FOCUS AREAS

- Social Sciences and Humanities
- Science, Technology and Engineering
- Economics, Business and Management
- Life Sciences and Others

ASIA INTERNATIONAL MULTIDISCIPLINARY CONFERENCE AIMC 2017

ASIA INTERNATIONAL MULTIDISCIPLINARY CONFERENCE 2017

TECHNOLOGY & SOCIETY: A MULTIDISCIPLINARY PATHWAY FOR SUSTAINABLE DEVELOPMENT

1-2 MAY 2017

UNIVERSITI TEKNOLOGI MALAYSIA

Science, Technology and Engineering

UTM

ASIA

AIMC 2017

ASIA International Multidisciplinary Conference

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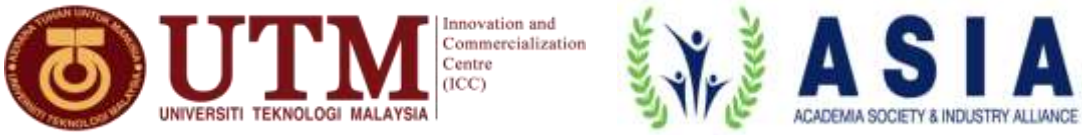
Pre-Conference Training Workshop



AIMC 2017

ASIA International Multidisciplinary Conference

Conference Program

Schedule for AIMC 2017

Conference Theme: Technology and Society: a multidisciplinary pathway for sustainable development

Venue: Seminar Room 2, FAB, Universiti Teknologi Malaysia, Johor Bahru, Malaysia

Monday, 1st May 2017

Time	Event
07:30-08:45	Registration
08:45-09:00	Guests Seating
09:00-09:20	Opening Note by **Prof. Dr Amran Rasli (UTM)**
09:20-09:40	Keynote Speech by **Prof. Dr Rajah Rasiah (UM)**
09:40-10:00	Keynote Speech **Prof. Dr Hadi Nur (UTM)**
10:00-10:15	Introduction of Connecting Asia by **Dr Muhammad Imran Qureshi (UniKL)**
10:15-10:20	Group Photograph
10:20-10:45	**Breakfast**
10:45-13:00	Parallel Sessions / 5Slides 5 Minute 5 Slides (5S 5M)) Competition /Poster Presentation Competition
13:00-14:00	**Lunch & Prayer Break**
14:00-16:00	Parallel Sessions
	5Slides 5 Minute 5 Slides (5S 5M) Competition
	Poster Presentation Competition
16:00-16:15	**Tea Break**
16:15-18:15	Parallel Sessions
	5Slides 5 Minute 5 Slides (5S 5M) Competition
	Poster Presentation Competition

CONFERENCE GALA DINNER

AIMC 2017
ASIA International Multidisciplinary Conference

Venue: Pulai Spring Resort, Skudai, Johor Bahru[a]
Date: 1 May 2017
Time: 19:00 – 22:00 Hours

Time	Program
19:00 – 19:30	Registration & Guest Seating
19:30 – 19:40	Welcome Speech by Conference Chairman **Prof. Dr Amran Rasli**
19:40 – 20:00	Keynote address by **Vice Chancellor UTM, Prof. Datuk IR. Dr Wahid Bin Omar**
20:00 – 20:05	Montage (ASIA Achievements & AIMC 2017)
20:05 – 20:15	About ASIA till Now and Future Plans of ASIA, Launch of ASIA Membership Campaign
20:15 – 20:30	Presentation of Awards and cash prize
20: 30 – 21:15	Cultural Event
21: 15 – 21:20	Photo Sessions
21: 20 – 22:00	Networking & Dinner
22:00	End of the Event

Dinner Theme: Connecting People Globally
Dinner Attire: Traditional Attire[a]

Tuesday, 2 May 2017

09:00-17:00	**Virtual Conference (Audience is not allowed)**

[a]20km, Jalan Pontian Lama, 81110 Pulai, Johor Malaysia
Tel : +607 521 2121, Fax : +607521 1818, Email: enquiry@pulaisprings.com

[b]**(The Guests are requested to wear their own Country's Traditional Attire)**

WELCOME MESSAGES FROM CONFERENCE CHAIR

Professor Dr Amran Rasli

We welcome all respected Researchers to the AIMC 2017, ASIA International Multidisciplinary Conference on four sub-themes i.e. Social Sciences and Humanities, Life Sciences, Science, Technology and Engineering, Economics, Business and Management. AIMC 2017 received more than 1700 abstracts from 22 countries. However, after rigorous review process, 500 quality abstracts were selected for oral presentations. The presentations are divided into different categories including 5Slides 5Minute (5S 5M) competition which are a trademark of ASIA, poster presentation competition and oral presentations with a cash prize for winners. These papers cover a wide range of disciplines consisted of Social Sciences and Humanities, Psychology, Education, Linguistics, Civilization and Law, Anthropology, Life Sciences, Environmental Sciences, Biosciences, Pharmacy, Medical Sciences, Earth sciences, Geology, Agriculture, Anatomy, Genetics, Zoology, Science, Technology and Engineering, Civil Engineering, Mechanical Engineering, Chemical Engineering, Electrical Engineering, Energy, Marine Engineering, Information technology and Computer science, Bioinformatics, Geo-informatics and real states, Mathematics, Physics and Chemistry, Economics, Business and Management, Economics, Business Management, Accounting and Finance, Management, Marketing, Technology management, Human Resource and Operations Management, that bring new and general insights body of knowledge and research world. We are delighted that we will have Special Keynote Speakers Prof. Datuk Ir. Dr Wahid bin Omar Vice Chancellor UTM, Prof. Dr Rajah Rasiah. Professor Dr Hadi Nur and Dr Muhammad Imran Qureshi. They will deliver an insightful keynote on the emerging agenda of the conference. ASIA is a Research society intended to create a symbiotic partnership between academia and industry to provide sustainable solutions for social and industrial issues. ASIA Mediterranean network is a conference management system which aims to bring all respective stakeholders, including practitioners, educators, and professionals on one platform from all over the globe to share the latest developments and transfer the academic and tacit knowledge to make the society more sustainable and knowledgeable. Recently the ASIA Mediterranean Network conducted 2nd ASIA International Conference AIC 2016 at UTM Kuala Lumpur Malaysia. In addition, 2nd AFAP International Conference on Entrepreneurship and Business Management (AICEBM 2015) was successfully conducted at Kuala Lumpur Malaysia. In 2015 ASIA International Conference (AIC 2015) in collaboration with UTM-ICC was also successfully organised. In the same vein, ASIA extends the journey of success to organise ASIA International Multidisciplinary Conference AIMC 2017 in collaboration with UTM-ICC, and Universiti Technologi Malaysia on four sub-themes i.e. Social Sciences and Humanities, Life Sciences, Science, Technology and Engineering, Economics, Business and Management.at Universiti Teknologi Malaysia, International Campus, Johor Bahru, Malaysia.

GUIDE TO SESSION CHAIRS

Before Session

1. Please arrive at the meeting room 5 minutes earlier before the session starts.
2. You can check the program on the official conference website in advance.
3. If there are any changes of the session time or presenting abstract, the working staff will notify you right at the registration desk.

During Session

1. Please divide the available time equally among all presenters. Each paper should be presented in ten minutes, followed by three minutes discussion time.
2. At the beginning of the session, briefly, introduce yourself, announce of your arrangement of the presentations to the presenters and the audience. Please make sure the presenters are aware that they will receive their certificate at the end of the session.
3. We will have our working staff ready at the end of each session to take a group picture of the participants, please help to gather everyone for the photo shoot.
4. Papers with more than one author do not get any extra time for the presentation.
5. Please remind the presenters of the remaining time they have three minutes before the end of their presentation. If a speaker goes beyond the allotted time, the session chair should ask him/her to close the presentation promptly and politely.
6. Confer the certificate of participation to every presenter at the end of the session.
7. Please try to make sure the session timely proceeds since some attendees need to move from session to session.
8. If any problem which affects the continuation of your session appears, please send someone to contact the organisers.
9. If any of the presenters fail to appear at the session, please return their certificates to the organising committee.

SESSION CHAIRS & JUDGES

Names	Area	University
Prof. Dr. Amran bin MD. Rasli	Management	UTM
Prof. Dr. Rajah A/l Rasiah	Business Economics	UM
Dr. Nurwina Akmal Binti Anuar	Biosciences and Health Sciences	UTM
Dr. Shafqat Ullah Khan	Communication/Electrical Engineering	UTM
Dr. Muhammad Adil Khattak	Mechanical and Nuclear Engineering	UTM
Dr. Rashid Ahmed	Physics	UTM
Dr. Kashif Tufail Choudhary	Physics and Biomedical Engineering	UTM
Dr. Usman Ullah Sheikh	Electronics and Computer Engineering	UTM
Dr. A. S. A. Ferdous Alam	International Business Management	UUM
Dr. Mastura Mahfar	Management	UTM
Prof. Madya Dr. Khairil Wahidin bin Awang	Economics and Management	UPM
Dr. Zainudin bin Hassan	Education	UTM
Dr. Aqeel Khan	Education	UTM
Dr. Farhana Diana Deris	Linguistics and Online Learning	UTM
Dr. Mehrbakhsh Nilashi	Computing	UTM
Dr. Zahid Sultan	Built Environment	UTM
Dr. Dodo Yakubu Aminu	Sustainable Architectural Education	UTM
Dr. Munirah Binti Onn	Applied Sciences	UiTM
Dr. Yulia Hendri Yeni	Business and Management	Unand,
Dr. Syed Zuhaib Haider Rizvi	Lasers Induced Plasma	UTM
Dr.Maqsood Ahmed	Nuclear Energy Physics	UP, Pakistan
Assoc. Prof. Dr. Mukhiddin Muminov	Analysis, Mathematical Physics	UTM
Dr. Mazlina Mustapha	Economics and Management	UPM
Dr. Jafri bin Mohd. Rohani	Industrial and Mechanical Engineering	UTM
Dr. Ani Bin Shabri	Mathematics/Statistics	UTM
Dr. Basheer Ali Ghazali	Business and Management	KFU,SA
Dr. Mohamed Ayyub Hassan	Human Resource Development	UTM
Prof. Madya Dr Torehman	Management	UTHM
Dr. Abdullah Hisam Omar	Geo Information	UTM
Dr. Mhammed Amin Azimi	Built Environment/ Civil Engineering	UTM
Dr. Suresh Ramakrishnan	Accounting and Finance	UTM
Dr. Goh Chin Fei	Business and Management	UTM
Dr. Tan Sui Hong, Helen	Business and Management	UTM
Assoc. Prof. Dr. Ismail Said	Built Environment	UTM
Dr. Associate Prof. Datin Dr. Hasmah Binti Zanuddin	Department of Media Studies, Faculty of Arts and Social Sciences	UM
Dr. Inam Abbasi	Electrical Engineering	UTM
Dr. Qais Ali	Computing	UTM
Dr. Usman Ahmad	Computing	LCW, Pak

Names	Area	University
Dr. Kang Chia Chao	Electrical Engineering	Uni KL
Dr. Tan Owee Kowang	Management / Mechanical Engineering	UTM
Dr. Muhammad Imran Qureshi	Operation Management	Uni KL
Dr. Solomon Olayinka	Management	UTM
Dr. Monica Obi	Education	UTM
Asso. Prof. Dr. Hashanah Binti Ismail	Economics and Management	UPM
Dr. Susilawati Toemen	Chemistry	UTM
Dr. Salmiah Jamal Mat Rosid	Chemistry	UTM

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Name	Affiliation
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Dr Muhammad Tariq	Department of Economics, Abdul Wali Khan University Mardan, Pakistan.

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Professor Dr Amran Rasli

Program Director

Dr Muhammad Imran Qureshi

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OUR DIGNITARIES

Prof. Datuk. Ir. Dr Wahid bin Omar
Vice-Chancellor,
Universiti Teknologi Malaysia

Datuk Wahid Omar is a Professor of Structural Engineering at the Faculty of Civil Engineering, Universiti Teknologi Malaysia (UTM). He was appointed as the Vice-Chancellor of UTM in September 2013. Wahid Omar obtained his PhD. in Structural Engineering from the University of Birmingham, his Master's degree in Bridge Engineering from the University of Surrey, and his Bachelor of Science in Civil Engineering degree from the University of Strathclyde, United Kingdom. He is a Fellow of the Institution of Engineers Malaysia, a registered Professional Engineer with the Board of Engineers Malaysia and a member of various professional bodies. He is also an Honorary Member of the ASEAN Federation of Engineering Organization (AFEO). His areas of expertise include structural assessment, reinforced and pre-stressed concrete and ductility of high strength concrete and project management. Prior to his present appointment, he was the Deputy Vice-Chancellor (Development) (2011-2013) and the Director of the Office of Asset and Development (2008-2011). In his capacity as the then Director of the Office of Asset and Development, he was entrusted with a major task to manage UTM campus development projects worth RM1 billion.

Professor Dr Amran Rasli has a PhD in Society, Business & Globalisation from Roskilde University, Denmark. He is currently the Director of Innovation and Commercialization Centre, Universiti Teknologi Malaysia. His main task is to screen UTM research and development projects, and subsequently, create commercial ventures through licensing and/or formation of spin-offs companies. He is a director of two spin-off companies on behalf of UTM. He also liaises, plans and conducts entrepreneurship activities with funding agencies to ensure the sustainability and impact for the entrepreneurs and the agencies concerned. At the Faculty of Management, Prof. Dr Amran Rasli teaches postgraduate students, supervise doctoral students, conduct research projects and write journals for publication as per the expectation of the university. Prof. Dr Amran Rasli is still active in doctoral supervision having graduated 31 PhD scholars so far. He had been invited as a visiting professor at University College of Engineering and Technology, Pahang, Indian Institute of Risk Management, Hyderabad, India, Hebei University, China, Kaunas Technological University, Lithuania, National Central University, Taoyuan, Taiwan, National Chen Kung University, Tainan, Taiwan and Universitas Sebelas Maret, Surabaya, Indonesia. He is currently an Adjunct Professor at Asia E-University.

Dr Rajah Rasiah is Professor of Economics and Technology Management at the Faculty of Economics and Administration, University of Malaya. He was the first holder of the Khazanah Nasional Chair of Regulatory Studies and a Professorial Fellow at UNU-MERIT and a member of the GLOBELICS scientific board, and an advisory member of the Industrial Development Research Centre, Zhejiang University. He is also a member of the National Science Research Council, Malaysia, and an advisory member of the Export Committee of the Ministry of International Trade and Industry, Malaysia. He has contributed extensively to projects commissioned by UNCTAD, World Bank, ILO, UNIDO, UNESCO, UNDP and WIPO in Africa, Asia and Latin America. He obtained his doctorate in Economics from Cambridge University in 1992 and was a Rajawali fellow at Harvard University in 2014. He is the 2014 recipient of the Celso Furtado prize from the World Academy of Sciences for his contributions to the field of social sciences. He has published more than 300 research articles in SCOPUS, ISI indexed and Impact factor journals. He has supervised 32 Doctoral Theses and 18 Master Theses. More than 100 scientific papers have been presented since 2007 at various international conferences. About 17 books have been published in national and international publishers. His work has been cited extensively (<3700) with 94 i10 index and h index 31.

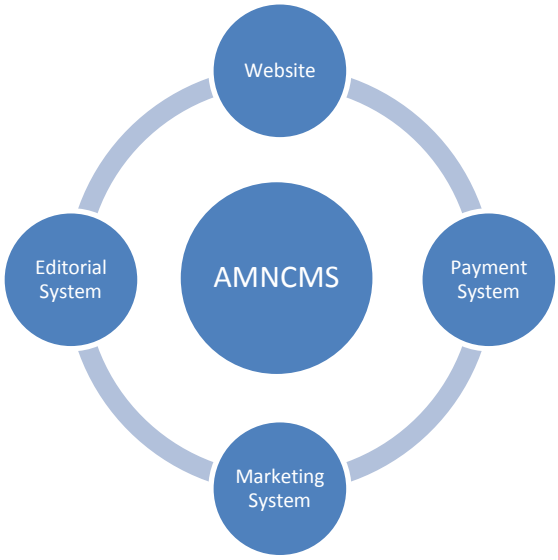
Dr Hadi Nur is a Professor and specialised in advanced materials and heterogeneous catalysis. His main field of undergraduate and graduate studies was in chemistry and materials engineering at the Institut Teknologi Bandung. He obtained his B.S. and M.Eng. (cum laude) degrees in 1992 and 1995, respectively. Shortly after that, he continued his postgraduate studies in zeolite chemistry at the Universiti Teknologi Malaysia (UTM) as he received his PhD degree in 1998. His postdoctoral studies started with a year as a UTM Postdoctoral Fellow and with two years as a Japan Society for Promotion of Science (JSPS) Postdoctoral Fellow at Catalysis Research Center (CRC), Hokkaido University, Sapporo, Japan. He continued there as a Center of Excellence (COE) Visiting Researcher at CRC for half a year. In May 2002, he joined the Ibnu Sina Institute for Fundamental Science Studies, Universiti Teknologi Malaysia. He was a visiting scientist at the Institute for Heterogeneous Materials Systems, Helmholtz-Zentrum Berlin for Materials and Energy, Germany from July to September 2015. Currently, he is a full professor at UTM. He has supervised many postgraduate students studying for PhD and M.S. degrees in heterogeneous catalysis and advanced materials, for example, zeolite chemistry and catalysis, photocatalysis, semiconductor nanoparticle-polymer composite, bifunctional oxidative, and acidic catalysts and phase-boundary catalysis. Currently, he and his family enjoy living in Johor Bahru area and are glad that they made the move.

Muhammad Imran Qureshi is a doctor of management from Universiti Teknologi Malaysia. His doctorate research focused on the work practices for sustainable manufacturing under Socio-technical systems context. He is currently working as a senior lecturer in Malaysian Institute of Industrial Technology (MITEC), Universiti Kuala Lumpur. He is also founding Director of Connecting ASIA research network. He has ten years of teaching experience in the field of Operations Management, Strategic Management, Project Management, Total Quality Management, Statistical Process Control, Environmental Management, Logistic and Supply Chain Management, Production Management and Operations Research, Statistics and Data Analysis. He is a professional trainer for data analysis. He has conducted several workshops on Structural Equation Modeling (SEM) using AMOS and SMART PLS, qualitative data analysis using NVIVO. On the research side, his research profile consists of more than 100 research publications in renowned journals with a cumulative impact factor above 34. He has written several impact factor publications with world renowned publishers like ELSEVIER and SPRINGER in the area of Operations Management, Environmental Management, Sustainability and Organizational Behavior. His work has been cited extensively with 15 i10 index and h index 12.

CONNECTING ASIA CONFERENCE MANAGEMENT SYSTEM NETWORK (CACMSN)

AMNCMS provides all solutions for the problems in managing conferences. This is a comprehensive system to manage conference website, marketing and payment system. AMNCMS also contains an integrated editorial system for submission and review of the conference articles. AMNCMS enables conference organisers to manage multiple conferences on the single web and provide hassle free easy to use interface for organisers and researchers over the globe. AMNCMS is undergoing the process for copyright protection as stipulated by the commercialization policy of Universiti Teknologi Malaysia (UTM). Many local and international conferences are using AMNCMS for hassle free conference management. Our team is committed to providing quality services to satisfy conference organisers needs.

CONNECTING ASIA CONFERENCE MANAGEMENT SYSTEM NETWORK



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Abstracts for AIMC 2017

Abstract ID: **AIMC-2017-STE-10**

PRODUCTION OF ENDOGLUCANASE AND BIOMASS YIELDS OF BACILLUS MEGATERIUM STRAIN IN DIFFERENT NITROGEN SOURCES

Corresponding Author: Al-Gheethi AA
Universiti Tun Hussein Onn Malaysia (UTHM)
Co-Authors: Efaq AN, Mohamed RM, Abdel-Monem MO, Amir Hashim MK

Abstract

Introduction: *The present study aimed to investigate the efficiency of Bacillus megaterium in the production of Endoglucanase enzyme and biomass yield in different source of organic and inorganic sources* **Methodology:** *The experimental production was performed in CMC-Yeast Extract (CYE) agar medium with 106 cell mL-1 for 3 days at 45ºC and pH 6.5.* **Findings:** *The results revealed that the organic source (peptone) was the best for production of Endoglucanase enzyme than inorganic source (sodium nitrate) the enzyme activity was 19.12 vs. 12 U mL-1, respectively. In order to determine the best amino acid which improve the enzyme production, 21 amino acids and their derivatives were examined at a concentrations included 5, 50, 100 and 200 ppm. L-arginine, L-hydroxy proline, glycine, L-histidine, L-leucine, DL-isoleucine, DL-β-phenylalanine were the best nitrogen source at 50 ppm, while DL-threonine, L-ornithine 12.29, L-proline were the best source with 100 ppm. Among all the amino acids investigated the maximum biomass yield was recorded with 5 ppm of glycine 5 ppm and 100 ppm of DL-serine.* **Contribution:** *This study focused on the investigation the role for different types of amino acids at different concentrations in the production of Endoglucanase by Bacillus megaterium which has not reported in details yet.*

Keywords: Endoglucanase, Bacillus megaterium, amino acids

Abstract ID: **AIMC-2017-STE-13**

INVESTIGATION ON STRENGTH AND WORKABILITY OF CONCRETE BY PARTIALLY REPLACEMENT OF CEMENT WITH SUGARCANE BAGASSE ASH

Corresponding Author: Sajjad Ali Mangi
UTHM Malayisa
Co-Authors: Abd Halid Abdullah, A.S.M. Abdul Awal, Samiullah Sohu

Abstract

Introduction: *This research addresses the suitability of sugarcane bagasse ash (SCBA) in concrete used as partial replacement of cement.* **Methodology:** *Two grade of concrete M15 (1:2:4) and M20 (1:1 ½:3) were used for the experimental analysis. The cement was partially replaced by SCBA at 0%, 5% and 10%, by weight in normal strength concrete (NSC). The cylindrical specimens having size 150mmx300mm were used and tested after curing period of 7, 14 and 28 days.* **Findings:** *It was observed that the compressive strength tends to increase with increase of SCBA in the concrete. Results showed that the use of SCBA in concrete (M20) at 5% increased the average amount of compressive strength by 15% as compared to the normal strength concrete. The outcome of this work indicates that maximum strength of concrete could be attained at 5% replacement of cement with SCBA. Furthermore, the SCBA also gives compatible slump values which increase the workability of concrete.* **Contribution:** *The innovative part of this study is to consider two grade of concrete mixes to evaluate the optimum values for cement replacement by sugarcane bagasse ash.*

Keywords: Sugarcane bagasse ash, concrete, compressive strength, workability.

Abstract ID: **AIMC-2017-STE-15**

ASSESSMENT OF WOOD-FUEL ENERGY CONSUMPTION AND NATURAL GAS AS AN ALTERNATIVE ENERGY RESOURCE

Corresponding Author: Sajjad Ali Mangi
Universiti Tun Hussein Onn Malayisa,Johor, Malaysia
Co-Authors: Samiullah Sohu, Abd Halid Abdullah,Sasitharan Nagapan,Hemu Karira

Abstract

Introduction: *Villages of every country are the highly dependent on the biomass fuels i.e wood-fuel and dried dung for their energy needs. Fuel-wood as a source of energy plays significant role in domestic energy*

necessities, due to financial problems many people are using wood-fuel as an affordable and convenient method in Pakistan. Wood-fuel in vicinity of PAI forest Nawabshah is the most highly consumed fuel. **Methodology:** *Two surveys has been conducted to collect the data, first survey was conduct from the villages in the vicinity of PAI forest and the data was collected from the 200 householders and subsequently second survey of 200 households was also conducted from nearby city known as Sakrand Town of district Shaheed Banazir Abad (SBA) to gather the data regarding the natural gas consumption per household so as to compare the cost of Natural Gas verses wood-fuel energy cost.* **Findings:** *It was observed from the detailed surveys of the area that one householder use wood-fuel of amounting PKR: 12,960.00 per year whereas the peoples while using the natural gas were paid around PKR: 10,345.00 per year which is 20% lesser than the wood-fuel energy cost. In addition to that the burning of fuel wood creates the harmful health impacts and develop indoor air pollution. Therefore, it is highly be recommended that immediately supply of natural gas to the villages in the vicinity of PAI forest and the biogas plants should be installed within the targeted area because 30% population rearing livestock.* **Contribution:** *Conducted two surveys, to collect the data, first survey was conduct from the villages in the vicinity of PAI forest and the data was collected from the 200 householders and subsequently second survey of 200 households was also conducted from nearby city known as Sakrand Town of district Shaheed Banazir Abad (SBA)*

Keywords: Wood-fuel, Energy, Household, PAI forest, Nawabshah

Abstract ID: **AIMC-2017-STE-16**

PENILAIAN TERHADAP KUALITI LAPORAN EIA DALAM ASPEK HAKISAN TANAH DAN SEDIMENTASI

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Abstract

Introduction: *Soil erosion and sedimentation has become one of the major issues in the implementation of the EIA project in Malaysia. Study shows that, there are weaknesses among the developer in terms of implementing erosion anda sedimentation control measures. Therefore, this study was conducted to evaluate the quality of the EIA report in the terms of soil erosion and sedimentation aspect. The quality report is defined as a measure of adequacy and completeness the necessary information in the impact assessment. In this study, an EIA review package was designed to assess the quality of the EIA report.* **Methodology:** *This study has used quantitative content analysis method to evaluate the quality of the EIA report. There are 7 review areas has been evaluted in each EIA report. There are description of the project, project options, existing environmental conditions, impact assessment, mitigation measure, ESCP conceptual and monitoring plan. The review package contains 73 items overall. The scale of measurement 0 to 5 has been used to rating score quality for each item. 35 samples of EIA report for housing projects from the year 2012 to 2016 were evaluated. Test and retest method is conducted to ensure the reliability of review data meet the standard. The overall quality is calculated by aggregating the each value quality of review areas.* **Findings:** *Intraclass corellation (ICC) was done, it is aim to identify reliability of the data. Its found that the correlation is 0.896, which means the review has good reliability. This study found about 22 of the EIA report achieve satisfactory level (3.00 <). Only two review areas achieve 3.0 and above min quality which is mitigation measure and existing environment. While five review areas which are project description, project options, impact assessment, ESCP conceptual and monitoring plan has fail to achieve satisfactory levels (3.00 >). ESCP conceptual has found very poor quality. Most of the ESCP plan fail to shows the earthwork to be conduct in stages. The study also identify that the quality of EIA report was very depend by the expertise of the consultant.* **Contribution:** *This research was contribute in the new methodology in conducting evaluation of the EIA quality. EIA review packages in terms of soil erosion and sedimentation is one of the most important things that criticaly needed to be used in EIA review. It can be regard as quality control tools in EIA implementation. The study shows that EIA effectiveness could be affected if the quality of EIA report is in poor level.*

Keywords: EIA effectiveness, soil erosion and sedimentation, EIA quality, EIA review package.

Abstract ID: **AIMC-2017-STE-17**

INVESTIGATION OF ENERGY CONSERVATION POTENTIALS: A CASE STUDY OF KATSINA STATE SECRETARIAT COMPLEX, NIGERIA

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Abstract

Introduction: *The importance of energy conservation in our contemporary world cannot be overemphasized, efficient utilization of energy has significant impact in improving economy at all levels of human endeavour. No doubt, adequate and appropriate utilization of energy especially electrical energy boosts up any organizational developmental activities. Recently, research interest has emphasis towards efficient energy utilization and energy conservation as the effective means of reducing energy consumption in buildings thereby reducing its maintenance cost.* **Methodology:** *This paper investigated and analysed the energy consumption characteristics of Katsina state secretariat complex for the period of 3 years (i.e. from 2014 to 2016) based on site surveys and analysis of the energy end users present, using the records of electricity utility bills and Automotive Gas Oil (AGO), being the two energy carriers of the complex. Records have shown that, the secretariat complex average electricity and AGO consumptions were found as 1045661.95 kWh and 116650.33 litres of AGO, which is equivalent to 1250491.54 kWh.* **Findings:** *The investigation revealed a distinct consumption pattern, indicating peak energy consumption during the hot months of April to August due to significant air conditioning requirements. The result of the investigation of the energy conservation potentials in the secretariat complex have shown that, energy savings of up to 6.5% of the total energy can be achieved by switching-off all security lights during the day. While turning off the air conditioners in the early morning hours of between 8am to 10am would provide a saving of up to 19% of the total energy. Furthermore, a saving of 16.5% of the total energy can be achieved when the incandescent lamps are replaced with the energy efficient ones.* **Contribution:** *The energy conserving measures (ECMs) followed in this research has shown significant savings in terms of both energy and cost, and if well implemented can give way for a sustainable energy management of similar office buildings in future.*

Keywords: Office buildings; Electricity, Energy conservation, Savings

Abstract ID: **AIMC-2017-STE-23**

BARRIERS AND DRIVERS OF WLCC OF SUSTAINABLE FACILITY MANAGEMENT FOR PPP/PFI PROJECTS IN MALAYSIA

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Co-Authors: Sarajul Fikri Mohamed

Abstract

Introduction: *The research seeks to examine the barriers and drivers of Whole Life Cycle Costing for Sustainable Facility Management of PPP/PFI projects in Malaysia.* **Methodology:** *Data is collected by means of questionnaires which are distributed to all members of Malaysian Association of Facility Management (MAFM).* **Findings:** *Collected data is analysed by means of Relative Importance Index (RII) and Severity Index (SI).* **Contribution:** *Many researches have been carried out in relation to WLCC but there is a lack of research that focuses on WLCC for Sustainable Facility Management.*

Keywords: WLCC, Sustainable Facility Management, PPP/PFI Projects in Malaysia

Abstract ID: **AIMC-2017-STE-24**

PARAMETERS OF WLCC FOR SUSTAINABLE FACILITY MANAGEMENT OF PPP/PFI PROJECTS IN MALAYSIA

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Abstract

Introduction: *The research seeks to investigate the significant parameters of WLCC for Sustainable Facility Management of PPP/PFI projects in Malaysia* **Methodology:** *Data is collected by means of questionnaire which are distributed to all members of Malaysian Association of Facility Management (MAFM)* **Findings:** *Collected data is analysed by means of fuzzy logic. Parameters are categorized into six categories which are identification*

of objectives, alternatives and constraints, formation of basic parameters, compilation of data, implementation of WLCC, consideration of risks and uncertainties and reporting of WLCC. The parameters are further categorized into sub-parameters. Findings revealed that most of the parameters are significant with μ > 3.78. **Contribution:** *The research allows for further research to be conducted in integrating the significant parameters of WLCC with sustainability elements.*

Keywords: WLCC, Sustainable Facility Management, Fuzzy Logic, PPP/PFI Projects

Abstract ID: **AIMC-2017-STE-25**

CONTROL OF SHUNT ACTIVE POWER FILTER USING UNITY POWER FACTOR STRATEGY IN MICROGRID

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Abstract

Introduction: *Since late 1980s, power quality has been considered important for electrical companies and customers intended for high and low voltage. Consequently, electrical companies have tried to improve the power quality in power grid through respecting to customer's request. In recent times Distributed Generation (DG) has been increasing; since the growth in using renewable energy source as well as evolving synchronized generation units. As it is defined, DG is a source of electrical generation that is associated either to distribution grid directly or to customers. The micro-grid system distribution network contains distributed generation, which can function in grid-connected or islanded methods.* **Methodology:** *Certain different controlling approaches have been presented in numerous papers according to the area of frequency and time. Recently, numerous publications have similarly discussed on the harmonics suppression by active power filters. The control methods of active power filters have been researched by several researchers. In this control method, the load and APF are observed through the source by means of a linear resistance. After applying the unity power factor (UPF) condition, the source voltage and source current at the PCC will have indistinguishable waves haps by different amplitudes (e.g., have equal THD values).* **Findings:** *According to the obtained results of current waveforms, the APF is substituted in operation at 0.1 seconds; the consequence of the active filter can be obviously realized by paralleling the system current waveforms previously and after 0.1 seconds. Figure 5 illustrates the waveforms of the currents entering the system and the current injected via the APF after full compensation. The active filter can still right the waveforms into a sinusoidal shape in this circumstance. According to Figures 5 b and c, the FFT of both currents is exposed. Hence, the THD is reduced from 80.81 to 2.69%, (after compensation).* **Contribution:** *This paper deals with a compensation system, including distributed passive filter and active power filter in micro grid system. Every passive filter has been designed to eliminate main harmonics and gain reactive power while it is the duty of active filter to correct unbalanced system as well as eliminate any harmonic left. The simulation results have demonstrated that good compensation effects can be achieved by using the Unity Power Factor Strategy Controller (UPFC).*

Keywords: Power quality, Active power filter, Passive filter, Harmonic compensation, Microgrid.

Abstract ID: **AIMC-2017-STE-26**

A REVIEW OF HYBRID COMPENSATOR FILTERS AND CONTROL STRATEGIES FOR GRID-CONNECTED MICROGRID

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Abstract

Introduction: *In most cases, either a harmonic voltage source or harmonic current sources can represent a harmonic producing load. Non-linear loads are able to produce harmonic and cause the system to be unbalanced and consume reactive power, also the lack of a suitable compensator can practically worsen the power quality of the AC system. By developing Distributed Generation Systems (DGSs) in a Micro-Grid, this situation becomes more serious, because power electronic inverters are often used to connect DG units. A micro-grid is a local power supply system, which integrates Renewable Energy Sources (RESs), energy storage devices, local loads and communication devices.* **Methodology:** *The control techniques have been studied by many researchers. Various control methods are based on the frequency domain or the time domain. The Synchronous Reference Frame (SRF) control is also called dq control [54]. This method uses a reference frame*

transformation module, abc→dq, to transform it into a reference frame that rotates synchronously by using the transform of the grid current and the voltage waveforms. The Park transformation for an electrical power system analysis has been extended. The application of the Park transformation to three generic three-phase quantities supplies their components in dq0 coordinates [55]. The control strategy applied to the interface converter usually includes two cascaded loops. In fact, an external voltage loop controls the dc-link voltage, and a fast internal current loop regulates the grid current [21]–[23]. The current loop is designed for current protection and power quality issues; hence, harmonic compensation is an important property of the current controller. Nevertheless, the main aim is system stability having slow dynamics [9]. Figure 4, shows a schematic of the SRF control. **Findings:** *Mainly, the control strategy applied to the grid-side converter includes a fast internal current and an external voltage loops [50], which regulates the grid current, controls the dc-link voltage respectively [51], [52]. The current loop in grid-connected inverter is responsible for current protection and power quality issues; therefore, harmonic compensation is the important properties of the current controller and also for balancing the power flow in the system is designed the dc-link voltage controller. In fact, aims for system stability having slow dynamics is the design of this controller. Instead of a current loop in some study, the control of grid-side controller is based on a dc-link voltage loop cascaded with an inner power loop. As well as, in this paper [53] control strategies employing an inner current loop and an outer power loop.* **Contribution:** *A review of HCFs and Control strategies of grid-connected inverters has been presented to provide a wide exposure on various issues of the HCFs to the designers, researchers and engineers working on these power filters for power quality improvement. A large number of HCFs configuration is available to compensate voltage and current harmonics, reactive power and unbalanced harmonic current. These HCFs can be considered as a better alternative for power quality improvement owing to simple design, reduced cost and high reliability compared to other options of power quality improvement.*

Keywords: Active filter, Passive filter, Hybrid Filter, Control methods

Abstract ID: **AIMC-2017-STE-27**

COOPERATIVE GPS AND NEIGHBORS AWARENESS BASED DEVICE DISCOVERY FOR D2D COMMUNICATION IN IN-BAND CELLULAR NETWORKS

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Abstract

Introduction: *Device to Device (D2D) Communication is one of the potential advancement in 5 G. In D2D communication two devices communicate directly without passing through the intermediate node. Initiating D2D communication starts with the device discovery and followed by the access process. Device discovery is a vital research problem due to the need of discovery in dense areas. Each discovered device acts as a femtocell and fully or partially/locally controlled under the cellular network. Cooperative use of Global Positioning System (GPS), femto devices cell, and channel reuse can help in efficient discovery and minimum energy consumption.* **Methodology:** *A device need to discover neighbor devices on the certain channel to initiate the D2D communication within minimum period. A device discovery technique based on Global Positioning System (GPS) and neighbor awareness base is proposed for in-band cellular networks. This method is called network centric approach, and it improves the device discovery efficiency, accuracy and channel capacity. Differential code is applied to measure the signal to noise ratio of each discovered device. In the case that the signal to noise ratio (SNR) of two devices is above a specified threshold value, then these two devices are qualified for D2D communication. Two procedures are explored for device discovery; discovery by CN (core network) and eNB (evolved node B) cooperation with the help of GPS and neighbor awareness. Using 'haversine' formula, SNR base distance is calculated, and valuable observations on the optimum theoretical presentation in terms of the figure of obligatory discovery transmissions. Results show an increment in the channel capacity relative to SNR obtained for each device.* **Findings:** *Differential code locates the devices and measure the signal to noise ratio of each device. G's are gain ratio of each device if their gains are in threshold value then these devices are eligible for D2D communication. In this sky plot, it can be seen that which devices are qualified for D2D communication. Device having gain G2 can make D2D communication with G5 by getting neighbor awareness of G10. 3D position view of each device east, north and their distances, graphically tells how many devices are in which direction, position and epoch to discover the devices. Our results show that using cooperative GPS and neighbor awareness method is much efficient than other techniques used in literature survey. Channel capacity of femtocell is increased many time regarding Nano or Pico cell systems.* **Contribution:** *In this work, we proposed a cooperative GPS and neighbor aware assisted base device discovery technique. Obtained results*

showed that our proposed technique can provide lower latency, efficient discovery in high dense area, and accurate discovery in multiple femtocells in addition to capacity increment. In future works, results for multi cell scenarios and neighbor awareness in no coverage zone will be obtained.

Keywords: D2D Communication, SNR, GPS, CN and eNB

Abstract ID: **AIMC-2017-STE-32**

GEOGRAPHIC INFORMATION SYSTEMS FOR SPATIAL ANALYSIS IN DISPUTE DETERMINATION PRONE AREAS IN KENDARI CITY

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Abstract

Introduction: *The objectives of this research were to discover mapping process of vulnerability of land dispute and the benefit of land dispute vulnerability map and*
land dispute distribution map. **Methodology:** *Research method used in this research was mixed method research with*
spatial approach. Analysis technic used was valence and overlaying. Determinant variable of land dispute vulnerability was classified and given a valence based on its impact on land dispute vulnerability. Then overlaying was conducted among those seven variables by using Software ArcGis 10.3 to produce map of Prone for Land Dispute in Kendari City. Overlaying technic used was Union technic collecting all attributes of each determinant variable for later to be calculated its total valence. Here after the making of Land Dispute Distribution Map was made and overlay Prone for Land Dispute Area Map with Land Dispute Distribution Map. **Findings:** *Based on research result and analysis, and then discovered that 1) by using*
valence and overlaying can be obtained distribution of prone for land dispute area. 2) Result of total valence indicated that area with class prone was 4%, class quite prone and not prone were 32%. Class very prone was not found in Kendari City area. 3) Strategic Area Variable (at class Prone), Accessibility (at class Quite Prone) and Conformity of Land Use with RTRW (at class Not Prone) have a greater impact to land dispute sample compared to other prone for land dispute variable at each class prone for dispute **Contribution:** *Map of Prone for Land Dispute area and Map of Land Dispute Distribution for Kendari City at Land Office of Kendari City were unavailable. So with the existence of this research could provide contribution to land office as spatial data material regarding land dispute vulnerability at Kendari City and distribution of its land disputes that can be benefitted in supporting implementation of services at Land Office of Kendari City*

Keywords: Geographic Information Systems,Mapping, Overlaying, Land Dispute

Abstract ID: **AIMC-2017-STE-33**

IMPROVEMENT LAND DATA QUALITY ON KENDARI CITY LAND OFFICE SOUTHEAST SULAWESI PROVINCE INDONESIA

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Co-Authors: Yuli Efendi;I Made Sumadra

Abstract

Introduction: *Developments in technology must be used in daily work of land service for public. Digitizing land records in database and computer-based service called Computerized Land Office (KKP) which developed into a Geo-KKP. The conditions of land data quality in Geo-KKP on Kendari City Land Office are still low, so it should be improved* **Methodology:** *Data quality improvement held in the Kendari City Land Office includes several stages: preparation, entry of textual data: Buku Tanah and Surat Ukur/Gambar Situasi, the digitization of land parcel, graphic index mapping (GIM), integration of textual and spatial data, and physical and digital data validation.* **Findings:** *Data quality improvements into the best quality (KW 1), implemented by analyzing the results of the inventory data and compared with land data quality class table, so we can get how to handle it. The constraints faced in land data quality improvements caused of the condition of land records, office infrastructure and Human Resources* **Contribution:** *The benefits with a quality improvements of land records is to provide legal certainty registered land and support in realizing the National Land Information System (SIMTANAS) and the implementation of Openness Public Information (KIP).*

Keywords: Improvement, Land Data Quality, Geo-KKP

Abstract ID: **AIMC-2017-STE-35**

PREDICTION OF SOUND ABSORPTION PERFORMANCE FOR DOUBLE LAYER RUBBERIZED CONCRETE BLOCKS

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Abstract

Introduction: *Nowadays rubberized concrete is used to support construction sustainability and contribute to the development of more efficient construction material, in particular by using waste rubber tire. The use of rubber in block pavement is one of the actions in order to reduce the noise from tire-road interaction and hence able to reduce pass by noise pollution. In this paper, the influence of waste rubber tire content within the range of 10–40% as the replacement for aggregate on the sound absorption coefficient of double layer rubberized concrete blocks was investigated.* **Methodology:** *Experimental investigations were carried out on a series of block with thickness of 80 mm. First layer of block varies in thickness from 10 to 40 mm and consist of concrete mixture series 1 while second layer with mixture series II. Mixtures for series I used waste tyre rubber granules of 5 mm to 8 mm in size whereas mixture for series II used waste tyre rubber granules of 1 mm to 4 mm. The ratio for cement: aggregate: sand was 1: 1.7:1.5 and water to cement (w/c) ratio of 0.47. Experimental investigations include non-acoustic and acoustic parameters. Based on the experimental results, acoustic performance such that optimum sound absorption and its frequency for double layer rubberized concrete blocks were calculated by considering the independent factors of rubber content, thickness and the non-acoustic performance such as density, water absorption, compressive strength, and porosity.* **Findings:** *Acoustic parameters investigation of specimens of double layer block showed that concrete pavement blocks have one peak of sound absorption located at low frequency of 500 to 700 Hz. This indicates that it suitable for application of mitigation of low speed traffic condition. A model was developed to predict the optimum sound absorption of the double layer block pavements. The effect of rubber content, thickness of facing layer and porosity on the prediction was statistically significant ($p < 0.05$). The model is capable of predicting the optimum sound absorption of double layer rubberized concrete block products of cement: aggregate: sand was 1: 1.7:1.5 and water to cement (w/c) ratio of 0.47 if the facing layer thickness, the content of rubber and the curing condition used are within the tested ranged.* **Contribution:** *The investigation on double layer rubberised block pavement has so far extensively focused on overall of double layer on physical and mechanical performance for applications in highway pavement structures but little attention have been focused on acoustic performance. Albeit, sound absorption performance is main criteria in traffic noise mitigation management. Thus, this research has add the valuable characteristic of the double layer rubberized block pavement. The proposed block and the model obtained can be used by the interested party for the purpose of traffic noise mitigation for road with low speed traffic.*

Keywords: strength, sound absorption, double-layer, rubberised, concrete paving blocks

Abstract ID: **AIMC-2017-STE-37**

OVERALL THERMAL TRANSFER VALUE (OTTV) OF NATURALLY VENTILATED DOUBLE SKIN FAÇADE IN MALAYSIA

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Abstract

Introduction: *Malaysia standard -MS 1525 provide some important and necessary standards for ensuring sustainable built environment and one of the standards is in the specification of overall thermal transfer value of building envelope. However, as Architects look towards the option of choosing naturally ventilated double skin facade for their prospective commercial buildings, calculating the building OTTV is a challenge that this study hope to solve, as the existing formula in MS 1525 is deficient for calculating OTTV for this envelope typology.* **Methodology:** *To achieve the study goal, Cap Square Tower in Kuala Lumpur, Malaysia is evaluated. The value of the OTTV of the single skin tower is compared with the building integrated with naturally ventilated façade by an analytical approach using dynamic simulation software (EnergyPlus/DesignBuilder)* **Findings:** *The result indicates that the annual heat transferred through the east orientation of the building is more than all other orientations and by integrating NVDSF on the east orientation the building would reduce energy use over traditional SSF building by more than 5%. Also, the cost implication of investing in NVDSF facilities should be studied for a better understanding of the return of investment in that same context* **Contribution:** *The ultimate*

goal of this research is to enhance the exisiting building design sustainability standards in Malaysia building industry as the country undergo developmental growth.

Keywords: Naturally Ventilated Double-Skin Facades, Simulation (DesignBuilder), Overall Thermal Transfer Value (OTTV), Thermal performance.

Abstract ID: **AIMC-2017-STE-40**

AN INTEGRATED SERVICE ORIENTED ARCHITECTURE ADOPTION FRAMEWORK BASED ON THE TOE AND HOT-FIT MODEL

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Abstract

Introduction: *With the advent of computing systems, there were only stand-alone machines run monolithic applications. In 60s, after development of monolithic systems, structured based systems were appeared. Then object based, client/server, 3-tier, and N- tier systems were developed. The next generations established were distributed systems, component based, and finally the Service Oriented Architectures. According to Seth et al. Service Oriented Architecture is a computer system's architectural approach to make and to apply the processes of business via their lifecycle. SOA permits converting data between procedures and being a section of business process.* **Methodology:** *The main effort of this section is to present the initial findings of the study. To achieve this goal, a systematic literature review conducted by the present investigators and a large amount of research material was meticulously studied to extract influential factors for SOA adoption. The systematic literature review was conducted by following guidelines according to Kitchenham. The primary studies included 35 papers in the form of book chapters, conference proceedings, and journals from 2009 to 2015. 17 factors, resulted from the reviewed papers, were recognized as the most frequently repeated factors in previous studies. Then, SOA factors were categorized based on research model discussed in the following sections* **Findings:** *Based on the discussions in this article, it is concluded that humans as decision makers in organizations are prominent and crucial factors in IS researches. Since TOE framework does not include the individual aspect of new technology acceptance, human context has been added to evaluate human factors in the context of SOA adoption in organizations. Figure 9, presents the proposed framework of this study. As it was mentioned in research methodology section, all factors were extracted from previous studies based on a systematic literature review.* **Contribution:** *Based on the findings of this study, it could be concluded that there is not a suitable and unified framework for analysing the adoption of SOA in organizations. As mentioned in previous studies, human factors have a crucial impact on adopting new technology in organizations. In fact, decision makers have vital roles in adopting new technologies in organizations. TOE framework is the most frequently used model for analyzing IT adoption in many sectors at enterprise level and this framework does not concentrate on human dimension, the present researchers aimed to propose a new framework based on TOE and HOT-fit frameworks.*

Keywords: Service Oriented Architecture; Adoption; TOE Framework; HOT-fit Framework

Abstract ID: **AIMC-2017-STE-43**

HETEROSCEDASTIC LINEAR REGRESSION MODEL IN THE PRESENCE OF OUTLIERS, HIGH LEVERAGE POINTS AND MULTICOLLINEARITY USING HUBER AND TUKEY PSI FUNCTIONS.

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Abstract

Introduction: *The robust heteroscedasticity model techniques introduced have wide applications, particularly, in regression models. They have been utilized by researchers to build empirical distribution for evaluations of regression model. However, in the presence of leverage points and multicollinearity the robust heteroscedasticity model is no longer efficient. This article is concerned with the improvement of robust heteroscedasticity model in the presence of residuals outliers by using Huber's Psi function. It improves the existing method by incooperating a modified version of parameter estimation for heteroscedasticity model in the presence of outliers, high leverage points and multicollinearity in the data.* **Methodology:** *The robustness of heteroscedasticity model based on the initial MM-estimators and modified robust heteroscedasticity model obtained from GM-estimator based on the initial MM-estimators were investigated from various properties of Tukey's and Andrew's sin Weighted GM-estimator. The modified robust heteroscedasticity model obtains from*

GM-estimator also incooperates the multicollinearity diagnostic methods of partial least square (PLS) procedures. **Findings:** *Based on our real data and simulation study, it has shown that the biases and RMSE's of the robust heteroscedasticity model obtain from MM-estimator is increasing appreciably higher than that of modified robustness heteroscedasticity model obtained from GM-estimator as the percentages of outliers and high leverage points (HLP) increase in the presence of multicollinearity. Hence, by utilizing the Tukey's and Andrew's sin rho function together with the multicollinearity diagnostics method of partial least square in the WGM estimator, the accuracy and efficiency of the estimates can be improved substantially.* **Contribution:** *The research will aid in solving the problem of linear regression model in terms of data that contains heteroscedasticity, outliers and high leverage points in the presence of multicollinearity.*

Keywords: Heteroscedasticity, multicollinearity, Outliers, high leverage points, Robust estimation

Abstract ID: **AIMC-2017-STE-44**

MODIFIED ROBUST PC WITH WILD BOOTSTRAP ESTIMATION BASED ON GM-ESTIMATOR IN LINEAR REGRESSION MODEL

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Abstract

Introduction: *In linear regression, estimation is said to be superior if it is robust and resistant towards the presence of heteroscedasticity, residuals outliers or high leverage outliers. Presence of high leverage outliers will introduce multicollinearity in the data. With regards to these problems, estimation using the classical wild bootstrap and robust wild bootstrap are inefficient since the former could not produce the least variance in the presence of outliers and the latter is not resistant to high leverage outliers. Disregarding this would potentially lead to severe statistical problems. Therefore, the main objective of the study is to employ a combination of a wild bootstrapping in modified robust principal component methods in regression model for data with problems of heteroscedasticity, multicollinearity, outliers and high leverage points.* **Methodology:** *This study employed the principal component, weighted residuals with incorporate the Huber weighted function, GM-estimators, robust location, scale and wild bootstrapping technique of Wu and Liu. The GM-estimator, was obtain using the MM-estimator as the initial estimator. The proposed method is known as modified robust PC with wild bootstrap GM-estimation MRPCWBootWuGM and MRPCWBootLiuGM and was expected to reduce the effect of the problems of the estimation results by producing lower standard error values as compared to the existing methods.* **Findings:** *based on the real data and simulation study, the performance of the MRPCWBootWuGM and MRPCWBootLiuGM is compared with the existing RBootWu, RBootLiu and also with BootWu and BootLiu using the biased, root mean squares errors (RMSE) and standard error. The numerical example and simulation study shows that the MRPCWBootWuGM and MRPCWBootLiuGM techniques have proven to be a good alternative estimator for regression model with lower values of standard error and root mean squares error.* **Contribution:** *The research introduces a modified procedure for parameter estimation of data that contain heteroscedasticity, residuals outliers, high leverage points and multicollinearity*

Keywords: Heteroscedasticity, Multicollinearity, Outliers, High Leverage Points GM-estimator

Abstract ID: **AIMC-2017-STE-49**

SOLVENT PRODUCTION BY CLOSTRIDIUM ACETOBUTYLICUM ATCC4259 USING OIL PALM FROND (OPF) LIQUID EXTRACT AS FERMENTABLE SUGAR.

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Abstract

Introduction: *In recent years, increase fossil fuel prices and environmental concerns such as global warming, attributed to the use of the fuel product, have stimulated efforts towards the search for an alternative fuel from renewable resource. Thus far, the use of oil palm frond a residues generated in the palm plantation during pruning and harvesting for the production of solvent is attracting research attention*. **Methodology:** *Oil palm frond liquid extract was fermented anaerobically in a batch process using clostridium acetobutylicum (ATCC4259) as the microbe at incubation temperature of 37oC. The effect of medium pH in the range (5.7 - 6.3) and inoculum size concentrations (5%-15%) on biomass growth and solvent production was studied.* **Findings:**

The biomass growth and solvent production of Clostridium acetobutylicum ATCC4259 at medium pH 6.0 and 10% inoculum concentration shows a better solvent production and yield of 16.96g/L and 0.44 the maximum biomass concentration of 9.5 g/L. Thus, this activity indicates that rapid cell growth was directly associated with glucose utilization. Furthermore, solvent production is manifestly influenced by medium pH and inoculum size concentration **Contribution:** *The results presented indicates that OPF Liquid extract is a promising fermentable sugar source for solvent production.*

Keywords: Keywords: Oil palm frond, Solvent, Fermentation, pH, Clostridium acetobutylicum (ATCC4259)

Abstract ID: **AIMC-2017-STE-50**

BUS FRONT PROTECTIVE DEVICE USING TUBULAR ENERGY ABSORBERS

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Abstract

Introduction: *Due to the size and mass of heavy vehicles, the problem of compatibility with other road or street users is a serious issue. This problem was followed by EU seeking the TRL report and first obligation about using under run protection devises is introduced in 2000 only for trucks and lateral studied showed that these systems could reduce about 1,176 deaths and 23,660 seriously injured car occupants in Europe per year. Whereas in city traffic the buses are more using heavy vehicles than trucks and they should be more intended to decrease the city traffic injuries.* **Methodology:** *The present paper describes the activities of the Gemilang technical team for introducing a practical bus front protective device using tubular energy absorbers. Tubular energy absorbers can absorb high levels of impact energy by plastic deformation during axial folding. The key advantages of this type of energy absorber are the compact dimensions, simple manufacturing, and good energy absorption efficiency. The dynamic behavior of the tube during collapse has a great influence on the total energy absorbed and, consequently, the force transmitted during folding. An explicit finite element software LS-Dyna is used in FPD analysis for impact loading and CAE process.* **Findings:** *The CAE results showed that in frontal crash between bus and passenger car the stress waves go through the car structure and deform the B-pillar of car to rear position of car. In this time the seat belt is locked and in combination with rear movement of B-pillar, crash lead to passenger injuries. After using of FPD, the tubular energy absorbers are satisfied, so the kinetic energy of crash will convert to plastic energy in absorbers. Absorbents are replaceable part. In this manner, in addition to decreasing car passenger injury, the under body parts of bus will be secured.* **Contribution:** *I've introduced front protective device for buses using metallic tubular energy absorbers. This is all my own work, I haven't copied it from anywhere else.*

Keywords: Bus front crash, tubular energy absorber, explicit FEM.

Abstract ID: **AIMC-2017-STE-54**

DESIGN OF 2,75-2,85 GHZ FREQUENCY MICROSTRIP BAND PASS FILTER WITH SQUARE OPEN LOOP RESONATOR IN RADAR METHOD

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Abstract

Introduction: *Radar is an important component for people. A number of functions could be taken into account on a various aspects in term of quantifying the distance of a specific object, developing a map, and/or forecasting climate. Generally, one of the main instruments within a radar is a filter. The aim of this study is to design a simple Band Pass Filter which able to be effectively worked on frequency 2,75–2,85 GHz.* **Methodology:** *The filter is designed at the mid frequency of 2,8 GHz with ≤ -20 dB of Return Loss Range, ≥ -3 dB for Insertion Loss, and 100 MHz for Bandwidth, then it is manufactured into a Square Open Loop Resonator microstrip. The filter uses Rogers R04035B for its substrate with 3,48 of Dielectric Constant Values 〖(ε〗_r) and 1,524 mm of Substrate Thickness (h). The radar's filter is simulated by a software of Computer System Technology (CST) suite 2015.* **Findings:** *The simulation results -31,608995 dB for Return Loss Range, -2,0529871 dB, and 100 MHz for Insertion Loss and Bandwidht respectively. By the end of this process, this instrument is applied and a Network Analyzer is then utilized to get a comparable output. It produces a quite different ranges of -23,519 dB for Return Loss, -2,183 dB for Insertion Loss and 90 MHz for Bandwidth*

Contribution: *The study result a design of radar's simple band pass filter which able to be effectively worked on frequency 2,75-2,85 GHz.*

Keywords: band pass filter, CST, microstrip, square ppen loop resonator

Abstract ID: **AIMC-2017-STE-62**

FINITE ELEMENT MODELLING OF ULTRASONIC ASSISTED COMPRESSION OF COPPER TUBE

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Abstract

Introduction: *The present study aims to investigate the elastic-plastic behaviour of copper tube under compression test. Here, copper tube was compressed under two types of condition namely; quasi-static and ultrasonic. For quasi-static condition, the compression test was conducted without the presence of ultrasonic vibration. Meanwhile, for ultrasonic condition, the compression test was conducted with the presence of ultrasonic vibration applied on the lower platen.* **Methodology:** *Additionally, in order to obtain a more quantitative interpretation of the experimental data, a Finite Element (FE) model was developed to simulate the quasi-static and ultrasonic compression test. This method used general static and dynamic implicit step analysis with isotropic material model. Following, the predictive ability of FE modelling was demonstrated and the effect of ultrasonic vibration on the compression of copper tube was studied and compared with the experimental counterpart.* **Findings:** *Results of the FE modelling was analysed based on the stress-strain curves and deformation profile. It was found that the deformation profile predicted by the FE modelling matched favourably with the experimental results. However, further adjustment in the model parameter input is required as the stress values predicted by the FE modelling was not in good agreement with the experimental data.* **Contribution:** *1. Previous researchers demonstrate the application of ultrasonic vibration in various metal forming processes mostly by using solid metal specimens. The present study is designed to be among the earliest to consider the hollow metal parts, specifically copper tube in the application of ultrasonic vibration. As a results, many beneficial effects found in the ultrasonic assisted compression of copper tube.*

2. Novel FE modelling of quasi-static and ultrasonic compression of copper tube have been developed, indicating how industrial metal forming process can be successfully simulated without relying on the experimental study. The present research used an isotropic material model to predict the response of quasi-static and ultrasonic compression. Some results from the FE modelling were in good agreements with the experimental counterparts.

Keywords: Ultrasonic vibration; compression test; finite element; copper tube.

Abstract ID: AIMC-2017-STE-64

CLUSTERING SOCIAL CONDITIONS BATAM USING GEOGRAPHIC INFORMATION SYSTEM

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Abstract

Introduction: *Batam is an archipelago that have different social characteristics of each sub-district. Social problems should be a concern and responsibility of both the public and government. For the programs launched by the government in accordance targeted and it is necessary to determine the priorities of the social problems that arise in each region.* **Methodology:** *This study uses k-means algorithm to classify social problems in the form of clusters. Each cluster has the same characteristics in the group while the other cluster to form the next group according to their characteristics.* **Findings:** *The results of the study, k-means algorithm determines the cluster and map the distribution of social issues into the Geographic Information System (GIS) to facilitate the social information to know each district and determine priorities for help to the government program on target.* **Contribution:** *Algorithm k-means capable of performing clustering of social data with 4 cluster including Cluster 0 undergone many economic problems and health (includes District Lubuk Baja, Batam City, Sagulung and Bengkong), Cluster 1 on the average, the problems of education and culture (includes District Sei Beduk, Nongsa and Batu Ampar), Cluster 2 did not experience any problems (includes District Sekupang and Batu Aji), Cluster 3 on average experiencing health problems (including Belakang Padang, Bulang, Galang). The clustering results are presented in the form of WebGIS so enables users to know the social information.*

Keywords: clustering, social issues, GIS

Abstract ID: **AIMC-2017-STE-65**

RINGGIT NOTES RECOGNITION BASED ON COLOUR SENSOR FOR VISUAL IMPAIRMENTS

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Abstract

Introduction: *In the past, Malaysian ringgit notes were not designed for the visually impaired. Recently, Braille markings have been incorporated with the Malaysian ringgit notes. However for the blind Malaysian who do not know how to read Braille find that it is very difficult to differentiate between several differences kinds of Malaysian banknotes. There are many devices available in the market but it is not suitable to detect Malaysian ringgit notes. The objective of this project was to develop a compact device by using color sensor to assist visually impaired people to recognize Malaysian ringgit notes.* **Methodology:** *This device will detects different colors of Malaysian bank notes and producing the beeping sound to differentiate the difference of each notes for MYR 1, MYR 5, MYR 10, MYR 20 and MYR 50. This device is evaluated by determine the appropriate distance between the banknotes and the color sensor for the each of the different value of the banknotes.* **Findings:** *From several testing, the appropriate distance for the color sensor to detect the value of the banknotes are 1.0 cm.* **Contribution:** *Ringgit notes recognition device has been developed in this study that manages to detect banknotes by classifying them based on colour description using the colour sensor TCS34725. Moreover, this device also produce the queuing system for the visual impairment to acknowledge the value of the Ringgit Notes. It will produce different sound to show the value of the banknotes.*

Keywords: Banknotes; Colour Sensor; Visual Impairment; Assistive Technology

Abstract ID: **AIMC-2017-STE-69**

VARIATION OF TIME DOMAIN FAILURE PROBABILITIES OF JACK UP WITH WAVE RETURN PERIODS

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Abstract

Introduction: *Jack up is a mobile offshore exploration and production units that can be used in multiple offshore locations during their design life. Before the unit is offered for use in any location, its suitability for use in such location is assessed on the basis of safety and stability using reliability theories. The guidelines for assessment of such units specified that a reliability criterion is established in such a way that, throughout the period of its operation, a jack up unit will safely perform its intended purpose under the worst design wave event* **Methodology:** *This study evaluated the failure probabilities of jack up units on the framework of time dependent reliability analysis using uncertainty from different sea states representing different return period of the design wave. The sea surface elevation for each sea state was represented by Karhunen-Loeve expansion method using the eigenfunctions of prolate spheroidal wave functions in order to obtain the wave load. The stochastic wave load was propagated on a simplified jack up model developed in ANSYS commercial software to obtain the structural response due to the wave loading. The analysis of the stochastic response to determine the failure probability in excessive deck displacement in the framework of time dependent reliability analysis was performed by developing Matlab codes in a personal computer* **Findings:** *The results of the study indicated that the failure probability increases with increase in the severity of the sea state. Although the results obtained are in agreement with the results of a study of similar jack up model using time independent method at higher values of failure criteria, it is in contrast at lower values of the criteria where the study reported that failure probability decreases with increase in the severity of the sea state* **Contribution:** *Although the results obtained are in agreement with the results of a study of similar jack up model using time independent method at higher values of failure criteria, it is in contrast at lower values of the criteria where the study reported that failure probability decreases with increase in the severity of the sea state.*

Keywords: Jack up; Wave load; Sea surface elevation; Return period

Abstract ID: **AIMC-2017-STE-73**

EFFECTS ON RADIATIVE ELECTRICAL MHD FLOW OF NANOFLUID OVER STRETCHING SHEET OF NANOFLUID OVER STRETCHING SHEET

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Abstract

Introduction: *The purpose of this investigation focus on combined effects of thermal radiation, viscous dissipation, heat generation/absorption and chemical reaction on electrical magnetohydrodynamic (MHD) boundary layer flow and heat transfer of nanofluid through linear stretching sheet using the Buongiorno model.* **Methodology:** *The governing equations which are partially differential equations are converted to couple of ordinary differential equations with suitable similarity transformation techniques and then solved using implicit finite difference scheme. The electrical conducting nanofluid particle fraction on the boundary is passively rather than actively controlled. The effects of the emerging parameters on the electrical conducting nanofluid velocity, temperature and nanoparticles concentration volume fraction with skin frication characteristics are examined with the aids of graphs and tabular form and then discussed extensively. Comparison with published results are examined and presented which are found to be in good agreement.* **Findings:** *Electric field enhance the nanofluid velocity which resolved the sticking effects caused by magnetic field which suppressed the profiles. The fluid temperature reduces with rise in heat absorption, whereas the opposite trend occurs for heat generation. Radiative heat transfer and viscous dissipation are sensitive to an increase in the fluid temperature and thicker thermal boundary layer thickness. The nanoparticles concentration enhance with generative chemical reaction while opposite trend occurs for destructive chemical reaction.* **Contribution:** *This study discusses the electrical magnetohydrodynamic (MHD) steady two-dimensional flow of nanofluid with combined effects of thermal radiation, viscous dissipation, heat generation/absorption and chemical reaction. No such investigation exists in the literature yet.*

Keywords: MHD nanofluid; Thermal radiation; Chemical reaction; Electric field; Heat generation/absorption; Stretching sheet.

Abstract ID: **AIMC-2017-STE-84**

TWO-SHAFT STATIONARY GAS TURBINE ENGINE GAS PATH DIAGNOSIS USING FUZZY LOGIC

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Abstract

Introduction: *The performance of a gas turbine engine deteriorates through time when it is being operated because its components are exposed to different physical faults. This may affect its reliability and availability. Thus, there is a need to obtain an advanced health monitoring system that can assist the maintenance decision process to ensure reliable, energy efficient, safe, and cost-effective operation. Gas path diagnosis is a condition based maintenance strategy using an effective technique that can diagnose developing engine faults, at the earliest possible. Towards this end, fuzzy logic based algorithm is developed and implemented on a 2-shaft engine.* **Methodology:** *The proposed fault diagnostic algorithm is developed using Fuzzy logic and implemented on a two-shaft stationary gas turbine engine. The fault data required to develop and verify the fuzzy inference system is generated from a gas turbine simulation program taking in to account the two most common engine performance degradation causes, namely, fouling and erosion. Following this, in order to undertake the issue of robustness towards measurement uncertainties, Gaussian noise is added to the data. The fuzzy inference system (FIS) is then developed based on fuzzy rules. Finally, the fault isolation and quantification capability of the proposed algorithm has been evaluated for single, double and triple component fault scenarios by using the test data set.* **Findings:** *The performance of the proposed fault diagnostics algorithm is evaluated using the generated test data sets. In fault isolation the fault with the highest degree of fulfillment is taken as the most likely fault. The test results show that the fuzzy system can isolate the implanted component faults, both one at a time and simultaneously, with 100% accuracy. As far as the quantification performance of the algorithm is concerned, average estimation accuracy (in terms of root mean square RMS value) of 83.5%, 80% and 78.5% are obtained for a single, double and triple component faults, respectively. It can be seen that as the number of concurrent fault increases the quantification accuracy decreases. This is because, complexity of the diagnostics problem is influenced by the number of concurrent faults. Moreover, if we consider component faults in general*

or health parameter in particular, power turbine faults and efficiency deviations, present individually or with others, simultaneously, showed better predicted accuracy. In general, since the FIS is developed using only 700 fault case patterns (100 fault case patterns for each fault type) and diagnostic accuracy of fuzzy logic based methods depend on the data size, the obtained success rate is promising. **Contribution:** *In fuzzy logic based algorithms optimal selection of fuzzy sets with the appropriate membership functions (MFs) is the critical step. In this paper, unlike most of the available methods, the MFs for each input parameter are created by a careful study of the nature of the entire data and dividing into N number of representative subsets and taking the center of each subset as a midpoint of the associated MF. Furthermore, the capability of a triple component fault (TCF) diagnosis using fuzzy logic is analysed, which is very real in the available studies.*

Keywords: gas turbine; component faults; gas turbine performance; fuzzy logic; gas path diagnosis

Abstract ID: **AIMC-2017-STE-86**

UTILIZATION OF FLY ASH AS PARTIAL SAND REPLACEMENT IN OIL PALM SHELL LIGHTWEIGHT AGGREGATE CONCRETE PRODUCTION

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Abstract

Introduction: *Due to large production of fly ash, a large landfill area is required for disposal of this solid waste. At the same time, the demand for sand supply, which used in construction activity and concrete production is increasing along with the growing construction sector. Thus, researchers looked on the possible use of waste materials namely fly ash to replace fine aggregate in oil palm shell lightweight aggregate concrete.* **Methodology:** *The lightweight aggregate concrete prepared for this experimental work were produced using cement, water, sand, oil palm shell and fly ash. Fly ash of 0%, 10%, 20% and 30% by sand weight was added as fine aggregate replacement. Oil palm shell (OPS) was use to fully replace conventional coarse aggregate to produce oil palm shell lightweight aggregate concrete (OPS LWAC). Fresh concrete workability was investigated by conducting slump test. For the determination of compressive strength, 100 mm cubes were prepared.* **Findings:** *The result observed that the workability of concrete mix decreases as the amount of fly ash used becomes higher. The use of fly ash increases the water demand of concrete when compared to a control specimen of the same workability. However, the slump is still in good working range for lightweight concrete when 10% fly ash was added. In term of strength, fly ash replacement of 10% by sand produces strength higher than control mixes of about 7% at 28 days which shows the optimum percentage to be used. This increase probably attributed to filling effect of fly ash making the concrete denser and capable of resisting higher load as compared to control specimen.* **Contribution:** *Fly ash has been widely used as partial cement replacement in other types of concrete. However, the properties of oil palm shell lightweight aggregate concrete containing fly ash as partial sand replacement is yet to be studied.*

Keywords: Oil palm shell, fly ash, partial sand replacement, lightweight aggregate concrete

Abstract ID: **AIMC-2017-STE-90**

ANALYSIS OF DETERMINANT FACTORS IN SELECTING LABORATORY EQUIPMENT IN CHEMISTRY EDUCATION EXPERIMENT

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Abstract

Introduction: *Learning chemistry is a learning process that simultaneously develops the cognitive, affective, and psychomotor aspects. Developing affective and psychomotor aspects, however, need learning support conducted in the laboratory in terms of practice and or experiment. Learning pattern in the laboratory requires good equipment selection. This study aims to set the determinant factors in laboratory equipment selection in chemistry education.*

Methodology: *The analysis method used in this study is Analytical Hierarchy Process, in which setting modeling decisions is made by developing logical relationship between criteria in the form of decision hierarchy, and then calculating the interest value between these factors based on respondent or expert preferences.*

Findings: *The result of this research showed the value of key factors relating to laboratory equipment selection in chemistry education. Here are the importance sequences of these factors in chemistry laboratory equipment selection, namely: safety, improvement of practitioner's understanding, use simplicity, accuracy level of tools, and price.*

Contribution: *This study provides contribution in setting determination of the criteria/factors which can be used as the analysis unit in selecting chemistry laboratory equipment. The characteristic of these criteria is more permanent, while the interest factor of each criterion is dynamic in accordance with education level, student's skills, experimental need and others.*

Keywords: Analytical Hierarchy Process, laboratory equipment, determinant factors.

Abstract ID: **AIMC-2017-STE-91**

SELECTING THE AFFECTED FACTORS ON PAVEMENT DISTRESS PROBLEMS USING ANALYTICAL HIERARCHY PROCESS (AHP)

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Abstract

Introduction: *This paper describing (AHP) Analytic Hierarchy Process has been used broadly to multi-criteria selection problem-solving. A technique that allows decision-makers to determine their priorities, rational weights of the importance of pavement distressing priority ranking factors needs to be considered. In this study utilise the AHP to select the best rank distress in the flexible pavement on tropical region Malaysia. The experts who are knowledgeable with and those who have some years of experience in flexible pavement maintenance at JKR and IKRAM company were interviewed to make the pairwise comparisons which are a structured problem that needs an extensive assessment of four criteria namely cracking crack, surface defects, surface deformation, and patching & pothole's aspects. These criteria then developed into a few more sub-criteria. The analysis is completed using the super decisions software. The result shows that cracking crack factor is the most important factor with (0.5500), followed by surface deformation (0.2300), patching and pothole's (0.1600) and surface defects (0.0600) factors. The result shows that cracking crack is more significant distress according to these four factors.* **Methodology:** *In AHP the pairwise comparisons are considered the fundamental building blocks (Meade & Presley 2002). It is developed based on an expert's preferences and experience gained from the observation and continuous learning. Table 3.1 shows the intensity of the importance of the criteria.The score of 1 representing indifference between the two components and 9 being the overwhelming dominance of the component under consideration (row element in the matrix) over the comparison element (column component in the matrix) (Saaty 2005) . If the relative importance of the element on the element j is represented by aij = wi/wj in the pairwise comparison matrix then the pairwise comparison matrix A with n elements can be illustrated by Equation matrix 3.1 (Fang & Nan 2014). Moreover, when scoring is conducted for a pairwise comparison, a reciprocal value is automatically assigned to the reverse comparison within the matrix. That is, if aij is a matrix value allocated to the comparison of component i to the component j then aji is equal to 1/aij. However, the used questionnaire was developed after preliminary interviews with an expert. In the pilot phase, three asphalt pavements experts were chosen to respond to the questions, and their comments and suggestions were considered.* **Findings:** *The last priorities of the main criteria group are shown . The most dominant cause for road crack is the one with the highest rank (0.55) that is cracking crack, followed by surface deformation (0.23) and patching and potholes (0.16). The surface defect is the least frequent cause of road distressing. However, the main criteria play an essential role in determining the frequency of the sub-criteria because their weights significantly influence the sub-criteria weights and thus the overall process* **Contribution:** *Study utilise the AHP to select the best rank distress in the flexible pavement on tropical region Malaysia.*

Keywords: Analytic Hierarchy Process, flexible pavement, pavement maintenance

Abstract ID: **AIMC-2017-STE-95**

SPATIAL ANALYSIS FOR DETERMINATION THE ALTERNATIVE LOCATION OF NEW LANDFILL IN BATAM ISLAND

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Abstract

Introduction: *Batam is one of the islands in Kepulauan Riau (Indonesia). Batam is an island adjacent to the state of Singapore, separated by a strait width of 15 km, and a FTZ area (Free Trade Zone), part of the area Sijori (Singapore, Johor (Malaysia) and Kepulauan Riau (Indonesia)). Currently, only 1 (one) landfill on Batam island, namely Telaga Punggur Landfill in the district of Nongsa, with an area of 47.4 hectares (Dinas Kebersihan dan Pertamanan Kota Batam, 2016). This landfill estimated that can only accommodate municipal solid waste until 2026, starting from 2017. Application of waste management (garbage destruction) in Telaga Punggur Landfill yet implemented, due to the bidding process the project is still constrained by local regulation. Batam government has plans to build a landfill again in accordance with the RTRW of Batam, but has not been realized to date. The landfill plans are on Galang island, but for the development of alternative locations on Batam island was not planned, whereas it is a central location where the government and industry are located. Therefore, it should be done immediately finding alternative solutions a new landfill site on the Batam island.* **Methodology:** *There are several methods of determining the location of the landfill, one of which is according to Bagchi (1982), which says that in putting waste disposal sites must be attention of distance to lake/pool or the other water bodies, rivers, wetlands, flood, road, water resources, and airport (airfield). This distances are intended to reduce the impact of the garbage itself* **Findings:** *Based on the results of GIS analysis of alternative landfill siting using Bagchi's method (1982), found that 22.9% of the area on Batam island can be developed as a new landfill site, where all the districts on Batam island has a positive area of the landfill, with the boardest area of alternative landfill in the district of Sungai Beduk (28.644 km2) and the tightest area in the district of Bengkong (0.185 km2). But, the determination of the landfill on the island of Batam using Bagchi method is less precise, because most areas in Batam are coastal, while this method does not consider the circumstances of the highest tides in coastal areas and also the location of the port as a parameter.* **Contribution:** *From this research can be used as one of the considerations for the Batam government to plan for siting a new landfill on Batam island, while maintaining environmental sustainability.*

Keywords: spatial analysis, GIS, landfill, Bagchi, Batam island

Abstract ID: **AIMC-2017-STE-96**

PERFORMANCE EVALUATION OF CARBONIZED RUBBER SEED SHELL (CRSS) FILLER AS REINFORCER IN RUBBER BINDER

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Abstract

Introduction: *Rubber product is one of the important natural sources that can give benefits in many applications. However, the present properties in rubber are not strong enough, thus need the incorporation with filler in order to strengthen up the structure and give some improvement toward mechanical properties. Conventional used of artificial filler, carbon black (CB) originate from petroleum provide outstanding properties for the rubber. However, this un-ecofriendly source is quite toxic and going depleted by days. Therefore, a research had been done to investigate the properties of natural filler, rubber seed shell (RSS) that had been carbonized in order to replace the usage of CB.* **Methodology:** *The processing technique can be divided into two major steps in which filler and rubber preparation. In filler preparation, RSS being crushed into smaller size by using the crusher machine. Then, the filler will undergo carbonization process in hot furnace (METM-525 Muffle furnace) at 6000C for 3 hours. The carbonized RSS (CRSS) then being sieved to get more fine particles size using 150µm siever. For rubber preparation, ethylene propylene rubber (EPDM) being compound with the compounding ingredients using internal mixer followed by sheeting process using two roll mills. The process is repeated using different addition amount of CRSS (0, 10, 15, 20 and 30phr). The rubbers are then left overnight before undergo rheological test and samples preparation. The samples are then undergo testing process that are tensile, hardness and abrasion test to identify the best formulation for CRSS to be used.* **Findings:** *Different loading CRSS used show some improvement in term of rheological and mechanical properties of rubber. The higher filler loading show increment in tensile stress, tensile modulus and hardness but*

decrease in elongation at break properties. At optimum filler loading (20 phr), tensile stress and tensile modulus (M300) show positive improvement in which 2.25 N/mm2 and 3.63 N/mm2 respectively. The hardness value is also high in which 60.25 IRHD. Meanwhile, as the CRSS loading being increase above the optimum value, it will result in less developed structure that will worn the surface of rubber compound, thus decrease the abrasion resistance index (ARI) value from 1275.06 % to 1160.66%. The tensile stress and tensile modulus also reduce from 2.25 N/mm2 to 1.72 N/mm2 and 3.63 N/mm2 to 3.62 N/mm2 respectively due to brittleness effect as the filler loading increase. The elastic abilities of the rubber also being reduced as the structure getting more complex and the rubber particles unable to slip pass each other during extension process and being proved in reduction of elongation at break value from 528.24% to 426.98%. **Contribution:** *This research study has come out with green shoe soles from natural RSS filler in which environmental friendly due to free toxicity and one of the affordable option to replace the usage of artificial carbon black. This green shoe soles different from conventional shoe sole type as it is strong, durable and has good resistance towards harsh environment condition such as heat, oxidation, ozone, and weather ageing making them suitable to be exposed to outdoor application and has long lasting lifetime.*

Keywords: Carbonized Rubber Seed Shell, carbon black, miscibility, tensile strength

Abstract ID: **AIMC-2017-STE-97**

BOND BEHAVIOUR IN STEEL STRAP CONFINED HIGH (2)

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Abstract

Introduction: *The aim of this study is to evaluate bond behaviour of steel strap confined high strength concrete (HSC).* **Methodology:** *In this study, 8 pull-out specimens with 12 mm diameter reinforcement were carried out to determine the bond behaviour of short embedded reinforcing bar (5db). The specimens were divided into 4 groups, based on confinement volumetric ratio: a) single layer with zero gap; b) single layer with 10mm gap; c) single spacing with 20mm gap and d) without steel strap confinement as a control specimen. To compare the experimental bond strength, three theoretical bond strength expressions were used in this study which are Darwin et al., [6], Orangun et al., [4, 5] and ACI Committee 408 [2].* **Findings:** *The study indicates the theoretical bond expressions were underestimating the experimental bond strength. The Cont specimen had experimental bond strength about 54 percent, 50 percent and 47 percent higher than theoretical bond strength by Darwin's, Orangun's and ACI 408, respectively.* **Contribution:** *In traditional design, there are many developed theories of embedded reinforcing bar bond strength. The theoretical bond strength of the embedded reinforcing bar are produced based on comparison with experimental test results and make it an aspects for bond behaviour properties for bond strength predictions. The current design code regarding on bond development under confined HSC has not been widely discovered and need further research on it. In order to investigate the bond behaviour of ribbed bar and SSTT confined HSC, 8 pull out tests were carried out with a concrete compressive strength about 60 MPa. This paper is a step in understanding the bond behaviour of SSTT confined HSC with ribbed reinforcing bar.*

Keywords: Bond behaviour; Confined HSC; Short embedment reinforcement; confinement volumetric ratio

Abstract ID: **AIMC-2017-STE-103**

A COMPARATIVE STUDY ON "ADDITIVE ALGORITHM" AND "BRANCH AND BOUND" FOR SOLVING THE MENU PLANNING PROBLEM

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Abstract

Introduction: *A healthy body needs sufficient nutrients from food that we eat every day. Eating more or less than what our body needs will lead to malnutrition (under-nutrition and over-nutrition). In Malaysia, several studies have been conducted to investigate the nutritional status of Malaysian, especially among children and adolescents.* **Methodology:** *However there are various ways of solving the menu planning problem and in this paper Binary Integer Programming (BIP) is implemented. Respectively, "Additive Algorithm" and "Branch and Bound" are used in BIP. Both approaches use different techniques and might yield different optimal solutions.* **Findings:** *Therefore, this study aims to develop a mathematical model for diet planning that meets the necessary*

nutrient intake and compare the results yield through additive and branch and bound approaches. Well balanced and fully structure meal were produced through this study. The data was collected from various boarding schools and also from the Ministry of Education. The model was solved by using "Modified Balas Algorithm" through Additive Algortihm and "Extended Binary Programming" through branch and bound. **Contribution:** *Binary Programming along with optimization method was used to solve this problem and never been used in solving menu planning problem before. Furthermore some modification and extended process were applied in the process of solving the problem. In future, this model can be implemented to other menu problems such as for sports, chronic illness patients, militaries, universities, hospitals and nursing homes.*

Keywords: Mathematical modeling, Optimization, Additive Algorithm, Binary Programming, Menu Planning

Abstract ID: **AIMC-2017-STE-104**

IMPLEMENTATION OF LIGHT DEPENDENT RESISTOR (LDR) IN EXHAUST-FAN AUTOMATION SYSTEM

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Abstract

Introduction: *LDR is a resistor that resistance value depends on the intensity of the light it receives. Exhaust fan serves to sucking the air inside the room to be disposed to the outside, and at the same time attract fresh air at outdoor into the room. Automation exhaust fan is necessary to reduce the waste of electric power that often occur when the room already clean and free of smoke but the exhaust fan still running.The goals of this research is the design and implement automatic exhaust fan systems using LDR as smoke detectors, and perform testing and analysis system using the intensity of the smoke; thin, medium and thick.* **Methodology:** *The sensor works by distinguishing dark and light received LDR into voltage output. Dark and light conditions are obtained from the density of smoke that block LED lighting to the LDR. The output voltage of the sensor is forwarded to the Comparator circuit, then comparator compared received input voltage with the voltage reference or the reference has been setup by turning the potentiometer. When the output voltage of the LDR is smaller than the reference voltage, the circuit will drive the fan.* **Findings:** *From the test results obtained that the system can detect smoke with a medium thickness and thick smoke, while the thin smoke can not be detected. The comparator reference voltage is 5.4 volts, when a thin smoke via through the LDR sensors, the output voltage is 5.8 volts. When the smoke with medium thickness through the LDR, the output voltage down to 4.6 volts and 4.4 volts for thick smoke. The voltage drop causes the comparator circuit work and turn on the exhaust fan.* **Contribution:** *Previous studies typically use smoke sensor AF30, but these sensors are expensive. This study also did not use the microcontroller and run automatically, without needing human handling. This study is useful for use in restaurants, workshops or smoky industrial area*

Keywords: automation ; exhaust fan; LDR ; sensor; smoke detection .

Abstract ID: **AIMC-2017-STE-105**

MAPPING CULTURAL ECOSYSTEM SERVICES AT SUB-DISTRICT OF MUAR: RECREATION PROVISION MAP

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Abstract

Introduction: *The number of research on cultural ecosystem services (CES) are growing exponentially but there is still a need to consider spatial assessment for recreational provision especially at urban-rural areas in southeast regions. CES are crucial as it provides many benefits for physical and psychological well-being. One of the major opportunity afforded by our ecosystem is recreational activities that co-generated through the interaction of humans and the environment. Those activities include but not limited to hiking at the mountain, climbing up a tree, relaxing on the beach-side, walking, jogging and cycling at neighbourhood area.* **Methodology:** *In such, mapping CES are relatively significant in land use and urban planning for designing recreation hotspots. Different approaches have been suggested in mapping CES and it can be categorized in the following dimensions: (i) field survey; (ii) expert- based; (iii) literature-based. This paper incorporated these three approaches in selecting and ranking the criteria to develop CES recreational provision map. Muar district was selected as the study area due to its diversity in natural resources. Three plots from urban, suburb and rural*

areas at sub-districts of Muar was plotted to evaluate the recreational CES, respectively. The methodological design was categorized into three tiers. Firstly, the parameters were elicited based on CES literature including land use/land cover (LULC), accessibility and usage, visual landscape aesthetic and digital elevation model (DEM). Secondly, each criterion was classified (low, moderate, or high) based on the attributes suggested from past study, accordingly. Lastly, 19 experts from landscape architecture background were selected to quantifying relative priorities of the attributes. Geographic Information System (GIS) was used to produce the criterion maps using spatial analysis. The weight of each criterion map was later rated using analytic hierarchy process (AHP) via Expert Choice software (EC). Finally, the criterion maps were overlaid together to develop CES recreational provision map. **Findings:** *The result showed that urban area has limited recreational spaces, hence, the potential of recreation provision is a notch below as compared to suburb and rural areas, in general. However, some of the urban zone showed high recreational opportunities due to the facilities provided. River at the suburb area is the recreation hotspot but the recreational provision is not-that good due to the wilderness of the place. While, rural area has many potential spaces to be developed for various recreational activities. In conclusion, the natural resources at sub-districts of Muar are substantial and have rafts of potential to develop for various recreational and ecotourism activities.* **Contribution:** *A fundamental problem in decision making process is to derive the relative weights of the criteria. And this problem can be solved by using a well-known weight evaluation method, Analytical Hierarchy Process (AHP) to obtain the criteria weights in multi-criteria decision making (MCDM). Methodologically, the contribution of this study mainly related to spatial planning to support spatial decision-making through the used of geographic information system (GIS) and Expert Choice (EC) to produce the recreation provision map. Other than that, the study of CES is important in land use planning for designing recreation hotspots or reallocation of resources for new ecotourism initiatives. For example, how the greenery offer opportunity for exercising and recreational activities that help people to relax and maintaining mental and physical health.*

Keywords: Cultural Ecosystem Services (CES), Recreation Provision, Criterion Maps, Weightage, Geographic Information System (GIS), Analytic Hierarchy Process (AHP), Muar

Abstract ID: **AIMC-2017-STE-110**

EVALUATION OF CHILLING INJURY AND INTERNAL BROWNING CONDITION ON QUALITY ATTRIBUTES, PHENOLIC CONTENT AND ANTIOXIDANT CAPACITY DURING SUB-OPTIMUM COLD STORAGE OF MALAYSIAN CULTIVAR PINEAPPLES

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Abstract

Introduction: *Cold storage treatment at sub-optimum temperature (4 ± 2 °C) and duration of treatments (0, 7, 14, 21 and 28 day) was used to investigate its effect on physical injury known as chilling injury (CI) and internal browning (IB) which contributed to quality attributes (pH, total soluble solid (TSS) concentration, ascorbic acid (AA) content, ion leakage (IE) and fruit tissue deterioration), total phenolic content (TPC) and antioxidant capacity of 3 cultivars pineapple during cold storage. We hypothesized that pineapple's CI and IB would affects the quality attributes, phenolic content and antioxidant capacity* **Methodology:** *The experiment were conducted in completely randomized design (CRD), whereby 60 fruit of each cultivar were packed and randomly divided in 3 batches to be place into commercial cardboard box (14 x 32 x 49 cm) for export and stored at 4 ± 2ºC storage temperatures and 85 ± 5% relative humidity (RH). Fruits were further randomly sampled and evaluated on 0, 7, 14, 21 and 28 days after storage. The quality attributes tested were pH, total soluble solid (TSS) concentration, ascorbic acid (AA) content, ion leakage (IE) and fruit tissue deterioration, total phenolic content (TPC) and antioxidant capacity* **Findings:** *Following cold storage treatment, at 4 °C and along the treatment, until 28 days cv. Morris (Queen) showed a significant ($p<0.05$) severity of CI and IB compared to others two varieties cv. Josapine (hybrid, between 'Johor' Spanish and Smooth Cayenne) and 'Sarawak' (Smooth Cayenne) and cv. MD-2 or gold (hybrid of Smooth Cayenne). Meanwhile, quality attributes measured shown CI and IB symptom were correlated with an increase in IE, decrease in AA, TPC, antioxidant capacity and activities measures by FRAP and DPPH respectively. It is concluded that CI and IB condition were correlated with quality attribute as reflected in AA content, IE, TPC content and total antioxidant capacity.* **Contribution:** *High quality of pineapple that meet the criteria of export market, needs an efficient postharvest storage strategy. Based on current practices driven by standard postharvest practices, storage by refrigeration is recommended for storage perishable commodities which includes pineapple. However, chilling injury (CI) is a major problem for tropical fruits during storage which has been recognised as unique abiotic stress impact on crop plant*

physiology when expose to low but above freezing temperature. Thus, addressing the Malaysian pineapple postharvest challenge in this study shall create a niche competitive advantages for Malaysia

Keywords: pineapple, chilling injury, sub-optimum temperature, quality attribute

Abstract ID: **AIMC-2017-STE-111**

NAOH EVALUATION OF TENSILE PROPERTIES FOR SINGLE KENAF FIBER

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Co-Authors: R Dolah ; M.Y.M Zuhri ; S Sharif ; M Hassan

Abstract

Introduction: *A natural fiber including kenaf fibers as reinforcement in polymer composite has increasingly attracts the manufacturing industry. However, the poor interfacial adhesion between fiber and matrix are commonly encountered due to its nature compatibility, namely hydrophilic and hydrophobic. Therefore, alkaline treatment has been introduced to reduce the hydrophilic effect of natural fiber.* **Methodology:** *This paper presents the treatment of single kenaf fibers towards tensile test. The effect of tensile test is analyzed using analysis of variance (ANOVA). Kenaf fibers were modified using different concentrations of NaOH. Then, the single kenaf fiber was performed under ASTM D3379-89 standard.* **Findings:** *The results showed that kenaf fiber treated with 6% NaOH concentration is statistically significant showing an outstanding performance of the tensile properties.* **Contribution:** *The biodegradable resource especially natural fiber such as kenaf must widely used in order to overcome environment issue. Furthermore, natural fiber have advantages such as environmental friendly, availability, and has good strength and modulus. It can be the product as good as synthetic polymer.*

Keywords: Kenaf, Natural Fiber, Tensile Properties, Alkaline Treatment, ANOVA

Abstract ID: **AIMC-2017-STE-113**

BUILDING ENVELOPE THERMAL PERFORMANCE ASSESSMENT USING VISUAL PROGRAMMING AND BIM

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Abstract

Introduction: *The accomplishment of green building design requirements and the achievement of the targeted credit points under a specific green rating system are known to be a task that is very challenging. Building Information Modeling (BIM) design process and tools have already made considerable advancements in green building design and performance analysis. However, building design process is still lack of tools that can provide real-time feedback of building sustainability and rating during the design stage.* **Methodology:** *The development of the tool starts by creating a generic integration framework between BIM-VPL functionalities and ETTV requirements. Then, data is extracted from the BIM 3D model and managed using Revit, Excel and Dynamo for visual scripting. A sample project consisting of a hypothetical residential building is run and its envelope ETTV performance and rating score are obtained for the validation of the tool.* **Findings:** *This tool serves as proof of concept that building sustainability rating and compliance checking can be automatically processed through customized workflows developed based on BIM and VPL technologies.* **Contribution:** *In this paper, a new workflow of green building design assessment and rating is proposed based on the integration of Visual Programing Language (VPL) and BIM. Thus, the aim of this study is to develop a BIM-VPL based tool for building envelope design and assessment support. The focus performance metric in this research is building Envelope Thermal Transfer Value (ETTV) which is an Energy Efficiency (EE) prerequisite requirement (up to 15 credits) in both Green Mark and GreenRE rating systems.*

Keywords: visual programming language (VPL), building information modelling (BIM), Dynamo, Green Building Rating System, ETTV

Abstract ID: **AIMC-2017-STE-115**

NAOH EVALUATION OF TENSILE PROPERTIES FOR SINGLE KENAF FIBER

Corresponding Author: I Ibrahim
Universiti Teknologi Malaysia
Co-Authors: R Dolah ; M.Y.M Zuhri ; S Sharif ; M Hassan

Abstract

Introduction: *A natural fiber including kenaf fibers as reinforcement in polymer composite has increasingly attracts the manufacturing industry. However, the poor interfacial adhesion between fiber and matrix are commonly encountered due to its nature compatibility, namely hydrophilic and hydrophobic. Therefore, alkaline treatment has been introduced to reduce the hydrophilic effect of natural fiber.* **Methodology:** *This paper presents the treatment of single kenaf fibers towards tensile test. The effect of tensile test is analyzed using analysis of variance (ANOVA). Kenaf fibers were modified using different concentrations of NaOH. Then, the single kenaf fiber was performed under ASTM D3379-89 standard.* **Findings:** *The results showed that kenaf fiber treated with 6% NaOH concentration is statistically significant showing an outstanding performance of the tensile properties.* **Contribution:** *The biodegradable resource especially natural fiber must widely used in order to overcame the environment issue. The natural fiber have advantages such as environmental friendly, availability, and has good strength and modulus. It can be the product as good as synthetic polymer. The aim of this study is to identify the optimum composition of NaOH for treating the fiber.*

Keywords: Natural Fiber, Kenaf, Alkaline Treatment, Tensile Properties, ANOVA

Abstract ID: **AIMC-2017-STE-118**

THE OPTIMISATION OF PROCESSING CONDITIONS AND THE EFFECT OF NANOCLAY TOWARDS SNAP FIT SAMPLES.

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Abstract

Introduction: *This research is about the optimisation the injection moulding processing condition to control shrinkage and warpage for snap fit product throughout Taguchi Method in practical injection moulding. This snap fit product was specifically made from polypropylene-nanoclay nanocomposites.* **Methodology:** *In this try-out, the selected processing conditions were barrel temperature, holding pressure, injection velocity and injection holding. The materials were mixtures of polypropylene and nanoclay with the addition of polypropylene grafted maleic-anhydride as the compatibilizer. Two formulations were chosen, with the difference of 0 wt. % and 5 wt. % of nanoclay loading. Each formulation was added with 15 wt. % of compatibilizer. The design of experiment for this project had adopted from L943 orthogonal array of Taguchi method. By using the signal to noise ratio responses, the optimum processing condition for each formulation has been obtained.* **Findings:** *The design of experiment for this project had adopted from L9 orthogonal array of Taguchi method. By using the signal to noise ratio responses, the optimum processing condition for each formulation has been obtained, whereby the optimum barrel temperature was 240 0C, 20% for holding pressure, 10% for injection velocity and 9 seconds for injection holding time. The results showed that warpage reduced from 0.2944 mm (0 wt. % nanoclay) to 0.2061 mm (5 wt. % nanoclay). The shrinkage also reduced from 0.0453% (0 wt. % nanoclay) to 0.0320 % (5 wt. % nanoclay).* **Contribution:** *The originality of this research is about the optimised processing condition, the usage of new material which was polypropylene-nanoclay and the snap fit samples as the specific product. The findings of this experiment shall be useful for future manufacturing process which was related to this sample and material.*

Keywords: Injection moulding, optimum processing condition, polypropylene-nanoclay, Taguchi method, shrinkage, warpage

Abstract ID: **AIMC-2017-STE-119**

APPLICATIONS OF THERMOREGULATION ADAPTIVE TECHNIQUE OF FORM IN NATURE INTO ARCHITECTURE: A REVIEW

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Abstract

Introduction: *In the last 20 years, biology has obviously been the source of countless, innovative solutions from nature in many disciplines. Biomimetic is an interesting philosophy which hybrids multi-disciplinary sciences with biology. Biomimetic design is currently one of the promising fields ranging from accessing to adaptive, sustainable and energy saving solutions for the architectural and environmental challenges* **Methodology:** *This paper underlines and reviews the recent state of the art biomimetic applications to architecture, in particular, thermoregulation strategies. The review design was based on project's status that varies from executed projects, experimental models and design concepts.* **Findings:** *The study shows that biomimicking thermoregulation strategies of the nature leads to a significant energy saving and indoor thermal comfort. It is also observed that some of the architectural researches in this regard do not exceed the stage of theoretical study due to the lack of sponsorship and funding. Although there is a number of levels in respect to mimicking adaptive notions from nature such as behavioral, physiological, and morphological, architects' works are mostly confined to mimicking the functional performance of organism through its morphological configuration; physiological and morphological adaptation.* **Contribution:** *The review shows that architects turn noticeably to nature's solutions as the source of efficient structure, zero-waste system, saving energy and controlling thermal environment*

Keywords: Thermoregulation, biomimicry, adaptation, passive design, thermal comfort

Abstract ID: **AIMC-2017-STE-122**

TRIPLE MIXED OXIDES MODIFIED JOURDIQUA CLAY IN HETEROGENEOUS CATALYSIS FOR METHANOLYSIS OF CASTOR OIL

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Abstract

Introduction:

Biodiesel is the methyl esters of fatty acid develops, as alternative to fossil fuels, the strongest factor concern about global pollutant . Clays have very promising future in catalysis of chemical reaction, such as esterification and transesterification reactions. In this study clay called Jourdiqua was brought from Sudan, and was modified by triple mixed oxides of MgO, BaO, and SrO, using their nitrates, by impregnation them into the clay, and the modified clay was calcined at 500 C for 5 hours. The modified clay was used as solid base catalyst in transesteifaction reaction of castor oil with methanol.

Methodology:

The starting clay was natural clay called Jourdiqua from north of Sudan, Castor oil was purchased from Indian shop in Skudai, Johor Bahru, magnesium nitrate, calcium nitrate, barium nitrate and strontium nitrate from Aldrich company, methanol analytical grade, purity > 99%, potassium hydroxide and hydrochloric acid 37% (w/w) with purity > 99% from Sigma company. Jourdiqua clay was dried in oven at 90oC overnight and then ground, and sieved with mesh scale of 60, and kept in bottle sample. Jourdiqua clay was impregnated with triple mixed oxides of MgO, BaO and SrO, in ratio of 50% of oxides to clay, and atomic ratio of (1:1:1) for Mg: Ba: Sr, in order to improve the catalytic activity of the clay. The raw and modified clay were characterized by Thermogravimetric (TGA-DTG), Brunauer-Emmett-Teller (BET) for the textural properties of the catalysts, Inductively Coupled Plasma Emission Spectroscopy, (ICP-ES), Atomic A absorbance Spectroscopy for the elemental analysis, (AAS) for Na, K and Ca,, X-Ray diffraction (XRD), Fourier Transform Infrared (FTIR), Field Emission Scanning Electron Spectroscopy (FESEM), basicity test (back titration), and Temperature Programmed Desorption of CO2 (TPD-CO2). Transesterification reaction was conducted for castor oil with methanol, for 3 hours, the product was separated and analyzed with GC-FID, and 1H NMR techniques.

Findings:

The result from BET showed that, there was a little increase in specific surface area after modification from 9.67 to 10.00 m/g, elemental analysis by ICP-ES, showed increase content in the elements that , their oxides were impregnated with clay, Mg increased from 0.988 to 9.26%, Ba from 0.599 to 14.80%, and Sr from 0.143 to 21.00%, Na increased from 40.00 to 46.80, Al from 1.95 to 3.46%, the other cations such as, Si, Ca and K were

decreased , Si decreased from 6.030 to 0.211% , may be due to the replacing by Ba and Sr, Ca decreased from 17.40 to 1.22%. and K from 4.88% to 0.607%, these cations may be replaced by Mg, Ba, and Sr cations. TPD-CO2 showed three catalytic basic sites with total concentrations of 0.7222 mmole/g, GC-FID analysis showed that, the main esters present in biodiesel from castor oil, are methyl ricinoleate with content of 89.12, methyl linoleate 4.11, methyl oleate 3.44, methyl stearate 1.1 and methyl palmitate with content of 0.86%, 1HNMR technique revealed that the conversion of castor oil to biodiesel using triple mixed oxides of MgO, BaO ,SrO modified Jourdiqua clay was 96.59%.

Contribution:

Clay, Zeolites, and other aluminosilicate, were intensively, developed in production of biodiesel, as the catalysts. In this study, unique clay was brought from Sudan , with pH of 11.30. and concentrations of basic sites of 0.6645 mmol/g had used in transesterification process , and it was achieved conversion of oil to biodiesel of 64.99% as a raw. After modification, with triple mixed oxides of Mg, Ba, and Sr, the basic sites concentrations was increased to 0.7222 mmol/g, achieved conversion of 96.59%. It was observed that basic modification by these triple mixed oxides, have improved tremendously the catalytic capability of the raw clay, while no significance leaching was found after four consecutive cycles of reactions.

Keywords: Biodiesel; Transesterification; Modification; Catalyst; Impregnation ; Triple Mixed oxides, Clay, Sudan

Abstract ID: **AIMC-2017-STE-124**

ECODRAINAGE SYSTEMS PLANNING USING RECHARGE WELL IN UNIVERSITAS PENDIDIKAN INDONESIA BANDUNG, WEST JAVA

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Abstract

Introduction: *Based on the function of the area, Universitas Pendidikan Indonesia (UPI) in Bandung is located in the area of North Bandung as protected area. The aim of the study was to determine the distribution of spatial undeveloped and developed area in UPI, to design the dimension of Recharge wells in UPI based on shape and area of developed and undeveloped land.* **Methodology:** *The method used to meet the goals of the research is the analysis of remote sensing imagery, hydrological analysis, and modeling design of Recharge wells* **Findings:** *Typology of land use land cover in UPI Bandung based Quickbird satellite imagery shows vegetation cover area 35%, developed area 22% consist of buildings, roads, troroar, and parking area. Rainfall design with 10 years return period and 60 minutes duration, resulting in a discharge 0.3 to 3.3 liters per second, the total discharge is generated is 0.48 cubic meter per second. The number of wells should be built based on the dimensions of the well diameter 1 m and a depth of 5 meters is 425 wells, with distribution in zone 1: 21 wells, Zone 2: 302 wells, and zone 3: 101 wells* **Contribution:** *This research is try to combined the remote sensing and hydrology analysis to provide up to date land cover situation and discharge generated based on land cover. The result of this research can be used as a model to conserve water in Northern Bandung Area as Protected Area for water Conservation.*

Keywords: Recharge Well, Water conservation, Inverse Auger Hole

Abstract ID: **AIMC-2017-STE-126**

WEARABLE DEVICE-BASED FALL DETECTION SYSTEM FOR ELDERLY CARE USING SUPPORT VECTOR MACHINE (SVM) CLASSIFIER

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Abstract

Introduction: *Fall is an increasing problem as people ageing. It may happens to anyone, but their incidence does increase with age. Hence, elderly will be facing catastrophic consequences due to falls. Nevertheless, there are still vulnerable in its accuracy in categorizing and differentiating the Activities Daily Living (ADL) and falls as most of existing systems cause false alarm. This paper presents the research and simulation of wearable device-based fall detection approach by addressing the building of wearable device-based fall detection system for elderly care by using mobile devices.* **Methodology:** *Two main phases involve in this research: online phase*

and offline phase. Online phase covers in data acquisition step whereby the raw data of simulated falls by participants is collected via built-in-tri-axial accelerometer in smartphone, then automatically sent towards the computer via wireless communication. Meanwhile, offline phase covers data pre-processing, feature extraction and selection and data classification where these steps is handling in offline mode. Support Vector Machine (SVM) classifier was employed, and evaluated in analysis. **Findings:** *Overall accuracy rate, sensitivity, specificity as well as False Positive Rate (FPR) and False Negative Rate (FNR) were calculated. The findings suggest that SVM with Polynomial (order 5) method which achieved 68.91% overall accuracy as well as producing only 24.46% FPR is the most precise model for fall detection system in this paper.* **Contribution:** *This approach has the potential to be implemented and deploy in real mobile application in future.*
Keywords: fall detection, elderly, Support Vector Machine, and wearable.

Abstract ID: **AIMC-2017-STE-127**

THE STUDENT DEVELOPMENT OF THINKING THROUGH SYMBOLIC MANIPULATION ON THE ENGINEERING STUDENTS IN VOCATIONAL UNIVERSITY

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Abstract

Introduction: *This research describe regarding with investigation into university students manipulations of symbols that has problem in solving calculus problems, and also has the relation to others aspect such as graphical interpretation. It comes to the concerned that identifying difference between students who are successful with symbol manipulation and those who are less successful. Krutetskii (1976) noted that more successful problem-solver curtail their solutions whilst the less able are less likely to acquire that ability even after long practice.* **Methodology:** *Research instruments*

In this research, students' thinking in calculus is revealed by interview it is relatively based on react of respond of the students . It depends on the student and the interviewer and on the relations between them formed before and the during interview Amit & Vinner (1990).

The procedure

In the main study, the students chosen were those second year undergraduates who had undergone same calculus course and mathematics courses in the first year. The engineering students are grouped according to their grade A,B,C. Their names are arranged in alphabetical orders. To ensure the randomness of the selection of the students, the first nine student were selected:twenty seven students from mathematics courses and twenty seven students from technical courses.

Interview question consist of two parts:

The first part of the interview:

The question posed are open-ended and informal with intention of getting general information on how student conceptualize and study calculus topics

The second part:

The question are open ended and based on the question. By considering

(a) The role of good symbolic manipulation in interpretation of calculus in particular situation equation

(b) The number of approaches available in dealing with the same calculus problems.

Findings: *In this study, it is found that the more successful students develop more flexible approaches in tackling calculus problems. They have strong conceptual linkages.Hence they are more likely to demonstrate flexibility in handling mathematics symbolic manipulation. This phenomenon can be seen when students develop meaningful relationship between symbolism and show the ability to interchange symbolism freely in different ways. Given several methods available for tackling a calculus problem, the more successful students probably make use of their strong conceptual to choose an easier method that needs less cognitive strain in execution. Lacking such conceptual quality, less able student are more likely to face considerate difficulties in performing calculus tasks.* **Contribution:** *The contribution of the research can be considered that lecturer must have ability to provide better constructivism and approaches teaching based on student level understanding. The ability of the students comes in different prospective and methods.As lecturer can provide better solution be done for better understanding for students as their future is to be an engineer.*

Keywords: symbolic manipulation,

Abstract ID: **AIMC-2017-STE-129**

SIDE-SCAN SONAR TECHNIQUES FOR THE CHARACTERIZATION OF SEABED IDENTIFICATION TARGET IN PUNGGUR SEA, INDONESIA

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Abstract

Introduction: *This paper presents a unified framework for the creation of side scan sonar techniques for characterization of seabed identification from sonar imagery. Side-scan sonar imagery with approaches Punggur sea, Batam, Indonesia areas subjected to Side-Scan Sonar (SSS) records. Acoustic returns from SSS produce intense geometric and radiometric artefacts in the created backscatter mosaics. The data presented here were collected at different sites located on the continental shelf of the Punggur sea. This study was carried out at December 2016 in the Riau Islands, Indonesia (104°08.7102 E, 1°03.2448 N until 1°03.3977N 104°08.8133 E).* **Methodology:** *This study using side scan sonar C-Max CM2 with the tow fish was towed at a speed of approximately 5-7 Knots at an altitude of 10-26 m above the seabed. The system allowed the user to operate it under dual acoustic signal frequencies, at 325 KHz. The increased knowledge about pockmark features resulting from this survey, was mainly achieved by the side scan sonar which was towed at an optimum altitude (10-26 m) above the bottom, regardless of the (actual) water depth. This was done with normal profiling speed (6-7knots). SSS surveys were performed using C-Max CM2 model operating at 325 kHz covering surface around 4.72 km.* **Findings:** *Seabed identification target have 4 target detection in side scan sonar imagery result. Seismic line trace of target detection have 41 number of data collection from side scan sonar imagery after processing. Highest of seismic line trace of target detection is target 3. Highest result of the time in figure 9 is 13568 cm/second and 104,325 cm in line trace target 4 of side scan sonar imagery. Highest result of line trace is target 1 with 191, 88 cm on target 1, and highest of time result is 13568 cm/second on target 4. Target 1 have a relationship with results with highest target detection of side scan sonar imagery. Seismic figure of side scan sonar imagery have total line trace is 4479, time: 77.9547 cm/s, and gain: 0.00271091* **Contribution:** *Side Scan Sonar Techniques (Acoustic wave technology) used in all kinds of aquatic ecosystems in order to acquire detailed information about stock estimation about fish abundance and seabed identification*

Keywords: Side Scan Sonar (SSS), Target detection, SSS Imagery, Seismic

Abstract ID: **AIMC-2017-STE-131**

AUTO-GENERATE CLASS TIMETABLE SYSTEM

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Abstract

Introduction: *Prior to a new semester, the timetable committees have to key-in manually on the existing UiTM Smart Scheduling System (SSS) to generate the class timetable. They have to arrange the timetable for every lecturer, classroom and*

group. All these must be well aligned and no clash between one to another. This method very inefficient and time consuming. Sometimes, there are cases where the timetable has to be rearrange for many times even then the class has already started. Therefore a new auto-generated class timetable system is needed to solve this problem. The users can key-in the lecturer's detail and subjects to be teach. The system will then generate the class timetable automatically. This output can be used as references for the users to fill-in the existing SSS. The system will use Xampp that consist of MySQL, PHP, Pearl and Apache software to develop the database and Visual Studio software to develop the Graphic User Interface (GUI). Besides, an Artificial Intelligence-based class management

algorithm such as Expert System will be developed and put in the system. It is believe that this system will assist many admin personnel especially the timetable committee member to generate the class timetable before entering the details on the SSS. The system is expected to be faster, easier and more accurate. **Methodology:** *1) Literature review: review and study on past research that related to database, timetable management system and expert system*

2) Develop class timetable database using Xampp that consist of MySQL, Apache, PHP and other related tools.

3) Develop class timetable system Graphic User Interface using Visual Studio and Visual C++.

4) Develop AI-based class management algorithm such as Expert System

5) Deploy the Expert System to the developed class timetable system
6) Test and debug the system
7) Evaluate the developed performance report generated by the system such as total time taken to generate class time table, any overlapping schedules between
groups, lecturers and classrooms. The system is considered a success if no clashes being reported.
8) Report writing **Findings:** *The system will generate the class timetable automatically. This output can be used as references for the users to fill-in the existing SSS. The system will use Xampp that consist of MySQL, PHP, Pearl and Apache software to develop the database and Visual Studio software to develop the Graphic User Interface (GUI). Besides, an Artificial Intelligence-based class management algorithm such as Expert System will be developed and put in the system. It is believe that this system will assist many admin personnel especially the timetable committee member to generate the class timetable before entering the details on the SSS. The system is expected to be faster, easier and more accurate.* **Contribution:** *In promoting the auto generate class timetable, it is essential to point out the critical role that the proposed system plays in helping to provide benefits to society, such as Institution/University, School, Academic Staff, Administration and Student. The proposed system will auto generate the timetable based on the loaded information with individual user customization setting.*

Keywords: Timetable system, database, automatic generate, expert system, SQL

Abstract ID: **AIMC-2017-STE-132**

BIO-INSPIRED ALGORITHM FOR CONTENT CENTRIC VEHICULAR NETWORK (CCVN)

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Abstract

Introduction: *Content Centric in Vehicular Network (CCVN) is a potential key player in future vehicular communication where it may possibly eliminate issues related to host-based IP addressing. This study aims to improve mobile Quality of Service (QoS) in CCVN using a bio-inspired intelligent algorithm. In dynamic communication model, the preferred QoS parameter can be differentiated by the request's content type. Hence, problem with CCVN articulated as optimization problem to sustain the desired QoS. Intelligent algorithm hybrid in CCVN's strategy layer uses QoS parameter as optimization inputs. Numerical findings display the superiority of Bio-Geography Based Optimization's scheme in comparison with other algorithms.* **Methodology:** *The framework design extends the CCN strategy layer to achieve optimal QoS towards mobile users. In the strategy layer, the characteristics of QoS optimization and forwarding strategies are implemented. The QoS optimization uses real-time input parameters to measure the appropriate forwarding needed by each packet. These input parameters are used to sustain QoS communication which are measured in terms of required bandwidth, delay, packet loss, throughput and velocity. Some application benefits from the bandwidth, others may prefer lower delay. Hence, the five matrices are used for cost function calculation to specify the cost needed to deliver each requested packet. The cost functions calculation designed and adopted in three bio-inspired algorithms, which are Ant-Colony Optimization (ACO), Artificial Neural Network (ANN), and Bio-geography Based Optimization (BBO). After that, data forwarding layer will forward requested packets using the appropriate forwarding interface based on the best solution presented. To measure their performance, the three-selected bio-inspired algorithms compared using four different criteria in terms of the Number of Function Evaluations (Nfe), the Standard Deviation (SD), the computation time (CT); and the average of best cost (BC) of the cost function.* **Findings:** *Based on the QoS parameters applied and the cost function designed, selected three bio-inspired algorithms evaluated using MATLAB to measure their performance in 4 selected criteria.*
1) Number of Function Evaluation: result shows that ACO and BBO have the first and second lowest number of function evaluation, indicated that they own the highest efficiency than the compared algorithm.
2) Standard Deviation: Result suggest that BBO and GA has the the first and second lowest average SD of function values than others; indicates a more stable solution quality while the ACO algorithms gave larger SD hence their solutions qualities were deduced to be less stable.
3) Computation Time (CT): Result suggest that GA and BBO has the lowest average CT, suggesting that both algorithm can perform well on real-time environment.
4) Best Cost Function: Result shows that BBO has the smalles numbers of nest cost function, indicates lesser time required to finish one operating cycle in each trial. The average of best cost functions shows algorithms' response and computation time that are obtain at each trial.

The simulation findings indicate the superiority of Biogeography-Based Optimization (BBO)'s scheme in terms of efficiency, solution stability, support in real-time and response in each trial. **Contribution:** *The rapid increase of mobile multimedia traffic and content sharing demands has motivated CCVN properties to separate content name from content location, which gives built-in mobility functions by default. This property leads CCVN as an attractive candidate solution for vehicular networking due to its nature of location independent. Bio-Inspired techniques have been proven to address problem in information networks based on lessons from biological systems. This paper aim to evaluate the performance of three selected bio-inspired algorithms and indicate each algorithms component stability. The selected algorithm is chosen to extend CCVN strategy layer which expected to increase CCVN QoS performance.*
Keywords: Content Centric Vehicular Network; Bio-inspired Algorithm; Quality of Service

Abstract ID: **AIMC-2017-STE-133**

COMPARISON THE COORDINATES OF MAPPING FRAMEWORK USING ENCLOSED POLYGON BOUWDITCH METHOD AND TRIANGULATED QUADRILATERAL ADJUSTMENT METHOD

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Abstract

Introduction: *The initial measurement process of mapping activity is Procurement Basis Point Mapping Framework (TKDP in Indonesian) on the area that will be mapped. This TKDP will be binding from the details that wich the objects of the elements in the earth's surface that is depicted into map form (Basuki, 2006). The basic mapping framework divided into two types, there are horizontal framework (planimetric) and vertical framework (height). The basic horizontal framework of mapping are vary depend of the selection and usefullnes policy that determined by many factors, wich as the area, tools availability, and the calculation method. The commonly used of basic mapping framework in the geodesy field are triangulation and polygon method.* **Methodology:** *To obtain the precise map frame coordinate value from the results of triangulation method measurement, it can be use a least squares calculation method or a least squares triangulation adjustment. In the other hand, the polygon method using the Bouwditch to solve the problem. The least squares method (adjustment) is well known as three methods, there are parameter, condition, and combination. The least squares method of triangulation (triangulated quadrilateral adjustment) can use the conditions or measurements equation either azimuth or angle measurement. The procedure of this equation involves parameter adjustment, where these parameter is the coordinates on a flat surface.* **Findings:** *This study review about the comparison of coordinate result of the enclosed polygon mapping framework using bouwditch method and triangulated quadrilateral adjustment method. The coordinates result of the calculations using Bouwditch method provides value better than adjustment method, where the confidence interval of standard deviation of the coordinates using this method is around 0.400954085 m minimum and feet 1.020967284 m maximum in the 90% of confidency level, in the othe hand, the adjustment method ranges between 1.112780078 m minimum and 2.833521575 m maximum.* **Contribution:** *The benefit of this study is provide concept that can be used as a comparative study for surveyors engaged in the field of geodetic engineering that the basic mapping framework measurements use bouwditch method will yield more accurace than adjustment triangulated quadrilateral method.*
Keywords: adjustment, triangulated, polygon, bouwditch, coordinates, interval of confidency.

Abstract ID: **AIMC-2017-STE-136**

ECONOMIC IMPACT OF CLIMATE CHANGE ON FARMING SYSTEM IN SIERRA LEONE

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Abstract

Introduction: *This study examines the economic implications of climate change on vulnerable farming system in Sierra Leone especially the study area. The country's economy and employment is predominantly agrarian such that, the exploitation of natural resources remains the driving force for the country's economic development. The objectives of this research are to investigate the economic implications of climate change, examine how climate change affects farmers and finding out the constraints that exacerbates vulnerability. In achieving the set objectives of the study, the researcher adopted both primary and secondary sources of data to present and*

analyze the information for the study. **Methodology:** *This study adopts the exploratory and ex-post facto design. The exploratory design will be used to gather relevant materials from textbooks, journal articles and so on while the ex-post facto design will be used on the basis that it does not provide the study an opportunity to control the variables mainly because they have already occurred and cannot be manipulated.*

METHOD AND SOURCES OF DATA

The study will predominantly use primary and secondary source of data. These data will involve site visitation, focus ground discussion, administering of questionnaires, face to face interview with Sierra Leone climate change office, approaches from text books, journals, internet, statistical bulletin and other relevant government publications.

Findings: *Climate change shocks also erode the long-term opportunities for human development and could exacerbate inequalities within countries (UNDP 2007). Climate change impacts the four key dimensions of food security – availability, stability, access, and utilization (e.g. Schmidhuber and Tubiello 2007).*

In addition, stability of crop yields and food supplies is negatively affected by variable weather conditions. Physical, economic, and social access to food would be affected negatively by climate change as agricultural production declines, food prices rise, and purchasing power decreases.

Contribution: *Sierra Leone depends on agriculture which constitutes 75% of her employment and is being affected from this global phenomenon either directly or indirectly. Because of Sierra Leone's low capacity to cope with and to adapt to this global environmental illness, her vulnerability to climate change is a topic of concern and this research, much attention will be focus by both government and international partners.*

Keywords: Economic impact, Climate Change, Farming system

Abstract ID: **AIMC-2017-STE-144**

EXPERIMENTAL AND FINITE ELEMENT MODELING OF RESIDUAL STRESS RELAXATION UNDER CYCLIC LOAD OF ALUMINIUM ALLOYS :A REVIEW

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Abstract

Introduction: *The compressive residual stresses, which were induced as a result of the shot peening techniques, increased the fatigue life of the component. The initial residual stress was relaxed during the component's operational life and considering the stress relaxation within the design, is very important* **Methodology:** *The studied review in material is aluminium alloy A2024-T351, which is an alloy designed for aerospace applications requiring tolerance for damages. The T351 treatment of the aluminium alloy reveals that the material is heat solution treated at 435 0C, worked cold, aged naturally, and finally relieved from stress using traction. Residual stress measurements by the X-ray diffraction was utilized to measure the initial and residual stresses following every cycle. The measurements of residual stress were performed on the surface in the direction of longitude only at the central length of the gauge on the width side. Moreover, the residual stress X-ray diffraction measurement was performed by utilizing a two-angle sine squared-psi approach.* **Findings:** *In this study finding the shot peening technique helps in improving the material fatigue life as seen in the case of the aluminium alloy components under optimised conditions, or appropriate results cannot be obtained and it could even result in unfavourable results. Moreover, the beneficial effects of the shot peening technique are better for longer fatigue lives as compared to the shorter fatigue lives. The bigger shots produced more residual surface stress in the specimens than the smaller shots, whereas the smaller shots were more effectual than the large shots. Moreover, the distance of the nozzle from the surface did not affect the intensity greatly, while the media flow rates were inversely proportional to shot intensity. The Almen intensity also increased with an increase in the media size. The optimal shot peening intensity for the aluminium alloys ranged between 8- 13A.*
Contribution: *The residual stress relaxation and the varying degrees of the surface cold working that was induced due to shot peening technique as compared to the simulation techniques indicated that the analytical model was quite robust especially for the cyclic loading stages for the low cycle fatigues. This is an important feature as the majority of the stress relaxation took place in the earlier stages, as could be seen from the previous reports.*

Keywords: shot peening; surface treatment; residual stress; relaxation; X-ray diffraction; fatigue

Abstract ID: **AIMC-2017-STE-147**

STRATEGY DEVELOPMENT CREATIVE INDUSTRY CENTERS FOOTWEAR OF WEDORO

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Abstract

Introduction: *Small and Medium Enterprises (SMEs) have an important role and strategic for economic growth. Because, at the time of the economic crisis in Indonesia, SMEs are the economic sectors which have the most excellent durability. Wedoro Village, District Waru, famous for the creative industry centers footwear, especially slippers and shoes* **Methodology:** *Currently the industrial centers of creative footwear is experiencing a decline in sales compared with its heyday in 2001-2006 years ago. This research aims to design a strategy of development of the creative industry center Wedoro footwear. The method used is the SWOT analysis and Grand Strategy* **Findings:** *The results of this study indicate that the cause of the decline in sales is a flood of Chinese products, rising raw material prices, and the lack of innovation in product design. Hence the need for guidance from the government in developing innovation in product design and innovation in marketing* **Contribution:** *Hence the existence of a creative industry center Wedoro can grow and create jobs for local residents as well as increasing revenue Sidoarjo*

Keywords: Strategy, Industry Centers, Footwear, Wedoro

Abstract ID: **AIMC-2017-STE-149**

ARBITRARY WALL SHEAR IN HEAT TRANSFER ANALYSIS OF MHD CASSON FLUID PAST A TILTED PLATE

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Abstract

Introduction: *Casson fluid is a shear thinning liquid which has dual nature. It behaves like a solid when a shear stress applied is less than the yield stress and it starts to move when the applied shear stress is greater than yield stress. Due to its dual behavior, this fluid is equally important in industry and engineering and hence is chosen for the present work. More exactly, this article aims to examine the influence of an arbitrary wall shear stress in heat transfer analysis of Casson fluid past a tilted plate. The fluid is electrically conducting with uniform magnetic field. General solutions of the dimensionless governing equations with corresponding initial and boundary conditions are determined using the Laplace transform technique. Computational software MATHCAD is used for plotting graphs for velocity. For accuracy purpose, present results are compared with published results and an excellent agreement is noted.* **Methodology:** *The purpose of the present study is two-fold. Firstly, it incorporates the effects of magnetic field by considering the fluid to be electrically conducting. Secondly, the fluid is considered in a porous medium. More exactly, the present work concenters on unsteady MHD free convection flow of a Casson fluid in a tilted plate embedded in a porous medium. Exact solutions are obtained by using the Laplace transform method and convolution technique . Analytical results for skin-friction and Nusselt number are provided. Graphical results are presented and discussed for various physical parameters entering into the problem.* **Findings:** *An exact analysis is carried out to study the unsteady MHD free convection flow of a Casson fluid past an arbitrary wall shear stress in heat transfer past over a tilted plate. The results for velocity and temperature are obtained using the Laplace transform technique. The main conclusions of this study are as follows:*

- *Velocity increases with increasing Grashof number, permeability parameter and time whereas decreases with increasing values of Casson parameter, Prandtl number, magnetic parameter and shear stress.*
- *Temperature increases with increasing time whereas decreases when Prandtl number is increased.*

Contribution: *The obtained solution is found in excellent agreement with published result.*

Keywords: Casson fluid, wall shear stress, tilted plate, MHD, exact solutions.

Abstract ID: **AIMC-2017-STE-150**

TENSILE PROPERTIES OF JUTE-POLYPROPYLENE COMPOSITES

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Abstract

Introduction: *This paper describes the tensile behaviour of jute-polypropylene fibre composites with different fibre volume fractions.* **Methodology:** *Here, the composite laminates consisting of weaving jute fibres, with the fibre volume percentage in the range of 20 to 80% and polypropylene plies were prepared using a hand lamination. The composite laminates were subjected to tensile testing as per ASTM D3039.* **Findings:** *The experimental results suggested that fibre-to-resin contents have a strong influence on the tensile properties of the composites. There is an increase in the tensile strength and Young's Modulus of the composites with increasing fibre volume fraction. However, upon reaching 60% of the fibre contents, the tensile properties of the laminate showed a sudden decrease due to high concentration of fibre. Theoretical models including Rule of Mixture, Halpin-Tsai, Hirsch, Einstein-Guth models were used to predict the tensile strength of the composites. It was found that the experimental results attained are in close agreement with the values predicted using the Rule of Mixtures.* **Contribution:** *This study aims to characteristic the mechanical behavior of the optimum jute reinforced polypropylene laminated following tensile test. Then, an experimental result and developed analytical model such asRules of Mixtures, Halpin-Tsai model, Hirsch's model and Einstein & Guth model will be compared.*

Keywords: Jute, propylene, tensile properties, volume fractions.

Abstract ID: **AIMC-2017-STE-152**

SMART WASTE BIN WITH REAL TIME MONITORING SYSTEM

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Abstract

Introduction: *This paper presents a smart waste bin with real time monitoring system which integrates multiple technologies such as solar panel, sensors and wireless communication devices. The aim of this project is to provide an efficient and cost-effective waste collection management hence providing cleaner and greener environment.* **Methodology:** *This system consists of three module which are solar energy system, smart waste bin and waste bin monitoring system. Solar energy system comprises of solar panel, solar charger controller and rechargeable battery acts as an energy provider to the Arduino Mega which is placed inside the waste bin. Arduino Mega microcontroller is used to combine PIR motion sensor, ultrasonic sensor, DS1302 Real Time Clock module and 12 x 6 LCD display module to form a smart waste bin. The smart waste bin used PIR motion sensor to detect any movement especially when someone open the waste bin lid to throw rubbish and automatically sense the waste level inside the waste bin by using an ultrasonic sensor. The ultrasonic sensor takes the measurement of the waste level and RTC module generates the current timestamp continuously. These real time data are then send over the Internet by using ESP8266 Wi-Fi module and store in the database server. A proper database schema is designed to cater for future project enhancement. Waste bin monitoring system is a web-based application and accessible from anywhere where Internet connection is available. The monitoring system manipulates and displays all the collected data from database server in different formats. It contains two dashboards that shows the current waste level in every waste bin and monthly analysis of number of time the waste collection is done for every waste bin. The system also shows historic data and also 20 current waste management activities using different statuses in a table form. All these informative data provides by the monitoring system are very useful for local authority to plan and take proper action in order to provide an efficient and cost-effective waste management services.* **Findings:** *The outcome of this project is a solar powered smart waste bin with real time monitoring system. This system is portable and intelligent to notify whether the waste bin is empty or full. The real time monitoring system able to assist the local authority to provide an efficient service to the people. The local authority can used these data to improve the services such as to decide add additional waste bin in a critical areas that requires most frequent collections, produce a proper scheduling, estimate number of labors required and fleet management. Since this whole system only operates when there is an Internet connection, a strong Wi-Fi connection is required in the area to place the smart waste bin.* **Contribution:** *This project is one of the IOT-based innovative project that able to help in providing clean and green environment. The waste bin able to be monitored by the developed system.*

Keywords: Smart waste bin, real time monitoring system, IOT, waste management, waste bin monitoring, wireless connection, ESP8266 Wi-Fi, ultrasonic, PIR

Abstract ID: **AIMC-2017-STE-155**

TIO2 SUPPORTED ON BRICK WASTE AS LOW COST PHOTOCATALYST FOR DYE PHOTODEGRADATION

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Abstract

Introduction: *Photocatalysis is one of the most important technology for treating water pollutants effectively. The method is better compared to adsorption method in that photocatalysis gives advance destroying organic contaminants and has better reusability. In other side, textile industry incuding Batik's industry is a potential source of wastewater contaminated with dyes which can cause serious environmental problems. For photocatalysis purposes, TiO2 is the popular material. In order to enhance both economic and photocatalytic activity of TiO2, supporting TiO2 into solid material is interesting effort. In this research, brick waste was choosen as low cost and effective support for TiO2.* **Methodology:** *TiO2 supporting onto brick waste by impregnation method was carried out. The composite of TiO2/Brick waste (Ti-BW) was conducted by dispersing titanium tetraisopropoxide as TiO2 precursor followed by calcination. Characterization of Ti-BW was performed by XRD analysis, Diffuse Reflectance UV-Vis and FTIR analysis. For photocatalytic activity, experiments on photocatalysis and photooxidation of rhodamine B solution were examined.* **Findings:** *Prepared Ti-BW exhibits the formation of TiO2 in mixed anatase and rutile phases as presented by XRD pattern. From the DRUV-Vis analysis, it is found that the band gap energy of composite material lays in UV-Visible region. Ti-BW showed high photoactivity as represented by faster degradation rate of rhodamine B over photooxidation and photocatalysis compared to adsorption method. From the data simulation, it is revealed that rhodamine B degradation over photocatalysis mechanism follow pseudo-first order while over photooxidation the kinetic obey pseudo-second order.* **Contribution:** *The use of brick waste as low cost support is the novelty of this work.*

Keywords: Photocatalysis; TiO2; Brick Waste; Dye Degradation

Abstract ID: **AIMC-2017-STE-158**

EVALUATION OF NEW YOGYAKARTA INTERNATIONAL AIRPORT (NYIA) IN KULONPROGO REGENCY INDONESIA BASED ON TSUNAMI DISASTER RISK USING GEOGRAPHIC INFORMATION SYSTEM (GIS)

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Abstract

Introduction: *Yogyakarta is a province that has an appeal to be visited by the domestic and foreign visitors. Two important factors that cause people to go to Yogyakarta are many tourism places and good educational institutions. Because of the increase in the number of passengers and the bustle of activity in Adisucipto airport (previous Airport), in 2012 the central and local government of Special Propince of Yogyakarta unveiled a new airport, which it is now still in progress and targeted to be completed in 2019. The election of new airport site is very close to the subduction zone of Eurasia and Indo-Australia plates where it frequently occures earthquakes and high probability of tsunami.* **Methodology:** *In this study, to predict the risk level of the tsunami, we use the Crunc model, which the multiplication of the hazard to the vulnerability and subsequently modeled by Geographic Information System (GIS).* **Findings:** *Based on the simulation of tsunami wave height of 15 meters, there is an area of 27.35 km2, or approximately 18.32% of the total area of Kulonprogo Regency. New Yogyakarta International Airport (NYIA) belongs to the zone that has a high risk of tsunami disaster risk followed by settlements and agricultural land. There are 5 main shelters acting as evacuation points which should be built and 7 evacuation routes in around the airport.* **Contribution:** *The benefit of this study is to provide information that the airport is located in the high tsunami disaster risk so the construction of this airport should be equipped with good mitigation systems.*

Keywords: Evaluation, Tsunami Disaster Risk, GIS

Abstract ID: **AIMC-2017-STE-162**

DESIGN ARCHITECTURE INFORMATION INTERNAL QUALITY ASSURANCE STT IBNU SINA BATAM WITH METHOD ENTERPRISES ARCHITECTURE PLANNING

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Abstract

Introduction: *Designing an information architecture that is able to meet the information needs of stakeholders for ensuring the quality of STT Ibn Sina Batam.*

Designing an information architecture that can accommodate, process and display the results of the evaluation questionnaire as a reference for improving the quality of STT Ibn Sina Batam. **Methodology:** *The research method by observation, documentation, and literature*

Analysis of the data by creating a flowchart flow of information systems that are currently underway. Framework used Zachman Framework, this framework can also be considered as a basis to think to categorize and organize the representation of a company that is important for company management and future system development.

In EAP, explain the architecture of the data, applications and technologies required to support the organization's business. The entire architecture, is needed to support the business held by the enterprise. **Findings:** *The function of internal quality assurance business there are five entities and data entities as much data as 14, 3 internal quality assurance application architecture. With the architecture of this information can be obtained an internal quality assurance information system that is able to accommodate, process and display the results of the activities and internal quality assurance processes busines STT Ibn Sina Batam effective and efficient as a reference for quality improvement STT Ibn Sina Batam*

Contribution: *Internal Business Process Quality Assurance for Higher Education, Planning and Architectural Design Busines Process in building information systems for internal quality assurance in higher education*

Keywords: internal quality assurance agencies, Information System, Architecture Enterprise Planning

Abstract ID: **AIMC-2017-STE-166**

THE SIGNIFICANCE OF TPB MAIN CONSTRUCTS IN RECENT ISP COMPLIANCE BEHAVIOR STUDY: A COMPARISON AMONG TOP THREE BEHAVIORAL THEORIES

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Abstract

Introduction: *For a decade since year of 2000 until 2010, Theory of Planned Behavior (TPB) and its main construct of Attitude, Normative belief and Self-efficacy have been considered as a significant theory and factors in the area ISP compliance behavior study. However, there are still some questions exist particularly on to what extent this theory is significant in recent studies compare to other competing theories. This paper will present a comparison on main constructs of top three behavioral theories in predicting and explaining employees' ISP compliance behavior in recent studies.* **Methodology:** *The online databases of ScienceDirect, IEEEXplore, SpringerLink, ACM, Wiley, Researchgate, InformsOnline, Emerald, and AISeL were used to find the latest studies on ISP compliance and violation in current literature. The search criterion were based on keywords or combinations of specific terms such as "Information Security Policy Compliance", "Information Security Policy Violation", "Information Security Compliance Behavior", "Information Security Compliance Behavior", "Information Security Violation Behavior", "Security Compliance Behavior", "Employee ISP Compliance" and "Security Violation Behavior". The details of inclusion criteria included are:*

1. *The studies must directly investigate employees' compliance or violation behavior towards ISP in the organization*
2. *The studies must clearly mentioned the usage of TPB, GDT or PMT.*
3. *The studies must have empirical results and findings*
4. *The studies must be published in the period of 2010 until 2016*
5. *The studies must be written in English*

The selected study will be compared and the criteria of comparisons are based on the significant of main constructs towards dependent variable and the comprehensiveness of a theory's main constructs usage in the selected studies.

Findings: *Based on searching criteria, there are 36 articles that specifically use TPB, GDT and PMT in the study. From 36 studies, 15 studies have used TPB, 13 used GDT and 8 studies have used PMT. In terms of significance of main constructs towards dependent variable in a study, the main constructs of TPB, which are Attitude, Normative belief and Self-efficacy have the most number of significant relationships compared to other theories' main constructs. In other words, the main constructs of TPB are always having the significant results compared to other main constructs.*

In terms of the comprehensiveness of usage of main constructs, it was found that TPB main constructs are always used as a complete set of construct in research model of a study compared to GDT and PMT. Most of the studies that adopted GDT and PMT have not used the entire main constructs of the theories in the research models.

The results have confirmed that TPB is still relevant as the most significant in the area of ISP compliance study and its main constructs are the strongest predictors of dependent variables in most of ISP compliance models compared to GDT and PMT.

Contribution: *This paper provides a clear status on the significant of TPB and its main constructs of Attitude, Normative belief and Self-efficacy in predicting and explaining ISP compliance behavior in recent studies. It also provides a new perspective of comparison based on comprehensiveness of usage of main constructs in a study as additional significant comparison criteria to be highlighted. These two criteria have provided more convincing findings in terms of comparison among top behavior theories in this area of study. The findings could be used by academicians as references for statistical evidences on the comparison of the top behavioral theories.*

Keywords: Information Security Policy Compliance, Comparison, Main constructs, Behavioral Theory

Abstract ID: **AIMC-2017-STE-167**

SPATIAL MAPPING AND ANALYSIS OF CARBON DIOXIDE EMISSIONS FROM ELECTRICITY IN UITM PERLIS FOR ASSESSMENT OF LOW-CARBON CAMPUS

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Abstract

Introduction: *The increase of energy usage is the cause of greenhouse gas emission, especially carbon dioxide. Furthermore, one of the factors of high carbon emission is electricity, which is one of energy sources needed for campus activities. The aim of this study is to analyze the amount of carbon dioxide emissions produced by the source of electricity in UiTM Perlis, for the assessment of low carbon dioxide compliance in campus.* **Methodology:** *There are three types of data utilized, which are total electric consumptions in UiTM Perlis from 2013 to 2015, the building plan of UiTM Perlis, the base map of UiTM Perlis, and the spatial analysis of GIS. The assessment of low-carbon i campus is based on the calculation of the amount of carbon dioxide emission, and it is then mapped based on five building categories. The total consumption of electrical energy by the buildings is used to determine the amount of carbon emission using the formula for carbon dioxide emission.* **Findings:** *Carbon dioxide emissions per unit square meter (ktCO2) /m² in the three years in UiTM Perlis are 58.34, 56.24 and 55.31 respectively. Based on the comparison of these results with carbon dioxide emission guideline per unit square meter (ktCO2) /m² which is 56.5 ktCO2, it can be seen that UiTM Perlis complies with the guideline for year 2014 and 2015.* **Contribution:** *Therefore, the Save Energy Campaign is proven successful, as recognized by UiTM Perlis. This can be seen from the reduction of electricity consumption, which leads to the decrease of carbon dioxide emission. This is a positive step towards promoting a sustainable green campus, and the enhancement of available methods for the estimation of carbon dioxide emission.*

Keywords: Carbon Dioxide Emissions, Low Carbon Campus, Electricity

Abstract ID: **AIMC-2017-STE-170**

ACCURACY ASSESSMENT OF WATERSHED DELINEATION USING VARIOUS SOURCES OF DEM DATA FOR PENINSULAR MALAYSIA

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Co-Authors: Muhamad Sharizal Nordin; Suhaila Hashim; Muhammad Faiz Pa'suya

Abstract

Introduction: *Watershed is a region draining into a river, river system, or body of water and watersheds are always physically delineated by the area upstream from a given outlet point. The aim for this study is to study*

the accuracy of watershed delineation between DEM (Digital Elevation Model) from ASTER30 and SRTM90 for the whole Peninsular Malaysia. **Methodology:** *The hydrological modelling tool namely SWAT (Soil and Water Assessment Tool) utilized to delineate watersheds for both of the datasets. Watershed can be delineated with two (2) important data which are DEM data and river line. The watersheds delineated using ASTER30 and SRTM90 were compared using correlation analysis, mean center distance, number of watersheds, area differences and perimeter differences. All the analysis was referring to watersheds that derived by Department of Irrigation and Drainage (JPS) using 20m contour data.* **Findings:** *The correlation value (R2) for watershed area in ASTER30 and SRTM90 are 0.9985 and 0.9941 respectively. Then, for perimeter, the correlation value R2 for ASTER30 and SRTM90 are 0.7607 and 0.8821 respectively. Meanwhile, the ASTER30 shows mean center distance is less than SRTM90 which total mean center distance for ASTER30 and SRTM90 was 121.045 and 184.563 respectively that made ASTER30's distance quiet close with JPS reference data. The total of watershed that generated from ASTER30 also higher which is 125 watersheds as compared to SRTM90 which is 102 watersheds.* **Contribution:** *Based on the results, it can be concluded that ASTER30 obtained better accuracy in watershed delineation, however, SRTM90 also able to be used with appropriate accuracy.*
Keywords: ASTER30, SRTM90, DEM, SWAT, Watershed

Abstract ID: **AIMC-2017-STE-171**

EXPERIMENTAL AND NUMERICAL INVESTIGATION OF SURFACE RESIDUAL STRESS RELAXATION OF A2024-T351 ALUMINIUM ALLOY

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Abstract

Introduction: *Residual stress that is compressive and induced by intense plastic strains has been proven to significantly affect alloys and metals' fatigue life.Certain surface treatments are utilized in inducing residual stress to enhance materials' failure. Among the recognized processes that enhance fatigue life include inducing the residual stress through the shot peening approach that results in a residual stress that is compressive on metallic components' surface layer making it more difficult for the crack initiation, propagation and growth.. The initial few cycles of relaxation are the result of surface yielding and the subsequent cycles with gradual relaxation.* **Methodology:** *The studied material is aluminium alloy A2024-T351, which is an alloy designed for aerospace applications requiring tolerance for damages. The T351 treatment of the aluminium alloy reveals that the material is heat solution treated at 435 0C, worked cold, aged naturally, and finally relieved from stress using traction. Table 1 presents its composition. The material is received as thick plates of 6.5 mm, 484 MPa tensile strength, with 72 GPa elastic modules, yield strength of 348 MPa, and a 15% elongation. Sinusoidal loading with Constant amplitude at the frequency of 30Hz was utilized in an Instron 810 unit built with hydraulic grips at room temperature. These levels of frequency were specifically selected after taking into account the testing time. The load ratio from minimum to maximum was chosen at 0.1, primarily to sustain the total tensile cyclical stress as well as to block any potential impact. The cyclic loading of 1, 2, 10 cycles were utilized on the 8-10A specimen intensity for stress loads of 170MP and 260 MPa. The X-ray diffraction was utilized to measure the initial and residual stresses following every cycle. The measurements of residual stress were performed on the surface in the direction of longitude only at the central length of the gauge on the width side.* **Findings:** *The specimens fatigue life was enhanced using the experimental treatments of shot peening, which used the XRD to measure.This enhancement, which is the shot peened intensity 8-10 A specimens' S-N curves in comparison with the 2024-T351 aluminium alloy, an untreated material. It is understood that shot peening has enhanced the specimens' fatigue life. The initial residual stress for shot peening intensity was measured using the X-ray diffraction (XRD). Shot peening intensity was utilized to introduce the specimens' compressive residual stress in the subsequent format: 8-10A, -196±13MPa. For -170MPa load, readings on the residual stress following the 1st cycle demonstrated a 37% initial residual stress relaxation.Following ten cyclical loads, the residual stress of the intensity of the shot peening was continuously relaxed at a range of 2-3% increment to the 1st cyclical relaxation. Residual stress relaxation for the -260 MPa load following the 1st cycle arrived at 40% of the initial residual stress for the intensity of shot peening at 8-10 A. Following ten cyclic loads, the intensity of shot peening relaxation continued to relax with a spectrum of 3-5 % increment of the 1st cycle relaxation* **Contribution:** *The residual stress stability of induced using various intensities of shot peening in 2024-T 351 aluminium alloy because of cyclical loading was presented. It was found that the residual stresses decreased by the amount based on the amplitude of the load. A -260 MPa load decreased the residual stress in the specimens*

more than the load of -170 MPa. The maximum relaxation of residual stress was 45% of the initial residual stress following ten cycles under a -260 MPa load.

Keywords: Shot peening; residual stress; relaxation; Surface treatment; Fatigue

Abstract ID: **AIMC-2017-STE-184**

THE TENDENCY PROSPECTIVE STUDENTS CHOOSING HIGHER EDUCATION BY USING FACTOR ANALYSIS TECHNIQUE

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Co-Authors: Eko Wahyudi

Abstract

Introduction: *Along with the growing number of colleges or universities in Sidoarjo and surrounding area, making prospective students have many options to choose a college where they would choose. Prospective students will choose a university which will provide maximum service and satisfaction for them. Therefore, each university or college should be oriented to the satisfaction of the students to be able to compete with other universities. The existence of the Universitas Maarif Hasyim Latif Sidoarjo is still relatively new, but is able to compete with universities that already exist beforehand in Sidoarjo and surrounding area. One indicator is a significant increase the number of students who enroll each year. An increasing number of students is not by chance, but there are determinants that influence prospective students to choose Universitas Maarif Hasyim Latif as a place to continue his studies.* **Methodology:** *Through data collection techniques such as observation, interviews and questionnaires to students. The sampling method using stratified random sampling techniques and methods used to analyze the data with the technical approach factor analysis.* **Findings:** *Based on data processing, the factors that influence prospective students choose the Universitas Maarif Hasyim Latif consists of five factors, namely trust in the YPM (Education and Social Maarif Foundation) with eigenvalue equal to 8.774; the cost factor education for 2,438; factor of 1.798 facilities and services; internal factors as well as the sale of 1.509 accessibility factor of 1.133 is a factor with the smallest eigenvalues.* **Contribution:** *Based on the results of data processing, it is hoped this research can make a positive contribution to the Universitas Maarif Hasyim Latif and other universities to improve services to students that aims to increase the number of applicants in the future*

Keywords: factor analysis ; Eigenvalue ; college

Abstract ID: **AIMC-2017-STE-185**

IBS PROVISION IN LOCAL AND INTERNATIONAL STANDARD FORM OF CONTRACTS

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Abstract

Introduction: *Industrialized Building System (IBS) has been introduced for over 40 years in Malaysia, with well-documented benefits and strong support from the government. Unfortunately, the pace of adaptation of IBS is still slow and below the government's target. Construction players are still facing various issues and challenges when adopting IBS particularly on contractual and procurement aspects, thus it contributes to the low adoption of IBS in Malaysia. As of to date, there is still the lack of provisions in the Malaysia standard form of contract to suit the IBS construction approach. Therefore this research will attempt to investigate and compare a number of standard forms of contract locally and internationally in order to identify and highlight what international standard form of contract have provisions to suit IBS construction approach.* **Methodology:** *Literature review and documents analysis were used in the data collection exercise.* **Findings:** *The study revealed that there are six (6) provisions that the local standard form of contract can enhance to suit the IBS construction approach.* **Contribution:** *The findings will be useful in order to enhance the local standard form of contract to suit IBS construction approach hence able to accelerate the adoption of IBS construction in Malaysia.*

Keywords: IBS, Standard form of contract, Contract, Procurement, Malaysia

Abstract ID: **AIMC-2017-STE-186**

DEVELOPMENT OF WEARABLE NO-INTERRUPTION SIGNAGE TO REDUCE NURSES INTERRUPTION IN HOSPITAL BASED ON HUMAN FACTOR APPROACH

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Abstract

Introduction: *Interruption can be defined as an act of neglecting the important task which require a full attention instead focusing on others activities. This frequent stressor will reduce nurse's productivity and bring a detrimental effect on the safety of the patient. As we know that nurses deals with different types of interruptions every days while working in the hospital. Thus, this study aim to identify and classify the interruption faced by nurses while working in hospital. This study also propose, design and develop a watch based wearable no-interruption signage (WIS) to reduce nurses' interruption in hospital based on human factor approach* **Methodology:** *The study was conducted in Hospital Pontian, Johor Bahru, Malaysia involving 60 nurses. A focus groups session with four nurses, one senior nurses and a human factor expert is conducted. They discussed a set of open ended question to further identify and verified the possible interruption interruptions in the hospital. A set of questionnaire consist of 30 questions was distributed and answered by the respondent. Data for the questionnaires were further analyse using factor analysis in Statistical Package for the Social Sciences (SPSS) statistics. Then a watch based wearable no-interruption signage (WIS) was developed using Arduino Pro Mini. Then, the watch based wearable no-interruption signage (WIS) was evaluated using 14 heuristics Nielsen–Shneiderman heuristic evaluation methods with heuristic violation and severity rank were also calculated* **Findings:** *From the focus group discussion and questionnaires, 6 new factor interruptions identified and classifies from original 4 factors with a Cronbach's alpha of 0.9. Heuristic evaluation of the newly developed wearable no-interruption signage reveal 7 items of heuristic violations that need to be address. From the severity ranking result, there are two major problems which is important to fixed and the design should be given a high priority* **Contribution:** *We are able to identify several important and classified nurse's interruption in the hospital and a wearable no-interruption signage based on human factor approach was successfully designed to reduce the interruption in nurses in the hospital*

Keywords: heuristic evaluation, patient safety

Abstract ID: **AIMC-2017-STE-190**

ANALYSIS OF FACTORS AFFECTING THE DECISION TO PURCHASE PRODUCTS CLOTHES WITH STRUCTURAL EQUATION MODELLING

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Abstract

Introduction: *Community dynamics and intense competition among traders of clothing products in the market, requires every draper in the market must be observant to see the changes that occur, particularly in seeking opportunities and address the threat to the merchant. Competitor will try to launch new attacks, by making creations and innovations to improve profit sales, and therefore developments in society should be overcome by improving service, compliance rates, and ensure the quality of apparel products sold in order to satisfy the desires of the customer.* **Methodology:** *The method used in this study is one part of the analysis method of Structural Equation Modeling (SEM) is Partial Least Square (PLS) with the help of software SmartPLS 3, this study aims to determine customer responses to endogenous variables Purchase Decision (Y) on clothing products and 5 exogenous variables that affect its namely, Advertising (X1), Can Biddable (X2), Quality Goods (X3), Services (X4), and Close to Home (X5). This research was conducted in the New Town market Driyorejo (KBD), and this study also used a survey method is the method of research that takes a sample from a population by using a questionnaire that this questionnaire will further test the validity and reliabelity.* **Findings:** *From the results of research conducted turns exogenous variables Services (X4) gives the most effect on endogenous variables Purchase Decision (Y), this is evidenced by the value of the output table SmartPLS in Table Path Coefficients in which the value of T-statistics for 2.247 is greater than the value T-table was used in the amount of 1.98, with significance = 0.05, but five exogenous variables in this study only provides loading R -square value of 30.4 % against endogenous variable, while the remaining 70.6% is influenced by variables others that are not included in this study.* **Contribution:** *For further, this research might be usefull for other researchs and researcher by using Structural Equation Modelling metode.*

Keywords: Structural Equation Modeling (SEM) ;Partial LeastSquare; Customer satisfaction

Abstract ID: **AIMC-2017-STE-195**

SYNTHESIS AND APPLICATION OF GREEN SURFACTANT FROM OIL PALM EMPTY FRUIT BUNCHES'S LIGNIN FOR ENHANCED OIL RECOVERY (EOR) STUDIES

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Abstract

Introduction: *One of EOR methods is micellar-polymer flooding. Surfactants are used to reduce the interfacial tension between fluid and oil. In the implementation, the price of surfactant are expensive and limited, so it is necessary to develop surfactants which are cheap and easily obtained*. **Methodology:** *Isolation of lignin from oil palm empty fruit bunches and synthesis of sodium lignosulphonate have been done by using batch method. Optimation of isolation and synthesis method was achieved through this study. The study was conducted on the optimation of lignin isolation, surfactant synthesis and EOR application processes. The optimation of lignin isolation included about size of empty fruit bunch's size, reaction temperature, types of solvent, reaction time. Synthesis of surfactant was done by using sulphonation reaction where the optimation of mass ratio of lignin to the NaHSO3 solution, the concentration of NaHSO3 solution, reaction temperature, and reaction time have been conducted.* **Findings:** *In EOR test, there are consist of IFT, phase behavior, thermal stability, compatibility tests. Optimum condition for lignin isolation which include optimum empty fruit bunch's size, reaction temperature, types of solvent and reaction time respectively are 10 mesh, reflux temperature, aquadest, and the reaction was carried out for 3 hours. This reaction gave 14.56% of yield. For sulphonation process, the optimum mass ratio of lignin to the NaHSO3 solution, concentration of NaHSO3 solution, reaction temperature, and reaction time respectively, 0.3 M, 0.1 M 97 °C, and the reaction was carried out for 4 hours. Excellent yields and selective products were obtained (90-92%). Finally for surfactant test conducted up to the feasibility test as an EOR agent. This test was very important for a preliminary test like core flooding and another advanced test. The results demonstrated that 1% surfactant solution has 0,2 IFT value and also great in compatiblity, phase behavior, and thermal stability test.* **Contribution:** *This research is original and new in Enhanced Oil Recover field because its using biomass (lignin) from Oil Palm Empty Bunches as waste from Oil Palm Industry. Contribution of my research in EOR field are give surfactants which are cheap and easily obtained for produce oil in old wheel.*

Keywords: IFT, lignin, sodium ligno sulphonate, EOR

Abstract ID: **AIMC-2017-STE-198**

ARABIC PART-OF-SPEECH TAGGER, AN APPROACH BASED ON NEURAL NETWORK MODELLING

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Abstract

Introduction: *Part-of-speech tagging is a process of assigning the proper grammatical tag automatically to each word of a written text per its appearance on the text. The main task of part-of-speech tagger is to attach the appropriate grammatical or morpho-syntactical category labels to every word token, and even to punctuation marks, symbols and abbreviations. in a corpus. POS-tagging is usually the first step in linguistic analysis and it is a very important intermediate step to build many natural language processing applications. It could be used in spell checking and correcting systems, speech recognition systems, information retrieval systems, text-to-speech synthesis systems.* **Methodology:** *POS-tagger had been developed using neural networks for Arabic language. A corpus of 20,620 words was created and manually tagged to train the neural networks and to test the performance of the developed POS-Tagger.* **Findings:** *The overall accuracy of the developed tagger system reached 89.04% using the testing dataset. While, it is 98.94% using the training dataset. By combining the two datasets, the accuracy rate for the whole system is 96.96%.* **Contribution:** *The limitations of the current Arabic tagging systems and the modesty of the accuracies of the available systems was the motivation to investigate a novel approach to build a part-of-speech tagger based on artificial neural networks for Arabic language. Artificial neural networks had been applied in many applications such as speech recognition and part of speech prediction, but it is considered as a new approach in Part-of-speech tagging.*

Keywords: Part of speech tagging- Artificial Neural Network- Corpus

Abstract ID: **AIMC-2017-STE-202**

EDCDS: ENHANCING DIVERSITY AND COVERAGE FOR MULTIPLE DOCUMENTS SUMMARIZATION

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Abstract

Introduction: *With huge amount of information in the World Wide Web and digital libraries, it is difficult for users to extract useful information from them. A lot of relevant and interesting documents are not read by the user due to the large amount of information. To tackle this pressing text information overload problem, text summarization can be used as a solution. Text summarization is the process of automatically creating a compressed version of a given document preserving its information content. This paper presents an optimization-based model where the objective function is a weighted combination of the content coverage and diversity objectives.* **Methodology:** *In this paper we aim to answer the research question including, 1) what are the descriptions of text summarization; 2) what are the various taxonomies of text summarization; 3) How can the proposed method for text summarization be formulated; 4) how does the proposed method work; 5) how is the performance of the proposed method when compared to human judgment. Our system performs the following main steps:*

1. Sentence Similarity Computation Method (SSCM)
1.1. Semantic Similarity between Words (SSW)
1.2. Semantic similarity between sentences
1.3. Word-order similarity between sentences
2. Optimization method
2.1. Objective for enforcing coverage
2.2. Objective for enforcing diversity
3. Differential Evolution (DE) algorithm
3.1. Population initialization
3.2. Mutation
3.3. Crossover
3.4. Selection

Data set

We describe the data used throughout our experiments. We conduct experiments on the DUC 2002 and corresponding summaries generated for each of documents. The DUC2002 data collection contains 567 documents in 59 sets. DUC2002 contains various English news articles collected from TREC-9 for the document summarization task. Each set is accompanied by reference summaries for single and multiple documents. **Findings:** *In the experiments, the performance of the proposed method is compared with the related methods and with the top three performing systems defined by DUC2002. The experimental results display that our method achieves the highest ROUGE scores and outperforms all the other systems. We found that our method could improve the summarization results significantly.* **Contribution:** *The method aims to optimize three properties a) coverage: summary should contain informative information that indicates the main idea of source text; b) diversity: summaries should not include the sentences that convey the same information; c) length: summary is bounded in length; and d) combination semantic and syntactic information to calculate similarity measure between two sentences.*

Keywords: Adaptive Differential Evolution Algorithm, Information Diversity, k-Means, Optimization Model, Text Summarization

Abstract ID: **AIMC-2017-STE-205**

HOSPITAL BUILDING MAINTENANCE MANAGEMENT MODEL

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Abstract

Introduction: *Hospital buildings are very large, complex, sophisticated and costly, albeit the wellness of the occupants depend on the building performance. Because of this, the maintenance management of hospital buildings is one of the most delicate and expensive to perform. Although, representative data on maintenance of hospital buildings in Malaysia is lacking, a growing concern with the subject is symptomatic. However the*

maintenance of hospital buildings is seldom discussed even in the literature. In Malaysia, while the design and construction of hospital buildings are becoming complex, enormous and vibrant, recent incidences of fire outbreak and decay in the buildings suggest the need to conduct critical research to investigate the maintenance management of the hospital buildings. **Methodology:** *This research is reports part of an ongoing research that aims to develop a maintenance model for hospital buildings. Hence, this current research reports the result of literature and observations on hospital buildings in Malaysia and their maintenance practices. Through reviewing the literature, a conceptual framework of maintenance model for hospital buildings was proposed.* **Findings:** *The results indicate that current maintenance management is corrective or condition-based and the maintenance are expensive. The procurement of maintenance practice mainly in-house and we also observed that sustainability credential of the maintenance organisations are questionable.* **Contribution:** *There is not similar research in Malaysia. With the large sum of money that is currently invested in hospital construction and operation, in Malaysia, any reduction in the amount invested on maintenance will not only translate into cost saving, it will ultimately improve the building performance, patient wellness and productivity of the healthcare sector.*

Keywords: critical success factors, maintenance management, users' satisfactions, building performance.

Abstract ID: **AIMC-2017-STE-206**

PREPARATION OF PEROVSKITE CATIO3 NANOPOWDER USING CAO DERIVED FROM SNAIL SHELL

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Abstract

Introduction: *Calcium titanate belongs to the important group of compounds with a perovskite structure having high dielectric loss for various applications including photocatalysis mechanism. Refer to the principles of green chemistry, in this work preparation of CaTiO3 was conducted by using CaO derived from snail shell. Aim of this research are to study the physicochemical character of perovskite derived from snail shell and its comparison with CaO and CaCO3 as Ca sources.* **Methodology:** *Material preparation was performed by solid reaction of Ca with TiO2 under comparison with CaO and CaCO3 precursors. Mixture of Ca sources with TiO2 in certain proportion were ground and calcined at the temperature of 400oC for 4 hs. Materials were characterized by using x-ray diffractometer (XRD) and the photocatalytic activity was tested by using methylene blue photooxidation.* **Findings:** *Perovskite synthesized using CaO derived from snail shell exhibits the similar XRD pattern with that were prepared by using CaO and CaCO3. From the photooxidation activity test, it is proofen that CaTiO3 shows similar photocatalytic activity correspond to that were prepared by CaO and CaCO3.* **Contribution:** *Utilization of snail shell as agricultural waste for the synthesis of CaTiO3 perovskite is the novelty of this work. Furthermore, the study on material structure and photoactivity is the main focuses for the application in industry and environment.*

Keywords: CaTiO3, Perovskite, Photocatalysis

Abstract ID: **AIMC-2017-STE-209**

ENHANCED COPY-MOVE FORGERY DETECTION MODEL BASED ON DISCRETE WAVELET TRANSFORM AND MULTI RESOLUTION LOCAL BINARY PATTERN

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Abstract

Introduction: *Copy-Move forgery (CMF) is defined as copying a portion of an image and pasting it into another location within the same image. During the last decade, the copy-move forgery detection (CMFD) has received more attention than other approaches such as splicing and retouching due to its reputation of image manipulation. Despite the fact that there are many CMFD improvements in literature, studies have not addressed the concerns of single and multiple attacks. Different methods have been implemented to solve the issue of CMF. However, the major problems with these methods were the lack of robust features extraction with post-processing operations (such as noise and blurring) and high computational time for the CMFD matching process.* **Methodology:** *The aim of the study is to propose an improve CMF detection model in terms of accuracy that can be applied in the presence of several post-processed images. Thus, this study proposed a new*

CMFD model to overcome the above issues. This model consists of three main stages: preprocessing, feature extraction and matching. First, in the stage of preprocessing, the Guided Image Filter (GIF) is combined with Adaptive Median Filter (AMF) to sharpen the image and decrease the noise. Then, a Discreet Wavelet Transform and Multi resolution Local Binary Pattern (DWTMLBP) algorithm is developed to extract robust features. For final stage, features matching algorthim, Adjusted Vantage Point (AVP) tree and lexicography sorting are proposed to decrease the computational time. The performance of the current proposed model is validated using CoMoFoD dataset. **Findings:** *The experimental result has revealed a significant improvement in term of accuracy comparing to state-of-art.* **Contribution:** *proposed a new CMFD model*

Keywords: COPY-MOVE, Image Forgery, Discrete wavelet transform, Multi resolution Local Binary Pattern

Abstract ID: **AIMC-2017-STE-210**

EFFECT OF DIFFERENT NITROGEN SOURCES ON BIOMASS AND LIPID YIELD OF CHLORELLA SOROKINIANA IN INDUSTRIAL WASTEWATER

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Abstract

Introduction: *Nitrogen is very vital for growth and lipid production of microalgae (Cai et al., 2013). For that, appropriate nitrogen sources and optimal concentrations must be pinpointed for higher growth rate, biomass production and lipid yield. Microalgae assimilate nitrogen in form of nitrate and ammonium, preferably ammonium in most strains. The optimal concentration of nitrogen enhances biomass maximization whereas the deficient concentration of nitrogen in microalgae cell induces stress. Therefore, the aim of this study is to assess the potential of cultivating C. sorokiniana in POME in order to determine appropriate nitrogen source for growth, biomass and lipids production of C. sorokiniana in industrial wastewater. Since nitrogen sources play a significant role in microalgae growth and lipid induction, an optimal concentration of nitrogen sources for achieving high biomass production and lipid content was also assessed.* **Methodology:** *C. sorokiniana was cultivated in wastewater containing different sources of nitrogen, the effect of these nitrogen was testing for their potential in producing biomass and lipid content. The cultivation was done for over a period of 15 days* **Findings:** *Nitrogen sources such as ammonium nitrate, sodium nitrate, urea, and glycine were evaluated on their potential to produce high biomass and lipid of C. sorokiniana. Urea concentration of 1.5 g/L produces the highest lipid and biomass concentration of 30% and 3.5 g/L in 12 days culture respectively. Based on the various concentrations of urea tested, urea concentration of 2 g/L was found to promote higher biomass concentration of 3.16 g/L with lipid production up to 30%* **Contribution:** *This study showed that urea, which is the cheapest form of nitrogen was found to be effective for the cultivation of C. sorokiniana in industrial wastewater.*

Keywords: Chlorella sorokiniana, biomass, lipid, wastewater

Abstract ID: **AIMC-2017-STE-213**

SEABED IDENTIFICATION USING SIDE SCAN SONAR INSTRUMENT WITH PATTERN DISCRETE-EQUI-SPACED UNSHADED LINE ARRAY METHOD

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Abstract

Introduction: *The Punggur Sea is located in Batam, Riau Islands. Side scan sonar (SSS) is a sonar system development instrument which has the capability to show the images of the two-dimensional surface of the seabed by contour conditions, topography, and the target simultaneously. The Beam Pattern Discrete – equi-spaced unshaded Line Array Method was used to compute the two-dimensional beam pattern which depends on the angle of the incoming sound waves from the axis of the array were accepted have been depending on the angle at which the sound beam array.* **Methodology:** *This research was conducted in December 2016 in the Punggur Sea, Batam, Riau Islands-Indonesia, and its coordinate system is 104° 08,7102 E and 1° 03,2448 N until 1° 03.3977 N and 104° 08,8133 E, using Side Scan Sonar Tow C-Max CM2 fish instruments with a frequency of 325 kHz.* **Findings:** *The recorded results show that there are 7 targets, and Beam pattern of Discrete-Beam Equi-Spaced unshaded Line Array method in target 4 has the highest value in the directivity pattern is 21.08 dB. The results of the beam pattern model show that neither the central value at the incidence*

angle (o) of the directivity pattern (dB) were not at the 0 (zero) or the beam pattern central have been generated by the target 6 with incident angle -1.5 o and 1.5o. In addition, it has declined by 40 dB. The bottom sediment in the Punggur Sea was founded the highly concentrate of the sand. **Contribution:** *For Data Information About Seabed Identification, Checking Method Of Modelling Data, Identification Underwater object.*

Keywords: Side Scan Sonar, Beam Pattern Discrete-Equi-Spaced Unshaded Line Array, Incidence angle, Directivity pattern.

Abstract ID: **AIMC-2017-STE-217**

EFFICIENT AND EFFECTIVE LAND RESERVATION IMPLEMENTATION FOR GOOD-GOVERNANCE IN LAS: A CASE FOR BRUNEI DARUSSALAM

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Abstract

Introduction: *Good-governance in land administration is a subjective and difficult to ascertain issue as different nation has dissimilar approach on the subject matter. Nevertheless, the importance of having good-governance in land administration system is crucial as it ensures smooth delivery of services favorable to all stakeholders. In order to achieve this, efficiency and effective system are vital in indicating good-governance practices. This paper is aimed at measuring effective and efficient delivery of land reservation procedures as part of a huge step towards good-governance and sustainable development in Brunei Darussalam* **Methodology:** *This paper will alleviate the exploration of good-governance by measuring the extent of effectiveness and efficiency of LAS practices in order to achieve smooth delivery of land services towards good-governance and sustainable development. Since LAS is a vast subject, this study will only explore a particular land process delivery system, which is land reservation. The method used in conducting this study involves both qualitative and quantitative data collection method made through professional interviews and survey questionnaires. Questions are created specifically based on the 5 main indicators of good-governance practices. To validate the findings, a modified USAID-OCA tool framework is adopted by utilizing the 7 main criteria of organizational behavior assessment.* **Findings:** *The major finding of the study reveals that the processes and procedures implementation of land reservation is mostly ineffective and inefficient. The confidence levels of each governance indicators from the USAID-OCAT observes the Land Management and Alienation section's performance are mostly below average and indicated basic capacity. These are mostly resulted from the problem of lacking in statutory and legal provisions, unclear strategy and process implementation, irresponsible and unaccountable office holders as well as insecure succession of knowledge and experiences.* **Contribution:** *This study is a precedent and has never been explored before. It is hoped that through exploration of the research, much could be learn with regards to challenges in the implementation of land reservation, and largely land administration systems in Brunei Darussalam. It is also through the finding of this study that a comprehensive solution could be recommended in order to tackle the issues and problems associated.*

Keywords: Land Alienation, Land Reservation, Effective and Efficient, Good-Governance, Brunei Darussalam

Abstract ID: **AIMC-2017-STE-221**

EVALUATION AND ANALYSIS OF MOISTURE AND AGEING EFFECTS ON CALCIUM CARBONITE NANOPARTICLES MODIFIED ASPHALT MIXTURES

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Abstract

Introduction: *Nanotechnology is being increasingly used to modify asphalt, and nanomaterials are now used to improve the performance of asphalt. Modification of asphalt mixtures with nano-materials is an important approach in enhancing the properties of asphalt mixture. Numerous researches have been done and considerable amount of findings have been made regarding nano-materials modified asphalt mixture. study was conducted to evaluate the performance of asphalt mixture modified with nano calcium carbonate which were then subjected to ageing and moisture. The nanoparticles were added to the asphalt binder in varying concentrations, namely 2, 4 and 6% by weight of asphalt binder. The mechanical properties of the asphalt mixtures was investigated using the resilient modulus, dynamic creep and moisture susceptibility tests.* **Methodology:** *The base asphalt binder used in this study is bitumen with 80/100 penetration grade, and nano*

calcium carbonate (CaCO3) in powder form was used as a modifier; the nano calcium carbonate was added in three different percentages, namely 2, 4 and 6% by the weight of asphalt binder. The aggregate was obtained from a quarry in Kajang city, in the eastern part of Selangor, Malaysia. Dense grade aggregate was used with a maximum 19-mm aggregate size. The aggregate gradation was chosen based on the ASTM D 3515-96 (D-4).
Findings: *•Adding a higher percentage of CaCO3 nanoparticles to base asphalt mixture improved the performance of asphalt mixtures. The improvement is 48.18% in indirect tensile strength test (ITS), while the improvement of resilient modulus was 21.34 and 138% at high and low temperatures respectively.*
•The results for moisture susceptibility test showed that adding modifier led to increased bonding strength between the asphalt binder and the aggregates, which in turn improved moisture susceptibility by 17% compared to that of the base asphalt mixture.
•Improved stiffness at high temperatures indicates that the rutting resistance of the modified asphalt mixtures has increased. The decrease in aging index indicates that CaCO3 nanoparticles are able to delay aging although it is not a strong anti-aging material.
•Modifying asphalt mixture with varying percentages of nanoparticles showed that the addition of 6% CaCO3 resulted in the best performance among all modified asphalt mixtures.
Contribution: *New types of nanoparticles were used to modify local asphalt mixture in Malaysia. Also, the CaCO3 is not costly compared to other types of nanomaterials and it has the ability to improve the performance of asphalt mixture, which led to the increase the durability of modified asphalt mixture.*
Keywords: Asphalt Mixture, Calcium carbonate nanoparticles, Resilient modulus and Moisture susceptibility

Abstract ID: **AIMC-2017-STE-222**

THE EFFECT OF ELECTRON BEAM RADIATION ON MECHANICAL STABILITY OF POLYBUTYLENE SUCCINATE (PBS) POLYMER

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Abstract

Introduction: *The crosslinking structure in the polymer can be effectively formed by electron beam (EB) irradiation. Ionizing radiation produces an excitation of polymer molecules in the vicinity of the impinging radiation. The energies associated with the excitation are dependent on the irradiation dosage and voltage (velocity) of electrons. The effect of irradiation on the mechanical stability of polybutylene succinate (PBS) blends with three types of cross-linking agent has been studied using tensile, flexural, impact, gel content, melt flow index (MFI), and heat deflection temperature (HDT) test. PBS was irradiated using a 3.0MeV electron beam machine with doses ranging from 20 to 120kGy/ 10kGy per pass. The results show that 20kGy depict the most stable mechanical properties. Higher radiation figures higher crosslink density but depicts a reduction in most of the mechanical properties. Blends with a crosslinker such as Triallyl Isocyanurate (TAIC), Hexanediol Diacrylate (HDDA) and Tripropyleneglycol Diacrylate (TPGDA) influences the irradiated PBS properties. It shows more stable strength and significant gel content value. PBS/HDDA blends with 20kGy dose show the highest in mechanical stability of this type of biodegradable resin. The result values have been used to correlate the change in the structure of PBS upon crosslinking process.* **Methodology:** *Pelletized polybutylene succinate (Bionolle), grade 1010 was received from Showa High Polymer Co. Ltd., Japan. Chloroform (R&M Marketing Essex, UK) analytical grade was used. Hexanediol Diacry -late (HDDA) from Bayer, Germany, Triallyl Isocyanurate (TAIC) (Sigma-Aldrich GmbH, Germany) and Tripropyleneglycol Diacrylate (TPGDA) from (R&M Marketing Essex, UK) were used as received.*
The blends were prepared using Brabender Plastograph machine rotating at a speed of 50 rpm at temperature 115°c. For addition with cross-linking agents, only one dose was used which is 20kGy. These cross-linkers were mix by wetting process first before process into the Brabender Mixer. The amount was varied with 0.5,1 and 2% (w/w) using the same parameter. The process was conducted for 10 minutes and torque versus time curve for every blend was recorded.The blend samples were then compressed for 5minutes into sheets at 130°c. Samples for Flexural and impact test were using stainless steel mold (15 cm × 15 cm × 0.3 cm). For tensile test, a stainless steel mold (15 cm × 15 cm × 0.1cm) were used. All molded samples were cut into seven standard test pieces using a Wallace die cutter. Irradiation of the samples was carried out at the Alton Department, Malaysia Nuclear Agency and the doses of 10, 20, 40, 60, 80, 100, 120 and140kGy were applied to the samples. Anaerobic soil burial test was performed in a plastic container with a volume 60cm long, 30cm wide and 10cm high.The standard size dumbbell shape samples were buried in a soil mixture consisting of 1/3 fermented leaves, 1/3 pond soil, and 1/3 forest soil and were placed in direct contact with the soil at a depth of 25mm. The test was

performed in the laboratory, and the soil temperature was controlled 25±5°c. The PH value was maintained at PH 6-7 using Whatman PH paper. Mechanical properties of the irradiated sheet were tested on their tensile, flexural, HDT and impact strength. Tensile properties were measured using Toyoseiki with 1kN and crosshead speed of 10mm/min according to ASTMD 1822. Flexural properties were measured using Instron Universal Testing Machine 4301. The specimens were 12.7 mm wide, and the 1kN load was used. Three-point bending tests were performed with a span length of 43 mm at a crosshead speed of 1.3 mm/min referring to ASTMD 790. Izod impact strength notched with 2.54mm were done according to ASTMD 256. The specimen is held with a vertical cantilever beam and is broken by a single swing using 1J energy by the pendulum at a fix distance. Heat Deflection Temperature was carried out using Rayran HDT Vicat Softening Point according to ASTMD 648. Lastly, Melt Flow Index (MFI) using temperature 190°C with load 2.16kg was done referring to ASTMD 1238.
Findings: *The optimum dose for irradiation of polybutylene succinate was determined by e-beam radiation at a dose range of 10–140 kGy. Upon irradiation, a reactive group which is ester will undergo predominantly a crosslinking process and, as a result, a three-dimensional network of polymer chains is formed. PBS reached an optimum level at an irradiation dose of 20 kGy. The optimum irradiation dose at 20 kGy is confirmed by elongation at break, tensile strength, and impact strength. The tensile strength of EB-irradiated PBS at low irradiation dose slightly increased due to the formation of additional cross-linking in PBS from the production of mainly polymer radicals and hydrogen radicals.*

The dose with the most stable mechanical properties was chosen and added with a crosslinking agent. Figure 1 below shows the relationship between the gel content and irradiation dose where increased irradiation dose increase the crosslinking density marginally. The mechanical properties results for the dose range of 0–140 kGy are shown in Table 1. After Irradiation, elongation, tensile strength and Impact strength were improved until 20kGy followed by dramatically decrease at a higher dose. Increasing radiation dose also influenced the mechanical energy absorbed before fracture. For dose 20kGy and above, the PBS has developed more crosslink in their microstructure but significantly alter the viscoelastic properties. The irradiated PBS exhibit brittle behaviors which reduce toughness to resist shock impact. Elongation shows a dramatic drop and tensile strength reduce marginally. It illustrates that higher irradiation dose changes the structure of the sample by exhibit lower strain and brittleness. During crosslinking reaction, the average molecular weight of the chain increase thus causing a drop in melt flow. The dramatic increment for melt flow index at 40kGy figures that the reductions of PBS molecular weight. Intensive chain scission induced by irradiation at above 20 kGy reduces the length of macromolecules thus causing a drop in molecular weight. Degraded materials would flow more as a result of reduced in physical properties. **Contribution:** *Nowadays, world have a big issue in disposing plastic because it is not biodegradable. The biodegradable plastic such as PBS face the issue on low mechanical strength and stability. This research is expected to increase the properties of biodegradable PBS polymer by electron beam radiation technique. Radiation influences the properties of polymer materials. These results explained that low doses of radiation could promote crosslinking over degradation reactions. Suitable crosslinking of polymer materials was needed to improve properties of materials thus suit the industrial application. The Optimum radiation dose which PBS can absorb is 20kGy and intensive chain scission induced by irradiation at above 20 kGy reduces the length of PBS macromolecules and thus cause a decrease in molecular weight, strength, and elongation at break. Irradiation up to 140kGy will just produce degradation and made the material brittle, hence higher dose for crosslink is not preferable. Overall, the used of beam radiation with the crosslinker agent have improved the properties of PBS. The properties of PBS can be altered suitable with the applications, and it will degrade when no oxygen occur hence reducing environmental problems caused by plastic wasted.*
Keywords: Electron beam radiation; Polybutylene Succinate (PBS); Biodegradable Plastics;Mechanical Stability; Triallyl Isocyanurate (TAIC);Hexanediol Diacrylate (HDDA) and Tripropyleneglycol Diacrylate (TPGDA)

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OBSERVING THE TENDENCY OF RISKY DRIVING BEHAVIOR USING DRIVING SIMULATOR

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Abstract

Introduction: *The essential aspect of transportation has a significant effect in Indonesia. The transportation sector has never fallen whilst increasing simultaneously with the economic activities growth. The increasing number of vehicles will impact traffic activity and intend to traffic congestion. There have been approximately*

more than 12 million deaths because of road traffic injuries that place the third most common cause of death after coronary heart disease and tuberculosis in 2011, and part of them caused by human error. Psychological studies regarding to driving and traffic research have increased significantly especially using self- report approaches. However, self-report approaches are often misused, which can be misleading and biased especially if the questionnaire is not good. Alternatively, direct observation regarding to measure driving behavior including risky behavior can more reliable compare to self-report approaches. Nevertheless, the constrain related to lack of control regarding to the observed environment situation in studying driving behavior using direct observation approach will take a longer time and have a chance to take bigger risk. However, simulation system can be used to simulate the observed environment situation with full control. The major advantage of driving simulator is controlling the situation based on what is the aim of study. Higher degree of efficiency can be achieved by controlling the situation through implements the scenario. The utilization of driving simulator can lower the risk and increase the time efficiency compared to the study in real driving situation. We implemented OpenDS to provide the driving simulation system. OpenDS is an open-source driving simulation that can be configured for certain driving task to meet the required simulation scenario. An agent is placed in the simulation to run specific scenario that will trigger risky driving behavior of the subject. **Methodology:** *We design the scenarios based on the studies by Tasca and Hermita which provides seven type of tests: patience test, yellow traffic light test, speeding test, malfunction traffic light test, traffic light obedience test, tailgating test, and traffic sign obedience test. 1) In patience test, subject will be directed into driving situation of driving behind a group of vehicles that move at a very low velocity (20 – 30 mph). In the other direction there are also other cars that makes it impossible to pass through it for a hundred of meters. The purpose of patience test is to observe the behavior of subject while confronting the situation that demanding a lot of patience. However, the situation does not limit the movement of the subject. The subject can also do all the possibility in the simulation. The result will be whether the subject moves slowly behind a group of slow moving vehicles or pass through it forcibly. 2) The traffic lights are set to be changed their light color state in a given interval time. And another traffic light, which is placed in the last intersection, is set based on subject position. When the intersection is rendered into the subject visibility, the subject will see the green light state. Then when subject approach for about five meters to the intersection, the traffic light will immediately change its state into yellow. The objective of this scenario is to analyze the subject's decision while facing such a situation, whether subject going to stop or give the car more speed to pass the intersection. 3) The aim of speeding test is observing the speed driving habit of a subject. The track model in our simulation is a rectangle-looping highway thus stimulating subject driving at high speed even thought some maximum speed limit traffic signs (80 mph) installed in several places. The place where such speed limit traffic signs installed is area that can be seen by subject since beginning of simulation. 4) Instead of flashing red, green or yellow, traffic light can be totally off without flashing any light. Massachusetts's registry of motor vehicle states that a stop sign in all direction is applied to the intersection while such an event happens. The user can drive pass through the intersection after confirming there are no other vehicles or pedestrian crossing the intersection. Our simulation applied a scenario for the condition of traffic light malfunction in a intersection. 5) The Traffic Light Obedience Test intended to observe subject behavior in normal traffic light that is stop at red and run at green. 6) Tailgating means driving closely behind a vehicle, which is considered as a dangerous behavior. A space between vehicles is intended to anticipate if there is a situation that insist driver to make a sudden break avoiding the accident. 7) In the simulation, we use six rectangular tracks area attached together to create one three-times-six rectangular track. Every attached corner of rectangular creates one intersection resulting eight intersections. The scenario only applied in the outer ring of the rectangular sequentially. Thus, a boundaries have to be made to prevent user getting in the inner track and drive against the assigned direction as well. On the other hand, the simulation cannot directly limit the user movement. We place a sign to prevent user driving out of track indirectly, by installing several traffic sign in several places.* **Findings:** *The simulator generates two sets of data, i.e. performance data and results of test. Performance data is recorded every 20ms and contains: position, rotation, speed, steering wheel position, pedal position, and engine status. The result of test data is the sets of test results that had been examined to the subject. Tests data contains the value of eight sets of true or false data according to the driver performance while doing the tests. The testing is applied in two part of the simulator: Black box testing and operational reliability test. Black box testing intended to check whether every function generate output as the expected, and the operational acceptance testing is aimed to assure the simulation has represented the real world problem, in this case detecting the tendency of risky driving behavior. Black box testing is applied for two conditions, i.e. when the subject fail and pass the test, which are indicated by result of recorded data of subject actions sequences as respond of treatment in scenarios. Operational acceptance testing is applied to 40 respondents from previous study. Before perform simulation, respondents accomplished self-report approach through answering questionnaire that indicates to risky driving behavior. The questions of self-report approach indicate whether*

the respondent has low or high tendency of risky driving behavior. Result of such test approach then compared to the output of simulation performance for each subject and the result shows that 60% of 40 respondents have the same result between self-report approach and simulation. To increase the percentage of acceptance, it should consider other treatments that influence the risky driving behavior such as make a call while driving.
Contribution: *Objective measurement tools in psychological domains of risky driving behavior*
Keywords: Simulation, scenario design, risky driving behavior, opends

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THE DISTRIBUTION OF MANGROVE IN RIAU ISLANDS BY USING REMOTE SENSING TECHNOLOGY

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Abstract

Introduction: *The one of these natural resources in Riau Islands is a mangrove. The intrusion of sea water could be restrained by the mangrove. in addition, the other functions of mangrove were to prevent the coastal erosion, as a habitat for the several ecosystems and species. Nowadays, the condition of mangrove ecosystem in Riau Islands is having the damage was caused by deforestation, hoarding mangrove forests and coastal reclamation. Therefore, the distribution of mangrove need to know to give the prevention and control efforts. The one of the way is to make a map of the mangrove by using remote sensing technology.* **Methodology:** *Remote sensing was the science to acquire or collect, process and interpret the images that have been recorded. Its were derived by the interaction between electromagnetic waves and an object or phenomenon. The mangrove mapping was done with remote sensing technology used the high-resolution image data. There are four main stages, namely geometric correction using the reference data map RBI Indonesia, masking the location of the study, visual interpretation to obtain land cover maps of mangrove forest and field validation method omission commission. The truth percentage of the used visual interpretation results greater than or equal to 85%.* **Findings:** *The extensive of mangrove forests in Riau Islands was 54759.17 hectares totally. The extensive mangrove forests in each district from the largest to the smallest in the Riau Islands were Batam as wide as 25392.44 ha (46.4%), Karimun regency as wide as 13659.58 ha (24.9%), Bintan regency as wide as 9701.49 ha (17.7%), Natuna regency as wide as 2471.38 ha (4.5%), Tanjung Pinang as wide as 1847.66 ha (3.4%), and Anambas as wide as 1686.61 ha (3.1%). The largest mangrove forest in Batam city was in the Galang and Bulang island as wide as 16159.18 hectares.* **Contribution:** *Producing the map of the mangrove distribution in Riau islands was the goal of this research. These further function can assist the government to arrange the settlement and mangrove habitats. In addition, the mangrove forest has the important role of the people in the coastal area, especially in fish breeding.*

Keywords: mangrove, remote sensing technology, Riau Islands

Abstract ID: **AIMC-2017-STE-234**

THE CROSSING EFFECTS OF VARIOUS DRAGON FRUIT CULTIVARS (HYLOCEREUS SP.) ON YIELD

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Abstract

Introduction: *One type of dragon fruit plants frequently cultivated commercially is the red dragon fruit type. It is much favored by consumers because of the attractiveness and the beneficial health effects (containing the betalain pigment). Unfortunately there is not optimal production, because the flower of the plant is self incompatible (cannot pollinate within the one flower). One way of improved production (fruiting) of dragon fruit is through a crossbreeding. This research aim is to study the effect of various crosses and to study the crossing ability of the red dragon fruit on the fruiting. This research was also completed with literature study on the betalain.* **Methodology:** *This research was conducted in field (dragon fruit plantation). Experimental design used was Randamized Block Design with four treatments and 6 replications. The treatments were A: Natural Pollination (control); B: Crossing in one flower; C: Crossing between flowers; and D: Crossing between varieties. Analysis of variance of the parameters fruit diameter were: fruit length, weight of fresh fruit and sugar content of fruits and Duncan test at 5% significance level. Preparation of flower pollination was done by*

selecting the most probable flower to bloom at night to come. The blooming flower can be predicted in the afternoon and the crossing was done at around midnight. then the crossing was conducted manually. The Parameters measure were :fruit diameter, fruit length, fresh weight of fruit and sugar content levels. **Findings:** *The result showed that crosses between varieties can improve the fruiting production of dragon fruit including the improved in fruit diameter, fruit length, fresh weight of fruit and sugar levels. Betalain is of great beneficial for human health.*

Contribution: *The pollination of this plant flower were usually done by farmers, but they do not make such the methodology . This study of pollination flower of dragon fruit will make as one of pioneer, that it will give as additional references.*

Keywords: Betalain, cross, dragon fruit, sugar level.

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EQUIPMENT MONITORING SYSTEM USING RIVER WATER QUALITY PH PHMETER AND PHOTODIODE

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Abstract

Introduction: *Water is a necessity that most needed by all living things. The need for clean water is increasing in proportion to the high level of water pollution. Water quality can be determined from the value of the temperature, salinity, turbidity (salinity), dissolved oxygen, pH (acidity), nutrients, PO4, and NO3. The value can be measured fairly easily as turbidity, pH and temperature. Each type has a water quality measuring instrument respectively. In this study will be made of a monitoring system of river water using a pH meter and a photodiode which the results were displayed on the LCD screen 16 x 2 display all kinds of water quality in parallel.* **Methodology:** *This tool is designed to utilize ATMega8535 microcontroller as the main controller, wherein the pH sensor are made based on changes in the value of the second ADC and photodiode sensors are designed based on the value of the output voltage changes. Tools which were utilized were from the manufacture of circuits and the program is coupled from the microcontroller circuit, photodiode circuit, the circuit ph probe, a series of push button or keypad, LCD circuit, power supply circuit, Photodiode program, program and program ph probe interface. Tools and programs directly tested in the field that consists of five different rivers in the areas. Testing that were performed: circuit testing, testing Connectivity, Efficiency and Effectiveness Testing.* **Findings:** *The test results showed good accuracy the instrument has to be an indicator of water quality. By comparison between the success rate measurements with tools made with the manual measurement and comparison of litmus paper indicators five glasses quite visible to the difference between the results of both are 0.2 to 0.7 for each measurement.* **Contribution:** *This experiment as the cheap way to measured the parameters that very valuable for the practician in the field of electricity equipment utilized by people. So it will save cost for the usaged of electronic. To know the security and the healty of water for household.*

Keywords: ATMega8535, measuring, pH meter, photodiode, water quality

Abstract ID: **AIMC-2017-STE-238**

CONSTRUCTION TECHNOLOGY CHOICE FOR THE TRADE CONTRACTORS IN MALAYSIA

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Abstract

Introduction: *To further enhance the efficiency, capacity and capability of the Malaysian construction industry, the government has been aggressively championing the use of Industrialised Building System (IBS). However, several studies have pointed out that the trade contractors are very concern with the increasing use of IBS in the country because it will reduce their business opportunities. Therefore, the research is dedicated to address issues faced by the trade contractors with the adoption of IBS. The aim of this paper is to develop strategies in the construction method selection for the trade contractors.* **Methodology:** *A fundamental of the methodology is to adopt multiple case studies approach. A number of 8 projects were selected. These projects adopted both conventional and IBS construction method. The collected data is then modeled by using the combination of fuzzy theory set and simple multi-attribute rating technique.* **Findings:** *It is significant for the trade contractors to obtain skills for IBS approach besides their existing crafts. Furthermore, the trade contractors are suggested to*

register themselves as IBS components installer as this does not involve high investment capital or they can join the other companies to increase their technical and financial capacity. **Contribution:** *These findings will inform on numerous policy initiatives to manage the business sustainability of the domestic trade contractors, to improve construction methods, then to modernise and upgrade the construction industry within the country.*

Keywords: Construction technology choice, IBS, trade contractors

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INDENTATION BEHAVIOUR OF THE JUTE/KENAF SANDWICH STRUCTURE

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Abstract

Introduction: *Nowadays, sandwich structures are widely used in automobile, marine and aerospace industries due to preferable properties including lightweight and high bending stiffness to weight ratio. However, these structures have poor capability to carry the localized load that typically induces from the impact event. The aim of this study is to determine mechanical properties of kenaf/jute sandwich structures following quasi static indentation test.* **Methodology:** *The core panel was consisted of both kenaf core and bast. In addition, these core materials were bonded with urea formaldehyde. Here, this composite core with densities of 0.30, 0.35 and 0.4 g/cm3 were then sticked with woven jute plies. Following that, indentation tests were obtained using 5, 10 and 12.7mm of diameter indenter at crosshead displacement rate 1 mm/min.* **Findings:** *The experiments indicated that the contact stiffness increase with increasing of the core density. From the load-displacement graph, at the higher load the indentation become linear as the damage became significant. The linear behavior on the graph is thought to be due to pressure distribution under indenter when the contact area became larger. Besides, the capability of sandwich structure to carry local load increase as the density of the core increase.* **Contribution:** *reseach on kenaf and jute had been done recently, but indentation behaviour of kenaf/jute sandwich structure has no been done yet. This research will contribute the lightweight but high stiffness sandwich structure by using composite natural fiber*

Keywords: localized indentation test, kenaf, jute, sandwich structures

Abstract ID: **AIMC-2017-STE-248**

AN IMPORTANCE-PERFORMANCE ANALYSIS OF SAFETY MANAGEMENT PRACTICES IN MALAYSIAN CONSTRUCTION PROJECTS

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Abstract

Introduction: *The construction industry has been recognized as one of the major economic forces that has contributed vastly in developing Malaysia on becoming a developed nation by the year 2020. Unfortunately, its reputation and image has been tarnished by high rates of accidents and fatalities. Many approach has been suggested and implemented but the accidents still occurs resulting fatalities, disabilities or even damage to the property and project. Therefore, it is crucial for the safety management system to shift from lagging indicators towards leading indicators which aims at developing the culture of safety among construction workers. Before any intervention strategies been implemented, it is important to understand the current status of safety management practices implemented in Malaysian construction projects. This research aims at understanding the current status of safety management practices using the importance-performance analysis.* **Methodology:** *This research starts with the identification of the safety management practice in the construction industry. Through extensive literature review the list of safety management practice were identified. Next, the instrument for data collection were developed using dual scale questionnaires to identify the level of implementation and level of importance of each safety management practices, therefore the gap analysis and importance-performance analysis can be conducted. After analysis stage, the results will be plotted to the IPA graph to seek their level of implementation. This study involve 297 respondents from Malaysian construction projects.* **Findings:** *Finding shows that in Quadrant I: Concentrate Here, the respondents perceive the attributes as very important, but the perceptions of performance level are below the average. Thus, further improvement need to be implemented. There are five practices that fall in this quadrant such as supervisor should regularly check the safety*

equipment, supervisor's knowledge on safety, colleagues concern on safety, site safety meeting and emergency room equipped with medicines. Seventeen practices falls into Quadrant II: Keep Up the Good Work such as management concern on safety, provision of safety equipment, family support, etc. Another quadrant is Quadrant III: Low Priority which covers management interest in safety proposal, incentives on safety, application of security management, worker's feedback on safety, etc. The last Quadrant IV: Possible Overkill include the use of IT in safety, role of print media, etc. From the analysis it can be concluded among safety management practices under studied, there are variety of quadrant involve when it comes into current implementation. The construction management team need to concentrate their resources towards the most important quadrant in order to maximize their effort in safety. **Contribution:** *This study provide an original contribution to knowledge through the implementation of IPA towards analyzing the performance of safety management practices in Malaysian construction industry. It is clear that the management team unable to improve all related safety practices in one time but by focusing into right practices will enhance the safety performance.*

Keywords: safety management practices, importance-performance analysis, quadrant, safety performance, safety

Abstract ID: **AIMC-2017-STE-255**

OPTIMIZATION OF PROCESS CONDITION FOR EXTRACTION OF GELATIN ASSISTED BY HPP FROM RED TILAPIA SKIN (OREOCHROMIS NILOTICUS)

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Abstract

Introduction: *Extraction of gelatin using traditional acid-base pretreatment method has several limitations such as time consuming and causes serious water pollution. Chemical treatment often being used as an alternative process to overcome the weaknesses of the conventional method. However, excessive chemical elements would damage the structure of the gelatin due to its high sensitivity to the acid content. The purpose of this study is to introduce new physical method for gelatin extraction. High Pressure Processing (HPP) is a novel and environmental friendly method that has been suggested to assist gelatin extraction. Pressurization during pre-treatment could reduce the extraction time and amount of acid used. It also has a potential in enhancing the properties of the gelatin extract and increasing the gelatin yield.* **Methodology:** *In this research, One-Factor-at-Time (OFAT) and optimization study were done to determine the optimum parameters for extraction of gelatin assisted by HPP from red tilapia skin (oreochromis niloticus). Four parameters; applied pressure, pressure holding time, ratio of acid to skin and extraction time have been selected for the OFAT design and concentration of the gelatin extract and percentage of yield gelatin were evaluated.* **Findings:** *From OFAT test, optimum technical parameters for response surface optimization design were 250 MPa pressure, 7.5 ml of acid to 1 g of skin and 12 hours extraction time. Pressure holding time was fixed at 10 min. FCCCD has been used for optimization study. Results from the contour plot show that optimum conditions for gelatin extraction from red tilapia skin were between 225 - 250 MPa, 7.5 - 10 ml of acid for 1 g of skin and 12 hours of extraction time while the maximum concentration and yield were 19.51 mg/ml and 30.85% (308.5 mg/g), respectively.* **Contribution:** *HPP has been used widely in food preservation industry. However there are very limited number of publish papers regarding application of HPP in gelatin extraction, thus create opportunity for new research. Besides, HPP could improve the production of gelatin by reducing extraction operation time and chemical waste while increasing the yield and properties of the gelatin extract. This finding is significant, especially for gelatin extracted from marine source. This is because fish gelatin covers only one percent from total production of gelatin worldwide and it has weaker properties compared to mammalian gelatin. Thus this research can contribute to the improvement of gelatin extraction activity.*

Keywords: Single-factor-at-time, FCCCD, Biuret test, High Pressure Extraction

Abstract ID: **AIMC-2017-STE-256**

NEEDS ELICITATION IN SOFTWARE ENGINEERING

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Abstract

Introduction: *Software Engineering (SE) is a discipline, concept, method that focus on all aspects related to software production. SE must adapt organized system and approach in building software. The objective of this article is to discuss needs elicitation in SE, so that the design can be done through utilizing appropriate tools and techniques based on the problem to be solved, restrictions and need that must be met, as well as resource availability.* **Methodology:** *The method used in this article is literature review as a major source of problem analysis. In the next phase, the main topic of the article is clarified, validated, and verified by the model of the Focus Group Discussion (FGD). The respondents of FGD are lecturers of Informatics Department at UIN Sunan Gunung Jati Bandung.* **Findings:** *Need elicitation is in-dept and comprehensive process of finding information from all stakeholders in relation to the built software. The result of need elicitation is the explanation of natural language from every stakeholder related to the will and interest of the built software. The mechanism of finding information can be done through observation, questionnaire, interview, and documentary study, which are then tested with data validation and verification in FGD. The product of need elicitation is the User Requirement Document (URD) that can be used as an early artifact in software development process. Furthermore, URD is used as a reference in tracking the suitability between the function of software and the needs of stakeholder.* **Contribution:** *This article formulated analysis approach of SE need, so that it is easily modified, adaptive to growing software complexity, and connected with the analysis of hardware.*

Keywords: elicitation, need analysis, software engineering

Abstract ID: **AIMC-2017-STE-257**

TRACING THE LINKAGE OF SEVERAL UNIFIED MODELLING LANGUAGE DIAGRAMS IN SOFTWARE MODELLING BASED ON BEST PRACTICE

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Abstract

Introduction: *Designing software aims to ensure that the systems will be developed truly reflects the needs of users. To ensure the software and the needs of users requires designing software with a good methodology, which can capture a wide range of user needs properly and accurately. One method of designing software is applied through the implementation of Unified Modeling Language (UML) concept. The objective of this article is to reveal the general system and concept of object-oriented software design with UML.* **Methodology:** *The methodology used in writing articles using literature reviews as the primary source of analysis object oriented software design with UML The method used in this article is literature review as a major source of object-oriented software design analysis with UML. In the next phase, the main topic of the article is clarified, validated, and verified by the model of the Focus Group Discussion. The respondents of this study are informatics lecturers at UIN Sunan Gunung Jati Bandung.* **Findings:** *UML is a used modeling for Object Oriented Analysis and Design (OOA&D) that develops coincided with object-oriented programming. UML is divided into view and diagram. View is a description of several diagrams used for software modeling, while chart is a graph or symbol that models view. In general, the phases of Software Engineering that utilize UML are: use case view, logical view, component view, concurrency view and deployment view. Based on the view then diagrams are made: use case diagrams, class diagrams, state diagrams, sequence diagram, collaboration diagrams, activity diagram, component diagram, deployment diagram.* **Contribution:** *This article describes the approach of object oriented software designing with UML. Through a good UML method, the produced software is expected to meet the standards of good software quality, which is able to solve problems quickly and accurately.*

Keywords: object oriented, software engineering, unified modelling language

Abstract ID: **AIMC-2017-STE-263**

POLYMER ELECTROLYTES BASED ON CARBOXYMETHYL CELLULOSE/KAPPA CARRAGEENAN BLEND VIA ELECTROCHEMICAL APPROACH

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Abstract

Introduction: *Ionic conductors are regarded as key components in electrochemical devices since the ionic conduction has a strong influence on the devices performance. Liquid electrolytes as ionic conductors are preferable because of their high ionic conductivity. However, the use of liquid electrolyte in electrochemical devices suffers a lot of problems. Hence, researchers have turned their attention by using polymer as a host in electrolytes system or commonly name as polymer electrolytes (PEs) have gains tremendous interest due to their superior. To date, lots of works have been done in order to improve the PEs properties including addition of dopant or filler.* **Methodology:** *Yet, this PEs still shows poor in conductivity due to instability of electrochemical properties. Based on this problem, this present work was carried out with the development of carboxyl methylcellulose (CMC) with kappa carrageenan (KC) as a host in PEs system via blending technique method. The CMC/KC films were successfully prepared via solution casting method with no separation phase and good mechanical properties. Electrical Impedance Spectroscopy (EIS); ionic conduction mechanism; structural studies and transport studies via Fourier Transform Infra-Red Spectroscopy (FTIR) were used as for characterization for CMC/KC PEs system.* **Findings:** *Through the FTIR characterization, it shows an increase of intensity and there are disappear of peak when introducing in wavenumber which confirm there is complexation has taken place between CMC/KC blend. It can be found that the ionic conductivity at ambient for CMC/KC PEs system was achieved to optimum value at 1.11 x 10-5 S/cm with sample containing with 80:20 ratio which quiet higher in comparison by other PEs system in literature using single polymer. In addition, the dielectric study which was elaborate from EIS results shown that the CMC/KC system obeys non-Debye behavior.* **Contribution:** *It is believed that the CMC/KC PEs systems will spectacle a promising semi-conductive behavior which can be used in numerous electrochemical devices such as battery, fuel cells and solar cells.*

Keywords: blending method; CMC/KC; complexation; ionic conductivity.

Abstract ID: **AIMC-2017-STE-267**

ECONOMICAL USEFUL ALTERNATIVE OF WASTE COOKING OIL AS AGGREGATE BINDER

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Abstract

Introduction: *Improper disposal of waste cooking oil into the environment is causing serious concern in the recent time. This work explored the reuse of waste cooking oils as aggregate binder in the production of non structural building blocks* **Methodology:** *Block samples were prepared with 10% liquid binder of waste cooking oil, compacted and thermally cured in a conventional oven at temperature ranges of 160-200°C. Important parameters such as optimum binder content, optimum curing temperature, and optimum curing age were established. The mechanical and physical properties of the product were examined.* **Findings:** *the result shows that the compressive strength of 32MPa was achieved, initial rate of absorption (IRA), water absorption, efflorescence, and wet/dry durability of the product exhibit acceptable values within the threshold of required standards.* **Contribution:** *The utilization of waste cooking as a binder in the production of non structural building block is new in whole Asia and Malaysia, Currently, no such information exists on the use of waste vegetable oil as a binder for building blocks in either Malaysia or the whole of Asia .This research will contribute towards the concept of "Green Construction & Energy conservation" by considering;*

- Reduction in resource consumption, environment degradation, and social and economic aspects at the various stages of design, construction and operation of construction.

Keywords: Wastevege block; Compressive strength; oxy-polymerisation; Durability; water absorption; initial rate of absorption; Efflorescence

Abstract ID: **AIMC-2017-STE-272**

TEXTURE FEATURES EXTRACTION FOR CORNEAL ARCUS CLASSIFICATION.

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Abstract

Introduction: *The hyperlipidemia is the abnormal condition of lipids or fat, contained, in the blood. This condition can be seen by prevalence of some body indicators, for example, corneal arcus (CA) and xanthoma. In this work, we proposed the classification of CA, using the texture features extraction. This classification can be used to determine the abnormalities, referring to hyperlipidemia presence.* **Methodology:** *The data-set of the eye is established into two groups; the normal (without CA) and the abnormal (with CA). We use the grey level co-occurrence matrix (GLCM) for image extraction. The neural network is used to training the data, along with testing and validation the data. The classifier is run using ten-fold validation for establishing the classification robustness. The results than analysed using confusion matrix evaluation for performance analyses.* **Findings:** *Our results show good achievement, with more than 96% accuracy of the classification the abnormal eye (e.g. CA).* **Contribution:** *The originality of this study is on the approaching of pre-processing image for the extraction process, the selection of the features based on statistically approach. Our contribution is by improving the performance of classification of the images related to the study of the prevalence CA signs.*

Keywords: texture features, classification, pre-processing; corneal arcus; image processing;

Abstract ID: **AIMC-2017-STE-282**

IMPLEMENTATION OF LIGHT DEPENDENT RESISTOR (LDR) IN EXHAUST-FAN AUTOMATION SYSTEM

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Abstract

Introduction: *Exhaust fan serves to sucking the air inside the room to be disposed to the outside, and at the same time attract fresh air at outdoor into the room. Automation exhaust fan is necessary to reduce the waste of electric power that often occur when the room already clean and free of smoke but the exhaust fan still running.The goals of this research is the design and implement automatic exhaust fan systems using LDR as smoke detectors, and perform testing and analysis system using the intensity of the smoke; thin, medium and thick.* **Methodology:** *LDR is a resistor that resistance value depends on the intensity of the light it receives. The resistance value of LDR will decrease when the condition is bright and the resistance value will be high if the environment in dark conditions. The sensor mechanism is by distinguishing dark and light received by the LDR into voltage output. Dark and light conditions are obtained from the density of smoke that block LED lighting to the LDR. The output voltage of the sensor forwarded to the comparator circuit, and then comparator compared the received input voltage with the voltage reference or the reference that has been setup by turning the potentiometer. When the output voltage of the LDR is smaller than the reference voltage, the circuit will drive the fan.* **Findings:** *The testing stage is divided into two phases, the first is the testing circuit without using smoke, and the second is to test the response of the circuit by using smoke. The circuit to be tested is a series of sensors, the comparator circuit, transistor switch circuit, and the relay circuit. the result of the final testing prove that the system can detect smoke with a medium thickness and thick smoke, while the thin smoke can not be detected. The comparator reference voltage is 5.4 volts, when a thin smoke through the LDR sensors, the output voltage is 5.8 volts. When the smoke with medium thickness through the LDR, the output voltage down to 4.6 volts and 4.4 volts for thick smoke. The voltage drop causes the comparator circuit work and turn on the exhaust fan.* **Contribution:** *Previous studies typically use smoke sensor AF30, but these sensors are expensive. This study also did not use the micro controller and run automatically, without needing human handling. This study is useful for use in restaurants, workshops or smoky industrial area.*

Keywords: automation; comparator; exhaust fan ; LDR ,

Abstract ID: **AIMC-2017-STE-298**

PREFENCES, USABILITY AND EFFECTS ON VEHICLE MODIFICATIONS FOR INDEPENDENT DRIVER

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Abstract

Introduction: *Vehicle Modification, particularly for the person with disabilities has lessen the difficulties for them to drive independently. Numerous modification development which can be seen saperated into categories (primary control, secondary control, foot control, and vehicle accessibility) has flooded the market. Even so, Malaysia display a very low information on personal vehicle modification and its usability. The population and the exact figure of those who were driving their vehicle with modification were unknown* **Methodology:** *A total of 178 respondent were involved in this studies. The sample were gathered based from the suggestion and name list given by the Persatuan Orang orang cacat anggoa Malaysia (POCAM). The studies uses the close ended survey form approach and each respondent were allocated with 20 to 25 minutes to finish the survey. Most of the session happen within the peninsular of Malaysia. The result from the survey will be displayed in descriptive analysis format.* **Findings:** *From the study,132 out of 178 respondent were found to be driving their vehicle independently. The study also discovered that not much modification variation are limited and some even being self made by fabricators. The findings also resulted with low ratings on the safety aspect and different price range for similar modification types. The studies also discovered that modification built into their personal vehicle were found to be unattractive and less comfortable although display a positive result on the vehicle usability* **Contribution:** *Since information relating to the disabled vehicle modification and its usability in Malaysia is limited. It is hoped that the study will give an insight, particularly on the malaysia disabled vehicle driving situations. It is also hope that the result and finding discovered from the studies can be used as a benchmark or a kick start to improve the disabled person mobility development.*

Keywords: person with disabilities, personal vehicle modification, independent driving, usability and effect, preferences

Abstract ID: **AIMC-2017-STE-299**

ONTOLOGY KNOWLEDGE BASED DECISION SUPPORT SYSTEM

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Abstract

Introduction: *Decision support systems have been used in different areas over the years as a system that can aid in decision support for decision makers. Different knowledge representation techniques have also been used in designing decision support systems* **Methodology:** *In this paper, an ontology knowledge representation technique is used to design a decision support system. The system is built on designing the taxonomy of important terms in the domain of interest as the knowledge base and combining this with Java rules through the web ontology language application programming interface (OWL-API)* **Findings:** *Case studies for technology decision support selection for subsea multiphase pump used in the oil and gas industry shows the tool applicability in recommending technologies based on the match algorithm. A percentage comparator further helps to refine the results by showing the percentage match for the recommendations suggested* **Contribution:** *The ontology knowledge based system can influence decision makers approval of knowledge based systems as it is built on linguistic terms that is close to human semantics. Decision in the domain in which the system is tested is usually manual based; as such the expert's satisfaction survey shows the systems applicability*

Keywords: Decision support, Ontology, OWL-API, Java, Oil and Gas

Abstract ID: **AIMC-2017-STE-305**

CONTEXTUAL PREDICTORS OF URBAN PARK UTILIZATION AMONG MALAYSIAN ETHNIC GROUPS

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Abstract

Introduction: *Social interaction among diverse ethnic groups motivates people within communities to visit urban parks, for this is in line to achieving social cohesion. In Malaysia for example, different ethnic backgrounds spend their leisure time in urban parks, this is because offer opportunities for social interaction among the users. The perception and requirement of attributes needed varies among the various ethnic groups which include Malays, Chinese and Indians this is to assure their full utilization of the parks.* **Methodology:** *This study investigates the urban park attributes of the three ethnic groups that encourage the utilization of urban park toward achieving social cohesion. Questionnaire survey method was adopted, a total of 274 respondents were sampled at Batu Pahat urban parks in Johor Bahru, Malaysia., Subsequently, Structural Equation Modelling (SEM) was used to analyse and validate respondents' perception in regards to urban park utilization.* **Findings:** *the findings show that aesthetics, safety, lighting, maintenance and cleanliness in urban parks which are the determining factors that attract the users to utilizes the parks* **Contribution:** *contribute to achieve a social cohesion*

Keywords: Multi-ethnicity, attributes, Social interaction, Urban and Park

Abstract ID: **AIMC-2017-STE-306**

A NOVEL SUPERVISED LEARNING MODEL FOR FIGURES RECOGNITION BY USING ARTIFICIAL NEURAL NETWORK

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Abstract

Introduction: *Supervised learning has been considered as an important topic as it is used in different fields to exploit the advantages of artificial intelligence. This research introduces a new approach using Artificial using neural networks (ANN) to supervise machine learning that enables the machine to recognize a figure via calculating values of angles of the figure, as well as area and length of the line. The research also introduces a processor that would be suitable for the algorithm that uses rotation techniques to specify the best situation in which the figure will be identified easily.* **Methodology:** *The proposed algorithm uses rotation techniques to specify the best situation in which the figure will be identified easily. The research also introduces a processor that would be suitable for the proposed algorithm.* **Findings:** *This research introduces a new approach using neural networks to supervise machine learning that enables the machine to recognize a figure via calculating values of angles of the figure, as well as area and length of the line. The proposed algorithm uses rotation techniques to specify the best situation in which the figure will be identified easily. The proposed algorithm can be used in many fields such as military and medicine fields.* **Contribution:** *The research also introduces a proposed processor that would be suitable for the proposed algorithm. The study is limited by one type of figures and should make enhancement to convert any kind of image to be examined.*

Keywords: supervised learning, figures recognition, neural network.

Abstract ID: **AIMC-2017-STE-311**

STRATEGIC DESIGN OF INFORMATION SYSTEM IMPLEMENTATION AT UNIVERSITY

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Abstract

Introduction: *Higher education over the past decade has experienced several view changes that includes: paradigm shift, management and competition changes, and so forth. The paradigm shift was primarily driven by the development of Information Technology (IT) which covers: e-learning, e-university, and so on. The only university supported by the excellent IT that will be able to enhance and maintain its advantages. The purpose of this article is reviewing the strategic design of IT implementation at university.* **Methodology:** *The analysis used*

to reveal fact, problem and problem solving in this article adopts the model of Strategic Management of Information Technology (SMIT) developed by Flodström. SMIT is a holistic framework of IT-Based strategic management framework. The design of IT implementation is presented in environmental analysis form, namely an environment that covers university business. For analysis purpose, the site of an initial study was UIN Sunan Gunung Djati Bandung Indonesia. **Findings:** *The strategy design of IT implementation based on the competitive environment of UIN Sunan Gunung Djati Bandung is coordinated with its business strategy. The role of IT as an enabler or tool that allow university to be able to create cheaper-better-faster educational process. In this article there are designed two types of IT Functions: back office and front office. For back office application function, there is a software management with specific modules to support the implementation of university management. In the front office function of IT usage, there are some types of IT usage concepts that directly and indirectly affect the way of establishing education that leads to quality improvement which can be implemented through: media simulation, course management, virtual class, computer based training (CBT), knowledge portal and cyber community.* **Contribution:** *The strategic design of IT implementation presented in this article is a generic model of the plan, design, and implementation of IT in the object of study. Given that the concept developed is a generic model, this article will provide benefits for other universities to analyze their environment as guidelines in developing strategic design of IT implementation at their universities.*

Keywords: competitive environment, e-university, information technology, strategic management

Abstract ID: **AIMC-2017-STE-312**

AN EVALUATION INSTRUMENT FOR MEASURING USABILITY OF BUSINESS INTELLIGENCE APPLICATIONS BASED ON VIRTUAL DATA INTEGRATION

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Abstract

Introduction: *Business Intelligence (BI) is the mechanism to provide insights for most of the operations and performance of organizations, in addition to identifying strategic business opportunities. In order to gain a maximum advantage during applying BI applications based on virtual data integration; the organizations looking forward to finding a best or most favorable way to measure BI applications. The most favorable way is based on measuring the usability of BI.* **Methodology:** *However, this study developed an instrument comprised of multi-items spread over multi-dimensions and utilizes a questionnaire as the main evaluation instrument to investigate whether BI application is workable in terms of usability.To design the evaluation instrument, a systematic approach was adopted as suggested by reviewing the literature. The design of the instrument began with the elicit works to determine the items of the evaluation instrument. Then the drafted instrument was piloted for test of validity and reliability before it is ready to measuring the usability of BI applications.* **Findings:** *The findings which obtained from the pilot test as well as from face validity by experts review; these findings show the usability instrument is applicable and ready to be used in measuring BI usability.* **Contribution:** *An Evaluation Instrument for Measuring Usability Of Business Intelligence Applications Based on Virtual Data Integration*

Keywords: Instrument Development, Business Intelligence, Usability measurement, Virtual Data Integration

Abstract ID: **AIMC-2017-STE-315**

HOW FACEBOOK AFFECTS ONLINE NEWS CONSUMPTION

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Abstract

Introduction: *The fast growth of social media has help increase and spread the information to the public. This positive increment is agreeable and pleasing to the news business In today's era of social media, more people especially the younger generation are depending on their Facebook to get the latest news. Despite others like Google News and Twitter exercising big influence, Facebook is at the front of fundamental change on how people consume journalism. The support and wide spread use of mobile devices, such as smartphones and tablets, users can access to online services anywhere and anytime.* **Methodology:** *The dataset consists of web server logs from Berita Harian Online from 19 November to 8 December 2016. We are applying Web Usage Mining techniques that comprise of three stages to process the data.* **Findings:** *The results show that Facebook*

referrals have impact on news consumption. Almost half of the page request is from Facebook referral. We investigate the contents of the page requested; either article page, section page or the main page. The origin of the request either from mobile device or from desktop is also examined to see if there are any impacts. We discuss the popular sections page that are requested through Facebook request as well as the time of the day when the requests are at the peak. **Contribution:** *This study investigate the online news consumption using web server logs which are unobtrusive to the user and free of any bias, as compared to user study that requires user to answer questionnaires or interview. The data set; which is the web server logs are collected from the web server which denotes the requests from users.*

We are investigating how Facebook impacts online news consumption based on the Facebook referrals which can be obtained from the user-agent string in the web server logs. As social media is prevalent in our daily life, this study can shed a light on how Facebook affects the news consumption by examining the access throughout the day, the contents requested and the type of device used.

Keywords: online news
user behaviour
social media
web server logs

Abstract ID: **AIMC-2017-STE-328**

STAKEHOLDERS' PERCEPTIONS AND ATTITUDES TOWARDS RAINWATER HARVESTING FOR PROMOTION OF WATER CONSERVATION IN MALAYSIA

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Abstract

Introduction: *Malaysia is not spared from regular water shortages although it is a water rich region owing to monsoonal wet climate. As the demand for water grows, the need to embrace water conservation measures intensifies. It is verified that rainwater harvesting (RWH) is among the priority measure for water conservation. RWH potential analysis in Selangor reveals that water consumption reduction capacity up to 22 L/p/d or 6% reduction rate could be materialized by full-scale RWH adoption (Nafisah, 2011). Accordingly, grasping stakeholder's perceptions and attitudes is essential. This social research aims to explore the multi-stakeholders' receptivity towards RWH in Malaysia. The study focuses on investigating the level of knowledge, acceptance, involvement and willingness to participate in RWH program, and to gauge feasibility of the authors' proposal on conceptual plan for RWH.*

Methodology: *Two survey methods were employed in this study to investigate the multi-stakeholders' perceptions and attitudes towards RWH implementation. Those methods are the structured interviews for the fostering-side and questionnaire surveys for the accepting-side. The fostering-side are the policy-makers, equipment-makers and NGOs/community leaders; and the accepting-side is the end-users.*

Structured Interviews - Fostering-Side

Structured interviews were conducted by interviewing three sub-groups of stakeholders who are responsible to foster RWH implementation in Malaysia. The exact same questions both close-ended and open-ended were asked in the same order to all the stakeholders. Supporting documents such as proposed RWH conceptual plan were shown and explained to the respondents.

Questionnaire Surveys - Accepting-Side

During the interview sessions with the fostering-side, existing RWH end-users were identified. Therefore, potential respondents among them were able to be chosen. Other non-user respondents were randomly selected in the study area. Questionnaires were given in person and they were asked to complete the form right away. A total of 200 questionnaire forms were prepared. The survey was conducted by visiting private houses and public places. The questionnaires are divided into 3 sections namely: (i) basic demographic information; (ii) awareness on RWH and (iii) involvement and willingness to participate in RWH programs.

Findings: *It was found that the fostering-side had been involved at intermediate level for RWH implementation. Among the efforts are involvement in pilot projects, preparation of guidelines, attempts toward enforcement of RWH by the introduction of regulation on compulsory practice and introduction of RWH-products in domestic market. However, the efforts seem insufficient since comprehensive RWH application has not been materialized due to lack of co-operation from the accepting-side. The proposed conceptual plan for comprehensive RWH by the authors deemed as feasible on condition that the accepting-side could co-operate.*

On the other hand, only a small number of respondents among the accepting-side have implemented RWH. Half of them have little or no satisfaction toward RWH due to factors such as incomplete system installation and aesthetic issues. 86% of other respondents never involved in RWH. Their level of knowledge on RWH is unsatisfactory. The offer of subsidies for RWH installation, enforcement of relevant regulation and the availability of affordable low cost system is considered to be key factors to ensure widespread RWH practice. Both fostering-side and accepting-side shows interest in RWH. However, due to the conditions specified by both sides, deadlock relationship exists.

Several approaches that can be beneficial to both parties are proposed: (i) the promotion of the Green Building Index (GBI) (ii) rewards based RWH implementation - property tax reduction, reduction of water bills; and (iii) attractive offers such as discounted purchase of buildings equipped with RWH and low interest loan for RWH installation.

Contribution: *Rainwater harvesting is beneficial in so many ways for sustainable water resources management. However, there are huge gap between theory and practice for RWH implementation including in Malaysia. So far, investigations have been confined to policy, technical and economic matters without taking into considerations of stakeholders' perspective. Through this study, attempts have been made to cover the gaps between theory and practice by understanding the stakeholders' perceptions and attitudes towards RWH. By getting feedbacks from stakeholders, this research could contribute to boost RWH in Malaysia since necessary further actions can be planned once challenges are recognized.*

Keywords: Accepting-side; fostering-side; rainwater harvesting (RWH); water conservation program (WCP)

Abstract ID: **AIMC-2017-STE-336**

DECISION SUPPORT SYSTEM POSITION MOVEMENT BETWEEN OFFICIALS IN THE DISTRICT GOVERNMENT DEPARTMENT TANGGAMUS USING PROFILE MATCHING

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Abstract

Introduction: *Mutation Position Employees Inter-Services In Government Environment Tanggamus is a common thing in the work environment, but until now the stakeholders find it difficult to determine who will be moved or transferred to place a new work for rekamjejak performance of every employee, not all the documentation properly. Therefore, in an effort to improve performance and career Civil Service with the support of a decision support system which is one implementation of information technology development.* **Methodology:** *In stepping up the promotion of career Civil Servants and filling vacancies for positions that match your criteria, use of the method of profile matching with the criteria used in decision support systems transfer of duties of employees are: intellectual and working attitude. On Intellectual criteria consist of several sub-criteria: Education, Verbalization idea, Systematic Thinking, Reasoning and Real Solutions, concentration, logic Practical, Flexible Thinking, Creative Imagination, Anticipation, Intelligence Potential. On Criteria Work Attitude is then translated into several sub-criteria that include: Old Work, Rigour and Responsibility, Prudence, Ethics, Encouragement Achievement, Vitality and Planner.* **Findings:** *The result of this research is to produce a sequence ranking of prospective employees who have a good performance that has been selected, and the output of the application can help decision makers (Decission maker) to choose an alternative transfer of duties or mutation office employee who is on the government's environmental Tanggamus in order an increase in employment and a better performance in the work place new again.* **Contribution:** *With the use of this method is expected to Profile Matching really can help the Government Tanggamus for structuring positions in the Civil Service departments agencies required in accordance with predetermined criteria.*

Keywords: Decision Support Systems, Profile Matching, Mutation

Abstract ID: **AIMC-2017-STE-341**

LITERATURE REVIEW: ANALYSIS OF ACCIDENT FACTOR ON ROAD USING HADON MATRIX APPROACH

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Abstract

Introduction: *The present paper provides a comprehensive review of past research that examined accident factor on the road.* **Methodology:** *Articles and publications were selected for relevance and research strength through a comprehensive search of major database such as Science Direct, UiTM EZAccess and Transportation Research Information Services (TRIS). Total of 40 articles were analyzed the accident factors and categorized using Hadon Matrix method.* **Findings:** *There are three major factors that contribute to the road accident which are human behavior, road environment and vehicle condition. Human behavior refer to road user attitude during driving such as speeding, under alcohol influence, not wearing seat belt and using mobile phone while driving. Meanwhile, road environment include common factor of climate and environment, condition of road; and time of accident occur. In addition, vehicle also one of factor for road accident, such as vehicle design and quality.* **Contribution:** *Previous research offers valuable insight into the underlying road accident factor mechanism. However, with the increase of rapid urbanization and motorization was changed in traffic composition in recent years, prior research finding should be updated on these factors.*

Keywords: accident factors, Hadon Matrix, human behavior, road

Abstract ID: **AIMC-2017-STE-350**

PID CONTROLLER FOR NUCLEAR REACTOR POWER CONTROL SYSTEM

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Abstract

Introduction: *PUSPATI TRIGA Reactor (RTP) Mark II type undergoes safe operation more than 30 years and the only research reactor exists in Malaysia. The main safety feature of Instrumentation and Control (I&C) system design is such that any failure in the electronic or its associated components, does not lead to any uncontrolled rate of reactivity. In RTP, the most important considered parameter is the reactor power and act as nervous system. Currently, the real RTP use feedback approach to control the reactor power and need to improve the rise time and settling time of the system.This paper introduces control techniques using Proportional Integral Derivatives (PID) methods for existed RTP system by MATLAB simulation.* **Methodology:** *To design new controller for complex plant like RTP is quite difficult due to high cost and safety factors cause by the failure of controller. Furthermore, to overcome these problem, the simulator can replace the hardware and test can be done. In order to commit the complication to find the best parameters, several parameters were proposed and the result will be analysed for study the RTP power performances. Currently, the structures RTP was design using MATLAB/Simulink tool that consist of fission chamber, controller, control rod position, height to worth and thermal-hydraullic neutronic. The controller will control the control rod position to make sure the reactivity still under the limitation parameter.* **Findings:** *From the investigation in this research, Proportional-Integral-Derivative (PID) controller are capable to improve the performance of RTP in term of settling time, rise time, overshoot and steady state error.* **Contribution:** *The modelling for RTP using the experimental data from RTP and the identification of the system are using the black box theory. This method had never been done at our RTP for identification of system behaviour. Since the black box are more accurate than mathematical approach, thus this method are applicable for complex system like RTP.*

Keywords: PUSOATI TRIGA Reactor (RTP), Proportional-Integral-Derivative (PID), black-box

Abstract ID: **AIMC-2017-STE-352**

ELECTROCOAGULATION TECHNOLOGY FOR TREATMENT OF TEXTILE WASTEWATER USING A NOVEL REACTOR DESIGN WITH ROTATED ANODE

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Abstract

Introduction: *This paper investigates the optimum operational conditions of a novel rotated bed electrocoagulation (EC) reactor for the treatment of textile wastewater.* **Methodology:** *The effect of various operational parameters such as rotational speed, current density (CD), operational time (RT), pH, temperature, and inter-electrode distance (IED) on the pollutant removal efficiency were examined.* **Findings:** *The results indicated that the optimum conditions for the treatment of textile wastewater were achieved at CD = 4 mA/cm2, RT = 10 minutes, rotational speed = 150 rpm, pH = 4.57, temperature = 25oC, and IED = 1cm. The removal efficiencies of chemical oxygen demand (COD), biological oxygen demand (BOD), total suspended solid (TSS), turbidity and color were 97.10%, 95.55%, 98%, 96% and 98.50%, respectively, at the first 10 minutes of reaction time.* **Contribution:** *The experimental results confirm that the new reactor design with rotated anode impellers and cathode rings provided high treatment efficiency at a reduced reaction time.*

Keywords: electrocoagulation; electrode consumption; textile wastewater; rotated anode reactor.

Abstract ID: **AIMC-2017-STE-355**

DEVELOPMENT OF MICROBIAL GRANULE USING LOW STRENGTH TEXTILE WASTEWATER UNDER INFLUENCE OF STATIC MAGNETIC FIELD

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Abstract

Introduction: *In recent years, most of the studies cultivated aerobic granules using high strength wastewater with high organic loading rate (OLR). According to Tay et al. [21], it was quite difficult to cultivate and form granules using low strength wastewater. The study also showed that OLR of low than 2 kgCOD/m3 resulted in slow formation of aerobic granules and took longer time to reach stable condition. Hence, the purpose of this study is to present a new way to cultivate aerobic granules using low strength wastewater under influence of static magnetic field.* **Methodology:** *Wastewater Compositions: The used wastewater in this study was a synthetic textile type of wastewater. The compositions were KH2PO4 (0.23 g/L), NH4Cl (0.16 g/L), MgSO4.7H2O (0.09 g/L), EDTA (0.02 g/L), trace solution 1 mL/L, CaCl2.2H20 (0.07 g/L) and K2HPO4 0.58 (g/L). The carbon sources used in this experiment were sodium acetate (0.5 g/L), ethanol (0.125 g/L) and glucose (0.5 g/L). The trace elements used in this study were according to Smolder et al. (1995). Reactive Black 5, Disperse Orange 1 and Reactive Blue 4 were the used dyes. The wastewater had a COD of 500 ± 100 mg/L; TOC of 205 ± 20 and color 1000 ± 100 American Dye Manufacturing Index (ADMI).*

Experimental Procedure: A mixture of 750 mL sludge and 750 mL wastewater from a textile wastewater treatment plant which giving a total of 1.5 L for the operational volume with the total sludge concentration 4.8 g/L and organic loading rate (OLR) of 0.825 kgCOD/m3.d. Acclimatization of sludge mixture was performed before the SBR was operated for 24 weeks with hydraulic retention time (HRT) of 8 hours. Temperature of the reactor was 26 ± 3ºC while pH was set 7.0 ± 0.5. Size of the granule was observed by a stereo microscope with camera (HUVITZ, HSZ-ILST6, Korea). Parameter of COD, colour, TOC, MLSS and MLVSS were measured based on Standard Methods [22]. The physical and biological characteristics of the microbial granules were studied. **Findings:** *The operation of a two stage anaerobic-aerobic reaction phase sequencing batch reactor was found to be able to develop microbial granules with low strength textile wastewater under the influence of 13.9 ± 0.2 mT static magnetic fields. Although this microbial granules need a long time to grow up and develop, but this microbial granules still can be successful on the degradation process. The improvement in the granular strength as a result of increase in the biomass concentration led to an increase in the COD, TOC and color removal efficiencies indicating that the process was effective. Modification of characteristic organic bonds of the textile wastewater in the FTIR study indicates that biodegradation occurred. The results show that application of anaerobic-aerobic reaction phase SBR strategy under the influence of magnetic field is feasible. At this time, it can be concluded that static magnetic field has a positive effect towards the operation of a biological bioreactor.* **Contribution:** *Using static magnetic field (SMF), formation of the granules can be developed under low*

strength of textile wastewater particularly under anaerobic-aerobic reaction phase. Consequently, these formation of granules able to be used for efficient biodegradation process.

Keywords: Low strength textile wastewater; Granulation; Static magnetic field; Sequencing batch reactor; Anaerobic-aerobic reaction phase

Abstract ID: **AIMC-2017-STE-363**

GOAL-ORIENTED APPROACH FOR BUSINESS INTELLIGENCE BASED ON DATA VIRTUALIZATION TECHNIQUE

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Abstract

Introduction: *In a business intelligence environment, data integration is considered as a backbone for design and development business intelligence applications. An emerging approach for business intelligence environments is to employ data virtualization technology for integrate and deliver data to data consumers.* **Methodology:** *However, the main concern of data virtualization is to deliver virtual tables that contain the live data to data consumers. Conventional virtual tables contain a huge amount of data. Thereby, the data consumers have facing difficulties regarding analysis and use these data. In this paper, this issue has addressed by introducing a goal-oriented approach for to create the virtual table based on relevant data in order to facilitate analysis and use these data by BI data consumers.* **Findings:** *Besides, such approach composite of three main steps build goal structure, matching the indicators with the existing virtual tables, and deliver the new virtual table to BI data consumers. Two evaluation methods have been conducted to validate and evaluate the proposed approach (expert review and case study), which resulted in the workability of the proposed approach in terms of usability.* **Contribution:** *Goal-Oriented Approach for Business Intelligence Based on Data Virtualization Technique.*

Keywords: Business Intelligence, Data Integration, Data Virtualization, Goal-Driven, Virtual Table.

Abstract ID: **AIMC-2017-STE-366**

REMOVAL CADMIUM FROM AQUEOUS SOLUTION BY POWDERED ACTIVATED CARBON (PAC) FROM LEUCAENA LEUCOCEPHALA BIOMASS

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Abstract

Introduction: *Activated carbon (ACs) prepared from Leucaena leucocephala biomass, an agricultural solid waste by-product, for the removal of cadmium from aqueous solutions had been studied.* **Methodology:** *The activated carbon was produced by NaOH at impregnation ratios of NaOH:char (w/w) equal to 1:1 (AC-1), 2:1 (AC-2) and 3:1 (AC-3) under activation temperature of 800oC. The properties of these activated carbons which is BET surface area was analyzed. Parameters such as contact time, the effect of pH, concentration and temperature on removal were also studied.* **Findings:** *It was found that the ACs BET surface area was in the order of 185 m2/g−1 for AC-1, 595 m2/g-1 for AC-2, and 776 m2/g−1 for AC-3. The equilibrium time was established within 40 min for metal ions at initial concentrations of 30 mg/l. Then, the adsorbent exhibited good sorption potential for cadmium at pH 7.0. For temperature, the equilibrium temperature is 30oC.* **Contribution:** *Based on the results, this study demonstrated that activated carbon from Leucaena leucocephala biomass could be used for removal cadmium.*

Keywords: Activated carbon; Leucaena leucocephala; Cadmium; Adsorption

Abstract ID: **AIMC-2017-STE-368**

EFFECTS OF USING CONTROLLED DECAFEINATED MACHINE ON QUALITY OF ROBUSTA COFFEE BEAN

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Abstract

Introduction: *Indonesia is considered a strategic world coffee exporter. Indonesia is one of the country's third largest coffee exporter after Brazil and Vietnam. Indonesian coffee production amounted to 11.250 tons per year is quite low when compared to coffee producing countries in the world such as Brazil (50.826 tonnes per year) and Vietnam (22.000 tonnes per year) (International Coffee Organization, 2012). Coffee is one of the potential export commodities for Indonesia. But in this modern era of human began to realize that the effect of the caffeine in coffee is thought to have adverse effects on human health. Human consciousness on the health impact on the decline of interest for coffee. According Koswara (2006) which states that consuming coffee in doses higher caffeine causes heart pounding, arteoklorosis, liver damage, hands trembling, muscle spasms, headache, nausea and can even cause mutations in the gene.*

Coffee low in caffeine is one product diversification to increase value added and domestic consumption of coffee in Indonesia. The added value obtained from the selling price low caffeine coffee relatively high in the market, and the utilization of natural caffeine compounds for the food and beverage industry and the pharmaceutical industry (Widyotomo, 2012). Decaffeinationi is a process that aims to reduce the levels of caffeine in coffee. During this time, decaffeinationi process using imported technology both from a hardware and software. This causes the high low coffee caffeine (Widyotomo, 2012).

The development process decaffeination of robusta coffee beans in a reactor single column has intensively conducted by the Research Center of Indonesian Coffee and Cocoa using solvent water (Sri Mulato etal., 2004; Lestari, 2004). The use of a single column reactor among others has a very simple design (Sri Mulato et al., 2004). Coffee decaffeination process development must continue to be made, among which innovation decaffeination coffee making machines controlled by the construction design of appropriate use thermo control system and clock control to optimize the process decaffeination coffee. According to (Sri Mulato et al., 2004), the higher the temperature and concentration of the solvent, the transfer process will be faster caffeine compounds. However, the higher the temperature the solvent will impact on the flavor of the coffee beans low in caffeine and any concentration of solvent has a certain character in dissolving the compound caffeine which depends on the temperature of the process. Therefore, the objective of this study was to determine the quality characteristics of coffee beans that include physical, chemical and organoleptic use the controlled decaffeinated machine.

Methodology: *Experiments were performed by treatment with a temperature of 1000C and the long process of dissolution. Decaffeination using ethyl acetate solvent. The length of time the process of three levels, namely 2, 4, and 6 hours. Then observed in the optimum condition to produce coffee beans of the highest quality.*

The decaffeination process

Decaffeination process steps using decaffeinated controlled machine to determine the effect of temperature and solvent concentration is shown in Figure 3.1. Before being fed into the reactor decaffeination coffee beans sorted to separate it from dirt and other foreign matter. Coffee beans, water and solvents that are used for each treatment each as much as 3 kg, 1.5 L and 3 L.

Decaffeination process consists of the stages of the boiling process, and dissolution. The boiling process coffee beans done in the tube reactor using heat source an electric heater with a system combined with a heating jacket system thermo control to control the temperature. The water content increased from 12% to 54-57% after steaming process for 2 hours for all the seed size. After the boiling process is completed, the water released from the reactor and replaced with a solvent. The solvent is heated to a temperature obtained a predetermined treatment. Solvents included in the controlled decaffeinated machine through a pipe connected to the reactor tube. Old leaching process is stopped until a predetermined treatment temperature.

Findings: *Lowest levels of caffeine reached on a long process of decaffeination 6 hours, is 0.3%. The positions of caffeine in coffee beans are located on the cell wall and cytoplasm. Caffeine present in the cytoplasm are in the free state, while the rest found in the cell walls under conditions of bonded as alkaloid compound in the form of potassium complex salt compound chlorogenic an ionic bond (Sivets and Desroiser, 2003). Bonding complex cause's caffeine cannot move freely within the network of coffee beans. Effect of heat energy can cause these bonds disconnected so caffeine readily soluble in solvents etil asetat. Physical changes during steaming coffee beans (volume expansion) are the first step in the process of softening network of coffee beans and far spacing between cells. Making it easier for ethyl acetate as the solvent molecules diffuse into the beans and caffeine compounds accelerating dissolution. The smaller the size of coffee beans, then the distance between the surfaces*

of the seeds to the core seeds will become shorter so that the solvent molecules will more quickly diffuse and reach the cell wall and cytoplasm, so the more the amount of caffeine dissolved.

Dissolving the compound caffeine from coffee beans preceded by the breaking of ties complex compound due to heat treatment. In such conditions, caffeine become more mobile, easily diffuse through the cell wall and subsequently dissolved in ethyl acetate solvent. The results showed that the smaller the size of the beans and the longer the process of dissolving and leaching the higher the temperature, the rate of decline of the caffeine in the coffee beans will be higher. This is consistent with what has been reported by Jaganyi and Price (1999) that the result of condensation is influenced by the old process, the concentration of the solvent and the size of the material.

On the table above shows that changes in the levels of chlorogenic acid and trigonelin greatest in a long time of dissolution 6 hours are consecutive of 2.1% for chlorogenic acid and 0.4% for trigonelin. Coffee beans using a controlled decaffeinated machine still have high bioactive compounds that is chlorogenic acid. However, the resulting flavor is low. This is indicated by low levels of trigonelin generated. To obtain optimum flavor, trigonelin levels contained in the coffee beans must be greater than 1% (Viani and Horman, 1974).

Contribution: *Innovation controlled decaffeinated machine by the construction design of appropriate use thermo control system and clock control to optimize the process decaffeination coffee. Coffee bean that produced by this machine have good chemical content such as high chlorogenic acid, and low caffeine until 0.3%*

Keywords: Robusta coffee bean, decaffeination, caffeine content, decaffeinated controlled machine.

Abstract ID: **AIMC-2017-STE-372**

REMOVAL OF NAPHTHENIC ACID FROM HIGHLY ACIDIC PETROLEUM CRUDE OIL UTILIZING DIETHANOLAMINE-POLYETHYLENE GLYCOL SOLUTION COUPLED WITH COPPER CALCIUM OXIDE CATALYST SUPPORTED ON ALUMINA

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Abstract

Introduction: *A high content of naphthenic acid (NA) in the petroleum crude oil cause major corrosion in pipelines and refinery system which lowered the quality and price of the crude oil. This study aim to remove the NA content in crude oil by reducing the total acid number (TAN) of crude oil to less than one in order to meet the PETRONAS requirement for less acidic crude oil. Thus, in this study, a novel method was explored in which diethanolamine of polyethylene glycol (DEA-PEG) solution acted as basic chemical reagent coupled with copper calcium oxide supported on alumina (Cu/Ca(10:90)/Al2O3) as a catalyst to assess their performance towards removal of NA.* **Methodology:** *The Cu/Ca(10:90)/Al2O3 catalyst was synthesized using wet impregnation method and was characterized utilizing TGA-DTA, BET and FESEM-EDX. A series of different parameters were investigated such as concentrations of DEA-PEG, molecular weight of PEGs, reaction times, reaction temperatures and calcination temperatures of Cu/Ca(10:90)/Al2O3 catalyst.* **Findings:** *A lower TAN of 0.58 mg KOH/g was achieved from actual TAN of 8.32 mgKOH/g with 1000 mg / L of DEA-PEG, 2000 MW of PEG, reaction time of 7 min, at 27oC reaction temperature aids by 1000oC calcination temperature of Cu/Ca(10:90)/Al2O3 catalyst.* **Contribution:** *This is a novel method which used a novel basic chemical (DEA-PEG) and alumina supported catalyst (Cu/Ca(10:90)/Al2O3) , in addition, this technique is an environmental friendly technology as it consumed less chemical reagent, save energy and time and concurrently prevent an environmental pollution.*

Keywords: naphthenic acid, crude oil, diethanolamine, polyethylene glycol, catalyst

Abstract ID: **AIMC-2017-STE-373**

GEAR BOX CONDITION MONITORING USING OPTIMUM HIDDEN NEURONS IN ARTIFICIAL NEURAL NETWORKS AND ACOUSTIC EMISSION

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Abstract

Introduction: *Predicting the performance of a gear system is a serious*
function, as it is a crucial component inmachinery **Methodology:** *The research methodology depend on a data from previous work to find a new monitoring and predicting models for spur gear specific film thickness for that*

purpose a robust artificial neural networks is used **Findings:** *This includes specific film thickness prediction and classification based on Acoustic Emission (AE) signal, temperature and acoustic emission* **Contribution:** *Both FFBP and Elman networks and multiple regression models were used to predict specific oil film thickness with input as AE and temperature data. The results showed that FFBP and Elman models were effective in predicting oil film thickness. The findings from this research will create the foundations for applying AE with ANN to identify and predicted the lubrication regime in gearbox*

Keywords: Gear, Acoustic Emission , Artificial Neural Network ,specific film thickness

Abstract ID: **AIMC-2017-STE-374**

EFFECT ON THE ELECTRICAL PROPERTIES OF PLASTICIZED CELLULOSE DERIVATIVE-NH¬4BR SOLID POLYMER ELECTROLYTES SYSTEM VIA IMPEDANCE ANALYSIS

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Abstract

Introduction: *Since polymer electrolytes were discovered in early 1970s, much research has been devoted to the preparation of solid polymer electrolytes made of various types of polymer materials. Solid polymer electrolytes (SPEs) have long been proposed as a means to solve many of the challenges inherent in commercial liquid electrolytes system.* **Methodology:** *The bio-polymer from cellulose derivative namely carboxymethyl cellulose was chosen due to their superior properties and doped with NH4Br and plasticized with glycerol was successfully prepared via solution casting method. The superior properties of prepared solid polymer electrolytes (SPEs) system were investigated in term of their conductivity and also electrical properties using impedance technique* **Findings:** *The ionic conductivity value was found to archived optimum value at 1.91×10-3 S cm-1 when plasticized with glycerol. The temperature dependence of ionic conductivity shown BPEs system obeys Arrhenius law where the R2~1. The dielectric values were found to increase with increasing temperature thus revealed the SPEs system to be of the non-Debye type without single relaxation time has observed.*

Contribution: *This due to their excellent mechanical and thermal stability and high ionic conductivity where can be used as alternative system for application in electrochemical devices. To address this current research, this study reports on investigation of new type materials of polymer electrolytes family based bio-polymer material via enhancement of electrical properties.*

Keywords: solid polymer electrolytes, carboxyl methylcellulose, ionic conductivity, non-Debye behaviour.

Abstract ID: **AIMC-2017-STE-378**

SELF- PIERCING RIVET PROCESS OPTIMIZATION USING TAGUCHI DESIGN OF EXPERIMENT

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Abstract

Introduction: *Self-piercing rivet (SPR) is an alternative joining method for the automotive, furniture and potentially for future joining technology. SPR is able to join similar or dissimilar material where current conventional welding process is not possible. The process requires simple equipment, short time process, repeatable and able to automate in production lines. However, joint quality depends on several factors such as the joint materials, geometry and processing parameters which differ. This paper presents an experimental investigation for optimizing the self-piercing riveting process purposely for maximizes the tensile-shear strength. The higher tensile shear ensures the joint is strong and safe.* **Methodology:** *On this study, the lap shear test were conducted on 1.6mm thickness of steel material. The 100mm x 50mm coupon size specimens are prepared and joint with different type of rivet material, rivet dies and air pressure which energized the pneumatic-hydraulic system punch of the self-piercing rivet machine. The Taguchi's Design of Experiment concept of L8 Octagonal Array has been applied. The specimens were prepared in different studied factors and levels for eight samples and repeated in three times at Instron Universal Test Machine. All of specimens are loaded in shear tension condition until the joint broke. The maximum tensile forces are recorded and calculated to determine the signal-to-noise (S/N) ratio.This S/N value shows the most affecting parameters for most influence process factors that increase the joint performance.* **Findings:** *The experimental result has successfully shown that the rivet dies*

is the most influence factors followed by air pressure and rivet type. Finally the confirmation test had proved that the Taguchi's proposed parameters are reliable and powerful tools for optimization. **Contribution:** *The experiment has conducted at UTM Kuala Lumpur. Currently most of the the studies are focusing on aluminum base material joint combination for self piercing rivet application. This is due to weight reduction and fuel saving on new vehicle design. However steel materialis still demanding and became the main material for body in white (BIW) as it is inexpensive and available compared to other new material such as aluminum alloy and polymer composite. The data gained from this study may useful to engineers in designing self-piercing riveted joints of optimum mechanical characteristics. This work will contribute to the knowledge on the application of self piercing rivet especially in applied science and automotive component assemblies.*

Keywords: Self Piercing Rivet, Taguchi Design of Experiment

Abstract ID: **AIMC-2017-STE-379**

EVALUATION OF LOW COST DIGITAL CAMERAS FOR PRODUCING PHOTOGRAMMETRIC OUTPUT FROM UAV

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Abstract

Introduction: *Aerial mapping technologies have improve over this recent year. One of these technologies is the sensor to collect the data this done using digital camera. One of the digital camera is an action camera like Xiaomi Yi it has smaller size that are more suitable for UAV. With this small camera size it reduces the cost to build the UAV and can have longer flight time than a compact camera like Canon Powershot XS230HS. With longer time it can cover a wider area, and thus the cost of producing a map is that relatively cheap* **Methodology:** *This study is conducted within UTM Skudai campus at Kolej Tun Razak. Both of the Canon Power Shot SX230 and Xiaomi yi cameras would be attach to the UAV to take aerial photo with three different altitudes which is 60 meter, 80 meter and 100 meter with a similar flight path. Ground control point (GCPs) and check point (CPs) were also established using rapis static technique of Global Positioning System (GPS) and Total Station. The Canon Power Shot SX230 and Xiaomi yi camera is then calibrated using check board calibration this is done by using Agisoft Lens software. Then all of the pictures that been taken by the Canon Power Shot SX230 and the Xiaomi yi would be processed by using Agisoft Photoscan software to generate Digital Elevation Model (DEM), orthophoto and contour line. The accuracy of DEM was determined based on Root Mean Squared Error (RMSE) value. Two types of analysis were carried out, that are point analysis and visual analysis* **Findings:** *Three type of result were produce which is orthophoto, contour line and Digital Elevation Model (DEM). Visually both camera give similar result in both contour line and orthophoto. For the accuracy the orthophoto of the Xiaomi Yi give a slight better accuracy compare at altitude 80meter compare to the Canon Powershot XS230HS. While for the DEM the experiment show that the Xiaomi Yi has a better accuracy at altitude 100 meter and 80 meter than the Canon Powershot XS230HS while no significant different at altitude 60 meter* **Contribution:** *One of the issues using action camera like Xiaomi Yi is the lens. It use fish eye lens that cause the barrel distortion. Because of these it never been widely used for aerial mapping. This research provide the evidence that by using lens calibration even the distorted image can be used to produce photogrammetry output which is orthophoto, contour line and Digital Elevation Model (DEM). The benefit of this research is that the UAV can use Xiaomi Yi which a lighter weight compare to Canon Powershot XS230HS to extend the flight time thus increasing the coverage of the map.*

Keywords: Photogrametry, UAV, Digital Camera, Lens

Abstract ID: **AIMC-2017-STE-380**

DETERMINATION OF SIGNIFICANT WAVE HEIGHT USING PEAKS-OVER-THRESHOLD METHOD WITH OFFSHORE LABUAN DATASET

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Abstract

Introduction: *Probabilistic evaluation of surface waves was undertaken to estimate extreme wave heights for several return periods in order to use them in coastal and offshore constructions in Labuan region. The Goda method, which is called Peaks-Over-Threshold (POT) as the standard practice in mainstream extreme statistics,*

was developed in MATLAB programming. **Methodology:** *Studies have shown that the POT model is not equipped with a suitable approach to determine true threshold value. This study proposed a Coupled method to specify true threshold value for the model.*
The wave height dataset employed in the modelling was observed during a 41-year period from 1949 to 1989, in the South China Sea, inside the offshore area of Federal Territory of Labuan, off the coast of Sabah, Malaysia.
To determine the best fitting distribution function for the POT model, presently, the minimum ratio of residual correlation coefficient (MIR) criterion is used as a goodness-of-fit method. However, examinations in this study indicated that the MIR method has not always been a reliable approach in determining the best fitting distribution function. This study proposed an alternative approach, known as Norm-of-Residuals to replace it with MIR. Validity of Norm-of-Residuals was examined by the Chi-Square test. **Findings:** *The results of this study demonstrated that the Coupled method for the POT model is reliable and feasible, and the threshold value for the Labuan dataset is u = 2 m. Moreover, the proposed Norm-of-Residual method for selecting the best fitting distribution is very stable, and matched the POT model. The best fitting distribution function for the Labuan data is Weibull distribution with shape parameter k = 1.4, and the obtained significant wave height is 4.71 m for the return period of 100 years.* **Contribution:** *In this study, two methods were introduced to improve the POT model: First, the Coupled method to determine true threshold value for the dataset at hand. Threshold value in the model of Goda plays an important role to estimate significant wave height and decrease uncertainties in the Extreme Wave Analysis method (inference). Second, the proposed Norm-of-Residual method in this study guarantees the procedure of determining true distribution function for the model. This type of methods are usually called goodness-of-fit methods to determine the best fitting distribution functions, which is a very crucial step in estimating the return period of destructive waves in coastal and offshore areas.*
Keywords: Goda method; Peaks-Over-Threshold method; goodness-of-fit; Labuan; Significant Wave Height; Extreme Wave Analysis

Abstract ID: **AIMC-2017-STE-383**

AN EVOLUTION TO NEXT GENERATION INTELLIGENT HETEROGENEOUS CELLULAR NETWORKS

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Abstract

Introduction: *The convergence of internet and wireless mobile communication accompanied by the massive growth in the number of cellular subscribers has led mobility management to emerge as a significant and challenging domain for wireless mobile communication over the internet. Over the recent past, wireless communication market has witnessed a considerable amount of intensification, both in aspects of mobile technology and subscribers, which has led network operators and vendors to apprehend importance of efficacious networks along with an equally intelligent design processes.* **Methodology:** *Thus, to commend recent state-of- the-art technologies and in order to extensively contribute to their enhancement in near future, it is always interesting to have a quick glance at history of such technologies so as to sketch certain smaller steps that led to their present development.* **Findings:** *Wireless communication has undoubtedly became ubiquitous; it has almost revolutionized every single aspect of our daily lives. The sheer increase in number of cellular phones, mobile handheld devices, personal digital assistants and mobile subscribers has demanded an upgradation of cellular communication technologies in several generations to cater demand for modern data services, multimedia services, and voice communications.* **Contribution:** *This manuscript outlines and traces key developments and trends in this ever-growing domain of wireless communications.*
Keywords: Next Generation Cellular Networks, 4G Technology, Heterogeneous Networking, etc.

Abstract ID: **AIMC-2017-STE-388**

LIGHT SHELF AS A DAYLIGHTING SYSTEM IN A TROPICAL CLIMATE OFFICE SPACE

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Abstract

Introduction: *Daylighting is a passive design strategy for lighting office spaces given the fact that offices operate within day time, usually between 8am to 5:00pm which correspond to the period of daylight availability.*

Daylight is abundant in the tropics, free and has no negative impact on the environment. It has positive physiological and psychological effect on man as well as good colour rendering. Ironically, despite the abundant availability and the merits of daylighting especially in the tropics, it is not being fully utilized. Light shelve is one the innovative daylighting systems that can be employed to improve office spaces daylighting performance. Therefore, the focus of this study is the application of light shelf as a daylighting system in government offices in Malaysia. **Methodology:** *This study was carried out through literature search on thirteen disciplines. These discipline were building and environment, energy and building, renewable and sustainable energy, energy conservation in building, lighting research and technology, energy conservation and management, solar energy, renewable energy, indoor and built environment, energy policy, energy and buildings, renewable energy, and applied energy. Data were obtained from Science Direct, Web of Science, Scopus and Conference Proceedings. This was done by typing in key words such daylighting, light shelf, office spaces, visual performance, tropical climate and Malaysia. The review was from 1986 to 2016 to cover the length and breadth of the work that has been done in this area for the past 30years. This work includes previous review and empirical works. Attention was equally given to the methodologies and context on the work.* **Findings:** *The result of this study showed poor daylighting performance of government office spaces in Malaysia. The daylighting in these offices is either too low as a result of the use of excessive external shading devices to reduce interior heat gain or too high due to over glazed wall for aesthetics and daylighting. Consequent upon these is inadequate daylighting illuminance, non-uniform illuminance distribution and glare. This brings about visual discomfort. In addition, the study revealed that light shelf as an innovative daylighting lighting system can improve the day lighting performance of these office spaces.* **Contribution:** *The effectiveness of light shelf depends on the latitude, reflectance of the light shelf material, the angle of inclination, its depth, mounting position among others. However, there exist little work on the effect of the depth of light shelf and its distance from the ceiling on the daylighting performance of government office spaces in Malaysia. This paper therefore recommends investigation on the effect of the depth of light shelf and the variation of its distance from the ceiling on daylighting performance of government office spaces in Malaysia.*

Keywords: daylighting, light shelf, office spaces, visual performance, tropical climate, Malaysia.

Abstract ID: **AIMC-2017-STE-389**

SCREENING OF FACTORS AFFECTING BIOHYDROGEN PRODUCTION FROM SAGO WASTE WATER

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Abstract

Introduction: *Untreated sago waste water (SWW) contains high organic content which can cause severe environmental pollution. SWW that has not fully utilized is a potential susbstrate for biohydrogen production due to its starch content. We took SWW from Batu Pahat, Johor which contains COD and glucose. After acid pretreatment process the glucose was further increased significantly. pH, temperature, inoculum size, malt extract, yeast extract, metals concentration, and nitrogen sparge were factors investigated in this experiment. This study aims to select 3 most significant factors that affect biohydrogen production* **Methodology:** *Enterobacter aerogenes (E. aerogenes) was used in this experiment as a hydrogen producing bacterium. Initially, the bacteria were cultured in 100 ml LB medium in the flask. The flask then was placed in an incubator shaker at 150 rpm with the temperature of 35oC for 18 hours.*

Acid pre-treatment of SWW was carried out using 1.5% v/v H2SO4 at 121oC for 60 in an autoclave The acidic SWW was then neutralized to pH designed for this experiment.

The experiments were conducted in 125 ml serum bottles with a 80 ml working volume. Before fermentation was carried out, the prepared SWW was supplemented by modified endonutrient. After it was ready, inoculum, malt extract, yeast extract, FeSO4.7H2O, MgSO4.7H2O, and CuCl2.2H2O were added under sterile condition. The bottle was then purged by nitrogen gas and sealed with silicone stopper and alumunium cap. Fermentation was carried out using parameters according to Plackett Burman design. All experiments were conducted in incubator shaker at 48 hours with the agitation speed of 125 rpm.

The bacterial growth was determined using colony cell counting. The gas was collected using 50 ml gas tight syringe. Hydrogen concentration was measured using hydrogen analyzer. Initial and final glucose concentration was recorded using HPLC **Findings:** *SWW contains 460 mg/L COD and 0.084 g/l glucose . After acid pretreatment the glucose content was 40.88 g/l. The inoculum stock contains bacteria with OD600 of 4.5. It was found that from 10 phsyco-chemical factors, yeast extract concentration, fermentation temperature, and*

inoculum size were ranked as the most significant factor. Positive effect of yeast extract indicated that the more yeast extract added to the media, the higher the concentration of hydrogen produced. While the effect of inoculum and temperature was negative, indicating that less inoculum size and temperature was more preferable to achieve high hydrogen concentration. The model suggested that 36.76 µmol hydrogen can be produced by using these parameters; pH 7.25, temperature 35oC, inoculum size 5.19%, malt extract 1.97 g/l, yeast extract 2.00 g/l, iron 200 mg/l, magnesium 288.36 mg/l, cuprum 6 mg/l, without sparging of nitrogen. The maximum hydrogen concentration, volume production, and hydrogen yield were 36.34 µmol, 88 ml, and 2.41 mmol H2/mol glucose respectively, obtained from run no 10. **Contribution:** *Bacteria prefer glucose for hydrogen generation. However, the use of glucose from biomass feedstock is more preferred for bioethanol production, which gives higher yield and conversion rate than biohydrogen. In recent years, there has been an increasing interest in waste due to the cost effectiveness and renewability. Sago waste is one of the potential candidate that is available abundantly in Malaysia. However, the researches of biohydrogen production from sago waste are still limited, especially using single culture of E. aerogenes. Therefore, this paper is trying to fill the gap by investigating which factors are mostly significant to optimize hydrogen production from sago waste.*

Keywords: Biohydrogen, Sago waste, Dark fermentation, Renewable energy

Abstract ID: **AIMC-2017-STE-392**

THE SMALL HYDROGRAPHY MARINE BOUNDARY BOAT (SHUMOO) FOR BATHYMETRIC 3D SURVEYS IN SHALLOW WATERS

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Abstract

Introduction: *The aim of this paper is to presents SHUMOO (Small Hydrography Marine Boundary Boat) a new technology for bathymetry survey in shallow area such as bathymetry surveying lakes, reservoirs, rivers, etc. Bathymetry charts in shallow water area is difficult to produce since the present available tools only for the deep water such as in ocean. Small Hydrography Marine Boundary Boat (SHUMOO) is a small boat integrated with a systems of remote sensing technology, GPS and echo sounder, created by research students of National Institute of Technology (ITN), Malang.* **Methodology:** *SHUMOO is a Remotely Operated Vehicles (ROVs) concieved, and built to operate in shallow waters (0.5 m – 100 m). It is driven by non-polluting electric motor. This project is a low risk, more safety because remotely controlled by an operator in the ground based. SHUMOO was designed for shallow waters using Solidwork software. It was made form fiberglass material and equipped with propellers, motors, and servo. The navigation manuever of SHUMO is controlled by a remote control on the ground. Depth and position data will be broadcasted via wireless in real-time and received by computer on the ground.* **Findings:** *Small Hydrography Marine Boundary Boat (SHUMOO) is a small boat integrated with a systems of remote sensing technology, GPS and echo sounder. SHUMOO can be used for mapping the surface of shallow water bottom because it can detected of depth is 0.5 meter from surface. Boat navigation is connected with HydroPro software, and the results of measurement are stored in (x, y, z) data as the variables for bathymetric map.*

The Navigation displayed by HydroPro Software and 3D Simulation created by Terramodel Software. The shallow waters of measurement data can be used by governments and planners. In the future, SHUMOO will be developed as a Autonomous Surface Vehicle, upgrade the accuracy of GPS and Echosounder, and has its own software. **Contribution:** *Ketut Tomy Suhari is the team leader in the engineering of the SHUMOO, a coordinator for the hydrographic surveys, and a writer for this paper; Indah Jonthan Lomi, Rahmawati and M. Zainuri Hasan are the hardware and software engineering for SHUMOO; Hery Purwanto is superviser engineering of*
SHUMOO.

Keywords: SHUMOO, HydroPro, Shallow Water, Real Time Mapping System.

Abstract ID: **AIMC-2017-STE-400**

EFFECTS OF DIFFERENT PERMEABILITY LAYERS TO OIL FLOW IN POROUS MEDIA USING WATER-ALTERNATING-GAS INJECTION

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Abstract

Introduction: *Immiscible Water-Alternating-Gas (IWAG) injection is a process that targets to improve oil recovery and microscopic displacement efficiency in the oil fields. The method has been reported to be applicable to Malaysia reservoir in order to recover residual oil. This experimental study was aimed to observe the performance of IWAG, displacing oil in a model of different permeability of top and bottom layers simulating the reservoir.* **Methodology:** *The study was carried out by introducing immiscible injection mode of WAG, as tertiary recovery in the model. The immiscible gas floods were conducted at 10 psi using Perspex sand pack filled with different sand sizes, brine water of 20,000 ppm NaCl solution, and paraffin oil of 32^{o} API with viscosity of 21.3 cp. Each of the four models of different permeability was run at 1 cc/min flow rate, with a series of brine saturation, oil flooding for drainage, brine solution for imbibition, continuous CO2 flooding as secondary injection, and Immiscible Water-Alternating-Gas (IWAG) as tertiary injection to recover the residual oil.* **Findings:** *The cross-flow observed increases the vertical sweep, but generally the effect when applied to reservoir scale will give detrimental oil recovery volume. This is due to the gravity segregation and decreased flow velocity as shown in the reservoir model. Moreover, there is reduction in frontal advancement in the lower permeability layer. Thus, both gravity and viscosity are forces that are observed, causing the instability during displacement of fluids.* **Contribution:** *It is concluded that IWAG is proven to have potential to recover residual oil in reservoir layers of different permeability. Optimum flow rate for an efficient 2-cycle WAG should be studied by monitoring the IWAG process and evaluating the results of oil recovery.*

Keywords: IWAG, Different Permeability, Oil Flow

Abstract ID: **AIMC-2017-STE-402**

TENSILE BEHAVIOUR OF CHEMICAL TREATMENT FOR BAMBOO USING BOX-BEHNKEN DESIGN (BBD)

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Abstract

Introduction: *Previous studies proved that mechanical properties of natural fibres reinforced polymer composites are excellent and competent to be utilized in high-tech applications. In contrast, the presence of chemical constituents such as cellulose, lignin, hemicellulose and wax substances in natural fibres preventing them from firmly bind with polymeric resin. Thus, resulted in poor mechanical properties for composites. To overcome this defect, chemical treatment is introduced in order to enhance the fibre surface.* **Methodology:** *The effect of alkaline treatment on tensile behaviour of bamboo was studied. Box-Behnken design (BBD) tool was employed to create experimental design and to determine the significant factor that influence the conditions of treatment.* **Findings:** *Result show that treatment with 3% of NaOH concentration as a vital factor that greatly influence the tensile properties of the bamboo.* **Contribution:** *Percentage of NaOH concentration that give major influence to the tensile properties of the bamboo.*

Keywords: Bamboo; alkaline treatment; tensile behaviour; Box-Behnken

Abstract ID: **AIMC-2017-STE-403**

DESIGN OF MICROSTRIP HAIRPIN BANDPASS FILTER FOR 2,9 GHZ – 3,1 GHZ S-BAND RADAR WITH DEFECTED GROUND STRUCTURE

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Abstract

Introduction: *The Radar has very broad utility in a variety of fields, such as the use of telecommunications, the use in the military, or civilian use for navigation. One of the important part to improve the work of the radar system is a filter. The function of filter is to pass the desired frequencies and muffle unwanted frequencies. This*

paper discusses a new and simple design of the filter for S-band radar in the 2.9 to 3.1 GHz frequency. **Methodology:** *Filters are designed at the center frequency of 3 GHz with a bandwidth of 200 MHz, insertion loss <-3 dB, return loss > - 20 dB and realized into microstrip hairpin structure. A fith-order hairpin bandpass filter (BPF) is designed with Defected Ground Structure (DGS) in the form of a square groove. The addition of DGS can reduce filter size and eliminate harmonization, as well as increasing the return loss of the filter. These filters use substrate Rogers 4350B with relative dielectric constant (εr) = 3.48 and thickness of the substrate (h) = 1.524 mm. Measurements were performed in two situations: filter by using the casing and without casing.* **Findings:** *The measurement result of BPF without the casing shows an insertion loss of -1.748 dB at a frequency of 2.785 GHz and return loss of -21.257 dB that works at a frequency of 2.785 to 2.932 GHz. Meanwhile, measurements the BPF using a casing shows an insertion loss of -1.643 dB at a frequency of 2.921 GHz and return loss of -19.529 dB that works at a frequency of 3.021 - 2,820 GHz. Filter by using the casing shows better performance than without casing. It can be seen from the frequency shift value and the value of the filter response. Despite the shift in frequency and value of the response, the filter with casing may still work on the S-band radar that is in the range of 2-4 GHz.* **Contribution:** *This study is a new development which has not been published and contribute to the development of research in the field of antennas and filters in particular for s band radar applications. So the results of this study can be used in the S-band radar used for telecommunications, weather, maritime, and navigation.*

Keywords: microstrip bandpass filter, fifth-order hairpin, square groove DGS, return loss, S-band radar

Abstract ID: **AIMC-2017-STE-405**

THE EXTRACTION TEMPERATURE EFFECT IN THE MODIFICATION OF NEPHELIUM TANNIN BASED BIOSORBENT

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Abstract

Introduction: *The tannins produced from the skin of nephelium will be used as material biosorbent metal ions in solution. The synthesis process of biosorbent material is need for a study of the parameters that affect the synthesis and modification of the tannin-based nephelium biosorbent (NTBB). The parameters examined in this study are the temperature of the tannin extraction from the nephelium peel toward the result of extract tannin polymerization with formaldehyde to form NTBB. The other parameters are determining the stability of NTBB in acidity system to produce a material that is stable and optimum performance as biosorbent in solution.* **Methodology:** *Generals. The nephelium peel was obtained from kind of Binjai. NaOH, HCl, CH2O (formaldehyde) were purchased from Merck and were used without purification.*

Method. Extraction of tannin from the nephelium peel was conducted by reacting nephelium peel powder with NaOH at temperature variations (room temperature, 50, 70, 90 °C). Solids and solutions were separated. Fraction solution is dried at 65 °C to obtain crystalline solid. The weight of tannin extract solids after drying was measured.

Synthesis of NTBB was done by dissolving in NaOH and H2O at 80 °C until it becomes a homogenous mixture. The mixture was then added formaldehyde. The mixture was kept under these conditions for 8 hours until polymerization is formed. Gel that has formed is then dried at 65 °C to remove water and form a gel to be more solid. These results are called Nephelium Tannin Based Biosorbent (NTBB). NTBB was characterized by spectrophotometer of Fourier Transform Infra-Red (FTIR) (Simadzu Prestige-21).

The stability study of NTBB was done by mixing NTBB in H2O. The solution was adjusted acidity using pH meter in the variation of pH. The mixture was strirred and then filtered using. The filtrate was obtained and analyzed using UV-Vis spektrofometer. **Findings:** *The temperature variation in the extraction process of tannins from the nephelium peel powder can affect the amount of tannin extract and the results of polymerization. The higher the extraction temperature, the amount of tannin extracts was also greater reach 5.073 g and the higher temperature extraction, the result of polymerization indicate that there NTBB aldehyde group from oxidation process of primary alcohol groups. NTBB stability is affected by the acidity of the system where NTBB optimum stability in solution occurs at pH 5.* **Contribution:** *Originality of this study is the use of tannin from the nephelium peel as biosorbent had never been studied before, tannin used is derived from persimmon, guava leaves, mangrove, wine, considering that Indonesia is rich in tropical fruits like nephelium. The originality from this research is The contribution of this study is to provide information and a new discourse about the isolation*

of tannin from the lappaceum peel and the polymerization process as Nephelium Tannin Based Biosorbent (NTBB) environmentally friendly.

Keywords: tannin; nephelium; temperature; modification; biosorbent

Abstract ID: **AIMC-2017-STE-407**

FLOWSHOP PRODUCTION SCHEDULING USING PASCAL'S TRIANGLE METHOD TO DETERMINE OPTIMAL SEQUENCE

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Abstract

Introduction: *Scheduling is a planning process in an activity to gain maximum results with the minimum use of resources. In the flowshop scheduling, the process used is a flow or a sequential series. This research discusses a production scheduling using flowshop production scheduling with consider makespan, lateness and flow time.* **Methodology:** *The research object is a production scheduling process with 16 pieces of jobs that will be produced using 6 pieces of machines. One effort that can be done to minimize processing time and delays the completion of the job by using an effective production scheduling. The method used in this research is the Pascal's Triangle Method.* **Findings:** *After computation, it obtained optimal value in makespan 214.7, mean lateness 1678.38 minutes and mean flow time 15928.38 minutes.* **Contribution:** *The Pascal's Triangle Method can solve flowshop production scheduling problems by reducing m machines n jobs to 2 machines n jobs.*

Keywords: Scheduling, Flowshop, Makespan, Lateness, Flow Time

Abstract ID: **AIMC-2017-STE-408**

MICROBIAL DELIGNIFICATION OF OIL PALM MESOCARP FIBER BY SOLID STATE CULTURE OF PHANEROCHAETE CHRYSOSPORIUM TO ADVANCE ENZYMATIC REDUCING SUGAR PRODUCTION

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Abstract

Introduction: *Lignocellulosic biomass is the most plentiful biomass on earth; they are renewable with great potential in bioconversion to various products. A key set back to the conversion of the polysaccharides to hexose and pentose sugar is due to the presence of lignin recalcitrance.* **Methodology:** *Therefore, this manuscript described the microbial delignification of oil palm mesocarp fiber (OPMF) by Phanerochaete chrysosporium (ATCC 24725). The effects of inorganic salt media and incubation time on lignin degradation, and cellulose and hemicellulose recovery were studied. Enzymatic activities; cellulases, xylanase and ligninases and their role in delignification were also studied* **Findings:** *Media composition considerably affected lignin degradation, with 21.2 % lignin removal, 13 % and 9 % increase in cellulose and hemicellulose, respectively. Incubation time was also found to play significant role in lignin removal. FESEM images before and after delignification showed the effect of microbial treatment on the surface modification of the fiber. High reducing sugar was obtained after enzymatic treatment of OPMF.* **Contribution:** *This is the first study to report the delignification of oil palm mesocarp fiber by Phanerochaete chrysosporium to advance reducing sugar production*

Keywords: Delignification, OPMF, Solid state culture, Phanerochaete chrysosporium, reducing sugar

Abstract ID: **AIMC-2017-STE-412**

POTENTIAL COMMUNICATION, NAVIGATION AND SURVEILLANCE (CNS) TECHNOLOGIES FOR UNMANNED AIRCRAFT SYSTEM (UAS) TRAFFIC MANAGEMENT (TM)

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Abstract

Introduction: *Air Traffic Management (ATM) is designed based on the notion of a pilot navi-gating an aircraft from within the aircraft. Increasing demand for Unmanned Air-craft Systems (UAS) usage and its safe integration into segregated/non-segregated airspace, on the other hand, have raised a question on the adoption of the current ATM for the UAS Traffic Management (TM). The Procedures for Air Navigation Services-Air*

Traffic Management (PAN-ATM) and Procedures for Air Navigation Services - aircraft operations (PAN-OPS) rules are both developed for manned flight operations. The increasing demand for UAS civil applications include precision agriculture, fishery protection, package delivery, infrastructure monitoring, aerial photography and video, land surveying, environmental assessment, security surveillance, emergency response for medical services, forest fire detection, search and rescue, con-tamination measurement, recreation and many more applications to emerge in the near future. The large number of potential applications indicate the UASs occupancy coverage of the airspace and hence the need for UASs traffic management (UTM). In other words, an ATM like system is needed to safely manage the UAS traffic in a particular airspace. **Methodology:** *This work conducts an exploratory research to identify the distinctions between a manned and an unmanned flight operations. It then identifies the required functionalities and the feasible Communication, Navigation, and Surveillance technologies to aid safe implementation of the functions. This work is developed based on the assumption that the Unmanned Aircraft Systems are remotely- piloted and operates in the class G airspace (below 500 feet) in urban areas.* **Findings:** *This work has identified the required functionalities to implement traffic management for unmanned aircradt system in low altitude airspace in urban areas. It then identified the components that would make up the Unmanned Aircraft Traffic Management System (UTM). Finally, potential Communication , Surveillance, and Navigation (CNS) technologies to implements the functions and interaction among components are proposed.* **Contribution:** *Research works in Air Traffic Management (ATM) for the UAS Traffic Management (TM) is still in infancy. And hence this work is crucial, novel and of high value for the researchers and implementers of this new mode of urban transportation for various economic developments.*

Keywords: unmanned aircraft, low altitude, traffic management, surveillance, communication, navigation

Abstract ID: **AIMC-2017-STE-414**

EXTRACTION OF NAPHTHENIC ACIDS FROM ACIDIC PETROLEUM CRUDE OIL UTILIZING 2-METHYLIMIDAZOLE WITH THE AID OF CA/AL2O3 AND CE/AL2O3 CATALYSTS

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Abstract

Introduction: *Naphthenic acids (NAs) is one of the major sources of corrosion in oil pipelines and distillation units in crude oil refineries. Removing NA compounds from crude oils is regarded as one of the most crucial processes in heavy oil upgrading. Catalytic deacidification method had been developed in order to reduce the total acid number values in crude oil.* **Methodology:** *Crude oil from Petronas Penapisan Melaka had been chosen to be studied with original total acid number (TAN) of 2.43 mgKOH/g. The parameters used were different catalyst calcination temperatures, catalyst loading, reagent concentration, reaction times and reaction temperature. A reagent of 2-methylimidazole in ethanol was used as acid removal agent and monometallic calcium and cerium doped with alumina as a catalysts.* **Findings:** *The results showed that with the aid of catalyst, the TAN can be reduced to lower than 1 mg KOH/g. Catalyst of Ca/Al2O3 with a calcination temperature of 900oC gave a better reduction than Ce/Al2O3 with 83.54% of TAN reduction (2.43 to 0.4) for Ca/Al2O3 catalyst and 71.19% (2.43 to 0.7) for Ce/Al2O3 catalyst. The best catalyst underwent several characterization methods such as X-Ray Diffraction Spectroscopy (XRD), Fourier Transform Infrared Spectroscopy (FTIR) and Thermogravimetry Analysis (TGA-DTA) for its physicochemical properties.* **Contribution:** *It can be concluded that catalytic deacidification method was effective in extracting NAs from the crude oil thus lowered the TAN value to less than 1 mg KOH/g.*

Keywords: Naphthenic acids, Crude oil, Catalysts

Abstract ID: **AIMC-2017-STE-416**

A SIMPLE THERMAL ENERGY HARVESTING FOR LOW POWER APPLICATION

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Abstract

Introduction: *Thermal energy harvesting (TEH) is a process of capturing heat from several sources or heat waste that spread freely into the surrounding or available in the environment. These heat waste can be collected, convert into electrical energy and use for low power application devices. Large amount of thermal energy can*

be produced proportional with higher amount of heat waste harvest. Aims of this project is develop a simple thermal energy harvesting device to harvest heat waste from several source and convert it into electrical energy that can be used for low power applications with less maintenance and cost. **Methodology:** *A simple design of TEH device consist of thermoelectric, dc-dc booster converter, electrical energy storage and DC output port source is developed. Thermoelectric device used is based on a conversion principle from temperature difference into electrical energy known as Seebeck effect concept. Seebeck effect defines that, generation of an electrical potential difference will occur as a result of a temperature difference across a conductor. Generally, the thermal energy harvest is in very small amount, therefore power amplification circuit are required. Moreover, an energy storage is necessary to store the electrical energy generates. This device will operates as simple as tapping the thermoelectric to heat waste sources, collect the heat waste and convert into electrical energy. Then, the converted energy are ready to be use with any low power devices.* **Findings:** *There are several electrical output from various waste heat source has been measured and convert into electrical energy. From vehicles body that has been exposure to sunlight for more than 4 hour, engine combustion and sort of electrical appliances such as electrical kettle, cloth iron, air condition compressor, heater and many more. These several range of temperature has been measured from 30◦C until more than 100◦C. As a conclusion, we can say that this thermal energy device has been successfully develop and had a capability to harvest electrical energy from 30◦C until 300◦C besides produce a minimum raw voltage output from 7mV until about 1.5V without any voltage booster. However, since the main purpose of the project is to convert heat waste into electrical energy that can be used for low power device, the stable 5Vdc with approximately 0.1A is finally obtained.* **Contribution:** *This simple thermal energy harvesting device will hold a promise for electronic device application, hence replacing batteries with a benefit of green technology, environment sustainable, less maintenance and less cost. Nevertheless the waste heat conversion is really useful and beneficial to overcome national energy crisis. The small energy produce can be improve for high power application usage in future. The result is also beneficial to nation in reducing energy and pursuing green growth for sustainability life. This result is in line with Eleventh Malaysia Plan (RMK-11 2016-2020), especially in support trust number two and trust number four.*

Keywords: thermal energy harvesting, thermoelectric, green technology, renewable energy

Abstract ID: **AIMC-2017-STE-422**

DECISION SUPPORT SYSTEMS SELECTION OF ANALYTICAL METHOD OF USE DISTRIBUTOR HIERARCHY PROCESS (AHP) IN CEMENT PADANG

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Abstract

Introduction: *In the development of PT Semen Padang has a lot of uses of information technology in its operations, such as the implementation of computer networks in the process of transmission of information from one user to another, processing employee data, processing employee payroll, attendance record keeping, and others. But the determination of the decision making cement distributor has been no application of decision support systems. The decision runs still manually so that the process of determining decision making is slow, because it must match the requirements of the proposed distributor with the provisions that have been defined* **Methodology:** *Distribution is the process of distribution of goods from producers to consumers. In choosing the distributor must be seen from a number of factors with the weight of each vote. To overcome this problem, we used Analytical Hierarchy Process (AHP). AHP is a method of multi-criteria decision making. Design a system based on the requirements of the principle, legality, infrastructure and administration.* **Findings:** *The findings conducted in several stages, determination of the hierarchy and priorities of each of the criteria, do pairwise comparison matrices for alternative distributors. Results of the total priority multiplied by the requirements of distributors and after it is done using the highest ranking of system applications.*

Contribution: *Contributions to PT Semen Padang in order to use AHP as a decision support system with a computerized database Microsoft Access*

Keywords: Decision Support Systems, Requirements, Analytical Hierarchy Proces, distributors, system application

Abstract ID: **AIMC-2017-STE-425**

THE EXPERTS EVALUATION ON THE ELEMENTS OF TECHNOLOGY IN A FRAMEWORK OF MOBILE APPLICATION FOR KINDERGARTEN EARLY READING

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Abstract

Introduction: *Many research emphasized technology are beneficially to foster children learning. The advancement of mobile technology provided the opportunities for using the mobile application in early reading instruction for young children.* **Methodology:** *The present study highlighted the use of Fuzzy Delphi Method to obtain experts consensus on determining the elements of technology in a framework of mobile application for kindergarten early reading. This study involved 14 experts from mobile learning and early childhood education field. The expert's opinion collected by questionnaire.* **Findings:** *Result indicated the consensus of experts on seven elements of technology namely multimedia, ease of use, interactive, intuitiveness, legibility, readability and gamification.* **Contribution:** *This study revealed the important of incorporating a technology elements in the development of mobile application for kindergarten early reading.*

Keywords: technology, mobile application, early reading, framework, childhood

Abstract ID: **AIMC-2017-STE-431**

DEVELOPMENT DASHBOARD OF INFORMATION STT IBN SINA BATAM METHOD USING OBJECT ORIENTED ANALYSIS AND DESIGN (OOAD)

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Abstract

Introduction: *Organizations need to monitor and provide of information on an ongoing basis to ensure the achievement of its performance objectives that have been made. Performance monitoring process requires data and information collected from all parts of the organization. Effective means that the meaning contained in the of information can be perceived correctly, so the purpose of information delivery can be achieved. Dashboard is a tool to present information at a glance, the solution to the organization's information needs. Dashboard inform using effective presentation media. The aim of developing this dashboard are: implementation of the method of Object Oriented Analysis and Design (OOAD) in the development of STT Ibn Sina Batam dashboard; Designing dashboarb facilitate obtaining information on the activities of STT Ibn Sina Batam; Designing a system dashboard STT Ibn Sina Batam modern, actual, effective and efficient.* **Methodology:** *The evaluation method using structured interviews were submitted to the representatives of use, staff STT Ibn Sina, lecturers, students to assess aspects of the components and functions of the dashboard and its implementation. The development phase dashboard system consists of two parts; designing the layout and navigation controls dashboard and database design of information dashboard.*

Analysis of system design with OOAD (Object Oriented Analysis Design) examining the requirements in a class and objects encountered within the scope of the problems that lead to software architecture based on the manipulation of objects the system or subsystem. Where there are several concepts in OOAD namely: classes, objects, methods, attributes, Attribute, Abstraction **Findings:** *Development System Dashboard entire information on STT Ibn Sina Batam can help the decision made by the staff, faculty, and students who are in the scope of STT Ibn Sina Batam. Object Oriented Design Analysis methods can assist in the implementation of information Dashboard STT Ibn Sina Batam in implementing the system in the future.* **Contribution:** *Implements Object Oriented Analysis method of design in the development of information dashboard; Also Assist in building facilities, Quality and Credibility STT Ibn Sina Batam as flagship campuses globally competitive.*

Keywords: Information, dashboard, Object Oriented Design Analysis

Abstract ID: **AIMC-2017-STE-435**

GREEN ECONOMY AND SUSTAINABLE DEVELOPMENT FOR NIGERIA

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Abstract

Introduction: *This paper highlights the concept of a green economy which affirms to promise an attractive orientation out of the present economic crises affecting both developed and developing countries for sustainable economic growth and environmental improvements. Thus, concept of sustainable development establishes a basis for apprehending the development of the concept of green economy to enhance economic growth and environmental benefits for future humanity. The main purpose of this paper is to improve the global economic and environmental crises through a sustainable green economy for the survival of the present and future generations.* **Methodology:** *Most of the approaches used in this study were obtained from previous studies based on the green economy and sustainable development concepts. Therefore, different attributes were used for the identification of economic and environmental crises currently affecting Nigeria. The major problems affecting green economy were identified and analyzed based on the present situation that Nigeria is currently facing now. Therefore, the major problem influencing green economy and sustainable development is global economic crises. Thus, environmental challenges are also influencing both developed and developing countries especially Nigeria for instance. Additionally, other challenges of this study were climate change, poverty and hunger, social instability, environmental degradation, desertification, sprawl, flooding, pollution, loss of biodiversity, and erosion. Meanwhile, global climate change was also identified as one of the major environmental challenges affecting the green economy [6]. This is resulted primarily by the carbon dioxide (CO2) emissions released from the burning fossil fuels such as gas, coal, oil spill, etc. In summary, sustainable development has been approached in practice which focus on environmental protection and undesirable risks for the survival of the present and future generations [16].* **Findings:** *From the results, Nigeria's multidimensional poor index (MPI) is 0.2790, whereas its contributions to overall poor deprivation is 40.40%. As such, 50.90% of the Nigeria population are multi-dimensional poor, while an additional 18.40% live near multi-dimensional poor. Therefore, the average value of deprivation witnessed by Nigerians in multi-dimensional poor is 54.80%. In addition, the recent Nigeria's 2014 human growth index is 0.5140, which exceeds the average value of 0.5050 for countries in the low human growth index. Similarly, Nigeria's overall loss in terms of human growth index as at 2014 survey year is 37.80%, which also exceeds the average value of 32.00% for countries in the low overall loss. Meanwhile, there is a fluctuation in GDP value (i.e. about -1.51% in 2016) with a reduction in the fourth quarter of construction, manufacture, housing estates, and trade sectors (-6.04%, -2.55 %, -9.30 %, and -1.45 % respectively). Therefore, Nigeria's inflation with respect to food prices is elevated from 17.80% to 18.50% in September and October, 2016 respectively.*

In summary, Nigerians are seriously experiencing global challenges especially in terms of economic and environmental crises which led to serious poverty in the country. Detail results are presented in the main paper.

Contribution: *In practice, the findings of this study will serve as a useful indicator to provide positive solutions to the global issues affecting both developed and developing countries. The findings will also establish a global environmental improvements; eradication of hunger and poverty; creating additional green jobs for citizens; reducing the subsidies for fossil fuels; promoting hydrogen and sound renewable energy fuels; restoring investment and natural resources; and low-price distributed renewable energy technologies for future humanity [6, 14, and 15]. In summary, there are many ways in which developed and developing countries are benefiting from green economy.*

Keywords: Green economy, sustainable development, economic crises, environmental challenges, CO2 emissions, fossil fuels.

Abstract ID: **AIMC-2017-STE-440**

3D GEOMETRIC SOLID OBJECT VOLUME DETERMINATION USING CLOSE RANGE PHOTOGRAMMETRY METHOD

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Abstract

Introduction: *It is important to know cutting and filling volumes in many survey, engineering and mining works. Volume calculation, generally, are completed with conventional terrestrial surveying equipments. They are GPS instrument and Total Station. The biggest problem with operation of the equipment are time and cost. Therefore, we need an alternative method and equipment to resolve the constraints of short time, cost, and risk area but still retaining the quality and accuracy of volume calculation results. One of them is using close range photogrammetry. This study aimed to quantify volume using close range photogrammetry methods with a lower cost and easily just by using non-metric cameras like Digital Single Lens Reflex (DSLR).* **Methodology:** *Generally, close range photogrammetry records objects on earth with the position of the camera on the ground. Distance between the object and the camera is less than 100 meters and cameras stations around the object. The camera used Digital Single Lens Reflex (DSLR) which is non-metric cameras. User needs to be calibrated beforehand. Calibration determines distortion parameters and others parameters. The images can be shaped 3D geometric solid object that will be used for engineering purposes, especially volume determination. Research objects are 3D geometric solid objects consist of cuboid, cylinder, and ball. For comparative data, mathematical calculations using tape measure results data is assumed correct value. There are two methods of volume determination using close range photogrammetry. They are using Surpac software and mathematical calculations based on the analysis of 3D models.* **Findings:** *The Results of this research is value of each 3D geometric solid object volume. Differences volume of each 3D geometric solid object using close range photogrametry method with Surpac software where cuboid, cylinder, and ball to volume assumed correct value are 26.6793125 cm3, 87.0067 cm3, and 680 617 cm3, whereas difference volume of each 3D geometric solid object based on analysis results 3D model are 7.8757 cm3, 11.2243 cm3, and 179 504 cm3. Precision analysis conducted by statistical tests using standard deviation. Tolerance limit of measurement used is ± 2σ whereas confidence level is 95%.* **Contribution:** *The benefit of this study is close range photogrammetry method more advantageous in time and cost base according to classical method. Time saving will be more when we use optimal close range photogrammetry evaluation process according to the object shape and specifications. That is,in respect of object properties when photogrammetric evaluation have been made optimal level, time advantage could be go up. Risky places to reach or unreachable places or when required to short time to complete works, close range photogrammetry method have been advantageous.*

Keywords: volume, non metric cameras, close range photogrammetry, 3D geometric solid object

Abstract ID: **AIMC-2017-STE-445**

UTILIZATION OF PECTIN FROM LEMON PEEL WASTE AS CORROSION INHIBITOR

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Abstract

Introduction: *Corrosion, especially on the surface of objects and components made from ferrous metals, is very disanvantageous. Many efforts have been done to prevents corrosion such as finding corrosion inhibitor materials to reduce rate of corrosion. Pectin, natural polysaccharide contained in plants, has been known to possess inhibition properties towards corrosion. In this research, pectin was extracted from lemon peel waste and tested for its efficiency as corrosion inhibitor.* **Methodology:** *Pectin was extracted using HCl and precipitated using ethanol. The extracted pectin was characterized using FTIR. The method used in calculating the inhibition efficiency and corrosion rate was weight loss method. The tests conducted to samples of iron plate with 13,92 cm2 surface area on HCl 1M corrosive media at room temperature. The variations in the concentration of pectin used were 0 g/L, 2 g/L, 4 g/L, and 6 g/L. Durations of soaking time tested were 1, 2, and 3 hours.* **Findings:** *Percent yield of pectin obtained via extraction using HCl and ethanol was 35%. Highest inhibition efficiency reached at optimum pectin concentration of 4 g/L, and optimum soaking time of 2 hours. Lowest corrosion rate was 2,6 x 10-5 grams/cm2.hour and highest inhibitor efficiency was 78%.* **Contribution:** *This research provides data about possibility of pectin extraction from lemon peel waste as well as its utilization*

as corrosion inhibitor. To the best of our knowledge, there are no report yet about pectin from lemon peel source.

Keywords: lemon peel, pectin, corrosion inhibitors, corrosive media, corrosion rate, weight loss method.

Abstract ID: **AIMC-2017-STE-449**

AN ULTRASONIC SENSING SYSTEM FOR DETECTING FOREIGN BODIES IN MILK CARTONS

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Abstract

Introduction: *Foreign body refers to any unwanted matter found in food. The existence of foreign bodies resulted in the food being unfit for human consumption. Milk is widely consumed in the world as it is considered as a healthy drink due to it is high nutrients levels. In Malaysia, milk is seen as an important drink to the extent that the government made is as part of the Food Supplemental Programme which aims to encourage milk drinking among primary school pupils. However from time to time cases of milk contamination are reported. This paper presents the application of an ultrasonic sensing system to detect foreign bodies in milk cartons.* **Methodology:** *In this project, the relationship between the foreign bodies in terms of their dimensions and the resultant amplitude were investigated. Mathematical modelling were carried out based on two ultrasonic parameters i.e. acoustic impedance and wave amplitude utilizing several types of foreign bodies with different dimensions. Three types of foreign bodies which are steel, rubber and air were investigated to determine the voltage amplitude detected by the ultrasonic receiver when the foreign bodies obstructed the ultrasonic wave propagation path. The diameters of foreign bodies were in the range from 4 mm to 11 mm.* **Findings:** *The results showed good correlations between the receiver voltage and the size of foreign bodies with correlation coefficients greater than 0.95. Each foreign body also demonstrated different voltage amplitudes when several sizes of the foreign bodies were tested which showed the ability of the system to distinguish the size of each foreign body.* **Contribution:** *The ultrasonic system has the advantage of being inexpensive and it is able to detect a wide range of materials. In addition, there is no problem with safety as there is no radiation hazard when using an ultrasonic system. Besides, the ultrasonic system can be placed around the food to be examined without the need to open or damage the food packaging in order to detect the existence of foreign bodies.*

Keywords: Foreign body; milk; acoustic impedance; amplitude wave

Abstract ID: **AIMC-2017-STE-450**

THE DESIGNING CRITERIA AND SUB-CRITERIA OF UNIVERSITY BALANCE SCORECARD USING ANALITICAL HIERACHY PROCESS METHOD

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Abstract

Introduction: *Universities have an important role in determining the progress and prosperity of a nation. In connection with this progress, the social demand for accountability of higher education also emerged broadly, therefore, the college should be able to compete to improve the quality of all aspects college business strategy both internally and externally.* **Methodology:** *The design will use the Balanced Scorecard and Analytical Hierarchy Process.*

Balance Scorecard method is a method that has the ability to analyze leading indicators and lagging indicators. Lagging indicators consist of a financial perspective, while Leading indicators consist of internal business process, learning and growth, customer. While Analytical Hearachy process is a method that determines the best alternative amongst the chosen criteria and sub criteria will be ranked, started from the highest score, thus, it will become benchmark percentage to determine the value range from the highest to the lowest. **Findings:** *The criteria and sub criteria of this study are the four main criteria taken the persefective of balance scorecard , Internal Bisnis, Customer, financial, Learning and Growth. whereas the 9 sub-criteria used to measure the performance are taken from higher education in the region Pringsewu.* **Contribution:** *A university accountability can be seen from the performance measurement of the college, the aim of this study is to design sub criteria and of performant measuremen of a university to improve the quality of higher education in the district Pringsewu Lampung*

Keywords: Keyword: Performance, Performance colleges, Balance Scorecard, AHP

Abstract ID: **AIMC-2017-STE-454**

EFFECT OF PRESSURES ON EXPANDED POLYSTYRENE (EPS) DRY MIX MORTAR BLOCK

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Abstract

Introduction: *Nowadays, there is more demand than supply on the uses of material in the construction. Thus, the need to use alternative materials should be widely used and practiced among the construction and development to pro-longed the material for future generation supply. The objective of this study is to investigate the effect of different pressure exerted between 700kPa, 900kPa and 1100kPa to the replacement of Expanded Polystyrene (EPS) at 20%, 25%, 30%, 35% and 40% of sand replacement in achieving target strength of 5N/mm² to 7N/mm² of EPS dry mix mortar block.* **Methodology:** *In this study, the basic mix proportion of dry mix mortar with EPS powder replacement was: cement:sand with ratio of 1:2.5. The content of EPS applied in this study were with the replacement proportion of 20%, 25%, 30%, 35% and 40% to the sand volume. The EPS powder ratio was calculated as the ratio of the mass of the total dry mix content to the mass of the sand in the in the dry mix content. Mixing of cement, sand and water to form control mix. Then, addition of EPS as a sand replacement at 20%, 25%, 30%, 35%, and 40%. The ratio of the cement in the mix remains the same in all mix while the ratio of the sand will be differing as the increasing of EPS powder ratio replacement in the mix. The procedure was repeated until 40% of EPS powder replacement. Mix were cast into cubes 100x100x100mm and placed under hydraulic press machine for designated pressure of 700kPa, 900kPa and 1100kPa. The specimens were demoulded approximately 24hour after casting and then subjected to 7 and 28 days of curing.* **Findings:** *From the result that obtained, it was found that the most suitable pressure to be exerted is 700kPa since it was the less required pressure needed to achieve the target strength of 5-7 N/mm² at 20% of EPS replacement which is 5.74 N/mm². Besides, it was shown that the increase of pressure exerted to the EPS dry mix mortar block also will increased its density thus resulted in higher compressive strength.*

The target strength of 5-7N/mm² for mix with applied pressure of 700kPa and 900kPa achieved at mix with minimum EPS replacement of 20% which the result is 5.74N/mm² and 5.947N/mm² respectively. However, for mix applied with 1100kPa, the target strength already achieved at control mix which is 7.53N/mm² and mix with 20% of EPS replacement surpass target strength which is 12.83N/mm. This results indicates that the pressure applied to the mix also play a greater role in affecting the compressive strength of the mix. **Contribution:** *Ali M.,A.,A. (2012), his study is about to produce self-compacted polystyrene concrete by using expanded polystyrene beads as a partial replacement in the sand proportion. The result in this study indicated that the increased of EPS beads in the concrete, the decreased of compressive strength obtained.*

Tamut et al. (2014), their study in Partial Replacement of Coarse Aggregates by Expanded Polystyrene Beads in Concrete, density affects the compressive strength where the increasing of density will increasing the compressive strength.

Keywords: Curing; Compressive Strength; Dry Mix Mortar Block; Expanded Polystyrene (EPS) powder; Pressure, Replacement

Abstract ID: **AIMC-2017-STE-458**

ON SITE FIELD SOLUTIONS TO PILE ECCENTRICITIES AND PILE FAILURES

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Abstract

Introduction: *The primary aim of this study is to evaluate the maximum allowable pile group eccentricity of several common pile group arrangements. Results of this study indicates that the norm adopted maximum allowable eccentricity value of 75 mm for each individual pile is quite misleading and may result in an unsafe pile group performance! Rather, results from this study suggests that the critical factor is not the eccentricity of individual piles but the overall pile group centroidal eccentricity that governs the safety and reliability of pile group load carrying capacity.* **Methodology:** *The short comings to drive pre designated piles at pin point accuracy at exactly the correct position on the ground has raised questions of how much an eccentricity limit can be allowed for each pile or rather pile group arrangements such that previous pile cap designs are still safe and applicable, and does the net service load of a column supported by a particular pile group arrangement as*

well as the pile spacing play a role on this eccentricity limit, has to be addressed.Several commonly adopted pile group arrangement is selected for this study, ranging from a two pile group to a six pile group arrangement. The use of Axial Load - Moment Equilibrium equation is then applied to map out allowable eccentricities such that loads distributed to each pile is less than the pile working load. The use of the 'Pile Group Centroidal Eccentricity Limit Charts', helps to establish a safe zone to locate 'add-on' piles. Further analysis is then carried out to determine the optimum position of 'add-on' piles by comparing the pile load distribution pattern of the selected pile group arrangement, for each corresponding 'add-on' pile locations within the safe zone. **Findings:** *This study has resulted in formulating Net Pile Group Eccentricity Limit Charts for several common pile group arrangements usually adopted in practice. These charts can be referred to evaluate the safety and reliability of pile caps that has been designed earlier by ignoring pile eccentricities against actual pile eccentricities recorded on site. Another source of related problem is where eccentricities beyond 'allowable' limits occur. This will render pile groups and the subsequent pile caps as 'unsafe' to sustain column loads due to eccentric moments which causes loads distributed to piles to be greater than the pile working load capacities! The most practical solution usually adopted on site to rectify this problem is by installing additional or 'add-on' pile/s. This helps to reduce the intensity of loads distributed to all piles to values lower than the pile working load capacities. Thus the secondary aim of this study is to formulate a procedure as to determine the optimum location and number of additional or 'add-on' pile/s to be driven, such that the new pile group arrangement, inclusive of earlier piles that has been driven with excessive eccentricities, can be salvaged. This has resulted in the development of the Optimum Additional/Replacement Pile Location Chart.* **Contribution:** *The development of both the Net Pile Group Eccentricity Limit Chart and the Optimum Additional/Replacement Pile Location Chart has never been presented in any conferences/seminars/books or any known construction specification document. Instead the current practice of comparing on site individual pile eccentricities with a maximum allowable eccentricity of 75mm has been adopted worldwide as a basis of Pass/Fail criteria. Also there is no known literature that explicitly relates net column service load/pile working load ratio and pile spacing to allowable pile group centroidal limit.*

Keywords: Pile, Pile Eccentricities

Abstract ID: **AIMC-2017-STE-464**

QUANTITATIVE ANALYSIS OF GOLD CONCENTRATE USING FIRE ASSAY BY GRAVIMETRY AND SPECTROPHOTOMETRY METHOD

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Abstract

Introduction: *Gold ore containing Ag (10-15%), Cu, Fe, Bi, Pb, Sn, Zn, and Pt in small quantities. The gold is separated from other metal elements to obtain pure substances. Gold separation contained in these rocks can be used several ways including fire assay, amalgamation, sluice box, and cyanidation. In this research the gold separation was done using fire assay method due to cheapest and most accurate method so far even equally with X-Ray analysis. The level of accuracy of fire assay can achieve 0:04%. The final result of the analysis is conducted the weighing using gravimetry or measured with AAS instrumentation.* **Methodology:** *Fire assay method involves the dry chemical reagents or flux. Gravimetric assay done by heavy metals in a pure state. The stages of fire assay methods include sample preparation, the addition of flux, smelting, cupellation, separation of gold and silver, partings and weighing. Smelting process coupled with flux, which is a substance that binds impurities and to form a substance that is easy to melt, called slag. Sample preparation includes crushing the samples, milling machines, and stirring. Samples were crushed until smooth reaches ± 200 mesh size to obtain representative results. The addition of flux which has a composition include Na2CO3, PbO, SiO2, Na2B4O7, CaF2, and flour aims to make the process of fusion by binding to substances which are not desirable as a metal oxide (SiO2 and TiO2) and sulfur, such as pyrite (FeS2) and chalcopyrite (CuFeS2) contained in the mineral. The tools used in this test include fusion furnace, muffle furnace, multipour set (loader + Mould + unloader), test tubes 10 mL, crucible, cupel 8A & 6A and AAS. The materials used in this research include gold concentrate, sample STD G. 905_6, Flux (Na2CO3, PbO, SiO2, Na2B4O7, CaF2, HCl 37%, KNO3, nails, silver, HNO3 65% and distilled water.* **Findings:** *The samples in this research including gold concentrate and cupel loss that respectively analyzed using gravimetry and spectrophotometry method. Based on test results, it can be summed up as follows:*

1. The average gold content of the concentrate sample tseted using fire assay methods gravimetrically was 14.41 mg/g. while the average gold content of the cupel loss sample using AAS was 6.27x10-6 mg/g.

2. The results of gold concentrate by fire assay method with a gravimetric with precision value (% RSD) was 3.3850%, while the value of CV Horwitz was 10.7078. The accuracy with trueness value of 99.06%. AAS test results with precision% RSD value of 41.1290 while CV Horwitz amounted to 34.3292, while the value of accuracy (% recovery) of 99.88%, and then to the value of 0.6146 LOD and LOQ value of 2.0488. **Contribution:** *Analysis of gold grades in this research is using two samples are concentrates and cupel loss. Concentrate is the result of the concentration of the ore containing high grade gold and silver, meanwhile cupel loss is a container that is used to process gold cupellation process. The information is very important because not much research regarding the analysis of gold using fire assay being published besides the research provide data related to quality assurance test including precision, accuracy, LOD and LOQ to figure out the measurements had similar proximity to one another and also with measurement repeatability.*

Keywords: Gold, Gravimetry, Atomic Absorption Spectrophotometry (AAS), Fire Assay, Cupel Loss, Concentrate

Abstract ID: **AIMC-2017-STE-473**

PRINCIPAL SUBMITTING PERSON ROLES IN DELIVERY QUALITY HOUSING

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Abstract

Introduction: *Professional architects have been identified as a profession who is responsible for overseeing the entire housing projects development that resulting in the issuance of quality housing through Certificate Completion and Compliance (CCC). The appointed architects called the Principal Submitting Person (PSP). This purpose of this paper is to identify the roles and responsibilities of PSP, in the hope that the quality housing delivery process can be improved through CCC method that was certified by PSP.* **Methodology:** *This paper present a survey conducted using questionnaires on respondent. Quantitative Data were obtained from 202 respondents consisting of representatives from architectural firm throughout peninsular Malaysia. These quantitative methods are measured using numbers and analysed using statistical procedures that will produce data that is not abstract, reliability and undoubted.* **Findings:** *Data Analysis showed six variables that need to be taken seriously for PSP carrying out their duties and roles properly accordingly to delivery quality housing. The six variables of PSP also have to follow the law and rules stated ensuring the service provided could be able to achieve the CCC goals comprehensively.* **Contribution:** *Architect had been appointed as the PSP (producer of building certificates) are the perfect choice as they are overseeing a project from before, during and after the project is to be delivered to the buyer. However, for the goals of the implementation of this method is achieved by CCC, PSP appointed to provide quality services to ensure that all processes, procedures and requirements are followed. All the six PSP roles and responsibility found to be significant to the effectiveness of the PSP under this CCC method. The success of quality housing certification is entirely depend on PSP whereby they needs to play their roles as the responsible professional through all the stage of project undertaken undoubted a result of building quality built and ensure the safety and comfort of building occupants. Thus by keeping the accountability as PSP and compiles with prescribed the roles are certainly the quality of their service is always maintained.*

Keywords: Principal Submitting Person, Quality Housing, Certificate of Completion and Compliance

Abstract ID: **AIMC-2017-STE-475**

INCORPORATION OF IMPRINTED-ZEOLITE ONTO POLYETHER SULFONE/CELLULOSE ACETATE MEMBRANE FOR SELECTIVITY IMPROVEMENT OF HEMODIALYSIS PROCESS

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Abstract

Introduction: *Poletersulfon (PES) membrane has been widely used in biomedical field especially in hemodialysis application. So many modification of membranes applied into hemodialysis such as diffusion, adsorption, and mixed-matrix membrane. The main problem of those membrane is less selectivity to attract the uremic toxins. In this study, we report the modification of PES mixed with cellulose acetate (CA) membrane as mixed-matrix membrane using imprinted-zeolite in order to increase the selectivity (PES/CA/IZC). For*

improving the selectivity, comparison between zeolit A and imprinted-zeolit for creatinine were embedded into the PES/CA membrane. **Methodology:** *The hollow fiber membranes (HFM) were fabricated by dry-wet spinning technique. The successful of zeolit A synthesis and imprinted-zeolite creatinine were characterized by x-ray diffraction (XRD). The mixed-matrix membranes were characterized in terms of morphology using scanning electron microscopy (SEM), water contact angle (WCA), pure water flux (PWF), clearance of creatinine (CC), and BSA adsorption. In accordance with the results of characterization, the synthesis of zeolit A and imprinted-zeolit creatinin was successfull fabricated.* **Findings:** *The SEM results showed that the PES/CA/IZC membrane has a uniform pores and fingerlike. The same result for PES/CA membrane and not for PES/CA/ZA membrane. The additional of CA and zeolite was to improving the hydrophilicity of PES membrane thus increasing hemocompatibility of the membranes. The WCA of the PES/CA; PES/CA/ZA; and PES/CA/IZC were 85.63; 84.98; and 77.53 (o) respectively, so then affect into the PWF result. The PWF were 22.84; 27.57; and 40.52 (Lm-2h-1) respectively. It is indicates that using PES/CA/IZC membranes, water can pass through into the HFM pores from the inside out. The adding of imprinted-zeolite into the membrane can improve creatinine clearance until 74.99%. It showed that PES/CA/IZC succeed to increase the selectivity of membranes to attract the creatinine as target analyte. If compared into the PES/CA, the creatinine clearance of membranes improved was increase until 5.2%. The protein rejection, the PES/CA/IZC rejected 79.05% of BSA whereas PES/CA showed protein rejection of 50.47%.* **Contribution:** *Based on the results above, it can be concluded that PES/CA/IZC can used as an alternative as hemodialysis membranes with good selectivity. This research can be used as a basis for the improvement of membranes selectivity.*

Keywords: polyether sulfon, cellulose acetate, imprinted-zeolite, creatinine, hemodialysis

Abstract ID: **AIMC-2017-STE-476**

LEAN AND GREEN RHYMES

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Abstract

Introduction: *Worldwide organisations are facing scarce resources, dynamic technology change, and environmental issues. Different organisations are seeking different continuous improvement methods to encompass competition and sustain in global market. Many system, tools and techniques of manufacturing are successfully adopted by service and public sectors with changes as per adoptability and environment requirement. Lean and Green are two different management philosophies, one focus process improvement and other concerned about environment protection and preservation. This research paper studied the philosophies of lean and green system, their benefits and integration in different organisations.* **Methodology:** *In this research data collected from secondary sources and analysed the literature to find interrelated topics.* **Findings:** *In research it is found that integration of Lean and green philosophies is establishing and successful in different organisation. It is beneficial to implement lean which Push green outcomes and improves also environmental performance. Their integration reflects optimistic outcomes, so integrating both philosophies initiate innovative research direction and practical implications of integrated approach.* **Contribution:** *The findings are concluded from the literature review of organisations adopted Lean and green philosophies. It identified the potential benefits of integrating both philosophies.*

Keywords: Lean manufacturing, Green manufacturing, continuous improvement, sustainability

Abstract ID: **AIMC-2017-STE-478**

COMPRESSIVE STRENGTH TEST PAVEMENT BAMBOO COMPOSITE

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Abstract

Introduction: *The use of bamboo as an alternative material aggregate pavement. This study aims to find out the compressive strength of bamboo aggregate.* **Methodology:** *Pavement research methodology in the form of a mixture of bamboo strips measuring 20mm by SNI 03-0691-1996. Variations aggregate bamboo 0%, 20%, 40%, 60%, 80% and 100% of the weight aggregate.* **Findings:** *The results were obtained best value pressure test at 14 days was obtained under normal conditions of 0% with the composition of the fly ash 20 g: 0 gr bamboo produces compressive strength of 230.75 kg / cm2 and the condition of 60% with the composition of the fly ash 0*

g: bamboo 90 gr produce compressive strength of 192.29 kg / cm2. Pavement has exceeded the classification standard C SNI 03-0691-1996 compressive strength of 150 kg / cm2. **Contribution:** *Analyzing bamboo as concrete mixtures*

Keywords: pavement, pressure test, fly ash, bambo, SNI 03-0691-1996

Abstract ID: **AIMC-2017-STE-479**

THE EXPERT CHOICE IMPLEMENTATION IN SELECTING THE ELECTRONIC VOTING SOFTWARE

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Abstract

Introduction: *The voting service process conducted today is still done manually so that it becomes a decision to utilize the electronic voting processing. The electronic voting greatly reduce human control and human direct influence on this voting process. Provide an opportunity to resolve some of the problems that have long election but also provide a series of new concerns. Problems faced by end users in the selection is there are so many choices of software processing electronic voting services based on Information Communication Technology.* **Methodology:** *Decision-making, essentially a form of election of the various alternatives of action or multi-criteria decision making that can be selected. Decision support system in this research is used to select the type of service software processing electronic voting. The method used in this research is the Multi-Criteria Decision Making and Analytical Hierarchy Process using Expert Choice 2000TM software computer. And aims to make decisions that can help make certain parties to take the best decision in choosing the type of software processing services electronic voting.* **Findings:** *From the data processing is concluded that the first sequence is Online-Voting 58.3%, second Express-Vote 17.2%, third Simply-Voting 17% and the final sequence Ballot-Online 7.5%. Processing of data obtained from the respondents expert inconsistencies value ratio is less than 0.1, thus the combined geometric calculation result data is fairly consistent expert respondents.* **Contribution:** *1. Analysis of an Electronic Voting System. TADAYOSHI KOHNO ADAM STUBBLEFIELD AVIEL D. RUBIN DAN S. WALLACH February 27, 2004.*

2. Introducing Electronic Voting: Essential Considerations. IDEA December 2011.

3. The Expert Choice Implementation in Selecting The Electronic Voting Software. Faisal Mar 2017. And aims to make decisions that can help make certain parties to take the best decision in choosing the type of software processing services electronic voting.

Keywords: Analytical Hierarchy Process, Decision support system, Electronics Election Processing, Expert Choice, Multi-Criteria Decision Making

Abstract ID: **AIMC-2017-STE-481**

PERFORMANCE OF SOIL WATER CONTENT USING GROUND PENETRATING RADAR WITH DIFFERENT ANTENNA FREQUENCIES

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Abstract

Introduction: *Accurate measurements of Soil Water Content (SWC) with an appropriate support are important in many earth and soil engineering research field. Ground Penetrating Radar (GPR) is a geophysical tool to measure the accurate results for SWC determination. To prove the accuracy of SWC measurement using GPR, the field survey were performed at peat soil. This paper presents field work survey for the aim to assessed the SWC measurement by using GPR. The survey work was conducted at Johor Bharu using different antenna frequencies (250 and 700 MHz). Five profiles of length 25m each were scanned along the east-west direction with a common offset at equal spacing of 5m. To measure the SWC with GPR, researchers used the velocity from GPR's signal of receiving antenna to the soil. A statistical analysis was carried out based on the dielectric permittivity and SWC. Schaap's equation and Roth's equation were used to distinguish the relative dielectric permittivity of the soil to SWC. The results of this study show the linear function, θ for the measured SWC. The validation graph shows that at 250 MHz frequency, the depth penetration is deeper as compared to 750 MHz frequency. These results, suggest that higher frequency will give higher resolution but lower in depth penetration.* **Methodology:** *The instruments that has been used was Ground Penetrating Radar (GPR) with dual*

frequency which were IDS DuoDetector (250 and 750 MHz) and the test beds that are filled with peat soils. GPR was used to undergo the survey of underground detection in order to extract the parameters of soil for SWC and dielectric permittivity. The GPR scanning displayed the deep and shallow channel in the screen of the tough book. Researchers (who) claimed that the higher the frequency, the higher the resolution but, less depth penetration. The figure shows the IDS Detector Duo. Five profiles of length 5m each were scanned along the east-west direction with a common offset at equal spacing of 5m. The velocity can be determined from the GPR data by dividing the distance between the transmitting and receiving antennas by the travel time. The calculated velocity then can be used to estimate the dielectric permittivity using an empirical formula. **Findings:** *Using an appropriate equation, the GPR data was analyzed using two equation (i.e Roth's equation and Schaap's equation) to estimate the water content at peat soil as well as dielectric permittivity. The number of output file was selected to be 512 samples per scan. To obtain the best results, the processing data is needed to remove any kind of interference (noise). Subtract mean filter, gain functions, dewow and background removal were applied to remove the noise. After filtering and processing, the color of the radargrams transform was changed and make the layers more visible. The depth penetration of the 250MHz antenna is deeper even though the resolution is lower that the 700MHz antenna. Consequently, in the presence case (where the site is covered with peat soil), when compared with 700MHz antenna, the penetration depth of 250MHz antenna helps identify more locations of potential moisture deeper in the layer The estimation of soil water content from GPR measurements requires an appropriate petrophysical relationships to convert the dielectric permittivity information into volumetric water content. For this study, Roth's equation and Schaap's equation were used to determine the value of volumetric water content for 250MHz and 700MHz. The GPR provides information about velocity that can be used to convert the value to dielectric permittivity. The velocity were recorded as V (mns-1) which is extracted from the radargrams information used together with the t values to compute depth. For each hyperbola, the velocity is converted to dielectric permittivity, then will be converted to water content using equations (Roth's equation and Schaap's equation).The validation graph of water content between 250MHz and 700 MHz using both equations with correlation coefficient for 250MHz (left) is 0.8869m3m-3 and for 700MHz (right) is 0.4031m3m-3. The results shows slightly greater in differences between the correlations. The antenna frequencies determines the depth of penetration and resolution on soil with a consistent dielectric permittivity. As mentioned by Hiroko [20], the higher frequency lead to higher resolution but lower depth penetration than lower frequency. The graph presents the curves for Roth's equation and Schaap's equation which these equations involve one parameter. Equations with one parameter involves only dielectric permittivity parameter to estimate water content.* **Contribution:** *In this research, performance of different frequency of SWC were studied and applied on peat soil. The study was carried out on peat soil using GPR IDS Detector Duo to retrieve the velocity from the radargrams profile. The velocity was then be converted to dielectric permittivity using an equation. By using an appropriate equations, Roth and Schaap's equation were choosen to estimate the water content from peat soil for 250MHz and 700MHz. The correlations for 250MHz between Roth's equation and Schaap's equation demonstrate that GPR provide deeper penetration compared to higher antenna frequencies (700MHz) but lower in resolution. Meanwhile, the performance of both equations were tested to obtain the trends of the equation for SWC estimation. Schaap's equation shows better correlation compared to Roth's equation on peat soil.*

Keywords: Soil Water Content, Ground Penetrating Radar, Dielectric Permittivity, Antenna Frequency, Petrophysical Relationship

Abstract ID: **AIMC-2017-STE-487**

STUDY OF THE HYDRODYNAMIC BEHAVIOUR OF BIOLOGICAL SUBSTRATE IN AN ELECTROSTATIC FIELD

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Abstract

Introduction: *Processing of biological fluids using traditional processing methods is difficult due to the physicochemical properties of the fluids. They possess low volatility, limited temperature stability, low density and are compressible in nature. A technique of producing dispersed particle at high speed into a continuous stream is considered as an alternative processing method. This research study the hydrodynamic behavior of biological substrate in an electrostatic field, using aqueous glucose solution in a continuous phase (n-hexane system).* **Methodology:** *The experimental setup, shown in Figure 1, is similar with slight modification, to that adopted by Yamaguchi and Kanno (1996a). The novel contactor (A) is made of a rectangular box transparent*

plastic measuring 45 mm by 45 mm square base and 100 mm height. It is equipped with two electrodes, a needle electrode (B) and a plate electrode (C) at the top and bottom of the contactor respectively. The needle electrode is made up of a long injection needle, 2 mm diameter and rounded at the top and is connected to a D.C. source (D). The plate electrode is a brass plate metal attached to the bottom of the contactor and is electrically grounded through a copper wire (E). The needle electrode is adjustable in a vertical direction, this is to allow variation in the gap between electrodes.

The hydrodynamic behaviour was investigated using glucose solution as the dispersed phase and hexane as continuous phase. The hold-up fraction of the dispersed phase was measured by a batch method (Yamaguchi and Kanno, 1996b). This involve the following procedure. A constant volume of the aqueous phase (dispersed phase) and the organic phase (continuous phase) were fed to the contactor and the dispersed phase as well dispersed into the continuous phase by applying the highest obtainable voltage of 5 kV and the gap between electrodes was kept constant at 10 mm. The height of both phases were measured and the corresponding volume determined from the calibration of the contactor. The ratio of volume change due to dispersion to the total volume of mixture was defined as the hold-up fraction of the dispersed phase. The same procedure was repeated with voltages of 4, 3, 2 and 1 kV keeping the gap between electrodes constant at 10 mm. **Findings:** *Visual observation*

Batch operation was used with glucose solution as the dispersed phase and hexane and as the continuous phase. The contacted contains two phases, an organic phase at the top and an aqueous phase at the bottom when the voltage applied between the two electrodes increases from 1 kV to 5 kV, for a constant gap between electrodes of 10 mm, the interface between the aqueous and the organic phase vibrates slowly and becomes faster at 5 kV. The behaviour observed to induced charge on the aqueous phase by the electrostatic field generated between the electrodes (Pohl, 1961)

The observed behaviour of electrostatically induced vibration appears to cease when the gap between electrodes was increased over 12 mm. Probably the DC voltages supply of 5 kV was too small to generate significant electrostatic field that can give a visual observation within the contactor for electrodes separation of 12 mm and above. This is likely to be so because the electrostatic field generated is directly related to the voltage applied and inversely related to the gap between electrodes, i.e.

Electrostatic field =(Applied voltage)/(Gap between Electrodes) 4.1

Quantitative analysis

The effect of various operating parameters on the hold-up fraction, N, of dispersed phase were determined. The parameters studied were applied voltage and gap between electrodes. The hold-up fractions of the dispersed phase was determined according to Yamaguchi and Kanno (1996b) as shown in equation 4.2

hold-up (φ)=(increase in volume (ΔV))/(total volume of the solution (V_T)) 4.2

Figure 2 shows the variation of the hold-up fraction of dispersed phase against voltage. The trend shows a gradual increase in hold-up fraction as the voltage increased from 1 to 5 kV. It is evidently clear that the tendency for higher dispersion of the aqueous phase (glucose solution) in the organic phase (hexane) could be achieved with higher electric voltage (higher electrostatic field), at constant gap between electrodes. This is in consonant with the findings presented by Yamaguchi and Kanno (1996b) which used a voltage range of 20 to 55 kV to observe the dispersion characteristics of distilled water in organic solvent. Variation of gap between electrodes from 4 to 12 mm, at constant applied voltage of 5 kV, shows a slight decrease trend in hold-up fraction of the dispersed phase as shown in Figure 3. There is no records change in volume for gap between electrodes beyond 12 mm. This suggest that the electrostatic field generated within the contactor appear to have ceased to exist when the gap between electrodes exceed 12 mm.

Contribution: *1.Hold-up fraction of dispersed phase in continuous phase gradually increase with increased applied D.C. voltage within the range of 1 to 5 kV, at constant gap between electrodes of 10 mm.*

2. There is little fall in hold-up fraction of dispersed phase, from 0.40 to 0.34, as gap between electrodes increases from 4 to 12 mm.

3. No observable hold-up fraction was recorded when the gap between electrodes exceed 12 mm

Keywords: hydrodynamic behavior; biological substrate; electrostatic field; glucose solution, n-hexane

Abstract ID: **AIMC-2017-STE-488**

TORSIONAL STIFFNESS ANALYSIS OF A TATA TL SC CHASSIS USING FINITE ELEMENT METHOD

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Abstract

Introduction: *This work presents a study on the torsional stiffness of a TATA TL SC chassis by using finite element method (FEM). The torsional stiffness is one of the most important properties of chassis that significantly affect its dynamic characteristics such as handling and rollover. The torsional stiffness is desired to be as high as possible since low torsional stiffness may cause resonance or vibration. The objective of this study is to determine the torsional stiffness of a TATA TL SC chassis using FEM and the result of simulation would be validated by experiment.* **Methodology:** *The chassis was modeled and simulated using Finite Element Method (FEM) to obtain deflection. The model of the truck chassis was drawn in CATIA V16 software and then imported to the ABAQUS software where the simulation would be done. The design has been meshed using tetrahedral element to develop the FE model in ABAQUS. Three different type of loading which is 30 kg, 60 kg and 90 kg used to generate the displacement result for the chassis. The truck chassis was constrained at rear-end of the structure for torsion analysis. The load was applied at the front-end structure and the applied load was 30, 60, 90 kg on both directions. The torsional stiffness was then calculated based on the deflection obtained from simulation results.* **Findings:** *The deflection of chassis at both side, left and right has been obtained from the simulation. These deflection data were used to calculate the twist angle of chassis (θ). The torsional stiffness (K) was calculated using the formula, torsion over the twist angle (T/θ). The result showed that the torsional stiffness of the chassis is 36336.42 Nm/rad. For validation purpose, experiment to determine torsional stiffness was also done. The average difference percentage between experimental results and simulation results is 2.28%.* **Contribution:** *The work used new experimental set up which provides simple preparation and low cost. Other contribution of this work is determining torsional stiffness value of TATA TL SC chassis which has not been investigated by other researchers.*

Keywords: Chassis, Finite Element Method, Torsional Stiffness

Abstract ID: **AIMC-2017-STE-489**

ANALYSIS OF ATTRIBUTES AND PARAMETERS FOR CONSTRUCTION CONTRACT FORM STUDY IN MALAYSIA

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Abstract

Introduction: *Malaysian construction industry depends on construction contracts, especially standard forms of contract to define and govern the contractual relations of the contracting parties. However, it is established through this work that there is no specific method for standard form reviews and analyses that is of a systematic, repeatable and clause assessment technique.* **Methodology:** *The form analyses method developed and designed has eight (8) Malaysian attributes of evaluation, namely Clarity, Comprehensiveness, Completeness, Consistency, Flexibility, Clear Structured Project Management Framework, Role Distribution and Risk Distribution. The eight (8) attributes are further narrow down to various parameters for more effective form study. The attributes and their various parameters that are verified and weighted via a structured questionnaires survey to five hundred (500) construction industry contract and procurement administrator to check on the validity and suitability for form analyses.* **Findings:** *There are one hundred sixty two (162) returned survey forms from the respondents; one hundred fifty two (152) out of the total returns were deemed appropriate to be used to analyze the importance weighting of each attribute. Each attribute with respective aligned parameters, were verified and ranked through this developed procedures. The ranking of importance are as follows from the most to least important -Clarity, Comprehensiveness, Completeness, Consistency, Flexibility, Clear Structured Framework for Project Management, Fairness or Role Distribution and Risk Distribution.* **Contribution:** *It is hopeful that with this study, standard form study and analyses can be more systematic, objective and comprehensive so as to have guidelines that enhanced current standard forms and future form drafting or redrafting.*

Keywords: Standard form; analysis; attributes; parameters; construction contract; Malaysia

Abstract ID: **AIMC-2017-STE-499**

SUPPLY CHAIN GREEN TECHNOLOGY IN TRANSPORTATION: AIR, SEA & LAND

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Abstract

Introduction: *The purpose of this paper is to oversee into the holistic green initiatives into the three (3) major supply chain in the global of air, sea and land which soon to be far-off dream* **Methodology:** *This paper describes to latest green technology involvement in supply chain transportation in air, sea and land and related to the global issues of severe air pollution, global warming and drastic changes in climate.* **Findings:** *Being an important endeavour, supply chain management, processes and agents should converge with green initiatives to sustain in business.* **Contribution:** *Leaders and managers could not hesitate to participate in the involvement of green technology in transportation in preserving the green global.*

Keywords: Supply chain, green technology, Transportation, Air, Sea, land

Abstract ID: **AIMC-2017-STE-500**

THE EFFECT OF POTENTIAL TO COLOR AND COD REMOVAL FROM WASTE TEXTILE INDUSTRY BY ELECTROCHEMICAL

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Abstract

Introduction: *Waste textile industry is one of the problems to human life as well as environment. In this study, the treatment of waste textile industry by electrochemical using stainless steel as anode and cathode was investigated. The effect of potential to color and COD removal were investigated* **Methodology:** *The research consists of several stages, the electrode composition analysis using Scanning Electron Microscopy-Energy Dispersive X-Ray (SEM-EDX). Electrolysis waste textile has been done using various potential. Parameters degradation is chemical oxygen demand (COD) were analysis using spectrometry method* **Findings:** *The research results showing that stainless steel electrode has composition are iron (72.2%), chromium (18.9%), nickel (7.6%) and silica (1.4%). After electrolysis with various potential shows percentage degradation is 98.56% at 3 V. The percentage reduction in COD value of textile waste electrolyzed in optimum condition is 50.3834%.* **Contribution:** *stainless steel electrode good for electrochemical degradation of waste textile industry*

Keywords: textile waste, electrolysis, stainless steel, spectrometry

Abstract ID: **AIMC-2017-STE-502**

NOVEL APPROACH FOR IMPROVEMENT OF PDC DRILL BIT THROUGH ADDITIVE MANUFACTURING

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Abstract

Introduction: *Additive Manufacturing (AM) is an emerging technology capable of producing fully-dense components layer upon layer directly from computer-aided-design (CAD) model as opposed to subtractive manufacturing technologies. PDC drill bit is currently manufactured by subtractive manufacturing method in which steel body is machined on conventional machines and then passed through heat treatment processes till we get the final part. There is not much literature available on the use of AM for manufacturing of PDC drill bit body. The objective of this research paper is to explore the applications of AM for producing one piece drill bit body with enhanced mechanical properties.* **Methodology:** *Since AM eliminates the need of tooling, many of the current limitations for design for manufacturing (DFM) and design for assembly (DFA) are no longer applicable. A growing number of materials including polymer, plastic, ceramic, organic, composites, metals and alloys can be processed using AM. Metal AM is now being used to produce parts for direct use by many industries. AM has been in the oil and gas sector for some time, primarily used for prototyping and design purposes. Polycrystalline Diamond Compact (PDC) drill bit is one of the major tools used for drilling rock formations. The PDC drill bit is currently manufactured by subtractive manufacturing method in which steel*

body is machined on conventional machines and then passed through additional heat treatment processes till we get the final part. Moreover, the bits are produced in two parts which are then joined together by welding. All these processes induce tensile residual stresses in the bit and need post processing to remove them. The objective of this research paper is to explore the applications of AM for producing one piece drill bit body with enhanced mechanical properties in terms of strength increase, improved wear resistance, durability and longevity. **Findings:** *There is not much literature available on the use of AM for the manufacturing of PDC drill bit body. So, the authors aim at finding an improved manufacturing method of PDC drill bit. In this paper, current manufacturing methods of PDC drill bit are addressed along with the problems associated with them. Related works on improvement of drill bit body manufacturing and the issues associated with them are highlighted. The authors have discussed the benefits of AM and specifically Selective Laser Melting (SLM) of M2 High speed steel and its processing for use in manufacturing of PDC drill bit body. Currently, the drill bit body is manufactured in two parts which are then joined through welding due to the limitations of the current manufacturing methods. The authors propose new methodology of producing one piece drill bit body through design freedom of AM. At the end of the paper, the proposed methodology for manufacturing of PDC drill bit body through AM has been addressed. The authors believe that this approach will have remarkable improvement in the manufacturing of PDC drill bit and hope that this project will be helpful in the advancement towards development of improved materials, design and manufacturing process.* **Contribution:** *The authors of this research work hereby acknowledge that this research work presented here is totally original except the quotations, citations and figures which have been duly acknowledged. The authors also declare that this research work has not been previously or concurrently submitted to any other conference or journal publication. All the authors have contributed equally in this paper.*

Keywords: Additive Manufacturing, AM, PDC, drill bit, wear resistance, strength

Abstract ID: **AIMC-2017-STE-505**

DECISION SUPPORT SYSTEM OF DISMISSAL WORKING RELATIONSHIP WITH AHP

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Abstract

Introduction: *Company or educational institution must have an effective and professional management. The effective management and professional, can not be separated from the support of all professional employees. Many companies or institutions in the field of education is decided Termination of Employment which result in decreased product or performance of the company.* **Methodology:** *To determine the employment relationship many criteria that made judging the election. One method of determining a recommendation system that involves multi-criteria problems is by using Analytical Hierarchy Process (AHP).* **Findings:** *This application is used to assist in the assessment and can be used as input for the company to make decision termination of employment.* **Contribution:** *Analytical Hierarchy Process (AHP) was chosen because this method provides a more dominant interests.*

Keywords: analytical hierarchy process; decision support system; termination of employment

Abstract ID: **AIMC-2017-STE-507**

STATISTICAL ANALYSIS OF FRICTION FORCE DATA IN REPEATED SLIDING SYSTEM

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Abstract

Introduction: *Tribology, science associated surface layers on the contacting bodies, is one of indispensable technologies for a sustainable society which requires the improved efficiency and the durability of various facilities.*

So, understanding fundamental mechanisms of phenomena is of decisive importance for the contribution of tribology to the society, those mechanisms have not yet been clarified sufficiently.

The objectives of this abstract is to construct and study the properties of statistical functions, i.e. autocovariance (or autocorrelation) function (ACVF), structure function (SF), power spectral (or autospectral) density function (PSDF), cumulative distribution function (CDF), Probability Density Functions (PDV) of friction force in

Repeated Sliding System. **Methodology:** *The data is collected using a pin-on-disk tribo-tester equipped with the technology developed by the current theisis' second author (granted patent 2719275 Japan etc.).*
The collected friction force by will be interpolated by FFT and Wavelet transformation, ACVF ACVF, SF, PSDF, CDF and PDV statistical functions will be studied. **Findings:** *For each single fix rotation of disc sliding, ACVF, SF, PSDF, CDF and PDV statistical functions of the friction force data will be performed, and the dependence of these functions on the rotations will be considered.* **Contribution:** *The data is collected using a pin-on-disk tribo-tester equipped with the technology in MJIIT, UTM KL developed by the current theisis' second.*
The obtained results will help to investigate the effective information (kinds of data) and their combination for analyzing friction and wear mechanisms in sliding phenomena.
Keywords: tribology, friction, wear, numerical data analysis, statistical analysis

Abstract ID: **AIMC-2017-STE-508**

IMPROVING OF MECHANICAL PROPERTIES AND FATIGUE LIFE BY SHOT PEENING PROCESS ON ASTM A516 GRADE 70 STEEL

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Abstract

Introduction: *ASTM A516 Grade 70 is widely used in industrial sector as it provides very good mechanical properties in tough conditions. The main usage of this material is in moderate and low operating services. This paper focus on the effect of shot peening process on ASTM A516 Grade 70 on improving the mechanical properties and fatigue life of the material.* **Methodology:** *Samples have been shot peened with steel shot to induce comperssive residual stress. Hardness, tensile and fatigue test as well as microstructure were done on the samples before and after shot peening process to study the effects on mechanical properties.* **Findings:** *Result shows that there are increement in every test after shot peening process. There is a slight increement of 0.47% in hardness value, 0.39% increement in tensile strength and 6.78% increement in fatigue life of the material after shot peening process applied. The slight increement in every result was due to low intensity of the shot peening process. Result also shows that the shot peening process compressed the molecules closer to each other as can be seen under SEM.* **Contribution:** *Therefore it was proven that in this study, there is a very significant improvement in mechanical properties and fatigue life by shot peening process on ASTM A516 Grade 70 Steel.*

Keywords: Shot peening; Hardness; Tensile; Microstructure; Fatigue

Abstract ID: **AIMC-2017-STE-514**

THE IMPLEMENTATION OF DHCP RELAY USING POX CONTROLLER ON OPENFLOW PROTOCOL

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Abstract

Introduction: *Communication between computer in a networking system needed IP address which can do by manual system to make configuration in each computer. It could be not effective, if it used in big scale. DHCP (Dynamic Host Configuration Protocol) server became an automatic machine to rule IP address when it connected to the network.*
DHCP (Dynamic Host Configuration Protocol) relay is used to the big scale network which has more computer, so it can make more subnet. Subnet is a small network but it principal parts of network between subnet which is connected with gateway or router. By using DHCP, each subnet needs DHCP server. So it can make load of computer, especially if there is more of subnet which is used. To solve the problems above, we could use DHCP relay agent. So by using DHCP relay agent, it only uses one DHCP server, and request of IP address which comes from each subnet, will be sent by DHCP relay agent to each subnet to DHCP server.
Software Defined Network (SDN) offers new paradigm in which how to design, to rule and to implement network, especially to support a need and inovation in this case, which is more complex. DHCP relay could be implementated to the OpenFlow protocol. OpenFlow is part of component in architectur SDN, OpenFlow it open standard for protocol communication between control and forwarding plane.

Methodology: *Implementation of DHCP Relay was conducted in the laboratory of electrical engineering UIN Sunan Gunung Djati Bandung.*

The use of DHCP Relay

If host ask IP, so it can do broadcast packet by using port source 68 and port destination 67. If there is not DHCP server in subnet, but it was a DHCP relay, so those packet would be accepted by DHCP relay and then it would be forwarded to DHCP server in another subnet. But before forwarded to DHCP server, DHCP relay will change the contents giaddr based on IP gateway subnet host which is requested by IP.

DHCP server receives packet from DHCP Relay and then go to check content giaddr to make sure IP address which is given to the host. After IP address is fixed by DHCP server, packet will be send to DHCP relay to be forwarded to the host.

Findings: *In this research, contribution that is resulted are:*

- *Implementation DHCP Relay to the OpenFlow Protocol.*
- *Make a testbed DHCP Relay by OpenFlow in Laboratory Electrical Engineering State Islamic University of Sunan Gunung Djati Bandung.*
- *OpenFlow could be change DHCP Relay function.*

Contribution: *Implementation DHCP Relay on OpenFlow protocol, it showed that SDN (Software Defined Network) is not joined automatically with new communication protocol, in another word, SDN is compatible with technology. And SDN, is joined more with modulating and flexibility, because of it brings culture modular programming to the networking of the world.*

By using SDN, network engineer/scientist it can make a complexity of functioning will be more fast and run well, without containing or operating a new protocol communication.

Keywords: DHCP Server, DHCP Relay, SDN, OpenFlow

Abstract ID: **AIMC-2017-STE-515**

DESIGN OF EXPERIMENTS WITH FREE LATIN SQUARES

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Abstract

Introduction: *Studying causal links between phenomena is no easy task. Outside Physics, agreement on the causal link between two events is anything but universal. In certain cases, experiments and statistical inference may help to assess causality with an associated degree of certitude. Latin squares can be used to this purpose with the method known as ANOVA (Analysis of Variance). A Latin square with n rows and n columns can be used to design an experiment with n x n tests, to assess the causality of n treatment factors. Our research aims at reducing the number of tests in this case.* **Methodology:** *The methodology in our research uses free Latin squares, a new type of combinatorial design in which the n rows (n columns) are divided into n/k groups of k rows (columns) each. We have adapted ANOVA to this new design and show how to perform the statistical analysis of the test results.* **Findings:** *We have found that a free Latin square with n rows (columns) forming groups of k rows (columns) divides the number of tests, needed in an experiment with a Latin square, by k x k. Furthermore, we have shown that we need fewer initial assumptions to apply ANOVA compared with Latin squares.* **Contribution:** *We have shown that free Latin squares used in ANOVA may design more efficient experiments and need fewer initial assumptions in certain cases.*

Keywords: ANOVA, experimental design theory, free Latin square, hypothesis testing, Latin square

Abstract ID: **AIMC-2017-STE-522**

APPRAISAL OF ROAD NETWORK SPATIAL STRUCTURE IN ABUJA CITY, NIGERIA

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Abstract

Introduction: *Road network creates a pivotal basis for existence, relationship among people, production and consumption opportunities. This in turn leads to the attainment of enhanced lifestyle and overall efficient growth of cities. In contrast to Western, American and Asian cities, urban road transportation networks in West Africa remain scantly researched. On this premise, we explore the topology and spatial disparity of road network in*

Abuja municipality, a prototype of West African cities. **Methodology:** *Forty districts were used as spatial units for this analysis. GIS approach was applied to generate the road network spatial structure from open street map imagery. Graph theory indexes were used to evaluate topological properties of the road network system.* **Findings:** *The study reveals that there is spatial disparity of road network across the districts of Abuja metropolis. Majority of the districts have fair distribution of road density. However, most of the districts portray low road network connectivity. The districts in the city center are characterized by high road density and connectivity, while the districts at the city peripheral have low road density and connectivity.* **Contribution:** *The pattern of road transportation networks in West African cities remain scarcely explored.This study will lead to better understanding of the road network pattern, its performance on transportation system and consequent influence on urban form and land use in Abuja city. Implementation of our recommendations will improve road density and connectivity in the city. Thereby eradicate inequity and enhance economic growth, social stability, unity and quality of life among the entire urban dwellers.*

Keywords: Road network, spatial disparity, density, connectivity, Abuja city

Abstract ID: **AIMC-2017-STE-524**

A HYBRID GA-FCEEMD FOR FORECASTING NATURAL GAS DEMAND

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Abstract

Introduction: *Forecasting natural gas demand is important to distribution of natural gas network. In this paper, a hybrid Genetic Algorithm and Fast Cardinal Ensemble Empirical Mode Decomposition, (GA-FCEEMD) is proposed in forecasting natural gas demand. This hybrid GA-FCEEMD model can effectively handle the uncertainty, fluctuation and volatility pattern of natural gas demand. A monthly of natural gas demand from January, 2002 to November, 2016 were deployed to measure the forecasting performance for proposed hybrid GA-FCEEMD model. The result revealed that comparing to ARIMA model, ANN model and GARCH model, the GA-FCEEMD provides high forecast accuracy in predicting natural gas demand.* **Methodology:** *In this study, we employed ARIMA, ANN, GARCH and GA-FCEEMD for forecasting natural gas demand data. The forecasting results are compared among above methods.* **Findings:** *The result shows GA-FCEEMD method achieved high forecast accuracy compared with other methods.* **Contribution:** *This study contribute to development of new hybrid Genetic Algorithm and Fast Cardinal Ensemble Empirical Mode Decomposition in forecasting method.*

Keywords: Hybridization; Genetic Algorithm (GA); Fast Cardinal Ensemble Empirical Mode Decomposition (FCEEMD); Natural Gas Demand; Forecasting.

Abstract ID: **AIMC-2017-STE-528**

IMMOBILIZATION OF CANDIDA RUGOSA LIPASE ON GRAFTED-PGMA POLYMER FOR INDUSTRIAL APPLICATIONS

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Abstract

Introduction: *Lipases are among the most used enzymes in both hydrolysis and formation of ester bond between glycerol and fatty acids. However, free enzymes limit its long usage in term of its reusability, downstream separation and instability. The high demand on the use of lipases in industry urge the alteration of these soluble enzymes. Radiation- induced graft polymerization is one of the methods to introduce functional groups into polymer. Poly(glycidyl methacrylate) was being introduced onto non-woven polyethylene/polypropylene sheet introducing a reactive epoxide group which is able to react with other functional groups forming stable covalent bonds without any linkers.* **Methodology:** *PE/PP nonwoven sheet-grafted with poly (glycidyl methacrylate) with 200 degrees of grafting were supplied by Department of Chemical Engineering, UTM Kuala Lumpur and Lipase from C. Rugosa, ρ-nitrophenyl palmitate (ρ-npp), ρ-nitrophenol (ρ-NP), diethylamine, Bovine serum albumin (BSA) and other chemicals were purchased from Sigma-Aldrich Co. (St. Louis, MO, USA.*

In designing the research, the grafted-PGMA polymer was activated by chemical modification of amination by treating it with diethylamine. The initial and final weight of the polymer were weighed to determine the amine group density.
The activated polymer was characterized by Fourier transform infrared (FTIR) spectroscopy and Field Emission Scanning Electron Microscope (FESEM).
The C. rugosa lipase was immobilized covalently on the activated epoxy group of the grafted-PGMA polymer under various conditions. Response Surface Methodology (RSM) was applied to model and optimize the modification conditions of the three factors which are immobilized time (2-6 h), immobilized pH (pH 7-9) and enzyme/support ratio (5.0-9.0 mg/cm2). Biochemical characterization of immobilized lipase was tested for optimum temperature, optimum pH, stability and reusability and compared with free enzymes. **Findings:** *The features of FTIR spectra shown provide evidence for the activation of grafted-PGMA polymer by amination reaction. The amine group density of the activated polymer is calculated to be 3.33 mmol/g.*
Well-correlated significant model (p-value = 0.0003) was established for the residual activity of the immobilized lipase (R2 = 0.9136). ANOVA shows that the model was statistically good with a significance level of $p < 0.0500$ and the model had no significant lack of fit ($p > 0.05$). This demonstrates the precision and reliability of the design model. The estimated immobilized lipase activity (response; Y) was calculated according to the immobilization model. Based on the analysis, the maximum immobilization conditions could be obtained at an immobilization time of 4.24 h, an immobilization pH of 8.00, and an enzyme/support ratio of 8.51 mg/cm2 with maximal lipase activity of 1.4588 U per cm2. The immobilized lipase exhibited significantly higher thermal and pH stability than equivalent free enzyme.
Contribution: *In this research, a novel polymer of grafted-PGMA was used as polymer support for enzyme immobilization. The polyethylene/polypropylene non-woven sheet is a cheap material which was an added value for its use by introduction of functional groups on its membrane. The application of immobilization technology on this polymer provides a greater surface area for attachment of enzymes without any linkage which further allows the reduction of the processing cost of this biocatalyst in industry.*
Keywords: Activated polymer, enzyme activity, immobilization, candida rugosa, lipase

Abstract ID: **AIMC-2017-STE-532**

CARBON DIOXIDE CONVERSION TO METHANE FUEL GAS UTILIZING NEODYMIUM OXIDE CATALYSTS IN METHANATION REACTION

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Abstract

Introduction: *Carbon dioxide emission to atmosphere has become worsen since all the industries emit this greenhouse gases (GHGs) to the air especially from refinery industry. The CO2 content in natural gas is one of the major contributors to air pollution. Therefore, it must be treated. The catalytic chemical conversion through methanation reaction can be applied to convert this harmful CO2 gas to wealth CH4 gas for the combustion.*
Methodology: *This method was conducted using alumina supported neodymium oxide as a based catalyst doped with manganese and cobalt together with ruthenium as the co-dopant which were prepared via wet impregnation technique. The series of neodymium oxide catalysts were calcined at 400°C for 5 hours for screening purpose. Then, the potential catalysts were optimized by various calcination temperatures and based ratios loading.*
Findings: *The best catalyst of Ru/Mn/Nd (5:30:65)/Al2O3 calcined at 1000°C gave 91% of CO2 conversion and yielded about 40% of CH4 at 400°C reaction temperature. XRD analysis for the best catalyst showed an amorphous phase with the presence of active species RuO2, MnO2 and Nd2O3, while FESEM analysis illustrated the surface of this catalyst was covered with small and dispersed spherical particles. EDX analysis revealed that at 1000oC calcination temperature, the mass ratio of Mn is the highest among other active species in XRD analysis. The ESR analysis showed the paramagnetic of Nd3+ at g value of 2.348; meanwhile NA analysis showed the Type IV isotherm with H3 hysteresis exhibited the mesoporous structure of this catalyst.*
Contribution: *Up to date, there is no research in CO2/H2 methanation reaction using neodymium oxide as a based catalyst has been reported.*
Keywords: neodymium oxide, methanation, carbon dioxide, natural gas, greenhouse gases

Abstract ID: **AIMC-2017-STE-536**

PRELIMINARY STUDY ON THE EFFECT OF POWER INTENSITY AND EXPOSURE TIME PROPERTIES OF MICROWAVE MODIFIED OIL PALM TRUNK LUMBER

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Abstract

Introduction: *Oil palm, Elaeis guineensis is well thought-out as an agricultural waste from oil palm plantation. Currently, supplies of wood are becoming more limited, and the oil palm trunk could be the potential alternative source to replace wood. But, in spite of its many uses, fresh oil palm trunks consist of very high moisture content. This study was expected to examine the effect of power intensity and exposure time properties of microwave modified oil palm trunk lumber. Enhancing the drying conditions using a microwave, avoid burning and shrinkage was aimed to develop a new value added material.* **Methodology:** *A set of experiments was conducted by central composite design using response surface methodology (RSM) to calculate the findings. Microwave treatment of oil palm trunk samples was set-up by using a microwave operating at 2.45 GHz and with the power output of 1000W. Two independent process variables including input power (600-1000W) and exposure time (16-19 min) were studied under the given conditions designed by Design Expert Software. The untreated oil palm trunk sample was used for comparison purpose.* **Findings:** *From the result, there was clear indication that the microwave treatment showed the effectiveness in reducing the time and better removal of moisture compare to that oven drying with no significant changes.* **Contribution:** *In recent times, researchers have been investigating microwave treatment, which is a promising inventive method for drying materials in the wood industry. The crisis of wood shortage also makes this resource as a promising alternative material as a substitute for wood due to its abundant availability of oil palm trunk lumber.*

Keywords: microwave treatment, oil palm trunk, microwave power intensity, exposure time, RSM

Abstract ID: **AIMC-2017-STE-537**

THE POTENTIAL OF SEAWEED KAPPAPYCUS ALVAREZII (K. ALVAREZII) AS A RAW MATERIAL FOR PARTICLEBOARD: A PRELIMINARY STUDY

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Abstract

Introduction: *Recently, the utilization of lignocellulosic materials to produce eco-friendly products is very promising as biodegradable reinforcing elements for composite materials like particleboards and medium density fiberboards. Furthermore, all the industries are looking for lightweight and high-strength wood and wood-based composite boards as the preferred option for construction due to low-cost and environmentally friendly products. The growing shortage of wood has also led to the development of suitable alternative materials for construction. For this reason, the industry is working to develop high-efficiency green materials including the use of seaweed.* **Methodology:** *This paper focused on the manufacture of particleboards using seaweed from Kappaphycus species which is Kappaphycus alvarezii (K. alvarezii) as raw material. This research is conducted to study on the combination of seaweed particle with urea-formaldehyde (UF) resin to produce seaweed particleboard, and the properties of particleboard make from seaweed. The particleboards were produced in several different target densities in the following proportions: seaweed particles from 150 to 200 grams and UF resin from 15% to 20%. The series of sets of the experiment designed by using Response Surface Methodology (RSM). In this work, the prepared particleboards were characterized with different techniques to ascertain their utility for broad range applications.* **Findings:** *Their physical and mechanical properties which are density, moisture content, water absorption and thickness swelling, internal bonding and bending testing were tested. Besides that, the samples were also studied by utilizing chemical analysis. The outcome showed that seaweed particle could be alternative raw material in the manufacture of particleboards and it holds the potential to be used in commercial applications as it can be combined with UF resin.* **Contribution:** *Thus, it can be as an alternative material to solve the growing shortage of wood's problem for the future. Researcher on seaweed material have been carried out to help in decreasing non-biodegradable product and in the meantime can benefit economic return for the country.*

Keywords: Seaweed, Kappapycus alvarezii, particleboard, urea formaldehyde, RSM

Abstract ID: **AIMC-2017-STE-543**

PROMOTING BIODIVERSITY THROUGH THE URBAN STREAM CORRIDOR IN AKURE, NIGERIA

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Abstract

Introduction: *The urban stream corridor constitutes one of the three most important ecological units of a landscape. The stream corridor provides essential functional linkages to the matrix and patch landscape patterns. It also acts to facilitate biodiversity, through the opportunity it provides for migration and dispersal of species, and the flow of genes across landscapes. However, its potential role in providing connectivity through the entire urban green space sub-systems has not been adequately explored. The aim of this study is to investigate the potentials of river corridor for the promotion of biodiversity in Akure, Nigeria.* **Methodology:** *The study adopts a morphological spatial systems planning approach (MSSPA), which highlights the potentials of the urban stream corridor as an ecological planning unit. The approach emphasises the inter-connectivity of the urban stream corridor with other urban green space infrastructure networks in Akure, the study area. 100 survey questionnaires were randomly administered on residents located within the stipulated 30 metre set-back on both sides of the Ala River flood plain. Besides, oral interviews were conducted on key government officials in the Ministry of Environment and Natural Resources, and the Ministry of Housing and Urban Development, Akure. Photographs were also taken to convey vivid or picturesque evidences of the spate of illegal developments along the major and minor tributaries of the Ala River corridor. Thematic analysis was used to decode the major contents of the interviews. Tables, charts, ratios and percentages were used to summarise the data, while the arcGIS software was used to depict some of the illegal developments along some sections of the river corridor.* **Findings:** *The study adopts a morphological spatial systems planning approach (MSSPA), which highlights the potentials of the urban stream corridor as an ecological planning unit. The approach emphasises the inter-connectivity of the urban stream corridor with other urban green space infrastructure networks in Akure, the study area. 100 survey questionnaires were randomly administered on residents located within the stipulated 30 metre set-back on both sides of the Ala River flood plain. Besides, oral interviews were conducted on key government officials in the Ministry of Environment and Natural Resources, and the Ministry of Housing and Urban Development, Akure. Photographs were also taken to convey vivid or picturesque evidences of the spate of illegal developments along the major and minor tributaries of the Ala River corridor. Thematic analysis was used to decode the major contents of the interviews. Tables, charts, ratios and percentages were used to summarise the data, while the arcGIS software was used to depict some of the illegal developments along some sections of the river corridor.* **Contribution:** *Many studies of urban problems in Akure had been done from either the urban and regional planning, or the architectural built-form perspective. However, these failed to approach the problems holistically from the landscape ecology perspective. They also glossed over the inter-connectivity of the urban landscape elements, and their individual contributions to biodiversity. Studies on land use, land use cover, or green spaces, for example, merely walked through by lumping the issues together. This study departs by treating the river corridor as a system. The misuse of the river corridor and its implications for reduction in biodiversity were used to inform policy directions in favour of the inter-connectivity of landscape elements in the study area.*

Keywords: river corridor; morphological spatial systems planning, inter-connectivity; biodiversity.

Abstract ID: **AIMC-2017-STE-544**

THE INVESTIGATION OF HEAVY METALS IN SELECTED COSMETIC PRODUCTS IN MALAYSIA USING X-RAY FLUORESCENE (XRF), INDUCTIVELY COUPLED PLASMA MASS SPECTROMETER (ICP-MS) AND LASER INDUCED BREAKDOWN SPECTROSCOPY (LIBS)

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Abstract

Introduction: *Cosmetic products refers to any treatment or preparation that being applied to the body or face for cleansing, promoting attractiveness, beautify, improve the body odor, or changing the appearance and many more. There are wide variety of cosmetic products in the markets such as skin care products, hair care products, personal care products, color cosmetics and etc. Cosmetics main ingredient consists of the mixture of*

surfactants, oils and additives to make it long lasting, stable and effective. As a result of widespread use of cosmetics available in the local market in Malaysia; we reported the detection and determination of heavy metals in several cosmetic products using different methods and instruments namely X-ray Fluorescene (XRF), Inductively Coupled Plasma Mass Spectrometer (ICP-MS) and Laser induced breakdown spectroscopy (LIBS). **Methodology:** *15 samples from different brands of cosmetics were bought from the various shops in Serdang, Selangor, Malaysia. All the data about the origin of the products were recorded. Samples were then examined or analyzed through X-ray Fluorescene (XRF), Inductively Coupled Plasma Mass Spectrometer (ICP-MS) and Laser induced breakdown spectroscopy (LIBS). 15 samples were analyzed using XRF spectrometry. All the samples were subjected to detection for metal ranging from Sodium (Na) to Uranium (U) in periodic table. For XRF, 15 and 50 kV of accelerating voltage were set to analyze the samples. Solid samples such were examined directly but liquids samples need an additional step of drying prior to analysis. All the liquids samples were run under vacuum condition and only detect elements at a level higher than 200-300 ppm (Liu et al, 2013). For LIBS measurement, solid samples were directly measured while liquid samples were put on a glass slide and freeze for overnight with the extremely low temperature of -5°C in the refrigerator prior to analysis. Then, each sample was exposed to 5 different positions with the laser light. An average of spectral line was achieved by using this technique. ICP-MS was used in order to compare the data gathered with LIBS. For ICP-MS, 1.0 g of tested samples was digested with 5.0 ml mixture of the concentrated acids; nitric acid (HNO3) and perchloric acid at 3:1 ratio. The mixtures were heated for 2-3 hours on a hot plate and the digested samples were cooled down to room temperature and 5.0 ml of ultra -pure water was added and mixed well in the volumetric flask up to 25 ml. Finally the solution was filtered using Whatman filter paper and subject to analysis using ICP-MS.* **Findings:** *XRF analysis revealed several heavy metals that detected in the cosmetic products such as Cu, Ti, Cl, and Fe. However, LIBS analysis shows spectra highest heavy metals detected for tested cosmetics which included Cd, Cu, Fe, Cr, Pb and Hg. ICP-MS analysis confirmed the present of heavy metals consist of Cd, Pb, Hg, Zn, Fe and Cr.* **Contribution:** *The detection and determination of heavy metals in some cosmetics available in locally market in Malaysia has not reported previously. The data obtained will further relate to the amount of toxins in the environment as well as the promotion of public awareness among the users of cosmetics about their health risk.*

Keywords: heavy metals, cosmetics, XRF, LIBS, ICPMS

Abstract ID: **AIMC-2017-STE-547**

EVALUATION OF JORDANIAN BANKS WEBSITES USABILITY

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Abstract

Introduction: *Being convinced of the importance of online banking, as a new competitive advantage that every bank around the world is rushing to gain, another step is evident; to what extent is any bank's website is usable and beneficial to customers?* **Methodology:** *This research is about evaluating Jordanian banks' websites; actually we have followed two approaches in parallel for evaluating these websites. The first approach is evaluating our sample according to the WEBUSE model developed by Chiew and Salim , while the second is according to the WAI index developed by Francisco Javier Miranda et al.* **Findings:** *The results of the evaluation process have indicated that the banks websites are nearly of close quality in their functional attributes or services the bank's website offers, as will as in the user's acceptance of other features adopted in the WEBUSE index.*

Finally this research concludes that the sample Jordanian banks' websites are of excellent to good quality or usability level.

Contribution: *This study was conducted to evaluate the websites of some of the Jordanian leading banks, the evaluation process revealed that these banks' websites are of excellent to good quality, and are usable from many different perspectives (i.e. the categories we evaluated in both measures).during the research phases we came up with an idea about how much is online banking adopted by bank's customers, this idea was not that bright; since we did not find people who are using online banking that easy. If we assume that our set of 30 evaluators are a random sample selected for evaluation, then the percentage of users who use online banking service is equal to 0.03 which is very low.*

Keywords: EVALUATION- WEBUSE-BANKS

Abstract ID: **AIMC-2017-STE-555**

ESTIMATION OF TIME SERIES LOAD PROFILES USING DIFFERENT CLUSTERING TECHNIQUE

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Abstract

Introduction: *This paper presents a method of mathematical technique, Independent Component Analysis (ICA) and Joint Approximate Diagonalization of Eigen Matrices (JADE) to estimate the original analysis of source signals. The objective of this research is to minimizing the cost by reducing number of equipment in order to estimate type of load profiles at certain locations.* **Methodology:** *An innovative method using Power System Simulation (PSSTME) software, Phyton Programming, Matlab software and Microsoft Excel is implemented. With limited information of the system, the load profiles can be determinate based on ICA and JADE technique. The proposed techniques are tested on 69 test bus system and the simulation results and errors are discussed in this paper. Besides, the comparative manner between these two techniques is also recorded.* **Findings:** *The estimated result presented in this paper shows that the load profiles can be estimated with less accuracy tested 69 bus systems. In conclusion, an algorithm based on ICA and JADE can separate the branch power flow profiles into its loads. However, the load has some dissimilarity between original and estimated load pattern. It is strongly proved by quantile- quantile plot where most distribution loads has x-axis and y-axis lies on straight line. The performance of estimation was also been analyzed by error calculations between original and estimated comparison. The comparison between the estimated and original load profile indicates that the proposed estimation scheme is efficient proven with a small estimation errors when based on ICA algorithm. It is not any experience of any changes as applied with different type of radial distribution system. Compared to JADE algorithm method, the results of error measures is high. It is observed that ICA Algorithm performs well compared to JADE algorithm.* **Contribution:** *The originality of this research offers another technique for estimating load profile at each load bus using Independent Component Analysis algorithm. Load profiles represents the measured curve of power of consumption over a period of time. Load profiles for each node can be referred for electric power companies to manage their power demand. This subsequently improves their market strategies and reduces their cost to produce electricity and furthermore reduce number of metered demand in distribution areas. The process of static state estimation is used to determine the bus voltage magnitude and angles from available measurements data. State estimation estimates the best possible true value using some information available of the system. For that, various algorithm and techniques were used to enhance and predict the measurement data collection of the systems.*

Keywords: Electrical Distribution System, Load Profiles, Independent Component Analysis, JADE, Power System Simulation Network.

Abstract ID: **AIMC-2017-STE-556**

TAMOXIFEN CITRATE LOADED SUPERPARAMAGNETIC POLY (D,L-LACTIDE-CO-GLYCOLIDE) -IRON OXIDE NANOPARTICLES FOR DRUG DELIVERY

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Abstract

Introduction: *Tamoxifen citrate (TAM) has been used for treating estrogen receptor (ER)-positive breast cancer for over 30 years now. But the toxicities of TAM still pose a clinical problem. It is anticipated that the toxicity of TAM can be reduced by reducing the doses by targeted drug delivery. Therefore, this studies were conducted to synthesis polymeric drug delivery system encapsulated TAM and superparamagnetic iron (III) oxide nanoparticles (SION) for breast cancer treatment. The encapsulated nanoparticles were characterized and analyzed using X-ray Diffraction Analysis (XRD), Energy-dispersive X-ray spectroscopy (EDXRF), Vibrating sample magnetism (VSM) and Transmission electron micrograph (TEM).* **Methodology:** *SION were synthesized via the co-precipitation method from iron (II) chloride tetrahydrate, iron (III) chloride hexahydrate, and ammonium hydroxide, under nitrogen gas bubbling at 45 ℃. Then, it was coated with oleic acid at 80 ℃ to improve the stability of the SIONs. Formation of encapsulated SIONs was obtained by oil in water emulsion evaporation technique. TAM, SIONs coated with oleic acid, and Poly (D,L lactice-co-glycolide acid) were dissolved in dichloromethane. This mixture was sonicated together to form a homogenous solution and polyvinyl alcohol were used as a surfactant. It was left overnight for the formation of the nanoparticles. Finally, the*

nanoparticle were collected after lypolization method. **Findings:** *The XRD pattern showed that crystalline phase of the SION is magnetite. Iron (Fe), oxygen (O) and carbon (C) were detected in the SION using EDX. The TEM images showed that SIONs sizes are in the range of 10-20 nm and increases to about 170 nm after encapsulation with TAM using PLGA Previous studies showed that cut off sizes of porous blood vessels in majority of tumor is known to be 380-780nm (4). Therefore, the sizes of the encapsulated SIONs are still acceptable. In addition, it was confirmed by VSM that both SIONs and encapsulated SIONs were superparamagnetic.*

Contribution: *Among women, breast cancer is the leading cause of death regardless of their ethnicity background. Every year, around 5000 malaysian women aged between 30-60 years are diagnosed with breast cancer. This paint a terrifying picture of how common breast cancer in Malaysia. Previous work had encapsulated SION and TAM in PLGA but separately. Therefore, this work had successfully encapsulated SION and TAM together in order to improve the treatment for breast cancer by targeted drug delivery.*

Keywords: Tamoxifen citrate, Superparamagnetic iron (III) oxide nanoparticle, Poly (D,L lactice-co-glycolide acid)

Abstract ID: **AIMC-2017-STE-566**

OPTIMIZATION AND PHYSICOCHEMICAL STUDIES OF ALUMINA SUPPORTED RU/MG/CE CATALYST FOR CO2 METHANATION REACTION

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Abstract

Introduction: *The century of the urbanization and industrialization have gave a great impact on the environment due to more flue gases sectors present which contributed to the emission of CO2 gas. It was well known that CO2 gas was one of the greenhouse gases and lead to the earths' climate change. A green and recycling technology should be used in order to convert the CO2 gas into CH4 gas* **Methodology:** *Ce was acknowledged with its highly basic and unique redox properties. Therefore, Ce was used as based catalyst and impregnated with Ru/Mg to boost the activity. The catalysts were supported on alumina with different ratios and calcination temperatures of 500°C-700°C for 5 hours.* **Findings:** *In this study, the potential catalyst was Ru/Mg/Ce/Al2O3 catalyst with the best working conditions for catalytic methanation reaction was 60 wt% of Ce loading at calcination temperature of 600°C. This catalyst was able to convert about 79.04% of CO2 with 58.08% of CH4 formation. The characterization results obtained suggest that CeO2, Mg(Al2O4) and RuO2 species were the active species for the potential catalyst.* **Contribution:** *The treated CO2 converted into CH4 can also be used as alternative fuel in generating the electricity. Thus, the resources like coal and natural gas used can be reduced as well.*

Keywords: methanation; power plant; flue gases; carbon dioxide; catalyst; ceria.

Abstract ID: **AIMC-2017-STE-577**

COMPACTION BEHAVIOUR COMPARISON OF NUSAJAYA MARINE CLAY TREATED WITH TWO SIZES OF RECYCLED BLENDED TILES

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Abstract

Introduction: *Soil stabilization is an alteration or modification of the properties of soils that have inadequate engineering characteristics such as strength and settlement. Recently, a wide range of chemical stabilization additives are implemented to in ground stabilization. Those chemicals are generally classified as non-environmental friendly, expensive and require advanced instrumentation during application at site. Underground water contamination is an example of the several problems created by the implementation of chemical additives in soft soil improvement. Hence, this research is aimed to treat soft soil with an environmental, sustainable and economical additive that is still not widely investigated in this area of research. Recycled blended tiles (RBT) is introduced in this study as an environmental additive to be used in soil stabilization. The influence of different percentages and sizes of RBT on marine clay is evaluated.* **Methodology:** *Marine clay is the soil being investigated in this study due to its insufficient strength and poor engineering properties. This soil was excavated, transported and dumped into legal and illegal landfills as a waste and then replaced at site by a stiff soil that has the minimum requirements to sustain the construction loads. Dredged*

marine clay was collected from Kota Iskander, Nusajaya, Johor to be studied and tested. It was collected from a depth of one meter and it was in wet condition with natural moisture content of 59%. Once the marine clay arrived into the geotechnical lab, it was naturally dried, grinded and sieved for compaction tests.

On the other hand, RBT is a waste ceramic tile that was collected from construction sites at Ponderosa, Impian Hieghts Golf and Country Club and Taman Pelangi, Johor. The collected ceramic tiles were those that were rejected during construction due to design failures and appearance of cracks / smashes on the surface. Besides, the wastage generated by cutting tiles into specific sizes at site. The ceramic tiles used in this research was prepared in several steps started by cleaning the tiles to remove materials that stick on its surface such as cement, dust and others. Then, tiles were crashed manually using hammer into small pieces that can fit into the crushing machine at which tiles were crushed into 5mm size. Next, the tiles were blended into powder using Los Angelos Abrasion machine and this process took almost 48 hours. After that, tiles were sieved into the specific required sizes for testing.

Findings: *This study investigates the suitability of possible uses of RBT to treat Nusajaya marine clay. Standard proctor tests were conducted for 40 treated specimens and 5 untreated specimens at different moisture contents approaching the optimum. The compaction ability of treated marine clay was compared by adding two different sizes (0.3 and 1.18 mm diameter) of RBT. Four different percentages of RBT were added for each size, i.e. 10, 20, 30 and 40% of the dry weight of marine soil. The combination of each mix was monitored in order to evaluate the optimum moisture content (OMC) and Maximum Dry Density (MDD) for marine clay. OMC and MDD for untreated marine clay samples were 22% and 1.59, respectively. Meanwhile, OMC and MDD varied from 19 to 15% and 1.69 to 1.77, respectively for samples treated with 10, 20, 30 and 40% of 0.30 mm sized RBT. In addition, OMC and MDD for samples stabilized with 10, 20, 30 and 40% of 1.18 mm sized RBT varied from 15 to 13.5% and 1.75 to 1.82, respectively. For both sizes of RBT, the higher the percentage of additive, the higher the MDD and the lower is the OMC. In terms of size effect, 1.18mm RBT was more effective that act as a reinforcing agent that bonded the marine clay particles together resulting in higher density and lower moisture content.* **Contribution:** *Recycled blended tiles (RBT) is found to be cost effective, sustainable and environmental friendly and has the potential to be used in soft soil stabilization. RBT is a waste material produced from ceramic tile factories and construction works either during the construction of new buildings or the renovation of existing ones. Recent reports showed that massive amounts of RBT are dumped into landfills every year consuming very large spaces and creating major environmental problems such as influencing the vegetation and growth of plants in the occupied areas. On the other hand, Dredged marine clay obtained from Nusajaya, Johor has weak physical and engineering characteristics to be considered as problematic soft soil. Marine clay is usually excavated, dumped into landfills and replaced by suitable soil. Marine clay can be stabilized using RBT that will contribute to clean the environment from these wastes as well as reducing the usage of chemical stabilizers which harm the ecology system.*

Keywords: Marine clay; soil stabilization; recycled blended tiles; compaction

Abstract ID: **AIMC-2017-STE-579**

SYNTHESIS OF NANO CHROMIUM OXIDE SUPPORTED ON ZIRCONIA BASED CATALYST FOR ISOMERIZATION OF N-HEPTANE

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Abstract

Introduction: *Gasoline is a complex liquid mixture that is processed from petroleum. To enhance its performance and reduce emissions, small quantities of alkane cyclic and aromatic compounds, such as toluene and benzene, are added to petrol. It also boosts its octane rating, which is gasoline's measure of resistance. Higher octane levels are needed for high-performance petrol, for example in racing cars, since higher-performance gasoline is more likely to combust. In this regard, isomerization of light straight alkanes perfectly fits these new trends in processing so called reformulated petrol-fuel. In this context, light straight alkanes isomerization is of particular interest as it can be established in a refinery at low investment, using idle reactors from either catalytic reforming or hydroprocessing.* **Methodology:** *Cr2O3-ZrO2 was prepared by impregnation of zirconium hydroxide with aqueous solution of ammonium nano-dichromate followed by calcination at 873 K for 3 h. The crystallinity of the catalysts was characterized by XRD and FESEM while the acidity of catalysts was determined by pyridine and ammonia preadsorbed FTIR spectroscopy. The isomerization of n-heptane was carried out at 523 K under hydrogen stream.* **Findings:** *The presence of nano Cr2O3 developed only a tetragonal phase of zirconia and strong Lewis and protonic acid sites. High selectivity and stability of nano*

Cr2O3-ZrO2 was observed on n-heptane isomerization. No by-product was traced on the isomerization of n-heptane at 523 K, while the highest conversion of n-heptane reached about 15 %. **Contribution:** *Although, large efforts have been undertaken to find a suitable catalyst, effective processes and technology for the catalytic conversion of straight chain alkanes to more valuable hydrocarbon, a lot of fundamental issues are not clear yet such as the interaction between the reactant and the active surface species, mechanism or molecular growth-processes leading to products. Along this line, development of new type catalyst for conversion of n-alkane to iso-alkane is required. In this study, we prepared nano Cr2O3 loaded on zirconia for n-heptane isomerization. The outstanding properties of nano metal and super acidic material brought a new type of catalyst which is able to overcome the disadvantages of current catalysts.*

Keywords: Chromium oxide, zirconia, ammonium nano-dichromate, nano Cr2O3-ZrO2, isomerization of n-heptane.

Abstract ID: **AIMC-2017-STE-580**

BURGLARY IN CAMPUS, A HOTSPOTS DETECTION USING SPATIAL ANALYSIS IN UNIVERSITI TEKNOLOGI MALAYSIA

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Abstract

Introduction: *Burglary is one of the crime happen in campus, and need serious precaution to reduce the loss of items and the life of the victims. To help preventing the burglary cases, every university and college campuses has established their own security division. Current practices shows security division relying on table form of information about burglary, and it's difficult to detect which area has the most burglary cases in the campus.* **Methodology:** *To determine the hotspot area of the burglary cases, the used of spatial analysis can determine the hotspot area. This study discussed the used on spatial analysis to determine the hotspot area in UTM campus as a case study. There were 4 phases in this study; (1) research formulation phase, (2) database development, (3) data collection and (4) analysis phase.* **Findings:** *The results show the burglary crime map, with clustered burglary cases. This results can be used for future planning for safety precautions.* **Contribution:** *This study purpose is to using spatial analysis to detecting the hotspot in campus area. Current practices show different method for detecting hotspot. This study used spatial analysis which can show the results in map, which can also be overlay with other indicators in the future.*

Keywords: Burglary hotspot; spatially hotspot analysis; campus burglary

Abstract ID: **AIMC-2017-STE-584**

EVALUATION OF SOIL RESISTIVITY EFFECT ON UNDERGROUND PIPELINE COATING STRESS DUE TO NEARBY LIGHTNING STROKE

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This work was supported by the Malaysian Ministry of Higher Education (FRGS Vot no. 4F828) and Universiti Teknologi Malaysia (RUG Vot. No 10H61).

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Abstract

Introduction: *Rapid economic developments have forced the power networks and the pipeline networks to share the same pathway. Induced voltages and currents appear on the pipelines running parallel with the high voltage transmission line when the transmission line is hit by lightning strike.* **Methodology:** *In this study, a field model had been developed to determine the first stroke effect on an underground pipe by measuring the coating stress. CDEGS software was used to solve the Maxwell equations, in particular, two software tools, HIFREQ and FFTSES were utilised. An analysis of the electromagnetic interference on a 2-km underground nearby in parallel with a 345-kV transmission line had been carried out when a tower was subjected to a lightning strike.* **Findings:** *The results show that the clearance distance is dependent on the peak current of lightning and on the soil resistivity, as well as on the withstand voltage of the pipeline coating. The soil resistivity of the first layer must be considered when designing any mitigation technique.* **Contribution:** *The accuracy of the clearance distance with varying soil resistivity and the efficiency improvement of mitigation techniques were also analyzed.*

Keywords: Clearance distance, Mitigation technique, Lightning strike, Metal pipeline, CDEGS

Abstract ID: **AIMC-2017-STE-586**

WAYFINDING AND SIGNAGE FOR CYCLING ACTIVITY IN BANDUNG CITY

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Abstract

Introduction: *In developing countries, especially Indonesia, cycling activities does not supported by stable infrastructure. Many of the existing bike lanes does not equipped with proper cycling wayfinding and signage. It is important to analyze the existing condition and issues about bike lane, signage and marking for cycling in Bandung.* **Methodology:** *A benchmarking about bike lane, signage and marking in other countries is also summarized. Several crucial recommendations to support cycling facilities in Bandung are made.* **Findings:** *First to enforce the law about illegal parking and street vendor on bike lane, revitalization of marking for bike lane area, to develop two-way/direction bike lane area, to add markings and signage for existing bike lanes and markings for cycling crossing, to develop and connect the bike lane in Bandung with other area i.e. public transport network/hub, and to add other signage and provide wayfinding of cycling direction (bike routes) for cyclist.* **Contribution:** *Few study has been made in the area of way finding and signage for cycling activity in South East Asia. These research will be the first research in Indonesia. The presence of proper bike lanes, signage, and wayfinding can encourage and establish cycling culture in the future.*

Keywords: Wayfinding, Signage, Cycling, Bandung

Abstract ID: **AIMC-2017-STE-591**

INFORMATION TECHNOLOGY DISASTER RECOVERY PROCESS IMPROVEMENT

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Abstract

Introduction: *Disaster Recovery (DR) activities require accurate information and preserve valuable knowledge in order to safeguard IT components. This trigger for process improvement that can strengthen and maintain data, information and knowledge processes effectively during disaster activities. An organization's knowledge base and Disaster Recovery Plan (DRP) needs to include relevant and accurate knowledge that can be made available during disaster activities (Davenport and Prusak, 2000). Lesson learned and best practices entries are changes in processes made throughout the organization that have led to improved processes (O'Leary, 1998). Infusion of KM elements into a DR process especially in IT organization is still unavailable. Therefore, identifying and testing success factors of KM in DR process is timely.* **Methodology:** *The research will adopt a mixed-method to obtain variation in data collection which will lead to greater validity. The nature of this research demand for direct researcher's involvement in the organization studied, for this reason an Action Research (AR) approach will fit the purpose. AR seeks two goals namely to solve problems within an institutional context and contribute to knowledge (Davison, Martisons and Kock, 2004 ; 2012 and Baskerville and Wood-Harper, 1998). The KMS Success Model of Maier (2002) which is an extension from DeLone and McLean model is used as the fundamental theoretical framework. This model will be used as a guide to improve existing DR process. At present, the study is in its second stage which is the Action Planning as per CAR diagram by Susman (1983), Baskerville and Harper (1998) and Davison (2004). The study's objective is to expand the theoretical perspective of KM in IT organization's Disaster Recovery activities.* **Findings:** *Gap Analysis :*

There is significant gap in the literature and past research on Knowledge Management (KM) in the context of Disaster Recovery (DR) in Information Technology (IT) organizations. A query was run in Scopus database using two keywords to search, Knowledge Management and Disaster Recovery. Total of 256 results were found with publication date from 1975 to 2016. The analysis was analyzed using Microsoft Excel spreadsheet software. In order to reflect the gap, first level of a deep-dive analysis was performed to explore if the study were conducted in IT or Non-IT Sector. A total of 137 papers were collected and categorized based on two areas, IT and Non-IT Sector. Figure 3 shows that majority of the research articles published in journals were done on Non-IT Sector, which representing 88% from the total 137 articles. Only 12% were on IT and IS or combination of both and this was grouped as IT Sector. Total of 16 articles (12%) were found to be related to either IT, IS or combination of both categories. Hence, these 16 articles were investigated further to identified the research focus area. This will be discussed in the next analysis.

Final level of a deep-dive analysis was accomplished in order to understand the research focus area. Based on Figure 3 above, the 16 articles were reviewed to identify the research focus area. The research focus area has been clearly clustered in Table 2 below. The table is divided into three categories which are IT, IS and combination of IT and IS. In the domain of IT only, there were 8 articles studied with focusing mainly on decision support, Geographical Information Systems (GIS) and knowledge sharing. For the IS domain, DRP for residential community, medical, e-learning and knowledge inventory. Study focusing on knowledge base, critical data and critical issues were done using both IT and IS. **Contribution:** *There have been numerous studies and researches that focus of KM in non-IT sector (Martin, 2000 and Mistilis and Sheldon, 2005). There are studies that focus on the DR (Bosher et. al., 2007 and Bayrak, 2009). Researchers also focused on the implementation of system related to KM for the support for disaster management and emergency preparedness (Raman, Ryan and Olfman, 2006 ; Hassan et. al., 2011 and Huang, 2010 ; Dorasamy, 2013). There has been no specific study with reference to the IT DR process with respect to KM during disaster recovery activities. This clearly state that there is significant gap in the past research on KM in the context of DR in IT organizations. Hence this study will reveal new research dimension in IT DR scope with the support of KM elements.*

Keywords: Disaster recovery, knowledge management, protection motivation, information technology, action research.

Abstract ID: **AIMC-2017-STE-592**

APPROXIMATE METHOD FOR SOLVING LINEAR INTEGRO-DIFFERENTIAL EQUATIONS OF ORDER ONE

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Abstract

Introduction: *There are many problems in different fields of fundamental sciences and engineering which can be modeled into functional equations such as linear, nonlinear and singular integral equations, differential equations and integro-differential equations. In most of the cases finding the exact solution of the problems is impossible. Therefore, many researchers try to develop the methods to solve the equations numerically.*
This paper is focused on the finding the numerical solution of linear Fredholm-Volterra integro-differential equations (IDEs) of order one. **Methodology:** *In order to find the numerical solution of the linear Fredholm-Volterra IDEs, we do the following steps:*

1) Linear Fredholm-Volterra IDEs are reduced into the integral equations by reduction technique.
2) The unknown function is approximated by truncated Legendre series.
3) Gauss-Legendre quadrature formula and the collocation method are applied to form a system of linear algebraic equation.
4) The system is then solved for unknown coefficient by Gauss elimination method.
5) The roots of Legendre polynomial are chosen as the quadrature nodes and collocation points.
6) The existence and uniqueness solution are proved.
7) For the validity and the accuracy of the proposed method numerical examples with comparison are provided. **Findings:** *The proposed method is able to give high accurate results and in many cases, the error between the exact solution and approximate solution decreases as the number of collocation points increases. The numerical results reveal that the proposed method is dominated with repeated trapezoidal rule, differential transform method and Lagrange polynomial approximation method.* **Contribution:** *In this paper, high accurate approximate method is proposed for solving general Fredholm-Volterra IDEs of order one. The problem raised here is originated from the differential equations theory and the use of Gauss-Legendre quadrature formula leads to the high accurate approximate solution.*

Keywords: Integro-differential equations, Legendre polynomials, Approximations, Collocation method, Quadrature Formula.

Abstract ID: **AIMC-2017-STE-593**

DEEP LEARNING FOR DENSE CROWD COUNTING FROM STILL IMAGES

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Abstract

Introduction: *With the perspective of setting up fully autonomous video-surveillance systems, automatic detection and location of crowds is a crucial step. Crowd estimation in dense crowd is of immense significance, for various security or operational reasons. Dense crowds pose several new challenges to computer vision industry due to large number of individuals, occlusions, clutter, and fewer pixels per person. The latter of the challenges has not been dealt with in detail for they contain a low crowd density and motion features are relied upon for dense crowd count, which is not applicable to still images.* **Methodology:** *. The approach we take is to adapt features extracted from deep learning to regress a crowd spatial density map across the image. This is applicable to situations where individuals in crowd occupy only a few pixels, have perspective distortion or overlap. This paper presents a novel feature extraction technique that can extract features suitable for a better count estimate in the presence of low resolution and occlusion among the crowd, containing hundreds to thousands of humans. We make the following contributions: (i) we develop a deep network structure and use it to extract dense crowd features, (ii) two supervisory signals are defined to learn crowd features and estimate the crowd count: crowd perspective distortion information and crowd density.* **Findings:** *The algorithm presented considers the issues due to perspective distortion in a dense crowd. We test our approach on UCF dataset containing between 94 and 4543 people per image annotated. The provided results confirm that the proposed features better accuracy for crowd count despite the presence of several challenges.* **Contribution:** *. We make the following contributions: (i) we develop a deep network structure and use it to extract dense crowd features, (ii) two supervisory signals are defined to learn crowd features and estimate the crowd count: crowd perspective distortion information and crowd density*

Keywords: Keywords—crowd counting; deep learning features; perspective correction; regression; view invariant

Abstract ID: **AIMC-2017-STE-610**

PROPERTY EVALUATION OF SECOND GENERATION BIODIESEL FOR GAS TURBINE APPLICATION

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Abstract

Introduction: *Alternative fuel in the form of non-crude oil resources are drawing considerable attention as a result of shrinking oil reserves, increasing petroleum costs and the need to reduce emissions of harmful pollutants. Therefore, renewable energy has gained considerable attention to substitute fossil fuels such as solar, biomass, biogas and biofuels. One of the promising biofuel is biodiesel where it has been used successfully in diesel engine to replace diesel fuel. However, biodiesel also has potential to replace distillate diesel for gas turbine application. Nevertheless, inherited properties of biodiesel such as high density, surface tension and viscosity impede the fuel compatible for gas turbine application.* **Methodology:** *Therefore, in this research microwave distillation method has been developed to produce second generation biodiesel from waste cooking oils.This is a novel method has been filed for patent. The biodiesel fuel or called second generation biodiesel produced from microwave distillation method has shown promising results compared to first generation biodiesel. Besides that, microwave distillation system has several advantages over conventional heating distillation.* **Findings:** *The fatty acids composition of second generation biodiesel has been evaluated in gas chromatography and the physical properties of second generation biodiesel have been compared with fossil diesel and first generation biodiesel. The result shows properties of second generation biodiesel have been improved and meets the standard requirement of gas turbine fuel accordance to ASTM D2880. The most notable is viscosity of second generation reduced to 4.8mm2/s compared to neat first generation biodiesel 6.6mm2/s. Overall the properties of second generation biodiesel meets ASTM D2880 standard and more favorable for gas turbine.* **Contribution:** *The novelty of this research is all previous works on biodiesel for gas turbine application have suggested to modify the hardware of gas turbine to accommodate the fuel, however this research has modified the fuel properties to accommodate the gas turbine fuel specification standards. Additionally, this research has opened an opportunity for biodiesel fuel to penetrate into power generation sector for gas turbine application. Besides that, deploying microwave for biodiesel distillation process is a novel method.*

Keywords: Second Generation Biodiesel, Gas Turbine, ASTM D2880, Waste Cooking Oil, Microwave Distillation

Abstract ID: **AIMC-2017-STE-619**

SF6 DECOMPOSITION CHARACTERISTIC UNDER FIXED METALLIC DEFECT IN GAS INSULATED SWITCHGEAR.

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Abstract

Introduction: *Sulphur hexafluoride gas (SF6) is used in gas-insulated switchgear (GIS) as an insulant because of its high dielectric strength, good thermal transfer characteristics and excellent arc quenching ability. Despite the fact of its excellent characteristic, it deteriorates due to the activities of partial discharge caused by fixed contamination on the surface of the spacer thereby causing sudden failure on the GIS, so there is a need for an effective diagnostic method for condition monitoring. A diagnostic method for GIS condition monitoring such as acoustic, optical, electrical discharge and UHF method was used by researchers but they have the limitation of external and internal electromagnetic interference. This research is employing a method of SF6 decomposition that has high sensitivity and anti-electromagnetic interference.* **Methodology:** *A simulated coaxial decomposition GIS chamber made up of Austenitic stainless steel designation of AISI 300 series (Cr/Ni/Fe) and fixed metallic artificial defect made up of cutting of copper wire of 15mm length by 0.1mm diameter were designed and used in the experiment to simulate the decomposition of SF6. The artificial defect was fixed on the spacer in the GIS chamber which was subjected by a vacuum pump. The chamber was filled with pressurised pure SF6 gas at 0.2Mpa and high voltage was applied slowly up to 45KV as the experimental voltage over a period of 30 hours. Aluminium was used as the high voltage conductor or electrode and (Cr/Ni/Fe) the chamber tank as the ground electrode in order to make the simulation more practical as in real GIS. The experiment was conducted excluding the influence of humidity and temperature but the temperature and humidity of the laboratory were about 240C and 60% humidity respectively. The high voltage was disconnected and the residual voltage was discharge with earth electrode before sampling and connected after sampling. SF6 gas was sampled every 10 hours with the use of TEDLAR-PVT sampling bag and injected into FTIR spectrometer to detect the amount and concentration of the decomposed products.* **Findings:** *The decomposition product of SF6 gas and its concentration detected by FTIR spectrometer under the artificial defects that caused the partial discharge to simulate the decomposition is shown in table 1 below*

TABLE 1: ARTIFICIAL FIXED DEFECT SF6 DECOMPOSITION PRODUCTS VARIATION WITH TIME

Decomposition Product.	*Concentration (Ppmv)*		
	10 hours	*20 hours*	*30 hours*
SO2	*199*	*0*	*0*
HF	*0*	*62*	*2*
SOF2	*720*	*3222*	*2423*
SOF4	*0*	*1216*	*395*
SO2F2	*494*	*1779*	*1848*
SO2F10	*11*	*57*	*0*
SiF4	*614*	*2833*	*2440*
CO	*28*	*14*	*13*
C2F6	*12*	*0*	*0*
CF4	*31*	*156*	*86*

The experiment result shows ten decomposed products with its concentration in Ppmv at 10 hours intervals for the period of 30 hours as shown in table 1 above **Contribution:** *The decomposition products that was detected after the experiment are HF, SOF2, SOF4, SO2F2, SO2F10, SiF4, SO2, CO, C2F6 and CF4. These decomposed products and its concentration can be used to detect and identify the type and the level of fault in gas insulated switchgear (contamination fault) before GIS failure for purpose of preventive maintenance.*

Keywords: Gas insulated switchgear, SF6, Partial discharge, Decomposition products, diagnostic technique, FTIR spectrometer.

Abstract ID: **AIMC-2017-STE-626**

MODELING AND STABILITY ANALYSIS OF DENGUE SPREADING WITH VECTOR CLASSIFICATION ON AQUATIC AND ADULT STAGES

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Abstract

Introduction: *Dengue is the most rapidly spreading mosquito-borne viral disease in the world. In recent years, more than 55% of the world population live in areas at risk of dengue transmission, with over 50 million people infected and 20,000 deaths due to dengue fever annually. Dengue has four serotypes, namely DEN-1, DEN-2, DEN-3 and DEN-4.The result of a viral infection that causes the disease dengue fever.*

Dengue fever is a health problem in the area of Southeast Asia and the Western Pacific. Asian continent ranks first in the number of dengue fever patients annually and starting from 1968 until 2009. WHO noted that Indonesia as the country with the highest dengue cases in Southeast Asia. Based on the health profile of the Republic of Indonesia in 2014, the number of dengue patients reported as many as 100.347 people with as many as 907. The number of cases of dengue fever continues increasing annually, and the number of countries at risk of dengue fever also continues increasing.

Mathematical modeling of dengue spreading is discussed and solved by focusing on the vector classification on aquatic and adult stages. Based on the mathematical model, the stability analysis is proposed for the diseases free equilibrium and endemic equilibrium.

Methodology: *This paper focuses on model and stability analysis of dengue spreading by considering vector classification on aquatic and adult stages. Firstly, we constructed the mathematical model of dengue transmission that consist of host and vector population classes. In this case, the host population split it into: susceptible, infected and recovered subpopulation. While vector population split it into: aquatic, susceptible and infected subpopulation. Then the disease-free equilibrium and endemic-equilibrium points are determined. Furthermore, we analyzed the stability of the model around the equilibrium points by using Routh Hurwitz creteria. In addition, the basic reproduction number is used as reference for determining disease-free stability. In this study, Runga Kutta method is used to solve the ODE problem in the model. The numerical simulation results are given to show the dynamic and stability of dengue transmission with the variation of given parameters.* **Findings:** *This paper focuses on model and stability analysis of dengue spreading by considering vector classification on aquatic and adult stages. Firstly, we constructed the mathematical model of dengue transmission that consist of host and vector population classes. In this case, the host population split it into: susceptible, infected and recovered sub-population. While vector population split it into: aquatic, susceptible and infected sub-population. Then the disease-free equilibrium and endemic-equilibrium points are determined. Furthermore, we analyzed the stability of the model around the equilibrium points by using Routh Hurwitz criteria. In addition, the basic reproduction number is used as reference for determining disease-free stability. In this study, Runga Kutta method is used to solve the ODE problem in the model. The numerical simulation results are given to show the dynamic and stability of dengue transmission with the variation of given parameters.*

Contribution: *The contribution of this paper are*

1. Mathematical Modelling of dengue spreading. The host population is divided into sub-populations: susceptible, infected and recovered. Vector population is divided into sub-populations: aquatic, susceptible and infected.

2. The stability analysis of dengue at two points of equilibrium: disease-free and endemic equilibrium point. Routh-Hurwitz stability criteria is used to determine the characteristics of the roots.

3. The asymptotic stability of the equilibrium point are also address

4. Numerical simulation is done based on the Runge-Kutta Algorithm for stability analysis of the problem.

This research is one of the applied mathematics contribution, especially in the modeling of the dengue spreading. This study is originil and expected to provide the advantages for readers.

Keywords: Mathematical modeling, dengue disease, stability analysis, vector classification.

Abstract ID: **AIMC-2017-STE-628**

ENVIRONMENTAL MANAGEMENT SYSTEM FOR SMALL AND MEDIUM FOOD PROCESSING ENTERPRISES IN PAKISTAN

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Abstract

Introduction: *Environmental issues gained more importance in the last few decades due to the increasing proportion of global warming and also the climate change predictions. Pakistan ranks 148 out of 168 countries under environmental performance index. The environmental degradation loss estimated Rs.365 billion PKR annually. Country is facing serious obstacles in international trade due to environmental issues. Awareness about environmental regulations is weak. Food processing is considered as one of the sources which pollutes environment through waste water, solid waste & air pollution in different processes. Food sector considered as major consumer of energy, water and resources. This research would be examines the barriers for the adoption of Environment Management System (EMS); perceived benefits of ISO 14000 EMS certification and its effects on overall organizational performance by proposing a model. An exploratory / preliminary study conducted in food processing industry to view the current status of EMS practices. The research is planned to conduct a questionnaire base survey to obtain the data and information. Structural Equation Modeling (SEM) will be used to analyze the data. The findings will identify the root cause for poor implementation of EMS and provides the way forward for successful implementation of an EMS in food processing Small and Medium Enterprises (SMEs) of Pakistan. The results will help by providing new ideas and knowledge through identifying the problems and providing innovative solutions for environmental improvement.* **Methodology:** *This study will use quantitative methodology, the structured questionnaire will be served to the food processing SMEs. The list of food processing SMEs will be acquired from Small and Medium Enterprises Development Authority (SMEDA), Ministry of Industries and Production (MOIP), and Chamber of Commerce and Industries. Partial Least Square-Structured Equation Modelling (PLS-SEM) will be used for hypothesis testing.* **Findings:** *The findings of the study will provide valuable guidelines for food processing manufacturers (SMEs) that at one hand help them to reduce environmental impact and on the other hand remove trade barriers and by fulfilling compliance requirements and increase trade with other countries.* **Contribution:** *This research is focusing on food processing SMEs. SMEs are the back bone and Pakistan's economy and playing an important role in socio-economic development of the country. Pakistan is an agricultural country and provides raw material for processing and value additions.*

Keywords: Environmental Management System, Food Processing, SMEs, Pakistan

Abstract ID: **AIMC-2017-STE-633**

DEFINING SYSTEM BOUNDARY OF MYRA CHICKEN FARM AND SERVICES USING LCA GUIDELINES

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Abstract

Introduction: *Commercial poultry production in Malaysia has shown a yearly escalation due to the high demand of poultry product in the market. The aim of this paper is to present the system boundaries' input output of broiler chicken farming industry in Malaysia.* **Methodology:** *According to ISO 14044 standard of lifecycle assessment (LCA), the system boundary is used to determine the inclusion and exclusion of the unit input output processes to be included in the environmental analysis. In order to achieve that, a cradle to gate case study was conducted at a broiler farm in Kalumpang, Hulu Selangor examining their process flow chain. The chosen input output can have a decisive impact on the environmental burden identified during the conduct of the LCA.* **Findings:** *Thus, at the end of this research, the system boundaries of the broiler operation were determined and provided insights on environmental information that was not examined in the past.* **Contribution:** *It is hoped that the study will lead to greater understanding of LCA application, importantly for broiler industry, real and measurable improvement in its environmental performance.*

Keywords: Broiler chicken, system boundaries, life cycle assessment

Abstract ID: **AIMC-2017-STE-634**

DIGITAL IMAGE WATERMARKING AND PERFORMANCE ANALYSIS OF HISTOGRAM MODIFICATION BASED METHODS

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Abstract

Introduction: *Digital image watermarking is defined as inserting digital signals in to a cover image such that the degradation of quality would be minimized and most amounts of the hidden data can be retrieved after geometric and signal processing distortions. In order to select an efficient algorithm in digital image watermarking to fulfill criteria such as robustness, imperceptibility and capacity, it is necessary to be aware of the specifications of the chosen method. Considering the in dependency of image histogram from the position of the pixels classifies the histogram modification based watermarking as an appropriate method against geometric and signal processing attacks.* **Methodology:** *the outstanding presented works in histogram modification based methods during the recent years are investigated to classify them based on the strength points and their drawbacks in order to highlight the vital factors in design and implementation of new high performance algorithms in this area. The factors such as Impressing by image contrast*
Sufficient security
High capacity
High imperceptibility
Relativity of capacity & imperceptibility
Relativity of capacity & robustness
Sufficient robustness
Watermark inserted in spatial/ transform domain and also robustness of each method against 12 types of signal processing and geometric attacks were investigated and at the end the pros and cons of each method were presented.
Findings: *Experimental results show that although histogram modification based methods are suffering from vulnerabilities like instability of the histogram shape resulting from image contrast, using the techniques like intelligently choosing the adjacent bins to embed the watermark, employing the secret keys and selecting the constant points of cover images by exposing them under attack before watermark embedding make them to be a good candidate for image watermarking to withstand against geometric and signal processing attacks.* **Contribution:** *This paper investigates the recent outstanding presented methods in histogram modification based image watermarking from 2010 to 2017 to identify the weak and strength points of them to emphasize which method should be developed to enhance the performance of the watermarking algorithms in terms of the Imperceptibility, Robustness, Capacity and security.*

Keywords: Digital image watermarking, Histogram Modification, Imperceptibility, Robustness, Capacity

Abstract ID: **AIMC-2017-STE-636**

RADIATION AWARENESS AMONG SECONDARY SCHOOL STUDENTS IN PERAK, MALAYSIA

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Abstract

Introduction: *The number of student enrolment for Radiography programme in Universiti Kuala Lumpur – Royal College of Medicine Perak is the lowest compared to other programmes. Hence, this study is done not only to determine students' tendency to further their study in radiography/related programme but also to determine the radiation awareness among the secondary school students.* **Methodology:** *Sets of validated questionnaire were distributed to form four secondary school students in Perak, Malaysia and 429 responses were collected.* **Findings:** *The result shows average score of basic knowledge regarding radiation (μ = 59.53%). Meanwhile, printed reading materials showed the highest type of information source (25.9%). 46.2% claimed that they fear to radiation due to the radiation disaster incidences and 50.8% claimed that they may continue their higher education in radiography/related programme. Result also showed that fear to radiation effects the students' tendency to choose radiography/related programme as their choice ($p<0.05$).* **Contribution:** *This study is a tool to identify the reasons of low number of enrolment for Radiography program in our institution. Hence, finding the solution to overcome the problem.*

Keywords: radiation awareness, school students, radiation fear

Abstract ID: **AIMC-2017-STE-637**

DESIGN OF RECANGULAR MICROSTRIP PATCH ANTENNA FOR STRAIN SENSING APPLICATIONS

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Abstract

Introduction: *Microstrip patch antennas could be used not only for communication between sender and receiver, but also, as a strain sensor. The advantages of the microstrip patch antenna lies in the fact that it is light in weight, ease of fabrication and low fabrication cost. The antenna sensor showed that there is a linear relationship between an applied strain and percentage of shift in antennas resonant frequency regardless of the materials used for antenna fabrication.*

The purpose of the research is to design and simulate of a rectangular microstrip patch antenna for strain sensing application using CST studio suite. **Methodology:** *The proposed antenna operating at 5.8 GHz frequencies was designed using CST software. The feeding method chosen for this antenna was Microstrip Line Fed. where the ground plane is at the front of the substrate. The substrate used for the proposed antenna is FR-4 which has dielectric constant of = 4.3, with high h = 0.5 mm and loss tangent . The antenna consists of a rectangular radiating patch with length L and width W. The Rectangular radiator fed by a microstrip line is printed on the top side of the substrate while the partial ground plane of size Wg × Lg is printed on the bottom side of the substrate.* **Findings:** *The result showed that when no strain applied, the antenna operate at its resonance frequency. However, under an applied strain, a change in the antenna dimensions i.e. patch length and width will occur, causing a shift in the resonance frequency. It was found that there is a linear relationship between the applied strain and the resonance frequencies. The designed microstrip patch antenna was found to be more sensitive to the strain applied along its length than its width.* **Contribution:** *The contribution of this research is to study the effect of strain senstivity on the antenna's length and width.*

Keywords: structural health monitoring, strain sensing, microstrip antenna, Computer Simulation Technology (CST)

Abstract ID: **AIMC-2017-STE-638**

USE OF REMOTE SENSING AND GIS TO EXTRACT SURFACE WATER DRAINAGE PATTERNS OF STREAMS IN SOKOR, TANAH MERAH, KELANTAN

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Abstract

Introduction: *The extraction of the water hydrographical pattern is very important for many types of study. In Malaysia the topographic map scale 1:25,000 produced at the Department of Surveying and Mapping Malaysia (DSSM) is considered the most important source of contour lines and drainage pattern. Therefore, it is imperative to estimate the accuracy of these types of data extracted from the previous topographic maps.* **Methodology:** *In this project the hydrographical pattern of streams in Sokor were extracted in two methods: (1) Digital Elevation Model (DEM) DEM based on satellite imageries using remote sensing methods (2) topographic maps at scale 1:25,000. The extractions of DEM were accomplished by using several software such as ArcGIS, TCX converter and DNRGPS as open source update to the popular DNRGarmin application. The quality of DEM is imperative to assure precise results and depends on the method of creation of this DEM besides other factors. The elevation has a range from 27m to 420m. DEM and its derivatives can be used for efficient watershed delineation and stream network generation. A complete data base for the necessary information for achieving this objective was built.* **Findings:** *The obtained results were evaluated using GPS points and photo-interpretation. The results show that the drainage pattern extracted from DEM using remote sensing and GIS systems was very accurate; meanwhile, the accuracy of the drainage pattern extracted from topographic maps has some flaws.* **Contribution:** *This paper presents a framework for accuracy assessment of extracting hydrographic network from 1:25,000 topographical maps. This assessment is based on DEM and hydrological techniques by extracting the hydrographic network from a precise DTM built by these techniques which were proved to be an efficient tool for hydrological studies.The topographic maps (at scale 1:25, 000) have some flaws and necessitate revision and update in order to be a reliable source of spatial data*

Keywords: Geographical Information System (GIS), Drainage pattern . Digital Terrain
Model (DTM) , Prediction, Accuracy

Abstract ID: **AIMC-2017-STE-639**

STUDY AND ANALYSIS OF ELECTROCARDIOGRAPHIC (ECG) FOR DETECTION OF ABNORMALITIES USING EFFECTIVE TOOLS

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Abstract

Introduction: *In this paper the propose method is to study and analysis the electrocardiography waveform for detection of abnormalities present in the signal. We develop a method, based on various filters that would be able us to remove noise.* **Methodology:** *Selected filters are used to eliminate any interference while maintaining the useful information within the signal.The ECG data used for this purpose was taken from the Phyionet library and more specifically from the MIMIC II database. The work is implemented in the most familiar multipurpose tool, MAT LAB. This software efficiently uses algorithms and techniques for detection of any abnormalities present in the ECG signal. Proper utilization of MAT LAB functions (both built-in and user defined) can lead us to work with ECG signals for processing and analysis.* **Findings:** *The simulation result will help us for better interpretation of the ECG signal. The results of ECG signal processing and abnormality detection demonstrate the suitability of the selected filtering techniques and the efficiency of the detection mechanisms.* **Contribution:** *We process and analysis in order to increase the reliability of QRS detection and then we contribute to the calculate of the heart rate of the patient using*
MAT LAB software.

Keywords: Electrocardiography ECG, ECG signal filtering and processing heartbeat abnormalities, MATLAB.

Abstract ID: **AIMC-2017-STE-646**

ASSESSMENT OF MANGROVE HABITAT AND RIVER SHORELINE EROSION BASED ON SEA LEVEL RISE AND UNMANNED AERIAL VEHICLE SYSTEM

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Abstract

Introduction: *The recognition of Kilim River, Langkawi, Kedah as Geopark by UNESCO in 2006 had increased the number of tourist and therefore opened up various economic opportunities to the society. It is well known as nature reserve that consist of various flora and fauna. There are gigantic limestone rock rising from the river bed with dense green mangroves that protecting the shorelines. The study area is one of the most attractive tourist spots in Malaysia. This area is now under the threat of significant mangrove area reduction caused by two main reasons: intensification of tourism activities and Sea Level Rise (SLR).* **Methodology:** *First objective aims at identifying mangrove characteristics and species by means of optical aerial photogrammetry technique. Imaging sensor is attached to the Unmanned Aerial Vehicle (UAV) system, which allows rapid and detailed mangrove mapping. Relative measurement and species diversity index is calculated for each sample of mangrove trees. Gridded topography map is marked with the coordinate location as a reference to locate the plot. In each plot, four quadrates are defined at every center nodes as Q1, Q2, Q3 and Q4 which characterize the mature mangrove trees nearest to the center node are measured. The second objectives devote for modelling of river bank erosion and affected mangrove area using different geospatial technology. Small scale river bank erosion can be measured using real-time kinematic (RTK) GPS. Large area erosion mapping can be done by means of aerial photogrammetry. For assessment of mangrove habitat, integrated analysis between aerial photogrammetry and shoreline evolution is employed. Also Digital Elevation Model (DEM) is used to simulate water levels in GIS environment and model the shoreline evolution for the projected scenarios* **Findings:** *All these simulations are integrated into a mangrove vulnerability map and the effect of SLR on mangrove migration can be predicted. The output of this study includes mangrove vulnerability map, rehabilitation efforts and prediction of the mangrove migration.* **Contribution:** *In conclusion, SLR affect the migration of mangrove trees in the study area and the UAV system can also be used to detect the riverbank erosion based on several epochs.*

Keywords: Mangrove migration, Sea Level Rise, Aerial Photogrammetry, Riverbank Erosion

Abstract ID: **AIMC-2017-STE-647**

AUXIN TREATMENT AND GELLING AGENTS IN CALLUS INDUCTION AND HISTOLOGY OF SELECTED MALAYSIAN RICE CULTIVARS

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Abstract

Introduction: *Rice (Oryza Sativa var indica) is a main staple food in Malaysia. Rice production in Malaysia is extremely vulnerable to weather changes, drought and flooding. To ensure food security for the country need to develop improved high yield rice variety. Tissue culture methods of rice is used to generate new plantlets through in vitro techniques to develop high yielding and well developed plant species through genetic transformation.The aim of this study is to identify most suitable medium for embryogenic callus induction which was further assessed by histology.* **Methodology:** *. The present study was conducted from mature embryo from Malaysian wetland rice cultivar MR220, MR220-Cl2, MR232 and upland rice cultivar Bario. Three different basal media viz. MS (Murashige and Skoog, 1962), LS and N6 were used supplemented with 2,4-Dichlorophenoxyacetic acid (2,4-D) and naphthaleneacetic acid (NAA).* **Findings:** *Result showed that callus growth efficiency were significantly affected by media, plant growth regulators, cultivar. Best callus induction was found in MS media supplemented with 3 mg/L 2,4-D for MR220 and MR220-Cl2, MR232 (84%, 86%, 92% respectively) whereas N6 media with 2mg/L 2,4-D is for upland Bario (82.6%). No significant difference were found when cultured on different gelling agent (phytagel, gelrite agar and bactoagar). Morphological analysis through light microscopy, histology revealed the presence of embryogenic and non-embryogenic regions of callus. Small, isodiametric and high dense of cytoplasmic cells were considered as embryogenic in histological analysis. This finding of this study would very useful for producing high frequency embryogenic callus induction which is the crucial step for crop improvement.* **Contribution:** *Original paper from my own research conducting for phD project*

Keywords: Malaysian rice (Oryza sativa), basal meida, auxin treatment, somatic embryogenesis, histology.

Abstract ID: **AIMC-2017-STE-651**

FREQUENCY ANALYSIS OF BRAIN SIGNALS FOR BIOMETRIC APPLICATION

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Abstract

Introduction: *In this research we proposed a novel authentication method based on electroencephalogram (EEG) responses of individuals while writing their own signature and other´s signature. Comparison of the averages of the frequency powers after fast Fourier transformation of EEG data revealed the similarities and differences at different frequencies between two tasks. Average comparison was done for each individual channel in 10 frequency ranges within 4 to 43.5 Hz showed significant differences between the two groups are found in beta rhythm, particularly from 16 to 23.5 Hz at O1, O2, and P7 ($p < 0.05$; Two-way repeated ANOVA).*
Methodology: *Two young (25 and 29 years old men) subjects were selected to perform signing task while recording EEG. An experiment started with explaining the procedure to subjects, and asked them to try to feel comfortable. A timing application was designed to play a beep sound every 5 seconds and stops 2 minutes after the onset of a task with different sound that shows the end. There were two tasks. After each beep sound, subject started to sign self-signature in task 1 and to copy someone else's signature in task 2. A whole experiment was recorded using a web camera and simultaneously the beep sound and EEG signals were recorded using Camtasia Studio software (TechSmith Co., USA). EEG signals were recorded by Emotiv Neuroheadset from 14 channels (AF3, F7, F3, FC5, T7, P7, O1, O2, P8, T8, FC6, F4, F8, AF4) at 128Hz sampling rate using Emotiv TestBench.*
This experiment was approved by the Internal Ethics Committee at Kyushu Institute of Technology. The possible risks, mental task, and approximate measurement time were explained to all participants. In addition, all participants gave their written informed consent before participating in this experiment.
Findings: *Analyzing EEG signals of two subjects in frequency domain showed clear differences between signing self signature and others signature. As shown in Fig 1 the clear differences are at posterior area (P7, O1, O2, and P8) for subject 1 and the result from subject 2 showed a clear difference at T7. Differences from posterior area probably resulted because of different visual responds in two conditions. Higher power frequency*

in others signature could be because of higher required attention while trying to copy others signature. On the frequencies, the results between two subjects were as follows:

A. Difference between self signature and others signature happened at beta rhythm with the frequencies between 12 and 31.5 Hz.

B. Signing others signature produced the higher power at beta rhythm in comparison with the self-signature.

Contribution: *in this research, we investigate on finding similarities and differences on EEG signals while signing on a paper for two scenarios which first is self-signature and second one is trying to copy someone else's signature. Utilizing this similarities and differences gave us an opportunity to differentiate individuals with high accuracy rate.*

Keywords: EEG, Authentication, Neuro-feedback, Biometric

Abstract ID: **AIMC-2017-STE-655**

LAND COVER MAPPING OF LANGKAWI GEOPARK USING OBJECT-BASED AND PIXEL-BASED CLASSIFICATION APPROACHES

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Abstract

Introduction: *Land cover map is very important input and useful for planning and management activities especially for conserving environment. However, most of existing land cover map still encounter lack of accuracy and lower resolution. Therefore, this study aims to produce high resolution land cover map of Kilim River in Langkawi Geopark, Kedah, Malaysia.* **Methodology:** *In this study, automated classification technique of mapping of this area is employed using high resolution Quickbird satellite image. Object-based and pixel-based classification methods were explored and compared. Object-based method involved segmentation part where objects were assigned class rules using spectral signatures, shapes and contextual relationship. The rules were then used as a basis in classification part. Both segmentation and classification processes were conducted in e-Cognition software. While, a supervised classification, Maximum Likelihood Classification (MLC) involved selection of training areas were used for pixel-based method using Erdas Imagine software. Then, classification accuracy was assessed by comparing the techniques used with the field inventory data using Kappa coefficient.* **Findings:** *The results from the Quickbird data classification show that the object-based approach gave more accurate results of approximately 81.30% compared to the results achieved by MLC pixel-based classification of 78.16%.* **Contribution:** *As conclusion, a land cover map of Langkawi Geopark with higher resolution was produced successfully.*

Keywords: land cover mapping, classification, object-based, pixel-based, Quickbird

Abstract ID: **AIMC-2017-STE-662**

ROBUSTNESS ANALYSIS IN DIGITAL IMAGE WATERMARKING AGAINST GEOMETRIC AND REMOVAL ATTACKS: A SURVEY

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Abstract

Introduction: *One of the challengeable concerns in digital image watermarking is to design a technique in order to resist against geometric and removal attacks. Although researchers proposed many techniques for this purpose, most of them suffer from problems such as requiring pre calculation, complexity of the algorithms, high computational load and etc.* **Methodology:** *In this survey, we classified the digital image watermarking solutions against geometric and removal attacks in four categories (1) exhaustive search (2) invariant domains (3) template based and (4) feature extractions.*

Then the limitations affecting on performance and feasibility of each group were investigated based on the influential factors like calculation complexities such as computational load, pre-calculations repetitive computation, time consumption and other limitations like false positive effect, capacity, sufficient imperceptibility and robustness. **Findings:** *The result of this comparison and investigation shows that Singular Value Decomposition (SVD) techniques have less limitation according to the specified factors and best*

*robustness against attacks. Simulation is made for 512*512 gray scale images in MATLAB for the all mentioned SVD techniques. It shows that combination of SVD with transform domain methods like DWT/DCT with evolutionary techniques give an ascending trend to achieve the maximum rate of robustness, such that, calculated NC is increased to more than 0.90 for geometric and signal processing attacks.* **Contribution:** *This paper proposes a profound investigation and classification amongst the solutions of digital image watermarking against geometric and removal attacks. Classification is according to important factors such as robustness, data capacity, time consumption, pre-calculations and computational load. The first advantage of this survey is to specify which group of this classification encompasses less limitation according to the mentioned influential factors and the second advantage is to express which method has the optimum efficiency in spatial and which one has the best in transform domain. It is gained by considering the level of imperceptibility and robustness of each method against attacks.*

Keywords: Digital image watermarking; DFT; DCT; DWT; SVD;

Abstract ID: **AIMC-2017-STE-664**

RIVERBANK EROSION MAPPING USING REMOTE SENSING DATA AND UNMANNED AERIAL VEHICLE SYSTEM

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Abstract

Introduction: *Mangrove riverbank erosion is a serious environmental issue which urges government to take appropriate action to solve this problem. Kilim River, Langkawi Geopark, Kedah which is located in northern part in Peninsular Malaysia is under the threat of critical reduction caused by intensification of tourism activities.* **Methodology:** *The purpose of this study is to assess mangrove riverbank erosion by using geoinformation techniques of remote sensing and unmanned aerial vehicle (UAV) approaches. The output from image classification of Quickbird image and UAV image can be utilized to identify the area of Kilim River which is severely affected by erosion. By using Object-Based Classification method in e-Cognition software, mangrove riverbank and the river itself were classified as separate classes which allowed researcher to distinguish both classes in order to discover location and value of riverbank loss. Subsequently, spatio-temporal analysis is carry out in order to predict riverbank erosion in future based on present erosion data by using interpolation method in geographical information system (GIS).* **Findings:** *The output of this study comprised of spatio-temporal map and map which display location of erosion area in the study area. For this study, it can be concluded that the geoinformation technologies are can be utilized in environmental study for detection of riverbank erosion.* **Contribution:** *The research should be able to display riverbank erosion map by using remote sensing data and unmanned aerial vehicle system. The estimation of riverbank erosion in future could be mapped by using present result and projected using interpolation method in GIS to show erosion in upcoming 10 or 20 years ahead.*

Keywords: Riverbank erosion, remote sensing, unmanned aerial vehicle, map, geoinformation

Abstract ID: **AIMC-2017-STE-671**

REAL TIME DETECTION OF VIBRATION FAULT VIA UTILIZED INDUSTRIAL WIRELESS VIBRATION SENSOR

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Abstract

Introduction: *Wireless techniques utilized in industrial applications face significant challenges in reducing noise, packet flood, and data modification. Wireless sensors are utilized to identify and monitor fault level in real time to protect machine from damage.* **Methodology:** *This study will focus on the design of wireless vibration sensor to display the fault via computer based on the two schemes; first, vibration fault collected 3-axis mode, while second, scheme collected 1-axis mode, which is using to protect the induction motor (IM) from the vibration fault.* **Findings:** *The fault signal in main computer is applied on signal processing and Fuzzy Logic (FL) to classify the fault. Meanwhile, wireless vibration sensor designed depending on the wireless techniques via the C++ code. MATLAB coding was utilized to collect data from wireless vibration sensor, signal processing*

and fuzzy logic. The system was successful classified the vibration fault to reduce the real time processing to 60% if the second scheme employed. **Contribution:** *The vibration fault value detected via the wireless system with reducing the real time processing based on using the second scheme that is improved the system protection by early detected the fault of IM.*

Keywords: Wireless vibration sensor , real time fault detection, fuzzy logic , signal processing

Abstract ID: **AIMC-2017-STE-673**

EVALUATION OF LOW COST MULTI-ROTOR UNMANNED AERIAL VEHICLE SYSTEM FOR MAPPING PALM OIL PLANTATION

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Abstract

Introduction: *Today, there are many types and models of unmanned aerial vehicle (UAV) system available in the market. In general, UAV can be categorized as fixed wing and multi-rotor. The UAV has been widely used by many professionals such as surveyors, engineers, planners, scientist and others. The UAV can be used to acquire digital aerial images and later it can be processed to generate orthophoto. Subsequently, map can be produced from the orthophoto. The UAV also can be used to produce Digital Elevation Model (DEM) and contour line can be generated from the DEM. The aim of this study is to evaluate the capability of the low cost multi-rotor UAV system to produce map of palm oil plantation.* **Methodology:** *In this study, a low cost multi-rotor UAV were flown over a small area of the palm oil plantation with the width of 600m and length of 700m. The UAV was flown at three flying heights of 80m, 100m and 120m. After the acquisition of digital aerial images of the study area, ground control points (GCPs) and check points (CPs) were established using real time kinematic Global Positioning System (RTK-GPS) technique. Then the digital aerial images and GCPs were used in digital image processing software to produce orthophoto and DEM. Then the CPs were used to evaluate the planimetric accuracy of the orthophoto and height accuracy of the DEM. After the process of evaluation, the map of the palm oil plantation is produced by digitizing the orthophoto and then contour lines were added to the map.* **Findings:** *The results of this study show that the orthophoto and DEM were successfully produced for the UAV at three different flying heights within short time. From the orthophoto, the planimetric accuracy is less than 0.5m, however, the height accuracy from the DEM is more than 0.5m.* **Contribution:** *Production of orthophoto and DEM based on low cost multi-rotor unmanned aerial vehicle (UAV) system. The map of palm oil plantation can be produced by digitizing the orthophoto while the contour lines are generated based on DEM.*

Keywords: Map, orthophoto, DEM, UAV, accuracy

Abstract ID: **AIMC-2017-STE-678**

COD REDUCTION IN BATIK WASTEWATER USING PINEAPPLE ACTIVATED CARBON

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Abstract

Introduction: *Batik had become a very popular handmade craft in Malaysia, especially in Kelantan and Terengganu. High demand of the batik products from local and international had urged the batik entrepreneur to produce more batik product. Batik making process produce large amount of discharge water into the environment which contains a lot of pollutant such as colour, wax, heavy metals and some other organic pollutants without any prior treatment.Therefore, a simple, safe and inexpensive water treatment should be applied in the batik factories.* **Methodology:** *A study on the potential of pineapple parts (crown, peel and core) as an activated carbon (KOH activation) to reduce COD level in the batik discharge was carried out. SEM and FTIR were used to analyse the morphology and functioning group of the prepared activated carbon.* **Findings:** *The results of the activated carbon derived from pineapple crown, peel and core indicate maximum COD reduction between 58.06% to 68.34%, 64.13% to 84.14% and 62.75% to 90.57% respectively.* **Contribution:** *Therefore this study had proved that activated carbon derived from pineapple waste has a good potential for COD reduction in batik wastewater and will help to reduce the water pollution made by the batik wastewater.*

Keywords: discharge, KOH, pollutants

Abstract ID: **AIMC-2017-STE-679**

ASSESSMENT OF DIGITAL CAMERA OF DIFFERENT RESOLUTION USING UNMANNED AERIAL VEHICLE FOR THE PRODUCTION OF TOPOGRAPHIC MAP

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Abstract

Introduction: *This research will study about the accuracy assessment of digital camera of different resolution using unmanned aerial vehicle for production of topographic map. The accuracy generated from processed UAV images comparing with known height values of ground control points (GCP). The data of ground control points will establish using the GPS technique (RTK-GPS). The research is expected to produce topographic map and provide contribution for an easy and fast way in getting height points value rather than using conventional method such as leveling. In this research, UAV is used as a platform to capture digital image using high resolution digital camera. The research area is surrounding the Universiti Teknologi Malaysia (UTM).*

Methodology:

There are four phases covered in this study which are literature review related to the study and study preparation, the collection of the data, the processing of the data and data analysis.

The literature review will explain briefly about the photogrammetry and the development of UAV in many applications and mapping purposes. The study preparation give an explanation about the preparation should be done in collecting the data such as instrument used, flight planning and camera calibration of digital camera.

For the data collection phase, there are three main data should be collected that are ground control points (GCPs) established from RTK-GPS, camera calibration parameter from camera calibration and digital images captured by UAV at the study area. The determination of GCPs and Check Points (CPs) location must be well organized referred to UAV images for the study area.

In the processing stage, all the data will be processed using photogrammetric software to produce high resolution orthophoto. The orthophoto then will be analyzed with GCPs to determine their accuracy by checking the value of root mean square error (RMSE).

Findings: *The findings of the research is expected to give contribution for determine the coordinates and elevation value of the ground surface in easy and fast produce topographic map.*

Contribution: *This research show that the achievable planimetric accuracy (XY) is less than one meter while the elevation accuracy is less accurate than the planimetric. Also the accuracies improved as the resolution of the digital camera increases. From this research, it can be concluded that UAV system has great potential to be used for updating topographic map*

Keywords: UAV, digital camera, topographic map, accuracy

Abstract ID: **AIMC-2017-STE-680**

MULTISET CONTROLLED GRAMMARS

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Abstract

Introduction: *A large number of various types of regulated grammars have been investigated and studied as well as at the same time have achieved a plentiful remarkable results within formal language field. However, the swift growth in present day technology, industry and other fields have resulted more and more new and intricate issues arise which required to seek for new suitable tools to counter those issues. This study focus on defining a new variant of regulated grammars called multiset controlled grammars as well as investigating their computational power.* **Methodology:** *We apply a constructive theoretical approach, the intent of which is to provide new theories based on mathematical and formal methods where the results are appeared in the form of examples, lemmas and theorems.* **Findings:** *In the study, we have proved that multiset controlled grammars are more powerful than the traditional Chomsky grammars and have at least the lower bound of computational power as additive valence grammars as well as they also can generate the languages that are included in family of languages of matrix (upper bound case)* **Contribution:** *It can be used as an analysis tool to generate and analyze a large scale sequence in the area such pattern recognition, molecular computing, compiler, cryptography and others.*

Keywords: Multiset, Controlled Grammars, Generative Power, Chomsky.

Abstract ID: **AIMC-2017-STE-681**

THERMAL TRANSFER AND MAPPING OF THZ RADIATION ABSORPTION IN BIOLOGICAL TISSUE USING THE MATHEMATICA BASED SIMULINK TRANSFORM

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Abstract

Introduction: *The transformer system connection building of mathematica-simulink based matlab program is the main aspect to be concerned on this work in which focuses on the thermal transfer of THz radiation regime through biological tissue.* **Methodology:** *It is built on the mathematica-simulink system transformed dynamic modeling which emphasizes on the rate of heat generation when occurs THz radiation regime absorption with low scattering in attenuation against the tissue radial and axial depth. Experimental based data and prediction of thermal distribution owing to this radiation absorption has applied a closed-form system known in principle as analog computer model. There are assumptions to be considered to modeling principle and sample conditions such as static tissue with no blood supply or dynamic tissue with response to homeostatic regulation of body temperature equilibrium.* **Findings:** *Thermal transfer of different power densities indicates that it penetrates the axial or radial depth with the small heat change difference for several types of tissue. ex. skin, fat, tumor, and muscle. The results for time intervals of one second or longer show a constant temperature or a steady state centered about one temperature. By contrast, milliseconds to picoseconds time ranges display a small but significant temperature change as the depth varies correlated with the contrasting tissue structures. The dimensionless temperature used for finding in difference of tissue thermal characteristics that gives the heat mapping in different contours of the dimensionless temperature.* **Contribution:** *This indicates that THz radiation regime has a good prospect for clinical purpose and medical therapy as well as imaging.*

Keywords: THz radiation; modeling; absorption; thermal mapping; biological tissue.

Abstract ID: **AIMC-2017-STE-686**

ABOVE AND BELOW-GROUND BIOMASS OF MACARANGA GIGANTEA IN UNIVERSITI TEKNOLOGI MALAYSIA SECONDARY FOREST

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Abstract

Introduction: *A study on above and below-ground biomass of Macaranga gigantea was carried out in Univeristi Teknologi Malaysia (UTM) secondary forest which located at Skudai, Johor Bharu* **Methodology:** *A total of 200 plots with dimension 10 m x 10 m have been established in the UTM secondary forests. Total of 438 Macaranga gigantea trees with ≥5 cm diameter at breast height (dbh) were tagged and measured. In estimating above-ground biomass, Chave et al., (2014) equation has been applied while below-ground biomass was estimated from Cairns et al., (1997).* **Findings:** *Results indicated that above-ground biomass was 17.1 t/ha and below-ground biomass was 0.35 t/ha. Therefore, total above and below-ground biomass for Macaranga gigantea in UTM secondary forest was 17.5 t/ha.* **Contribution:** *Shows that pioneer species from secondary forest also contribute in reducing carbon for mitigating global warming*

Keywords: Above and Below-ground Biomass, Macaranga gigantea, secondary forest

Abstract ID: **AIMC-2017-STE-687**

ANALYSIS OF CONTROLLERS IN SUPPRESSING THE STRUCTURAL BUILDING VIBRATION

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Abstract

Introduction: *Two degree of freedom (2 DOF) mass spring damper system is used in representing as building structure that dealing with the earthquake vibration. The real analytical input is used to the system that taken at El Centro earthquake occur in May 1940 with magnitude of 7.1 Mw. Three type of controller is presents in controlling the vibration which is Proportional Integral (PI), fuzzy logic (FL) and sliding mode controller (SMC). The paper is to improve the performance of building structure vibration based on propose controllers. PI*

controller is widely known control method, while fuzzy and sliding mode controller is widely known with robustness character. **Methodology:** *The mathematical model of two degree of freedom mass spring damper is derived to obtain the relationship between mass, spring, damper, force and actuator. PI, fuzzy logic and sliding mode controllers are implemented to 2 DOF system to suppress the earthquake vibration of two storey building. Matlab/Simulink is used in designing the system and controllers to present the result of two storey displacement time response and input control voltage for uncontrolled and controlled system. Then the data of earthquake disturbance is taken based on real seismic occur at El Centro to make it as the force disturbance input to the building structure system. The controller propose will minimize the vibration that used in sample earthquake disturbance data.* **Findings:** *The simulation result is carried out by using Matlab/Simulink. The simulation result shows sliding mode controller is better controller than others based on its performance in suppressing the earthquake vibration followed by fuzzy logic and then PI controller. In specific, by using the controller, earthquake vibration can be reduce.* **Contribution:** *The contribution of this paper is by designing and compares the controller to reduce earthquake vibration by taking the real seismic sample data*
Keywords: PI, Fuzzy logic, sliding mode controller, vibration, earthquake

Abstract ID: **AIMC-2017-STE-688**

IMPROVED WAVELET GAUSSIAN PROCESS REGRESSION MODEL FOR UNIVARIATE CRUDE OIL PRICE FORECASTING

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Co-Authors: Ani Shabri; Mohd Fahmi Abdul Hamid

Abstract

Introduction: *Crude oil price forecasting is a challenging task due to the extreme volatility and sensitivity of crude oil market towards many other complicated factors. This paper proposes a hybrid model, Wavelet Gaussian Process Regression (WGPR) which is a combination of Maximal Overlap Discrete Wavelet Transform (MODWT), Recursive Feature Elimination (RFE) and Gaussian Process Regression (GPR) in forecasting crude oil price series. The monthly West Texas Intermediate (WTI) and Brent North Sea (Brent) crude oil price are used to test the forecasting performance of the proposed model.* **Methodology:** *This study employs only the historical measurement data and neglects the potential exogenous inputs. Therefore, the input selection stage is an important part in this study in order to obtain high accuracy forecasting results, at the same time mitigate the overfitting issue which may occur due to irrelevant or redundant inputs. In this study, RFE is used to identify the optimal time lag for the univariate forecasting models. The original time series data is decomposed by using MODWT into subseries components of details and approximations. The obtained components of the MODWT are used as input variables to forecast the crude oil price. The model is further improved by incorporating forecasting combination of several WGPR models with different covariance function. The forecasting performance of the proposed model is compared with Autoregressive Moving Average (ARIMA), Generalized Autoregressive Conditional Heteroscedasticity (GARCH), Aritificial Neural Network (ANN) and the regular Gaussian Process Regression (GPR). The forecasting performances are measured by using root mean square error (RMSE) and mean absolute error (MAE).* **Findings:** *The application of RFE is able to assist in selecting the optimal time lag input for the models. The experimental results show that the regular GPR model outperforms ANN, ARIMA and GARCH models in forecasting monthly crude oil price based on the value of RMSE and MAE. Furthermore, the application of MODWT decomposition is seen to significantly improve the forecasting performance of the regular GPR model. Finally, the forecasting performance of the proposed hybrid model is further improved through the combination of several WGPR models with different covariance function which are selected based on the value of the RMSE.* **Contribution:** *The motivation of this study is to further improve the forecasting performance of the GPR model. This research proposes the combination of MODWT decomposition and GPR forecasting method. The ability of the proposed model, WGPR in forecasting monthly crude oil prices is explored and it shown that the forecasting performance of the GPR model is significantly improved. Other contribution of this paper is through the forecasting combination of selected WGPR with different covariance functions based on the value of RMSE for each individual WGPR. Previous study has shown that squared exponential is widely used as the covariance function for the GPR model. However, given the different properties of the time series, it may not be able to capture all the characteristics and trends well. Therefore, this study seeks to fill this gap by using the forecasting combination approach.*

Keywords: Crude oil price forecasting, MODWT, ARIMA, GARCH, ANN, Recursive Feature Elimination, Gaussian Process Regression.

Abstract ID: **AIMC-2017-STE-689**

SIGNED PRODUCT CORDIAL LABELING OF FLOWER GRAPH FNX4 MODIFIED BY SWITCHING VERTEX

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Abstract

Introduction: *A labeling is an assignment of labels to edges, vertices, or both edges and vertices of a graph. An edge labeling is a labeling of all edges by integers. A graph with such a labeling is an edge labeled graph. A vertex labeling is a labeling of all vertices by integers. A graph with such a labeling is a vertex labeled graph. A total labeling is a labeling of all vertices and edges by integers. A graph with such a labeling is a total labeled graph.*

In 1987, I Cahit introduce one type of graph labeling is a cordial labeling in a paper entitled "A Weaker Version of Graceful and Harmonious Graphs". In further developments, found signed product cordial labeling by Jayapal Baskar Babujee et al in a paper entitled "On Signed Product Cordial Labeling" . **Methodology:** *A vertex labeling of graph G^'*

f: V(G^')⟶{-1,1} with induced edge labeling f^*: E(G^')⟶{-1,1} defined by f^* (e=uv)=f(u)f(v) is called a signed product cordial labeling if |v_f (-1)-v_f (1)|≤1 and |e_f (-1)-e_f (1)|≤1, where v_f (-1) is the number of vertices labeled with -1, v_f (1) is the number of vertices labeled with 1, e_(f^*) (-1) is the number of edges labeled with -1, and e_(f^*) (1) is the number of edges labeled with 1. A graph G^' is signed product cordial if it admits signed product cordial labeling. **Findings:** *In this paper, we determine signed product cordial labeling of flower graph f_(n×4) modified by switching vertex. The result is that the flower graph f_(n×4) modified by switching vertex is signed product cordial labeling.* **Contribution:** *Signed product cordial labeling reviewed by Jayapal Baskar Babujee and Shobana Loganathan has been applied to the circle graph C_n , path graph P_n, star graph K_ (1, n), and bistar graph B_ (n, n). Not only applied to these graphs, signed product labeling cordials can also be applied to the modified graphs. Such as signed product cordial labeling studied by Santhi. M and J. James Albert is signed product labeling cordial to the graph circle C_n and star graph K_ (1, n) which modified by the corona G_1⊙G_2 and duplication at the vertex.*

From these studies, signed product cordial labeling not only applied in special graphs, but can be applied to graphs that have been modified. Therefore, the authors are interested in taking the theme of this paper regarding signed product cordial labeling of flower graph f_(nx4) modified by switching vertex.

Keywords: Signed product cordial labeling, switching vertex, flower graph

Abstract ID: **AIMC-2017-STE-693**

AUTHENTICATION USING FACE RECOGNITION IN ANDROID APPLICATION

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Abstract

Introduction: *Facial recognition (or face recognition) is a computer technology that identifies human faces in digital images. The study is to discuss the implementation of facial recognition techniques on an Android mobile phone, as well as the design and implementation of an application using facial recognition.* **Methodology:** *For this study, face recognition would assist in identifying and authenticate related personnel in protecting their confidential data on their mobile device. For the face detection, the researcher use LBP- based face detector and Eigenface algorithm for face recognition.* **Findings:** *In addition, any data that is stored in the project will not be at risk of being snooped or altered without permission.* **Contribution:** *As a result, the proposed system will be useful for android smartphone users to secure their files from unauthorized entities.*

Keywords: Android Application, Eigenface, Face recognition, Face Detection, Local binary pattern (LBP)

Abstract ID: **AIMC-2017-STE-696**

INVESTIGATION OF FACTORS AFFECTING DEVELOPMENT OF BROWNING DURING MAILLARD REACTION OF GELATIN

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Abstract

Introduction: *Gelatin is one of the most versatile food ingredients because of its multiple functional roles including stabilization, gelling, emulsifying, water holding capacity, mouth feel and adhesive property. However, presence of gelatin in food has now become a source of concern among some consumers due to religious, cultural and health reasons. The Muslim and Jews reject gelatin from porcine in line with their religious believes, the Chinese disallowed the medicine use of gelatin from other sources except that of donkey and vegetarians reject gelatin from animal source. The outbreak of bovine spongiform encephalopathy (BSE or "mad cow disease") has equally called for banning of use of mammalian gelatin in animal feeds. Hence, several studies have been conducted to developed some authentication protocols of gelatin in food and none food products.*

The aim of this study is to investigate the effects of some conditions that affect the development of browning during Maillard reaction of gelatin. The factors that were investigated include pH, concentration of xylose, type and concentration of metals, reaction time, and trypsin hydrolysis. **Methodology:** *Maillard reaction of gelatin*

About 100 ml of solution containing 0.5 % xylose and 2.0 % of gelatin was prepared at 60oC, each for fish, bovine and porcine gelation. The solutions were divided into different tubes and pH was adjusted to the desired value according to experimental design using 1.0 M HCl/NaOH. Each of the solutions was heated at 95oC for 48 hours. About 1 ml of the solution was removed at specific time interval. The mixture was allowed to cool at room temperature before the determination of browning index.

In order to test for effect of different concentration of sugar, the same procedure was followed but the concentration of sugar was varied according to the experimental design.

Also, the effect of effect of metals was invested by carrying out the experiment as described above in the presence of different metal ions at a concentration of 2 - 5mM.

Hydrolysis of gelatin

Gelatin hydrolyzates were produced using chymotrypsin to digest gelatin from fish, porcine and bovine. The digestion was carried out for 4 h at 25oC and enzyme-gelatin ratio of 1:250 (w:w). The reaction was stop by heating the mixture at 100oC for 10 min. The solutions were centrifuged at 3000 rpm for 15 min and the supernatants were discounted off and referred to as gelatin hydrolyzates solution.

Determination of browning index

The browning index (Bindex) of cooled mixture of gelatin/hydrolyzate containing xylose with or without Cu2+ was measured at 420 nm using micro-plate spectrophotometer. The change in browning index (□Bindex) was used to determine the effect of enzyme hydrolysis and presence of Cu2+.

Findings: *The development of browning of gelatin and hydrolyzate is affected by the reaction conditions of during xylose-induced Maillard reaction. Change in browning index increases with degradation of enzyme, concentration of xylose, presence of Cu and Fe ions and increase in type of reaction. However, increase in concentration of Cu ion above 2.5mM lack significant effect on change in browning index of gelatin hydrolysate. The discrimination of gelatin is achievable in the first 6 hr of reaction time. There was high increase in browning index of fish hydrolyzate compared to that of mammalian source. This approach will found useful for development of rapid and cheap UV-spectroscopic method for Halal authentication.* **Contribution:** *We have investigated the use of UV-spectroscopy for development of protocol for specie specific gelatin authentication for halal industrial. The transformation of gelatin during xylose-induced browning reaction was adequately described using change in browning index.*

Keywords: enzyme, hydrolysis, Maillard, gelatin, Halal authentication, catalysis

Abstract ID: **AIMC-2017-STE-703**

CMOS LOW NOISE AMPLIFIER FOR UWB APPLICATION: A REVIEW

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Abstract

Introduction: *A number of Low Noise Amplifier (LNA) design for ultra-wideband application had been produced with a various topology and techniques. The most common technology used for LNA production is using CMOS technology which is cheaper and can help reduce the size of chip. There are a few different size of CMOS technology used which are 0.18µm, 130nm and 90nm. This paper presents a compilation of review about design of low noise amplifier used for ultra-wideband application in term of different types of method, topology*

and circuit. Parameter reviewed for each paper is based on frequency bandwidth, noise figure and gain. **Methodology:** *Review paper* **Findings:** *Review paper on other researchers that related to LNA for UWB applications* **Contribution:** *This review paper and a comparison of the performance criteria of various LNA topologies for UWB application .*

Keywords: Low Noise Amplifier (LNA); Ultra-wideband (UWB); Radio Frequency (RF).

Abstract ID: **AIMC-2017-STE-705**

A REVIEW OF HIGHLY EFFICIENT CLASS F POWER AMPLIFIER DESIGN TECHNIQUE IN GIGAHERTZ FREQUENCIES

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Abstract

Introduction: *Highly efficient class F power amplifier (PA) in Gigahertz (GHz) frequencies for wireless application is reviewed in this paper. The study focused on the technique used in designing a class F PA especially at GHz frequencies. Several works on the class F PA with different semiconductor technologies from year 2001 to 2016 are discussed. Recent works on class F PA in wireless applications are examined and a comparison of the PA performances of various techniques is presented. Key performance indicators for high efficiency class F PA include power added efficiency (PAE), linearity, gain and output power (Pout).* **Methodology:** *Review paper in class F PA for gigahertz frequency* **Findings:** *Recent developments of CMOS class-F PAs are examined*
and a comparison of the performance criteria of various topologies is presented. **Contribution:** *This review paper is used for researchers to do research on class F power amplifier.*

Keywords: Class F; High Efficiency; Power Added Efficiency; Power Amplifier

Abstract ID: **AIMC-2017-STE-709**

WIRELESS CHARGING SYSTEM FOR LOW POWER MEDICAL DEVICES

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Abstract

Introduction: *A medical device may refer to any instrument or apparatus to be used on human beings for the purpose of diagnosis, prevention monitoring, treatment or alleviation of disease. However, these electronic devices are not self-powered. It is greatly depending on the electricity from the battery which is coupled together with the devices. For non-implantable devices, batteries can be easily replaced or recharged. However, the batteries in implantable devices can only be replaced or recharged by surgery. Otherwise, a transcutaneous power cord has to be made out from the patient's skin in order to charge the devices. This transcutaneous cable might lead to infection due to breach on the skin. Therefore, a wireless charging system (WCS) which can effectively power up the biomedical devices is proposed. This WCS should have the characteristics of unblockable by the human tissues, and has mitigate effect to patient health, yet efficient in the power transmission process. Wireless charging technology does offer the advantages of safety, non-invasive and no significant effect on patient health. Eventually, bacterial infection on the skin breach is prevented.* **Methodology:** *Basically there are three types of wireless energy transfer technique that are widely used and research by the researcher today which is inductive coupling, magnetic resonance coupling and radiative transfer. Magnetic resonant coupling technique is the most suitable technique among various wireless power transmission for biomedical devices due to its advantages of non-radiativity properties, mid-range operation, high efficiency for low to medium power transmission, relatively safe for due to weakly interaction with living tissues and off-resonant object as well as not being hindered by non-magnetic materials.*

This system will be divided into two main parts. First is the transmitting module and second is the receiving module. The function of the transmitting module is to power up the transmitter coil to generate magnetic coupling resonant with the receiver coil in order to transmit the power wirelessly. Receiver module play a role to capture the power generated by the transmitter module during the resonance of both transmitter and receiver coils pair. In order to increase the efficiency the system, an impedance matching method

implemented. This impedance matching method ensures that system always operate in its best performance. A pair of 40cm diameter coils of transmitter and receiver were used.

This WCS design was simulated using Agilent Advance Design System and Matlab in order to validate the efficiency of the system. Both simulations with the same parameter was design (with impedance matching technique applied to the system) and result simulations were compared. After validate the system, an experiment was carried out and the result was recorded and compared to the simulations to justify the correctness of the result.

Findings: *WCS performance test setup is as below. Function generator and power source were connected to the transmitter circuit. A step-up transformer was added to the transmitter circuit and a step-down transformer was added to the receiver circuit. A load with 10ohm resistor was connected to the receiver circuit. Oscillator was connected to the load. Measurement from distance 2cm to 100cm were recorded and compared with the simulation. From the experiment, the WCS system can achieved 62% efficiency at distance of 43cm (1.1 times diameter of coil, mid-range achieved). The performance of this system decreases when the distance of transmitter and receiver coils increases.*

There are two reasons which degrade the system efficiency which is difference in the transformer gain and power loss from the system. The fabricated transformer gain is slightly different with the simulated transformer gain causes the impedance of the system to be slightly unmatched and the manually designed transformers cannot achieve the simulation ideal state. The second reason is the power loss from the transformer during the experiment. However, the WCS demonstrates the approach for matching the system impedance correctly to optimize the performance of the system.

Contribution: *An impedance matching method is designed for both transmitter and receiver circuit to achieve better efficiency of the wireless charging system for biomedical devices by maximizing the power transfer and reduce the power loss. This study is very limited in current wireless charging technologies due to the difficulties in matching the impedance which changes all the time on both transmitter and receiver sides. Therefore, an alternative impedance matching method is proposed. This technique required a step-up and a stepdown transformer to be added into the transmitter and receiver respectively to achieve impedance matching instead of complex impedance matching circuit. This technique is universal and can be applied into any two coils wireless power transfer system. Hence, the complexity of the design is reduced and transfer efficiency is optimized.*

Keywords: Wireless charging system, wireless power transfer, contactless power transfer, wireless energy transfer, mid-range power transfer, magnetic resonant coupling

Abstract ID: **AIMC-2017-STE-712**

ACCURACY OF DIGITAL ELEVATION MODELS AND ORTHOPHOTOS USING MICRO UNMANNED AERIAL VEHCILE (UAV) FOR MAPPING COASTAL TERRAIN

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Co-Authors: Anuar Ahmad

Abstract

Introduction: *Coastal area is the most important part for societal impact of a developing country. The low cost unmanned aerial vehicle (UAV) system can be used in various applications including mapping coastal area. The aim of this study is to investigate the influences of flying height, coastal terrain, and number of ground control points (GCPs) on Digital Elevation Model (DEM) and orthophoto accuracies obtained with UAV system.* **Methodology:** *In this study, a micro fixed wing UAV attached with a camera digital were used for digital aerial images acquisition on two different coastal terrains (i.e. cliff and sandy) with three flying heights (i.e. 200m, 250m, 300m) and six different numbers of GCPs (i.e. 5, 10, 15, 20, 25, 30). The root mean square error (RMSE) analysis was used to assess the planimetric accuracy of orthophoto based on Northing and Easting coordinates and height accuracy of DEM based on height coordinate.* **Findings:** *The results show that RMSE of planimetric accuracy is not influenced by flying height or coastal terrain. However, the number of GCPs influenced the planimetric accuracy. As the number of GCPs increases, the planimetric accuracy improved. Height accuracy is not influenced by coastal terrain, but both flying altitude and the number of GCPs had significant influenced the height accuracy. As the number of GCPs increases, the accuracy improved. In this study, it was found that the best GCP configuration to produce coastal erosion mapping scale of 1:14000 is 25 points. Meanwhile, the best flying altitude is 300m with the accuracy of ±0.002m, ±0.004m and ±0.389m in Northing, Easting and Height respectively.* **Contribution:** *These results from the UAV system are sufficient for most civil engineering project according to map standard published by American Society for Photogrammetry and Remote Sensing and support the findings of other*

researchers with respect to the accuracy and mapping suitability of UAV photogrammetry

Keywords: Keywords: Accuracy, DEM, UAV, mapping, coastal area

Abstract ID: **AIMC-2017-STE-713**

STUDY OF MECHANICAL PROPERTIES OF NEOLAMARCKIA CADAMBA AND ENDOSPERMUM DIADENUM IN WOOD COMPOSITE PARTICLEBOARD

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Abstract

Introduction: *The global production of particleboard is increased due to higher demand in furniture sectors such as chairs, table top, wall panel and automotive interior design. This research was carried out to investigate the mechanical properties of particle board by using two different wood waste which are well-known in scientific name as neolamarckia cadamba (NC) and endospermum diadenum (ED). NC and ED are fast growing species available in Peninsular Malaysia.* **Methodology:** *A Single layer particleboard was fabricated with 0.8 mm particle size with density 650 kg/m3 and bonded with urea formaldehyde (UF) as binder. UF resin was synthesis in the laboratory with solid at 65.4% content at 165◦C of hot pressing temperature. NC and ED species based of oven-dry weight and amount of adhesive which are 8%, 10% and 12% was applied, respectively. The mechanical properties in static bending (modulus of rupture and modulus of elasticity) and internal bond were determined.* **Findings:** *The results showed modulus of rupture (MOR) testing of NC wood species at 12% had the highest values which is 25.20 N/mm2 compare ED wood species 24.07 N/mm2. However, the results of MOE and IB testing showed the samples of ED had the highest values which is 3303.32 N/mm2 and 1.29 N/mm2 compared to NC wood species has 3226.07 N/mm2 and 1.12 N/mm2, respectively. The obtained results revealed an increase in the MOR, modulus of elasticity (MOE), and internal bond strength (IB) of these panels when high amount (12%) of UF added. From this study, different wood species and different amount of resin content is effects the strength properties of particleboard.* **Contribution:** *Hence, NC and ED particles can be used as a raw materials to wood composite particleboard for product application in order to sustain the resource for wood-based industry in the future.*

Keywords: Particle board, Urea formaldehyde, Neolamarckia cadamba, Endospermum diadenum.

Abstract ID: **AIMC-2017-STE-715**

PERFORMANCE OF SOIL STABILIZED WITH CARBON NANOMATERIALS

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Abstract

Introduction: *The use of nanomaterials to stabilize soil is a developing research area in geotechnical engineering. This is important to tap the advantages offered by the significant developments in nanotechnology. In this study the use of carbon nanotube was compared to carbon nanofiber for possible applications in soil stabilization.* **Methodology:** *Fundamental properties such as Atterberg's limits and compaction characteristics were first explored. Then the hydraulic conductivities of the soil-nanomaterial mixtures were determined.* **Findings:** *The maximum amounts of the nanomaterial used is 0.2% by dry weight of the soil. The soil used was a sedimentary residual soil which was collected within the campus of the Universiti Kebangsaan Malaysia, in Bandar Baru Bangi, Malaysia. Both the nanocarbons increased the pH values from 3.93 to 4.16. The nanocarbons also reduced the plasticity index, decreased the optimum moisture content, and increased the maximum dry density of the soil. Furthermore, the hydraulic conductivity decreased from 2.16 x 10-9 m/s to 9.46 x 10-10 m/s for samples with carbon nanotubes. For comparison, the hydraulic conductivity for carbon nanofibers samples reduced further to 7.44 10-10 m/s.* **Contribution:** *These results indicated that small amounts of nanomaterials used can provide noticeable changes in the soil behavior. Thus, the nanomaterials used in this study can be further considered as potential soil stabilization materials.*

Keywords: Geotechnical engineering, soil stabilization, residual soil, nanomaterials

Abstract ID: **AIMC-2017-STE-716**

ACCURACY OF DIGITAL ELEVATION MODELS AND ORTHOPHOTOS USING MICRO UNMANNED AERIAL VEHCILE (UAV) FOR MAPPING COASTAL TERRAIN

Corresponding Author: Norhadija Darwin
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Co-Authors: Anuar Ahmad

Abstract

Introduction: *Coastal area is the most important part for societal impact of a developing country. The low cost unmanned aerial vehicle (UAV) system can be used in various applications including mapping coastal area. The aim of this study is to investigate the influences of flying height, coastal terrain, and number of ground control points (GCPs) on Digital Elevation Model (DEM) and orthophoto accuracies obtained with UAV system.* **Methodology:** *In this study, a micro fixed wing UAV attached with a camera digital were used for digital aerial images acquisition on two different coastal terrains (i.e. cliff and sandy) with three flying heights (i.e. 200m, 250m, 300m) and six different numbers of GCPs (i.e. 5, 10, 15, 20, 25, 30). The root mean square error (RMSE) analysis was used to assess the planimetric accuracy of orthophoto based on Northing and Easting coordinates and height accuracy of DEM based on height coordinate.* **Findings:** *The results show that RMSE of planimetric accuracy is not influenced by flying height or coastal terrain. However, the number of GCPs influenced the planimetric accuracy. As the number of GCPs increases, the planimetric accuracy improved. Height accuracy is not influenced by coastal terrain, but both flying altitude and the number of GCPs had significant influenced the height accuracy. As the number of GCPs increases, the accuracy improved. In this study, it was found that the best GCP configuration to produce coastal erosion mapping scale of 1:14000 is 25 points. Meanwhile, the best flying altitude is 300m with the accuracy of ±0.002m, ±0.004m and ±0.389m in Northing, Easting and Height respectively.* **Contribution:** *Results from the UAV system are sufficient for most civil engineering project according to map standard published by American Society for Photogrammetry and Remote Sensing and support the findings of other*
researchers with respect to the accuracy and mapping suitability of
UAV photogrammetry.

Keywords: Accuracy, DEM, orthophoto, UAV, mapping, coastal terrain

Abstract ID: **AIMC-2017-STE-717**

ACCELERATING SUSTAINABLE INFRASTRUCTURE: A CASE STUDY OF MEGA-PROJECT DEVELOPMENT IN INDONESIA

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Abstract

Introduction: *Infrastructure plays a significant role in encouraging the economic growth of developing countries such as Indonesia. The government has initiated the development of mega infrastructure projects in the past decade, including Sunda Strait Bridge, Soekarno Hatta Airport Rail Link, Trans Sumatera Toll Road, High-Speed Train Jakarta – Surabaya and many others. However, some obstacles that may hold back the implementation of the projects still exist. This paper aims to improve the feasibility of the mega projects by introducing alternative approach through value engineering.*
This study will examine four case studies from road and railway projects to address project feasibility. The paper will also present ways to create value and to obtain significant result using function analysis as part of VE method. It is expected that the findings of this study can be used to disseminate knowledge, stimulate international debate and also amplify the use of VE on infrastructure project development. **Methodology:** *The study was carried out using workshop phase in VE job plan that consists of information, creativity, evaluation, development, and presentation. In creativity phase, a quantitative approach through questionnaire survey was first conducted to generate potential ideas. The result will show the respondents' perspective on potential ideas for the project.*
Creativity phase uses an idea generation tool to map the functions of the projects based on multidisciplinary views called FAST diagram. It was used in an iterative manner during research creativity process. Initially, the team generated potential ideas, which were then refined by the returned questionnaire. Evaluation phase aims to decide ideas and innovation feasible to be implemented in the project. It was discussed and finalized in a focused group discussion (FGD). FGDs were conducted as a validation and verification in order to gain inputs from various stakeholders on the findings.

In development stage, this study will conduct a financial analysis by evaluating selected ideas and innovation from the previous stage. The estimated life cycle cost will show the feasibility level of the project expressed by the internal rate of return.

Findings: *VE on Sunda Strait Bridge (SSB) performs 5 additional functions ranging from power plant (tidal energy, wind energy, and solar energy), tourism area, oil and gas distribution pipelines, fiber optic and industrial area. It requires US$ 18 billion or US$ 8 billion higher than the construction costs of the bridge but shows a greater internal rate of return (IRR) for about 7.26%.*

On the other hand, PRASTI Tunnel is an innovative design having four functions such as transport, flood control, telecommunication, and commercial area developed to overcome Jakarta's problems It produces higher IRR for about 12.50% in a moderate scale of generated revenue. VE on Trans Sumatera Toll Road serves additional functions; toll road, motorbike toll road, dry port, railway integration, recreational and theme park area and fiber optic. The proposed concept shows a shorter route and produces significant IRR at 12.84% for a moderate tariff.

Lastly, potential added value such as the use of bituminous ballast, transit-oriented development, utility service integration, tourism area, electrical generator and train service facility was generated from VE approach in Jakarta – Surabaya high – speed train. The concept produces a prospective rate of return at about 8.09%.

Contribution: *The challenge to improve the feasibility of mega project infrastructure becomes crucial for a developing country such as Indonesia in accommodating the nation's competitiveness. The expected VE can be used to produce more benefits in terms of technical and financial aspects that may assist related stakeholders to formulate policies and regulations to launch the project.*

Keywords: Case study, Infrastructure, Life Cycle Cost, Mega – project, Value Engineering

Abstract ID: **AIMC-2017-STE-720**

ANAIYSIS AND DFEVELOPE MICROSTRIP MOISTURE SENSOR FOR WHEAT GRAINS

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Abstract

Introduction: *Analysis and develop a multi-layered microstrip moisture sensor is a low-cost microwave sensor for rapid and nondestructive sensing of moisture content in granular and particulate materials has been built and tested by used three types of wheat grains. The sensor was made with inexpensive material are RT Duroid 5880, Aluminum and plastic paper. The sensor structure consists of three layers are substrate, protective layer and grain medium. It designed by NI AWR Design Environment software at 9.2 GHz.* **Methodology:** *It designed by NI AWR Design Environment software at 9.2 GHz. The attenuation of wheat grain samples measured by the sensor using network analyzer and compared by the results from the software which calculate by the dielectric mixture equation and dielectric properties which measured by Open Ended Coaxial Probe.* **Findings:** *It is suitable for the natural range of moisture content for wheat grains, the model could be validated for MC% in the range start from 10% until 20.6% (wet basis) and the attenuation in this range from 3.2 dB to 8.6 dB .*

Contribution: *The developed microwave sensor prototype provides that entity with very good accuracy for moisture content of wheat grains.*

Keywords: Microstrip line sensor, Microwave, Attenuation,Moisture Content, wheat grain.

Abstract ID: **AIMC-2017-STE-721**

UNMANNED AERIAL VEHICLE FOR DIGITAL TERRAIN MODEL UNDER TREE CANOPY: A REVIEW

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Co-Authors: Suzanah Abdullah; Mohd Fadzil Abdul Rashid; Muhammad Ariffin; Chua Guan Liyong; Muhammad Armi Abdul Majid

Abstract

Introduction: *Digital Terrain Model (DTM) is a form of presentation of terrestrial elevation which represent the shape of the earth's surface. In others words DTM is a set of measurement of the height on the ground that used to analyze the topography in certain area. DTM used in a variety of applications either directly in the form of visualization model and becomes to another product.*

Nowadays Digital Terrain Model (DTM) are widely used to produce topographic maps in many applications. DTM is a very important product and essential demand for various of applications Uysal et al.,(2015). The author's also mentioned photogrammetry is a method that is widely used to generate DTM in order requires a large scale and take a long time to produce topographic maps. Conventional methods such as Airborne LiDAR and satellite Remote Sensing are not practically used to generate DTM in order to make a large scale mapping in small area.

Methodology: *UAV technology is an alternative method to generate DTM. The aim of this research is to evaluate the ability of UAV technology for DTM production. Hence this study focusing on the assessing accuracy of DTM result under tree canopy using UAV images. The process include to the several parts such as preparation, data acquisition, proceesing and analysis. The process of UAV work shows as figure 2.1.*

Findings: *The result will be achieved in the implementation of this project are as below:*

The improvement of accuracy assessment on Digital Terrain Model using UAV technology will be useful for many applications as LiDAR accuracy. Other than that, this research can help the planning authority for hillside development and also important forest inventory for planning and construction which is can facilitate urban planning and allows engineers to create a model for new roads in the context of agriculture purposes

Contribution: *This paper significantly outlooks for the various parties such as employed for flood hazard analyses, resources management and environmental assessment that adopting with DTM information and topographic mapping. DTM is increased uses for many applications especially in the tropical and developing countries. Other than that, the accuracy assessment of DTM is play a significant role in the improvement of analysis result, decision making and product development.*

The accuracy of DTM is also very important in the study of forest inventory for planning and construction. For example, digital topographic data set can facilitate urban planning and allows engineers to create a model for new roads in the context of the existing landscape

Keywords: UAV, DTM, Tree Canopy, Accuracy assessment

Abstract ID: **AIMC-2017-STE-727**

THE DYNAMIC OF LOCATION ATTRIBUTES TOWARD MALAYSIAN REAL ESTATE INVESTMENT TRUST PERFORMANCE

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Abstract

Introduction: *The Malaysian real estate investment trusts (M-REITs) properties intensive location contributes toward higher rental yield. Nevertheless, the location diversification depends on the type of properties in the portfolio, puzzled shareholder in their investment decision making in M-REITs. This study aim to determine the dynamic of location attributes toward financial performance.* **Methodology:** *The pearson correlation and descriptive analysis of ten years (2006 until 2015) data is used.* **Findings:** *This study indicate that there is correlation between attributes of economic location with dividend yield(DY) (cor: 0.241). Yet, the market capitalization, have a negative correlation (cor: -0.246), which contradict with prior study on REITs' location attributes. This study also show that attributes of location of M-REITs properties should located between 5km to 10km from central business district (CBD). This study conclude that in order to ensure M-REITs properties remain competitive for commercial occupancy.* **Contribution:** *The investment on M-REITs proven that dynamic of location attributes is priority, which support that M-REITs design for a long term investment goal.*

Keywords: Location, real estate investment trust, performance, investment goal

Abstract ID: **AIMC-2017-STE-728**

STRATEGIC ASSET MANAGEMENT FOR MALAYSIAN PUBLIC HOSPITAL AMBULANCE

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Abstract

Introduction: *The ambulance fleet management services is one of the most important facilities provided by the Malaysian public hospital to assist patients upfront in emergency. Yet there is misclassification of ambulance as movable asset such as computer, office equipment and other, which reduce the strategic function of the asset. This study aim to determine the effectiveness of Malaysian public hospital ambulance through strategic asset*

management (SAM) point of view. **Methodology:** *Adopting a content analysis for identify the element of strategic asset management function of ambulance is conducted. While, a pilot study interview with Malaysian public hospital personnel is carried out in order to ensure a constructive function of ambulance fleet management is highlighted.* **Findings:** *This study illustrated a conceptual ambulance fleet management outline for Malaysian public hospital management. This will help to overcome the issue of planning a better fleet management services in future, since the cost new acquisition of ambulance is significant for the public hospital spending.* **Contribution:** *This study provide a strategic asset management for Malaysian public hospital ambulance fleet management*

Keywords: Strategic Asset Management, Ambulance Fleet Management, Hospital

Abstract ID: **AIMC-2017-STE-732**

SHOPPERS BEHAVIOURAL AND PREFERENCE TOWARD MALAYSIAN REAL ESTATE INVESTMENT TRUSTS' COMMERCIAL MALL

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Abstract

Introduction: *There is a growing trend of commercial mall in Malaysian real estate investment trusts (M-REITs)' properties portfolio since year 2010. However, the inclusion of these expensive and luxury commercial mall in portfolio resulted either higher gearing or dilution of unit price. Therefore the quality and performance of commercial mall are important in order to guarantee higher rental yield. First, the study aim to identify the behavioural and preference of shoppers toward M-REITs' commercial mall. Second, the study aim to determine the relationship of shoppers behaviour and preference toward the property performance.* **Methodology:** *Through survey instrument of questionnaires on the shoppers, qualitative and quantitative method had been adopted.* **Findings:** *The study suggest, shoppers preference visiting based on commercial mall attributes such as "user-family" commercial mall, more lighting, parking availability, numerous choice of retail outlet and existence of anchor tenants. Therefore, this study conclude upon considering new acquisition of commercial mall property, M-REITs need to determine the local shoppers behaviour and preferences visiting the property.* **Contribution:** *This is important to ensure that the M-REITs properties able to remain competitive and to prosper the shareholder wealth in a long run.*

Keywords: Shoppers Preference, Behaviour, Property Performance, Property Portfolio

Abstract ID: **AIMC-2017-STE-742**

MALAYSIAN ACTIVE AGEING COMMUNITARIAN LIVING DEVELOPMENT: COMPARATIVE ON SENIOR COHOUSING ELEMENTS

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Abstract

Introduction: *National Policy for Elderly (2011) had string the elderly to remain active, productive and create opportunities for them to live independently and encourage alternative homes equipped with continuous services such as retirement home as Malaysia will reach ageing population status by year 2030. Senior Cohousing can be considered as a part of retirement home concept that can improve well-being and quality of life for active ageing and encourages independent living. However, further discussion on how cohousing concept may assist in improving active ageing for Malaysian multi-racial community and the objectives of living together need to elucidate since the culture, religion, and ethnic are different* **Methodology:** *A preliminary study was conducted in selected Skudai area among people who are in the age of 50 and over to seek their opinion regarding to an ideal concept of cohousing development base on the cohousing's elements and their perception towards multi-racial neighborhood. The 6th elements of cohousing in this study were Participatory process, Neighborhood Design, Common Facilities, Resident Management, Non- Hierarchy Structure Decision and No Share Community Economy. Data analysed through cross tabulation, likert scale and frequency analyses by using SPSS version 20.0 to seek cohousing potentialities.* **Findings:** *Findings showed that respondents were strongly agree the elements of Neighbourhood Design which are safety and security; privacy and the layout of neighbourhood are the most important factor in cohousing, whereas, the other elements of Common Facilities and Non-Hierarchal Structure decision show oppositely. Hence the respondents also support an idea of living*

together in multiracial community as cohousing needed tough they are less agreement on participation of any ceremony or culture events due to the different religion and belief. **Contribution:** *Overall this finding will be useful to identify multi-racial senior cohousing mechanism especially in determining the suitable activities and to propose the other core elements of cohousing development suit with Malaysian active ageing community. As number of ageing are on rise with limited number of public and private old folk's provided, more option of elderly living need to verify. The introduction of senior cohousing as an alternative living for active ageing in Malaysia will be a great opportunity to be implemented in the current market outlook.*

Keywords: Senior Cohousing, Malaysian ageing, Active ageing, Multi-racial community

Abstract ID: **AIMC-2017-STE-745**

EFFECT OF CHEMICAL TREATMENT ON MECHANICAL AND PHYSICAL PROPERTIES OF KENAF FIBER REINFORCED THERMOSETTING POLYURETHANE (PU) COMPOSITE

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Abstract

Introduction: *The expansion in ecological awareness and group intrigue, the new natural controls and unsustainable utilization of petroleum, prompted to thinking about the utilization of earth well-disposed materials. Recent development on Natural Fiber Polymer Composites (NFPC) is growing quickly around the world. The main purpose of this research is to perform chemical treatment on kenaf fibers and to study the effect of chemical treatment on mechanical and physical properties kenaf fiber reinforced polyurethane (PU) composite. Besides that, the impact of kenaf fiber on mechanical and physical properties of kenaf fiber/Polyurethane strengthened composites are investigated extensively.* **Methodology:** *Thermosetting polyurethane is a mixture of both the resin and the hardener. Mirathane 6414 A/B are used for this project. The resin is known as Mirathane 6414 A and it is beige in colour with a viscosity of 2000-4000 CPS at 25 ^{0}C. The hardener is known as Mirathane 6414 B and it is brown in colour with a viscosity of 30-80 CPS at 25 ^{0}C. The mixing ratio of both this resin and hardener is 100:64. Its tensile strength is 8-12 N/mm², hardness of 55-65 shore D and and elongation of 55-65%. The Mirathane 6414 A and 6414 B are both purchased from Miracon (M) Sdn Bhd. Kenaf short fiber of size 3-5 mm is used for this experiment. The Kenaf fiber is sieved first by using a sieve of size 212 µm. Its tensile strength, modulus and elongation are 930MPa, 53GPa, and 1.6% respectively. The Kenaf short fiber was purchased from Innovative Pultrusion Sdn. Bhd. Seawater or common salt water taken from sea. Seawater has a coarseness of around 5.5% (35 g/L) The sample preparation was done by solvent casting method.* **Findings:** *Based on impact test results, it indicated 8% of treated arrangement is ingested more vitality as much as 38035.21 J/m2 contrast with the rest. The energy absorption by 100% PU is the lowest compare with other composition. It showed increasing trend from 0% to 8% and, then decrease at 10% of composition. Composite of kenaf/polyurethane have better energy absorption compare to pure 100% PU.This is due to the good adhesion and bonding between the fibers in reinforced polyurethane (PU) composite. Sea water treated kenaf reinforced polyurethane composite sample shows a lower value compared to untreated composite. Scanning electron microscope (SEM) image of cracking at the polyurethane and kenaf fibre interface seen for composite sample of 8 % and 2% untreated fiber. PU melt flow was also shown among the reinforced kenaf fiber. Less fracture surfaces observed for 2% and 10% of treated kenaf fiber composite. The water absorption increased with soaking time, but the rate of absorption decreased over time for all of the kenaf/polyurethane composite sample. Generally, polymer like polyurethane and untreated fibers can absorb small amount of water while the treated kenaf fibers complex absorbs more water due to the hydrophilic nature of the treated fiber.* **Contribution:** *This research shows the effect of using sea water as a medium to treat the kenaf fiber. The effect of chemical treatment of kenaf fiber, reinforced polyurethane composite showed an improvement on mechanical properties of the composite. Chemical treatment by using sea water will be a cost effective way to developed kenaf/polyurethane reinforced composite which is superior in mechanical and physical properties.*

Keywords: chemical treatment, sea water, kenaf, polyurethane(PU)

Abstract ID: **AIMC-2017-STE-749**

COLLAPSED-BUILDING RISK POTENCY ZONATION OF EARTHQUAKE DISASTER IN PADANG CITY

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Abstract

Introduction: *Geologically, Padang City is the capital of West Sumatra Province having potency of high earthquake hazard. West side of Padang City is a subduction zone (the Indo-Australian Plate) and the Mentawai fault, while its east side also contains the Sumatra fault (Semangko). Therefore, this study aims to determine the distribution of earthquake hazard regions and zonation of the collapsed-building risk potencies.* **Methodology:** *Method used in the research is spatial analysis with Geographic Information System (GIS) and Remote Sensing (RS). Analysis started by determining spatial distribution of earthquake hazard is based on previous earthquake occurrences (Peak Ground Acceleration (PGA) and Modified Mercalli Instensity (MMI) Scale) and physical-geography factors (Geology, Geomorphology, and active fault). Then, building density is mapped by a grid method on a Quickbird Imagery (0,6m) in which this method is more accuracy than properly research. Analysis continued to determine the risk level of collapsed-building potency bases on matrix analysis between the earthquake hazard and the building density.* **Findings:** *The result of this research shows that the higher earthquake hazard is tend to the district located in the west region of Padang City namely surrounding Padang Utara, Padang Timur, Padang Barat, Nanggalo, Padang Selatan with a total area about 28.320 Ha2 (27%), while the low earthquake hazard lies in the east side of Padang City that is around Pauh, Koto Tangah, and Kuranji 28.320 Ha2 (42%). This exacerbated by the dense buildings lies in west part of Padang City around 13.003 Ha2 (21%). It caused by its geomorphology is highland and does not suitable to the settlement. Based on the earthquake hazard and the building density, matrix analysis show that a higher risk must also locate in the west parts of the Padang city or surrounding Padang Utara, Padang Timur, Padang Barat, Nanggalo, Padang Selatan around 9647 Ha2 (14%).* **Contribution:** *This paper is improvement of properly research using only Peak Ground Acceleration (PGA) without considering physical-geography factors and This Paper also completed by grid method to determine building density to get better accuracy. Purpose of this research represents new idea to reduce earthquake risk.*

Keywords: earthquake, physical-geographic factors, spatial analysis

Abstract ID: **AIMC-2017-STE-755**

THE ELECTRIC VEHICLE CELLS FAST CHARGING SYSTEM WITH INTEGRATED CONTROL MANAGEMENT

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Abstract

Introduction: *The electric vehicles (EVs) have not been commonly used by people nowadays although they are recognized as one of the initiatives to reduce the impact of internal combustion (IC) engine vehicles on the global climate change problem due to the lack of charging infrastructure.* **Methodology:** *This study presents an advanced charging system to charge the battery in three different modes: slow charging mode with charging current of 16A, medium mode with charging current of 25A and quick charging mode of 50A. The simulations and experiments have been conducted on a scale down battery pack. Due to limitation of Malaysia electricity provider, the maximum 50 A is found to be the optimized charging current for the on-board charger.* **Findings:** *The developed advanced charger prototype performance has been compared with the simulation and conventional charger performance, the maximum variation has been found about 15%. This closed agreement between the advanced charger prototype and simulation model validate the prototype model. Furthermore, based on the result, the battery to be charged up to 85% of its rated capacity by constant current mode only which could shorten the battery charging time by 16%.* **Contribution:** *The advanced on-board charging system make possible to charge the electric vehicle anywhere that available 240V single phase power supply. Slow and medium charging are suitable while park the vehicle at office or home. Fast charging is suitable to charge the car while buying household items at shopping complex. The fast mode also make the electric vehicle possible to travel for a long journey where the charging process could be done at any charging station. It was proposed that the vehicle to be charged up to 85% of its capacity to shorten the charging time and lengthen the battery lifespan.*

Keywords: Advanced charger; Electric vehicles; Buck converter; Green transportation

Abstract ID: **AIMC-2017-STE-759**

WEB-BASED KNOWLEDGE EVOLUTION FOR THINKING GREEN TRANSPORTATION USING EXPERT SYSTEMS

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Abstract

Introduction: *In many developing nations, it is difficult for development planners and novice engineers to determine the point of transportation service and usability only based the master plan of the city. On the other hand, managers in organizations now make use of computerized support for making decisions on a day-to-day basis. The experts were able to easily identify problems and find solutions quickly whereas novice engineers were unable to do so. This expert system is developed to fill the gap between the sustainable urban design experts and people who seek to employ Green transportation system including decision makers, engineers, and students.* **Methodology:** *Verifying, validating processes, and comparing the system with similar works have shown that the system is consistent and acceptable for practical uses. In order to build the expert system, examining sources related to Expert system for transportation studies as well as interviewing with domain experts have been carried out.The proposed expert system is developed using Visual Studio as the building tools and SQL as the query tool.* **Findings:** *The knowledge base of thinking green transportation (T Green T) includes three modules; each module may contain a number of sub-modules, parameters, strategies, and criteria. The system includes rules and images for different types of measures finally, some recommendations for maintenance and improving the system are presented.* **Contribution:** *The development's suitability can be characterized using websites of other modes of transportation, such as bicycle movement and pedestrian traffic.*

Keywords: Web-based knowledge; green transportation; expert system

Abstract ID: **AIMC-2017-STE-761**

THE IMPLEMENTATION OF GUIDED DISCOVERY LEARNING METHOD TO IMPROVE STUDENT LEARNING OUTCOMES BY ELECTROMAGNETIC CONTROL SYSTEM AND OPERATION COURSE IN SMK MUHAMMADIYAH, PADANG

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Abstract

Introduction: *Learning Process Requires Active Role of Students IN While studying but still yet reached commercial article indicated that the teacher even MORE dominate hearts learning activities so that students Less Understanding lesson material. Based on the background of the need to apply the learning method that can improve student activity and its value is getting better and then the one that could be applied is guided discovery learning method. The purpose of this study was to examine whether there is an increase in student learning outcomes when using guided discovery learning method through electromagnetic control system in Vocational High School of Muhammadiyah Padang, Indonesia.* **Methodology:** *This type of research is quasi-experimental with one group pretest-posttest design. This study population is students who are registered in the period of 2015/2016 and 26 students were selected. The instrument of this study is an objective test that has tested the validity, reliability, level of difficulty and the level of the different indices. Data were analyzed by using test score gains.* **Findings:** *This research results exposed that students who practice guided discovery learning methods achieve the minimum completeness criteria (MCC) by 87.46% and yet, 7.7%. Furthermore, the test score gain indicated that students' scores increased in the medium category.* **Contribution:** *Thus, the application of guided discovery learning method can improve student learning outcomes in the control and operation system electromagnetic courses.*

Keywords: guided discovery learning method, improving student learning outcomes, gain score test

Abstract ID: **AIMC-2017-STE-763**

CONTENT VISUALIZATION: AN EVALUATION OF POWERPOINT EFFECTIVENESS AS A LEARNING TOOL FOR STUDENTS

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Abstract

Introduction: *PowerPoint is a slide show presentation program from Microsoft, which also one of the most widely used programs to develop visual presentation. PowerPoint has become enormously popular because of the functionalities offered and easy to use. Previous researchers stated PowerPoint as one of the best tool to facilitate users to deliver idea/objective/goal, especially in education field. But some of the researchers have been argued that statement, PowerPoint no longer considered as the best tool to deliver information in today's environment. This view has been changed because students no longer attracted to the content delivered through PowerPoint, thus resulted on the difficulties to retrieve the information. In fact, PowerPoint cannot be separated from the content/slide being presented, in the end the evaluation of effective content through visualization to deliver the information is important to be examined.* **Methodology:** *This research discussed impact of teaching process using slides that follows "rules" of content slide compared with conventional teaching method using board and textbook/handout. The samples used in this study are 74 students majoring in Industrial Engineering. 74 students mentioned derived from 3 different classes which are taking the same courses, and 3 different treatments were given to them. The same material is used while conducting 3 different treatments. To examine the finding, the post test is used.* **Findings:** *This research aims to evaluate and design the content of the slide which influences the level of students understanding on information being presented. The results revealed that the quality of PowerPoint slide influences the level of students understanding compared with conventional methods (blackboard and textbook).* **Contribution:** *The use of unattractive PowerPoint (dull or boring with less visualization) slide is certainly not an effective way to engage students, as proved by previous studies. However, there are not many evaluation studies have taken place so far on evaluating the effectiveness of PowerPoint slides compare to conventional method by applying content rubrics such the limitation idea in each slide, number of lines, number of words, typography, association of graphic, limitation of animation usage, color combination, integration of theme, and utilize of multimedia*

Keywords: PowerPoint; effectiveness; conventional; content; visual

Abstract ID: **AIMC-2017-STE-764**

EXPERT SYSTEM IN THE APPLICATION OF LEARNING MODELS WITH FORWARD CHAINING METHOD

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Abstract

Introduction: *one in the field of education is the process of learning and teaching and learning models. An expert system is one of the subjects contained in the Department of Information Engineering, University of Pasir Pengaraian. In this course there are materials in connection with forward chaining method. Many students find it difficult to accept the material on forward chaining method, so that the difficulties in applying the method. In this year, there were 30.1% of students who do not pass the course the expert system. Therefore we need a tool or model of learning in the delivery of the material.* **Methodology:** *The methodology is based on a needs analysis software used to obtain data required in making the application of this research. With the existence of this analysis then the input, output, and processes required in this application can be determined. For the necessary data, obtained from books on forward chaining method and through, journals, scientific articles, and other on line media such as the web field of expert systems.*

Findings: *The results of the expert system in the application of learning models with forward chaining method is generate some pages that have menus. The page is displayed in the form of the main menu page, which has four main menu and the menu will change according to the menu selected by the user. As the menu forward chaining, materials, simulation, and implementation exercise.*

The main page is the first page that appears when the user opens the application. On this page consists of several parts, namely, the header main menu and button support. The main menu section contains buttons that will link to another page that is menu navigation forward chaining, materials, simulation, and implementation

exercise. while supporters button found on each page consists of the exit button to close the application and the overall sound button to turn off and turn back the existing sound.

Contribution: *Expert system in the application of learning models with forward chaining method is attractive, easy to use, the material readily accepted and easily understood application. So that young students understand the learning materials, and rejuvenate lecturers to deliver material to students. With the existence of this media then help improve student learning systems model to understand the material expert system with forward chaining method.*

Keywords: Expert System, Forward Chaining, Model Study

Abstract ID: **AIMC-2017-STE-768**

EXTREME STOCK RETURN DISTRIBUTION: INTERNATIONAL APPLICATION

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Abstract

Introduction: *Various studies have proved that the extreme volatility of share returns are not normally distributed. The distribution assumption adopted is crucial in getting an accurate prediction for an investor. This study aimed to verify the best probability distribution in illustrating the extreme volatility of stock returns events using global stock market data.* **Methodology:** *This paper investigates the ability of five option distributions namely generalized lambda distribution (GLD),generalized extreme value (GEV), generalized logistic (GLO), generalized pareto (GPA), and pearson (PE3) to interpret the performance of global extreme daily share returns over the period 1990–2016. the share return data obtained from 11 major developed countries namely ASX 200 (AUSTRALIA), TSX (CANADA), CAC 40 (FRANCE), DAX (GERMANY), NIKKEI 225 (JAPAN), STI (SINGAPORE), IBEX 35 (SPAIN), SMI (SWITZERLAND), FTSE 100 (UK), S&P 500 (US), and SSE (CHINA). The parameter for each distribution estimated using the L-moment method and the performance each of the distribution measured using L-moment ratio diagram and k-sample Anderson darling test.* **Findings:** *We find that the generalized lambda distribution (GLD) is a*
excellent choice for representing the volatility of global extreme share returns.
The fitting accuracy provided in generalized lambda distribution GLD can overcome the risks and grant benefits to investors. The GLD achievement is exposed not only for an overall weekly period but also fit the sub-period of global returns. **Contribution:** *The first contribution of this investigation is we have checked GLD capabilities in explaining global extreme stock return volatility that has been less noted. Next, we analysed the performance of GLD with other common distribution in extreme stock return using certain approach namely l-moment ratio diagrams (LRD), k-sample Anderson-Darling test (k-ad), and analysis of tail distribution.*

Keywords: Extreme share returns, stock market, l-moment, risk management, value at risk (VaR)

Abstract ID: **AIMC-2017-STE-777**

GEOSPATIAL BASED STRATEGY OF LANDFILL SITE SELECTION FOR MUNICIPAL SOLID WASTE MANAGEMENT: A REVIEW

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Abstract

Introduction: *The most common and easiest method of solid waste disposal nowadays in the majorities of both developed and developing countries is the landfilling method. The landfill site selection process requires consideration of multiple alternative solutions and evaluation criteria and analysis. Landfill site selection process aims to locate the areas that will minimize hazards to the environment and public health. This paper presents a review on landfill site selection evaluation criteria for locating landfills by combining GIS coupled with MCE. It provides a summary guide to the landfill siting analysis criteria. The study will help the decision makers to identify the most optimize location of landfill for municipal solid waste disposal.* **Methodology:** *A wide range of journals and articles applied the multi-criteria evaluation technique landfill site selection studies. An extensive literature review on the common methodologies used for the GIS landfill site selection was done. Most of these researchers found that MCE is one of the good techniques that can be used and combined with GIS to conduct site selection or site suitability analysis. In every landfill site selection based on the theoretical and empirical study, some effective criteria's such as environmental criteria, social criteria and economic criteria*

needs to be evaluated. From the literature survey, it was discovered that the most commonly used GIS-based and Multi-Criteria Evaluation technique for landfill siting methodology is the Analytical Hierarchy Process (AHP). The AHP tool provides an easy and understandable solution to the decision-making problems. **Findings:** *Site selection of municipal solid waste landfill demands an extensive evaluation criterion process on order to select the best available landfill site. This site must follow the necessary requirement of the government rules and regulations. From the literature, some articles and journals have been selected; these selected studies mainly gives attention to the process of enhancing the methodology for the suitable site for locating landfill. This gives a summary of what the researchers have done in their studies in terms of GIS-Based and Multi-Criteria Evaluation technique for landfill site selection. This has shown a vast increase in the development of GIS and computer technology in the past few years.*

Furthermore, from thorough literature, it has shown that quiet a large number of criteria are adopted to aid landfill site selection processes and screening. To provide a coherent discussion regarding the implemented criteria they have been grouped into five principal categories. These criteria's shows that more considerations should be taken during the site selection process.

Contribution: *Efficiency and integrity is required when carrying out a GIS-based site suitability analysis for landfill site selection and suitability studies. The integration of MCE and GIS improves the quality and reliability of final decisions especially in studies related to landfill siting. Also, MCDA supply an intelligent policy to analyze a huge number of criteria's which can play a important part in determining best locations of various types of land uses. This review can offer a good help to the planners and decision makers as a prepared reference and a guide line.*

Keywords: Geographic Information Systems; Multi-Criteria Evaluation; Landfill Site Selection

Abstract ID: **AIMC-2017-STE-789**

SATISFIABLE INTEGER PROGRAMMING (SIP) ALGORITHM ON DISTRIBUTED INTER PROCESS COMMUNICATION (DIPC)

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Abstract

Introduction: *Data mining is getting popular support in recent development on Big Data. Among popular methods in Data Mining is Rough Classification Modeling (RCM), Neural Network and Statistical Analysis. RCM is capable of giving more accurate reducts calculation on huge dataset. However, RCM consume a lot of computing times to operate on even a small dataset. Satisfiable Integer Programming (SIP) has been used to quantify dataset in Rough Classification Modeling (RCM). Previously SIP has been ported on a single node. In order to expedite the computing times, SIP has been ported on distributed computing environment. The result on RCM using SIP in this paper perform faster than the current Neural Network utilizing Multilayer Perceptron (MLP) and Statistical Analysis using Multiple Regression (MR) on a different distributed computing platforms. Its computation time has been recorded and compared. Result and analysis of the comparisons made between the three algorithms will be presented.* **Methodology:** *Finding minimal reduct determines the selection of attributes that are more important than the rest of attributes within the database. The minimal reduct is important to preserve dissimilarity of all objects from one another. It will decrease the size of the conditional attributes in the classification rules. Given an equivalence class E1, a discernibility relation of a class is a propositional formula ϕ in CNF formulas denoting a boolean function $f : \{0,1\}n \rightarrow \{0,1\}$, which each clause ω is a sum of literals, and a literal l is either a variable xi or its complement xi'. A clause $\omega = (l1 + \cdots + lk)$ denotes a constraint which can also be viewed as a linear inequality $l1 + \ldots + lk \geq 1$. The literals can be formulated as a propositional satisfiability model with the following definition.*

Given a DS A = (U, (C,D)) where C in the condition class and D is the decision class, let n = |U/IND (C)| and $\delta c(Ei)$ is the value of a decision class Ei with the set of conditional attributes c, assume a(Ei) is the value of attribute a at class Ei, ma represents a binary value of an element of the coefficient matrix in the decision related BIP model. The solution of the optimization gives a minimal reduct of an equivalence class. The algorithm of transforming the equivalence class into a Binary Integer Programming (BIP) model is shown in Algorithm I. An instance of a BIP problem is defined as in the Equation (2) and Equation (3) below where cj is a non-negative integer cost associated with variable xj, $1 \leq j \leq n$ and $Ax \geq b$, $x \in \{0,1\}n$ denote the set of linear constraints with every entry (m x n) of matrix A is in the set {0,1} and bi = 1, $1 \leq i \leq m$.

Proposed Algorithm will be ported on Distributed Inter Process Communication platform. Kernel modifications have to be made and several kernels were identified as satisfiable. The system implementation defined limits on

the number and sizes of resources of any given type. Some of these are imposed by the implementation and others by the system administrator when configuring the kernel. The experiments were divided into several parts. Rough sets on distributed environment divided more into three parts which is Rough Set on clustered environment with 2 nodes, 4 nodes and 8 nodes. Analysis will on computational times on all three nodes will be recorded and analyzed.

Findings: *Logically, when several computers were connected to each other, the computation speed will be better compared to a stand-alone machine. Table 1 below is an experiment on dual nodes. The SIP algorithm were ported on different nodes of DIPC and MOSIX and PVM. The performance in terms of processing time were calculated. The result shows that DIPC gave slightly better computation times compared to PVM and MOSIX.*

Rough classification modeling (SIP) with the satisfiable algorithm in finding minimal reducts was developed by A. Bakar10 and the propositional combination of the SIP algorithm with DIPC distributed system is based on several citations18. The performance of the model is compared with the multilayer perceptron model (executed in MOSIX distributed system). Another experiment is on Multiple Regression Algorithm ported on Parallel Virtual Machine (PVM). In all the experiments, SIP-DIPC combination were found exemplary and has infatuated competitive results. **Contribution:** *Data mining is widely used in recent development on Big Data rules calculation. RCM is capable of giving more accurate reducts calculation on huge dataset. Even though RCM consume a lot of computing times to operate on even a small dataset, Satisfiable Integer Programming (SIP) has been ported on to DIPC distributed environment to speed up its processing times. The result on RCM using SIP in this paper perform faster than the current Neural Network utilizing Multilayer Perceptron (MLP) and Statistical Analysis using Multiple Regression (MR) on a different distributed computing platforms. Its computation time has been recorded and compared. The rough, neural and statistical learning schemes on the distributed platform have led to a fruitful analysis in terms of computational speed.*

Keywords: Rough Classification Modeling (RCM), Satisfiable Integer Programming (SIP), Distributed Inter Process Communications (DIPC), Distributed Computing, Data Mining

Abstract ID: **AIMC-2017-STE-790**

INVESTIGATION OF NON-AQUEOUS PHASE LIQUIDS MIGRATION IN FRACTURED DOUBLE-POROSITY SOIL

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Abstract

Introduction: *The development country activity has played a part in climate change and natural disasters which lead to a negative influence on the geo-environment and health. The issue of leakage from underground storage tank and spillage of hydrocarbon liquid can contribute to the non-aqueous phase liquids (NAPLs) contamination into the groundwater, resulting in groundwater pollution and rendering the quality of groundwater unsafe for drinking and agriculture. Groundwater contamination is one of the most challenging issues and more complicated problems arise when the surface or subsurface has experienced earthquake vibration, which probably influences the migration of NAPL into the groundwater sources.* **Methodology:** *A physical experimental model was conducted to study the characteristic of NAPLs migration in deformable double-porosity soil under the vibration effect by using digital image processing technique (DIPT). Thus, to achieve the purpose of this study, several objectives based on the literature were (i) to determine the behavior of NAPLs migration in fractured double-porosity soil using digital image processing technique, (ii) to differentiate the pattern of NAPLs migration in fractured double-porosity with different soil moisture content. This study covered the double-porosity aggregated soil medium vibrated by using a vibratory table involving a special assemble acrylic glass soil column. The migration of Toluene was observed in a 100mm height fractured soil sample in acrylic glass circular column. The aggregated soil sample mixed with 25% and 30% water added to dry kaolin S300 soil in experiment 1 and 2, respectively. Toluene was used as a liquid source. The Toluene was dyed red with red powder to intensify the migration observation. Dyed Toluene with 150ml was poured instantaneously on top of the soil surface for each aggregated soil sample. The image analysis was accomplished by using Surfer programme and Matlab routine to analyse the dye Toluene flow migration pattern and behavior.* **Findings:** *In both experiments, the flow of the NAPLs migration was not uniformly downward at the front boundary horizontal line due to the non-homogeneity of the fractured double-porosity soil structure. Based on the HSI intensity contour plot result, faster migration occurred at the cracked soil surface condition compared to other locations on the soil surface that was not cracked in the experiment, even not used the same soil moisture*

content. In experiment 1, the NAPLs completely migrated on the whole top soil surface area into the fractured soil sample of the test, which took about 60 seconds. Meanwhile, the duration for NAPLs migration from the top surface to the stop point was 110 seconds and further observation at 200 seconds indicated no further changes in migration pattern. In experiment 2, the NAPLS completely receded from view on the whole top soil surface area into the fractured soil sample of the test, which took about 24 seconds. Meanwhile, the overall duration for NAPLs migration from the top surface to the bottom of the soil column was 57 seconds. The both experiment indicated that the NAPLs migrated faster at the initiation of the experiment and maintain slightly descending migration until the experiment ended. **Contribution:** *The previous experiments on double-porosity media have contributed to the body of knowledge with critical view point on double-porosity soil characteristics, but have not taken into account the vibration effect on the soil structure, which might cause the soil structure to become weaker and more problematic for the fracture double-porosity soil. The dyed Toluene migration HSI intensity value and contour plots have provided detailed useful information to researcher and professionals to comprehensively understand and simulate the behavior and pattern of NAPL migration that could be used to identify the remediation method and to ensure sustainable groundwater and geo-environmental.*

Keywords: Vibration; Non-aqueous Phase Liquids; Groundwater Contamination; Image Analysis Method

Abstract ID: **AIMC-2017-STE-794**

THE IDEAL LOCATION DETERMINATION FOR BROILER CHICKEN FARM USING SPATIAL ANALYSIS AND FUZZY LOGIC

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Abstract

Introduction: *Broiler chickens are kind of young chicken aged 6-8 weeks in intensive maintained, in order to obtain optimal meat production. In conduction farm business in general and broiler chicken farms in particular need a strategy in production, process and distribution which can increase farmer income. According to Hartono (1997), to ensure success in the breeding business, location determination is the first concern. Therefore it need the application of spatial analysis to determine the location of broiler chicken farms. The purpose of this research was conducted to determine the location of the farm using spatial analysis and fuzzy logic in GIS.* **Methodology:** *This research, the determination of farm location carried out in three stage of assessment based on the rules of agriculture ministers number 31 in 2014 (31/Permentan/OT.140/2/2014). The first stage (feasibility region) was conducted by assigning weights and values based on five criteria, namely: location of empty land, distance to roads, elevation, distance to water sources or rivers, and distance from residential locations. The second stage (fuzzy logic) calculation by using fuzzy logic, namely: distance to the main road and distance from residential locations. The third stage (feasibility recommendation) to determine the best location of several alternative locations which have been obtained in previous assessment. Spatial analysis in GIS is used to evaluate each criteria. Covers the reclassification process, query spatial process, buffering process, overlay process and calculation process.* **Findings:** *The end result of this research is the six locations with a level of suitability "very suitable" with a total area of 165.631 hectare which located in Tanjung Agung sub-district. Of the six locations are included in the category of zone to built farm are the best locations to considerations that can be recommended to be the location of farms, namely location 4. The main consideration is the recommendation for these locations have the most extensive area among other locations, namely 72.07 hectare. Moreover the location 4 can be reached via the main road and has the fastest path to get the traditional market.* **Contribution:** *This research was conducted in Muara Enim District, Palembang, South Sumatera, Indonesia. The benefit of this research is a consideration in the development of broiler chicken farm site for breeders in Muara Enim District.*

Keywords: broiler chicken farm location, GIS, spatial analysis, fuzzy logic

Abstract ID: **AIMC-2017-STE-798**

GREEN SYNTHESIS OF SILVER NANOPARTICLE FROM PHOTOGRAPH WASTEWATER USING HYLOCEREUS UNDATUS SKIN EXTRACT

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Abstract

Introduction: *Green synthesis of nanoparticle utilizing plant extract is developing technique recently. A relative cheap and non-hazardous substance is an advantageous for this. Regarding to the potency of dragon fruit (Hylocereus undatus), this research employed the extract of dragon fruit waste (skin) and also photography waste as sources for synthesis. Effect of preparation method was studied by varying reflux and microwave irradiation method.* **Methodology:** *Bioreductor of Hylocereus undatus was prepared by maceration of dried Hylocereus undatus skin. The extract was mixed with photograph wastewater followed by reflux and microwave irradiation separately. The nanoparticle formation was measured by using UV-Vis spectrophotometry and particle size analyzer. The nanoparticle solution was tested for antibacterial activity antioxidant activity by DPPH method.* **Findings:** *The result indicates that the extract of Hylocereus undatus is potential to be used as bioreductor in silver nanoparticle synthesis. The nanoparticles are found to have particle size in between 20-100nm. Nanoparticles are active antioxidant. The antioxidant activity of derived nanoparticles is influenced by method in that by reflux method the antioxidant activity is 90.00% while by microwave irradiation the activity is 80.00%. Both values are higher compared to synthesis by using silver standard solution with the same methods.*
Contribution: *The research gives new perspective of the use of Hylocereus undatus skin extract as safe reagent in nanoparticle synthesis.*

Keywords: Nanoparticle, Hylocereus Undatus, DPPH, Green Synthesis, Antioxidant.

Abstract ID: **AIMC-2017-STE-799**

FINDING TIME QUANTUM OF ROUND ROBIN CPU SCHEDULING ALGORITHM USING FUZZY LOGIC

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Abstract

Introduction: *Round Robin (RR) is one of the simplest scheduling algorithms for processes in an operating system, which assigns time slices to each process in equal portions and in circular order , handling all processes without priority , arguably, the major issue in RR is the time slice . Round Robin scheduling is both simple and easy to implement, and starvation-free.*

Scheduling is a key concept in computer multitasking, multiprocessing operating system and real-time operating system designs. Scheduling refers to the way processes are assigned to run on the available CPUs, since there are typically many more processes running than there are available CPUs. Scheduling algorithms have been found to be NP-complete in general form (i.e., it is believed that there is no optimal polynomial-time algorithm for them [27]). Software known as a scheduler and dispatcher carry out this assignment.

CPU utilization - to keep the CPU as busy as possible.

Throughput - number of processes that complete their execution per time unit.

Turnaround - total time between submission of a process and its completion.

Waiting time - amount of time a process has been waiting in the Waiting Queue.

Response time - amount of time it takes from when a request was submitted until the first response is produced.

Fairness-Equal CPU time to each process.

Variance –time should be less.

Scheduling algorithm should try to (i)maximize CPU utilization and throughput, (ii)to minimize turnaround time, waiting time and response time and (iii)to avoid starvation of any process .

Some of the scheduling algorithms are briefly described below.

FCFS: In First come First serve scheduling algorithm the process that request first is scheduled for execution.

SJF: In shortest Job first scheduling algorithm the process with the minimum burst time is scheduled for execution.

SRTN: In shortest remaining time next algorithm, a process is scheduled for execution whose remaining execution time is shortest .

Priority: In Priority Scheduling algorithm the process with highest priority is scheduled for execution. Multilevel queue scheduling: In this the ready queue is partitioned into several different queues.

Methodology: *A fuzzy inference system (FIS) tries to derive answers from a knowledge base by using a fuzzy inference engine. The inference engine which is considered to be the brain of the expert systems provides the methodologies for reasoning around the information in the knowledgebase and formulating the results. It considered of three stages input, processing and output. In input stage the inputs, such as limitline, execution time and so on are mapped to the appropriate membership functions and truth values. In processing stage each appropriate rule is invoked each of them generates a result. The results of the rules are then combined. Finally, in the output stage the combined result is converted back into a specific output value. The membership function of a fuzzy set corresponds to the indicator function of the classical sets. It can be expressed in the form of a curve that defines how each point in the input space is mapped to a membership value or a degree of truth between 0 and 1. The common shapes of a membership function is triangular, trapezoidal and bell curves.The input space is sometimes referred to as the universe of discourse.*

The five steps toward a fuzzy inference are as follows:

(i) Fuzzifying inputs
(ii) Applying fuzzy operators
(iii) Applying implication methods
(iv) Aggregating outputs
(v) Defuzzifying results [5]

There are two common inference methods. The first one is called Mamdani's fuzzy inference method proposed in 1975 by Ebrahim Mamdani [6] and the second one is Takagi-Sugeno-Kang, or simply Sugeno, method of fuzzy inference introduced in 1985 [7]. These two methods are the same in many respects, such as the procedure of fuzzifying the inputs and fuzzy operators. The main difference between Mamdani and Sugeno is that the Sugeno's output membership functions are either linear or constant but Mamdani's inference expects the output membership functions to be fuzzy sets.

The Fuzzy Inference System for finding the time quantum has got three inputs and one output. First input is Fi that specifies the level of fair share for each process in the system and second input is the average burst time of the processes in the ready queue and third is the N which denotes the number of processes in one cycle in the system. Time Quantum is the output of the FIS. Block diagram, rules base, surface view and rule view of the FIS designed are shown below **Findings:** *Here we have taken no. of process that is having no. of cycles along with them. The processes coming in the ready queue are on the basis of FCFS.And having I/O bound equal to zero. We have applied our proposed algorithm for the each cycle of the processes and get the desired result i.e. Time Quantum using FIS system in Matlab.* **Contribution:** *Time quantum is the bottleneck facing round robin algorithm and was more frequently asked question: What is the optimal time quantum to be used in round robin algorithm?*

In light of the effectiveness and the efficiency of the RR algorithm, this paper works for multi-level Queue.

Keywords: multiprogramming, process. FIS, fuzzy logic, FCFS , roundrobin.

Abstract ID: **AIMC-2017-STE-801**

FEMTOCELL PARTITIONING-BASED RESOURCE MANAGEMENT SCHEME FOR DENSE FEMTOCELL NETWORKS

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Abstract

Introduction: *Extensive deployment of femtocells is endorsed as a key solution to cope with the ever-increasing high data rates and to enhance indoor coverage. Nevertheless, densification of femtocells in an uncoordinated manner can lead to serious co-tier interference, especially when they share the same channel and operate in Closed Subscriber Group (CSG) mode. In this regard, we propose a dynamic resource management approach.*

Methodology: *we propose a dynamic resource management approach namely Femtocell Partitioning-Based Resource Management Scheme (FPRM). Firstly, FPRM categorizes femtocells into the victim or aggressor based on users' status whether critical or non-critical. Each victim femtocell is then partitioned into two virtual cells. One is serving critical users only, while the other is serving non-critical users. Thus, each victim femtocell cell virtually comprises two cells. Secondly, a disjoint femtocell cluster is formed for the first partition of each victim femtocell and its aggressor/s. Finally, within each cluster the optimal resource allocation for each*

femtocell is performed. **Findings:** *The proposed scheme was evaluated for different femtocell deployment densities. Simulation results show that our proposal outperforms one of the state of the art X2-based schemes in all different deployment densities. The results concern; the mean throughput of all users and the average throughput of users within victim femtocells.* **Contribution:** *An optimal resource allocation for each femtocell is performed which allows ranging from sharing the use of resources to the frequency reuse 1 when interference is negligible. Accordingly, minimizing inter-femtocell interference and enhancing user's throughput.*

Keywords: CSG, Femtocell, Interference, Resource management, Victim femtocell

Abstract ID: **AIMC-2017-STE-803**

OBSERVATION OF IONOSPHERIC CURRENT DURING INTENSE SOLAR FLARE USING GROUND BASED DATA

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Abstract

Introduction: *Sudden bright light from the sun surface which is known as the solar flare can immediately affect earth's ionosphere thus perturb any currents flowing in the layer. The activity can be verified using various type of ground based data such as magnetometer data. Regularly, the event will enhance the ionospheric conductivity thus increase the readings but seldom solar flares result in negative perturbation.* **Methodology:** *In this study, we want to classify the characteristic of solar flare that caused depletion to E layer ionosphere. Data from Magnetic Data Acqusition System/Circum-pan Pacific Magnetometer Network (MAGDAS/CPMN) are used to detect the peculiar event and the time of the occurrence were strengthen with Sudden Ionospheric Disturbance Monitoring (SID) system data.* **Findings:** *Our preliminary findings agree with past research where solar flare class X can decrease the ionospheric current intensity. Apart from that, we also found out that class M solar flare can also cause such unusual depletion.* **Contribution:** *Based on result achieved, we hope to improve the understanding of the effect of solar flare to the ionosphere for future researchers.*

Keywords: Solar flare, geomagnetic field, ionosphere

Abstract ID: **AIMC-2017-STE-808**

THE INFLUENCE OF THERMAL COMFORT AND LIGHTING TOWARDS WORKPLACE COMFORT OF INTRASTATE BUS TRAFFIC CONTROLLER

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Abstract

Introduction: *Thermal comfort and lighting is considered to be a principal requirement that is usually demanded of by occupants of accommodation units. A compatible indoor climate environment design is actually a modification of the external environmental system and is designed to provide comfort for occupants. Previous study proved that there is a reciprocal relationship between ergonomic working environment and workplace comfort, productivity, job satisfaction and performance. Standards typically address different environmental factors such as thermal comfort, indoor air quality, and lighting and visual environments separately. In fact, these environmental factors have notable combined effects on occupants' comfort, acceptability and work performance.* **Methodology:** *The data collection instrument choosen in this research are; (1) Validated survey questionnaire develop from previous study, (2) Digital thermometer hygrometer, (3) Digital luxmeter. The data were analysed using Statistical Package for the Social Science (SPSS), Revit, AutoCAD and CBE Thermal Comfort Tools.* **Findings:** *The results shown that there are a significant relationships between lighting towards workplace comfort and insignificant relationship between thermal comfort towards workplace comfort of CSOs. Meanwhile,the lux value for overhead lighting are within the range of 200lux to 500 lux and for thermal comfort, results shows that bus control room are not comply with ASHRAE – 55 Standard* **Contribution:** *This study would serve as a guidance and reference related to this field especially in Malaysia bus control room. The study concludes by giving some recommendation to the company for them to maintain and enhance the workplace comfort of bus traffic controller. Furthermore, the data obtained from this study can be used to suggest the ergonomic working environment for bus traffic control room to increase employees workplace comfort level that is still less emphasised compared to usual manufacturing context.*

Keywords: Workplace Comfort; Thermal Comfort; Lighting; Bus Traffic Controller

Abstract ID: **AIMC-2017-STE-814**

MUDUD CHECKING RULE FOR WARSH RECITATION

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Abstract

Introduction: *Learning and teaching the Quran is the most important science for Muslim. The teacher and learner in this area they should have the provisions of tajweed rules when reading the Quran. This research will present a speech recognition system to recognize, identify and correct the rules of Madd (elongate tone) or prolongation for Qira'at of WARSH. The proposed system will be capable to recognise, identify, point out the mismatch and Discriminate between two types of Madd which are The Soft Lengthening المد اللين and The Exchange Prolongation المد البدل rules for WARSH for the verses contains the two rules which made by the expert teachers stored in a database. In addition, in this research will use Mel-Frequency Cepstral Coefficient (MFCC) and Hidden Markov Models (HMM) as feature extraction and feature classification respectively.* **Methodology:** *The research methodological is presented here. The first step of this approach is a pre-processing stage. In this stage, the collected speech data is modified by applying a pre-emphasis filter to reduce the glottal pulses effects low-pass filter is used to remove the low frequency noise of the background. The feature extraction process is designed to deliver a feature vector to any efficient classifier for categorization of the patterns. Mel frequency cepstrum coefficients (MFCC) is a popular speech feature representation. The most important property of the MFCC technique is that it is more robust in the presence of background noise than other feature parameters.*
The classification is done by HMM model. It calculates the HMM parameters. Training phase is characterised by extracting features using large number of samples "training data", and testing phase is characterised by extracting features from testing data "data speech". Testing data (the user recorded) are matched with voice features stored in the database, to provide responses based on whether they recited correctly or incorrectly. Then the comparison acknowledge the users' level of accuracy. A codebook models (stored template) in the database that is constructed from training data is used for the experimental records.
Findings: *The experimental results of the testing process are presented here. The experiment reveals the extracted features of 10 verses of the Qur'anic recitation which were directly compared with the data based on the Model. As a result, the test result on the training data obtained for this study is at 60% and 50% for The Exchange Prolongation and the greater connective prolongation according Warsh respectively* **Contribution:** *The prototype has been designed as an interactive Tajweed system that assist in proper Madd (prolongation) Checking rule for Warsh recitation based on the automatic speech recognition system. In this research, Mel-frequency Cepstral Coefficients (MFCC) and HMM (Hidden Markov Model) have been chosen as the algorithms used to develop this system. The spectrogram has been successfully implemented to investigate the characteristics of Madd (prolongation) sounds. In this research, Mel-frequency Cepstral Coefficients (MFCC) and HMM (Hidden Markov Model) have been chosen as the algorithms used to develop this system. The experimental results on a database showed that feature extraction method and recognition method in this research are appropriate for Arabic recognition system.*

Keywords: Holy Quran; Tajweed; WARSH; Prolongation, Mel-Frequency; Hidden Markov Models

Abstract ID: **AIMC-2017-STE-815**

EVALUATION OF SOIL RESISTIVITY EFFECT ON UNDERGROUND PIPELINE COATING STRESS DUE TO NEARBY LIGHTNING STROKE

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Abstract

Introduction: *Rapid economic developments have forced the power networks and the pipeline networks to share the same pathway. Induced voltages and currents appear on the pipelines running parallel with the high voltage transmission line when the transmission line is hit by lightning strike* **Methodology:** *In this study, a field model had been developed to determine the first stroke effect on an underground pipe by measuring the coating stress. CDEGS software was used to solve the Maxwell equations, in particular, two software tools, HIFREQ and FFTSES were utilised. An analysis of the electromagnetic interference on a 2-km underground nearby in parallel with a 345-kV transmission line had been carried out when a tower was subjected to a lightning strike.*
Findings: *The results show that the clearance distance is dependent on the peak current of lightning and on the soil resistivity, as well as on the withstand voltage of the pipeline coating. The soil resistivity of the first layer*

must be considered when designing any mitigation technique. The accuracy of the clearance distance with varying soil resistivity and the efficiency improvement of mitigation techniques were also analyzed. **Contribution:** *firstly, analysis the parameters are affect the selection of the safety clearance distance between the tower and pipeline. Secondly, to improve the mitigation technique without any connection to the pipe to reduce the cost and protect the equipment are attach pipeline.*

Keywords: Clearance distance, Mitigation technique, Lightning strike, Metal pipeline, CDEGS

Abstract ID: **AIMC-2017-STE-818**

SEABED IDENTIFICATION USING SIDE SCAN SONAR INSTRUMENT WITH PATTERN DISCRETE-EQUI-SPACED UNSHADED LINE ARRAY METHOD

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Abstract

Introduction: *The Punggur Sea is located in Batam, Riau Islands. There are the varieties of object habitat and very highly dynamical seabed structure. Side scan sonar (SSS) is a sonar system development instrument which has the capability to show the images of the two-dimensional surface of the seabed by contour conditions, topography, and the target simultaneously.* **Methodology:** *The Beam Pattern Discrete – equi-spaced unshaded Line Array Method was used to compute the two-dimensional beam pattern which depends on the angle of the incoming sound waves from the axis of the array were accepted have been depending on the angle at which the sound beam array. This research was conducted in December 2016 in the Punggur Sea, Batam, Riau Islands-Indonesia, and its coordinate system is 104° 08,7102 E and 1° 03,2448 N until 1° 03.3977 N and 104° 08,8133 E, using Side Scan Sonar Tow C-Max CM2 fish instruments with a frequency of 325 kHz.* **Findings:** *The recorded results show that there are 7 targets, and Beam pattern of Discrete-Beam Equi-Spaced unshaded Line Array method in target 4 has the highest value in the directivity pattern is 21.08 dB. The results of the beam pattern model show that neither the central value at the incidence angle (o) of the directivity pattern (dB) were not at the 0 (zero) or the beam pattern central have been generated by the target 6 with incident angle -1.5 o and 1.5o. In addition, it has declined by 40 dB. The bottom sediment in the Punggur Sea was founded the highly concentrate of the sand. And also based on the Discrete-method result Beam Equi-Spaced Unshaded Line Array method was discovered the sunken wreck.* **Contribution:** *This Paper is First and Originality From me and This Paper when Published for Learning to Student in Polytechnic , For Indonesian database of ocean, and for goverment in KEPRI Islands*

Keywords: Side Scan Sonar, Beam Pattern Discrete-Equi-Spaced Unshaded Line Array, Incidence angle, Directivity pattern

Abstract ID: **AIMC-2017-STE-820**

DYNAMIC CLASSIFICATIONS AND LIMIT BEHAVIOR OF THE TRAJECTORIES OF EXTREME DOUBLY STOCHASTIC QUADRATIC OPERATORS ON FINITE DIMENSIONAL SIMPLEX.

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Abstract

Introduction: *Consensus problems in multi agent systems (MAS) are theoretical aspect convergence of doubly stochastic quadratic operators. This work has presented the dynamic classifications of extreme doubly stochastic quadratic operators (EDSQOs) on finite-dimensional simplex (FDS) based on the limit behavior of the trajectories. The limit behavior of the trajectories of EDSQOs, on FDS is either in state of convergence, or fixed or periodic. This paper aimed at examining the behavior of these states. The paper modelled the states and prove theoretically the characteristics of each state. The results indicate that convergence operators converge to the center (1/m), and EDSQOs point are fixed with two or more points whereas periodic states exhibit sinusoidal behavior. This work has contributed in understanding the limit of EDSQOs of the exterior initial points as fixed and periodic points developed spread attribute toward a fixed point.* **Methodology:** *The DSQOs evaluate the next generation starting from the initial state x^0 of the probability distribution. They then continue to improve the probability distribution of the first generation, x^((1))=V(x^0), followed by the second generation iteratively, x^((2))=V(x^((1)))=V(V(x^((0))))=V^((2)) (x^((0))), and so on. Therefore, the iterative notation defining the EDSQOs is given by V^((t+1)) (x_i^0), where t is the number iterations (generations).* **Findings:** *This work has*

studied the dynamic classifications of EDSQOs on FDS and investigated the limit behavior of trajectories of EDSQOs. It is obtained that the limit of EDSQOs converges to the central point if the operator satisfies the condition; it has no point with a common factor amongst its terms and it does not consist of two or more points that can be expressed in terms of one another. Empirically, the work has proven in theorem 3.1 that the EDSQO never converge from the extreme exterior initial points (where it must range from 0 to 1 and not exactly equal to one), it has fixed or periodic points. However, it has also been proven in theorem 3.2 that the operator of EDSQOs has a fixed point if this point has a (common) factor of its functional point. Meanwhile, it has been proven as well in theorem 3.3 that, if two points or more have a (common) factor amongst each other, then these points are periodic. In turn, it has been proved in theorem 3.4 that the EDSQOs on FDS is convergent to the center (1/m) if it has no fixed or periodic points and the initial values are not extremes. From this study, the EDSQOs have been classified on FDS to three classes: i) fixed, ii) periodic and iii) convergence. Finally, the results of this study have been simulated by MatLab software and presented with the help of appropriate figures depicting the specific classes. The class of EDSQOs is very large on FDS. Therefore, the presented simulation has been considered for EDSQOs on 2DS, 3DS and 4DS, but the results are in turn generalized for FDS as it is proven in theorems 3.1, 3.2, 3.3 and 3.4. This work demonstrates that it is possible to achieve convergence in nonlinear-complexity protocol for consensus problem in MAS. **Contribution:** *the contribution of this research is to improved the new nonlinear systems of DSQO. This nonlinear systems will open new ground in the engineering, science, technology applications.*

Keywords: dynamic classifications, extreme doubly stochastic quadratic operators, majorization, convergence, fixed, periodic, finite dimensional simplex.

Abstract ID: **AIMC-2017-STE-821**

THE EFFECT OF FERRIHYDRITE SURFACE AREA ON THE SILICIC ACID (H4SIO4) CHEMISTRY AT THE FERRIHYDRITE-WATER INTERFACE.

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Abstract

Introduction: *Ferrihydrite is an important iron oxide in aquatic systems. Silicic acid (H4SiO4) is ubiquitous and sorbs and polymerises on oxide surfaces influencing the oxide's chemistry. Much understanding of oxide surfaces comes from infrared studies using oxide films dried onto an ATR crystal but little is known about how this relates to oxide suspensions as found in water treatment. In this work, the H4SiO4 sorption and polymerization was compared on ferrihydrite suspensions and ferrihydrite films. Both the H4SiO4 isotherms and the extent of silicate oligomerization were quantified and the ferrihydrite surface areas determined by BET N2 and titration methods.* **Methodology:** *Ferrihydrite was precipitated by the rapid alkaline hydrolysis of ferric nitrate. Solutions of H4SiO4 were equilibrated with the ferrihydrite suspensions at pH 4 in 0.01 M NaCl. Suspensions were then centrifuged to obtain pellets of ferrihydrite and ATR-IR spectra measured. These spectra were compared to H4SiO4 on ferrihydrite films from Swedlund et al. (2009). In addition ferrihydrite was dried at 35°C to obtain thin ferrihydrite films on an ATR-IR crystal prior equilibration with H4SiO4 solutions, also at pH 4 in 0.01 M NaCl. The proportion of monomeric and oligomeric silicate species adsorbed on the ferrihydrite pastes were quantified by fitting the measured ATR-IR spectra as the sum of previously determined component spectra of three pure surface species; monomeric, oligomeric and polymeric silicate using multivariate curve resolution with alternating least squares (MCR-ALS) in Matlab® (Swedlund et al., 2009). The Diffuse Layer Model (DLM) was used to model H4SiO4 sorption and oligomerization using the model parameters for the H4SiO4 chemistry on ferrihydrite surface from Swedlund et al. (2010). The ferrihydrite surface areas were measured by the BET N2 method and also estimated from acid base titration data of the oxides.* **Findings:** *H4SiO4 isotherms with surface coverage expressed as mole Si per mole Fe (□mole) were higher for ferrihydrite suspensions than ferrihydrite films as expected. This is because drying the ferrihydrite suspensions will reduce the sites available for adsorption. However, when surface coverage was expressed per surface area (□nm-2) there was no difference in the isotherms for suspensions or films. Similarly, silicate polymerization was lower on the ferrihydrite suspension than the films, when expressed as a function of □mole. However, there was no difference in amount of silicate polymerized when expressed as a function of □nm-2. This demonstrates that the key difference between the suspension and films of ferrihydrite is the surface area decrease due to dehydration. Also, it is difficult to determine meaningful surface areas for ferrihydrite. The BET surface areas were substantially lower than the titration derived estimates. The isotherms and polymerization data calculated using titration derived surface areas fitted the H4SiO4 isotherm and the percent monomers adsorbed modeled from*

Swedlund et al. (2010) DLM parameters and are considered to more closely represent the true values. **Contribution:** *Understanding the H4SiO4-ferrihydrite interaction is important for of ferric based water treatment systems. In this work we have made the connection between infrared data on dried ferrihydrite films and ferrihydrite suspensions as encountered in real world systems. ATR-IR spectra of ferrihydrite films cannot be used directly to assess the Si surface coverage and polymerization in aquatic systems. A reliable measure of surface area is required, which is challenging for these systems. Acid base titrations provided the most reliable estimates in terms of understanding the H4SiO4 isotherms and amount of silicate polymerized.*

Keywords: ATR-IR, ferrihydrite, H4SiO4, surface area

Abstract ID: **AIMC-2017-STE-822**

AN OVERVIEW OF THE CONSENSUS PROBLEM IN THE CONTROL OF MULTI-AGENT SYSTEMS

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Abstract

Introduction: *As a solution to the distributed multi-agent coordination, the problems of consensus or agreement have been widely explored and studies in the literature. This document provides an overview of consensus problems in multi-agent cooperative control with the goal to expose the related literature and promote the research in this area. The document presents the theoretical results concerning the search for consensus in all the involved topologies and including information exchange that is invariant in time and dynamically change. Applications related to consensus protocols are studied in the context of multi-agent coordination. The presentation includes as well open problems and offers future research direction.* **Methodology:** *Consensus problem for distributed systems has gained a growing attention in various fields of research works. One of the essential problems linked to the MAS is the consensus convergence to a common value via mathematical distributed model of discrete time. Such a problem is solved by linear and nonlinear consensus algorithms. Discovering necessary and sufficient conditions [57], [58] for the class DSQO based on majorization theory for convergence has been the purpose of a significant frame of the review.*

Previous studies have established a general scheme of consensus convergence problem (consensus problem) using various models [20]–[25], [29]–[31], [33], [35], [49], [55], [56], [59]–[74].

A central problem in MAS is how the agents coordinate among themselves to execute one task. Consequently, how will the agents converge or agree among themselves and achieve a common goal at the same time. Another concern is how do all agents in one group converge or agree on a consensus objective at the same time. In order to address the aforementioned problem, most of the previous studies have presented a linear consensus model of DeGroot, where the consensus can be achieved after long iterations. Some few authors have addressed the consensus problem with nonlinear models while others have attempted to improve the models theoretically. The key idea behind this is that the design of nonlinear mathematical model is still very complex.

Therefore, it is imperative for an attempt to investigate models that combine both merits of faster convergence of the nonlinear protocols and the low complexity of calculations. Many attempts have been made to resolve the complexity of stochastic systems by employing other optimization techniques such as greedy method [93]–[96], known for its space and time efficiency, as well as the greedy technique used in the optimization of stochastic systems require generalization conditions. However, many systems cannot be generalized as such and thereby necessitating further efforts to improve the complexity in optimization. One such effort yielded the majorization technique [97], which combined the principle of majorization with nonlinear models. Though having direct relation to the greedy method, it however was able to overcome the generalization conditions required for greedy method. Owning to the fact that consensus convergent problems are analogous to optimization, applying the majorization as a prospect to solve the complexity problem in consensus problem offers an appealing solution.

Findings: *In this paper, the resent literature of consensus problem is reviewed. Since most of the researches of the consensus problem are ongoing, this survey focuses on linear and nonlinear consensus for MAS. In recent work, most consensus problems in MAS are considered in the framework of linear dynamics model. Some results of linear dynamics model imply that they can be extended by nonlinear dynamics model. As the outcome, the framework of nonlinear stochastic dynamics consensus can be applied to centralized robot, spacecraft, and UAV formation flying scenarios. The study of the consensus problem for the team of agents through complex nonlinear dynamics and in the case of heterogeneous agents is a motivating issue for future research. Most research on the problems consensus expected that the status of final consensus achieved is intrinsically constant,*

which may not be the case in the sense that the status information of each agent can be dynamically changing over time as an inherent dynamic. It will be interesting to investigate a new nonlinear model so as to study the consensus problem as the final consensus status changes with time. In the present reality, most researches have considered the linear model and complicated nonlinear model which is motivated for evolving into a low complexity nonlinear model for consensus problem in MAS. Furthermore, most works are concentrated on the theoretical study of the consensus problems and most results are verified by simulations with the exception of some experimental results of the coordination of MAS communicated in invariant time. **Contribution:** *Solve one of the central issues in the complicated systems of MAS. This work proposes the handling of the nonlinear consensus problem based on effective mathematical nonlinear systems of the PDSQO. This approach is a modified version of the method from the existing works of Linear consensus [22]–[24], [28], [29], [31]–[33], [49], [98]–[101], the nonlinear consensus protocols of Lyapunov function given in [39], [40], [45], [77], [80], [81], [102] and the nonlinear consensus protocols of equations including calculus equations of the works in [82], [83], [85]–[92], which are applied to evaluate the consensus problem. Since the building of the existing Lyapunov function for nonlinear consensus and equation of the second order is difficult, this proposed work investigates the consensus behaviour of nonlinear MAS using stochastic quadratic operators based on majorization technique, which are effective and relatively easy mathematical tools. It is stressed that the aim of this research is to build non-complicated mathematics, nonlinear protocols, effective and easier to appreciate. Under designing distribution of nonlinear protocols, it is demonstrated that the consensus is reached for group agents through local interaction of stochastic networks. Furthermore, the group final decision value is a common value achieved based on an initial status. By using the nonlinear consensus protocols proposed in this research, the capability of the agents reaching an agreement on the value of the group's decision is proven.*
Generalization of linear and nonlinear consensus, the work investigates nonlinear protocols which are as powerful as the linear protocols and additionally, fulfill the information requirements of physical frameworks and also the state of data transmission among agents as functional rank. Accordingly, this work contends that these nonlinear protocols are perceptible developments over present protocols. What more is that, these nonlinear agreement protocols generalize the consensus of linear protocols and might be utilized to upgrade the performance of the dynamic consensus algorithm.

Keywords: consensus problem, multi-agent systems.

Abstract ID: **AIMC-2017-STE-823**

IMPROVED QUASI-NEWTON METHOD VIA SR1 UPDATE FOR SOLVING SYMMETRIC SYSTEMS OF NONLINEAR EQUATIONS

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Abstract

Introduction: *The systems of nonlinear equations emerges from many areas of computing, scientific and engineering research applications. A variety of an iterative methods for solving such systems have been developed, this include the famous Newton method. Unfortunately, the Newton method suffers setback which includes storing an n×n matrix at each iteration and computing Jacobian matrix which may be difficult or even not possible to compute.* **Methodology:** *To overcome the drawbacks bedeveling Newton method, a modification to SR1 update is proposed. With the aid of inexact line search procedure by Li and Fukushima, The modification is achieved by simply approximating the inverse Hessian matrix to an identity matrix without computing the Jacobian. Unlike the classical SR1 method, the modification neither requires to store an n×n matrix at each iteration nor computing the Jacobian matrix.* **Findings:** *In finding the solution to nonlinear problems of the form F(x)=0, a set of 100 benchmark test problems were solved. A comparison is made between two methods, based on number of iterations, 91 problems were solved effectively by the proposed method. In terms of CPU time, the proposed method also outperformed the existing method.* **Contribution:** *An original contribution from the methodology yield a method suitable for solving symmetric systems of nonlinear equations. The derivative-free feature of the proposed method gives it advantage to solve relatively large-scale problems (10,000 variables) compared to the existing method. From the preliminary numerical results, the proposed method turns out to be significantly faster, effective and suitable for solving large scale symmetric nonlinear equations.*

Keywords: SR1, Global convergence, Nonlinear Equations

Abstract ID: **AIMC-2017-STE-824**

THE EFFECT OF EXTRACTION SOLVENT AND MIXTURE DESIGN ON BIOACTIVE COMPOUNDS IN AJWA DATE (PHOENIX DACTYLIFERA L.) FLESH

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Abstract

Introduction: *Date fruits (Phoenix Dactylifera L.) are considered as an ideal food because it consists of high nutrients and provide beneficial effect to human health. Bioactive compounds in Ajwa dates have different polarities thus require solvents of different polarities for the extraction.* **Methodology:** *In this study, we investigated the effects of selective extracting solvents on extraction of bioactive compounds in Ajwa flesh using mixture design. Methanol, chloroform and hexane were used in the design. Bioactive compounds were identified using GCMS.* **Findings:** *Identification of bioactive compounds using GCMS shows Ajwa date flesh contain antioxidants, antifungal, anticholesterol, antimicrobial, anticancer and anti-inflammatory. Most bioactive compounds were identified in methanolic extract (D1) except β-Sitosterol was identified in hexane extract (D3) while Longifolenaldehyde and Nonadecyl pentafluoropropionate were identified in hexane layer (D5H) from the combination of methanol: hexane (1:1).* **Contribution:** *This study showed that other bioactive compounds can be extracted by combining solvents of different polarities (polar and nonpolar).*

Keywords: Ajwa Date, Bioactive Compounds, Solvents, Mixture Design, GCMS

Abstract ID: **AIMC-2017-STE-825**

INSULATION COATING PAINT APPLIED ON BUILDING IN THE MALAYSIAN CLIMATE

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Abstract

Introduction: *to determine the ability of coating paint that be applied onto low-rise buildings with Malaysian weather conditions.* **Methodology:** *four 3*3m2 mock-up buildings have been constructed with different features of each parameters Mock-Up Building no. 4 has been completely painted with white coating paint on the walls and the roof. 5 reference days been selected to analyse using Minitab software.* **Findings:** *The effectiveness of white coating heavily depends not only on daily, but also on the long-term weather condition as the wall itself absorbs and keeps the temperatures of previous days in it for several days. After heavy rain the wall was still cool. and retained until the very next day* **Contribution:** *First experiment in a longitudinal study showcasing real time conditions in a life lab to test the effect of coating in a green and energy efficient buildings*

Keywords: Insulation, Coating, Green Building, Energy Efficiency,

Abstract ID: **AIMC-2017-STE-826**

INDOOR ENVIRONMENTAL QUALITY: AN ANALYSIS ON LIGHTING EFFICIENCY OF THE ARCHITECTURE STUDIO

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Abstract

Introduction: *Studio is the most important space in architecture education where student spends most of their learning activities through peers and educators interaction, struggling on projects, sharing information and learning from peers. Studio learning involves task lighting which need quality and sufficient amount of lights for a specific work such as drawing and constructing 3D modelling. A long hour's work with insufficient lighting will cause physical discomfort such as fatigue, learning inefficiency and decreasing productivity. A condusive architecture studio allows natural light to transmit, less artificial lighting involves and reduce heat and glare. Therefore, this paper focuses to identify the quality of lighting of the architecture studio in selected local universities, in order to instill a creative learning environment.* **Methodology:** *This experiment was conducted to get the preliminaries studies of the lighting performance of the architecture studio in selected general and private universities all over Malaysia. The methodology of this analysis is providing lighting measurement by using the equipment named LM-8100, and questionnaire in gauging the lighting comfort level from students' perspective and identifies other criteria that contributes to lighting efficacy. From the measurement, the data*

will be analysed in accordance with other factors that contribute to effective learning environment such as the lighting arrangements, opening size, the types & colours of finishes, material exploration and furniture involved. The data collected will be compared with the lux reading from Malaysian Standard and Indoor Air Quality Standard. Questionnaire was distributed to the studio occupants to identify occupant's perspective on studio environment. From the questionnaire, data will be analysed on three parameters of occupancy, condusive and visual comfort. The questionnaire will measure occupant's assessment on the studio ambience in providing a productive working environment to the occupants. **Findings:** *The lighting measurement were collected in several different areas in the selected studio. Each zoning provide different readings and comparison to one another were recorded in a table with the ideal readings recommended from the Malaysian Standard and Indoor Air Quality. From the comparison, areas were identified on sufficient and insufficient lighting analysis. Reason were identified in several factors such as lighting arrangements, opening size, the types and colours of finishes, material and furniture involved. Analysis from the questionnaire distributed measured occupants overall evaluation from the studio environment. The three parameters shown different result from all the respondents. Majority of the occupants find the lighting level in the studio was sufficient however they do agree that the monotonous layout and lack of facilities affects the mood and long hours working performance. Although occupants feel the lighting was convenient, in a long term, insufficient lighting will affects a person's mood and energy. Great alertness and performance can be increased with higher illumination level.* **Contribution:** *Architecture studio is a place where students spend most of their time of a day. Their presence in a studio is a must in order to develop and complete their design projects. Studio is a place where most of the architecture education happen where students interacts, gather knowledge, interpret theories, sharing information and learning from educators and peers. Therefore, it is crucial for the studio environment to meet up with the ideal indoor environmental quality to provide a healthy learning place for the students. This study is conducted to identify the factors of good & poor lighting in architecture studio. A long hour's work in a studio required sufficient task lighting to avoid physical n psychological discomfort. This research can be further presented to the Council of Architectural Education Malaysia (CAEM) in providing optional regulation on architecture schools relating to policy and procedure for Accreditation of Architectural Programmes.*

Keywords: Lighting, Architecture, Architecture Studio, Indoor environmental quality, creative learning

Abstract ID: **AIMC-2017-STE-833**

A NEW FAMILY OF COMBINATORIAL DESIGNS FOR ANOVA

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Abstract

Introduction: *Experiments and statistical inference are commonly carried out to assess causal links between phenomena. Latin squares can be used to this purpose within the method known as ANOVA (Analysis of Variance), a collection of statistical models developed by British statistician Ronald Fisher. A Latin square with n rows and n columns can be used to design an experiment with n x n tests, meant to assess causality involving n treatment factors. Our research aims at reducing the number of tests in this case.* **Methodology:** *The methodology in our research uses a new type of combinatorial design called free Latin squares, in which the n rows (n columns) are divided into n/k groups of k rows (columns) each. We have adapted ANOVA to this new design and showed how to perform the statistical analysis of the test results.* **Findings:** *We have found that a free Latin square with n rows (columns) forming groups of k rows (columns) divides the number of tests, needed in an experiment with a Latin square, by k x k. Furthermore, we have shown that we need fewer initial assumptions to apply ANOVA compared with Latin squares.* **Contribution:** *We have shown that free Latin squares used in ANOVA may design more efficient experiments and need fewer initial assumptions in certain cases.*

Keywords: ANOVA, experimental design theory, free Latin square, hypothesis testing, Latin square

Abstract ID: **AIMC-2017-STE-835**

TRAFFIC CONGESTION FOR EMERGENCY RESPONSES USING GIS APPROACH

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Abstract

Introduction: *Traffic congestion is a major problem in developing areas and Alor Star City, Kedah is no exception. It became a problem when it disrupts emergency response way and more severe if the driver does not know the situation and the level of congestion. This may cause delays and can lead to loss of life and loss of valuable goods* **Methodology:** *This study was therefore carried out with the aim of applying GIS to provide an effective and efficient database for emergency responses in Alor Star City. It examines a methodology where to identify the closest emergency responses and to solving the problem of emergency responses to each incident or vice versa by considering the historical traffic* **Findings:** *The finding of this study is creating a dynamic road network model for incorporating historical traffic data and performing the best way for a given time of day and date* **Contribution:** *Hence, the road network model is considered dynamic in the sense that cost attributes such as travel speed change with respect to time*

Keywords: Traffic Congestion, GIS, Emergency Response

Abstract ID: **AIMC-2017-STE-836**

USE OF MULTIVARIATE ANALYSIS TECHNIQUE FOR EVALUATION OF ANALYTICAL DATA-DETERMINATION OF THE MINERALS COMPOSITION OF DATES

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Abstract

Introduction: *Dates (Phoenix dactylifera L.) is one of mankind's oldest cultivated plants. It is known to be a most important fruit tree particularly in the Middle Eastern, North African and Asian countries due to its natural sources of nutrition. The purpose of this study is to evaluate the minerals content in date (flesh and pit), purchased from local market in Malaysia using multivariate analysis technique.* **Methodology:** *The minerals composition of dates purchased in local market was determined and the results were evaluated using multivariate analysis. The samples were digested using nitric acid and hydrochloric acid and were analyzed using inductively coupled plasma optical emission spectrometry. The principal component analysis (PCA) evaluated the samples according to their minerals (major and minor) concentration of each sample is different referring to their variety.*

Findings: *The results expressed as milligrams of element per kilogram of samples demonstrated that the concentration ranges varied from 16.5 to 105.8 for aluminium, 0.12 to 0.86 for barium, 343 to 870 for calcium, 1.86 to 6.23 for copper, 7.52 to 17.61 for iron, 336 to 530 for magnesium, 1.37 to 5.02 for manganese, 95 to 4.73 for sodium, 0.15 to 0.50 for nickel, 0.09 to 0.53 for lead, 1.80 to 6.70 for zinc, -0.02 to 0.33 for selenium and 2823 to 5623 for potassium. PCA showed the ability to evaluate of minerals content in different varieties of dates samples. The major elements content in dates are potassium, magnesium, sodium and calcium while other elements were observed to contain in minor concentration. Both Ajwa pits and flesh contained high concentration of calcium, sodium and magnesium.*

Contribution: *In Malaysia, dates can be purchased in different varieties and also the price for each are according to their grade. The information of nutrient and mineral contents in dates have already being studied by many researchers, but very limited information can be found on dates available in Malaysia's supermarket. There are varieties of date name available, but there is no certainty whether the name refer to the distinct varieties or merely local names for the same varieties grown in different regions or countries. Thus, PCA is one of the multivarite technique used to evaluate and classified all the dates referring to their minerals.*

Keywords: Phoenix dactylifera, elements composition, inductively coupled plasma optical emission spectrometry (ICP-OES), PCA.

Abstract ID: **AIMC-2017-STE-838**

OPTIMIZATION OF DOUBLE BOILING TREATMENT OF KELULUT HONEY USING RESPONSE SURFACE METHODOLOGY

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Abstract

Introduction: *Design of experiments (DoE) contributes a conceptual framework of an experiment to determine the relationships between factors and dependent variables. This study was conducted to investigate the combined effects of temperature and time of double boiling treatment on quality of Kelulut honey using Response Surface*

Methodology (RSM). **Methodology:** *Central composite design employed nine runs with duplicates under different combination of temperature (30 - 60°C) and time (10 – 60 min) to analyze the quality of Kelulut honey. Quality of Kelulut honey in this experiment was analyzed under six parameters which are physicochemical properties (pH, moisture content, total solids, and total soluble solids), brown pigment and antioxidant activity. The fresh and untreated Kelulut honey was obtained from a Kelulut beekeeper in Kampung Bintang, Batu Pahat, Johor. The double boiling treatment was performed using a double boiler which was set up conventionally using a 250 mL round bottom flask and placed on top of a 250 mL beaker (Sigma-Aldrich, USA) that fit tightly. pH value of 10% diluted Kelulut honey was measured using a pH meter while refractive index of the samples were measured using an RX-5000a digital refractometer for determination of moisture content, total solids and total soluble solids. Brown pigment was determined according to the method by Turkmen et al. Finally, antioxidant activity was determined using 2,2-diphenyl-1-picrylhydrazyl (DPPH) method.* **Findings:** *Statistical analysis revealed that treatment variables give coefficient of determination in the range of 46.21% to 83.16% that indicates an adequate correlation between the experimental and predicted response values. Coefficient of determination is crucial to guarantee a strong relationship between factors and responses hence is sufficient to evaluate the effect of factors. As treatment temperature increases, total solids and total soluble solids increase while moisture content decreases. In addition, treatment conditions give significant effect on brown pigment with highest R-squared value. Comparing based on treatment conditions; pH was shown the highest when treatment condition was at 60°C for 35 minutes. Moreover, the same treatment condition resulted the lowest moisture content therefore the highest total solids and total soluble solids content. These parameters are very important especially for storage and shelf life of Kelulut honey. In addition, the highest antioxidant activity also was obtained at the same treatment condition. On the other hand, the treatment temperature of 60°C and time of 10 mins resulted in the highest absorbance reading at 420nm of Kelulut honey. Therefore, based on experimental design and ANOVA, treatment condition at temperature of 60°C for 35 minutes were chosen as optimal setting of experimental factors for double boiling treatment of Kelulut honey.* **Contribution:** *This study reported a novel findings on the optimization of double boiling treatment (combined temperature and time) for the quality of Kelulut honey. The proposed model provides an efficient treatment condition of double boiling treatment that might be suitable for further research of Kelulut honey. This result also gives a beneficial to the local bee keepers who applied double boiling method as a conventional treatment in Kelulut honey processing.*

Keywords: Optimization, Kelulut honey, double boiling, response surface methodology (RSM), Central Composite Design

Abstract ID: **AIMC-2017-STE-839**

IDENTIFICATION OF THE SHEAR PROPERTIES OF DIFFERENT EPOXY ADHESIVE USING MODIFIED ARCAN FIXTURE

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Abstract

Introduction: *The shear test with Arcan method has been used to measure the shear properties of fibre-reinforced plastic composites and adhesives. In this test, four type of epoxy adhesives have been used as a sample to determine their respective shear modulus and shear strength. The Arcan rig consisted of a diametrically loaded circular disc containing asymmetric cut outs with the mid-section designed to establish a state of uniform stress. Depending on the loading angle, various biaxial stress states can be produced. In principle, a uniform state of pure shear should exist when the loading axis and the notch axis are aligned. The shear test method employs a butterfly specimen with two symmetrical notches cut at ±45° to the loading axis. This specimen is gripped in a loading frame with the load applied via the faces to avoid the potential problem of instability associated with edge loading.* **Methodology:** *Test samples are ProAssure Wrap Extreme (PAWE), ProAssure Wrap (PAW), ProAssure Wrap Primer (PR), Sikadur 330 and Sikadur 30. The test samples in form of butterfly shape and each of them consist five specimens. The shear test method with two symmetrical notches cut at ±45° to the loading axis. This specimen is gripped in a loading frame with the load applied via the faces to avoid the potential problem of instability associated with edge loading. The butterfly shaped specimens were cast by using a mild steel mould which consisted of male parts (top) and female parts (base). A rosette type strain gauge, TML FCA-1-11 with 1 mm gauge length was installed onto the sample. The gauge was installed in the direction of 45° measured from the specimen's horizontal axis for a selected specimen for each sample. The test was conducted with the cross head speed of 1 mm/min and gauge length of 50 mm. The specimens were subjected to loading until failure to get the maximum failure load. The data to be recorded in shear test are*

shear stress, shear strain and shear modulus. **Findings:** *The result showed that the shifting of the stress element as indicated by the average strain value increased with the loading. This was due to the nature of brittle materials, where the micro cracks typically propagated rapidly through the specimen as the loading increased. The result obtained was probably influenced by the non-uniformity of the prepared specimen due to the casting process. During testing, it could be observed that almost all samples are linearly*
gained shear loads from the start until up to failure, and had shown brittle type of failure mode except for PR sample the curve is nonlinear showing ductile type of failure mode. Sika30 has the highest stiffness property with high shear modulus 2.36GPa compared to Sika 330, PAW and PR. While the shear stress of Sikadur 330 is almost similar to PAW and shear strain near to failure value which PAW is 28042 με with difference of about 782 με which is also not much different. The properties of Sika 330 and PAW can be conclude they are almost similar properties ie; same stiffness, shear modulus and brittle. While the PR properties are very different compared to other samples.

Contribution: *To determine the pure shear properties of epoxy adhesive with different formulation of materials. This study is focus on adhesive for compatibility of Fibre Reinforce Polymer (FRP) on steel strengthening application. The result of shear properties for each epoxy formulation will be test on bond between FRP and steel.*

Keywords: Arcan, Shear, Epoxy.

Abstract ID: **AIMC-2017-STE-848**

A STUDY OF FOOT CHARACTERISTICS AMONG MULTHIETHNIC WOMEN IN MALAYSIA USING 3D FOOT SCANNER

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Abstract

Introduction: *Malaysian citizens are categorize according to ethnicity into three major ethnic groups Malays, Chinese,Indian and others. The aim of the study to compare the foot dimension and foot characteristic for foot length, foot breadth and ball girth circumference among different three ethnic groups in Malaysia.* **Methodology:** *The study was carried out on age between 20 to 60 women with 1210 sample size. In this study, the Infoot scanner high types was used to collect the 17 foot dimension.* **Findings:** *Using one-way analysis of variance (ANOVA), The results showed that there are significant differences among ethnic group with p value <0.05. The Post hoc Tukey test presenting the result,only the foot length was significantly difference between all the ethnic groups. As for the ball girth, there were only significant difference between Chinese and Malay (p<0.05), but, no significant difference between Indian with Malay and Chinese. While for the foot breadth, there were significant difference between Malay with Chinese and Indian (p<0.05), but, no significant difference between Chinese and Indian. Indian had slightly longer foot length than Malay and Chinese.The result for foot breadth and ball girth circumference, Malay is higher ball girth and wider foot breadth compare than Indian and Chinese. Chinese have more slimmer foot shape compare than Malay and Indian.* **Contribution:** *This study fully uses the original data from the experiment conducted between the researcher and the participants. All measurements were fully taken by the researcher as well as those trained by the expert in foot ergonomic from Japan, Makiko Kuichi. The foot result for characteristics will be use for development of new standard shoe sizing system for Malaysian women.*

Keywords: Ethnic diffrences; foot dimension; foot characteristic; Malaysian women; Foot size

Abstract ID: **AIMC-2017-STE-850**

BIODIESEL PRODUCTION VIA ULTRASOUND-ASSISTED METHOD USING OIL ADSORBED ON SPENT BLEACHING CLAY

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Abstract

Introduction: *Ultrasonication provides a faster chemical reaction, and the rate enhancements, refereed by cavitations that causes the building- up of pressures and temperatures, as well as increased catalytic surface areas and improve mass transfer. This paper reports studies in ultrasound-assisted heterogeneous solid catalyzed (CaO) synthesis of biodiesel from adsorbed crude palm oil on spent bleaching clay (SBC.)*

Methodology: *Ultrasound transesterification method of spent bleaching clay (SBC) to methyl esters (ME) was conducted using 100/20 mL one neck round bottom flask with condenser with the constituent of 2 g oil, catalyst(CaO form barnacles shell) and methanol. The above mixture was immersed in an ultrasound water bath (Bransonic at a working frequency of 42 kHz and the power supply of 235W) at a temperature of 65 ºC. The effect of catalyst amount (6-12 wt.%), methanol to oil molar ratio (5:1 – 15:1), and reaction duration (2-4 h) on the conversion of triglycerides to biodiesel were investigated. After the transesterification, the reaction mixture was allowed to cool. Then, to further separate the product (methyl esters and glycerol) and the catalyst was carried out by a centrifugation at 4000 rpm for 15 min.* **Findings:** *The optimized reaction conditions were as follows: methanol to oil molar ratio of 15:1; catalyst (CaO), 12 wt. %; reaction temperature, 65 ± 2 °C; reaction time, 3 h at a working frequency of 42 kHz and the power supply of 235W. Highest conversion of 93 wt. % was achieved.* **Contribution:** *This novel method offers significant advantages such as shorter reaction time and less energy consumption than the conventional method, efficient molar ratio of methanol to triglycerides, higher purity of the glycerol and provides the mechanical energy for mixing, the required activation energy for initiating the transesterification reaction and so, it gives a higher yield by transesterification of oils into biodiesel using barnacles shell as catalyst.*

Keywords: Biodiesel, ultrasound-assisted, spent bleaching clay, heterogeneous catalyst

Abstract ID: **AIMC-2017-STE-856**

CHEMOMETRIC ANALYSIS OF UV-SPECTRA: A NOVEL, RAPID AND CHEAP METHOD TO DIFFERENTIATE BOVINE, PORCINE AND FISH GELATIN

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Abstract

Introduction: *Industrialists and consumers demand that food quality assessment must be objective and supported by scientific research. This has called for development of scientific methods in order to investigate and provide proves for specie-specific analysis of food raw materials and ingredients (most especially gelatin). From Halal perspective, gelatin and gelatin based products are currently classified as doubtful because gelatin from haram (porcine) source is abundantly used in food systems. Currently, all the methods that are being used to determine specie-specific of gelatin are time consuming and capital intensive (huge equipment and running cost requirement).*

Many UV-spectroscopic analytical procedures have been found useful for food analyses. UV-Spectroscopy is easy to use and readily available in most laboratories because it is highly versatile. It has high level of accuracy and acceptable to scientific world. Development of UV-spectroscopic based analysis for source discrimination of gelatin will be a novel, cheap, and quick protocols. In principle, spectroscopy measures the formation of color which relates to the properties of sample under investigation.

The main objective of this study is to development quick and cheap UV-spectroscopic method to distinguish gelatin base on their sources.

Methodology: *Preparation of gelatin and gelatin hydrolysate*

The substrates were prepared by measuring 2g of gelatin and dissolved with 100 ml of distilled water for 20 min at 60 oC in a water bath. The samples were allowed to cool under room temperature. Gelatin hydrolysates were prepared by digesting the gelatin solutions with chymotrypsin for 3 h at room temperature under continuous stirring. The gelatin hydrolysate solutions were heated for 10 min in a boiling water to inactivate the enzyme. The mixtures were centrifuged at 10,000 rpm to removed coagulated protein and the supernatant was collected. Both gelatin solutions and hydrolysates were kept at 4 oC until required.

Preparation of UV-responsive mixture.

The UV-responsive mixtures were prepared by heating 1 ml of test reagents with 2 ml of gelatin solution and gelatin hydrolysates in a glass test tube. The reaction was carried out at 80 oC for 6 h using water bath under dark condition. The reaction mixtures were allowed to cool before UV measurement.

UV-spectroscopic measurement

Micropipette was used to dispensed 200 µL of the samples into 96-well micro plate (COS96ft_half area-Corning). The UV-spectra of the samples were determined using microplate reader (TECAN infinite M200, Sn: 7-62028). The absorbance scanning was conducted between 300 – 700 nm wavelength at a scanning step size 2 nm and the number of flashes was 25.

Principal Component Analysis (PCA)

Principal component analysis was performed using SAS® JMP® 12. The covariance matrix of the data was decomposed into a product of scores and loadings matrices, which contains the information about the samples and the variables respectively. **Findings:** *Compared to initial state of the mixture before heating (Figures 1 a and 1b), there was increase in spectra intensity (Figure 1c and 1d) in all samples suggesting that certain reaction has occurred and new product(s) has been formed. The difference in the intensity of the spectra shape is as a result of the variation in the gelatin sources and molecular size distribution of gelatin. Gelatin from fish exhibited the lowest spectra size followed by that of porcine while the spectra size was largest in bovine gelatin. The difference in shape and size of UV-spectra of gelatin and gelatin hydrolysate suggests that the molecular size of gelatin has effects on the products.*

Chemometric analysis of UV-spectra reveal that gelatin can be successfully categorized into fish, bovine and porcine. Chymotrypsin hydrolysis of gelatin prior to UV-measurement resulted into improved separation of gelatin base on source. The method will be useful for onsite inspection of food and pharmaceutical companies.

Contribution: *We have developed a novel, fast and cheap methods that use UV-spectroscopy to differentiate gelatin based on source. Fish gelatin can be differentiated from mammalian gelatin in the PCA component 1, while PCA component 2 was able to differentiate the mammalian gelatin when compared together. Chymotrypsin hydrolysis of gelatin prior to analysis improved the discriminative efficiency of the developed method. Future works will focus understanding the reaction mechanisms.*

Keywords: Halal, porcine gelatin, fish gelatin, bovine gelatin, chemometric

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INDUSTRIAL WASTEWATER REJECTION BY MEMBRANE TECHNOLOGY

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Abstract

Introduction: *Membrane distillation (MD) is one of the emerging thermal driven membrane separation processes in wastewater treatment attributed to its lower energy requirement and able to coupled with waste heat relative to pressure driven process.* **Methodology:** *In this study, polyimide was used as the polymeric materials in hollow fiber membrane fabrication whereas 1-methyl-2-pyrrolidone (NMP) was use as solvent. The fabricated hollow fiber membrane were later coated with different concentration of polydimethysiloxane (PDMS) to investigate the effect of surface coating in the permeate flux performance. Later, the properties of the fabricated membrane will be characterized with respect to the thickness, pore size, porosity, and water contact angle using scanning electron microscope and gas permeation system, respectively. The membrane characterization results illustrated that the morphology of the membrane possesses a finger-like layer that extending from the inner layer to outer layer. The formation of this structure was due to the nature characteristics of NMP which act as a strong solvent in the water solution (non-solvent) during the phase inversion process.* **Findings:** *The results in this study shows that the coating of the PDMS on the membrane surface able to improve the surface roughness which eventually lead to a better permeate flux performance in the removal of nickel (II) nitrate by MD. In summary, the findings from this study show the potential of PI membrane with PDMS coating in the wastewater treatment industry by MD technique.* **Contribution:** *As the demand for purity water increase over the years, this research will contribute to fulfill the society demand. Research and development of membrane technology must be carried out persistently as water are necessity to people daily life.*

Keywords: Wastewater Rejection; Membrane Technology

Abstract ID: **AIMC-2017-STE-864**

SURFACE WATER QUALITY IN PALM OIL PLANTATION

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Abstract

Introduction: *River water that directly connected to palm oil plantation activity has been analysed for concentration of Al, Pb and Cu and the physico-chemical parameters. The river received various outfalls of domestic effluents especially from palm oil plantation.* **Methodology:** *The samples were collected from 12*

sampling points along the river in which located in Jerantut District in Pahang, Malaysia. The metal concentration was determined using Inductively Coupled Plasma Optical Emission Spectroscopy (ICP – OES) in triplicates after gone through chemical treatment. Six physico-chemical parameters namely temperature, salinity, dissolved oxygen (DO), pH, total dissolved solid (TDS) and specific conductance (SpC) were measured in-situ. **Findings:** *The average water temperature was recorded as 28.01°C, 0.02 ppt for salinity, 0.13 mg L-1 for DO, 7.90 for pH, 0.031 mg L-1 for TDS and 51.8 µS cm-1 for conductivity. The mean concentrations of the studied metals were 1.91 mg L-1 for Al, 0.02 mg L-1 for Pb and 0.01 mg L-1 for Cu which below the permissible value limit.* **Contribution:** *The contamination factor, CF for all elements indicates uncontaminated level at all sampling points. The study was found that the river was not contaminated with the studied pollutants and the plantation activities do not seriously affected the quality of the river.*

Keywords: CF, heavy metal, palm oil plantation, river water.

Abstract ID: **AIMC-2017-STE-866**

COMPARISON OF HYDROPHILICITY BEHAVIOUR OF POLYLACTIC ACID/PECTIN SCAFFOLD BETWEEN FREEZE EXTRACTION AND SURFACE ENTRAPMENT METHOD

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Abstract

Introduction: *In tissue engineering, scaffold act as a framework for cell and tissue development which make the selection of the materials and methods are important. Hydrophilicity properties of scaffold is important criteria in order to ensure cell and tissue able to proliferate and growth which are determined by water contact angle and swelling behavior analysis. This study aim to compare the effect of different method on hydrophilicity properties of polylactic acid (PLA)/pectin scaffold between freeze extraction method and surface entrapment method* **Methodology:** *Material*

Polylactic acid (PLA) (Mw~60,000) is a thermoplastic polymer will incorporated with pectin (apple based) using two different methods, freeze extraction method and entrapment method.

Fabrication of PLA/pectin Scaffold using Freeze Extraction Method

PLA was dissolved in 1,4-dioxane overnight and mixed with pectin until clear polymer solution obtained. Then, the polymer solution was cooled at -20oC and immersed in pre-cooled ethanol to extract out 1.4dioxane which resulting porous scaffold.

Fabrication of PLA/Pectin Scaffold using Surface Entrapment Method.

The neat PLA scaffold was prepared using freeze extraction method. The pectin was dissolved in 70% distilled water and 30% acetone for 24 hours. The neat PLA scaffold was soaked into dissolve pectin solution for 20 seconds. This will resulting open channel at the scaffold that allowed pectin to enter the pore. Later, the scaffold was soaked into sodium hydroxide (NaOH) to close the open channel.

Characterization

The scaffolds were prepared in 1cm x 1cm dimension for water contact angle analysis using contact angle goniometer (VCA Optima system, AST Products USA). Swelling analysis was performed for 48 hours by placing the sample in a phosphate buffered saline (PBS) at ph 7.4.

Findings: *Finding showed that incorporation of pectin has improved hydrophilicity characteristic of neat PLA scaffold. The neat PLA scaffold have highest water contact angle around 76.8o and poor swelling percentage. Addition of pectin at the scaffold formulation improved the swelling properties as well as reduces the angle dropped on the surface of scaffolds which indicate hydrophilicity condition. PLA/pectin scaffold prepared by freeze extraction method have better hydrophilicity compared to scaffold that prepared by entrapment method with 86% degree of swelling and 39.8o water contact angle. The incorporation during formulation of PLA/pectin in the freeze extraction method lead to the ionic interaction between PLA and pectin which suspected contributed to well interconnected porous formed compared to entrapment method. Moreover, the entrapment method lead to formation of large pore size on the surface due to acid-base action from acetone and NaOH which reduce water holding capacity. Hydrophilic condition is important because it will allow the cell to attach at the scaffold but also permit migration between the pore and grow in three-dimensional pattern. Besides, it will allow better nutrient supply and waste removal which create better condition for cell growth.* **Contribution:** *The results of the above studies suggest the best method in fabricating PLA/pectin scaffold to improve hydrophilicity properties is using freeze extraction method. Currently, these scaffold formulation using this methods are not reported especially for tissue engineering purpose. In spite of that, future works need to be*

conducted especially to know the capability of scaffold for in-vitro and in-vivo transplantation which reassure the potential of the scaffold for tissue engineering application.

Keywords: Polylactic acid, Pectin, Tissue Engineering, Hydrophilicity, Polysaccharide, Scaffold

Abstract ID: **AIMC-2017-STE-872**

DEVELOPMENT OF BIOSORBENT FROM SURFACTANT MODIFIED SALACCA SKIN WASTE FOR CU ADSORPTION

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Abstract

Introduction: *Research on preparation of biosorbent from Salacca skin waste and its application for copper adsorbent has been investigated. Research aimed to obtain low cost bisorbent for enviromental application.* **Methodology:** *The biosorbent was prepared by grinding and surfactant modification of Salacca skin powder. The effect of surfactant was studied by varying sodium dodecyl sulphate (SDS) content at the percentage of 0.25, 0.5 and 1 %. The obtained solid was analyzed by using FTIR and the obtained liquid was analyzed by using AAS. The biosorbents were used in the copper adsorption and study on effect of surfactant content in adsorptivity.* **Findings:** *The results showed biosorbents have higher adsorptivity for copper reduction from solution. The prepared biosorbent can be developed for low cost and reusable biosorbent for other metals and organic compounds.* **Contribution:** *The reasearch gives alternative for low cost adsorbent in enviromental application*

Keywords: Biosorbent, Adsorption, Surfactant, Metal Adsorption

Abstract ID: **AIMC-2017-STE-873**

SEDIMENT TRANSPORT AND CHARACTERISTICS IN PERAK RIVER AND KURAU RIVER

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Abstract

Introduction: *The particle size is the most important parameter to deal with sediment transport processes. This parameter is important to determine the class of sediment transport in river. The sediment size distribution plays important parameter to determine the sediment load of any particular river. The sediment size distribution is different depend on many factor such as river discharge and river geology. The information is essential especially for design purposes such as design stable channel, hydraulic structural and water intake. Clay and silt are mostly occurring as suspended load. Meanwhile, sand and gravel are commonly occurs as bed load.* **Methodology:** *For this study, sediment samples were collected using a Helley Smith sediment sampler for bed load sampling. Suspended load samples were collected manually by bottle. Van Veen sampler was used to obtain bed material. Sampling in wide rivers were carried out by a boat. Sampling method and technique adopted the techniques described in the Guidelines for Field Data Collection and Analysis of River Sediment by Ab. Ghani et al. (2003). Sediment analysis was carried out after the sediment loads were obtained from rivers. Three analysis were conducted for sediment analysis which are sieve analysis (particle size distribution) for bed material and bed load, filtration method for suspended load.* **Findings:** *The sediment load of Perak river is slightly high which is ranging of 17.025 kg/s to 80.273 kg/s. The highest sediment load of Kurau River is 0.878 kg/s which was recorded at Line 2 on August 2015. For Perak river, the average of median size is 0.93 which is can categorize as coarse sand range. The uniformity of bed load was 3.09 which slightly fit into uniform range. However, the gradation of material was quite high which is can class as poorly graded sand. Then, the ranges of bed material size were in the range of 0.78 mm to 2.94 mm which can be categorized as coarse sand and slightly fine gravel respectively. However, the average of median size was 1.349 mm which fit into very coarse sand. For Kurau River, median size of bed loads found in Kurau River were in the range of 0.72 and 1.27 mm. The result showed this river was carried mostly very coarse sand. The overall average of sediment uniformity was 3.28. The uniformity of this bed material can classified as non-uniform sediment mixture.* **Contribution:** *Based on presented results previously, the bed loads of two rivers are mostly nearly uniform mixture and Sungai Perak shown the highest value of uniformity value of the bed load. The results indicate that the Malaysia rivers are mostly carried the nearly uniform bed load as founded by Sinnakaudan et al. (2006).*

Keywords: Sediment Transport, Non-cohesive sediment, Tropical rivers, Sediment Distribution

Abstract ID: **AIMC-2017-STE-877**

DESIGNING CHAM FONT UNICODE STANDARD AND CHAM KEYBOARD

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Abstract

Introduction: *The Cham people have used Cham script, derived from the Sanskrit alphabet (Devanagari) in India since the 2nd century on Vo Canh stone stele [1]. While the Cham language appeared on stone stele in Tra Kieu in the 4th century [2,3]. The crucial problem is that the Cham Textbook Compiling Committee (CTCC) has not yet supported to preserve the traditional Cham script (TCS) [4]. Most Cham Cham people strongly desire to conserve the TCS [3,5].*

Using Cham font to typing Cham scrip on the computer is needed. Thus, we offer solutions to design Unicode standard Cham font and Cham keyboard application include four options: Cham Thrah, Cham Latin, English and Vietnamese. This is very useful in using the Cham font to learn and teach Cham language as well as preserve the heritage of Cham script.

Methodology: *2). Research Methodology*

This research was implemented using a quantitative approach and the application was developed using ADDIE model.

2.1. Unicode Standard Cham Font

In order to design Cham font for Unicode, first we based on the Unicode standard version 9.0, ranges AA00 - AA5F. Second, to design the typeface for new Cham font, we based on font Times New Roman and Arial.

2.1.1. Cham Font Analysis

The total numbers of code point in range AA00-AA5F of Unicode standard for Cham font are 83 letters, within this range, the remaining 13 code points have no character assigned.However,the Cham final letter "wa matai" in the traditional Cham alphabet is missing.

2.1.2. CHAM FONTS DESIGN

Unicode standard for Cham font in range AA00-AA5F has a total of 83 letters. However, for convenience of typing Cham script, we design and add more 9 letters to the free space in range AA00-AA5F.

23.2. Cham Keyboard

In order to design the appropriate keyboard, we continue to develop the keyboard designed for Windows and Macintosh.

2.2.3). Cham Keyboard Application

Application include four functions: Cham Thrah, Cham Latin, English and Vietnamese. In order to type Vietnamese and English, Chamkey supports the Telex and VNI for typing as UniKey. To type Cham Latin, we embed the EFEO Cham Latin to Cham script conversion application.

Findings: *3. EXPERIMENTS*

3.1. Acceptant Level of Cham Font

This section will address the acceptance level for Cham font. Each question was answered on a scale from 1 to 5 to measure respondents' acceptance.

the results showed that all 54 respondents (100%) either agreed or strongly agreed with every statement. Specifically, from the six items asked, item 6 showed the highest number of respondents choosing the answer 'strongly agree', at 36 (66.67%). These results tell us that the respondents agreed that the font size is similar to Times New Roman.

3.2. Acceptant Level of Cham Keyboard

This section will address the level of acceptance of the Cham keyboard application. Each question was answered on a scale from 1 to 5.

The results showed that all 54 respondents either agreed or strongly agreed. Specifically, item 4 showed the highest value with 47 respondents (87.04%) strongly agree and 7 respondents (12.96%) agree.

4. Results

Firstly, fifty four participants to evaluate the typefaces of Cham font. Based on results, the two Cham fonts get high evaluation with the achieved: EFEO Cam Times (99.12%), EFEO Cam Arial (99.64%).

Secondly, sixteen experts to evaluate the Cham keyboard application. The threshold and the experts' percentage consensus ($d \leq 0.2$) for all six items was 100%, more than the required value of 75%. The value of d for the total construct is 0.08 (required $d \leq 0.2$). Thus, it can be concluded that all sixteen experts have come to a consensus that the Cham keyboard is acceptable.

Contribution: *We have presented a new approach in analysis, design and development for Cham font in Unicode standard range AA00-AA5F and Cham keyboard application with in four options as Cham Thrah,*

Cham Latin, English and Vietnamese. The products were developed using the ADDIE model. In evaluation the acceptant level of Cham font and Cham keyboard, the result shows that all respondents are accepted. Typeface of EFEO Cam Times and EFEO Cam Arial was designed exactly for all alphanumeric Cham letters. In addition, Cham keyboard application was evaluated using Fuzzy Delphi get high consensus by experts.
Keywords: Cham font, Cham script, Cham keyboard, Cham font conversion

Abstract ID: **AIMC-2017-STE-878**

IMPROVEMENT CAURSEWARE AUTHERING TOOLS FOR PHIL230 SYMBOLIC LOGIC STUDENTS AT BUC

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Abstract

Introduction: *Computer aided learning (CAL) or computer assisted learning is known to be an interactive tool, and a practice of utilising the computer for teaching as well as learning. Amid several challenges, students, while following CAL, face issues like the over-mechanical nature of learning, dearth of infrastructure and absence of robust CAL packages. This essay talks about CAE, CAD, and CAL. Computer aided design (CAD) is the usage of information technology (IT) in the design activity. A CAD system comprises specialized software (S/W), IT hardware (H/W), and peripherals; these are extremely specialized in some applications. Advantages are greater array of design ideas, enhanced precision, output repeatability and quality, ease of alteration, and lower wattage. Its applications include surface modelling, solid modelling, assembly, drafting & detailing, and reverse engineering .Computer aided learning (CAL) aides in making the textbook content, interactive, simpler, and more interesting.Research indicated that few of the contents are tough to understand. To aid teachers in interacting with students in an improved manner , CAL can acclimate to the learners' aptitudes and preferences, offering personalized as well as private learning. It also offers authentic communication which encourages students to utilize language outside the classroom.* **Methodology:** *The ADDIE model is the generic process that is traditionally utilised by training developers and instructional designers. The five project phases (Analysis, Design, Development, Implementation and Evaluation) serve as a flexible and dynamic guideline for creating effective support tools for training and performance. ADDIE is an Instructional Systems Design (ISD) model. An improvement to this model which is commonly accepted is the employment of rapid prototyping. This means receiving formative or continual feedback alongside the creation of instructional materials. Each step in the ADDIE model generates an outcome that feeds into the next steps. The ADDIE (Analysis, Design, Development, Implementation and Evaluation) model* **Findings:** *An interactive suffix learning tool has been effectively formulated on the basis of the ADDIE model. The assessment output indicated favourable responses from the students for the development of the tool. Furthermore, the developed tool offered improved idea of the concepts and models pertaining to suffixes. The learning outcome indicated that the students were able to comprehend the concept of suffixes better . The questionnaire scores prior to and after employing the authoring tool showed that the pupils were able to score higher marks on learning through the tool, which means there was an increase in understanding. Hence, it can be said that this research accomplished its goal of helping the students better understand the concept of suffixes, and the authoring tool can be designed as a supplementary material in the process of learning in diverse paths.* **Contribution:** *Developing a user-friendly SW to course (ENGL001) provides the ability to:*

1 - Help students who sometimes find it difficult to know how to add a suffix.

2 - Acquire academic vocabulary with the use of suffixes through this very efficient tool.

Keywords: Multimedia , CAL , Authoring Tools

Abstract ID: **AIMC-2017-STE-882**

INVESTIGATING DELAYS IN LIBYAN ROAD CONSTRUCTION PROJECTS USING STRUCTURAL EQUATION MODELLING (SEM)

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Abstract

Introduction: *Transportation infrastructure, specifically road infrastructure, is the backbone of economic and social development of many countries. Successful road infrastructure projects are delivered with reduced cost,*

on time. Time delays are a worldwide phenomenon to the detriment of economic development and taxpayers. Most government initiated infrastructure projects are delayed and get finished years after their scheduled completion. Delays have always been a major concern in road construction projects throughout the world, with significant financial and social impacts for stakeholders. Libya faces all these issues and has also experienced, with economic development, an expansion in highway construction in the country. **Methodology:** *Factors contributing to delays in road construction projects in Libya were identified and ranked through a questionnaire survey distributed to owners, consultants, and contractors involved in road construction projects in Tripoli city and areas of western Libya. A total of 256 completed questionnaire forms were received and analysed. An SEM Path Model of delay factors of road construction was formulated and evaluated using Structural Equation Modeling (SEM) 21 software. Thirty-nine factors classified into eight groups constituted the independent variables, while delay in road projects was the single dependent variable.* **Findings:** *Evaluation of the model's measurement and structural components confirmed that they met specified threshold values. For the structural model, it was found that of the eight groups, the contractor and project group had the greatest impact on road construction delay, with path coefficient β-values of 0.332 and 0.221 respectively, while external factors had the least impact with β-value of 0.100. The R2 value of the model is 0.530, indicating that the developed model substantially explains construction delay. This rigorous multivariate analysis has identified several causative factors that contribute to delay in road construction projects in Tripoli city and areas of western Libya.* **Contribution:** *The findings will help all parties involved in road construction projects to achieve better control over construction delays, and will provide support for practitioners to incorporate risk analysis for potential construction delay in future road projects, as well as for researchers in the field of road construction. And provides some insights and deepening the owners, contractors and consultants understanding of the factors causing project cost overruns in developing countries. The uptake of project management practices could contribute to the reduction of project overruns within the Libyan road construction sector.*

Keywords: Delay; Road construction projects; Libya; SEM

Abstract ID: **AIMC-2017-STE-887**

PERCEPTIONS PASSENGERS ON SERVICE QUALITY: PUBLIC TRANSPORT IN KUALA LUMPUR

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Abstract

Introduction: *Service quality is a measure of the level of service provided against the expectations of customers. This research examines the behaviour of passengers using public transport with respect to the service quality of public transit.* **Methodology:** *A questionnaire was answered by 412 passengers at one of the main railway stations, Kuala Lumpur Sentral. Empirical data were extracted based on the information collected from the survey. Structural equation modelling was used to examine the measurement model.* **Findings:** *The findings of the study reveal that public transport passengers are significantly influenced by service attributes, for example, vehicle safety, cleanliness of the facility, and management of complaints. These findings identify the important service attributes that public transportation services in Kuala Lumpur need to prioritise.* **Contribution:** *This study will help ascertain whether service quality meets or exceeds the expectations of the passengers.*

Keywords: Kuala Lumpur, Service Quality, Public Transport and structural equation modelling

Abstract ID: **AIMC-2017-STE-897**

BIOACTIVE YTTRIA STABILISED ZIRCONIA (YSZ) FOR ORTHOPAEDIC APPLICATION

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Abstract

Introduction: *The bioinert nature of Yttria Stabilised Zirconia (YSZ) limits the biocompatibility of its surface. Surface functionalisation by polydpamine is considered to be an effective strategy to improve biocompatibility. We report the effects of polydopamine coating temperature on the attachment of osteoblast cells on the coated*

YSZ discs. **Methodology:** *The YSZ discs were immersed in dopamine solution at either 25 °C or 50 °C. The samples were then seeded with human osteoblast cells and incubated for 7 d.* **Findings:** *FTIR-ATR analysis showed that as the coating temperature increased from 25 to 50 °C, the intensity of functional groups corresponding to polydopamine increased. The initial cell spreading ability was enhanced by coating the YSZ with polydopamine at 50 °C. After 7 days of culturing, more osteoblast cells were attracted towards the functionalized YSZ surface.* **Contribution:** *These results suggest that the bioinert nature of YSZ can be surpassed by coating with polydopamine at elevated temperature, hence improving the biocompatibility.*
Keywords: Polydopamine Films; Surfaces; Biomedical application; Osteoblast cells; Yttria Stabilised Zirconia

Abstract ID: **AIMC-2017-STE-898**

INFLUENCE HOUSEHOLDS SOCIO-DEMOGRAPHIC ON KNOWLEDGE FACTORS IN SOLID WASTE MINIMISATION

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Abstract

Introduction: *Solid waste minimisation as an approach to solid waste management helps in the separation of wastes from the source. Influence households socio-demographic on knowledge factors in solid waste minimization are believed to achieving sustainable solid waste management.* **Methodology:** *This study investigates the influence of household attributes on waste minimization knowledge in Shah Alam City, Malaysia. Through a household survey, 300 respondents were randomly chosen from the three housing types (terrace, semi –detached, bungalow) in the study area. Thus, the study adopted a one way ANOVA to determine statistically the significant differences between household socio-demographic and knowledge factors towards solid waste minimisation.* **Findings:** *Findings from the study revealed that knowledge on solid waste minimisation has statistically significant associations with 5 socio-demographic characteristics, namely age [F(4, 295) = 2.36, p = 0.05]; race [F(2, 297) = 2.84, p = 0.05]; marital status [F(2, 297) = 2.83, p = 0.05]; monthly income [F(3, 296) = 2.86, p = 0.037] and home ownership [F(2, 297) = 5.01, p = 0.007].* **Contribution:** *It is anticipated that the results of this analysis will facilitate the design and implementation of policies (by government/local authority) for sustainable solid waste minimisation.*

Keywords: Sustainable solid waste management; solid waste minimization; household socio-demographic; significant.

Abstract ID: **AIMC-2017-STE-899**

A CRYPTANALYSIS OF PHOTON FAMILY OF LIGHTWEIGHT HASH FUNCTIONS

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Abstract

Introduction: *PHOTON has been considered one of the best among the family of lightweight hash functions. This is due to the lower gate equivalence in the structure which almost reaches the theoretical optimum and suitable for implementation for on-tag application. In this paper, we conduct a mathematical cryptanalysis of PHOTON* **Methodology:** *To realize our goal, we apply an interpolation attack in order to recover the message part of PHOTON. Primarily, we focus on the first to third rounds of PHOTON-80/16/16.* **Findings:** *We show that we can derive the equation of 2 different message of PHOTON for each element in the structure for the same hash value.* **Contribution:** *The interpolation attack against PHOTON family of lightweight hash functions are a new approach in its cryptanalysis, which leads to improve its security by considering its modified versions.*

Keywords: Hash functions, PHOTON, cryptanalysis, interpolation attack

Abstract ID: **AIMC-2017-STE-902**

THE EFFECT OF AERATION SYSTEM ON THE ELECTROLYSIS DEGRADATION OF METHYLENE BLUE USING CARBON ELECTRODES

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Abstract

Introduction: *Electrochemical oxidation of methylene blue using carbon composite has been done. Methylene blue is a dye which is most commonly used in the textile industry. In the coloring process, methylene blue only used about 5%, while the remaining 95% will be disposed of as waste. This compound is quite stable and non-degradable, hence it is very difficult to be degraded in nature and harmful to the environment.* **Methodology:** *The aim of this study is to degrade methylene blue using electrochemical oxidation with the addition of sodium chloride as electrolyte and using carbon electrode. In this study, we use carbon composite in the electrolysis process. The advantages of carbon electrodes are low cost, wide potential window, inert and electrocatalysis activity for a variety of redox reaction. The study was conducted to determine the optimum result degradation of methylene blue by electrolysis method in the variation of the current strength, the amount of time required, the volume of hydrogen peroxide was added and the aeration system in the electrolysis process.* **Findings:** *The analysis showed that the electrolysis process with the aeration system which affects the degradation of methylene blue with a very short time. With the aeration system in the electrolysis process takes a shorter time electrolysis process is 10 minutes.* **Contribution:** *As a conclusions, this method only using simple equipment, easy operation and friendly for environmental.*

Keywords: Methylene blue, electrolysis, aeration system, carbon

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ASSESSING EFFECT OF WEAK AND STRONG ACID AS ELECTROLYTE IN REMOVAL OF CAESIUM BY SOIL ELECTROKINETIC REMEDIATION

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Abstract

Introduction: *World energy demand was increased, make nuclear power as one of the suppliers of energy. The main environmental problems in nuclear power is radioactive waste. In the aftermath of tsunami on 2011, the catastrophic failure of the Fukushima I Nuclear Power Plant reactor, release amount of radioactive caesium (Cs) into the environment. The purpose of this study was to evaluate the electrokinetic process applications on remediation soil Kotagede by cesium contamination with weak and stong acid as electrolytes. Result obtained from those studies will be used to predict the applicability of electrokinetic technology at the removal of Cs from soil.* **Methodology:** *Soil Preparation*

Soil sample on four (A, B, C, D) different locations at Kotagede, Yogyakarta, Indonesia which has similar characteristic with Fukushima soil, contaminated caesium (100 mg CsCl/Kg soil) in five cycles of saturation process using de-ionized water. Physicochemical of samples before contaminated were characterized by XRD and soil component analysis was measured. Electrokinetic Experiments

Contaminated soil sampel weighed 200g, added 40 mL of water in soil chamber (dimension i.e. 150mm(l) x 20mm(w) x 35mm(h)) sectioned into five parts. Weak or strong acid 1.0 M in electrolyte chamber with filter paper was inserted between soil and electrolyte chamber. Graphite (i.e. 120mm(l) x 3mm(d)) for the electrode connected with constant voltage of 1 V/cm provided by DC power supply unit applied for 7d. The electric currents were monitored by using data logger. Nitric acid 10 mL used to extracted caesium from 0.5 sample for 24h. The soil pH was measured in 1:20 (mass/volume) water suspensions, after equilibration for 30 mins. Caesium concentration in specimens was determined by measuring the metal concentration in the supernatant liquid using flame- AAS at λ 852.1 nm.

Fig 1. Electrokinetic Set-up Appartus **Findings:** *The pH changes of Cs contaminated soils after electrokinetic remediation processes were show in Table 1.*

Table 1. Effect of electrokinetic on pH changes

No.	*Elektrolyte*	*Soil*	*Initial pH*		*Region pH*				
					1	*2*	*3*	*4*	*5*
1.	*CH3COOH*	*A*	*7.70*	*3.10*	*4.30*	*5.90*	*6.40*	*6.80*	
		B	*7.80*	*5.91*	*5.95*	*6.40*	*6.45*	*6.66*	
		C	*6.90*	*4.20*	*5.30*	*6.20*	*7.30*	*7.50*	
		D	*7.40*	*4.30*	*5.20*	*6.50*	*7.10*	*7.50*	
2.	*HNO3*	*A*	*7.70*	*4.00*	*4.10*	*4.20*	*4.70*	*9.30*	
		B	*7.80*	*3.35*	*4.74*	*5.87*	*6.22*	*8.77*	
		C	*6.90*	*3.80*	*3.90*	*4.80*	*7.40*	*8.80*	
		D	*7.40*	*4.38*	*4.89*	*5.26*	*5.83*	*8.77*	

Electrikinetic seemed an effective technique to lower the pH of soil. The H+ ions generated by the electrolysis of water caused soil acidification in the vicinity of the anode region. They were transported towards the cathode through electromigration and electroosmosis, while OH− generated from the cathode was transported to the anode.

Result of the removal as percentages were shown in Figure 2. The removal percentages of Cs by HNO3 (4.5-37%) were significanly higher than CH3COOH (19.4-27.6%).

Contribution: *This study is assesing effect of acetic acid and nitric acid as electrolyte in removal of caesium by soil electrokinetic remediation*

Keywords: electrolyte, caesium, soil, electrokinetic, remediation

Abstract ID: **AIMC-2017-STE-906**

CONTRIBUTIONS OF STAKEHOLDERS, CONSTRUCTION WORKERS AND CONSTRUCTION SITE ENVIRONMENT TO THE OCCURRENCE OF ACCIDENTS IN NIGERIAN CONSTRUCTION SITES. A LITERATURE REVIEW

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Abstract

Introduction: *The construction industry serves as the core of social and economic growth in all countries globally (Agwu & Olele, 2014; Hosseinian & Torghabeh, 2012). However, Construction is predominantly characterised with different kinds of accident, as well as numerous hazards and dangers having the capability of resulting to hundreds of injuries and deaths (Tahir et al, 2008). The types of activities performed on site and the nature of the tasks carried out on the site make the profession a hazardous one (Hashem et al, 2012). At any time during the construction period, accidents that are not unpredictable do take place which has the potential of putting construction workers' lives at risk (Mohd Ashri, 2010), which warrants researching the various factors or features contributing to these site accidents.* **Methodology:** *This is a review paper. Having the main goal of this research in focus, a reasonable number of scholarly articles were reviewed to identify more than fifteen different types of accident occurring on building construction sites. However, three hundred and ninety three (393) questionnaires were administered to construction experts, through physical contact and on-line, in order to establish the types and frequencies of accident taking place in the Nigerian construction sites. The respondents were to indicate their opinions based on their experiences in the construction industry on a 5-point Likert scale. Additionally, through the extensive review of construction related articles, the various factors contributing to the occurrence of accident were identified and categorised as Stakeholders-related, Construction Workers-related and Construction Site Environment-related accidents.* **Findings:** *As it is essential to establish the types of building construction accidents taking place as a precursor to the factors contributing to the accidents, in achieving this, three hundred and ten (310) questionnaires were correctly answered and found useful for this research. The useable questionnaires represent 78.88% of the administered questionnaires, which was adequate for the establishment of types and frequencies of accidents on building sites in Nigeria. The survey reveals that; contact with equipment and working tools, machine-related, slip and trip, and fall-related accidents are the most common accidents on the construction site. Through comprehensive literature review, it was found out that stakeholders, site workers, as well as the construction site environment contribute immensely to the occurrence of accidents on construction sites* **Contribution:** *Few studies were carried out combining the accident types, frequencies and contributing factors together. A comprehensive data on accident occurrence is unavailable in Nigeria, as accidents on construction sites are not published unlike other countries. It is difficult for any researcher to access reasonable statistical data of construction site accidents in Nigeria. With the establishment of the types of accident occurring in the Nigerian building construction through survey, an avenue is created for the development of a model (s) that could prevent the occurrence of these accidents. Such model development will be next stage of this research. Moreover, there is dearth of research work on the systematic grouping of accident contributing factors, as being carried out by the researchers, which has proved the novelty of this research.*

Keywords: Construction Stakeholders, Construction Accident, Construction Workers, Accident Prevention.

Abstract ID: **AIMC-2017-STE-913**

DETERMINANT FACTORS COMMUNITY BEHAVIOUR IN RESIDENTIAL NEIGHBOURHOODS

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Abstract

Introduction: *Community behaviour affects interaction with social values and individual attitudes, mobility and transport patterns are linked in complex ways with significant social trends. Determinant factors community behaviour elements are believed to have an effect towards the reduction of sustainable mobility in residential neighbourhoods. The research focuses on the intentions of community towards sustainable mobility.* **Methodology:** *The case of is in Section 7, Shah Alam, Selangor. The study is conducted through face to face survey. One hundred and thirty five samples were retrieved from the low cost, medium and high cost housing. Fifteen community behaviour items were determined.* **Findings:** *The main factors that contribute in successful relationship between the community behaviour factors towards sustainable mobility are neighbourhood safety of crime (NSoC), neighbourhood safety of traffic (NSoT) and neighbourhood street connectivity (NSC). Intention involved in this study conducted through a survey using a questionnaire. The reliability of three constructs were acceptable. done using Cronbach's Alpha. Cronbach's Alpha coefficient level showed all the factors exceeding 0.70 (NSoC=0.89, NSoT=0.84, NSC=0.91). These results explain all items in NSoC, NSoT and NSC construct have good internal consistency, indicating that all dimensions have a good reliability value.* **Contribution:** *Determinant factors of community behaviour has been discovered to reduce the negative effects of congestion. The contribution is not only to the environment, but also on the economy and the living community of neighbourhood residential.*

Keywords: Sustainable mobility; community behaviour; neighbourhood

Abstract ID: **AIMC-2017-STE-915**

DESIGN GUIDELINES OF MOBILE LEARNING OF ALGORITHM VISUALIZATION

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Abstract

Introduction: *This paper entails an ongoing study about the design guidelines of algorithm visualization (AV) on mobile platform, helping students learning data structures and algorithm (DSA) subject effectively. Our previous review indicated that design guidelines of AV on mobile platform are still few. Additionally, researchers added to comprehensively discuss about interactivity learning and UI design in order to achieve effective-learning of AV system. Therefore, our guidelines elaborate these two aspects. The interactivity is the active learning strategy features based on learning experiences, whereby UI design describes the arrangement of AV features in mobile environment.* **Methodology:** *This study utilizes Design Science Research Methodology (DSRM) (Segura, 2008; Peffers, 2007) as research method. This methodology consists of stages and activities, which can be interactively performed to accomplish objectives. The Figure 3 exhibits the stages of DSRM. Meanwhile, this study is only focused on designing activity (until the third stage), while the next stages will be conducted in the future. The extraction problems have been discussed in introduction and yield with the objective of this study, which is developing design guidelines of AVOMP.*

To accomplish the aim of study, the authors perform content and comparative analysis towards the recommendations from AV studies, and other related studies as well as theories, such as design guidelines on mobile development, UI design principle, gestalt theory, active learning theory, multimedia theory, engagement taxonomies, the empirical studies of previous AV studies, multimedia learning theory, cognitive load theory, etc.

Findings: *The result of our study are guidelines of algorithm visualization on mobile platform (AVOMP) that are comprehensively divided into two aspects, as follows:*

1. UI Design Aspects

i) Do not use horizontal scrolling
ii) Choose appropriate color (for clarity and readability)
iii) The AV and its correspondent pseudo code should be placed nearby each other.
iv) Display dynamic explanation (textual explanation)
v) Strengthen with aural explanation in AV
vi) Choose the most important information or content:
vii) Create visual hierarchy on AV elements

viii) Choose landscape orientation
ix) Text size and visualization should be responsive.
4.2 Interactivity Aspect
i) Allow in customization of environment:
ii) Support database to store points:
iii) Allow student to learn by watching AV (Viewing level).
iv) Use structural view in AV
v) Provide prediction activity (responding level)
vi) Allow custom input (changing level)
vii) Provide exercises and feedback (constructing level)
viii) Present AV to other students (Presenting level)

Contribution: *These guidelines are useful for AV designer and lectures to be alert to what things should do and don't in developing effective mobile learning circumstances on DSA subject. These guidelines are comprehensive in two aspects: Interactivity and UI design. Interactivity in our mobile learning is not merely active but also varied. The student will have various ways of interactivity experiences, which are able to make them engaging, and motivated. Equally important, UI design strategy is about how to arrange UI properties such as color, font, arrangement, sound, image, animation, etc, so that it will reduce cognitive over load.*

Keywords: algorithm visualization; AV design guidelines; DSA; mobile learning; data structure and algorithm

Abstract ID: **AIMC-2017-STE-916**

PRESSURE-INDUCED ELECTRONIC, ELASTIC AND OPTICAL PROPERTIES OF BI2TE3 BY DFT APPROACH

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Abstract

Introduction: *Bismuth Telluride (Bi2Te3) is an extensively studied semiconductor material widely used in thermoelectric devices.* **Methodology:** *In the present investigation, we have studied its electronic, elastic and optical properties by employing density functional theory (DFT) under various pressures. The ultrasoft pseudopotential method is used by employing the Generalized Gradient Approximation functional GGA-PBE proposed by Perdew et al. to calculate the exchange-correlation potential within the framework of DFT.* **Findings:** *The calculated band structure and density of states for Bi2Te3 indicate that as we increase the pressure band gap decreases and it shows metallic behavior at pressure 14 GPa. It has also been observed that lattice constants decrease with the increase of pressure. Furthermore, we also calculated the elastic properties of Bi2Te3 under pressure. The calculated band gap, band energies, bulk modulus are in good agreement with the theoretical results and are consistent with experimental results. Optical properties comprising of the absorption coefficient, energy loss function, dielectric function and refractive index are also investigated.* **Contribution:** *From the study of its optical properties, it is obvious that this material can be used in optoelectronic devices and solar cell.*

Keywords: Bi2Te3; Optical properties; absorption coefficient; energy loss function; optoelectronic devices

Abstract ID: **AIMC-2017-STE-919**

A COMPARISON OF STANDARD LED AND 385 NM UVA-LED FOR INACTIVATION OF PATHOGENS

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Abstract

Introduction: *Ultraviolet (UV) disinfection is an effective way of inactivating pathogens. Traditional disinfection methods use UV mercury based lamps which operate at 254 nm wavelength to produce germicidal light, which have been used widely in water disinfection. Unfortunately, these lamps need to be used with extreme cautions and have to be disposed of with care to prevent environmental hazard. Recently a new light source –Ultraviolet light emitting diodes (UV-LEDs) have been introduced capable of addressing the*

shortcomings of the existing methods. UV-LEDs have started replacing the mercury lamps for water disinfection, however, their application in the healthcare have not yet been studied extensively. **Methodology:** *In this paper, Nichia (NVSU233A-D1) UVA-LED with 385 nm wavelength and standard LED (F33CC4SB-3) with wavelength 460 nm have been compared to verify that UVA-LED possesses disinfection properties. Powdered nutrient agar, 25 grams, was mixed with 1 liter of distilled water to prepare growth medium. The medium was autoclaved and left at room temperatures to solidify after being poured into petri dishes. The petri dishes were stored in fridge at 4 ℃. In the first experiment setting, three cardboard boxes were taken for control, LED and UVLED samples respectively. LED and UVLED were placed on top of the box facing downwards whereas the control box was left as it is. A nutrient agar petri dish was placed in each of the box with lid removed. The distance between the petri dish and light source was 70 mm. LED and UVLED sample was exposed to their respective lights for 1 hour, whereas control sample was left untreated. Dishes were then incubated at 37 ℃ for 1 day to observe any bacteria growth. In the second setting, the procedures were repeated expect this time the petri dishes were swabbed with Escherichia coli bacteria using cotton bud. The following day the dishes were observed for bacteria colonies.* **Findings:** *The bacteria colony for each of the first experiment setting was observed and counted on the petri dish. In the first experiment setting, the control sample contained many grown bacteria colonies. It was estimated that the control sample had 10 colonies showing the environment, in which petri dishes were placed, had bacteria presence. However, for LED sample the total number of bacteria colonies found was 4 indicating that bacteria were able to grow under LED light. The situation with UVLED was completely different only 1 bacteria colony was found on the edge of the petri dish clearly indicating that UVLED was able to inactivate bacteria and was able to stop bacteria growth. The results were repeated and similar findings were observed. For second experiment setting E.Coli was swabbed on the nutrient agar with cotton bud. The whole petri dish was covered with overgrown bacteria colonies in control sample and similar was observed for LED indicating little to no disinfection at all. For UVLED the bacteria were able to grow on the edges of the dish but in the center where the light intensity was maximum few colonies were found demonstrating UVA-LED was able to disinfect.* **Contribution:** *This preliminary research study was conducted to compare the efficiency of UVA-LED for inactivation of pathogens. Standard LED was compared with UVA-LED and results found demonstrated that UVA-LED was able to disinfect efficiently. Majority of the research has been carried out on the use of mercury based UV lamps for disinfection and just recently the research focus has been diverted to the use of UV-LEDs for the said purpose. However, most of studies used UVC LEDs for disinfection and only few studies have been reported to have used UVA-LEDs for water disinfection. The use of UV for disinfection in healthcare has not been explored significantly. Current studies used UV lamps for disinfection of hospital rooms and only handful studies have used UVC-LEDs for medical equipment disinfection. The use of UVA-LEDs is relatively new area and have not been explored deeply. Therefore, the use of Nichia 385 nm UV-LED for propose application in the medical equipment disinfection could be considered a contribution in the existing literature. This preliminary research suggests that UVA-LEDs could be used in applications such as disinfection of water as well as in healthcare for inactivation of pathogens from hospital surfaces as well as medical devices.*

Keywords: Ultraviolet (UV) , Ultraviolet light emitting diodes (UV-LEDs), UVA-LED for inactivation of pathogens, mercury based UV lamps, UVC LEDs for disinfection

Abstract ID: **AIMC-2017-STE-920**

A NEW APPROACH TO MEASURE OUTDOOR QUADCOPTER SYSTEM LATENCY USING MOTION ANALYSIS SENSOR

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Abstract

Introduction: *This paper presents a new approach to measure quadcopter system latency by using ground camera-integrated motion analysis sensor combined with an on-board Global Positioning System (GPS) position sensor. This method is applied into outdoor quadcopter, which is challenging to obtain position accuracy that depends on the normal GPS sensor. Any motion control commands will not execute immediately as it has system latency. The quadcopter system latency is defined as the closed-loop time that is required to complete a single command cycle between the ground control station (or from sensors respond) and the quadcopter on-board system. As an example, a stop command latency is counted from the time stamped command was sent to the quadcopter stop at a certain position in the air. Several parameters, such as time (latency), distance, and acceleration can be obtained from this approach. The paper begins with an overview of quadcopter system*

latency, describes the latency terms that are used, and identifies the quadcopter latency contribution by two factors; internal and external factors. Then, a general methodology is presented to set up an experimental configuration for measuring latency parameters by using motion analysis sensor for the real quadcopter in an outdoor environment. Finally, a system latency calculation technique is proposed for 10x10 external factor variables (weight and speed) from this proposed measurement approach. The contribution of this study has provided a new approach to develop data-driven modelling, which is an important step in procedure to develop collision avoidance control system in the future. **Methodology:** *To measure quadcopter system latency for outdoor implementations by optimizing flight data log and vision-based motion analysis sensor. This method is divided into three stages; (1) air vehicle platform preparation, which includes electronic hardware integration and control scheme. (2) positioning detection system setup, and (3) experimental environment consideration.*
A quadcopter is designed based on Open-Source Project (OPS) for this experiment. Two basic parameters of quadcopter's motion, time (in seconds) and relative position (in latitude and longitude) have been analysed from the recorded onboard flight data messages and the analysis tool software of the motion analysis sensor. variable needed to consider in this experiment is the battery level consistency of our quadcopter platform along this experiment. The current wind speed, flying mode, and PID flight control parameters will also be taken into account. **Findings:** *A novel approach to develop a positioning system to measure quadcopter system latency implemented in outdoor environments. The latency measures in terms of time by using a combination of motion analysis sensor and GPS sensor. The proposed positioning system is quick and simple to configure, which is only necessary to define the desired image areas and the directions of movement that can trigger logical output. Time and position form both the flight data logger and motion sensor can be defined by using a simple transformation calculation. By implementing averaging parameters from two difference measurement systems, the positioning system accuracy can be improved. This system will benefit the research community as another option to the already developed method. For future work, a model of quadcopter system latency from the set of data obtained from this experiment will be developed.* **Contribution:** *This approach to measure quadcopter system latency by using ground camera-integrated motion analysis sensor combined with an on-board Global Positioning System (GPS) position sensor is a new. The embedded latency model in the quadcopter control system, which has limited processing power will provide advanced knowledge of obstacle to improve navigation in outdoor environment. This fundamental study will bring significant information, knowledge and understanding to the control engineers and researchers in optimizing the obstacle avoidance controller design. The implementation of the latency model in the controller will enhance the performance of the UAV in various potential industrial applications. This is considered a new research contribution in this area, taking into account the possibility of system latency contribution control techniques published in the literature.*

Keywords: Quadcopter; latency; motion analysis; outdoor; global positioning system

Abstract ID: **AIMC-2017-STE-921**

PREDICTION OF BOULDER PERCENTAGE IN OPENCAST BENCH BLASTING USING ARTIFICIAL NEURAL NETWORK AND THEIR LIMITATION

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Abstract

Introduction: *Limestone quarry in Thailand is selected for prediction of boulder blasting. Percentage of boulders generated is key performance of bench blasting in opencast bench blasting. The purpose of research is to predict pecentage of boulders generated.* **Methodology:** *This paper discusses the various artificial neural techniques used to analyze 285 blasting data set from limestone quarry in Thailand consisting of blast design data and percentage of boulders as blast performance criteria. In the beginning, the data sets have been divided into train and test sets using genetic algorithm to maintain their statistical properties. Five-fold cross validation technique has been used for the selection of the network configurations and the regularisation constant. Step by step analysis of data has been carried out. Four type of models are used for analysis namely- neural networks with whole set of features, neural networks with feature transformation using principal component analysis, neural networks with feature selection using information gain by decision trees and neural networks with feature selection using forward search. The results of various models are compared.* **Findings:** *Neural network with feature selection using forward search, produced the best results among the four models. However, the model has not been able to produce any significant improvement in the results. The analysis shows that there exists an insignificant correlation and mean square error values with the collected data samples from the blast results of the quarry. The methods to forcibly produce significant mean square error and correlation values, that shows*

apparently good results, have been shown. However, such models are not fit for generalizing the results. These models will not be able to predict the results for new and unnoticed inputs.

Contribution: *Percentage of boulders of bench blasting record is maintain at various quarries. Attempt has been done to find best model which can be fitted for prediction of percentage boulders. This is original research based on blasting data from Thailand quarry and the same has not been analysed anywhere. The research shows that additional data may be necessary from various other quarries or unnoticed inputs are necessary. There is limitation of ANN is part of research findings.*

Keywords: Artificial neural network (ANN), Whole set of features, Principal component analysis, Filtering decision trees, Wrapping forward search

Abstract ID: **AIMC-2017-STE-922**

SYNTHESIZING THE NANOCRYTALLINE COBALT-IRON COATING THROUGH THE ELECTRODEPOSITION PROCESS WITH DIFFERENT TIME DEPOSITION

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Abstract

Introduction: *Surface and coating technology is a technology that has been used in many engineering applications. The surface coating is used to modify and improve the surface properties of materials for protection in demanding contact conditions or an aggressive environment for enhanced functional performance. In other words, the surface coating is used to increase the lifetime of components exposed to corrosion conditions. High mechanical and corrosion protective properties of nanoparticle alloy coating are needed for the design and operation of devices, machine, and structural systems in extreme environments. Electrodeposition or electroplating has become the most popular method of surface coating in improving corrosion behavior and mechanical properties of material.* **Methodology:** *Nanocrystalline Co-Fe alloy coating has been synthesized on the mild steel washer using the electrodeposition method. The electrodeposition was conducted in an acidic environment with pH value ranging from 1 to 2 with a constant temperature of 50°C. The influence of deposition time (30, 60, 90 minutes) towards the characteristic and properties such as particle size, surface morphology, corrosion behavior, and microhardness were studied using the XRD, FESEM, salt spray test and microhardness.* **Findings:** *The various deposition time (30-90 minutes) had a huge effect on the surface morphology, corrosion behavior, and microhardness of the nanostructured CoFe alloy coating. It can be observed that all CoFe coatings coated on the mild steel washer produced dendritic structure. The time deposition has a significant influence on the microhardness of the CoFe coating. The coating obtained with the lowest time deposition which is 30 minutes showed the highest microhardness (236.84 HV) and smallest particles size (3.29μm). Meanwhile, the corrosion behavior of the CoFe nanoparticle was accelerated with the increment of the time deposition.* **Contribution:** *From this study, it can be concluded that the deposition time plays a major role in the synthesizing process of the nanocrystalline CoFe alloy coatings. It can be said that the most efficient time deposition in order to produce the CoFe nano coating with improved corrosion resistance and microhardness is 30 minutes. Therefore, it is important to synthesize the CoFe alloy coatings at a shorter time in order to obtain remarkable corrosion behavior and hardness.*

Keywords: Nanocrystalline CoFe,surface coating, electrodeposition, corrosion

Abstract ID: **AIMC-2017-STE-928**

HOSPITAL INFORMATION SYSTEMS (HIS) IN THE EXAMINATION ROOMS AND WARDS: DOCTORS PERCEIVED POSITIVE IMPACT ON QUALITY OF CARE AND PATIENT SAFETY

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Abstract

Introduction: *Hospital Information Systems (HIS) is developed to support healthcare organizations in providing efficient, quality, and safe healthcare services. The objective of this study is to identify and describe doctors' perspective about the impact of HIS use in the examination rooms and wards on quality of care and patient safety.* **Methodology:** *Semi-structured interviews were carried out with thirty one doctors from three Malaysian government hospitals. Thematic qualitative analysis was performed by using ATLAS.ti to deduce the relevant themes.* **Findings:** *HIS were commonly believed to improve quality of care and patient safety in terms of*

: (1) accessibility of patients' record, (2) efficient patient-care, (3) well-structured report viewing, (4) less missing patients' records, (5) legibility of patients' records, and (6) safety features. **Contribution:** *This study was concentrated on its impact to the quality of care and patient safety. The study revealed that most of the respondents perceived positive impact of HIS on quality of care and patient safety. HIS improves the quality of care due to the accessibility, efficient patient-care management, well-structured report viewing, and less missing patients' records. In addition, HIS contributes to the patients' safety as it offers safety features and legible patients' records.*

Keywords: Hospital Information Systems, safe use, error, patient safety, quality of care

Abstract ID: **AIMC-2017-STE-929**

DIELECTRIC BARRIER DISCHARGE BASED TEMPERATURE REGULATOR

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Abstract

Introduction: *Temperature regulator which can modify the temperature rapidly is always on demand. The feasibility of using plasma generated by mean of dielectric barrier discharge (DBD) for temperature regulation has been justified. The temperature characteristic of the plasma environment created significantly depends on the discharge voltage and the type of carrier gas. Thus, by manipulating the electrical voltage supplied to initiate the plasma process, the temperature of the plasma region can be controlled. Detail information on the temperature profile of the plasma region during the discharge process is required in order to optimally utilize the unique heating properties of plasma. The suitable discharge voltage range for each type of plasma carrier gas is also important to be determined in order to prevent the occurrence of plasma arc discharge which can melts the plasma reactor.* **Methodology:** *The experimental arrangement consists of 2 parts: plasma generation and temperature measurement. A typical design of DBD plasma reactor has been used. It consists of a 15cm borosilicate glass tube with thickness of 0.2cm as the plasma discharge tube. A layer of dielectric material is wrapped around the middle part of the glass tube. A piece of graphene sheet electrode is then put on top of the dielectric layer. Electrical power is supplied through a copper wire attached to the graphene sheet. Both ends of the glass tube are sealed with wooden stoppers. A steel rod electrode is inserted to the glass tube by piercing through the center of the wooden stoppers. The plasma carrier gas is injected to the glass tube through an aperture located near the left end (inlet) and ejected though another aperture near the right end (outlet). In this study, atmospheric air, nitrogen and helium are used as the carrier gas while the discharge voltage supplied to generate plasma is in the range of 3kv pk to 8kv pk.*

The thermometry part is done by employing fiber Bragg Gratings (FBGs) as temperature sensor. Their working principle are based on the Bragg's wavelength shifting which induced by the temperature change. There are in total 5 arrays of FBGs inserted to the plasma discharge tube to measure the local temperature. Optical signal is sent to the FBGs and their reflected spectrum are obtained using interrogator. The translation of the wavelength shift into temperature change is done by computer software. Thus, the real time measurement of temperature can be realized by such manner. **Findings:** *Local temperatures within the discharge tube during the plasma generation was measured. The temperature characteristic for plasma generated depends largely on the type of carrier gas used and the discharge voltage supplied. Besides that, each type of carrier gas has its own suitable operating voltage range before the occurrence of arc discharge. Within this operating voltage range, the plasma generated is non-thermal and they are in the condition of local thermodynamic equilibrium. Under such condition, electrical energy can be easily deposited to electrons than the other plasma species due to its small size.*

Plasma generated at higher discharge voltage could achieve higher temperature within the same period of time. This is because more energy could be transferred to the electrons.

Different location in the plasma discharge region had different temperature. The temperature difference between 2 successive point of distance about 3mm could be up to 30 degree Celsius.

When the discharge current was cut off, the temperatures at the same location drop sharply. The temperature of these locations were able to return to its original temperature after around 3 minutes. **Contribution:** *The advantage of using DBD to control temperature are:*

The temperature manipulation can be done easily by only varying the input voltage supplied to generate plasma. Plasma environment with desired temperature can be created easily. In some circumstance, It can also create conditions that favor some chemical reactions without involving hazardous chemicals.

The temperature variation is confined in the plasma region. This property enable sophisticated usages, for example: heating up only the desired locations of a sample.
The cooling process is rapid. When the plasma is 'switch off', the temperature drops to almost the initial temperature within a few minutes. This will shorten the waiting time for the next usage.

Keywords: Dielectric Barrier Discharge; Local temperature; Fiber Bragg Grating

Abstract ID: **AIMC-2017-STE-930**

WEB-BASED EXPERT SYSTEM FOR OPTIMIZING OF TRAFFIC ROAD IN DEVELOPING COUNTRIES

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Abstract

Introduction: *In recent decades, road traffic has increased from road users, including pedestrians, vehicles, street carriers, buses and other means of transport, either individually or in combination, using the general method for travel purposes. Traffic laws are laws governing traffic and vehicle regulation, while road rules are both natural legislation and norms that may be developed over time to facilitate the orderly and timely flow of traffic in developing countries. This system of experts (TRSys) proposes a process for road traffic experts and provides guidance and ice advertising on the selection of efficient and appropriate policies.* **Methodology:** *The development of road traffic to deal with traffic-related problems requires a lot of extensive experience and knowledge Acquisition that can be achieved from road traffic sources such as written sources (books, manuals, technical reports and standards) and opinions of traffic expert. A computer tool used to develop the expert system is Web-based expert system Microsoft (PHP. NET) is a powerful application that contains all the necessary facilities to build a Windows or Web-based applications such as expert systems quickly and efficiently and tools.* **Findings:** *(TRSys) is an online consultant system for the implementation of a road network in developing countries that can assist engineers, consultants, contractors, students of civil engineering, and decision makers in traffic safety. This expert system (TRSys) is useful for giving recommendations which are suitable to Road Network for Developing Countries.* **Contribution:** *Road Traffic System (TRSys) is a new system developed in this research to help junior engineers. Decision-makers and students to identify traffic problems in developing countries and accordingly apply appropriate solutions.*

Keywords: Traffic Road in Developing Countries, Expert System, Knowledge Acquisition

Abstract ID: **AIMC-2017-STE-935**

GEOMETRIC AND RADIOMETRIC CHARACTERISTICS OF TERRESTRIAL LASER SCANNING - A REVIEW

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Abstract

Introduction: *Terrestrial laser scanners (TLS) are in operation for more than two decades and has increasingly been used in last decade and half for a diverse type of applications like surface reconstruction, forestry, metrology, cultural heritage preservation, reverse engineering, mine volume estimation, topographic mapping, architecture, urban development, forensics, visualization and modeling artificial features etc. This technology has made a paradigm shift in surveying from measurement of sparsely dense individual points to fast acquisition of accurate and highly dense 3D point cloud.* **Methodology:** *This necessitates the understanding of all error contributing factors which may be geometric, radiometric or environmental. This understanding leads towards the modeling or quantification of errors resulting from different sources and subsequently the application of correction to the point cloud. The geometric errors resulting from either instrument manufacturing mechanism or application setup are the major error contributing source followed by the radiometric characteristics of the object and scanner.* **Findings:** *The technical specifications including different accuracies of laser scanners provided by the manufacturers are usually observed under laboratory conditions using specific surfaces. In actual, the natural scenery presents a large variety of surfaces to be scanned and the scanning geometry is also different as well as the presence of different environmental and atmospheric conditions. This necessitates the*

identification of errors resulting from different sources, their modeling or quantification for adjustment in final product. **Contribution:** *This paper summarizes the work done on modelling or quantification of geometric and radiometric characteristics of different error contributing factors in TLS. Major focus is on the geometric properties as compared to radiometric.*

Keywords: Laser Scanning, Geometric Characteristics, Radiometric Characteristics, Optimum Cloud, Scanning Geometry

Abstract ID: **AIMC-2017-STE-944**

GEOTECHNICAL CHARACTERISTICS OF COMPACTED LATERITE SOIL AT DIFFERENT FINES CONTENT FOR LANDFILLS

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Abstract

Introduction: *Municipal Solid Waste (MSW) in landfills are associated with many potential environmental risks. These risks are often long-term which include uncontrolled migration of landfill gas and leachate, generation of noise, visual nuisances, health hazards, landfill settlement, unpleasant odour, vegetation damage, surface and ground water pollution, landfill fire and global warming. In this research, the material adopted for the design of liner is laterite soil which is a residue of rock decay that is red in colour and has a high content of oxide of iron and hydroxide of aluminum and low proportion of silica.* **Methodology:** *Laterite soil samples are sieved into three different grading sizes (i.e. gravel, sand and fines). The gradation of laterite soil specimen or soil-grades mixtures investigated are:*

1. *Laterite soil (on its natural state with 30% fines).*
2. *Laterite soil mixtures of 40% fines, 40% sand and 20% gravel contents by weight of dry soil.*
3. *Laterite soil mixtures of 50% fines, 40% sand and 10% gravel contents by weight of dry soil.*

Laboratory tests were conducted to determine the index properties of the laterite soil in accordance with British Standards. The compactive energy level used is the British standard light. The tests involving moisture-density relationship, volumetric shrinkage, unconfined compressive strength (UCS), and hydraulic conductivity. Air dried soil samples passing through BS sieve with 4.75mm aperture at different soil-grades mixtures by weight of dry soil were used. Before each compaction, the soil was mixed at the desired moisture content and sealed in polythene bag and kept for a period of 48 hours to allow for uniform moisture distribution, at a temperature of 26 ± 2ºC.The British standard light is the effort derived from 2.5kg rammer falling through 300mm onto three layers, each receiving 27 uniformly distributed blows. **Findings:** *The MDD generally increased with higher fines content. This could be due to the large amounts of fines having better cohesion and clogging the voids of the soil mixture. On mixing with 30%, 40% and 50% fines content at OMC, the values increased from 1.35 to1.42 to 1.43 Mg/m3 respectively. On the other hand, the OMC decreased with higher fines content. The OMC reduced from 30 to 29 to 28% for 30%, 40% and 50% fines content. This could be due to the large amounts of water required for the hydration of fines.* **Contribution:** *The criteria in most regulatory agencies (guidelines) and researches for assessing the technical suitability of materials meant for hydraulic barriers in waste disposal facilities are low hydraulic conductivity of 1x10-9m/s, low volumetric shrinkage of 4%, and acceptable shear strength of 200kN/m2. Thus a minimum of 50% fines content is recommended for laterite soil to be use in waste containment facility.*

Keywords: Compaction; Geotechnical Characteristics; Gradation; Landfill Liner; Laterite Soil

Abstract ID: **AIMC-2017-STE-954**

EYE TRACKING STUDIES ON QURAN READING

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Abstract

Introduction: *The study of eye movement and gazing using eye tracking is a growing multidisciplinary field that links electronics, psychology and cognitive science.*

The purpose of this study is to examine the relation of eye movement behavior and gazing while reading the Quran, using eye tracking equipment. The next study focus is to analyze the relation of eye tracking with human when reciting the Quran. Last but not least, this study attempt to relate the human psyche when reciting Quran.

Methodology: *The experiment was conducted inside the closed room at Bio-iST cognition laboratory, MJIIT UTM KL. This experiment used Tobii TX300 eye tracker. 6 healthy subjects were participated in the experiment. Four of them are male and the other two are female, from the age of 23 years old. All of them are free from any disease and medication. Verbal consent form was done with all the participants.*

The subjects are categorized based on their level of reading the Quran : average or intermediate. 4 of the subjects are average reader which means they can read the Quran but does not memorize and understand Quran. The other two are intermediate which means they memorize the Surah, able to read smoothly and understand the Surah. All experimental data were collected between 3rd March 2017 until 10th March 2017.

Findings: *The eye movement of the reading behavior was detected by using gaze plot. A list of figures are shown for this result. The result show the gaze plot recorded for each participant P1-P6. The gaze plot results showed that participants looked back and forth between each word. This is because, when a person is reading, the eyes do not read smoothly and continuously but pause (fixations) on some words while moving quickly (saccades) through others. Our eye movement changes according to difficulty of text. The repeated gaze plot shows that readers retain fixation on particular words until complete processing then jump to the next.* **Contribution:** *As conclusion, we successfully achieve the objectives of the study. Based on the result, we can see the relation of eye movement with Quran reading using eye tracking as the equipment. However, there are limitations in the study. We need bigger amount of participant to make a general conclusion. Next, to relate this study with human psyche, we may need to use the neurophysiological system e.g EEG in order to get the specific track on the emotion. To the best of our knowledge, the eye tracking studies on human behavior when reciting Quran has not been widely published.*

Keywords: Eye tracking, Quran reading, gaze, fixation, saccade

Abstract ID: **AIMC-2017-STE-955**

THE STUDIES OF GAZE BEHAVIOR ON QURAN LISTENING

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Abstract

Introduction: *Human is equipped with different external and internal senses by which he can understand the tangible world through him. He understands noticeable things through the eyes, audible sounds through the ears, edibles things through taste, smells through the nose and feels rigidity, softness, coldness and warmness through the sense of touch.*

Senses of hearing and sight are two main elements of knowledge and thought. Speaking is based on hearing and imagination is based on observation. Therefore, ears and eyes are highly important. Specifically, the study aims to provide a deeper understanding in how eye tracking data could be used :

1. To study the relation of Quran listening and the gazing behaviour through the eye tracking experiments.

2. To study the human psyche through the Quran listening.

Methodology: *The participants were brought individually into the testing room where they were invited to have seat in a stationary chair in front of the eye tracking computer. This experiments use the Tobii TX 300 eye tracker. A short overview of the experiment was explained. The participants were informed that the eye tracker would follow their gaze to the screen and beyond. They were informed that, they need to focus on the screen and minimized the eyes blinking. The participants were also instructed to avoid dramatic movements from side to side once the experiments begin.*

The participants were shown the required files on the screen. This file contains of two Surah which are Al-Fatihah and An-Nuur. They were instructed of procedure of experiments, and also how the calibration would work. The participants were informed to be ready and click ok if they are in ready position to precede the experiments. Sufficient explanation and overview was given to each participant so they were able to do these experiments. In short, the verbal consent was given in details to each participants.

Findings: *The eye movement behavior data in this research is illustrated using gaze plot to study the behavior of each subject and their differences. The subjects were classified into several class of level understanding Al-Quran. In this study, consist of two surah which is Al-Fatihah and An-Nuur. While eye tracking camera records several metrics, the observation of gaze event type for both surah and also pupil size dilation are particularly focused. The gaze event type for six subjects was illustrated using bar chart. The gaze plot behavior represents by different color corresponds to different subjects participated. From the gaze plot results, we can tell most of*

the subjects were listening well to Quran recitation except for the non-muslim. For the non-Muslim maybe this is the first time for them listening to Quran recitation and both have differences results.

On the other hand, we also had analyzed the pupil left and pupil right data in terms of average pupil size dilation and we illustrated the data into bar chart.

Contribution: *A large amount of research has been done in the area of eye tracking studies. Many disciplines have been using eye trackers for various studies and research. However, research on Quran related to eye tracking studies are very rare. At the moment of this writing, we have not find any papers that have been publish related to this topic.*

In summary, our studies shows the potential and feasibility of Quran Listening and gazing behavior. A future work with more parameters and bigger number of participants will determine the relations of human psyche through Quran listening.

Keywords: gaze behavior, eye tracking, Quran Listening

Abstract ID: **AIMC-2017-STE-956**

IMPROVEMENT ACCURACY OF TIME AGENT IN ELECTRONIC PERSONAL SYNTHESIS BEHAVIOR (EPSB)

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Abstract

Introduction: *The peoples, companies and governments focus to use online applications which are ubiquitous application can be used worldwide. The accounts based on the web and online can be attacked remotely, which increase the risk of stealing the accounts. The possibility of using the account by unauthorized users and using an authority password to make changes on the account such as changing password it cannot be determined by basic authentication model. To prevent online application from unauthorized user we need to build an authentication model which diagnosis unauthorized uses by diagnosis the behavior of the real user when unauthorized user try to access using real password by the diagnosis behavior of typing password time*

Methodology: *The waterfall model is a sequential design process, used in software development processes, in which progress is seen as flowing steadily downwards through six phases, user requirements, software requirement, architecture design, detailed design , coding and testing, delivery.*

E-learn Oman website providing free tutorial on programing languages and their website are free, open to use, they face problem to manage on bandwidth also they don't have data records about users they are using their website. E-learn Oman website ask us to create robust authentication model and registration model to their website.

Moreover, the client E-learn Oman website they need from our system to be able to more secure and safe from unauthorized user, we suggested for them to crate diagnostic model to check the behavior of the user to determine the real user from unauthorized users. The client E-learn Oman website, email us all requirements and operating environments details. We discuss all issues through an online conference and emails.

Findings: *The system will help us to improve time agents in confidence range algorithms for diagnosis unauthorized user by using a Z - score. Make the system more secure and safe.* **Contribution:** *According to the results from our system, the system meets the user requirements and achieve the objectives of the paper. The system successfully to diagnoses the unauthorized user and determine the behavior of the real user of speed typing password. The measure the duration of typing password can include extreme value that can go make wrong decision we success to identify the extreme value and eliminate this value and not included with the records. This way can prevent web application from the miss use of the user account by unauthorized user even he has real password*

Keywords: Authentication Model, EPSB, Confidence Range, Data Security

Abstract ID: **AIMC-2017-STE-958**

PRESSURE-INDUCED ELECTRONIC, ELASTIC AND OPTICAL PROPERTIES OF BI2TE3 BY DFT APPROACH

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Abstract

Introduction: *Bismuth Telluride (Bi2Te3) is an extensively studied semiconductor material widely used in thermoelectric devices. In the present investigation, we have studied its electronic, elastic and optical properties by employing density functional theory (DFT) under various pressures. The ultrasoft pseudopotential method is used by employing the Generalized Gradient Approximation functional GGA-PBE proposed by Perdew et al. to calculate the exchange-correlation potential within the framework of DFT.*

The calculated band structure and density of states for Bi2Te3 indicate that as we increase the pressure band gap decreases and it shows metallic behavior at pressure 14 GPa. It has also been observed that lattice constants decrease with the increase of pressure. Furthermore, we also calculated the elastic properties of Bi2Te3 under pressure. The calculated band gap, band energies, bulk modulus are in good agreement with the theoretical results and are consistent with experimental results. Optical properties comprising of the absorption coefficient, energy loss function, dielectric function and refractive index are also investigated. From the study of its optical properties, it is obvious that this material can be used in optoelectronic devices and solar cell.

Methodology: *To investigate electronic, structural and optical properties of Bi2Te3 within the framework of DFT. we have used Generalized Gradient Approximation (GGA-PBE) formulated by Perdew et al. All the calculations and data analysis is done through Cambridge Serial Total Energy Package (CASTEP) code within the framework of Material Studio which is widely used for studying various properties (electronic, elastic, optical, thermal and structural) of materials.In the present study we calculated band structures, band gap energies, elastic constants, lattice parameters, bulk modulus, density of states, and optical properties of Bi2Te3. All the calculations were performed at pressure 0-16 GPa and keeping cut off energy 480 eV.. Pseudo-potential calculations are carried out for the electronic configuration Bi 6s2 6p3 and Te 5s2 5p4. For Brillouin-zone sampling, we used Monkhorst-Pack mesh [6]. To make our calculations standard, we took self-consistent convergence energy as. Brodyden-Fletcher-Goldfarb-Shanno (BFGS) minimization method is used for geometry optimization for pressures ranging from 0-16 GPa.* **Findings:** *In the present research we have investigated electronic, elastic and optical properties of Bi2Te3 using GGA-PBE functional at pressure 0-16GPa. The investigated band structure and density of states show that energy band gap decreases with the increase of pressure due to the movement of valance bands electrons from lower to high energy levels and the conduction band electrons from higher to lower energy levels respectively. The effect of pressure on lattice constants demonstrates the decrease in lattice constants with the increase of pressure. Furthermore, we calculated the elastic properties under pressure. The calculated band gap, band energies, bulk modulus are in good agreement with theoretical results and are consistent with experimental results. From the optical properties it is evident that this material has good absorption coefficient, therefore, it can be used in optoelectronic devices and in solar cells.*

Contribution: *The research work reported here is carried out as requirement of MPhil degree program. The results reported are original and are not published before.*

Keywords: Electronic properties, optical properties

Abstract ID: **AIMC-2017-STE-962**

IOT ENVIRONMENT MONITORING SYSTEM

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Abstract

Introduction: *Internet Of Things(IOT) architecture consists of several crucial layers that play its own role to finest IOT operation; while sensors device set up meant to be the fundamental of IOT's set up layer. IOT Monitoring environment monitors the physical environment changes via sensors through a data acquisition medium for various purposes of environment monitoring applications such as for agriculture, natural disaster and other related monitoring purposes.* **Methodology:** *The circuit design of basic ESP8266 and Atmel microcontroller with the Wifi and radio frequency data transfer application of master and slave transmission medium. The Sensors data are available on-line to be monitored and analysed accordingly. Initially device is being located at potential environment area. Afterwards, the physical environmental changes of various sensors are being recorded on cloud server and updated on website. Then, ubiquitous monitoring system is being computed through a fuzzy logic analyzation in order to monitor environment changes and send the monitoring observation back to website to alert the current condition. An on-line monitoring data updated on domain dan hosting page aid to analyse data for further application promptly.* **Findings:** *Moreover, ubiquitous monitoring system could aid to come up with better improved real time environment data updated of every minutes, an alert*

notification of environment changes, an improved accuracy alert system and could increase real time monitoring analyzation of data due to sufficient data stations could be installed at potential at risk areas neglecting cost of installation of DAQ. **Contribution:** *Hence, environment monitoring system platform promotes low cost, easy to handle and ubiquitous data updated device for a better monitoring system platform.*

Keywords: IOT, mobile DAQ, ubiquitous, monitoring system

Abstract ID: **AIMC-2017-STE-963**

ANDROID MOBILE FORENSIC FOR JPEG RECOVERY WITH EXIF METADATA

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Abstract

Introduction: *Mobile devices are becoming a more popular tool to use and have changed the way we live in our daily lives. Therefore, it become one of the most popular medium of communication in the world. Besides of these good and advanced capabilities of mobile technology, it can also be used to perform various activities that may be of malicious intent or criminal in nature. Due to this, mobile devices can be a valuable source of digital evidence since it can accumulate a sizeable amount of information if the device is involved in a crime. Hence, it should be considered in digital forensic investigations.The purpose of this research is to provide the basic forensic tool analysis based on android platform.* **Methodology:** *Android smartphone has been used to store an enormous amount of data that can be stored locally or remotely, and enable forensic analyst to acquire the data and evidence as for collecting this valuable information with regard to the investigation. In this paper, we present a new mobile forensic application based on android smartphone that able to extract and recover the data. This application able to support Android OS version 4.3 and above. It was been developed using Java language. File carving technique has been used to recover corrupted or deleted files from the mobile devices. File carving is the technique that can helps the investigator to retrieve and acquire the data from unallocated space. This application perform as digital forensic tool in order to guide basic forensic analysis on Android by focuses on extraction and analysis of JPEG image files from either digital cameras or smartphones. This paper focus on JPEG format since it is the most widespread loss compression formats used by digital cameras or smartphones.* **Findings:** *The results and findings for this research were based on the testing that been conducted. There are seven modules that been tested which are imaging evidence, integrity evidence, data carving, bookmarks, EXIF metadata, GPS tag, and android version. Based on the results, it shows that the application able to analyse the content of the memory card or secure digital card by extracting JPEG image files and visualize the image as soon as image are extracted. Then, it able to reveals the EXIF metadata information as well as translating some of the metadata content into GPS tag if available. The EXIF is a standard for storing information about digital images. It used in almost all modern cameras to record equipment model, date and time the image was taken, f-stop, ISO speed, resolution, metering, GPS coordinates and other information relevant at the time of the image acquisition. The EXIF data is embedded with the image in the header of the digital file. For forensic image analysis, the EXIF is an important part of the file structure to inspect because information in the EXIF can be used to validate information about the acquisition of the digital image.* **Contribution:** *It is very significant to have this application as it can help the forensic investigator for investigating the evidence by extracting and recovering the data on android applications since its mobility and convenience to users.*

Keywords: Digital Forensic, Mobile Forensic, File Carving, JPEG Carving, Data Recovery.

Abstract ID: **AIMC-2017-STE-966**

EXPERT'S CONSENSUS ON PAYMENT PRACTICES ATTRIBUTES FOR NIGERIAN CONSTRUCTION INDUSTRY

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Abstract

Introduction: *Payment can be well-defined as monetary consideration given by the clients to the contractors for the value of work done, materials or goods comprised in the sub-contract. In the recent years, payment problem is widely spread across the world and have attracted a lot of concerned in both developing and developed countries (Olusegun & Michael, 2011 Wu, et al., 2008).The payment issue is continuously generating problem in*

the industry the subcontractors, suppliers, and every person in the entire construction value suffered (Kontagora, 1993; Olusegun and Michael, 2011 ;
Omotoso, 2013 ; Chrejina, 2013). Many researchers have investigated the late payment and non-payment in the construction industry in many countries. identified that the general nature of construction dispute where payment related issues and the problem frequently happen between contractor and client, (Abidin Asniah, 2007 ; Abdul Rashid, 2010) It very difficult to assess the problem because the payment practice lacked consensus on payment attributes that can be used to assess and improve the inefficiency of payment in construction industry
Methodology: *This paper used quantitative and qualitative methodologies. In the qualitative method the Delphi first round start in qualitative by way of supplied of questions for his or her additional payment attributes then reverted to quantitative for better understanding within the constrution industry context. The decision rule of 70 percent of agreement and above by experts is retained and below was dropped.* **Findings:** *The result shows that only one item was dropped and upon applying the decision rules the following payment practices attributes were retained*
Regular Payment, Payment according to contract, Setting off Sum Certified, Contractors Right to Payment, Certified Value Retained, Certification of work, Supervision, Processing files for Payment, Selective Payment, Paymaster Certification, Contractors Claims, Compliance to Design, Compliance to Specification, Time of Delivery ,Contractors Satisfaction, Credit Payment, Project Duration, Amount of Payment, Cost Overrun, Time Overrun , War or Civil Disturbance, Flooding, Change of government policies, and Economic Meltdown
Contribution: *This paper has determined expert consensus on construction industry payment practice attributes as follows:*
Regular Payment, Payment according to contract, Setting off Sum Certified, Contractors Right to Payment, Certified Value Retained, Certification of work, Supervision, Processing files for Payment, Selective Payment, Paymaster Certification, Contractors Claims, Compliance to Design, Compliance to Specification, Time of Delivery ,Contractors Satisfaction, Credit Payment, Project Duration, Amount of Payment, Cost Overrun, Time Overrun , War or Civil Disturbance, Flooding, Change of government policies, and Economic Meltdown were retained which unanimously agreed by expert as the payment practices attributes in construction industry

Keywords: Payment; Payment in Nigerian Construction Industry; Payment Practice attributes

Abstract ID: **AIMC-2017-STE-971**

EFFECTS OF BIOMACROMOLECULES ON THE SURFACE POROSITY AND HYDROPHILICITY OF POLYLACTIC ACID SCAFFOLD

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Abstract

Introduction: *Modern 3D printing with the aid of computer design and automatic printing technology can custom made the geometry of scaffold with uniform porosity. Scaffold design and manufacture is the key component in tissue engineering as it act as a framework for cell and tissue development.Scaffold material and internal architectures such as porosity and hydrophilicity controls the behaviour and health of the cell seeded. Incompatibility of materials such as Polylactic acid (PLA) can be overcome by introducing surface entrapment of biomacromolecules. This study aim to study the porous structure and hydrophilicity of control and entrapped 3D printed PLA scaffold.* **Methodology:** *1. Material*
Polylactic acid (PLA) (Mw~60,000) in form of filament. Chosen biomacromolecules is Chitosan (powder based)
2. Fabrication of scaffold using 3D printing
PLA scaffolds was design using Solidwork software and transferred in form of STL file to the 3D printing software. The porosity of the printing is set in the system and the scale of the scaffold is set which is (0.5mm x 0.5mm x 0.5mm) in the software. The scaffold produce components by printing layer by layer of molten PLA to the platform and forming desired part.
3. Surface Entrapment of 3D PLA printed scaffold.
0.1g of chitosan is mix with the 35 ml of 0.5% acetic acid. The acetone is added with the ratio of (70:30). The scaffold was soak into the solution for 30 seconds before immersed in the Noah for I minutes. The scaffold were dried at room temperature for 48 h, and then dried under vacuum for 24 h.
4. Characterization

Porosity of both controlled and entrapped 3d printed scaffold are analyzes based on its morphological properties using microscope and SEM. Contact angle measuring system, VCA Optima, AST Products, Inc. is used to determine the hydrophilicities of 3D PLA printed scaffold.

Findings: *Finding showed that controlled 3D printed scaffold have well interconnected porous but limited on setup design and drawing. This porous structure can be controlled and custom-made design using Solidwork software. Other than that, the molten polymer deposited to form the structure are rigid and no porous structure were observed. Incorporation of chitosan via surface entrapment enhance the surface porosity. Under SEM, entrapped scaffold shows formation of mall size porous structure, which formed during entrapment process. Porosity plays an important role in cell seeding and proliferation. On top of that, entrapped 3D printed scaffold have higher hydrophilicity compared to control with 85.3o and 37.7o water contact angle. Increase in surface porosity in this entrapped 3D printed will increase hydrophilicity and water holding capacity thus will increase the probability for cell attachment and migration. Even though the main function of entrapment method was to introduce fictional group and adjust recognition site, entrapped 3D printed scaffold show high hydrophilicity and consist two different porous size, which one of it can be controllable, well-defined and reproducible architecture thus aided in cell growth and migration.* **Contribution:** *The results of the above studies show entrapment method on 3D printed PLA scaffold will result a high surface porosity and hydrophilicity. In previous work, surface entrapment of chitosan has reported in aiding capability of non-bioactive material but limited on film scaffold. Combination of 3D printing and surface entrapment method are not reported especially for tissue engineering purpose. Future work should be conducted especially in determining the ability for the scaffold to fully function to direct the growth of cell seeded within the porous structure such as in-vitro and in-vivo transplantation.*

Keywords: 3D printing, Biomacromolecules, Tissue Engineering, Porosity, hydrophilicity, Surface Entrapment, Scaffold

Abstract ID: **AIMC-2017-STE-972**

EVALUATION OF PREDUSTER IN CEMENT INDUSTRY BASED ON COMPUTATIONAL FLUID DYNAMIC

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Abstract

Introduction: *Ash-laden hot air from clinker in cement industry is being used to reduce water contain in coal, however it may still contain large amount of ash even though it was treated by a preduster as a gas-solid separator.* **Methodology:** *This study investigated preduster performance as a cyclone separator in the cement industry by Computational Fluid Dynamic method. In general, the best performance of cyclone is it have relatively high efficiency with the low pressure drop. The most accurate and simpler turbulence model, Reynold Average Navier Stokes (RANS), and combination with Lagrangian model as particles tracking model were used to solve the problem.* **Findings:** *The measurement used to evaluating simulation result are flow pattern in the cyclone, pressure outlet and collection efficiency of preduster. The applied model well predicted by comparing experimental measurement.* **Contribution:** *Several research are using DRSM and LES method that need higher capacity in computer specification than RANS method in this work. beside that, this work evaluated gas purification tool in industry scale as preduster in PT Semen Indonesia, Persero (Tbk).*

Keywords: Computational Fluid Dynamic, Cyclone, RANS, Lagrangian Method

Abstract ID: **AIMC-2017-STE-978**

COMPANY INDUSTRIAL WASTE MANAGEMENT PLANNING OF PT. KRAKATAU STEEL REGARDING MANAGEMENT AND IMPROVEMENT OF ENVIRONMENTAL QUALITY (DESCRIPTIVE STUDY IN INDUSTRIAL ESTATE OF CILEGON-BANTEN, 2016)

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Abstract

Introduction: *The research is aimed at finding out information about waste waste management planning of PT. Krakatau Steel in Cilegon Banten which focuses on the management and improvement of environment quality that meets the environmental quality standards.* **Methodology:** *Descriptive qualitative techniques method was*

applied in order to illustrate and evaluate disposal management that has been developed originally by PT. Krakatau Steel. **Findings:** *The research results revealed that there was the industrial disposal management planning of PT. Krakatau Steel had met the environmental quality standards in improving the quality of the environment surrounding the company. Several programs of Zero Waste Concept were implemented using Green Technology with the 3R's (Reuse, Reduce, and Recycle): 1) Slag processing with SAT (Slag atomizing Technology), 2) Utilization of Slag for Road Base and Asphalt mixtures, 3) Sludge drying with Sludge Drying Bed (SDB), 4) Recycle/Fines Sponge processing using Briquetting and Blocking, 5) Filter Press Operation, 6) Recycle of Hcl waste with ARP technology (Acid Regeneration Plant), and 7) Utilization of waste CO2 into CO2 liquid. Furthermore, there were some waste products, categories, percentages of piles disposal (unit % of the product amount), and the treatment, as follows: a) Fines Pellet, non B3, 7% - 8%, exported; b) Fines Sponge, non B3, 1% - 3%, exported and tooling (reuse); c) mill scale, B3, 2.2% - 3%, exported and used magnetic industrial raw materials; d) Steel slag, B3, 14% - 15%, is used for PS Ball products (SNI), PT. Krakatau Steel & group internal utilization as accumulated Road Base (licensed); e) EAF Dust, B3, 0.9% - 1.5%, used by the cement industry; f) Sludge / IC, B3, 0.9% - 1.5%, used by the cement industry; g) Ferro oxide, B3, 0.9% - 1.5%, used as the counterweight of heavy equipment; and h) CO2 gas used by the third parties as fuel for CO liquid.* **Contribution:** *This Research result is true masterpiece genuiness of myself, which parts of selected in this writing I borrowed ideas from result of others masterpiece and I have written down the source of him or her clearly as according to norm, method, and erudite writing ethics. Contribution result of this research as an evaluation to standardization of waste management planning of many companies.*

Keywords: Planning, processing, waste management, environmental quality

Abstract ID: **AIMC-2017-STE-980**

EXPERIMENTAL STUDY OF PV/T SYSTEM IN LOCAL CLIMATIC CONDITIONS OF KARACHI

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Abstract

Introduction: *Search of eco-friendly alternate sources is need of the hour in wake of increasing demand of energy and the corresponding environmental problems. Solar energy is one of the sources that have attracted the researchers due to its availability in abundance and environmentally friendly nature. Pakistan is facing energy load shedding since last two decades and PV panels are being increasingly used to meet electricity demand all over the country. Performance of solar panels is temperature dependent and in Pakistan the ambient temperatures are recorded as high as 50o C, in most of parts of the country, which is not desirable for such systems. In the present study a comparative study was conducted to investigate the effect of cooling on PV panels in local climatic conditions of Karachi, Pakistan* **Methodology:** *In the present study a flexible photo voltaic thermal hybrid system was designed with provision to change the absorber plate. A purpose oriented fixture was attached to the back of the solar panel to ensure full contact between the panel surface and the surface of absorber plate. Cooling system was developed to allow the flow of water under gravity force. The system was fabricated using indigenously available resources and technical skill. Thermal cooling showed improvement in the performance of the PV panel with achievement of additional thermal energy in terms of increase of 10o C in water temperature flowing through the tubes of the collector.* **Findings:** *1. Electrical efficiency of the PVT system was enhanced by a 3.9% as compared to Un-cooled system.*

2. The designed hybrid system showed 80% thermal efficiency.

3. Thermal energy was used to heat the water and an increase of 6 degree C in the temperature of water was achieved which useful for low temperature applications.

Contribution: *An experimental facility using indigenous resources has been developed to investigate the effect of cooling on the performance of PV panels. A gravity flow of water was developed to pass the water through collector tubing.*

Keywords: PV/T panel, hybrid system, thermal efficiency, electrical efficiency

Abstract ID: **AIMC-2017-STE-985**

CASE STUDY FOR EXAMINING TIME AND COST PERFORMANCE OF BUILDING AND INFRASTRUCTURE PROJECTS OF MALAYSIA

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Abstract

Introduction: *Poor time and cost performance of construction projects results in significant monetary loss to the investors. It is common problem worldwide including Malaysia which must be handled properly. Thus this paper investigated time and cost performance of construction projects in Malaysia.* **Methodology:** *Study was conducted through case study of six projects involving 3 infrastructure project and 3 building projects. Data involved the investigation on site as well as documents of the projects and structured interviews of the officials involved handling those particular projects.* **Findings:** *Study revealed that 5 of the 6 investigated projects were over ran where all three infrastructure projects were delayed while two building projects were delayed while one building project was completed earlier. Also, study of cost performance showed that two infrastructure and two building projects were completed within estimated cost while remaining four projects had poor cost performance.* **Contribution:** *This research paper investigated three infrastructure and three building projects. It was found that the construction projects in Malaysia are subjected to poor time and cost performance. The findings of this paper will be useful for the practitioners to understand the time and cost behaviour of the projects.*

Keywords: Time performance; cost performance; case study; Malaysia; Infrastructure projects; building projects

Abstract ID: **AIMC-2017-STE-992**

IMPLEMENTATION OF OPERATIONAL EXCELLENCY IN MINING INDUSTRY THROUGH LEAN PRODUCTION SYSTEM

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Abstract

Introduction: *Traditionally it is observed that the mining organisations follow the conventional practices for the regular activities due to which process improvement is constrained. However with the rapid growth of industrialization, the level of competitiveness among the entrepreneurs has increased many folds in this era. In order to survive in this challenging economic environment, low costs of production along with improved quality products standards are essential.* **Methodology:** *Organizations are looking for a prudent global strategy to respond to the new challenges emerged not only due to intense global competition but also because of continuously evolving customer requirements. At this juncture, it is observed that most of the leading companies have adopted the lean production system into their operations. Lean production is a management philosophy that creates competitive advantages and provides important savings opportunities for companies and organizations by adopting the innovative strategies into their operations*. **Findings:** *Unlike other industries mining industry is always associated with the geological uncertainties due to which it has become imperative task for the leading mining entrepreneurs to adopt the lean production system into their operations. The lean principles that apply to the mining industry are highly interdependent. Present paper reviews upon the importance of implementing operational excellence in mining industry by adopting lean production system with special focus on optimization of blasting operations and other activities like hauling, determining the exact target fleet for the operations, minimizing the queuing time of dumpers and many other areas.* **Contribution:** *Lean manufacturing is not practiced in India for mining industry. The paper is useful initially include in Operational Mine Planning . The proposed methods in different operation methods are compared with Australain Mines where Lean Manufacturing is practised.*

Keywords: : Implementation, Blasting, Lean Production System, Optimisation, Mining industry.

Abstract ID: **AIMC-2017-STE-993**

A CONCEPTUAL FRAMEWORK OF SUSTAINABLE SAFETY COST ITEMS AT THE OPERATIONAL STAGE OF URBAN RAIL INFRASTRUCTURE PROJECTS

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Abstract

Introduction: *The new of urban rail infrastructure project is an emphasis to radically improve and transform Kuala Lumpur's poor and sorely inadequate transportation coverage. However, many previous accident cases had turned into fatalities and injuries during the operation of urban rail infrastructure projects. Once the accident occurred, it involves a huge amount of cost to be borne by a client. However, the quantification, evaluation and identification of many losses incurred in an accident are hidden and difficult to quantify, evaluate and identify. A project can be called sustainable only if sustainability principles are applied throughout its life cycle project.* **Methodology:** *The proposed initial conceptual framework for the study was developed through a review of literature related to safety costs management. The reviews conceptually identified variables that are related to sustainable safety cost items during the operational stage of a projects. A further study is planned to be conducted by through a comprehensive empirical research using a semi-structured interview for the preliminary study and a questionnaire survey for the main study, followed by the development and validation of the sustainable safety cost items framework by team of experts.* **Findings:** *The study shows that the three principles of sustainability, i.e. social, economy and environmental. However, the environmental aspect is excluded. On the other hand, under the social and economy aspects only the safety and health and whole life costing become the focus of this study. At the post construction stage, the safety costs items are categorized into direct costs, indirect costs and extraordinary costs.* **Contribution:** *Numerous studies have attempted to explain the safety cost during pre-construction and construction stage but at the operational stage is very limited. Therefore, the objective is to fill this gap by developing a sustainable safety cost framework at the operational stage of the urban rail infrastructure projects. Thus, based on the foregoing concept, the sustainable safety cost framework will be developed in order to assist client in complying to allocate safety cost items in their project operations and also as a reference for project practitioners in Malaysia who involve directly or indirectly in rail transportation projects.*

Keywords: Safety cost, Sustainability, Operational stage, Urban rail infrastructure project.

Abstract ID: **AIMC-2017-STE-994**

LOW COST TREATMENT OF BATIK'S WASTEWATER BY USING TIO2/BRICKWASTE PHOTOCATALYST

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Abstract

Introduction: *Indonesian batik is a cultural heritage of humanity's oral and non-material as defined by UNESCO since 2009. As it is, an effort promoting batik industry is increasing from time to time. However, so far the increase in the number of batik industry is not accompanied by an increase in restructuring and the impact on the environment. In terms of production processes, industries produce wastewater batik dye that can adversely affect the environment if not managed properly because it has the characteristics of COD and BOD figures are high and expose bad odor. Treatment of batik's wastewater is required but a reachable technology is important thing. In this research, a technique of photocatalytic oxidation method was developed by using low cost photocatalyst, TiO2-immobilized brickwaste.* **Methodology:** *Photocatalyst material was prepared by dispersing titanium precursor into brickwaste powder suspension followed by drying and calcination. Characterization of material was conducted by using x-ray diffraction, scanning electron microscope and diffuse reflectance UV-Visible. The material was applied in batik's waste water photooxidation at varied treatment of the addition of H2O2 and potassium peroxodisulphate. The quality of water was monitored by UV-Vis spectrophotometry analysis.* **Findings:** *Prepared material showed the formation of anatase phase homogeneously immobilized in brickwaste composite. The materialexhibited photocatalytic activity in batik's wastewater over photooxidation under the addition of H2O2 and potassium peroxodisulphate as oxidant. From varied method it is concluded that the oxidation over potassium peroxodisulphate addition has higher rate compared to the use of H2O2.* **Contribution:** *The research gives alternative for low cost batik's treatment in sustainable culture development*

Keywords: Photocatalytic, batik's wastewater , TiO2/brickwaste, H2O2, potassium peroxodisulphate

Abstract ID: **AIMC-2017-STE-995**

THE DISCOVERY OF PHYSICAL PROPERTIES OF FOOD WASTE IN COMPOSTING PROCESS

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Abstract

Introduction: *Abstract*

Composting as a method of solid waste management should be given attention. It gives means of producing a valuable end product, by treating of organic wastes in an environmentally friendly method which does not release any hazardous chemical which can affect human health without causing a major disruption to the surrounding ecosystem. Nevertheless, the issue of time-consuming arises and this correspond to the sink of market demand. The optimized pre-composting process was done through drying, grinding and controlled aeration resulted in the fast-compost formation and cost-effective. This study aimed to discover the physical properties of food waste in composting process. The controlled parameter of the composting which is aeration time where pre-composting processes applied was drying and grinding. The manipulated parameter of composting process happened within two duration: rotation and rest. Each container has been rotated for 15 minutes yet different resting time was applied which are 15, 25, 50, 150 minutes namely A, B, C and D. The data collection has been done in hourly basis for the total of 72 hours. Based on the statistical analysis, results show that mass reduction of samples (A=38.6%, B=32.6%, C=24.6%, D=22.6%). The compost temperature ranged between (23°C - 39°C) while the compost pH was (5.12 – 5.85). Peak level of surrounding temperature was (35.7°C) while surrounding relative humidity (53%) in normal condition. Among the highest moisture content was (52.63%) while the lowest discovered in sample D (24.81%) respectively. Results show that with the longer the aeration time, the better physical properties of compost formed. The obtained data will provide evidence on its significances application to the agencies, the public and the industrial player to cope up with this major environmental threat. This study found a significant relationship between physical factors and compost formation which contribute to better analysis, especially to food waste management. **Methodology:** *The controlled parameter of the composting which is aeration time where pre-composting processes applied was drying and grinding. The manipulated parameter of composting process happened within two duration: rotation and rest. Each container has been rotated for 15 minutes yet different resting time was applied which are 15, 25, 50, 150 minutes namely A, B, C and D. The data collection has been done in hourly basis for the total of 72 hours. Based on the statistical analysis, results show that mass reduction of samples (A=38.6%, B=32.6%, C=24.6%, D=22.6%). The compost temperature ranged between (23°C - 39°C) while the compost pH was (5.12 – 5.85). Peak level of surrounding temperature was (35.7°C) while surrounding relative humidity (53%) in normal condition. Among the highest moisture content was (52.63%) while the lowest discovered in sample D (24.81%) respectively.* **Findings:** *Results show that with the longer the aeration time, the better physical properties of compost formed. The obtained data will provide evidence on its significances application to the agencies, the public and the industrial player to cope up with this major environmental threat. This study found a significant relationship between physical factors and compost formation which contribute to better analysis, especially to food waste management.* **Contribution:** *Food waste turn into product as composting fetilizer with systematic and enhance process within 3 days.*

Keywords: Food Waste, Composting, physical properties

Abstract ID: **AIMC-2017-STE-999**

PERFORMANCE ANALYSIS AND CHARACTERISTIC OF TRAFFIC FLOW IN NICOSIA NORTH CYPRUS WITH THE APPLICATION OF SIDRA INTERSECTION 5

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Abstract

Introduction: *Road traffic congestion comprises of several complex procedures and incorporates numerous components cooperating simultaneously. In such an intricate problem condition a simulation modeler can be a very effective tool by providing evaluations for various traffic conditions.The main aim of this study is to evaluate the existing traffic flow system at signalized four intersections and two roundabouts in busy areas in Nicosia/TRNC and establish a comparative study between the morning and evening peak hours in city of Nicosia/TRNC.* **Methodology:** *The study was focused on traffic flow at signalized intersections and*

roundabouts, in order to evaluate the current situation of traffic system of the city. Moreover, the performances of traffic flow was analyzed and evaluated using SIDRA INTERSECTION 5 Software. In addition, after the observation and site selection, the parameter were collected for the filed namely: the volume of traffic including (cars, motocycles, van, trucks and buses),phases movement of intersections with the cycle time and the geometric design of intersections. The volume of traffic which the most important factor when it was collected, it must consider to collect it during normal working days and prevent to collect it in severe weather conditions and unformal traffic conditions when accidents occurs which results to collect fake traffic volume at intersections. Moreover, the Data were collected for the period of fifteen minutes in the morning and evening peak hours, the peak hours observed between 8:15 - 9:00 am in the morning and between 4:00 - 5:30 pm in the evening **Findings:** *The results obtained show that the delay was very high comparing for three and four legs intersections due to the movement of drivers to the destination (work) in the morning at one time, while in evening the delay was less resulting of less production and variety in the movement of people to reach residential areas. The reduction was up to 31% and 35% for three and four legs intersections respectively. whereas, the travel speed corresponding to the delay was in evening peak hours period better than the morning. the evaluation of changes in the speed between morning and evening peak hours were up to 9, 36 and 10% for three and four legs intersections and roundabout respectively.* **Contribution:** *This is the first study in evaluation and analysis of traffic flow in the city of Nicosia/TRNC, Turkey. To evaluate the existing situation of level of service and other parameters of Traffic Jam.*

Keywords: SIDRA INTERSECTION, Traffic Congestion, Signalized Intersections, Roundabouts and Level of Service.

Abstract ID: **AIMC-2017-STE-1006**

ISOMORPHISM AND MATRIX REPRESENTATION OF POINT GROUPS

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Abstract

Introduction: *In chemistry, point group is a type of group used to describe the symmetry of molecules. It is a collection of symmetry elements possessed by a shape or form which all pass through one point in space, which consists of all symmetry operations that are possible for every molecule. A set of number or matrices which is assigned to the elements of a group and which represents the multiplication of the elements is said to constitute representation of a group. Here, each individual matrix is called a representative that corresponds to the symmetry operations of point groups, and the complete set of matrices is called a matrix representation of the group.* **Methodology:** *This research relates the symmetry in point groups with group theory in mathematics using the concept of isomorphism, where elements of point groups and groups are mapped such that the isomorphism properties are fulfilled. Then, matrix representations of point groups are found based on the multiplication table where symmetry operations are represented by using matrices.* **Findings:** *From this research, point groups of order at most 8 are shown to be isomorphic with groups in group theory. In addition, the matrix representation corresponding to the symmetry operations of these point groups is presented.* **Contribution:** *This research hence bridges the field of mathematics and chemistry, where the relation between groups in group theory and point groups in chemistry are shown.*

Keywords: group, isomorphism, matrix representation, point group

Abstract ID: **AIMC-2017-STE-1007**

EXPERIMENTAL STUDY OF ICE ACCRETION ON AERODYNAMIC PERFORMANCE OF FFA-W3-270 AIRFOIL FOR HAWT BLADE.

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Abstract

Introduction: *The performance of wind turbine blade can be affected by physical and environmental factors. In cold climate, ice glaze might be formed on the leading edge and these phenomena of ice accretion could cause the aerodynamics performance to degrade. Ice accretion causes the drag and skin friction coefficient to increase and this will reduce the maximum lift coefficient and stall conditions could occur at a lower angles of attack. Consequently, this lead to reduction in the generated power of wind turbines. This study was carried out to*

investigate the effect of ice accretion on the performance of wind turbine airfoil. **Methodology:** *In the present work, the aerodynamics performances of a wind turbine airfoil was experimentally investigated with and without ice accretion model and the effect of ice accretion on the airfoil aerodynamics characteristics was examined. The experimental study was conducted at the Universiti Teknologi Malaysia Low Speed Wind Tunnel (UTM-LST) which is a close circuit, return-type subsonic wind tunnel. The test section is rectangular with a cross section dimensions of 2.0m x 1.5m and 5.8m long and the maximum wind speed is 80 m/s. The turbulence level and flow uniformity are about 0.06% and 0.15% respectively. The experiments were carried out using a fiberglass model of a FFA-W3-270 airfoil with 500 mm chord length and 750 mm span wise length which was mounted vertically in the test section of the UTM-LST. This study deals with 2D measurement of the airfoil characteristics, where end plates were mounted at both end of the span. In order to simulate the ice accretion in an experimental study, an empirical 2D stream-wise type ice accretion model was mounted on the leading edge along the span.* **Findings:** *The experimental results with ice accretion model were compared with the clean airfoil data. All data were acquired at the chord-wise Reynolds number Re =1x10^6 for positive ranges of angles of attack from 0 up to +30 degrees. The current measurements show that the ice deposit at the airfoil leading edge in cold climate condition could cause a significant reductions in the maximum lift coefficient and a substantial increase in the drag coefficient. As a result of these variations in the airfoil characteristics, the aerodynamics performance of the wind turbine blade that is designed with this type of airfoil would considerably decline and it will finally lead to a major decrease in the power generated by the wind turbine rotor.* **Contribution:** *FFA-W3-xxx airfoils family is the type of airfoil mainly being used for wind turbine blade. The experimental study of ice accretion on an FFA-W3-270 airfoil have been carried out in the state-of-the-art UTM-LST wind tunnel. The measured results could be used to design wind turbine blade that could be used cold condition and also as a validation data for CFD simulation.*

Keywords: Airfoil, Ice accretion, FFA-W3-270, HAWT blade, Wind tunnel testing

Abstract ID: **AIMC-2017-STE-1010**

PEAT SOIL STABILIZATION AND EFFECT ON PLASTICITY INDEX AND COMPACTION VALUE

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Abstract

Introduction: *This research describe a study on the stabilization potential of peat soil with various stabilizer such as ordinary Portland cement, fly ash (FA) and oil palm shell activated carbon (AC). Peat formed in very wet conditions accumulates considerably faster and is less decomposed than peat accumulating in drier places. Due to its geotechnical drawback characteristics such as highly compressibility and low shear strength, peat soil is classified as problematic soils and unstable for engineering structures. This paper presented the effect of cement stabilized peat soil with added of additives to the engineering properties of peat soil.* **Methodology:** *Peat soils are obtained from peat land at Matang, Sarawak. The soil samples are collected at a depth of 0.3 m – 0.8 m below the ground surface. Portland cement obtained from CMS Bhd. Ordinary Portland cement has been used in this study as a binding agent to stabilized the peat soil. Two types of additive used in this experiment are fly ash and oil palm shell activated carbon. Fly ash is an industrial waste produced by burning the coal from the electric power plant. In this experiment, fly ash was obtained from Sejingkat Coal Power Plant.*

In this experimental research, plasticity behaviour of cemented soft soils will be investigated to study their response to change in moisture content. The plasticity index (PI) will be determined, which is a measure of the range of moisture content between the plastic limit and liquid limit and PI is commonly used as an indication of soil shrink/swell properties and constructability. In addition, compaction characteristics of soils will be investigated to determine the optimum moisture content (OMC) of the untreated and cemented soils.

Findings: *The result shows the lowest plasticity index of peat soil stabilized with 80% FAAC and 20% OPC. Peat soil added with FA recorded the lowest optimum moisture content (OMC) and the highest maximum dry density (MDD) value. This improvement in the geotechnical characteristic of treated peat soil indicates that FA has the potential to be used as stabilizing agent and with the addition of AC to FA can reduce the harmful chemical in FA preserve the environment for future generation.* **Contribution:** *The novelty of this study to the current practice will be on the reduction of cement for cementation of peat and highlighting the fact that utilization of high content of FA is possible with addition of AC as an eco-friendly practice.*

Keywords: Peat Soil, Plasticity, Compaction, Fly Ash, Activated Carbon.

Abstract ID: **AIMC-2017-STE-1013**

INNOVATIVE PROCUREMENT ADOPTION FOR INDUSTRIALISED BUILDING SYSTEM (IBS) PROJECTS

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Abstract

Introduction: *Industrialised Building System (IBS) is a new method that used prefabrication components in building construction as an alternative towards enhancing construction performance. The Construction Industry Development Board (CIDB) embraced the IBS method to enhance productivity and building quality, reduce wastage on site, increase occupational safety and health, and reduce overall cost of construction. Currently, most of the IBS project developments in Malaysia are still adopting traditional procurement system. However, traditional procurement system has been criticised for its fragmented procedure to project delivery in terms of integration and collaboration of the project team. As a result of that problem, a number of issues have recently arisen such as reworks, time delay, rising costs, lack of communication and coordination, and wastage. The purpose of this research is to identify challenges of the current procurement system and to investigate the possibilities of implementing innovative type of procurement method for IBS implementation.* **Methodology:** *A deductive research approach was adopted. Reviewing relevant literature before embarking into any academic research project is one way of exploring a known theory in a holistic manner. It also appears to be one of an essential features to create a firm foundation for the research. Based on extensive literature reviews; this paper describes what are initiatives that have been taken from developed nations which are known as earlier IBS adopters and through the findings these experiences may shed some light on the type of procurement that have been adopted. A pilot study was conducted among Grade 7 IBS contractors in Malaysia to gain further clarification on the immensity of the issues as well as assessing the research instrument.* **Findings:** *The initial findings reveal that financial matters, lack of early involvement, lack of integration and coordination, knowledge and understanding, role and responsibility, risk liability, communication and information, attitude and relationship matters are challenges embedded in the existing procurement approach in adopting IBS. Suggestion on how innovative type of procurement method such as Separation of IBS from Main Contract, Partnering and Integrated Project Delivery (IPD) will be able to minimise the fragmentation gaps will be concluded .*

Contribution:

This research is intended to make both an academic and practical contribution by providing a better understanding about the current body of knowledge in adopting innovative procurement for IBS project to ensure its success. Development of this conceptual framework of key factors for selecting procurement can be a reference to stakeholders particularly in Malaysia before engaging into any IBS project. Furthermore, this research enable generation of ideas and hypotheses for future research within other sector and different perspectives.

Keywords: Innovative procurement, Industrialised Building System (IBS), Integrated Project Delivery (IPD), collaborative, relational contracting

Abstract ID: **AIMC-2017-STE-1014**

STATISTICAL MODELING OF SEMI-ANALYTICAL 10 NM BILAYER GRAPHENE FET FOR HIGHER ION/IOFF RATIO USING TAGUCHI METHOD

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Co-Authors: K. E. Kaharudin, F. Salehuddin, Z. A. Noor Faizah, I. Ahmad

Abstract

Introduction: *The simulation and statistical modeling are conducted using Silvaco TCAD tools and L9 orthogonal array (OA) of Taguchi method respectively to design a proposed layout of 10 nm gate length (Lg) Bilayer Graphene Field Effect Transistor (Bi-GFET).* **Methodology:** *The investigated process parameters are halo implant dose, halo implant energy, source/drain (S/D) implant dose and source/drain (S/D) implant energy, while the noise factors are halo implant tilt angle and source/drain (S/D) implant tilt angle. The process parameters and the noise factors are optimized using the L9 orthogonal array (OA) of Taguchi method to achieve the highest possible ION/IOFF ratio.* **Findings:** *Utilizing both signal-to-noise ratio (SNR) and analysis of variance (ANOVA), the most dominant process parameters upon ION/IOFF ratio are identified as S/D*

implant energy and S/D implant dose with 56% and 37% factor effects on SNR respectively. **Contribution:** *The largest factor effects on SNR of S/D implant energy shows that it has dominantly affected the ION/IOFF ratio. The final results indicate that the 1.99 x 1013 atom/cm-3 of halo implant dose. 174 kev of halo implant energy, 1.63 x 1014 of S/D implant dose, 17kev of S/D implant energy, 24o of halo implant tilt angle and 9o of S/D implant tilt angle are the best parameter setting in obtaining the highest ION/IOFF ratio of the device which is measured at 4.811 x 105.*

Keywords: ANOVA, ION/IOFF ratio, SNR, Taguchi method

Abstract ID: **AIMC-2017-STE-1015**

THE EFFECT OF EXTRACTION SOLVENT AND MIXTURE DESIGN ON BIOACTIVE COMPOUNDS IN AJWA DATE (PHOENIX DACTYLIFERA L.) FLESH

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Abstract

Introduction: *Date fruits (Phoenix Dactylifera L.) are considered as an ideal food because it consists of high nutrients and provide beneficial effect to human health. Bioactive compounds in Ajwa dates have different polarities thus require solvents of different polarities for the extraction.* **Methodology:** *In this study, we investigated the effects of selective extracting solvents on extraction of bioactive compounds in Ajwa flesh using mixture design. Methanol, chloroform and hexane were used in the design. The bioactive compounds were identified using GCMS.* **Findings:** *Identification of bioactive compounds using GCMS shows Ajwa date flesh contain antioxidants, antifungal, anticholesterol, antimicrobial, anticancer and anti-inflammatory. Most bioactive compounds were identified in methanolic extract (D1) except β-Sitosterol was identified in hexane extract (D3) while Longifolenaldehyde and Nonadecyl pentafluoropropionate were identified in hexane layer (D5H) from the combination of methanol: hexane (1:1).* **Contribution:** *Methanol (polar solvent) is a universal extraction solvent used to extract bioactive compounds in natural products. This study showed that hexane (non-polar solvent) and combination of methanol: hexane (polar and non-polar solvent) could extract other bioactive compounds. Thus, varying polarities of extraction solvent could extract more bioative compounds.*

Keywords: Ajwa Date, Bioactive Compounds, Solvents, Mixture Design, GCMS

Abstract ID: **AIMC-2017-STE-1017**

A STUDY OF IDENTIFYING SIGNIFICANT VARIABLES OF DELAYS IN ROAD CONSTRUCTION VIA SEM MODELLING.

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Abstract

Introduction: *Delays have always been a major concern in road construction projects throughout the world, with significant financial and social impacts for stakeholders. The situation is exacerbated by increasing technological complexity, Libya is one of the countries faces all these delay issues however, and the occurrence of schedule delays has a serious impact on project investment, efficiency, cost, and reputation.* **Methodology:** *This study explored variables of delays in road construction via a via Structural Equation Model SEM modelling. Drawing upon an earlier studies, combined with interviews of Libyan experts, factors that have an impact upon delays in road construction schedules in Libya were investigated by means of a questionnaire survey carried out in 2015. Confirmatory factor analysis CFA was applied to extract significant variables based on the questionnaire results. Structural equation modelling (SEM) was then used to verify the relationships between the significant variables identified in road construction* **Findings:** *Responses were analysed using structural equation modelling (SEM) to establish the comparative influence of these factors, and eight factors were found to have significant impacts on construction schedule delays. The results of the goodness of fit (GOF) showed that chi-square is significant at 0.000 levels. Overall, ''contractor-related factors'' had the most significant impact on road construction schedule delay and, within that category, the causes ''Difficulties in project financing by contractor" and "Poor communication between contractor and other project parties'' were the most significant.* **Contribution:** *The present study was concerned with examining the relative impact of different causes on project schedule delay. The study adopted a novel approach, using SEM to quantify the impacts of different causes of delay on road project schedule delays and on other causes. the study has shown*

that SEM can quantify comprehensive relationships among a broad range of factors and contribute to resolving problems commonly experienced in the road construction industry and, more specifically, it provides valuable information for construction professionals in Libya.

Keywords: road projects, delay variables, Structural Equation Model (SEM), Libya.

Abstract ID: **AIMC-2017-STE-1018**

VIRTUAL LOCAL AREA NETWORK (VLAN): SEGMENTATION AND SECURITY

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Abstract

Introduction: *A virtual local area networks (VLANs) have recently developed into an integral feature of switched LAN solutions from every major LAN equipment vendor. VLANs represent an alternative solution to routers for broadcast containment, since VLANs allow switches to also contain broadcast traffic. This paper presents exactly what a VLAN is and how VLAN memberships are used in a switched network. VLANs are cost and time effective, can reduce network traffic, provide an extra measure of security, and give upgraded system security.* **Methodology:** *While a useful technology for small LANS, VLANs are often deployed in large networks as well. In larger networks, VLANs are sometimes used to join physically separate LANs or LAN segments into a single logical LAN.*

In this paper, we will discuss about the segmentation of a VLAN, including why you should consider using VLANs in a smaller network. We will go through the segmentation process of the LAN to the VLAN how to configure a VLAN-aware switch to create separate LAN segments. It is imperial for the company to secure the network from any attackers that wishes to steal company information. Network security technologies protect the network against the theft and misuse of confidential information and guards against malicious attacks from Internet-borne viruses and worms. Without network security in place, the company risks unauthorized intrusions, network downtime, service disruption, regulatory noncompliance and even legal action. Companies use VLAN as a way to connect the networks in their company.

Findings: *The security of the VLAN has been discussed in this paper, as well as further indulgent into the discussion of the different types of attack such as ARP poisoning and VLAN hopping on the VLAN and how we can use different ways of preventing such attacks such as the use of static ARP entries.*

The related work that focuses on the segmentation and the security of the VLAN and the benefits of the VLAN has been discussed, which highlighted the benefits of VLAN in terms of scalability, cost, ease of use, integrity, virtual work group and security. VXLAN has been examined, and how it differs from VLAN and its benefits. Then, the security of the VLAN in more details has been discussed.

Contribution: *To address the issue with handling many networks, logical addressing was created where component only needed to be in the same sub network to interact with each other. With the wide usage of VLAN, there is a concern of security of the network, as well as scalability and network management, which have been discussed in this paper.*

It can be concluded that utilization of virtual local area networks can surely simplify network management and also provide networks with improved security.

Keywords: Virtual LAN, Security, Segmentation, VXLAN

Abstract ID: **AIMC-2017-STE-1020**

EMERGING SUSTAINABLE TECHNOLOGIES FOR TRANSFORMATION OF GELATIN AND GELATIN-BASED FILMS

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Abstract

Introduction: *Over the years, food scientists have made several efforts aimed to improve both sensory properties and nutritional values of food by the addition of some ingredients/additives most especially gelatin. Many past studies have shown that the chemical and physical properties of gelatin are inter-related and any condition that affects the chemical properties of gelatin has a direct or indirect effect on the physical properties of gelatin. The understanding of gelatin transformation during processing is valuable for future researches and for the development gelatin-based product. A number of recent studies have investigated gelatin production from*

both plant and animal sources and these previous researches have conducted several independent studies on gelatin and gelatin-based film under different processing conditions. The lack of literature reviews that focus on gelatin transformation during different processing techniques obscure the understanding of interrelationship between its properties and the processing conditions. Likewise, the alteration of gelatin during food process is likely to pose challenges for species-specific gelatin authentication methods. This is because, most of the currently developed gelatin authentication protocols uses unmodified gelatin. **Methodology:** *The authors adopted a systematic literature review approach to retrieve relevant scientific manuscripts from known databases including Science Direct, Scopus, Springer and Google Scholar among others for conference proceedings, journal articles, book sections and books. The search terms include combinations of any two of the following: gelatin, irradiation, high-pressure-processing, Maillard reaction, enzymatic, biocatalytic processing. The search items were evaluated to determine if it will be included or not. The selected papers were afterwards arranged into two groups based on their area of focus.*

Information were compiles after a critical analysis of the findings in each of the documents including search for achievement, possible theoretical findings and explanation on gelatin structural modification and also the area of lack of evidence or study.

Findings: *The findings in this review will reveal the consequence of the impacts of some food processing reactions, techniques and conditions on gelatin and gelatin synthesized films. Reviews on the different techniques such as Maillard reactions, high pressure processing, irradiation and biocatalytic processing shows different effects on gelatin molecules and gelatin-based film materials. The findings from this review will help in understanding the fundamental principles associated with the different processing techniques used in the production and transformation of gelatin and gelatin films.* **Contribution:** *This review examines the impacts of some food processing reaction and techniques (Maillard reactions, high pressure processing, irradiation and biocatalytic processing) on gelatin-based film. The information provided in this review will serve as a great reference for future researchers that will be involved in gelatin-based products. A critical review of gelatin transformation during food processing will equally unfold areas that could be explored for future works.*

Keywords: Gelatin, Maillard reactions, irradiation, high pressure processing, biocatalytic process

Abstract ID: **AIMC-2017-STE-1022**

UTILIZING LASER CUTTING METHOD IN MENS' CUSTOM-MADE CASUALWEAR

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Abstract

Introduction: *Laser cutting is a method of manufacturing process that uses laser in order to cut materials. It provides and ensures extreme accuracy which has a clean cut effect, CO2 laser dominate this application due to their good- quality beam combined with high output power. It comes with a small scale and it has a limitation in cutting sizes of materials, therefore it is more appropriate for custom- made products. The same laser cutting machine is also capable in cutting fine material such as fine silk, cotton, leather, polyester etc.* **Methodology:** *In order to achieve the objectives, this research has been conducted by using mixed methods which are interviews with two (2) local experts in the apparel manufacturing industries and interviews via telephone with five (5) local respondents who are local emerging fashion designers, the questionnaires were distributed to one hundred (100) respondents around Klang Valley, in order to gain the information about their understanding and awareness regarding laser cutting technology. The experiment was conducted by using natural and man- made fibers.* **Findings:** *The results from the survey and questionnaire were calculated before it has been analyzed. Most of the respondents' state fashion designer and fashion student should take the chances to learn about this technology. It is because it will diversify their skill and technique, become easier and save a lot of time besides efficiency during the cutting process. To make that to become reality, more exposure and expertise in this field are needed so it opens the opportunities to designer so the design will be different and unique beside can compete with other country.* **Contribution:** *The significance of the research are to utilize laser cutting technique system in custom made for men's garment , and to enhance the innovation in fine technology, skillful and delicate work. Additionally, the output from this research will merge the gap between the industrial manufacturing industries and the designers. Hence, this module provide a unique guideline which will assist the apparel industries in the advancement of new technology.*

Keywords: Custom-Made, Fashion, Fashion Forecast, Laser Cut, Men's wear

Abstract ID: **AIMC-2017-STE-1025**

EFFECTS OF CCA AND LOSP PRESERVATIVE TREATMENTS ON THE BENDING PERFORMANCE OF GLUED LAMINATED TIMBER BEAM

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Abstract

Introduction: *Timber employed for structural material and for decorative purposes in the form of engineered timber products may be exposed to a wide range of environmental conditions. Thus, timber preservatives was applied.The information on the treatment for Malaysian timbers are mainly on sawn timbers alone but there is no information on the treatment of glued laminated timber (glulam). Hence, there is a need to look at the influence of treatment on the performance of glulam. Therefore, this study investigated the physical and mechanical properties of glulam manufactured from Malaysian timber treated with CCA and LOSP preservatives when exposed to different environment conditions.* **Methodology:** *Mengkulang and and Sesendok timber were selected for this study. The timber logs were processed at the factory, PEKA Konsortium Sdn. Bhd, Karak, Pahang, Malaysia. For preservative treated specimens, the sawn timbers were treated with the wood preservatives before bonding as recommended in MS544. After that, by lamination technique, finger jointed timbers were assembled into 5-ply or layers of laminations to form 150mm in thickness, 100mm in width and 3000mm in length of glued laminated timber beams. After a week of cramping periods at cramping bed, the glulam beams were was exposed in QUV machine and also exposed to outdoor conditions. The bending test was carried out after the exposures by four point bending method. The span to width ratio was 17:1. The test was carried out in a universal testing machine equipped with a 2500kN load cell and loading rate of 0.5mm/min. The test procedure was done according to American Standard Testing Material (ASTM D-198). The Modulus of Rupture (MOR) and Modulus of Elasticity (MOE) was calculated as indicator of strength performance.* **Findings:** *Comparing the bending strength properties of treated and untreated glulam, it can be seen that, generally the bending strength properties of treated glulam were reduced . Accelerated exposure to UV light have the advantage in giving reproducible result on how strength performance of glulam in actual service conditions and the test can be repeated at any laboratory equipment. UV light and changes in moisture will affect the natural color of timber and cause the surface become rough, splits and cracks. Result show that glulam timber treated with LOSP and CCA have lower value of MOR and MOE rather than untreated glulam. It shows that glulam treated with LOSP and CCA will degrade drastically. Thus, this indicate that timber preservative give significant effect on strength performance of glulam beam after exposures.* **Contribution:** *Data on the effect of treatment of timber on the bending performance of glulam timber beam can be established.*

Keywords: Glulam; chromated copper arsenated (CCA); light organic solvent preservative (LOSP); strength performance.

Abstract ID: **AIMC-2017-STE-1032**

THE EFFECT OF INNOVATION MANAGEMENT AND INFORMATION TECHNOLOGY & COMMUNICATION TO COMPETITIVE STRATEGY (CASE STUDY: SOES CONSTRUCTION ENTREPRISES IN INDONESIA)

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Abstract

Introduction: *This research is an empirical study on State-Owned Enterprises (SOEs) Construction Service in Indonesia. The main objective of this study is to analyze the influence among variables to address the issues of how to improve competitive strategy through the performance of innovation management and information technology &comunication. The study population is managers and decision makers on large-scale SOEs in Indonesia. Respondents in this study are 9 SOEs Construction Service and the parties involved in the construction service business with a total of 102 people. The respondents' answers data are analyzed for compliance with the research model developed from theoretical framework by using confirmatory analysis of SEM. Analysis of the data shows that the entire hypotheses are accepted, The data analysis technique that will be utilized in this research is the SEM (Structural Equation Modeling) analysis using the SPSS AMOS 22 Program. The research results show that: (1) Innovation Management has a significant effect on Competitive*

Strategy. (2) Information Technology and Comunication has significant effects on Competitve Strategy. (3). Innovation Managemnt has significant effect on Information Technology & Communication
Keywords: Competitive Strategy, Innovation management, Information Technology & Communication, and SOEs Construction Service
Methodology: *Respondents in this study are 9 SOEs Construction Service and the parties involved in the construction service business with a total of 102 people. The respondents' answers data are analyzed for compliance with the research model developed from theoretical framework by using confirmatory analysis of SEM. Analysis of the data shows that the entire hypotheses are accepted, The data analysis technique that will be utilized in this research is the SEM (Structural Equation Modeling) analysis using the SPSS AMOS 22 Program.* **Findings:** *The research results show that: (1) Innovation Management has a significant effect on Competitive Strategy. (2) Information Technology and Comunication has significant effects on Competitve Strategy. (3). Innovation Managemnt has significant effect on Information Technology & Communication* **Contribution:** *Originality and contribtion innovation management and information & communication technology will together affect the competitive startegy.*

Contribution:SOEs construction service and other construction companies in Indonesia have to increase attention, innovation process, and utilizattion of information & communication technology in order to increase competitiveness in construction service industry.

Originality:Innovation managemnet and information technology & communication will together affect the competitive strategy.
Keywords: Keywords: Competitive Strategy, Innovation management, Information Technology & Communication, and SOEs Construction Service

Abstract ID: **AIMC-2017-STE-1036**

A REVIEW PAPER: ACQUIRING ANIMAL BEHAVIOR FOR WEATHER MONITORING PURPOSES

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Abstract

Introduction: *Animal are very much interact with nature that speaks between each other in its own sign language for any in coming signs of nature changes. Thus, animal behaviour is a significant indication of weather prediction in the means of animal monitoring changes. The ancient methods on monitoring natural disaster such as earthquake, monsoonal flood, typhoon and others have been part of a belief practices made by villages and farmers prior to the natural disaster occurrence. In Malaysia flora and fauna of various types and species could be easily found and could be part of a significant research finding.* **Methodology:** *The selected animal in order to monitor weather changes are frog and fish. Frog is to observe the sound of frog in weather changes. Analysis of sound thus provides a way to compare behaviour in detail. While fish is being monitor on the movement of fish related to pressure difference and correlate to depth difference to the fish behaviour. The set up of basic mobile data acquisition system of master unit, remote terminal units and human machine interface. Where the wireless radio frequency sensors are attached to the animal and send the data to the master terminal and updated it in the webpage for analyzation purposes. The animal behaviour is being observed and monitored in order to alert weather changes.* **Findings:** *Sound for frog is a pressure wave, in which the molecules of the medium (air or water) move minute distances to create rapidly alternating higher and lower pressure. These changes in pressure are transduced by a microphone into changes in electrical voltage. The amplitude of the changes in pressure determines the intensity (our sensation of the loudness) of the sound. The rate of the changes (cylces/second or Hertz, abbreviated Hz) is the frequency of sound. The frequency of sound determines our sensation of pitch. A sound that consists of a sinusoidal change of pressure at a constant frequency is a pure tone. While for fish, normally pressures fluctuate slightly. Animals as such fish are highly tuned in to any changes beyond those natural fluctuations, which can signal big changes in the weather. These variations can trigger an animal's survival mechanism. The animals' instinctive reaction is to seek shelter in the face of potentially violent weather.* **Contribution:** *Sensor parameter of behavioral change of animal/insects in weather could alert flood occurrence ahead of time depending on few days before flooding of animal behaviour instead of relying only on the physical monitoring aspect of hydrological and hydrodynamic pre floods features.*

Keywords: animal behavior, master terminal unit, remote terminal unit, human machine interface, data acquisition

Abstract ID: **AIMC-2017-STE-1037**

MISCIBILITY AND THERMAL PROPERTIES OF THERMOPLASTIC STARCH/NOVOLAK/POLYVINYL ALCOHOLTERNARY BLENDS

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Abstract

Introduction: *Thermoplastic starch (TPS) is one of the cheapest biodegradable materials available nowadays. TPS is renewable and can be obtained from various sources such as cassava, pea, rice, maize, potato etc. However, there are some limitations in TPS's nature such as high water sensitivity, poor heat resistance and low mechanical properties comparing to petroleum based plastic. Polymer blending is a good way to overcome the above mentioned limitations. Previous study showed TPS/Novolak blend has improved TPS thermal properties and water sensitivity but it has poor mechanical properties . Polyvinyl alcohol (PVA) was mixed into the blends to improve the blend's properties. In this study, the miscibility of TPS/Novolak/ PVA blend was studied. Besides, the effects of PVA contents on the thermal and morphological properties of TPS/Novolak/PVA blends was also been studied.* **Methodology:** *Ternary blends of Thermoplastic starch (TPS)/Novolak/Polyvinyl alcohol (PVA) were prepared via high speed mixing and twin screw extrusion. The ternary blends were prepared based on the good TPS-Novolak miscibility and the PVA's ability to improve the mechanical properties of the blends. TPS and Novolak were fixed at the ratio of 80:20 whereas the PVA added to the blends varied from 5wt%-50wt%. Thermal properties and miscibility of the ternary blends were studied via thermogravimetric analysis (TGA), differential scanning calorimetry (DSC) and scanning electron microscopy (SEM).* **Findings:** *TGA showed that degradation temperature of the blends increased with increasing of PVA content while DSC well miscibility of the blend components by showing a single melting (Tm) and crystallization (Tc) temperature. Meanwhile, SEM micrographs showed the absence of phase separation in the blends. In short, addition of PVA into the TPS/Novolak blends improved the miscibility and thermal properties of the blends.* **Contribution:** *So far, there is no report about TPS/Novolak/PVA blends is found. This study provide the information about the miscibility and thermal properties of the TPS/Novolak/PVA ternary blend which can serve as a reference for future studies.*

Keywords: Ternary blend; Thermoplastic starch; Novolak; Polyvinyl alcohol; Miscibility; Thermal Properties

Abstract ID: **AIMC-2017-STE-1041**

EFFECT OF SOL-IMMOBILIZED TITANIA BASED CATALYST ON PHOTODEGRADATION OF 1,2-DICHLOROBENZENE IN AQUEOUS

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Abstract

Introduction: *The utilization of sol-immobilization method in catalyst preparation has been widely investigated.* **Methodology:** *Titania based trimetallic oxides catalysts with WO3 and SnO2 as co-catalyst have been prepared utilizing sol-immobilization technique. The effect of ratios, calcination temperature and light source on the photocatalytic activity has been studied.* **Findings:** *Based on the characterization data from DRUV, the trimetallic oxide TiO2/WO3/SnO2 calcined at 900°C has low band gap and visible light range absorption which is essential to enhance the activity. Nevertheless, the experimental results displayed that incorporation of co-catalyst does not significantly improve the photocatalytic activity. Furthermore, TiO2 catalyst was observed to be deactivated by the loading of WO3 and SnO2 upon irradiation under visible light. The photocatalytic activity decreased from 71.3% to 67.9% under visible light radiation. After subjecting it to a range of analytical techniques, including X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), transmission electron microscopy (TEM), it was found that amorphous WO3-SnO2 was dominant in the trimetallic oxide sample which blocked TiO2 surface. This led to the disappearance of oxygen vacancies in the TiO2 particles and hence decreasing its rate of oxidation/reduction recycle.* **Contribution:** *In this paper, the poisoning effect of co-catalyst on TiO2 surface was studied for the first time and a deactivation mechanism was proposed.*

Keywords: Trimetallic oxide, Titania, Sol-immobilization, Photocatalytic, 1,2-dichlorobenzene

Abstract ID: **AIMC-2017-STE-1056**

ISOLATION AND DISTILLATION UREA FROM COW URINE FOR NATURAL FERTILIZER

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Abstract

Introduction: *The research aimed to isolate urea from cow urine as an alternative to produce natural fertilizer by distillation method. Urea is a chemical fertilizer which has rich nitrogen elements. Cow urine is a potential material for producing urea fertilizer. It contains urea or ammonia which is quite h igh, supply is relatively abundant and can be renewed. Local Microorganisms (MOL) is a microorganism which is made of natural materials as the growing medium. These microorganisms are useful to accelerate the destruction of organic materials. It is expected through innovation for mixing urea production using local microorganisms of banana weevil in producing urea fertilizer. In addition, local microorganisms is expected to have further enrich of the soil nutrients and good for plant growth.* **Methodology:** *The tools used in this study included beaker glass, flask, pipette volume, funnel glass, thermometer, erlenmeyer, uv-vis spectroscopy (Hitachi U-2010), FTIR Perkin Elmer and electrical balance. The material used is a urine sample from cow, distilled water, the standard of ammonia (NH3), n-hexane, chloroform, diethyl eter, ethanol, sugar, banana weevil, and carbon dioxide.*

The research activities begins with primary cow urine separating from the bully metals with deposition method using zeolite. The next step is distilled to separate ammonia from secondary cow urine, mixing carbon dioxide with ammonia to form urea, and create local microorganisms of banana weevil which will be mixed with urea distilled. To determine the concentration of urea, it was used standard curve method using Spectrophotometer UV-Vis. And the final product will be analyzed using FTIR to determine the functional groups of the urea compound.

Findings: *This was to measure the absorbance of standard solutions and urine samples from the optimum λ (419 nm). The absorbance data of the standard solution was prepared with calibration curve equation so it was to determine the concentration of ammonia in the urine sample using absorbance value that included the equation of the standard calibration curve. The levels of ammonia obtained is used to determine levels of urea were calculated stoichiometry.*

To determine whether there is urea in the end product, then analyzed using FTIR. Based on the results of FTIR, it show that the characteristic of absorption C = O carbonyl in the 1700 cm-1, -CN in the 2250 cm-1 and N-H in the 3400 cm-1. The uptake of areas suspected to be clusters of urea compounds.

Contribution: *Ammonia from urine sample of cow is separated by the addition of organic solvent in the process of distilation. Ammonia could be added carbon dioxide to form urea. The result using FTIR analysis showed the functional groups of urea. Local microorganisms mixed with urea rated alive, because the microorganisms living in the pH range of urea. It is expected that through innovation mixing urea production with local microorganisms of banana weevil can help governments in producing urea fertilizer and reduce dependence on natural gas in the production of urea fertilizer chemicals. Local microorganisms is expected to further enrich the soil nutrients and good for plant growth.*

Keywords: Cow, Urine, Distillation, Local Microorganisms, Banana Weevil

Abstract ID: **AIMC-2017-STE-1057**

CHARACTERIZATION AND OPTIMIZATION IN THE PRODUCTION OF FATTY ACID METHYL ESTER OVER BI-FUNCTIONAL, CR/CA/AL2O3 CATALYST

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Abstract

Introduction: *Environmental concerns in fossil fuel depletion intensified the search for alternate fuel from renewable resources. Biodiesel is commonly produced by transesterification of vegetable oil in the presence of homogeneous catalyst. These catalyst, however, dissolved into the vegetable oil and a large amount of water required to remove the homogeneous catalyst that can make the saponification occurs. The focus of this study is to produce biodiesel from low-grade cooking oil by using heterogeneous base catalyzed transesterification reaction.* **Methodology:** *The heterogeneous base alkaline earth metal oxide incorporates with transition metal oxide (Cr/Ca) supported on Al2O3 were used as bi-functional catalyst. The investigation of Cr/Ca/Al2O3 catalyst on the calcination temperature, chromium loading and number of alumina coatings had significantly affected the catalytic performance. The design of experiments was performed using Box-Behnken Design (BBD)*

coupled with response surface methodology (RSM) in order to optimize the transesterification conditions. Three process parameters which were reaction time (1-5 hours), oil to methanol ratio (1:12-1:24) and catalyst loading (2-10 wt.%) were set in a range between low and high levels which coded -1 and +1 to achieve maximum response for the biodiesel conversion. **Findings:** *The optimum conditions from experimental data were achieved with 10 wt.% of Cr loading of Cr/Ca/Al2O3 catalyst calcined at 700°C with 3 times number of alumina coatings exhibited the highest fatty acid methyl ester (FAME) yields, 84.72% at mild reaction conditions (65°C, atmospheric pressure, 1:18 oil to methanol ratio, 6 wt.% of catalyst loading and 3 hours of reaction time). The physicochemical properties by BET surface area of Cr/Ca/Al2O3 catalyst calcined at 700°C which gave high surface area, 164.32 m2/g. FESEM-EDX analysis of Cr/Ca/Al2O3 catalyst indicated the amorphous in structure with undefined shapes and mixture of larger and smaller particles sizes.* **Contribution:** *The experimental value achieved with 84.72% conversion of biodiesel closely agreed with the predicted result from RSM and validated the findings of response surface optimization. This modified base heterogeneous catalyst, Cr/Ca/Al2O3 which are non-leaching and recyclability for the transesterification of biodiesel has not been revealed.*

Keywords: Bi-functional catalyst; Box-Behnken Design, Heterogeneous, Transesterification

Abstract ID: **AIMC-2017-STE-1058**

SPATIO-TEMPORAL CHANGES IN DAILY RAINFALL EXTREMES IN PENINSULAR MALAYSIA

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Abstract

Introduction: *Aim to extract different indices from Asian Precipitation Highly Resolved Observational Data Integration towards Evaluation of Water Resources APHRODITE from 1951-2007 and observe the rainfall variability in Peninsular Malaysia.* **Methodology:** *Daily Data set from APHRODITE monsoon Asia Precipitation data V1101 was downloaded and used in this paper from 1951-1970 with a spatial resolution of 0.25 Latitude and 25 Longitude. Different stations were chosen all over Malaysian Peninsular with a minimum total recorded rainfall days of at least 50%. Then each station was compared with the gridded APHRODITE data set and stations closer to the APHRODITE data set were chosen* **Findings:** *Extreme rainfall events have increased in the recent discoveries by many climatic models. It seems that global warming is playing a vital role in these indices. Though it is not possible to make a concrete decision on global climate change impacts on extreme rainfall indices in peninsular Malaysia, it can be remarked recent changes in temperature in region may have change the rainfall pattern and consequently extreme rainfall indices. With the increase of both extreme rainfall and consecutive dry days, more floods and drought-like conditions become more visible in different parts of peninsular Malaysia in recent years. APHRTODITE showed some indication regarding the extreme rainfall events in Peninsular Malaysia.* **Contribution:** *Different indices trends were found during the research from APHRODITE and a increase in rainfall in all indices were found out and also an increase in dry days were also found.*

Keywords: Climate change, extreme rainfall, APHRODITE, peninsular Malaysia

Abstract ID: **AIMC-2017-STE-1062**

RIVER RESERVES: A BOUNDARY AFFECTING LOCAL MICROCLIMATE

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Abstract

Introduction: *River reserves or urban riparian functions as an important part of both the adjacent land and the river itself. Malaysia has gazetted this particular land under Section 62 of the National Land Code in the year 1965. However, its criteria are simply determined by the width of the reserved land without emphasizing on other relevant aspects. Recent studies prove that vegetated urban riparian showed thermal reduction than those consisting of only hard surfaces, and surrounding material do give impact on air temperature. This paper aims to evaluate how river reserves with different vegetation formation and materials affect the local microclimate.* **Methodology:** *Horizontal distribution of ambient air temperature and relative humidity is measured in two varied formations of river reserve, which is bound by the same river, in Johor, Malaysia. Surrounded by housing area, the north-east river bank is undeveloped river reserve, and on the south-west riverbank, the river reserve has been developed into neighbourhood green area accessible to the locals. Measurements were taken at 12*

locations that were perpendicular to the river bank. The apparatuses were all located at unshaded area, at the height of 1.5 meter above the ground and recorded every 30 minutes for 12 hours. Both sites are on the opposite sides of the river, enabling the microclimate effects to be assessed with different vegetation formation and materials. **Findings:** *Despite the low-albedo materials, developed river reserve shows lower microclimate when compare to undeveloped river reserve area. Even though the unexploited river reserve has a higher percentage of vegetation growth, the tree formations causing less area are shaded when compared to the developed river reserve. Evenly distributed canopy tree and high clear trunk height in the developed river reserve allow wind movement and ventilation to the adjacent build-up area. It was obvious that differences in ambient air temperature and relative humidity linked to microclimate factors such as shading and wind movement. Therefore, vegetation should be well-thought-out vertically and horizontally since it could block wind flow and cause elevated humidity, which affects the local thermal conditions. Even though the percentage of surface covered by vegetation is high, wind blockage and ventilation condition plays an important part and should be further explored in terms of pattern, direction and velocity. Consequently, additional study of these features is required to provide detailed guidance towards gaining the most efficient measure from an urban river reserve in mitigating heat island effect.* **Contribution:** *The study is significant in response to the current trend of urban river reserve. Either natural or fully developed; the impact of vegetation formation on microclimate in a hot and humid area can be substantial. Wind from vegetated area known for reducing the temperature in build-up area. However, its benefits might be lacking if less consideration displayed through the vegetation formation. The finding indicates the importance of vegetation vertically and horizontally since high friction to wind flow influence the local microclimate. This contributes to local authorities and other practitioners to elaborate a more substantial urban river reserve maintenance and management.*

Keywords: River reserves, urban riparian, vegetation formation, local microclimate

Abstract ID: **AIMC-2017-STE-1066**

ASSESSMENT OF GLOBAL PRECIPITATION CLIMATOLOGY CENTRE DATA IN REPLICATION OF VARIOUS RAINFALL PROPERTIES IN NIGERIA

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Abstract

Introduction: *Rainfall is one of the most important variables in hydrological and climatic research. For these purposes, several rainfall products including; gauged based, satellite based, merged satellite/gauge and reanalysis products have emerged over several decades. Amongst them, the gauge based gridded datasets are widely used due to their availability for longer periods. Though the gauge based gridded precipitation data can provide comprehensive global precipitation map at consistent spatial and temporal scales, their accuracy in precipitation estimation is militated upon by diverse land surface features such as elevation and climate type representing the average ambient atmospheric conditions. Therefore, the choice of gauge based gridded rainfall data is very crucial to a model's output. Literatures have reported the GPCC data product to be one of the reliable rainfall products for climatic studies. To ascertain this for the study area, the ability of the GPCC to replicate rainfall properties of a referenced data, the (observed data) GHCN has been assessed.* **Methodology:** *The data used for 37 rain gauge stations are monthly data obtained from the Global Historical Climatology Network (GHCN). The GPCC monthly full reanalysis precipitation data at a spatial resolution of 0.50 × 0.50 latitude and longitude was extracted for the same stations. For the assessment, standard statistical indices: percentage of bias (Pbias), normalized root mean square error (NRMSE), Nash-Sutcliff efficiency (NSE), modified index of agreement (md) and volumetric efficiency (VE) were used to check the ability of the GPCC to replicate the observed data properties including the mean, variability, and pattern. Time series plots of the two data sets for the stations were graphed and the residual between the two obtained. To confirm the ability of GPCC to replicate the observed annual rainfall distribution of the observed data, the similarity between the probability density function (PDF) and cumulative density function (CDF) of observed and gridded precipitation data were assessed. Annual trend analysis for both data sets was done for the same purpose. Finally, the spatial distribution maps of the mean and standard deviation of observed and GPCC precipitation were compared to show ability of GPCC to replicate the spatial distribution of observed precipitation and propagation of precipitation phenomena.* **Findings:** *The time series results shows by visual inspection that most of the 40 year's time series plots of the 37 stations for the observed and the GPCC data matched. Over or under estimations which are not very significant were however seen at some stations. This is buttressed by the residual plots. With exception of few stations, the PDF and the CDF also shows great similarities in their plots for the data sets.*

While the spatial statistical maps of the mean of the observed and the GPCC data shows slight similarity around the central part of the study area, the standard deviation are seen to be very similar for both data. The GPCC data shows in a similar way that the trend of rainfall in the study area shows a general decrease but more significant in the northern parts. Mean monthly spatial rainfall distribution shows similarities in many cases for the area. The error metrics obtained from the models indicates that the model performance was good. **Contribution:** *Going by the analysis of the metrics especially the NSE, md, and VE, and visual inspection of the times series plots and residual plots, and the spatial distribution of precipitation of the statistical maps and mean monthly rainfall maps, it can be concluded that the GPCC data set satisfactorily replicates the rainfall properties of the observed data over the study area.*

Keywords: Global Precipitation Climatology Centre, Rainfall spatial distribution, Climate, Nigeria.

Abstract ID: **AIMC-2017-STE-1068**

THE POTENTIAL COST IMPLICATIONS AND BENEFITS FROM BUILDING INFORMATION MODELING (BIM) IN MALAYSIAN CONSTRUCTION INDUSTRY

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Abstract

Introduction: *The construction industry is being labelled as an industry which is developing continuously in contemporaneous with its unparalleled characteristics and incertitude along the project delivery process. To cope with the development flow, the industry requires the embracement of advanced information technology approaches and alternatives such as Building Information Modelling (BIM) which can prompt close integration and consolidation among the involved stakeholders. However, the acceptance and espousal of BIM still remained at marginal level. Therefore, this paper aims to evaluate the workability and applicability of BIM in the Malaysian construction industry, in terms of its potential cost implication and benefits; in parallel with the objectives to examine the significances and relevant cost benefit elements of BIM investment in industry.* **Methodology:** *Qualitative approach is utilized in this study. Data is collected through structured interview session with the industry practitioners. Interviews are opted for current study to depict the genuineness and reality-close-up, in terms of opted cost-benefit elements; to explore and enhance greater depth and extension of meanings. The data gathered from the interview session are analysed by employing framework analysis approach.* **Findings:** *It is found that the BIM potential cost implications are fall into consultancy fees, variation orders, re-measurement, mark-up and Late and Ascertained Damages (LAD). There are 10 external factors and 16 driving factors that lead to BIM implications in Malaysian construction industry. However, the BIM implications are hindering by the high training cost, organisation and data management, BIM workflow, BIM experiences and BIM risks. The results are then synchronized in framework analysis to develop BIM investment framework in Malaysia.* **Contribution:** *This paper shed light upon the preliminary concerns of a research plan, with the intention to comprehend the perceived value of BIM in the Malaysian construction industry. Then, a BIM reference framework is prepared to serve as a baseline guidance for potential adopters to outline effective BIM adoption planning with the incorporation of future forethoughts.*

Keywords: Cost benefits, Building Information Modeling, Malaysian construction industry.

Abstract ID: **AIMC-2017-STE-1069**

CHALLENGES OF MOBILE MONEY TO MOBILE TRANSACTION SERVICE ON POLICY REGULATION AND SECURITY FRAUDS IN EAST AFRICA

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Abstract

Introduction: *Mobile monetary transfer service is engulfing most of the developing countries and providing financial transaction inclusion to large unbanked communities. In all together, in any case from any country particularly East Africa, the mobile cellphone money transactions are changing the traditional financial risk management requirements and transaction policy control environment and the central banks are creating commercial procedure, assessment and improvements. In this survey paper we highlighted the importance of*

mobile monetary transactions to the developing countries and the policy, rules and regulation challenges they have confronted, the paper also outlines the potential security fraudsters and attackers. **Methodology:** *In this survey paper, we used case study as our reach method because the researcher hasn't performed any pilot test or any data collection methodology as there is no information from primary data collection resource. There are several categories of case study including exploratory, descriptive and explanatory. We selected descriptive case study as the researcher's survey paper methodology because of the different strategies being used by telecommunication network operator and the narratives of the description of the data being assessed relating to mobile money transfer services. The descriptive case study can be both qualitative and quantitative and the papers, case studies and journals that the researcher went through to observe, analyze and study during the groundwork of this survey paper is all based on descriptions of the mobile money financial transaction services. Descriptive theory was used to examine the depth and the scope of the mobile money transactions service and their telecommunication network operators' carrier.* **Findings:** *The mobile money to mobile transfer services are Papers have written a lot about the rise of new technology in east Africa mobile money transfer operations like Safaricom and Vodacom, but little have written from Telesom Zaad service, the world leading mobile monetary transaction of personal to personal transaction. Scholars have investigated in many aspects of this new technology innovation in order to enlighten the pros and cons and many other aspects that may cut the traditional ways of transactions. The researchers have also mentioned that these new technology implementations have saved a lot of time, cost and have their own traces like printing daily transactions or going to the telecommunication network agencies or stores to print customers to any transactions that they request. The most scholar documentation focuses on internet banking, mobile money transfer and mobile banking.*

Comparing companies like Safaricom, Vodacom and Telesome have used different customer outreach strategy, distribution strategy, business model and product strategy. For example Vodacom and Safaricom charge on very transaction that takes place while Telesom the transaction service is free, Vodacom use aggregator to scale the size of their network transaction coverage while Telesom use merchants and salary payers in order to reach the customer.

Contribution: *In this survey paper the researcher highlighted the background history of mobile money to mobile in east Africa, which is the heart dominant of mobile money financial transaction all over the world. After reading more than twenty five papers, the research contributed that this new technology innovation is taking place in east Africa in different ways according to the culture and the policy restriction environments. In Kenya and Tanzania, the amount of mobile money being transferred is controlled by the central banks backed by the central government while in Somalia, the amount of mobile money to be transferred in daily transaction is unlimited because people are using mobile money more than transferring money from person to person. They are buying goods and services and they are deposited and withdrawing from their account banks.*

The researcher has also outlined the potential challenges that mobile money to mobile may face and we found that mobiles carrying money has more risk than internet banking and mobile banking because mobiles are portable and they are prone to lost and theft. Mobile also belongs to individuals who use as more personal information which add the pressure of high security concerns. The researcher also found that this kind monetary platform can be easily used for money laundering and terrorist financial transactions.

Keywords: mobile money transfer; mobile monetary; network operator; financial inclusion, mobile money to mobile

Abstract ID: **AIMC-2017-STE-1070**

EMPHASIZING GRID FEATURE AS FLOOD ZONAL IDENTIFICATION TO SUPPORT FLOOD RELIEF MECHANISM

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Abstract

Introduction: *Annual flood outbreaks during Northeast monsoon season in the East Coast of Peninsular Malaysia are known to be a prevalent issue. More research and studies incorporating Geographic Information System (GIS) approach have been invested by the government to lessen Malaysia's economic strain. This study will elaborate on how gridding feature is essential in flood mapping while focusing on Pekan sub-district as the case study area.* **Methodology:** *The methodology consists of combining a generated 3-Dimensional map model with multiple blank layers acting as river water level. A simple survey procedure was conducted to convert*

MyGeiod mean sea level (MSL) to GPS ellipsoidal height (WGS 84) by ratio calculation. River water levels are then to be offset by 1.0m each starting from 2.5 meter (danger level, Pekan station; ID 3434401) to 5.5 meter height. Grids were set at 250m x 250m squares focusing only within the study area boundaries and the inundated areas are populated and observed from the river water simulation. **Findings:** *The 3-Dimensional map model of Pekan sub-district provides terrain information of the area while combining it with multiple layer offsets allow inundation to be simulated. Flood zones are identified and marked where results indicate significant flood effect at 3.5m (in which 3.66m is the danger level). While at 5.5m gauge reading, Pekan sub-district is observed to be totally inaccessible from the three main routes (Pekan-Rompin, Pekan-Balik Batu, and Pekan-Kuantan).* **Contribution:** *The graphical output that are produced are then used to assess the rate of accessibility and affected infrastructures which have the potential to act as flood relief center. Integrating these information with disaster web information provider like 'infobanjir' (DID) and 'disaster portal' (NADMA) should be emphasized to ensure systematic flood management in the future.*

Keywords: Gridding; Flood Modelling; MyGeoid; Ellipsoidal Height

Abstract ID: **AIMC-2017-STE-1072**

LIFT PERFORMANCE ANALYSIS OF AIRFOIL USING PLASMA ACTUATOR

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Abstract

Introduction: *This is considered to be an introductory study to understand the improvement a plasma actuator can brings to aerodynamic performance and characteristic of an aircraft system. Plasma actuator are type of electrical actuator that is capable of ionizing the flowing air and adding localized momentum to the flow through collision process of the migrating charged particles due to the large potential difference with the natural surrounding gasses. Through wind tunnel testing, the lift performance of a NACA0015's airfoil with and without the effect of a plasma actuator will be studied.* **Methodology:** *The experimental setup consist of three main parts; the NACA0015 airfoil, wind tunnel and the plasma actuator. The actuator used consist of two copper tape with thickness about 0.1mm each. The copper tape was separated by 0.2mm thick kapton as dielectric. The dielectric was built by stacking three layers of kapton tape, which is 60μm thick each, on top of each other. The width of the top electrode is 2mm, while its length is 65mm. For the bottom electrode, its width is 4mm and its length is 75mm. The power to this actuator is supplied by a 6.0 kV pulse high voltage regulator. This actuator was attached on the top surface of the airfoil where the separation is expected to happen. When the wind tunnel is turned on, the lift forces induced will be recorded. For each velocity and its pair of angle of attack, two sets of lift force will be recorded. One set is the lift forces during where the actuator is turned off, while another set is when it is turned on. The data of the lift forces collected will then be analyzed to see the effect of a plasma actuator to an airfoil.* **Findings:** *In terms of the experimental data, it is noted that the lift performance of the plasma actuator shows positive trends at lower angle of attack, while at higher angle, the effect of the plasma actuator is hardly seen. This is due to the limitation of power we have in this experiment. Moreover, the effect of plasma actuator on the stalling angle was also limited by the equipment. Referring to the literatures, this experiment realized on a few reasons of the inconsistency of the data recorded. The main differences between this study and other literatures shows that our power supply is not sufficient in producing adequate plasma thrust to affect the airflow. Although the results of the experiment did not give us convincing conclusions, there are also other observations to note from the experiment. Firstly is the effect of the gap between the top and bottom electrodes. By using our relatively low 6 kV-rated voltage source, gap of the electrodes can give significant remarks. This shows that when the gap is increased, the plasma generated will be less. As a result, less effect can be produced by the plasma.* **Contribution:** *The experiments was successful in showing the effect of the plasma actuator on the lift performance of a NACA 0015, though the results was not as swayed as it was expected. The improvement on the lift performance of the airfoil was found to be positive at lower angle of attack, while at higher degrees, the thrust generated was inadequate. For further improvement, an adjustable and higher rated power supply is needed to study its performance. With a better equipment, more aspects of a plasma actuator can be studied, including the effect of different voltage level and different actuators' configurations.*

Keywords: Plasma actuator, Dielectric-barrier-discharge, NACA 0015 airfoil, Wind tunnel, Aerodynamic performance

Abstract ID: **AIMC-2017-STE-1077**

USE OF MOBILE PLATFORM FOR RUNOFF PREDICTION IN THE AGRICULTURAL LAND USING RATIONAL FORMULA

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Abstract

Introduction: *One of watershed health indicators is peak flow. High peak flow reflects watershed degradation. Some watersheds do not have hydrologic station: therefore, the peak discharge data are not available. Appropriate model for estimating peak run-off should be tried in some watersheds with different area. The aim of this paper is to report on the development of a runoff prediction on mobile platform using Rational Formula. The method is chosen due to simplicity and the most popular method in peak runoff estimation. Indirect method for runoff predictions are plentiful, one of which is rational formula.* **Methodology:** *Runoff prediction model is the describing mathematically the processes of accumulating water from rainfall on the surface of a land, which become surface runoff. Runoff is simply the excess of water from infiltration rate and surface storage. There exist many runoff prediction models which were developed, namely Rational formula, and several other empirical models.*

Rational formula is an oldest method which was developed merely to predict the peak discharge rate without seeing the distribution of discharge rate over time. In this formula, it is assumed that the rainfall intensity over the draining time of the water catchment is constant, so that runoff intensity is equal to rainfall intensity falling in the area.

The assumption is certainly merely applied to the small water catchment with impermeable surface such as parking area. The assumption can be expressed in the following formula (Kensaku Takeda, 2006).

$$Q = 0.00278\ C.Ip.A \qquad (1)$$

Where:

Q = maximum flood discharge (m3/s)
C = runoff coefficient
Ip = Rainfall intensity (mm/hour)
A = effective water catchment area (km2).

By using all those factors, we try to extract all knowledge into our smart mobile application to predict RUNOFF.

Findings: *In order to measure the system's usability in this study, the authors adapt a model developed by Ali (2013). This model is chosen due to the usability measurement is specifically designed for mobile application. The usability characteristic in this model is categorized into four characteristic: ease of use, user satisfaction, attractiveness, learnability. convenience sampling was chosen, in which the respondents were obtained from any members of the population who are conveniently available to provide it (Bougie & Sekaran, 2010).*

This study managed to gather 35 responses to be involved in the experiment.

All respondents were then required to fill the usability questionnaire that represents all the characteristics mentioned earlier. The questioner used the likert scale of 5 point

By using descriptive analysis in SPSS, The results show all respondents have very good perspective in usability of the mobile application in general.

Contribution: *A new solution for runoff calculation is simple to run by changing the Rational formula in smart mobile applications as the appropriate tool in lieu of runoff calculation system which is manual. This application is designed with a simple language for each factor and also by utilizing Based System (RBS), an algorithm rules. Runoff calculation in this paper is begun by calculating the catchment characteristics, followed by maximum intensity of rainfall and catchment area. The program is also designed to give the user classifications of rates of calculated runoff of a given land and suggesting factors that require further treatments.*

Keywords: Runoff prediction, rational formula, catchment characteristics, maximum rainfall intensity, mobile application

Abstract ID: **AIMC-2017-STE-1079**

EFFECT OF HALO AND S/D IMPLANT VARIATIONS TOWARDS DRIVE CURRENT IN VERTICAL DOUBLE-GATE P-CHANNEL MOSFET

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Abstract

Introduction: *This paper describes a study on the effect of Halo and Source/Drain (S/D) implant upon drive current (ION) in vertical double-gate (DG) PMOS device.* **Methodology:** *The experiment and process optimization were conducted by using L9 orthogonal array of Taguchi method. The significance level for each process parameter upon ION value was determined by utilizing analysis of variance (ANOVA). The virtual fabrication and electrical characterization of the device were conducted using a process simulator (ATHENA) and a device simulator (ATLAS) respectively. This method was further enhanced by Taguchi modeling to optimize the process parameter variations upon ION.* **Findings:** *Based on the final results, the most dominant factor influencing the ION value was found to be S/D implant energy with 99% of factor effects on signal-to-noise ratio (SNR). The highest ION value after the optimization was found to be 323.2 µA/µm.* **Contribution:** *The optimum solution in obtaining the highest possible value of drive current (ION) value was successfully predicted by L9 orthogonal array Taguchi method. There is an improvement of 7.7% ION value if compared to the value before the optimization approach.*

Keywords: ANOVA; Drive Current; Taguchi

Abstract ID: **AIMC-2017-STE-1080**

A COMPUTATIONAL STUDY OF THE STIBNITE BY FP-LAPW

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Abstract

Introduction: *Chalcogenide materials have considerably attracted the attention of a lot of researchers because of showing a great potential for different applications. Stibnite (Sb2S3), a chalcogenide binary material is intensively investigated for exploiting its potential for optoelectronics/photovoltaics being a less toxic, abundantly available, stable and efficient one which are the fundamentals for sustainability as well as to realize the dream of green energy.* **Methodology:** *In this work, a computational study of the structural, electronic and optical properties of the stibnite (Sb2S3) crystal structure is presented using the full potential (FP) linearized augmented plane wave (LAPW) method framed within the density functional theory (DFT). To obtain more reliable results of the electronic and optical properties, Trans-Blaha (TB) approach of the modified Becke-Johnson (mBJ) potential in combination with generalized gradient approximation (GGA) of Perdew-Burke-Ernzerhof (PBE) is used for the evaluation of the change-correlation potential part, in our present calculations. Moreover, these calculations are performed by involving spin-orbit coupling contribution as well.* **Findings:** *The obtained results of the band gap energy are found in nice agreement with the experimental values as compared to the standard DFT calculations.* **Contribution:** *This calculation of stibnite are running with Trans-Blaha (TB) approach of the modified Becke-Johnson (mBJ) potential in combination with generalized gradient approximation (GGA) of Perdew-Burke-Ernzerhof (PBE) and involving spin-orbit coupling contribution*

Keywords: Density Functional Theory, LAPW, stibnite

Abstract ID: **AIMC-2017-STE-1084**

SYNTHESIS AND CHARACTERIZATION OF CHITOSAN FROM CRAB SHELL

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Abstract

Introduction: *Chitosan is the modification of chitin which found on the outer skin of Crustacea species such as shrimps and crabs. This study aims to syntesize and characterize chitosan from crab shells.* **Methodology:** *The tools that were used in this experiment are glassware, filter paper, magnetic stirrer, pipette volumes, oven, three-neck glass flask, thermometer, and FTIR. The materials used in this experiments is crab shells obtained from*

seafood stalls around Yogyakarta, especially in Muara Kapuas Restaurant, HCl 5%, NaOH 3.5%,HCl 1 N, nitrogen, NaOH 50%, distilled water.

Chitin isolation stage included demineralization using HCL 1 N and deproteination step with NaOH 3.5%. Transformation of chitin into chitosan was done through the deacetylation reaction by using NaOH 50%.

Findings: *The result showed that characteristic of the chitosan obtained in this research was as follows: the yield of transformation chitin into chitosan was 66.64%; it had a white color powder texture with had no smell with 76.69 % deacetylation.* **Contribution:** *Crab shells obtained from sea food stalls around Yogyakarta, especially in Muara Kapuas restaurant . Crab shells is crushed into powder. Then synthesized by deproteination, demineralization and deacetylation process. The FTIR analysis results show the functional groups present in chitosan. It is hoped that through innovation using crab shells can help the government to minimize waste from crab shells.*

Keywords: Chitin, Chitosan, Crab Shells.

Abstract ID: **AIMC-2017-STE-1085**

PEMODELAN KONJOIN KABUR UNTUK MENGKAJI KESEDIAAN PENGGUNA BERALIH KEPADA PENGANGKUTAN BERBASIKAL DI BANDARAYA IPOH

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Abstract

Introduction: *The increase of vehicles on the road contributed to the unsustainability city. The user dependence on motorized vehicles such as cars, motorcycles, vans, buses, and trucks should be reduced. Bicycle as transportation is the alternative methods that can be done as active transportation. The usage of bicycle can be reducing traffic, improve health, and reduce environmental pollution. As a model to assess the willingness of consumers to switch to bicycle transportation, total of 400 questionnaires were distributed in Ipoh city. The analysis uses fuzzy conjoint model as introduced by Zadeh and Tuksen to assess the extent to which consumers are willing to shift to cycling transport. The findings concluded, there are 6 strategies to improve the level of bicycle use special facilities for cyclists, a special crossing for cyclists, cycle parking provision, the application of the current cycle, associated facilities and bicycle users, and location of routes for cyclists.* **Methodology:** - **Findings:** - **Contribution:** -

Keywords: Cycling; active transport; fuzzy conjoint model

Abstract ID: **AIMC-2017-STE-1086**

INSTRUCTIONAL COMPETENCIES REQUIRED BY TECHNICAL COLLEGE TEACHERS FOR EFFECTIVE PERFORMANCE IN TECHNICAL DRAWING

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Abstract

Introduction: *National Business and Technical Education Board chief examiners` reported that instructors employed to teach the students lack required competencies in teaching methods (NABTEB 2002). Lack of acquisition of relevant competencies by teacher in teaching Technical drawing will lead to the poor performance of students in Technical drawing. Therefore, the study was conducted to identify the instructional competencies required by technical teachers in teaching technical drawing.* **Methodology:** *The study adopted descriptive survey design. The population for the study is 103 Technical College teachers in Ondo State. The instrument for data collection was a questionnaire. The questionnaire consisted of thirty eight (38) items structured in a four point rating scale based on the three research questions formulated for the study.* **Findings:** *Based on the findings made, it was found that Technical College teachers required all the 15 instructional competencies identified for them to be effective in teaching Technical drawing. It was also found that factors are militating the acquisition of those competencies by the teachers.* **Contribution:** *Original research study conducted by researchers. The finding contributed to identify the factors and how to enhance the competency factors.*

Keywords: Instructional competencies, technical drawing, technical teacher

Abstract ID: **AIMC-2017-STE-1087**

MULTI-RESPONSE OPTIMIZATION FOR TIO2/WSIX-BASED VERTICAL DOUBLE-GATE MOSFET USING TAGUCHI-BASED GREY RELATIONAL ANALYSIS

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Abstract

Introduction: *An approach to optimize multiple responses of titanium dioxide/tungsten silicide (TiO2/WSix)-based vertical double-gate MOSFET is conducted, using a combination of L9 orthogonal array (OA) of Taguchi method and grey relational analysis (GRA).* **Methodology:** *Four process parameters which are VTH implant energy, halo implant dose, source/drain (S/D) implant dose and S/D implant tilt angle are optimized to obtain the desired value of on-current (ION), off-current (IOFF) and subthreshold slope (SS). The design of experiment (DoE) is based on the L9 OA of Taguchi method and then the experimental data for multiple responses are converted into a single unit called grey relational grade (GRG). The most optimal level of four process parameters towards multiple responses are selected based on the highest GRG.* **Findings:** *Based on the analysis of variance (ANOVA), the most significant factor is observed to be S/D implant dose with 35.6% factor effect on GRG. The optimized value for ION, IOFF and SS after the optimization approach are 1599.3 µA/µm, 8.655E-10 A/µm and 68.02 mV/dec respectively with 0.8362 of GRG.* **Contribution:** *The final results have justified that the L9 OA of Taguchi method is able to optimize multiple responses simultaneously in the TiO2/WSix-based vertical double-gate MOSFET.*

Keywords: ANOVA, on-current, off-current, subthreshold slope

Abstract ID: **AIMC-2017-STE-1091**

EEG ANALYSIS ON HUMAN REFLECTION TOWARDS RELAXATION OF MIND

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Abstract

Introduction: *This research aims to study the application of neural signal analysis on human by using Net Station Acquisition interface for acquiring EEG data. We focused to relate the EEG signal frequencies with human emotions when the subject is instructed to listen to music and Quran recitation.The EEG works as a brain signal processing technique that allows gaining the information of the complex inner mechanisms of the brain. The waveforms recorded are thought to reflect the activity of the surface of the brain cortex.* **Methodology:** *Six healthy subjects had been participated in the experiment. They are from both gender male and female, from the age of 20-24 years old, a non-Muslim and five Muslims. All of them are free from any disease and medication. All participants are given verbal consent regarding the experiment protocol. The experiment include the measurement of the subject's head circumference, starts from the brow bone to 2.5cm (1 in.) above the inion, back to the brow bone. This measurement is important in order to determine the size of the hardware to be used. The hardware and software used was the Geodesic Station Net with 256 channels. Then, the net is applied on subject's head. The Cortex position must be placed on the marked position as measured during the first step. Only then the Net can be adjusted using the ear and eye band beads so they do not rest on the jaw bone. The placement of the vertex, nation and mastoid sensors are checked. Each sensor is briskly scrubbed side to side on the scalp to ensure good contact with the scalp. In addition MATLAB software is used for the purpose of extracting and analyzing the data.* **Findings:** *The results were analyzed from 256 channels of electrodes. EEG data of auditory listening task was divided into two segments namely Quran and Music. These segments are recorded as 'Good' after the pre-extraction process of the raw data has been done. The alpha brainwaves (8-13Hz) are produced. The ERP amplitude values are mapped on the scalp with a color scale. Blue means negative potential compared to baseline, red is positive potential compared to baseline and white is no potential compared to baseline. The darker the blue the more negative the amplitude is and the darker the red, the higher the amplitude is. The dark spots on the scalp below represent the amplitude voltage of each position. From this Topo plot view, we can observe the brain activity at each lobes, frontal, parietal, occipital, and temporal. This Topographic plot view allows us to observe the brain activity from time to time.*

Contribution: *The ERP analysis on Net Station review allows us to observe the alpha brainwaves and the topographic map at each 256 sensors of electrodes. Thus, both music and Quran listening has proved that these stimuli can lead the subject to relaxation state. From the result, 4 out 6 students tend to have better relaxation*

when they are listening to Quran recitation rather than music. To the best of our knowledge the usage of Power Spectral Density (PSD) to differentiate the level of relaxation has not been done in other previous research.

Keywords: EEG, Quran listening , alpha waves

Abstract ID: **AIMC-2017-STE-1093**

THE APPLICATION OF SENSITIZERS FROM RED FRANGIPANI FLOWERS AND STARGOOSE BERRY IN DYE-SENSITIZED SOLAR CELLS

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Abstract

Introduction: *Nowadays natural based dyes for dye-sensitized solar cells (DSSCs) have been in central research field attention due to its advantages over other type of dyes such as low-cost, low-toxicity, completely biodegradable and abundance in resources. Natural dyes as sensitizers can be produced via simple extraction method of pigments from plant parts such as flower, fruits, leaves, tuber etc.* **Methodology:** *The natural dyes which composed of anthocyanin pigment from red frangipani flowers and chlorophyll from stargoose berry leaves were applied in ZnO based-DSSC. The ZnO photoanode of the DSSCs sample were sensitized in each dye with different duration. The optical and electrical properties of ZnO/Natural dyes thin films were measured.* **Findings:** *The result showed that optical energy gap of ZnO/RF and ZnO/Chlo thin film were high than ZnO. The electrical results was observed that DSSCs which has chlorophyll pigment as dye sensitizer showed better performance of power conversion efficiency (PCE) with value 0.01%.* **Contribution:** *Natural dyes was extracted from red frangipani flowers(RF) and chlorophyll (Chlo) from stargoose berry leaves. the application of RF and Chlo in solar cell was not found in any publication yet.*

Keywords: Red Frangipani Flowers, Anthocyanin, Chlorophyll, Zink Oxide, Dye-Sensitized Solar Cells

Abstract ID: **AIMC-2017-STE-1094**

OPTICAL AND ELECTRICAL PROPERTIES: POTENTIAL OF ELAEIS GUINEENSIS AND TERMINALIA CATAPPA AS NATURAL DYES FOR SOLAR CELLS APPLICATIONS

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Abstract

Introduction: *The increasing energy demand is compounded by various factors. Among them are global warming, growing population and industrial development. Solar cells have become one of the clean technologies that have been adopted to produce electricity. However, due to low efficiency and high production cost of the materials, the development of solar cells was yet feasible. Therefore, organic solar cells, inorganic solar cells, dye sensitized solar cells (DSCs) [2,3,4,5] and hybrid solar cells (HSCs) [6] were developed to match the global demand for renewable energy. The main purpose of this research is to study the potential of natural dye as hybrid solar cell.In this paper, two types of natural dye were extracted from Terminalia cattapa and Elaeis guineensis. They were characterized using UV-Vis Spectrometer to observe the absorption spectrum and the dye structure was confirmed using FTIR.* **Methodology:** *The organic dye is taken from nature plant and this research is conducted in a few stages. Below are the details of the experimental works*

a)Extraction Process of Natural Dyes

In this paper, two types of natural dye were extracted from Terminalia cattapa and Elaeis guineensis. They were characterized using UV-Vis Spectrometer to observe the absorption spectrum and the dye structure was confirmed using FTIR.

b)Preparation of Indium Tin Oxide (ITO) Substrate

The ITO coated glass substrates which is used as working electrode were clean with distilled water for 10 minutes, followed by detergent for 10 minutes, then with distilled water again for 10 minutes. Lastly, ITO must be clean with acetone for 10 minutes before finally clean with the distilled water for another 10 minutes. After that, ITO coated glass substrates were dried using the dryer before being kept in a Petri dish. Finally, the natural dye was deposited on the ITO substrate by using Electrochemical Impedance Spectroscopy (EIS).

CHARACTERIZATION OF NATURE DYE

Absorption Spectrum using Uv vis Spectrometer and to study the dye structure using FTIR. The electrical conductivity was measured using Four Point Probe (FPP).

Findings: *From the result, the broadest spectrum between the extracted dyes is Elaeis guineensis which is in the range of 380nm to 550nm. Elaeis guineensis having the lowest energy gap of 2.4eV compared to Terminalia catappa. Elaeis guineensis dyes extracted with ethanol has the lowest energy band gap compared with Terminalia cattapa. A lowest energy band gap of dye helps the electron to interact faster from the high occupied molecule orbital, HOMO to the low unoccupied molecule orbital, LUMO. Therefore, less energy needed to combine the electron. Elaeis guineensis also have a broader region of the visible light spectrum compared with other dyes. As a result, photon from sunlight can be absorbed easily from the entire region* **Contribution:** *Due to low efficiency and high production cost of the materials, the development of solar cells was yet feasible. Therefore, organic solar cells, inorganic solar cells, dye sensitized solar cells (DSCs) [2,3,4,5] and hybrid solar cells (HSCs) [6] were developed to match the global demand for renewable energy. There are a lot of researches that have been conducted concerning organic solar cells, inorganics, DSCs and hybrid solar cells. However, no researches in hybrid solar cells using Elaies guineesis and Terminalia catappa's leaves as natural dye have been conducted. Futhermore, natural dye from fruits and leaves are viable for hybrid solar cell due to low cost, abundant in resources and safety.*

Keywords: Elaies guineesis, Terminalia cattapa, conductivity, solar cell application

Abstract ID: **AIMC-2017-STE-1099**

MECHANICAL AND SPECTROSCOPIC STUDIES OF POLYLACTIC ACID/HALLOYSITE NANOTUBES SCAFFOLDS FOR TISSUE ENGINEERING

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Abstract

Introduction: *Biodegradable polymers have been widely used for the fabrication of tissue engineering scaffolds due to their ability to degrade by simple hydrolysis to products through enzymatic activities in human body. However, the scaffold must have mechanical properties consistent with the anatomical site into which it is to be implanted and able to retain a firm shape while allowing a fast cell growth. Therefore, this study aims to investigate the effect of Halloysite Nanotubes (HNTs) towards the mechanical properties as well as the spectroscopic study of the nanotube composite scaffold.* **Methodology:** *1. Material*

FDA approved polylactic acid (PLA) (Mw~60,000) is used as the scaffold matrix incorporated with different amount of Halloysite Nanotubes (HNTs) which is supplied by Sigma Aldrich.

2. Fabrication of PLA/HNTs Scaffold via Freeze Extraction Method

PLA was dissolved in1,4-dioxane to form polymer solution overnight and then mixed with a different amount of HNTs until a clear PLA/HNTs composite solution obtained. The resulting PLA/HNTs solution was frozen at -20°C and then immersed in pre-cooled ethanol for solvent extraction. The obtained specimen was taken out and rinsed with pre-cooled ethanol to remove excess solvent.

3. Characterization

3.1 Mechanical testing

Mechanical properties of the scaffold was determined by means of tensile testing (strength, Young's modulus and elongation at break) using universal testing machine according to ASTM D638 standard using a computer controlled Instron machine with a crosshead speed of 1 mm/min.

3.2 Fourier Transform Infrared (FTIR)

Spectroscopy study was done to evaluate the vibrational and functional groups of the scaffold. Fourier transform infrared (FTIR) spectra was obtained from NICOLET IS5-IR SPECTROMETER a Thermo Fisher Scientific brand spectrometer with a resolution of 0.4 cm-1 with scanning range from 400 to 4000 cm-1. **Findings:** *From the tensile test, finding showed that the ultimate tensile strength (MPa) increasing as the amount of HNTs is increased. The significant value of modulus and elongation at break was showed by PLA/5HNTs which is 7.44±0.8 MPa and 1.2±0.2 % respectively. The increasing of mechanical strength in PLA scaffold is due to the existence of HNTs which helps to improve the mechanical properties of the PLA. This differ from the neat PLA sample which it has the lowest value of ultimate tensile strength and modulus which is 3.54 ± 1.2 MPa and 6.75±1.0 MPa respectively. For the spectroscopic study through FTIR results of PLA/5HNTs, the 3611.95 cm-1 shows the OH group vibration that affirms the hydrogen bond between HNTs and PLA does not form because of the difficulty for the coupling agent to access the OH groups of HNTs. The RSi – O – Si and RSi – O – Al bond showed at 1086.48 cm-1 is may cause by the OH groups of PLA with the Si – O and Al – OH of HNTs. The*

interaction between HNTs and PLA is verified by the NH stretching the NO asymmetric stretching displayed by the 1542.83 cm-1 band. **Contribution:** *The findings obtained from the above studies have showed the contribution of HNTs towards the mechanical properties of PLA scaffold in order to retain a firm shape as a tissue engineering scaffold. The spectroscopic study also showed the good interaction between HNTs and PLA itself. Currently, such nanotube composite scaffold has yet been reported using the same method of fabrication for the application of tissue engineering. Therefore, future works, such as in-vitro and in-vivo studies need to be conducted in order to investigate the potential of this PLA/HNTs scaffold for cell growth, thus allowing an increased success of tissue engineering.*

Keywords: Polylactic acid, Halloysite Nanotubes, Tensile strength, Spectroscopy, Tissue Engineering, Scaffold

Abstract ID: **AIMC-2017-STE-1100**

AUDITORY EVOKED POTENTIAL (AEP) STUDIES ON QURAN LISTENING

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Abstract

Introduction: *This paper intends to explore and investigate the relation of brain electrical activities and listening to the holy Quran compare to music. The study of human brain activity using electroencephalogram (EEG) is a growing multidisciplinary field that links electronics, psychology and cognitive science to study human brain activity on meditation. We used EEG to study human mind using Auditory Evoked Potential (AEP) between Quran and music listening. 16 channels of EEG system were used. This research focused on the EEG frequency of the Alpha band and its cognitive relation to the brain lobes to analyze using Auditory Evoked Potential (AEP).* **Methodology:** *Three healthy subjects participated in this research. All of them are free from any disease and medication. This research was conducted in a room with an air-conditioner. Subjects were instructed to sit at their own comfortable. Then the subjects were instructed to rest and listen to 2 sets of Quran recitation and 3 sets of songs which are divided into 3 genres, rock, pop and reggae. Verbal consent was obtained from the participants for the experiment protocol.*

The stimuli started with 60 seconds of silence. Each Quran surah and music clips lasted for 60 seconds and silence for 5 seconds between each clip. The EEG signals were saved as the EEG raw data is in .edf format. The .edf file for each subject was analysed using MATLAB tools which is EEGLAB tools. Using the EEGLAB in MATLAB, the EEG raw data were filtered and transform into FFT. Then the data of the result were save in Microsoft Excel. In the Excel, the data were analyse by simplifying the frequency range that need to be used and then compare to each of the subject stimuli.

Findings: *By conducting this research, the effect of listening to music and Quran on the brainwave signal was found using AEP test. After analyzing the data for each of the subject, the result was different between the subjects. Two of the subject which subject 2 and 3 have higher alpha state value during Quran listening compare to music listening, meanwhile subject 1 has higher alpha state value during music listening which is during Pop song. These finding indicate that the alpha wave increase with higher value when listening to Quran compare to music. Therefore, listening to Quran specifically can bring to relaxing and alert conditions. This appears to concur with that the recitation of Quran gives mental and spiritual relaxation. The result additionally demonstrates which area of brain that creates more alpha wave which in this research, right side of brain produces more alpha wave than the left side of the brain. This finding proposes that listening to Quran recitation can be considered as a method to release tension, relieves boringness, gain more relaxation and also release stress beside listen to music.* **Contribution:** *In this study, the Auditory Evoked Potential (AEP) or evoked response was used to record the electrical potential activities from the participants. This AEP mechanism is distinct from spontaneous potentials as detected by electroencephalography (EEG), electromyography (EMG), or other electrophysiologic recording method. Such potentials are useful for electrodiagnosis and monitoring. To the best of our knowledge the study using AEP method on Quran listening has not been done in the previous research.*

Keywords: Electroencephalogram (EEG), Auditory Evoked Potential (AEP), Quran listening.

Abstract ID: **AIMC-2017-STE-1101**

STATITICAL ANALYSIS OF CRITICAL VELOCITY IN ENCLOSED CAR PARK VIA RESPONSE SURFACE METHODOLOGY

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Abstract

Introduction: *The presence of the beam in enclosed car park resulting smoke back layering phenomenon and consequently creating hazard environments such as stagnant, dead zone and recirculation zone.* **Methodology:** *The current study investigates statistically the effect the presence of the beam using response surface methodology. Fire Dynamic Simulator was employed as a simulation tool while the result was statistically examined using analysis of variance via Minitab application.* **Findings:** *In this study, it has found that the result was linear which the predicted R2 (83.37%) was within permissible of observation R2 (95.83%). Also, the finding of the control parameters which has been identified are beam spacing (p=0.00), longitudinal beam depth (p=0.052), ceiling height (p=0.00) and extraction rate (p=0.042) and consequently give a significant effect toward critical velocity as the main response.* **Contribution:** *In short, the contribution of this study provides a good insight to the engineer in providing initial design of enclosed car park with better condition.*

Keywords: Critical Velocity; Fire Dynamic Simulator; Response Surface Methodology

Abstract ID: **AIMC-2017-STE-1102**

PARAMETER ESTIMATION OF RADAR SIGNALS USING ADAPTIVE DOPPLER-LAG BLOCK SEARCHING WIGNER-VILLE DISTRIBUTION (DLBS-WVD).

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Abstract

Introduction: *Time-varying signals such as LPI radar signals whose spectral characteristics depend on time are best analyzed with time-frequency distribution (TFD). Among TFD classes, quadratic TFD (QTFD) is widely used because it provides high resolution representation both in time and frequency. Cross-terms introduced in QTFD due to the quadratic nature of the TFD makes it difficult to interpret the true signal characteristics and introduce artifacts in the time-frequency representation (TFR). A new kernel function, adaptive Doppler-Lag Block Searching (DLBS) is introduced as a solution in suppressing the cross-terms and obtaining an accurate TFR.* **Methodology:** *The new DLBS-WVD can be used to evaluate broader types of radar signal including continuous wave LFM (CW-LFM) and Costas coded pulse. The ability to handle wider types of signal can avoid the need of multiple time-frequency analysis (TFA) at a single location. For most of radar signals, the signal auto-terms are located close to the origin in the ambiguity domain while the cross-terms are positioned further away from the origin. In terms of energy concentration, the highest energy in the ambiguity plane is at the origin. The search method employs in DLBS-WVD in kernel parameters estimation is origin biased searching strategy because the auto-terms of the signals are positioned close to the origin. The sum of absolute difference (SAD) technique is used to determine the match between the reference block, Az(0,0) and the analyzed blocks, $Az(v,\tau)$ in the ambiguity domain. The blocks that have high energy level can be considered as auto-terms rich area which later used in the window width estimation. The size for the analyze and reference blocks can be in any number. A bigger block size slightly reduces the computational cost but in exchange of accuracy in the kernel parameter estimation.* **Findings:** *The performance of adaptive DLBS-WVD is measured in terms of the accuracy in the TFR and instantaneous frequency (IF) estimation for every signal types. From the estimated IF and TFR, the detail signal parameters such as pulse repetition period (PRP), pulse width (PW), and bandwidth (BW) can be obtained. The adaptive DLBS-WVD is evaluated in additive white Gaussian noise (AWGN) because in the practical situation, the presence of noise causes error in the signal representation and parameter estimation. The quality of the TFR for adaptive DLBS-WVD is highest at high SNR and degrades as the SNR decreases. The significant reduction in terms of IF estimation accuracy occurs at SNR of -1 dB except for CW-LFM signal which happens at SNR of 6 dB. Comparing the variance of IF estimate with the Cramer-Rao lower bound (CRLB) is an important measure of the performance of the estimator. An estimator that achieve the lower bound on the variance can be considered as an efficient estimator.* **Contribution:** *The ability to analyze broader class of radar signals is one of the important feature that successfully developed in the new adaptive DLBS-WVD. Electronic support measure (ES) is one of the key element in electronic warfare (EW) that require the capability of analyzing wide class of signals. Thus, the utilization of DLBS-WVD in ES system perhaps can*

improve the effectiveness in the signals surveillance. The adaptive DLBS-WVD is able to produce a precise instantaneous frequency (IF) estimation which are needed in estimating the true signal characteristics. The accurate IF estimation remains high even at low SNR of -1 dB.

Keywords: Wigner-Ville Distribution, Doppler-lag block searching, auto-terms, cross-terms

Abstract ID: **AIMC-2017-STE-1104**

GROUND RECEIVING STATION REFERENCE PAIR SELECTION TECHNIQUE FOR A MINIMUM CONFIGURATION 3-D EMITTER POSITION ESTIMATION MULTILATERATION SYSTEM.

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Abstract

Introduction: *Multilateration estimates aircraft position using the time difference of arrival (TDOA) with a lateration algorithm. The position estimation (PE) process of the system involves measuring the TDOA of the aircraft transponder emission detected at spatially located ground receiving stations (GRSs) pairs which are then inputted into the lateration algorithm to estimate the aircraft position. PE accuracy of the lateration algorithm depends on several factors such as, number of GRS deployed and the choice of GRS reference used for the PE. A GRS reference pair selection (GREPS) technique was proposed to select the best GRS reference pair and improve PE accuracy.* **Methodology:** *PE using lateration algorithm is a least square (LS) problem involves solving the position of the aircraft (x,y,z) given the TDOA measurements and GRSs coordinate. By calculating the condition number of matrix A of the LS problem for difference GRS pair combination, the pair with the least condition number is most suitable as reference for the PE lateration algorithm.*

The GRS reference selection process is performed before the PE process and at that stage, only TDOA measurements are available. This means that matrix A cannot be used to determine the suitable reference GRS pair as it is a function of both TDOA measurements and GRSs coordinates. A matrix whose entries are only the TDOA measurements was derived through factorization of the matrix A. This derived matrix is used to determine the suitable GRS pair to be as reference for the PE lateration algorithm. The GREPS technique proposed in this research is for 3 dimensional (3-D) PE lateration algorithm of an Multilateration system with the minimum GRS configuration.

Findings: *For emitter at two different positions, the condition number of matrix A and that of the derived matrix were obtained for all possible GRS pair combinations as reference for the PE lateration algorithm. It was found out that the at a fixed emitter position and GRS configuration, the condition number of all the possible GRS pair combinations as references for the PE lateration algorithm are different. The GRS pair with the least condition number of the matrix A is most suitable as the reference for the PE lateration process. For this particular pair, it was observed that the condition number of the derived matrix is unity which is the minimum condition number for any given matrix. The same was observed for a different emitter position in which for the GRS pair with the least matrix A condition number, the derived matrix has a unity condition number. Thus, the derived matrix can be used to determine the suitable GRS reference pair to be for the PE lateration algorithm. This involves choosing from all the GRS pairs that results in unity or has the minimum condition number value for the derived matrix.* **Contribution:** *Several researchers have proposed techniques such as weighting functions, total least squares, and Tikhonov regularization to improve PE accuracy of the lateration algorithm. These techniques proved to be effective, but requires at least a minimum of five GRSs to be deployed. The minimum number of GRSs for 3-D emitter PE is four. These techniques cannot be used to improve the 3-D PE accuracy of the minimum GRS configuration lateration algorithm. This research has accomplished a method to determine the suitable GRS reference pair to be used for improving PE accuracy of the lateration algorithm for a minimum configuration Multilateration system.*

Keywords: Multilateration, Reference selection, lateration algorithm, minimum configuration

Abstract ID: **AIMC-2017-STE-1105**

BRAINWAVE STUDIES ON THE COMPARISON OF QURAN RECITATION AND SHORT MALAY AND ENGLISH TEXTS

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Abstract

Introduction: *Every Islam practice is believed to have its own benefit and advantages for Muslims. Therefore, we discussed in this research the EEG studies on the Quran recitation and compare it to the short English and Malay texts.*

This study aims to accomplish the following:

1. To observe the pattern of the signal increment and decrement between reading other languages and reciting the Quran.

2. To identify the differences of alpha activities when subject is instructed to read other languages and Quran recitation.

3. To prove Quran recitation can leads someone to a relaxation and calm situation.

Methodology: *Three healthy male participants were participated in the experiment, with the range of the age between 23-24 years old. The participants are all Muslim. All of these participants are free from any disease and medication. The experiment was conducted in at room temperature with air conditioning. Participants were instructed to sit at their own comfortable. Then, the participants were instructed to read a short texts of Quran recitation, English language and Malay language. A verbal consent on this experiment was provided to the participants.*

This experiment used EMOTIV headset hardware to monitor the brainwave signals. Two main software are used in order to acquire and analyze the data. The software are the EEG Lab Toolbox from MATLAB and Camtasia Studio to monitor the participants.

Findings: *In order to obtain the most accurate value for the alpha wave signal, the average value for each and every one of the total 14 channels (excluding the reference channels) for every stimuli was measured. Then, the average values obtained by each of the stimuli was then compared. Generally, there are differences in alpha activities for each short text when a participant read all three of the short texts. It is found that the alpha waves will have higher value when a person recite the Quran compared to reading the English and Malay languages. Malay language has the second highest value of Alpha wave with the English language has the lowest value.*

The results showed a negative correlation between reading other languages and reciting Quran for every subject. Other than that, it is believed that the Quran could be used as a tool for healing and meditation reduces stress and makes our mind in calm state. The research was done to hopefully make people realize the advantages and the importance of Islam's practice in human daily life. Hence, we can conclude that Quran recitation are potentials to lead someone to a relaxation and calm situation.

Contribution: *In this study, the Visual Evoked Potential (VEP) approach was used to measure the electrical activity in the vision system. The brain electrical activity is transformed into electrical energy to process the vision in the brain. In this study, it is found that the alpha wave from the vision from the Quran recitation vision has the highest value which suggests a relaxation state of mind. Hence, a study of VEP approach on Quran recitation recommends a significant breakthrough on the relation of human cognitive behaviour.*

Keywords: Electroencephalogram (EEG), Visual Evoked Potential (VEP), Alpha wave, Quran recitation.

Abstract ID: **AIMC-2017-STE-1106**

EFFECT OF PARTICLE SIZE ON THE MECHANICAL PROPERTIES OF THE RHDPE/PCB COMPOSITES.

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Abstract

Introduction: *There is an urgency to resolve the environmental pollution associated with the waste materials and the need to adopt a more sustainable approach to the problems associated with end of waste life. Thus, this research is intended to develop a new potential reuse of recovered nonmetallic materials of PCBs and plastic waste. From environmental point of view, recycling of these wastes are being attempted in order to reduce its harmful effects on the environment. In fact, due to ever increasing environmental concerns and disposal costs, reuse and recycling the nonmetallic fractions from PCB wastes are considered as the best treatment practices*

and can generate economy too by commercializing the products made from the rHDPE and PCB composites. **Methodology:** *For sample preparation, nonmetallic PCB was taken from a local electronic waste recycling plant. The sample was analysed for their chemical composition and microstructure surface analysis. The waste nonmetallic PCBs used in this study are without electronic elements. The PCBs were sieved to remove impurities and manually sieved according to BS 812 sieve test: Part 103: Section 1 [BSI, 1989]. The specimens were agitated for 20 minutes and the nonmetallic PCBs collected on each sieve were weighed to calculate the particle size distribution. The nonmetallic PCBs with different particle sizes of 0.07-0.09 mm, 0.09-0.15 mm, 0.15-0.3 mm and 0.3-0.5 mm were selected for making composites. Blends of rHDPE and nonmetallic PCBs were premixed in sealed containers and shaken manually. The rHDPE and the nonmetallic PCBs were dried at 80oC for 24 hours prior to compounding. The nonmetallic PCB content was fixed at 30 wt% and rHDPE at 70 wt%. The composites were tested its tensile strength, flexural strength and impact strength. Five specimens of each formulation were tested and the average values reported.* **Findings:** *From the experiment results, it could be concluded that the nonmetallic powder from PCBs are suitable to be used as filler material in rHDPE matrix in production of composite material. The effect of different particle sizes of nonmetallic PCB on mechanical properties of composites has been studied and it proved that the mechanical properties of composite by using smaller size of nonmetallic PCB powder as filler was better than larger size. It was observed that particle size ranging from 0.07 to 0.15 mm could be used as filler to obtain a better result. Microscopic observation also revealed that when nonmetallic PCBs with smaller size particles are used, the polymer matrix can encapsulate the nonmetallic materials entirely and voids were not easily generated. Therefore, mechanical properties of rHDPE/PCB composites with fine nonmetallic materials are seen better than those of the composites with large nonmetallic materials. The composite with nonmetallic PCB loading of 50 wt% and compatibilized with 6 phr MAPE compatibilizer showed the excellent mechanical properties. It was noted that, with incorporation of compatibilizer, a good compatibility between nonmetals and matrix was achieved, hence improved the mechanical properties of the composites. Based on TGA study, care must be taken during extrusion process whereby the extruder temperatures should be less than 300o C to prevent the nonmetallic PCB material from degrading.* **Contribution:** *The main concern of this study is to recycle the nonmetallic printed circuit boards (PCB) waste in a safe and environmentally sound manner by applying encapsulation technique in preparing composites made from nonmetallic PCB and recycled HDPE (rHDPE). This research will contribute to many potential specific application in the future. As for this research, the composite made from nonmetallic PCB waste and recycled HDPE can best be used in plastic lumber applications. The use of waste materials can significantly reduce waste disposal cost and resource wasting by making full use of the waste material from being dump into landfill.*

Keywords: nonmetallic printed circuit boards; recycled HDPE; particle size; mechanical properties

Abstract ID: **AIMC-2017-STE-1107**

A NOVEL S-REGRESSION MODEL ON AN AUTO PRICE

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Abstract

Introduction: *A simple linear regression model is useful in predicting. A general linear regression beyond a single independent variable is still not popular. A nonlinear regression can be easily produced a better predictive model but it is difficult to construct. Thus, the objective of this paper is to propose a technique for predicting the price of used cars in Malaysia by using an S-shaped curve model or later will be known as S-Regression model.* **Methodology:** *The S-shaped Membership Function (SMF) is used as the basis to develop a novel S-Regression model. Data from www.carlist.my website which is a famous website of used car price in Malaysia have been gathered. Real data have been collected on the price of used cars for BMW 325i 3 series and VOLVO S60 within the year of 2000 until 2016. By using Microsoft Excel, 3 types of linear regression graphs and models have been produced and compared which are linear regression, cubic regression and S-shaped curve or S-Regression.* **Findings:** *The predicted y-value for linear and cubic regressions were computed straight away from the Microsoft Excel menu. Meanwhile, S-shaped Membership Function (SMF) equation was used to compute the predicted y-value for S-Regression. The mean squared errors (MSE) for all the three types of regressions models were calculated and compared for both car models. The smaller the mean squared error, the closer in finding the best fit line. However, the MSE result did not show that the S-Regression have the smallest value, but the mean squared error for S-Regression is found to be closer toward cubic regression quantitatively. Using the S-shaped curve, a used car is expected to rise over the make years. Even though cubic*

regression produces smaller MSE, the curves on the far ends have already gone into negative derivative. This phenomena negate the principle of rising price over time. Even though the S-Regression takes a slightly higher MSE, it gives a closer price prediction in real practical life. **Contribution:** *This research is a preliminary study toward the developing a novel S-Regression model in which none has come up with S-Regression model for better estimation or prediction or forecasting. S-shaped curve pattern gives a significant meaning on what is happening in the real situation. S-Regression model would be the potential model in the world of prediction or forecasting the real scenario. The intention of this research is to give a fair price of used cars. Thus, S-Regression model can be predicted to give a more realistic forecast value on the price of used cars in Malaysia.*
Keywords: S-Regression, Regression model, Regression analysis, S-shaped curve, Prediction on used car price

Abstract ID: **AIMC-2017-STE-1110**

EARLY STRENGTH PROPERTIES OF CONCRETE INCORPORATING PLASTIC FIBERS DERIVED FROM WASTE PLASTIC BAGS

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Abstract

Introduction: *Increasing of plastic waste worldwide and especially in Malaysia have become critical as plastic is not decomposable. Malaysia alone generates approximately 30,000 MT rubbish every day containing around 13% of solid plastic waste. Besides conventional recycling and landfilling, an alternative disposal of this waste is required for sustainable development. Nowadays, development of green materials is significant for sustainable development. Adding plastic waste as fiber in concrete would play an important role to reduce plastic waste. Moreover, it might increase physical properties of concrete. Hence, this study aims to utilize plastic fibers derived from waste bags in concrete.* **Methodology:** *Ordinary Portland Cement, coarse aggregates, fine aggregates, fibers derived from waste plastic bags and water were used to prepare Plastic Fiber Reinforced Concrete (PFRC). Experimental program was conducted to determine fresh and hardened properties. Fresh properties was determined using slump test (BS 1881:102) immediately after preparing concrete mix . The hardened properties were determined in terms of compressive strength (BS EN 12390-3:2009), flexural strength(BS EN 12390-5:2009) and splitting tensile strength (ASTM C496/C496–04) after 7 days of curing. Concrete was designed to achieve 20 MPa strength in 7 days. The concrete mix contains 22 kg/m3 cement, 33.5 kg/m3 fine aggregate, 51.5 kg/m3 coarse aggregate with a water/cement ratio of 0.5. First of all, waste plastic bags were properly washed and cut into 2 groups of 1-2 mm width; long fibers (20-35 mm) and short fibers (5-12 mm). Concrete mix was placed into the molds in 3 layers and compaction was done using vibration table. Specimens were de-molded after 24 hours of casting and placed into water for 7 days for proper curing. Total 9 concrete mixes were prepared; such as, Control mix (CM) and PFRC with 0.1%, 0.2%, 0.3%, 0.4% long fibers and 0.1%, 0.2%, 0.3%, 0.4% short fibers.* **Findings:** *Average of 3 test results was recorded. Slump of CM was 65 mm, whereas PFRC showed lower slump. Workability decreases with the increase in fiber content. Maximum slump was obtained for 0.1% fibers (for both types) with slump value of 45 and 55 mm. On the other hand, Compressive strength of PFRC increases with the increase of fiber addition until 0.3%. CM specimens achieved 20.94 MPa strength; however, PFRC with 0.1% long fibers achieved 24.02 MPa strength. In general, all PFRC specimens except 0.4% had better compressive strength than CM. In general, PFRC also shows better tensile properties. The highest tensile strength had PFRC specimen with 0.3% of short fibers 3.21 MPa. However, tensile strength of specimens decreases with further addition of fiber because of low workability. During flexural test, Control mix beams were broken suddenly and completely detached. However, PFRC was higher toughness than CM specimens and was not broken into two parts, as fibers act to bridge the crack. Specimens with long fibers show higher flexural strength than specimens with short fibers. PFRC with 0.1%, 0.2% of long fibers had higher strength with results 3.31 and 3.25 MPa while CM specimens showed 2.96 MPa.* **Contribution:** *This research utilized hard plastic bag used to provide drinks in Malaysian restaurants in concrete as an alternative way to reduce environmental threat. According to results, usage of waste plastic bags as fiber affect positively on the properties of concrete up to a certain limit. Malaysia as one of the leading economic power in south east Asia conducts a lot of construction projects. Usage of this method in construction industry of Malaysia would show positive influence on environment and concrete properties. It is also possible to use this kind of PFRC in seismically active areas.*

Keywords: Plastic Fiber Reinforced Concrete; waste plastic; Workability; Strength

Abstract ID: **AIMC-2017-STE-1112**

OPTIMIZATION PROCESS OF MORINGA OLEIFERA SEED EXTRACT USING ARTIFICIAL NEURAL NETWORK (ANN)

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Abstract

Introduction: *High cost of water treatment and high cost of chemicals for disinfection makes it difficult to produce high quality drinking water particularly in the developing countries. Also, the use of chlorine which causes disinfection by-products is a major concern especially in the developed countries. As a result of this, there is the need to look for a cheap alternative such as the use of plant material as substitutes for chemical disinfectant. Moringa oleifera is an extensively documented plant material used for the treatment of drinking water. Its seed extracts contain active agents having excellent coagulation properties and exerting in vitro bactericidal activity. However, lack of available literature on the statistical optimization using artificial neural network (ANN), inactivation kinetics of the seed extract using different disinfection models for the seed extracts are major aspect that have not been explored. This study aims to develop operation parameters using ANN for the seed extracts to be used as disinfectant for water treatment.* **Methodology:** *The optimization process, based on statistical experimental design using artificial neural network (ANN) in MATLAB 2012A were used to identify and determine the optimum process conditions. The multivariate regression analysis of the disinfection kinetic models was analysed using SPSS version 20 and the final application of the optimized process conditions with river water was evaluated.* **Findings:** *The statistical analysis of optimization results using ANN gave a high coefficient of determination (R2) of 0.9992 and 0.9886 for E.coli. The model developed was verified and the optimum process parameters were 124 mg/L dosage, 65 minutes of contact time, 110 rpm mixing rate for E.coli bacterial strain. The order of reaction followed second order and the inactivation kinetics showed that modified Hom model best fits the disinfection process with R2 of 0.711.* **Contribution:** *The findings from the application of the seed extract to river water shows that the removal efficiency for the seed extract with over 99.98% reduction of heterotrophic bacteria after the disinfection process. Hence, the findings of this study showed that defatted Moringa oleifera seed extract using the salt extraction method can be used as a disinfectant. This extract is recommended to be used in small communities and in emergency situations.*

Keywords: Moringa oleifera seed, artificial neural network, E.coli, heterotrophic bacteria

Abstract ID: **AIMC-2017-STE-1113**

LEADERSHIP CHALLENGES IN MANAGING CONSTRUCTION WORKFORCE IN SAUDI ARABIA

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Abstract

Introduction: *Most of the construction workers in Saudi Arabia are foreigners from several countries having different knowledge, skills and cultures. These give challenges to construction leaders to administer the workers in ensuring project success. Hence, this paper presents an investigative study on the challenges faced by construction leaders in managing construction workforce in Saudi Arabia* **Methodology:** *It describes insight processes of handling the workforce based on the observation by first author who are working in Saudi Arabia construction industry and also an interview with senior manager who has experienced more than 15 years handling mega construction projects in Makkah region.* **Findings:** *Based on interview session, It found that among important issues related to construction workers in Makkah construction industry are restrictions on workers' religion, limited visa quota from authorities, being away from family for long periods, delay in salary payment, unskilled workers brought under name of skilled, safety issues, communication barriers and living condition. However, these issues need quality leadership attributes such as continuous empathy with workers, respectful, trustful, sincere, open and clear decision making skills, reliable, convincible, practice equality and positive discrimination, good communication skills, ability to secure stable cash flow throughout project, continues technical training session, giving safety issues the priority attention and maintain the team spirit.* **Contribution:** *This study focuses on challenges faced by construction leaders in handling workforce in Saudi Arabia specifically in Makkah region.These findings are useful to construction practitioners and also research work related to construction leadership in handling worker' issues.*

Keywords: Leadership; workforce; construction industry; Saudi Arabia; Makkah region

Abstract ID: **AIMC-2017-STE-1116**

ANALYSIS OF GOVERNMENT RESIDENTIAL PROJECTS OVERRUNS IN JORDAN

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UMP
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Abstract

Introduction: *In Jordan, as in many countries, contracting is one of the imperative fields of economic growth and developments. Therefore, contracting has taken places that are directed towards enhancing the performance of projects quality.*

The Construction Industry in Jordan According to the minister of public works and housing (JCCA 2012), the construction industry in Jordan is a major contributor to the Jordanian Gross Domestic Product (it contributes to about 15% of the Jordanian economy). The industry is considered one of the key drivers in building a strong local economy. A high level of professionalism and organization characterizes the sector, and it includes 1716 Jordanian contractors graded by expertise and capabilities.

Methodology: *This chapter presents the research methodology that was used in the study .*

This study was conducted using qualitative approach , the sample was the governmental construction projects implemented in Jordan between years 2010 until year 2016 .

Findings: *The collected data was analyzed per year as shown Table 5, the maximum projects awarded were in 2015 with 117.78 million Jordanian dinners which represent 13.15% of the total projects. The analysis goal is to evaluate the relationship between the amounts of the projects cost and the amount of overruns?.*

Table 5 contracts awarded 2010-2014

Year	*awarded*	*after complete*	*difference*
2010	*86734236.3*	*86764377.64*	*30624.435*
2011	*61564691.39*	*62445813.34*	*1852162.173*
2012	*41536395.67*	*42038018.12*	*1142756.755*
2013	*59533107.16*	*60214128.32*	*705082.671*
2014	*69873090.73*	*70723471.52*	*944476.547*
2015	*115002190.5*	*117781159.5*	*2785299.09*
Summation	*874210680.2*	*454887771.8*	*7460418.208*

The answer came from table 6 which present the percentage of the differences in the whole projects, in fact year 2015 was in the first rank with 37.33 % from the whole projects with 2.786 million Jordanian dinners, as its obvious in figure 5.

Contribution: *This research focuses on the understanding of Over Run (OR) situation in building projects in Jordan. It is designed broadly in two parts. Part one aimed at establishing critical issues of OR and their causes in building projects in Jordan. This part involved four stages; Problem definition, Literature review, case study.*

Keywords: OR : OVERRUN

Abstract ID: **AIMC-2017-STE-1125**

CATALYTIC TRANSESTERIFICATION OF GLYCEROL: OPTIMIZATION FOR PRODUCTION OF GLYCEROL CARBONATE

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Abstract

Introduction: *In order to increase the conversion of glycerol and yield of glycerol carbonate via moderate-temperature transesterification with calcined calcium oxide as catalyst, the effect of reaction temperature, reaction time and dimethyl carbonate : glycerol (DMC:Gly) molar ratio were investigated and the reaction was further optimized with the aids of response surface methodology (RSM).* **Methodology:** *Applying the design expert software (version 6.0.6, State-Ease, Inc., Minneapolis, MN) with central composite design (CCD) of RSM, 15 runs of transesterification reaction were carried out. Meanwhile, the calcined calcium oxide catalyst was*

fixed at catalyst/glycerol molar ratio to 0.06 while the stirring rate was maintained at 1000 rpm for every runs. **Findings:** *ANOVA results indicated that reaction temperature and reactants ratio (DMC:Gly) influenced the yield significantly. Synergy effect of reaction temperature with reaction time and reaction temperature with DMC:Gly molar ratio seem to have greater significance on the conversion instead of single parameter. Under optimization studies, the maximum possible conversion and yield were 100% and 96.36% respectively which could be accomplished at 60.16oC reaction temperature with 1.19 hour reaction time and 3.04 DMC:Gly molar ratio.* **Contribution:** *Compared to the highest conversion (96.22%) and yield (95.83%) achieved before the optimization with reaction carried out at 70oC, after 1.5 hours and at DMC:Gly molar ratio of 1:1, the optimization had resulted in the higher conversion with lower reaction temperature and shorter reaction time.*

Keywords: Glycerol, transesterification, glycerol carbonate, calcium oxide, optimization.

Abstract ID: **AIMC-2017-STE-1126**

OPTICAL AND ELECTRICAL PROPERTIES: POTENTIAL OF ELAEIS GUINEENSIS AND TERMINALIA CATAPPA AS NATURAL DYES FOR SOLAR CELLS APPLICATIONS

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Abstract

Introduction: *The increasing energy demand is compounded by various factors. Among them are global warming, growing population and industrial development. Solar cells have become one of the clean technologies that have been adopted to produce electricity. However, due to low efficiency and high production cost of the materials, the development of solar cells was yet feasible. Therefore, organic solar cells, inorganic solar cells, dye sensitized solar cells (DSCs) [2,3,4,5] and hybrid solar cells (HSCs) [6] were developed to match the global demand for renewable energy.*

In this paper, two types of natural dye were extracted from Terminalia cattapa and Elaeis guineensis. They were characterized using UV-Vis Spectrometer to observe the absorption spectrum and the dye structure was confirmed using FTIR. Elaeis guineensis (oil palm's fruit) and Terminalia catappa's leaves were chosen as organic materials (natural dyes) in which can be utilized for hybrid solar cell development. Combination of organic material and photovoltaic are one of the fastest growing renewable energy technologies

Methodology: *Experimental details*

The organic dye is taken from nature plant and this research is conducted in a few stages. Below are the details of the experimental works.

Extraction Process of Natural Dyes

The fresh leaves of Terminalia cattapa were cleaned with distilled water and dried at 40C. Then, it was crushed into fine powder and 10 g sample of powdered leaves were placed into 100 ml methanol. The mixture was kept for one week at room temperature. Subsequently, the solution was filtered using filter paper and dark brown extract were collected. Then, the solution was placed in ultrasonic bath for 10 minutes and at temperature 30C. The extraction were concentrated and used as a dye to TiO2 nanoparticles for the fabrication of solar cell [11,12].

Absorption spectra and dye structure

All natural dyes were characterized by using Uv –Vis Spectrometer and FTIR

The electrical conductivity was recorded using Four point probe.

Findings: *From the result, the broadest spectrum between the extracted dyes is Elaeis guineensis which is in the range of 380nm to 550nm. Elaeis guineensis having the lowest energy gap of 2.4eV compared to Terminalia catappa. Consequently, the result shows Elaeis guineensis have good proves its potential as a natural dye and the data acquired will assist in the development of hybrid solar cells in Malaysia. Elaeis guineensis dyes extracted with ethanol has the lowest energy band gap compared with Terminalia cattapa. A lowest energy band gap of dye helps the electron to interact faster from the high occupied molecule orbital, HOMO to the low unoccupied molecule orbital, LUMO. Therefore, less energy needed to combine the electron. Elaeis guineensis also have a broader region of the visible light spectrum compared with other dyes. As a result, photon from sunlight can be absorbed easily from the entire region.* **Contribution:** *Due to low efficiency and high production cost of the materials, the development of solar cells was yet feasible. Therefore, organic solar cells, inorganic solar cells, dye sensitized solar cells (DSCs) [2,3,4,5] and hybrid solar cells (HSCs) [6] were developed to match the global demand for renewable energy. Futhermore, natural dye from fruits and leaves are viable for hybrid solar cell due to low cost, abundant in resources and safety. There are a lot of researches that have been*

conducted concerning organic solar cells, inorganics, DSCs and hybrid solar cells. However, no researches in hybrid solar cells using Elaies guinennsis and Terminalia catappa's leaves as natural dye have been conducted. Relying on the potential of hybrid solar cells, this research will be conducted to provide some data and to contribute to the knowledge of society. The data and knowledge acquired will assist in the development of hybrid solar cells in Malaysia.

Keywords: Elaies guineesis, Terminalia cattapa, conductivity, solar cell application

Abstract ID: **AIMC-2017-STE-1127**

SPYCARE: ANDROID BASED STEALTH PARENTAL MONITORING TOOL

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Co-Authors: Muzaffar Mohamed;Herny Ramadhani Mohd Husny Hamid;Norsuhaili Seid

Abstract

Introduction: *Nowadays the usage of technology especially handheld devices in a young generation were constantly increasing. The children can easily be manipulated and without proper guidance or monitoring from the parent, this situation could be dangerous to them. Due to this situation, parental control application was developed. However most of the application was too restrictive and difficult to configure. Furthermore, children nowadays will try to bypass the restriction or become more creative in finding an alternative to the problem. Therefore this project developed Stealth-based Android Parental Monitoring Tool to help parent monitor their child's mobile activity silently. Parent may analyze mobile usage behavior, parent and plan for proactive measures to deal with the problem.* **Methodology:** *This application is develop based on client server application, where Android based application is developed for client side and web application is developed on the server-side. As this is android based client side application, protecting the application from internal external threats is necessary. Authentication process is used to validate authenticated user and stealth process is used to make application invisible from users. Pattern Lock and password method are used for authentication process. For the purpose of stealth process, "secret door" technique, where developer will disable an application component; this technique will have the effect of removing an application shortcut from any Launcher.*

This parental monitoring tool at android based client application will be able to log the location, message log, call log, network log, and device information. The collected data will be uploaded to a web server to be reviewed by the parents anytime and anywhere through the internet enabled devices.

Findings: *This application is tested based on functionality testing for Android Based client side application and web application server side web application. For Android based client side application eight test cases were developed: Android Authentication Module, Android device registration module, Android logging module, Android uploading module, Android system cleaner module, Android stealth hide/reveal icon module, Android stealth launch application via dialer module and Android protection module. For each test case, the result is indicated as pass.*

For web application server side web application, four test cases were developed; web application registration module, web application authentication module, web application monitoring module and web application disconnect device module. For each test case, the result is indicated as pass.

Contribution: *Android Based Stealth Parental Monitoring Tool has been successfully developed and meet the development objective to collect Android critical data including network log, call log, device information log, incoming or outgoing SMS and Call logs in stealth and synchronized it to the server where it can be used as digital evidence if necessary.*

The result of this project is hoped to benefits the society by providing a better monitoring technique for the concerned parent via implementing an alternate way on how to continuously collect and monitor their children/teen mobile activity thus at the same time helps them to identify problems concerning their kids before it's too late.

Keywords: Stealth-based, Parental Monitoring Tool, Monitor, Android tool

Abstract ID: **AIMC-2017-STE-1128**

PHYSICAL PROPERTIES AND TOTAL PHENOLIC CONTENT BY DIFFERENT DRYING AND EXTRACTION TECHNIQUES OF CLINACANTHUS NUTANS LEAVES

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Abstract

Introduction: *This report presents a series of different drying and extraction methods on Clinacanthus nutans leaves.* **Methodology:** *C. nutans leaves were dried using three different drying conditions: oven (40°C, 60°C and 80°C), vacuum oven and air drying. Then, the physical properties of dried leaves obtained were analyzed in terms of the moisture content, water activity and color parameter. Thus, the series of extraction was performed using three different extraction techniques: soxhlet, maceration and ultrasound-assisted solvent extraction. Finally, the total phenolic content of each extracts were determined using the Folin-Ciocalteu method.* **Findings:** *The results showed that the choice of drying and extraction methods influenced the phenolic compound yield of C. nutans extract. Excellent performance of the combination of drying C. nutans leaves using laboratory oven at 60°C and soxhlet extraction obtained the highest total phenolic content yield at 65.92 ± 2.19 mg GAE/g.* **Contribution:** *Results from this study can be used to determine the optimal drying and extraction methods for potential application by researchers on future phytochemical studies of C. nutans.*

Keywords: Clinacanthus nutans; drying and extraction method

Abstract ID: **AIMC-2017-STE-1129**

AN EMPIRICAL STUDY WITH FUNCTION POINT ANALYSIS FOR REQUIREMENT CHANGES DURING SOFTWARE DEVELOPMENT PHASE

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Abstract

Introduction: *Software requirement changes may occur at any time and phase of the Software Development Life Cycle (SDLC). Accommodating many changes may increase time and cost of the software development. While denying changes may raise customer disappointment. Hence, it is very crucial for a software project managers to manage the ever changing requirements as well as take the best decisions for the success of software projects. One of the inputs that can assist and support the software project manager to take the best decision is the software effort estimation during software development phase.* **Methodology:** *This analysis is conducted by using FPA method for requirement changes during software development phase. We applied the method in an empirical study i.e. Course Registration System (CRS). CRS is a software development project assigned to the postgraduate students of software engineering at Advanced Informatics School (AIS), at Universiti Teknologi Malaysia (UTM).Whereas, five case studies (CSs) were selected and each case study was representing a different development progress state in software development phase. Furthermore, We follow the rules of IFPUG manual for calculating function points. As we are using three CTs i.e. addition, deletion and modification, for fifteen change requests.* **Findings:** *To review the results of the empirical study in which FPA method used as methodology for the measurement of software effort estimation during software development phase. From the study, we found that the FPA is not able to present the: (1) current state of software artifacts; and (2) impact of changes on software artifacts.* **Contribution:** *This paper presets a study on the capability analysis of Function Point Analysis (FPA) to implement the software change effort estimation during software development phase. Typically, the FPA method is used in Software Development Life Cycle (SDLC) for software effort estimation. The novelty of this study is that we implemented the FPA method for requirement changes during software development phase in the existence of inconsistent states of software artifacts. We have selected a small case study namely Course Registration System to analyze the capability of estimation performed by the FPA method. Our results have shown that there are some challenges facing by the FPA method which are: (1) Tracing of requirement changes in software artifacts and (2) Impact of requirement changes on software artifacts. Therefore for future work, we intend to integrate the FPA method with change impact analysis technique. The selected impact analysis technique should be able to consider the inconsistent states of software artifacts in its implementation.*

Keywords: Software Effort Estimation, Function Point Analysis, Requirement Changes, Software Development Phase.

Abstract ID: **AIMC-2017-STE-1130**

SPYCARE: ANDROID BASED STEALTH PARENTAL MONITORING TOOL

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Abstract

Introduction: *Nowadays the usage of technology especially handheld devices in a young generation were constantly increasing. The children can easily be manipulated and without proper guidance or monitoring from the parent, this situation could be dangerous to them. Due to this situation, parental control application was developed. However most of the application was too restrictive and difficult to configure. Furthermore, children nowadays will try to bypass the restriction or become more creative in finding an alternative to the problem. Therefore this project developed Stealth-based Android Parental Monitoring Tool to help parent monitor their child's mobile activity silently. Parent may analyze mobile usage behavior, parent and plan for proactive measures to deal with the problem.* **Methodology:** *This application is develop based on client server application, where Android based application is developed for client side and web application is developed on the server-side. As this is android based client side application, protecting the application from internal external threats is necessary. Authentication process is used to validate authenticated user and stealth process is used to make application invisible from users. Pattern Lock and password method are used for authentication process. For the purpose of stealth process, "secret door" technique, where developer will disable an application component; this technique will have the effect of removing an application shortcut from any Launcher.*

This parental monitoring tool at android based client application will be able to log the location, message log, call log, network log, and device information. The collected data will be uploaded to a web server to be reviewed by the parents anytime and anywhere through the internet enabled devices.

Findings: *This application is tested based on functionality testing for Android Based client side application and web application server side web application. For Android based client side application eight test cases were developed: Android Authentication Module, Android device registration module, Android logging module, Android uploading module, Android system cleaner module, Android stealth hide/reveal icon module, Android stealth launch application via dialer module and Android protection module. For each test case, the result is indicated as pass.*

For web application server side web application, four test cases were developed; web application registration module, web application authentication module, web application monitoring module and web application disconnect device module. For each test case, the result is indicated as pass.

Contribution: *Android Based Stealth Parental Monitoring Tool has been successfully developed and meet the development objective to collect Android critical data including network log, call log, device information log, incoming or outgoing SMS and Call logs in stealth and synchronized it to the server where it can be used as digital evidence if necessary.*

The result of this project is hoped to benefits the society by providing a better monitoring technique for the concerned parent via implementing an alternate way on how to continuously collect and monitor their children/teen mobile activity thus at the same time helps them to identify problems concerning their kids before it's too late.

Keywords: Stealth-based, Parental Monitoring Tool, Monitor, Android

Abstract ID: **AIMC-2017-STE-1132**

INVESTIGATING QURAN READING THROUGH EEG

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Abstract

Introduction: *Reciting Quran is believed by Muslims to have an effect to the human brain. The holy Quran is not like the other books. Muslims believed that it is a divine revelation from Almighty God. Muslim focuses and meditates to God by reciting the Quran and engaging in Dhikr to reaffirm and strengthen the bond between Creator and creation. This meditation can help to build or create a spiritual peace to every Muslims so that they can face whatever challenge may present.*

In this study, Electroencephalogram (EEG) is used to measure the Quran reading meditation to the human brain.

Methodology: *Three healthy subjects were recruited in this experiment. Subject 1 and 2 are Muslims while subject 3 is non-Muslim. The experiment was conducted in a quiet and closed room with a temperature of 25°C. The subject is instructed to place any other electronic devices such as mobile phone and laptop outside of the room to avoid interference during the experiment was conducted. Verbal consent was obtained from all subjects on this experiment protocol.*

The functionality of each of the electrodes was checked before starting the experiment. A sequence of 9 texts (3 Quran's surah, 3 English's text and 3 Malay's text) were displayed in the form of video. Each text was displayed for 30 seconds each and the subject was instructed to read all of the text. The subject was restricted to move during the experiment was held to avoid noise. The EEG data was recorded by using the Emotiv TestBench and the experiment's activity was recorded by using Camtasia's application.

For the data analysis, the Matlab EEGLab toolbox was used. This toolbox was used for the feature extractions. The extracted data is then analyzed by using Microsoft Excel.

Findings: *The analysis was carried out to observe the pattern of the signal increment and decrement during reciting Quran, and compare to the reading of English and Malay texts. We observed the alpha band brain wave of the three subjects and we depicted the results in a table.*

The FFT algorithm computed the fix values of each electrodes for the range of frequency 8Hz to 13Hz, then the value is averaged. All electrodes except electrodes 1 and 2 (ground) were observed to study the brain wave signal of the subjects when reciting Quran and reading English and Malay texts. The data was analyzed by averaging the log power spectral density of three subjects and then the result is plotted into a separated graph of each of the subject for frequency range of alpha band.

From the study, it is obviously shows that most of the EEG mean log power spectral density is high in frequency range of alpha band (8-13Hz) during reciting the Quran compared to reading English and Malay text. However, the non-Muslim subject has the least mean log power spectral density in frequency range of alpha band due to disability or difficulty to read the Quran text.

Contribution: *In this paper, we had contributed a distinguishing mark on Quran recitation compared to ordinary texts reading. It is shown experimentally that the calming alpha waves signals are significant when in Quran reading. Therefore, based on each band's wave obtained from the 16 electrodes, it is suggested that reciting Quran can lead to calming and resting mind for those that can read Quran. Further study or research can be done by increasing the number of stimuli or increasing the number of the subjects to improve the finding of this study.*

Keywords: EEG, Brain Waveforms, Quran Reading

Abstract ID: **AIMC-2017-STE-1134**

ENHANCEMENT OF CELL MIGRATION ON PROTEIN PATTERN SURFACE WITH THE ASSISTANCE OF PULSED ELECTRIC FIELD: CELL GUIDANCE STUDY

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Abstract

Introduction: *Cell guidance is used to control the attachment of cells to substrate for biological studies by controlling the shapes, position, and migration of attached cells to the substrate. (Mrkisch et al., 1997). Guiding cells is important for many applications such as tissue engineering (Fredrik Johansson et al., 2010). Which by Controlling the migration of adherent cells it will be very useful for studying cellular mechanics and response to the external stimulation (Jian-Long Xiao, DeHan Lu et al.,2013), most studies had been performed on micrometer-sized structure, such as grooves and ridges, due to technical limitations (Fredrik Johansson et al., 2010). Where it believe that the Track of adhesiveness is involved in guiding the morphogenetic cell migrations (Peter Clark et al., 1992). The surface properties of ECM play a vital role in cellular behavior in adhesion spreading, migration, proliferation and also differentiation (Bangshang Zhu, Qiqiao Zhang et al., 2003). One of the methods of cell guidance is providing protein pattern surface by using micro-contact printing method.*

Microcontact printing is a useful method in several applications such as ECM patterning for cell adhesion molecule to promote cell attachment for the cell assembly, growth and cell guidance. μCP significantly had a large impact on the study of control cell growth (Arjan P. Quist et al., 2005) and cell guidance (Peter Clark et al., 1992). Its application is widely ranging including microelectronic, surface chemistry, cell biology (Y. Xia and G. M. Whitesides, 1998) biotechnology (Dong Qin et al., 2010), tissue engineering, cell cocultures, bio-

assays, biosensor (Ammar Azioune et al., 2010). The ability to regenerate tissues by migrating or dividing more rapidly are the physiological role of the cell within the body and therefore contributing to vital functions such as wound healing. Protein micropatterned surface was patterned on the substrates by using this method and protein as an ink.

Protein plays important role in the organization of tissues. For example, it can provide necessary biochemical cues that direct the organized formation of tissue. Where this role impacts embryogenesis, capillary sprouting and wound healing. Ink that used is a Fibronectin, which is one of the ECM protein that had been used to assist in the wound healing process by facilitating cell movement to the affected area and binding to platelets during blood clotting. It had been used as mediator to form the connection between cells and the ECM and it plays a major role in cell adhesion, growth, migration, and differentiation, and it is also important for processes such as wound healing and embryonic development. This method will assist with the pulsed electric field inducement.

The pulsed electric field is the method of open up pores on cell membrane either temporarily or permanently, this happens due to the field enhancement in the plasma membrane that allowed the transfer of material into cells and tissue by exposing the cell to short high voltage field pulses. It can provide an opportunity for many new medical treatments and valuable tool for the study of a basic structural, biochemical behavior of the cellular and intercellular system (David W. Jordan et al., 2004) and effective method to overcome the membrane barrier (Sukhendu B. Dev et al., 2000). Direct evidence such as imaging at membrane level still in research, instead the evidence is indirect (James C. Weaver, 2000). Therefore, it is fascinating to see the morphological changes of cells membrane such as, possible to move, separate, fuse perforate and deform during electroporation (Muhamad Nazib Adon et al., 2012).

This study was conducted in order to see the cell migration on protein pattern surface or it called cell guidance by measured the alignment of HeLa cell attached on the protein pattern surface with assistance of PEF, which the protein pattern acts as a track or path for the HeLa cell to control the adsorption of protein to these surface and the attachment of cells to protein (David S. K. et al., 1999). Where the track of adhesiveness is involved in guiding the migration of cell (Peter Clark et al., 1992). By the addition of pulsed electric field, it might accelerate the migration of cell on the protein patterned surface which can be used on wound healing process for faster recovery and any other application that related to the acceleration in the rate of growth of the cell.

Methodology: *A. Cell*

HeLa cell line is a cancer cell type, which is an immortal cell line that was widely used in scientific research. It was derived from Human cervical cancer that was taken from a patient who died because of her cancer on 1951, her name is Henrietta Lacks. The name of HeLa was taken from the initial first 2 words of her name. It is the oldest and most commonly used human cell line. Where the main advantage of this cell is that they do not die after a specific growth cycle and it can be divided by an unlimited number of times as long as basic cell survival condition are met. Therefore, we used HeLa cell as the primary cell type in this study.

B. Preparation HeLa cell

HeLa cells were cultured in Standard culture Flask in Rosewell Park Memorial Institute (RPMI) 1640 media (Sigma) with 10% Fetal Bovine Serum and 1% Pen/Strep until 90% confluence. The cell was maintained in the atmosphere of 5% CO2 at 37˚C and was split once reaching confluence, usually every 5 to 6 days.

C. Experimental setup for Electroporation System

The general of the experimental setups of Electroporation (EP) is to create a situation where is pores that can be temporary open or permanently open. This experiment is conducted in order to induce pulse electric field to the cell and do further biological investigations. This experiment setup on Figure 2 is a setup for EP technique. The size EP cuvette that is commercially available have 3 different of electrode gaps which are 1, 2, and 4mm that have the volume of 100µl, 200µl, and 400µl. In this experiment, the 4mm of the cuvette is used because it is suitable for the mammalian cell. However, this setup cannot be observed under real-time visualization, where at least several seconds after the procedure of taking the sample to the microscope.

D. Stamp Preparation

In this study, PDMS stamp were produced from the master template (produced at Department of Electronics and Electrical, University of Glasglow) by using a 184 Sylgard elastomer gel. To produce PDMS stamp, the template was coated with 2% dimethylchlorosilane mixed with 98% trichloroethylene depending on the size of template. Approximately 30ml of Sylgard elastomer gel pre-mixed with curing agent (ratio 9:1) was poured onto the templates and left to set overnight. The next day, the stamps were removed from the master template.

E. Micro contact printing method

The process of micro contact printing method was conducted in sterile conditions inside of biological safety cabinet. Glass cover slip was micro contact printed with Fetal Bovine Serum (FBS), using the following method as shown in figure 4; (A) 25µm stamp was inked by dipping into Fetal Bovine Serum. the stamp was then removed from the FBS solution, air-dried inside of incubator for 30 seconds and (B) stamped onto a glass

coverslip for 30 seconds by applying small force in order for the protein distributed equally, (C) this resulted in the substrate acquiring a line of fibronectin protein pattern as shown on figure 5. The substrate was then washed with PBS, dried and put in 6 well cell culture plate and seed cell equivalently. **Findings:** *A. EP effect on HeLa cell cultured on protein pattern surface*

This test was conducted in order to see the effect of the electroporation technique on HeLa cancer cell plated on protein pattern surface. Fetal Bovine Serum (FBS) and Fibronectin (FN) was used in this experiment as the ECM protein pattern. For the electroporation technique, the voltage used is 2000V/cm with the pulse length of 30µs and a single pulse number was applied in order to achieve high electrical field intensity of reversible EP had been proven in the previous study.

B. Morphological Changes during Electroporation Induced

The result shows the difference in size of HeLa before, during and after inducement with EP. It also showed that HeLa expanded in size during EP compared to before EP and it decreased back to the previous size before EP. The result from this experiment proved the Reversible Electroporation (RE) effect. This happens when a cell is exposed to a sufficiently high electric field. Its membrane becomes temporarily permeable to surrounding molecules.

The result of morphological changes phenomenon during multicellular exposure to PEF showed that HeLa cells were in contact with each other, where the PEF changed cells structures compared to HeLa without EP. This phenomenon eventually led to the fusion of the cells or called electrofusion. Electrofusion means that the cells are able to combine with adherent cells depending on the PEF exposure rate (M.N. Adon., 2015). Thus, this combination effect of cells could be useful in wound healing process. One of the challenges in wound healing studies is the way to direct or guide cells to grow in the specific direction that the researcher would like the cell to present at the wound site. Thus, the PEF effect showed a way to increase cell size for covering a bigger area and this could potentially save the time taken for wound closure.

Thus, this shows how exposure to pulse electric field affect the HeLa cells growth and proliferation rate. The exposure to pulse electric field permeabilize the cell membrane and caused opening of pores on the cell membrane. This phenomenon caused the insertion of nutrient around the cell surrounding and resulted in acceleration of cell growth and cell migration as compared to the cell without pulse electric field exposure. This finding can be useful in the wound healing process for faster recovery without addition or application of any drugs. In wound healing, accelerated cell migration is important for wound closure for faster recovery (Pradipta Banerjee et al. 2014).

C. Stamping protein onto glass substrate

Figure 8 shows the result of stamping method with PDMS stamp by using micro contact printing method with 4 different sizes of the gap (10, 25, 50, and 100µm). The reason of using 4 different sizes of the gap is to determine the size of the gap will allow the cell to align with it. In order for the cell to be alignment in the path given and follow the track by giving it a guide or it called cell guidance.

D. Cell alignment with Patterned Surface

For the protein pattern surface, two type of protein is used which is FBS and fibronectin with concentration of 100µg/l. The protein were patterned on the 24mm cover glass and the cells were plated in 2ml of RPMI inside six-well plate. Where it was suspended for 72 hours to see the proliferation rate and alignment of HeLa cell on micro patterned surface. The electroporation parameter induced was 2kV/cm with 30µs of pulse duration and single pulse number. The result that most showed that cells following the protein patterned is on 50µm gap size.

Figure 10 and Figure 11 shows that, HeLa with EP aligned with the protein patterned surface more compared to HeLa without EP with 63% (FBS) and 67% (FN). For the fibronectin, the pattern size of 50 and 100µm are the most shown the alignment of HeLa cell with the protein pattern surface but 50µm has higher number compared to 100µm. For the FBS protein pattern, only 50µm shows the cell are attached and follow the protein pattern. The result shows EP enhance the proliferation rate and attachment of HeLa to the protein surface compared to without EP. Where it shows that the physical the activity of HeLa cell does effect by the presence of Pulse Electric Field. This is due to EP accelerated the growth and the proliferation rate of the cell. The addition of pulsed electric field has shown an influenced for the movement of the cells through the migration of cell on the protein patterned surface. Based on previous research, the protein had been used to attract cell by giving a mechanical force to attach to them. In wound healing process there is an inflammatory stage, where at this stage a thin mesh of protein was made on the wound site in order to attract cell to migrate towards wound site and form a tissue layer and cover the wound. But for some cases where the wound healing process a disrupted, the system of recovering was not done. Thus, this study can be used as an alternative to providing a protein layer to enhance the formation of tissue at the wound site by guiding the cell to the wound site for the process of wound healing. By this contribution, which can be used on wound healing process for faster recovery because one of

the challenges in wound healing studies is to direct the cell to grow in the specific location that we would like the cell to grow and covering the wound area.

Contribution: *In this study, 4 different sizes of the stamp were used (10, 25, 50 and 100µm) in order to see which size that HeLa would align the best on protein patterned surface. The result showed that 50µm was the best size that gave the highest number of cell alignment with protein pattern. This was proven via the quantitative analysis when measured the angle of cell alignment on the protein pattern. The technique also proves that the cells are able to migrate through the patterned surface. From this experiment, it can be summarized that the cells have the higher number of alignment and also a number of cells count with the presence of protein track. This shows cells are corresponding well to the ECM protein due to the communication and stimulation between cell and cell adhesion molecules junction.*

Likewise, these ECM protein guided cells were further investigated by exposing the cells to the pulse electric field. The finding shows that the guided cells on protein patterned area become more active and proliferate faster in comparison to the control. This again proves that the pulse electric field did have an influence on HeLa cell alignment, enhanced proliferation, and migration, which is an important contribution towards wound healing process. As a conclusion of this studies, the combination of these two techniques might be a lead towards the new development of electrical pulse accelerated wound healing. The attachment of the cell and PEF had shown a significant effect on the growth of HeLa cell on a protein pattern. The combination of these two techniques may lead to the new development of electrical pulse accelerated wound healing.

Keywords: Electroporation, micro contact printing, cell proliferation, wound healing

Abstract ID: **AIMC-2017-STE-1135**

A NEUROPHYSIOLOGICAL STUDIES ON ZIKR COMPARE TO MUSIC LISTENING

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Abstract

Introduction: *As a muslim , we believe that Zikr (praising and glorifying the Almighty God) has a positive impact on the life of human being. Many research has been scientifically proved this by using various state of art technology e.g. EEG ECG etc. In this study , the neurophysiological EEG was used to monitor the brain activities of listening to Zikr and compare it to music listening .*

Specifically, the study aims to accomplish the following:

1. *To observe the brain wave and its effect to human mind.*
2. *To prove Zikr meditation can leads someone to relaxation and calm situation.*

Methodology:

This experiment involved three male subjects/participants. Range of their age between 22 and 24 years old. A verbal consent on the experiment was provided to the participants. The subjects with short hair is considered for better attachment of electrodes and they also need to be ensure that they did not put any gel or wax to their hair. This to prevent any interrupt while collected the data. All of them are free from any disease and medication. The experiment was conducted in at room temperature with air conditioning. Subjects were instructed to sit comfortably and relax before starting the procedure to ensure a decrease of noise recorded that could affect to the data collection. Then, the students were instructed to rest for 2 minutes and listen to the Zikr meditation from Asma Ul-Husna for another 2 minutes by using headphones with closed eyes. After they had finished listening to the Zikr , they continued to listening to rock music genre for another 2 minutes. Therefore, total of the data collection took place is 8 minutes.

Findings: *The result for this experiment considering two type of stimuli which are S1 (Listening with Zikr) and S2 (Listening with Slow Rock music) with brain wave and compared with the location of the brain lobes . During listening to Zikr meditation , the subject 1 had the highest amplitude of alpha and beta which were located at Pariental lobe (P8) .For subject 2 and 3 , they had low beta band wave for all the electrodes as beta band represent as the level of stress but for both participant ,therefore they considered not in the stress mood . For listening to music , the participant of subject 1 had the highest alpha and beta wave among all the participants .*

The lower of the beta value compared to the alpha wave value make the condition of the subjects' shows that they were in the calmness condition during the listening to music . However, the difference shows that during the listening to Zikr meditation , all of the subjects were in the calm situation, with the increase of alpha wave magnitude value compared to beta value.

Contribution: *In this paper , insights of Zikr meditation in the brain activities has been experimented . The results were very encouraging and promise an obvious evident for human daily life. The brain activities of alpha*

and beta wave show a significant result to the temporal and pariental lobes . This findings suggest that listening and language interpretation on human mind has a positive effect to the Zikr meditation. Further investigation with greater number of participants and addition parameters may lead to a more details improvement to the finding of this study.

Keywords: Zikr meditation , EEG , Alpha wave , Beta wave

Abstract ID: **AIMC-2017-STE-1137**

ENVIRONMENTAL PSYCHOLOGY: AN ANALYSIS ON LIGHTING EFFICIENCY OF THE HEALTHY WORKPLACE

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Abstract

Introduction: *In an education institution, lecturers' office space is the most important place where they spend most of time in day doing their works, whether completing given task, preparing for the lecture, doing research, checking exam papers and assignments, or conducting consultation with students. According to P.Boyce et al. 2003, Natural lighting in offices is healthy and efficient. However, daylight alone is insufficient in providing the required level for the occupied space. Especially when the room design is generic and does not tailored to the specific task of the lecturers according to their field of work. For instance, lecturers that teaching studio subject might require more light level to accommodate their specific task such as examining drawings, paintings or more intricate model compare to non-studio lecturers which only check paper assignments or doing work on their computers. Bad implementation artificial lighting introduce heat gain within a space, together with the lighting that it produces. For office, this can be significant proportion of the heat gain within it (Harvey, 2009). However, for lighting issues, this study is referred on the guidelines based on requirement of the illuminance level for an office space that provided by JKR, IES and MS1525:2007.* **Methodology:** *The objecvtive of this research is to identify the quality of lighting in the workplace in UiTM Seri Iskandar. Therefore, the study was carried out by collecting the artificial and natural lighting data at various work place. Research are limited to lecturer's offices and detail observation of the area and interview with the respective users/owner will help in analyzing the quality and the design of the space/area in the terms of its lighting and work productivity. The methodology of this analysis is to provide lighting data by using the lighting measurement tools, LM-8100. Lighting reading was taken in a constant interval at specific uniform points to achieve consistent readings and create comparison. From the lighting measurement, the data collected will be will be compared with the ideal lux reading provided by Malaysian Standard and Indoor Air Quality Standard. The data will be analysed with other supporting factors that contribute to effective lighting in a workplace. These factors are lighting arrangements, opening size, the types & colours of finishes, material and furniture involved. Apart from tangible data, a questionnaire was given to the occupants in gauging the lighting comfort level from user' perspective.* **Findings:** *The measurement was collected from various office and work space at a constant place and time interval. Each data taken then recorded and comparison made to eliminate variables that could affect the findings. The findings from the analysis will determine the level of lighting settings in accordance to the Malaysian Code of Practice on Indoor Air Quality standards. The result will identify the lecturer's satisfaction and performance in achieving healthy working environment. Analysis from questionnaire will determine the work performance of the respondents in term of mood, alertness, ability to complete task and overall working environment. Other factors such as comfort level and glare will also be taken into account. From the finding, factors are identify whether the existing working environment provide a healthy workplace to the occupants in terms of physical and psychology comfort in delivering task as an educator. This results will be further discussed on the recommendation and guidance in improving the workplace to a healthy and conducive environment. Due to generic building design, most layout and the furniture provided at the office are monotonous regardless of the field of work of these lecturers.* **Contribution:** *Most work place are design as a generic space to people to work regardless of the work requirement as according to their field of work. This is evidence in an education institution where various field are being thought in one place. The generic design might be economically effective in long run of the institution operation. However, to standardize the work space requirement will result to in efficient work and might affect work performance. This study is conducted to compare and analyse the lighting performance, specifically on artificial lighting, at studio based and non-studio based lecturers' offices. With the studies, we can identify whether the lighting performance is in accordance to the standard set by by JKR, IES and MS1525:2007. This research can be further presented to the professional bodies that govern the*

education quality such as Council of Architectural Education Malaysia (CAEM) in providing optional regulation on architecture schools relating to policy and procedure for Accreditation of Architectural Programmes.

Keywords: Lighting efficiency, Healthy work space, Indoor environment quality, artificial lighting

Abstract ID: **AIMC-2017-STE-1143**

RELIGION AND THE CRISIS OF MODERNITY: A RESPONSE OF INDONESIAN MUSLIM SCIENTISTS ON THE IDEA OF ISLAMIZATION OF KNOWLEDGE

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Abstract

Introduction: *The idea of Islamization of knowledge in the Islamic world has been responded with many different ways. Some of them disagree such as Fazlur Rahman, but the majority of Muslim thinkers in many countries welcome and support it with great enthusiasm and interest. To restore the glory of the ummah, Islamizing the western secular knowledge is a necessity. This study tries to reveal how the response of Indonesian Muslim scientists, the dabate amongst them and alternative ideas they offer ranging from the need to totally reconstruct western scientific paradigm and making its new theoretical application in many disciplines* **Methodology:** *This article will use descriptive analytical approach with content analyses methodology by describing the problem of western secular knowledge and its destructive impact to the modern civilization. After that, how this problem is viewed by Indonesian Muslim scientists and how the debates occurred among them. Some of them are agree and some are disagree. From the protagonist pool, this article will analyses what are their arguments and solutions they provide, also what kind of example of the knowledge and discipline they try to Islamize.* **Findings:** *The result of this study indicates that the responses are varied but the majority of them support it. The support shown through lively discourse ranging from the need to totally reconstruct wester scientific paradigm, making its theoretical application, changing the object of study from the West to Muslim societies as in sociology-anthropology, until using Islam as the moral measure as can be found in psychology and management. As a great task, Islamization of knowledge has yet to show tangible results, but looking for an alternative to Islam as a response to the global crisis that originated from the dominance of the secular modern Western science, perceived as a common need* **Contribution:** *This research has not been done by Indonesian Muslim scholars before. Therefore, this article is the ground-breaking study that is very important in the field of Islamic thought in Southeast Asia.*

Keywords: Islamization of knowledge, Indonesian Muslim scientist, Indonesian Islam, Islamic thought

Abstract ID: **AIMC-2017-STE-1149**

A MATHEMATICAL MODEL OF OIL PRODUCTION WITH INTERMITTENT GAS LIFT METHOD

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Abstract

Introduction: *In oil industry, volume of oil production is very important to increase. However, many mature wells are not afford to drain oil from reservoir to the surface. Mature wells need artificial lift to help production of oil to the surface. One of artificial method is intermittent gas lift. Intermittent gas lift is gas injection in well. Gas is used to propel oil to the surface. This research will be developed a mathematical model to describe fluid flow in the intermittent gas lift process.* **Methodology:** *System of the intermittent gas lift consist of compressor, gas-line, choke, mandrel, gas-lift valve, tubing, production-line, and a separator. This research will be discussed gas flow model in the gas-line and tubing. Gas injection is flowed from compressor to the gas-line and then gas from the gas-line will be injected into the tubing. Gas will be form three parts in the tubing that is gas column, the film column, and the column slug. Each parts are constructed flow model. The model is developed based on momentum and mass conservation. The model consists of a system of ordinary differential equations. The model is analyzed and simulated with Runge-kutta method.* **Findings:** *Moreover, the dynamic of some variables is presented. The success of oil production is affected by some variable such as: pressure of gas injection, velocity of gas, velocity of oil, and film thickness. The pressure of gas injection can be controlled, so that production of oil is optimal. The results can be used to design well with intermittent gas lift method* **Contribution:** *The dynamics of each of the variables that affect the process of intermittent gas lift can describe the success of this*

method. The results can be used to design well with intermittent gas lift method. In a previous research, the injection pressure of the gas at the choke given. But in this research, the pressure of gas injection is predicted by the gas flow model in the gas-line on the surface.

Keywords: Intermittent gas lift, mathematical model, gas-line, tubing, the dynamics of variables

Abstract ID: **AIMC-2017-STE-1154**

CAN SUPPLY CHAIN CONNECTIVITY EFFECT ON THE RELATIONSHIP BETWEEN PORT PERFORMANCE AND ECONOMIC GROWTH?

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Abstract

Introduction: *In the past decade, the ports served as a node in a network of transportation, trade and global supply chain. Their roles are becoming increasingly important. They play a key role in the efficiency and effectiveness of transport as well as connectivity and competitiveness of a country. And, one of their most important roles is to develop and grow national economy. This study is aimed at analyzing the relationship between the performance of the ports and the country's economic growth by having the function of mediation by supply chain connectivity* **Methodology:** *Tanjung Priok Port as the main port in Indonesia is chosen as a case study. Port performance is measured by eight indicators, while the supply chain connectivity measured by seven indicators, and national economic growth measured by the Gross Domestic Product Constructs. Linear regression analysis is used to identify the relationships developed based on three hypotheses* **Findings:** *The study concludes that the increase of port performance has no direct effect on the country's economic growth, but this increase affects the supply chain connectivity directly. The analysis also shows that the supply chain connectivity affects the relationship between port performance and country's economic growth* **Contribution:** *This research has proved that supply chain connectivity may affect the relationship between the performance of the port and the economic growth of a country. Therefore, the importance of the port to the country's economic growth needs to be addressed with improved port performance and connectivity between ports, and it certainly demands hard efforts from the port authorities and other stakeholders*

Keywords: Port performance, supply chain connectivity, economic growth, gross domestic product constructs

Abstract ID: **AIMC-2017-STE-1157**

GREEN OPEN SPACE NEEDS ANALYSIS OF CARBON DIOXIDE (CO2) GAS EMISSIONS ABSORBTION IN SERANG CITY

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Abstract

Introduction: *Increasing population is growing along with the progress of science, technology, arts and culture (science and technology) of a region. It will be able to influence the development of construction in an urban area. The direct impact of the urban facilities construction is recognized from continuous conversion of green open spaces that occur , as a result of limited open spaces. One effort to be performed to minimize the impact of global warming is the provision of green open space. it has ability to absorb CO2 emissions so as to reduce the concentration of CO2 emissions in nature.* **Methodology:** *in general this study using a calculation based on IPCC*

CH4 Emission (Gg/yr) =
(MSWT x MSWF x MCF x DOC x DOCF x F x (16/12 -R)) x (1 - OX)
CO2 Emission =
Methane Emission (CH4) x ((1- F/F) + OX) x 44/16

Description :

MSWT : Heaps of waste that goes into processing or landfill (Gg/year)
MSWF : The percentage of waste that goes into processing or landfill compared to the amount of waste produced by the source.

MCF : Methane correction factor, Indonesian state does not currently have instruments of landfill gas processing, therefore 0.4 is selected in the calculation. (IPCC)
DOC : degradation of organic carbon (IPCC).
DOCF : fraction DOC, by 0,77 IPCC.
F : fraction based on methane gas volume in the waste landfill. IPCC gives Standard value of 0,5.
R : CH4 stored in gas processing instrument. Indonesia does not have a gas processing instrument. Thus, methane gas from waste generation can not be measured, the R value is set to 0.
OX : oxidation factor, the IPCC provides default values 0,1
Findings: *Total CO2 emissions in the city of Serang in 2016 is about 492,080.29 tons of CO2 and in 2026 increased to 1,058,468.16 tons of CO2. Total emission is viewed from three aspects, namely, electrical energy use, livestock and trash activities. This is due to the increase of electricity users, along with the increasing number of residents in the city of Serang. And Than Absorptive capacity of carbon dioxide emissions (CO2) from the land cover of green open space in Serang city is 251,680.99 from the total green area of 4320.14 hectares in 2016, and the latter, The needs of green open space (GOC) which is ideal in 2016 to fulfill the function of absorbing carbon dioxide (CO2) emissions is 8446.63 hectares, whereas in 2026 the green open space (GOC) needs as an absorber of carbon dioxide gas emissions (CO2) in the city of Serang is 18168.76 hectares.*
Contribution: *predict the needs of urban green space in the city of Serang in the past 10 years into the future, so that the city government attack can determine and develop policies related to air quality deterioration, especially of co2 emissions. Open green space that is currently not able to reduce gas emissions issued in the city of Serang emanating from the garbage, livestock, and electricity consumption society, so the need for alternative management of green open space in the city of Serang*
Keywords: green open space, emissions, absorption of CO2

Abstract ID: **AIMC-2017-STE-1158**

NONMETALLIC PRINTED CIRCUIT BOARD WASTE AND TREATED MAGNETIC WATER AS CEMENT REPLACEMENT IN MORTAR

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Abstract

Introduction: *Nonmetallic powder recycled from waste printed circuit boards (NMPCBs) and magnetic water are used in mortar as cement and water replacement respectively. These study focus on producing eco-friendly and economical mortar with higher strength by reducing the usage of cement in a mix without effecting the other properties of mortar by replacing cement with NMPCBs and magnetic water. In order to elucidate clearly about magnetic water we studies the influences of magnetic field on the change of chemical, physical, and mechanical, including chemical composition, morphological, pH, and surface tension. The leaching and compressive strength were also tested on raw NMPCBs and mortar.* **Methodology:** *The material that was used in this research are Nonmetallic Printed Circuit Board (NMPCBs), Magnetic Water (MW), Portland cement, and fine aggregate. The particle size of the NMPCBs is mainly in the range from 0.08 to 0.15 mm. MW was prepared by passing tap water through magnetic field, using an immerseable pump to circulate the water through the magnetic field for 7 and 14 days with a velocity of 10 m3/h and magnetic field strength of 0.13 and 0.55 Tesla. The mortar specimens were prepared with water to cement ratio by mass of 0.5 and sand to cement ratio by mass of 2.75. The specimens are different in terms of the proportion of NMPCBs that added in mortar, magnetic field strength, and exposure period of water on magnetic field. Specimen with no NMPCBs and using tap water will be used as the control specimen. We studies and inspect in detail the influences of magnetized water on the chemical, physical, and mechanical, including chemical composition, morphological, pH, compressive strength, surface tension, and optic properties as well as the Fourier Transform Infrared Spectroscopy (FTIR), and X-ray Diffraction (XRD). The leaching and compressive strength were also tested on raw NMPCBs and mortar.* **Findings:** *The size of water molecule for tap water is larger than magnetic water. The average size of tap water molecules is 8.17µm while the average size of magnetic water molecule is 6.56µm. Magnetic water mainly contained five elements with is 22.794% of CaCO3, followed by SiO2 7.344%, K2O 5.717%, Na2O 3.028, and MgO 1.214%. It also found that, the pH is increased with the increasing of exposure period water on magnetic field. But when magnetic water were stored in static condition and away from the magnetic field, magnetic water slowly decreased with the increasing of time. From Pendant Drop testing, it found that the surface tension increased parallel with response to the increased of exposure period and strength on magnetic field. For FTIR*

and XRD testing, it showed that the mid infrared spectra of water were changed distinctly, and the strengths of absorbance of band of the magnetized water were obviously stronger than that of pure water. From the result of leaching tests for heavy metals, there is no heavy metal was found in the leachate from NMPCBs waste. The use of magnetic water can improve the compressive strength of mortar in place of cement. **Contribution:** *We have successfully obtained an approval from DOE to utilize the NMPCBs waste in making end products. So NMPCBs can be used in making value added products, and also can solve the problem of waste generated by electronic industry in Malaysia. Only by this way, the NMPCBs waste can be reused just like in other countries. For potential application, magnetic water can be used as replacement materials in making mortar or concrete. It is because magnetic water can act as materials that can increase the strength of mortar and at the same time can reduced the used of cement in construction.*

Keywords: Waste, nonmetallic, printed circuit board, magnetic water, mortar, leachate

Abstract ID: **AIMC-2017-STE-1164**

PRIVATE VEHICLE SWITCHED TO PUBLIC TRANSPORT ANALYSIS BY COMMUTERS BASED ON SAFETY PERCEPTION IN SUBURBAN

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Abstract

Introduction: *The problem of high usage of private modes than public transport modes into one of the problems of transport in the buffer zones (suburban) which is one of the effects of the phenomenon of urban sprawl. This study aims to determine the safety system attributes in the buffer zones that need to be improved and how the contribute of Smart transportation can improve strategies to switched of private transport users to public transport.* **Methodology:** *The cluster random sampling survey conducted on 200 private vehicle users in the city of Depok Indonesia. The method used in this study is the Hybrid Model, the model uses Partial Least Square (PLS) SEM modelling to obtain the safety indicators that affect the desire of switching vehicle, and Analytical Hierarchy Process (AHP) to obtain improvement strategies Smart Transportation can be done to improve safety in the suburban area.* **Findings:** *The results of this study, 14 indicators of the five transportation safety service attributes required in the buffer zones. While the strategy of Smart Transportation selected is Monitoring Strategy with 27.5% percentage elected.* **Contribution:** *Previous research only see how the attributes of public transport affects the desire to switch to public transport to see the safety factor as a small indicator variable rate of accidents and the impact of any accident to services (Altef et al, 2013; Wang et al, 2013 and Pirdavani et al, 2016).*

Keywords: private vehicle commuters; public transport; safety perception; hybrid model

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INVESTIGATION ON NANO-SILICA PERFORMANCE AS A BRIDGING AGENT AND ITS EFFECTS IN BASIC WATER BASED MUD FILTRATION AND RHEOLOGICAL PROPERTIES

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Abstract

Introduction: *Drilling Fluid can be defined by any fluid that is used throughout a drilling operation that serves many purposes include transporting cutting into the surface, controlling subsurface pressure, controlling the fluid flow into and out of the formations, and supporting and stabilizing the well-bore.*

Rheological and filtration properties of drilling mud are important parameters that should be considered to optimize drilling fluid performance and to obtain economic drilling operations. Firstly, filtrate loss caused due to the mud cake and bridging agents' low efficiency in sealing the formations and in preventing the fluid into the formation. Moreover, most of the formation with low permeability and nano-pores size is such that normal filtration additives can't form bridge across the formation, thus effect negatively the filtration properties, and increases the fluid invasion into the formations. Therefore, it requires nano-particles to form efficient bridge to develop proper mud cake that seal completely the formation from the fluid circulation zone that may reduce significantly the filtrate loss and the formation damage. Secondly, the need of improving the rheological properties is required to overcome the drilling operations challenges such as poor hole cleaning low Rate of Penetration (ROP) Pipe Sticking and higher torque and drag .

The objective of this study is to investigate the nano-silica performance as a bridging agent in Basic WBM and its effects in filtration and rheological properties. Microscopic qualitative and quantitative interpretation of the Nano Silica ability on sealing the small-pores size after filtration tests is performed. **Methodology:** *A. Mud Formulation*

This system is considered a basic water based mud system. Mud preparation at LPLT using nano silica 5-15nm, at 0-2.5 wt.% nano silica concentrations of total mud weight which this concentration was deducted from filtration loss agent Bentonite.

B. Mud Testing & Samples Preparations

Density Measurement. Mud density for all mud samples are measured using the Mud Balance with accuracy reading is 0.1 lb/gal following API standard, this project is testing the mud with density equals to 9.2ppg.

AP LPLT Filtration Test. Static filtration test is used in this experiment to indicate the filter cake quality and filtrate loss volume for all samples under low pressure low pressure condition using 300 Series API filter press.

Mud Rheology Test. Fann Model 35A viscometer is used to determine the viscosities measurements using 6 fixed speeds 3, 6, 100, 200, 300,and 600 rheological properties are calculated using the dial reading using the following

Filter Paper Preparation for SEM Scanning. Mud cake is removed carefully without disturbing the surface of the filter paper using thin ruler, and to ensure only solid particles left within the filter papers, this can be done by drying the filter paper under the sun for 3 days. 1 cm2 of filter paper are cuts as sample to fit the chamber of SEM.

Filter Papers Imaging using Scanning Electron Microscope (SEM). Unused filter paper is to be scanned to visualize and measure the pore size, besides the samples which are going to be prepared after all filtration tests. The Sample imaging will be conducted in BLOCK 15 (GEOLOGY LAB) , Universiti Teknologi PETRONAS.

Perform Interpretation and Analysis for Images Produced by (SEM). Results will be obtained from the images and comparison Interpretation studies are performed based on plugged pore and nano-particles dispersion parameters for the filter paper surface after filtration tests. Qualitative & quantitative comparisons are performed for all samples for both formulation mud systems **Findings:** *Filtration properties including fluid loss volume versus time describes the differences of spurt loss of the fluids during filtration test which is the highest at 2.5wt. % sample, total fluid loss volume through 30 minutes time ,and mud thickness*

Nano-Silica (5-15 nm size) performance as bridging agent was microscopically investigated, and it can be concluded nano-silica cannot contribute on performing efficient bridging filtration mechanism in Barite/Bentonite WBM system. Comparison between the based mud case system (0.wt.% nano silica concentration) and mud with different nano silica concentration up to 2.5wt.% of total mud weight shows an increase significantly of the fluid loss volume as well as the mud cake thickness when the concentration of nano silica increase therefore, it's not advisable to use nano-silica as fluid control loss and bridging agent in Barite/Benonite WBM system. On the other hand, nano silica shows its capability to act as rheology modifier.

over all nano silica has negative impacts on the filtration properties for basic mud system Barite/Bentonite mud system. The fluid loss volume keeps increasing by increasing the nano-silica concentration. The fluid loss volume increases by 52% compared to the based mud when the concentration of nano silica is at the highest 2.5wt. %.This can cause formation damage, and more cost for the drilling operation will be required due to the huge fluid loss. [6]. Addition to that mud cake thickness tends to rise slightly with the increasing of nano silica that a undesirable indicator because increasing in mud cake thickness causes stuck pipe and major mechanical instability in the wellbore while drilling[7]. The results above can be explained by the fact that nano-silica size (5-15nm) is too small to seal the filter paper micro-size pores and it was observed during the filtration tests fluid loss volume contains a huge amount of nano silica specially in the 2.5 wt.% sample. Therefore the excessive amount of nano-silica concentration (2.5wt.%) penetrates the filter paper ,and produces a high filtrate loss volume equals to 37.5ml.

filter paper has random pores distributions and various size ranges between 5-15 µm with holes rounded shapes. The pore size is much larger than nano silica diameters (5-15nm). However, the assumption of this study that the large filter paper pores size are primarily sealed/filled partially by the conventional fluid loss control solid additives and bridging agent which is in the case the Bentonit [8]. Nano silica may contribute to form a bridges within Bentonite particles to block efficiently the small left of nano-pore sized in the filter papers, but results in the next section shows the opposites of the project hypothesis.

the filter paper surface after filtration test of all mud samples with nano silica concentration 0wt% - 2.5wt% respectively. .It can be seen that the filter papers pores are sealed and blocked with the solid mud additives but there still pores left un-sealed, the number of unblocked pores differ depending on the nano-silica concentrations. Similar pattern to filtration properties effects of nano silica takes place in this section where the number of pores unfilled keeps rising by increasing nano-silica concentrations. For example the number of pores unsealed in the based mud system with 0 wt. % nano-silica Figure (5) is approximated between 3-4 pores, the number of unblocked pores increase to more than 15 when 2.5 wt.%. Figure (9). These results can justify the reasons of the negative effects of nano silica in WBM filtration properties.

filter paper surface at different magnifications for 1.25wt. % unblocked pore. From Figure 10 and based on the filtration mechanisms types, the Bentonite block most of the filter paper pores, thus blocking filtration type encountered by the Bentonite additives, and

inefficient standard blocking filtration type occurred too since there're still pores unsealed and nano silica particles are captured inside the filter medium which are accumulated by approximately 200nm,nano-silica can be distinguished because the other additives diameter is in micro size, which were also observed that nano-silic's existence in the fluid loss at excessive amount. That is because of the nano-silica particles are too small relatively to the pore size, therefore they penetrate into the filter paper which effects negatively the filtration performance. Therefore, nano-silica particles (5-15nm) are not advised to be used as bridging agent in Basic WBM **Contribution:** *Nano-Silica (5-15 nm size) performance as bridging agent was microscopically investigated, and it can be concluded nano-silica cannot contribute on performing efficient bridging filtration mechanism in Barite/Bentonite WBM system. Comparison between the based mud case system (0.wt.% nano silica concentration) and mud with different nano silica concentration up to 2.5wt.% of total mud weight shows an increase significantly of the fluid loss volume as well as the mud cake thickness when the concentration of nano silica increase therefore, it's not advisable to use nano-silica as fluid control loss and bridging agent in Barite/Benonite WBM system. On the other hand, nano silica shows its capability to act as rheology modifier.*

Keywords: Nano-Silica; Drilling Mud; Bridging agent; Filtration and Rheological Properties; Scanning Electron Microscope (SEM)

Abstract ID: **AIMC-2017-STE-1172**

EFFECT OF TEMPERATURE, GAS RATE AND WATERCUT ON FOAM STABILITY IN THE PRESENCE OF HYDROCARBON

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Abstract

Introduction: *When a hydrocarbon reservoir unable to produce naturally, gas or water injection is often implemented as a secondary recovery to produce the remaining oils. However, several implications associated with gas injection such as poor sweep efficiency, viscous fingering and gravity override had been identified. Foam able to overcome such aforementioned problems by reducing the gas mobility and relative permeability. Application of foam in improving hydrocarbon recovery was dated back in 1958 when Bond and Holbrook patented the use of foam to improve sweep efficiency of gas drive in secondary recovery process. Research since then shifted its focus to foam as one of the many options in third hydrocarbon recovery, or known as enhanced oil recovery (EOR). Behaviour of foam is complex and inconsistent, and many factors are affecting foam performance. Foam stability is a measure of foam lifetime. It is crucial for surfactant to produce a strong and stable foam that can withstand a long period of time.* **Methodology:** *In this study, the effect of temperature, gas rate and watercut on foam stability is investigated with the presence of Malaysian crude oil. The experiment is conducted in a bulk column test using FoamScan from Teclis Instrument. The temperature is tested from ambient condition to 60°C, whilst the gas rate injection is varied from 100 to 600 ml/min. For the watercut, which is the ratio of water to oil, is tested from 70% to 95% watercut. For each sample test run, nitrogen gas is sparged through the mixture of crude oil, in-house developed surfactant, and brine at different parameter to produce foam until a certain height. A camera is continuously recording the height of foam during the production and the*

collapse of foam. **Findings:** *The result shows a significant impact on the foam stability. From the test, it can be observed when the temperature increases, the foam become less stable. For the gas rate injection, the higher the gas rate, the less solution mixture is used in foaming process, therefore resulting in less stable foam as gas rate increases. As for the watercut test, the higher the watercut, the less hydrocarbon content, the less stable is the foam. The result shows a reversed trend in foam stability as compared to theory claimed. Hydrocarbon as a defoamer supposed to contribute to the destabilization of the foam. The reverse trend is believed due to the effect of using the in-house surfactant.* **Contribution:** *This study is intended to address the issue in foam performance by investigating several parameters that affecting foam stability. The test is done using bulk foam experiment with highly integrated equipment that able to capture the data on rear time.*
Keywords: Hydrocarbon, foam, EOR, foam stability, watercut

Abstract ID: **AIMC-2017-STE-1180**

A SHORT REVIEW ON MEASUREMENT OF CONSTRUCTION LABOUR PRODUCTIVITY

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Abstract

Introduction: *The key to success for every construction industry is its Manpower. Despite the numbers, there are still claims that there is a shortage and urgently more foreign workers are required. In the past, a lot of research has been conducted to investigate the factors affecting construction labour productivity and to highlight which factors are more important from the Management's perspective. Very few have conducted a research on construction labour productivity from foreign worker's perspective, which represent a rapidly growing proportion of the Construction Industry. The major goal in any construction project is to improve labour productivity. For this purpose, it is not only necessary to identify the important factors responsible for productivity, but also the influence of different factors to productivity.* **Methodology:** *The review of measurement of labour productivity in construction was conducted using available literatures on construction productivity assessment in different countries across the world. Information about the factors related to productivity in construction, the methods used to measure productivity and other related information were gathered from published journal articles, governmental and non-governmental organization reports, newsletters, booklets and online database of various organizations involved in construction management and related research. The factors and their relevance to labour and management that determine were identified through the analysis of information gathered from above mentioned sources.*

A systematic approach was used for the review of available literature. A total of 82 articles related to measurement of productivity in construction were identified through internet searching. The articles are then classified according to method used for measurement of productivity. Finally, factors identified in different articles were listed down and compiled together to make a complete list of factors that defines productivity in construction.

Findings: *Enshassi et al (2007) grouped factors affecting labour productivity into 10 categories: manpower, leadership, motivation, time, materials/tools, and supervision, project, safety, quality and external factors. Kazaz, Mansali and Serdar (2008) considered productivity factors under four groups – organizational factors, economic factors, physical factors and socio-psychological factors. Adamu et al (2011), Durdyev and Mbachu (2011), and Attar, Gupta and Desai (2012) went on to further categorize the labour productivity factors but none of the above have established a study from where it can be directly witnessed on how the CLP factors are affecting the productivity as well as to compare the views by the labour and the management of a construction project.*

In Jordan, most of the construction workers are expatriates, and have been reported as to having little or no vocational training. The skills of almost all construction workers were acquired by experience rather than official vocational programmes and training (Hiyassat, 1998). A survey on craftsmen in Indonesia, identified lack of material, rework, absenteeism, interference and lack of tools among the most significant factors impacting construction labour productivity (Kaming et al., 1997). In a survey carried out on project managers in Thailand, (Makulsawatudom et al., 2004), using relative importance index, ranked the following five factors as the most significant factors affecting construction labour productivity: (1) lack of material; (2) incomplete drawing; (3) incompetent supervisors; (4) lack of tools and equipment and (5) absenteeism. **Contribution:** *A large number of physical, social, economic, environmental, and behavioral factors have been identified in different studies. Literature review revealed total 112 factors identified in different studies. The literature survey revealed that material shortage is identified as the most influential factor of construction productivity in most of*

the studies, followed by non-payment and lack of supply. On the other hand, motivation is found as the most important factor directly related to labor productivity, followed to salary and skill. It is expected that the findings of the study will be helpful in construction management and improvement of productivity in construction sector.

Keywords: Construction labour productivity

Abstract ID: **AIMC-2017-STE-1181**

SUSTAINABLE HYBRID CEMENTITIOUS COMPOSITES FOR EFFLUENT CONTROL IN CONCRETE SILOS

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Abstract

Introduction: *The challenge from silage effluent has constituted a threat to the quality of water as well as dairy farms valuable forage nutrient loss in no small measures globally, particularly in a weather condition that is difficult for field drooping. Silage effluent can result in fish kills and eutrophication as a result of high biochemical oxygen demand (BOD) as well as nutrient content, respectively. It contains a high acidity value, hence caustic to steel and destructive to concrete This makes treatment, storage and disposal a challenge. Generally, concrete silo construction is majorly of ordinary Portland cement constituents conventionally.* **Methodology:** *The aim of this study mix design is to select the optimum proportion of OPC, MK, CNS, fine aggregates, Epoxy, water and fibres, both synthetic and naturals. The main purpose of this is to develop an HCC material that meets up with the modern strength and environmental needs and as well meet the required fresh and hardened state, durable and cost effective. The mix design used in this study was adopted according to literatures based on the design standard established for ECC. It is called M45 ECC design standard. The design was adjusted because of the incorporation of CNS and epoxy. The cement, fine sand and MK were blended in drum mixer with a planetary rotating blade for 2 minutes. Then the plasticizers and 10% of water were added into the mix with the blending continued for the next 2 minutes. Thereafter, the remaining water was added and then the fibres added manually and gradually to ensure even distribution in the cementitious matrix. The HCC mix was filled into moulds as required for various tests and demoulded after 24±1 hours before being cured in ordinary water and sea water till different test ages of 7, 28, 90, 180 and 365 days. All tests was done according to America standard tests method.* **Findings:** *The incorporation of MK at 10% MK, 1% each of CNS and Epoxy by binder replacement result in the following;*

- *Higher compressive strength of between 29% and 33.41% than the control at 28 days.*
- *High UPV results of all HCC mix between 2.99 to 8% above control at 28 days*
- *Minimizes the drying shrinkage by 25.81% to 67.72% of all HCC specimens for the first 7 days.*
- *Significant reduction of water absorption by 2.78% as compared to the control specimens.*
- *reduced porosity by 13.62% compared with the control mix which has a value of 14.7% value.*

Contribution: *The novelty of this research lies in the material tailoring mechanism adopted in the incorporation of MK, CNS and Epoxy with various natural and synthetic fibres to produce a hybrid cementitious composite suitable for the control of effluents in concrete silo. Apart from the benefit of reducing the carbon dioxide emission of a concrete silo, this research will in no measure reduces the devastating impact of silage effluents in a concrete silo hence reduces the annual repairs and maintenance cost. Also, it will improve the storage of feeds and make available sufficient feed stock for the winter season and thereby tackle food scarcity of dairy farming.*

Keywords: HCC, Natural and synthetic fibres, MK, CNS, Epoxy, Effluent.

Abstract ID: **AIMC-2017-STE-1185**

STUDY AND FORMULATION OF ANIONIC SURFACTANT FOR ENHANCED OIL RECOVERY

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Abstract

Introduction: *Sodium Ligno Sulphonate (SLS) is one of the types of anionic surfactants that can be made from oil palm empty fruit bunches's lignin. Therefore, these surfactants have the opportunity to applied as EOR cheap agent because of the presence of highly abundant raw materials. In this study, we investigated the ability of lone*

SLS and mixed SLS with some support materials as EOR agent. **Methodology:** *The study was conducted on the optimation of mixed SLS with another supporting materials namely Na-fatty acid and co-solvent (isoamyl alcohol and 1-octanol) in various combination as EOR agent. In the initial screening, we conducted IFT test for selecting viable EOR agent where surfactant's IFT value must be in range 10-3 mN/M.* **Findings:** *The results demonstrated that SLS can't stand alone as EOR agent and must be blended with another supporting materials like Na-fatty acid and cosolvent. There are 4 surfactant formulas that potentially as EOR agent, BRP14, CRP14, B3RP14, F1RP14 and HRP14.* **Contribution:** *Utilization of chemicals for the study of enhanced oil recovery (EOR) in the old wells has been done by many researchers. One of EOR methods is using surfactants to reduce the interfacial tension between the injected fluid and the oil in the reservoir. However, in the process there are obstacles, such as high prices of surfactants and limited raw materials. It is necessary to develop new method for produce surfactants which are cheap and easily obtained. In this study we are using oil samples from Indonesian oil well under Pertamina (National Oil Company of Indonesia) authority. From this research we can give more solution methods to overcome Oil recovery problems.*

Keywords: Sodium lignosulphonate, mixed SLS, EOR

Abstract ID: **AIMC-2017-STE-1191**

FEASIBILITY OF THE DESIGN FOR CONSTRUCTION SAFETY IN MALAYSIAN CONSTRUCTION INDUSTRY : THE ENGINEERS' PERSPECTIVE

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Abstract

Introduction: *The Design for Construction Safety is a concept where it increases the safety and health of the construction workers in order to decrease accidents during the construction phase. This is done by the designers by eliminating risks and hazards through their designs. Design professionals are the key component in determining how this intervention can be most effectively utilized within the constraints of the Malaysia's construction industry.* **Methodology:** *This paper presents a study that was conducted to investigate the current culture in the industry in terms of addressing construction worker safety when designing a project and to determine the feasibility of the intervention. The types of design disciplines included in the research study were limited to civil engineers. Questionnaire forms were distributed by mail, by hand and by online form. A brief explanation on the concept were stated in the form for better understanding to overrule misleading and confusion. The responses were scored on a 5-point Likert Scale and respondents were asked to express their level of agreement based on the scoring system of highest score being to strongly agree. The data were analysed using SPSS computer program. The respondents had varied backgrounds representing a variety employment firm, durations of work experience and level of education. Of those 48 respondents, 47.9% works with a civil engineering firm and 41.7% are in a contractor firm where n=2 are for subcontractors and n=3 for developers. The majority of the respondents (54.17) have working experience more than 5 years in this industry with n=32 respondents equipped with a bachelor degree.* **Findings:** *The mean score for current performance culture among the engineers was 3.38. This value indicates that the professional engineers have a slightly above average agreeable view that they involved design safety concept in their practice. The mean scores is the lowest for the statement 'OSH policies and procedures mean a lot to me when it comes to get tasks completed'(2.9792). This indicates that the engineers does not consider OSH policies during their design process. In a positive note, the engineers stated that they have discussions on methods and practices with the contractors in regards to construction workers osh. A list of impediments in implementation were given to the respondents to be rated based on their personal view. Among the seven barriers listed, the highest mean scores are the increasing of project costs (3.4792) and liability exposure (3.2708). The least impediments stated are limitation of creativity (2.7708) and lack motivating forces (2.7083). These shows that the engineers has understanding that the design safety concept will not limits their creativity and will not be a impediment to proceed in practice. The results also show that the engineers have mutual agreement on the significant effect of design safety implementation towards rate of accidents.* **Contribution:** *This paper reveals to which extent the safety and health integration is fostered in the current practice of the professional engineers. Exploring the current practice, barriers of implementation and perception on the concept will give an insight on the possible impediments that may faced duing the intervention. All parties should take part in minimizing risks and hazards on site especially during the construction process where it risks workers' live.The integration of design safety in the construction industry culture will decrease the site accidents related to design towards to zero-accident as well as increase the designers' value in construction industry.*

Keywords: Design Safety, Construction Safety, Engineers, Malaysia

Abstract ID: **AIMC-2017-STE-1193**

STATISTICAL ANALYSIS OF CRITICAL VELOCITY STUDY IN ENCLOSED CAR PARK VIA RESPONSE SURFACE METHODOLOGY

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Abstract

Introduction: *The presence of beam in enclosed car park will cause smoke back layering phenomenon and consequently create hazardous environments such as stagnant, dead zone and recirculation zone.* **Methodology:** *The current study investigates statistically the effect of the presence of beam using response surface methodology. Fire Dynamic Simulator was employed as a simulation tool while the result was statistically examined using analysis of variance via Minitab application.* **Findings:** *In this study, it was found that the result was linear with predicted R-squared (83.37%) and within the permissible R-squared (95.83%). Four control parameters which are beam spacing, longitudinal beam depth, ceiling height and extraction rate with p-values of 0.00, 0.052, 0.00 and p=0.042 respectively, have been found to have significant effect on the critical velocity.* **Contribution:** *In short, the contribution of this study provides a good insight to the engineer in providing initial design of enclosed car park with better condition.*

Keywords: Response Surface Methodology, Critical Velocity, Fire Dynamic Simulator

Abstract ID: **AIMC-2017-STE-1194**

THE EFFECT OF PH VALUE ON THE CORROSION BEHAVIOUR OF TI-6AL-4V AND 316L SS ALLOYS UNDER PHYSIOLOGICAL ENVIRONMENT

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Abstract

Introduction: *The pH value of human body is normally 7, and it may change from 3 to 9 due to several causes such as accidents, diseases, infections and other factors. After surgery, the pH value of hard tissue near the implant area can change approximately to 5.2 and then recovers to 7.4 within two weeks. The change of pH value in human body may be affected the corrosion behavior of a material. The aim of this work was to study the to study the effect of pH value on the corrosion rate of Ti-6Al-4V and 316L SS alloys under physiological environment.* **Methodology:** *A titanium aluminum vanadium alloy or Ti-6Al-4V and 316L stainless steel served as the working electrode in form of rods, 10 mm and 6 mm in diameter. The samples were sequentially wet sanded to a 400 grit finish, cleaned and rinsed with distilled water, dried with compressed air and left in open air for 5 minutes and then transferred quickly to the electrolytic cell. The specimens were glued to the wire using conductive glue leaving surface area for exposure to the solution of 4.5 cm2 and 2.5 cm2 for Ti-6Al-4V and 316L SS respectively. A three-electrode cell setup was used, which consisted of graphite rod as a counter electrode, a saturated calomel reference electrode (SCE) and a specimen as the working electrode. Electrochemical test were conducted at temperature of 37˚C and maintained at pH 5.2 (implant surgery area) and 7.4 (normal physiological condition) using Gamry model G300 potentiostat/galvanostat. All potentials in this work were measured versus SCE. The potentiodynamic polarization test was performed when the open circuit potential (OCP) became relatively stable after immersion for 1 h. Then, the potentiodynamic polarization scan was commenced from -0.5V below Eoc up to +0.5 V using a scan rate of 5 mV s-1.* **Findings:** *The results of electrochemical tests showed that the corrosion potential (Ecorr) values of stainless steel at both pH values are slightly higher than Ti-6Al-4V in absence of BSA. The chromium (III) oxide (Cr2O3) film formed on stainless steel is more stable in neutral medium than in acidic one without the presence of proteins. Meanwhile, the Ecorr of Ti-6Al-4V increases at acidic (−611.0 mV) and neutral pH (−585.0 mV) of human body in phosphate buffer solution (PBS) with addition of BSA, compared to test medium without the addition of proteins. This shows the interaction between proteins and surface of the Ti-6Al-4V have no significant effect onto corrosion. However, the Ecorr of Ti-6Al-4V at condition acidic pH with the absence of proteins, which is −740.0 mV showed the lowest corrosion resistance than stainless steel (Ecorr = −652.0 mV). Stainless steel alloy showed the best corrosion rate in acidic pH, which is 3.048 × 10-3 without addition of BSA in solution. But both alloys show greater corrosion rate at normal phase condition compared to acidic phase condition.* **Contribution:** *This study provides fundamental understanding on electrochemical behaviour of Ti-6Al-4V and 316L SS. It will help other researchers to examine the similarity or differences of the electrochemical behaviour between these materials in different physiological environment. The findings would provide beneficial information in biomedical*

application. Also, it could provide some insights for a new strategy in producing new material with higher corrosion resistance than the current biomaterials used in biomedical applications.

Keywords: Stainless steel, Ti-6Al-4V, corrosion rate, phosphate buffer solution and electrochemical methods

Abstract ID: **AIMC-2017-STE-1196**

ESTIMATING TEXTURE PROFILE OF A PIECE OF JAPONICA COOKED RICE BY STRESS-STRAIN RELATION DURING DEFORMATION PROCESS USING SQUEEZING TEST

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Abstract

Introduction: *Texture on cooked rice plays an important role on the characteristics of cooked rice. Based on it, cooked rice divided by its stickiness and firmness characteristics. Japonica rice is one of rice that has highest stickiness characteristics than others type of rice. In this research we tried to define the characteristics of Japonica cooked rice by the changed of the cross-sectional area during deformation and the stress-strain relationship during deformation. Strain defined as a shrinking ratio of cooked rice, while area defined as a cross-sectional area in the horizontal plane.* **Methodology:** *A single Japonica cooked rice squeezed using parallel plate type rheometer with constant velocity (0,2; 0,5; 1; 2; 4 mm/s). The deformation process of cooked rice was recorded from both side and bottom views to measure area transformation.* **Findings:** *By area transformation, we divided the deformation process of Japonica cooked rice into three stages by the value of its slope. On the first stage, the area transformation was mainly affected by the deformation of short axis. On the second, both short and long axis contributed to changing of area deformation. While on the last stage, cooked rice deformed rapidly in a drastic expansion of area. The area transformation then used to calculate the deformation stress. It showed that on the first stages, Japonica cooked rice behave as an elastic solid body while on second stages behave as an plastic solid body.The strain at the transition between stages on different velocity showed both transition strains were decreased monotonically as velocity increased, suggesting that the squeezing speed affected the maximum strain which cooked rice was changed from elastic to plastic*
Contribution: *Prior research has shown the characteristics of texture of cooked rice by using Texture Analyzer. This research, the texture was analyze by using rheometer. The deformation itself was recorded to measure area transformation clearly. By this method, the stress happened during deformations was explicitly define. The different velocities used during deformation were affected significantly to the area transformation.*

This research is one of my research topic as a PhD candidate in Kobe University. I have scholarship from Islamic Development Bank as a loan to State University of Jakarta, The University where I work as a lecturer.

Keywords: food rheology, japonica rice, cooked rice, deformation

Abstract ID: **AIMC-2017-STE-1198**

EYE TRACKING STUDIES ON EMOTION RECOGNITION

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Abstract

Introduction: *The broaden-and-build model of positive emotions suggests that positive emotions, such as joy, interest, contentment, elation, or love, temporarily broaden an individual's thought-action range. This situation promotes the expansion of attention and interest in the environment. Sequentially, these broadening behaviors promote healthy resources such as physical agility, social relationships, and heightened psychological resilience. Positive emotions help promotes faster healing after a major medical trauma such as heart attack. Positive feelings have a significant effect on our everyday lives and routines. This paper intends to investigate the nature of feelings in the physiological excitement through eye tracking device.* **Methodology:** *In this experiment, 6 subjects were chosen. These participant were 6 university students with normal vision (1 woman and 5 men), all of them are free from any disease and medication. The experiment were conducted at room temperature (22~25 degree). Subject was instructed to sit at their own comfortability. The eye tracker device, TOBII TX300 was used to display the stimuli and record the gaze data from the subject's eye. A verbal consent on the experiment protocol was provided to all the subjects.*

The subjects was displayed with 4 different film stimuli which triggers 4 types positive emotions; joy, hope, interest and serenity. Duration of each video is 1 minute in average.

Hence, the subject is required to spend about 4 minutes in total to watch all the videos. All the eye movement is recorded. Several metrics from the recorded data is extracted for the analysis such as fixation count (number of fixations), saccade count (number of saccades), fixation and saccade duration for every count (milliseconds) and also pupil dilation on each fixation count. The extracted data is then tabulated and visualised by using charts to analyse the significant difference in eye activity between the 4 different stimuli.

Findings: *Video analysis was completed in several steps. Profile correlations for each targeted positive emotion (hope, interest, joy, serenity) were used to assess the degree of similarity between ideal emotional responses and average emotional responses. The result was analyzed in order to assess possible effects of targeted emotion and video on the results of the reported emotions. The recorded data is visually analyzed using Microsoft Excel charts and graphs. Analysis of emotion on the percentage of correct identifications of the targeted emotion, providing clues into the non-standardized emotional reactions of all participants.*

We analyzed the result from each participant in term of eye fixation duration in each fixation count. Furthermore, the relation between the fixation count and pupil dilation was also analyzed. From this analysis, we found out that interesting and serenity stimulis has a greater positive impact on the participants.

Contribution: *This study was conducted to assess the ability of 4 film clips to elicit four discrete positive emotions: joy, interest, serenity, and hope. Each of the clips represents each of the above mentioned emotion. To the best of our knowledge, this is the first study to examine the use of film clips to elicit discrete positive emotions through eye tracking device. As the fields of interdisciplinary research studies and science grow, these findings contribute significant results for a research breakthrough in the field of psychology and engineering.*

Keywords: Eye Tracking, Positive Emotion, Video Stimuli

Abstract ID: **AIMC-2017-STE-1203**

EVALUATION OF PATIENT EFFECTIVE DOSE FROM ANGIOGRAPHY PROCEDURES

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Abstract

Introduction: *Angiography procedure helps Interventional Radiologist (IR) to image blood vessels via real-time images. Although this dynamic imaging technique is highly important in medical services, there is a concern towards the radiation hazard to the patients has turned into a question mark.* **Methodology:** *Hence in this study, we reports radiation doses of angiography procedures encompassing a total 112 examinations (from August 2016 until December 2016) conducted in Department of Diagnostic Imaging, National Cancer Institute, Putrajaya. The scanner utilised was a bi-plane flat detector imaging (Philips Allura) where for each case; the acquisition parameters and the reporting dose were recorded into the established forms. Patient effective dose were estimated by using PCXMC Monte Carlo based software. The phantom in the software was modelled according to the anthropometry of Malaysian populations. In accords to have standard acquisitions, we rounding off the projection areas and categorised into five standard beams; 10 cm x 10 cm, 15 cm x 15 cm, 20 cm x 20 cm, 25 cm x 25 cm and 30 cm x 30 cm. The locations of the beam were based on angiography procedures and interest organs, namely: adrenal, brain, chest, kidney, liver and ureter.* **Findings:** *The results are presented in terms of Entrance Surface Air Kerma (ESAK), Dose Area Product (DAP) and Effective Dose (ED). The ESAK and DAP value for all beams were ranged between 2.65 mGy to 2934.18 mGy and 1363 mGy.cm2 to 1953899 mGy.cm2, respectively. The mean values for patient effective dose is 41.60 ± 9.58 mSv.*
Contribution: *The information obtained here were diverse although the procedures and the size of beam were similar as ESAK value changing according to patient density. All of the reported values are comparable from elsewhere studies. Enhancement systems in angiography are prescribed to stay essential, with all around prepared radiology staff staying at the cutting edge of such endeavours.*

Keywords: Angiography, Interventional Radiology, Dose area product, Patient effective dose

Abstract ID: **AIMC-2017-STE-1204**

A STUDY OF MOBILE APPLICATION USAGE PATTERN AMONG STUDENTS : SATISFACTION AND USAGE BEHAVIOR

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Abstract

Introduction: *Mobile phones have become an essential part of modern human life. They have many attributes which makes them very attractive to mankind, especially young adults. There has been an increasing trend of mobile phones usage among students in Malaysia, specifically in Johor state. Hence this paper discusses the relationships between the usage of mobile phone applications with respect to a student's perceived enjoyment, usefulness, and attitude; and the behavioural intention of these students.* **Methodology:** *This study involved comparing data collected via a set of questionnaires from 228 students throughout the state of Johor, which the respondents' age ranges from 13 to 18 years old. A confirmatory factor analysis was conducted on scale items to examine the fitness of the model, and also to validate the relationships between independent variables that were investigated with respect to one's behavioural intentions.* **Findings:** *An intervariable relationship between independent variables are developed, and the model shows a good fit to the data, scoring a Goodness of Fit Indices (GFI) at 1.77 points. Two model cases were developed based on this set of data which the first case studies the effect of perceived enjoyment and perceived usefulness towards attitude. The second case studies the effect of all independent variables towards the items that belongs in the dependent variable. The scores of both of the models are presented, which the scores indicate a mixed levels of model fitness with indicators above and below levels of confidence thus implying a need for further iterative study.* **Contribution:** *The significant contribution of this paper, both of the case models revealed that perceived enjoyment strongly affected the behavioural intention of an individual when using the applications installed in their mobile phone, due to social trend set by surrounding communities, other than the usability factor of the application. Findings are discussed accompanied with limitations of the current study and suggestions for further research.*

Keywords: Mobile phone usage, mobile phone application, youth, confirmatory factor analysis, structural equation modelling.

Abstract ID: **AIMC-2017-STE-1207**

THEORETICAL MODELING FOR CONTINUANCE PHYSICAL ACTIVITY PREDICTION ON SOCIAL MEDIA

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Abstract

Introduction: *The world population is being threatened by immense rates of physical inactivity in the form of health issues such as cardio diseases, obesity, and etc. Physical activity (PA) such as walking, cycling, cleaning a house and washing a car can improve healthy mind and body with a reward of increasing productivity. Social media (SM) is a growing social-network tool that connects people from different states across the globe and available round the clock. Moreover, SM has great potential to increase PA level from meta-analyses they exhibited the possibility of changing behavior and many sedentary lifestyles, for example watching TV, playing games, working with computers, and so on can be reduced with the help of SM. Whereby, maintaining PA behavior can turn into a sophisticated topic as people would need constant motivations. The benefits of successfully predicting and understanding continuance behavior will lead the improvement on moderating and intervening PA continuance (PAC) on SM.* **Methodology:** *The objective of this study is to build a model to predict and understand how Facebook (FB) users' continuance PA intention and continuance PA behavior developed by analyzing the prior works and the existing theoretical theories. Modeling methods used in this work are wordcloud's function, the analytic hierarchy process's calculation (AHP), the review of health behavior (HB) theories, and the synthesis of the base models.* **Findings:** *The proposed model was constructed under a 2D concept which consists of two layers where layer 1 is Facebook continuance (FBC) sitting on top of layer 2, PAC. Both FBC and PAC comprises of the same theory of planned behavior's (TPB) constructs such as attitude, intention, social norm, perceived behavioral control (PBC) and behavior outcome with perceived value, as an additional construct. Nevertheless, FBC needs the extension of social network factors, therefore, social network structure and characteristics of network ties were included to measure the impacts on social support and social influence. Publicly, the model can be adapted to other areas of study, for example, the control of the*

spread of contagious diseases (STD, HIV and etc.) and go way up vertically. The model can positively be an example of the next models being built including the way it was built. Eventually, model validation is the next part and meanwhile, the model's improvement is a continuing and imperative task. **Contribution:** *To the best of our knowledge, this paper is the first theoretical model ever developed under a 2D concept. Confidently, the final model can be the precursor of the forthcoming models being built from other disciplines.*

Keywords: : physical activity; social media; Facebook; TPB; theoretical model; social network

Abstract ID: **AIMC-2017-STE-1212**

FACTORS OF MOBILE APPLICATION USAGE AMONG YOUTH

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Abstract

Introduction: *In this globalization era, mobile technology is widely used worldwide. There is no exception for teenagers, in which mobile phone becomes part of their life. The mobile application in their mobile phone become tools for them to communicate with each other, besides treated as a tool to gather information and spend leisure time. The aim of this study is to investigate the factors that influence mobile application usage among youth. As student became one of the main stakeholder to mobile applications, it is necessary for a study to be conducted to find out the factors that attract student to use mobile applications. This study is beneficial for mobile application developer to develop new application that attract students' interest.* **Methodology:** *A total of 228 high school students participated in the study (161 girls and 67 boys). Every student was given a questionnaire which include 18 questions about mobile application is distributed and the data collected is analysed using Factor Analysis method.* **Findings:** *As a result, based from the findings, 30.072% of respondents use mobile application because it is exciting and amusing, 10.678% of them use mobile application because they have positive feeling about the benefit of mobile application, 7.540% of teenagers used mobile applications due to its usefulness, and 6.781% of respondents have strong intention to keep using mobile applications in future.* **Contribution:** *The vital contribution of this study, the mobile application usage among youth is influenced by four factors. The factors are perceived enjoyment, attitude, perceived usefulness and behavioural intention.*

Keywords: Mobile application usage, youth, factor analysis, mobile phone.

Abstract ID: **AIMC-2017-STE-1213**

FATTY ACID METHYL ESTERS PRODUCTION FROM WASTE CATFISH FAT (PANGASIUS HYPOTHALAMUS) USING BARNACLE-ZNO AS A CATALYST

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Abstract

Introduction: *The abundance and diverse populations of barnacle shells catching the intention as a source of calcium oxide catalyst to transesterify waste catfish fat into methyl ester.* **Methodology:** *Calcium oxide supported with zinc oxide was prepared by ball milling method at 1:2 ratio, calcined for 4h at 700 °C. The characterization of catalyst revealed both metals were well integrated into a bimetallic oxide.* **Findings:** *The optimal conditions were found to be: methanol/oil mass ratio, 10:1; catalyst amount, 11 wt% at reaction temperature, 65 °C with 3 h of reaction time achieving 85.7% of methyl ester conversion.* **Contribution:** *Both feedstock and catalyst from waste source have been successfully utilized to produce biodiesel.*

Keywords: waste catfish fat, barnacle shells, fatty acid methyl esters

Abstract ID: **AIMC-2017-STE-1216**

A STUDY OF MOBILE APPLICATION USAGE PATTERN AMONG STUDENTS: SATISFACTION AND USAGE BEHAVIOR

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Abstract

Introduction: *Mobile phones have become an essential part of modern human life. They have many attributes which makes them very attractive to mankind, especially young adults. There has been an increasing trend of mobile phones usage among students in Malaysia, specifically in Johor state. Hence this paper discusses the relationships between the usage of mobile phone applications with respect to a student's perceived enjoyment, usefulness, and attitude; and the behavioural intention of these students.* **Methodology:** *This study involved comparing data collected via a set of questionnaires from 228 students throughout the state of Johor, which the respondents' age ranges from 13 to 18 years old. A confirmatory factor analysis was conducted on scale items to examine the fitness of the model, and also to validate the relationships between independent variables that were investigated with respect to one's behavioural intentions.* **Findings:** *An intervariable relationship between independent variables are developed, and the model shows a good fit to the data, scoring a Goodness of Fit Indices (GFI) at 1.77 points. Two model cases were developed based on this set of data which the first case studies the effect of perceived enjoyment and perceived usefulness towards attitude. The second case studies the effect of all independent variables towards the items that belongs in the dependent variable. The scores of both of the models are presented, which the scores indicate a mixed levels of model fitness with indicators above and below levels of confidence thus implying a need for further iterative study.* **Contribution:** *The significant contribution of this paper, both of the case models revealed that perceived enjoyment strongly affected the behavioural intention of an individual when using the applications installed in their mobile phone, due to social trend set by surrounding communities, other than the usability factor of the application. Findings are discussed accompanied with limitations of the current study and suggestions for further research.*

Keywords: Mobile phone usage, mobile phone application, youth, confirmatory factor analysis, structural equation modelling.

Abstract ID: **AIMC-2017-STE-1218**

THE EFFECTS OF POLYCARBOXYLATE CONTENT TO THE COMPRESSIVE AND FLEXURAL STRENGTH OF MORTAR CONTAINING CARBON NANOTUBES

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Abstract

Introduction: *This paper reports a brief study on the performance of carbon nanotubes mortar with the presence of Polycarboxylate. Comparison for both compressive and flexural strength of between Carbon Nanotubes (CNTs) mortar with Polycarboxylate and normal plain mortar was performed. Polycarboxylate was act as a dispersant to have a well distribution of CNTs within the cement composites. Compressive strength of mortar is the most important properties. It is a mechanical test to determine the maximum amount of compressive load that the material can withstand before fracturing or undergoes deformation. The test was conducted by compressing the material under gradually applied load.* **Methodology:** *The casting of mortar mix was done for four (4) batches of mortar containing constant amount of CNTs with the various percentage of Polycarboxylate which are 0%, 1.1%, 2% and 5% respectively. Dispersion of MWCNTs in distilled water requires adequate ultrasonic energy for the bond of Van De Waal's force can be enchained. Ultrasonic device was done in this process to disperse the MWCNTs. With 24 kHz of frequency and 200 watts within 30 minutes was carried out for each batch.The preparation of sample was done by casting three batch of mortar. Each batch of mortar consists of different percentages of Polycarboxylate (1.1%, 2%, and 5% to the weight of cement) and constant percentage of MWCNTs (0.5% to the weight of cement) with dimension of 50mm X 50mm X 50mm. As for the cement-sand mortar ratio used was 1:2 and 0.5 of tap water. After 24 hour of casting the mortar, the mould was dismantled and was placed in poly tank of water with the nominal size of 100 gallon. The samples were tested at 1, 3, 7 and 28 days on its compressive and flexural. These test was conducted according to ASTM C348. Each readings of the sample were recorded and tabulated in the report. Sixty (60) pieces of sample were tested for compressive test with dimension of 40mm X 40mm X 160mm within the number of curing 1,3,7 and 28 days. Sixty (60) pieces of sample from 5 batch were tested for flexural test with dimension of 50mm X 50mm X 50mm.* **Findings:** *The study has shown that the combination of these two substances gives positive effects on the increment of strength compared to normal mortar without Polycarboxylate & MWCNTs and mortar with MWCNTs. The highest strength shows that the optimum percentage of Polycarboxylate is 5% to the weight of the cement. Adding Polycarboxylate in mortar composites containing MWCNTs has increases the compressive strength from 6.4% to 39% while flexural strength from 11.58% to 37.74%.* **Contribution:** *The significance of this study is the use of additives Polycarboxylate to the mortar containing MWCNTs is to increase its performance on strength. Many researches have been conducted in the last few decades on improving the*

construction material. However, none of them study the effects of polycarboxylate content to the mechanical properties of cement based can be improved with the use of carbon nanotubes (CNTs).

Keywords: Polycarboxylate; Compressive; Flexural Strength; Carbon Nanotubes; Mortar

Abstract ID: **AIMC-2017-STE-1221**

YAW ANGLE EFFECT ON THE AERODYNAMIC PERFORMANCE OF HATCHBACK VEHICLE FITTED WITH WING SPOILER

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Abstract

Introduction: *Since the application of spoiler on racing cars proved its practicability, spoilers of various kinds had been widely researched. Basically, spoiler is an aerodynamic device used to minimize air movement around the vehicle. Numerous studies optimizing the performance of the wing spoiler on a vehicle had been reported in the literature. However, the researches were mostly done in zero-yaw condition. In fact, the effect of spoiler to provide better downforce is most needed during cornering to ensure drive stability. Hence, the main objective of this study is to investigate the aerodynamic performance of the wing spoiler in yawing conditions.* **Methodology:** *In this study, the Ahmed body is adopted for simulating the hatchback-type vehicle. The slant angle of the model is chosen to be 35°. The Ahmed body was fitted with a rear-roof NACA 0018 wing spoiler with angle-of-attack of 5°. The chord length of the wing is set to be 69 mm. Meanwhile, in order to avoid highly skewed cells during meshing, the sharp end of the wing and sharp edges of the two endplates had been filleted (2 mm radius). For this study, the yaw angles investigated were from 0° to 12°, at 4° increment. Computational Fluid Dynamics, CFD was used to simulate the flow. The boundary condition for inlet was set as uniform flow, with inlet velocity of 40m/s and turbulence intensity of 0.2%. The corresponding Reynolds number was 768,000. The computational domain has a cross sectional area of 1450 mm (height) x 3890 mm (width) with the two ends set as inlet and outlet. The blockage ratio obtained was below 2%. As for the outlet, the pressure outlet boundary condition was used, with the pressure value set as zero gauge pressure. Comparison between the numerically obtained results and experimental data was done to validate the CFD method.* **Findings:** *The findings show aerodynamic force coefficients increased with increasing yaw angle. This trend suggests that when the vehicle is no longer travelling in a straight path, its aerodynamic performances deteriorate. However, performance of wing spoiler shows a decrease of 22.22% for the drag coefficient, Cd and 42.86% for the lift coefficient, Cl. The descending values proved that the wing spoiler does contribute to lower the drag and lift coefficients for vehicles, even during non-zero-yaw conditions. However, since its proportion contribution to the overall Cd and Cl were only 2.7% and 4.1% in average respectively, its effect was overshadowed by other components. The main components contributed to the increasing drag coefficient at higher yaw angles are the base and slant while the rise in lift coefficient is caused by the roof. On the other hand, the front part of the Ahmed body brought about a desirable influence to Cd. Meanwhile, the underbody of the model too exert opposite influence to the increasing Cl.* **Contribution:** *An effective roof spoiler will improve ride comfort and safety particularly during cornering. Hence, this study contributed to the establishment of knowledge of how the flow characteristics of spoiler are affected by yaw angle change associated to cornering, and the subsequent influence on the aerodynamic performance off vehicle mounted with the spoiler. The research outcome is expected to serve as a design guideline for spoiler which is widely used in passenger vehicles.*

Keywords: yaw angle, spoiler, aerodynamics, hatchback, spoiler

Abstract ID: **AIMC-2017-STE-1223**

SEISMIC PERFORMANCE OF VERTICAL GEOMETRIC

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Abstract

Introduction: *This research highlights the result of vertical geometric irregularity frame structures. The aid of finite element analysis software, LUSAS was used to analyse seismic performance by focusing particularly on type of irregular frame on the differences in height floors and continued in the middle of the building. Earthquake is one of the nature's most destructive phenomena. Malaysia is surrounded by country which has earthquake such as Indonesia (Sumatera Island). As a consequence, Malaysia's building structures were*

affected once the earthquake took place in the neighbouring country. In Malaysia, concrete is widely used in building construction and limited tension resistance to prevent it. Concrete frame is made up by mixing the fine and course of aggregate with cement and water. Frame structure consists of horizontal members (beams) and vertical members (columns) and supported by foundation at end of the ground. Analysing structural behavior with horizontal and vertical static load is commonly analyses by using the Plane Frame Analysis. The structural design of building typically requires performing analysis to compute action and displacement. The action used in sizing the structure to have sufficient strength while the displacements are used to provide sufficient stiffness for the serviceability of the structure. The case study of this research is to determine the stress and displacement in the seismic response under this type of irregular frame structures. This study is based on seven-storey building of Clinical Training Centre located in Sungai Buloh, Selayang, Selangor. Since the largest earthquake occurs in Acheh, Indonesia on December 26, 2004, the data was recorded and used in conducting this research. The result of stress and displacement using IMPlus seismic analysis in LUSAS Modeller Software under the seismic response of a formwork frame system states that the building is safe to withstand the ground and in good condition under the variation of seismic performance. **Methodology:** *The important source of information in this study is architectural and structural drawing. This drawing was acquired from a civil engineer, who has built about three years ago in Sungai Buloh, Selayang, Selangor. This drawing is seven-storey of Clinical Training Centre obtained from the Development Office. The analysis on structural frame was combination of beam and column. To ease the analysis process, LUSAS software was used to determine the stress and displacement seismic performance for vertical geometric irregularity reinforced concrete frame structures regarding to the topic of research.*

The vertical geometric irregularity reinforced concrete frame structures was chosen because this section has different in floors height and continued in the middle of the building. In addition, this study was refers to British Standard as the references. This research used BS 6399 Part 1 and BS 8110 Part 1.

The Spectral Response Analysis has three distinct stages. Firstly, a natural frequency analysis, in which is to calculate the first 10 natural modes of vibration of the structures. The modes shapes such eigenvalue, frequencies and eigenvectors are stored and used in the spectral response analysis. Any information regarding the magnitudes of deformations or moment is non-quantitative from an eigenvalue analysis are obtained through the natural frequencies. Second, the spectral response calculation is performed interactively as a results processing operation using the Interactive Modal Dynamics (IMD) facility in which to performing a non-interactive spectral response analysis in LUSAS. Finite element study using LUSAS requires a description of the model configuration, the material, boundary conditions and loading. To shorten the analysis time required, the frame was modelled in 2D. The model is comprised of thick beam elements for the concrete column and beam members. The structure is fully restrained against displacement and rotation at ground level. Since the global response of the structure is required, the model of the frame is further simplified by meshing each Line with a single element. This will effectively avoid the extraction of local panel modes for individual beams and columns. The geometry is simplified to a wire-frame on stick representation with each of the structural members being represented by Point and Line features only.

The size of beam is 350 mm x 350 mm and the column size is 600 mm x 600mm. The material properties for concrete was chosen from existing material library in LUSAS where the ungraded concrete was selected. The material concrete properties of Young's modulus, Poisson's ratio, Density, Thermal expansion was leave to default. The support at the ground level must be fully restrained as foundation, therefore for boundary condition a fully fixed support type is required. The self-weight of beam and column, and imposed loads that used in design buildings were considered. The peak ground acceleration (PGA) data was getting from the measuring station located at Ipoh, Perak. This data was recorded during the earthquake event happened in Acheh, Indonesia on December 26, 2004. From the data, the higher peak ground acceleration (PGA) obtained was 0.012g. This data of earthquake was used as a seismic load for vertical geometric irregularity reinforced concrete frame structures. 5% of modify damping was used in this study for seismic analysis in IMDPlus. Figure 3 shows the final irregularity frame models in LUSAS.

Findings: *The purpose of the stress analysis is to determine this vertical geometric irregularity frame safely standing within the loading of specified forces. The stress of this type of frame shown in contours in order to visualize the distribution of the stress. The colour of contours show the level stresses on the frame structures. The maximum stress is 40.5756 kN/m2 and the minimum stress is -40.56kN/m2.*

The purpose of this displacement analysis is to determine this frame safe due to seismic performance. The displacement of the vertical geometric irregularity frame structures shown in values and modes shape in order to visualize the distribution of the displacement. Besides, this research also to compare with previous research to see the result of differences displacement by using Finite Element Analysis and other software. The maximum displacement for mode shape 1 is 15.3085E-6 m and the minimum displacement is -13.059E-6 m

The modal analysis represents the information of mode shape, eigenvalue and natural frequency for vertical geometric irregularity frame structures due to seismic performance. The natural frequency is depends on the value of the eigenvalue. The highest natural frequency is 15.72 Hz for mode 5. **Contribution:** *The variation of stress under seismic performance loading on the vertical geometric irregularity frame structure is normally stress in the frame due to loading of building and seismic wave. Mode shape of eigenvalue is represents the certain place of critical stress where the maximum stress occurs due to seismic performance. From the overall results of stress, the vertical geometric irregularity frame can safely withstand by the variation of loading and force against to this frame structures.*

Furthermore, this studies also to determine the displacement of the vertical geometric irregularity due to seismic performance. From the overall results of mode shape, the frame structure was sway in the balance condition movement where the displacement is not very large movement. Hence, the vertical geometric irregularity is in good condition and safely withstand under the variation of loading and force.

Keywords: irregular frame structure, seismic response, stress and displacement

Abstract ID: **AIMC-2017-STE-1227**

CONCRETE BRIDGE (DECK) PERFORMANCE UNDER EARTHQUAKE LOADING

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Abstract

Introduction: *water, or other physical obstacle, for the purpose of providing passage over the obstacle. This paper will describe the performance of concrete bridge (deck) due to earthquake loading by using LUSAS. LUSAS is one of the finite element method application are used in order to determine the structure element such as stress, deformed shape and displacement of this concrete bridge deck. This software application absolutely suitable for engineering and mathematical analysis. When seismic load apply on the bridge deck, we will know the ability of bridge deck to sustain the earthquake load before it fail.* **Methodology:** *The concrete bridge dimensions and its material properties are taken from the structural drawing plan. The PGA data is get from the measuring station situated at Ipoh, Perak. The data was recorded during the earthquake event in Acheh, Indonesia in year 2004. The wave from the earthquake in Acheh, Indonesia can be detected in Ipoh, Perak. The PGA value that was recorded is 0.012g. This data can be used as a earthquake or seismic load in analysis concrete bridge performance by using LUSAS software.*

The bridge was situated at Batang Padang, Perak Darul Ridzuan. The purpose of this concrete bridge are to connect a state road from Kalumpang to Tanjong Malim and to cross the Bernam river for transportation purpose. PWD/JKR is a main body that involve in the construction of this bridge starting from design stage until construction stage. They also have a responsible to do a maintenance works to ensure this bridge is safe for users The main structure component of this concrete bridge is the decks and this concrete bridge use a prestressed concrete T-beam as a deck. This prestressed concrete T-beam is made or cast at other site by another contractor and follow the design standard from JKR. The reason for the contractor used a already cast prestressed concrete T-beam because this method is quite easy to construct the concrete bridge and it can reduce the time of construction. This concrete bridge does not have a pier because the river width is not too wide. Table 1 shows the dimension the bridge structure. **Findings:** *The result from deformation diagram for mode shape 1 which has a maximum displacement 0.001 kN/m2 at node 188 and minimum displacement 0.000 kN/m2 at node 10. While for mode shape 2 shows in Fig. 9 gives a maximum displacement 0.001 kN/m2 at node 296 and minimum dispalcement 0.000 kN/m2 at node 10. Maximum displacement for mode shape 3 is 0.001 kN/m2 at node 165 and minimum displacement 0.000 kN/m2 at node 10 are shown in Fig. 10. Lastly, Fig. 11 shows a maximum displacement 0.001 kN/m2 at node 680 and minimum displacement 0.000 kN/m2 at node 10.By comparing the value of bridge deck performance due to earthquake loading based on different modes shape, the maximum stress value for the bridge deck is 11.284 kN/m2 at nodes 26 from the modes shape 4. The maximum value for deformation is same for each modes shape which is 0.001 kN/m2. So, the critical modes of failure is modes shape 4. This is in the good agreement with information found in literature review, this research has been a success since the aims of the research were archived and gained a knowledge regarding the performance of concrete bridge deck due to earthquake loading.*

A modal analysis give the information of the mode shape or natural period of a given bridge deck, but not necessarily its full time history response to a given seismic load. The natural period of a bridge deck is dependent only on the stiffness and the mass which participates with the bridge deck structure (including self-

weight). The maximum natural period 3.10sec for mode shape 1. **Contribution:** *The need for this research is to analyze the performance of the concrete bridge due to earthquake load. The performance of the bridge is determined from the maximum load to failure and deflection. The performance of the bridge can be access by using LUSAS software. The knowledge and result of this research can be used in the designation of the future concrete bridge in Malaysia. This study will lead to further understanding of characteristic that needed to design a safe concrete bridge in the future that can facing or handle the earthquake load. It also can show to us the existing concrete bridge in Malaysia is safe or not due to earthquake load and we can use the result to conduct a rehabilitation works to increase the performance and safety of the bridge due to earthquake load.*
The important to study this case is because many bridge in Malaysia was designed and built without consider the earthquake load. This is happen because Malaysia is outside the earthquake area and there are no earthquakes event happen in this country. So as a responsible engineer in the future, the existing structure in Malaysia must be analyzed whether it is safe due to earthquake event or not. In this case, concrete bridge is a case study for this research and take the bridge deck as element to be analyzed. The concrete bridge deck will be analyzed by using LUSAS software.

Keywords: performance; earthquake loading; stress; displacement; deformation shape

Abstract ID: **AIMC-2017-STE-1228**

CONSTRUCTION WASTE CLASSIFICATION ON HIGH RISE RESIDENTIAL PROJECTS

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Abstract

Introduction: *The increasing amount of construction waste generated gives significant negative impact towards the environment, community and also the economy. There are various types of construction waste produced and its handling method. This article outline the identification on classification of construction waste generated from high rise residential projects and its handling method.* **Methodology:** *This research was conducted through an in depth literature review and preliminary survey with the G7 contractors. A snowballing technique has been adopted, until it reach saturation point* **Findings:** *The results represent the generalization in types of construction waste generated and the waste handling method. It shows that there are six main waste stream identified and these waste were managed through seven types of waste handling method.* **Contribution:** *Malaysia is undergoing a rapid growth of residential construction development to cater population demand and these construction projects have large impacts on the environment. The township size and level of economic standards contributes to the quantities of waste. As Malaysia is still lacking in the waste database, therefore this study identified the types of construction waste and waste handling method to enhance data recorded and assist in providing data for further research. The significant of the issue highlighted can be used by practitioner to properly plan their on-site construction waste management and thereby undertake construction waste in more sustainable manner. This is an on-going research by author towards establishing a construction waste baseline.*

Keywords: construction waste, waste classification and waste handling method

Abstract ID: **AIMC-2017-STE-1231**

THE RISE OF GROUNDWATER DUE TO RAINFALL AND THE CONTROL OF LANDSLIDE BY ZERO-ENERGY GROUNDWATER WITHDRAWAL SYSTEM

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Abstract

Introduction: *Slope failure is a common issue in tropical countries,the rise of groundwater due to rainfall is one of the main triggering factors. There are several methods for slope stabilization such as soil nailing, retaining walls, cut and fill, vegetation and so on. Most of those methods are costing and we are in need for stabilizing method that is more economical and easier in construction. In this paper, a new method of slope stability is examined numerically and experimentally, this method is represented in an automatic zero-energy groundwater withdrawal system to enhance slope stability.* **Methodology:** *The system is examined in a pre-fabricated model for work verification and simulated numerically by SOILWORKS software with coupled seepage-slope stability analysis using Finite Element Methods. The effectiveness of this method is examined with*

varied rainfall intensities and soil permeability. **Findings:** *The results for slopes with the application of groundwater withdrawal system are compared with the results without that system. The result shows the effectiveness of the method in reducing groundwater table and enhancing slope stability. The factor of safety for the slope with high soil permeability drops from 1.312 before the rainfall to 0.93 after the third rainfall event for the slope without pumping groundwater whereas it is 1.292 after the third rainfall event with pumping groundwater. For soil slope with moderate soil permeability, the factor of safety drops from 1.314 to 1.157 at the end of the third day while it remains stable with pumping groundwater. Matric suction is highly increased at the crest of the slope due to pumping.* **Contribution:** *this research give a new method of landslide control as well as studying the effect of the rise of groundwater due to rainfall at far field.*

Keywords: slope stability, rainfall infiltration, groundwater table

Abstract ID: **AIMC-2017-STE-1232**

EFFECT OF CURING METHOD ON PROPERTIES OF LIGHTWEIGHT FOAMED CONCRETE

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Abstract

Introduction: *Lightweight construction is aimed to achieve a sustainable feature by reducing transportation frequency during construction phase. Lightweight precast concrete may serve an alternative for this type of construction. This lightweight concrete panel always serve as non load bearing members in a building due to its low confident level in application for structural members. As there is a limited references for lightweight foamed concrete (LFC) in structural use, the properties of LFC at required density for different curing methods should be investigated. Therefore, this paper presents an experimental study on properties (compressive strength, splitting tensile strength, water absorption) of lightweight foamed concrete (LFC) at two different curing methods.* **Methodology:** *LFC with densities of 1500, 1700, and 1800 kg/m3, cement-sand ratio of 2:1 and water-cement ratio of 0.5 were investigated. Cubes size of 70 x 70 x 70 mm (for compression test) and cylinder mould of size 100 mm diameter and 200 mm height (for splitting tensile test) were used throughout this research. Both the cubes and cylinders were cured in water and air for 7, 28 and 56 days. All tests were carried out in triplicates, and the average values were reported. The fresh density and the water absorption also have been recorded for further analysis.* **Findings:** *The results showed LFC can be produced with the properties of density range of 1500 to 1800 kg/m3 and corresponding compressive strength of 10 to 39 MPa. The higher the density of LFC, the less the water absorption for all the curing method considered, the highest and the lowest water absorption was 11.3% and 2.0% for 1500 kg/m3 cured in water and 1800 kg/m3 cured in air respectively. Compressive strength of LFC increases with age and density while water cured LFC has high compressive strength. Splitting tensile strength increases with density of LFC, but air cured LFC has more splitting tensile strength than water cured of the same density. The highest splitting tensile strength recorded was 3.92 MPa for 1800 kg/m3 cured in air, which was about 16% of its compressive strength at 28 days of curing age.*

The results can be summarized:

1. The density affects other properties of fresh and hardened LFC. Air cured LFC is more stable than water cured sample for all the densities considered.

2. It can be seen that the higher the density of LFC, the less the water absorption for both the water and air cured LFC. And water cured LFC has more water absorption than air cured LFC of the same design density.

3. Compressive strength of LFC increases with age for both water and air cured LFC. But the strength of LFC cured in water is high than that of LFC cured in air of the same design density. Also, the higher the density of LFC, the more the compressive strength for both the air and water cured samples.

4. Splitting tensile strength of LFC is proportional to its designated density. Air cured LFC has high splitting tensile strength than water cured LFC for all the designated densities considered at 28 days curing. **Contribution:** *These investigated properties are important and can be applied to LFC precast structural members with air or water curing method. As mentioned in introduction, this findings may help to identify the LFC in load bearing members which relatively reduce the member self-weight and leading to sustainable construction features especially during construction phase.*

Keywords: Lightweight; foamed concrete; curing; density; strength

Abstract ID: **AIMC-2017-STE-1234**

MAPPING LAND COVER CHANGES IN CHERATING, PAHANG USING GIS

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Abstract

Introduction: *This study is to determine the land cover changes within 20 years. Chalets, resorts, human settlements, roads, shrimp farm, jetty and tourist information centre were developed over the years.* **Methodology:** *Remote sensing and Geographical Information System (GIS) have been performed on Cherating area to determine the expansion of urban and degradation of mangrove area by processing five Landsat satellite images from 1997, 2002, 2006, 2013 and 2016 using supervised classification.* **Findings:** *Based on supervised classification of urban group, the expansion of development or urban area can be observed in 1997 (58.45 ha) and in 2016 (108.70 ha), showing an increase by 85.96% in 20 years.* **Contribution:** *A significant increase in coastal development urges long term monitoring in Cherating mangrove area to ensure the survival of biodiversity and encourage development in a sustain manner.*

Keywords: land cover, supervised classification, Cherating, GIS

Abstract ID: **AIMC-2017-STE-1235**

REMOVAL OF HEAVY METALS FROM LEACHATE USING HYDROPONIC ELECTRO-ASSISTED PHYTOREMEDIATION (EAPR) SYSTEM WITH WATER HYACINTH (EICHHORNIA CRASSIPES)

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Abstract

Introduction: *The garbage disposal management using landfill system produces unpleasant odor of wastewater (i.e leachate) which can disrupt the groundwater equilibrium in the rainy season. The combination of electro-assisted and hydroponic phytoremediation which is hereinafter referred as hydroponic EAPR for removal heavy metal from leachate has been demonstrated in a laboratory-scale experiment.* **Methodology:** *A hydroponic setting was used to evaluate the potential removal and uptake of heavy metals (Cu, Fe, Cd, Pb and Cr) concentration by water hyacinth (Eichornia crassipes) in aquatic environment. The enhancement of a designed two-dimensional (2D) of cathode pot electrode onhydroponic EAPR system were also evaluated. A batch reactor of hydroponic EAPR system was carried out for 11 d using constant voltage of 2 V. The effectiveness of hydroponic EAPR system on the leachate treatment was evaluated by using the following parameters, e.g heavy metals concentration (i.e Pb, Cd, Fe and Cu), pH, DO, TDS and electrical conductivity. Plant stress was also monitored including chlorophyll content (i.e chlorophyll a and b and total chlorophyll) and bioaccumulation coefficient (BC) and translocation factor (TF). Also, heavy metal distribution in root and shoot plant were evaluated.* **Findings:** *The results showed that the heavy metals concentration in the leachate decreased significantly for Cu, Fe, Cd and Pb metals from initial concentration. Cu concentration from 0.0507 mg/L to 0.0395 mg/L, Fe from 0.4631 mg/L to , 0.1026 mg/L, Pb from 0.0420 mg/L to 0.0292 and Cd from 0.0212 mg/L to 0.0145 mg/L. The decreasing of heavy metals is following the decreasing of TDS, electrical conductivity and increasing of DO concentration. Chlorophyll content in treated plant with hydroponic EAPR system showed that the water hyacinth could cope with heavy metals stress in the leachate and accumulation of high heavy metal concentration in the plant roots.* **Contribution:** *this study is a new innovation for leachate treatment using Electro-assisted phytoremediation. Leachate is a big issue in a developing country where is still use landfill method.*

Keywords: Leachate; EAPR; Water hyacinth

Abstract ID: **AIMC-2017-STE-1236**

PROCESS OPTIMIZATION AND STABILITY OF COCONUT OIL-HONEY NANOEMULSION UPON STORAGE

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Abstract

Introduction: *Nanoemulsion is a clear dispersion of two immiscible liquids such as water and oil stabilized by an interfacial film of surfactant with the particle size ranges from 20-200nm. In this study, nanoemulsion was evaluated for its physiochemical properties including particle size, polydispersity index (pdi), turbidity, stability and pH.* **Methodology:** *2.1 Materials*

Natural unprocessed Tualang honey, dark yellow in color samples (pH of 3.55-4.2, 23.3% moisture contain) was purchased from Federal Marketing Agriculture (FAMA) agency, Kedah. Samples will be stored at 4 ºC until analysys. Virgin coconut oil (VCO) was obtained from the Institute of Bioproduct Development (IBD) Universiti Teknologi Malaysia, Malaysia. Glycerol was purchased from Fluka.

2.2 Preparation of coconut oil honey nanoemulsion

During the preparation of coconut oil honey nanoemulsion, oil- virgin coconut oil, emulsifier-tween 80, and honey were mixed to form the oil phase. The preliminary of the of the loading capacity of honey to form water phase was done using 1%, 2%, and 3%. Oil phase will be added to water phase and stirred using magnetic stirrer for half an hour. Stirring for half an hour was the optimal time that enabled honey to be dispersed homogenously in the system. Different concentration of emulsifier tween 80 (2-10%) used.

2.3 Physicochemical characterisation

2.3.1 Particle Size and polydispersity index (pdi)

Particle size is an important aspect of developing a formulation system. Particle size will be measured using dynamic light scattering (DLS) technique, and it is known as photon correlation spectroscopy (PCS). The measurement will be repeated in triplicate. The PDI is a dimensionless measure for the range of particle size distribution and can be used for the nanoemulsion measurement. The (PDI) is an index that describes the variation in size. The higher the PDI the wider is the Particle size distributed.

2.3.2 pH

The pH measurement of the nanoemulsion formulation provides information on the feasibility of the practical application. For cosmeceutical applications, a lower pH at the range 4.5-5.5 which is friendly to the skin indicating they are suitable for topical application (Lambers et al., 2006; Schreml et al., 2010). The pH of the formulation can be determined use Decibel digital pH meter (Metler Toledo) from US, at 25±1 °C.

2.3.3 Turbidity

Turbidity of sample was measured by using UV-spectrophotometer (1800, Shimazu corporation, Japan) at room temperature) at wavelength 430 nm before optimization process. Clear sample was selected for optimization.

2.3.5 Stability Study

Stability study was consisted two step. First was centrifugation test, and second long storage stability. Centrifugation test was performed to observe phase separation in extreme condition. 1 ml sample was putted in appendorf tube 1.5 ml. The sample was centrifuge directly at room temperature at 3500 rpm for 30 minute. Clear sample without any sedimentation and phase separation was continued for long storage stability study which is subjected to three different temperatures (4 °C, 25 °C, 45 °C). Physical stability of nanoemulsions will be continuously monitored for 3 month whereas phase separation, flocculation, sedimentation, turbidity and pH, and were observed at room temperature (Azeem et al., 2009).

Findings: *The optimum composition of the Co-H based nanoemulsion was found to be 1% coconut oil, 2.2% honey, 9% Tween 80 with the particle size less than 200 nm and polydispersity index below 0.3 w/w. The pH value was in acidic condition ranging from 3.34 - 4.48. The stability of the formulation was evaluated based on the visual observation for the clearness without sedimentation, flocculation and creaming upon storage. Both formulation A and B showed good stability until day 60 in room temperature (25 oC) and freezer (4 oC), respectively. The formulation A and B were also stable with no separation after*

centrifugation at 3500 rpm for 30 minutes. The particle size of formulation A (29.10 nm, 0.25 pdi) at room temperature, and (15.89 nm, 0.164 pdi) at freezer were smaller than formulation B (31.20 nm, 0.298 pdi) at room temperature, and (17.88 nm, 0.259 pdi) at freezer. The stability of the formulations was mainly contributed by the relatively small size of Co-H nanoemulsion. This is because Tween 80 acted an emulsifier to prevent droplet recoalescence **Contribution:** *Nanoemulsion is a clear dispersion of two immiscible liquids such as water and oil stabilized by an interfacial film of surfactant with the particle size ranges from 20-200nm. In this study, nanoemulsion was evaluated for its*

physiochemical properties including particle size,
polydispersity index (pdi), turbidity, stability and pH. The combination of coconut oil and honey (Co-H) was prepared in the form of oil-in-water nanoemulsion using the method of spontaneous emulsification (SE). This low energy method involved the use of tween 80 as a surfactant to lower surface tension between two immiscible phases, coconut oil and honey solution. The optimum composition of the Co-H based nanoemulsion was found to be 1% coconut oil, 2.2% honey, 9% Tween 80 with the particle size less than 200 nm and polydispersity index below 0.3 w/w. The pH value was in acidic condition ranging from 3.34 - 4.48. The stability of the formulation was evaluated based on the visual observation for the clearness without sedimentation, flocculation and creaming upon storage. Both formulation A and B showed good stability until day 60 in room temperature (25 oC) and freezer (4 oC), respectively. The formulation A and B were also stable with no separation after
centrifugation at 3500 rpm for 30 minutes. The particle size of formulation A (29.10 nm, 0.25 pdi) at room temperature, and (15.89 nm, 0.164 pdi) at freezer were smaller than formulation B (31.20 nm, 0.298 pdi) at room temperature, and (17.88 nm, 0.259 pdi) at freezer. The stability of the formulations was mainly contributed by the relatively small size of Co-H nanoemulsion. This is because Tween 80 acted an emulsifier to prevent droplet recoalescence
Keywords: Nanoemulsion, non-ionic surfactant, virgin coconut oil, honey, Tween 80

Abstract ID: **AIMC-2017-STE-1239**

POLYPROPYLENE BEADS IN WATER-BASED MUD FOR CUTTINGS TRANSPORTATION IMPROVEMENT

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Abstract

Introduction: *Good wellbore cleaning is highly essential as it has been commonly acknowledged to cut off unnecessary spending due to related problems in drilling operations. Many new technologies have been introduced to address the poor wellbore cleaning issues. In this study, the experimental investigation focuses on the use of polypropylene-based polymer beads as a mechanism to enhance cuttings transportation in water-based mud. The primary objective of the experimental investigation is to observe the performance of the polymer beads in lifting the different sizes of drilled cuttings in water-based mud.* **Methodology:** *The test section was built by a transparent acrylic pipe to allow observation of the mud flow behaviour. The pipe was 13 ft long with 2 in inner diameter (ID) and 2.1 in outer diameter (OD) used to serve as a drilled hole. Inside this pipe was a 13 ft long hollow PVC pipe with 0.79 in OD. The inner pipe was sealed at both ends to simulate a drill pipe and to ensure fluid flow was only through the annulus. The flow loop was also equipped with the separation tank which consisted of two layers of wire mesh. The top wire mesh was 2.0 mm in size, and the bottom wire mesh was 0.18 mm in size. The separation unit was equipped with a vibrator to simulate a shale shaker. Six different sizes of drilled cuttings, ranging from 0.50 to 3.34 mm, were used and the lifting performances were done at five different angles, i.e., 0o (vertical), 30o, 60o, 75o, and 90o (horizontal). One percent by weight of polymer beads was added into the basic drilling mud. Quantitative data were recorded and compared to evaluate the recovery percentage of drilled cuttings at the end of each run.* **Findings:** *From 250 tests conducted, the experimental results showed that the cuttings transport efficiency with the presence of polymer beads in basic water-based mud was better than basic mud especially in a vertical hole. Results showed that the drilling mud with polymer beads improved the cuttings transport efficiency (CTE) by 8% in the vertical hole when smaller cuttings size (0.50 – 0.99 mm) were injected and 6% improvement when larger cuttings size (2.8 – 3.34 mm) were injected. The CTE for the smallest cuttings size also improved by 6%, 4%, 4%, and 4% at hole angles of 30°, 60°, 75°, and 90° respectively. Drilling mud with polymer beads transported smaller cuttings more efficiently compared to larger cuttings. Despite a relatively low recovery at highly deviated angles, the use of polymer beads has shown improvements in cuttings transportation.* **Contribution:** *This approach is suitable to address the concern of some researchers that smaller drilled cuttings are more difficult to transport to the surface in directional wells. The presence of polymer beads in the drilling mud provides a buoyancy force due to their low density. This results in the minimizing of the slip velocity of drilled cuttings which in turn will minimize the formation of cuttings bed. As the slip velocity of particles reduces, the Reynolds number reduces which causes the drag coefficient to increase. Hence, this phenomenon enhances the cuttings transportation. Such study was never been published in open literature.*

Keywords: Drilled cuttings; cuttings transportation; cuttings lifting; polymer beads; wellbore cleaning; hole cleaning; polypropylene; cuttings transportation efficiency.

Abstract ID: **AIMC-2017-STE-1240**

ENHANCED OIL RECOVERY BY ALKALINE-SURFACTANT-POLYMER ALTERNATING WITH WATERFLOODING

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Abstract

Introduction: *Crude oil is a highly valued natural resource where its demand always exceeds supply. Therefore, its recovery should be improved by implementing the Enhanced Oil Recovery (EOR) technique. Alkaline-Surfactant-Polymer (ASP) flooding is an efficient method but was poorly applied in the industry as it can be costly and also the best mixture and injection sequence is still uncertain. The objectives of this research work is to study the injection design and find the best injection design pattern which could reduce the cost while improving recovery via the conventional ASP flooding.* **Methodology:** *Beach sand was used to simulate the porous media of the oil reservoir with the desired size of 125-212 µm packed in a 120 cm long tubing with internal diameter of 2.5 cm. Simulated formation brine and simulated oil were injected to saturate the core sample and for physical properties measurement, namely porosity and permeability. A total of 6 pore volume of chemical and water were injected which comprised of ASP in a sloppy slug acting as the main slug, while the pre- and post-slugs consisted of polymer covered the ASP. The study conducted utilized early EOR to compare and contrast with the conventional ASP Flooding. Three types of chemical flooding injection design were evaluated which are, continuous or conventional ASP flooding, alternating ASP with waterflooding of balanced ratio for each cycle, and lastly tapering water to ASP ratio where the water ratio decreased as the cycle increased. The recoveries for each cycle were recorded and the ultimate recovery was compared.* **Findings:** *The experimental results showed that ASP alternating with waterflooding gave the best ultimate recovery of 68%, followed by tapering water to ASP ratio with 62% while continuous ASP flooding was the worst with only 57%. This is expected as the alternating ASP with waterflooding and the tapering water to ASP ratio are an early EOR application compared to the conventional flooding. The recovery per volume of chemical injected showed that tapering water to ASP gave the best ratio of 0.37 compared to ASP alternating with waterflooding of 0.34. The worst recovery per volume of chemical injected was the continuous ASP flooding with ratio of 0.25. This showed that tapering water to ASP flooding proved to be technically feasible as it required the least chemical to yield a higher recovery compared to conventional ASP flooding and ASP alternating. However, the ASP alternating with waterflooding gave the best performance with highest ultimate recovery thus should be considered for field application.* **Contribution:** *This experimental study showed the effects of different ASP injection technique by sequence and mixture on the ultimate oil recovery. The ASP alternating with waterflooding injection is the best technique as it is able to yield the highest recovery compared to conventional ASP and tapering water to ASP flooding. This study successfully compared three different injection techniques used in the industry as well as taking the ratio of recovery per volume of chemical required into account. Such a comparison study was never been published in open literature thus will be an added knowledge in Enhanced Oil Recovery application.*

Keywords: Enhanced oil recovery, Alkaline-surfactant-polymer flooding, Alternating, Tapering, Sloppy slug

Abstract ID: **AIMC-2017-STE-1241**

EFFECT OF ELECTRO-ASSISTED AND AERATION SYSTEM ON THE PHYTOREMEDIATION WITH WATER LETTUCE (PISTIA STRATIOTES L.) ON THE REMOVAL OF LEAD (PB) IN THE WASTEWATER TREATMENT

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Abstract

Introduction: *This study was aimed to determine the effect of electro-assisted and oxygen injection system to improve the effectiveness of the Pb removal in wastewater by a combined used of electro-assisted phytoremediation (EAPR) and aeration system hereinafter referred as E-PHYRA system. The E-PHYRA system was run with water lettuce (Pistia stratiotes L.) as accumulator plant and a constant DC power supply of 2 V and air flow rate of 5 L/min. in 15 L wastewater. The combination of 2D cathode-pot electrode and air diffuser configuration on the E-PHYRA system was also evaluated in this study* **Methodology:** *The effectiveness of E-PHYRA system, phytoaeration and phytoremediation on the wastewater treatment was compared and evaluated*

by using Pb concentration in plant, pH, TDS, DO, respectively. Plant appearance was also monitored by the measurement of chlorophyll content using UV-Vis Spectroscopy after the acetone extraction and heavy metal concentration was measured by Flame-Atomic Absorption Spectroscopy (Flame-AAS) **Findings:** *The results showed that the decreasing of Pb concentration in the wastewater as much as 87.3%, higher than that phytoaeration and phytoremediation. The absorption of Pb by water lettuce on the basis of E-PHYRA process was much higher than that in the phytoremediation. Those results concluded that the E-PHYRA system was decreasing the Pb concentration more efficient and faster compared with other treatment.* **Contribution:** *Ephyra (electro assisted phytoremediation-aeration) is an innovative wastewater treatment methods that overcome lack of phytoremediation.*

Keywords: Aeration, EAPR, Phytoremediation, Pb, Water lettuce

Abstract ID: **AIMC-2017-STE-1242**

MOBILE APPLICATION USAGE AMONG HIGH SCHOOL STUDENTS IN MALAYSIA

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Abstract

Introduction: *Nowadays, the mobile phone is viewed as an important communication tool in Malaysian society, with application such as simple text message (SMS), multimedia messaging services (MMS), internet access, games, social media like Facebook, Instagram, WeChat, Twitter and others application. The development of mobile phone and application provide benefits for users in very convenient way for communication and socialization.* **Methodology:** *In this paper, we present our work the descriptive analysis of mobile application usage among high school students in Malaysia using SPSS Software.* **Findings:** *The analysis was divided into demographic analysis and the patterns trend of mobile application usage among 228 respondents where 71% (n=161) were female and 29% (n=67) were males. The students were found to spend an average more than 2-3 hours per day on their mobile phone and mobile applications. The analysis showed that the Form 5 students (n= 114, 50%) were the higher usage of mobile phone with the most popular mobile application were SMS, WhatsApp (n=128,48%) and internet access (n=61,23%).* **Contribution:** *The summary patterns of mobile application of the students was divided into four categories such as perceived usefulness, perceived enjoyment, behavioral intention and attitude. The average positive response respectively 71%, 65.5%, 32.3% and 64.4% which most of the students have interest use the mobile application due to the perceived usefulness.*

Keywords: Descriptive analysis, Mobile application, Usage Patterns, Malaysia.

Abstract ID: **AIMC-2017-STE-1243**

SYNTHESIS, SPECTROSCOPIC INVESTIGATION AND CATALYTIC STUDIES OF NICKEL(II) AROMATIC AZOMETHINE COMPLEXES

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Abstract

Introduction: *Coupling reaction between aryl halide and terminal alkyne or simply termed as Sonogashira coupling reaction, has been given much attention by synthesis and organic chemists due to its extensive application in the re-synthesis of natural products, production of drugs, dyes, and polymers. Effort to increase product yield has involved exploration of new catalysts. This is essential as the current catalysts such as phosphine-based complexes has triggered some environmental issues due to its toxicity. Phosphines are also costly and sensitive to air and moisture. Furthermore, the common use of copper as co-catalyst in Sonogashira coupling reaction has been reported to cause Glaser-type homocoupling which hindered the formation of the desired products* **Methodology:** *Realising the need to tackle these matters, nickel(II) Schiff base complexes were synthesised by reacting aromatic Schiff base ligands namely LH, LF and LC with nickel(II) acetate tetrahydrate under reflux for 5 hours in ethanol. The products formed denoted as NiLH, NiLF, and NiLC were elucidated through physical, analytical and spectral techniques namely elemental analysis, melting point, FTIR, 1H and 13C NMR and magnetic susceptibility* **Findings:** *All nickel(II) complexes were tested as catalysts in homogenous Sonogashira reaction between iodobenzene and phenylacetylene in DMSO for 12 hours. NiLF, a new nickel(II) complex, converted the highest percentage of iodobenze (91%) while NiLH and NiLC converted 78% and 83% of*

iodobenzene, respectively **Contribution:** *The new nickel(II) complexes were synthesised from this research works. Hence its application as catalyst in homogeneous Sonogashira reaction can be considered novel.*
Keywords: Schiff bases, substituent, nickel(II) complexes, Sonogashira, catalysis

Abstract ID: **AIMC-2017-STE-1245**

HEAT DISTRIBUTION MODELING OF THE SUBSURFACE OF WAPSALIT GEOTHERMAL AREA BASED ON LAND SURFACE TEMPERATURE FROM LANDSAT-8 THERMAL INFRARED SENSOR IMAGERY

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Abstract

Introduction: *In this study, we built models of heat distribution of the subsurface of Wapsalit geothermal areas, which their structures were known before, using finite different method. The aim of the study is to describe the process of heat transfer in the study area.* **Methodology:** *The modelling scheme using finite difference method based on the implicit Crank-Nicholson algorithm. Thermal diffusivity of the rocks was used as the model parameter, which control the heat flow.* **Findings:** *The result shows that the heat flow adjust the model parameters effectively. Furthermore, land surface temperature (LST) as the result of the model was compared to LST from Landsat-8 Thermal Infrared Sensor Imagery. This comparison produces absolute error 6.8% and 3.6% for cross-section 1 and 2 respectively.* **Contribution:** *Based on this modelling, we have an opportunity to build an inversion method, which using Landsat-8 Thermal Infrared Sensor Imagery, to investigate the subsurface in the future.*
Keywords: Wapsalit geothermal areas, Heat Distribution, Finite Difference method, Landsat-8

Abstract ID: **AIMC-2017-STE-1246**

A STUDY TO INVESTIGATE TECHNOPRENEURSHIP TALENT FOR HIGHER EDUCATION STUDENTS (ENGINEERING, AGRICULTURE ENGINEERING, AND INFORMATION TECHNOLOGY IN ANDALAS UNIVERSITY INDONESIA)

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Abstract

Introduction: *Lack of new business and jobs has led unemployment issues, including in Indonesia. This problem can be settled by increasing the number of new entrepreneurs, especially technopreneurs. Technopreneur is entrepreneurs creating new business and jobs through technological innovations. Considered as part of society with relatively better knowledge and perspective, university students are expected to become future technopreneurs.* **Methodology:** *This research tries to assess university student's technopreneur talent, especially students from faculty who are directly related to technological innovation: engineering, agriculture engineering and information technology. Technopreneur talent assessed on three criteria: (1) Absorptive Capacity, (2) Knowledge and Learning Skills, (3) Business and Communication Skills. In addition to technopreneur talent, this study also assessed student's entrepreneurial characteristics as criteria for a basic set of abilities of technopreneurship, based on local uniqueness. A set of indicators is developed to assess each criterion. Research is conducted qualitatively using questioners as assessment tool. The assessments are carried out in three stages: first, attitudes measurement technique using indicators assessment, followed by criteria assessment using Weighted Sum Model (WSM) based on indicator assessment result, and then technopreneur talent assessment based on the result of criteria assessment, also using WSM.* **Findings:** *The result shows that agriculture engineering students are most adept in some aspects of business management and communication, and entrepreneurship characteristics; most of other aspects are relatively dominated by engineering and information technology students. For criteria assessment, engineering students are relatively excellent in terms of entrepreneurship characteristics, absorptive capacity, and knowledge and learning skills, while information technology students are relatively more adept in terms of business management and communication skills. The overall technopreneur talent assessments show that engineering students are relatively better.* **Contribution:** *This paper provides an insight to assess student's technopreneur talent. Indicators developed in this paper can also be used as input and considerations in preparing technopreneurship-based curriculum.*
Keywords: Technopreneur; talent; characteristics; WSM

Abstract ID: **AIMC-2017-STE-1249**

APPLICATION OF MULTISPECTRAL SATELLITE IMAGES ON ESTIMATION OF CARBON STORAGE IN MANGROVE AREA

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Abstract

Introduction: *Pulau Indah shown a rapid urbanization and changes within 20 years of anthropogenic activities which have contributed impact towards mangrove area. The aim of this study is to investigate the changes of mangrove area in Pulau Indah and to estimate the carbon storage magnitude using multispectral images.* **Methodology:** *Landsat satellite images for 24 years utilized to determined the mangrove changes using supervised classification method. The mangrove area shows massive declination within 24 years by 21.4% of them replaced with urban area. Then, by utilizing global solar radiation data and satellite images, carbon storage of mangrove was estimated.* **Findings:** *As a result, the total carbon storage also decreasing in total 8,752.4 kg/hectare within 24 years. Carbon storage and mangrove area then correlated and shows the decrease of carbon storage positively correlated (R2 = 0.9) with the decrease of mangrove area. Meanwhile, the land surface temperature in Pulau Indah also shows an increment of 8.1˚C within this 24 years.* **Contribution:** *In conclusion, by using multispectral satellite images, the replacement of mangrove area and how its affecting the magnitude of carbon storage and temperature managed to be estimated.*

Keywords: carbon storage; multispectral image; mangrove; Pulau Indah

Abstract ID: **AIMC-2017-STE-1252**

CONCRETE BRIDGE STRUCTURE DISPLACEMENT DETECTION USING GPS STATIC APPROACH

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Abstract

Introduction: *Global Positioning System (GPS) is being actively applied to measure static displacement responses of large civil engineering structures such as bridge under the moving vehicles loads. An old concrete bridge in Ipoh, Perak, namely Jalan Sultan Idris Shah Bridge or Birch Bridge (GPS: 4.59813, 101.07925) have been used as the study área. This bridge is one of the two main bridges across the Kinta River that separates Ipoh Old Town and Ipoh New Town. The Bridge was built in 1907 and has been upgraded a few times from steel to concrete bridge.* **Methodology:** *GPS Static displacement measurements are carried out to detect the displacement occurrence on the bridge. Therefore, this paper explores the possibility displacement of bridge structure using static GPS measured signals to enhance the measurement accuracy of total static displacement response of the bridge structure. Two days GPS campaign have been carried out by using three (3) GPS receivers and defined by input wave time around a predefined static position. There are three (3) stations as a control point with a long observation situated at the embankment of the bridge and nine monitoring stations with every 15 minutes' observation.* **Findings:** *The proposed data processing techniques are applied to the recorded GPS data to find the displacements. These results are compared with the first session actual displacement motions generated by the motion of real work. The comparative results demonstrate that the proposed technique can significantly enhance the measurement accuracy of the total displacement of a structure.* **Contribution:** *This study is aimed to analyze the findings of the GPS readings with static displacement method. In this study, the researchers chose the old bridge and is still often used by vehicles every day. Observations conducted over two days from early morning until late afternoon or evening. Observations made by marking the nine (9) points to 'fast static' and three (3) points for a 'base'.*

Keywords: GPS, concrete bridge, Static, displacement.

Abstract ID: **AIMC-2017-STE-1259**

FEASIBILITY OF USING ISO SHIPPING CONTAINER TO BUILD LOW COST HOUSE IN MALAYSIA

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Abstract

Introduction: *The idea of container home is relatively new in Malaysia and there is no indicator of what are the expectations from Malaysian citizen about the container home. The purpose of this study is to test the feasibility of using ISO shipping container as low cost house and to investigate the structural performance of shipping container house under different loading situation.* **Methodology:** *A set of questionnaire which comprises of different sections is given to four groups of people namely Container Stock Keeper, Container Designer, Container owner or contractor and Public. The respondents are randomly sampled, means that every citizen of Malaysia will be given an equal chance to be selected. Slovin's formula was used to analyse the number of respondent needed. 400 citizens from different states of Malaysia will be picked randomly and be invited to answer the survey questionnaire through Google Docs.* **Findings:** *The result showed that the acceptance level of living inside a container home is only 45% but the acceptance level of using shipping container as storage, office and business development is highly acceptable by Malaysian citizen.* **Contribution:** *The research had provided an insight on the feasibility of using shipping container as low cost housing solution in Malaysia. The potential of container house also provides alternative as commercial building for architect and engineer in their design.*

Keywords: shipping container, low cost house, acceptance level, questionnaire

Abstract ID: **AIMC-2017-STE-1261**

INVESTIGATION ON NANO-SILICA PERFORMANCE AS A BRIDGING AGENT AND ITS EFFECTS IN WATER BASED MUD FILTRATION AND RHEOLOGICAL PROPERTIES

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Abstract

Introduction: *Drilling Fluid can be defined by any fluid that is used throughout a drilling operation that serves many purposes include transporting cutting into the surface ,controlling subsurface pressure, controlling the fluid flow into and out of the formations, and supporting and stabilizing the wellbore.*

Rheological and filtration properties of drilling mud are important parameters that should be considered to optimize drilling fluid performance and to obtain economic drilling operations. Firstly, filtrate loss caused due to the mud cake and bridging agents' low efficiency in sealing the formations and in preventing the fluid into the formation. Moreover, most of the formation with low permeability and nano-pores size is such that normal filtration additives can't form bridge across the formation, thus effect negatively the filtration properties, and increases the fluid invasion into the formations. which cause damage of formations and decrease oil wells productivity. Consequently, further investigation of using nano-particles in Basic Water mud system is required to characterize the feasibility of using such in drilling operations. Secondly, the need to enhance and to acquire additives to manipulate reheological properties is required to overcome the drilling operations challenges such as poor hole cleaning low Rate of Penetration (ROP) Pipe Sticking and higher torque and drag. **Methodology:** *All the expermintal tests are performed under API standard:*

1) Mud Formulation

This system is considered a basic water based mud system. Mud preparation at LPLT using nano silica 5-15nm, at 0-2.5 wt.% nano silica concentrations of total mud weight which this concentration was deducted from filtration loss agent Bentonite.

2)Density Measurement

Mud density for all mud samples are measured using the Mud Balance with accuracy reading is 0.1 lb/gal following API standard, this project is testing the mud with density equals to 9.2ppg.

3)AP LPLT Filtration Test. Static filtration test is used in this experiment to indicate the filter cake quality and filtrate loss volume for all samples under low pressure low pressure condition using 300 Series API filter press.

4)Mud Rheology Test. Fann Model 35A viscometer is used to determine the viscosities measurements using 6 fixed speeds.

5) Filter Paper Preparation for SEM Scanning. Mud cake is removed carefully without disturbing the surface of the filter , and to ensure only solid particles left

within the filter papers, this can be done by drying the filter paper under the sun for 3 days, and 72 hours in the oven under ATSE standard.

6) Filter Papers Imaging using Scanning Electron

Microscope (SEM). Unused filter paper is to be scanned to visualize and measure the pore size, besides the samples which are going to be prepared after all filtration tests. The Sample imaging is conducted in BLOCK 15

(GEOLOGY LAB) , Universiti Teknologi PETRONAS.

7) Perform Interpretation and Analysis for Images

Produced by (SEM) using Chellappah& Aston,2012 filtration mechanisms illustrated in the figure in the paper and presentation slides **Findings:** *The experimental results showed an increase in the filtration loss when adding nano-silica to the conventional additives for basic water based mud, these results also are illustrated by the SEM images which show the increase of un-seal pore-throat by adding more nano-silica.*

These filtration experimental results contradicted the literature which shows enhancement when adding nano-silica to Complex not basic water base mud that can be explained by the fact that nano-silica size (5-15nm) is too small to seal the filter paper micro-size pores and it was observed during the filtration tests fluid loss volume contains a huge amount of nano silica specially in the 2.5 wt.% sample.

Contribution: *The basic water base mud is usually used for drilling the first 100-200 meter at shallow depth in the formations, and more additives and more complex systems are used for drilling the deeper formations. nano-silica is not advisable to be used in the basic water base mud, and based on the literature is only feasible to be added to more complex mud systems.*

On the other hand, nano silica shows its capability to act as rheology modifier which can be used to modify the reheological properties as the drilling operations required.

Keywords: Nano-Silica; Bridging agent; Filtration and Rheological Properties; Scanning Electron Microscope (SEM)

Abstract ID: **AIMC-2017-STE-1264**

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cfg
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Abstract

Introduction: *ghjj* **Methodology:** *cgh* **Findings:** *fhjuy* **Contribution:** *fguy*

Keywords: fddg

Abstract ID: **AIMC-2017-STE-1266**

MAPPING MANGROVE DISTRIBUTIONS IN CHERATING RIVER ESTUARY, PAHANG BY USING REMOTE SENSING

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Abstract

Introduction: *The mangrove at Cherating river estuary are diverse in species diversity and well distributed along the seven kilometer of the riverine swamp. The study on the mangroves cover are needed for coastal development planning and monitoring.* **Methodology:** *Combination of unsupervised and supervised classification of Landsat Satellite imageries were used for the study.* **Findings:** *A total of 15 mangrove species comprise of exclusive and non-exclusive mangroves species along the Cherating river estuary have been identified. The mangrove species that are distributed in the riverine swamp of Cherating are dominated by Rhizophora species which are Rhizophora apiculata and Rhizophora mucronata. Based on the supervised classification, a total of 26.32 hectares of the mangrove areas have been lost form 1997 to 2016. Significant decline of the mangroves cover is recorded from the year of 2013 to 2016 with the loss of 9.156 hectares mangrove forest with the percentage of 34.76% of mangroves cover decline from 1997 to 2016.* **Contribution:** *However, the decline of the mangrove forest covers have affected the tourism activities as mangrove forest serve as the habitats for floras and faunas. Clearance of mangrove forest for development and timbers exploitation have a negative impact on the firefly habitation. Mangroves covers mapping are important for the future*

monitoring, management and tourism planning in the Cherating river estuary in order to provide the tourism sector with the recent database on the mangroves cover changes. Sustainable development and the environmental approach in the tourism sectors are important in order to protect the mangrove area from any further decline.

Keywords: mangroves cover, remote sensing, development, tourism.

Abstract ID: **AIMC-2017-STE-1267**

EFFECT OF WIND SPEED ON UHF RADIO PROPAGATION IN KUSZA OBSERVATORY, EAST COAST OF PENINSULAR MALAYSIA

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Abstract

Introduction: *Northeast (NE) monsoon is the season received high wind speed, heavy rain and greater humidity in east cost of Peninsular Malaysia. The wind speed is achieved 55.56 km/h or more as reported by Malaysian Meteorological Department. This weather event has affected the attenuation of radio signal. This study investigate the effect of wind speed on radio signal strength (RSS) within Ultra High Frequency (UHF) band at Kusza Observatory (KO)* **Methodology:** *This study is conducted the observation in wet season by measuring the wind speed using weather station and spectrum analyser for RSS (dBm). The statistical correlation analysis were employed for determining the correlation value between them.* **Findings:** *From the obtained result, RSS is found negatively correlated with wind speed. Meanwhile, strong and significant correlation were determined at frequency of 382.5MHz, 945MHz and 2160 MHz with correlation value of r = -0.583, -0.631 and -0.514 respectively.* **Contribution:** *This findings is useful to radio astronomer to determine the best period for radio astronomical observation with minimum interference by considering weather condition. Concurrently, benefit to spectrum user such as mobile telecommunication, wireless internet and radio broadcasting.*

Keywords: radio signal strength, wind speed, correlation

Abstract ID: **AIMC-2017-STE-1271**

FACILE GREEN SYNTHESIS OF POROUS SNO2 NANOPARTICLES BY HYDROTHERMAL METHOD AND THEIR POTENTIAL APPLICATION FOR DYE-SENSITIZED SOLAR CELLS

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Abstract

Introduction: *The synthesis method of SnO2 nanoparticles have been developed in recent year in view of their potential applications in electrochemical devices and dye sensitized solar cells. The synthesis of SnO2 nanoparticles with different size and morphology by hydrothermal method using surfactant as structure directing agent (SDA) or capping agent has been reported. However, the use of surfactant is still remains problems such as relatively high cost and the lack of crystal purity due to the difficulties to remove surfactant from the as-synthesized SnO2 nanoparticles. In this report, the facile green synthesis of porous SnO2 nanoparticles by hydrothermal method at relatively low temperature using aqueous rinds extracts of Sapindus rarak DC as capping agent in acid solution have been developed.* **Methodology:** *Different size and morphology SnO2 nanoparticles were synthesized by using hydrothermal method with variation of aqueous rinds extracts of Sapindus rarak DC concentration in acid solution. The process was carried out at 950C for 8 hours. After synthesis, the white precipitate was washed by water and ethanol several times and was dried at room temperature over night for further characterization. The phase purity and crystalinity of the SnO2 nanoparticles were determined by X-ray powder diffraction (XRD) data, which were collected by an X-Ray Diffractometer. Morphology of the SnO2 nanoparticles was observed by a Scanning Electron Microscopy.* **Findings:** *The pattern of XRD results showed that all products yielded phase pure SnO2 nanocrystals. All diffraction peaks indicated that no impurity peaks can be observed which indicating the high purity of the SnO2 nanocrystals. In addition, SnO2 nanoparticles synthesized with extracts in the acid solution clearly showed the porous structures as observed from the SEM image observation. SEM analyses also clearly show that the addition of these extracts in solution reaction could change the morphology of SnO2 nanoparticles from large to small aggregate. The results indicated that the aqueous rinds extracts of Sapindus rarak DC in acid solution could give significant*

effect to the size and morphology controlled of SnO2 nanoparticles. Furthermore, the potential application of porous SnO2 nanoparticles as photoelectrodes in dye-sensitized solar cells was discussed in view of their differences in size and morphology. **Contribution:** *The hydrothermal synthesis method of SnO2 nanoparticles using Sapindus rarak DC as capping agent at low temperature in this research could give significant contribution to the development of SnO2 nanoparticles synthesis method in view of their application in electrochemical devices and dye-sensitized solar cells. Furthermore, the use of aqueous rinds extracts of Sapindus rarak DC as capping agent could be a new method in order to control morphology of SnO2 nanoparticles.*

Keywords: SnO2, Hydrothermal, Green synthesis, Sapindus rarak DC, Dye-sensitized solar cells

Abstract ID: **AIMC-2017-STE-1272**

IMPROVEMENT ON STRENGTH PROPERTIES OF HYBRID KENAF-STEEL FIBER REINFORCED CONCRETE

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Abstract

Introduction: *Recently, fiber reinforced concrete (FRC) has been gained more attention in the development and used in many types of engineering application. The advantages of adding fiber into reinforced concrete, including the efficiency of improving the load carrying capacity and ductility of the structural members.*

Several of researches focus on only a single type of fiber such as steel fiber or kenaf fiber. However, few studies have been carried out to study the effect of using two types of fibers in reinforced concrete structures which is called hybrid fibers reinforced concrete (HyFRC). This study attempts to investigate the strength properties of hybrid kenaf-steel fiber reinforced concrete (HyKSFRC) through compressive and flexural strength.

Methodology: *In the concrete mix design, four mixtures are produced for hybrid fiber reinforced concrete. The first is a reference mixture without adding any fiber Vf = 0%. Whilst, the three mixtures consisted of volume fraction for hybrid fiber Vf is 1 % with the ratio of (0.5 – 0.5 %, 0.25 – 0.75 % and 0.75 – 0.25 %) for kenaf–steel, respectively. Hooked-end steel fiber added into the mixtures were 60 mm of length with a diameter of 0.75 mm. In addition, the kenaf fiber was treated by 1% of sodium hydroxide (NaOH) with a length of 30 mm and a diameter has ranges between 0.1 mm to 1 mm was used.*

Compression test and flexural test were considered in this study. Six cubes and three beam prisms were prepared for each mixture. In order to measure the compressive strength, a number of 24 cubes with standard size 150 x 150 x 150 mm were used. Three cubes were tested for each mixture on the 7th and 28th day. In the flexural test, three beam prisms with a dimension 100 x 100 x 500 mm were tested on 28th day under four point bending test by using Automatic Flexural Test Machine.

Findings: *The compressive strength of the hybrid kenaf-steel fiber reinforced concrete cube has affected by a volume fraction of fiber. The results showed the adding hybrid fiber has a significant increase in compressive strength compared to the reference cube.*

In the flexural test, the finding showed the hybrid kenaf - steel fiber reinforced concrete beam has higher flexural strength compared to the reference beam. In addition, the results observed the reference beam failed occurred suddenly without any cracking. Therefore, adding hybrid fiber can modify the mode of failure from brittle to a ductile mode and highly improvement of the flexural strength.

Contribution: *This research confirmed the effectiveness of hybrid kenaf-steel fiber to improve the compressive and flexural strength of reinforced concrete. In addition, it presents the potential of hybrid kenaf-steel fiber to serve as a part of shear reinforcement which reflects on reducing the conventional shear reinforcement and the thickness of structural members such as beam or slab.*

Keywords: Hybrid kenaf-steel fiber, Steel fiber, Kenaf fiber, Compressive strength, Flexural strength.

Abstract ID: **AIMC-2017-STE-1280**

EXPERIMENTAL OF ENERGY ABSORPTION OF COMPRESSED ALUMINIUM FOAM SANDWICH

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Abstract

Introduction: *Recently, researchers have been shown an increased interest in production of automotive industries. In the past few years, metallic foams has been attracting considerable attention. One of the excellent metal foam that are used by previous researchers in automotive application is aluminium foam sandwich due to their unique properties such as low density, good energy absorption characteristics. Therefore, the current research was conducted to provide reliable data that can be used to analyze energy absorption behaviour of aluminium foam sandwich by performing experimental work which is compression test.* **Methodology:** *For this research, aluminium foam sandwich was used for conducting the experimental work. Aluminium foam were attached together with aluminium sheets using epoxy resin with hardener ratio of 2:1 to fabricate aluminium foam sandwich. According to ASTM standard of C393, the preferable ratio for designing sandwich structure should be approximately less or equal to 0.10 in order to select the suitable thickness for core and skin. Based on design of experiment (DOE), full-factorial design were developed with two level of thickness of core were used which were 6.35 and 10 mm, whereas three level of thickness of aluminium sheets were 0.4, 0.6 and 0.8 mm respectively. For compression test, Universal Testing (INSTRON) machine was used to analyze the compressive behavior of aluminium foam sandwich (AFS).* **Findings:** *During compression test, the aluminium foam sandwich (AFS) samples will deform after undergoes some load. Energy is absorbed by aluminium foam core which approximately equal to one of AFS structure. It had been clearly shown that there were increasing trend for compressive stress, compressive strain and energy absorbed based on area under curve when increasing the thickness of aluminium foam as a core. The sample have been compressed until 50% of its initial length. The three regions in the stress-strain curves are observed in aluminium foam sandwich. , the alteration point between plateau stress and rupture (densification) region are clear trend. As compressive stress increases, the compressive strain also increases due to densification region. It can be found that the energy absorbed of aluminium foam sandwich follows the same trends with the increasing of compressive strain and stress.* **Contribution:** *this current study will help to provide the reliable experimental data that can be used to analyze energy absorption behavior of aluminium foam sandwich in automotive application.*

Keywords: Aluminium Foam Sandwich, Compression Test, Energy Absorption

Abstract ID: **AIMC-2017-STE-1281**

A MULTI-CRITERIA DECISION MAKING FRAMEWORK FOR THE SELECTION OF MEDICAL EQUIPMENT VENDOR

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Abstract

Introduction: *The decision to purchase medical equipment has enormous impact on hospital's treatment outcomes, procedure and health system sustainability. Prioritizing is a useful technique that can be used in making those critical decision. There are various MCDM methods used in different disciplines including procurement. However, in private health care industry, this technique still not widely used. Thus, this research will propose a decision making framework for vendor selection that based on multi-criteria decision making (MCDM) methods. The objective of this research is to propose a possible algorithms of vendor selection prioritization specifically for private healthcare medical equipment.* **Methodology:** *This research will be conducted through four (4) main phases :*

1) Phase one: To analyse academic literature that will cover analysis, classification, challenges and taxonomy of the research articles.

2) Phase two: To investigate factors (i.e. which include criteria and alternatives) that influence the decision making of vendor selection specifically for medical equipment. This will include specifying the criteria and attribute that will be used during the evaluation process.

3) Phase three: To investigate the suitable algorithm for the above mentioned problem. The weight for each attribute should be measured using one convenience algorithms that will be formulated once phase one and phase two of the research activities completed. Subsequently, one of the MCDM techniques will be used to rank the available alternatives. Both steps (i.e. finding the suitable algorithm for the criteria and ranking the available alternative) require further investigations towards nominating suitable techniques for weight preferences and alternatives ranking.

4) Phase four: Based on the integration a proper weight method and one of the MCDM techniques, there is a potential of developing a conceptual framework that can solve complex vendor selection process in term of prioritization the most eligible and compatible vendor to be selected. **Findings:** *1. Provide a better way of*

prioritising and selecting the most eligible vendor for purchasing medical equipment. A clear guidelines can save the organisation from greater loss.
2. Analysis of the possibility of adapting MCDM techniques in vendor selection for medical equipment procurement.
3. Identify possible conceptual and theoretical framework of private healthcare decision making. Findings from this research will be the "proof of concept" which can also be applied to other private hospitals as well as for other public hospitals.
4. Malaysia government is in the effort to enhance the quality of healthcare. The improvement could be done through providing efficient and effective procurement process. This research helps in realising the effort.
Contribution: *1) One of the areas that stated in Eleventh Malaysia Plan is to enhance the quality of healthcare industry. Thus, this research will be the "proof of concept" in providing efficient decision making process especially in managing complex tender project. The framework propose by this research will assist in realizing the effort. 2) Healthcare will always be a relevant discussion as every human being will need service offered by this industry. Providing the best service will also be the main goal for this industry. Thus, this research propose a better way making critical decision specifically to select the most eligible and compatible vendor for purchasing medical equipment. 3) Provide the opportunity to lecturers and student to conduct research that is critical and important to government and industry. This research will promote a new collaboration between academic and industry.*

Keywords: MCDM, vendor selection, medical equipment

Abstract ID: **AIMC-2017-STE-1282**

DATA AS KEY DIMENSION FOR ORGANIZATIONS' READINESS TOWARD BUSINESS INTELLIGENCE SYSTEMS

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Abstract

Introduction: *Nowadays, Business Intelligence (BI) systems are becoming a necessity for many organizations. Billions of US Dollars are spent annually on BI systems but unfortunately more than half of BI projects are ending with unrealized benefits. One of the main reasons behind this failure rate is that many organizations were not ready for such systems. Therefore, this study took the opportunity to investigate this area more to help organization with identified valid dimensions. Based on detailed review, seven dimensions were found and this study tried to focus on Data dimension to discuss its results and validity.* **Methodology:** *After a detailed review of previous studies for BI readiness dimension, an organizations' readiness model toward BI systems was developed. This model is consisting of 7 dimensions, each dimension involves many sub-dimensions. A two round questionnaires geared towards measuring all the dimensions and sub-dimensions that formed the conceptualized model. This paper is just focusing on the data dimension (which is one of these seven dimensions). Probabilistic and randomization is the sampling method used in this study. The number of respondents for the first round questionnaire was 35, while for the second round questionnaire it was 200 respondents. The two round questionnaires were conducted on Malaysian organizations that have BI systems in house. The distribution and collection of the questionnaire were done manually. The second round questionnaire was partially based on the responses of the first round findings. For the quantitative data set, the statistical analysis tools used such as SPSS Version 19 and AMOS Version 16. While for the open ended-questions, it was analyzed qualitatively by identifying the themes and patterns. Also, this research used Structure Equation Modeling (SEM) which is a family of statistical models that seek to explain the relationships among multiple variables.* **Findings:** *As a prerequisite to test data model validity, the data passed through tests such as data reduction and screening, checking for missing data, checking normality and internal consistency. The data met the requirement tests and passed them. When the data was run for the first time using AMOS version 19 to test the model fitness, the results of the multiple fit indices were not really satisfactory. The Normed Chi-square ($\chi 2$) and root mean square error of approximation (RMSEA) exceeded the recommended range. The results of residual errors for the items are acceptable, except some items that are below .40. To improve the model fit, some diagnostic measures were carried. The first step involved the examination of the standardized factor loadings. Then modification indices (MIs) were examined. Also, the exploratory factor analysis (EFA) utilized to evaluate the amount of variance in observed variables. Also, the Principal component analysis (PCA) is used to have more clear idea about the problem. After running these tests it was found that some items were having high cross-loadings and correlations that exceeded .5, which encourages for avoiding. Surprisingly, after avoiding these items from the*

model, the results showed a valid model that satisfied model fit standards. **Contribution:** *This study can be distinguished by developing a comprehensive conceptual model that took in consideration most of the BI readiness dimensions of the previous studies. However, it can be considered from the pioneer studies that tested empirically, on the context of Malaysian organizations, the conceptual model of organizations' readiness toward BI systems. At the same time, this study can distinguished from the previous studies by using Structure Equation Modeling (SEM) which is from the highly recommended methodologies for model validation.*

Keywords: business intelligence; business intelligence readiness; readiness model; readiness factors; success factors; business dimension.

Abstract ID: **AIMC-2017-STE-1283**

PREPARATION OF TIO2¬ BAMBOO LEAVES ASH COMPOSITE AS PHOTOCATALYSTFOR DYE PHOTODEGRADATION

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Abstract

Introduction: *Textile waste containing dye generates environmental problems especially for human. Therefore some techniques are developed to overcome the impact of toxic contaminant from dyes residue. Photocatalysis is one of the most important technology for treating water pollutants effectively. The method is better compared to adsorption method in that photocatalysis gives advance destroying organic contaminants and has better reusability.The photocatalysis mechanism TiO2 is a popular photocatalyst and in order to improve its activity the composite formation with a some solid support are attempted. In this research, bamboo leaves was choosen as low cost and effective support for TiO2.* **Methodology:** *TiO2 was supported into bamboo leaves by impregnation method highlight. The composite of TiO2/Bamboo leaves Ash (BLA) was conducted by dispersing titanium tetraisopropoxide as TiO2 precursor followed by calcination. Characterization of Ti-BLA was performed by XRD analysis,gas sorption analyzer and SEM-EDX analysis. For photocatalytic activity, experiments on photocatalysis and photooxidation of metilen blue solution (pH 4, 7, and 9) were examined.* **Findings:** *Prepared Ti-BLA exhibits the formation of TiO2 in mixed anatase and rutile phases as presented by XRD pattern. From our analysis SEM-EDX it can be seen that bamboo leaves ash as a template for making Ti-BLA. Ti-BLA showed high photoactivity as represented by faster degradation rate of metylen blue (pH 4, 7 and 9) over photooxidation and photocatalysis compared to adsorption method.* **Contribution:** *The research gives alternative for effectively photocatalyst for dye photodegradation.*

Keywords: textile waste; bamboo leaves; photodegradation; TiSiO2 bamboo leaves

Abstract ID: **AIMC-2017-STE-1285**

THE INFLUENCE OF BUSINESS DIMENSION ON ORGANIZATION READINESS TOWARD BUSINESS INTELLIGENCE SYSTEMS

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Abstract

Introduction: *The continually improving capabilities of BI systems, increasing the demand on them day by day. According to statistics, the spending on BI projects is exceeding most of the IT segments. However, most of the BI projects are failing due to the lack of organizations readiness toward BI systems. This issue, opened the gate for this study to contribute in solving this problem by exploring the important BI readiness Dimensions. Based on review of previous studies, seven dimensions found but this study will focus on one dimension, which is the Business dimension, to validate it and discuss its results in details.* **Methodology:** *After a detailed review of previous studies for BI readiness dimension, an organizations' readiness model toward BI systems was developed. This model is consisting of 7 dimensions, each dimension involves many sub-dimensions. A two round questionnaires geared towards measuring all the dimensions and sub-dimensions that formed the conceptualized model. This paper is just focusing on the business dimension (which is one of these seven dimensions). Probabilistic and randomization is the sampling method used in this study. The number of respondents for the first round questionnaire was 35, while for the second round questionnaire it was 200 respondents. The two round questionnaires were conducted on Malaysian organizations that have BI systems in house. The distribution and collection of the questionnaire were done manually. The second round questionnaire was*

partially based on the responses of the first round findings. For the quantitative data set, the statistical analysis tools used such as SPSS Version 19 and AMOS Version 16. While for the open ended-questions, it was analyzed qualitatively by identifying the themes and patterns. Also, this research used Structure Equation Modeling (SEM) which is a family of statistical models that seek to explain the relationships among multiple variables. **Findings:** *As a prerequisite to test data model validity, the data passed through tests such as data reduction and screening, checking for missing data, checking normality and internal consistency. The data met the requirement tests and passed them. When the data was run for the first time using AMOS version 19 to test the model fitness, the results of the multiple fit indices were not really satisfactory. The Normed Chi-square (χ2) and root mean square error of approximation (RMSEA) exceeded the recommended range. The results of residual errors for the items are acceptable, except some items that are below .40. To improve the model fit, some diagnostic measures were carried. The first step involved the examination of the standardized factor loadings. Then modification indices (MIs) were examined. Also, the exploratory factor analysis (EFA) utilized to evaluate the amount of variance in observed variables. Also, the Principal component analysis (PCA) is used to have more clear idea about the problem. After running these tests it was found that some items were having high cross-loadings and correlations that exceeded .5, which encourages for avoiding. Surprisingly, after avoiding these items from the model, the results showed a valid model that satisfied model fit standards.* **Contribution:** *This study can be distinguished by developing a comprehensive conceptual model that took in consideration most of the BI readiness dimensions of the previous studies. However, it can be considered from the pioneer studies that tested empirically, on the context of Malaysian organizations, the conceptual model of organizations' readiness toward BI systems. At the same time, this study can distinguished from the previous studies by using Structure Equation Modeling (SEM) which is from the highly recommended methodologies for model validation.*

Keywords: business intelligence; business intelligence readiness; readiness model; readiness factors; success factors; business dimension.

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AN URBAN HIGHWAY TRAFFIC AND TRAVEL INFORMATION SERVICES: INFORMATION ON PUBLIC NEEDS AND EXPECTATION

Corresponding Author: Wan Suhaila Binti Wan Rani
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Co-Authors: Prof. Dr. Miswan @ Abdul Hakim Bin Mohammed; Prof. Madya Dr. Ibrahim Atan Bin Sipan

Abstract

Introduction: *This paper aims to present the traffic and travel information service issues, implication and proposed solutions. The identified current issues in urban transportation in most worldwide cities such as economic diversity, financial viability and service efficiency could be restricted the adequacy, efficiency, safety, reliability and equity of traffic and travel information service performance. The proposed solution is to develop an evaluation tool specifically for the traffic and travel information systems success (TTISS) as a measure of the urban highway information services performance management. To develop the TTISS model and tools, the measurements on the public perceptions is required. The service success outcome is vital to sustain urban public mobility and highway facility efficiency, with a timely and cost-effective deployment of traffic and travel information services that beneficially to save users time, money and increase traffic safety and minimum environment impact for the urban area, at the same time could also be supporting measures in the urban facilities management.* **Methodology:** *The proposed management of travel information systems success (TTISS) evaluation model is based on the integrations of three existing Management Information Systems evaluation models (a) Technology Acceptance Model (TAM); (b) D&M Updated IS Success Model; (c) End-User. The evaluation tools were developed by the integrating empirically tested questionnaire that captures the constructs in the underlying of management information systems (IS) performance evaluation. A questionnaire survey will be used as data collection methods. The statistical tests for confirmatory factor analysis (CFA) will be used to test the proposed measurement models and collected data by using AMOS software.* **Findings:** *This study is expected to measure results from empirical testing of the newly designed TTISS evaluation tool which used to refine the initial model. Data captures and analysis used expected to be an added value in contextual explaining the quantitative finding for the study of performance management information systems (IS) on the urban road transport service.* **Contribution:** *The expected contribution of the traffic and travel information systems success (TTISS) model and evaluation tool is practical can use by the Malaysian highway's facilities management operator in evaluating service performance and as tools to make their performance management easier. The novelty of this research is anticipated to contribute as a new instrument for the facilities management study,*

specifically on the service performance acceptance in relation to information services success in the highway context.

Keywords: Traffic and Travel Information Services, Traveller Information Systems, Public

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Keywords: Traffic and Travel Information Services, Traveller Information Systems, Public Acceptance and Beliefs

Abstract ID: **AIMC-2017-STE-1288**

CORROSION INHIBITION OF MILD STEEL ELECTRODEPOSITED WITH 4-HYDROXYBENZALANILINE IN 0.5 M NACL

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Abstract

Introduction: *Azomethines or Schiff bases are commonly synthesised through condensation of primary amines with active carbonyl compounds and they were first reported in 1864 by Hugo Schiff (Cimerman et al., 2000). Schiff bases with their characteristic C=N moiety are known as nitrogen bearer inhibitors, commonly chosen due to the presence of lone pairs of electrons in their molecular structures. The purpose of this research is to study the inhibition efficiency of coated mild steel with Schiff base.*

Methodology: *The synthesis of a Schiff base 4-hydroxybenzalaniline was carried out via condensation reaction giving yield of 81.7%. It was characterized by physico-chemical and spectroscopic techniques namely melting*

point, micro elemental analysis (C, H and N), 1H Nuclear Magnetic Resonance (NMR) and Infrared (IR) spectroscopy. The characteristic □(C=N) peak was observed at 1613 cm-1 and the □(OH) at 10.15 ppm. Cyclic voltammetry (CV) and chronoamperometry (CA) techniques were employed to electrodeposit 4-hydroxybenzalaniline on mild steel at 0.05 M inhibitor concentration in 0.3 M NaOH.

Findings: *The formation of yellow imine films was observed on the mild steel. The corrosion behavior of coated and uncoated mild steel was studied using Linear Polarization Resistance (LPR) and Electrochemical Impedance Spectroscopy (EIS) in 0.5 M NaCl. The coated mild steel showed better corrosion resistance compared to the uncoated. The mild steel coated with the compound through CA technique revealed the highest inhibition efficiency, hence indicating a better surface coverage, at potential +1.05 V with 59.8 % and 96.79 % for EIS and LPR investigations, respectively.*

Contribution: *The deposited Schiff base can contribute as a potent organic corrosion inhibitor, and have a high potential to be commercialized.*

Keywords: Schiff base, electrodeposition, mild steel, corrosion inhibition, cyclic voltammetry, chronoamperometry, LPR, EIS

Abstract ID: **AIMC-2017-STE-1291**

SEQUENTIAL EXTRACTION OF MITRAGYNINE FROM MITRAGYNA SPECIOSA (KETUM) LEAVES USING DIFFERENT SOLVENT POLARITIES

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Abstract

Introduction: *Mitragyna speciosa Korth or known as ketum in Malaysia is a tree planted in South East Asia region such as Thailand, Malaysia and Myanmmar. The leaves of ketum have been used widely for long time ago for traditional human remedy. Generally, more than 25 alkaloids have been isolated from ketum leaves and mitragynine is the primary active alkaloid in this plant that contribute to the anti-inflammatory, analgesic and opioid properties. Isolation of mitragynine is an important technique in natural product research study due to this alkaloid is the main compound that contribute to herbal medicine.* **Methodology:** *Continuous extraction process using three different solvents such as hexane, chloroform and methanol were employed in this study to extract the maximum yield of mitragynine from the ketum leaves. The mitragynine was isolated and purified by solid phase extraction using column chromatography after the extraction process* **Findings:** *Approximately, 75 mg of pure mitragynine was obtained from 1.0 g of crude extract using methanol as solvent. Pure mitragynine was validated using carbon and proton NMR. GC-MS showed that mitragynine was present in chloroform and methanol but absence in hexane extraction. LC-MS analysis was confirmed the present of mitragynine in chloroform and methanol at the retention time of 6.0 minutes* **Contribution:** *pure mitragynine was successfully isolated and purified from the leaves of Mitragyna speciosa using simple of continuous solvent extraction. This finding*

provide an alternative method to isolate pure alkaloidal compound of mitragynine and has revealed that methanol was the best solvent.

Keywords: Mitragynine speciosa, solvent extraction, alkaloid, mitragynine, NMR, LC/MS and GC-MS.

Abstract ID: **AIMC-2017-STE-1293**

CHARACTERISATION OF HYDROCARBON RESERVOIR AT FIELD “B”, SOUTH SUMATERA BY USING POISSON IMPEDANCE INVERSION

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Abstract

Introduction: *Identification of lithology and fluid reservoir is an important part in the characterisation of reservoir by using seismic data. The process explains physical properties of reservoir rock by integrating the geophysics and petrophysical data. This process is difficult to do in the field "B" when using parameters of acoustic impedance and LMR (Lambda Mu Rho) method, because it still has a fairly high degree of ambiguity. Poisson impedance (PI) has been implemented as a solution to address the problem.* **Methodology:** *The crossplot between acoustic impedance (AI) and shear impedance (SI) data conducted a rotation of both axis*

*according to the trend of lithology-fluid to satisfy the equation of PI(c) = AI – c*SI. To improve the accuracy of PI calculation, the value of c (optimization factor of rotation) is calculated through the method of TCCA (Target Correlation Coefficient Analysis). Much like EEI (Extended Elastic Impedance) method, then do the correlation with to be predicted wells data. Analysis of sensitivity parameter performed on two wells in the field "B". Impedance parameters Zp, Zs and density are obtained from the simultaneous inversion then transformed into PI.* **Findings:** *Our PI models clearly show the separation of rock lithology of hydrocarbon reservoir. Lithology impedance (LI) as a result of the PI-GR (Poisson Impedance-Gamma Ray) correlation is able to separate sand and shale very well. Similarly, the impedance Fluid (FI) as a result of PI-SW (Poisson Impedance-Water Saturation) correlation is also able to separate the water content in the reservoir with high Sw value relative to gas with a low value of Sw. Hydrocarbon zone proven at depth of 2360-2400 m.* **Contribution:** *The slicing result of the volumes of Poisson impedance inversion has provided a clearly distribution and interpretation of lithology and fluid content reservoir at the field "B" of South Sumatera when the conventional LMR's crossplot method could not be able to do it.*

Keywords: Reservoir Characterisation, Poisson impedance, TCCA, lithology, LMR.

Abstract ID: **AIMC-2017-STE-1297**

DRIVING AND HINDERING FACTORS IN DEVELOPING PICO-HYDRO GENERATION SYSTEM IN MALAYSIA

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Abstract

Introduction: *This study presents a systematic review of literature associated with the essential driving factors and also factors that hindering this technology from expending, these factors are useful to refining the decision fro developing Pico-hydro system. the aim of this paper is to provide a survey of water related innovations which have been done in previous studies and be adapted with the situation in Malaysia.* **Methodology:** *This paper is focusing on investigate the interface on driving and hindering factors in developing Pico-hydro generation system in Malaysia by revisit at least 100 technical papers that related and connected with the small hydro power generation system. Since that, the studies case needed to be filtered to define the key element that related with Pico-hydro power that generated less than 5kW and below. Justification from 100 technical papers and report sorted to classify into several theme, which are : (A) Community, (B) Resource Potential, (C) Technology, (D) Economy, (E) Environment, (F) RE Policy and (G) Political. The analysis continues to develop The Generic Reference Model that shown development of Pico-hydro process to assist the driving and hindering factors.* **Findings:** *After preposition of revisit 100 technical papers and reports, the two driving factors that developing are theme A (Community) and B (Resources Potential) in Malaysia. From the papers, Pico-hydro are installed in remote areas which that the environments are off grid from the urban places. The installment of Pico-hydro scheme that capable to produce 220 V voltage and 22 A current after harnessing two small streams with 40 meter head and width of 3 meter and 5 meter. In addition, the driving factors that effected in developing Pico-hydro technology in Malaysia is theme B (Resources Potential).*

For hindering factors, the theme that may involved is theme C (Technology theme). The exposures of this green technology are not really wide in Malaysia. We need to import the technology from the outside. Furthermore, there are also other factors that must be taken into consideration such as economic factors (D). However, the economic standard in present situation shown that is not easy to emphasize this technology widely in Malaysia. **Contribution:** *The paper is focused more on investigation of the interface on driving and hindering factors in developing Pico-hydro generation system in Malaysia and it should be noted that the review only looks into the consideration of this green technology development for future benefits. 100 technical reports and papers that been categorized and summarized by indicating into source, scope, research method, outcomes, critical evaluation and division of themes to show the findings of the research.*

Keywords: Pico-Hydro, driving, hindering, Generic Reference Model, theme

Abstract ID: **AIMC-2017-STE-1300**

IMPROVED HARMONIC PERFORMANCE OF SEVEN-LEVEL CHB INVERTER USING MULTICARRIER MODULATION AND VARYING THE MODULATION INDEX.

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Abstract

Introduction: *The application of multilevel inverter compared to the conventional two-level inverter in the medium and high voltage grid are increasing over the years due to the numerous advantage provided by the multilevel inverter such as CHBI. The main advantage offered by the multilevel inverter is the increasing number of n levels which enables the generation of higher voltage levels as well as further reduce the harmonic distortion in the output voltage and current. Therefore, the multilevel inverter produces lower THD in terms of performance. This paper proposed the design of a multicarrier modulation with symmetrical voltage input of a single phase seven-level cascaded H-Bridge multilevel inverter (CHBI). The modulation control technique for the power switches of the inverter is the multicarrier PWM technique which focuses specifically on PD technique. The modulation index is varied and the results are measured in terms of THD. The results obtained are analyzed and discussed in this article. The results indicate that the THD is decreasing for increasing values of modulation index.* **Methodology:** *The multicarrier PWM technique utilizes the comparison of a single sinusoidal reference or modulating signal with multiple high switching frequency carrier signals obtained through disposition or shifting. The frequency of the reference signal is usually significantly lower than the carrier signal. In general, the number of carrier signals needed for the multicarrier PWM follows the expression of (m-1) where m represents the level of the multilevel inverter. Multicarrier PWM can be categorized into two types mainly known as phase-shifted modulation and level-shifted modulation.*

This paper used PD modulation method, where the carrier signal is offset vertically. The carrier signal is offset such that all (m-1) carrier signals are in phase to each other. The proposed method is divided into the inverter model and the modulation model. The seven-level CHBI utilizes isolated and symmetrical DC power sources. The power device used for the simulated inverter model is the Metal Oxide Semiconductor Field Effect Transistor. (MOSFET). The simulation parameters are such that each DC power sources are of 100V (Vdc1=Vdc2=Vdc3=100V) and the load which consists of resistive and inductive components which are of 15 Ω *and 0.8 H respectively (R= 15* Ω*, L= 0.8 H). The modulation index, Ma, is then varied (by altering the amplitude of the modulating sine wave) for every interval of 0.1 (0.1 to 1.0). For every 0.1 modulation index, the harmonic performance and the output voltage of the seven-level CHBI is analyzed.* **Findings:** *The multicarrier PWM in this proposed methodology utilizes one modulating signal (sine signal) and six carrier signals (triangular signal). Each carrier signals are of 1V peak-to-peak with a frequency of 2000 Hz while the modulating signal is of 6V peak-to-peak with frequency of 50 Hz. The relational operator in the simulation model is used to compare the modulating signal and carrier signal to produce suitable switching states for the MOSFETs in the seven-level CHBI. The modulation index for the seven-level CHBI is altered for every 0.1 from 0.1 to 1.0. In order to achieve the desired modulation index, the only parameter adjusted is the amplitude of the modulating signal.*

The harmonic performances for each modulation index is successfully recorded.

The general trend of the relationship between the Ma and harmonic percentage is successfully illustrated. The output voltage level also indicates changes from three-level to five-level (at Ma = 0.4) then from five-level to seven-level (at Ma = 0.8) as the Ma increases. **Contribution:** *On the whole, this proposed methodology was successfully described the fundamentals of the seven-level CHBI inverter. The CHBI topology exhibits various advantages including the modular structure as well as easy implementation despite the requirement of additional isolated DC supply for each H-bridge unit. The selected modulation technique of the seven-level CHBI is the multicarrier PWM technique specifically the PD PWM control technique. The reduction in harmonic performance is inversely proportional to the number of level of the multilevel inverter. The analysis from the simulation results reveal that the varying of modulation index, Ma from 0.1 to 1.0 will result in the reduction of harmonic presents as well as the changes in the output voltage levels.*

Keywords: Multilevel Inverter, Cascaded H-Bridge, Multicarrier, Pulse Width Modulation,

Abstract ID: **AIMC-2017-STE-1302**

A WEB-BASED SPECIFIC LEARNING DISABILITIES SCREENING: THE CLASSIFICATION OF FIVE MAIN TYPES

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Abstract

Introduction: *In recent years, extensive use of computer-based method has emerged as a strong tool for solving real life problems especially in screening and diagnosing process. These methods can simulate the real life processes without prior knowledge of the exact relationship between their components. The limitations of the conventional methods for screening and diagnosing in special education call for the integration of knowledge-based expert systems that will lead to more accurate and timely screening and diagnosing. The main idea is to ensure the availability of expertise for decision makers to quick answers or solutions. Currently, there does not exist a global method to cater this specific learning disabilities problems.* **Methodology:** *Thus, motivated by this requirement, this research focuses on the development of a more distinguished and considerable size system which can assists in pre-screening, pre-detection and classification of five major types of specific learning disabilities namely dyslexia, dysgraphia, dyscalculia, dyspraxia, and ADD/ADHD. Specific learning disabilities are an excellent domain as it is complex, contains both rare and frequently occurring disorders with both biomedical knowledge is available and described only in terms of symptoms and signs. The development applied scientific and technical knowledge in order to fulfill its objectives and requirements. It is formed by the adaptation of KBS and expert systems, implemented into a web-based platform, guided by several methodologies namely CommonKADS, knowledge-based systems and expert system development life cycle. The system was developed by using Google AngularJS, AngularJS-UI and Express framework for Node.js as its front end. As for the back end, Node.js acts as a server whilst Red Hat OpenShift acts as a free hosting server and MySQL as KB. The development is formed by several menus or modules namely "What is SpLD", "Pre-Screening Test", "Links", "FAQ" and "Contact Us". The verification and validation was based on the expert judgemental due to construct validity, supported by Analytic Hierarchy Process (AHP) technique.* **Findings:** *From a theoretical standpoint, the target findings can help explain the subtle nuances of the effects of specific learning disabilities towards student learning and performance. Through greater insights, the complex factors (signs and symptoms), interplays or interactions and intervention (remedial measures) for each specific learning disabilities can be better explained to help researchers and scholars to undertake further research using different perspectives, contexts, methods and tools. In term of practical insight, the research findings can assist parents and special educators specifically, and also to schools, institutions, organizations, researchers, special education community and probably the novice psychiatrists generally to learn the proper method in using technology-enhanced learning tools to improve the screening and diagnosing process for pre-detection and classification of five main types of specific learning disabilities. Additionally, developers of knowledge-based expert systems can utilize or adapt the development framework as proposed in this study in designing and developing effective, efficient learning tools or applications, hopefully beneficial for those mentioned earlier.*

Contribution: *On the whole, this system will assist in early screening, pre-detection and proper classification of specific learning disabilities, thus giving better solutions to support special education community in their quest to be with mainstream. It can automatically screen for specific learning disabilities, administered locally without or with minimal expert supervision, supported by a centralized data processing and lead to precise evaluation according to the input of the system. The loss of vital knowledge through the death of domain expertise and the replication of knowledge can also equally be prevented by the backup storage and similarity filtering. However, this is not a purely diagnosis where further diagnosis, treatment and intervention are required. The findings will be inaccurate if the primary problem is physical, mental or emotional factors.*

Keywords: knowledge-based expert systems, classification, pre-detection, specific learning disabilities

Abstract ID: **AIMC-2017-STE-1308**

WATER PONDING MODEL IN HOMOGENOUS MATERIAL WITH VARIOUS GRAIN SIZE

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Abstract

Introduction: *The Green Ampt infiltration theory is often used to determinate water content distribution at ground surface. Some research's results recently had presented the water ponding model from several kinds of*

material, but less of them had illustrated the model patterns in homogenous material with various grain size. This study would like to emphasize the water ponding model of water content distribution of silica sand in three kinds of size. **Methodology:** *The infiltration process had been simulated in precisely soil column apparatus height 50 cm with a diameter of 30 cm as the physical model, and the material was blended by ball mill machine to comparable size of sand, clay and silt, specifically the mesh number 30-60, 100-200 and 200-325, refers to grain size category of AASHTO soil classification. Meanwhile, the soil water retention curve was predicted by Macro-Solver technique in spreadsheet application refer to the van Genuchten function based on the amounts of pF suction result between field capacity (pF 2) and permanent wilting point (pF 4,2) conditions.* **Findings:** *The wetting front speed of the materials were increased dramatically against grain size. The result indicating that the layer is fully saturated at 5030, 2515, 1047 and seconds due saturated water content measured at 0.274, 0.395 and 0.360 respectively, which corresponds to numerical finite different simulation through 1D Crank-Nicolson scheme.* **Contribution:** *The formulation in this model is refining the previous configuration of water ponding phenomena of natural sand, clay and silt soils due to physical movement approach with less chemical reaction.*

Keywords: infiltration, water content, water retention curve

Abstract ID: **AIMC-2017-STE-1309**

BIOETHANOL PRODUCTION FROM LEUCAENA LEUCOCEPHALA SEEDS

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Abstract

Introduction: *Nowadays, utilization of renewable fuel from biomass such as bioethanol is gaining a worldwide attention. Due to the global demand for bioethanol production, edible biomass (corn, sugarcane etc.) could not be the feedstock to solve this issue as their primary use is for food production. Hence, Leucaena leucocephala (non-edible biomass) would be a possible alternative to replace edible biomass. This research deals with seeds of Leucaena leucocephala because there is a limited study on conversion of cellulose obtained from Leucaena leucocephala seeds into bioethanol and the seeds are normally left unused. In this study, therefore, optimization of fermentation parameters such as fermentation days, sugar concentration, yeast concentration and pH was studied. Optimization of these key parameters is important to produce high yield bioethanol from cellulose obtained from Leucaena leucocephala. The question is what is the best optimum parameter for the highest yield of ethanol? Objectives of this research are to determine the optimum parameters for the fermentation of anhydrous glucose with yeast, to convert cellulose from Leucaena leucocephala seeds to ethanol using optimized conditions, to detect the presence of ethanol from Leucaena leucocephala seeds by using GCMS headspace and to calculate the percentage yield of ethanol.* **Methodology:** *Yeast (Saccharomyces cerevisiae) was procured from local supplier. Yeast was used to convert glucose into ethanol. This conversion was called as fermentation. Fermentation was occurred in closed flask at fixed temperature (Periyasamyetal., 2009) with constant amount of yeast, amount of glucose and uncontrolled pH. After day 1, 3, 8 and 10, mixture in flask was then filtrated by using filter paper. Next, filtrated product was distillated. Distillated product would be ethanol. Ethanol was then analyzed by LabAlliance Company. They were used Gas Chromatography Mass Spectrometry (GCMS) Headspace for analysis of ethanol. The highest yield of ethanol would be optimum parameter for day. Yield of ethanol was obtained by using formula as shown below:*

Percentage Yield (%) = (Actual Yield x 100)/ Theoretical Yield

Experimental procedure in optimizing days was repeated in optimizing amount of glucose, amount of yeast and pH. However, optimization for amount of glucose was used different amount of glucose and same amount of yeast with uncontrolled pH in optimized day. Next, optimization for amount of yeast was used optimized amount of glucose, different amount of yeast with uncontrolled pH in optimized day. Optimization for pH was then carried out by using optimized amount of glucose, optimized amount of yeast with different pH in optimized day. Next experiment would used cellulose from Leucaena leucocephala seeds and blended Leucaena leucocephala seeds instead of glucose. These materials were obtained from Biomass Energy Laboratory collection. Fermentation for cellulose and Leucaena leucocephala seeds were then take place by using optimized day, amount of glucose, amount of yeast and pH. **Findings:** *Table 4.1: Yield of ethanol for optimization of fermentation days*

Period of Time Taken, day	*Yield of Ethanol, %*
1	*1.45*
3	*4.71*

8 4.35
10 2.54

Table 4.1 showed the yield of ethanol for optimization of fermentation days. It was observed that day 3 was the optimum of fermentation day as ethanol is produced at the highest yield which was 4.71%.

Based on table 4.1, Tahir et al. (2010) stated that ethanol production initially begins at a low level. The yield of ethanol is then increased as the number of yeast cells increased. After optimum fermentation time, the amount of sugar would decrease and the yield of ethanol would be inhibited. Fermentation would continue until almost all of sugar amount is utilized by yeast.

Table 4.2: Yield of ethanol for optimization of glucose amount

Amount of Glucose, g	*Yield of Ethanol, %*
10	*0.36*
15	*0.95*
20	*3.94*
30	*2.36*

Table 4.2 showed the yield of ethanol for optimization of glucose amount. It was proved that 20 g of glucose is the optimum glucose amount as it produced the highest yield of ethanol which was 3.94%.

Based on table 4.2, Periyasamyet al. (2009) said that the yield of ethanol increases with increasing amount of sugar. Maximum yield of ethanol is achieved at a certain amount of sugar. The yield of ethanol would be inhibited with increasing amounts of sugar.

Table 4.3: Yield of ethanol for optimization of yeast amount

Amount of Yeast, g	*Yield of Ethanol, %*
1	*5.92*
2	*4.14*
3	*6.21*
4	*0.89*
5	*0.79*

Table 4.3 showes the yield of ethanol for optimization of yeast amount. It was indicated that the highest yield of ethanol is achieved by using 3 g of yeast which was 6.21%. Thus, 3 g of yeast would be the optimum yeast amount.

Based on table 4.3, Periyasamyet al. (2009) stated that the yield of ethanol would increase when the amount of yeast is increased. After that, the yield of ethanol starts to decline.

Table 4.4: Yield of ethanol for optimization of pH range

pH Range	*Yield of Ethanol, %*
4.0 – 4.6	*1.87*
6.0 – 6.6	*1.58*
7.0 – 7.6	*1.78*

Table 4.4 shows the yield of ethanol for optimization of pH range. It is stated that the highest yield of ethanol was achieved at 1.87% after the pH range was between 4.0 and 4.6. Hence, the pH range between 4.0 and 4.6 would be the optimum pH range.

Based on table 4.4, according to Periyasamyet al. (2009), bioethanol production would increase from a low pH to a high pH. However, ethanol reached its peak when pH is at 4.0. Then, ethanol production started to decrease as the pH increased. This is because there is low activity of yeast.

Table 4.5: Yield of ethanol for amount of CLLS and LLS

Raw Materials	*Yield of Ethanol, %*
CLLS	*0.07*
LLS	*0.07*

Both amount of CLLS and amount of LLS achieved the same yield of ethanol at 0.07%. This yield of ethanol could be indicated by using an arrow in figure 4.5. This is because CLLS and LLS were originated from the same Leucaena species. This ethanol was yield during the fermentation process in optimum conditions. These optimum conditions are 3 days, 20 g of CLLS and LLS respectively, 3 g of yeast and a pH range between 4.0 and 4.6.

Calibration curve is defined as the unknown concentration of a compound is being compared with a known concentration of another compound. Based on figure 4.5, the presence of ethanol for yield of ethanol from the

amount of CLLS and LLS could be proved by indicating an arrow. This calibration curve was generated by using Agilent GC/MSD.

However, the yield of ethanol for amount of CLLS and amount of LLS is the lower than the optimum of day, optimum of glucose amount, optimum of yeast amount and optimum of pH range. The lowest yield of ethanol is caused by, yeast, Saccharomyces cerevisiae that cannot degrade cellulose components. Hence, ethanol cannot be obtain directly from cellulose (Cho et al., 1999). If the cell surface of yeast is being modified, ethanol could be produced directly from cellulose. **Contribution:** *This study concludes that optimum conditions such as optimum of fermentation day, optimum of glucose amount, optimum of yeast amount and optimum of pH range are day 3, 20 g of glucose, 3 g of yeast and a pH range between 4.0 and 4.6. Meanwhile, same yield of ethanol could produce from the amount of cellulose obtained from Leucaena leucocephala seeds, CLLS and amount of Leucaena leucocephala seeds LLS by using optimum conditions with the help of Saccharomyces cerevisiae. Hence, Leucaena leucocephala seeds could be a renewable source which can potentially replace non-renewable sources in the production of ethanol.*

Keywords: Seeds of Leucaena leucocephala, optimum parameters, fermentation.

Abstract ID: **AIMC-2017-STE-1311**

EFFECT OF HUMIDITY ON TROPOSPERIC RADIO SIGNAL STRENGTH (UHF) AT KUSZA OBSERVATORY, TERENGGANU

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Abstract

Introduction: *Many communication systems and wireless sensor networks are exposed to weather condition fluctuations, which can cause severe deterioration in system performance. Therefore, it is very necessary to explore the factors that influence the quality of the radio signal to adapt to the weather conditions. In this paper, we study the tropospheric effect of the meteorological parameter (humidity) for Ultra High Frequency (UHF) band at KUSZA Observatory (KO), UniSZA, Terengganu.* **Methodology:** *Radio signal strength (RSS) and humidity were collected using spectrum analyzer and weather station respectively for 24 hours in hot season. Statistical analysis was used to determine the relationship between humidity and RSS.* **Findings:** *The results show that changes in weather conditions affect received signal strength. The correlation of the radio signal strength and humidity for frequency 382.5 MHz (r= -0.17), while for frequency 945 MHz (r= 0.07), frequency 1867.5 MHz (r= -0.32) and frequency 2160 MHz(r=- 0.20).* **Contribution:** *This study will benefit the active spectrum users such as mobile telecommunications, wireless signal, satellite transmission TV and radio astronomy expert in the management of radio frequency Interference (RFI) for the observation and monitoring of the radio signal transmission.*

Keywords: Meteorology, Radio signal, UHF, Relative humidity (Atmospheric humidity)

Abstract ID: **AIMC-2017-STE-1315**

OPTICAL AND ELECTRICAL STUDY OF BIOPOLYMER BASED ON METHYLCELLULOSE DOPED WITH CANO3

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Abstract

Introduction: *Technology nowadays emphasize of "green materials" aspect to avoid the all profanation environment and energy disaster. The new biopolymer electrolytes (BPE) product are to lower the cost and being environmentally green compare synthetic polymer electrolytes. Through this research, use Methylcellulose (MC) biopolymer act as polymer electrolyte. Besides, MC is biodegradable cellulose ether presents good solubility in water at low temperature. In addition, the biopolymer of MC as the host polymer are mix with Ca(NO3)2 (CN) salt to increase the conductivity and achieve the standard characterize of electrolyte which help in the system of application such as solar cell, battery and others.* **Methodology:** *Solid biopolymer electrolyte thin films were prepared by using cast technique. MC from Sigma Aldrich were dissolved into different amounts of wt% of CN salt from Merck KGaA in distilled water and stirred continuously until the salt was dissolved completely. Then, make sure the salt and polymer complex were homogenously mixed and were poured into different polystyrene petri dishes and left to evaporate the mixtures under room atmosphere.*

Besides, the optical and electrical characteristics of the samples was study by using Fourier Transform-Infrared (FTIR) spectroscopy, X-ray Diffraction (XRD) and Electrical Impedance Spectroscopy (EIS). Furthermore, FTIR spectroscopy, model of Thermo Nicolet Avatar 380 FT-IR spectrometer are to study the synergy of the biopolymer provide and the salts. While, it study the complex nature and functional groups present in complex electrolyte. The sample also was analysed by using XRD. It was investigated the XRD patterns at room temperature and the amorphous structure of the sample on a MiniFlex II diffractometer equipped with an X'celerator, using Cu Kα radiation in the range of 2θ=5° to 80°. The sample were measured the conductivities of MC-Ca(NO3)2 by EIS using a Hioki 3532-50 LCR Hi-Tester interfaced to a computer with used a frequency range between 50Hz to 1MHz. **Findings:** *FTIR analysis performed investigate the compositional, structural and interaction bonding between MC and CN in BPE system. The peak at 1055 cm-1 is described as the antisymmetric stretching of asymmetric oxygen bridge in the cyclohexane ring with range between 1150 to 1000 cm-1 is C-O-C bond. Consequent to addition of CN salt, Ca will provide as cation that will attract at the oxygen atom at C-O-C bond of the ether group in the polymer host to form polymer salt complexes. The amorphous on crystallinity of the polymer film respect to pure MC and CN complex have been examine by XRD. The pattern of x-ray diffraction of pure MC and samples 0, 5, 10, 15, 20, and 25 wt% at room temperature from 2θ=5° to 80° was observed. The pattern for pure MC shows two peaks, at 2θ=8° and 21°. The conductivity of MC without salt is ≈10^-10 S/cm and it increase distinctly to ≈10^-7 S/cm on complexing the MC with CN. In this case can relate that the current carriers are ions and the total conductivity mostly the result of ion conduction. The value of conductivity occur with incorporation of the CN and reaches maximum value of 2.21×10^-7 S/cm for sample with 25 wt%.* **Contribution:** *Nowadays so many research based on biopolymer electrolyte. However, the Methylcellulose (MC) biopolymer electrolyte is rarely study in the open literature. This research used main biopolymer of MC because it is the host in anionic conducting polymer electrolytes. There are several main interest of this study, which is to establish a low cost, natural, and biodegradable of renewable polymer electrolyte base on MC. However, the ability of MC as BPE will be investigated widely by characterized of optical, electrical and conductivity studies.*

Keywords: Polymer electrolyte; FTIR; Conductivity; XRD; Methylcellulose

Abstract ID: **AIMC-2017-STE-1318**

ANALYSIS OF BANANA VOLATILE COMPOUNDS BY USING FOURIER TRANSFORM INFRARED SPECTROSCOPY

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Abstract

Introduction: *Fruits release specific volatiles during their ripening process which lead to spoilage. The volatiles released are varied with the storage time and spoilage stage.* **Methodology:** *In this study, the volatiles released from the fruits are analysed by using Fourier Transform Infrared Spectroscopy (FTIR). A comparative study on using natural and artificial ripening agents has been done to demonstrate the ripening process of banana by observing the volatiles released. For this purpose, apple is used as the natural ripening agent while calcium carbide is used as the artificial ripening agent which speed up the ripening process of banana.* **Findings:** *It was observed from the FTIR spectra obtained for banana and apple that ethanol, ethylene and carbon dioxide are released during their ripening while acetylene is also found when calcium carbide is used. The relation between the concentration of these compounds and the storage time is also determined.* **Contribution:** *The finding of this study will benefit fruits classification during the storage and transportation by having better control of the fruits spoilage. Furthermore, fresher and safer fruits to be consumed are targeted as comparing the usage of natural and artificial ripening agents has been done.*

Keywords: Fourier Transform Infrared Spectroscopy, Banana, Volatiles, Fruits, Spoilage

Abstract ID: **AIMC-2017-STE-1320**

THE EFFECT OF TEMPERATURE ON THE CHROMIZING PROCESS FOR FERRITIC-MARTENSITIC STEEL

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Abstract

Introduction: *It has been well known that the oxidation behaviour of ferritic-martensitic steel in steam condition is different in dry condition. The formation of protective chromia (Cr2O3) layer was retarded in the presence of hydrogen steam and makes the oxidation rate higher than that in dry condition.* **Methodology:** *In this work, chromizing is introduced to diffuse Cr on the surface of ferritic steel so that it can act as a reservoir for the formation of Cr2O3. The chromizing process was conducted by exposing T91 steel sample that was already put in the Alumina crucible that contain the chromizing mixture powder at 600ºC-1050ºC for 2 h.* **Findings:** *It was found the Cr layer on top of the surface is about 6µm while it diffused into steel for about 15µm depth at 1050ºC.* **Contribution:** *Experimental results under the laboratory setting conducted for chromizing process for ferritic-martensitic steel for the proposed to produce Cr and diffuse Cr into the steel to prevent the formation of non protective oxide. There are already a few research about chromizing. However, the steam oxidation test on chromized steel at future expected operating temperature of power plant are still do not have enough data and limited. This research is still new and have a very good benchmark for contribution to knowledge and environment in order to improve the efficiency of power plant.*

Keywords: Ferritic-martensitic steel, chromizing process, steam condition, oxidation rate.

Abstract ID: **AIMC-2017-STE-1325**

COMMUNITY ENGAGEMENT IN THE CONTEXT OF FACILITIES MANAGEMENT

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Abstract

Introduction: *Community Engagement is generally described as the opportunity, capacity and willingness of individuals to work collectively to shape public life. This concept has been practiced widely in the field of public health, town and regional planning, governance, community development, tourism as well as education. However research on community engagement in the field of facilities management is scared. Therefore, this article explored precedent researches pertaining community engagement in in the setting of built-environment and specifically facilities management.* **Methodology:** *The methodology employed is systematic literature review on journal articles, proceeding papers as well as Phd theses accessed through online databases subscribe by the university via entering keywords of 'community engagement' AND 'facilities management'.* **Findings:** *The result revealed sufficient amount of researches published on the selected topic. A critical review on these literature supports for upcoming research on community engagement in mosque setting in the lenses of mosque as a community facility.* **Contribution:** *This research contributes to the facilities management body of knowledge (FMBOK) and can be implemented in researches on community facilities.*

Keywords: Theory of community engagement, community facilities, facilities management

Abstract ID: **AIMC-2017-STE-1326**

CAPABILITIES OF ENHANCED CONTINGENT VALUATION METHOD FOR HERITAGE PROPERTY VALUATION

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Abstract

Introduction: *There is evidence that contingent valuation method of stated preference method is the most accepted method for heritage property valuation in many countries. However, it is limited to heritage property in non-active market or non-transacted goods of property such as air and water quality, outdoor recreation, wetlands, wilderness areas and historical site (grade I) includes museum, mosque and monument. Even though, the application of contingent valuation method most focusing on non-active market or non-transacted goods, there are several real estate economists, appraisal and analysts has attempted to extended the contingent*

valuation method in active real estate markets. One of the study is by Roddewig et al. (2006) were the authors concludes that contingent valuation method is not an appropriate method to value active real estate market because it not incorporate with many factors that go into real estate purchase and sale decisions. However, according to authors, to overcome this problem, there are ways to improve the reliability and validity of contingent valuation method for real estate valuation. Therefore, the aim of this paper was to evaluate the capability of contingent valuation method in valuing heritage property with active market but with limited transaction for example prewar shophouse and prewar housing. The uniqueness of contingent valuation method is by applying people preference in obtaining the market value of heritage property. **Methodology:** *The sources of contingent valuation survey are based on primary data collected from 100 respondents from owners and tenants of pre-war shophouse in Kota Bharu, Kelantan, Malaysia involving 1 dependent variable and 7 independent variables. This stage adopts probit regression analysis based on contingent valuation survey in obtaining the willingness-to-pay and market value of shophouse heritage property.* **Findings:** *The findings shows that contingent valuation method is capable to be used as an alternatives method in valuing heritage property with active market because the value produce by this method is similar with market value. Besides, the contingent valuation method also fulfils the requirements by Roddewing et al. (2006). This suggests that contingent valuation method is capable for heritage property valuation for active market with limited transaction.* **Contribution:** *The use of the CV method for measuring the value of historical building with consideration of thin market is a novel attempt. This study provides empirical evidence by establish an effective approach for heritage property valuation considering the reliability, validity and practicality aspect.*

Keywords: Stated preference method, contingent valuation method, limited transaction, heritage property, property valuation

Abstract ID: **AIMC-2017-STE-1327**

AN EMPIRICAL STUDY WITH FUNCTION POINT ANALYSIS FOR REQUIREMENT CHANGES DURING SOFTWARE DEVELOPMENT PHASE

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Abstract

Introduction: *Changes occurs at any stages during the development of a software system. Accepting too many changes may rise cost and time of the software development. However, rejecting changes may increase customer dissatisfaction. Software effort estimation is one of the methods that can help software project managers to make an effective decisions. Literature present that several software effort estimation methods have been introduced and Function Point Analysis (FPA) is one of the methods. FPA method commonly is used for software effort estimation in the early phases of software development cycle when the requirements are pre-defined. Our previous works have shown that it is a challenging task to implement FPA method in software development phase due to the inconsistent states of software artifacts such as (1) some of the artifacts are fully developed, (2) some are partially developed and (3) some are not developed yet. Hence, a study is conducted on FPA method to analyze the capability of the FPA methods to support change effort estimation in the context of software development phase. From the study, we found that the FPA is not able to present the: (1) current state of software artifacts; and (2) impact of change on software artifacts. As a result, we recommended in our future works that the integration of FPA method with impact analysis technique that can overcome the limitations and potentially giving higher accuracy of change effort estimation results.* **Methodology:** *Using Function Point Analysis in an empirical study (Course Registration System (CRS))for requirement changes during software development phase* **Findings:** *From the study, we found that the FPA is not able to present the: (1) current state of software artifacts; and (2) impact of change on software artifacts.* **Contribution:** *The novelty of this study is that we are using FPA method for requirement changes in software development phase. While previously FPA was used for pre-defined software requirements.*

Keywords: Software Effort Estimation, Function Point Analysis, Requirement Changes, Software Development Phase.

Abstract ID: **AIMC-2017-STE-1329**

SIMULATING ENERGY ABSORPTION IN ALUMINIUM FOAM SANDWICH USING NEURAL NETWORK METHOD

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Abstract

Introduction: *Energy absorption capability is one of the important aspect that affects the structural design and material properties in automotive application. For the development of aluminium foam sandwich, not only to maintain the high ratio of stiffness, deformation behavior, but also good energy absorption of aluminium foam sandwich levels need to be achieved. There were many different types of methods that can be used to simulate the reliable optimization model through statistical analysis. Therefore, this current study aims to develop and optimize the parameters using neural network to predict the energy absorption behavior for different design based on skin to core ratio of aluminium foam sandwich.* **Methodology:** *In order to achieve the objectives of research, an integrate approach between experimental work and artificial method have been conducted. For this current study, aluminium foam sandwich was used for conducting the experimental work. Aluminium foam were attached together with aluminium sheets using epoxy resin with hardener ratio of 2:1 to fabricate aluminium foam sandwich. According to ASTM standard of C393, the preferable ratio for designing sandwich structure should be approximately less or equal to 0.10 in order to select the suitable thickness for core and skin. Taguchi design, L8 have been conducted with two level of thickness of core which were 6.35 and 10 mm, whereas three level of thickness of aluminium sheets which were 0.4, 0.6 and 0.8 mm respectively by considering the standard ratio of sandwich structure. Six samples of data have been collected based on two levels of core thickness and three levels of skin thickness* **Findings:** *The statistical analysis were extracted from experimental work using Monte Carlo method by creating 1000 random runs and this results were used to develop new model for energy absorption based on different levels of skin and core thickness using artificial neural network. Modeling results shows that as skin thickness increase, the energy absorption as well as signal to noise (SN) ratio increase. This results also in line with increasing core thickness will increase the energy absorbed as well as signal to noise (SN) ratio. Hence, signal to noise (SN) ratio for experimental work shows the positive result. One of the significant findings to emerge from this study is the ratio between skin to core thickness. It shows that the best ratio of skin to core thickness is 0.08 which is in allowable ranging based on ASTM C393.*

Contribution: *This current study will help to provide the reliable compression test data by statistical approach that can be used to analyze energy absorption behavior of aluminium foam sandwich in industrial application.*

Keywords: Energy absorption, Aluminium foam sandwich, Neural network, Monte Carlo method

Abstract ID: **AIMC-2017-STE-1331**

WATER PONDING MODEL IN HOMOGENOUS MATERIAL WITH VARIOUS GRAIN SIZE

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Abstract

Introduction: *The Green Ampt infiltration theory is often used to determinate water content distribution at ground surface. Some research's results recently had presented the water ponding model from several kinds of material, but less of them had illustrated the model patterns in homogenous material with various grain size. This study would like to emphasize the water ponding model of water content distribution of silica sand in three kinds of size.* **Methodology:** *The infiltration process had been simulated in precisely soil column apparatus height 50 cm with a diameter of 30 cm as the physical model, and the material was blended by ball mill machine to comparable size of sand, clay and silt, specifically the mesh number 30-60, 100-200 and 200-325, refers to grain size category of AASHTO soil classification. Meanwhile, the soil water retention curve was predicted by Macro-Solver technique in spreadsheet application refer to the van Genuchten function based on the amounts of pF suction result between field capacity (pF 2) and permanent wilting point (pF 4,2) conditions* **Findings:** *The wetting front speed of the materials were increased dramatically against grain size refer to the unsaturated hydraulic conductivities function of water content are approximately, Ku1 = 58003x5 - 46344x4 + 14162x3 - 1595.3x2 + 67.441x - 0.6891, Ku2 = 383595x5 - 240440x4 + 57487x3 - 5756.1x2 + 238.84x - 3.1811 and Ku3 = 156176x5 - 139144x4 + 44860x3 - 6151x2 + 336.75x - 5.52 with correlation coefficients are 1, 0.9999 and 0.9954. The result indicating that the layer is fully saturated at 1047, 2515, and 5030 seconds due saturated water content measured at 0.360, 0.395 and 0.274 respectively, which corresponds to numerical finite different*

simulation through 1D Crank-Nicolson scheme **Contribution:** *The formulation in this model is refining the previous configuration of water ponding phenomena of natural sand, clay and silt soils due to physical movement approach with less chemical reaction.*

Keywords: infiltration, water content, water retention curve

Abstract ID: **AIMC-2017-STE-1332**

MEASURING SEVERITY OF DOWNTIME INFLUENCE FACTORS TO NAVAL SHIP OPERATIONAL AVAILABILITY – A DELPHI STUDY

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Abstract

Introduction: *With increased ship complexity, size and revolutionary design, organisations strive to balance ideal maintenance philosophies against on-going efforts of cost reduction whilst maintaining high availability of vessels. Despite continuous efforts Royal Malaysian Navy (RMN) vessels currently maintained under the In Service Support (ISS) Contracts aspire to improve their availability. Due to limited research on Downtime Influence Factors (DIFs) on ships, improvement efforts could not be allocated precisely in tackling issues involving combined "human and equipment" aspects impacting ship availability. The purpose of this study is to generate RMN ship maintenance DIFs and their severity measures via a Delphi approach.* **Methodology:** *The identification of research variables commenced with a detailed Literature Review (LR). A generic list of variables or DIFs were compiled and subsequently pooled in relevant categories. Due to the limited research available on ship DIFs, an exploratory study across various engineering disciplines was devised and conducted in the form of a 3-Stage Exploratory Sequential Mixed Method Modified Delphi.*

In the first stage, Focus Group Discussions (FGD) amongst 30 panel experts were conducted in order to perform initial face validation of the LR of identified DIFs. In the second stage, defined as Delphi Round 1, a survey is conducted with 30 experts directly involved in daily implementation of naval ship maintenance contracts to identify and confirm the ship DIFs and apply Risk Assessment Method to identify the Impact and Likelihood of the DIF occurrence on Ship Availability with a view to rank and subsequently prioritize the DIFs in the third stage. In the third stage, defined as Delphi Round 2, a further survey is conducted with the same experts to validate the results from the previous round and to measure the consensus. A severity cut-off point for the DIFs is determined and a list of severe DIFs is produced.

Findings: *The FGD in the first stage complemented the findings from the LR to populate the factors affecting the operational availability of ships. At the completion of pooling and redefining of the terms for the DIFs, an agreed list of 50 DIFs were generated and confirmed by all 30 panel expert members with a 100% agreement.*

In the second stage, Delphi Round 1, the list of 50 DIFs for ship availability was generated and the DIFs were ranked from most to least severe. Based on the cut-off point of "high impact" and "likely" probability of occurrence, 15 DIFs were revealed as "Severe DIFs".

In the third stage, Delphi Round 2, the same expert panellists were asked to re-assess their "Severe DIFs" ratings in light of the consolidated results obtained from the second stage. A high consensus amongst experts was achieved. The results confirmed that the agreement level amongst the panel members had improved. In addition, the results indicate all rankings of the Severe DIFs remain unchanged when compared with the consolidated results from the second stage.

Contribution: *This research is probably the most comprehensive study of its nature in consolidation of DIFs in the naval ship domain. The research pinpointed to 15 severe DIFs as the key problem areas for prioritization of efforts in improving RMN ship availability. Setting basis of new knowledge on combining "human and equipment" related factors to downtime which directly impact the availability of naval vessels.*

As the DIFs were originally populated from the various engineering fields, it is the author's intention that the consolidated results shall be shared back to the other engineering fields for future reference.

Keywords: Naval vessels, Navy Ship Maintenance, Ship Operational Availability, Downtime Influence Factor (DIFs), Delphi Method

Abstract ID: **AIMC-2017-STE-1333**

ASSESSMENTS ON HOUSEHOLD ANAEROBIC BIOREACTOR AS PROSPECTIVE HOUSEHOLD ORGANIC WASTE TREATMENT FOR ENERGY RECOVERY

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Abstract

Introduction: *Household organic waste (HOW) generates from residential areas is the single largest portion of waste in Malaysia. HOW mainly constitutes from food waste and other organic waste are potential substrate for renewable energy production by means of biological treatment technology; anaerobic digestion (AD). The objective of this study is to determine methane (CH4) yields and maximum CH4 production (%) in wet digestion (<10% TS) and dry digestion (>10% TS) in 200 L household anaerobic bioreactor working in mesophilic (37oC) condition, while pH level was maintained at optimum level (6.0 – 7.2) by controlling the buffer capacity of the bioreactors.* **Methodology:** *Anaerobic digestion of household organic waste was examined using batch experiments at solid contents of 5%, 10% and 15%. The assays were conducted in 200L household bioreactor™ (NUKLEARMALAYSIA ref no:2016/L/26) with total working volume of 160L. The reactor incorporated with 2 separated ports inlets for different function of feedstock feeding, biogas measurement and biogas collection that connected to 40L×3 standard FlexFoil gas bag with single polypropylene fitting (SKC brand;USA) with single outlet for digestate sampling. Liquid and gas sampels were taken at regular time intervals. Each digester was manually mixed once a day. The biogas production volume standard temperature and pressure is measured periodically by water displacement method and calculated as volume at STP condition. All the analytical procedures were conducted based on Standard Procedures (APHA, 2007).* **Findings:** *The results revealed that with the increasing contributions of HOW, the CH4 yield of mixtures increased just due to its higher CH4 potential. The highest CH4 production was 63.7 L CH4 / kg VS (5% TS) followed by 29.8 L CH4 / kg VS (10% TS) and 10.5 L CH4 / kg VS (5% TS). The accretion of 5% of TS in AD system boost approximately 30 – 60% raise in CH4 production. Based from correlation test, TS (%) has positive-strong relationship with CH4 production with $\rho = 0.980$ (significant at the 0.01 level 2 tailed). The results clearly demonstrate that the increase of TS content in substrate has certain effect on optimum CH4 production offering potential organic waste treatment and alternative renewable energy resource.* **Contribution:** *The result from this research can be used to develop household/centralized treatment option for household organic waste in Malaysia. In the National Key Economic Areas, the oil, gas and energy sector would gain benefits from this research because by-product from the anaerobic digestion could be used to supply energy to small community. The development of the treatment plant in vicinity of the community would potentially increase public participation thus will significantly reduce the transportation cost of MSWM.*

Keywords: Dry Anaerobic Digestion, Household Organic Waste, Household Bioreactor, Correlation Coefficient

Abstract ID: **AIMC-2017-STE-1334**

PHYSICAL FATIGUE DETECTION USING ELECTROMYOGRAM DURING RUNNING ACTIVITY

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Abstract

Introduction: *Running is one of the most popular sports activities and it was significantly affected to the lower limb region. Understanding of lower extremity biomechanics during running is important for the prevention from injuries. Therefore, the purpose of this paper is to use electromyogram (EMG) as an indicator device to detect physical fatigue during running activity.* **Methodology:** *By inducing fatigue to the subject through an aerobic exercise, they required to running on the treadmill until volitional fatigue condition. There are three level of intensities by increasing the speed of treadmill in order to reach fatigue faster which is light, medium and hard. Prior to start the running, rating of perceived exertion (RPE) is educated to each of them by using 20-point Borg scale method and it was carried out in 2 minutes interval. A prototype of EMG was used to measure gastrocnemius lateralis (GL) muscle activity when running activity has performed. Reducing amplitude and frequency of EMG over time is an indicator or detection of fatigue condition.* **Findings:** *Based on the results, fatigue detection by using EMG amplitude is promising when compared to the RPE method. When fatigue occurred, the signal was decline time by time until it reached the plateau condition. This fatigue threshold can be used to compared with Borg scales in order to synchronized the measurement.* **Contribution:** *Traditionally, fatigue is detected by using fatigue index form that required to fill in every selected time interval. However, this*

method is depends on the subjective feeling of the subject and it was not accurate compared to the scientific value measured from the device. On the other hand, EMG measurement is can be automated by programmed it based on the fatigue threshold value. Therefore, this study is significant to facilitate improvements in the prediction of physical fatigue that will lead to exhaustion during exercise.

Keywords: Physical Exercise; Running; Electromyogram; Fatigue.

Abstract ID: **AIMC-2017-STE-1338**

DAMAGE IDENTIFICATION BASED ON CURVATURE MODE SHAPE USING LAGRANGIAN INTERPOLATION AND UNEVEN GRID SPACING FINITE DIFFERENCE

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Abstract

Introduction: *Structure Health Monitoring (SHM) is one of important tools to maintain safety and integrity of structure such as aircraft, machinery, multi-storey building and bridges. A reliable non-destructive identification (NDI) is important to ensure effectiveness of such monitoring system.*

Gapped smoothing method (GSM) is most popular non-destructive identification (NDI) method due to its simplicity and did not require baseline data for comparisons. However, GSM required huge number of measurement data and sensitive to evenness of mesh grid spacing to determine damage location accurately.

Objective of this study is to improve current GSM algorithm using Lagrangian Interpolation Formula (LI) and uneven grid spacing finite difference (UGS) to alleviate noise at boundary. **Methodology:** *from Finite Element Analysis (FEA) for data processing using Lagrangian Interpolation Formula (LI). This method expected to allow for less data required from inspection process.*

In addition, was using Uneven Grid Spacing Finite Difference (UGS) was used in calculation of curvature mode shape to alleviate noise near boundary of the beam in Structural Irregularity Index (SII) due to uneven mesh grid spacing.

In this study, four cases was considered. Two cases are to study effectiveness of UGS to alleviate noise near boundary of the beam in Structural Irregularity Index (SII) due to uneven mesh grid spacing. While, another two cases to study effectiveness of LI to improve current GSM algorithm by increase number of data points for data processing to identify damage location. **Findings:** *Result shows natural frequency data from FEA and experimental data (Ratcliffe, 2009). Only the first four bending mode shapes are considered for data processing. The difference between experiment and FEA is less than 3% for the first four bending mode shapes, it indicates that the data from FEA have good correlation with experimental data.*

Curvature plot shows that CMS for with Lagrangian interpolation case has lower magnitude of CMS compared to without Lagrangian interpolation case. Decrease in CMS magnitude for with Lagrangian interpolation case compared to without Lagrangian interpolation case caused by gradual changes in two successive FEA transverse displacement nodes due to presence an 'extra' interpolation node in between at the bending point. Hence, the deviation in curvature mode shape data for with Lagrangian interpolation case is clearly observed compared to without Lagrangian interpolation case which show damage location with better refinement.

In addition, Result shows damage detection using LI and UGS has better accuracy by reducing noise at boundary condition in SII from 90% to 23% compared to GSM Algorithm. **Contribution:** *This study is to extend current GSM algorithm to detect damage in 1D beam by using Lagrangian Interpolation Formula (LI) and Uneven Grid Spacing Finite Difference (UGS). Lagrangian Interpolation Formula was used to enhance detection of damage by increase number of calculation data.While UGS equation is to alleviate noise near boundary of the beam due to uneven grid spacing. Uneven grid spacing finite difference allows for less measurement data and shorten time for inspection process.*

Keywords: Vibration-based Damage Detection, Lagrangian Interpolation, Uneven Grid Spacing Finite Difference, Curvature Mode Shape.

Abstract ID: **AIMC-2017-STE-1340**

OPTIMIZATION OF ELECTROSPINNING OF POLYURETHANE SCAFFOLDS FABRICATION USING RESPONSE SURFACE METHOD (RSM)

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Abstract

Introduction: *Electrospinning is versatile method that can produce various range of fibre diameters. The experimental design using Box-Behnken and response surface methodology (RSM) have been used to develop predictive models for simulation and optimization of the parameters that influence the average fibre diameters of electrospun polymers.The objectives of this paper are to study the effect of electrospinning variables (applied voltage, concentration of the PU polymer solution, flow rate and distance between the needle tips and the collectors) and also to find the optimum condition for the PU polymer scaffold.* **Methodology:** *A. Materials, Apparatus and Software*

Polyurethane pellet (Selectophore) was purchased from Sigma Aldrich. Tetrahydrofuran and N,N-dimethylformamide was used as a solvent in fabrication procedure was supplied by Merck. The diameters and morphology of electrospun fibers was analyzed by using scanning electron microscope (SEM, JOEL JSM-6701F,) after platinum coating. The statistical software used for regression analysis of experimental data is Design expert version 8 from Stat-Ease.

B. Preparation of electrospun PU scaffolds.

The electrospinning process starts with the preparation of PU solution. The solvent used was the mixture of DMF and THF with 1:1 ratio. PU pellet was solubilized in DMF: THF with continuous stirring for 12 hour at room temperature. PU with concentration 8wt%, 10wt% and 12wt% were prepared. The electrospinning process is set-up using horizontal layout with independent variable; distance (10 to 22cm), flow rate (0.3-1 ml/h), voltage (10-25Kv). Average fiber diameter (AFD) of electrospun scaffold is the response of the design determine by SEM image. The Stat-Ease Design Expert 8.0 software was used to evaluate the statistical design of experiment and data analysis of variance (ANOVA). Total twenty-seven run of experiments were obtained by using Box-Behnken quadratic order of polynomial model. **Findings:** *This research conducted to study the behavior of factors toward average fiber diameter, proposing mathematical formula equation and the interaction between factors.*

The effect of dependent variable (average fiber diameter) with independent variable; distance (10 to 22cm), flow rate (0.3-1 ml/h), voltage (10-25Kv) and concentration (8-12wt%)) was shown in Equation (1) in term of coded factors.

$$y=0.63 - 6.667\text{-}3a1 - 1.667\text{-}3a2 + 8.333\text{-}3a3 + 0.075a4 - 0.055a1a2 - 0.025a1a3 + 0.010a1a4 - 0.032a2a3 + 7.5\text{-}3a2a4 + 0.013a3a4 - 0.049a12 + 0.029a22 + 0.021a32 + 0.011a42 \quad (1)$$

The result obtained point out that concentration of polyurethane had a significant influence on the average fiber diameter instead of voltage, distance and flow rate which is insignificant.

It can be concluded that fiber diameter which lower than 0.6μm can be produced when the concentration is less than 8.5wt% by evaluation of counter plot.

The optimum value of experimental parameters was as follows: Applied voltage: 17.5 kV, Flow rate of the solution: 1 ml/h, Distance between tip of needle and collector: 22cm, concentration: 10 wt%. Under this condition, 520 nm electrospun fiber was produced which was in close agreement with the value predicted from the proposed model. **Contribution:** *Study on effect of parameter on PU using statistical design of experiment (DoE) and response surface method (RSM) is not been study yet. Classical method of optimization is using technique where one independent variable is changed while maintaining the others fixed at given value. It is well known, the classical method of optimization involved many tests which are time consuming, costly, ignores interaction effects between the operating parameters and induced low efficiency in optimization. These limitation can be avoids by applied DoE and RSM in which all factor are varied together in one set of experimental run even in the present of complex interaction.*

Keywords: Polyurethane, Electrospinning, Box-Behnken Design, Response Surface Method, Optimization

Abstract ID: **AIMC-2017-STE-1343**

REACTIVITY ANALYSIS OF POULTRY PROCESSING DEWATERED SLUDGE DURING COMBUSTION

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Abstract

Introduction: *Currently the combustion parameters of Malaysian poultry processing dewatered sludge (PPDS) are not well understood in depth where our knowledge on this matter is largely based on very limited data. This paper is aimed at investigating for measurement of the temperature-dependent mass changes and energetic effects of four different biomass samples combustion which were designated as Oil Palm Fiber, Oil Palm Shell, Sewage Sludge and PPDS.* **Methodology:** *This combustion experiments were conducted using the TG-DSC under 20 K/min heating rates respectively. The experimental were set up under isothermal temperature conditions with air atmospheres over the temperature range of 900-1500oC.* **Findings:** *The results showed that the combustion process of biomass can be broadly separated into three stages: evaporation of water, release and combustion of volatile, and finally the combustion of fixed carbon.* **Contribution:** *The Malaysian PPDS has an advantage of low ignition and burnout temperature, as well as high combustion rate. Through comparison of experimental reactivity, it gives a beyond explanation to analyze the PPDS combustion reaction.*

Keywords: PPDS, Biomass, Reactivity, Combustion

Abstract ID: **AIMC-2017-STE-1345**

TOWARDS FIVE STAR CLASSIFICATION SHOPPING CENTRE IN MALAYSIA: A COMPARATIVE STUDY OF ATTRIBUTES

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Abstract

Introduction: *Shopping centre are retail properties with special qualities compared to other property investments (Gerbich, 1998). Shopping centre are the most glorious places these days with their attractive shops and a wide variety people where people spend their weekends to relax and shop. However, it appears the forces driving retail expansion all over the world have deviated from actual consumer demand. A shopping centre is a collection of retail stores. It is usually the largest building complex in the region. The large shopping centres containing cinemas, entertainment areas, restaurant areas, and parking areas called malls combine many small shopping stores under one roof and include various activities. With the harried number growth of shopping centres in Malaysia, the competition among of those commercial retailers is seen as crucial. The shopping centre springing up around us like mushrooms after the rain. The changes format of urbanization, globalization, new technologies and innovations are leading the entire retail market makes our shopping centres management more challenging* **Methodology:** *Because shopping centre comprise of many types with different features to serve its function, the measurement of quality of shopping centre becomes more complex. One of the ways to facilitate the measurement of quality of different types of shopping centre is by classifying the shopping centre.* **Findings:** *The classification of shopping centre has different characteristics and subjected to innovation to maintain their attractiveness and hence competitiveness* **Contribution:** *This paper looks on the classification of shopping centre in Malaysia. By considering the country experience in it, this paper also looks on its attributions. The attributes of shopping centre gained through literature reviews can be set as reference in creating a shopping centre classification in Malaysia*

Keywords: Classification, Shopping Centre, attributes, characteristics

Abstract ID: **AIMC-2017-STE-1347**

SYNTHESIS AND CHARACTERIZATION OF BENZOHYDROXAMIC ACID METAL COMPLEXES AND THEIR CYTOTOXICITY STUDY

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Abstract

Introduction: *Hydroxamic acids (RCONHOH) are versatile compounds that constitute a significant biological importance.The syntheses, physico-chemical and characterization of benzohydroxamic acid (BHA) and its metal complexes (VO(IV), Cr(III) and Ni(II)) are reported herein.* **Methodology:** *The metal complexes were synthesized via condensation reaction of BHA and metal salts in 2:1 molar ratio using ethanol as reaction medium. The compounds were characterized by elemental analysis, spectral (infrared, 1H and 13C NMR, UV-Vis), TGA, magnetic susceptibility as well as molar conductance.* **Findings:** *The spectral study analysis reveals that all complexes coordinated to the metal via oxygen atoms (O,O) in bidentate manner to form octahedral geometry. The molar conductance values suggested that all complexes yielded were non-electrolytes. A cytotoxicity study against HCT116 displayed that VO(IV) has the potential as an anticancer better than the parent ligand, BHA.* **Contribution:** *This study presents new data that VO(IV)BHA is a better anticancer agent than Cr(III),Ni(II) and the parent ligand,BHA.*

Keywords: benzohydroxamic acid, vanadium(IV), chromium(III), nickel(II), cytotoxicity, HCT116

Abstract ID: **AIMC-2017-STE-1350**

FLEXURAL PERFORMANCE OF IRON ORE TAILINGS CONCRETE

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Abstract

Introduction: *The current depletion of the environment due to huge consumption of natural sand by the building and construction industry, calls for an urgent alternative for natural sand, to be used as fine aggregate in concrete. Iron ore tailings is an industrial waste product derived during the process of extracting iron ore from magnetite and haematite. Based on the results obtained from the characterization of the iron ore tailings, it was utilized as fine aggregate, by partially replacing sand with the tailings to produce normal strength concrete. Two different types of iron ore tailings were used to produce rectangular reinforced concrete beams. The flexural behaviour of these beams were determined and the results compared with that of the control beam.* **Methodology:** *Normal srength concrete beam was designed based on BS 8110. The control beam and two others containing IOTs were tested using using Magnus testing frame.* **Findings:** *The IOTs concrete recorded better performance than the normal strength concrete.* **Contribution:** *The research provided flexural performance of iron ore tailings in terms of the ultimate load, stress-strain relationships and deflections.*

Keywords: Normal strength concrete, flexural performance, iron ore tailings, fine aggregate, sustainability.

Abstract ID: **AIMC-2017-STE-1354**

FUNDAMENTAL STUDY OF TENSILE TEST OF ALUMINIUM FOAM SANDWICH IN STRUCTURAL PARTS FOR AUTOMOTIVE

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Abstract

Introduction: *Metallic foams have gained their reputation in industry due to their lightweight advantages. One of the most important metallic foams are the aluminium foam. However, the aluminium foam alone may not give the required specification in terms of stiffness and strength to weight ratio. Therefore, developing a sandwich using aluminium sheets as a skin with aluminium foam core as a core will help in improving the specification. Aluminium foam sandwich (AFS) can be used for different applications such as automotive industries. The main objective of this research is to have a fundamental knowledge experimentally on AFS under tensile for different levels of skin and core thickness taking on consideration of ASTM standard for the skin to core ratio.*

Methodology: *The experiments were designed using full factorial of two factor which core thickness with two levels and skin thickness with three levels using JMP statistical analysis. A total of 6 runs had been developed.*

The specimens are designed so that an aluminium foam grade 6101 acting as the core of the sandwich and attached in between of aluminium sheet grade 6061. The aluminium foams and the aluminium sheets will be cut using the EDM Wire Cut Machine to produce the intended shapes. Then, the foams will be glued together using the Araldite Rapid Steel Epoxy with the aluminium sheets on the both side to become the AFS. After that, the specimen was undergo tensile test using INSTRON 5582 Universal Tester. The specimen was clamped at both and pull upward with one side remain fixed. The pulling process continued at a constant speed of 1.68mm/min until the specimen fully brake. The tensile test was repeated for all run in order to have more accurate results. **Findings:** *In this study, specimens of AFS with two levels of core thickness and three levels of face thickness have been fabricated. Next, the specimens have undergone tensile test to determine their maximum stress. From the results gained and the discussions that have been made, there are some findings that can be made:*

a) Increase in the ratio of face-to-core thickness will increase the tensile modulus value of the specimen

b) Increase in face thickness will increase the tensile modulus value if the core thickness kept constant

c) Increase in core thickness will decrease the tensile modulus value if the face thickness kept constant

d) In order to replace the aluminium alloy in the car parts, the design of the AFS need to be modified so that it will become stronger.

Contribution: *The research was conducted in order to determine the new reliable data for aluminium foam sandwich properties which is tension behavior for different parameters. From the compilation data, the application of aluminium foam sandwich will be wider. It is important nowadays to used lightweight material for reducing the weight of structural parts and at the same time will reduce the consumption of oil.*

Keywords: Aluminium foam sandwich, design of experiment, stress/strain curve, tensile test, full factorial

Abstract ID: **AIMC-2017-STE-1355**

ACOUSTICAL PROPERTIES OF PERFORATED PANEL MADE OF CSM COCONUT FIBER FILLED POLYURETHANE

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Abstract

Introduction: *Sandwich structure is an expensive engineering material. However, due to its multiple advantages such as light weight and high strength, its demand is relatively high. In this research, the natural material fiber was intended to replace the synthetic fiber in the core to reduce its dependency on synthetic materials. Basically, the use of natural material can minimize the cost in terms of materials and processing as well as to conserve the environment by reducing the waste of natural material.* **Methodology:** *The materials needed are coconut fiber, polystyrene and polyurethane. The sandwich structure is done by using hand lay-up and press technique using a hydraulic press machine with 1 tonne pressure. The natural acoustic panel is drilled in order to produce perforation on the surface of the panel. The suggested diameter for the perforation is 3 mm and 6 mm.* **Findings:** *The acoustical properties of the 23 samples were tested by using impedance tube testing according to ASTM E1050-98. The highest absorption coefficient at low, medium and high frequency are S3 (0.90), S13 (0.98) and S14 (0.85), respectively.* **Contribution:** *This research utilized the green natural fiber in the manufacturing of acoustic panel which must own good properties such as the sound absorption.*

Keywords: Acoustical Properties; Perforated; CSM Coconut Fiber; Polyurethane; Absorption Coefficient.

Abstract ID: **AIMC-2017-STE-1356**

STATISTICAL ANALYSIS STUDY OF TENSILE TEST DATA FOR ALUMINIUM FOAM SANDWICH

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Abstract

Introduction: *Demand for the use of aluminium foam sandwich are rapidly increase in various application because of the lightweight material, high specific stiffness and strength and also excellent energy absorption. After many years, the development of data for aluminium foam sandwich properties are growth in variety parameters and application. However, there are least of them focusing on the statistical analysis method. Therefore, this research were conducted in order to analyse the tensile test data using statistical analysis in JMP software.*

Methodology: *The material used in this research was aluminium foam core grade 6101 and aluminium skin sheet grade 6061. The dog-bone shape of both cores and skins were first cut using EDM wire cut according to the ASTM standard. Then the core and skins were attached into sandwich structure using adhesive bonding. The experimental work of tensile test were performed on sandwich panels using Universal INSTRON machine. There were 6 runs of experiments with two different input parameters combination which is three levels of aluminium skins thickness and two levels of foam core thickness. The design of experiment were developed using full factorial method in JMP statistical analysis software. The results from tensile test then documented in table in order to conduct the statistical analysis in JMP statistical analysis software. The relationship between input parameters with the stress result were analysed.*

Findings: *The findings were analysis using statistical analysis of ANOVA, summary of fit models, surface profiler, scatter diagram and desirability function for determine the relationship between input parameters of skins thickness and core thickness with the stress-strain output. Based on the result for ANOVA analysis, there are 0.0181% chance of error that the model could be occur due to noise which can be accepted since the value of 'Prob > F' less than 0.05. Next, for summary to fit model shows the differences between RSquare and RSquare adjusted. RSquare is always increased when the factors increase while the RSquare adjusted is increased when the bad factors were removed. Based on the result obtained, the RSquare value is reasonably agree with RSquare adjusted which is 0.987872 and 0.96968 respectively. Following with the analysis of the relationship between input parameters with the stress result, from the scatter diagram, it shows that positive correlation of a skin thickness which mean increasing the skin thickness will increase the stress value. This also agree with the surface profiler analysis, the profiler shows that as the skin thickness increase, the stress value also increase. Lastly, the desirability function analysis shows that the optimum input parameters combination for finding the maximize stress was skin thickness of 0.8 mm and core thickness of 6.35 mm.* **Contribution:** *The objective of this research paper was to analyse the data using statistical analysis which least used by previous researchers for aluminium foam sandwich material. This paper can be as a references for other researcher on how to conduct a statistical analysis on aluminium foam sandwich using JMP statistical analysis.*

Keywords: Aluminium foam sandwich, design of experiment, full factorial method, JMP statistical analysis, desirability function

Abstract ID: **AIMC-2017-STE-1360**

HAMMERSTEIN MODEL BASED RLS ALGORITHM FOR INTELLIGENT PNEUMATIC ACTUATOR (IPA) SYSTEM

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Abstract

Introduction: *The Hammerstein model is one of the block structured nonlinear models often used to model a nonlinear system. Basically, it consists of a static nonlinear block followed by a linear block of dynamic element. This paper presents a new modeling of an Intelligent Pneumatic Actuator (IPA) system based on Hammerstein model. The parameters of the proposed Hammerstein model have been estimated using Recursive Least Square (RLS) algorithm.* **Methodology:** *System identification approach, known as experimental approach has been employed for the collection of input and output data. The input and output data collected from real-time experiment have been utilized to describe the IPA system used, while a RLS has been employed as the main algorithm in order to estimate the parameters of the Hammerstein model. In this study, the static nonlinear block was represented by a deadzone of the pneumatic valve, while the linear block was represented by a dynamic element of IPA system. An Auto-Regressive with Exogenous input (ARX) has been chosen as a model structure in order to represent dynamic of IPA system. Acceptance of the developed Hammerstein model is based on several criteria such as poles location, best fit, loss function and final prediction error, as outlined in the system identification's procedures. The validity of the proposed model has been verified by conducting a real-time experiment.* **Findings:** *All of the criteria as outlined in the system identification's procedures were successfully complied with by the proposed Hammerstein model. The proposed model has managed to provide a stable system, higher best fit, lower loss function and lower final prediction error than a linear model developed before. The performance of the proposed Hammerstein model in controlling the IPA's positioning system is also considered good. Thus, this new developed Hammerstein model is sufficient enough to represents the IPA system utilized in this study.* **Contribution:** *A new modeling of IPA system using Hammerstein model based RLS algorithm is proposed in this paper.*

Keywords: Pneumatic, system identification, Hammerstein, RLS, valve deadzone, ARX

Abstract ID: **AIMC-2017-STE-1362**

A PRELIMINARY ANALYSIS ON FACILITY LEADERSHIP ATTRIBUTES OF MOSQUE MANAGERS OF DISTRICT MOSQUE IN SELANGOR.

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Abstract

Introduction: *This research investigated into the facility leadership attributes found in mosque managers of Selangor's district mosque. Mosque manager are the appointed and recognised organization manager cum facilities manager of district mosque in Selangor. The selection of topic on facility leadership is supported by the Quranic verses on the role of selected people as guardianship of the mosque (Surah 9:verse 18) as well as academic journals on the topic of mosque leadership. This study hypothesis the ability of facility leadership is correlated with level of community engagement in the mosque.* **Methodology:** *A qualitative research methodology was employed using case study approach on 8 district mosques situated in Selangor. Interview and document review methods were conducted followed with thematic analysis. This study reported preliminary finding on facility leadership attributes of mosque managers.* **Findings:** *The result indicated that the facility leadership attributes of mosque managers are consistent with the leadership style which is inclined towards people-based. This promotes community engagement in the mosque. Aside from that, the leadership style is also influenced by their comprehension of the mosque leadership role mentioned in the Quran.* **Contribution:** *This research contributed to the facilities management body of knowledge (FMBOK) especially in the field of facilities management in the community setting.*

Keywords: Facility leadership,community engagement,facility management,community facility

Abstract ID: **AIMC-2017-STE-1365**

INTERFACE SHEAR BEHAVIOR ASSESSMENT OF COMPOSITE LANDFILL LINERS USING LIMIT EQUILIBRIUM ANALYSIS METHOD

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Abstract

Introduction: *Protection against leachate leakage is the main focus of individual countries in selecting landfill liner mainly on environmental protection purpose. Selection of landfill liners are depends on interface properties, fill heights of slope section and horizontal strain compatibility considering the interface stability aspects of landfill. Failures commonly occurs along the low interface friction angle zone within landfill liner component. This study addresses various kind of landfill liner system which is currently being used and possible mode of interface failures which could occurred at landfill.* **Methodology:** *Two different model of landfill was designed and their interface shear behavior were also investigated using limit equilibrium method to assess the influence of slope sections, normal loads, side slope and waste face slope.The model analyzed using selected input parameter for single composite base liner configuration and single membrane cover liner configuration using limit equilibrium analysis approach with asses of SLOPE software. SLOPE- developed by DR.D.L. Borin from UK to be used for slope failure probability evaluation using Janbu Code.* **Findings:** *Based on the study side slope and waste face slope angle 1V:2H and 1V:3H with liner component interface between geotextile & geomembrane HDPE Smooth shows lowest factor of safety. This is the most critical failure zone in base and cover liner. Side slope and waste face slope angle 1V:3H with liner component interface between geotextile & geomembrane HDPE textured is safe with factor safety more than 1.5. Material with low friction angle must be avoided in liner configuration.* **Contribution:** *Material with low friction angle must be avoided in liner configuration. This study is part of initial steps taken to provide well managed, organized and safe landfill design which could provide full protection to the environment from pollution due to leakage of leachate and harmful landfill gases.*

Keywords: Interface, Shear Strength, Landfill liner, Slope angle and Stability Analysis

Abstract ID: **AIMC-2017-STE-1366**

NET SHAPED FORMING OF 316L STAINLESS STEEL FOR POTENTIAL MEDICAL APPLICATIONS UTILIZING BIO-COMPOSITE BINDER SYSTEM

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Abstract

Introduction: *Metal injection moulding (MIM) is a competitive manufacturing process in producing large amount of small, complex and high performance metallic components. Conventional wax-based binders have proven their suitability as binder system in production of intricate shape metallic component by using MIM route. However, in recent years research and development of binder system which may minimise environmental menace associated with conventional plastic and wax has accelerated. In the present research work, a Termoplastic Rice Starch (TPRS)-wax based binder containing palm stearin was developed and investigations on the feasibility of the new developed binder in MIM of 316L Stainless Steel was performed.* **Methodology:** *Characterization of the 316L SS powder was performed using Laser Particle Size Analyzer and Scanning Electron Microscope (SEM). The 316L Stainless Steel powder was compounded to form a feedstock at powder loading of 63 vol% with binder system consisting of 40 wt.% thermoplastic rice starch, 40 wt.% palm stearin, 10 wt.% polyethylene and 10 wt.% stearic acid. The compounding process was performed at a temperature of 160°C for duration of 2 hours in a Z-blade mixer. The rheological behaviors of the feedstock were evaluated by extruding the feedstock through a die capillaries having diameter of 1mm and length of 10mm at temperature ranging from 150°C to 170°C. A defects-free green part was successfully injection moulded by using injection pressure of 400 bar and mold temperature of 160°C. Prior to sintering, the green parts were solvent debound for 240 minutes at a temperature of 40°C and 50°C by means of heptane. Following the leaching process, the brown parts were sintered in vacuum environment at temperature of 13800C. The mechanical properties of the green and sintered parts were evaluated by three point bending test whilst the fracture surfaces were examined by scanning electron microscopy and sintered densities were evaluated by Archimedes' method.* **Findings:** *The spherical 316L SS particles used in the study are having a narrow particles size distribution ranging from about 4.82 to 32.71µm, suggesting a high surface area which is less prone to segregation. The rheological analysis performed indicate that the bio-composite binder system comprising of 40 wt.% thermoplastic rice starch, 40 wt.% palm stearin, 10 wt.% polyethylene and 10 wt.% stearic acid work successfully with 316L Stainless Steel powder to form a feedstock which possessed pseudoplastic behavior. The feedstocks was successfully moulded to produce a defects-free green part at injection pressure of 400 bar and a temperature of 160□C. The green density of the injection moulded parts was near 5 g/cm3, suggesting that the feedstocks had allowed the molding pressure to be transmitted uniformly during the injection molding process, and resulted in better packing of the feedstock into the mold cavity. Approximately, 7.8 g/cm3 theoretical density, hardness of 216.18 HV and tensile strength of 81.682 MPa were achieved. The findings suggested that the physical and mechanical properties of sintered 316L Stainless Steel are in good agreement with the international standard.* **Contribution:** *In this research work, a new binder comprising of starch has been employed in Metal Injection Moulding (MIM) of 316L stainless steel. Starch which was introduced at the mixing stage of metal powder can be extracted during debinding stage via an enviromental friendly solvent, providing minimisation of environmental menace associated with conventional plastic and wax.*

The novel binder system developed has the potential to offer solutions to enviromental and safety concerns in the field of MIM and promote economical practice in producing small, high precision and complicated shape of 316L stainless steel medical devices.

Keywords: Metal Injection Moulding; 316L Stainless Steel; Bio-Composite Binder; Pseudoplastic ; Sintering.

Abstract ID: **AIMC-2017-STE-1369**

IMPACT OF PRE-TREATED ALUM SLUDGE ON BEHAVIOUR OF SELF-COMPACTING CONCRETE AT ELEVATED TEMPERATURES

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Abstract

Introduction: *Provision of water drinking worldwide including Malaysia has become accompanied by the generation of waste called alum sludge. It is hazardous by accumulative of heavy metals that it contains when disposal of by landfill. Water plants in Malaysia produce over 2.0 million tons sludge every year. Traditional recycling and landfill led for seeking of an alternative planning. An attention increasing for reusing of waste is vital for sustainable development. Replaced cement by pre-treated alum sludge in self-compacting concrete might provide good performance properties of (SCC) at elevated temperatures and same time reduces the impact of this waste on environment.* **Methodology:** *Self-compacting concrete samples consist of: Cement (OPC) with a specific gravity (SG) of 3.1 and fineness of 328 kg/m2; Alum sludge treated at 750 °C for 2 hours, has 2.36 and 702 kg/m2 of SG and specific surface area; (Glenium Ace388) has a specific gravity of 1.20; Fine Aggregate has SG and fineness modulus of 2.67 and 2.84; Coarse Aggregate: 10 mm crushed gravel with 2.67 and 0.63 of SG and absorption. Concrete mixes consist of total powder of 500 kg/m3. The proportion of fine to total aggregate content was kept 50.46% of the total aggregate content. The water to powder (w/p) ratio was 0.36, 0.38, and 0.40. Three control mixes used OPC only and the rest mixes were replaced OPC by TAS at (5%, 10%, 15%, 20%, and 25%) weight of cement. 100×100×100 mm3 specimens used to study SCC after subjected to elevated temperatures. After 28 days of wet curing, were kept in air curing until reaching 56 days. At this age, they were kept into an electric furnace, until reaching the temperatures of (200,400,600) 0C for 3 hours. The evaluation included losses in masses and compressive strengths by comparing between samples under elevated temperature with untreated SCC samples.* **Findings:** *The loss weight increased with increasing temperature from 2.26 % to 6.35% which corresponds increasing in temperature from 200 °C to 600 °C and also increased with the increased amount of TAS in comparison with control SCC. The evaluation of weight loss showed that the SCC control made with only OPC suffered less weight loss compared to SCC mixes including TAS. However, the slight different in these losses it is not an obstacle to the use of TAS as replaced OPC in SCC. The reduction in weight is attributed to the loss of water from the fine pores in the cement paste and total particles. After the mass losses were recorded, the residual strength of different SCC mixes subjected to elevated temperature was evaluated. The residual compressive strengths after heating at different exposure temperatures on room temperature strengths (strength before heating) are performed. It noted at 600°C for 3 hours, the minimum reduction in compressive strength took place in SCC control. Concrete at Elevated temperature is sensitive to the temperature levels. For the temperatures of 200°C to 600°C, compressive strength loss was 8.61% to 49%. The smallest value was 11.6% for control mix at 200 0C.* **Contribution:** *The significant contribution of this research is the new utilisation and experimental results on reusing of pre-treated alum sludge (TAS) to produce SCC. It was adopted to solve the problem of the high quantities that accompanied in the provision of potable resulted in an adverse impact on our environment. This idea came after knowing that alum sludge will continue to generating for a long time to come. The best replacement of cement by TAS which gives good performance characteristics was 5 % to 15%. Finally, the authors found it is appropriate to point out the pioneering features of the research*

Keywords: Pre-treated alum sludge, Elevated temperature, Self-compacting concrete

Abstract ID: **AIMC-2017-STE-1370**

RELATIVE GAIN ANALYSIS OF ENERGY EFFICIENT HYDROCARBON MIXTURE SEPARATION SEQUENCE

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Abstract

Introduction: *The problem with distillation sequences is that it consumes large amounts of energy; as much as 40% of chemical industries' energy consumption. The consumption can vary according to the way columns are sequenced. Researchers Bek-Pedersen and Gani proposed an algorithm that can deliver an energy efficient sequence quickly and requires no simulation and optimisation. Previous researchers have studied the controllability of different distillation columns designs; conventional and complex columns but little efforts have*

been done to connect controllability to sequencing methods. Therefore, the study's objective is to determine the controllability of the sequence derived from Bek-Pedersen and Gani's method. **Methodology:** *The methodology used for this study consist of four stages; optimal sequence synthesis, alternative sequence synthesis, energy comparison, and controllability comparison. In the first stage, the distillation columns sequencing algorithm that is based on a driving force concept is used to determine an optimal or near-optimal sequence in terms of energy usage. In the second stage, the remaining sequences for the separation of a chosen mixture are determined. In the third stage, all sequences are simulated using Aspen HYSYS to determine their energy consumptions. After that, the energy consumptions are compared to determine the most energy efficient distillation columns sequence. In the fourth and final stage, Relative Gain Array method by Bristol is used to analyse the interactions between control loops that exist in a sequence, for all sequences. Then, the RGA values will be compared to determine which sequence has the best controllability, in terms of the loop interactions.* **Findings:** *The case study used in this study is an equimolar hydrocarbon mixture made up of four components; n-Pentane (A), n-Hexane (B), n-Heptane (C), and n-Octane (D). The number of possible sequences for a five-component mixture is five and they are named as follows for easy reference in this study: direct, direct-indirect, indirect, indirect-direct, and splitter sequence. The optimal sequence of the separation process was determined using the algorithm and it was found that the optimal separation sequence is the direct sequence. The alternative sequences for the separation were determined and then all sequences were simulated. After the simulation, it was found that direct sequence uses the least energy (5659.96 MJ/hr) when compared to direct-indirect (6114.49 MJ/hr), indirect (7028.68 MJ/hr), indirect-direct (6624.61 MJ/hr), and splitter (5891.05 MJ/hr) sequence. The direct sequence is therefore the most energy efficient sequence out of the five. From the controllability analysis, the direct sequence has the positive values closest to one (1,1.6640) compared to direct-indirect (1,1.8915), indirect (1,3.8614), indirect-direct (1,1.9061), and splitter (3.8223,1.8915) sequence. The closer the value to one, the less interaction between the control loops in a sequence. From both analyses, it can be concluded that the sequence determined using the algorithm; the direct sequence is both energy efficient and controllable.* **Contribution:** *The methodology used in this study can be used for other multicomponent mixtures to determine an energy efficient and controllable distillation columns sequence.*

Keywords: Driving force, hydrocarbon mixture, relative gain array

Abstract ID: **AIMC-2017-STE-1371**

SURVEY OF RESIDENT BEHAVIOUR RELATED TO AIR CONDITIONER USAGE IN MALAYSIA

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Abstract

Introduction: *Occupant behaviour describes how people respond to their indoor environment by making use of the building controls, for example, by switching on the lights, opening windows, or turning on the air conditioners (AC). These studies were conducted in different countries with varying climate conditions. They also involved different building types and different correlation variables. These studies are often then used to develop behavioural models based on statistical algorithms that predict the probability of user action. However, occupant behaviour and thermal preferences in a hot and humid country like Malaysia may differ from that of other countries. Consequently, the main purpose of this research is to identify the factors that influence occupant decisions regarding AC usage in order to construct a model of AC temporal patterns in tropical regions.* **Methodology:** *Sixty-three dwellings within two apartments were selected for a series of field measurements in the period from September 2013 to May 2015. The households are comprised of nuclear families (two adults plus children), single-parent families, and extended families (including grandparents). The average household size is four with a standard deviation of 1.2. The maximum number of people living in the same house is eight. A thermo recorder was installed at the air outlet of the AC unit. Low temperatures recorded by the thermo recorder indicated AC usage. Additionally, the room temperature was measured in the centre of the room using the same sensor. Data were collected in 15 min intervals. Measurements were performed in either the living room or bedroom, depending on the location of the AC unit. Some of the dwellings had more than one air conditioner installed in different rooms. Due to the limited number of instruments available, it was not possible to place sensors inside all of these rooms. Occupants were interviewed on their air conditioner usage preferences, and any air conditioners that were rarely used were omitted. There was an equal distribution of air conditioners, in that 50% of sensors were installed in bedrooms and 50% were installed in living rooms* **Findings:** *The effects of outdoor temperature conditions on occupant decisions to use the air conditioner can be observed by studying the relationship between the daily hours of AC usage and daily statistics of outdoor air*

temperature. AC usage in the living room slightly increases with outdoor temperature. However, the AC usage in the bedroom remains constant despite the increasing outdoor temperature. This may be a result of occupants' daily habits, in which the AC in the bedroom is always used at night, regardless of the outdoor temperature. In order to observe how daily habits or schedules affect decisions regarding air conditioner usage, the joint probability distributions of events in terms of event start time and duration are plotted. This indicates that air conditioner use in the bedroom is determined by the occupants' sleep schedule. **Contribution:** *The findings of this study can be concluded as follows:*
(a) Air conditioner usage is not significantly affected by the outdoor temperature, but is affected by occupants' habitual behaviour.
(b) Malaysian residents tend to use the air conditioner during sleeping hours, but the start time and duration of use varies. AC events rarely occur during the daytime.
(c) AC usage events in living rooms are more numerous than those in bedrooms for a similar daily amount of AC usage.
(d) AC events in bedrooms tend to be longer than those in living rooms.
The findings of this survey could be used to develop a model based on the stochastic information of occupant AC behavior, with a specific emphasis on tropical regions.
Keywords: Air-conditioner, Occupant behaviour, Tropical climate, Field survey

Abstract ID: **AIMC-2017-STE-1374**

SPATIAL STATISTIC ANALYSIS ON CHILDHOOD MALNUTRITION CASES IN ASIA

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Abstract

Introduction: *Although there are inequalities in child nutrition and growth in Asia, the influence of the surrounding factors such as under-five population, Gross Domestic Product (GDP) value, education level and breastfeeding practice on children's nutritional status is still unclear. This research investigates the pattern of malnutrition cases in Asia in year 2000 and 2010 by testing the explanatory variables in order to find the most influence factors contribute to malnutrition cases.* **Methodology:** *Spatial statistic analysis was examined for under-five childhood malnutrition data obtained by World Health Organization (WHO), United Nations International Children's Emergency Fund (UNICEF) and the World Bank by performing regression analysis including Ordinary Least Square (OLS) test and Geographical Weighted Regression (GWR) and conducting spatial autocorrelation by using Moran's I.* **Findings:** *Since the model combination in year 2000 has successfully passed all the checklist of OLS, hence it is qualified to run the GWR analysis. Comparing both models with the Akaike's Information Criterion (AICc) values show that the value is reduced from 352.89 for OLS model to 347.21 for GWR model. The GWR model was an improvement over the global.* **Contribution:** *In conclusion, education level and economic country has high significant and has strong negative relationship with malnutrition cases and appropriate ways need to be draft and create in order to monitor the child growth and nutritional status worldwide.*
Keywords: Malnutrition; explanatory variables; OLS; GWR

Abstract ID: **AIMC-2017-STE-1375**

STRENGTH AND INTERFACE ADHESION PROPERTIES OF IN-PLANE SHEAR LOADED THICK ADHESIVE JOINT

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Abstract

Introduction: *This paper addresses the quality of the interface bonded joints in layers of timber elements. The shear performance was studied to assess the suitability of adhesive to bond timber with different thickness of glueline and timber densities. Since there is absolute test method in establishing the shear strength of the surface bonds between layers timber elements, two test methods were used namely Thick Adherend Shear Test (TAST) and Lap Shear Test in Single Lap Joint. The adhesived used is Sikadur-30 and timber used are Sesendok,*

Bintangor and Kempas with average densities 400-600kg/m3, 600-800kg/m3 and 800-1000kg/m3 respectively. Obtained results suggest that the interface stress distribution are related to the thicknesses of adhesive and densities of timber. **Methodology:** *Materials. Sikadur-30 is a thixotropic adhesive used for this study. This adhesive was obtained from Sika Kimia Sdn Bhd and can be used for bonding structural reinforcement particularly in structural strengthening works. While three species of Malaysian tropical timbers in category of standard light and medium hardwood are been used in this study; Sesendok, Bintangor and Kempas*
Thick Adherend Shear Test (TAST). Two pieces of timber were prepared to cut into the specific size before pouring glued and clamped together. After curing, the bonded section across the grain was cut approximately 2mm as a notch. The notch of the specimens was cut up to the glue line. These steps were repeated with different adhesive thickness of 2 mm and 3 mm.
Lap Shear Test. Two pieces of timber planks from three different species were prepared. The adhesive was applied on the overlap area of the specimens. These steps were repeated with different adhesive thickness of 2 mm and 3 mm and left for curing.
Testing Method. A tensile force was applied for TAST and Lap Shear Test using a tensile testing machine equipped with 50kN load cell at a crosshead rate of 1.0 mm/min. The results then been analyzed. **Findings:** *Shear Strength for TAST. The result show that the highest ultimate shear strength value obtained from Sesendok SG7 with 1 mm adhesive thickness for timber of the lowest density. The strength value of Bintangor SG5 reveal a lack of relationship between timber density and the joint strength. But Sesendok SG7 with the lowest density has higher bond strength compare to Kempas SG2.The type of failure of the specimens appears too failed in a combination of modes. Higher thickness tends to fail in between interface of adherend and adhesive, while lower thickness fails in wood or adhesive itself. On the other hand, Kempas showed a variation of mode failures over the different range of bondline thicknesses.*
Shear Strength for Lap Shear Test. The test results show that the influence on low density of Sesendok SG7 do not seems to strengthen the bonded joints. It turn out that the optimum shear strength was identified in Bintangor SG5 specimens with 1 mm adhesive thickness.A small different of shear strength between Kempas SG2 and Bintangor SGS in density was noted between this two species, that joint strength increases as the density decrease. Obtained from this test result proved that the bondline thickness affect directly on the joint strength. It is clear that as the bondline thickness increase the shear strength of the adhesive decreases gradually. **Contribution:** *The timber bond strength depends on how well the adhesive wet the adherends and the lower the viscosity, the more easily the adhesive will penetrate the adherend. Currently, this information is still lacking, therefore this study is required as the model to predict the strength of timber bonded with high viscosity adhesive by two different test with three different species of Malaysian tropical timber. As the adhesive used for bonded-in pultruded rods into timber connection is high viscosity adhesive with thick glueline joint, hence the availability of analytical model need to be validated with experimental testing of timber bonded with high viscosity adhesive with different thick glueline.*

Keywords: Timber, Adhesive, Density, Thickness, Shear Strength

Abstract ID: **AIMC-2017-STE-1376**

AFFORDABLE HOUSING LIVABILITY ATTRIBUTES

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Abstract

Introduction: *Housing plays an important role in people's wellbeing, contributing to the physical and mental health, education, employment and security outcomes for individuals. Still, housing affordability has always been an issue worldwide. Governments have been scrambling to build sufficient affordability house to meet the forever increasing demand. In light of this there is concern on the livability aspect of these affordability houses built have been compromised. For that reason, this study presents a research on determines the attributes of livable-affordable-homes.* **Methodology:** *Data was gathered by identify all attributes from literature and previous researches carried out with particular focus on Malaysia. A FGD have been conducted at this juncture to finalise and refine the attributes and sub-attributes* **Findings:** *The findings indicated that seven affordable housing livability attributes are determined which are physical impact, community and neighbourhood factor, public amenities, economics development, residence wellbeing, safety and security and also psychology impact. This research also takes into account of not only physical aspect but also psychological well being of the residents.* **Contribution:** *Hence, the consumer of affordable homes should benefit greatly from the findings of this research. They would be occupying homes, which meet the minimum for livable affordable housing.*

Keywords: Affordability, Affordable Housing, Livability, Housing, Attributes.

Abstract ID: **AIMC-2017-STE-1379**

ASSESSMENT MODEL FOR ECONOMIC CRITERIA OF SUSTAINABLE AFFORDABLE HOUSING

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Abstract

Introduction: *Affordable housing and sustainable development are major challenges across the world, including Malaysia. To address affordability issue, the government has provided affordable housing to the nations. However, the economic sustainability of affordable housing remains questionable. This is because housing affordability is often defined by house price and household income without considering other criteria that affect long-term affordability. Hence, economic sustainable affordable housing need to be provided as to make housing more affordable. This study aims to develop an economic assessment model for sustainable affordable housing since there is no such kind of assessment model in our country so far.* **Methodology:** *This study used a quantitative descriptive design to identify criteria contributing to the economic sustainability of affordable housing and to derive its important levels based on the buyers' perspectives for assessment model development purpose. Data were collected from 573 respondents in Iskandar Malaysia through questionnaire survey and were analyzed using descriptive statistics and Analytic Hierarchy Process.* **Findings:** *The findings show that all 38 economic criteria are important to the sustainable affordable housing with the average mean value of 3.88 out of 5-point Likert scale. The economic criteria were then assigned weights to reflect its relative importance in order to develop a scoring system for the model and then the assessment model for economic criteria of sustainable affordable housing was developed.* **Contribution:** *The outcome of this study can contribute to the housing industry players such as buyers, developers, local authorities and those who sought to verify the economic criteria for sustainable affordable housing. Besides, the originality of this study has contributed to the development of sustainable affordable housing economic assessment model (SAHEAM) since it is the first assessment model in Malaysia.*

Keywords: assessment model, economic criteria, sustainable affordable housing, AHP.

Abstract ID: **AIMC-2017-STE-1380**

APPLICATION OF FLOW ZONE INDICATOR AND LEVERETT J-FUNCTION TO CHARACTERIZE CARBONATE RESERVOIR AND CALCULATE PRECISE WATER SATURATION IN KUJUNG FORMATION

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Abstract

Introduction: *Carbonate reservoir is known as a heterogen reservoir due to its pore complexity caused by depositional setting and diagenetic process. This complexity can cause misleading comprehension about its storage capacity and flow capacity, including water saturation. Therefore, a reservoir characterization analysis is important to applied in carbonate reservoir in order to understand its internal character about storage and flow capacity of the reservoir related to reservoir performance* **Methodology:** *Reservoir characterization method through Flow Zone Indicator can be useful to divide reservoir rock based on its flow unit. One of reservoir characterization application is on Kujung formation, Jago and Bravo Structure, North East Java Basin After the reservoir character has been divided, then water saturation of the reservoir calculated by J-Function method which every flow unit has its own irreducible water saturation.* **Findings:** *From FZI method, Kujung formation can be divided into three flow unit which flow unit 1 has channeling pore type and 0.25 Swirr, flow unit 2 has vuggy pore and 0.39 Swirr, flow unit 3 has highly cemented interparticle pore and 0.43 Swirr.*

Water saturation by J-Function method which applied to Kujung formation in Jago and Bravo structure provide a more precise result than water saturation of Archie method. **Contribution:** *Water saturation in study area still concern to calculated by classical method like Archie equation. therefore in this study, J-Function method is applied to calculate water saturation preceded by reservoir characterization with Flow Zone Indicator method. This study provide a more precise water saturation result than Archie method, which validated to Free water level of RFT & MDT test and fractional flow of SCAL core. The result even provide a better understanding about reservoir character in Kujung formation like its pore type, its Reservoir Quality Index, and Irreducible water saturation (Swirr)*

Keywords: Carbonate Reservoir, Reservoir Characterization, Flow Zone Indicator, Water Saturation, Leverett J-Function, Kujung Formation.

Abstract ID: **AIMC-2017-STE-1382**

ASSESSMENT OF SPATIO-TEMPORAL TRENDS IN ANNUL AND SEASONAL RAINFALL OF SYRIA USING GAUGE-BASED GRIDDED PRECIPITATION DATA

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Abstract

Introduction: *Increased concentration of atmospheric greenhouse gases (GHG) due to massive industrialization and widespread use of fossil fuels in the last century has changed the global energy balance and has caused a change in global climate (IPCC, 2013). Increased temperature has changed the atmospheric moisture holding capacity which in turn has changed the spatial and temporal distribution of rainfall. The climate of Middle East is also changing in the line of global climate change. Recent studies revealed that the effect of global climate change in middle eastern region has been projected much severe compared to other parts of the world. Changes in historical climate provides a clue about on-going changes in climatic pattern in a region and can be helpful for necessary adaptation and mitigation planning. The objective of present study is to assess the recent trends in rainfall and temperature of Syria where economic damage due to long political conflict can be aggravated in future due climate change.* **Methodology:** *A study has been carried out to assess the trends in rainfall and temperature of Syria using gauge-based gridded precipitation and temperature data. Monthly gridded rainfall data of Global Precipitation and Climatology Center (GPCC) with 0.5□ resolution for the period 1961-2010 was used for this purpose. The GPCC a were first compared to observed data available at six locations of Syria to validate that the trend in gridded data resembles the observed trend. Non-parametric Mann-Kendall test was used for the assessment of significance of trend and Sen's Slope method was used to estimate the rate of change. Obtained results were plotted using geographical information system to show the spatial pattern of rainfall trends in Syria.* **Findings:** *The results reveal that GPCC precipitation is capable to resemble the observed rainfall reasonably in Syria in term of all the statistical indices used in the study. The Nash-Sutcliff efficiency (NSE) values were found in the range of 0.8 to 0.99, mean error (ME) between -1.01 and 0.73, and normalized mean square error (NMSE) in the range of 8.8 to 44.4. The values clearly indicate the ability of GPCC in replicating historical rainfall in Syria.*

Spatial pattern in rainfall trends revealed decrease in annual rainfall in most part, particularly the east part of Syria at 95% level of confidence. Rainfall is also found to decrease in most of the seasons. The most prominent decrease is observed during winter when significant decrease in rainfall has been noted over the whole country except a small patch in the northeast. The summer rainfall is found to decrease least. It is found to decrease mostly in southwest part. Autumn rainfall is found to decrease in the east and the west. Increase in Autumn rainfall in few grid points located in central south region is also noticed. Rainfall trend during Spring is found to increase in most part of Syria in contrast to other seasons. The most prominent increase in Spring rainfall is found in the west part of Syria.

Contribution: *Spatial pattern in annual and seasonal rainfall trends of Syria for the period 1961-2010 has been assessed in this study using non-parametric test statistics. Significant decrease in annual rainfall as well as most of the seasons are observed in most part of Syria at 95% level of confidence. The results indicate water stress will be increase in Syria due to reduction of rainfall. The knowledge generated in the study can be useful to climate change adaptation and mitigation planning as well as agricultural and water resources management of Syria.*

Keywords: Trend analysis, Climate variability and changes, Gridded climate data, Syria

Abstract ID: **AIMC-2017-STE-1383**

A CONCEPTUAL FRAMEWORK OF ELEARNING READINESS FOR INDONESIAN STUDENTS

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Abstract

Introduction: *In this paper, a model for measuring students' readiness in adopting e-Learning in Indonesia from individual perspective is developed.* **Methodology:** *A literature study of reasearch reports on e-Learning Readiness (ELR) in Indonesia's education institutions,*

from Chapnick, Rosenberg, Borotis & Poulymenakou, Aydin & Tasci are examined. **Findings:** *This paper offers a new matrix that shows the interaction of two big factors. The first factor includes attitudes and skills, and the*

second factor includes Technology, Innovation, People, and Self Development. **Contribution:** *This papers explains how those factors interrelate in ELR analysis for Indonesian students.*

Keywords: eLearning, eLearning Readiness, ELR

Abstract ID: **AIMC-2017-STE-1384**

CONTROL SIMULATION OF LOWER LIMB EXOSKELETON ROBOT CAD DESIGN

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Abstract

Introduction: *Nowadays it is normal for robot prototypes to be designed using Computer Aided Engineering (CAD) software. Some of the CAD software are capable to perform analysis such as stress analysis, frame analysis and also perform dynamic simulation or even integrated with electrical and mechanical module for precise drawing and simulation of the electrical and mechanical systems like the simulation of robotic system. However, those CAD software cannot perform control system analysis as it is not designed to form a control system. This research aims to simulate the control response of lower extremity exoskeleton robot using the CAD design.* **Methodology:** *The exoskeleton CAD design is drawn for 6-DoF movement in sagittal plane with 3-DoF in each leg for hip, knee and ankle joints, left and right legs. The CAD drawn in Autodesk Inventor is exported to Matlab SimMechanics First Generation. Once exported, an xml file is created in Matlab and when the xml file is run, stl files are created based on the original Autodesk Inventor part files. This opens a SimMechanics block diagram to be later saved Simulink file. The block diagram has to be rearranged and modified so that it resembles the shape of the lower limb exoskeleton design with right leg and left leg being attached to center hip. All joints have only revolute movement for extension or flexion. The see any joints response, the revolute block in the block diagram has to be connected to the joint actuator and joint sensor blocks. The joint actuator functions as actuator to actuate each joint by receiving input from external source while the joint sensor reads the joint output giving output in terms of angle, velocity and torque. The whole block diagram can be made into a control system with the exoskeleton model and having controller with feedback.* **Findings:** *The exoskeleton CAD designed in Autodesk Inventor has been displayed and appeared similarly in Matlab SimMechanics; in different environment from the original environment it has been created in. At the beginning, the resulting block diagram has been tested with sinusoidal input to all joints, the response from each joint is displayed while the exoskeleton displayed is animated at the same time. The results show that the exoskeleton structure in SimMechanics block diagram can be actuated at each joint while sensor can be added to give outputs in term of position angle, velocity and acceleration. Improvement or modification is done by introducing a negative feedback loop to each joint. The results shows the output tracks the input with some error. Further improvement includes introducing controller which results in further reduction of error and good output tracking of the input.* **Contribution:** *The 6-DoF exoskeleton CAD design has been successfully simulated even before the prototype fabrication. The resulting block diagram has been modified so that by running simulation, different control systems can be further developed while introducing various controllers. The prototype funtionalities can be analyzed before hardware and electronics are developed. Further research can be done by including a human 3D model wearing the exoskeleton with both the human model and the exoskeleton having different control systems to study the human-exoskeleton interaction. This is how the exoskeleton functions in assisting human in improving walking gait can be simulated and studied.*

Keywords: Lower Limb Exoskeleton; CAD; SimMechanics; Control System

Abstract ID: **AIMC-2017-STE-1386**

EFFECT OF ENVIROMENT TO GROWTH RATE AND SURVIVAL RATE OF MANGGABAI FISH (GLOSSOGOBIUS GIURIS)

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Abstract

Introduction: *Manggabai Fish (Glossogobius Giuris) is one of the fish species that have good economic value, so its sustainability needs to be maintained. Manggabai fish population in nature continues to decline, this is due to environmental changes. Environment is one factor that is very influential on the sustainability of Manggabai*

fish in nature, because it is the living medium of Manggabai fish. Environmental changes occur naturally that are difficult to control. This study aims to see the environmental impact on growth and survival of Manggabai fish. **Methodology:** *The method used is the experimental method that is through the maintenance of Manggabai fish in different environments. Manggabai fish is maintained in two types of environment that is in the natural environment with floating net cage system in the lake and in the artificial environment using a concrete tub. The size of pond and KJA used is 1 m3 volume with Manggabai fish density of 1 tail/10 liters of water. Manggabai fish used 5 cm in size.* **Findings:** *The data analysis used descriptive analysis on growth and survival of Manggabai fish during three months maintenance. The results showed that Manggabai fish kept in artificial environment had a higher growth of 0.012 cm/day compared to that maintained in natural environment that is 0.087 cm/day. While the survival of Manggabai fish kept in natural environment that is 97.5% higher than that maintained in the artificial environment is 86.6%.* **Contribution:** *This research is expected to be the basis for the development of aquaculture in Gorontalo Utara Regency. The results of this study can increase public knowledge about the quality of aquatic environment suitable for the development of Manggabai fish cultivation.*
Keywords: Manggabai, Environment, Growth Rate, Survival Rate

Abstract ID: **AIMC-2017-STE-1390**

POST HARVESTING MANGO RIPENESS IDENTIFICATION SYSTEM

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Abstract

Introduction: *For the inquiry of determining fruit quality, question arises if it can be done by means of electronic device. Henceforth the study of post harvesting identification prototype system of mango for reliable measurement and correct classification of fruit ripeness.* **Methodology:** *The prototype system consists of a set of gas sensors, microcontroller and a display unit. The sensors were used to rapidly and consistently evaluate complex volatile gaseous mixtures namely alcohol, ammonia, and combustible gases to determine the ripeness of mango. Based on the computation and conditional branching method, the identification system will able to classify the mango sample into three different states of ripeness which are unripe, ripe or overripe. Through the strength of sensors signal within the specific ripeness branch, it is also able to detect the degree of ripeness of fruit from the scale of 0.0 to 2.0 (0.0 represents unripe, 1.0 represents ripe, 2.0 represents overripe).* **Findings:** *The analysis of the gas sensors responses toward mango aroma shows that all sensors display slow responses yet able to achieve steady and reliable results. Results shows that the identification system is able to classify the mangoes in three different ripening stages. The system is only programmed to determine the ripeness of one type of mango and no other fruits were experimented using the system.* **Contribution:** *The system is programmed to detect the level of ripeness of a mango at low cost parts. This will become the early step to go further for different type fruits in detection of their ripeness stages. This system will help farmer, distributor and seller of fruits to identify the ripeness stages and then enable them to stages the selling time of their fruits*

Keywords: fruit ripeness, gas sensors, microcontroller, identification system

Abstract ID: **AIMC-2017-STE-1392**

STRATEGY OF MARINE CULTURE DEVELOPMENT THROUGH SWOT ANALYSIS APPROACH IN GORONTALO UTARA REGENCY

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Abstract

Introduction: *The fishery potential in Gorontalo Utara regency consists of capture fisheries and aquaculture fishery. The utilization of capture fishery potential in Gorontalo district has reached 72.55%, while the utilization of sea cultivation potential is only 15% of the potential. Based on these data, the cultivation of the sea is very potential to be developed in the Gorontalo Utara regency because it has a high potential but the utilization is still low. The development of marine aquaculture can be successfully supported by various factors. Factors influencing the development of marine aquaculture include environmental, economic, socio-cultural, infrastructure, legal and institutional factors. This study aims to establish a strategy of aquaculture development that can be used to determine the utilization of a region through the approach of carrying capacity of environmental quality by integrating environmental, economic, socio-cultural, infrastructure, legal and*

institutional factors. **Methodology:** *The method used in the research is SWOT analysis that is by identifying internal factors and external factors that influence the development of marine aquaculture.* **Findings:** *The result of the research is obtained on the strategy of S-T: 0.84, W-O strategy: 0.75, S-O strategy: 0.69 and W-T: 0.64. Based on these results, the S-T strategy has the highest value, indicating that the strength and challenge factors are the most important factor in the development of marine aquaculture in Gorontalo Utara regency.* **Contribution:** *The result of the research is expected to be the basis by the Government in establishing the strategy and the development of marine aquaculture model based on environmental carrying capacity that can be used to determine the utilization of a region through the environmental carrying capacity by integrating environmental, economic, social-cultural, infrastructure, legal and institutional factors.*

Keywords: Marine culture, Environmental Quality, Economy, Social, Infrastructure.

Abstract ID: **AIMC-2017-STE-1393**

PERFORMANCE COMPARISON BETWEEN FULL-ORDER AND REDUCED ORDER OBSERVER FOR PREDICTIVE FUNCTIONAL CONTROLLER (PFC) IN CONTROLLING THE PNEUMATIC POSITIONING SYSTEM

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Abstract

Introduction: *This paper proposes the design of Predictive Functional Controller (PFC) using two different types of observers; full-order and reduced-order observer. The aim of this paper is to compare the performance of both observers in controlling the pneumatic positioning system.* **Methodology:** *The mathematical model of the system has been identified from the collected input and output data from real-time experiment. In this study, a linear third order Auto-Regressive with Exogenous input (ARX) has been chosen as a model in order to represent the pneumatic system under study. Matlab/Simulink has been employed as the platform and the performance of the controller using both types of observers have been observed in simulation. Comparisons between these two strategies have been made. The performances of the strategies have been compared in term transient response; steady-state error, percentage of overshoot, settling time, and rise time.* **Findings:** *Simulation results indicated that both control strategies (PFC with full-order observer and PFC with reduced-order observer) has resulted in approximately 0 mm steady-state error and 0 % overshoot. Observation based on varying the controller parameter (alpha) value showed that both the rise time and settling time increased as alpha increased. Simulation results also showed that the strategy using full-order observer is more effective in reaching the steady-state value that the strategy using reduced-order observer.* **Contribution:** *A new design of observer system, namely reduced-order observer was proposed in this study. The developed reduced-order observer was incorporated with PFC in order to control the pneumatic positioning system.*

Keywords: Predictive Functional Controller, Auto-Regressive with Exogenous Input, Full-Order Observer, Reduced-Order Observer, Pneumatic, Position Control

Abstract ID: **AIMC-2017-STE-1396**

FOOD HABIT OF MANGGABAI (GLOSSOGOBIUS GIURUS) FISH AT LIMBOTO LAKE

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Co-Authors: Juliana

Abstract

Introduction: *Manggabai (Glossogobius giurus) is one of freshwater species having the economically important value and it is liked by the people. This fish common in lake of limboto.* **Methodology:** *Observation of food habit of is one of method to find out the feed kind of Manggabai. The research is done with the survey method, meanwhile the samples taken by purposive sampling. Food habits of observation methods condueted by the method according to the number of Effendie(1997). Fish sample was captured by various catching gears like net, trap, gillnet and push net.* **Findings:** *Manggabai fish in Limboto lend to carnivorous species where its main food : shrimp freshwater small, Payangka (Uphiocara poroceplrala), Nila (Oreochromis mosambicus), Tawes (Puntius gonionotus).* **Contribution:** *This research is for development of fish endemic fish cultivation in limboto lakeResearch of*

Keywords: Food habits, Lake Limboto, Manggabai

Abstract ID: **AIMC-2017-STE-1397**

SELECTION STUDY ON BIODIESEL OF SUNAN PECAN AS DIESEL ENGINE FUEL BASED ON PROMETHEE METHOD

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Abstract

Introduction: *Biodiesel obtained from Sunan pecan seeds in the form of FAME (Fatty Acid Methyl Ester) of various fatty acid component mixtures is a product of esterification and trans-esterification processes that needed to be fractionated into sole component of FAME which properties approaching the characteristics of diesel oil.* **Methodology:** *The study conducted using promethe method through fractionation processes had produced FAME with a single fatty acid component and sorted suitability to be selected for diesel engine fuel.* **Findings:** *The result showed that FAME with a single fatty acid without fractionation was the chosen fuel.* **Contribution:** *The genuine idea was proposed in 2015 in efforts to use biodiesel obtained from sunan pecan (Reutalis trisperma) oil which is non fossil as well as non-edible fuel for diesel engine. Contibution of this effort would be that the world would use modified internal combustion engine for industry which could reduce the use of the diminishing fossil fuel and redeem the global warming and destruction of ozon layer.*

Keywords: Biodiesel, sole FAME component, Sunan Pecan, Fractionation, Promethee

Abstract ID: **AIMC-2017-STE-1409**

ANDROID MALWARES AND THEIR DETECTION TECHNIQUES: A REVIEW

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Abstract

Introduction: *Nowadays, the most popular operating system (OS) for mobile devices is the Android. Because of its popularity and being, open source, this makes it an interesting platform for malicious applications, when the need for developing effective protecting techniques was emerged. In order to make devices with Android OS safe from different attacks of those malicious applications (malwares), especially attacks on privacy and user's sensitive data. In this work, we have presented briefly the categories of potential harmful applications (PHAs), common malwares attacks and malware analysis techniques, then, we focused on Malware detection techniques with different tools used in those techniques.* **Methodology:** *This paper presents firstly a comprehension on android malware classification, attacks and analysis techniques then highlighting different works on malware detection techniques, after that, establishing a comparison between those detection techniques, finally a discussion on their general pros and cons was presented.* **Findings:** *We find that these detection techniques are focusing on detection of different potential harmful applications categories on user's smart device caused by malicious applications and leave other (benign) applications function freely, however, harm on user's privacy and sensitive data, which is a high security issue, could be done through the benign applications by utilizing the minimum permission granted, to collect data more than what users expect. Where the previous detection techniques did not show the ability to detect this kind of violation.* **Contribution:** *This paper can lead future works to a new research issue about the user's privacy violation and sensitive data collection on smart devices that can be caused by benign applications and how to detect these kinds of violations.*

Keywords: Android, android malware, privacy, malware detection, malware categories

Abstract ID: **AIMC-2017-STE-1412**

EXPERIMENTAL INVESTIGATION OF QUALITY AND PRODUCTIVITY OF HIGH ACCURACY ELECTRICAL COMPONENT ON SUCKING BLOWING PROCESS

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Abstract

Introduction: *The timer is an electronic component that is very important in a time-based production machine, such as the oven or cooler machine. The high accuracy of an electronic component will determine the quality of the manufacturing process result. The electronic component manufacturing industry is now required to produce*

timers with high accuracy that comes with other important functions, especially the rising market demand calls for an increase in quality and productivity. Electronic components such as timers with high accuracy have an electrical circuit that is very sensitive to dust, therefore requires a process of sucking and blowing for cleaning sensitive areas on its electrical circuit. **Methodology:** *The aim of the research is to compare the manual to the automated process of sucking and blowing on a timer Omron series H3Y as electronic components products. The experiment data take from two type machines, that are manually and automated machine. The success factors of the course of sucking and blowing depends on the ability of the process to eliminate dust as much as possible with the result of stable processes. It must be accompanied by noise level is low, productivity is high, and the absence of a scratch on the product.* **Findings:** *The result of this research is a comparison between productivity and the quality of the manual and automated processes. Productivity in the course of sucking and blowing show that automatic processes are capable of producing more quantity and stable product that is 810 pieces/day with production speeds of 4 seconds/product with two stages of sucking and blowing process performed on the 6 point blowing at once. The manual process is capable of producing 640 pieces/day with the products speed of 12.7 sec/products is divided into 2 phases with 5 point blowing carried one by one manually. The quality of the results depends on several things, namely the ability to reduce particles of dust, noise, scratch and bend produced, and there is no abnormal noise when the product in shucking. The automated process can reduce dust particles up to 80%, compared to the manual process which only reached 53%. The noise level during the process shows that the manual process has a higher noise level with a value of 75.1 to 91.8 dB(A) while automatic processes only 79.4 to 84.4 dB(A) is measured from the operator stay point. Hence manual process requires the operator to use earplug. As well as on both the process does not generate interference and functional characteristics, and does not produce a scratch or bend the product despite the friction during automated processes.* **Contribution:** *The Prototype of H3Y-Auto Sucking Blowing machine equipped with PLC and HMI control system, so capable of increasing quality and productivity in the process of sucking and blowing that is easily operated by the operator. H3Y-Auto Sucking Blowing machine configuration that runs automatically to replace the manual process at sucking and blowing process is not done before. The contribution of H3Y-Auto Sucking Blowing Machine design is as a foothold for further research to develop the process of sucking and blowing that more simpler, easy to fabricate, and can improve the quality and productivity of high accuracy electronic component industries that require such a process.*

Keywords: high accuracy timer, sucking and blowing, particle removal

Abstract ID: **AIMC-2017-STE-1414**

A CONCEPTUAL FRAMEWORK OF ECONOMIC VALUATION TOWARDS FLOODS DISASTER

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Abstract

Introduction: *The purpose of this paper is to inform a conceptual framework of economic valuation towards floods disaster. The existing pattern, themes and issues associated with economic of valuation towards flooding were identified and used to inform the conceptual framework.* **Methodology:** *Literature review is performed to identify the factor in economic valuation towards flooding. The review approach was based on related literature contributing to identify themes and sub themes summarized as "floods mapping" and "property value". The synthesized literature is then utilized in developing the conceptual map which further paved the way towards designing the conceptual framework.* **Findings:** *The generic conceptual framework presented explores the interaction between different internal and external factors affecting the economic value of properties. An extensive review of previous studies in economic valuation of property for different floods disaster studies considered to be main restrictive factor resulting in lack of empirical studies in this field.* **Contribution:** *This study brings together two existing research domains of floods and property value. Practitioners and researchers will find this study useful in developing an improved understanding of the economic valuation to flooding. The conceptual framework is important outcome of the research which will encourage further research in this area of study.*

Keywords: Conceptual framework, Floods, Economic Valuation, Property value

Abstract ID: **AIMC-2017-STE-1416**

PROCESS OPTIMIZATION AND UPSCALING EXTRACTION OF SABAH SNAKE GRASS (CLINACANTHUS NUTANS)

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Abstract

Introduction: *Today, the market demand of C. nutans has gradually increased due to its ability to cure cancer. Extract of C. nutans leaves is commonly consumed as a tea and taken orally either by traditional or industrial processes extract. The production of C. nutans water extract is mainly carried out through various traditional methods, such as boiling or soaking which often lead to high losses or low production yield. Therefore, a proper water extraction method needs to be developed and optimized to gain high production yield.* **Methodology:** *The aim of this study is to identify chemical markers in C. nutans leaves extract that have ability to treat cancer. The production of C. nutans leaves extract will be conducted in pilot scale using batch solid liquid extraction with optimum parameters for industrial purpose. Then the production of C. nutans extract in powder form will be conducted using spray drying process. The C. nutans extract is converted into powder form that is easier to handle and free of harmful bacteria and fungi. Spray drying powders however may have some problems on their properties such as hygroscopicity, stickiness, and solubility which lead to low efficiency of spray drying process (Tonon et al., 2008). Hence, the effect of processing parameters of spray drying process needs to be studied to attain highest process yield.* **Findings:** *The effect of processing parameters on total solid content and amount of vitexin and isovitexin from C. nutans extraction was investigated. A Central Composite Design was employed to study the effect of solvent to raw material ratio, duration and temperature of extraction on two response variables; total solid content and amount of vitexin and isovitexin. Hence, the extraction were undergone spray drying process with fixed inlet air temperature, feed temperature, air pressure and feed flow rate on response variable. In addition, effect of spray drying heat was investigated on bioactive compounds of C. nutans; vitexin, isovitexin, total polysaccharide, total protein and total glycosaponins. Analysis of variance and response surface methodology were applied to identify the optimal processing parameters of C. nutans extraction. The optimum extraction condition was achieved at 10:1 g/g of solvent to raw material ratio, 1 hour of extraction duration at 100°C which corresponds to 9.82 mg/g solid content and 3.28 % vitexin and isovitexin. Meanwhile for spray drying process the parameters were fixed at 190°C air inlet temperature and 110°C outlet temperature with 28.10% efficiency of spray drying achieved. Spray dried C. nutans does not affect vitexin, isovitexin, total polysaccharide, total protein and total glycosaponins.* **Contribution:** *This study is one of very few studies which have investigated the impact of variables like temperature, solvent to feed ratio and duration of extraction towards production of sabah snake grass extract. Boiling extraction is one of the cost efficiency technique to produce C. nutans extract and has resulted to the most yield collected. Furthermore, C. nutans leaves extract proven contains high concentration of flavonoid,vitexin, isovitexin and most bioactive compounds. Hence, it was a great source of antioxidant, antithyroid effect and antibacterial. Therefore, C. nutans leaves should be utilized to it maximum therapeutic potential for nutraceutical and herbal medicine applications.*

Keywords: sabah snake grass; optimization; rsm ; herbs ; antioxidant ; vitexin ; isovitexin ; extraction ; upscaling ; decoction

Abstract ID: **AIMC-2017-STE-1418**

DATA CLUSTERING FOR ACADEMIC DISHONESTY CASES USING GOWER SIMILARITY COEFFICIENT ALGORITHM

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Abstract

Introduction: *Data clustering is a technique to group similar objects based on their common attributes from a single dataset. This paper presents data clustering technique using Gower similarity coefficient algorithm for extracting knowledge from academic dishonesty cases among university students. Academic dishonesty cases have become a great concern in education sector because these cases can affect students' career development in the future. Thus, data clustering is needed to comprehend and retrieve relevant data from academic dishonesty cases.* **Methodology:** *Academic dishonesty cases are comprised of different variable types such as nominal, continuous, and categorical data. Therefore, Gower coefficient algorithm is required to quantify the similarity between 2 objects. This study uses R Programming as a tool for data statistical analysis.* **Findings:** *Based on the*

results, there are 2 cluster groups for academic dishonesty cases. They are clusters for cases mostly committed by part-time students and the other for cases committed by full-time students. **Contribution:** *This study using real legal cases for academic dishonesty committed offences among undergraduate students. The contribution in this study lies in handling insensitivity of multivariate data, missing values and outlier detection without remove any previous cases. Thus, precedent cases can be established based on similarity of previous cases.*
Keywords: Data clustering, Gower coefficient, similarity, academic dishonesty

Abstract ID: **AIMC-2017-STE-1419**

FIELD PROGRAMMABLE GATE ARRAY (FPGA) IMPLEMENTATION OF RADIO FREQUENCY (RF) POWER MEASUREMENT PROCESSOR IN 1/F NOISE

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Abstract

Introduction: *RF power sensor is used to measure the power of various types of signal in the field of communication, aerospace, defence and signal detection. The acquired signal is corrupted by both additive white Gaussian noise (AWGN) and 1/f noise which leads to error in power measurement. Thus, the objective of this project is to implement a radio frequency (RF) power measurement processor on a field programmable gate array (FPGA) to minimize the noise in the signal and improve power measurement accuracy.* **Methodology:** *The RF power measurement processor consists of five main processes or modules which are whitening, wavelet decomposition, denoising, wavelet reconstruction and power estimation. Whitening process converts the signal properties from 1/f noise to AWGN. Two whitening methods used are linear prediction and decimation. For implementing wavelet on FPGA, Mallat's architecture is used for signal decomposition and reconstruction. The signal is then decomposed into five levels with detailed and approximate coefficients. The detailed coefficients are further used in the denoising process. Universal thresholding is used to determine the threshold value. Once denoised, the signal is reconstructed in the next process by using Mallat's reconstruction scheme. Finally, the signal power is estimated from the power estimation module. Altera Quartus II and ModelSim software are used extensively in this project to simulate, verify and implement the RF power measurement processor on FPGA. FPGA platform provides flexibility, reprogrammability and high rate of throughput by exploiting bit parallelism and pipelining techniques. The resulting waveforms, RTL notation, and data flow graphs are presented and compared with Matlab simulations to verify its accuracy, function and performance.* **Findings:** *A signal corrupted with 1/f noise and AWGN is used in this paper to test and verify the functionality of the system. The signal is obtained from a RF power sensor with sample size of 41,000. First, the resulting waveforms of both Matlab and Altera ModelSim software are compared module by module starting with the decimation module and end with power estimation module. It is shown that the resulting waveforms are similar. This indicates that the functionality of the implementation has been proven by simulations. In whitening process using decimation, the decimated signal are obtained after 40,960 clock cycles. The noise properties of the signal have been converted into AWGN. Wavelet decomposition, denoising and reconstruction took up to 251 clock cycles. Next, the power estimation module used another 512 cycles to obtain a single power reading. From this experiment, the proposed architecture manages to produce results after 41,723 cycles. A total of 1269 elements are used for wavelet decomposition, denoising and reconstruction and 250 logic elements for power estimation.* **Contribution:** *This paper focused on minimizing the resources needed to implement the RF power estimation system. At the same time, the speed of the system need to be kept at optimum level which is measured in the number of readings per second. The wavelet implementation follows Mallat's architecture with a further reduction in logic elements used by manipulating the properties of Haar wavelet. The rms value for the power estimation of signal before and after the implementation of proposed architecture shows 62.4% increase in accuracy of the reading.*

Keywords: FPGA implementation, RF power sensor, wavelet

Abstract ID: **AIMC-2017-STE-1421**

APPPLICATION OF PHENYLBORONIC ACID AS GLUCOSE-SENSITIVE SENSOR IN HYDROGEL FOR DIABETES: A REVIEW

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Abstract

Introduction: *Diabetes is one of the main causes of heart disease. Researcher have developed various types of treatment including transdermal delivery of insulin. Recent studies have focused on smart hydrogel glucose sensors that detect glucose blood level in diabetic patient through skin and trigger insulin release as the glucose blood level fluctuates.* **Methodology:** *Phenylboronic acid (PBA), one of glucose-sensitive material sensor was mainly used in diabetic sensor and treatment study. PBA forms a cyclic boronate esters with glucose and gives out negatively charged ions that help in drug delivery system. Polyacrylic acid was more widely studied by researchers in forming PBA-functionalized polymer compared to silica, polysaccharide and polypeptide due to its characteristics and stability.* **Findings:** *This article aims to review various applications of phenylboronic acid as glucose-sensitive sensor material and the comparison of different PBA-functionalized polymer used in delivering insulin.* **Contribution:** *PBA shows significant roles as a main component in smart hydrogel in delivering exact amount of insulin in response to increment of glucose blood level and increase patience compliance.*

Keywords: Phenylboronic acid; glucose; diabetes; insulin delivery

Abstract ID: **AIMC-2017-STE-1423**

EVALUATION OF GRADUATE STUDENTS EMPLOYABILITY FROM EMPLOYER PERSPECTIVE: REVIEW OF THE LITERATURE

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Abstract

Introduction: *Graduate employability is a critical issue in Higher Education. Employers are expecting not only the subject knowledge from the students to compete with the current industry demands, but also additional skills to face corporate battles and challenges. The aim of this research is to identify the skills demanded by the employers and to incorporate them in the learning outcomes of higher education.* **Methodology:** *This research aims to review and analyses all the papers published from 2010 until now regarding the evaluation of graduate students from employers' perspectives. This subject has been rarely touched in literature and needs more focus regarding to its importance for both education institutions and employers. Papers were collected from different databases and carefully analyzed by the authors. Different classification methods were done. The results were analyzed.* **Findings:** *Results indicate that employment sectors expect a set of general skills as well as specific knowledge from every employee. Based on the findings, we have classified these skills into 4 categories such as Basic Skills, Interpersonal Skills, Emotional Intelligence and Specific Knowledge* **Contribution:** *Employability is the ability of an individual to gain employment appropriate to his/her educational standard (Dearing, 1997). It is very important to train the students to satisfy the requirement of the industry. There is an obvious relationship between the education and employment (Cai, 2012). The most focus on these studies were to observe the first employment after the graduation. Until 1990s there was not a huge attention to the movement process from education to the career field. This change in the research can be referred to the use of work success and can be an indicator to the quality of the education generally and higher education specifically (Teichler 2009). Since that, the needs of employment were taken into consideration from the universities, educational institutions and also students in the teaching and learning processes. Unfortunately, the needs of the career fields are not so clear because of the rapid growth in the labor market. Employers expect higher levels of competence than the actual outcome of the courses. (Zwane et al., 2014)*

These challenges have induced the researchers to conduct more studies about the evaluation of the graduate from employer perspectives. The results of these studies were diverse and argumentative (Teichler ,2009). Employer's perceptions about employees vary according to the traditional, political and other factors.

Keywords: Higher Education - Employability - Graduates

Abstract ID: **AIMC-2017-STE-1425**

FUZZY LOGIC CONTROLLER OF QUARTER CAR SEMI ACTIVE SUSPENSION

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Abstract

Introduction: *A car suspension system is the structure that substantially separates the car body from the wheels of the car. Suspension consists of the system of springs, shock absorbers and linkages that connects a vehicle to its wheel and allows relative motion between the two. The purpose of this paper is to design suitable controller for semi-active suspension quarter car systems. The controller's purpose is to decrease of a continuously damping in suspension system. The inconsistency condition of the road are the main element that effect ride comfort.* **Methodology:** *In suspension principles, the road wheels and vehicle body produce vertical forces which rotational motions. The irregular condition of the road are the main element that effect ride comfort. The approach of the study is review on literature that have relation suspension system, automotive system and related designed controller. This knowledge is essential as this is the basic foundation of this research. Next, model the quarter car system. From the quarter car system model, it can be extract the mathematical modelling and state space of the model. Then, stimulate the quarter car suspension system by using Simulink and Matlab software. Analyse the performance of the suspension system the present and absence of controller. This result is very crucial to investigate the suspension system performance. Therefore, designing suitable controller for semi-active suspension quarter car systems is very important. The controller's is to reduce of a continuously damping in car suspension system. In this paper, it is focused on car body deflection. Last but not least, analyse the controller performance by comparing with different types of controller. The performance result is discussed and concluded the research.* **Findings:** *By studying about model passive car suspension system, the car body delection is reduced, however it takes a longer time to achieved stable condition. The PID controller also achieved the target which is to reduced the vibration and statisfied the acceptable range of stability time. However, there was overshoot according to the Matlab and Simulink simulation. Therefore, the new approach for this study for the controller is designed which is fuzzy logic controller. The fuzzy logic controller optimized by membership function rule method for the semi-active suspension of cars. The model will be applied to a sample one quarter car model. The results of quarter car model are compared between without controller, PID controller and FLC controller model have been assessed based on previous study. It has been shown that the fuzzy-logic controller displays better performance than the PID controller and without controller for both the minimization of the car body deflection of the controller.* **Contribution:** *Reduced the oscillation of the vibration in car body deflection using pid controller and fuzzy logic controller. Achieved the stability of car body within acceptable time range.*

Keywords: SEMI-ACTIVE SUSPENSION, CAR BODY DEFLECTION, PID, FUZZY LOGIC CONTROLLER

Abstract ID: **AIMC-2017-STE-1428**

CONTROL SURFACE SENSORS FAULT DIAGNOSIS FOR UNMANNED AIR VEHICLE USING ARTIFICIAL NEURAL NETWORK BASED SFDIA

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Abstract

Introduction: *The occurrence of faults during the flight of an unmanned aerial vehicle (UAV) is very critical due to its impact on the completion of flight vehicle flights. It has been found that most of these faults are caused by breakdowns in sensors and special sensors for the aircraft control surfaces of the UAV including roll, pitch, heading, aileron, rudder and elevator of the aircraft as well as all cases of deflection from the aileron, elevator, and rudder.* **Methodology:** *This paper presents an effective technique with two proposed approaches to ensure sensors for working with high efficiency. The first approach is Neural Networks (NNs) and it is based on the tool Sensor Failure Detection Identification and Accommodation (SFDIA). The second approach is added through using Radial-Basis Function (RBFNN) which is trained online with Extended Minimum Resource Allocating Network (EMRAN) algorithms and it has been chosen for modeling purposes due to its good estimation capabilities and compact size.* **Findings:** *The results of the proposed technique showed that the modeling process of neural network-based tool SFDIA and the algorithm EMRAN are able to achieve high-resolution sensors in the behavior of control surfaces of the aircraft as well as the diagnosis of the repair systems.*

Contribution: *In this paper unmanned air vehicle UAV for the sensor failure detection identification and accommodation problem has been analyzed . The control process of the UAV is accomplished through transmitting signals by sensors. In this respect comes the importance of increasing the efficiency of sensors. In order to apply the proposed techniques ANN based SFDIA and NN trained with the EMRAN algorithms which is a set of conditions that decide how the implemented structure should be adapted for better suit the training data to improve the electrical sources performance of unmanned airborne vehicles.*

Keywords: Unmanned Air Vehicle (UAV), Sensors Fault Diagnosis, Neural Networks (NNs), Sensor Failure Detection Identification and Accommodation (SFDIA), Extended Minimum Resource Allocating Network (EMRAN) algorithms.

Abstract ID: **AIMC-2017-STE-1429**

PRODUCTION AND CHARACTERIZATION OF ACTIVATED BIOCHAR FROM OIL PALM EMPTY FRUIT BUNCH (EFB) UNDER DIFFERENT ACTIVATION TEMPERATURE BASED ON MORPHOLOGY AND PHYSICOCHEMICAL PROPERTIES

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Abstract

Introduction: *Malaysia has become second largest oil palm producer and exporter in the world. Hence, this industry produced huge amount of agriculture waste where about 23 million ton of empty fruit bunch (EFB) are generated per year. Thus, disposing of these agriculture waste will be created negative impacts to the environment. Since the EFB are high carbon content, rich in lignin and available locally and abundantly, it has the potential as precursor for production of activated biochar.In this study, EFB was used as precursor for production of activated biochar through chemical activation to determine the effects of different activation temperatures (400, 500, and 600°C) on physicochemical properties of activated EFB biochar and their physicochemical properties were analyzed.* **Methodology:** *The raw material was carbonized at 350˚C for 2 hours (first pyrolysis). The purpose of carbonization process is to develop initial porosity of the sample. The carbonized sample was impregnated with potassium hydroxide at 1:1 ratio (KOH pallets: biochar). The impregnated sample was activated at 400, 500 and 600˚C of activation temperature (second pyrolysis) for 45 minutes of activation time. The activated samples were washed with hot distilled water and 0.1 M HCL until the pH of solution reached 6.0-7.0 to remove the remaining KOH components in the samples. The samples were filtered and dried at 102˚C for 24 hours. The activated EFB biochar were characterized for physicochemical properties, surface area by Brunauer, Emmett and Teller (BET) surface area and organic functional group by Fourier Transform Infrared Spectroscopy (FTIR).* **Findings:** *The results indicate that ash content, fixed carbon, pH, electrical conductivity (EC), Total C, Total O, Total P and Total Zn of activated EFB biochars were increased with temperature. However, volatile matter, cation exchange capacity (CEC), total H and N content were decreased with increasing activation temperature. Meanwhile, the BET surface area, total pore volume and micropore volume were increased with increasing activation temperature. For Fourier Transform IR (FTIR) analysis, there were reductions in the amount of functional groups as pyrolysis temperature increased for the activated EFB biochars.* **Contribution:** *Three activated biochar with novel structure and surface properties were derived from chemical activation of EFB with activation temperature of 400˚C, 500˚C and 600˚C. The results revealed that the activated EFB biochar from 600˚C was most preferable over 400˚C and 500˚C in terms of physicochemical properties, surface area and organic functional groups for improvement of remediation efficiency and environmental advantages.*

Keywords: Empty Fruit Bunch (EFB), Activated biochar

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ENCAPSULATION OF FUNGICIDE IN NANOPARTICLE MATERIALS FOR INHIBITION OF PEPPER PLANT FUNGAL GROWTH

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Abstract

Introduction: *Fungal infection is a common disease occurs in pepper plantation that may have resulted from fungicide leaching, especially during rainy season. This study aims to overcome the leaching problem by using*

encapsulated fungicide in multiwall carbon nanotubes (MWCNTs). **Methodology:** *Encapsulation of mancozeb in MWCNTs was prepared by stirring for 20 min and 30 min. The encapsulated mancozeb-MWCNTs were investigated using UV-vis spectroscopy method. Anti-fungal activity of the encapsulated mancozeb-MWCNTs was observed on fungi isolated from pepper plant leaves and seeds.* **Findings:** *Anti-fungal assay showed that growth of fungi isolated from Malaysia pepper plant leaves and seeds were inhibited when encapsulated mancozeb-MWCNTs were applied on the growth media. Interestingly, the anti-fungal activity was sustained even after seven days of application as indicated by the minimum fungal colonies on the growth media.* **Contribution:** *These findings provide essential information on the application of nanomaterials for efficient, safe and sustainable fungicide delivery that can be applied by pepper plantations in Malaysia.*
Keywords: Multi-wall carbon nanotubes (MWCNTs) , fungicide , pepper plant

Abstract ID: **AIMC-2017-STE-1433**

OIL PALM BIOMASS-BASED BIOSORBENTS FOR REMOVAL OF ENVIRONMENTAL POLLUTANTS – A REVIEW

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Abstract

Introduction: *Malaysia being one of the largest producers of palm oil dedicated most of the agricultural land to oil palm plantations. This in turn gave effect on the environment with the excessive usage of pesticides, excretion of effluent and generation of large quantities of biomass. In the lights of promoting sustainable development, utilization of oil palm biomass-based adsorbents such as activated carbons, etc. for the removal of environmental pollutants appears to be a viable solution.* **Methodology:** *This review aims to present current usages of different parts of oil palm biomass as biosorbents for the removal of various environmental pollutants. Physical and chemical factors that enhance the applicability of the biomass as adsorbents are also discussed.* **Findings:** *The literature clearly reveals that each part of the oil palm biomass is potentially applicable as biosorbents for most environmental pollutants and the capability could be further enhanced through modifications in accordance to its specific adsorption. The modifications include chemical treatments such as acidic, basic and drying agent treatment under optimum dosages.* **Contribution:** *Recent trends in the application of oil palm biomass as biosorbents are also discussed that together open new doors to sustainable development.*

Keywords: oil palm biomass, biosorbent, activated carbon, environmental pollutants

Abstract ID: **AIMC-2017-STE-1435**

SYNTHESIS OF ANTIMALARIAL OF (1)-N-(2-METHOXYBENZYL)-1,10-PHENANTHROLINIUM BROMIDE FROM WINTERGREEN OIL

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Abstract

Introduction: *Malaria continues to be main health problem and deadly parasitic disease in the world. Malaria could be treated by oral medication. However, it constantly changes, especially through the development of parasite (such as P. falciparum), which is resistance to standard antimalarial drugs (chloroquine). Therefore, the discovery and development of new effective antimalarial drugs are urgently required to solve the problems. By considering the previous results, the another 1,10-phenanthroline derivative was designed and synthesized from methyl salicylate (compound in wintergreen oil) as the main raw material. The synthesis of (1)-N-(2-methoxybenzyl)-1,10-phenanthrolinium bromide from wintergreen oil had been conducted.* **Methodology:** *Synthesis of antimalarial of 1,10-phenanthroline was conducted in several steps. The first step of reaction was reduction of methyl salicylate which contained in wintergreen oil using LiAlH4. The raw material was dissolved in acetone and added by LiAlH4. The mixture was refluxed for 2 h and extracted. The second step was methylation of salicylaldedhyde using dimethylsulfate and K2CO3. The mixture was refluxed for 4 h. Methylation product was reduced using sodium borohydride (NaBH4) with grinding method. 2-Methoxy benzyl alcohol was brominated using PBr3 reagent and was refluxed to 3 h. Steps of synthesis in above mentioned represent the process of reagent alkylation and the product was then reacted with 1,10-phenanthroline monohydrate. The final step is*

benzylation of 1,10-phenanthroline monohydrate with the synthesized 2-methoxy benzyl bromide. It was conducted by refluxed in acetone for 14 h. The structures of products were characterized by IR, GC-MS and 1H-NMR spectrometer. **Findings:** *The first step of reaction give salicylaldeyde as yellow liquid (98%). The second step yield 2-methoxy benzaldehyde in the form of a purple liquid (96.2%). Reduction step produce 2-methoxy benzyl alcohol in the form of yellow liquid (55%). 2-Methoxy benzyl alcohol was brominated to yield 2-methoxy benzyl bromide as yellow liquid (67%). The final step produce (1)-N-(2-methoxybenzyl)-1,10-phenanthrolinium bromide (63%) as a pink solid with melting point of 199-200 oC.* **Contribution:** *The novelty of this research is the raw material and product. The procedure used in this research is well known and to my knowledge, there is no one who did the research using the same raw material and produce the same product.*

Keywords: Wintergreen oil, (1)-N-(2-methoxybenzyl)-1,10-phenanthrolinium bromide, antimalarial

Abstract ID: **AIMC-2017-STE-1442**

SEISMIC ANALYSIS FOR MULTI-STORY HORIZONTALLY DAMPED BUILDING ABOVE BASEMENT LEVEL

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Abstract

Introduction: *Due to the high increasing rate of population and some restrictions on construction in big cities, the basement floors are commonly exist in multi-story buildings. Now a day, seismic energy dissipating devices are being used for various types of structures and located in basements which are difficult to maintain. The main objective of the study is to evaluate the effectiveness of horizontal dampers in the ground floor level of the multi-story building above basement. Among different types of dampers, visco-elastic (VE) dampers are used for this numerical study. For the better understanding of the horizontal dampers, stiff foundation system is considered, thus soil-structure interaction is omitted.* **Methodology:** *This study was carried out by using linear time history analysis. In order to carry out the study a hypothetical 40 story moment resisting residential building was designed without any basement by using the finite element modeling software (ETABS 2013 software). Four buildings also modeled with different basements and horizontal dampers at the ground floor level. These 4 buildings were similar 40 stories height having dampers at 5th, 10th, 15th and 20th level respectively. The compressible soil condition was not considered and the entire building was supported by fixed foundation. Visco-elastic dampers were used as horizontal dampers having the stiffness, K of 20000 KN/m and the damping coefficient C is 10000 KNs/m. Sabah earthquake (05/June/2015) with the PGA of 0.126g was considered in time history analysis of all buildings.* **Findings:** *Different dynamic properties such natural periods, top story displacements and base shears were evaluated. It was found that the installation of horizontal dampers dramatically changed the behavior of the structures. The natural periods were decreasing as the numbers of basements were increasing indicating the ductile action. Top story displacements were increased indicating more flexible structures and among the analyzed structures, maximum top story displacements were found when dampers were installed at level 5. Base shear also increased as the level of dampers moved up and the structure with dampers at level 10 showed the maximum base shear.* **Contribution:** *These results show horizontal dampers can contribute significantly towards minimization of earthquake damages for multi-story buildings having basements. Analysis results predict there is a relation between the horizontal dampers and their location along the height of the building. In this study, dampers at the height one fourth of the structure showed the most pleasant result. Another idea is that horizontal dampers may be possible as an alternative to base isolation which is difficult to maintain.*

Keywords: Multi-Story building, Horizontal damper, Sabah earthquake, Time history analysis

Abstract ID: **AIMC-2017-STE-1449**

EVALUATION OF GRADUATE STUDENTS EMPLOYABILITY FROM EMPLOYER PERSPECTIVE: REVIEW OF THE LITERATURE

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Abstract

Introduction: *Graduate employability is a critical issue in Higher Education. Employers are expecting not only the subject knowledge from the students to compete with the current industry demands, but also additional skills*

to face corporate battles and challenges. The aim of this research is to identify the skills demanded by the employers and to incorporate them in the learning outcomes of higher education. Papers were collected from different databases and carefully analyzed by the authors. Different classification methods were done. The results indicate that there is a gap between the learning outcome and the employability skills.

Methodology: *The research methodology used in this research is literature review. Papers were collected from different databases and carefully analyzed by the authors. The main search criteria used in this research is the employer perspective, skills and graduate students. Different classification methods were done and the results were analyzed.*

Findings: *The collected papers were classified based on the industry, country and the expected skills from the graduate students. Findings are really interesting.*

Results indicate that employment sectors expect a set of general skills as well as specific knowledge from every employee. Based on the findings, we have classified these skills into 4 categories such as Basic Skills, Interpersonal Skills, Emotional Intelligence and Specific Knowledge.

S.No	*Industry*	*Total papers Collected*
1	*Tourism/ Hotel/Hospitality*	*7*
2	*Manufacturing Industries*	*6*
3	*Information & communication Technology Engineering*	*6*
4	*Accounting*	*8*
5	*Management*	*6*
6	*Bio Molecular Science*	*6*
7	*Construction Industry*	*8*
8	*General*	*10*
9	*Industrial Engineering*	*8*

Contribution: *Further research is needed regarding to its importance for both education institutions and employers. By the end we develop a research outlines for future Employers Perspectives research.*

Keywords: Higher Education - Employability - Graduates- Evaluation

Abstract ID: **AIMC-2017-STE-1452**

RELATIONSHIP BETWEEN SAFETY CLIMATE FACTORS AND SAFETY PERFORMANCE IN CHEMICAL INDUSTRIES IN JOHOR

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Abstract

Introduction: *Safety is an important crucial issue to be concerned on in the rapid industrialization especially Chemical Industries. Chemical Industries are often classified as crucial and most complex system where accidents are tending to occur by new, unforeseen mechanisms. Accidents and Injuries in Chemical Industries give larger impacts to the industry's performance.Therefore, this research is aimed to develop a theoretical model to control and preserve safety performance through a well-organized system. Safety climate factor, a common tool in determining the safety performance will be used as determinant of the industry's safety performance.* **Methodology:** *A set of questionnaires compiling of safety climate factors (Commitment, communication, work pressure, Safety system, Safety competence, Safety Supervision, and Safety responsibility) and Safety Performance (Safety Behaviour, Safety Compliance, Safety Participation and Near Misses and Injuries) will be sent to the selected Chemical Companies in Johor. The collected sample data will be then divided into 2 equal sized sub samples, which SEM will be used to test the model which will be evaluated on the second sample.* **Findings:** *At the end of this study, the theoretical model developed will be useful in determining safety Climate Factors affecting Safety Performance in Chemical Industries.* **Contribution:** *Despites to previous researches on safety climate, this research will fill in the gap of investigating safety climate relationship in chemical Industries in Johor. At the end of this study, the theoretical model developed will be useful in determining safety Climate Factors affecting Safety Performance in Chemical Industries.*

Keywords: safety climate factor, safety performance, chemical industries

Abstract ID: **AIMC-2017-STE-1453**

ANALYSIS OF SOCIAL NETWORK COLLABORATIVE LEARNING ON KNOWLEDGE CONSTRUCTION AND SOCIAL INTERACTION OF STUDENTS

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Abstract

Introduction: *Social network collaborative learning is normally created and sustained via students' social interaction. The higher education learning topic has moved from knowledge to a continuous learning process as relating to skills. Collaborative skills which are a piece of these skills have been held in high regard by both learners in the higher institution and even managers in the various organization. Despite arguments about negative opinions and assumption of social networking impact on learning outcomes, social interaction, and performances of students, some of the learners and teachers make use of this platform to disseminate information and carry out some other online educational collaborative activities which fosters communication between them. Based on this, research was carried out to explore the utilization of social networking in higher education environment for collaborative learning, particularly among teachers and learners. The purpose of this research is to analyzes the impact on social interaction in discussion forums and knowledge construction amongst students.* **Methodology:** *The research utilized highly populated public university which is familiar with social network collaborative learning activities. However, the research focuses on the usage of three kinds of activities (social interaction with peers and teachers, knowledge construction, and collaborative learning) which are performed via various social network platforms such as Facebook, Twitter, wiki, TedED, YouTube, blog.* **Findings:** *The result shows that most respondents agree that social network promotes collaboration with their peers and their teachers, and also it improves their communication skills with their peers and teachers. It also enhances social interaction and knowledge sharing with their colleagues and teachers. In the result, most of the respondents say that Facebook is the most used social network that enhances collaborative learning, social interaction and knowledge construction and the use of YouTube is more efficient in enhancing their educational purposes. Given this, will foster the learning outcome and experiences using collaborative learning, intellective abilities replication, and metacognition to promote a social network for collaborative learning in the institution of higher learning. The result of this analysis gives an indication on how active the students are within the course's activities.* **Contribution:** *The study finally present information that could be useful for the teachers about the students' performance, knowledge construction and students interactions within the course. Through this study teachers and/or tutors were able to interpret the social structure of the networks extracted from activities performed on the social networks and thus gain insight on students' participation patterns and styles in the course.*

Keywords: Social network, Social interaction, Collaborative learning, Knowledge construction

Abstract ID: **AIMC-2017-STE-1454**

AIRCRAFT PITCH CONTROL USING FUZZY LOGIC CONTROL

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Abstract

Introduction: *The movement of the aircraft pitch is very important to ensure the passengers are in intrinsically safe and the aircraft achieve its maximum stability. This paper aims to study and analyse the control systems used nowadays to control the aircraft pitch. Besides that, a controller using intelligence method will be used to enhance the performance of the aircraft pitch.* **Methodology:** *The equations of the aircraft pitch are needed and generated using the force and motion equation of the aircraft in its stable condition. In addition, state-space method is used to simplify the equations obtained. The simulation on the behaviors of the aircraft pitch motion is obtained using the widely used controller, Proportional, Integral and Derivatives (PID) controller. A simulation using MATLAB/Simulink is used to interpret the results. A block of the Fuzzy Logic controller is added to the closed-loop system of the aircraft pitch to tune the output graph obtained.* **Findings:** *From the simulation of pitch angle of an aircraft using Proportional Integral and Derivatives (PID) controller, a closed loop feedback is created to make the control system obtain a desired output following the input injected into the system. A step input is injected into the system and being converted into the state space form to simplify the system from the complex equation to the matrix form. Then, output is given from the generate system and a closed loop take place to make a negative feedback to the summation before the step input injected to the system. A gain is set to*

get a desired output same as the input injected. At this point, the Proportional Integral and Derivatives (PID) play the role to tune the gain until the ideal and best graph of the pitch angle obtained. The scope is used to give the output graph of the pitch angle while the terminators use to block the other graph for the roll angle and yaw angle from being misled the pitch angle graph. **Contribution:** *From this research, the rise time and settling time of the aircraft pitch angle will be reduce. The overshoot will be eliminate and enhance.*

Keywords: Aircraft stability, pitch motion , Fuzzy Logic Control, Proportional, Integral and Derivatives (PID), MATLAB

Abstract ID: **AIMC-2017-STE-1455**

ANALYSIS ON AIRCRAFT GROUND MOVEMENT AT KUALA LUMPUR INTERNATIONAL AIRPORT

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Abstract

Introduction: *Airport airside activity mainly consist of aircraft arrival and departure during turn-around process. Aircraft ground travel time increase with the increment of distance. This paper will discuss the descriptive analysis on passenger aircraft arrival and departure activities at Kuala Lumpur International Airport, KLIA.* **Methodology:** *Two years numerical data of passenger aircraft ground movement has been sorted using MySQL based on three airline providers. The aircraft ground movement data has been categorized based on weather condition, runway usage and gate assigned.* **Findings:** *The result shows that most of the arrival and departure activities happens during normal weather condition. During arrival activities, the most frequent runway usage for Airline 1 is Runway 32L (n= 2115), Airline 2 is Runway 33 (n=1889), and Airline 3 is Runway 33 (n=180). For departure activities, the most frequent runway usage for Airline 1 is Runway 32R (n= 1960), Airline 2 is Runway 33 (n=1682), and Airline 3 is Runway 33 (n=218). During arrival activities, the highest average ground travel time for Airline 1 is from Runway 33 to Gate J and Gate K (avg 90 mins), Airline 2 is from Runway 32L to Gate A and Gate B (avg 85 mins), and Airline 3 is from Runway 32L to Gate A and Gate C (avg 95 mins). For departure activities, the highest average ground travel time for Airline 1 is from Gate J, Gate K and Gate P to Runway 33 (avg 95 mins), Airline 2 is from Gate A and Gate C to Runway 32R (avg 95 mins), and Airline 3 is from Gate A, Gate B and Gate C to runway 32R (avg 95 mins).* **Contribution:** *As a conclusion, the study shows pattern of KLIA ground activity amongst three airlines based on weather condition, runway usage and gate assigned. The findings will be an important contribution for future research at KLIA that will focus on ground delay produced during aircraft ground movement activities for each airlines, and airport airside simulation and optimization.*

Keywords: airport airside; arrival and departure; ground travel time; delay

Abstract ID: **AIMC-2017-STE-1456**

CONTROLLING THE PITCH ANGLE OF AN AIRCRAFT WITH DISTURBANCE USING LINEAR QUADRATIC REGULATOR CONTROLLER

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Abstract

Introduction: *This project shows the enhancement of pitch angle controller for manned-vehicle in mathematical modelling for auto pilot system. The manned vehicle is focusing on aircraft vehicle. The aircraft has 3 degree of freedom which is has 3 major motions thus these three motion are needed to be control. One of the motion is longitudinal motion which include pitch motion. The longitudinal motion will be in non-linear system and also disturbances. Then the system need to be linearized and transform into state space because of multiple input and multiple output. This system have to be controlled using suitable and effective controller.* **Methodology:** *In this project there two controllers are using. The general controller use is PID because easy to use and simulate. PID controller is taking as a benchmark of the result for the next controller. The next controller use is LQR. The LQR controller is in state space thus it will be easy to observe and control. This project will proof that LQR is a better controller for the aircraft system.* **Findings:** *LQR is a method in modern control theory that used state-space approach to analyse such a system. Using state space methods it is relatively simple to work with a multi-output system. The system can be stabilized using full-state feedback system. LQR problem is a special type of optimal*

control that deals with linear systems in state and in control and minimisation of parameter index or cost function that are quadratic. **Contribution:** *Increasing transient response and have quicker response. The controller use nbar as gain to eliminate the steady state error. checking on the robustness of the system with the lqr controller with bode plot and root locus. The comparison between PID controller and lqr by knowing the effect on the pitch motion.*

Keywords: Linear quadratic Controller , pitch motion control , implementation of lqr

Abstract ID: **AIMC-2017-STE-1458**

DESIGN OF 2X2 PLANAR SWITCHED BEAM ANTENNA ARRAY FOR 5G WIRELESS COMMUNICATION SYSTEMS

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Abstract

Introduction: *Phased Antenna-array system plays a significant role in wireless communication systems. Particularly in satellite communications and other applications demanding high directivity and improvements in throughput and Signal-to-Noise Ratio (SNR). Beamforming network offer an antenna beam steering and the possibility of placing a null to an interferer in a smart-antenna system [1-2]. However, the phased array system needs relatively high power consumption, intricate algorism and circuit complexity to generate multiple beams. On the other hand, Butler Matrix offers an alternative beam steering system with little complexity.*

Lots of energy is being wasted when an omnidirectional or fixed beam antenna is to be without any beam steering device. This is because most of the power will be distributed towards unintended user. To minimizes the power wastage, several beamforming networks are used to steer the radiation pattern of the antenna towards the desired user and form nulls towards the undesired interferer. This improves the Signal-to-Interference Ratio (SIR) by maximizing the received signal strength of the desired user and suppressed the undesired signals. Among the popular techniques of beamforming network are Butler Matrix [xxx], Phase array systems [xxx] and smart antenna system. The used of BM is the most common because it does not require complex algorism, and has simple structure that could be realized in planner form. A 2x2 BM base on Branch Line coupler was proposed in [xxx]. The results obtained shows that the system is capable of steering the beam at a maximum angle of 200 on either side of the E/H-Planes.

This article presents a steerable antenna based on a 2 × 2 Butler matrix (BM) having a good directivity high return loss. It is designed to operate at center frequency of 6GHz. Section II of the paper presents the design of the BLC and the patch antenna. Implementation of the proposed 2x2 switched beam antenna discussed in Section III. In section IV, the results, discussions and conclusions are presented.

Methodology: *II. Branch Line Coupler Design*

In this article, the output ports of the branch-line coupler is feeds the two antenna elements. Hence, a 2x2 butler matrix feed 2 radiating antenna elements that gives the fixed overlapping beams deposed on the different directions and cover the 200 Cellular area. The characteristic impedances of the vertical and horizontal branches of the BLC are given by [7]:

$$Z_{0s} = Z_0 \sqrt{(1 - [|S_{31}|]^2)} \quad (1)$$

and

$$Z_{0p} = Z_{0s} / \sqrt{(1 - [|S_{21}|]^2)} \quad (2)$$

Where Z_{0s} and Z_{0p} are the impedances of the vertical and shunt branches of the coupler. By matching all the ports with an Impedance equal to the characteristic impedance Z0 of the line, and use (5) and (6), Z_{0s} and Z_{0p} are 35.35Ω and 50Ω respectively. These impedances are used to compute the initial parameter of the BLC. Fig. 1 shows the layout of the BLC after tuning and optimization. Port 1 is taken as the input, port 2 and port 3 are the through and the coupled ports respectively while port 4 is completely isolated.

III. Antenna Design

Microstrip patch antenna was used to test the beam steering capability of the system. It has been widely used Because of its compactness, lightweight, and cost effective. Input impedance of patch antennas array depends on their geometrical shape, dimensions, the electrical and mechanical properties of the materials involved, the location and type of the feedline. Therefore, a subset of antenna parameters can be adjusted to achieve the "best" geometry for matching at any desired resonance frequency. The inset-fed microstrip antenna provides a method of impedance control with a planar feed configuration [8]. The rectangular patch microstrip antenna served as the radiating element. The width and length of the rectangular patch and the length of the inset feed

are calculated according to the equations presented in [8]. Fig 2 shows the layout of the patch antenna and the return loss.

Findings: *This paper presents a design of a 2x2 planar beam steerable antenna array system for 5G application. All the formulae used to obtain the initial dimensions of hybrid coupler and radiating elements were evaluated using MATLAB. The components are then designed and simulated using a commercial software, CST Microwave Studio 2005®. A specially coated Polyethylene terephthalate (PET) was used as the substrate with measured thickness of 0.125mm, εr = 2.49 and a loss tangent of 0.042. Silver-nano printing technology was used to produce the prototype. Having obtained the simulation results for individual components, they are combined on a single substrate and simulated using in the same environment. The simulated result of beam steerable antenna is shown in Fig. 3.*

In contrast to the proposed system in [9] where three (3) antenna array are used as the radiating elements, this study uses only single antenna per port. A peak realized gain of 3.03dB and directivity of 7.12dBi at the designed frequency are achieved with only one antenna element as against a gain of 7.6 dB and directivity of 14 dBi with three antenna elements which translate to a gain and directivity of 2.53dB and 4.67dBi per antenna. The result obtained outperformed the those presented in [9] as they used three antenna array in place of single antenna used in this study. The designed antenna system would support the future 5th generation mobile communication that was proposed to operate at 6 GHz of frequency and above.

Contribution: *This paper presents a design of a 2x2 planar beam steerable antenna array system for 5G application. All the formulae used to obtain the initial dimensions of hybrid coupler and radiating elements were evaluated using MATLAB. The components are then designed and simulated using a commercial software, CST Microwave Studio 2005®. A specially coated Polyethylene terephthalate (PET) was used as the substrate with measured thickness of 0.125mm, εr = 2.49 and a loss tangent of 0.042. Silver-nano printing technology was used to produce the prototype. Having obtained the simulation results for individual components, they are combined on a single substrate and simulated using in the same environment. The result shows that the antenna system could be a suitable candidate for the future 5th generation mobile communication that was proposed to operate from 6 GHz and above.*

Keywords: Phased Antenna-array, Branch Line coupler, Butler matrix and beam steering

Abstract ID: **AIMC-2017-STE-1459**

EFFECT OF THE REACTANT CONCENTRATIONS ON MANGANESE OXIDE STRUCTURES AND THEIR CATALYTIC PERFORMANCE FOR DEGRADATION OF METHYLENE BLUE

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Abstract

Introduction: *Various Mn Oxides have been studied extensively in the past decades due to their possible applications in several areas such as catalysis, adsorbents, ion-exchanges and batteries. Different approaches have been applied to synthesize these materials, resulting many different structures, morphologies, and physico-chemical properties. Among the applications of Mn oxides, degradation dyes are the hottest topics because organic dye pollutants in water have become the source of environmental problems. In current work, three different structures of Mn oxides were synthesized via redox reaction between KMnO4 and glucose in aqueous solution. The prepared Mn oxides was used to degrade methyelene-blue .* **Methodology:** *The three Mn oxides (MnO, α-MnO2, and δ-MnO2) were synthesize by sol-gel method involving a redox reaction between KMnO4 and glucose. The influences of different KMnO4/glucose molar ratio on structures and morphologies of prepared Mn oxides has been thoroughly investigated by X-ray powder diffraction, scanning electron microscopy, and nitrogen adsorption/desorption measurements. The catalytic performance of the three oxides for methyelene- blue degradation are examined by manipulation of different reaction parameters such as reaction time, reaction temperature, dye concentration, catalyst concentration, hydrogen peroxide concentration. The experimental data were analyzed using the first and second-order kinetics with respect to the concentration of the MB dyes and the Chu kinetic model* **Findings:** *The MnO and δ-MnO2 can be obtained at too concentrated and moderately concentrated reactant concentration (KMnO4 and glucose) , respectively, whereas α-MnO2 was prepared at diluted reactant concentration. The catalytic activities of the as-synthesized Mn oxides were evaluated by carrying out the degradation study of methylene blue (MB). The MnO is highly effective in heterogeneous activation of hydrogen peroxide to generate hydroxyl radicals for methylene blue degradation compared to the other two catalysts (α-MnO2 and δ-MnO2) with the activity order of MnO> α-*

MnO2> δ-MnO2, being able to remove 90% of methylene blue in 120 min at the conditions of 50 mg/L MB, 25 mg catalyst, 15 mL H2O2 at room temperature. The experimental data were analyzed using the first and second-order kinetics with respect to the concentration of the MB dyes and the Chu kinetic model. The Chu kinetic model seems to provide the best correlation of the data obtained in this experiment. **Contribution:** *The MnO structure prepared by a sol-gel technique has never been reported previously, whereas the other two oxides were obtained using reported method. The catalytic performance of the three Mn oxides synthesized by a sol-gel reaction between KMnO4 and glucose for degradation of dyes such as methyele blue has also never been published. The excellent performance of MnO for degradation of methyelene-blue dye is a good candidate catalyst for handling various organic dye pollutants, which become major environmental problems.*

Keywords: MnO, α-MnO2, and δ-MnO2, Fenton-like reaction

Abstract ID: **AIMC-2017-STE-1460**

GPR REFLECTION ANOMALIES FOR DIFFERENT MATERIAL IN VARIOUS SOIL WATER CONTENT

Corresponding Author: MIMI DIANA BINTI GHAZALI
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Co-Authors: Othman Zainon;Khairulnizam M.Idris;Rahmat Mohsin

Abstract

Introduction: *Ground penetrating radar (GPR) is widely used for non-destructive inspection of the subsurface structures. The GPR mechanism relies on the extent to which various materials allow or prevent the transmission of radar waves. The contrast in the material properties adjacent layer is a function of electromagnetic radiation which contributed to the amount of energy reflected.* **Methodology:** *This paper introduces a comparison of GPR reflection profiles for the different material in the sandy sediment with different soil moisture. Experiments were conducted by scanning a 50cm x 30cm fiberglass, 16cm x 100cm PVC (type of non-metal pipelines) and two heavy metal pipelines (10cm x 70cm and 20cm x 80cm) which was buried at parallel and equivalent depth. The measurements were performed in two soil condition with respect to low and high water content.* **Findings:** *By processing using Reflex2DQuick, the GPR reflection profile had shown the high-amplitude GPR anomalies as guideline to estimate attribute to boundary between pipelines and sediment. The outcomes of the study show that the GPR profiles for metal pipelines give a strong reflection which consequently diffracted energy for other materials reflection. This eventually caused of the misinterpretation to the GPR raw profile.* **Contribution:** *In addition, the signal reflection of the buried pipes are significantly different depend on soil moisture as different water contents affect the GPR velocity.*

Keywords: Reflection, Ground Penetrating Radar, Soil Moisture

Abstract ID: **AIMC-2017-STE-1467**

SYNTHESIS OF COBALT NANOPARTICLE FOR CERAMIC PIGMENT

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Co-Authors: Erdawati; Athiek Sri Redjeki

Abstract

Introduction: *Cobalt nitrate and alumina, which can be found in the wasted sludge of electroplating and steel plants, are the main raw material for synthesizing Cobalt Blue, a favourite basic pigment of ceramic glaze. Containing heavy metal and refractory, its brilliant blue colour is stable at the very high temperature of ceramic firing up to 1400ºC. With the rise of nanotechnology, many ceramic industries are now employing nanoparticle pigments for their vivid and intensive colours, which are more appealing to customers yet more efficient in production cost.* **Methodology:** *In the synthesis of cobalt blue pigment nanoparticle, cobalt nitrate and alumina were dissolved in water with added poly vinyl alcohol and poly ethylene glycol, while pH was controlled by drops of sodium hydroxide. The mixture was then centrifuged to obtain blue sediment. The sediment was then washed and dried prior to calcination at varying degrees of centigrade, and characterization in several instruments for its morphological, thermal, and physical properties.* **Findings:** *The results of synthesis are blue nanoparticle samples of cobalt alumina. The samples of cobalt blue pigment were more homogeneous in size, compared to those prepared by mechanical process. Their dispersion in ceramic glaze mixture was homogeneous and stable up to 1200ºC of firing. Their brilliant blue colour was enriched with a hint of light green.* **Contribution:** *To the best of authors knowledge, no other exactly similar previous studies has been conducted. In fact, this study will contribute its results in particular to ceramic industry by providing synthesis*

process of a better quality yet more economical nanopigment. The process provided by this study will also help the environment by two actions: (1) reducing waste and harmful materials by reusing hazardous solid industrial waste; (2) reducing energy consumption due to low calcination temperature.

Keywords: cobalt, nanoparticle, pigment

Abstract ID: **AIMC-2017-STE-1468**

THE USE AND UTILIZATION OF LOCAL E-GOVERNMENT APPLICATION IN URBAN VILLAGES (STUDY IN TANJUNGPINANG CITY, INDONESIA)

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Abstract

Introduction: *Under Republic of Indonesia President Instruction number 03 in year 2003 about National Policy and Strategy Development of E-Government, local government whether province, cities or regency following also by sub-district, urban-village and village should provide public services e-government oriented. In the age of digital, technology play an important role in the human life and government at in this case local government particularly urban-villages in Tanjungpinang city of Riau Islands Province has already uses this program. Therefore, electronic digital mode is not easy as imagine or in the other words urban-villages electronic service face a big barrier.* **Methodology:** *To examine this research, qualitative approach mode has chosen as the main approach and to be more explicit, descriptive mode would be realistic as a tools to "extract" the reseach question about use and utilization of local e-government in Tanjungpinang city.According to Creswell qualitative research is an inquiry process of understanding based on distinct methological traditions of inquiry that explore social or human problem. the researcher builds a complex, holistic picture, analyzes words reports detailed views of informants, and conducts the study in natural setting.* **Findings:** *The results of this study indicate that the application of electronic application system in urban village of Tanjungpinang has been said either because the application of SIMDA BMD (management information system of local property), SIMDA Finance (regional management information system), SIMARDI (archive management information system) And SIAK (population administration system) is a useful application to help ease the work. With the existence of this application greatly facilitate the work of employees, the work process becomes short and does not take a long time. Obstacles in this application because SIMDA BMD and SIMDA financial applications are still offline, in the data input still works twice both in Kelurahan to Dinas DPPKAD. In bmd simda application there is an option to import and export data but can not be used properly, whereas to import the data the urban village must use the flash to mengimpormasikanya to the Office DPPKD.Untuk SIAK application there are constraints is the Internet and electricity network for operating SIAK application requires speed High internet and server network for this application has its own network directly connected to DISDUK. Without internet connection from DISDUK then the SIAK application in Kelurahan can not be used.* **Contribution:** *This is an preliminary studies to examine of local e-government in 18 urban-villages in Tanjungpinang city, Kepulauan Riau Province or riau Islands in Indonesia. In the beginning of local e-government focus on build an applications, mutual human resource understanding and favor of infrastructure. To accomplish this research actually need a large various expert to describes more deep about why e-government could not succeed as public expectation. In, addition through this research will be use full to identification various program of e-government applications in 18 urban-villages in Tanjungpinang city and future development.*

Keywords: local government, e-government, digital information, public services

Abstract ID: **AIMC-2017-STE-1469**

INVESTIGATION OF INTERACTION ON STANDARD AND MODIFIED ADHESIVE (ALBIPOX) WITH WATER USING MOLECULAR MODELLING

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Abstract

Introduction: *The extensive applications of epoxy resins give a motivation to prepare the organic/inorganic composites of epoxy resins with better properties and application. However, they are frequently subjected to severe environmental conditions, making an improvement in terms of its mechanical and thermal properties become desirable. To satisfy the industrial needs of an accurate and suitable application of epoxy resins,*

computational method is applied since the trial an error approach to experimentally study the epoxy resins are time consuming and expensive. Hence, the objective of this study is to predict the behavior of standard and modified epoxy resins with water using molecular dynamic technique **Methodology:** *Material Studio software was used for the simulation of adhesive with water. The first stage was to build the initial structure of molecules involved in the simulation. Standard epoxy resin consists of a mixture of diglycidyl ether of bisphenol-A (DGEBA), silica fume and polyetheramine while carboxyl terminated butadiene nitrile (CTBN) were used as an additional material to modify the epoxy resin. A cell consisting of DGEBA, silica fume and polyetheramine were built in equal weight percent using Amorphous Cell module. Meanwhile, a cell consisting of water molecule was constructed by packing the molecules into an arbitrary cubic cell using Amorphous Cell module where the initial molecular configuration was built and allowed to mix randomly. The cell was constructed using a fix amount of 2000 molecules of water in an arbitrary cubic box with the dimension of 70 x 70 x 70Å. The adhesive was inserted into the water box and the cell was subjected to geometry optimization task for refinement and short dynamic simulation for 5ps to lose the vacuum space between the molecules created when using Amorphous Cell construction. For the production run, dynamic simulation was applied for 100ps using NPT ensemble with COMPASS II forcefield.* **Findings:** *The trajectory from the dynamic simulation for every condition was analyzed and the mean square displacement (MSD) was obtained. MSD measures the deviation time between the positions of particles from a reference position. The result obtained shows that the MSD for water molecules in standard adhesive system was higher than Albipox which is the adhesive specifically modified intended to toughen the standard adhesive and control moisture uptake. Higher MSD for water in the system with standard adhesive means that it is easier for water molecules to move in the system. It moves to a wider or larger area compared to the water with Albipox in the system. Based on the result, the usage of Albipox, which is actually the standard adhesive with the addition of CTBN molecules, was successful to control the moisture uptake of water. The temperature also affects the MSD of the system where it can be seen that the MSD at 323K was higher than 293K for both standard adhesive and Albipox.* **Contribution:** *The prediction of interaction between standard and modified adhesive with water has yet to be investigated using dynamic simulation in molecular modelling technique. From the result shown in this work, it was proven that molecular modeling technique was able to predict the interaction of adhesive and water. Hence, molecular modeling technique can be used as a guideline for researchers to do the experimental work instead of the trial and error approaches used in designing the experimental framework.*

Keywords: Adhesive, dynamic simulation, diffusion coefficient, epoxy resin, mean squared displacement

Abstract ID: **AIMC-2017-STE-1471**

THE USE GENERALIZED SEQUENTIAL PATTERN METHOD IN BUILDING MOBILE APPLICATION OF CUSTOMER RELATIONSHIP MANAGEMENT FOR CAR SERVICE RECOMMENDATION

Corresponding Author: Nina Setiyawati

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Abstract

Introduction: *Maintaining quality of service, is one way to maintain customer loyalty. Similarly, conducted by the automotive company has Unit Sales and Service division. In the service division, there are several problems, among other: customers don't know what kind of services should be done during a routine service, customers can't monitor the progress of the process details of their cars or on the condition of the car where they are being or have been done and working redundancy of customer service when doing reservation by the customer. The purpose of this research is service type recommendations base that can be run simultaneously at one service period.* **Methodology:** *Using data mining exploration held on garage data in order to find possible pattern as management' precise decision making base. Generalized Sequential Pattern (GSP) Algorithm refers to sequential data mining algorithm which able in exploring data that able solving any time and taxonomy constraints. GSP Algorithm implemented in this study in order to find customer service pattern both sequentially and simultaneously.* **Findings:** *The resulting recommendations are matching service history with servicing sequential patterns discovered by the algorithm Generalized Sequential Pattern. With this mobile application, customers can make a reservation service and monitoring the process of servicing their cars.* **Contribution:** *This research give knowledge in the form of customer transaction patterns that can be used by the management as a basis for decision- making actions in maintaining customers' loyalty, such as promotions of product building or product affinity.*

Keywords: Recommendations, Mobile, Customer Relationship Management, Customer Loyalty, Generalized Sequential Pattern

Abstract ID: **AIMC-2017-STE-1472**

IN-SILICO STRUCTURAL MODELING OF PATHOGEN-ASSOCIATED MOLECULAR PATTERN ELF18

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Abstract

Introduction: *Pattern-triggered immunity (PTI) is the first layer of defense mechanism in plant. At the initial stage of PTI, by some cell surface localized receptor named pattern-recognition receptors (PRRs) sense pathogen-associated molecular patterns (PAMPs) and activate immunity following several chronological steps. Although characterization of PAMP and PRR is important to understand the PTI mechanism properly, but only few of them have been discovered and characterized. With an aim of understanding the molecular nature, 3D modeling was done for elf18, corresponding PAMP for elongation factor receptor (EFR) of Arabidopsis thaliana.* **Methodology:** *To have an initial idea about the physio-chemical properties of elf18, ProtParam tool was used. The secondary structure was predicted using PSIPRED (V3.3) and SOPMA. To investigate the domain architecture, InterPro was used. Different automated online modeling approach was carried out using HHpred server toolkit, CPHmodel 3.2, Geno3D, Sparks-X, Swiss-Model, Phyre2 intensive modeling, Raptor-X, Quark and AIDA. To evaluate the structural and geometrical consistency and reliability of the modeled proteins, several approaches were adopted. ERRAT was used to study the non-bonded interactions between different atoms types while, Verify-3D was subjected to assess the compatibility of the atomic models with its own AA sequence. To study the geometrical consistency of the modeled proteins, Ramachandran plot generated from RAMPAGE were assessed.* **Findings:** *ProtParam analysis revealed that the isoelectric point (pI) of elf18 is 9.70 which clarify that the protein is highly alkaline in nature. The aliphatic index computed 53.89 and the instability of elf18 is computed to be -4.18 which classify the protein as unstable. Finally the grand average of hydrophobicity (GRAVY) index was computed -1.044 which indicates elf18 as hydrophilic protein. The secondary structure predicted by both PSIPRED and SOPMA showed that elf18 protein is mainly composed of alpha helix (22.22%), extended strand (33.33%) and random coil (38.89%). No domain were predicted by SMART and Interpro tool. Among the protein modeling tool, HHpred toolkit server, Sparks-X and AIDA modeled elf18. The other tools like Quark, CPHmodel 3.2, Geno3D, Swiss-Model, Phyre2 intensive modeling, Raptor-X could not generate any model due to its small AA sequence (18 AA) and their failure to generate any template/psiblast. Among the tools used, only protein modeled by Sparks-X gave value (70.00) for ERRAT model validation which clarifies the good quality of the modeled protein. All the protein modeling tools show zero values for Verify-3D. For Ramachandran plot summary validation, both HHpred server toolkit and AIDA resulted 93.8% in favoured region and the rest 6.2% in allowed region which clarify the very good quality of the protein.* **Contribution:** *Proper structural study of different PAMPs is essential as these play significant role in first layer of the defense mechanism of the plant. This is the first ever attempt to study the physio-chemical properties of PAMP elf18 and model its 3D structure by different tools. These results can contribute significantly towards understanding the structural properties and function of elf18, which is the PAMP for PRR EFR.*

Keywords: PAMP, elf18, EFR, Defense

Abstract ID: **AIMC-2017-STE-1474**

AN IMPROVED BINARY SEARCH ALGORITHM FOR ROBUST RFID SYSTEMS

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Co-Authors: Salwani Mohd Daud; Azizul Azizan

Abstract

Introduction: *Radio Frequency Identification (RFID) is an automatic identification technology that a reader recognizes object through wireless communication with tags attached to the objects. Tag collisions occur when multi tags try to respond to a reader simultaneously. Various anti-collision algorithms have been applied with various levels of performance in respect of the number of tags and the time required in handling them. Another issue is how dynamic the algorithm adapted with the leaving and new arriving tags. Most of the previous study addressed of static tag. This study will include the adaptability of algorithm to the dynamic issue.* **Methodology:** *This paper is the extending analysis of the binary search fast algorithm (BSF1 and BSF2) which had been presented in previous paper. These algorithm improving the methods of inquiry for solving tag collision. The tags were grouped into two groups, the collision is solved by applying collision tracking mechanism, dynamic searching and backtracking to the root node. However, the demonstration was for the static tag. This paper will*

presenting on how the backtracking method updating the branch of binary tree. It is capable for adapting with leaving and new arriving tags. This is the extended analysis of verifying how dynamic the algorithm adapted with the leaving and new arriving tags. A dynamic algorithm (BSF) by means will meet the requirement of improving system efficiency and at the same time would not contributing to the system complexities. There are an established algorithm which able to identify static, leaving and arriving tags, however the tags are no longer considered as memoryless. **Findings:** *The algorithm is compared with binary search tree, for 7 tags and 8 bit ID with Manchester coding tracking mechanism. The new method of enquiry reduced the iteration. Binary search tree used 18 inquiry meanwhile the binary search fast used 13 inquiry. The comparison will be continued with adaptive binary splitting which was an established one for identify staying, leaving and new arriving tags. However the implementation of adaptive binary splitting need to have counter in tag's circuit. The BSF algorithm is using prefix matching circuit which is be considered as memoryless. System efficiency of Adaptive binary splitting is 34%, Giuseppe Bagnato (2009). BSF is to be more than 34%. The detail analysis will be provided and attached with the simulation graph.* **Contribution:** *BSF algorithm is the improvement of query tree and binary search algorithm. Query tree algorithm is a memoryless which using prefix matching circuit however it will take long time to solve collision. Binary search algorithm, using Manchester coding as for bit collision tracking mechanism. BSF is the improvement by combining the both collision resolution mechanism of query tree and binary search tree algorithm. It has the novelty of dynamic adaptability.*

Keywords: RFID, Anti-collision, dynamic algorithm, binary search

Abstract ID: **AIMC-2017-STE-1478**

THE ROLE OF DIPLOMA I CADASTRAL SURVEYING AND MAPPING PROGRAM IN FULFILLMENT THE NEEDS OF CADASTRAL SURVEYOR ASSISTANT IN INDONESIA

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Co-Authors: Kusmiarto

Abstract

Introduction: *Diploma I Cadastral Surveying and Mapping Program (Diploma I PPK- National Land Institute) was established in 1996 in Yogyakarta with the aim to meet the needs of Cadastral Surveyor Assistant in Adjudication Program. Previously, in Indonesia, the candidate of Cadastral Surveyor Assistant was educated through the Short Course program.* **Methodology:** *The method is descriptive informative, which describes ability and competence owned by alumni of Diploma I PPK-STPN.* **Findings:** *Identification of the number of alumni of Diploma I PPK-STPN can describe the number of Cadastral Surveyor Assistant in Indonesia. By looking at the number of alumni of Diploma I PPK-STPN, we can see the level of adequacy of needs of Cadastral Surveyor Assistant in Indonesia in acceleration of land registration in Indonesia.* **Contribution:** *To achieve the ideal number of Cadastral Surveyor Assistant, the existence of Diploma I PPK-STPN is still needed in Indonesia.*

Keywords: Education, Cadastral Surveyor Assistant, Land Registration

Abstract ID: **AIMC-2017-STE-1479**

MEANING CONSTRUCTION OF SUNDANESE ENCULTURED ON CHINESE INDIVIDUALS IN GARUT REGENCY, WEST JAVA

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Co-Authors: Iwan Koswara, Fitri Perdana

Abstract

Introduction: *The background of this research was the existence of Chinese individuals who lived and applied kasundaan in their daily lives. They are socio-cultural Sundanese. This study aimed to find out motives and the construction of meaning on applied kasundaan of Chinese individuals in Garut regency, West Java.* **Methodology:** *The method was qualitative with phenomenological approach. The subjects of this study were Chinese individuals who applied kasundaan in their thoughts, behaviour, and works. Data collection was obtained through depth interviews and observations as well as from documents, news from printed newspaper and online newspaper.* **Findings:** *This study revealed that there was an extrinsic and intrinsic driving aspects as well as aspects of hope that motivated Chinese individuals in applying kasundaan. Family environment, social environment, and natural environment played a big role in forming the meaning of kasundaan on Chinese individuals through their cultural literacy experience. The meaning construction of Sundanese encultured on*

Chinese individuals were formed according to their knowledge and experiences. **Contribution:** *Being Sundanese, for the research subjects was interpreted philosophically as a worldview and "nyunda" mindset and manifested in a real contribution to Sunda.*

Keywords: kasundaan, nyunda, Chinese individuals.

Abstract ID: **AIMC-2017-STE-1484**

ENERGY HARVESTING SYSTEM FOR AN AUTONOMOUS FOREST-FIRE SENSOR USING TEG ELEMENT BASED ON TEMPERATURE DIFFERENCE BETWEEN TREE XYLEM AND AMBIENT TEMPERATURE

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Co-Authors: H. Yanuar, M. Mardhiansyah, T.M. Linda

Abstract

Introduction: *Deploying forest fire sensor in a forest is usually associated with powering problems since the sensors do not have access to external power supply and a periodical change of internal batteries is an undesired option. This paper presents an autonomous forest-fire sensor module with self-powered circuit harvested energy using thermoelectric generator (TEG). Presented energizing fire sensor is environmentally friendly and can be mass produced at a very low cost. The sensor module consisted of a NTC temperature sensor used as fire detector, transmitter EnOcean STM 110 and receiver RCM110 module has been constructed.* **Methodology:** *The thermistor is mounted on the exterior of the module and its switch-temperature is adjusted from 80 up to 95□C. A rapid rise in the temperature above the setting point indicates the presence of a nearby fire changes the sensor resistance rapidly and therefore, the sensor would send a telegram to the central station (receiver module). A TEG element from Eureka TEC2L-15-15-5.6/73-CS was used to harvested electrical energy based on the temperature difference between the tree trunk xylem and the air temperature in the forest. Since the tree trunk temperature is relative constant compared to the ambient temperature under the tree canopy, then the elements take advantage to generate energy. A modified aluminum nails electrode length 80mm inserted into tree trunks and a heat sink were used for TEG holder and the prototype was mounted on the tree.* **Findings:** *Eureka TEG element has a coefficient equal to 10mV/K while the maximum measurable voltage obtained was 87.5 mV. From the measurements it can be seen that the temperature fluctuation of the tree xylem compared with the surrounding air temperature has a difference of 7K and the resulting voltage has exceeded the minimum limit of 15mV which is acceptable for DC / DC circuit to be amplified. A DC / DC converter from EnOcean Module ECT 310 (DC/DC converter) was used to amplify the output voltage up to 4 Volts. Based on the results of this study, forest fire sensors can be made as cheaply as possible so that the density of node sensors installed in the forest can be made as much as possible by utilizing the electrical energy generated by the TEG elements.* **Contribution:** *The sensor can be designed to activate itself at different temperatures to suit different climate zones.*

Keywords: forest-fire sensor, harvesting energy, TEG element, tree trunk xylem, NTC sensor

Abstract ID: **AIMC-2017-STE-1488**

OPTIMIZATION OF ACID HYDROLYSIS OF UNPAD HYBRID CORN COB AS RAW MATERIAL FOR XYLITOL PRODUCTION

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Universitas Padjadjaran
Co-Authors: Robi Andoyo; Alfredo Matheus; MTAP Kresnowati

Abstract

Introduction: *The avaibility of food source in Indonesia is very abundant. It produces large amount of biomasses waste. One of them is corn with corn cob as its waste product. The treatment of corn cob is very limited even though corn cob has high content of hemicellulose. Materials with high content of hemicellulose can be processed into xylose trought hydrolysis reaction. Hydrolisate material containing xylose can be used as raw material of xylitol production. . The aim of this study is to determine optimum condition of corn cob hydrolysis to produce maximize xylose as raw material of xylitol production.* **Methodology:** *The optimum condition determined with maximization of xylose concentrations, ratio of xylose-glucose concentrations, and minimization of acetic acid concentrations responses. The method used in this research was experimental research with Response Surface Methodology (RSM) particulary Central Composite Design (CCD) with Design Expert 7.0.0 software which is performed at operating temperature 121 ºC using various reaction time (10-15 min) and*

concentration of sulfuric acid (2–6%). **Findings:** *The result of this research showed that mathematical models were obtained in order to predict concentration of xylose, ratio of xylose-glucose conscentration, acetic acid concentration in the hydrolysate and to optimize the process. The optimum condition of acid hydrolysis in multi objective responses was obtained at 12,54 minutes hydrolysis time and 3,19% usage of sulfuric acid concentration. The optimum of xylose concentration, ratio of xylose-glucose concentration, and acetic acid concentration found in the hydrolysate were 8,89 g/L; 1,06; and 1,27 g/L, respectively.* **Contribution:** *Corn cob occupy 30% mass of corn which is a waste from corn processing. Corn cob obtained from corn processing in Indonesia was about 5.7 million tons/year. Most of corn cob were being dumped and burned which caused pollution. In order to reduce the impact of the corn cob waste to the environment and improve its economic value, , it is necessary to process the corn cob being value products including xylose and xylitol.*

Keywords: Acetic acid, corn,corn cob,hydrolysis, ratio xylose-glucose concentration, xylitol, xylose

FUTURE CONFERENCES

3rd ASIA International Conference 2017 (AIC-2017)

Venue: *Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia*

Date: *16-17 December 2017*

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Venue: *Jakarta, Indonesia*

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FUTURE WORKSHOPS

Certification on Statistics and Data Analysis (Weekly Programme)

Date: *23 June 2017 (8weeks)*

Venue: *Innovation and Commercialisation Centre, Industry Centre, Technovation Park, Universiti Teknologi Malaysia, 81300 Johor Bahru, Johor, Malaysia.*

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Workshop on Systematic Literature Review and Meta-Analysis

Date: *20 May 2017*

Venue: *Innovation and Commercialisation Centre, Industry Centre, Technovation Park, Universiti Teknologi Malaysia, 81300 Johor Bahru, Johor, Malaysia.*

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Workshop on Structural Equation Modeling (SEM) Using AMOS

Date: *18-19 June 2017*

Venue: *UTM, Kuala Lumpur, Malaysia*

Workshop on Structural Equation Modeling (SEM) Using AMOS

Date: *24 July 2017*

Venue: *Innovation and Commercialisation Centre, Industry Centre, Technovation Park, Universiti Teknologi Malaysia, 81300 Johor Bahru, Johor, Malaysia.*

Workshop on Structural Equation Modeling (SEM) Using Smart PLS

Date: *25 August 2017*

Venue: *Innovation and Commercialisation Centre, Industry Centre, Technovation Park, Universiti Teknologi Malaysia, 81300 Johor Bahru, Johor, Malaysia.*

Workshop on Qualitative Data Analysis using NVIVO

Date: *22 September 2017*

Venue: *Innovation and Commercialisation Centre, Industry Centre, Technovation Park, Universiti Teknologi Malaysia, 81300 Johor Bahru, Johor, Malaysia.*