

# 2020 Index

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This index covers all technical items—papers, correspondence, reviews, etc.—that appeared in this periodical during 2020, and items from previous years that were commented upon or corrected in 2020. Departments and other items may also be covered if they have been judged to have archival value.

The Author Index contains the primary entry for each item, listed under the first author's name. The primary entry includes the coauthors' names, the title of the paper or other item, and its location, specified by the publication abbreviation, year, month, and inclusive pagination. The Subject Index contains entries describing the item under all appropriate subject headings, plus the first author's name, the publication abbreviation, month, and year, and inclusive pages. Note that the item title is found only under the primary entry in the Author Index.

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A Study of High-Temperature Effects on an Asymmetrically Doped Vertical Pillar-Type Field-Effect Transistor. *Han, J.*, +, *TNANO 2020 52-55*

Analytical Current Transport Modeling of Monolayer Molybdenum Disulfide-Based Dual Gate Tunnel Field Effect Transistor. *Khan, M.A.U.*, +, *TNANO 2020 620-627*

Compact I-V Model for Ambipolar Field-Effect Transistors With 2D Transition Metal Dichalcogenide as Semiconductor. *Deng, L.*, +, *TNANO 2020 841-848*

Highly-Efficient Solution Processed Yellow Organic Light Emitting Diode With Tungsten Trioxide Hole Injection/Transport Layer. *Kumar, P.*, +, *TNANO 2020 61-66*

Nitride Induced Stress Affecting Crystallinity of Sidewall Damascene Gate-All-Around Nanowire Poly-Si FETs. *Shen, C.*, +, *TNANO 2020 322-327*

#### Catalysis

Strain Effect on the Hydrogen Evolution Reaction of  $V_{Mo}$ -SLMoS<sub>2</sub>. *Ye, K.*, +, *TNANO 2020 192-196*

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Enhanced Performance Organic Light Emitting Diode With CuI:CuPC Composite Hole Transport Layer. *Mohan, V.*, +, *TNANO 2020 699-703*

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Design of an Efficient  $N \times N$  Butterfly Switching Network in Quantum-Dot Cellular Automata (QCA). *Bahar, A.N.*, +, *TNANO 2020 147-155*

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Biped Walking of Magnetic Microrobot in Oscillating Field for Indirect Manipulation of Non-Magnetic Objects. *Li, J.*, +, *TNANO 2020 21-24*

Microrobots Based *In Vivo* Evolutionary Computation in Two-Dimensional Microchannel Network. *Shi, S.*, +, *TNANO 2020 71-75*

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An Analytical Approach to Study Annealing Induced Interdiffusion of In and Ga for Truncated Pyramidal InAs/GaAs Quantum Dots. *Mal, I.*, +, *TNANO 2020 223-229*

Barrier Layer Induced Switching Stability in Ga:ZnO Nanorods Based Electrochemical Metallization Memory. *Panda, D.*, +, *TNANO 2020 764-768*

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Analytical Study of Chiral Multi-Layer Structures Containing Graphene Sheets for THz Applications. *Heydari, M.B.*, +, *TNANO 2020 653-660*

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Highly Sensitive Plasmonic Sensor Based on Ring Shape Nanoparticles for the Detection of Ethanol and D-Glucose Concentration. *Heidarzadeh, H.*, *TNANO 2020 397-404*

Localized Surface Plasmon Resonance Based Hetero-Core Optical Fiber Sensor Structure for the Detection of L-Cysteine. *Singh, L.*, +, *TNANO 2020 201-208*

Silver Nanoparticles SERS Sensors Using Rapid Thermal CVD Nanoscale Graphene Islands as Templates. *Tzeng, Y.*, +, *TNANO 2020 25-33*

#### Chemical vapor deposition

Enhancement of Responsivity and Sensitivity of p-Silicon/n-Zinc Oxide-Based Photodetector Using Titanium Dioxide Nanoparticles. *Monshipouri, M.*, +, *TNANO 2020 744-748*

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Miniaturized Platform With Nanocomposite Optimized Pencil Electrodes for Selective Non-Interfering Electrochemical Sensing. *Salve, M.*, +, *TNANO 2020 575-578*

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Electrical Control of Spin-Injection Using Mixed Dimensional van der Waals Heterostructures. *Tiessen, J.E.*, +, *TNANO 2020 736-743*

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#### Circuit optimization

Mathematical Framework of Tetramorphic MWCNT Configuration for VLSI Interconnect. *Amin, A.B.*, +, *TNANO 2020 749-759*

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Design of CNTFET-Based Ternary ALU Using 2:1 Multiplexer Based Approach. *Gadgil, S.*, +, *TNANO 2020 661-671*

#### Circuit theory

Closed Form Resonance Solution in Metallic Nanoparticles With Cubic Nonlinearity. *Khan, M.U.*, +, *TNANO 2020 461-468*

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Real-Time Estimation of the Tip-Sample Interactions in Tapping Mode Atomic Force Microscopy With a Regularized Kalman Filter. *Keyvani, A.*, +, *TNANO 2020 274-283*

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Direct Integration of Carbon Nanotubes in CMOS, Towards an Industrially Feasible Process: A Review. *Aasmundtveit, K.E.*, +, *TNANO 2020 113-122*

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Approaching the Design of Energy Recovery Logic Circuits Using TFETs. *Nunez, J.*, +, *TNANO 2020 500-507*

Atomic Silicon Quantum Dot: A New Designing Paradigm of an Atomic Logic Circuit. *Bahar, A.N.*, +, *TNANO 2020 807-810*

C<sup>2</sup>TIG: Dynamic C<sup>2</sup>MOS Design Based on Three-Independent-Gate Field-Effect Transistors. *Vana, D.*, +, *TNANO 2020 123-136*

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Polymer–Nanocrystal Nanocomposites: Device Concepts in Capacitors and Multiferroics. *Pearsall, F.A.*, +, *TNANO 2020 255-268*

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Enhanced Performance Organic Light Emitting Diode With CuI:CuPC Composite Hole Transport Layer. *Mohan, V.*, +, *TNANO 2020 699-703*

#### Compressed sensing

Adaptive Simultaneous Topography and Broadband Nanomechanical Mapping of Heterogeneous Materials on Atomic Force Microscope. *Li, T.*, +, *TNANO 2020 689-698*

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Experimental Analysis of Transition Metal (Ni-V) Codoped ZnO Nanorods for Piezoelectric Accelerometer Application. *Ramany, K.*, +, *TNANO 2020 728-735*

Nanorods Versus Nanoparticles: A Comparison Study of Au/ZnO-PMMA/Au Non-Volatile Memory Devices Showing the Importance of Nanostructure Geometry on Conduction Mechanisms and Switching Properties. *Jaa-far, A.H.*, +, *TNANO 2020 236-246*

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Enhancing the Performance of Polygon Monopole Antenna Using Graphene/TMDCs Heterostructures. *Abdul-Aziz, M.R.R.*, +, *TNANO 2020 269-273*

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Suppression of Blinking and Enhancement of Optical Properties of Core-Shell Quantum Dots by Structural Formulation. *Rani, S.*, +, *TNANO 2020 792-799*

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Laser-Based Fabrication of Microstructures on Nickel Thin Films and Its Applications in On-Chip Thin Film Inductors. *Itapu, S.*, +, *TNANO 2020 455-460*

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Mathematical Framework of Tetramorphic MWCNT Configuration for VLSI Interconnect. *Amin, A.B.*, +, *TNANO 2020 749-759*

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Laser-Based Fabrication of Microstructures on Nickel Thin Films and Its Applications in On-Chip Thin Film Inductors. *Itapu, S.*, +, *TNANO 2020 455-460*

XAS Microstructure Analysis of Manganese Doped Zinc Sulphide Nanophosphor. *Sahay, P.*, +, *TNANO 2020 360-367*

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Ag Nanoparticles Sheltered In<sub>2</sub>O<sub>3</sub> Nanowire as a Capacitive MOS Memory Device. *Nath, A.*, +, *TNANO 2020 856-863*

Investigation of Optoelectronic Properties in Germanium Nanowire Integrated Silicon Substrate Using Kelvin Probe Force Microscopy. *Singh, H.M.*, +, *TNANO 2020 628-634*

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Closed Form Resonance Solution in Metallic Nanoparticles With Cubic Nonlinearity. *Khan, M.U.*, +, *TNANO 2020 461-468*

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Length-Dependent Electron Transport Properties of Defective Silicene Nanoribbons. *Poljak, M.*, *TNANO 2020 315-321*

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Real-Time Estimation of the Tip-Sample Interactions in Tapping Mode Atomic Force Microscopy With a Regularized Kalman Filter. *Keyvani, A.*, +, *TNANO 2020 274-283*

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High-Frequency Performance Study of CNTFET-Based Amplifiers. *Ramos-Silva, J.N.*, +, *TNANO 2020 284-291*

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Analysis of Partial Hybridization and Probe Positioning on Sensitivity of a Dielectric Modulated Junctionless Label Free Biosensor. *Bhattacharyya, A.*, +, *TNANO 2020 719-727*

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Prospective Sensing Applications of Novel Heteromaterial Based Dopingless Nanowire-TFET at Low Operating Voltage. *Kumar, N.*, +, *TNANO 2020 527-534*

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High Performance Transparent a-IGZO Thin Film Transistors With ALD-HfO<sub>2</sub> Gate Insulator on Colorless Polyimide Substrate. *Yu, M.*, +, *TNANO 2020 481-485*

Memristive State Equation for Bipolar Resistive Switching Devices Based on a Dynamic Balance Model and Its Equivalent Circuit Representation. *Miranda, E.*, +, *TNANO 2020 837-840*

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The Influence of Superlattice Structure on the Dynamic Buffer Response of AlInN/GaN-on-Si HEMTs. *Chen, Y.*, +, *TNANO 2020 415-420*

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Smearing Observation of Picoliter Droplets Pinning on Bio-Inspired Negative Lotus Leaf Replicas. *Du, L.*, +, *TNANO 2020 102-106*

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Improving DSSC Performance Using Enhanced Double Layers Based on Magnetic Beads and Reduced Graphene Oxide. *Chou, J.*, +, *TNANO 2020 375-381*

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Millimeter Waveband Dielectric Permittivity of Nanocomposites Containing Vanadium Oxides. *Pakhomov, Y.A.*, +, *TNANO 2020 535-544*

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Conductance Parametric Analysis of Graphene Nanoribbons With Magnetic Contacts. *Moysidis, S.*, +, *TNANO 2020 778-783*

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Breakdown Field Strength Variations and Energy Density Limits of Nanoparticle Composite Materials. *Costello, B.*, +, *TNANO 2020 811-819*

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Comprehensive Read Margin and BER Analysis of One Selector-One Memristor Crossbar Array Considering Thermal Noise of Memristor With Noise-Aware Device Model. *Bae, W.*, +, *TNANO 2020 553-564*

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Self-Powered Active Spherical Triboelectric Sensor for Fluid Velocity Detection. *Cheng, P.*, +, *TNANO 2020 230-235*

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Length-Dependent Electron Transport Properties of Defective Silicene Nanoribbons. *Poljak, M.*, *TNANO 2020 315-321*

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Impact of Interfacial SiO<sub>2</sub> on Dual Ion Beam Sputtered Y<sub>2</sub>O<sub>3</sub>-Based Memristive System. *Das, M.*, +, *TNANO 2020 332-337*

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Study of Laterally Stacked Nanostructures Using an Organic Semiconducting Channel Fabricated by Trench Isolation Technique. *Ghosh, J.*, +, *TNANO 2020 410-414*

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Highly-Efficient Solution Processed Yellow Organic Light Emitting Diode With Tungsten Trioxide Hole Injection/Transport Layer. *Kumar, P.*, +, *TNANO 2020 61-66*

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Enhancement of a Green Supercapacitor With a Hydrogel/Carbon Nanotubes-Based Electrolyte. *Pacheco, M.*, +, *TNANO 2020 711-718*

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Investigation of Optoelectronic Properties in Germanium Nanowire Integrated Silicon Substrate Using Kelvin Probe Force Microscopy. *Singh, H.M.*, +, *TNANO 2020 628-634*

**Electron diffraction**

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Investigation of Ring-TFET for Better Electrostatics Control and Suppressed Ambipolarity. *Kumari, T.*, +, *TNANO 2020 829-836*

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Length-Dependent Electron Transport Properties of Defective Silicene Nanoribbons. *Poljak, M.*, *TNANO 2020 315-321*

Mechanisms of a Rectifying TiN Gate Contact for AlGaIn/GaN HEMTs on Silicon Substrate. *Chahdi, H.O.*, +, *TNANO 2020 682-688*

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Novel Design Approach of Extended Gate-On-Source Based Charge-Plasma Vertical-Nanowire TFET: Proposal and Extensive Analysis. *Kumar, N.*, +, *TNANO 2020 421-428*

Numerical Investigation of Reconfigurable Photonic Crystal Switch Based on Phase Change Nanomaterial. *Rajasekar, R.*, +, *TNANO 2020 545-552*

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SiQAD: A Design and Simulation Tool for Atomic Silicon Quantum Dot Circuits. *Ng, S.S.H.*, +, *TNANO 2020 137-146*

Trapping Depth and Transition Probability of Four-Level Random Telegraph Noise in a Gate-All-Around Poly-Si Nanowire Transistor. *Chang, Y.*, +, *TNANO 2020 338-343*

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Coordinated and Simultaneous Formation of Paired Ge Quantum Dots by Thermal Oxidation of Designer Poly-SiGe Spacer Structures. *Chen, H.*, +, *TNANO 2020 436-438*

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Intrinsic Bounds for Computing Precision in Memristor-Based Vector-by-Matrix Multipliers. *Mahmoodi, M.R.*, +, *TNANO 2020 429-435*

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Modeling of Short-Term Synaptic Plasticity Effects in ZnO Nanowire-Based Memristors Using a Potentiation-Depression Rate Balance Equation. *Miranda, E.*, +, *TNANO 2020 609-612*

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Microrobots Based *In Vivo* Evolutionary Computation in Two-Dimensional Microchannel Network. *Shi, S.*, +, *TNANO 2020 71-75*

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XAS Microstructure Analysis of Manganese Doped Zinc Sulphide Nanophosphor. *Sahay, P.*, +, *TNANO 2020 360-367*

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Barrier Layer Induced Switching Stability in Ga:ZnO Nanorods Based Electrochemical Metallization Memory. *Panda, D.*, +, *TNANO 2020 764-768*

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An Analytical Approach to Study Annealing Induced Interdiffusion of In and Ga for Truncated Pyramidal InAs/GaAs Quantum Dots. *Mal, I.*, +, *TNANO 2020 223-229*

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Highly Sensitive Ethanol Sensor Based on Two-Dimensional Layered Mesoporous In<sub>2</sub>O<sub>3</sub> Nanosheets. *Zhao, J.*, +, *TNANO 2020 486-491*

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Investigation on Nickel-Based Nano-Scaffold Getter With Induction Heating and Rapid Activation. *Lin, S.*, +, *TNANO 2020 67-70*

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Enhanced Optical and Electrical Properties of Metallic Surface Plasmon Sensitized TiO<sub>2</sub> Nanowires. *Kashyap, K.K.*, +, *TNANO 2020 519-526*

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Impact of Digital Alloy Capping Layers on Bilayer InAs Quantum Dot Heterostructures. *Kumar, R., +, TNANO 2020 368-374*

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Characteristics of Poly-Si Junctionless FinFETs With HfZrO Using Forming Gas Annealing. *Chung, S., +, TNANO 2020 390-396*

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True Random Number Generator Integration in a Resistive RAM Memory Array Using Input Current Limitation. *Aziza, H., +, TNANO 2020 214-222*

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Valley-Coupled-Spintronic Non-Volatile Memories With Compute-In-Memory Support. *Thirumala, S.K., +, TNANO 2020 635-647*

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Investigation on Nickel-Based Nano-Scaffold Getter With Induction Heating and Rapid Activation. *Lin, S., +, TNANO 2020 67-70*

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Design of an Efficient  $N \times N$  Butterfly Switching Network in Quantum-Dot Cellular Automata (QCA). *Bahar, A.N., +, TNANO 2020 147-155*

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A Dynamic Reference and Variation-Tolerant Sensing Circuit for Deep Nanometer STT-MRAM. *Cheng, G.*, +, *TNANO 2020 672-681*

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Laser-Based Fabrication of Microstructures on Nickel Thin Films and Its Applications in On-Chip Thin Film Inductors. *Itapu, S.*, +, *TNANO 2020 455-460*

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Tunable Isotropic Absorber With Phase Change Material VO<sub>2</sub>. *Chen, A.*, +, *TNANO 2020 197-200*

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Real-Time Data-Driven Quality Assessment for Continuous Manufacturing of Carbon Nanotube Buckypaper. *Shi, X.*, +, *TNANO 2020 350-359*

**Random noise**

Trapping Depth and Transition Probability of Four-Level Random Telegraph Noise in a Gate-All-Around Poly-Si Nanowire Transistor. *Chang, Y.*, +, *TNANO 2020 338-343*

**Random number generation**

True Random Number Generator for Reliable Hardware Security Modules Based on a Neomorphic Variation-Tolerant Spintronic Structure. *Amirany, A.*, +, *TNANO 2020 784-791*

True Random Number Generator Integration in a Resistive RAM Memory Array Using Input Current Limitation. *Aziza, H.*, +, *TNANO 2020 214-222*

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**Random-access storage**

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**Rapid thermal annealing**

Vertically Coupled Hybrid InAs Sub-Monolayer on InAs Straniski-Krastanov Quantum Dot Heterostructure: Toward Next Generation Broadband IR Detection. *Das, D.*, +, *TNANO 2020 76-83*

**Rectification**

Experimental Analysis of Transition Metal (Ni-V) Codoped ZnO Nanorods for Piezoelectric Accelerometer Application. *Ramany, K.*, +, *TNANO 2020 728-735*

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**Recurrent neural networks**

NARMAX Model-Based Hysteresis Modeling of Magnetic Shape Memory Alloy Actuators. *Yu, Y.*, +, *TNANO 2020 1-4*

**Reduction (chemical)**

Improving DSSC Performance Using Enhanced Double Layers Based on Magnetic Beads and Reduced Graphene Oxide. *Chou, J.*, +, *TNANO 2020 375-381*

**Refractive index**

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Highly Sensitive Plasmonic Sensor Based on Ring Shape Nanoparticles for the Detection of Ethanol and D-Glucose Concentration. *Heidarzadeh, H.*, *TNANO 2020 397-404*

**Refractive index measurement**

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**Replica techniques**

Smearing Observation of Picoliter Droplets Pinning on Bio-Inspired Negative Lotus Leaf Replicas. *Du, L.*, +, *TNANO 2020 102-106*

**Resistive RAM**

Analytic Modeling for RRAM Based on Multistage Homotopy Analysis Method. *Hu, W.*, +, *TNANO 2020 179-191*

Exploiting Oxide Based Resistive RAM Variability for Bayesian Neural Network Hardware Design. *Malhotra, A.*, +, *TNANO 2020 328-331*

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**Resonant tunneling**

Electrical Control of Spin-Injection Using Mixed Dimensional van der Waals Heterostructures. *Tiessen, J.E.*, +, *TNANO 2020 736-743*

**Resonant tunneling devices**

Electrical Control of Spin-Injection Using Mixed Dimensional van der Waals Heterostructures. *Tiessen, J.E.*, +, *TNANO 2020 736-743*

**Rigidity**

Characterizing Hydrogen Microbubble Stiffness Properties Using Atomic Force Microscopy. *Yu, H.*, +, *TNANO 2020 209-213*

**RLC circuits**

Mathematical Framework of Tetramorphic MWCNT Configuration for VLSI Interconnect. *Amin, A.B.*, +, *TNANO 2020 749-759*

**Robot vision**

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**S****Scanning electron microscopy**

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**Schottky barriers**

- Barrier Layer Induced Switching Stability in Ga:ZnO Nanorods Based Electrochemical Metallization Memory. *Panda, D.*, +, *TNANO 2020 764-768*
- Bias-Dependent Contact Resistance Characterization of Carbon Nanotube FETs. *Pacheco-Sanchez, A.*, +, *TNANO 2020 47-51*
- Improving the Electronic Properties of Au/n-Si Type Schottky Junction Structure With Graphene-PVP Nano-Thin Film by Using the I-V, C<sup>-2</sup>-V and G/ $\omega$ -V Characteristics. *CICEK, O.*, *TNANO 2020 172-178*

**Schottky diodes**

- Compact Modeling of the I-V Characteristics of ZnO Nanowires Including Nonlinear Series Resistance Effects. *Miranda, E.*, +, *TNANO 2020 297-300*

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- Microrobots Based *In Vivo* Evolutionary Computation in Two-Dimensional Microchannel Network. *Shi, S.*, +, *TNANO 2020 71-75*

**Security**

- Enhancing Programming Variability in Multi-Bit Phase Change Memory Cells for Security. *Noor, N.*, +, *TNANO 2020 820-828*

**Self-assembly**

- An Analytical Approach to Study Annealing Induced Interdiffusion of In and Ga for Truncated Pyramidal InAs/GaAs Quantum Dots. *Mal, I.*, +, *TNANO 2020 223-229*
- Spatial Optimization of Modulation Doping in P-I-P QDIPs: Towards Achieving Higher Operating Temperature. *Deviprasad, V.P.*, +, *TNANO 2020 247-254*

**Semiconductor device breakdown**

- The Influence of Superlattice Structure on the Dynamic Buffer Response of AlInN/GaN-on-Si HEMTs. *Chen, Y.*, +, *TNANO 2020 415-420*

**Semiconductor device manufacture**

- Low-Frequency Noise Characterization of AlGaIn/GaN HEMTs and MIS-HEMTs Under UV Illumination. *Nagarajan, V.*, +, *TNANO 2020 405-409*

**Semiconductor device measurement**

- The Influence of Superlattice Structure on the Dynamic Buffer Response of AlInN/GaN-on-Si HEMTs. *Chen, Y.*, +, *TNANO 2020 415-420*

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- Analysis and Optimization of GaN Based Multi-Channels FinFETs. *Yu, C.*, +, *TNANO 2020 439-445*
- Analysis of Noise-Immune Dopingless Heterojunction Bio-TFET Considering Partial Hybridization Issue. *Bhattacharyya, A.*, +, *TNANO 2020 769-777*
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- C<sup>2</sup>TIG: Dynamic C<sup>2</sup>MOS Design Based on Three-Independent-Gate Field-Effect Transistors. *Vana, D.*, +, *TNANO 2020 123-136*
- Compact I-V Model for Ambipolar Field-Effect Transistors With 2D Transition Metal Dichalcogenide as Semiconductor. *Deng, L.*, +, *TNANO 2020 841-848*
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- Prospective Sensing Applications of Novel Heteromaterial Based Dopingless Nanowire-TFET at Low Operating Voltage. *Kumar, N.*, +, *TNANO 2020 527-534*

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- Low-Frequency Noise Characterization of AlGaIn/GaN HEMTs and MIS-HEMTs Under UV Illumination. *Nagarajan, V.*, +, *TNANO 2020 405-409*
- Trapping Depth and Transition Probability of Four-Level Random Telegraph Noise in a Gate-All-Around Poly-Si Nanowire Transistor. *Chang, Y.*, +, *TNANO 2020 338-343*

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- Nitride Induced Stress Affecting Crystallinity of Sidewall Damascene Gate-All-Around Nanowire Poly-Si FETs. *Shen, C.*, +, *TNANO 2020 322-327*

**Semiconductor device testing**

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**Semiconductor doping**

- A Strategy for Optimizing Low Operating Voltage in a Silicon Biristor. *Son, J.W.*, +, *TNANO 2020 5-10*
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- XAS Microstructure Analysis of Manganese Doped Zinc Sulphide Nanophosphor. *Sahay, P.*, +, *TNANO 2020 360-367*

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- An Analytical Approach to Study Annealing Induced Interdiffusion of In and Ga for Truncated Pyramidal InAs/GaAs Quantum Dots. *Mal, I.*, +, *TNANO 2020 223-229*
- InGaIn/GaN Quantum Dots on Silicon With Coalesced Nanowire Buffer Layers: A Potential Technology for Visible Silicon Photonics. *Das, D.*, +, *TNANO 2020 571-574*

**Semiconductor growth**

- 2D-SnS<sub>2</sub> Nanoflakes Based Efficient Ultraviolet Photodetector. *Yadav, S.M.*, +, *TNANO 2020 301-307*
- Ag Nanoparticles Sheltered In<sub>2</sub>O<sub>3</sub> Nanowire as a Capacitive MOS Memory Device. *Nath, A.*, +, *TNANO 2020 856-863*
- An Analytical Approach to Study Annealing Induced Interdiffusion of In and Ga for Truncated Pyramidal InAs/GaAs Quantum Dots. *Mal, I.*, +, *TNANO 2020 223-229*
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Analysis of Noise-Immune Dopingless Heterojunction Bio-TFET Considering Partial Hybridization Issue. *Bhattacharyya, A.*, +, *TNANO 2020 769-777*

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#### Semiconductor materials

Ag Nanoparticles Sheltered In<sub>2</sub>O<sub>3</sub> Nanowire as a Capacitive MOS Memory Device. *Nath, A.*, +, *TNANO 2020 856-863*

Coordinated and Simultaneous Formation of Paired Ge Quantum Dots by Thermal Oxidation of Designer Poly-SiGe Spacer Structures. *Chen, H.*, +, *TNANO 2020 436-438*

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#### Semiconductor thin films

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High Performance Transparent a-IGZO Thin Film Transistors With ALD-HfO<sub>2</sub> Gate Insulator on Colorless Polyimide Substrate. *Yu, M.*, +, *TNANO 2020 481-485*

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#### Silicon

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- Silicon compounds**
- Breakdown Field Strength Variations and Energy Density Limits of Nanoparticle Composite Materials. *Costello, B.*, +, *TNANO 2020 811-819*
- Coordinated and Simultaneous Formation of Paired Ge Quantum Dots by Thermal Oxidation of Designer Poly-SiGe Spacer Structures. *Chen, H.*, +, *TNANO 2020 436-438*
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- Silicon-on-insulator**
- Self-Heating in 40 nm SOI MOSFETs on High Resistivity, Trap-Rich Substrates. *Zhang, X.*, +, *TNANO 2020 42-46*
- Silver**
- Ag Nanoparticles Sheltered In<sub>2</sub>O<sub>3</sub> Nanowire as a Capacitive MOS Memory Device. *Nath, A.*, +, *TNANO 2020 856-863*
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- Silver Nanoparticles SERS Sensors Using Rapid Thermal CVD Nanoscale Graphene Islands as Templates. *Tzeng, Y.*, +, *TNANO 2020 25-33*
- Silver compounds**
- Miniaturized Platform With Nanocomposite Optimized Pencil Electrodes for Selective Non-Interfering Electrochemical Sensing. *Salve, M.*, +, *TNANO 2020 575-578*
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- Polymer-Nanocrystal Nanocomposites: Device Concepts in Capacitors and Multiferroics. *Pearsall, F.A.*, +, *TNANO 2020 255-268*
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- SPICE**
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- Valley-Coupled-Spintronic Non-Volatile Memories With Compute-In-Memory Support. *Thirumala, S.K.*, +, *TNANO 2020 635-647*
- Spin polarized transport**
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- Valley-Coupled-Spintronic Non-Volatile Memories With Compute-In-Memory Support. *Thirumala, S.K.*, +, *TNANO 2020 635-647*
- Spin valves**
- Conductance Parametric Analysis of Graphene Nanoribbons With Magnetic Contacts. *Moysidis, S.*, +, *TNANO 2020 778-783*
- Sputter deposition**
- Impact of Interfacial SiO<sub>2</sub> on Dual Ion Beam Sputtered Y<sub>2</sub>O<sub>3</sub>-Based Memristive System. *Das, M.*, +, *TNANO 2020 332-337*
- Laser-Based Fabrication of Microstructures on Nickel Thin Films and Its Applications in On-Chip Thin Film Inductors. *Itapu, S.*, +, *TNANO 2020 455-460*
- Stacking faults**
- InGaIn/GaN Quantum Dots on Silicon With Coalesced Nanowire Buffer Layers: A Potential Technology for Visible Silicon Photonics. *Das, D.*, +, *TNANO 2020 571-574*
- Statistical analysis**
- Enhancing Programming Variability in Multi-Bit Phase Change Memory Cells for Security. *Noor, N.*, +, *TNANO 2020 820-828*
- Statistical testing**
- True Random Number Generator for Reliable Hardware Security Modules Based on a Neuromorphic Variation-Tolerant Spintronic Structure. *Amirany, A.*, +, *TNANO 2020 784-791*
- Stochastic processes**
- True Random Number Generator Integration in a Resistive RAM Memory Array Using Input Current Limitation. *Aziza, H.*, +, *TNANO 2020 214-222*
- Stress effects**
- Nitride Induced Stress Affecting Crystallinity of Sidewall Damascene Gate-All-Around Nanowire Poly-Si FETs. *Shen, C.*, +, *TNANO 2020 322-327*
- Strontium compounds**
- Breakdown Field Strength Variations and Energy Density Limits of Nanoparticle Composite Materials. *Costello, B.*, +, *TNANO 2020 811-819*
- Sugar**
- Highly Sensitive Plasmonic Sensor Based on Ring Shape Nanoparticles for the Detection of Ethanol and D-Glucose Concentration. *Heidarzadeh, H.*, *TNANO 2020 397-404*
- Miniaturized Platform With Nanocomposite Optimized Pencil Electrodes for Selective Non-Interfering Electrochemical Sensing. *Salve, M.*, +, *TNANO 2020 575-578*
- Supercapacitors**
- Enhancement of a Green Supercapacitor With a Hydrogel/Carbon Nanotubes-Based Electrolyte. *Pacheco, M.*, +, *TNANO 2020 711-718*
- Surface enhanced Raman scattering**
- Silver Nanoparticles SERS Sensors Using Rapid Thermal CVD Nanoscale Graphene Islands as Templates. *Tzeng, Y.*, +, *TNANO 2020 25-33*
- Surface magnetism**
- The Magnetism of a Ni Monolayer on Vanadium: Structure and Exchange Correlation Effects. *Ramanathan, A.A.*, *TNANO 2020 11-16*
- Surface morphology**
- Experimental Analysis of Transition Metal (Ni-V) Codoped ZnO Nanorods for Piezoelectric Accelerometer Application. *Ramany, K.*, +, *TNANO 2020 728-735*
- Surface plasmon resonance**
- Highly Sensitive Plasmonic Sensor Based on Ring Shape Nanoparticles for the Detection of Ethanol and D-Glucose Concentration. *Heidarzadeh, H.*, *TNANO 2020 397-404*
- Localized Surface Plasmon Resonance Based Hetero-Core Optical Fiber Sensor Structure for the Detection of L-Cysteine. *Singh, L.*, +, *TNANO 2020 201-208*
- Surface plasmons**
- Enhanced Optical and Electrical Properties of Metallic Surface Plasmon Sensitized TiO<sub>2</sub> Nanowires. *Kashyap, K.K.*, +, *TNANO 2020 519-526*

**Surface potential**

Analysis of Noise-Immune Dopingless Heterojunction Bio-TFET Considering Partial Hybridization Issue. *Bhattacharyya, A.*, +, *TNANO 2020 769-777*

**Surface roughness**

Enhanced Performance Organic Light Emitting Diode With CuI:CuPC Composite Hole Transport Layer. *Mohan, V.*, +, *TNANO 2020 699-703*

**Surface states**

Length-Dependent Electron Transport Properties of Defective Silicene Nanoribbons. *Poljak, M.*, *TNANO 2020 315-321*

Surface State Controlled Superior Photodetection Properties of Isotype n-TiO<sub>2</sub>/In<sub>2</sub>O<sub>3</sub> Heterostructure Nanowire Array With High Specific Detectivity. *Pooja, P.*, +, *TNANO 2020 34-41*

**Surface treatment**

Smearing Observation of Picoliter Droplets Pinning on Bio-Inspired Negative Lotus Leaf Replicas. *Du, L.*, +, *TNANO 2020 102-106*

**Swarm intelligence**

Microrobots Based *In Vivo* Evolutionary Computation in Two-Dimensional Microchannel Network. *Shi, S.*, +, *TNANO 2020 71-75*

**Synchronization**

Phase Transition Device for Phase Storing. *Avedillo, M.J.*, +, *TNANO 2020 107-112*

**T****Technology CAD (electronics)**

A Kinetic Monte Carlo Study of Retention Time in a POM Molecule-Based Flash Memory. *Badami, O.*, +, *TNANO 2020 704-710*

Investigation of Temperature and Source/Drain Overlap Impact on Negative Capacitance Silicon Nanotube FET (NC Si NTFET) with Sub-60mV/decade Switching. *Moparthy, S.*, +, *TNANO 2020 800-806*

Investigation on the Effects of Gate-Source Overlap/Underlap and Source Doping Gradient of *n*-Type Si Cylindrical Gate-All-Around Tunnel Field-Effect Transistors. *Liu, K.*, +, *TNANO 2020 382-389*

Negative Capacitance Effect on MOS Structure: Influence of Electric Field Variation. *Lee, K.*, +, *TNANO 2020 168-171*

**Terahertz wave spectra**

Analytical Study of Chiral Multi-Layer Structures Containing Graphene Sheets for THz Applications. *Heydari, M.B.*, +, *TNANO 2020 653-660*

**Ternary logic**

Design of CNTFET-Based Ternary ALU Using 2:1 Multiplexer Based Approach. *Gadgil, S.*, +, *TNANO 2020 661-671*

**Thermal analysis**

Investigation on Nickel-Based Nano-Scaffold Getter With Induction Heating and Rapid Activation. *Lin, S.*, +, *TNANO 2020 67-70*

**Thermal conductivity**

Self-Heating in 40 nm SOI MOSFETs on High Resistivity, Trap-Rich Substrates. *Zhang, X.*, +, *TNANO 2020 42-46*

**Thermal expansion**

Laser-Based Fabrication of Microstructures on Nickel Thin Films and Its Applications in On-Chip Thin Film Inductors. *Itapu, S.*, +, *TNANO 2020 455-460*

**Thermal noise**

Comprehensive Read Margin and BER Analysis of One Selector-One Memristor Crossbar Array Considering Thermal Noise of Memristor With Noise-Aware Device Model. *Bae, W.*, +, *TNANO 2020 553-564*

**Thermal resistance**

Degradation of Off-Phase Leakage Current of FinFETs and Gate-All-Around FETs Induced by the Self-Heating Effect in the High-Frequency Operation Regime. *Park, C.*, +, *TNANO 2020 308-314*

**Thermal stability**

2D-SnS<sub>2</sub> Nanoflakes Based Efficient Ultraviolet Photodetector. *Yadav, S.M.*, +, *TNANO 2020 301-307*

Nitride Induced Stress Affecting Crystallinity of Sidewall Damascene Gate-All-Around Nanowire Poly-Si FETs. *Shen, C.*, +, *TNANO 2020 322-327*

**Thermionic emission**

Improving the Electronic Properties of Au/*n*-Si Type Schottky Junction Structure With Graphene-PVP Nano-Thin Film by Using the I-V, C<sup>-2</sup>-V and G/ω-V Characteristics. *CICEK, O.*, *TNANO 2020 172-178*

**Thin film inductors**

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**Thin film transistors**

High Performance Transparent a-IGZO Thin Film Transistors With ALD-HfO<sub>2</sub> Gate Insulator on Colorless Polyimide Substrate. *Yu, M.*, +, *TNANO 2020 481-485*

Performance of Junctionless and Inversion-Mode Thin-Film Transistors With Stacked Nanosheet Channels. *Lin, Y.*, +, *TNANO 2020 84-88*

**Three-dimensional integrated circuits**

Modeling of Carbon Nanotube-Based Differential Through-Silicon Vias in 3-D ICs. *Zhao, W.*, +, *TNANO 2020 492-499*

**Tight-binding calculations**

Conductance Parametric Analysis of Graphene Nanoribbons With Magnetic Contacts. *Moysidis, S.*, +, *TNANO 2020 778-783*

**Time resolved spectra**

InGaN/GaN Quantum Dots on Silicon With Coalesced Nanowire Buffer Layers: A Potential Technology for Visible Silicon Photonics. *Das, D.*, +, *TNANO 2020 571-574*

**Tin compounds**

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**Titanium**

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Enhancement of Responsivity and Sensitivity of p-Silicon/*n*-Zinc Oxide-Based Photodetector Using Titanium Dioxide Nanoparticles. *Monshipouri, M.*, +, *TNANO 2020 744-748*

Fabrication and Characterization of TiO<sub>x</sub> Memristor for Synaptic Device Application. *Kim, T.*, +, *TNANO 2020 475-480*

Improving DSSC Performance Using Enhanced Double Layers Based on Magnetic Beads and Reduced Graphene Oxide. *Chou, J.*, +, *TNANO 2020 375-381*

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**Torque**

A Novel Transverse Read Technique for Domain-Wall "Racetrack" Memories. *Roxy, K.*, +, *TNANO 2020 648-652*

**Transmission electron microscopy**

Ag Nanoparticles Sheltered In<sub>2</sub>O<sub>3</sub> Nanowire as a Capacitive MOS Memory Device. *Nath, A.*, +, *TNANO 2020 856-863*

An Analytical Approach to Study Annealing Induced Interdiffusion of In and Ga for Truncated Pyramidal InAs/GaAs Quantum Dots. *Mal, I.*, +, *TNANO 2020 223-229*

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Simple and Low-Cost Technique for Carbon Nanotube Synthesis. *Isoldi, M.*, +, *TNANO 2020 760-763*

**Tumors**

Microrobots Based *In Vivo* Evolutionary Computation in Two-Dimensional Microchannel Network. *Shi, S.*, +, *TNANO 2020 71-75*

**Tungsten compounds**

Highly-Efficient Solution Processed Yellow Organic Light Emitting Diode With Tungsten Trioxide Hole Injection/Transport Layer. *Kumar, P.*, +, *TNANO 2020 61-66*

Valley-Coupled-Spintronic Non-Volatile Memories With Compute-In-Memory Support. *Thirumala, S.K.*, +, *TNANO 2020 635-647*

WO<sub>x</sub>-Based Synapse Device With Excellent Conductance Uniformity for Hardware Neural Networks. *Choi, W.*, +, *TNANO 2020 594-600*

**Tunnel field-effect transistors**

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Approaching the Design of Energy Recovery Logic Circuits Using TFETs. *Nunez, J.*, +, *TNANO 2020 500-507*

Investigation of Ring-TFET for Better Electrostatics Control and Suppressed Ambipolarity. *Kumari, T.*, +, *TNANO 2020 829-836*

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Novel Design Approach of Extended Gate-On-Source Based Charge-Plasma Vertical-Nanowire TFET: Proposal and Extensive Analysis. *Kumar, N.*, +, *TNANO 2020 421-428*

Prospective Sensing Applications of Novel Heteromaterial Based Dopingless Nanowire-TFET at Low Operating Voltage. *Kumar, N.*, +, *TNANO 2020 527-534*

**Tunnel transistors**

N<sup>+</sup> Pocket Doped Vertical TFET Based Dielectric-Modulated Biosensor Considering Non-Ideal Hybridization Issue: A Simulation Study. *Wangkheirakpam, V.D.*, +, *TNANO 2020 156-162*

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**Ultraviolet detectors**

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XAS Microstructure Analysis of Manganese Doped Zinc Sulphide Nanoporphor. *Sahay, P.*, +, *TNANO 2020 360-367*

**Ultraviolet spectra**

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Localized Surface Plasmon Resonance Based Hetero-Core Optical Fiber Sensor Structure for the Detection of L-Cysteine. *Singh, L.*, +, *TNANO 2020 201-208*

**V****Vacancies (crystal)**

Memristive State Equation for Bipolar Resistive Switching Devices Based on a Dynamic Balance Model and Its Equivalent Circuit Representation. *Miranda, E.*, +, *TNANO 2020 837-840*

Strain Effect on the Hydrogen Evolution Reaction of V<sub>M6</sub>-SLMoS<sub>2</sub>. *Ye, K.*, +, *TNANO 2020 192-196*

The H<sub>2</sub>O Dissociation and Hydrogen Evolution Performance of Monolayer MoS<sub>2</sub> Containing Single Mo Vacancy: A Theoretical Study. *Ye, K.*, +, *TNANO 2020 163-167*

**Vacuum deposition**

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Investigation of Optoelectronic Properties in Germanium Nanowire Integrated Silicon Substrate Using Kelvin Probe Force Microscopy. *Singh, H.M.*, +, *TNANO 2020 628-634*

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**Vanadium**

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The Magnetism of a Ni Monolayer on Vanadium: Structure and Exchange Correlation Effects. *Ramanathan, A.A.*, *TNANO 2020 11-16*

**Vanadium compounds**

Millimeter Waveband Dielectric Permittivity of Nanocomposites Containing Vanadium Oxides. *Pakhomov, Y.A.*, +, *TNANO 2020 535-544*

Tunable Isotropic Absorber With Phase Change Material VO<sub>2</sub>. *Chen, A.*, +, *TNANO 2020 197-200*

**Vectors**

Intrinsic Bounds for Computing Precision in Memristor-Based Vector-by-Matrix Multipliers. *Mahmoodi, M.R.*, +, *TNANO 2020 429-435*

WO<sub>x</sub>-Based Synapse Device With Excellent Conductance Uniformity for Hardware Neural Networks. *Choi, W.*, +, *TNANO 2020 594-600*

**Velocity measurement**

Self-Powered Active Spherical Triboelectric Sensor for Fluid Velocity Detection. *Cheng, P.*, +, *TNANO 2020 230-235*

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**VLSI**

Mathematical Framework of Tetramorphic MWCNT Configuration for VLSI Interconnect. *Amin, A.B.*, +, *TNANO 2020 749-759*

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Laser-Based Fabrication of Microstructures on Nickel Thin Films and Its Applications in On-Chip Thin Film Inductors. *Itapu, S.*, +, *TNANO 2020 455-460*

**Voltage measurement**

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**Voltage-controlled oscillators**

A Magnetic Field-to-Digital Converter Employing a Spin-Torque Nano-Oscillator. *Albertsson, D.I.*, +, *TNANO 2020 565-570*

**W****Wavelength division multiplexing**

A Novel Multi-Functional Plasmonic Logic Device by Angle Manipulation. *Ye, Y.*, +, *TNANO 2020 94-101*

**Wide band gap semiconductors**

2D-SnS<sub>2</sub> Nanoflakes Based Efficient Ultraviolet Photodetector. *Yadav, S.M.*, +, *TNANO 2020 301-307*

Analysis and Optimization of GaN Based Multi-Channels FinFETs. *Yu, C.*, +, *TNANO 2020 439-445*

Barrier Layer Induced Switching Stability in Ga:ZnO Nanorods Based Electrochemical Metallization Memory. *Panda, D.*, +, *TNANO 2020 764-768*

Compact Modeling of the I-V Characteristics of ZnO Nanowires Including Nonlinear Series Resistance Effects. *Miranda, E.*, +, *TNANO 2020 297-300*

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Low-Frequency Noise Characterization of AlGaIn/GaN HEMTs and MIS-HEMTs Under UV Illumination. *Nagarajan, V.*, +, *TNANO 2020 405-409*

Mechanisms of a Rectifying TiN Gate Contact for AlGaIn/GaN HEMTs on Silicon Substrate. *Chahdi, H.O.*, +, *TNANO 2020 682-688*

Modeling of Short-Term Synaptic Plasticity Effects in ZnO Nanowire-Based Memristors Using a Potentiation-Depression Rate Balance Equation. *Miranda, E.*, +, *TNANO 2020 609-612*

Nanorods Versus Nanoparticles: A Comparison Study of Au/ZnO-PMMA/Au Non-Volatile Memory Devices Showing the Importance of Nanostructure Geometry on Conduction Mechanisms and Switching Properties. *Jaafer, A.H.*, +, *TNANO 2020 236-246*

Suppression of Blinking and Enhancement of Optical Properties of Core-Shell Quantum Dots by Structural Formulation. *Rani, S.*, +, *TNANO 2020 792-799*

The Influence of Superlattice Structure on the Dynamic Buffer Response of AlInN/GaN-on-Si HEMTs. *Chen, Y.*, +, *TNANO 2020 415-420*

XAS Microstructure Analysis of Manganese Doped Zinc Sulphide Nanophosphor. *Sahay, P.*, +, *TNANO 2020 360-367*

**Work function**

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**X****X-ray chemical analysis**

Enhancing the Performance of Polygon Monopole Antenna Using Graphene/TMDCs Heterostructures. *Abdul-Aziz, M.R.R.*, +, *TNANO 2020 269-273*

**X-ray diffraction**

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Study on Inter Band and Inter Sub-Band Optical Transitions With Varying InAs/InGaAs Sub-Monolayer Quantum Dot Heterostructure Stacks Grown by Molecular Beam Epitaxy. *Shriram, S.R.*, +, *TNANO 2020 601-608*

**X-ray photoelectron spectra**

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