The President's Farewell

JAMES
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PRESIDENT'S MESSAGE

IT'S BEEN AN EXTRAORDINARY two years, for everyone, and let's hope it is never to be repeated.

This is my farewell after two years (2020–2021) as your IEEE Nanotechnology Council (NTC) president, although it is being written in August 2021 when much remains uncertain. A month ago, for example, we were confidently planning the first face-to-face (F2F) expanded Executive Committee (ExCom) meeting in December at the rescheduled IEEE Nanotechnology Materials and Devices Conference (NMDC) 2021 in Vancouver, but now that suddenly seems to be threatened by COVID Delta-variant resurgences. By the time you read this, you will know if the meeting occurred as planned or not.

Like all of you, the NTC has been conducting its business on WebEx (or Zoom), with the unsolvable time-zone issue having some rising at unaccustomed hours, while others stay up way later than usual. Both IEEE International Conferences on Nanotechnology (NANOs) were held online, as were the NMDC and the IEEE International Conference on Nanomaterials: Applications & Properties in 2020 (with hopes for an F2F meeting later this year), while others were postponed or cancelled, but mostly converted to virtual format. NANO 2020 is a case in point. When it had to go virtual barely three months ahead of the event, it was taken over by a team consisting of most of the 2020 ExCom with a few others, including Guangyong Li as general cochair, Antonio Di Bartolomeo as publications cochair, and Lee Oien as treasurer. I'm sure everyone involved would agree that Guangyong's hard work and experience were critical to NANO 2020's success. The move to virtual was particularly disappointing because 2020 was NANO's 20th anniversary year. However, although the F2F get-together didn't happen, the occasion was observed with a panel discussion of past NTC presidents, who also recorded short videos of their impressions on nanotechnology developments over the 20 years (which are still available at IEEE NANO 20th Anniversary Video Messages–IEEE NANO 2020). The opening plenary of NANO 2020 was presented by Toshio Fukuda, NANO 2001 chair, the first NTC president in 2002/2003 and 2005, and IEEE president in 2020.

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At this point, having mentioned the ExCom, I must acknowledge the continued support and contributions of all of its members to the NTC's activities and success through "the pandemic years" (see Table 1).

New achievements in education in 2020 and 2021 include the reestablishment of the TryNano.org website, now being further developed by Jim Spicer as editor-in-chief, and the restart of the Nanotechnology Summer Schools, with one virtual in Region 9 (Colombia and Brazil) and another F2F in Constanta, Romania. The Distinguished Lecturers also presented more talks in 2020 and 2021 than usual, obviously because travel was not required (and impossible). The big development in publications was the introduction of *IEEE Open Journal of Nanotechnology* with a successful first year in 2020, and things are looking good so far in 2021. [But note that *IEEE Transactions on Nanotechnology* (*T-NANO*) continues as a hybrid, i.e., accepting both traditional and open access articles.] The impact factor of *T-NANO* jumped 17% in 2021, showing definite progress, and the magazine continues its expansion to six themed issues per year. The format might change in 2022 with a change to "common design," and the digital format means that the full magazine will be delivered by email and is more adaptable to the IEEE app on smartphones.

Two new technical committees (TCs) were established this year: TC-16 Quantum, Neuromorphic, and Unconventional Computing (Chair Giovanni Finocchio) and TC-17 Emerging Plasma Nanotechnologies (Chair Seiji Samukawa), and a new TC reporting system was established with the TC Technical Progress slides, which are gathered each year into a booklet. The TCs are the NTC's backbone, contributing to the educational, conference, and publication portfolios alike as, e.g., contributors, reviewers, and conference program committees, as needed. On the governance side, a second annual meeting of the Administrative Committee (AdCom) was instituted. This was split

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between 1 h of information, which was an informal summary of NTC activities, followed by 1 h of general discussion on how to improve generally and in relationships with the Member Societies specifically. There were no motions or formal reports, which are handled at the formally mandated annual meeting.

Another significant activity in 2020/2021 for the ExCom was the IEEE Technical Activities Board (TAB) Society and Council Review Committee (SCRC) review, which comes up every five years. In the first step, the ExCom fills out the SCRC review template, which prompts questions and suggestions from the SCRC. The NTC's response to those comments constitutes the final report, which is then submitted to TAB. We seem to have survived satisfactorily. The SCRC's primary criticisms are that the 12-year-old strategic plan needs updating (which is to begin in early 2022) and that there is a general lack of diversity, both gender and geographic, throughout the organization, e.g., associate editors and reviewers for all of the publications, TC members and chairs, conference committees, and so on.

The diversity point had already been recognized, and efforts were underway to improve it, but it's proving to be slow going. Actually, the NTC's geographic diversity doesn't seem too bad on the surface, with many active participants from all Regions except Region 9 (Latin America,), which IEEE recognizes as a problem for the whole organization. The NTC has made some progress here, with two new Chapters under development (Brazil and Peru), a virtual summer school planned (Brazil and Colombia), and a special webinar delivered in Spanish with the objective of recruiting Region 9 (Student) Chapters. However, India is the country with the most rapid growth in Chapters, but it is woefully underrepresented in NTC committees and so on. In November, *T-NANO* will also undergo a periodic IEEE TAB Periodicals Review and Advisory Committee review.

> Identifying paths for young volunteers to become known and involved in NTC activities remains an ongoing discussion.

The Standing Committees get less visibility but are equally important, and they have all done well in the past two years. The Fellows Evaluation Committee (chaired by Steve Goodnick) successfully forwarded five names for elevation as new IEEE Fellows: Osamu Tabata and Tza-huei Wang (2020) and Deji Akinwande, David Gracias, and Paul Weiss (2021). The Awards Committee (chaired by Alex Balandin) selected Supriyo Bandyopadhyay (2020) and Jean-Pierre Leburton (2021) for the Pioneer Awards, Mikhail Kats (2020) and Myeong-Lok Seol and Max Shulaker (2021, jointly) for Early Career Awards, and John Yeow for the 2021 Service Award. Paul Weiss will chair the committee for the remainder of 2021 and the 2022 awards. Two committees were rejuvenated this year by new chairs: Tyler Jaynes for the Standards Committee and Valentine Novosad for the Industrial Advisory Committee. Tyler has made great progress with the bureaucracy and is definitely winning with the appointment of a new experienced committee. The Fellows Search Committee, chaired by Jean-Pierre Leburton, is a totally new committee this year.

While there have always been representatives for Women in Engineering [now renamed Women in Nanotechnology (WIN)], Saumya Sharma has been unusually active, organizing virtual events at NANO 2020 and 2021 and, one hopes, in the F2F format for NMDC 2021. As the first Young Professionals (YP) representative, Rafal Sliz took off like a rocket and has enlisted regional YP coordinators for Regions 4, 6, 7, 8, 9, and 10/India. The regional YPs all have LinkedIn pages, and at least three have active webinar programs available to all.

2019 was the first year of the NTC New Chapters Initiative, funded from the reserves under a limited-term IEEE formula. We hope that the funding will continue in 2022, which would be its last year of eligibility. So far, the 28 Chapters at the end of 2018 have grown to 57, with more in the pipeline, and with most of the new Chapters being awarded start-up grants based on their proposals. With the pandemic, there are essentially zero program costs, so these grants are designed to sustain the new Chapters into the future when supplemented by Section support. Financially, the pandemic has hit conferences hard, but at the same time, there have been zero travel expenses, so at this point, it is hoped that the Council can also provide some support to the "old" (pre-2019) Chapters. Again, you might know if that happened late in 2021.

TABLE 1 ExCom personnel.

POSITION	PERSON	AFFILIATION
• Past President	Yonhua (Tommy) Tzeng	National Cheng Kung University, Taiwan
• Vice President Conferences	Lixin Dong (2020)	City University of Hong Kong
	Jin-Woo Kim (2021)	University of Arkansas, United States
• Vice President Education	John Yeow	University of Toronto, Canada
• Vice President Finance	Malgorzata Chrzanowska-Jeske	Portland State University, United States
• Vice President Publications	Fabrizio Lombardi (2020)	Northeastern University, United States
	Supriyo Bandyopadhyay (2021)	Virginia Commonwealth University, United States
• Vice President Technical Activities	Kremena Makasheva	CNRS-Plasma and Energy Conversion Laboratory, Toulouse, France
• President-Elect (2021)	Fabrizio Lombardi	Northeastern University, United States
• Secretary	Edward Perkins	Consultant, Portland, United States

The other Chapter news is that the new international coordinator, Lan Fu of Australian National University, is supported by five regional coordinators: Vasuda Bhatia, Regions 1–7; Attila Bonyár, Region 8; Camilo Tellez Villamizar, Region 9; Zhiming Wang, Region 10; and Brajesh Kumar Kaushik, Region 10 (India).

There are ongoing projects that must be completed by the end of the year, including passing changes to the Constitution and Bylaws, which will introduce vice president-elect and member-at-large positions to the ExCom and AdCom, respectively, and completion of the Operations and Conferences manuals, the latter for future conference organizers to ensure greater year-to-year continuity. Identifying paths for young volunteers to become known and involved in NTC activities remains an ongoing discussion; the obvious avenues are to publish in the journals and conferences, then become reviewers and beyond, and to volunteer for TryNano or join a TC. There are also regional paths through Chapters, YPs, or WIN. It is no secret that the NTC is usually struggling to find financial support for all of its activities as it has only publications and conferences as sources of revenue (and no membership fees). We need a third source of income, especially since all models predict a drastic decline in publication income with the move to open access, and the only obvious source is magazine advertising and increasing conference sponsorships through increased industrial contacts. You should have seen first efforts in this direction in the fourth quarter.

As past president in 2022 and 2023, I will chair the Nominations and Appointments and the Liaison and Transnational Committees. As the Liaison and Transnational chair, it will be my goal to attend as many regional Chapter, YP, and WIN meetings; NTC conferences (including cosponsored ones); and Member Society AdCom/Board of Governors meetings as possible, preferably F2F, but virtually if that's not possible. So, I hope to see you soon!

ABOUT THE AUTHOR

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THE EDITORS' DESK *(continued from page 2)*

electrical engineering from Colorado State University, Fort Collins, in 1983. He was an Alexander von Humboldt Fellow with the Technical University of Munich, Germany, and the University of Modena, Italy, in 1985 and 1986, respectively. He served as chair and professor of electrical engineering at ASU, Tempe, from 1996 to 2005. He served as associate VP for research at ASU during 2006–2008 and presently is the deputy director of ASU Lightworks. He was also a Hans Fischer Senior Fellow with the Institute for Advanced Studies at the Technical University of Munich.

Professionally, he served as president of the IEEE Nanotechnology Council during 2012–2013 and as president of the IEEE Eta Kappa Nu Electrical and Computer Engineering Honor Society BoG during 2011–2012. Some of his main research contributions include the analysis of surface roughness at the Si–SiO_2 interface, Monte Carlo simulation of ultrafast carrier relaxation in quantum confined systems, global modeling of high-frequency and energy-conversion devices, full-band simulation of semiconductor devices, transport in nanostructures, and the fabrication and characterization of nanoscale semiconductor devices. He has published more than 450 journal articles, books, book chapters, and conference proceedings, and he is a Fellow of IEEE (2004) for contributions to carrier transport fundamentals and semiconductor devices.

Prof. Martin Wybourne.

PROF. MARTIN WYBOURNE

Prof. Martin Wybourne is the Francis and Mildred Sears Professor of Physics at Dartmouth College and received his Ph.D. and D.Sc. degrees from the University of Nottingham, United Kingdom. He joined the Dartmouth faculty in 1997 following 10 years at the University of Oregon, before which he directed the Phonon Physics Research Team at the General Electric Company's Hirst Research Centre, London. His research focuses on the electrical, thermal, and mechanical properties of nanoscale systems. He has published more than 125 papers and organized several major international conferences.

At Dartmouth College, he has served as senior vice provost for research, associate dean of the faculty for the sciences, and interim provost. From 2003 to 2015, he chaired the Institute for Information Infrastructure Protection, a national consortium of universities and nonprofit organizations. He is a Senior Member of IEEE and a fellow of the Institute of Physics.

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