



IEEE Nanotechnology Council Newsletter, May - 2018



Editor's Note

I am delighted to bring you the newsletter for the quarter ending May 2018. This issue is focused on providing the latest updates and activities. I am also extremely proud to share that the IEEE NTC is currently the largest IEEE council with more than ~7000 members of established and young researchers. I hope you enjoy this issue and do let us know if there is any topic you'd like to see covered in the future issue.

Jr-Hau He
King Abdullah University of Science and Technology
EiC Newsletter & Web Content

Nanotechnology Council seeking nominations for 2019-20 Officers

Call for Nominations IEEE Nanotechnology Council

The IEEE Nanotechnology Council (NTC) is seeking nominations for the following officer positions:

- (1) President-elect (2019-2020) (1-year) and President (2020-2021)
- (2) VP for Conferences (2019-2020)
- (3) VP for Finances (2019-2020)
- (4) *NEW* VP for Education (2018-2019) (start-up; starts immediately upon election)

Unless otherwise noted, all positions are two-year terms and start Jan. 1, 2019. Nominations should include a statement from the candidate and a bio in IEEE format. The deadline for nomination is May 21, 2018. A position description and nomination form are in the attached NTC Nomination Package, which can also be downloaded here.

Eligibility: Candidates are nominated from current AdCom members or from those past members who have served as Member Society-appointed or ex-officio AdCom members within the previous five years. Review the AdCom roster here.

NOTE: Nominations may be made only by AdCom members (one per Society, as designated by the Society).

Note: An individual may not serve concurrently as both a Council officer and a Council Member Society representative.

The election will be held at the NTC AdCom on July 22, 2018 in Cork, Ireland.

Please email the nominations to Wen Li, Chair, NTC Nominations Committee at wenjli@cityu.edu.hk by midnight (HK Time) 21-May-2018.

Call for 2018 Award Nominations

Nominations are being solicited for the IEEE Nanotechnology Council's 2019 Awards. Award categories are Early Career, Pioneer and Distinguished Service.

1. PIONEER AWARD IN NANOTECHNOLOGY

The NTC Pioneer Award in nanotechnology is to recognize individuals who by virtue of initiating new areas of research, development or engineering have had a significant impact on the field of nanotechnology. The award is intended for people who are in the mid or late portions of their careers, i.e., at least 10 years beyond his or her highest earned academic degree on the nomination deadline date.

2. EARLY CAREER AWARD IN NANOTECHNOLOGY

The Nanotechnology Council has established an Early Career Award to recognize individuals who have made contributions with major impact on the field of nanotechnology.

3. DISTINGUISHED SERVICE AWARD

Nanotechnology Council to establish a Distinguished Service Award to recognize an individual who has performed outstanding service for the benefit and advancement of Nanotechnology Council.

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Special points of interest:

- Call for Proposals Future IEEE-NTC Conferences
- Distinguished Lecture series updates
- Conference Focus—IEEE-Nano and IEEE-NDMC
- Summer Schools—2018 in China and India.

For more details and updates visit IEEE—Nanotechnology

Council's Official website:

<http://sites.ieee.org/nanotech/>

2018 NTC Award Winners Announced

The IEEE Nanotechnology Council announces its 2018 Award Winners. Awards will be presented at its 13th Nanotechnology Materials & Devices Conference (NMDC 2018) which will be held in Portland, Oregon, USA on 14-17 October, 2018.

Early Career Award

Professor Can Bayram at the University of Illinois at Urbana-Champaign has been selected as the recipient for the 2018 IEEE Nanotechnology Council Early Career Award, with the citation:

“For seminal contributions to III-V quantum devices and their hetero-integration on silicon and graphene platforms through nanotechnology.”

Professor Bayram is a leader in the design, growth, and fabrication of III-V quantum devices. He has engineered novel quantum structures that have enabled the development of LEDs, lasers, photodetectors and solar cells covering the spectral range from deep ultraviolet to terahertz. This work includes the growth of cubic phase GaN on nanopatterned silicon, and the invention of GaN-on-Graphene technology that enables the production of low defect wafer-scale GaN-based devices on inexpensive and reusable substrates.

Prof. Can Bayram

Assistant Professor

Micro and Nanotechnology Laboratory

Department of Electrical and Computer Engineering,

University of Illinois at Urbana-Champaign

E-mail: cbayram@illinois.edu

Pioneer Award

Professor Nader Engheta at the University of Pennsylvania has been selected as the recipient of the 2018 IEEE Nanotechnology Council Pioneer Award in Nanotechnology, with the citation:

“For his transformative contributions to the nanoscience and nanotechnology of photonic metamaterials and for the development of optical nanocircuits”

Professor Engheta is known for founding the field of optical nanocircuits (“optical metatronics”) and his pioneering development and contributions to this field, which has merged the fields of nanoelectronics and nanophotonics. He is also known for developing epsilon-near-zero (ENZ) materials with near zero electric permittivity. Through this work he has opened many new frontiers, including optical computation at the nanoscale and scattering control for cloaking and transparency. Professor Engheta’s work has far reaching implications in various branches of materials science, optics, micro-waves, and quantum electrodynamics.

His current research activities span a broad range of areas including photonics, metamaterials, nano-optics, graphene optics, electro-dynamics, imaging and sensing inspired by eyes of animal species, micro-wave and optical antennas, and physics and engineering of fields and waves. He has received several awards for his research including the 2017 William Streifer Scientific Achievement Award from the IEEE Photonics Society, the 2015 Gold Medal from SPIE, the 2015 Fellow of US National Academy of Inventors (NAI), the 2014 Bal-

thasar van der Pol Gold Medal from the International Union of Radio Science (URSI), the 2017 Beacon of Photonics Industry Award from the Photonics Media, the 2015 Vannevar Bush Faculty Fellowship Award from US Department of Defense, the 2012 IEEE Electromagnetics Award, the 2015 IEEE Antennas and Propagation Society Distinguished Achievement Award, the 2015 Wheatstone Lecture in King’s College London, the 2013 Inaugural SINA Award in Engineering, 2006 Scientific American Magazine 50 Leaders in Science and Technology, the Guggenheim Fellowship, and the IEEE Third Millennium Medal.

Prof. Nader Engheta

H. Nedwill Ramsey Professor

Electrical and Systems Engineering,

Physics and Astronomy,

Materials Science and Engineering,

Bioengineering

University of Pennsylvania

Department of Electrical and Systems Engineering

E-mail: engheta@ee.upenn.edu

Call for Proposals for Future IEEE NTC Sponsored Conferences

The IEEE Nanotechnology Council (NTC) is calling for proposals for future sites for IEEE NANO 2021 and for IEEE NMDC 2020.

IEEE NANO 2021:

The annual IEEE International Conference on Nanotechnology is the NTC’s flagship event. The conference scope covers a wide range in nanoscience and technology. In particular, it covers nanofabrication, nanomanufacturing, nanomaterials, nanobiomedicine, nanoenergy, nanoplasmonics, nanoelectronics, nanosensors and nanoactuators, characterisation and modelling of nano structures and devices. Research in both experiments and simulation is reported. Industry is encouraged to present its research projects. NANO 2018, 2019 and 2020 will be held in Cork, Ireland; Macau, China; Montreal Canada respectively.

We are now seeking proposals for NANO 2021 which is expected to run in IEEE Regions 8 (Europe). NANO should be run at the end of July, preferably in the last week.

For conference history see <http://sites.ieee.org/nanotech/ieee-nano-conferences/>

Early indication of an intention to submit a proposal is strongly recommended. Candidates for NANO 2021 will be expected to present an informal 5-10 minute “Proposal in preparation” at the NTC Excom and Adcom meetings at NANO 2018 in Cork, Ireland. (The presentation can be done remotely, on-line.)

Proposal deadline:

NANO 2021: October 15th, 2018

IEEE NMDC 2020:

The Nanotechnology Materials and Devices Conference (NMDC) aims to develop critical assessment of existing work and future directions in nanotechnology research from every sector in the nanotech-

nology research field, with a special focus on materials and devices. NMDC 2018 and 2019 will be held in Portland, Oregon USA and Stockholm, Sweden respectively. Past locations of the NMDC have been in Asia (Korea, Japan, Taiwan, Singapore), USA (California, Michigan, Hawaii, Alaska), and Europe (Sicily, France).

For conference history see <http://www.ieeenmdc.org/>

Early indication of an intention to submit a proposal is strongly recommended. Candidates for NMDC 2019 will be expected to present an informal 5-10 minute "Proposal in preparation" at the NTC Excom and Adcom meetings at NANO 2018 in Cork, Ireland. (The presentation can be done remotely, on-line.)

Proposal deadline:

NMDC 2020: October 15th, 2018

PROPOSAL FORMAT:

Proposals may be submitted in PowerPoint, Word, or PDF formats, but PowerPoint files are required for the presentation. A Conference Proposal Reference guide and a PPT template is available on request. Proposals should cover:

Venue: City (or nearby city for rural locations); visitor access (e.g. daily flights,) with typical travel costs; hotel costs (including wi-fi,

breakfast, etc?); tourist information

Facilities: Hotel or campus venue if known (with verification of availability for formal proposals); lecture theater and meal capacities

Personnel: General Chair(s), Program Chair(s), Treasurer, other volunteer personnel if known, (e.g program/advisory committees), and any administrative staff or management company.

Budget information:

For informal proposals: Target registration rates, estimated number of attendees, estimated income (registration, tutorials, exhibition, grants/donations, etc), estimated expenses (meals/receptions/breaks, administrative costs, etc.), other features of interest

For formal proposals: As above, but with more detail covering all budgeted income and expenses in the required IEEE NetSuite spreadsheet format. Note that the (Income-Expense)/Expense ratio must be at least 20%, in accordance with IEEE policy.

Formal proposals must be e-mailed prior to the appropriate deadline to: NTC Vice-President for Conferences Guangyong Li, (GUL6@pitt.edu) with copies to Ed Perkins, NTC Secretary (e.perkins@ieee.org).

Contact Guangyong Li (GUL6@pitt.edu) with any questions.

IEEE-Nanotechnology Council Membership distribution

We are very happy to inform you that the Nanotechnology council is currently the largest Council, in IEEE with 7074 members as of May 4. We are growing!!

Affiliate	71
Associate	39
Member	2830
Life Member	45
Senior Member	898
Life Senior	46
Fellow	82
Life Fellow	25
Student	1735
Grad Student	1303
TOTAL	7074

Count of Members	Membership or Pub Name
3870	IEEE Biometrics Council
3162	IEEE Council on Electronic Design Automation
2929	IEEE Council on RFID
2165	IEEE Council on Superconductivity
7074	IEEE Nanotechnology Council
5792	IEEE Sensors Council
3412	IEEE Systems Council

IEEE Nanotechnology Council Distinguished Lectures

The IEEE Nanotechnology Council (NTC)'s Distinguished Lectures (DLs)

Talks by NTC Distinguished Lecturers can be requested by: IEEE student branches; NTC or member Society Chapters; NTC and member Society Conferences; conferences of other IEEE Societies not members of the NTC for major plenary/keynote (based on availability of funding). Please contact the presenter directly to arrange for a presentation. The talk will also include an introduction of the IEEE Nanotechnology Magazine. Part of the effort is to promote the magazine to students.

Notes from Vice-President Technical Activities (VP TA) of IEEE-NTC:

For some time now, the IEEE NTC via its VP TA has been supporting the IEEE program involving DLs. The program aims basically at two complementary objectives: to recognize our leading members and to bring the specialists amid burgeoning scientific environments. IEEE DLs are scientific professionals who help lead their fields in new technical developing areas that shape the global community. Usually they are also recognized by their peers.

The chosen candidates specialize in the fields of interest of our Council. There is funding for them to travel to various technical and regional groups, such as Society and Technical Council Chapters, to lecture at events. Typically, each Distinguished lecturer participates yearly to 2 events. A DL is nominated for one year and may be renewed for a second year.

NTC possesses many IEEE society members and therefore covers a large scientific ground. This year, the DL program comprises 9 lecturers, each advocating one major distinguished lecture. The first 5 DLs are briefly introduced below:

Prof. Dr. Michel F. Fr chette

NTC Vice-president TA (2018-2019)

Detailed report and updates of Distinguished Lectures

Prof. Husam Alshareef

King Abdullah University of Science & Technology

Thuwal, Saudi Arabia. Email: husam.alshareef@kaust.edu.sa

Indium-Free Fully Transparent Electronics Deposited Entirely by Atomic Layer Deposition

The field of transparent electronics based on metal oxide conductors and semiconductors has attracted much attention recently, because it is expected that fabrication of fully transparent devices will not only enable higher performance displays, but will also usher in a new era of transparent electronics and sensors. However, the limited work on fully transparent circuits has almost exclusively relied on indium tin oxide (ITO), indium doped zinc oxide (IZO) or other indium-containing oxides. It is well-known that indium supplies have been a constant concern for the display and touch screen industries, thus it is necessary to demonstrate high-performance fully transparent TFTs using alternative transparent oxides. In light of the above facts, we demonstrate robust processes for fully-transparent electronics fabrication with the following features: (1) A unique multi-

layer semiconductor channel composed of alternating layers of hafnium oxide (HfO₂) and zinc oxide (ZnO), which gives significant improvement in the electrical stability of our devices; (2) entirely indium-free transistors (gate, SD, channel, dielectric are all indium-free); (3) all-oxide, truly fully-transparent devices and circuits (no metals, only transparent oxide conductors and semiconductors); (4) single deposition technique (ALD) for all materials, which means uniform and conformal deposition is possible on both planar and three-dimensional device architectures; (5) maximum process temperature of 160°C which allowed us to demonstrate the process on both rigid glass and flexible substrates. A variety of circuits including inverters, rectifiers, and ring oscillators are demonstrated using this technology.

Prof. Husam Alshareef obtained his PhD degree in Materials Science and Engineering from North Carolina State University, Raleigh, USA in 1996. He then spent 2 years as postdoctoral associate at Sandia National Laboratories in Albuquerque, United States. He then embarked on a 10-year career in the semiconductor industry, holding positions at Micron Technology and Texas Instruments, Inc. There he worked on developing new materials and processes for integrated circuit fabrication. In 2009 he joined KAUST, where he initiated an active research group focusing on emerging electronics and energy storage. The author of nearly 350 articles, he has 80 issued patents. He has won the UNDP Undergraduate Fellowship, Seth Sprague Physics Award, North Carolina State Dean's Fellowship, U.S. Department of Education Electronic Materials Fellowship, Sandia National Laboratories Post-doctoral Fellowship, the SEMATECH Corporate Excellence Award (2006), two Dow Sustainability Awards with his students in (2011) and (2014), the AH Shoman Award for Excellence in Energy Research (2016), and KAUST Distinguished Teaching Award (2018). He is also a Distinguished IEEE Speaker in Nanotechnology, Fellow of the Royal Society of Chemistry, and Senior Member of IEEE. He was co-chair for the 2014 Materials Research Society (MRS) Fall Meeting in Boston, USA, and has served on various MRS committees. He was associate editor for the Journal of Electronic Materials (2011-2013) and is on the Editorial Board of ACS Applied Materials & Interfaces and Wiley's Journal Small Methods. He was Chair of the Materials Science & Engineering program at KAUST from January 2013 till January 2016.



Prof. Dominique Baillargeat

University of Limoges, France, Email: dominique.baillargeat@xlim.fr

3D Radio-Frequency to millimeter wave heterogeneous system integration: Emerging nanotechnology for RF nanopackaging, the link between nanoscopic and macroscopic worlds?

Whether for niche applications (military, space, medical) or for high volume applications (portable devices, entertainment, automobile) the design of RF subsystems requires balancing packaging choices to meet demanding customer targets of cost, size and high performance.

IEEE Nanotechnology Council Distinguished Lectures

In this context, numerous efforts have recently focused on heterogeneous 3D integration of components to subsystems for future RF to mmW applications. However major challenges remain and as a response, RF nanotechnology offer new opportunities. It enables new nanomaterials with unique RF properties due to their small dimensions and good transport properties for more efficient interconnects, EM shielding and thermal management. The talk will start by introducing the future trends in RF to mmW electronics, highlighting limitations and opportunities that nanomaterials with associated nanotechnologies and additive manufacturing processes (such 3D printing) can help to overcome and take advantage of respectively. The focus will be on what is actually done and will be done to pave the way for better 3D integration. The talk will cover the latest developments of highly multidisciplinary approaches in RF/thermal-mechanical simulations at nanoscale intensive research investigations focused on carbon nanotubes, nanowires, graphene or other 2D materials innovative RF nanopackaging approaches. A review of the state of the art will be given during the entire talk, in order to provide examples of tangible results.

D. BAILLARGEAT (50) is Senior Member IEEE. He is Professor at the University of Limoges (France). He is currently the Director of XLIM a joint research institute of 460 members of CNRS and University of Limoges. He is also the Director of the Lab of Excellence SIGMA_LIM, an 8 years project, on innovative materials, technologies and software architectures dedicated to the future smart and highly integrated communication systems. From September 2009 to August 2013 he was the Director of the research laboratory CINTRA in Singapore, a joint lab. between the CNRS, NTU and Thales. The vision of this framework is to develop nanotechnologies for electronics.



D Baillargeat has done lot of research activities on the design of passive RF devices and on innovative packaging solutions for 3D heterogeneous integration. His research work is mainly in the following areas: (1) EM modelling and design of RF components and modules, (2) 2D/3D additive manufacturing processes (3) nano-modelling and nano-characterization techniques for assisting the development of carbon based devices (solutions for RF nanopackaging (interconnect), RF components, sensors, etc.)

Prof Baillargeat have been involved in many projects (past and present) either as XLIM scientific responsible or collaborator through fundings from the French Research Agency, European Community, ESA, CNES or with industrial partners (Thales, EADS etc.). He has been the advisor of 30 graduated PhD students. D Baillargeat co-authored more than 60 articles in international journals and books, and 200 communications in international conferences.

Prof. Sasitharan Balasubramaniam

Dept. of Electronic and Communication Engineering, Tampere University of Technology, Finland;
Telecommunication Software and Systems Group (TSSG), Waterford Institute of Technology, Ireland. Email: sasi.bala@tut.fi

Wireless Optogenetics Nano Communications and Networking; Engineering Bacterial Molecular Communication Systems; Calcium-signaling based Molecular Communica-

tion Systems

Dr. Sasitharan Balasubramaniam currently an Acting Director of Research at the Telecommunications Software and Systems Group, Waterford Institute of Technology, Ireland and also an Academy of Finland Research Fellow at the Department of Electrical and Communication Engineering of the Tampere University of Technology. Dr. Balasubramaniam completed his Bachelors of Electrical and Electronic Engineering and Ph.D. in Computer Science from the University of Queensland, Australia, in 1998 and 2005, respectively. He also completed his Masters of Engineering Science (Computer and Communication Engineering) from the Queensland University of Technology, Australia, in 1999.



The main research interests of Dr. Balasubramaniam lies in Biologically inspired Nanoscale Communications, which also includes molecular communications. In this area he has developed communication models for calcium signalling, bacterial nanonetworks, as well as microfluidic communications. His research interests recently moved towards nanoscale communications within the brain, and this includes modelling the communication within the cortical micro columns as well as implanting nanoscale wireless optogenetic devices that can stimulate single neurons. The aim of this research is to target new forms of Brain-Machine Interfaces that can link machines to stimulations of single neurons, where applications can include managing certain neurological diseases (e.g., epilepsy) or targeted plasticity training. Dr. Balasubramaniam has published 46 peer reviewed journal publications, 66 conference proceedings, 2 book chapters, and has edited a number of special issues in the area of molecular communications and the Internet of (Bio) Nano Things.

Dr. Balasubramaniam co-founded a new workshop series called IEEE Molecular and Nano Communication (MoNaCom), which ran from 2011 – 2013, and most recently he co-founded the ACM International Conference on Nanoscale Computing and Communication (ACM NanoCom), where he is on the steering committee. In 2014, he was the Technical Program Committee co-chair, and in 2015 he was the General Chair of ACM NanoCom. He serves as an Associate Editor for IEEE Internet of Things journal, Editor of Elsevier Nano Communication Networks, and Editor of Digital Communication Networks. He is currently an IEEE Nanotechnology Council Distinguished Lecturer for 2018.

The topics in Dr. Balasubramaniam's DL talks includes:

Wireless Optogenetics Nano Communications and Networking

Engineering Bacterial Molecular Communication Systems

Calcium-signaling based Molecular Communication Systems

which are emerging areas in the field of nano and molecular communication systems. This is a very multi-disciplinary research area that brings together nanotechnology, computer science, communication engineering, as well as molecular biology, amongst others.

IEEE Nanotechnology Council Distinguished Lectures for 2018—updates

Dr. Balasubramaniam has so far given two lectures, which are at (i) University of Padova, Italy (March 15th – 22nd), and (ii) Vidyasirimedhi Institute of Science and Technology (VISTEC), Thailand (February 9th).

The lectures offered at the University of Padova were to postgraduate Computer Science students, where the lectures includes: (i) Introduction to Nano and Molecular Communications, (ii) Bacterial Nanonetworks, (iii) Electromagnetic Nano Communications and The Internet of Nano Things, and (iv) Nano Communications and the Brain. The objective was to introduce this new field to the postgraduate students, and to pursue opportunities of developing research programs at the Masters and PhD level.

VISTEC is a new and emerging postgraduate-based Institute in Thailand. The long-term objective of VISTEC is to develop a research-intensive institute that is focused on new emerging fields. The lecture offered at VISTEC was for postgraduate students in molecular biology and computer science, and the topic was on “Molecular Communication and The Future Perspectives on the Internet of Bio-Nano Things”. The lecture presented a general overview of the field of



nano and molecular communications, targeting specifically on bacterial nanonetworks and calcium signaling. Towards the end of the lecture, the different types of molecular communication networks are brought together, where discussions focused on how this could be connected to Cyber-world.

Photos of Dr. Balasubramaniam' DL lecture at VISTEC.

Prof. Samir Iqbal

Professor and Chair, Department of Electrical Engineering, Professor, School of Medicine

University of Texas Rio Grande Valley USA. Email: smiqbal@ieee.org

Nanotextured Microfluidic Substrates to Interface Living Systems; Cancer Nanotechnology; Nanotextured Materials for Selective Biosensing

"Dr. Samir Iqbal is a Professor of Electrical Engineering at the University of Texas Rio Grande Valley in USA. He is a Senior Member of IEEE and a Fellow of the Royal Society of Chemistry. His research has focused on developing robust nano-bio interfaces for genes, proteins and cellular investigations, lab on chips, and cancer diagnostics using nanotechnology. He has innovated the use of nanotextured materials for selec-



tive and sensitive sensing of cancer, high-speed imaging, and big data analytics for single-cell analysis in real-time.

Dr. Iqbal holds an adjunct position in the Department of Urology at the University of Texas Southwestern Medical Center in Dallas, a courtesy appointment in the Bioengineering Department of the University of Texas at Arlington and a joint appointment in the School of Medicine at the University of Texas Rio Grande Valley. He has received a number of awards and honors for excellence in research, teaching and student mentoring. He received his Bachelor's in Electrical Engineering from NED University of Engineering and Technology, Karachi, Pakistan, and his Ph.D. from Purdue University, West Lafayette, Indiana, USA."

Prof. Xiaoning Jiang

North Carolina State University, Raleigh, NC 27695 USA

Email: xjiang5@ncsu.edu

Nanoacoustics: Materials, Devices and Applications

Biography: Dr. Xiaoning Jiang is a University Faculty Scholar and a Professor of Mechanical and Aerospace Engineering at North Carolina State University. He is also an Adjunct Professor of Biomedical Engineering at North Carolina State University and University of North Carolina, Chapel Hill. Dr. Jiang received his Ph.D. degree from Tsinghua University (1997) and his Postdoctoral training from the Pennsylvania State University (1997-2001). He was the Chief Scientist and Vice President for TRS Technologies, Inc. prior to joining NC State in 2009. Dr. Jiang is the author and co-author of two books, 5 book chapters, 9 issued US Patents, 90 peer reviewed journal papers and over 90 conference papers on nano-acoustics, piezoelectric ultrasound transducers, ultrasound for medical imaging and therapy, drug delivery, ultrasound NDT/NDE, smart materials and structures and M/NEMS. Dr. Jiang is a member of the technical program committee for a few international conferences including IEEE Ultrasonics Symposium (TPC-5), SPIE Smart Structures and NDE, ASME IMECE, IEEE NMDC and IEEE NANO. He also serves as the UFFC representative to IEEE Nanotechnology Council (NTC), Nano-Acoustics Technical Committee Chair for IEEE NTC, IEEE NTC Distinguished Lecturer (2018), an editorial board member for the journal Sensors and a senior associate editor for the new ASME Journal of Engineering and Science in Medical Diagnostics and Therapy.



Conferences



The 18th IEEE International Conference on Nanotechnology

| Cork, Ireland | 23-26 July 2018 | www.ieeenano2018.org

We are now open to submissions for workshops and tutorials at Tyndall National Institute, to be held on Monday 23rd July 2018, in advance of IEEE NANO 2018. If you are interested in running a workshop or tutorial in advance of IEEE NANO 2018 please send a course outline and abstract, along with any costings or logistical requirements to danny.denton@tyndall.ie.

About the Conference

IEEE-NANO is the flagship IEEE Nanotechnology conference. The conference scope spans nanoscience and nanotechnology, from nanomaterials and nanofabrication nanosensors, nanoactuators and nanoelectronics/nanophotonic devices. The thematic focus for this year's event is Nano-Enabled Smart Things: new materials, devices and systems that can benefit humanity through applications in communications, energy, healthcare, food and environment. The conference themes will encompass experimental contributions (e.g., materials development and integration, device fabrication, characterization and metrology) as well as modelling and simulation. We welcome contributions from both academic and industry-based researchers. The Conference Proceedings for IEEE NANO 2018 will be published on IEEE Xplore.

Selected contributions will be eligible for submission to a special issue of IEEE Transactions on Nanotechnology (TNANO).

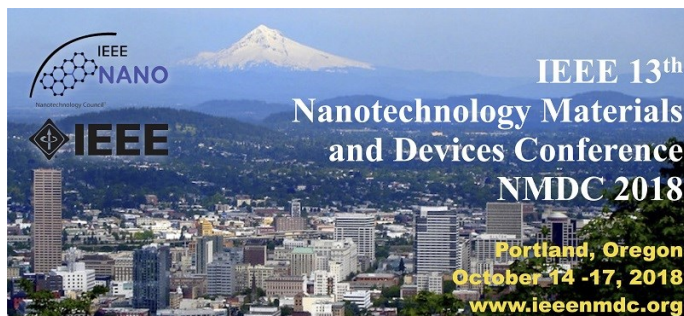
Confirmed plenary speakers for IEEE NANO 2018 include:

Prof. John A. Rogers, Northwestern University

Prof. Malini Olivo, A*STAR Singapore

Prof. Clivia M. Sotomayor Torres, Catalan Institute of Nanoscience and Nanotechnology

Prof. Rong Chen, Huazhong University of Science and Technology



NMDC 2018 is soliciting papers and sessions on Materials and Devices for heterogeneous Nanoscience and Nanotechnology systems in these areas:

IEEE NANO 2018 Themes

- Nanosensors & Nanoactuators
- Materials Design & Development
- Nanoelectrochemical Sensors
- Surface-enhanced Raman Spectroscopy
- Piezoelectric Sensors & Actuators
- Biophotonics
- Nanoplasmonics & Nanophotonics
- Nanoenergy for Smart Things
- Materials Design
- Energy Harvesting & Conversion
- Energy Storage
- Power Management
- Materials, Devices & Architectures for Nanoelectronics
- Brain-Inspired Circuits & Architectures
- Resistive Random Access Memories
- 2D Materials & Devices
- Nanofabrication & Assembly
- Nano-Acoustics
- Nanophonics
- Nanomagnetism & Spintronics
- Nanometrology
- Nanosafety
- Nanoscale & Biological Communication
- Multi-scale Simulation

1.0 Materials & devices for:

- 1.1 Nanoelectronics, e.g. SETs, memristors, QCAs, NanoCMOS
- 1.2 Nano-Optics/Photonics/Optoelectronics
- 1.3 Metamaterials & Plasmonics
- 1.4 Energy harvesting and storage
- 1.5 MEMS/NEMS
- 1.6 Spintronics
- 1.7 Nano-Biomedicine
- 1.8 Nanorobotics and nanomanufacturing
- 1.9 Nanonetworks

2.0 Properties, Fabrication and applications of

- 2.1 Graphene, CNTs, Nanodiamond and Nanowires
- 2.2 Semiconductors, e.g. Organic, Oxides, III-V

2.3 2D Materials (MoS₂, hBN, etc)
 2.4 Nanosensors and Nanoactuators
 2.5 Quantum dots & Nanoparticles (0-D)
 2.6 Nanomagnetism and Passive Devices
 2.7 Thin Films and Nanocomposites

3.0 Special Applications

3.1 Nano-fluidics and integrated bio-chips
 3.2 DNA Nanotechnology
 3.3 Nano-Metrology/Characterization
 3.4 Environment, Health & Safety

4.0 Nanotechnology, Nanostructures and Nanosystems

4.1 Nanopackaging, Interconnects, and Reliability of nano-chips
 4.2 Reliability and other thermal issues in nano-structures and nanosystems
 4.3 Standards and safety issues of nanotechnology
 4.4 Synthesis and modification

5.0 Modeling and simulation of nano-materials, nanostructures and nanodevices

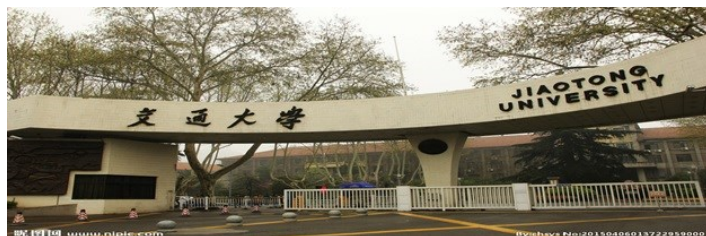
6.0 Emerging topics related to nanomaterials, nanodevices and nanostructures

Author Timeline

Date

Last date for Special Session proposals	May 1, 2018 May 15, 2018
Last date for Short Abstract (text only) submission (100-200 words)	May 30, 2018
Last date for Regular, Special Session and Invited papers submission	June 11, 2018
Paper acceptance notification	July 25, 2018
Last date for Final Manuscript submission for Regular, Special Session and Invited papers	August 13, 2018

IEEE Summer Schools-2018



Summer School: Nanomaterials for Energy at Xi'an Jiaotong University (XJTU), Xi'an, China

Is nano green?

WHEN: From August 6th to 10th, 2018

DURATION: 5 full days

WHERE: All activities at the Nan Yang Hotel in Xi'an. This hotel belongs to XJTU and is at short distance from XJTU campus

– Limited to 75-100 participants with a varied provenance from Asia
 – Reasonable cost with food provided

– Inquiry: frechette.mick@gmail.com

School Organizers

*Michel Fréchette

**Stephen Goodnick

*Shengtao Li

*Jianying Li

*Daomin Min

*Miss Chang

* State Key Laboratory of Electrical Insulation and Power Equipment,

Xi'an Jiaotong University (XJTU)

** Electrical engineering at Arizona State University, Phoenix, USA

AGENDA

School topic: "Nanomaterials for energy"

Many national and international experts will join us to teach participants

Energy here is taken in the broadest sense, e.g. electrical, chemical, etc. Since materials play a crucial role in the domain of energy, nanostructured materials offer the potential for revolutionary changes in the energy industry through enhanced performance in terms of energy conversion and storage, more compact design leading to miniaturization of components, and increased reliability.

- Day 1: Basic notions, nanoparticles/their functionalization, and characterization
- Day 2: Nanodielectrics including electrotechnical applications and simulations
- Day 3: Battery and energy storage
- Day 4: Nanotechnology Pathways to Advanced Concept Photovoltaics
- Day 5: Smart, Green, and greener and smarter

A more detailed program is under preparation and the same will be updated in IEEE-NTC website soon. Please visit the website for more updates.

IEEE Nanotech Summer School 2018 – India

CENTRE FOR NANO SCIENCE AND ENGINEERING (CeNSE)
Indian Institute of Science



IISc IEEE Nanotechnology Council and Sensors Council Student Chapter and IEEE Nanotechnology Council Bangalore Chapter presents IEEE Nanotech Summer School 2018, Nanotechnology: From Science to Systems and Beyond at CeNSE, IISc from 16th-20th July 2018.

The summer school organised by IEEE NC SC JSC, is motivated to provide a platform for students and professionals to learn and interact with the stalwarts in the field of nanotechnology. Seminar from pioneers across the globe of multiple diverse coupled with intricately designed hands-on sessions will be provided to elevate the interaction of the attendees. The talks will be designed to reach a broader audience consisting of senior undergraduates, graduate students, post-docs and researchers at the early stages of their careers irrespective of their background. Each day of the 5-day event will be dedicated to 5 unique domains of nanotechnology being:

1. Nanomaterials
2. Nanoelectronics
3. Nano-photonics
4. NEMS/MEMS
5. Nano-biotechnology

Download flyer: <http://sites.ieee.org/nanotech/files/2018/04/NTC-India-SummerSchool.pdf>

Centre for Nano Science and Engineering (CeNSE) is one of the finest research centres in the world, located in the lush green campus of Indian Institute of Science (IISc), which is also a home to numerous exotic plants and animals. The interdisciplinary research in the centre is defining new horizons through scientific discovery and engineering innovation at nano-scale. CeNSE houses a state-of-the-art National Nano-fabrication Centre (NNfC) with 14000 square feet of class 100/1000 clean room. It also houses a comprehensive Micro Nano Characterization Facility (MNCf) to conduct a plethora of electrical, optical, mechanical and material characterization.

IEEE—Nanotechnology Council's Social Media : Official Facebook page

Dear friends,
I am elated to welcome you all to our official IEEE Nanotechnology - Facebook page

(<https://www.facebook.com/groups/550239578466583/>).

This group serves as a dedicated platform for researchers all over the world to connect and communicate nanotechnology and nano science.

Now the IEEE Nanotechnology FB group has very rich contents with active interactions among members from around the world. There are more than 10,000 members now.

I would encourage the group members to actively take part in promoting research and development in addition to other valuable infor-

mation such as conference details and science jobs. Please feel free to join the group and add your fellow research members in order to expand the scientific network.

Thank you for your kindly support.

Warm Regards,

Jr-Hau He

Newsletter EIC of IEEE NTC

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**Announcement—General Data Protection Regulation (GDPR) statement**

The European Union mandate, General Data Protection Regulation (GDPR) is changing the way we communicate. The GDPR effective date is May 25, 2018. IEEE is asking subscribers to mailing lists such as this IEEE Nanotechnology Council interest to reaffirm their subscriptions. You may have or will shortly receive an email from IEEE asking you to affirm your subscription. Per GDPR you must actively indicate that you wish to remain on this list. *If you ignore the email you will be unsubscribed.* The only way to remain and receive communications from the Council about nanotechnology news and events such

as conference announcements and calls for papers, is to *confirm your interest when you receive the notification from the IEEE.*

Alternatively, if you prefer not receive emails, you can join or follow the Council on Facebook:

<https://www.facebook.com/groups/550239578466583/>