

NMDC 2015 Technical Program

Sessions

Time	Aleutian Room	Dillingham Room	Katmai Room
Monday, September 14			
08:30 AM-09:00 AM	<u>Welcome</u>		
09:00 AM-10:00 AM	<u>Opening Plenary</u>		
10:00 AM-10:30 AM	BREAK		
10:30 AM-12:00 PM		<u>Session M1</u>	<u>Session M2</u>
12:00 PM-01:00 PM	LUNCH		
01:00 PM-03:00 PM		<u>Session M3</u>	<u>Session M4</u>
03:00 PM-03:20 PM	BREAK		
03:20 PM-05:30 PM		<u>Session M5</u>	<u>Session M6</u>
Tuesday, September 15			
08:30 AM-10:00 AM	<u>Tuesday Plenary</u>		
10:00 AM-10:30 AM	BREAK		
10:30 AM-12:00 PM		<u>Session T1</u>	<u>Session T2</u>
12:00 PM-01:00 PM	LUNCH		
01:00 PM-03:00 PM		<u>Session T3</u>	<u>Session T4</u>
03:00 PM-03:20 PM	BREAK		
03:20 PM-05:30 PM		<u>Session T5</u>	<u>Session T6</u>
06:30 PM-08:30 PM	DINNER		
Wednesday, September 16			
08:00 AM-09:00 AM	<u>Wednesday Plenary</u>		
09:00 AM-09:30 AM	<u>Closing & Awards</u>		
09:30 AM-10:00 AM	BREAK		
10:00 AM-12:40 PM		<u>Session W1</u>	<u>Session W2</u>

Monday, September 14

8:30 AM – 9:00 AM Welcome

Room: **Aleutian**

Chair: Saif alZahir, NMDC 2015 Chair, UNBC, Canada

9:00 AM – 10:00 AM Opening Plenary Keynote

Room: **Aleutian**

Chair: Parviz Famouri, IEEE NTC VP Conferences, UWV, USA

“Planes, Trains, Automobiles...and Cells?”

Speaker: Philip R. LeDuc, Carnegie Mellon University, USA

10:30 AM – 12:00 PM

Session M1 — Invited Presentations

Room: Dillingham

Chair: Kenrick J Mock, NMDC Co-chair, University of Alaska Anchorage, USA

- 10:30 am ***Biomimetic Nanotechnology for Enhanced Detection of Circulating Tumor Cells***
Seungpyo Hong, Ja Hye Myung and Sin-jung Park (University of Illinois at Chicago, USA); Andrew Wang (University of North Carolina, USA)
- 11:00 am ***Advanced Nanomaterials for Solar Energy Applications***
Haiguang Zhao and Federico Rosei (INRS, Quebec University, Canada)
- 11:30 am ***Recent developments on InAs/InP quantum dash nanostructures and devices***
Boon S. Ooi, Mohammed Zahed Mustafa Khan and Tien Khee Ng (King Abdullah University of Science and Technology, Saudi Arabia)

Monday, September 14

10:30 AM – 12:00 PM

Session M2 — Invited Presentations

Room: Katmai

Chair: Frank Moore, University of Alaska Anchorage, USA

- 10:30 am *Towards Functionality-Enhanced Devices: Controlling the Modes of Operations in Three-Independent-Gate Transistors*
Pierre-Emmanuel Gaillardon, Jian Zhang, Michele De Marchi and Giovanni De Micheli (EPFL, Switzerland)
- 11:00 am *3D Atomic-Scale Insight Into Semiconductor Nanowires*
Rongkun Zheng (The University of Sydney, Australia)
- 11:30 am *Ge Nanowire Transistors*
Chee-Wee Liu, I-Hsieh Wong, Shih-Hsien Huang and Chih-Hsiung Huang (NTU, Taiwan)
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1:00 PM – 3:00 PM

Session M3

Room: Dillingham

Chair: Andrew Wang, University of North Carolina, USA

- 1:00 pm *Nanoparticle or Microparticle Sintering for 3D/Power Assembly? (Invited)*
Katsuaki Suganuma (Osaka University, Japan)
- 1:30 pm *Raman spectroscopy studies of phonons in a nanowire subjected to a magnetic field*
Md. Iftekhar Hossain, Jayasimha Atulasimha and Supriyo Bandyopadhyay (Virginia Commonwealth University, USA)
- 1:50 pm *Biodegradable Nanoporous Microspheres by RAFT and Photodegradation*
Ildoo Chung and Taeyoon Kim (Pusan National University, Korea)
- 2:10 pm *Nanoscaled Self-Assemblies for Facilitated Energy Conversion*
Hsing-Lin Wang (MSJ567, Chemistry Division, Los Alamos National Laboratory & Los Alamos National Laboratory, USA); Hsinhan Tsai (MSJ567, Chemistry Division, Los Alamos National Laboratory, USA)

- 2:30 pm ***Dielectric engineering of nanostructured layers preventing electrostatic charging in thin dielectrics***
 Kremena Makasheva and Christina Villeneuve-Faure (LAPLACE, University of Toulouse, France); Caroline Bonafos (CEMES-CNRS, France); Christian Laurent (University of Toulouse and CNRS & LAPLACE, France); Alessandro Pugliara (LAPLACE, CEMES-CNRS, University of Toulouse, France); Bernard Despax and Laurent Boudou (LAPLACE, University of Toulouse, France); Gilbert Teyssevre (University of Toulouse & CNRS, LAPLACE & CNRS, Paul Sabatier University, France)

1:00 PM – 3:00 PM

Session M4

Room: Katmai

Chair: Frank D Witmer, University of Alaska Anchorage, USA

- 1:00 pm ***Advanced Carbon Nanotube Based Devices (Invited)***
 Qing Zhang (Nanyang Technological University, Singapore)
- 1:30 pm ***Photon Induced Negative Capacitance in Metal Oxide Semiconductor Structures***
 Anant M. P. Anantram (University of Washington, USA); Anita Fadavi Roudsari, Iman Khodadad and Simarjeet Saini (University of Waterloo, Canada)
- 1:50 pm ***Exploration of Digital Latch Design using Ballistic Deflection Transistors – Modeling and Simulation***
 Poorna Marthi and Jean Francois Millithaler (University of Massachusetts Lowell, USA); Ignacio Iñiguez-de-la-Torre, Javier Mateos and Tomás González (University of Salamanca, Spain); Martin Margala (University of Massachusetts Lowell, USA)
- 2:10 pm ***Resistive Switching Effect At Boundary Between Film Like Grown ZnO Nanorods***
 Eunji Yoo (Sejong University, Korea)
- 2:30 pm ***Correlation Between Gate Length, Geometry and Electrostatic Driven Performance in Ultra-Scaled Silicon Nanowire Transistors***
 Talib Al-Ameri (University of Glasgow & Device Modelling Group, United Kingdom); Y. Wang (Peking University, P.R. China); Vihar Georgiev, F. Adamu-Lema, Xingsheng Wang and A. Asenov (University of Glasgow, United Kingdom)

Monday, September 14

3:20 PM – 5:30 PM

Session M5

Room: Dillingham

Chair: Andrew Wang, University of North Carolina, USA

- 3:20 pm ***Length Control of Packed Single Crystalline TiO₂ Nanorods for Dye-sensitized Solar Cell (Invited)***
YoungSoo Kang (Sogang University & Korea Center for Artificial Photosynthesis, Korea)
- 3:50 pm ***A Low-cost Superlyophobic Dry Adhesive Film Based on EVA Copolymer***
Lifang Yuan, Lei Wang, Zhiwei Wang, Tianzhun Wu and Yu Zhao (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, P.R. China)
- 4:10 pm ***Mesoporous polyurea aerogel for large loading, uniform and slow release of insect repellent oil***
Hao Tang and Chunrong Zhu (Onechip Co. Ltd, P.R. China); Wanli Niu (WindTalk Co. Ltd, P.R. China); Honglei Wang (University of Texas at Dallas, USA); Walter Hu (800 W. Campbell Rd & University of Texas at Dallas, USA)
- 4:30 pm ***A Wireless Motion Detection System with Silver Nano Ink Printed Accelerometer***
Jae Sung Park and Woo Soo Kim (Simon Fraser University, Canada)
- 4:50 pm ***Optical and Morphological Properties of Porous Silicon Grown At Low Hydrofluoric Acid Concentration by Electrochemical Anodization***
Mateus Moura (Federal University of Bahia, Brazil); Ademir Costa (Federal Institute of Bahia, Brazil); Leizer Schnitman (Universidade Federal da Bahia, Brazil); Marcio Fontana (Federal University of Bahia, Brazil)
- 5:10 pm ***3D Printed Inductor Designs Decorated with Silver Nano Ink***
Benny Chou, Jae Sung Park and Woo Soo Kim (Simon Fraser University, Canada)

Monday, September 14

3:20 PM – 5:30 PM

Session M6

Room: Katmai

Chair: Frank D Witmer, University of Alaska Anchorage, USA

- 3:20 pm *Synthesis and Characterization of MoS₂ Nanostructures Using Pulsed-laser Deposition System (Invited)*
Anderson Sunda-Meya (Xavier University of Louisiana, USA)
- 3:50 pm *Heterodimensional Transistor Technology for Attojoule Electronics*
Michael Shur (Rensselaer Polytechnic Institute, USA)
- 4:10 pm *Electronic Properties of Metal-Molecular Nanojunctions and Networks*
Po Zhang and Chris Papadopoulos (University of Victoria, Canada)
- 4:30 pm *Study on the ESD-Induced Gate-Oxide Breakdown and the Protection Solution in 28nm High-K Metal-Gate CMOS Technology*
Chun-Yu Lin (National Taiwan Normal University, Taiwan); Ming-Dou Ker (National Chiao-Tung University, Taiwan); Pin-Hsin Chang (National Chiao Tung University, Taiwan); Wen-Tai Wang (Global Unichip Corporation, Taiwan)
- 4:50 pm *Self-assembled Coffee-ring Colloidal Crystal Arrays with Periodical Structural Colours Utilizing Porous Polydimethylsiloxane Film as a Template*
Xuemin Du (Shenzhen Institutes of Advanced Technology (SIAT), Chinese Academy of Sciences (CAS), P.R. China); Tengyue Li and Tianzhun Wu (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, P.R. China)
- 5:10 pm *Nanoimprinted Solar Cells with Large Molecular Weight P3HT Nanogratings with Enhanced Molecular Alignment*
Yi Yang, Kamil Mielczarek and Anvar Zakhidov (University of Texas at Dallas, USA); Walter Hu (800 W. Campbell Rd & University of Texas at Dallas, USA)

Tuesday, September 15

8:30 AM – 10:00 AM Tuesday Plenary Keynote

Room: Aleutian

Chair: Yonhua (Tommy) Tzeng, IEEE NTC VP Publications, National Cheng Kung University (NCKU), Taiwan

“Semiconductor Nanomaterials for Transient Electronics”

Speaker: John A. Rogers, UIUC, USA

10:30 AM – 12:00 PM

Session T1 — Invited Presentations

Room: Dillingham

Chair: Saif alZahir, NMDC 2015 Chair, UNBC, Canada

- 10:30 am *Metallic Nanoparticles for Cancer Cell Selective Therapeutics*
Dar-Bin Shieh (National Cheng Kung University & NCKU Hospital, Taiwan)
- 11:00 am *Mechanisms of endosomal escape for nanoparticle-mediated cytosolic drug delivery (Invited)*
Gaurav Sahay (Oregon State University, USA)
- 11:30 am *Straintronics: Strain-switched multiferroic nanomagnets for extremely low energy logic/memory*
Hasnain Ahmad (Virginia Commonwealth University, USA); Ayan Kumar Biswas (BUET, Bangladesh); Jayasimha Atulasimha and Supriyo Bandyopadhyay (Virginia Commonwealth University, USA)

Tuesday, September 15

10:30 AM – 12:00 PM

Session T2 — Invited Presentations

Room: Katmai

Chair: Yonhua (Tommy) Tzeng, IEEE NTC VP Publications, National Cheng Kung University (NCKU), Taiwan

- 10:30 am *Van Der Waals Epitaxy for New 2D Materials-Based Low-power Logic and Memory*
Christopher Hinkle (University of Texas at Dallas, USA)
- 11:00 am *Sub-5 nm Patterning and Applications by Nanoimprint Lithography and Helium Ion Beam Lithography*
Yuanrui Li, Ahmed Abbas, Yuhan Yao and Yifei Wang (University of Southern California, USA); Wen-Di Li (University of Hong Kong, Hong Kong); Chongwu Zhou and Wei Wu (University of Southern California, USA)
- 11:30 am *A Modeling Study of Mechanisms for NDR in graphene-BN-graphene Heterostructures*
Yunqi Zhao, Zhenni Wan, Xu Xu, Sunil Patil, Ulrich Hetmaniuk and Anant M. P. Anantram (University of Washington, USA)
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1:00 PM – 3:00 PM

Session T3

Room: Dillingham

Chair: Osama Abaza, University of Alaska Anchorage, USA

- 1:00 pm *Delay and Yield of CNFET-based Circuits in the Presence of Variations (Invited)*
Malgorzata Chrzanowska-Jeske (Portland State University, USA)
- 1:30 pm *Enabling Antenna Design with Nano-magnetic Materials Using Machine Learning*
Carmine Gianfagna (Georgia Tech, Italy); Madhavan Swaminathan and Raj Pulugurtha (Georgia Tech, USA); Giulio Antonini (Università degli Studi dell'Aquila, Italy)
- 1:50 pm *Enhancing the Electronic Conductivity of Lignin-sourced, Sub-micron Carbon Particles*

Naveen kumar Palapati (300 W Franklin St, USA); Muslum Demir (Virginia Commonwealth University, USA); Charles Harris (Sandia National Laboratories, USA); Arunkumar Subramanian and Ram Gupta (Virginia Commonwealth University, USA)

- 2:10 pm ***Thin Graphite Membranes for Laser Photoacoustic Spectroscopy***
Jan Suchánek (J. Heyrovsky Institute of Physical Chemistry of the ASCR, v. v. i. & Faculty of Safety Engineering, VŠB – Technical University of Ostrava, Czech Republic); Michal Dostál (J. Heyrovsky Institute of Physical Chemistry of the ASCR, v. v. i., Czech Republic); Tereza Vlasáková (Faculty of Science, Charles University in Prague, Czech Republic); Pavel Janda, Monika Klusáčková and Pavel Kubát (J. Heyrovsky Institute of Physical Chemistry of the ASCR, v. v. i., Czech Republic); Václav Nevrlý and Petr Bitala (Faculty of Safety Engineering, VSB – Technical University of Ostrava, Czech Republic); Svatopluk Civiš and Zdeněk Zelinger (J. Heyrovsky Institute of Physical Chemistry of the ASCR, v. v. i., Czech Republic)
- 2:30 pm ***Graphene Based Photoconductivity and Surface Enhanced Raman Scattering***
Yonhua Tzeng, Pinyi Li, Minjui Lo and Chuncheng Chang (National Cheng Kung University, Taiwan)

1:00 PM – 3:00 PM

Session T4

Room: Katmai

Chair: James Randy Moulic, University of Alaska Anchorage, USA

- 1:00 pm ***Nanoscale Electronic Materials for Neurophysiological Interfaces (Invited)***
Shadi Dayeh (UCSD, USA)
- 1:30 pm ***HSPICE Macromodel of a PMA Racetrack Memory***
Pilin Junsangri (Northeastern University, USA); Jie Han (University of Alberta, Canada); Fabrizio Lombardi (Northeastern University, USA)
- 1:50 pm ***Food Nanotechnology and Nano Food Safety***
Hongwu Bai (Jiangsu Academy of Agricultural Sciences, Canada)
- 2:10 pm ***Cell Impedance Sensing System Based on Vertically Aligned Carbon Nanofibers***
Syed Islam, Nicole McFarlane and Yongchao Yu (University of Tennessee, USA); Khandaker Abdullah Al Mamun (The University of Tennessee, USA)
- 2:30 pm ***Nanopatterning in GeTe Phase Change Materials Using Heated Atomic Force Microscope Tips***
Adrian Podpirka, Woo Lee, Todd Brintlinger, Nabil Bassim, Paul Sheehan and Laura Ruppalt (United States Naval Research Laboratory, USA)

Tuesday, September 15

3:20 PM – 5:00 PM

Session T5

Room: Dillingham

Chair: Osama Abaza, University of Alaska Anchorage, USA

- 3:20 pm ***Theoretical Investigation of the Oxygen Bond Dissociation Energies in Graphene Oxide***
Walid M. I. Hassan (Qatar University, Qatar); Amit Verma and Reza Nekovei (Texas A&M University – Kingsville, USA); R. Jeyakumar (CSIR-National Physical Laboratory, Pusa Campus, India); Mahmoud M Khader (Qatar University, Qatar)
- 3:40 pm ***Polaron Effect on Ballistic Transport in Armchair Graphene Nanoribbon***
Nazir Hossain, Poorna Marthi, Jean Francois Millithaler and Martin Margala (University of Massachusetts Lowell, USA)
- 4:00 pm ***Origin of Competing Blue and Green Emission in InGaN/GaN Quantum-Disks in Nanowires Heterostructure***
Aditya Prabaswara, Tien Khee Ng, Dalaver Anjum, Nini Wei and Chao Zhao (King Abdullah University of Science and Technology, Saudi Arabia); Abdulrahman M. Albadri, Ahmed Y. Alyamani and Munir El-Desouki (King Abdulaziz City for Science and Technology, Saudi Arabia); Boon S. Ooi (King Abdullah University of Science and Technology, Saudi Arabia)
- 4:20 pm ***A Novel Approach for Preparation of CuO Nanostructures on Conductive Substrate***
Fan Wei (Shenyang Institute of Automation, P.R. China)
- 4:40 pm ***Antimicrobial Properties of Silver Nanorods: Chemical or Physical Kill?***
Md. Iftexhar Hossain (Virginia Commonwealth University, USA); Jarrod Edwards (US Army Engineer Research and Development Center, USA); James Tyler (Virginia Commonwealth University, USA); John Anderson (US Army Engineer Research and Development Center, USA); Supriyo Bandyopadhyay (Virginia Commonwealth University, USA)

Tuesday, September 15

3:20 PM – 5:30 PM

Session T6

Room: Katmai

Chair: James Randy Moulic, University of Alaska Anchorage, USA

- 3:20 pm ***Towards Nanomagnetic Logic systems: A Programmable Arithmetic Logic Unit for Systolic Array-based Computing (Invited)***
Stephan Breitzkreutz-v. Gamm, Irina Eichwald and Grazvydas Ziemys (Technische Universität München, Germany); György Csaba, Gary Bernstein and Michael Niemier (University of Notre Dame, USA); Wolfgang Porod (University of Notre Dame, Germany); Mariagrazia Graziano (Politecnico di Torino, Italy); Doris Schmitt-Landsiedel and Markus Becherer (Technische Universität München, Germany)
- 3:50 pm ***Controllable Reversibility of Ultrafast Electron Dynamics in Buckled Dirac Materials***
Hamed Koochaki Kellardeh, Vadym Apalkov and Mark Stockman (Georgia State University, USA)
- 4:10 pm ***Strain induced and Spin Torque induced Switching of Nanomagnets: Coherent or Incoherent?***
Md Mamun Al-Rashid, Dhritiman Bhattacharya, Supriyo Bandyopadhyay and Jayasimha Atulasimha (Virginia Commonwealth University, USA)
- 4:30 pm ***Nanorods Self-Assembled From Polyaromatic Compounds: A Molecular Dynamics Study***
Cuiying Jian and Tian Tang (University of Alberta, Canada)
- 4:50 pm ***Tuning macroscopic body interactions by manipulation of quantum vacuum photon-modes at the nanoscale***
Louis Dellieu and Olivier Deparis (University of Namur, Belgium); Branko Kolaric (UNAMUR, Belgium); Michael Sarrazin (University of Namur, Belgium)
- 5:10 pm ***Multilevel Resistance in Ti/Pt/AlOx/HfOy/Ti/Pt/Ag Resistive Switching Devices***
Farhana Anwar (University of New Mexico, USA); John Nogan (Center for Integrated Nanotechnologies, USA); Payman Zarkesh-Ha and Marek Osiński (University of New Mexico, USA)

Wednesday, September 16

8:00 AM – 9:00 AM Wednesday Plenary Keynote

Room: Aleutian

Chair: Saif alZahir, NMDC 2015 Chair, UNBC, Canada

“Bio Cell Analysis and Assembly by Micro and Nano Robotic Technology”

Speaker: Toshio Fukuda, Nagoya University/Meijo University, Beijing Institute of Technology

9:00 AM – 9:30 AM Closing & Awards

Room: Aleutian

Chairs:

Kenrick J Mock, NMDC Co-chair, University of Alaska Anchorage, USA

Parviz Famouri, IEEE NTC VP Conferences, UWV, USA

10:00 AM – 12:20 PM

Session W1

Room: Dillingham

Chair: Martin Cenek, University of Alaska Anchorage, USA

- 10:00 am *Device and Energy Properties of Two-Dimensional (2D) Atomically Thin Materials (Invited)*
Eric Pop, Stanford University, USA
- 10:30 am *Atomically precise graphene nanoribbons and transition metal chalcogenide nanostructures for electronics applications (Invited)*
Alexander Sinitskii, University of Nebraska, USA
- 11:00 am *Nanotechnology Laboratory and Nanoelectronics Simulation Courses*
James Morris (Portland State University, USA)
- 11:20 am *Yield Estimation for CNFET- Based Circuits with Imperfections*
Rehman Ashraf (Tyfone & Tyfone, USA); Malgorzata Chrzanowska-Jeske (Portland State University, USA)

- 11:40 am ***Channel limitation of 1-D wire random network for transparent conducting electrodes application***
Jinyoung Hwang (Samsung Advanced Institute of Technology, Korea); Sang Hyun Lee (Sejong University, Korea); Hyosung Lee (Samsung Advanced Institute of Technology, Korea)
- 12:00 pm ***Characteristics Analysis of InN-In_{0.25}Ga_{0.75}N Quantum Well Laser with In_{0.4}Al_{0.6}N Layers for Short Distance Communication Wavelength***
Md. Mobarak Hossain Polash (Bangladesh University of Engineering and Technology & University of Asia Pacific, Bangladesh); Kamruzzaman Khan (University of Toledo, USA)

10:00 AM – 12:20 PM

Session W2

Room: Katmai

Chair: Frank Moore, University of Alaska Anchorage, USA

- 10:00 am ***Optical Modulation and Manipulation of Neurons and Cells with High Efficiency through Quantum Dots and Photonic Crystals (Invited)***
Lih Lin, Peifeng Jing, Ethan Keeler and Jingda Wu (University of Washington, USA)
- 10:30 am ***2D Nanoscale Semiconductors for Genomics (Invited)***
Jean-Pierre Leburton (University of Illinois at Urbana-Champaign, USA)
- 11:00 am ***Detection of base pair charges during DNA extension with Si nanowire FETs towards DNA sequencing***
Yuchen Liang and Silu Zhang (University of Texas at Dallas, USA); Walter Hu (800 W. Campbell Rd & University of Texas at Dallas, USA)
- 11:20 am ***A Nanomedicine Approach to Improving Chemoradiation Treatment for Cancer***
Andrew Wang (University of North Carolina, USA)
- 11:40 am ***Physico-chemical characterization of the interaction of red fluorescent protein – DsRed with silica layers***
Marvine Soumbo (LAPLACE, University of Toulouse, France); Alessandro Pugliara (LAPLACE, CEMES-CNRS, University of Toulouse, France); Marie-Carmen Monje and Christine Roques (LGC, University of Toulouse, France); Bernard Despax (LAPLACE, University of Toulouse, France); Caroline Bonafos (CEMES-CNRS, France); Robert Carles and Adnen Mlayah (CEMES-CNRS, University of Toulouse, France); Kremena Makasheva (LAPLACE, University of Toulouse, France)
- 12:00 pm ***In-situ Study of O₂ Adsorption on Few-layer MoS₂ Field Effect Transistor in Ultrahigh Vacuum***
Long Qi, Ying Wang, Braj Bhusan Singh and Yihong Wu (National University of Singapore, Singapore)