SYMPOSIUM NM8

2D Materials—Macroscopic Perfection vs. Emerging Nanoscale Functionality
April 18 - April 20, 2017

Symposium Organizers
Nasim Alem, The Pennsylvania State University
Arkady Krasheninnikov, Helmholtz-Zentrum Dresden-Rossendorf
Peter Sutter, University of Nebraska-Lincoln
Alexander Weber-Bargioni, Lawrence Berkeley National Laboratory

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* Invited Paper

SESSION NM8.1: 2D Materials Synthesis and Processing
Session Chairs: Peter Liljeroth and Peter Sutter
Tuesday Morning, April 18, 2017
PCC West, 100 Level, Room 101 A

10:30 AM *NM8.1.01
Predictive Modeling of 2D Materials, Growth and Properties Boris I. Yakobson; Rice University, United States.

11:00 AM NM8.1.02
Synthesis, Characterization and Property Tuning of Two-Dimensional Mo_2C (MXene) Rahele Meshkian; Thin Film Division, Linkoping University, Sweden.

11:15 AM NM8.1.03
Deterministic Patterned Growth of High-Mobility Large-Crystal Graphene—A Path towards Wafer Scale Integration Vaidotas Miseikis[1, 2, 4]; [1]Istituto Italiano di Tecnologia, Italy; [2]Istituto Italiano di Tecnologia, Italy; [4]Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT), Italy.

11:30 AM NM8.1.04
Fabrication of Sub-30nm Period Graphene Antidot Lattices by Electron Beam Lithography Lene Gammelgaard; Technical University of Denmark, Denmark.

11:45 AM NM8.1.05
Scalable and Versatile Liquid-Phase Production and Patterning of Two-Dimensional Nanomaterials Ethan B. Secor; Northwestern University, United States.

SESSION NM8.2: Functional 2D Materials and Devices
Session Chairs: Arkady Krasheninnikov and Boris Yakobson
Tuesday Afternoon, April 18, 2017
PCC West, 100 Level, Room 101 A

1:30 PM *NM8.2.01
Functional 2-Dimensional Materials—From Photo Detectors to Molecular and Strain Sensors Mauricio Terrones[1, 2]; [1]The Pennsylvania State University, United States; [2]Shinshu University, Japan.

2:00 PM NM8.2.02
Utilizing Atom by Atom Doping Approach to Tune Electronic Properties of 2D Materials Vidya Kochat; Rice University, United States.

2:15 PM NM8.2.03
Photoluminescence Enhancement and Carrier Type Modulation in Monolayer Transition Metal Dichalcogenides Using Isoelectronic Substitution Xufan Li; Oak Ridge National Laboratory, United States.

2:30 PM NM8.2.04
Controllable Doping of Ultrathin MoS_2 by Conventional Ion-Implantation Kang Xu; The Hong Kong Polytechnic University, China.

2:45 PM NM8.2.05
Engineering the Structural and Electronic Phases of $MoTe_2$ through W Substitution Daniel Rhodes; Columbia University, United States.

3:00 PM BREAK

SESSION NM8.3: Graphene
Session Chairs: Alexander Weber-Bargioni and Oleg Yazyev
Tuesday Afternoon, April 18, 2017
PCC West, 100 Level, Room 101 A

3:30 PM *NM8.3.01
Atomically Precise Graphene Nanostructures through On-Surface Synthesis Peter Liljeroth; Aalto University, Finland.

4:00 PM NM8.3.02
Bottom-Up Synthesis and Self-Assembly of Atomically Precise Pristine and Nitrogen-Doped Graphene Nanoribbons Alexander Sinitskii; University of Nebraska–Lincoln, United States.

4:15 PM NM8.3.03
Atomically Thin Nanoporous Graphene Membranes for Size Selective Membrane Applications Piran Ravichandran Kidambi; Massachusetts Institute of Technology, United States.

4:30 PM NM8.3.04
Lateral Superlattices and Anisotropic Optoelectronic Behaviour of Monolayer Semiconducting TMDCs via Large-Scale, Heterogeneous Elastic Strain Engineering Michael Cai Wang; University of Illinois at Urbana-Champaign, United States.

4:45 PM NM8.3.05
Growth Processes of Graphene on Ni(111) Surface Hakim Amara; ONERA-CNRS, France.

SESSION NM8.4: Poster Session I: Graphene and Carbon Materials
Tuesday Afternoon, April 18, 2017
8:00 PM - 10:00 PM
Sheraton, Third Level, Phoenix Ballroom

NM8.4.01
Exploring Surface Diels-Alder Adducts on Silica as a Controllable Carbon Precursor for Pristine Graphene Hossein Sojoudi; University of Toledo, United States.

NM8.4.02
Simple Step Growth of Graphene Nitrogen-Doped Graphene Hybrid Bilayer System in the Hot Filament Chemical Vapor Deposition Maried Rios; University of Puerto Rico - Rio Piedras, United States.

NM8.4.03
Nondestructive Optical Visualisation of Graphene Domains and Boundaries Xingyi Wu; University of Cambridge, United Kingdom.

NM8.4.04
Continuous Single Crystal Growth of Two Dimensional Materials—The Case of Graphene Ivan Vlassiouk; Oak Ridge National Lab, United States.

NM8.4.05
Probing the Gas-Phase Dynamics of Graphene Chemical Vapour Deposition Using *In Situ* UV Absorption Spectroscopy Abhay Shivayogimath; Technical University of Denmark, Denmark.

NM8.4.06
Modelling the Effect of Electron Beam Irradiation on the Thermal Conductivity of Graphene Srilok Srinivasan; Iowa State University, United States.

NM8.4.07
Investigation of Spin Current Absorption through a Transparent Ferro Magnet Junction on Graphene Cengiz S. Ozkan; University of California Riverside, United States.

NM8.4.08
A Novel Electrochemical Sensor Based on Gold/Reduced Graphene Oxide Hollow Microspheres Modified Glass Carbon Electrode for Sensitive Detection of Nitrite Shifeng Hou; Shandong University, China.

NM8.4.09
Synthesis of Bernal-Stacked Multilayer Graphene on Cu Surface via Chemical Vapor Deposition Minseok Yoo; POSTECH, Korea (the Republic of).

NM8.4.10
Role of Extra Cu Vapors in the Growth of Graphene on Cu via Chemical Vapor Deposition Hyo Chan Lee; POSTECH, Korea (the Republic of).

NM8.4.11
Selective Separation of Large Graphene Oxide in Liquid Crystal Phase and Its Application on Electrochemical Catalysis Kyungeun Lee; KAIST, Korea (the Republic of).

NM8.4.12
Dynamic Observation of Atomic-Scale Evolution in Graphene Layer under High Current Density Chun-Wei Huang; National Chiao Tung University, Taiwan.

NM8.4.13
Catalyst-Free Bottom-Up Growth of Graphene Nanofeatures along with Molecular Templates on Dielectric Substrates Sohyeon Seo[1, 2]; [1]Sungkyunkwan University, Korea (the Republic of); [2]Center for Integrated Nanostructure Physics, Korea (the Republic of).

NM8.4.14
Comparative Study on Graphene Growth by Chemical Vapor Deposition on Cu foil and Textured Ni-W Metal Yijie Li; Shanghai Jiao Tong University, China.

NM8.4.15
Viscosity Increase of Graphene Oxide Aqueous Suspension after Electrophoretic Deposition Seong G. Park; Kumoh National Institute of Technology, Korea (the Republic of).

NM8.4.16
***In Situ* RBS, Raman and Ellipsometry Study of Nickel-Catalyzed Amorphous Carbon Graphitization** Daniel Janke; Helmholtz-Zentrum Dresden-Rossendorf, Germany.

NM8.4.17
Large-Area Aligned Pentagonal Graphene Domains on Copper Foils Kailun Xia; Tsinghua University, China.

NM8.4.18
Lattice Transparency of Graphene Sieun Chae[1, 2]; [1]Korea Research Institute of Chemical Technology, Korea (the Republic of); [2]Seoul National University, Korea (the Republic of).

NM8.4.19
Dopant-Specific Unzipping of Carbon Nanotube for Intact Crystalline Graphene-Carbon Nanotube Complexes Joonwon Lim; KAIST, Korea (the Republic of).

NM8.4.20
Hybrid Zero-Dimensional C60 Clusters with Graphene—Synthesis, Fabrication and Transport Characteristics Srishti Chugh; University of Texas El Paso, United States.

NM8.4.21
Versatile Water-Based Transfer of Large-Area Graphene Films onto Flexible Substrates Mariia Kim; Aalto University, Finland.

NM8.4.22
Stacked Graphene as an Electrode for ITO-Free Solar Cells Ehsan Keyvani-Someh; Northeastern University, United States.

NM8.4.23
Graphene Moiré Pattern Ultra-High Resolution Atomic Force Microscopy Byong Kim; Park Systems Corporation, United States.

NM8.4.24
Preparation of Metal Nanoparticles-Decorated Graphene via a Physical Route Chi Z. Wang; WuHan University, China.

NM8.4.25
Solvothermal Exfoliation of Graphite—A Greener Method to Produce Few-Layered Graphene Paulo Duarte[1, 2]; [1]Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal; [2]Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa, Portugal.

NM8.4.26
Low Concentration Nanofluid of Graphene-Based Amphiphilic Janus Nanosheets for Oil Recovery—High Performance by Its Unique Interfacial Behavior Dan Luo; University of Houston, United States.

NM8.4.27
Xenon Flash Lamp-Induced Multilayer Graphene Growth for Roll-to-Roll Application Tae Hong Im; KAIST, Korea (the Republic of).

NM8.4.28
A PDMS-Based, Semi-Dry Technique for Transferring CVD-Grown Graphene to SiO_2 Surfaces Kyle Slusarski; U.S. Army Research Laboratory, United States.

NM8.4.29
Unraveling the Role of Nitrogen Bonding Configurations on the Electrical Transport Properties of N-Doped Twisted Bilayer Graphene Tej B. Limbu[1, 2]; [1]Institute for Functional Nanomaterials, United States; [2]University of Puerto Rico at Rio Piedras, United States.

NM8.4.30
Growth of Graphene on FIB Patterned 3C-SiC Nanostructures by UHV Annealing Mojtaba Amjadipour; Queensland University of Technology, Australia.

NM8.4.31
Boosting the Electrical Conductivity and 3D Nanostructuring of Inkjet Printed Graphene with Pulsed Laser Irradiation Suprem R. Das[1, 2]; [1]Iowa State University, United States; [2]Ames Laboratory, United States.

NM8.4.32
Photoresponse of a Bilayer Graphene p-n Junction Using a Combination of Electrostatic and Electrolytic Gating Anupama Joshi[1, 2]; [1]Tata Institute of Fundamental Research, India; [2]Indian Institute of Technology Bombay, India.

NM8.4.33
Characterization of Smart Polymer-Graphene Hybrid Systems: Atomistic Insights into Adsorption and Stimuli-Responsive Behaviors Mahdi Moshref-Javadi; Monash University, Australia.

SESSION NM8.5: Novel 2D Materials I
Session Chairs: Nasim Alem and Vivek Shenoy
Wednesday Morning, April 19, 2017
PCC West, 100 Level, Room 101 A

8:00 AM NM8.5.01
Strain Engineering of 2D Materials via Dielectric Nanosphere Assemblies Yingjie Zhang; University of Illinois at Urbana-Champaign, United States.

8:15 AM NM8.5.02
From Liquid Metals Down to Two-Dimensional Semiconductors Kourosh Kalantar-Zadeh; RMIT, Australia.

8:30 AM NM8.5.03
Layer Structured Gallium Chalcogenides—Controlled Synthesis and Engineering of Their Bandgap and Optical Properties Hui Cai; Arizona State University, United States.

8:45 AM *NM8.5.04
Properties and Device Applications of Two-Dimensional Charge Density Wave Materials Alexander A. Balandin; University of California, Riverside, United States.

9:15 AM NM8.5.05
Synthesis of Large Area MoS_2 Few Layers by RF Sputtering Process Jeon Kook Lee; Korea Institute of Science and Technology, Korea (the Republic of).

9:30 AM NM8.5.06
Quasi-2D Monolayers of Plasmonic Nanocrystals Cross-Linked by Phthalocyanines—A New Playing Field for Molecular Electronics Marcus Scheele; University of Tubingen, Germany.

9:45 AM BREAK

SESSION NM8.6: Novel Phenomena in 2D Materials
Session Chairs: Alexander Balandin and Arkady Krasheninnikov
Wednesday Morning, April 19, 2017
PCC West, 100 Level, Room 101 A

10:15 AM *NM8.6.01
Novel Quantum Phenomena in Atomically Thin Two-Dimensional Materials Steven Louie[1, 2]; [1]University of California, Berkeley, United States; [2]Lawrence Berkeley National Laboratory, United States.

10:45 AM NM8.6.02
One-Dimensional Photonic Crystals for Touchless Finger Motion Tracking Based on 2D Nanosheets with Ultrahigh Moisture Sensitivity Katalin Szendrei[2, 1, 3]; [1]LMU Munich, Germany; [2]Max Planck Institute for Solid State Research, Germany; [3]Nanoinitiative Munich and Center for Nanosciences, Germany.

11:00 AM NM8.6.03
Towards Single-Photon LEDs by FRET from Metal Nanoparticles to TMDC Monolayers John Lupton; University of Regensburg, Germany.

11:15 AM NM8.6.04
Large Scale Commercial Fabrication of High Quality Graphene-Based Assays for Biomolecule Detection Mitchell Lerner; Nanomedical Diagnostics, United States.

11:30 AM *NM8.6.05
Rational Design of 2-Dimensional Magnetic Materials for the Quantum Anomalous Hall Effect and Spintronic Applications Vivek B. Shenoy; University of Pennsylvania, United States.

SESSION NM8.7: Novel 2D Materials II
Session Chairs: Alexander Weber-Bargioni and Xiaodong Xu
Wednesday Afternoon, April 19, 2017
PCC West, 100 Level, Room 101 A

1:30 PM NM8.7.01
Synthesis of 2D Chromium Carbide MXene and Its Magnetic Properties Babak Anasori[1, 2]; [1]Drexel University, United States; [2]Drexel University, United States.

1:45 PM NM8.7.02
Defects in Monolayer Titanium Carbide ($Ti_3C_2T_x$) MXene Xiahan Sang; Oak Ridge National Lab, United States.

2:00 PM NM8.7.03
CVD Growth of 2D Pyrite and Pyrite/Graphene Vertical Heterostructures Zafer Mutlu; University of California at Riverside, United States.

2:15 PM NM8.7.04
Control of Edge and Surface Chemistry in 2D Black Phosphorus and Oxides Kaci L. Kuntz; University of North Carolina at Chapel Hill, United States.

2:30 PM BREAK

SESSION NM8.8: 2D Heterostructures
Session Chairs: Zafer Mutlu and Peter Sutter
Wednesday Afternoon, April 19, 2017
PCC West, 100 Level, Room 101 A

3:30 PM *NM8.8.01
Excitons in van der Waals Heterostructures Xiaodong Xu; University of Washington, United States.

4:00 PM *NM8.8.02
The Effect of Substrates on Optical, Thermal and Catalytic Functionalities of 2D TMDC Materials Linyou Cao; North Carolina State University, United States.

4:30 PM NM8.8.03
The Hot Pick-up Technique for Batch Assembly of van der Waals Heterostructures Bjarke Jessen; Technical University of Denmark, Denmark.

4:45 PM NM8.8.04
Epitaxial Growth and Characterisation of Graphene Heterostructures on SiC Jonathan Bradford; Queensland University of Technology, Australia.

SESSION NM8.9: Poster Session II: 2D Materials Beyond Graphene
Wednesday Afternoon, April 19, 2017
8:00 PM - 10:00 PM
Sheraton, Third Level, Phoenix Ballroom

NM8.9.01
Defect-Mediated Photoluminescence Up-Conversion in Cadmium Sulfide Nanobelts Yurii Morozov; University of Notre Dame, United States.

NM8.9.02
Stacking of CVD-Grown Single Layer MoS_2 to Graphene for the Reduction of Schottky Barriers Chun-Yu T. Huang; University of California, Riverside, United States.

NM8.9.03
Aging Effects and Environmental Stability of Anisotropic GaTe Nanomaterials Sijie Yang; Arizona State University, United States.

NM8.9.04
Synthesis of Wafer Scale with Phase-Controlled 1T' and 2H Atomic Molybdenum Ditelluride Layers Juhong Park; University of North Texas, United States.

NM8.9.05
Two-Dimensional Materials as Reinforce Particles in Health Monitoring Composite Sensors and Various Applications Jorge A. Catalan; University of Texas at El Paso, United States.

NM8.9.06
Impact of the Functionality of Perovskite-Based Nanosheets on Their Optical Properties Sara Akbarian-Tefaghi; University of New Orleans, United States.

NM8.9.07
Tuning Electronic Properties of Layered Tin Dichalcogenides via Electron-Beam Induced Transformations Mahdi Ghorbani Asl; Helmholtz-Zentrum Dresden-Rossendorf, Germany.

NM8.9.08
Facile Synthesis of TiO_2 QDS Decorated on Monolayer WS_2 Nanohybrids with Enhance Gas Sensitive for Ammonia Detection at Room Temperature Ziyu Qin; Huazhong University of Science and Technology (HUST), China.

NM8.9.09
Rotational Superstructure in Self-Assembled C_{60} Monolayer on WSe_2 Qing Hua Wang; Arizona State University, United States.

NM8.9.10
Spectroscopic Ellipsometry of Large-Area Tungsten Disulfide Daniel A. Nezich; Massachusetts Institute of Technology, United States.

NM8.9.11
Understanding the Role of Novel Mineralizers and Dopants in Improving Synthesis of Black Phosphorous Crystals Sayan Sarkar; University of Utah, United States.

NM8.9.12
Formation and Properties of Nanoscale Origami Features on 2D Material Properties Yi Ding[2, 1]; [1]University of Central Florida, United States; [2]University of Central Florida, United States.

NM8.9.13
Intrinsic Photoconductivity of Few-Layered Transition Metal Dichalcogenides Phototransistors via Multi-Terminal Measurements Nihar R. Pradhan; National High Magnetic Field Lab, United States.

NM8.9.14
Precise, Layer-by-Layer Control of MoS_2 Thickness and Properties via Thermal Vapor Sulfurization John T. Robertson; Tulane University, United States.

NM8.9.15
Exfoliation of Quasi-Stratified Bi_2S_3 Crystals into Micron-Scale Ultrathin Corrugated Nanosheets Rhiannon Clark[1, 2]; [1]RMIT University, Australia; [2]CSIRO, Australia.

NM8.9.16
Self-Assembly of 2D Phage-Selected Peptide Layers on MoS_2 Surfaces Jiajun Chen[1, 2]; [1]University of Washington, United States; [2]Pacific Northwest National Laboratory, United States.

NM8.9.17
Phase Transformation in Thin Films under Surface Heating and Convective Boundary Conditions Rahul Basu[1, 2]; [1]VTU, India; [2]Adarsha Institute of Technology, India.

NM8.9.18
Atomically-Layer Precision Controlled Synthesis and Characterization of cm-Scale Hexagonal Boron Nitride Wei-Hsiang Lin; California Institute of Technology, United States.

NM8.9.19
High-Performance Hybrid Capacitors Based on Graphene and Carbon Sphere/Polyaniline/MnO2 Ternary Nanocomposites Shifeng Hou; Shandong University, China.

NM8.9.20
Cavity Ring-Down Spectroscopy Monitoring of Photochemistry in Monolayer 2D Polymer Films Sean M. Casey; University of Nevada, Reno, United States.

NM8.9.21
Large-Scale High Quality Single Crystal Growth of $BiSbTeSe_2$ by Zone Melting with Bridgman Kyu-Bum Han; University of Utah, United States.

NM8.9.22
Three-Dimensional Electron Beam Microscopy of BSTS Topological Insulator Kyu-Bum Han; University of Utah, United States.

NM8.9.23
Flexible 2D Organic–Inorganic Hybrid Thin Films for Band-Selective Photodetection Dhinesh Babu Velusamy; KAUST, Saudi Arabia.

NM8.9.24
Characterization of Mechanical Properties of Polycrystalline 2D Materials with Interfacial Phases Sangil Hyun; Korea Institute of Ceramic Engineering & Technology, Korea (the Republic of).

NM8.9.25
Light Emission from InP/Graphene Hybrid Epitaxial Structures Samik Mukherjee; Ecole Polytechnique-Montreal, Canada.

NM8.9.26
Hierarchical Assembly of Molybdenum Trioxide 2D Sheets and Aluminum Nanoparticles Shubhra Gangopadhyay; University of Missouri, United States.

NM8.9.27
Conjugated Polyelectrolyte/Graphene Heterobilayer Nanocomposites Exhibit Temperature Switchable Type of Conductivity Viktor Brus; Helmholtz-Zentrum Berlin, Germany.

NM8.9.28
Understanding How Spatial Heterogeneity of Nanostructures Impacts the Optical and Electronic Properties of 2D Materials Melinda J. Shearer; University of Wisconsin-Madison, United States.

NM8.9.29
Designing Novel 2D Materials and Heterostructures for Next-Generation Ultra Energy-Efficient Electronics Jiahao Kang; University of California, Santa Barbara, United States.

SESSION NM8.10: Defects and Grain Boundaries in 2D Materials
Session Chairs: Mauricio Terrones and Alexander Weber-Bargioni
Thursday Morning, April 20, 2017
PCC West, 100 Level, Room 101 A

8:15 AM NM8.10.01
Unraveling Hidden Defects and Unexpected Properties of Graphene—How Advanced TEM Contributes to Materials Development Benjamin Butz[1, 2, 9]; [1]Friedrich-Alexander-Universität Erlangen Nürnberg, Germany; [2]Friedrich-Alexander-Universität Erlangen Nürnberg, Germany; [9]Stanford University, United States.

8:30 AM NM8.10.02
Chemical and Electronic Repair Mechanism of Sulfur Vacancies in MoS_2 Monolayers Sibylle Gemming[2, 3]; [2]Helmholtz-Zentrum Dresden-Rossendorf, Germany; [3]Technische Universität Chemnitz, Germany.

8:45 AM *NM8.10.03
Mapping the Effect of Structural Defects in 2D Transition Metal Dichalcogenides Sara Barja[4, 6]; [4]Centro de Fisica de Materiales, Spain; [6]Lawrence Berkeley National Lab, United States.

9:15 AM *NM8.10.04
Pushing the Performance Limit of 2D Semiconductor Transistors Xiangfeng Duan; University of California, Los Angeles, United States.

9:45 AM BREAK

SESSION NM8.11: Defects and Grain Boundaries
Session Chairs: Nasim Alem and Sara Barja
Thursday Morning, April 20, 2017
PCC West, 100 Level, Room 101 A

10:15 AM *NM8.11.01
Grain Boundaries and Dislocations in Graphene and other 2D Materials Oleg Yazyev; Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland.

10:45 AM NM8.11.02
Highly Sensitive and High-Speed Imaging of Grain Boundaries in Graphene by Transient Absorption Microscopy Chen Yang; Purdue University, United States.

11:00 AM NM8.11.03
Joule Heating in Phase Change SnS_2 Nanoflakes Yu-Kai Wu; National Taiwan University of Science and Technology, Taiwan.

11:15 AM NM8.11.04
Defects by Design—Molecular Engineering for Flexible Electronics Christopher Muratore; University of Dayton, United States.

11:30 AM NM8.11.05
Directing Interlayer Exciton and Photocurrent Dynamics by Twisting and Stacking van der Waals Materials Matt W. Graham; Oregon State University, United States.

11:45 AM NM8.11.06
Long-Term Stability of Mechanically Exfoliated MoS_2 Flakes Prachi Budania; Queen's University, United Kingdom.

SESSION NM8.12: Ion and Electron Beam Effects
Session Chairs: Arkady Krasheninnikov and P James Schuck
Thursday Afternoon, April 20, 2017
PCC West, 100 Level, Room 101 A

1:30 PM *NM8.12.01
Performance and First Results of the Cc/Cs Corrected SALVE Microscope for Imaging Low-Dimensional Electron-Beam-Sensitive Objects Ute A. Kaiser; Ulm University, Germany.

2:00 PM NM8.12.02
Tuning Local Electronic Structure of Monolayer MoS_2 through Defect Engineering Shengxi Huang; Massachusetts Institute of Technology, United States.

2:15 PM NM8.12.03
Transition Metal Dichalcogenides under Ion Irradiation—From Defects to Atomic Structure Engineering Mahdi Ghorbani Asl; Helmholtz-Zentrum Dresden-Rossendorf, Germany.

2:30 PM NM8.12.04
Nanoforging of Single Layer $MoSe_2$ through Defect Engineering Using Focused Helium Ion Beams Alex Belianinov; Oak Ridge National Laboratory, United States.

2:45 PM NM8.12.05
Phase Transitions in Two-Dimensional Transition Metal Dichalcogenides under Electron Beam Silvan Kretschmer; Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Germany.

3:00 PM BREAK

SESSION NM8.13: Spatially Resolved Probing of Heterogeneous Properties
Session Chairs: Ute Kaiser and Peter Sutter
Thursday Afternoon, April 20, 2017
PCC West, 100 Level, Room 101 A

3:30 PM *NM8.13.01
Nano-Optical Investigations of 2D Semiconductors at Length Scales That Matter P James Schuck; Lawrence Berkeley National Lab, United States.

4:00 PM *NM8.13.02
Atomic Resolution Imaging and Spectroscopy of Low-Dimensional Materials with Interrupted Periodicities Kazutomo Suenaga; AIST, Japan.

4:30 PM NM8.13.03
Probing Interfaces, Hidden Charges and ns Time-Scale Nanoelectromechanics of 2D Materials via Ultrasonic SPM Oleg Kolosov; Lancaster University, United Kingdom.

4:45 PM NM8.13.04
Nanoscale Heterogeneity in Exfoliated WSe_2 Probed by Correlated TERS, SKM and Photocurrent Mapping Andrey Krayev; AIST-NT Inc, United States.