Program Key

Conference Topics

2D 2D Materials Focus Topic
AC Actinides and Rare Earths Focus Topic
AM Extending Additive Manufacturing to the Atomic Scale Focus Topic
AS Applied Surface Science Division
BI Biomaterial Interfaces Division
BP Biomaterials Plenary Session
EL Spectroscopic Ellipsometry Focus Topic
EM Electronic Materials and Photonics Division
EW Exhibitor Technology Spotlight Workshops
HC Fundamental Discoveries in Heterogeneous Catalysis Focus Topic
HI Advanced Ion Microscopy Focus Topic
IPF Industrial Physics Forum
MI Magnetic Interfaces and Nanostructures Division
MM In-situ Microscopy, Spectroscopy, and Microfluidics Focus Topic
MN MEMS and NEMS Group
MP Materials and Processes for Quantum Computing Focus Topic
MS Manufacturing Science and Technology Group
NS Nanometer-scale Science and Technology Division
PB Plasma Biology, Agriculture, and Environment Focus Topic
PC Processing and Characterization of Air-Liquid, Solid-Liquid and Air-Solid Interfaces Focus Topic
PS Plasma Science and Technology Division
RM Reconfigurable Materials and Devices for Neuromorphic Computing Focus Topic
SA Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic
SE Advanced Surface Engineering Division
SS Surface Science Division
TF Thin Films Division
TR Tribology Focus Topic
VT Vacuum Technology Division

Key to Session/Paper Numbers

Sessions sponsored by multiple topics are labeled with all acronyms (e.g. **AC+EM+SS**),
then a number to indicate simultaneous sessions sponsored by the same topic(s) (e.g. SS**1**, SS**2**),
then a dash followed by the first two characters of the day of the week:
Monday, **Tu**esday, **We**dnesday, **Th**ursday, **Fr**iday,
then a single letter for **M**orning, **A**fternoon, **E**vening, **P**oster,
and finally a number indicating the starting time slot for the paper.
Example: SS1-MoM9 (Surface Science, Monday morning, 11:00 am).

Program Overview

Room /Time	101A	101B	102A	102B	103C
SuA		BP-SuA: AVS BIP & AIP IPF Forum Plenary Session			
MoM	EM+MP+PS-MoM: IoT Session: CMOS, Beyond the Roadmap and Over the Cliff	IPF+AS+BI+NS-MoM: Biofabrication: From Tissue to Organ	TF1-MoM: Precursors and Surface Reactions	NS+2D+AN+EM+MN+MP+PC+RM-MoM: IoT Session: Nanostructured Devices and Sensors	
MoA	EM+AM+NS+PS-MoA: Atomic Layer Processing: Selective-Area Patterning /Assembly/Deposition/Et	BI+AS+IPF+MN-MoA: Advanced Imaging and Structure Determination of Biomaterials Research	TF+EM+MI+PS-MoA: Thin Films for Advanced Memory Applications and Magnetics	NS+2D+AS+PC-MoA: SPM - New Imaging and Spectroscopy Methodologies	
TuM	TF-TuM: Emerging Applications for ALD	IPF+AS+BI+MN-TuM: Advanced Imaging and Structure Determination of Biomaterials	TF+AS-TuM: Special Session in Honor of Paul Holloway: Luminescent Materials Growth	NS+AN+EM+MN+MP+RM-TuM: Nanophotonics, Plasmonics, and Metamaterials	
TuB					MS-TuB: Working with Government Labs and other User Facilities
TuL					
TuA	EM+2D+AN+MI+MP+NS-TuA: Solar/Energy Harvesting and Quantum Materials and	BI+AS+IPF+NS-TuA: IoT Session: Biofabrication, Bioanalytics, Biosensors and Diagnostics	TF+SS-TuA: Organic/Inorganic Materials and Interfaces	NS+AM+MI+MN+SS+TR-TuA: SPM – Probing and Manipulating Nanoscale Structures	
TuAB					
TuP					
WeM	EM+AN+MI+SS-WeM: Surface and Interface Challenges in Electronics and Photonics	IPF+AS+BI+NS-WeM: IoT Session: Bioanalytics, Biosensors and Diagnostics	TF+EM+MI-WeM: Thin Film Processes for Electronics and Optics I	AM+NS+SS-WeM: Nanofabrication with Focused Electron Beams (8:00-10:00 am)/Atomic	
WeB					
WeL					
WeA	EM+2D+SS-WeA: Wide and Ultra-Wide Bandgap Materials for Electronic Devices: Growth	BI-WeA: Microbes and Fouling at Surfaces	TF+EM+MI-WeA: Thin Film Processes for Electronics and Optics II	AM+MP+NS-WeA: Atomic Scale Manipulation with SPM	
ThM	EM+MI+MN+NS-ThM: Nanostructures for Electronic and Photonic Devices	BI-ThM: Biomolecules and Biophysics at Interfaces	TF+AS+EL+PS-ThM: In-situ Characterization and Modeling of Thin Film Processes	NS+AN+EM+MI+MN+MP+PS+RM-ThM: Nanopatterning and Nanofabrication	
ThA	EM+2D+NS+PS+RM+TF-ThA: IoT Session: Flexible Electronics & Flash Networking Session	BI-ThA: Biolubrication and Wear / Women in Bio-surface Science	SS+EM+PS+TF-ThA: Deposition, Etching and Growth at Surfaces	NS+2D+AS+MN+PC-ThA: SPM – Probing Electronic and Transport Properties	
ThP					
FrM		BI+AS+NS-FrM: Characterization of Biological and Biomaterial Surfaces		NS+AM+AS+MN+PC+PS+SS+TR-FrM: SPM – Probing Chemical Reactions at the	

Program Overview

Room /Time	104A	104B	104C	201A	201B
SuA					
MoM	PS+AS+EM+SS-MoM: Plasma-Surface Interactions	TF2-MoM: IoT Session: Thin Film Processes for Energy Storage	PS+TF-MoM: Plasma Deposition and Plasma-Enhanced ALD	TR+AS+NS+SS-MoM: Tribology Focus Session	2D+EM+MI+NS+TF-MoM: 2D Materials Growth and Fabrication
MoA	PS+PB-MoA: Plasma and Polymers: 'The Legacy of Riccardo d'Agostino and Beyond'	TF-MoA: IoT Session: Thin Films for Photovoltaics		MI+2D+EM+NS-MoA: IoT Session: Symposium on new Magnetic Materials, Devices and Concepts for	2D+MI+NS-MoA: 2D Materials Characterization including Microscopy and
TuM	PS+EM+SE-TuM: Plasma Processing of Challenging Materials - I	TF+AM+EM+PS-TuM: Atomic Layer Processing: Area Selective Deposition	PS+PB-TuM: Plasma Medicine	HC+SS-TuM: Nanochemistry in Heterogeneous Catalysis	2D+EM+MI+NS-TuM: Properties of 2D Materials including Electronic, Magnetic
TuB					
TuL					
TuA	PS+EM+NS+SS-TuA: Plasma Processing of Challenging Materials - II	TF+PS-TuA: Atomic Layer Processing: Chemistry & Surface Reactions for Atomic Layer Processing	PS+PB+SE-TuA: Atmospheric Pressure Plasmas	HC+SS-TuA: A Tale of Two Scales: Catalytic Processes and Surface Science	2D+EM+MI+MN+NS-TuA: 2D Device Physics and Applications
TuAB					
TuP					
WeM	PS+EM-WeM: Advanced Patterning	PS+AS+EL+EM+SE-WeM: Current and Future Stars of the AVS Symposium I	PS+MN-WeM: IoT Session: Enabling IoT Era	HC+SS-WeM: Mechanisms and Reaction Pathways of Heterogeneously	2D+AM+EM+NS-WeM: Dopants, Defects, and Interfaces in 2D Materials
WeB					
WeL					
WeA	PB+BI+PC+PS-WeA: Plasma Agriculture & Environmental Applications	BI+AC+AS+HC+NS+SS+TF-WeA: Current and Future Stars of the AVS Symposium II	PS+EM-WeA: Advanced BEOL/Interconnect Etching	HC+SS-WeA: Theory and Dynamics of Heterogeneously Catalyzed Reactions	2D+MN+NS+SS-WeA: IoT Session: Surface Chemistry, Functionalization, Bio
ThM	PS-ThM: Plasma Sources	TF+PS-ThM: Deposition Processes for 3D and Extreme Geometries	PS+EM+TF-ThM: Atomic Layer Processing: Atomic Layer Etching	HC+SS-ThM: In-situ Analysis of Heterogeneously Catalyzed Reactions	2D+EM+MI+MN+NS+SS-ThM: Novel 2D Materials
ThA	PS-ThA: Plasma Diagnostics, Sensors and Controls	TF+AS+EL+EM+NS+PS+SS-ThA: IoT Session: Thin Films for Flexible Electronics and IoT	PS+EM+TF-ThA: Atomic Layer Processing: Integration of ALD and ALE	HC+SS-ThA: Bridging Gaps in Heterogeneously Catalyzed Reactions	2D+EM+MN+NS-ThA: Novel Quantum Phenomena in 2D Materials
ThP					
FrM	PS-FrM: Plasma Modeling				2D+EM+MN+NS-FrM: Nanostructures including Heterostructures and Patterning of 2D

Program Overview

Room /Time	202A	202B	202C	203A	203B
SuA					
MoM	EL+AS+EM-MoM: Application of SE for the Characterization of Thin Films and Nanostructures	MM+AS+NS+PC-MoM: Mechanical, Electrical, Thermal and Optical Systems, for In situ TEM	SE+NS+TF-MoM: Nanostructured Thin Films and Coatings	MP+EM+MN+NS-MoM: Systems and Devices for Quantum Computing I	VT-MoM: Vacuum Measurement
MoA	EL+EM-MoA: Spectroscopic Ellipsometry: Novel Applications and	MM+AS+NS+PC+SS-MoA: X-ray and Electron Spectromicroscopy in Liquids and Gases & Flash	SE-MoA: New Challenges and Opportunities in Surface Engineering	MP+AM+EM+NS-MoA: Systems and Devices for Quantum Computing II	VT-MoA: Pumping and Outgassing
TuM	PC+AS+BI+NS+PB+SS-TuM: Solid-Liquid and Gas-Liquid Interfacial Processes and	MS+MI+RM-TuM: IoT Session: Challenges of Neuromorphic Computing and	SE+PS-TuM: Plasma-assisted Surface Modification and Deposition Processes	MP+EM+NS-TuM: High Coherence Qubits for Quantum Computing	VT-TuM: Large Vacuum Systems and Accelerator Vacuum Technology
TuB					
TuL					
TuA	PC+AS+BI+EM+NS+PB+SS-TuA: Progress in Industrial Processes and Characterization of	MS+MN-TuA: IoT Session: Challenges of Sensor Manufacturing for the IoT	SE-TuA: Wear, Oxidation and Corrosion Protective Coatings	RM+EM+NS-TuA: IoT Session: Reconfigurable Materials and Devices for Neuromorphic	VT-TuA: IoT Session: Vacuum System Design and Automation & Flash Networking Session
TuAB					
TuP					
WeM	PC+AS+BI+EM+PB+SS-WeM: Novel Approaches and Challenges of Interfaces	MN+NS+PS-WeM: IoT Session: Multiscale Manufacturing: Enabling Materials and Processes	AC+MI+SA-WeM: Magnetism, Complexity, and Superconductivity in the Actinides and Rare	NS+2D+AN+MN+MP+SE-WeM: Micro, Nano and Opto Mechanics	VT-WeM: Vacuum Technology Developments
WeB					
WeL					
WeA	SA+AS+MI-WeA: Hard X-Ray Photoemission for Probing Buried Interfaces	MN+2D+AN+NS-WeA: IoT Session: MEMS for IoT: Chemical and Biological Sensing	AC+AS+SA-WeA: Chemistry and Physics of the Actinides and Rare Earths	NS+MN+PC+SS-WeA: IoT Session: Bio at the Nanoscale	HI-WeA: Novel Beam Induced Material Engineering & Nano-Patterning
ThM	SA+MI-ThM: Ultra-fast Dynamics for Magnetic and Quantum Systems	MN+2D+AN+MP+NS-ThM: Optomechanics and 2D NEMS	AC+AS+SA-ThM: Nuclear Power, Forensics, and Other Applications	MI+2D-ThM: Magnetism at the Nanoscale	HI+AS-ThM: Advanced Ion Microscopy & Surface Analysis
ThA	SA+AS+HC+SS-ThA: IoT Session: Multi-modal Characterization of Energy Materials &	MN+2D+AN+NS-ThA: Nonlinear and Thermal Resonators	AC-ThA: Early Career Scientists	MI+BI-ThA: Interdisciplinary Magnetism	HI-ThA: Emerging Ion Sources, Optics, and Applications
ThP					
FrM			AC+MI+SA-FrM: Actinide and Rare Earth Theory and Related Measurements	MI+EM-FrM: Magnetism and Spin-Orbit Coupling at Surfaces, Interfaces and Thin Films	

Program Overview

Room /Time	203C	204	Hall A	Hall B
SuA				
MoM	SS+HC+MI-MoM: Dynamical Processes at Surfaces	AS-MoM: Quantitative Surface Analysis		
MoA	SS+HC-MoA: Theory and Modeling of Surfaces and Reactions	AS-MoA: Multitechnique Applications-When More techniques are Better than One		
TuM	SS+HC+NS+PS-TuM: Controlling Mechanisms of Surface Chemical Reactions	AS+BI-TuM: Applied Surface Science: From Electrochemistry to Cell Imaging, a Celebration of the Career of Nicholas		
TuB			EW-TuB: Exhibitor Technology Spotlight Session I	
TuL			EW-TuL: Exhibitor Technology Spotlight Session II	
TuA	SS+HC+MI-TuA: Oxides/Chalcogenides: Structures and Reactions	AS-TuA: The Impact of Modeling (Ion, Electron) and Data Analysis on Applied Surface Science, a Celebration of the Career of		
TuAB			EW-TuAB: Exhibitor Technology Spotlight Session III	
TuP				Poster Sessions
WeM	SS+HC-WeM: Catalytic Alloys: Understanding Heterogeneity	AS+NS+SA-WeM: Beyond Traditional Surface Analysis		
WeB			EW-WeB: Exhibitor Technology Spotlight Session IV	
WeL			EW-WeL: Exhibitor Technology Spotlight Session V	
WeA	SS+AS+EM-WeA: Semiconducting Surfaces	AS+SE-WeA: Industrial and Practical Applications of Surface Analysis		
ThM	SS+EM+NS-ThM: Defects in and Functionalization of 2D Materials	AS+SE-ThM: Applied Surface Analysis of Novel, Complex or Challenging Materials		
ThA	SS+AS+BI+MI+NS-ThA: Organic/Inorganic Surfaces, Interfaces and Nanostructures	AS+NS-ThA: Profiling, Imaging and Other Multidimensional Pursuits		
ThP				Poster Sessions
FrM	SS+AS+HC-FrM: Near/Ambient Pressure and Bridging Gaps between Surface Science and Catalysis			

Special Events Sunday

Special Events Sunday

7:30 AM QSA 17 "Data Reproducibility"/101A

8:00 AM AVS Board of Directors' Executive Session (CLOSED SESSION)/Seaview AB-Hyatt Regency (by invitation)

9:00 AM AVS Board of Directors' Meeting/Seaview AB-Hyatt Regency

3:00 PM JVST Associate Editors' Meeting/Harbor-Hyatt Regency (by invitation)

5:30 PM ASTM E-42 Business Meeting/Regency D-Hyatt Regency

6:00 PM Science Educators' Workshop Teachers' Reception/Seaview Rotunda-Hyatt Regency (by invitation)

6:00 PM Vacuum Technology Division Executive Committee Meeting & Dinner/Shoreline A-Hyatt Regency (by invitation)

6:30 PM Applied Surface Science Division Memorial Reception/Regency EF-Hyatt Regency

7:00 PM International Dignitaries & Chapter Chairs Reception/Tides Restaurant-Hyatt Regency (by invitation)

7:00 PM Short Course Executive Committee Meeting/Shoreline B-Hyatt Regency (by invitation)

Biomaterials Plenary Session
Room 101B - Session BP-SuA
AVS BIP & AIP IPF Forum Plenary Session
Moderator: Joe Baio, Oregon State University

3:00pm	**INVITED: BP-SuA-1** Integrating Single Molecule Devices with Conventional Microfabrication using DNA Origami, ***Paul Rothemund***, California Institute of Technology	
3:20pm	Invited talk continues.	
3:40pm	**INVITED: BP-SuA-3** High Resolution Cryo-EM Structures of Macromolecular Complexes, ***Wah Chiu***, Stanford University	
4:00pm	Invited talk continues.	

Special Events Monday

Special Events Monday

7:00 AM Professional Leadership Committee Meeting & Breakfast/Tides Restaurant-Hyatt Regency (by invitation)

8:00 AM Science Educators' Workshop/Seaview-Hyatt Regency (by invitation)

10:20 AM AVS Member Center: Demo Hour--AVS Events & Activities/AVS 65 Mobile App/103C

12:05 PM MIND Business Meeting/201A

12:15 PM 2019 AVS Program Committee Meeting and Lunch/Regency A-Hyatt Regency (by invitation)

12:15 PM AVS Member Center: Professional Development-"Welcome to AVS Overview & Lunch*"/103C

12:15 PM Recommended Practices Committee Meeting & Lunch/Pacific-Hyatt Regency (by invitation)

3:00 PM AVS Member Center: Professional Development--"Speed Networking for Young Professionals"/103C

4:00 PM Publications Committee Meeting/Shoreline A-Hyatt Regency (by invitation)

4:45 PM VTD Business Meeting/203B

5:00 PM Plenary Lecture: Kim Chaffin, Distinguished Scientist & Bakken Fellow in Strategic and Scientific Operations, Medtronic, plc,"The Internet of Things: Shaping the Future of the Medical Device Industry"/Grand Ballroom

6:15 PM AVS Symposium Plenary Panel/Grand Ballroom

7:00 PM ASSD Executive Committee Meeting & Dinner/Pacific-Hyatt Regency (by invitation)

7:00 PM Welcome Mixer/Hall B

7:30 PM Thin Film Division/Harper Award TED-Talk Competition/102A

7:45 PM MIND Executive Committee Meeting and Dinner/Shoreline A-Hyatt Regency (by invitation)

7:45 PM Publications Committee Meeting & Dinner/Offsite (by invitation)

	2D Materials Focus Topic **Room 201B - Session 2D+EM+MI+NS+TF-MoM** **2D Materials Growth and Fabrication** **Moderator:** Jing Xia, University of California Irvine	**Applied Surface Science Division** **Room 204 - Session AS-MoM** **Quantitative Surface Analysis** **Moderators:** Kateryna Artyushkova, The University of New Mexico, Tim Nunney, Thermo Fisher Scientific, UK
8:20am	**2D+EM+MI+NS+TF-MoM-1** Wafer Scale Epitaxial Growth of Monolayer and Few-Layer WS_2 by Gas Source Chemical Vapor Deposition, ***Mikhail Chubarov****, T Choudhury, J Redwing,* The Pennsylvania State University	**INVITED: AS-MoM-1** A Fistful of Data: The Good, the Bad and the Ugly of Quantitative Surface Analysis, ***Alexander Shard****,* National Physical Laboratory, UK
8:40am	**2D+EM+MI+NS+TF-MoM-2** Wafer Scale Deposition of Monolayer Transition Metal Dichalcogenides, ***Kortney Almeida****, M Wurch, G Stecklein, L Bartels,* University of California, Riverside	Invited talk continues.
9:00am	**INVITED: 2D+EM+MI+NS+TF-MoM-3** Crystal Growth of 2D Materials: From Model Systems to Integrated Manufacturing, ***Stephan Hofmann****,* University of Cambridge, UK	**AS-MoM-3** XPS and the Reproducibility Crisis, ***Donald Baer****, M Engelhard,* Pacific Northwest National Laboratory
9:20am	Invited talk continues.	**AS-MoM-4** Rapid Calculation Method of the Voigt Function for Use in the Analysis of Photoelectron Spectroscopic Data, ***Peter Sherwood****,* University of Washington
9:40am	**2D+EM+MI+NS+TF-MoM-5** Understanding the Edge-Controlled Growth and Etching in Two-Dimensional Materials, ***Kai Xiao****, X Li, X Sang,* Center for Nanophase Materials Sciences, Oak Ridge National Laboratory*; W Zhao, J Dong,* Center for Multidimensional Carbon Materials (CMCM), Institute for Basic Science (IBS), Ulsan,44919, South Korea*; A Purektzy,* Center for Nanophase Materials Sciences, Oak Ridge National Laboratory*; C Rouleau,* Center for Functional Nanomaterials Brookhaven National Laboratory*; F Ding,* Center for Multidimensional Carbon Materials (CMCM), Institute for Basic Science (IBS), Ulsan,44919, South Korea*; R Unocic, D Geohegan,* Center for Nanophase Materials Sciences, Oak Ridge National Laboratory	**AS-MoM-5** Statistical Analysis and Peak Fitting of X-ray Photoelectron Spectroscopy Data. Good Practices and Procedures for Working up this Information., ***Matthew Richard Linford****, V Jain,* Brigham Young University
10:00am	**2D+EM+MI+NS+TF-MoM-6** Synthesis and Characterization of 1T, 1T', and 2H $MoTe_2$ Thin Films, ***Thomas Empante****,* University of California, Riverside*; Y Zhou,* Stanford University*; S Naghibi Alvillar,* El Camino College*; E Reed,* Stanford University*; L Bartels,* University of California, Riverside	**AS-MoM-6** Modeling the Shirley Background, ***Alberto Herrera-Gomez****, D Mulato-Gomez,* Cinvestav-Unidad Queretaro, Mexico*; A Dutoi,* University of the Pacific
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: 2D+EM+MI+NS+TF-MoM-8** 2D Anisotropic Semiconductors: Competing Phases by Alloys Engineering, ***Sefaattin Tongay****,* Arizona State University	**AS-MoM-8** XPS Spectra and Bonding In Ionic Transition Metal Compounds, ***C. Richard Brundle****,* C. R. Brundle and Associates*; P Bagus,* University of North Texas
11:00am	Invited talk continues.	**AS-MoM-9** Combinatorial Group XPS Analysis of Novel Material Systems, ***Sarah Coultas****,* Kratos Analytical Ltd, UK*; J Counsell,* Kratos Analytical Limited, UK*; C Moffitt,* Kratos Analytical Inc.*; C Blomfield, A Roberts,* Kratos Analytical Limited, UK
11:20am	**2D+EM+MI+NS+TF-MoM-10** Low-Defect, High-Uniformity Transfer-Free Graphene on SiO_2 by Thermal Chemical Vapor Deposition, ***Leslie Chan****, D Tsai, Z Wang, C Carraro, R Maboudian,* University of California, Berkeley	**AS-MoM-10** Towards Spatially Resolved Quantification of Gold Nanoparticles Embedded in an Organic Matrix using Secondary Ion Mass Spectrometry, ***Shin Muramoto****, J Bennett,* National Institute of Standards and Technology (NIST)
11:40am	**2D+EM+MI+NS+TF-MoM-11** Barrier Based Approach to Modify Vapor Phase Concentrations for High Quality MoS_2 Growth, ***Dongzhi Chi****, S Wong,* Institute of Materials Research and Engineering, Agency for Science Technology and Research, Singapore	**AS-MoM-11** Correction-Free Analysis of SIMS Data at High Mass Resolution in the Presence of Detector Saturation, ***Lev Gelb****, A Walker,* University of Texas at Dallas

	Spectroscopic Ellipsometry Focus Topic **Room 202A - Session EL+AS+EM-MoM** **Application of SE for the Characterization of Thin Films and Nanostructures** **Moderators:** Alain C. Diebold, SUNY College of Nanoscale Science and Engineering, Mathias Schubert, University of Nebraska - Lincoln	**Electronic Materials and Photonics Division** **Room 101A - Session EM+MP+PS-MoM** **IoT Session: CMOS, Beyond the Roadmap and Over the Cliff** **Moderators:** Sean King, Intel Corporation, Wilman Tsai, TSMC
8:20am	**INVITED: EL+AS+EM-MoM-1** Stealth Technology-based Terahertz Frequency-domain Ellipsometry, ***Vanya Darakchieva***, Linköping University, Sweden	**EM+MP+PS-MoM-1** Aluminum Gettering Gate for Improving Defect Density in SiGe MOSCAP Devices, ***Emily Thomson***, *M Kavrik, A Kummel,* University of California at San Diego
8:40am	Invited talk continues.	**EM+MP+PS-MoM-2** Direct Growth of Single Crystal Compound Semiconductor Materials on Diverse Substrates for Beyond the Roadmap Multifunctional Integrated Circuits, ***Debarghya Sarkar***, *R Kapadia,* University of Southern California
9:00am	**EL+AS+EM-MoM-3** Spectroscopic Ellipsometry and Finite Element Modeling based Optical Characterization of Highly Coherent Au-Si Slanted Columnar Periodic Nanostructures, ***Ufuk Kilic***, University of Nebraska-Lincoln; *A Mock,* Linköping University, Sweden; *R Feder,* Fraunhofer IMWS, Germany; *D Sekora, M Hilfiker, R Korlacki, E Schubert, C Argyropoulos, M Schubert,* University of Nebraska-Lincoln	**INVITED: EM+MP+PS-MoM-3** Going Beyond Traditional CMOS, ***Inge Asselberghs***, *I Radu,* IMEC, Belgium
9:20am	**EL+AS+EM-MoM-4** Temperature Dependent Dielectric Function and Critical Point Comparison of bulk Ge and α-Sn on InSb, ***Rigo Carrasco***, *C Emminger, N Samarasingha, F Abadizaman, S Zollner,* New Mexico State University	Invited talk continues.
9:40am	**EL+AS+EM-MoM-5** Elastomer Thin Films and Conducting Nanostructures for Soft Electronics and Dielectric Elastomer Transducers, ***Bert Müller***, *B Osmani, T Töpper,* University of Basel, Switzerland	**EM+MP+PS-MoM-5** Suppression of Electronic Defects at HfO_2-SiGe Interface with Selective Surface Oxidation Using Ozone, ***Mahmut Sami Kavrik***, University of California at San Diego; *V Hou,* TSMC, Taiwan, Republic of China; *E Thomson,* University of California at San Diego; *K Tang,* Stanford University; *Y Taur,* University of California at San Diego; *P McIntyre,* Stanford University; *A Kummel,* University of California at San Diego
10:00am	**EL+AS+EM-MoM-6** Spectroscopic Ellipsometry Investigation of Temperature Effects in Heated Self-organized 2D Arrays of Au Nanoparticles, ***Michele Magnozzi***, *M Ferrera, M Canepa,* Università di Genova, Italy; *F Bisio,* CNR-SPIN, Italy	**EM+MP+PS-MoM-6** Surface Free Energy and Interfacial Strain in HfO2 and HZO Ferroelectric Formation, ***Andrew Kummel***, *E Chagarov, M Kavrik,* University of California at San Diego; *M Katz, N Sanford, A Davydov,* National Institute of Standards and Technology (NIST); *M Lee,* National Taiwan University
10:20am	**BREAK**	**BREAK**
10:40am	**EL+AS+EM-MoM-8** Spectroscopic Ellipsometry of 2D WSe_2 Films, ***Baokun Song***, *H Gu, M Fang,* Huazhong University of Science & Technology, China; *Y Hong, W Ren,* Shenyang National Laboratory for Materials Science Institute of Metal Research Chinese Academy of Sciences, China; *X Chen, S Liu,* Huazhong University of Science & Technology, China	**INVITED: EM+MP+PS-MoM-8** The Role of Selective Processes in the Atomic Scale Era, ***Robert Clark***, *J Smith, K Yu, K Tapily, G Pattanaik, S Consiglio, T Hakamata, C Wajda, A Raley, G Leusink,* TEL Technology Center, America, LLC
11:00am	**EL+AS+EM-MoM-9** Thermal Evolution Process of $MaPbI_3$ Film Based on Spectroscopic Ellipsometry, *X Wang,* University of Science and Technology of China, China; *X Shan, H Siddique,* ***Rucheng Dai***, *Z Wang,* University of Science and Technology of China; *Z Ding, Z Zhang,* University of Science and Technology of China, China	Invited talk continues.
11:20am	**EL+AS+EM-MoM-10** a-Si as a Protective Layer to Block the Oxidization of Al mirrors, ***Yhoshua Wug***, University of California at Los Angeles; *D Allred, S Turley,* Brigham Young University	**EM+MP+PS-MoM-10** Selective Patterning of Silicon/Germanium Surfaces and Nanostructures via Surface Initiated Polymerization, ***Amar Mohabir***, *T Weiss, G Tutuncuoglu, E Vogel, M Filler,* Georgia Institute of Technology
11:40am	**EL+AS+EM-MoM-11** Terahertz to Mid-infrared Dielectric Response of Poly-methacrylates for Stereolithographic Single Layer Assembly, *D Fullager,* ***Serang Park***, *Y Li, J Reese,* University of North Carolina at Charlotte; *E Sharma, S Lee,* Harris Corporation; *S Schöche, C Herzinger,* J.A. Woollam Co. Inc; *G Boreman, T Hofmann,* University of North Carolina at Charlotte	**EM+MP+PS-MoM-11** Chemically Selective Imaging of Sequential Infiltration Synthesis with nm-scale Spatial Resolution, *D Nowak,* ***Tom Albrecht***, Molecular Vista

	Industrial Physics Forum **Room 101B - Session IPF+AS+BI+NS-MoM** **Biofabrication: From Tissue to Organ** **Moderators:** Jason Bardi, American Institute of Physics, Jim Hollenhorst, Agilent Technologies	**In-situ Microscopy, Spectroscopy, and Microfluidics Focus Topic** **Room 202B - Session MM+AS+NS+PC-MoM** **Mechanical, Electrical, Thermal and Optical Systems for In situ TEM (9:00-10:100 am)/Beam Induced Effects and Processing in Liquid/Gas Cells for TEM/SEM (10:40-11:40 am)** **Moderators:** Suneel Kodambaka, University of California Los Angeles, Olga Ovchinnikova, Oak Ridge National Laboratory
8:20am	**INVITED: IPF+AS+BI+NS-MoM-1** Strategic Thinking on the Architecture and Design of Scaffolds for Regenerative Medicine, ***Buddy D. Ratner,*** University of Washington, Seattle	
8:40am	Invited talk continues.	
9:00am	**INVITED: IPF+AS+BI+NS-MoM-3** Sequential Bottom-up Assembly of Synthetic Cells, ***Joachim Spatz,*** Max Planck Institute for Medical Research, Germany	**INVITED: MM+AS+NS+PC-MoM-3** Cantilever Substrates for Quantitative Growth Experiments in the Environmental Transmission Electron Microscope, ***Frances Ross,*** IBM T. J. Watson Research Center, MIT
9:20am	Invited talk continues.	Invited talk continues.
9:40am	**INVITED: IPF+AS+BI+NS-MoM-5** Activation of Inkjet Printed Cells Enhances Microvasculature Formation in Host Tissues, ***Thomas Boland,*** *B Oropeza, L Solis,* University of Texas at El Paso*; M Yanez,* University of South Carolina	**MM+AS+NS+PC-MoM-5** In Situ Laser Heating and Excitation in the Transmission Electron Microscope: Recrystallization, Grain Growth, Phase Separation and Dewetting in $Ag_{0.5}Ni_{0.5}$ Thin Films, ***Philip D. Rack,*** University of Tennessee Knoxville*; Y Wu,* University of Notre Dame*; C Liu,* University of Tennessee Knoxville*; T Moore, G Magel,* Waviks Inc.*; D Garfinkel,* University of Tennessee Knoxville*; J Camden,* University of Notre Dame*; M Stanford, G Duscher,* University of Tennessee Knoxville
10:00am	Invited talk continues.	**MM+AS+NS+PC-MoM-6** In situ Transmission Electron Microscopy Study of the Mechanical and Electrical Properties of Single III-V Semiconductor Nanowires, ***Lunjie Zeng,*** Chalmers University of Technology, Gothenburg, Sweden*; C Gammer,* Austrian Academy of Sciences, Austria*; B Ozdol,* Lawrence Berkeley National Laboratory*; T Nordqvist, P Krogstrup,* University of Copenhagen, Denmark*; A Minor,* Lawrence Berkeley National Laboratory*; W Jäger, E Olsson,* Chalmers University of Technology, Gothenburg, Sweden
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: IPF+AS+BI+NS-MoM-8** Challenges in Organ-specific Vascular Engineering and Tissue Assembly, ***Ying Zheng,*** University of Washington	**INVITED: MM+AS+NS+PC-MoM-8** Radiolytic Synthesis of Nanostructured Materials using *In situ* Liquid Cell Microscopy, ***Raymond Unocic,*** *X Sang, A Belianinov, O Ovchinnikova, K More, S Jesse,* Oak Ridge National Laboratory
11:00am	Invited talk continues.	Invited talk continues.
11:20am	**INVITED: IPF+AS+BI+NS-MoM-10** Bioprinting for Translational Applications: *The Quest for Whole Organ Fabrication,* ***James J. Yoo,*** Wake Forest School of Medicine	**MM+AS+NS+PC-MoM-10** Electron Beam Induced Cross-Linking in Liquid Hydrogels, ***Tanya Gupta,*** *A Kolmakov,* National Institute of Standards and Technology (NIST)
11:40am	Invited talk continues.	**MM+AS+NS+PC-MoM-11** Nanoscale Chemical Reactor Based on Localized Surface Plasmon Energy in Environmental Transmission Electron Microscope, ***Canhui Wang***[1]*, W Yang,* UMD/NIST*; R Sharma,* National Institute of Standards and Technology

[1] **NSTD Postdoc Finalist**

Monday Morning, October 22, 2018

	Materials and Processes for Quantum Computing Focus Topic **Room 203A - Session MP+EM+MN+NS-MoM** **Systems and Devices for Quantum Computing I** **Moderator:** Vivekananda Adiga, IBM, T.J. Watson Research Center	**Nanometer-scale Science and Technology Division** **Room 102B - Session NS+2D+AN+EM+MN+MP+PC+RM-MoM** **IoT Session: Nanostructured Devices and Sensors** **Moderators:** David Czaplewski, Argonne National Laboratory, Liya Yu, NIST Center for Nanoscale Science and Technology
8:20am		**INVITED: NS+2D+AN+EM+MN+MP+PC+RM-MoM-1** Integrating Nanodiamonds with Augmented Artificial Intelligence and Digital Health to Optimize Combination Therapy, ***Dean Ho,*** UCLA
8:40am		Invited talk continues.
9:00am	**INVITED: MP+EM+MN+NS-MoM-3** Quantum Supremacy: Checking a Quantum Computer with a Classical Supercomputer, ***John Martinis,*** Google Inc	**NS+2D+AN+EM+MN+MP+PC+RM-MoM-3** Morphology-Controlled Large-Scale Tin Oxide Nanostructures for Highly Sensitive Room Temperature Gas Sensor, ***Amrit Sharma,*** Norfolk State University
9:20am	Invited talk continues.	**NS+2D+AN+EM+MN+MP+PC+RM-MoM-4** Improving the Localized Surface Plasmonic Resonance Sensing Properties by Composite Metal/Dielectric Mixtures, ***Steven Larson***[1]*, Y Zhao,* University of Georgia
9:40am	**MP+EM+MN+NS-MoM-5** Active Protection of a Superconducting Qubit against Josephson Amplifier Backaction, ***Baleegh Abdo,*** *N Bronn, O Jinka, S Olivadese, A Corcoles, M Brink,* IBM T. J. Watson Research Center*; R Lake, D Pappas,* National Institute of Standards and Technology*; J Chow,* IBM T. J. Watson Research Center	**NS+2D+AN+EM+MN+MP+PC+RM-MoM-5** Improving the Selectivity of Tin (IV) Oxide Paper Based Gas Sensors with Plasma Surface Modification, ***Kimberly Hiyoto,*** *E Fisher,* Colorado State University
10:00am	**MP+EM+MN+NS-MoM-6** Nonlinear Light-matter Interaction: From Superconducting Qubits to Spins in Diamond, ***Eyal Buks,*** Israel Institute of Technology, Israel	**NS+2D+AN+EM+MN+MP+PC+RM-MoM-6** TiN@Si_3N_4 Core-shell Heterostructures as Nanoantennas for Photocatalytic Reforming of Methanol, ***Alejandro Alvarez Barragan,*** *L Mangolini,* University of California, Riverside
10:20am	**BREAK**	**BREAK**
10:40am	**MP+EM+MN+NS-MoM-8** Variations in Surface Dipole-Moment Density with Coverage for C/Au(110) – (2 × 1) and Electroplated Au Ion-trap Electrodes, ***Dustin Hite,*** *K McKay,* National Institute of Standards and Technology (NIST)*; H Jooya,* ITAMP, Harvard-Smithsonian Center for Astrophysics*; E Kim,* University of Nevada, Las Vegas*; P Weck,* Sandia National Laboratories*; H Sadeghpour,* ITAMP, Harvard-Smithsonian Center for Astrophysics*; D Pappas,* National Institute of Standards and Technology (NIST)	**INVITED: NS+2D+AN+EM+MN+MP+PC+RM-MoM-8** Nanostructured Sensor and Device Applications of Infiltrated Zinc Oxide, ***Leonidas Ocola,*** Argonne National Laboratory*; Y Wang, J Chen,* University of Wisconsin-Milwaukee*; P Blaisdell-Pijuan,* California State University-Fullerton*; R Divan,* Argonne National Laboratory
11:00am	**MP+EM+MN+NS-MoM-9** A Compact Cryogenic Setup for Quantum Computing with Trapped Atomic Ions, ***Ismail Inlek,*** *R Spivey, G Vrijsen, Z Jia, J Kim,* Duke University	Invited talk continues.
11:20am	**INVITED: MP+EM+MN+NS-MoM-10** Advances in Trapped Ion Quantum Computing, ***Jungsang Kim,*** Duke University	**NS+2D+AN+EM+MN+MP+PC+RM-MoM-10** Templates for the Investigation of Size-Selected Nanocluster Networks, ***Patrick Edwards,*** *V Kresin,* University of Southern California
11:40am	Invited talk continues.	**NS+2D+AN+EM+MN+MP+PC+RM-MoM-11** High Performance Detection for X-ray and g -ray with $MAPbX_3$ Perovskite Single Crystals, *X Wang, Z Zhu, Q Li, J Wu, X Zhang, B Wang,* ***Wei Lei,*** Southeast University

[1] **NSTD Student Award Finalist**

	Plasma Science and Technology Division **Room 104A - Session PS+AS+EM+SS-MoM** **Plasma-Surface Interactions** **Moderators:** Yohei Ishii, Hitachi High Technologies America Inc., Erik V. Johnson, LPICM, Ecole Polytechnique, France	**Plasma Science and Technology Division** **Room 104C - Session PS+TF-MoM** **Plasma Deposition and Plasma-Enhanced ALD** **Moderators:** Kazunori Koga, Kyushu University, Japan, Erwine Pargon, CNRS-LTM, Université Grenoble Alpes, France
8:20am	**PS+AS+EM+SS-MoM-1** Atomic-scale Numerical Simulation of a Nanometer-Scale Hole Etching of SiO2 with a Carbon Mask, ***Charisse Marie Cagomoc****, M Isobe, S Hamaguchi,* Osaka University, Japan	**PS+TF-MoM-1** ZrO_2 Deposition using a 2.45 GHz Atmospheric Pressure Plasma Torch, ***Dhruval Patel****, L Bonova, C Ahn, D Krogstad, D Ruzic,* University of Illinois at Urbana-Champaign*; S Chaudhuri,* University of Illinois at Chicago
8:40am	**PS+AS+EM+SS-MoM-2** SF_6/O_2 Plasma Nanotexturing of Silicon: Decoupling How Ion Flux and Ion Energy Matter, ***Guillaume Fischer***[1], Institut Photovoltaïque d'Ile-de-France (IPVF), France*; E DRAHI, S FILONOVICH,* Total SA Renewables, France*; E Johnson,* LPICM, CNRS, Ecole polytechnique, Université Paris-Saclay, France	**PS+TF-MoM-2** Ion Energy Characteristics during Plasma-Enhanced Atomic Layer Deposition and their Role in Tailoring Material Properties, ***Tahsin Faraz***[1], Eindhoven University of Technology, The Netherlands, Netherlands*; K Arts,* Eindhoven University of Technology, The Netherlands*; S Karwal, M Creatore,* Eindhoven University of Technology, The Netherlands, Netherlands*; H Knoops,* Oxford Instruments, The Netherlands*; E Kessels,* Eindhoven University of Technology, The Netherlands, Netherlands
9:00am	**PS+AS+EM+SS-MoM-3** Corrosion Resistance to F and Cl plasma of Yttrium Oxyfluoride (YOF) formed by Sintering, ***Akinobu Teramoto****, Y Shiba, T Goto,* Tohoku University, Japan*; Y Kishi,* Nippon Yttrium Co., Ltd, Japan*; S Sugawa,* Tohoku University, Japan	**INVITED: PS+TF-MoM-3** Plasma Deposition of Functional, Nanostructured Coatings on Materials and Nanomaterials Derived from the Wood Biomass, ***Luc Stafford****,* Université de Montréal, Canada
9:20am	**PS+AS+EM+SS-MoM-4** Decay of Hydrogen in NF_3/Ar and O_2/Ar Cleaning Process by Optical Emission Spectroscopy, ***Hanyang Li****, Y Zhou, V Donnelly,* University of Houston*; J Chiu, X Chen,* MKS	Invited talk continues.
9:40am	**INVITED: PS+AS+EM+SS-MoM-5** Plasma-surface Interactions in the Strongly Coupled Regime, ***Thomas Morgan****,* DIFFER, Netherlands	**PS+TF-MoM-5** Mechanisms of Halogenated Silane Decomposition on an N-rich Surface during Atomic Layer Deposition of Silicon Nitride, ***Gregory Hartmann****,* University of Texas at Austin*; P Ventzek,* Tokyo Electron America, Inc.*; K Ishibashi, T Iwao,* Tokyo Electron Technology Solutions Ltd., Japan*; G Hwang,* University of Texas at Austin
10:00am	Invited talk continues.	**PS+TF-MoM-6** Characterization of Inductively Coupled Plasma Source for Plasma Enhanced Atomic Layer Deposition, ***Premkumar Panneerchelvam****, A Agarwal,* KLA-Tencor*; D Boris, S Walton,* Naval Research Laboratory
10:20am	**BREAK**	**BREAK**
10:40am	**PS+AS+EM+SS-MoM-8** Tailoring the Surface Properties of Porous Zeolite Constructs using Plasma Processing, ***Angela Hanna***[2]*, E Fisher,* Colorado State University	**PS+TF-MoM-8** Structural, Optical, and Electrical Properties of Plasma-Enhanced Atomic Layer Deposited ZnO: Influence of Substrate Temperature, ***Julian Pilz****, A Perrotta, A Coclite,* Graz University of Technology, Austria
11:00am	**PS+AS+EM+SS-MoM-9** Generation Kinetics of Plasma-induced Electronic Defects in Semiconductor Materials, ***Shota Nunomura****, I Sakata, K Matsubara,* National Institute of Advanced Industrial Science and Technology (AIST), Japan	**PS+TF-MoM-9** Critical Effect of the Presence and Position of Double Bonds in the Atmospheric Plasma Synthesis of Organic Coatings, ***Jérémy Mertens***[1]*, J Baneton, A Ozkan, F Reniers,* Université Libre de Bruxelles, Belgium
11:20am	**PS+AS+EM+SS-MoM-10** Evolution of Photoresist Layer Structure and Surface Morphology under Fluorocarbon-Based Plasma Exposure, ***Adam Pranda****, S Gutierrez Razo, J Fourkas, G Oehrlein,* University of Maryland, College Park	**PS+TF-MoM-10** Capacitively Coupled DC/RF Discharges for PEALD Process of Titanium Dioxide Films, ***Shinya Iwashita****, A Suzuki, T Shindo, T Kikuchi, T Matsudo, Y Morita, T Moriya,* Tokyo Electron Technology Solutions Ltd., Japan*; A Uedono,* University of Tsukuba, Japan
11:40am	**PS+AS+EM+SS-MoM-11** Fundamental Studies of Plasma Species with Organic Materials of Varying Hydrogen and Oxygen Composition by Computational and Experimental Approaches, ***Yusuke Fukunaga****,* Nagoya University, Japan*; P Ventzek, B Lane,* Tokyo Electron America, Inc.*; A Ranjan,* TEL Technology Center America, LLC*; M Sekine, T Tsutsumi, H Kondo, K Ishikawa,* Plasma Nanotechnology Research Center, Japan*; R Upadhyay,* Esgee Technologies*; L L. Raja,* The University of Texas at Austin*; G Hartmann,* McKetta Department of Chemical Engineering, The University of Texas at Austin*; G S. Hwang,* The University of Texas at Austin*; M Hori,* Institute of innovation for future society, Japan	**PS+TF-MoM-11** The effects of Varying Plasma Conditions on Plasma Enhanced Atomic Layer Epitaxy, *D Boris, V Wheeler,* U.S. Naval Research Laboratory*; V Anderson,* Kennesaw State University*; N Nepal,* U.S. Naval Research Laboratory*; S Rosenberg, A Kozen,* ASEE Postdoctoral Fellow*; S Walton,* ***Charles Eddy****,* U.S. Naval Research Laboratory

[1] **Coburn & Winters Student Award Finalist**

[2] **National Student Award Finalist**

	Advanced Surface Engineering Division **Room 202C - Session SE+NS+TF-MoM** **Nanostructured Thin Films and Coatings** **Moderators:** Jianliang Lin, Southwest Research Institute, Matjaz Panjan, Jozef Stefan Institute, Slovenia	**Surface Science Division** **Room 203C - Session SS+HC+MI-MoM** **Dynamical Processes at Surfaces** **Moderator:** Gareth Parkinson, TU Wien
8:20am	**SE+NS+TF-MoM-1** The Role of Mechanical and Chemical Bonding Mechanisms in Adhesion of Nanoporous Anodic Aluminium Oxides (AAO), ***Shoshan Abrahami,*** Vrije Universiteit Brussel (VUB), Belgium*; V Gudla,* Technical University of Denmark*; K Marcoen,* Vrije Universiteit Brussel, Belgium*; J de Kok,* Fokker Aerostructres*; T Hauffman,* Vrije Universiteit Brussel, Belgium*; R Ambat,* Technical University of Denmark*; A Mol,* Technical University Delft, Netherlands*; H Terryn,* Vrije Universiteit Brussel, Belgium	**INVITED: SS+HC+MI-MoM-1** Light Induced Single-Molecule Dynamics at Surfaces*,* ***Wilson Ho,*** University of California, Irvine
8:40am	**SE+NS+TF-MoM-2** Tuning Surface States of Nanocrystalline ZnO Films by Atomic Layer Deposited TiO_x*, C Yi,* ***Ich Tran****, M Law,* University of California, Irvine	Invited talk continues.
9:00am	**SE+NS+TF-MoM-3** Two-dimensional Hexagonal Boron Nitride (hBN) Layer Promoted Growth of Highly-oriented, Trigonal-structured Ta_2C(0001) Thin Films via Ultra-high Vacuum Sputter-deposition on Al_2O_3(0001)*,* ***Koichi Tanaka****, P Arias, M Liao, Y Wang, H Zaid, A Aleman, M Goorsky, S Kodambaka,* University of California, Los Angeles	**SS+HC+MI-MoM-3** Probing the Effects of Surface Structure on the Dissociative Chemisorption of Methane*,* ***Eric High***[1]*, D Tinney, A Utz,* Tufts University
9:20am	**SE+NS+TF-MoM-4** Nitride High Entropy Alloy Thin Films Deposited by Magnetron Sputtering and Cathodic Arc on Polymer Substrates: Structure and Electro-Mechanical Properties*,* ***Ao Xia,*** Montanuniversität Leoben, Austria*; R Dedoncker,* Ghent University, Belgium*; M Cordill,* Erich Schmid Institute of Materials Science, Austria*; D Depla,* Ghent University, Belgium*; R Franz,* Montanuniversität Leoben, Austria	**SS+HC+MI-MoM-4** Adsorption and Diffusion of NH_3 on Anatase-TiO_2 (101)*,* ***Kræn Christoffer Adamsen****, S Koust, E Kolsbjerg, B Hammer, S Wendt, J Lauritsen,* Aarhus University, Denmark
9:40am	**SE+NS+TF-MoM-5** Isomeric Phase Composition and Mechanical Properties of NbN Nanocomposite Coatings Deposited by Modulated Pulsed Power Magnetron Sputtering*,* ***Y.G. Li****, H Yuan, Z Jiang, N Pan, M Lei,* Dalian University of Technology, China	**SS+HC+MI-MoM-5** Non-equilibrium Growth of Metastable Clusters as a Means of Controlling Supramolecular Structure.*,* ***Ryan Brown,*** Clarkson University*; A Kandel,* University of Notre Dame
10:00am	**SE+NS+TF-MoM-6** Ab initio Guided Development of Ternary Borides: A Case Study of Ti-B-N, Ti-Zr-B, Ti-W-B, Ta-W-B, and V-W-B Systems*, V Moraes, R Hahn, M Bartosik, H Riedl,* TU Wien, Austria*; H Euchner,* Ulm University, Austria*; D Holec,* Montanuniversität Leoben, Austria*;* ***Paul Heinz Mayrhofer,*** TU Wien, Austria	**SS+HC+MI-MoM-6** Ultrafast Dynamics of Reaction Pathways on Metal Surfaces*,* ***Jerry LaRue,*** Chapman University
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: SE+NS+TF-MoM-8** Toughness Enhancement in Hard Ceramic Films by Alloy Design*,* ***Hanna Kindlund,*** Department of Mechanical and Aerospace Engineering, University of California Los Angeles (UCLA)	**INVITED: SS+HC+MI-MoM-8** Designer Solids via Multi-Heteroepitaxy: Layer-by-Layer Deposition of Molecular Frameworks on Solid Substrates*,* ***Christof Wöll,*** Karlsruhe Institute of Technology, Germany
11:00am	Invited talk continues.	Invited talk continues.
11:20am	**SE+NS+TF-MoM-10** From Ab-Initio Design to Synthesis of Multifunctional Coatings with Enhanced Hardness and Toughness*, D Edström, D Sangiovanni, L Hultman,* Linköping University, Sweden*; I Petrov, J Greene,* University of Illinois at Urbana Champaign*;* ***Valeriu Chirita,*** Linköping University, Sweden	**SS+HC+MI-MoM-10** Isotope Enrichment via Non-Equilibrium Differential Condensation and Reflection using Supersonic Beam Gas-Surface Scattering*,* ***Jacob Graham****, A McMillan, K Nihill, S Sibener,* University of Chicago
11:40am	**SE+NS+TF-MoM-11** Mechanical Properties of $V_{0.5}Mo_{0.5}N_{1-x}O_x$ Thin Films*,* ***Daniel Edström****, D Sangiovanni,* Linköping University, Sweden*; L Landälv,* Linköping University, Sandvik Coromant AB, Sweden*; L Hultman,* Linköping University, Sweden*; I Petrov, J Greene,* University of Illinois at Urbana Champaign, Linköping University, Sweden*; P Eklund, V Chirita,* Linköping University, Sweden	**SS+HC+MI-MoM-11** Structural Reorganization of Sequentially Adsorbed Two-component Self-assembled Monolayers after Soft Ultraviolet Irradiation*, C Gerber,* ***Rebecca Quardokus,*** University of Connecticut

[1] **Morton S. Traum Award Finalist**

Monday Morning, October 22, 2018

	Thin Films Division **Room 102A - Session TF1-MoM** **Precursors and Surface Reactions** **Moderators:** Cathleen Crudden, Queen's University, Canada, Markku Leskela, University of Helsinki, Finland	**Thin Films Division** **Room 104B - Session TF2-MoM** **IoT Session: Thin Film Processes for Energy Storage** **Moderators:** Virginia Wheeler, U.S. Naval Research Laboratory, Paul Poodt, Holst Centre / TNO
8:20am	**TF1-MoM-1** Monitoring the Transient Surface Species during TiO_2 Atomic Layer Deposition using Surface-Enhanced Raman Spectroscopy, ***Ryan Hackler***[1]*, G Kang, G Schatz, P Stair, R Van Duyne,* Northwestern University	**INVITED: TF2-MoM-1** Thin Films for Next Generation Batteries, ***Brecht Put,*** Imec, Belgium*; S Hollevoet, N Labyedh,* KULeuven & Imec, Belgium*; M Debucquoy,* Imec, Belgium*; E Kessels, M Creatore,* Eindhoven University of Technology, The Netherlands, Netherlands*; P Vereecken,* KULeuven & Imec, Belgium
8:40am	**TF1-MoM-2** Theoretical Study on the Effect of Precursor Ligand in Atomic Layer Deposition of Al_2O_3 on SiO_2, ***Tania Sandoval,*** Universidad Técnica Federico Santa María*; T Liu,* Stanford University*; R Tonner,* Philipps-Universität Marburg*; S Bent,* Stanford University	Invited talk continues.
9:00am	**TF1-MoM-3** Relevance of Dimeric and Tetrameric Structures to the Surface Chemistry of Metal Amidinate Atomic Layer Deposition Precursors, ***Bo Chen****, Y Yao, Q Ma, F Zaera,* University of California, Riverside*; Y Duan, A Teplyakov,* University of Delaware*; J Coyle, S Barry,* Carleton University	**TF2-MoM-3** Radical Enhanced Atomic Layer Deposition of Cobalt Oxide Based Electrodes for 3D Lithium-ion Battery Applications, ***Ryan Sheil****, J Lau, B Dunn, J Chang,* University of California at Los Angeles
9:20am	**TF1-MoM-4** Low Temperature Dielectric ALD with the use of Hydrogen Peroxide: Comparison of Growth and Film Characteristics for Anhydrous H_2O_2, H_2O_2/H_2O Mixtures and H_2O, ***Daniel Alvarez****, K Andachi, J Spiegelman,* RASIRC	**TF2-MoM-4** Fast-charging 3D Battery Electrodes with High-Capacity Materials Using Large Area Atmospheric Pressure Spatial ALD, ***Lucas Haverkate****, S Unnikrishnan, D Hermes,* Holst Centre / TNO, The Netherlands*; F Roozeboom,* Eindhoven University of Technology, The Netherlands, Netherlands*; F Zorro, F Grob, E Balder,* Holst Centre / TNO, The Netherlands*; P Poodt,* Holst Centre / TNO and SALDtech B.V., Netherlands*; M Tulodziecki,* Holst Centre / TNO, The Netherlands
9:40am	**INVITED: TF1-MoM-5** Putting More Chemistry into CVD. Precursors, Superconformality, and Selectivity, ***Gregory Girolami****, J Abelson,* University of Illinois at Urbana-Champaign	**INVITED: TF2-MoM-5** Thin Film Technology - Opening New Frontiers for Solid State Batteries, ***Gary Rubloff****, K Gregorczyk,* University of Maryland, College Park*; A Pearse,* Control Electron*; S Lee,* University of Maryland, College Park*; A Talin,* Sandia National Laboratories, Livermore
10:00am	Invited talk continues.	Invited talk continues.
10:20am	**BREAK**	**BREAK**
10:40am	**TF1-MoM-8** Insight into the "Residual Methyls" during ALD of Al_2O_3 from TMA/H_2O using *in situ* RAIRS, ***Brent Sperling****, B Kalanyan, J Maslar,* National Institute of Sandards and Technology (NIST)	**INVITED: TF2-MoM-8** Atomic Layer Deposition: A Scalable Process for Enabling the Next Generation of High Performance Materials, ***Arrelaine Dameron****,* Forge Nano
11:00am	**TF1-MoM-9** Low Temperature Atomic Layer Deposition of Silicon Nitride using Hexachlorodisilane and Ultra-High Purity Hydrazine, ***Aswin Kondusamy****, A Lucero, S Hwang, X Meng, H Kim,* University of Texas at Dallas*; D Alvarez Jr., J Spiegelman,* RASIRC*; J Kim,* University of Texas at Dallas	Invited talk continues.
11:20am	**TF1-MoM-10** Investigating Low-Temperature Atomic Layer Deposition of Nickel Oxide using $Ni(^{tBu2}DAD)_2$ and Ozone, ***Konner Holden****, J Conley, Jr.,* Oregon State University*; C Dezelah,* EMD Performance Materials	**TF2-MoM-10** A Facile CVD Route for the Large-scale Fabrication of Silicon-graphite Core-shell Composites, ***Giorgio Nava****, J Schwan, L Mangolini,* University of California, Riverside

[1] **National Student Award Finalist**

	Tribology Focus Topic **Room 201A - Session TR+AS+NS+SS-MoM** **Tribology Focus Session** **Moderator:** Filippo Mangolini, University of Leeds, UK	**Vacuum Technology Division** **Room 203B - Session VT-MoM** **Vacuum Measurement** **Moderators:** Marcy Stutzman, Jefferson Lab, Alan Van Drie, TAE Technologies
8:20am	**INVITED: TR+AS+NS+SS-MoM-1** Structural Superlubricity: History, Breakthroughs, and Challenges, ***Mehmet Z. Baykara,*** University of California, Merced	**INVITED: VT-MoM-1** Pharmaceutical Freeze-Drying and Vacuum-Drying: Challenges and Opportunities, ***Evgenyi Shalaev,*** Allergan
8:40am	Invited talk continues.	Invited talk continues.
9:00am	**INVITED: TR+AS+NS+SS-MoM-3** An Examination of the Nature of Bonding during Indentation and Sliding using MD and in-situ Nanoindentation, ***Judith Harrison,*** United States Naval Academy	**VT-MoM-3** Fixed Length Optical Cavities for Primary Traceability to the Pascal, ***Jay Hendricks,*** *J Ricker, K Douglass,* National Institute of Standards and Technology*; G Brucker, E Fuchs, D Ocepek, P Sullivan, S Venkatesan,* MKS Instruments, Inc., Pressure and Vacuum Measurement Group
9:20am	Invited talk continues.	**VT-MoM-4** Fundamental Quantum-based Vacuum Metrology at NIST, ***Julia Scherschligt,*** National Institute of Standards and Technology
9:40am	**INVITED: TR+AS+NS+SS-MoM-5** The Chemistry of Friction, Wear, and Tribofilm Growth on 2D Materials, ***Jonathan Felts,*** Texas A&M University	**VT-MoM-5** Moving the FLOC to the Telecom, ***Kevin Douglass,*** *J Ricker,* National Institute of Standards and Technology*; J Hendricks,* National Institute of Standards and Technology (NIST)
10:00am	Invited talk continues.	**VT-MoM-6** Transient Method of Permeability Measurements for Microporous Media, *M Johansson,* Aix Marseille University, France*; M Wuest,* INFICON, Liechtenstein*; P Perrier,* ***Irina Graur Martin,*** Aix Marseille University, France
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: TR+AS+NS+SS-MoM-8** Nanomechanics of Soft, Hierarchical Polymer- and Biological-Networks, ***Prathima Nalam,*** University at Buffalo - SUNY	**INVITED: VT-MoM-8** Beamline Technology and Current Modeling Capabilities for Ion Implantation, ***Svetlana Radovanov,*** Applied Materials, Varian Semiconductor Equipment
11:00am	Invited talk continues.	Invited talk continues.
11:20am	**INVITED: TR+AS+NS+SS-MoM-10** Mechanisms for Controlling Friction and New Approaches for Achieving Superlubricity Regime in 2D Materials, ***Diana Berman,*** University of North Texas*; A Erdemir, A Sumant,* Argonne National Laboratory	**VT-MoM-10** Design of a New Thermal Vacuum Chamber for Space instrument Calibration, ***Freek Molkenboer,*** *R Jansen, R Veraar, G Otter, W van Werkhoven, N Koster, F Driessen,* TNO, Netherlands
11:40am	Invited talk continues.	**VT-MoM-11** Pressure Measurements from Combining Non-evaporable Getter Pumps and a Novel Extreme High Vacuum Cryopump, ***Marcy Stutzman,*** Thomas Jefferson National Accelerator Facility*; A Segovia Miranda,* Universidad Aut´onoma de Zacatecas*; P Adderley, M Poelker,* Thomas Jefferson National Accelerator Facility

	2D Materials Focus Topic **Room 201B - Session 2D+MI+NS-MoA** **2D Materials Characterization including Microscopy and Spectroscopy** **Moderators:** Stephan Hofmann, University of Cambridge, UK, Richard Vanfleet, Brigham Young University	**Applied Surface Science Division** **Room 204 - Session AS-MoA** **Multitechnique Applications-When More techniques are Better than One** **Moderator:** Karen Gaskell, University of Maryland, College Park
1:20pm	**INVITED: 2D+MI+NS-MoA-1** Observing the Mechanisms of Graphene Growth during Chemical Vapor Deposition: Routes to Controlling Layer Number and Domain Size, ***Robert Weatherup,*** University of Manchester, UK	**AS-MoA-1** Overcoming Obstacles in Surface and Interface Characterization of All Solid-State Lithium Battery Materials, ***Natalie Seitzman,*** Colorado School of Mines*; H Guthrey, D Sulas, S Johnston,* National Renewable Energy Laboratory*; J Nelson Weker,* SLAC National Accelerator Laboratory*; H Platt,* Solid Power, Inc.*; M Al-Jassim,* National Renewable Energy Laboratory*; S Pylypenko,* Colorado School of Mines
1:40pm	Invited talk continues.	**AS-MoA-2** *In-situ* Complementary XPS and Raman Analysis of Technologically Important Materials, ***Paul Mack,*** Thermo Fisher Scientific, UK
2:00pm	**2D+MI+NS-MoA-3** Band Alignment of 2-D Materials by Internal Photoemission, *Q Zhang, S Zhang,* Theiss Research & National Institute of Standards and Technology*; B Sperling,* ***Nhan Nguyen,*** National Institute of Standards and Technology	**INVITED: AS-MoA-3** Integration of Laboratory Experiments. Spectroscopy, and Microscopy to Investigate the Reactivity of Metals in Mine Wastes, ***José Cerrato,*** University of New Mexico
2:20pm	**2D+MI+NS-MoA-4** Visible to mid-IR Nanoscale Characterization of 2D Materials via Photo-induced Force Microscopy, ***Padraic O'Reilly****, D Nowak, S Park,* Molecular Vista	Invited talk continues.
2:40pm	**INVITED: 2D+MI+NS-MoA-5** Polymorphic Structures and Diversified Properties of Low-dimensional Materials Investigated by In situ Electron Microscopy, ***Kazu Suenaga,*** National Institute of Advanced Industrial Science and Technology (AIST), Japan	**AS-MoA-5** Degradation Methodology of Reinforced Concrete in South Asia analyzed using Surface Analysis and other Techniques, ***Nirmalya Karar,*** CSIR-National Physical Laboratory, India*; S Singh,* CSIR-CBRI Roorkee India, India
3:00pm	Invited talk continues.	**AS-MoA-6** Surface Phase, Morphology, and Charge Distribution Transitions on Vacuum and Ambient Annealed Perovskites: A Case Study on $SrTiO_3$(100), ***Omur Dagdeviren***[1]*, G Simon, K Zou, C Ahn, F Walker, E Altman, U Schwarz,* Yale University
3:20pm	**BREAK**	**BREAK**
3:40pm	**INVITED: 2D+MI+NS-MoA-8** Probing Interlayer Interaction in van der Waals Materials by Low-energy Electron Microscopy (LEEM), ***Johannes Jobst****, D Geelen,* Leiden University, Netherlands*; R Tromp,* IBM, T.J. Watson Research Center*; S van der Molen,* Huygens-Kamerlingh Onnes Laboratory, Netherlands	**AS-MoA-8** In-situ Characterisation of Graphene using combined XPS and Raman Spectroscopy: Removal of Polymer Residue by Ar Gas Cluster Ion Beams, ***Barry Brennan,*** National Physical Laboratory, UK*; P Mack,* Thermo Fisher Scientific, UK*; A Centeno, A Zurutuza,* Graphenea, Spain*; A Pollard,* National Physical Laboratory, UK
4:00pm	Invited talk continues.	**AS-MoA-9** Topography-corrected TOF-SIMS Chemical Imaging of Chip Interconnect Surfaces, ***Conor Thomas****, B Singh, R Wang,* IBM Systems Division
4:20pm	**2D+MI+NS-MoA-10** Fast Full Wafer Analysis for Graphene and 2D-materials by Imaging Ellipsometry, ***Sebastian Funke,*** Accurion GmbH, Germany*; P Braueniger-Weimer, S Hofmann,* University of Cambridge, UK*; P Thiesen,* Accurion GmbH, Germany	**AS-MoA-10** Combining the Benefits of GCIB-ToF-SIMS, MALDI-FTICR-MS and LC-MS/MS for Location specific Lipid Identification in Planarian Flatworm Tissue Sections, ***Tina Angerer,*** University of Washington*; D Velickovic, C Nicora, C Anderton,* Pacific Northwest National Laboratory*; D Graham, L Gamble,* University of Washington

[1] **NSTD Student Award Finalist**

	Biomaterial Interfaces Division **Room 101B - Session BI+AS+IPF+MN-MoA** **Advanced Imaging and Structure Determination of Biomaterials Research** **Moderators:** Dan Graham, University of Washington, Axel Rosenhahn, Ruhr-University Bochum	**Spectroscopic Ellipsometry Focus Topic** **Room 202A - Session EL+EM-MoA** **Spectroscopic Ellipsometry: Novel Applications and Theoretical Approaches** **Moderators:** Vanya DarakchievaStefan Zollner, New Mexico State University,
1:20pm	**INVITED: BI+AS+IPF+MN-MoA-1** NMR Relaxometry as a Medical Diagnostic, ***Michael J. Cima,*** Massachusetts Institute of Technology	**INVITED: EL+EM-MoA-1** The Physics of Low Symmetry Metal Oxides with Special Attention to Phonons, Plasmons and Excitons and their Potential for Uses in Power Electronics and Quantum Technologies, ***Mathias Schubert,*** University of Nebraska - Lincoln, Linköping University, Sweden, Leibniz Institute for Polymer Research, Dresden, Germany*; A Mock, R Korlacki, S Knight,* University of Nebraska - Lincoln*; V Darakchieva,* Linköping University, Sweden*; B Monemar,* Linköping University, Sweden, Tokyo University of Agriculture and Tech., Japan*; H Murakami, Y Kumagai,* Tokyo University of Agriculture and Technology, Japan*; K Goto,* Tokyo University of Agriculture and Technology, Tamura Corporation, Japan*; M Higashiwaki,* National Institute of Information and Communications Technology, Japan
1:40pm	Invited talk continues.	Invited talk continues.
2:00pm	**BI+AS+IPF+MN-MoA-3** Direct Observation of Cell Signaling Proteins Interacting with a Model Cell Membrane by Sum Frequency Generation Vibrational Spectroscopy*, T Golbek,* Oregon State University*; T Weidner,* Aarhus University, Denmark*; C Johnson,* ***Joe Baio,*** Oregon State University	**EL+EM-MoA-3** Mueller Matrix Spectroscopic Ellipsometry Based Scatterometry of Nanowire Gate-All-Around (GAA) Transistor Structures*, M Korde,* ***Alain C. Diebold,*** SUNY Polytechnic Institute
2:20pm	**BI+AS+IPF+MN-MoA-4** Vibrational Sum-frequency Scattering Spectroscopy for the Characterization of Protein Fiber Structures and their Surface Interactions in Biological Environments, ***Patrik K. Johansson,*** *D Castner,* University of Washington	**EL+EM-MoA-4** Anomaly in the Optical Constants of Ni near the Curie Temperature, ***Farzin Abadizaman,*** *S Zollner,* New Mexico State University
2:40pm	**BI+AS+IPF+MN-MoA-5** How Proteins Grow Calcium Carbonates – The Mechanism of Vaterite Bioprecipitation Studied at the Molecular Level by Sum Frequency Generation Spectroscopy*, H Lu,* Max Planck Institute for Polymer Research, Germany*; S Roeters,* Aarhus University, Denmark*; H Lutz, M Hood, A Schäfer,* Max Planck Institute for Polymer Research, Germany*; R Muñoz-Espí,* Universidad de Valencia, Spain*; M Bonn,* Max Planck Institute for Polymer Research, Germany*;* ***Tobias Weidner,*** Aarhus University, Denmark	**EL+EM-MoA-5** Phonon Confinement and Excitonic Absorption in the Optical Properties of ZnO Films, ***Nuwanjula Samarasingha,*** *S Zollner,* New Mexico State University*; D Pal, A Mathur, A Singh, R Singh, S Chattopadhyay,* Indian Institute of Technology Indore, India
3:00pm	**BI+AS+IPF+MN-MoA-6** ToF-SIMS Imaging of Chemical Modifications in Topographically Challenging Materials, ***Michael Taylor,*** *D Graham, L Gamble,* University of Washington	**EL+EM-MoA-6** High Aspect Ratio Etch Tilt Detection with Full 4x4 Mueller Matrix Spectroscopic Ellipsometry and Its Application to 3DNAND Channel Hole Etch Process and Chamber Monitoring, ***Peilin Ong,*** Micron Semiconductor Asia Pte. Ltd., Singapore*; S Ng,* Nanometrics Incorporated*; G Chu,* Micron Semiconductor Asia Pte. Ltd., Singapore*; P Murphy,* Nanometrics Incorporated*; L Liong, W Fu,* Micron Semiconductor Asia Pte. Ltd., Singapore*; Y Wen,* Nanometrics Incorporated, Nanometrics Incorporated*; L Ho,* Micron Semiconductor Asia Pte. Ltd., Singapore
3:20pm	**BREAK**	**BREAK**
3:40pm	**BI+AS+IPF+MN-MoA-8** Imaging Plant and Plant Growth-Promoting Bacteria Interactions Using Time-of-Flight Secondary Ion Mass Spectrometry, ***Xiao-Ying Yu,*** *R Komorek, Z Zhu, C Jansson,* Pacific Northwest National Laboratory	**EL+EM-MoA-8** Ultra-High-Speed Spectroscopic Ellipsometry and its Applications, ***Gai Chin,*** ULVAC Inc., Japan
4:00pm	**BI+AS+IPF+MN-MoA-9** Imaging of Cells and Tissues with Helium Ion Microscopy*, J Notte, D Wei,* ***Chuong Huynh,*** Carl Zeiss Microscopy, LLC	**EL+EM-MoA-9** Use of Ellipsometry to Monitor Implant Damage in Methane Plasma Implant, ***Nicholas Bateman,*** Varian Semiconductor Equipment, Applied Materials
4:20pm	**BI+AS+IPF+MN-MoA-10** Quantitative Analysis of Electrolytes in Microliter-size Blood Drops Congealed via HemaDrop™ using Ion Beam Analysis and SIMNRA, ***Harshini Thinakaran,*** *S Narayan, J Day, N Herbots, F Ark, B Wilkens, M Mangus, R Culbertson,* Arizona State University	**EL+EM-MoA-10** Study of the Thickness-dependent Optical Constants of Metallic Thin Films based on Ellipsometry and Reflectivity, ***Jiamin Liu,*** *H Jiang, S Liu,* Huazhong University of Science and Technology, China

	Electronic Materials and Photonics Division **Room 101A - Session EM+AM+NS+PS-MoA** **Atomic Layer Processing: Selective-Area Patterning (Assembly/Deposition/Etching)** **Moderators:** Michael Filler, Georgia Institute of Technology, Jessica Hilton, RHK Technology	**Magnetic Interfaces and Nanostructures Division** **Room 201A - Session MI+2D+EM+NS-MoA** **IoT Session: Symposium on new Magnetic Materials, Devices and Concepts for the Information Society** **Moderator:** Hendrik Ohldag, SLAC National Accelerator Laboratory
1:20pm	**EM+AM+NS+PS-MoA-1** Area-Selective Deposition of Crystalline Perovskites, *E Lin,* ***Brennan Coffey,*** *Z Zhang, P Chen, B Edmondson, J Ekerdt,* University of Texas at Austin	**INVITED: MI+2D+EM+NS-MoA-1** "ZOOMING in on Data Storage and the Superb HDD", ***Roger Wood,*** Western Digital
1:40pm	**EM+AM+NS+PS-MoA-2** A Dry NF_3/NH_3 Plasma Clean for Removing Si Native Oxide and Leaving a Smooth Si Surface, ***Christopher Ahles,*** *J Choi,* University of California, San Diego*; A Kummel,* University of California at San Diego	Invited talk continues.
2:00pm	**INVITED: EM+AM+NS+PS-MoA-3** Probing Strategies for Selective Deposition that Exploit Competitive Interactions, ***James Engstrom,*** Cornell University	**INVITED: MI+2D+EM+NS-MoA-3** Physics and Applications of Spin-transfer Torques, ***Andrew Kent,*** New York University
2:20pm	Invited talk continues.	Invited talk continues.
2:40pm	**EM+AM+NS+PS-MoA-5** The Interconnect Resistivity Bottleneck, ***Daniel Gall,*** *T Zhou, E Milosevic,* Rensselaer Polytechnic Institute*; P Zheng,* Micron Technology	**INVITED: MI+2D+EM+NS-MoA-5** Hybrid Magnetic Heterostructures, ***Ivan K. Schuller,*** *A Basaran,* University of California, San Diego*; J de la Venta,* Colorado State University*; J Ramirez,* Universidad de los Andes, Colombia*; T Saerbeck,* Institute Laue-Langevin, France*; I Valmianski,* University of California, San Diego*; X Batlle,* University of Barcelona, Spain
3:00pm	**EM+AM+NS+PS-MoA-6** Sub 0.3 micrometer Copper Patterns Etched with a Plasma-Based Process and Pattern Dependent Electromigration Failure Mechanism, ***Yue Kuo,*** Texas A&M University	Invited talk continues.
3:20pm	**BREAK**	**BREAK**
3:40pm	**INVITED: EM+AM+NS+PS-MoA-8** The Effect of Metal Diffusion on Contacts to Semiconducting Chalcogenides: Examples for 2D and 3D Materials, ***Suzanne E. Mohney,*** *K Cooley, M Abraham, A Domask, H Simchi, L Kerstetter, C Lawrence, T Walter,* The Pennsylvania State University	**INVITED: MI+2D+EM+NS-MoA-8** Organismic Materials and Intelligence, ***Shriram Ramanathan,*** Purdue University
4:00pm	Invited talk continues.	Invited talk continues.
4:20pm	**EM+AM+NS+PS-MoA-10** TiN_x and TaN_x Films via Low-T Thermal ALD using Anhydrous N_2H_4, ***Steven Wolf,*** *M Breeden, M Kavrik,* University of California at San Diego*; D Alvarez, J Spiegelman,* RASIRC*; M Naik,* Applied Materials*; A Kummel,* University of California at San Diego	

	In-situ Microscopy, Spectroscopy, and Microfluidics Focus Topic **Room 202B - Session MM+AS+NS+PC+SS-MoA** **X-ray and Electron Spectromicroscopy in Liquids and Gases & Flash Networking Session** **Moderator:** Piran Kidambi, Vanderbilt University	**Materials and Processes for Quantum Computing Focus Topic** **Room 203A - Session MP+AM+EM+NS-MoA** **Systems and Devices for Quantum Computing II** **Moderator:** Josh Mutus, Google Inc
1:20pm	**INVITED: MM+AS+NS+PC+SS-MoA-1** Bridging the Material and Pressure Gap in Synchrotron based Photoelectron in Situ/Operando Studies, ***Luca Gregoratti****, M Amati, P Zeller,* Elettra-Sincrotrone Trieste, Italy	**INVITED: MP+AM+EM+NS-MoA-1** Quantum Engineering of Superconducting Qubits, ***William Oliver,*** MIT Lincoln Laboratory
1:40pm	Invited talk continues.	Invited talk continues.
2:00pm	**MM+AS+NS+PC+SS-MoA-3** Transition Metal Complexes in Aqueous Solutions Characterized by Liquid Jet Ambient Pressure X – ray Photoelectron Spectroscopy, ***Jared Bruce****, J Hemminger,* University of California, Irvine	**INVITED: MP+AM+EM+NS-MoA-3** The Quantum Socket: A Wiring Method for Superconducting Quantum Computing, ***Matteo Mariantoni,*** University of Waterloo, Canada
2:20pm	**MM+AS+NS+PC+SS-MoA-4** Interfacial Electrochemistry in Liquids Probed with Photoemission Electron Microscopy, *S Nemsak,* Forschungszentrum Juelich GmbH, Germany*; E Strelcov,* NIST Center for Nanoscale Science and Technology*;* ***Tomas Duchon****,* Forschungszentrum Juelich GmbH, Germany*; H Guo,* National Institute of Standards and Technology*; J Hackl,* Forschungszentrum Juelich GmbH, Germany*; A Yualev,* NIST Center for Nanoscale Science and Technology*; I Vlassiouk,* Oak Ridge National Laboratory*; D Mueller, C Schneider,* Forschungszentrum Juelich GmbH, Germany*; A Kolmakov,* NIST Center for Nanoscale Science and Technology	Invited talk continues.
2:40pm		**MP+AM+EM+NS-MoA-5** Pogo Pin Packaging for High Coherence Qubits, ***Nicholas Bronn****, V Adiga, S Olivadese, O Jinka,* IBM, T.J. Watson Research Center*; X Wu,* National Institute of Standards and Technology*; J Chow,* IBM, T.J. Watson Research Center*; D Pappas,* National Institute of Standards and Technology
3:00pm		**MP+AM+EM+NS-MoA-6** 50 Ohm Superconducting Kinetic Inductance Traveling-Wave Amplifier with flexible pump frequency for Four Wave Mixing and Three Wave Mixing, ***Xian Wu****, M Bal, J Long, H Ku, R Lake, D Pappas,* National Institute of Standards and Technology
3:20pm	**BREAK**	**BREAK**
3:40pm	**INVITED: MM+AS+NS+PC+SS-MoA-8** Practical Liquid Cell Microscopy - Opportunities and Challenges, ***Daan Hein Alsem****, K Karki,* Hummingbird Scientific*; T Mefford, W Chueh,* Stanford University*; N Salmon,* Hummingbird Scientific	**INVITED: MP+AM+EM+NS-MoA-8** Near Term Development of Short Depth Quantum Processors, ***Jerry Chow,*** IBM Research Division, T.J. Watson Research Center
4:00pm	Invited talk continues.	Invited talk continues.
4:20pm	**MM+AS+NS+PC+SS-MoA-10** Observation of Electric Double Layer under Graphene by Scanning Electron Microscopy, ***Hongxuan Guo****, A Yulaev, E Strelcov,* National Institute of Standards and Technology (NIST)/ University of Maryland, College Park*; A Tselev,* CICECO and Department of Physics, University of Aveiro,Portugal*; A Kolmakov,* National Institute of Standards and Technology	**MP+AM+EM+NS-MoA-10** Frequency Crowding in Lattices of Transmon Qubits, ***Sami Rosenblatt****, J Hertzberg, J Chavez-Garcia, N Bronn, H Paik, M Sandberg, E Magesan, J Smolin, J Yau, V Adiga, M Brink, J Chow,* IBM, T.J. Watson Research Center

	Nanometer-scale Science and Technology Division **Room 102B - Session NS+2D+AS+PC-MoA** **SPM - New Imaging and Spectroscopy Methodologies** **Moderators:** Aubrey Hanbicki, U.S. Naval Research Laboratory, Sidney Cohen, Weizmann Institute of Science, Israel	**Plasma Science and Technology Division** **Room 104A - Session PS+PB-MoA** **Plasma and Polymers: 'The Legacy of Riccardo d'Agostino and Beyond'** **Moderators:** Ankur Agarwal, KLA-Tencor, Mohan Sankaran, Case Western Reserve University
1:20pm	**INVITED: NS+2D+AS+PC-MoA-1** A Connection Between Stability of STM Control System and Local Barrier Height: Implications on Imaging and Lithography, ***S.O. Reza Moheimani,*** University of Texas at Dallas	**PS+PB-MoA-1** Foreword/introduction to the session: "Reflections on the Legacy of Riccardo d'Agostino", *P Favia,* University of Barii, Italy
1:40pm	Invited talk continues.	**PS+PB-MoA-2** Atmospheric Pressure PE-CVD of Drug-containing Nanometric Capsules, ***Pietro Favia,*** *C Lo Porto, A Treglia,* University of Bari, Italy*; F Palumbo,* CNR Institute of Nanotechnology NANOTEC, Italy
2:00pm	**NS+2D+AS+PC-MoA-3** Distinctive Microstructures in a Complex Polymer Evolve with Time and Composition, *X Yu,* Worcester Polytechnic Institute*; S Granados-Focil,* Clark University*; M Tao,* ***Nancy Burnham,*** Worcester Polytechnic Institute	**PS+PB-MoA-3** Ultrathin Metal-Organic Covalent Networks by initiated Plasma Enhanced Chemical Vapor Deposition (iPECVD) for Gas Separation Membranes, ***Karen Gleason,*** *M Wang,* MIT*; N Boscher,* Luxembourg Institute of Science and Technology (LIST), Luxembourg*; M Creatore, A Perrotta,* Eindhoven University of Technology, The Netherlands, Netherlands*; K Heinze,* Johannes Gutenberg-Universität, Mainz, Germany
2:20pm	**NS+2D+AS+PC-MoA-4** Offering new Characterization Capabilities at the XTIP beamline by Combining Scanning Tunneling Microscopy with Synchrotron Radiation, ***Volker Rose,*** *H Chang, M Fisher, S Hla, N Shirato,* Argonne National Laboratory	**PS+PB-MoA-4** Influence of Energetic Conditions on the Plasma Polymerization of Cyclopropylamine in Capacitively Coupled Discharges, ***Lenka Zajickova,*** *M Michlicek,* Masaryk University, Czech Republic*; S Hamaguchi,* Osaka University, Japan
2:40pm	**INVITED: NS+2D+AS+PC-MoA-5** Scanning Probe Microscopy Based Spectroscopy Measurement for Nanoscale Chemical Identification, ***Chanmin Su,*** Bruker-Nano, Inc.	**PS+PB-MoA-5** Electrochromic Investigation of PEDOT Film Deposited by Plasma Radicals Assisted Polymerization *via* CVD, ***Bianca Rita Pistillo,*** *G Lamblin, J Polesel-Maris, K Menguelti, D Arl, D Lenoble,* Luxembourg Institute of Science and Technology (LIST), Luxembourg
3:00pm	Invited talk continues.	**PS+PB-MoA-6** Initial ZnO Crystallite Formation by Plasma Enhanced ALD, ***Alberto Perrotta,*** *J Pilz, A Coclite,* Graz University of Technology, Austria
3:20pm	**BREAK**	**BREAK**
3:40pm	**NS+2D+AS+PC-MoA-8** Quantifying Tip-Sample Interactions in Vacuum Using Cantilever-based Sensors: An Analysis, *O Dagdeviren, C Zhou, E Altman,* ***Udo D. Schwarz,*** Yale University	**PS+PB-MoA-8** On Fluorocarbons and Fish: Creating a Global Impact on Generations of Plasma Chemists, ***Ellen Fisher,*** Colorado State University
4:00pm	**NS+2D+AS+PC-MoA-9** AFM + Nanoscale Vis-IR Spectroscopy via Photo-induced Force Microscopy, ***Derek Nowak,*** *T Albrecht, S Park,* Molecular Vista	**PS+PB-MoA-9** DIRECT and Remote Surface Functionalization using Atmospheric Pressure Dielectric Barrier Discharges, ***Francesco Fracassi,*** University of Bari, Institute of Nanotechnology (NANOTEC), NRC, Italy, Italia*; F Fanelli,* Institute of Nanotechnology (NANOTEC), NRC, Italy, Italia*; V Armenise, A Uricchio, R d'Agostino,* University of Bari, Italy, Italia
4:20pm		**PS+PB-MoA-10** Quest for Durable Low-index Optical Coatings: From Plasma Polymerized Fluorocarbons to Hybrid Organic-inorganic and Nanostructured Films, *L Martinu,* ***Jolanta Klemberg-Sapieha,*** *O Zabeida,* Ecole Polytechnique de Montreal, Canada

	Advanced Surface Engineering Division **Room 202C - Session SE-MoA** **New Challenges and Opportunities in Surface Engineering** **Moderators:** Robert Franz, Montanuniversität Leoben, Jianliang Lin, Southwest Research Institute	**Surface Science Division** **Room 203C - Session SS+HC-MoA** **Theory and Modeling of Surfaces and Reactions** **Moderators:** Liney Arnadottir, Oregon State University, Petra Reinke, University of Virginia
1:20pm	**INVITED: SE-MoA-1** From Passive to Active Optical Coatings - Challenges and Opportunities for Pulsed Plasma Deposition Processes, ***Ludvik Martinu,*** Ecole Polytechnique de Montreal, Canada	**INVITED: SS+HC-MoA-1** Elucidating the Chemical Nature of Single-Site Catalysts from First Principles, *A Hensley,* Washington State University*; A Therrien,* Tufts University*; R Zhang,* Washington State University*; A Schilling,* Tufts University*; K Groden,* Washington State University*; C Sykes,* Tufts University*;* ***Jean-Sabin McEwen,*** Washington State University
1:40pm	Invited talk continues.	Invited talk continues.
2:00pm	**SE-MoA-3** Anomalous Orientation-dependent Slip during Uniaxial Compression of TaC Crystals, *M Chen,* ETH Zurich, Switzerland*; D Sangiovanni,* Ruhr-University Bochum, Germany and Linköping University, Sweden*; A Aleman, H Zaid,* University of California at Los Angeles*; J Wheeler,* ETH Zurich, Switzerland*; G Po,* ***Suneel Kodambaka,*** University of California at Los Angeles	**SS+HC-MoA-3** Unravelling the Complex Features in STM Images of O/Ag(110) System, ***Takat B. Rawal,*** University of Central Florida*; M Smerieri,* IMEM-CNR, UOS Genova, Italy*; J Pal,* University of Genova, Italy*; S Hong,* Brewton-Parker College*; M Alatalo,* University of Oulu, Finland*; L Savio, L Vattuone,* University of Genova, Italy*; T Rahman,* University of Central Florida*; M Rocca,* University of Genova, Italy
2:20pm	**SE-MoA-4** Selectable Phase Formation in Al-based Transition Metal Nitride Films by Controlling Al^+ Subplantation depth during HIPIMS Deposition, ***Grzegorz Greczynski,*** Linköping University, Sweden*; S Mraz, M Hans,* RWTH Aachen University*; J Lu, L Hultman,* Linköping University, Sweden*; J Schneider,* RWTH Aachen University, Germany	**SS+HC-MoA-4** First Principles Investigations on CO_2 Adsorption and Dissociation on $Cu_{cluster}$ / Cu(111) Surfaces: Influence of Co-adsorbed CO Molecule, ***Allan Abraham Padama,*** University of the Philippines Los Baños, Philippines*; H Nakanishi, H Kasai,* National Institute of Technology, Akashi College, Japan*; J Ocon,* University of the Philippines Diliman, Philippines
2:40pm	**INVITED: SE-MoA-5** Metallic-Glass Nanotube Arrays: A Novel Device for Various Applications, ***Jinn P. Chu,*** *J Chen, C Yu,* National Taiwan University of Science and Technology, Taiwan, Republic of China	**SS+HC-MoA-5** Step-Spacing Distributions Revisited: New Motivations from Curved Crystals and Other Systems, ***Theodore L. Einstein,*** University of Maryland, College Park
3:00pm	Invited talk continues.	**SS+HC-MoA-6** Small Molecule Activation Using Computational Catalysis and Machine Learning, ***Yousung Jung,*** Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea
3:20pm	**BREAK**	**BREAK**
3:40pm	**SE-MoA-8** Biocompatibility and Antibacterial Behaviors of TaON(porous)/TaN/TaN-Ag/Ta Multi-layered Thin Films, ***Joe. H. Hsieh,*** Ming Chi University of Technology, Taiwan, Republic of China*; C Li,* National Yang Ming University, Taiwan, Republic of China*; C Hsu,* Ming Chi University of Technology, Taiwan, Republic of China	**SS+HC-MoA-8** Elucidating Mechanisms of Alkanol Catalysis on $SrTiO_3$ Perovskite Surfaces using Density Functional Theory, ***Robert Chapleski,*** *S Roy,* University of Tennessee Knoxville
4:00pm	**SE-MoA-9** Electrochemically Deposited Coating with Antibacterial Properties against the Spread of Heath Care-associated Infections, ***Nicole Ciacotich,*** Technical University of Denmark, Denmark*; J Rasmussen,* Elplatek A/S, Denmark*; K Kragh,* University of Copenhagen, Denmark*; P Møller, L Gram,* Technical University of Denmark, Denmark	
4:20pm	**SE-MoA-10** Tunable Self-Healing Thermal Barrier Coatings, *S Joshi,* ***J.J. Gu,*** *Y Ho, B Wei, T Hung, Y Liu, N Dahotre, S Aouadi,* University of North Texas	

	Thin Films Division **Room 102A - Session TF+EM+MI+PS-MoA** **Thin Films for Advanced Memory Applications and Magnetics** **Moderator:** Robert Grubbs, Sandia National Laboratories	**Thin Films Division** **Room 104B - Session TF-MoA** **IoT Session: Thin Films for Photovoltaics** **Moderators:** Matthew Richard Linford, Brigham Young University, Mark Losego, Georgia Institute of Technology
1:20pm		**INVITED: TF-MoA-1** Atomic Layer Deposition for Organic and Perovskite Solar Cells, ***Thomas Riedl,*** University of Wuppertal, Germany
1:40pm	**TF+EM+MI+PS-MoA-2** ---Multiferroic Integration of Undoped Ferroelectric HfO_2 and Ferrimagnetic $CoFe_2O_4$ Thin films by Radical-Enhanced Atomic Layer Deposition, *J Chang,* ***Adrian Acosta****, J Chang,* University of California at Los Angeles	Invited talk continues.
2:00pm	**TF+EM+MI+PS-MoA-3** Growth and Characterization of BeO Thin Films Grown by Atomic Layer Deposition using H_2O and O_3 as Oxygen Sources, ***Lee Woo Chul****, C Cheol Jin,* Center for Electronic Materials, Korea Institute of Science and Technology, Korea*; K Sangtae,* Center for Electronic Materials, Korea Institute of Science and Technology, Korea*; L Eric S., Y Jung Hwan,* Center for Multidimensional Carbon Materials (CMCM), Institute for Basic Science (IBS), South Korea*; H Cheol Seong,* Department of Materials Science and Engineering, and Inter-University Semiconductor Research Center, College of Engineering, Seoul National University, South Korea*; B Christopher W.,* Center for Multidimensional Carbon Materials (CMCM), Institute for Basic Science (IBS), South Korea*; K Seong Keun,* Center for Electronic Materials, Korea Institute of Science and Technology, Korea	**TF-MoA-3** Insights into ALD Al_2O_3 Growth on Hybrid Organic-Inorganic Perovskite, ***Dibyashree Koushik***[1]*,* Eindhoven University of Technology, The Netherlands, Netherlands*; L Hazendonk,* Eindhoven University of Technology, The Netherlands*; V Zardetto,* TNO-Solliance, The Netherlands, Netherlands*; W Kessels,* Eindhoven University of Technology, The Netherlands*; M Creatore,* Eindhoven University of Technology, The Netherlands, Netherlands
2:20pm	**TF+EM+MI+PS-MoA-4** Atomic Layer Deposition of Magnetic Films and Patterned Features with Tunable Magnetic Properties, *Z Zhang,* ***John Ekerdt****,* University of Texas at Austin	**TF-MoA-4** Single Junction GaAs Thin Film Solar Cells on Flexible Metal Tapes for Low Cost Photovoltaics, ***Devendra Khatiwada***[1]*, M Rathi, P Dutta, S Sun, Y Yao, Y Gao, Y Li, S Pouladi, J Ryou, V Selvamanickam,* University of Houston
2:40pm	**INVITED: TF+EM+MI+PS-MoA-5** Tuning of the Magnetic and Electronic Properties of Epitaxial Heusler Compound Heterostructures, ***Christopher Palmstrøm****,* University of California, Santa Barbara	**TF-MoA-5** New Insights into the Microstructure and Composition of New Generation CdSeTe/CdTe/MZO Photovoltaic Devices, *T Fiducia, A Abbas,* Loughborough University, UK*; K Li, C Grovenor,* University of Oxford, UK*; A Munshi, K Barth, W Sampath,* Colorado State University*;* ***John Walls****,* Loughborough University, UK
3:00pm	Invited talk continues.	**TF-MoA-6** Schottky Barrier Metal-Insulator-Silicon Photovoltaics: Influence of Fixed Charge and Dipoles in Atomic Layer Deposited Alumina, ***Nicholas Strandwitz****,* Lehigh University
3:20pm	**BREAK**	**BREAK**
3:40pm	**TF+EM+MI+PS-MoA-8** Stabilization of Ferroelectric Phase of $Hf_{0.5}Zr_{0.5}O_2$on NbN at 4 K, ***Michael David Henry****, S Smith, R Lewis,* Sandia National Laboratories*; J Ihlefeld,* University of Virginia	**TF-MoA-8** Sulfur Vacancies as the Origin of *n*-type Doping in Pyrite FeS_2Single Crystals, *B Voigt, W Moore, J Walter, D Ray, M Manno,* University of Minnesota*; J Jeremiason,* Gustavus Adolphus College*; L Gagliardi,* ***Eray Aydil****, C Leighton,* University of Minnesota
4:00pm	**TF+EM+MI+PS-MoA-9** Atomic Layer Deposition of Co/Pt Multilayer films for Perpendicular Magnetic Anisotropy, ***Devika Choudhury****, A Mane, C Phatak, A Petford Long, J Elam,* Argonne National Laboratory	**TF-MoA-9** Strong Effect of Reaction Temperature on the Nucleation of Atomic Layer Deposition of Al_2O_3 on Methylamine Lead Perovskite, ***Xiaozhou Yu****, H Yan, Q Peng,* University of Alabama
4:20pm		**TF-MoA-10** Synthesis of Gas Barrier Coatings for Hybrid Halide Perovskites by Atomic Layer Deposition, *X Yu, H Yan,* ***Qing Peng****,* University of Alabama

[1] **TFD James Harper Award Finalist**

Vacuum Technology Division
Room 203B - Session VT-MoA
Pumping and Outgassing
Moderators: James Fedchak, National Institute of Standards and Technology, Giulia Lanza, SLAC National Accelerator Laboratory

1:20pm	**INVITED: VT-MoA-1** Gas Adsorption and Desorption Properties of 3D Printed Objects, ***Matt Hartings,*** American University; *J Scherschligt, J Fedchak, Z Ahmed,* National Institute of Standards and Technology	
1:40pm	Invited talk continues.	
2:00pm	**VT-MoA-3** Outgassing, Desorption, and Gas Uptake of 3D-Printed Materials, ***James Fedchak,*** NIST; *J Scherschligt, Z Ahmed,* National Institute of Standards and Technology; *M Hartings,* American University	
2:20pm	**VT-MoA-4** Performance Prediction Approaches for Liquid Ring Vacuum Pumps with Mercury as Working Fluid, ***Santiago Ochoa Guaman,*** *T Giegerich,* Karlsruhe Institute of Technology, Germany; *C Dahlke,* HERMETIC-Pumpen GmbH, Germany; *C Day,* Karlsruhe Institut of Technology (KIT), Germany	
2:40pm	**VT-MoA-5** Particle Emission from Ion Pumps: Optimized Shielding without Severe Conductance Limitation, ***Mauro Audi,*** *C Paolini,* Agilent Technologies, Italy; *P Manassero,* Agilent Technologies	
3:00pm	**VT-MoA-6** Extension of the Range of Primary Vacuum Calibration Methods with the Use of Non-evaporable Getters, ***Sefer Avdiaj,*** University of Prishtina, Albania	
3:20pm	**BREAK**	
3:40pm	**INVITED: VT-MoA-8** VTD Early Career Award Invited Talk: The Development of the Spacecraft Atmosphere Monitor, ***Steven Schowalter***[1], Jet Propulsion Laboratory	
4:00pm	Invited talk continues.	
4:20pm	**VT-MoA-10** Surface Modification to Reduce Species Retention and Outgassing Rate from Vacuum Components, ***Quirinius Grindstaff,*** *J Peak, C Miracle,* CNS, LLC	

[1] **VTD Early Career Award**

Special Events Tuesday

Special Events Tuesday

7:30 AM Awards Committee Meeting and Lunch/Pacific-Hyatt Regency (by invitation)
8:00 AM Science Educators' Workshop/Seaview-Hyatt Regency (by invitation)
9:00 AM AVS Member Center: eSpectra: Surface Science/103C
10:00 AM AVS Member Center: Professional Development--Working with National Labs and Other User Facilities/103C
10:00 AM Session Coffee Break/Hall A
11:40 AM Federal Funding Town Hall/202C
12:20 PM Exhibit Hall Lunch/Hall A
12:30 PM AVS Member Center: Professional Development--Job Information Forum and Lunch/103C
12:30 PM Chapters, Divisions, and Groups Meeting and Lunch/Regency D-Hyatt Regency (by invitation)
12:30 PM MSTG Technical Group Executive Committee Meeting and Lunch/Tides Restaurant-Hyatt Regency (by invitation)
3:40 PM Biointerphases Reception/Shoreline A-Hyatt Regency (by invitation)
3:40 PM Session Refreshment Break/Hall A
4:00 PM AVS Member Center: Professional Development--SCCAVS/NCCAVS Members Hospitality Hour/103C (by invitation)
6:05 PM BID Business Meeting/101B
6:25 PM EMPD Business Meeting/101A
6:25 PM NSTD Business Meeting/102B
6:25 PM PSTD Business Meeting & 2018 Plasma Prize Award Announcement/104A
6:25 PM SSD Business Meeting/203C
6:25 PM TFD Business Meeting/102A
6:30 PM Tuesday Poster Session & Refreshments/Hall B
6:45 PM AVS Member Center: Professional Development--EMPD Forum: "Careers at LAM Research"/103C
7:00 PM MEMS/NEMS Executive Committee Meeting and Dinner/Regency F-Hyatt Regency (by invitation)
7:00 PM NSTD Executive Committee Meeting and Dinner/Seaview A-Hyatt Regency (by invitation)
7:00 PM SSD Executive Committee Meeting and Dinner/Regency C-Hyatt Regency (by invitation)
7:30 PM ASSD Business Meeting/Regency DE-Hyatt Regency
7:30 PM PSTD Executive Committee Meeting and Dinner/Seaview C-Hyatt Regency (by invitation)
7:30 PM TFD Executive Committee Meeting and Dinner/Seaview B-Hyatt Regency (by invitation)
7:45 PM BID Executive Committee Meeting and Dinner/Pacific-Hyatt Regency (by invitation)
7:45 PM EMPD Executive Committee Meeting and Dinner/Regency B-Hyatt Regency (by invitation)
8:00 PM ASTM E-42 and Applied Surface Science Joint Workshop: "A Tribute to the Careers of Barbara Garrison and Nicholas Winograd"/Regency DE-Hyatt Regency

	2D Materials Focus Topic **Room 201B - Session 2D+EM+MI+NS-TuM** **Properties of 2D Materials including Electronic, Magnetic, Mechanical, Optical, and Thermal Properties** **Moderator:** Johannes Jobst, Leiden University	**Applied Surface Science Division** **Room 204 - Session AS+BI-TuM** **Applied Surface Science: From Electrochemistry to Cell Imaging, a Celebration of the Career of Nicholas Winograd** **Moderators:** Arnaud Delcorte, Université Catholique de Louvain, Belgium, Michaeleen Pacholski, The Dow Chemical Company
8:00am	**2D+EM+MI+NS-TuM-1** Effect of Lattice Stacking Orientation and Local Thickness Variation on the Mechanical Behavior of Few Layer Graphene Oxide, ***Teng Cui***, *S Mukherjee, C Cao, P Sudeep, J Tam,* University of Toronto, Canada; *P Ajayan,* Rice University; *C Singh, Y Sun, T Filleter,* University of Toronto, Canada	**INVITED: AS+BI-TuM-1** Surface Analysis and Beyond, Using Ion Beams and Lasers, ***Nicholas Lockyer***, *J Vickerman,* University of Manchester, UK
8:20am	**2D+EM+MI+NS-TuM-2** Out-of-Plane Mechanical Properties of 2D Hybrid Organic-Inorganic Perovskites by Nanoindentation, ***Qing Tu***, *I Spanopoulos, S Hao, C Wolverton, M Kanatzidis, G Shekhawat, V Dravid,* Northwestern University	Invited talk continues.
8:40am	**2D+EM+MI+NS-TuM-3** Mechanical Properties of Many-layer CVD Graphene, ***Kyle Larsen***, *S Lehnardt, J Rowley, B Anderson, R Vanfleet, R Davis,* Brigham Young University	**AS+BI-TuM-3** A High Resolution Tandem MS Imaging Method to Probe the Composition of Organelles in Single Cells, ***Gregory L. Fisher***, Physical Electronics; *C Chini,* University of Illinois at Urbana-Champaign; *B Johnson, M Tamkun,* Colorado State University; *M Kraft,* University of Illinois at Urbana-Champaign
9:00am	**2D+EM+MI+NS-TuM-4** Electronic Structure and Magneto-transport Properties of Nanostructured Graphene on SiC(001), ***Victor Aristov***, DESY Hamburg, Germany; *H Wu,* BIT, Beijing, China; *O Molodtsova,* DESY Hamburg, Germany; *A Chaika,* ISSP RAS, Russia	**AS+BI-TuM-4** SIMS and MALDI-MS. Competitive, Complimentary or Complementary Techniques for Bio-imaging?, ***John Stephen Fletcher***, *I Kaya,* University of Gothenburg, Sweden
9:20am	**INVITED: 2D+EM+MI+NS-TuM-5** Discovering and Visualizing Ferromagnetism in Intrinsic Two Dimensional Materials, ***Jing Xia***, University of California Irvine	**AS+BI-TuM-5** High Spatial Resolution Metabolic Imaging using the 3D OrbiSIMS - Fundamentals of Metabolite Fragmentation and Biological Applications, *C Newell, Y Panina,* Francis Crick Institute, UK; *L Matjacic, V Cristaudo,* National Physical Laboratory, UK; *A Bailey,* Francis Crick Institute, UK; *R Havelund,* National Physical Laboratory, UK; *M Yuneva, A Gould,* Francis Crick Institute, UK; ***Ian S. Gilmore***, National Physical Laboratory, UK
9:40am	Invited talk continues.	**AS+BI-TuM-6** Small Molecule Imaging in Single Frozen-Hydrated Cells using High-Resolution Gas Cluster Ion Beam Secondary Ion Mass Spectrometry (GCIB-SIMS), ***Hua Tian***, *N Winograd,* Pennsylvania State Univeristy
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**2D+EM+MI+NS-TuM-10** Onset of Buckling Folding and Slipping Instabilities in 2D Materials under Compressive Strain, ***Jaehyung Yu***, *E Ertekin, A van der Zande,* University of Illinois at Urbana-Champaign	**INVITED: AS+BI-TuM-10** Pushing the Limits of Measurement Science with SIMS, ***Christopher Szakal***, *D Simons, J Fassett, T Forbes,* National Institute of Standards and Technology (NIST)
11:20am	**2D+EM+MI+NS-TuM-11** Title: Spatially-Resolved Contact-Free Electrical Characterization of Transition Metal Dichalcogenide Films Grown by Chemical Vapor Deposition., ***Miguel Isarraraz***, *L Bartels,* University of California, Riverside	Invited talk continues.
11:40am	**INVITED: 2D+EM+MI+NS-TuM-12** Electronic, Thermal, and Unconventional Applications of 2D Materials, ***Eric Pop***, *E Yalon, C McClellan, K Smithe, C English, M Mleczko, M Muñoz Rojo, N Wang, S Suryavanshi, I Datye, C Bailey, A Gabourie, M Chen, V Chen, K Schauble, R Grady,* Stanford University	**AS+BI-TuM-12** Multiplexed Ion Beam Imaging: Cell and Tissue Imaging using Secondary Ion Mass Spectrometry for Pathology, ***Jay Tarolli***, *R Finck, M Aksoy, D Stumbo,* Ionpath, Inc.
12:00pm	Invited talk continues.	**AS+BI-TuM-13** Combined ToF-SIMS and AFM Protocol for Accurate 3D Chemical Analysis and Data Visualization, ***Maiglid Andreina Moreno Villavicencio***, *N Chevalier, J Barnes, I Mouton,* Univ. Grenoble Alpes, CEA, LETI, France; *F Bassani,* Univ. Grenoble Alpes, CNRS, LTM, France; *B Gautier,* Université de Lyon, INSA Lyon, Institut des Nanotechnologies de Lyon, UMR CNRS 5270, F-69621 Villeurbanne cedex, France

Tuesday Morning, October 23, 2018

	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic **Room 201A - Session HC+SS-TuM** **Nanochemistry in Heterogeneous Catalysis** **Moderator:** Matthew Marcinkowski, Pacific Northwest National Laboratory	**Industrial Physics Forum** **Room 101B - Session IPF+AS+BI+MN-TuM** **Advanced Imaging and Structure Determination of Biomaterials** **Moderators:** David G. Castner, University of Washington, Michael Grunze, Max Planck Institute for Medical Research
8:00am	**HC+SS-TuM-1** Probing Oxide Supported Single Rh Atoms as Model Catalysts for CO Oxidation, ***Alex C. Schilling,*** *C Sykes,* Tufts University	**INVITED: IPF+AS+BI+MN-TuM-1** Chemical Imaging as a Tool to asses Molecular and Morphologic Content in Natural Tissues and Fabricated Models, ***Rohit Bhargava,*** *T Comi, M Gryka,* University of Illinois at Urbana-Champaign
8:20am	**HC+SS-TuM-2** Methanol Partial Oxidation Mechanisms on a Single-site Catalyst Pt_1/ZnO(10-10): A First-principles Study, ***Tao Jiang,*** University of Central Florida*; T Rawal,* Oak Ridge National Laboratory*; D Le, T Rahman,* University of Central Florida	Invited talk continues.
8:40am	**HC+SS-TuM-3** Imaging the Ordering of Weakly Adsorbed CO_2 Molecules on Rutile Titania using Ambient Pressure Microscopy and Spectroscopy, ***Rebecca Hamlyn***[1], Brookhaven National Lab*; J Rodriguez, S Senanayake, M Mahapatra, F Xu, D Grinter, S Luo, P Liu, R Palomino, I Waluyo, S Kattel, D Stacchiola,* Brookhaven National Laboratory	**INVITED: IPF+AS+BI+MN-TuM-3** Fluorescence Dynamics and Nonlinear Optical Imaging Methods for Biomedical Applications, ***Alba Alfonso Garcia,*** *L Marcu,* University of California at Davis
9:00am	**HC+SS-TuM-4** Using Sn Atomic Layer Deposition to Tune the Coking Resistance of Size-selected Pt Model Catalysts, ***Timothy Gorey***[1], *E Baxter, A Cass, S Anderson,* University of Utah*; B Zandkarimi, A Alexandrova,* University of California at Los Angeles	Invited talk continues.
9:20am	**HC+SS-TuM-5** Synergistic Effects of Pd and PdO Domains on Thin Film TbOx(111)/Pt(111), ***Christopher Lee***[1], *J Weaver,* University of Florida	**INVITED: IPF+AS+BI+MN-TuM-5** Single Molecule Imaging of Receptor Signalling, ***Katharina Gaus,*** University of New South Wales, Australia
9:40am	**HC+SS-TuM-6** Copper Vapor Adsorption Calorimetry on $HCa_2Nb_3O_{10}$(001) Nanosheets: Energetics and Adsorbate Structure, ***Wei Zhang***[1], *J Eichler,* University of Washington*; R Uppuluri, T Mallouk,* The Pennsylvania State University*; C Campbell,* University of Washington	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**HC+SS-TuM-10** Adsorption and Adhesion of Ni on MgO(100) at 300 and 100 K by Calorimetry, ***Zhongtian Mao,*** *W Zhao, Z Almualem, C Campbell,* University of Washington	**INVITED: IPF+AS+BI+MN-TuM-10** Developing a Google-earth View of Tumour Metabolism through Multiscale Molecular Imaging, *J Bunch,* ***Rory T. Steven,*** National Physical Laboratory, UK
11:20am	**HC+SS-TuM-11** The atomic-scale Structure of the Active CoO(OH)/Au Interface in Electrochemical Water Splitting, *J Fester, Z Sun, J Rodríguez-Fernandez,* Aarhus University, Denmark*; R Gutzler,* Max Planck Institute for Solid State Research, Germany*; D Grumelli,* Universidad Nacional de La Plata, Argentina*; K Kern,* Max Planck Institute for Solid State Research, Germany*;* ***Jeppe Vang Lauritsen,*** Aarhus University, Denmark	Invited talk continues.
11:40am	**INVITED: HC+SS-TuM-12** *In situ* Microscopy of Oxide Growth and Transformation under Reaction Conditions, ***Jan Ingo Flege,*** University of Bremen, Germany	**INVITED: IPF+AS+BI+MN-TuM-12** X-ray Diffraction and Coherent Imaging with Nano-focused Radiation: A Multi-scale Approach from Biomolecular Assembly to Cell, Tissue and Organ, ***Jan-David Nicolas,*** *T Salditt,* University of Göttingen, Germany
12:00pm	Invited talk continues.	Invited talk continues.

[1] **Heterogeneous Catalysis Graduate Student Presentation Award Finalist**

Tuesday Morning, October 23, 2018

	Materials and Processes for Quantum Computing Focus Topic **Room 203A - Session MP+EM+NS-TuM** **High Coherence Qubits for Quantum Computing** **Moderator:** Robert Ilic, National Institute of Standards and Technology (NIST)	**Manufacturing Science and Technology Group** **Room 202B - Session MS+MI+RM-TuM** **IoT Session: Challenges of Neuromorphic Computing and Memristor Manufacturing (8:00-10:00 am)/Federal Funding Opportunities (11:40 am-12:20 pm)** **Moderators:** Christopher L. Hinkle, University of Texas at Dallas, Sean Jones, National Science Foundation, Alain C. Diebold, SUNY College of Nanoscale Science and Engineering
8:00am	**MP+EM+NS-TuM-1** MBE Grown Nitride Superconductors for Quantum Circuits, ***Christopher Richardson***, *A Alexander, C Weddle,* Laboratory for Physical Sciences	**INVITED: MS+MI+RM-TuM-1** ReRAM – Fabrication, Characterization, and Radiation Effects, ***David Hughart***, *R Jacobs-Gedrim, K Knisely, N Martinez, C James, B Draper, E Bielejec, G Vizkelethy, S Agarwal,* Sandia National Laboratories; *H Barnaby,* Arizona State University; *M Marinella,* Sandia National Laboratories
8:20am	**MP+EM+NS-TuM-2** Towards Improved Coherence Times in Transmon Qubits, ***Sam Stanwyck***, Rigetti Computing	Invited talk continues.
8:40am	**INVITED: MP+EM+NS-TuM-3** Design and Fabrication for High Coherence Quantum Circuits, ***David Pappas***, *X Wu, R Lake, M Bal, J Long, C McRae, H Ku,* National Institute of Standards and Technology (NIST)	**INVITED: MS+MI+RM-TuM-3** Memristive Synapses – Tuning Memristors for Performance and CMOS Integration, ***Nathaniel Cady***, SUNY Polytechnic Institute
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**MP+EM+NS-TuM-5** Effect of Surface Treatment on Superconducting Qubit Coherence, ***Bradley Christensen***, University of Wisconsin-Madison; *P Kumar,* University of Wisconsin - Madison; *J Nelson, Y Liu, A Ballard, B Plourde,* Syracuse University; *R McDermott,* University of Wisconsin - Madison	**INVITED: MS+MI+RM-TuM-5** Analog In-Memory Computing for Deep Neural Network Acceleration, ***Hsinyu Tsai***, *S Ambrogio, P Narayanan, R Shelby, G Burr,* IBM Almaden Research Center
9:40am	**MP+EM+NS-TuM-6** Metrology of Dielectric Loss using Lumped-Element Microwave Resonators, ***Corey Rae McRae***, *X Wu, M Bal, J Long, H Ku, D Pappas, R Lake,* National Institute of Standards and Technology	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: MP+EM+NS-TuM-10** Direct Observation of Atomic Structure of Ultra Thin AlO_x Barriers in Al/AlO_x/Al Josephson Junctions for Quantum Devices, ***Eva Olsson***, Chalmers University of Technology, Gothenburg, Sweden	**INVITED: MS+MI+RM-TuM-10** Computation Immersed in Memory: Integrating 3D vertical RRAM in the N3XT Architecture, ***Weier Wan***, *W Hwang, H Li, T Wu, Y Malviya,* Stanford University; *M Aly,* Nanyang Technological University, Singapore; *S Mitra, H Wong,* Stanford University
11:20am	Invited talk continues.	Invited talk continues.
11:40am	**MP+EM+NS-TuM-12** Metrology of Tunnel Junctions for Superconducting Qubits, ***Russell Lake***, National Institute of Standards and Technology (NIST); *X Wu, H Ku, J Long, M Bal, C McRae,* National Institute of Standards and Technology (NIST) and University of Colorado Boulder; *D Pappas,* National Institute of Standards and Technology (NIST)	**MS+MI+RM-TuM-12** Materials for the Second Quantum Revolution, ***Tomasz Durakiewicz***, Los Alamos National Laboratory
12:00pm		**MS+MI+RM-TuM-13** SynBio(medicine): The Intersection Biomaterials and Living Systems, ***David Rampulla***, National Institute of Health

Tuesday Morning, October 23, 2018

	Nanometer-scale Science and Technology Division **Room 102B - Session NS+AN+EM+MN+MP+RM-TuM** **Nanophotonics, Plasmonics, and Metamaterials** **Moderators:** Alokik Kanwal, NIST Center for Nanoscale Science and Technology, Nikolai Klimov, National Institute of Standards and Technology	**Processing and Characterization of Air-Liquid, Solid-Liquid and Air-Solid Interfaces Focus Topic** **Room 202A - Session PC+AS+BI+NS+PB+SS-TuM** **Solid-Liquid and Gas-Liquid Interfacial Processes and Characterization** **Moderators:** Stephen Nonnenmann, University of Massachusetts - Amherst, Juan Yao, Pacific Northwest National Laboratory
8:00am	**INVITED: NS+AN+EM+MN+MP+RM-TuM-1** Parametric Nonlinear Interactions in Nanofabricated Silicon-based Photonics, ***Amy Foster,*** Johns Hopkins University	**INVITED: PC+AS+BI+NS+PB+SS-TuM-1** Liquefied Gas Electrolytes for Electrochemical Energy Storage Devices, ***Y. Shirley Meng,*** University of California San Diego; *Y Yang,* University of California at San Diego
8:20am	Invited talk continues.	Invited talk continues.
8:40am	**INVITED: NS+AN+EM+MN+MP+RM-TuM-3** Ultrafast Optical Pulse Shaping using Dielectric Metasurfaces, ***Amit Agrawal,*** *S Divitt, W Zhu, C Zhang, H Lezec,* NIST Center for Nanoscale Science and Technology	**INVITED: PC+AS+BI+NS+PB+SS-TuM-3** An *In situ* Molecular-scale View of Nucleation and Self-assembly at Solid-liquid Interfaces, ***James De Yoreo,*** Pacific Northwest National Laboratory
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**INVITED: NS+AN+EM+MN+MP+RM-TuM-5** Single-Particle Nanophotonics and Materials Investigations with Optical Microresonator Spectrometers, ***Erik Horak,*** University of Wisconsin - Madison; *K Heylman, K Knapper, M Rea, F Pan, L Hogan, R Goldsmith,* University of Wisconsin-Madison	**INVITED: PC+AS+BI+NS+PB+SS-TuM-5** Non-linear Surface Spectroscopy at the Aerosol Particle/Gas Interface, *F Geiger,* ***Ariana Gray Be,*** Northwestern University
9:40am	Invited talk continues.	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: NS+AN+EM+MN+MP+RM-TuM-10** Optomechanical Interactions for Metrology and Signal Processing, ***Karen Grutter,*** The Laboratory for Physical Sciences	**PC+AS+BI+NS+PB+SS-TuM-10** The Influence of Electrochemical Potential and Water Vapor on Ionic Liquid Binding Energy Shifts Examined by AP-XPS, ***Meng Jia,*** University of Delaware; *A Broderick, J Newberg,* University of Delaware
11:20am	Invited talk continues.	**PC+AS+BI+NS+PB+SS-TuM-11** Role of Air Gas at the Interface between Water and Graphite Surfaces, ***Ing-Shouh Hwang,*** Institute of Physics, Academia Sinica, Taiwan, Republic of China; *C Yang, C Fang,* Institute of Physics, Academia Sinica,Taiwan, Republic of China, Taiwan, Republic of China; *Y Lu,* Institute of Physics, Academia Sinica, Taiwan, Republic of China; *H Ko,* Institute of Physics, Academia Sinica,Taiwan, Republic of China, Taiwan, Republic of China
11:40am	**INVITED: NS+AN+EM+MN+MP+RM-TuM-12** Cold-atom based Sensors and Standards, ***Stephen Eckel,*** *D Barker, J Fedchak, N Klimov, E Norrgard, J Scherschligt,* National Institute of Standards and Technology	**INVITED: PC+AS+BI+NS+PB+SS-TuM-12** Probing Cluster and Nanoparticle Growth Processes with X-Ray Spectroscopy and Mass Spectrometry, ***Musahid Ahmed,*** *O Kostko,* Lawrence Berkeley National Laboratory
12:00pm	Invited talk continues.	Invited talk continues.

	Plasma Science and Technology Division **Room 104A - Session PS+EM+SE-TuM** **Plasma Processing of Challenging Materials - I** **Moderators:** Necmi Biyikli, University of Connecticut, Jun-Chieh Wang, Applied Materials	**Plasma Science and Technology Division** **Room 104C - Session PS+PB-TuM** **Plasma Medicine** **Moderator:** Deborah O'Connell, University of York, UK
8:00am	**PS+EM+SE-TuM-1** Development and Understanding of Isotropic Etching Process of Si Selectively to $Si_{0.7}Ge_{0.3}$, ***Sana Rachidi***, *A Campo, V Loup,* CEA-LETI, France*; N Posseme,* CEA, LETI, France, France*; J Hartmann, S Barnola,* CEA-LETI, France	**PS+PB-TuM-1** Lessons from Tesla for Plasma Medicine, ***David Graves***, University of California at Berkeley
8:20am	**PS+EM+SE-TuM-2** III-V/Ge Heterostructure Etching for Through Cell Via Contact Multijunction Solar Cell, ***Mathieu de Lafontaine***, *G Gay, C Petit-Etienne, E Pargon,* LTM, Univ. Grenoble Alpes, CEA-LETI, France*; M Darnon, A Jaouad, M Volatier, S Fafard, V Aimez,* 3IT, Univ. de Sherbrooke, Canada	**PS+PB-TuM-2** Characterization of a Helium Atmospheric Pressure Plasma Jet by Measuring the Total Yield of Reactive Species in Real Time, ***Ek Adhikari***, *V Samara, S Ptasinska,* University of Notre Dame
8:40am	**PS+EM+SE-TuM-3** Feature Scale Modeling of Etching of High Aspect Ratio Silicon Structures in Pulsed Plasmas, ***Wei Tian***, *J Wang, S Sadighi, J Kenny, S Rauf,* Applied Materials	**PS+PB-TuM-3** Dry Etching of Patterned Medical Grade Titanium Alloys, ***Eitan Barlaz***, *J Mettler, D Ruzic,* University of Illinois at Urbana-Champaign
9:00am	**PS+EM+SE-TuM-4** Plasma Etching of High Aspect Ratio Oxide-Nitride-Oxide Stacks, *S Huang, C Hurard,* University of Michigan*; S Nam, S Shim, W Ko,* Samsung Electronics Co., Ltd., Republic of Korea*; **Mark Kushner,*** University of Michigan	**PS+PB-TuM-4** Electron Temperature And Plasma Density Of Ar Plasma In Atmospheric Pressure Micro-DBD, ***Pradoong Suanpoot***, *J Sornsakdanuphap,* Maejo University Phrae Campus, Thailand*; B Ghimire, Y Hong,* Plasma Bioscience Research Center, Republic of Korea*; G Cho,* Charged Particle Beam and Plasma Laboratory, Republic of Korea*; E Choi,* Plasma Bioscience Research Center, Republic of Korea
9:20am	**PS+EM+SE-TuM-5** Etch Profile Evolution in Poly-silicon using Halogen Containing Plasmas for Next Generation Device Fabrication, ***Shyam Sridhar***, *S Voronin, P Biolsi, A Ranjan,* TEL Technology Center, America, LLC	**INVITED: PS+PB-TuM-5** Plasma Immunotherapy of Cancers, ***Vandana Miller***, *A Lin, P Ranieri,* Drexel University*; A Snook,* Thomas Jefferson University*; A Fridman,* Drexel University
9:40am	**PS+EM+SE-TuM-6** Flux and Energy of Reactive Species Arriving at the Etch Front in High Aspect Ratio Features During Plasma Etching of SiO_2 in Ar/CF_4/CHF_3 Mixtures, ***Soheila Mohades***, University of Michigan*; M Wang, A Mosden,* TEL Technology Center America, LLC*; M Kushner,* University of Michigan	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: PS+EM+SE-TuM-10** Wafer-scale Fabrication of Suspended Graphene Nanoribbon Arrays -from Growth Dynamics to Optoelectrical Applications-, ***Toshiaki Kato***, *T Kaneko,* Tohoku University, Japan	**PS+PB-TuM-10** Hydroxyl Radical Footprinting with Plasma-Induced Modification of Biomolecules (PLIMB): A Novel Tool for Protein Structural Analysis, ***Faraz Choudhury***, *D Benjamin, B Minkoff, J Blatz, M Sussman, J Shohet,* University of Wisconsin-Madison
11:20am	Invited talk continues.	**PS+PB-TuM-11** Biological Effects of Plasma-Irradiated Organic Molecules in Plasma- Treated Liquids, ***Kenji Ishikawa***, *Y Hosoi, D Kanno, Y Kurokawa, H Tanaka, M Mizuno, F Kikkawa, M Hori,* Nagoya University, Japan
11:40am	**PS+EM+SE-TuM-12** Investigation of Surface Reactions for GeSbTe-based Phase Change Material: From Etching to Final Sealing Process, ***Yann Canvel***, *S Lagrasta,* STMicroelectronics, France*; C Boixaderas, S Barnola,* CEA-LETI, France*; E Martinez,* CEA/LETI-University Grenoble Alpes, France	**PS+PB-TuM-12** OH-Radical Generation in an Atmospheric-Pressure Plasma Discharge for use in Three-Dimensional Protein Structural Analysis, ***Joshua Blatz***, *B Minkoff, F Choudhury, D Benjamin, J Shohet, M Sussman,* University of Wisconsin-Madison
12:00pm	**PS+EM+SE-TuM-13** Behaviors of Charged Species in Afterglow of Dual Frequency Pulsed Capacitively Coupled Plasma with a Synchronous Negative DC-bias, ***Takayoshi Tsutsumi***, *T Ueyama, K Ishikawa, H Kondo, M Sekine,* Nagoya University, Japan*; Y Ohya,* Tokyo Electron Miyagi Limited*; M Hori,* Nagoya University, Japan	**PS+PB-TuM-13** Plasma-Surface Interaction at Atmospheric Pressure: From Mechanisms with Model Polymers to Applications for Sterilization, ***Pingshan Luan***[1], *G Oehrlein,* University of Maryland, College Park

[1] **Coburn & Winters Student Award Finalist**

	Advanced Surface Engineering Division **Room 202C - Session SE+PS-TuM** **Plasma-assisted Surface Modification and Deposition Processes** **Moderators:** Jolanta Klemberg-Sapieha, Ecole Polytechnique de Montreal, Canada, Matjaz Panjan, Jozef Stefan Institute, Slovenia	**Surface Science Division** **Room 203C - Session SS+HC+NS+PS-TuM** **Controlling Mechanisms of Surface Chemical Reactions** **Moderators:** Bruce D. Kay, Pacific Northwest National Laboratory, Arthur Utz, Tufts University
8:00am	**SE+PS-TuM-1** Surface Modification of 304 Stainless Steel by Neutral Nitriding, ***Petros Abraha,*** Meijo University, Japan	**INVITED: SS+HC+NS+PS-TuM-1** Bond Making and Bond Breaking at Wet and Dry Surfaces, ***Angelos Michaelides,*** University College London, UK
8:20am	**SE+PS-TuM-2** Plasma Cratering and Hardening for Friction Reduction and Wear Resistance of Cast Iron, ***Wei Zha,*** Univesity of Windsor, Canada; *C Zhao, X Nie,* University of Windsor, Canada	Invited talk continues.
8:40am	**SE+PS-TuM-3** Area-selective Deposition by Surface Engineering for Applications in Nanoelectronics. From Blanket to Confined Dimensions, ***Silvia Armini,*** IMEC, Belgium	**SS+HC+NS+PS-TuM-3** Stability and Reactivity of Isolated Rh_1 Atoms on Fe_3O_4(001), ***Gareth Parkinson,*** TU Wien, Austria
9:00am	**SE+PS-TuM-4** Experimental and Numerical Evaluation of Cohesive and Adhesive Failure Modes during Indentation of TiAlN Coatings on Si(100) Deposited by MPPMS, ***Z.T. Jiang,*** *M Lei,* Dalian University of Technology, China	**SS+HC+NS+PS-TuM-4** The Mechanism of Glaser Coupling Reactions on Ag(111) and Cu(111) Surfaces: a Case for Halogen Substituted Terminal Alkyne, *T Wang, H Lv,* University of Science and Technology of China, China; *L Feng,* University of Science and Technology of China; *J Huang, X Wu,* University of Science and Technology of China, China; ***Junfa Zhu,*** National Synchrotron Radiation Laboratory and Department of Chemical Physics, University of Science and Technology of China, China
9:20am	**SE+PS-TuM-5** Growth of TiB_x Thin Films by DC Magnetron Sputtering and High-Power Impulse Magnetron Sputtering: Effect of Pressure and Substrate Temperature, ***Niklas Hellgren,*** Messiah College; *J Thörnberg, I Zhirkov,* Linköping University, Sweden; *G Greczynski,* Linköping University, Sweden; *J Palisaitis,* Linköping University, Sweden; *M Sortica,* Uppsala University, Sweden; *P Persson,* Linköping University, Sweden; *I Petrov, J Greene,* University of Illinois at Urbana-Champaign; *L Hultman, J Rosen,* Linköping University, Sweden	**SS+HC+NS+PS-TuM-5** Sulfur-driven Switching of the Ullmann Coupling on Au(111), ***Jonathan Rodríguez-Fernández,*** *S Schmidt, J Lauritsen,* Aarhus University, Denmark
9:40am	**SE+PS-TuM-6** Time-resolved Analysis of the Cathodic Arc Plasma from Nb-Al Cathodes, *S Zöhrer,* Montanuniversität Leoben, Austria; *A Anders,* Lawrence Berkeley National Laboratory, Leibniz Institute of Surface Engineering (IOM), Leipzig, Germany; *D Holec,* ***Robert Franz,*** Montanuniversität Leoben, Austria	**SS+HC+NS+PS-TuM-6** The Step Sites of Ultrathin ZnO Promote Methanol Oxidation to Formaldehyde, ***Xingyi Deng,*** *D Sorescu, J Lee,* National Energy Technology Laboratory
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: SE+PS-TuM-10** Dedicated Experiments to Challenge a Model for Reactive Magnetron Sputtering, ***Diederik Depla,*** Ghent University, Belgium	**SS+HC+NS+PS-TuM-10** Investigation of Configuration Change in Water Clusters on a Bilayer ZnO Surface, ***Junseok Lee,*** *D Sorescu, X Deng,* National Energy Technology Laboratory
11:20am	Invited talk continues.	**SS+HC+NS+PS-TuM-11** Oxygen Reduction Reaction on Fullerene, ***Yosuke Kikuchi,*** *J Nakamura,* The University of Electro-Communications (UEC-Tokyo), Japan
11:40am	**SE+PS-TuM-12** Current-voltage-time Characteristics of HiPIMS Discharges Revisited, ***André Anders,*** Leibniz Institute of Surface Engineering (IOM), Germany	**SS+HC+NS+PS-TuM-12** Surface Structure and Reactivity of Ni-Cu Single-Atom Alloys, ***Dipna Patel,*** *C Sykes,* Tufts University
12:00pm	**SE+PS-TuM-13** Advantages Associated with Applying a Positive Pulse Option to a HIPIMS Power Supply, ***Jason Hrebik,*** Kurt J. Lesker Company	**SS+HC+NS+PS-TuM-13** Effective Local Structure for Bottom-up Designed ORR Catalyst Using Pyridinic Nitrogen Containing Molecules, ***Kotarou Takeyasu,*** *Y Shimoyama, M Furukawa, S Singh, J Nakamura,* University of Tsukuba, Japan

	Thin Films Division **Room 104B - Session TF+AM+EM+PS-TuM** **Atomic Layer Processing: Area Selective Deposition** **Moderators:** Christophe Vallee, LTM - MINATEC - CEA/LETI, France, Steven George, University of Colorado at Boulder	**Thin Films Division** **Room 102A - Session TF+AS-TuM** **Special Session in Honor of Paul Holloway: Luminescent Materials Growth, Synthesis and Characterization** **Moderators:** Sean Jones, National Science Foundation, Jay Lewis, RTI International
8:00am	**INVITED: TF+AM+EM+PS-TuM-1** New Approaches for Area-Selective Atomic Layer Deposition: Inspiration from Etching, ***Adrie Mackus,*** Eindhoven University of Technology, The Netherlands, Nederland	**TF+AS-TuM-1** INTRO: Special Session Honoring Professor Paul H. Holloway, ***Gary McGuire,*** Adamas Nanotechnologies
8:20am	Invited talk continues.	**TF+AS-TuM-2** Harnessing Disorder in Detectors, ***Jay Lewis,*** Defense Advanced Research Projects Agency
8:40am	**TF+AM+EM+PS-TuM-3** Nucleation of HfO_2 on Si, SiO_2 and TiN Substrates in PE-ALD Processes Investigated by In situ Ellipsometry and Optical Emission Specroscopy (OES), ***Marceline Bonvalot,*** *S belahcen, V Pesce, A Chaker, P Gonon, C Vallée, A Bsiesy,* LTM, Univ. Grenoble Alpes, CEA-LETI, France	**INVITED: TF+AS-TuM-3** Luminescent Materials for Solid State Lighting and Solar Cell Applications, ***Hendrik C Swart,*** *J Terblans,* University of the Free State, Republic of South Africa, South Africa*; R Kroon, E Coetsee, M Duvenhage, E Hasabeldaim, A Balakrishna, A Kumar,* University of the Free State, Republic of South Africa*; P Holloway,* University of Florida
9:00am	**TF+AM+EM+PS-TuM-4** Topographical Selectivity with BN Electron-Enhanced ALD, ***Jaclyn Sprenger,*** *A Cavanagh, H Sun,* University of Colorado at Boulder*; A Roshko, P Blanchard,* National Institute of Standards and Technology*; S George,* University of Colorado at Boulder	Invited talk continues.
9:20am	**TF+AM+EM+PS-TuM-5** Optimization by In situ Ellipsometry of ALD and ALE Successive Steps for the Selective Atomic Layer Deposition of Ta_2O_5 on TiN and Si., ***Vincent Pesce,*** *C Vallée,* LTM, Univ. Grenoble Alpes, CEA-LETI, France*; R Gassilloud,* Cea Leti, France*; A Chaker, M Bonvalot, B Pelissier,* LTM, Univ. Grenoble Alpes, CEA-LETI, France*; P Nicolas,* Cea, France*; A Bsiesy,* LTM, Univ. Grenoble Alpes, CEA-LETI, France	**INVITED: TF+AS-TuM-5** Fluorescent Nanodiamond for Applications in Whole Body Imaging, ***Olga Shenderova,*** *M Torelli,* Adamas Nanotechnologies*; A Rickard,* Duke University*; N Nunn,* Adamas Nanotechnologies*; J Backer,* SibTech*; G Palmer,* Duke University*; G McGuire,* Adamas Nanotechnologies
9:40am	**TF+AM+EM+PS-TuM-6** ALD and PEALD of ZnO on MoS_2 and WSe_2, ***Timothy N. Walter***[1]*, S Lee,* The Pennsylvania State Univeristy*; M Chubarov,* The Pennsylvania State University*; X Zhang,* The Pennsylvania State Univeristy*; T Choudhury, J Redwing,* The Pennsylvania State University*; T Jackson, S Mohney,* The Pennsylvania State Univeristy	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: TF+AM+EM+PS-TuM-10** From Fundamental Insights into Growth and Nucleation Mechanisms to Area-selective Deposition, ***Annelies Delabie,*** IMEC & KU Leuven, Belgium*; J Soethoudt,* KU Leuven, Belgium*; G Pourtois, S Van Elshocht, K Barla,* Imec, Belgium*; F Grillo, E Marques, R van Ommen,* TU Delft, Netherlands	**INVITED: TF+AS-TuM-10** The Apple does not Fall Far from the Tree: A Serendipitous Journey from Luminescent Materials to Nanoscale Focused Electron (and Ion) Beam Induced Processing, ***Philip D. Rack,*** University of Tennessee Knoxville
11:20am	Invited talk continues.	Invited talk continues.
11:40am	**TF+AM+EM+PS-TuM-12** DETA SAMs as ALD Ru Inhibitor for Area-selective Bottom-up Interconnects, ***Ivan Zyulkov,*** IMEC & KU Leuven*; S Armini,* IMEC, Belgium*; S De Gendt,* IMEC, KU Leuven, Belgium	**INVITED: TF+AS-TuM-12** Atomic Layer Deposition of Optoelectronic Materials, ***Markku Leskela,*** *M Ritala,* University of Helsinki, Finland
12:00pm		Invited talk continues.

[1] **TFD James Harper Award Finalist**

Tuesday Morning, October 23, 2018

	Thin Films Division **Room 101A - Session TF-TuM** **Emerging Applications for ALD** **Moderators:** Arrelaine Dameron, Forge Nano, Qing Peng, University of Alabama	**Vacuum Technology Division** **Room 203B - Session VT-TuM** **Large Vacuum Systems and Accelerator Vacuum Technology** **Moderator:** Yevgeniy Lushtak, SAES Getters USA
8:00am	**TF-TuM-1** Atomic Layer Deposition of the Metal Pyrites FeS_2, CoS_2, and NiS_2, ***Xinwei Wang***, Shenzhen Graduate School, Peking University, China	**INVITED: VT-TuM-1** Design of Vacuum Control System for the Linac Coherent Light Source II (LCLS-II) at SLAC National Accelerator Laboratory, ***Shweta Saraf***, *S Kwon, G Lanza, D Gill,* SLAC National Accelerator Laboratory
8:20am	**TF-TuM-2** Atomic Layer Deposition of Yttrium Fluoride and Yttrium Oxyfluoride Films with Tunable Stoichiometry, ***Jasmine Wallas***[1], *J Murdzek, D Lancaster, A Cavanagh, S George,* University of Colorado at Boulder	Invited talk continues.
8:40am	**TF-TuM-3** Synthesis of Single Phase Two-dimensional SnS_2 by Plasma-enhanced Atomic Layer Deposition, *J Pyeon, I Baek,* Korea Institute of Science and Technology; *T Chung,* Korea Research Institute of Chemical Technology; *J Han,* Seoul National University of Science and Technology; *C Kang,* ***SeongKeun Kim,*** Korea Institute of Science and Technology, Republic of Korea	**VT-TuM-3** Vacuum System Design for Advanced Light Source Upgrade (ALS-U), ***Sol Omolayo,*** Lawrence Berkeley Lab, University of California, Berkeley
9:00am	**TF-TuM-4** Phase Selective, Low Temperature Growth of TiO2 by Atomic Layer Epitaxy, ***Jason Avila***, *D Boris, S Qadri, J Freitas, S Walton, C Eddy Jr., V Wheeler,* U.S. Naval Research Laboratory	**VT-TuM-4** Vacuum System for CHESS-U: Design, Manufacturing, and Installation, ***Xianghong Liu***, *D Burke, A Holic, Y Li, A Lyndaker,* Cornell University
9:20am	**TF-TuM-5** Substrate Biasing During Plasma Atomic Layer Deposition: From Stress-controlled Oxides to Low-resistivity Nitrides, ***Harm Knoops***, Oxford Instruments, The Netherlands; *T Faraz,* Eindhoven University of Technology, The Netherlands, Netherlands; *K Arts,* Eindhoven University of Technology, The Netherlands; *S Karwal, M Creatore, E Kessels,* Eindhoven University of Technology, The Netherlands, Netherlands	**VT-TuM-5** Design and Fabrication of CHESS-U Crotch Absorbers, ***Yulin Li***, *X Liu, A Lyndaker, K Smolenski, A Woll, L Smieska,* Cornell Laboratory of Accelerator-based Sciences and Education
9:40am	**TF-TuM-6** Development of Novel Superconducting ALD Films for Astronomy Applications, ***Frank Greer***, *P Day, B Eom, H Leduc,* Jet Propulsion Laboratory, California Institute of Technology	**VT-TuM-6** Simulation and Measurement of the Tritium Retention in the Beamline of the KATRIN Experiment, ***Joachim Wolf***, Karlsruhe Institute of Technology, Germany
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**TF-TuM-10** Atomic Layer Deposition of Cobalt Nanoparticles, ***Gerben van Straaten***, *E Kessels, M Creatore,* Eindhoven University of Technology, The Netherlands, Netherlands	**VT-TuM-10** NSLS-II Beamline Vacuum Challenges: Design, Commissioning, and Operations, ***Robert Todd***, *C Hetzel,* Brookhaven National Laboratory
11:20am	**TF-TuM-11** Atomic Layer Deposition of Ni-Al-O Catalysts for Water Oxidation, ***Jon Baker***, *J Schneider, J Singh, A Mackus, S Bent,* Stanford University	**VT-TuM-11** Thin film Heterostructures for Superconducting Photocathode Applications, ***Mark Warren***, Illinois Institute of Technology
11:40am	**TF-TuM-12** Atomic Layer Deposition of Bismuth Vanadate Photoanodes, ***Sudarat Lee***, *A Bielinski, S Esarey, J Brancho, B Bartlett, N Dasgupta,* University of Michigan, Ann Arbor	**VT-TuM-12** TPD Results on Electrode Materials for Pulsed Power Vacuum Environments, ***Ronald Goeke***, *S Simpson, K Coombes, K Alam, D Adams,* Sandia National Laboratories
12:00pm	**TF-TuM-13** ALD of Cobalt Phosphate Electro-catalyst for Oxygen Evolution Reaction, ***Valerio Di Palma***, Eindhoven University of Technology, The Netherlands; *G Zafeiropoulos, M Tsampas,* DIFFER; *W Kessels,* Eindhoven University of Technology, The Netherlands; *M Creatore,* Eindhoven University of Technology, The Netherlands, Netherlands	**VT-TuM-13** Radio Frequency Surface Resistance Measurement of Metals for Accelerator Vacuum Chamber, ***Omid Seify***, STFC/DL/ASTeC, Daresbury, Warrington, Cheshire, UK

[1] **TFD James Harper Award Finalist**

Tuesday Morning, October 23, 2018

	Exhibitor Technology Spotlight Workshops Room Hall A - Session EW-TuB Exhibitor Technology Spotlight Session I **Moderator:** Christopher Moffitt, Kratos Analytical Inc	Manufacturing Science and Technology Group Room 103C - Session MS-TuB Working with Government Labs and other User Facilities **Moderator:** Bridget Rogers, Vanderbilt University
10:00am		**MS-TuB-1** Joining the Research Community at the Cornell NanoScale Science and Technology Facility, ***Michael Skvarla,*** Cornell University
10:20am	**EW-TuB-2** IMPULSE HIPIMS Power Supply with Positive Pulse Option Advantages, ***Jason Hrebik,*** Kurt J. Lesker Company	**MS-TuB-2** Opportunities at DOE Nanoscale Science Research Centers, ***Arthur Baddorf,*** Oak Ridge National Laboratory
10:40am	**EW-TuB-3** Choosing the Proper Equipment for Vacuum Heat Treatment, ***Rachael Stene,*** Across International	

Exhibitor Technology Spotlight Workshops
Room Hall A - Session EW-TuL
Exhibitor Technology Spotlight Session II
Moderator: Christopher Moffitt, Kratos Analytical Inc

12:00pm		
12:20pm		
12:40pm	**EW-TuL-3** Correlative Spectroscopy with the Thermo Scientific Nexsa, ***Tim Nunney***, *P Mack, R Simpson,* Thermo Fisher Scientific, UK	
1:00pm	**EW-TuL-4** Exploring the Capabilities of a Modern XPS Spectrometer: In-situ Surface Preparation & Modification, ***Adam Roberts,*** Kratos Analytical Limited, UK*; D Surman, C Moffitt,* Kratos Analytical Inc*; J Counsell,* Kratos Analytical Ltd, UK	
1:20pm	**EW-TuL-5** Design and Characterization of Nanomaterials using PREVAC's Research Platforms, ***Lukasz Walczak,*** PREVAC sp. z o.o., Poland	
1:40pm	**EW-TuL-6** Agilent's New Helium Leak Detector, ***John McLaren,*** Agilent	
2:00pm	**EW-TuL-7** Auger Multi-Technique: EDS, EBSD, BSE, FIB, ***John Newman,*** Physical Electronics	

Tuesday Afternoon, October 23, 2018

	2D Materials Focus Topic **Room 201B - Session 2D+EM+MI+MN+NS-TuA** **2D Device Physics and Applications** **Moderator:** Roland Kawakami, The Ohio State University	**Applied Surface Science Division** **Room 204 - Session AS-TuA** **The Impact of Modeling (Ion, Electron) and Data Analysis on Applied Surface Science, a Celebration of the Career of Barbara Garrison** **Moderators:** Gregory L. Fisher, Physical Electronics, Alexander Shard, National Physical Laboratory
2:20pm	**2D+EM+MI+MN+NS-TuA-1** Spin Relaxation and Proximity Effect in WS_2/Graphene/Fluorographene Non-local Spin Valves, ***Adam Friedman***, Laboratory for Physical Sciences; *K McCreary, J Robinson, O van 't Erve, B Jonker,* US Naval Research Laboratory	**INVITED: AS-TuA-1** Collective Action, the Key to Soft Molecule Desorption under Particle Bombardment, ***Arnaud Delcorte***, Université catholique de Louvain, Belgium
2:40pm	**2D+EM+MI+MN+NS-TuA-2** Two-dimensional Field-effect Light Emitting Transistors, ***Junyoung Kwon***, *H Ryu,* Yonsei University, Republic of Korea; *J Lee, C Lee,* Korea University, Republic of Korea; *G Lee,* Yonsei University, Republic of Korea	Invited talk continues.
3:00pm	**INVITED: 2D+EM+MI+MN+NS-TuA-3** Quantum Devices with 2D Materials, *H Overweg, M Eich, R Pisoni, T Ihn, P Rickhaus,* ETH Zurich, Switzerland; ***Klaus Ensslin***, ETH Zürich, Switzerland	**AS-TuA-3** Mechanisms of the Generation of Nanoparticles and Surface Modification in Short Pulse Laser Ablation of Metal Targets in Liquids, ***Leonid Zhigilei***, *C Shih, M Shugaev,* University of Virginia
3:20pm	Invited talk continues.	**AS-TuA-4** First Principles Thermodynamics and Molecular Modeling of Surfaces in Aqueous Environments, ***Donald Brenner***, *Z Rak, L Su, J Krim,* North Carolina State University
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**2D+EM+MI+MN+NS-TuA-7** GaN Microdisk Light-emitting Diode Display Fabricated on Graphene, ***Youngbin Tchoe***, *K Chung, K Lee, M Song, J Park, H Kim, J Park, G Yi,* Seoul National University, Republic of Korea	**INVITED: AS-TuA-7** Computer Modeling of Cluster Projectile Impacts for SIMS Applications, ***Zbigniew Postawa***, Jagiellonian University, Krakow, Poland
4:40pm	**2D+EM+MI+MN+NS-TuA-8** Room Temperature Magnetron Sputtering and Laser Annealing of Ultrathin MoS_2 for Transistor Device Fabrication on Flexible Polymer Substrates, ***Benjamin Sirota***, University of North Texas; *N Glavin,* Air Force Research Laboratory; *C Arnold, A Voevodin,* University of North Texas	Invited talk continues.
5:00pm	**INVITED: 2D+EM+MI+MN+NS-TuA-9** Black Phosphorus: Fundamental Properties and Emerging Applications, ***Han Wang***, University of Southern California	**AS-TuA-9** Use of Ion-Solid Interactions Modeling and Theory for Real Applications in FIB Milling, ***Lucille Giannuzzi***, L.A. Giannuzzi & Associates LLC
5:20pm	Invited talk continues.	**AS-TuA-10** The Influence of the Projectile Cluster on the Molecular Ionization Probability in SIMS, ***Lars Breuer***, *A Wucher,* Universität Duisburg-Essen, Germany; *N Winograd,* The Pennsylvania State University
5:40pm	**2D+EM+MI+MN+NS-TuA-11** Patterned Growth of Hybrid Bulk-2D Tungsten Diselenide for Transistor Applications, ***Quinten Yurek***, *I Liao, D Barroso, A Nguyen, N Duong, G Stecklein, L Bartels,* University of California, Riverside	**INVITED: AS-TuA-11** In Situ Liquid SIMS, a Molecular Eye for Examination of Liquids and Liquid Interfaces, ***Zihua Zhu***[1], *Y Zhang,* Pacific Northwest National Laboratory
6:00pm	**2D+EM+MI+MN+NS-TuA-12** Enhanced Ionic Sensitivity in Solution-Gated Graphene-Hexagonal Boron Nitride Heterostructure Field-Effect Transistors, *A Radadia,* ***Nowzesh Hasan***, *B Hou, A Moore,* Louisiana Tech University	Invited talk continues.

[1] **ASSD Peter Sherwood Award**

	Biomaterial Interfaces Division **Room 101B - Session BI+AS+IPF+NS-TuA** **IoT Session: Biofabrication, Bioanalytics, Biosensors and Diagnostics** **Moderators:** Graham Leggett, University of Sheffield, UK, Tobias Weidner, Aarhus University, Denmark	**Electronic Materials and Photonics Division** **Room 101A - Session EM+2D+AN+MI+MP+NS-TuA** **Solar/Energy Harvesting and Quantum Materials and Applications** **Moderators:** Yohannes Abate, Georgia State University, Nicholas Strandwitz, Lehigh University
2:20pm	**BI+AS+IPF+NS-TuA-1** Functionalization of Silica Materials *via* Click Reaction of Surface Silanol Groups with Vinyl Sulfones, ***Fang Cheng***, *H Wang, W He, B Sun, J Qu,* Dalian University of Technology, China	**INVITED: EM+2D+AN+MI+MP+NS-TuA-1** Plasmonic Metasurface Electrodes for Excitonic Solar Cells., ***Deirdre O'Carroll***, Rutgers, the State University of New Jersey
2:40pm	**BI+AS+IPF+NS-TuA-2** Organosilica pH Nanosensors Applied to Realtime Metabolite Monitoring, ***Kye Robinson***, Monash University, Australia; *K Thurecht,* University of Queensland, Australia; *S Corrie,* Monash University, Australia	Invited talk continues.
3:00pm	**BI+AS+IPF+NS-TuA-3** Impact of Different Receptor Binding Modes on Surface Morphology and Electrochemical Properties of PNA-based Sensing Platforms, ***Johannes Daniel Bartl***, Walter Schottky Institut (WSI) and Physics Department, Technische Universität München, Germany; *P Scarbolo,* Dipartimento Politecnico di Ingegneria e Architettura (DPIA), Università degli Studi di Udine, Italy; *S Gremmo, G Rziga, M Stutzmann,* Walter Schottky Institut (WSI) and Physics Department, Technische Universität München, Germany; *M Tornow,* Molecular Electronics Group and Department of Electrical and Computer Engineering, Technische Universität München, Germany; *L Selmi,* Dipartimento di Ingegneria "Enzo Ferrari" (DIEF), Università di Modena e Reggio Emilia, Italy; *A Cattani-Scholz,* Walter Schottky Institut (WSI) and Physics Department, Technische Universität München, Germany	**EM+2D+AN+MI+MP+NS-TuA-3** Photoemission Electron Microscopy as a New Tool to Study the Electronic Properties of an Inhomogeneous Semiconductor for Photovoltaics, *M Berg,* Sandia National Laboratories; *J Kephart, A Munshi, W Sampath,* Colorado State University; ***Taisuke Ohta***, *C Chan,* Sandia National Laboratories
3:20pm	**BI+AS+IPF+NS-TuA-4** Biosensor for Detection of Gasotransmitter from Living Cells Employing Silver Nanorods Array, ***Shashank Gahlaut***, *C Sharan, J Singh,* Indian Institute of Technology Delhi, India	**EM+2D+AN+MI+MP+NS-TuA-4** Modification of Bandgap for Lead-Free Double Perovskite $Cs_2AgInCl_6$ with Bi Doping, ***Hassan Siddique***, University of Science and Technology of China; *H Da, X Wang,* University of Science and Technology of China, China; *R Dai, Z Wang,* University of Science and Technology of China; *Z Ding, Z Zhang,* University of Science and Technology of China, China
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**BI+AS+IPF+NS-TuA-7** Conversion of Human Stem Cells into Insulin Producing Cells Through 2D Platforms for Enhanced in-vitro Insulin Production, *S Vishwakarma, A Khan,* Central Laboratory for Stem Cell Research and Translational Medicine, Centre for Liver Research and Diagnostics, Deccan College of Medical Sciences, India; ***Marshal Dhayal***, IIT (BHU), Varanasi, India	**INVITED: EM+2D+AN+MI+MP+NS-TuA-7** Optimized (Quantum) Photonics, ***Jelena Vuckovic***, Stanford University
4:40pm	**BI+AS+IPF+NS-TuA-8** Polyzwitterion-modified Nanoparticles for Selective Antibody Separation, *F Cheng, C Zhu,* ***Wei He***, *B Sun, J Qu,* Dalian University of Technology, China	Invited talk continues.
5:00pm	**BI+AS+IPF+NS-TuA-9** Orienting Proteins on Surfaces with Site-specific Bioorthgonal Ligations, ***Riley Bednar***, *R Mehl,* Department of Biochemistry and Biophysics, Oregon State University	**EM+2D+AN+MI+MP+NS-TuA-9** Optical Properties of Single Silicon Vacancies in 4H-SiC, *H Banks,* National Research Council Postdoc residing at the Naval Research Laboratory; *O Soykal,* Sotera Defense Solutions, Inc, residing at the Naval Research Laboratory; *S Pavunny, R Myers-Ward, D Gaskill,* ***Samuel Carter***, U.S. Naval Research Laboratory
5:20pm	**BI+AS+IPF+NS-TuA-10** High-throughput Study of the Role of Spatial Organization on the Activity of Surface-Bound Enzymes, ***Nourin Alsharif***, Boston University; *T Lawton, J Uzarski,* Natick Soldier Research, Development and Engineering Center; *K Brown,* Boston University	**EM+2D+AN+MI+MP+NS-TuA-10** Photoluminescence Studies on Patterned Silicon Vacancy Defects in Li Ion Implanted 4H-SiC for Scalable Quantum Device Applications, ***Shojan Pavunny***, U. S. Naval Research Laboratory; *S Carter, H Banks, R Myers-Ward, P Klein,* U.S. Naval Research Laboratory; *E Bielejec,* Sandia National Laboratories; *M DeJarld, A Bracker, E Glaser, D Gaskill,* U.S. Naval Research Laboratory
5:40pm	**BI+AS+IPF+NS-TuA-11** Fabrication of Amino acid Contained Poly-lactic Acid Nanofibers by Electrospinning, *C Li,* National Yang Ming University, Taiwan, Republic of China; *J Hsieh,* Ming Chi University of Technology, Taiwan, Republic of China; ***P.H. Lin***, National Yang Ming University, Taiwan, Republic of China	**EM+2D+AN+MI+MP+NS-TuA-11** Processing of Cavities in SiC Material for Quantum Technologies, ***Rachael Myers-Ward***, *K Hobart, K Daniels, A Giles, M Tadjer, L Luna, F Kub, S Pavunny, S Carter, H Banks, E Glaser,* U.S. Naval Research Laboratory; *P Klein,* Sotera Defense Solutions; *K Qiao, Y Kim, J Kim,* Massachusetts Institute of Technology; *K Gaskill,* U.S. Naval Research Laboratory
6:00pm		**EM+2D+AN+MI+MP+NS-TuA-12** Investigation of Localized Electronic structures of PbSe Quantum Dot Superlattice on a Highly Oriented Pyrolytic Graphite (HOPG), ***Il Jo Kwak***, *S Ueda,* University of California at San Diego; *A Abelson, C Qian, M Law,* University of California, Irvine; *A Kummel,* University of California at San Diego

	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic **Room 201A - Session HC+SS-TuA** **A Tale of Two Scales: Catalytic Processes and Surface Science** **Moderator:** Ashleigh Baber, James Madison University	**Manufacturing Science and Technology Group** **Room 202B - Session MS+MN-TuA** **IoT Session: Challenges of Sensor Manufacturing for the IoT** **Moderator:** Robert Lad, University of Maine
2:20pm	**HC+SS-TuA-1** CO_2 Reduction on the Surface of Cu/TiO_2 NPs Supported on Graphite Studied using Ambient Pressure-XPS and Differential Electrochemical Mass Spectrometer, ***Djawhar Ferrah***, *A Haines, R Galhenage,* University of California at Irvine*; A Javier,* California Institute of Technology*; J Bruce,* University of California at Irvine*; M Soriaga,* California Institute of Technology*; J Hemminger,* University of California at Irvine	**INVITED: MS+MN-TuA-1** Manufacturing Strategies for Flexible Hybrid Electronics*,* ***Scott Miller,*** NextFlex
2:40pm	**HC+SS-TuA-2** Influence of Bi and Sb on the Structure of Pd-based Catalysts*,* ***Joo Kang****, W Lee, P Vlasak,* The Dow Chemical Company*; A Kirilin,* The Dow Chemical Company, Netherlands*; H Clements, C Menzies, S Yusuf,* The Dow Chemical Company	Invited talk continues.
3:00pm	**INVITED: HC+SS-TuA-3** The Molecular Surface Chemistry Approach to Heterogeneous Catalysts*,* ***Peter Stair,*** Northwestern University	**INVITED: MS+MN-TuA-3** Enabling Smart and Connected Living through High Volume Roll to Roll Manufacturing*,* ***Enid Kivuti,*** Sheldahl Flexible Technologies
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**HC+SS-TuA-7** Formation and Stability of Subsurface Oxygen on Ag(111)*,* ***Marie Turano,*** Loyola University Chicago*; S Isbill, S Roy,* University of Tennessee Knoxville*; R Farber,* Loyola University Chicago*; E Iski,* University of Tulsa*; D Killelea,* Loyola University Chicago	**INVITED: MS+MN-TuA-7** New Generation Chemical and Biological Sensors: From New Ideas to Manufacturable Products in the era of Internet of Things and Industrial Internet*,* ***Radislav Potyrailo,*** General Electric Global Research Center
4:40pm	**HC+SS-TuA-8** Mechanistic Insights into Catalytic Transfer Hydrogenation and Decarbonylation of Aromatic Aldehydes on P_x-Ru(0001)*,* ***Abinaya Sampath****, D Flaherty,* University of Illinois at Urbana-Champaign	Invited talk continues.
5:00pm	**HC+SS-TuA-9** Hot Electron Flux under Methanol Oxidation on Pt/TiO_2 Catalytic Nanodiode; Intrinsic Relation between Selectivity and Chemicurrent*,* ***Si Woo Lee****, S Lee,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea*; H Lee,* Institute for Basic Science (IBS), Republic of Korea*; W Park, Y Jung, J Park,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea	**INVITED: MS+MN-TuA-9** The Unique Challenges Implantable Sensor Manufacture*,* ***Kimberly Chaffin****, S Terry,* Medtronic plc
5:20pm	**HC+SS-TuA-10** Online Kinetics Study of Oxidative Coupling of Methane over La_2O_3 for C_2 Activation: What is Behind the Distinguished Light-off Temperatures*,* ***Yong Yang****, Z Liu, E Vovk, X Zhou, C Guan,* ShanghaiTech University, China	Invited talk continues.
5:40pm	**INVITED: HC+SS-TuA-11** Non-Innocent Solvents, Hydrogen Transfer, Oxygen Dissociation on Nanoparticles during the Direct Synthesis of H_2O_2*,* ***David W. Flaherty****,* University of Illinois, Urbana-Champaign	
6:00pm	Invited talk continues.	

	Nanometer-scale Science and Technology Division **Room 102B - Session NS+AM+MI+MN+SS+TR-TuA** **SPM – Probing and Manipulating Nanoscale Structures** **Moderators:** Renu Sharma, NIST Center for Nanoscale Science and Technology, Carl Ventrice, Jr., SUNY Polytechnic Institute	**Processing and Characterization of Air-Liquid, Solid-Liquid and Air-Solid Interfaces Focus Topic** **Room 202A - Session PC+AS+BI+EM+NS+PB+SS-TuA** **Progress in Industrial Processes and Characterization of Interfaces and Gas-Solid Interfacial Processes and Characterization** **Moderators:** Jeffrey Fenton, Medtronic, Inc., Xiao-Ying Yu, Pacific Northwest National Laboratory
2:20pm	**INVITED: NS+AM+MI+MN+SS+TR-TuA-1** Building Artificial Quantum Matter with Dopant Atoms, ***Sven Rogge***, University of New South Wales, Australia	**INVITED: PC+AS+BI+EM+NS+PB+SS-TuA-1** Near Ambient Pressure XPS as a Standard Tool for True Non-destructive High-throughput Surface Chemical Analysis in Industrial Applications, ***Andreas Thissen***, *P Dietrich,* SPECS Surface Nano Analysis GmbH, Germany; *M Kjaervik, W Unger,* Bundesanstalt für Materialforschung und -prüfung (BAM), Germany
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**NS+AM+MI+MN+SS+TR-TuA-3** Scanning Tunneling Microscopy Study of Structure Control of a Nanocarbon Catalyst through a Surface-Activated coupling Reaction, ***Jeremy Schultz***, *P Whiteman, N Jiang,* University of Illinois at Chicago	**INVITED: PC+AS+BI+EM+NS+PB+SS-TuA-3** Surface Modifications in the Medical Device Field – Understanding of Methods to Control Adhesion and Reactions That Materials Undergo, ***Jeffrey Fenton***, *B Theilacker, A Belu, B Tischendorf,* Medtronic
3:20pm	**NS+AM+MI+MN+SS+TR-TuA-4** Detecting the Tip Shape Dependence of the Plasmonic Photon Emission under STM, ***Songbin Cui***, Pohang University of Science and Technology, Republic of Korea; *U Ham,* Institute for Basic Science (IBS), Republic of Korea; *T Kim,* Pohang University of Science and Technology, Republic of Korea	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: NS+AM+MI+MN+SS+TR-TuA-7** Advances in SPM Methods for Energy-relevant Materials, ***Marina Leite***, University of Maryland College Park	**INVITED: PC+AS+BI+EM+NS+PB+SS-TuA-7** Ambient Pressure X-Ray Photoelectron Spectroscopy Studies of Catalytically Active Interfaces using Electron Transparent Graphene Membranes, *R Mom, L Frevel,* Fritz-Haber Institute of the Max Planck Society, Germany; *J Velasco-Velez,* MPI CEC Mülheim, Germany; *T Jones, M Plodinec,* Fritz-Haber Institute of the Max Planck Society, Germany; *R Schlögl,* MPI CEC Mülheim, Germany; ***Axel Knop-Gericke***, Fritz Haber Institute of the Max Planck Society, Germany
4:40pm	Invited talk continues.	Invited talk continues.
5:00pm	**NS+AM+MI+MN+SS+TR-TuA-9** Coherent Electrical Contact to Semiconducting Graphene Nanoribbon, ***Chuanxu Ma***, *L Liang,* Oak Ridge National Laboratory; *Z Xiao,* North Carolina State University; *A Puretzky, K Hong,* Oak Ridge National Laboratory; *W Lu, J Bernholc,* North Carolina State University; *A Li,* Oak Ridge National Laboratory	**INVITED: PC+AS+BI+EM+NS+PB+SS-TuA-9** The Influence of Density and Chemical Bonding on Atomic and Molecular Structures of Alcohols, Water and Oxides, ***Gabor A. Somorjai***, University of California at Berkeley
5:20pm	**NS+AM+MI+MN+SS+TR-TuA-10** Visualizing Coordination Structures of Small Gas Molecules to Metallo-porphyrin on Au(111) Using Scanning Tunneling Microscopy, ***MinHui Chang***, Korea University, Republic of Korea; *Y Chang, N Kim,* Korea Advanced Institute of Science and Technology (KAIST); *U Jeon, H Kim,* Korea University, Republic of Korea; *Y Kim,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea; *S Kahng,* Korea University, Republic of Korea	Invited talk continues.
5:40pm	**NS+AM+MI+MN+SS+TR-TuA-11** Effects of Dimensionality on the Reactivity of Carboxylic-Acid-Terminated Monolayers, ***Dominic Goronzy***[1], *E Avery, N Gallup,* University of California, Los Angeles; *J Staněk, J Macháček, T Baše,* Institute of Inorganic Chemistry, Academy of Sciences of the Czech Republic; *K Houk,* Chemistry and Biochemistry, University of California, Los Angeles; *P Weiss,* University of California at Los Angeles	**PC+AS+BI+EM+NS+PB+SS-TuA-11** Atomic Scale Observation of Oxidation and Reduction of Palladium Surface, ***Takehiro Tamaoka***, *H Yoshida, S Takeda,* Osaka University, Japan
6:00pm		**PC+AS+BI+EM+NS+PB+SS-TuA-12** Polymorphism of Hydrogen-Bonded Clusters at the Vacuum-Solid Interface, ***Angela Silski***, *J Petersen,* University of Notre Dame; *R Brown,* Clarkson University; *S Corcelli, S Kandel,* University of Notre Dame

[1] **NSTD Student Award Finalist**

	Plasma Science and Technology Division **Room 104A - Session PS+EM+NS+SS-TuA** **Plasma Processing of Challenging Materials - II** **Moderators:** Michael Gordon, University of California at Santa Barbara, Wei Tian, Applied Materials Inc.	**Plasma Science and Technology Division** **Room 104C - Session PS+PB+SE-TuA** **Atmospheric Pressure Plasmas** **Moderators:** Francois Reniers, Université libre de Bruxelles, Steven Vitale, MIT Lincoln Laboratory
2:20pm	**INVITED: PS+EM+NS+SS-TuA-1** Self-limiting Growth of III-nitride Materials via Hollow-cathode Plasma-ALD: Structural and Chemical Analysis, ***Necmi Biyikli***, *A Mohammad, D Shukla,* University of Connecticut	**PS+PB+SE-TuA-1** Compact, Low Cost Atmospheric Pressure Plasma Jets Driven by Piezoelectric Transformers, ***Michael Johnson***, National Research Council; *D Boris, L Petrova, S Walton,* Naval Research Laboratory
2:40pm	Invited talk continues.	**PS+PB+SE-TuA-2** Process Regimes of Atmospheric Pressure Plasma-enhanced Chemical Vapor Deposition with Source Materials Highly Diluted in Inert Gases, ***SeungJae Baik***, *J Jang,* Hankyong National University, Republic of Korea; *H Oh,* Yonsei University, Republic of Korea
3:00pm	**PS+EM+NS+SS-TuA-3** Electrostatic Charge of Solution-droplet in Plasma-coupled Micro Reactor, ***Tae Hwan Kim***, *S Lee,* National Fusion Research Institute, Republic of Korea	**PS+PB+SE-TuA-3** Plasma-enhanced Chemical Film Conversion (PECFC): Direct, Low-temperature Growth of Solution-processible and Printable Layered Thin Films, *T Liu,* ***R. Mohan Sankaran***, Case Western Reserve University
3:20pm	**PS+EM+NS+SS-TuA-4** Surfactant-free and Stable Colloidal Metal Oxide Ultra-small Quantum Dots via Plasma-liquid Electrochemistry, ***Dillibabu Padmanaban***, *D Carolan, R McGlynn, T Velusamy, P Maguire, D Mariotti,* Nanotechnology & Integrated Bio-Engineering Centre, Ulster University, UK	**PS+PB+SE-TuA-4** Plasma-based Remediation of Nanoscale Particulate Matter in Charbroiler Smoke Emissions, ***Sisi Yang***, *S Subramanian,* University of Southern California, Los Angeles; *D Singleton,* Transient Plasma Systems; *C Schroeder, W Schroeder, M Gundersen, S Cronin,* University of Southern California, Los Angeles
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**PS+EM+NS+SS-TuA-7** From Organometallic Precursors to Bimetallic Nanocatalysts using Atmospheric-pressure Plasma Processes, ***Joffrey Baneton***, *J Mertens, M Smiljanic, S Cauchies, T Segato,* Université Libre de Bruxelles, Belgium; *Y Busby,* Université de Namur, Belgium; *G Caldarella,* Université de Liège, Belgium; *V Debaille, S Godet,* Université Libre de Bruxelles, Belgium; *J Pireaux,* Université de Namur, Belgium; *N Job,* Université de Liège, Belgium; *M Gordon,* University of California at Santa Barbara; *M Sankaran,* Case Western Reserve University; *F Reniers,* Université Libre de Bruxelles, Belgium	**PS+PB+SE-TuA-7** The Interactions of Atmospheric Pressure Plasma Jets with Surfaces: *In situ* Measurements of Electron Heating in Materials, ***Scott Walton***, U.S. Naval Research Laboratory; *J Tomko, B Foley,* University of Virginia; *D Boris,* U.S. Naval Research Laboratory; *M Johnson,* National Research Council; *T Petrova,* U.S. Naval Research Laboratory; *A Giri, P Hopkins,* University of Virginia
4:40pm	**PS+EM+NS+SS-TuA-8** Synthesis of Hydrogenated Amorphous Carbon Nanoparticles using High-Pressure CH_4+Ar Plasmas and Their Deposition, ***Kazunori Koga***, *S Hwang, K Kamataki, N Itagaki,* Kyushu University, Japan; *T Nakatani,* Okayama University of Science, Japan; *M Shiratani,* Kyushu University, Japan	**PS+PB+SE-TuA-8** Surface Activation by Atmospheric Plasma: the Right Technology for the Right Application, *A Ozkan, D Merche,* ***Francois Reniers***, Université Libre de Bruxelles, Belgium
5:00pm	**PS+EM+NS+SS-TuA-9** Antimony-doped Tin Oxide Nanocrystals Synthesized by Low Temperature Plasma, ***Qinyi Chen***, *E Thimsen,* Washington University in St. Louis	**PS+PB+SE-TuA-9** Aluminum Alloy Surface Cleaning by Atmospheric Pressure Microwave Discharge, ***Lucia Bonova***, *W Zhu, A Farrokhpanah, D Krogstad, Z Jeckell, S Chaudhuri, D Ruzic,* University of Illinois at Urbana-Champaign
5:20pm	**PS+EM+NS+SS-TuA-10** Femtosecond Laser Texturing of Plasma-immersed Ti to Create TiN, ***Chisung Ahn***, *E Barlaz, D Ruzic,* University of Illinois at Urbana-Champaign	**PS+PB+SE-TuA-10** Temporal and Spatial Study of a Parallel pin-plate Plasma Reactor, ***Vladimir Milosavljević***, *M Gulan, L Scally, P Cullen,* BioPlasma Research Group, Dublin Institute of Technology, Dublin, Ireland
5:40pm	**PS+EM+NS+SS-TuA-11** Modeling Chemical Reactions in Contact Glow Discharge Electrolysis, ***Bocong Zheng***, *M Shrestha, K Wang, T Schuelke, Q Fan,* Michigan State University	**PS+PB+SE-TuA-11** Plasma-modulated Metamaterials and Photonic Crystals, ***Jeffrey Hopwood***, *H Kim,* Tufts University
6:00pm	**PS+EM+NS+SS-TuA-12** Effects of Light Ion Beam Irradiation in Plasma Etching Processes, ***Kazuhiro Karahashi***, *T Ito, H Li, M Isobe, K Mizotani, S Shigeno,* Osaka University, Japan; *M Fukasawa, A Hirata, T Tatsumi,* Sony Semiconductor Solutions Corporation, Japan; *S Hamaguch,* Osaka University, Japan	**PS+PB+SE-TuA-12** Generation of Large-Volume Transient Glow Discharge Plasma by an External Fast Ionization Wave (FIW) from a Plasma Jet, ***Hamid Razavi***, *M Laroussi,* Old Dominion University

Tuesday Afternoon, October 23, 2018

	Reconfigurable Materials and Devices for Neuromorphic Computing Focus Topic **Room 203A - Session RM+EM+NS-TuA** **IoT Session: Reconfigurable Materials and Devices for Neuromorphic Computing** **Moderators:** Gina Adam, National Institute for R&D in Microtechnologies (IMT Bucharest), Brian Hoskins, National Institute of Standards and Technology (NIST)	**Advanced Surface Engineering Division** **Room 202C - Session SE-TuA** **Wear, Oxidation and Corrosion Protective Coatings** **Moderators:** Suneel Kodambaka, University of California Los Angeles, Andrey Voevodin, University of North Texas
2:20pm	**INVITED: RM+EM+NS-TuA-1** Non-volatile Memories for Neuromorphic Computing, ***Alec Talin,*** Sandia National Laboratories	**INVITED: SE-TuA-1** Dissociative Extraction of Carbon-based Tribofilms from Hydrocarbon Molecules on Catalytically Active Nanocomposite Coatings, ***Ali Erdemir,*** *G Ramirez, O Eryilmaz,* Argonne National Laboratory
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**INVITED: RM+EM+NS-TuA-3** Anionic and Protonic Transfer Materials for ReRAM and Neuromorphic Computing, ***Jennifer Rupp,*** Massachusetts Institute of Technology	**SE-TuA-3** Use of Carbon Nanotube-Silver Metal Matrix Composite Thin Films to Enhance Mechanical Properties of Grid Fingers and Busbars on Photovoltaic Cells, ***Cayla Nelson,*** University of New Mexico*; O Abudayyeh,* Osazda Energy, LLC*; Y Shen, S Han,* University of New Mexico
3:20pm	Invited talk continues.	**SE-TuA-4** Study of Effects of Synergistic Environmental Exposures on Fiber-Reinforce Polymer Composites Protected by Metallic Coatings, ***Arash Afshar,*** *D Mihut, S Hill,* Mercer University School of Engineering
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: RM+EM+NS-TuA-7** Memristor Neural Networks for Brain-Inspired Computing, ***Qiangfei Xia,*** University of Massachusetts Amherst	**SE-TuA-7** Atomistic View of Mg Metal Corrosion Using *in-situ* cryo-XPS and *ab initio* Computation, ***Vaithiyalingam Shutthanandan,*** *A Martinez, P Sushko, A Devaraj, E Stevens, O Marina, V Joshi, S Thevuthasan, V Murugesan,* Pacific Northwest National Laboratory
4:40pm	Invited talk continues.	**SE-TuA-8** Scratch Behavior and Modelling of Cu/Si(100) Thin Films Deposited by Modulated Pulsed Power Magnetron Sputtering, *D Meng, Y Li,* ***M.K. Lei,*** Dalian University of Technology, China
5:00pm	**RM+EM+NS-TuA-9** Indium Phosphide Synaptic Device on Silicon for Scalable Neuromorphic Computing, ***Jun Tao,*** *D Sarkar, R Kapadia,* University of Southern California	**INVITED: SE-TuA-9** Corrosion Resistance of Mechanically Reinforced Aluminium based Coatings obtained by PVD Techniques, ***Frederic Sanchette,*** UTT - Université de Technologie de Troyes, France*; J Creus,* Université de La Rochelle, France*; A Billard,* FEMTO-ST, France
5:20pm	**RM+EM+NS-TuA-10** Ultra-low Power Microwave Oscillators based on Phase Change Oxides as Solid-State Neurons, ***Boyang Zhao,*** *J Ravichandran,* University of Southern California	Invited talk continues.
5:40pm	**INVITED: RM+EM+NS-TuA-11** Leveraging Nanodevice Volatility for Low Energy Computing Inspired from Nature, ***Alice Mizrahi,*** NIST/University of Maryland*; T Hirtzlin,* Centre de Nanosciences et Nanotechnologies*; B Hoskins,* NIST Center for Nanoscale Science and Technology*; A Fukushima,* AIST*; A Madhavan,* NIST Center for Nanoscale Science and Technology*; H Kubota, S Yuasa,* AIST*; N Zhitenev, J McClelland, M Stiles,* NIST Center for Nanoscale Science and Technology*; D Querlioz,* Centre de Nanosciences et Nanotechnologies, France*; J Grollier,* UMR CNRS/Thales	**SE-TuA-11** High Temperature Mechanical Properties of CrAlN and CrAlSiN Hard Coatings, ***Aljaž Drnovšek,*** *M Rebelo de Figueiredo, A Xia,* Montanuniversität Leoben, Austria*; S Kolozsvári,* Plansee Composite Materials GmbH, Germany*; H Vo, P Hosemann,* Univeristy of California Berkeley*; R Franz,* Montanuniversität Leoben, Austria
6:00pm	Invited talk continues.	**SE-TuA-12** Thick CrN/AlN Superlattice Coatings for Solid Particle Erosion and High Temperature Wear Resistant Applications, ***Jianliang Lin,*** Southwest Research Institute

Tuesday Afternoon, October 23, 2018

	Surface Science Division **Room 203C - Session SS+HC+MI-TuA** **Oxides/Chalcogenides: Structures and Reactions** **Moderator:** Andrew Teplyakov, University of Delaware	**Thin Films Division** **Room 104B - Session TF+PS-TuA** **Atomic Layer Processing: Chemistry & Surface Reactions for Atomic Layer Processing** **Moderators:** Jessica Kachian, Intel Corporation, Keren Kanarik, Lam Research Corporation
2:20pm	**INVITED: SS+HC+MI-TuA-1** New Eyes for Nanocatalysis: Atomic Scale Investigations of TiO_2 Chemistry, ***Melissa Hines,*** Cornell University	**INVITED: TF+PS-TuA-1** N-heterocyclic Carbenes on Au and Cu Surfaces, ***Cathleen Crudden,*** Queen's University, Canada
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**SS+HC+MI-TuA-3** Coverage-dependent Water Agglomerates on Fe_3O_4 Surfaces, ***Zdenek Jakub,*** Vienna University of Technology, Austria; *M Meier,* University of Vienna, Austria; *J Hulva, J Pavelec, M Setvin, M Schmid, U Diebold,* Vienna University of Technology, Austria; *C Franchini,* University of Vienna, Austria; *G Parkinson,* Vienna University of Technology, Austria	**TF+PS-TuA-3** Enhancing Nucleation in Platinum Atomic Layer Deposition by Surface Pre-Treatment with Small Organometallic Molecules, ***Camila de Paula,*** *L Zeng, S Bent,* Stanford University
3:20pm	**SS+HC+MI-TuA-4** Reversible Structural Evolution and Identification of the Catalytically Active Phase of $NiCoO_xH_y$ During the Oxygen Evolution Reaction (OER), ***Bruce E. Koel,*** Princeton University	**TF+PS-TuA-4** Mass Spectrometer Studies of Volatile Etch Products Produced by Ligand-Exchange Reactions During Thermal Atomic Layer Etching, ***Joel Clancey,*** *A Cavanagh, S George,* University of Colorado Boulder
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**SS+HC+MI-TuA-7** Understanding the Growth and Chemical Activity of Titania-Supported MoS_x Clusters, ***Donna Chen,*** University of South Carolina; *R Galhenage,* University of California at Irvine; *H Yan,* University of Louisiana Layfette; *D Le, T Rawal, T Rahman,* University of Central Florida	**INVITED: TF+PS-TuA-7** Beyond Conventional Lithography – Using Self-assembly to Create Patterns for New Device Fabrication Techniques, ***Michael Morris,*** Trinity College Dublin, Ireland
4:40pm	**SS+HC+MI-TuA-8** Analyzing Single Atom Catalysts using Low Energy Ion Scattering (LEIS), ***Thomas Grehl,*** IONTOF GmbH, Germany; *R ter Veen,* Tascon GmbH, Germany; *D Kunwar, A Datye,* University of New Mexico; *H Brongersma,* IONTOF GmbH and Tascon GmbH, Germany	Invited talk continues.
5:00pm	**SS+HC+MI-TuA-9** Synthesis and Characterization of Metals Supported on ZnO Nanoparticles, ***Amanda Haines,*** *D Ferrah, J Hemminger,* University of California at Irvine	**TF+PS-TuA-9** Calculations of Etch Products from Thermal Atomic Layer Etching Using Fluorination and Ligand-Exchange Reactions, ***Andrew Cavanagh,*** *J Clancey, S Sharma, S George,* University of Colorado at Boulder
5:20pm	**SS+HC+MI-TuA-10** Molecular Water Adsorption and Reactions on α-Al_2O_3(0001) and α-Alumina Particles, ***Greg Kimmel,*** *N Petrik,* Pacific Northwest National Laboratory; *P Huestis, J LaVerne,* University of Notre Dame; *A Aleksandrov, T Orlando,* Georgia Institute of Technology	**TF+PS-TuA-10** Formation of Monolayers and Multilayers During the Vapor-Phase Deposition of Dodecanethiols on Copper Oxide, ***David Bergsman,*** *T Liu, R Closser, S Bent,* Stanford University
5:40pm	**SS+HC+MI-TuA-11** Applying Low Temperature Titration for Determination of Metallic Sites on Active Oxide Supported Catalysts, ***Jerry Pui Ho Li,*** *Z Liu, Y Yang,* ShanghaiTech University, China	**TF+PS-TuA-11** Exchange Reactions During Atomic Layer Deposition: ZnO Conversion to Al_2O_3 by Trimethylaluminum, ***Tyler Myers,*** *A Cano, J Clancey, D Lancaster, S George,* University of Colorado at Boulder
6:00pm	**SS+HC+MI-TuA-12** Giant Optical Anisotropy in Hexagonal Perovskite Chalcogenides with Quasi-1D Structures, ***Shanyuan Niu,*** University of Southern California; *G Joe,* University of Wisconsin - Madison; *H Zhao, M Mecklenburg,* University of Southern California; *T Tiwald,* J.A. Woollam Co. Inc; *K Mahalingam,* Air Force Research Laboratory; *H Wang,* University of Southern California; *M Kats,* University of Wisconsin - Madison; *J Ravichandran,* University of Southern California	**TF+PS-TuA-12** 3D Feature Profile Simulation Coupled with Realistic Plasma Surface Reaction Model for ALE Process, *Y Im,* ***YeongGeun Yook,*** *H You, J Park,* Chonbuk National University, Republic of Korea; *D You,* KW Tech, Republic of Korea; *K Choi,* Chonbuk National University, Republic of Korea; *W Chang,* National Fusion Research Institute, Republic of Korea

	Thin Films Division **Room 102A - Session TF+SS-TuA** **Organic/Inorganic Materials and Interfaces** **Moderator:** Matthew Richard Linford, Brigham Young University	**Vacuum Technology Division** **Room 203B - Session VT-TuA** **IoT Session: Vacuum System Design and Automation & Flash Networking Session** **Moderators:** Julia Scherschligt, National Institute of Standards and Technology, Martin Wuest, Inficon
2:20pm	**TF+SS-TuA-1** Chemical Interactions at Hybrid Interfaces: An In Situ Investigation of Organic/Inorganic Systems, ***Sven Pletincx,*** Vrije Universiteit Brussel, Belgium; *L Trotochaud,* Lawrence Berkeley Lab, University of California, Berkeley; *L Fockaert, M Meeusen, A Mol,* Technical University Delft, Netherlands; *H Bluhm,* Lawrence Berkeley Lab, University of California, Berkeley; *H Terryn, T Hauffman,* Vrije Universiteit Brussel, Belgium	**INVITED: VT-TuA-1** The Importance of Vacuum Cleanliness in Semiconductor Process Control SEM Tools, ***Irit Ruach Nir,*** Applied Materials, Israel; *M Eilon, K Luria, G Eytan,* Applied Materials
2:40pm	**TF+SS-TuA-2** Microscopic and Spectroscopic evidence of Odd-Even Effect in Self-Assembled Monolayers of Biphenyl-Substituted Fatty Acid on Ag(111), ***Anna Krzykawska,*** Jagiellonian University, Polska; *P Cyganik, M Szwed, J Ossowski,* Jagiellonian University, Poland	Invited talk continues.
3:00pm	**INVITED: TF+SS-TuA-3** CVD of Thin Polymer Films for Engineered Material Properties, ***AnnaMaria Coclite,*** Graz University of Technology, Austria	**INVITED: VT-TuA-3** Vacuum Chamber Design and Fabrication., ***Steve Greuel,*** Nor-Cal Products
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**TF+SS-TuA-7** Organosilicon Functionally Nanostructured Films as Engineered Interlayers for Hybrid Materials, ***Vladimir Cech,*** Brno University of Technology, Czech Republic; *J Houdkova,* Institute of Physics, Academy of Sciences of the Czech Republic; *M Branecky, T Plichta,* Brno University of Technology; *J Zemek,* Institute of Physics, Academy of Sciences of the Czech Republic	**INVITED: VT-TuA-7** Compact Ultra High Vacuum Systems for Applications of Cold Matter, ***Evan Salim,*** *S Hughes, M Perez, D Anderson,* ColdQuanta Inc.
4:40pm	**TF+SS-TuA-8** Studying Electron Induced Chemical Changes of Hafnium Oxide-Methacrylate EUV Photoresists with *In Situ* IR Spectroscopy and Model Flat Surfaces, ***Yasiel Cabrera,*** *E Mattson, K Oyekan, Y Wang, Y Chabal,* University of Texas at Dallas	Invited talk continues.
5:00pm	**TF+SS-TuA-9** Photoactivated Molecular Layer Deposition of Fluoropolymer Thin Films, ***Richard Closser,*** Stanford University; *M Lillethorup,* Radisurf Aps, Denmark; *D Bergsman, J Shi, S Bent,* Stanford University	**INVITED: VT-TuA-9** Plasma Window as Vacuum Atmosphere Interface for Various Applications, ***Ady Hershcovitch,*** Brookhaven National Laboratory
5:20pm	**TF+SS-TuA-10** Sputter-Deposited Porous Coatings for Solid Phase Microextraction, ***Tuhin Roychowdhury,*** *D Patel, M Linford,* Brigham Young University	Invited talk continues.
5:40pm	**TF+SS-TuA-11** Interfacial Electron Transfer of Ferrocene Immobilized onto Indium Tin Oxide through Noncovalent Interactions, ***Caitlin Hanna,*** *J Yang,* University of California, Irvine	**VT-TuA-11** Applications of IoT in Vacuum Technology, ***Jacob Ricker,*** *J Hendricks,* NIST
6:00pm	**TF+SS-TuA-12** Vapor Phase Infiltration of Polymers with Intrinsic Microporosity: Structure and Chemical Separation Performance, ***Mark Losego,*** *E McGuinness, F Zhang, R Lively,* Georgia Institute of Technology	

Exhibitor Technology Spotlight Workshops
Room Hall A - Session EW-TuAB
Exhibitor Technology Spotlight Session III
Moderator: Christopher Moffitt, Kratos Analytical Inc

3:40pm		
4:00pm	**EW-TuAB-2** eSpectra, your Data, and your Collaborations, ***Jessica Hoy***, AIPP/AVS	

Extending Additive Manufacturing to the Atomic Scale Focus Topic
Room Hall B - Session AM-TuP
Extending Additive Manufacturing to the Atomic Scale Poster Session
6:30pm

AM-TuP-1 Direct-Write Fabrication of 3D Nano-Probes for Thermal Microscopy, *J Sattelkow, J Froech, R Winkler,* Graz University of Technology, Austria*; C Schwalb, E Fantner,* GETec Microscopy Inc., Austria*;* ***Harald Plank,*** Graz University of Technology, Austria

AM-TuP-2 Laser Induced Formation of Eutectic Nanostructures in Al-Cu Powder for Additive Manufacturing, ***Jonathan Skelton,*** *C Headley, J Floro, J Fitz-Gerald,* University of Virginia

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Biomaterial Interfaces Division
Room Hall B - Session BI-TuP
Biomaterial Interfaces Division Flash Poster Session
Moderator: Joe Baio, Oregon State University
6:30pm

BI-TuP-1 An Ultrasensitive, Selective, Multiplexed Superbioelectronic NoseThat Mimics the Human Sense of Smell, ***Sungeun Seo,*** *O Kwon,* Korea Research Institute of Bioscience & Biotechnology(KRIBB), Republic of Korea

BI-TuP-2 Graphene Field-effect Transistor Microfluidics Sensor for Real-time Bacteria Detection, *O Kwon,* ***KyungHo Kim,*** *J Lee,* Korea Research Institute of Bioscience & Biotechnology(KRIBB), Republic of Korea

BI-TuP-3 Stimuli-responsive Thin Films made from Highly Methoxylated Citrus Pectin, ***Zeinab Veisi,*** *N Alcantar, R Toomey,* University of South Florida

BI-TuP-4 Fluorescent DNA Nanosphere Barcdoe System by Rolling Circle Amplification for Tumor Cells Detection, *S Han,* ***JongBum Lee,*** University of Seoul, Republic of Korea

BI-TuP-5 Conducting Polymer Nanotubes-based Field Effect Transistor Dopamine sensor, *O Kwon,* ***Jiyeon Lee,*** *S Park,* Korea Research Institute of Bioscience & Biotechnology(KRIBB), Republic of Korea

BI-TuP-6 A study of Dopamine Receptor D1 Agonism and Antagonism Using GPCR-based FET biosensor, *O Kwon,* Korea Research Institute of Bioscience & Biotechnology(KRIBB), Republic of Korea*;* ***Sanghyuck Lee,*** Korea Research Institute of Bioscience and Biotechnology (KRIBB), Republic of Korea*; S Park,* Korea Research Institute of Bioscience & Biotechnology(KRIBB), Republic of Korea

BI-TuP-7 Vapor-Deposited Porous Polymers for the Fabrication of Giant Lipid Vesicles, ***Nareh Movsesian,*** *M Matthew Tittensor, G Dianat, N Malmstadt, M Gupta,* University of Southern California

BI-TuP-8 Developing a pH Responsive Hydrogel for the Encapsulation of Poly(ethylene glycol) 3350, ***Phuong Anh Nguyen***[1], *B Matheson, D Cuylear, H Canavan,* University of New Mexico

BI-TuP-9 Hemocompatibility of the Endexo™ Fluoro-oligomeric Surface, ***Bill Theilacker,*** Medtronic*; J Ho, J Swenor,* Interface Biologics*; M Wolf, J Kalscheue, S Thinamany,* Medtronic*; S Ubl,* medtronic

BI-TuP-10 High Performance Dopamine Sensor Based on Field-Effect Transistor (FET) with H uman Dopamine Receptor Integrated-Multidimensional Conducting Polymer Nanofiber, *O Kwon,* ***Jinyeong Kim,*** *S Park,* Korea Research Institute of Bioscience and Biotechnology (KRIBB), Republic of Korea

BI-TuP-11 Detection of B-type Natriuretic Peptide in Human Serum Based on Flexible Biosensors and Data Analysis Methodology, ***Xinruo Yi,*** *A Khalaf, R Gunasekeran, M Yun, M Akcakaya,* University of Pittsburgh*; Y Zhang, S Marc, N Petroni,* UPMC

BI-TuP-12 Characterizing Hetero-oligomer of Amyloid-beta and Alpha-synuclein with Bio-AFM, ***Eun Ji Shin,*** *J Park,* Pohang University of Science and Technology, Republic of Korea

BI-TuP-13 Creation of de novo Nucleic Acid Binding Disordered Proteins using the Thermally Responsive Behavior of Elastin-like Polypeptides, ***Telmo Diez,*** *G Lopez, N Carroll,* University of New Mexico

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Spectroscopic Ellipsometry Focus Topic
Room Hall B - Session EL-TuP
Spectroscopic Ellipsometry Focus Topic Poster Session
Moderator: Tino Hofmann, University of North Carolina at Charlotte
6:30pm

EL-TuP-1 An In situ Spectroscopic Ellipsometry Study of Cerium Oxidation, ***Wayne Lake,*** *P Roussel,* AWE, UK

EL-TuP-2 In-situ Multi-wavelength Ellipsometric Monitoring of the Reactive Sputter Deposition of WO_x Films, ***Ned Ianno,*** *G Kaufman, C Luth,* University of Nebraska-Lincoln*; C Exstrom, S Darveau,* University of Nebraska at Kearney*; B Johs,* Film Sense

EL-TuP-3 Mid-infrared Optical Constants of InAsSb Alloys and Bulk GaSb, ***Pablo Paradis,*** *S Zollner, R Carrasco,* New Mexico State University, Department of Physics*; J Carlin, V Dahiya, A Kazemi, S Krishna,* The Ohio State University, Department of Electrical and Computer Engineering

EL-TuP-4 Temperature-dependent Ellipsometry and Thermal Stability of Ge2Sb2Te5:C Phase Change Memory Alloys, ***Cesy Zamarripa,*** *N Samarasingha, F Abadizaman, R Carrasco, S Zollner,* New Mexico State University

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In-situ Microscopy, Spectroscopy, and Microfluidics Focus Topic
Room Hall B - Session MM-TuP
In-situ Microscopy, Spectroscopy, and Microfluidics Focus Topic Poster Session
6:30pm

MM-TuP-1 In-situ Low Energy Electron Microscopy at Near Ambient Pressures, ***Thomas Schulmeyer,*** SPECS Surface Nano Analysis GmbH

MM-TuP-2 NanoESCA III: Recent Progress and Applications, *M Merkel, N Weber, M Escher, T Kühn,* FOCUS GmbH, Germany*;* ***Marten Patt,*** Scienta Omicron GmbH, Germany

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Manufacturing Science and Technology Group
Room Hall B - Session MS-TuP
Topics in Manufacturing Science and Technology Poster Session
6:30pm

MS-TuP-1 Formation of High Entropy Film for Cutting Tool by Magnetron Sputtering, ***Ki Buem Kim,*** Sejong University, Republic of Korea*; T Choi,* Sejong university, Korea, Republic of Korea*; H Lee,* Korea Institute of Industrial Technology, Republic of Korea*; J Lee,* Kongju National University, Republic of Korea*; Y Kim,* Sejong University, Republic of Korea*; Y Park, K Kim, S Jeong,* YG-1 Co. LTD, Republic of Korea

MS-TuP-2 Plasma Diagnostics Technique using Floating Harmonic Method for Pulsed Plasma Monitoring, ***Yusin Kim,*** Samsung Electronics, Republic of Korea*; C Chung,* Hanyang University, Republic of Korea*; J Kim,* Samsung Electronics, Republic of Korea

MS-TuP-3 Trace Level Detection of Gas Impurities Using Atmospheric Pressure Ionization Mass Spectrometry, ***Gregory Thier,*** Extrel CMS

MS-TuP-4 Novel Safe Approach to Process Gas Delivery, ***Richard Elzer,*** Entegris*; K Olander,* Retired co-founder of ATMI Corp

MS-TuP-5 Advanced Characterization to Support Development of Next Generation Phosphors, ***Vincent Smentkowski,*** *R Davis, J Murphy, A Setlur, M Butts, J Lu,* General Electric Global Research Center*; W Beers,* Current by GE

Plasma Biology, Agriculture, and Environment Focus Topic
Room Hall B - Session PB-TuP
Plasma Biology, Agriculture, and Environment Focus Topic Poster Session
6:30pm

PB-TuP-1 Detection of Metallic Ions in Solution Using Optical Emission Spectroscopy of Plasma Driven by Bipolar Pulsed Power Sources, ***Ching-Yu Wang,*** *C Hsu,* National Taiwan University, Taiwan, Republic of China

[1] **National Student Award Finalist**

Processing and Characterization of Air-Liquid, Solid-Liquid and Air-Solid Interfaces Focus Topic
Room Hall B - Session PC+AS+BI+EM+NS+PB+SS-TuP
Processing and Characterization of Gas-Liquid, Solid-Liquid, and Gas-Solid Interfaces
6:30pm

PC+AS+BI+EM+NS+PB+SS-TuP-1 Operando Photoelectron Spectroscopic Study of Copper-based Oxide Semiconductor Interface with Water, ***Pitambar Sapkota***, *S Ptasinska,* University of Notre Dame; *A Cabrera,* Instituto de Física, Pontificia Universidad Católica de Chile, Chile

PC+AS+BI+EM+NS+PB+SS-TuP-2 Interfacial Water in Silicon-based Catalytic Motors, ***Jordi Fraxedas***, *K Zhang, B Sepulveda, M Esplandiu,* Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and BIST, Spain; *X Garcia, J Llorca,* Institute of Energy Technologies, Department of Chemical Engineering and Barcelona Research Center in Multiscale Science and Engineering. Universitat Politècnica de Catalunya, Spain; *V Perez-Dieste, C Escudero,* Alba Synchrotron Light Source, Spain

PC+AS+BI+EM+NS+PB+SS-TuP-3 Chiral Modification of Oxide-Supported Pt Surfaces: An in-situ ATR-IR Study, ***Yufei Ni***, *F Zaera,* University of California, Riverside

PC+AS+BI+EM+NS+PB+SS-TuP-4 Wettability Behaviour of Synthesized Carbon Nanospheres and its Application as a Photocatalyst, ***Sonal Singhal***, *A Shukla,* IIT Delhi, India

PC+AS+BI+EM+NS+PB+SS-TuP-5 Thermally Driven Solid-solid Li^+ Transfer into Nanostructured TiO_2, ***Tiffany Kaspar***, *T Varga,* Pacific Northwest National Laboratory; *D Shapiro,* Advanced Light Source, Lawrence Berkeley National Laboratory; *A Martinez, Y Shin, K Han, M Lee, S Thevuthasan, V Murugesan,* Pacific Northwest National Laboratory

Plasma Science and Technology Division
Room Hall B - Session PS-TuP
Plasma Science and Technology Division Poster Session
6:30pm

PS-TuP-1 Surface Modification for the Enhancement of the Patterning Margin by Using Plasma Treatment, ***Wanjae Park***, *L Huli, S Chae, A Ko, P Biolsi,* TEL Technology Center, America, LLC

PS-TuP-2 N_2/H_2, O_2 and NF_3 Dissociation Percentages in a Remote, Low Frequency, High Density Plasma Source, ***Yingliang Zhou***, *H Li, V Donnelly,* University of Houston; *J Chiu, X Chen,* MKS Instruments, Inc., Pressure and Vacuum Measurement Group

PS-TuP-3 Thermal Atomic Layer Etching of Silicon and Silicon Nitride Using an Oxidation and "Conversion-Etch" Mechanism, ***Aziz Abdulagatov***, *S George,* University of Colorado at Boulder

PS-TuP-4 Annihilation Kinetics of Plasma-induced Electronic Defects in Semiconductor Materials, *S Nunomura,* ***Isao Sakata***, *K Matsubara,* National Institute of Advanced Industrial Science and Technology (AIST), Japan

PS-TuP-5 High efficiency Magnetic Induction Plasma Source for Remote Plasma Removal Process, ***TaeSeung Cho***, *S Park, D Lubomirsky,* Applied Materials

PS-TuP-6 Aspect-ratio and Line-edge Fluctuation Controlled Nanolithography using Poly(styrene-*b*-Dimethylsiloxane) and Amorphous Carbon Layer, ***JiSoo Oh***, *G Yeom,* Sungkyunkwan University, Republic of Korea

PS-TuP-7 Development of A Low-Cost ZnO Nanorods-Based Gas Sensor with an Integerated Microplasma Generation Unit for Ethanol Sensing, ***Sz-Yun Lin***, *F Huang, C Hsu,* National Taiwan University, Taiwan, Republic of China

PS-TuP-8 Development of a Plasma Generation Device Integrated with a Piezoelectric Spray to Detect Metal Ions in Solution, ***Ting-Ting Pan***, *S Lin, C Hsu,* National Taiwan University, Taiwan, Republic of China

PS-TuP-9 Development of a Light-weight System for Detection of Metal Ions in Solutions Using Plasma Spectroscopy, ***Ching-Yu Su***, *S Lin, C Hsu,* National Taiwan University, Taiwan, Republic of China

PS-TuP-10 Inductively Coupled Plasma Reactive Ion Etching of Nanometer-scale Patterned Copper Thin Films using Alcohol-based Gases, ***Jinsu Ryu***, *E Lim, D Park, C Chung,* INHA University, Republic of Korea

PS-TuP-11 Etch Characteristics of Nanometer-scale Patterned Cu Thin Film Using Pulse- modulated RF Source Plasma, ***Euntaek Lim***, *J Ryu, C Chung,* INHA University, Republic of Korea

PS-TuP-12 Etch Characteristics of Magnetic Tunneling Junction Materials by Using Noble Gas and Hydrogen, ***SooGang Kim***, *K Yang, Y Shin, D Sung, G Yeom,* Sungkyunkwan University, Republic of Korea

PS-TuP-13 Particle Temperature Histories in a Tubular Low Temperature Plasma Reactor: Relevance to the Synthesis of Amorphous Metal Alloys, *N Uner,* ***Elijah Thimsen***, Washington University in St. Louis

PS-TuP-14 Building Tailored Chemistry Sets for Plasma Modelling using a Statistical Approach Embedded in an Online Engine, ***Sebastian Mohr***, *G Evans, A Dzarasova,* Quantemol Ltd., UK; *M Virdee,* University College London, UK

PS-TuP-15 Easy Synthesis of Hybrid Laterally or Vertically Patterned Hydrophobic/Hydrophilic Surfaces using a Dielectric Barrier Discharge, ***Annaëlle Demaude***, Université Libre de Bruxelles, Belgique; *M Gordon,* University of California at Santa Barbara; *F Reniers,* Université Libre de Bruxelles, Belgium

PS-TuP-16 Plasma-based Approach to Driving an Amorphous-To-Crystalline Phase Change in MoS_2 Grown on Polymers, *S Walton, D Boris,* U.S. Naval Research Laboratory; *A Kozen,* American Society for Engineering Education; ***Gary Kushto***, U.S. Naval Research Laboratory; *M Johnson,* National Research Council; *R Rai,* University of Dayton; *N Glavin,* Air Force Research Laboratory; *C Muratore,* University of Dayton

PS-TuP-17 Atmospheric Plasma Deposition of Vanadium Oxide Thin Coatings on Cold and Heated Substrates, ***Antoine Remy***, Université Libre de Bruxelles, Belgium; *M Gordon,* University of California at Santa Barbara; *F Reniers,* Université Libre de Bruxelles, Belgium

PS-TuP-18 The Increased Efficiency Of The Amorphous/Silicon Heterojunction Solar Cells With Silicon Micro-Channels In Back Side Substrate, ***Hugo Alvarez***, *G Bertão, A Silva, F Ciodin, J Diniz,* University of Campinas, Brazil

PS-TuP-19 Effect of RF Plasma on H Radical Generation on DCMS Produced a-Si:H, ***Jan Uhlig***, *E Barlaz, D Ruzic,* University of Illinois at Urbana-Champaign

PS-TuP-20 Hardmasks of TiN and Al for Silicon Micro-Channel Definition via ICP Plasma Etching Process, ***Camila Ruiz***, Plasma Nanotechnology Research Center, UNICAMP, Brazil; *J Diniz, A Rosa,* Plasma Nanotechnology Research Center, University of Campinas, Brazil

PS-TuP-21 Time- and space-resolved Diagnostics of a Self-Neutralized Ion Beam Extracted from a Pulsed Plasma, ***Ryan Sawadichai***, *Y Chen,* University of Houston; *S Tian,* Lam Research Corporation; *V Donnelly, P Ruchhoeft, D Economou,* University of Houston

PS-TuP-22 Vacuum-ultraviolet-radiation Damage of Low-k Dielectrics, ***J. Leon Shohet***, *S Kim, H Nguyen, P Xue, J Blatz, H Cheng,* University of Wisconsin-Madison; *Y Lin,* NSRRC, Taiwan; *J de Marneffe, M Redzheb, S Armini,* IMEC, Belgium; *C Chen,* NSRRC, Taiwan; *Y Wu,* University of Wisconsin-Madison

PS-TuP-23 Porous Alumina as a Vacuum Ultraviolet Transmission Window, ***Yuting Wu***, *H Cheng,* University of Wisconsin-Madison; *Y Lin, C Chen, H Fung,* NSRRC, Taiwan; *J Shohet,* University of Wisconsin-Madison

PS-TuP-24 Frequency Response of Microwave Excited Argon Microplasmas using Continuum Simulations, ***Ayyaswamy Venkattraman***, *A Verma,* University of California Merced

PS-TuP-25 Development of an In-situ Plasma Enhanced Atomic Layer Etching System for III-group Nitride Device Process, ***C.P. Lin***, *Y Lin, C Chen, M Wang,* National Applied Research Laboratories, Taiwan, Republic of Korea; *C Hsiao,* National applied research Laboratories,Taiwan, Republic of Korea, Taiwan, Republic of Korea; *F Chen,* National Applied Research Laboratories, Taiwan, Republic of Korea

PS-TuP-26 Advances in the Spectroscopic Characterization of Ceramic Films and Coatings, ***Fuhe Li***, *A Tavakoli, J Brim,* Air Liquide Electronics - Balazs NanoAnalysis

PS-TuP-27 Effect of Plasma Configuration on Defect-free Functional Doping on Graphene Surface, ***Goo-Hwan Jeong***, *S Jo,* Kangwon National University, Republic of Korea

PS-TuP-28 Fluid Model Numerical Simulation Analysis of Microwave Plasma Discharges, ***Wan-Ting Chiu***, National Tsing-Hua University, Taiwan, Taiwan, Republic of China; *I Yeh, K Leou,* National Tsing-Hua University, Taiwan, Republic of China

PS-TuP-29 Evaluation of Simulation Tool for a Plasma Generation based on the Dual Property of Electrons, ***Shinichiro Kitamoto***, *P Abraha,* Meijo University, Japan

PS-TuP-30 Plasma Nitriding of Highly Polished Metallic Surfaces, ***Yoshiki Handa***, *P Abraha,* Meijo University, Japan

Reconfigurable Materials and Devices for Neuromorphic Computing Focus Topic
Room Hall B - Session RM-TuP
Reconfigurable Materials and Devices for Neuromorphic Computing Poster Session
6:30pm

RM-TuP-1 Selector-less Crossbar Array through Self-rectifying Characteristic of Pt/HfO_2/Ti Memristor, ***Yong Kim***, *S Ryu, W Jeong,* Seoul National University of Science and Technology, Republic of Korea*; K Min,* Kookmin University, Republic of Korea*; B Choi,* Seoul National University of Science and Technology, Republic of Korea

RM-TuP-2 Electron Beam Induced Current Microscopy of Interfacial Barrier Effects in Al_2O_3/TiO_x Resistive Switches, ***Brian Hoskins***, National Institute of Standards and Technology (NIST)*; G Adam,* National Institute for R&D in Microtechnologies (IMT Bucharest), Romania*; E Strelcov,* National Institute of Standards and Technology (NIST)/University of Maryland*; A Kolmakov, N Zhitenev,* National Institute of Standards and Technology (NIST)*; D Strukov,* University of California at Santa Barbara*; J McClelland,* National Institute of Standards and Technology (NIST)

RM-TuP-3 Ion-insertion Electrodes for Brain Inspired Computing, ***Elliot Fuller***, Sandia National Laboratories*; S Keene,* Stanford University*; Z Wang,* University of Massachusetts Amherst*; S Agarwal, R Jacobs-Gedrim, J Niroula, C Bayley, U Sohi,* Sandia National Laboratories*; A Melianas, Y Tuchman,* Stanford University*; M Marinella,* Sandia National Laboratories*; J Yang,* University of Massachusetts Amherst*; A Salleo,* Stanford University*; A Talin,* Sandia National Laboratories

Advanced Surface Engineering Division
Room Hall B - Session SE-TuP
Advanced Surface Engineering Division Poster Session
6:30pm

SE-TuP-1 Deposition and Characterization of Ga-doped TaON Thin Films*, J Hsieh,* ***Shi Jei Lin***, Ming Chi University of Technology, Taiwan, Republic of China

SE-TuP-2 Fabrication of Porous Membranes of Controlled Porosity and Chemical Functionality, ***Golnaz Dianat***, *M Gupta, S Seidel, M Deluna,* University of Southern California

SE-TuP-3 Plasma Treatment of Thiol-Carborane Self-Assembled Monolayers on Copper, ***Michelle Paquette***, *R Thapa, L Dorsett, S Malik, S Wagner, A Caruso,* University of Missouri-Kansas City*; D Merrill, J Bielefeld, S King,* Intel Corporation

SE-TuP-4 Improved Light Extraction Efficiency using Homeotropic Thin Films on SiO_2 Micro Pillars, ***J.H. Lee***, *Y Lin, G Wu,* Chang Gung University, Taiwan

SE-TuP-5 Investigating the Influence of Substrate Cleaning on the Solution Stability of Plasma Polymer Films, ***Karyn Jarvis***, Swinburne University of Technology, Australia*; S McArthur,* Swinburne University of Technology and CSIRO, Australia

SE-TuP-6 Tribological Systems Solutions for Gas Turbine Engines, ***Pantcho Stoyanov***, Pratt & Whitney

SE-TuP-7 Effect of Laser Processing on the Atmospheric Corrosion Behavior of Mg Alloy AZ31B and Weldments, *M Melia,* Sandia National Laboratories*; L Agnew, J Skelton, J Scully,* ***James Fitz-Gerald***, University of Virginia

Surface Science Division
Room Hall B - Session SS-TuP
Surface Science Division Poster Session
6:30pm

SS-TuP-1 Encapsulation of Metallic Nanoparticles near the Surface of Graphite, ***Ann Lii-Rosales***[12], *P Thiel,* Iowa State University and Ames Laboratory

SS-TuP-2 Uncovering the Mechanism of Thermal Dry Etching of Cobalt Thin Films Using Hexafluoroacetylacetone (hfacH), ***Mahsa Konh***, *J Zhao, A Teplyakov,* University of Delaware

SS-TuP-3 Revealing the Atomic Scale Insights for CO_2 Dissociation on the Rh(111) Surfaces at Ambient Pressure, ***Won Hui Doh***, Institute for Basic Science (IBS), Republic of Korea*; J Kim,* Institute for Basic Science (IBS), Republic of Korea*; J Park,* Institute for Basic Science (IBS), Republic of Korea

SS-TuP-4 Study of Spin Dependent Electrochemical Charge Transfer Across the Ferromagnetic Electrode/Solution Interface, ***Mika Tamski***, *F Blumenschein, C Roussel, J Ansermet,* Ecole Polytechnique Fédérale de Lausanne, Switzerland

SS-TuP-5 Two-faced Steps: How Molecular Alignment does and does not Impacts O_2 Sticking Dynamics on Pt., *K Cao,* Leiden University, Nederland*; M Kurahashi,* National Institute for Materials Science, Japan*;* ***Ludo Juurlink***, Leiden University, Nederland, Netherlands

SS-TuP-6 Secondary Electron Emission from Borosilicate Glass Under Electron Impact, *C Li,* University of Science and Technology of China, China*; L Repetto,* Università di Genova, Italy*; Z Ding,* University of Science and Technology of China, China*;* ***Karoly Tokesi***, Institute for Nuclear Research, Hungarian Academy of Sciences (ATOMKI), Hungary

SS-TuP-7 Crystallinity-Transport Investigations of Nanoscale Ru Conductors at Al_2O_3 and/or SiO_2 Interfaces, ***Asim Khaniya***, *S Ezzat, W Kaden, K Coffey,* University of Central Florida

SS-TuP-8 Iron Oxide Surface Transformations Revealed by AP-XPS for Ammonia Synthesis, ***Mikhail Trought***, Michigan Technological University*; E Crumlin, S Nemsak,* Advanced Light Source, Lawrence Berkeley National Laboratory*; K Perrine,* Michigan Technological University

SS-TuP-9 Surface Energies of Thin Oxides of Si(100) as Function of Thickness, Composition and Surface Processing, ***Saaketh Narayan***, *J Day, N Herbots, A Brimhall, A Mascareno,* Arizona State University*; A Krishnan,* Harvard University*; S Whaley,* Arizona State University*; R Bennett-Kennett,* Stanford University*; K Kavanagh,* Simon Fraser University, Canada

SS-TuP-10 Space Weathering Effects at the Surface of Thin-Film Aluminosilicate Model Regolith, ***Bijoya Dhar***, *W Kaden,* University of Central Florida

SS-TuP-11 Identification of Surface Processes in Individual Minerals of a Complex Ore through the Analysis of Polished Sections using Polarization Microscopy and X-ray Photoelectron Spectroscopy (XPS), ***Dhamelyz Silva Quiñones***, UTEC, Perú*; C He,* University of Delaware*; J Rodriguez,* UTEC, Perú*; A Teplyakov,* University of Delaware*; C Benndorf,* UTEC, Perú

SS-TuP-12 Effect of Surface Roughness, Etch Pits, and Adsorbates on the Surface Phonon Density of States of Graphite, ***Krishnan Swaminathan-Gopalan***, *K Stephani,* University of Illinois at Urbana-Champaign

SS-TuP-13 Variation of Structure Colors of Copper with LIPSS(Laser-Induced Periodic Surface Structure) by Femtosecond Laser Irradiation, ***TaeHoon Park***, *J Kim, T Hwang, J Kang,* Korea Institute of Industrial Technology (KITECH), Republic of Korea*; K Kim,* Sejong University, Republic of Korea*; H Lee,* Korea Institute of Industrial Technology (KITECH), Republic of Korea

SS-TuP-14 Bio-synthesis of Finely Distributed Ag Nanoparticle-decorated TiO_2 Nanorods for Sunlight-induced Photoelectrochemical Water Splitting, ***Moo Hwan Cho***, *S Sawant, M Sayed, T Han, J Shim,* Yeungnam University, Republic of Korea

SS-TuP-15 Oxidation of Nb(100) and Kinetics of Surface to Bulk Transport and Extension to Nb_3Sn, ***Rachael Farber***, *D Veit, S Sibener,* The University of Chicago

Tribology Focus Topic
Room Hall B - Session TR-TuP
Tribology Focus Topic Poster Session
6:30pm

TR-TuP-1 Measurements of Microscale Friction on Molybdenum Disulfide using an Integrated Quartz Crystal Microbalance and Nanoindentation System, ***Brian Borovsky***, *G McAndrews, R Wieser,* St. Olaf College

TR-TuP-2 Sliding Wear Behavior of Tool Steel Functionalized with Organic Monolayers Against Aluminum, ***Stephan Prünte***, *D Music,* RWTH Aachen University, Germany*; V Terziyska, C Mitterer,* Montanuniversität Leoben, Austria*; J Schneider,* RWTH Aachen University, Germany

Vacuum Technology Division
Room Hall B - Session VT-TuP
Vacuum Technology Division - Poster Session
6:30pm

VT-TuP-1 Characterization and Imaging of Surface Acoustic Waves on GaAs with Raman Spectroscopy, ***Brian Rummel***, University of New Mexico*; M Henry,* Sandia National Laboratory*; S Han,* University of New Mexico

[1] **Morton S. Traum Award Finalist**
[2] **National Student Award Finalist**

VT-TuP-2 Sapphire MEMS based Capacitance Manometer for Vacuum Freeze-Drying Device, ***Masashi Sekine***, *M Soeda, T Ishihara, M Nagata,* Azbil Corporation, Japan

VT-TuP-3 Development of Vacuum Equipment Trainer (VET) Systems for Off-site Students, ***Delmer Smith***, *N Louwagie,* Normandale Community College

VT-TuP-4 Vacuum System of the SuperKEKB Main Ring in the Phase - 2 Commissioning, ***Yusuke Suetsugu***, *K Shibata, T Ishibashi, M Shirai, S Terui, K Kanazawa, H Hisamatsu,* KEK, Japan

VT-TuP-5 Smart Diagnostics for Dry Vacuum Pumps Running in Semiconductor Processes, ***Wan-Sup Cheung***, *J Lim,* KRISS, Republic of Korea; *N LEE, J LEE, T Park, T Kim,* SK Hynix, Republic of Korea

VT-TuP-6 Commissioning of Vacuum System for Positron Damping Ring for SuperKEKB, ***Kyo Shibata***, *Y Suetsugu, T Ishibashi, M Shirai, S Terui, K Kanazawa, H Hisamatsu,* KEK, Japan

VT-TuP-7 Development of a Measurement System for Pressures in Vacuum Regions using an Optical Method, ***Yoshinori Takei***, *K Arai, H Yoshida, Y Bitou, S Telada, T Kobata,* National Institute of Advanced Industrial Science and Technology (AIST), Japan

VT-TuP-8 Study on a Performance of a Sniffer Leak Detector based on EN 14624, ***Kenta Arai***, *H Yoshida,* National Institute of Advanced Industrial Science and Technology (AIST), Japan

VT-TuP-9 Elimination of Electron-Beam-Induced Carbonaceous Contamination in SEMs and the new RGM 10100 NIST Contamination Testing Artifact, ***Andras Vladar***, *K Purushotham,* National Institute of Standards and Technology (NIST)

VT-TuP-10 PAL-XFEL Vacuum System, ***Donghyun Na***, Pohang Accelerator Laboratory, Republic of Korea

VT-TuP-11 Extreme 2 Million Liter/sec Hydrogen Pump Speed Measurements of C-2W Divertors, ***Ernesto Barraza-Valdez***, *A Van Drie,* TAE Technologies

VT-TuP-12 KICT Dirty Thermal Vacuum Chamber: design, fabrication, and performance test, *T Chung,* Korea Institute of Civil Engineering and Building Technology, Republic of Korea; ***Jong Yeon Lim***, Korea Research Institute of Standards and Science, Republic of Korea; *Y Yoo, H Shin,* Korea Institute of Civil Engineering and Building Technology, Republic of Korea

Special Events Wednesday

Special Events Wednesday

6:15 AM AVS 38th Annual 5 km Run (Register at the 5 km Booth before Wednesday)/TBD, Offsite
7:30 AM AVS Diversity & Inclusion Committee Breakfast/Tides Restaurant-Hyatt Regency (by invitation)
8:00 AM ASED Business Meeting/Shoreline-Hyatt Regency
8:15 AM ASED Executive Committee Meeting & Lunch/Shoreline-Hyatt Regency (by invitation)
10:00 AM AVS Member Center: Diversity and Inclusion--"Inclusion and Diversity at the Workplace: Your Suggestions for Best Practices"/103C
10:00 AM Session Coffee Break/Hall A
12:20 PM Exhibit Hall Lunch/Hall A
12:20 PM NSTD Graduate Student and Postdoc Award Competitions/102B
12:20 PM PSTD Coburn and Winters Adjudication Session (Closed Session)/104A (by invitation)
12:30 PM AVS Member Center: Professional Development--"XPS for the Non-Analyst" & Lunch/103C
12:30 PM Governance Committee Meeting and Lunch/Tides Restaurant-Hyatt Regency (by invitation)
12:30 PM PacSurf Committee Meeting & Lunch/Tides Restaurant-Hyatt Regency (by invitation)
1:00 PM Biointerphases Strategic Planning Meeting/Seaview A-Hyatt Regency (by invitation)
3:00 PM AVS Member Center: Professional Development--"Get Involved: How to Moderate and Lead Conference Sessions"/103C
3:40 PM Session Refreshment Break/Hall A
4:30 PM Exhibitors & Manufacturers' Reception (Invitation Only)/Hall A (by invitation)
5:30 PM Heterogeneous Catalysis Graduate Student Presentation Awards Reception/201A
6:30 PM AVS Awards Ceremony & Reception/Grand Ballroom

	2D Materials Focus Topic **Room 201B - Session 2D+AM+EM+NS-WeM** **Dopants, Defects, and Interfaces in 2D Materials** **Moderator:** Eric Pop, Stanford University	**Actinides and Rare Earths Focus Topic** **Room 202C - Session AC+MI+SA-WeM** **Magnetism, Complexity, and Superconductivity in the Actinides and Rare Earths** **Moderators:** Melissa Denecke, University of Manchester, UK, David Geeson, AWE, James Tobin, UW Oshkosh
8:00am	**2D+AM+EM+NS-WeM-1** Carbon Doping of 2D Transition Metal Dichalcogenides by Plasma Enhanced CVD, ***Yanfu Lu***, *F Zhang, S Sinnott, M Terrones,* The Pennsylvania State University	**INVITED: AC+MI+SA-WeM-1** Strong electron-electron Interactions in the Actinides: Using Organometallics to Probe Delocalization Effects, ***Corwin Booth***, Lawrence Berkeley National Laboratory
8:20am	**2D+AM+EM+NS-WeM-2** Methoxy Formation Induced Defects on MoS_2*, ***Duy Le***, University of Central Florida; *P Evans,* University of Nebraska - Lincoln; *Z Hooshmand,* University of Central Florida; *T Rawal,* Oak Ridge National Laboratory; *L Bartels,* University of California, Riverside; *P Dowben,* University of Nebraska-Lincoln; *T Rahman,* University of Central Florida	Invited talk continues.
8:40am	**INVITED: 2D+AM+EM+NS-WeM-3** Defect Engineering of 2D Materials for Advanced Electronic Devices, ***Gwan-Hyoung Lee***, Yonsei University, Republic of Korea	**INVITED: AC+MI+SA-WeM-3** Structure and Magnetism of U-based Thin Films and Heterostructures, ***Evgeniya Tereshina-Chitrova***, Institute of Physics, Academy of Sciences of the Czech Republic, Czech Republic; *L Havela,* Charles University, Prague, Czech Republic; *T Gouder, Z Bao,* Institute for Transuranium Elements, Germany; *M Dopita,* Charles University, Prague, Czech Republic; *R Caciuffo,* Institute for Transuranium Elements, Germany
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**2D+AM+EM+NS-WeM-5** Modeling Defects and Electron-electron Interactions in Low-dimensional Materials, ***Daniel Gunlycke***, *C Ekuma,* U.S. Naval Research Laboratory	**INVITED: AC+MI+SA-WeM-5** Field Induced Lifshitz Transitions in URu2Si2, *E Calegari,* Univ Federale Santa Maria, Brazil; *S Magalhaes,* Universidade Federale Rio Grande do Sul, Brazil; ***Peter Riseborough***, Temple University
9:40am	**2D+AM+EM+NS-WeM-6** Post-Synthesis Modifications of Two-Dimensional $MoSe_2$ or $MoTe_2$ by Incorporation of Excess Metal Atoms into the Crystal Structure, ***Paula Mariel Coelho***, University of South Florida; *H Komsa,* Aalto University, Finland; *H Coy Diaz, Y Ma,* University of South Florida; *A Krasheninnikov,* Institute of Ion Beam Physics and Materials Research, Germany; *M Batzill,* University of South Florida	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**2D+AM+EM+NS-WeM-10** Dry Cleaning and Doping of MX_2 for Contact Engineering, ***Daniil Marinov***, IMEC, Belgium; *J Ludwig,* IMEC & KU Leuven, Belgium; *D Chiappe,* IMEC, Belgium; *E Voronina, T Rakhimova,* Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University; *J de Marneffe, I Asselberghs,* IMEC, Belgium; *S De Gendt,* IMEC, KU Leuven, Belgium	**AC+MI+SA-WeM-10** New Form of Uranium Hydride - UH_2, ***Ladislav Havela***, *M Paukov, M Dopita, L Horak, P Minarik, M Divis, I Turek,* Charles University, Prague, Czech Republic; *D Legut,* VSB-Technical University of Ostrava, Czech Republic; *T Gouder, A Seibert, F Huber,* European Commission - Joint Research Centre; *E Tereshina-Chitrova,* Institute of Physics, Academy of Sciences of the Czech Republic, Czech Republic
11:20am	**2D+AM+EM+NS-WeM-11** Deep Learning for Atomically-Resolved Scanning Transmission Electron Microscopy Experiments on 2D Materials, ***Maxim Ziatdinov***, *S Kalinin,* Oak Ridge National Laboratory	**AC+MI+SA-WeM-11** Tuning of Electronic Properties of U- and RE-Metallic Systems by H Absorption, ***Silvie Maskova***, Charles University, Prague, Czech Republic; *K Miliyanchuk,* Ivan Franko National University of Lviv, Lviv, Ukraine; *A Kolomiets,* Lviv Polytechnic National University, Lviv, Ukraine; *L Havela,* Charles University, Prague, Czech Republic
11:40am	**2D+AM+EM+NS-WeM-12** Magnetic Doping in 2D MBE-grown-$MoSe_2$/graphene Heterostructures Studied by Photoelectron Spectroscopy and Band Structure Imaging, ***Maxime Gay***, *O Renault,* CEA-LETI, France; *M Dau, C Vergnaud, M Jamet,* CEA-INAC-SPINTEC, France	**AC+MI+SA-WeM-12** Magnetic Structures of U_nRhIn_{3n+2} Materials, ***Attila Bartha***, *M Klicpera,* Charles University, Prague, Czech Republic; *P Cermak,* Forschungszentrum Juelich GmbH, Germany; *B Ouladdiaf,* Institute Laue-Langevin, France; *J Custers,* Charles University, Prague, Czech Republic
12:00pm		**AC+MI+SA-WeM-13** Insights into the Magnetic Dead Layer in $La_{0.7}Sr_{0.3}MnO_3$ Thin Films from Temperature, Magnetic Field and Thickness Dependence of their Magnetization, ***Navid Mottaghi***, *M Seehra, R Trappen, S Kumari, C Huang, S Yousefi, G Cabrera, A Romero, M Holcomb,* West Virginia University

Wednesday Morning, October 24, 2018

	Extending Additive Manufacturing to the Atomic Scale Focus Topic **Room 102B - Session AM+NS+SS-WeM** **Nanofabrication with Focused Electron Beams (8:00-10:00 am)/Atomic Scale Manipulation with Focused Electron Beams (11:00 am-12:20 pm)** **Moderator:** Ondrej Dyck, Oak Ridge National Laboratory	**Applied Surface Science Division** **Room 204 - Session AS+NS+SA-WeM** **Beyond Traditional Surface Analysis** **Moderators:** Mark Engelhard, EMSL, Environmental Molecular Sciences Laboratory, Kathryn Lloyd, DuPont
8:00am	**INVITED: AM+NS+SS-WeM-1** 3D Nano-Printing via Focused Electron Beams: An Emerging Technology for Novel Applications, ***Harald Plank***, *R Winkler, J Sattelkow,* Graz University of Technology, Austria*; J Fowlkes,* Oak Ridge National Laboratory*; P Rack,* University of Tennessee Knoxville	**AS+NS+SA-WeM-1** Solar Wind Interaction with Carbonate Deposits on Asteroid (1) Ceres' Surface: The Role of Surface Analysis in Laboratory Planetary Science, ***Catherine Dukes***, *G Rodriguez Lopez, C Bu,* University of Virginia
8:20am	Invited talk continues.	**AS+NS+SA-WeM-2** Looking Deeper and Smaller: Enhancing XPS by Hard X-ray Probes and High-resolution Imaging, ***Olivier Renault***, CEA/LETI-University Grenoble Alpes, France*; C Zborowski,* University of Southern Denmark, Denmark*; J Rueff,* Synchrotron SOLEIL, L'orme des Merisiers, France*; Y Yamashita, S Ueda,* NIMS, Japan*; G Grenet,* Lyon Institute of Nanotechnology, France*; S Tougaard,* University of Southern Denmark, Denmark
8:40am	**INVITED: AM+NS+SS-WeM-3** 3D Nanoprinting using an Electron Beam: Simulations and Computer-aided Design, ***Jason Fowlkes***, Oak Ridge National Laboratory*; R Winkler,* Graz Centre for Electron Microscopy, Austria*; B Lewis,* Carl Zeiss Microscopy, LLC*; A Fernandez-Pacheco, L Skoric, D Sanz-Hernandez,* University of Cambridge*; M Stanford, E Mutunga, P Rack,* University of Tennessee*; H Plank,* Graz University of Technology, Austria	**INVITED: AS+NS+SA-WeM-3** Reenvisioning Amphiphilicity: Translating Cell Membrane Design Principles to Synthetic 2D Materials, ***Shelley Claridge***, Purdue University
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**INVITED: AM+NS+SS-WeM-5** 2D/3D Nano-printed Functional Structures for Application and Device Development using Focused Electron Beams, ***Michael Huth***, Institute of Physics, Goethe University, Frankfurt am Main, Germany	**AS+NS+SA-WeM-5** Microstructural Effects on Surface Potential of Amorphous Solid Water, ***Caixia Bu***, *C Dukes,* University of Virginia
9:40am	Invited talk continues.	**AS+NS+SA-WeM-6** Speciation and Reactivity of Organic Matter in Uranium Mine Wastes from Laguna- New Mexico: An Application of Surface Sciences in Environmental Systems., ***Carmen A. Velasco***, *A Ali,* University of New Mexico*; C Osburn,* North Carolina State University*; K Artyushkova, J Cerrato,* University of New Mexico
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: AM+NS+SS-WeM-10** Single Atom Scale Manipulation of Matter by Scanning Transmission Electron Microscopy, ***Stephen Jesse***, *O Dyck, S Kalinin,* Oak Ridge National Laboratory	**AS+NS+SA-WeM-10** Optical Constants Measured for Iridium and Samarium by Reflection Electron Energy-loss Spectroscopy Spectra, ***LiHao Yang***, *H Xu,* University of Science and Technology of China*; A Sulyok, M Menyhard,* Institute for Technical Physics and Materials Science Centre for Energy Research, Hungarian Academy of Sciences (MTA)*; K Tokesi,* Institute for Nuclear Research, Hungarian Academy of Sciences (ATOMKI), Hungary*; Z Ding,* University of Science and Technology of China, China
11:20am	Invited talk continues.	**AS+NS+SA-WeM-11** X-Ray Photoelectron Spectroscopy and Electrical Modeling of Electrowetting on Dielectric Devices, ***Pinar Aydogan Gokturk***, Bikent University, Turkey*; B Ulgut, S Suzer,* Bilkent University, Turkey
11:40am	**INVITED: AM+NS+SS-WeM-12** Single Atom Modification of 2D Materials: Fabrication and Electronic Structure, ***Demie Kepaptsoglou***, *F Hage,* SuperSTEM Laboratory, UK*; T Susi, J Kotakoski, J Meyer,* University of Vienna, Austria*; Y Lin, K Suenaga,* National Institute of Advanced Industrial Science and Technology (AIST), Japan*; T Hardcastle,* University of Leeds, UK*; U Bangert,* University of Limerick, Republic of Ireland*; J Amani, H Hofsaess,* University of Göttingen, Germany*; Q Ramasse,* SuperSTEM Laboratory, UK, United Kingdom of Great Britain and Northern Ireland	**AS+NS+SA-WeM-12** Near Ambient Pressure XPS Study of Oxygen Binding to the Surface of Transition Metal-nitrogen-carbon Electrocatalysts for Oxygen Reduction, *K Artyushkova,* ***Yechuan Chen***, *P Atanassov,* University of New Mexico
12:00pm	Invited talk continues.	**AS+NS+SA-WeM-13** Surface Chemistry of Scandium, ***Michael Brumbach***, *D Casalnuovo, E Barnat, C Winters, D Robinson Brown, C Snow, A Grillet,* Sandia National Laboratories

Wednesday Morning, October 24, 2018

	Electronic Materials and Photonics Division Room 101A - Session EM+AN+MI+SS-WeM Surface and Interface Challenges in Electronics and Photonics **Moderators:** Andy Antonelli, Nanometrics, Michael Filler, Georgia Institute of Technology	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Room 201A - Session HC+SS-WeM Mechanisms and Reaction Pathways of Heterogeneously Catalyzed Reactions **Moderator:** Johan Gustafson, Lund University
8:00am	**INVITED: EM+AN+MI+SS-WeM-1** Few Monolayer Atomic Layer Deposition (ALD) to Engineer New Surfaces and Interfaces, ***Parag Banerjee,*** Washington University in St. Louis	**HC+SS-WeM-1** Surface Reactions of Methanol on Fe_3O_4(001) and Pd/Fe_3O_4(001) Model Catalysts, ***Matthew Marcinkowski,*** *N Doudin, R Smith, B Kay, Z Dohnalek,* Pacific Northwest National Laboratory
8:20am	Invited talk continues.	**HC+SS-WeM-2** Hydrogen Activation and Spillover on Single Palladium Atoms Supported on Fe_3O_4(001) Surface, ***Nassar Doudin,*** Pacific Northwest National Laboratory; *J Cheng Liu,* Tsinghua University, China; *M Marcinkowski, M Nguyen,* Pacific Northwest National Laboratory; *J Li,* Tsinghua University, China; *V Glezakou,* Pacific Northwest National Laboratory; *G Parkinson,* Vienna University of Technology, Austria; *R Rousseau, Z Dohnálek,* Pacific Northwest National Laboratory
8:40am	**EM+AN+MI+SS-WeM-3** Lattice-alignment mechanism of SiGe on Sapphire, ***HyunJung Kim,*** National Institute of Aerospace; *S Choi,* NASA Langley Research Center	**INVITED: HC+SS-WeM-3** Model Studies on Ligand-assisted Heterogeneous Catalysis, ***Swetlana Schauermann,*** Christian-Albrechts-University Kiel, Germany
9:00am	**EM+AN+MI+SS-WeM-4** An Effort to Resolve Band Offset Anomalies in ZnO/GaN Heterostructures, ***Monu Mishra***[1], *A Gundimeda, V Vandana, G Gupta,* CSIR-National Physical Laboratory, India	Invited talk continues.
9:20am	**EM+AN+MI+SS-WeM-5** Stress Relaxation in the Si-SiO2 System and its Influence on the Interface Properties, ***Daniel Kropman,*** *T Laas,* Tallinn University, Estonia; *A Medvids,* Riga Technical University, Latvia	**HC+SS-WeM-5** *In situ* Structural Studies and Gas Phase Visualization of Model Catalysts at Work, ***Sara Blomberg***[2], *J Zetterberg, J Zhou, J Gustafson, E Lundgren,* Lund University, Sweden
9:40am	**EM+AN+MI+SS-WeM-6** Unique Sensitivity to Deep Trap States Demonstrated by CREM of Broad Bandgap Dielectric Layers, ***Hagai Cohen,*** Weizmann Institute of Science, Israel; *K Steirer,* Colorado School of Mines	**HC+SS-WeM-6** Adsorption, Thermal Stability, and Kinetics of Atomic Oxygen at Ag(111) and Ag(110) Surfaces, ***Sara Isbill***[2], *S Roy,* University of Tennessee Knoxville
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**EM+AN+MI+SS-WeM-10** Fabrication of Multilayered Optically Active Nanocrystal Solids by Surface Passivation using Metal Oxides: ALD vs CVD, ***Riya Bose,*** *A Dangerfield,* University of Texas at Dallas; *S Rupich,* University of Texas; *Y Chabal, A Malko,* University of Texas at Dallas	**HC+SS-WeM-10** Understanding the Intrinsic Surface Reactivity of Multilayer vs. Single-layer PdO(101) on Pd(100), ***Jason Weaver,*** *V Mehar,* University of Florida; *M Kim,* Ohio State University; *M Shipilin,* Lund University, Sweden; *M van den Bossche,* Chalmers University of Technology, Gothenburg, Sweden; *J Gustafson,* Lund University, Sweden; *L Merte,* Chalmers University of Technology, Gothenburg, Sweden; *U Hejral,* Lund University, Sweden; *H Gronbeck,* Chalmers University of Technology, Gothenburg, Sweden; *E Lundgren,* Lund University, Sweden; *A Asthagiri,* Ohio State University
11:20am	**EM+AN+MI+SS-WeM-11** The Role of Surface Oxides for the Optoelectronic Performance of III-V Semiconductor Nanowires, *J Colvin, A Troian, O Persson, A Mikkelsen,* ***Rainer Timm,*** Lund University, Sweden	**HC+SS-WeM-11** Simultaneous Study of Catalyst Structure, Gas Phase and Morphology, ***Sebastian Pfaff,*** *J Zhou, S Albertin,* Lund University, Sweden; *M Shipilin,* Stockholm University, Sweden; *J Gustafson, S Blomberg, E Lundgren, J Zetterberg,* Lund University, Sweden
11:40am	**EM+AN+MI+SS-WeM-12** Photonic Annealing of 2D Transition Metal Dichalcogenides for Tailored Optical Properties, ***Rachel Rai,*** *K Gliebe,* University of Dayton; Air Force Research Laboratory; *N Glavin, R Kim, A Jawaid, R Wheeler, L Bissell,* Air Force Research Laboratory; *C Muratore,* University of Dayton	**INVITED: HC+SS-WeM-12** New Catalysis for Light Alkanes – From Methane Functionalization to Light Akenes, ***Johannes Lercher,*** Pacific Northwest National Laboratory and TU München, United States of America/Germany
12:00pm	**EM+AN+MI+SS-WeM-13** Polarity Control of GaN Nanowires on Diamond: Experiment and Theory, ***Karin Larsson,*** Uppsala University, Sweden; *M Hetzl, M Kraut, T Hoffmann, M Stutzmann,* Technical University Munich, Germany	Invited talk continues.

[1] **National Student Award Finalist**

[2] **Heterogeneous Catalysis Graduate Student Presentation Award Finalist**

Wednesday Morning, October 24, 2018

	Industrial Physics Forum **Room 101B - Session IPF+AS+BI+NS-WeM** **IoT Session: Bioanalytics, Biosensors and Diagnostics** **Moderators:** Anna Belu, Medtronic, Inc., Sally McArthur, Swinburne University of Technology, Australia	**MEMS and NEMS Group** **Room 202B - Session MN+NS+PS-WeM** **IoT Session: Multiscale Manufacturing: Enabling Materials and Processes** **Moderators:** Susan Burkett, The University of Alabama, Roya Maboudian, University of California at Berkeley
8:00am		**INVITED: MN+NS+PS-WeM-1** Miniaturizing 3D Printed Microfluidics: State-of-the-Art and Outlook, ***Greg Nordin,*** Brigham Young University
8:20am		Invited talk continues.
8:40am	**INVITED: IPF+AS+BI+NS-WeM-3** Harnessing Bacteria for Fabrication of Photoelectrodes and Pressure Sensors, *Y Feng, K Marusak, Y Cao, E Ngaboyamahina, J Glass, L You,* ***Stefan Zauscher,*** Duke University	**MN+NS+PS-WeM-3** A Novel Inkjet Printing Technology Based on Plasma Conversion of Metal-Salt Based Inks for the Fabrication of Microfabricated Sensors, *Y Sui, M Sankaran,* ***Christian Zorman,*** Case Western Reserve University
9:00am	Invited talk continues.	**MN+NS+PS-WeM-4** Full Wafer Thickness Through Silicon Vias for MEMS Devices, ***Andrew Hollowell,*** *E Baca, D Dagel, M Jordan, L Menk, K Musick, T Pluym, J McClain,* Sandia National Laboratories
9:20am	**INVITED: IPF+AS+BI+NS-WeM-5** Surface Chemistry and Surface Analysis: Their Importance and Application in Industrial Genomics, ***Fiona Black,*** Illumina Inc.	**MN+NS+PS-WeM-5** Scaling from Die Level to Full 150 mm Wafer TSV Filling through Fluid Dynamics Modeling and Current Controlled Deposition, ***Ehren Baca,*** *M Jordan, L Menk, K Musick, P Yeh, A Hollowell,* Sandia National Laboratories
9:40am	Invited talk continues.	**MN+NS+PS-WeM-6** Batch Level Electroless Under Bump Metallization for Singulated Semiconductor Die, ***Matthew Jordan,*** *E Baca, J Pillars, C Michael, A Hollowell,* Sandia National Laboratories
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: IPF+AS+BI+NS-WeM-10** Design and Evaluation of Organosilica Nanosensors for Continuous Molecular Monitoring in Complex Biological Environments, ***Simon Corrie,*** Monash Univ., Melbourne AU, Australia	**INVITED: MN+NS+PS-WeM-10** MEMS-based Atomic Force Microscopy Probes: From Electromechanical to Optomechanical Vibrating Sensors, ***Bernard Legrand,*** LAAS-CNRS, France*; L Schwab,* LAAS-CNRS, Univ Tououse, France*; P Allain, I Favero,* MPQ, CNRS, Univ Paris Diderot, France*; M Faucher, D Théron,* IEMN, CNRS, Univ Lille, France*; B Walter,* Vmicro SAS, France*; J Salvetat,* CRPP, CNRS, Univ Bordeaux, France*; S Hentz, G Jourdan,* CEA-LETI, France
11:20am	Invited talk continues.	Invited talk continues.
11:40am	**INVITED: IPF+AS+BI+NS-WeM-12** Optoregulated Biointerfaces, ***Aránzazu del Campo,*** INM-Leibniz Institute for New Materials, Germany	**MN+NS+PS-WeM-12** Suppressing Secondary Grain Growth in $Sc_{0.125}Al_{0.875}N$ Using a CMOS Compatible Electrode, ***Giovanni Esteves,*** *M Berg, M Henry, B Griffin, E Douglas,* Sandia National Laboratories
12:00pm	Invited talk continues.	**MN+NS+PS-WeM-13** A Low Voltage NEMS Relay. Design, Fabrication and Challenges, *A Solot, A Dinescu,* National Institute for R&D in Microtechnologies (IMT), Bucharest, Romania*; M Fernandez-Bolaños, A Ionescu,* École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland*;* ***Gina Adam,*** National Institute for R&D in Microtechnologies (IMT Bucharest), Romania

Wednesday Morning, October 24, 2018

	Nanometer-scale Science and Technology Division **Room 203A - Session NS+2D+AN+MN+MP+SE-WeM** **Micro, Nano and Opto Mechanics** **Moderators:** Robert Ilic, National Institute of Standards and Technology (NIST), Alokik Kanwal, NIST Center for Nanoscale Science and Technology	**Processing and Characterization of Air-Liquid, Solid-Liquid and Air-Solid Interfaces Focus Topic** **Room 202A - Session PC+AS+BI+EM+PB+SS-WeM** **Novel Approaches and Challenges of Interfaces** **Moderators:** Andrei Kolmakov, National Institute of Standards and Technology (NIST), Xiao-Ying Yu, Pacific Northwest National Laboratory
8:00am		**INVITED: PC+AS+BI+EM+PB+SS-WeM-1** Probing Chemical Species and Potential Profiles of Electrified Interfaces, ***Ethan J. Crumlin,*** Advanced Light Source, Lawrence Berkeley National Laboratory
8:20am	**NS+2D+AN+MN+MP+SE-WeM-2** The Collective Behavior of Large Ensembles of Coupled MEMS Cantilevers with Varying Natural Frequencies, ***Christopher Wallin,*** National Institute of Standards and Technology, Center for Nanoscale Science and Technology; *N Dick,* Tel Aviv University, Israel; *R De Alba, D Westly,* National Institute of Standards and Technology, Center for Nanoscale Science and Technology; *S Grutzik,* Sandia National Laboratories; *A Zehnder, R Rand,* Cornell University; *V Aksyuk,* National Institute of Standards and Technology, Center for Nanoscale Science and Technology; *S Krylov,* Tel Aviv University, Israel; *R Ilic,* National Institute of Standards and Technology, Center for Nanoscale Science and Technology	Invited talk continues.
8:40am	**INVITED: NS+2D+AN+MN+MP+SE-WeM-3** Piezoelectric Optomechanical Systems, ***Krishna Coimbatore Balram,*** University of Bristol, UK	**PC+AS+BI+EM+PB+SS-WeM-3** Observation of Electron Transfer in Riboflavin Reduction by In Situ Liquid SIMS, ***Rachel Komorek,*** *X Yu, Z Zhu, X Yu,* Pacific Northwest National Laboratory
9:00am	Invited talk continues.	**PC+AS+BI+EM+PB+SS-WeM-4** Electrowetting of Liquid Drops Revisited by XPS, ***Sefik Suzer,*** *P Gokturk, B Ulgut,* Bilkent University, Turkey
9:20am	**NS+2D+AN+MN+MP+SE-WeM-5** Absolute Deflection Measurements in a MEMS/NEMS Fabry-Perot Interferometry System, ***Roberto De Alba,*** *C Wallin, G Holland,* National Institute of Standards and Technology; *S Krylov,* Tel Aviv University, Israel; *R Ilic,* National Institute of Standards and Technology	**INVITED: PC+AS+BI+EM+PB+SS-WeM-5** Probing Interfaces in Heterogeneous Catalysts at Atomic Scale: Current and Emerging STEM Techniques, ***Miaofang Chi,*** Oak Ridge National Laboratory
9:40am	**NS+2D+AN+MN+MP+SE-WeM-6** Silicon on Insulator Electrostatically Actuated Bistable Cantilevers for Resonant Displacement/Acceleration Sensing, *O HaLevy, E Benjamin, N Krakover, Y Kessler,* ***Slava Krylov,*** Tel Aviv University, Israel	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: NS+2D+AN+MN+MP+SE-WeM-10** Electron-Photon-Phonon Hybrid Systems Based on Compound Semiconductor Mechanical Resonators, ***Hiroshi Yamaguchi,*** NTT Basic Research Laboratories, Nippon Telegraph and Telephone Corporation, Japan	**PC+AS+BI+EM+PB+SS-WeM-10** From 2D to Advanced 3D Surface Functionalization using Self-limiting Reactions in the Fluidized Bed Reactor Technology, ***Didier Arl,*** *T Da Cunha, N Adjeroud, K Menguelti, M Gerard, D Lenoble,* Luxembourg Institute of Science and Technology (LIST), Luxembourg
11:20am	Invited talk continues.	
11:40am	**NS+2D+AN+MN+MP+SE-WeM-12** Size Dependent Mechanics of Elastomers, ***Le Li,*** *N Alsharif, K Brown,* Boston University	

Wednesday Morning, October 24, 2018

	Plasma Science and Technology Division **Room 104B - Session PS+AS+EL+EM+SE-WeM** **Current and Future Stars of the AVS Symposium I** **Moderator:** Eric A. Joseph, IBM Research Division, T.J. Watson Research Center	**Plasma Science and Technology Division** **Room 104A - Session PS+EM-WeM** **Advanced Patterning** **Moderators:** Jeffrey Shearer, IBM Research Division, Albany, NY, Yiting Zhang, KLA-Tencor
8:00am		**PS+EM-WeM-1** Study of High Selective Silicon Nitride Etching Mechanisms in Remote Plasmas: Impact of Wafer Temperature, ***Emilie Prevost,*** STMicroelectronics, France*; L Vallier, G Cunge,* LTM, Univ. Grenoble Alpes, CEA-LETI, France*; C De Buttet,* CEA-LETI, France*; S Lagrasta,* STMicroelectronics, France*; C Petit-Etienne,* LTM, Univ. Grenoble Alpes, CEA-LETI, France
8:20am	**PS+AS+EL+EM+SE-WeM-2** Invited Talk-Future Stars of AVS Session: Ellipsometry at THz Frequencies: New Approaches for Metrology and Metamaterial-based Sensing, ***Tino Hofmann***[1], University of North Carolina at Charlotte	**PS+EM-WeM-2** Mechanism of Highly Selective SiO_2 Etching over Si_3N_4 using a Cyclic Process with BCl_3 and Fluorocarbon Gas Chemistries, ***Miyako Matsui,*** Hitachi Ltd., Japan*; K Kuwahara,* Hitachi High-Technologies Corp., Japan
8:40am	**PS+AS+EL+EM+SE-WeM-3** Invited Talk-Future Stars of AVS Session: Remote Epitaxy – The Future for Stackable SiC Electronics, ***Rachael Myers-Ward***[1], U.S. Naval Research Laboratory*; J Kim,* Massachusetts Institute of Technology*; M DeJarld,* US Naval Research Laboratory*; K Qiao, Y Kim,* Massachusetts Institute of Technology*; S Pavunny, K Gaskill,* U.S. Naval Research Laboratory	**INVITED: PS+EM-WeM-3** DSA Patterning for and Beyond CMOS, ***Patricia Pimenta Barros,*** CEA-LETI, France*; N Posseme,* CEA, LETI, France, France*; S Barnola,* CEA-LETI, France*; R Tiron,* CEA-LETI, MINATEC, France*; A Gharbi, M Argoud, Z Chalupa, M Gusmao-Cacho,* CEA-LETI, France*; A Paquet,* Arkema, France*; F Delachat,* CEA-LETI, France*; Nicolet, Navarro,* Arkema, France
9:00am	**PS+AS+EL+EM+SE-WeM-4** Invited Talk-Future Stars of AVS Session: Low-Temperature Growth for 3D Integration of van der Waals Materials, ***Christopher L. Hinkle***[1], University of Texas at Dallas	Invited talk continues.
9:20am	**PS+AS+EL+EM+SE-WeM-5** Invited Talk-Future Stars of AVS Session: Engineering the Properties at Heusler Interfaces, ***Jason Kawasaki***[1], University of Wisconsin - Madison	**PS+EM-WeM-5** Composition Modulation of SiGe for Si/SiGe Dual Channel Fin Application, ***Yohei Ishii,*** Hitachi High Technologies America Inc.*; Y Lee,* National Nano Divice Laboratories*; W Wu,* National Nano Device Laboratories*; K Maeda,* Hitachi High Technologies America Inc.*; H Ishimura,* Hitachi High-Technologies Taiwan Corp.*; M Muira,* Hitachi High-Technologies Corp.
9:40am	**PS+AS+EL+EM+SE-WeM-6** Invited Talk-Future Star of AVS Session: Atom Probe Tomography for 3D Semiconductor Devices Applications, ***Ajay Kumar Kambham***[1], GLOBALFOUNDRIES U.S. Inc.	**PS+EM-WeM-6** Etching Mechanisms of Si Containing Materials in Remote Plasma Source using NF3 based Gas Mixture, ***Erwine Pargon,*** *V Renaud, C Petit-Etienne, L Vallier, G Tomachot, G Cunge, O Joubert,* Univ. Grenoble Alpes, CNRS, LTM, Grenoble, France*; J Barnes, N Rochat,* Univ. Grenoble Alpes, CEA, LETI, Grenoble , France
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**PS+AS+EL+EM+SE-WeM-10** Invited Talk-Future Stars of AVS Session: Three-Dimensional Imaging of Complex Oxide Interfaces, ***Divine P. Kumah***[1], North Carolina State University	**PS+EM-WeM-10** Precise Control of Silicon Nitride Spacer Etching Selectively to Silicon for 3D CMOS Device, *V Ah-Leung, N Possémé,* ***Olivier Pollet,*** *S Barnola,* CEA-LETI, France
11:20am	**PS+AS+EL+EM+SE-WeM-11** Invited Talk-Future Stars of AVS Session: Illuminating Physics of Magnetron Sputtering Discharges, ***Matjaz Panjan***[1], Jozef Stefan Institute, Slovenia	**PS+EM-WeM-11** A Study on the Distortion of Poly Si Nano Hole Profile with High Aspect Ratio in sub X nm, ***Jin Won Lee,*** *J Lee, K Seong, T Kwon, H Jeong, S Hong, D Han, B Lim, A Ji, Y Oh, J Park,* Samsung Electronics, Republic of Korea
11:40am	**INVITED: PS+AS+EL+EM+SE-WeM-12** Peter Mark Memorial Award: Plasma-bio Interactions: Investigating Mechanisms to Enable New Applications, ***Peter Bruggeman***[2], University of Minnesota	**INVITED: PS+EM-WeM-12** Etching Recipe Optimization Using Machine Learning, ***Takeshi Ohmori,*** *H Nakada, M Ishikawa, N Kofuji, T Usui, M Kurihara,* Hitachi, Ltd., Japan
12:00pm	Invited talk continues.	Invited talk continues.

[1] **Future Stars of the AVS**

[2] **Peter Mark Memorial Award Winner**

Wednesday Morning, October 24, 2018

	Plasma Science and Technology Division **Room 104C - Session PS+MN-WeM** **IoT Session: Enabling IoT Era** **Moderators:** Ankur Agarwal, KLA-Tencor, David Lishan, Plasma-Therm LLC	**Surface Science Division** **Room 203C - Session SS+HC-WeM** **Catalytic Alloys: Understanding Heterogeneity** **Moderators:** April Jewell, Jet Propulsion Laboratory, Jean-Sabin McEwen, Washington State University
8:00am	**INVITED: PS+MN-WeM-1** A "Moore's Law" for Packaging, ***Subramanian Iyer,*** University of California at Los Angeles	**INVITED: SS+HC-WeM-1** Toward Surface Science-informed Design of Bifunctional Deoxygenation Catalysts, ***J. Will Medlin,*** University of Colorado Boulder
8:20am	Invited talk continues.	Invited talk continues.
8:40am	**PS+MN-WeM-3** Fabrication, Chemical Lift-Off and Optical Characterization of Nanoscale III-Nitride Light Emitters, ***Lesley Chan***[1]*, C Pynn, P Shapturenka, T Margalith, S DenBaars, M Gordon,* University of California at Santa Barbara	**SS+HC-WeM-3** Computationally Assisted Correlative STEM and EXAFS Characterization for Multiscale Structure Determination of Tunable Rh/Au Bimetallic Nanoparticle Catalysts, *S House, C Bonifacio,* University of Pittsburgh*; J Timoshenko,* Stony Brook University*; P Kunal, H Wan, Z Duan, H Li,* University of Texas at Austin*; **Judith Yang,*** University of Pittsburgh*; A Frenkel,* Stony Brook University*; S Humphrey, R Crooks, G Henkelman,* University of Texas at Austin
9:00am	**PS+MN-WeM-4** High Radical Flux, with Low Ion and Photon Flux, Plasma Source, for MEM'S Technology, ***Marc Segers,*** *Y Pilloux, D Lishan, S FERRAND,* Plasma-Therm LLC	**SS+HC-WeM-4** Designing Heterogeneous Alloy Catalysts from First Principles and Surface Science, ***Charles Sykes,*** Tufts University
9:20am	**INVITED: PS+MN-WeM-5** Use of Plasma in Advanced Packaging, ***Michael Seddon,*** ON Semi	**SS+HC-WeM-5** Extracting Diffusing Parameters for Cu and S from Surface Segregation Data Recorded with AES on a Ni-Cu(S) Ternary Alloy, ***Jacobus Terblans,*** University of the Free State, South Africa*; X Yan,* University of the Free State, China*; J Wand,* Shantou University, China*; H Swart,* University of the Free State, Republic of South Africa, South Africa
9:40am	Invited talk continues.	**SS+HC-WeM-6** Atomic and Electronic Structure of CoO Nanoislands on Au(111), ***Ana Sanchez-Grande,*** IMDEA Nanoscience, Spain*; J Rodriguez-Fernandez,* Aarhus University, Denmark*; E Carrasco, B Cirera, K Lauwaet,* IMDEA Nanoscience, Spain*; J Fester,* Aarhus University, Denmark*; R Miranda,* Universidad Autonoma Madrid, Spain*; J Lauritsen,* Aarhus University, Denmark*; D Ecija,* IMDEA Nanoscience, Spain
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: PS+MN-WeM-10** Low Temperature Plasmas in Nanotechnology Applications, ***Meyya Meyyappan,*** NASA Ames Research Center	**INVITED: SS+HC-WeM-10** Using Water as a Co-catalyst in Heterogeneous Catalysis to Improve Activity and Selectivity, ***Lars Grabow,*** University of Houston
11:20am	Invited talk continues.	Invited talk continues.
11:40am	**PS+MN-WeM-12** Gas Phase Synthesis of Pure III-V Semiconductor Nanoparticles from Bulk Metals by using Low Temperature Plasma, ***Necip Berker Uner,*** *E Thimsen,* Washington University in St. Louis	**SS+HC-WeM-12** Experimental and Theoretical Evaluation of Water Chemistry on Two-dimensional Silica and Aluminosilicate, ***Jin-Hao Jhang,*** *G Hutchings,* Yale University*; J Boscoboinik,* Center for Functional Nanomaterials Brookhaven National Laboratory*; E Altman,* Yale University
12:00pm	**PS+MN-WeM-13** Investigation of Fundamental Hydrocarbon Plasma Chemistry for Unraveling Film Deposition Processes on Nanomaterials, ***Tara Van Surksum,*** *E Fisher,* Colorado State University	**SS+HC-WeM-13** Double Layer Formation of Water Molecules on Graphene, *A Akaishi, T Yonemaru,* ***Jun Nakamura,*** The University of Electro-Communications (UEC-Tokyo), Japan

[1] **Coburn & Winters Student Award Finalist**

Wednesday Morning, October 24, 2018

	Thin Films Division **Room 102A - Session TF+EM+MI-WeM** **Thin Film Processes for Electronics and Optics I** **Moderators:** Joe Becker, Kurt J. Lesker Company, Virginia Wheeler, U.S. Naval Research Laboratory	**Vacuum Technology Division** **Room 203B - Session VT-WeM** **Vacuum Technology Developments** **Moderators:** Jason Carter, Argonne National Laboratory, Yulin Li, Cornell University
8:00am	**INVITED: TF+EM+MI-WeM-1** Crystalline Conductors: Transition Metal Nitride Materials and Device Applications, ***David Meyer,*** *D Katzer, N Nepal, B Downey, M Hardy, D Storm,* U.S. Naval Research Laboratory	**VT-WeM-1** Trace Helium Effects from High Pressure Swing Adsorption Nitrogen Generator on Semiconductor Capital Equipment Manufacturer, *S Borichevsky,* ***William Johnson,*** Applied Materials, Varian Semiconductor Equipment
8:20am	Invited talk continues.	**VT-WeM-2** Remote Handling Clamps for Flange Connections in Vacuum Service, ***Ryan McCall,*** Technetics Group
8:40am	**TF+EM+MI-WeM-3** Growth Mechanism and Characteristics of Hf-Si-O Film by PE-ALD using TDMAS and TDMAH Precursors and Oxygen Plasma Gas, ***Toshihide Nabatame,*** National Institute for Materials Science (NIMS), Japan; *M Inoue,* National Institute for Materials Science (NIMS); *E Maeda, K Yuge, M Hirose,* Shibaura Institute of Technology, Japan; *M Takahashi, K Ito,* Joining and Welding Research Institute, Osaka University, Japan; *N Ikeda,* National Institute for Materials Science (NIMS), Japan; *T Ohishi,* Shibaura Institute of Technology, Japan; *A Ohi,* National Institute for Materials Science (NIMS), Japan	
9:00am	**TF+EM+MI-WeM-4** Atomic Layer Epitaxy of Ultra-wide Bandgap Ga_2O_3 Films, ***Virginia Wheeler,*** *N Nepal,* U.S. Naval Research Laboratory; *L Nyakiti,* Texas A&M University; *D Boris, S Walton, B Downey, D Meyer, C Eddy Jr.,* U.S. Naval Research Laboratory	**VT-WeM-4** Role of Rotor Surface Conditions on Calibration Constant of Spinning Rotor Gauges, ***Tim Verbovsek,*** Institute of Metals and Technology, Slovenia
9:20am	**TF+EM+MI-WeM-5** Effects of Process Gases and Gate TiN Electrode during the Post Deposition Anneal to ALD-Al_2O_3 Dielectric Film, ***Masaya Saito,*** *A Teramoto, T Suwa, K Nagumo, Y Shiba, R Kuroda, S Sugawa,* Tohoku University, Japan	**VT-WeM-5** Condensation-based Low-grade Heat Powered Dual-chamber Vacuum Technology, ***Tony Guo,*** New Jersey Institute of Technology
9:40am	**TF+EM+MI-WeM-6** Controlling the NbO_xMaterials System for Neuromorphic Computing, ***Alexander C. Kozen,*** U.S. Naval Research Laboratory; *Z Robinson, A Rowley,* The College at Brockport - SUNY; *T Larrabee, M Twigg, H Cho, S Prokes,* U.S. Naval Research Laboratory	**VT-WeM-6** Vacuum Design and Testing of the ARIEL Radio Frequency Quadrupole Buncher and Cooler (ARQB), ***Geoff Hodgson,*** *B Barquest,* TRIUMF, Canada
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**TF+EM+MI-WeM-10** Sputtering Power Dependent on Switching Characteristics of ZnO-based Transparent Resistive Memory Devices, ***Firman Mangasa Simanjuntak,*** Tohoku University, Japan; *T Ohno,* Oita University, Japan; *S Samukawa,* Tohoku University, Japan	
11:20am	**TF+EM+MI-WeM-11** Influence of Iintrinsic and Extrinsic Dopants in HfO_x Films for Resistive Switching Memory, ***SungYeon Ryu,*** *Y Kim,* Seoul National University of Science and Technology, Republic of Korea; *W Park, S Kim,* SK Hynix Inc., Republic of Korea; *B Choi,* Seoul National University of Science and Technology, Republic of Korea	
11:40am	**TF+EM+MI-WeM-12** Scaling up of an Electrochemical Atomic Layer Deposition of Copper, *D Dictus,* Lam Research Corporation, Belgium; ***Aniruddha Joi,*** Lam Research Corporation; *G Alessio Verni,* Lam Research Corporation, Belgium; *K Vandersmissen,* Imec, Belgium; *B Frees,* Lam Research Corporation, Belgium; *D Yezdi,* Lam Research Corporation	
12:00pm	**TF+EM+MI-WeM-13** A Novel High-deposition-rate PECVD Process based on Hollow Cathode Plasma Technique, *S Shayestehaminzadeh, N Rivolta,* AGC Glass Europe, Belgium; *M Datz,* Interpane E&B GmbH; ***John Chambers,*** AGC North America; *H Wiame,* AGC Glass Europe, Belgium	

Exhibitor Technology Spotlight Workshops
Room Hall A - Session EW-WeB
Exhibitor Technology Spotlight Session IV
Moderator: Christopher Moffitt, Kratos Analytical Inc

10:00am		
10:20am	**EW-WeB-2** HAXPES-Lab: A Laboratory Based System for HAXPES Measurements, ***Susanna Eriksson,*** Scienta Omicron	
10:40am	**EW-WeB-3** Coatings Characterization Solution from Fischer Technology - XRF, Nanoindentation and Progressive Load Scratch, ***Rahul Nair,*** Fischer Scientific	

Exhibitor Technology Spotlight Workshops
Room Hall A - Session EW-WeL
Exhibitor Technology Spotlight Session V
Moderator: Christopher Moffitt, Kratos Analytical Inc

12:00pm		
12:20pm		
12:40pm	**EW-WeL-3** The TESLA JT SPM*,* ***Markus Maier****,* Scienta Omicron GmbH, Germany	
1:00pm	**EW-WeL-4** MKS Instruments, Inc., 523 Granville-Phillips® Wide-Range Cold Cathode Transducer: Applications and Market Update*,* ***David Kelly****,* MKS Instruments	

	2D Materials Focus Topic **Room 201B - Session 2D+MN+NS+SS-WeA** **IoT Session: Surface Chemistry, Functionalization, Bio and Sensor Applications** **Moderator:** Daniel Walkup, National Institute of Standards and Technology (NIST)/ University of Maryland, College Park	**Actinides and Rare Earths Focus Topic** **Room 202C - Session AC+AS+SA-WeA** **Chemistry and Physics of the Actinides and Rare Earths** **Moderators:** Krzysztof Gofryk, Idaho National Laboratory, Ladislav Havela, Charles University, Czech Republic, David Shuh, Lawrence Berkeley National Laboratory
2:20pm	**2D+MN+NS+SS-WeA-1** Impact of Hydrogen on Graphene-based Materials: Atomistic Modeling and Simulation of HRSTEM Images, *C Guedj,* Univ. Grenoble Alpes, CEA, LETI, France*; L Jaillet, F Rousse,* ***Stéphane Redon,*** Univ. Grenoble Alpes, CNRS, INRIA, Grenoble INP*, LJK, France, France	**INVITED: AC+AS+SA-WeA-1** New Directions in f-Block Separations Chemistry based on Metal and Ligand Redox Activity, ***Eric Schelter,*** *A McSkimming,* University of Pennsylvania*; J Su,* Los Alamos National Laboratory,*; T Cheisson, H Fang,* University of Pennsylvania*; L Moreau,* Lawrence Berkeley National Laboratory, Berkeley*; B Cole, B Manor, M Gau, P Carroll,* University of Pennsylvania*; E Batista, P Yang,* Los Alamos National Laboratory*; C Booth,* Lawrence Berkeley National Laboratory*; Y Qiao, J Bogart,* University of Pennsylvania
2:40pm	**2D+MN+NS+SS-WeA-2** High Density H2 and He Plasmas: Can They be used to Treat Graphene?, ***Hasan-Al Mehedi,*** Laboratoire des Technologies de la Microélectronique, CNRS-UJF, France*; D Ferrah,* Cea, Leti, Minatec, France*; J Dubois,* Laboratoire des Technologies de la Microélectronique, CNRS-UJF*; C Petit-Etienne,* Laboratoire des Technologies de la Microélectronique, CNRS-UJF, France*; H Okuno,* Cea, Inac/sp2m/lemma*; V Bouchiat,* Institut Néel, CNRS-UJF-INP*; O Renault,* CEA/LETI-University Grenoble Alpes, France*; G Cunge,* Laboratoire des Technologies de la Microélectronique, CNRS-UJF, France	Invited talk continues.
3:00pm	**2D+MN+NS+SS-WeA-3** Novel Binder-free Ag@Ni(OH)$_2$ over Graphene/Ni Foam and Glucose Sensing, ***Tong-Hyun Kang,*** *J Yu,* DGIST, Republic of Korea	**INVITED: AC+AS+SA-WeA-3** Bond Distance Variations for Lanthanide and Actinide Compounds and its Implication, ***Tsuyoshi Yaita,*** Japan Atomic Energy Agency, Japan*; S Suzuki, T Kobayashi, H Shiwaku,* Materials Sciences Research Center, Japan Atomic Energy Agency, Japan
3:20pm	**2D+MN+NS+SS-WeA-4** Surface Modification and Magnetization of Carbon Based Nanostructures, ***Rina Tannenbaum,*** University of Stony Brook*; I Kim,* Gachon University, Korea*; S Sharma,* University of Stony Brook	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**2D+MN+NS+SS-WeA-7** Chemical Modification of Graphene and Carbon Nano Tubes as viewed by XPS and NEXAFS Spectroscopies underpinned by DFT Spectra Simulation, *C Ehlert, E Donskyi,* Bundesanstalt für Materialforschung und -prüfung (BAM), Germany*; P Girard-Lauriault,* McGill University, Canada*; R Illgen,* Bundesanstalt für Materialforschung und -prüfung (BAM), Germany*; A Lippitz,* Bundesanstalt für Materialforschung und -prüfung (BAM)*; R Haag, M Adeli,* Freie Universität Berlin, Germany*;* ***Wolfgang Unger,*** Bundesanstalt für Materialforschung und -prüfung (BAM), Germany	**INVITED: AC+AS+SA-WeA-7** Spectroscopic Studies of Trivalent Actinide Coordination, ***Benjamin Stein,*** *M Kerlin, A Morgenstern, E Batista, S Bone, S Cary,* Los Alamos National Laboratory*; J Lezama Pacheco,* SLAC National Accelerator Laboratory*; S Kozimor, P Yang,* Los Alamos National Laboratory
4:40pm	**2D+MN+NS+SS-WeA-8** Elastic Spongy Graphene-Functionalized Silicon Anode with Excellent Cycle Stability in Li battery, ***Byong-June Lee,*** *J Yu,* DGIST, Republic of Korea	Invited talk continues.
5:00pm	**2D+MN+NS+SS-WeA-9** Electrical and Structural Changes of Multilayer WSe_2 Transistors: Atmospheric Gas Adsorption and Long Term Aging, ***Anna Hoffman,*** University of Tennessee Knoxville, usa*; M Stanford, C Zhng,* University of Tennessee Knoxville*; I Ivanon,* Oak Ridge National Laboratory*; A Oyedele, D Mandrus,* University of Tennessee Knoxville*; L Liang, B Sumpter, K Xiao,* Oak Ridge National Laboratory*; P Rack,* University of Tennessee Knoxville	**AC+AS+SA-WeA-9** Speciation of Rare Earth Elements in Coal Harvesting Byproducts, ***Xu Feng,*** *M Council-Troche, J Morris, A Noble, R Yoon,* Virginia Polytechnic Institute and State University
5:20pm	**2D+MN+NS+SS-WeA-10** Ion Migration Studies in Exfoliated 2D Molybdenum Oxide via Ionic Liquid Gating for Neuromorphic Device Applications, ***Cheng Zhang,*** *P Pudasaini, A Oyedele,* University of Tennessee Knoxville*; A Ivelev, K Xiao, T Ward,* Oak Ridge National Laboratory*; D Mandrus,* University of Tennessee Knoxville*; O Ovchinnikova,* Oak Ridge National Laboratory*; P Rack,* University of Tennessee Knoxville	**AC+AS+SA-WeA-10** Exotic Electronic Properties of Strongly Correlated Compounds $NpPd_3$ and $PuPd_3$, ***Krzysztof Gofryk,*** Idaho National Laboratory*; J Griveau, E Colineau,* Institute for Transuranium Elements*; K McEwen,* University College London*; W Nellis,* Harvard University*; J Smith,* Los Alamos National Laboratory
5:40pm	**2D+MN+NS+SS-WeA-11** Infrared Absorption of Nanometer-scale Thermally Reduced Graphene Oxide, ***Erin Cleveland,*** *J Nolde, G Jernigan, E Aifer,* U.S. Naval Research Laboratory	
6:00pm	**2D+MN+NS+SS-WeA-12** Dielectric Properties of Carbon Nanomembranes prepared from aromatic Self-Assembled Monolayers and their application in All-Carbon Capacitors, ***Xianghui Zhang,*** *P Penner, E Marschewski,* Bielefeld University, Germany*; T Weimann, P Hinze,* Physikalisch-Technische Bundesanstalt, Braunschweig, Germany*; A Gölzhäuser,* Bielefeld University, Germany	

Wednesday Afternoon, October 24, 2018

	Extending Additive Manufacturing to the Atomic Scale **Focus Topic** **Room 102B - Session AM+MP+NS-WeA** **Atomic Scale Manipulation with SPM** **Moderator:** Sven Rogge, University of New South Wales, Australia	**Applied Surface Science Division** **Room 204 - Session AS+SE-WeA** **Industrial and Practical Applications of Surface Analysis** **Moderators:** Jeffrey Fenton, Medtronic, Inc., Svitlana Pylypenko, Colorado School of Mines
2:20pm	**INVITED: AM+MP+NS-WeA-1** Advanced Scanning Probe Lithography: Processes, Nanopatterning and Nanoelectronics, ***Ricardo Garcia,*** Inst Ciencia Materiales Madrid, CSIC, Spain	**AS+SE-WeA-1** Identification of Unknown Contaminants in Industrial Applications Using MS/MS in Combination with High Resolution Mass Spectrometry, *A Pirkl,* ***Julia Zakel,*** *D Rading,* IONTOF GmbH, Germany*; N Havercroft,* IONTOF USA*; S Kayser, H Arlinghaus, R Moellers, E Niehuis,* IONTOF GmbH, Germany
2:40pm	Invited talk continues.	**AS+SE-WeA-2** ToF-SIMS Analysis of Glass and Glass Coatings, ***Christine Mahoney,*** Corning Inc.
3:00pm	**AM+MP+NS-WeA-3** Integrated Devices made Using Atomically Precise Advanced Manufacturing, *D Ward, D Campbell, M Marshall, T Lu, L Tracy, L Maurer, A Baczweski,* ***Shashank Misra,*** Sandia National Laboratories	**INVITED: AS+SE-WeA-3** Problem Solving with Valence Band Spectroscopy and SIMS MS/MS, ***Steven Pachuta****, D Poirier,* 3M Company
3:20pm		Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**AM+MP+NS-WeA-7** Electrical Transport Properties of Si:P δ-layer Devices, ***Ranjit Kashid****, X Wang, P Namboodiri, J Hagmann,* National Institute of Standards and Technology (NIST)*; S Schmucker,* University of Maryland College Park*; J Wyrick, C Richter, R Silver,* National Institute of Standards and Technology (NIST)	**AS+SE-WeA-7** *Surface and In-depth XPS Characterization of Liquid and Cured Control Release Additives (CRAs) Used in Silicone-Based Release Coatings,* ***Brian Strohmeier****, K Rhodes, R Munigeti, J Orlowski,* Avery Dennison Corporation
4:40pm	**AM+MP+NS-WeA-8** Atomically Precise Tip Positioning for Automated Writing of Atomic-scale Devices, ***James Owen****, E Fuchs, J Randall, J Von Ehr,* Zyvex Labs	**AS+SE-WeA-8** Differentiating Silicones Using SIMS, ***Paul Vlasak****, M Pacholski,* The Dow Chemical Company
5:00pm	**INVITED: AM+MP+NS-WeA-9** Kilobyte Scale Data Storage through Autonomous Atom Assembly, *S Otte,* ***David Coffey,*** Delft University of Technology, Netherlands	**AS+SE-WeA-9** Uranium Particles Analysis and Imaging Using ToF-SIMS for Source Identification, ***Juan Yao****, E Krogstad, S Shen, Z Zhu, X Yu,* Pacific Northwest National Laboratory
5:20pm	Invited talk continues.	**AS+SE-WeA-10** XPS Depth Profiling of Organic Resins with Inorganic Inclusions, ***Benjamin Schmidt****, J Newman, J Mann, L Swartz,* Physical Electronics
5:40pm	**INVITED: AM+MP+NS-WeA-11** Extending the Capabilities of STM-based Dopant Device Fabrication, *T Skeren, N Pascher, S Köster,* ***Andreas Fuhrer,*** IBM Research - Zurich, Switzerland	**AS+SE-WeA-11** Application of X-ray Photoelectron Spectroscopy to Degradation Studies of Electrodes in Fuel Cells and Electrolyzers, ***Kateryna Artyushkova,*** University of New Mexico*; N Danilovic,* Lawrence Berkeley Lab, University of California, Berkeley*; C Capuano,* Proton on site*; A Serov,* Pajarito Powder LLC*; P Atanassov,* University of New Mexico
6:00pm	Invited talk continues.	**AS+SE-WeA-12** Application of X-ray Photoelectron Spectroscopy in Semiconductor Industry, ***Yibin Zhang****, Z Bayindir, Z Sun, M Zhu, J Gao, X Wang, T Han, J Shu, D Shao, J Riendeau, J Liu,* GLOBALFOUNDRIES

Wednesday Afternoon, October 24, 2018

	Biomaterial Interfaces Division **Room 104B - Session BI+AC+AS+HC+NS+SS+TF-WeA** **Current and Future Stars of the AVS Symposium II** **Moderator:** David Boris, U.S. Naval Research Laboratory	**Biomaterial Interfaces Division** **Room 101B - Session BI-WeA** **Microbes and Fouling at Surfaces** **Moderator:** Caitlin Howell, University of Maine
2:20pm	**INVITED: BI+AC+AS+HC+NS+SS+TF-WeA-1** Medard W. Welch Award Lecture: A Surface Scientist's Journey from Small Molecules to Biomolecules and Biomaterials, ***David G. Castner***[1], University of Washington	
2:40pm	Invited talk continues.	
3:00pm	**BI+AC+AS+HC+NS+SS+TF-WeA-3** Invited Talk-Future Stars of AVS Session: Making, Studying, and Designing Hierarchically Structured Soft Materials, ***Keith A. Brown***[2], Boston University	**INVITED: BI-WeA-3** Gaede-Langmuir Award Lecture: From Description to Prediction of Biointerphase Reactions, ***Michael Grunze***[3], Max Planck Institute for Medical Research, Germany; *H Kreuzer,* Dalhousie University, Canada
3:20pm	**BI+AC+AS+HC+NS+SS+TF-WeA-4** Invited Talk-Future Stars of AVS Session: Vapor Phase Infiltration for Transforming Polymers into Hybrid Materials: Processing Kinetics and Applications, ***Mark Losego***[2], Georgia Institute of Technology	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**BI+AC+AS+HC+NS+SS+TF-WeA-7** Invited Talk-Future Stars of AVS Session: Surface Preparation Methods for the Selective Oxidation of Ethanol to Acetaldehyde over TiO_2/Au(111), ***Ashleigh Baber***[2], *D Boyle, J Wilke, V Lam, D Schlosser,* James Madison University	**INVITED: BI-WeA-7** Unraveling Complexities at the Adhesive Interface of Acorn Barnacles, ***Kenan Fears***, *C So, D Leary, H Ryou, J Schultzhaus, C Wang,* US Naval Research Laboratory; *B Orihuela, D Rittschof,* Duke University Marine Laboratory; *C Spillmann, K Wahl,* US Naval Research Laboratory
4:40pm	**BI+AC+AS+HC+NS+SS+TF-WeA-8** Invited Talk-Future Stars of AVS Session: Single Atom Catalysis: An Atomic-Scale View, ***Gareth Parkinson***[2], TU Wien, Austria	Invited talk continues.
5:00pm	**BI+AC+AS+HC+NS+SS+TF-WeA-9** Invited Talk-Future Stars of AVS Session: Multimodal Chemical and Functional Imaging of Nanoscale Transformations Away from Equilibrium, ***Olga Ovchinnikova***[2], Oak Ridge National Laboratory	**BI-WeA-9** Ultra Low Fouling Zwitterionic Coatings – Influence of Molecular Architecture on Fouling Inhibition, ***Axel Rosenhahn***, *J Koc,* Ruhr-University Bochum, Germany; *S Bauer,* Ruhr-Universität Bochum, Germany; *J Finlay, A Clare,* Newcastle University; *E Schoenemann,* University of Potsdam; *A Laschewsky,* Unversity of Potsdam
5:20pm	**BI+AC+AS+HC+NS+SS+TF-WeA-10** Invited Talk-Future Stars of AVS Session: Expanding the Structural Toolkit to Characterize Heavy Actinide Complexes, ***Rebecca Abergel***[2], Lawrence Berkeley Lab, University of California, Berkeley; *G Deblonde, A Mueller, P Ercius,* Lawrence Berkeley National Laboratory; *A Minor,* Lawrence Berkeley Lab, University of California, Berkeley; *C Booth, W de Jong,* Lawrence Berkeley National Laboratory; *R Strong,* Fred Hutchinson Cancer Research Center	**BI-WeA-10** Biomimetic Surfaces on Chitosan Membranes with Enhanced Antibacterial Properties Produced by Directed Plasma Nanosynthesis, ***Camilo Jaramillo***, *A Civantos, J Allain,* University of Illinois at Urbana-Champaign
5:40pm	**BI+AC+AS+HC+NS+SS+TF-WeA-11** Invited Talk-Future Stars of AVS Session: Trends in Adsorbate Interactions with Bimetal Surfaces, ***Liney Arnadottir***[2], *L Sprowl,* Oregon State University	**BI-WeA-11** How Do Geobacter Aggregates Communicate: New Understanding from In Situ Liquid SIMS, ***Wenchao Wei***, *R Komorek,* Pacific Northwest National Laboratory; *C Yang, F Liu,* Yantai Institute of Coastal Zone Research; *Z Zhu, X Yu,* Pacific Northwest National Laboratory

[1] **Medard W. Welch Award Winner**
[2] **Future Stars of the AVS**
[3] **Gaede Langmuir Award Winner**

	Electronic Materials and Photonics Division **Room 101A - Session EM+2D+SS-WeA** **Wide and Ultra-Wide Bandgap Materials for Electronic Devices: Growth, Modeling and Properties** **Moderators:** Erica Douglas, Sandia National Laboratories, Rachael Myers-Ward, U.S. Naval Research Laboratory	**Fundamental Discoveries in Heterogeneous Catalysis Focus Topic** **Room 201A - Session HC+SS-WeA** **Theory and Dynamics of Heterogeneously Catalyzed Reactions** **Moderator:** Erin Iski, University of Tulsa
2:20pm		**HC+SS-WeA-1** First-Principles Kinetic Monte Carlo Simulation of CO Oxidation on PdO(101): Role of Oxygen Vacancies, ***Minkyu Kim***[1], *A Asthagiri,* Ohio State University
2:40pm	**EM+2D+SS-WeA-2** 2300 V Reverse Breakdown Voltage Ga_2O_3 Schottky Rectifiers, ***Jiancheng Yang***[2], *F Ren,* University of Florida; *M Tadjer,* U.S. Naval Research Laboratory; *S Pearton,* University of Florida; *A Kuramata,* Tamura Corporation and Novel Crystal Technology, Inc., Japan	**HC+SS-WeA-2** Surface Reactivity of Activated CO_2, ***Richard van Lent***[1], Leiden University, Netherlands; *A Walsh, M Gleeson,* DIFFER, Netherlands; *L Juurlink,* Leiden University, Netherlands
3:00pm	**EM+2D+SS-WeA-3** Characterization of β-$(Al,Ga,In)_2O_3$ Epitaxial Films for UV Photodetector Applications, ***Luke Lyle***, *L Porter, R Davis,* Carnegie Mellon University; *S Okur, G Tompa,* Structured Materials Industries, Inc.; *M Chandrashekhar, V Chava, J Letton,* University of South Carolina	**INVITED: HC+SS-WeA-3** Shining Light on Complexity: State- and Energy-Resolved Studies of Gas-Surface Reaction Dynamics and Mechanism, ***Arthur Utz***, Tufts University
3:20pm	**EM+2D+SS-WeA-4** High Three-terminal Breakdown Voltage Quasi-two-dimensional β -Ga_2O_3 Field-effect Transistors with a Dual Field Plate Structure, ***Jinho Bae***, Korea University, Republic of Korea; *H Kim, I Kang,* Korea Electrotechnology Research Institute (KERI), Republic of Korea; *G Yang, S Oh, J Kim,* Korea University, Republic of Korea	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: EM+2D+SS-WeA-7** GaN Vertical Device Technology and its Future, ***Srabanti Chowdhury***, UC Davis	**HC+SS-WeA-7** Vibration-driven Reaction of CO_2 on Cu Surfaces via Eley-Rideal Type Mechanism, ***Junji Nakamura***, *J Quan, T Kozarashi, T Mogi, T Imabayashi, K Takeyasu, T Kondo,* University of Tsukuba, Japan
4:40pm	Invited talk continues.	**INVITED: HC+SS-WeA-8** First Principles Reaction Kinetics over Metals, Oxides and Nanoparticles, ***Henrik Grönbeck***, Chalmers University of Technology, Gothenburg, Sweden
5:00pm	**EM+2D+SS-WeA-9** Effects of Proton Irradiation Energy on SiN_x/AlGaN/GaN Metal-insulator-semiconductor High Electron Mobility Transistors, ***Chaker Fares***, *F Ren,* University of Florida; *J Kim,* Korea University, Republic of Korea; *S Pearton,* University of Florida; *C Lo, J Johnson,* IQE; *G Yang,* Korea University, Republic of Korea	Invited talk continues.
5:20pm	**EM+2D+SS-WeA-10** Cesium-Free III-Nitride Photocathodes Based on Control of Polarization Charge, ***Douglas Bell***, Jet Propulsion Laboratory, California Institute of Technology; *E Rocco, F Shahedipour-Sandvik,* SUNY Polytechnic Institute; *S Nikzad,* Jet Propulsion Laboratory, California Institute of Technology	**HC+SS-WeA-10** Formation of Pd/Ag Sandwiches, a Stable PdAg Subsurface Alloy, and the Pd Segregation induced by CO and O_2, Studied with STM, Ambient-pressure XPS, and DFT, ***Matthijs van Spronsen***, Lawrence Berkeley National Laboratory; *K Duanmu,* UCLA; *R Madix,* Harvard University; *M Salmeron,* Lawrence Berkeley National Laboratory; *P Sautet,* UCLA; *C Friend,* Harvard University
5:40pm	**EM+2D+SS-WeA-11** Current Enhancement for Ultra-Wide Bandgap AlGaN High Electron Mobility Transistors by Regrowth Contact Design, ***Erica Douglas***, *B Klein, S Reza, A Allerman, R Kaplar, A Armstrong, A Baca,* Sandia National Laboratories	
6:00pm	**EM+2D+SS-WeA-12** Understanding Homoepitaxial GaN Growth, ***Jennifer Hite***, *T Anderson, M Mastro, L Luna, J Gallagher, J Freitas, C Eddy,* U.S. Naval Research Laboratory	

[1] **Heterogeneous Catalysis Graduate Student Presentation Award Finalist**

[2] **National Student Award Finalist**

	Advanced Ion Microscopy Focus Topic **Room 203B - Session HI-WeA** **Novel Beam Induced Material Engineering & Nano-Patterning** **Moderators:** Armin Gölzhäuser, University of Bielefeld, Germany, Olga Ovchinnikova, Oak Ridge National Laboratory	**MEMS and NEMS Group** **Room 202B - Session MN+2D+AN+NS-WeA** **IoT Session: MEMS for IoT: Chemical and Biological Sensing** **Moderators:** Robert Davis, Brigham Young University, Sushma Kotru, University of Alabama
2:20pm	**INVITED: HI-WeA-1** Delving into the Finer Details of Helium FIBID, ***Frances Allen,*** University of California, Berkeley	**INVITED: MN+2D+AN+NS-WeA-1** BioMEMS for Eye Applications, ***Yu-Chong Tai,*** California Institute of Technology
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**INVITED: HI-WeA-3** Anderson localization of Graphene by Helium Ion Irradiation, ***Yuichi Naitou,*** *S Ogawa,* National Institute of Advanced Industrial Science and Technology (AIST), Japan	**MN+2D+AN+NS-WeA-3** Real-Time, Single Cell, Size Measurements using a Facile, Multimode Microwave Resonator, ***Selim Hanay,*** *H Aydogmus, A Secme, H Pisheh, M Kelleci,* Bilkent University, Turkey
3:20pm	Invited talk continues.	
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: HI-WeA-7** The Frontiers of Focused Ion Beam in Semiconductor Applications, ***Shida Tan,*** Intel Corporation	**INVITED: MN+2D+AN+NS-WeA-7** Magnetic Microsystems for Communications, ***Rob Candler,*** University of California at Los Angeles
4:40pm	Invited talk continues.	Invited talk continues.
5:00pm	**HI-WeA-9** 2D Materials Under Ion Irradiation: In-situ Experiments and the Role of the Substrate, ***Gregor Hlawacek,*** *S Kretschmer,* Helmholtz Zentrum Dresden-Rossendorf, Germany; *M Maslov,* Moscow Institute of Physics and Technology; *S Ghaderzadeh, M Ghorbani-Asl, A Krasheninnikov,* Helmholtz Zentrum Dresden-Rossendorf, Germany	**INVITED: MN+2D+AN+NS-WeA-9** MEMS-Based Resonant Sensors for IoT Applications, ***Oliver Brand,*** *M Kim, P Getz,* Georgia Institute of Technology
5:20pm	**HI-WeA-10** Sample Heating Effects from Light Ions in Thin Films, ***John A. Notte,*** *B Lewis,* Carl Zeiss Microscopy, LLC	Invited talk continues.
5:40pm	**HI-WeA-11** Helium Ion Direct Write Patterning of Superconducting Electronics, ***Shane Cybart,*** *E Cho, H Li,* UC Riverside; *Y Naitou, S Ogawa,* National Institute of Advanced Industrial Science and Technology (AIST), Japan	**MN+2D+AN+NS-WeA-11** Etched Silicon Microcolumn For Tunable Thermal Gradient Gas Chromatography, ***Aaron Davis,*** *P Schnepf, P Ng, R Vanfleet, R Davis, B Jensen,* Brigham Young University

Wednesday Afternoon, October 24, 2018

	Nanometer-scale Science and Technology Division **Room 203A - Session NS+MN+PC+SS-WeA** **IoT Session: Bio at the Nanoscale** **Moderators:** Juraj Topolancik, Roche Sequencing Solutions, Liya Yu, NIST Center for Nanoscale Science and Technology	**Plasma Biology, Agriculture, and Environment Focus Topic** **Room 104A - Session PB+BI+PC+PS-WeA** **Plasma Agriculture & Environmental Applications** **Moderator:** Deborah O'Connell, University of York, UK
2:20pm		**INVITED: PB+BI+PC+PS-WeA-1** Pulsed Power Applications for Farming and Food Processing, ***Koichi Takaki,*** Iwate University, Japan
2:40pm		Invited talk continues.
3:00pm	**NS+MN+PC+SS-WeA-3** Nanoscale Label-free Imaging of Protein Molecules via Photo-induced Force Microscopy, *D Nowak,* ***Sung Park,*** Molecular Vista	**INVITED: PB+BI+PC+PS-WeA-3** Stimulus Control on Organisms Using Pulsed Power Technology, ***Douyan Wang,*** *T Namihira,* Institute of Pulsed Power Science, Kumamoto University, Japan
3:20pm	**NS+MN+PC+SS-WeA-4** Evaluating Reaction-diffusion Immunoassays via High-resolution Imaging Techniques, ***Imanda Jayawardena,*** University of Queensland, Australia; *S Corrie,* Monash University, Australia; *L Grondahl,* University of Queensland, Australia	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: NS+MN+PC+SS-WeA-7** The Last Nanometer – Hydration Structure of DNA and Solid Surfaces Probed by Ultra-High Resolution AFM, ***Uri Sivan,*** *K Kuchuk, I Schlesinger,* Technion - Israel Institute of Technology, Israel	**PB+BI+PC+PS-WeA-7** Synthesis of Nitrates by Atmospheric Microplasma in Aqueous Solution, ***Nicolas Maira,*** *F Reniers,* Université Libre de Bruxelles, Belgium
4:40pm	Invited talk continues.	
5:00pm	**INVITED: NS+MN+PC+SS-WeA-9** Open-hardware, High-speed Atomic Force Microscopy using Photothermal Off-resonance Tapping, ***Georg Fantner,*** École Polytechnique Fédéral de Lausanne, Switzerland	**INVITED: PB+BI+PC+PS-WeA-9** Design Considerations for Plasma-based Water Purification Reactor Scale-up, ***John Foster,*** *S Mujovic, J Groele, J Lai,* The University of Michigan-Ann Arbor
5:20pm	Invited talk continues.	Invited talk continues.
5:40pm	**NS+MN+PC+SS-WeA-11** Development of Multimodal Chemical Nano-Imaging for *in situ* Investigations of Microbial Systems, *A Bhattarai, B O'Callahan, P El Khoury,* ***Scott Lea,*** Pacific Northwest National Laboratory; *K Park, E Muller, M Raschke,* University of Colorado Boulder	**PB+BI+PC+PS-WeA-11** Radicals and Ozone Generated in Ar/He and Ar/He/H_2O Plasma by using Atmospheric Pressure Plasma Jet Systems and their use in Methylene Blue Degradation, *J Hsieh,* ***YiJinWei Wei,*** Ming Chi University of Technology, Taiwan, Republic of China; *C Li,* National Yang Ming University, Taiwan, Republic of China

	Plasma Science and Technology Division **Room 104C - Session PS+EM-WeA** **Advanced BEOL/Interconnect Etching** **Moderators:** Michael Morris, Trinity College Dublin, Tetsuya Tatsumi, Sony Semiconductor Solutions Corporation	**Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic** **Room 202A - Session SA+AS+MI-WeA** **Hard X-Ray Photoemission for Probing Buried Interfaces** **Moderators:** Zahid Hussain, ALS-LBNL, Olivier Renault, CEA-University Grenoble Alps, France
2:20pm	**PS+EM-WeA-1** Etch Strategies for Reducing Defects and Pattern Roughness in BEOL EUV Patterning, ***Jeffrey Shearer,*** IBM Research Division, Albany, NY; *A Raley, Q Lou, J Kaminsky,* TEL Technology Center, America, LLC; *L Meli,* IBM Research Division, Albany, NY	**SA+AS+MI-WeA-1** Element-resolved Electronic Band Structure of Ga(Mn)As Measured by Standing-wave Hard X-ray Angle-resolved Photoemission, ***Slavomir Nemsak,*** Advanced Light Source, Lawrence Berkeley National Laboratory; *M Gehlmann, C Kuo,* University of California, Davis; *T Lee,* Diamond Light Source Diamond House, Harwell Science and Innovation Campus; *L Plucinski,* Forschungszentrum Juelich GmbH, Germany; *J Minar,* University of West Bohemia; *C Schneider,* Forschungszentrum Juelich GmbH, Germany; *C Fadley,* University of California, Davis
2:40pm	**PS+EM-WeA-2** Influence of Topological Constraints on the Ion Damage Resistance of Low-*k* Dielectrics, ***Qing Su,*** University of Nebraska-Lincoln; *T Wang, J Gigax, L Shao,* Texas A&M University; *W Lanford,* University at Albany; *M Nastasi,* University of Nebraska-Lincoln; *L Li,* Intel Corporation; *G Bhattarai, M Paquette,* University of Missouri-Kansas City; *S King,* Intel Corporation	**SA+AS+MI-WeA-2** Probing Surface Band Bending of Polar GaN by Hard X-ray Photoemission Combined with X-ray Total Reflection, ***Shigenori Ueda,*** NIMS, Japan
3:00pm	**INVITED: PS+EM-WeA-3** BEOL Patterning Challenges for 14nm and Beyond High Volume Manufacturing, ***Xiang Hu,*** GLOBALFOUNDRIES; *Y Ren,* GLOBALFOUDRIES; *D Medeiros, P Lee,* GLOBALFOUNDRIES	**INVITED: SA+AS+MI-WeA-3** Interfaces in Cycled Battery Electrodes: Insights from HAXPES Studies, ***Julia Maibach,*** Karlruhe Institut of Technology (KIT), Germany
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: PS+EM-WeA-7** Innovative Approaches for Future Challenges in MOL/BEOL Etch, ***Ryukichi Shimizu,*** Tokyo Electron Miyagi Limited, Japan	**INVITED: SA+AS+MI-WeA-7** Development of Ambient Pressure HAXPES and other HAXPES Measurements at SPring-8 for Buried Interface, ***Yasumasa Takagi,*** Japan Synchrotron Radiation Research Institute (JASRI), Japan
4:40pm	Invited talk continues.	Invited talk continues.
5:00pm	**PS+EM-WeA-9** Gas-phase Pore Stuffing for Low-damage Patterning of Organo-silicate Glass Dielectric Materials, ***Jean-Francois de Marneffe,*** IMEC, Belgium; *M Fujikama, T Yamaguchi, S Nozawa, R Niino, N Sato,* Tokyo Electron Technology Solutions Limited; *R Chanson, K Babaei Gavan,* IMEC, Belgium; *A Rezvanov,* IMEC, Belgium/Moscow Institute of Physics and Technology; *F Lazzarino, Z Tokei,* IMEC, Belgium	**SA+AS+MI-WeA-9** Operando HAXPES Investigations of La Manganite-based Resistive Memories, ***Eugénie Martinez,*** CEA/LETI-University Grenoble Alpes, France; *B Meunier,* Univ. Grenoble Alpes, CEA, LETI & LMGP, CNRS, France, France; *D Pla,* Univ. Grenoble Alpes, LMGP, CNRS, France; *R Rodriguez-Lamas,* Univ. Grenoble Alpes, LMGP, CNRS France, France; *M Burriel, C Jimenez,* Univ. Grenoble Alpes, LMGP, CNRS, France; *J Rueff,* Synchrotron SOLEIL, France; *Y Yamashita, S Ueda,* NIMS, Japan; *O Renault,* CEA/LETI-University Grenoble Alpes, France
5:20pm	**PS+EM-WeA-10** ALD-Sequential Etch to Address Advanced BEOL Etch/Integration Challenges, ***Xinghua Sun,*** *Y Lu, K Lutker-Lee, A Raley,* TEL Technology Center, America, LLC; *D O'Meara,* Tokyo Electctron, America, Inc.; *T Yamamura,* Tokyo Electron Miyagi Limited; *Y Kikuchi,* TEL Technology Center, America, LLC	**INVITED: SA+AS+MI-WeA-10** Combining Hard and Soft X-ray Angle-resolved Photoemission to Probe the Bulk Electronic Structure of Engineered Quantum Solids, ***Alexander Gray,*** Temple University
5:40pm	**PS+EM-WeA-11** The Underlying Role of Mechanical Rigidity and Topological Constraints in Reactive Ion Etching of Amorphous Materials, ***Gyanendra Bhattarai,*** *S Dhungana, B Nordell, A Caruso, M Paquette,* University of Missouri-Kansas City; *W Lanford,* University at Albany; *S King,* Intel Corporation	Invited talk continues.
6:00pm	**PS+EM-WeA-12** Plasma Processing of Phase Change Materials for PCRAM, *N Altieri,* ***Ernest Chen,*** *J Chang,* University of California, Los Angeles; *S Fong, C Neumann, P Wong,* Stanford University; *M Shen, T Lill,* Lam Research Corporation	**SA+AS+MI-WeA-12** Surface/Interface Coupling in Buried Oxide Interfaces, ***Conan Weiland,*** National Institute of Standards and Technology (NIST); *A Rumaiz,* Brookhaven National Laboratory; *G Sterbinsky,* Argonne National Laboratory; *J Woicik,* National Institute of Standards and Technology (NIST)

Wednesday Afternoon, October 24, 2018

	Surface Science Division **Room 203C - Session SS+AS+EM-WeA** **Semiconducting Surfaces** **Moderators:** Melissa Hines, Cornell University, Ludo Juurlink, Leiden University	**Thin Films Division** **Room 102A - Session TF+EM+MI-WeA** **Thin Film Processes for Electronics and Optics II** **Moderators:** Hilal Cansizoglu, University of California, Davis, John F. Conley, Jr., Oregon State University
2:20pm	**INVITED: SS+AS+EM-WeA-1** Functionalizing Semiconductor Surfaces and Interfaces, ***Stacey Bent,*** Stanford University	**INVITED: TF+EM+MI-WeA-1** What can we Benefit from Nanochemistry of Crystalline Silicon?, ***Naoto Shirahata,*** National Institute for Materials Science, Tsukuba, Japan
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**SS+AS+EM-WeA-3** Atomic Structure of UHV-prepared GaP(111)A Surface and its Reactivity Towards Simple Molecules, ***Denis Potapenko****, X Yang, B Koel,* Princeton University	**TF+EM+MI-WeA-3** Low-temperature Homoepitaxial Growth of Two-dimensional Antimony Superlattices in Silicon, ***April Jewell****, M Hoenk, A Carver, S Nikzad,* Jet Propulsion Laboratory
3:20pm	**SS+AS+EM-WeA-4** Stabilization Mechanism of the Se- or S-treated GaAs(111)B Surface, ***Shunji Goto****,* The University of Electro-Communications (UEC-Tokyo), Japan*; A Ohtake,* National Institute for Materials Science (NIMS), Japan*; J Nakamura,* The University of Electro-Communications (UEC-Tokyo), Japan	
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**SS+AS+EM-WeA-7** Novel Pathways in Reaching Buried Interfaces of Organic/Inorganic Hybrid Systems: A Mechanistic Understanding of Polymer Adsorption on Passivated Metal Oxide Surfaces, ***Tom Hauffman****, S Pletincx, K Marcoen, F Cavezza,* Vrije Universiteit Brussel, Belgium*; L Fockaert, J Mol,* Technical University Delft, Netherlands*; H Terryn,* Vrije Universiteit Brussel, Belgium	**TF+EM+MI-WeA-7** Electron-Doped $BaZrO_3$ Thin Films Prepared by Topochemical Reduction, ***Thomas Orvis****,* University of Southern California
4:40pm	**SS+AS+EM-WeA-8** Surface Modification of Metal Oxide Surfaces with Gas-Phase Propiolic Acid for Dye Sensitization by Click Reaction, ***Chuan He****, A Teplyakov, B Abraham, M Konh, Z Li, L Gundlach, S Bai,* University of Delaware*; E Galoppini, H Fan, R Harmer,* Rutgers, the State University of New Jersey	**TF+EM+MI-WeA-8** Epitaxial Growth and Electrical Properties of VO_2Thin Films, ***Yang Liu****, S Niu, T Orvis, H Zhang, H Wang, J Ravichandran,* University of Southern California
5:00pm	**SS+AS+EM-WeA-9** Solar Energy Storage in the Norbornadiene-quadricyclane System: From Surface Science to In-situ Photochemistry and photospectroelectrochemistry, *M Schwarz, F Waidhas, C Schuschke,* Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*; S Mohr,* Friedrich-Alexander-Universität Erlangen-Nürnberg*; O Brummel, T Döpper, C Weiss, K Civale,* Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*; M Jevric,* Chalmers University of Technology, Gothenburg, Sweden*; J Bachmann,* Friedrich-Alexander-Universität Erlangen-Nürnberg. Germany, Germany*; A Görling, A Hirsch,* Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*; K Moth-Poulsen,* Chalmers University of Technology, Gothenburg, Sweden*; **Jörg Libuda***, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany	**TF+EM+MI-WeA-9** A Novel Technique for the Growth of Gallium Oxide Nanowires for UV Detection, ***Badriyah Alhalaili****,* UC, Davis*; R Bunk, H Mao,* UC Davis*; R Vidu,* UC, Davis*; H Cansizoglu,* UC Davis*; M Islam,* UC, Davis
5:20pm	**SS+AS+EM-WeA-10** In-situ Characterization of Photon induced Chemistries in Organotin Clusters with Ambient Pressure XPS, ***J. Trey Diulus***[1]*, R Frederick,* Oregon State University*; M Li,* Rutgers, the State University of New Jersey*; D Hutchison, I Lyubinetsky, L Árnadóttir, M Olsen,* Oregon State University*; E Garfunkel,* Rutgers, the State University of New Jersey*; M Nyman,* Oregon State University*; H Ogasawara,* SLAC National Accelerator Laboratory*; G Herman,* Oregon State University	**TF+EM+MI-WeA-10** Enhanced Efficiency in Photon-trapping Ge-on-Si Photodiodes for Optical Data Communication, ***Hilal Cansizoglu****, C Bartolo Perez, Y Gao, E Ponizovskaya Devine, S Ghandiparsi, K Polat, H Mamtaz, M Cansizoglu,* University of California, Davis*; T Yamada,* University of California, Santa Cruz*; A ElRefaie, S Wang,* W&WSens Devices, Inc.*; S Islam,* University of California, Davis
5:40pm	**SS+AS+EM-WeA-11** Integrated Photonics Driven Electron Emission from LaB_6 Nanoparticles, ***Fatemeh Rezaeifar****, R Kapadia,* University of Southern California	**TF+EM+MI-WeA-11** Correlating Composition and Structure with Optical Properties of Combinatorial Sputtered Thin Film Au_xAl_{1-x} Alloys, ***Robyn Collette****,* University of Tennessee Knoxville*; Y Wu, J Camden,* University of Notre Dame*; P Rack,* University of Tennessee Knoxville
6:00pm	**SS+AS+EM-WeA-12** Photon Stimulated Desorption and Diffusion of CO on TiO_2(110), ***Nikolay Petrik****, R Mu, A Dahal, Z Wang, Z Dohnalek, I Lyubinetsky, G Kimmel,* Pacific Northwest National Laboratory	**TF+EM+MI-WeA-12** The Multifunctional TiO2 Thin Films Sensor, ***Awais Ali****, M Alam, S Nasser, N Akbar, A Saeed, A Bhatti,* COMSATS Institute of Information Technology, Islamabad Pakistan, Pakistan

[1] **Morton S. Traum Award Finalist**

Special Events Thursday

Special Events Thursday

10:00 AM	AVS Presidents Panel/Hall A
10:00 AM	Session Coffee Break/Hall A
12:20 PM	Exhibit Finale & Refreshments/Hall A
12:20 PM	PSTD Coburn and Winters Award Ceremony/104A
12:20 PM	Surface Science Division Mort Traum Awards Ceremony/203C
12:30 PM	2019 Program Committee Chairs' Meeting & Lunch/Seaview-Hyatt Regency (by invitation)
12:30 PM	AVS Business Meeting/101A
12:30 PM	AVS Member Center: Professional Development--"Work Life Satisfaction" & Lunch/103C
3:30 PM	History Committee Meeting/Shoreline B-Hyatt Regency (by invitation)
6:00 PM	Thursday Poster Session & Refreshments/Hall B
6:30 PM	2018/2019 Program Committee Reception and Dinner/Seaview-Hyatt Regency (by invitation)
7:00 PM	SSS Editorial Board Dinner/Shoreline A-Hyatt Regency (by invitation)

Thursday Morning, October 25, 2018

	2D Materials Focus Topic Room 201B - Session 2D+EM+MI+MN+NS+SS-ThM Novel 2D Materials **Moderator:** Han Wang, University of Southern California	Actinides and Rare Earths Focus Topic Room 202C - Session AC+AS+SA-ThM Nuclear Power, Forensics, and Other Applications **Moderator:** Ladislav Havela, Charles University, Czech Republic
8:00am		**INVITED: AC+AS+SA-ThM-1** Electron Microscopy in Nuclear Forensics, ***Edgar Buck***, *D Reilly, J Schwantes, J Soltis, T Meadows, D Meier, J Corbey,* Pacific Northwest National Laboratory
8:20am	**2D+EM+MI+MN+NS+SS-ThM-2** Controlled Growth of 2D Ni-Silicate and Silica Films on Ni_xPd_{1-x} (111) Substrates, ***Chao Zhou***, *X Liang, G Hutchings, Z Fishman, J Jhang, S Hu, S Ismail-Beigi, U Schwarz, E Altman,* Yale University	Invited talk continues.
8:40am	**INVITED: 2D+EM+MI+MN+NS+SS-ThM-3** Topological Materials, ***Hsin Lin***, Institute of Physics, Academia Sinica	**INVITED: AC+AS+SA-ThM-3** New Frontiers with Fission Track Analysis and TOF-SIMS Techniques, ***Itzhak Halevy***, Nrcn Israel, Israel*; R Radus,* Ben Gurion University, Israel*; S Maskova,* Charles University, Prague, Czech Republic*; A Kogan, S Samuha, D Gridchin, E Grinberg, E Boblil, N Haikin,* IAEC-NRCN, Israel*; I Orion,* Ben-Gurion University -Negev, Israel*; A Weiss,* Faculty of Engineering, Bar-Ilan University, Israel
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**2D+EM+MI+MN+NS+SS-ThM-5** Few-Layer Rhenium Disulfide Synthesized Via Chemical Vapor Deposition, ***Michael Valentin***, Army Research Laboratory*; A Guan, A Nguyen, I Lu, C Merida, M Gomez,* University of California, Riverside*; R Burke, M Dubey,* Army Research Laboratory*; L Bartels,* University of California, Riverside	**INVITED: AC+AS+SA-ThM-5** Predictive Nuclear Forensics: Fundamental Frameworks to Fill Missing Pieces, ***Jenifer Shafer***, *M Koehl, A Baldwin, D Wu,* Colorado School of Mines*; R Rundberg,* Los Alamos National Laboratory*; M Servis,* Washington State University*; T Kawano,* Los Alamos National Laboratory
9:40am	**2D+EM+MI+MN+NS+SS-ThM-6** Dipolar Disorder of a van-der-Waals Surface Revealed by Direct Atomic Imaging, *M Susner,* Air Force Research Laboratory*; M McGuire,* ***Petro Maksymovych***, Oak Ridge National Laboratory	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**2D+EM+MI+MN+NS+SS-ThM-10** Advanced ARPES Analyzer and Momentum Microscope KREIOS 150 – Concepts and first results on layered materials and topological insulators, ***Paul Dietrich***, *M Wietstruk, T Kampen, A Thissen,* SPECS Surface Nano Analysis GmbH, Germany	**AC+AS+SA-ThM-10** Soft X-ray Synchrotron Radiation Spectromicroscopy Studies of Radioactive Materials, ***David Shuh***, Lawrence Berkeley National Laboratory*; A Altman,* Lawrence Berkeley National Laboratory and UC Berkeley*; D Kilcoyne, S Minasian, J Pacold, D Smiles, T Tyliszczak, D Vine,* Lawrence Berkeley National Laboratory*; L He, J Harp, M Meyer,* Idaho National Laboratory*; C Degueldre,* University of Lancaster, Switzerland
11:20am	**2D+EM+MI+MN+NS+SS-ThM-11** Carbon Nanomembranes with Sub-nanometer Channels: 2D Materials for Water Purification with High Selectivity and Highest Permeance*, Y Yang, P Dementyev, N Biere, D Emmrich, P Stohmann, R Korzetz, X Zhang, A Beyer, S Koch, D Anselmetti,* ***Armin Gölzhäuser***, Bielefeld University, Germany	**AC+AS+SA-ThM-11** Comparison of the Oxidation Rates for Alpha Versus Delta Plutonium by X-ray Photoelectron Spectroscopy, ***Art Nelson***, *S Donald, D Roberts, W McLean,* Lawrence Livermore National Laboratory
11:40am	**INVITED: 2D+EM+MI+MN+NS+SS-ThM-12** Discovery of Dirac Monolayers and Elucidation of Functonalites by Advanced Soft X-ray Spectroscopy, ***Iwao Matsuda***, University of Tokyo, Japan	**AC+AS+SA-ThM-12** A Single-Stage AMS Detector for Secondary Ion Mass Spectrometry and its Applications to Nuclear Materials Analyses, ***David Willingham***, *E Groopman, K Grabowski,* U.S. Naval Research Laboratory*; L Sangely,* International Atomic Energy Agency*; A Meshik, O Pravdivtseva,* Washington University in St. Louis*; D Weisz, K Knight,* Lawrence Livermore National Laboratory
12:00pm	Invited talk continues.	**AC+AS+SA-ThM-13** Physicochemical Properties of Ag in Annealed ZrN/SiC/Ag Heterostructures Used to Simulate TRISO Nuclear Fuels, ***Jeff Terry***, *M Warren, R Seibert,* Illinois Institute of Technology

Thursday Morning, October 25, 2018

	Applied Surface Science Division **Room 204 - Session AS+SE-ThM** **Applied Surface Analysis of Novel, Complex or Challenging Materials** **Moderators:** Michael Brumbach, Sandia National Laboratories, Thomas Grehl, ION-TOF GmbH, Germany	**Biomaterial Interfaces Division** **Room 101B - Session BI-ThM** **Biomolecules and Biophysics at Interfaces** **Moderator:** Joe Baio, Oregon State University
8:00am	**INVITED: AS+SE-ThM-1** Understanding the Surface of Complex Oxides used in High Temperature Electrochemical Devices, ***John Kilner,*** Imperial College London, UK*; J Druce,* International Institute for Carbon Neutral Energy Research (I2CNER), Japan*; H Tellez, A Staykov,* International Institute for Carbon Neutral Energy Research (I2CNER)	**INVITED: BI-ThM-1** Bioinspired Adaptive Reconfigurable Material Systems based on Smart Hydrogels*,* ***Ximin He,*** University of California, Los Angeles
8:20am	Invited talk continues.	Invited talk continues.
8:40am	**AS+SE-ThM-3** Vectorial Method used to Monitor a XPS Evolving System: Titanium Oxide Thin Films under UV Illumination*, S Bechu,* Institut Photovoltaïque d'Ile-de-France, France*; N Fairley,* Casa Software Ltd, UK*; L Brohan,* Institut des materiaux Jean Rouxel, France*;* ***Vincent Fernandez,*** Université de Nantes, Institut des matériaux Jean Rouxel, France*; M Richard-Plouet,* Institut des matériaux Jean Rouxel, France	**BI-ThM-3** Importance of a In Depth Characterisation for the Design of Functional Gold Nanoparticles for Bioapplications*, R Capomaccio, I Ojea-Jimenez, D Mehn, P Colpo, D Gilliland,* European Commission - Joint Research Centre, Italy*; R Hussain, G Siligardi,* Diamond Light Source Diamond House, Harwell Science and Innovation Campus, UK*; L Calzolai,* ***Giacomo Ceccone,*** European Commission - Joint Research Centre, Italy
9:00am	**AS+SE-ThM-4** XPS Characterization of Copper and Silver Nanostructures*,* ***Tatyana Bendikov,*** *M Susman, F Muench, A Vaskevich, I Rubinstein,* Weizmann Institute of Science, Israel	**BI-ThM-4** A Model Membrane Microsystem for Measurement of the Kinetics of Transmembrane Proton Transport*, J Madsen, A Johnson, M Cartron, N Hunter, S Armes,* ***Graham Leggett,*** University of Sheffield, UK
9:20am	**AS+SE-ThM-5** Quantification of Hydroxyl, Major Element and Trace Element Concentrations in Oxide Glasses by Quadrupole SIMS.*,* ***Albert Fahey,*** *A Sarafian, T Dimond,* Corning Inc.	**BI-ThM-5** Theranostics Gold Nanoparticles for Brain Cancer Applications*, I Naletova, L Cucci, F D'Angeli, C Anfuso, G Lupo,* University of Catania, Italy*; A Magrì,* National Council of Research (CNR), Italy*; C Satriano,* University of Catania, Italy*;* ***Diego La Mendola,*** University of Pisa, Italy
9:40am	**AS+SE-ThM-6** Modification of Sputtered Carbon Surfaces in Biosensor Arrays*,* ***Varun Jain,*** *M Linford,* Brigham Young University	**BI-ThM-6** Repeated Biorecognition Assays Based on Reversibly Biofunctionalized Surfaces*, A Francesko,* University of Minho, Portugal*; S Lanceros-Mendez,* IKERBASQUE, Basque Foundation for Science, Spain*; J Määttä, V Hytönen,* University of Tampere, Finland*; E Fernandes,* International Iberian Nanotechnology Laboratory (INL), Portugal*; J Guerreiro,* International Iberian Nanotechnology Laboratory (INL), Portugal*;* ***Dmitri Petrovykh,*** International Iberian Nanotechnology Laboratory, Portugal
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**AS+SE-ThM-10** The Role of Surface Analysis in Characterization of Synthetic Opioids: TOF-SIMS imaging of Fentanyl and Fentanyl Analogs for Forensics and First Responder Safety*,* ***Greg Gillen,*** *S Muramoto, J Verkouteren, E Sisco,* National Institute of Standards and Technology (NIST)	**BI-ThM-10** Non-equilibrium Thermodynamic Model for DNA at Nanochannel Junctions*, R Riehn,* ***Saroj Dangi,*** North Carolina State University
11:20am	**AS+SE-ThM-11** 3D TOF SIMS, Parallel Imaging MS/MS, and XPS Analysis of Glitterwing (*Chalcopteryx rutilans*) Damselfly Wings*,* ***Ashley Ellsworth,*** *D Carr, G Fisher, B Schmidt,* Physical Electronics*; W Valeriano, W Rodrigues,* UFMG, Brazil	**BI-ThM-11** Dipeptide Nanocontainers Immobilised on Graphene Nanoplatforms for Drug-delivery Applications*, V Caruso,* University of Catania, Italy*; G Trapani,* University of Catania and Scuola Superiore di Catania, Italy*; L Cucci, I Naletova,* University of Catania, Italy*; D La Mendola,* University of Pisa, Italy*;* ***Cristina Satriano,*** University of Catania, Italy
11:40am	**AS+SE-ThM-12** Characterization of Aniline Dyes in the Modern Colored Papers and the Prints of José Posada*, J Hedlund, L Gelb,* ***Amy Walker,*** University of Texas at Dallas	**BI-ThM-12** Seriatim Operando STM and FTIR Study of Phospholipid Membrane Phase Transition Driven by Electrochemical Potential Control*,* ***Taro Yamada,*** RIKEN, Japan*; S Matsunaga, H Shimizu,* The University of Tokyo*; T Kobayashi,* RIKEN, Japan*; M Kawai,* The University of Tokyo
12:00pm	**AS+SE-ThM-13** GaAs and Si Surface Energies derived from Three Liquid Contact Angle Analysis (3LCAA), as a Function of Oxygen Coverage for Heterogeneous Nano-Bonding™*,* ***Sukesh Ram,*** Arizona State University*; K Kavanagh,* Simon Fraser University, Canada*; F Ark, C Cornejo, T Diaz, M Bertram, S Narayan, J Day, M Mangus, R Culbertson, N Herbots,* Arizona State University*; R Islam,* Cactus Materials, Inc.	**BI-ThM-13** Mitochondria Localized Polymerization for New Cancer Therapy*,* ***Ja-Hyoung Ryu,*** Ulsan Natioanl Institute of Science and Technology, Republic of Korea

	Electronic Materials and Photonics Division **Room 101A - Session EM+MI+MN+NS-ThM** **Nanostructures for Electronic and Photonic Devices** **Moderators:** Sang M. Han, University of New Mexico, Jason Kawasaki, University of Wisconsin - Madison	**Fundamental Discoveries in Heterogeneous Catalysis Focus Topic** **Room 201A - Session HC+SS-ThM** **In-situ Analysis of Heterogeneously Catalyzed Reactions** **Moderator:** Sharani Roy, University of Tennessee Knoxville
8:00am	**INVITED: EM+MI+MN+NS-ThM-1** Extreme Nanophotonics from Ultrathin Metallic Junctions, ***Maiken Mikkelsen,*** Duke University	**HC+SS-ThM-1** Structural Characterization of ZnO on Cu(111) by using STM and XPS: Role of Cu-ZnO Interface in Methanol Synthesis, ***Mausumi Mahapatra,*** *J Rodriguez,* Brookhaven National Laboratory
8:20am	Invited talk continues.	**HC+SS-ThM-2** Dissociative Adsorption of CO_2 on Cu-surfaces, ***Benjamin Hagman,*** Lund University, Sweden*; A Posada-Borbón, A Schaefer,* Chalmers University of Technology, Gothenburg, Sweden*; C Zhang,* Lund University, Sweden*; M Shipilin,* Stockholm University, Sweden*; N Martin,* Chalmers University of Technology, Gothenburg, Sweden*; E Lundgren,* Lund University, Sweden*; H Grönbeck,* Chalmers University of Technology, Gothenburg, Sweden*; J Gustafson,* Lund University, Sweden
8:40am	**EM+MI+MN+NS-ThM-3** The Geode Process: A Route to the Large-Scale Manufacturing of Functionally-Encoded Semiconductor Nanostructures, *M Mujica, G Tutuncuoglu, V Breedveld, S Behrens,* ***Michael Filler,*** Georgia Institute of Technology	**HC+SS-ThM-3** Infrared Spectroscopy of Carbon Dioxide Hydrogenation over the Cu(111) Surface Under Ambient Pressure Conditions, *C Kruppe,* ***Michael Trenary,*** University of Illinois at Chicago
9:00am	**EM+MI+MN+NS-ThM-4** Disordered Microsphere-Based Coatings for Effective Radiative Cooling under Direct Sunlight, *S Atiganyanun, J Plumley, K Hsu,* University of New Mexico*; T Peng,* Air Force Research Laboratory*;* ***Sang M. Han,*** *S Han,* University of New Mexico	**HC+SS-ThM-4** Oxide Formation on Ir(100) Studied by in-Situ Surface X-ray-Diffraction, ***Stefano Albertin,*** *U Hejral,* Lund University, Sweden*; R Felici,* SPIN-CNR, Italy*; R Martin,* University of Florida*; M Jankowski,* ESRF, France*; J Weaver,* University of Florida*; E Lundgren,* Lund University, Sweden
9:20am	**EM+MI+MN+NS-ThM-5** Assessing Strain Relaxation in Nanostructured InGaN Multiple Quantum Wells Using X-Ray Diffraction Reciprocal Space Mapping and Photoluminescence Spectroscopy, ***Ryan Ley,*** *C Pynn, M Wong, S DenBaars, M Gordon,* University of California at Santa Barbara	**INVITED: HC+SS-ThM-5** Dynamic Nanocatalysts: Environmental Effects, ***Beatriz Roldan Cuenya,*** Fritz-Haber Institute of the Max Planck Society, Germany
9:40am	**EM+MI+MN+NS-ThM-6** Scalable, Tunable, and Polarization-Independent High Contrast Grating Reflectors for Integration into Resonant-Cavity micro-LEDs, ***Pavel Shapturenka,*** *S DenBaars, M Gordon,* University of California at Santa Barbara	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: EM+MI+MN+NS-ThM-10** Nano-optical Activation of Defect-bound Excitons in Monolayer WSe_2: Towards Room-temperature 2D Single-photon Optoelectronics, ***Jim Schuck,*** Columbia University	**HC+SS-ThM-10** Atomic Layer Deposition (ALD) Synthesis of Au/TiO_2/SBA-15 Catalysts, *W Ke, X Qin,* ***Francisco Zaera,*** University of California, Riverside
11:20am	Invited talk continues.	**HC+SS-ThM-11** Enhanced Stability of Pt/Cu Single-Atom Alloy Catalysts: In Situ Characterization of the Pt/Cu(111) Surface in an Ambient Pressure of CO, ***Juan Pablo Simonovis Santamaria,*** Brookhaven National Laboratory
11:40am	**EM+MI+MN+NS-ThM-12** Light Scattering Properties of Silver Nanoprisms in Different Environments, ***Yuri Strzhemechny,*** Texas Christian University*; S Requena,* Harris Night Vision*; H Doan,* Texas Christian University*; S Raut,* University of North Texas Health Science Center*; Z Gryczynski,* Texas Christian University*; I Gryczynski,* University of North Texas Health Science Center	**INVITED: HC+SS-ThM-12** Multiscale Modelling of Metal Oxide Interfaces and Nanoparticles, ***Kersti Hermansson,*** *P Mitev, J Kullgren, P Broqvist,* Dept of Chemistry-Ångström, Uppsala University, Sweden
12:00pm	**EM+MI+MN+NS-ThM-13** Core-Shell Processing of BTO Nanocomposites for Optimal Dielectric Properties, ***Kimberly Cook-Chennault,*** Rutgers University	Invited talk continues.

Thursday Morning, October 25, 2018

	Advanced Ion Microscopy Focus Topic **Room 203B - Session HI+AS-ThM** **Advanced Ion Microscopy & Surface Analysis** **Moderators:** Gregor Hlawacek, Helmholtz-Zentrum Dresden - Rossendorf, Shida Tan, Intel Corporation	**Magnetic Interfaces and Nanostructures Division** **Room 203A - Session MI+2D-ThM** **Magnetism at the Nanoscale** **Moderators:** Axel Enders, University of Nebraska-Lincoln, Hendrik Ohldag, SLAC National Accelerator Laboratory
8:00am	**INVITED: HI+AS-ThM-1** Pushing the Limits: Secondary Ion Mass Spectrometry with Helium Ion Microscopy, ***Alex Belianinov,*** Oak Ridge National Laboratory; *S Kim,* Pusan National University, South Korea; *M Lorenz,* University of Tennessee Knoxville; *A Ievlev, A Trofimov, O Ovchinnikova,* Oak Ridge National Laboratory	
8:20am	Invited talk continues.	**MI+2D-ThM-2** Magnetic Competition in $La_{0.7}Sr_{0.3}MnO_3$ Thin Films, ***Mikel B. Holcomb,*** West Virginia University
8:40am	**HI+AS-ThM-3** When HIM meets SIMS, ***Tom Wirtz,*** Luxembourg Institute of Science and Technology (LIST), Luxembourg; *O De Castro, J Lovric,* Luxembourg Institute of Science and Technology (LIST); *J Audinot,* Luxembourg Institute of Science and Technology (LIST), Luxembourg	**INVITED: MI+2D-ThM-3** Ferromagnetism in 2D Materials, ***Jiabao Yi,*** The University of New South Wales, Australia
9:00am	**HI+AS-ThM-4** Deciphering Chemical Nature of Ferroelastic Twin Domain in $MAPbI_3$ perovskite by Helium Ion Microscopy Secondary Ion Mass Spectrometry, ***Yongtao Liu,*** University of Tennessee; *L Collins,* Oak Ridge National Laboratory; *R Proksch,* Asylum Research an Oxford Instruments Company; *S Kim,* Oak Ridge National Laboratory; *B Watson,* University of Tennessee; *B Doughty,* Oak Ridge National Laboratory; *T Calhoun, M Ahmadi,* University of Tennessee; *A Ievlev, S Jesse, S Retterer, A Belianinov, K Xiao, J Huang, B Sumpter, S Kalinin,* Oak Ridge National Laboratory; *B Hu,* University of Tennessee; *O Ovchinnikova,* Center for Nanophase Materials Sciences, Oak Ridge National Laboratory	Invited talk continues.
9:20am	**INVITED: HI+AS-ThM-5** Helium and Neon Ion Microscopy for Microbiological Applications, ***Ilari Maasilta,*** University of Jyvaskyla, Finland	**INVITED: MI+2D-ThM-5** New Insights into Nanomagnetism by Low-temperature Spin-polarized Scanning Tunneling Microscopy, ***Dirk Sander,*** Max Planck Institute of Microstructure Physics, Germany
9:40am	Invited talk continues.	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**HI+AS-ThM-10** Characterization of Soot Particles by Helium Ion Microscopy, ***André Beyer,*** *D Emmrich, M Salamanca, L Ruwe, H Vieker, K Kohse-Höinghaus, A Gölzhäuser,* Bielefeld University, Germany	**INVITED: MI+2D-ThM-10** Materials Optimization to Form Skyrmion and Skyrmion Lattices, ***Eric Fullerton,*** University of California at San Diego
11:20am	**HI+AS-ThM-11** Development of a Surface Science Spectra Submission Form for Low Energy Ion Scattering (LEIS), *M Linford,* ***Tahereh Gholian Avval,*** Brigham Young University; *H Brongersma, T Grehl,* IONTOF GmbH, Germany	Invited talk continues.
11:40am	**HI+AS-ThM-12** Time of Flight Backscatter and Secondary Ion Mass Spectrometry in the Helium Ion Microscope, ***Nico Klingner,*** *R Heller, G Hlawacek, J von Borany, S Facsko,* Helmholtz Zentrum Dresden-Rossendorf, Germany	**MI+2D-ThM-12** Giant Magnetostriction and Low Loss in FeGa/NiFe Nanolaminates for Strain-Mediated Multiferroic Micro-Antenna Applications, ***Kevin Fitzell***[1], *C Rementer,* University of California, Los Angeles; *N Virushabadoss,* University of Texas at Dallas; *M Jamer,* National Institute of Standards and Technology (NIST); *A Barra,* University of California, Los Angeles; *J Borchers, B Kirby,* National Institute of Standards and Technology (NIST); *G Carman,* University of California, Los Angeles; *R Henderson,* University of Texas at Dallas; *J Chang,* University of California, Los Angeles
12:00pm	**HI+AS-ThM-13** Helium and Neon Focused Ion Beam Hard Mask Lithography on Atomic Layer Deposition Films, ***Matthew Hunt,*** California Institute of Technology; *J Yang,* University of Texas at Austin; *S Wood, O Painter,* California Institute of Technology	**MI+2D-ThM-13** Structural and Electronic Origin of Stable Perpendicular Magnetic Anisotropy in Pt/Co/Pt magnetic ultra-thin film with Ti Buffer Layer, ***Baha Sakar,*** Gebze Technical University, Turkey; *Z Balogh-Michels, A Neels,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *O Öztürk,* Gebze Technical University, Turkey

[1] **Falicov Student Award Finalist**

Thursday Morning, October 25, 2018

	MEMS and NEMS Group **Room 202B - Session MN+2D+AN+MP+NS-ThM** **Optomechanics and 2D NEMS** **Moderator:** Max Zenghui Wang, University of Electronic Science and Technology of China	**Nanometer-scale Science and Technology Division** **Room 102B - Session NS+AN+EM+MI+MN+MP+PS+RM-ThM** **Nanopatterning and Nanofabrication** **Moderators:** Brian Hoskins, National Institute of Standards and Technology (NIST), Meredith Metzler, University of Pennsylvania, Leonidas Ocola, IBM Research Division, T.J. Watson Research Center
8:00am	**INVITED: MN+2D+AN+MP+NS-ThM-1** Towards Microwave to Telecom Wavelength Quantum Information Transfer using Cavity Optomechanics, ***John Davis,*** University of Alberta, Canada	**NS+AN+EM+MI+MN+MP+PS+RM-ThM-1** Femtosecond Laser Processing of Ceria-Based Micro Actuators, ***Jenny Shklovsky,*** Tel Aviv University, Israel; *E Mishuk,* Weizmann Institute of Science, Israel; *Y Berg,* Orbotech Ltd, Israel; *N Vengerovsky, Y Sverdlov,* Tel Aviv University, Israel; *I Lubomirsky,* Weizmann Institute of Science, Israel; *Z Kotler,* Orbotech Ltd; *S Krylov, Y Shacham-Diamand,* Tel Aviv University, Israel
8:20am	Invited talk continues.	**NS+AN+EM+MI+MN+MP+PS+RM-ThM-2** Synthesis of Functional Particles by Condensation and Polymerization of Monomer Droplets in Silicone Oils, ***Prathamesh Karandikar,*** *M Gupta,* University of Southern California
8:40am	**INVITED: MN+2D+AN+MP+NS-ThM-3** 1D/2D NEMS Quantum Information Processing, ***Guangwei Deng,*** Institute of Fundamental and Frontier Sciences, University of Electronic Science and Technology of China 610054, Chengdu, Sichuan, China.0	**INVITED: NS+AN+EM+MI+MN+MP+PS+RM-ThM-3** Competition Between Scale and Perfection in Self-assembling Structures, ***James Liddle,*** NIST Center for Nanoscale Science and Technology
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**INVITED: MN+2D+AN+MP+NS-ThM-5** Characterization and Modeling of Radio Frequency Graphene Resonant Channel Transistor, ***Yuehang Xu,*** University of Electronic Science and Technology of China, China; *T Mei,* University of Electronic Science and Technology of China	**NS+AN+EM+MI+MN+MP+PS+RM-ThM-5** Polymer Templated Annealing of DNA Patterned Gold Nanowires, ***Tyler Westover,*** *B Aryal, R Davis, A Woolley, J Harb,* Brigham Young University
9:40am	Invited talk continues.	
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am		**INVITED: NS+AN+EM+MI+MN+MP+PS+RM-ThM-10** Directed Self-assembly of Block Copolymers for Applications in Nanolithography, ***Paul Nealey,*** University of Chicago
11:20am	**MN+2D+AN+MP+NS-ThM-11** Reconfigurable Resonant Responses in Atomic Layer 2D Nanoelectromechanical Systems (NEMS), ***Zenghui Wang,*** University of Electronic Science and Technology of China, China; *R Yang, P Feng,* Case Western Reserve University	Invited talk continues.
11:40am	**INVITED: MN+2D+AN+MP+NS-ThM-12** Cavity Optomechanics: Dynamics and Applications, ***Eyal Buks,*** Israel Institute of Technology, Israel	**NS+AN+EM+MI+MN+MP+PS+RM-ThM-12** Three Dimensional Mesoporous Silicon Nanowire Network Fabricated by Metal-Assisted Chemical Etching, ***Deepak Ganta,*** *C Guzman, R Villanueva,* TAMIU
12:00pm	Invited talk continues.	**NS+AN+EM+MI+MN+MP+PS+RM-ThM-13** Enhancing Light Extraction from Free-standing InGaN/GaN light Emitters Using Bio-inspired Backside Surface Structuring, *L Chan, C Pynn, S DenBaars,* ***Michael Gordon,*** University of California at Santa Barbara

	Plasma Science and Technology Division **Room 104C - Session PS+EM+TF-ThM** **Atomic Layer Processing: Atomic Layer Etching** **Moderators:** Erwin Kessels, Eindhoven University of Technology, the Netherlands, Mingmei Wang, TEL Technology Center, America, LLC	**Plasma Science and Technology Division** **Room 104A - Session PS-ThM** **Plasma Sources** **Moderators:** TaeSeung Cho, Applied Materials, Geunyoung Yeom, Sungkyunkwan University, Republic of Korea
8:00am	**INVITED: PS+EM+TF-ThM-1** Precise Flux Control of Ions and Radicals using Electron Beam Generated Plasmas, ***David Boris,*** U.S. Naval Research Laboratory	**PS-ThM-1** Model of a Radio-Frequency Low Electron Temperature Plasma Source, ***Shahid Rauf,*** *L Dorf, K Collins,* Applied Materials
8:20am	Invited talk continues.	**PS-ThM-2** Electron-beam Sustained Plasma with Unique Characteristic of Low Electron Temperature at Very Low Pressure, ***Zhiying Chen,*** Tokyo Electron America, Inc.*; K Nagaseki,* Tokyo Electron Miyagi, Ltd., Japan*; J Blakeney, M Doppel, P Ventzek,* Tokyo Electron America, Inc.*; A Ranjan,* TEL Technology Center, America, LLC.
8:40am	**PS+EM+TF-ThM-3** Demonstration of Self-limiting Nature and Selectivity Control in Annealing Procedures for Rapid Thermal-Cyclic ALE of W, TiN, and SiN, ***Kazunori Shinoda,*** *H Kobayashi,* Hitachi, Japan*; N Miyoshi, K Kawamura, M Izawa,* Hitachi High-Technologies, Japan*; K Ishikawa, M Hori,* Nagoya University, Japan	**INVITED: PS-ThM-3** Hydrid Plasma Source with Inductive and Capacitive Fields: Fundamental Understanding and Nano-applications, ***Hyo-Chang Lee,*** Korea Research Institute of Standards and Science (KRISS), Republic of Korea
9:00am	**PS+EM+TF-ThM-4** Mechanisms for Atomic Layer Etching of Metal Films by the Formation of Beta-diketonate Metal Complexes, ***Tomoko Ito,*** *K Karahashi, S Hamaguchi,* Osaka University, Japan	Invited talk continues.
9:20am	**INVITED: PS+EM+TF-ThM-5** Thermal Atomic Layer Etching of Transition Metal Films, ***Charles Winter,*** Wayne State University	**PS-ThM-5** Improving RF Power Delivery for Pulsed Operation, *J Brandon, C Smith, K Ford,* North Carolina State University*; S Nam,* Samsung Electronics*;* ***Steven Shannon,*** North Carolina State University
9:40am	Invited talk continues.	**PS-ThM-6** Optimizing Transients Using Low-High Pulsed Power in Inductively Coupled Plasmas, ***Chenhui Qu,*** *S Lanham,* University of Michigan*; T Ma, T List, P Arora, V Donnelly,* University of Houston*; M Kushner,* University of Michigan
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: PS+EM+TF-ThM-10** Gas Cluster Ion Beam Etching under Organic Vapor for Atomic Layer Etching, ***Noriaki Toyoda,*** University of Hyogo, Japan	**PS-ThM-10** Silicon Nitride Film Formations Using Magnetic-Mirror Confined New Plasma Source, ***Tetsuya Goto,*** Tohoku University, Japan*; S Kobayashi,* Kotec Company, Ltd., Japan*; S Sugawa,* Tohoku University, Japan
11:20am	Invited talk continues.	**PS-ThM-11** Resonant Element Microwave Plasma Source, ***Barton Lane,*** *P Ventzek, A Bhakta,* Tokyo Electron, America, Inc.*; K Nagaseki,* Tokyo Electron Miyagi, Ltd., Japan*; A Ranjan,* Tokyo Technology Center America
11:40am	**PS+EM+TF-ThM-12** Utilizing Chemical Structure of Hydrofluorocarbon Precursors to Achieve Ultra-High Selective Material Removal in Atomic Layer Etching, ***Kang-Yi Lin,*** *C Li,* University of Maryland, College Park*; S Engelmann, R Bruce, E Joseph,* IBM Research Division, T.J. Watson Research Center*; D Metzler,* IBM Research Division, Albany, NY*; G Oehrlein,* University of Maryland, College Park	**INVITED: PS-ThM-12** Microwave Plasma Enabling Efficient Power-To-X Conversion, ***Gerard van Rooij,*** DIFFER, The Netherlands, Netherlands
12:00pm	**PS+EM+TF-ThM-13** Etch Selectivity Mechanisms of Implanted Over Pristine SiN Materials in NH_3/NF_3 Remote Plasma for Quasi Atomic Layer Etching with the Smart Etch Concept, ***Vincent Renaud,*** *E Pargon, C Petit-Etienne,* LTM, Univ. Grenoble Alpes, CEA-LETI, France*; J Barnes, N Rochat,* Cea, Leti, Minatec, France*; L Vallier, G Cunge, O Joubert,* LTM, Univ. Grenoble Alpes, CEA-LETI, France	Invited talk continues.

	Novel Trends in Synchrotron and FEL-Based Analysis **Focus Topic** **Room 202A - Session SA+MI-ThM** **Ultra-fast Dynamics for Magnetic and Quantum Systems** **Moderator:** Claus Michael Schneider, Forschungszentrum Juelich GmbH, Germany	**Surface Science Division** **Room 203C - Session SS+EM+NS-ThM** **Defects in and Functionalization of 2D Materials** **Moderators:** Lars Grabow, University of Houston, Greg Kimmel, Pacific Northwest National Laboratory
8:00am	**SA+MI-ThM-1** New Opportunities at the APS: Using Intermediate Energy X-rays to Investigate Collective Behavior in Interacting Electron Systems, ***Jessica McChesney,*** *F Rodolakis,* Argonne National Laboratory	**INVITED: SS+EM+NS-ThM-1** Holes, Pinning Sites and Metallic Wires in Monolayers of 2D Materials, ***Thomas Michely,*** University of Cologne, Germany
8:20am	**SA+MI-ThM-2** Observation of Surface Recombination in Ultra-fast Carrier Dynamics of $La_{0.7}Sr_{0.3}MnO_3$ Thin Films, ***Saeed Yousefi Sarraf,*** *G Cabrera, R Trappen, N Mottaghi, S Kumari, C Huang, A Bristow, M Holcomb,* West Virginia University	Invited talk continues.
8:40am	**INVITED: SA+MI-ThM-3** Non-equilibrium Control of Charge & Spin Motion in Quantum Materials, ***Hermann Dürr,*** Uppsala University, Sweden	**SS+EM+NS-ThM-3** CO Chemisorption at Pristine, Doped and Defect Sites on Graphene/Ni(111), ***Mario Rocca,*** *G Carraro,* University of Genova, Italy; *M Smerieri, L Savio,* IMEM-CNR, UOS Genova, Italy; *E Celasco, L Vattuone,* University of Genova, Italy
9:00am	Invited talk continues.	**SS+EM+NS-ThM-4** Geometry of Cu Islands Buried Beneath the Surface of Graphite, *A Lii-Rosales,* Ames Laboratory and Iowa State University; *S Julien,* Northeastern University; *Y Han, J Evans,* Ames Laboratory and Iowa State University; *K Wan,* Northeastern University; ***Patricia A. Thiel,*** Ames Laboratory and Iowa State University
9:20am	**INVITED: SA+MI-ThM-5** XUV-transient Grating: Probing Fundamental Excitations at the Nanoscale, ***Laura Foglia,*** *F Capotondi, R Mincigrucci, D Naumenko, E Pedersoli, A Simoncig, G Kurdi, M Manfredda, L Raimondi,* Elettra-Sincrotrone Trieste, Italy; *N Mahne,* IOM-CNR, Italy; *M Zangrando, C Masciovecchio, F Bencivenga,* Elettra-Sincrotrone Trieste, Italy	**SS+EM+NS-ThM-5** Intercalation of O_2 and CO between Graphene and Ru(0001) and the Role of Defects, ***Jory Yarmoff,*** *T Li,* University of California, Riverside
9:40am	Invited talk continues.	**SS+EM+NS-ThM-6** Organic-2D Transition Metal Dichalcogenide van der Waals Heterostructures, ***Yu Li Huang,*** Institute of Materials Research & Engineering (IMRE), A*STAR, Singapore; *Z Song,* National University of Singapore, Singapore; *D Chi,* Institute of Materials Research & Engineering (IMRE), A*STAR, Singapore; *A Wee,* National University of Singapore, Singapore
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: SA+MI-ThM-10** Study of Photo-induced Dynamics in Quantum Materials using Femtosecond Time-resolved X-ray Scattering, ***Wei-Sheng Lee,*** SLAC National Accelerator Laboratory	**SS+EM+NS-ThM-10** Influence of Surface Functionalization on Surface Topography and Growth of Metal Oxide Structures on HOPG, ***Kathryn Perrine,*** *M Trought, I Wentworth, C de Alwis, T Leftwich,* Michigan Technological University
11:20am	Invited talk continues.	**SS+EM+NS-ThM-11** Impurity Induced Chemical Properties of BN on Rh(111) Studied by First Principle Calculations: A New Phase, ***Zahra Hooshmand***[1], *D Le, T Rahman,* University of Central Florida
11:40am	**SA+MI-ThM-12** HAXPES Lab- A Home Lab System for HAXPES Measurements, *S Eriksson,* Scienta Omicron; ***Anna Regoutz,*** Imperial College London, UK	**SS+EM+NS-ThM-12** Texture of Atomic-layer Deposited MoS: A polarized Raman Study, ***Vincent Vandalon,*** *A Sharma, E Kessels,* Eindhoven University of Technology, The Netherlands, Netherlands; *A Bol,* Eindhoven University of Technology, Netherlands

[1] **National Student Award Finalist**

	Thin Films Division **Room 102A - Session TF+AS+EL+PS-ThM** **In-situ Characterization and Modeling of Thin Film Processes** **Moderator:** Thomas Riedl, University of Wuppertal	**Thin Films Division** **Room 104B - Session TF+PS-ThM** **Deposition Processes for 3D and Extreme Geometries** **Moderators:** Richard Vanfleet, Brigham Young University, AnnaMaria Coclite, Graz University of Technology
8:00am	**INVITED: TF+AS+EL+PS-ThM-1** Defects in Thin Films: A First Principles Perspective, ***Douglas Irving***, *J Harris, J Baker, S Washiyama, M Breckenridge,* North Carolina State University*; P Reddy,* Adroit Materials*; R Collazo, Z Sitar,* North Carolina State University	**TF+PS-ThM-1** ALD and Diffusion in High Aspect Ratio Carbon Nanotube Forests, ***David Kane***, *R Davis, R Vanfleet,* Brigham Young University
8:20am	Invited talk continues.	**TF+PS-ThM-2** Nanoporous Reference Substrates for ALD on High Aspect Ratio High Surface Area Materials, ***Dmitri Routkevitch***, InRedox
8:40am	**TF+AS+EL+PS-ThM-3** Advances in Numerical Simulation of SiN ALD, ***Paul Moroz,*** TEL Technology Center, America, LLC	**TF+PS-ThM-3** Fine-tuned Resistive Coatings for Detector Applications, ***Maximilian Gebhard***, *A Mane, D Choudhury, S Letourneau, D Mandia, Y Zhang, J Elam,* Argonne National Laboratory
9:00am	**TF+AS+EL+PS-ThM-4** Diffusion Kinetics Study of Adatom Islands: Activation Energy Barriers Predicted using Data-driven Approaches, ***ShreeRam Acharya***, *T Rahman,* University of Central Florida	**TF+PS-ThM-4** Tungsten Atomic Layer Deposition on Vertically Aligned Carbon Nanotube Structures, ***Ryan Vanfleet***, *R Davis, D Allred, R Vanfleet,* Brigham Young University
9:20am	**TF+AS+EL+PS-ThM-5** Using Ellipsometry and XPS to Understand the Degradation of Thin-film Aluminum Mirrors Protected by Ultrathin Fluorides, *M Linford,* ***Brian I. Johnson***, *R Turley, D Allred,* Brigham Young University	**INVITED: TF+PS-ThM-5** ALD in Metal Organic Frameworks: Toward Single Site Synthesis and Sinter-Resistant Catalysts, ***Alex Martinson***, Argonne National Laboratory
9:40am	**TF+AS+EL+PS-ThM-6** Model for Amorphous Thin Film Formation and Validation, ***Rahul Basu***, VTU, India	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: TF+AS+EL+PS-ThM-10** 2D TMD Monolayer of MoS_2 BY ALD and Insight in the Mechanism by Surface Organometallic Chemistry, ***Elsje Alessandra Quadrelli***, CNRS CPE Lyon, France	**TF+PS-ThM-10** Alumina Deposition by Atomic Layer Deposition (ALD) on Flat Surfaces and High Aspect Ratio Structures, ***Dhruv Shah***, *D Patel, D Jacobsen, J Erickson, M Linford,* Brigham Young University
11:20am	Invited talk continues.	**TF+PS-ThM-11** Resistivity of the Alumina Diffusion Barrier in Catalytic Carbon Nanotube Growth, ***Berg Dodson***, *G Chen, R Davis, R Vanfleet,* Brigham Young University
11:40am	**TF+AS+EL+PS-ThM-12** A Novel Fourier Transform Ion Trap Mass Spectrometer for Semiconductor Processes, ***Gennady Fedosenko***, *H Chung, R Reuter, A Laue, V Derpmann, L Gorkhover, M Aliman, M Antoni,* Carl Zeiss SMT GmbH, Germany	**TF+PS-ThM-12** High Temperature Active CeO_2 Nanorods Generated via Diffusion Limited Atomic Layer Deposition, ***Haoming Yan***, *X Yu, Q Peng,* University of Alabama
12:00pm	**TF+AS+EL+PS-ThM-13** Realization of Shifts in Threshold Voltage and Subthreshold Swing in Atomic Layer Deposited Zinc Oxide As Channel Layer through *in-situ* Half-Cycle Analysis, ***Harrison Sejoon Kim***, *A Lucero, S Kim, J Kim,* University of Texas at Dallas	

	2D Materials Focus Topic **Room 201B - Session 2D+EM+MN+NS-ThA** **Novel Quantum Phenomena in 2D Materials** **Moderator:** Hsin Lin, Institute of Physics, Academia Sinica	**Actinides and Rare Earths Focus Topic** **Room 202C - Session AC-ThA** **Early Career Scientists** **Moderators:** Tomasz Durakiewicz, National Science Foundation, David Shuh, Lawrence Berkeley National Laboratory
2:20pm	**2D+EM+MN+NS-ThA-1** Double Indirect Interlayer Exciton in a $MoSe_2/WSe_2$ van der Waals Heterostructure, ***Aubrey Hanbicki***, *H Chuang, M Rosenberger, C Hellberg, S Sivaram, K McCreary, I Mazin, B Jonker,* Naval Research Laboratory	**INVITED: AC-ThA-1** Complexation, Characterization and Separation of the Lanthanides and Actinides: Shedding Light to Subtle Differences within the f-element Series, ***Gauthier Deblonde***, *C Booth,* Lawrence Berkeley National Laboratory*; M Kelley, J Su, E Batista, P Yang,* Los Alamos National Laboratory*; A Müller, P Ercius, A Minor, R Abergel,* Lawrence Berkeley National Laboratory
2:40pm	**2D+EM+MN+NS-ThA-2** Comparison of A- and B-exciton Intensity and Polarization in Transition Metal Dichalcogenide Monolayers and Heterostructures, ***Kathleen McCreary***, *A Hanbicki, S Sivaram, B Jonker,* U.S. Naval Research Laboratory	Invited talk continues.
3:00pm	**INVITED: 2D+EM+MN+NS-ThA-3** Optospintronics and Magnetism with 2D Materials and Heterostructures, ***Roland Kawakami***, The Ohio State University	**INVITED: AC-ThA-3** Improving the Understanding of Actinides Through Spectroscopy, ***Samantha Cary***, *J Su,* Los Alamos National Laboratory*; S Galley, T Albrecht-Schmitt,* Florida State University*; E Batista, M Ferrier, S Kozimor, V Mocko, B Scott, B Stein,* Los Alamos National Laboratory*; F White,* Florida State University*; P Yang,* Los Alamos National Laboratory
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**2D+EM+MN+NS-ThA-6** Giant Electromechanical Response in Van-der-Waals Layered Crystals, ***Sabine Neumayer***, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory*; E Eliseev,* National Academy of Sciences of Ukraine*; A Tselev,* CICECO and Department of Physics, University of Aveiro, Portugal*; A Morozovska,* National Academy of Sciences of Ukraine*; M Susner, M McGuire,* Oak Ridge National Laboratory*; J Brehm, S Pantelides,* Vanderbilt University*; N Balke, P Maksymovych,* Center for Nanophase Materials Sciences, Oak Ridge National Laboratory	**INVITED: AC-ThA-6** Structural Chemistry of M(IV) (M = Ce, Th, and U) Complexes Isolated from Aqueous Solution, ***Karah Knope***, Georgetown University
4:20pm	**2D+EM+MN+NS-ThA-7** A Universal Method for Measuring Valleytronic Quality of 2D Materials using Conventional Raman Spectroscopy, ***Steven Vitale***, *J Varghese, D Nezich, M Rothschild,* MIT Lincoln Laboratory	Invited talk continues.
4:40pm	**INVITED: 2D+EM+MN+NS-ThA-8** Discovery of Intrinsic Ferromagnetism in 2D van der Waals Crystals, ***Xiang Zhang***, *C Gong,* University of California, Berkeley	**INVITED: AC-ThA-8** Hundess, Coherence and Magnetism in URu2Si2- and USb2-family Materials, ***L. Andrew Wray***, *L Miao, H He,* New York University*; S Ran,* University of Maryland, College Park*; N Butch,* Nist / Umd*; J Denlinger, Y Chuang,* Advanced Light Source, Lawrence Berkeley National Laboratory
5:00pm	Invited talk continues.	Invited talk continues.
5:20pm	**2D+EM+MN+NS-ThA-10** Spectroscopic Evidence of Pair-mediated Bosonic Modes in Superconductor FeSe/$SrTiO_3$(100) Film, ***Minjun Lee***, Seoul National University, Republic of Korea, Republic of Korea*; M Oh, H Jeon, S Yi, I Zoh,* Seoul National University, Republic of Korea*; C Zhang,* Seoul National University, Republic of Korea, Republic of Korea*; J Chae, Y Kuk,* Center for Quantum Nanoscience, Institute for Basic Science, Republic of Korea	

	Applied Surface Science Division **Room 204 - Session AS+NS-ThA** **Profiling, Imaging and Other Multidimensional Pursuits** **Moderators:** Ashley Ellsworth, Physical Electronics, Jordan Lerach, ImaBiotech Corp.	**Biomaterial Interfaces Division** **Room 101B - Session BI-ThA** **Biolubrication and Wear / Women in Bio-surface Science** **Moderators:** Anna Belu, Medtronic, Inc., Sally McArthur, Swinburne University of Technology, Australia
2:20pm	**AS+NS-ThA-1** Surface Science Study of Au/Ni/Cr/n-SiC and Au/Cr/Ni/n-SiC Thin Film Ohmic Contact Material, ***Martyn Kibel***, *A Barlow,* La Trobe University, Australia; *P Leech,* RMIT University, Australia	**INVITED: BI-ThA-1** Super Lubrication and Extremewear Protection using Bioinspired Polymers, ***Xavier Banquy***, *J Faivre,* Universite de Montreal, Canada; *G Xie, M Olszewski,* Carnegie Mellon University; *L David, T Delair, G Sudre, A Montembault,* Univ. Claude Bernard Lyon I; *K Matyjaszewski,* Carnegie Mellon University; *B Shrestha,* Universite de Montreal, Canada
2:40pm	**AS+NS-ThA-2** 3D Imaging of InGaN/GaN based Nanowires and Nanotubes using Time-of-flight Secondary Ion Mass Spectrometry, ***Jean-Paul Barnes***, Univ. Grenoble Alpes, CEA, LETI, France; *A Kapoor,* Univ. Grenoble Alpes, CEA, France, France; *C Durand,* Univ. Grenoble Alpes, CEA, France; *C Bougerol,* Univ. Grenoble Alpes, CNRS, France; *J Eymery,* Univ. Grenoble Alpes, CEA, France	Invited talk continues.
3:00pm	**INVITED: AS+NS-ThA-3** Atom Probe Tomography: Applications and Prospects for Surface and Interface Science, ***Austin Akey***, *D Bell,* Harvard University	**BI-ThA-3** A Billion Force Runs: The AFM/Single-molecule Version of the Pitch Drop Experiment, ***Laila Moreno Ostertag***, Vienna University of Technology, Austria; *T Utzig,* Max Planck Institute for Iron Research, Germany; *C Klinger,* TU Bergakademie Freiberg, Germany; *M Valtiner,* Vienna University of Technology, Austria
3:20pm	Invited talk continues.	**BI-ThA-4** Ionic Liquid Behaviour in Biologic Environments: Structuring and Lubrication at Aqueous Solid/liquid Interfaces, *H Cheng,* TU Wien, Germany; *H Weiss, M Mezger,* Max Planck Institute for Polymer Research, Germany; ***Markus Valtiner***, Vienna University of Technology, Austria
3:40pm	**BREAK**	**BREAK**
4:00pm	**AS+NS-ThA-6** TOF-SIMS Analysis with High Lateral and High Mass Resolution in Parallel, *F Kollmer,* IONTOF GmbH, Germany; *N Havercroft,* IONTOF USA; *A Henß,* Justus-Liebig University Giessen, Germany; *J Zakel, D Rading, H Arlinghaus,* ***Ewald Niehuis***, IONTOF GmbH, Germany	**INVITED: BI-ThA-6** Synergistic Mechanisms of Selenium and Tellurium based Nano-Alloys Towards Biofilm Inhibition, ***Kelly Nash***, *S Tek, B Vincent, C Smith, R Robledo,* University of Texas at San Antonio
4:20pm	**AS+NS-ThA-7** Industrial Applications of Surface Analysis in Chemical Mechanical Planarization, ***Hong Piao***, *Y Liang, J McDonough, C Ballesteros,* FUJIFILM Planar Solutions, LLC, FUJIFILM Electronic materials USA., Inc.; *E Turner,* FUJIFILM Planar Solutions, LLC, FUJIFILM Electronic materials USA., Inc; *A Mishra, R Wen,* FUJIFILM Planar Solutions, LLC, FUJIFILM Electronic materials USA., Inc.	Invited talk continues.
4:40pm	**AS+NS-ThA-8** Correlative Images of Microscopy Spectroscopy: Beyond the 3D Characterization in Surface Analysis, ***Tanguy Terlier***, Korea Institute of Science and Technology, Republic of Korea; *R Verduzco,* Shared Equipment Authority, Rice University; *Y Lee,* Korea Institute of Science and Technology, Republic of Korea	**BI-ThA-8** From Bedside Back to Bench: Combining Human Centered Design with Biointerfacial Research, *P Nguyen, T Martin, D Cuylear, L Mckenney, B Matheson, A Yingling, L Ista,* ***Heather Canavan***, University of New Mexico
5:00pm	**AS+NS-ThA-9** 3D Structure of Atomically Dispersed Metal Species on an Oxide Single Crystal Surface Studied by Polarization-dependent Total Reflection Fluorescence (PTRF)-XAFS, ***Satoru Takakusagi***, *K Asakukra,* Hokkaido University, Japan	**BI-ThA-9** Liquid-Infused Surfaces Coated on Paper Improve Bacteria Handling Efficiency and Detection, *D Regan, C Lilly, A Weigang, H Patanwala,* ***Caitlin Howell***, University of Maine
5:20pm	**AS+NS-ThA-10** XPS Imaging and Spectromiscroscopy Investigation of Extended Release Pharmaceutical Tablets, ***Jonathan Counsell***, *S Coultas, C Blomfield,* Kratos Analytical Ltd, UK; *D Scurr,* The University of Nottingham, UK; *L Mason,* University of Nottingham, UK; *V Ciarnelli, J Garfitt, S Rigby-Singleton,* Juniper Pharma Services Ltd, UK; *M Alexander,* The University of Nottingham, UK; *M Davies,* University of Nottingham, UK; *C Moffitt,* Kratos Analytical Inc.; *S Hutton,* Kratos Analytical Ltd, UK, United Kingdom of Great Britain and Northern Ireland	**BI-ThA-10** Tailoring Interactions at the Nanoparticle-nucleic Acid Interface using Molecular Modelling, *M Manning, J Nash,* ***Yaroslava Yingling***, North Carolina State University
5:40pm	**AS+NS-ThA-11** An experimental Guide to Conversion of Tof-SIMS Spectrum to BIG DATA: Application in Analysis of Ultrathin Coatings, ***Kevin Abbasi***, *A Avishai,* Swagelok Center for Surface Analysis of Materials, Case school of Engineering, Case Western Reserve University	**BI-ThA-11** Biomolecule Interaction with Polymer Thin Films Based on Zwitterions and Polymer Nanoparticles, ***Eva Bittrich***, *C Naas,* Leibniz-Institut für Polymerforschung Dresden e.V., Germany; *F Mele,* Leibniz-Institut für Polymerforschung Dresden e.V. and Polytechnic University of Turin, Italy; *A Münch,* Leibniz-Institut für Polymerforschung Dresden e.V., Germany; *P Uhlmann,* Leibniz-Institut für Polymerforschung Dresden e.V.,Germany, Germany; *D Appelhans, K Eichhorn, B Voit,* Leibniz-Institut für Polymerforschung Dresden e.V., Germany

	Electronic Materials and Photonics Division **Room 101A - Session EM+2D+NS+PS+RM+TF-ThA** **IoT Session: Flexible Electronics & Flash Networking Session** **Moderators:** Shalini Gupta, Northrop Grumman ES, Sang M. Han, University of New Mexico	**Fundamental Discoveries in Heterogeneous Catalysis Focus Topic** **Room 201A - Session HC+SS-ThA** **Bridging Gaps in Heterogeneously Catalyzed Reactions** **Moderator:** Ryan Brown, Clarkson University
2:20pm	**INVITED: EM+2D+NS+PS+RM+TF-ThA-1** Epitaxial Electrodeposition of Electronic and Photonic Materials onto Wafer-size Single Crystal Gold Foils for Flexible Electronics, ***Jay Switzer,*** Missouri University of Science and Technology	**HC+SS-ThA-1** Hydrogen Adsorption and Reaction on RuO_2(110) Surface, *A Dahal, I Lyubinetsky,* ***Zdenek Dohnalek,*** Pacific Northwest National Laboratory
2:40pm	Invited talk continues.	**HC+SS-ThA-2** The Role of Oxides for CO Oxidation over Pd and Rh, and How to Deal with Oxygen Poisoning, ***Johan Gustafson,*** Lund University, Sweden; *O Balmes,* MAX IV Laboratory, Sweden; *C Zhang,* Lund University, Sweden; *M Shipilin,* Stockholm University, Sweden; *A Schaefer,* Chalmers University of Technology, Gothenburg, Sweden; *B Hagman,* Lund University, Sweden; *L Merte, N Martin, P Carlsson,* Chalmers University of Technology, Gothenburg, Sweden; *M Jankowski,* ESRF, France; *E Crumlin,* Advanced Light Source, Lawrence Berkeley National Laboratory; *E Lundgren,* Lund University, Sweden
3:00pm	**EM+2D+NS+PS+RM+TF-ThA-3** Flexible Electronic Devices Based on Two Dimensional Materials, *R Kim, N Glavin,* Air Force Research Laboratory; *R Rai, K Gliebe, M Beebe,* University of Dayton; Air Force Research Laboratory; *J Leem,* University of Illinois at Urbana-Champaign, Republic of Korea; *S Nam,* University of Illinois at Urbana-Champaign; *R Rao,* Air Force Research Laboratory; ***Christopher Muratore,*** University of Dayton	**INVITED: HC+SS-ThA-3** Simplifying the Relationships between Catalyst Structure and Reaction Rates for Complex Mechanisms, ***Charles T. Campbell,*** University of Washington
3:20pm	**EM+2D+NS+PS+RM+TF-ThA-4** Contact Resistances and Schottky Barrier Heights of Metal-SnS Interfaces, ***Jenifer Hajzus,*** *L Porter,* Carnegie Mellon University; *A Biacchi, S Le, C Richter, A Hight Walker,* National Institute of Standards and Technology (NIST)	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm		**HC+SS-ThA-6** Spectroscopic Techniques for Identifying Reactive Intermediate Structures during Decomposition of Formic Acid over Metals and Metal Oxides, ***Megan Witzke,*** *D Flaherty,* University of Illinois at Urbana-Champaign
4:20pm		**HC+SS-ThA-7** Self-sustained Reaction Oscillations in a New Light, ***Uta Hejral,*** *S Albertin, J Zhou, S Pfaff,* Lund University, Sweden; *M Shipilin,* Stockholm University, Sweden; *S Blomberg,* Lund University, Sweden; *O Gutowski, A Dippel,* Deutsches Elektronen-Synchrotron DESY, Germany; *J Gustafson, J Zetterberg, E Lundgren,* Lund University, Sweden
4:40pm		**INVITED: HC+SS-ThA-8** Operando Catalysis--A First-Principles Perspective, ***William Schneider,*** University of Notre Dame
5:00pm		Invited talk continues.
5:20pm		**HC+SS-ThA-10** Chiral Selectivity in Heterogeneous Catalysis, *R Chapleski,* ***Sharani Roy,*** University of Tennessee Knoxville
5:40pm		**HC+SS-ThA-11** Combining *in situ* Environmental TEM and Multiscale Simulations to Study the Dynamic Processes of Copper Oxidation, ***Meng Li,*** *M Curnan, W Saidi, J Yang,* University of Pittsburgh

	Advanced Ion Microscopy Focus Topic **Room 203B - Session HI-ThA** **Emerging Ion Sources, Optics, and Applications** **Moderators:** John A. Notte, Carl Zeiss Microscopy, LLC, Shinichi Ogawa, National Institute of Advanced Industrial Science and Technology (AIST)	**Magnetic Interfaces and Nanostructures Division** **Room 203A - Session MI+BI-ThA** **Interdisciplinary Magnetism** **Moderator:** Markus Donath, Muenster University, Germany
2:20pm	**INVITED: HI-ThA-1** Development of Gas Field Ionization Source using Gas with Low Ionization Energy that Enables Sample Processing and Observation, ***Shinichi Matsubara***, *H Shichi, T Hashizume,* Hitachi, Japan	
2:40pm	Invited talk continues.	**MI+BI-ThA-2** Chiral Induced Spin Selectivity in Molecular Bond Dissociation, ***Richard Rosenberg***, Argonne National Laboratory
3:00pm	**HI-ThA-3** Development of Scanning Helium Microscopy (SHeM), ***Susanne Schulze***, *D Ward, M Bergin, S Lambrick, B Allison, J Ellis, A Jardine,* University of Cambridge, UK	**INVITED: MI+BI-ThA-3** The Chiral Induced Spin Selectivity Effect- From Spintronics to Controlling Chemistry, ***Ron Naaman***, Weizmann Institute of Science, Israel
3:20pm	**HI-ThA-4** Fabrication of Trimer/Single Atom Tip for GFIS by Field Evaporation without Tip Heating, ***Kwang-Il Kim***, University of Science and Technology, Republic of Korea; *Y Kim, T Ogawa,* Korea Research Institute of Standards and Science (KRISS), Republic of Korea; *S Choi,* Kyungpook National University, Republic of Korea; *B Cho, S Ahn, I Park,* Korea Research Institute of Standards and Science (KRISS), Republic of Korea	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: HI-ThA-6** Nano Aperture Ion Source, ***Greg Schwind***, *A Botman, S Kellogg,* Thermal Fisher Scientific; *L van Kouwen, P Kruit,* Delft University of Technology, Netherlands	**INVITED: MI+BI-ThA-6** Multifunctional Ferromagnetic Disks for Life Sciences Applications, ***Elena Rozhkova***, *V Novosad,* Argonne National Laboratory
4:20pm	Invited talk continues.	Invited talk continues.
4:40pm	**HI-ThA-8** Avoiding Amorphization Related Shape Changes of Nano-structures during Medium Fluence Ion Beam Irradiation of Semiconductor Materials, ***Xiaomo Xu***, *G Hlawacek, H Engelmann, K Heinig,* Helmholtz Zentrum Dresden-Rossendorf, Germany; *W Möller,* Helmholtz-Zentrum Dresden-Rossendorf, Germany; *A Gharbi,* CEA-LETI, France; *R Tiron,* CEA-LETI, MINATEC, France; *L Bischoff, T Prüfer, R Hübner, S Facsko, J von Borany,* Helmholtz Zentrum Dresden-Rossendorf, Germany	**INVITED: MI+BI-ThA-8** Magnetic Nanoparticles in Biomedicine: Recent Developments in Imaging, Diagnostics and Therapy, ***Kannan Krishnan***, University of Washington
5:00pm		Invited talk continues.

	MEMS and NEMS Group **Room 202B - Session MN+2D+AN+NS-ThA** **Nonlinear and Thermal Resonators** **Moderators:** Meredith Metzler, University of Pennsylvania, Christian Zorman, Case Western Reserve University	**Nanometer-scale Science and Technology Division** **Room 102B - Session NS+2D+AS+MN+PC-ThA** **SPM – Probing Electronic and Transport Properties** **Moderators:** Ondrej Dyck, Oak Ridge National Laboratory, Sergei Kalinin, Oak Ridge National Laboratory, Indira Seshadri, IBM Research Division, Albany, NY
2:20pm	**INVITED: MN+2D+AN+NS-ThA-1** Embracing Nonlinearity and Thermal Fluctuations in Nanomechanics, ***Daniel Lopez***, *D Czaplewski, C Chen,* Argonne National Laboratory; *D Zanette,* Centro Atomico Bariloche, Argentina; *S Shaw,* Michigan State Univrsity	**INVITED: NS+2D+AS+MN+PC-ThA-1** Imaging Currents in Two-dimensional Quantum Materials, ***Katja Nowack***, Cornell University
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**MN+2D+AN+NS-ThA-3** Probing Ion Radiation Effects in Silicon Crystals by 3D Integrated Resonating Thin Diaphragms, ***Hailong Chen***, *H Jia, V Pashaei,* Case Western Reserve University; *W Liao, C Arutt, M McCurdy,* Vanderbilt University; *P Hung,* The Aerospace Corporation; *R Reed, R Schrimpf, M Alles,* Vanderbilt University; *P Feng,* Case Western Reserve University	**NS+2D+AS+MN+PC-ThA-3** Side-gate Construct for Probing Active Energy Levels in Electron Transport through a Solid-state Surface-bound Protein Monolayer, ***Sidney Cohen***, *B Kayser, C Gua, M Sheves, I Pecht, D Cahen,* Weizmann Institute of Science, Israel
3:20pm	**MN+2D+AN+NS-ThA-4** An Array of Thermally-actuated Nanoresonators for Real-time Mass Spectrometry, ***Martial Defoort***, *M Sansa, M Gély, G Jourdan, S Hentz,* CEA/LETI-University Grenoble Alpes, France	**NS+2D+AS+MN+PC-ThA-4** Adding Electrons One at a Time to Electrostatically Confined Graphene Quantum Dots, ***Daniel Walkup***, *C Gutierrez, F Ghahari,* National Institute of Standards and Technology (NIST)/ University of Maryland, College Park; *C Lewandowski,* MIT; *J Rodriguez-Nieva,* Harvard University; *T Taniguchi, K Watanabe,* National Institute for Materials Science (NIMS), Japan; *L Levitov,* MIT; *N Zhitenev, J Stroscio,* National Institute of Standards and Technology (NIST)
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: MN+2D+AN+NS-ThA-6** Nonlinear and Noise Induced Dynamics of High Q Nanomechanical Resonators, ***Jana Huber***, *E Weig,* University of Konstanz, Germany	**NS+2D+AS+MN+PC-ThA-6** Bulk and Surface Contribution to the Charge and Spin Transport in Topological Insulators Observed with a Four-Probe Scanning Tunneling Microscope, ***Wonhee Ko***, *G Nguyen,* Oak Ridge National Laboratory; *H Kim, J Kim,* Pohang University of Science and Technology, Republic of Korea; *A Li,* Oak Ridge National Laboratory
4:20pm	Invited talk continues.	**NS+2D+AS+MN+PC-ThA-7** Modulation of Single-Walled Carbon Nanotube Electronic Structure by External Electronic Perturbations: Scanning Tunneling Spectroscopy and Density Functional Theory, ***Benjamen Taber***[1], *G Nazin,* University of Oregon
4:40pm	**MN+2D+AN+NS-ThA-8** SNIC Bifurcation Generated Mechanical Frequency Comb, ***David Czaplewski***, *D Lopez,* Center for Nanoscale Materials, Argonne National Laboratory; *O Shoshani,* Ben-Gurion University -Negev, Israel; *A Eriksson,* Chalmers University of Technology, Gothenburg, Sweden; *S Shaw,* Florida Institute of Technology	**NS+2D+AS+MN+PC-ThA-8** Single Charge and Exciton Dynamics probed on the Molecular Scale, ***Anna Roslawska***, *P Merino, C Grosse, C Leon, O Gunnarsson, M Etzkorn, K Kuhnke, K Kern,* Max Planck Institute for Solid State Research, Germany
5:00pm	**MN+2D+AN+NS-ThA-9** A Buckling-based, DC Controlled, Non-volatile Nanoelectromechanical Logic Memory, *S Erbil, U Hatipoğlu,* Bilkent University, Turkey; *C Yanık,* Sabancı University; *M Ghavami,* ***Mehmet Selim Hanay***, Bilkent University, Turkey	**NS+2D+AS+MN+PC-ThA-9** Microscopic Understanding of the Temperature-dependent Carrier Transport in Ge Nano - Crystal s Films, ***Dan Shan***, Yangzhou Polytechnic Institute, China; *J Xu,* Nanjing Universityy, China

[1] **NSTD Postdoc Finalist**

	Plasma Science and Technology Division Room 104C - Session PS+EM+TF-ThA Atomic Layer Processing: Integration of ALD and ALE **Moderator:** Scott Walton, Naval Research Laboratory	Plasma Science and Technology Division Room 104A - Session PS-ThA Plasma Diagnostics, Sensors and Controls **Moderator:** Steven Shannon, North Carolina State University
2:20pm	**PS+EM+TF-ThA-1** Atomic-Layer Etching (ALE) of Nickel or Nickel Oxide Films by Hexafluoroacetylacetone (HFAC) Molecules, ***Abdulrahman Basher***, *M Isobe, T Ito, K Karahashi,* Osaka University, Japan*; M Kiuchi,* National Institute of Advanced Industrial Science and Technology (AIST), Japan*; T Takeuchi,* Nara Women's University, Japan*; S Hamaguchi,* Osaka University, Japan	**PS-ThA-1** In-situ Measurement of Electron Emission and Electron Reflection Yields, ***Mark Sobolewski,*** National Institute of Standards and Technology (NIST)
2:40pm	**PS+EM+TF-ThA-2** Thermal Atomic Layer Etching of HfO_2 Using HF for Fluorination and $TiCl_4$ for Ligand-Exchange, *Y Lee,* ***Steven George,*** University of Colorado at Boulder	**PS-ThA-2** Electron Energy Distribution Measurements in Dusty Non-thermal Plasmas, ***Austin Woodard****, L Mangolini,* University of California, Riverside
3:00pm	**PS+EM+TF-ThA-3** Rapid thermal-cyclic Atomic Layer Etching of SiO_2 Using Infrared Annealing, ***Nobuya Miyoshi,*** Hitachi High-Technologies, Japan*; H Kobayashi, K Shinoda, M Kurihara,* Hitachi, Japan*; K Kawamura, K Ookuma, Y Kouzuma, M Izawa,* Hitachi High-Technologies, Japan	**INVITED: PS-ThA-3** The Surface Plasmon Energy and the Secondary Electron Emission on an Oxidized Aluminum Surface*, J Li, J Qiu,* ***Yi-Kang Pu,*** Tsinghua University, China
3:20pm	**PS+EM+TF-ThA-4** The Smoothing Effect in Atomic Layer Etching (ALE), ***Keren Kanarik****, S Tan, W Yang, I Berry, T Lill, Y Pan, R Gottscho,* Lam Research Corporation	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: PS+EM+TF-ThA-6** Prospects for Combining ALD and ALE in a Single Chamber, ***Mike Cooke,*** Oxford Instruments, UK	**PS-ThA-6** Transient Phenomena in Power Modulated Chlorine Plasma, ***Priyanka Arora****, T List, T Ma,* University of Houston*; S Shannon,* North Carolina State University*; S Nam,* Samsung Electronics Co., Ltd., Republic of Korea*; V Donnelly,* University of Houston
4:20pm	Invited talk continues.	**PS-ThA-7** Measurements of RF Magnetic Fields and Plasma Current in Coupled Low and Very High Dual-Frequency Plasma Sources*, J Zhao, P Ventzek, B Lane,* Tokyo Electron America, Inc.*;* ***Toshihiko Iwao****, K Ishibashi,* Tokyo Electron Technology Solutions Ltd., Japan
4:40pm	**PS+EM+TF-ThA-8** Low Temperature Surface Preparation of GaN Substrates for Plasma Assisted-Atomic Layer Epitaxial Growth, ***Samantha G. Rosenberg,*** U.S. Naval Research Laboratory*; D Pennachio,* University of California, Santa Barbara*; M Munger,* SUNY Brockport*; C Wagenbach,* Boston University*; V Anderson,* U.S. Naval Research Laboratory*; S Johnson,* U. S. Naval Research Laboratory*; N Nepal, A Kozen, J Woodward,* U.S. Naval Research Laboratory*; Z Robinson,* SUNY Brockport*; K Ludwig,* Boston University*; C Palmstrøm,* University of California, Santa Barbara*; C Eddy, Jr.,* U. S. Naval Research Laboratory	**PS-ThA-8** Self-neutralized Nearly Monoenergetic Positive Ion Beam Extracted From a Pulsed Plasma, ***Ya-Ming Chen****, R Sawadichai,* University of Houston*; S Tian,* Lam Research Corporation*; V Donnelly, D Economou, P Ruchhoeft,* University of Houston
5:00pm	**PS+EM+TF-ThA-9** Chemical Interactions with Alkali Compounds for Controlling the Transition between Thermal HF-based Atomic Layer Etching and Deposition, ***John Hennessy,*** Jet Propulsion Laboratory, California Institute of Technology	**PS-ThA-9** Diagnostics of Plasma Neutral Species in a Very High Frequency Oxygen Plasma with High Sensitivity Broadband Absorption Spectroscopy, ***Jianping Zhao****, P Ventzek, B Lane,* Tokyo Electron America, Inc.*; T Iwao, K Ishibashi,* Tokyo Electron Technology Solutions Ltd., Japan*; J Booth,* CNRS, Ecole Polytechnique, France
5:20pm	**INVITED: PS+EM+TF-ThA-10** Selective Processing to Enable High Fidelity Control for the 5 nm Node, ***Benjamen Rathsack,*** Tokyo Electron America, Inc.*; A Ranjan,* TEL Technology Center, America, LLC.*; P Ventzek,* Tokyo Electron America, Inc.*; H Mochiki,* Tokyo Electron Miyagi, Ltd., Japan*; J Bannister,* Tokyo Electron America, Inc.	**PS-ThA-10** Development of the Virtual Metrology Using a Plasma Information Variable (PI-VM) for Monitoring SiO_2 Etch Depth, ***Yunchang Jang****, H Roh, S Ryu, J Kwon, G Kim,* Seoul National University, Republic of Korea
5:40pm	Invited talk continues.	**PS-ThA-11** Model Predictive Control of Plasma Density in Ar/SF_6 Capacitively Coupled Plasma Source, ***Sangwon Ryu****, H Roh, Y Jang, D Park, J Koo, J Lee, G Kim,* Seoul National University, Republic of Korea

	Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic **Room 202A - Session SA+AS+HC+SS-ThA** **IoT Session: Multi-modal Characterization of Energy Materials & Device Processing** **Moderators:** Maya Kiskinova, Elettra-Sincrotrone Trieste, Italy, Slavomir Nemsak, Advanced Light Source, Lawrence Berkeley National Laboratory	**Surface Science Division** **Room 203C - Session SS+AS+BI+MI+NS-ThA** **Organic/Inorganic Surfaces, Interfaces and Nanostructures** **Moderator:** Denis Potapenko, Princeton University
2:20pm	**INVITED: SA+AS+HC+SS-ThA-1** Revealing Structure-Function Correlations in Fuel-Cells and Batteries., ***Klaus Attenkofer****, E Stavitski, M Liu, D Lu, M Topsakal, D Stacchiola, M Hybertsen,* Brookhaven National Laboratory	**SS+AS+BI+MI+NS-ThA-1** Investigation of the Stability of Ag Monolayers on Au(111) as a Function of Metal Adatom Diffusion*, J Phillips, L Harville, H Morgan, L Jackson, G LeBlanc,* ***Erin Iski****,* University of Tulsa
2:40pm	Invited talk continues.	**SS+AS+BI+MI+NS-ThA-2** Chain-Length Dependent Reactivity of Thiolate Self-Assembled Monolayers with Atomic Gas Species*,* ***Jeffrey Sayler****, S Brown, S Sibener,* University of Chicago
3:00pm	**INVITED: SA+AS+HC+SS-ThA-3** Soft X-ray Spectroscopy for High Pressure Liquid*,* ***Ruimin Qiao****, J Guo, W Chao,* Lawrence Berkeley National Laboratory	**INVITED: SS+AS+BI+MI+NS-ThA-3** Scan Probe Studies of Lithium Transfer through Solid State Electrochemical Interfaces*,* ***Janice Reutt-Robey****,* University of Maryland College Park
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**SA+AS+HC+SS-ThA-6** Surface Action Spectroscopy Using FHI FEL Infrared Radiation*,* ***Zongfang Wu****, H Kuhlenbeck, W Schöllkopf, H Freund,* Fritz-Haber Institute of the Max Planck Society, Germany	**SS+AS+BI+MI+NS-ThA-6** Adsorption and Self-assembly of Halogenated Organic Molecules on the Si(111) √3×√3-Ag Surface*,* ***Renjie Liu****,* Lakehead University, Canada*; C Fu, A Moisseev, M Rao, Y Chen, D Perepichka,* McGill University, Canada*; M Gallagher,* Lakehead University, Canada
4:20pm	**SA+AS+HC+SS-ThA-7** Spectroscopic Insight into Resistive Switching Processes in Oxides*, C Baeumer, C Schmitz,* Forschungszentrum Juelich GmbH, Germany*; A Kindsmüller,* RWTH Aachen University, Germany*; N Raab, V Feyer, D Mueller, J Hackl, S Nemsak,* Forschungszentrum Juelich GmbH, Germany*; O Mentes, A Locatelli,* Elettra-Sincrotrone Trieste, Italy*; R Waser, R Dittmann,* ***Claus Michael Schneider****,* Forschungszentrum Juelich GmbH, Germany	**SS+AS+BI+MI+NS-ThA-7** Electron Interactions with Alkanethiol Self-assembled Monolayers on Au(111), ***Jodi Grzeskowiak****,* University at Albany-SUNY*; C Ventrice, Jr.,* SUNY Polytechnic Institute
4:40pm	**INVITED: SA+AS+HC+SS-ThA-8** Visualizing Electronic Structures of Topological Quantum Materials by Synchrotron Based Photoemission Spectroscopy*,* ***Yulin Chen****,* Oxford University, UK	**SS+AS+BI+MI+NS-ThA-8** Measuring the Electronic Properties of Organic Single Crystals*,* ***Sujitra Pookpanratana****, E Bittle, C Hacker, S Robey,* National Institute of Standards and Technology (NIST)*; R Ovsyannikov, E Giangrisostomi,* Helmholtz-Zentrum Berlin, Germany
5:00pm	Invited talk continues.	**SS+AS+BI+MI+NS-ThA-9** Surface Functionalization of Porous Substrates via Initiated Chemical Vapor Deposition*,* ***Christine Cheng****, M Gupta,* University of Southern California
5:20pm	**SA+AS+HC+SS-ThA-10** Electronic Structure of FeO, γ-Fe_2O_3 and Fe_3O_4 Epitaxial Films using High-energy Spectroscopies*,* ***German Rafael Castro****,* Spanich CRG BM25-SpLine Beamline at the ESRF,, France*; J Rubio Zuazo,* Spanish CRG BM25-SpLine at the ESRF, France*; A Chainani,* Condensed Matter Physics Group, NSRRC, Taiwan, Republic of China*; M Taguchi,* RIKEN SPring-8 centre, Japan*; D Malterre,* Institut Jean Lamour, Universite de Lorraine, France*; A Serrano Rubio,* Spanich CRG BM25-SpLine Beamline at the ESRF, France	**SS+AS+BI+MI+NS-ThA-10** Atomic-Scale Understanding of Anatase Nanocatalyst Activation*,* ***William DeBenedetti***[1]*, E Skibinski, M Hines,* Cornell University
5:40pm	**SA+AS+HC+SS-ThA-11** Single-Bunch Imaging of Detonation Fronts Using Scattered Synchrotron Radiation*, M Nielsen, J Hammons, M Bagge-Hansen, L Lauderbach, R Hodgin, K Champley, W Shaw,* Lawrence Livermore National Laboratory*; N Sinclair,* Washington State University*;* ***Trevor Willey****,* Lawrence Livermore National Laboratory	**SS+AS+BI+MI+NS-ThA-11** Mechanistic view of Solid-Electrolyte Interphase Layer Evolution at Li-metal Anode*,* ***Venkateshkumar Prabhakaran****,* Physical Sciences Division, Pacific Northwest National Laboratory*; M Engelhard, A Martinez,* Environmental Molecular Science Laboratory, Pacific Northwest National Laboratory*; G Johnson,* Physical Sciences Division, Pacific Northwest National Laboratory*; S Thevuthasan,* Environmental Molecular Science Laboratory, Pacific Northwest National Laboratory*; V Murugesan,* Physical Sciences Division, Pacific Northwest National Laboratory

[1] **National Student Award Finalist**

Thursday Afternoon, October 25, 2018

	Surface Science Division **Room 102A - Session SS+EM+PS+TF-ThA** **Deposition, Etching and Growth at Surfaces** **Moderator:** Bruce E. Koel, Princeton University	**Thin Films Division** **Room 104B - Session TF+AS+EL+EM+NS+PS+SS-ThA** **IoT Session: Thin Films for Flexible Electronics and IoT** **Moderators:** Jesse Jur, North Carolina State University, Siamak Nejati, University of Nebraska-Lincoln
2:20pm	**INVITED: SS+EM+PS+TF-ThA-1** Controlled Deposition and High-Resolution Analysis of Functional Macromolecules in Ultrahigh Vacuum, ***Giovanni Costantini,*** University of Warwick, UK	**INVITED: TF+AS+EL+EM+NS+PS+SS-ThA-1** Ultraflexible Organic Electronics for Bio-medical Applications, ***Tomoyuki Yokota,*** *T Someya,* The University of Tokyo, Japan
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**SS+EM+PS+TF-ThA-3** Unconventional Nucleation and Growth Kinetics: *in situ* Variable-temperature Scanning Tunneling Microscopy Studies of Chemical Vapor Deposition of Inorganic Monolayers on Metallic Substrates, ***Pedro Arias,*** University of California, Los Angeles; *A Abdulslam,* Colorado School of Mines; *A Ebnonnasir,* University of California at Los Angeles; *C Ciobanu,* Colorado School of Mines; *S Kodambaka,* University of California, Los Angeles	**TF+AS+EL+EM+NS+PS+SS-ThA-3** Molecular Surface Chemistry for Improved Interfaces in Organic Electronics, ***Jacob W. Ciszek,*** Loyola University Chicago
3:20pm	**SS+EM+PS+TF-ThA-4** Redox-Active Ligands for Single-Site Metal-Organic Complexes on Surfaces as Heterogeneous Catalysts, ***Tobias Morris,*** Indiana University; *D Wisman,* Indiana University, NAVSEA Crane; *I Huerfano, N Maciullis, K Caulton, S Tait,* Indiana University	**TF+AS+EL+EM+NS+PS+SS-ThA-4** Investigation of Low Temperature ALD-deposited SnO_2 Films Stability in a Microfabrication Environment, ***Tony Maindron,*** *S Sandrez, N Vaxelaire,* CEA/LETI-University Grenoble Alpes, France
3:40pm	**BREAK**	**BREAK**
4:00pm	**SS+EM+PS+TF-ThA-6** Oxidation and Ablation of HOPG Using Supersonic Beams of Molecular Oxygen Combined with STM Visualization, ***Ross Edel,*** *T Grabnic, B Wiggins, S Sibener,* University of Chicago	**TF+AS+EL+EM+NS+PS+SS-ThA-6** Dopant Distribution in Atomic Layer Deposited ZnO:Al and In_2O_3:H Films Studied by Atom Probe Tomography and Transmission Electron Microscopy, *Y Wu, B Macco,* Eindhoven University of Technology, The Netherlands, Netherlands; *D Giddings, T Prosa, D Larson,* CAMECA Instruments Inc.; *S Kölling, P Koenraad,* Eindhoven University of Technology, The Netherlands; *F Roozeboom,* ***Erwin Kessels,*** Eindhoven University of Technology, The Netherlands, Netherlands; *M Verheijen,* Eindhoven University of Technology, The Netherlands
4:20pm	**SS+EM+PS+TF-ThA-7** Kinetically Trapped Molecular Growth during the Self-assembly of ZnTPP on Ag(100), ***Sylvie Rangan,*** *P Kim, C Ruggieri, R Bartynski,* Rutgers, the State University of New Jersey; *S Whitelam,* Lawrence Berkeley National Laboratory	**TF+AS+EL+EM+NS+PS+SS-ThA-7** Roll-to-Roll Processable OTFT Sensors and Amplifier, ***Kai Zhang,*** University of Oxford, Department of Materials, UK; *C Chen, B Choubey, H Assender,* University of Oxford, UK
4:40pm	**SS+EM+PS+TF-ThA-8** Early Stage Oxidation and Evolution of Surface Oxides in Ni(100) and Ni-Cr(100) Thin Films, ***William H. Blades,*** *P Reinke,* University of Virginia	**TF+AS+EL+EM+NS+PS+SS-ThA-8** Functionalization of Indium Gallium Zinc Oxide Surfaces for Transparent Biosensors, *X Du, S John, J Bergevin,* ***Gregory Herman,*** Oregon State University
5:00pm	**SS+EM+PS+TF-ThA-9** DLC Films by Modified HiPIMS with Effect from Pulse Parameters on Plasma Parameters and Film Quality, ***David Ruzic,*** *I Haehnlein,* University of Illinois at Urbana-Champaign; *B Wu,* Southwest Jiaotong University; *D Barlaz,* University of Illinois at Urbana-Champaign; *B Jurczyk,* Starfire Industries	**TF+AS+EL+EM+NS+PS+SS-ThA-9** Large Area Atmospheric Pressure Spatial ALD of IZO and IGZO Thin-film Transistors, *C Frijters, I Katsouras, A Illiberi, G Gelinck,* Holst Centre / TNO, Netherlands; ***Paul Poodt,*** Holst Centre / TNO and SALDtech B.V., Netherlands
5:20pm	**SS+EM+PS+TF-ThA-10** Adsorption and Reactions on Topological Insulators Surfaces Probed by Low Energy Ion Scattering, ***Haoshan Zhu***[1], *W Zhou, J Yarmoff,* University of California - Riverside	**TF+AS+EL+EM+NS+PS+SS-ThA-10** Thin Film Ink-Jet Printing on Textiles for Flexible Electronics, ***Jesse Jur,*** *I Kim, H Shahariar,* North Carolina State University
5:40pm	**SS+EM+PS+TF-ThA-11** Atomically Controlled Metallation of Porphyrinoid Species with Lanthanides on Surfaces, ***Borja Cirera,*** IMDEA Nanoscience, Spain; *J Björk,* Linköping University, Sweden; *G Bottari, T Torres,* Universidad Autonoma Madrid, Spain; *R Miranda, D Ecija,* IMDEA Nanoscience, Spain	**TF+AS+EL+EM+NS+PS+SS-ThA-11** Flexography Oil Patterning for In-line Metallization of Aluminium Electrodes onto Polymer Webs: Commercial Roll to Roll Manufacturing of Flexible and Wearable Electronics, ***Bryan Stuart,*** *T Cosnahan, A Watt, H Assender,* University of Oxford, Department of Materials, UK

[1] **Morton S. Traum Award Finalist**

2D Materials Focus Topic
Room Hall B - Session 2D-ThP
2D Materials Poster Session
6:00pm

2D-ThP-1 Activated Reduction Plasma Assisted Sulfurization in Layered WS_2 Synthesis, ***Chien-Pao Lin***, *C Hsiao,* ITRC,NARL, Taiwan, Republic of China*; P Chen, C Jong,* No Matching Affiliation, Taiwan, Republic of China

2D-ThP-2 Quantized States, Berry Phases, and Quantum-Hall Wedding-Cake structures in Graphene Quantum Dots, ***Fereshte Ghahari Kermani***, *D Walkup, C Gutiérrez,* National Institute of Standards and Technology (NIST)/ University of Maryland, College Park*; C Lewandowski,* Department of Physics, Massachusetts Institute of Technology*; J Rodriguez-Nieva,* Massachusetts Institute of Technology*; K Watanabe, T Taniguchi,* National Institute for Materials Science, Japan*; L Levitov,* Massachusetts Institute of Technology*; N Zhitenev, J Stroscio,* National Institute of Standards and Technology (NIST)

2D-ThP-3 Growth Phenomena and Mechanism of MoS2 Formed by Conventional Chemical Vapor Deposition, ***Cheol-Min Hyun***, *J Choi, S Lee, J Ahn,* Korea Maritime and Ocean University, Republic of Korea

2D-ThP-4 Graphene Micro Wires Defined by Photolithography and Plasma Etching for Field Effect Transistors, *F Rufino, A Pascon,* University of Campinas, Brazil*; D Larrude,* Mackenzie Presbyterian University, Brazil*; W Mariano,* ***José Alexandre Diniz***, University of Campinas, Brazil

2D-ThP-5 Elucidating the Influence of Chemical Functionalizationand Structural Defects in 2D Material Properties, ***Sanjini Nanayakkara***, *H Zhang,* National Renewable Energy Laboratory*; M Todt, J Sambur,* Colorado State University*; J Blackburn, E Miller,* National Renewable Energy Laboratory

2D-ThP-6 In-Operando AFM/STM and Transport Measurements of a Graphene Hall Bar Device, ***Johannes Schwenk***, National Institute of Standards and Technology (NIST)/ University of Maryland, College Park*; S Kim,* National Institute of Standards and Technology (NIST) / Department of Physics and Astronomy, Seoul National University, Seoul, Korea*; F Ghahari,* National Institute of Standards and Technology (NIST)/ University of Maryland, College Park*; J Berwanger,* Institut für Experimentelle und Angewandte Physik, Universität Regensburg, Germany*; W Cullen, S Blankenship,* National Institute of Standards and Technology (NIST)*; Y Kuk,* Department of Physics and Astronomy, Seoul National University, Seoul, Korea*; F Giessibl,* Institut für Experimentelle und Angewandte Physik, Universität Regensburg, Germany*; N Zhitenev, J Stroscio,* National Institute of Standards and Technology (NIST)

2D-ThP-7 Mechanical Properties of Graphynes under Tension and Shearing, ***Te-Hua Fang***, National Kaohsiung University of Science and Technology, Taiwan*; C Hung,* National Kaohsiung University of Science and Technology

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Actinides and Rare Earths Focus Topic
Room Hall B - Session AC-ThP
Actinides and Rare Earths Poster Session
Moderators: David Shuh, Lawrence Berkeley National Laboratory, James Tobin, UW Oshkosh
6:00pm

AC-ThP-1 Upconversion Photoluminescence Efficiency Dependence of Yb ions in Gd0.91-xNbO4: Ybx3+, Er0.09, *S Yi,* ***Seung Gon Lee***, Silla University, Republic of Korea

AC-ThP-2 Luminescence Characteristics of $(Gd_{0.85-x}Yb_{0.15})NbO_4:Er_x^{3+}$ Phosphors, *S Yi,* ***DongGyu Lee***, Silla University, Republic of Korea

AC-ThP-3 Exploring the Electronic Structure of Molecular Lanthanide Complexes in the +2 Oxidation State Using Photoelectron Spectroscopy, ***Daniel Huh***, *J Bruce, J Hemminger, W Evans,* University of California, Irvine

AC-ThP-4 Effects of Cerium Content on Local Structure in U1-xCexO2 Solid Solution, *H Cao,* Shanghai Institute of Applied Physics, Chinese Academy of Science., China*;* ***Yuying Huang***, Shanghai Institute of Applied Physics, Chinese Academy of Science, China

AC-ThP-5 Magnetism of the $(Nd,R)_2Fe_{14}B$ - H system with R = Er and Tm, *I Tereshina,* ***Lev Ivanov***, M.V. Lomonosov Moscow State University, Russian Federation*; D Gorbunov,* Helmholtz-Zentrum Dresden-Rossendorf, Germany*; M Paukov,* Charles University, Prague, Czech Republic*; E Tereshina-Chitrova,* Institute of Physics, Academy of Sciences of the Czech Republic, Czech Republic*; M Doerr,* Technische Universität Dresden, Germany*; L Havela,* Charles University, Prague, Czech Republic*; A Andreev,* Institute of Physics ASCR, Czech Republic

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Applied Surface Science Division
Room Hall B - Session AS-ThP
Applied Surface Science Division Poster Session
6:00pm

AS-ThP-1 Toward an Improved Understanding of the role of soil organic matter in NOy cycling through Investigation of Heterogeneous Reactions with NO2+, *R Hansen,* Indiana University*;* ***Mark Engelhard***, Pacific Northwest National Laboratory*; J Raff,* Indiana University

AS-ThP-2 Measuring the Damage Depth and Recovery of PEMA Thin Films using Multiple Technique Analysis, ***William Sgammato***, *R Simpson,* Thermo Fisher Scientific, UK

AS-ThP-3 Determination of Band Offsets in Semiconductor Heterostructures (2D/3D) by using XPS, ***Mohamed Hedhili***, King Abdullah University of Science and Technology (KAUST), Core Labs, Saudi Arabia*; M Tangi, P Mishra, T Ng, B Janjua, C Tseng,* Photonics Laboratory, King Abdullah University of Science and Technology (KAUST), Saudi Arabia*; D Anjum,* King Abdullah University of Science and Technology (KAUST), Core Labs, Saudi Arabia*; M Alias,* Photonics Laboratory, King Abdullah University of Science and Technology (KAUST), Saudi Arabia*; N Wei,* King Abdullah University of Science and Technology (KAUST), Core Labs, Saudi Arabia*; L Li,* Physical Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST), Saudi Arabia*; B Ooi,* Photonics Laboratory, King Abdullah University of Science and Technology (KAUST), Saudi Arabia

AS-ThP-4 Multi-technique Characterization of Nanowire-based Catalysts and Electrodes, ***Sarah Zaccarine***, *C Ngo,* Colorado School of Mines*; S Shulda, S Mauger, S Alia, K Neyerlin, B Pivovar,* National Renewable Energy Laboratory*; S Pylypenko,* Colorado School of Mines

AS-ThP-5 Detailed Peak-Fitting Analysis of the Photoemission Spectra of the Early Oxidation Stages of Cobalt Thin Films, ***Dagoberto Cabrera-German***, Universidad de Sonora, México*; O Cortazar-Martinez, G Vázquez, J Torres-Ochoa,* Cinvestav-Unidad Queretaro, Mexico*; A Herrera-Gomez,* CINVESTAV-Unidad Queretaro, Mexico

AS-ThP-6 Characterization of Laser-Treated Ti-6Al-4V-Surfaces, ***Harry Meyer***, *D Leonard, A Sabau,* Oak Ridge National Laboratory

AS-ThP-7 Cross-Sectional Mapping vs. Depth Profiling Analysis: Is the Choice Always Clear?, ***Kathryn Lloyd***, *J Marsh,* DuPont Corporate Center for Analytical Sciences

AS-ThP-8 Investigation on Human Evidences using ToF-SIMS Combined with Advanced Matching Recognition, *T Terlier,* Korea Institute of Science and Technology*; J Lee, M Kang,* ***Yeonhee Lee***, Korea Institute of Science and Technology, Republic of Korea

AS-ThP-9 Calculation of Multiplet Structure in a Mixture of Copper Oxides, ***Diego Fernando Mulato-Gómez***, *J Torres Ochoa,* Cinvestav-Unidad Queretaro, Mexico*; D Cabrera-German,* Universidad de Sonora, México*; A Herrera-Gomez,* CINVESTAV-Unidad Queretaro, Mexico

AS-ThP-10 Wafer Bonding Between LiTaO3(100) and Alpha-quartz SiO2(100) via Low Temperature (<220°C) NanoBonding™ Using Surface Energy Modification, ***Brian Baker***, *J Kintz, A Yano, N Herbots,* Arizona State University*; W Lee,* Cactus Materials, Inc.*; S Narayan, J Day,* Arizona State University*; R Islam,* Cactus Materials, Inc.*; Y Watznabe,* TDC Coporation*; M Koury, M Johnson, R Culbertson, M Magnus,* Arizona State University

AS-ThP-11 Structural, Morphological and Electrical Properties of Multilayer Sequentially Sputtered Nb_3Sn Films for Different Layer Thicknesses, ***Md. Nizam Sayeed***, Old Dominion University*; U Pudasaini,* College of William and Mary*; H E. Elsayed-Ali,* Old Dominion University*; G Eremeev,* Thomas Jefferson National Accelerator Facility

AS-ThP-12 Corrosive and Thermal Properties of ZrO_2- Y_2O_3 Thermal Barrier Coatings, ***Byung-Koog Jang***, Kyushu University, Japan*; H Kim,* Korea Institute of Ceramic Engineering and Technology

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Electronic Materials and Photonics Division
Room Hall B - Session EM-ThP
Electronic Materials and Photonics Division Poster Session
6:00pm

EM-ThP-1 Femtosecond-Pulsed Laser Deposition of Erbium-Doped Glass Nanoparticles in Polymer Layers for Hybrid Optical Waveguide Amplifiers., ***Eric Barimah***, University of Leeds, UK, United Kingdom of Great Britain and Northern Ireland*; M Ziarko, N Bamiedakis, I White, R Penty,* University of Cambridge, United Kingdom of Great Britain and Northern Ireland*; G Jose,* University of Leeds, UK

EM-ThP-2 Precisely Determining the Band Offset at GaN/AlGaN Interfaces by Effectively Control the Surface and Interface States, ***Sunan Ding***, *H Yang,* SuZhou Institute of Nano-Tech and Nano-Bionics, CAS, China

EM-ThP-3 Thermal Engineering for High-Power, Flexible Electronics, ***Katherine Burzynski***, University of Dayton and Air Force Research Laboratory, Materials and Manufacturing Directorate*; E Blanton, N Glavin, E Heller, M Snure, E Heckman,* Air Force Research Laboratory*; C Muratore,* University of Dayton

EM-ThP-4 Growth and Magneto-optical Properties of $ZnO/Zn_{1-x}Mn_xO$ Thin Films on Si Substrates, ***Da-Ren Liu***, ITRC,NARL,Taiwan, Republic of Korea, Taiwan, Republic of Korea*; C Weng,* ITRC,NARL, Taiwan, Republic of Korea

EM-ThP-5 The Formation of Stable GeO_2 Oxide on Germanium Epitaxial Layer using the High Pressure Oxidation, *I Chung,* ***Nakjun Choi***, *J Bae,* Sungkyunkwan University, Republic of Korea

EM-ThP-6 NH_4OH Solution Wet Etching for Silicon Channel Thinning of Junctionless-FET, ***Lucas Stucchi-Zucchi***, *A Silva, J Diniz,* University of Campinas, Brazil

EM-ThP-7 Fabrication of Highly-Efficient Nanoscale Multilayered Thin-Film Thermoelectric Devices, ***Alandria Henderson***, *J Kimbrough, Z Duncan, K Davis, M Howard, J Elike, T Wimbley, M Glenn, Z Xiao,* Alabama A&M University

EM-ThP-8 Plasmonic Studies of Metallic Nanostructures Fabricated by DNA Origami, ***Enrique Samano***, *D Ruiz, K Cardos,* Universidad Nacional Autónoma de México, Mexico

EM-ThP-9 Control of Randomness in Microsphere-Based Photonic Crystals Assembled by Langmuir-Blodgett Process, ***Sarun Atiganyanun***, *O Abudayyeh, S Han, S Han,* University of New Mexico

EM-ThP-10 Incorporation of Ferroelectric HfO_2 into Magnetoelectric Random-Access Memory (MeRAM) Devices, *K Fitzell,* ***Jeffrey Chang***, *A Acosta, H Ma, X Li, K Wang, J Chang,* University of California, Los Angeles

EM-ThP-11 Extreme Environment Operation of $Al_{0.85}Ga_{0.15}N/Al_{0.7}Ga_{0.3}N$ High Electron Mobility Transistors, ***Patrick Carey***, *F Ren,* University of Florida*; A Baca, B Klein, A Allerman, A Armstrong, E Douglas, R Kaplar,* Sandia National Laboratories*; S Pearton,* University of Florida

EM-ThP-12 Electrical Characterization of the Reduced Effective Schottky Barrier Height by Nanoscale Ge bi-layer of CZTSe Solar Cells, ***Sanghyun Lee***, Indiana State University

EM-ThP-13 Optimal Contact Photolithography Techniques For HEMT Substrates using I-line Photoresist, ***Whitney Ingram***, *A Jones, B Klein, A Baca, A Armstrong, A Allerman, E Douglas,* Sandia National Laboratories

EM-ThP-14 High-mobility Helical Tellurium Field Effect Transistors Enabled by Transfer-free, Low-temperature Direct Growth, ***Guanyu Zhou***, *R Addou, Q Wang, S Honari, C Cormier, L Cheng, R Yue, C Smyth, A Laturia, J Kim, W Vandenberghe, M Kim, R Wallace, C Hinkle,* University of Texas at Dallas

EM-ThP-16 Investigation of Field Emission from Single ZnO Nanowire, ***Yicong Chen***, *X Song, Y Wang, Z Zhang, Z Li, J She, S Deng, N Xu, J Chen,* State Key Lab of Optoelectronic Materials and Technologies, Guangdong Province Key Lab of Display Material and Technology, Sun Yat-sen University

EM-ThP-17 Photoemission under Different Mechanisms from Single- and Dual-gate Carbon Nanotubes Field Effect Transistors, *S Yang,* ***Bo Wang***, *S Cronin,* University of Southern California

EM-ThP-18 100 keV Proton Irradiation Effects on AlGaN/GaN Epistructures, ***Min Khanal***, *S Uprety, K Yapabandara, V Mirkhani, S Wang, B Schoeneck, T Isaacs-Smith, A Ahyi, M Bozack, M Park,* Auburn University

EM-ThP-19 Properties of WSe_2 Thin Films Grown by Molecular Beam Epitaxy, *P Litwin, K Freedy, T Zhu, M Zebarjadi,* ***Stephen McDonnell***, University of Virginia

EM-ThP-20 Effects of O_2 Partial Pressure on Ga_2O_3 Thin-films, ***Seth King***, University of Wisconsin - La Crosse

Fundamental Discoveries in Heterogeneous Catalysis Focus Topic
Room Hall B - Session HC-ThP
Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Poster Session
6:00pm

HC-ThP-1 Analyses of Nano-Crystalline Structure in Precipitated Iron-Based Catalysts for Fischer-Tropsch Synthesis, ***Dong Hyun Chun***, *G Rhim, J Park,* Korea Institute of Energy Research, Republic of Korea*; C Kim,* Kookmin University, Republic of Korea*; J Bae, M Youn, H Jeong, S Kang, H Lee, J Yang, H Jung,* Korea Institute of Energy Research, Republic of Korea

HC-ThP-2 *In situ* Infrared and Catalytic Reaction Studies of Active Sites on Pt Nanoparticles Supported on Nanosponge Oxides under CO oxidation, ***Sunyoung Oh***, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea*; C Jung,* Institute for Basic Science (IBS), Republic of Korea*; H Ha,* Chungnam National University, Republic of Korea*; C Jo,* Institute for Basic Science (IBS), Republic of Korea*; S Moon, Y Kim,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea*; W Doh,* Institute for Basic Science (IBS), Republic of Korea*; H Kim,* Chungnam National University, Republic of Korea*; R Ryoo, J Park,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea

HC-ThP-3 Activity of Bimetallic Pt-Re Surfaces and Influence of the Support for the Water-Gas Shift Reaction, ***Amy Brandt***[1]*, T Maddumapatabandi, D Shakya, S Farzandh, D Chen,* University of South Carolina

HC-ThP-4 In-Operando Photoluminescence Imaging of a Single-Layer Molybdenum Disulfide Catalyst, ***Koichi Yamaguchi***, University of California - Riverside*; S Naghibi, W Coley, L Bartels,* University of California, Riverside

HC-ThP-5 Efficient Photoelectrochemical Water Splitting in Band Edge Engineered Metal Oxide Heterostructure Photoanode for Solar Fuel Production, ***Nisha Kodan***, Thin Film Laboratory, Department of Physics, IIT Delhi, India*; A Singh,* Division of Chemical Physics, Department of Physics, Chalmers University of Technology, SE-412 96 Göteborg, Sweden*; B Mehta,* Thin Film Laboratory, Department of Physics, IIT Delhi, India

HC-ThP-6 Comparative Reactivity of Oxide and Metallic Phases on Rh(111), *R Farber, M Turano, W Walkosz,* ***Christopher Smith***, *D Killelea,* Loyola University Chicago

HC-ThP-7 Hybrid Adsorbent Catalyst for Siloxane Removal: Fe-BEA Zeolites, ***Alba Cabrera-Codony***, University of Girona, Spain*; E Santos-Clotas, M Martin,* University of Girona

Advanced Ion Microscopy Focus Topic
Room Hall B - Session HI-ThP
Advanced Ion Microscopy Poster Session
6:00pm

HI-ThP-1 He+ and Ne+ Ion Beam Resolution Dependency on Beam Energy, ***Waqas Ali***, Intel Corporation, USA*; S Tan,* Intel Corporation*; R Hallstein, R Livengood,* Intel Corporation, USA

HI-ThP-2 *Focused Cs Ion Beam-Induced Deposition and Gas Assisted Etch Characterization Results for 10nm Circuit Edit Applications,* ***Roy Hallstein***, *R Livengood, M Ly,* Intel Corporation, USA*; Y Greenzweig, Y Drezner,* Intel Corporation, Israel*; B Knuffman, A Steele, A Knuffman,* zeroK NanoTech

Magnetic Interfaces and Nanostructures Division
Room Hall B - Session MI-ThP
Magnetic Interfaces and Nanostructures Division Poster Session
6:00pm

MI-ThP-1 Synthesis and Size Dependent Magnetic Properties of Iron Oxide Nanoparticles, ***Jeremy Winsett***, *A Moilanen, S Neupane,* Middle Tennessee State University

[1] **Morton S. Traum Award Finalist**

MEMS and NEMS Group
Room Hall B - Session MN-ThP
MEMS and NEMS Group Poster Session
6:00pm

MN-ThP-1 The Ni-Co Micro-porous Array with High Dimensional Accuracy Control by Electroforming Process, ***YuHsin Lin***, *H Wen,* ITRC,NARL, Taiwan, Republic of China*; C Tsia,* NCTU, Taiwan, Republic of China*; M Wang, N Chu, C Chen, C Hsiao,* ITRC,NARL, Taiwan, Republic of China

MN-ThP-2 Reactive Etching of AlGaN using BCl_3 and Ar/BCl_3, ***Meng-Kun Wang***, *Y Lin, C Hsiao, C Chen, J Su, N Chu, C Lee,* ITRC,NARL, Taiwan, Republic of China

MN-ThP-3 Self-Assembled Poly(Ethylene Glycol) Initated Spatial And Temporal Profiling Of Micro Devices For Selectively Growing Human Liver Cancer Cells, ***Juhi Jaiswal***, *M Dhayal,* IIT (BHU), Varanasi, India

MN-ThP-4 III-V_Si Wafer Bonding using Silicon Oxide Interlayer, ***WoongSun Lim***, *S Jung,* Korea Advanced Nano Fab Center, Republic of Korea*; S Hwang,* Korea Advancnced Nano Fab Center, Republic of Korea*; G Yeom,* Sungkyunkwan University, Republic of Korea

MN-ThP-5 Flexible Nanocomposite Sensors for Biomedical and Energy Harvesting Applications, *A Batra,* ***Bir Bohara***, Alabama A&M University*; J Currie,* NASA

MN-ThP-6 Comparative Studies of Electrical Behavior of PLZT Thin Film Capacitors using Coplanar and Interplanar Configurations, ***Vaishali Batra***, *R Paul, S Kotru,* The University of Alabama

MN-ThP-7 Carbon Nanotube Yarn Based Strain Sensor, ***Maeum Han***, *J Lee, J Kim, J Park, D Jung,* Korea Institute of Industrial Technology (KITECH), Republic of Korea

MN-ThP-8 Carbon Nanotube Yarn Based Gas Sensor, *J Lee, M Han, J Kim,* ***Daewoong Jung***, Korea Institute of Industrial Technology (KITECH), Republic of Korea

Nanometer-scale Science and Technology Division
Room Hall B - Session NS-ThP
Nanometer-scale Science and Technology Division Poster Session
6:00pm

NS-ThP-1 Intermolecular Interactions in Self-Assembled Monolayers on Metal Surfaces Characterized by Ultrahigh Vacuum Tip-Enhanced Raman Spectroscopy, *J Schultz, P Whiteman,* ***Nan Jiang***, University of Illinois at Chicago

NS-ThP-2 Nanoscale Detection of Surface Plasmon-driven Hot Electron Flux on Au/TiO_2 Nanodiodes with Atomic Force Microscopy, ***Hyunhwa Lee***, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea*; H Lee,* Institute for Basic Science (IBS), Republic of Korea*; J Park,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea

NS-ThP-3 Surface Functionalization of 2D Mo_2C, ***Yang Zeng***, *P McBreen, T Zhang,* Laval University, Canada

NS-ThP-4 a-Si:H Spacer Lithography Using Different Mandrels (Al, SiN_x and Photoresist) and Etching Processes (RIE, ECR and ICP), ***Andressa Rosa***, *J Diniz,* UNICAMP, Brazil

NS-ThP-5 Optimization of Stitching Multiple Fields of View for Large Scale Two Photon Lithography, ***Steven Kooi***, Massachusetts Institute of Technology

NS-ThP-6 Fabrication of Carbon Nanotube-Based Electronic Devices with the Dielectrophoresis Method, ***Joevonte Kimbrough***, *S Chance, B Whitaker, Z Duncan, K Davis, A Henderson, Q Yuan, Z Xiao,* Alabama A&M University

NS-ThP-7 Fabrication and Electrical Characterization of a Flagella-Scaffolded Metallic Nanocluster Network, ***Marko Chavez***, *P Edwards, M El-Naggar, V Kresin,* University of Southern California

NS-ThP-8 High-contrast Infrared Polymer Photonic Crystals Fabricated by Direct Laser Writing, ***Yanzeng Li***, *D Fullager, S Park,* University of North Carolina at Charlotte*; D Childers,* USC Conec, Ltd.*; G Boreman, T Hofmann,* University of North Carolina at Charlotte

NS-ThP-9 Controlled Water-repellent Behavior by Modulating the Density of Nanoscale Si Nanopillar Structure Fabricated with Bio-template and Neutral Beam Etching Technique, ***Daisuke Ohori***, *S Samukawa,* Tohoku University, Japan

NS-ThP-10 An Empirical Model of Fences Formation during Ion Beam Processing, ***Anthony De Luca***, *J Guerrero, C Ligaud,* Cea, Leti, Minatec, France

NS-ThP-11 Towards Molecular-Level Control of Reactions on Organic Semiconductor Surfaces, ***Gregory Deye***, *J Ciszek,* Loyola University Chicago*; J Chen, J Vicente,* Ohio University*; S Dalke, S Piranej,* Loyola University Chicago

NS-ThP-12 The TESLA JT SPM, ***Markus Maier***, *D Stahl, A Piriou, M Fenner, J Koeble, K Winkler, T Roth,* Scienta Omicron GmbH, Germany

NS-ThP-13 Recent Developments of Home-made UHV SPM Systems and their Applications, ***Qing Huan***, *R Wu, L Yan, D Bao, R Ma, Z Wu,* Institute of Physics, CAS, China*; Z Gao, X Chen,* University of Chinese Academy of Scineces, China*; J Ren,* Institute of Physicsics, CAS, China*; L Dong, A Wang, H Yang, Y Xing, L Wu, J Yan, Y Wang, L Bao, S Du, H Gao,* Institute of Physics, CAS, China

NS-ThP-14 Novel *In-situ* Diagnostic tools to Analyze Chemical Composition and Energy Spectrum of Vapor in Thin Film Deposition Process, ***Mikhail Strikovski***, *S Kolagani,* Neocera LLC

NS-ThP-15 Towards Automated High Throughput Drug Delivery with Plasmonic Nanopipettes, ***Naihao Chiang***, *Y Gong, L Scarabelli, N Wattanatorn, C Zhao, J Belling,* University of California at Los Angeles*; N Cho,* Nanyang Technological University*; S Jonas, P Weiss,* University of California at Los Angeles

NS-ThP-16 High Fidelity and Sustainable Anti-reflective Moth-eye Nanostructures and Large Area Sub-wavelength Applications, ***Shuhao Si***, Technische Universität Ilmenau, Germany*; M Hoffmann,* Ruhr-Universität Bochum, Germany

NS-ThP-17 Fano Resonances at Interference of Electron Waves in Geometrically Inhomogeneous Semiconductor 2D Nanostructures, ***Victor Petrov***, Institute of Radio Engineering and Electronics, Russian Academy of Sciences, Moscow, Russia, Russian Federation

NS-ThP-18 Indirect Transition and Opposite Circular Polarization of Interlayer Exciton in a MoSe2/WSe2 van der Waals Heterostructure, ***Hsun-Jen Chuang***[1], *A Hanbicki, M Rosenberger, C Hellberg, S Sivaram, K McCreary, I Mazin, B Jonker,* Naval Research Laboratory

NS-ThP-19 Pycroscopy – A Community-driven Approach for Analyzing and Storing Materials Imaging and Spectroscopy Data, *S Somnath, C Smith, R Vasudevan,* ***Sergei Kalinin***, *S Jesse,* Oak Ridge National Laboratory

NS-ThP-20 Auto-dispersing Cellulose Nanoparticles with High Uniformity via Self-assembly in Ionic Liquids, *Y Ahn,* ***Seung-Yeop Kwak***, Seoul National University, Republic of Korea

NS-ThP-21 The Silicon Atomic Layer Etching by Two-step PEALD Consisting of Oxidation and $(NH_4)_2SiF_6$ formation, *E Song,* Korea Institute of Materials Science, Republic of Korea*; J Ahn,* Korea Maritime and Ocean University, Republic of Korea*; Jung-Dae (J.-D.) Kwon,* Korea Institute of Materials Science, Republic of Korea*; S Kwon,* Pusan National University, Republic of Korea

Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic
Room Hall B - Session SA-ThP
Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic Poster Session
6:00pm

SA-ThP-1 Relative Sensitivity Factors in Hard X-ray Photoelectron Spectroscopy up to 10 keV for Quantitative Analysis, ***Satoshi Yasuno***, Japan Synchrotron Radiation Research Institute, Japan*; N Ikeno,* Aichi Synchrotron Radiation Center, Japan*; H Oji,* Nagoya University Synchrotron Radiation Research Center, Japan

SA-ThP-2 In Situ Characterization of Freeze-Cast Metal Nanowire Aerogels, ***Tyler Fears***, *J Hammons, F Qian, T Braun, A Troksa, M Nielsen, J Forien, T Baumann, Y Han, S Kucheyev, M Bagge-Hansen,* Lawrence Livermore National Laboratory

SA-ThP-3 In situ Probing of the Potential Distribution in a Thin Film All-solid-state Li-ion Battery, ***Evgheni Strelcov***, National Institute of Standards and Technology (NIST)/University of Maryland*; E Fuller,* Sandia National Laboratories*; W McGehee, N Zhitenev, J McClelland,* National Institute of Standards and Technology (NIST)*; A Talin,* Sandia National Laboratories

SA-ThP-4 A New Route for the Determination of Protein Structure in Physiological Environment through Coherent Diffraction Imaging., ***Danny Fainozzi***, university of Trieste / Elettra Synchrotron, Italy

SA-ThP-5 The League of European Accelerator-Based Photon Sources: New strategic partnerships in Europe and beyond, ***Maya Kiskinova***, Elettra-Sincrotrone Trieste, Italy

[1] **NSTD Postdoc Finalist**

Thin Films Division
Room Hall B - Session TF-ThP
Thin Film Poster Session
6:00pm

TF-ThP-2 Investigation of Target State by Plasma Emission and Target Voltage Measurements for Reactive Sputtering of Ni oxide thin films with water vapor injection, ***Yuki Yokoiwa***, *Y Abe, M Kawamura, K Kim, T Kiba,* Kitami Institute of Technology, Japan

TF-ThP-3 Rectification and Non-linearity in Ferroelectric Tunnel Junction based on $BiFeO_3$ Ultra-thin Film, ***Taekjib Choi***, Sejong University, Republic of Korea

TF-ThP-7 Optical and Electrochemical Properties of Rhodium Oxide Thin Films prepared by Reactive Sputtering in O_2 or H_2O Atmosphere, ***ChanYang Jeong***, *Y Abe, M Kawamura, K Kim, T Kiba,* Kitami Institute of Technology, Japan

TF-ThP-8 Interfacial Self-assembled Monolayers as Copper Diffusion Barrier for IGZO Semiconductor Thin Film Transistor, ***Sung-Eun Lee***, *K Lim, J Park, J Huh, J Lee, E Lee, C Im, Y Kim,* Seoul National University, Republic of Korea

TF-ThP-9 Atmospheric-pressure Plasma Treatment Effect of Solution-processed Aluminum Oxide Gate Insulator for Oxide Semiconductor Thin-film Transistors, ***Jintaek Park***, *K Lim, S Lee, J Huh, J Lee, E Lee, C Im, Y Kim,* Seoul National University, Republic of Korea

TF-ThP-10 Microstructural and Electrical Properties of Ni Stanogermanides formed on $Ge_{0.92}Sn_{0.08}$ epi-layer Grown on Si(100) Substrate, *C Choi,* Semiconductor Physics Reasearch Center(SPRC), Chonbuk National University, Republic of Korea; ***HanSoo Jang***, Semiconductor Physics Reasearch Center(SPRC), Chonbuk National Universityh, Republic of Korea

TF-ThP-11 Radiation Effects on Al_2O_3 Thin Films, *H Zhu, X Chen,* ***Zhong-Shan Zheng***, *D Li, J Gao, B Li, J Luo,* Institute of Microelectronics of Chinese Academy of Sciences, China

TF-ThP-12 Comparative Study of Erosion on Various Polymers and Composites both Coated Using a DC Magnetron Sputtering Process and Uncoated, *S Hill,* ***Dorina Mihut***, *A Afshar, K Culp, Z Grantham,* Mercer University School of Engineering

TF-ThP-13 Plasma-enhanced Atomic Layer Deposition of Molybdenum Compounds Thin Films Using $Mo(CO)_6$ with Various Plasma Gases, ***Jeong-Hun Choi***, *S Lee, C Hyun, J Ahn,* Korea Maritime and Ocean University, Republic of Korea

TF-ThP-14 Development of Metal Linear Evaporator for OLED Panel Mass Production of Gen.6 half and Gen. 8 lines, ***Jung Hyung Kim***, Korea Research Institute of Standards and Science (KRISS), Republic of Korea; *M Kang, K Shin, D Lim,* Fineva Co., Republic of Korea

TF-ThP-15 Study of W Film Properties on Various Treated TiN/AlO Underlayer, ***Dong-Hoon Han***, *D Lee, M Park, J Bae, J Lee, Y Koo,* Samsung Electronics, Republic of Korea

TF-ThP-16 Fabrication of Mo/B_4C Periodic Films on the High Reflective Mirror for Applications in Beyond Extreme Ultraviolet Lithography, ***Chao-Te Lee***, *W Chen, H Chen, M Wang,* Instrument Technology Research Center, Taiwan, Republic of China

TF-ThP-17 Effects of the Electric Field Application for the Photocatalytic Property of TiO_2/Ni Thin Films, ***Taishi Segawa***, *I Takano,* Kogakuin University, Japan

TF-ThP-18 Crystallization Behavior and Thermal Stability of Zr-based Metallic Glasses, *J Park, D Song,* ***JinKyu Lee***, Kongju National University, Republic of Korea

TF-ThP-19 The Investigation of the Chemical State of the PTFE Surface Treated by Ar Plasma, ***Koki Iesaka***, *I Takano,* Kogakuin University, Japan

TF-ThP-20 The Influence of ZnO Layers for Photovoltage of Cu_2O/ZnO/TiO_2 Thin Films Prepared by Reactive Sputtering, ***Keisuke Ishizaka***, Kogakuin University,Japan, Japan; *I Takano,* Kogakuin University, Japan

TF-ThP-21 The Formation of Amorphous Carbon Thin Films by Ion Beam Mixing, ***Kenji Iwasaki***, *I Takano,* Kogakuin University, Japan

TF-ThP-22 Enhancing Ultra-violet Optical Properties of Aluminum Mirrors with a Single Step Approach to Oxide Removal and Fluorine Passivation, ***David Boris***, U.S. Naval Research Laboratory; *A Kozen,* ASEE Postdoctoral Fellow; *J del Hoyo, M Quijada,* NASA Goddard Space Flight Center; *S Walton,* U.S. Naval Research Laboratory

TF-ThP-23 Cu Films on Thermoelectric ZnSb, ***Terje Finstad***, *X Song, H Riis, Ø Prytz,* University of Oslo, Norway

TF-ThP-24 Using a Semitransparent Underlayer to Determine Optical Constants of a Mostly Opaque Layer by Thin Film Interference: Application to AlF_3 on Al in the Extreme Ultraviolet, ***Gabriel Richardson***, *K Wolfe, M Barona, S Turley, D Allred,* Brigham Young University

TF-ThP-25 Thermoelectric Properties of Sb_2Te_3 Thin Films, ***Eshirdanya McGhee***, *B Bohara, C Payton, S Gere, S Budak,* Alabama A&M University

TF-ThP-26 Thermal Annealing Effects on the Thermoelectric Properties of CoAg Thin Films, ***Satilmis Budak***, *S Gere, E McGhee, E Gamble,* Alabama A&M University

TF-ThP-28 Interlayer Effect for Photocatalytic Properties of TiO_2/Cu_2O Thin Films Prepared by Reactive Sputtering, ***Akihiro Joichi***, *I Takano,* Kogakuin University, Japan

TF-ThP-29 The effect of Proton Radiation on ALD HfO_2 Films and HfO_2 based RRAM, ***Panpan Xue***, University of Wisconsin-Madison; *Z Wang,* Stanford University; *T Chang,* University of Wisconsin-Madison; *Y Nishi,* Stanford University; *Z Ma, J Shohet,* University of Wisconsin-Madison

TF-ThP-30 Comparison of Hafnium Oxide and Zirconium Oxide for Fabricating Electronic Devices, ***Kenneth Davis***, *Z Duncan, M Howard, T Wimbley, Z Xiao,* Alabama A&M University

TF-ThP-31 Development of the Synchrotron-based Capabilities for Direct, *In-situ* XANES/XAFS Measurements of Thermal ALD: Initial Proof-of-Concept Study Exploring ZrO_2 ALD, ***David Mandia***, *B Kucukgok, S Letourneau, M Ward, A Yanguas-Gil, J Elam,* Argonne National Laboratory

TF-ThP-32 Nitridation of Transition Metal Oxide Films, ***Li Chang***, *W Chen, K Chiu, Y Fang,* National Chiao Tung University, Hsinchu, Taiwan, Taiwan, Republic of China

TF-ThP-33 The Evolution of Atomic Layer Processing as a Field: Atomic Layer Etching, and its Connections with Atomic Layer Deposition, ***Elsa Alvaro***, Northwestern University; *A Yanguas-Gil,* Argonne National Laboratory

TF-ThP-34 Optical Characterization of SiC Thin Films on Si(111), ***Kjeld Pedersen***, Aalborg University, Danmark; *R Juluri,* Aarhus University, Denmark; *P Kjaer Kristensen,* Aalborg University, Denmark; *J Lundsgaard Hansen, B Julsgaard,* Aarhus University, Danmark

TF-ThP-35 Nanocarbon based Field Assisted Electron Emitter Arrays for Development of Electrical Propulsion for Nano Satellite, ***Nirupama Prasad***, Jain University,Bangalore, India

TF-ThP-36 Investigation of Synthesis Yield Variation of Single-Walled Carbon Nanotubes inside Horizontal Chemical Vapor Deposition Systems, *G Jeong,* ***Sung-Il Jo***, Kangwon National University, Republic of Korea

TF-ThP-37 Optical and Mechanical Properties of Diamond-like Carbon Thin Film deposited by Filtered Cathodic Vacuum Arc Source for Durable Coating of Infrared Optics, ***Jung-Hwan In***, *M Seo, H Jung, S Kim, J Choi,* Korea Photonics Technology Institute, Republic of Korea

TF-ThP-38 Influence of Temperature and Plasma Gas Chemistry on Atomic Layer Epitaxial Growth of InN on GaN Assessed with *In Situ* Grazing Incidence Small-Angle X-ray Scattering, ***Jeffrey Woodward***, *S Rosenberg,* American Society for Engineering Education (residing at U.S. Naval Research Laboratory); *N Nepal, S Johnson,* U.S. Naval Research Laboratory; *C Wagenbach,* Boston University; *A Kozen,* American Society for Engineering Education (residing at U.S. Naval Research Laboratory); *Z Robinson,* The College at Brockport - SUNY; *D Boris, S Walton,* U.S. Naval Research Laboratory; *K Ludwig,* Boston University; *C Eddy,* U.S. Naval Research Laboratory

TF-ThP-39 Water-based Superconcentrated Electrolytes as Gate Dielectric for High-performance Solution-processed Oxide Thin Film Transistors, ***Eun Goo Lee***, *K Lim, J Park, S Lee, J Lee, C Im, Y Kim,* Seoul National University, Republic of Korea

TF-ThP-40 Atomic Layered Deposition and Characterizations of HfO_2 for OLED Encapsulation, ***Nak-Kwan Chung***, Korea Research Institute of Standards and Science (KRISS), Republic of Korea; *S Kim, J Yun, J Kim,* Korea Research Institute of Standards and Science (KRISS)

TF-ThP-41 Reaction Mechanism Study on the Atomic Layer Deposition of Titanium Oxide Film using Heteroleptic Precursors, ***Jaemin Kim***, *H Kim, J Gu, S Kim, H Jung, R Hidayat,* Sejong University, Korea; *Y Myung,* Sejong University, Korea, Republic of Korea; *W Lee,* Sejong University, Korea

	2D Materials Focus Topic **Room 201B - Session 2D+EM+MN+NS-FrM** **Nanostructures including Heterostructures and Patterning of 2D Materials** **Moderator:** Xiang Zhang, University of California, Berkeley	**Actinides and Rare Earths Focus Topic** **Room 202C - Session AC+MI+SA-FrM** **Actinide and Rare Earth Theory and Related Measurements** **Moderators:** Paul S. Bagus, University of North Texas, David Shuh, Lawrence Berkeley National Laboratory
8:20am	**2D+EM+MN+NS-FrM-1** Interfacial Strength and Surface Damage Characteristics of Two-dimensional h-BN, MoS_2 and Graphene, ***Frank DelRio,*** National Institute of Standards and Technology*; B Tran Khac, K Chung,* University of Ulsan, South Korea	**INVITED: AC+MI+SA-FrM-1** Periodic Boundary Condition and Embedded Cluster DFT Calculations of Water Adsorption on AnO_2 (An = U, Pu) Surfaces, ***Nikolas Kaltsoyannis,*** University of Manchester, UK, United Kingdom of Great Britain and Northern Ireland
8:40am	**2D+EM+MN+NS-FrM-2** Optical and Optoelectronic Properties in 2D Homo- and Hetero-junctions, ***Juan Xia,*** Nanyang Technological University, Singapore, China	Invited talk continues.
9:00am	**INVITED: 2D+EM+MN+NS-FrM-3** Sequential Edge-epitaxy: Towards Two-dimensional Multi-junctions Heterostructures and Superlattices, ***Humberto Rodriguez Gutierrez,*** University of South Florida	**INVITED: AC+MI+SA-FrM-3** Understanding the Role of Oxidation States on the Chemistry of Actinides through Integration of Theory and Experiment, ***Wibe de Jong****, J Gibson,* Lawrence Berkeley National Laboratory*; R Abergel,* Lawrence Berkeley Lab, University of California, Berkeley
9:20am	Invited talk continues.	Invited talk continues.
9:40am	**2D+EM+MN+NS-FrM-5** Interpretation of π-band Replicas Observed for Mono- and Multi-layer Graphene Grown on 4H SiC(0001)*, T Balasubramanian, M Leandersson, J Adell, C Polley,* Lund University, Sweden*; **Leif Johansson**, R Yakimova, C Jacobi,* Linkoping University, Sweden	**AC+MI+SA-FrM-5** An Experimentalist's Viewpoint: The Tremendous Strengths and Occasional Weaknesses of Actinide Cluster Calculations, ***James G. Tobin,*** University of Wisconsin-Oshkosh
10:00am	**2D+EM+MN+NS-FrM-6** Effect of SiC(0001) Substrate Morphology and Termination on Multilayer Hexagonal Boron Nitride Epitaxy by Plasma-Enhanced CBE, ***Daniel J. Pennachio****, N Wilson, E Young, A McFadden, T Brown-Heft,* University of California at Santa Barbara*; K Daniels, R Myers-Ward, K Gaskill, C Eddy, Jr.,* U.S. Naval Research Laboratory*; C Palmstrøm,* University of California at Santa Barbara	**AC+MI+SA-FrM-6** Ligand and Metal XAS Edges In Heavy Metal Compounds, ***Paul S. Bagus,*** University of North Texas*; C Nelin,* Consultant
10:20am	**2D+EM+MN+NS-FrM-7** Nanoelectromechanical Drumhead Resonators from 2D Material Bimorphs, ***Sun Phil Kim****, J Yu, E Ertekin, A van der Zande,* University of Illinois at Urbana-Champaign	**AC+MI+SA-FrM-7** Thermal Expansion and Conductivity of Th and Ac from First Principles Calculations, ***Dominik Legut****, L Kyvala,* VSB-Technical University of Ostrava, Czech Republic*; U Wdowik,* Pedagogical University, Poland
10:40am	**2D+EM+MN+NS-FrM-8** Atomically-precise Graphene Etch Masks for 3D Integrated Systems from 2D Material Heterostructures, ***Jangyup Son,*** University of Illinois at Urbana-Champaign*; A van der Zande,* University of Illinois at Urbana Champaign	**AC+MI+SA-FrM-8** XANES Investigation into the Electronic Structure of Ce Coordination Complexes, ***Liane Moreau****, C Booth,* Lawrence Berkeley National Laboratory*; Y Qiao, E Schelter,* University of Pennsylvania
11:00am	**2D+EM+MN+NS-FrM-9** Insights into the O Atom Adsorption and O_2 Dissociation on Halogenated Graphene Surfaces, ***Reynaldo Geronia,*** University of the Philippines Diliman*; A Padama,* University of the Philippines Los Baños, Philippines*; J Ocon,* University of the Philippines Diliman, Philippines*; P Chuang,* University of California, Merced	**AC+MI+SA-FrM-9** Structure and Properties of Reactively Deposited Uranium Hydride Coatings Studied by the X-ray Scattering Methods, ***Milan Dopita****, L Havela, L Horák, E Chitrova,* Charles University, Prague, Czech Republic*; D Legut,* VSB-Technical University of Ostrava, Czech Republic*; M Cieslar,* Charles University, Prague, Czech Republic*; Z Matěj,* MAX-IV, Lund, Sweden
11:20am		**AC+MI+SA-FrM-10** Ligand Induced Shape Transformation of Thorium Dioxide Nanocrystals, ***Gaoxue Wang****, E Batista, P Yang,* Los Alamos National Laboratory
11:40am		**AC+MI+SA-FrM-11** Perspectives on the Synthesis, Characterization and Applications of Upconversion and Downconversion Nanomaterials, ***Martin Ntwaeaborwa,*** University of the Witwatersrand, South Africa

Friday Morning, October 26, 2018

	Biomaterial Interfaces Division **Room 101B - Session BI+AS+NS-FrM** **Characterization of Biological and Biomaterial Surfaces** **Moderator:** Bill Theilacker, Medtronic	**Magnetic Interfaces and Nanostructures Division** **Room 203A - Session MI+EM-FrM** **Magnetism and Spin-Orbit Coupling at Surfaces, Interfaces and Thin Films** **Moderator:** Valeria Lauter, Oak Ridge National Laboratory
8:20am	**INVITED: BI+AS+NS-FrM-1** Novel Insights into Skin Biology and Permeation of Actives using ToF-SIMS and 3D OrbiSIMS., ***David Scurr,*** The University of Nottingham, UK	**INVITED: MI+EM-FrM-1** Interfacial Spin-orbitronics: Spin-charge Current Conversion in Topological Insulators and Rashba Interfaces, ***Juan Carlos Rojas Sánchez,*** Institut Jean Lamour, Universite de Lorraine, France
8:40am	Invited talk continues.	Invited talk continues.
9:00am	**BI+AS+NS-FrM-3** Multivariate Analysis of ToF-SIMS Data using Mass Segmented Data Matrices: Polymers and Biointerfaces, *R Madiona,* La Trobe University, Australia*; N Welch,* CSIRO Manufacturing, Australia*; D Winkler,* La Trobe University, Australia*; J Scoble,* CSIRO, Austalia*; B Muir,* CSIRO, Australia*;* ***Paul Pigram,*** La Trobe University, Australia	**MI+EM-FrM-3** Spin-orbit Coupling in Ion-surface Collisions Observed by a Polarized $^4He^+$ Ion Beam, ***Taku Suzuki,*** *O Sakai,* National Institute for Materials Science, Japan
9:20am	**BI+AS+NS-FrM-4** Can you dig it? ToF-SIMS Tissue Depth Profiling, ***Daniel Graham,*** *T Angerer, L Gamble,* University of Washington	**MI+EM-FrM-4** Transport and Magnetic Properties of $LaAlO_3/SrTiO_3$ Heterostructure during Cooling and Warming, ***Zengming Zhang,*** *X Wang,* University of Science and Technology of China, China*; M Zhang, A Rahman, R Dai, Z Wang,* University of Science and Technology of China*; Z Ding,* University of Science and Technology of China, China*; L Cheng,* University of Science and Technology of China
9:40am	**BI+AS+NS-FrM-5** Characterization of Biologic Release and Transformation Processes of Clay-sorbed Ammonia using ToF-SIMS and XPS, ***Liuqin Huang,*** *W Liu,* State Key Laboratory of Biogeology and Environmental Geology, China University of Geosciences, China*; Z Zhu,* Pacific Northwest National Laboratory*; H Dong,* Miami University	**INVITED: MI+EM-FrM-5** Engineering the Magnetic Properties of Complex Oxide Heterostructures, ***Yayoi Takamura,*** University of California at Davis
10:00am	**BI+AS+NS-FrM-6** Novel Insights into Drug Release by a Functionalized Biomaterial and Dispersion into Bone using Surface Analytical Techniques, ***Marcus Rohnke,*** *C Kern, B Mogwitz, S Ray,* Justus-Liebig University Giessen, Germany*; J Thomas,* IFW Dresden, Germany	Invited talk continues.
10:20am	**BI+AS+NS-FrM-7** Spatial Distributions of Epithelial Growth Factors in Hydrogels Studied by ToF-SIMS and TIRF Microscopy for the Development of Biocompatible Multiple-protein Delivery Systems for Wound Healing, ***Shohini Sen-Britain,*** State University of New York, Buffalo*; W Hicks,* Roswell Park Comprehensive Cancer Center*; J Gardella Jr.,* State University of New York, Buffalo	**MI+EM-FrM-7** Location of the Valence Band Maximum in the Band Structure of Anisotropic 1T'-$ReSe_2$, ***Markus Donath,*** *P Eickholt, J Noky,* Westfälische Wilhelms-Universität Münster, Germany*; E Schwier, K Shimada, K Miyamoto, T Okuda,* Hiroshima University, Japan*; C Datzer, M Drüppel, P Krüger, M Rohlfing,* Westfälische Wilhelms-Universität Münster, Germany
10:40am		**MI+EM-FrM-8** Controlling Antiferromagnetic Order at the Surface of La doped $BiFeO_3$, ***Hendrik Ohldag,*** SLAC National Accelerator Laboratory*; B Jang,* Korea Advanced Institute of Science and Technology*; J Lee, K Kim,* Korea Advanced Institute of Science and Technology, Republic of Korea*; H Jang,* SLAC National Accelerator Laboratory*; K Ko,* Max Planck Institute for Chemical Physics of Solids*; M Jung,* Pohang University of Science and Technology, Republic of Korea*; Y Koo,* Pohang Light Source*; Y Jeong,* Pohang University of Science and Technology, Republic of Korea*; J Lee,* SLAC National Accelerator Laboratory*; C Yang,* Korea Advanced Institute of Science and Technology, Republic of Korea
11:00am		**INVITED: MI+EM-FrM-9** Control of Magnetism at the Antiperovskite/Perovskite Interface, *D Shao, T Paudel,* ***Evgeny Tsymbal,*** University of Nebraska-Lincoln
11:20am		Invited talk continues.

Friday Morning, October 26, 2018

	Nanometer-scale Science and Technology Division **Room 102B - Session NS+AM+AS+MN+PC+PS+SS+TR-FrM** **SPM – Probing Chemical Reactions at the Nanoscale** **Moderators:** Phillip First, Georgia Institute of Technology, An-Ping Li, Oak Ridge National Laboratory	**Plasma Science and Technology Division** **Room 104A - Session PS-FrM** **Plasma Modeling** **Moderators:** Venkattraman Ayyaswamy, University of California Merced, Premkumar Panneerchelvam, KLA-Tencor
8:20am	**INVITED: NS+AM+AS+MN+PC+PS+SS+TR-FrM-1** Using Self-Assembly to Engineer Electronic Properties in 1D and 2D Molecular Nanostructures, ***Michael F. Crommie,*** University of California at Berkeley Physics Dept.	**PS-FrM-1** Investigation of Electrical Asymmetric Effect in Very High Frequency Plasma Source using Electromagnetic Plasma Model, ***Xiaopu Li,*** *K Bera, S Rauf, K Collins,* Applied Materials
8:40am	Invited talk continues.	**PS-FrM-2** Simulation of Pulsed Inductively Coupled Plasmas, ***Jun-Chieh Wang,*** *W Tian, S Rauf, S Sadighi, J Kenney, P Stout, V Vidyarthi, J Guo, K Delfin, N Lundy,* Applied Materials
9:00am	**NS+AM+AS+MN+PC+PS+SS+TR-FrM-3** Chemical and Electronic Structure of Aniline Films on Silica Surfaces, ***Christopher Goodwin,*** University of Delaware*; A Maynes,* Virginia Polytechnic Institute and State University*; Z Voras,* University of Delaware*; S Tenney,* Center for Functional Nanomaterials Brookhaven National Laboratory*; T Beebe,* University of Delaware	**INVITED: PS-FrM-3** The Important Role of Metal Vapour in Arc Welding: New Insights from Modelling, ***Anthony Murphy,*** *J Xiang, H Park, F Chen,* CSIRO, Australia
9:20am	**NS+AM+AS+MN+PC+PS+SS+TR-FrM-4** Electric Field Driven Chemical Reaction of Individual Molecular Subunits by Scanning Tunneling Microscopy, ***Tomasz Michnowicz,*** Max Planck Institute for Solid State Research, Germany, Deutschland*; B Borca,* Max Planck Institute for Solid State Research, Germany*; R Pétuya,* Donostia International Physics Centre, Spain*; M Pristl, R Gutzler, V Schendel, I Pentegov, U Kraft, H Klauk,* Max Planck Institute for Solid State Research, Germany*; P Wahl,* University of St Andrews, UK*; A Arnau,* Donostia International Physics Centre, Spain*; U Schlickum, K Kern,* Max Planck Institute for Solid State Research, Germany	Invited talk continues.
9:40am	**NS+AM+AS+MN+PC+PS+SS+TR-FrM-5** Characterising Conjugated Polymers for Organic Electronics by High-resolution Scanning Probe Microscopy, ***Giovanni Costantini,*** University of Warwick, UK	**PS-FrM-5** Molecular Dynamics Study on Collision Cascade Dynamics for Sputtering of Lennard-Jones Particles, ***Nicolas Mauchamp,*** *M Isobe, S Hamaguchi,* Osaka University, Japan
10:00am	**NS+AM+AS+MN+PC+PS+SS+TR-FrM-6** Probing Electrical Degradation of Lithium Ion Battery Electrodes with Nanoscale Resolution, ***Seong Heon Kim,*** Samsung Advanced Institute of Technology, Republic of Korea*; S Park, H Jung,* Samsung Advanced Institue of Technology, Republic of Korea	**PS-FrM-6** Surface Reaction Analysis by Molecular Dynamics (MD) Simulation for SiO2 Atomic Layer Etching (ALE), ***Satoshi Hamaguchi,*** *Y Okada, M Isobe, T Ito, K Karahashi,* Osaka University, Japan
10:20am		**PS-FrM-7** Atomistic Simulations of He Plasma Modification of SiO2 Thin Films for Advanced Etch Processes, ***Florian Pinzan,*** *R Blanc, F Leverd,* STMicroelectronics, France*; E Despiau-Pujo,* LTM, Univ. Grenoble Alpes, CEA-LETI, France
10:40am		**PS-FrM-8** Plasma Characteristics in a Capacitively Coupled System at Moderately High Pressure: Model and Experiment Comparison, ***David J. Peterson,*** *S Shannon,* North Carolina State University*; W Tian, P Kraus, K Bera, S Rauf, T Chua, T Koh,* Applied Materials Inc.
11:00am		**PS-FrM-9** Numerical Modeling of Capacitively Coupled Plasma Process Chamber using CCPFoam, ***Abhishek Kumar Verma***[1], University of California Merced*; K Bera, S Rauf,* Applied Materials*; A Venkattraman,* University of California Merced
11:20am		**PS-FrM-10** Silicon Carbide Nanoparticles for Thermoelectric Composites and Graphene Coatings for Plasmonics, ***Devin Coleman,*** University California, Riverside*; A Hosseini, A Greaney,* University of California, Riverside*; S Bux, J Fleurial,* Jet Propulsion Laboratory, California Institute of Technology*; L Mangolini,* University of California, Riverside
11:40am		**PS-FrM-11** Electromagnetic Effects in Wide Area Very High Frequency Linear Plasma Source, ***Kallol Bera,*** *X Li, S Rauf, K Collins,* Applied Materials
12:00pm		**PS-FrM-12** External Circuitry Models for PIC Simulations of Cylindrical Magnetron Sputtering Chamber, ***Nate Crossette,*** *T Jenkins, D Smithe, J Cary,* Tech-X Corporation

[1] **Coburn & Winters Student Award Finalist**

Surface Science Division
Room 203C - Session SS+AS+HC-FrM
Near/Ambient Pressure and Bridging Gaps between Surface Science and Catalysis
Moderators: Donna Chen, University of South Carolina, Janice Reutt-Robey, University of Maryland

8:20am	**INVITED: SS+AS+HC-FrM-1** Ambient Pressure Electron Spectroscopy (XPS, XAS) and Electron Microscopy Studies of the Structure and Chemistry of Nanostructured Model Catalysts, ***John Hemminger***, University of California Irvine	
8:40am	Invited talk continues.	
9:00am	**SS+AS+HC-FrM-3** *In-operando* Investigation of the Initial Oxidation Stages for NiCr-(W) Alloys with X-ray Photoelectron Spectroscopy, ***Cameron Volders***, *V Angelici Avincola, P Reinke,* University of Virginia	
9:20am	**SS+AS+HC-FrM-4** Surface Hydroxylation of Polar (000-1) and Non-polar (11-20) ZnO Probed with AP-XPS, ***Sana Rani***, *A Broderick, J Newberg,* University of Delaware	
9:40am	**SS+AS+HC-FrM-5** Reason of High Stability and Reactivity of Ni/silicalite-1 Catalyst for Dry Reforming of Methane, ***Evgeny Vovk***, *X Zhou, Z Liu, C Guan, Y Yang,* ShanghaiTech University, China; *W Kong,* Shanghai Advanced Research Institute, China; *R Si,* Shanghai Synchrotron Radiation Facility, Shanghai Institute of Applied Physics, Chaina	
10:00am	**SS+AS+HC-FrM-6** Recent Development in XPS and Ambient Pressure XPS Techniques, ***Lukasz Walczak***, PREVAC sp. z o.o., Poland	
10:20am	**SS+AS+HC-FrM-7** Quantum Mechanics and Reaction Kinetics Study on SiO_2 and SiN Dry Isotropic Chemical Etching Process, ***Taiki Kato***, *M Matsukuma, K Matsuzaki, L Chen,* Tokyo Electron Technology Solutions Limited, Japan	
10:40am	**SS+AS+HC-FrM-8** Viscosity and Surface Tension Effects on Metal Sputtered onto Low Vapor Pressure Liquids, ***Mark De Luna***, *M Gupta,* University of Southern California	

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