

Program Key

AVS 68 PROGRAM TOPICS

2D	2D Materials Technical Group
AC	Actinides and Rare Earths Focus Topic
AP	Atomic Scale Processing Focus Topic
AQS	AVS Quantum Workshop
AS	Applied Surface Science Division
BI	Biomaterial Interfaces Division
BP	Biomaterials Plenary Session
CA	Chemical Analysis and Imaging Interfaces Focus Topic
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 and Ion Beam Nano-engineering Focus Topic
LS	New Trends on Structural and Electronic Characterization of Materials, Interfaces, and Surfaces Using Synchrotron and FEL-Based Radiation Sources Focus Topic
MI	Magnetic Interfaces and Nanostructures Division
MN	MEMS and NEMS Technical Group
MS	Manufacturing Science and Technology Group
MS-2DMS	Mini Symposium on 2D Materials Synthesis
NS	Nanoscale Science and Technology Division
NSP	Nanoscale Science and Technology Plenary Session
PS	Plasma Science and Technology Division
QS	Quantum Information Science Focus Topic
RE	Radiation Effects on Materials Focus Topic
SE	Advanced Surface Engineering Division
SM	Smart Multifunctional Materials for Nanomedicine Focus Topic
SS	Surface Science Division
TF	Thin Films Division
VT	Vacuum Technology Division

KEY TO SESSION/ABSTRACT 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. **SS1, SS2**), then a dash followed by the first two characters of the day of the week:

Monday, Tuesday, Wednesday, Thursday, Friday,

then a single letter for **Morning, Afternoon, Poster,**

and finally a number indicating the starting time slot for the paper.

Example: **SS1-MoM9** (Surface Science, Monday morning, 11:00 am).

AVS 68 Program Overview

Room /Time	301	302	303	304	305	315	316	317
SuA				NSP-SuA: Nanoscale Science and Technology Plenary Session				
MoM	VT-MoM: Vacuum Measurement and Gas Analysis and Vac Tech for Quantum Apps	MN+AS+NS+QS+SE-MoM: Dynamics and Engineering of MEMS/NEMS	2D+EM-MoM: Electronic, Mechanical, and Optical Properties	NS1+QS-MoM NS2+AS+EM+SS-MoM NS3+EM+TF-MoM	MS+HI-MoM: Machine Learning for Microelectronic Mfg Proc Control & Matls Disc R&D	PS-MoM: Plasmas for the Env & Sustain: Plasmas-Liquid Int, Water, Air, Soil Treatment	TF+EM-MoM: Microelectronics and Spintronics Application	AP+2D+AS+EM+PS+SS+TF-MoM: Area Selective Processing and Patterning
MoA	VT-MoA: Vacuum Technology for Accelerators	MN+2D-MoA: Emerging Materials and Structures for MEMS/NEMS Devices	2D+AS+SS-MoA: Defects, Dopants, Edges, Functionalization, and Intercalation	NS1+AS+EM-MoA: Corr Micro for Nano Char/NS2+AP+BI-MoA: Fab & Ope of Nano-Systems	MS+AP+AS+TF-MoA: Advanced Char & Met for 3D and ML for Micro Materials Discovery	PS+AS-MoA: Plasma Chemistry and Catalysis	TF+EM-MoA: Thin Films for Optics, Photonics, Metamaterials, and Soft Electronics	AP+AS+EL+MS+SS-MoA: Advancing Met and Char to Enable Atomic Scale Processing
TuM	VT-TuM: Vacuum Technology for Large Vacuum Systems	CA+AS+SE+SS-TuM: Progress and Challenges in Industrial Applications	MS-2DMS+2D+EM+NS-TuM: Direct Growth of 2D Matls, Incl CVD & MBE	EL+AS+EM-TuM: Optical Characterization of Thin Films and Nanostructures	PS1+NS-TuM: Adv Plas attening: EUV-Based, Multi & Alt Patt Approaches (Imprint, DSA, Etc.)	PS2+MS-TuM: Model of Plasmas & Plas Driven Proc, and Machine Learning	TF-TuM: Growth in 3D, High Aspect Ratio and Nanostructured Materials	AP+AS+EM+HI+PS+SS+TF-TuM: Area Selective Processing and Patterning II
TuMB								
TuL								
TuA	VT-TuA: Vacuum Pumping, Leak Detection, and Modeling	CA+2D+AS+BI+HC+LS+NS-TuA: In Situ Micro, Spect & Proc at Liquid-Solid-Gas Interfaces	2D+MI-TuA: Heterostructures, Twistronics, and Proximity Effects	EL1+AS+EM-TuA EL2+EM-TuA	PS1+TF-TuA: Plas Proc for Adv Emerging Memory Tech, Adv Packaging & Hetero Integration	PS2+AS+SS-TuA: Plasma-Surface Interactions	TF2+2D-TuA: Low Dimension Material Application	AP+PS+TF-TuA: Thermal Atomic Layer Etching
TuP								
WeM	SM-WeM: Smart Multifunctional Materials for Nanomedicine and Theranostics	CA+HC+LS+VT-WeM: Multiphase Interfacial Analysis and Imaging	2D+EM+MI+NS+QS-WeM: Quantum and Symmetry-Protected States	NS+AP+BI+SS-WeM: Frontiers in SPM Including Machine Learning	PS1+AP+TF-WeM: Plasma Deposition and ALD Processes for Coatings and Thin Films	PS2+TF-WeM: Plas Proc of Non-Si Rel Semi for Energy-Eff Dev in Power, Photo & Opto Apps	TF2+AP+SE+SS-WeM: TF3+MS-WeM	TF1+SE-WeM: Vapor Dep and Vapor Infiltration of Organic, Poly, &/or Hybrid Materials
WeL								
WeA	HI+AP-WeA: Emerging Ion Sources, Optics, & Applications	QS+EM+MN+NS-WeA: Systems and Devices for Quantum Information	2D+EM+MI-WeA: Charge Density Waves, Mag, and Superconductivity	NS1+BI-WeA NS2+AS+EM-WeA:	PS1+AP-WeA: Plasma Assisted Atomic Layer Etching	PS2+SE-WeA: Atmospheric Pressure Plasmas and their Applications	TF1+AP-WeA: Manufacturing and Scale-Up of CVD and (Spatial) ALD TF2-WeA: Solution	SE+MN+PS+TF-WeA: Vapor Deposition Technologies and New Trends in
ThM	HI+AS-ThM: Advanced Ion Microscopy & Surface Analysis	QS+AP+EM+MN+NS+SS-ThM: Systems and Devices for Quantum Computing	2D+AS+NS+SS-ThM: Scanning Probe Microscopy and Spectroscopy	EM+AS-ThM EM+MN+TF-ThM		PS-ThM: Plasma Processing for Advanced Semiconductor Devices	TF+AP-ThM TF1+SE+SS-ThM	SE+AS+BI+SS+TF-ThM: Nanostruct and Multifunctional Thin Films and Coatings I
ThA	HI-ThA: Novel Beam Induced Material Engineering and Nano Patterning	QS+EM+MN+NS-ThA: The Quantum Metrology Revolution	2D+AS+EM-ThA: Electron Micro and Photoemission Spectroscopy	EM+AS+EL+NS+SS-ThA: Interfaces and Defect Engineering in Electronic & Photonic Materials		PS-ThA: Harnessing the Power of Plasmas for Real-World Applications: PSTD Award	TF+AS-ThA: In-Situ Characterization of Thin Films and Interfaces	SE+AS+MN+SS-ThA: Mechanical and Tribological Properties of Thin Films and Coatings
ThP								
FrM	AQS-FrM: AVS Quantum Science Workshop		2D+AS+BI+HC+SS-FrM: Biological, Electronic, Energy, and Other Applications	EM1+MN+NS-FrM: Piezo, Ferro, & Multi Dev & Micro EM2-FrM: Adv Dev & Fabrication	PS1+MS+SS-FrM: Mod of Plasmas & Plas riven Proc, & Plasma-Surface Interactions II	PS2+SE-FrM: Plasma Sources, Diagnostics, Sensors and Control	TF1+PS-FrM TF2+EM-FrM	SE+MN+PS-FrM: Nanostructured and Multifunctional Thin Films and Coatings II

AVS 68 Program Overview

Room /Time	318	319	320	321	330	Ballroom A	Hall A
SuA	BP-SuA: Biomaterials Plenary Session: Programmable Biologic Materials & BID Flash Poster Sess						
MoM	BI+AS+PS-MoM: Biomolecular Interfaces and Underwater Adhesion	SS+AS+TF-MoM: Dynamics and Mechanisms at Surfaces and Interfaces	AS+LS+RE+SS-MoM: Probing Surf & Int Struct with XPS: in Memory of Charles Fadley				
MoA	BI+AS+HC+SS-MoA: Bioinspired Materials and Applications	SS+AS-MoA: Molecular Organization at Surfaces	AS+CA+EL+EM+LS+SE+SS-MoA: Quantitative Surface Analysis	HC+AS+SS-MoA: Advances in Materials and Analysis in Heterogeneous Catalysis I			
TuM	BI1+AS+EM+NS+SE+TF-TuM: Bioanal, Biosens & Diag BI2+AS-TuM: Char of Bio & Biomaterials	SS-TuM: Liquid/Solid Interfaces and Electrochemistry	AS+LS+RE+SS-TuM: Synch-Based Photo Spect Studies of Tech Import Matls: in Mem of David Shirley	HC+AS+SS-TuM: Energetic Processes and Tailored Surfaces in Heterogeneous Catalysis			
TuMB							EW-TuMB: Exhibitor Technology Spotlight Session I
TuL							EW-TuL: Exhibitor Technology Spotlight Session II
TuA	LS1+2D+AS+EM+QS+S S-TuA: Oper Catal & Energ Syst LS2+2D+AS+TF-TuA: Role of Def in Matls	SS+2D+AS-TuA: Structure, Adsorption and Reaction at 2D Material Surfaces	AS+EM+SE-TuA: Surface Analysis Using Complementary Techniques	HC+AS+SS-TuA: Bridging Gaps I: Structural and Dynamic Effects in Catalysis	MI-TuA: Topological Insulator Heterostructures		
TuP							POSTER SESSIONS: AC, AP, BI, CA, EL, MI, MN, MS, NS, LS, PS, SS, VT
WeM	AC+LS+MI-WeM: Mag, Electron Correlation, and Superconductivity in the Actinides/Rare Earths	SS1+HC-WeM: Alloy Surface Reactivity SS2+AS+HC-WeM: Nanoparticle Surfaces	AS+BI+CA+HC+LS+PS+SE+SS-WeM: Analysis of Surf & Int Related to Energy and the Environment	HC+AS+SS-WeM: Advances in Materials and Analysis in Heterogeneous Catalysis II	MI-WeM: Spin Landscape I (Magnetic Structures in Real and Momentum Space)		
WeL							EW-WeL: Exhibitor Technology Spotlight Session III
WeA	AC+LS+MI-WeA: Chemistry and Physics of the Actinides/Rare Earths	SS+AS-WeA: Memorial Session in Honor of Patricia Thiel I	AS+CA+HC+LS-WeA: Shining a Light on Surface Chemical Metrology: In Memory of Martin Seah	HC+AS+SS-WeA: Bridging Gaps II: Single Atom Alloys and Desirable Defects	MI-WeA: Spin Land II (Mag Struct in Real & Mom Space) EM-WeA: Compound Semiconductors		
ThM	AC+AS+LS-ThM: Emerging Topics and Methods in Actinide/Rare Earth Science	SS+AS-ThM: Memorial Session in Honor of Patricia Thiel II	AS+AC+BI+CA+HI-ThM: Unraveling the Composition of Complex Systems with SIMS	HC+AS+SS-ThM: Bridging Gaps III: Combined Theory and Experiment in Catalysis	MI+2D+TF-ThM: Quantum Materials (2D)		
ThA		SS+AS+SE-ThA: ALD and CVD Surface Chemistry	AS+2D+EM+MS+NS+SS+TF-ThA: Probing Defects at Surfaces and Interfaces	HC+AS+NS+SS-ThA: Special Session and Recep for the HC Comm & to Celebrate Robert Madix			
ThP							POSTER SESSIONS: 2D, AS, EM, HC, QS, SE, SM, TF
FrM	RE+AS-FrM: Materials Analysis and Characterization with Radiation	SS1+AS+HC-FrM: Oxide Surface Structure and Reactivity	SS2+CA+AS-FrM: Environmental, Atmospheric and Astronomical Surfaces				

Sunday Afternoon, November 6, 2022

Biomaterials Plenary Session Room 318 - Session BP-SuA Biomaterials Plenary Session: Programmable Biologic Materials (ALL-INVITED SESSION) & Flash Poster Session Moderators: Caitlin Howell, University of Maine, Markus Valtiner, Vienna University of Technology, Austria		Nanoscale Science and Technology Plenary Session Room 304 - Session NSP-SuA Nanoscale Science and Technology Plenary Session (ALL-INVITED SESSION) Moderator: David Czaplewski, Argonne National Laboratory
3:00pm		INVITED: NSP-SuA-1 Adventures in Nanofabrication and Manufacturing, from Electron-Beam Lithography to DNA: Science, Technology, and Lessons Learned, James Liddle , National Institute of Standards and Technology (NIST)
3:20pm		
3:40pm		
4:00pm		
4:20pm	INVITED: BP-SuA-5 Enhancing the Programmability of Engineered Extracellular Matrices with Sequence Specific Peptoids, Adrienne M. Rosales , The University of Texas at Austin	
4:40pm		
5:00pm	INVITED: BP-SuA-7 New Biomaterials and Bio-inspired Materials from Polyelectrolyte Complexation, Yun Fang, M. Tirrell , University of Chicago	
5:20pm		
5:40pm	BP-SuA-9 BID Flash Poster Session: Oral Presentations 5:40: BI-TuP-2 - Hannah Omeoka 5:43: BI-TuP-8 - Juhi Jaiswal 5:46: BI-TuP-12 - Ainslie Allen 5:49: BI-TuP-6 Shahidul Alam Mohammad	

Monday Morning, November 7, 2022

<p>Vacuum Technology Division Room 301 - Session VT-MoM Vacuum Measurement and Gas Analysis and Vacuum Technology for Quantum Applications Moderators: James Fedchak, National Institute of Standards and Technology</p>		<p>MEMS and NEMS Technical Group Room 302 - Session MN+AS+NS+QS+SE-MoM Dynamics and Engineering of MEMS/NEMS Moderators: Jürgen Brugger, EPFL, Switzerland, Eva Weig, University of Munich, Germany</p>	
8:20am	<p>INVITED: VT-MoM-1 “Much to Do About Nothing.” Advancing Compact UHV Packages for a “Quantum Everywhere” Future, <i>Alex Tingle</i>, ColdQuanta</p>		
8:40am			
9:00am	<p>VT-MoM-3 Non-Magnetic UHV Chambers and Feedthroughs for Quantum Applications: A Challenge for Vacuum, Optics and Mechanics, <i>Klaus Bergner, J. Hertel, A. Trützscher, M. Flaemmich</i>, VACOM Vakuum Komponenten & Messtechnik GmbH, Germany</p>	<p>INVITED: MN+AS+NS+QS+SE-MoM-3 MEMS-Based Surface Nanoengineering Using Thermal AFM Probes: 30 Years and Counting, <i>Jürgen Brugger</i>, École Polytechnique Fédérale de Lausanne, Switzerland</p>	
9:20am	<p>VT-MoM-4 Comparison of Quantum and Classical Vacuum Standards, <i>Daniel Barker, N. Klimov, E. Tiesinga, J. Fedchak, J. Scherschligt, S. Eckel</i>, National Institute of Standards and Technology</p>		
9:40am	<p>VT-MoM-5 Direct Comparison of Two Portable Cold Atom Vacuum Standards, <i>Stephen Eckel</i>, National Institute of Standards and Technology (NIST); <i>L. Ehinger</i>, Seattle University; <i>D. Barker, J. Fedchak, J. Scherschligt</i>, National Institute of Standards and Technology (NIST)</p>		
10:00am	<p>VT-MoM-6 Reference Ionization Vacuum Gauge, <i>Martin Wüest, F. Scuderi</i>, INFICON Ltd., Liechtenstein; <i>J. Šetina</i>, Institute of Metals and Technology, Slovenia; <i>K. Jousten, M. Bernien</i>, Physikalisch-Technische Bundesanstalt - Berlin, Germany; <i>C. Illgen</i>, Physikalisch-Technische Bundesanstalt - Berlin, Germany; <i>N. Bundaleski</i>, Nova School of Sciences and Technology, CEFITEC, Portugal; <i>B. Jenninger, A. Stöltzel</i>, CERN, Switzerland</p>		
10:20am	BREAK	BREAK	
10:40am	<p>INVITED: VT-MoM-8 Towards an Ionization Vacuum Gauge Suitable as a Reference Standard, <i>Nenad Bundaleski</i>, CEFITEC, NOVA School of Science and Technology (FCT-NOVA), NOVA University Lisbon, Portugal</p>	<p>INVITED: MN+AS+NS+QS+SE-MoM-8 Atomically-Thin MoS₂ Nanoelectromechanical Resonators, <i>R. Yang</i>, Shanghai Jiao Tong University, China, <i>Jaesung Lee</i>, University of Texas at El Paso</p>	
11:00am			
11:20am	<p>VT-MoM-10 Evaluating low Pressure Resolution Limits for Optical Refractometry, <i>Jacob Ricker, K. Douglass, J. Hendricks</i>, National Institute of Standards and Technology (NIST); <i>S. White, S. Syssoev</i>, MKS Instruments, Inc.</p>	<p>INVITED: MN+AS+NS+QS+SE-MoM-10 Can a Single Nanomechanical Mode Generate a Frequency Comb?, <i>Eva Weig</i>, Technical University of Munich, Germany</p>	
11:40am	<p>VT-MoM-11 Vacuum Fixed Length Optical Cavity (VFLOC): Optical Pressure Measurements Approaching Ultra-High Vacuum, <i>Kevin Douglass, J. Ricker, J. Hendricks</i>, NIST</p>		

Monday Morning, November 7, 2022

Room 303		
8:20am	INVITED: 2D+EM-MoM-1 Scanning Tunneling Spectroscopy of 2d Electronic Materials – from Monolayers to Complex Heterostructures, <i>Chih-Kang (Ken) Shih</i> , Department of Physics, The University of Texas at Austin	2D Materials Technical Group Session 2D+EM-MoM 2D Materials: Electronic, Mechanical, and Optical Properties Moderator: Sarah Haigh , University of Manchester, UK
8:40am		
9:00am	2D+EM-MoM-3 Strain and Charge-Transfer at the Device Relevant Interface Between Single Layer MoS ₂ and Gold: In-Situ Raman Study, <i>Stephanie Lough, J. Thompson</i> , University of Central Florida; <i>R. Rao</i> , Air Force Research Laboratory; <i>M. Ishigami</i> , University of Central Florida	
9:20am	2D+EM-MoM-4 The Anti-Reflection Performance of Tetrahedral Amorphous Carbon Coatings by Metal Doping, <i>HoeKun Kim, S. Lee</i> , Korea Aerospace University, Republic of Korea	
9:40am	2D+EM-MoM-5 Optical and Electrical Investigation into HfS ₂ Oxidation Mechanisms, <i>I. Chirca, A. Almutairi, Stephan Hofmann</i> , University of Cambridge, UK	
10:00am		
10:20am	BREAK	
10:40am	2D+EM-MoM-8 Electrical Characterization of β -In ₂ Se ₃ Thin Films Synthesized via Molecular Beam Epitaxy, <i>Cooper Voigt</i> , Georgia Institute of Technology, USA; <i>B. Wagner</i> , Georgia Tech Research Institute; <i>E. Vogel</i> , Georgia Institute of Technology, USA	
11:00am	2D+EM-MoM-9 Mechanics of Pristine and Pyrolysed Carbon Nanomembranes (CNMs), <i>André Beyer, F. Paneff, X. Zhang, A. Götzhäuser</i> , Bielefeld University, Germany	
11:20am	INVITED: 2D+EM-MoM-10 Interplay between Electronic, Magnetic and Mechanical Properties in 2D Crystals, <i>Young-Woo Son</i> , Korea Institute for Advanced Study, Republic of Korea	
11:40am		

Monday Morning, November 7, 2022

Room 304		
8:20am	INVITED: NS1+QS-MoM-1 Single Electrons on Solid Neon: A New Solid-State Qubit Platform with Ultralong Coherence, <i>Xianjing Zhou</i> , Pritzker School of Molecular Engineering, University of Chicago	Nanoscale Science and Technology Division Session NS1+QS-MoM Fabrication, Testing and Metrology of Quantum Devices and Systems Moderator: Wonhee Ko , Oak Ridge National Laboratory
8:40am		
9:00am	NS1+QS-MoM-3 Ultra-thin TaN Damascene Nanowire Structures on 300 mm Si Wafers for Quantum Applications, <i>Ekta Bhatia</i> , <i>S. Kar</i> , <i>S. Olson</i> , <i>T. Vo</i> , <i>S. Schujman</i> , <i>J. Nalaskowski</i> , NY CREATES; <i>H. Frost</i> , SUNY Polytechnic Institute, Albany; <i>J. Mucci</i> , <i>B. Martinick</i> , <i>I. Wells</i> , <i>T. Murray</i> , <i>C. Johnson</i> , <i>V. Kaushik</i> , <i>S. Papa Rao</i> , NY CREATES	
9:20am	NS1+QS-MoM-4 Direct Integration of Atomic Precision Devices into a MOS-Compatible Process, <i>Jeffrey Ivie</i> , <i>D. Campbell</i> , <i>A. Leenheer</i> , <i>C. Halsey</i> , <i>E. Anderson</i> , <i>S. Schmucker</i> , <i>D. Scrymgeour</i> , <i>X. Gao</i> , <i>W. Lepkowski</i> , <i>T. Lu</i> , <i>L. Tracy</i> , <i>S. Misra</i> , Sandia National Laboratories	
9:40am	NS1+QS-MoM-5 Low Thermal Budget PMOS in Low Temperature Epitaxial Silicon, <i>Christopher Allemang</i> , <i>D. Campbell</i> , <i>J. Ivie</i> , <i>T. Lu</i> , <i>S. Misra</i> , Sandia National Laboratories	
10:00am		
10:20am	BREAK	Nanoscale Science and Technology Division Session NS2+AS+EM+SS-MoM Quantum Based Sensors and Metrology Moderator: Nikolai Klimov , National Institute of Standards and Technology
10:40am	INVITED: NS2+AS+EM+SS-MoM-8 Interfacing Biomolecules with Coherent Quantum Sensors, <i>Peter Maurer</i> , University of Chicago	
11:00am		
11:20am	INVITED: NS3+EM+TF-MoM-10 Quantum and Nonlinear Photonics in Silicon Carbide with Inverse Design, <i>Daniil Lukin</i> , <i>J. Vuckovic</i> , Stanford University	Nanoscale Science and Technology Division Session NS3+EM+TF-MoM Nanophotonics, Metasurfaces and Plasmonic Systems Including Inverse Design Methods Moderators: David Czaplewski , Argonne National Laboratory, Nikolai Klimov , National Institute of Standards and Technology
11:40am		

Monday Morning, November 7, 2022

Manufacturing Science and Technology Group Room 305 - Session MS+HI-MoM Machine Learning for Microelectronics Manufacturing Process Control and Materials Discovery R&D Moderators: Tina Kaarsberg, U.S. Department of Energy, Advanced Manufacturing Office, Gary Rubloff, University of Maryland, College Park		Plasma Science and Technology Division Room 315 - Session PS-MoM Plasmas for the Environment and Sustainability: Plasmas-Liquid Interactions, Water, Air, Soil Treatment Moderators: David Go, University of Notre Dame, Jeffrey Shearer, TEL	
8:20am	INVITED: MS+HI-MoM-1 Progressing Process Control with Data-Centric AI, <i>Jeff David</i> , PDF Solutions		
8:40am			
9:00am	INVITED: MS+HI-MoM-3 Paths Toward Autonomous Plasma Process Tool Operation by Pairing of Plasma and Machine Learning Technologies, <i>Jun Shinagawa, P. Ventzek</i> , Tokyo Electron America Inc.,	PS-MoM-3 Nitrogen Fixation by Atmospheric Plasma: Effect of Process Parameters on Product Yield and Selectivity, <i>N. Maira</i> , Université libre de Bruxelles, Belgium; <i>A. Remy</i> , Université libre de Bruxelles, Belgium/ Ghent University, Belgium; <i>K. Van't Veer</i> , Université libre de Bruxelles / Antwerpen University, Belgium; <i>C. Pattyn, N. Roy</i> , Université libre de Bruxelles, Belgium; <i>A. Bogaerts</i> , University of Antwerp, Belgium; <i>N. De Geyter</i> , Ghent University, Belgium; <i>Francois Reniers</i> , Université libre de Bruxelles, Belgium	
9:20am		PS-MoM-4 Fundamental Insights Into Plasma-Liquid Interactions by Combined Experiments and Multiphase Modeling, <i>Necip Uner</i> , Middle East Technical University, Turkey; <i>S. Keniley</i> , LAM Research; <i>E. Perez, D. Curreli, M. Sankaran</i> , University of Illinois at Urbana-Champaign	
9:40am	MS+HI-MoM-5 Compliant Hybrid Bonding for Large CTE Mismatched Electronic Materials, <i>Mieko Hirabayashi Hirabayashi, M. Wiwi, S. Herrera, E. Madison, M. Jordan</i> , Sandia National Laboratories	INVITED: PS-MoM-5 Merging the Fundamental and Applied: Understanding Plasma Kinetics and Energetics to Build Better Mousetraps, <i>Ellen Fisher</i> ³ , University of New Mexico	
10:00am			
10:20am	BREAK	BREAK	
10:40am	INVITED: MS+HI-MoM-8 Machine Learning Accelerated Scale-up for Microporous Materials - An Industrial Perspective, <i>Di Du, P. Kamakoti</i> , ExxonMobil Technology and Engineering Company	PS-MoM-8 Comparative Investigation of DC Plasma Versus Boron-doped Diamond Electrodes for Electrochemical Degradation of PFOA, <i>Jasmine Dinari</i> , University of Illinois at Urbana-Champaign; <i>N. Uner</i> , Middle East Technical University, Turkey; <i>P. Baldaquez Medina, M. Sankaran, X. Su</i> , University of Illinois at Urbana-Champaign	
11:00am		PS-MoM-9 Integrated circuit Manufacturing with Plasma Activated Chemical Treatment (IMPACT): A Potential Approach for Reducing the Dose-to-Clear in a Commercial Photoresist, <i>Christian Williams, S. Dubowsky, E. Barlaz, S. Marcinko, M. Sankaran</i> , University of Illinois at Urbana-Champaign; <i>E. Suga, A. Matsuyama</i> , TOK America, Japan; <i>D. Curreli, D. Ruzic</i> , University of Illinois at Urbana-Champaign	
11:20am	MS+HI-MoM-10 Optimizing Copper Deposition in High Aspect Ratio Through Silicon Vias, <i>Jessica N. McDow, R. Schmitt, M. Hirabayashi, J. McClain, M. Jordan</i> , Sandia National Laboratories	PS-MoM-10 Low Power Degradation of Perfluorooctane Sulfonate (PFOS) in Water Using a Nanosecond Pulsed Atmospheric Pressure Plasma, <i>Michael Johnson</i> , Syntek Technologies; <i>W. Maza, V. Breslin</i> , Naval Research Laboratory, Chemistry Division; <i>D. Boris, T. Petrova, S. Walton</i> , Naval Research Laboratory	
11:40am	INVITED: MS+HI-MoM-11 Advanced Manufacturing using Virtual Metrology and Equipment Intelligence [®] , <i>David Fried</i> , Lam Research Corporation		

Monday Morning, November 7, 2022

Thin Films Division Room 316 - Session TF+EM-MoM Microelectronics and Spintronics Application Moderator: John F. Conley, Jr., Oregon State University		Atomic Scale Processing Focus Topic Room 317 - Session AP+2D+AS+EM+PS+SS+TF-MoM Area Selective Processing and Patterning Moderators: Eric A. Joseph, IBM Research Division, T.J. Watson Research Center, Adrie Mackus, Eindhoven University, Netherlands	
8:20am	INVITED: TF+EM-MoM-1 Rare Earth Thin Oxide Films for Sustainable Energy, <i>Ivona Z. Mitrovic, H. Finch, S. Almalki, S. Tekin, L. Jones, V. Dhanak</i> , University of Liverpool, UK; <i>A. Hannah, R. Valizadeh</i> , STFC Daresbury Laboratory, UK; <i>A. Renz, V. Shah, P. Gammon, P. Mawby</i> , University of Warwick, UK	INVITED: AP+2D+AS+EM+PS+SS+TF-MoM-1 Imperfectly Perfect Materials and/or Processes as a Route for ASD, <i>Christophe Vallee</i> , SUNY POLY, Albany; <i>M. Bonvalot, M. Jaffal, T. Yeghoyan</i> , University Grenoble Alpes, LTM, CNRS, France; <i>N. Posseme, R. Gassilloud, T. Chevolleau</i> , CEA/LETI-University Grenoble Alpes, France	
8:40am			
9:00am	TF+EM-MoM-3 TaN Electrical Barrier for High-k MOS Capacitor, <i>R. César, José Diniz</i> , University of Campinas - UNICAMP, Brazil; <i>R. Cotrin, E. Joanni, M. Vidal</i> , Renato Archer Information Technology Center, Brazil	AP+2D+AS+EM+PS+SS+TF-MoM-3 Area Selective Deposition on EUV Photoresist, <i>Rosanna Robert</i> , SUNY College of Nanoscale Science and Engineering; <i>H. Frost, K. Lutker-Lee</i> , TEL Technology Center, America, LLC, USA; <i>C. Vallée</i> , SUNY College of Nanoscale Science and Engineering	
9:20am	TF+EM-MoM-4 Internal Photoemission (IPE) Spectroscopy Measurement of Interfacial Barrier Heights in Pristine and Pooled Ferroelectric Hafnium Zirconium Oxide Devices, <i>Jessica Peterson</i> , Oregon State University; <i>T. Mimura</i> , Gakushuin University, Japan; <i>J. Ihlefeld</i> , University of Virginia; <i>J. Conley</i> , Oregon State University	AP+2D+AS+EM+PS+SS+TF-MoM-4 Impact of Post-Exposure Treatments on TMSDMA-Passivated SiO ₂ Surfaces, <i>Anthony Valenti, C. Vallée, C. Ventrice</i> , SUNY Polytechnic Institute, Albany; <i>K. Tapily, K. Yu, S. Consiglio, C. Wajda, R. Clark, G. Leusink</i> , TEL Technology Center, America, LLC	
9:40am		AP+2D+AS+EM+PS+SS+TF-MoM-5 Area-Selective ALD Using Small Molecule Inhibitors of Different Sizes: Single and Sequential Inhibitor Dosing, <i>Pengmei Yu, M. Merckx, I. Tezsevin</i> , Eindhoven University of Technology, Netherlands; <i>P. Lemaire, D. Hausmann</i> , Lam Research Corp.; <i>T. Sandoval</i> , Federico Santa Maria Technical University, Chile; <i>W. Kessels, A. Mackus</i> , Eindhoven University of Technology, Netherlands	
10:00am		AP+2D+AS+EM+PS+SS+TF-MoM-6 Role of Catalytic Surface Reactions During Area-Selective Tan ALD for Precursor Blocking Using Aniline Molecules, <i>Marc Merckx¹, I. Tezsevin, P. Vu, R. Heinemans, R. Lengers, E. Kessels, A. Mackus</i> , Eindhoven University of Technology, Netherlands; <i>T. Sandoval</i> , Federico Santa Maria Technical University, Chile	
10:20am	BREAK	BREAK	
10:40am		AP+2D+AS+EM+PS+SS+TF-MoM-8 AVS Russell and Sigurd Varian Awardee Talk: Sequential Application of Two Inhibitors to Achieve Area-Selective Atomic Layer Deposition of Dielectric on Metal, <i>Tzu-Ling Liu^{2,3}, M. Harake, S. Bent</i> , Stanford University	
11:00am	TF+EM-MoM-9 On-Chip ALD LiPON Capacitors for High Frequency Application, <i>K. Ahuja</i> , University of Maryland, College Park; <i>V. Sallaz, F. Voiron</i> , Murata, France; <i>P. McCluskey, G. W. Rubloff</i> , University of Maryland, College Park; <i>Keith E. Gregorczyk</i> , University of Maryland	AP+2D+AS+EM+PS+SS+TF-MoM-9 Carborane Self-Assembled Monolayers for Area-Selective Deposition, <i>Michelle Paquette, R. Bale, R. Thapa, S. Pinnepalli</i> , University of Missouri-Kansas City; <i>J. Bielefeld, S. King</i> , Intel Corporation	
11:20am	INVITED: TF+EM-MoM-10 Designer Heusler Half-Metals for Ultra-Fast Spintronics, <i>Avik Ghosh</i> , University of Virginia	INVITED: AP+2D+AS+EM+PS+SS+TF-MoM-10 Peter Mark Memorial Award Talk: Reactive Inhibitory Chemistries for Area Selective Depositions and Their Application in Back End of the Line Processes, <i>Rudy Wojtecki⁴</i> , IBM Almaden Research Center	
11:40am			

¹ 2021 TFD James Harper Awardee

² TFD James Harper Award Finalist

³ AVS Russell and Sigurd Varian Awardee

⁴ Peter Mark Memorial Award Winner

Monday Morning, November 7, 2022

Biomaterial Interfaces Division Room 318 - Session BI+AS+PS-MoM Biomolecular Interfaces and Underwater Adhesion Moderator: Morgan Alexander, University of Nottingham, UK		Surface Science Division Room 319 - Session SS+AS+TF-MoM Dynamics and Mechanisms at Surfaces and Interfaces Moderators: Eric Altman, Yale University,	
8:20am	BI+AS+PS-MoM-1 Supported Lipid Bilayers as Model Systems to Understand Molecular Interactions at Complex Solid/Liquid Interfaces, <i>Pierluigi Bilotto</i> , Centre for Electrochemistry and Surface Technology, Austria; <i>L. Mears, M. Valtiner</i> , Vienna University of Technology, Austria	INVITED: SS+AS+TF-MoM-1 Stereodynamics Effects in Grazing-Incidence Fast-Molecule Diffraction, <i>Cristina Díaz</i> , Universidad Complutense de Madrid, Spain	
8:40am	BI+AS+PS-MoM-2 Recombinant Lubricin Improves Anti-Adhesive, Wear Protection and Lubrication of Collagen II Surface, <i>H. Yuan</i> , Tianjin University, China; <i>Laura Mears</i> , Vienna University of Technology, Austria; <i>R. Su</i> , Tianjin University, China; <i>M. Valtiner</i> , Vienna University of Technology, Austria		
9:00am		SS+AS+TF-MoM-3 Intermolecular Interactions in Carbonyl Compounds Trigger Surface Reactivity, <i>Swetlana Schauerermann, S. Attia, C. Schroeder, M. Schmidt</i> , Kiel University, Germany	
9:20am		SS+AS+TF-MoM-4 Velocity Map Images of Subsurface Oxygen Desorbing from Rh(111), <i>Arved Cedric Dorst, T. Schäfer</i> , University of Göttingen, Germany; <i>D. Killelea</i> , Loyola University Chicago	
9:40am	BI+AS+PS-MoM-5 Hyaluronic Acid-Dopamine Conjugate for Facile Deposition onto Collagen I with Enhancing Anti-Adhesion and Lubrication, <i>H. Yuan</i> , Tianjin University, China; <i>L. Mears, M. Valtiner</i> , Vienna University of Technology, Austria; <i>Rongxin Su</i> , Tianjin University, China	SS+AS+TF-MoM-5 In-Situ Characterization of O ₂ Gas-Induced Rearrangement of Near-Surface Composition in Refractory High-Entropy Alloys, <i>H. Kersell</i> , Oregon State University; <i>X. Fan</i> , University of Tennessee Knoxville; <i>A. Herman</i> , Oregon State University; <i>Z. Lyu</i> , University of Tennessee Knoxville; <i>B. Steingrimsson</i> , Imagers LLC; <i>P. Liaw</i> , University of Tennessee Knoxville; <i>Michely</i>	
10:00am	BI+AS+PS-MoM-6 Anti-Fouling Properties of Amphiphilic Zwitterionic Hydrogels, <i>Lisa Schardt</i> , Ruhr University Bochum, Germany; <i>A. Martínez Guajardo</i> , University of Potsdam, Germany; <i>J. Koc</i> , Ruhr University Bochum, Germany; <i>J. Clarke, J. Finlay, A. Clare</i> , Newcastle University, UK; <i>H. Gardner, G. Swain, K. Hunsucker</i> , Florida Institute of Technology; <i>A. Laschewsky</i> , University of Potsdam, Germany; <i>A. Rosenhahn</i> , Ruhr University Bochum, Germany	SS+AS+TF-MoM-6 Surface Faceting and Oxidation in Binary and Ternary Ni-Based Alloys, <i>Devin Jessup, K. Orson, Z. Harris, P. Reinke</i> , University of Virginia	
10:20am	BREAK	BREAK	
10:40am	BI+AS+PS-MoM-8 Mussel Adhesion: A Fundamental Perspective on Factors Governing Strong Underwater Adhesion, <i>L. Mears, J. Appenroth, A. Celebi, A. Imre, H. Yuan</i> , TU Wien, Austria; <i>P. Bilotto</i> , CEST Centre for Electrochemistry and Surface Technology, Austria; <i>R. Su</i> , Tianjin University, China; <i>Markus Valtiner</i> , TU Wien, Austria	INVITED: SS+AS+TF-MoM-8 Medard W. Welch Award Talk: Atomistic Simulations to Advance Surface Science, <i>Susan Sinnott</i> ¹ , Pennsylvania State University	
11:00am	BI+AS+PS-MoM-9 Bioinspired Underwater Adhesives Using Amyloids from Commonplace Proteins, <i>M. Wilson</i> , NRC Post-doctoral Fellow sited at the Naval Research Laboratory, Chemistry Division; <i>M. Beasley</i> , NRC post-doc sited at the Naval Research Laboratory, Chemistry division; <i>K. Fears</i> , Naval research laboratory, Chemistry Division; <i>E. Yates</i> , US Naval Academy, Chemistry Department; <i>Christopher So</i> ² , Naval Research Laboratory, Chemistry Division		
11:20am	BI+AS+PS-MoM-10 Incorporation of Antimicrobial Cyclic Peptides in Polymeric Materials, <i>D. Regan, Q. Lu, D. Barlow, Kenan Fears</i> , US Naval Research Laboratory	SS+AS+TF-MoM-10 STM Study of Ag Encapsulation of Pd and Pt Islands on Ag(111) at Room Temperature, <i>Buddhika Alupothe Gedara, M. Trenary</i> , University of Illinois - Chicago	
11:40am	BI+AS+PS-MoM-11 Tuning Amphiphilicity of Alginate-Based Polyelectrolyte Multilayers to Enhance Marine Fouling Resistance, <i>Jana Karthäuser, T. Gnanasampanthan, S. Spöllmann, R. Wanka, H. Becker, A. Rosenhahn</i> , Ruhr University Bochum, Germany		

¹ Medard W. Welch Award Winner

² BID Early Career Researchers Award

Monday Morning, November 7, 2022

Room 320		
8:20am		Applied Surface Science Division Session AS+LS+RE+SS-MoM Probing Surface and Interface Structure with X-ray Photoelectron Spectroscopy: In Memory of Charles Fadley Moderators: Gregory Herman , Oregon State University, Theva Thevuthasan , Pacific Northwest National Laboratory
8:40am		
9:00am	AS+LS+RE+SS-MoM-3 X-Ray Spectroscopic Identification of Strain and Structure-Based Resonances in a Series of Saturated Carbon-Cage Molecules: Adamantane, Twistane, Octahedrane, and Cubane, Trevor Willey , <i>J. Lee</i> , Lawrence Livermore National Laboratory; <i>D. Brehmer</i> , <i>O. Paredes Mellone</i> , SLAC National Accelerator Laboratory; <i>L. Landt</i> , Lawrence Livermore National Laboratory; <i>P. Schreiner</i> , <i>A. Fokin</i> , <i>B. Tkachenko</i> , Institute of Organic Chemistry, Justus Liebig University, Germany; <i>A. de Meijere</i> , <i>S. Kozhushkov</i> , Institute for Organic and Biomolecular Chemistry, Georg-August-University, Germany; <i>T. van Buuren</i> , Lawrence Livermore National Laboratory	
9:20am	AS+LS+RE+SS-MoM-4 Composition and Thermal Stability Analysis of Passive Films on NiCr and NiCrMo Alloys, Keithen Orson , <i>A. Costine</i> , <i>E. Romanovskaia</i> , <i>J. Scully</i> , <i>P. Reinke</i> , University of Virginia	
9:40am	AS+LS+RE+SS-MoM-5 Reversible Changes in Surface Charging and Surface Oxide of NiFe ₂ O ₄ Thin Films: A Temperature Dependent X-Ray Photoemission Study, Arjun Subedi , <i>D. Yang</i> , <i>X. Xu</i> , <i>P. Dowben</i> , University of Nebraska-Lincoln	
10:00am	AS+LS+RE+SS-MoM-6 The Reproducibility Crisis in Science as Manifested in X-Ray Photoelectron Spectroscopy (XPS). What's Been Done, and What's Being Done About It?, Matthew Linford , Brigham Young University; <i>D. Baer</i> , PNNL; <i>G. Major</i> , Brigham Young University	
10:20am	BREAK	
10:40am	INVITED: AS+LS+RE+SS-MoM-8 Study of Surface Oxides on Pt ₃ Ni(111) and Pt ₃ Co(111) using Ambient Pressure XPS, Bongjin Simon Mun , Gwangju Institute of Science and Technology, Republic of Korea	
11:00am		
11:20am	AS+LS+RE+SS-MoM-10 Probing the Oxidation Chemistry of TRISO Nuclear Fuels Using Depth Profiled XPS and Ambient Pressure XPS, Jeff Terry , Illinois Institute of Technology	
11:40am	AS+LS+RE+SS-MoM-11 Environmental X-ray Photoelectron Spectroscopy Study of Catalyst-Ionomer Interactions in Polymer Electrolyte Membrane Fuel Cells, Jayson Foster , <i>S. Zaccarine</i> , <i>M. Dzara</i> , Colorado School of Mines, USA; <i>C. Baez-Cotto</i> , National Renewable Energy Laboratory; <i>S. Kim</i> , Colorado School of Mines, USA; <i>M. Batool</i> , <i>J. Jankovic</i> , University of Connecticut; <i>M. Ulsh</i> , <i>S. Mauger</i> , National Renewable Energy Laboratory; <i>S. Pylypenko</i> , Colorado School of Mines, USA	

Monday Afternoon, November 7, 2022

Vacuum Technology Division Room 301 - Session VT-MoA Vacuum Technology for Accelerators Moderators: Giulia Lanza , SLAC National Accelerator Laboratory, Yevgeniy Lushtak , SAES Getters USA		MEMS and NEMS Technical Group Room 302 - Session MN+2D-MoA Emerging Materials and Structures for MEMS/NEMS Devices Moderators: Azadeh Ansari , Georgia Institute of Technology, Yanan Wang , University of Nebraska - Lincoln	
1:40pm	INVITED: VT-MoA-1 Developments of the Vacuum Systems Required for the Electron Ion Collider, Charles Hetzel , Brookhaven National Laboratory		INVITED: MN+2D-MoA-1 Phononic Crystals based on Two-Dimensional Materials, Yanan Wang , University of Nebraska - Lincoln
2:00pm			
2:20pm	INVITED: VT-MoA-3 Vacuum System of the MAX IV 3 GeV Storage Ring: Design and Performance, Marek Grabski , M. Grabski , Max IV Laboratory, Sweden		INVITED: MN+2D-MoA-3 Scaling Acoustics into mm-Wave: Higher-Order Lamb Mode Devices in Piezoelectric Thin Films, Ruo Chen Lu , J. Kramer , S. Cho , O. Barrera , The University of Texas at Austin
2:40pm			
3:00pm	VT-MoA-5 Fabrication and Assembly Status of the APS-Upgrade Storage Ring Vacuum System, Jason Carter , O. Mulvany , G. Wiemerslage , Argonne National Laboratory		INVITED: MN+2D-MoA-5 AlScN Piezoelectric Metamaterials for Next Generation RF Systems, C. Cassella , Dan Zhao , Northeastern University
3:20pm			
3:40pm	BREAK		BREAK
4:00pm	INVITED: VT-MoA-8 CW Superconducting Linac for the LCLS-II HE Free Electron Laser at SLAC, Marc Ross , SLAC National Accelerator Laboratory		INVITED: MN+2D-MoA-8 Fabrication, Actuation and Control of 3D-Printed Microscale Robots, Azadeh Ansari , The Georgia Institute of Technology
4:20pm			
4:40pm	VT-MoA-10 Upgrades for the Jefferson Lab Injector and Linac Accelerator Vacuum Systems, Marcy Stutzman , Thomas Jefferson National Accelerator Facility		MN+2D-MoA-10 Fabrication of Resistor-based Zinc Devices using Selective Chemical Deoxidation of Screen Printed Zinc Inks by Inkjet Printing, A. Radwan , Case Western Reserve University; Y. Sui , University of Colorado at Boulder; Christian Zorman , Case Western Reserve University
5:00pm	VT-MoA-11 Vacuum Leak Detection with Variational Smoothing for Vacuum Process Chamber, Taekyung Ha , PSK, Republic of Korea		MN+2D-MoA-11 Mechanically Tunable One-Dimensional Photonic Crystals Fabricated by Two-Photon Polymerization, Victoria P. Stinson , N. Shuchi , M. McLamb , G. Boreman , T. Hofmann , University of North Carolina at Charlotte

Monday Afternoon, November 7, 2022

Room 303		
1:40pm		2D Materials Technical Group Session 2D+AS+SS-MoA 2D Materials: Defects, Dopants, Edges, Functionalization, and Intercalation Moderators: Chih-Kang (Ken) Shih , University of Texas at Austin, Young-Woo Son , Korea Institute for Advanced Study, Republic of Korea
2:00pm		
2:20pm	2D+AS+SS-MoA-3 Effect of Defects in 2D Materials on the Dielectric BREAK down, <i>Abdulrahman H. Basher, M. Lanza, U. Schwingenschlogl</i> , King Abdullah University of Science and Technology (KAUST), Saudi Arabia	
2:40pm	2D+AS+SS-MoA-4 Palladium Nucleation and Alloying at the WTe ₂ (001) Surface, <i>Prescott E. Evans, P. Sushko, Z. Dohnálek</i> , Physical and Computational Sciences Directorate and Institute for Interfacial Catalysis, Pacific Northwest National Laboratory	
3:00pm	2D+AS+SS-MoA-5 Advanced Doping Schemes for 2D Nb:WS ₂ for Catalysis and Electronics, <i>Jeff Schulpen, C. Lam, W. Kessels, M. Verheijen</i> , Eindhoven University of Technology, The Netherlands; <i>A. Bol</i> , University of Michigan, Ann Arbor	
3:20pm		
3:40pm	BREAK	
4:00pm	INVITED: 2D+AS+SS-MoA-8 Atomic Imaging of Dynamic Behaviour at 2D Material Solid-Solid and Solid-Liquid Interfaces, <i>Sarah Haigh</i> , University of Manchester, UK	
4:20pm		
4:40pm	2D+AS+SS-MoA-10 Electrodeposition of Nanofiberous H-Type MnO ₂ Birnessite on Epitaxial Graphene Silicon Carbide Heterostructures, and transformation to Alkali Birnessites (Na, Li, K) via Simple Intercalation, <i>Michael Pedowitz, D. Lewis, K. Daniels</i> , University of Maryland, College Park	
5:00pm	2D+AS+SS-MoA-11 Signature of Coexistence of Ferroelectricity and Ferromagnetism in a Quantum Material, <i>I-Hsuan Kao, S. Yuan, J. Katoch, S. Singh</i> , Carnegie Mellon University	

Monday Afternoon, November 7, 2022

Room 304		
1:40pm	INVITED: NS1+AS+EM-MoA-1 Large Volume 3D Biological Imaging with Electron and Cryo-Super-Resolution Microscopy, <i>Harald Hess</i> , HHMI, Janelia	Nanoscale Science and Technology Division Session NS1+AS+EM-MoA Correlative Microscopy for Nanoscale Characterization Moderators: Sidney Cohen , Weizmann Institute of Science, Israel, Georg Fantner , EPFL, Switzerland
2:00pm		
2:20pm	NS1+AS+EM-MoA-3 The Role of SnO ₂ Processing on Ionic Migration in Multi-Halide Perovskites, <i>Holland Hysmith</i> , University of Tennessee Knoxville; <i>S. Park</i> , National Renewable Energy Laboratory; <i>A. Ievlev</i> , <i>Y. Liu</i> , Oak Ridge National Laboratory; <i>K. Zhu</i> , National Renewable Energy Laboratory; <i>M. Ahmadi</i> , University of Tennessee Knoxville; <i>J. Berry</i> , National Renewable Energy Laboratory; <i>O. Ovchinnikova</i> , Oak Ridge National Laboratory	
2:40pm	NS1+AS+EM-MoA-4 Nanoplastic Arrays – from Chaotic Measurements to New Order, <i>A. Madison</i> , <i>D. Westly</i> , <i>R. Ilic</i> , <i>C. Copeland</i> , <i>A. Pintar</i> , <i>C. Camp</i> , <i>J. Liddle</i> , Samuel M. Stavis , National Institute of Standards and Technology (NIST)	
3:00pm	NS1+AS+EM-MoA-5 Development of Nanoendoscopy-AFM for Visualizing Intracellular Nanostructures of Living Cells, <i>Keisuke Miyazawa</i> , Kanazawa University, Japan; <i>M. Penedo</i> , EPFL, Switzerland; <i>N. Okano</i> , <i>H. Furusho</i> , <i>T. Ichikawa</i> , <i>M. Shahidul Alam</i> , <i>K. Miyata</i> , Kanazawa University, Japan; <i>C. Nakamura</i> , AIST, Japan; <i>T. Fukuma</i> , Kanazawa University, Japan	
3:20pm	NS1+AS+EM-MoA-6 Nanoplastic Arrays – from Chaotic Measurements to New Order, <i>A. Madison</i> , <i>D. Westly</i> , <i>R. Ilic</i> , <i>C. Copeland</i> , <i>A. Pintar</i> , <i>C. Camp</i> , <i>J. Liddle</i> , Samuel M. Stavis , National Institute of Standards and Technology (NIST)	
3:40pm	BREAK	Nanoscale Science and Technology Division Session NS2+AP+BI-MoA Fabrication and Operation of Nano-Systems Moderators: David Czaplewski , Argonne National Laboratory
4:00pm	INVITED: NS2+AP+BI-MoA-8 Control of Color Centers in Diamond using Photonic and Phononic Crystals, <i>Kazuhiro Kuruma</i> , Harvard University	
4:20pm		
4:40pm	NS2+AP+BI-MoA-10 Scalable Preparation of Intrinsically Chiral Metal Surfaces for Enantioselective Processes, <i>Nisha Shukla</i> , <i>A. Gellman</i> , Carnegie Mellon University, USA	
5:00pm	NS2+AP+BI-MoA-11 Wrinkle-Induced, Scale-Dependent Mechanical Properties in Nanometer Thick Films, <i>Jian Zhou</i> , <i>N. Moldovan</i> , <i>L. Stan</i> , <i>J. Wen</i> , <i>D. Jin</i> , Argonne National Lab; <i>D. Lopez</i> , Pennsylvania State University; <i>D. Czaplewski</i> , Argonne National Lab	

Monday Afternoon, November 7, 2022

Manufacturing Science and Technology Group Room 305 - Session MS+AP+AS+TF-MoA Advanced Characterization and Metrology for 3D and ML for Microelectronics Materials Discovery Moderators: Alain Diebold, SUNY Polytechnic Institute, Jeremy Mehta, U.S. Department of Energy		Plasma Science and Technology Division Room 315 - Session PS+AS-MoA Plasma Chemistry and Catalysis Moderators: Michael Gordon, University of California at Santa Barbara, Floran Peeters, LeydenJar Technologies, Netherlands	
1:40pm	INVITED: MS+AP+AS+TF-MoA-1 Semiconductor Metrology for Dimensional and Materials Scaling, <i>Bryan Barnes</i> , NIST		PS+AS-MoA-1 Study of Plasma-Catalyst Surface Interactions for Nitrogen Oxidation, <i>Michael Hinshelwood, Y. Li, G. Oehrlein</i> , University of Maryland College Park
2:00pm			PS+AS-MoA-2 Investigation of the Interaction Between Non-Thermal Plasma Activated Nitrogen and Metal Surfaces, <i>Garam Lee, C. Yan, W. Schneider, D. Go, C. O'Brien</i> , University of Notre Dame
2:20pm	INVITED: MS+AP+AS+TF-MoA-3 Towards a Digital Twin for Spatiotemporal Experiments, <i>Subramanian Sankaranarayanan</i> , Argonne National Laboratory		PS+AS-MoA-3 Long-Term Degradation of PTFE in a Low Temperature Oxygen Plasma, <i>Tobias Wagner, T. Zeller, M. Rohnke, J. Janek</i> , Institute of Physical Chemistry, Justus Liebig University Giessen, Germany
2:40pm			PS+AS-MoA-4 Study of Elastomer Degradation in Processing and Cleaning Plasma Chemistries, <i>Nicholas Connolly, D. Barlaz, R. Garza, D. Ruzic, M. Sankaran</i> , University of Illinois Urbana-Champaign; <i>N. Koliopoulos, G. Lunardi</i> , DuPont Precision Parts & Solutions
3:00pm	INVITED: MS+AP+AS+TF-MoA-5 Autonomous Scanning Probe Microscopy: from Streaming Image Analysis to Learning Physics, <i>S. Kalinin, Yongao Liu</i> , Oak Ridge National Laboratory		PS+AS-MoA-5 Utilizing Optical Spectroscopy to Explore Mechanisms of Plasma-Assisted Catalysis in Model Exhaust Systems, <i>Joshua Blechle</i> , Wilkes University
3:20pm			PS+AS-MoA-6 Gasification of Carbon and CO ₂ Into CO at Low Vacuum Through Combined Plasma and Heating Exposure, <i>Edwin Devid</i> , DIFFER, Netherlands; <i>R. Van de Sanden</i> , DIFFER & EIRES, Netherlands; <i>M. Gleeson</i> , DIFFER, Netherlands
3:40pm	BREAK		BREAK
4:00pm	INVITED: MS+AP+AS+TF-MoA-8 New in-Line Metrology for Advanced Semiconductor Nodes, <i>Cornel Bozdog</i> , Onto Innovation		PS+AS-MoA-8 Investigation of Oxygen Permeation Enhancement with He/O ₂ Plasma and SOEC Interaction, <i>Xingyu Chen</i> , Dutch Institute for Fundamental Energy Research, China; <i>F. Peeters, F. Smits, W. Bongers, R. van de Sanden</i> , Dutch Institute for Fundamental Energy Research, Netherlands
4:20pm			PS+AS-MoA-9 Application of Plasma-Liquid Chemistry to Carbon-Carbon Bond Formation via Pinacol Coupling Reaction, <i>Scott Dubowsky, J. Wang</i> , University of Illinois at Urbana-Champaign; <i>N. Üner</i> , Middle East Technical University, Turkey; <i>J. Moore, M. Sankaran</i> , University of Illinois at Urbana-Champaign
4:40pm	INVITED: MS+AP+AS+TF-MoA-10 Applications of Artificial Intelligence AI and Machine Learning ML to Semiconductor Materials Discovery and Optimization, <i>Brian Valentine</i> , DOE		PS+AS-MoA-10 Understanding Temperature Inhibition of Methane Conversion in DBD Plasma Using Electrical Characterization and Optical Emission Spectroscopy, <i>Ibukunoluwa Akintola, G. Rivera-Castro, J. Yang, J. Hicks, D. Go</i> , University of Notre Dame
5:00pm			PS+AS-MoA-11 Optimization of CO ₂ Dissociation Efficiency and Conversion in Vortex-Stabilized Microwave Plasmas by Effluent Nozzles, <i>Cas van Deursen</i> , DIFFER, Netherlands; <i>H. van Poyer</i> , DIFFER, Belgium; <i>Q. Shen</i> , DIFFER, China; <i>W. Bongers</i> , DIFFER, Netherlands; <i>F. Peeters</i> , Technical University of Eindhoven, Netherlands; <i>F. Smits, R. van de Sanden</i> , DIFFER, Netherlands

Monday Afternoon, November 7, 2022

Thin Films Division Room 316 - Session TF+EM-MoA Thin Films for Optics, Photonics, Metamaterials, and Soft Electronics Moderator: April Jewell, Jet Propulsion Laboratory		Atomic Scale Processing Focus Topic Room 317 - Session AP+AS+EL+MS+SS-MoA Advancing Metrology and Characterization to Enable Atomic Scale Processing Moderators: Steven M. George, University of Colorado at Boulder, Rudy Wojteki, IBM Almaden Research Center	
1:40pm	INVITED: TF+EM-MoA-1 Strategies for Achieving Tunable Infrared Emission in III-V Materials, <i>Michelle Povinelli, H. Chae, A. Ghanekar, B. Shrewsbury, R. Ahsan, R. Kapadia</i> , University of Southern California	INVITED: AP+AS+EL+MS+SS-MoA-1 Nanoscale Chemical Analysis and Mapping of Atomic and Molecular Scale Processes via Infrared Photo-Induced Force Microscopy, <i>Sung Park</i> , Molecular Vista	
2:00pm			
2:20pm	TF+EM-MoA-3 Effects of Ultra-Thin Conformal Coatings on the Spectral Location of Reciprocal Plasmonic Metasurface Resonances, <i>Michael McLamb, V. Stinson, N. Shuchi, G. Boreman, T. Hofmann</i> , University of North Carolina at Charlotte	AP+AS+EL+MS+SS-MoA-3 Area-Selective Deposition/Patterning of Boron Carbide Layers: Etch Studies, <i>Raja Sekhar Bale, R. Thapa, A. Caruso</i> , University of Missouri-Kansas City; <i>J. Bielefeld, S. King</i> , Intel Corporation; <i>M. Paquette</i> , University of Missouri-Kansas City	
2:40pm	TF+EM-MoA-4 Integrating Structural Colors with Additive Manufacturing Using Atomic Layer Deposition, <i>Tae Cho, B. Rorem, N. Farjam, J. Lenef, K. Barton, J. Guo, N. Dasgupta</i> , University of Michigan, Ann Arbor	AP+AS+EL+MS+SS-MoA-4 Smoothing of Surfaces by Atomic Layer Deposition and Etching, <i>S. Gerritsen, N. Chittock, V. Vandalon, M. Verheijen</i> , Eindhoven University of Technology, The Netherlands; <i>H. Knoops</i> , Oxford Instruments Plasma Technology, Netherlands; <i>E. Kessels, Adrie Mackus</i> , Eindhoven University of Technology, The Netherlands	
3:00pm	TF+EM-MoA-5 Biosensor Encapsulation via Photoinitiated Chemical Vapor Deposition (piCVD), <i>Ruolan Fan, T. Andrew</i> , University of Massachusetts - Amherst	AP+AS+EL+MS+SS-MoA-5 Thermal Atomic Layer Etching of Amorphous Aluminum Nitride Using Sf_6 Plasma and $Al(CH_3)_3$, <i>Haozhe Wang, A. Houssain, D. Catherall, A. Minnich</i> , California Institute of Technology	
3:20pm	TF+EM-MoA-6 Harnessing Wide-Range, Highly Stable Pressure Sensitivity Via PEDOT-Cl Vapor Printed Textiles for Health Monitoring, <i>S. Zohreh Homayounfar, A. Kiaghadi, D. Ganesan, T. Andrew</i> , University of Massachusetts, Amherst	AP+AS+EL+MS+SS-MoA-6 Thermal Atomic Layer Etching using MoF6-H ₂ O precursors, <i>Anil Mane, J. Elam</i> , Argonne National Laboratory, USA	
3:40pm	BREAK	BREAK	
4:00pm		INVITED: AP+AS+EL+MS+SS-MoA-8 The Thinner, the Better - Characterization of Ultra-Thin Films by Low Energy Ion Scattering (Leis), <i>Thomas Grehl</i> , IONTOF GmbH, Germany	
4:20pm			
4:40pm		AP+AS+EL+MS+SS-MoA-10 Intrinsic Area Selective Atomic Layer Deposition of MoS ₂ Thin Films, <i>J. Soares, Wesley Jen, S. Hues</i> , Boise State University; <i>J. Wensele</i> , Micron Technology Inc; <i>E. Graugnard</i> , Boise State University	
5:00pm		AP+AS+EL+MS+SS-MoA-11 In Situ Measurements of Surface and Film Stress during Atomic Layer Deposition of Al ₂ O ₃ and AlF ₃ using Wafer Curvature Techniques, <i>Ryan B. Vanfleet, E. Sorinto, A. Cavanagh, V. Bright, S. George</i> , University of Colorado at Boulder	

Monday Afternoon, November 7, 2022

Biomaterial Interfaces Division Room 318 - Session BI+AS+HC+SS-MoA Bioinspired Materials and Applications Moderators: Sally M. McArthur , Daeking University, Australia, Tobias Weidner , Aarhus University, Denmark		Surface Science Division Room 319 - Session SS+AS-MoA Molecular Organization at Surfaces Moderator: Donna Chen , University of South Carolina	
1:40pm	INVITED: BI+AS+HC+SS-MoA-1 Bioinspired Approaches to Prevent Microbes and Fouling on the Surface of Membranes, <i>R. Shah, T. Goodwin, Jessica Schiffman</i> , University of Massachusetts Amherst		
2:00pm			
2:20pm	BI+AS+HC+SS-MoA-3 Antibiotic-Free Liquid Layers Decrease Bacterial Adhesion on Catheters In Vivo, <i>C. Fong</i> , University of Maine; <i>M. Andersen, A. Flores Mireles</i> , Notre Dame; Caitlin Howell , 5737 Jenness Hall		
2:40pm	BI+AS+HC+SS-MoA-4 Discovery of Cell Instructive Materials for Next Generation Medical Devices: Exploring Microtopography and 3D Shapes, Morgan Alexander , University of Nottingham, UK	SS+AS-MoA-4 Protein Structure and Dynamics at the Air-Water Interface Using Sum Frequency Generation Simulations, Kris Strunge , Aarhus University, Denmark; <i>Y. Nagata</i> , Max Planck Institute for Polymer Research, Germany, Denmark; <i>T. Weidner</i> , Aarhus University, Denmark	
3:00pm	BI+AS+HC+SS-MoA-5 Development of a Method for Visualizing Nanometer-Scale Three-Dimensional Structures of Chromosomes by Three-Dimensional Atomic Force Microscopy, Ryohei Kojima , <i>K. Miyazawa, K. Teramae</i> , Kanazawa University, Japan; <i>T. Sumikama</i> , PRESTO, JST, Japan; <i>M. Meguro</i> , Research Center for Experimental Modeling of Human Disease, Kanazawa University, Japan; <i>K. Imadate</i> , Osaka University, Japan; <i>N. Okano</i> , Kanazawa University, Japan; <i>S. Horike</i> , Research Center for Experimental Modeling of Human Disease, Kanazawa University, Japan; <i>K. Hirahara</i> , Osaka University, Japan; <i>T. Fukuma</i> , Kanazawa University, Japan	SS+AS-MoA-5 Confinement at Solid-solid Interfaces Enhances Crystallinity of COF Thin Films, Joshua Roys ¹ , <i>J. O'Brien, N. Stucchi</i> , Clarkson University; <i>A. Hill</i> , St. Lawrence University; <i>J. Ye, R. Brown</i> , Clarkson University	
3:20pm	BI+AS+HC+SS-MoA-6 Mass-Manufactured Surface Textures Kill Bacteria as Part of Low-Cost Water Purification Devices, Liza White , <i>C. Howell</i> , University of Maine	SS+AS-MoA-6 Metal Tetraphenylporphyrin Induced Organic/Metal Interactions, Isheta Majumdar , <i>F. Goto, A. Calloni, M. Finazzi, L. Duò, F. Ciccacci, G. Bussetti</i> , Politecnico di Milano, Italy	
3:40pm	BREAK	BREAK	
4:00pm	INVITED: BI+AS+HC+SS-MoA-8 Nature-inspired Materials for Energy and Environmental Sustainability, Tak Sing Wong , The Pennsylvania State University		
4:20pm			
4:40pm	BI+AS+HC+SS-MoA-10 Programmable Biomimetic Light-Harvesting Systems: Quantum-Optical Control of Light-Matter Interactions, <i>A. Lishchuk, E. Csanyi</i> , Graham Leggett , University of Sheffield, UK	SS+AS-MoA-10 Characterization of Oxygen Evolution from Rh(111), Maxwell Gillum , <i>E. Jamka, C. Grytsyshyn-Giger, F. Lewis, A. Kerr, D. Killelea</i> , Loyola University Chicago	
5:00pm	BI+AS+HC+SS-MoA-11 Microfluidic QCM with Ultrahigh Q-Factor: A New Paradigm for Acoustic Biosensing?, <i>Y. Zhao</i> , Duke University; <i>Z. Parlak</i> , Qatch LLC.; <i>M. Yu</i> , Duke University; <i>D. French</i> , Qatch LLC.; <i>W. Aquino</i> , Stefan Zauscher , Duke University	SS+AS-MoA-11 Developing a Mechanistic Understanding of Nb ₃ Sn Growth: Sn Adsorption and Diffusion Behavior on (3×1)-O Nb(100), Rachael Farber , University of Kansas; <i>S. Willson</i> , University of Chicago; <i>A. Hire, R. Hennig</i> , University of Florida; <i>S. Sibener</i> , University of Chicago	

Monday Afternoon, November 7, 2022

<p>Applied Surface Science Division Room 320 - Session AS+CA+EL+EM+LS+SE+SS-MoA Quantitative Surface Analysis Moderators: Jordan Lerach, PPG Industries, Hong Piao, FUJIFILM Electronic Materials USA., Inc.</p>		<p>Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Room 321 - Session HC+AS+SS-MoA Advances in Materials and Analysis in Heterogeneous Catalysis I Moderators: Dan Killelea, Loyola University Chicago, Swetlana Schauer, Christian-Albrechts-University Kiel, Germany</p>
1:40pm	<p>INVITED: AS+CA+EL+EM+LS+SE+SS-MoA-1 Hard Targets: Developing Tools for Quantitative HAXPES, David Cant, National Physical Laboratory, UK</p>	
2:00pm		<p>HC+AS+SS-MoA-2 Electrocatalytic Activity of Size-Selected Sub-Nano Pt Clusters Toward the Hydrogen Evolution Reaction, Tsugunosuke Masubuchi, University of Utah; S. Kumari, Z. Zhang, P. Sautet, A. Alexandrova, University of California at Los Angeles; H. White, S. Anderson, University of Utah</p>
2:20pm	<p>AS+CA+EL+EM+LS+SE+SS-MoA-3 Process-Induced Reactions in Interfaces of High-K/Metal Gate Stacks Studied Using HAXPES, Thierry Conard, A. Vanleenhove, F. Mascarenhas, I. Hoflijck, I. Vaesen, IMEC, Belgium</p>	<p>INVITED: HC+AS+SS-MoA-3 In situ X-ray Absorption Spectroscopy to Probe the Dynamics of Ni₃Fe catalysts: Implications for Dry Methane Reforming, L. Cruz, University of California, Riverside; J. Hong, Stanford Institute for Materials and Energy Sciences, SLAC National Accelerator Laboratory; S. Shah, University of California - Riverside; S. Bare, Stanford Institute for Materials and Energy Sciences, SLAC National Accelerator Laboratory; Kandis Leslie Gilliard-AbdulAziz, University of California - Riverside</p>
2:40pm	<p>AS+CA+EL+EM+LS+SE+SS-MoA-4 Quantification and Reporting of XPS Data Taken Under Near Ambient Pressure Conditions – Chances and Challenges in Acquisition Speed, Beam Damage, Sensitivity, Reliability, Reproducibility and Repeatability, P. Dietrich, Andreas Thissen, SPECS Surface Nano Analysis GmbH, Germany</p>	
3:00pm	<p>AS+CA+EL+EM+LS+SE+SS-MoA-5 The Modern Spectrometer – Reliable, Repeatable and Relatable, S. Coultas, J. Counsell, Kratos Analytical Limited, UK; Christopher Moffitt, Kratos Analytical Inc.; C. Blomfield, Kratos Analytical Limited, UK</p>	<p>INVITED: HC+AS+SS-MoA-5 Photocatalysis between High-Purity and Applied Reaction Conditions: Understanding Carbon Dioxide Reduction on the Molecular Level, Jennifer Strunk, Leibniz Institute for Catalysis, Germany</p>
3:20pm	<p>AS+CA+EL+EM+LS+SE+SS-MoA-6 Modulation with Atomic Number of the Shirley Background of the Photoemission Spectra of Transition Metals, Alberto Herrera-Gomez, D. Guzman-Bucio, CINVESTAV-Queretaro, Mexico; D. Cabrera-German, M. Mayorga-Garay, O. Cortazar-Martinez, J. Torres-Ochoa, A. Carmona-Carmona, CINVESTAV-Unidad Queretaro, Mexico; M. Gonzalez Reyna, UNAM-Mexico; V. Crist, XPS Library; C. Ospina-Ocampo, Cinvestav-Unidad Queretaro, Mexico</p>	
3:40pm	BREAK	BREAK
4:00pm	<p>AS+CA+EL+EM+LS+SE+SS-MoA-8 Thin Film Analysis by XPS: Quantitative Modeling of Sputtering and Depth Profile Data, Lev Gelb, A. Walker, University of Texas at Dallas</p>	<p>INVITED: HC+AS+SS-MoA-8 Electrocatalytic Nitrate Reduction: Controlling Adsorbate Affinity to Tailor Reaction Products, Kelsey Stoerzinger, Oregon State University</p>
4:20pm	<p>AS+CA+EL+EM+LS+SE+SS-MoA-9 Understanding and Controlling Sample Degradation on Modern XPS Spectrometers, David Morgan, Cardiff University, UK</p>	
4:40pm	<p>AS+CA+EL+EM+LS+SE+SS-MoA-10 XPS Intensity Calibration and Validation Using Polyethylene and Ionic Liquids, Benjamin Reed, National Physical Laboratory (NPL), UK; J. Radnik, Bundesanstalt für Materialforschung und -prüfung (BAM), Germany; A. Shard, National Physical Laboratory (NPL), UK</p>	<p>HC+AS+SS-MoA-10 Energetics and Growth Modes of Ni and Pd Nanoparticles on Graphene / Ni(111), Kun Zhao, J. Rumpitz, N. Janulaitis, C. Campbell, University of Washington</p>
5:00pm		<p>HC+AS+SS-MoA-11 Size Dependent CO₂ Reduction Activity and Selectivity of Ag Nanoparticle Electrocatalysts in sub-5 nm Regime, Xingyi Deng, NETL/LRST; D. Alfonso, NETL; T. Nguyen-Phan, NETL/LRST; D. Kauffman, NETL</p>

Tuesday Morning, November 8, 2022

Vacuum Technology Division Room 301 - Session VT-TuM Vacuum Technology for Large Vacuum Systems Moderators: Chandra Romel, Consultant, Marcy Stutzman, Jefferson Lab		Chemical Analysis and Imaging Interfaces Focus Topic Room 302 - Session CA+AS+SE+SS-TuM Progress and Challenges in Industrial Applications Moderators: Alex Tselev, University of Aveiro, Portugal, Xiao-Ying Yu, Oak Ridge National Laboratory, USA	
8:00am	INVITED: VT-TuM-1 Vacuum Materials for the Next Generation Gravitational Wave Detectors, <i>Ivo Wevers, G. Bregliozzi, P. Chiggiato, M. Rimoldi, C. Scarcia, M. Taborelli, CERN, Switzerland</i>	INVITED: CA+AS+SE+SS-TuM-1 Progress on Commercializing Doped Diamond Materials and Devices, <i>Anna Zaniewski, Advent Diamond</i>	
8:20am			
8:40am	INVITED: VT-TuM-3 Vacuum Design for a Cryogenic Gravitational Wave Detector, <i>Rana Adhikari, C. Wipf, California Institute of Technology</i>	INVITED: CA+AS+SE+SS-TuM-3 Advanced in Situ Transmission Electron Microscopy: A Powerful Tool for Materials Science, Catalysis, Energy Storage & Lifescience Applications, <i>Hugo Pérez-Garza, DENSolutions, Netherlands</i>	
9:00am			
9:20am	VT-TuM-5 CSI; the New Space Calibration Facility at TNO, <i>Freek Molkenboer, R. Jansen, TNO Science and Industry, the Netherlands; W. van Werkhoven, T. Luijckx, W. Mulckhuyse, tno Science and Industry, the Netherlands</i>	CA+AS+SE+SS-TuM-5 Chemical Analysis Using Laboratory-Based Hard X-Ray Photoelectron Spectroscopy: The Binding Energy Reference Challenge, <i>A. Vanleenhove, F. Mascarenhas, Thierry Conard, IMEC, Belgium</i>	
9:40am	VT-TuM-6 The Challenges of Heating a Sample in Vacuum, <i>H. Bekman, Johannes Velthuis, F. Molkenboer, TNO Science and Industry, the Netherlands</i>		
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall	
10:20am			
10:40am			
11:00am	INVITED: VT-TuM-10 Design of ITER Roughing Pump System, <i>Charles Smith, S. Smith, US ITER</i>	INVITED: CA+AS+SE+SS-TuM-10 Integrating Spatial Multiomics Using Giant Cluster Imaging Mass Spectrometry at the Single-Cell Level, <i>Hua Tian, University of Pittsburgh</i>	
11:20am			
11:40am	VT-TuM-12 Monte Carlo Simulation Studies to Support an Integrated Design for the Cryogenic Vacuum Systems of the Einstein Telescope, <i>Xueli Luo, Karlsruhe Institute of Technology, Institute for Technical Physics, Germany; S. Hanke, K. Battes, C. Day, Karlsruhe Institute of Technology (KIT), Germany</i>	INVITED: CA+AS+SE+SS-TuM-12 Atom Probe Tomography Using Wavelength-Tunable, Femtosecond-Pulsed Coherent Extreme Ultraviolet Radiation, <i>Ann Chiamonti, B. Caplins, J. Garcia, L. Miaja-Avila, N. Sanford, National Institute of Standards and Technology (NIST)</i>	
12:00pm			

Tuesday Morning, November 8, 2022

	<p>Mini Symposium on 2D Materials Synthesis Room 303 - Session MS-2DMS+2D+EM+NS-TuM Direct Growth of 2D Materials, Including CVD and MBE Moderators: Matthias Batzill, University of South Florida, Erica Douglas, Sandia National Laboratories, Maryam Ebrahimi, Lakehead University, Canada, Kathleen McCreary, Naval Research Laboratory</p>	<p>Spectroscopic Ellipsometry Focus Topic Room 304 - Session EL+AS+EM-TuM Optical Characterization of Thin Films and Nanostructures Moderators: Tino Hofmann, University of North Carolina at Charlotte, Mathias Schubert, University of Nebraska - Lincoln</p>
8:00am	<p>INVITED: MS-2DMS+2D+EM+NS-TuM-1 Efficient Control of 2D Magnetism, Cheng Gong, University of Maryland</p>	<p>INVITED: EL+AS+EM-TuM-1 Femtosecond Time Resolved Pump-Probe Spectroscopic Ellipsometry – Applications and Challenges, Rüdiger Schmidt-Grund, TU Ilmenau, Germany</p>
8:20am		
8:40am	<p>INVITED: MS-2DMS+2D+EM+NS-TuM-3 Epitaxial Growth of Transition Metal Dichalcogenide Monolayers for Large Area Device Applications, J. Redwing, Thomas V. Mc Knight, The Pennsylvania State University</p>	<p>EL+AS+EM-TuM-3 Evolution of Anisotropy and Order of Band-to-Band Transitions, Excitons, Phonons, Static and High Frequency Dielectric Constants Including Strain Dependencies in Alpha and Beta Phase ($Al_xGa_{1-x}O_3$), Megan Stokey, R. Korlacki, M. Hilfiker, T. Gramer, J. Knudtson, University of Nebraska-Lincoln; S. Richter, Lund University, Sweden; S. Knight, Linköping University, Sweden; A. Mock, Weber State University; A. Mauze, Y. Zhang, J. Speck, University of California Santa Barbara; R. Jinno, Y. Cho, H. Xing, D. Jena, Cornell University; E. Ahmadi, University of Michigan; V. Darakchieva, Lund University, Sweden; M. Schubert, University of Nebraska-Lincoln</p>
9:00am		<p>EL+AS+EM-TuM-4 Engineering the Bi-Signate Broadband Enhanced Chirality Revealed by All Dielectric <i>Nanoboomerang</i> Structure, Ufuk Kilic, M. Hilfiker, A. Ruder, S. Wimer, S. G. Kilic, E. Schubert, C. Argyropoulos, M. Schubert, University of Nebraska-Lincoln</p>
9:20am	<p>MS-2DMS+2D+EM+NS-TuM-5 Formation of Transition Metal Dichalcogenide Janus Monolayers and 2D Alloys Through Non-Equilibrium Synthesis and Processing Approaches, Kai Xiao, S. Harris, Y. Lin, C. Liu, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory; G. Duscher, University of Tennessee Knoxville; M. Yoon, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA; L. Liang, C. Rouleau, A. Puretzky, D. Geohegan, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory</p>	<p>EL+AS+EM-TuM-5 Structural Properties and Optical Constants of CaF_2 at 300 K from 0.03 to 6.5 eV, Jaden R. Love, N. Samarasingha, C. Armenta, S. Zollner, New Mexico State University; H. Kim, National Institute of Aerospace (NIA)</p>
9:40am	<p>MS-2DMS+2D+EM+NS-TuM-6 Effects of Deposition Technique on Monolayer MoS_2 and WS_2, Ama Agyapong, S. Mohnhey, Pennsylvania State University</p>	<p>EL+AS+EM-TuM-6 Optical Dielectric Function of a Solution-Processable Thiazolothiazole Thin Films Determined by Spectroscopic Ellipsometry, Nuren Shuchi, J. Mower, V. Stinson, . McLamb, G. Boreman, M. Walter, T. Hofmann, University of North Carolina at Charlotte</p>
10:00am	<p>BREAK - Complimentary Coffee in Exhibit Hall</p>	<p>BREAK - Complimentary Coffee in Exhibit Hall</p>
10:20am		
10:40am		
11:00am		<p>EL+AS+EM-TuM-10 Bandgap Engineering of Polycrystalline Ge-doped Sb_2Se_3 Thin-Film: Surface and Optical Properties, Sanghyun (Philip) Lee, University of Kentucky; M. McInerney, Rose-Hulman Institute of Technology</p>
11:20am		<p>EL+AS+EM-TuM-11 Optical Properties of Orthorhombic $LiGaO_2$ from Far-Infrared to Vacuum Ultraviolet, Teresa Gramer, E. Williams, M. Stokey, R. Korlacki, U. Kilic, M. Hilfiker, M. Schubert, University of Nebraska - Lincoln</p>
11:40am	<p>MS-2DMS+2D+EM+NS-TuM-12 The Growth of $Nb_{1+x}Se_2$ by Molecular Beam Epitaxy, Peter Litwin, S. Jaszewski, J. Ihlefeld, S. McDonnell, University of Virginia</p>	<p>EL+AS+EM-TuM-12 Optical and X-ray Characterization of Ge-Sn Alloys on GaAs, Haley Woolf, C. Emminger, C. Armenta, New Mexico State University; M. Kim, QuantTera; S. Zollner, New Mexico State University</p>
12:00pm	<p>MS-2DMS+2D+EM+NS-TuM-13 Formation of 1D and 2D Carbon-Based Nanomaterials on Surfaces, Maryam Ebrahimi, Lakehead University, Canada</p>	<p>EL+AS+EM-TuM-13 Zinc Gallate ($ZnGa_2O_4$) Epitaxial Thin Films: Determination of Optical Properties and Bandgap Estimation Using Spectroscopic Ellipsometry, S. Bairagi, J. Chang, C. Hsiao, R. Magnusson, J. Birch, Linköping University, Sweden; Jinn P Chu, National Taiwan University of Science and Technology, Taiwan; F. Tarntair, National Yang Ming Chiao Tung University, Taiwan; R. Horng, National Yang Ming Chiao Tung University, Taiwan; K. Järrendahl, Linköping University, Sweden</p>

Tuesday Morning, November 8, 2022

	Plasma Science and Technology Division Room 305 - Session PS1+NS-TuM Advanced Plasma Patterning: EUV-Based, Multipatterning and Alternative Patterning Approaches (Imprint, DSA, Etc.) Moderators: Yohei Ishii, Hitachi High Technologies America Inc., Angelique Raley, TEL US	Plasma Science and Technology Division Room 315 - Session PS2+MS-TuM Modelling of Plasmas and Plasma Driven Processes, and Machine Learning Moderators: Mingmei Wang, Lam Research Corporation, David Lishan, Plasma-Therm LLC
8:00am	INVITED: PS1+NS-TuM-1 EUV Patterning: Plasma Processing Innovations for Single Exposure and Multi-Patterning, <i>Katie Lutker-Lee</i> , TEL Technology Center, America, LLC	PS2+MS-TuM-1 Molecular Dynamics Simulation of Oxide and Nitride Etching by CF_3^+ and Cl^+ , <i>Charisse Marie Cagomoc¹</i> , <i>S. Taira, M. Isobe, T. Ito, K. Karahashi</i> , Osaka University, Japan; <i>L. Belau, E. Hudson</i> , Lam Research Corporation; <i>S. Hamaguchi</i> , Osaka University, Japan
8:20am		PS2+MS-TuM-2 Molecular Dynamics Simulations of High-Energy Ion Bombardment ALE Processes for Smooth Surfaces, <i>Joseph Vella</i> , Princeton Plasma Physics Laboratory; <i>D. Humbird</i> , DWH Consulting; <i>D. Graves</i> , Princeton Plasma Physics Laboratory, Department of Chemical and Biological Engineering Princeton University
8:40am	PS1+NS-TuM-3 Reduction of EUV Resist Damage by using Neutral Beam Etching. <i>N. Soo</i> , School of Advanced Materials Science and Engineering, Sungkyunkwan University, Republic of Korea; <i>Geun Young Yeom</i> , School of Advanced Materials Science and Engineering, Sungkyunkwan University / SKKU Advanced Institute of Nano Technology (SAINT), Sungkyunkwan University,	PS2+MS-TuM-3 Analysis of RF Sheath Dynamics in Dual-Frequency Capacitively Coupled Ar Plasmas Using a Two-Dimensional Particle-in-Cell Simulation, <i>Ji Hyun Shin, H. Kim, C. Kim, S. Choi, H. Lee</i> , Pusan National University, Republic of Korea
9:00am	PS1+NS-TuM-4 Numerical Investigation of EUV Induced H_2-O_2 Plasmas and Surface Chemistry, <i>Tugba Piskin</i> , University of Michigan; <i>V. Volynets, S. Nam</i> , Mechatronics Research, Samsung Electronics Co., Ltd, Republic of Korea; <i>H. Lee</i> , Mechatronics Research, Samsung Electronics Co., Ltd., Republic of Korea; <i>M. Kushner</i> , University of Michigan	PS2+MS-TuM-4 Incorporation of Match timing in a Global Plasma Circuit Model, <i>Carl Smith</i> , North Carolina State University; <i>S. Nam, K. Bae, . Lee</i> , Samsung Mechatronics R&D Center, Republic of Korea; <i>S. Shannon</i> , North Carolina State University
9:20am	PS1+NS-TuM-5 Modeling of Shallow Trench Isolation Etch in Self-aligned Double Patterning Process, <i>Shuo Huang, P. Panneerchelvam, C. Huard</i> , KLA Corporation; <i>S. Sridhar, P. Ventzek</i> , Tokyo Electron America; <i>M. Smith</i> , KLA Corporation	INVITED: PS2+MS-TuM-5 Nanosheet GAA Transistor Manufacturing Modeling Study: Build Fundamental Knowledge of SiGe to Si Selective Etching in ClF_3 Gas, <i>Yu-Hao Tsai, M. Wang</i> , TEL Technology Center, America, LLC
9:40am	PS1+NS-TuM-6 Polymer Engineering for High Aspect Ratio Plasma Etching Enabled by Chemistry, <i>Phong Nguyen, S. Biltek, X. Guo, N. Nathan Stafford</i> , American Air Liquide	
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am		
10:40am		
11:00am	INVITED: PS1+NS-TuM-10 Achieving Better Etching Performance with Lower GWP Gases, <i>Nicolas Gosset, T. Hasegawa, V. Gamaleev</i> , Air Liquide Laboratories, Japan	PS2+MS-TuM-10 Study on Spatiotemporal Evolution of Plasma Arcing in Low-Temperature Plasma, <i>Si-jun Kim, C. Cho, M. Choi, Y. Lee, I. Seong, W. Jeong, Y. You</i> , Chungnam National University, Republic of Korea; <i>J. Lee</i> , Samsung Electronics Co., Inc., Republic of Korea; <i>S. You</i> , Chungnam National University and Institute of Quantum Systems (IQS), Republic of Korea
11:20am		PS2+MS-TuM-11 Instabilities in Low Pressure Magnetized Capacitively Coupled Plasmas, <i>Sathya Ganta, K. Bera, S. Rauf</i> , Applied Materials, Inc.; <i>I. Kaganovich</i> , Princeton University Plasma Physics Lab; <i>D. Sydorenko</i> , University of Alberta, Canada; <i>A. Khrabov, T. Powis</i> , Princeton University Plasma Physics Lab; <i>L. Xu</i> , Ruhr Universität Bochum, Germany
11:40am	PS1+NS-TuM-12 Etch Profile Control for High-Aspect-Ratio Amorphous Carbon Mask Layer Etching, <i>Du Zhang, S. Chang, P. Luan, M. Wang</i> , TEL Technology Center, America, LLC	PS2+MS-TuM-12 2D Hybrid Simulation of a CF_4 Plasma in a DF CCP Reactor: Influence of Operating Conditions on Plasma Bulk Properties and Fluxes on the Wafer, <i>Pierre Ducluzaux</i> , LTM/CNRS-UGA, France; STmicroelectronics, France; <i>D. RISTOIU</i> , STmicroelectronics, France; <i>C. Gilles, E. Despiau-Pujo</i> , LTM/CNRS-UGA, France
12:00pm	PS1+NS-TuM-13 A Mask-free and Contactless Plasma Patterning Technique for Interdigitated Back Contact Silicon Heterojunction Solar Cells Fabrication, <i>Junkang Wang, M. Ghosh, P. Bulkin, D. Daineka, P. Roca i Cabarrocas</i> , LPICM-CNRS, École Polytechnique, Institut Polytechnique de Paris, France; <i>S. Filonovich</i> , TotalEnergies GRP, France; <i>J. Alvarez</i> , Laboratoire de Génie Electrique et Electronique de Paris, CNRS, CentraleSupélec, Université Paris-Saclay, France; <i>E. V. Johnson</i> , LPICM-CNRS, École Polytechnique, Institut Polytechnique de Paris, France	PS2+MS-TuM-13 Investigation of N_2 Plasma in Plasma Enhanced Atomic Layer Deposition of Silicon Nitride Using First Principles Calculation, <i>Tsung-Hsuan Yang, T. Wang, G. Hwang</i> , University of Texas at Austin; <i>P. Ventzek, T. Iwao, J. Zhao</i> , Tokyo Electron America Inc.; <i>K. Ishibashi</i> , Tokyo Electron Ltd., Japan

Tuesday Morning, November 8, 2022

Thin Films Division Room 316 - Session TF-TuM Growth in 3D, High Aspect Ratio and Nanostructured Materials Moderators: Richard Vanfleet, Brigham Young University		Atomic Scale Processing Focus Topic Room 317 - Session AP+AS+EM+HI+PS+SS+TF-TuM Area Selective Processing and Patterning II Moderators: Michelle Paquette, University of Missouri-Kansas City, Christophe Vallee, SUNY College of Nanoscale Science and Engineering	
8:00am	INVITED: TF-TuM-1 Tailoring 3-D Nanomaterial Architectures Using ALD: Bridging Scales from Atoms to Bulk, <i>Neil Dasgupta</i> , University of Michigan	INVITED: AP+AS+EM+HI+PS+SS+TF-TuM-1 New Precursors and Approaches to ALD and AS-ALD of Metals, <i>Mikko Ritala</i> , University of Helsinki, Finland	
8:20am			
8:40am	TF-TuM-3 Thin Film Technology and Diagnostics for Multilayered Solid-State Batteries, <i>Victoria Castagna Ferrari, G. Rubloff, D. Stewart</i> , University of Maryland, College Park	AP+AS+EM+HI+PS+SS+TF-TuM-3 Comparing Interface and Bulk Physicochemical Properties of TiO ₂ Deposited by PEALD Assisted by Substrate Biasing on Thermal SiO ₂ and TiN Substrates, for Area Selective Deposition Application, <i>Jennifer Not</i> , LTM - MINATEC - CEA/LETI, France; <i>L. Mazet</i> , STMicroelectronics, France; <i>T. Maindron</i> , Minalogic, France; <i>R. Gassilloud</i> , CEA-LETI, France; <i>M. Bonvalot</i> , LTM - MINATEC - CEA/LETI, France	
9:00am	TF-TuM-4 Interface Mixing in Thin-Film Solid-State Sodium Batteries, <i>Blake Nuwayhid, A. Kozen</i> , University of Maryland; <i>D. Long</i> , Air Force Research Laboratory, USA; <i>G. Rubloff, K. Gregorczyk</i> , University of Maryland	AP+AS+EM+HI+PS+SS+TF-TuM-4 Area Selective Atomic Layer Deposition of SnO ₂ as An Etch Barrier, <i>Xin Yang</i> , University of Texas at Austin; <i>B. Coffey</i> , Lam Research Corp; <i>J. Ekerdt</i> , University of Texas at Austin	
9:20am	TF-TuM-5 Direct CVD Synthesis of MgH ₂ Thin Films and Nanowires by Decomposition of the Novel Magnesium Bis-Diamidodiboranate Precursor, <i>Laurent Souqui, C. Caroff, S. Shrivastav, G. Girolami, J. Abelson</i> , University of Illinois at Urbana-Champaign	AP+AS+EM+HI+PS+SS+TF-TuM-5 Selective Deposition Two Ways: Chemical Bath Deposition of Metal Sulfides on Organic Substrates, <i>T. Estrada, Amy Walker</i> , University of Texas at Dallas	
9:40am	TF-TuM-6 The Fabrication of Heterojunctions by Atomic Layer Deposition for Gas Sensing Applications, <i>Nicola Pinna, H. Raza</i> , Humboldt University Berlin, Germany	AP+AS+EM+HI+PS+SS+TF-TuM-6 Anatase Crystalline Phase Discovery on Ultra-Thin Layer TiO ₂ Films During Low-Temperature Ald on Fluorine-Rich Carbon Substrates, <i>Brian Butkus, S. Dabas, C. Feit, J. Ganesan, Z. Parsons, X. Feng, P. Banerjee</i> , University of Central Florida	
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall	
10:20am			
10:40am			
11:00am	TF-TuM-10 Tunable ALD Infiltration into High-Aspect-Ratio Aerogels Enabled by Process Modeling for Solar Thermal Applications, <i>Andrew J. Gayle¹, Z. Berquist, Y. Chen, A. Davoodabadi, A. Hill, J. Hoffman, A. Bielinski, A. Lenert, N. Dasgupta</i> , University of Michigan, Ann Arbor	INVITED: AP+AS+EM+HI+PS+SS+TF-TuM-10 Site-selective Atomic Layer Deposition: Targeting Electronic Defects, <i>Alex Martinson</i> , Argonne National Laboratory	
11:20am	TF-TuM-11 Ultra-thin, Conformal ALD Films for Reliable Corrosion Resistance in SLM Metal Additive Manufactured Surfaces, <i>Timothy J. Gorey</i> , Los Alamos National Laboratory		
11:40am	TF-TuM-12 Atomic Layer Deposition of Superconducting Films for Through-Silicon-Via Structures and Photon Detection, <i>John Femi-Oyetero, H. LeDuc, P. Day, F. Greer</i> , Jet Propulsion Laboratory (NASA/JPL)	INVITED: AP+AS+EM+HI+PS+SS+TF-TuM-12 Low Temperature Area-selective ALD and ALE of Pd, <i>H. Nallan, X. Yang, B. Coffey, John Ekerdt</i> , University of Texas at Austin	
12:00pm	TF-TuM-13 Reliable RF and DC Plasma-Power Solutions Supporting Today's Demanding Industrial Applications, <i>Mike Meyer, P. Maloney</i> , Advanced Energy Industries, Inc., USA		

Tuesday Morning, November 8, 2022

Room 318	
8:00am	<p>BI1+AS+EM+NS+SE+TF-TuM-1 Understanding and Employing Adhesion Forces in Microfluidic Channels for Cell Separation, <i>Avi Gupta, F. Chrit, A. Liu, A. Alexeev, T. Sulchek</i>, Georgia Institute of Technology, USA</p>
8:20am	<p>BI1+AS+EM+NS+SE+TF-TuM-2 Wafer-Scale Metallic Nanotube Arrays with Highly Ordered Periodicity for SERS Application, <i>Jinn Chu</i>, National Taiwan University of Science and Technology, Taiwan</p>
8:40am	<p>BI1+AS+EM+NS+SE+TF-TuM-3 Customizing Silk Film Surface Properties Using Plasma-Enhanced Chemical Vapor Deposition, <i>A. Devore, G. Reyes, Morgan Hawker</i>, California State University, Fresno</p>
9:00am	<p>BI1+AS+EM+NS+SE+TF-TuM-4 Biopotential Sensing Using Flexible, Reusable Smart Textile-Based Dry Electrodes, <i>Jitendra Pratap Singh</i>, Physics Dept IIT Delhi, India</p>
9:20am	<p>INVITED: BI1+AS+EM+NS+SE+TF-TuM-5 Functional Plasma Polymers for Biosensing Applications, <i>Melanie McGregor</i>, University of South Australia</p>
9:40am	
10:00am	<p>BREAK - Complimentary Coffee in Exhibit Hall</p>
10:20am	
10:40am	
11:00am	<p>INVITED: BI2+AS-TuM-10 Getting to the Surface of Biology, <i>Lara Gamble</i>, University of Washington</p>
11:20am	
11:40am	<p>BI2+AS-TuM-12 3D Investigation of Sr²⁺ Mobility in Bone Marrow by ToF- and Orbi-SIMS, <i>C. Kern, A. Pauli, R. Jamous, T. El Khassawna, Marcus Rohnke</i>, Justus Liebig University Giessen, Germany</p>
12:00pm	<p>BI2+AS-TuM-13 Comparison of NAP-XPS and Cryo-XPS for Studies of the Surface Chemistry of the Bacterial Cell-Envelope, <i>Paul Dietrich</i>, SPECS Surface Nano Analysis GmbH, Germany; <i>M. Kjærviik</i>, BAM Berlin, Germany, Norway; <i>M. Ramstedt</i>, Umeå University, Sweden; <i>W. Unger</i>, BAM, Germany</p>

Biomaterial Interfaces Division
Session BI1+AS+EM+NS+SE+TF-TuM
Bioanalytics, Biosensors and Diagnostics
Moderators:
Caitlin Howell, University of Maine,
Laura Mears, TU Wien, Austria

Biomaterial Interfaces Division
Session BI2+AS-TuM
Characterization of Biological and Biomaterials Surfaces
Moderators:
Kenan Fears, U.S. Naval Research Laboratory,
Graham Leggett, University of Sheffield, UK

Tuesday Morning, November 8, 2022

<p>Surface Science Division Room 319 - Session SS-TuM Liquid/Solid Interfaces and Electrochemistry Moderator: Kathryn Perrine, Michigan Technological University, Michelle Personick, Wesleyan University</p>		<p>Applied Surface Science Division Room 320 - Session AS+LS+RE+SS-TuM Synchrotron-Based Photoelectron Spectroscopy Studies of Technologically Important Materials: in Memory of David Shirley Moderators: James G. Tobin, University of Wisconsin-Oshkosh, Eric L. Shirley, National Institute of Standard and Technology</p>	
8:00am	<p>SS-TuM-1 Investigating the Oxidation of Pt(111) Using High-Pressure Scanning Tunneling Microscopy, Force Field Calculations, and Ab Initio Thermodynamics, <i>D. Boden</i>, Leiden University, Netherlands; <i>M. van Spronsen</i>, Diamond Light Source, UK; <i>J. Frenken</i>, ARCNL; <i>J. Meyer</i>, Irene Groot, Leiden University, Netherlands</p>		
8:20am	<p>SS-TuM-2 Operando Electrochemistry: NAP-XPS on Electrolyte/Electrode Interfaces - Studies of Liquid Electrolytes and Their Interfaces to Battery Cathodes for Lithium Ion Battery Applications, Francesca Mirabella, <i>P. Dietrich</i>, <i>A. Thissen</i>, SPECS Surface Nano Analysis GmbH, Germany</p>	<p>AS+LS+RE+SS-TuM-2 Limitations in the Structural Determination of a Close-Packed Overlayer, JG Tobin, U. Wisconsin-Oshkosh</p>	
8:40am	<p>SS-TuM-3 AVS Dorothy M. and Earl S. Hoffman Scholarship Talk: Infrared Nanospectroscopy for Solid-Liquid Interface, Xiao Zhao^{1,2}, <i>M. Salmeron</i>, LBNL</p>	<p>INVITED: AS+LS+RE+SS-TuM-3 Sub-Micron Chemical Speciation Mapping of Uranium Dioxide Aged Under Humid Conditions, David Shuh, <i>A. Ditter</i>, <i>J. Pacold</i>, Lawrence Berkeley National Laboratory (LBNL); <i>Z. Dai</i>, <i>L. Davison</i>, Lawrence Livermore National Laboratory; <i>D. Vine</i>, Lawrence Berkeley National Laboratory (LBNL); <i>S. Donald</i>, <i>B. Chung</i>, Lawrence Livermore National Laboratory</p>	
9:00am	<p>SS-TuM-4 Methods for Exposing UHV-prepared Metal Oxide Surfaces to Liquid Water: A Comparison of TiO₂, Fe₂O₃, and Fe₃O₄, Jiri Pavelec, <i>J. Balajka</i>, <i>F. Kraushofer</i>, Vienna University of Technology, Austria; <i>Z. Jakub</i>, CEITEC, Czechia; <i>G. Franceschi</i>, <i>M. Schmid</i>, <i>G. Parkinson</i>, <i>U. Diebold</i>, Vienna University of Technology, Austria</p>		
9:20am	<p>SS-TuM-5 Interplay of Structure, Dynamics and Energetics of Alkali Metal Ions on Muscovite Mica Surfaces: Molecular Dynamics Simulation, Alper T. Celebi, Vienna University of Technology, Austria; <i>S. Reindl</i>, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; <i>M. Olgiati</i>, Vienna University of Technology, Austria; <i>T. Bauer</i>, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; <i>L. Maers</i>, <i>M. Valtiner</i>, Vienna University of Technology, Austria</p>	<p>INVITED: AS+LS+RE+SS-TuM-5 On Photoelectron Spectroscopy and the Shirley Background, Eric L. Shirley, NIST</p>	
9:40am	<p>SS-TuM-6 Corrosion Mechanism of Aluminum Alloy at Grain Boundaries Investigated by in-Liquid Nanoscale Potential Measurement Technique, Shinnosuke Yamamoto, <i>D. Taniguchi</i>, <i>T. Okamoto</i>, <i>K. Hirata</i>, Kanazawa University, Japan; <i>T. Ozawa</i>, Kobe Steel, Ltd., Japan; <i>T. Fukuma</i>, Kanazawa University, Japan</p>		
10:00am	BREAK - Complimentary Coffee in Exhibit Hall		BREAK - Complimentary Coffee in Exhibit Hall
10:20am			
10:40am			
11:00am	<p>SS-TuM-10 Identifying Available Adsorption Sites on Au-Ps Alloys by FTIR Spectroscopy and Monte Carlo Simulations, <i>S. Manzi</i>, Dep. de Física, Universidad Nacional de San Luis, Instituto de Física Aplicada, CONICET, Argentina; <i>M. Bosco</i>, <i>M. Brites Helú</i>, Instituto de Desarrollo Tecnológico para la Industria Química (INTEC), UNL/CONICET, Argentina; <i>A. Baldo</i>, Fac. de Ingeniería Química (FIQ), Universidad Nacional del Litoral (UNL), Argentina; <i>S. Collins</i>, Florencia Calaza, Instituto de Desarrollo Tecnológico para la Industria Química (INTEC), UNL/CONICET, Argentina</p>	<p>INVITED: AS+LS+RE+SS-TuM-10 Origin of the Complex Main and Satellite Features in Oxides, Paul S. Bagus, University of North Texas; <i>C. Nelin</i>, <i>C. Brundle</i>, <i>B. Crist</i>, Consultant; <i>N. Lahiri</i>, <i>K. Rosso</i>, PNNL</p>	
11:20am	<p>SS-TuM-11 Role of Chemisorbing Species in Growth at Liquid Metal-Electrolyte Interfaces Revealed by in Situ X Ray Scattering, Andrea Sartori, ESRF, France</p>		
11:40am	<p>SS-TuM-12 In Situ Electrochemical STM Imaging of an Au Electrode Identifying the Active Sites during the Electrocatalytic Process, Yongman Kim, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea; <i>Y. Jeong</i>, Institute for Basic Science (IBS), Republic of Korea; <i>Y. Kim</i>, <i>J. Park</i>, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea</p>		
12:00pm	<p>SS-TuM-13 Extreme Atomic-Scale Surface Roughening: Amino Acids on Ag on Au(111), <i>E. Cook</i>, <i>K. P.S. Boyd</i>, <i>M. Paszkowiak</i>, Erin Iski, The University of Tulsa</p>		

¹ SSD Morton S. Traum Award Finalist

² AVS Dorothy M. and Earl S. Hoffman Scholarship Recipient

Tuesday Morning, November 8, 2022

Room 321		
8:00am		Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Session HC+AS+SS-TuM Energetic Processes and Tailored Surfaces in Heterogeneous Catalysis Moderators: Tim Schäfer , Georg-August Universität, Göttingen, Germany, Arthur Utz , Tufts University
8:20am		
8:40am	HC+AS+SS-TuM-3 Adsorption and Reaction of Acetic Acid on Single-Crystal and Faceted Nanoparticle Anatase TiO ₂ (101) Surfaces, <i>C. O'Connor, R. Ma, Y. Wu, W. DeBenedetti, F. Gao, Y. Wang, G. Kimmel, Zdenek Dohnálek</i> , Pacific Northwest National Laboratory	
9:00am	HC+AS+SS-TuM-4 Phase Transformation of Single Micro-Sized TiO ₂ Crystals, <i>W. Lu, H. Zhu, N. Craft, K. Park, Zhenrong Zhang</i> , Baylor University	
9:20am	HC+AS+SS-TuM-5 Reactivity of Formic Acid on Single Atom Rh Supported on Fe ₃ O ₄ (001), <i>Christopher Lee, M. Sharp, S. Smith, B. Kay, Z. Dohnálek</i> , Pacific Northwest National Laboratory	
9:40am	HC+AS+SS-TuM-6 WO ₃ /Ag ₂ S type-II Hierarchical Heterojunction for Improved Charge Carrier Separation and Photoelectrochemical Water Splitting Performance, <i>Jyoti Yadav, J. Singh</i> , IIT DELHI, India	
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	
10:20am		
10:40am		
11:00am	INVITED: HC+AS+SS-TuM-10 Using Photon-Stimulated Desorption to Probe the Structure and Reaction Dynamics of Molecules Adsorbed on TiO ₂ (110), <i>Greg Kimmel</i> , Pacific Northwest National Laboratory	
11:20am		
11:40am	HC+AS+SS-TuM-12 Comparison of Pt, Rh and Ir Single Atoms on a Fe ₂ O ₃ Model Support, <i>Gareth Parkinson, A. Rafsanjani Abbasi, L. Puntischer, F. Kraushofer, P. Sombut, C. Wang</i> , TU Wien, Austria; <i>M. Meier</i> , University of Vienna, Austria; <i>M. Eder, J. Pavelec, G. Franceschi, M. Riva, M. Schmid, U. Diebold</i> , TU Wien, Austria; <i>C. Franchini</i> , University of Vienna, Austria	
12:00pm	HC+AS+SS-TuM-13 HC Graduate Student Finalist Talk: Preparation and Characterization of Model Homotopic Catalysts: Rh Adatoms, Nanoparticles, and Mixed Oxide Surfaces on Fe ₃ O ₄ (001), <i>Marcus Sharp</i> , PNNL/WSU; <i>C. Lee, M. Mahapatra, S. Smith, B. Kay, Z. Dohnálek</i> , PNNL	

Tuesday Morning BREAK, November 8, 2022

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

10:00am

10:20am

EW-TuMB-2 Edwards Vacuum Presentation - The Future of Vacuum I & II: A Review of Safety Considerations in the Design and Operation of Vacuum Systems, **Andrew Chew**, Edwards

11:00am

Tuesday Afternoon, November 8, 2022

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 New Developments in Surface Analysis from Thermo Fisher Scientific, Adam Bushell , <i>T. Nunney, P. Mack, R. Simpson</i> , Thermo Fisher Scientific, UK	
1:00pm	EW-TuL-4 PHI Surface Analysis Solutions: No Compromise, Jennifer Mann , Physical Electronics	
1:20pm	EW-TuL-5 EnviroMetros – A Novel Surface and Multilayer Thin Film Analysis Tool, Andreas Thissen , SPECS Surface Nano Analysis GmbH, Germany	
1:40pm	EW-TuL-6 AFM - The Instrument of Choice for Twisted Graphene Preparation and Characterization, Ted Limpoco , Oxford Instruments Asylum Research Inc.	
2:00pm	EW-TuL-7 Automated, High-Performance X-Ray Photoelectron Spectroscopy System for Advanced Analysis of Solid-State Energy Materials and Systems, Chris Blomfield , Kratos Analytical Inc., UK	

Tuesday Afternoon, November 8, 2022

Vacuum Technology Division Room 301 - Session VT-TuA Vacuum Pumping, Leak Detection, and Modeling Moderators: Jason Alfrey , Vacuum Technology, Inc., Freek Molkenboer , TNO Science and Industry, the Netherlands		Chemical Analysis and Imaging Interfaces Focus Topic Room 302 - Session CA+2D+AS+BI+HC+LS+NS-TuA In Situ Microscopy, Spectroscopy and Processing at Liquid-Solid-Gas Interfaces Moderators: Andrei Kolmakov , National Institute of Standards and Technology (NIST), Xiao-Ying Yu , Oak Ridge National Laboratory, USA
2:20pm	INVITED: VT-TuA-1 Design and Fabrication of Ultra-High Vacuum Test System for Quantitative Determination of Hydrogen Gettering and Permeation of Various Materials, Ewa Ronnebro , R. Storms, S. Suffield, Pacific Northwest National Laboratory; M. Boeckmann, A. Parrot, J. Alfrey, Vacuum Technology, Inc.	INVITED: CA+2D+AS+BI+HC+LS+NS-TuA-1 Understanding Charge Carrier Variations on the Nanoscale Using Microwave Near-Field Microscopy, T. Mitch Wallis , S. Berweger, P. Kabos, National Institute of Standards and Technology
2:40pm		
3:00pm	VT-TuA-3 Gas Partial Pressure Measurement by Remote Plasma Optical Emission Spectroscopy & Automated Analysis Using Artificial Intelligence, Dermot Monaghan , J. Brindley, B. Daniel, V. Bellido-Gonzales, Gencoa Ltd, UK	CA+2D+AS+BI+HC+LS+NS-TuA-3 Oxidation/Reduction of Cu Nanoparticles at a Single-Layer Graphene/Electrolyte Interface Monitored by Scanning Kelvin Probe Microscopy, Sidney Cohen , S. Khatun, M. Andres, I. Pinkas, I. Kaplan-ashiri, O. Brontvein, Weizmann Institute of Science, Israel; I. Rosenhek-Goldian, weizmann Institute of Science, Israel; R. Weatherup, Oxford University, UK; B. Eren, Weizmann Institute of Science, Israel
3:20pm		CA+2D+AS+BI+HC+LS+NS-TuA-4 Investigation Tritium and Lithium transport along the Tritium-Producing Burnable Absorber Rod, Jiyoung Son , Pacific Northwest National Lab; J. Gao, PNNL; G. Sevigny, S. Tripathi, B. Matthews, Pacific Northwest National Lab; X. Yu, Oak Ridge National Laboratory
3:40pm	BREAK	BREAK
4:00pm		
4:20pm		INVITED: CA+2D+AS+BI+HC+LS+NS-TuA-7 Development of a Workflow for Multiscale Elemental Analysis with X-ray Fluorescence Microscopy and Tomography, Si Chen , Argonne National Lab; Y. Luo, Argonne National Laboratory; T. Paunesku, Northwestern University; O. Antipova, Y. Liu, N. Zaluzec, Z. Di, Argonne National Laboratory; G. Woloschak, Northwestern University
4:40pm	VT-TuA-8 How Vacuum Controlled Venting Can Improve the Imagery of Electron Microscopy, Tim Collins , DigiVac	
5:00pm	VT-TuA-9 Novel Cylindrical Hot Cathode Ionisation Gauge, Ricardo A.S. Silva , N. Bundaleski, O. Teodoro, CeFiTec - Nova School of Science and Technology, Portugal	CA+2D+AS+BI+HC+LS+NS-TuA-9 in Situ Molecular Imaging of Green Solvents for CO ₂ Capture, Xiao-Ying Yu , Oak Ridge National Laboratory, USA
5:20pm	VT-TuA-10 High Performance Sealing In Extreme Environments, Christopher Cosgrove , Technetics Group	CA+2D+AS+BI+HC+LS+NS-TuA-10 Depth Dependence of Salt Ions at the Liquid/Vapor Interface Studied by Ambient Pressure X-Ray Photoelectron Spectroscopy, A. Siebert, K. Goodman, Monika Blum , LBNL
5:40pm		CA+2D+AS+BI+HC+LS+NS-TuA-11 Room-Temperature Oxidation of Pt Nanoparticles Catalyzed by Partially Reduced CeO ₂ , Shuanan Ye , X. Sun, State University of New York at Binghamton, China; J. Wang, state University of New York at Binghamton, China; X. Chen, State University of New York at Binghamton, China; J. Yang, University of Pittsburgh; G. Zhou, State University of New York at Binghamton

Tuesday Afternoon, November 8, 2022

Room 303		2D Materials Technical Group Session 2D+MI-TuA 2D Materials: Heterostructures, Twistronics, and Proximity Effects Moderators: Francesca Tavazza , National Institute of Standard and Technology, Suyang Xu , Harvard University
2:20pm	INVITED: 2D+MI-TuA-1 Strategies for Controlling Structure and Magnetic Texture in 2D Magnets, <i>Frances Ross</i> , MIT; <i>J. Klein</i> , MIT, USA	
2:40pm		
3:00pm	2D+MI-TuA-3 Bidirectional Phonon Emission in van der Waals Heterojunctions During Ultrafast Charge Transfer, <i>Aditya Sood</i> , Stanford University	
3:20pm		
3:40pm	BREAK	
4:00pm		
4:20pm	INVITED: 2D+MI-TuA-7 Understanding Structural, Chemical, and Number of Layer-Dependent Properties in 2D Lateral and Vertical Structures for Subsequent Optical Measurements, <i>U. Kaiser</i> , <i>Michael Mohn</i> , University of Ulm, Germany	
4:40pm		
5:00pm	2D+MI-TuA-9 Determination of Band Offsets in Semiconductor Heterostructures (2D/3D) by Using XPS, <i>Mohamed Nejib Hedhili</i> , <i>NG</i> , <i>B. Ooi</i> , King Abdullah University of Science and Technology, Saudi Arabia	
5:20pm	2D+MI-TuA-10 Investigation of a Novel Layer-by-Layer Growth Methodology for Surface Metal-Organic Frameworks, <i>Nicholas Stucchi</i> , Clarkson University	
5:40pm		
6:00pm		

Tuesday Afternoon, November 8, 2022

Room 304	
2:20pm	<p>INVITED: EL1+AS+EM-TuA-1 Terahertz to Vacuum Ultraviolet Ellipsometry Characterization of Spin, Lattice, Strain, Free Charge Carrier, Dielectric Constants, Exciton and Band-to-Band Transition Properties in Ultrawideband Gap Alpha and Beta Aluminum Gallium Oxide Semiconductor Alloys, <i>Mathias Schubert</i>, R. Korlacki, M. Stokey, University of Nebraska-Lincoln; A. Mock, Weber State University; M. Hilfiker, University of Nebraska-Lincoln; J. Knudtson, University of Nebraska-Lincoln, USA; U. Kilic, University of Nebraska-Lincoln; S. Richter, Lund University, Sweden; S. Knight, P. Kuehne, Linkoping University, Sweden; V. Darakchieva, Lund University, Sweden</p>
2:40pm	
3:00pm	
3:20pm	
3:40pm	BREAK
4:00pm	
4:20pm	<p>EL2+EM-TuA-7 A Study of Wire Grid Polarizers with Mueller Matrix Ellipsometry, T. Gholian Avval, M. Linford, Brigham Young University; N. Keller, G. Andrew Antonelli, Onto Innovation, Inc.</p>
4:40pm	<p>EL2+EM-TuA-8 Temperature Dependence of the Direct Band Gap of InSb from 80 to 700 K, <i>Melissa Rivero Arias</i>, N. S. Samarasingha, C. Emminger, S. Zollner, New Mexico State University</p>
5:00pm	<p>EL2+EM-TuA-9 Coherent Acoustic Phonon Oscillations in Ge Using Pump-Pulse Time-Resolved Spectroscopic Ellipsometry, <i>Carlos Armenta</i>, New Mexico State University; M. Zahradnik, ELI Beamlines, Czechia; C. Emminger, Humboldt University Berlin, Germany; S. Espinoza, M. Rebarz, J. Andreasson, ELI Beamlines, Czechia; S. Zollner, New Mexico State University</p>
5:20pm	<p>EL2+EM-TuA-10 Time-Resolved Spectroscopic Ellipsometry Helped by Imaging Spectroscopic Ellipsometry, <i>Shirly Espinoza</i>, ELI Beamlines, Czechia</p>

Spectroscopic Ellipsometry Focus Topic Session EL1+AS+EM-TuA
Emerging Technological Advances and BREAKthroughs of Spectroscopic Ellipsometry
Moderators:
Alain Diebold, SUNY Polytechnic Institute,
Ruediger Schmidt-Grund, Technical University Ilmenau, Germany

Spectroscopic Ellipsometry Focus Topic Session EL2+EM-TuA
Spectroscopic Ellipsometry: Novel Applications and Theoretical Approaches
Moderators:
Alain Diebold, SUNY Polytechnic Institute,
Ruediger Schmidt-Grund, Technical University Ilmenau, Germany

Tuesday Afternoon, November 8, 2022

	<p>Plasma Science and Technology Division Room 305 - Session PS1+TF-TuA Plasma Processing for Advanced Emerging Memory Technologies, Advanced Packaging and Heterogeneous Integration Moderators: Hisataka Hayashi, KIOXIA, Japan, Samson Odunuga, Intel Corporation</p>	<p>Plasma Science and Technology Division Room 315 - Session PS2+AS+SS-TuA Plasma-Surface Interactions Moderators: Pingshan Luan, TEL Technology Center America, Kenji Maeda, Hitachi High Technologies America Inc.</p>
2:20pm	<p>PS1+TF-TuA-1 Study of Residues Formation after Ge-Rich GST Etching Using Halogen Gases, Benjamin Fontaine, STMicroelectronics, France; C. Boixaderas, Univ. Grenoble Alpes, CEA, Leti, France; J. Dubois, P. Gouraud, A. Rival, STMicroelectronics, France; N. Posseme, Univ. Grenoble Alpes, CEA, Leti, France</p>	<p>INVITED: PS2+AS+SS-TuA-1 Selective Mask Deposition Using SiCl₄ Plasma for a Highly Selective Etching Process, Miyako Matsui, Hitachi Ltd., Japan; K. Kuwahara, Hitachi High-Tech Corp., Japan</p>
2:40pm	<p>PS1+TF-TuA-2 Magnetron Plasma Sputtered Ge₂Sb₂Se₄Te as a Non-Volatile Optical Switch Material, Steven Vitale, P. Miller, P. Robinson, C. Roberts, V. Liberman, MIT Lincoln Laboratory; Q. Du, Y. Zhang, C. Popescu, M. Shalaginov, T. Gu, Massachusetts Institute of Technology; M. Kang, K. Richardson, University of Central Florida; C. Rios, University of Maryland; J. Hu, Massachusetts Institute of Technology</p>	
3:00pm	<p>PS1+TF-TuA-3 Phase-Change Memory Materials Processing Requirements, Luxherta Buzi, IBM Research Division, T.J. Watson Research Center; H. Cheng, Macronix; M. Hopstaken, IBM Research Division, T.J. Watson Research Center; L. Gignac, IBM Research, T. J. Watson Research Center; C. Tabachnick, J. Papalia, H. Miyazoe, S. Engelmann, R. Bruce, IBM Research Division, T.J. Watson Research Center</p>	<p>PS2+AS+SS-TuA-3 On the Self-bias Voltages at Sintered Yttrium Oxyfluoride (Y-O-F) and Y₂O₃ During Plasma Irradiation and Their Etching Rates due to Ion Bombardment, Tetsuya Goto, Y. Shiba, Tohoku University, Japan; A. Teramoto, Hiroshima University, Japan; Y. Kishi, Nippon Yttrium Co., Ltd, Japan; S. Sugawa, Tohoku University, Japan</p>
3:20pm	<p>PS1+TF-TuA-4 Exploration of Alternative Hard Mask Materials for the IBE Patterning of 50nm Pitch STT-MRAM High Density Orthogonal Pillar Array, Romuald Blanc, L. Souriau, W. Devulder, S. Couet, F. Lazzarino, IMEC, Belgium</p>	
3:40pm	BREAK	BREAK
4:00pm		
4:20pm	<p>INVITED: PS1+TF-TuA-7 Patterning Approaches for Integration of Complex Metal Alloys Towards Advanced Memory and Compute Applications, Shreya Kundu, F. Lazzarino, IMEC, Belgium</p>	<p>PS2+AS+SS-TuA-7 In-Plasma Photo-Assisted Etching of Si with Chlorine Aided by an External Vacuum Ultraviolet Source, L. Du, D. Economou, Vincent M Donnelly, University of Houston</p>
4:40pm		<p>PS2+AS+SS-TuA-8 Etching of Silicon Dioxide (SiO₂) Based on Remote Plasma-Based Functionalization and Electron Beam-Activation, Yudong Li, K. Lin, University of Maryland, College Park; C. Preischl, C. Hermanns, D. Rhinow, H. Solowan, M. Budach, H. Marbach, K. Edinger, Carl Zeiss SMT, Germany; G. Oehrlein, University of Maryland, College Park</p>
5:00pm	<p>PS1+TF-TuA-9 Plasma Etch Challenges and Processing Optimization in Spin Logic Device Fabrication, Yann Canvel, L. Souriau, IMEC, Belgium</p>	<p>PS2+AS+SS-TuA-9 Investigation of Plasma-Surface Interactions During Plasma Enhanced Atomic Layer Deposition (PE-ALD) of Silicon Nitride Using <i>in Situ</i> Surface Chemistry Measurements, Samuel Johnson, University of Texas at Austin; J. Zhao, T. Iwao, J. Carroll, C. Schlechte, P. Ventzek, Tokyo Electron America; J. Ekerdt, University of Texas at Austin</p>
5:20pm	<p>PS1+TF-TuA-10 Effects of Bias Frequency on High Aspect Ratio Etching Using Voltage Waveform Tailoring, Florian Krüger, University of Michigan; H. Lee, S. Nam, Mechatronics Research, Samsung Electronics Co., Ltd., Republic of Korea; M. Kushner, University of Michigan</p>	<p>PS2+AS+SS-TuA-10 Differences in Sidewall Chemistry for SiO₂ and Si₃N₄ after Ar/HFC or Ar/FC Plasma Processing Using High Aspect Ratio Structures, Sang-Jin Chung, University of Maryland, College Park; P. Luan, A. Metz, M. Park, TEL Technology Center, America, LLC, USA; G. Oehrlein, University of Maryland, College Park</p>
5:40pm	<p>PS1+TF-TuA-11 Wafer Bevel Deposition by Localized SiO₂ and Si₃N₄ PECVD and Application to 3D Integration, Francois Boulard, F. Fournel, V. Lapras, L. Brunet, D. Truffier-Boutry, CEA-University Grenoble Alps, France; P. Ruault, Lam Research, France; M. Keovisai, Lam Research; C. Porzier, V. Gros, N. Posseme, CEA-University Grenoble Alps, France</p>	<p>PS2+AS+SS-TuA-11 Significance of Plasma-Surface Interactions in the Etch Behavior of Low-k Materials, Adam Pranda, S. Grzeskowiak, Y. Yoshida, E. Liu, Y. Han, P. Biolsi, TEL Technology Center, America, LLC; K. Kobayashi, N. Ikezawa, Tokyo Electron Miyagi Ltd., Japan</p>
6:00pm	<p>PS1+TF-TuA-12 Plasma Etching of Copper for the Microfabrication of High-Density Interconnects in Advanced Packaging, Juliano Borges, M. Darnon, Y. Beilliard, D. Drouin, Université de Sherbrooke, Canada</p>	<p>PS2+AS+SS-TuA-12 Low Temperature Superpermeability in Metal Foils Exposed to Hydrogen Plasma, Chao Li, A. Job, Colorado School of Mines; M. Shimada, T. Fuerst, Idaho National Laboratory; D. Way, C. Wolden, Colorado School of Mines</p>

Tuesday Afternoon, November 8, 2022

Thin Films Division Room 316 - Session TF2+2D-TuA Low Dimension Material Application Moderator: Mark Losego, Georgia Institute of Technology		Atomic Scale Processing Focus Topic Room 317 - Session AP+PS+TF-TuA Thermal Atomic Layer Etching Moderators: Silvia Armini, IMEC, Belgium, Eric A. Joseph, IBM Research Division, T.J. Watson Research Center	
2:20pm	INVITED: TF2+2D-TuA-1 Operando and High-throughput Approaches to Advance Integrated Process Technology of Atomically Thin Device Materials, Stephan Hofmann , University of Cambridge, UK	INVITED: AP+PS+TF-TuA-1 Thermal Atomic Layer Etching: The Right Etch Technology at the Right Time, Andreas Fischer , A. Routzahn, R. Gasvoda, J. Sims, T. Lill, Lam Research Corporation	
2:40pm			
3:00pm	TF2+2D-TuA-3 Versatile Synthesis of 2D Superlattices from Conversion of Sequentially Layered Sub-nanomater Metal Films, Nicholas Glavin¹ , Air Force Research Laboratory, Materials and Manufacturing Directorate, USA	AP+PS+TF-TuA-3 Atomic Layer Etching of Titanium Nitride with Surface Modification by Cl Radicals and Rapid Thermal Annealing, N. Miyoshi , Hitachi High Technologies America Inc., Japan; Nicholas McDowell , Hitachi High Technologies America Inc.; H. Kobayashi , Hitachi Global Storage Technologies Inc, Japan	
3:20pm	TF2+2D-TuA-4 Study of the Functionality of Spin Crossover Thin Films on the Ti ₃ C ₂ Mxene Substrates, Saeed Yazdani , Department of Physics, Indiana University-Purdue University Indianapolis; J. Phillips , Department of Physics, Indiana University-Purdue University Indianapolis; B. Wyatt , Department of Mechanical and Energy Engineering, and Integrated Nanosystems Development; P. Wang , Department of Chemistry and Biochemistry, Florida State University; M. Shatruk , Department of Chemistry and Biochemistry, Florida State University; B. Anasori , Department of Mechanical and Energy Engineering, and Integrated Nanosystems Development; P. Dowben , Department of Physics and Astronomy, Jorgensen Hall, University of Nebraska; R. Cheng , Department of Physics, Indiana University-Purdue University Indianapolis	AP+PS+TF-TuA-4 Thermal Atomic Layer Etching (ALE) of Metal Oxides by Chlorination and Ligand Addition using SO ₂ Cl ₂ and Tetramethylethylenediamine (TMEDA), Jonathan Partridge , J. Murdzek, S. George, University of Colorado Boulder	
3:40pm	BREAK	BREAK	
4:00pm			
4:20pm		INVITED: AP+PS+TF-TuA-7 Thermal Atomic Layer Etch Processes in Semiconductor Manufacturing Challenges and Opportunities, Gert Leusink , TEL Technology Center, America, LLC	
4:40pm	TF2+2D-TuA-8 AVS Thin Film Division/Graduate Student Harper Award TED-Talk Competition,		
5:00pm		AP+PS+TF-TuA-9 Thermal Atomic Layer Etching (ALE) of InGaP:Processing Chemistry and Removal of Surface Defects, Ross Edel , T. Nam, S. George, University of Colorado Boulder	
5:20pm		AP+PS+TF-TuA-10 Thermal Atomic Layer Etching of MoS ₂ Films, Jake Soares , Boise State University; A. Mane , Argonne National Laboratory; S. Hues , Boise State University; J. Elam , Argonne National Laboratory; E. Graugnard , Boise State University	
5:40pm		AP+PS+TF-TuA-11 Atomically-Precise Surface Processes: From Molecular Mechanisms to Realistic Devices, Andrew Teplyakov , University of Delaware	
6:00pm		AP+PS+TF-TuA-12 Deposit and Etchback Approach for Ultrathin and Continuous Films Using Atomic Layer Deposition and Atomic Layer Etching, J. Gertsch , E. Sortino , V. Bright , Steven George , University of Colorado Boulder	

Tuesday Afternoon, November 8, 2022

Room 318	
2:20pm	INVITED: LS1+2D+AS+EM+QS+SS-TuA-1 In-situ/Real-time XPS Study of Electrochemical Reactions in All-solid-state Thin-film Lithium-Ion Batteries, <i>Takuya Masuda</i> , National Institute for Materials Science, Japan
2:40pm	
3:00pm	LS1+2D+AS+EM+QS+SS-TuA-3 Interaction of Molecular Nitrogen with Vanadium Oxide in the Absence and Presence of Water Vapor at Room Temperature: Near-Ambient Pressure XPS, <i>S. Nemsak</i> , Lawrence Berkeley National Laboratory; Kabirat Balogun , <i>P. Chukwunenye, T. Cundari, P. Bagus, J. Kelber</i> , Department of Chemistry, University of North Texas
3:20pm	LS1+2D+AS+EM+QS+SS-TuA-4 Catalysts Caught in the Act: an Operando Investigation of Copper during CO ₂ Hydrogenation, <i>Elizabeth Jones</i> , University of Oxford, UK
3:40pm	BREAK
4:00pm	
4:20pm	INVITED: LS2+2D+AS+TF-TuA-7 Visualizing Complex Many-Body Phenomena in 2D Materials Based Heterostructures and Devices, <i>Jyoti Katoch</i> , Carnegie Mellon University
4:40pm	
5:00pm	LS2+2D+AS+TF-TuA-9 Dynamic Grating Development for Neutron Imaging Across Multiple Length Scales, <i>Sarah M. Robinson, R. Murphy, J. LaManna, C. Wolf</i> , National Institute of Standards and Technology (NIST); <i>Y. Kim, M. Daugherty</i> , National Institute of Standards and Technology (NIST)/ University of Maryland, College Park; <i>M. Huber, P. Bajcsy, P. Kienzle, K. Weigandt, D. Hussey, N. Klimov</i> , National Institute of Standards and Technology (NIST)
5:20pm	INVITED: LS2+2D+AS+TF-TuA-10 Dynamics, Stability and History-Dependence of Magnetic Skyrmions in the 2D van der Waals Magnets Fe _x GeTe ₂ , <i>Kai Litzius, M. Birch, L. Powalla, S. Wintz</i> , Max Plank Institute for Intelligent Systems, Germany; <i>M. Weigand</i> , 4Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany; <i>K. Kern, M. Burghard, G. Schutz</i> , Max Plank Institute for Intelligent Systems, Germany
5:40pm	
6:00pm	

New Trends on Structural and Electronic Characterization of Materials, Interfaces, and Surfaces Using Synchrotron and FEL-Based Radiation Sources Focus Topic
Session LS1+2D+AS+EM+QS+SS-TuA
Operando Catalysis and Energy Systems
Moderator:
Jyoti Katoch, Carnegie Mellon University

New Trends on Structural and Electronic Characterization of Materials, Interfaces, and Surfaces Using Synchrotron and FEL-Based Radiation Sources Focus Topic
Session LS2+2D+AS+TF-TuA
Role of Defects in Materials
Moderator:
Takuya Masuda, National Institute for Materials Science, Japan

Tuesday Afternoon, November 8, 2022

Surface Science Division Room 319 - Session SS+2D+AS-TuA Structure, Adsorption and Reaction at 2D Material Surfaces Moderators: Florencia C. Calaza , Instituto de Desarrollo Tecnológico para la Industria Química, Argentina, Arthur Utz , Tufts University		Applied Surface Science Division Room 320 - Session AS+EM+SE-TuA Surface Analysis Using Complementary Techniques Moderators: Samantha Rosenberg , Sandia National Laboratory, Carl A. Ventrice, Jr. , SUNY Polytechnic Institute	
2:20pm	SS+2D+AS-TuA-1 Chemically Identifying Single Adatoms with Single-Bond Sensitivity During Oxidation Reactions of Borophene, <i>L. Li, N. Jiang, Sayantan Mahapatra</i> , University of Illinois - Chicago	INVITED: AS+EM+SE-TuA-1 Origins of the Emergent Phenomena at Oxide Interfaces Studied with Complementary X-Ray Spectroscopic and Scattering Techniques, <i>Alexander Gray</i> , Temple University	
2:40pm	SS+2D+AS-TuA-2 Tailoring the Interfacial Properties of 2D Transition Metal Silicates on Metal Supports, <i>N. Doudin, K. Saritas</i> , Yale University; <i>J. Boscoboinik, G. Li</i> , Brookhaven National Laboratory; <i>S. Ismail-Beigi, Eric Altman</i> , Yale University		
3:00pm	INVITED: SS+2D+AS-TuA-3 Metal Oxide and Metal Dichalcogenide 2D Nanocrystals: Structure, Adsorption and Catalytic Properties, <i>Jeppe V. Lauritsen</i> , Aarhus University, Denmark	AS+EM+SE-TuA-3 Multi-Technique Forensic Analysis by Co-Incident XPS & Raman Imaging, <i>Robin Simpson, P. Mack</i> , Thermo Fisher Scientific, UK	
3:20pm		AS+EM+SE-TuA-4 Comparison of Methods to Quantify Silicone on Hair, <i>Michaeleen Pacholski, B. Johnson, T. Case, T. Powell, D. Carsten, J. Stratton</i> , The Dow Chemical Company; <i>C. Ji</i> , The Dow Chemical Company, China; <i>M. Mclvor, N. Goodman, S. Yusuf, M. Upshur</i> , The Dow Chemical Company	
3:40pm	BREAK	BREAK	
4:00pm			
4:20pm	SS+2D+AS-TuA-7 Intercalated Cu _{2-x} O Thin Film Confined Underneath Hexagonal Boron Nitride, <i>J. Trey Diulus, Z. Novotny, N. Dongfang, N. Comini, J. Beckord, Y. Al-Hamdani</i> , University of Zurich, Switzerland; <i>M. Muntwiler</i> , Paul Scherrer Institute, Switzerland; <i>M. Hengsberger, M. Iannuzzi, J. Osterwalder</i> , University of Zurich, Switzerland	INVITED: AS+EM+SE-TuA-7 Progress Towards Atomic Scale Analytical Tomography, <i>Brian Gorman</i> , Colorado School of Mines; <i>T. Kelly</i> , Steam Instruments, Inc; <i>M. Holtz</i> , Colorado School of Mines	
4:40pm	SS+2D+AS-TuA-8 Imaging Surface Defects on MoS ₂ , <i>Blake Birmingham</i> , Baylor University		
5:00pm	INVITED: SS+2D+AS-TuA-9 Modifying 2D Transition Metal Dichalcogenides (TMDs) by Incorporating Excess Transition Metals, <i>Matthias Batzill</i> , University of South Florida	AS+EM+SE-TuA-9 Investigating 2d-Materials Using Correlative Spectroscopy & Microscopy, <i>Tim Nunnay, R. Simpson, P. Mack, H. Tseng</i> , Thermo Fisher Scientific, UK	
5:20pm		AS+EM+SE-TuA-10 Surface Analysis in Fujifilm Electronic Materials Research & Development Laboratory: Applications on Chemical Mechanical Planarization, <i>Hong Piao</i> , FUJIFILM Electronic materials USA., Inc.; <i>Y. Liang, K. Huang, B. Duong, J. McDonough, Y. Zhang, H. Lee, B. Hu</i> , FUJIFILM Electronic materials USA., Inc.	
5:40pm	SS+2D+AS-TuA-11 SSD Flash Poster Session: Oral Presentations 5:40: SS-TuP-7 - Dr. Pierluigi Bilotto; 5:43: SS-TuP-12 - Dr. Benjamin Reed; 5:46: SS-TuP-13 - Mr. Xiao Zhao; 5:49: SS-TuP-6 - Dr. J. Trey Diulus;	AS+EM+SE-TuA-11 Investigating GeTe as an Ovonic Threshold Switch with Spectroscopic and Electronic Techniques, <i>Melissa Meyerson, M. Kalaswad, M. King, D. Adams, J. Custer, P. Kotula, M. Rodriguez, S. Rosenberg</i> , Sandia National Laboratories	
6:00pm	5:52: SS-TuP-9 - Mr. Dustin Johnson; 5:55: SS-TuP-18 - Aman Patel	AS+EM+SE-TuA-12 Multi-Technique Analysis of Organic and Inorganic Semiconductors for Composition and Electronic Information, <i>Paul Mack</i> , Thermo Fisher Scientific, UK; <i>M. Modreanu</i> , Tyndall National Institute-University College Cork, Ireland	

Tuesday Afternoon, November 8, 2022

Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Room 321 - Session HC+AS+SS-TuA Bridging Gaps I: Structural and Dynamic Effects in Catalysis Moderators: Dan Killelea, Loyola University Chicago		Magnetic Interfaces and Nanostructures Division Room 330 - Session MI-TuA Topological Insulator Heterostructures Moderators: Axel Enders, University of Nebraska-Lincoln, Germany, Valeria Lauter, Oak Ridge National Laboratory	
2:20pm	INVITED: HC+AS+SS-TuA-1 Fundamental Studies of C1 Catalysis on Metal-oxide and Metal-Carbide Interfaces, <i>Jose Rodriguez</i> , Brookhaven National Laboratory	INVITED: MI-TuA-1 Evidence of Antiferromagnetic Coupling between Topological and Magnetic Insulators, <i>Leonid Rokhinson</i> , Purdue University	
2:40pm			
3:00pm	HC+AS+SS-TuA-3 Atomic Scale Studies of Chromium Species on Iron Oxide Surfaces, <i>Moritz Eder</i> , TU Wien, Austria; <i>P. Sombut</i> , University of Vienna, Austria; <i>C. Wang, L. Puntischer, A. Rafsanjani-Abbasi, M. Meier, J. Pavelec, G. Franceschi, M. Riva</i> , TU Wien, Austria; <i>C. Franchini</i> , University of Vienna, Austria; <i>M. Schmid, U. Diebold, G. Parkinson</i> , TU Wien, Austria	INVITED: MI-TuA-3 Infrared Magnetospectroscopy of Magnetic Topological Insulator Heterostructures, <i>Badih Assaf</i> , University of Notre Dame	
3:20pm	HC+AS+SS-TuA-4 Investigation of CO Oxidation on Oxygenated Rh(111) Surfaces with RAIRS, <i>Elizabeth Jamka, D. Killelea</i> , Loyola University Chicago		
3:40pm	BREAK	BREAK	
4:00pm			
4:20pm	INVITED: HC+AS+SS-TuA-7 Molecular Beam Surface Reaction Experiments with Chiral Molecules, <i>Tim Schäfer</i> , Georg August University, Goettingen, Germany	INVITED: MI-TuA-7 Topological States in the van der Waals Magnet MnBi ₂ Te ₄ : from 3D to 2D, <i>Hendrik Bentmann</i> , Wuerzburg University, Germany	
4:40pm			
5:00pm	INVITED: HC+AS+SS-TuA-9 A Local View on the Influence of Solvent and Product on the Reactivity of Surface-Catalyzed Reactions, <i>Karina Morgenstern</i> , Ruhr Universität Bochum, Germany	MI-TuA-9 Rashba-Type Splitting of the Au(110) Surface State: A Combined Inverse and Direct Photoemission Study, <i>Markus Donath, K. Ritter</i> , University of Münster, Germany; <i>K. Miyamoto, T. Okuda</i> , Hiroshima University, Japan	
5:20pm		INVITED: MI-TuA-10 Spin-Polarized Resonant Tunneling - a New Tool for Sensing and Manipulating Magnetism on the Atomic Scale, <i>Anika Schlenhoff</i> , Department of Physics, University of Hamburg, Germany	
5:40pm	HC+AS+SS-TuA-11 Enhanced Catalytic Selectivity Due to Topographically Reduced Work Function of Carbon Nanospikes, <i>Arthur P. Baddorf</i> , Center for Nanophase Materials Sciences, Oak Ridge National Laboratory; <i>A. Rondinone</i> , Center for Integrated Nanotechnologies, Los Alamos National Laboratory; <i>D. Hensley</i> , Center for Nanophase Materials Sciences, Oak Ridge National Laboratory		
6:00pm	HC+AS+SS-TuA-12 HC Graduate Student Finalist Talk: Enhanced Descriptor Identification and Mechanic Understanding for Catalytic Activity using Data-Driven Framework: A Case Study of CO Hydrogenation over Cu-Based Single Atom Alloys, <i>Wenjie Liao</i> , Stony Brook University/Brookhaven National Laboratory; <i>P. Liu</i> , Brookhaven National Laboratory and State University of New York at Stony Brook		

Actinides and Rare Earths Focus Topic

Room Ballroom A - Session AC-TuP

Actinides and Rare Earths Poster Session, 6:30-8:30pm

AC-TuP-1 The Underlying Simplicity of 5f Unoccupied Electronic Structure, *JG Tobin*, U. Wisconsin-Oshkosh; *S. Nowak*, SLAC National Accelerator Laboratory; *S. Yu*, LLNL; *P. Roussel*, AWE, UK; *R. Alonso-Mori*, *T. Kröll*, *D. Nordlund*, *T. Weng*, *D. Sokaras*, SLAC National Accelerator Laboratory

AC-TuP-4 Epitaxial Actinide Heterostructures: Synthesis and Characterization, *Kevin Vallejo*, *B. May*, *F. Kabir*, *C. Dennett*, Idaho National Laboratory; *P. Simmonds*, Boise State University; *D. Hurley*, *K. Gofryk*, Idaho National Laboratory

Atomic Scale Processing Focus Topic

Room Ballroom A - Session AP-TuP

Atomic Scale Processing Poster Session, 6:30-8:30pm

AP-TuP-1 A Computational and Experimental Investigation of Platinum Vapor Deposition Reactions on Oxygen and Nitrogen Functionalized Carbon, *I. Campbell*, *N. Nayir*, Penn State University; *S. Kuespert*, *N. Ortlieb*, *A. Fischer*, University of Freiburg, Germany; *A. Van Duin*, *Suzanne Mohney*, Penn State University

AP-TuP-2 Subtractive Printing of Atomic Layer Deposition using Electrohydrodynamic Jet Printing, *Tae Cho*, *N. Farjam*, *K. Barton*, *N. Dasgupta*, University of Michigan, Ann Arbor

AP-TuP-4 Design of Gas Flow Field for a Sustainable ALD Process Chamber, *Kyung-Hoon Yoo*, Korea Institute of Industrial Technology (KITECH), Republic of Korea; *G. Song*, KUMYOUNG ENG Inc., Republic of Korea; *C. Kim*, TNG Co., Republic of Korea; *J. Hwang*, *H. Lee*, Korea Institute of Industrial Technology, Republic of Korea; *K. Lee*, SAMSUNG DISPLAY, Republic of Korea

AP-TuP-5 Atomic Structure Characterization of PEALD Semiconductors by Using HRSTEM, *Chien-Nan Hsiao*, *C.C. Chen*, National Applied Research Laboratories, Taiwan; *W.-C. Chen*, National applied research Laboratories, Taiwan; *F.Z. Chen*, National Applied Research Laboratories, Taiwan

Biomaterial Interfaces Division

Room Ballroom A - Session BI-TuP

Biomaterial Interfaces Poster Session, 6:30-8:30pm

BI-TuP-2 Direct Detection of COVID-19 Oligonucleotides Through Formation of Nanoparticle Satellite Conjugates, *Hannah Umoeke*, *A. Martinez*, *C. Afzulpurkar*, *M. Sharma*, *S. Talasila*, *T. Nguyen*, *D. Singh*, *I. Shortt*, *E. La Plante*, *S. Koh*, The University of Texas at Arlington

BI-TuP-3 Study of Catechol Reaction Mechanisms, *J. Appenroth*, *Laura L. E. Meares*, *A. Celebi*, *M. Valtiner*, Vienna University of Technology, Austria

BI-TuP-6 Direct Observation of Focal Adhesion by Nanoendoscopy-AFM in Live Cells, *Alam Mohammad Shahidul*, *T. Shirokawa*, *T. Ichikawa*, *K. Miyazawa*, *K. Miyata*, *T. Fukuma*, Kanazawa University, Japan

BI-TuP-8 pH Responsive Functionally Graded Nano-Composites Coatings for Studying Hepatocellular Carcinoma Cellular Behaviour, *Juhi Jaiswal*, *M. Dhayal*, Indian Institute of Technology (Banaras Hindu University), India

BI-TuP-9 'Plasmon Resistor' Device – Electronic Transduction of Plasmon Signals for Highly Sensitive Detection of Biomolecules, *Corbin Feit*, University of Central Florida; *P. Rathi*, *S. Singamaneni*, Washington University, St. Louis; *P. Banerjee*, University of Central Florida

BI-TuP-10 Hemoglobin-Bound Iron Fraction In Thin Films Rapidly Solidified From 100µL Drops Measured By Extended X-ray Absorption Fine Structure (EXAFS), *Arjun Sekar*, *A. Suresh*, *R. Rane*, *A. Thinakaran*, Arizona State University; *J. Bischoff*, Simon Fraser University, Canada; *N. Herbots*, Arizona State University; *K. Kavanagh*, Simon Fraser University, Canada

BI-TuP-12 Detecting Shared Touch Surface Contamination with a Deep Learning-Enhanced Smartphone and Nanopatterned Material System, *Ainslie Allen*, *J. Andle*, *O. Biswas*, University of Maine; *R. Perry*, VEMI Lab; *S. Yasaei Sekeh*, *C. Howell*, University of Maine

BI-TuP-13 Smartphone Enabled Micro/ Nano Microscopy for Biomedical Sensing, *M. Sami*, Rutgers University; *Umer Hassan*, Rutgers, The State University of New Jersey

Chemical Analysis and Imaging Interfaces Focus Topic

Room Ballroom A - Session CA-TuP

Chemical Analysis and Imaging Interfaces Poster Session 6:30pm

CA-TuP-1 The Metrology Platform for in Operando Characterization of the Diamond Based High Power Devices and Detectors, *Andrei Kolmakov*, NIST

CA-TuP-2 Using Complimentary Characterization Techniques to Understand Interfacial Phenomena, *Vincent Smentkowski*, GE-R; *I. Spinelli*, *M. Knussman*, *M. Larson*, *J. Della Villa*, 1 Research Circle

Magnetic Interfaces and Nanostructures Division

Room Ballroom A - Session MI-TuP

Magnetic Interfaces and Nanostructures Poster Session 6:30pm

MI-TuP-1 Microscopy with Momentum and Imaging Spin-Filter (Au/Ir), *Marten Patt*, *M. Escher*, *N. Weber*, *T. Kuehn*, *M. Merkel*, FOCUS GmbH, Germany

MI-TuP-2 Investigating the Magnetic Properties of the Co-Tb Phase Diagram, *Sydney Harrington*, *B. Wilfong*, United States Naval Academy; *D. Heiman*, Northeastern University; *M. Jamer*, United States Naval Academy

Manufacturing Science and Technology Group

Room Ballroom A - Session MS-TuP

Manufacturing Science and Technology Poster Session 6:30-8:30pm

MS-TuP-2 Materials Metrology Using in-Line SIMS System for Improved Manufacturing Process Control in Advanced Nodes, *Ganesh Vanamu*, *J. Hoffman*, *L. Rooney*, *S. Okada*, Nova Measuring Instruments

MEMS and NEMS Technical Group

Room Ballroom A - Session MN-TuP

MEMS and NEMS Poster Session, 6:30-8:30pm

MN-TuP-1 Nanoelectromechanical Resonators Based on Mechanically Anisotropic 2D Material, *Bo Xu*, *F. Xiao*, *J. Zhu*, *Y. Liang*, *C. Jiao*, *J. Li*, *Q. Deng*, *S. Wu*, *T. Wen*, *S. Pei*, *J. Xia*, *Z. Wang*, University of Electronic Science and Technology of China

MN-TuP-2 Frequency Scaling in Electrically Tunable WSe₂ Nanomechanical Resonators, *Jiankai Zhu*, *B. Xu*, *F. Xiao*, *Y. Liang*, *C. Jiao*, *J. Li*, *Q. Deng*, *S. Wu*, *T. Wen*, *S. Pei*, *J. Xia*, *Z. Wang*, University of Electronic Science and Technology of China

MN-TuP-3 Strain-Modulated Dissipation and Signal Transduction in Two-Dimensional Molybdenum Disulfide Nanoelectromechanical Resonators, *Pengcheng Zhang*, *Y. Rui*, Shanghai Jiao Tong University, China

MN-TuP-4 Titania Nanotube Array Electrochemical Characterization and Integration Into a Mechanically-Adaptive Neural Interface, *D. Sacco*, *H. Wang*, *T. Stegall*, *A. Menon*, *Y. Yang*, *J. Capadona*, Case Western Reserve University; *H. Amani Hamedani*, *Allison Hess-Dunning*, Louis Stokes Cleveland VA Medical Center

MN-TuP-5 One-Dimensional Photonic Crystals with Narrow-Band Defect Modes Fabricated by Direct Laser Writing, *Victoria P. Stinson*, *M. McLamb*, *T. Hofmann*, University of North Carolina at Charlotte

MN-TuP-6 Ultra-High-Quality-Factor Membrane Resonators for Gas Pressure Sensing, *Christoph Reinhardt*, Deutsches Elektronen-Synchrotron (DESY), Germany; *H. Masalehdan*, University of Hamburg, Germany

MN-TuP-7 The Effect of Laser Processing on Drug-Loaded Polymers for Microfabricated Neural Interfaces, *Natalie Mueller*, *M. Ya Mungu Ocoko*, *D. Chirra*, *P. Dernelle*, *A. Hermoso*, *J. Capadona*, *A. Hess-Dunning*, Case Western Reserve University

MN-TuP-8 Pressure Control During Bronze Infiltration of Binder-Jet Printed Stainless-Steel to Create Metal Microchannels, *H. Davis*, *J. Harkness*, *I. Kohls*, *N. Crane*, *B. Jensen*, *R. Vanfleet*, *Robert C. Davis*, Brigham Young University

Nanoscale Science and Technology Division

Room Ballroom A - Session NS-TuP

Nanoscale Science and Technology Poster Session 6:30pm

NS-TuP-1 Collection of Raman Signal in a Liquid Using Plasmonic Vortex Fiber, *Rohil Kayastha*, *B. Birmingham*, *Z. Zhang*, Baylor University

NS-TuP-2 Chemical Mechanical Planarization Slurry Stability Study, *Yibin Zhang*, FUJIFILM Electronic Materials USA., Inc.

NS-TuP-3 A New Tool for Quantum and Nanoscale Materials Engineering, *Gianfranco Aresta*, Ionoptika Ltd, UK

NS-TuP-4 Atomic Silicon Wires: Dopant Mediated Charging Characterization, *Max Yuan*, University of Alberta, Canada; *R. Wolkow*, University of Alberta, Quantum silicon, Canada; *R. Achal*, *J. Croshaw*, Quantum Silicon, Canada; *T. Chutora*, *F. Altincicek*, *C. Leon*, University of Alberta, Canada; *L. Livadaru*, Quantum silicon, Romania; *J. Pitters*, Quantum silicon, Canada

New Trends on Structural and Electronic Characterization of Materials, Interfaces, and Surfaces Using Synchrotron and FEL-Based Radiation Sources Focus Topic

Room Ballroom A - Session LS-TuP

New Trends on Structural and Electronic Characterization of Materials, Interfaces, and Surfaces Using Synchrotron and FEL-Based Radiation Sources Poster Session

6:30pm

LS-TuP-2 Synchrotron Hard X-Ray Scattering for Investigation of ALD Processes, *Jeffrey Woodward*, U.S. Naval Research Laboratory; *P. Myint*, *B. Jiang*, Boston University; *X. Zhang*, University of Vermont; *C. Wang*, *K. Ludwig*, Boston University; *R. Headrick*, University of Vermont; *S. Rosenberg*, U.S. Naval Research Laboratory; *K. Evans-Lutterodt*, *L. Wiegart*, *A. Fluerasu*, *R. Li*, *M. Fukuto*, Brookhaven National Laboratory; *C. Eddy*, U.S. Naval Research Laboratory

LS-TuP-3 High Energy X-Ray Photoelectron Spectroscopy of COTS Electronics Interfacial Failure Modes, *Samantha G. Rosenberg*, *M. Meyerson*, *M. Kottwitz*, Sandia National Laboratories; *R. Rajendran*, Georgia Institute of Technology; *M. Reingold*, *B. Young*, Sandia National Laboratories; *P. Singh*, *J. Kacher*, Georgia Institute of Technology; *J. Fowler*, Sandia National Laboratories

LS-TuP-4 In situ AFM Imaging of the Structural and Morphological Evolution of Epitaxial LiCoO₂ Films during Charge and Overcharge, *Yingge Du*, Pacific Northwest National Laboratory; *W. Samarakoon*, Oregon State University; *J. Hu*, *L. Wang*, Pacific Northwest National Laboratory; *Z. Feng*, Oregon State University; *J. Tao*, Pacific Northwest National Laboratory

Plasma Science and Technology Division

Room Ballroom A - Session PS-TuP

Plasma Science and Technology Poster Session

6:30pm-8:30pm

PS-TuP-1 SiO₂ Contact Hole Etching Using Heptafluoropropyl Methyl Ether Plasmas, *Sanghyun You*, *C. Kim*, Ajou University, Republic of Korea

PS-TuP-2 Selective Cyclic Etching of Silicon Oxide Over Silicon Nitride Using NF₃/H₂ Remote Plasma and NH₃, *Hong Seong Gil*, *Y. Gill*, *D. Kim*, *Y. Jang*, *H. Kwon*, *D. Kim*, *G. Yeom*, Sungkyunkwan University (SKKU), Republic of Korea

PS-TuP-3 Identification of Critical Factors in Plasma Enhanced Atomic Layer Etching of Silicon Nitride through First-Principles-Based Simulations, *Erik Cheng*, *G. Hwang*, The University of Texas at Austin; *P. Ventzek*, *Z. Chen*, *S. Sridhar*, Tokyo Electron America

PS-TuP-6 Dry Etching of Co Thin Films Using High Density Plasma of Organic Gases, *S. Y. Park*, *E. Lim*, *Seon Jae Kim*, *C. Chung*, *S.J. Kim*, Inha University, Republic of Korea

PS-TuP-8 Selective Etching of Silicon Nitride with Remote ClF₃/H₂ Plasma, *Seongjae Yu*, *K. Kim*, *Y. Ji*, *J. Kang*, *G. Yeom*, Sungkyunkwan University (SKKU), Republic of Korea

PS-TuP-9 Treatment and Gasification of Spent Caustic wastes using transferred Arc Thermal Plasma Torch with Syngas Production, *R. Aghayee*, *Farzaneh Ostovarpour*, *M. Abbassi Shanbehbazar*, Laser and Plasma Research Institute (LAPRI), Shahid Beheshti University, Iran (Islamic Republic of); *M. Shafiei*, *M. Khani*, *B. Shokri*, Laser and Plasma Research Institute (LAPRI), Shahid Beheshti University, Iran (Islamic Republic of)

PS-TuP-10 Layer-by-Layer Etching of Copper Thin Films Under Acetylacetone/O₂ Gas Mixture, *Seung Hyun Kim*, *E. Lim*, *S. Park*, *C. Chung*, Inha University, Republic of Korea

PS-TuP-11 Enhancement of Plasma Uniformity Controlling Thermal Conductivity by Insulator Ring, *Jinuk Park*, *J. Park*, Sungkyunkwan University (SKKU), Republic of Korea

PS-TuP-12 Effect of C₄H₂F₆ Isomers on the Etch Characteristics of SiO₂, *Hyejoon Lee*, *H. Tak*, *S. Kim*, *D. Sung*, *T. Park*, *J. Kim*, *J. Min*, Sungkyunkwan University (SKKU), Republic of Korea; *W. Long*, Sungkyunkwan University (SKKU), China; *D. Kim*, *G. Yeom*, Sungkyunkwan University (SKKU), Republic of Korea

PS-TuP-13 Analysis on Ion Energy Distribution and Ion Mean Energy for All Radio-Frequencies and Pressures, *Inho Seong*, *S. Kim*, *Y. Lee*, *C. Cho*, *W. Jeong*, *Y. You*, *S. You*, Chungnam National University, Republic of Korea

PS-TuP-14 Moving Toward Antibacterial Wound Dressings: Modifying Commercially-available Materials Using Pulsed and Continuous-wave 1,8-cineole Plasma, *Mia-Rose Kayaian*, *M. Hawker*, California State University, Fresno

PS-TuP-15 To What Extent Do Nitrogen and Water Vapor Plasma Treated Silk Films Exhibit Hydrophobic Recovery?, *Ashley Keobounnam*, *C. Lenert-Mondou*, *M. Hawker*, California State University, Fresno

PS-TuP-16 Ion Energy Control Independent with Ion Density Using a Passive Antenna in an Inductively Coupled Plasma Source, *Minsu Choi*, *S. Kim*, *I. Seong*, *C. Cho*, *Y. Lee*, *W. Jeong*, *Y. You*, *B. Choi*, *S. You*, Chungnam National University, Republic of Korea

PS-TuP-17 The Impact of Si₃N₄ Ultra-thin Layer on InN Growth on Si(111) by RF-MOMBE, *Wei-Chun Chen*, Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan; *S. Chen*, *C. Cheng*, Department of Mechatronic Engineering, National Taiwan Normal University, Taiwan

PS-TuP-18 Machine Learning Based Surrogate Models for Capacitively Coupled Plasmas, *L. Yan*, Applied Materials, Inc. (Currently with University of Pennsylvania); *Abhishek Verma*, *S. Ganta*, *K. Bera*, Applied Materials, Inc.

PS-TuP-19 Chemistry Reduction in Fluid Plasma Simulations, *Ramanish Singh*, Applied Materials Inc. (Currently with University of Minnesota); *S. Ganta*, *A. Verma*, *K. Bera*, Applied Materials, Inc.

Spectroscopic Ellipsometry Focus Topic

Room Ballroom A - Session EL-TuP

Spectroscopic Ellipsometry Poster Session, 6:30-8:30pm

EL-TuP-2 Unraveling the Ultra-Violet Active Chiroptical Response by ZrO₂ Helical Nanostructures, *Ufuk Kilic*, *M. Hilfiker*, *S. Wimer*, *S. G. Kilic*, *C. Argyropoulos*, *E. Schubert*, *M. Schubert*, University of Nebraska-Lincoln

EL-TuP-4 A Review of Refractive Index Refinements Analysis in Mono layers Absorbents Atomic Layer Deposition (ALD) or Molecular Physisorption Phenomena, *F. Ferrieu*, Optical Polarimetry Ellipsometry, Switzerland; *Christophe Vallee*, SUNY POLY, Albany

Surface Science Division

Room Ballroom A - Session SS-TuP

Surface Science Poster Session, 6:30-8:30pm

SS-TuP-1 Monolayer Functionalization of Semiconductor and Metal Oxide Surfaces with Boron-Containing Precursors, *Dhamelyz Silva Quinones*, *C. Byron*, *A. Telyakov*, University of Delaware

SS-TuP-2 Detection of Chemically-induced Hot Electron Flux Amplified by Plasmonic Effect on Pt/Ag/TiO₂ Nanodiodes, *Mincheol Kang*, *B. Jeon*, *J. Park*, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea

SS-TuP-3 Boosting Hot Electron Generation and Catalytic Performance by Engineering Metal-Oxide Interfaces, *Kyoungjae Song*, *J. Park*, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea

SS-TuP-4 Effect of Water Vapor on Oxidation Process of Cu(111) Surface and Sublayer; Ambient Pressure STM and XPS Studies, *Youngjae Kim*, *D. Kim*, *Y. Kim*, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea; *Y. Jeong*, Institute for Basic Science (IBS), Republic of Korea; *B. Jeong*, Korea Basic Science Institute (KBSI), Republic of Korea; *J. Park*, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea

SS-TuP-5 Phase-Dependence on the Friction of Exfoliated MoX₂ (X: S, Te) Layers, *Dooho Lee*, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea; *H. Jeong*, Korea Advanced Institute of Science and Technology, Republic of Korea; *H. Lee*, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea; *Y. Kim*, Korea Advanced Institute of Science and Technology, Republic of Korea; *J. Park*, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea

SS-TuP-6 Electron Dynamics at a Confined Cu₂O/Cu Interface, *J. Trey Diulus, J. Beckord, Z. Novotny, N. Comini, M. Hengsberger, J. Osterwalder*, University of Zurich, Switzerland

SS-TuP-7 Understanding Interfaces to Develop Advanced Materials for Industrial Applications, *Pierluigi Bilotto Bilotto, M. Ostermann, D. Miano*, Centre for Electrochemistry and Surface Technology (CEST GmbH), Austria; *M. Valtiner*, Centre for Electrochemistry and Surface Technology (CEST GmbH), Vienna University of Technology (TUW), Austria

SS-TuP-8 Investigation of CO Oxidation on Rh(111) with IRRAS, *Faith Lewis, D. Killelea*, Loyola University Chicago

SS-TuP-9 Modifications of Surface Optoelectronics in ZnO Nano- and Microcrystals Following Exposure to *Staphylococcus Aureus* and Bacterial Growth Media, *Dustin Johnson*, Texas Christian University; *J. Reeks*, INSTITUTE OF LOW TEMPERATURE AND STRUCTURE RESEARCH - POLISH ACADEMY OF SCIENCES, Poland; *A. Caron*, Texas Christian University; *I. Tzoka*, University of Texas at Arlington; *O. Castillo, K. Nguyen*, Paschal High School; *M. Hattarki*, Rice University; *S. McGillivray, Y. Strzhemechny*, Texas Christian University

SS-TuP-10 A Potential Model for Investigating the Edge Properties of FeO by Taking Advantage of Different Metal Affinities, *Dairong Liu, L. Li, S. Mahapatra, N. Jiang*, University of Illinois - Chicago

SS-TuP-11 Effects of Thermal Atomic Layer Etching on the Magnetic Properties of CoFeB, *Marissa Pina, M. Konh, Y. Wang, J. Xiao, A. Teplyakov*, University of Delaware

SS-TuP-12 The Diamond (111) Surface Reconstruction and Epitaxial Graphene Interface, *Benjamin Reed*, National Physical Laboratory, UK; *M. Bathen*, ETH Zurich, Switzerland; *J. Ash*, Aberystwyth University, UK; *C. Meara*, Newcastle University, UK; *A. Zakharov*, Max IV Laboratory, Sweden; *J. Goss*, Newcastle University, UK; *J. Wells*, University of Oslo, Norway; *D. Evans*, Aberystwyth University, UK; *S. Cooil*, University of Oslo, Norway

SS-TuP-13 The Nature of Electrical Double Layer Near Graphene and Anatase, *Xiao Zhao, S. Yang, M. Salmeron*, LBNL

SS-TuP-14 Reactions of Tetrakis(Dimethylamido)Titanium on Halogenated, Hydrogenated, and Oxidized Silicon Monolayer Resists for Atomic Layer Deposition, *Tyler Parke, D. Silva-Quinones, A. Teplyakov*, University of Delaware

SS-TuP-15 A 2D Bismuth-induced Honeycomb Surface Structure on GaAs(111), *Yi Liu, S. Benter*, Lund University, Sweden; *C. Ong, R. Maciel, O. Eriksson*, Uppsala University, Sweden; *A. Mikkelsen, R. Timm*, Lund University, Sweden

SS-TuP-16 Hydrochloride Production from Dichlorosilane Decomposition and Its Impact on Atomic Layer Deposition of Silicon Nitride, *Tsung-Hsuan Yang, E. Cheng, G. Hwang, S. Johnson, J. Ekerdt*, University of Texas at Austin; *P. Ventzek, T. Iwao, J. Zhao*, Tokyo Electron America Inc.; *K. Ishibashi*, Tokyo Electron Ltd., Japan

SS-TuP-18 Enhancing Fiber-Coupled Thermal Emission Collection Using IR Plasmonic Coating, *Aman Patel, R. Kayastha, K. Agyepong, B. Birmingham, Z. Zhang*, Baylor University

SS-TuP-19 The Effects of Surface Treatments on the Nucleation and Growth of Ruthenium on Tantalum Nitride, *C. Feit, U. Kumar, N. Berriel, Luis Tomar, S. Seal, P. Banerjee*, University of Central Florida

SS-TuP-20 Laser Assisted Thermal Reactivity of Alkanes on Pt(111), *Julissa Velasquez*, University of Virginia

SS-TuP-21 ID31 - High-Energy Beamline at ESRF for Buried Interface Structure and Materials Processing, *Andrea Sartori, J. Drnec*, ESRF, France

SS-TuP-22 Modeling Surface Interactions: Methods and Select Applications, *Sierra Jubin*, Princeton University; *Y. Barsukov*, Princeton Plasma Physics Laboratory; *I. Kaganovich*, Princeton Plasma Physics Laboratory

SS-TuP-24 Deterministic Switching Using Unconventional Spin-Orbit Torques in Atomically Clean WTe₂/FGT Heterostructures, *Sean Yuan, I. Kao, R. Muzzio*, Carnegie Mellon University; *J. Edgar*, Kansas State University; *J. Goldberger*, Ohio State University; *J. Yan*, Oak Ridge National Laboratory; *J. Hwang*, Ohio State University; *J. Katoch, S. Singh*, Carnegie Mellon University

SS-TuP-25 Preparing and Characterizing Thin Hexagonal Boron Nitride Flakes for Creating Spin Defects, *Seth Eisenberger, I. Kao, R. Muzzio, J. Katoch, S. Singh*, Carnegie Mellon University

SS-TuP-26 Visualizing the Electronic Structure of Multiple Twisted Bilayer Graphene Domains, *Indra Periwal, R. Muzzio*, Carnegie Mellon University; *C. Jozwiak, A. Bostwick, E. Rotenberg*, Lawrence Berkeley National Laboratory; *S. Singh, J. Katoch*, Carnegie Mellon University

SS-TuP-27 Angle-Resolved XPS Analysis of the Oxidation of Ru Thin Films, *Shivan Antar, A. Valenti, R. Wheeler, C. Ventrice*, SUNY Polytechnic Institute; *M. Strohmayer, J. Brewer, C. Nassar, C. Keimel*, Menlo Micro

Vacuum Technology Division

Room Ballroom A - Session VT-TuP

Vacuum Technology Poster Session, 6:30-8:30pm

VT-TuP-1 Analysis and Quantification of the Impurities in a 300mm Etch Tool Exhaust During an Oxide Etch Process with CF₄ Under Plasma, *Anup Kumar Doraiswamy, C. Jennings*, Air Liquide; *N. Stafford*, air liquide; *P. Nguyen*, Air Liquide

VT-TuP-2 Amorphous Carbon Thin Films: Influence of Hydrogen Contamination on the Secondary Electron Emission Properties, *Carolina Adame*, CEFITEC, NOVA School of Science and Technology, Portugal; *E. Alves, N. Barradas*, DECN and IPFN, Instituto Superior Técnico, University of Lisbon, Portugal; *N. Bundaleski*, CEFITEC, NOVA School of Science and Technology, Portugal; *P. Pinto*, CERN, Switzerland; *J. Deuermeier*, CENIMAT|i3N, NOVA School of Science and Technology and CEMOP/UNINOVA, Portugal; *Y. Delaup*, CERN, Switzerland; *I. Ferreira*, CENIMAT|i3N, NOVA School of Science and Technology and CEMOP/UNINOVA, Portugal; *H. Neupert, M. Himmerlich, S. Pfeiffer, M. Rimoldi, M. Taborelli*, CERN, Switzerland; *O. Teodoro*, CEFITEC, NOVA School of Science and Technology, Portugal

Wednesday Morning, November 9, 2022

	<p>Smart Multifunctional Materials for Nanomedicine Focus Topic Room 301 - Session SM-WeM Smart Multifunctional Materials for Nanomedicine and Theranostics Moderators: Diego La Mendola, University of Pisa, Italy, François Reniers, Université Libre de Bruxelles, Belgium, Cristina Satriano, University of Catania, Italy</p>	<p>Chemical Analysis and Imaging Interfaces Focus Topic Room 302 - Session CA+HC+LS+VT-WeM Multiphase Interfacial Analysis and Imaging Moderators: Andrei Kolmakov, National Institute of Standards and Technology (NIST), Slavomir Nemsak, Advanced Light Source, Lawrence Berkeley National Laboratory</p>
8:00am		<p>INVITED: CA+HC+LS+VT-WeM-1 Probing the Impact of Nanoscale Defect Sites in Perovskite Photovoltaic Films with Time-Resolved Photoemission Electron Microscopy, Keshav Dani, 1919-1 Tancha, Kunigami-kun, Japan</p>
8:20am		
8:40am	<p>INVITED: SM-WeM-3 Plasma-Enabled Switchable Surfaces: Going from Molecules to Bacteria, U. Cvelbar, Martina Modic, Jozef Stefan Institute, Slovenia</p>	<p>INVITED: CA+HC+LS+VT-WeM-3 Correlating Structure and Chemistry Using Ambient Pressure Photoemission and X-Ray Scattering, Slavomir Nemsak, Lawrence Berkeley Laboratory Advanced Light Source</p>
9:00am		
9:20am	<p>SM-WeM-5 Cisplatin-Loaded Pd Nanoparticles as Bimodal Theranostic Nanomedicine in the Tumor Treatment, A. Bellissima, G. Scivoletto, L. Cucci, V. Sanfilippo, University of Catania, Italy; A. De Bonis, University of Basilicata, Italy; R. Fiorenza, S. Scirè, University of Catania, Italy; V. Notarstefano, E. Giorgini, Polytechnic University of Marche, Italy; Cristina Satriano, University of Catania, Italy</p>	<p>CA+HC+LS+VT-WeM-5 Gating of the 2D Hole Transport in Diamond by Subsurface Charges, E. Strelcov, Andrei Kolmakov, NIST</p>
9:40am	<p>SM-WeM-6 Old Drugs for a Golden Future: Clinically Established Au-Based Complexes...from Repurposing to Potential Application in Nanomedicine, Tiziano Marzo, L. Chiaverini, D. La Mendola, University of Pisa, Department of Pharmacy, Italy</p>	<p>CA+HC+LS+VT-WeM-6 Development of 0-D Argon Collisional Radiative Model conjoined with Optical Emission Spectroscopy between 1 mTorr to 760 Torr, Tag Choi, N. Abuyazid, D. Patel, University of Illinois at Urbana-Champaign; D. Jacobson, LytEn. Inc; S. Keniley, S. Dubowsky, D. Barlaz, D. Curreli, D. Ruzic, University of Illinois at Urbana-Champaign</p>
10:00am	<p>BREAK - Complimentary Coffee in Exhibit Hall</p>	<p>BREAK - Complimentary Coffee in Exhibit Hall</p>
10:20am		
10:40am		
11:00am	<p>SM-WeM-10 Plasmonic Tuning of Go-Based Nanosheets by Plasmonic Noble Metal Nanorods for Self-Cleaning Photothermal Surfaces to Fight Surface Contamination, Vanessa Sanfilippo, T. Pascal, A. Foti, University of Catania, Department of Chemical Sciences, Italy; A. Fraix, S. Petralia, G. Forte, University of Catania, Department of Drug and Health Sciences, Italy; C. Fortuna, University of Catania, Department of Chemical Sciences, Italy; A. Giuffrida, C. Satriano, University of Catania, Department of Chemical Sciences, Italy</p>	<p>INVITED: CA+HC+LS+VT-WeM-10 Atomic-Scale Modeling of Bismuth and Argon Clusters Sputtering of Water/Vacuum Interfaces, Zbigniew Postawa, M. Kański, C. Chang, S. Hrabar, Jagiellonian University, Poland</p>
11:20am	<p>SM-WeM-11 Green Synthesis of Metal Nanoparticles for Wound Healing Applications, Alice Foti, V. Sanfilippo, University of Catania, Italy; V. Caruso, R. Inturri, P. Amico, S. Vaccaro, Fidia Farmaceutici S.p.A., Italy; C. Satriano, University of Catania, Italy</p>	
11:40am	<p>SM-WeM-12 Nanoparticles Loaded with Histidine Rich Peptides for Wound Healing, Diego La Mendola, Università di Pisa, Italy; L. Chiaverini, T. Marzo, University of Pisa, Italy</p>	<p>INVITED: CA+HC+LS+VT-WeM-12 Finite-Elements Modeling of Solid-Electrolyte Interfaces in Through-Membranes Imaging and in-Liquid Scanning Probe Experiments, Alexander Tselev, Department of Physics & CICECO-Aveiro Institute of Materials, University of Aveiro, Portugal</p>
12:00pm		

Wednesday Morning, November 9, 2022

2D Materials Technical Group Room 303 - Session 2D+EM+MI+NS+QS-WeM 2D Materials: Quantum and Symmetry-Protected States Moderators: Thomas Michely , University of Cologne, Germany, Frances Ross , Massachusetts Institute of Technology		Nanoscale Science and Technology Division Room 304 - Session NS+AP+BI+SS-WeM Frontiers in Scanning Probe Microscopy Including Machine Learning Moderators: Wonhee Ko , University of Tennessee, Knoxville, Adina Luican-Mayer , University of Ottawa, Canada	
8:00am	INVITED: 2D+EM+MI+NS+QS-WeM-1 Semi-High Throughput Investigation of 2d Materials: Anomalous Quantum Confinement Effect and Spectral Properties, <i>Francesca Tavazza</i> , <i>K. Choudhary</i> , National Institute of Standard and Technology		
8:20am			
8:40am	2D+EM+MI+NS+QS-WeM-3 Dry Patterning Chemically Sensitive Quantum Materials, <i>Joseph Benigno</i> , <i>Q. Zou</i> , <i>C. Cen</i> , <i>L. Li</i> , West Virginia University	NS+AP+BI+SS-WeM-3 Decay Rate Spectroscopy for a Direct Probe of Josephson and Andreev Currents on the Atomic Scale, <i>Wonhee Ko</i> , University of Tennessee, Knoxville; <i>J. Lado</i> , Aalto University, Finland; <i>E. Dumitrescu</i> , <i>P. Maksymovych</i> , Oak Ridge National Laboratory	
9:00am	2D+EM+MI+NS+QS-WeM-4 Electron Transport and Charge Sensing in Strongly Coupled Quantum Dot Array in Silicon, <i>Fan Fei</i> , <i>J. Wyrick</i> , <i>P. Nambodiri</i> , <i>J. Fox</i> , NIST; <i>E. Khatami</i> , SJSU; <i>R. Silver</i> , NIST	NS+AP+BI+SS-WeM-4 Machine Learning-Driven Automated Scanning Probe Microscopy: Application to Ferroelectric Materials, <i>Yongtao Liu</i> , <i>K. Kelley</i> , <i>R. Vasudevan</i> , Oak Ridge National Laboratory, USA; <i>H. Funakubo</i> , Tokyo Institute of Technology, Japan; <i>S. Kalinin</i> , University of Tennessee Knoxville; <i>M. Ziatdinov</i> , Oak Ridge National Laboratory, USA	
9:20am	INVITED: 2D+EM+MI+NS+QS-WeM-5 Observation of the Layer Hall Effect in Topological Axion Antiferromagnet $MnBi_2Te_4$, <i>Suyang Xu</i> , Harvard University	NS+AP+BI+SS-WeM-5 AVS Dorothy M. and Earl S. Hoffman Scholarship Talk: Direct Imaging of Light-Matter Interaction of 0-dimensional Excitonic Emitters using Tip-enhanced Scanning Probe Technique, <i>Kiyoun Jo</i> ¹ , <i>E. Marino</i> , <i>J. Lynch</i> , <i>Z. Jiang</i> , <i>N. Gogotsi</i> , University of Pennsylvania; <i>P. Schuck</i> , Columbia University; <i>N. Borys</i> , Montana State University; <i>C. Murray</i> , <i>D. Jariwala</i> , University of Pennsylvania	
9:40am		NS+AP+BI+SS-WeM-6 Nanoscale Subsurface Depth Sensitivity of Contact Resonance Atomic Force Microscopy on Layered Films, <i>Gheorghe Stan</i> , National Institute for Science and Technology (NIST); <i>C. Ciobanu</i> , Colorado School of Mines; <i>S. King</i> , Intel Corporation	
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall	
10:20am			
10:40am			
11:00am	2D+EM+MI+NS+QS-WeM-10 Phonon Limited Mobility and Phonon Drag in h-BN Encapsulated Monolayer and AB-stacked Bilayer Graphene, <i>Vasilii Perebeinos</i> , University at Buffalo	NS+AP+BI+SS-WeM-10 The Impact of Temperature on Viscoelastic Properties of Nanoscale Domains Within Polymer Composites, <i>Bede Pittenger</i> , <i>S. Osechinskiy</i> , <i>J. Thornton</i> , <i>S. Loire</i> , <i>T. Mueller</i> , Bruker Nano Surfaces	
11:20am	2D+EM+MI+NS+QS-WeM-11 Exciton Physics at the Atomic Scale, <i>Daniel Gunlycke</i> , U.S. Naval Research Laboratory	NS+AP+BI+SS-WeM-11 AFM Force Spectroscopy Combined with Machine-Learning Methods for Identifying Malaria Derived- EV Subpopulations, <i>Irit Rosenhek-Goldian</i> , <i>P. Abou Karam</i> , Weizmann Institute of Science, Israel; <i>T. Ziv</i> , Technion - Israel Institute of Technology, Israel; <i>H. Ben Ami Pilo</i> , <i>I. Azuri</i> , <i>A. Rivkin</i> , <i>E. Kiper</i> , <i>R. Rotkopf</i> , <i>S. Cohen</i> , Weizmann Institute of Science, Israel; <i>A. Torrecilhas</i> , Federal University of São Paulo, Brazil; <i>O. Avinoam</i> , Weizmann Institute of Science, Israel; <i>A. Rojas</i> , University of Costa Rica; <i>M. Morandi</i> , <i>N. Regev-Rudzki</i> , Weizmann Institute of Science, Israel	
11:40am	INVITED: 2D+EM+MI+NS+QS-WeM-12 Weyl Semimetals with Low-Symmetry Crystal Structure for Generating Out-of-Plane Oriented Spin Current, <i>Simranjeet Singh</i> , Carnegie Mellon University		
12:00pm			

¹ AVS Dorothy M. and Earl S. Hoffman Scholarship Recipient

Wednesday Morning, November 9, 2022

Plasma Science and Technology Division Room 305 - Session PS1+AP+TF-WeM Plasma Deposition and ALD Processes for Coatings and Thin Films Moderators: Sumit Agarwal, Colorado School of Mines		Plasma Science and Technology Division Room 315 - Session PS2+TF-WeM Plasma Processes of Non-Silicon Related Semiconductors for Energy-Efficient Devices in Power, Photovoltaics and Optoelectronics Applications Moderators: Kenji Ishikawa, Nagoya University, Japan, Steven Vitale, MIT Lincoln Laboratory	
8:00am	PS1+AP+TF-WeM-1 Hollow Cathode Enhanced Capacitively Coupled Plasmas in Ar / N ₂ / H ₂ Mixtures and Implications for Plasma Enhanced ALD, <i>David Boris</i> , U.S. Naval Research Laboratory; <i>M. Johnson</i> , Syntek Technologies; <i>C. Eddy</i> , ONR Global; <i>S. Walton</i> , U.S. Naval Research Laboratory	INVITED: PS2+TF-WeM-1 Low-Damage Etching of Nitride Semiconductors Utilizing Photo-Electrochemical Reactions, <i>Taketomo Sato</i> , Hokkaido University, Japan	
8:20am	PS1+AP+TF-WeM-2 Chasing Oxygen Out of Nitrides Grown on PEALD and Thermal ALD, <i>Bangzhi Liu</i> , The Pennsylvania State University; <i>B. Rayner</i> , KJ Lesker		
8:40am	INVITED: PS1+AP+TF-WeM-3 Area-Selective Deposition: A Bottom-Up Approach to Nanoelectronics Fabrication, <i>Silvia Armini</i> , IMEC, Belgium	PS2+TF-WeM-3 Gan Profile Understanding During the Plasma Etching of an HEMT Recessed-Gate with a Photoresist Mask, <i>Simon Ruel</i> , CEA-LETI, France; <i>P. Thoueille</i> , Lam Research Corporation, France; <i>P. Pimenta-Barros, N. Posseme</i> , CEA-LETI, France	
9:00am		PS2+TF-WeM-4 Quantitative Characterization of Plasma-Induced Defect Creation in InP Substrates Using Conductance Analysis, <i>Takahiro Goya</i> , Kyoto University, Japan; <i>Y. Kodama, Y. Zaizen, M. Fukasawa</i> , Sony Semiconductor Solutions Corporation, Japan; <i>K. Urabe, K. Eriguchi</i> , Kyoto University, Japan	
9:20am	PS1+AP+TF-WeM-5 The Role of Plasma in Plasma Enhanced Atomic Layer Epitaxy, <i>Scott Walton, D. Boris</i> , US Naval Research Laboratory; <i>M. Johnson</i> , Syntek Technologies, Inc.; <i>V. Wheeler, J. Woodward, S. Rosenberg, S. Johnson</i> , US Naval Research Laboratory; <i>K. Ludwig</i> , Boston University; <i>J. Hite, C. Eddy</i> , US Naval Research Laboratory	PS2+TF-WeM-5 Impact of Bias Power and Oxygen Addition on Selective Dry Etching of TiAlC over TiN Using N ₂ /H ₂ -based Plasmas, <i>Kenji Ishikawa, T. Nguyen</i> , Nagoya University, Japan; <i>K. Shinoda, H. Hamamura</i> , Hitachi, Japan; <i>K. Maeda, K. Yokogawa, M. Izawa</i> , Hitachi High Technologies, Japan; <i>M. Hori</i> , Nagoya University, Japan	
9:40am	PS1+AP+TF-WeM-6 Plasma-Enhanced Atomic Layer Deposition of TiAlN Thin Films: A Novel Approach for MAX-phase Synthesis, <i>Moses Nnaji</i> , Georgia Institute of Technology, USA; <i>D. Hitchcock</i> , Savannah River National Laboratory, USA; <i>E. Vogel</i> , Georgia Institute of Technology, USA		
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall	
10:20am			
10:40am			
11:00am	PS1+AP+TF-WeM-10 AVS Graduate Research Awardee Talk: Temporal Evolution of Densities and Temperatures in Sub-Microsecond Pulsed Microwave Discharges, <i>Dhruval Patel</i> ^{1,2} , <i>T. Choi, H. Swearingen</i> , University of Illinois at Urbana Champaign; <i>D. Jacobson</i> , Lyten; <i>J. Bruehl</i> , University of Illinois at Urbana Champaign; <i>B. Gittleman, M. Stowell</i> , Lyten; <i>E. Barlaz, S. Dubowsky, D. Ruzic</i> , University of Illinois at Urbana Champaign	PS2+TF-WeM-10 Bulk Titanium Micromachining and Simultaneous Sidewalls Passivation for Bio-MEMS Applications, <i>Rim Ettouri, T. Tillocher, P. Lefauchaux</i> , GREMI CNRS/Université d'Orléans, France; <i>B. Boutaud, J. Phung, H. Philippe</i> , MISTIC, France; <i>R. Dussart</i> , GREMI CNRS/Université d'Orléans, France	
11:20am	PS1+AP+TF-WeM-11 In situ Atomic Layer Doping Coupled Low-temperature Epitaxial Growth of β -Ga ₂ O ₃ Films via Plasma-enhanced ALD, <i>Saidjafarzoda Itham, A. Mohammad, J. Grasso</i> , University of Connecticut; <i>A. Okyay</i> , Stanford University; <i>B. Willis, N. Biyikli</i> , University of Connecticut	PS2+TF-WeM-11 Selective Dry Etching of TiAlC over TiN using N ₂ /H ₂ Plasma Chemistry, <i>Thi-Thuy-Nga Nguyen</i> , Nagoya University, Japan; <i>K. Shinoda, H. Hamamura</i> , Hitachi, Japan; <i>K. Maeda, K. Yokogawa, M. Izawa</i> , Hitachi High-Tech, Japan, Japan; <i>K. Ishikawa, M. Hori</i> , Nagoya University, Japan	
11:40am	PS1+AP+TF-WeM-12 Plasma-Polymer Coating of Li-Metal Anodes for the Improvement of Li-Ion Batteries, <i>Yannik Moryson, H. Hartmann, S. Otto</i> , Justus Liebig University Giessen, Germany; <i>X. Fang</i> , Technical University of Darmstadt, Germany; <i>M. Rohnke, J. Janek</i> , Justus Liebig University Giessen, Germany	PS2+TF-WeM-12 Surface Modification of CoSi through Interconnect Fabrication Processes, <i>Nathan Marchack, A. Orefice, M. Hopstaken, G. Cohen, C. Lavoie, R. Bruce, C. Chen</i> , IBM Research	
12:00pm	PS1+AP+TF-WeM-13 Fabrication and Evaluation of Composite Thin Film Membranes for Tritium Management in Future Fusion Plants, <i>Adam Job, C. Li</i> , Colorado School of Mines; <i>T. Fuerst, C. Taylor</i> , Idaho National Laboratory; <i>J. Way, C. Wolden</i> , Colorado School of Mines	PS2+TF-WeM-13 PbS Quantum Dots Thin Film Dry Etching, <i>Nicolas Le Brun</i> , LTM - MINATEC - CEA/LETI, France; <i>P. Gouraud</i> , STMicroelectronics, France; <i>G. Cunge</i> , LTM - MINATEC - CEA/LETI, France; <i>L. Parmigiani, S. Allegret-Maret</i> , STMicroelectronics, France	

¹ PSTD Coburn & Winters Student Award Finalist

² AVS Graduate Research Awardee

Wednesday Morning, November 9, 2022

Room 316		
8:00am	TF2+AP+SE+SS-WeM-1 Nucleation Enhancement of Ruthenium Atomic Layer Deposition Using Organometallic Molecules, <i>Amnon Rothman</i> , D. Tsousis, S. Bent, Stanford University	Thin Films Division Session TF2+AP+SE+SS-WeM ALD and CVD: Surface Reactions, Mechanisms and Kinetics Moderators: Jessica Kachian , Intel Corporation
8:20am	INVITED: TF2+AP+SE+SS-WeM-2 Ald of Chalcogenide and III-V Materials for Memory Applications, <i>Laura Nyns</i> , A. Delabie, W. Devulder, IMEC, Belgium; <i>J. Girard</i> , Air Liquide, France; <i>B. McKeown</i> , V. Pallem, Air Liquide; <i>T. Peissker</i> , <i>J. Sinha</i> , IMEC, Belgium; <i>N. Stafford</i> , Air Liquide; <i>J. Swerts</i> , IMEC, Belgium	
8:40am		
9:00am	TF2+AP+SE+SS-WeM-4 Plasma-enhanced Spatial ALD of SiO ₂ investigated by gas-phase Infrared and Optical Emission Spectroscopy, <i>M. Mione</i> , V. Vandalon, Eindhoven University of Technology, Netherlands; <i>A. Marnett</i> , TNO-Holst Centre & Eindhoven University of Technology, The Netherlands; <i>F. Roozeboom</i> , TNO-Holst Centre & Eindhoven University of Technology, Netherlands; <i>Erwin Kessels</i> , Eindhoven University of Technology, Netherlands	
9:20am	TF2+AP+SE+SS-WeM-5 Role of Al in Enhancing Growth Rate and Crystallinity in Chemical Vapor Deposition of Hf _{1-x} Al _x B ₂ Coatings Below 300 °C, <i>Kinsey Canova</i> ¹ , S. Shrivastav, C. Caroff, L. Souqui, G. Girolami, J. Krogstad, J. Abelson, University of Illinois at Urbana-Champaign	
9:40am	TF2+AP+SE+SS-WeM-6 Pushing the Limits of ALD Infilling to Produce Macroscopic Nanocomposites, <i>Benjamin Greenberg</i> , K. Anderson, A. Jacobs, J. Wollmershauser, B. Feigelson, U.S. Naval Research Laboratory	
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	Thin Films Division Session TF3+MS-WeM Simulations and Machine Learning Applications for Thin Films Moderator: Angel Yanguas-Gil , Argonne National Lab
10:40am		
11:00am	INVITED: TF3+MS-WeM-10 What an Experimentalist Needs from Computational Materials Science (Including Machine Learning) – Studies in Semiconductor Processing and Metrology, <i>Rafael Jaramillo</i> , MIT	
11:20am		
11:40am	TF3+MS-WeM-12 Computational Analysis and Design of Precursors for ALD and CVD of Metals, <i>S.D. Elliott</i> , A. Chandrasekaran, S. Tiwari, A. Fonari, D. Giesen, <i>Casey Brock</i> , Schrödinger	
12:00pm	TF3+MS-WeM-13 Dopant-selective Atomic Layer Deposition of Metals for Bottom-up Nanoelectronics, <i>Nishant Deshmukh</i> , Georgia Institute of Technology, USA; <i>D. Aziz</i> , A. Brummer, M. Filler, Georgia Institute of Technology	

Wednesday Morning, November 9, 2022

Thin Films Division Room 317 - Session TF1+SE-WeM Vapor Deposition and Vapor Infiltration of Organic, Polymeric, and/or Hybrid Materials Moderator: Siamak Nejati, University of Nebraska-Lincoln		Actinides and Rare Earths Focus Topic Room 318 - Session AC+LS+MI-WeM Magnetism, Electron Correlation, and Superconductivity in the Actinides/Rare Earths Moderators: James G. Tobin, University of Wisconsin-Oshkosh, Ladislav Havela, Charles University, Czech Republic, Gertrud Zwicknagl, Technical University Braunschweig, Germany	
8:00am	TF1+SE-WeM-1 Thermophysical Properties of Organic-Inorganic Hybrid Thin Films Created via Vapor Phase Infiltration (VPI), <i>Mark Losego</i> , Georgia Institute of Technology	INVITED: AC+LS+MI-WeM-1 The Relation between Crystal Chemistry and Superconductivity in Actinide-Based Superconductors, <i>Eteri Svanidze</i> , Max Plank Institute, Dresden, Germany	
8:20am	INVITED: TF1+SE-WeM-2 Chemical Vapor Deposition of Soft Materials for Garment-Integrated Sensor Systems and Plant Electronics, <i>Trisha L. Andrew</i> , University of Massachusetts Amherst		
8:40am		INVITED: AC+LS+MI-WeM-3 Revealing The Beauty of Uranium Compounds: the UMB ₄ (M=V, Cr, Fe, Co, Mo, W, Re, Os) and UFe _x Sb ₂ Cases, <i>Antonio Pereira Gonçalves</i> , Instituto Superior Técnico, Univ. Lisboa, Portugal	
9:00am	TF1+SE-WeM-4 Effects of Trimethylaluminum Vapor Pressure and Exposure Time on Inorganic Loading in Vapor Phase Infiltrated PIM-1 Polymer Membranes, <i>Benjamin Jean, Y. Ren, E. McGuinness, R. Lively, M. Losego</i> , Georgia Institute of Technology		
9:20am	TF1+SE-WeM-5 Elucidating the Sequential Infiltration of Trimethylaluminum and Water Into Polycarbonate Membranes and Thin Films, <i>Rajesh Pathak, R. Shevate, A. Mane, J. Elam</i> , Argonne National Laboratory, USA		
9:40am	TF1+SE-WeM-6 Kinetics of TiCl ₄ Vapor Phase Infiltration (VPI) into PMMA and the Resulting Thermophysical and Optical Properties of the TiO ₂ -PMMA Hybrids, <i>Shuaib Balogun</i> , Georgia Institute of Technology; <i>A. Steiner</i> , Sandia National Lab; <i>M. Losego</i> , Georgia Institute of Technology		
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall	
10:20am			
10:40am			
11:00am		AC+LS+MI-WeM-10 Uranium Hydrides Revisited, <i>Ladislav Havela</i> , Charles University, Faculty of Mathematics and Physics, Czechia; <i>D. Legut</i> , VSB Technical University Ostrava, Czechia; <i>J. Kolorenc</i> , Institute of Physics, Czech Academy of Sciences, Czechia	
11:20am	TF1+SE-WeM-11 Effect of the Metal-Heteroatom Bond on Film Growth and Properties in Vapor-Deposited, Hybrid Metal Organic Thin Films, <i>Jacqueline Lewis, J. Shi, A. Ravi, S. I-Cheng Hsu, S. Bent</i> , Stanford University	AC+LS+MI-WeM-11 Towards a Better Understanding of the Rkky Interaction in Ce- and Yb-Based Compounds: Anisotropies from Cef Effects and Fermi Surfaces, <i>Gertrud Zwicknagl</i> , Institut für Mathematische Physik, Germany; <i>V. Zevin</i> , The Racah Institute of Physics, Israel	
11:40am	TF1+SE-WeM-12 Oxidative Molecular Layer Deposition of Electrochemically Active Polymers, <i>Matthias Young¹, Q. Wyatt, M. Vaninger, N. Paranamana, T. Heitmann, H. Kaiser</i> , University of Missouri	AC+LS+MI-WeM-12 Mechanically Forced Tuning of Interactions in Tetragonal 221 Intermetallics, <i>Petr Král, J. Prchal</i> , Charles University, Czech Republic; <i>J. Kaštil</i> , Czech Academy of Sciences, Czech Republic; <i>D. Daisenberger</i> , Diamond Light Source, UK; <i>D. Staško</i> , Charles University, Czech Republic	
12:00pm	TF1+SE-WeM-13 Towards High Throughput Molecular Layer Deposition of Alucone Films, <i>Hardik Shantilal Jain²</i> , Holst Centre / TNO and Eindhoven University of Technology, The Netherlands; <i>M. Creatore</i> , Eindhoven University of Technology, The Netherlands; <i>P. Poodt</i> , Holst Centre / TNO and Eindhoven University of Technology, The Netherlands	AC+LS+MI-WeM-13 Effects of O ₂ Growth Pressure on the Magnetization of LaMnO ₃ -SrTiO ₃ Thin Films, <i>Ghadendra Bhandari</i> , West Virginia University; <i>R. Trappen</i> , University of Waterloo; <i>N. Mottaghi, M. Holcomb</i> , West Virginia University	

¹ 2020 TFD Paul Holloway Awardee

² TFD James Harper Award Finalist

Wednesday Morning, November 9, 2022

Room 319		
8:00am	SS1+HC-WeM-1 Development of a Predictive Model for Nb ₃ Sn Thin Film Growth: Elucidating the Substrate-Mediated Diffusion Pathways Guiding Alloy Formation in Accelerator Infrastructure, <i>Sarah Willson</i> , University of Chicago; <i>R. Farber</i> , University of Kansas; <i>S. Sibener</i> , University of Chicago	Surface Science Division Session SS1+HC-WeM Alloy Surface Reactivity Moderators: Zdenek Dohnalek , Pacific Northwest National Laboratory
8:20am	SS1+HC-WeM-2 Surface Chemical Reactions in the Oxidation of NiCr and NiCrW Alloys, <i>Petra Reinke</i> , <i>C. Volders</i> , University of Virginia, USA; <i>V. Avincola Angelici</i> , University of Virginia; <i>I. Waluyo</i> , <i>A. Hunt</i> , Brookhaven National Laboratory; <i>L. Arnadottir</i> , University of Oregon	
8:40am	INVITED: SS1+HC-WeM-3 High Throughput Methods for Comprehensive Study of Alloy Segregation and Structure Sensitivity, <i>Andrew Gellman</i> , <i>C. Fernandez-Caban</i> , <i>Z. Guo</i> , <i>R. Burnley</i> , Carnegie Mellon University, USA	
9:00am		
9:20am	SS1+HC-WeM-5 Unveiling the Ability of Rh Single Atoms to Enhance the Dissociation of Molecular Oxygen and Spillover to Cu, <i>Volkan Cinar</i> ¹ , Tufts University; <i>D. Guo</i> , Washington State University, US; <i>Y. Wang</i> , <i>C. Easton</i> , <i>H. Chen</i> , Tufts University; <i>N. Ulumuddin</i> , Washington State University, US; <i>R. Hannagan</i> , Tufts University; <i>I. Waluyo</i> , Brookhaven National Laboratory; <i>J. McEwen</i> , Washington State University, US; <i>C. Sykes</i> , Tufts University	
9:40am	SS2+AS+HC-WeM-6 Understanding the Growth of Sn and Pt-Sn Clusters on Titania and Carbon Surfaces, <i>S. Beniwal</i> , University of South Carolina; <i>W. Chai</i> , University of Texas at Austin; <i>M. Qiao</i> , <i>P. Kasala</i> , University of South Carolina; <i>K. Shin</i> , <i>G. Henkelman</i> , University of Texas at Austin; <i>Donna Chen</i> , University of South Carolina	Surface Science Division Session SS2+AS+HC-WeM Nanoparticle Surfaces Moderators: Zdenek Dohnalek , Pacific Northwest National Laboratory
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	
10:20am		
10:40am		
11:00am	SS2+AS+HC-WeM-10 Single Nanoparticle Surface Chemistry: Structure-Reactivity Relationships, Evolution During Reactions, and an Approach to Ultra-High Temperature Surface Chemistry, <i>C. Lau</i> , <i>A. Friese</i> , <i>D. Rodriguez</i> , <i>Scott Anderson</i> , University of Utah	
11:20am	SS2+AS+HC-WeM-11 Oxidation of Size-Selected Ag Clusters on Graphene: Bulk Motifs and Electronic Anomalies at sub-Nanoscale, <i>F. Loi</i> , University of Trieste, Italy; <i>M. Pozzo</i> , University College London, UK; <i>Luca Bignardi</i> , <i>L. Sbuely</i> , University of Trieste, Italy; <i>P. Lacovig</i> , <i>E. Tosi</i> , <i>S. Lizzit</i> , Elettra Sincrotrone Trieste, Italy; <i>A. Kartouzian</i> , <i>U. Heiz</i> , Technical University Munich, Germany; <i>R. Larciprete</i> , Institute for complex systems - CNR, Italy; <i>D. Alfè</i> , University College London, UK; <i>A. Baraldi</i> , University of Trieste, Italy	
11:40am	INVITED: SS2+AS+HC-WeM-12 Precision Engineering of Metal Nanoparticle Surfaces for Fundamental Studies of Catalytic Reactivity, <i>Michelle Personick</i> , Wesleyan University	
12:00pm		

Wednesday Morning, November 9, 2022

	Applied Surface Science Division Room 320 - Session AS+BI+CA+HC+LS+PS+SE+SS-WeM Analysis of Surfaces and Interfaces Related to Energy and the Environment Moderators: Kateryna Artyushkova , Physical Electronics, Tony Ohlhausen , Sandia National Laboratory	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Room 321 - Session HC+AS+SS-WeM Advances in Materials and Analysis in Heterogeneous Catalysis II Moderators: Sanjaya Sennayake , Brookhaven National Lab, Jason Weaver , University of Florida
8:00am	AS+BI+CA+HC+LS+PS+SE+SS-WeM-1 Adhesion Properties of Industrial Steel Samples, <i>Lukas Kalchgruber</i> , <i>M. Hahn</i> , <i>L. Mears</i> , <i>M. Valtiner</i> , TU Wien, Austria	
8:20am	AS+BI+CA+HC+LS+PS+SE+SS-WeM-2 An Electrochemically Polymerized Protective Layer for Magnesium Metal Anode, <i>Y. Wang</i> , University of Maryland College Park; <i>Alexander Kozen</i> , University of Maryland	HC+AS+SS-WeM-2 Development and Characterization of Highly Stable ALD Coated Catalysts for Dehydrogenation of Light Alkanes, <i>Jonathan Travis</i> , <i>J. Burger</i> , <i>A. Dameron</i> , Forge Nano
8:40am	INVITED: AS+BI+CA+HC+LS+PS+SE+SS-WeM-3 Analysis of Surfaces and Interfaces in Polymer Electrolyte Membrane Fuel Cell and Electrolyzer Devices, <i>Svitlana Pylypenko</i> , Colorado School of Mines	INVITED: HC+AS+SS-WeM-3 Combining Theory with Ambient Pressure XPS to Reveal Chemistry at Interfaces Under <i>In Situ</i> and <i>Operando</i> Conditions, <i>Ethan Crumlin</i> , Lawrence Berkeley National Laboratory
9:00am		
9:20am	AS+BI+CA+HC+LS+PS+SE+SS-WeM-5 XPS Analysis of Battery Materials, <i>Sarah Zaccarine</i> , <i>B. Schmidt</i> , <i>K. Artyushkova</i> , Physical Electronics USA; <i>A. Baniya</i> , <i>Q. Qiao</i> , Syracuse University	INVITED: HC+AS+SS-WeM-5 The Electrochemical Interface as a Reactive Environment to Resynthesize Electrode Surface Chemistry Using the Dissolution-Redeposition Dynamics, <i>Feng Lin</i> , Virginia Tech
9:40am	AS+BI+CA+HC+LS+PS+SE+SS-WeM-6 Novel Battery Material Analysis with High-Resolution and High-Throughput XPS, <i>J. Counsell</i> , <i>S. Coultas</i> , Kratos Analytical Inc., UK; <i>C. Moffitt</i> , Kratos Analytical Inc.; <i>C. Blomfield</i> , <i>Adam Roberts</i> , Kratos Analytical Limited, UK	
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am		
10:40am		
11:00am	AS+BI+CA+HC+LS+PS+SE+SS-WeM-10 Multimodal Analysis and Imaging of the Boehmite Layer on AA6061, <i>Lyndi Strange</i> , Pacific Northwest National Lab; <i>X. Yu</i> , Oak Ridge National Laboratory; <i>V. Shutthahandan</i> , <i>M. Song</i> , <i>Q. Miller</i> , <i>M. Bowden</i> , <i>J. Gao</i> , <i>Y. Zhang</i> , <i>J. Son</i> , <i>R. Shimskey</i> , <i>R. Prabhakaran</i> , Pacific Northwest National Lab; <i>V. Joshi</i> , Pacific Northwest National Laboratory	INVITED: HC+AS+SS-WeM-10 Ambient Pressure Spectroscopy of Catalytic Porous Nanofilms, <i>C. Eads</i> , MAX IV Laboratory, Sweden; <i>T. Hu</i> , <i>S. Tenney</i> , <i>Ashley Head</i> , Brookhaven National Laboratory
11:20am	AS+BI+CA+HC+LS+PS+SE+SS-WeM-11 Study of Cs _x (CH ₃ NH ₃) _{1-x} PbBr ₃ Perovskite with XPS Imaging and Small Area Spectra, <i>Tatyana Bendikov</i> , Weizmann Institute of Science, Israel; <i>Y. Rakita</i> , Columbia University; <i>H. Kaslasi</i> , <i>G. Hodes</i> , <i>D. Cahen</i> , Weizmann Institute of Science, Israel	
11:40am	AS+BI+CA+HC+LS+PS+SE+SS-WeM-12 Surface Characterization of Mineral Associated Organic Matters in Environmental Samples by Using X-Ray Photoelectron Spectroscopy (XPS), <i>Qian Zhao</i> , <i>M. Engelhard</i> , <i>O. Qafoku</i> , <i>K. Hofmockel</i> , Pacific Northwest National Laboratory	HC+AS+SS-WeM-12 Catalytic Oxidation of Methane on IrO ₂ (110) Films, <i>Jovenal Jamir</i> , <i>R. Martin</i> , University of Florida; <i>M. Kim</i> , Yeungnam University, Republic of Korea; <i>C. Lee</i> , <i>V. Mehar</i> , University of Florida; <i>A. Asthagiri</i> , The Ohio State University; <i>J. Weaver</i> , University of Florida
12:00pm		HC+AS+SS-WeM-13 HC Graduate Student Finalist Talk: <i>Operando</i> Observation of Metal Encapsulation Causing Strong Metal-Support Interaction at the Pt-Co ₃ O ₄ Interface, <i>Daeho Kim</i> , Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea; <i>D. Park</i> , Korea Advanced Institute of Science and Technology, Republic of Korea; <i>H. Song</i> , Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea; <i>B. Jeong</i> , Korea Basic Science Institute (KBSI), Republic of Korea; <i>Y. Jung</i> , Korea Advanced Institute of Science and Technology, Republic of Korea; <i>J. Park</i> , Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea

Wednesday Morning, November 9, 2022

Room 330	
8:00am	<p>INVITED: MI-WeM-1 Voltage Controlled Néel Vector Rotation in Zero Magnetic Field, Christian Binek, A. Mahmood, University of Nebraska-Lincoln; W. Echtenkamp, University of Minnesota; M. Street, J. Wang, S. Cao, T. Komesu, P. Dowben, P. Buragohain, H. Lu, A. Gruverman, A. Parthasarathy, S. Rakheja, University of Nebraska-Lincoln; J. Weaver, J. Lynn, NIST-Gaithersburg</p>
8:20am	
8:40am	<p>INVITED: MI-WeM-3 Discovering Magnetic Mechanisms in Room-Temperature Metallic Antiferromagnet Fe₃Ga₄, Michelle Jamer, B. Wilfong, United States Naval Academy; D. Baigutlin, O. Miroshkina, V. Buchelnikov, V. Sokolovskiy, Chelyabinsk State University, Russian Federation; G. Stephen, A. Friedman, Laboratory for Physical Sciences; R. Barua, Virginia Commonwealth University; B. Barbiellini, LUT University, Finland; D. Heiman, Northeastern University</p>
9:00am	
9:20am	
9:40am	
10:00am	
10:00am	<p>BREAK - Complimentary Coffee in Exhibit Hall</p>
10:20am	
10:40am	
11:00am	
11:00am	<p>INVITED: MI-WeM-10 Irradiative Control of FeRh's Metamagnetic Phase Change Under Three-Dimensional Spatial Confinement Interrogated by Polarized Neutron Scattering, Steven Bennett, Naval Research Laboratory</p>
11:20am	

**Magnetic Interfaces and Nanostructures Division
Session MI-WeM
Spin Landscape I (Magnetic Structures in Real and Momentum Space)
Moderators: Mikel Holcomb, West Virginia University,**

Wednesday Afternoon, November 9, 2022

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

12:20pm	EW-WeL-1 PHI Lunch & Learn Session, PHI Lunch & Learn Session: Analysis of Heterogeneous Samples using Surface Analytical Techniques - The Role of Small Area Analysis and Imaging, <i>Kateryna Artyushkova</i> , Physical Electronics	
12:40pm		
1:00pm		
1:20pm		
1:40pm		

Wednesday Afternoon, November 9, 2022

	<p>Advanced Ion Microscopy and Ion Beam Nano-engineering Focus Topic Room 301 - Session HI+AP-WeA Emerging Ion Sources, Optics, & Applications Moderators: Rosa Cordoba, University of Valencia, Spain, Florian Vollnhals, INAM, Germany</p>	<p>Quantum Information Science Focus Topic Room 302 - Session QS+EM+MN+NS-WeA Systems and Devices for Quantum Information Moderators: Megan Ivory, Sandia National Laboratories, Dave Pappas, Rigetti Computing</p>
2:20pm	<p>INVITED: HI+AP-WeA-1 Rationalizing and Controlling the Composition and Properties of Materials Deposited Using Charged Particles, Howard Fairbrother, Johns Hopkins University</p>	<p>INVITED: QS+EM+MN+NS-WeA-1 Photonics-Integrated Microfabricated Surface Traps for Trapped Ion Applications, Megan Ivory, <i>W. Setzer, N. Karl, J. Schultz, J. Kwon, M. Revelle, R. Kay, M. Gehl, H. McGuinness</i>, Sandia National Laboratories</p>
2:40pm		
3:00pm	<p>HI+AP-WeA-3 Ion Beam Induced Reactions and Deposition of Pt(CO)₂Br₂ and Pt(CO)₂Cl₂, Mohammed Abdel-Rahman, <i>P. Eckhart</i>, Johns Hopkins University; <i>J. Yu, A. Chaudhary, L. McElwee-White</i>, University of Florida; <i>H. Fairbrother</i>, Johns Hopkins University</p>	<p>INVITED: QS+EM+MN+NS-WeA-3 Toward Heterogeneous Quantum Networks: Interfacing Trapped Ion, Superconducting, and Integrated Photonic Qubits, Kathy-Anne Soderberg, <i>A. Paul</i>, Air Force Research Laboratory; <i>N. Barton, A. Brownell</i>, Murray Associates; <i>D. Campbell</i>, Air Force Research Laboratory; <i>C. Craft</i>, Technergetics; <i>M. Fanto, D. Hucul</i>, Air Force Research Laboratory; <i>A. Klug</i>, Griffiss Institute; <i>M. LaHaye</i>, Air Force Research Laboratory; <i>M. Macalik</i>, Booz Allen Hamilton; <i>K. Scalzi</i>, Technergetics; <i>J. Schneeloch</i>, Air Force Research Laboratory; <i>M. Senatore</i>, Griffiss Institute; <i>E. Sheridan</i>, National Academies of Sciences, Engineering, and Medicine; <i>D. Sica</i>, Griffiss Institute; <i>A. Smith, Z. Smith, C. Tison</i>, Air Force Research Laboratory; <i>C. Woodford</i>, Griffiss Institute</p>
3:20pm	<p>HI+AP-WeA-4 Next Generation Ion Beam Resists: Sub-10 nm Helium Ion Beam Lithography, Scott Lewis, <i>G. Derose</i>, California Institute of Technology</p>	
3:40pm	BREAK	BREAK
4:00pm		
4:20pm	<p>INVITED: HI+AP-WeA-7 Novel Source Development for Focused Ion Beam Implantation and Irradiation, Edward S. Bielejec, <i>M. Titze, A. Katzenmeyer, A. Belianinov</i>, Sandia National Laboratories; <i>Y. Wang</i>, Los Alamos National Laboratory; <i>B. Doyle</i>, Sandia National Laboratories</p>	<p>INVITED: QS+EM+MN+NS-WeA-7 Superconductor/Semiconductor Heterostructures for Quantum Computing Applications, Chris Palmström, University of California, Santa Barbara</p>
4:40pm		
5:00pm	<p>HI+AP-WeA-9 Focused Ion Beams from GaBiLi LMAIS for Nanofabrication and Ion Imaging, Torsten Richter, <i>P. Mazarov, A. Nadzeyka, L. Bruchhaus, U. Mantz</i>, Raith GmbH, Germany</p>	<p>QS+EM+MN+NS-WeA-9 High Throughput Measurements of III-V Semiconductor Materials Stack of 2DEG-Based Tunable Couplers, Nicholas Materise, Colorado School of Mines; <i>J. Pitten</i>, University of Colorado at Boulder; <i>W. Strickland</i>, New York University; <i>A. McFadden</i>, National Institute for Science and Technology (NIST); <i>J. Shabani</i>, New York University; <i>E. Kapit</i>, Colorado School of Mines; <i>C. McRae</i>, University of Colorado at Boulder</p>
5:20pm		<p>INVITED: QS+EM+MN+NS-WeA-10 Strong Coupling between a Superconducting Microwave Resonator and Low-Damping Magnons Using Vanadium Tetracyanoethylene Thin Films, Q. Xu, <i>H. Cheung</i>, Cornell University; <i>D. Cormode, H. Yusuf</i>, The Ohio State University; <i>Y. Shi</i>, University of Iowa; <i>M. Chilcote</i>, Cornell University; <i>M. Flatté</i>, University of Iowa; <i>E. Johnston-Halperin</i>, The Ohio State University; G. D. Fuchs, Cornell University</p>
5:40pm		
6:00pm		<p>QS+EM+MN+NS-WeA-12 Role of Point Defect Disorder on the Extraordinary Magnetotransport Properties of Epitaxial Cd₃As₂, Jocienne Nelson, <i>A. Rice, C. Brooks, I. Leahy, G. Teeter, M. van Schilfgaarde, S. Lany, B. Fluegel, M. Lee, K. Alberi</i>, NREL</p>

Wednesday Afternoon, November 9, 2022

Room 303		
2:20pm	<p>INVITED: 2D+EM+MI-WeA-1 Tunable Electronic Structure and Correlations in Quasi-Freestanding Monolayer Transition Metal Disulfides, <i>Thomas Michely</i>, Universität zu Köln, Germany</p>	<p>2D Materials Technical Group Session 2D+EM+MI-WeA 2D Materials: Charge Density Waves, Magnetism, and Superconductivity Moderators: An-Ping Li, Oak Ridge National Laboratory, Xiaomeng Liu, Princeton University</p>
2:40pm		
3:00pm	<p>2D+EM+MI-WeA-3 Dopants Modulated Interplay of Charge Density Wave and Superconductivity in 2D VdW Layered ZrTe₃, <i>Xiao Tong</i>, . Center of Functional Nanomaterials, Brookhaven National Laboratory; <i>Y. Liu, Z. Hu</i>, Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory; <i>D. Leshchev</i>, National Synchrotron Light Source II, Brookhaven National Laboratory; <i>X. Zhu, H. Lei</i>, Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory; <i>E. Stavitski, K. Attenkofer</i>, National Synchrotron Light Source II, Brookhaven National Laboratory; <i>C. Petrovic</i>, Condensed Matter Physics and Materials Science, Department, Brookhaven National Laboratory</p>	
3:20pm	<p>2D+EM+MI-WeA-4 Magnetic Order in a Coherent Kondo Lattice in 1T/1H TaSe₂ Heterostructures, <i>W. Wan, Rishav Harsh, P. Dreher, S. Sajan</i>, Donostia International Physics Center , Spain; <i>A. Menino, I. Errea</i>, Centro de Física de Materiales (CSIC-UPV-EHU), Spain; <i>F. de Juan, M. Ugeda</i>, Donostia International Physics Center , Spain</p>	
3:40pm	BREAK	
4:00pm		
4:20pm	<p>2D+EM+MI-WeA-7 Structural and Magnetic Properties of Ultrathin Cr_(1+δ)Te₂ Films Grown by Van Der Waals Epitaxy, <i>Kinga Lasek, P. Coelho</i>, University of South Florida; <i>P. Gargiani, M. Valvidares</i>, ALBA Synchrotron Light Source, Spain; <i>K. Mohseni, H. Meyerheim, I. Kostanovskiy</i>, Max Planck Institute of Microstructure Physics, Germany; <i>K. Zborecki</i>, Warsaw University of Technology, Poland; <i>M. Batzill</i>, University of South Florida</p>	
4:40pm	<p>2D+EM+MI-WeA-8 Transition Metal Silicates as a Platform for Robust Single Layer, Two-Dimensional Ferromagnetism, <i>Nassar Doudin, K. Saritas</i>, Yale University; <i>P. Shafer, A. T. N'Diaye</i>, Lawrence Berkeley National Laboratory (LBNL); <i>S. Ismail-Beigi, E. Altman</i>, Yale University</p>	
5:00pm	<p>INVITED: 2D+EM+MI-WeA-9 Novel Materials for Quantum Computing Devices: Monolayer Topological Superconductors, <i>Yi-Ting Hsu</i>, University of Notre Dame</p>	
5:20pm		
5:40pm	<p>2D+EM+MI-WeA-11 Tuning Magnetism and Superconductivity in Single Layer FeSeTe by Chemical Pressure, <i>Basu Oli, Q. Zou, H. Zhang</i>, West Virginia University; <i>T. Shishidou, M. Weinert</i>, University of Wisconsin, Millwaukie; <i>L. Li</i>, West Virginia University</p>	
6:00pm	<p>2D+EM+MI-WeA-12 Peculiar Near-Contact Regime of Andreev Reflection at the BREAKdown of a Tunnel Junction, <i>Petro Maksymovych, S. Song</i>, Oak Ridge National Laboratory; <i>J. Lado</i>, Aalto University, Finland; <i>W. Ko</i>, Oak Ridge National Laboratory</p>	

Wednesday Afternoon, November 9, 2022

Room 304		
2:20pm	INVITED: NS1+BI-WeA-1 Single Cell and Single Molecule Biophysics with Glass Nanopores, <i>Georg Fantner</i> , EPFL, Switzerland	Nanoscale Science and Technology Division Session NS1+BI-WeA Nanopore Sensing and Fabrication, Operation and Metrology of Biodevices Moderators: David Czaplewski, Argonne National Laboratory, Georg Fantner, EPFL, Switzerland
2:40pm		
3:00pm	NS1+BI-WeA-3 Ultrasensitive Nanoporous Gold Substrates for SERS Detection in Liquids or Gases, <i>Issraa Shahine, B. Humbert, J. Mevellec, M. Richard-Plouet, P. Tessier</i> , Nantes Université, CNRS, Institut des Matériaux de Nantes Jean Rouxel (IMN), France	
3:20pm		
3:40pm	BREAK	
4:00pm		
4:20pm	INVITED: NS2+AS+EM-WeA-7 New on-Surface Synthesis Techniques for Creating Precise 1D Graphene Nanoribbon Heterojunctions and Device-Tunable 2D Molecular Arrays, <i>Michael Crommie</i> , UC Berkeley Department of Physics; <i>G. Dong</i> , University of Chicago Department of Chemistry; <i>J. Lischner</i> , Imperial College London Department of Materials, UK; <i>A. Zettl, P. Jacobse, Z. Wang</i> , UC Berkeley Department of Physics; <i>J. Yin</i> , University of Chicago Department of Chemistry; <i>H. Tsai, F. Liou, A. Aikawa</i> , UC Berkeley Department of Physics	Nanoscale Science and Technology Division Session NS2+AS+EM-WeA Scanning Probe Metrology of 1D and 2D Materials Moderators: Maryam Ebrahimi, Lakehead University, Canada, Aubrey Hanbicki, Laboratory for Physical Sciences
4:40pm		
5:00pm	NS2+AS+EM-WeA-9 Temperature-Mediated Adsorption and Assembly of Internally Fluorinated Chevron Graphene Nanoribbon Precursors on Au(111), <i>Jacob Teeter</i> , Center for Nanophase Materials Sciences, Oak Ridge National Laboratory; <i>M. Sarker</i> , University of Nebraska - Lincoln; <i>C. Tao, J. Huang</i> , Center for Nanophase Materials Sciences, Oak Ridge National Laboratory; <i>W. Lu, J. Bernholc</i> , North Carolina State University; <i>A. Sinitskii</i> , University of Nebraska - Lincoln; <i>A. Li</i> , Center for Nanophase Materials Sciences, Oak Ridge National Laboratory	
5:20pm	NS2+AS+EM-WeA-10 STM Study of Superconducting Film FeTe(1-x)Se(x) on Topological Insulator Bi ₂ Te ₃ , <i>Hoyeon Jeon, W. Ko, M. Brahlek, R. G. Moore II, A. Li</i> , Oak Ridge National Laboratory, USA	
5:40pm	NS2+AS+EM-WeA-11 Atomic-Scale Mapping of Thermoelectric Properties of Noble Transition Metal Dichalcogenides, <i>Saban Hus, A. Li</i> , Oak Ridge National Laboratory; <i>L. Liu, Y. Chen</i> , Purdue University	

Wednesday Afternoon, November 9, 2022

Plasma Science and Technology Division Room 305 - Session PS1+AP-WeA Plasma Assisted Atomic Layer Etching Moderators: Harm Knoops , Oxford Instruments Plasma Technology, UK, Eindhoven University of Technology, Netherlands, Emilie Despiau-Pujo , Univ. Grenoble Alpes, CNRS, LTM, France		Plasma Science and Technology Division Room 315 - Session PS2+SE-WeA Atmospheric Pressure Plasmas and their Applications Moderators: Adam Pranda , TEL Technology Center, America, LLC, François Reniers , Université Libre de Bruxelles, Belgium	
2:20pm	PS1+AP-WeA-1 Mechanism of Isotropic Plasma Atomic Layer Etching Using Hexafluoroacetylacetone and H ₂ Plasma, Nicholas J. Chittock , <i>J. Maas</i> , <i>M. Merckx</i> , <i>W. Kessels</i> , Eindhoven University of Technology, The Netherlands; <i>H. Knoops</i> , Oxford Instruments Plasma Technology, UK; <i>A. Mackus</i> , Eindhoven University of Technology, The Netherlands	PS2+SE-WeA-1 Organized DBD Streamers for Maskless Chemical and Topographic Patterning of Surfaces, <i>O. Polonskyi</i> , <i>T. Hartig</i> , UCSB Chemical Engineering; <i>J. Uzarski</i> , U.S. Army Combat Capabilities Development Command Soldier Center; Michael Gordon , UCSB Chemical Engineering	
2:40pm	PS1+AP-WeA-2 AVS Dorothy M. and Earl S. Hoffman Awardee Talk: On the Chemical and Physical Mechanisms of Etch Product Volatilization in Plasma Enhanced Atomic Layer Etch of Silicon Nitride with Hydrofluorocarbons, Erik Cheng ^{1,2} , <i>G. Hwang</i> , The University of Texas at Austin; <i>P. Ventzek</i> , <i>Z. Chen</i> , <i>S. Sridhar</i> , Tokyo Electron America	PS2+SE-WeA-2 Electrical and Optical Study of the Dielectric Barrier-Free Atmospheric Plasma System, <i>M. Gulan</i> , Technological University Dublin, Ireland; Vladimir Milosavljevic , Technological University Dublin, Ireland & University of Belgrade, Serbia	
3:00pm	INVITED: PS1+AP-WeA-3 Use of Atomic Layer Etching Techniques in Today's and Tomorrow's Industry, Dominik Metzler , IBM Research Division, Albany, NY	PS2+SE-WeA-3 An Atmospheric-Pressure Microwave Plasma Source for "Chemical Waste-Free" Surface Cleaning and Anti-Corrosion Coatings, <i>D. Ellis</i> , University of Illinois at Urbana-Champaign; <i>D. Krogstad</i> , Applied Research Institute, University of Illinois at Urbana-Champaign; <i>M. Sankaran</i> , David Ruzic , University of Illinois at Urbana-Champaign	
3:20pm		PS2+SE-WeA-4 Characteristics of Ionization Wave Propagation on Variable Thickness Dielectric Substrate, Joshua Morse , <i>S. Shannon</i> , North Carolina State University	
3:40pm	BREAK	BREAK	
4:00pm			
4:20pm	PS1+AP-WeA-7 Approaches to Improve the SiO ₂ to SiN _x Etch Selectivity during ALE and RIE, Xue Wang , Colorado School of Mines; <i>R. Gasvoda</i> , <i>P. Kumar</i> , <i>E. Hudson</i> , Lam Research Corporation; <i>S. Agarwal</i> , Colorado School of Mines		
4:40pm	PS1+AP-WeA-8 Plasma Atomic Layer Etching of Molybdenum with Fluorocarbon and Hydrofluorocarbon, Yongjae Kim , <i>H. Kang</i> , <i>H. Ha</i> , <i>H. Chae</i> , Sungkyunkwan University, Korea		
5:00pm	PS1+AP-WeA-9 Atomic Layer Etching of Si by Surface Chlorination, Ar or He Sputtering, Tao Li , <i>E. Miller</i> , IBM Research Division, Albany, NY; <i>S. Schmitz</i> , <i>P. Friddle</i> , <i>W. Yang</i> , Lam Research Corporation	INVITED: PS2+SE-WeA-9 Synthesis and Applications of Metal Oxides NPs, Daive Mariotti , University of Ulster, UK	
5:20pm	PS1+AP-WeA-10 Real-Time Monitoring of Atomic Layer Etching in Cl ₂ /Ar Pulsed Gas, Pulsed Power Plasmas by Optical Emission Spectroscopy, Qinzhao Hao , <i>V. Donnelly</i> , University of Houston; <i>S. Nam</i> , <i>H. Yoon</i> , Samsung Electronics, Republic of Korea		
5:40pm	PS1+AP-WeA-11 Self-Limited Cyclic Etching of Copper Thin Films in Hydrogen and Argon Plasmas for Copper Hybrid Bonding, Qi Wang , <i>C. Netzband</i> , <i>G. Gibney</i> , <i>S. Voronin</i> , <i>S. Han</i> , <i>S. Arkalgud</i> , <i>P. Biolsi</i> , TEL Technology Center, America, LLC; <i>C. Vallee</i> , College of Nanoscale Science and Engineering, SUNY Polytechnic Institute	PS2+SE-WeA-11 AVS Graduate Research Awardee Talk: Immobilization of Plasma Filaments in a DBD: Discharge Characterization and Patterned Coating Deposition, Annaëlle Demaude ^{1,3} , <i>A. Remy</i> , <i>D. Petitjean</i> , <i>J. Zveny</i> , Université libre de Bruxelles, Belgium; <i>K. Baert</i> , <i>T. Hauffman</i> , Vrije Universiteit Brussel, Belgium; <i>E. Goormaghtigh</i> , Université libre de Bruxelles, Belgium; <i>M. Gordon</i> , University of California Santa Barbara; <i>F. Reniers</i> , Université libre de Bruxelles, Belgium	
6:00pm	PS1+AP-WeA-12 Examination of Mechanisms and Processes of Atomic Layer Etching of Copper, Taylor Smith , University of California, Los Angeles; <i>E. Crumlin</i> , Lawrence Berkeley National Laboratory; <i>J. Chang</i> , University of California, Los Angeles	PS2+SE-WeA-12 Maximizing Photon Flux in a Miniaturized Photoionization Detector, Mackenzie Meyer , <i>X. Huang</i> , <i>A. Sivakumar</i> , <i>X. Fan</i> , <i>M. Kushner</i> , University of Michigan	

¹ PSTD Coburn & Winters Student Award Finalist

² AVS Dorothy M. and Earl S. Hoffman Awardee

³ AVS Graduate Research Awardee

Wednesday Afternoon, November 9, 2022

Room 316	
2:20pm	<p>TF1+AP-WeA-1 Optimizing Vapor Delivery of a Nickel Diazadienyl Complex for Nickel Metal Atomic Layer Deposition, <i>J. Maslar, Berc Kalanyan</i>, NIST-Gaithersburg; <i>V. Dwivedi</i>, NASA; <i>D. Moser</i>, EMD Electronics</p>
2:40pm	<p>TF1+AP-WeA-2 Mechatronic Spatial Atomic Layer Deposition: Model-Informed Design for Scalable Manufacturing, <i>Daniel Penley, T. Cho, O. Trejo, K. Barton, N. Dasgupta</i>, University of Michigan, Ann Arbor</p>
3:00pm	<p>TF1+AP-WeA-3 Atmospheric Pressure Spatial ALD of Al-Doped ZnO: Co-injection vs. Supercycles, <i>Mike van de Poll, B. Macco, E. Kessels</i>, Eindhoven University of Technology, Netherlands</p>
3:20pm	<p>TF1+AP-WeA-4 Manufacturing of ALD-enhanced Li-ion Batteries via Particle ALD Coatings And R2R ALD on Separators, <i>Markus Groner, A. Dameron, B. Hughes, D. Lewis, J. Keene, M. Martinez, J. Burger, M. Rodgers, J. Ragonesi</i>, Forge Nano; <i>J. Li</i>, Oak Ridge National Laboratory, China; <i>W. Steenman, K. Livingston</i>, Oak Ridge National Laboratory</p>
3:40pm	BREAK
4:00pm	
4:20pm	<p>TF2-WeA-7 The Truth About Graphene - Where Is It and Why It Is Taking This Long to Get Here, <i>Michael Stanford, M. Baraket</i>, General Graphene Corporation</p>
4:40pm	<p>TF2-WeA-8 Initiated Chemical Vapor Deposition (iCVD) for Shape-Programmed Polymer Nanoparticles, <i>Rong Yang</i>, Cornell University</p>
5:00pm	<p>TF2-WeA-9 Synthesis, Properties and Applications of Donor-Acceptor Conductive Polymers by Oxidative Chemical Vapor Deposition, <i>Marek Charyton, N. Boscher</i>, Luxembourg Institute of Science and Technology (LIST), Luxembourg</p>
5:20pm	<p>TF2-WeA-10 Effect of doping and annealing on the Optical and Magnetic properties of Sol-Gel deposited NiZn Ferrite films, <i>Roni Paul, S. Kothapally, J. Abu Qahouq, S. Kotru</i>, The University of Alabama</p>
5:40pm	<p>TF2-WeA-11 A Scalable Method for Rare Earth Oxide Thin Films by Chemical Solution Deposition, <i>Daniel Rodriguez, A. Edgar, D. Vodnik, I. Usov</i>, Los Alamos National Laboratory</p>
6:00pm	

Thin Films Division
Session TF1+AP-WeA
Manufacturing and Scale-Up of CVD and (Spatial) ALD
Moderators:
Joe Becker, Kurt J. Lesker Company,
Marceline Bonvalot, Grenoble Alpes University, France

Thin Films Division
Session TF2-WeA
Solution Based and Graphene or Polymer Deposition Techniques
Moderators:
Parag Banerjee, University of Central Florida,
Mark Losego, Georgia Institute of Technology

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<p>Advanced Surface Engineering Division Room 317 - Session SE+MN+PS+TF-WeA Vapor Deposition Technologies and New Trends in Surface Engineering Moderators: Jianliang Lin, Southwest Research Institute, Filippo Mangolini, The University of Texas at Austin</p>		<p>Actinides and Rare Earths Focus Topic Room 318 - Session AC+LS+MI-WeA Chemistry and Physics of the Actinides/Rare Earths Moderator: Krzysztof Gofryk, Idaho National Laboratory</p>	
2:20pm	<p>INVITED: SE+MN+PS+TF-WeA-1 BREAKing the Back-Attraction by Bipolar HiPIMS Bursts, <i>Rajesh Ganesan</i>, University of Illinois at Urbana-Champaign</p>	<p>INVITED: AC+LS+MI-WeA-1 Novel Preorganized Ligands for Selective and Efficient Separation of f-Elements, <i>Santa Jansone-Popova</i>, Oak Ridge National Laboratory</p>	
2:40pm			
3:00pm	<p>SE+MN+PS+TF-WeA-3 Experimental and Theoretical Study of the Thermal Shock Behavior of MAX Phase Thin Films, <i>Matej Fekete, C. Azina, P. Ondračka, L. Löfler, D. Bogdanovski</i>, RWTH Aachen University, Germany; <i>D. Primetzhofer</i>, Uppsala University, Sweden; <i>M. Hans, J. Schneider</i>, RWTH Aachen University, Germany</p>	<p>INVITED: AC+LS+MI-WeA-3 Impact of Noncovalent Interactions on Actinide Structural Chemistry, <i>Karah E. Knope</i>, Georgetown University; <i>J. Wacker</i>, Lawrence Berkeley National Lab; <i>M. Shore</i>, Georgetown University</p>	
3:20pm			
3:40pm	BREAK	BREAK	
4:00pm			
4:20pm	<p>INVITED: SE+MN+PS+TF-WeA-7 Combinatorial Application of Advanced Characterization Methods to Illuminate the Role of Interfaces in Multilayer Coatings, <i>Nina Schalk, C. Kainz, F. Frank</i>, Montanuniversität Leoben, Austria; <i>C. Czettl, M. Pohler</i>, CERATIZIT Austria GmbH, Austria; <i>M. Tkadletz</i>, Montanuniversität Leoben, Austria</p>	<p>AC+LS+MI-WeA-7 XPS Characterization of a Pu-7at.%-Ga Alloy, <i>Paul Roussel</i>, AWE, UK; <i>K. Graham, S. Hernandez, J. Joyce, T. Venhaus</i>, Los Alamos National Laboratory</p>	
4:40pm		<p>AC+LS+MI-WeA-8 Nanoscale Uranium Oxide: Correlating Colloidal Synthesis Pathways with Structure at the Atomic and Nanometer Length Scale, <i>Liane Moreau</i>, Washington State University</p>	
5:00pm	<p>SE+MN+PS+TF-WeA-9 Influence of Al-Content on Structure, Mechanical Properties and Thermal Stability of Reactively Sputtered AlTaTiVZr High-Entropy Nitride Coatings, <i>Alexander Kirnbauer</i>¹, TU Wien, Austria; <i>S. Kolozsvári</i>, Plansee Composite Materials GmbH, Germany; <i>P. Mayrhofer</i>, TU Wien, Austria</p>	<p>AC+LS+MI-WeA-9 Chemical Speciation Mapping of Spent Nuclear Fuel Using Soft X-Ray Spectromicroscopy at the Advanced Light Source, <i>Alexander Ditter, D. Smiles, D. Lussier</i>, Lawrence Berkeley National Laboratory (LBNL); <i>A. Altman</i>, Northwestern University; <i>M. Bachhav, L. He</i>, Idaho National Laboratory; <i>M. Mara</i>, Northwestern University; <i>S. Minasian</i>, Lawrence Berkeley National Laboratory (LBNL); <i>C. Degeldre</i>, Lancaster, UK; <i>D. Shuh</i>, Lawrence Berkeley National Laboratory (LBNL)</p>	
5:20pm	<p>SE+MN+PS+TF-WeA-10 Ternary Transition Metal Diborides – Future Defect Engineered Protective Coating Materials?, <i>A. Hirle, L. Zauner, C. Fuger, A. Bahr, R. Hahn, T. Wojcik, T. Glechner</i>, Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria; <i>J. Ramm, O. Hunold</i>, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; <i>P. Polcik</i>, Plansee Composite Materials GmbH, Germany; <i>Helmut Riedl</i>, TU Wien, Austria</p>	<p>AC+LS+MI-WeA-10 Structural, Thermodynamics, and the Electronic Properties of Al, Ga, In, and Tl Stabilized δ-Pu, <i>Sajib Barman, S. Hernandez</i>, Los Alamos National Laboratory</p>	
5:40pm	<p>SE+MN+PS+TF-WeA-11 Influence of Interplay of Substrate Template Effects and Bias Voltage on the Microstructure of Cathodic Arc Evaporated Fcc-Ti_{0.5}Al_{0.5}N Coatings, <i>Michael Tkadletz, N. Schalk, H. Waldl</i>, Montanuniversität Leoben, Austria; <i>B. Sartory, J. Wosik</i>, Materials Center Leoben Forschung GmbH, Austria; <i>C. Czettl, M. Pohler</i>, CERATIZIT Austria GmbH, Austria</p>		
6:00pm	<p>SE+MN+PS+TF-WeA-12 Super Hard High Temperature TaC-Based Superlattice Protective Coatings Prepared by Magnetron Sputtering, <i>Barbara Schmid</i>, TU Wien, Austria; <i>S. Kolozsvári</i>, Plansee Composite Materials GmbH, Germany; <i>P. Mayrhofer</i>, TU Wien, Austria</p>		

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Surface Science Division Room 319 - Session SS+AS-WeA Memorial Session in Honor of Patricia Thiel I Moderators: Alex Belianinov, Oak Ridge National Laboratory, Dapeng Jing, Iowa State University		Applied Surface Science Division Room 320 - Session AS+CA+HC+LS-WeA Shining a Light on Surface Chemical Metrology: In Memory of Martin Seah Moderators: Donald Baer, Pacific Northwest National Lab, Alexander Shard, National Physical Laboratory, UK	
2:20pm	INVITED: SS+AS-WeA-1 Assembly and Stability of Metal Nanoclusters at Surfaces: Modeling Inspired by Thiel-Group STM Studies, <i>Jim Evans, Y. Han</i> , Iowa State University; <i>D. Liu</i> , Ames Laboratory USDOE; <i>K. Lai</i> , Fritz Haber Institute of the Max Planck Society, Germany		
2:40pm	INVITED: SS+AS-WeA-2 Stability and Dynamics of Sulfur-Metal Complexes on Coinage Metal Surfaces, <i>Da-Jiang Liu</i> , Iowa State University		
3:00pm	INVITED: SS+AS-WeA-3 The Atomic of Structure of Surfaces: From Vacuum to Gas and Liquid Environments, <i>Miquel Salmeron</i> , Lawrence Berkeley National Laboratory	AS+CA+HC+LS-WeA-3 Two-Point Calibration Method for Quantifying Organic Binary Mixtures Using SIMS in the Presence of Matrix Effects, <i>Alexander Shard</i> , National Physical Laboratory, U.K.; <i>A. Miisho</i> , Kobelco, Japan; <i>J. Vornig, R. Havelund, I. Gilmore</i> , National Physical Laboratory, U.K.; <i>S. Aoyagi</i> , Seikei University, Japan	
3:20pm		AS+CA+HC+LS-WeA-4 OrbiSIMS Metrology: Optimization of Inorganic Depth Profiling using Ge and Sb Delta-layer Samples, <i>Y. Zhou</i> , National Physical Laboratory, UK; <i>A. Franquet, V. Spampinato</i> , IMEC, Belgium; <i>A. Pirkl</i> , IONTOF GmbH, Germany; <i>W. Vandervorst, P. Van Der Heide</i> , IMEC, Belgium; <i>Ian Gilmore</i> , National Physical Laboratory, UK	
3:40pm	BREAK	BREAK	
4:00pm			
4:20pm	INVITED: SS+AS-WeA-7 The Influence of Alloying on Surface Kinetics, <i>Karina Morgenstern</i> , Ruhr-Universität Bochum, Germany	INVITED: AS+CA+HC+LS-WeA-7 Complementary Perspectives on the Impacts of Martin Seah on Surface Analysis, <i>Don Baer</i> , Pacific Northwest National Laboratory	
4:40pm			
5:00pm	INVITED: SS+AS-WeA-9 Cluster Superlattice Membranes, <i>Thomas Michely</i> , University of Cologne, Germany	AS+CA+HC+LS-WeA-9 The 'Crypto-Electron' Question: XPS of Tribo-electrified Insulators, <i>Hagai Cohen</i> , Perlman bdg., The Weizmann Institute, Israel	
5:20pm		AS+CA+HC+LS-WeA-10 Effects, in XPS, on Composition Determination Using Different Background Removal Procedures: Single Crystal Fe ₂ O ₃ as an Example, <i>Christopher R. Brundle</i> , C R Brundle and Associates; <i>B. Crist</i> , xpsdata; <i>P. Bagus</i> , University of North Texas	
5:40pm	INVITED: SS+AS-WeA-11 High Quality 2-D Materials Characterized Paradoxically from Broad Diffraction Features., <i>Michael Tringides</i> , Iowa State University and Ames Laboratory US-DOE	AS+CA+HC+LS-WeA-11 XPSOasis.org: the XPS Peak-Fitting Network, <i>Alberto Herrera-Gomez</i> , CINVESTAV, Mexico; <i>D. Herrera-Rendon, E. Aguilar-Diaz</i> , RDATAA, Mexico	
6:00pm		INVITED: AS+CA+HC+LS-WeA-12 ASSD Peter Sherwood Mid-Career Award Talk: Advancing X-ray Photoelectron Spectroscopy (XPS) Methodologies for Materials Research, <i>Mark Biesinger</i> ¹ , Surface Science Western, Canada	

¹ ASSD Peter Sherwood Award

Wednesday Afternoon, November 9, 2022

Room 321		
2:20pm		Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Session HC+AS+SS-WeA Bridging Gaps II: Single Atom Alloys and Desirable Defects Moderators: Rachel Farber , University of Chicago, Gareth Parkinson , TU Wien, Austria
2:40pm		
3:00pm	HC+AS+SS-WeA-3 Atomic-Scale Structure-Function Relationships of Pt-based Copper Oxide Single-Atom Catalysts, Audrey Dannar , <i>A. Schilling, G. Giannakakis, A. Therrien, E. Sykes</i> , Tufts University	
3:20pm		
3:40pm	BREAK	
4:00pm		
4:20pm	HC+AS+SS-WeA-7 Comparison Study of Several Transition Metals on Two Different TiO ₂ Model Supports: Anatase TiO ₂ (101) and Rutile TiO ₂ (110), Lena Puntischer , <i>K. Daninger, P. Sombut</i> , TU Wien, Austria; <i>M. Meier</i> , University of Vienna, Austria; <i>M. Schmid</i> , TU Wien, Austria; <i>C. Franchini</i> , Alma Mater Studiorum, Università di Bologna, Bologna, Italy; <i>U. Diebold, G. Parkinson</i> , TU Wien, Austria	
4:40pm	HC+AS+SS-WeA-8 Boron Effect Improves Catalytic Performance on Supported Pt/SiO ₂ Catalysts for Dry Reforming of Methane at Reduced Temperatures, Carly Byron , University of Delaware; <i>M. Ferrandon, A. Kropf</i> , Argonne National Laboratory; <i>S. Bai</i> , University of Delaware; <i>M. Delferro</i> , Argonne National Laboratory; <i>A. Tepyakov</i> , University of Delaware	
5:00pm	HC+AS+SS-WeA-9 Facet Dependence of RhCu Single-Atom Alloy Structure and Reactivity, Yicheng Wang , <i>R. Hannagan</i> , Tufts University; <i>J. Schumann, M. Stamatakis</i> , University College London, UK; <i>C. Sykes</i> , Tufts University, UK	
5:20pm	HC+AS+SS-WeA-10 Crossing the Great Divide Again: Pseudo-Molecular Beams at Atmospheric Pressure, <i>E. High, Christian Reece</i> , Harvard University	
5:40pm	HC+AS+SS-WeA-11 Self-Propagating High Temperature Synthesis of Chevrel Phase Sulfides from Elemental Precursors, Tessa Gilmore , <i>M. Pawar, P. Gouma</i> , The Ohio State University	
6:00pm	HC+AS+SS-WeA-12 Growth and Activity of Ni Catalysts Supported over Ti-doped Ceria from Single Crystal Thin Films to Nanocrystals, <i>J. Miao, T. Ara, Jing Zhou</i> , University of Wyoming	

Wednesday Afternoon, November 9, 2022

Room 330		
2:20pm	INVITED: MI-WeA-1 Exploring Magnetic Reversal Behavior and Domain Structure in Perpendicular Anisotropy Layered Synthetic Antiferromagnets, <i>Olav Hellwig</i> , Chemnitz University of Technology and Helmholtz Zentrum Dresden-Rossendorf, Germany	Magnetic Interfaces and Nanostructures Division Session MI-WeA Spin Landscape II (Magnetic Structures in Real and Momentum Space) Moderator: Markus Donath , Muenster University, Germany
2:40pm		
3:00pm	MI-WeA-3 Influence of Underlayer Quality and Sputter Gas Pressure on Structural and Magnetic Properties of Co/Pt Multilayers, <i>Rico Ehrler, T. Uhlig, O. Hellwig</i> , Chemnitz University of Technology, Germany	
3:20pm	MI-WeA-4 Thickness and Oxygen Growth Pressure Effects on Spontaneous Magnetization Reversal, <i>Mikel Barry Holcomb, G. Bhandari, N. Mottaghi, R. Trappen</i> , West Virginia University	
3:40pm	BREAK	
4:00pm		
4:20pm	INVITED: MI-WeA-7 Thermally Induced Magnetic Order from Glassiness in Elemental Neodymium, <i>Daniel Wegner</i> , Radboud University, Netherlands	
4:40pm		
5:00pm	MI-WeA-9 Designing Antiferromagnetic Domain Landscapes via Focused Ion Beam Irradiation, <i>Fabian Samad</i> , Helmholtz-Zentrum Dresden - Rossendorf, Germany; <i>G. Hlawacek</i> , Helmholtz Zentrum Dresden-Rossendorf, Germany; <i>L. Koch</i> , Technische Universität Chemnitz, Germany; <i>X. Xu</i> , Helmholtz Zentrum Dresden-Rossendorf, Germany; <i>O. Hellwig</i> , Helmholtz-Zentrum Dresden - Rossendorf, Germany	
5:20pm	EM-WeA-10 Strain-Induced Semiconducting to Metallic Phase Transition in Suspended MoTe_2 using a Single-Ion Conductor, <i>Shubham Awate</i> , University of Pittsburgh; <i>K. Xu</i> , Rochester Institute of Technology; <i>J. Liang, B. Mostek</i> , University of Pittsburgh; <i>B. Katz</i> , Pennsylvania State University; <i>R. Muzzio</i> , Carnegie Mellon University; <i>V. Crespi</i> , Pennsylvania State University; <i>J. Katoch</i> , Carnegie Mellon University; <i>E. Backman, S. Fullerton-Shirey</i> , University of Pittsburgh	
5:40pm		
6:00pm		
6:00pm	EM-WeA-11 Investigation of Thermal Stability of Pure-Metal Schottky Contacts to $\beta\text{-Ga}_2\text{O}_3$, <i>Elizabeth Favela, K. Zhang, A. Ho, S. Kim</i> , Carnegie Mellon University; <i>K. Das</i> , North Carolina State University; <i>L. Porter</i> , Carnegie Mellon University	
6:00pm	EM-WeA-12 Electrical and Chemical Effects of Metal Contacts to $\beta\text{-Ga}_2\text{O}_3$ Surfaces, <i>Luke Lyle</i> , Pennsylvania State University	

Thursday Morning, November 10, 2022

	<p>Advanced Ion Microscopy and Ion Beam Nano-engineering Focus Topic Room 301 - Session HI+AS-ThM Advanced Ion Microscopy & Surface Analysis Moderators: Armin Golzhauser, Bielefeld University, Germany, Shida Tan, Intel Corporation</p>	<p>Quantum Information Science Focus Topic Room 302 - Session QS+AP+EM+MN+NS+SS-ThM Systems and Devices for Quantum Computing Moderators: Kathy-Anne Soderberg, Air Force Research Laboratory, Vivekananda Adiga, IBM</p>
8:00am	<p>INVITED: HI+AS-ThM-1 Defect Engineering on the Atomic Scale with the Helium Ion Microscope, Frances I. Allen, UC Berkeley</p>	<p>INVITED: QS+AP+EM+MN+NS+SS-ThM-1 Effects of Environmental Radioactivity on Superconducting Qubits, L. Cardani, Ambra Mariani, Istituto Nazionale di Fisica Nucleare, Italy</p>
8:20am		
8:40am	<p>HI+AS-ThM-3 Effects of Defects and Si Doping on Ion Motion in TaOx Bilayer Memristors, Matthew Flynn-Hepford, University of Tennessee Knoxville; J. Keum, I. Kravchenko, S. Randolph, A. Ievlev, B. Sumpter, Oak Ridge National Laboratory; M. Marinella, Arizona State University; O. Ovchinnikova, Oak Ridge National Laboratory</p>	<p>QS+AP+EM+MN+NS+SS-ThM-3 Dynamics of a Dispersively Coupled Transmon in the Presence of Noise from the Control Line, Antti Vaaranta, Bluefors Oy, Finland; M. Cattaneo, University of Helsinki, Italy; R. Lake, Bluefors Oy</p>
9:00am	<p>HI+AS-ThM-4 Advantages of Using Helium Ion Microscopy for Morphological Analysis of BiScO₃-PbTiO₃ Piezoelectric Ceramics, S. Chen, A. Bunevich, Y. Yuan, Karen Kavanagh, Z. Ye, Simon Fraser University, Canada</p>	<p>QS+AP+EM+MN+NS+SS-ThM-4 Accurate Microwave Characterization for Superconducting Quantum Technology, Slawomir Simbierowicz, Bluefors Oy, Finland</p>
9:20am	<p>HI+AS-ThM-5 Low-Energy Ion Implantation - Range Comparisons between Theory and Experiment, Michael Titze, Sandia National Laboratories; J. Poplawsky, Oak Ridge National Laboratory; A. Belianinov, E. Bielejec, Sandia National Laboratories</p>	<p>INVITED: QS+AP+EM+MN+NS+SS-ThM-5 Improving Qubit Performance Through Engineering of the Substrate-Josephson Junction Interface, Cameron Kopas, H. Cansizoglu, R. Cochrane, B. Ercan, Rigetti Computing; D. Goronzy, C. Torres-Castaneda, Northwestern University; J. Oh, Ames Laboratory; A. Murthy, Fermi Lab; E. Lachman, Rigetti Computing; A. Romanenko, A. Grassellino, Fermi Lab; M. Kramer, L. Zhou, Ames Laboratory; M. Bedzyk, Northwestern University; J. Mutus, Rigetti Computing; M. Hersam, Northwestern University; K. Yadavalli, Rigetti Computing</p>
9:40am		
10:00am	<p>BREAK - Complimentary Coffee in Exhibit Hall</p>	<p>BREAK - Complimentary Coffee in Exhibit Hall</p>
10:20am		
10:40am		
11:00am	<p>INVITED: HI+AS-ThM-10 Correlative Microscopy Using HIM and HIM/SIMS, Florian Vollnhals, Institute for Nanotechnology and Correlative Microscopy - INAM, Germany; G. Sarau, Fraunhofer Institute for Ceramics Technology and Systems - IKTS, Germany; A. Kraus, Institute for Nanotechnology and Correlative Microscopy - INAM, Germany; S. Christiansen, Fraunhofer Institute for Ceramics Technology and Systems - IKTS, Germany</p>	<p>INVITED: QS+AP+EM+MN+NS+SS-ThM-10 Design and Optimal Control of Superconducting Qubits to Achieve Quantum Speed Limits, Meenakshi Singh, Colorado School of Mines, USA</p>
11:20am		
11:40am	<p>HI+AS-ThM-12 Electronic vs. Nuclear Sputtering of Coronene, Lars Breuer, T. Heckhoff, M. Herder, University of Duisburg-Essen, Germany; H. Tian, N. Winograd, The Pennsylvania State University; A. Wucher, University of Duisburg-Essen, Germany</p>	<p>INVITED: QS+AP+EM+MN+NS+SS-ThM-12 Atomic Scale Processing for Quantum Computing, Harm Knoops, Oxford Instruments Plasma Technology, Netherlands</p>
12:00pm	<p>HI+AS-ThM-13 Scanning Transmission Helium Ion Microscopy- How Does It Compare to TEM?, Annalena Wolff, Caltech; R. Fieth, QUT, Australia</p>	

Thursday Morning, November 10, 2022

Room 303	
8:00am	INVITED: 2D+AS+NS+SS-ThM-1 Atomically Precise Graphene Nanoribbons for Quantum Electronics, <i>An-Ping Li</i> , Oak Ridge National Laboratory
8:20am	
8:40am	2D+AS+NS+SS-ThM-3 Band Gaps of Single-Layer Transition-Metal-Dichalcogenides Determined by Scanning Tunneling Spectroscopy, <i>Randall Feenstra</i> , <i>G. Frazier</i> , <i>J. Lou</i> , Carnegie Mellon University; <i>Y. Pan</i> , <i>S. Foelsch</i> , Paul Drude Institute, Germany; <i>Y. Lin</i> , <i>B. Jariwala</i> , <i>K. Zhang</i> , <i>J. Robinson</i> , Penn State University
9:00am	2D+AS+NS+SS-ThM-4 Open-Source Controller for Scanning Probe Microscopy Applications, <i>M. Kangül</i> , <i>N. Asmari Saadabad</i> , <i>M. Penedo</i> , <i>Georg Fantner</i> , École Polytechnique Fédérale de Lausanne, Switzerland
9:20am	2D+AS+NS+SS-ThM-5 Activation of Resistive Switching in TaOx on the Nanoscale, <i>Olha Popova</i> , ORNL
9:40am	2D+AS+NS+SS-ThM-6 Probing Sub-Nanoscale Photophysical and Photochemical Processes via Localized Surface Plasmons: Vibrational Nano-Spectroscopy, <i>Sayantana Mahapatra</i> , <i>N. Jiang</i> , University of Illinois - Chicago
10:00am	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	
10:40am	
11:00am	INVITED: 2D+AS+NS+SS-ThM-10 Visualize Emergent Electron Orders in Two-Dimensional Quantum Materials, <i>Xiaomeng Liu</i> , Princeton University
11:20am	
11:40am	2D+AS+NS+SS-ThM-12 Reconstruct the Intrinsic Force Landscape of Interfacial Interaction with Excitation-Enhanced Force Spectroscopy, <i>Alan Liu</i> , <i>T. Sulchek</i> , Georgia Institute of Technology
12:00pm	2D+AS+NS+SS-ThM-13 AVS Graduate Research Awardee Talk: True Atomic-Resolution Imaging under Ambient Conditions via Conductive Atomic Force Microscopy, <i>Saima Sumaiya</i> ¹ , <i>M. Baykara</i> , University of California, Merced

2D Materials Technical Group
Session 2D+AS+NS+SS-ThM
2D Materials: Scanning Probe Microscopy and Spectroscopy
Moderators:
Matthias Batzill, University of South Florida,
Yi-Ting Hsu, University of Notre Dame,

¹ AVS Graduate Research Awardee

Thursday Morning, November 10, 2022

Room 304		
8:00am	INVITED: EM+MN+TF-ThM-1 What Can We Do With Ga ₂ O ₃ ?, <i>Man Hoi Wong</i> , University of Massachusetts Lowell	Electronic Materials and Photonics Division Session EM+MN+TF-ThM Wide and Ultra Wide Band Gap Materials and Devices Moderators: <i>Erica Douglas</i> , Sandia National Laboratories, <i>Rehan Kapadia</i> , University of Southern California, <i>Rachael Myers-Ward</i> , U.S. Naval Research Laboratory
8:20am		
8:40am	EM+MN+TF-ThM-3 Controlled Growth of Epitaxial Ga ₂ O ₃ Polymorphs for Ultra-Wide Bandgap Semiconductor Devices, <i>Lisa Porter, K. Jiang, J. Tang, M. Cabral, R. Davis</i> , Carnegie Mellon University, USA	
9:00am	EM+MN+TF-ThM-4 Plasma Enhanced-ALD Amorphous Gallium-Oxide Channel Thin Film Transistors for Back-End-of-Line Integration, <i>Charlotte Van Dijk</i> , Helmholtz-Zentrum -Berlin für Materialien und Energy, Germany; <i>F. Maudet</i> , Helmholtz-Zentrum-Berlin für Materialien und Energy, Germany; <i>S. Banerjee, V. Deshpande, C. Dubourdieu</i> , Helmholtz-Zentrum Berlin für Materialien und Energy, Germany	
9:20am	EM+MN+TF-ThM-5 Interface Trap State Analysis of ALD-deposited Gate Dielectrics on Gallium Nitride using a Modified C-ψ _s Procedure, <i>Brian Rummel, L. Yates, C. Glaser, A. Binder, J. Steinfeldt, T. Smith, P. Sharps</i> , Sandia National Laboratories; <i>J. Cooper</i> , Sonrisa Research; <i>R. Kaplar</i> , Sandia National Laboratories	
9:40am	EM+MN+TF-ThM-6 Characterization of Intervalence Band (IVB) Transitions in Boron-Doped Diamond, <i>Souvik Bhattacharya</i> , University of Illinois at Urbana Champaign; <i>J. Boyd</i> , Case Western Reserve University; <i>A. Hossein, S. Reichardt</i> , University of Luxembourg; <i>N. Maccaferri</i> , Umea University, Sweden; <i>O. Shenderova</i> , Adamas Nanotechnologies Inc.; <i>L. Wirtz</i> , University of Luxembourg; <i>M. Sankaran</i> , University of Illinois at Urbana Champaign; <i>G. Strangi</i> , Case Western Reserve University	
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	
10:20am		
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	Electronic Materials and Photonics Division Session EM+AS-ThM Photovoltaic Materials, Characterization, and Applications Moderators: <i>Seth King</i> , University of Wisconsin - LaCrosse
11:00am	EM+AS-ThM-10 Translating Materials-Level Characterization of Carbon-Nanotube-Reinforced Composite Gridlines To Module-Level Degradation, <i>Sang Han</i> , The University of New Mexico and Osazda Energy; <i>A. Chavez</i> , The University of New Mexico and Osazda Energy; <i>B. Rummel</i> , The University of New Mexico and Osazda Energy; <i>A. Jeffries</i> , Osazda Energy; <i>N. Bosco</i> , National Renewable Energy Laboratory; <i>B. Rounsaville</i> , <i>A. Rohatgi</i> , Georgia Institute of Technology	
11:20am	EM+AS-ThM-11 Effects of Carbon-Nanotube-Reinforced Composite Gridlines on Photovoltaic PERC Cell and Module Efficiency, <i>Andre Chavez</i> , The University of New Mexico and Osazda Energy; <i>S. Han</i> , The University of New Mexico and Osazda Energy; <i>A. Jeffries</i> , Osazda Energy; <i>S. Huneycutt</i> , The University of North Carolina at Charlotte; <i>A. Ebong</i> , The University of North Carolina at Charlotte; <i>D. Harwood, N. Azpiroz</i> , D2 Solar	
11:40am		
12:00pm	EM+AS-ThM-13 XPS Depth Profiling of Single Film and Two-Layer Heterojunction Metal-Halide Perovskites, <i>Jennifer Mann</i> , Physical Electronics; <i>C. Clark, W. Hsu, E. Pettit</i> , University of Minnesota; <i>K. Artyushkova</i> , Physical Electronics; <i>R. Holmes</i> , University of Minnesota	

Thursday Morning, November 10, 2022

Room 315		
8:00am	INVITED: PS-ThM-1 Dry Etch Solution to a Challenge in Si/SiGe Dual Channel Process Integration, Yohei Ishii , Hitachi High-Tech America, Inc.; R. Sugano , Hitachi, Ltd., Japan; Y. Lee, W. Wu , Taiwan Semiconductor Research Institute, Taiwan; L. Kovatch , Hitachi High-Tech America, Inc.; K. Maeda, M. Miura , Hitachi High-Tech Corporation, Japan	Plasma Science and Technology Division Session PS-ThM Plasma Processing for Advanced Semiconductor Devices Moderators: John Arnold , IBM Research Division, Albany, NY, Kenji Maeda , Hitachi High Technologies America Inc.
8:20am		
8:40am	PS-ThM-3 Investigation into the Effect of Plasma-Deposited SiCl ₄ /O ₂ Chamber Wall Coatings on the Selective Fluorine-Based Etching of TaN with Respect to Polycrystalline Silicon and Silicon Oxide, Ivo Otto IV , Tokyo Electron Ltd.; C. Vallée , SUNY Polytechnic Institute; K. Yu, S. Kal, A. Mosden, P. Biolsi , Tokyo Electron Ltd.	
9:00am	PS-ThM-4 Influence of Aspect Ratio on Isotropic Etch Process: A Case Study with SiCN Material, P. Luan, Andrew Nolan, Y. Yoshida, Y. Han, P. Biolsi , TEL Technology Center, America, LLC, USA; K. Ken, N. Ikezawa , Tokyo Electron Ltd., Japan	
9:20am		
9:40am		
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	
10:20am		
10:40am		
11:00am		
11:00am	INVITED: PS-ThM-10 Plasma Etch Fundamentals and Engineering: Advancing Interconnect Scaling, Theo Standaert , IBM Research Division, Albany, NY	
11:20am		
11:40am	PS-ThM-12 Exploring the Use of Tungsten-Based Hard Masks in Beol Interconnects for 3 nm Node and Beyond, Daniel Montero, V. Vega-Gonzalez, H. Puliyalil , IMEC, Belgium; J. Nie, J. Yang , LAM Research; F. Schleicher , IMEC, Belgium; K. Mclaughlin , LAM Research; J. Versluijs, F. Lazzarino, S. Park, Z. Takei , IMEC, Belgium	
12:00pm	PS-ThM-13 Reactive Ion Etch of Subtractive Metal for Advanced Interconnect, Lijuan Zou, Y. Mignot, C. Penny, J. Arnold , IBM Research Division, Albany, NY; G. Stojakovic, P. Friddle, S. Schmitz , Lam Research Corporation	

Thursday Morning, November 10, 2022

Room 316		
8:00am	INVITED: TF1+SE+SS-ThM-1 Opportunities of Complex Oxides Prepared by Atomic Layer Depositions, <i>P. Sallés, P. Machado, Mariana Coll</i> , ICMAB-CSIC, Spain	Thin Films Division Session TF1+SE+SS-ThM Nucleation, and Interface Phenomena in Thin Films Moderators: Adrie Mackus , Eindhoven University, Netherlands, Qing Peng , University of Alabama
8:20am		
8:40am	TF1+SE+SS-ThM-3 An Atomic-Scale Study of Si Epitaxial Growth on Cl-Si(100), <i>Azadeh Farzaneh</i> , University of Maryland, College Park; <i>R. Butera</i> , Laboratory for Physical Sciences	
9:00am	TF1+SE+SS-ThM-4 The Effect of Oxygen Plasma on the ZnO Growth on Polymer Substrates During Plasma-Enhanced Atomic Layer Deposition, <i>Lisanne Demelius</i> , Graz University of Technology, Austria; <i>M. Blatnik</i> , CEITEC – Central European Institute of Technology, Brno University of Technology, Czechia; <i>K. Unger</i> , Graz University of Technology, Austria; <i>P. Parlanti, M. Gemmi</i> , Istituto Italiano di Tecnologia, Center for Materials Interfaces, Italy; <i>A. Coclite</i> , Graz University of Technology, Austria	
9:20am	TF1+SE+SS-ThM-5 Measuring Local Atomic Structure Variations Through the Depth of Ultrathin ALD Aluminum Oxide, <i>Nikhila Paranamana, M. Young, R. Gettler, H. Koenig, S. Montgomery-Smith, X. He</i> , University of Missouri, Columbia	
9:40am	TF1+SE+SS-ThM-6 Interfacial Reactions and Energy Transfer in Sputter Deposited Thermite Reactive Nanolaminates, <i>Chloe Skidmore, J. Maria</i> , Pennsylvania State University	
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	
10:40am		
11:00am	INVITED: TF+AP-ThM-10 The Electrical and Magnetic Properties of Nonstoichiometric Nickel Oxide Thin Films, <i>Mari Napari</i> , University of Southampton, UK	Thin Films Division Session TF+AP-ThM Novel ALD CVD Precursors, Processes, Deposited Morphologies and Substrate Architectures Moderators: Parag Banerjee , University of Central Florida, Richard Vanfleet , Brigham Young University
11:20am		
11:40am	TF+AP-ThM-12 Al ₂ O ₃ Thin Films with Controlled Nanoporosity Prepared by Low Temperature Thermal ALD, <i>Marceline Bonvalot, S. Hekking</i> , LTM - MINATEC - CEA/LETI, France; <i>C. Vallée</i> , SUNY POLY, Albany	
12:00pm	TF+AP-ThM-13 Thermal ALD Process of NiO Based on Ni(^t Bu-MeAMD) ₂ Precursor, <i>Cristian van Helvoirt, N. Phung, M. Creatore</i> , Eindhoven University of Technology, Netherlands	

Thursday Morning, November 10, 2022

Advanced Surface Engineering Division Room 317 - Session SE+AS+BI+SS+TF-ThM Nanostructured and Multifunctional Thin Films and Coatings I Moderators: Suneel Kodambaka, University of California Los Angeles, Jianliang Lin, Southwest Research Institute		Actinides and Rare Earths Focus Topic Room 318 - Session AC+AS+LS-ThM Emerging Topics and Methods in Actinide/Rare Earth Science Moderators: David Shuh, Lawrence Berkeley National Lab, Alison Pugmire, LANL, Paul Rousel, AWE, UK		
8:00am	INVITED: SE+AS+BI+SS+TF-ThM-1 Nanostructured Optical Thin Films for Energy Applications and More, <i>Bill Baloukas</i> , Polytechnique Montréal, Canada	INVITED: AC+AS+LS-ThM-1 Nuclear Forensics 2020:A Strategic Inflection Point, <i>David Willingham</i> , Lawrence Livermore Laboratory		
8:20am				
8:40am	SE+AS+BI+SS+TF-ThM-3 Constitution, Microstructure and Mechanical Properties of Magnetron Sputtered RuAl Thin Films, <i>Vincent Ott</i> , Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Germany; <i>T. Wojcik</i> , TU Wien, Austria; <i>S. Ulrich</i> , Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Germany; <i>S. Kolozsvári</i> , Plansee Composite Materials GmbH, Germany; <i>P. Polcik</i> , Plansee Composite Materials GmbH, Germany; <i>P. Mayrhofer</i> , <i>H. Riedl</i> , TU Wien, Austria; <i>M. Stueber</i> , Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Germany	INVITED: AC+AS+LS-ThM-3 The Non-Integer Occupancy Ground State Hypothesis, <i>Miles Beaux</i> , Los Alamos National Laboratory		
9:00am	SE+AS+BI+SS+TF-ThM-4 Microstructure, Thermal Stability and Oxidation Resistance of an arc-evaporated $\text{Cr}_{0.74}\text{Ta}_{0.26}\text{N}$ Coating, <i>Christina Kainz</i> , Christian Doppler Laboratory for Advanced Coated Cutting Tools at the Department of Materials Science, Montanuniversität Leoben, Austria; <i>M. Tkadletz</i> , <i>M. Burtscher</i> , Department of Materials Science, Montanuniversität Leoben, Austria; <i>C. Saringer</i> , Christian Doppler Laboratory for Advanced Coated Cutting Tools at the Department of Materials Science, Montanuniversität Leoben, Austria; <i>A. Stark</i> , <i>N. Schell</i> , Institute of Materials Physics, Helmholtz-Zentrum Hereon, Germany; <i>C. Czettl</i> , <i>M. Pohler</i> , CERATIZIT Austria GmbH, Austria; <i>D. Kiener</i> , Department of Materials Science, Montanuniversität Leoben, Austria; <i>N. Schalk</i> , Christian Doppler Laboratory for Advanced Coated Cutting Tools at the Department of Materials Science, Montanuniversität Leoben, Austria	INVITED: AC+AS+LS-ThM-5 Legacy Plutonium at the Hanford Site, <i>Edgar Buck</i> , <i>D. Reilly</i> , <i>G. Hall</i> , <i>K. Kruska</i> , <i>L. Liu</i> , <i>S. Tripathi</i> , <i>B. McNamara</i> , <i>A. Casella</i> , <i>D. Meier</i> , Pacific Northwest National Laboratory		
9:20am	SE+AS+BI+SS+TF-ThM-5 Microstructural Characterization and Tribological Evaluation of TiN, CrN, TiSiCN, and CrSiCN Coatings for Applications in Cold Regions, <i>Nicholas D'Attilio</i> , <i>F. Thompson</i> , <i>G. Crawford</i> , South Dakota School of Mines and Technology; <i>E. Asenath-Smith</i> , US Army Corps of Engineers Cold Regions Research and Engineering Laboratory			
9:40am	SE+AS+BI+SS+TF-ThM-6 Development and Evaluation of TiAlNb/YSZ Protective Coatings for Titanium Alloys, <i>Jianliang Lin</i> , Southwest Research Institute, San Antonio Texas; <i>T. Stinnett</i> , Lockheed Martin Missiles and Fire Control			
10:00am	BREAK - Complimentary Coffee in Exhibit Hall		BREAK - Complimentary Coffee in Exhibit Hall	
10:20am				
10:40am				
11:00am	INVITED: SE+AS+BI+SS+TF-ThM-10 Imperfections in Metal Diborides – from Ab-Initio Calculations to Transmission Electron Microscopy, <i>Martin Dahlqvist</i> , IFM, Linköping University, Sweden; <i>M. Dahlqvist</i> , Linköping University, Sweden	AC+AS+LS-ThM-10 Focused Ion Beam for Spatially Resolved Morphological Analysis of Nuclear Materials, <i>Brandon Chung</i> , <i>S. Donald</i> , <i>D. Rosas</i> , <i>S. Sen-Britain</i> , <i>V. Som</i> , <i>N. Teslich</i> , <i>A. Baker</i> , Lawrence Livermore National Laboratory; <i>A. Ditter</i> , <i>D. Shuh</i> , Lawrence Berkeley National Laboratory		
11:20am		AC+AS+LS-ThM-11 Studying Combined Influence of Alpha Irradiation and Dissolved Hydrogen on UO_2 Corrosion Using a Microfluidic Electrochemical Cell, <i>Jennifer Yao</i> , <i>B. McNamara</i> , <i>M. O'Hara</i> , Pacific Northwest National Laboratory; <i>N. Lahiri</i> , Pacific Northwest National Lab; <i>E. Ilton</i> , <i>C. Wang</i> , <i>E. Buck</i> , Pacific Northwest National Laboratory		
11:40am	SE+AS+BI+SS+TF-ThM-12 Mechanical Property and Corrosion Resistance Evaluation of $\text{Ti}_x\text{ZrNbTaFeB}_y$ High Entropy Alloy Thin Films, <i>B. Lou</i> , Chang Gung University, Taiwan; <i>F. Kan</i> , Ming Chi University of Technology, Taiwan; <i>Jyh-Wei Lee</i> , Ming Chi University of Technology, Taiwan	AC+AS+LS-ThM-12 A Model to Extract the Size-Dependent Surface Structure of Actinide Oxide Nanoparticles, <i>Shinhyo Bang</i> , <i>L. Moreau</i> , Washington State University		
12:00pm	SE+AS+BI+SS+TF-ThM-13 Tuning the Properties of Thin Films via Disorder, <i>Alessandro Troglia</i> , <i>M. van de Poll</i> , Advanced Research Center for Nanolithography (ARCNL), Netherlands; <i>J. van de Groep</i> , <i>A. de Visser</i> , Van der Waals-Zeeman Institute, University of Amsterdam, Netherlands; <i>R. Bliem</i> , Advanced Research Center for Nanolithography (ARCNL), Netherlands			

Thursday Morning, November 10, 2022

Surface Science Division Room 319 - Session SS+AS-ThM Memorial Session in Honor of Patricia Thiel II Moderators: James Evans, Ames Laboratory, Cynthia Jenks, Oak Ridge National Laboratory		Applied Surface Science Division Room 320 - Session AS+AC+BI+CA+HI-ThM Unraveling the Composition of Complex Systems with SIMS Moderators: Steve Consiglio, Tokyo Electron, Gregory L. Fisher, Physical Electronics	
8:00am			
8:20am	INVITED: SS+AS-ThM-2 Navigating Complex Interfaces: In Memory of Patricia A. Thiel, <i>Cynthia Jenks</i> , Oak Ridge National Laboratory	AS+AC+BI+CA+HI-ThM-2 Ex-Situ, Surface and Bulk Investigations of Defluxing Chemistry Effects on Solder Mask, <i>J. Elliott Fowler</i> , Sandia National Laboratories; <i>R. Gerhardt</i> , Georgia Institute of Technology; <i>J. Ohlhausen</i> , <i>R. Callaway</i> , Sandia National Laboratories; <i>M. Watt</i> , Georgia Institute of Technology; <i>S. Grosso</i> , <i>S. Rosenberg</i> , Sandia National Laboratories	
8:40am	INVITED: SS+AS-ThM-3 Atomic Scale Investigation of Friction Properties of Quasicrystals and Beyond, <i>Jeong Young Park</i> , Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea	INVITED: AS+AC+BI+CA+HI-ThM-3 Unraveling the Composition of Complex Systems with SIMS, <i>Birgit Hagenhoff</i> , Tascon GmbH, Germany	
9:00am			
9:20am	INVITED: SS+AS-ThM-5 Quantification of Structure-Property Relationships at Interfaces, <i>Susan B. Sinnott</i> , Pennsylvania State University	AS+AC+BI+CA+HI-ThM-5 Time of Flight Secondary Ion Mass Spectrometry (ToF-SIMS) as a Novel Approach to the Characterization of Coatings and Interfaces of Porous Transport Layers, <i>Genevieve Stelmacovich</i> , <i>M. Walker</i> , <i>J. Foster</i> , Colorado School of Mines; <i>D. Cullen</i> , Oak Ridge National Laboratory; <i>A. Paxson</i> , Plug Power; <i>G. Bender</i> , <i>T. Schuler</i> , <i>S. Ware</i> , National Renewable Energy Laboratory; <i>S. Pylypenko</i> , Colorado School of Mines	
9:40am	INVITED: SS+AS-ThM-6 Metal Nodes in Bimetallic Metal-Organic Frameworks as Isolated Sites for Gas-Phase Catalytic Hydrogenation, <i>Donna Chen</i> , University of South Carolina	AS+AC+BI+CA+HI-ThM-6 Construction of Accurate 3D NanoSIMS Depth Profiling Images of Cells in the Presence of Lateral Variations in Sputter Rate, <i>M. Brunet</i> , <i>B. Gorman</i> , <i>Mary Kraft</i> , University of Illinois Urbana-Champaign	
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall	
10:20am			
10:40am			
11:00am	INVITED: SS+AS-ThM-10 Quasicrystals in Two Dimensions: From Metals To Molecules And Oxides, <i>Vincent Fournée</i> , Institut Jean Lamour - CNRS- Université de Lorraine, France	INVITED: AS+AC+BI+CA+HI-ThM-10 Innovations in Nuclear Materials Analysis with SIMS, <i>Christopher Szakal</i> , National Institute of Standards and Technology (NIST)	
11:20am			
11:40am	INVITED: SS+AS-ThM-12 Unusual Flat and Extended Morphology of Intercalated Cu Under MoS ₂ , <i>Dapeng Jing</i> , <i>Y. Han</i> , <i>J. Evans</i> , <i>M. Kolmer</i> , <i>Z. Fei</i> , <i>M. Tringides</i> , Ames Laboratory USDOE	AS+AC+BI+CA+HI-ThM-12 Understanding Surface Bonding and Molecular Structure with MS/MS Imaging: From Click-Chemistry to Biogenesis, <i>Gregory L. Fisher</i> , Physical Electronics	
12:00pm	INVITED: SS+AS-ThM-13 Helium Ion Microscopy for Surface Modification and Characterization, <i>Alex Belianinov</i> , Sandia National Laboratory	AS+AC+BI+CA+HI-ThM-13 Probing Grain Boundary Segregation in 304L Stainless Steel using Time-of-Flight Secondary Ion Mass Spectrometry (ToF-SIMS), <i>James Ohlhausen</i> , <i>E. Barrick</i> , <i>D. Susan</i> , <i>C. Robino</i> , <i>K. Hattar</i> , <i>J. Herrmann</i> , <i>P. Duran</i> , <i>J. Rodelas</i> , Sandia National Laboratories	

Thursday Morning, November 10, 2022

	<p>Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Room 321 - Session HC+AS+SS-ThM Bridging Gaps III: Combined Theory and Experiment in Catalysis Moderators: Liney Arnadottir, Oregon State University, Sharani Roy, University of Tennessee Knoxville</p>	<p>Magnetic Interfaces and Nanostructures Division Room 330 - Session MI+2D+TF-ThM Quantum Materials (2D) Moderator: Zheng Gai, Oak Ridge National Laboratory</p>
8:00am	<p>INVITED: HC+AS+SS-ThM-1 Mechanistic Understanding and Catalyst Design for Selective Methane Activations, <i>Ping Liu</i>, Brookhaven National Laboratory</p>	<p>MI+2D+TF-ThM-1 Exploration of Two Surfaces Observed in Weyl Semimetal BaMnSb₂, <i>Zheng Gai, Q. Zou</i>, Oak Ridge National Laboratory; <i>S. Huang</i>, University of South Carolina; <i>W. Ko, M. Fu</i>, Oak Ridge National Laboratory; <i>Y. Yang, K. Zhao</i>, Louisiana State University; <i>S. Crittenden</i>, University of South Carolina; <i>E. Plummer</i>, Louisiana State University; <i>R. Jin</i>, University of South Carolina</p>
8:20am		<p>MI+2D+TF-ThM-2 Properties of Mn₃Sn Films Grown on Sapphire Substrates Using Molecular Beam Epitaxy, <i>Sneha Upadhyay</i>, Ohio University; <i>T. Erickson, D. Ingram</i>, Ohio University; <i>K. Sun</i>, The University of Michigan, Ann Arbor; <i>A. Smith</i>, Ohio University</p>
8:40am	<p>HC+AS+SS-ThM-3 A First Principles Study of Propane Dehydrogenation Reactions on Hydroxyl-Terminated Al₂O₃ Decorated Platinum Surfaces, <i>Sumandeep Kaur, H. Nguyen, L. Arnadottir</i>, Oregon State University</p>	<p>INVITED: MI+2D+TF-ThM-3 Interfacial Magnetism in Oxide Heterostructures, <i>Alex Demkov</i>, The University of Texas at Austin</p>
9:00am	<p>HC+AS+SS-ThM-4 Atomic-Level Studies of C₂H₄ on clean and Rh₁-Decorated Fe₃O₄(001), <i>Panukorn Sombut, L. Puntischer, C. Wang, M. Ulreich</i>, TU Wien, Austria; <i>M. Meier</i>, University of Vienna, Austria; <i>J. Pavelec, Z. Jakub, F. Kraushofer, M. Schmid, U. Diebold</i>, TU Wien, Austria; <i>C. Franchini</i>, University of Vienna, Austria; <i>G. Parkinson</i>, TU Wien, Austria</p>	
9:20am	<p>INVITED: HC+AS+SS-ThM-5 How the Support Dictates the Reactivity of FeO_x-Based Single-Atom Catalysts, <i>Matthias Meier</i>, TU Wien, Austria</p>	<p>INVITED: MI+2D+TF-ThM-5 Epitaxial 2D Van Der Waals Magnets, <i>Roland Kawakami</i>, Ohio State University</p>
9:40am		
10:00am	<p>BREAK - Complimentary Coffee in Exhibit Hall</p>	<p>BREAK - Complimentary Coffee in Exhibit Hall</p>
10:20am		
10:40am		
11:00am	<p>INVITED: HC+AS+SS-ThM-10 Modifying Ethane Oxidation Selectivity on the stoichiometric IrO₂(110) surface through anion substitution, <i>Aravind Asthagiri</i>, The Ohio State University</p>	<p>INVITED: MI+2D+TF-ThM-10 Hybrid Superconductor-Semiconductor Device, <i>Sergey Frolov</i>, University of Pittsburgh</p>
11:20am		
11:40am	<p>HC+AS+SS-ThM-12 HC Graduate Student Finalist Talk: Insight into Subsurface Adsorption and Reconstruction of Ag(111) Deduced from a Lattice-Gas Model and Monte Carlo Simulations, <i>Carson Mize</i>, University of Tennessee Knoxville; <i>L. Crosby</i>, Joint Institute for Computational Sciences; University of Tennessee Knoxville; <i>E. Lander, S. Roy</i>, University of Tennessee Knoxville</p>	<p>MI+2D+TF-ThM-12 Magnetotransport in Graphene/Pb_{0.24}Sn_{0.76}Te Heterostructures: Finding a Way to Avoid Catastrophe, <i>G. Stephen</i>, Laboratory for Physical Sciences; <i>I. Naumov</i>, Howard University; <i>N. Blumenschein, L. Sun, Jennifer DeMell</i>, Laboratory for Physical Sciences; <i>S. Shirodkar, P. Dev</i>, Howard University; <i>P. Taylor</i>, Army Research Laboratory; <i>J. Robinson, P. Campbell</i>, Naval Research Laboratory; <i>A. Hanbicki, A. Friedman</i>, Laboratory for Physical Sciences</p>
12:00pm	<p>HC+AS+SS-ThM-13 Measuring and Predicting a Key Catalyst-Performance Descriptor for Supported Metal Nanoparticle Catalysts: Metal Chemical Potential, <i>Charles T. Campbell, J. Rumpitz, K. Zhao</i>, University of Washington</p>	

Thursday Afternoon, November 10, 2022

	<p>2D Materials Technical Group Room 303 - Session 2D+AS+EM-ThA 2D Materials: Electron Microscopy and Photoemission Spectroscopy Moderators: Keun Su Kim, Yonsei University, Republic of Korea, Dmitry Kireev, University of Texas at Austin</p>	<p>Advanced Ion Microscopy and Ion Beam Nano-engineering Focus Topic Room 301 - Session HI-ThA Novel Beam Induced Material Engineering and Nano Patterning Moderators: Frances Allen, UC Berkeley, Annalena Wolff, Caltech</p>
2:20pm	<p>INVITED: 2D+AS+EM-ThA-1 Periodic Lattice Displacements in Low Dimensional Materials, Robert Hovden, University of Michigan</p>	<p>INVITED: HI-ThA-1 Additive Nano-Manufacturing of Advanced Superconductors, and Devices Using Focused Ion Beam Technology, Rosa Córdoba, Institute of Molecular Science (ICMol), University of Valencia, Spain</p>
2:40pm		
3:00pm	<p>2D+AS+EM-ThA-3 Engineering of Nanoscale Heterogenous Transition Metal Dichalcogenide-Au Interfaces, Alex Boehm, Sandia National Laboratories; J. Fonseca, Naval Research Laboratory; K. Thuermer, J. Sugar, Sandia National Laboratories; J. Robinson, Naval Research Laboratory; T. Ohta, Sandia National Laboratories</p>	<p>HI-ThA-3 On Demand Spatially Controlled Fabrication of Single Photon Emitters in Si, Gregor Hlawacek, N. Klingner, M. Hollenbach, U. Kentsch, G. Astakhov, Helmholtz-Zentrum Dresden - Rossendorf, Germany</p>
3:20pm	<p>2D+AS+EM-ThA-4 Advanced Laboratory-Based Momentum Microscopy and PEEM Analysis, Stefan Böttcher Böttcher, SPECS Surface Nano Analysis GmbH, Germany; D. Singh, T. Conard, IMEC, Belgium; M. Wietstruck, SPECS Surface Nano Analysis GmbH, Germany; P. van der Heide, IMEC, Belgium; A. Thissen, SPECS Surface Nano Analysis GmbH, Belgium</p>	<p>HI-ThA-4 Towards FIB Patterning of Reconfigurable Plasmonic Arrays, Ivan Kravchenko, N. Lavrik, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory</p>
3:40pm	<p>2D+AS+EM-ThA-5 Epitaxial Growth and Electronic States of Ultrathin Bi (111) Films on Insb (111)B: Evidence of Inversion Symmetry Breaking via Film-Substrate Interactions, Hadass S. Inbar, J. Dong, A. Engel, C. Dempsey, Y. Chang, University of California Santa Barbara; A. Fedorov, Advanced Light Source, Lawrence Berkeley National Laboratory; C. Palmstrom, University of California Santa Barbara</p>	<p>HI-ThA-5 Low Energy Ion Beam Backside Circuit Edit Applications in FinFET Devices, M. Usman Raza, R. Livengood, T. Malik, O. Sidorov, Z. Malamud, I. Ronen, Shida Tan, Intel Corporation; M. Wong, Thermofisher Scientific</p>
4:00pm	<p>2D+AS+EM-ThA-6 Band Modulations: Revealing Moiré Effects in Twisted Bilayer 2D Materials, Ryan Muzzio, Carnegie Mellon University; A. Jones, P. Majchrzak, Aarhus University, Denmark; H. Martins, S. Singh, Carnegie Mellon University; C. Jozwiak, A. Bostwick, E. Rotenberg, Lawrence Berkeley National Laboratory; P. Hofmann, Aarhus University, Denmark; S. Ulstrup, aarhus University, Denmark; J. Katoch, Carnegie Mellon University</p>	

Thursday Afternoon, November 10, 2022

Advanced Surface Engineering Division Room 317 - Session SE+AS+MN+SS-ThA Mechanical and Tribological Properties of Thin Films and Coatings Moderators: Jyh-Wei Lee, Ming Chi University of Technology, Taiwan, Filippo Mangolini, The University of Texas at Austin		Applied Surface Science Division Room 320 - Session AS+2D+EM+MS+NS+SS+TF-ThA Probing Defects at Surfaces and Interfaces Moderators: Michaeleen Pacholski, The Dow Chemical Company, Zachary Robinson, SUNY Brockport	
2:20pm	INVITED: SE+AS+MN+SS-ThA-1 Investigating Solid and Boundary Lubrication Processes With an Environment Controlled Tribometer Based on a Unique 6 Axes Sensor, Julien Fontaine , LTDS - CNRS/Ecole Centrale de Lyon, France; C. Minfray , LTDS - Ecole Centrale de Lyon/CNRS, France; J. Galipaud , LTDS - CNRS/Ecole Centrale de Lyon, France	2:40pm	
3:00pm	SE+AS+MN+SS-ThA-3 Differential Impact of Scale Dependent Roughness on Lubricant Infused Surfaces, Robert Chrostowski , B. Fang , J. Smith , F. Mangolini , University of Texas at Austin	3:20pm	AS+2D+EM+MS+NS+SS+TF-ThA-3 Characterization of MAX Phases using a Combination of Micro-spot XPS, HAXPES and C60 Cluster Depth Profiling, Kateryna Artyushkova , Physical Electronics USA; M. Anayee , Y. Gogotsi , Drexel University
3:20pm	INVITED: SE+AS+MN+SS-ThA-4 Imperfectly Perfect Coatings for Rolling Bearing Applications, Esteban Broitman , SKF B.V. - Research and Technology Development, Netherlands	3:40pm	AS+2D+EM+MS+NS+SS+TF-ThA-4 Unusual Trend in Thermal Stability of Alanine Different Ni Surfaces, J. Ontaneda , Queen Mary University of London, UK; R. Grau-Crespo , University of Reading, UK; Georg Held , Diamond Light Source, UK
4:00pm	SE+AS+MN+SS-ThA-6 Tribological Behavior of WC/WCN/CNx Thin Films Deposited by HIPIMS, Luis Flores-Cova , O. Jimenez , M. Flores , Universidad de Guadalajara, Mexico		AS+2D+EM+MS+NS+SS+TF-ThA-5 Correlative Theoretical and Experimental Study of the PC X Interfacial Bond Formation (X = TiN, AlN, TiAlN) During DC Magnetron Sputtering, Lena Patterer , P. Ondračka , D. Bogdanovski , S. Karimi Aghda , J. Schneider , Materials Chemistry, RWTH Aachen University, Germany
			AS+2D+EM+MS+NS+SS+TF-ThA-6 Using Resonant Photoemission Spectroscopy to Probe the Electronic Structure of Complex Oxides with Elemental and Orbital Specificity, Jessica McChesney , D. Fong , H. Hong , Argonne National Laboratory, USA

Thursday Afternoon, November 10, 2022

<p>Electronic Materials and Photonics Division Room 304 - Session EM+AS+EL+NS+SS-ThA Interfaces and Defect Engineering in Electronic & Photonic Materials & Devices Moderators: Erin Cleveland, U.S. Naval Research Laboratory</p>		<p>Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Room 321 - Session HC+AS+NS+SS-ThA Special Session and Reception for the HC Community and to Celebrate Robert Madix Moderators: Liney Arnadottir, Oregon State University, Dan Killelea, Loyola University Chicago, Jason Weaver, University of Florida</p>	
2:20pm	<p>INVITED: EM+AS+EL+NS+SS-ThA-1 Design and Control of Defect-Mediated Properties in Electronic Ceramics, <i>Elizabeth Dickey</i>, Carnegie Mellon University</p>	<p>INVITED: HC+AS+NS+SS-ThA-1 Gaede-Langmuir Award Talk: Not a Divide - A Continuum: Surface Science to Heterogeneous Catalysis, <i>Robert J. Madix</i>¹, Harvard University</p>	
2:40pm			
3:00pm	<p>EM+AS+EL+NS+SS-ThA-3 In-Situ Investigation of the Interface Formation between Si-Terminated Diamond and a NbxOy Electron Acceptor Layer for Electronic Applications, <i>Gabrielle Abad, P. Hopkins, S. McDonnell</i>, University of Virginia</p>		
3:20pm	<p>EM+AS+EL+NS+SS-ThA-4 Effects of Atmospheric UV-O₃ Exposure of WSe₂ on the Properties of the HfO₂/WSe₂ Interface, <i>Maria Gabriela Sales</i>, University of Virginia; <i>A. Mazzoni</i>, University of Maryland College Park; <i>W. Sarney</i>, Army Research Laboratory; <i>J. Pearson</i>, University of Maryland College Park; <i>S. Najmaei</i>, Army Research Laboratory; <i>S. McDonnell</i>, University of Virginia</p>		
3:40pm	<p>EM+AS+EL+NS+SS-ThA-5 Near Zero Field Magnetoresistance and Electrically Detected Magnetic Resonance Studies of Instabilities in Semiconductor/ Insulator Systems, <i>Patrick Lenahan</i>, Pennsylvania State University</p>		
4:00pm			

¹ Gaede Langmuir Award Winner

Thursday Afternoon, November 10, 2022

	<p>Plasma Science and Technology Division Room 315 - Session PS-ThA Harnessing the Power of Plasmas for Real-World Applications: PSTD Award Lectures Moderators: Sebastian Engelmann, IBM T. J. Watson Research Center, Mingmei Wang, Lam Research Corporation</p>	<p>Quantum Information Science Focus Topic Room 302 - Session QS+EM+MN+NS-ThA The Quantum Metrology Revolution Moderator: Dave Pappas, Rigetti Computing</p>
2:20pm	<p>INVITED: PS-ThA-1 <i>Time-Resolved Energy and Ion Energy Distributions during High-Powered Impulse Magnetron Sputtering (HIPIMS) with Cathode Voltage Reversal</i>, David Ruzic¹, University of Illinois; D. Barlaz, Z. Jeckell, University of Illinois at Urbana-Champaign; W. Huber, I. Haehnlein, University of Illinois at Urbana-Champaign, Starfire Industries LLC; T. Houlihan, B. Jurczyk, Starfire Industries LLC</p>	<p>INVITED: QS+EM+MN+NS-ThA-1 Magnetic Textures in Quantum Materials Revealed by SQUID-on-tip Microscopy, Ella Lachman, Rigetti Computing</p>
2:40pm		
3:00pm	<p>INVITED: PS-ThA-3 PSTD Plasma Prize Award Talk: Plasma ON then OFF, ON - OFF, ON – OFF, ON - OFF: Who Knew Being Indecisive Could Work So Well!, Lawrence Overzet², University of Texas at Dallas</p>	<p>QS+EM+MN+NS-ThA-3 Quantum-Based Measurements for Pressure and Vacuum and the NIST on a Chip Program, Jay Hendricks, B. Goldstein, NIST</p>
3:20pm		<p>INVITED: QS+EM+MN+NS-ThA-4 Materials and Devices for Efficient Quantum Memories and Sensors, Lee Bassett, University of Pennsylvania</p>
3:40pm	<p>INVITED: PS-ThA-5 PSTD Young Investigator Award Talk: Next Generation “Birkeland-Eyde”: From NH₃ to NO, Floran Peeters³, DIFFER, Netherlands</p>	
4:00pm		

¹ 2020 AVS Gaede-Langmuir Awardee

² 2021 PSTD Plasma Prize Winner

³ 2021 PSTD Young Investigator Awardee

Thursday Afternoon, November 10, 2022

	Surface Science Division Room 319 - Session SS+AS+SE-ThA ALD and CVD Surface Chemistry Moderators: Melissa Hines , Cornell University, Dario Stacchiola , Brookhaven National Laboratory	Thin Films Division Room 316 - Session TF+AS-ThA In-Situ Characterization of Thin Films and Interfaces Moderators: James Fitz-Gerald , University of Virginia, Robert Grubbs , IMEC, Belgium
2:20pm	INVITED: SS+AS+SE-ThA-1 ALD Surface Chemistry on Lithium-Ion Battery Cathodes, Jeffrey Elam , Argonne National Laboratory	TF+AS-ThA-1 <i>In situ</i> IRRAS and XPS for the Characterization of Gas Interactions with MOF Nanofilms, Tianhao Hu , Stony Brook University/Brookhaven National Laboratory; C. Eads , Max IV Laboratory, Sweden; D. Stacchiola , A. Head , Brookhaven National Laboratory
2:40pm		TF+AS-ThA-2 AVS Nellie Yeoh Whetten Awardee Talk: Characterizing Early-Stage Morphology and Defect Dynamics in Block Copolymer Thin Films with Environmentally Controlled High-Speed Atomic Force Microscopy, Julia Murphy ¹ , University of Chicago; J. Raybin , University of California at Berkeley; S. Sibener , University of Chicago
3:00pm	SS+AS+SE-ThA-3 Role of Temperature, Pressure and Surface Oxygen Migration in the Initial Atomic Layer Deposition of HfO ₂ on Anatase TiO ₂ (101), G. D'Acunto , R. Jones , Lund University, Sweden; L. Pérez Ramírez , Synchrotron Soleil, France; P. Shayesteh , E. Kokkonen , F. Rehman , Lund University, Sweden; F. Lim , F. Bournel , J. Gallet , Sorbonne Université, France; R. Timm , Joachim Schnadt , Lund University, Sweden	TF+AS-ThA-3 <i>In Situ</i> X-Ray Scattering Studies of the Influence of Plasma Properties on Epitaxial InN Growth by PEALD, Jeffrey Woodward , S. Rosenberg , D. Boris , U.S. Naval Research Laboratory; M. Johnson , Syntek Technologies; S. Walton , S. Johnson , U.S. Naval Research Laboratory; Z. Robinson , SUNY Brockport; N. Nepal , U.S. Naval Research Laboratory; K. Ludwig , Boston University; J. Hite , C. Eddy , U.S. Naval Research Laboratory
3:20pm	SS+AS+SE-ThA-4 ALD of Well-Defined Mixed-Oxide and Metal-Oxide Catalytic Interfaces, Francisco Zaera , University of California - Riverside	TF+AS-ThA-4 Optical Monitoring of MoCl ₅ and H ₂ S Delivery During Atomic Layer Deposition of MoS ₂ , Berc Kalanyan , National Institute of Standards and Technology; E. Jahrman , National Institute of Standard and Technology; J. Maslar , National Institute of Standards and Technology
3:40pm	SS+AS+SE-ThA-5 Mechanistic studies on Catalytically Activated ALD of Fe ₂ O ₃ on Pt, Andreas Werbrouck , Stanford University, Belgium; J. Schneider , S. Nathan , A. Rothman , S. Bent , Stanford University	TF+AS-ThA-5 Temperature-Time-Thickness (TTT) Topography Maps: A Parameter Space Visualization Approach for ALD Processes, S. Novia Berriel , C. Feit , U. Kumar , University of Central Florida; A. Arunachalam , University of Texas at Dallas; S. Seal , University of Central Florida; K. Basu , University of Texas at Dallas; P. Banerjee , University of Central Florida
4:00pm		TF+AS-ThA-6 Surface Functionalization of Cu with Inhibitors to Enable Area-Selective Atomic Layer Deposition, Andrew Kaye , S. Agarwal , Colorado School of Mines

¹ AVS Nellie Yeoh Whetten Awardee

2D Materials Technical Group

Room Ballroom A - Session 2D-ThP

2D Materials: Poster Session, 4:30-6:30pm

2D-ThP-1 MoS₂ on Sapphire for Aligned Growth Using Liquid Precursor, **Anindita Chakravarty**, University at Buffalo

2D-ThP-2 Growing and Analyzing Ultra-Thin Polyaniline Films, **Anthony Annerino**, P. Gouma, The Ohio State University

2D-ThP-3 Modification of Bilayer VSe₂ by Intercalating Transition Metals, **Vimukthi Pathirage**, K. Lasek, J. Li, I. Ponomareva, M. Batzill, University of South Florida

2D-ThP-6 Chemical Vapor Deposition of Large Grain and Continuous MoS₂ Layers on Catalyzed SiO₂/Si Substrate, Z. Graham, **Matara Indika**, M. Williams, Clark Atlanta University

2D-ThP-7 Quantum Confinement in Topological Semimetal Nano-Platelets, **Margaret Brown**, R. Laing, T. Muratore, University of Dayton; K. Burzynski, J. Brown, Wright Patterson Air Force Base; J. Corbett, Miami University; K. Eyink, Wright Patterson Air Force Base; S. Elhamri, University of Dayton; A. Reed, Wright Patterson Air Force Base

2D-ThP-8 Characterizing the Low-Symmetry Crystallographic Axis in Atomically Thin WTe₂ Layers Using Raman Spectroscopy for Spin-Orbit Torque Studies, **Anh Ramirez**, I. Kao, R. Muzzio, J. Katoch, S. Singh, Carnegie Mellon University, USA

2D-ThP-11 Designing a Green Synthesis Route and a Green Solvent to Exfoliate Graphene for Cost-Efficient Supercapacitors, S. Kittur, J. Zhang, A. Pangal, I. Agrawal, S. Raj, **Abhiram Hanumanthi**, N. Sangeneni, ASDRP

Advanced Surface Engineering Division

Room Ballroom A - Session SE-ThP

Advanced Surface Engineering Poster Session, 4:30-6:30pm

SE-ThP-1 Can a Nanoindenter be Used as a Hardness Spectrometer?, **Eteban Broitman**, SKF B.V. - Research & Technology Development, Netherlands

SE-ThP-2 Diagnosing Stress in Thin Films with High-Throughput Experimentation and Simulation-Based Methods, **Matias Kalaswad**, A. Shrivastava, S. Desai, J. Custer, S. Addamane, M. Rodriguez, P. Kotula, M. D'Elia, H. Najm, R. Dingreville, B. Boyce, D. Adams, Sandia National Laboratories

SE-ThP-3 Significant Texture and Wear Resistance Improvement of TiN Coatings Using Pulsed DC Magnetron Sputtering, **Nicholas Richter**, B. Yang, J. Barnard, T. Niu, Purdue University; Y. Zhang, Los Alamos National Laboratory; D. Shaw, Advanced Energy Industries, Inc.; H. Wang, X. Zhang, Purdue University

SE-ThP-4 Investigation of Laser Ablation Coating Removal (LACR) for Steel Surface Cleaning and Coating Adhesion, **William Moffat**, University of Virginia; J. Provines, S. Sharp, Virginia Transportation Research Council (VTRC); S. Agnew, J. Fitz-Gerald, University of Virginia

SE-ThP-5 Study of the Corrosion Resistance and Adhesion of DLC with a CrC/CrCN/Cr Bonding Multilayer Deposited by HIPIMS on AISI 4317 Steel, **Martin Flores**, L. Flores, Universidad de Guadalajara, Mexico; J. Aguilar, A. Gonzalez, Universidad Autonoma de Tamaulipas, Mexico

Applied Surface Science Division

Room Ballroom A - Session AS-ThP

Applied Surface Science Poster Session, 4:30-6:30pm

AS-ThP-1 Isolation of Pt Metal Atoms Using a Surface-Catalyzed Covalent Organic Framework, **David Wisman**, Indiana University Department of Chemistry; NAVSEA Crane; Y. Bai, S. Tait, Indiana University Department of Chemistry

AS-ThP-2 In situ Spectroscopic Evaluation of the Aging Mechanisms of Molybdenum Disulfide, **Robert Chrostowski**, University of Texas at Austin; J. Curry, M. Dugger, Sandia National Lab; F. Mangolini, University of Texas at Austin

AS-ThP-4 Stm Investigations of Self-Assembly of Proline, **Benjamin Heiner**, A. Pittsford, S. Kandel, University of Notre Dame

AS-ThP-5 Efforts to Improve XPS Analysis Quality in an Era of Increasingly Diverse Uses and Users, **Don Baer**, Pacific Northwest National Laboratory; J. Watts, University of Surrey, U.K.; A. Herrera-Gomez, CINVESTAV-Unidad Queretaro, Mexico; M. Linford, G. Major, Brigham Young University

AS-ThP-6 Metrology Developments in XPS and HAXPES, **David Cant**, B. Reed, A. Shard, National Physical Laboratory, UK

AS-ThP-7 Advances in Automated XPS Analysis – from Data to Answers, S. Coultas, J. Counsell, Kratos Analytical Limited, UK; C. Moffitt, Kratos Analytical Inc; K. Good, K. Macak, **Christopher Blomfield**, Kratos Analytical Limited, UK

AS-ThP-10 The Role of Artificial Intelligence in Minimizing Analysis Errors, Illustrated with EXAFS, Nanoindentation, and Core Level Photoemission, **Jeff Terry**, Illinois Institute of Technology

AS-ThP-11 X-ray Photoelectron Spectroscopy of Polymer Electrolyte Membrane Fuel Cell Components, **Maxim Shepherd**, S. Pylpenko, Colorado School of Mines

AS-ThP-12 Nanoscale Surface Sensitive Chemical Imaging of Additive Manufacturing Materials, **Ashley Maloney**, K. Artyushkova, Physical Electronics USA; O. Renault, E. De Vito, CEA/LETI-University Grenoble Alpes, France

AS-ThP-13 Data Reporting in XPS: A Consistent Lack of Information, **Max Clark**, G. Major, M. Linford, Brigham Young University

AS-ThP-14 Electrochemical Flow Cell for Surface and Interface Analysis Cluster, **Soniya Gahlawat**, CEST Kompetenzzentrum für elektrochemische Oberflächentechnologie GmbH, Austria; M. Valtiner, TU Wien/IAP, CEST Kompetenzzentrum für elektrochemische Oberflächentechnologie GmbH, Austria

AS-ThP-15 Optical Measurements of Temperature Driven Phase Change in Doped Niobium Oxides for Neuromorphic Computing Applications, **James Michels**, Z. Robinson, V. Daviero, State University of New York College at Brockport; K. Beckmann, N. Cady, SUNY Polytechnic Institute, Albany

AS-ThP-16 Laser Surface Melting to Mitigate Intergranular Corrosion of Sensitized AA 5083, **Md Sojib Hossain**, University of Virginia, USA, Bangladesh; J. Skelton, University of Virginia; W. Moffat, A. Wang, G. Lu, J. Fitz-Gerald, University of Virginia, USA

AS-ThP-17 Chemistry and Mechanism of Two-Dimensional Transition Metal Carbide and Nitride Mxene Synthesis, **Mark Anayee**, R. Wang, Y. Gogotsi, Drexel University

AS-ThP-19 Multilayer Method Modification for the Quantitative Chemical Composition Analysis on Initial Oxidation of Nickel, D. Guzmán Bucio, G. Gómez Sosa, D. Cabrera German, M. Bravo Sánchez, J. Torres Ochoa, O. Cortazar Martínez, A. Carmona Carmona, **Alberto Herrera Gómez**, M. Mayorga-Garay, CINVESTAV-Unidad Queretaro, Mexico

Electronic Materials and Photonics Division

Room Ballroom A - Session EM-ThP

Electronic Materials and Photonics Poster Session

4:30-6:30pm

EM-ThP-2 Synthesis and Characterization of Pb(In_{1/2}Nb_{1/2}O₃)-Pb(Mg_{1/3}Nb_{2/3}O₃)-PbTiO₃ Thin Films Grown by Pulsed Laser Deposition, **Da-Ren Liu**, Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan

EM-ThP-3 The Study of Magnetic and Electrical Properties of Co Spin Crossover Molecule Thin Films, **Jared Phillips**, S. Yazdani, Indiana University-Purdue University-Indianapolis; T. Ekanayaka, E. Mishra, University of Nebraska; J. Soruco, Indiana University-Purdue University-Indianapolis; A. N'Diaye, Advanced Light Source, Lawrence Berkeley National Laboratory; P. Wang, University of Florida; M. Shatruk, Florida State University; P. Dowben, University of Nebraska; R. Cheng, Indiana University-Purdue University-Indianapolis

EM-ThP-5 Multi-Frame Gated X-Ray Imager (MGXI) for Fast Hard X-Ray Imaging, **Mary Ann Mort**, C. Hunt, University of California at Davis; A. Carpenter, Lawrence Livermore National Laboratory

Fundamental Discoveries in Heterogeneous Catalysis Focus Topic

Room Ballroom A - Session HC-ThP

Heterogeneous Catalysis Poster Session, 4:30-6:30pm

HC-ThP-2 Facet-Dependent Strong Metal-Support Interaction of Pt Nanoparticles on Morphology Controlled Cu₂O Under CO Oxidation, **Seunghwa Hong**, D. Kim, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea; Y. Song, Korea Advanced Institute of Science and Technology, Republic of Korea; K. Kim, Pohang Accelerator Laboratory (PAL), Republic of Korea; J. Park, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea

HC-ThP-3 Investigation of Strong metal-support Interaction at the Pt-CoO interface Formed on Pt-Co Bimetallic Nanoparticles, *Yejin Song, D. Kim, S. Hong*, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea; *K. Kim*, Pohang Accelerator Laboratory (PAL), Republic of Korea; *J. Park*, Korea Advanced Institute of Science and Technology (KAIST) & Institute for Basic Science (IBS), Republic of Korea

HC-ThP-4 Effusive Molecular Beam Study of CH₄ Dissociative Chemisorption on Rh(111): The Remarkable Activity of Step Sites and Extrapolation to Catalytic Rh Films at Temperatures where Tunneling Dominates, *Xingyu Wang, I. Harrison*, University of Virginia

HC-ThP-5 Adsorption and Decomposition of Zirconium Tetrahydroborate on Pd(111), *Ravi Ranjan, M. Trenary*, University of Illinois - Chicago

HC-ThP-6 Preliminary Studies of RhCu Single-Atom Alloys Using Molecular Beams, *Laurin Joseph, M. Powers, A. Utz*, Tufts University

HC-ThP-8 Characterization of a Pt/Cu(111) Single Atom Alloy using CO-RAIRS and CO-TPD, *David Molina, M. Trenary*, University of Illinois - Chicago

HC-ThP-9 Surface Chemistry of Acrolein and its Hydrogenation Products on Cu(111) and Single Atom Alloy Pd-Cu(111), *Arephin Islam, D. Molina, M. Trenary*, University of Illinois - Chicago

HC-ThP-10 Characterizing the Ag/Al₂O₃ Catalyst and Nonthermal Plasma Couple via Native OES Diagnostics, *Ryan Chapman, J. Blechle*, Wilkes University

HC-ThP-11 Analysis of Microsilicon and Nanosilicon for Lithium-Ion Battery Anodes, *Aaron Hsi, A. Sheth, C. Chu, A. Suen, S. Annamalai, S. Adibnia, M. Uddin, N. Sangeneni*, Aspiring Scholars Directed Research Program

HC-ThP-12 Chemical Speciation and Structural Evolution of Rhodium and Silver Surfaces with High Oxygen Coverages, *Dan Killelea, E. Jamka, M. Gillum, M. Turano*, Loyola University Chicago; *J. Juurlink*, Leiden University, Netherlands

HC-ThP-13 Density Functional Theory Computed Descriptors for Heterogeneous Catalysis of CO₂ Sorbent Amines, *Joshua Gabriel*, Argonne National Laboratory, USA

HC-ThP-14 Reactivity of Primary and Secondary Butanol Isomers on TiO₂/Au(111), *Haley Frankovich, L. Garber, A. Galgano, C. Grant, E. Schell, J. Yoo, C. Rogers, J. Carmany, A. Baber*, James Madison University

HC-ThP-16 Synthesis and Characterization of Mixed-Ligand Monolayers on Silver Nanoparticles, *X. Wang, William Hemmingson, D. Green*, University of Virginia, USA

HC-ThP-17 Morphological Studies of TiO₂ Nanoparticles on Au(111), *Erin Schell, J. Yoo, A. Baber*, James Madison University

Quantum Information Science Focus Topic

Room Ballroom A - Session QS-ThP

Quantum Information Science Poster Session, 4:30-6:30pm

QS-ThP-2 Creating, Controlling, and Characterizing Quantum Emission in Hexagonal Boron Nitride, *Annamarie Exarhos*, Lafayette College; *D. Hopper, R. Patel, R. Grote*, University of Pennsylvania; *A. Alkauskas*, Center for Physical Sciences and Technology, Lithuania; *M. Doherty*, Australian National University, Australia; *L. Bassett*, University of Pennsylvania

Smart Multifunctional Materials for Nanomedicine Focus Topic

Room Ballroom A - Session SM-ThP

Smart Multifunctional Materials for Nanomedicine and Theranostics Poster Session, 4:30-6:30pm

SM-ThP-1 Electrospun Aligned and Randomly Oriented Fibers Using a Novel Collector, *Tessa Gilmore, P. Gouma*, The Ohio State University

SM-ThP-2 Effect of Metal-Mediated Oxidative Stress on Lysosomal Damage/Dysfunction, *V. Sanfilippo, C. Bonaccorso, L. Cucci*, University of Catania, Italy; *R. Inturri*, Fidia Farmaceutici S.p.A., R&D Unità locale Fidia Research sud, Italy; *P. Amico*, Fidia Farmaceutici S.p.A., R&D Unità locale Fidia Research sud, Italy; *S. Vaccaro*, Fidia Farmaceutici S.p.A., R&D Unità locale Fidia Research sud, Italy; *Cristina Satriano*, University of Catania, Italy

SM-ThP-3 The Interaction of Neurotrophin-Mimicking Peptides and Artificial Cell Membranes: An Experimental and Theoretical Study, *Vanessa Sanfilippo, L. Redigolo*, University of Catania, Department of Chemical Sciences, Italy; *G. Forte*, University of Catania, Department of Drug and Health Sciences, Italy; *C. Satriano*, University of Catania, Department of Chemical Sciences, Italy

SM-ThP-4 CTAB Removal and Graphene Oxide Functionalization of Metallic Nanorods for Theranostic Applications, *Alice Foti, V. Sanfilippo, P. Tomasella*, University of Catania, Italy; *L. Le Meur, T. Bretot*, University of Rennes, France; *C. Satriano*, University of Catania, Italy

SM-ThP-5 Hydropolymers, Hydrogels and Hydrogel Composites as Lubricants, *Nir Kampf, W. Lin, M. Kluzek*, Weizmann Institute of Science, Israel; *S. Angayarkanni*, SRMIST, India; *N. Iuster, E. Shimoni*, Weizmann Institute of Science, Israel; *R. Goldberg*, lipo-sphere, Israel; *J. Klein*, Weizmann Institute of Science, Israel

SM-ThP-6 Nanocomposites of Gold Nanoparticles-Graphene Oxide and Angiogenin for Wound Care Treatment, *L. Chiverini, T. Marzo, Diego La Mendola*, University of Pisa, Italy

SM-ThP-7 Novel Synthesis of Silver Nanoparticles and Their Antibacterial Activity for Therapeutic Applications, *H. Arshad*, Rutgers, The State University of New Jersey; *Umer Hassan*, Rutgers The State University of New Jersey

Thin Films Division

Room Ballroom A - Session TF-ThP

Thin Film Poster Session, 4:30-6:30pm

TF-ThP-1 Effect of Metallic Bonding on the Optical Properties of Transition Metal Based Thin Films, *Nimarta Kaur Chowdhary, T. Gougousi*, UMBC

TF-ThP-2 Water Transfer of Electronic Circuits on Flexible and Stretchable 3D Objects, *Issraa Shahine*, Nantes Université, CNRS, Institut des Matériaux de Nantes Jean Rouxel (IMN). iété d'Accélération du Transfert de Technologie, SATT Ouest Valorisation SAS, France; *M. Harnois*, Université Rennes 1, CNRS, Institut d'Électronique et des Télécommunications de Rennes (IETR), France; *P. Tessier*, Nantes Université, CNRS, Institut des Matériaux de Nantes Jean Rouxel (IMN), France

TF-ThP-3 Magnetic Field Assisted Epitaxial Growth of Magnetite Films, *Adam Dziwoki*, Jerzy Haber Institute of Catalysis and Surface Chemistry PAS, Poland; *B. Blizniuk*, Jerzy Haber Institute of Catalysis and Surface Chemistry, PAS, Ukraine; *K. Freindl, J. Korecki, N. Spiridis*, Jerzy Haber Institute of Catalysis and Surface Chemistry, PAS, Poland

TF-ThP-4 Spectra Analyses of Antireflection Coatings and Hydrogenated Amorphous Silicon Deposited at Room Temperature for Silicon Photovoltaic Cells Applications, *H. da Silva Alvarez, A. Roberto Silva, F. Hummel Cioldin, L. Carvalho Jayme Espindola, José Alexandre Diniz*, University of Campinas, Brazil

TF-ThP-5 Characteristics of Low Temperature Deposited SiO₂ Film based on Very High Frequency Plasma Enhanced Atomic Layer Deposition with Substrate Bias, *Yongki Lee, H. Kim, G. Ahn, G. Yeom*, Sungkyunkwan University (SKKU), Republic of Korea

TF-ThP-6 SiO₂ Bottom-Up Trench Fill of a High Aspect Ratio Hole by Plasma Enhanced Atomic Layer Deposition Using a Very High Frequency Plasmas and Inhibitor Surface Treatment, *Gyuhwan An, H. Kim, Y. Lee, G. Yeom*, Sungkyunkwan University (SKKU), Republic of Korea

TF-ThP-8 Using Metal Precursors to Passivate Surfaces for Area Selective Deposition, *Kinsey Canova, L. Souqui, G. Girolami, J. Abelson*, University of Illinois at Urbana-Champaign

TF-ThP-9 Amorphous GeSe Thin Films Prepared by Magnetron Co-Sputtering with Rapid Thermal Annealing for UV Optoelectronic Applications, *S. Pech*, Chosun University, Cambodia; *Sara Kim, Y. Jun, N. Kim*, Chosun University, Republic of Korea

TF-ThP-10 Considering XPS Characterisation of Ultra-Thin Films, *J. Counsell, S. Coultas, Christopher Moffitt*, Kratos Analytical Inc.

TF-ThP-11 Characterization of Polycrystalline Hf-doped Ga₂O₃, *Sara Chamberlin, V. Singh*, Washington and Jefferson College; *S. King*, University of Wisconsin - La Crosse

TF-ThP-12 A Novel Direct Current Chemical Vapor Deposition (DC-CVD) Reactor for Large Area Diamond Deposition, *G. Major, A. Lizarbe*, Brigham Young University; *B. Lawrence*, Exolv; *Matthew Linford*, Brigham Young University

TF-ThP-13 Surface Modification of Additively Manufactured Materials via Stress Gradients on Thin Film Growth, *Andrew Miceli, S. Stagon*, University of North Florida

TF-ThP-14 Decoding Thickness Profiles: Conformality as a Tool to Study Process Kinetics, *Andreas Werbrouck*, Stanford University, Belgium; *V. Cremers, J. Dendooven, C. Detavernier*, Ghent University, Belgium

TF-ThP-15 Low-Temperature Synthesis of Crystalline VO_x Films via Hollow-Cathode Plasma-Assisted ALD: Impact of Vanadium Precursor, *Adnan Mohammad, K. Joshi, S. Ilhom, B. Wells*, University of Connecticut; *A. Kemal Okyay*, Stanford University; *B. Willis, N. BIYIKLI*, University of Connecticut

Thursday Evening, November 10, 2022

TF-ThP-16 Dielectric Property on the Post-Heating Treatment of PVDF Thin Film Prepared by Atmospheric Pressure Plasma Deposition, *Eun Young Jung*, Kyungpook National University, Republic of Korea; *C. Park*, Milligan University; *H. Tae*, Kyungpook National University, Republic of Korea

TF-ThP-17 The Microstructure, Roughness, and Electrical Properties of v-Doped SiC Films, *Chao-Te Lee Lee*, *W. Chen*, *H. Chen*, Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan

TF-ThP-19 Fluorine-Doped SiO₂ Films Applied to Optical Coating Deposited by Reactive Magnetron Sputtering, *B.-H. Liao*, Taiwan Instrument Research Institute, Taiwan; *Chien-Nan Hsiao*, National Applied Research Laboratories, Taiwan

TF-ThP-20 Low-Density SiOC Thin Films Grown by Low Temperature Plasma-Enhanced Chemical Vapor Deposition for High Performance Acoustic Bragg Mirrors, *Julian Pilz*, *N. Andrianov*, Microsystems Division, Silicon Austria Labs, Austria; *T. Sinani*, Sensor Systems Division, Silicon Austria Labs, Austria; *S. Azeem*, *T. Dao*, *M. Moridi*, Microsystems Division, Silicon Austria Labs, Austria; *G. Bruckner*, Sensor Systems Division, Silicon Austria Labs, Austria

Friday Morning, November 11, 2022

Room 303		
8:20am	<p>INVITED: 2D+AS+BI+HC+SS-FrM-1 Printable Electrochemical Biosensors based on 2D and 3D Graphene, <i>A. Ebrahimi, Derrick Butler, V. Kammarchedu, K. Zhou</i>, Penn State University</p>	<p>2D Materials Technical Group Session 2D+AS+BI+HC+SS-FrM 2D Materials: Biological, Electronic, Energy, and Other Applications Moderators: Robert Hovden, University of Michigan, Jyoti Katoch, Carnegie Mellon University</p>
8:40am		
9:00am	<p>2D+AS+BI+HC+SS-FrM-3 A Large Area Selective Emitter for Thermophotovoltaic Applications, <i>Minsu Oh, K. Grossklous, D. DeMeo, Z. Kranefeld, T. Vandervelde</i>, Tufts University</p>	
9:20am	<p>2D+AS+BI+HC+SS-FrM-4 Advanced Two-Dimensional Nanohybrids for Efficient Electrocatalytic Hydrogen Evolution, <i>Fei Yao</i>, University at Buffalo-SUNY</p>	
9:40am	<p>INVITED: 2D+AS+BI+HC+SS-FrM-5 Bandstructure Engineering in Two-Dimensional Semiconductors, <i>Keun Su Kim</i>, Yonsei University, Republic of Korea</p>	
10:00am		
10:20am	<p>2D+AS+BI+HC+SS-FrM-7 Graphene – Ferritin Interface Unpins Fermi-Level and Induces Temperature Dependent Coherent Tunneling Across Biomolecular Junctions, <i>Ayelet Vilan</i>, Weizmann Institute of Science, Israel; <i>N. Kumar Gupta</i>, National University of Singapore; <i>S. Kumar Karuppanan</i>, National Quantum Fabless Foundry, Singapore; <i>R. Reddy Pasula</i>, Nanyang Technological University Singapore; <i>J. Martin, W. Xu</i>, National University of Singapore; <i>E. May</i>, Nanyang Technological University, Singapore; <i>A. Pike</i>, Newcastle University, UK; <i>H. Astier, T. Salim</i>, National University of Singapore; <i>S. Lim</i>, Nanyang Technological University, Singapore; <i>C. Nijhuis</i>, University of Twente, Netherlands</p>	
10:40am	<p>2D+AS+BI+HC+SS-FrM-8 The Influence of Selenium Incorporation on the HER Catalytic Activity of Electrodeposited Se-MoS_x Electrocatalysts, <i>Lee Kendall, G. Zangari, S. Mc</i>, University of Virginia</p>	
11:00am	<p>INVITED: 2D+AS+BI+HC+SS-FrM-9 Two-Dimensional Skintronics, <i>Dmitry Kireev, D. Akinwande</i>, The University of Texas at Austin</p>	
11:20am		
11:40am	<p>2D+AS+BI+HC+SS-FrM-11 Ultrasonic-Assisted Assembly of Metal Nanoparticles within Graphene Oxide for Tailoring Stem Cell Response, <i>J. Jaiswal</i>, Indian Institute of Technology (Banaras Hindu University), India; <i>Marshal Dhayal</i>, Indian Institute of Technology (Banaras Hindu University), India</p>	
12:00pm		
12:20pm		

Friday Morning, November 11, 2022

Room 304	
8:20am	INVITED: EM1+MN+NS-FrM-1 Piezoelectric Adjustable X-ray Optics, <i>Susan Trolier-McKinstry</i> , Penn State University
8:40am	
9:00am	EM1+MN+NS-FrM-3 Oxide and Nitride Ferroelectric Wurtzite Crystals, <i>Jon-Paul Maria</i> , Penn State University
9:20am	EM1+MN+NS-FrM-4 Development and Processing of Al _{1-x} Sc _x N (x<0.40) Films for Resonator and Filter Applications, <i>Giovanni Esteves</i> , <i>S. Yen</i> , <i>T. Young</i> , Sandia National Laboratories; <i>Z. Tang</i> , The University of Pennsylvania; <i>E. Schmidt</i> , <i>L. Gastian</i> , <i>M. Henry</i> , <i>T. Bauer</i> , <i>C. Nordquist</i> , Sandia National Laboratories; <i>R. Olsson</i> , The University of Pennsylvania
9:40am	EM1+MN+NS-FrM-5 Formation of Aluminum Scandium Nitride Microelectromechanical Systems Via Etching in Aqueous Potassium Hydroxide (KOH), <i>Zichen Tang</i> , <i>M. D'Agati</i> , <i>R. Beaucejour</i> , <i>S. Sofronici</i> , <i>J. Zheng</i> , <i>K. Kaylan</i> , University of Pennsylvania; <i>G. Esteves</i> , Sandia National Laboratories; <i>R. Olsson</i> , University of Pennsylvania
10:00am	EM1+MN+NS-FrM-6 Interface Reactions During the Ferroelectric Switching of HfZrO Thin Films on InAs, <i>A. Irish</i> , <i>Y. Liu</i> , <i>R. Atle</i> , <i>A. Persson</i> , <i>R. Yadav</i> , <i>M. Borg</i> , <i>L. Wernersson</i> , <i>Rainer Timm</i> , Lund University, Sweden
10:20am	EM1+MN+NS-FrM-7 The Effect of Hf Doping on Piezomagnetic Properties of FeCo for Magnetoelectric Heterostructure Devices, <i>Thomas Mion</i> , <i>K. Bussmann</i> , <i>M. Staruch</i> , <i>P. Finkel</i> , US Naval Research Laboratory
10:40am	EM2-FrM-8 Two-Dimensional Steep-Slope Transistors Using Graphene Cold Sources, <i>M. Liu</i> , <i>H. Jaiswal</i> , <i>S. Shahi</i> , <i>S. Wei</i> , <i>Y. Fu</i> , <i>A. Chakravarty</i> , <i>A. Cabanillas</i> , <i>A. Ahmed</i> , <i>F. Yao</i> , <i>Huamin Li</i> , University at Buffalo
11:00am	EM2-FrM-9 High Performance, RF Interposer Fabrication on Glass with 3 Metal Layers and Embedded TGVs, <i>S. Herrera</i> , <i>A. Ruyack</i> , <i>S. Lepkowski</i> , <i>M. Hirabayashi</i> , <i>M. Powner</i> , <i>C. Nordquist</i> , <i>Matthew Jordan</i> , Sandia National Laboratories
11:20am	EM2-FrM-10 Single Step Fabrication Process of Alignment Markers for Direct-Write Electron Beam Lithography in Metal-Organic Negative Tone Resist, <i>Guy DeRose</i> , California Institute of Technology
11:40am	EM2-FrM-11 Non-Destructive Metrology Techniques for Characterizing a-C Hard Mask Films in 3D NAND Structures, <i>P. Mukundhan</i> , <i>G. Andrew Antonelli</i> , Onto Innovation

**Electronic Materials and Photonics Division
Session EM1+MN+NS-FrM
Piezoelectric, Ferroelectric, and Multiferroic
Devices & Microelectronics**
Moderators:
M. David Henry, Sandia National Labs,
Stephen McDonnell, University of Virginia

**Electronic Materials and Photonics Division
Session EM2-FrM
Advanced Devices & Fabrication Methods**
Moderators:
Parag Banerjee, University of Central Florida,
Bryan Wiggins, Intel Corporation

Friday Morning, November 11, 2022

Plasma Science and Technology Division Room 305 - Session PS1+MS+SS-FrM Modelling of Plasmas and Plasma Driven Processes, and Plasma-Surface Interactions II Moderators: Tetsuya Tatsumi, Sony Semiconductor Solutions Corporation, Japan, Yu-Hao Tsai, TEL Technology Center, America, LLC		Plasma Science and Technology Division Room 315 - Session PS2+SE-FrM Plasma Sources, Diagnostics, Sensors and Control Moderators: Nathan Marchack, IBM T.J. Watson Research Center	
8:20am	PS1+MS+SS-FrM-1 Helium and Hydrogen Plasmas Interaction with Si-Based Materials for Advanced Etch Applications: Insights from MD Simulations, <i>Emilie Despia-Pujo, V. Martirosyan, F. Pinzan</i> , Univ. Grenoble Alpes, CNRS, LTM, France; <i>F. Leverd</i> , ST Microelectronics, France; <i>O. Joubert</i> , Univ. Grenoble Alpes, CNRS, LTM, France	INVITED: PS2+SE-FrM-1 Optical and Electrical Diagnostics of Industrial Plasma Reactors: Measuring the Relevant Physical Quantities to Assist Process Development, <i>Gilles Cunge</i> , LTM/CNRS-UJF, France; <i>S. Younesni</i> , STMicroelectronics/CNRS-LTM France; <i>N. Loubet, M. Kagelschatz, E. Pargon, C. Petit-Etienne, O. Joubert, E. Despia-Pujo, N. Sadeghi</i> , CNRS-LTM, Université Grenoble Alpes, France	
8:40am	PS1+MS+SS-FrM-2 Efficient Parametric Nonlinear Model Reduction of Low Temperature Plasma Applications, <i>Abhishek Verma</i> , Applied Materials Inc.; <i>K. Bera, S. Rauf</i> , Applied Materials, Inc.		
9:00am	PS1+MS+SS-FrM-3 Novel Approaches to Generate Missing Data for Plasma Chemistry Modelling, <i>Sebastian Mohr</i> , Quantemol Ltd., UK; <i>M. Hanicinec, A. Owens, J. Tennyson</i> , University College London, UK	PS2+SE-FrM-3 Hole Transport Properties of Nickel Oxide Films Grown via Hollow-Cathode Plasma-Assisted Atomic Layer Deposition, <i>S. Ilhom, A. Mohammad, M. Niemiec, D. Zacharzewski, P. Chardavoyne, S. Abdari, Necmi Biyikli</i> , University of Connecticut	
9:20am	PS1+MS+SS-FrM-4 Particle-in-Cell Modeling of Electron-Beam Generated Low Electron Temperature Plasma, <i>Shahid Rauf</i> , Applied Materials, Inc.; <i>D. Sydorenko</i> , University of Alberta, Canada; <i>S. Jubin, W. Villafana, S. Ethier, A. Khrabrov, I. Kaganovich</i> , Princeton University Plasma Physics Lab	PS2+SE-FrM-4 In-Situ Measurement of Electron Emission Yield at Silicon Surfaces in Ar/CF4 Plasmas, <i>Mark Sobolewski</i> , NIST	
9:40am	PS1+MS+SS-FrM-5 Modeling Edge Effects in Wafer Etching with VSim, <i>Daniel Main, J. Cary, T. Jenkins</i> , Tech-X Corporation	PS2+SE-FrM-5 Plasma Characterization: Radical Recombination Sensor Based on Dual Probe Thermopile Heat Flux Sensors, <i>Johannes Velthuis</i> , TNO Science and Industry, the Netherlands	
10:00am	PS1+MS+SS-FrM-6 A Study on Dielectric Material Etching in Cryogenic Process Based on Atomistic Simulation, <i>Junghwan Um</i> , Yonsei University, Korea; <i>S. Cho</i> , Samsung Electronics Co., Inc., Republic of Korea; <i>K. Kang</i> , Yonsei University, Korea	PS2+SE-FrM-6 Dielectric Toroidal Plasma Sources for Improved Plasma Resistance, <i>Ilya Pokidov</i> , MKS Instruments	
10:20am	PS1+MS+SS-FrM-7 Machine Learning Based Model for a RF Hollow Cathode Discharge, <i>K. Bera, A. Verma, Sathya Ganta, S. Rauf</i> , Applied Materials, Inc.	INVITED: PS2+SE-FrM-7 What We Still Won't Know About Plasmas in Simple Diatomic Gases- or Using a DC Glow Discharge in Pure O ₂ as an Ideal Test-Bed for Experimental Validation of Models, <i>Jean-Paul Booth¹</i> , LPP-CNRS, France	
10:40am	PS1+MS+SS-FrM-8 Molecular Dynamics Simulations of Plasma-Enhanced Atomic Layer Etching of Silicon Nitride Using Hydrofluorocarbon and Oxygen Plasmas, <i>Jomar Tercera</i> , Osaka University, Japan; <i>A. Hirata</i> , Sony Semiconductor Solutions Corporation, Japan; <i>M. Isobe, K. Karahashi</i> , Osaka University, Japan; <i>M. Fukasawa</i> , Sony Semiconductor Solutions Corporation, Japan; <i>S. Hamaguchi</i> , Osaka University, Japan		
11:00am	PS1+MS+SS-FrM-9 Understanding Plasma Etch Mechanism of Low-k Materials Under Low Temperature Substrates with Fluorine-Based Precursors, <i>Daniel Santos</i> , Tokyo Electron America; <i>C. Vallee</i> , SUNY Polytechnic Institute, Albany; <i>P. Wang</i> , Tokyo Electron America	PS2+SE-FrM-9 Voltage and Sheath Dynamics in Electropositive Capacitively Coupled Plasmas with Focus Ring and External Circuit, <i>Yuhua Xiao, J. Brandon, J. Morsell</i> , NCSU; <i>S. Nam, J. Lee</i> , Samsung Electronics Co., Inc., Republic of Korea; <i>S. Shannon</i> , NCSU	
11:20am	PS1+MS+SS-FrM-10 Plasma-Assisted Atomic Layer Etching of Silicon Nitride with Unfragmented Fluorocarbons, <i>Chon Hei Lam, M. Carruth</i> , University of Texas at Austin; <i>Z. Chen, J. Blakeney, P. Ventzek, S. Sridhar</i> , Tokyo Electron America Inc.; <i>J. Ekerdt</i> , University of Texas at Austin	PS2+SE-FrM-10 Time Resolved Diagnostics of a Silver HiPIMS Discharge, <i>Zachary Jeckell, D. Barlaz, R. Ganesan, D. Kapelyan, K. Martin</i> , University of Illinois at Urbana Champaign; <i>W. Huber, B. Jurczyk</i> , Starfire Industries LLC; <i>D. Ruzic</i> , University of Illinois at Urbana Champaign	
11:40am	PS1+MS+SS-FrM-11 Time Resolved Ion Energy Distribution in Pulsed Inductively Coupled Argon Plasma with/without DC Bias, <i>Zhiying Chen, J. Blakeney, M. Carruth, P. Ventzek</i> , Tokyo Electron America Inc.	PS2+SE-FrM-11 Title: Curling Probe Analysis for Practical Measurement of Electron Density, <i>Daisuke Ogawa, K. Nakamura, H. Sugai</i> , Chubu University, Japan	

Friday Morning, November 11, 2022

Room 316		
8:20am		Thin Films Division Session TF1+PS-FrM Plasma, PVD and HIPIMS Processes for Emerging and Advanced Materials Moderators: Joe Becker , Kurt J. Lesker Company, Christophe Vallee , SUNY College of Nanoscale Science and Engineering
8:40am	TF1+PS-FrM-2 Growth of c-axis Textured AlN PVD Film on a 2D-MoS ₂ Seed Layer, Julien Patouillard , STMicroelectronics, France; E. Blanquet, A. Mantoux , SIMaP, CNRS, University Grenoble Alpes, France; F. Gianesello , STMicroelectronics, France; M. Bernard, S. Cadot, R. Gassilloud, C. Raynaud , Commissariat à l'énergie Atomique, France	
9:00am	TF1+PS-FrM-3 Synthesis and Hardness of Thin-Film High-Entropy Transition Metal Ceramics, Nathaniel McIlwaine , The Pennsylvania State University; M. Hossain , Pacific Northwest National Lab; J. Maria , The Pennsylvania State University	
9:20am	TF1+PS-FrM-4 Structural Evolution and Thermoelectric Properties of Flexible Mg ₂ Sn Films Prepared by Magnetron Co-sputtering, Sara Kim, S. Kang, N. Kim , Chosun University, Republic of Korea	
9:40am		
10:00am	INVITED: TF2+EM-FrM-6 AlGa _N , An Enabling Ultra-Wide Bandgap Semiconductor, Dolar Khachariya , Adroit Materials; M. Breckenridge, D. Szymanski, S. Stein , North Carolina State University; W. Mecouch , Adroit Materials; Y. Guan, P. Bagheri, S. Rathkanthiwar , North Carolina State University; P. Reddy, R. Kirste, S. Mita, B. Moody, J. Tweedie , Adroit Materials; K. Sierakowski, M. Boćkowski , Institute of High-Pressure Physics, Poland; E. Kohn, S. Pavlidis, R. Collazo, Z. Sitar , North Carolina State University	Thin Films Division Session TF2+EM-FrM Wide and Ultra-Wide Bandgap Thin Films: Advances in Deposition and Novel Materials Moderators: Christophe Vallee , SUNY College of Nanoscale Science and Engineering, Virginia Wheeler , U.S. Naval Research Laboratory
10:20am		
10:40am	TF2+EM-FrM-8 CVD of Crystalline and Amorphous sp ² -BN Thin Films on Different Orientations of Al ₂ O ₃ , S. Sharma , Linköping Univ., IFM, Thin Film Physics Div., Sweden; Laurent Souqui , University of Illinois at Urbana-Champaign; H. Pedersen , Linköping University, IFM, Sweden; H. Högborg , Linköping Univ., IFM, Thin Film Physics Div., Sweden	
11:00am	TF2+EM-FrM-9 Investigating SiC/Graphene/SiC(0001) Remote Epitaxy Using Hot-wall CVD, Daniel J. Pennachio , US Naval Research Laboratory; J. Hajzus , ASEE Postdoctoral Fellow at US Naval Research Laboratory; A. Lang , US Naval Research Laboratory; R. Stroud , Former employee of US Naval Research Laboratory; R. Myers-Ward , US Naval Research Laboratory	
11:20am	TF2+EM-FrM-10 Sputter Deposition of III-N Thin Films, Joshua Nordlander , The Pennsylvania State University; Z. Sitar , North Carolina State University; J. Maria , The Pennsylvania State University	
11:40am	TF2+EM-FrM-11 Thickness Dependent Properties of Ferroelectric Boron-Substituted Aluminum Nitride Thin Films, John Hayden, J. Nordlander, W. Zhu, S. Trolier-McKinstry, J. Maria , Pennsylvania State University	

Friday Morning, November 11, 2022

Advanced Surface Engineering Division Room 317 - Session SE+MN+PS-FrM Nanostructured and Multifunctional Thin Films and Coatings II Moderators: Jyh-Wei Lee, Ming Chi Univ of Technology, Taiwan Filippo Mangolini, The University of Texas at Austin		Radiation Effects on Materials Focus Topic Room 318 - Session RE+AS-FrM Materials Analysis and Characterization with Radiation Moderators: Scott Dubowsky, University of Illinois at Urbana-Champaign, Camilo Jaramillo-Correa, Pennsylvania State University	
8:20am	INVITED: SE+MN+PS-FrM-1 New Challenges and Opportunities for Hard and Superhard Coatings, Aharon Inspektor , Carnegie Mellon University		INVITED: RE+AS-FrM-1 Characterization of Materials and Surfaces with Various Types of Radiation, Zachary Robinson , SUNY Brockport
8:40am			
9:00am	SE+MN+PS-FrM-3 Insights Into the Formation and Characterization of Boron Nitride Thin Films Prepared by Pulsed DC Magnetron Sputtering, Rebecca Janknecht , TU Wien, Austria; P. Polcik , Plansee Composite Materials GmbH, Germany; P. Mayrhofer , TU Wien, Austria		RE+AS-FrM-3 High-Energy (MeV), Heavy Ion Irradiation of Chalcogenide Phase Change Thin Films, David Adams , E. Lang , T. Clark , C. Sobczak , E. Scott , J. Custer , Sandia National Labs; T. Beechem , Purdue University; K. Hattar , M. Kalaswad , M. Rodriguez , Sandia National Labs
9:20am			INVITED: RE+AS-FrM-4 Multiwavelength Raman Microscopy Used to Characterize Surfaces for Plasma-Wall Interaction Study in Tokamaks, Cedric Pardanaud , C. Martin , P. Roubin , Aix-Marseille University / CNRS, France
9:40am			
10:00am			INVITED: RE+AS-FrM-6 In Situ Optical Characterization of High Temperature Defect Kinetics in Mixed-Conducting Oxide Films, Nicola Perry , University of Illinois, Urbana-Champaign
10:20am			
10:40am			INVITED: RE+AS-FrM-8 Exploring the Effects of Radiation on Planetary Surfaces through the Analysis of Experimental Analogs and Returned Samples from the Moon and Asteroids, Michelle Thompson , Purdue University
11:00am			
11:20am			INVITED: RE+AS-FrM-10 Ground-Based Space Environmental Testing of Materials and Components for Spacecraft Mission Assurance, Sven Bilén , J. McTernan , C. Zawaski , The Pennsylvania State University
11:40am			

Friday Morning, November 11, 2022

Surface Science Division Room 319 - Session SS1+AS+HC-FrM Oxide Surface Structure and Reactivity Moderators: Andrew Gellman, Carnegie Mellon University, Zhenrong Zhan, Baylor University		Surface Science Division Room 320 - Session SS2+CA+AS-FrM Environmental, Atmospheric and Astronomical Surfaces Moderators: Kathryn Perrine, Michigan Technological Univ., Xiao-Ying Yu, Oak Ridge National Laboratory, USA	
8:20am	SS1+AS+HC-FrM-1 Operando Photoluminescence Microscopy Study of Photoreduction of Resazurin on TiO ₂ Microcrystals, <i>Hao Zhu, Z. Zhang, W. Lu, B. Birmingham</i> , Baylor University	INVITED: SS2+CA+AS-FrM-1 Combining Synchrotron X-ray and SFG Spectroscopy Techniques to Illuminate Aqueous Interfaces, <i>S. Nayak, R. Kumal, A. Carr</i> , Argonne National Laboratory, USA; <i>S. Lee</i> , Argonne National Laboratory; <i>Ahmet Uysal</i> , Argonne National Laboratory, USA	
8:40am	SS1+AS+HC-FrM-2 Unraveling Surface Structures of Ga-Promoted Transition Metal Catalysts in CO ₂ Hydrogenation, <i>Si Woo Lee, M. Lopez Luna, S. Shaikhutdinov, B. Roldan Cuenya</i> , Fritz Haber Institute of the Max Planck Society, Germany		
9:00am	INVITED: SS1+AS+HC-FrM-3 Stabilization of Active Cu Sites on Oxide Surfaces, <i>Dario Stacchiola</i> , Brookhaven National Laboratory	INVITED: SS2+CA+AS-FrM-3 X-Ray Studies of Extractant and Lanthanide Ion Ordering at Liquid Interfaces Relevant to Solvent Extraction, <i>Mark Schlossman</i> , University of Illinois at Chicago	
9:20am			
9:40am	SS1+AS+HC-FrM-5 An optimized IRAS Setup to Investigate Adsorbates on Metal-Oxide Single Crystals, <i>David Rath, J. Pavelec, U. Diebold, M. Schmid, G. Parkinson</i> , TU Wien, Austria	SS2+CA+AS-FrM-5 Probing Surface Chemistry in Complex Environments: Water Disinfectants and Ionic Solutions at the Air/Liquid/Iron Interface, <i>Kathryn Perrine</i> , Michigan Technological University	
10:00am	SS1+AS+HC-FrM-6 Photochemical Fluorination of TiO ₂ (110), <i>Melissa Hines, W. DeBenedetti, Q. Zhu, M. Hasany, D. Somaratne</i> , Cornell University	SS2+CA+AS-FrM-6 The Surface Chemistry of Martian Mineral Analogs During Triboelectric Charging in Sand Storms, <i>Mikkel Bregnhøj, T. Weidner, K. Finster</i> , Aarhus University, Denmark	
10:20am	SS1+AS+HC-FrM- Surface Structures of La _{0.8} Sr _{0.2} MnO ₃ (001) Thin Films, <i>Erik Rheinfrank, M. Brunthaler, G. Franceschi, M. Schmid, U. Diebold, M. Riva</i> , Institute of Applied Physics, TU Wien, Austria	INVITED: SS2+CA+AS-FrM-7 Unraveling Water Formation on Planetary and Astrophysical Bodies: The Role of Surface Science, <i>T. M. Orlando, Brant Jones</i> , Georgia Institute of Technology	
10:40am	SS1+AS+HC-FrM-8 Adsorption of Organophosphate Nerve Agent VX on the (101) Surface of Anatase Titanium Dioxide, <i>Gloria Bazargan</i> , NRC Research Associate, U.S. Naval Research Laboratory; <i>I. Schweigert, D. Gunlycke</i> , Chemistry Division, U.S. Naval Research Laboratory		
11:00am			
11:20am			

Friday Morning, November 11, 2022

Room 301-302	
8:20am	<p>Welcome and Introductions</p>
8:40am	<p>INVITED: AQS-FrM-2 Electronic Excitations of Defects in Semiconductors – First-Principles Simulations and Quantum Embedding, <i>André Schleife</i>, University of Illinois</p>
9:00am	
9:20am	<p>INVITED: AQS-FrM-4 Following Enzymatic Reactions with Quantum Light, <i>Marco Barbieri</i>, Universita Roma Tre, Italy</p>
9:40am	
10:00am	BREAK
10:20am	<p>INVITED: AQS-FrM-7 Running Quantum Circuits on a Neutral Atom Quantum Computer, <i>Mark Saffman</i>, University of Wisconsin-Madison and ColdQuanta</p>
10:40am	
11:00am	<p>INVITED: AQS-FrM-9 Unitary Coupled Cluster Ansatz as an Efficient Way to Perform Electronic Structure Calculations, <i>Jim Freericks</i>, Georgetown University</p>
11:20am	
11:40am	<p>AQS-FrM-11 AQS Panel Discussion,</p>
12:00pm	
12:20pm	<p>AVS Quantum Workshop Closing Remarks</p>

AVS Quantum Workshop
Session AQS-FrM
AVS Quantum Science Workshop
Moderators:
Charles R. Eddy, Jr., Office of Naval Research Global - London, UK
Rachael Myers-Ward, U.S. Naval Research Laboratory

Bold page numbers indicate presenter

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