AVS 69 Program Key

2D 2D Materials Technical Group
AC Actinides and Rare Earths Focus Topic
AP Atomic Scale Processing Mini-Symposium
AQS AVS Quantum Science Workshop
AS Applied Surface Science Division
BI Biomaterial Interfaces Division
BP Biomaterials Plenary Session (ALL-INVITED)
CA Chemical Analysis and Imaging of Interfaces Focus Topic
CPS CHIPS Act Mini-Symposium
EL Spectroscopic Ellipsometry Technical Group
EM Electronic Materials and Photonics Division
EW Exhibitor Technology Spotlight Workshops
HC Fundamental Discoveries in Heterogeneous Catalysis Focus Topic
IB Advanced Focused Ion Beams Focus Topic
LS Light Sources Science Mini-Symposium
LX Laboratory-Based Ambient-Pressure X-ray Photoelectron Spectroscopy Focus Topic
MI Magnetic Interfaces and Nanostructures Division
MN MEMS and NEMS Technical Group
MS Manufacturing Science and Technology Group
NS Nanoscale Science and Technology Division
NSP Nanoscale Science and Technology Plenary Session (ALL-INVITED)
PS Plasma Science and Technology Division
QS Quantum Science and Technology Mini-Symposium
SE Advanced Surface Engineering Division
SS Surface Science Division
TF Thin Film Division
TH Theory for Surface Processes and Spectroscopies Focus Topic
UN Undergraduate Poster Session
VT Vacuum Technology Division

Key to Session/Paper Numbers

Sessions sponsored by multiple topics are labeled with:

1. All sponsoring topic acronyms (e.g. **AC+EM+SS**),
2. Then a number to indicate simultaneous sessions sponsored by the same topic(s) (e.g. SS**1**, SS**2**),
3. Then a dash followed by the first two characters of the day of the week:
   Monday, **Tu**esday, **We**dnesday, **Th**ursday, **Fr**iday,
4. Then a single letter for **M**orning, **A**fternoon, **E**vening, **P**oster,
5. And finally a number indicating the starting time slot for the paper.

Example: SS1-MoM-9 (Surface Science, Monday morning, 11:00 am)

AVS 69 Program Overview

Room /Time	A105	A106	A107-109	B110-112	B113	B116	B117-119
SuA				AQS-SuA: AVS Quantum Science Workshop: Materials & Surface Science of Quantum	NSP-SuA: Nanoscience and Technology Division Plenary Session (ALL-INVITED)		BP-SuA: Coupled Phenomena in Biomaterial Systems (ALL-INVITED)
MoM	CA1+AS+LS+NS+SS+VT-MoM CA2+AS+LS+NS+SS+VT+MoM	PS+TF-MoM: Plasma Processing for Advanced Emerging Memory Technologies	AP+PS+TF-MoM: Thermal Atomic Layer Etching and Deposition	QS+EM+TF-MoM: Materials for Quantum Computation & Quantum Info	NS1+2D+BI+SS-MoM NS2+2D+BI+EL+SS-MoM	LX+AS+HC+SS-MoM: Lab-Based AP-XPS: Advances in Instrumentation and Applications	BI1+PS-MoM BI2+AS+HC+SS-MoM
MoA	CA+AS+LS+NS+SS+VT-MoA: Environmental and Energy Interfaces	PS+SE-MoA: Plasma Sources, Diagnostics, Sensors and Control	AP+PS-MoA: Plasma Enhanced Atomic Layer Etching	QS-MoA: Systems and Devices for Quantum Computing	NS+EM+MN-MoA: Nanoscale Devices, Structures and Materials	LX+AS+BI+HC+SS+TH-MoA: Lab-Based AP-XPS:Surface Chem & Biological/ Pharm Interfaces	BI1-MoA BI2-MoA
TuM	CA+AS+LS+LX+MN+SE+SS-TuM: Novel Developments and Applications of Interfacial Analysis	PS-TuM: Plasma Processing for Advanced Logic Device Fabrications	AP+EM+PS+TF-TuM: Area Selective Processing and Patterning	QS+EM-TuM: SiC, Diamond and Related Materials for Quantum Info Sciences	NS+2D+EM+MN+SS-TuM: Scanning Probe Microscopy	TH1+AS+SS-TuM TH2+AS+SS-TuM	BI+AS+PS-TuM: Biomolecules and Biophysics at Interfaces
TuL							
TuA	TF1-TuA: Catalytic and Active Materials TF2-TuA: TF for Battery Applications	PS+MS-TuA: Modelling of Plasmas and Plasma Driven Processes	AP1+2D+EM+PS+TF-TuA AP2+PS+TF-TuA	QS+SS-TuA: The Quantum Metrology Revolution	NS1+2D+EM+MN-TuA NS2+2D+EM-TuA	TH1-TuA: Electronic Structure Theory TH2-TuA: Electronic Structure and Reactivity	BI+AS+EM+NS+SE+TF-TuA: Functional Biomaterials II: Sensing and Diagnostics
TuP							
WeM	TF1+PS-WeM TF2+AP+SE+SS-WeM	PS-WeM: Exploring Boundaries of Plasma Science (ALL INVITED)	AP+PS+TF-WeM: Plasma Deposition and ALD Processes for Coatings and Thin Films	QS+VT-WeM: Vacuum Technology for Quantum Applications	HC+SS-WeM: Origins of Single Atom Catalysis	EM-WeM: Advance in Micro-elect & Nanotech by Early and Mid Career Prof	AS+2D+CA+EL+EM+MS+NS+SE+SS+TF-WeM: Multi-Modal & Multi-Dim Analysis
WeA	TF+QS-WeA: Thin Films for Space and Electronic Applications	PS1+AS-WeA: Plasma Chemistry, Catalysis and Applications for the Environment and	PS2+MS-WeA: Plasma-Surface Modeling	MI+2D+TF-WeA: Special Symposium on Coupling Phenomena in Magnetism	HC+SS-WeA: Advances in Complex Catalytic Systems	EM-WeA: Advanced Materials for Electronic and Photonic Applications	AS+CA+EL+EM+SE+SS+TF-WeA: Quantitative Surface Analysis I
ThM	TF-ThM: Creating Organic-Inorganic Hybrid Materials	PS1+MS-ThMPS2+AS+SS-ThM	IB-ThM: Advances in FIB Instrumentation, Source, Optics, and Surface Analysis	MI+2D+TF-ThM: 2D Magnetism and Superconductivity	HC+SS-ThM: Dynamics and Mechanisms in Heterogeneously Catalyzed Reactions	EM+TF-ThM: Wide- and Ultra-Wide Band Gap Materials and Devices	AS+CA+EL+EM+SE+SS+TF-ThM: Quantitative Surface Analysis II
ThA	TF-ThA: Organic and Polymeric Materials	PS1-ThA: Plasma-Surface Interactions II	IB-ThA: In Situ FIB Applications	2D2-ThA: 2D-Materials: Surface and Interface Effects	HC+SS-ThA: Closing in on Reality & HC Discovery Reception	EM-ThA: Theme: CMOS+X: Piezo-electrics, Ferro-electrics, Multif-erroics, & Memory	PS2-ThA: Plasma Modeling and Characterization
ThP							
FrM	TF+SE-FrM: Metal-Organic Frameworks and Other Network Materials	PS+SE-FrM: Atmospheric Pressure Plasmas and Their Applications	PS+NS-FrM: Advanced Patterning and Plasma-Engineered Materials	IB1-FrM IB2-FrM IB3-FrM	HC+SS-FrM: Greatest Hits in Heterogeneous Catalysis	EM1+TF-FrM EM2-FrM	AS+2D+CA+EM+MS+NS+SE+SS+TF-FrM: Industrial Applications

AVS 69 Program Overview

Room /Time	C120-122	C123	C124	D136	Exhibit Halls A-B, Booth 1003	Oregon Ballroom 203-204
SuA						
MoM	VT-MoM: Vacuum Measurement, Partial Pressure, and Gas Analysis	SE1+TF-MoM SE2+TF-MoM	EL1-MoM EL2-MoM	SS1+HC-MoM: Electrochemistry SS2-MoM: Liquid-Solid Interfaces		
MoA	VT-MoA: Leaks, Flows, and Material Outgassing	SE+TF-MoA: Mechanics and Tribology of Thin Films and Coatings	EL1+TF-MoA: Thin Films & Novel Materials EL2-MoA: Instrumentation	SS+AS+TF-MoA: Mechanisms at Surfaces and Interfaces		
TuM	VT-TuM: Particle Accelerators and Large Vacuum Systems	2D-TuM: 2D-Materials: Heterostructures and Functionalization	AC+MI+TH-TuM: Mag, Electron Correlation, and Superconductivity in the Actinides/Rare Earths	SS+2D+AS+HC-TuM: Oxide and Chalcogenide Surfaces and Interfaces	AVS 69 EXHIBITION 10:00 AM – 5:00 PM	
TuL					EW-TuL: Exhibitor Technology Spotlight Session I	
TuA	VT-TuA: Novel Vacuum Instrumentation	2D+TF-TuA: 2D-Materials: Synthesis	AC+MI+TH-TuA: Chemistry and Physics of the Actinides/Rare Earths	SS+HC-TuA: Photochemistry		
TuP						POSTER SESSIONS 6:30-8:30 PM
WeM	MN1-WeM MN2-WeM:	2D-WeM: 2D-Materials: Defects, Dopants, and Modifications	AC+AS+TH-WeM: Nuclear Safeguards, Forensics, Environmental Science, and Stewardship	SS+2D+AS+HC-WeM: Surface Science of 2D Materials	AVS 69 EXHIBITION 10:00 AM – 4:30 PM	
WeA	CPS+CA-WeA: CHIPS Act: Interfaces and Defects	2D-WeA: 2D-Materials: Electronic/Magnetic/Optical Properties	AC+AS+MI+TH-WeA: Emerging Topics and Methods in Actinide/Rare Earth Sciences	SS-WeA: A Special Session Honoring Wilson Ho: 25 Years of Single-Molecule Vibrational	BI-WeA: Biointerphases: Emerging Young Scientists Focus Session (ALL INVITED)	
ThM	CPS+MS-ThM: Chips and Science Act Implementation for Microelectronics (Including Workforce)	2D-ThM: 2D-Materials: Microscopy	LS+AC+LX+MI+TH-ThM: Tender X-ray Science and Time Resolved Studies	SS1+AS-ThM: Molecular Organization at Surfaces SS2+AS+TF-ThM: Thin Film Surface Chemistry	AVS 69 EXHIBITION 10:00 AM – 2:30 PM	
ThA	MS+AP+AS+TF-ThA: Machine Learning for Microelectronics Manufacturing Process Control	2D1-ThA: 2D-Materials: Topological and Quantum Properties	LS+AC+AS+LX+MI+TH-ThA: Facility Upgrades and Recent Capability Development	SS+HC-ThA: Alloys and Complex Surfaces		
ThP						POSTER SESSIONS 4:30-6:30 PM
FrM	MS-FrM: Microelectronics R&D for Life-Cycle Energy Efficiency	2D+EM-FrM: 2D-Materials: Device Application	AP+PS-FrM: Atomic Scale Processing Late Breaking Atomic Layer Etching and Area Selective Deposition			

Sunday Afternoon, November 5, 2023

	AVS Quantum Science Workshop **Room B110-112 - Session AQS-SuA** **AVS Quantum Science Workshop: Materials & Surface Science of Quantum Sensing** **Moderators: Philippe Bouyer**, University of Amsterdam – Technical University Eindhoven, Netherlands, **Charles R. Eddy, Jr.**, Office of Naval Research Global-London, UK,	**Biomaterials Plenary Session (ALL-INVITED)** **Room B117-119 - Session BP-SuA** **Coupled Phenomena in Biomaterial Systems** **Moderators:** **Kenan Fears**, U.S. Naval Research Laboratory, **Markus Valtiner**, Vienna University of Technology, Austria
2:00pm	**INVITED: AQS-SuA-1** Single Ion Implantation for Quantum Devices and Materials using Focused Ion Beam Irradiation, ***Edward Bielejec***, Sandia National Laboratories	
2:20pm		
2:40pm	**INVITED: AQS-SuA-3** On the Relevance of Avalanche Phenomenon in Wide Bandgap Technology, ***Srabanti Chowdhury***, Stanford University	
3:00pm		
3:20pm	**BREAK**	
3:40pm	**INVITED: AQS-SuA-6** Interfacing Biomolecules with Coherent Quantum Sensors, ***Peter Maurer***, University of Chicago	
4:00pm		**INVITED: BP-SuA-7** BID Early Career Awardee Talk: Large-Scale Vascularized Polymers Enable Continuous Sensing of and Responding to Bacteria at Interfaces, *B. Dixon, A. Briley, K. Marquis, B. Chasse,* ***Caitlin Howell***[1], University of Maine
4:20pm	**INVITED: AQS-SuA-8** Scale-Invariant Lasers Beyond the Schawlow-Townes Two-Mirror Strategy, ***Boubacar Kanté***, University of California at Berkeley	
4:40pm		**INVITED: BP-SuA-9** Learning from Nature to Tackle Adhesion in Wet and Challenging Conditions, ***Ali Dhinojwala***, University of Akron
5:00pm	**AQS-SuA-10** Panel Discussion,	
5:20pm		**INVITED: BP-SuA-11** Mechanoresponsive Proteins - from Molecular Mechanisms Towards Applications in Biology and Materials Science, ***Kerstin G. Blank***, Johannes Kepler University Linz, Austria
5:40pm		

[1] **BID Early Career Researchers Award**

Sunday Afternoon, November 5, 2023

Nanoscale Science and Technology Plenary Session
Room B113 - Session NSP-SuA
Nanoscience and Technology Division Plenary Session
(ALL-INVITED)
Moderators: Georg Fantner, EPFL, Switzerland,
Adina Luican-Mayer, University of Ottawa, Canada

2:00pm	**INVITED: NSP-SuA-1** Bits to Atoms and Atoms to Bits: Atomic Fabrication in Electron Microscopy, ***Sergei Kalinin,*** University of Tennessee Knoxville	
2:20pm		
2:40pm	**BREAK**	
3:00pm	**NSP-SuA-4** NSTD Early Career Competition Finalist Talks: N. Hosseini, Y. Liu, S. Challa,	
3:20pm		
3:40pm	**NSP-SuA-6** NSTD Graduate Competition Finalist Talks: N. Asmari, L. Kuo,	
4:00pm		
4:20pm	**NSP-SuA-8** Co-Localizing Atomic Force Microscopy with Other Microscopies and Spectroscopies: Elucidating Material Composition, Structure, and Properties at the Nanoscale, *B. Bailey, O. Maryon, J. Tenorio,* Boise State University*; D. Cintron Figuero,* Pennsylvania State University*; J. Benzing,* National Institute for Science and Technology (NIST)*; F. DelRio,* Sandia National Laboratories*; J. Robinson,* Pennsylvania State University*; M. Hurley, S. Hues, E. Graugnard, **Paul Davis**,* Boise State University	
4:40pm	**NSP-SuA-9** Electron Paramagnetic Resonance of Individual Rare-Earth Atoms, ***Gregory Czap**, C. Lutz,* IBM Almaden Research Center*; H. Brune,* EPFL, Switzerland	
5:00pm		
5:20pm		
5:40pm		

Monday Morning, November 6, 2023

	Room A105	
8:20am	**INVITED: CA1+AS+LS+NS+SS+VT-MoM-1** Topological and Geometric Descriptors of Complex Self-assembly at Liquid Interfaces, ***Aurora Clark,*** University of Utah	**Chemical Analysis and Imaging of Interfaces Focus Topic** **Session CA1+AS+LS+NS+SS+VT-MoM** **Modeling, AI, and Machine Learning Applied to Interfaces** **Moderators:** **J. Trey Diulus**, NIST, **Kateryna Artyushkova**, Physical Electronics
8:40am		
9:00am	**INVITED: CA1+AS+LS+NS+SS+VT-MoM-3** Machine Learning and the Future of Surface Analysis, *J. Jones, M. Caouette,* ***Kateryna Artyushkova,*** Physical Electronics	
9:20am		
9:40am	**CA1+AS+LS+NS+SS+VT-MoM-5** Complexity to Clarity: Detecting, Identifying and Analyzing Complex Materials with Machine Learning, ***Paul Pigram,*** *W. Gardner, S. Bamford, D. Winkler, B. Muir, R. Sun, S. Wong,* La Trobe University, Australia	
10:00am		
10:20am	**BREAK**	
10:40am	**INVITED: CA2+AS+LS+NS+SS+VT+MoM-8** Probing hydrogen bonding in aerosols, and solutions with X-Ray and vibrational spectroscopy, ***Musahid Ahmed***, LBNL	**Chemical Analysis and Imaging of Interfaces Focus Topic** **Session CA2+AS+LS+NS+SS+VT+MoM** **Environmental and Energy Interfaces** **Moderators: Xiao-Ying Yu**, Oak Ridge National Laboratory, USA, **Musahid Ahmed**, LBNL
11:00am		
11:20am	**CA2+AS+LS+NS+SS+VT+MoM-10** The Investigation of Degraded Historic Glass Samples Using X-ray Photoelectron Spectroscopy, *G. Verhaar,* Rijksmuseum, Netherlands*; J. Vienes, N. Tennent,* University of Texas at Dallas, United States Minor Outlying Islands (the)*;* ***Amy Walker,*** University of Texas at Dallas	
11:40am	**CA2+AS+LS+NS+SS+VT+MoM-11** Studying Oil-in-Water Emulsion Interfacial Changes Using Static and in Situ Imaging, ***Xiao-Ying Yu,*** Oak Ridge National Laboratory	

Monday Morning, November 6, 2023

	Plasma Science and Technology Division **Room A106 - Session PS+TF-MoM** **Plasma Processing for Advanced Emerging Memory Technologies** **Moderators: Harutyun Melikyan**, Micron Technology, **Jeffrey Shearer**, TEL	**Atomic Scale Processing Mini-Symposium** **Room A107-109 - Session AP+PS+TF-MoM** **Thermal Atomic Layer Etching and Deposition** **Moderators:** **Jean-Francois de Marneffe**, IMEC, Belgium,
8:20am	**PS+TF-MoM-1** IBE Patterning and Characterization of High Density STT-MRAM at Pitch 50nm and MTJ CD 20nm, ***Romuald Blanc**, L. Souriau, K. Wostyn, S. Couet, F. Lazzarino,* IMEC, Belgium	**INVITED: AP+PS+TF-MoM-1** Atomic Layer Etching of Aluminum and Aluminum Oxide for Optical Applications, ***John Hennessy**, R. Rodríguez, A. Jewell,* Jet Propulsion Laboratory
8:40am	**PS+TF-MoM-2** Cryogenic Etching by Physisorption of Neutrals for High-Aspect-Ratio Contact, ***Masahiko Yokoi**, R. Suda, K. Tanaka, M. Tomura, K. Matsushima, Y. Ohya, M. Honda, Y. Kihara,* Tokyo Electron Miyagi Limited, Japan	
9:00am	**INVITED: PS+TF-MoM-3** Plasma Etching Processes Challenges in Emerging Non-Volatile Memories, *C. Boixaderas, T. Magis, C. Socquet, A. Roman, B. Martin,* CEA-LETI, France; *B. Fontaine, P. Gouraud,* STMicroelectronics, France; *J. Dubois,* STMicrolectronics, France; *N. Posseme,* STMicroelectronics, France; *L. Grenouillet, C. Jahan, G. Navarro, G. Bourgeois, M. Cyrille, **Thierry Chevolleau**,* CEA-LETI, France	**AP+PS+TF-MoM-3** Thermal Etching of First Row Transition Metal Oxides using Acetylacetone and O_3: Pathway for Atomic Layer Etching, ***Jonathan Partridge**[1], S. George,* University of Colorado at Boulder
9:20am		**AP+PS+TF-MoM-4** Selectivity between Silicon-Based Materials for Thermal Atomic Layer Etching and Spontaneous Etching, ***Marcel Junige**, S. George,* University of Colorado at Boulder
9:40am	**PS+TF-MoM-5** Principle and Application of Etching Lag Mitigation in High Aspect Ratio Contact Process, ***Kyoungsoo Chung**, H. Kim, S. Park, J. Min, K. Yoon, B. Kuh,* Samsung Electronics, Republic of Korea	**AP+PS+TF-MoM-5** Thermal Atomic Layer Etching of SnO_2 by Fluorination and Ligand-Exchange Using HF and $Al(CH_3)_3$, *C. Li,* University of Colorado Boulder, China; *J. Partridge, **Steven George**,* University of Colorado Boulder
10:00am	**PS+TF-MoM-6** Etching Selectivities of SiO_2 and SiN Against *a*-C Films Using CF_4/H_2 with a Pseudo-Wet Plasma Etching Mechanism, ***Yusuke Imai**, S. Hsiao, M. Sekine, T. Tsutsumi, K. Ishikawa,* Nagoya University, Japan; *M. Iwata, M. Tamura,* Tokyo Electron Ltd., Japan; *Y. Iijima,* tokyo Electron, Japan; *T. Gohira, K. Matsushima, Y. Ohya,* Tokyo Electron Ltd., Japan; *M. Hori,* Nagoya University, Japan	
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: PS+TF-MoM-8** Enhancing Etching Processes at Lower Wafer Temperatures: New Insights into Chemical and Physical Mechanisms, ***Thorsten Lill**,* Clarycon Nanotechnology Research, Inc.	**AP+PS+TF-MoM-8** Reactivity and Volatility as Key Metrics for Classifying the Substrate Selectivity of Ligands in Atomic Level Processing, ***Hadi Abroshan**,* Schrödinger, Inc.; *S. Lim,* Schrödinger, Inc., Republic of Korea; *A. Chandrasekaran,* Schrödinger, Inc.; *S. Elliott,* Schrödinger, Inc., Germany; *H. Kwak, M. Halls,* Schrödinger, Inc.
11:00am		**AP+PS+TF-MoM-9** Etching of Silicon Nitride Using Vapor-Phase HF Exposures at Various Temperatures: Role of Ammonium Hexafluorosilicate Salt, ***Vahid Ghodsi**, S. George,* University of Colorado Boulder
11:20am	**PS+TF-MoM-10** High Selectivity Etching via Pulsed Selective Deposition, ***André Amend**, M. Yakushiji, K. Kuwahara,* Hitachi High-Tech, Japan	**AP+PS+TF-MoM-10** Crystal Phase Transformations During Thermal Atomic Layer Etching of Hafnium–Zirconium Oxide (HZO) Using Hydrogen Fluoride and Dimethylaluminum Chloride, ***Aziz Abdulagatov**, J. Partridge,* University of Colorado at Boulder; *M. Surman,* ASM Microchemistry Ltd., Finland; *S. George,* University of Colorado at Boulder
11:40am		**AP+PS+TF-MoM-11** Novel Conversion Half-Cycle for Thermal ALD of High-Density Hfo_2 and Its Use in HfO_2/Al_2O_3 Nanolaminate Dielectric Barriers, ***Dane Lindblad**,* Forge Nano

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

	Room B110-112	
8:20am	**QS+EM+TF-MoM-1** High Stability Metal-Based Single Electron Transistors for Silicon Quantum Dot Charge Sensors, ***Runze Li,*** University of Maryland College Park*; P. Namboodiri,* NIST-Gaithersburg*; Y. Hong, N. Ebadollahi,* University of Maryland College Park*; J. Pomeroy,* NIST-Gaithersburg	**Quantum Science and Technology Mini-Symposium** **Session QS+EM+TF-MoM** **Materials for Quantum Computation and Quantum Information** **Moderators:** **Robert Grubbs**, IMEC Belgium, **Dave Pappas**, Rigetti Computing
8:40am	**QS+EM+TF-MoM-2** High-quality and High Deposition Rate Atomic Layer Deposition of NbN and TiN for Superconducting Quantum Applications, *H. Knoops,* Oxford Instruments Plasma Technology, Netherlands*; L. Bailey, D. Besprozvannyy, M. Powell,* Oxford Instruments Plasma Technology, UK*;* ***Russ Renzas,*** Oxford Instruments Plasma Technology	
9:00am	**INVITED: QS+EM+TF-MoM-3** Navigating MBE Growth of Atomically Precise Complex Oxides using Source Chemistry, ***Bharat Jalan,*** University of Minnesota, USA	
9:20am		
9:40am	**QS+EM+TF-MoM-5** Atomic Layer Deposition of Superconducting Titanium Nitride for Through-Silicon-Via Structures and Photon Detection, ***John Femi-Oyetoro****, H. LeDuc, P. Day, M. Dickie, F. Greer,* Jet Propulsion Laboratory (NASA/JPL)	
10:00am		
10:20am	**BREAK**	
10:40am	**QS+EM+TF-MoM-8** Molecular Beam Epitaxy of Superconducting ZrN Thin Films on GaN Substrates, ***Brelon May****, K. Vallejo, D. Hurley, K. Gofryk,* Idaho National Laboratory	
11:00am	**QS+EM+TF-MoM-9** Enhancing Quantum Circuits Through Biased Plasma-Enhanced ALD of Ultrathin Superconducting TaC_xN_{1-x}, ***Silke Peeters,*** Eindhoven University of Technology, Netherlands*; C. Lennon, V. Seferai, R. Hadfield, M. Weides,* University of Glasgow, UK*; M. Verheijen, E. Kessels,* Eindhoven University of Technology, Netherlands*; H. Knoops,* Eindhoven University of Technology, Oxford Instruments, Netherlands	
11:20am	**QS+EM+TF-MoM-10** Characterization of Ultra-Thin Superconducting TaN Nanowires with Integrated Heatsink Capabilities for SNSPD Applications, ***Ekta Bhatia,*** NY CREATES*; T. Nanayakkara, C. Zhou,* Center for Functional Nanomaterials, Brookhaven National Laboratory*; T. Vo,* American Institute for Manufacturing Integrated Photonics*; W. Collison, S. Schujman, A. Biedron, J. Nalaskowski, S. Olson,* NY CREATES*; S. Kar,* American Institute for Manufacturing Integrated Photonics*; H. Frost,* College of Nanoscale Sci. & Eng., SUNY Polytechnic Institute*; J. Mucci, B. Martinick, I. Wells, T. Murray, C. Johnson, V. Kaushik,* NY CREATES*; C. Black, M. Liu,* Center for Functional Nanomaterials, Brookhaven National Laboratory*; S. Papa Rao,* NY CREATES	
11:40am	**QS+EM+TF-MoM-11** Cryogenic Microwave Loss Measurements of Metal-Oxides using 3D Superconducting Cavities, ***Nicholas Materise,*** Colorado School of Mines, USA*; J. Pitten,* University of Colorado Boulder*; W. Strickland, J. Shabani,* New York University*; C. McRae,* University of Colorado Boulder/National Institute for Science and Technology (NIST)	

Room B113

8:20am 8:40am	**INVITED: NS1+2D+BI+SS-MoM-1** Combined Metrology at the Nanoscale: Advanced Scanning Probe Microscopy to Evaluate Complex Semiconductors, ***Fernando A. Castro,*** National Physical Laboratory, UK	**Nanoscale Science and Technology Division** **Session NS1+2D+BI+SS-MoM** **Combined Nanoscale Microscopy** **Moderators:** **Adina Luican-Mayer**, University of Ottawa, Canada, **Sergei Kalinin**, Oak Ridge National Laboratory
9:00am	**NS1+2D+BI+SS-MoM-3** Correlated Functional Imaging of Printed and Ferroelectric 2D Devices for Ubiquitous Sensing and Neuromorphic Computing, *J. Kim, Z. Zhu, T. Chu, H. Choi, M. Moody,* ***Lincoln Lauhon,*** Northwestern University	
9:20am	**NS1+2D+BI+SS-MoM-4** A Unique New Correlative Microscopy Platform for Combined Nanoscale Microscopy by Combination of AFM and SEM, ***Chris Schwalb,*** Quantum Design Microscopy GmbH, Germany*; K. Arat,* Quantum Design, Inc.*; H. Alemansour, A. Alipour,* Quantum Design, Inc., Iran (Islamic Republic of)*; A. Amann,* Quantum Design, Inc., Germany*; L. Montes,* Quantum Design, Inc., Colombia*; J. Gardiner,* Quantum Design, Inc.*; H. Frerichs, L. Stuehn, S. Seibert,* Quantum Design Microscopy GmbH, Germany*; S. Spagna,* Quantum Design, Inc.	
9:40am	**NS1+2D+BI+SS-MoM-5** Correlative *in-Situ* Nanoscale Microscopy Using AFM and FIB-SEM for Nanomechanical Property Mapping Throughout a 3D Volume, ***Prabhu Prasad Swain****, M. Penedo, N. Hosseini, M. Kangül, S. Andany, N. Asmari, G. Fantner,* Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland	
10:00am	**NS1+2D+BI+SS-MoM-6** Anisotropic Friction Effects of Perovskite Nanoplatelets on a vdW Substrate, ***Sidney Cohen****, N. Itzhak, I. Rosenhek-Goldian, O. Brontvein, E. Joselevich,* Weizmann Institute of Science, Israel	
10:20am	**BREAK**	
10:40am 11:00am	**INVITED: NS2+2D+BI+EL+SS-MoM-8** Nanoscale imaging with photo-induced force microscopy, ***Eric Potma,*** University of California Irvine	**Nanoscale Science and Technology Division** **Session NS2+2D+BI+EL+SS-MoM** **Chemical Identification with Scanning Probe Microscopy** **Moderators:** **Sidney Cohen**, Weizmann Institute of Science, Israel, **Harald Plank**, Graz University of Technology, Austria
11:20am	**NS2+2D+BI+EL+SS-MoM-10** Near-field Optical Microscopy Imaging and Spectroscopy at 10nm Spatial Resolution, ***Artem Danilov,*** Attocube Systems Inc.	
11:40am	**NS2+2D+BI+EL+SS-MoM-11** Correlative Nanoscale Chemical, Mechanical and Electrical Property Mapping on a Single AFM-IR Platform, *C. Li,* ***Martin Wagner****, C. Phillips,* Bruker Nano Surfaces Division	

Monday Morning, November 6, 2023

	Room B116	
8:20am	**INVITED: LX+AS+HC+SS-MoM-1** Instrumentation for Electron Microscopy and Spectroscopy in Plasma Environment, ***Andrei Kolmakov,*** NIST-Gaithersburg	**Laboratory-Based Ambient-Pressure X-ray Photoelectron Spectroscopy Focus Topic Session LX+AS+HC+SS-MoM** **Laboratory-Based AP-XPS: Advances in Instrumentation and Applications** **Moderators:** **Sylwia Ptasinska**, University of Notre Dame, **Heath Kersell**, Oregon State University
8:40am		
9:00am	**LX+AS+HC+SS-MoM-3** Scienta Omicron HiPPLab - A Lab-based APXPS Instrument for Probing Surface Chemical Reactions, ***Peter Amann,*** Scienta Omicron, Germany	
9:20am	**LX+AS+HC+SS-MoM-4** Using Microheaters for Time-Resolved APXPS and Correlated ETEM, ***Ashley Head,*** Brookhaven National Laboratory; *B. Karagoz,* Diamond Light Source, UK; *J. Carpena-Nuñez,* Air Force Research Laboratory; *D. Zakharov,* Brookhaven National Laboratory; *B. Maruyuma,* Air Force Research Laboratory; *D. Stacchiola,* Brookhaven National Laboratory	
9:40am	**INVITED: LX+AS+HC+SS-MoM-5** NAP-XPS Instrumentation Came a Long Way - Where Will Applications Lead Us from Here?, *P. Dietrich, F. Mirabella, K. Kunze, O. Schaff,* ***Andreas Thissen,*** SPECS Surface Nano Analysis GmbH, Germany	
10:00am		
10:20am	**BREAK**	
10:40am	**INVITED: LX+AS+HC+SS-MoM-8** Evolution of Metal-Organic Frameworks in the Presence of a Plasma by AP-XPS and IRRAS, ***J. Anibal Boscoboinik,*** Brookhaven National Laboratory and State University of New York at Stony Brook; *M. Ahmad,* Stony Brook University/Brookhaven National Laboratory; *M. Dorneles de Mello,* Brookhaven National Laboratory; *D. Lee,* Johns Hopkins University; *P. Dimitrakellis,* University of Delaware; *Y. Miao,* Johns Hopkins University; *W. Zheng,* University of Delaware; *D. Nykypanchuk,* Brookhaven National Laboratory; *D. Vlachos,* University of Delaware; *M. Tsapatsis,* Johns Hopkins University	
11:00am		
11:20am	**INVITED: LX+AS+HC+SS-MoM-10** Surface Degradation and Passivation in Perovskite Solar Cells, ***Wendy Flavell,*** The University of Manchester, UK	
11:40am		

Room B117-119

Biomaterial Interfaces Division
Session BI1+PS-MoM
Microbes and Fouling at Surfaces
Moderators:
Kenan Fears, U.S. Naval Research Laboratory,
Sally M. McArthur, Deakin University, Australia

8:20am **INVITED: BI1+PS-MoM-1** Amphiphilic Coatings for Marine Low-Fouling Applications, ***Axel Rosenhahn***, Ruhr University Bochum, Germany

8:40am

9:00am **INVITED: BI1+PS-MoM-3** Bio-Informed Interface Design and Synthesis to Manipulate Microbial Behavior, ***Rong Yang***, Cornell University

9:20am

9:40am **BI1+PS-MoM-5** Using Flow-Cells to Culture Microbial Biofilms for Improved Secondary Ion Mass Spectral Imaging, ***Yuchen Zhang***, Oak Ridge National Laboratory, USA; *X. Yu*, Oak Ridge National Laboratory

10:00am **BI1+PS-MoM-6** Role of Microbial Biofilms in the Settlement of Macrofoulers on Antifouling Marine Coatings, ***Sara Tuck***, *M. Kardish,* US Naval Research Laboratory; *B. Orihuela,* Duke University; *G. Vora,* US Naval Research Laboratory; *D. Rittschof, K. Franz,* Duke University; *K. Fears,* US Naval Research Laboratory

10:20am **BREAK**

Biomaterial Interfaces Division
Session BI2+AS+HC+SS-MoM
Energy Transfer and Light Induced Phenomena in Biologic Systems
Moderators:
Morgan Alexander, University of Nottingham, UK,
Tobias Weidner, Aarhus University, Denmark

10:40am **BI2+AS+HC+SS-MoM-8** Electrochemically Conducting Lipid Bilayers: Q-Lipid-Containing Membranes ShowHigh in-Plane Conductivity Using a Membrane-on-a-Chip Setup, *U. Ramach,* TU Wien, Austria; *J. Andersson,* IST Austria; ***Markus Valtiner***, TU Wien, Austria

11:00am **BI2+AS+HC+SS-MoM-9** Light Responsive Cyclic Peptide Polymer Nanomaterials, *O. Atoyebi, M. Beasley, W. Maza, M. Kolel-Veetil, A. Dunkelberger,* ***Kenan Fears***, US Naval Research Laboratory

11:20am **BI2+AS+HC+SS-MoM-10** Programmable Biomimetic Light-Harvesting Systems based on Strong Coupling of Synthetic Peptides and Dye-Functionalised Polymer Brushes to Plasmon Modes, ***Graham Leggett***, University of Sheffield, UK

11:40am

	Room C120-122	
8:20am	**VT-MoM-1** 30 Years of Active and Combination Cold-Cathode Gauges, ***Martin Wüest,*** INFICON Ltd., Liechtenstein	**Vacuum Technology Division** **Session VT-MoM** **Vacuum Measurement, Partial Pressure, and Gas Analysis** **Moderators:** **James Fedchak**, National Institute of Standards and Technology, **Yev Lushtak**, Lawrence Berkeley Lab
8:40am	**VT-MoM-2** Enabling Vacuum Process Monitoring with Time-of-Flight Spectroscopy, ***Kristian Kirsch,*** VACOM Vakuumkomponenten & Messtechnik GmbH, Germany	
9:00am	**VT-MoM-3** Remote (100 meters) RGA Operation for High Energy Physics Experiments, *W. Fletcher, A. Nikitin, D. RioPousa, M.Aitken,* ***J. Leslie,*** *S. Johnson, G. Jennings,* ***Gerardo Brucker,*** MKS Instruments, Inc. Mass Spectrometry Solutions Group, UK	
9:20am	**VT-MoM-4** Prospects for Wide-Range, Primary Pressure Sensing with Tethered Optomechanics, ***Daniel S. Barker****, Y. Bao, J. Lawall, J. Gorman, J. Scherschligt,* National Institute of Standards and Technology	
9:40am	**INVITED: VT-MoM-5** Novel Diaphragm Vacuum Gauge: Q'zGauge (QZG), ***Masatoshi Ono****, S. Goto, H. Motoyama, H. Hojoh,* Vacuum Products Co., Japan	
10:00am		
10:20am	**BREAK**	
10:40am	**VT-MoM-8** A Demonstration of the Portable Cold Atom Vacuum Standard as a Pressure Sensor, ***Stephen Eckel****, D. Barker, J. Fedchak, J. Scherschligt,* NIST	
11:00am	**VT-MoM-9** Update on Construction of the Vacuum Fixed Length Optical Cavity Pressure Standard, ***Jacob Ricker****, K. Douglass, J. Hendricks,* NIST	
11:20am	**VT-MoM-10** Mfig a Mass Filtered Ion Gauge, ***Freek Molkenboer****, H. Bekman, T. Mechielsen, D. Elstgeest, Y. Westland, J. Emmelkamp, M. Haye, H. Lensen,* TNO Science and Industry, the Netherlands	
11:40am		

	Room C123	
8:20am	**INVITED: SE1+TF-MoM-1** AVS John A. Thornton Memorial Award Talk: Low Temperature Thin Film Growth Using Metal-ion/Surface Interactions, ***Lars Hultman***[1], *G. Greczynski,* Linköping University, Sweden; *I. Petrov,* University of Illinois, Urbana-Champaign	**Advanced Surface Engineering Division** **Session SE1+TF-MoM** **Advanced Multi-Functional Thin Film Materials** **Moderator:** **Suneel Kumar Kodambaka**, Virginia Tech
8:40am		
9:00am	**INVITED: SE1+TF-MoM-3** Multi-Component Materials – Bonding, Disorder and Possibilities, ***Erik Lewin,*** Uppsala University, Sweden	
9:20am		
9:40am	**SE1+TF-MoM-5** High-k Gate Dielectrics for InAlN and ScAlN Barrier GaN HEMT Structures, ***Neeraj Nepal***, *B. Downey, M. Hardy, D. Meyer, V. Wheeler,* U.S. Naval Research Laboratory	
10:00am	**SE1+TF-MoM-6** Molecular Layer Deposition for Alumina Gas Separation Membranes, ***Lucie Badouric***, *C. Charmette, J. Cartier, M. Drobek, A. Julbe, M. Bechelany,* University of Montpellier, France	
10:20am	**BREAK**	
10:40am	**INVITED: SE2+TF-MoM-8** Advanced Surface Engineering Coating Technologies for Automotive Applications, ***Jianliang Lin,*** Southwest Research Institute, San Antonio Texas	**Advanced Surface Engineering Division** **Session SE2+TF-MoM** **Surface Engineering by Deposition of Protective Coatings** **Moderator:** **Suneel Kumar Kodambaka**, Virginia Tech
11:00am		
11:20am	**INVITED: SE2+TF-MoM-10** Thin Film Materials Design & Some Thoughts on Complexity and Sustainability, ***Jochen M. Schneider***, Materials Chemistry RWTH Aachen University, Germany	
11:40am		

[1] **John A. Thornton Memorial Award Winner**

	Room C124	
8:20am	**INVITED: EL1-MoM-1** Ellipsometry Analysis Overview: Things We Can't Ignore, ***Nikolas Podraza***, *A. Bordovalos,* University of Toledo*; P. Dulal, N. Jayswal, M. Mainali, E. Miller, B. Shrestha, M. Tumusange, R. Collins, A. Shan,* University of Toledo, United States Minor Outlying Islands (the)	**Spectroscopic Ellipsometry Technical Group** **Session EL1-MoM** **Big Data, AI and Analytical Methods** **Moderators: David Aspnes**, North Carolina State University, **Tino Hofmann**, University of North Carolina at Charlotte
8:40am		
9:00am	**INVITED: EL1-MoM-3** Noise Reduction Using Linear and Nonlinear Filtering, ***Long V. Le,*** Institute of Materials Science, Vietnam Academy of Science and Technology, Viet Nam	
9:20am		
9:40am	**EL1-MoM-5** Numerical Ellipsometry: Artificial Intelligence Methods for Solving Ellipsometer Data, ***Frank Urban****, D. Barton,* Florida International University	
10:00am	**EL1-MoM-6** Modeling Many-body Effects in Ge Using Pump-Probe Time-Resolved Spectroscopic Ellipsometry, ***Carlos A. Armenta***, New Mexico State University*; M. Zahradnik, M. Rebarz,* ELI Beamlines Facility, The Extreme Light Infrastructure ERIC, Czechia*; S. Espinoza,* ELI Beamlines Facility, The Extreme Light Infrastructure ERIC*; S. Vazquez-Miranda,* ELI Beamlines Facility, The Extreme Light Infrastructure ERIC, Czechia*; J. Andreasson,* ELI Beamlines Facility, The Extreme Light Infrastructure ERIC*; S. Zollner,* New Mexico State University	
10:20am	**BREAK**	
10:40am	**INVITED: EL2-MoM-8** Spectroscopic Ellipsometry and Reflectometry for Advanced Semiconductor Metrology, ***Shankar Krishnan***, KLA Corporation	**Spectroscopic Ellipsometry Technical Group** **Session EL2-MoM** **Industrial Applications of Spectroscopic Ellipsometry** **Moderators: Andy Antonelli**, Nanometrics, **Stefan Zollner**, New Mexico State University
11:00am		
11:20am	**INVITED: EL2-MoM-10** Ellipsometry in Industrial Applications, ***Andre Miller***, Intel	
11:40am		

	Room D136	
8:20am	**SS1+HC-MoM-1** Surface Inhomogeneities and Ordering Phenomena of (Pr,Ba)$CoO_{3-\delta}$ Thin Film Electrocatalysts Induced by High Temperatures and Oxygen Partial Pressures, ***David Mueller***, *M. Giesen, T. Duchon, C. Schneider,* Forschungszentrum Jülich GmbH, Germany	**Surface Science Division** **Session SS1+HC-MoM** **Electrochemistry** **Moderators:** **Jan Balajka**, TU Wien, Austria, **Sefik Suzer**, Bilkent University, Turkey
8:40am	**SS1+HC-MoM-2** Understanding the Influence of Electrolyte and the Buried Interface on the Stability of Hybrid Systems: A Spectro-Electrochemical Approach, ***Tom Hauffman***, *N. Madelat, B. Wouters, A. Hubin, H. Terryn,* Vrije Universiteit Brussel, dept. Materials and Chemistry, Belgium	
9:00am	**INVITED: SS1+HC-MoM-3** Controlling CO_2 Reduction and Electrocatalysis Reactivity Using Alloy and Polymer-modified Electrodes, ***Andrew Gewirth***, University of Illinois at Urbana Champaign	
9:20am		
9:40am	**SS1+HC-MoM-5** Enhancement of CO_2 Reduction Reaction Activity and Selectivity of Sub-2 nm Ag Electrocatalysts by Electronic Metal-Carbon Interactions, ***Xingyi Deng***, *D. Alfonso, T. Nguyen-Phan, D. Kauffman,* National Energy Technology Laboratory	
10:00am	**SS1+HC-MoM-6** Super Structure and Surface Reconstrutions with High-Energy Surface X-Ray Diffraction, ***Gary Harlow***, University of Oregon; *D. Gajdek,* University of Malmo, Sweden; *G. Abbondanza, A. Grespi,* Lund University, Sweden; *H. Wallander,* University of Malmo, Sweden; *A. Larsson,* University of Lund, Sweden; *L. Merte,* University of Malmo, Sweden; *E. Lundgren,* Lund University, Sweden	
10:20am	**BREAK**	
10:40am	**SS2-MoM-8** Local Potential Determinations by XPS Provides the Missing Link about Charge Dynamics of Ionic Liquid Devices, ***Sefik Suzer***, Bilkent University, Chemistry Department, Turkey	**Surface Science Division** **Session SS2-MoM** **Liquid-Solid Interfaces** **Moderators:** **Jan Balajka**, TU Wien, Austria, **Sefik Suzer**, Bilkent University, Turkey
11:00am	**SS2-MoM-9** Interactions at the Solid-Liquid Interface of Microcrystalline ZnO and Bacterial Growth Environments, ***Dustin Johnson***, *J. Reeks, A. Caron, M. Smit,* Texas Christian University; *T. McHenry,* Texas christian University; *S. McGillivray, Y. Strzhemechny,* Texas Christian University	
11:20am	**SS2-MoM-10** Towards Understanding Interfacial Thermodynamics: Visualizing and Quantifying Competitive Adsorption on Muscovite Mica with AFM, ***Matteo Olgiati***, *J. Dziadkowiec, A. Celebi, L. Mears, M. Valtiner,* Technische Universität Wien, Austria	
11:40am		

	Chemical Analysis and Imaging of Interfaces Focus Topic **Room A105 - Session CA+AS+LS+NS+SS+VT-MoA** **Environmental and Energy Interfaces** **Moderators: Musahid Ahmed**, LBNL, **Xiao-Ying Yu**, Oak Ridge National Laboratory, USA	**Plasma Science and Technology Division** **Room A106 - Session PS+SE-MoA** **Plasma Sources, Diagnostics, Sensors and Control** **Moderator:** **Michael Gordon,** University of California at Santa Barbara, **Yohei Ishii**, Hitachi High Technologies America Inc.
1:40pm	**INVITED: CA+AS+LS+NS+SS+VT-MoA-1** In situ Spectroscopies of Interfacial Reactions and Processes in Batteries, ***Feng Wang***, Argonne National Laboratory	**PS+SE-MoA-1** On the Influence of the Target Material on the Discharge Properties of the High Power Impulse Magnetron Sputtering Discharge, ***Jon Tomas Gudmundsson***, *K. Barynova,* University of Iceland; *M. Rudolph,* Leibniz Institute of Surface Engineering (IOM), Germany; *J. Fischer,* Linköping University, Sweden; *S. Suresh Babu,* University of Iceland; *M. Raadu, N. Brenning,* KTH Royal Institute of Technology, Sweden; *D. Lundin,* Linköping University, Sweden
2:00pm		**PS+SE-MoA-2** Numerical Analysis of Curling Probe Designing for an Effective Electron Density Measurement in Plasma, ***Daisuke Ogawa***, *S. Kato, H. Sugai, K. Nakamura,* Chubu University, Japan
2:20pm	**INVITED: CA+AS+LS+NS+SS+VT-MoA-3** Novel Strategies for the Characterization of the Next-Generation Energy Storage Materials by ToF-SIMS: From an in-Situ Exploration to an Operando Measurement, ***Tanguy Terlier***, *Q. Ai, S. Sidhik, A. Mohite, J. Lou,* Rice University	**PS+SE-MoA-3** Annular Beam Confocal Laser-Induced Fluorescence Diagnostic for Measurements of Ion Velocity Distribution Function in Industrial Plasmas, ***Ivan Romadanov***, *Y. Raitses,* Princeton Plasma Physics Laboratory
2:40pm		**PS+SE-MoA-4** Control of Electron Energy Distribution Function in Electron Beam Generated ExB Plasma, ***Nirbhav Chopra***, *Y. Raitses,* Princeton Plasma Physics Laboratory
3:00pm	**CA+AS+LS+NS+SS+VT-MoA-5** Advanced In-Situ and Ex-Situ S/TEM Probing of Interfacial Process in Rechargeable Batteries, ***Chongmin Wang***, Pacific Northwest National Laboratory	**INVITED: PS+SE-MoA-5** Expanding the Capabilities of Microwave Hairpin Resonator Probes, ***Steven Shannon***, North Carolina State University
3:20pm	**CA+AS+LS+NS+SS+VT-MoA-6** Investigating sp^2 and sp^3 Carbon Ratios by XPS: A Study of the D-Parameter and a New Second Plasmon Loss (2PL) Parameter, ***Alvaro Lizarbe***, *G. Major, B. Clark,* Brigham Young University; *D. Morgan,* Cardiff University, UK; *M. Linford,* Brigham Young University	
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: CA+AS+LS+NS+SS+VT-MoA-8** Solid-Liquid Interfaces for Energy-efficient Chemical Separation of Critical Minerals and CO_2 Conversion, ***Manh-Thuong Nguyen***, *V. Prabhakaran, D. Heldebrant, G. Johnson,* Pacific Northwest National Laboratory	**PS+SE-MoA-8** Time-Resolved Electron Energy Distribution in a Multi-Frequency Capacitively Coupled Plasma Reactor, *C. Kelly,* ***Md. Amzad Hossain***, *D. Kapelyan, D. Ruzic,* University of Illinois at Urbana-Champaign
4:20pm		**PS+SE-MoA-9** Mass Spectral Characterization and Control of Plasma Etch Processes, *L. Shoer, P. Heil, S. Pursel,* Intel Corporation; *N. Salovich,* Edwards Vacuum; ***David Shykind***, Intel Corporation
4:40pm	**CA+AS+LS+NS+SS+VT-MoA-10** Buried Interfaces of Ir Photodetector Devices Analyzed with Lab-Based Xps/Haxpes, ***Roman Charvier***, *M. Juhel,* STMicroelectronics, France; *O. Renault,* Univ. Grenoble-Alpes, CEA, Leti, France; *A. Valery, D. Guiheux, L. Mohgouk Zouknak,* STMicroelectronics, France; *B. Domenichini,* ICB UMR 6303 CNRS-Université de Bourgogne, France	**PS+SE-MoA-10** Development of a Catalytic Probe for the Detection of Fluorine Radicals with Applications to Semiconductor Manufacturing, ***Nicholas Connolly***, *J. Mettler, R. Garza, R. Sankaran, D. Ruzic,* University of Illinois Urbana-Champaign
5:00pm	**CA+AS+LS+NS+SS+VT-MoA-11** Detection and Discrimination of Aquatic Toxins Targeting Voltage Gated Sodium Channels Using Static ToF-SIMS Imaging, ***Jiyoung Son***, *K. Engbrecht, J. Mobberley,* PNNL	**PS+SE-MoA-11** Multi-Diagnostic Investigation of Etching Plasma Species in an Industry-Grade Inductively-Coupled Plasma Etcher, ***Jeremy Mettler***[1], *N. Connolly, S. Dubowsky, D. Ruzic,* University of Illinois at Urbana-Champaign

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

	Atomic Scale Processing Mini-Symposium **Room A107-109 - Session AP+PS-MoA** **Plasma Enhanced Atomic Layer Etching** **Moderators: Robert Bruce**, IBM T. J. Watson Research Center, **Scott Walton**, Naval Research Laboratory	**Quantum Science and Technology Mini-Symposium** **Room B110-112 - Session QS-MoA** **Systems and Devices for Quantum Computing** **Moderators: Ekta Bhatia**, NY CREATES, **Dave Pappas**, Rigetti Computing
1:40pm	**AP+PS-MoA-1** Chemical Contrast by Nitridation for Improving Atomic Layer Etching Selectivity in Interconnect and EUV Absorber Applications, ***Taylor G. Smith***[1], University of California, Los Angeles; *J. de Marneffe, V. Philipsen,* IMEC, Belgium; *J. Chang,* University of California, Los Angeles	**INVITED: QS-MoA-1** Hole-Based, Atomic-Scale Quantum Devices in Silicon, ***Robert Butera,*** Laboratory for Physical Sciences
2:00pm	**AP+PS-MoA-2** Anisotropic and Selective Atomic Layer Etching of Ruthenium, ***Owen Watkins,*** University of California at Los Angeles; *H. Simka,* Samsung; *J. Chang,* University of California at Los Angeles	
2:20pm	**INVITED: AP+PS-MoA-3** Mechanisms and Benefits of Cryogenic Processes in Silicon Based Material Atomic Layer Etching, ***Remi Dussart,*** *R. Ettouri, J. Nos, G. Antoun, P. Lefaucheux, T. Tillocher,* GREMI CNRS/Université d'Orléans, France	**QS-MoA-3** Interface Loss Engineering for High Coherence Aluminium Qubits, ***Janka Biznarova,*** *J. Bylander,* Chalmers University of Technology, Gothenburg, Sweden
2:40pm		**QS-MoA-4** Examine the Electrical Transport Properties of Superconducting Quantum Devices Based on PtSi, ***Tharanga Nanayakkara,*** *A. Bollinger, R. Li, M. Liu, C. Black,* Brookhaven National Laboratory
3:00pm	**AP+PS-MoA-5** Damage Formation Analyses of Steady Plasma-Enhanced Atomic Layer Etching for Silicon Nitride with Molecular Dynamics Simulations, ***Jomar U. Tercero***[1], Osaka University, Japan; *A. Hirata,* Sony Semiconductor Solutions Corporation, Japan; *M. Isobe, K. Karahashi,* Osaka University, Japan; *M. Fukasawa,* Sony Semiconductor Solutions Corporation, Japan; *S. Hamaguchi,* Osaka University, Japan	**INVITED: QS-MoA-5** Two Architectures for Superconducting Quantum Processors with Tunable Couplers, ***Stefano Poletto,*** Rigetti Computing
3:20pm	**AP+PS-MoA-6** Orientation Dependent Etching of Silicon: A Computational Chemistry Study, ***Yuri Barsukov,*** *O. Dwivedi, S. Jubin, J. Vella, I. Kaganovich,* Princeton University Plasma Physics Lab	
3:40pm	**BREAK**	**BREAK**
4:00pm		**INVITED: QS-MoA-8** Quantum Device Formation in Silicon via Ion Implantation, ***Jeffrey McCallum,*** School of Physics, Australia
4:20pm	**AP+PS-MoA-9** Process Drift of SiO_2 Atomic Layer Etching in HFC and FC/Ar Chemistries by Optical Spectroscopy and Surface Chemistry Analysis, ***Antoine Ronco***[1], *F. Boulard, N. Posseme,* Univ. Grenoble Alpes, CEA, Leti, France	
4:40pm	**AP+PS-MoA-10** Atomic Layer Etching of Superconducting Titanium Nitride Thin Films Using Molecular Oxygen and H_2/SF_6 Plasma, ***Azmain Hossain,*** *A. Minnich,* California Institute of Technology	**QS-MoA-10** Quantum Technology Manufacturing Roadmap v1.0, ***Jonathan Felbinger,*** SRI International
5:00pm	**AP+PS-MoA-11** Quasi-Atomic Layer Etching of X-Cut MgO-Doped Lithium Niobate Using Sequential Exposures of H_2 and SF_6 Plasma, ***Ivy Chen,*** *J. Solgaard, R. Sekine, A. Hossain, A. Ardizzi, D. Catherall, A. Marandi,* California Institute of Technology; *F. Greer,* Jet Propulsion Laboratory (NASA/JPL), California Institute of Technology; *A. Minnich,* California Institute of Technology	**QS-MoA-11** Cryogenic Properties of Discrete Electronic Components for Use in Quantum Measurement Circuits, ***Nikki Ebadollahi,*** National Institute of Standards and Technology (NIST)/ University of Maryland, College Park; *P. Shrestha,* National Institute of Standards and Technology (NIST); *D. Krymski,* University of Maryland, College Park; *Y. Hong, E. Rissanen, J. Pomeroy,* National Institute of Standards and Technology (NIST)

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

Monday Afternoon, November 6, 2023

	Nanoscale Science and Technology Division **Room B113 - Session NS+EM+MN-MoA** **Nanoscale Devices, Structures and Materials** **Moderators:** **Deep Jariwala**, University of Pennsylvania, **Aubrey Hanbicki**, University of Maryland	**Laboratory-Based Ambient-Pressure X-ray Photoelectron Spectroscopy Focus Topic** **Room B116 - Session LX+AS+BI+HC+SS+TH-MoA** **Laboratory-Based AP-XPS:Surface Chemistry and Biological/Pharmaceutical Interfaces** **Moderators: Gregory Herman**, Argonne National Laboratory, **Ashley Head**, Brookhaven National Laboratory
1:40pm	**NS+EM+MN-MoA-1** Integrated Nanophotonics Temperature Metrology Platform, ***Nikolai N. Klimov***, *K. Douglass, D. Barker, T. Bui, S. Robinson, T. Herman, K. Quelhas,* National Institute of Standards and Technology (NIST)	**INVITED: LX+AS+BI+HC+SS+TH-MoA-1** The Role of Co-Adsorbed Water in Decomposition of Oxygenates, *H. Nguyen, K. Chuckwu,* ***Líney Árnadóttir,*** Oregon State University
2:00pm	**NS+EM+MN-MoA-2** AVS Dorothy M. and Earl S. Hoffman Scholarship Recipient Talk: Breaking the Efficiency Bottleneck of Micro-LEDs Through Nanoscale and Excitonic Engineering, ***Yixin Xiao***[1], *R. maddaka, Y. Wu, Y. Malholtra, Y. Guo, S. Yang, K. Sun, A. Pandey, J. Min, Z. Mi,* University of Michigan, Ann Arbor	
2:20pm	**NS+EM+MN-MoA-3** Modeling Gas Phase Etching in High Aspect Ratio Stacked Nanostructures for Semiconductor Processing: Stacked SiGe Layer Etching, ***Zach Zajo***, Stanford University; *D. Mui, J. Zhu, M. Kawaguchi,* Lam Research Corp.; *E. Shaqfeh,* Stanford University	**INVITED: LX+AS+BI+HC+SS+TH-MoA-3** Integrating First-principles Modeling and AP-XPS for Understanding Evolving Complex Surface Oxides in Materials for Hydrogen Production and Storage, *B. Wood,* ***Tu Anh Pham,*** Lawrence Livermore Laboratory
2:40pm	**NS+EM+MN-MoA-4** Fabrication of Silicon Microfluidic Gratings for Neutron Imaging, *S.M. Robinson,* ***R. Murphy,*** National Institute of Standards and Technology (NIST); *Y. Kim,* National Institute of Standards and Technology (NIST)/ University of Maryland, College Park; *J. LaManna, C. Wolf, K. Weigandt, D. Hussey,* ***Nikolai Klimov,*** National Institute of Standards and Technology (NIST)	
3:00pm	**NS+EM+MN-MoA-5** The Small Shift Matters – Submilliradian Tilt Goniometry in Scanning Electron Microscopy, ***Andrew Madison***, *J. Villarrubia, D. Westly, R. Dixson, C. Copeland,* National Institute of Standards and Technology (NIST); *J. Gerling, K. Cochrane, A. Brodie, L. Muray,* KLA-Tencor; *J. Liddle, S. Stavis,* National Institute of Standards and Technology (NIST)	**INVITED: LX+AS+BI+HC+SS+TH-MoA-5** Particle Encapsulation on Reducible Oxides Under Near-Ambient Pressures, *F. Kraushofer, M. Krinninger, P. Petzoldt, M. Eder, S. Kaiser, J. Planksy, T. Kratky, S. Günther, M. Tschurl, U. Heiz, F. Esch,* ***Barbara A. J. Lechner,*** TUM, Germany
3:20pm		
3:40pm	**BREAK**	**BREAK**
4:00pm	**NS+EM+MN-MoA-8** On Point – Accurate Integration of Quantum Dots and Bullseye Cavities, ***Craig Copeland***, *A. Pintar, R. Dixson, A. Chanana, K. Srinivasan, D. Westly, B. Ilic, M. Davanco, S. Stavis,* NIST-Gaithersburg	**INVITED: LX+AS+BI+HC+SS+TH-MoA-8** Applications of NAP XPS in Pharmaceutical Manufacturing: Surface Analysis, Hydrogen Bonds, and Solute-Solvent Interactions, ***Sven Schroeder,*** University of Leeds, UK
4:20pm	**NS+EM+MN-MoA-9** Nanostructured Gas Sensors for the Detection of Meat Spoilage, ***Ken Bosnick,*** National Research Council of Canada	
4:40pm	**NS+EM+MN-MoA-10** From Natural to Fabricated Gas Sensing Photonic Nanostructures: Unexpected Discoveries and Societal Impact, ***Baokai Cheng***, *J. Brewer, B. Scherer, R. Potyrailo,* GE Research Center	**INVITED: LX+AS+BI+HC+SS+TH-MoA-10** The Change of DNA and Protein Radiation Damage Upon Hydration: In-Situ Observations by Near-Ambient-Pressure XPS, ***Marc Benjamin Hahn,*** Bundesanstalt für Materialforschung und -prüfung (BAM), Germany
5:00pm	**NS+EM+MN-MoA-11** Argon-Plasma Dry Etch of sub-Micron Feature-Size Waveguides in Thin-Film Lithium Niobate, ***Sesha Challa***, *N. Klimov, P. Kuo,* NIST-Gaithersburg	

[1] **AVS Dorothy M. and Earl S. Hoffman Scholarship Recipient**

	Room B117-119	
1:40pm	**BI1-MoA-1** Mixing Things Up to Reduce Mix Ups in Lipid and Fatty Acid Analysis, ***Daniel Graham***, *H. Lei, L. Gamble,* University of Washington	**Biomaterial Interfaces Division** **Session BI1-MoA** **SIMS and Orbi-SIMS Characterization of Biological and Biomaterials Surfaces** **Moderators:** **Axel Rosenhahn**, Ruhr-University Bochum, Germany, **Markus Valtiner**, Vienna University of Technology, Austria
2:00pm	**BI1-MoA-2** Native State Physicochemical Characterisation of Drug Delivery Hydrogels using Cryo-OrbiSIMS and SEM, ***Julie Watts***, *D. Scurr,* University of Nottingham, UK	
2:20pm	**INVITED: BI1-MoA-3** Molecular Characterization of Cells and Bio-interfaces using SIMS: The Foreign Body Reaction, ***Morgan Alexander***, The University of Nottingham, UK	
2:40pm		
3:00pm	**BI1-MoA-5** Elucidating of Native Macromolecule Structure in Cryo OrbiSIMS, ***Anna Kotowska***, *M. Alexander, D. Scurr,* University of Nottingham, UK	
3:20pm	**BI1-MoA-6** Comparing Desalination Methods of Bacterial Biofilms for Static ToF-SIMS Analyses, ***Gabriel Parker***, University of Illinois - Chicago; *X. Yu,* Oak Ridge Natinal Laboratory; *A. Plymale, J. Dhas, Z. Zhu,* Pacific Northwest National Laboratory; *L. Hanley,* University of Illinois - Chicago	
3:40pm	**BREAK**	
4:00pm	**BI2-MoA-8** Low Fouling Marine Coatings Based on Nitric Oxide-Releasing Polysaccharide-Based Hybrid Materials, ***Samantha Muhring-Salamone***, *R. Wanka, A. Rosenhahn,* Ruhr University Bochum, Germany	**Biomaterial Interfaces Division** **Session BI2-MoA** **Functional Biomaterials I: Fabrication and Application** **Moderators:** **Pierluigi Bilotto**, CEST GmbH, Austria, **Caitlin Howell**, University of Maine
4:20pm	**BI2-MoA-9** Underwater Adhesives Through Chemically-Induced Protein Aggregation, *M. Wilson,* Purdue University; *Q. Lu,* Naval Research Laboratory, Chemistry Division; *K. Nachtrieb, J. Fuller, C. Skogg, E. Yates,* United States Naval Academy; *M. Thum,* ***Christopher So***, Naval Research Laboratory, Chemistry Division	
4:40pm	**BI2-MoA-10** Analysis of a Pharmaceutical Formulation using Orbitrap-SIMS, ***Birgit Hagenhoff***, Tascon GmbH, Germany; *J. van Rüschen,* University of Muenster, Germany; *D. Breitenstein,* Tascon GmbH, Germany; *A. Pirkl,* IONTOF GmbH, Germany; *G. Winkler,* Tascon GmbH, Germany	
5:00pm		

Monday Afternoon, November 6, 2023

	Vacuum Technology Division Room C120-122 - Session VT-MoA Leaks, Flows, and Material Outgassing **Moderators: Giulia Lanza**, SLAC National Accelerator Laboratory, **Chandra Romel**, Consultant	Advanced Surface Engineering Division Room C123 - Session SE+TF-MoA Mechanics and Tribology of Thin Films and Coatings **Moderators: Rebecca Cai**, Virginia Tech, **Suneel Kumar Kodambaka**, Virginia Tech
1:40pm	**INVITED: VT-MoA-1** Cesium Intercalation of Graphene: A 2D Protective Layer on Alkali Antimonide Photocathode, ***Mengjia Gaowei***, Brookhaven National Laboratory	**SE+TF-MoA-1** Mini-Module Stress Testing to Assess 'Fatigue-Like' Failure Mode of Gridlines on Silicon Solar Cells, *A. Chavez,* ***Sang Han***, University of New Mexico; *S. Huneycutt, A. Ebong,* University of North Carolina at Charlotte; *D. Harwood, N. Azpiroz,* D2Solar
2:00pm		**SE+TF-MoA-2** Relating Stress in Thin Films to the Underlying Kinetic Processes: Experiments and Modeling, *E. Chason,* ***Tong Su***, Brown University
2:20pm	**INVITED: VT-MoA-3** On Ground and In-Orbit Decontamination Strategies for Space Hardware, ***Delphine Faye***, Centre National d'Etudes Spatiales, France	**INVITED: SE+TF-MoA-3** Tailoring the Tribocorrosion Resistance of Al-based Metallic Thin Films via Alloying and Nanolayering, ***Wenjun (Rebecca) Cai***, Virginia Tech
2:40pm		
3:00pm	**VT-MoA-5** Helium Permeation Through Zerodur Glass, ***Sefer Avdiaj***, University of Prishtina, Albania	**SE+TF-MoA-5** Tribological Properties of Conversion Layers and Carbon-based PVD Coatings for Rolling Bearing Applications, ***Esteban Broitman***, *A. Ruellan, R. Meeuwenoord, D. Nijboer,* SKF B.V. - Research and Technology Development, Netherlands
3:20pm	**VT-MoA-6** Improvement and Verification of Modified Knudsen Equation to Calculate the Gas Flow Rate through a Cylindrical Tube in Various Flow Regimes, ***Hajime Yoshida***, AIST, NMIJ, Japan	**SE+TF-MoA-6** The Tribological Behaviour of TiAlN Coating Under High-Temperature Conditions, ***Aljaž Drnovšek***, Jozef Stefan Institute, Slovenia; *P. Šumandl,* Faculty of Natural Sciences and Engineering, University of Ljubljana, Slovenia; *Ž. Gostenčnik,* Jozef Stefan Institute, Slovenia; *M. Čekada,* jozef Stefan Institute, Slovenia
3:40pm	**BREAK**	**BREAK**
4:00pm	**VT-MoA-8** Dirty Vacuums - To Contamination and Beyond, ***Rod Boswell***, *C. Charles, M. Davoodianidalik, J. Richmond, M. Shadwell,* Australian National University, Australia	**SE+TF-MoA-8** Atomic Layer Deposition Coatings on Micron-Sized Iron Powders for Increased Oxidation Resistance, ***Chris Gump***, *J. Burger, T. Porcelli, J. Travis, B. Boeyink, T. Champ,* Forge Nano
4:20pm	**VT-MoA-9** Outgassing Studies of A36 Mild Steel, ***James Fedchak***, *E. Newsome, D. Barker, S. Eckel, J. Scherschligt,* NIST-Gaithersburg	**SE+TF-MoA-9** Characterizing the Composition, Structure, and Mechanical Properties of Titanium Silicon Nitride Erosion Resistant Coatings, ***Gilad Zorn***, *P. Shower, S. Weaver, R. Rose, J. Her, J. Salisbury,* GE Research Center
4:40pm		
5:00pm		

	Room C124	
1:40pm	**INVITED: EL1+TF-MoA-1** Enhancement of Electron Effective Mass in Semiconductor Materials and 2DEGs Revealed by THz Optical Hall Effect, ***Nerius Armakavicius,*** Linköping University, Sweden*; S. Knight,* Linköping University*; P. Kuhne, H. Zhang, R. Carrascon,* Linköping University, Sweden*; S. Richter,* Linköping University, Lund University, Sweden*; V. Stanishev,* Linköping University, Sweden*; M. Schubert,* Linköping University, Sweden, University of Nebraska-Lincoln*; P. Paskov,* Linköping University, Sweden*; V. Darakchieva,* Lund University, Sweden	**Spectroscopic Ellipsometry Technical Group** **Session EL1+TF-MoA** **Thin Films & Novel Materials** **Moderators:** **Mathias Schubert**, University of Nebraska - Lincoln, **Megan Stokey**, Milwaukee School of Engineering
2:00pm		
2:20pm	**EL1+TF-MoA-3** In Situ and Real Time Spectroscopic Ellipsometry of Polycrystalline $CuInSe_2$ Co-Evaporation for Narrow Bandgap Photovoltaic Absorbers, *D. Sapkota,* ***Balaji Ramanujam****, M. Alaani, A. Shan, N. Podraza, R. Collins,* University of Toledo	
2:40pm	**EL1+TF-MoA-4** Anisotropic Optical Properties of $GdScO_3$, ***Prabin Dulal****, E. Miller,* University of Toledo*; D. Sotir, M. Barone, D. Schlom,* Cornell University*; N. Podraza,* University of Toledo	
3:00pm	**INVITED: EL1+TF-MoA-5** Combined Density Functional Theory and Spectroscopic Ellipsometry Studies of Anisotropic Materials, ***Rafal Korlacki****, M. Hilfiker, M. Stokey, M. Schubert,* University of Nebraska-Lincoln	
3:20pm		
3:40pm	**BREAK**	
4:00pm	**INVITED: EL2-MoA-8** Advancing Metrology in Semiconductor Manufacturing: Challenges and Novel Ellipsometry Techniques*, M. Lee,* ***Wookrae Kim,*** Samsung Electronics Co., Inc., Republic of Korea	**Spectroscopic Ellipsometry Technical Group** **Session EL2-MoA** **Instrumentation** **Moderators:** **Alain Diebold**, SUNY Polytechnic Institute, **Nikolas Podraza**, University of Toledo
4:20pm		
4:40pm	**INVITED: EL2-MoA-10** Mid-Infrared Ellipsometry for High Aspect Ratio Semiconductor Process Control Applications, ***Troy Ribaudo,*** Onto Innovation	
5:00pm		

	Room D136	
1:40pm	**INVITED: SS+AS+TF-MoA-1** Spin- and Alignment-Controlled O_2 Chemisorption and Catalytic CO Oxidation on Stepped Pt and Pt/Co Alloy Surfaces, ***Mitsunori Kurahashi,*** National Institutes for Materials Science, Japan	**Surface Science Division** **Session SS+AS+TF-MoA** **Mechanisms at Surfaces and Interfaces** **Moderators:** **Florencia C. Calaza**, Instituto de Desarrollo Tecnológico para la Industria Química, Argentina, **Jun Nakamura**, UEC Tokyo, Japan
2:00pm		
2:20pm	**SS+AS+TF-MoA-3** Atomic-Scale Insights Into the Sintering Resistance and Oxidation of Single-Atom Alloys, ***Audrey Dannar***[1], Tufts University; *J. Finzel,* University of California, Santa Barbara; *V. Cinar, E. Sykes,* Tufts University	
2:40pm	**SS+AS+TF-MoA-4** Visualization of the Local Dipole Moment at the Si(111)-(2x2) Surface Using DFT Calculations, ***Akira Sumiyoshi,*** *J. Nakamura,* The University of Electro-Communications (UEC Tokyo), Japan	
3:00pm	**SS+AS+TF-MoA-5** Mechanism Study of a Chemisorbed O_2 Molecule on Ag(110) Induced by High-Order Overtone Excitation Using STM, ***Minhui Lee,*** *E. Kazuma,* The University of Tokyo, Japan; *C. Zhang,* Tongji University, China; *M. Trenary,* University of Illinois at Chicago; *J. Takeya,* The University of Tokyo, Japan; *J. Jung,* University of Ulsan, Republic of Korea; *Y. Kim,* The University of Tokyo, Japan	
3:20pm	**SS+AS+TF-MoA-6** Characterization of Oxygen Evolution from Rh(111), ***Maxwell Gillum,*** *E. Jamka, F. Lewis, D. Killelea,* Loyola University Chicago	
3:40pm	**BREAK**	
4:00pm	**SS+AS+TF-MoA-8** Spin-Polarized VLEED from Au(111): Surface Sensitivity of the Scattering Process, ***Christoph Angrick,*** *A. Reimann,* University of Münster, Germany; *J. Braun,* Ludwig-Maximilians-University of Munich, Germany; *M. Donath,* University of Münster, Germany	
4:20pm	**SS+AS+TF-MoA-9** Unravelling the Chemisorption Mechanism of Epoxy-Amine Coatings on Zr-Based Converted Galvanized Steel by Combined Static XPS/ToF-SIMS Approach, ***Vanina Cristaudo,*** *K. Baert, P. Laha,* Research Group Electrochemical and Surface Engineering (SURF), Vrije Universiteit Brussel, Belgium; *M. Lim, L. Steely, D. Clingerman, E. Brown-Tseng,* Coatings Innovation Center, PPG; *H. Terryn, T. Hauffman,* Research Group Electrochemical and Surface Engineering (SURF), Vrije Universiteit Brussel, Belgium	
4:40pm	**SS+AS+TF-MoA-10** Fermi Surface Emergence and Valence Band Maximum Formation During Li_XCoO_2 Insulator-to-Metal Transition, ***Elena Salagre,*** Dpto Física Materia Condensada, Universidad Autónoma de Madrid, Spain; *P. Segovia,* Dpto Física Materia Condensada, Universidad Autónoma de Madrid. IFIMAC (Condensed Matter Physics Center), Spain; *M. González-Barrio,* Dpto Física de Materiales, Universidad Complutense de Madrid, Spain; *J. Pearson, I. Takeuchi,* Materials Science and Engineering, Univ. Of Maryland; *E. Fuller, A. Talin,* Sandia National Laboratories; *M. Jugovac, P. Moras,* Istituto di Struttura della Materia, Consiglio Nazionale delle Ricerche, Italy; *A. Mascaraque,* Dto. Fïsica de Materiales, Univ. Complutense de Madrid, Spain; *E. Garcia Michel,* Dto. Física Materia Condensada, Univ. Autonoma de Madrid, IFIMAC (Condensed Matter Physics Center), Spain	
5:00pm	**SS+AS+TF-MoA-11** Nanoscale Hydrogen Detection Using Time-of-Flight Secondary Ion Mass Spectrometry, *B. Paudel, J. Dhas, M. Choi, Y. Du,* ***Zihua Zhu,*** Pacific Northwest National Laboratory	

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

Tuesday Morning, November 7, 2023

	Chemical Analysis and Imaging of Interfaces Focus Topic **Room A105 - Session CA+AS+LS+LX+MN+SE+SS-TuM** **Novel Developments and Applications of Interfacial Analysis** **Moderators: Andrei Kolmakov**, National Institute of Standards and Technology (NIST), **Slavomir Nemsak**, Advanced Light Source, Lawrence Berkeley National Laboratory	**Plasma Science and Technology Division** **Room A106 - Session PS-TuM** **Plasma Processing for Advanced Logic Device Fabrications** **Moderators:** **John Arnold**, IBM Research Division, Albany, NY, **Tetsuya Tatsumi**, Sony Semicond. Solutions Corporation, Japan
8:00am	**INVITED: CA+AS+LS+LX+MN+SE+SS-TuM-1** Hypervelocity Nanoprojectile Impacts on Graphene, Graphene-Solid/Liquid Interphases: From Mechanisms of Interaction/Ejection to Practical Applications, ***Dmitriy Verkhoturov***, Texas A&M University; *S. Lee,* Mayo Clinic; *M. Eller,* California State University Northridge; *M. Gołuński, S. Hrabar,* Jagiellonian University, Poland; *S. Verkhoturov,* Texas A&M University; *Z. Postawa,* Jagiellonian University, Poland; *A. Kolmakov,* National Institute for Science and Technology (NIST); *A. Revzin,* Mayo Clinic; *E. Schweikert,* Texas A&M University	**PS-TuM-1** Chemical Role of a Small Amount of Cl--$_2$ in O_2/Cl_2 Plasma for Ru Etching Reaction, ***Masaya Imai***, *M. Matsui, R. Sugano,* Hitachi, Ltd., Japan; *T. Shiota, K. Takasaki,* Hitachi High Technologies, Japan; *Y. Ishii,* Hitachi High Technologies America Inc.; *M. Miura, K. Kuwahara,* Hitachi High Technologies, Japan
8:20am		**PS-TuM-2** Coupling of Deposition and Etching to Achieve Selective Removal of TaN with Respect to Ultra Low-*k* Dielectric, ***Ivo Otto IV***, SUNY Polytechnic Institute; *C. Vallée,* SUNY Polytechnic Institute, France
8:40am	**CA+AS+LS+LX+MN+SE+SS-TuM-3** Applying *in Situ* Bias During TOF-SIMS Analysis to Investigate Ion Migration in Perovskite Devices, ***Steven Harvey***, National Renewable Energy Laboratory; *I. Gould,* University of Colorado, Boulder; *D. Morales, M. McGehee,* University of Colorado Boulder; *A. Palmstrom,* National Renewable Energy Laboratory	**PS-TuM-3** Using Metal-Based Photoresists and Hard Masks for Patterning Process Window Expansion, ***Joe Lee***, *Y. Mignot, S. Sieg, C. Penny, K. Motoyama, K. Petrillo,* IBM Research Division, Albany, NY; *E. Liu, S. Thibaut, C. Cole,* Tokyo Electron Ltd.
9:00am	**CA+AS+LS+LX+MN+SE+SS-TuM-4** Oxidation of a Single Fe Nanoparticle at the Nanoscale and Real-Time by Operando Atom Probe, ***Sten V. Lambeets***, Pacific Northwest National Laboratory; *N. Cardwell, I. Onyango,* Washington State University; *T. Visart de Bocarmé,* Université libre de Bruxelles, Belgium; *J. McEwen,* Washington State University; *D. Perea,* Pacific Northwest National Laboratory	**PS-TuM-4** Understanding Etching of Nanoscale Structures Using Molecular Dynamics and Plasma Modeling, ***Xingyi Shi***, *S. Rauf, J. Wang, J. Kenney,* Applied Materials; *J. Booth,* LPP-CNRS, France; *Y. Azamoum,* Helmholtz Institute Jena, Germany; *M. Foucher,* LPP-CNRS, France
9:20am	**INVITED: CA+AS+LS+LX+MN+SE+SS-TuM-5** Reporting Interfaces: Unconventional Excitation of Interfaces Enables Exquisite Gas Sensing Toward Our Sustainable Future, ***Radislav Potyrailo***, GE Research	**INVITED: PS-TuM-5** Technology Options to Enable Logic Scaling in Advanced BEOL from Patterning to Metal Interconnect Formation, ***Eric Liu***, *A. Ko, N. Joy, S. Rogalskyj, S. Grzeskowiak, A. Krawicz, K. Kanzo, L. Huli, P. Biolsi,* TEL Technology Center, America, LLC
9:40am		
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am		
10:40am		
11:00am	**INVITED: CA+AS+LS+LX+MN+SE+SS-TuM-10** A "Simple" Approach to Combine Electrochemistry and Operando Near Ambient Pressure XPS Studies, *F. Mirabella,* ***Paul Dietrich***, *A. Thissen,* SPECS Surface Nano Analysis GmbH, Germany	**PS-TuM-10** Direct Ru Etching Mechanism for Advanced Interconnect, ***Miyako Matsui***, Hitachi, Ltd., Japan; *Y. Ishii, L. Kovatch, K. Maier,* Hitachi High Tech America Inc.; *M. Miura, K. Kuwahara,* Hitachi High Tech, Japan
11:20am		**PS-TuM-11** Study and Characterization of Thick Beol Dual Damascene Self- Aligned via Indenting Etch for Bcd Smart Power Technology Node, ***Pietro Petruzza***, ST Microelectronics, Italy
11:40am	**CA+AS+LS+LX+MN+SE+SS-TuM-12** Recent Developments in Probing Buried Interfaces Using Standing-Wave Photoelectron Spectroscopy, ***Slavomir Nemsak***, Lawrence Berkeley Lab	**PS-TuM-12** Process Development of Selective ICP Etching of Si_3N_4 over SiO_2 and of SiO_2 over Si_3N_4 to Produce Dense Arrays of 50 nm Patterns, ***Andréa Fassion***, *A. Sarrazin, T. Chevolleau,* Univ. Grenoble Alpes, CEA, Leti, France
12:00pm	**CA+AS+LS+LX+MN+SE+SS-TuM-13** The Influence of Surface Structure and Electrostatics on Measuring Unoccupied Electronic States via Low Energy Inverse Photoemission Spectroscopy (LEIPS), ***James Johns***, Physical Electronics USA	**PS-TuM-13** Plasma etch study of $Nb_xTi_{(1-x)}N$ metal lines for Superconducting Digital Logic, ***Yann Canvel***, *L. Souriau, V. Renaud, A. Pokhrel, A. Gupta, M. Kim, J. Soulie, S. Sarkar,* IMEC, Belgium; *A. Herr, Q. Herr,* IMEC; *F. Lazzarino, Z. Tokei,* IMEC, Belgium

Tuesday Morning, November 7, 2023

	Atomic Scale Processing Mini-Symposium **Room A107-109 - Session AP+EM+PS+TF-TuM** **Area Selective Processing and Patterning** **Moderators: Eric A. Joseph**, IBM Research Division, T.J. Watson Research Center, **Adrie Mackus**, Eindhoven University, Netherlands	**Quantum Science and Technology Mini-Symposium** **Room B110-112 - Session QS+EM-TuM** **SiC, Diamond and Related Materials for Quantum Information Sciences** **Moderators: Erin Cleveland**, U.S. Naval Research Laboratory, **Cheng Gong**, University of Maryland
8:00am	**INVITED: AP+EM+PS+TF-TuM-1** Area-Selective Deposition in Nanoscale Patterns, ***Annelies Delabie,*** Imec Belgium, and KU Leuven Belgium; *J. Clerix,* IMEC Belgium; *K. Van Dongen,* IMEC, Belgium; *J. Sinha,* IMEC Belgium; *L. Nyns,* IMEC, Belgium; *R. Nye,* LAM Research; *G. Parsons,* North Carolina State University; *J. Swerts,* IMEC Belgium	
8:20am		
8:40am	**INVITED: AP+EM+PS+TF-TuM-3** N-Heterocyclic Carbenes as Small Molecule Inhibitors in AS-ALD, ***Cathleen Crudden,*** Queen's University, Canada	**INVITED: QS+EM-TuM-3** Topology, Superconductivity and Unconventional Quantum Criticality in Monolayer WTe2, ***Sanfeng Wu,*** Princeton University
9:00am		
9:20am	**AP+EM+PS+TF-TuM-5** Unraveling Precursor Blocking Mechanisms in Area-Selective Atomic Layer Deposition Using Small Molecule Inhibitors, ***Olaf Bolkenbaas,*** *M. Merkx,* Eindhoven University of Technology, Netherlands; *P. Yu,* eindhoven University of Technology, Netherlands; *T. Sandoval,* Universidad Tecnica Federico Santa Maria, Chile; *E. Kessels, A. Mackus,* Eindhoven University of Technology, Netherlands	**QS+EM-TuM-5** Robust Cavity Emitter Coupled System Based on Lifetime-Limited Emission in H-BN, ***Sanchaya Pandit,*** Department of Mechanical and Material Engineering, University of Nebraska - Lincoln; *Y. Wang,* Department of Electrical and Computer Engineering, University of Nebraska - Lincoln
9:40am	**AP+EM+PS+TF-TuM-6** Topographically-Selective Deposition Using Amorphous Carbon as Inhibition Layer, ***Thijs Janssen,*** *M. Merkx, W. Kessels, A. Mackus,* Eindhoven University of Technology, The Netherlands	
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am		
10:40am		
11:00am	**AP+EM+PS+TF-TuM-10** A ReaxFF Study for Hacac Interaction on Al_2O_3 Surface in Area-Selective ALD, ***Naoya Uene,*** Tohoku University, Japan; *I. Tezsevin, W. Kessels, A. Mackus,* Eindhoven University of Technology, Netherlands; *A. van Duin,* Pennsylvania State University; *T. Tokumasu,* Tohoku University, Japan	**INVITED: QS+EM-TuM-10** Collective Excitations in Topological Materials, ***Stephanie Law,*** Pennsylvania State University
11:20am	**AP+EM+PS+TF-TuM-11** Enhancement of TMSDMA Passivation on SiO2 by Surface Fluorination, ***Anthony Valenti,*** SUNY College of Nanoscale Science and Engineering; *C. Vallée,* SUNY College of Nanoscale Science and Engineering, France; *C. Ventrice,* SUNY College of Nanoscale Science and Engineering; *K. Tapily, K. Yu, S. Consiglio, C. Wajda, R. Clark, G. Leusink,* TEL Technology Center, America, LLC, USA	
11:40am	**INVITED: AP+EM+PS+TF-TuM-12** A Study of Elucidation and Improvement of TiO_2 Selectivity by First-Principles Based Thermodynamic Simulation, ***Yukio Kaneda,*** Sony Semiconductor Solutions Corporation, Japan; *E. Marques, S. Armini, A. Delabie, M. van Setten, G. Pourtois,* IMEC, Belgium	**INVITED: QS+EM-TuM-12** Novel Particles in 2D Materials Detected with Quantum Interference and Raman., ***Kenneth Burch,*** Boston College
12:00pm		

	Room B113	
8:00am	**INVITED: NS+2D+EM+MN+SS-TuM-1** AVS Medard W. Welch Award Talk: Microscopy is All You Need: The Rise of Autonomous Science, ***Sergei Kalinin***[1], University of Tennessee Knoxville	**Nanoscale Science and Technology Division** **Session NS+2D+EM+MN+SS-TuM** **Scanning Probe Microscopy** **Moderators:** **Fernando Castro**, National Physical Laboratory, U.K., **Aubrey Hanbicki**, University of Maryland
8:20am		
8:40am	**NS+2D+EM+MN+SS-TuM-3** Dielectric Constant Measurement Sensitivity in Electrostatic Force and Force Gradient Microscopy-Based Modes, ***Gheorghe Stan***, National Institute of Standards and Technology (NIST); *C. Ciobanu,* Colorado School of Mines	
9:00am	**NS+2D+EM+MN+SS-TuM-4** Measuring and Understanding the Nanomechanical Properties of Halide Perovskites and Their Correlation to Structure, *I. Rosenhek-Goldian,* Dept. of Chemical Research Support, Weizmann Inst. of Science, Israel; *I. Buchine, N. Prathibha Jasti,* Bar-Ilan Inst. for Adv. Mater. and Nanotechnol & Dept. of Chem. Bar-Ilan Univ., Israel; *D. Ceratti,* Dept. of Mol. Chem. & Materials Science, Weizmann Inst. of Science, Israel & CNRS, UMR 9006, IPVF, Institut Photovoltaïque d'Ile-de-France; *S. Kumar,* Bar-Ilan Inst. for Adv. Mater. and Nanotechnol & Dept. of Chem. Bar-Ilan Univ. Ramat Gan Israel. & Dept. of Mol. Chem. & Materials Science, Weizmann Inst. of Science, Israel; *D. Cahen,* Bar-Ilan Inst. for Adv. Mater. and Nanotechnol & Dept. of Chem. Bar-Ilan Univ. & Dept. of Mol. Chem. & Materials Science, Weizmann Inst. of Science, Israel; ***Sidney Cohen***, Dept. of Chemical Research Support, Weizmann Inst. of Science., Israel	
9:20am	**NS+2D+EM+MN+SS-TuM-5** 3D Nanoprinting of Advanced AFM Nano-Probes, ***Harald Plank***, *M. Brugger-Hatzl, R. Winkler, L. Seewald,* Graz University of Technology, Austria	
9:40am		
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	
10:20am		
10:40am		
11:00am	**NS+2D+EM+MN+SS-TuM-10** Chemical, Mechanical, and Morphological Evolution of Nanostructures on the Surfaces of Asphalt Binders, *L. Lyu, J. Pei,* Chang'an University, China; *E. Fini,* Arizona State University; *L. Poulikakos,* EMPA (Swiss Federal Laboratories for Materials Science and Technology), Switzerland; ***Nancy Burnham***, Worcester Polytechnic Institute	
11:20am	**NS+2D+EM+MN+SS-TuM-11** Identifying Potential Carbon Sources for Direct Carbon Material Production by AI Assisted HR-AFM, ***Percy Zahl***, Brookhaven National Laboratory; *Y. Zhang,* ExxonMobil Technology and Engineering Company; *S. Arias,* Brookhaven National Laboratory	
11:40am	**NS+2D+EM+MN+SS-TuM-12** Automated Microscopy for Physics Discovery: From High-Throughput to Hypothesis Learning-Driven Experimentation, ***Yongtao Liu***, *R. Vasudevan, M. Ziatdinov, S. Kalinin,* Oak Ridge National Laboratory	
12:00pm		

[1] **Medard W. Welch Award Winner**

Tuesday Morning, November 7, 2023

	Room B116	
8:00am	**INVITED: TH1+AS+SS-TuM-1** X-Ray Photoelectron Spectroscopy as a Useful Tool to Study Surfaces and Model Systems for Heterogeneous Catalysts, ***Hans-Joachim Freund,*** Fritz-Haber-Institut der Max-Planck-Gesellschaft, Germany	**Theory for Surface Processes and Spectroscopies Focus Topic** **Session TH1+AS+SS-TuM** **Introduction and Core-Level Spectroscopies I** **Moderators:** **Gianfranco Pacchioni**, Universita' degli Studi di Milano-Bicocca, Italy, **John Rehr**, University of Washington
8:20am		
8:40am	**INVITED: TH1+AS+SS-TuM-3** X-Ray Absorption and Emission Spectroscopy of Actinide Materials: Electronic Structure Questions from the Experimental Viewpoint, ***Bianca Schacherl,*** Karlsruhe Institute of Technology (KIT), Institute for Nuclear Waste Disposal (INE), Germany	
9:00am		
9:20am	**TH1+AS+SS-TuM-5** Towards New Spectroscopic Tools for Detection of Bonding Properties in Radiopharmaceuticals: Application on La Used as a Homolog of Ac, ***Tonya Vitova,*** Karlsruhe Institute of Technology (KIT), Institute for Nuclear Waste Disposal, Germany; *B. Schacherl, H. Ramanantoanina,* Karlsruhe Institute of Technology (KIT), Institute for Nuclear Waste Disposal (INE), Germany; *M. Benesova,* German Cancer Research Center, Im Neuenheimer Feld 280, 69120 Heidelberg, Germany; *J. Göttlicher,* Karlsruhe Institute of Technology, Institute for Photon Science and Synchrotron Radiation (IPS), P.O. Box 3640, D-76021 Karlsruhe, Germany; *R. Steininger,* Karlsruhe Institute of Technology, Institute for Photon Science and Synchrotron Radiation (IPS), Germany; *M. Haverkort,* Heidelberg University, Institute for Theoretical Physics, P.O. Box 105760, 69047 Heidelberg, Germany; *A. Kovac,* European Commission, Joint Research Centre Karlsruhe, P.O. Box 2340, 76125 Karlsruhe, Germany	
9:40am	**TH1+AS+SS-TuM-6** Potential Energy Curves of Core-Excited States and Vibrational Broadening of X-Ray Adsorption Spectra of Uranyl, ***Robert Polly,*** Karlsruhe Institute of Technology (KIT), Germany; *P. Bagus,* University of North Texas	
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	
10:20am		
10:40am		
11:00am	**INVITED: TH2+AS+SS-TuM-10** Cumulant Green's Function Approaches for Satellites and Multiplets in X-Ray Spectra, ***John J. Rehr,*** Dept of Physics, University of Washington; *J. Kas,* Department of Physics, University of Washington	**Theory for Surface Processes and Spectroscopies Focus Topic** **Session TH2+AS+SS-TuM** **Core-Level Spectroscopies II** **Moderators:** **Ria Broer**, University of Groningen, Netherlands, **Bianca Schacherl**, Karlsruhe Institute of Technology, Germany
11:20am		
11:40am	**INVITED: TH2+AS+SS-TuM-12** Understanding Multiplets in the XPS of Transition Metal Oxides: Experiment and Theory and the Effects on Quantitation Procedures, ***Christopher Richard Brundle,*** C. R. Brundle and Associates; *B. Christ,* XPS library; *P. Bagus,* Center for Advanced Scientific Computing and Modeling (CASCAM) Department of Chemistry University of North Texas	
12:00pm		

	Biomaterial Interfaces Division **Room B117-119 - Session BI+AS+PS-TuM** **Biomolecules and Biophysics at Interfaces** **Moderators: Christopher So**, Naval Research Laboratory, **Markus Valtiner**, Vienna University of Technology, Austria	**Vacuum Technology Division** **Room C120-122 - Session VT-TuM** **Particle Accelerators and Large Vacuum Systems** **Moderators: Julia Scherschligt**, National Institute of Standards and Technology, **Steven Wulfsberg**, SAES Getters USA
8:00am	**BI+AS+PS-TuM-1** Probing Protein Structure on Nanoplastic Surface by Sum Frequency Scattering, ***Akriti Mishra***, *T. Weidner,* Aarhus University, Denmark	**VT-TuM-1** Study on a Pressure Anomaly Detection Method Applying Machine Learning in SuperKEKB Accelerator Vacuum System, ***Yusuke Suetsugu,*** High Energy Accelerator Research Organization (KEK), Japan
8:20am	**BI+AS+PS-TuM-2** The Structure of Alpha-Synuclein at Lipid Interfaces Determined by Experimental and Theoretical Sum Frequency Generation Spectroscopy, *K. Strunge, K. Pedersen, T. Golbek, M. Brgenhøj, D. Otzen, B. Schiøtt,* ***Tobias Weidner***, Aarhus University, Denmark	**VT-TuM-2** NEG Coating for PETRA IV: Resistivity and Sticking Probability Measurements, ***Ruta Sirvinskaite***, *L. Lilje, S. Lederer, R. Boespflug, N. Plambeck, S. Antipov, M. Schroeder, A. Winiarska,* DESY, Germany
8:40am	**BI+AS+PS-TuM-3** Lubricant Viscosity Affects the Antifouling Activity of PFPE Based SLIPS Coatings, ***Onur Özcan***, *J. Karthäuser, R. Kopecz, A. Gelhar, A. Rosenhahn,* Ruhr-Universitat Bochum, Germany	**VT-TuM-3** Vacuum System for Cornell Brookhaven Energy Recovery Linac Test Accelerator, ***Yulin Li***, *D. Burke,* Cornell University
9:00am	**BI+AS+PS-TuM-4** Orientation of the Dysferlin C2A Domain is Responsive to the Composition of Lipid Membranes, *A. Carpenter,* Oregon State University; *S. Roeters, T. Weidner,* Aarhus University, Denmark; ***Joe Baio***, Oregon State University	**VT-TuM-4** Operational Experiences of NEG Dominated Pumping System at CHESS-U, ***Leila Aboharb***, Cornell University
9:20am	**BI+AS+PS-TuM-5** Probing the Interfacial Action of *Thermomyces Lanuginosus* Lipase at Lipid Surfaces with Vibrational Sum Frequency Spectroscopy – from Monolayers to Emulsions, ***Khezar Saeed***, *K. Strunge, T. Golbek, T. Weidner,* Aarhus University, Denmark	**VT-TuM-5** ALS-U Vacuum Systems Production QA/QC Process, ***Sol Omolayo,*** Lawrence Berkeley Lab, University of California, Berkeley
9:40am		**VT-TuM-6** Exploring Large Vacuum Systems at LIGO: A Brief Introduction to the Vacuum Challenges of the Cosmic Explorer, ***Melina Fuentes-Garcia***, *J. Feicht,* LIGO Laboratory, California Institute of Technology; *J. Feicht,* California Institute of Technology
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am		
10:40am		
11:00am	**INVITED: BI+AS+PS-TuM-10** An *in Situ* Look at Interfacial Controls on Nucleation, Self-Assembly, and Crystal Growth in Biomolecular and Biomimetic Systems, ***Jim De Yoreo***, Pacific Northwest National Laboratory	**INVITED: VT-TuM-10** Exploring the Gravitational Wave Universe: Vacuum Systems for LIGO A+ and Beyond, ***Michael Zucker,*** LIGO Laboratory, Caltech and MIT
11:20am		
11:40am	**BI+AS+PS-TuM-12** the Surface Chemistry of Gecko Toe Pads, ***Mette Heidemann Rasmussen***, *K. Holler,* Department of Chemistry, Aarhus University, Denmark; *J. Baio,* School of Chemical, Biological and Environmental Engineering, Oregon State University; *C. Jaye, D. Fischer,* National Institute of Standards and Technology, Gaithersburg; *S. Gorb,* Functional Morphology and Biomechanics, Zoological Institute, Kiel University, Germany; *T. Weidner,* Department of Chemistry, Aarhus University, Denmark	**VT-TuM-12** A Cryogenically Cooled Water Trap for ITER's Vacuum System, ***Jared Tippens***, *C. Smith III,* Oak Ridge National Laboratory
12:00pm	**BI+AS+PS-TuM-13** All-Atom Simulations of Peptide Aggregation: Understanding and Predicting Biopolymeric Morphologies, *A. Kwansa, A. Cannon,* North Carolina State University; ***Yaroslava Yingling***, 911 Partners Way, Engineering Building I, Campus Box 7907	**VT-TuM-13** Photon Stimulated Desorption Beamline at NSLSII, *M. Ferreira,* ESS, Sweden; *S. Hulbert, P. Palecek, I. Saleh, M. Seegitz, T. Shaftan, O. Tchoubar,* ***Robert Todd***, Brookhaven National Laboratory

Tuesday Morning, November 7, 2023

	2D Materials Technical Group **Room C123 - Session 2D-TuM** **2D-Materials: Heterostructures and Functionalization** **Moderators:** **Xiangfeng Duan**, UCLA, **Kai Xiao**, Oak Ridge National Laboratory	**Actinides and Rare Earths Focus Topic** **Room C124 - Session AC+MI+TH-TuM** **Magnetism, Electron Correlation, and Superconductivity in the Actinides/Rare Earths** **Moderators: Edgar Buck**, PNNL, **Tomasz Durakiewicz**, Idaho National Laboratory, **Krzysztof Gofryk**, Idaho National
8:00am	**INVITED: 2D-TuM-1** A Wafer Scale Approach to Synthesize Targeted Metastable Heterostructures, ***David Johnson***, University of Oregon	**INVITED: AC+MI+TH-TuM-1** Uranium and Cerium Based Systems Probed with High-Pressure XANES and XMCD, ***Fabrice Wilhelm***, *A. Roagelv,* ESRF, France
8:20am		
8:40am	**2D-TuM-3** Simple Approach to Demonstrate the Van Der Waals Heterostructure Composed of Different Kinds of MoS_2 Phase for Photodetector Application, *K. Aydin, T. Kim,* Sungkyunkwan University (SKKU), Republic of Korea; ***Chisung Ahn***, Korea Institute of Industrial Technology, Republic of Korea	**AC+MI+TH-TuM-3** Searching for New Uranium-Based Arsenides, ***Eteri Svanidze***, Max Planck Institute for Chemical Physics of Solids, Germany
9:00am	**2D-TuM-4** TaS_x Prepared by Atomic Layer Deposition: Two-Dimensional Crystalline Films as Cu Diffusion Barrier, ***Sanne Deijkers***, *H. Thepass,* Eindhoven University of Technology, The Netherlands; *H. Sprey, J. Maes,* ASM, Belgium; *E. Kessels, A. Mackus,* Eindhoven University of Technology, The Netherlands	**AC+MI+TH-TuM-4** 5*f* Magnetism at an Extreme, ***Ladislav Havela***, Charles University, Faculty of Mathematics and Physics, Czechia; *V. Buturlim,* Idaho National Laboratory; *F. Honda*, Tohoku University, Japan; *D. Kaczorowski,* Institute of Low Temperature and Structure Research, Wrocław, Poland
9:20am	**INVITED: 2D-TuM-5** Hybrid Epitaxial Heterostructures for Topological Spintronics, ***Nitin Samarth***, Pennsylvania State University	**AC+MI+TH-TuM-5** Valence-to-Core RIXS in Insulating Compounds with 4f and 5f Elements, ***Jindrich Kolorenc***, Institute of Physics, Czech Academy of Sciences, Czechia
9:40am		**AC+MI+TH-TuM-6** Magnetism of Binary Actinide Oxides, ***Binod Rai***, *A. Bretaña,* Savannah River National Laboratory; *G. Morrison,* University of South Carolina, Columbia; *R. Greer,* Savannah River National Laboratory; *K. Gofryk,* Idaho National Laboratory; *H. zur Loye,* University of South Carolina, Columbia
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am		
10:40am		
11:00am	**INVITED: 2D-TuM-10** Designer Quantum Matter in Van Der Waals Heterostructures, ***Peter Liljeroth***, Aalto University, Finland	**AC+MI+TH-TuM-10** N-Point Saddle-Band Model for the Hidden Order Phase of URu_2Si_2, ***J. D. Denlinger***, Lawrence Berkeley National Laboratory; *J. Kang,* The Catholic University of Korea; *L. Dudy,* SOLEIL, France; *J. Allen,* University of Michigan; *L. Wray,* New York University; *A. Gallagher, R. Baumbach,* National High Magnetic Field Laboratory; *N. Butch,* University of Maryland; *M. Maple,* University of California, San Diego
11:20am		**AC+MI+TH-TuM-11** Magnetoelastic Properties of 5*f* Ferromagnet UCu_2P_2, ***Volodymyr Buturlim***, Idaho National Laboratory; *P. Doležal, O. Koloskova, J. Prchal,* Charles University, Czechia; *I. Turek,* Charles university, Czechia; *M. Martinez Celis,* CRISMAT Laboratory, France; *F. Honda,* Kyushu University, Japan; *M. Divis,* Charles University, Czechia; *D. Kaczorowski,* Polish Academy of Sciences, Poland; *K. Gofryk,* Idaho National Laboratory; *L. Havela,* Charles University, Czechia
11:40am	**2D-TuM-12** 2D Hybrids Based on Graphene Oxide and Palladium Nanozymes for Multimodal Theranostics, *A. Foti, L. Calì, S. Petralia, A. Fraix, G. Forte, R. Fiorenza, S. Scirè, L. D'Urso, C. Bonaccorso, C. Fortuna,* ***Cristina Satriano***, University of Catania, Italy	**AC+MI+TH-TuM-12** Density Functional Theory Calculations of the Phonons in Gamma and Delta Phase Pu, ***Sven P. Rudin***, Los Alamos National Laboratory
12:00pm	**2D-TuM-13** Hybrid Molecule/Quantum Material van Der Waals Heterostructures, ***Emanuele Orgiu***, Institut national de la recherche scientifique (INRS), Canada	**AC+MI+TH-TuM-13** The 5f UDOS of the Actinide Dioxides: Why Pu is n = 5 in PuO_2, ***James Tobin***, University of Wisconsin-Oshkosh; *H. Ramanantoanina,* KIT, Germany; *C. Daul,* U. Fribourg, Switzerland; *S. Yu,* LLNL; *P. Roussel,* AWE, UK; *S. Nowak, R. Alonso-Mori, T. Kroll, D. Nordlund, T. Weng, D. Sokaras,* SSRL

Room D136

Surface Science Division
Session SS+2D+AS+HC-TuM
Oxide and Chalcogenide Surfaces and Interfaces
Moderators:
Rachael Farber, University of Kansas,
Gareth Parkinson, TU Wien, Austria

8:00am	**SS+2D+AS+HC-TuM-1** ViPErLEED: LEED-*I*(*V*) Made Easy, ***Alexander Michael Imre***[1], TU Wien, Austria; *F. Kraushofer,* TU Munich, Germany; *T. Kißlinger, L. Hammer,* Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany; *M. Schmid, U. Diebold, M. Riva,* TU Wien, Austria
8:20am	**SS+2D+AS+HC-TuM-2** Quasicrystal-like Ordering of the $La_{0.8}Sr_{0.2}MnO_3$(001) Surface, ***Erik Rheinfrank,*** *G. Franceschi, L. Lezuo, M. Schmid, U. Diebold, M. Riva,* TU Wien, Austria
8:40am	**SS+2D+AS+HC-TuM-3** AVS Graduate Research Awardee Talk: The Selective Blocking of Potentially Catalytically-Active Sites on Surface-Supported Iron Oxide Catalysts, ***Dairong Liu***[21], *N. Jiang,* University of Illinois - Chicago
9:00am	**SS+2D+AS+HC-TuM-4** Unraveling Surface Structures of Ga-Promoted Transition Metal Catalysts in CO_2 Hydrogenation, ***Si Woo Lee,*** *S. Shaikhutdinov, B. Roldan Cuenya,* Fritz Haber Institute of the Max Planck Society, Germany
9:20am	**INVITED: SS+2D+AS+HC-TuM-5** Ultrathin Metal Oxide, Nitride and Sulfide Films: Bringing the Well-Known Compounds to a Unit-Cell Thickness, ***Mikołaj Lewandowski,*** NanoBioMedical Centre, Adam Mickiewicz University in Poznań, Poland
9:40am	
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	
10:40am	
11:00am	**SS+2D+AS+HC-TuM-10** Optimized Infrared Reflection Absorption Spectroscopy for Metal Oxides: Overcoming Challenges of Low Reflectivity and Sub-Monolayer Coverage, ***Jiri Pavelec,*** *D. Rath, M. Schmid, U. Diebold, G. Parkinson,* Vienna University of Technology, Austria
11:20am	**SS+2D+AS+HC-TuM-11** VO Cluster-Stabilized H_2O Adsorption on a TiO_2 (110) Surface at Room Temperature, ***Xiao Tong,*** Brookhaven National Laboratory
11:40am	**SS+2D+AS+HC-TuM-12** Synthesis and Multimodal Characterization of Thin-Film Oxides, ***Dario Stacchiola,*** Brookhaven National Laboratory
12:00pm	**SS+2D+AS+HC-TuM-13** Atomic Structure of Reconstructed Al_2O_3(0001) Surface, *J. Hütner, A. Conti,* TU Wien, Austria; *D. Kugler,* CEITEC, Czechia; *F. Mittendorfer, U. Diebold, M. Schmid,* ***Jan Balajka,*** TU Wien, Austria

[1] **SSD Morton S. Traum Award Finalist**
[2] **AVS Graduate Research Awardee**

Exhibitor Technology Spotlight Workshops
Room Exhibit Halls A-B, Booth 1003 - Session EW-TuL
Exhibitor Technology Spotlight Session I
Moderator: Christopher Moffitt, Kratos Analytical Inc

12:00pm	**EW-TuL-1** Challenges and Solutions for Ion Energy and Ion Flux Measurements in Plasma-Assisted Etching and Deposition Processes, ***Angus McCarter,*** Impedans	
12:20pm	**EW-TuL-2** Advance in Momentum Microscopy with NanoESCA MARIS, ***Marten Patt,*** *N. Weber, M. Escher, T. Kühn,* FOCUS GmbH, Germany	
12:40pm	**EW-TuL-3** New Developments for Surface Analysis from Thermo Fisher Scientific, ***Adam Bushell,*** *T. Nunney, P. Mack, R. Simpson, H. Tseng,* Thermo Fisher Scientific, UK	
1:00pm	**EW-TuL-4** Driving Discoveries Through Surface Analysis, *J. Mann*, ***Greg Fisher,*** Physical Electronics	
1:20pm	**EW-TuL-5** EnrivoMETROS – Advanced Surface Hybrid Metrology, ***Stefan Böttcher,*** SPECS Surface Nano Analysis GmbH, Germany	
1:40pm	**EW-TuL-6** Kratos Axis Supra+ -- Automated, Quantitative HAXPES for Advanced Materials Development, ***Chris Moffitt,*** Kratos Analytical Inc.	
2:00pm	**EW-TuL-7** VON ARDENNE: Shaping the Future of Coating Technologies to tackle Today's Challenges in Global Industries, ***Daniel Radach,*** *B. Coll, B. Cohen, J. Rajan, P. Burke,* VON ARDENNE North America, Inc.	

Tuesday Afternoon, November 7, 2023

	Room A105	
2:20pm	**INVITED: TF1-TuA-1** MLD as a Sandbox for Photoactive Hybrid Materials, ***Ola Nilsen,*** University of Oslo, Norway	**Thin Film Division** **Session TF1-TuA** **Catalytic and Active Materials** **Moderators:** **Mark Losego**, Georgia Institute of Technology, **Richard Vanfleet**, Brigham Young University
2:40pm		
3:00pm	**TF1-TuA-3** Dry Pathways to Synthesize Thin Films of Covalent Organic Frameworks, ***Syed Ibrahim Gnani Peer Mohamed,*** *S. Nejati, M. Bavarian,* University of Nebraska - Lincoln	
3:20pm	**TF1-TuA-4** Vapor Phase Infiltration of Titanium Oxide into P3HT to Create Organic-Inorganic Hybrid Photocatalysts, ***Li Zhang,*** *S. Gregory, M. Losego,* Georgia Institute of Technology	
3:40pm	**BREAK**	
4:00pm		
4:20pm		**Thin Film Division** **Session TF2-TuA** **Thin Films for Battery and Photovoltaic Applications** **Moderators:** **Richard Vanfleet**, Brigham Young University, **Matthias Young**, University of Missouri
4:40pm	**TF2-TuA-8** Optimization and Structural Characterization of ITO Thin Fims for Photovoltaic Applications, *F. Ali,* Metallurgical and Materials Engineering, The University of Alabama; *D. Li,* Electrical and Computer Engineering, Tne University of Alabama; ***Subhadra Gupta,*** Metallurgical and Materials Engineering, The University of Alabama	
5:00pm	**TF2-TuA-9** Isolating Battery Components to Understand How Processing Affects Interface Formation, ***Victoria Castagna Ferrari***[1], *G. Rubloff, D. Stewart,* University of Maryland, College Park	
5:20pm	**TF2-TuA-10** Towards Dual Lithium-Ion and Electronically Conductive Polymer Coatings by MLD, ***Nikhila Paranamana***[1], *A. Datta, X. He, M. Young,* University of Missouri, Columbia	
5:40pm	**TF2-TuA-11** Initiated Chemical Vapor Deposition Stabilized Current Collectors for Anode-Free Lithium Metal Batteries, ***Ramsay Blake Nuwayhid,*** *J. Yeom, G. Waller, R. Carter, C. Love,* U.S. Naval Research Laboratory	
6:00pm		

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

Room A106

Plasma Science and Technology Division
Session PS+MS-TuA
Modelling of Plasmas and Plasma Driven Processes
Moderators:
Mingmei Wang, Lam Research Corporation,
Jinyu Yang, University of Notre Dame

2:20pm **PS+MS-TuA-1** Towards Completing Chemistry Sets for Plasma Simulations, ***Sebastian Mohr***, *G. Armstrong, K. Lemishko,* Quantemol Ltd., UK; *A. Owens, W. Wu, J. Tennyson,* University College London, UK

2:40pm **PS+MS-TuA-2** Particle-in-Cell Monte Carlo Collision Modeling of Low-Pressure Plasma Discharges, ***Ken Hara***, *Y. Yamashita,* Stanford University

3:00pm **INVITED: PS+MS-TuA-3** Radio-frequency Hollow Cathode Discharge Characterization using Plasma and Machine Learning Models, ***Kallol Bera***, *A. Verma, S. Ganta, S. Rauf,* Applied Materials, Inc.

3:20pm

3:40pm **BREAK**

4:00pm

4:20pm **PS+MS-TuA-7** Experimental Characterization and Modeling of the Spatial Afterglow of Plasmas, ***Nabiel Hilmy Abuyazid***, University of Illinois at Urbana Champaign; *N. Uner,* Middle East Technical University, Turkey; *S. Peyres, R. Sankaran,* University of Illinois at Urbana Champaign

4:40pm **PS+MS-TuA-8** Circuit-based Reduced Order Model for Fluid Plasma Simulation of Capacitively Coupled Plasma Reactors, ***Sathya Ganta***, *A. Verma, K. Bera, S. Rauf,* Applied Materials, Inc.

5:00pm **PS+MS-TuA-9** Fully Kinetic Modeling of Wafer Processing Chambers in CCP and coupled ICP/CCP Systems Using VSim, ***Daniel Main***, *E. Lanham, J. Cary, T. Jenkins, J. Leddy, S. Kruger,* Tech-X Corporation

5:20pm **PS+MS-TuA-10** Hybrid Particle-in-Cell + Fluid Model of Multi-Frequency Capacitively Coupled Plasma with Tailored Voltage Waveform Bias, ***Shahid Rauf***, *X. Shi, T. Wang, S. Ganta,* Applied Materials, Inc.

5:40pm **PS+MS-TuA-11** Wafer Edge and Focus Ring Effects on Ion Energy Distributions and Har Features During Plasma Etching Using Low Bias Frequencies, ***Evan Litch***, University of Michigan; *H. Lee, S. Nam,* Samsung Electronics Co., Inc., Republic of Korea; *M. Kushner,* University of Michigan

6:00pm **PS+MS-TuA-12** Plasma Dynamics During Synchronous RF Pulsing in Dual Frequency Capacitively Coupled Plasma, ***Abhishek Verma***, *S. Rauf, K. Bera,* Applied Materials, Inc.; *D. Sydorenko,* University of Alberta Edmonton, Canada; *A. Khrabrov, I. Kaganovich,* Princeton Plasma Physics Laboratory

Room A107-109

2:20pm	**INVITED: AP1+2D+EM+PS+TF-TuA-1** Combination of Plasma-Based Atomic-Scale Deposition and Etching Processes for Advanced Patterning, ***Marceline Bonvalot,*** LTM - MINATEC - CEA/LETI, France; *C. Vallée,* SUNY College of Nanoscale Science and Engineering; *r. gassilloud, T. Chevolleau,* CEA/LETI-University Grenoble Alpes, France; *N. Possémé,* STmicroelectronics, France	**Atomic Scale Processing Mini-Symposium** **Session AP1+2D+EM+PS+TF-TuA** **Atomic Layer Processing: Integration of Deposition and Etching** **Moderator:** **John F. Conley, Jr.**, Oregon State University
2:40pm		
3:00pm	**INVITED: AP1+2D+EM+PS+TF-TuA-3** Application of Etching Reaction Models to Deposition Processes, ***Nobuyuki Kuboi,*** Sony Semiconductor Solutions Corporation, Japan	
3:20pm		
3:40pm	**BREAK**	
4:00pm		
4:20pm	**INVITED: AP1+2D+EM+PS+TF-TuA-7** Recent Advancements for Atomic Layer Advanced Manufacturing Processes: Microreactor Direct Atomic Layer Processing (µDALP™), ***Maksym Plakhotnyuk,*** *A. Varga, I. Kundrata,* ATLANT 3D Nanosystems, Denmark; *J. Bachmann,* ATLANT 3D Nanosystems; Friedrich-Alexander Universität Erlangen-Nürnberg, Denmark	
4:40pm		
5:00pm	**INVITED: AP2+PS+TF-TuA-9** Atomic Layer Annealing with Radio Frequency Substrate Bias for Control of Grain Morphology in Gallium Nitride Thin Films, *A. Mcleod, P. Lee,* University of California, San Diego; *S. Yun, S. Ueda,* University of California, San Diego, USA; *Z. Devereaux, C. Winter,* Wayne State University; *J. Spiegelman,* RASIRC; *R. Kanjolia, M. Moinpour,* EMD Electronics, USA; ***Andrew Kummel,*** University of California, San Diego	**Atomic Scale Processing Mini-Symposium** **Session AP2+PS+TF-TuA** **Energy Enhanced ALD** **Moderator:** **John F. Conley, Jr.**, Oregon State University
5:20pm		
5:40pm	**AP2+PS+TF-TuA-11** Atomic Layer Annealing for sub-10 nm, Wake-up Free Ferroelectric $Hf_{0.5}Zr_{0.5}O_2$ Thin Films, ***Yu-Sen Jiang,*** National Taiwan University, Taiwan; *T. Chang, S. Yi,* Taiwan Semiconductor Manufacturing Company, Taiwan; *M. Chen,* National Taiwan University, Taiwan	
6:00pm	**AP2+PS+TF-TuA-12** A System for Predicting the Area Selective Deposition of Titanium: Plasma State Diagnostics Using Electrical Simulation, ***Kyoungmi Choi,*** *T. Hong, H. Kim, Y. Oh,* Samsung Electronics Co., Inc., Republic of Korea	

Tuesday Afternoon, November 7, 2023

	Room B110-112	
2:20pm	**INVITED: QS+SS-TuA-1** *Quantum Sensing Enabled by Spin Qubits in Diamond* , ***Fedor Jelezko***, Institute of Quantum Optics, Ulm University, Germany	**Quantum Science and Technology Mini-Symposium** **Session QS+SS-TuA** **The Quantum Metrology Revolution** **Moderators:** **Luxherta Buzi**, IBM, **Petra Reinke**, University of Virginia
2:40pm		
3:00pm	**QS+SS-TuA-3** Tunneling Andreev Reflection - New Quantitative Microscopy of Superconductors with Atomic Resolution, *W. Ko,* University of Tennessee Knoxville*; S. Song, J. Yan,* Oak Ridge National Laboratory*; C. Lane,* Los Alamos National Laboratory*; J. Lado,* Aalto University, Finland*;* ***Petro Maksymovych***, Oak Ridge Natinal Laboratory	
3:20pm	**QS+SS-TuA-4** Patterned-Stress-Induced Compositional Manipulation of Epitaxially Grown Semiconductors for Quantum Applications, ***Leonid Miroshnik***, University of New Mexico*; B. Rummel,* Sandia National Laboratories*; M. Patriotis,* University of New Mexico*; A. Li, T. Sinno,* University of Pennsylvania*; M. Henry,* Sandia National Laboratories*; G. Balakrishnan, S. Han,* University of New Mexico	
3:40pm	**BREAK**	
4:00pm		
4:20pm	**INVITED: QS+SS-TuA-7** Atomic Tunneling Defects in Superconducting Quantum Circuits: Origins and Remedies, ***Jürgen Lisenfeld***, Karlsruhe Institute of Technology (KIT), Germany	
4:40pm		
5:00pm	**QS+SS-TuA-9** Mechanistic Investigations of Superconducting Film Growth: Substrate-Mediated Sn Diffusion on a Niobium Oxide, ***Sarah Willson***, University of Chicago*; R. Farber,* University of Kansas*; S. Sibener,* University of Chicago	
5:20pm	**QS+SS-TuA-10** Revealing Pairing Symmetry of Superconductors by Tunneling Andreev Reflection, ***Wonhee Ko***, University of Tennessee, Knoxville*; S. Song, J. Yan,* Oak Ridge National Laboratory*; J. Lado,* Aalto University, Finland*; P. Maksymovych,* Oak Ridge National Laboratory	
5:40pm	**QS+SS-TuA-11** Single-nm-Resolution Gate Fabrication for Top-Gated Quantum Dot Qubits, *J. Owen,* ***Joshua Ballard***, *E. Fuchs, J. Randall,* Zyvex Labs*; F. Beaudoin,* Nanoacademic Technologies, Canada*; A. Sigillito,* U. Pennsylvania	
6:00pm	**QS+SS-TuA-12** The Changing Role of National Metrology Institute with Quantum-Based Standards and the Nist on a Chip Program, ***Jay Hendricks***, *B. Goldstein,* NIST	

	Room B113	
2:20pm	**INVITED: NS1+2D+EM+MN-TuA-1** Atomic-Scale Design and Defect Networks at the 2D/3D Interface, ***Kate Reidy,*** MIT	**Nanoscale Science and Technology Division** **Session NS1+2D+EM+MN-TuA** **Nanofabrication and Characterization of Low-Dimensional Materials** **Moderator:** **Georg Fantner**, EPFL, Switzerland,
2:40pm		
3:00pm	**NS1+2D+EM+MN-TuA-3** Highly Asymmetric Doping of Epitaxial Bilayer Graphene by Targeted Bonding of the Intercalated Gadolinium, ***Marek Kolmer,*** Ames National Laboratory; *J. Hall,* Ames National Laboratory and Department of Physics and Astronomy, Iowa State University; *S. Chen, M. Tringides,* Ames National Laboratory, Department of Physics and Astronomy, Iowa State University	
3:20pm		
3:40pm	**BREAK**	
4:00pm		
4:20pm	**NS1+2D+EM+MN-TuA-7** AVS Dorothy M. and Earl S. Hoffman Scholarship Recipient Talk: Exfoliated 2D Nanosheets for Large-Area, Solution-Processed Optoelectronics, ***Lidia Kuo***[1], *S. Rangnekar, V. Sangwan, M. Hersam,* Northwestern University	
4:40pm	**INVITED: NS2+2D+EM-TuA-8** Highly Tunable Room-Temperature Exciton-Polariton Strong Coupling from Monolayer Wse_2 in Nanocavities, *P.J. Schuck,* **Thomas Darlington,** Columbia University	**Nanoscale Science and Technology Division** **Session NS2+2D+EM-TuA** **Light-Matter Interactions at the Nanoscale** **Moderator:** **Nancy Burnham**, Worcester Polytechnic Institute
5:00pm		
5:20pm	**NS2+2D+EM-TuA-9** Surface Plasmon Characterization in Ag Nanotriangles for Evaluation of Fano Resonance Conditions, ***Nabila Islam,*** Department of Physics, Portland State University; *R. Word,* Department of Physics, Portland State University, Portland, Oregon; *E. Abdul, S. Rananavare,* Department of Chemistry, Portland State University; *R. Könenkamp,* Department of Physics, Portland State University	
5:40pm	**NS2+2D+EM-TuA-11** Interconnected Plasmonic Nanogap Antennas for Photodetection via Hot Carrier Injection, ***John Grasso,*** *R. Raman, B. Willis,* University of Connecticut	
6:00pm		

[1] **AVS Dorothy M. and Earl S. Hoffman Scholarship Recipient**

	Room B116	
2:20pm	**INVITED: TH1-TuA-1** Non-Orthogonal Configuration Interaction for the Study of Ground and Excited State Properties of Materials, ***Ria Broer,*** University of Groningen, Netherlands*; C. de Graaf,* Universitat Rovira i Virgili and ICREA, Spain*; A. Sanchez-Mansilla,* Universitat Rovira i Virgili, Spain*; C. Sousa,* University of Barcelona, Spain*; T. Straatsma,* Oak Ridge National Laboratory, USA	**Theory for Surface Processes and Spectroscopies Focus Topic** **Session TH1-TuA** **Electronic Structure Theory** **Moderators:** **Robert Polly**, Karlsruhe Institute of Technology, Germany, **Sefik Suzer**, Bilkent University, Turkey
2:40pm		
3:00pm	**INVITED: TH1-TuA-3** Enabling Long Time-scale Quantum Molecular Dynamics Simulation for 5f-elements*, P. Yang,* ***Enrique Batista****, M. Cawkwell, D. Perez,* Los Alamos National Laboratory	
3:20pm		
3:40pm	**BREAK**	
4:00pm		
4:20pm	**INVITED: TH2-TuA-7** Interaction of Hydrogen Species with γ-Al_2O_3 Surfaces*,* ***Anne Chaka****, K. Khivantsev, T. Ahmed, B. Schmitt, J. Szanyi, L. Kovarik,* Pacific Northwest National Laboratory	**Theory for Surface Processes and Spectroscopies Focus Topic** **Session TH2-TuA** **Electronic Structure and Reactivity** **Moderators: Paul S. Bagus**, University of North Texas, **C. Richard Brundle**, CR Brundle and Associates
4:40pm		
5:00pm	**TH2-TuA-9** Elucidating the Effects of Oxygen Vacancies and Electric Fields on the Adsorption of Species on La-Based Perovskites*,* ***Ariel Whitten****, J. McEwen,* Washington State University*; E. Nikolla,* University of Michigan, Ann Arbor*; R. Denecke,* University of Leipzig, Germany	
5:20pm	**TH2-TuA-10** Theory of Magnetic Impurities in Oxides. Complex Problem, Pragmatic Solutions*,* ***Gianfranco Pacchioni****,* Università di Milano-Bicocca, Italy	
5:40pm	**TH2-TuA-11** Dynamics of Electrical Potential Distribution in Ionic Liquid Based Electrochemical Systems at Extended Time and Length Scales, Observed by Myriad of Experimental Techniques Awaits for Theoretical Attention*,* ***Pinar Aydogan Gokturk****,* Koc University, Turkey*; S. Suzer,* Bilkent University, Turkey	
6:00pm	**TH2-TuA-12** Sub-eV Electron Inelastic Mean Free Path: A Second Inverted Trend ?*,* ***Hagai Cohen****,* The Weizmann Institute, Israel	

	Biomaterial Interfaces Division **Room B117-119 - Session BI+AS+EM+NS+SE+TF-TuA** **Functional Biomaterials II: Sensing and Diagnostics** **Moderators: Joe Baio**, Oregon State University, **Caitlin Howell**, University of Maine	**Vacuum Technology Division** **Room C120-122 - Session VT-TuA** **Novel Vacuum Instrumentation** **Moderators: Jason Carter**, Argonne National Laboratory, **Yulin Li**, Cornell University
2:20pm	**BI+AS+EM+NS+SE+TF-TuA-1** AVS Nellie Yeoh Whetten Awardee Talk: Detection of SARS-CoV-2 using Surface-enhanced Raman Spectroscopy and Deep Learning Algorithms, ***Yanjun Yang***[1], University of Georgia; *H. Li,* Chongqing University, China; *L. Jones, J. Murray, D. Luo, X. Chen, H. Naikare, Y. Mosley, R. Tripp,* University of Georgia; *B. Ai,* Chongqing University, China; *Y. Zhao,* University of Georgia	**INVITED: VT-TuA-1** Saving Energy of Subfab Equipment for Semiconductor Manufacturing, ***Yohei Yoda,*** EBARA, Japan
2:40pm	**BI+AS+EM+NS+SE+TF-TuA-2** Wafer-Scale Metallic Nanotube Arrays: Fabrication and Application, ***Jinn P. Chu,*** National Taiwan University of Science and Technology, Taiwan	
3:00pm	**BI+AS+EM+NS+SE+TF-TuA-3** Low-Cost, Continuous Spectroscopic Monitoring of Chemical and Biological Contamination in Liquids, ***Liza White,*** *C. Howell,* University of Maine	**VT-TuA-3** The Transfer of R&D Vacuum Products to Series Production - When Cleanliness and Quality Control Becomes Critical, ***Klaus Bergner,*** *C. Worsch, F. Haidu, K. Marschall, M. Flaemmich,* VACOM Vakuum Komponenten & Messtechnik GmbH, Germany
3:20pm	**BI+AS+EM+NS+SE+TF-TuA-4** Clickable Cerium Oxide Nanoparticles with Gadolinium Integration for Multimodal Micro- and Macroscopic Targeted Biomedical Imaging, ***Anna du Rietz,*** *C. Brommesson, K. Roberg, Z. Hu, K. Uvdal,* Linköping University, Sweden	**VT-TuA-4** High Temperature Inlet of Residual Gas Analyzers for Atomic Layer Deposition Process Monitoring, ***Chenglong Yang,*** MKS Instruments, Inc. Mass Spectrometry Solutions Group; *J. Leslie, G. Jennings,* MKS Instruments, Inc. Mass Spectrometry Solutions Group, UK; *U. Meissner,* MKS Instruments, Inc. Mass Spectrometry Solutions Group, Germany; *M. Aitken, A. Wallace,* MKS Instruments, Inc. Mass Spectrometry Solutions Group, UK; *G. Brucker,* MKS Instruments, Inc. Mass Spectrometry Solutions Group
3:40pm	**BREAK**	**BREAK**
4:00pm		
4:20pm	**INVITED: BI+AS+EM+NS+SE+TF-TuA-7** Molecularly Imprinted Polymers (MIPs): Rising and Versatile Key Elements in Bioanalytics, *J. Völkle, A. Feldner,* Center for Electrochemical Surface Technology, Wiener Neustadt, Austria; *P. Lieberzeit,* University of Vienna, Faculty for Chemistry, Department of Physical Chemistry, Vienna, Austria; ***Philipp Fruhmann,*** Center for Electrochemical Surface Technology, Wiener Neustadt, Austria	**INVITED: VT-TuA-7** Improved Reliability of High Sensitivity Leak Testing of Large Chambers, ***Brad Shaw,*** Leak Testing Specialists, Inc.
4:40pm		
5:00pm	**BI+AS+EM+NS+SE+TF-TuA-9** X-ray Fluorescence Analysis of Metal Containing Cytostatics in HeLa Cells using the Ultra-compact Cryo-vacuum Chamber µ-HORST, ***Lejla Jusufagic,*** *C. Rumancev, A. Rosenhahn, A. Steinbrück, N. Metzler-Nolte,* Ruhr-University Bochum, Germany	**VT-TuA-9** An Alternative to Helium Leak Checking, ***Kieran Massey,*** *J. Brindley, V. Bellido-Gonzalez, D. Monaghan,* Gencoa Limited, UK
5:20pm	**BI+AS+EM+NS+SE+TF-TuA-10** Hemocompatibility Analysis of Novel Bioinspired Coating, ***AnneMarie Hasbrook,*** *R. Faase, M. Hummel, J. Baio,* Oregon State University	**VT-TuA-10** Reference Leaks for Traceable Outgassing Rate Measurements of Hydrocarbons and Water, ***Annas Bin Ali,*** *M. Bernien,* Physikalisch-Technische Bundesanstalt (PTB), Germany; *J. Setina,* Institute of Metal Technology (IMT), Ljubljana, Slovenia; *K. Jousten,* Physikalisch-Technische Bundesanstalt (PTB), Germany
5:40pm	**BI+AS+EM+NS+SE+TF-TuA-11** Signal Enhancement for Gravimetric Biomimetic Detection – Conjugation of Molecularly Imprinted Polymer Nanoparticles to Metal Nanoparticles, ***Julia Völkle,*** CEST GmbH, University of Vienna, Austria; *A. Weiß, P. Lieberzeit,* University of Vienna, Austria; *P. Fruhmann,* CEST GmbH, Austria	**VT-TuA-11** Anti-Deposition Sensor Diaphragm Structures of Sapphire-Based Capacitance Manometer for Semiconductor Manufacturing Processes, ***Takuya Ishihara,*** *Y. Mastugi, M. Soeda,* Azbil Corporation, Japan
6:00pm	**BI+AS+EM+NS+SE+TF-TuA-12** Biomaterial Interfaces Flash Poster Session, ***Regina Kopecz,*** Ruhr University Bochum, Germany; ***Saima Sumaiya,*** Columbia University; ***Kate McHardy,*** Ionoptika Ltd., UK; ***Chun Ki Fong,*** University of Maine; ***Adriana Feldner,*** CEST GmbH/University of Vienna, Austria	**VT-TuA-12** Overview of the Vacuum Pumping Systems for the SPARC Tokamak, ***Matt Fillion,*** *A. Kuang,* Commonwealth Fusion Systems; *C. Day,* Karlsruhe Institute of Technology (KIT), Germany; *O. Mulvany, F. Ravelli,* Commonwealth Fusion Systems

[1] **AVS Nellie Yeoh Whetten Awardee**

	2D Materials Technical Group **Room C123 - Session 2D+TF-TuA** **2D-Materials: Synthesis** **Moderators:** **David Johnson**, University of Oregon, **Peter Liljeroth**, Aalto University, Finland	**Actinides and Rare Earths Focus Topic** **Room C124 - Session AC+MI+TH-TuA** **Chemistry and Physics of the Actinides/Rare Earths** **Moderators: Ladislav Havela**, Charles University, Czech Republic, **Eteri Svanidze**, Max Planck Institute for Chemical Physics of Solids, Germany, **Gertrud Zwicknagl**, Technical University Brauschweig, Germany
2:20pm	**INVITED: 2D+TF-TuA-1** High-Order Van Der Waals Superlattices and Artificial Quantum Solid Beyond Mechanical Exfoliation and Restacking, ***Xiangfeng Duan***, UCLA	**INVITED: AC+MI+TH-TuA-1** Electronic Structure Methods for f-Block Elements: Are We There Yet?, *X. Li*, ***Chad Hoyer,*** University of Washington
2:40pm		
3:00pm	**2D+TF-TuA-3** Understanding the Sequential Growth of Bilayer MoS2 on SiO2 Substrate by Mo Isotope Labeling, ***Kai Xiao***, Center for Nanophase and Materials Sciences Oak Ridge National Laboratory; *Y. Yu,* School of Physics and Technology, Wuhan University, China; *J. Hachtel,* Center for Nanophase and Materials Sciences Oak Ridge National Laboratory; *M. Yoon,* Material Science and Technology Division, Oak Ridge National Laboratory; *A. Puretzky, A. Ievlev, C. Rouleau, D. Geohegan,* Center for Nanophase and Materials Sciences Oak Ridge National Laboratory	**INVITED: AC+MI+TH-TuA-3** Structures and Electronic States of Actinide and Lanthanide Complexes with Phenanthroline Derivatives, ***Tsuyoshi Yaita***, Japan Atomic Energy Agency, Japan
3:20pm		
3:40pm	**BREAK**	**BREAK**
4:00pm		
4:20pm	**2D+TF-TuA-7** The Transformation from Dendritic to Triangular Ws_2 Growth via Nacl-Assisted Low-Pressure Chemical Vapor Deposition, ***Himal Pokhrel***, *J. Duncan, S. Pollard,* The University of Memphis	**INVITED: AC+MI+TH-TuA-7** Unraveling the Unique Properties of *f*-Element Terpyridyl Complexes, ***Alyssa Gaiser***, Michigan State University; *C. Celis-Barros,* Colorado School of Mines; *F. White,* Oak Ridge National Laboratory; *T. Albrecht-Schoenzart,* Colorado School of Mines
4:40pm	**2D+TF-TuA-8** Hybrid Pulsed Laser Deposition Growth of Layered Chalcogenides, ***Mythili Surendran***, *H. Chen, J. Ravichandran,* University of Southern California	
5:00pm	**2D+TF-TuA-9** Effect of Several Growth Parameters on Graphene Growth on Four Types of Supported Cu Films Using Cold Wall Cvd and Perspective on Growth Mechanism of Graphene from Scaling Functions of Graphene Island Size Distribution, ***Shantanu Das***, Intel Corporation	**AC+MI+TH-TuA-9** Electronic Properties of Plutonium Oxycarbide, ***Paul Roussel***, AWE plc, UK
5:20pm	**2D+TF-TuA-10** Decoupling of Graphene from Metal Substrate via Interface Epitaxy, ***Abdullah Al-Mahboob***, *J. Sadowski,* Center for Functional Nanomaterials, Brookhaven National Laboratory	**AC+MI+TH-TuA-10** Exploring the Surface and Subsurface Behavior of Hydrogen in δ-Pu(100) and Bulk δ-Pu Through Density Functional Theory, ***Charles Fricke***, *S. Hernandez,* Los Alamos National Laboratory
5:40pm	**2D+TF-TuA-11** Wafer-Scale, Phase-Selective Growth of Two-Dimensional Indium Selenides by Metal-Organic Chemical Vapor Deposition, ***Seunguk Song***, *S. Jeon, M. Rahaman, J. Lynch, D. Rhee, P. Kumar, S. Chakravarthi, G. Kim, X. Du,* University of Pennsylvania; *E. Blanton,* KBR Inc.; *K. Kisslinger,* Brookhaven National Laboratory; *M. Snure,* Air Force Research Laboratory, Sensors Directorate; *N. Glavin,* Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; *E. Stach, R. Olsson III, D. Jariwala,* University of Pennsylvania	**AC+MI+TH-TuA-11** Nanoscale Nuclear Materials: Synthesis and Advanced X-Ray Characterization of Uranium Oxide Nanoparticles, ***Liane Moreau***, Washington State University, US
6:00pm		**AC+MI+TH-TuA-12** A Statistical Mechanics Treatment of Multiconfigurational Ground States in Isolated Neutral Atoms, ***Miles Beaux***, Los Alamos National Laboratory

Room D136

Surface Science Division
Session SS+HC-TuA
Photochemistry
Moderators:
Erik Jensen, University of Northern British Columbia, Canada,
Ahmad Nawaz, Hebrew University of Jeruzalem, Israel

2:20pm **INVITED: SS+HC-TuA-1** Pt Nanoclusters on GaN Nanowires for Solar-Assisted Seawater Hydrogen Evolution, ***Victor Batista***, *W. Dong, Y. Xiao, K. Yang, Z. Ye, P. Zhou, I. Navid, Z. Mi,* Yale University

2:40pm

3:00pm **SS+HC-TuA-3** Photoreactivity of Single Micro-Sized TiO_2 Crystals, *H. Zhu, W. Lu, K. Park,* ***Zhenrong Zhang***, Baylor University

3:20pm **SS+HC-TuA-4** Electron Induced Photochemistry of Nitrous Oxide-Water Co-Adsorbed Film ($N_2O@H_2O$) as a Model Study of Astrochemistry in the Interstellar Medium, ***Ahmad Nawaz***, The Hebrew University of Jerusalem, Israel

3:40pm **BREAK**

4:00pm

4:20pm **INVITED: SS+HC-TuA-7** Structure and Chemistry of Aqueous Oxide Interfaces from Molecular Simulations, *A. Selloni, A. Raman,* Princeton University; ***Marcos Calegari Andrade***, Lawrence Livermore National Laboratory; *B. Wen,* Henan University, China

4:40pm

5:00pm **SS+HC-TuA-9** Photodissociation of an Adsorbate via Coadsorbate Photon Absorption: Electronic Energy Transfer in Heterogeneous Molecular Thin Films, ***Erik Jensen***, University of Northern B.C., Canada

5:20pm **SS+HC-TuA-10** UV-Induced Oxidation of Aluminum, ***Robert Berg***, *C. Tarrio, T. Lucatorto,* National Institute of Standards and Technology (NIST); *F. Eparvier, A. Jones,* Laboratory for Atmospheric and Space Physics

5:40pm **SS+HC-TuA-11** Self-Induced and Progressive Photo-Oxidation of Organophosphonic Acid Grafted Titanium Dioxide, ***Nick Gys***, Vrije Universiteit Brussel, Belgium; *B. Pawlak,* Hasselt University, Belgium; *K. Marcoen,* Vrije Universiteit Brussel, Belgium; *G. Reekmans,* Hasselt University, Belgium; *L. Fernandez Velasco,* Royal Military Academy, Belgium; *R. An,* University of Antwerp, Belgium; *K. Wyns,* Flemish Institute for Technological Research, Belgium; *K. Baert,* Vrije Universiteit Brussel, Belgium; *K. Zhang, L. Lufungula,* University of Antwerp, Belgium; *A. Piras,* Hasselt University, Namur University, Belgium; *L. Siemons,* University of Antwerp, Belgium; *B. Michielsen,* Flemish Institute for Technological Research, Belgium; *S. Van Doorslaer, F. Blockhuys,* University of Antwerp, Belgium; *T. Hauffman,* Vrije Universiteit Brussel, Belgium; *P. Adriaensens,* Hasselt University, Belgium; *S. Mullens,* Flemish Institute for Technological Research, Belgium; *V. Meynen,* University of Antwerp, Belgium

6:00pm **SS+HC-TuA-12** "Laser-XPS" invented 1989 in Japan, Patented 1997, ***B. Vincent Crist***, XPS Library

Actinides and Rare Earths Focus Topic
Room Oregon Ballroom 203-204 - Session AC-TuP
Actinides and Rare Earths Poster Session
6:30 – 8:30 pm

AC-TuP-2 Magnetic Properties of Lu doped Ce-Fe-B Magnets, ***Alex Bretaña,*** *B. Rai, C. Housley, H. Ajo,* SRNL*; G. Morrison, H. zur Loye,* University of South Carolina

AC-TuP-3 A Novel Approach to the FTA Procedure for Nuclear Forensics, ***Itzhak Halevy,*** Ben Gurion uni., Israel*; R. Babayew, Y. Yehuda-Zada, N. Elgad,* Engineering and Physics Departments, Nuclear Research Centre Negev, Beer-Sheva, Israel*; J. Lorincik,* Nuclear Fuel Cycle Department, Research Centre Rez, Czech Republic*; I. Orion,* Unit of Nuclear Engineering, Faculty of Engineering Sciences, Ben-Gurion University of the Negev, Israel*; A. Weiss,* Faculty of Engineering, Bar Ilan University, Israel*; G. Katarivas Levy,* Department of Biomedical Engineering, Faculty of Engineering Sciences, Ben-Gurion University of the Negev, Israel

Advanced Surface Engineering Division
Room Oregon Ballroom 203-204 - Session SE-TuP
Advanced Surface Engineering Poster Session
6:30 – 8:30 pm

SE-TuP-1 Characterizations and Drill Performance of AlCrCn Coatings Deposited by High-Power Impulse Magnetron Sputtering, *F. Yang,* National Taiwan University of Science and Technology, Taiwan*; B. Lu, J. Tsao,* Ming Chi University of Technology, Taiwan*; Y. Kuo,* National Taiwan University of Science and Technology, Taiwan*;* ***Chi-Lung Chang,*** Ming Chi University of Technology, Taiwan

SE-TuP-2 Fabrication of FeCrAlY-Al_2O_3 Composite for Additive Manufacturing, ***Hsin-Mei Kao,*** *K. Son, S. Yang, N. Ghanadi, S. Pasebani, B. Paul, C. Chang,* Oregon State University

SE-TuP-3 Avoiding Mistakes During the Nanoindentation of Coatings, ***Esteban Broitman,*** SKF B.V. - Research and Technology Development, Netherlands

SE-TuP-4 Plasma Deposited Si-Rich Silicon Nitride: Deposition, Characterization, thickness scaling limitation and applications in Cap/Passivation of Advanced nano Devices, ***Son Nguyen,*** *V. Pai,* IBM Research Division, Albany, NY*; Y. Yao,* IBM Corporation, East Fishkill Facility*; M. Rizzolo, A. Dutta, D. Canaperi,* IBM Research Division, Albany, NY*; U. Sharma,* IBM Research Division, Albany, NY (IBM Intern**)

SE-TuP-5 Multifunctional Optical Surfaces Using Scalable Nanostructuring, ***Iliyan Karadzhov,*** *J. Rombaut, C. Graham, A. Mezzadrelli, J. Arres Chillon,* Institute of Photonic Sciences (ICFO), Spain*; W. Senaratne, R. Bellman, D. Thelen, P. Mazumder,* Corning Research and Development Corporation*; V. Pruneri,* Institute of Photonic Sciences (ICFO), Spain

SE-TuP-9 Investigating the Microstructure and Mechanical Behavior of the Particle-Particle and Substrate-Particle Interfaces in Cold Sprayed Coatings, ***Tanvi Ajantiwalay,*** *S. Niverty, R. Kalsar, V. Joshi, A. Devaraj,* Pacific Northwest National Laboratory

SE-TuP-10 Icephobic Coating Using Polymers/Silica Nanoparticles Composite via Self-Formation of Superhydrophobic Surface, ***Aravind H. Patil,*** Incheon National University/ Korea Polar Research Institute, Korea (Democratic People's Republic of)*; N. Trinh,* Incheon National University, Korea (Democratic People's Republic of)*; H. Do,* Korea Polar Research Institute, Korea (Democratic People's Republic of)*; G. Seo, J. Wook Choi,* Seoul National University, Korea (Democratic People's Republic of)*; Y. Kang,* Incheon National University, Korea (Democratic People's Republic of)*; J. Lee, C. Chung,* Korea Polar Research Institute, Korea (Democratic People's Republic of)*; H. Lee,* Incheon National University, Korea (Democratic People's Republic of)

Atomic Scale Processing Mini-Symposium
Room Oregon Ballroom 203-204 - Session AP-TuP
Atomic Scale Processing Poster Session
6:30 – 8:30 pm

AP-TuP-2 in-Situ Laser Diagnostics of Plasma Surface Interactions by fs-TALIF, ***Mruthunjaya Uddi,*** Advanced Cooling Technologies*; A. Dogariu,* Texas A&M University*; E. Kudlanov,* Advanced Cooling Technologies*; G. Urdaneta,* Texas A&M University*; Y. Xiao, D. Jensen, C. Chen,* Advanced Cooling Technologies

AP-TuP-3 Characteristics of Hydrogenated Amorphous Carbon Thin Films Fabricated by Plasma-Enhanced Chemical Vapor Deposition of Cyclohexane Precursor, *T. Poche, R. Chowdhury,* ***Seonhee Jang,*** University of Louisiana at Lafayette

AP-TuP-4 Fabrication Related Impurities Study of Aluminum Transition Edge Sensors, ***Ghadendra Bhandari,*** West Virginia University*; T. Stevenson, E. Barrentine,* NASA*; M. Holcomb,* West Virginia University

AP-TuP-5 Plasma-Induced Surface Defects and Their Impact on the Surface Chemistry of Silicon Nitride and Silicon Carbonitride, ***Ting-Ya Wang,*** *G. Hwang,* University of Texas at Austin

AP-TuP-6 Electron Heating Mode Changes in Plasma Sources Used for Atomic Precision Processing, ***David Boris,*** U.S. Naval Research Laboratory*; M. Johnson,* Huntington Ingalls Industries*; J. Woodward, V. Wheeler, S. Walton,* U.S. Naval Research Laboratory

AP-TuP-7 $NaHF_2$ as an Alternative Hydrogen Fluoride (HF) Source for Thermal Atomic Layer Etching and Deposition, ***Marcel Junige,*** *R. Hirsch, V. Ghodsi, S. George,* University of Colorado Boulder

Biomaterial Interfaces Division
Room Oregon Ballroom 203-204 - Session BI-TuP
Biomaterial Interfaces Flash Poster Session
6:30 – 8:30 pm

BI-TuP-1 Spacer Length Variations in Sulfo- and Sulfabetaines Affecting the Resistance Against Pathogenic Bacteria, ***Regina Kopecz,*** *J. Karthäuser,* Ruhr University Bochum, Germany*; E. Schönemann, A. Martínez Guajardo, A. Laschewsky,* University Potsdam, Germany*; A. Rosenhahn,* Ruhr University Bochum, Germany

BI-TuP-2 Frequency-Dependent Mechanical Characterization of Hygroscopic Biological Materials, ***Saima Sumaiya,*** *B. Sejour, O. Sahin,* Columbia University

BI-TuP-4 Gas Sensing via Conductive Molecularly Imprinted Polymers (cMIPs), ***Adriana Feldner,*** CEST GmbH/University of Vienna, Austria*; P. Lieberzeit,* University of Vienna, Austria*; P. Fruhmann,* CEST GmbH, Austria

BI-TuP-7 3d Mass Imaging of Bacterial Biofilm Composition Using Water Cluster Sims, ***Kate McHardy,*** *N. Sano,* Ionoptika Ltd., UK*; N. von Jeinsen, D. Ward,* University of Cambridge, UK

BI-TuP-8 Characterization of Commercial Catheter Surfaces with Bio-Inspired Liquid-Infused Surfaces, ***Evan Leonard,*** University of Maine

BI-TuP-9 Multi-Component Liquid-Infused Systems: A New Approach to Functional Coatings for Biomaterials, ***Zachary Applebee,*** *C. Howell,* University of Maine

BI-TuP-10 Subcellular Detection of PEBCA Particles in Macrophages: Combining Darkfield Microscopy, Confocal Raman Microscopy, and ToF–SIMS Analysis, ***Elke Tallarek,*** Tascon GmbH, Germany*; A. Vennemann,* IBE gGmbH, Germany*; M. Wiemann,* IBe gGmbH, Germany*; D. Breitenstein, B. Hagenhoff,* Tascon GmbH, Germany

BI-TuP-11 Removal of Free Liquid Layer from Liquid-Infused Silicone Catheters Reduces Silicone Loss into the Environment while Maintaining Adhesion Resistance, ***Chun Ki Fong,*** University of Maine*; M. Andersen,* University of Notre Dame*; E. Kunesh, E. Leonard, D. Durand, R. Coombs,* University of Maine*; A. Flores-Mireles,* University of Notre Dame*; C. Howell,* University of Maine

Chemical Analysis and Imaging of Interfaces Focus Topic
Room Oregon Ballroom 203-204 - Session CA-TuP
Chemical Analysis and Imaging of Interfaces Poster Session
6:30pm

CA-TuP-1 Combined Spectro-Electrochemical Methods to Investigate Electrochemical Corrosion in Real-Time, ***Matteo Olgiati,*** CEST GmbH, Austria

CA-TuP-2 Diamond Hydrogenation Using a Compact and Cost-Effective Low–Power Plasma, ***J. Trey Diulus,*** NIST Center for Nanoscale Science and Technology*; F. Yi,* NIST-Gaithersburg*; E. Strelcov,* NIST Center for Nanoscale Science and Technology*; D. LaVan,* NIST-Gaithersburg*; A. Kolmakov,* NIST Center for Nanoscale Science and Technology

CA-TuP-3 A Study of the D-Parameter: Evaluating Measurement Techniques in X-ray Photoelectron Spectroscopy (XPS), ***Alvaro Lizarbe,*** *G. Major, B. Clark,* Brigham Young University*; D. Morgan,* Cardiff University*; M. Linford,* Brigham Young University

CA-TuP-4 Proton and Hydroxide Diffusion Within Supercooled Water, ***Megan Dunlap,*** Pacific Northwest National Lab*; L. Kringle, R. Smith, B. Kay, G. Kimmel,* Pacific Northwest National Laboratory

Laboratory-Based Ambient-Pressure X-ray Photoelectron Spectroscopy Focus Topic
Room Oregon Ballroom 203-204 - Session LX-TuP
Laboratory-Based AP-XPS: Poster Session
6:30 – 8:30 pm

LX-TuP-1 Multimodal Liquid Cell for Lab-based APXPS: Investigating Ruthenium-based Organometallic Molecules in Various Environments, ***Youngseok Yu***, *A. Vidal Muller,* Brookhaven National Laboratory*; Z. Xi,* Stony Brook University/Brookhaven National Laboratory*; M. Liu, E. Stavitski, J. Concepcion, A. Head,* Brookhaven National Laboratory

LX-TuP-2 Investigating Solvation with Liquid Jet Photoelectron Spectroscopy, ***Jared Bruce***, University of Nevada, Las Vegas*; A. Haines, F. Furche,* University of California, Irvine*; R. Seidel,* Helmholtz-Zentrum Berlin für Materialien und Energie, Germany*; B. Winter,* Fritz Haber Institute of the Max Planck Society, Germany*; J. Hemminger,* University of California, Irvine

LX-TuP-4 Evaluation of AlCoCrFeNiMnTi High Entropy Alloys for CO_2 Hydrogenation, ***Chiezugolum Odilinye***, *H. Kersell,* School of Chemical, Biological, and Environmental Engineering, Oregon State University*; X. Fan,* Department of Materials Science and Engineering, University of Tennessee, Knoxville*; Z. Lyu, P. Liaw,* Department of Materials Science and Engineering, University of Tennessee*; G. Herman,* School of Chemical, Biological, and Environmental Engineering, Oregon State University

Nanoscale Science and Technology Division
Room Oregon Ballroom 203-204 - Session NS-TuP
Nanoscale Science and Technology Poster Session
6:30 – 8:30 pm

NS-TuP-1 AVS Dorothy M. and Earl S. Hoffman Awardee Talk: Scalable and Sustainable Synthesis of ZnO Nanowires via Hot Water Treatment for Photocatalytic Applications, ***Ranjitha K. Hariharalakshmanan*** [1], *F. Watanabe, T. Karabacak,* University of Arkansas at Little Rock

NS-TuP-2 Nanopore Arrays Patterned by Thermal Scanning Probe Lithography for Electrochemical Biosensing, ***Ken Bosnick***, *J. Canlas, E. Kamali,* National Research Council of Canada

NS-TuP-3 Tunable Gold- and Aluminum-Nanocrescents as a Platform for Circular Dichroism Spectroscopy, ***Anh Nguyen***, University of Utah

NS-TuP-4 Towards Artifact-Free Atomic Force Microscopy Images, ***Nancy Burnham***, Worcester Polytechnic Institute*; L. Lyu,* Chang'an University, China*; L. Poulikakos,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland

NS-TuP-5 Probing Metal Substrate Effects on the Adsorbate Conformations of a Nonplanar Tetrabenzoporphyrin Molecule by Ultra-high Vacuum Tip-Enhanced Raman Spectroscopy, ***Soumyajit Rajak***, *N. Jiang, D. Liu, L. Li,* University of Illinois - Chicago

NS-TuP-6 Studies of Chemistry and Materials Approaching the Atomic Scale with Cryogenic Ultrahigh Vacuum Scanning Near-Field Optical Microscopy Methods, ***Jeremy F Schultz***, National Institute of Standards and Technology (NIST)*; L. Li, S. Mahapatra, N. Jiang,* University of Illinois Chicago*; A. Centrone,* National Institute of Standards and Technology (NIST)

NS-TuP-7 Novel Air Spacer Technology for Parasitic Bit-Line Capacitance Reduction, ***Dongmin Han***, Department of Semiconductor and Display Engineering The Graduate School Sungkyunkwan University, Republic of Korea*; B. Choi,* Department of Electrical and Computer Engineering, Sungkyunkwan University, Republic of Korea

NS-TuP-8 Understanding Interaction Forces at Silicon Wafer Interfaces to Optimize Nanoscale Cleaning Processes, *D. Miano,* CEST GmbH, Austria*; L. Palla, A. Seltenhammer,* TU Wien, Austria*;* ***Pierluigi Bilotto***, CEST GmbH, Austria*; B. Loidl, S. Garvey,* Lam Research Corp., Austria*; M. Valtiner,* TU Wien, Austria

NS-TuP-9 The Design of Thermal Cloak Using Nanoporous Thin Films, ***Yue Xiao***, Advanced Cooling Technologies, Inc.*; Q. Chen, Q. Hao,* University of Arizona

NS-TuP-11 Control and Manipulation of Superconducting Vortex Lattices from Nano to Mesoscales, *S. Song, J. Yan,* Oak Ridge National Laboratory*; W. Ko,* University of Tennessee Knoxville*; E. Dumitrescu, G. Halasz,* Oak Ridge National Laboratory*; H. Fangohr,* Max Planck Institute for Structure and Dynamics of Matter, Germany*; C. Ha, B. Lawrie,* ***Petro Maksymovych***, Oak Ridge National Laboratory

NS-TuP-13 Exploiting Mixed-Dimensionality in Hybrid Van Der Waals Heterostructures, ***Emanuele Orgiu***, Institut National de la Recherche Scientifique / University of Quebec, Canada

NS-TuP-14 Circuit-Level Device Modeling for Framework Analyzing Hot Carrier Injection Failure in Gate-All-Around (GAA) Charge Trapping Flash (CTF) Memory Devices Based on New Experimental Methodology, ***Sunghwan Cho***, Samsung Electronics Co., Inc., Republic of Korea

NS-TuP-15 Statistic Analysis of Nanoscale Tunneling Electrical Contacts Based on Transmission Line Model, ***Bingqing Wang***, *P. Zhang,* Michigan State University

NS-TuP-16 Instrumentation of Ptychographic Microscopy at the Atomic Scale, ***Chien-Nan Hsiao***, *F. Chen,* Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan*; T. Chung,* Department of Materials Science and Engineering, National Yang Ming Chiao Tung University, Taiwan*; C. Chen,* Department of Engineering and System Science, National Tsing Hua University, Taiwan

NS-TuP-17 Influence of Defects on Oxidation of Rhodium, ***Allison Kerr***, *M. Gillum, D. Killelea,* Loyola University Chicago

Plasma Science and Technology Division
Room Oregon Ballroom 203-204 - Session PS-TuP
Plasma Science and Technology Poster Session
6:30 – 8:30 pm

PS-TuP-1 Sidewall Polymer Removal Challenges by Wet-Etching and the Proposal of High-Density Radical Flux (HDRF™) as a Dry-Etch Solution, ***Sabrina Rosa Ortiz***, *J. Tressler, D. Meisner,* Plasma-Therm LLC

PS-TuP-2 Mass Spectrometric Study of Ar-Diluted Ammonia Borane Plasma for h-BN 2D Film Formation, ***Takeshi Kitajima***, *T. Nakano,* National Defense Academy, Japan

PS-TuP-3 Plasma Degradation of PTFE Channel in a DBD/Plasma Jet Configuration for Endoscopes Use in Plasma Medicine, ***Juliette Zveny***, *T. Serra, A. Remy, A. Nonclercq, J. Deviere, A. Delchambre, F. Reniers,* Université Libre de Bruxelles, Belgium

PS-TuP-4 Effect of Additive Gas on Etch Profile Improvement during Dielectric Etching, ***Hyun Woo Tak***, *S. Kim, C. Choi, S. Kim, S. Lee, M. Park, D. Park, D. Kim, ,. Yeom,* Sungkyunkwan University (SKKU), Republic of Korea

PS-TuP-5 Etch Characteristics IGZO and Chamber Cleaning using CxHyFz Gases, ***Jong Woo Hong***, *D. Kim,* Sungkyunkwan University (SKKU), Republic of Korea*; Y. Jeong, H. Cho, D. Jung, Y. Yeo,* Samsung, Republic of Korea*; G. Yeom,* Sungkyunkwan University (SKKU), Republic of Korea

PS-TuP-6 Molecular Dynamics Simulation of Vapor-Phase Nucleation of Metal Nanoparticles in a Reactive Plasma Atmosphere, ***Louis Hoffenberg***, *D. Graves,* Princeton University*; I. Kaganovich,* Princeton Plasma Physics Laboratory

PS-TuP-7 Elementary Surface Reactions During F- and CF- Based Plasma Cryoetching of Si and SiO_2: A Molecular Dynamics Study, ***Jonathan Romero Cedillo***, *G. Cunge, E. Despiau-Pujo,* Univ. Grenoble Alpes, CNRS, LTM, France

PS-TuP-9 Synthesis and Characterization of Antiviral (Doped)-TiO_2 Coatings by an Atmospheric Pressure Dielectric Barrier Discharge, *A. Chauvin,* Université libre de Bruxelles/University of Mons, Belgium*; M. Galais, L. Sauvage, C. Van Lint, A. Op De Beeck,* Université libre de Bruxelles, Belgium*; R. Snyders,* University of Mons, Belgium*;* ***Francois Reniers***, Université libre de Bruxelles, Belgium

PS-TuP-11 Stability Criteria for Radiofrequency Plasmas at Low Pressure*, ***Omar Alsaeed***, *A. Lietz,* North Carolina State University*; B. Yee, C. Qu, M. Mamunuru, B. Scheiner,* Lam Research Corporation

PS-TuP-12 Cyclic Isotropic Etching of SiO_2 using NF_3/H_2 Remote Plasma and Methanol Vapor, ***Ji Yeon Lee***, *H. Gill, D. Kim, Y. Jang, H. Kwon, G. Kim, D. Kim, D. Kim, G. Yeom,* Sungkyunkwan University (SKKU), Republic of Korea

PS-TuP-13 Etching Characteristics of Sion Films Using $C_2F_4O/C_2H_2F_2$ with a Low Global Warming Potential, ***Seul Ki Kim***, *H. Tak, S. Kim, C. Choi, D. Kim, G. Yeom,* Sungkyunkwan University (SKKU), Republic of Korea

PS-TuP-14 Isotropic Dry Etching of SiO_2 using NF_3/H_2 Pulsed Remote Plasma and NH_3 Gas Injection, ***DaeWhan Kim***, *H. Gil, H. Kwon, D. Kim, Y. Jang, G. Kim, D. Kim, G. Yeom,* Sungkyunkwan University (SKKU), Republic of Korea

PS-TuP-15 Etched Characteristics of Nanoscale Tio_2 Using C_4F_8-Based and Bcl_3-Based Gases, ***Nam Il Cho***, *J. Hong, H. Kim, D. Ji, D. Kim, G. Yeom,* Sungkyunkwan University (SKKU), Republic of Korea

PS-TuP-16 Study on Atomic Layer Etching of Molybdenum by Formation of $MoCl_x/MoO_xCl_y$, ***Do Seong Pyun***, *J. Lee, D. Kim, Y. Jang, D. Kim, H. Kwon, H. Gil, G. Kim, J. Kim, G. Yeom,* Sungkyunkwan University (SKKU), Republic of Korea

[1] **AVS Dorothy M. and Earl S. Hoffman Awardee**

PS-TuP-17 Modeling the Impact of Electronegativity in Capacitively Coupled Argon/Oxygen Discharges with Tailored Voltage Waveforms, ***Sk Azmaeen Bin Amir,*** *S. Zulqarnain,* North Carolina State University*; J. Prager, T. Ziemba,* Eagle Harbor Technologies*; A. Lietz,* North Carolina State University

PS-TuP-18 Kinetic Modeling of Dual-Frequency Capacitively Coupled Argon Discharges Using Tailored Voltage Waveforms, ***Syed M. Zulqarnain,*** North Carolina State University*; J. Prager, T. Ziemba,* Eagle Harbor Technologies*; A. Lietz,* North Carolina State University

PS-TuP-19 Patterning of Magnetic Tunnel Junction (MTJ) using RF-biased Reactive Ion Beam Etching, ***Kyoung Chan Kim,*** *D. Kim, Y. Jang, H. Gil, H. Kwon, J. Kim, G. Yeom,* Sungkyunkwan University, Republic of Korea

PS-TuP-21 Production of Argon Metastable Species in an Electron Beam Generated Plasma, ***Vighneswara Siva Santosh Kumar Kondeti,*** *N. Chopra, S. Yatom, Y. Raitses,* Princeton University Plasma Physics Lab

PS-TuP-22 Effect of Plasma Nitrided Layer on the Deflection of Biopsy Needles, ***Hideaki Kuwabara,*** *T. Yamauchi, P. Abraha,* Meijo University, Japan

PS-TuP-24 Understanding 3D Grayscale Pattern Transfer: A Plasma Etching Parametric Study for Optoelectronic Devices, ***Assia SELMOUNI,*** *A. TAVERNIER, A. WARSONO, S. BERARD-BERGERY, N. POSSEME,* Univ. Grenoble Alpes, CEA, Leti, France

PS-TuP-25 Monocrystalline III-Nitride Films Grown on Sapphire Substrates at 200 °C via Hollow-Cathode Nitrogen Plasmas, ***Narmin Ibrahimli,*** *I. Saidjafarzoda, A. Mohammed, N. Biyikli,* University of Connecticut

PS-TuP-26 Plasma Delayering for Non-Selective Precision Etching, ***Leonid Miroshnik,*** *S. Han,* University of New Mexico*; T. Stevens, J. Duree, R. Shul, C. Nakakura,* Sandia National Laboratories

PS-TuP-27 Ion Energy Control in a Capacitively Coupled Plasma with a High Voltage Custom Waveform Bias, ***Timothy Ziemba,*** *J. Prager, J. Perry, K. Muggli,* Eagle Harbor Technologies, Inc.

PS-TuP-28 Cryogenic Aspect Ratio Etching of SiO_2 at $CF_4/H_2/Ar$ Plasma in a Cryogenic Reactive Ion Etch System, *H. Kwon,* ***In Young Bang,*** *J. Kim, H. Kim, S. Lim, S. Kim, S. Jo, J. Kim, W. Kim, G. Shin, G. Kwon,* Kwangwoon University, Republic of Korea

PS-TuP-29 in-Situ Electron Density Measurement in Inductively Coupled Plasma Using Microwave Reflectometer, ***Jae Hyeon Kim,*** *W. Kim, G. Shin, H. Kwon, J. Kim, I. Bang, S. Lim, H. Kim, S. Kim, S. Jo, G. Kwon,* Kwangwoon University, Republic of Korea, Korea (Democratic People's Republic of)

PS-TuP-30 Localized Deposition of Coatings Using Immobilized Streamers of a DBD: Interplay between the Electrode Gap and the Precursor Flow on the Coating Chemistry, ***Marie Brabant,*** Université libre de Bruxelles, Belgium*; A. Demaude, D. Petitjean, F. Reniers,* Université Libre de Bruxelles, Belgium

PS-TuP-31 the Effect of Rf Bias Frequency on the Ion Energy Distribution in Ultra-Low Electron Temperature Plasma, ***Chang-Min Lim,*** *M. Kim, J. Park, C. Chung,* 'Department of Electrical Engineering, Hanyang University, Republic of Korea

PS-TuP-32 Changes in Ion Density and Electron Temperature Over Time Due to Bias Power, ***Park Sung-Joon,*** *E. Hyundong, C. Chin-Wook,* Department of Electrical Engineering, Hanyang University, Republic of Korea

PS-TuP-33 On the Method of Dielectric Thickness Measurement by Using Three Frequencies, ***Hyeon ho Nahm,*** *H. Lee, B. Seo, C. Chung,* Department of Electrical Engineering, Hanyang University, Republic of Korea

PS-TuP-34 Etching Characteristics of NF_3 and F_3NO at Reactive Ion Etching Plasma for Silicon Oxide, *W. Kim,* ***Seong Hee Jo,*** *H. Kwon, G. Shin, J. Kim, I. Bang, S. Lim, J. Kim, H. Kim, S. Kim, G. Kwon,* Kwangwoon University, Republic of Korea

PS-TuP-35 Investigation of Transient Phenomena of Electron Heating in Low-Frequency Pulse-Driven Capacitively Coupled Ar Plasmas Using a Particle-in-Cell Simulation, ***Seoi Choi,*** *H. Lee,* Pusan National University, Republic of Korea

PS-TuP-37 An Arrival Time Difference-Based Elimination Method of Cavity Resonances for Crossing Frequency Determination of the Cutoff Probe, ***Chulhee Cho,*** *S. Kim, W. Lee,* Chungnam National University, Republic of Korea*; B. Na,* Korea Institute of Fusion Energy, Republic of Korea*; Y. Seol, Y. Lee, I. Seong, W. Jeong, M. Choi, B. Choi, S. Seo, S. You,* Chungnam National University, Republic of Korea

PS-TuP-38 A Global Model with Monte Carlo Collision Method in Sheath for Capacitively Coupled Ar Plasma, ***Inho Seong,*** *S. Kim, Y. Lee, Y. Seol, C. Cho, W. Jeong, M. Choi, B. Choi, S. Seo, W. Lee, S. You,* Chungnam National University, Republic of Korea

PS-TuP-39 Control of Radical Density Through Modulation of Electron Energy Probability Function in a Dual-Frequency (2/27.12 MHz) Inductively Coupled Plasma, ***Yeong Jae Jeong,*** Department of Electrical Engineering, Hanyang University, Seoul, Republic of Korea*; U. Jung, C. Chung,* Department of Electrical Engineering, Hanyang University, Republic of Korea

PS-TuP-40 Effects of a Non-Sinusoidal Rf Field on Multipactor Discharge in a Parallel Plate Geometry, ***Asif Iqbal,*** *D. Wen, J. Verboncoeur, P. Zhang,* Michigan State University

PS-TuP-41 Field Reversals in High Voltage-Driven Low Pressure Capacitively Coupled Plasmas, ***De-Qi Wen,*** Michigan State University*; J. Krek,* KLA Corporation*; J. Gudmundsson,* University of Iceland*; E. Kawamura, M. Lieberman,* University of California at Berkeley*; P. Zhang, J. Verboncoeur,* Michigan State University

Spectroscopic Ellipsometry Technical Group
Room Oregon Ballroom 203-204 - Session EL-TuP
Spectroscopic Ellipsometry Poster Session
6:30 – 8:30 pm

EL-TuP-1 Dielectric Function of Tantalum Nitride Formed by Atomic Layer Deposition on 300 mm Wafers, ***Aaron Lopez Gonzalez,*** *Y. Hettige, J. Love, S. Zollner,* New Mexico State University*; E. Bhatia, T. Vo, S. Papa Rao,* NY CREATES

EL-TuP-2 A Generalized Maximum-Entropy Approach for Eliminating Apodization and Associated Errors in Noise Reduction, ***L. V. Le,*** Institute of Materials Science, Vietnam Academy of Science and Technology, Viet Nam*; Y. Kim,* Department of Physics, Kyung Hee University, Republic of Korea*; D. Aspnes,* North Carolina State University

EL-TuP-3 Intelligent Linear Filters for Noise Reduction in Spectroscopy, ***Young Dong Kim,*** Kyung Hee University, Republic of Korea*; L. Le,* Vietnam Academy of Science and Technology, Viet Nam*; D. Aspnes,* North Carolina State University

EL-TuP-4 Temperature Dependence of the Fine Structure of the NiO Critical Points, ***Yoshitha Hettige,*** *C. Armenta, J. Love, S. Zollner,* New Mexico State University*; M. Veis,* Charles University, Prague, Czech Republic

EL-TuP-5 Characterization of Hybrid Organic-Inorganic Perovskite Semiconductors and Solar Cells, ***Bailey Frye,*** *E. Miller, N. Podraza,* University of Toledo

EL-TuP-6 Many-Body Effects in the Mid-Infrared Dielectric Function of InSb from 80 to 800 K, *M. Rivero Arias, C. Armenta,* New Mexico State University*; C. Emminger,* Leipzig University, Germany*; C. Zamarripa,* New Mexico State University*; N. Samarasingha,* Nova Measuring Instruments*; J. Love, S. Yadav,* ***Stefan Zollner,*** New Mexico State University

EL-TuP-8 Film-Side Versus Through-the-Glass Ellipsometry Measurements of Wide Band Gap Perovskites, ***Emily Amonette,*** *K. Dolia, B. Frye, Y. Yan, Z. Song, N. Podraza,* University of Toledo

EL-TuP-9 Determination of the Optical Constants and Thickness of Ultrathin Thermally Evaporated Iron Catalyst Films Using Spectroscopic Ellipsometry, ***Nicholas Allen,*** *M. Linford, R. Vanfleet, R. Davis,* Brigham Young University

EL-TuP-10 Elevated Temperature Model Dielectric Function of InAs Determined by Spectroscopic Ellipsometry, ***Preston Sorensen,*** *U. Kilic, R. Korlacki, M. Schubert,* University of Nebraska - Lincoln

EL-TuP-11 Numerical Ellipsometry: Artificial Intelligence for Real-Time, *in Situ* Absorbing Film Process Control, ***Frank Urban,*** Florida International University*; D. Barton,* Florida International University Retired

EL-TuP-12 Massive Data Collection With A Pupil Plane Imaging Polarized White Light Interferometer, ***Alexander Boosalis,*** *Y. Wang,* Onto Innovation*; P. Vagos,* Onto Innovation, France*; Y. Liu,* Onto Innovation, Singapore*; G. Antonelli, N. Smith,* Onto Innovation

EL-TuP-13 Fast Spectroscopic Mueller Matrix Ellipsometry in the THz Range, ***Alexander Ruder,*** University of Nebraska - Lincoln*; S. Richter,* Lund University, Sweden*; P. Kuhne,* Linkoping University, Sweden*; V. Rindert,* Lund University, Sweden*; V. Stanishev,* Linkoping University, Sweden*; R. Korlacki, J. Olander,* University of Nebraska - Lincoln*; V. Darakchieva,* Lund University, Sweden*; M. Schubert,* University of Nebraska - Lincoln

Theory for Surface Processes and Spectroscopies Focus Topic
Room Oregon Ballroom 203-204 - Session TH-TuP
Theory for Surface Processes and Spectroscopies Poster Session
6:30 – 8:30 pm

TH-TuP-1 Evaluation of Covalent Bonding In Ionic Compounds, ***Paul S. Bagus,*** University of North Texas*; C. Nelin,* Consultant*; T. Vitova,* Karlsruhe Institute of Technology, Institue for Nuclear Waste Disposal, Germany*; B. Schacherl,* Karlsruhe Institute of Technology,KIT, INE, Germany

Vacuum Technology Division
Room Oregon Ballroom 203-204 - Session VT-TuP
Vacuum Technology Poster Session
6:30 – 8:30 pm

VT-TuP-1 Measurements of NEG Pumping Performance at Cryogenic Temperatures, ***Sam Lodge***, *P. Smith, A. Chew, N. Burch,* Edwards Ltd, UK*; D. Clement,* Gamma Vacuum*; P. Jones, P. Lamb, E. Lucchetta, P. Milner,* Edwards Ltd, UK*; T. Sinha,* Gamma Vacuum

VT-TuP-3 Boosting Pumping Speed Simulations of Sticky Vacuum Components, ***Stefan Kiesel***, *A. Trützschler, K. Bergner,* VACOM Vakuum Komponenten & Messtechnik GmbH, Germany

VT-TuP-4 Present Status of the SuperKEKB Accelerator Vacuum System, ***Yusuke Suetsugu***, *K. Shibata, T. Ishibashi, M. Shirai, S. Terui,* High Energy Accelerator Research Organization (KEK), Japan*; M. Yao,* High Energy Accelerator Research Organization (KEK), Taiwan*; K. Kanazawa, H. Hisamatsu,* High Energy Accelerator Research Organization (KEK), Japan

VT-TuP-6 Complex Bend Vacuum Chamber for NSLSII-U, ***Robert Todd,*** *M. Seegitz, P. Palecek,* Brookhaven National Laboratory*; M. Ferreira,* European Spallation Source, Sweden*; D. Hidas, A. Khan, V. Smaluk, T. Shaftan, S. Sharma,* Brookhaven National Laboratory

VT-TuP-7 Investigation of Pump Down Characteristics for *AISI1020* Carbon Steel and *SS316* Stainless Steel Exposed to Air at Varied Temperatures, ***Aiman Al-Allaq***, Old Dominion University*; M. Mamun, M. Poelker, M. Stutzman,* Thomas Jefferson National Accelerator Facility*; A. Elmustafa,* Old Dominion University

	Room A105	
8:00am 8:20am	**INVITED: TF1+PS-WeM-1** Modified Reactive Sputter Deposition of Titanium Nitride Thin Films via HIPIMS with Kick-Pulse, *A. Miceli, D. Santavicca,* ***Stephen Stagon,*** University of North Florida	**Thin Film Division** **Session TF1+PS-WeM** **Emerging and Advanced Materials and Processes** **Moderators:** **Subhadra Gupta**, University of Alabama, **April Jewell**, Jet Propulsion Laboratory
8:40am 9:00am	**INVITED: TF1+PS-WeM-3** Time-Resolved ALD Reaction Heat, ***Ashley Bielinski****, E. Kamphaus, L. Cheng, A. Martinson,* Argonne National Laboratory	
9:20am	**TF1+PS-WeM-5** Reducing Hysteresis in Atomic Layer Deposited VO_2 Thin Films, *V. Wheeler,* ***Peter Litwin****, S. Bennett, M. Currie,* US Naval Research Laboratory	
9:40am	**TF1+PS-WeM-6** Magnetron Sputtering Deposition and Stabilization of the Bismuth Sesquioxide (Bi_2O_3) High-Temperature Equilibrium Phase, ***Sandra E. Rodil****, A. Martinez, O. Depablos-Rivera,* Universidad Nacional Autónoma de Mexico	
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	
11:00am 11:20am	**INVITED: TF2+AP+SE+SS-WeM-10** Stabilizing Polar Polymorphs of Scandium Ferrite for Photovoltaics, *M. Frye,* ***Lauren Garten****,* Georgia Institute of Technology	**Thin Film Division** **Session TF2+AP+SE+SS-WeM** **Controlling Microstructure and Accessing Non-Equilibrium Phases in Thin Films** **Moderators:** **Robert Grubbs**, IMEC Belgium, **Richard Vanfleet**, Brigham Young University
11:40am	**TF2+AP+SE+SS-WeM-12** The Role of Thermal Vibrational Disorder in the Structural Phase Transition of VO_2 Probed by Raman Spectroscopy, ***Aminat Oyiza Suleiman****,* Institut National de la Recherche Scientifique, Canada*; S. Mansouri,* Institut National del a Recherche Scientifique, Canada*; N. Émond,* Massachusetts Institute of Technology, Canada*; T. Bégin, J. Margot,* Université de Montréal, Canada*; C. Mohamed,* National de la Recherche Scientifique, Canada	
12:00pm	**TF2+AP+SE+SS-WeM-13** Interplay of Lattice Distortion and Electronic Structure in Metastable Brookite TiO_2, ***Pritha Biswas****,* Oregon State University*; M. Choi, K. Koirala, M. Bowden, L. Strange,* Pacific Northwest National Laboratory*; H. Zhou,* Argonne National Laboratory*; J. Tate,* Oregon State University*; Y. Du, T. Kaspar, D. Li, P. Sushko,* Pacific Northwest National Laboratory	

Wednesday Morning, November 8, 2023

	Plasma Science and Technology Division Room A106 - Session PS-WeM Exploring Boundaries of Plasma Science (ALL-INVITED) **Moderators:** **Michael Gordon**, University of California at Santa Barbara, **Mingmei Wang**, Lam Research Corporation	Atomic Scale Processing Mini-Symposium Room A107-109 - Session AP+PS+TF-WeM Plasma Deposition and ALD Processes for Coatings and Thin Films **Moderators: Silvia Armini**, IMEC, Belgium, **Jessica Kachian**, Intel Corporation
8:00am	**INVITED: PS-WeM-1** Electron Beam Driven Plasmas: Development and Use for Ultra Low T_E Processing, ***Scott Walton***, Naval Research Laboratory	**INVITED: AP+PS+TF-WeM-1** Recent Progress in Analysis of the Conformality of Films by Atomic Layer Deposition, ***Riikka Puurunen***, Aalto University, Finland
8:20am		
8:40am	**INVITED: PS-WeM-3** My Path to AVS Fellow: Non-Volatile Memory Processing from Fundamental Understanding to the Promise of Atomic Layer Etching and Sustainable Etch Precursors, ***Eric Joseph***, IBM T. J. Watson Research Center	**AP+PS+TF-WeM-3** ALD Temperature Cycling for Uniform Infilling of Macroscopic Nanoporous Solids, ***Benjamin Greenberg***, *K. Anderson, A. Jacobs, J. Wollmershauser, B. Feigelson,* U.S. Naval Research Laboratory
9:00am		**AP+PS+TF-WeM-4** Plasmonic Plasma Process for Room Temperature Growth of High-quality Ultra-thin Dielectric Films, ***Takeshi Kitajima***, *M. Miyake,* National Defense Academy, Japan; *K. Watanabe,* National defense Academy, Japan; *T. Nakano,* national defense Academy, Japan
9:20am	**INVITED: PS-WeM-5** VHF Plasma Enhanced Atomic Layer Deposition of SiN_x using Aminosilane Precursors, *Y. Ji, S. Choi, J. Kang*, Sungkyunkwan University, Republic of Korea; *A. Ellingboe,* Dublin City University, Ireland; *C. Lee,* Merck Korea; *H. Chandra,* EMD Electronics; ***Geun Young Yeom***, Sungkyunkwan University, Republic of Korea	**AP+PS+TF-WeM-5** Time Resolved Energy Diagnostics of HiPIMS Discharges With Positive Cathode Reversal, ***Zachary Jeckell***, *T. Choi, M. Hossain, D. Kepelyan, N. Vishnoi,* University of Illinois at Urbana Champaign; *B. Jurczyk,* Starfire Industries; *D. Ruzic,* University of Illinois at Urbana Champaign
9:40am		**AP+PS+TF-WeM-6** Electron-Enhanced ALD of TiO_2, TiN, and TiCN at Low Temperature Using TDMAT Together with O_2 and NH_3 Reactive Background Gas, *Z. Sobell*, *A. Cavanagh*, ***Steven George***, University of Colorado Boulder
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am		
10:40am		
11:00am	**INVITED: PS-WeM-10** PSTD 2022 Young Investigator Awardee Talk: Plasma Processing Challenges for Emerging Memory Technology, ***Luxherta Buzi***[1], IBM Research, T. J. Watson Research Center; *N. Marchack, S. Engelmann, R. Bruce,* IBM Research Division, T.J. Watson Research Center	**AP+PS+TF-WeM-10** A Non-Violent Approach to Remove SiN:H Surface Impurities (HCl) at Room Temperature, ***Tsung-Hsuan Yang***, *T. Wang, G. Hwang,* University of Texas at Austin; *P. Ventzek, J. Zhao,* Tokyo Electron America, Inc.
11:20am		**AP+PS+TF-WeM-11** Influence of Plasma Species on the Growth Kinetics and Properties of Epitaxial InN Films Grown by Plasma-Enhanced Atomic Layer Deposition, ***Jeffrey Woodward***, *D. Boris,* U.S. Naval Research Laboratory; *M. Johnson,* Huntington Ingalls Industries; *S. Walton,* U.S. Naval Research Laboratory; *S. Rosenberg,* Lockheed Martin Space Advanced Technology Center; *J. Hite, M. Mastro,* U.S. Naval Research Laboratory
11:40am	**INVITED: PS-WeM-12** How Can Machine Learning Help Process Development?, ***Satoshi Hamaguchi***, Osaka University, Japan	**AP+PS+TF-WeM-12** One Step Synthesis of Patterned Coatings Using Immobilized Filaments in an Atmospheric Pressure Dielectric Barrier Discharge. Effect of Gap and Power Pulsing., *M. Brabant,* ***Annaëlle Demaude***, *D. Petitjean,* Université Libre de Bruxelles, Belgium; *K. Baert, T. Hauffman,* Vrije Universiteit Brussel, Belgium; *M. Gordon,* University of California Santa Barbara; *F. Reniers,* Université Libre de Bruxelles, Belgium
12:00pm		**AP+PS+TF-WeM-13** Effect of Bias Pulsed Plasma Enhanced Atomic Layer Deposition for Void-Free SiO_2 Gap-Fill of High Aspect Ratio Trench Structures, ***Ye Ji Shin***, *H. Kim, G. Yeom,* Sungkyunkwan University, Korea

[1] **PSTD 2022 Young Investigator Awardee**

Wednesday Morning, November 8, 2023

	Quantum Science and Technology Mini-Symposium Room B110-112 - Session QS+VT-WeM Vacuum Technology for Quantum Applications **Moderators:** **Ekta Bhatia**, NY CREATES, **Freek Molkenboer**, TNO Science and Industry, the Netherlands	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Room B113 - Session HC+SS-WeM Origins of Single Atom Catalysis **Moderators: Rachael Farber**, University of Kansas, **Gareth Parkinson**, TU Wien, Austria
8:00am		**HC+SS-WeM-1** Role of Pyridinic Nitrogen in the Mechanism of the Oxygen Reduction Reaction on Carbon Electrocatalysts, ***Kotaro Takeyasu***, University of Tsukuba, Japan; *S. Singh,* Shiv Nadar University, India; *K. Homma, K. Hayashida,* University of Tsukuba, Japan; *S. Ito, T. Morinaga,* National Institute of Technology, Tsuruoka College, Japan; *Y. Endo, M. Furukawa,* University of Tsukuba, Japan; *T. Mori,* National Institute for Materials Sciences (NIMS), Japan; *H. Ogasawara,* SLAC National Laboratory; *J. Nakamura,* International Institute for Carbon-Neutral Energy Research, Kyushu University, Japan
8:20am		**HC+SS-WeM-2** Atomic-Level Studies of Mono-Carbonly and Gem-Dicarbonyl Formation on Rh-Decorated Fe_3O_4(001), ***Panukorn Sombut***, *C. Wang, L. Puntscher, M. Meier, J. Pavelec, Z. Jakub, M. Schmid, U. Diebold,* TU Wien, Austria; *C. Franchini,* University of Vienna, Austria; *G. Parkinson,* TU Wien, Austria
8:40am		**INVITED: HC+SS-WeM-3** A Few Questions About Single Atom Catalysts: When Theory Helps, ***Gianfranco Pacchioni***, University of Milano-Bicocca, Italy
9:00am		
9:20am	**INVITED: QS+VT-WeM-5** Stand-Alone Vacuum Cells for Compact Ultracold Quantum Technologies, ***Oliver Burrow***, *A. Arnold, P. Griffin, E. Riis,* University of Strathclyde, UK	**HC+SS-WeM-5** A Multi-Technique Study Of Ethylene and H2 Adsorption on Rh_1/Fe_3O_4, ***Gareth Parkinson***, *C. Wang, P. Sombut, L. Puntscher,* TU Wien, Austria
9:40am		**HC+SS-WeM-6** Remote Activation of H–H bonds by Platinum in Single-Atom Alloy Catalysts, ***Francisco Zaera***, University of California Riverside
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am		
10:40am		
11:00am	**INVITED: QS+VT-WeM-10** Hybrid Quantum-HPC Computing Clouds in Europe, ***Richard Versluis***, TNO Science and Industry, the Netherlands	**INVITED: HC+SS-WeM-10** Electrifying Industrial Chemistry at the Molecular Level: Controlling the Electrocatalytic Transformation of Alcohols and Alkanes to Valuable Products, ***Marcel Schreier***, University of Wisconsin-Madison
11:20am		
11:40am	**QS+VT-WeM-12** Design Considerations of an XHV System for an Ion Trap Quantum Computer, ***Paul Smith***, *N. Burch, A. Chew, P. Jones, P. Lamb, E. Lucchetta, S. Lodge, P. Milner,* Edwards Ltd, UK; *D. Clement, T. Sinha,* Gamma Vacuum; *A. Abolghasemi, L. Earl, J. Randall,* Universal Quantum, UK	**HC+SS-WeM-12** Probing Elementary Steps and Catalyst Structure Evolution: Insights into Formic Acid Conversion on Rh/Fe_3O_4(001) Model Catalysts, ***Zdenek Dohnalek***, Pacific Northwest National Laboratory
12:00pm	**QS+VT-WeM-13** Chances and Challenges: Aluminum Vacuum Components for Quantum Technology, ***Stefan Kiesel***, *A. Trützschler, J. Hertel, K. Bergner,* VACOM Vakuum Komponenten & Messtechnik GmbH, Germany	**HC+SS-WeM-13** Hydrogen and Hydrocarbon Reactions on Single-Atom RhCu(100), ***Laurin Joseph***, *M. Powers, J. Rosenstein, A. Utz,* Tufts University

Wednesday Morning, November 8, 2023

	Electronic Materials and Photonics Division Room B116 - Session EM-WeM Advancements in Microelectronics and Nanotechnology by Early and Mid Career Professionals **Moderators:** **Erica Douglas**, Sandia National Laboratories, **Stephen McDonnell**, University of Virginia	Applied Surface Science Division Room B117-119 - Session AS+2D+CA+EL+EM+MS+NS+SE+SS+TF-WeM Multi-Modal & Multi-Dimensional Analysis **Moderators: Gustavo Trindade**, National Physical Lab, UK, **Paul Mack**, Thermo Fisher Scientific, UK, **Tim Nunney**, Thermo Fisher Scientific, UK
8:00am	**INVITED: EM-WeM-1** Assessment and Benchmarking of Nonvolatile Memory Devices for Analog In Memory Computing, ***Matthew Marinella***, Arizona State University; *C. Bennett, P. Xiao, W. Wahby, S. Agarwal,* Sandia National Laboratories	**INVITED: AS+2D+CA+EL+EM+MS+NS+SE+SS+TF-WeM-1** Growth and Characterization of Large-Area 2D Materials, ***Glenn Jernigan***, US Naval Research Laboratory
8:20am		
8:40am	**INVITED: EM-WeM-3** AVS Peter Mark Memorial Award Talk: Heterostructures for Low-Power Logic and Memory Devices, ***Deep Jariwala***[1], University of Pennsylvania	**AS+2D+CA+EL+EM+MS+NS+SE+SS+TF-WeM-3** Using a Correlative Approach with XPS & SEM to Measure Functionalized Fabrics for Antimicrobial Applications, ***Tim Nunney***, *H. Tseng,* Thermo Fisher Scientific, UK; *D. Marković, M. Radetić,* University of Belgrade, Serbia
9:00am		**AS+2D+CA+EL+EM+MS+NS+SE+SS+TF-WeM-4** Multi-Modal Analysis in Photoelectron Spectroscopy: From High-Resolution Imaging to Operando Experiments, ***Olivier Renault***, CEA-Leti, France; *A. Benayad,* CEA, France; *N. Gauthier,* CEA-Leti, France; *R. Charvier,* ST Microelectronics, France; *E. Martinez,* CEA-Leti, France
9:20am	**EM-WeM-5** BeyondFingerprinting – Materials Discovery via High-Throughput, Low Cost, AI-Guided Materials Science, *B. Boyce, R. Dingreville,* ***Elliott Fowler***, *N. Trask, D. Adams, J. Coleman, K. Johnson,* Sandia National Laboratories	**AS+2D+CA+EL+EM+MS+NS+SE+SS+TF-WeM-5** Multi-Modal Analyses of Ultrasonic-Spray-Deposited Ultrathin Organic Bathocuproine Films, *J. Chen,* ***Juliet Risner-Jamtgaard***, *T. Colburn,* ***A. Vailionis, A. Barnum, M. Golding,*** Stanford University; *K. Artyushkova,* Physical Electronics; *R. Dauskardt,* Stanford University
9:40am	**EM-WeM-6** Tunability of the Thermal and Photophysical Properties of Blue-Emitting Fluoranthene Chromophores, ***Christopher Brewer***, *J. Wheeler, A. Pyrch, F. Castellano,* North Carolina State University	**AS+2D+CA+EL+EM+MS+NS+SE+SS+TF-WeM-6** Combinatorial Synthesis and High-Throughput Characterization of Pt-Au Thin Films Fabricated by Confocal Magnetron Sputter Deposition, ***David Adams***, *R. Kothari, M. Kalaswad, C. Sobczak, J. Custer, S. Addamane, M. Jain, E. Fowler, F. DelRio, M. Rodriguez, R. Dingreville, B. Boyce,* Sandia National Laboratories
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am		
10:40am		
11:00am	**EM-WeM-10** Hf-Doping of Polycrystalline Gallium Oxide Thin-films, ***Seth King***, University of Wisconsin - La Crosse	**INVITED: AS+2D+CA+EL+EM+MS+NS+SE+SS+TF-WeM-10** Optical and X-Ray Characterization and Metrology of Si/Si(1-X)Ge(X) Nanoscale Superlattice Film Stacks and Structures, ***Alain Diebold***, SUNY Polytechnic Institute
11:20am	**EM-WeM-11** Composition of Chemically Treated (111) Surfaces of $Cd_{0.9}Zn_{0.1}Te$ by X-Ray Photoelectron Spectroscopy, *H. Yuan, T. Nguyen,* ***Thomas Tiedje,*** University of Victoria, Canada; *B. Aitchison, Y. Song, M. Jackson,* Redlen Technologies, Canada; *J. Chen, H. Wang,* University of Saskatchewan, Canada	
11:40am	**INVITED: EM-WeM-12** High Throughput Design of 2D Electronic Materials and Heterostructures, ***Nicholas Glavin***, Air Force Research Laboratory, Materials and Manufacturing Directorate, USA	**AS+2D+CA+EL+EM+MS+NS+SE+SS+TF-WeM-12** Non-Destructive Depth Differentiated Analysis of Surfaces Using Ion Scattering Spectroscopy (ISS), XPS and HAXPES, ***Paul Mack***, Thermo Fisher Scientific, UK
12:00pm		**AS+2D+CA+EL+EM+MS+NS+SE+SS+TF-WeM-13** Towards Measurement of Molecular Shapes Using OrbiSIMS, ***Gustavo F. Trindade***, *J. Vorng, A. Eyres, I. Gilmore,* National Physical Laboratory, UK

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

Wednesday Morning, November 8, 2023

	Room C120-122	
8:00am	**INVITED: MN1-WeM-1** Additive Manufacturing for 3D Metal Microsystems, ***Robert Roberts,*** The University of Texas at El Paso	**MEMS and NEMS Technical Group** **Session MN1-WeM** **MEMS Processes, Materials, and Fabrication** **Moderators:** **Benjamín Alemán**, University of Oregon, **Jaesung Lee**, University of Central Florida
8:20am		
8:40am	**INVITED: MN1-WeM-3** Epitaxial Materials and Devices for High Performance RF Acoustics, ***Vikrant Gokhale,*** *B. Downey, D. Katzer, M. Hardy, J. Roussos, S. Mack, J. Champlain, A. Lang,* US Naval Research Laboratory*; P. Dhagat, A. Jander,* Oregon State University*; E. Jin,* US naval Research Laboratory*; N. Nepal, V. Wheeler, D. Meyer,* US Naval Research Laboratory	
9:00am		
9:20am	**MN1-WeM-5** Slanted Wire Diffraction Gratings Fabricated by Two-Photon Polymerization for Micro-Mechanical Applications, ***V. Paige Stinson,*** *U. Subash, M. Poutous, T. Hofmann,* University of North Carolina at Charlotte	
9:40am	**MN1-WeM-6** Very High Frequency Stability of Single-Crystal Silicon Thermal-Piezoresistive Resonators with Phase-Locked Loop, *C. Watkins,* University of Florida, Gainesville*;* ***Jaesung Lee,*** University of Texas at El Paso*; J. McCandless,* Cornell University*; H. Hall,* Air Force Research Laboratory*; P. Feng,* University of Florida, Gainesville	
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	
10:20am		
10:40am		
11:00am	**INVITED: MN2-WeM-10** Spatial Mapping and Analysis of Graphene Nanomechanical Resonator Networks, ***Benjamín Alemán,*** University of Oregon	**MEMS and NEMS Technical Group** **Session MN2-WeM** **Nanomechanics** **Moderators:** **Vikrant Gokhale**, US Naval Research Laboratory, **Robert Roberts**, The University of Texas at El Paso
11:20am		
11:40am	**MN2-WeM-12** Nonlinear Stiffness and Nonlinear Damping in Atomically Thin MoS_2 Nanomechanical Resonators, ***Tahmid Kaisar,*** University of Florida, Gainesville*; J. Lee,* University of Texas at El Paso*; D. Li, S. W. Shaw,* Florida Institute of Technology*; P. Feng,* University of Florida, Gainesville	
12:00pm		

Wednesday Morning, November 8, 2023

	2D Materials Technical Group **Room C123 - Session 2D-WeM** **2D-Materials: Defects, Dopants, and Modifications** **Moderators:** **Jin Myung Kim,** University of California, Irvine **Stuart Parkin**, MPI Halle, Germany	**Actinides and Rare Earths Focus Topic** **Room C124 - Session AC+AS+TH-WeM** **Nuclear Safeguards, Forensics, Environmental Science, and Stewardship** **Moderators: Paul Roussel**, AWE, UK, **David Shuh**, Lawrence Berkeley National Laboratory, **Evgeniya Tereshina-Chitrova**, Charles University, Prague, Czech Republic
8:00am	**INVITED: 2D-WeM-1** Developing Quantum Photon Sources from 2D Semiconductor Materials, ***Xuedan Ma,*** Argonne National Laboratory	**INVITED: AC+AS+TH-WeM-1** Simulation Tools for Improvement of the Fission Track Analysis Method for Nuclear Forensics, ***Itzhak Halevy,*** Nuclear Engineering, Ben Gurion Uni. Be'er Sheva, Israel
8:20am		
8:40am	**2D-WeM-3** Bandgap Modulation of Graphene by Boron Nitride Doping, ***Sergi Campos Jara,*** Leiden University, The Netherlands; *L. Caputo,* Université Catholiqué de Louvain, Belgium; *T. Roorda, T. Benschop, A. Mozes,* Leiden University, The Netherlands; *V. Calvi, R. van Rijn,* Delft University of Technology, Netherlands; *M. P. Allan, I. M.N. Groot,* Leiden University, The Netherlands	**INVITED: AC+AS+TH-WeM-3** Characterizing Actinides in Subsurface Sediments for Contaminant Remediation, ***Carolyn Pearce,*** *H. Emerson,* Pacific Northwest National Laboratory; *C. Delegard,* TradeWind Services LLC
9:00am	**2D-WeM-4** Wafer-Scale Photoluminescence Enhancement for MoS_2 Monolayers Through Simple Wet-Chemical Defect Passivation in Acidic Hydrogen Peroxide Solution, ***Dennis H. van Dorp,*** IMEC Belgium; *L. van der Krabben,* Radboud University Nijmegen, Netherlands; *A. Brady-Boyd,* Aberystwyth University, UK; *C. Gort,* TU Darmstadt, Germany; *S. Arnauts, T. Nuytten, H. Medina Silva, E. Altamirano Sanchez,* IMEC Belgium; *J. Hofmann,* TU Darmstadt, Germany; *S. Brems,* IMEC Belgium	
9:20am	**2D-WeM-5** Metal-to-Semiconductor Transition Observed in the Surface Density of States of Ti-Te Layered Monoclinic Crystals via Forced Atmospheric Exposure, ***Bishal Pokhrel,*** *J. Quarnstrom, S. Shrestha, H. Helfrich, E. Echeverria, D. McIlroy, M. Borunda, A. Yost,* Oklahoma State University	**INVITED: AC+AS+TH-WeM-5** Changes in Oxidation Mechanism with Relative Humidity: Application to Uranium Dioxide Powders, ***Scott Donald,*** *L. Davisson,* Lawrence Livermore National Laboratory
9:40am	**2D-WeM-6** Correlated KPFM and TERS Imaging to Elucidate Defect-induced Inhomogeneities in Oxygen Plasma Treated 2D MoS_2 Nanosheets, ***Sanju Gupta,*** Penn State University	
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am		
10:40am		
11:00am	**INVITED: 2D-WeM-10** Imaging Carrier Motion in Graphene Using Scanning Tunneling Potentiometry, *V. Brar,* ***Zachary Krebs,*** University of Wisconsin - Madison	**AC+AS+TH-WeM-10** Spatially Resolved Morphological and Chemical Analysis of Nuclear Materials, ***Brandon Chung,*** *A. Baker, S. Donald, T. Li, R. Lim, U. Mehta, D. Rosas, S. Sen-Britain, D. Servando-Williams, N. Cicchetti,* Lawrence Livermore National Laboratory; *A. Ditter, D. Shuh,* Lawrence Berkeley National Laboratory (LBNL)
11:20am		**AC+AS+TH-WeM-11** Soft and Tender Spectromicroscopy for Nuclear Forensics at the Advanced Light Source, ***David Shuh,*** *A. Ditter,* Lawrence Berkeley National Laboratory (LBNL); *N. Cicchetti,* University of Nevada Las Vegas; *R. Lim, S. Sen-Britain, D. Rosas, D. Servando-Williams, A. Baker, S. Donald, B. Chung,* Lawrence Livermore National Laboratory
11:40am	**2D-WeM-12** Interfacial Design of 2D Materials for Energy-Efficient Nanoelectronics, ***Huamin Li,*** University at Buffalo	
12:00pm	**2D-WeM-13** Substrate Van Der Waals Force Effect on the Stability of Violet Phosphorous, ***Sarabpreet Singh,*** University of Georgia; *M. GhafariAsl,* University of georgia; *H. Ko,* Cornell University; *S. Gamage,* University of Georgia; *R. Distasio Jr.,* Cornell University; *M. Snure,* Air Force Research Laboratory; *Y. Abate,* University of Georgia	

	Room D136	
8:00am	**SS+2D+AS+HC-WeM-1** Heterogeneous Photocatalysis: Alcohols on Bare and Metal-loaded TiO_2(110) and Fe_2O_3(012), ***Moritz Eder,*** TU Wien, Austria*; P. Petzoldt, M. Tschurl,* Technical University of Munich, Germany*; J. Pavelec, M. Schmid, U. Diebold,* TU Wien, Austria*; U. Heiz,* Technical University of Munich, Germany*; G. Parkinson,* TU Wien, Austria	**Surface Science Division** **Session SS+2D+AS+HC-WeM** **Surface Science of 2D Materials** **Moderators:** **Irene Groot,** Leiden University, The Netherlands **Bo-Hong Liu**, National Synchrotron Radiation Research Center, Taiwan
8:20am	**SS+2D+AS+HC-WeM-2** Factors Governing the Reactivities of Transition Metal Carbides at Vapor/Solid and Liquid/Solid Interfaces*, S Alhowity, A. Ganesan, M. Gharaee, O. Omolere,* ***Qasim Adesope****, K. Balogun, P. Chukwunenye, F. D'Souza, T. Cundari, J. Kelber,* University of North Texas	
8:40am	**INVITED: SS+2D+AS+HC-WeM-3** Tunable Interfacial Electrochemistry at Moiré Material Interfaces*,* ***D. Kwabena Bediako****,* University of California at Berkeley	
9:00am		
9:20am	**SS+2D+AS+HC-WeM-5** Growth of Ultrathin Silica Films on Pt(111) and Rh(111): Influence of Intermixing with the Support*,* ***Matthias Krinninger,*** Technical University of Munich, Germany*; F. Kraushofer,* Technical University of Munich, Austria*; N. Refvik,* University of Alberta, Canada*; F. Esch,* Technical University of Munich, Germany*; B. Lechner,* Technical University of Munich, Austria	
9:40am	**SS+2D+AS+HC-WeM-6** CO_2 Adsorption on Graphitic-Like Bilayer ZnO Film Studied by NAP-XPS*,* ***Bo-Hong Liu****, S. Cheng,* National Synchrotron Radiation Research Center, Taiwan	
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	
10:20am		
10:40am		
11:00am	**SS+2D+AS+HC-WeM-10** Investigation of Nitride Spintronic and Kagome-Structured Intermetallic Topological Materials Using Molecular Beam Epitaxy and Scanning Tunneling Microscopy*,* ***Arthur R. Smith,*** Ohio University Physics and Astronomy Department	
11:20am	**SS+2D+AS+HC-WeM-11** Molecular Beam Epitaxial Growth and Investigations of FeSn on $LaAlO_3$*,* ***Tyler Erickson****, S. Upadhyay, H. Hall, D. Ingram, S. Kaya, A. Smith,* Ohio University	
11:40am	**SS+2D+AS+HC-WeM-12** AVS Graduate Research Awardee Talk: Molecular Beam Epitaxial Growth, Structural Properties, and Surface Studies of *a*-Plane-Oriented Mn_3Sn on *C*-Plane Al_2O_3*,* ***Sneha Upadhyay***[1]*, T. Erickson,* Ohio University*; J. Hernandez,* Universidad Autonoma de Puebla, Mexico*; H. Hall, K. Sun,* Ohio University*; G. Cocoletzi,* Universidad Autonoma de Puebla, Mexico*; N. Takeuchi,* Universidad Nacional Autonoma de Mexico, Mexico*; A. Smith,* Ohio University	
12:00pm		

[1] **AVS Graduate Research Awardee**

Wednesday Afternoon, November 8, 2023

	2D Materials Technical Group **Room C123 - Session 2D-WeA** **2D-Materials: Electronic/Magnetic/Optical Properties** **Moderators:** **Zachary Krebs**, University of Wisconsin – Madison, **Xuedan Ma**, Argonne National Lab	**Actinides and Rare Earths Focus Topic** **Room C124 - Session AC+AS+MI+TH-WeA** **Emerging Topics and Methods in Actinide/Rare Earth Sciences** **Moderators: Edgar Buck**, PNNL, **Krzysztof Gofryk**, Idaho National Laboratory, **Liane Moreau**, Washington State University
2:20pm	**INVITED: 2D-WeA-1** Josephson Diode Effect via Proximity Induced Superconductivity in 2D Materials, ***Stuart Parkin,*** Max Planck Institute for Microstructure Physics, Germany	**INVITED: AC+AS+MI+TH-WeA-1** Chemical Imaging and Applications Using High Energy Resolution Fluorescence Detection for the Actinides, ***Samuel Webb,*** *N. Edwards, V. Noel,* SLAC National Accelerator Laboratory
2:40pm		
3:00pm	**2D-WeA-3** Behavior of Excited States in 2H and 3R Bilayer WSe_2, ***Kathleen McCreary,*** *M. Phillips, H. Chuang, D. Wickramaratne, M. Rosenberger, C. Hellberg, B. Jonker,* Naval Research Laboratory	**INVITED: AC+AS+MI+TH-WeA-3** High Energy X-Ray Characterization of Microstructure at Macroscopic Depths in Pu Alloys, ***Donald Brown,*** Los Alamos National Laboratory*; T. Carver, R. Pokharel,* los alamos National Laboratory*; A. Smith,* los al*; P. Kenesei, J. Park,* Argonne National Laboratory
3:20pm	**2D-WeA-4** 2D SnO/MoO_3 van der Waals Heterojunction with Tunable Electronic Behaviors for Multi-functional Applications: DFT Calculations, ***Junyu Lang,*** ShanghaiTech University, China*; Y. Ma,* Shanghai Jiao Tong University, China*; Y. Yang,* ShanghaiTech University, China	
3:40pm	**BREAK**	**BREAK**
4:00pm		
4:20pm	**INVITED: 2D-WeA-7** 2D Materials Explored Using nanoARPES, *A. Bostwick, C. Jozwiak,* ***Eli Rotenberg,*** Lawrence Berkeley Lab, USA	**AC+AS+MI+TH-WeA-7** Native Oxide Growth of Pu—Ga Alloys, ***Kasey Hanson,*** *S. Hickam, D. Olive, A. Pugmire,* Los Alamos National Laboratory
4:40pm		**AC+AS+MI+TH-WeA-8** Molecular Beam Epitaxy of Ternary Nitrides: From Transition Metals to Actinoids, ***Kevin Vallejo,*** Idaho National Laboratory*; S. Gutierrez Ojeda,* Universidad Nacional Autonoma de Mexico*; G. Hernandez Cocoletzi,* Benemerita Universidad Autonoma de Puebla, Mexico*; S. Zhou, K. Gofryk, B. May,* Idaho National Laboratory
5:00pm	**2D-WeA-9** Probing Many-body Effects in 2D Materials using nanoARPES, ***Jyoti Katoch,*** Carnegie Mellon University, United States Minor Outlying Islands (the)	**AC+AS+MI+TH-WeA-9** Formation and Electronic Properties of Uranium Tellurides: A Thin Films Study, ***Evgenia Tereshina-Chitrova,*** *S. Alex,* Institute of Physics CAS, Prague, Czechia*; O. Koloskova, L. Horak,* Charles University, Prague, Czechia*; O. Romanyuk, Z. Soban,* Institute of Physics CAS, Prague, Czechia*; T. Gouder, F. Huber,* JRC Karlsruhe, Germany
5:20pm	**2D-WeA-10** Electrical Transport of High-Quality CVD-Grown $MoSe_2$ Nanoribbons, ***Y.-J. Leo Sun,*** Laboratory for Physical Sciences*; O. Ambrozaite, Z. Zhang, T. Kempa,* Johns Hopkins University*; T. Murphy,* University of Maryland, College Park*; A. Friedman, A. Hanbicki,* Laboratory for Physical Sciences	**AC+AS+MI+TH-WeA-10** Nanoscale Uranium and Thorium Oxides for Applications in Advanced Nuclear Fuels, ***Matthew Heaney,*** *L. Moreau, X. Guo,* Washington State University
5:40pm	**INVITED: 2D-WeA-11** Strain-Exciton Coupling in Two-dimensional Semiconductors, ***Jin Myung Kim,*** *S. Nam,* University of California, Irvine, USA	
6:00pm		

	Applied Surface Science Division **Room B117-119 - Session AS+CA+EL+EM+SE+SS+TF-WeA** **Quantitative Surface Analysis I** **Moderators: David Cant**, National Physical Laboratory, UK, **Peter Cumpson**, University of New South Wales, Australia, **Christopher Moffitt**, Kratos Analytical Inc, **Lev Gelb**, University of Texas at Dallas	**Biomaterial Interfaces Division** **Room Exhibit Halls A-B, Booth 1003 - Session BI-WeA** **Biointerphases: Emerging Young Scientists Focus Session (ALL INVITED)** **Moderators:** **Caitlin Howell**, University of Maine, **Tobias Weidner**, Aarhus University, Denmark
2:20pm	**AS+CA+EL+EM+SE+SS+TF-WeA-1** Status of Efforts to Upgrade the Quality of Surface Analysis Data in the Literature, ***Donald Baer,*** Pacific Northwest National Laboratory	**BI-WeA-1** Mycelium's Dynamic Functionality Across Material Systems: Insights and Research Challenges, ***Wenjing Sun,*** EPFL, Switzerland
2:40pm	**AS+CA+EL+EM+SE+SS+TF-WeA-2** The behavior of the Shirley background of the Ti 2*p* spectra across the Ti 1*s* edge, ***Dulce Maria Guzman Bucio,*** CINVESTAV-Unidad Queretaro, Mexico*; D. Cabrera German,* Universidad de Sonora, Mexico*; O. Cortazar Martinez, J. Raboño Borbolla,* CINVESTAV-Unidad Queretaro, Mexico*; M. Vazquez Lepe,* Universidad de Guadalajara, Mexico*; C. Weiland, J. Woicik,* National Institute of Standards and Technology*; A. Herrera Gomez,* CINVESTAV-Unidad Queretaro, Mexico	**BI-WeA-2** Breaking Protein-Membrane Chemistry to Understand the Molecular Origins of Adult-Onset Muscular Dystrophies, ***Andrew Carpenter****, J. Baio,* Oregon State University
3:00pm	**AS+CA+EL+EM+SE+SS+TF-WeA-3** Chemical Analysis of Multilayer System by Photoemission: The Binding Energy Reference Challenge, ***Thierry Conard****, A. Vanleenhove,* IMEC Belgium*; D. Desta, H. Boyen,* University of Hasselt, Belgium	**BI-WeA-3** Understanding Adsorption, Adhesion, and Cohesion Phenomena at the Solid/Liquid Interface, ***Pierluigi Bilotto,*** Centre for Electrochemistry and Surface Technology GmbH, Austria*; D. Barragan,* University of Calabria, Italy*; L. Mears, M. Valtiner,* TU Wien, Austria*; B. Zappone,* CNR/University of Calabria, Italy
3:20pm	**AS+CA+EL+EM+SE+SS+TF-WeA-4** Where Are We on the Road-Map to Artificially Intelligent Interpretation of X-ray Photoelectron Spectra?*, C. Moffitt,* Kratos Analytical Inc*; A. Roberts, J. Counsell, C. Blomfield,* ***Kevin Good****, K. Macak,* Kratos Analytical Limited, UK	**INVITED: BI-WeA-4** Plasma and Beyond: Expanding the Horizons of Naturally-derived Polymers as Biomaterials Through Surface Modification, ***Morgan Hawker,*** California State University Fresno
3:40pm	**BREAK**	
4:00pm		
4:20pm	**AS+CA+EL+EM+SE+SS+TF-WeA-7** Thin Film Analysis by XPS: Quantitative Analyses Using Physics-Based and Machine-Learning Approaches, ***Lev Gelb****, N. Castanheira, A. Walker,* University of Texas at Dallas	
4:40pm	**AS+CA+EL+EM+SE+SS+TF-WeA-8** Room Temperature Ionic Liquids as Reference Materials for Photoelectron Spectrometers, ***Benjamen Reed****,* National Physical Laboratory, U.K.*; J. Radnik,* BAM Berlin, Germany, UK*; A. Shard,* National Physical Laboratory, U.K.	
5:00pm	**AS+CA+EL+EM+SE+SS+TF-WeA-9** Fractional Coverage Analysis of Monolayers with XPS and Non-Destructive Depth-Profiling with Combined Soft and Hard X-Rays, ***Norbert Biderman****, K. Artyushkova, D. Watson,* Physical Electronics USA	
5:20pm	**AS+CA+EL+EM+SE+SS+TF-WeA-10** Reassessing the Reduction of Ceria in X-Ray Photoelectron Spectroscopy, ***David Morgan,*** Cardiff University, UK	
5:40pm	**AS+CA+EL+EM+SE+SS+TF-WeA-11** Using High Sensitivity – Low Energy Ion Scattering Spectroscopy (LEIS) to Unravel the Complex Nature of High Entropy Alloys, ***Matthias Kogler****, C. Pichler,* Centre for Electrochemistry and Surface Technology (CEST GmbH), Austria*; M. Valtiner,* Vienna University of Technology, Austria	
6:00pm		

Wednesday Afternoon, November 8, 2023

	CHIPS Act Mini-Symposium **Room C120-122 - Session CPS+CA-WeA** **CHIPS Act: Interfaces and Defects** **Moderators: Tina Kaarsberg**, U.S. Department of Energy, Advanced Manufacturing Office, **Andrei Kolmakov**, National Institute of Standards and Technology (NIST)	**Electronic Materials and Photonics Division** **Room B116 - Session EM-WeA** **Advanced Materials for Electronic and Photonic Applications** **Moderators: Parag Banerjee**, University of Central Florida, **Jason Kawasaki**, University of Wisconsin - Madison, **Stephen McDonnell**, University of Virginia
2:20pm	**INVITED: CPS+CA-WeA-1** Future Needs and Current Trends in Interfacial Metrology for the Development of Reliable Ultra-Wide Bandgap Electronics, ***Luke Yates***, *A. Jarzembski, W. Hodges, M. Bahr, W. Delmas, Z. Piontkowski, A. McDonald, M. Smith, B. Rummel, C. Glaser, A. Binder, J. Steinfeldt, A. Allerman, A. Armstrong, B. Klein, G. Pickrell,* Sandia National Laboratories*; D. Morisette,* Purdue University*; J. Cooper,* Sonrisa Research Inc.*; R. Kaplar,* Sandia National Laboratories	**INVITED: EM-WeA-1** Mind the Gap: Integrating Materials and Engineering Research to Enable Advanced Electronics, ***Paul Lane***, National Science Foundation
2:40pm		
3:00pm	**INVITED: CPS+CA-WeA-3** Diamond/h-BN Heterostructures for High-Performance Electronics, ***Yamaguchi Takahide***, National Institute for Materials Science, Japan	**EM-WeA-3** Atomic Layer Deposition Defect Engineering of Step Tunneling MIIM Diodes, ***Shane Witsell***, *J. Conley,* Oregon State University
3:20pm		**EM-WeA-4** Silicon-Doped Titanium Nitride with Near-Zero Temperature Coefficient of Resistivity (0.05 ppm/K) in the Temperature Range, 80 K - 420 K, ***S. Novia Berriel***, *C. Feit,* University of Central Florida*; M. Islam,* University of Virginia*; J. Shi,* University of Central Florida*; A. Dhamdhere, H. Kim,* Eugenus, Inc.*; P. Hopkins,* University of Virginia*; D. Le, T. Rahman, P. Banerjee,* University of Central Florida
3:40pm	**BREAK**	**BREAK**
4:00pm		
4:20pm	**CPS+CA-WeA-7** Hydrogenation of a $Cu_{2-x}O$ Confined Under Hexagonal Boron Nitride, ***J. Trey Diulus***, *E. Strelcov,* NIST Center for Nanoscale Science and Technology*; Z. Novotny,* Empa (Swiss Federal Laboratories for Materials Science and Technology), Switzerland*; N. Comini,* University of Zurich, Switzerland*; A. Naclerio, P. Kidambi,* Vanderbilt University*; J. Osterwalder,* University of Zurich*; A. Kolmakov,* NIST Center for Nanoscale Science and Technology	**INVITED: EM-WeA-7** An Auric Goldfinger Inspired Search for Copper Replacement Conductors, ***Sean King***, Intel Corporation
4:40pm	**CPS+CA-WeA-8** A Proven Model for Workforce Development, ***David Ruzic***, *D. Andruczyk,* University of Illinois at Urbana-Champaign	
5:00pm	**CPS+CA-WeA-9** Characterization of Buffer Layers for Remote Plasma-Enhanced Chemical Vapor Deposition of Germanium-Tin Epitaxial Layers, ***Bridget Rogers***, Vanderbilt University*; S. Zollner, C. Armenta,* New Mexico State University*; G. Grzybowski,* KBR*; B. Claflin,* Air Force Research Lab	**INVITED: EM-WeA-9** Chalcogenide p-Type Transparent Conductors, ***Andriy Zakutayev***, 15013 Denver W pkwy
5:20pm	**CPS+CA-WeA-10** Comparative Study of Mechanical and Corrosion Behaviors on Heat Treated Steel Alloys, ***Moe Rabea***, California State Polytechnic University, Pomona	
5:40pm		**INVITED: EM-WeA-11** Strain Manipulation of Ferroelectricity and Flexoelectricity, ***Harold Hwang***, Stanford University and SLAC National Accelerator Laboratory
6:00pm		

Wednesday Afternoon, November 8, 2023

	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic **Room B113 - Session HC+SS-WeA** **Advances in Complex Catalytic Systems** **Moderators: Zdenek Dohnalek**, Pacific Northwest National Lab, **Dan Killelea**, Loyola University Chicago	**Magnetic Interfaces and Nanostructures Division** **Room B110-112 - Session MI+2D+TF-WeA** **Special Symposium on Coupling Phenomena in Magnetism** **Moderators:** **Hendrik Ohldag**, Lawrence Berkeley National Laboratory
2:20pm	**INVITED: HC+SS-WeA-1** Computational Studies of Selective Reduction Reactions on Metal and Metal Compounds Electrocatalysts, ***J.R. Schmidt***, UW Madison	**MI+2D+TF-WeA-1** Coupling Spin-Orbit and Exchange Interaction in a Low-Dimensional Magnet, ***Pascal Jona Grenz***[1], *M. Donath, P. Krüger,* University of Münster, Germany
2:40pm		**MI+2D+TF-WeA-2** AVS Graduate Research Awardee Talk: Temperature Dependent Magnetic and Electronic Properties of $NiCo_2O_4$ Thin Film Surfaces, ***Arjun Subedi***[21], University of Nebraska-Lincoln*; D. Yang, C. Mellinger, X. Xu,* University of Nebraska–Lincoln*; P. Dowben,* University of Nebraska-Lincoln
3:00pm	**HC+SS-WeA-3** Metal Atom Chemical Potential: A Key Descriptor for Predicting Particle Size Effects on Catalyst Performance, and How to Estimate It, ***Charles T. Campbell***, *K. Zhao, N. Janulaitis,* University of Washington	**INVITED: MI+2D+TF-WeA-3** Antiferromagnetic Real-Space Configuration Probed by Dichroism in Scattered X-Ray Beams with Orbital Angular Momentum, ***Sophie Morley***, *M. McCarter, A. U. Saleheen, A. Singh,* Lawrence Berkeley Lab*; R. Tumbleson,* University of California Santa Cruz*; J. Woods,* Argonne National Laboratory*; A. Tremsin,* UC Berkeley*; A. Scholl,* Lawrence Berkeley Lab*; L. de Long, J. Hastings,* University of Kentucky*; S. Roy,* Lawrence Berkeley Lab
3:20pm	**HC+SS-WeA-4** Size-Dependent Properties of Cobalt Nanoclusters on Ceo_2(111), *M. Rahman,* Louisiana State University*; T. Ara,* University of Wyoming*;* ***Ye Xu,*** Louisiana State University*; J. Zhou,* University of Wyoming	
3:40pm	**BREAK**	**BREAK**
4:00pm		
4:20pm	**INVITED: HC+SS-WeA-7** on-Surface Synthesis of Porous Planar-Carbon-Lattices: Fundamental Properties and Applications, ***Abner de Siervo,*** Institute of Physics Gleb Wataghin, University of Campinas (UNICAMP), Brazil	
4:40pm		
5:00pm	**HC+SS-WeA-9** 2D Surface Optical Reflectance for Surface Studies in Harsh Environments, *A. Larsson,* Lund University, Sweden*; S. Pfaff,* Sandia National Laboratories*; L. Ramisch, S. Gericke, A. Grespi, J. Zetterberg,* ***Edvin Lundgren***, Lund University, Sweden	**MI+2D+TF-WeA-9** Spin-dependent Hybridization of Image-potential States with Tl States in Tl/Ag(111), ***Sven Schemmelmann***[1], Universität Münster, Germany*; P. Härtl,* Universität Würzburg, Germany*; P. Krüger,* Universität Münster, Germany*; M. Bode,* Universität Würzburg, Germany*; M. Donath,* Universität Münster, Germany
5:20pm	**HC+SS-WeA-10** Interrogating Reactive Sites with Intrinsic Kinetics Over Well-Defined Supported Pt Nanoparticles, *T. Kim, C. O'connor,* ***Christian Reece***, Harvard University	**MI+2D+TF-WeA-10** Distinct Tamm and Shockley Surface States on Re(0001) Mixed by Spin-Orbit Interaction – A Photoemission Study, ***Marcel Holtmann***, *P. Krüger,* University of Münster, Germany*; K. Miyamoto, T. Okuda,* HiSOR, Japan*; P. Grenz,* University of Münster, Germany*; K. Shimada,* HiSOR, Germany*; M. Donath,* University of Münster, Germany
5:40pm	**INVITED: HC+SS-WeA-11** The Effects of Catalytic Cluster Size on Catalysis and Electrocatalysis, ***Scott Anderson***, University of Utah	**INVITED: MI+2D+TF-WeA-11** Coupling between Spin Order and Orbital Order in 2D-Superlattice Perovskite Film, ***Bin Hu***, University of Tennessee Knoxville
6:00pm		

[1] **Falicov Student Award Finalist**

[2] **AVS Graduate Research Awardee**

	Plasma Science and Technology Division **Room A106 - Session PS1+AS-WeA** **Plasma Chemistry, Catalysis and Applications for the Environment and Sustainability** **Moderators: Michael Gordon**, University of California at Santa Barbara, **Kenji Ishikawa**, Nagoya University, Japan	**Plasma Science and Technology Division** **Room A107-109 - Session PS2+MS-WeA** **Plasma-Surface Modeling** **Moderators:** **Emilie Despiau-Pujo**, Univ. Grenoble Alpes, CNRS, LTM, France, **Jun-Chieh Wang**, Applied Materials
2:20pm	**INVITED: PS1+AS-WeA-1** Synthesis of Hydrogen and Structural Carbon Materials from Methane Using Radiofrequency Nonequilibrium Plasma, ***Elijah Thimsen***, Washington University in St. Louis	**INVITED: PS2+MS-WeA-1** Modeling and Simulation of Plasma-Surface Interactions in Nanofabrication, ***David Graves***, Princeton University
2:40pm		
3:00pm	**PS1+AS-WeA-3** Kinetics of Hydrocarbon Decomposition in Plasmas Operating Up to 5 bar, ***Norleakvisoth Lim***, *M. Gordon,* University of California at Santa Barbara	**PS2+MS-WeA-3** Mechanisms of Phosphorus Halides Gas Boosting Cryogenic Dry Process Etch Rate: A Quantum Chemistry Investigation, ***Yu-Hao Tsai***, *D. Zhang,* TEL Technology Center, America, LLC; *T. Orui, T. Yokoyama, R. Suda,* Tokyo Electron Miyagi Limited, Japan; *T. Hisamatsu,* TEL Technology Center, America, LLC; *Y. Kihara,* Tokyo Electron Miyagi Limited, Japan; *P. Biolsi,* TEL Technology Center, America, LLC
3:20pm	**PS1+AS-WeA-4** Plasma Pyrolysis of Liquid Hydrocarbons to Produce H_2 and Solid Carbon, *N. Lim,* ***Michael Gordon***, University of California at Santa Barbara	**PS2+MS-WeA-4** Molecular Dynamics Simulations of Diamond Surface Processing via Low-Energy Hydrogen and Argon Ion Bombardment, ***Jack Draney***, Princeton University; *J. Vella,* Princeton University Plasma Physics Lab; *A. Panagiotopoulos, D. Graves,* Princeton University
3:40pm	**BREAK**	**BREAK**
4:00pm		
4:20pm	**INVITED: PS1+AS-WeA-7** Plasma-Surface Interaction in CO_2 Containing Plasmas, ***Olivier Guaitella***, *E. Baratte,* Ecole Polytechnique - CNRS, France; *V. Guerra,* Instituto Superior Técnico, Portugal; *D. Sadi, S. Bravo, C. Garcia-Soto,* Ecole Polytechnique - CNRS, France; *T. Silva,* Instituto Superior Técnico, Portugal	**INVITED: PS2+MS-WeA-7** Yesterday, Today, and Tomorrow for High-Aspect-Ratio Contact Etching: Unraveling the Mysteries of Plasma-Surface Interactions with Modeling and Simulations, ***Du Zhang***, *Y. Tsai,* TEL Technology Center, America, LLC; *M. Iwata, M. Yokoi, K. Tanaka,* Tokyo Electron Miyagi Limited, Japan; *T. Hisamatsu,* TEL Technology Center, America, LLC; *Y. Kihara,* Tokyo Electron Miyagi Limited, Japan; *P. Biolsi,* TEL Technology Center, America, LLC
4:40pm		
5:00pm	**PS1+AS-WeA-9** Study of Plasma-Catalyst Surface Interactions for Methane Dry Reforming, ***Michael Hinshelwood***, *G. Oehrlein,* University of Maryland, College Park	**PS2+MS-WeA-9** Optimization of Model Parameters in Simulations of High Aspect Ratio Plasma Etching, ***Florian Krüger***, University of Michigan, Ann Arbor; *D. Zhang, M. Park, A. Metz,* TEL Technology Center, America, LLC, USA; *M. Kushner,* University of Michigan, Ann Arbor
5:20pm	**PS1+AS-WeA-10** Silver Nanoparticle Synthesis in Low-Pressure Plasmas: The Roles of Free Electrons and Photons, ***Chi Xu***, *J. Held, H. Andaraarachchi, U. Kortshagen,* University of Minnesota	**PS2+MS-WeA-10** Prediction of Surface Morphology and Composition Evolution during Atomic Layer Deposition via Combined Ab-Initio and Monte Carlo Approach, ***Ting-Ya Wang***, *G. Hwang,* University of Texas at Austin
5:40pm	**PS1+AS-WeA-11** Plasma Synthesis of Hydrogen from Ethanol Solution, *D. Lojen,* Université libre de Bruxelles, Belgium; *T. Fontaine,* Université libre de Bruxelles/ University of Mons, Belgium; *L. Nyssen,* Université libre de Bruxelles/Ghent University, Belgium; *D. Petitjean,* Université libre de Bruxelles, Belgium; *R. Snyders,* University of Mons, Belgium; *N. De Geyter,* Ghent University, Belgium; ***Francois Reniers***, Université libre de Bruxelles, Belgium	**PS2+MS-WeA-11** Modeling Reaction and Diffusion at a Plasma-Liquid Interface, ***Sean Peyres***, University of Illinois at Urbana-Champaign; *N. Üner,* Middle East Technical University, Turkey; *N. Abuyazid, R. Sankaran,* University of Illinois at Urbana-Champaign
6:00pm		**PS2+MS-WeA-12** Integrated Modeling of Diamond Growth and the Surface Composition in CH_4/H_2 Plasma, *Y. Barsukov,* Princeton University Plasma Physics Lab; *A. Khrabry,* Princeton University; ***Igor Kaganovich***, Princeton University Plasma Physics Lab

Wednesday Afternoon, November 8, 2023

	Surface Science Division **Room D136 - Session SS-WeA** **A Special Session Honoring Wilson Ho: 25 Years of Single-Molecule Vibrational Spectroscopy and Microscopy** **Moderators: Xi Chen**, Tsinghua University, China, **Xiaohui Qiu**, Nanocenter, China	**Thin Film Division** **Room A105 - Session TF+QS-WeA** **Thin Films for Space and Electronic Applications** **Moderators:** **John Hennessy**, Jet Propulsion Laboratory, **Richard Vanfleet**, Brigham Young University
2:20pm	**INVITED: SS-WeA-1** Development of Single-Molecule Spectroscopy Inspired by STM-IETS, ***Yousoo Kim,*** RIKEN, Japan	**INVITED: TF+QS-WeA-1** From Space Thrusters to Exoplanets Research, ***Christine Charles,*** *R. Boswell, M. Davoodianidalik, J. Machacek, D. Tsifakis, M. Shadwell, H. Punzmann,* Australian National University, Australia*; K. Takahashi,* Tohoku University, Japan*; J. Lecomte, N. Suas-David, L. Rutkowski, E. Dudas, A. Benidar,* Université de Rennes, France*; S. Kassi,* Université de Grenoble-Alpes, France*; R. Georges,* Université de Rennes, France*; N. Smith, P. Tesch,* Oregon Physics
2:40pm	**INVITED: SS-WeA-2** Unraveling Orbital Magnetism Contributions to Landau Levels in Moiré Quantum Matter, ***Joseph Stroscio,*** NIST	
3:00pm	**INVITED: SS-WeA-3** Sub-Nanometer Resolved Single-Molecule Optical Imaging, *Z.-C. Dong,* University of Science and Technology of China; ***Shaowei Li,*** University of California, San Diego	**TF+QS-WeA-3** Photodegradation of Self-Immolating Polymers as a Potential Solution to Optical Scattering, ***Alexandra Stapley,*** *S. McFarland, J. Vawdrey, K. Mitchell, W. Paxton, D. Allred,* Brigham Young University
3:20pm	**INVITED: SS-WeA-4** Magnetic Resonance Imaging of Individual Organic Radicals with sub-Molecular Resolution Using a Scanning Tunneling Microscope, ***Christopher Lutz,*** *G. Czap,* IBM Almaden Research Center	**TF+QS-WeA-4** Enhancement of the Bifacial Absorber of Silver Antimony Sulfur Selenide Photovoltaic Devices, ***Sanghyun Lee,*** University of Kentucky*; M. McInerney,* Rose-Hulman Institute of Technology
3:40pm	**BREAK**	**BREAK**
4:00pm		
4:20pm	**INVITED: SS-WeA-7** Revealing the Local Band Structures of Sharp WS_2/MoS_2 Heterojunction and Graded $W_xMo_{1-x}S_2$ Alloy by Near-Field Optical Imaging, ***Chi Chen,*** Academia Sinica, Taiwan	**INVITED: TF+QS-WeA-7** Atomic Scale Processing and Surface Engineering to Maximize Microdevice Performance for Remote Sensing and Imaging Applications, ***Frank Greer,*** Jet Propulsion Laboratory (NASA/JPL)
4:40pm	**INVITED: SS-WeA-8** On-Surface Chemical Dynamics Probed with Concurrent In Situ STM, Infrared Spectroscopy, and Supersonic Molecular Beams, ***Steven Sibener,*** *J. Wagner, R. Edel, T. Grabnic, S. Brown, J. Sayler, J. Brown,* University of Chicago	
5:00pm	**INVITED: SS-WeA-9** Unravelling the Mysteries of Water and Ice: A Journey Starting from Single Water Molecule, ***Ying Jiang,*** International Center for Quantum Materials, School of Physics, Peking University, China	**TF+QS-WeA-9** Advances in Plasma-Based Atomic Layer Processing of AlF_3 for the Passivation of FUV Mirrors, ***Virginia Wheeler,*** *D. Boris,* US Naval Research Laboratory*; L. Rodriguez de Marcos, J. del Hoyo,* NASA Goddard Space Flight Center*; N. Nepal, A. Lang, M. Sales, S. Walton,* US Naval Research Laboratory*; E. Wollack, M. Quijada,* NASA Goddard Space Flight Center
5:20pm	**INVITED: SS-WeA-10** Probing Chemistry at the Angstrom-Scale via Tip-Enhanced Raman Spectroscopy, ***Nan Jiang,*** University of illinois Chicago	**TF+QS-WeA-10** Thin Film Processes for UV Detector Technologies for Next Generation NASA Missions, ***Robin Rodríguez,*** *A. Jewell, J. Hennessy, M. Hoenk, T. Jones, S. Nikzad,* Jet Propulsion Laboratory (NASA/JPL)
5:40pm	**SS-WeA-11** Single Molecule Characterization of Cobalt Phthalocyanine Co_2 Reduction Catalysts, *X. Wang,* Yale University*; P. Zahl,* Brookhaven National Laboratory*; H. Wang,* ***Eric Altman,*** *U. Schwarz,* Yale University	**TF+QS-WeA-11** Commercializing Nanowire LEDs, ***David Laleyan,*** *B. Le, G. Frolov,* NS Nanotech Canada*; M. Stevenson, S. Coe-Sullivan,* NS Nanotech
6:00pm	**SS-WeA-12** Switching Chemical Bonds by Mechanical Load at Single Molecule Level via Qplus Atomic Force Microscope, ***A.M. Shashika Wijerathna,*** *M. Zirnheld,* Old Dominion University*; Z. Win,* City University of Hong Kong, Hong Kong Special Administrative Region of China*; Y. Li,* Center for Nanoscale Materials, Argonne National Laboratory*; R. Zhang,* City University of Hong Kong, Hong Kong Special Administrative Region of China*; S. Hla,* Center for Nanoscale Materials, Argonne National Laboratory*; Y. Zhang,* Old Dominion University	

	Room A105	
8:00am	**INVITED: TF-ThM-1** Functional Ceramic Heterostructures via Vapor and Liquid Phase Infiltration of Polymer Templates, ***Diana Berman,*** University of North Texas	**Thin Film Division** **Session TF-ThM** **Creating Organic-Inorganic Hybrid Materials** **Moderators:** **Devika Choudhury**, ASM **Robin Rodiguez,** Jet Propulsion Laboratory
8:20am		
8:40am	**TF-ThM-3** Effect of Polymer Templates on Nanoporous Inorganic Coatings Synthesized by Polymer Infiltration, ***Khalil Omotosho****, D. Berman,* University of North Texas	
9:00am	**TF-ThM-4** Alkylation of Esters by $TiCl_4$ Vapor Phase Infiltration (VPI) and the Resulting Chemical and Thermophysical Properties of the Hybrid Materials, ***Shuaib Balogun,*** Georgia Institute of Technology, USA*; S. Yim,* Georgia Institute of Technology*; B. Jean, T. Yom,* Georgia Institute of Technology, USA*; A. Steiner,* Sandia National Laboratories*; M. Losego,* Georgia Institute of Technology, USA	
9:20am	**TF-ThM-5** Free and Simple Simulations of Vapor-Phase Infiltration Process Kinetics Using Google Colab, ***Mark Losego,*** Georgia Institute of Technology	
9:40am	**TF-ThM-6** High-Throughput Molecular Layer Deposition for the Discovery of Organic-Inorganic EUV Photoresists, ***Duncan Reece,*** University of Washington, UK*; E. Crum,* University of Washington*; Y. Choe,* University of Washington, Republic of Korea*; D. Bergsman,* University of Washington	
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	
10:20am		
10:40am		
11:00am	**TF-ThM-10** Understanding the Physicochemical Properties and Structural Evolution of Sequential Infiltration Synthesis Derived Indium Oxyhydroxide Clusters for CO_2 Absorption, ***Thabiso Kunene****, A. Martinson,* Argonne National Laboratory	
11:20am	**TF-ThM-11** Optimizing Aluminum Oxyhydroxide Vapor Phase Infiltration for the Vapor Phase Mordanting of Natural Dyes to Polyester Fabrics*, M. Losego,* ***Nicole McClelland****, E. McGuinness,* Georgia Institute of Technology	
11:40am	**TF-ThM-12** Tuning the Thermal Stability of Vapor Phase Infiltrated Polyacrylonitrile Fabrics, ***Téa Cook****, B. Jean, E. McGuinness, A. Gonzalez, M. Losego,* Georgia Institute of Technology	
12:00pm		

Thursday Morning, November 9, 2023

	Room A106	
8:00am	**INVITED: PS1+MS-ThM-1** Approaches to Accelerate Etch Process Optimization by Using Virtual Experiment, ***Tetsuya Nishizuka***, *R. Igosawa, T. Yokoyama, K. Sako, H. Moki, M. Honda,* Tokyo Electron Miyagi, Ltd., Japan	**Plasma Science and Technology Division** **Session PS1+MS-ThM** **AI/ML in Plasma Applications** **Moderators:** **Robert Bruce**, IBM Research, T. J. Watson Research Center, **Yu-Hao Tsai**, TEL Technology Center, America, LLC
8:20am		
8:40am	**PS1+MS-ThM-3** Recipe Optimization for Plasma Etching with Machine Learning Model Trained by Initial Dataset Using D-Optimal Design, ***Ryo Morisaki***, *T. Ohmori,* Hitachi, Ltd., Japan	
9:00am	**PS1+MS-ThM-4** Digital Twin Model to Compensate for Variations in Plasma Etching Process, *T. Nakayama,* ***Naoto Takano***, *T. Ohmori,* Hitachi, Ltd., Japan	
9:20am	**PS1+MS-ThM-5** Deep Learning-Enabled Plasma Equipment Design Optimization in Semiconductor Manufacturing, *S. Ahn,* ***Jinkyu Bae***, *S. Yoo, S. Nam,* Samsung Electronics, Republic of Korea	
9:40am	**PS1+MS-ThM-6** Wafer Arcing Detect Algorithm Using LSTM Autoencoder in Hardmask Strip Equipment with CCP Source, ***Heewoong Shin***, PSK, Republic of Korea	
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	
10:20am		
10:40am		
11:00am	**PS2+AS+SS-ThM-10** Remote Plasma-Activated and Electron Beam-Induced Etching of Ruthenium and Its Comparison to Tantalum, ***Yudong Li***[1], University of Maryland College Park; *C. Preischl, M. Budach, H. Marbach, D. Rhinow,* Carl Zeiss SMT, Germany; *G. Oehrlein,* University of Maryland College Park	**Plasma Science and Technology Division** **Session PS2+AS+SS-ThMPlasma-Surface Interactions I** **Moderators:** **Lei Liu**, Lam Research Corporation, **Pingshan Luan**, TEL Technology Center America
11:20am	**PS2+AS+SS-ThM-11** Plasma Surface Ionization Wave Interaction with Single Channel Structures, ***Joshua Morsell***, *S. Shannon,* North Carolina State University	
11:40am	**INVITED: PS2+AS+SS-ThM-12** Plasma-wall Interactions: Implications for Advanced Chamber Materials Requirements, ***John Daugherty***, Lam Research Corporation	
12:00pm		

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

	Advanced Focused Ion Beams **Room A107-109 - Session IB-ThM** **Advances in FIB Instrumentation, Source, Optics, and Surface Analysis** **Moderators: Alex Belianinov**, Sandia National Laboratory, **Armin Goelzhaeuser**, Uni Bielefeld, Germany	**Magnetic Interfaces and Nanostructures Division** **Room B110-112 - Session MI+2D+TF-ThM** **2D Magnetism and Superconductivity** **Moderators:** **Markus Donath**, Muenster University, Germany, **Valeria Lauter**, Oak Ridge National Laboratory
8:00am	**INVITED: IB-ThM-1** TIBUSSII - the First Triple Beam Single Ion Implantation Setup for Quantum Applications, ***Nico Klingner***, *G. Hlawacek, S. Facsko,* Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden - Rossendorf (HZDR), Germany; *J. Silvent, A. Delobbe,* Orsay Physics, France	**INVITED: MI+2D+TF-ThM-1** Heterostructures for Tunneling and Point-Contact Spectroscopy of Two-Dimensional Superconductors, ***Benjamin Hunt***, *Q. Cao,* Carnegie Mellon University; *E. Telford, C. Dean,* Columbia University
8:20am		
8:40am	**IB-ThM-3** A New Tool for Single Ion Implantation and Nanoscale Materials Engineering: System Design and Source Development, ***Gianfranco Aresta***, *K. Stockbridge, K. McHardy, P. Blenkinsopp,* Ionoptika Ltd., UK	**INVITED: MI+2D+TF-ThM-3** Ghost States and Topography Inversion in 2D Materials, ***Mina Yoon***, Oak Ridge National Laboratory, USA
9:00am	**IB-ThM-4** ToF-SIMS on a Plasma FIB: Dos and Dont's, ***Jamie Ford***, University of Pennsylvania	
9:20am	**INVITED: IB-ThM-5** Multimodal Characterization of Biological Samples on FIB Instruments Combining Nano-Scale SIMS, SE and STIM Imaging Under Ambient or Cryogenic Conditions, ***Antje Biesemeier***, *T. Taubitz, O. De Castro, J. Audinot, H. Hoang, P. Philipp,* Luxembourg Institute of Science and Technology (LIST), Luxembourg	
9:40am		
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am		
10:40am		
11:00am	**IB-ThM-10** Mobile and Non-Mobile Hydrogen in Hydrogen-Charged Zirconium Alloy, ***Edward Gillman***, Naval Nuclear Lab	**INVITED: MI+2D+TF-ThM-10** Spatially-Resolved Photoemission Studies of Magnetic Weyl Semimetals, *S. Sreedhar,* University of California, Davis; *M. Staab, R. Prater,* University of California at Davis; *A. Rossi,* Italian Institute of Technology, Italy; *V. Ivanov,* Lawrence Berkeley Lab; *Z. Shen,* University of California at Davis; *G. Conti,* Lawrence Berkeley Lab; *V. Taufour, S. Savrasov,* University of California at Davis; *S. Nemsak,* Lawrence Berkeley Lab; ***Inna Vishik***, University of California-Davis
11:20am	**IB-ThM-11** Visualization of the Pore Formation in Carbon Microspheres by Charge-compensated Helium Ion Microscopy, ***Natalie Frese***, *M. Wortmann, M. Westphal,* Bielefeld University, Germany; *E. Diestelhorst, B. Brockhagen,* University of Applied Sciences and Arts, Germany; *K. Sattler,* University of Hawaii; *A. Gölzhäuser,* Bielefeld University, Germany	
11:40am	**IB-ThM-12** 3D Volume and Surface Imaging Applications using Focused Ion Beams from LMAIS, ***Alexander Ost***, *A. Nadzeyka, L. Bruchhaus, T. Richter,* Raith GmbH, Germany	**MI+2D+TF-ThM-12** High-Temperature Superconductor FeSe Films Enabled Through Temperature and Flux Ratio Control, ***Maria Hilse***, *H. Yi, C. Chang, N. Samarth,* The Pennsylvania State University; *R. Engel-Herbert,* Paul-Drude-Institut für Festkörperelektronik, Germany
12:00pm	**IB-ThM-13** Application of Helium Ion Microscope in Site Specific Material Radiation Studies, ***Vaithiyalingam Shutthanandan***, *S. Lambeets, A. Devaraj,* Pacific Northwest National Laboratory	**MI+2D+TF-ThM-13** Unraveling Picosecond Dynamic Material Processes on the Mesoscale by X-Ray Microscopy, ***Thomas Feggeler***, University of California, Berkeley; *J. Lill, D. Guenzing, R. Meckenstock, D. Spoddig, B. Zingsem,* University of Duisburg-Essen, Germany; *M. Efremova,* Eindhoven University of Technology, Netherlands; *S. Pile, T. Schaffers,* Johannes Kepler University, Austria; *S. Wintz,* Max Planck Institute for Intelligent Systems, Germany; *M. Weigand,* Helmholtz Center Berlin, Germany; *A. Ney,* Johannes Kepler University, Austria; *M. Farle, H. Wende, K. Ollefs,* University of Duisburg-Essen, Germany; *D. Shapiro,* Lawrence Berkeley National Laboratory; *R. Falcone,* University of California, Berkeley; *H. Ohldag,* Lawrence Berkeley National Laboratory

	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic **Room B113 - Session HC+SS-ThM** **Dynamics and Mechanisms in Heterogeneously Catalyzed Reactions** **Moderators: Arthur Utz**, Tufts University, **Jason Weaver**, University of Florida	**Electronic Materials and Photonics Division** **Room B116 - Session EM+TF-ThM** **Wide- and Ultra-Wide Band Gap Materials and Devices** **Moderators:** **Erica Douglas**, Sandia National Laboratories, **Seth King**, University of Wisconsin - La Crosse, **Daniel Pennachio**, Naval Research Laboratory
8:00am	**HC+SS-ThM-1** Dehydration and Dehydrogenation of Formate on Fe_3O_4(001), ***Marcus Sharp,*** Pacific Northwest National Laboratory / Washington State University*; C. Lee, S. Smith, B. Kay, Z. Dohnálek,* Pacific Northwest National Laboratory	**INVITED: EM+TF-ThM-1** Ga_2O_3 and AlN for Power and RF Electronics, ***Grace Xing,*** Cornell University
8:20am	**HC+SS-ThM-2** The Effect of No and Co on the Rh(100) Surface at Atmospheric Pressure, *D. Boden, J. Meyer,* ***Irene Groot,*** Leiden University, Netherlands	
8:40am	**INVITED: HC+SS-ThM-3** Sustainable Production of Aromatics via Methane Dehydroaromatization: Role of Dynamic Carbon Accumulation, *M. Hossain,* Virginia Tech*; M. Rahman,* Southwest Research Institute, San Antonio Texas*; D. Maiti, E. Sobchinsky, M. Kunz, R. Fushimi,* Idaho National Laboratory*;* ***Sheima Khatib,*** Virginia Tech	**EM+TF-ThM-3** Deep UV Photoluminescence Mapping of Gallium Oxide, ***Matthew McCluskey,*** Washington State University
9:00am		**EM+TF-ThM-4** Spatially Resolved Polymorph Conversion in Ga_2O_3, *U. Bektas, P. Chekhonin, R. Heller, R. Hübner, M. Liedke, N. Klingner,* ***Gregor Hlawacek,*** Helmholtz Zentrum Dresden-Rossendorf, Germany
9:20am	**HC+SS-ThM-5** Mechanistic Understanding of Methanol Synthesis on an In_2O_3 Catalyst, ***Yong Yang,*** ShanghaiTech University, China	**EM+TF-ThM-5** Low-Temperature Epitaxy and in-situ Doping of Ultrawide Bandgap Ga_2O_3 Films via Hollow-Cathode Plasma-ALD, *S. Ilhom, A. Mohammad, N. Ibrahimli, J. Grasso, B. Willis,* University of Connecticut*; A. Okyay,* OkyayTech Inc*;* ***Necmi Biyikli,*** University of Connecticut
9:40am	**HC+SS-ThM-6** The Strong Metal-Support Interaction Under Reactive Conditions and Its Influence on the Hydrogen Evolution Reaction Over Pt/TiO_2(110), ***Philip Petzoldt,*** Technical University of Munich, Germany*; M. Eder,* TU Wien, Austria*; M. Blum,* Lawrence Berkeley National Laboratory (LBNL)*; T. Kratky,* Technical University of Munich, Germany*; S. Günther,* Technical University Munich, Germany*; M. Tschurl, B. Lechner, U. Heiz,* Technical University of Munich, Germany	**EM+TF-ThM-6** Growth of Metastable Ga_2O_3 Epitaxial Films Using Metalorganic Chemical Vapor Deposition and Halide Vapor Phase Epitaxy, ***Jingyu Tang,*** *K. Jiang, M. Weiler, M. Moneck, R. Davis, L. Porter,* Carnegie Mellon University
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am		
10:40am		
11:00am	**INVITED: HC+SS-ThM-10** Rotational Orientation Effects in Hydrogen-Surface Scattering, ***Helen Chadwick,*** *Y. Alkoby, G. Alexandrowicz,* Swansea University, UK	**EM+TF-ThM-10** AlGaN/GaN HEMTs with Submicron Gates for High-Frequency Operation in Harsh Space Environments, ***Isabel Harrysson Rodrigues,*** *M. Rais-Zadeh,* Jet Propulsion Laboratory, California Institute of Technology
11:20am		**EM+TF-ThM-11** Selected-Area P-Type Doping of GaN Using Focused-Ion Beams, ***Sam Frisone,*** University of Michigan*; M. Titze, A. Katzenmeyer,* Sandia National Lab*; B. Li,* Yale University*; A. Flores,* Sandia National Lab*; Y. Wang,* Los Alamos National Laboratory*; R. Goldman,* University of Michigan*; E. Biejelec,* Sandia National Lab*; J. Han,* Yale University
11:40am	**HC+SS-ThM-12** Studies of Pt-Sn Catalysts for Methylcylcohexane Dehydrogenation to Toluene, ***Donna Chen,*** University Of South Carolina*; M. Qiao, A. Ahsen, A. Heyden, J. Monnier,* University of South Carolina	**EM+TF-ThM-12** Epitaxial Growth and Characterization of High ScN Fraction ScAlN on NbN and SiC, ***Matthew Hardy,*** *S. Katzer, A. Lang, E. Jin, N. Nepal, B. Downey, V. Gokhale, V. Wheeler,* U.S. Naval Research Laboratory
12:00pm	**HC+SS-ThM-13** Platinum@Hexaniobate Nanopeapods: A Directed Photocatalytic Architecture for Dye-Sensitized Semiconductor H_2 Production Under Visible Light Irradiation, ***Clare Davis-Wheeler Chin,*** Sandia National Laboratories, USA*; P. Fontenot,* Tulane University*; T. Rostamzadeh,* University of New Orleans*; L. Treadwell,* Sandia National Laboratories, USA*; R. Schmehl,* Tulane University*; J. Wiley,* University of New Orleans	**EM+TF-ThM-13** Novel Graphene and SiC Epitaxy to Enable Film Transfer, ***Daniel Pennachio,*** *J. Hajzus, A. Lang,* US Naval Research Laboratory*; R. Stroud,* Former employee of US Naval Research Laboratory*; R. Myers-Ward,* US Naval Research Laboratory

Thursday Morning, November 9, 2023

	Applied Surface Science Division **Room B117-119 - Session AS+CA+EL+EM+SE+SS+TF-ThM** **Quantitative Surface Analysis II** **Moderators:** **Thierry Conard**, IMEC, Belgium, **Benjamen Reed**, National Physical Laboratory, UK **Samantha Rosenberg**, Lockheed Martin	**CHIPS Act Mini-Symposium** **Room C120-122 - Session CPS+MS-ThM** **Chips and Science Act Implementation for Microelectronics (Including Workforce)** **Moderators: Alain Diebold**, SUNY Polytechnic Institute, **Tina Kaarsberg**, U.S. Department of Energy, Advanced Manufacturing Office
8:00am	**AS+CA+EL+EM+SE+SS+TF-ThM-1** OrbiSIMS: Signal, Noise and Transmission Are Three Sides of a Metrology Triangle, *G. Trindade, Y. Zhou, A. Eyres,* National Physical Laboratory, UK*; M. Keenan,* Independent*; **Ian Gilmore,*** National Physical Laboratory, UK	**INVITED: CPS+MS-ThM-1** The Goals for the CHIPS and Science Act of 2022*, D. Lavan, **Jay Lewis,*** National Institute for Science and Technology (NIST)
8:20am	**AS+CA+EL+EM+SE+SS+TF-ThM-2** Contribution of Imaging X-Ray Photoelectron Spectroscopy to Characterize Chrome Free Passivation Nano-Layer Deposited on Food-Packaging Tinplate: Composition and Chemical Environment*, E. Ros, **Vincent Fernandez,*** CNRS, France*; N. Fairley,* CASAXPS, UK*; B. Humbert, M. Caldes,* CNRS, France	
8:40am	**AS+CA+EL+EM+SE+SS+TF-ThM-3** Cryo-Xps for Surface Characterisation of Nanomedicines*, **David Cant,*** National Physical Laboratory,, UK*; Y. Pei,* National Physical Laboratory, UK*; A. Shchukarev, M. Ramstedt,* University of Umea, Sweden*; S. Marques, M. Segundo,* University of Porto, Portugal*; J. Parot, A. Molska, S. Borgos,* SINTEF, Norway*; C. Minelli, A. Shard,* National Physical Laboratory, UK	**INVITED: CPS+MS-ThM-3** U.S. CHIPS Act and Semiconductor R&D Centers: Accelerating American Innovation*, **David Anderson,*** NY CREATES
9:00am	**AS+CA+EL+EM+SE+SS+TF-ThM-4** Redox XPS as a Means to Address Some XPS Reproducibility Challenges*, **Peter Cumpson,*** University of New South Wales, Australia	
9:20am	**AS+CA+EL+EM+SE+SS+TF-ThM-5** Sub-Nanometer Depth Profiling of Native Metal Oxide Layers Within Single Lab-XPS Spectra*, **Martin Wortmann,** N. Frese,* Bielefeld University, Germany*; K. Viertel,* Bielefeld University of Applied Sciences and Arts, Germany*; D. Graulich, M. Westphal, T. Kuschel,* Bielefeld University, Germany	**INVITED: CPS+MS-ThM-5** A View on the 1000x Performance Efficiency Goal*, **Steve Pawlowski,*** Intel Corp.
9:40am	**AS+CA+EL+EM+SE+SS+TF-ThM-6** A Tag-and-Count Methodology Based on Atomic Layer Deposition (ALD) and Low Energy Ion Scattering (LEIS) for Quantifying the Number of Silanols on Fused Silica*, **Josh Pinder,*** Brigham Young University	
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am		
10:40am		
11:00am	**INVITED: AS+CA+EL+EM+SE+SS+TF-ThM-10** ASSD Peter M. A. Sherwood Mid-Career Professional Awardee Talk: Providing Fundamental Mechanistic Insights Into Single-Site Catalytic Reactions*, **Jean-Sabin McEwen**[1],* Washington State University	**INVITED: CPS+MS-ThM-10** Re-Shoring and Re-Energizing Microelectronics: the Workforce Challenge*, M. Lundstrom, **Vijay Raghunathan,*** Purdue University
11:20am		
11:40am	**AS+CA+EL+EM+SE+SS+TF-ThM-12** Beyond the Physical Origin of the Shirley Background in Photoemission Spectra: Other Predictions of the Interchannel Coupling with Valence Band Losses Mechanism*, **Alberto Herrera-Gomez,*** CINVESTAV-Unidad Queretaro, Mexico	**INVITED: CPS+MS-ThM-12** Saving Power with New Designs and Chiplets in the New Era of Advanced Packaging*, **Jan Vardaman,*** TechSearch International, Inc.
12:00pm	**AS+CA+EL+EM+SE+SS+TF-ThM-13** Aging of Hydrophilicity in a Nano-Textured SS316 Thin Film Fabricated by Magnetron Sputtering*, **Pakman Yiu,*** Ming Chi University of Technology, Taiwan*; J. Chu, J. You,* National Taiwan University of Science and Technology, Taiwan	

[1] **ASSD Peter Sherwood Award**

Thursday Morning, November 9, 2023

	2D Materials Technical Group **Room C123 - Session 2D-ThM** **2D-Materials: Microscopy** **Moderators:** **David Cobden**, University of Washington,	**Light Sources Science Mini-Symposium** **Room C124 - Session LS+AC+LX+MI+TH-ThM** **Tender X-ray Science and Time Resolved Studies** **Moderators: Alison Pugmire**, LANL, **David Shuh**, Lawrence Berkeley National Laboratory, **James G. Tobin**, University of Wisconsin-Oshkosh
8:00am	**INVITED: 2D-ThM-1** In and Ex Situ (S)TEM Manipulation of 2D Materials, *J. Kotakoski,* ***Harriet Åhlgren,*** University of Vienna, Austria	**INVITED: LS+AC+LX+MI+TH-ThM-1** Developments of High Resolution X-Ray Spectroscopic Tools for Probing Structural Properties of Actinide System from the Metal and Ligand Perspective, ***Tonya Vitova,*** Karlsruhe Institute of Technology, Institute for Nuclear Waste Disposal, Germany
8:20am		
8:40am	**2D-ThM-3** Synthesis of Quantum-Confined Borophene Nanoribbons, ***Qiucheng Li,*** *M. Hersam,* Northwestern University	**INVITED: LS+AC+LX+MI+TH-ThM-3** High-Energy-Resolution X-Ray Spectroscopy and Actinides Research at SLAC, ***Dimosthenis Sokaras,*** SLAC National Accelerator Laboratory
9:00am	**2D-ThM-4** Formation of Multilayer Bismuthene on Hexagonal Manganese Nitride, ***Ashok Shrestha,*** *A. Abbas, A. Smith,* Ohio University	
9:20am	**2D-ThM-5** A Combined NAP-XPS and NAP-STM Study on 2D MoS_2-based Catalysts for Hydrodeoxygenation of Organic Feedstocks, ***Lars Mohrhusen,*** *M. Hedevang, J. Lauritsen,* Aarhus University, Denmark	**INVITED: LS+AC+LX+MI+TH-ThM-5** New Insight Into Excited-State Chemical Dynamics Using Ultrafast X-Rays:Recent Highlights, Future Opportunities & Development Plans at LCLS, ***Robert Schoenlein,*** Linac Coherent Light Source - SLAC National Accelerator Laboratory
9:40am	**2D-ThM-6** NanoFrazor Technology - Fabricating Advanced 2D and Grayscale Structures for 2D Materials Using Thermal Scanning Probe Lithography and Direct Laser Sublimation, ***Nicholas Hendricks,*** *A. Ubezio, M. Käppeli, J. Vergés, J. Chaaban, E. Çağin,* Heidelberg Instruments Nano, Switzerland	
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am		
10:40am		
11:00am	**INVITED: 2D-ThM-10** Phase Transformations in 2D Van der Waals Materials: Insights from Cryogenic Atomic Resolution STEM and EELS, ***Miaofang Chi,*** Oak Ridge National Laboratory	**INVITED: LS+AC+LX+MI+TH-ThM-10** Attosecond Studies of Radiolysis at XFELs, ***Linda Young,*** Argonne National Laboratory
11:20am		
11:40am	**2D-ThM-12** Intercalation of Transition Metals in between Bilayer-VSe2, *V. Pathirage, K. Lasek, S. Lisenkov,* University of South Florida; *I. Ponomareva,* University South Florida; ***Matthias Batzill,*** University of South Florida	**LS+AC+LX+MI+TH-ThM-12** First Real-Time Tracking of Oxidation States During Fast Redox of UO_2 Using a Microfluidic Electrochemical Cell and HR-XANES, ***Jennifer Yao,*** Pacific Northwest National Laboratory; *B. Schacherl,* Karlsruhe Institute of Technology (KIT), Germany; *B. McNamara,* Pacific Northwest National Laboratory; *C. Vollmer,* Karlsruhe Institute of Technology (KIT), Germany; *N. Lahiri, E. Ilton, E. Buck,* Pacific Northwest National Laboratory; *T. Vitova,* Karlsruhe Institute of Technology (KIT), Germany
12:00pm	**2D-ThM-13** Atomically Resolved Imaging of CVD-Grown Thin α-Mo_2C Crystals, ***Saima Sumaiya,*** Columbia University; *I. Demiroglu,* Eskisehir Technical University, Turkey; *O. Caylan, G. Buke,* TOBB University of Economics and Technology, Turkey; *C. Sevik,* Eskisehir Technical University, Turkey; *M. Baykara,* University of California Merced	**LS+AC+LX+MI+TH-ThM-13** Use of Artificial Intelligence Techniques To Analyze Materials Characterization Data From Actinide Containing Materials, ***Jeff Terry,*** Illinois Institute of Technology

	Room D136	
8:00am 8:20am	**INVITED: SS1+AS-ThM-1** Supramolecular Self-assembly and Metal-Ligand Redox Assembly at Surfaces, ***Steven Tait,*** Indiana University	**Surface Science Division** **Session SS1+AS-ThM** **Molecular Organization at Surfaces** **Moderators:** **Eric Altman**, Yale University, **Zdenek Jakub**, CEITEC, Czechia
8:40am	**SS1+AS-ThM-3** Self-Assembly Controlled at the Level of Individual Functional Groups, ***Benjamin Heiner,*** *A. Pittsford, S. Kandel,* University of Notre Dame	
9:00am	**SS1+AS-ThM-4** Atomically-Defined, Air-Stable 2D Metal-Organic Frameworks on Graphene: How the Support Defines the System Properties, ***Zdenek Jakub,*** *A. Kurowska, J. Planer, A. Shahsavar, P. Prochazka, J. Cechal,* CEITEC - Central European Institute of Technology, Czechia	
9:20am	**SS1+AS-ThM-5** Using 2D COFs to Stabilize Single-Atom Catalysts on Model Surfaces: From Ultra-High Vacuum System to Ambient Conditions, ***Yufei Bai,*** Indiana University; *D. Wisman,* NAVSEA Crane; *S. Tait,* Indiana University	
9:40am	**SS1+AS-ThM-6** Protein Adsorption on Mixed Self-Assembled Monolayers: Influence of Chain Length and Terminal Group, ***Rebecca Thompson,*** St. Edward's University	
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	
11:00am	**SS2+AS+TF-ThM-10** Ultrafast Exciton Dynamics of Phthalocyanine Films with Different Molecular Orientations, ***Hui Ung Hwang,*** *S. Kim, J. Kim,* Korea Research Instutue of Standards and Science (KRISS), Republic of Korea	**Surface Science Division** **Session SS2+AS+TF-ThM** **Thin Film Surface Chemistry** **Moderators:** **Eric Altman**, Yale University, **Zdenek Jakub**, CEITEC, Czechia
11:20am 11:40am	**INVITED: SS2+AS+TF-ThM-11** Understanding the Surface Chemistry of Oxide Thin Films by Isotope Labeling, ***Yingge Du,*** Pacific Northwest National Laboratory	
12:00pm	**SS2+AS+TF-ThM-13** Interaction of Self-Assembled Monolayers with Atomic Oxygen During Area-Selective Atomic Layer Deposition, ***Silvia Armini,*** IMEC Belgium; *A. Brady Boyd,* School of Physical Sciences, Dublin City University, Ireland	

Thursday Afternoon, November 9, 2023

	2D Materials Technical Group **Room C123 - Session 2D1-ThA** **2D-Materials: Topological and Quantum Properties** **Moderators: Harriet Åhlgren**, University of Vienna, Austria, **Miaofang Chi**, Oak Ridge Natinal Laboratory	**2D Materials Technical Group** **Room B110-112 - Session 2D2-ThA** **2D-Materials: Surface and Interface Effects** **Moderators: Huamin Li**, University at Buffalo-SUNY, **Cristina Satriano**, University of Catania, Italy
2:20pm	**INVITED: 2D1-ThA-1** 2D Transition Metal Chalcogenide Semimetals, ***David Cobden,*** University of Washington	**2D2-ThA-1** Two-dimensional van der Waals Materials and Their Mixed Low-Dimensional Hybrids for Electrochemical Energy Applications, ***Fei Yao,*** University at Buffalo-SUNY
2:40pm		**2D2-ThA-2** Influences of Fe Vacancy and Te Vacancy on Magnetic Domains on Fe_3Gete_2 Surfaces, ***TeYu Chien,*** University of Wyoming; *D. Baral,* University of Arkansas; *Z. Fu, J. Tian,* University of Wyoming; *H. Chen,* Colorado State University
3:00pm	**2D1-ThA-3** Artificial Graphene Nanoribbons with Tailored Topological States, ***Nathan Guisinger,*** *P. Darancet,* Argonne National Laboratory, USA	**2D2-ThA-3** Emergent Moiré Phonons Due to Zone Folding in WSe_2-WS_2 Van Der Waals Heterostructures, ***Hsun Jen Chuang,*** *B. Jonker,* Naval Research Laboratory
3:20pm	**2D1-ThA-4** Critical Materials: Fine Tuning Electronic and Structural Properties of Rare-Earth Based 2-D Structures at the Atomic Limits, ***Kyaw Zin Latt,*** Nanoscience and Technology Division, Argonne National Laboratory; *T. Ajayi,* Nanoscience and Technology Division, Argonne National Laboratory ; Nanoscale and Quantum Phenomena Institute, and Department of Physics & Astronomy, Ohio University; *X. Cheng,* Department of Chemistry and Biochemistry, Ohio University; *N. Dandu,* Materials Science Division, Argonne National Laboratory; *A. Ngo,* Materials Science Division, Argonne National Laboratory; Chemical Engineering Department, University of Illinois; *E. Masson,* Department of Chemistry and Biochemistry, Ohio University; *S. Hla,* Nanoscience and Technology Division, Argonne National Laboratory; Nanoscale and Quantum Phenomena Institute, and Department of Physics & Astronomy, Ohio University	**2D2-ThA-4** Stabilizing Metastable Constituent Structures via 2D Interlayer Interactions in Heterostructures, ***Fischer Harvel,*** *D. Johnson,* University of Oregon
3:40pm	**INVITED: 2D1-ThA-5** Quantum Sensing with Spin Qubits in Hexagonal Boron Nitride, ***Tongcang Li,*** Purdue University	**2D2-ThA-5** Comparative Study of How Growth Parameters Affect the Optoelectronic Properties of $MoSe_2$ and WS_2 on Sapphire Substrates Grown by Chemical Vapor Deposition (CVD), ***Selena Coye,*** Department of Physics, Clark Atlanta University; *K. Johnson,* Morehouse College, Department of Dual Degree Engineering; *I. Matara Kankanamge, M. D. Williams,* Department of Physics, Clark Atlanta University
4:00pm		**2D2-ThA-6** Imaging Spin Filter for NanoESCA Based on Au/Ir or Oxide Passivated Fe, *M. Escher, N. Weber, T. Kuehn,* ***Marten Patt,*** FOCUS GmbH, Germany

Thursday Afternoon, November 9, 2023

	Advanced Focused Ion Beams **Room A107-109 - Session IB-ThA** **In Situ FIB Applications** **Moderators:** **Valerie Brogden**, University of Oregon, **Shida Tan**, Intel Corporation	**Electronic Materials and Photonics Division** **Room B116 - Session EM-ThA** **Theme: CMOS+X: Piezoelectrics, Ferroelectrics, Multiferroics, and Memory** **Moderators: M. David Henry**, Sandia National Labs, **Stephen McDonnell**, University of Virginia
2:20pm	**INVITED: IB-ThA-1** Surface Near Helium Damage in Materials Studied with a High Throughput Implantation Method, ***Peter Hosemann***, University of California at Berkeley, Lawrence Berkeley National Laboratory; *M. Baloocha, S. Stevenson, Y. Xie,* University of California at Berkeley	**INVITED: EM-ThA-1** Factors That Stabilize the Ferroelectric Phase of Hafnia, ***Jon Ihlefeld***, *S. Jaszewski, S. Fields, M. Lenox, B. Aronson,* University of Virginia; *T. Cai, B. Sheldon,* Brown University; *S. Calderon,* Carnegie Mellon University; *K. Kelley,* Oak Ridge Natinal Laboratory; *T. Beechem,* Purdue University; *M. Henry,* Sandia National Laboratories; *E. Dickey,* Carnegie Mellon University
2:40pm		
3:00pm	**IB-ThA-3** Modes of Strain Accommodation in Cu-Nb Multilayered Thin Film on Indentation and Cyclic Shear, ***Mayur Pole***, *A. Devaraj, T. Ajantiwalay, S. Tripathi, M. Olszta, T. Wang,* PNNL; *B. Gwalani,* North Carolina State University; *Z. Lu, H. Mehta,* PNNL	**EM-ThA-3** Internal Photoemission (IPE) Spectroscopy Measurement of Interfacial Barrier Heights in Pristine and Poled Ferroelectric ALD Hafnium-Zirconium-Oxide Metal/Oxide/Semiconductor (MOS) Devices, ***Jessica Haglund***, Oregon State University; *T. Mimura,* Gakushuin University, Japan; *J. Ihlefeld,* University of Virginia; *J. Conley,* Oregon State University
3:20pm	**IB-ThA-4** Investigating the Site-Specific Mechanical Properties of Advanced Aluminum Alloys via in-Situ Micromechanical Testing Inside the Plasma FIB, ***Tanvi Ajantiwalay***, *A. Devaraj,* Pacific Northwest National Laboratory	**EM-ThA-4** Phase Transformations Driving Biaxial Stress Reduction During Wake-Up of Hafnium Zirconium Oxide Thin Films, ***Samantha Jaszewski***, Sandia National Laboratories; *S. Fields,* University of Virginia; *S. Calderon,* Carnegie Mellon University; *B. Aronson,* University of Virginia; *T. Beechem,* Purdue University; *K. Kelley,* Oak Ridge Natinal Laboratory; *E. Dickey,* Carnegie Mellon University; *J. Ihlefeld,* University of Virginia
3:40pm	**INVITED: IB-ThA-5** Evolution of Stress Fields During Crack Growth and Arrest in Micro-Cantilevers During *in Situ* Bending, ***Michael Meindlhumer***, *M. Alfreider,* Montanuniversität Leoben, Austria; *M. Burghammer, M. Rosenthal,* ESRF, The European Synchrotron, France; *R. Daniel, A. Hohenwarter, C. Mitterer, J. Todt, D. Kiener, J. Keckes,* Montanuniversität Leoben, Austria	**EM-ThA-5** AVS Russell and Sigurd Varian Awardee Talk: Novel Chalcogenide Superlattice-Based Energy-Efficient Phase-Change Memory for 3D Heterogeneous Integration, ***Asir Intisar Khan***[1], *X. Wu, A. Daus, H. Kwon, K. Goodson, H. Wong, E. Pop,* Stanford University
4:00pm		

[1] **AVS Russell and Sigurd Varian Awardee**

Thursday Afternoon, November 9, 2023

	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic **Room B113 - Session HC+SS-ThA** **Closing in on Reality & HC Discovery Reception** **Moderators: Liney Arnadottir**, Oregon State University, **Ashleigh Baber**, James Madison University, **Dan Killelea**, Loyola University Chicago	**Light Sources Science Mini-Symposium** **Room C124 - Session LS+AC+AS+LX+MI+TH-ThA** **Facility Upgrades and Recent Capability Development** **Moderators:** **David Shuh**, Lawrence Berkeley National Laboratory, **James G. Tobin**, University of Wisconsin-Oshkosh, **Gertrud Zwicknagl**, Technical University Brauschweig, Germany
2:20pm	**INVITED: HC+SS-ThA-1** Ion Imaging applied to Heterogeneous Catalysis on Metals, ***Theofanis Kitsopoulos***, University of Southern Mississippi	**INVITED: LS+AC+AS+LX+MI+TH-ThA-1** The Impact of Upgraded High-Brightness Synchrotron Lightsources on the Chemical Speciation of Nanoscale Heterogeneous Aggregates and Transformations, ***Andreas Scholl***, Advanced Light Source, Lawrence Berkeley National Laboratory
2:40pm		
3:00pm	**INVITED: HC+SS-ThA-3** Structure-Sensitive Metal-Support Interactions – Applications to Selective Hydrogenation Reactions, ***Helena Hagelin Weaver***, *H. Zhao, M. Lapak, L. Hsiao, D. Choi, C. Bowers,* University of Florida	**INVITED: LS+AC+AS+LX+MI+TH-ThA-3** The Advanced Photon Source Upgrade: A transformative tool for understanding material structure., ***Jonathan Lang***, *J. Lang,* Argonne National Laboratory
3:20pm		
3:40pm	**HC+SS-ThA-5** High Activity and Selectivity of Dilute Ti-Cu(111) Alloys Toward the Deoxygenation of Ethanol to Ethylene, *J. Shi,* University of Florida; *H. Ngan, P. Sautet,* University of California at Los Angeles; ***Jason Weaver***, University of Florida	**INVITED: LS+AC+AS+LX+MI+TH-ThA-5** Combining Focused Ion Beam Sectioning, Soft X-ray Spectromicroscopy, and Non-Negative Matrix Factorization to Reveal Acrtinide Chemical Speciation at the Nanoscale, ***Alexander Ditter***, *D. Smiles, J. Pacold, D. Lussier,* Lawrence Berkeley National Laboratory; *Z. Dai,* Lawrence Livermore National Laboratory; *A. Altman,* Lawrence Berkeley National Laboratory; *M. Bachhav,* Idaho National Laboratory; *B. Chung,* Lawrence Livermore National Laboratory; *C. Degueldre,* Lancaster University, UK; *S. Donald,* Lawrence Livermore National Laboratory; *L. He,* Idaho National Laboratory; *M. Mara, S. Minasian, D. Shuh,* Lawrence Berkeley National Laboratory
4:00pm		

	Manufacturing Science and Technology Group **Room C120-122 - Session MS+AP+AS+TF-ThA** **Machine Learning for Microelectronics Manufacturing Process Control** **Moderator: Tina Kaarsberg**, U.S. Department of Energy, Advanced Manufacturing Office	**Plasma Science and Technology Division** **Room A106 - Session PS1-ThA** **Plasma-Surface Interactions II** **Moderators:** **Lei Liu**, Lam Research Corporation, **Pingshan Luan**, TEL Technology Center America
2:20pm	**INVITED: MS+AP+AS+TF-ThA-1** Human-Machine Collaboration for Improving Semiconductor Process Development, ***Keren Kanarik,*** LAM Research	**PS1-ThA-1** A Pseudo-Wet Plasma Etching Mechanism for SiO_2 at Cryogenic Temperature Using Hydrogen Fluoride Gas with*in-Situ* Surface Monitoring, ***Shih-Nan Hsiao****, M. Sekine,* Nagoya University, Japan*; Y. Iijima, R. Suda, Y. Ohya, Y. Kihara,* Tokyo Electron Ltd., Japan*; T. Tsutsumi, K. Ishikawa,* Nagoya University, Japan*; M. Hori,* nagoya University, Japan
2:40pm		**PS1-ThA-2** Coalescence/De-Coalescence Plasma Patterns on a Plasma-Liquid Interface, ***Jinyu Yang****, O. Dubrovski, P. Rumbach, H. Chang, D. Go,* University of Notre Dame
3:00pm	**INVITED: MS+AP+AS+TF-ThA-3** Machine Learning-based Atomic Layer Deposition, ***Kanad Basu,*** University of Texas at Dallas	**INVITED: PS1-ThA-3** Plasma-Surface Interactions at Atmospheric Pressure: From Liquids to Catalytic Surfaces, ***Peter Bruggeman,*** University of Minnesota
3:20pm		
3:40pm	**MS+AP+AS+TF-ThA-5** Rapid Optimization of Gap-Fill Recipes Using Machine Learning, ***Sebastian Naranjo****, L. Medina de Oliveira, M. Chopra,* Sandbox Semiconductor	**PS1-ThA-5** Enabling Dry Etching of sub-10 Nm Features at Cryogenic Temperature, *S. Srinivasan, J. Li, X. Yang, S. Joshi, T. Liu,* ***Sunit Agarwal,*** Applied Materials, Inc.
4:00pm		**PS1-ThA-6** Study of Nonequilibrium Electron and Vibrational Response During Plasma Excitation, ***Sara Makarem****, P. Hopkins,* University of Virginia

	Plasma Science and Technology Division **Room B117-119 - Session PS2-ThA** **Plasma Modeling and Characterization** **Moderators: Catherine Labelle**, Intel Corporation, **Du Zhang**, TEL Technology Center America	**Surface Science Division** **Room D136 - Session SS+HC-ThA** **Alloys and Complex Surfaces** **Moderators: Arthur Utz**, Tufts University, **Zhenrong Zhang**, Baylor University
2:20pm	**PS2-ThA-1** Control of the Ion Angle and Energy Distribution by an Embedded Electrode in a Focus Ring for a Capacitively Coupled Rf Plasma, ***Seoi Choi***, *H. Lee,* Pusan National University, Republic of Korea	**INVITED: SS+HC-ThA-1** Single-Atom Alloy Catalysts: Born in a Vacuum, Tested in Reactors, and Understood In Silico, ***E Charles Sykes***, Tufts University
2:40pm	**PS2-ThA-2** Plasma Etch Chemistries for High Aspect Ratio Application with Low Emission, ***Phong Nguyen***, *C. Jennings, S. Biltek, N. Stafford,* Air Liquide	
3:00pm	**PS2-ThA-3** Two and Three-Dimensional Kinetic Modeling of Capacitively Coupled Plasma Discharge in Cylindrical and Cartesian Geometry, ***Willca Villafana***, *A. Powis,* Princeton University Plasma Physics Lab; *S. Rauf,* Applied Materials; *I. Kaganovich,* Princeton University Plasma Physics Lab	**SS+HC-ThA-3** Heterogeneities in Early Oxide Evolution on Ni-Cr Alloys Studied with a Combination of XPEEM and Data Analytics Methods, ***Keithen Orson***, University of Virginia; *W. Blades,* University of Arizona; *Y. Niu, A. Zakharov,* Max IV Laboratory, Sweden; *P. Reinke,* University of Virginia
3:20pm	**PS2-ThA-4** Effect of Feed Gas Content and Substrate Temperature on RIE of SiN_x with $Ar/C_4F_6/O_2$ Plasma, ***Xue Wang***, Colorado School of Mines, USA; *R. Gasvoda,* Lam Research Corporation, Tualatin; *E. Hudson, P. Kumar,* Lam Research Corporation, Fremont; *S. Agarwal,* Colorado School of Mines	**SS+HC-ThA-4** The Impact of Crystallographic Orientation on the Oxidation of Ni-Cr Alloys, ***Petra Reinke***, University of Virginia, USA; *W. Blades,* Arizona State University; *D. Jessup, J. St.Martin, K. Orson,* University of Virginia, USA
3:40pm	**PS2-ThA-5** Characterization of Ion and Reactive Species in Perfluorocarbon Gas ($C_4H_2F_6$-Z) Plasma for Mitigating Global Warming Potential, ***Minsu Choi***, Chungnam National University (CNU), Republic of Korea; *Y. Lee,* Institute of Quantum Systems (IQS), Chungnam National University (CNU), Republic of Korea; *C. Cho,* Chungnam National University (CNU), Republic of Korea; *S. Kim,* Institute of Quantum Systems (IQS), Chungnam National University (CNU), Republic of Korea; *I. Seong, W. Jeong, B. Choi, S. Seo,* Chungnam National University (CNU), Republic of Korea; *Y. Seol,* Institute of Quantum Systems (IQS), Chungnam National University (CNU), Republic of Korea; *H. Tak,* Sungkyunkwan University (SKKU), Republic of Korea; *G. Yeom,* Sungkyunkwan University (SKKU), SKKU Advanced Institute of Nano Technology (SAINT), Republic of Korea; *S. You,* Institute of Quantum Systems (IQS), Chungnam National University (CNU), Republic of Korea	**SS+HC-ThA-5** Structure of Electrochemical Electrode/Electrolyte Interfaces from First Principles, ***Axel Groß***, University of Ulm, Germany
4:00pm	**PS2-ThA-6** Cryogenic Aspect Ratio Etching of SiO_2 at $CF_4/H_2/Ar$ Plasma in a Cryogenic Reactive Ion Etch System, ***Hee Tae Kwon***, *I. Bang, J. Kim, H. Kim, S. Lim, S. Kim, S. Jo, J. Kim, W. Kim, G. Shin, G. Kwon,* Kwangwoon University, Republic of Korea	**SS+HC-ThA-6** Surface Characteristics of Flexible Carbon-Doped Oxide Thin Films Under Reactive Ion Etching Process Using Fluorocarbon-Based Plasma, ***Seonhee Jang***, *T. Poche, R. Chowdhury,* University of Louisiana at Lafayette

Thin Film Division
Room A105 - Session TF-ThA
Organic and Polymeric Materials
Moderators: Mark Losego, Georgia Institute of Technology,
Matthias Young, University of Missouri

2:20pm	**INVITED: TF-ThA-1** Chemical, Biological, and Topological Control Using Chemical Vapor Deposition Polymerization, ***Joerg Lahann***, University of Michigan, Ann Arbor	
2:40pm		
3:00pm	**TF-ThA-3** On the Mechanism of Oxidative Molecular Layer Deposition, ***Matthias Young***, *Q. Wyatt, K. Brathwaite, M. Mehregan, M. Ardiansyah, N. Paranamana, K. Brorsen,* University of Missouri	
3:20pm	**TF-ThA-4** Adsorbed Polymer Crystals in Icvd: Prevention and Control, ***Simon Shindler***, *R. Yang*, Cornell University	
3:40pm	**TF-ThA-5** Area-Selective Initiated Chemical Vapor Deposition (AS-iCVD) for Non-Lithographic Patterning of Polymer Thin Films, ***Junjie Zhao***[1], Zhejiang University, China	
4:00pm		

[1] **TFD Paul Holloway Award Winner**

2D Materials Technical Group
Room Oregon Ballroom 203-204 - Session 2D-ThP
2D-Materials: Poster Session
4:30 – 6:30 pm

2D-ThP-1 Multi-MOF-Based Chemical Gas Sensors with Enhanced Selectivity and Sensitivity via Quartz Crystal Microbalances, ***Tzer-Rurng Su***, *J. Dhas, C. Pan, M. Paul, C. Simon, C. Chang,* Oregon State University

2D-ThP-2 Graphene/Noble Metal Nanoparticles Nanocomposites at the Biointerface with a Blood Brain Barrier Model to Scrutinize Brain Wound Healing, *A. Foti, L. Calì, A. Agafonova, A. Cosentino, C. Anfuso, G. Lupo,* ***Cristina Satriano***, University of Catania, Italy

2D-ThP-4 Performance and Reliability Improvement of IGTO TFTs via Co-Sputtering, ***Seung Jin Kim***, *B. Choi,* Sungkyunkwan University, Korea

2D-ThP-5 NanoFrazor Technology: Enabling Unique Nanowire and 2D Material Device Fabrication, ***Nicholas Hendricks***, *A. Ubezio, M. Käppeli, J. Vergés, J. Chaaban, E. Çağin,* Heidelberg Instruments Nano, Switzerland

2D-ThP-6 Synthesis of 2D-WS_2 on c-sapphire using H_2S gas-source CVD, ***Kun-An Chiu***, *W. Chen, H. Chen, Y. Lin, C. Chen, H. Chen, F. Chen,* Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan

2D-ThP-8 Polarization Sensitive Frequency Selective Metasurface for the Infrared Spectral Range, ***Micheal McLamb***, *P. Stinson, N. Shuchi, D. Louisos, T. Hofmann,* University of North Carolina at Charlotte

2D-ThP-9 *In-situ* X-ray Absorption Spectroscopy Study of Monodispersed Cobalt Phthalocyanine on Carbon Nanotubes as Electrocatalyst for Carbon Dioxide Reduction to Methanol, ***Mason Lyons***, Oregon State University; *C. Rooney, H. Wang,* Yale University; *Z. Feng,* Oregon State University

2D-ThP-10 A Method for creating Single Atom Catalysts through Vapor-phase Synthesis of Covalent Organic Frameworks, ***Siamak Nejati***, University of Nebraska–Lincoln; *S. Gnani Peer Mohamed,* University of Nebraska - Lincoln

2D-ThP-11 Real-Time Machine Learning Enhanced Defect Engineering in Ceria Nanostructures, *U. Kumar,* University of Central Florida; *A. Arunachalam,* University of Texas at Dallas; *C. Feit, N. Berriel,* University of Central Florida; *K. Basu,* University of Texas at Dallas; *P. Banerjee, S. Seal,* University of Central Florida; ***Yifei Fu***, University of Central Florida, Orlando

2D-ThP-12 Investigating the Fate of Nanoplastics in Aquatic Environments, ***Tycho Roorda***, *I. Groot,* Leiden University, The Netherlands

2D-ThP-13 Plasma-Induced Energy Band Evolution for Two-Dimensional Heterogeneous Junctions, *A. Ahmed, A. Cabanillas, A. Chakravarty, F. Yao,* ***Huamin Li***, University at Buffalo

2D-ThP-14 *in-situ* Electronic structure monitoring of 2D TMDC-field effect transistor by operando-XPS, ***Seungwook Choi***, Korea Research Instutue of Standards and Science (KRISS), Republic of Korea; *G. Oh, T. Kim,* Jeonbuk National University, Republic of Korea; *A. Kim,* Korea Research Instutue of Standards and Science (KRISS), Republic of Korea

2D-ThP-15 Atomic Layer Deposition of Al_2O_3 on Monolayer MoS_2 with Mild NF_3 Remote Plasma Treatment, ***Kwangwuk Park***, *J. Kang, H. Lee, M. Leem, G. Yeom, H. Kim,* Sungkyunkwan University (SKKU), Republic of Korea

2D-ThP-16 AgNFs Supported on Graphene Based Materials as Multi-Wavelength SERS Active Platforms, *A. Brancato, M. Condorelli, S. Sciacca, C. Bonaccorso, M. Barcellona, M. Fragalà, C. Satriano, G. Compagnini,* ***Luisa D'Urso***, University of Catania, Italy

2D-ThP-17 Angiogenin-Tailored Graphene Oxide Nanosheets to Target Prostate Cancer, ***Diego La Mendola***, *T. Marzo,* University of Pisa, Italy; *O. Hansson,* University of Goteborg, Sweden; *C. Satriano,* University of Catania, Italy

2D-ThP-18 Defect Inventory of CVT Grown TaS_2 Crystals, ***Dejia Kong***, *R. Peckham,* University of Virginia; *Z. Mao, S. Lee,* Pennsylvania State University; *K. Burns, I. Harrison, P. Reinke,* University of Virginia

2D-ThP-19 Advance in Momentum Microscopy with NanoESCA MARIS, ***Marten Patt***, *N. Weber, M. Escher, T. Kuehn,* FOCUS GmbH, Germany

2D-ThP-20 A Novel Method to Measure Cross-plane Resistivity of Ultra-Thin Films, *S. Weng,* University of Southern California; *Y. Wang,* Stanford University; ***Celsey Price***, *H. Blackwood, M. Choffel, A. Miller,* University of Oregon; *R. Li, M. Chen,* University of Southern California; *D. Johnson,* University of Oregon; *A. Majumdar,* Stanford University; *S. Cronin,* University of Southern California

2D-ThP-21 Evaluating the Impact of Defects, Interfaces and Boundaries on Thermal Transport in 2D Materials Using a Novel Opto-Thermal Metrology Technique with Sub-Micron Resolution, ***John Gaskins***, *A. Jones, P. Hopkins, B. Foley,* Laser Thermal

2D-ThP-22 Site-Specific Synthesis of Molybdenum Dichalcogenide Using Chemical Vapor Deposition Technique, ***Chu Te Chen***, *A. Butler, Y. Fu, A. Cabanillas, A. Ahmed, A. Chakravarty, S. Jadeja, A. Yadav, H. Li, F. Yao,* The State University of New York, Buffalo

Advanced Focused Ion Beams
Room Oregon Ballroom 203-204 - Session IB-ThP
Advanced Focused Ion Beams Poster Session
4:30 – 6:30 pm

IB-ThP-1 Emission of Multiple Ion Species from a Single Ion Source: Top-Down FIB with LMAIS on a Lithography Platform, ***Torsten Richter***, *A. Ost, A. Nadzeyka, P. Mazarov, L. Bruchhaus, F. Meyer,* Raith GmbH, Germany

IB-ThP-2 Roadmap for Focused Ion Beam Technologies, *K. Höflich,* Ferdinand Braun Institut, Germany; *G. Hobler,* TU Wien, Austria; *F. Allen,* University of California at Berkeley; *T. Wirtz,* LIST, Luxembourg; *G. Rius,* Institut de Microelectrònica de Barcelona, Spain; ***Gregor Hlawacek***, Helmholtz Zentrum Dresden-Rossendorf, Germany

INVITED: IB-ThP-3 A Multi-Scale Understanding of the Three-Dimensional Microstructure of the Cornea Using Oxygen Plasma Focused Ion Beam, Scanning Transmission Electron Microscopy and Micro-CT Techniques, ***Valerie Brogden***, *M. Scanagatta-Long, H. Uehara, A. Lin,* University of Oregon

IB-ThP-5 Focused Ion Beam Implantation by Deceleration, *M. Titze,* Sandia National Laboratory; *J. Poplawsky,* Oak Ridge Natinal Laboratory; *E. Bielejec,* Sandia National Laboratory; ***Alex Belianinov***, Sandia National Laboratories

Applied Surface Science Division
Room Oregon Ballroom 203-204 - Session AS-ThP
Applied Surface Science Poster Session
4:30 – 6:30 pm

AS-ThP-1 Low-Energy Ion Scattering Intensities from Supported Nanoparticles: The Spherical Cap Model to Determine Number Density, Size, and Contact Angle, ***Kun Zhao***, University of Washington; *D. Auerbach,* Max Planck Institute for Multidisciplinary Science, Germany; *C. Campbell,* University of Washington

AS-ThP-2 Work Function Measurement by Ultraviolet Photoelectron Spectroscopy: Versailles Project on Advanced Materials and Standards Interlaboratory Comparison, ***Jeong Won Kim***, *A. Kim, H. Hwang, J. Kim, S. Choi,* KRISS, Republic of Korea; *N. Koch, D. Shin,* Humboldt University Berlin, Germany; *Z. Zhao, F. Liu,* CAS, China; *M. Choi,* SK Hynix, Korea; *K. Lee, Y. Park,* Kyung Hee University, Republic of Korea

AS-ThP-3 Effect of Soft X-Ray Beam on Channel Properties of 2D-Field Effect Transistor During *operando* X-ray Photoelectron Spectroscopy, ***Ansoon Kim***, *S. Choi,* Korea Research Instutue of Standards and Science (KRISS), Republic of Korea; *G. Oh, T. Kim,* Jeonbuk National University, Republic of Korea

AS-ThP-4 Transient Grating Time-Resolved PEEM to Study Charge-Carrier Transport, ***Chandni Babu***, *D. Zigmantas,* Lund University, Sweden

AS-ThP-5 Comparison of Commercially Available as-Received Lithium Metal Surfaces Using XPS and FTI, ***Harry Meyer***, *R. Sahore, A. Westover,* Oak Ridge National Laboratory

AS-ThP-6 Silver and Aluminum by X-ray Photoelectron Spectroscopy (XPS), ***Braxton Kulbacki***, *S. Jafari, A. Dean, S. Ko, M. Linford,* Brigham Young University

AS-ThP-7 Copper and Gold by X-ray Photoelectron Spectroscopy (XPS), ***Annika Dean***, *S. JAFARI, B. Kulbacki, S. ko, M. Linford,* Brigham Young University

AS-ThP-8 Xps Investigation of Monoatomic and Cluster Argon Sputtering of Zirconium Dioxide, ***Michael Burrell***, Naval Nuclear Laboratory, Knolls Atomic Power Laboratory; *E. Gillman,* Naval Nuclear Laboratory, Bettis Atomic Power Laboratory

AS-ThP-10 Unlocking the Potential of Critical Rare Earth Minerals: Advanced Characterization and Analysis with XPS and RBS for Sustainable Resource Management, ***Sage Buchanan***, Western University, Canada

AS-ThP-11 Computer-Readable Image Markers for Automated Registration in Correlative Microscopy, ***Peter Cumpson***, University of New South Wales, Australia; *J. Sherriff,* University of Newcastle-upon-Tyne, UK

AS-ThP-12 Surface Restructuring and Stability of Perovskite Oxide Electrocatalysts Studied by Surface X-ray Diffraction and Grazing Incidence X-ray Absorption Spectroscopy, ***Alvin Chang***, *R. Jana, K. Stoerzinger, Z. Feng,* Oregon State University

AS-ThP-13 XPS and ToF-SIMS Depth Profile Comparison of Si Heterojunction Solar Cells, ***Tae Kyong John Kim***, Case Western Reserve University; *K. Davis,* University of Central Florida; *I. Martin,* Case Western Reserve University

AS-ThP-14 Surface Analysis of Ru and Ir Thin Films after Device Fabrication Processing Techniques, ***Randall Wheeler***, *S. Antar, A. Valenti, C. Ventrice,* SUNY Polytechnic Institute; *M. Strohmayer, J. Brewer, C. Nassar, C. Keimel,* Menlo Microsystems, Inc.

AS-ThP-17 In-Depth Morphology/Evolution Characterization of an Obliquely Sputtered Micro/Mesoporous Si/SiO_2 Thin Film, ***Behnam Moeini***, Department of Chemistry and Biochemistry, Brigham Young University; *D. Shollenberger, D. Bell,* Restek Corporation; *D. Fullwood,* Mechanical Engineering Department, Brigham Young University; *R. Vanfleet,* Department of Physics and Astronomy, College of Physical and Mathematical Sciences, Brigham Young Universit; *M. Linford,* Department of Chemistry and Biochemistry, Brigham Young University

AS-ThP-18 Benefits of Cryo-XPS for Battery Analysis, ***Jonathan Counsell***, *A. Roberts,* Kratos Analytical Limited, UK; *C. Moffitt,* Kratos Analytical Inc., UK; *C. Blomfield,* Kratos Analytical Limited, UK; *D. Surman,* Kratos Analytical Inc.

AS-ThP-19 Analysis of Buried Interfaces for Device Technology by Soft and Hard X-ray Photoelectron Spectroscopy, ***Jennifer Mann***, *K. Artyushkova, S. Zaccarine, N. Biderman,* Physical Electronics

AS-ThP-20 X-ray Photoelectron Spectroscopy Analysis of PEMWE Catalyst Layers with Focus on Catalyst-Ionomer Interface, ***Jayson Foster***, Colorado School of Mines, USA; *X. Lyu*, Oak Ridge National Laboratory, USA; *E. Padgett, S. Mauger,* National Renewable Energy Laboratory; *A. Serov,* Oak Ridge National Laboratory, USA; *S. Pylypenko,* Colorado School of Mines, USA

AS-ThP-21 Correlative ToF SIMS and STEM-EDS Analysis of Platinum Coatings on Electrolyzer Porous Transport Layers, ***Genevieve Stelmacovich***, *L. van Eijk, M. Coats,* Colorado School of Mines; *S. Ware, J. Young*, National Renewable Energy Laboratory; *M. Walker,* Colorado School of Mines; *G. Bender,* National Renewable Energy Laboratory; *S. Pylypenko,* Colorado School of Mines

AS-ThP-22 Using X-Ray Photoelectron Spectroscopy (XPS) to Characterize Organo-Mineral Complexes in Environmental and Synthesized Samples, ***Qian Zhao***, *M. Engelhard, A. Bhattacharjee,* Pacific Northwest National Laboratory; *E. Rooney,* University of Tennessee, Knoxville; *E. Herndon,* oak Ridge Natinal Laboratory; *K. Bidas,* University of Tennessee, Oak Ridge National Laboratory

AS-ThP-23 Do Different XPS Systems Give the Same Result?, ***Lyndi Strange***, *D. Baer, M. Engelhard, V. Shutthanandan,* Pacific Northwest National Laboratory; *A. Shard,* National Physical Laboratory, U.K.

AS-ThP-25 Correlative Microscopy of SIMS, Helium Ion Microscopy and XPS, ***Jake Sheriff***, *I. Fletcher,* Newcastle University, UK; *P. Cumpson,* University of New South Wales, Australia

AS-ThP-27 The Utility of Surface-Induced Dissociation in Molecular Identification, ***Gregory L. Fisher***, Physical Electronics; *S. Iida,* ULVAC-PHI, Japan

AS-ThP-28 Unraveling the Temperature Induced Phase Transitions of PbO_x Using Multi-Modal Characterization Approach, ***Ajay Karakoti***, *V. Shutthanandan, D. Bazak, D. Nguyen, V. Murugesan,* Pacific Northwest National Laboratory

AS-ThP-29 Quantitative Investigation of SiP and SiGe Layers using HAXPES and ToF-SIMS, *N. Gauthier,* ***Olivier Renault***, *E. Martinez, J. Barnes, J. Richy, J. Kanyandekwe,* CEA-LETI, France

AS-ThP-30 Tof-SIMS Analyses in an H_2 Atmosphere: Improvements in Thin Films Depth Profiling and Reduction of Matrix Effect, *J. Ekar,* ***Janez Kovač***, Jozef Stefan Institute, Slovenia

AS-ThP-34 Analysis of Defective Electrical Characteristics of Metal-Insulator-Metal(Mim) Capacitor and Improvement of Leakage Characteristics, ***SUNG Gyu PYO***, CAU, Republic of Korea

AS-ThP-35 Assessment of Hafnium Oxynitride ($HfO_{1-x}N_x$) and Silicon Hafnium Oxynitride ($SiHfO_{1-x}N_x$) Components in Hf 4f XPS Spectra, *M. Mayorga Garay,* CINVESTAV-Queretaro, Mexico; *J. Torres Ochoa,* Universidad Politecnica de Juventino Rosas, Mexico; *O. Cortazar Martinez,* ***Dulce Maria Guzman Bucio***, *A. Herrera Gomez,* CINVESTAV-Unidad Queretaro, Mexico

AS-ThP-36 A Novel Approach for Discriminating Cu^0 and Cu^{1+} in Cu 2*P* Photoemission Spectra, *A. Torres-Ochoa,* Universidad Politecnica Juventino Rosas, Mexico; *D. Cabrera-German,* Universidad de Sonora, Mexico; *O. Cortazar-Martinez,* CINVESTAV-Unidad Queretaro, Mexico; *M. Bravo-Sanchez,* Universidad de Guadalajara, Mexico; *G. Gomez-Sosa,* ***Alberto Herrera-Gomez***, CINVESTAV-Unidad Queretaro, Mexico

AS-ThP-37 Morphological and Chemical State Characterization of CuO Nanoparticles and Thin Films, *M. Kazi Hanium,* Department of Physics, University of Dhaka, Bangladesh; *S. Rodriguez Bonet, M. Bosco,* ***Florencia Carolina Calaza***, Instituto de Desarrollo Tecnológico para la Industria Química, Argentina

Electronic Materials and Photonics Division
Room Oregon Ballroom 203-204 - Session EM-ThP
Electronic Materials and Photonics Poster Session
4:30 – 6:30 pm

EM-ThP-1 Phase Transformation and Growth Mechanism of RF Sputtered Ferroelectric Lead Scandium Tantalate ($PbSc_{0.5}Ta_{0.5}O_3$) Films for Thermal Management, ***Sanju Gupta***, Penn State University

EM-ThP-2 Flexible Phototransistors Array based on Hybrid Channel composed of Tellurium nanowires and tellurium-film with High Optical Responsivity, ***Uisik Jeong***, Sungkyunkwan University (SKKU), Republic of Korea; *M. Naqi,* Sungkyunkwan University (SKKU), Pakistan; *S. Kim,* Sungkyunkwan University (SKKU), Republic of Korea

EM-ThP-3 Observation of Gapless Nodal-line States in NdSbTe, ***Sabin Regmi***, Idaho National Laboratory; University of Central Florida; *R. Smith, A. Sakhya, M. Sprague, M. Mondal, I. Bin Elius, N. Valadez,* University of Central Florida; *K. Gofryk,* Idaho National Laboratory; *A. Ptok, D. Kaczorowski,* Polish Academy of Sciences, Poland; *M. Neupane,* University of Central Florida

EM-ThP-4 Growth of Mn-Doped $Pb(In_{1/2}Nb_{1/2}O_3)$-$Pb(Mg_{1/3}Nb_{2/3}O_3)$-$PbTiO_3$ Thin Films by Pulsed Laser Deposition, ***Da-Ren Liu***, Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan

EM-ThP-5 Synthesis and Stability of MBE Grown $NbSe_2$, *C. Rogers,* University of Virginia; *A. Hasan,* The University of Virginia; *C. Jezewski, C. Naylor,* Components Research, Intel Corporation, Hillsboro, OR 97124, USA; *N. Shukla,* ***Stephen McDonnell***, The University of Virginia

EM-ThP-6 Hollow-Cathode Plasma-ALD of Titanium Nitride Films Using *In-Situ* Ellipsometry for Conductivity Analysis, *D. Lefcort, S. Bin Hafiz, H. Mohammad, L. Antoine, N. Ibrahimli, S. Ilhom,* University of Connecticut; *A. Okyay,* OkyayTech Inc; ***Necmi Biyikli***, University of Connecticut

EM-ThP-7 A Statistical Design of Experiments and Structural Characterization of ITO for Perovskite Solar Cells, ***Firdos Ali***, Metallurgical and Materials Engineering, The University of Alabama; *D. Li,* Electrical and Computer Engineering, Tne University of Alabama; *S. Gupta,* Metallurgical and Materials Engineering, The University of Alabama

EM-ThP-8 Voltage Tunability in Foundry Produced Resonant PZT piezoMEMS, *J. Evans, N. Montross,* ***Sean Smith***, *S. Chapman, M. McDaniel,* Radiant Technologies Inc.

EM-ThP-9 Enforcing π-π Stacking Using a 1D Perovskite Core, ***Raúl Castañeda***, New Mexico Highlands University

EM-ThP-10 Modular until it's Not – Imaging Fast, Hard X-Rays at NIF, ***Mary Ann Mort***, University of California at Davis; *A. Carpenter,* Lawrence Livermore National Lab; *C. Hunt,* University of California at Davis

Fundamental Discoveries in Heterogeneous Catalysis Focus Topic
Room Oregon Ballroom 203-204 - Session HC-ThP
Fundamental Discoveries in Heterogeneous Catalysis Poster Session
4:30 – 6:30 pm

HC-ThP-1 Insight into Synergistic Effect of Oxide-Metal Interface on Hot Electron Excitation, ***Eunji Lee***, Korea National University of Education, Republic of Korea; *B. Jeon, J. Park,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea; *S. Lee,* Korea National University of Education, Republic of Korea

HC-ThP-2 Chemical Speciation and Structural Evolution of Rhodium and Silver Surfaces with High Oxygen Coverages, ***Dan Killelea***, *M. Turano, L. Jamka, M. Gillum,* Loyola University Chicago; *L. Juurlink,* Leiden University, The Netherlands; *T. Schäfer,* University of Göttingen, Germany

HC-ThP-3 Exploring Field-Assisted Nitrogen Activation with Atom Probe Microscopy, ***Sten V Lambeets***, *M. Wirth, D. Perea,* Pacific Northwest National Laboratory

HC-ThP-4 Adsorption and Hydrogenation of 1,3-Butadiene on Cu (111) and a Pd/Cu (111) Single-Atom-Alloy, ***Mohammad Rahat Hossain***, *M. Trenary,* University of Illinois - Chicago

HC-ThP-5 Studying C-H Activation on RhCu Single-Atom Alloys Using Molecular Beams, ***Molly Powers***, *J. Rosenstein, L. Joseph, A. Utz,* Tufts University

HC-ThP-6 Investigating the Dissociative Chemisorption of Methane on Ru(0001) via Supersonic Molecular Beam, ***Matthew Kalan***, *Y. Li, A. Utz,* Tufts University

HC-ThP-7 Size-Selected Pt Alloy Cluster Catalysts for the Dehydrogenation of Light Alkanes, ***Autumn Fuchs***, *M. Malek, S. Anderson,* University of Utah

HC-ThP-8 Switching between Hot Electron and Hot Hole Transfer during Chemical Reaction, ***Hyekyung Kwon***, Korea National University of Education, Republic of Korea; *B. Jeon, J. Park,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea; *S. Lee,* Korea National University of Education, Republic of Korea

HC-ThP-9 Tracking Elementary Steps in Conversion of Carboxylic Acids on Single Crystalline and Nanofaceted TiO_2(101), ***Xingyu Wang***, Pacific Northwest National Laboratory; *W. Debenedetti,* Los Alamos National Laboratory; *C. O'Connor,* Harvard University; *Z. Dohnalek, G. Kimmel,* Pacific Northwest National Laboratory

HC-ThP-10 ZnO Nanoparticles as an Effective Rhodamine B Dye Mineralization Under Direct Sunlight Irradiation, ***Jose Alberto Alvarado Garcia***, BENEMERITA UNIVERSIDAD AUTONOMA DE PUEBLA, Mexico; *G. ANAYA GONZALEZ,* Universidad Autónoma de Mexico; *R. PEREZ CUAPIO, H. JUAREZ SANTIESTEBAN,* BENEMERITA UNIVERSIDAD AUTONOMA DE PUEBLA, Mexico; *A. ARCE PLAZA,* INSTITUTO POLITÉCNICO NACIONAL, Mexico

HC-ThP-11 Role of Vacancies and Absorbed Hydrogen Atoms on the Formation of Peroxides and Superoxides on CeO_2 Surfaces, *M. Brites Helu, M. Vecchietti, S. Collins,* Instituto de Desarrollo Tecnológico para la Industria Química, Argentina; *M. Calatayud,* Laboratoire de Chimie Théorique, Sorbonne Université, France; ***Jorge Anibal. Boscoboinik***, *D. Stacchiola,* Center for Functional Nanomaterials, Broohaven National Laboratory; *F.C. Calaza,* Instituto de Desarrollo Tecnológico para la Industria Química, Argentina

HC-ThP-12 Small Alcohol Reactivity Over TiO_2/Au(111) Inverse Model Catalysts, ***Ashleigh Baber***, James Madison University

Manufacturing Science and Technology Group
Room Oregon Ballroom 203-204 - Session MS-ThP
Manufacturing Science and Technology Poster Session
4:30 – 6:30 pm

MS-ThP-1 Autonomous Synthesis in the MBE Using Real-Time Artificial Intelligence, ***Tiffany Kaspar***, *L. Wang, J. Christudasjustus, M. Sassi, B. Helfrecht, J. Pope, A. Harilal, S. Akers, S. Spurgeon,* Pacific Northwest National Laboratory

MS-ThP-2 Machine Learning Based Virtual Metrology for Effective Process Control in High Product Mix Manufacturing, ***Hyung Joo Lee,*** *S. Choi,* Siemens EDA, Republic of Korea; *N. Greeneltch, S. Jayaram,* Siemens EDA

MS-ThP-3 Experimental 3D Maintenance Work Measurement and Analysis for Maintenance Improvement and Enhancement of Productivity of Semiconductor Manufacturing Equipment, ***Takashi Numata***, *Y. Ogi, K. Mitani, R. Kawamata, N. Ikeda, T. Ege,* Hitachi, Ltd., Japan; *Y. Kadomoto, R. Ishibashi, Y. Shengnan, Y. Sakka, Y. Nakamura, K. Sato,* Hitachi High-Tech Corporation, Japan

MEMS and NEMS Technical Group
Room Oregon Ballroom 203-204 - Session MN-ThP
MEMS/NEMS Poster Session
4:30 – 6:30 pm

MN-ThP-1 Ferroelectric and Photovoltaic Properties of $Pb_{0.95}La_{0.05}Zr_{0.54}Ti_{0.46}O_3$ Films as a Function of Film Thickness, ***Sneha Kothapally***, *S. Kotru,* The University of Alabama

MN-ThP-2 An In-Situ Reflectometry Parylene Deposition Technique for Highly Accurate and Repeatable Film Thickness and Uniformity, ***Steven Larson***, *K. Coombes, A. Mings, J. Norris,* Sandia National Laboratories

MN-ThP-3 The Effect of CH_4/H_2 Gas Admixture on the Selectivity Towards Pt in Dry Etching of PZT Thin-Films by ICP-RIE, ***Madeleine Petschnigg***, *N. Andrianov, S. Azeem,* Silicon Austria Labs, Austria; *S. Trolier-McKinstry,* The Pennsylvania State University

MN-ThP-4 Nanowatt Chemical Sensor for Unattended Sensing, ***Mieko Hirabayashi***, *S. Yen,* Sandia National Laboratories; *O. Faruqe, B. Calhoun,* University of Virginia; *P. Miller, J. Moody,* Sandia National Laboratories

Surface Science Division
Room Oregon Ballroom 203-204 - Session SS-ThP
Surface Science Poster Session
4:30 – 6:30 pm

SS-ThP-1 ESI Investigations of Melamine and Cyanuric Acid Clusters and Their Relationship to STM Experiments, ***Alex Walter***, *K. Handy, J. Soucek, S. Kandel,* University of Notre Dame

SS-ThP-2 Scanning Tunneling Microscopy Study of the H_2O-CO Co-Adsorbed Fe_3O_4(111) Surface for Understanding the Water-Gas Shift Reaction Mechanism, ***Asa Kiuchi***, *Y. Eda, T. Hirai, T. Shimizu,* Keio University, Japan

SS-ThP-3 Growth of Metal Nanoclusters on Thin Layer Moiré Pattern of Graphene and Feo on Single Crystal, ***Shilpa Choyal***, *D. Liu, N. Jiang,* UIC

SS-ThP-4 Post-Synthesis Isotopic Purification of Oxygen in Tio_2 via Controllable Surface Injection of Interstitial Atoms, *H. Jeong,* ***Nabiel Hilmy Abuyazid***, *E. Seebauer,* University of Illinois at Urbana Champaign

SS-ThP-5 Analyses of Surface Structure and Chemical States of Carbon Black Nano Particles, ***Mari Isagoda***[1], Keio University, Japan; *T. Aoki,* Asahi Carbon Co., Ltd., Japan; *T. Shimizu,* Keio University, Japan

SS-ThP-6 Surface Chemistry of Zirconium Borohydride on Zirconium Diboride (0001), ***Ayoyele Ologun***, *M. Trenary,* University of Illinois - Chicago

SS-ThP-7 An Annotated Compendium of X-Ray Photoelectron Spectroscopy (XPS) Spectra, ***Samira Jafari***, *M. Linford, A. Dean, B. Kulbacki, S. Ko,* Brigham Young University

SS-ThP-8 Determination of Band Alignment in Semiconductor Heterojunctions by X-Ray Photoelectron Spectroscopy (XPS), ***Mohamed Nejib Hedhili***, *T. Ng, K. Lee, B. Ooi,* KAUST, Saudi Arabia; *O. Bakr,* Kaust, Saudi Arabia

SS-ThP-9 Localized Plasmon-Controlled Chemistry at and Beyond the Nanoscale, ***Chamath Siribaddana***, *S. Rajak, S. Choyal, D. Liu, S. Mahapatra, L. Li, N. Jiang,* University of Illinois Chicago

SS-ThP-10 Heterostructured Nanomaterials Fabrication Usinga Modular MBE Research Platform, ***Lukasz Walczak***, Research and Development Division, PREVAC sp. z o.o., Raciborska 61, 44-362 Rogow, Poland; *M. Florek,* Research and Development Division, PREVAC sp. z o.o, Poland; *M. Kwoka,* Department of Microelectronics, Silesian University of Technology, Poland

SS-ThP-12 Angular and Velocity Distributions of NO_2 and O_2 Desorption from an Oxidized Ag(111) Surface, ***Arved Cedric Dorst***, Georg-August Universität, Göttingen, Germany; *R. Dissanayake,* Max Planck Institute for Multidisciplinary Sciences, Germany; *D. Schauermann,* Georg-August Universität, Göttingen, Germany; *D. Killelea,* Loyola University Chicago; *T. Schäfer,* Georg-August Universität, Göttingen, Germany

SS-ThP-14 Growth and Characterization of Bimetallic NiCo Particles on CeO_2(111) Thin Film Surfaces, *T. Ara,* ***Nishan Paudyal,*** *J. Zhou,* University of Wyoming

SS-ThP-15 DFT Calculations of Cyanuric Acid and Melamine from ESI-MS, ***Kaitlyn Handy***, *A. Walter, J. Soucek, S. Kandel, S. Corcelli,* University of Notre Dame

SS-ThP-17 Scanning Tunneling Microscopy Studies of Diarylethene Monolayer and Cluster Formation on Noble Metal Surfaces, ***Tomoko K. Shimizu***, *T. Kaneko,* Keio University, Japan; *K. Sagisaka,* National Institute for Materials Science, Japan

SS-ThP-18 Distinguishing Elements at the sub-Nanometer Scale on the Surface of a High Entropy Alloy, ***Lauren Kim***, *W. Scougale,* University of Wyoming; *P. Sharma,* Lehigh University; *N. Shirato, S. Wieghold,* Argonne National Laboratory; *W. Chen,* Northwestern University; *V. Rose,* Argonne National Laboratory; *G. Balasubramanian,* Lehigh University; *T. Chien,* University of Wyoming

SS-ThP-19 Soft X-Ray Spectro-Microscopy for Electrochemical Interfaces, ***Xiao Zhao***, *E. Carlson, T. Mefford, W. Chueh,* Stanford University

SS-ThP-20 Effect of Heat Treatment on Silicon Carbide Reinforced Aluminum Matrix Composite Fabricated Through an Optimized Stir Casting Process, ***Conner Neely***, *D. Madiraju, M. Rabea,* California State Polytechnic University, Pomona

SS-ThP-22 Atomic-Scale Hydration Structures Visualized by Three-Dimensional Atomic Force Microscopy (3D-AFM), ***Keisuke Miyazawa***, Kanazawa University, Japan

Thin Film Division
Room Oregon Ballroom 203-204 - Session TF-ThP
Thin Film Poster Session
4:30 – 6:30 pm

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

TF-ThP-2 High Heat Resistant Y_2O_3 Film on Quartz Prepared by Ion-Assisted Deposition, ***Naoto Kihara***, *S. Ogawa, K. Kawahara, R. Hayashi, T. Ogawa,* AGC Inc., Japan; *M. Tanimura, H. Okada, M. Ishikawa,* Tsubasa Science Corporation, Japan

TF-ThP-3 Improvement of Transparency and Electrical Conductivity of Ti-Doped ZnO Thin Films, ***Naoya Utsu***, *I. Takano,* Kogakuin University, Japan

TF-ThP-4 Improving Compositional Analysis of Copolymer Thin Films Using a Simple Density Correction, ***Simon Shindler***, *R. Yang,* Cornell University

TF-ThP-5 Theoretical Prediction of Trisilylamine (TSA) Adsorption and Decomposition on Hydrogen-rich Silicon Nitride, ***Tsung-Hsuan Yang***, *T. Wang, G. Hwang,* University of Texas at Austin; *P. Ventzek, J. Zhao,* Tokyo Electron America, Inc.

TF-ThP-6 Effects of Surface Morphology on the Phase Coexistence and Evolution in Li_xCoO_2 Films Studied by PEEM, ***Elena Salagre***, Dpto Fisica Materia Condensada, Universidad Autónoma de Madrid, Spain; *E. Fuller,* Sandia National Laboratories; *M. González-Barrio, A. Mascaraque,* Dpto Física de Materiales, Universidad Complutense de Madrid, Spain; *T. Mentes, A. Locatelli,* Elettra-Sincrotrone Trieste, Italy; *I. Takeuchi,* Materials Science and Engineering, Univ. Of Maryland; *A. Talin,* Sandia National Laboratories; *P. Segovia, E. Garcia Michel,* Dpto Física Materia Condensada, Universidad Autónoma de Madrid, IFIMAC, Spain

TF-ThP-7 Sorption-Vapor Synthesis of Zr-MOF, UiO-66-NH_2, Sponge Composites, ***Jimmy Nguyen***, *G. Parsons,* North Carolina State University

TF-ThP-8 Coating the Insides of Capillaries with a Flow-Through Atomic Layer Deposition (ALD) Reactor, ***Jacob Crossman***, *J. Pinder, D. Patel,* Brigham Young University; *D. Bell,* RESTEK; *M. Linford,* Brigham Young University

TF-ThP-9 Surface studies and molecular beam epitaxy of Kagome Antiferromagnetic Mn_3GaN grown on MgO (001), ***Ali Abbas***, *A. Smith, A. Shrestha,* Ohio University

TF-ThP-10 Improved Interface of Mo/Si Bilayers by Magnetron Sputtering, ***Chao-Te Lee***, *W. Chen, H. Chen,* Taiwan Instrument Research Institute, National Applied Research Laboratories, Taiwan

TF-ThP-11 Optical Emission Spectroscopy Analysis of Self-limiting AlN Growth Process during Low-Temperature Plasma-Assisted ALD, ***Narmin Ibrahimli***, *R. Sultana, I. Saidjafarzoda,* University of Connecticut; *M. Kilinc,* University at Buffalo; *A. Okyay,* OkyayTech; *N. Biyikli,* University of Connecticut

TF-ThP-12 Oblique Angle Deposition on Porous Polymer Films, *S. Bacheller, N. Welchert,* ***Malancha Gupta***, University of Southern California

TF-ThP-13 Fabrication and Characterizations of Aluminum Doped Cadmium Oxide (CdO:Al) Thin Film using Sol-Gel Spin-Coating Method, *M. Syed,* ***Krastin Harvey***, LeMoyne Owen College; *M. Syeda, J. Sultana,* University of Memphis

TF-ThP-14 Structural and Electronic Impact on Various Substrates of TiO_2 Thin Film Using Sol-Gel Spin Coating Method, ***Moniruzzaman Syed***, *T. Crosby, M. Frierson, J. Muhammad,* LeMoyne Owen College; *M. Syeda, J. Sultana, M. Azim,* University of Memphis, USA

TF-ThP-15 Thin Film Transformations with Spinodal Mechanisms, ***Rahul Basu***, JNTU, India

TF-ThP-16 Optical Coating with High Hardness for MIR Optics Deposited by HIPIMS Deposition Technique, ***Bo-Huei Liao***, Taiwan Instrument Research Institutes, Taiwan

TF-ThP-17 Thermal Atomic Layer Deposition of Er2O3 Films from a Volatile, Thermally Stable Enaminolate Precursor, ***Chamod Dharmadasa***, *C. Winter, N. Jayakodiarachchi,* Wayne State University; *P. Evans, R. Liu,* University of Wisconsin - Madison

TF-ThP-18 Highly Sensitive and Stable pH Sensor Electrodes of TiN Fabricated using HiPIMS with Kick, ***Lucas Mougeot***, *S. Stagon, J. Aceros,* University of North Florida

TF-ThP-19 Temperature Dependent Thermal Conductivity Measurements of Thin Oxide Films Via Steady State Thermoreflectance, *J. Gaskins, D. Olson, T. Bates, P. Hopkins,* Laser Thermal; ***Ron Fisher***, Laser Thermal, USA

TF-ThP-20 Investigation on Atomic Layer Deposition Assisted Growth of Metal Organic Frameworksfilms and Their Sensing Performance, ***Zhe Zhao***, Fudan University, China

TF-ThP-21 Vapor Phase Infiltration of Metal-Organic Framework for Electrocatalysis, ***Fan Yang***, *M. Cao, H. ren, R. Chen,* Huazhong University of Science and Technology, China

Undergraduate Poster Session
Room Oregon Ballroom 203-204 - Session UN-ThP
Undergraduate Poster Session
4:30 – 6:30 pm

UN-ThP-2 Enhancing the Durability of Nitrogen Plasma-Treated PLA Films: Investigating Hydrophobic Recovery Reduction Methods, ***Mina Abdelmessih***, *M. Hawker,* California State University, Fresno

UN-ThP-3 Applying Ammonia Plasma to the Surface of PTFE to Enhance Amine Content, ***Sannad Jawad***, *A. O'Regan, M. Hawker,* California State University, Fresno

UN-ThP-4 Reporting of Parameters Related to Data Acquisition and Peak Fitting in XPS: A Further Evaluation of the Literature, ***B. Maxwell Clark***, *G. Major,* Brigham Young University; *D. Baer,* Pacific Northwest National Laboratory; *M. Linford,* Brigham Young University

UN-ThP-5 Analyzing the Surface Roughness and Surface Chemistry of Oxygen Plasma-Treated Silk Fibroin Films for Corneal Epithelial Tissue Regeneration, ***Gurneet Kaur***, *M. Hawker,* California State University, Fresno

UN-ThP-6 Exploring the Capabilities of Oxygen-Release Coatings on Collagen Films, ***Haylee McFall***, *M. Hawker,* California State University, Fresno

UN-ThP-7 A Precise Measurement of Atomic Spacings in Rotated Hexagonal Mn Adatom Structures on a MnGaN-2D FM Substrate, ***Cherie D'Mello***, Ohio University; *Y. Ma,* Ohio University, China; *D. Hunt, M. Barral, V. Ferrari,* CAC-CNEA, Argentina; *A. Smith,* Ohio University

UN-ThP-8 In-situ Spectroscopy Investigations of Methane Pyrolysis in Catalytic Molten Media, ***Phineas Lehan***, *O. Polonskyi, E. McFarland, M. Gordon,* University of California at Santa Barbara

UN-ThP-9 Ultraviolet Photoelectron Spectroscopy as a Powerful Technique to Investigate the Synthesis - Electronic Properties - Optical Behavior Correlation of a $Cu_2O||TiO_2$ Z-Scheme, ***Beatriz de la Fuente***, *T. Hauffman,* Vrije Universiteit Brussel, Belgium

UN-ThP-10 Reduced Microbial Attachment with Increased Oil Infusion in Liquid-Infused Silicone Material, ***Emma Kunesh***, *C. Fong, C. Howell,* University of Maine

UN-ThP-12 Exploring Thresholding Methods in Textured Surface UV-Vis Detection of Chemical and Biological Contamination in Liquids, ***Anna Folley***, *L. White, C. Howell,* University of Maine

UN-ThP-13 Analyzing Diffraction Pattern Colors in Textured Surface UV-Vis Detection of Chemical and Biological Contamination in Liquids, ***Lindsay Pierce***, *L. White, C. Howell,* University of Maine

UN-ThP-15 An STM Investigation of the Ambient Adsorption of L-Isoleucine on the Surface of Au(111), ***Dillon Dodge***, University of Tulsa; *R. Dirks,* Columbia University; *L. Hornbrook, E. Iski,* University of Tulsa

UN-ThP-16 Towards Plasma Enhanced Atomic Layer Deposition, ***Sivagya Kc***, *W. Jen, S. Hues, E. Graugnard,* Boise State University

UN-ThP-17 Role of Post-Deposition Annealing on Defectivity in 2d Materials, ***Icelene Leong***, *W. Jen, A. Rode, J. Wilson, R. Clouse, D. Tenne, S. Hues,* Boise State University; *E. Graugnard,* Boise State University and Center for Advanced Energy Studies

UN-ThP-18 Plasma-Excited Nitrogen for Stabilization of GaN During High Temperature Annealing, ***Reilly Shanahan***, *E. Thimsen, D. Mohr,* Washington University in St. Louis

UN-ThP-19 C_3 Oxidation Chemistry over CuO_x/Cu(111), ***John Yoo***, *E. Schell, J. Loiselet, A. Baber,* James Madison University

UN-ThP-20 Computationally Enhanced Experimental Investigation of Reactivity of Isomeric Butanolon TiO_2/Au(111), ***Haley Frankovich***, *L. Garber, A. Galgano, E. Schell, K. Letchworth Weaver, A. Baber,* James Madison University

UN-ThP-21 Effect of Thermal Annealing and Sputtering by Ion Bombardment on WSe_2 Adsorption Sites, ***Ava Galgano***, *E. Schell,* James Madison University; *J. St. Martin,* University of Virginia; *A. Baber,* James Madison University; *P. Reinke,* University of Virginia

UN-ThP-22 Enhancing the Selectivity of Acetaldehyde Formation Using a Copper-based Model Catalyst, ***Joseph Loiselet***, *E. Schell, A. Galgano, A. Baber,* James Madison University

UN-ThP-23 Understanding CO Binding Trends for CO2 Reduction Catalyst Optimization, ***Erin Schell***, *J. Loiselet, A. Galgano, A. Baber,* James Madison University

UN-ThP-24 Comparatively Testing CO Oxidation on Rh-Doped and Pt-Doped Copper-Based Catalysts, ***Maggie Rickman***, *G. Miller,* Washington State University*; V. Çinar,* Tufts University*; I. Waluyo,* Brookhaven National Laboratory*; E. Sykes,* Tufts University*; J. McEwen,* Washington State University

UN-ThP-25 Deconvoluting information-rich Ga(I) X-ray adsorption near-edge spectroscopy features from first principles, ***Grace Miller***, Washington State University*; C. Huang,* Carleton College*; S. Scott,* University of California at Santa Barbara*; J. McEwen,* Washington State University, Pacific Northwest National Labratory

UN-ThP-26 A Computational Investigation of the Urea Oxidation Reaction Mechanism Using Density Functional Theory: Promoting the NiOOH Active Phase by Introducing Effective Metal-Dopants, ***Matteo Garcia-Ortiz***, *Q. Jin, L. Árnadóttir,* Oregon State University

UN-ThP-27 Advanced Scanning Probe Microscopy and Infrared Nanospectroscopy Characterization of Atomic Layer Deposited and Etched Thin Films, ***Benjamin Bailey***, *P. Davis,* Boise State University

UN-ThP-28 Towards in-Situ Transmission Ftir of ALD Systems, ***Anthony Donegan***, *S. Hues, E. Graugnard,* Boise State University

UN-ThP-29 Gas-Phase Analysis of Plasma-Enhanced Modification of Silk Films, ***Mollie Corbett***, *B. Yashkus, J. Blechle,* Wilkes University

UN-ThP-30 Quantifying Oxygen Diffusion in Epitaxial $SrTiO_3$ Thin Films, ***Sihang Hui***, University of Florida, Gainesville

UN-ThP-31 Understanding the Role of the Interface in Thermoelectric Materials, ***Eli Robinson***, *Z. Irving-Singh, J. Sanders, R. Brown, W. Kim, P. Hall, N. Coates,* University of Portland*; J. Heath,* Reed College

UN-ThP-32 Ex-Situ Synthesis and Characterization of PEDOT:PSS-Au NP Composite Thermoelectrics, ***Won Sung Kim***, *J. Sanders, E. Robinson, Z. Irving-Singh, R. Brown, P. Hall, N. Coates,* University of Portland*; J. Heath,* Reed College

UN-ThP-33 Stabilization of Amidines and Imidoyl Amidine Ligands, *A. Peoble*, ***Michaela Martinez***, *R. Castañeda,* New Mexico Highlands University

Friday Morning, November 10, 2023

	Thin Film Division **Room A105 - Session TF+SE-FrM** **Metal-Organic Frameworks and Other Network Materials** **Moderators: Christophe Vallee**, SUNY College of Nanoscale Science and Engineering, **Junjie Zhao**, Zhejiang University, China	**Plasma Science and Technology Division** **Room A106 - Session PS+SE-FrM** **Atmospheric Pressure Plasmas and Their Applications** **Moderators:** **Michael Johnson,** Naval Research Laboratory, **Floran Peeters**, LeydenJar Technologies, Netherlands
8:20am	**INVITED: TF+SE-FrM-1** Membrane Design by Atomic Layer Deposition, ***Mikhael Bechelany,*** CNRS/European Institute of Membranes, France	**PS+SE-FrM-1** Electrolyte Engineering for Nitrogen Fixation by Plasma Electrolysis, ***Brandon Kamiyama,*** University of Illinois at Urbana Champaign*; M. Eslamisaray,* University of Illinois Urbana-Champaign*; R. Pierrard, R. Sankaran,* University of Illinois at Urbana Champaign
8:40am		**PS+SE-FrM-2** Two Atmospheric Pressure Plasma Jets Driven by Phase-Shifted Voltages: A Method to Control Plasma Properties at the Plasma–Surface Interface*,* ***Michael Johnson,*** Huntington Ingalls Industries*; G. Brown,* University of Texas, Austin*; D. Boris, T. Petrova, S. Walton,* Naval Research Laboratory
9:00am	**TF+SE-FrM-3** Ultrathin Transferable MOF/Polymer Janus Thin Films with Tunable Turing Morphologies, ***Xinyu Luo***[1]*, J. Zhao,* Zhejiang University, China	**INVITED: PS+SE-FrM-3** Plasma Chemistry in Atmospheric Pressure Gases and Liquids: Fundamentals and Novel Applications*,* ***Alexander Fridman,*** Drexel University, Nyheim Plasma Institute
9:20am	**TF+SE-FrM-4** Growth of Metal-Organic Framework Thin Films by a Vapor-Assisted Conversion Method*, D. Speed, A. Bajpai,* ***Greg Szulczewski,*** The University of Alabama	
9:40am	**TF+SE-FrM-5** Enhancing the Electrical and Optical Properties of Thermochromic VO_2: The Impact of Nanostructuring and Gold Nanoparticles*,* ***Gregory Savorianakis,*** *S. Konstantinidis, M. Voué,* Université de Mons, Belgium*; N. Martin,* FEMTO-ST, France	**PS+SE-FrM-5** Integrated Circuit Manufacturing with Plasma Activated Chemical Treatment (IMPACT): Effect of Plasmas on Photoresist and Cleaning Solutions in Semiconductor Processing*,* ***Christian Williams,*** *S. Dubowsky, D. Curreli, M. Sankaran, D. Ruzic,* University of Illinois at Urbana-Champaign
10:00am	**TF+SE-FrM-6** Atomic Layer Deposition of Sn-doped MoO_2 Electrode Films with Distorted Rutile Structure for High-performance TiO_2-based DRAM Capacitors*,* ***Jae Hyeon Lee,*** *J. Han, J. Shin, W. Kang,* Seoul National University of Science and Technology, Republic of Korea	**PS+SE-FrM-6** Increasing Adhesion of Polyurethane Painting on Aluminum by Atmospheric Pressure Plasma Jet Treatment*,* ***Jorane Berckmans,*** *C. Tubier,* Chemistry of Surfaces, Interfaces and Nanomaterials (ChemSIN), Faculty of Sciences, Université Libre de Bruxelles, Brussels, Belgium*; R. Revilla Castillo,* Research Group Electrochemical and Surface Engineering (SURF), Department of Materials and Chemistry, Vrije Universiteit Brussel, Brussels, Belgium*; C. Poleunis,* Unité Physico-Chimie et de Physique des Matériaux (PCPM), Université Catholique de Louvain, Louvain-la-Neuve, Belgium*; H. Terryn,* Research Group Electrochemical and Surface Engineering (SURF), Department of Materials and Chemistry, Vrije Universiteit Brussel, Brussels, Belgium*; A. Delcorte,* Unité Physico-Chimie et de Physique des Matériaux (PCPM), Université Catholique de Louvain, Louvain-la-Neuve, Belgium*; F. Reniers,* Chemistry of Surfaces, Interfaces and Nanomaterials (ChemSIN), Faculty of Sciences, Université Libre de Bruxelles, Brussels, Belgium
10:20am	**BREAK**	**BREAK**
10:40am	**TF+SE-FrM-8** Area Selectivity and Crystallographic Orientation of Zif-8 Films Deposited by Molecular Layer Deposition*,* ***Jorid Smets,*** *V. Rubio-Giménez,* KU Leuven, Belgium*; S. Armini,* IMEC, Belgium*; R. Ameloot,* KU Leuven, Belgium	**INVITED: PS+SE-FrM-8** Fundamentals of Atmospheric Pressure Discharges for Plasma Catalytic Applications*,* ***Judith Golda,*** *D. Steuer, R. Labenski, H. van Impel, M. Böke, V. Schulz-von der Gathen,* Ruhr-University Bochum, Germany
11:00am	**TF+SE-FrM-9** Electron-Beam Assisted Solvent-Free Bottom-Up Patterning of Zeolitic Imidazolate Frameworks*,* ***Dennis Lee,*** *Y. Miao,* Johns Hopkins University*; M. Dorneles de Mello,* Brookhaven National Laboratory*; M. Ahmad,* Stony Brook University/Brookhaven National Laboratory*; M. Abdel-Rahman, P. Eckhert,* Johns Hopkins University*; A. Boscoboinik,* Brookhaven National Laboratory*; H. Fairbrother, M. Tsapatsis,* Johns Hopkins University	
11:20am	**TF+SE-FrM-10** Al_2O_3 Atomic Layer Deposition on a Porous Matrix of Carbon Fibers (FiberForm) for Oxidation Resistance*,* ***Jack Widmer,*** *S. George,* University of Colorado Boulder	**PS+SE-FrM-10** Atmospheric Pressure Inductively Coupled Torus Torch System for 3D Printing the Silicon-Nanofiber (Si/CNF) Anodes for Li-ion Batteries*,* ***Yuri Glukhoy,*** Nanocoating Plasma Systems Inc*; M. Ryaboy,* UC Berkeley
11:40am	**TF+SE-FrM-11** Mesoporous UiO-66-NH_2 Thin Film Growth on TiO_2 Coated Fabrics Using Atomic Layer Deposition (ALD) for Enhanced Organophosphate Degradation*,* ***Mai Abdelmigeed,*** North Carolina State University	**PS+SE-FrM-11** Design and Functionality of a Low-Frequency Pulsed Plasma System*, M. Gulan,* Technological University Dublin, Ireland*;* ***Vladimir Milosavljevic,*** Technological University Dublin, Ireland & Faculty of Physics, University of Belgrade, Serbia, Ireland

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

Room A107-109

Plasma Science and Technology Division
Session PS+NS-FrM
Advanced Patterning and Plasma-Engineered Materials
Moderators:
Angelique Raley, TEL US

8:20am 8:40am	**INVITED: PS+NS-FrM-1** EUV Lithography Patterning towards Devices Nano Scaling, ***Danilo De Simone***, IMEC, Belgium
9:00am	**PS+NS-FrM-3** Break Healing and LER Mitigation for Low Dose EUV Exposure, ***Rémi Vallat***, *P. Bézard, B. Chowrira,* IMEC, Belgium*; A. Fathzadeh, W. Halim,* KU Leuven, Belgium*; F. Lazzarino, K. Ronse,* IMEC, Belgium
9:20am	**PS+NS-FrM-4** Carbon Resist Microlens Etching in DF-CCP CF_4 Plasmas: Comparison between Modeling and Experiments, *P. Ducluzaux,* Univ. Grenoble Alpes, CNRS, LTM / STMicroelectronics, France*; D. Ristoiu,* STMicroelectronics, France*; G. Cunge,* ***Emilie Despiau-Pujo***, Univ. Grenoble Alpes, CNRS, LTM, France
9:40am	**PS+NS-FrM-5** Investigations of Surface Reaction Mechanisms in Euv Induced Hydrogen Plasmas, ***Tugba Piskin***, University of Michigan*; V. Volynets, S. Nam, H. Lee,* Samsung Electronics Co., Inc., Republic of Korea*; M. Kushner,* University of Michigan
10:00am	**PS+NS-FrM-6** Area Selective Processing Based on Physisorption to Improve Functions of Extreme Ultraviolet Resist, ***Van Long Nguyen***, *N. Maldonado, G. Denbeaux, C. Vallee,* SUNY Polytechnic Institute, Albany
10:20am	**BREAK**
10:40am 11:00am	**INVITED: PS+NS-FrM-8** Recent Advances in Ga_2O_3 Material Development at AFRL, *S. Mou*, *T. Asel, A. Neal, Y. Kim,* ***Brenton Noesges***, *A. Charnas, J. Li, T. Back, K. Burzynski, B. Newton, A. Green, J. Blevins,* Air Force Research Laboratory, Materials and Manufacturing Directorate, USA
11:20am	**PS+NS-FrM-10** Reverse Lift-Off Process to Avoid Sidewall Artifacts Resulting from Dry Etching "Challenging" Materials, *D. Lishan*, ***Sabrina Rosa-Ortiz,*** Plasma-Therm, LLC*; V. Genova,* Cornell University*; S. Norris,* Axoft*; K. Dorsey,* Physical Sciences, Inc.
11:40am	**PS+NS-FrM-11** Control of Ge/Si Core/Shell Nanoparticles Growth In Pulsed Nonthermal Plasmas, ***Yifan Gui***, *J. Polito, M. Kushner,* University of Michigan

Friday Morning, November 10, 2023

	Room B110-112	
8:20am 8:40am	**INVITED: IB1-FrM-1** An Air-Free Transfer Mechanism For FIB SEM, ***Valerie Brogden****, J. Garman, S. Wiemholt, K. Langworthy,* University of Oregon	**Advanced Focused Ion Beams** **Session IB1-FrM** **Advances in FIB Specimen Preparation** **Moderators:** **Tanvi Ajantiwalay**, Pacific Northwest National Laboratory, **Gregor Hlawacek**, Helmholtz-Zentrum Dresden - Rossendorf, Germany
9:00am 9:20am	**INVITED: IB2-FrM-3** Correlative and In Situ TEM/APT Technique Reveals Insights into Early Oxide Film Formation in a High Entropy Alloy, ***Bharat Gwalani****,* Engineering Bldg I 911 Partners Way	**Advanced Focused Ion Beams** **Session IB2-FrM** **Advances in TEM and APT Specimen Preparation** **Moderators:** **Tanvi Ajantiwalay**, Pacific Northwest National Laboratory, **Gregor Hlawacek**, Helmholtz-Zentrum Dresden - Rossendorf, Germany
9:40am 	**IB2-FrM-5** Applications of Advanced Focused Ion Beam System to Energy Storage Materials, ***Yaobin Xu****, X. Cao, W. Xu, J. Zhang, C. Wang,* Pacific Northwest National Laboratory	
10:00am 	**IB2-FrM-6** The Fabrication of Ruthenium single crystal specimen with Focused Ion Beam and Field Ion Microscopy for Atom Probe Tomography, ***Mark G Wirth****, D. Perea, S. Lambeets*, Pacific Northwest National Laboratory	
10:20am 	**BREAK**	
10:40am 11:00am	**INVITED: IB3-FrM-8** Modeling and Experimental Demonstrations of Ion-Solid-Gas and Photon Beam Interactions During Nanoscale Synthesis, ***Philip Rack****,* University of Tennessee, United States Minor Outlying Islands (the)	**Advanced Focused Ion Beams** **Session IB3-FrM** **Beam Induced Defect and Material Engineering** **Moderators:** **Tanvi Ajantiwalay**, Pacific Northwest National Laboratory, **Gregor Hlawacek**, Helmholtz-Zentrum Dresden - Rossendorf, Germany
11:20am 	**IB3-FrM-10** Displacement Damage and Total Ionizing Dose Response of Ga_2O_3 MOSFETs, ***Michael Titze****,* Sandia National Laboratories	
11:40am 	**IB3-FrM-11** Helium Ion Microscopy for Morphological Analysis of Thrombi Extracted via Thrombectomy for Acute Stroke, ***Michael Westphal****, N. Frese,* University Bielefeld, Germany*; C. Sommer,* Institut für Neuropathologie, Universitätsklinik Mainz, Germany*; A. Kitsiou, W. Schäbitz,* Universitätsklinik für Neurologie, Evangelisches Klinikum Bethel gGmbH, Universitätsklinikum OWL, Germany*; A. Beyer, A. Gölzhäuser,* University Bielefeld, Germany	

	Room B113	
8:20am	**HC+SS-FrM-1** CO Characterized Pt/Cu(111) Single Atom Alloy (SAA) for the Hydrogenation of Unsaturated Aldehydes, ***David Molina**, M. Trenary,* University of Illinois - Chicago	**Fundamental Discoveries in Heterogeneous Catalysis Focus Topic** **Session HC+SS-FrM** **Greatest Hits in Heterogeneous Catalysis** **Moderators:** **Liney Arnadottir**, Oregon State University, **Ashleigh Baber**, James Madison University, **Dan Killelea**, Loyola University Chicago
8:40am	**HC+SS-FrM-2** Efficient Catalyst and Protection Layer of Ni/α-Al_2O_3 Catalysts for Improved H_2O/CO_2 Reforming Reaction of CH_4*via* Atomic Layer Deposition, ***Dae Woong Kim**, H. Jeong, W. Hong, J. Park, S. Oh, J. Jang,* Hyundai Motor Company, Republic of Korea	
9:00am	**HC+SS-FrM-3** Complementary Outer Atomic Layer Analysis of Catalyst Materials Using LEIS, *P. Brüner,* IONTOF GmbH, Germany*; J. Järvilehto,* Department of Chemical and Metallurgical Engineering, Aalto University School of Chemical Engineering, Finland*; S. Saedy,* Chemical Engineering Department, Delft University of Technology, Netherlands*;* ***Thomas Grehl**,* IONTOF GmbH, Germany	
9:20am	**HC+SS-FrM-4** Size-Selected Pt_n Cluster Electrocatalysts for Alcohol Oxidation, ***Zihan Wang**,* University of Utah, China*; T. Masubuchi,* University of Utah, Japan*; M. O'Brien, S. Anderson,* University of Utah	
9:40am	**HC+SS-FrM-5** Calorimetric Energies of Metal Atoms within Nanoparticles on Oxide and Carbon Supports: Improved Size Dependencies, Adhesion Energies and Trends versus Metal Element with the Spherical Cap Model, ***Kun Zhao**,* University of Washington*; D. Auerbach,* Max Planck Institute for Multidisciplinary Sciences, Germany*; C. Campbell,* University of Washington	
10:00am	**HC+SS-FrM-6** Insights Into Adsorbate-Driven Surface Restructuring Using Size-Selected Pt/SiO_2 Nanoparticle Catalysts, ***Christopher O'Connor**, T. Kim, C. Owen,* Harvard University*; N. Marcella,* University of Illinois*; A. Frenkel,* Stony Brook University/Brookhaven National Laboratory*; B. Kozinsky, C. Reece,* Harvard University	
10:20am	**BREAK**	
10:40am		
11:00am		
11:20am		
11:40am		

Friday Morning, November 10, 2023

	Room B116	
8:20am	**INVITED: EM1+TF-FrM-1** Thin Film Challenges and Opportunities in a 3D-Evolving Memory Landscape, ***Johan Swerts,*** imec, Belgium	**Electronic Materials and Photonics Division** **Session EM1+TF-FrM** **Advanced Patterning and Fabrication for Device Scaling** **Moderators:** **Stephen McDonnell**, University of Virginia, **Michelle Paquette**, University of Missouri-Kansas City
8:40am		
9:00am	**INVITED: EM1+TF-FrM-3** Patterning Challenges in the Era of Vertical Scaling, ***Luciana Meli,*** IBM Research Division, Albany, NY	
9:20am		
9:40am	**EM1+TF-FrM-5** Plasma Etch Challenges and Innovations to Enable sub-26nm Pitch L/S Patterning with High-NA EUV, ***Nafees Kabir,*** Intel Corporation	
10:00am	**EM1+TF-FrM-6** Area-Selective Deposition with Carborane and Aromatic Self-Assembled Monolayer Blocking Layers, ***Michelle Paquette,*** *R. Bale,* University of Missouri-Kansas City*; B. Garland,* Lehigh University*; S. King,* Intel Corporation*; A. Molder, N. Oyler, S. Pinnepalli,* University of Missouri-Kansas City*; N. Strandwitz, V. Vemuri,* Lehigh University*; T. Vo,* University of Missouri-Kansas City	
10:20am	**BREAK**	
10:40am	**INVITED: EM2-FrM-8** Enabling Novel Infrared (IR) Materials for Next-Generation Applications, ***Kathleen A. Richardson,*** University of Central Florida, College of Optics and Photonics	**Electronic Materials and Photonics Division** **Session EM2-FrM** **Emergent Photonic Materials and Devices for Mid-IR Applications** **Moderators:** **Parag Banerjee**, University of Central Florida, **Erin Cleveland**, U.S. Naval Research Laboratory
11:00am		
11:20am	**EM2-FrM-10** Inverse Piezoelectric Effect in Reverse Biased High-Voltage GaN PN Diodes Observed by In-Situ Biased X-Ray Topography Imaging, ***Andrew Koehler,*** *N. Mahadik,* U.S. Naval Research Laboratory*; M. Liao,* National Research Council Postdoctoral Fellow Residing at U.S. Naval Research Laboratory*; A. Jacobs,* U.S. Naval Research Laboratory*; G. Foster,* Jacobs Inc. Residing at U.S. Naval Research Laboratory*; S. Atwimah, P. Pandey, T. Nelson, D. Georgiev, R. Khanna,* EECS Department University of Toledo*; K. Hobart, T. Anderson,* U.S. Naval Research Laboratory	
11:40am		

	Applied Surface Science Division **Room B117-119 - Session** **AS+2D+CA+EM+MS+NS+SE+SS+TF-FrM** **Industrial Applications** **Moderators: Marko Sturm**, University of Twente, Netherlands, **Alan Spool**, Western Digital Corporation, **Yundong Zhou**, National Physical Laboratory, UK	**Manufacturing Science and Technology Group** **Room C120-122 - Session MS-FrM** **Microelectronics R&D for Life-Cycle Energy Efficiency** **Moderators:** **Nicholas Johnson**, Energetics, **Tina Kaarsberg**, U.S. Department of Energy, Advanced Manufacturing Office
8:20am	**INVITED: AS+2D+CA+EM+MS+NS+SE+SS+TF-FrM-1** Correlative Analysis Using Time-of-flight Secondary Ion Mass Spectrometry for Beam Sensitive Samples, ***Jean-Paul Barnes***, *C. Guyot, P. Hirchenhahn, A. De Carvalho, N. Gauthier, T. Maindron, B. Gilquin, D. Ratel, C. Gaude, O. Renault,* Univ. Grenoble Alpes, CEA, Leti, France*; A. Galtayries,* Chimie ParisTech, PSL University, CNRS, Institut de Recherche de Chimie Paris, France*; G. Fisher,* Physical Electronics USA*; C. Seydoux, P. Jouneau,* Univ. Grenoble Alpes, CEA, IRIG-MEM, France	**INVITED: MS-FrM-1** Energy Efficient Scaling in Microelectronics: Enabling a New Era in Computing for a Sustainable Future, ***Sadasivan Shankar,*** SLAC National Accelerator Laboratory
8:40am		
9:00am	**AS+2D+CA+EM+MS+NS+SE+SS+TF-FrM-3** Secondary Ion Mass Spectroscopy of Battery Surface and Interface Chemistry – Metrology and Applications, ***Yundong Zhou****, S. Marchesini, X. Yao, Y. Zhao, I. Gilmore,* National Physical Laboratory, UK	**INVITED: MS-FrM-3** Improving Asic Energy Efficiency from Systems to Silicon, ***Godwin Maben***, Synopsys, Inc
9:20am	**AS+2D+CA+EM+MS+NS+SE+SS+TF-FrM-4** Characterizing Ion Distribution at the Solid-Electrolyte Interface in Solid-State Lithium Ion Batteries with ToF-SIMS, ***Teodora Zagorac,*** University of Illinois - Chicago*; M. Counihan, J. Lee, Y. Zhang,* Argonne National Laboratory, USA*; L. Hanley,* University of Illinois - Chicago*; S. Tepavcevic,* Argonne National Laboratory, USA	
9:40am	**AS+2D+CA+EM+MS+NS+SE+SS+TF-FrM-5** A Perspective on X-ray Photoelectron Spectroscopy (XPS) Peak Fitting, and Reporting of XPS Data Acquisition and Peak Fitting Parameters in the Literature, ***Matthew Linford****, G. Major, J. Pinder,* Brigham Young University	**INVITED: MS-FrM-5** Atomic Precision Advanced Manufacturing for Tunnel Field Effect Transistors, ***Shashank Misra***, Sandia National Laboratories
10:00am	**AS+2D+CA+EM+MS+NS+SE+SS+TF-FrM-6** Unsupervised and Supervised Machine Learning Applied to ToF-SIMS of an Organic Matter-Rich Mudstone with Molecular Biomarker, *M. Pasterski,* University of Illinois Chicago*; M. Lorenz,* Oak Ridge Natinal Laboratory*; A. Ievlev,* Oak Ridge National Laboratory*; R. Wickramasinghe,* ***Luke Hanley****, F. Kenig,* University of Illinois Chicago	
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: AS+2D+CA+EM+MS+NS+SE+SS+TF-FrM-8** Probing Thin Film Interfaces at the Nanoscale by Low Energy Ion Scattering, ***Marko Sturm****, A. Chandrasekaran, A. Valpreda, A. Zameshin, R. Van de Kruijs, A. Yakshin, F. Bijkerk, M. Ackermann,* University of Twente, Netherlands	**INVITED: MS-FrM-8** Materials, Devices, and Packaging Opportunities Towards a Super Energy Efficient Future, ***Paul Fischer,*** Intel Corp.
11:00am		
11:20am	**AS+2D+CA+EM+MS+NS+SE+SS+TF-FrM-10** The Effect of Instrument Settings, Sample Distance, and Tilt on TofsimsSecondary Ion Intensities, ***Alan Spool****, L. Finney,* Western Digital	**INVITED: MS-FrM-10** EES2 Update—A Pledger's Perspective, ***Steve Pawlowski,*** Intel Corp.
11:40am	**AS+2D+CA+EM+MS+NS+SE+SS+TF-FrM-11** Evaluation of Unaltered and Irradiated Nuclear Graphite Surfaces through Integrated Traditional XPS and HAXPES Techniques, ***Jonathan Counsell****, L. Soomary, K. Zahra,* Kratos Analytical Limited, UK*; B. Spencer, A. Theodosiou,* University of Manchester, UK	

	2D Materials Technical Group **Room C123 - Session 2D+EM-FrM** **2D-Materials: Device Application** **Moderators:** **Maria Hilse**, Pennsylvania State University, **Tongcang Li**, Purdue University	**Atomic Scale Processing Mini-Symposium** **Room C124 - Session AP+PS-FrM** **Atomic Scale Processing Late Breaking Atomic Layer Etching and Area Selective Deposition** **Moderators: Eric Joseph**, IBM T.J. Watson Research Center
8:20am	**INVITED: 2D+EM-FrM-1** Stochastic Computing Enabled by 2D Memtransistors, ***Saptarshi Das***, Pennsylvania State University	**AP+PS-FrM-1** Atomic Layer Etching of SiO_2 via H_2/SF_6 Plasma and TMA, ***David Catherall***, *A. Minnich*, California Institute of Technology
8:40am		**AP+PS-FrM-2** Area Selective Deposition of HfO2 on Oxide and Nitride Surfaces, ***ByungChan Lee***, Incheon National University, Republic of Korea; *C. Nguyen*, Incheon National University, Viet Nam; *S. Shim, Y. Kang, H. Lee*, Incheon National University, Republic of Korea
9:00am	**2D+EM-FrM-3** Electrical Characteristics of Semi-Metallic 2H-$NbSe_2$ for Scalable Interconnects, ***Abir Hasan***, *T. Alem, C. Rogers, S. Stevenson, S. McDonnell, N. Shukla*, University of Virginia	**AP+PS-FrM-3** Surface Functionalization of SiN_x over SiO_2 with Aldehydes to Enable Area-Selective Atomic Layer Deposition, ***Andrew Kaye***, Colorado School of Mines, USA; *S. Agarwal*, Colorado School of Mines; *B. Zope, A. Derecskei, R. Pearlstein, X. Lei*, EMD Electronics, USA
9:20am	**2D+EM-FrM-4** Magneto-Transport Measurement and Maximum Entropy Mobility Spectrum Analysis in Semiconductor Substrates for Graphene Growth, ***Ruhin Chowdhury***, University of New Mexico; *A. Majee*, Intel Corp.; *E. Renteria, D. Ghosal*, University of New Mexico; *M. Arnold, M. Lagally*, University of Wisconsin - Madison; *F. Cavallo*, University of New Mexico	**AP+PS-FrM-4** Surface Reactions During Atomic Layer Etching of Platinum by High-Density Nitrogen-Oxygen Plasma and Organic Acid Vapor, ***Thi-Thuy-Nga Nguyen***, Nagoya University, Japan; *D. Akagi, T. Uno, T. Okato*, AGC Inc., Japan; *K. Ishikawa, M. Hori*, Nagoya University, Japan
9:40am	**INVITED: 2D+EM-FrM-5** What Are 2D Materials Good for?, *E. Pop*, ***Tara Pena***, Stanford University	**AP+PS-FrM-5** Isotropic Plasma-Thermal Atomic Layer Etching and in-Situ Atomic Layer Deposition Passivation of Aluminum Films for Superconducting Quantum Devices, ***Haozhe Wang***, Duke University; *I. Chen, D. Catherall, A. Hossain, A. Minnich*, California Institute of Technology
10:00am		
10:20am	**BREAK**	
10:40am	**2D+EM-FrM-8** Effect of Temperature on the Surface Morphologies of Sulfurized-Grown WS_2, ***Md Samim Reza***, *M. Singh*, Indian Institute of Technology Delhi, India	
11:00am	**2D+EM-FrM-9** The Study of Internal Ion Transport in Ionic $CuInP_2S_6$, ***Yujie Sun***, *B. Liu*, Tsinghua University, China	
11:20am		//
11:40am		

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