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Greetings

On behalf of the AVS community, we welcome you to Nashville, Tennessee for AVS 63. We hope you have a productive and exciting week filled with new insights and networking opportunities.

We are pleased to have **Dr. Heike Riel**, IBM Fellow and Director of the Physical Sciences Department at **IBM Research**, present the Symposium Plenary Lecture on "**Integrated Semiconductor Nanowires for Nanoelectronics.**" Dr. Riel's lecture will span the range from fundamental scientific principles associated with epitaxial growth and doping of nanowire heterostructures and novel device concepts to the technological challenges for future device applications. Thus her lecture connects to researchers across the AVS spectrum, from those doing basic research in academia to those conducting applied research in an industrial setting.

Throughout the week the technical program will typically run 14-15 parallel oral sessions during the day, complemented by lively poster sessions on Tuesday and Thursday evenings. Focus Topics that will be featured during the week include 2D Materials; Actinides and Rare Earths; Fundamental Discoveries in Heterogeneous Catalysis; Advanced Ion Microscopy; In situ and Operando Spectroscopy and Microscopy for Catalysts, Surfaces, and Materials; Novel Trends in Synchrotron and FEL-Based Analysis; Plasma Processing for Biomedical Applications; Scanning Probe Microscopy; Spectroscopic Ellipsometry; and Tribology. These topics will complement our traditional strong core on fundamental surface science and interfacial phenomena, applied surface science, surface engineering, microand nano-electronics, nanometer—scale science and technology, manufacturing science and technology, thin films, plasma science and technology, micro- and nano-electromechanical systems, electronic and photonic materials, biomaterials, and vacuum science and technology.

In addition to the Focus Topics and core Division/Group sessions, the technical program will include other special features. For example, the Advanced Ion Microscopy Focus Topic will hold a session "10 Years of GFIS Microscopy" to celebrate the 10th anniversary of the helium ion microscope. The Surface Science Division will sponsor an all-invited session, "Celebrating a Life in Surface Science: A Symposium in Honor of John T. Yates, Jr." Many sessions will feature cutting-edge research driven by applications with high industrial relevance: e.g., "Multiple Technique Approaches for Real-World Industrial Problem Solving" in the Applied Surface Science Division, Advanced Manufacturing and other sessions in the Manufacturing Science & Technology Group, "New Materials and Devices for Emerging Memory Technologies" in the Electronic Materials & Photonics Division, "Nanodiamonds, Thin Films and Electronics" in the Nanometer-scale Science and Technology Division, "Nanoscale Wear: Applications to Nanometrology and Manufacturing" in the Tribology Focus Topic, "Vacuum Measurement, Calibration, Primary and Industry Standards" in the Vacuum Science & Technology Division, and many others.

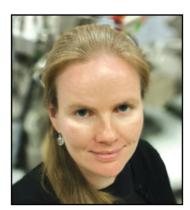
In conjunction with the technical program, there will be an extensive equipment and product exhibition, where the latest technology that enables cutting edge research will be displayed. And don't forget to take advantage of the many networking, professional development and recruitment events, which are hallmarks of AVS Symposia.

Thank you for making time to participate in AVS 63. We also want to extend special thanks to all the dedicated volunteers who put in countless hours to create the technical program and to the exceptional AVS Staff who worked long hours to assemble a world-class program and exhibition.



Lisa M. Porter 2016 Program Chair Carnegie Mellon University

See you in Music City!



Amy V. Walker 2016 Program Vice-Chair University of Texas at Dallas

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SYMPOSIUM

HQ HOTEL

Music City Center 201 5th Ave S Nashville, TN 37203 Renaissance Nashville 611 Commerce Street Nashville, TN 37203

AVS NATIONAL OFFICE

125 Maiden Lane, 15th Floor New York, NY 10038 212-248-0200 FAX: 212-248-0245 avsnyc@avs.org www.avs.org

SYMPOSIUM REGISTRATION HOURS

Sun.	2:00 p.m. to 6:00 p.m.	Wed. 7:30 a.m. to 5:00 p.m.
Mon.	7:30 a.m. to 5:00 p.m.	Thurs. 7:30 a.m. to 5:00 p.m.
Tues.	7:00 a.m. to 5:00 p.m.	Fri. 7:30 a.m. to 10:00 a.m.

SHORT COURSE REGISTRATION HOURS

Sun.	2:00 p.m. to 6:00 p.m.	Wed. 7:30 a.m. to 5:00 p.m.
Mon.	7:30 a.m. to 5:00 p.m.	Thurs. 7:30 a.m. to 5:00 p.m.
Tues	7:00 a.m. to 5:00 p.m.	Fri. 7:30 a.m. to 10:00 a.m.

SYMPOSIUM REGISTRATION FEES

	Pre-registration (Pre-Paid)	Registration (On-Site)
Member***	\$665.00	\$805.00
Non-Member**	\$790.00	\$955.00
Student Member*** *	\$220.00	\$270.00
Student Non-Member** *	\$260.00	\$315.00
Early Career Member*** *	\$335.00	\$405.00
Early Career Non-Member** *	\$400.00	\$485.00
Technical Specialist Member	\$315.00	\$385.00
Technical Specialist Non-Mem	\$360.00	\$435.00
One Day	\$385.00	\$480.00
Two Day	\$690.00	\$860.00
Exhibits Only	Free	FREE

Pre-registration deadline: October 17, 2016

AVS tax ID Number: 04-2392373

- *A bonafide full-time university student must present student I.D. Part-time students don't qualify for a student rate. If your highest degree is within 5 years you may register as an Early Career.
- **Non-member registration inludes a complimentary 2017 AVS membership—report to the AVS Booth
- ***Full Week, Student, Early Career & Technical Specialist member registration fee INCLUDES your 2017 membership renewal dues. For more information report to the AVS Booth.

EXHIBIT HOURS

Tuesday, November 8	10:00 a.m. to 5:00 p.m.
Wednesday, November 9	10:00 a.m. to 4:30 p.m.
Thursday, November 10	10:00 a.m. to 2:30 p.m.

OFFICE LOCATIONS

Symposium Registration	Hall CD Concourse
Short Course Registration	Hall CD Concourse
Staff Offfice/Press	210
AVS Store	Exhibit Hall Booth 645
Career Center	Exhibit Hall Booth 138
Publications Booth	Exhibit Hall Booth 430
Presenters Preview	106A

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AVS 63 Technical Program at a Glance

Room	101A	101B	101C	101D	102A	102B	103A	103B
/Time								
SuA	BP-SuA: Biomaterials Plenary							
MoM	BI+AS-MoM: Biomolecules and Cells at Interfaces	AS-MoM: QSA: New Ways to Perform Old Tricks	MI+2D+AC-MoM: Chir. Mag/Mag & Spin Orbit Eff at Inter & Surf: Rec Exp. & Theo. Adv	NS-MoM: Nanopatterning & Nanofabrication + 3D	EM+NS+PS+SS+ TF-MoM: Growth & Devices Tech. of Group III-Nitrides	EM-MoM: Advances in Photonics	MS-MoM: Manufacturing for Next- Generation Energy Solutions	2D+MI+SA-MoM 2D Matls Char. including Microscopy and Spectroscopy
MoA	PB+BI+PS-MoA: Plasma Processing of Biomaterials	AS+BI-MoA: Pract Surf. Anal I: Adv Bio Surf Anal/Imag Bey. 'Show & Tell'	MI+2D+AC-MoA: Mag & Spin Orbit Effects at Inter & Surf: Rec Exper & Theo Adv.	NS-MoA: Nanophotonics, Plasmonics, and Energy	EM-MoA: Surface & Inter. Challenges in Wide Bandgap Materials	TF+PS+SE-MoA: Plasma-based Deposition Techniques and Film	MS-MoA: Advanced Mfg: Systems, Devices, and Materials	2D+MI-MoA: Dopants, Defects and Interfaces in 2D Materials
TuM	PB+BI+PS-TuM: Plasma Proc. of Bio/Biomimetic Surfaces	AS+AC-TuM: Pract Surf Anal II: Micro, Nano, Atom Probe, & All Things 'Small'	SE+NS+TF+TR- TuM: Nanostructured Thin Films and Coatings	NS-TuM: Nanodiam., TF & Elect/ Health & Env. Impact of Nanotechnology	EM+MN-TuM: New Materials & Dev/ for TFETs, Spin., & Extended CMOS	TF+SA+MI-TuM: Thin Films for Synchrotron and Magnetism Applications	MS+AS-TuM: Characterization and Processing for IC Manufacturing	2D+MI-TuM: Novel 2D Materials
TuL								
TuA	BI+AS+SA-TuA: Biophys. & Char of Biological & Biomat Surfaces	AS+SS-TuA: Data Analytics in Surface Science and Nanoscience	SE+MS+TF-TuA: Innov in PVD, CVD, Atmos. Press. Plasma & Other Surf. Tech	NS-TuA: Nanoscale Imaging and Characterization	EM+MI+MN-TuA: New Materials & Dev. for Emerg. Memory Technologies	MI-TuA: Magnetic Phenomena in Organic Systems	MS-TuA: Working with National Labs and User Facilities	2D-TuA: Novel Quantum Phenomena in 2D Materials
TuP								
WeM	BI+MI-WeM: Biosensors and Diagnostics	AS+SS-WeM: Applications where Surface Analysis is Your Only Hope	SE+TR-WeM: Protective Coatings for Tribol Apps in Surf. Eng.	VT-WeM: Vac Tech – History & Innov/ Transfer & Manipulation	EM+NS-WeM: Nanoparticles for Electronics and Photonics	MN-WeM: Multiscale Phen. & Emerging Tech. in Micro- & Nano-Systems	HC+SS-WeM: Bridging Gaps in Heterogeneously -catalyzed Reactions	2D+TF-WeM: 2D Materials: Growth and Fabrication
WeL		, , ,				,		
WeA	TR+AS+NS+SS- WeA: Nano Wear: Apps to Nanomet. & Manufacturing	AS-WeA: Mult. Tech Approaches for Real-World Industrial Problem Solving	IS+HC-WeA: Ambient Press. XPS Studies of Surf. & Chem of Catalysts	SE+2D+EM-WeA: Multifunctional Thin Films and Coatings	EM+NS+SP+SS- WeA: Nano Imag of Mtls & Comp Semi based Nano, Surf, & Int	MN+NS-WeA: Optomechanics, Photonics, and Quantum Nanosystems	HC+NS+SS-WeA: Nano Surface Structures in Hetero Catalyzed Reactions	2D+NS-WeA: Nanostructures incl. Heterostruct made of 2D Materials
ThM	BI+AS+SA-ThM: Synth. & Proc of Biomat/Bio Inspired Mtls	AS+SS-ThM: Depth Profiling, Buried Interfaces, and 3D Analyses	IS-ThM: In-situ & Oper Spect. & Micros w/ Infrared Absorp Spect.		EM+AC+SS+TF- ThM: Radiation Det. Materials & Devices	MN+BI-ThM: 'Fantastic Voy.'— the New Micro/ Nano/Bio Syst. Frontiers	HC+SS-ThM: Dynamics of Gas- surface Interactions in Hetero Catalysis	2D+MI-ThM: Prop of 2D Matls incl. Elect, Mag, Opt, Mech, Therm Properties
ThA	TR+BI+SE+TF- ThA: Materials Tribology	AS-ThA: Adv. for Comp. Sample Prep. Strategies & Complex Systems	IS-ThA: Ambient Press. Photoelec Spect & Scanning Probe Techs.	NS+BI-ThA: App. Nanoscale Micro Techs/ Biomat Inter – New Advances	EM+SS+TF-ThA: Materials and Interfaces for Energy Storage	MN+2D+NS-ThA: Focused Session on Atomic Layer Nanomechanics and 2D MEMS	HC+SS-ThA: Adv. in Theor Models & Simul of Hetero-catalyzed Reactions	2D-ThA: Surface Chem, Function, Bio and Sensor Apps of 2D Materials
ThP								
FrM			IS-FrM: In situ Characterization of Nanomaterials		EM-FrM: Late Breaking News on Elect. Materials & Devices	MN+MS-FrM: Rad. Effect in Emerg Micro/ Nano Struct, Dev., & Systems		2D+NS-FrM: 2D Materials: Device Physics and Applications

AVS 63 Technical Program at a Glance

103C	104A	104B	104C	104D	104E	105A	Hall C	Hall D
SA+AS+MI-MoM Adv in Hi-Res	SP+AS+MI+NS+ SS-MoM:	PS-MoM: Advanced	VT-MoM: Vac Measure,	PS+SE-MoM: Atmospheric	SS+AS+HC- MoM: Mech	TF-MoM: ALD Precursors		
Imaging Tech/ Push the Limits w/ X-Ray Spect.	Advances in Scanning Probe Microscopy	FEOL/Gate Etching	Calib., Primary & Industry Standards	Pressure Plasma Processing		and Surface Reactions		
SA+AS-MoA: Front of Photo w/ Synch & XFEL Rad./Adv in Hi- Res. Imaging	SP+2D+AS+NS+ SS-MoA: Probing Top. States & Supercond.	PS-MoA: Advanced BEOL/ Interconnect Etching	VT-MoA: Gas Dynamics, Simulation and Partial Pressure Analysis	PS+AS+SS-MoA: Plasma Surface Interactions	SS+AS+HC-MoA: Metals, Alloys, and Oxides: Reactivity and Catalysis	TF+EM-MoA: ALD for Energy Conversion and Storage		
SA+2D+AC+AS+ TF-TuM: Apps of Syn-based Tech to 2D Mtls/Com Func Mtls & Het	SP+AS+MI+NS+ SS-TuM: Probing Chem Reactions at the Nanoscale	PS-TuM: Plasma Diagnostics, Sensors and Control	VT-TuM: Vacuum Pumping and Material Outgassing	SS1+AS+HC+NS- TuM: Surf Dyn, Non-Adiab, & Theo & Mod of Surf ∬ Phen	SS2+AS+HC+NS- TuM: Nanostruct: Growth, React., & Catalysis	TF-TuM: Advanced CVD and ALD Processing, ALD Manufacturing	EW-TuM: Exhibitor Technology Spotlight Session	
							EW-TuL: Exhibitor Technology Spotlight Session	
SA+AS+BI+MI- TuA: Syn & XFEL Adv for Bio Sys/ Syn Rad at Front of Dev Tech	SP+AS+MI+NS+ SS-TuA: Probing Spin- Dependent Phenomena	PS+2D-TuA: Plasma Proc for Nanomaterials and 2D Materials	VT-TuA: Accelerator and Large Vacuum Systems	SS+HC-TuA: Photocatalysis and Photochemistry at Surfaces	SS+AS-TuA: Structure and Characterization of Oxides	TF-TuA: Thin Film Photovoltaics		Poster Sessions
AC+MI-WeM: Mag., Complex, & Supercond. in the AC & RE/AC & RE Theory	SP+SS+TF-WeM: Probing Electronic Properties	PS-WeM: Plasma Sources & Novel Mech for Generating Plasmas	PS+TF-WeM: Atomic Layer Etching	SS+2D-WeM: Synth, Charact, & Surf Sci. of Novel Matls & Interfaces	SS+AS-WeM: Envir Interfaces, Ambient Surf, & In-Operando Studies	TF+MI+NS- WeM: ALD and Nanostructures	EW-WeM: Exhibitor Technology Spotlight Session	MS, NS, SA, SE SS, VT
							EW-WeL: Exhibitor Technology Spotlight Session	
AC+MI-WeA: AC & RE Theory/ Nuc. Power, Waste Remed & Applications	HI-WeA: 10 Years of GFIS Microscopy	PS+TF-WeA: Plasma Deposition and Plasma Assisted ALD	PS-WeA: Atomic Layer Etching and Low Damage Processing	SS+AS+EM- WeA: Semiconductor Surfaces and Interfaces	TF+MI-WeA: Thin Films for Magnetic and Optical Applications	TF+EM+MI- WeA: Thin Films for Microelectronics		
AC+AS+SA-ThM: Chemistry and Physics of the Actinides and Rare Earths	HI+NS-ThM: Fundamentals of Ion Beam Microscopy	PS2-ThM: Plasma Processing of Challenging Materials	PS1-ThM: Modeling of Plasmas and Plasma-Surface Interactions	SS-ThM: Chirality and Enantioselect on Surfaces; Ionic Liquid Interfaces	TF1-ThM: Control and Modeling of Thin Film Growth and Film	TF2-ThM: Area- selective Deposition and Sequential Infiltration		
SS+AS-ThA: Celeb. a Life in SS: A Symp in Honor of JOHN T. YATES, JR.	HI+MI+NS-ThA: Ion Beam Based Imaging and Nanofabrication	PS-ThA: Plasma Chemistry and Plasma Surface Interactions	EL+AS+BI+EM+ TF-ThA: Optical Char of Nanostruct & Metamaterials		TF+BI-ThA: Thin Films for Bio-related Applications	TF-ThA: Self- assembled Monolayers and Organic/Inorgan ic Interface		
								Poster Sessions 2D, EL, EM, HI, IS, MN, PS, TF, TR
			EL+AS+EM+MI+ TF-FrM: Spec Ellip: Novel Apps & Theor. Approaches	5	SS+HC-FrM: Deposition and Analysis of Complex Interfaces	TF-FrM: CVD, ALD and Film Characterization		

DIVISION, GROUP, & FOCUS TOPIC CHAIRS & CHAMPIONS



Michael Stueber Advanced Surface Engineering (SE)



Chris Szakal Applied Surface Science (AS)



Stephanie Alllen Biomaterial Interfaces & Biomater Plenary (BI/BP)



Nikolaus Dietz Electronic Materials & Processing (EM)



Hendrik Ohldag Magnetic Interfaces & Nanostructures (MI)



Philip Feng MEMS/NEMS



Bridget Rogers

Manufacturing Science
& Technology (MS)



Leonidas Ocola Nanometer-Scale Science & Technology (NS)



Sumit Agarwal
Plasma Science
& Technology (PS)



Bruce Kay Surface Science (SS)



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Thin Films (TF)



Yulin Li Vacuum Technology (VT)

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Daniel Gunlycke 2D Materials



David Shuh
Actinides and
Rare Earths (AC)



Dan Killelea Fundamental Discoveries in Heterogeneous Catalysis (HC)



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Advanced Ion

Microscopy (HI)



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In situ Spectroscopy
and Microscopy (IS)



Olivier Renault

Novel Trends in Synchrotron and
FEL-Based Anaylsis (SA)



Satoshi Hamaguchi Plasma Processing for Biomedical Applications (PB)



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Tribology (TR)



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Ye, Peide, Purdue University

Yin, Xiaobo, Univ. of Colorado Boulder

Actinides and Rare Earths

Chair: Shuh, David, Lawrence Berkeley National Lab. Bagus, Paul, University of North Texas Denecke, Melissa, University of Manchester, UK Durakiewicz, Tomasz, Los Alamos National Lab. Geeson, David, AWE, UK

Havela, Ladislav, Charles University, Prague, Czech Republic

Landa, Alexander I., Lawrence Livermore Natl. Lab. Ohldag, Hendrik, SLAC National Accelerator Lab. Petit, Leon, Daresbury Laboratory, UK

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Szakal, Christopher, National Institute of Standards and Technology (NIST)

Tereshina, Evgeniya, Institute of Physics ASCR, Czech Republic

Advanced Ion Microscopy

Chair: Hlawacek, Gregor, Helmholtz-Zentrum Dresden – Rossendorf, Germany Co-Chair: Livengood, Richard, Intel Corporation Gölzhäuser, Armin, Bielefeld University, Germany Ogawa, Shinichi, AIST, Japan

Advanced Surface Engineering

Chair: Stueber, Michael, Karlsruhe Institute of Technology, Germany

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Voevodin, Andrey, University of North Texas

Applied Surface Science

Chair: Szakal, Christopher, National Institute of Standards and Technology (NIST) Devaraj, Arun, Pacific Northwest National Lab. Dong, Xia, Eli Lilly and Company Fenton, Jeffrey, Medtronic Gaskell, Karen, Univ. of Maryland, College Park Herrera-Gomez, Alberto, CINVESTAV-Queretaro, Mexico

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Ohlhausen, Tony, Sandia National Laboratory
Pacholski, Michaeleen, The Dow Chemical Company
Pylypenko, Svitlana, Colorado School of Mines
Reinke, Petra, University of Virginia

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Tyler, Bonnie, National Physical Lab. (NPL), UK Ventrice, Jr., Carl, SUNY Polytechnic Institute

Biomaterial Interfaces

Chair: Allen, Stephanie, Univ. of Nottingham, UK Baio, Joe, Oregon State University
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Landry, Markita, University of California at Berkeley
Leggett, Graham, University of Sheffield, UK
Rosenhahn, Axel, Ruhr-Univ. Bochum, Germany
Valtiner, Markus, Max-Planck Institut für
Eisenforschung GmbH, Germany
Weidner, Tobias, Max Planck Institute for Polymer
Research, Mainz, Germany

Biomaterials Plenary Session

Chair: Allen, Stephanie, Univ. of Nottingham, UK Baio, Joe, Oregon State University
Chi, Eva, University of New Mexico
Graham, Daniel, University of Washington
Leggett, Graham, Univ. of Sheffield, UK
Rosenhahn, Axel, Ruhr-Univ. Bochum, Germany
Valtiner, Markus, Max-Planck Institut für
Eisenforschung GmbH, Germany
Weidner, Tobias, Max Planck Institute for Polymer
Research, Mainz, Germany

Electronic Materials and Photonics

Co-Chair: Dietz, Nikolaus, Georgia State University Co-Chair: King, Sean, Intel Corporation Abate, Yohannes, Georgia State University Antonelli, Andy, Nanometrics Baxter, Jason, Drexel University Baykara, Mehmet, Bilkent University Conley, Jr., John F., Oregon State University Filler, Michael, Georgia Institute of Technology Gupta, Shalini, Northrop Grumman ES Hilton, Jessica, Mantis Deposition Hoffmann, Axel, Argonne National Lab. Kummel, Andrew C., Univ. of Calif. at San Diego Mohney, Suzanne, Penn State University Myers-Ward, Rachael, U.S. Naval Research Lab. Okyay, Ali, Bilkent University, Turkey Tischler, Joseph, Naval Research Lab. Tsai, Wilman, Intel Corporation Wu, Wei, University of Southern California

Fundamental Discoveries in Heterogeneous Catalysis

Chair: Killelea, Dan, Loyola Univ. Chicago
Baber, Ashleigh, James Madison University
Chen, Donna, Univ. of South Carolina
Gross, Elad, Hebrew University of Jerusalem, Israel
Jackson, Bret, University of Massachusetts - Amherst
Kay, Bruce D., Pacific Northwest National Lab.
Kimmel, Greg, Pacific Northwest National Lab.
Utz, Arthur, Tufts University

In-Situ and Operando Spectroscopy and Microscopy for Catalysts, Surfaces, & Materials

Chair: Tao, Franklin (Feng), University of Kansas Co-Chair: Frenkel, Anatoly, Yeshiva University Co-Chair: Yang, Judith, University of Pittsburgh Co-Chair: Yu, Xiao-Ying, Pacific Northwest National Laboratory

Nonnenmann, Stephen, University of Massachusetts – Amherst

Magnetic Interfaces and Nanostructures

Chair: Ohldag, Hendrik, SLAC National Accelerator Laboratory

Bagus, Paul, University of North Texas
Donath, Markus, Muenster University, Germany
Enders, Axel, Univ. of Nebraska - Lincoln
Fischer, Peter, Lawrence Berkeley National Laboratory
Hoffmann, Axel, Argonne National Laboratory
Holcomb, Mikel, West Virginia University
Lauter, Valeria, Oak Ridge National Laboratory
Lukaszew, Ale, College of William and Mary
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Sun, Dezheng, Stanford University
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Manufacturing Science and Technology

Chair: Rogers, Bridget, Vanderbilt Univ. Butler, Stephanie, Texas Instruments Diebold, Alain, SUNY College of Nanoscale Science and Engineering

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Svedberg, Erik B., The National Academies

MEMS and NEMS

Chair: Feng, Philip, Case Western Reserve University Co-Chair: Wang, Max Zenghui, Case Western Reserve University

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Sumant, Anirudha, Argonne National Laboratory Thundat, Thomas, University of Alberta and The National Institute for Nanotechnology, Canada Tian, Wei-Cheng, National Taiwan University, Taiwan, Republic of China

Zorman, Christian, Case Western Reserve University

Nanometer-scale Science and Technology

Chair: Ocola, Leonidas, Argonne National Lab. Co-Chair: Evoy, Stephane, University of Alberta Abate, Yohannes, Georgia State University Arnault, Jean-Charles, Cea – List, France Baxter, Jason, Drexel University Baykara, Mehmet, Bilkent University

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Shenderova, Olga, Adámas Nanotechnologies Inc. Sumant, Anirudha, Argonne National Lab Timm, Rainer, Lund University, NanoLund, Sweden Tischler, Joseph, Naval Research Laboratory Willey, Trevor, Lawrence Livermore National Lab. Wu, Wei, University of Southern California

Novel Trends in Synchrotron and FEL-Based **Analysis**

Chair: Renault, Olivier, Univ. Grenoble Alpes/ CEA, LETI, MINATEC Campus, France Co-Chair: Kiskinova, Maya, Elettra-Sincrotrone Trieste, Italy

Ceccone, Giacomo, European Commission, Joint Research Centre, IHCP, Italy

Herrera-Gomez, Alberto, CINVESTAV-Queretaro,

Kay, Bruce D., Pacific Northwest National Lab. Kumah, Divine, North Carolina State University Lee, Jun-Sik, SLAC

Oleynik, Ivan, University of South Florida Rosenhahn, Axel, Ruhr-University Bochum, Germany

Schneider, Claus Michael, Forschungs- zentrum Juelich GmbH, Germany

Shuh, David, Lawrence Berkeley National Lab. Spence, John, Arizona State University Susini, Jean, ESRF, France

Tao, Franklin (Feng), University of Kansas Vescovo, Elio, Brookhaven National Laboratory Plasma Processing for Biomedical Applications

Chair: Hamaguchi, Satoshi, Osaka Univ., Japan Agarwal, Sumit, Colorado School of Mines Allen, Stephanie, University of Nottingham, UK Canal, Cristina, Technical University of Catalonia,

Choi, Eun Ha, Republic of Korea Cvelbar, Uros, Slovenia

Graves, David, University of California, Berkeley O'Connell, Deborah, University of York, UK

Plasma Science and Technology

Chair: Agarwal, Sumit, Colorado School of Mines Agarwal, Ankur, Applied Materials, Inc. George, Steven, Univ. of Colorado at Boulder Gordon, Michael, Univ. of Calif. at Santa Barbara Hayashi, Hisataka, Toshiba

Hsu, Cheng-Che, National Taiwan University, Taiwan, Republic of China

Johnson, Erik, LPICM-CNRS, Ecole Polytechnique,

Joseph, Eric, IBM T.J. Watson Research Center Kanarik, Keren, Lam Research Corp.

Kessels, Erwin, Eindhoven University of Technology, Netherlands

Lishan, David, Plasma-Therm LLC Mangolini, Lorenzo, Univ. of California at Riverside O'Connell, Deborah, University of York, UK

Park, Chanro, Global Foundaries Ranjan, Alok, Tokyo Electron Reniers, François, Université libre de Bruxelles Ruzic, David, Univ. of Illinois at Urbana Champaign Samukawa, Seiji, Tohoku Univ., Japan Shearer, Jeffrey, IBM Research Division, Albany, NY Sriraman, Saravanapriyan, Lam Research Corp. Srivastava, Aseem K., Applied Materials, Inc. van de Sanden, Richard, Dutch Institute for Fundamental Energy Research (DIFFER), Netherlands Vitale, Steven, MIT Lincoln Laboratory Yeom, Geunyoung, Sungkyunkwan University, Republic of Korea

Scanning Probe Microscopy

Chair: Li, An-Ping, Oak Ridge National Laboratory Co-Chair: First, Phillip, Georgia Institute of Tech. Co-Chair: Kim, Tae-Hwan, Pohang University of Science and Technology

Co-Chair: Ventrice, Jr., Carl, SUNY Polytechnic Institute

Baykara, Mehmet, Bilkent University Burnham, Nancy, Worcester Polytechnic Institute Donath, Markus, Muenster University, Germany Kahng, Se-Jong, Korea University

Spectroscopic Ellipsometry

Chair: Hofmann, Tino, Univ.y of Nebraska – Lincoln Co-Chair: Aspnes, David, North Carolina State Univ. Co-Chair: Creatore, Mariadriana, Eindhoven University of Technology, Netherlands Co-Chair: Diebold, Alain, SUNY College of Nanoscale Science and Engineering Co-Chair: Hilfiker, James, J.A. Woollam Co., Inc.

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Surface Science

Chair: Kay, Bruce D., Pacific Northwest National Lab. Bartynski, Robert, Rutgers, State Univ. of New Jersey Bernasek, Steven, Yale-National Univ. of Singapore Gellman, Andrew, Carnegie Mellon University Killelea, Dan, Loyola University Chicago Koel, Bruce, Princeton University Mullins, David, Oak Ridge National Laboratory Rahman, Talat, University of Central Florida Russell, Jr., John, Naval Research Laboratory Smentkowski, Vincent, General Electric Global Research Center

Sykes, Charles, Tufts University Szakal, Christopher, National Institute of Standards and Technology (NIST)

Tysoe, Wilfred, University of Wisconsin-Milwaukee Utz, Arthur, Tufts University

Thin Film

Chair: Creatore, Mariadriana, Eindhoven University of Technology, Netherlands Co-Chair: Jur, Jesse, North Carolina State University Adams, David, Sandia National Lab. Akvildiz, Halil, North Carolina State University Allen, Stephanie, The University of Nottingham, UK Allred, David, Brigham Young University Baxter Jason Drexel University Cavanagh, Andrew, University of Colorado, Boulder Ceccone, Giacomo, European Commission, Joint Research Centre, IHCP, Italy

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Karabacak, Tansel, Univ. of Arkansas at Little Rock Kessels, Erwin, Eindhoven University of Technology, Netherlands

Kumah, Divine, North Carolina State University Lewis, Jay, RTI International Linford, Matthew, Brigham Young University Mei, Antonio, Univ. of Illinois at Urbana-Champaign Ocola, Leonidas, Argonne National Laboratory Parsons, Gregory, North Carolina State University Pedersen, Henrik, Linkoping University Poodt, Paul, Holst Centre, TNO, Netherlands Renault, Olivier, Univ. Grenoble Alpes/CEA, LETI, MINATEC Campus, France

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Vanfleet, Richard, Brigham Young University Wheeler, Virginia, U.S. Naval Research Laboratory Yanguas-Gil, Angel, Argonne National Laboratory Yu, Cunjiang, University of Houston Zuilhof, Han, Wageningen University, Netherlands

Tribology

Co-Chair: Chandross, Michael, Sandia National Lab. Co-Chair: Schall, J. David, Oakland University Argibay, Nicolas, Sandia National Laboratory Irving, Douglas, North Carolina State University Jacobs, Tevis, University of Pittsburgh Mangolini, Filippo, Ecole Centrale de Lyon - LTDS, France

Vacuum Technology

Chair: Li, Yulin, Cornell University Co-Chair: Wüest, Martin, INFICON Ltd., Liechtenstein

Arnold, Paul, Pressure & Vacuum Measurement Solutions, MKS Instruments, Inc.

Becker, Joe, Kurt J. Lesker Company Borichevsky, Steve, Applied Materials, Varian Semiconductor Equipment

Brucker, Gerardo Alejandro, Pressure & Vacuum Measurement Solutions, MKS Instruments, Inc. Fedchak, James A., National Institute of Standards

and Technology (NIST) Ferreira, Marcelo, European Spallation Source, Sweden Garcia, Bob, MKS Instruments

Hendricks, Jay, National Institute of Standards and Technology (NIST)

Lushtak, Yevgeniy, SAES Getters USA Martinez, Ted, SLAC National Accelerator Lab. Peacock, Neil

Ricker, Jacob, National Institute of Standards and Technology (NIST)

Stutzman, Marcy, Thomas Jefferson National Accelerator Facility

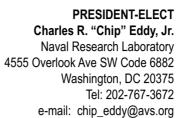
Valente-Feliciano, Anne-Marie, Thomas Jefferson National Accelerator Facility Wang, Lily, Los Alamos National Laboratory

Exhibitor Technology Spotlight Chair: DeGennaro, Jeannette, AVS

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GENERAL INFORMATION



AVS 63 Mobile App!

The AVS 63 App allows all Symposium registrants to: review the technical program and abstracts, plus exhibition, meetings/special events, and other travel and logistical details, create a personal schedule, send messages to other event attendees, capture and upload event photos, receive daily event notifications, access the AVS publications and technical libraries and more!

Simply download the app at: http://avs63.quickmobile.mobi/ Your username is your email address and your password is AVS63 Please contact AVS63app@avs.org should you need any assistance using the App

Stay Connected Year Around on Social Media

Did you know that AVS has several social media pages? We encourage you to expand your network and share your experiences or check regularly to stay abreast of the latest AVS activities and benefits—read the latest trending articles or learn more about AVS publications. Use #AVS63 in your Tweets this week to share your favorite parts of the meeting or to further scientific discussions. Links to the AVS social media pages can be found on the AVS 63 Mobile app or here are the links:

Twitter: @AVS_Members - @JVSTAB - @biointerphases Facebook: www.facebook.com/AVS-143182759040976/ Linked in: https://www.linkedin.com/groups/1309457

EXCITING 2016 EVENTS

Welcome Mixer for Attendees & Exhibitors

The Welcome Mixer will take place on Monday, November 7, from 6:30 p.m.–8:00 p.m. The Mixer is a casual gathering where attendees and exhibitors can enjoy some refreshments and spend time together prior to the opening of the Exhibit Hall. First time Symposium attendees - please watch for a special email invite pertaining to this event!

AVS Membership Booth and Store – Booth 645

Official AVS logo items including polos, graphic tees, the ever popular "No Vacuum" shirt, as well as other merchandise will be available for purchase throughout the week. Learn about the advantages and benefits of AVS membership and find out how to get more involved in AVS events and activities.

AVS Career Center - Booth 138

Looking for a position or seeking qualified candidates for a job opening? If so, please register at the AVS Career Center located in the Exhibit Hall.

AVS Publications - Booth 430

Come meet with the AVS journal editors, find out how to submit a manuscript and learn about exciting developments in all AVS journals.

Surface Science Spectra Data Browser - Booth 431

Announcing a unique new online spectral productivity tool! AIP Publishing and AVS are proud to preview at the Symposium the first release of the Surface Science Spectra Data Browser, a data analysis and visualization tool for the peer-reviewed and unique datasets contained in the AVS journal Surface Science Spectra. Surface Science Spectra Data Browser delivers a rich set of discovery, analytical, comparison, exporting, importing and sharing features to support exploration of the journal's 25 years of experimental output from the primary labs and researchers worldwide – and contains over 4000 XPS, UPS and AES spectra from more than 900 different materials. The new tool has been developed with global leaders in the surface science community in both university and industry contexts to meet the needs of physicists, chemists, biochemists, and mechanical engineers. Come to Booth #431 in the Exhibit Hall to see the Surface Science Spectra Data Browser in action!

Art Zone - Booth 727

See the entries into the 2016 art contest and vote for your favorites. Winners will take home cash prizes! To enter the contest, stop by the Staff Office (Room 210) for further information.

Exhibit Hall Refreshment Breaks

Visit the Exhibit Hall during the morning and afternoon technical session breaks. There will always be something special being offered in the Hall.

Complimentary Lunches in the Exhibit Hall

Full week attendees who pay for a full week registration (Full, Student, Early Career, Technical Specialist and Exhibitors) will receive three free lunch vouchers redeemable on Tuesday, Wednesday, and Thursday for lunch concessions located in the Exhibit Hall. Stop by the Exhibit Hall between 12:20–2:20 p.m. to grab a bite to eat and network with exhibitors and fellow colleagues. Come to the Exhibit Finale on Thursday for your free lunch!

AVS Raffle Zone – Booth 745

Be sure to enter your raffle tickets to participate in the daily raffles being held Tuesday-Thursday in the Exhibit Hall Raffle Zone! Thanks to our generous sponsors we have some really exciting prizes this year!

Ask The Experts – Booth 544 Sponsored by MKS Instruments, SAES Getters and Kimball Physics

The AVS Vacuum Technology Division is pleased to host Ask the Experts during the AVS 63 exhibit. Bring us your problems with vacuum system specifications, troubleshooting, process control, contamination and we will help you solve them.

Students and Early Career Members

The Professional Leadership is sponsoring some special events/ sessions. Please see the mobile app for further information.

Free Caricature—Booth 245 Sponsored by Shimadzu

Visit Booth 301 in the Exhibit Hall to get your ticket validated for a free caricature!

Internet Access E-mail Pavilion – **Booth 122**

Check your e-mail, confirm your flights, print your boarding passes.

Symposium Registration Cancellation Policy

All cancellations must be sent in writing to Yvonne Towse by October 17, 2016 (yvonne@avs.org) for a full refund less \$100 or \$50 for Students/Early Career/Technical Specialist/One Day cancellation fee. After that date AVS will only issue credits for AVS 63 with a valid reason. No refunds or credits for no shows. Please note that all refunds will be processed within 30 days following the meeting.

Terms & Conditions

- You will be charged for all registrations received.
- \$20 fee will be charged for all returned checks.
- · No Purchase Orders will be accepted.
- · All registration fees are NON-TRANSFERABLE.
- Children must be accompanied by a parent or a guardian during exhibit hours. Under no circumstances are children under the age of 12 (including infants and toddlers) permitted on the exhibit floor.

Symposium Lost Badge Policy

We will be imposing a \$20 fee for a replacement badge so please remember to bring your badge and keep it in a safe place throughout the week.

YOU MUST HAVE YOUR BADGE AND BADGE HOLDER TO GAIN ADMISSION TO THE TECHNICAL SESSIONS AND EXHIBITION.

AVS Membership Renewal Feature

The 2017 membership renewal dues will be included within the symposium registration fees for all Full, Student, Early Career, and Technical Specialist members. No further action will be required and 2017 membership will take effect on January 1, 2017. Any questions, see Angela Klink at the AVS Store (Booth 645) or via email (angela@avs.org).

Manuscript Publication Information

Journal of Vacuum Science & Technology A & B

Biointerphases

Authors are invited to submit an article to JVST A, JVST B or Biointerphases on the topic of their presentation/poster given at the AVS International Symposium. Articles can be submitted anytime between the abstract submission deadline and the special issue deadline of January 15, 2017. You can choose either JVST A, JVST B or Biointerphases depending on the topic. Online, you will have an opportunity to tell us that your paper is a part of the special issue by choosing "AVS 63 Special Issue." You can find easy to use templates and instructions for authors at http://scitation.aip.org/content/avs/journal/jvstb/info/authors, http://scitation.aip.org/content/avs/journal/jvstb/info/authors, http://scitation.aip.org/content/avs/journal/bip/info/authors.

For more information, stop by the AVS Publications Booth 430 in the Exhibit Hall during the week of the Symposium or contact:

Nancy Schultheis AVS Publications Office 51 Kilmayne Drive, Suite 104 Cary, NC 27511 Phone: 919-361-2787

Email: publications@avs.org

Complimentary AVS Membership Offer

If you have paid the Full, Student, Early Career, or Technical non-member registration fee, you will receive a complimentary AVS electronic membership for 2017. For more information, stop by AVS Booth 827 in the Exhibit Hall during the week of the Symposium or contact Angela Klink (angela@avs.org).

Recording/Photo Policy

Recording of Presentations is Strictly Prohibited. No individual
or entity—including a presenting author—may electronically
record or broadcast any portion of the AVS Meeting without
prior written consent of AVS. Unauthorized recording (audio,
video, still photography, etc.) of presentations during sessions,
posters, workshops, etcetera, without the express written consent of AVS and individual authors is strictly prohibited. Press
representatives must receive a Press Pass and photo/recording
permission from AVS.

AVS reserves the rights to any approved audio and video production of presentations at all AVS events.

Attendees or exhibitors are encouraged to network and enjoy
the meeting experience. As such, capturing memories of casual
meeting activities and networking is permitted with the permission of those being prominently photographed. Photographing
formal meeting presentations, posters, or displays is forbidden
without permission of AVS and the presenter.

Those who do not comply with the AVS photo policy may be asked to leave the premises.

Videos and Photo for AVS Use

AVS Meeting attendance implies your consent to be photographed, filmed and/or otherwise recorded for use on the AVS website or news publications. Please note that no technical presentations will be recorded without prior consent of AVS and the authors.

GENERAL INFORMATION

Additional Notes for Presenters

AVS will provide Windows 7 laptop computers running MS Office 2010, screens, microphones, and projectors in all session rooms, in addition to switchboxes set for HDMI for those who bring their own computers. We encourage you to use the system and to test your presentation on our equipment in our Presenter's Preview Room 106A prior to your talk. Please allow ample time for this; preferably the day before you are scheduled to present not immediately before your talk. If you are using the AVSprovided computer, please load your presentation on to this computer at least five minutes prior to the start of the session or during a session break. The Preview Room will be open on Sunday, for those of you with Sunday afternoon or Monday presentations. In deference to all our presenters, it is important that personal computer/projector compatibility issues be worked out well in advance of your presentation. Please note that PowerPoint is the recommended presentation software and the preferred format is (16:9). The projector is expected to be compatible with both PCs and MACs; however, please bring a copy of your presentation on a flash drive as a back-up.

Code of Conduct for AVS Meetings

Code of Conduct for AVS Meetings It is the policy of the American Vacuum Society (AVS) that all participants, including attendees, vendors, AVS staff, volunteers, and all other stakeholders at AVS meetings will conduct themselves in a professional manner that is welcoming to all participants and free from any form of discrimination, harassment, or retaliation.

Participants will treat each other with respect and consideration to create a collegial, inclusive, and professional environment at AVS Meetings. Creating a supportive environment to enable scientific disclosure at AVS meetings is the responsibility of all participants. Participants will avoid any inappropriate actions or statements based on individual characteristics such as age, race, ethnicity, sexual orientation, gender identity, gender expression, marital status, nationality, political affiliation, ability status, educational background, or any other characteristic protected by law. Disruptive or harassing behavior of any kind will not be tolerated. Harassment includes but is not limited to inappropriate or intimidating behavior and language, unwelcome jokes or comments, unwanted touching or attention, offensive images, photography without permission (see recording and photo policy), and stalking.

Violations of this code of conduct policy should be reported to the AVS Managing Director or Events Manager. Sanctions may range from verbal warning, to ejection from the meeting without refund, to notifying appropriate authorities. Retaliation for complaints of inappropriate conduct will not be tolerated. If a participant observes inappropriate comments or actions and personal intervention seems appropriate and safe, they should be considerate of all parties before intervening.

Hotel Reservations

Reservations (Opens: July 6, 2016; Closes: October 12, 2016))

Hotel	Room Rates	Parking
Renaissance Nashville 611 Commerce Street. Nashville, TN 37203	Single/Double: \$219	Parking: \$35 Valet \$12 Offsite self-parking
Courtyard Nashville Downtown 170 Fourth Ave North Nasvhille, TN 37219	Single/Double: \$195	Parking: \$28 Valet
Hampton Inn and Suites Nashville Downtwon 310 4th Avenue South Nashville, TN 37201	Single/Double: \$209	Parking: \$24 Valet \$20 Self- parking

Reservation Cancellation for Attendees

Reservations can be cancelled without penalty up to 72 hours prior to the day of arrival. Failure to arrive on your confirmed arrival date will result in one night's room & tax charged to the credit card provided and your entire reservation will be cancelled. A credit card is required to guarantee your reservation. Cancellations can be made via the website or via e-mail, avs@experientinc.com until 11:00 pm EST on October 12, 2016. Please wait to contact the hotel directly after October 14, 2016, for all cancellations and changes. The hotel may not have record of your reservation if you call prior to October 14, 2016.

Reservation Cancellation for Exhibitors

Due to hotel stipulations, a minimum number of blocked rooms must be utilized by the AVS; therefore, the FINAL day to cancel your reservation without penalty is 5:00 p.m. EST on September 1, 2016. Reservations cancelled AFTER 5:00 p.m. EST on September 1, 2016, will be assessed a cancellation fee equal to one night's room and tax per reservation. NOTE: The reservation cancellation fee is in addition to any hotel charges you may incur. If you cancel directly with the hotel, you will still be charged the cancellation fee. You are also subject to your individual hotel's cancellation policy. Hotel requires cancellation of 72 hours prior to the day of arrival. Failure to arrive on your confirmed arrival date will result in one night's room and tax charged by the hotel to the credit card provided and your entire reservation will be cancelled.

A credit card is required to guarantee your reservation. Changes to your reservation can be made via the website or via e-mail, avs@ experient-inc.com until 11:00 pm EST on October 12, 2016. Please contact the hotel directly after October 14, 2016, for all cancellations and changes. Please do not call the hotel prior to October 14, 2016, as the hotel may not have record of your reservation.

FLASH NETWORKING SESSIONS -

VACUUM TECHNOLOGY DIVISION, Monday, November 7, 2016, 3:40-4:00 pm, Room 104C

3:40 pm	VT-TuP1 Smart Measurement and Diagnostics Module for Dry Vacuum Pumps, WAN-SUP CHEUNG, K. BAIK, J.Y. LIM, KRISS,
	Republic of Korea
3:44 pm	VT-TuP2 Vacuum System of Positron Damping Ring for SuperKEKB, KYO SHIBATA, Y. SUETSUGU, T. ISHIBASHI, M. SHIRAI, S. TERUI, K. KANAZAWA, H. HISAMATSU, KEK, Japan
3:48 pm	VT-TuP3 Testing Pump Speed & Thermal Loading of Titanium Arc-Gettered High Speed (~2,000 m³/s for H₂) Cryoboxes, ERNESTO BARRAZA-VALDEZ, Tri Alpha Energy
3:52 pm	VT-TuP4 Formation and Characterization of Hydrogenated Amorphous Silicon (a-Si:H) Thin Films Deposited by ECR-CVD with Different RF Powers, HUGO ALVAREZ, A.R. SANTOS, J.G. FO, F.H. CIOLDIN, J.A. DINIZ, Universidade Estadual de Campinas, Brazil
3:56 pm	VT-TuP5 Hydrogen Measurement Using a Thermal Desorption Spectrometer, JONGYEON LIM, Korea Research Institute of Standards and Science, Republic of Korea; K.D. KIM, S.M. JOO, C.H. LIM, Y.D. JOH, Infinity Vacuum Technology, Republic of Korea
6:30 pm	TUESDAY, NOVEMBER 8 TH : VACUUM TECHNOLOGY POSTER SESSION, EXHIBIT HALL D

BIOMATERIAL INTERFACES DIVISION, Tuesday, November 8, 2016, 6:00 pm, Room 101A

C-00	BI+PB-TuP1 Quantitative Quartz Crystal Microbalance Measurements across Transients Produced by Switching Fluid Properties, V.
6:00 pm	Mugnaini, DMITRI PETROVYKH, International Iberian Nanotechnology Laboratory, Portugal
6:03 pm	BI+PB-TuP2 Quantitative Sensing of Pancreatic Enzymes using Gelatin, GEORGE BANIS, University of Maryland, College Park; L.
5100 pill	Beardslee, Walter Reed National Military Medical Center; R. Ghodssi, University of Maryland, College Park
6:06 pm	BI+PB-TuP3 Evaluation of Printed Cell Viability, Proliferation, and Insulin Production on Various Alginate-Gelatin Hydrogels, LUIS
	SOLIS, J. Rincon, A. Varela- Ramirez, R. Aguilera, T. Boland, University of Texas at El Paso
6:09 pm	BI+PB-TuP4 Synchrotron Radiation Studies of the Bonding and X-Ray Induced Reactions of Bacteriorhodopsin Adsorbed on Gold,
0.05 p	RICHARD ROSENBERG, Argonne National Laboratory; D. Mishra, R. Naaman, Weizmann Institute of Science, Israel
6:12 pm	BI+PB-TuP6 Developments of Non-Stick Surfaces for Medical Devices: Beneficial Effects of Thin Film Metallic Glass Coating, G.H.
0.12 p	Jiang, C.C. Yu, C.L. Li, Y. Tanatsugu, JINN P. CHU, National Taiwan University of Science and Technology, Taiwan, Republic of
	China; M.J. Chen, S.H. Chang, Mackay Memorial Hospital Tamsui Campus, Taiwan, Republic of China
6:15 pm	BI+PB-TuP7 Polyurethane Degradation by Wild Type and Hydrolase Deficient Pseudomonas protegens Pf-5 Unsaturated Biofilms,
0.13 p	DANIEL BARLOW, US Naval Research Laboratory; LJ. Nadeau, C.S. Hung, Air Force Research Laboratory; J.C. Biffinger, US
	Naval Research Laboratory; A.L. Crouch, Air Force Research Laboratory; J.N. Russell, US Naval Research Laboratory; W.J.
	Crookes-Goodson, Air Force Research Laboratory
6:18 pm	BI+PB-TuP8 Laser Irradiation of Mg Alloys: Reduced Kinetics and Enhanced Biocompatibility, M.A. Melia, DAVID FLORIAN, W.
0.10 piii	Steuer, J.R. Scully, J.M. Fitz-Gerald, University of Virginia
6:30 pm	BIOMATERIAL INTERFACES POSTER SESSION, EXHIBIT HALL D

THIN FILM DIVISION, Thursday, November 10, 2016, 5:40 pm, Room 104E

5:41 pm	TF-ThP8 Growth of Graphene on Cu Foil and Ni/Cu Surface by Pulsed Laser Deposition at Reduced Temperatures, MOHAMED
J. 12 p	HAFEZ, A. ABD ELHAMID, National Institute of Laser Enhanced Sciences, Cairo University, Egypt; A. ABOULFOTOUH, Cairo
	University, Egypt; I. AZZOUZ, National Institute of Laser Enhanced Sciences, Cairo University, Egypt
5:45 pm	TF-ThP19 Low Energy Ion Scattering (LEIS) Analysis of ALD Deposited GaSb Films on SiO2, THOMAS GREHL, P. BRÜNER, ION-
3.43 pm	TOF GmbH, Germany; R. TER VEEN, M. FARTMANN, Tascon GmbH, Germany; T. BLOMBERG, M. TUOMINEN, ASM
	Microchemistry Ltd., Finland
5:49 pm	TF-ThP29 Solution Deposition of Pentacene Thin Films for Solar Cells and Organic Electronics, MICHAEL LEE, R. MENDOZA, R.T.
3.43 pm	RODRIGUEZ, B.F. KUNZLER, Northern Arizona University
5:53 pm	TF-ThP17 Low Temperature Deposition of nc-Silicon Thin Films using SiH ₄ /H ₂ mixture, MONIRUZZAMAN SYED, Lemoyne Owen
3.33 pm	College; TONG. GOH, University of Malaya, Malaysia; N.F.F.B. NAZARUDIN, University of Malaya, Kuala Lumpur; A. JÁHANGIR,
	University of Memphis; Y. HAMADA, Lemoyne Owen College; A.M. ALI, King Khalid University, Saudi Arabia
5:57 pm	TF-ThP7 Internal Charge Transfer at the MBE-Grown Complex Oxide Interface, PENG XU, University of Minnesota; T.C. DROUBAY,
3.37 pm	Pacific Northwest National Laboratory; J.S. JEONG, K.A. MKHOYAN, University of Minnesota; P.V. SUSHKO, S.A. CHAMBERS,
	Pacific Northwest National Laboratory, B. JALAN, University of Minnesota
6:01 pm	TF-ThP26 Synergetic Effect of Nitrogen and Fluorine on the Total Dose Radiation Hardness of the Buried Oxide Layer in SOI Wafers,
0.02 p	ZHONGSHAN ZHENG, Institute of Microelectronics of Chinese Academy of Sciences, China
6:05 pm	TF-ThP9 Preparation of a Transparent Conductive Multilayer Consists of MoO ₃ /Ag/MoO ₃ and its Application in OLEDs, MIDORI
0.00 p	KAWAMURA, T. CHIBA, T. KIBA, Y. ABE, K.H. KIM, Kitami Institute of Technology, Japan
6:09 pm	TF-ThP32 Modification of the Vacuum-ultraviolet Absorption Spectrum during Plasma Exposure of Low-k Dielectrics: A Time-
0.03 p	dependent Density Functional Theory Analysis, HA NGUYEN, F.A. CHOUDHURY, J.L. SHOHET, University of Wisconsin – Madison
6:13 pm	TF-ThP33 High Moisture-Barrier Films using Roll-to-Roll-Plasma CVD grown SiOx on Room-Temperature ALD treated PEN
0.13 p	Substrates, NOBUYUKI KAWAKAMI, N. JIKO, T. OKIMOTO, Kobe Steel, Ltd., Japan; K. KANOMATA, F. HIROSE, Yamagata
	University, Japan
6:17 pm	TF-ThP44 Water Cooled Low Temperature Evaporation (LTE) Source for Thin Film Organic Semiconducting Materials, SALAHUD
0.17 piii	DIN, Kurt J. Lesker Company, UK
6:21 pm	TF-ThP46 Development of TiN/VN ALD Nanolaminates for Astronomy Applications, FRANK GREER, L. BAKER, P. DAY, B. EOM, H.
0.21 piii	LEDUC, Jet Propulsion Laboratory/California Institute of Technology
6:25 pm	THIN FILM DIVISION POSTER SESSION, EXHIBIT HALL D
3.23 P.II	THE TENDER OF LEGICIES, EXHIBIT HALL D

AVS DIVERSITY & INCLUSION BREAKFAST

Tuesday, November 8, 7:00–9:00 AM Renaissance Nashville Hotel, Belmont H

This Event is open to ALL Symposium attendees. The registration fee is \$25 and may be purchased with your Symposium registration. Pre-Registration is required; there will be no Onsite Registration available for this event.

"The Industrial Scientist's Guide to Riches, Fame, and Fortune or at Least a Raise"

Network with your colleagues at the 2nd Annual AVS Diversity and Inclusion Breakfast and join in a lively conversation with our diverse panel of experts as we discuss the management of your career as an industrial scientist, engineer or technician. This segment of our Society is of such great importance that we want to ensure its health and vitality. Much of the impact of scientific research nowadays is seen in its commercialization. The human side of this equation is to stimulate an environment that is as healthy for the workforce, you, as it is for the commercial venture. The discussion will be beneficial for the seasoned vet taking the plunge from the laboratory to sales all the way to the newly minted graduate trying to figure out the right work-life satisfaction balance. The experiences of the panel participants span the spectrums from startup to global conglomerates, and from sales to corporate laboratory management, and includes the perspectives of under-represented minorities and women. All are welcome to attend. Bring your questions and share your insights.

Panelists include:



Anna Belu Senior Principal Scientist, Medtronic



Baratunde ColaAssoc. Professor at Georgia Tech;
CEO, Carbice



Catherine Labelle
Senior Manager –
Technology Research,
GLOBALFOUNDRIES



David SurmanAVS President; President,
Kratos Analytical



Pacific Rim Symposium on Surfaces, Coatings & Interfaces

December 11-15, 2016, Kohala Coast, Hawaii Hapuna Beach Prince Hotel

This conference is being organized by AVS (United States) with a Steering Committee composed of representatives from Australia, Canada, China, Japan, Korea, Mexico, New Zealand, Singapore, and Taiwan. Symposium attendees will interact during morning and evening sessions that will include plenary, invited, and contributed presentations. We will have morning and evening technical sessions with the afternoons free for other activities and discussions.

The Plenary Lecture will be presented by Dr. Christian Kisielowski, Principle Investigator and Staff Scientist at the Molecular Foundry, Lawrence Berkeley National Laboratory on "Detecting the Invisible with Electron Beams: The Hidden Secrets of Nanocrystals, Interfaces and Surfaces at Atomic Resolution."

Biomaterial Surfaces & Interfaces
Energy Harvesting & Storage
Nanomaterials
Thin Films

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Details available at www.pacsurf.org

AVS Technical Library









The AVS Technical Library provides members with complimentary online access to technical and educational resources in the fields related to materials, processing, and interfaces:

Presentations on Demand
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Login at www.avs.org

Stop by the AVS Membership Booth 645

Tuesday-Thursday in the Exhibit Hall to learn more about the Technical Library portal

How Members Use the Technical Library... "Presentations on Demand provides the ability to view talks I could not attend at the symposium, it also allows me to go back and capture details I missed. Colleagues who were not able to attend the symposium are viewing the presentations at their convenience!"

-Vincent S. Smentkowski, General Electric GRC

"As a Professor, I find this a great way to share cutting edge research on a variety of topics with both students and colleagues on the fly. Given the use of electronic classrooms today, this has been a seamless partnership to a live lecture experience. The quality of the talks and the ability to tailor your selection, when you want to view it is a great feature."

-James Fitz-Gerald, Univ. of Virginia

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SPECS

CAREER CENTER and JOB FAIR

Looking for qualified candidates to interview and fill positions?

Looking for an employer who needs your skills and qualifications?



Check out the AVS Career Center and Job Fair Exhibit Hall – Booth #138

Sunday	Nov. 6	2:00 p.m. – 6:00 p.m.	Career Center Registration Area (Submit Job Openings/Résumés)
Monday	Nov. 7	7:30 a.m. – 5:00 p.m.	Career Center Registration Area (Submit Job Openings/Résumés)
Tuesday	Nov. 8	10:00 a.m. – 5:00 p.m.	Exhibit Hall, Booth #138 – Job Fair Open
Wednesday	Nov. 9	10:00 a.m. – 4:30 p.m.	Exhibit Hall, Booth #138 – Job Fair Open
Thursday	Nov. 10	10:00 a.m. – 2:30 p.m.	Exhibit Hall, Booth #138 – Job Fair Open
Thursday	Nov. 11	2:30 p.m. – 5 :00 p.m.	Career Center Registration Area

EMPLOYERS

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Interview Onsite

JOB SEEKERS

Submit Résumé/CV Review Job Openings Interview Onsite



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Not Intended for New Mexico residents



AVS 63 National Short Course Program

Music City Center Nashville, TN November 7-10, 2016

Vacuum Equipment and Technology ~ Materials Characterization Materials Processing

Short Course Rates

1 day – Regular \$575 / Student \$100 2 days – Regular \$850 / Student \$200 4 days – Regular \$1,495 / Student \$400

Courses that include a supplemental textbook – add \$100

Onsite short course registration – add \$50 per course (Regular) / \$25 per course (Student)

Short Course Times

8:30 a.m. - 5:00 p.m.

Short Course Registration Hours

Short Course Registration Counter

Day	Date	Time
Sunday	November 6	2:00 p.m. to 6:00 p.m.
Monday	November 7	7:30 a.m. to 5:00 p.m.
Tuesday	November 8	7:00 a.m. to 5:00 p.m.
Wednesday	November 9	7:30 a.m. to 5:00 p.m.
Thursday	November 10	7:30 a.m. to 5:00 p.m.

AVS Short Course Schedule (Courses offered Spring and Fall; 2017 schedule TBD)

http://www.avs.org/education-outreach/short-courses/short-courses-schedule

AVS Onsite Short Course Training

http://www.avs.org/Education-Outreach/Short-Courses/Onsite-Short-Courses

AVS Courses by Request

http://www.avs.org/Education-Outreach/Short-Courses/Short-Courses-by-Request

SPECIAL SESSIONS/WORKSHOPS

Biomaterial Interfaces Division Plenary Session and Reception

Sunday, November 6, 2016, 3:00-6:00 p.m., Room 101A, Music City Center

The Biomaterials Interfaces program kicks off with the now traditional Biomaterials Plenary Session. This year we are pleased to have presentations from three eminent scientists who have made significant contributions to our field. Kerstin Blank has made important developments in the field of mechano(bio)chemistry, which investigates the influence of force on the structure and function of molecules and materials. Through the development of novel force sensors, she is providing advances in biosensor design and also our understanding of complex biomimetic environments. David Needham has made significant contributions to our understanding of a broad swathe of interfacial phenomena, impacting in areas encompassing colloid science, materials (protein and polymer) engineering and drug-delivery. Dennis Discher has made key advances in areas spanning molecular/cell biology and physics, to polymer nano-engineering. These advances have in particular significantly improved our understanding of stem cell behavior and their involvement in disease. The session will close with the opportunity for further discussions at our traditional industry sponsored Plenary Reception.

Thin Film Division/Harper Award TED-Talk Competition (Invite Only)

Monday, November 7, 2016, 7:30 p.m., Room 105A, Music City Center

This special session is strictly for students who are authors on an abstract presented in a TFD sponsored or TFD-cosponsored session. Hor d'ouvres will be provided.

The four finalists are Melissa Beebe, College of William & Mary Collen Leng, Georgia Institute of Technology, Alberto Perrotta, Eindhoven University of Technology, The Netherlands, and Yanhao Yu, University of Wisconsin-Madison.

The four finalists for the Harper Award will present their work along the lines of a TED-talk, with 15 minutes to make their presentation. These talks will be judged and critiqued in real time for both their content as well as presentation quality and originality by a judging panel of TFD members in the role of execs and potential employers. Following the talks, the Harper Award winner for the best overall presentation will be announced.

Electronic Materials and Photonics Division Industrial Forum

The Electronic Materials and Photonics Division (EMPD) will host an industrial forum for those interested in learning about career opportunities in the semiconductor industry. These talks are aimed at introducing graduate students and post-doctoral researchers to some of the technical hurdles that the industry faces. Following the talks, there will be a question and answer period as well as informal discussions with the presenters. Dr. Gary McGuire will moderate the forum.

"Careers at Lam Research"

Tuesday, November 8, 2016, 6:45 p.m., Room 102A, Music City Center

Sponsored by Lam Research Corporation

This Forum will provide an open dialogue between an industrial liaison and young scientists and engineers. Dr. Adrien LaVoie will describe Lam Research Corporation, its technical thrusts as well as challenges, its products, future directions, and career opportunities.

Dr. Adrien LaVoie is Director of Technology for the Dielectric Atomic Layer Deposition Business Unit at Lam Research Corporation in Tualatin, Oregon. Prior to joining Lam Research, his research focused on transition metal ALD within the Components Research department at Intel Corporation. He holds a Ph.D. in synthetic organometallic chemistry from Yale University with postdoctoral research at Stanford University.

SPECIAL SESSIONS/WORKSHOPS

ASTM-E42/ASSD Joint Workshop: "Frontiers of Surface Analysis"

1) Inherently Nano: Surface Analysis Challenges and Opportunities in the Development of Nano-Science
2) The Rate Debate: Current State of Gas Cluster Source Use in Srface Analysis

Tuesday, November 8, 2016, 8:00 p.m., Belmont 2-3, Renaissance Nashville Hotel

Moderator: Tony Ohlhausen

Speakers: Don Baer, Pacific Northwest National Lab, Rasmus Havelund, National Physical Lab

The surface analysis techniques in the AVS community are intrinsically nano in nature, at least from the analysis in one dimensional direction. While some of these techniques lack a nano lateral resolution, their use in characterization of nano-structured surfaces is paramount to the development of a wide array of technological materials. Also inherent to the nano materials analysis world is a need for advanced sample handling protocols, often not previously necessary for bulk materials. We will discuss the surface implications of nano materials analysis, and recent developments in standardization of these methods and protocols.

Over the last several years, the surface analysis community has gained a new tool for the characterization of materials, the gas cluster ion source. These new sources have enabled depth profiling of organic and soft materials, something that was not previously possible, opening up a new world of analysis. Their expanded use brings with it a new parameter space of possible beam property combinations, whose use is often determined by the ability to etch a given material. Understanding the various attributes necessary for use on materials systems will be critical for these new sources to provide useful information. The current state of their use in materials analysis will be discussed.

Surface Science Morton M. Traum Presentation

Thursday, November 10, 2016, 12:20 p.m., Room 104D, Music City Center

The Tuesday Evening Poster Session features presentations by the Mort Traum Student Award Finalists. The Morton M. Traum Surface Science Student Award will be presented for the best student poster presented in the poster session sponsored or jointly sponsored by the Surface Science (SS) Division at the AVS International Symposia. The 2016 Winner will be announced in the Traum Student Award Ceremony.

"Celebrating a Life in Surface Science: A Symposium in Honor of JOHN T. YATES, JR."

Thursday, November 10, 2016, 2:00 pm, Room 103C, Music City Center



This special symposium celebrates the life and career of John T. Yates, Jr., Professor of Chemistry at the University of Virginia, member of the US National Academy of Sciences, and a pioneer of modern surface science. Throughout his career, his research was in the fields of surface chemistry and physics, including interests in the structure and spectroscopy of surface species, the dynamics of surface processes, and the development of new methods for research in surface chemistry. He is especially known for his work on desorption induced by electronic transitions (DIET), and as a co-developer of ESDIAD, electron stimulated desorption ion angular distribution. John was an exceptional scientist and gifted communicator, with a knack for making complex problems seem simple after he studied them in depth and communicated his results so beautifully, typically with his own meticulously hand-drawn diagrams. He published more than 750 scientific papers on surface chemistry and physics, and is among the 100 most-cited chemists in the world. His professional accomplishments have been recognized by many presti-

gious awards and honors, including the U.S. Department of Commerce's Gold Medal; Kendall Award for Colloid or Surface Chemistry of the American Chemical Society; the AVS Medard Welch Award; Fellow of the American Vacuum Society; Member of the National Academy of Sciences; Arthur W. Adamson Award for Distinguished Service in the Advancement of Surface Chemistry of the ACS); Peter Debye Award in Physical Chemistry of the ACS; Theodore Madey Award of the AVS; and the Gerhard Ertl Lecturer Award for Surface Chemistry and Catalysis. The symposium is comprised of former students, postdocs and colleagues who address the breath of his career through their work and his influence on them.

PROFESSIONAL LEADERSHIP

AVS attendees welcome at all Professional Leadership Committee sponsored events. Admission is free to all events.

Sunday, November 6, 2016 (Open to AVS attendees)

2:00 pm-6:00 pm	Career Center (Registration Area): submit resumes and job postings	
5:00 pm-6:30 pm	Improving Work-Life Satisfaction (102A Convention Center)	

Monday, November 7, 2016 (Open to AVS attendees)

7:30 am-5:00 pm	Career Center (Registration Area): submit resumes and job postings
12:15 pm-1:45 pm	Welcome to AVS! (102A Convention Center)

Tuesday, November 8, 2016 (Open to AVS attendees)

10:00 am-5:00 pm	Career Center (Exhibit HallBooth #138): Job Fair Open
12:30 pm-2:00 pm	Job Information Forum & Lunch (102A Convention Center)

Wednesday, November 9, 2016 (Open to AVS attendees)

10:00 am-4:30 pm	Career Center (Exhibit HallBooth #138): Job Fair Open
12:30 pm-2:00 pm	Federal Funding Town Hall & Lunch (102A Convention Center)

Thursday, November 10, 2016 (Open to AVS attendees)

10:00 am-5:00 pm Career Center (Exhibit Hall--Booth #138 10:00-2:30—Job Fair Open, Registration Area 2:30-5:00—Job Fair Closed)

AVS-63 Career Center & Job Fair

The AVS Professional Leadership Committee will be hosting the AVS Career Center, *open to all attendees*, for the purpose of connecting job seekers with potential employers. The goal is to facilitate contact and networking during the Conference. In addition, there will be a **Job Fair** Tuesday through Thursday.

Employers seeking qualified candidates can register for the Job Fair, provide job postings, purchase electronic resume files, and conduct onsite interviews. **Job seekers** can submit a resume, meet, and interview with potential employers. To take advantage of this service, please visit the following website for more information and submission deadlines.

AVS Onsite Career Center: http://www.avs.org/Symposium/Career-Center

PROFESSIONAL LEADERSHIP

Improving Work-Life Satisfaction

*No additional cost is required; however, we do ask you to register for this event.

Organizer: **Micky Holcomb, West Virginia University** Sponsor: AVS Professional Leadership Committee

Students, faculty, administrators, industrial and government personnel (or staff) will all come across times when they struggle with maintaining a happy work-life balance. This workshop will go over some tips and strategies for improving your own work-life satisfaction. The workshop leader is a funded tenure-track faculty member, mother of two young children and coach for the National Center for Faculty Development and Diversity.

This program was originally developed by the Association for Women in Science (AWIS) through a grant from the Elsevier Foundation.



Welcome to AVS! - A Brief Introduction to YOUR New Professional Society

Lunch is provided for all AVS attendees!

Organizer: **Charles Eddy, Naval Research Laboratory** Sponsor: AVS Professional Leadership Committee

Wonder about the Mission and Vision of AVS? Want to know how to get involved? Would you like to hear from AVS members and leaders?



Then, come learn about the benefits and opportunities of YOUR newest Professional Society!

- This "Welcome to AVS!" event will introduce you to the mission, vision and organization of AVS as well as highlight its major activities
 - o Publishing (Editor-in Chief Eray Aydil),
 - o Symposia and Conferences (Chair Chip Eddy),
 - o Education (Chair John Lannon),
 - o Membership (Chair Dave Surman), and
 - o Professional Development (Chair Susan Burkett).
- Come hear about the benefits now available to you as an AVS member both at the meeting this week and throughout the whole year!
- Meet with key leaders in AVS and find out how you can get involved!

Welcome! We're really glad you're here and we want you to stay!

PROFESSIONAL LEADERSHIP

Job Information Forum & Lunch

Lunch is provided for all AVS attendees!

Organizer/Moderator: **Jeffrey Fenton, Medtronic** Sponsor: AVS Professional Leadership Committee

Panelists come from various sectors to share their career paths and will give attendees advice as well as comment on opportunities for professional development, promotion, etc.



Invited Speakers Include:

Michaeleen Pacholski, Research Scientist, Dow Chemical

Marlon Walker, Research Chemist, Material Measurement Laboratory, NIST

Alison Baski, Dean of College of Science, Cal Poly Pomona

Federal Funding Town Hall

Lunch is provided for all AVS attendees!

Organizer/Moderator: **Sean Jones, National Science Foundation, Jeffrey Fenton, Medtronic** Sponsor: AVS Professional Leadership Committee

This year's Town Hall **focuses on translating basic and applied research into the market place**. Come hear about the I-Corps, SBIR/STTR, and PFI-Accelerating Innovation Research programs – featuring successful awardees. This is an event you will not want to miss!

Invited Speakers Include:

Dr. Ben Schrag, Program Director, Division of Industrial Innovation & Partnerships, SBIR/STTR Program, National Science Foundation

Dr. Perena Gouma, SUNY at Stony Brook, Nanogrid Tech/Electrospun Nanotechnologies

Byron Smith, Vanderbilt University, EndoInSight, Inc.

Dr. Mehmet Sarikaya, University of Washington, Seattle Biomemetics Sciences, Inc.

Dr. Michael Goldfarb, Vanderbilt University, Nexmatic LLC

Dr. Mehdi Yazdanpanah, Nauga Needles

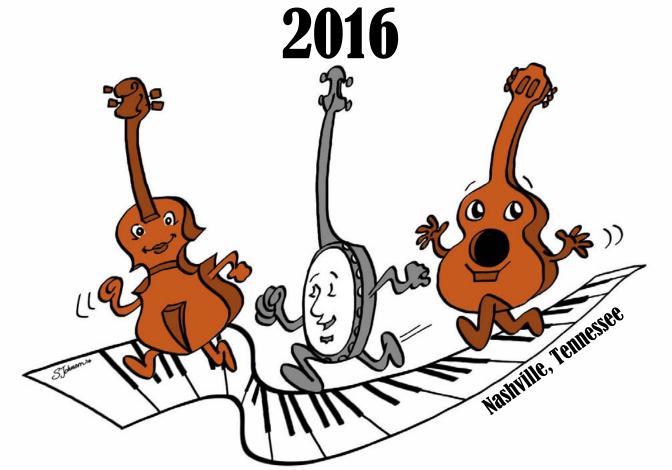




America's Seed Fund"

AVS 36th Annual 5k Run

Wednesday, November 9th



When: Wed., November 9, 2016, 6:30 a.m.

Registration: \$30 entry fee includes run t-shirt, race number, map of the course, and awards. Stop by the Run Registration Booth in the Music City Center by Tuesday, November 8th to register and/or pick up your materials and schedule.

Details and Awards: This year's course is an "out and back" on a paved path along the Cumberland River within walking distance of the Music City Center. The awards ceremony will be held at the Run Registration area on Wednesday at noon.

Don't forget to put together a team to compete in our CORPORATE RACE and DIVISIONS AND GROUPS RACE.

Each team representing a corporate entity (university, unemployed, research organization, manufacturer, etc.) or Division/Group must have three team members to qualify. Times are handicapped by age and sex.

To enter your team, please e-mail your roster, team name, and affiliation to the Run Director before noon on Tuesday, November 8—make sure each team member has registered for the run.

Run Director:

Bridget Rogers, bridget rogers@avs.org













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MEDADD	XX 7	WELCH	AWARDEES
MEDARD	· vv .	WELLE	AWARDEES

1970	Erwin W. Mueller	1987	Mark J. Cardillo	2002	Buddy Ratner
1971	Gottfried K. Wehner	1988	Peter Sigmund	2003	Matthias Scheffler
1972	Kenneth C.D. Hickman	1989	Robert Gomer	2004	Rudolf M. Tromp
1973	Lawrence A. Harris	1990	Jerry M. Woodall	2005	Charles S. Fadley
1974	Homer D. Hagstrum	1991	Max Lagally	2006	John C. Hemminger
1975	Paul A. Redhead	1992	Ernst Bauer	2007	Jerry Tersoff
1976	Leslie Holland	1993	George Comsa	2008	Miquel Salmeron
1977	Charles B. Duke	1994	John Yates, Jr.	2009	Robert J. Hamers
1978	Georg H. Hass	1995	Gerhard Ertl	2010	Mark J. Kushner
1979	Gert Ehrlich	1996	Peter J. Feibelman	2011	Wilson Ho
1981	Harrison E. Farnsworth	1997	Phaedon Avouris	2012	Yves Chabal
1983	H.H. Wieder	1998	David E. Aspnes	2013	Chris G. Van de Walle
1984	William S. Spicer	1999	John H. Weaver	2014	Patricia A. Thiel
1985	Theodore E. Madey	2000	D. Phillip Woodruff	2015	Charles T. Campbell
1986 Harald Ibach 2001 E		E. Ward Plummer	2016	Maki Kawai	
	C	EDI	E I ANCMIID AWADDEES		

GAEDE-LANGMUIR AWARDEES

1978	Pierre V. Auger	1992	Russell D. Young	2006	Leonard J. Brillson
1980	Daniel Alpert	1994	Robert J. Celotta	2008	Daniel Auerbach
1982	Alfred H. Sommer	1994	Daniel T. Pierce	2010	Gerald Lucovsky
1984	Alfred Benninghoven	1996	Gerald J. Lapeyre	2012	Dietrich Menzel
1986	Rointan F. Bunshah	1998	Paul D. Palmberg	2014	Hans-Joachim Freund
1988	Alfred Y. Cho	2000	Gary W. Rubloff	2016	Paul S. Bagus
1988	John R. Arthur, Jr.	2002	Cristoforo Benvenuti		

2004 Kunio Takayanagi

1990 François M. d'Heurle

ALBERT NERKEN AWARDEES

1985	John L. Vossen	1995	Donald Mattox	2006	Siegfried Hofmann
1986	Donald J. Santeler	1996	William R. Wheeler	2007	Richard J. Colton
1987	Marsbed Hablanian	1997	John C. Helmer	2008	Seizo Morita
1988	Stanley L. Milora	1998	Peter J. Clarke	2009	Donald R. Baer
1989	Charles D. Wagner	1999	Paul Holloway	2010	Fan Ren
1989	Martin P. Seah	2000	John T. Grant	2011	John E. Rowe
1990	J. Peter Hobson	2001	Cedric Powell	2012	Sven Tougaard
1991	Harold R. Kaufman	2002	David J. Harra	2013	Howard A. Padmore
1992	Paolo della Porta	2003	Peter B. Barna	2014	Gary E. McGuire
1993	John O'Hanlon	2004	Johan K. Fremerey	2014	Olga A. Shenderova
1994	Hajime Ishimaru	2005	Christopher R. Brundle		

JOHN A. THORNTON MEMORIAL AWARDEES AND LECTURES

1989	Eric Kay	1994	David Hoffman	2005	Stan Veprek
1990	Maurice Francombe	1995	Jan-Eric Sundgren	2007	Stephen J. Pearton
1991	Joseph E. Greene	1997	James M.E. Harper	2009	Frances A. Houle
1992	Thomas R. Anthony	1999	Timothy Coutts	2011	Vincent M. Donnelly
1993	John W. Coburn	2001	Samuel D. Bader	2013	Ivan Petrov
1993	Harold F. Winters	2003	William D. Sproul	2015	Alfred Grill

PETER MARK AWARDEES

198	0 Christopher R. Brundle	1993	Robert Hamers	2005	Jane P. Chang
198	1 Lawrence L. Kazmerski	1994	Marjorie Olmstead	2006	Mark C. Hersam
198	2 Charles M. Magee	1995	Emily Carter	2007	W.M.M. Kessels
198	3 D. James Chadi	1996	Brian E. Bent	2008	Sergei Kalinin
198	4 Barbara J. Garrison	1997	Brian Swartzentruber	2009	Beatriz Roldan Cuenya
198	5 Franz J. Himpsel	1998	David G. Cahill	2010	Arutiun Ehiasarian
198	6 Richard A. Gottscho	1999	Eray S. Aydil	2011	Mohan Sankaran
198	7 Raymond T. Tung	2000	Stacey F. Bent	2012	E. Charles H. Sykes
198	8 Jerry D. Tersoff	2001	Eli Rotenberg	2013	Daniel Gunlycke
198	9 Randall M. Feenstra	2002	Rachel S. Goldman	2014	Joshua Zide
199	0 Stephen M. Rossnagel	2003	Charles H. Ahn	2015	Petro Maksymovych
199	1 William J. Kaiser	2004	Kathrvn W. Guarini		

AVS AWARD WINNERS

HONORARY MEMBERSHIP

1959	Rudy A. Koehler	1996	Howard Patton	2006	Alvin Czanderna
1963	Benjamin B. Dayton	1997	Paul Holloway	2007	Paula J. Grunthaner
1981	Leonard C. Beavis	1997	William D. Westwood	2008	Eric Kay
1981	N. Rey Whetten	1999	Donna Bakale Sherwin	2009	Rudolf Ludeke
1982	Charles B. Duke	1999	James S. Murday	2009	William D. Sproul
1984	J. Roger Young	2000	Lawrence L. Kazmerski	2011	Robert A. Childs
1985	Kai Siegbahn	2001	Robert Willis	2012	Cedric Powell
1986	Manfred S. Kaminsky	2003	H. Frederick Dylla	2013	David Castner
1988	Jack H. Singleton	2003	Gary E. McGuire	2013	Stephen M. Rossnagel
1991	John W. Coburn	2004	Arthur O. Fuente, Jr.	2014	John N. Russell, Jr.
1991	J. Lyn Provo	2004	J.W. Rogers, Jr.		

2005 Gerald Lucovsky

JOHN L. VOSSEN MEMORIAL AWARDEES

1992 Marsbed Hablanian

GEORGE T. HANYO AWARDEES

199	7 Robert Shaner	2001	Paul Lulai		U		Arthur W. Ellis
199	8 Hasan Fakhruddin	2002	Toni L. Evans				Jonathan Koch
199	9 Chris Ann Slye	2004	Jacqueline G. Kane	1999			Percy Zahl
200	Charles J. Miltenberger		•	2001			Steven R. Blankenship
						2014	Ewald E. Chaban
				2004	Richard E. Muller	2015	Marc D. Landry
				2006	Jeffrey D. Kelley	2016	Stanley B. Christman

DOROTHY M. AND EARL S. HOFFMAN AWARDEES

2003	Kenneth Bratland (Univ. of Illinois at Urbana-Champaign)	2010	Esther Amstad (ETH Zurich, Switzerland)
2004	Michael Filler (Stanford University)	2011	Kangkang Wang(Ohio University)
2005	Michael Zellner (University of Delaware)	2012	Davide Sangiovanni (Linkoping University)
2006	Xingyi Deng (Harvard University)	2013	Zhu Liang (University of Illinois at Chicago)
2007	Thomas Mullen (Pennsylvania State University)	2014	Jingjing Qiu (University of Florida)
2008	Gregory Rutter (Georgia Institute of Technology)	2015	Jiayu Wan (University of Maryland, College Park)
2009	Juan Carlos Rodriguez-Reves (University of Delaware)		

NELLIE YEOH WHETTEN AWARDEES

1990	Jani C. Ingram (University of Arizona)	2003	Meredith L. Anderson (Carnegie Mellon University)
1991	Lucia Markert (University of Illinois)	2004	Wensha Yang (University of Wisconsin, Madison)
1992	Hope Michelson (IBM Almaden Research Center)	2005	Natalia Farkas (University of Akron)
1993	Laura Tedder (University of California, San Diego)	2006	Jessica Hilton (University of Minnesota)
1994	Monica Katiyar (University of Illinois)	2007	Andrea Munro (University of Washington)
1995	Cynthia Kelchner (Iowa State University)	2008	Brittany Nelson-Cheeseman (University of California, Berkeley)
1996	Tracey E. Caldwell (University of California, Davis)	2009	Sarah Bishop (University of California, San Diego)
1997	Catherine Labelle (Massachusetts Institute of Technology)	2010	Xiaoyu Wang (University of Wisconsin, Madison)
1998	Jennifer S. Hovis (University of Wisconsin)	2011	Sondra Hellstrom (Stanford University)
1999	Nerissa Taylor (University of Illinois)	2012	Nour Nijem (University of Texas, Dallas)
2000	Jennifer E. Gerbi (University of Illinois)	2013	Indira Seshadri (Rensselaer Polytechnic Institute)
2001	Tanhong Cai (Iowa State University)	2014	Jiechang Hou (University of Pennsylvania)
2002	Lyudmila Goncharova (Rutgers University)	2015	Leeya Engel (Tel Aviv University)

	AVS RUSSELL AND SIGURD VARIAN AWARDEES							
1983	J.S. Villarubia (Cornell University)	2000	Michelle L. Steen (Colorado State University)					
1984	Kenneth T.Y. Kung (MIT)	2001	Jianwei Dong (University of Minnesota)					
1985	Anne L. Testoni (Northwestern University)	2002	Wei Tan (University of Illinois)					
1986	Jingguang G. Chen (University of Pittsburgh)	2003	John R. Kitchin (University of Delaware)					
1987		2004	Vassil Antonov (Univ. of Illinois at Urbana-Champaign)					
1988	Christopher E. Aumann (University of Wisconsin)	2005	Liam Pingree (Northwestern University)					
1989	Brian S. Swartzentruber (University of Wisconsin)	2006	Gregory Ten Eyck (Rensselaer Polytechnic Institute)					
1990	Guangquan Lu (University of California, San Diego)	2007	H. Lee Mosbacker (Ohio State University)					
1991	Michael Flatte (University of California, Santa Barbara)	2008	Erik Wallen (Linkoping University)					
	Rex Ramsier (University of Pittsburgh)	2009	Sudhakar Shet (New Jersey Institute of Technology/NREL)					
	Daniel Kelly (University of California, Santa Barbara)	2010	Christine Tan (Cornell University)					
	Britt Turkot (University of Illinois)		David A. Siegel (University of California, Berkeley)					
	Robert Carpick (University of California, Berkeley)		April Jewell (Tufts University)					
1996	Kevin Robbie (University of Alberta)	2013	Jason Kawasaki (University of California, Santa Barbara)					
1997		2014	Deep Jariwala Northwestern University					
1998	John S. Lewis, III (University of Florida)	2015	Andrada-Oana Mandru Ohio University					
1999	Sanjit Singh Dang (University of Illinois, Chicago)							



AVS AWARDS

AWARDS CEREMONY & RECEPTION

The AVS Awards Ceremony will be held on Wednesday, November 9, 2016, at 6:30 p.m. in the Davidson Ballroom within the Music City Center to be followed immediately by an Awards Reception. This year, AVS honors the following awardees:

Maki Kawai, Medard W. Welch Award Paul S. Bagus, Gaede-Langmuir Award Stanley B. Christman, George T. Hanyo Award The newly elected AVS Fellows The 2016 AVS National Student Award Finalists

MEDARD W. WELCH AWARD

The Medard W. Welch Award was established in 1969 to commemorate the pioneering efforts of M.W. Welch in founding and supporting AVS. It is presented to recognize and encourage outstanding research in the fields of interest to AVS. The award consists of a cash award, a medal, a plaque, and an honorary lectureship at a regular session of the International Symposium.



MAKI KAWAI

"Medard W. Welch Award Lecture – "Action Spectroscopy: Characterizing Molecules at Surfaces and its Dynamics,

Monday, 9:40 am, Room 104A

Maki Kawai, Institute for Molecular Science and University of Tokyo, "for elucidation of the role of vibrational dynamics in single-molecule reactions at surfaces"

Maki Kawai is the Director General of the Institute for Molecular Science at Okazaki, Japan. She is also a Professor at University of Tokyo. She has coauthored over 300 publications on surface science, physical chemistry, catalysis and materials science. She received Surface Science Society of Japan award (2005), Chemical Society of Japan award (2008), 2015 IUPAC Distinguished women in Chemistry and Chemical Engineering, and 2015 Gerhard Ertl Lecture Award.

In addition to her fundamental scientific research, she is a widely-respected leader in scientific management. This activity, involving science in the USA, Germany, United Kingdom, and Japan has made her a highly valued member of the international scientific community, culminating with her former position as the RIKEN Executive Director in charge of research affairs. She is a member of the Science Council of Japan, and currently serving as an Executive Board Member representing Section III: Physical Sciences and Engineering. She is and has always been a highly respected member of the international community, serving as chair of the Surface Science Division, IUVSTA (International Union for Vacuum Science, Techniques, and Applications; 2001–2004), board member of the Institute of Physics, London, UK (2002-2004), as well as member of the Scientific Advisory Board at the Fritz Haber Institute of the Max Planck Society since 2010. She was elected an APS (American Physical Society) fellow in 2010.

Prof. Kawai has also played an important role in the Japanese government's planning of its science & technology policy, contributing to the drafting of a model plan for intellectual property strategy (2003–2007), and for new system for education as a member of Prime Minister Abe's Education Rebuilding Implementation Council (2013–2015).

Maki Kawai received her BS in Chemistry at the University of Tokyo in 1975 and her PhD there in 1980 under the guidance of Prof. Kenzi Tamaru. She then did postdoctoral research for 5 years in several places including RIKEN, the University of Tokyo, Osaka Industrial Research Institute, Ministry of International Trade and Industry (MITI) and at Osaka Gas Co. in Japan. These experiences of working in various places, university, governmental and private research institutes was especially important for Kawai to establish her direction of research in fundamental sciences.

Before becoming the chief scientist at RIKEN to direct Surface Chemistry Lab. in 1991, she worked at RIKEN (1985–1988) and served as TKD professor at Tokyo Institute of Technology (1988–1991). And from 2004, she is Professor at the University of Tokyo.

Maki Kawai is well known in her study on single-molecule chemistry, where spectroscopy of ultimate spatial resolution is performed. Of the most, single molecule vibrational spectroscopy utilizing inelastic tunneling process and extracting vibrational spectra from action of molecules (Action Spectroscopy) using STM stands to be unique. Interplay between the localized spin at adsorbed molecule and electrons at the Fermi sea of metal substrates is one of the recent topics of her group where Zeeman splitting or the Kondo resonance are resolved in sub-atomic resolution in space.

GAEDE-LANGMUIR AWARD

The Gaede-Langmuir Award was established in 1977 by an endowing grant from Dr. Kenneth C.D. Hickman. It is presented to recognize and encourage outstanding discoveries and inventions in the sciences and technologies of interest to AVS. The award is conferred biennially as a suitable candidate may be identified. It consists of a cash award, a commemorative plaque stating the nature of the award, and an honorary lectureship at a regular session of the International Symposium.



PAUL S. BAGUS

"Gaede Langmuir Award Lecture –
"Multiplets and More
for Core-Level Spectra"

Wednesday, 11:00 am, Room 103C

Paul S. Bagus, University of North Texas, "for seminal contributions to understanding photoelectron spectra of solid surfaces and molecules adsorbed thereupon"

Paul Bagus received his Ph.D. in 1965 at the University of Chicago under Prof. C. J. J. Roothaan in the Laboratory of Molecular Structure and Spectra, LMSS, directed by Profs. R. S. Mulliken and Roothaan. The LMSS was one of the major centers for the early development and applications of ab initio Quantum Chemistry and Paul Bagus was a major contributor to these efforts. His thesis work on the ionization of closed shell atoms showed, for the first time, that ab initio wavefunction methods could be successfully applied to the core-level excitations measured in X-Ray Photoemission Spectroscopy, XPS. This was followed by demonstrations of the importance of many body effects for the XPS of open shell systems and of the localization of coreholes. Based on this XPS work, he was named an APS Fellow in 1975. Starting in 1968, he spent several years at the IBM Research Laboratories in San Jose where he continued his efforts on the development of rigorous theoretical methods and he began his study of surface processes. This effort was, in large measure, inspired by the outstanding Surface Science program at IBM San Jose. Several of his post-doctoral visitors at IBM now hold significant academic positions. He left IBM in 1993, was a visitor at several institutions, primarily in Europe, and is now a Research Professor in the Chemistry Department at the University of North Texas. He has over 350 publications and his work is highly cited.

Paul Bagus' theoretical research has focused on topics in two separate but closely related scientific areas: (1) chemistry of surfaces with particular emphasis on the bonding between adsorbates and surfaces and (2) core level ionization and excitation. Essentially all of his research has involved using computations to determine the electronic structure of atoms, molecules, and condensed systems. He has demonstrated that clusters containing a few to many atoms can be successfully used as models of bulk and surface processes since they permit a focus on local aspects of atomic and molecular interactions. An important objective of his research has been to understand the physical and chemical reasons for observed properties. Contributing to this understanding is a role of theory that is easily as important as predicting values for these properties in close agreement with experiment. In order to reach this objective, He has pioneered in the development of programs that can be used to analyze the computed wavefunctions and to decompose the properties resulting from a chemical interaction into contributions from different physical and chemical mechanisms. A recurring theme of his efforts has been interaction and collaboration with experimentalists since this both guides his research efforts and helps to insure that they have a direct impact. These collaborations began during his tenure at IBM and were enhanced with continuing collaborations after his Humboldt Senior Scientist Award, originally made in 1979 with later extensions. In particular, at present, he maintains strong collaborations at the Fritz-Haber Institute, FHI, in Berlin and the Pacific Northwest National Laboratory, PNNL, in Richland, WA.

GEORGE T. HANYO AWARD

The George T. Hanyo Award was established in 1996 by the Kurt J. Lesker Company in the memory of George T. Hanyo, a highly skilled, longtime employee of the company. The award is presented to recognize outstanding performance in technical support of research or development in areas of interest to AVS. It recognizes valuable contributions made by persons outside normal professional circles. Typical nominees should have received mention in the "Acknowledgments" sections of the published papers but, with the possible exception of papers describing new apparatus or procedures, would rarely have been authors or co-authors. The award consists of a cash award and a plaque setting forth the reasons for the award.



STANLEY B. CHRISTMAN

Stanley B. Christman, Hickory Hill Designs, "for outstanding technical support on a variety of projects at Bell Labs"

Stanley Christman from Bell Laboratories, Murray Hill, Surface Physics Dept was responsible for equipment purchase, design, data taking, and maintenance. Design activities involved electronics, electrical, instrument to computer interfacing, software, vacuum, and mechanical.

After graduation in 1957 from Schuylkill Valley HS, Leesport, Berks Co., Pa., Stan completed a BS in Physics at Penn State Univ. He first encountered vacuum technology at his first job as an Operating Engineer of the Princeton-Pennsylvania 3Bev Proton Accelerator in 1962. When he arrived, there was a claim that there was a beam for a short time. The machine was eventually producing beam around the clock with Stan leading one of the operating crews. The maintenance and improvement of the RF Cavity Accelerating System was also his direct responsibility. This was the time when Quarks were yet to be discovered. This accelerator became obsolete in 7 years, as other higher energy accelerators came on line. While working at Princeton, Stan completed an MA in Physics at The College of NJ, where he developed an NMR facility for the college. His thesis project resulted in the first published NMR spectra of some new Nematic Liquid Crystal compounds.

In 1970, Stan joined Bell Labs Surface Physics department to became part of a team that was to develop a UV and x-ray photoemission experimental capability. This was the time when vacuum experimental work was transitioning from all glass chambers to stainless steel chambers, with the then new conflat flanges. A few chambers were built that allowed the sample to be rotated to allow the sample to be examined by UV, AES, LEED, HEED, and MBE. All chambers had custom computer controlled Residual Gas Analyzers.

Single and Double Cylindrical Mirror Analyzers were utilized to detect the photo-emitted electrons. Channel Plate Detectors were utilized to collect angle-resolved data. Chambers were taken to accelerators that produced more intense UV

light (synchrotron radiation) than was possible in the home lab.

In 1982 he became part of a team to establish an infrared internal reflection diagnostic technique at Bell Labs. to do studies of semiconductor surfaces in a vacuum environment. This led to the design and construction of a number of vacuum stations with IR windows and optics to focus the beam in and out of the polished sample plate beveled edges. These chambers also had Residual Gas Analyzer, LEED, and Auger optics. A unique Vacuum FTIR System was designed that had the IR source to detector completely in a vacuum environment, thus eliminating the bothersome spectral lines of water and carbon dioxide. The external IR detectors required low noise preamplifiers to be designed. Since many experiments were performed at low temperatures, he developed a Proportional Flow Liquid Nitrogen Control System to minimize turbulence and the quantity of nitrogen required to keep a reservoir full. A 4 point ohmic heating system was developed to uniformly heat the semiconductor plates. Many custom electronic and software solutions were provided.

Stan and Sandy operate a small farm in NJ that produces trees, eggs, honey, and firewood. They enjoy hiking, camping, folk dancing, and classical music. Amateur Radio (W2GCU–E) is a long-standing hobby for Stan. He regularly visits students and faculty at Rutgers U. as a Visiting Courtesy Appointee in the Physics Department. Since retiring from Bell Labs. in 2002, he has been designing custom instruments and solving laboratory instrumentation problems, as a consultant, for research groups at various universities, national labs, and Bell Labs.

AVS GRADUATE STUDENT AWARDS

2016 NATIONAL STUDENT AWARD FINALISTS

There are five (5) top-level named Graduate Student Awards and three (3) Graduate Research Awards, described below. The recipients of these awards are determined after a general competition with all the graduate research applicants and a presentation to the Awards Committee at the International Symposium.

The finalists are:

Swetha Barkam, University of Central Florida

Grant Langlois, University of Chicago Hyosun Lee, Korea Advanced Institute of Science and Technology (KAIST) Andrew Mannix, Northwestern University Takat Rawal, University of Central Florida Kasra Sardashti, University of California, San Diego

Debalaya Sarker, Indian Institue of Technology Delhi, India

Thomas Winkler, University of Maryland, College Park

RUSSELL AND SIGURD VARIAN AWARD

The Russell and Sigurd Varian Award was established in 1982 to commemorate the

pioneering work of Russell and Sigurd Varian. It is presented to recognize and encourage excellence in graduate studies in the sciences and technologies of interest to AVS. The award is supported by Varian, Inc. It consists of a cash award, a certificate, and reimbursed travel support to attend the International Symposium.

NELLIE YEOH WHETTEN AWARD

The Nellie Yeoh Whetten Award was established in 1989, in the spirit of Nellie Yeoh Whetten, to recognize and encourage excellence by women in graduate studies in the sciences and technologies of interest to AVS. A fund to support the award was established by Timothy J. Whetten, friends and family of Nellie Yeoh Whetten, and AVS. The award consists of a cash award, a certificate, and reimbursed travel support to attend the International Symposium.

DOROTHY M. AND EARL S. HOFFMAN AWARD

The Dorothy M. and Earl S. Hoffman Award was established in 2002 to recognize and encourage excellence in graduate studies in the sciences and technologies of interest to AVS. It is funded by a bequest from Dorothy M. Hoffman, who was president of

AVS in 1974 and held other positions of responsibility in the Society. The award consists of a cash award, a certificate, and reimbursed travel support to attend the International Symposium.

DOROTHY M. AND EARL S. HOFFMAN SCHOLARSHIPS

The Dorothy M. and Earl S. Hoffman Scholarships were established in 2002 to recognize and encourage excellence in graduate studies in the sciences and technologies of interest to AVS. They are funded by a bequest from Dorothy M. Hoffman. The scholarships consist of a cash award, a certificate, and reimbursed travel support to attend the International Symposium.

GRADUATE RESEARCH AWARDS

The Graduate Research Awards were established in 1984 to recognize and encourage excellence in graduate studies in the sciences and technologies of interest to AVS. Each consists of a cash award, a certificate, and reimbursed travel support to attend the International Symposium.

AVS FELLOWS

The membership level designated "Fellow of the Society" was established in 1993 to recognize members who have made sustained and outstanding scientific and technical contributions in areas of interest to AVS. These contributions can be in research, engineering, technical advancement, academic education or managerial leadership. This is a prestigious membership level to which members are elected.

AVS Fellows receive a certificate.

2016 AVS FELLOWS

Charles T. Campbell, University of Washington

Matthew J. Goeckner, The University of Texas at Dallas

Alberto Herrera-Gomez, CINVESTAV-Unidad Querétaro

Susan Burkett, The University of Alabama

Alberto Herrera-Gomez, CINVESTAV-Unidad Querétaro

Gregory Kimmel, Pacific Northwest National Laboratory

Yue Kuo, Texas A&M University

Rosa A. Lukaszew, The College of William and Mary Manos Mavrikakis, University of Wisconsin-Madison Sally McArthur, Swinburne University of Technology, Australia

Anders Mikkelsen, Lund University, Sweden

Talat Rahman, University of Central Florida

Steven J. Sibener, The University of Chicago Arthur Utz, Tufts University

Peter L.G. Ventzek, Tokyo Electron America Inc.

Jason F. Weaver, University of Florida

DIVISION AWARDS

Morton M. Traum Surface Science Division Student Award

The Surface Science Student Award was initiated in 1981. Morton M. Traum, then chair of the Surface Science Division, was the prime motivator in establishing the award. After Mort's untimely death on 1 December 1982, the Executive Committee of the Surface Science Division renamed the award in his memory. The Morton M. Traum Surface Science Division Student Award is presented annually for the best student paper based on work leading to a Ph.D thesis. The papers are judged on technical content and quality of presentation.

The 2016 winner will be announced in the Traum Student Award Ceremony, to be held on Thursday, November 10th at 12:30 p.m. in Room 104D of the Music City Center.

Past Winners:

1981	Eric Stuve	1990	Benjamin Wiegand	1999	Jongin Hahn	2008	Jeibin Sun
1982	Steven Gates	1991	David Peale	2000	Anders Carlsson	2009	Qing Hua
1983	Ann Smith	1992	Chaochin Su	2001	Jeppe Vang Lauritsen	2010	Heather Tierney
1984	Hans Gossman	1993	Anna Swan	2002	Seth B. Darling	2011	David Siegel
1985	Duane Outka	1994	Bert M. Müller	2003	Marcel A. Wall	2012	April Jewell
1986	Greg Sitz	1995	Frank Zimmermann	2004	Emrah Ozensoy	2013	Xiaofeng Feng
1987	Michael Henderson	1996	Joseph Carpinelli	2005	Jan Haubrich	2014	Feng Zhang
1988	Jeff Hanson	1997	Barry Stipe	2006	Petro Maksymovych	2015	Holly Walen
1989	Yunong (Neal) Yang	1998	Alexander Bogicevic	2007	Bogdan Diaconescu		

John Coburn and Harold Winters Student Award in Plasma Science and Technology

In 1994, the Plasma Science and Technology Division established the Coburn and Winters Award in honor of John Coburn and Harold Winters. Coburn and Winters have made pioneering contributions to the field of plasma science, especially in plasma processing and plasma-surface interactions. Their work has provided inspiration for countless students entering the field of plasma science and enhanced the experiences of students by both example and mentorship. The Coburn-Winters Award winner winner will be announced on Thursday, November 10th during the afternoon break.

Past Winners:

1994	Bruce Kellerman	2000	Siva Kanakasabapathy	2006	Lin Xu	2012	Joe Lee
1995	Not Given	2001	Nicholas Fuller	2007	Joydeep Guha	2013	Rohan Chaukulkar
1996	Jane Chang	2002	Lin Sha	2008	Emile Despiau-Pujo	2014	Bastien Bruneau
1997	Mikhail Malyshev	2003	Jan Benedikt	2009	Yang Yang	2014	Paul Rumbach
1998	Catherine Labelle	2004	Jun Belen	2010	Bhavin Jariwala	2015	Hu Li
1999	Erwin Kessels	2005	Joseph Végh	2011	Harald B. Profijt		

Leo M. Falicov Student Award

The Leo M. Falicov Student Award has been established in memory of Prof. Leo M. Falicov to recognize outstanding research performed by a graduate student in areas of interest to the Magnetic Interfaces and Nanostructures Division. Finalists will be selected on the basis of abstract submission, and will each receive an award upon attending the AVS 63rd International Symposium and Exhibition and presenting their paper in an oral session. The Best Student Paper Award winner will be selected on the basis of the oral presentation, considering quality of research and clarity of presentation.

Past Winners:

1999	W.H. Rippard	2004	Maria Torija	2008	Zhuhua Cai	2013	Jason Kawasaki
2000	R.D. Portugal	2005	Jessica Hilton	2009	Wei Han	2013	Kaida Yang
2001	D.B. Schultz	2006	Randy Dumas	2010	Kangkang Wang	2014	Henry Wortelen
2002	E.L. Biizdaca	2007	David Wisbey	2011	Juan Colon-Santana	2015	Andrada-Oana Mandru
2003	Tiffany Kaspar	2007	John Strachan	2012	Chloe Baldasseroni		

DIVISION AWARDS

Paul H. Holloway Young Investigator Award

The Thin Film Division is pleased to announce Neil Dasgupta, University of Michigan as the 2016 awardee of the Paul H. Holloway Young Investigator Award. Dr. Dasgupta has been given the award for his pioneering contributions to the fields atomic layer deposition and related theoretical and experimental work in thin film science and technology.

This award is named after Prof. Paul H. Holloway of the University of Florida who has a distinguished and continuing career of scholarship and service to AVS. The nominee is a young scientist or engineer who has contributed outstanding theoretical and experimental work in an area important to the Thin Film Division of AVS. The nominee's Ph.D. or equivalent degree must have been earned less than 7 years prior to January 1 of the award year. The award consists of a cash prize, a certificate citing the accomplishments of the recipient, and an honorary lecture at one of the TFD oral sessions at the International Symposium.

Past Winners:

2015 Cunjian Yu, University of Houston

2009 Suneel Kodambaka, UCLA 2013 Per Eklund, Linköping University 2010 O. Martin Ntwaaborwa, Univ. of the Free State, South Africa 2014 Andrea Illiberi, Dutch Inst for Applied Scientifc Res (TNO) 2011 Sumit Agarwal, Colorado School of Mines

2012 Franklin Tao, University of Notre Dame

Nanometer-scale Science and Technology Division Awards Competition for Graduate Students and Postdocs

The Nanometer-scale Science and Technology Division (NSTD) Graduate Student and Postdoctoral Awards bring recognition to outstanding work by early-career scientists giving oral presentations in NSTD sessions at AVS International Symposia. In addition to presenting their work in the standard NSTD sessions, finalists also make brief presentations at the NSTD Awards Competition. This public special event is held at noon on Wednesday of the symposium in the same room as the standard NSTD sessions. The winners will be selected based on the quality of the talk, the responses to questions, and the level of the research. Winners in the graduate student and postdoctoral categories are announced at the close of the competition.

Graduate Student Award Winners:

2002 Jeremy Steinshinder 2009 Mehmet Baykara, Yale University 2003 Cheol-Soo Yang 2010 Farzad Behafarid, Univ Central Florida 2004 Qiguang Li 2011 Justice Alaboson, Northwestern University 2005 Kiu-Yuen Tse 2012 David Reid, University of Central Florida 2006 Tracie Colburn 2013 Cédric Barroo, Université Libre de Bruxelles 2006 Dirk Weber 2014 Deep Jariwala, Northwestern University 2007 Jacob Palmer 2015 Wei Bao, University of California, Berkeley 2008 Qing Hua Wang, Northwestern University

Nanotechnology Recognition Award

The Nanotechnology Recognition Award recognizes members of NSTD for outstanding scientific and technical contributions in the science of nanometer-scale structures, technology transfer involving nanometer-scale structures, and/or the promotion and dissemination of knowledge and development in these areas. The Award will be presented before the recipient's talk at the AVS International Symposium. The 2016 Awardee is Ricardo Garcia, Professor of Nanoscience and Nanotechnology Instituto de Ciencia de Materiales de Madrid, CSIC

Past Winners:

2001	Nancy Burnham, Worcester Polytechnic Inst.	2011	Phaedon Avouris, IBM Yorktown Heights
2004	Harold Craighead, Cornell University	2012	Fleming Besenbacher, Aarhus University
2009	Joseph Stroscio, NIST	2013	Joseph Lyding, University of Illinois
2010	Roland Wiesendanger, Univ of Hamburg	2014	Dawn A. Bonnell, University of Pennsylvania
		2015	Meyya Meyyapan, NASA Ames Research Center



EXHIBIT HALL EVENTS

AVS is a Society unique for its multidisciplinary coverage of science and technology. Our International Symposium and Exhibition attracts exhibitors and attendees from a variety of industries that use controlled environments, including thin films, surface science, biomaterials interfaces, materials research, electronic materials and processing, magnetic interfaces, nanoscience and nanotechnology, vacuum coatings and manufacturing science and technology.

AVS has incorporated several session breaks into each exhibit day so that attendees have ample time to visit the exhibits. Many exciting activities are scheduled in the exhibit hall including Exhibitor Technology Spotlight sessions on Tuesday and Wednesday (during session breaks), free morning coffee, lunch, afternoon refreshments and 150 exhibitors waiting to show off their technology and services to you!

Entrance to the Exhibits is free and open to the public

Exhibit Schedule - November 8 - 10, 2016

Nov. 8 Tuesday 10am - 5:00pm

Nov. 9 Wednesday 10am - 4:30pm

Nov. 10 Thursday 10am - 2:30pm

Symposium Dates: November 6 - 11, 2016

EXHIBIT FINALE

THURSDAY 12:20 PM - 2:20PM

EVENTS:

•Free Lunch for everyone!

Art Zone Contest Prize Winners

Raffle Drawings

•Grand Prize Raffle Drawing

• Foosball Championship

Caricatures



EXHIBIT HALLATTRACTIONS & SPECIAL EVENTS



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	122	AVS E-MAIL PAVILION	517	IOP Publishing, Inc.	518	Scientific Instrument Services, In
	800	AVS Exhibitor Technology Sessions	307	J.A. Woollam Co., Inc.	310	Scientific Instruments, Inc.
	422	AVS Foosball Tournament	218	Kashiyama-USA Inc.	628	Semicore Equipment, Inc.
	644	AVS Future Sites	100	Kimball Physics Inc.	439	Semilab SDI LLC
	430	AVS Publications	301	Kratos Analytical	301	Shimadzu Industrial Equipment
	745	AVS RAFFLE ZONE	510	Kruss USA	301	Shimadzu Scientific Instruments
	245	AVS SPECIAL EVENTS BOOTH	201	Kurt J. Lesker Company	207	Sigma Surface Science GmbH
	645	AVS STORE & MEMBERSHIP	118	Kyungwon Tech Co., Ltd.	224	Solid Sealing Technology, Inc.
	431	AVS Surface Science Spectra	446	LDS Vacuum Products, Inc.	317	SPECS Surface Nano Analysis, II
		Data Browser	622	Leybold USA Inc.	601 229	SPI Supplies Staib Instruments
	418	BellowsTech, LLC	207	MANTIS Deposition, Inc.	514	
	327	Blue Wave Semiconductors, Inc.	623	McAllister Technical Services, Inc.	231	Super Conductor Materials
	337	Brooks Automation	208	MDC Vacuum Products, LLC	231 211	Surface Analysis Consulting
	315	CeramTec North America	333	MeiVac, Inc.	233	Synergy Systems Corporation T&C Power Conversion, Inc.
	716	Clark Industries Inc.	615	Micro Photonics		
	704	ColdQuanta, Inc.	137	Micron Technology, Inc.	515 226	TDK-Lambda Americas Tech-X Corporation
	702	CONAX TECHNOLOGIES	445	MKS Instruments	114	Telemark
	519	COSMOTEC, Inc.	605	Modion Vacuum	223	Thermo Fisher Scientific
	411	CRC Press/Taylor & Francis Group	410	(J.B. Anderson & Son, Inc.)	308	Trillium US, Inc.
	506	CS Clean Solutions, Inc.	410	MPF Products Inc	323	UC Components
	511	Denton Vacuum LLC	313	NiCoForm, Inc.	201	UHV Design Ltd.
	507	Duniway Stockroom Corp.	102	NIST/CNST	603	Ultratech/Cambridge NanoTech
	516	•	407	Nonsequitur Technologies	703	United Mineral and Chemical Corp.
		Eagle Instrument Services	618	Nor-Cal Products, Inc.	529	Vacuum Research Corporation
	414	Ebara Technologies	705	NSI	329	vacuum nesearch corporation

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OCI Vacuum Microengineering, Inc.

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Omley Industries, Inc.

Osaka Vacuum USA, Inc.

Vacuum Tech., Inc. Inc. ment Services, Inc. nents, Inc. ment, Inc. rial Equipment ntific Instruments cience GmbH echnology, Inc. Nano Analysis, Inc. ıts or Materials Consulting ns Corporation version, Inc. nericas ion cientific idge NanoTech nd Chemical Corp. 529 **Vacuum Research Corporation** 201 Yugyokuen Ceramics Co., Ltd. 609 Zeon Chemicals L.P. 213

341 Extrel

Edwards Vacuum

Lixin Vacuum

Electron Microscopy Sciences

Evey Vacuum Service, LLC /

426

701

717

This listing includes particpants as of September 2016

EXHIBITOR TECHNOLOGY SPOTLIGHT SESSIONS

Stage Area of Exhibit Hall • Music City Convention Center

20-minute interactive presentations scheduled during the technical session breaks in the Stage Area of the exhibit hall. Gain insight to the latest products and services offered by the exhibitors that benefit everyone including technicians, engineers and scientists as well as fellow manufacturers.

Free Admission

TUESDAY, November 6

10:20am CS Clean Systems, Inc.

Toxic, Flammable and Corrosive Waste Gas Treatment. Protect your Employees and

Environment

Presenter: D.K. Prasad

12:40pm SPECS Surface Nano Analysis GmbH

Spin-resolved Momentum Microscopy **Presenter:** Thomas Stempel Pereira

1:00pm PREVAC Sp z o.o.

The New Generation of the Hemispherical Energy Analyser in the Novel Surface Science Research

Presenter: Lukasz Walczak

1:20pm Kratos Analytical

Latest Developments in XPS and Related

Methods from Kratos Analytical **Presenter:** Chris Blomfield

1:40pm Physical Electronics

What's New from Physical Electronics

Presenter: Scott Bryan

WEDNESDAY, November 7

10:20am Ion-Tof

From Surface Spectrometry to 3D Analysis - Latest Trends and Instrumentation for

TOF-SIMS

Presenter: Nathan Havercroft

12:40am MDC

Ceramic-To-Metal Joint Design in Demanding and Harsh Environmental

Applications

Presenter: Jim Moore

1:00pm Kruss USA

Why Test Inks Cannot Tell the Full Truth

About Surface Free Energy

Presenter: Mr. Mark A. McCarthy

1:20pm Gencoa Limited, UK

A Vacuum Species Sensor using Remote Plasma Emission Spectroscopy for Direct

Monitoring of Vacuum Processes **Presenter:** Joseph Brindley

1:40pm Renishaw

Raman Imaging of Samples with Complex

surface Topographies Using Renishaw's

inVia Qontor

Presenter: Tim Prusnick

2:00pm NSI

Ampoules and Bubblers 101 **Presenter:** William Kimmerle





ASK THE EXPERTS !!!!!!

Troubleshooting Mysteries? Contamination Problems?

System Configuration Questions? Just want to make your vacuum better?

What's the best gauge for the 10-11 Torr Range?

How do I detect a Virtual Leak? What is my RGA telling me?

How do I control / eliminate water?

Problems with troubleshooting, process control, contamination or just want to bounce an idea off other people in the vacuum field? Maybe all our years of experience, successes and failures can help point you in the right direction or spark an idea! An unbiased, open forum with the desire to solve vacuum related issues. Come chat with us at Booth 544. Who are we?? We are volunteers of the AVS Vacuum Technology Division and our goal is to help you solve problems and understand the intricacies of vacuum technology.

PUT US TO THE TEST!

Whether you're new to vacuum technology or have 30 years of experience, stop by the Ask the Experts booth to discuss your vacuum concerns... or maybe you can even provide **US** with some new tips and suggestions!!

During your visit, receive a free telescoping, magnetic flashlight. *While they last!*



Ask the Experts!... Exhibit Hall Booth #544

Sponsored by Kimball Physics, SAES Getters & MKS Instruments Hosted by the AVS Vacuum Technology Division

saes getters





Archives and online discussion forum year round at www.avs.org/forum.aspx







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SYMPOSIUM PLENARY LECTURE

"Integrated Semiconductor Nanowires for Nanoelectronics" Monday, November 7, 2016, 5:30 p.m., Davidson Ballroom A Music City Center



Heike Riel, IBM Fellow Director Physical Sciences, IBM Research

eike Riel is IBM Fellow and the Director of the Physical Sciences Department at IBM Research focused on advancing the frontiers of information technology through the physical sciences and responsible for IBM's worldwide physical sciences research strategy. Her research interests include nanoscale materials and novel device concepts for applications in electronics, optoelectronics, and cognitive computing.

During her career at IBM she had seminal contributions in the science & technology of nanoscale electronics, the exploration and development of semiconducting nanowires for applications in future electronic devices, molecular electronics for future nanoscale switches and memory applications and organic light emitting devices for display applications.

For her outstanding scientific contributions Riel was elected by Technology Review, MIT's Magazine of Innovation, to the TR100, the annual list of the world's 100 Top Young Innovators in September 2003 and she received the 2005 Applied Physics Award of the Swiss Physical Society. In June 2012 Riel received the award in the category "Technical or Scientific Innovation" which was awarded by the Swiss Association of Women in Engineering (SVIN) on the occasion of their 20th anniversary. In 2013 she was offered a Humboldt Professorship and in 2015 she was elected Member of the Swiss Academy of Engineering Sciences and elected Member of the Leopoldina, the German National Academy of Sciences.

Riel studied physics at the Friedrich-Alexander University of Erlangen-Nuremberg (Germany) and received a PhD from the University of Bayreuth (Germany). She joined IBM in 1998 as a PhD student, and became a Research Staff Member in 2003. From 2008 to 2014 she has been leading the Nanoscale Electronics Group and then the Materials Integration and Nanoscale Devices group. In 2013 she became IBM Fellow and Member of the IBM Academy of Technology. She has authored more than 110 publications and filed more than 60 patents.

TECHNICAL PROGRAM-

Once again our technical program is second to none, providing cutting-edge content over a very broad range of diverse yet complementary topics. Brief summaries of each program theme are provided below. Symposium presenters represent the best and brightest from academia, industry, & government research labs around the world. The end result is a program that consists of over 125 oral sessions, more than 1,200 talks, over 250 invited speakers and two evenings of poster sessions. Start filling your week's schedule with must-see, career enhancing sessions.

EXHIBITS

This year's exhibition showcases equipment and instrumentation needed to perform cutting edge research presented in our technical program. Visit the exhibit hall to speak to experts representing the very best in components, systems, instrumentation, services and consumables. The exhibit hall will be open Tuesday through Thursday, November 8-10. There are many attractions in the exhibit hall, including Technology Spotlight Sessions, Career Center, Vacuum Technology Division's "Ask The Experts", the AVS Membership & Store, E-Mail Pavilion, Photo Booth, Free Caricatures, Art Zone/Contest, Free morning coffee, refreshments, lunches, daily raffles and much more!

SHORT COURSES

The Music City Center will be the site for the short course program where courses on a variety of topics will be offered. These courses will run concurrently with the AVS Symposium.

TECHNICAL PROGRAM

ADVANCED SURFACE ENGINEERING

The program of the Advanced Surface Engineering Division (SE) addresses important topics and new emerging developments in thin film materials, their synthesis and characterization, and their applications in surface engineering. Both fundamental scientific and application-oriented contributions are included. The four oral sessions plus one poster session, all co-sponsored by other AVS Divisions and Focus Topics, intend to offer a well balanced mix of huge diversity of all aspects related with thin film materials science and technology, modelling and simulation, plasma processes, novel deposition and surface modification and functionalization methods, thin film analysis and characterization, and technical applications in areas of interest to the Advanced Surface Engineering Division. The sessions particularly address the design, synthesis and utilization of protective coatings for tribological applications in surface engineering; the structure and properties of advanced nanostructured thin films and coatings; innovations in physical vapor deposition, chemical vapor deposition, atmospheric pressure plasma and other deposition and surface modification techniques. Special multifunctional thin films, coatings and surfaces are addressed as well. Presentations on novel thin film and coating materials, their design and growth, simulation and modelling, their synthesis and use, on plasma physics and process description, on their characterization and properties evaluation methods are solicited. Invited lectures review and highlight the state-of-the-art and latest findings in various topics. Academics, scientists, technicians and especially young students and PhD students from various disciplines and all over the world will contribute to a technical program of great interest, diversity and strength in the field of surface science, technology and engineering.

APPLIED SURFACE SCIENCE

The Applied Surface Science Division (ASSD) provides a forum for research in the preparation, modification, characterization, and

utilization of surfaces in practical applications. Areas of interest range from nanoscience, polymers, and semiconductor processing to forensic science and biotechnology. The Division has long been the premier gathering place for the global surface analysis community, with historical concentrations in techniques such as SIMS and XPS/Auger spectroscopies, including presentations representing a mixture of cutting-edge applications and the fundamentals supporting the measurement science. The Division is constantly striving to provide a forum for current and mature interests (with sessions such as Quantitative Surface Analysis and Practical Surface Analysis) while identifying key areas for future development. For AVS-63, the ASSD welcomes the Atom Probe Tomography Focus Topic into ASSD, providing a quickly developing research and application area to complement the core Division strengths and provide future growth. Additionally, the session Multiple Technique Approaches for Real-World Industrial Problem Solving represents a devoted effort to recognize the need of sharing appropriate information among those trying to meet ever-changing surface analysis demands. We welcome the submissions from all areas of applied surface science, and hope that the topics offered by ASSD will result in a comprehensive mixture of currently relevant research. As a strongly characterization-centered division, ASSD is contributing to Focus Topics in Actinides and Rare Earths (AC), In Situ Spectroscopy and Microscopy (IS), Scanning Probe Microscopy (SP), Novel Trends in Synchrotron and XFEL-Based Analysis (SA), and Spectroscopic Ellipsometry (EL).

BIOMATERIAL INTERFACES

The Biomaterials Interfaces Division will be running a series of sessions to provide an interdisciplinary forum for the presentation and discussion of fundamental aspects of bio-interface science and engineering. The need to increase our understanding of the interactions between biomolecules and surfaces, the behavior of complex macromolecular systems at materials interfaces, and interactions between biomolecules, is being driven by the rapid growth in biomedical research and the role these applications play in the fields of biology, biotechnology, diagnostics, dentistry and medicine. The BI program brings together recent advances made in materials science and molecular biology with sophisticated surface and interface analysis methods and theoretical and modeling approaches to biological systems. The oral presentation sessions include the following areas of interest: Biomolecules, Cells and Organisms at Surfaces (including proteins at surfaces, blood-contacting materials, bioadhesion, cell-material interactions, biofilms, biofouling, bioadhesion, tissue engineering, and artificial organs); Biophysics and Characterisation of Biological and Biomaterials Surfaces (including biological membranes, forces, recognition, spectroscopy, imaging/microscopy, characterization in fluids, quantification, and chemometrics); Biosensors and Diagnostics (including microfluidics, point-of-care devices, and electrochemistry); and Synthesis and Processing of biomaterials and biologically inspired materials. On Tuesday evening we will also feature FLASH Oral Presentations, with an accompanying Networking Session involving associated traditional poster presentations. Prizes will be awarded for the best FLASH Presentations.

BIOMATERIAL PLENARY SESSION AND RECEPTION

The Biomaterials Interfaces program kicks off with the now traditional Biomaterials Plenary Session. This year we are pleased to have presentations from three eminent scientists who have made significant contributions to our field. Kerstin Blank has made important developments in the field of mechano(bio)chemistry, which investigates the influence of force on the structure and function of molecules and materials. Through the development of novel force sensors, she is providing advances in biosensor design and also our understanding of

complex biomimetic environments. David Needham has made significant contributions to our understanding of a broad swathe of interfacial phenomena, impacting in areas encompassing colloid science, materials (protein and polymer) engineering and drug-delivery. Dennis Discher has made key advances in areas spanning molecular/cell biology and physics, to polymer nano-engineering. These advances have in particular significantly improved our understanding of stem cell behavior and their involvement in disease. The session will close with the opportunity for further discussions at our traditional industry sponsored Plenary Reception.

ELECTRONIC MATERIALS AND PHOTONICS

The Electronic Materials and Photonics Division (EMPD) encompasses the science and engineering of materials and interfaces that advance device technology. For AVS 63, EMPD will sponsor 70 oral sessions containing over 85 talks, a panel discussion, and a poster session on materials synthesis, devices, fabrication, and characterization. Researchers from around the world will present their work on a diverse spectrum of devices and technologies for advanced logic, ultra-dense memory, solar, optoelectronic, high power/frequency/temperature, and light management applications. The symposium topics span from electronic-/optoelectronic-/magnetic-/and photonic properties from the macro- down to the nano-scale, from nano-composites, 2D-materials, surfaces and interface engineering and their defect analysis. Advanced processing techniques will be presented for the growth of newly emerging materials and their properties analysis. Sessions are devoted to rectenna solar devices, MIM diodes, III-N nitrides and other wide band gap semiconductors, and nanoparticle-based electronic and photonics with newly developed nano-scale characterization techniques. Traditionally, EMPD has maintained an excellent list of distinguished invited speakers. This year, we will host well over 28 invited speakers. Among them are: Joshua Caldwell (NRL), Yoshio Nishi (Stanford), Christian Kisielowski (LBNL), Jacob Leach (Kyma Techn.), Ronny Kirste, (Adroit Materials), Saptarshi Das (Argonne), Nancy Dudney (Oak Ridge), Alan Seabaugh, (Notre Dame), James Schuck (The Molecular Foundry, LBNL), and James Tour (Rice).

EMPD will host an industrial forum for those interested in learning about career opportunities in the semiconductor industry. These talks are aimed at introducing graduate students and postdoctoral researchers to some of the technical hurdles that the industry faces, moderated by Gary McGuire.

MAGNETIC INTERFACES AND NANOSTRUCTURES

This years' MIND program will cover a wide area of topics ranging from chiral magnetism over magnetism and spin orbit effects at interfaces to magnetism in organic system. The focus of the program is to cover areas of magnetism that are fascinating from a fundamental point of view but which carry significance for future applications. The program will start on Monday morning with a series of four talks addressing magnetic structures with chiral symmetry. Such structures are induced by interface interactions and the presenters will describe the possibility to create, manipulate and employ features like e.g. skyrmions for future applications. The remainder of the presentations on Monday is dedicated to magnetism and spin orbit effects at interfaces, including novel state of the art experimental methods to characterize magnetic interfaces. Spintronic applications depend on materials, in which the spin degeneracy of electron states is lifted. This situation can, for example, be caused by magnetic exchange or spin-orbit interaction. The latter is observed in Rashba systems and topological insulators. The invited talks of this afternoon session focus on the theoretical description of electronic structure in spintronic materials as well as the peculiar correlation between superconductivity and interface properties in high Tc materials. The contributed talks cover experimental results obtained with a variety of techniques able to resolve the spin character of the electron states: scanning tunneling spectroscopy, angle-resolved photoemission and inverse photoemission as well as momentum. The Tuesday afternoon session is a joint session between Magnetic Interfaces and Nanaostructure (MIND) as well as Electronic Materials (EM). The session will consist of invited and contributed talks dedicated to new magnetic materials based on organic compounds and state of the art device concepts for quantum computing and low power electronics. The areas of organic magnetism as well as single spin manipulation are closely related to new concepts for information processing and storage, which is why we believe that this session should be attractive to a diverse audience interested in these fields.

MANUFACTURING SCIENCE AND TECHNOLOGY

MSTG sessions present research topics related to the science and technology of manufacturing. Our sessions include presentations in the areas of battery and other clean energy manufacturing issues, photonics manufacturing, metrology and other additive manufacturing challenges, as well as processing and characterization challenges for IC manufacturing. We have an excellent line up of invited and contributed talks as well as contributed posters. We have a diverse program with presenters representing industry, manufacturing institutes, academia, and government labs.

MEMS AND NEMS

The MEMS and NEMS Technology Group (MN) program will highlight recent advances in the broad areas of micro/nanoelectromechanical systems (MEMS/NEMS), especially latest fundamental studies of novel materials, processes, devices, and emerging functions and applications of MEMS/NEMS, in various areas including manufacturing, energy, communication, and healthcare. The ability to manipulate and engineer mechanical structures in various emerging low-dimensional materials creates intriguing possibilities of integrating these devices with existing fluidic, electronic and optical on-chip networks. This year's sessions will cover such areas that are thematically related to multiscale phenomena and emerging materials and technologies for new devices and systems that interact with real world or promise for critical applications, along with advanced fabrication, characterization, integration and packaging of MEMS/NEMS. The program continues to embrace latest progresses in optical MEMS/ NEMS, micro/nanophotonics, optomechanics, quantum MEMS/ NEMS, resonant systems, CMOS-MEMS, mesoscopic dynamics and dissipation processes, inertial sensors, chemical sensors and lab-onchip analytical microsystems, harsh-environment transducers, parametric and nonlinear MEMS/NEMS, and MEMS/NEMS-enabled energy technologies, etc. It also aims to capture some of the latest advances in soft materials, flexible and implantable MEMS/NEMS for biosensing, bio-inspired microsystems, wearable and wireless healthcare. The AVS63 MN program also highlights focus sessions to feature latest advances at the frontiers of the fusion of micro/ nano/biosystems, radiation effects in MEMS/NEMS and emerging devices, and atomic layer 2D NEMS.

NANOMETER-SCALE SCIENCE AND TECHNOLOGY

The Nanometer-scale Science and Technology Division (NSTD) at AVS explores the science and technology that emerges when material is shrunk to the nanoscale. Nanoscience and Nanotechnology have become pervasive throughout the scientific community as can be attested by the multiple sessions addressing their different aspects at the AVS Symposium.

At the NSTD sessions researchers from around the globe will present their work on topics such as nanoscale devices and quantum systems, exploiting nanomaterials for applications in photonics, plasmonics, catalysis, surface chemistry, sensors, biomechanics, imaging, and energy, including nanoscale characterization and spectroscopy. This year the program will highlight the following:

(a) The convergence of nanoscience and quantum systems through a joint session with the MEMS/NEMS division; (b) Nanoscience and energy with sessions in solar cells and plasmonics; (c) 3D two-photon nanoscale fabrication among other advances in nanofabrication; (d) Nanoscale characterization with sessions in imaging and optical spectroscopy; (e) Applications of material control in different environments at the nanoscale with nanodiamonds and thin film applications; (f) The Impact of Nanoscience on Health and the Environment which is a relatively new area we believe is important to address at the AVS.

PLASMA SCIENCE AND TECHNOLOGY

The 2016 Plasma Science and Technology Division (PSTD) highlights state-of-the-art advances in plasma research, ranging from fundamental studies of plasma physics and chemistry to applications for semiconductor fabrication, 2D materials and nanomaterials enablement, and plasmas for energy applications. The core program includes thirteen oral sessions and a poster session, as well as additional joint sessions with the "Applied Surface Science", "Electronic Materials" and "Thin Films" divisions as well as "2D" and "Plasmas Processing for Biomedical Applications" focus topics.

The week begins with sessions on "Atmospheric Pressure Plasma Processing" and "Advanced FEOL/Gate Etching" addressing state of the art plasma processing in atmospheric pressure environments as well as leading-edge plasma etch technology at the forefront of the semiconductor industry. Succeeding sessions on "Advanced BEOL/Interconnect Etching" and "Plasma-Surface Interactions" continue to explore latest results pertaining to the semiconductor industry. To encompass recent developments aiming to enable atomic scale precision, this year we feature sessions on "Atomic Layer Etching", "Atomic Layer Etching and Low Damage Processing", and "Plasma Deposition and Plasma-assisted Atomic Layer Deposition". Recent development in plasma etching beyond the traditional silicon-based materials will be featured in the session on "Plasma Processing of Challenging Materials". Fundamental scientific issues and various new and exciting results are also reported in traditional fields of plasma science and technology in sessions "Plasma Diagnostics, Sensors, and Control," "Modeling of Plasmas and Plasma-Surface Interactions", "Plasma Chemistry and Plasma-Surface Interactions", and "Plasma Sources and Novel Mechanisms for Generating Plasmas." Modern applications of plasma technologies, such as processing of semiconductor nanocrystals, graphene, 2-D materials, and other novel materials will be addressed in the session "Plasma Processing for Nanomaterials and 2D Materials", co-sponsored with 2D Focus Topic. The Poster session of the PSTD, which is scheduled on Thursday evening, provides an ideal venue for in-depth discussion on all topics above.

The Plasma Prize invited lecture, entitled "Nonthermal Plasma Synthesis of Nanocrystal Materials" will be delivered by 2015 winner Dr. Uwe Kortshagen, in the "Plasma Processing for Nanomaterials and 2D Materials" session on Tuesday afternoon. Nonthermal plasmas have emerged as a viable approach to nanocrystal synthesis. This talk will discuss the fundamentals of plasma synthesis of nanocrystals. It will then highlight some of the exciting optical and electronic properties of these nanomaterials and discuss potential applications in luminescent applications and thin film synthesis.

The 2016 Plasma Prize winner will be announced at the PSTD Business Meeting in Room 104B at 6:20 PM on Tuesday, immediately following the afternoon sessions. There are multiple finalists for the 2016 Coburn and Winters Student Award, who present throughout the week (see program for specific times). The winner is scheduled

to be announced in the Coburn and Winters Student Award ceremony in Room 104B at 12:20 PM on Thursday.

SURFACE SCIENCE

The program of the Surface Science Division provides a forum for cutting-edge research that involves solid surfaces and interfaces. Phenomena that take place at the gas-solid and liquid-solid interfaces are prominent within the Division programs. Technical sessions address atomistic, structural, electronic and chemical phenomena at surfaces and interfaces, their impact on materials properties, and their implication for technology and environmental processes. Surface Chemistry is an important divisional theme, encompassing the kinetics and dynamics of surface chemical events from adsorption and reaction to catalysis. Film and nanostructure growth is another key theme, explored from a fundamental perspective, through the development of new growth and processing methods for materials preparation. Surface chemical modification and photon-driven chemistry at surfaces are important concentrations. Lively sessions are devoted to the surface science of metallic, semiconductor, oxide and organic surfaces that support unique chemical activity and electronic properties. Surface science applications in high-impact areas — particularly energy science, microelectronics, nanotechnology, and environmental science — are highlighted in the program. This Division's overarching goal is to provide the atomistic insights on solid surfaces and interfaces needed to advance our understanding of materials systems and benefit society.

This year's surface science sessions are listed below. Several of the sessions are co-sponsored with other Divisions, Groups, and Focus Topics and should be of broad interest to attendees. Monday and Tuesday's SS sessions complement Wednesday and Thursday's Fundamental Discoveries in Heterogeneous Catalysis Focus Topic (HC) sessions. The HC Focus Topic is new for 2016. Tuesday's poster session also features the five finalists for the Morton M. Traum Surface Science Division Student Award.

In addition to the exciting oral and poster sessions covering a broad range of scientific topics there will be a special memorial session on Thursday afternoon "Celebrating a Life in Surface Science: A Symposium in Honor of JOHN T. YATES, JR." The symposium is comprised of former students, postdocs and colleagues who address the breath of his monumental career through their work and his influence on them.

THIN FILM

The Thin Film The Thin Film Division hosts 14 core oral sessions where outstanding invited speakers will address the state-of-the art in the areas of (ultra-)thin film science and technology.

The sessions focusing on atomic layer deposition (ALD) will cover fundamental topics such as ALD surface reactions, as well as advancements in ALD processing and manufacturing. Furthermore, applications where ALD is presently being adopted, such as energy conversion and storage, as well as recent developments of ALD and nanostructures will be presented. We are excited to have sessions focusing on thin film deposition, control and modelling of thin film growth, area-selective deposition and sequential infiltration synthesis. Furthermore, self-assembled monolayers and organic/inorganic interface engineering are also addressed. Finally, our sessions cover also the applications of thin films in photovoltaics, microelectronics, optical and magnetic, synchrotron and biomedical applications.

We offer to poster presenters the possibility to present a 2-3 minute oral synopsis and introduction to their posters. For the third year, we will host a student-only session to introduce the James Harper Award candidates: the student finalists will present their work in the form of TED talks. This is an excellent opportunity for graduate and undergraduate students in the Thin Film area to get together informally for

discussion. Finally, the Thin Film Division will hand two other awards, namely the Paul Holloway Young Investigator award and the Thin Film Technologist award.

VACUUM TECHNOLOGY

The Vacuum Technology Division (VTD) provides a forum for research in achieving, maintaining, analyzing, and measuring vacuum across a wide range of pressures and applications. The 2016 VT oral program topics include four traditional core sessions: (1) Vacuum Measurement, Calibration and Primary and Industry Standards, (2) Gas Dynamics, Simulation and Partial Pressure Analysis, (3) Vacuum Pumping and Material Outgassing, (4) Accelerator and Large Vacuum Systems. Additionally, we present a special session in Vacuum Technology: History, Innovation, Education, and Transport (VT5), with speakers covering topics from the developments leading to modern vacuum systems to cutting edge tools and applications of vacuum. The VT Poster session Tuesday evening features the VT Student Poster Competition, with a \$500 first place award, where students of any discipline are invited to share their innovative solutions to vacuum equipment challenges. Student presenter awards will also be given for the best presentations by students in the VT sessions.

We are pleased to announce the third annual VT Early Career Award winner, Sam Posen of Fermi National Accelerator Laboratory, who will speak in the Accelerator and Large Vacuum System session.

During the symposium, we will host the annual VTD Business Meeting at 3:20pm Monday (November 7, 2016) in Room 104C. The VTD chair will highlight the activities conducted by the VTD over the past year, and solicit input for planning future technical programs. We encourage all AVS members interested in the VTD technical program to join us in this important interaction between the VTD executive committee and the membership.

VTD will again host the "Ask the Experts" booth, located in the exhibit area, where experienced vacuum scientists, engineers and technicians strive to answer perplexing vacuum technology questions.

FOCUS TOPICS

2D MATERIALS

The 2D Materials (2D) focus topic is a crosscutting AVS-wide interdisciplinary forum for discussion of fundamental science and novel applications of emerging 2D materials. Our program, spanning the entire week, offers a diverse set of 9 oral sessions complemented by a poster session, which are co-sponsored by several AVS Divisions and Focus Topics. The comprehensive review of state of the art will be presented in 18 invited talks and 58 contributed papers discussing world-wide efforts in exploring the fundamental properties of emerging 2D materials, their growth, fabrication and characterization; mechanical, thermal, electronic, magnetic, and optical properties, emergent 2D materials, dopants, defects and heterostructures of 2D materials, surface chemistry, functionalization and sensor applications. The important themes of 2D FT highlighted in the invited talks are computational design of 2D materials and heterostructures, dopants and defects in 2D materials, 2D materials devices for nanoelectronics and sensor applications, novel quantum phenomena in 2D materials.

ACTINIDES AND RARE EARTHS

Actinides and rare earths exhibit many unique and diverse physical, chemical and magnetic properties, due in large part to the complexity of their 5f and 4f electronic structure. This set of Special Topic Sessions focuses on the chemistry, physics and materials science of lanthanide and actinide materials, driven by 4f and 5f electronic structure. Particular emphasis will be placed upon the 4f/5f magnetic structure, surface

science and thin film properties and their applications to energy-related issues. For the actinides, fundamental actinide science and its role in resolving technical challenges posed by actinide materials will be stressed, particularly with regard to energy applications, including energy generation, novel nuclear fuels and structural materials, waste remediation and waste disposal. Both basic and applied experimental approaches, including synchrotron radiation-based and neutron-based investigations, as well as theoretical and computational simulations, are to be part of the special sessions. Of particular importance are the issues connected to potential renaissance in nuclear energy, including fuel synthesis, oxidation, corrosion, intermixing, stability in extreme environments, prediction of properties via bench-marked simulations, separation science, environmental impact and disposal of waste products. Shared sessions are held with Applied Surface Science (AS), Magnetic Interfaces (MI), and Synchrotron Radiation (SA).

ADVANCED ION MICROSCOPY

2016 is the 10th anniversary of the commercial introduction of the Helium Ion Microscope (HIM). This year's program is special as it will of course celebrate the jubilee and at the same time broaden the scope of the topic to include other emerging focused ion beam technologies. We will have a special 10 year anniversary session which Bill Ward and John Notte will open. The focus topic name change from Helium Ion Microscopy to Advanced Ion Microscopy is related partly to the addition of new GFIS gases such as neon and nitrogen, and partly due to the inclusion of new source concepts and analytical possibilities. These new ion beam based microscopy and nanoengineering techniques have in common that they often can outperform classical alternatives such the scanning electron microscope or gallium based focus ion beams. The focus topic thus invites and attracts researchers working with gas field ion sources (GFIS) and other advanced charged particle source concepts used for ion beam microscopy, ion beam based analytics at the nano-scale, and focused ion beam based nano-machining. In addition to invited talks from Bill Ward and John Notte, the Advanced Ion Microscopy focus topic will also feature talks covering alternative source concepts and current applications of ion beam milling and imaging at the nanoscale. The lineup of speakers shows that we will continue a tradition from previous years: uniting researchers from around the globe that develop and/or use advanced focused ion beam techniques in their daily work. New developments making use of alternative source concepts, extension in terms of analytic power as well as state-of-the-art applications will be presented. Consequently a large interdisciplinary audience from various fields such as biology, catalysis, 2D-materials, thin films, nuclear materials and technology as well as the semiconductor industry will be attracted.

FUNDAMENTAL DISCOVERIES IN HETEROGENEOUS CATALYSIS

The "Fundamental Discoveries in Heterogeneous Catalysis" (HC) focus topic highlights recent advances in the understanding of the atomic and molecular basis for heterogeneously catalyzed reactions on solid surfaces. This will be the first time the HC focus topic has been organized, and is co-sponsored with the Surface Science (SS) division. Session topics include theoretical models, nanoscale structures, gas-surface dynamics, and novel studies of active surfaces. Co-sponsored topical sessions include ambient pressure studies of catalytic surfaces (with the IS Focus Topic) and oxide surfaces (with Surface Science Division). The symposium will highlight connections among theoretical and experimental approaches with the goal of revealing key details of the fundamental chemistry and physics underlying heterogeneous catalysis. Of particular interest are developments in chemical understanding, atomic-level details, and predictive models of reactions catalyzed by metal surfaces.

IN-SITU AND OPERANDO SPECTROSCOPY AND MICROSCOPY FOR CATALYSTS, SURFACES, & AND MATERIALS

Exploration of material structure and chemistry under real conditions using different spectroscopic and microscopic techniques is critical for correlating material structure and chemistry to functions they perform toward scalable and predicative materials, catalysis, and energy storage. This focused symposium presents current capabilities of in situ characterization techniques, new structure and chemistry revealed with these in situ tools, and progress in new microscopic and spectroscopic techniques. Topics of particular interest include: Ambient pressure X-ray photoelectron spectroscopy studies and chemistry of catalysts; In situ studies of nanomaterials; In situ and operando studies using infrared absorption spectroscopy.

NOVEL TRENDS IN SYNCHROTRON AND FEL-BASED ANALYSIS

The purpose of this topical session is to provide a forum for communicating and sharing the most recent achievements in characterization of all types of matter using synchrotron or Free Electron Laser (FEL) radiation from IR to hard X-rays thanks to the advancements in all experimental methods based on interaction of light with matter. These include imaging techniques employing photon scattering, transmission and emission as well as cutting-edge spectroscopic methods highlighting in particular exciting areas such as resonant inelastic X-ray scattering. The four oral sub-sessions will focus on research fields where the methodology developments have led to important breakthroughs, shedding light on the exotic properties of complex functional materials relevant to device technology, such as correlated and 2D-materials, innovative oxide heterostructures and thin films, and on the structure and functions of the constituents in biological systems.

PLASMA PROCESSING FOR BIOMEDICAL APPLICATIONS

Plasma processing is an ideal way to either create new or modify existing material surfaces for use in various applications, including medicine. In the Focus Topic "Plasma Processing for Biomedical Applications (PB) Focus Topic," plasma processing of biomaterials, pharmaceuticals, and living organisms, including human bodies, for biomedical and therapeutic applications is discussed. There are two major topical categories in this Focus Topic. One is concerned with plasma synthesis or modification of biomaterials, including chemical substances such as pharmaceuticals, and the other is concerned with the use of plasmas as direct therapeutics, including treating infected tissue, wound healing, and cancer treatment, among many others. The former covers the chemistry of biomaterial surfaces and biological molecules, biointerfaces, and efficacy of medical devices that are made or modified via plasma processes. The latter covers a field known as plasma medicine, in which biological reactions in living organisms triggered by plasma generated chemically reactive species are discussed. Latest interests in these categories include plasma polymerization and surface modification to increase biocompatibility of materials, plasma processes to create antimicrobial surfaces, biomimetic materials, 3D cell scaffolds, etc., plasma-liquid interaction, plasma-enhanced chemical reactions in liquid, and plasma-cell or tissue interaction. All sessions are co-sponsored by Biointerfaces (BI) and Plasma Science and Technology (PS).

SCANNING PROBE MICROSCOPY

The scanning probe microscopy (SPM) field has provided a family of techniques that have revolutionized our understanding of nanoscale interfacial phenomena. Now comprised of more than 20 different types of microscopy, the field has provided advanced tools that are able to image, manipulate and interrogate the functionality of surface features to the level of individual molecules and atoms. Such tools underpin the research activities encompassed by many AVS divisions. This focus topic will provide a forum for the discussion of the latest advances and novel applications made in the SPM field. Areas of particular interest include approaches to improve imaging capability, the acquisition of probe-sample interaction data, and the novel and emerging applications in physical and chemical functional imaging. These interests are reflected through invited and contributed presentations in 5 key areas, namely: (1) Advances in Scanning Probe Microscopy, (2) Probing Topological States and Superconductivity, (3) Probing Chemical Reactions at the Nanoscale, (4) Probing Spin-Dependent Phenomena, (5) Probing Electronic Properties. The highlighted speakers include Maki Kawai and Wilson Ho, the 2016 and the 2011 Medard W. Welch Award winners.

SPECTROSCOPIC ELLIPSOMETRY

The Spectroscopic Ellipsometry Focus Topic is a cross-cutting symposium which integrates themes ranging from classical material science and thin film characterization to physical and chemical processes at biomaterial interfaces and nanometer scale science. Supported by invited presentations of pioneering researchers in the field of Spectroscopic Ellipsometry we host three oral sessions dedicated to areas most dynamic development but also incorporate traditional application areas. The first session will focus on the use of Spectroscopic Ellipsometry for the characterization of Nanostructures and Metamaterials. This session emphasizes trending topics like Mueller matrix decomposition and optical critical dimension analysis techniques. In the second session we will host presentations on novel experimental and theoretical approaches including for instance Mueller matrix imaging ellipsometry, QCMD-SE, or THz ellipsometry. The third session is dedicated to the classical research topics of ellipsometry as for instance optical coatings and inorganic thin films characterization and will also include the investigation of biological materials and interfaces. A highlight of the symposium will be our student award which will be selected based on the quality of the research and its presentation and the discussion during the Symposium. Past recipients of the award and rules for entering the competition can be found at http://www.avs.org/Awards-Recognition/Focus-Topic-Awards/Spectroscopic-Ellipsometry-Focus-Topic

TRIBOLOGY

The 2016 Tribology Focus Topic will feature sessions on nanoscale wear with applications in nano-metrology and nano-manufacturing, molecular origins of friction, lubricants and coatings, and friction in biological systems. Sessions are jointly sponsored by the Applied Surface Science (ASSD) Division, Thin Films (TF), Nanometer-scale Science and Technology (NSTD), and Biointerfaces (BI). Our focus is on linking of nanoscale information (either simulations or experiments, but preferably both) to macroscale observations. Presentations will carry a materials focus in areas such as thin film deposition, solid lubricants, nanocomposites designed for tribological function, selfhealing interfaces, wear-resistant polymers, and biomaterials. Contributions will consider advances in in-situ, molecularly specific, spatially resolved approaches to the quantitative characterization of tribological interfaces as well as accounts of numerical computation and molecular modeling of tribological materials and biomaterials. In addition to the four oral sessions, we will have a poster session, which will provide an opportunity for personal exchange and discussion of results with colleagues.

SESSION OVERVIEW —

Symposium Plenary Lec	cture	Wed. AM Room 102A Nanoparticles for Electronics and Photonic					
Mon. 5:15 p.m. Davidson B	allroom A Integrated Semiconductor Nanowires	Wed. PM	Room 102A	Nanoscale Imaging of Metals and Compound Semiconductor based			
fc	or Nanoelectronics"	Thu AM	Room 102A	Nanostructures, Surfaces and Interfaces Radiation Detection Materials and Devices			
	Or. Heike Riel - IBM Fellow, Director Physical Sciences, IBM Research	Thu. PM	Room 102A	Materials and Interfaces for Energy Storage			
			Room Hall D Room 102A	EMPD Poster Session Late Breaking News on Electronic			
Advanced Surface Enginerate. AM Room 101C N	neering Vanostructured Thin Films and Coatings	111. 2111	100m 102/1	Materials and Devices			
Tue. PM Room 101C Ir	nnovations in PVD, CVD, Atmospheric	Magneti	c Interfaces a	nd Nanostructures			
	ressure Plasma and Other Surface echnologies	_	Room 101C	Chiral Magnetism (8:20–10:20 am)/			
Tue. PM Room Hall D A	dvanced Surface Engineering Poster			Magnetism and Spin Orbit Effects at Interfaces and Surfaces: Recent			
	ession rotective Coatings for Tribological			Experimental and Theoretical Advances			
A	applications in Surface Engineering	Mon PM	Room 101C	(10:40 am–12:00 pm) Magnetism and Spin Orbit effects at			
Wed. PM Room 101D M	Multifunctional Thin Films and Coatings	141011. 1 141	Room fore	Interfaces and Surfaces: Recent			
Applied Surface Science		Tue PM	Room 102B	Experimental and Theoretical Advances Magnetic Phenomena in Organic			
	Quantitative Surface Analysis: New Vays to Perform Old Tricks			Systems			
Mon. PM Room 101B P	ractical Surface Analysis I: Advancing	Tue. PM	Room Hall D	MIND Poster Session			
	Biological Surface Analysis/Imaging Beyond 'Show and Tell'	Manufac	cturing Science	ce and Technology			
Tue. AM Room 101B P	ractical Surface Analysis II:	Mon. AM	Room 103A	Manufacturing for Next-Generation Energy Solutions			
	ficroanalysis, Nanoanalysis, Atom robe, and All Things 'Small'	Mon. PM	Room 103A	Advanced Manufacturing: Systems,			
	Oata Analytics in Surface Science and Janoscience	Tue AM	Room 103A	Devices, and Materials Characterization and Processing for IC			
	applied Surface Science Division Poster			Manufacturing			
	ession pplications where Surface Analysis is	Tue. PM	Room 103A	Working with National Labs and User Facilities			
Y	our Only Hope	Tue. PM	Room Hall D	Aspects of Manufacturing Science and			
	Multiple Technique Approaches for Real- World Industrial Problem Solving	MEMS :	and NEMS	Technology Poster Session			
Thu. AM Room 101B D	Depth Profiling, Buried Interfaces, and		Room 102B	Multiscale Phenomena & Emerging			
	D Analyses dvances for Complicated Sample	Wed. PM	Room 102B	Technologies in Micro- and Nano-Systems Optomechanics, Photonics, and Quantum			
P	reparation Strategies			Nanosystems			
Biomaterial Interfaces		Inu. AM	Room 102B	'Fantastic Voyage' – the New Micro/ Nano/Bio Systems Frontiers			
	Biomolecules and Cells at Interfaces Biophysics and Characterization of	Thu. PM	Room 102B	Focused Session on Atomic Layer Nanomechanics and 2D MEMS			
_	Biological and Biomaterial Surfaces	Thu. PM	Room Hall D	MEMS/NEMS Poster Session			
	diomaterial Interfaces Poster Session preceded by Oral Flash Presentations)	Fri. AM	Room 102B	Radiation Effect in Emerging Micro/Nano Structures, Devices, and Systems			
	Biosensors and Diagnostics			•			
	ynthesis and Processing of Biomaterials/Biologically Inspired			nce and Technology			
	Materials		Room 101D Room 101D	Nanopatterning and Nanofabrication + 3D Nanophotonics, Plasmonics, and Energy			
Biomaterials Plenary Se	ossion	Tue. AM	Room 101D	(Nanodiamonds, Thin Films and			
Sun. PM Room 101A B				Electronics (8:20–10:00 am) / Health and environmental impact of nanotechnology			
Electronic Materials and	d Dhotonias	Tue DM	Room 101D	(11:00 am–12:20 pm)			
	Growth and Devices Technology of		Room Hall D	Nanoscale Imaging and Characterization Nanometer-scale Science & Technology			
G	Group III-Nitrides			Poster Session			
	Advances in Photonics urface and Interface Challenges in Wide	Plasma S	Science and T	echnology			
В	Sandgap Materials	Mon. AM	Room 104D	Atmospheric Pressure Plasma Processing			
	New Materials and Devices for TFETs, pintronics, and Extended CMOS		Room 104B Room 104D	Advanced FEOL/Gate Etching Plasma Surface Interactions			
Tue. PM Room 102A N	lew Materials and Devices for	Mon. PM	Room 104B	Advanced BEOL/Interconnect Etching			
Е	merging Memory Technologies	Tue. AM	Room 104B	Plasma Diagnostics, Sensors and Control			

SESSION OVERVIEW —

		DEDDIOI (O	√ -				* *
Tue. PM	Room 104B	Plasma Processing for Nanomaterials and 2D Materials			Room Room		Thin Films Poster Session CVD, ALD and Film Characterization
	Room 104C	Atomic Layer Etching					
Wed. AM	Room 104B	Plasma Sources and Novel Mechanisms	Vacu	uum	Techn	ology	
Wed. PM	Room 104B	for Generating Plasmas Plasma Deposition and Plasma Assisted ALD			Room		Vacuum Measurement, Calibration, Primary and Industry Standards
Wed. PM	Room 104C	Atomic Layer Etching and Low Damage Processing			Room		Gas Dynamics, Simulation and Partial Pressure Analysis
Thu. AM	Room 104C	Modeling of Plasmas and Plasma- Surface Interactions			Room		Vacuum Pumping and Material Outgassing
Thu. AM	Room 104B	Plasma Processing of Challenging Materials			Room Room	Hall D	
Thu. PM	Room 104B	Plasma Chemistry and Plasma Surface Interactions	Wed.	. AM	Room	101D	Competition) Vacuum Technology – History and Innovation (8:20 –10:00 am)/Transfer
Thu. PM	Room Hall D	Plasma Science and Technology Division Poster Session					and Manipulation (11:00 am–12:20 pm)
Surface S	Science		Exhi	ibito	r Tech	nology	Spotlight
	Room 104E	Mechanistic Insights on Surface					Exhibitor Technology Spotlight Session
IVIOII. 7 LIVI	Room To IE	Reactions in Catalysis and at Novel Interfaces					Exhibitor Technology Spotlight Session Exhibitor Technology Spotlight Session
Mon. PM	Room 104E	Metals, Alloys, and Oxides: Reactivity and Catalysis	Wed.	. PM	Exhib	it Hall 1	Exhibitor Technology Spotlight Session
Tue. AM	Room 104D	Surface Dynamics, Non-Adiabaticity,	2D N	Mate	rials F	ocus T	opic
		and Theory and Modeling of Surface and Interfacial Phenomena			Room		2D Materials Characterization including Microscopy and Spectroscopy
	Room 104E	Nanostructures: Growth, Reactivity, and Catalysis	Mon.	. PM	Room	103B	Dopants, Defects and Interfaces in 2D Materials
	Room 104E	Structure and Characterization of Oxides	Tue.	AM	Room	103B	Novel 2D Materials
	Room 104D	Photocatalysis and Photochemistry at Surfaces			Room		Novel Quantum Phenomena in 2D Materials
	Room Hall D Room 104D	Surface Science Poster Session Synthesis, Characterization, and Surface			Room		2D Materials: Growth and Fabrication
wed. Alvi	Room 104D	Science of Novel Materials and Interfaces			Room		Nanostructures including Heterostructures made of 2D Materials
Wed. AM	Room 104E	Environmental Interfaces, Ambient Surfaces, and In-Operando Studies	Thu.	AM	Room	103B	Properties of 2D Materials including Electronic, Magnetic, Optical, Machanical, Thornal Properties
Wed. PM	Room 104D	Semiconductor Surfaces and Interfaces	Thu	PM	Room	103B	Mechanical, Thermal Properties Surface Chemistry, Functionalization,
	Room 104D	Chirality and Enantioselectivity on Surfaces; Ionic Liquid Interfaces	Titu.	1 1/1	Room	103B	Bio and Sensor Applications of 2D Materials
Thu. PM	Room 103C	Celebrating a Life in Surface Science:	Thu.	PM	Room	Hall D	2D Materials Poster Session
		A Symposium in Honor of JOHN T. YATES, JR.	Fri.	AM	Room	103B	2D Materials: Device Physics and Applications
Thin Filr	n		A at:	nida	c and 1	Dara F	arths Focus Topic
Mon. AM	Room 105A	ALD Precursors and Surface Reactions					<u>-</u>
	Room 105A Room 102B	ALD for Energy Conversion and Storage Plasma-based Deposition Techniques and					Chemistry and Physics of the Actinides and Rare Earths Poster Session
		Film Characterization	Wed.	. AM	Room	103C	Magnetism, Complexity, and Superconductivity in the Actinides and
	Room 102B Room 105A	Thin Films for Synchrotron Applications Advanced CVD and ALD Processing,					Rare Earths (8:00–11:00 am)/Actinide and
rue. Alvi	KUUIII 1UJA	ALD Manufacturing and Spatial-ALD			_		Rare Earth Theory (11:00 am-12:20 pm)
Tue. PM	Room 105A	Thin Film Photovoltaics	Wed.	. PM	Room	103C	Actinide and Rare Earth Theory (2:20–
Wed. AM	Room 105A	ALD and Nanostructures					3:40 pm)/Nuclear Power, Waste Remediation and Applications (4:20–
	Room 105A	Thin Films for Microelectronics					6:20 pm)
	Room 104E	Thin Films for Magnetic and Optical Applications Control and Modeling of Thin Film	Thu.	AM	Room	103C	Chemistry and Physics of the Actinides and Rare Earths
inu. AM	Room 104E	Control and Modeling of Thin Film Growth and Film Characterization					
Thu. AM	Room 105A	Area-selective Deposition and Sequential Infiltration Synthesis			d Ion Room		copy Focus Topic 10 Years of GFIS Microscopy
Thu. PM	Room 104E	Thin Films for Bio-related Applications			Room		Fundamentals of Ion Beam Microscopy
	Room 105A	Self-assembled Monolayers and Organic/Inorganic Interface Engineering			Room		Ion Beam Based Imaging and Nanofabrication

SESSION OVERVIEW

Thu. PM Room Hall D Aspects of Advanced Ion Microscopy Tue. PM Room 103C Synchrotron and XFEL Advances for Biological Systems (2:20–3:40 pm)/ Poster Session Synchrotron Radiation at the Frontiers of **Fundamental Discoveries in Heterogeneous Catalysis** Device Technology (4:20–6:20 pm) **Focus Topic** Tue. PM Room Hall D Novel Trends in Synchrotron and FEL-Based Analysis Poster Session Wed. AM Room 103A Bridging Gaps in Heterogeneouslycatalyzed Reactions Plasma Processing for Biomedical Applications Wed. PM Room 103A Nanoscale Surface Structures in Heterogeneously Catalyzed Reactions **Focus Topic** Thu. AM Room 103A Dynamics of Gas-surface Interactions in Mon. PM Room 101A Plasma Processing of Biomaterials Heterogeneous Catalysis Tue. AM Room 101A Plasma Processing of Thu. PM Room 103A Advances in Theoretical Models and Biological/Biomimetic Surfaces Simulations of Heterogeneouslycatalyzed Reactions Scanning Probe Microscopy Focus Topic Mon. AM Room 104A Advances in Scanning Probe Microscopy In-Situ and Operando Spectroscopy and Microscopy for Mon. PM Room 104A Probing Topological States And Catalysts, Surfaces, & Materials Focus Topic Superconductivity Wed. PM Room 101C Ambient Pressure XPS Studies of Tue. AM Room 104A Probing Chemical Reactions at the Surface and Chemistry of Catalysts Nanoscale Thu. AM Room 101C In-situ and Operando Spectroscopy and Tue. PM Room 104A Probing Spin-Dependent Phenomena Microscopy with Infrared Absorption Tue. PM Room Hall D Scanning Probe Microscopy Poster Session Spectroscopy Wed. AM Room 104A **Probing Electronic Properties** Thu. PM Room 101C Ambient Pressure Photoelectron Spectroscopy and Scanning Probe Spectroscopic Ellipsometry Focus Topic **Techniques** Thu. PM Room 104C Optical Characterization of Thu. PM Room Hall D In-Situ and Operando Spectroscopy and Nanostructures and Metamaterials (2:20-Microscopy for Catalysts, Surfaces, & 3:40 pm)/Application of Spectroscopic Materials Poster Session Ellipsometry for the Characterization of AM Room 101C In situ Characterization of Nanomaterials Thin Films (4:00-6:00 pm) and Biological Materials Interfaces Novel Trends in Synchrotron and FEL-Based Analysis Spectroscopic Ellipsometry Poster Session Thu. PM Room Hall D **Focus Topic** Fri. AM Room 104C Spectroscopic Ellipsometry: Novel Mon. AM Room 103C Advances in High-Resolution Imaging Applications and Theoretical Approaches Techniques (8:20-10:20 am)/Pushing the Limits with X-Ray Spectroscopy (10:40 **Tribology Focus Topic** am-12:00 pm) Mon. PM Room 103C Frontiers of Photoemission with Synchrotron and XFEL Radiation/Advances in High-resolution **Imaging Techniques**

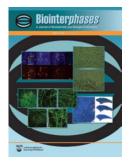
Tue. AM Room 103C

Applications of Synchrotron-based Techniques to 2D Materials (8:00-10:00 am)/Complex Functional Materials and Heterostructures (11:00 am-12:20 pm)

1A Nanoscale Wear: Applications to
Nanometrology and Manufacturing
1A Materials Tribology
all D Tribology Poster Session







Manuscript Deadline:

January 15, 2017

Manuscript Details & Submission:

www.jvsta.org www.jvstb.org www.biointerphases.org

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- · Magnetic thin films and interfaces
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- Plasma science and technology including plasma surface interactions, plasma diagnostics plasma deposition and etching and applications of plasmas to micro- and nanoelectronics

- Surface Engineering
- Thin film deposition, etching, properties and characterization
- Transmission electron microscopy including in situ methods
- Tribology
- Vacuum science and technology

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- Lithography
- Microelectromechanical and nanoelectromechanical systems and devices (MEMS & NEMS)

- Nanometer science and technology
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- Organic and molecular electronics
- Photovoltaics based on nanostructured materials, dye-sensitized and other excitonic solar cells
- Plasmonics
- · Spintronics and magnetic devices
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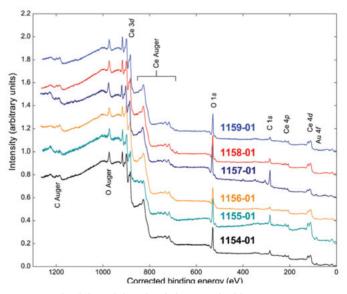
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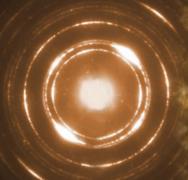
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Technical Symposia

- A Coatings for use at High Temperatures
- B Hard Coatings and Vapor Deposition Technologies
- C Fundamentals and Technology of Multifunctional Materials and Devices
- D Coatings for Biomedical and Healthcare Applications
- E Tribology & Mechanical Behavior of Coatings & Engineered Surfaces
- F New Horizons in Coatings and Thin Films
- G Surface Engineering Applied Research and Industrial Applications coordinated with SVC
- H Advanced Characterization Techniques for Coatings and Thin Films

Topical Symposia

- TS1 Biointerfaces
- TS2 Thermal Spray Technologies and Coatings
- TS3 Self-healing Materials

Important Dates - Mark Your Calendar:

Abstract Submission: October 1, 2016

Awards Nomination: October 1, 2016

Discounted Early Registration: March 24, 2017

Presenting Authors must register by March 24, 2017 to remain in the

Technical Program Book

Manuscript Submission: April 1, 2017

http://www2.avs.org/conferences/icmctf/



Plenary Lecture

April 24, 8am, Town & Country Room "Grain Boundary Alloying: The Key Ingredient for Commercializable Nanocrystalline Coatings"

Chris Schuh

Massachusetts Institute of Technology Cambridge, MA USA



Exhibition Keynote Lecture

April 25, 11am, Town & Country Room "Success and Failure in the Commercialization of CVD Diamond"

Chris Engdahl

Vice-President Technology Crystallume Santa Clara, CA USA

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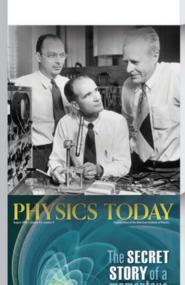
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60TH ANNUAL TECHNICAL CONFERENCE

RHODE ISLAND CONVENTION CENTER | PROVIDENCE, RHODE ISLAND | April 29-May 4, 2017

PLAN TODAY TO ATTEND THE GO-TO SHOW FOR THE VACUUM COATING INDUSTRY.

Technical Sessions

FEATURING THE SYMPOSIUM ON COATINGS FOR HEALTHCARE, BIOMETRIC MONITORING, AND BIO-INTERFACES

TRADITIONAL SESSIONS:

- WebTech Roll-to-Roll Coatings for High-End Applications
- Coatings for Energy Conversion and Related Processes
- Protective, Tribological and Decorative Coatings
- Emerging Technologies
- High Power Impulse Magnetron Sputtering (HIPIMS)
- Optical Coatings
- Plasma Processing
- Large Area Coatings
- Coatings and Processes for Biomedical and Environmental Applications
- Fundamentals of Interface Design: Organized with ICMCTF (AVS/ASED)
- HEURÉKA! Post-Deadline Recent Developments
- Technical Poster Presentations

Important Dates

MAY 1 - 4:

TECHNICAL PROGRAM

APRIL 29 - MAY 4:

EDUCATION PROGRAM

MAY 2 - 3:

EQUIPMENT EXHIBITION

MAY 1 - 4:

INTERACTIVE NETWORKING

FOR MORE INFORMATION CONTACT:

SVCINFO@SVC.ORG 440.338.5151

WWW.SVC.ORG

RENAISSANCE NASHVILLE HOTEL HOTEL GRAND BALLROOM LEVEL + + GRAND BALLROOM TERRACE CENTER WEST LOBBY ADMINISTRATION RECEPTIONIST STARBUCKS COMMERCE ST. GRILLE PREFUNCTION TRUCK RAMP BELOW STREET ENCLOSED ACCESSIBLE WALKWAY TO MEETING SPACE **HOTEL LEVEL 3 HOTEL LEVEL 2** FISK ROOM **HOTEL LEVEL 4** EXECUTIVE OFFICES **MEETING SPACE FLOOR 1**



MEETINGS AND SPECIAL EVENTS

2:00 p.m.	Educational Materials and Outreach Committee Meeting	Jazz (H)	
6:30 p.m.	Education Committee Dinner	. Commerce Street Grille (H	()
UNDAY, NOV	VEMBER 6, 2016		
7:30 a.m.	Sixteenth Topical Conference on Quantitative Surface Analysis (QSA16):		
	"Keys to Successful Quantitative Surface Analysis with XPS"		
8:30 a.m.	AVS Board of Directors' Meeting	. Ryman (H)	
12:30 p.m.	AVS Board of Directors' Lunch		
3:00 p.m.	Biomaterials Plenary Session and Reception		
3:00 p.m.	JVST Associate Editors' Meeting		
5:00 p.m.	Professional Development: Improving Work-Life Satisfaction Workshop		7
6:00 p.m.	ASTM E-42 Business Meeting		
6:00 p.m.	Science Educators' Workshop Teachers' Reception		
6:00 p.m.	Vacuum Technology Division Executive Committee Meeting and Dinner	. Classical (H)	
7:00 p.m.	ASTM E-42 Workshop: "QSA Summary and Discussion of Implications in ASTM E-42 Standards"	Dolmont 2.2 (II)	
7:00 p.m.	International Dignitaries & Chapter Chairs Reception (Invitation Only)		
7:00 p.m. 7:00 p.m.	Short Course Executive Committee Meeting and Dinner	. ,	
7.00 p.m.	Short Course Executive Committee Weeting and Dillier	. Country (11)	
	VEMBER 7, 2016		
7:00 a.m.	Professional Leadership Committee Meeting and Breakfast)
8:00 a.m.	Science Educators' Workshop	. Ryman (H)	
9:40 a.m.	Medard W. Welch Award Lecture: "Action Spectroscopy: Characterizing Molecules at	1044 (GG)	
12.00	Surfaces and its Dynamics," Maki Kawai, Institute for Molecular Science, Japan		
12:00 p.m.	Science Educators' Workshop Lunch	* *	
12:05 p.m. 12:15 p.m.	Biomaterial Interfaces Division Business Meeting	. ,	
1	2017 AVS Program Committee Meeting and Lunch Professional Development: "Welcome to AVS Workshop"		2
12:15 p.m. 12:15 p.m.	Recommended Practices Committee Meeting and Lunch		R
3:20 p.m.	Vacuum Technology Division Business Meeting		
4:00 p.m.	Publications Committee Meeting		
5:30 p.m.	Plenary Lecture: Heike Riel - IBM Fellow, Director Physical Sciences, IBM Research,	. Boardroom 3th Ave. (CC)	
5.50 p.m.	"Integrated Semiconductor Nanowires for Nanoelectronics"	Davidson Ballroom A (CC)	2
6:30 p.m.	Welcome Mixer	Davidson Ballroom BC (CC)) 2
6:30 p.m.	Biointer <i>phases</i> Reception (Invitation Only)) /
7:00 p.m.	Applied Surface Science Division Executive Committee Meeting and Dinner		
7:30 p.m.	Publications Committee Meeting and Dinner (Invitation Only)		
7:30 p.m.	Manufacturing Science and Technology Group Committee Meeting and Dinner	,	
7:30 p.m.	Thin Film Division/Harper Award TED-Talk Competition (Invitation Only)		
8:30 a.m5:		. ,	
		,	
	OVEMBER 8, 2016		
7:00 a.m.	Diversity and Inclusion Breakfast: "The Industrial Scientist's Guide to Riches, Fame, and	Delenent (II)	•
7:30 a.m.	Fortune or at least a Raise"		A
8:00 a.m.	Awards Committee Meeting and Lunch		
8.00 a.m. 10:00 a.m.	Science Educators' Workshop Session Coffee Break		
12:00 p.m.	Science Educators' Workshop Lunch		
12:20 p.m.	Exhibit Hall Lunch		2
12:30 p.m.	Chapters, Divisions, and Groups Meeting and Lunch (Invitation Only)		A
12:30 p.m.	Professional Development: Job Information Forum and Lunch		2
3:00 p.m.	Marketing Communications Committee Meeting		7
3:40 p.m.	Session Refreshment Break		2
6:05 p.m.	Magnetic Interfaces and Nanostructures Division Business Meeting		A
6:25 p.m.	Electronic Materials and Photonics Division Business Meeting		
6:25 p.m.	Nanometer-scale Science and Technology Division Business Meeting		
6:25 p.m.	Plasma Science and Technology Division Business Meeting and 2016 Plasma Prize Award Announcement	, ,	
6:25 p.m.	Surface Science Division Business Meeting	` /	
6:25 p.m.	Thin Film Division Business Meeting		
6:30 p.m.	Poster Session and Refreshments (Sponsored by MKS)		A
			/
6:45 p.m.	Electronic Materials and Photonics Division Forum: "Careers at LAM Research"	. 102A (CC)	

H = Renaissance Nashville Hotel

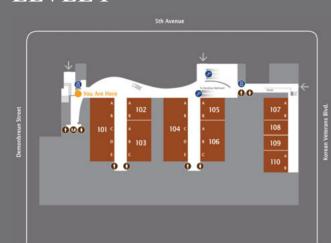
** = New Attendee Networking Events

MEETINGS AND SPECIAL EVENTS —

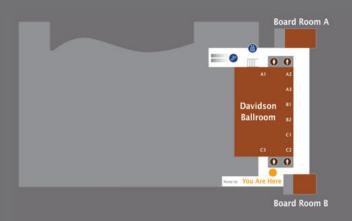
7.00	MEMO INDIMOTE 1 10 E 2 C 2 M M 2 ID	C1 : 1 (II)	
7:00 p.m.	MEMS and NEMS Technical Group Executive Committee Meeting and Dinner		
7:30 p.m.	Applied Surface Science Division Business Meeting.		
7:30 p.m.	Nanometer-scale Science and Technology Division Executive Committee Meeting and Dinner		
7:30 p.m.	Plasma Science and Technology Division Executive Committee Meeting and Dinner		
7:30 p.m.	Surface Science Division Executive Committee Meeting and Dinner		
7:30 p.m.	Thin Film Division Executive Committee Meeting and Dinner.	• • •	
7:45 p.m.	Biomaterial Interfaces Division Executive Committee Meeting and Dinner	• • •	
7:45 p.m.	Electronic Materials and Photonics Division Executive Committee Meeting and Dinner	Jazz (H)	
8:00 p.m.	ASTM E-42 and Applied Surface Science Division Joint Workshop:	D 1 (2.2.4T)	
0.20 5.00	"Frontiers of Surface Analysis"		
8:30 a.m5:00			~
10:00 a.m5:0	00 p.m. Equipment Exhibition	Hall C (CC)	R'A
WEDNESDA	Y, NOVEMBER 9, 2016		
6:15 a.m.	36th Annual AVS Run (Register at Run Booth before Wednesday in the Convention Center)		R'A
7:30 a.m.	Diversity Committee Meeting and Breakfast	Commerce Street Grille (H	I)
10:00 a.m.	Session Coffee Break	Hall C (CC)	R'A
11:00 a.m.	Gaede Langmuir Award Lecture: "Multiplets and More for Core-Level Spectra,"		
	Paul Bagus, University of North Texas		
12:10 p.m.	PSTD Coburn and Winters Adjudication Session (Closed Session)	104B (CC)	
12:20 p.m.	Exhibit Hall Lunch	Hall C (CC)	8° 1
12:30 p.m.	Governance Committee Meeting and Lunch		H)
12:30 p.m.	Nanometer-scale Science and Technology Division Graduate Student Award Competition	102B (CC)	
12:30 p.m.	PacSurf Committee Meeting and Lunch		
12:30 p.m.	Professional Development: Federal Funding Town Hall and Lunch		R'A
3:30 p.m.	History Committee Meeting	Classical (H)	
3:40 p.m.	Session Refreshment Break		R'A
6:30 p.m.	AVS Awards Ceremony and Reception	Davidson Ballroom (CC)	R'A
8:30 a.m5:00	p.m. Short Course Program	Various Rooms (CC)	
10:00 a.m4:3	30 p.m. Equipment Exhibition	Hall C (CC)	R'A
THURSDAY NO	OVEMBER 10, 2016		
7:30 a.m.	Membership Committee Meeting and Breakfast	Commerce Street Grille (F	1)
8:00 a.m.	Advanced Surface Engineering Division Business Meeting	*	-)
8:15 a.m.	Advanced Surface Engineering Division Executive Committee Meeting (Lunch Offsite)		
10:00 a.m.	Session Coffee Break	• • •	8×
12:20 p.m.	Exhibit Hall Lunch/Finale	\ /	R's
12:20 p.m.	Plasma Science and Technology Division Coburn and Winters Award Ceremony		· · · · · · ·
12:20 p.m.	Surface Science Division Mort Traum Awards Ceremony		
12:30 p.m.	2017 AVS Program Committee Chairs' Meeting and Lunch		
12:30 p.m.	AVS Business Meeting		
2:20 p.m.	"Celebrating a Life in Surface Science: A Symposium in Honor of John T. Yates, Jr."		
6:00 p.m.	Poster Session and Refreshments		R's
6:30 p.m.	2016/2017 Program Committee Reception and Dinner	` /	4
7:00 p.m.	Surface Science Spectra Editorial Board Dinner		
8:30 a.m5:0			
	30 p.m. Equipment Exhibition		8×
		,	~

MUSIC CITY CENTER

LEVEL 1



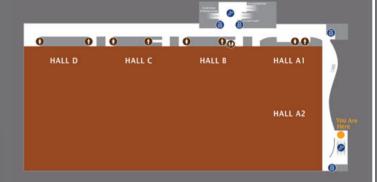
LEVEL 1M



LEVEL 3







LEVEL 3M



Program Key

SYMPOSIUM TOPICS

2D	2D MATERIALS FOCUS TOPIC
AC	ACTINIDES AND RARE EARTHS FOCUS TOPIC
AS	Applied Surface Science
Ы	BIOMATERIAL INTERFACES
BP	BIOMATERIALS PLENARY SESSION
EL	SPECTROSCOPIC ELLIPSOMETRY FOCUS TOPIC
EM	ELECTRONIC MATERIALS AND PHOTONICS
EW	EXHIBITOR TECHNOLOGY SPOTLIGHT
HC	FUNDAMENTAL DISCOVERIES IN HETEROGENEOUS CATALYSIS FOCUS TOPIC
HI	ADVANCED ION MICROSCOPY FOCUS TOPIC
IS	IN-SITU AND OPERANDO SPECTROSCOPY AND MICROSCOPY FOR CATALYSTS, SURFACES, & MATERIALS FOCUS TOPIC
MI	MAGNETIC INTERFACES AND NANOSTRUCTURES
MN	MEMS AND NEMS
MS	Manufacturing Science and Technology
NS	NANOMETER-SCALE SCIENCE AND TECHNOLOGY
PB	PLASMA PROCESSING FOR BIOMEDICAL APPLICATIONS FOCUS TOPIC
PS	PLASMA SCIENCE AND TECHNOLOGY
SA	Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic
SE	Advanced Surface Engineering
SP	SCANNING PROBE MICROSCOPY FOCUS TOPIC
SS	Surface Science
TF	THIN FILM
TR	TRIBOLOGY FOCUS TOPIC

KEY TO SESSION/ABSTRACT NUMBERS

Sessions sponsored by multiple topics are labeled with all acronyms (e.g. **AC+EM+SS**), then a number to indicate simultaneous sessions sponsored by the same topic(s) (e.g. SS1, SS2), then a dash followed by the first two characters of the day of the week:

Monday, Tuesday, Wednesday, Thursday, Friday, then a single letter for Morning, Afternoon, Evening, Poster, and finally a number indicating the starting time slot for the abstracts. Example: SS1-MoM9 (Surface Science, Monday morning, 11:00 am).

VT

VACUUM TECHNOLOGY

Program Key 71

AVS 63 Technical Program at a Glance

Room	101A	101B	101C	101D	102A	102B	103A	103B
/Time								
SuA	BP-SuA: Biomaterials Plenary							
MoM	BI+AS-MoM: Biomolecules and Cells at Interfaces	AS-MoM: QSA: New Ways to Perform Old Tricks	MI+2D+AC-MoM: Chir. Mag/Mag & Spin Orbit Eff at Inter & Surf: Rec Exp. & Theo. Adv	NS-MoM: Nanopatterning & Nanofabrication + 3D	EM+NS+PS+SS+ TF-MoM: Growth & Devices Tech. of Group III-Nitrides	EM-MoM: Advances in Photonics	MS-MoM: Manufacturing for Next- Generation Energy Solutions	2D+MI+SA-MoM 2D Matls Char. including Microscopy and Spectroscopy
MoA	PB+BI+PS-MoA: Plasma Processing of Biomaterials	AS+BI-MoA: Pract Surf. Anal I: Adv Bio Surf Anal/Imag Bey. 'Show & Tell'	MI+2D+AC-MoA: Mag & Spin Orbit Effects at Inter & Surf: Rec Exper & Theo Adv.	Plasmonics, and	EM-MoA: Surface & Inter. Challenges in Wide Bandgap Materials	TF+PS+SE-MoA: Plasma-based Deposition Techniques and Film	MS-MoA: Advanced Mfg: Systems, Devices, and Materials	2D+MI-MoA: Dopants, Defects and Interfaces in 2D Materials
TuM	PB+BI+PS-TuM: Plasma Proc. of Bio/Biomimetic Surfaces	AS+AC-TuM: Pract Surf Anal II: Micro, Nano, Atom Probe, & All Things 'Small'	SE+NS+TF+TR- TuM: Nanostructured Thin Films and Coatings	NS-TuM: Nanodiam., TF & Elect/ Health & Env. Impact of Nanotechnology	EM+MN-TuM: New Materials & Dev/ for TFETs, Spin., & Extended CMOS	TF+SA+MI-TuM: Thin Films for Synchrotron and Magnetism Applications	MS+AS-TuM: Characterization and Processing for IC Manufacturing	2D+MI-TuM: Novel 2D Materials
TuL								
TuA	BI+AS+SA-TuA: Biophys. & Char of Biological & Biomat Surfaces	AS+SS-TuA: Data Analytics in Surface Science and Nanoscience	SE+MS+TF-TuA: Innov in PVD, CVD, Atmos. Press. Plasma & Other Surf. Tech	NS-TuA: Nanoscale Imaging and Characterization	EM+MI+MN-TuA: New Materials & Dev. for Emerg. Memory Technologies	MI-TuA: Magnetic Phenomena in Organic Systems	MS-TuA: Working with National Labs and User Facilities	2D-TuA: Novel Quantum Phenomena in 2D Materials
TuP					resmoderes		radintes	
WeM	BI+MI-WeM: Biosensors and Diagnostics	AS+SS-WeM: Applications where Surface Analysis is Your Only Hope	SE+TR-WeM: Protective Coatings for Tribol Apps in Surf. Eng.	VT-WeM: Vac Tech – History & Innov/ Transfer & Manipulation	EM+NS-WeM: Nanoparticles for Electronics and Photonics	MN-WeM: Multiscale Phen. & Emerging Tech. in Micro- & Nano-Systems	HC+SS-WeM: Bridging Gaps in Heterogeneously -catalyzed Reactions	2D+TF-WeM: 2D Materials: Growth and Fabrication
WeL								
WeA	TR+AS+NS+SS- WeA: Nano Wear: Apps to Nanomet. & Manufacturing	AS-WeA: Mult. Tech Approaches for Real-World Industrial Problem Solving	IS+HC-WeA: Ambient Press. XPS Studies of Surf. & Chem of Catalysts	SE+2D+EM-WeA: Multifunctional Thin Films and Coatings	EM+NS+SP+SS- WeA: Nano Imag of Mtls & Comp Semi based Nano, Surf, & Int	MN+NS-WeA: Optomechanics, Photonics, and Quantum Nanosystems	HC+NS+SS-WeA: Nano Surface Structures in Hetero Catalyzed Reactions	2D+NS-WeA: Nanostructures incl. Heterostruct made of 2D Materials
ThM	BI+AS+SA-ThM: Synth. & Proc of Biomat/Bio Inspired Mtls	AS+SS-ThM: Depth Profiling, Buried Interfaces, and 3D Analyses	IS-ThM: In-situ & Oper Spect. & Micros w/Infrared Absorp Spect.		EM+AC+SS+TF- ThM: Radiation Det. Materials & Devices	MN+BI-ThM: 'Fantastic Voy.'— the New Micro/ Nano/Bio Syst. Frontiers	HC+SS-ThM: Dynamics of Gas- surface Interactions in Hetero Catalysis	2D+MI-ThM: Prop of 2D Matls incl. Elect, Mag, Opt, Mech, Therm Properties
ThA	TR+BI+SE+TF- ThA: Materials Tribology	AS-ThA: Adv. for Comp. Sample Prep. Strategies & Complex Systems	IS-ThA: Ambient Press. Photoelec Spect & Scanning Probe Techs.	NS+BI-ThA: App. Nanoscale Micro Techs/ Biomat Inter – New Advances	EM+SS+TF-ThA: Materials and Interfaces for Energy Storage	MN+2D+NS-ThA: Focused Session on Atomic Layer Nanomechanics and 2D MEMS	HC+SS-ThA: Adv. in Theor Models & Simul of Hetero-catalyzed Reactions	2D-ThA: Surface Chem, Function, Bio and Sensor Apps of 2D Materials
ThP								
FrM			IS-FrM: In situ Characterization of Nanomaterials		EM-FrM: Late Breaking News on Elect. Materials & Devices	MN+MS-FrM: Rad. Effect in Emerg Micro/ Nano Struct, Dev., & Systems		2D+NS-FrM: 2D Materials: Device Physics and Applications

Program Overview 72

AVS 63 Technical Program at a Glance

4000					rain at			–
103C	104A	104B	104C	104D	104E	105A	Hall C	Hall D
SA+AS+MI-MoM	SP+AS+MI+NS+	PS-MoM:	VT-MoM:	PS+SE-MoM:	SS+AS+HC-	TF-MoM:		
Adv in Hi-Res	SS-MoM:	Advanced	Vac Measure,	Atmospheric	MoM: Mech	ALD Precursors		
Imaging Tech/ Push the Limits	Advances in	FEOL/Gate	Calib., Primary	Pressure Plasma	Insights on Surf.	and Surface		
w/ X-Ray Spect.	Scanning Probe Microscopy	Etching	& Industry Standards	Processing	React in Catal. & at Novel	Reactions		
SA+AS-MoA:	SP+2D+AS+NS+	PS-MoA:	VT-MoA:	PS+AS+SS-MoA:	SS+AS+HC-MoA:	TF+EM-MoA:		
Front of Photo	SS-MoA:	Advanced BEOL/	Gas Dynamics,	Plasma Surface	Metals, Alloys,	ALD for Energy		
w/ Synch & XFEL	Probing Top.	Interconnect	Simulation and	Interactions	and Oxides:	Conversion and		
Rad./Adv in Hi- Res. Imaging	States & Supercond.	Etching	Partial Pressure Analysis		Reactivity and Catalysis	Storage		
SA+2D+AC+AS+	SP+AS+MI+NS+	PS-TuM:	VT-TuM:	SS1+AS+HC+NS-	SS2+AS+HC+NS-	TF-TuM:	EW-TuM:	
	SS-TuM: Probing		Vacuum	TuM: Surf Dyn,	TuM:	Advanced CVD	Exhibitor	
Syn-based Tech	Chem Reactions	Diagnostics,	Pumping and	Non-Adiab, &	Nanostruct:	and ALD	Technology	
to 2D Mtls/Com Func Mtls & Het	at the Nanoscale	Sensors and Control	Material Outgassing	Theo & Mod of Surf ∬ Phen	Growth, React., & Catalysis	Processing, ALD Manufacturing	Spotlight Session	
			-0		,,,,,,		EW-TuL:	
							Exhibitor	
							Technology	
							Spotlight	
SA+AS+BI+MI-	SP+AS+MI+NS+	PS+2D-TuA:	VT-TuA:	SS+HC-TuA:	SS+AS-TuA:	TF-TuA:	Session	
TuA: Syn & XFEL	SS-TuA:	Plasma Proc for	Accelerator and	Photocatalysis	Structure and	Thin Film		
Adv for Bio Sys/	Probing Spin-	Nanomaterials	Large Vacuum	and	Characterization	Photovoltaics		
Syn Rad at Front of Dev Tech	Dependent Phenomena	and 2D Materials	Systems	Photochemistry at Surfaces	of Oxides			
of Dev Tech	FileHolliella	iviaterials		at Surfaces				Poster Sessions
								AC, AS, BI, MI,
								MS, NS, SA, SE,
								SS, VT
AC+MI-WeM:	SP+SS+TF-WeM:	PS-WeM:	PS+TF-WeM:	SS+2D-WeM:	SS+AS-WeM:	TF+MI+NS-	EW-WeM:	
Mag., Complex,	Probing	Plasma Sources	Atomic Layer	Synth, Charact,	Envir Interfaces,	WeM: ALD and	Exhibitor	
& Supercond. in	Electronic	& Novel Mech	Etching	& Surf Sci. of Novel Matls &	Ambient Surf, &	Nanostructures	Technology	
the AC & RE/AC & RE Theory	Properties	for Generating Plasmas		Interfaces	In-Operando Studies		Spotlight Session	
,							EW-WeL:	
							Exhibitor	
							Technology	
							Spotlight Session	
AC+MI-WeA:	HI-WeA: 10	PS+TF-WeA:	PS-WeA:	SS+AS+EM-	TF+MI-WeA:	TF+EM+MI-	JESSIUII	
AC & RE Theory/	Years of GFIS	Plasma	Atomic Layer	WeA:	Thin Films for	WeA: Thin Films		
Nuc. Power,	Microscopy	Deposition and	Etching and Low	Semiconductor	Magnetic and	for		
Waste Remed & Applications		Plasma Assisted ALD	Damage Processing	Surfaces and Interfaces	Optical Applications	Microelectronics		
AC+AS+SA-ThM:	HI+NS-ThM:	PS2-ThM:	PS1-ThM:	SS-ThM:	TF1-ThM:	TF2-ThM: Area-		
Chemistry and	Fundamentals	Plasma	Modeling of	Chirality and	Control and	selective		
Physics of the	of Ion Beam	Processing of	Plasmas and	Enantioselect on		Deposition and		
Actinides and Rare Earths	Microscopy	Challenging Materials	Plasma-Surface Interactions	Surfaces; Ionic Liquid Interfaces	Thin Film Growth and Film	Sequential Infiltration		
SS+AS-ThA:	HI+MI+NS-ThA:	PS-ThA:	EL+AS+BI+EM+	quiu micci iaces	TF+BI-ThA:	TF-ThA: Self-		
Celeb. a Life in	Ion Beam Based	Plasma	TF-ThA:		Thin Films for	assembled		
SS: A Symp in	Imaging and	Chemistry and	Optical Char of		Bio-related	Monolayers and		
Honor of JOHN T. YATES, JR.	Nanofabrication	Plasma Surface Interactions	Nanostruct & Metamaterials		Applications	Organic/Inorgan ic Interface		
						15 111011400		Poster Sessions
								2D, EL, EM, HI,
								IS, MN, PS,
								TF, TR
			EL+AS+EM+MI+		SS+HC-FrM:	TF-FrM:		
			TF-FrM:		Deposition and	CVD, ALD and		
			Spec Ellip: Novel Apps & Theor.		Analysis of Complex	Film Characterization		
			Approaches		Interfaces	Characterization		
	1			1				1

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Program Overview

Anticipated Schedule Sunday, November 06, 2016

Anticipated Schedule Sunday Lunch, November 6

When	
Where	
With	
	Anticipated Schedule Sunday Afternoon, November 6
:00 PM	
:20 PM	
:40 PM	
:00 PM	
:20 PM	
:40 PM	
:00 PM	
:20 PM	
:40 PM	
:00 PM	
:20 PM	

Special Events Sunday

7:30 AM	Sixteenth Topical Conference on QSA (QSA-16)/101B
8:30 AM	AVS Board of Directors' Meeting/Ryman, Renaissance Nashville
3:00 PM	JVST Associate Editors' Meeting/Rock & Roll, Renaissance Nashville (by invitation)
5:00 PM	Professional Development Workshop: "Improving Work-Life Satisfaction"/102A
6:00 PM	ASTM E-42 Business Meeting/Belmont 2-3, Renaissance Nashville
6:00 PM	Science Educators' Workshop Teachers' Reception/Fisk 1, Renaissance Nashville (by invitation)
6:00 PM	Vacuum Technology Division Executive Committee Meeting & Dinner/Classical, Renaissance
	Nashville (by invitation)
7:00 PM	ASTM E-42 Workshop: "QSA Summary and Discussion of Implications in ASTM E42 Standards"/
	Belmont 2-3, Renaissance Nashville
7:00 PM	International Dignitaries & Chapter Chairs Reception/Fisk 2, Renaissance Nashville (by invitation)
7:00 PM	Short Course Executive Committee Meeting/Country, Renaissance Nashville (by invitation)

Special Events Sunday 75

Sunday Afternoon, November 6, 2016

	Biomaterials Plenary Session	
	Room 101A - Session BP-SuA	
	Biomaterials Plenary	
	Moderator: Stephanie Allen, The University of Nottingham, UK	
3:00pm		
3:20pm	Invited talk continues.	
3:40pm	INVITED: BP-SuA3 Formation of Stacked Lipid Lamellae and Development of Myelin-like Structures Is Promoted by a Surfactant Protein B Analog: A Micropipette Study of Lung Surfactants at Microscopic interfaces, <i>David Needham</i> , Duke University; <i>E. Parra, K. Konoshita</i> , University Southern Denmark, Denmark	
4:00pm	Invited talk continues.	
4:20pm	INVITED: BP-SuA5 Stem Cell Biophysics: From 3D Tissue Analyses to Gels of Controlled Flexibility, Heterogeneity, and Thickness, <i>Dennis Discher</i> , University of Pennsylvania	
4:40pm	Invited talk continues.	
5:00pm		
5:20pm		
5:40pm		

Anticipated Schedule Monday, November 07, 2016

Anticipated Schedule Monday Morning, November 7

8:20 AM	
8:40 AM	
9:00 AM	
9:20 AM	
9:40 AM	
10:00 AM	
10:20 AM	
10:40 AM	
11:00 AM	
11:20 AM	
11:40 AM	
12:00 PM	
	Anticipated Schedule Monday Lunch, November 7
When	,,,,
Where	
With	
_	
	Anticipated Schedule Monday Afternoon, November 7
1:00 PM _	
1:20 PM	
1:40 PM	
2:00 PM	
2:20 PM	
2:40 PM	
3:00 PM	
3:20 PM	
3:40 PM	
4:00 PM	
4:20 PM	
4:40 PM	
5:00 PM	

Special Events Monday

7:00 AM	Professional Leadership Committee Meeting & Breakfast/Commerce Street Grille, Renaissance
	Nashville (by invitation)
8:00 AM	Science Educators' Workshop/Ryman, Renaissance Nashville (by invitation)
12:05 PM	BID Business Meeting/101A
12:15 PM	2017 AVS Program Committee Meeting and Lunch/108 (by invitation)
12:15 PM	Professional Development: "Welcome to AVS Workshop"/102A
12:15 PM	Recommended Practices Committee Meeting & Lunch/Jazz, Renaissance Nashville (by invitation)
3:20 PM	VTD Business Meeting/104C
4:00 PM	Publications Committee Meeting/Boardroom 5th Avenue, Music City Center (by invitation)
5:30 PM	Plenary Lecture: Heike Riel, IBM Fellow, Director Physical Sciences IBM Research, "Integrated
	Semiconductor Nanowires for Nanoelectronics"/Davidson Ballroom A, Music City Center
6:30 PM	Biointerphases Reception/Offsite (by invitation)
6:30 PM	Welcome Mixer/Davidson Ballroom BC, Music City Center
7:00 PM	ASSD Executive Committee Meeting & Dinner/Rock & Roll, Renaissance Nashville (by invitation)
7:30 PM	MSTG Executive Committee Meeting and Dinner/Bluegrass, Renaissance Nashville (by invitation)
7:30 PM	Publications Committee Meeting & Dinner/Offsite (by invitation)
7:30 PM	Thin Film Division/Harper Award TED-Talk Competition/105A (by invitation)
	Short Courses Monday
8:30 AM	A Comprehensive Course on Surface Analysis and Depth Profiling by X-ray Photoelectron
0.007	Spectrscopy (XPS or ESCA), Auger Electron Spectroscopy (AES), Focused Ion Beam Analysis (FIB)
	and Secondary Ion Mass Spectrometry (SIMS) (2 days)
8:30 AM	Fundamentals of Vacuum Technology
8:30 AM	Sputter Deposition
8:30 AM	UHV Design and Practices
8:30 AM	X-ray Photoelectron Spectroscopy (XPS or ESCA) & Auger Electron Spectroscopy (AES)
0.50 AIVI	(Day 1 of Comprehensive SA Course)
	(Day 1 of Comprehensive 3A course)

LOCATION: All AVS Short Courses will be held at Music City Center

COURSE HOURS: All AVS Short Courses Hours: 8:30 a.m.—5:00 p.m. — with 1.5 hour break for Lunch

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(Lunch not included)

	2D Materials Focus Topic	Applied Surface Science
	Room 103B - Session 2D+MI+SA-MoM	Room 101B - Session AS-MoM
	2D Materials Characterization including Microscopy and	Quantitative Surface Analysis: New Ways to Perform Old
	Spectroscopy	Tricks
	Moderator: Matthias Batzill, University of South Florida	Moderators: Tony Ohlhausen, Sandia National Laboratory, Carl Ventrice, Jr., SUNY Polytechnic Institute
8:20am	2D+MI+SA-MoM1 Scanning Tunneling Microscopy and Spectroscopy of	INVITED: AS-MoM1 Quantitative Analysis of Dendrimer-Encapsulated
	Air Exposure Effects on Molecular Beam Epitaxy Grown WSe ₂	Nanoparticles, P. Bhattacharya, University of Dayton Research Institute; M.H.
	Monolayers and Bilayers, J.H. Park, University of California, San Diego; S.	Engelhard, L. Kovarik, L. Estevez, Pacific Northwest National Laboratory; YC. Wang, University of Washington; D.R. Baer, Pacific Northwest National Laboratory;
	Vishwanath, Cornell University; X. Liu, University of Notre Dame; H. Zhou, Cornell University; S.M. Eichfeld, Pennsylvania State University; S.K. Fullerton-Shirey,	D.G. Castner, University of Washington; Daniel Gaspar, Pacific Northwest National
	University of Pittsburgh; J.A. Robinson, Pennsylvania State University; R. Feenstra,	Laboratory
	Carnegie Mellon University; <i>J. Furdyna</i> , University of Notre Dame; <i>D. Jena</i> , <i>H.G. Xing</i> , Cornell University; <i>Andrew Kummel</i> , University of California, San Diego	
8:40am	2D+MI+SA-MoM2 Tuning the Trion Photoluminescence Polarization in	Invited talk continues.
	Monolayer WS ₂ , Aubrey Hanbicki, K.M. McCreary, M. Currie, Naval Research	
	Laboratory; G. Kioseoglou, University of Crete; C.S. Hellberg, A.L. Friedman, B.T.	
	Jonker, Naval Research Laboratory	
9:00am	INVITED: 2D+MI+SA-MoM3 Quantum Hall Effect in Graphene Visualized	AS-MoM3 Developing a Straightforward Method to Calculate Shell
3.00diii	through Scanning Tunneling Microscopy and Spectroscopy, Adina Luican-	Thicknesses for Core-Shell-Shell Nanoparticles from XPS Data, <i>David Cant</i> ,
	Mayer, University of Ottawa, Canada	National Physical Laboratory, UK, Y.C. Wang, D.G. Castner, University of
		Washington; A.G. Shard, National Physical Laboratory, UK
0.20		
9:20am	Invited talk continues.	AS-MoM4 Double-Lorentzian Asymmetric Line-shape as a Practical Tool for Peak-fitting Multiplet Structures in XPS Data, <i>Alberto Herrera-Gomez, D.</i>
		Cabrera-German, CINVESTAV-Queretaro, Mexico; J.A. Huerta-Ruelas, CICATA-
		Unidad Queretaro, Mexico; M. Bravo-Sanchez, IPICYT, Mexico
9:40am	2D+MI+SA-MoM5 Enhancing the Electrical Conductivity of VUV-reduced	AS-MoM5 Quantitative Evaluation of the Carbon Hybridization State by
	Graphene Oxide by Multilayered Stacking, <i>Yudi Tu, T. Utsunomiya, T. Ichii, H. Suqimura,</i> Kyoto University, Japan	Near Edge X-Ray Absorption Fine Structure Spectroscopy, <i>Filippo Mangolini</i> , University of Leeds, United Kingdom of Great Britain and Northern
		Ireland; J.B. McClimon, R.W. Carpick, University of Pennsylvania
10:00am	2D+MI+SA-MoM6 Silicene-like Reconstruction via Surface Relaxation of	AS-MoM6 Simultaneous XPS-UPS Depth Profiling of Thin Films, Jon
	Hexagonal-MoSi ₂ Crystallites, <i>Cameron Volders</i> , <i>P. Reinke</i> , <i>G. Ramalingam</i> , <i>E. Monzami</i> , University of Virginia	Treacy, C. Deeks, P. Mack, T.S. Nunney, Thermo Fisher Scientific, UK
	montaling of the same	
10:20am	BREAK	BREAK
40.40		
10:40am	INVITED: 2D+MI+SA-MoM8 Electron Dynamics in Two-Dimensional Materials, <i>Philip Hofmann</i> , Aarhus University, Denmark	
	, , , , , , , , , , , , , , , , , , , ,	
11:00am	Invited talk continues.	AS-MoM9 Quantification of the Layer Thickness of Thin Organic Layers
121000	milited talk continues.	by Secondary Ion Mass Spectrometry Depth Profiling, M.P. Seah, Rasmus
		Havelund, I.S. Gilmore, National Physical Laboratory, UK
11·20am	2D+MI+SA-MoM10 Novel Characterization Techniques for 2D Materials:	AS-MoM10 Spectromicroscopy and Vector Analysis of Carbon Materials,
	Visualizing Inherent and External Defects, <i>Rudresh Ghosh</i> , S.K. Banerjee, D.	Adam Roberts, Kratos Analytical Limited, UK; N. Fairley, Casa Software Ltd, UK;
	Akinwande, University of Texas at Austin	J.D.P. Counsell, C.J. Blomfield, Kratos Analytical Limited, UK
11:40am	2D+MI+SA-MoM11 Anomalous Dynamical Rehauler of Expertanding	AS-MoM11 Angular Broadoning in Core Flortree Spectroscopy // Color
±±.40aiil	2D+MI+SA-MoM11 Anomalous Dynamical Behavior of Freestanding Graphene, <i>Paul Thibado</i> , <i>M. Ackerman</i> , <i>P. Kumar</i> , <i>S. Singh</i> , University of	AS-MoM11 Angular Broadening in Core Electron Spectroscopy, H. Cohen, Weizmann Institute of Science, Israel; Alon Givon, Tel Aviv University, Israel
	Arkansas; M. Neek-Amal, F. Peeters, University of Antwerp, Belgium	, , , , , , , , , , , , , , , , , , , ,

	Biomaterial Interfaces Room 101A - Session BI+AS-MoM	Electronic Materials and Photonics Room 102A - Session EM+NS+PS+SS+TF-MoM
	Biomolecules and Cells at Interfaces Moderator: Joe Baio, Oregon State University	Growth and Devices Technology of Group III-Nitrides Moderators: Nikolaus Dietz, Georgia State University, Shalini Gupta, Northrop Grumman ES, Ali Okyay, Bilkent University, National Nanotechnology Research Center (UNAM), Turkey
8:20am	BI+AS-MOM1 Probing the Selectivity of Antimicrobial Peptides to Cell Membranes by Sum Frequency Generation Spectroscopy, <i>Thaddeus Golbek</i> , Oregon State University; <i>J. Franz</i> , Department of Molecular Spectroscopy, Max Planck Institute for Polymer Research, Mainz, Germany; <i>J.E. Fowler, K.F. Schilke</i> , Oregon State University; <i>T. Weidner</i> , Department of Molecular Spectroscopy, Max Planck Institute for Polymer Research, Mainz, Germany; <i>J.E. Baio</i> , Oregon State University	INVITED: EM+NS+PS+SS+TF-MoM1 Development of AlGaN based UV Laser Diodes, <i>Ronny Kirste</i> , Adroit Materials; <i>B. Sakar</i> , <i>A. Franke</i> , NCSU; <i>J. Tweedie</i> , Adroit Materials; <i>Z. Bryan</i> , <i>I. Bryan</i> , NCSU; <i>S. Mita</i> , Adroit Materials; <i>R. Collazo</i> , <i>Z. Sitar</i> , NCSU
8:40am	BI+AS-MoM2 Bacterial Adhesion to Immobilized Liquid Layers under Dynamic Conditions, <i>Caitlin Howell</i> , University of Maine; <i>Y. Kovalenko, I. Sotiri</i> , Harvard University; <i>J. Overton</i> , University of Maine; <i>J. Aizenberg</i> , Harvard University	Invited talk continues.
9:00am	INVITED: BI+AS-MoM3 Nitric Oxide Materials—An Approach to Creating More Hemocompatible Medical Device Coatings, <i>Hitesh Handa</i> , University of Georgia	INVITED: EM+NS+PS+SS+TF-MoM3 Low-Temperature PA-ALD Growth Technology for Group III-Nitride Nano-heterostructures and their (Opto)Electronic Device Applications, Necmi Biyikli, A. Haider, S. Kizir, P. Deminskyi, M. Yilmaz, S. Bolat, A. Celebioglu, A.K. Okyay, T. Uyar, Bilkent University, Turkey; F. Buyukserin, S. Altuntas, TOBB University of Economics and Technology, Turkey; I. Yilmaz, K. Khaled, Turgut Ozal University, Turkey
9:20am	Invited talk continues.	Invited talk continues.
9:40am	BI+AS-MoM5 Why do Bacteria Stick to Some Surfaces and Not Others? Characterisation of the Behaviour of Motile Bacteria at and Above the Surface of Materials, A.L. Hook, A. Carabelli, N.A. Russell, P. Williams, Morgan Alexander, The University of Nottingham, UK	EM+NS+PS+SS+TF-MoM5 Structural Qualities of GaN Grown on AlN Buffer Layer by MEPA-MOCVD, <i>Daniel Seidlitz</i> , <i>I. Senevirathna</i> , <i>A. Fali</i> , <i>Y. Abate</i> , <i>N. Dietz</i> , Georgia State University; <i>A. Hoffmann</i> , Technical University Berlin, Germany
10:00am	BI+AS-MoM6 Probing Adhesion of Marine Biofilm Formers by Microfluidics, K. Nolte, Ruhr-University Bochum, Germany; M. Alles, M.P. Arpa-Sancet, C. Christophis, University of Heidelberg, Germany; Axel Rosenhahn, Ruhr-University Bochum, Germany	EM+NS+PS+SS+TF-MoM6 Optical and Electrical Characteristics of Gamma-ray Irradiated AlGaN/GaN Heterostructures, MinPrasad Khanal, B. Ozden, K. Kim, S. Uprety, V. Mirkhani, L. Shen, K. Yapabandara, A.C. Ahyi, M. Park, Auburn University
10:20am	BREAK	BREAK
10:40am	BI+AS-MoM8 Protein Control of Materials Nucleation Probed by Sum Frequency Generation, <i>Tobias Weidner</i> , Max Planck Institute for Polymer Research, Mainz, Germany	INVITED: EM+NS+PS+SS+TF-MoM8 Seeded Regrowth for Production of AIN and GaN Substrates by HVPE, <i>Jacob Leach</i> , <i>K. Udwary</i> , <i>G. Dodson</i> , <i>K. Gentry</i> , <i>P. Quayle</i> , <i>T. Schneider</i> , <i>H. Splawn</i> , <i>K. Evans</i> , Kyma Technologies, Inc.
11:00am	BI+AS-MoM9 Piezoelectric Polymer Nanostructured Surfaces for Controlled Drug Release, <i>Carcia Carson</i> , H.J. Sung, Vanderbilt University; R. Mu, Fisk University	Invited talk continues.
11:20am	INVITED: BI+AS-MoM10 Regulation of Cell Surface Access and Mechanics at the Interface, <i>Jennifer Curtis</i> , <i>P. Chang</i> , <i>W. Wei</i> , <i>L.T. McLane</i> , Georgia Institute of Technology; <i>J. Scrimgeour</i> , Clarkson University	
11:40am	Invited talk continues.	
12:05 pm	BID BUSINESS MEETING	

	Electronic Materials and Photonics Room 102B - Session EM-MoM Advances in Photonics Moderators: Michael Filler, Georgia Institute of Technology, Daniel Wasserman, University of Texas at Austin	Magnetic Interfaces and Nanostructures Room 101C - Session MI+2D+AC-MoM Chiral Magnetism (8:20-10:20 am)/Magnetism and Spin Orbit Effects at Interfaces and Surfaces: Recent Experimental and Theoretical Advances (10:40 am - 12:00 pm) Moderators: Markus Donath, Westfälische Wilhelms-Universität Münster, Germany, Hendrik Ohldag, SLAC National Accelerator Laboratory
8:20am	INVITED: EM-MoM1 Optical Materials for Far-IR Reststrahlen Optics, Daniel Wasserman, University of Texas at Austin	INVITED: MI+2D+AC-MoM1 Manipulation of Magnetic Skyrmions with STM, Kirsten von Bergmann, University of Hamburg, Germany
8:40am	Invited talk continues.	Invited talk continues.
9:00am	INVITED: EM-MoM3 Mid-IR to THz Nanophotonics: Realizing Alternative Polaritonic Materials, <i>Joshua Caldwell</i> , US Naval Research Laboratory	MI+2D+AC-MoM3 Skyrmion Hall Effect, W. Jiang, Argonne National Laboratory; X. Zhang, The University of Hong Kong, Hong Kong Special Administrative Region of China; G. Yu, University of California Los Angeles; M.B. Jungfleisch, J.E. Pearson, O. Heinonen, Argonne National Laboratory; K.L. Wang, University of California Los Angeles; Y. Zhou, The University of Hong Kong, Hong Kong Special Administrative Region of China; S.G.E. te Velthuis, Axel Hoffmann, Argonne National Laboratory
9:20am	Invited talk continues.	MI+2D+AC-MoM4 Microscopic Magnetic Structures in Dy/Y Superlattices Measured by Polarized Neutron Reflectometry with Off- specular Scattering, Gary Mankey, J. Yu, P. LeClair, University of Alabama; R. Fishman, J.L. Robertson, H. Ambaye, V. Lauter, H. Lauter, Oak Ridge National Laboratory
9:40am	EM-MoM5 Time-Resolved Optical Studies on Reflection and Transmission of Niobium Dioxide Thin Films, <i>Melissa Beebe</i> *, College of William and Mary; <i>J.M. Klopf</i> , Helmholtz-Zentrum Dresden-Rossendorf, Germany; <i>D. Lahneman, Z. Xing, M.M. Qazilbash</i> , College of William and Mary; <i>Y. Wang, S. Kittiwatanakul, J. Lu, S.A. Wolf</i> , University of Virginia; <i>R.A. Lukaszew</i> , College of William and Mary	INVITED: MI+2D+AC-MoM5 Chirality Effects in Rare Earth based Thin Films and Multilayers, <i>Dieter Lott</i> , Helmholtz Zentrum Geesthacht, Germany; <i>K. Chen</i> , Universität Köln, Germany; <i>V. Tarnavich</i> , Petersburg Nuclear Physics Institute, Russian Federation
10:00am	EM-MoM6 Fabrication of Nanosphere-Based Disordered Coatings for Radiative Cooling under Direct Sunlight, <i>Sarun Atiganyanun</i> , <i>S.E. Han, S.M. Han</i> , University of New Mexico	Invited talk continues.
10:20am	BREAK	BREAK
10:40am	EM-MoM8 Symmetry-Breaking Nanostructures for Light Trapping in Thin Crystalline Silicon Solar Cells, Seok Jun Han , S. Ghosh, O.K. Abudayyeh, B.R. Hoard, E.C. Culler, J.E. Bonilla, S.M. Han, S.E. Han, University of New Mexico	INVITED: MI+2D+AC-MoM8 Is the High Tc Superconductivity in Cuprates an Interface Problem?, Qi-Kun Xue, Tsinghua University, China
11:00am	EM-MoM9 Non-thermal Plasma Synthesis of <i>In Situ</i> Graphene Shells on Silicon Carbide Nanoparticles, <i>Devin Coleman, L. Mangolini,</i> University of California - Riverside	Invited talk continues.
11:20am	EM-MoM10 Size and Structure Dependence of Electronic Transport Properties at Nanosized Interfaces, <i>Dawn Bonnell</i> , <i>J. Hou</i> , The University of Pennsylvania	MI+2D+AC-MoM10 How to do Depth-Dependent Measurements on Magnetic or Magnetoelectric Thin Films, <i>Mikel Holcomb</i> , <i>R. Trappen</i> , <i>J. Zhou</i> , <i>C-Y. Huang</i> , <i>G. Cabrera</i> , West Virginia University; <i>S. Dong</i> , Southeast University; <i>Y-H. Chu</i> , National Chiao Tung University, Taiwan
11:40am	EM-MoM11 Metal Nanoparticles formed in Organic Molecular Crystals: HR-TEM and HR-PES Characterisation, <i>Olga Molodtsova</i> , DESY, Hamburg, Germany; <i>I.M. Aristova</i> , ISSP RAS, Chernogolovka, Russia; <i>S.V. Babenkov</i> , DESY, Hamburg, Germany; <i>V.Y. Aristov</i> , ISSP RAS, Chernogolovka, Russia	MI+2D+AC-MoM11 Nano-Pico-Mikro - Dynamic Soft X-ray Microscopy of Magnetic Materials with High Sensitivity, <i>Hendrik Ohldag</i> , SLAC National Accelerator Laboratory

[†] TFD James Harper Award Finalist

	Manufacturing Science and Technology Room 103A - Session MS-MoM	Nanometer-scale Science and Technology Room 101D - Session NS-MoM
	Manufacturing for Next-Generation Energy Solutions Moderator: Erik B. Svedberg, The National Academies	Nanopatterning and Nanofabrication + 3D Moderators: Keith Brown, Boston University, Indira Seshadri, IBM Research Division, Albany, NY
8:20am		NS-MoM1 Fabrication and Characterization of Carbon Nanotube-Based Electronic Devices, <i>Zhigang Xiao</i> , <i>S. Budak, A. Kassu, X. Crutcher, T. Strong, J. Johnson, R. Hammond, J. Gray, A. Reynolds, R. Moten,</i> Alabama A&M University
8:40am		NS-MoM2 Multi-Material Two Photon and Direct Write Lithography for Photonics, Phononics and Mechanics, <i>Steven Kooi</i> , Massachusetts Institute of Technology
9:00am	INVITED: MS-MoM3 Manufacturing Challenges in Batteries: Lessons from Current Technology for Future Energy Storage Developments, <i>Yet-Ming Chiang</i> , MIT	INVITED: NS-MoM3 Applications of 2-photo 3D Stereolithography to Aerial Microrobots and Air-Microfluidics, <i>Igor Paprotny</i> , University of Illinois at Chicago
9:20am	Invited talk continues.	Invited talk continues.
9:40am	MS-MoM5 Efficient Manufacturing of Nano-structured Lithium Sulfide for Next Generation Batteries, <i>X. Li, Y. Yang, Colin Wolden, Colorado School of Mines</i>	NS-MoM5 Elucidating Proximity Effects during Direct-Write Synthesis of Complex 3D Nanostructures, <i>Brett Lewis</i> , University of Tennessee; <i>J.D. Fowlkes</i> , Oak Ridge National Lab; <i>R. Winkler</i> , Graz Centre for Electron Microscopy Austria; <i>H. Plank</i> , Graz University of Technology, Austria; <i>P.D. Rack</i> , University of Tennessee
10:00am	MS-MoM6 Anode Protection for Advanced Energy Storage Systems via Atomic Layer Deposition, Chuan-Fu Lin, M. Noked, Institute for System Research, University of Maryland; A.C. Kozen, Naval Research Laboratory; A.J. Pearse, University of Maryland, College Park; K. Gregorczyk, Institute for System Research, University of Maryland College Park; G. Rubloff, Institute for System Research, University of Maryland College Park; G. Rubloff, Institute for System Research, University of Maryland	NS-MoM6 Surface Textures with Asymmetric Wetting and Optical Properties Enabled by Two-Photon Direct Laser Writing, Nick Lavrik, Oak Ridge National Laboratory; C. McKown, UT/ORNL Bredesen Center
10:20am	BREAK	BREAK
10:40am	MS-MoM8 Controlling Nanomaterial Assembly to Improve Material Performance in Energy Storage Electrodes using Electrophoretic Deposition, Landon Oakes, R.E. Carter, A.P. Cohn, C.L. Pint, Vanderbilt University	NS-MoM8 New 3D Structuring Process, by Ion Implantation and Selective Wet Etching, <i>Lamia Nouri</i> , N.P. Posseme, S.L. LANDIS, F.G. GAILLARD F.M. MILESI, CEA, LETI, MINATEC Campus, France
11:00am	MS-MoM9 3D Architectures for Thin Film Batteries – from Science to Manufacturing, <i>Gary Rubloff, C. Liu, E. Hitz, S.B. Lee,</i> University of Maryland College Park; <i>K. Gregorczyk,</i> University of Maryland, College Park	NS-MoM9 Design and Realization of 3D Printed AFM Probes, N. Alsharif, A. Burkatovsky, C. Lissandrello, A.E. White, Keith Brown , Boston University
11:20am	INVITED: MS-MoM10 Advanced Manufacturing R&D for Clean Energy in the US Department of Energy, <i>Mark Johnson</i> , Advanced Manufacturing Office, U.S. Department of Energy	NS-MoM10 Evaluating the Reproducibility of Atomically Precise Dopan Structures, J. Koepke, D. Scrymgeour, R.J. Simonson, M. Marshall, Sandia Nation Laboratories; J. Owen, Zyvex Labs; D. Ward, R. Muller, M. Carroll, S. Misra, Ezra Bussmann, Sandia National Laboratories
11:40am	Invited talk continues.	

	Plasma Science and Technology Room 104D - Session PS+SE-MoM Atmospheric Pressure Plasma Processing Moderator: Lorenzo Mangolini, University of California Riverside	Plasma Science and Technology Room 104B - Session PS-MoM Advanced FEOL/Gate Etching Moderator: Ankur Agarwal, Applied Materials, Inc.
8:20am		PS-MoM1 Novel Etch Strategies for Sidewall Image Transfer, <i>Sonam</i> Sherpa, P. Chan, A. Ranjan, Tokyo Electron Ltd.
8:40am		PS-MoM2 Enhancing Fin Retention in Low-K Spacer Etch Processes Using a Highly Selective Etch Chemistry, N.P. Marchack, IBM Research Division, T.J. Watson Research Center; E. Miller, IBM Research at Albany Nanotech; R.L. Bruce, H. Miyazoe, E.M. Sikorski, Sebastian Engelmann, E.A. Joseph, IBM Research Division, T.J. Watson Research Center; S. Kanakasabapathy, IBM Research at Albany Nanotech
9:00am	PS+SE-MoM3 Fundamental Characterization of a Low Frequency, Ambient Air, Plasma Jet Discharge, <i>Vladimir Milosavljevic</i> , Dublin Institute of Technology, Ireland; <i>L. Scally, J. Lalor, P.J. Cullen</i> , Dublin Institute of Technology	PS-MoM3 Effect of the Amount of Hydrogen During SiN etching on Etching Properties, <i>Nobuyuki Kuboi</i> , <i>H. Minari</i> , <i>M. Fukasawa</i> , <i>Y. Zaizen</i> , <i>J. Komachi</i> , <i>T. Kawamura</i> , <i>T. Tatsumi</i> , Sony Corporation, Japan
9:20am	PS+SE-MoM4 CO ₂ Splitting by Dielectric Barrier Discharge at Atmospheric Pressure: Understanding the Influence of Electrical Regimes and Electrical Configurations, <i>Alp Ozkan</i> , <i>T. Dufour</i> , Université Libre de Bruxelles, Belgium; <i>A. Bogaerts</i> , University of Antwerp, Research group PLASMANT, Belgium; <i>F. Reniers</i> , Université Libre de Bruxelles, Belgium	PS-MoM4 Dual Channel Si/SiGe Fin patterning for 10nm Node and Beyond, Fee Li Lie, E. Miller, P. Xu, S. Sieg, M. Sankarapandian, IBM Research; S. Schmitz, P. Friddle, Lam Research Corporation; G. Karve, J. Strane, IBM Research; K.Y. Lim, K. Akarvardar, M.G. Sung, GLOBALFOUNDRIES, Inc.; S. Kanakabasapathy, IBM Research
9:40am	PS+SE-MoM5 Effect of Structural Variations of the Monomer on the Fast Synthesis of Highly Oxygenated Coatings in an Argon DBD, <i>Jérémy Mertens</i> , F. Reniers, Université Libre de Bruxelles, Belgium	INVITED: PS-MoM5 Computational Patterning and Process Emulation: Linchpins to Enable Continued Scaling through Design Technology Cooptimization for Advanced Nodes, <i>Derren Dunn</i> , IBM Corporation
10:00am	PS+SE-MoM6 Quantitative Study of Plasma Electrochemical Reduction of Aqueous Metal Salts, <i>S. Ghosh, A. Aube, R. O'Toole, R. Hawtof, R.Mohan Sankaran,</i> Case Western Reserve University	Invited talk continues.
10:20am	BREAK	BREAK
10:40am	PS+SE-MoM8 LDPE Modified by an Ar/H ₂ O Dielectric Barrier Discharge: Correlation between Texturization, Wettability and Grafting of Oxygen, <i>Stéphanie Collette</i> , Université Libre de Bruxelles, Belgium; <i>P. Viville</i> , Université de Mons, Belgium; <i>F. Reniers</i> , Université Libre de Bruxelles, Belgium	PS-MoM8 Overcoming Challenges of sub-10NM FinFET Gate Etching in Halogenated Plasmas., Sergey Voronin, TEL Technology Center, America, LLC; J.R. Sporre, S. Kanakasabapathy, International Business Machines – Research Division; A. Ranjan, TEL Technology Center, America, LLC
11:00am	PS+SE-MoM9 Particle-free Fabrication of Stretchable, Electrically Conductive Features by Atmospheric-Pressure Plasma Reduction of Metal-Ion-Containing Polymer Films, <i>Souvik Ghosh*</i> , <i>P.XL. Feng, C.A. Zorman, R.M. Sankaran</i> , Case Western Reserve University	PS-MoM9 Gate Etch Challenges Introduced by FinFET Gate Pitch Scaling, John Sporre, IBM Research Division; X. Liu, IBM Research Division, T.J. Watson Research Center; S. Seo, IBM Research Division; C. Prindle, GLOBALFOUNDRIES, Inc.; P. Montanini, IBM Research Division; R. Xie, GLOBALFOUNDRIES, Inc.; M. Sankarapandian, S. Mehta, M. Breton, S. McDermott, S. Kanakasabapathy, IBM Research Division; B. Haran, IBM Research
11:20am	PS+SE-MoM10 Plasma Polymerised 4-vinyl Pyridine Films with High Charge Density Synthesised in Atmospheric Roll-to-Roll System, <i>Hindrik de Vries</i> , FOM institute DIFFER, Netherlands; <i>W. van Baak</i> , S.A. Starostin, FUJIFILM Manufacturing Europe B.V., Netherlands; <i>M.C.M. van de Sanden</i> , FOM institute DIFFER, Netherlands	PS-MoM10 Hybrid Fin reveal for tight Fin Pitch Technologies, Peng Xu, IBM Research Division; P. Wang, Lam Research Corporation; T. Devarajan, IBM Research Division; B. Nagabhirava, A. Basavalingappa, Lam Research Corporation; F.L. Lie, J. Strane, M. Sankarapandian, S. Mehta, R. Conti, IBM Research Division; M. Goss, LAM Research Corporation; D. Canaperi, D. Guo, S. Kanakasabapathy, IBM Research Division
11:40am	PS+SE-MoM11 Plasma-Surface Interactions in Atmospheric Pressure Plasmas: In Situ Measurements of Local Excitations in Thin Films, Scott Walton, Naval Research Laboratory; B.M. Foley, University of Virginia; D.R. Boris, E.D. Gillman, S.C. Hernández, Naval Research Laboratory; A. Giri, University of Virginia; Tz.B. Petrova, G.M. Petrov, Naval Research Laboratory; P.E. Hopkins, University of Virginia	PS-MoM11 Damage Free Plasma Etching Processes for the Patterning of InGaAs fin for the sub-10nm Technological Node, <i>Maxime Bizouerne</i> , <i>E. Pargon</i> , LTM, Univ. Grenoble Alpes, CEA-LETI, France; <i>P. Burtin</i> , CEA, LETI, MINATEC Campus, France; <i>C. Petit-Etienne</i> , <i>E. Latu-Romain</i> , <i>S. Labau</i> , <i>M. Martin</i> , LTM, Univ. Grenoble Alpes, CEA-LETI, France

^{*} Coburn & Winters Student Award Finalist

Novel Trends in Synchrotron and FEL-Based Analysis Scanning Probe Microscopy Focus Topic Focus Topic Room 104A - Session SP+AS+MI+NS+SS-MoM Room 103C - Session SA+AS+MI-MoM **Advances in Scanning Probe Microscopy Moderators:** Advances in High-Resolution Imaging Techniques (8:20-Saban Hus, Oak Ridge National Laboratory, 10:20 am)/Pushing the Limits with X-Ray Spectroscopy Chanmin Su, Bruker Nano (10:40 am-12:00 pm) Moderators: Maya Kiskinova, Elettra-Sincrotrone Trieste, Italy, Claus Michael Schneider, Forschungszentrum Juelich GmbH 8:20am | INVITED: SA+AS+MI-MoM1 Molecular Coherent Imaging using X-ray FEL SP+AS+MI+NS+SS-MoM1 Ultrafast Imaging of Polarization Switching in Ferroelectrics via Complete Information Acquisition in SPM, Suhas Pulses, Henry Chapman, DESY, Hamburg, Germany Somnath, A. Belianinov, S.V. Kalinin, S. Jesse, Oak Ridge National Laboratory 8:40am Invited talk continues. SP+AS+MI+NS+SS-MoM2 Development of Synchrotron X-ray Scanning Tunneling Microscopy, Nozomi Shirato, Center for Nanoscale Materials at Argonne National Laboratory; H. Chang, Ohio University; M. Cummings, Advanced Photon Source at Argonne National Laboratory; S.W. Hla, Center for Nanoscale Materials at Argonne National Laboratory; V. Rose, Advanced Photon Source at Argonne National Laboratory INVITED: SA+AS+MI-MoM3 Applications of Novel Hard X-ray Nanoprobe **SP+AS+MI+NS+SS-MoM3** Development and Integration of a Universal SPM head: Design Criteria and Challenges, B. Guenther, Sigma Surface in Nanoscience, Gema Martinez-Criado, Madrid Materials Science Institute. CSIC, Spain Science GmbH, Germany; J. Hilton, Mantis Deposition; A. Feltz, Sigma Surface Science GmbH; Andreas Bettac, Sigma Surface Science GmbH, Germany 9:20am Invited talk continues SP+AS+MI+NS+SS-MoM4 How Soft Is a Protein? Stress-Strain Curve of Antibody Pentamers with 5 pN and 50 pm Resolutions, Alma Perrino*, Instituto de Ciencia de Materiales de Madrid, CSIC, c/ Sor Juana Ines de la Cruz 3, 28049 Madrid, Spain; R. Garcia, Instituto de Ciencia de Materiales de Madrid, CSIC., Spain 9:40am INVITED: SA+AS+MI-MoM5 Operando Study of Energy Materials with INVITED: SP+AS+MI+NS+SS-MoM5 AVS Medard W. Welch Award Talk: Synchrotron X-ray Imaging Techniques, Jiajun Wang, Brookhaven National Action Spectroscopy: Characterizing Molecules at Surfaces and its Laboratory Dynamics, Maki Kawai[†], Institute for Molecular Science, Japan; Y. Kim, RIKEN Surface and Interface Science Laboratory, Wako, Saitama, Japan; K. Motobayashi, Nagoya Institute of Technology, Japan; H. Ueba, Toyama University, Japan 10:00am Invited talk continues. Invited talk continues. 10:20am BREAK **BREAK** INVITED: SA+AS+MI-MoM8 Extreme X-ray Flux to Probe Picosecond INVITED: SP+AS+MI+NS+SS-MoM8 Near-Field Spectroscopy and Dynamics, Alfred Baron, RIKEN SPring-8, Japan Imaging of Single Nanoparticles, Yohannes Abate, D. Seidlitz, A. Fali, S. Gamage, V.E. Babicheva, V.S. Yakovlev, M.I. Stockman, Georgia State University; R. Collazo, D. Alden, North Carolina State University; N. Deitz, Georgia State University 11:00am Invited talk continues. Invited talk continues. INVITED: SA+AS+MI-MoM10 Beating Complexity through Selectivity: SP+AS+MI+NS+SS-MoM10 Atomically-resolved Three-dimensional Anti-Stokes Resonant Inelastic X-ray Scattering for Excited State Structures of Electrolyte Aqueous Solutions near a Solid Surface, Daniel Dynamics, Alexander Föhlisch, University of Potsdam, Germany Martin-Jimenez, E. Chacon, Instituto de Ciencia de Materiales de Madrid, CSIC, Spain; P. Tarazona, IFIMAC Condensed Matter Physics Center, UAM, Spain; R. Garcia, Instituto de Ciencia de Materiales de Madrid, CSIC, Spain 11:40am Invited talk continues SP+AS+MI+NS+SS-MoM11 Super-resolution Optical and Chemical Imaging of Organic Thin Films using Tip-enhanced Near-Field Optical Microscopy, A.L. Heilman, R. Hermann, Michael Gordon, University of California at Santa Barbara

NSTD Student Award Finalist

[†] Medard W. Welch Award Winner

	Surface Science	Thin Film
	Room 104E - Session SS+AS+HC-MoM	Room 105A - Session TF-MoM
	Mechanistic Insights on Surface Reactions in Catalysis	ALD Precursors and Surface Reactions
	and at Novel Interfaces	Moderators: Robert Grubbs, Micron Technology,
	Moderator: Bruce D. Kay, Pacific Northwest National Laboratory	Erwin Kessels, Eindhoven University of Technology, Netherlands
0:20am		, , ,
8:20am	SS+AS+HC-MoM1 Study of Metal-Organic Complexation at Metal and Metal Oxide Surfaces by HREELS, <i>Miao Wang</i> , <i>C. Williams</i> , <i>S.L. Tait</i> , Indiana University	INVITED: TF-MoM1 New Heteroleptic Precursors Enabling Industrial Scale ALD of Next Generation Metal Oxides and Metal Films, Nicolas Blasco, Air Liquide, France
8:40am	SS+AS+HC-MoM2 Studies of Single-site Catalysts on Powdered Oxide Support through Redox Assembly, <i>Linxiao Chen, J.P. McCann, S.L. Tait,</i> Indiana University	Invited talk continues.
9:00am	INVITED: SS+AS+HC-MoM3 Controlled Reactions of Coordination Complexes on Oxide Surfaces, <i>Susannah Scott</i> , University of California at Santa Barbara	
9:20am	Invited talk continues.	TF-MoM4 Time-resolved IR Spectroscopy during ALD of La ₂ O ₃ /Al ₂ O ₃ Nanolaminates, <i>Brent Sperling, J.E. Maslar, B. Kalanyan,</i> National Institute of Standards and Technology (NIST)
9:40am	SS+AS+HC-MoM5 Adsorption and Activation of CO ₂ on Cu(997) at Low Temperature, <i>Jun Yoshinobu</i> , The University of Tokyo, Japan	INVITED: TF-MoM5 Incomplete Elimination of Precursor Ligands during Atomic Layer Deposition of Metal Oxides, <i>Adrie Mackus</i> , Eindhoven University of Technology, Netherlands; <i>C. MacIsaac</i> , Stanford University; <i>V. Vandalon, W.M.M. Kessels</i> , Eindhoven University of Technology, Netherlands; <i>S.F. Bent</i> , Stanford University
10:00am	SS+AS+HC-MoM6 D ₂ O Interaction with Planar ZnO(0001) Bilayer Supported on Au(111): Structures, Energetics and Influence of Hydroxyls, <i>Xingyi Deng, D.C. Sorescu, J. Lee,</i> National Energy Technology Laboratory	Invited talk continues.
10.20		
10:20am	ВКЕАК	BREAK
10:40am	SS+AS+HC-MoM8 Nanoscale Silicon as a Catalyst for Graphene Growth: Mechanistic Insight from In-Situ Raman Spectroscopy, <i>Keith Share</i> , <i>R.E. Carter</i> , Vanderbilt University; <i>P. Nikolaev</i> , <i>D. Hooper</i> , Air Force Research Laboratory; <i>L. Oakes</i> , <i>A.P. Cohn</i> , Vanderbilt University; <i>R. Rao</i> , Air Force Research Laboratory; <i>A.A. Puretzky</i> , Oak Ridge National Lab; <i>D.B. Geohegan</i> , <i>B. Maruyama</i> , Air Force Research Laboratory; <i>C.L. Pint</i> , Vanderbilt University	TF-MoM8 Surface Chemistry of Pt and Al2O3 ALD Studied with Vibrational Sum-Frequency Generation, <i>Vincent Vandalon</i> , <i>W.M.M. Kessels</i> , Eindhoven University of Technology, Netherlands
11:00am	SS+AS+HC-MoM9 Functionalization of Graphene on Ru(0001) with Atomic Oxygen, <i>Zbynek Novotny</i> , Pacific Northwest National Laboratory; <i>F.P. Netzer</i> , Karl-Franzens University, Austria; <i>Z. Dohnálek</i> , Pacific Northwest National Laboratory	TF-MoM9 Surface Chemistry of Molybdenum Oxide Atomic Layer Deposition: Role of Precursor Chemisorption on Nucleation Delay and Initiating the ALD Process, <i>Charith Nanayakkara</i> , <i>A. Vega</i> , The University of Texas at Dallas; <i>G. Liu, C. Dezelah, R. Kanjolia</i> , SAFC Hitech; <i>Y.J. Chabal</i> , University of Texas at Dallas
11:20am	SS+AS+HC-MoM10 Interaction of BaO with H ₂ O, CO ₂ and NO ₂ Studied with APXPS and NEXAFS, <i>Osman Karslioglu</i> , <i>I. Zegkinoglou</i> , <i>L. Trotochaud</i> , <i>H. Bluhm</i> , Lawrence Berkeley National Laboratory	TF-MoM10 <i>In situ</i> FTIR Study of the Surface Reactions during Plasma-assisted Atomic Layer Deposition of SiN _x from Silicon Amides, <i>Noemi Leick, R.A. Ovanesyan, R.J. Gasvoda, P. Walker,</i> Colorado School of Mines; <i>K.M. Kelchner, D.M. Hausmann,</i> Lam Research Corporation; <i>S. Agarwal,</i> Colorado School of Mines
11:40am		

	Vacuum Technology	
	Room 104C - Session VT-MoM	
	Vacuum Measurement, Calibration, Primary and	
	Industry Standards	
	Moderators: Yulin Li, Cornell Laboratory for Accelerator-Based	
	Sciences and Education, Joe Becker, Kurt J. Lesker Company	
8:20am	INVITED: VT-MoM1 Industry Practice for Using Primary Leak Standards	
	to Validate Calibration Methods, <i>Jason Alfrey</i> , VACUUM TECHNOLOGY INC	
8:40am	Invited talk continues.	
9:00am	VT-MoM3 Fixed Length Optical Cavity for Photonic Realization of the	
	Pascal, <i>Jay Hendricks</i> , <i>J. Ricker</i> , <i>P. Egan</i> , <i>J. Stone</i> , <i>G. Scace</i> , <i>G.F. Strouse</i> , National Institute of Standards and Technology	
	institute of standards and recimology	
9:20am	VT-MoM4 Analysis of a Quantum Based Refractometer to Replace	
	Mercury Manometers as the Primary Standard for the United States, Jacob Ricker, J. Hendricks, P. Egan, J. Stone, NIST	
	3 , , ,	
9:40am	VT-MoM5 Creating Vacuum Standards in the UHV and XHV to Support	
	Cold-Atom Physics and Other Cool Stuff, <i>James A. Fedchak</i> , <i>J. Scherschligt</i> , M.S. Sefa, S. Eckel, D. Barker, National Institute of Standards and Technology	
	(NIST)	
10:00am	VT-MoM6 Technical Challenges of the Cold Atom Vacuum Standard, Julia Scherschligt, J.A. Fedchak, M.S. Sefa, S. Eckel, D. Barker, National Institute of	
	Standards and Technology (NIST)	
10:20am	DDCAV	
10.204111	DREAK	
10:40am	VT-MoM8 Investigation of a Novel Cold Cathode Ionization Gauge	
	Geometry with Wide Range from High Vacuum to Atmosphere in a	
	Single Gauge, T.R. Swinney, C. Percy, Gerardo Alejandro Brucker, Pressure &	
	Vacuum Measurement Solutions, MKS Instruments, Inc.	
11:00am	VT-MoM9 Advanced Manufacturing Techniques for Cold Cathode	
	Ionization Gauges, Clinton Percy, Pressure & Vacuum Measurement Solutions,	
	MKS Instruments, Inc.	
11:20am	VT-MoM10 Operation and Performance of a Wide Range Cold Cathode	
	Ionization Gauge, Tim Swinney, C. Percy, Pressure & Vacuum Measurement	
	Solutions, MKS Instruments, Inc.	
11:40am	VT-MoM11 Improving Process Resistance of Capacitance Diaphragm	
	Gauges, B. Andreaus, C. Strietzel, Martin Wüest, INFICON Ltd., Liechtenstein	

	2D Materials Focus Topic Room 103B - Session 2D+MI-MoA	Applied Surface Science Room 101B - Session AS+BI-MoA
	Dopants, Defects and Interfaces in 2D Materials Moderators: Philip Hofmann, Aarhus University, Denmark, Adina Luican-Mayer, University of Ottawa, Canada	Practical Surface Analysis I: Advancing Biological Surface Analysis/Imaging Beyond 'Show and Tell' Moderators: Ian S. Gilmore, National Physical Laboratory, UK, Jordan Lerach, The Pennsylvania State University
1:40pm	2D+MI-MoA1 High-k Dielectrics on WSe ₂ by Ozone-based Atomic Layer Deposition: An In-situ XPS Study, <i>Angelica Azcatl, R.M. Wallace,</i> The University of Texas at Dallas	AS+BI-MoA1 A Multi-technique Approach for Studying the Effect of Protein G B1 Orientation on Antibody Binding, <i>Elisa Harrison</i> , <i>G. Interlandi</i> , <i>D.G. Castner</i> , University of Washington
2:00pm	2D+MI-MoA2 A Two-step Atomic Layer Etching on MoS ₂ Realized by Remote O ₂ Plasma, <i>Hui Zhu, X. Qin, L. Cheng, A. Azcatl, J. Kim, R.M. Wallace,</i> University of Texas at Dallas	AS+BI-MoA2 ME-SIMS Revisited: Attempting to Unlock the Potential using Advancements in Sample Preparation and SIMS Technology, Nina Ogrinc Potocnik, Maastricht University, The Netherlands; C.R. Anderton, L. Pasa-Tolic, Pacific Northwest National Laboratory; R.M.A. Heeren, Maastricht University The Netherlands
2:20pm	INVITED: 2D+MI-MoA3 Engineering the Atomic Structure of 2D Transition Metal Dichalcogenides using Electron Beam: Experiments and Simulations, <i>Arkady Krasheninnikov</i> , Helmholtz Zentrum Dresden-Rossendorf, Germany	INVITED: AS+BI-MoA3 Improvements in SIMS Methods and Instrumentation in Effort to Make Measurements Biologists Can Use, Christopher R. Anderton, Pacific Northwest National Laboratory
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	2D+MI-MoA5 New Computational Tool for Electron Localization: Application to Low-dimensional Monolayers of h-BN and MoS ₂ , Chinedu Ekuma , NRC/NRL Postdoctoral Fellow; <i>V. Dobrosavljevic</i> , Florida State University; D. Gunlycke , Naval Research Laboratory	AS+BI-MoA5 Towards Bacterial Differentiation with Quantitative SIMS, Christopher Szakal, S. Da Silva, National Institute of Standards and Technology (NIST); N. Olson, National Institute of Standards and Technology(NIST)
3:20pm	2D+MI-MoA6 Effects of helium-ion beam irradiation on opto-electrical properties of multi-layers WSe2, <i>Anna Hoffman</i> , <i>P.R. Pudasaini</i> , <i>M.G</i> .	AS+BI-MoA6 New Insights into the Microenvironment of Cancerous Tissue by Combined Mass Spectrometry, Microscopy and Multivariate
	Stanford, P.D. Rack, D.G. Mandrus, N. Cross, J.H. Noh, M. Koehler, G. Duscher, The University of Tennessee Knoxville; A. Belianinov, A.J. Rondinone, Oak Ridge National Laboratory; I. Ivanov, T.Z. Ward, Oak Ridge National Lab	Analysis, <i>Tina Angerer</i> , University of Gothenburg, Sweden; <i>Y. Magnusson, G. Landberg</i> , Sahlgrenska Cancer Center, Sweden; <i>J.S. Fletcher</i> , University of Gothenburg, Sweden
3:40pm	BREAK	BREAK
4:00pm	2D+MI-MoA8 CO ₂ Adsorption Kinetics on Nitrogen Doped Graphene and Graphite, <i>Takahiro Kondo</i> , <i>R. Shibuya</i> , <i>D. Guo</i> , <i>J. Nakamura</i> , University of Tsukuba, Japan	AS+BI-MoA8 Super-resolution Mass Spectrometry Imaging of Biological Materials with the New 3D nanoSIMS, <i>Ian S. Gilmore</i> , <i>M.K. Passarelli</i> , National Physical Laboratory, UK; <i>A. Pirkl</i> , <i>R. Moellers</i> , <i>E. Niehuis</i> , ION-TOF GmbH, Germany; <i>A.A. Makarov</i> , Thermo Fisher Scientific; <i>H.F. Arlinghaus</i> , ION-TOF GmbH Germany; <i>R. Havelund</i> , <i>P.D. Rakowska</i> , <i>A.M. Race</i> , <i>A.G. Shard</i> , National Physical Laboratory, UK; <i>A. West</i> , GlaxoSmithKline; <i>S. Horning</i> , Thermo Fisher Scientific; <i>P. Marshall</i> , GlaxoSmithKline; <i>M.R. Alexander</i> , The University of Nottingham, UK; <i>C. Tollery</i> , GlaxoSmithKline
4:20pm	2D+MI-MoA9 Electronic Structure of Metallic Twin Grain Boundaries in Monolayer MoSe ₂ , <i>Matthias Batzill</i> , University of South Florida	AS+BI-MoA9 High-resolution, Sub-cellular Imaging of Pharmaceutical Localization by Correlative SIMS and TEM, <i>Paulina Rakowska</i> , National Physical Laboratory, UK; <i>H. Jiang</i> , University of Western Australia; <i>I.S. Gilmore</i> , National Physical Laboratory, UK
4:40pm		INVITED: AS+BI-MoA10 Sub-Micron Imaging and Identification of Molecular Chemistry by TOF-SIMS Parallel Imaging MS/MS, Gregory Fisher*, Physical Electronics; N. Ogrinc Potocnik, A.L. Bruinen, Maastricht University, The Netherlands; J.S. Hammond, S.R. Bryan, Physical Electronics; R.M., Heeren, Maastricht University; S. Iida, T. Miyayama, ULVAC-PHI
5:00pm		Invited talk continues.

	Electronic Materials and Photonics Room 102A - Session EM-MoA Surface and Interface Challenges in Wide Bandgap Materials Moderators: Charles Eddy Jr., U.S. Naval Research Laboratory, Rachael Myers-Ward, U.S. Naval Research Laboratory	Magnetic Interfaces and Nanostructures Room 101C - Session MI+2D+AC-MoA Magnetism and Spin Orbit Effects at Interfaces and Surfaces: Recent Experimental and Theoretical Advances Moderator: Valeria Lauter, Oak Ridge National Laboratory
1:40pm	INVITED: EM-MoA1 ALD Gate Dielectrics for GaN HEMTs, Andrea Corrion, HRL Laboratories, LLC	MI+2D+AC-MoA1 Bi-1Te1: A New Dual Topological Insulator, <i>Lukasz Plucinski</i> , <i>M. Eschbach</i> , <i>M. Lanius</i> , <i>C. Niu</i> , <i>E. Mlynczak</i> , <i>P. Gospodaric</i> , FZ Jülich GmbH, Germany; <i>J. Kellner</i> , RWTH Aachen University, Germany; <i>P. Schüffelgen</i> , <i>M. Gehlmann</i> , <i>S. Döring</i> , <i>E. Neumann</i> , <i>M. Luysberg</i> , <i>B. Holländer</i> , <i>G. Mussler</i> , FZ Jülich GmbH, Germany; <i>M. Morgenstern</i> , RWTH Aachen University, Germany; <i>D. Grützmacher</i> , <i>G. Bihlmayer</i> , <i>S. Blügel</i> , <i>Schneider</i> , FZ Jülich GmbH, Germany
2:00pm	Invited talk continues.	MI+2D+AC-MoA2 Spin-Polarized Scanning Tunneling Microscopy of a Two-Dimensional Ferromagnetic Semiconductor at Room-Temperature, Yingqiao Ma, A.R. Smith, Ohio University; A. Barral, V. Ferrari, Centro At'omico Constituyentes, GlyA, CNEA, Argentina
2:20pm	EM-MoA3 Advances in High-k Dielectric Integration with Ga-polar and N-polar GaN, Charles Eddy, Jr., U.S. Naval Research Laboratory; C.R. English, University of Wisconsin; V.D. Wheeler, U.S. Naval Research Laboratory; D.I. Shahin, University of Maryland College Park; N.Y. Garces, U.S. Patent & Trade Office; A. Nath, J.K. Hite, M.A. Mastro, T.J. Anderson, U.S. Naval Research Laboratory	INVITED: MI+2D+AC-MoA3 Spin-Orbit Induced Surface States of Rashba Systems and Topological Insulators, <i>Peter Krüger, T. Förster, M. Rohlfing, P. Eickholt, A.B. Schmidt, M. Donath,</i> Westfälische Wilhelms-Universität Münster, Germany
2:40pm	EM-MoA4 Effects of Surface Cleaning and Different Metals as Schottky Contacts to Bulk and Epitaxial β -Ga ₂ O ₃ , <i>Yao Yao</i> , <i>R. Gangireddy, J. Kim,</i> Carnegie Mellon University; <i>T. Salagaj, N. Sbrockey, G.S. Tompa,</i> Structured Materials Industries, Inc.; <i>K.K. Das,</i> JBP Materials; <i>R.F. Davis, L.M. Porter,</i> Carnegie Mellon University	Invited talk continues.
3:00pm	INVITED: EM-MoA5 Deep Traps in Wide Bandgap Semiconductors: From GaN to beta-Ga ₂ O ₃ , Steven Ringel, A. Arehart, E. Farzana, Z. Zhang, The Ohio State University; E. Ahmadi, Y. Oshima, J. Speck, University of California at Santa Barbara	INVITED: MI+2D+AC-MoA5 Spin-Resolved Momentum Microscopy of Strongly Correlated Electron Systems and Topological Insulators, Christian Tusche, Forschungszentrum Jülich, Germany
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	BREAK	BREAK
4:00pm	EM-MoA8 Study of Oxygen and Moisture Effect on Device Instability of Bottom-Gate ZnO Transistors with Sol-Gel Derived Channel Layers, Kosala Yapabandara , M. Park, M.C. Hamilton, DJ. Kim, V. Mirkhani, S. Wang, M. Sultan, B. Ozden, M.P. Khanal, S. Uprety, Y. Chung, Auburn University; M.H. Sk, Qatar University, Qatar	MI+2D+AC-MoA8 Spin-orbit-Induced Effects in the Electronic Structure of W(110) and Ta(110): Similarities and Differences, Markus Donath, K. Miyamoto, H. Wortelen, B. Engelkamp, Muenster University, Germany; H. Mirhosseini, Max Planck Institute for Microstructure Physics, Germany; T. Okuda, Hiroshima Synchrotron Radiation Center, Japan; A. Kimura, Hiroshima University, Japan; A.B. Schmidt, Muenster University, Germany; J. Henk, Martin Luther University Halle-Wittenberg, Germany
4:20pm	EM-MoA9 Depth Dependent Modification of Optical Constants Arising from H.* Implantation in n-type 4H-SiC Measured using Coherent Acoustic Phonons, <i>Andrey Baydin</i> , <i>H. Krzyzanowska</i> , Vanderbilt University; <i>M. Dhanunjaya</i> , <i>S.V.S. Nageswara Rao</i> , University of Hyderabad, India; <i>J.L. Davidson</i> , Vanderbilt University; <i>L.C. Feldman</i> , Vanderbilt University, Rutgers University; <i>N.H. Tolk</i> , Vanderbilt University	MI+2D+AC-MoA9 Formation of a 2D Interface by Low Energy Proton Implantation in ZnO Microwires, Israel Lorite, Y. Kumar, Universität Leipzig, Germany; B. Straube, S. Perez, Universidad Nacional de Tucumán, Argentina; C. Rodriguez, Universidad Nacional de La Plata, Argentina; P. Esquinazi, Universität Leipzig, Germany
4:40pm	EM-MoA10 Electrical and Thermal Stability of ALD-TiN Schottky Gates for AlGaN/GaN HEMTs, D.I. Shahin, University of Maryland College Park; Travis Anderson, V.D. Wheeler, M.J. Tadjer, A.D. Koehler, K. Hobart, C.R. Eddy Jr., F. Kub, U.S. Naval Research Laboratory; A. Christou, University of Maryland College Park	INVITED: MI+2D+AC-MoA10 Density Functional Studies of Magnetic and Spintronic Materials, <i>Ruqian Wu</i> , University of California Irvine
5:00pm	EM-MoA11 Spectroscopic Photo Current Voltage Measurements to Investigate Non-uniform Defect Distributions in AlGaN/GaN HEMT Hetererostructures, <i>Burcu Ozden</i> , <i>M.P. Khanal</i> , <i>C. Yang</i> , <i>L. Shen</i> , <i>V. Mirkhani</i> , <i>K. Yapabandara</i> , <i>M. Park</i> , Auburn University	Invited talk continues.

	Manufacturing Science and Technology Room 103A - Session MS-MoA Advanced Manufacturing: Systems, Devices, and Materials Moderator: Gary Rubloff, Institute for System Research, University of Maryland	Nanometer-scale Science and Technology Room 101D - Session NS-MoA Nanophotonics, Plasmonics, and Energy Moderators: Stephane Evoy, University of Alberta, Canada, Wei Wu, University of Southern California
1:40pm	INVITED: MS-MoA1 Metrology of Laser-based Powder Bed Fusion Additive Manufacturing Systems, <i>John Slotwinski</i> , The Johns Hopkins University Applied Physics Laboratory	NS-MoA1 CIGS/CZTS based Solar Cells with Thin Films or Nanowires Cell Configuration, <i>Mohammad Islam</i> , King Saud University, Saudi Arabia; <i>M. Akram</i> , <i>M. Mujahid</i> , National University of Sciences and Technology, Pakistan
2:00pm	Invited talk continues.	NS-MoA2 The Effects of N Incorporation in GaAsSb/GaAs Core-shell Nanowires, <i>Prithviraj Deshmukh</i> , <i>P. Kasanaboina</i> , NCA&T State University; <i>C. Reynolds Jr.</i> , <i>Y. Liu</i> , North Carolina State University; <i>S. Iyer</i> , NCA&T State University
2:20pm	MS-MoA3 Investigation of Superconductive Heavily Doped Boron Diamond for Device Fabrication, <i>Delroy Green</i> , <i>G.L. Harris</i> , Howard University; <i>R.D. Vispute</i> , Bluewave Semiconductor Inc.	INVITED: NS-MoA3 Exploitation of Microwave Interaction and Photoconductive Effects in TiO ₂ Nanotube/Nanowire Arrays for Use in Light Harvesting and Sensing Devices, <i>Karthik Shankar</i> , University of Alberta and The National Institute for Nanotechnology, Canada; <i>M.H. Zarifi, S. Farsinezhad, M. Daneshmand</i> , University of Alberta, Canada
2:40pm	MS-MoA4 Two-Dimensional Layered Materials For Composites Applications, <i>Jorge Catalan</i> , A. Delgado, A.B. Kaul, University of Texas at El Paso	Invited talk continues.
3:00pm	INVITED: MS-MoA5 Architectonics and Multi-Materials in Big Additive Manufacturing Clusters, S.H. Gardner, SG Advanced Manufacturing and Materials; Massimiliano Moruzzi, M. Bergin, F. Lorio, CTO-Autodesk Research, Canada	INVITED: NS-MoA5 Next Generation Photovoltaics from Solution-processed Quantum Dot Assemblies, <i>Joseph Luther,</i> National Renewable Energy Laboratory
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	BREAK	BREAK
4:00pm	INVITED: MS-MoA8 AIM Photonics – Manufacturing Challenges for Photonic Integrated Circuits, <i>Michael Liehr</i> , SUNY Polytechnic Institute	INVITED: NS-MoA8 Negative Index and Hyperbolic Metamaterials: Into the Ultra-Violet, <i>Henri Lezec</i> , National Institute of Standards and Technology (NIST)
4:20pm	Invited talk continues.	Invited talk continues.
4:40pm	MS-MoA10 Development of III-Nitrides for Energy Harvesting Applications, B. Kucukgok, N. Lu, Purdue University; IanT. Ferguson, Missouri University of Science and Technology	NS-MoA10 Probing Sub-5 nm Gap Plasmon Using Collapsible Nanofingers, <i>Boxiang Song, W. Wu,</i> University of Southern California
5:00pm		NS-MoA11 Strong Near-Field Coupling of Plasmonic Resonators Embedded in Si Nanowires, <i>Dmitriy Boyuk</i> , <i>LW. Chou, M.A. Filler</i> , Georgia Institute of Technology

	Plasma Processing for Biomedical Applications Focus Topic	Plasma Science and Technology Room 104D - Session PS+AS+SS-MoA
	Room 101A - Session PB+BI+PS-MoA	Plasma Surface Interactions
	Plasma Processing of Biomaterials	Moderator:
	Moderators: Denis Dowling, University College Dublin, Deborah O'Connell, University of York, UK	Michael Gordon, University of California at Santa Barbara
1:40pm	PB+BI+PS-MoA1 Design of Bone Bioceramics with Controlled Drug Release and Suitable Biocompatibility through Plasma Polymerized Coatings, <i>Kanupriya Khurana</i> , Technical University of Catalonia, Spain; <i>F. Soldero</i> ,	INVITED: PS+AS+SS-MoA1 Atomic-scale Analyses of Plasma Etching for Unconventional Materials in Microelectronics, Satoshi Hamaguchi, K. Karahashi, Osaka University, Japan
	F. Muchklich, Saarland University, Germany; M.P. Ginebra, C. Canal, Technical University of Catalonia, Spain	
2:00pm	PB+BI+PS-MoA2 Atmospheric Plasma Deposition of Antimicrobial Nano-Coatings on Biomedical Textiles, A. Nikiforov, I. Kuchakova, T. Coenye, C. Leys, Ghent University, Belgium; N. Hojnik, M. Modic, Uroš Cvelbar, Jozef Stefan Institute, Slovenia	Invited talk continues.
2:20pm	INVITED: PB+BI+PS-MoA3 Plasma Polymers for Biomedical Applications, Farzaneh Arefi-Khonsari, l'université Pierre et Marie Curie, France; A. Baitukha, J. Pulpytel, A. Valinataj Omran, Sorbonne Universités, UPMC, France	PS+AS+SS-MoA3 Plasma Wall Interactions: Y ₂ O ₃ Wall Interaction in Cl ₂ Plasma Etching of Si and NF ₃ Plasma Cleaning, <i>Tianyu Ma, T. List, V.M. Donnelly,</i> University of Houston
2:40pm	Invited talk continues.	PS+AS+SS-MoA4 Novel atomic order CD Control Technology by Fusion of Quasi-ALE and ALD, <i>Yoshihide Kihara</i> , <i>T. Hisamatsu</i> , Tokyo Electron Miyagi Limited, Japan; <i>T. Oishi</i> , <i>S. Ogawa</i> , <i>H. Watanabe</i> , Tokyo Electron Miyagi Limited; <i>A. Tsuji</i> , <i>M. Honda</i> , Tokyo Electron Miyagi Limited, Japan
3:00pm	INVITED: PB+BI+PS-MoA5 Plasma Coating Using Biologics: Degradation or Polymerisation?, <i>Liam O'Neill</i> , <i>J. O'Donoghue</i> , TheraDep, Ireland	PS+AS+SS-MoA5 Development of a New Analysis Technique of Nanostructures Etched by Plasmas: Quasi In-Situ TEM EDX Characterization, <i>Matthieu Serege</i> , LTM, Univ. Grenoble Alpes, CEA-LETI; <i>G. Cunge</i> , LTM, Univ. Grenoble Alpes, CEA-LETI, France; <i>L. Vallier</i> , <i>E. Latu-Romain</i> , LTM, Univ. Grenoble Alpes, CEA-LETI; <i>O. Joubert</i> , LTM, Univ. Grenoble Alpes, CEA-LETI, France
3:20pm	Invited talk continues.	PS+AS+SS-MoA6 Atomistic Simulations of He Plasma Modification of Si/SiN Thin-Films for Advanced Etch Processes, <i>Vahagn Martirosyan</i> , LTM, Univ. Grenoble Alpes, CEA-LETI, France; <i>E. Despiau-Pujo</i> , CNRS - LTM, France; <i>O. Joubert</i> , LTM, Univ. Grenoble Alpes, CEA-LETI, France
3:40pm	BREAK	BREAK
4:00pm	INVITED: PB+BI+PS-MoA8 Low and Atmospheric Pressure Plasma Polymerization for Immunosensing and Tissue Engineering, <i>Lenka</i> Zajickova, A. Manakhov, E. Makhneva, J. Medalova, D. Necas, Masaryk University, Czech Republic; L. Strbkova, Brno University of Technology, Czech Republic; A. Obrusnik, M. Landova, Masaryk University, Czech Republic	PS+AS+SS-MoA8 SiGe Channel Materials Surface Preparation and Process Control in Advanced CMOS Technologies, <i>Zhenxing Bi</i> , S. <i>Mochizuki, T. Devarajan, S. Naczas, A. Arceo, M. Ebrish, D. Canaperi, C. Surisetty</i> , IBM Semiconductor Technology Research
4:20pm	Invited talk continues.	PS+AS+SS-MoA9 Patterned Chromium Hard Mask Etching in a Two Reactant Gas for Bit Patterned Media Template Fabrication, <i>Daniel Staaks</i> , Molecular Foundry, Lawrence Berkeley National Lab; <i>X. Yang</i> , Seagate Technology; <i>S. Dallorto</i> , <i>S.D. Dhuey</i> , <i>S. Sassolini</i> , Molecular Foundry, Lawrence Berkeley National Lab; <i>K.Y. Lee</i> , Seagate Technology; <i>I.W. Rangelow</i> , Ilmenau University of Technology, Germany; <i>D.L. Olynick</i> , Molecular Foundry, Lawrence Berkeley National Lab
4:40pm	PB+BI+PS-MoA10 Low-Temperature Plasma Processing of Polymeric Materials for Biomedical Applications, <i>Michelle Mann, M.R. Maynard, E.R. Fisher,</i> Colorado State University	PS+AS+SS-MoA10 Alternative Solutions for Nanometric-Precision Etching: H2 Plasmas Modification of Si/ SiN Thin-Films, <i>Emilie Despiau-Pujo</i> , V. Martirosyan, O. Joubert, LTM - CNRS/Univ Grenoble Alpes/CEA, France
5:00pm	PB+BI+PS-MoA11 Plasma-based Functionalization of Polystyrene Surfaces of Cell Culture Plates, <i>Kazuma Nishiyama</i> , <i>T. Ito, S. Sugimoto, K. Gotoh, M. Isobe</i> , Osaka University, Japan; <i>M. Okamoto</i> , Osaka University Hospital, Japan; <i>A. Myoui</i> , Osaka University Hospital, Japan; <i>H. Yoshikawa</i> , <i>S. Hamaguchi</i> , Osaka University, Japan	PS+AS+SS-MoA11 Plasma Dynamics at the Surface Interface in Low Pressure Capacitively and Inductively Coupled Plasmas, <i>Martin Blake</i> , <i>D. O'Connell</i> , University of York, UK; <i>A.R. Gibson</i> , LPP, CNRS, Ecole Polytechnique, Université Paris-Saclay, France; <i>T. Gans</i> , University of York, UK

^{*} Coburn & Winters Student Award Finalist

	Plasma Science and Technology Room 104B - Session PS-MoA Advanced BEOL/Interconnect Etching Moderator: Hisataka Hayashi, Toshiba, Japan	Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic Room 103C - Session SA+AS-MoA Frontiers of Photoemission with Synchrotron and XFEL Radiation/Advances in High-resolution Imaging Techniques Moderators: Maya Kiskinova, Elettra-Sincrotrone Trieste, Italy, Olivier Renault, CEA-University Grenoble Alps, France
1:40pm	PS-MoA1 The Search for New Multi-Pattern Etch Colors: Usual (SiO ₂ , SiN, SiC) and Unusual (hi-k, BN, BC:H) Suspects, <i>Michelle Paquette</i> , S. <i>Dhungana</i> , <i>B.J. Nordell</i> , <i>A.N. Caruso</i> , University of Missouri-Kansas City; <i>W.A. Lanford</i> , University at Albany; <i>G. Chollon</i> , <i>C. Pallier</i> , <i>F. Teyssandier</i> , Universite de Bordeaux, France; <i>K. Scharfenberger</i> , <i>D. Jacob</i> , <i>S.W. King</i> , Intel Corporation	INVITED: SA+AS-MoA1 Photoemission with Soft and Hard X-Rays: Past, Present, and Future, <i>Charles Fadley</i> , University of California, Davis
2:00pm	PS-MoA2 An Investigation into the Mechanism of High Selectivity SiO _x and SiN _x Dielectric Etching, <i>Robert Bruce, H. Miyazoe, N.P. Marchack,</i> IBM Research Division, T.J. Watson Research Center; <i>J. Lee, J.C. Shearer,</i> IBM Research, Albany, NY; <i>JM. Papalia, S.U. Engelmann, E.A. Joseph,</i> IBM Research Division, T.J. Watson Research Center; <i>J.C. Arnold,</i> IBM Research, Albany, NY	Invited talk continues.
2:20pm	PS-MoA3 The Impact of Highly Selective Dielectric Etches on Etch Stop Layers, <i>Andre Labonte</i> , GLOBALFOUNDRIES; <i>A. Carr</i> , IBM; <i>J.M. Dechene</i> , GLOBALFOUNDRIES; <i>J.C. Shearer</i> , IBM; <i>J.M. Lucas</i> , <i>B. Messer</i> , <i>A. Metz</i> , Tokyo Electron America	SA+AS-MoA3 Honorary Session for Prof. Charles Fadley, <i>O.J. Renault</i> , CEA-University Grenoble Alps, France; <i>Julien Rault</i> , Synchrotron SOLEIL, France
2:40pm	PS-MoA4 Plasma Etching of High Aspect Ratio Contacts in SiO ₂ using Ar/C ₄ F ₈ /O ₂ Mixtures: A Computational Investigation, <i>Shuo Huang</i> , <i>C.M. Huard</i> , University of Michigan; <i>S. Shim</i> , <i>S. Lee</i> , <i>IC. Song</i> , <i>S. Lu</i> , Samsung Electronics Co., Ltd.; <i>M.J. Kushner</i> , University of Michigan	SA+AS-MoA4 Ultrafast Magnetization Relaxation Dynamics in La _{0.66} Sr _{0.33} MnO ₃ Films, <i>Tommaso Pincelli</i> , Università di Milano, Italy; <i>A.Yu. Petrov, G. Panaccione</i> , Laboratorio TASC, IOM-CNR, Italy; <i>M. Oura</i> , RIKEN SPring-8, Japan; <i>T.L. Lee</i> , Diamond Light Source Ltd., UK; <i>G. Rossi</i> , Università di Milano, Italy
3:00pm	INVITED: PS-MoA5 BEOL & Interconnect Challenges in Memory Scaling, Mark Kiehlbauch, Micron Technology	SA+AS-MoA5 Inelastic Background Analysis of Haxpes Spectra for Device Technology: A Non-Destructive Tool for Accessing Deeply Buried Interfaces, Charlotte Zborowski, O.J. Renault, E. Martinez, A. Torres, CEA, LETI, MINATEC Campus, France; Y. Yamashita, NIMS, Japan; G. Grenet, Inl, Ecl, France; S Tougaard, SDU, Denmark
3:20pm	Invited talk continues.	SA+AS-MoA6 Soft X-ray ARPES Investigation of the Spin-polarized n-BaTiO ₃ /SrRuO ₃ Buried interface, <i>Julien Rault</i> , <i>P. Le Fèvre</i> , <i>F. Bertran</i> , <i>J. Rebellato</i> , Synchrotron SOLEIL, France; <i>T. Maroutian</i> , <i>P. Lecoeur</i> , Université Paris-Sud - CNRS, France
3:40pm	BREAK	BREAK
4:00pm	PS-MoA8 Control of Uniformity and Ion Energy Distributions in Tri- frequency Capacitively Coupled Plasmas Accounting for Finite Wavelength Effects, <i>Peng Tian</i> , S. Huang, University of Michigan; S. Shim, S. Lee, IC. Song, S. Lu, Samsung Electronics Co., Ltd.; M.J. Kushner, University of Michigan	INVITED: SA+AS-MoA8 Progress and Perspectives in Photoemission using XFEL Radiation, Serguei Molodtsov, European XFEL GmbH, Germany
4:20pm	PS-MoA9 Metal Etch Mechanisms Using NH _x and CN-based Chemistry, Nathan Marchack, IBM Research Division, T.J. Watson Research Center; M. Yamazaki, Q. Yang, N. Joy, TEL Technology Center, America, LLC; S.U. Engelmann, E.A. Joseph, IBM Research Division, T.J. Watson Research Center; A. Ranjan, TEL Technology Center, America, LLC	Invited talk continues.
4:40pm	PS-MoA10 The Impact of Gate Overlap on Self-Aligned Contact (SAC) Etching, <i>Jeffrey Shearer</i> , IBM Research Division, Albany; A.P. Labonte, GLOBALFOUNDRIES; J.M. Lucas, A. Metz, Tokyo Electron - TTCA; J.C. Arnold, IBM Research Division, Albany	INVITED: SA+AS-MoA10 Revealing the Origins of Non-Joulian Magnetism with High-Resolution Photoemission Microscopy, <i>Alexander Gray</i> , <i>R.U. Chandrasena</i> , Department of Physics, Temple University; <i>H.D. Chopra</i> , Department of Mechanical Engineering, Temple University
5:00pm	PS-MoA11 Dynamic Plasma Etching of EUV Photoresist for Contact Profile Control and PR Selectivity Improvement, <i>Hongyun Cottle</i> , <i>I. Saraf, A. Metz, P. Biolsi</i> , TEL Technology Center, America, LLC	Invited talk continues.

	Commiss Duck a Missesson of Sour Tonic	
1:40pm	Scanning Probe Microscopy Focus Topic Room 104A - Session SP+2D+AS+NS+SS-MoA Probing Topological States And Superconductivity Moderators: An-Ping Li, Oak Ridge National Laboratory, Chuanxu Ma, Oak Ridge National Laboratory INVITED: SP+2D+AS+NS+SS-MoA1 Tuning Dirac States by Strain in Topological Insulators, Lian Li, University of Wisconsin-Milwaukee	Surface Science Room 104E - Session SS+AS+HC-MoA Metals, Alloys, and Oxides: Reactivity and Catalysis Moderator: David Mullins, Oak Ridge National Laboratory SS+AS+HC-MoA1 Scanning Tunneling Microscopy Studies of Hydrogen adsorption on the RuO ₂ (110) Surface, Arjun Dahal, R. Mu, Z. Dohnálek, I. Lyubinetsky, Pacific Northwest National Laboratory
2:00pm	Invited talk continues.	SS+AS+HC-MoA2 Metal Vapor Adsorption Calorimetry on Layered Ca Niobate Nanosheets: Energetics and Adsorbate Structure, <i>Wei Zhang</i> , <i>J. Lownsbury</i> , University of Washington; <i>R. Uppuluri</i> , <i>T.E. Mallouk</i> , The Pennsylvania State University; <i>C.T. Campbell</i> , University of Washington
2:20pm	SP+2D+AS+NS+SS-MoA3 Detection of Current Induced Spin Polarization in Topological Insulators via Four-Probe Spectroscopy, <i>Saban Hus</i> , Oak Ridge National Laboratory; <i>Y. Chen</i> , Purdue University; <i>AP. Li</i> , Oak Ridge National Laboratory	INVITED: SS+AS+HC-MoA3 Structure and Reactivity of Model Iron Oxide Surfaces, Gareth Parkinson, TU Wien, Austria
2:40pm	SP+2D+AS+NS+SS-MoA4 Switching Handedness of Chiral Solitons Under Z ₄ Topology, <i>Tae-Hwan Kim</i> , Pohang University of Science and Technology, Republic of Korea; <i>S. Cheon, H.W. Yeom</i> , Institute for Basic Science (IBS), Republic of Korea	Invited talk continues.
3:00pm	INVITED: SP+2D+AS+NS+SS-MoA5 Spectroscopic-imaging STM Studies on Dirac-Landau Levels in the Topological Surface State, <i>Tetsuo Hanaguri</i> , RIKEN Center for Emergent Matter Science, Japan	SS+AS+HC-MoA5 Structure and Ethanol Reactivity of Ti-modified CeO _x (111) Mixed Oxide Surfaces, <i>E.W. Peterson, Jing Zhou</i> , University of Wyoming
3:20pm	Invited talk continues.	SS+AS+HC-MoA6 New Insights into the Coverage-Dependent Structure and Desorption Kinetics of CO on Palladium(111), Pan Xu, Stony Brook University; SY. Hong, Brookhaven National Laboratory; S. Liu, Stony Brook University; N.R. Camillone, M.G. White, N. Camillone, Brookhaven National Laboratory
3:40pm	BREAK	BREAK
	INVITED: SP+2D+AS+NS+SS-MoA8 The Rashba and Quantum Size Effects in Ultrathin Bi films, <i>Toru Hirahara</i> , Tokyo Institue of Technology, Japan Invited talk continues.	SS+AS+HC-MoA8 Combined Experimental and Computational Study of Water on Fe ₃ O ₄ (001), <i>Jan Hulva</i> , Vienna University of Technology, Austria; <i>M. Meier</i> , Universität Wien, Austria; <i>J. Pavelec, S. Maaβ, R. Bliem, M. Schmid, U. Diebold</i> , Vienna University of Technology, Austria; <i>C. Franchini</i> , Universität Wien, Austria; <i>G.S. Parkinson</i> , Vienna University of Technology, Austria SS+AS+HC-MoA9 Water Desorption from Sulfur-Doped Oxide Thin Films on W (100), <i>Anthony Babore</i> , <i>J.C. Hemminger</i> , University of California Irvine
4:40pm	SP+2D+AS+NS+SS-MoA10 Understanding the Microscopic Effects of Annealing in Ba(Fe _{1-x} Co _x) ₂ As ₂ Superconductor, <i>Qiang Zou</i> , <i>Z. Wu</i> , <i>Q. Zheng</i> , <i>S. Rajputł</i> , <i>D.S. Parker</i> , <i>A.S. Sefat</i> , <i>Z. Gai</i> , Oak Ridge National Laboratory	SS+AS+HC-MoA10 Adsorption and Decomposition of Dimethyl Methylphosphonate on Metal Oxide Surfaces Under Atmospheric Conditions, Ashley Head, L. Trotochaud, Lawrence Berkeley National Laboratory (LBNL); R. Tsyshevsky, University of Maryland College Park; O. Karslioglu, Lawrence Berkeley National Laboratory (LBNL); M.M. Kuklja, University of Maryland College
5:00pm	SP+2D+AS+NS+SS-MoA11 Annealing Effect on the Properties of Superconducting Parent BaFe ₂ As ₂ Crystal, <i>Shivani Rajput</i> , <i>Q. Zou, A.S. Sefat, Z. Gai</i> , Oak Ridge National Laboratory	Park; H. Bluhm, Lawrence Berkeley National Laboratory (LBNL) SS+AS+HC-MoA11 Oxygen Chemisorption and Thermal Oxidation of TiAlN High Power Pulsed Magnetron Sputtering Hard Coatings, Martin Wiesing, T. de los Arcos, G. Grundmeier, University of Paderborn, Germany

	Thin Film	Thin Film
	Room 105A - Session TF+EM-MoA	Room 102B - Session TF+PS+SE-MoA
	ALD for Energy Conversion and Storage	Plasma-based Deposition Techniques and Film
	Moderators: Virginia Wheeler, U.S. Naval Research Laboratory,	Characterization
	Angel Yanguas-Gil, Argonne National Laboratory	Moderators: Jim Fitz-Gerald, University of Virginia,
		Tansel Karabacak, University of Arkansas at Little Rock
1:40pm	TF+EM-MoA1 Fabrication of Nano-power Generators using Thin Atomic	TF+PS+SE-MoA1 Microcrystalline Silicon Thin Film Deposited by Tailored
	Layer Deposited Films, <i>Giovanna Scarel, H.S. Mann, B.N. Lang,</i> James Madison University; <i>V.D. Wheeler,</i> Naval Research Laboratory; <i>B.C. Utter,</i> Bucknell	Voltage Waveform Plasmas using an SiF ₄ /H ₂ /Ar Chemistry and its
	University	Application to Photovoltaics, <i>Junkang Wang</i> , LPICM, CNRS, École Polytechnique, Université Paris Saclay, France; <i>M. Elyaakoubi</i> , TFSC-Instrument,
		Palaiseau, France; E.V. Johnson, LPICM, CNRS, École Polytechnique, Université
		Paris Saclay, France
2:00pm	TF+EM-MoA2 Ultrafast Triggered Transient Energy Storage by Atomic	TF+PS+SE-MoA2 Boron Carbide-Aromatic Composite Films by PECVD: A
	Layer Deposition Into Porous Silicon for Integrated Transient Electronics, Anna Douglas, N. Muralidharan, R.E. Carter, K. Share, C.L. Pint, Vanderbilt	Novel Approach to Electron-hole Separation, B. Dong, A. Oyelade, University of North Texas; E.M. Echeverria, University of Nebraska-Lincoln; Y-S. Jun, G.D.
	University	Stucky, University of California at Santa Barbara; P.A. Dowben, University of
		Nebraska-Lincoln; <i>Jeffry Kelber</i> , University of North Texas
2:20pm	TF+EM-MoA3 Refractory Solar Selective Coatings Synthesized by Atomic	TF+PS+SE-MoA3 Impact of Pulsing the rf Power and the Precursor
	Layer Deposition, <i>Jeffrey Elam</i> , A. Mane, A. Yanguas-Gil, J.A. Libera, J.R. Avila,	Injection on the Structure and Optical Properties of TiO ₂ and TiSiO Thin
	Argonne National Laboratory	Films Deposited by PECVD, Agnes Granier, S. Elisabeth, R. Michaud, N. Gautier,
		M. Richard Plouet, IMN, University of Nantes CNRS, France; M. Carette, IEMN CNRS/Université Lille 1, France; A. Goullet, IMN, University of Nantes CNRS, France
		·
2:40pm	TF+EM-MoA4 Sequential Infiltration Synthesis of Doped Polymer Films with Tunable Electrical Properties for Efficient Triboelectric	TF+PS+SE-MoA4 Plasma CVD of Boron-Carbon Thin Films from Organoboron Precursors for Next Generation Neutron Detectors,
	Nanogenerator Development, <i>Yanhao Yu</i> *, <i>X.D. Wang</i> , University of	Mewlude(Maiwulidan) Imam (Yimamu), Linköping University, Sweden; C.
	Wisconsin-Madison	Höglund, Linköping University and European Spallation Source ERIC, Sweden; R.
		Hall-Wilton, European Spallation Source ERIC, Sweden; J. Jensen, Linköping University, Sweden; S. Schmidt, Linköping University and European Spallation
		Source ERIC, Sweden; I.G. Ivanov, J. Birch, H. Pedersen, Linköping University,
		Sweden
3:00pm	INVITED: TF+EM-MoA5 ALD for Interfacial Engineering of Energy Conversion Devices, <i>Neil P. Dasgupta</i> [†] , University of Michigan, Ann Arbor	TF+PS+SE-MoA5 Plasma Enhanced Atomic Layer Deposition of
	Conversion Devices, Nen P. Dasgupta , University of Michigan, Ann Arbor	Superconducting Nb _x Ti _y N Films, <i>Mark Sowa</i> , Ultratech/CNT; <i>Y. Yemane, J. Provine</i> , Stanford University; <i>E.W. Deguns</i> , Ultratech/CNT; <i>F. Prinz</i> , Stanford
		University
3:20pm	Invited talk continues.	TF+PS+SE-MoA6 Mechanical Reliability of PECVD Barrier Films for
		Flexible Electronics, Kyungjin Kim, A. Singh, H. Luo, T. Zhu, O. Pierron, S.
		Graham, Georgia Institute of Technology
3:40pm	RDEAK	BREAK
3.40pm	DRLAK	DREAK
4:00pm	TF+EM-MoA8 Anchoring Down Soluble Polysulfides for Lithium and	TF+PS+SE-MoA8 Origin of Stress in Sputtered CdTe and ZnS Films:
	Sodium Sulfur Battery Cathodes using Atomic Layer Deposition, Rachel Carter, A.P. Cohn, L. Oakes, N. Miralidharan, A.E. Douglas, K. Share, C.L. Pint,	Influence of Sputter Ion Mass on Mechanical and Chemical Layer Properties, <i>Ségolène Liénard</i> , Univ. Grenoble Alpes, LTM CNRS, 38000 Grenoble,
	Vanderbilt University	France; D. Sam-Giao, A. Kerlain, Sofradir, BP 21-38113, Veurey-Voroize, France; F.
		Boulard, C. Vallée, Univ. Grenoble Alpes, France
4:20pm	TF+EM-MoA9 Improved Seebeck Coefficient for Thermoelectric ALD	TF+PS+SE-MoA9 Synthesis and Characterisation of MoB _{2-X} and Mo-B-C
0	Lead Chalcogenide Films Synthesized on Nano-Patterned Templates, Xin	Thin Films by Non-Reactive DC Magnetron Sputtering, <i>Paulius Malinovskis</i> ,
	Chen, P. Lin, K. Zhang, Old Dominion University	Uppsala University, Sweden; J.P. Palisaitis, Linkoping University, Sweden; P.O.A.
		Persson, Linköping University, Sweden; E.L. Lewin, U.J. Jansson, Uppsala University, Sweden
4:40pm	INVITED: TF+EM-MoA10 Hybrid Inorganic-Organic Thin Films by	TF+PS+SE-MoA10 Molybdenum Back Contacts Deposited by High Power
	ALD/MLD for Emerging Energy Technologies, <i>Maarit Karppinen</i> , Aalto University, Finland	Impulse Magnetron Sputtering, D.A. Loch, Arutiun Ehiasarian, Sheffield Hallam University, UK
	oniversity, rimana	Traillant Only Clarky, OK
5:00nm	Invited talk continues.	TF+PS+SE-MoA11 Plasma Characterization of Al and Cu with HIPIMS,
3.30pm	mirica taik continues.	Jason Hrebik, Kurt J. Lesker Company; R. Bandorf, H. Gerdes, D. Spreemann,
		Fraunhofer Institute for Surface Engineering and Thin Films IST, Germany

[†] TFD James Harper Award Finalist

[†] Paul Holloway Award Winner

	Vacuum Technology Room 104C - Session VT-MoA	
	Gas Dynamics, Simulation and Partial Pressure Analysis	
	Moderators: Steve Borichevsky, Applied Materials, Varian	
	Semiconductor Equipment,	
	Ted Martinez, SLAC National Accelerator Laboratory	
1:40pm	INVITED: VT-MoA1 Vacuum System Analysis of a Next Generation Light	
	Source with Synrad and MolFlow+, Jason Carter, Argonne National Laboratory	
2:00pm	Invited talk continues.	
2:20pm	VT-MoA3 Simulations of Vacuum Pumping and Beam Conditioning for	
·	CHESS-U Vacuum System, <i>Yulin Li</i> , <i>X. Liu</i> , Cornell Laboratory for Accelerator-	
	Based Sciences and Education; J.S. Mershon, The College of Wooster	
2:40pm	VT-MoA4 MFIG, A New Vacuum Sensor for Yield Enhancement, N.B.	
	Koster, F. de Graaf, Michel van Putten , P.M. Muilwijk, E. Nieuwkoop, O. Kievit, D.J.	
	Maas, TNO Technical Sciences, Netherlands	
3:00nm	VT-MoA5 Dynamic Process Modeling on a Condensation-based	
5.00p	Depressurization System, <i>Bo Zhang</i> , <i>G. Guo</i> , <i>C. Zhu</i> , <i>Z. Ji</i> , New Jersey Institute	
	of Technology	
	3,	
3:20pm	VTD BUSINESS MEETING	
3:40pm	VACUUM TECHNOLOGY FLASH NETWORKING SESSION:	
	WAN-SUP CHEUNG, KRISS, Republic of Korea (VT-TuP1); KYO SHIBATA,	
	KEK, Japan (VT-TuP2); ERNESTO BARRAZA-VALDEZ, Tri Alpha Energy	
	(VT-TuP3); HUGO ALVAREZ, Universidade Estadual de Campinas, Brazil	
	(VT-TuP4); JONGYEON LIM, Korea Research Institute of Standards and	
	Science, Republic of Korea (VT-TuP5)	
4:00pm	INVITED: VT-MoA8 Vacuum Adventures Encountered Towards a Field-	
	Portable Helium Isotope Detector, <i>Gary McMurtry</i> , SOEST, University of	
	Hawaii; J.R. DeLuze, Fusion Energy Solutions of Hawaii; D.R. Hilton, Scripps	
	Institution of Oceanography, UCSD; J.E. Blessing, MKS Instruments	
4.20:	Invited talk continues	
4:20pm	Invited talk continues.	
4:40pm	VT-MoA10 Use Of A Novel Sensor Using Remote Plasma Emission	
•	Spectroscopy For Monitoring And Control Of Vacuum Processes, <i>Joseph</i>	
	Brindley, T. Williams, B. Daniel, V. Bellido-Gonzalez, Gencoa Limited, UK; F. Papa,	
	Gencoa USA	
5:00pm	VT-MoA11 Calibration of Quadrupole Mass Spectrometers with a	
	Molecular Flow Gas Source, <i>Robert Ellefson</i> , REVac Consulting	

Anticipated Schedule Tuesday, November 08, 2016

Anticipated Schedule Tuesday Morning, November 8

8:00 AM _	
8:20 AM _	
8:40 AM _	
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11:20 AM _	
11:40 AM _	
12:00 PM _	
	Anticipated Schedule Tuesday Lunch, November 8
When	Anticipated Schedule Tuesday Editor, November 5
Where	
With	
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	Anticipated Schedule Tuesday Afternoon, November 8
1:00 PM _	
1:20 PM _	
1:40 PM _	
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Special Events Tuesday

7.00 484	Dispusito Charlesian Davaldaste IIII and establic Caiantistle Coide to Dichar Forms and Fortuna and
7:00 AM	Diversity & Inclusion Breakfast: "The Industrial Scientist's Guide to Riches, Fame, and Fortune or at least a Raise"/Belmont, Renaissance Nashville
7:30 AM	Awards Committee Meeting and Lunch/Classical, Renaissance Nashville (by invitation)
7.50 AIVI 8:00 AM	
	Science Educators' Workshop/Ryman, Renaissance Nashville (by invitation)
12:30 PM	Chapters, Divisions, and Groups Meeting and Lunch/108 (by invitation)
12:30 PM 3:00 PM	Professional Development: Job Information Forum and Lunch/102A Marketing & Communications Comm. Masting / Department 5th Avenue, Music City Contar (by invitation)
	Marketing & Communications Comm. Meeting/Boardroom 5th Avenue, Music City Center (by invitation)
6:05 PM 6:25 PM	MIND Business Meeting/102B EMPD Business Meeting/102A
	G .
6:25 PM	NSTD Business Meeting/101D
6:25 PM	PSTD Business Meeting & 2016 Plasma Prize Award Announcement/104B
6:25 PM	SSD Business Meeting/104E
6:25 PM	TFD Business Meeting/105A
6:30 PM	EMPD Forum: Careers at Lam Research/102A
6:30 PM	Tuesday Poster Session & Refreshments (Sponsored by MKS)/Hall D
7:00 PM	MEMS and NEMS Technical Group Executive Committee Meeting and Dinner/Classical, Renaissance
7:00 PM	Nashville (by invitation) NAND Everytive Committee Meeting and Dinner (Bhythm & Blues, Beneissance Nashville (by invitation)
	MIND Executive Committee Meeting and Dinner/Rhythm & Blues, Renaissance Nashville (by invitation)
7:30 PM	ASSD Business Meeting/Belmont 2-3, Renaissance Nashville
7:30 PM	NSTD Executive Committee Meeting and Dinner/Fisk 2, Renaissance Nashville (by invitation)
7:30 PM	PSTD Executive Committee Meeting and Dinner/Fisk 1, Renaissance Nashville (by invitation)
7:30 PM	SSD Executive Committee Meeting and Dinner/Rock & Roll, Renaissance Nashville (by invitation)
7:30 PM	TFD Executive Committee Meeting and Dinner/Ryman, Renaissance Nashville (by invitation)
7:45 PM	BID Executive Committee Meeting and Dinner/Bluegrass, Renaissance Nashville (by invitation)
7:45 PM	EMPD Executive Committee Meeting and Dinner/Jazz, Renaissance Nashville (by invitation)
8:00 PM	ASTM E-42/ASSD Joint Workshop, "Frontiers of Surface Analysis"/Belmont 2-3, Renaissance Nashville
	Short Courses Tuesday
8:30 AM	A Comprehensive Course on Surface Analysis and Depth Profiling by X-ray Photoelectron
6.50 AIVI	Spectrscopy (XPS or ESCA), Auger Electron Spectroscopy (AES), Focused Ion Beam Analysis (FIB)
	and Secondary Ion Mass Spectrometry (SIMS) (2 days)
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8:30 AM	Focused Ion Beams (FIB) and Secondary Ion Mass Spectrometry (SIMS) (Day 2 of Comprehensive SA Course)
8:30 AM	•
	Fundamentals of Vacuum Technology
8:30 AM	Partial Pressure Analysis with Residual Gas Analyzers

LOCATION: All AVS Short Courses will be held at Music City Center

COURSE HOURS: All AVS Short Courses Hours: 8:30 a.m.—5:00 p.m. — with 1.5 hour break for Lunch

(Lunch not included)

	2D Materials Focus Topic Applied Surface Science Room 103B - Session 2D+MI-TuM Room 101B - Session AS+AC-TuM	
	Novel 2D Materials Moderators: Daniel Gunlycke, Naval Research Laboratory, Yuanbo Zhang, Fudan University, China	Practical Surface Analysis II: Microanalysis, Nanoanalysis, Atom Probe, and All Things 'Small' Moderators:
8:00am	INVITED: 2D+MI-TuM1 Computational Design of 2D Materials and	Arun Devaraj, Pacific Northwest National Laboratory, Daniel Gaspar, Pacific Northwest National Laboratory INVITED: AS+AC-TuM1 Progress Toward Atomic-Scale Tomography,
0.000111	Layered Heterostructures for Opto-electronics, <i>Kristian Thygesen</i> , Technical University of Denmark	Thomas Kelly, CAMECA Instruments Inc.
8:20am	Invited talk continues.	Invited talk continues.
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8:40am	2D+MI-TuM3 Mo ₂ Ga ₂ C: Structural Determination of a New Nanolaminated Carbide and its 2D Modification by Selective Etching, <i>Chung-Chuan Lai</i> , <i>R. Meshkian</i> , <i>M. Dahlqvist</i> , <i>J. Lu</i> , <i>LÅ</i> . <i>Näslund</i> , Linköping University, Sweden; <i>O. Rivin</i> , <i>E.N. Caspi</i> , Nuclear Research Center-Negev, Israel; <i>O. Ozeri</i> , Nuclear Research Center-Soreq, Israel; <i>L. Hultman</i> , <i>P. Eklund</i> , Linköping University, Sweden; <i>M.W. Barsoum</i> , Drexel University; <i>J. Rosen</i> , Linköping University, Sweden	INVITED: AS+AC-TuM3 Atom Probe Tomography of Nano Materials. Additive Sample Preparation at the Nanoscale, <i>Peter Felfer</i> , Friedrich-Alexander University Erlangen-Nürnberg, Germany; <i>J.M. Cairney</i> , University of Sydney, Australia
9:00am	2D+MI-TuM4 Synthesis of Borophenes: Anisotropic, Two-Dimensional Boron Polymorphs, <i>Andrew Mannix</i> ^{*†} , <i>B. Kiraly</i> , Northwestern University/Argonne National Lab.; <i>J.D. Wood, M.C. Hersam</i> , Northwestern University; <i>N.P. Guisinger</i> , Argonne National Laboratory	Invited talk continues.
9:20am	2D+MI-TuM5 Atomic and Electronic Structures of Graphitic Carbon Nitride (g-C3N4) Monolayers on HOPG, Sangwoo Park, HM. Kang, Sungkyunkwan University, Republic of Korea; J.H. Yang, J.H. Choy, Ewha Womans University, Republic of Korea; YJ. Song, Sungkyunkwan University, Republic of Korea	AS+AC-TuM5 Atom Probe Tomography and Electron Microscopy Investigation of Composition and Structure of Functionalized Carbon, Chilan Ngo, D.R. Diercks, M.B. Strand, S. Pylypenko, Colorado School of Mines
9:40am	2D+MI-TuM6 Periodic Array of Graphene Quantum Dots Embedded in a Carbon-Boron-Nitrogen Alloy, <i>Jakob Jørgensen</i> , Aarhus University, Denmark; <i>L. Camilli, A. Stoot</i> , Technical University of Denmark; <i>A. Cassidy, R. Balog</i> , Aarhus University, Denmark; <i>J. Sadowski</i> , Brookhaven National Laboratory; <i>P. Bøggild</i> , Technical University of Denmark; <i>L. Hornekær</i> , Aarhus University, Denmark	AS+AC-TuM6 Advanced XPS Imaging and Spectromicroscopy: a Review of Current Capabilities, <i>Olivier Renault</i> , CEA-University Grenoble Alps, France
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	INVITED: 2D+MI-TuM10 Electric Field Control of 2D Materials with Electron Correlation, Yoshi Iwasa, University of Tokyo, Japan	INVITED: AS+AC-TuM10 Challenges and Solutions for Confined Volume Characterization in Semiconductor Systems, Wilfried Vandervorst, IMEC & KULeuven, Belgium
11:20am	Invited talk continues.	Invited talk continues.
11:40am	2D+MI-TuM12 Graphene-based Hybrid Materials by Designer Interfaces for High-Performance Hybrid Supercapacitors, <i>Sanju Gupta</i> , Western Kentucky University	AS+AC-TuM12 Characterization of Protein G B1 Immobilized Gold Nanoparticles using Time of Flight Secondary Ion Mass Spectrometry and X-ray Photoelectron Spectroscopy, YC. Wang, David Castner, University of Washington
12:00pm	2D+MI-TuM13 Realization of TaS ₂ in the Single-Layer Limit, <i>Charlotte Sanders</i> , <i>M. Dendzik</i> , Aarhus University, Denmark; <i>A.S. Ngankeu</i> , Aarhus University; <i>A. Eich</i> , Radboud University, Netherlands; <i>A. Bruix</i> , <i>J.A. Miwa</i> , <i>B. Hammer</i> , Aarhus University, Denmark; <i>A.A. Khajetoorians</i> , Radboud University, Netherlands; <i>P. Hofmann</i> , Aarhus University, Denmark	AS+AC-TuM13 What's New in Wetting? Inorganic Nanotubes at a Water Interface - A Molecular View, <i>Sidney Cohen</i> , <i>O. Goldbart</i> , <i>I. Kaplan-Ashiri</i> , Weizmann Institute of Science, Israel; <i>P. Glazyrina</i> , Ural Federal University, Russia; <i>H.D. Wagner</i> , Weizmann Institute of Science, Israel; <i>A. Enyashin</i> , Ub Ras, Russia; <i>R. Tenne</i> , Weizmann Institute of Science, Israel

^{*} Morton S. Traum Award Finalist

[†] National Student Award Finalist

	Electronic Materials and Photonics Room 102A - Session EM+MN-TuM New Materials and Devices for TFETs, Spintronics, and Extended CMOS Moderator: Wilman Tsai, TSMC	Exhibitor Technology Spotlight Room Hall C - Session EW-TuM Exhibitor Technology Spotlight Session Moderator: Chris Moffitt, Kratos Analytical Limited
8:00am	INVITED: EM+MN-TuM1 Vertical TFETs using III-V Nanowire/Si Heterojunctions, <i>Katsuhiro Tomioka</i> , Hokkaido University/JST-PRESTO, Japan; <i>J. Motohisa</i> , Hokkaido University, Japan	
8:20am	Invited talk continues.	
8:40am	INVITED: EM+MN-TuM3 Tunneling FET Technology using Ge and III-V Semiconductors, <i>Shinichi Takagi, M. Takenaka,</i> The University of Tokyo, JST-CREST, Japan	
9:00am	Invited talk continues.	
9:20am	INVITED: EM+MN-TuM5 Thin Film Materials in Novel Spintronic Devices, Gang Xiao, Brown University	
9:40am	Invited talk continues.	
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	EW-TuM8 Toxic, Flammable and Corrosive Waste Gas Treatment. Protect your Employees and Environment, <i>D.K. Prasad</i> , CS CLEAN SYSTEMS, Inc.
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	INVITED: EM+MN-TuM10 Tunneling in Low-Dimensional Materials, Joerg Appenzeller, Purdue University	
11:20am	Invited talk continues.	
11:40am	INVITED: EM+MN-TuM12 Controlled Phase Transition for Ultra Low Power Transistors, Sayeef Salahuddin, University of California, Berkeley	
12:00pm	Invited talk continues.	

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	Manufacturing Science and Technology	Nanometer-scale Science and Technology
	Room 103A - Session MS+AS-TuM	Room 101D - Session NS-TuM
	Characterization and Processing for IC Manufacturing Moderator: Alain C. Diebold, SUNY College of Nanoscale Science	Nanodiamonds, Thin Films and Electronics (8:20–10:00 am)/Health and Environmental Impact of
	and Engineering	Nanotechnology (11:00 am-12:20 pm)
	•	Moderators: Trevor Wiley, Lawrence Livermore National
		Laboratory, Leonidas Ocola, Argonne National Laboratory
8:00am	MS+AS-TuM1 Thermal Decomposition Properties of	NS-TuM1 Formation of Dynamic Topographic Patterns during Electron
3.00am	Bis(cyclopentadienyl)magnesium for Various Gas Supply System Materials, <i>Hidekazu Ishii</i> , Tohoku University, Japan; <i>S. Yamashita, M. Nagase, A. Hidaka, K. Ikeda,</i> Fujikin Incorporated, Japan; <i>Y. Shiba, Y. Shirai, S. Sugawa,</i> Tohoku University, Japan	National Laboratory: A. Bahm, FEI Company; J. Bishop, I. Aharonovich, M. Toth, University of Technology, Sydney
8:20am		NS-TuM2 Towards a Gold Standard in Single Digit Detonation
		Nanodiamond, N.J. Nunn, O.A. Shenderova, M. Torelli, Adamas Nanotechnologies, Inc.; Gary McGuire, International Technology Center
8:40am	INVITED: MS+AS-TuM3 High Volume Materials Characterization in the	INVITED: NS-TuM3 Microfabricated Ultrananocrystalline Diamond
0.400111	CMOS Industry, <i>Paul van der Heide</i> , GLOBALFOUNDRIES	(UNCD) Electrodes & Electrochemical Technology for Point-of-use Ozone Applications, <i>Donato Ceres</i> , Advanced Diamond Technologies
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9.00am	Invited talk continues.	Invited talk continues.
9:20am	, , , , , , , , , , , , , , , , , , , ,	NS-TuM5 Field Emission Electron Source Based on UltraNanoCrystalline
	Nano-Technology: Challenges and Solutions for Novel Materials and 3-D Devices, <i>Marinus Hopstaken</i> , IBM T.J. Watson Research Center	Diamond Films for Electron Accelerators Applications, S. Baryshev, S. Antipov, C. Jing, Euclid TechLabs LLC; Anirudha Sumant, Argonne National
	Devices, warmus Hopstaken, Ibivi 1.3. Watson Research Center	Laboratory
9:40am	Invited talk continues.	NS-TuM6 Time-resolved Small Angle X-ray Scattering during the
		Formation of Detonation Nanodiamond, Michael Bagge-Hansen, M. Nielsen,
		L. Lauderbach, R. Hodgin, S. Bastea, L. Fried, D. Hansen, C. May, Lawrence Livermore National Laboratory; T. Graber, Washington State University; B.J.
		Jensen, R. Gustavsen, D. Dattelbaum, E. Watkins, M. Firestone, Los Alamos
		National Laboratory; J. Ilavsky, Argonne National Laboratory; T. van Buuren, T.M.
		Willey, Lawrence Livermore National Laboratory
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
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10:40am	PREAK Complimentary Coffee in Exhibit Hall	PREAK Complimentary Coffee in Exhibit Hall
10.404111	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am		INVITED: NS-TuM10 Transformations and Biological Impact of Emerging
		Energy Storage Nanomaterials, <i>Robert Hamers</i> , University of Wisconsin-
		Madison
11:20am	MS+AS-TuM11 Characterization of Electrical Properties of Si and GaN	Invited talk continues.
	Devices using Scanning Microwave Impedance Microscopy (sMIM) and	
	Nano-scale Capacitance-voltage Curves, Stuart Friedman, F. Stanke, Y. Yang,	
	O. Amster, PrimeNano, Inc	
11:40am	INVITED: MS+AS-TuM12 Results of the 2016 Triennial Review of the	INVITED: NS-TuM12 Bio-inspired Nanosystems for Healthcare
22.700111	National Nanotechnology Initiative, <i>James Murday</i> , University of Southern	Applications, <i>Elena Rozhkova</i> , Argonne National Laboratory
	California; B.R. Rogers, Vanderbilt University; E.B. Svedberg, The National	, , , , , , , , , , , , , , , , , ,
	Academies	
12:00pm	Invited talk continues.	Invited talk continues.
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	Plasma Processing for Biomedical Applications Focus Topic Room 101A - Session PB+BI+PS-TuM Plasma Processing of Biological/Biomimetic Surfaces Moderators: Uroš Cvelbar, Jozef Stefan Institute, Slovenia, Satoshi Hamaguchi, Osaka University, Japan	Plasma Science and Technology Room 104B - Session PS-TuM Plasma Diagnostics, Sensors and Control Moderator: Richard van de Sanden, FOM Institute DIFFER, Netherlands
8:00am	PB+BI+PS-TuM1 Investigation of Discharge Propagation on Cell and Plasmid Suspension in Plasma Gene Transfection, <i>Yugo Kido</i> , Pearl Kogyo Co., Ltd., Japan; <i>H. Motomura</i> , <i>Y. Ikeda</i> , Ehime University, Japan; <i>S. Satoh</i> , Y's Corp., Japan; <i>M. Jinno</i> , Ehime University, Japan	INVITED: PS-TuM1 Translational and Vibrational Energy in Cl ₂ and O ₂ Plasmas Probed by Innovative Optical Diagnostics, <i>Jean-Paul Booth</i> , <i>D. Marinov</i> , <i>M. Foucher</i> , <i>O.Y.N. Guaitella</i> , LPP-CNRS, Ecole Polytechnique, France; <i>C. Drag</i> , Laboratoire Aime Cotton, CNRS-U. Paris-Sud, France; <i>A. Agarwal</i> , <i>S. Rauf</i> , Applied Materials Inc.
8:20am	PB+BI+PS-TuM2 Spectroscopic Study of Permeability of Stratum Corneum by Plasma Treatment for Transdermal Drug Delivery, <i>Jaroslav Kristof, N. Tran, M. Blajan, K. Shimizu,</i> Shizuoka University, Japan	Invited talk continues.
8:40am	INVITED: PB+BI+PS-TuM3 Cell Attachment to Microwave Plasma- oxidized Titanium Alloy Substrates, <i>Denis Dowling</i> , University College Dublin, Ireland; <i>M. Naciri</i> , University Mohamed V of Rabat, Morocco; <i>M. Al-Rubeai</i> , <i>A. Breen</i> , University College Dublin, Ireland	PS-TuM3 Spectroscopic Measurement of Molecular Densities and Temperatures in Processing Plasmas, Yaser Helal*, C.F. Neese, F.C. De Lucia, The Ohio State University; A. Agarwal, B. Craver, P.R. Ewing, P.J. Stout, M.D. Armacost, Applied Materials, Inc.
9:00am	Invited talk continues.	PS-TuM4 Optical Emission Spectroscopy to Determine Plasma Parameters in Low-pressure Oxygen Plasmas, <i>Nathaniel Ly, J. Boffard, C.C. Lin, A.E. Wendt,</i> University of Wisconsin - Madison
9:20am	INVITED: PB+BI+PS-TuM5 The Role of Electrical and Chemical Factors in the Molecular/Gene Transfection by Micro-Plasma Irradiation, <i>Masafumi Jinno</i> , Y. <i>Ikeda, H. Motomura</i> , Ehime University, Japan; Y. <i>Kido</i> , Pearl Kogyo Co. Ltd., Japan; S. <i>Satoh</i> , Y's Crop., Japan	PS-TuM5 Pulsed Capacitively Coupled Plasma Ignition: PROES and RF-IV Diagnostics, <i>John Poulose</i> , <i>M.J. Goeckner</i> , <i>L.J. Overzet</i> , The University of Texas at Dallas
9:40am	Invited talk continues.	PS-TuM6 Control of Ion Energy Distributions on Insulating Surfaces using Pulsed Plasmas, <i>Tyler List, T. Mu, V.M. Donnelly, D.J. Economou,</i> University of Houston
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	PB+BI+PS-TuM10 Control of Plant Growth by RONS Produced Using Nonthermal Atmospheric Air Plasma, <i>Kazunori Koga</i> , Kyushu University, Japan; <i>T. Sarinont</i> , Kyushu University; <i>M. Shiratani</i> , Kyushu University, Japan	INVITED: PS-TuM10 Charged Particle Dynamics in Technological Radio Frequency Plasmas Operated in CF ₄ , <i>Julian Schulze</i> , West Virginia University; <i>B. Berger</i> , Ruhr-University Bochum, Germany; <i>S. Brandt</i> , West Virginia University; <i>B. Bruneau</i> , Ecole Polytechnique, Palaiseau, France; Y. <i>Liu</i> , Dalian University of Technology; <i>I. Korolov</i> , <i>A. Derzsi</i> , Hungarian Academy of Sciences; <i>E. Schuengel</i> , <i>M. Koepke</i> , West Virginia University; <i>T. Mussenbrock</i> , Ruhr-University Bochum, Germany; <i>E.V. Johnson</i> , <i>T. Lafleur</i> , <i>JP. Booth</i> , Ecole Polytechnique, Palaiseau, France; <i>D. O'Connell</i> , <i>T. Gans</i> , University of York, UK; <i>YN. Wang</i> , Dalian University of Technology; <i>Z. Donko</i> , Hungarian Academy of Sciences
11:20am	PB+BI+PS-TuM11 Generation of Reactive Species in Medium Irradiated Laser-Induced-Plasmas, <i>Yukihiro Kurokawa</i> , N. Kurake, K. Takeda, K. Ishikawa, H. Hashizume, H. Tanaka, H. Kondo, M. Sekine, M. Hori, Nagoya University, Japan	Invited talk continues.
11:40am	INVITED: PB+BI+PS-TuM12 Electric Fields in kHz-driven Plasma Jets, ET. Slikboer, Y.N. Nguyen, Eindhoven University of Technology, The Netherlands; O.Y.N. Guaitella, Ecole Polytechnique, Palaiseau, France; G. Sretenović, University of Belgrade; A. Obrusnik, Masaryk University, Brno; Ana Sobota, Eindhoven University of Technology, The Netherlands	PS-TuM12 Correlation of III/V Semiconductor Etch Results with Physical Parameters of High Density Reactive Plasmas Excited by Electron Cyclotron Resonance, <i>Gerhard Franz</i> , Munich University of Applied Sciences, Germany; R. Meyer, MC. Amann, Technische Universität München, Germany
12:00pm	Invited talk continues.	PS-TuM13 Mapping Plasma Potential of Rotating Ionization Zone in DC Magnetron Sputtering, <i>Matjaz Panjan</i> , Lawrence Berkeley National Laboratory, Slovenia; <i>A. Anders</i> , Lawrence Berkeley National Laboratory

Advanced Surface Engineering

Room 101C - Session SE+NS+TF+TR-TuM

Novel Trends in Synchrotron and FEL-Based Analysis

Focus Topic

	rocus ropic	ROOM TOTC - Session SE+NS+1F+1K-1UIVI
	Room 103C - Session SA+2D+AC+AS+TF-TuM	Nanostructured Thin Films and Coatings
		Moderators:
	Applications of Synchrotron-based Techniques to 2D	
	Materials (8:00-10:00 am)/Complex Functional Materials	Jolanta Klemberg-Sapieha, Ecole Polytechnique de Montreal,
	and Heterostructures (11:00 am-12:20 pm)	Canada,
	· · · · · · · · · · · · · · · · · · ·	Robert Franz, Montanuniversität Leoben, Austria
	Moderators: Giacomo Ceccone, European Commission, Joint	Nobelt Franz, Montanumversität Leoben, Austria
	Research Centre, IHCP, Italy,	
	Alberto Herrera-Gomez, CINVESTAV-Queretaro, Mexico	
	Alberto Herrera-Gornez, Chivestav-Queretaro, Mexico	
8:00am		INVITED: SE+NS+TF+TR-TuM1 Design and Predictive Synthesis of Thin Films and Coatings, P.A. Salvador, Gregory Rohrer, Carnegie Mellon University
8:20am	SA+2D+AC+AS+TF-TuM2 A Versatile Method for the Fabrication of 2D-electron Systems at Functional Oxide Surfaces, T.C. Rödel, Université Paris-Sud - SOLEIL, France; Patrick Le Fèvre, Synchrotron SOLEIL, France; Patrick Le Fèvre, Synchrotron SOLEIL, France; Paris-Sud - IN2P3, France; F. Bertran, Synchrotron SOLEIL, France; T. Maroutian, P. Lecoeur, Université Paris-Sud - CNRS, France; B. Mersey, Université de Caen, France; A.F. Santander-Syro, Université Paris-Sud - IN2P3, France	Invited talk continues.
8:40am	INVITED. CALADIACIACIACITE TuMA Advanced Construction microscopy of lon	CELNCITEITA TUMA Nanaccala Atamia Arrangament in
8.40am	INVITED: SA+2D+AC+AS+TF-TuM3 Advanced Spectro-microscopy of Ion Irradiated Graphene-metal Interfaces: From Substitutional Implantation to Nanobubble Formation, Andrea Locatelli, A. Sala, TO. Menteş, Elettra - Sincrotrone Trieste, Italy; G. Zamborlini, Peter Grünberg Institute (PGI-6) Jülich; L. Patera, C. Africh, IOM-CNR Laboratorio TASC, Italy; M. Imam, N. Stojić, N. Binggeli, Abdus Salam International Centre for Theoretical Physics, Italy	SE+NS+TF+TR-TuM3 Nanoscale Atomic Arrangement in Multicomponent Thin Films Synthesized Far-from-Equilibrium, <i>V. Elofsson, G.A. Almyras, B. Lü, R.D. Boyd, Kostas Sarakinos,</i> Linköping University, Sweden
9:00am	Invited talk continues.	SE+NS+TF+TR-TuM4 Is Intrinsic Nanocrystalline Stability Practically
		Achievable? Insights from Investigations with Pt-Au Alloys, <i>Nicolas Argibay</i> , T.A. Furnish, D.P. Adams, P. Lu, M. Chandross, M.A. Rodriguez, B.L. Boyce, B.L. Clark, M.T. Dugger, Sandia National Laboratories
9:20am	SA+2D+AC+AS+TF-TuM5 Gas-source MBE Growth of 2D Materials	SE+NS+TF+TR-TuM5 Improved Mechanical Properties In Tungsten-
	Examined using X-ray Synchrotron Radiation, <i>Hugh Bullen</i> , R.K. Nahm, S. Vishwanath, H.G. Xing, J.R. Engstrom, Cornell University	Molybdenum Nanostructured Thin Films, <i>Gustavo Martinez, C.V. Ramana</i> , University of Texas at El Paso
9:40am	SA+2D+AC+AS+TF-TuM6 Nanostructured Surface of Multilayer	SE+NS+TF+TR-TuM6 Hierarchical Monolith Scaffolds for Silicon Lithium
3.40diii	Graphene on Cubic-SiC, <i>Victor Aristov</i> , ISSP RAS, Chernogolovka, Russia, Russian Federation; <i>HC. Wu</i> , BIT, Beijing, China; <i>O.V. Molodtsova</i> , <i>S.V. Babenkov</i> , DESY, Hamburg, Germany; <i>A.N. Chaika</i> , ISSP RAS, Chernogolovka, Russia, Russian Federation	Ion Battery Electrodes, <i>Kevin Laughlin</i> , Brigham Young University
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
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10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
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11:00am	INVITED: SA+2D+AC+AS+TF-TuM10 Full-field Photoelectron Spectromicroscopy of Ferroelectric Surfaces, Nicholas Barrett, CEA Saclay, France	INVITED: SE+NS+TF+TR-TuM10 Technological Developments in Coatings for Components and Cutting Tools, <i>Roel Tietema</i> , IHI Hauzer Techno Coating B.V., Netherlands; <i>D. Doerwald</i> , Hauzer, Netherlands; <i>R. Jacobs, G. Negrea, I. Kolev, J. Zhu, J. Landsbergen</i> , Hauzer
11:20am	In the deal of the line of the	
11.20am	Invited talk continues.	Invited talk continues.
11:40am	INVITED: SA+2D+AC+AS+TF-TuM12 Electron Confinement at Magnetic Oxide Interfaces: Insight from Photoemission Spectroscopy, <i>Martina Mueller</i> , Forschungszentrum Juelich GmbH, Germany	SE+NS+TF+TR-TuM12 Influence of Transition Metal Dopants on Target Poisoning and Oxidation Mechanisms of Reactively Sputtered γ-Al ₂ O ₃ Thin Films, <i>Helmut Riedl</i> , <i>B. Kohlhauser</i> , TU Wien, Institute of Materials Science and Technology, Austria; <i>V. Paneta</i> , Uppsala University, Sweden; <i>C.M. Koller</i> , TU Wien, Institute of Materials Science and Technology, Austria; <i>S. Kolozsvári</i> , Plansee Composite Materials GmbH, Germany; <i>D. Primetzhofer</i> , Uppsala University, Sweden; <i>P.H. Mayrhofer</i> , TU Wien, Institute of Materials Science and Technology, Austria
12:00pm	Invited talk continues.	SE+NS+TF+TR-TuM13 Non-volatile Memory Effects in Carbon Films Deposited by High Power Impulse Magnetron Sputtering, Rajesh Ganesan, B. Treverrow, The University of Sydney, Australia; J. Partridge, D. McCulloch, RMIT, Melbourge, Australia; D. McKenzie, M. Bilek, The University of Sydney, Australia

Tuesday Morning, November 8, 2016 101 8:00 AM

Melbourne, Australia; D. McKenzie, M. Bilek, The University of Sydney, Australia

	Scanning Probe Microscopy Focus Topic Room 104A - Session SP+AS+MI+NS+SS-TuM	Surface Science Room 104D - Session SS1+AS+HC+NS-TuM
	Probing Chemical Reactions at the Nanoscale Moderator: Tae-Hwan Kim, Pohang University of Science and Technology	Surface Dynamics, Non-Adiabaticity, and Theory and Modeling of Surface and Interfacial Phenomena Moderator:
8:00am	SP+AS+MI+NS+SS-TuM1 In Situ Probing of Oxygen Vacancy Diffusion Across Multilayer Oxide Heterostructures, J. Zhu, University of Massachusetts - Amherst; JW. Lee, H. Lee, University of Wisconsin - Madison; R. DeSouza, RWTH Aachen University, Germany; CB. Eom, University of Wisconsin - Madison; Stephen Nonnenmann, University of Massachusetts - Amherst	Greg Kimmel, Pacific Northwest National Laboratory SS1+AS+HC+NS-TuM1 Graphene-Semiconductor Catalytic Nanodiodes for Quantitative Detection of Hot Electrons Induced by a Chemical Reaction, Hyosun Lee*, KAIST & IBS, Republic of Korea; I. Nedrygailov, IBS & KAIST, Republic of Korea; Y.K. Lee, C. Lee, KAIST & IBS, Republic of Korea; H. Choi, Electronics and Telecommunications Research Institute (ETRI), Republic of Korea; J.Y. Park, Institute for Basic Science (IBS) & Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea
8:20am	SP+AS+MI+NS+SS-TuM2 Study of Surface Chemistry on Various Noble Metal Surfaces by Ultrahigh Vacuum Tip-Enhanced Raman Spectroscopy, Naihao Chiang, Northwestern University; D. Chulhai, Pennsylvania State University; G. Goubert, L. Madison, X. Chen, E. Pozzi, M.C. Hersam, T. Seideman, Northwestern University; N. Jiang, University of Illinois at Chicago; L. Jensen, Pennsylvania State University; G. Schatz, R.P. Van Duyne, Northwestern University	SS1+AS+HC+NS-TuM2 Adlayer-Structure Dependent Ultrafast Desorption Dynamics: The Coverage Dependence of Substrate— Adsorbate Energy Transfer in Carbon Monoxide on Pd(111), Sung-Young Hong, Brookhaven National Laboratory; P. Xu, Stony Brook University; N.R. Camillone, M.G. White, N. Camillone, Brookhaven National Laboratory
8:40am	INVITED: SP+AS+MI+NS+SS-TuM3 Exploring Surface-assisted Reactions Toward Functional Carbon Nanostructures, <i>Xiaohui Qiu</i> , National Center for Nanoscience and Technology, China	SS1+AS+HC+NS-TuM3 Evidence for a Spin Accelerated Reaction Mechanism in the Thermal Decomposition of Alkyl Radicals on the Si(100) Surface, A.J. Pohlman, D.S. Kaliakin, S.A. Varganov, Sean Casey, University of Nevada
9:00am	Invited talk continues.	SS1+AS+HC+NS-TuM4 Hyperthermal Ion Induced Hot Carrier Excitations in a Metal Probed using Schottky Diodes, <i>Dhruva Kulkarni</i> , D.A. Field, D.B. Cutshall, J.E. Harriss, W.R. Harrell, C.E. Sosolik, Clemson University
9:20am	SP+AS+MI+NS+SS-TuM5 Landscapes in Conversion of Quasi-Free-Standing Polymer Chains to Graphene Nanoribbons, <i>Chuanxu Ma</i> , Oak Ridge National Laboratory; <i>Z. Xiao</i> , North Carolina State University; <i>L. Liang</i> , Oak Ridge National Laboratory; <i>W. Lu, J. Bernholc</i> , North Carolina State University; <i>K. Hong, B.G. Sumpter, AP. Li</i> , Oak Ridge National Laboratory	INVITED: SS1+AS+HC+NS-TuM5 H Atom Scattering, Adsorption, and Absorption in Collisions with Metal Surfaces: the crucial role of electron-hole-pair excitation, M. Alducin, Donostia International Physics Center, Spain; Daniel Auerbach, Max Planck Institute for Biophysical Chemistry, Germany; M. Blanco-Rey, Donostia International Physics Center, Spain; O. Bünermann, Y. Dorenkamp, Georg-August University of Göttingen; S.M. Janke, Max Planck Institute for Biophysical Chemistry, Germany; H. Jiang, Georg-August University of Göttingen; A. Kandratsenka, Max Planck Institute for Biophysical Chemistry; G-J. Kroes, Leiden Institute of Chemistry, The Netherlands; M. Kammler, Max Planck Institute for Biophysical Chemistry; M. Pavenelo, Leiden Institute of Chemistry
9:40am	SP+AS+MI+NS+SS-TuM6 High Spatial Resolution Mapping of Catalytic Reactions on Single Pt Nanoparticles, <i>Elad Gross, Y. Levratovsky</i> , The Hebrew University of Jerusalem, Israel	Invited talk continues.
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
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11:00am	INVITED: SP+AS+MI+NS+SS-TuM10 Imaging Single Molecule Chemistry, Wilson Ho, University of California Irvine	SS1+AS+HC+NS-TuM10 Progress in Characterizing Submonolayer Island Growth: Capture-Zone Distributions, Growth Exponents, and Transient Mobility, <i>Theodore L. Einstein</i> , University of Maryland, College Park; A. Pimpinelli Rice University; J.R. Morales-Cifuentes, University of Maryland, College Park; D.L. González, Universidad del Valle, Colombia
11:20am	Invited talk continues.	SS1+AS+HC+NS-TuM11 Hindered Translator and Hindered Rotor Models for Calculating the Entropy of Adsorbed Species, <i>Lynza H. Sprowl</i> [†] , Oregon State University; <i>C.T. Campbell</i> , University of Washington; <i>L. Arnadottir</i> , Oregon State University
11:40am	INVITED: SP+AS+MI+NS+SS-TuM12 Atomic Force Microscopy: A Tool for Chemical Analysis of Surfaces and Molecules on Atomic Scale, <i>Pavel Jelinek</i> , Institute of Physics of the AS CR, Czech Republic	SS1+AS+HC+NS-TuM12 Stabilization of X-Au-X Complexes on the Au(111) Surface: A Theoretical Investigation and Comparison of X=Sulfur, Chlorine, Methythiolate, and Silylthiolate, J. Lee, J.S. Boschen, T.L. Windus, P.A. Thiel, J.W. Evans, Da-Jiang Liu, Iowa State University
12:00pm	Invited talk continues.	SS1+AS+HC+NS-TuM13 Contrasting Phonon Confinement and Interface Stability at Fe-Ag and Fe-Cr Multilayers: Insights from <i>Ab Initio</i> Calculations, <i>S. Hong, Talat Rahman</i> , University of Central Florida

^{*} National Student Award Finalist

[†] Morton S. Traum Award Finalist

	Surface Science Room 104E - Session SS2+AS+HC+NS-TuM Nanostructures: Growth, Reactivity, and Catalysis Moderator: Bruce Koel, Princeton University	Thin Film Room 102B - Session TF+SA+MI-TuM Thin Films for Synchrotron and Magnetism Applications Moderators: Joshua Ballard, Zyvex Labs, Divine Kumah, North Carolina State University
8:00am	INVITED: SS2+AS+HC+NS-TuM1 Use of Size Correlations to Probe Reaction Mechanisms on Size-selected Model Catalysts, Scott Anderson, University of Utah	TF+SA+MI-TuM1 Achieving High-Temperature Ferromagnetic Topological Insulator by Proximity Coupling, <i>Valeria Lauter</i> , Oak Ridge National Laboratory
8:20am	Invited talk continues.	TF+SA+MI-TuM2 Soft X-ray Induced Spin Crossover Transition at Room Temperature, <i>Paulo Costa, X. Zhang, S. Beniwal,</i> University of Nebraska-Lincoln; <i>A.T. N'Diaye,</i> Lawrence Berkeley National Laboratory; <i>J-F. Létard,</i> Université de Bordeaux; <i>P.A. Dowben, A. Enders,</i> University of Nebraska-Lincoln
8:40am	SS2+AS+HC+NS-TuM3 Role of the Strong Metal Support Interaction on the Catalytic Activity of Platinum Deposited on TiO ₂ Supports, <i>R.Paul Hansen</i> , <i>R.S. Phillips</i> , University at Albany-SUNY; <i>E.T. Eisenbraun</i> , <i>C.A. Ventrice</i> , <i>Jr.</i> , SUNY Polytechnic Institute	TF+SA+MI-TuM3 Probing Thermochromic Phase Transitions in ALD VO ₂ using Synchrotron Radiation, <i>Alexander Kozen</i> , U.S. Naval Research Laboratory; <i>H. Joress</i> , Cornell University; <i>V.D. Wheeler</i> , <i>C.R. Eddy</i> , U.S. Naval Research Laboratory
9:00am	SS2+AS+HC+NS-TuM4 Adsorption and Adhesion Energies of Au, Cu, and Ag Nanoparticles on CeO ₂ (111), MgO(100) and Other Oxide Surfaces, Charles T. Campbell, S.L. Hemmingson, G.M. Feeley, University of Washington	TF+SA+MI-TuM4 Standing-wave Synchrotron Photoemission Studies of Electronic Structure in SrTiO ₃ -LaCrO ₃ Superlattices, <i>Ryan Comes</i> , Auburn University; <i>S.C. Lin</i> , University of California, Davis; <i>C.T. Kuo</i> , Lawrence Berkeley National Laboratory (LBNL); <i>L. Plucinski</i> , FZ Juelich; <i>S. Spurgeon</i> , Pacific Northwest National Laboratory; <i>D. Kepaptsoglou</i> , <i>Q. Ramasse</i> , SuperSTEM; <i>J.E. Rault</i> , Synchrotron SOLEIL; <i>S. Nemsak</i> , Forschungszentrum Juelich GmbH, Germany; <i>C. Fadley</i> , Lawrence Berkeley National Laboratory (LBNL); <i>P.V. Sushko</i> , <i>S.A. Chambers</i> , Pacific Northwest National Laboratory
9:20am	SS2+AS+HC+NS-TuM5 Effects of Nanoparticles on Surface Resistivity: Ni on Au(111), Joshua Cohen, R.G. Tobin, Tufts University	INVITED: TF+SA+MI-TuM5 In Situ Synchrotron X-ray Studies of Complex Oxide Thin Film Growth, Dillon Fong, Argonne National Laboratory
9:40am	SS2+AS+HC+NS-TuM6 Three-Dimensional Control of Nanoparticle Layer Deposition by "Click Chemistry", <i>Mackenzie Williams</i> , A.V. Teplyakov, University of Delaware	Invited talk continues.
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
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10:20am 10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am 10:40am 11:00am	BREAK - Complimentary Coffee in Exhibit Hall BREAK - Complimentary Coffee in Exhibit Hall SS2+AS+HC+NS-TuM10 Spherical Metallic Nanostructures Based on Fullerene Scaffolds with Tunable Bandgap, A Scanning Tunneling Microscopy/Spectroscopy (STM/STS) Study, Ehsan Monazami, University of Virginia; J.B. McClimon, University of Pennsylvania; J.M. Rondinelli, Northwestern	BREAK - Complimentary Coffee in Exhibit Hall BREAK - Complimentary Coffee in Exhibit Hall TF+SA+MI-TuM10 Probing CVD Growth Mechanisms of SiC with In Operando Synchrotron-based X-ray Diagnostics, Philip DePond, A.A. Martin, J.H. Yoo, M. Bagge-Hansen, J. Lee, S. Elhadj, M. Matthews, T. van Buuren,
10:20am 10:40am 11:00am	BREAK - Complimentary Coffee in Exhibit Hall BREAK - Complimentary Coffee in Exhibit Hall SS2+AS+HC+NS-TuM10 Spherical Metallic Nanostructures Based on Fullerene Scaffolds with Tunable Bandgap, A Scanning Tunneling Microscopy/Spectroscopy (STM/STS) Study, Ehsan Monazami, University of Virginia; J.B. McClimon, University of Pennsylvania; J.M. Rondinelli, Northwestern University; P. Reinke, University of Virginia SS2+AS+HC+NS-TuM11 Facile Synthesis of Gold Nanoworms and their Excellent Surface Enhanced Raman Scattering (SERS) and Catalytic Properties, Waqqar Ahmed, COMSATS Institute of Information Technology,	BREAK - Complimentary Coffee in Exhibit Hall BREAK - Complimentary Coffee in Exhibit Hall TF+SA+MI-TuM10 Probing CVD Growth Mechanisms of SiC with In Operando Synchrotron-based X-ray Diagnostics, Philip DePond, A.A. Martin, J.H. Yoo, M. Bagge-Hansen, J. Lee, S. Elhadj, M. Matthews, T. van Buuren, Lawrence Livermore National Laboratory TF+SA+MI-TuM11 Unusual Effects in Organic Thin Film Growth as Revealed by the Use of In Situ Real Time Synchrotron X-ray Techniques,

	Thin Film Room 105A - Session TF-TuM Advanced CVD and ALD Processing, ALD Manufacturing and Spatial-ALD Moderators: Steven M. George, University of Colorado at Boulder, Jesse Jur, North Carolina State University	Vacuum Technology Room 104C - Session VT-TuM Vacuum Pumping and Material Outgassing Moderators: Martin Wüest, INFICON Ltd., Liechtenstein, Jacob Ricker, NIST
8:00am	TF-TuM1 An Analytic Expression for Reactant Utilization in CVD and ALD Chambers, <i>Edward McInerney</i> , Lam Research Corporation	INVITED: VT-TuM1 Applicative Challenges for today's Turbo Molecular Pumps, Adrian Wirth, H. Bernhardt, Pfeiffer Vacuum GmbH, Germany; N. Cotton, Pfeiffer Vacuum Inc
8:20am	TF-TuM2 Growth of Silicon Films at Room Temperature Using Electron Enhanced Atomic Layer Deposition, <i>Jaclyn Sprenger</i> , A.S. Cavanagh, H. Sun, S.M. George, University of Colorado, Boulder	Invited talk continues.
8:40am	INVITED: TF-TuM3 Chemical Vapor Deposition within the ALD window — Quantitative Analysis of Precursor Surface Kinetics in Thin Film Formation, <i>Michael Reinke, Y. Kuzminykh, P. Hoffmann,</i> Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	VT-TuM3 Ion Pump Design for Improved Pumping Speed at Low Pressure, <i>Alessandro Abatecola</i> , <i>M. Audi</i> , Agilent Technologies, Italy
9:00am	Invited talk continues.	VT-TuM4 Multi Scaled Titanium Gettered Surfaces for Enhanced Pumping of H ₂ , Alan Van Drie, Tri Alpha Energy
9:20am	TF-TuM5 A Rotation Fluidization Coupled Atomic Layer Deposition Reactor for Nanoparticle Coating, <i>C.L. Duan</i> , State Key Laboratory of Digital Manufacturing Equipment and Technology, School of Mechanical Science and Engineering, Huazhong University of Science and Technology, China; <i>R. Chen</i> , State Key Laboratory of Digital Manufacturing Equipment and Technology, School of Mechanical Science and Engineering, School of Optical and Electronic Information, Huazhong University of Science and Technology, China; <i>Kun Cao</i> , Huazhong University of Science and Technology, Wuhan, China	VT-TuM5 Challenges of Using Molecular Adsorbers for Maintaining High Vacuum, <i>Mihail Petkov</i> , <i>G.E. Voecks</i> , NASA Jet Propulsion Laboratory/California Institute of Technology
9:40am	TF-TuM6 Atmospheric Pressure ALD in Porous Substrates: The Effect of Pressure on Step Coverage, <i>E. Balder, F. Roozeboom, Paul Poodt,</i> Holst Centre / TNO, Netherlands	VT-TuM6 Outgassing of UHV Stainless Steel Cans, <i>Lily Wang</i> , <i>P.D. Honnell</i> , Los Alamos National Laboratory
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	INVITED: TF-TuM10 New Spatial ALD platform for Semiconductor Manufacturing, <i>Joseph Yudovsky</i> , Applied Materials, Inc.	VT-TuM10 Calibration of Reference Samples for Water Vapor Outgassing and Water Vapour Transfer Rate, <i>Janez Setina</i> , Institute of Metals and Technology (IMT), Slovenia; <i>K. Jousten</i> , Physikalisch-Technische Bundesanstalt (PTB), Germany
11:20am	Invited talk continues.	VT-TuM11 Simulated and Measured Extreme High Vacuum in the Jefferson Lab Polarized Electron Source, <i>Marcy Stutzman</i> , Thomas Jefferson National Accelerator Facility
11:40am	TF-TuM12 Spatial MLD of Polyamide Films on Flexible Substrates using a New Rotating Cylinder Reactor in a Custom Oven, <i>Daniel Higgs</i> , University of Colorado Boulder; <i>S.M. George</i> , University of Colorado at Boulder	VT-TuM12 Outgassing Rate Measurements of 3-D Printed Materials, Makfir Sefa, J.A. Fedchak, J. Scherschligt, National Institute of Standards and Technology (NIST)
12:00pm	TF-TuM13 Spatial Atomic Layer Deposition for Porous and Fibrous Materials, <i>Gregory Parsons</i> , A.H. Brozena, C.J. Oldham, North Carolina State University	VT-TuM13 Characterization Studies of UHV Polished Surfaces, <i>Melisa Buie, C. Fields,</i> Coherent Inc; <i>A. Cress,</i> San Jose State University

Tuesday Lunch, November 8, 2016

	Exhibitor Technology Spotlight	
	Room Hall C - Session EW-TuL	
	Exhibitor Technology Spotlight Session	
	Moderator: Chris Moffitt, Kratos Analytical Limited	
12:20pm		
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12:40pm	EW-Tul2 Spin-resolved Momentum Microscopy, <i>Thomas Stempel Pereira</i> , SPECS Surface Nano Analysis GmbH	
	SI LES Surface (Vallo Alialysis Gillott	
1:00pm	EW-TuL3 The New Generation of the Hemispherical Energy Analyser in	
	the Novel Surface Science Research, <i>Lukasz Walczak</i> , PREVAC Sp z o.o.,	
	Rogow, Poland	
1:20nm	FNA Total Labort Developments in VDC and Deleted Mathed from Victor	
1.20pm	EW-Tul4 Latest Developments in XPS and Related Methods from Kratos Analytical, <i>Chris Blomfield</i> , <i>J.D.P. Counsell</i> , <i>S.J. Coultas</i> , <i>S.C. Page</i> , Kratos	
	Analytical Limited, UK; C. Moffitt, Kratos Analytical Limited	
	. ,	
1:40pm	EW-TuL5 What's New with Physical Electronics, <i>John Newman,</i> Physical	
	Electronics USA	
2:00pm		

Tuesday Afternoon, November 8, 2016

	2D Materials Focus Topic Room 103B - Session 2D-TuA	Applied Surface Science Room 101B - Session AS+SS-TuA
	Novel Quantum Phenomena in 2D Materials Moderators: Yoshi Iwasa, University of Tokyo, Japan Kristian Thygesen, Technical University of Denmark	Data Analytics in Surface Science and Nanoscience Moderators: Anders Mikkelsen, Lund University, Sweden, Petra Reinke, University of Virginia
2:20pm	2D-TuA1 Time-dependent Density-functional Theory Simulation of Local Currents in Pristine and Single-defect Zigzag Graphene Nanoribbons, 5 <i>He, A. Russakoff, Y. Li, K. Varga,</i> Vanderbilt University	AS+SS-TuA1 Fast Strain Mapping of Nanowire Light-Emitting Diodes Using Nanofocused X-ray Beams, T. Stankevic, Copenhagen University, Denmark; U. Johansson, L. Samuelson, Lund University, Sweden; G. Falkenberg, DESY, Hamburg, Germany; R. Feidenhans'l, Copenhagen University, Denmark; Anders Mikkelsen, Lund University, Sweden
2:40pm	2D-TuA2 Effect of Environmental Parameters on 2D Excitonic Complexes, <i>David Zhang</i> , <i>D.W. Kidd</i> , <i>K. Varga</i> , Vanderbilt University	AS+SS-TuA2 Bellerophon Environment for Analysis of Materials (BEAM). A High Performance Computing Workflow Platform for Materials Research, E.J. Lingerfelt, A. Belianinov, E. Endeve, Oak Ridge National Laboratory. O.S. Ovchinnikov, Vanderbilt University; S. Somnath, R.K. Archiblad, S.V. Kalinin, Stephen Jesse, Oak Ridge National Laboratory
3:00pm	2D-TuA3 Studies of Conductance in Graphene Defects and Junctions using Complex-Injecting Potentials and TDDFT, <i>Cody Covington, K. Varga</i> , Vanderbilt University	INVITED: AS+SS-TuA3 The Center for Advanced Methods for Energy Research Applications (CAMERA): Mathematical Methods for Data Science from Experimental Facilities, James Sethian, University of California at Berkeley
3:20pm	2D-TuA4 Excited Biexcitons in Two-Dimensional Transition Metal Dichalcogenides, <i>Daniel Kidd</i> , <i>D. Zhang</i> , <i>K. Varga</i> , Vanderbilt University	Invited talk continues.
3:40pm	BREAK	BREAK
4:00pm	BREAK	BREAK
4:20pm	2D-TuA7 Electron Talbot Effect on Graphene, <i>Jorge Salas</i> , Vanderbilt University	AS+SS-TuA7 New Data Analysis Tools for X-ray Photoelectron Spectroscopy (XPS) and Spectroscopic Ellipsometry (SE), Matthew Linford B. Singh, J. Bagley, Brigham Young University; J. Terry, Illinois Institute of Technology; A. Herrera-Gomez, CINVESTAV-Unidad, Mexico
4:40pm	2D-TuA8 Femtosecond Hot Electron-Phonon Interactions of Single Layer Graphene and the undelying Substrate, <i>Zina Jarrahi</i> , J.L. Davidson, N.H. Tolk, Vanderbilt University	AS+SS-TuA8 A Surface Investigation of Parchments using ToF-SIMS and Principle Component Analysis, <i>Marie-Laure Abel, J.F. Watts, V. Vilde,</i> University of Surrey, UK
5:00pm	INVITED: 2D-TuA9 New Opportunities in Two-Dimensional Material Research, <i>Yuanbo Zhang</i> , Fudan University, China	INVITED: AS+SS-TuA9 Multivariate Analysis of Very Large Hyperspectra SIMS Datasets: What Can We Do, and What Would We Like to Do?, Henrik Arlinghaus, ION-TOF GmbH, Germany
5:20pm	Invited talk continues.	Invited talk continues.
5:40pm	2D-TuA11 Ultrafast Carrier Dynamics in the Quasi-2D Metal Dichalcogenide SnS ₂ , <i>Oliver Monti</i> , <i>C. Eads</i> , <i>D. Bandak</i> , University of Arizona; <i>D. Nordlund</i> , SLAC National Accelerator Laboratory; <i>M. Neupane</i> , US Army Research Laboratory	AS+SS-TuA11 High mass-resolution 3D ToF-SIMS: PCA and visualization in seconds using Graphical Processor Units (GPUs), <i>Peter Cumpson</i> , <i>I.W. Fletcher</i> , <i>N. Sano</i> , <i>A.J. Barlow</i> , Newcastle University, UK
6:00pm	2D-TuA12 MBE Growth of WTe ₂ for Novel Electronic and Topologically Protected Devices, <i>Lee Walsh</i> , <i>R. Yue</i> , <i>A.T. Barton</i> , <i>H. Zhu</i> , <i>L. Cheng</i> , <i>R. Addou</i> , <i>J. Hsu</i> , <i>J. Kim</i> , <i>M. Kim</i> , University of Texas at Dallas; <i>L. Colombo</i> , Texas Instruments; <i>R.M. Wallace</i> , <i>C.L. Hinkle</i> , University of Texas at Dallas	AS+SS-TuA12 Mass Spectrometry Image Fusion, Bonnie June Tyler, Universität Münster, Germany; H.F. Arlinghaus, University of Muenster, German

	Biomaterial Interfaces	Electronic Materials and Photonics
	Room 101A - Session BI+AS+SA-TuA	Room 102A - Session EM+MI+MN-TuA
	Biophysics and Characterization of Biological and	New Materials and Devices for Emerging Memory
	Biomaterial Surfaces	Technologies
	Moderators: Eva Chi, University of New Mexico,	Moderators: Andy Antonelli, Nanometrics,
	Axel Rosenhahn, Ruhr-University Bochum, Germany	Sean King, Intel Corporation
2:20pm	BI+AS+SA-TuA1 Resolving Non-specific and Specific Adhesive	INVITED: EM+MI+MN-TuA1 Emerging Processing Challenges for
1	Interactions of Catechols at Solid/Liquid Interfaces at the Single	Advanced Memory Technologies, Bart Van Schravendijk, Lam Research
	Molecular Scale, T. Utziq, Max-Planck Institut für Eisenforschung GmbH,	, , , , , , , , , , , , , , , , , , , ,
	Germany; P. Stock, Max Planck Institut fur Eisenforschung GmbH, Germany;	
	Markus Valtiner, Technische Universität Freiberg, Germany	
2:40pm	BI+AS+SA-TuA2 Protein-Nanoparticles Interactions: Surface Chemistry, Protein Corona and Secondary Structural Changes, I. Ojea, R. Capomaccio,	Invited talk continues.
	L. Calzolai, D. Gilliland, P. Colpo, Giacomo Ceccone , EC-JRC-IHCP, Italy; G. Siligardi, R. Hussein, Diamond Light Source, Oxfordshire, UK	
3:00pm	INVITED: BI+AS+SA-TuA3 Measuring the Impact of the Surface of	INVITED: EM+MI+MN-TuA3 STT-MRAM: A Versatile Memory Solution
	Protein Stability using Single Molecule Experiments with the AFM, <i>Phil</i>	Enabled by Atomic Level Engineering, Yu Lu, Hikstor Technology Co. Ltd,
	Williams, S. Allen, A. Oyefeso, G. Milson, E. Fornari, University of Nottingham, UK	China
2.22		
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	BREAK	BREAK
4:00nm	BREAK	BREAK
4.000111	DREAK	DREAK
4·20nm	INVITED: BI+AS+SA-TuA7 In Vitro Characterization of Interfaces for the	INVITED: EM+MI+MN-TuA7 Resistance Change Memory and its
	Development of Antibacterial and Biocompatible Surfaces, <i>Katharina Maniura</i> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	Perspective toward 3D Integration, <i>Yoshio Nishi, B. Magyari-Kope,</i> Stanford University
4:40pm	Invited talk continues.	Invited talk continues.
5:00pm	BI+AS+SA-TuA9 Vibrational Sum-Frequency Scattering Spectroscopy for	INVITED: EM+MI+MN-TuA9 Atomic Disorder As an Intrinsic Source of
	Characterization of Biomaterial Interfaces in Biological Environments,	Variability in Filamentary Rram Devices – Ab Initio Investigations, Sergiu
	Patrik Johansson, C. McDonald, YC. Wang, P. Koelsch, D.G. Castner, University of	Clima, IMEC, Belgium; L. Goux, B. Govoreanu, M. Jurczak, G. Pourtois, A. Fantini,
	Washington	IMEC
5:20nm	BI+AS+SA-TuA10 Imaging ToF-SIMS of Human Breast Cancer Tissues:	Invited talk continues.
3.20pm	Connecting Chemical Images to Biology, <i>Blake Bluestein</i> , University of	invited talk continues.
	Washington; F. Morrish, D. Hockenbery, Fred Hutchinson Cancer Research Center;	
	L.J. Gamble, University of Washington	
5:40pm	BI+AS+SA-TuA11 Some of These Images are Just Like the Others: Finding	EM+MI+MN-TuA11 Reduction of Radiation Damage to HfOx-Based
	Similar Images in Imaging Mass Spectrometry Data Sets, <i>Daniel Graham</i> ,	Resistive Random Access Memory using a Thin ALD HfOx Film, Kai-wen
	L.J. Gamble, University of Washington	Hsu, T. Chang, University of Wisconsin-Madison; L. Zhao, Z. Wang, Stanford University; R. Aqasie, T. Betthauser, J. Nickles, Z. Ma, J. Chang, University of
		Wisconsin-Madison; Y. Nishi, Stanford University; J.L. Shohet, University of
6:00pm	BIOMATERIAL INTERFACES FLASH NETWORKING SESSION:	Wisconsin-Madison EM+MI+MN-TuA12 Potential Dependent Resistance of Doped TiO₂ Film
0.00pm	DMITRI PETROVYKH, Int'l Iberian Nanotech Lab, Portugal (BI+PB-TuP1);	Fabricated by Solgel Process: Perspective for Resistive Memory, R.R.
	GEORGE BANIS, Univ. of Maryland, (BI+PB-TuP2); LUIS SOLIS, Univ. of	Pandey, Jyotirmay Sharma, C. Kant, K. Saini, CSIR-National Physical Laboratory,
	Texas El Paso (BI+PB-TuP3); RICHARD ROSENBERG, Argonne National	India
	Lab (BI+PB-TuP4); JINN P. CHU , National Taiwan Univy of Sci. & Tech.,	
	Republic of China (BI+PB-TuP6); DANIEL BARLOW , US Naval Research	
	Lab (BI+PB-TuP7); DAVID FLORIAN, Univ. of Virginia (BI+PB-TuP8)	
6:25 pm		EMPD BUSINESS MEETING
6:45 pm		

	Magnetic Interfaces and Nanostructures Room 102B - Session MI-TuA Magnetic Phenomena in Organic Systems Moderators: Gary Mankey, University of Alabama, Mikel Holcomb, West Virginia University	Manufacturing Science and Technology Room 103A - Session MS-TuA Working with National Labs and User Facilities Moderator: Bridget Rogers, Vanderbilt University
2:20pm	INVITED: MI-TuA1 Promises and Challenges of Organic Spintronics, Christoph Boehme, University of Utah	MS-TuA1 Southeastern Nanotechnology Infrastructure Corridor (SENIC) – A Nano Fabrication and Characterization Resource as part of the National Nanotechnology Coordinated Infrastructure (NNCI), P. Joseph, D. Gottfried, Gary Spinner, O. Brand, Georgia Institute of Technology
2:40pm	Invited talk continues.	MS-TuA2 The Cornell NanoScale Science and Technology Facility (CNF), Michael Skvarla, Cornell NanoScale Science and Technology Facility
3:00pm	MI-TuA3 Spin-Polarized STM Observation of Hybridization at the Interface between Different 8-hydroxyquinolates and the Cr(001) Surface, Daniel Dougherty, J. Wang, A. Deloach, North Carolina State University	MS-TuA3 The CNST NanoFab at NIST: Nanofabrication for US Commerce, Vincent Luciani, NIST Center for Nanoscale Science and Technology
3:20pm	MI-TuA4 Charge Transport in Thin Films of a Molecular Spin-Crossover Compound, <i>Greg Szulczewski</i> , E. Ellingsworth, The Univeristy of Alabama	MS-TuA4 In-Situ Characterization Tools for Materials Growth and Processing at NSLS-II, Klaus Attenkofer, E. Stavitski, K. Evans-Lutterodt, C. Nelson, Brookhaven National Laboratory
3:40pm	BREAK	BREAK
4:00pm	BREAK	BREAK
4:20pm	INVITED: MI-TuA7 Single Organic Radicals on Metal Surfaces: A Model System for Spin-1/2 Kondo Physics, <i>Peter Wahl</i> , University of St Andrews, UK	MS-TuA7 The Center for Nanophase Materials Sciences, <i>Michael Simpson</i> , Oak Ridge National Laboratory
4:40pm	Invited talk continues.	MS-TuA8 User Opportunities at the Center for Nanoscale Materials, Kathleen Carrado Gregar, Center for Nanoscale Materials at Argonne National Laboratory
5:00pm	INVITED: MI-TuA9 Tunneling in III-N Heterostructures for Low Power Electronics, <i>Patrick Fay, W. Li, L. Cao, K. Pourang,</i> University of Notre Dame; <i>S. Islam,</i> Cornell University; <i>C. Lund,</i> University of California at Santa Barbara; <i>H. Ilatikhameneh, R. Rahman, T. Amin,</i> Purdue University; <i>D. Jena,</i> Cornell University; <i>S. Keller,</i> University of California at Santa Barbara; <i>G. Klimeck,</i> Purdue University	MS-TuA9 The Center for Integrated NanotechnologiesResources and Capabilities, <i>Dale Huber</i> , Sandia National Laboratories
5:20pm	Invited talk continues.	MS-TuA10 Using EMSL Capabilities in Combination with those from other User Facilities to Address Fundamental and Applied Problems, Donald Baer, M.H. Engelhard, T.J. Law, Pacific Northwest National Laboratory
5:40pm	INVITED: MI-TuA11 A Spins-Inside Quantum Processor, <i>T. Fujita</i> , Delft University of Technology, The Netherlands; <i>L.M.K. Vandersypen</i> , Delft University of Technology, The Netherlands; <i>T. Hensgens</i> , Delft University of Technology, The Netherlands	PANEL DISCUSSION
6:00pm	Invited talk continues.	
6:05 pm	MIND BUSINESS MEETING	

Nanometer-scale Science and Technology Plasma Science and Technology Room 101D - Session NS-TuA Room 104B - Session PS+2D-TuA **Nanoscale Imaging and Characterization** Plasma Processing for Nanomaterials and 2D Materials Moderators: Mehmet Z. Baykara, Bilkent University, Turkey, Moderator: Sumit Agarwal, Colorado School of Mines Sidney Cohen, Weizmann Institute of Science, Israel, Rainer Timm, Lund University, Sweden INVITED: NS-TuA1 Frontiers of Force Microscopy in Nanoscience and 2:20pm PS+2D-TuA1 Analysis of Microplasma Reduction of Aqueous Silver and Nanotechnology, Ricardo Garcia*, CSIC, Spain Gold Salts to Colloidal Nanoparticles, Caroline De Vos, Université Libre de Bruxelles, Belgium; M.J. Gordon, University of California, Santa Barbara; R.M. Sankaran, Case Western Reserve University; F. Reniers, Université Libre de Bruxelles, Belgium Invited talk continues. PS+2D-TuA2 Controllable Optical Properties of Plasmonic TiN Nanoparticles Synthesized by a Scalable Non-Thermal Plasma Method, Alejandro Alvarez Barragan, L. Zhong, L. Mangolini, University of California Riverside **INVITED: NS-TuA3** Elemental and Magnetic Fingerprinting of Materials INVITED: PS+2D-TuA3 Plasma Prize Talk: Nonthermal Plasma Synthesis at the Nanoscale by Synchrotron X-ray Scanning Tunneling Microscopy, of Nanocrystal Materials, N.J. Kramer, K. Schramke, T. Chen, H. Fu, S. Ehrenberg, K. Reich, B. Shklovskii, **Uwe Kortshagen**[†], University of Minnesota Volker Rose, Argonne National Laboratory 3:20pm Invited talk continues. Invited talk continues. 3:40pm BREAK **BREAK** 4:00pm BREAK **BREAK** 4:20pm INVITED: NS-TuA7 Quantitative Nanomechanics of Soft Materials with PS+2D-TuA7 Initiated Plasma Enhanced Chemical Vapor Deposition of AFM: Old and New Methods, Igor Sokolov, Tufts University Metalloporphyrins: A Simple Route towards the Deposition of Metal Organic Covalent Networks, Nicolas BOSCHER, Luxembourg Institute of Science and Technology, Luxembourg; M. WANG, K. GLEASON, Massachusetts Institute of Technology 4:40pm Invited talk continues PS+2D-TuA8 H₂ Plasma Interaction with CVD Graphene, Gilles Cunge, CNRS-LTM, France; D. Ferrah, CEA-LETI, France; D. Marinov, LPP-CNRS, Ecole Polytechnique, France; J. Arias-Zapata, LTM-CNRS, France; E. Despiau-Pujo, A. Davydova, CNRS-LTM, France; H. Okuno, INAC; V. Bouchiat, CNRS I-Neel, France; O.J. Renault, CEA-LETI, France 5:00pm | **NS-TuA9** AFM Based Nanoscale Structure-Property Characterization of INVITED: PS+2D-TuA9 Plasma-graphene Interaction and its Effects on Nanoporous Organo-Silicates, Qichi Hu, K. Kjoller, Anasys Instruments; G. Stan, Nanoscale Patterning, A. Harpale, University of Illinois at Urbana-Champaign; NIST/Material Measurement Laboratory; S.W. King, Intel Corporation Huck Beng Chew, University of Illinois at Urbana Champaign 5:20pm NS-TuA10 Probing Single Molecule Reactions with Laser-coupled STM, Invited talk continues. Nicholas Tallarida, L. Rios, V.A. Apkarian, J. Lee, University of California, Irvine NS-TuA11 Scanning Microwave Microscopy Imaging in Liquids through INVITED: PS+2D-TuA11 A Closer Look at Chemically Modified Graphene, Ultra-Thin Membranes, Alexander Tselev, Oak Ridge National Laboratory; J. Sandra Hernández, Naval Research Laboratory Velmurugan, National Institute of Standards and Technology (NIST), University of Maryland (UMD); A. Kolmakov, NIST/CNST NS-TuA12 SnS Nanoplates, Nancy Trejo, A. Hunter, C. Wrasman, S. Ganguly, Invited talk continues. University of Minnesota; J. Dwyer, St. Catherine University; E.S. Aydil, University of Minnesota 6:25 pm NSTD BUSINESS MEETING PSTD BUSINESS MEETING & 2016 PLASMA PRIZE AWARD ANNOUNCEMENT

NSTD Recognition Award

[†] PSTD Plasma Prize

	Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic Room 103C - Session SA+AS+BI+MI-TuA Synchrotron and XFEL Advances for Biological Systems (2:20-3:40 pm)/Synchrotron Radiation at the Frontiers of Device Technology (4:20-6:20 pm) Moderators: David Shuh, Lawrence Berkeley National Lab, Olivier Renault, CEA-University Grenoble Alps, France	Advanced Surface Engineering Room 101C - Session SE+MS+TF-TuA Innovations in PVD, CVD, Atmospheric Pressure Plasma and Other Surface Technologies Moderators: Hana Barankova, Uppsala University, Sweden, Robert Franz, Montanuniversität Leoben, Austria
2:20pm	INVITED: SA+AS+BI+MI-TuA1 Crystal Growth Mechanisms of Biominerals Revealed by Polarization-dependent Imaging Contrast (PIC) Mapping, <i>Pupa Gilbert</i> , University of Wisconsin - Madison	SE+MS+TF-TuA1 Investigation of Critical Processing Parameters on Laser Surface Processing of Mg-Al-Zn Alloys: Impact on Corrosion Kinetics, <i>Michael Melia</i> , D.C. Florian, J.R. Scully, J.M. Fitz-Gerald, University of Virginia
2:40pm	Invited talk continues.	SE+MS+TF-TuA2 Engineering a WC/Co Carbide Surface for PVD and CVD coatings, Aharon Inspektor, P.A. Salvador, Carnegie Mellon University; D. Banerjee, C. McNerny, M. Rowe, P. Mehrotra, Kennametal Inc.
3:00pm	INVITED: SA+AS+BI+MI-TuA3 New Dimensions in Synchrotron IR Spectroscopy, Michael Martin, Lawrence Berkeley National Laboratory	INVITED: SE+MS+TF-TuA3 Room-Temperature Ductility in Refractory Transition-Metal Carbides: Potential to Create Ultra-Tough, Flexible Thin Films, Suneel Kodambaka, University of California at Los Angeles
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	BREAK	BREAK
4:00pm	BREAK	BREAK
4:20pm	INVITED: SA+AS+BI+MI-TuA7 Sample Delivery Methods for X-ray Free Electron Lasers, <i>Uwe Weierstall</i> , Arizona State University	SE+MS+TF-TuA7 Spray-Coated Carbon-Nanotubes for Crack-Tolerant Metal Matrix Composites as Photovoltaic Gridlines, Omar K. Abudayyeh, University of New Mexico; N.D. Gapp, G.K. Bradshaw, D.M. Wilt, Air Force Research Laboratories; S.M. Han, University of New Mexico
4:40pm	Invited talk continues.	SE+MS+TF-TuA8 Atmospheric Pressure Plasma Enhanced CVD of High Quality Silica-Like Bilayer Encapsulation Films, Fiona Elam, FUJIFILM Manufacturing Europe B.V., Netherlands; A.S. Meshkova, DIFFER, Netherlands; S.A. Starostin, J.B. Bouwstra, FUJIFILM Manufacturing Europe B.V.; M.C.M. van de Sanden, Dutch Institute for Fundamental Energy Research (DIFFER), Netherlands; H.W. de Vries, DIFFER, Netherlands
5:00pm	INVITED: SA+AS+BI+MI-TuA9 Synchrotron-based Spectroscopy Investigation for Electronic Phase Transition at Highly-Charged Electric-Double-Layer Interfaces, <i>Hongtao Yuan</i> , SLAC National Accelerator Laboratory	SE+MS+TF-TuA9 Plasma Polymerization of Organic Coatings at Atmospheric Pressure: Relationship between the Precursor Chemistry, the Plasma Chemistry and the Final Coating Chemistry, B. Nisol, N. Vandencasteele, J. Hubert, C. De Vos, J. Ghesquière, D. Merche, François Reniers, Université Libre de Bruxelles, Belgium
5:20pm	Invited talk continues.	INVITED: SE+MS+TF-TuA10 Innovations in Atmospheric Pressure Plasma Technologies for Surface Engineering, <i>David Ruzic</i> , <i>Y.L. Wu</i> , <i>L. Na</i> , <i>S. Hammouti</i> , <i>I.A. Shchelkanov</i> , University of Illinois at Urbana-Champaign
5:40pm	SA+AS+BI+MI-TuA11 Correlation of the Conductivity/Magnetic Properties and the Electronic, Crystalline and Compositional Structure of Strongly Correlated Complex-oxide Interfaces and Thin Films, Juan Rubio- Zuazo, SpLine CRG Beamline at the ESRF The European Synchrotron, France; G.R. Castro, SpLine CRG Beamline at the ESRF The European Synchrotron, France	Invited talk continues.
6:00pm	SA+AS+BI+MI-TuA12 Interface Passivation of III-V/High-k Materials by High Energy X-ray Photoelectron Spectroscopy: A Quantitative Evaluation, <i>Thierry Conard</i> , V. Spampinato, L. Nyns, S. Sioncke, IMEC, Belgium; J.M. Ablett, Synchrotron SOLEIL- Ligne GALAXIES, France; W. Vandervorst, IMEC, KU Leuven, Belgium	SE+MS+TF-TuA12 Solid-state Dewetting: Control and Applications, Lukasz Borowik, Y. Almadori, N. Chevalier, JC. Barbé, CEA, LETI, MINATEC Campus, France

	Scanning Probe Microscopy Focus Topic	Surface Science
	Room 104A - Session SP+AS+MI+NS+SS-TuA	Room 104E - Session SS+AS-TuA
	Probing Spin-Dependent Phenomena	Structure and Characterization of Oxides
	Moderators: Phillip First, Georgia Institute of Technology,	Moderator: Pohort Partynski, Butgars, the State University of New Jarsey
2,20,55	Shivani Rajput, Oak Ridge National Laboratory	Robert Bartynski, Rutgers, the State University of New Jersey
2:2Upm	INVITED: SP+AS+MI+NS+SS-TuA1 Spin Sensing and Magnetic Design at the Single Atom Level, <i>Alexander Khajetoorians</i> , Radboud University, The Netherlands	SS+AS-TuA1 Phase Formation and Stability of Reactive Sputtered Zirconium Dioxide Thin Films, <i>Mohsin Raza</i> , <i>D. Cornil</i> , <i>J. Cornil</i> , University of Mons, Belgium; <i>S. Lucas</i> , University of Namur, Belgium; <i>A.L. Thomann</i> , <i>A. Caillard</i> , <i>M. El Mokh</i> , GREMI CNRS/Université d'Orléans, France; <i>J.F. Pierson</i> , <i>P. Boulet</i> , Université de Lorraine, France; <i>R. Snyders</i> , <i>S. Konstantinidis</i> , University of Mons, Belgium
2:40pm	Invited talk continues.	SS+AS-TuA2 W-oxide on Ag(100): a Flexible Decoupled 2-D Oxide Layer, T. Obermüller, S. Surnev, Falko P. Netzer, Karl-Franzens University, Austria
3:00pm	INVITED: SP+AS+MI+NS+SS-TuA3 Electron Spin Resonance of Single Atom and Engineered Spin Structures, <i>Taeyoung Choi</i> , W. Paul, C.P. Lutz, A.J. Heinrich, IBM Almaden Research Center	SS+AS-TuA3 Growth and Termination of a Rutile IrO2(100) Layer on Ir(111), Rahul Rai, T. Li, Z. Liang, University of Florida, Gainesville; M. Kim, A. Asthagiri, Ohio State University; J.F. Weaver, University of Florida, Gainesville
3:20pm	Invited talk continues.	SS+AS-TuA4 Vibrational Spectroscopy of Iron Oxide Nanostructures and Thin Films Supported on Graphite, <i>Joel Langford</i> , F. Rosner, J.Y. Kwon, J.C. Hemminger, University of California Irvine
3:40pm	BREAK	BREAK
4:00pm	BREAK	BREAK
4:20pm	SP+AS+MI+NS+SS-TuA7 Probe the Inter-atomic Spin Coupling in Mn Clusters on Graphene with LT-Spin-IETS, <i>Haiming Guo</i> , Institute of Physics, Chinese Academy of Sciences, China	INVITED: SS+AS-TuA7 Electron Transfer Processes on Single Crsystalline Alkaline Earth Metal Oxide Films, <i>Thomas Risse</i> , Freie Universität Berlin, Germany
4:40pm	SP+AS+MI+NS+SS-TuA8 Controlling Kondo Effect of Magnetic Molecules on Au(111) by Small Molecule Binding, <i>MinHui Chang</i> , <i>S.J. Kahng</i> , Korea University, Republic of Korea; <i>Y.H. Chang</i> , Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea; <i>H.W. Kim</i> , <i>S.H. Lee</i> , Korea University, Republic of Korea; <i>YH. Kim</i> , KAIST, Republic of Korea	Invited talk continues.
5:00pm	INVITED: SP+AS+MI+NS+SS-TuA9 Spin-polarized Scanning Tunneling Microscopy on Surfaces Prepared by Molecular Beam Epitaxy, <i>Arthur Smith</i> , Ohio University Nanoscale and Quantum Phenomena Institute	SS+AS-TuA9 Tungsten Trioxide Monolayer on Pd(100), N. Doudin, M. Blatnik, Karl-Franzens University, Austria; D. Kuhness, Karl-Franzens University, Germany; A. Fortunelli, CNR-ICCOM & IPCF Pisa, Italy; F.P. Netzer, Svetlozar Surnev, Karl-Franzens University, Austria
5:20pm	Invited talk continues.	SS+AS-TuA10 Electron Energy Loss Study of Excess Electrons in Reducible TiO ₂ : Dual Behaviour or Coexistence of Trapped and Free States? Bulk or Surface Defects?, <i>Remi Lazzari</i> , <i>J. Li, J. Jupille</i> , Institut des NanoSciences de Paris, France
5:40pm	SP+AS+MI+NS+SS-TuA11 The Use of Scanning Probe Techniques to Study the Behaviour of Second Phase Particles in Beryllium and Their Role in Localised Corrosion, <i>Christopher Mallinson</i> , <i>J.F. Watts</i> , University of Surrey, UK	SS+AS-TuA11 Interplay between Steps and Oxygen Vacancies on Curved Rutile TiO ₂ (110), <i>Enrique Ortega</i> , Universidad del País Vasco, Spain; <i>L.A. Miccio</i> , Bihurcrystal Ltd.; <i>M. Setvin</i> , Technical University of Vienna, Austria; <i>M. Müller</i> , <i>M. Abadia</i> , <i>I. Piquero</i> , Centro de Fisica de Materiales, Spain; <i>J. Lobo-Checa</i> , Instituto de Ciencia de Materiales de Aragón, Spain; <i>F. Schiller</i> , <i>C. Rogero</i> , Centro de Fisica de Materiales, Spain; <i>M. Schmid</i> , Technical University of Vienna, Austria; <i>D. Sánchez-Portal</i> , Centro de Fisica de Materiales, Spain; <i>U. Diebold</i> , Technical University of Vienna, Austria
6:00pm 6:25 pm	SP+AS+MI+NS+SS-TuA12 Many-body Interaction induced Spin-split States of Single Vacancy in Graphite, <i>Wonhee Ko</i> , Samsung Advanced Institute of Technology, Republic of Korea; <i>H.W. Kim, Y. Cho,</i> Samsung Advanced Institute of Technology; <i>Y. Kuk</i> , Seoul National University, Korea, Republic of Korea; <i>S.W. Hwang</i> , Samsung Advanced Institute of Technology	SS+AS-TuA12 Vanadium on Anatase TiO ₂ , Stig Koust, L. Arnarson, iNANO, Aarhus University, Denmark; P.G. Moses, Haldor Topsøe Research Lab, Denmark; J. Beinik, J.V. Lauritsen, S. Wendt, iNANO, Aarhus University, Denmark SSD BUSINESS MEETING

	Surface Science Room 104D - Session SS+HC-TuA Photocatalysis and Photochemistry at Surfaces	Thin Film Room 105A - Session TF-TuA Thin Film Photovoltaics Moderators: Eray Aydil, University of Minnesota,
2:20pm	Moderator: Arthur Utz, Tufts University SS+HC-TuA1 Investigations of Surface Chemistry for Pyridine-catalyzed CO ₂ Reduction on GaP, C.X. Kronawitter, Bruce Koel, Princeton University	Colin Wolden, Colorado School of Mines INVITED: TF-TuA1 Perovskite Solar Cells: Material Synthesis, Device Operation and Charge Carrier Dynamics, Kai Zhu, National Renewable Energy Laboratory
2:40pm	SS+HC-TuA2 Photoreactivity of Benzoate Monolayers on TiO ₂ : Comparison of Anatase (001) and Rutile (110), Erik Skibinski, W.J.I. DeBenedetti, A. Song, A. Ortoll-Bloch, M.A. Hines, Cornell University	Invited talk continues.
3:00pm	INVITED: SS+HC-TuA3 Light-driven H ₂ Generation using Multicomponent Semiconductor-metal Colloidal Nanorod Heterostructures, <i>Tianquan Lian</i> , Emory University	TF-TuA3 Perovskite Film Growth And Degradation Mechanisms In Graphene-Based Perovskite Solar Cells By In Situ Spectroscopy, <i>Muge Acik</i> , Argonne National Laboratory, <i>S.B.D. Darling</i> , Argonne National Laboratory, University of Chicago
3:20pm	Invited talk continues.	TF-TuA4 ALD Processing for Organo-Metal Halide Perovskite Solar Cells: Opportunities and Challenges, V. Zardetto, Eindhoven University of Technology, Netherlands; F. di Giacomo, R. Andriessen, Solliance/TNO, Netherlands; T.M. Brown, A. di Carlo, University of Rome "Tor Vergata", Italy; W.M.M. Kessels, Mariadriana Creatore, Eindhoven University of Technology, Netherlands
3:40pm	BREAK	BREAK
4:00pm	BREAK	BREAK
4:20pm	SS+HC-TuA7 Quenching of Electron Transfer Reactions through Coadsorption: A Study of Oxygen Photodesorption from TiO ₂ (110), <i>Greg Kimmel</i> , N.G. Petrik, M. Shen, M.A. Henderson, Pacific Northwest National Laboratory	TF-TuA7 Identification of Critical Defects in Thin Film CdTe Solar Cells Deposited by Magnetron Sputtering, <i>P.M. Kaminski, A. Abbas, S. Yilmaz, John Walls,</i> Loughborough University, UK
4:40pm	SS+HC-TuA8 Different Effects of Oxygen Adsorption on the Band Bending of TiO ₂ Nanoparticles Studied by Photoluminescence Spectroscopy, <i>Shiliang Ma, M. Reish, Z. Zhang, I. Harrison, J.T. Yates, Jr.</i> , University of Virginia	TF-TuA8 Solar Energy Conversion Properties and Defect Physics of ZnSiP ₂ , Aaron Martinez, Colorado School of Mines; E.L. Warren, P. Gorai, National Renewable Energy Laboratory; K.A. Borup, Aarhus University, Denmark; D. Kuciauskas, P.C. Dippo, National Renewable Energy Laboratory; B.R. Ortiz, Colorado School of Mines; R.T. Macaluso, University of Texas at Arlington; S.D. Nguyen, University of Northern Colorado; A.L. Greenaway, S.W. Boettcher, University of Oregon, Eugene; A.G. Norman, National Renewable Energy Laboratory; V. Stevanovic, E.S. Toberer, Colorado School of Mines; A.C. Tamboli, National Renewable Energy Laboratory
5:00pm	$ \begin{array}{l} \textbf{SS+HC-TuA9} \ \text{Imaging Photodecomposition of Trimethyl Acetic Acid on} \\ \text{Cross-linked (1 \times 2) Rutile TiO}_2(110), \textit{Y. Xia, K. Zhu, Zhenrong Zhang, K.T. Park,} \\ \text{Baylor University} \end{array} $	TF-TuA9 Controlling the Composition of Zn(O,S) Alloys Grown by Atomic Layer Deposition, <i>Diane K. Lancaster, H. Sun,</i> University of Colorado, Boulder; <i>S.M. George,</i> University of Colorado at Boulder
5:20pm	$\label{eq:SS+HC-TuA10} Sharp Non-Fullerene Acceptors for Organic Photovoltaics: $$PTCDA versus C_{60}$, \textit{Steven Robey}$, National Institute of Standards and Technology $$$P$ (See No. 1). The property of $	TF-TuA10 ALD Ta-doped ZnO Transparent Conducting Oxide, <i>Zhengning Gao</i> , <i>Y. Myung</i> , <i>R. Mishra</i> , Washington University in St. Louis; <i>R. Kanjolia</i> , SAFC, Sigma; <i>J. Park</i> , Korea University, Republic of Korea; <i>P. Banerjee</i> , Washington University in St. Louis
5:40pm	SS+HC-TuA11 Use of Photoluminescence to Monitor Surface Chemistry of Metal Oxide Nanoparticles, S. Kim, D. Somaratne, James Whitten, University of Massachusetts Lowell	TF-TuA11 Leveraging Small Molecules to Control Interfacial Stability of Transparent Conductive Oxides, <i>Ina Martin</i> , <i>R. Matthews, E.B. Pentzer</i> , <i>T.J. Peshek</i> , Case Western Reserve University
6:00pm	SS+HC-TuA12 Exploring Pd Adsorption, Diffusion, Permeation, and Nucleation on Bilayer SiO ₂ /Ru as a Function of Hydroxylation and Precursor Environment: From UHV to Catalyst Preparation, <i>William Kaden</i> , University of Central Florida	TF-TuA12 Thickness Dependence of Electro-optical Properties of Pb _{0.95} La _{0.05} Zr _{0.54} Ti _{0.46} O ₃ Thin Films for Photovoltaic Applications, <i>Vaishali Batra</i> , <i>S. Kotru</i> , The University of Alabama
6:25 pm		TFD BUSINESS MEETING

	Vacuum Technology	
	Room 104C - Session VT-TuA	
	Accelerator and Large Vacuum Systems	
	Moderators: Marcy Stutzman, Thomas Jefferson National	
	Accelerator Facility,	
	Marcelo Ferreira, European Spallation Source-ESS, Sweden	
2:20pm	INVITED: VT-TuA1 Vacuum Design of the European Spallation Source Target Monolith System, Peter Ladd, European Spallation Source, Sweden	
2:40pm	Invited talk continues.	
3:00pm	VT-TuA3 Achievements and Problems in the First Commissioning of	
5.00p	SuperKEKB Vacuum System, Yusuke Suetsugu, K. Shibata, T. Ishibashi, M.	
	Shirai, S. Terui, K. Kanazawa, H. Hisamatsu, KEK, Japan	
3:20pm	VT-TuA4 Leak Testing of a Large Fusion Device and Measurement of	
	Leak Rates, <i>Tom Keenan,</i> UKAEA, UK	
3:40pm	BREAK	
4:00pm	BREAK	
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4·20nm	INVITED: VT-TuA7 Saving Megawatts in a Micron: Tailoring the Surfaces	
20	of Superconducting RF Cavities, <i>Sam Posen</i> , Fermi National Accelerator	
	Laboratory	
4:40nm	Invited talk continues.	
4.40pm	invited talk continues.	
F 00		
5:00pm	VT-TuA9 NEG Coating of Narrow-Gap Insertion Devices and Beam Pipes: Recent Achievements and Future Perspectives, <i>Paolo Manini</i> , <i>M. Puro</i> , <i>S.</i>	
	Raimondi, T. Porcelli, F. Siviero, E. Maccallini, G. Bongiorno, SAES Getters S.p.A.,	
	Italy	
5:20pm	· · · · · · · · · · · · · · · · · · ·	
	Freek Molkenboer, N.B. Koster, A.F. Deutz, B.A.H. Nijland, P.J. Kerkhof, P.M. Muilwijk, B.W. Oostdijck, J. Westerhout, C.L. Hollemans, E. te Sligte, W.F.W.	
	Mulckhuyse, M. van Putten, A.M. Hoogstrate, P. van der Walle, J.R.H. Diesveld, A.	
	Abutan, TNO Technical Sciences, Netherlands	
5:40pm	INVITED: VT-TuA11 Cleaning and Verification Strategies for UCV and	
	UHV Components, <i>Michael Flämmich</i> , VACOM, Vakuum Komponenten &	
	Messtechnik GmbH, Germany; C. Worsch, S. Gottschall, R. Bauer, U. Bergner, VACOM Vakuum Komponenten & Messtechnik GmbH, Germany	
6:00pm	Invited talk continues.	

Actinides and Rare Earths Focus Topic Room Hall D - Session AC-TuP Chemistry and Physics of the Actinides and Rare Earths Poster Session 6:30pm

AC-TuP1 Spatially Resolved Uranium Speciation in Nuclear Materials by Scanning Transmission X-ray Microscopy, *Joseph Pacold*, Lawrence Berkeley National Laboratory; M.J. Kristo, K.B. Knight, K.S. Holliday, Lawrence Livermore National Laboratory; W.W. Lukens, C.H. Booth, S.G. Minasian, T. Tyliszczak, D.K. Shuh, Lawrence Berkeley National Laboratory

AC-TuP2 XPS Investigation on the Reduction of Aged UO₂ Powders during Exposure to Vacuum, *Scott Donald*, *M. Davisson*, *Z. Dai*, *A.J. Nelson*, Lawrence Livermore National Laboratory

AC-TuP3 Ab initio Study of Electronic Structure Magnetic and Thermodynamic Properties of UO2 and PuO2., *Nisar Ahmed, M. Hasan Nasim,* PIFAS

AC-TuP4 Atomic Layer Deposited Cerium Oxide for Biosensing Application, Ankur Gupta, S. Das, C.J. Neal, S. Seal, University of Central Florida

Applied Surface Science Room Hall D - Session AS-TuP Applied Surface Science Division Poster Session 6:30pm

AS-TuP2 Observing the Effects of Jetting from Sputtering with Both Monatomic Argon and Argon Gas Clusters of Multi-layered Samples Using XPS with Rapid Mapping, *Timothy Nunney*, Thermo Fisher Scientific, UK; *R. Simpson*, University of Surrey, UK; *C. Deeks, P. Mack, J.P.W. Treacy*, Thermo Fisher Scientific, UK

AS-TuP3 Multitechnique Surface Analysis for Advanced Microelectronics Materials, *James Lallo*, Thermo Fisher Scientific; *C. Deeks, P. Mack, T.S. Nunney, J.P.W. Treacy*. Thermo Fisher Scientific. UK

AS-TuP4 Surface Analysis of Human Hair — a Multi-technique Approach, *Sarah Coultas*, *J.D.P. Counsell, C.J. Blomfield*, Kratos Analytical Limited, UK; *M. Openshaw*, Shimadzu - MALDI Technologies Group; *C. Moffitt*, Kratos Analytical Inc.

AS-TuP5 Exploring the Surface and Sub-Surface Nature of Nuclear Graphite, *J.D.P. Counsell, S.J. Coultas, C.J. Blomfield,* Kratos Analytical Limited, UK; *Chris Moffitt,* Kratos Analytical Limited; *A. Theodosiou,* University of Manchester

AS-TuP6 Comparison of Angle Resolved XPS and Ultra-shallow Ar Gas Cluster Depth Profiling of Organometallic Multilayer Materials, *Simon Hutton*, Kratos Analytical Limited, UK; *T. Bendikov*, Weizmann Institute of Science, Israel; *K. Macak, W. Boxford, S.C. Page, S.J. Coultas, C.J. Blomfield, J.D.P. Counsell*, Kratos Analytical Limited, UK

AS-TuP7 Pd deposited on AI_2O_3 analyzed by Low Energy Ion Scattering (LEIS), *P. Bruener, T. Grehl,* ION-TOF GmbH, Germany; *Nathan Havercroft,* ION-TOF USA; *J.Z. Mundy, G.N. Parsons,* North Carolina State University

AS-TuP8 Real-time Monitoring of Surface Reactions by Means of Cluster-induced Desorption/Ionization Mass Spectrometry, *A. Portz*, Justus Liebig University Giessen, Germany; *ChristophR. Gebhardt*, Bruker Daltonics Bremen, Germany; *M. Durr*, Justus Liebig University Giessen, Germany

AS-TuP9 Improved X-ray Photoelectron Spectroscopy Analysis using the PHI *VersaProbe* III, *Jennifer Mann, J.S. Hammond, J.F. Moulder, B. Schmidt,* Physical Electronics USA

AS-TuP10 Multiple Technique Investigation of UV-grafted Polymers, *Lopamudra Das, M.J. Kelley,* College of William and Mary

AS-TuP11 Analysis of Thin Phase-Shifter Films using Surface Analysis Techniques, *Vincent Smentkowski*, General Electric Global Research Center; *L. Le Tarte*, GGeneral Electric Global Research Center; *M. Marko*, Wadsworth Center

AS-TuP12 Improving the Performance of the Cylindrical Mirror Analyzer by Electrode Segmentation, *David Edwards, Jr*, JJL Research Center

AS-TuP13 Expanding the Use of Frequency-specific Techniques during Nano Mechanical Testing, S.P. Pardhasaradhi, Warren Oliver, No Matching Affiliation

AS-TuP14 Utilization of Secondary Vegetable Oils and Transformation Into Biodiesel, *Eliso Abramishvili*, No Matching Affiliation, Georgia

AS-TuP15 Impact of Surface Contaminants on ToF-SIMS analysis of Wood Polymer Composites (WPCs), *Laura D. Brunelle*, *Z.A. Gernold*, *C.S. Swagler*, *E.R. Welton*, *R.E. Goacher*, Niagara University

AS-TuP16 Examining the General Applicability of ToF-SIMS for Wood Polymer Composite (WPC) Analysis, *Christopher S. Swagler*, *L.D. Brunelle*, *M.R. Michienzi*, *E.R. Welton*, *R.E. Goacher*, Niagara University

AS-TuP17 Swift Heavy Ion Irradiation for Designing Planar Field Emitters and Exchange Bias Layers, *Debalaya Sarker**, S. *Bhattacharya*, Indian Institute of Technology Delhi, India; S. *Ghosh*, *P. Srivastava*, Indian Institute of Technology Delhi

AS-TuP18 Improving Relative Quantitation in Imaging Lipidomics using ToF-SIMS, *Marwa Munem, J.S. Fletcher*, University of Gothenburg, Sweden

AS-TuP19 XPS Investigation of UHP Mg and Mg Alloys Exposed to Water: Peak Fitting the Mg 2p Core Level Spectra to Distinguish Oxide from Hydroxide, *Harry Meyer*, *D. Leonard*, *M.P. Brady*, Oak Ridge National Laboratory

AS-TuP20 Root-Cause Analysis of an Interfacial Adhesive Failure Based on Time-of-Flight Secondary Ion Mass Spectrometry (ToF-SIMS), *James Ohlhausen, P. Vianco*, Sandia National Laboratories

AS-TuP21 Surface and Bulk Property Studies of Newly Developed High Performance Transparent Conductor Material, *Lei Zhang*, *W. Wu, N.G. Tassi, D. Walls*, DuPont Science and Engineering

AS-TuP22 Optimizing the Surface of Perovskite Oxide/Carbon Composites as Catalysts for the Oxygen Reduction Reaction in Alkaline Media, *Michael Dzara*, *C. Ngo*, Colorado School of Mines; *J. Christ*, National Renewable Energy Laboratory; *P. Joghee, C. Cadigan, T. Batson, R. Richards, R. O'Hayre, S. Pylypenko*, Colorado School of Mines

AS-TuP23 Tuning of N-Doping in Carbon Nanospheres for Investigation of Catalyst-Support Interactions, *Matthew Strand, C. Ngo, A. White, J. Hagen, S. Pylypenko*, Colorado School of Mines

AS-TuP24 Electron Microscopy Study of Fission Product Migration in Irradiated TRISO Nuclear Fuel, *Rachel Seibert*, Illinois Institute of Technology; *C. Parish, P. Edmondson, K. Terrani*, Oak Ridge National Laboratory; *J. Terry*, Illinois Institute of Technology

AS-TuP25 Interfacial Investigation of Reaction of Organic Micropollutants with Manganese Oxides, *Nabil Shaikh*, University of New Mexico; *S. Taujale*, *H. Zhang*, Temple University; *K. Artyushkova*, *A. Ali, J.M. Cerrato*, University of New Mexico

AS-TuP26 X-ray Photoelectron Spectroscopy Analysis of Titanium Nitride-Nickel Nanocomposite Catalyst, *Samuel Gage*, Colorado School of Mines; *V. Molinari*, *D. Esposito*, Max Planck Institute of Colloids and Interfaces, Germany; *S. Pylypenko*, Colorado School of Mines

AS-TuP27 Redox Active Cerium Oxide Immobilized on Highly Ordered Polymer Nanopillars as Dopamine Sensor, *Swetha Barkam*[†], *M. Peppler, S. Das, S. Saraf, C. Li, J. Thomas, S. Seal,* University of Central Florida

AS-TuP28 X-ray Photoelectron Spectroscopy of Raw Material for Metal Additive Manufacturing, *David Wieliczka*, A.S. Choi, J.A. Crow, C.J. Cook, L.F. Elder, R.D. Koch, T.A. Pond, B.C. Sartin, D.R. Shinault, S.E. Van Slyke, Honeywell Federal Manufacturing and Technology

AS-TuP29 Characterization of Bonding between Super-hard Ceramics and Polymer Substrate, *Ranganathan Parthasarathy*, Tennessee State University; *JB. Beam*, Vanderbilt University; *FEH. Hoff*, Tennessee State University; *A. Misra*, University of Kansas; *L.Z. Ouyang*, Tennessee State University; *CML. Lukehart*, Vanderbilt University

AS-TuP30 The Early Stages of Yttrium Oxidation, V. Arellano-Arreola, Jorge Alejandro Torres-Ochoa, O. Cortazar-Martinez, Y.L. Chipatecua-Godoy, L. Gomez-Muñoz, Cinvestav-Unidad Queretaro, Mexico; A. Herrera-Gomez, CINVESTAV-Queretaro, Mexico

Biomaterial Interfaces

Room Hall D - Session BI+PB-TuP Biomaterial Interfaces Poster Session (preceded by Oral Flash Presentations) 6:30pm

BI+PB-TuP2 Quantitative Sensing of Pancreatic Enzymes using Gelatin, *George Banis*, University of Maryland, College Park; *L. Beardslee*, Walter Reed National Military Medical Center; *R. Ghodssi*, University of Maryland, College Park

- * National Student Award Finalist
- [†] National Student Award Finalist

BI+PB-TuP3 Evaluation of Printed Cell Viability, Proliferation, and Insulin Production on Various Alginate-Gelatin Hydrogels, *Luis Solis*, *J. Rincon*, *A. Varela-Ramirez*. *R. Aauilera*. *T. Boland*. University of Texas at El Paso

BI+PB-TuP4 Synchrotron Radiation Studies of the Bonding and X-Ray Induced Reactions of Bacteriorhodopsin Adsorbed on Gold, *Richard Rosenberg*, Argonne National Laboratory; *D. Mishra, R. Naaman*, Weizmann Institute of Science, Israel

BI+PB-TuP5 Investigations on Peptide Incorporation and Peptide Yields in ME-SIMS, *Martin Körsgen, A. Pelster, M. Heeger, B.J. Tyler, K. Dreisewerd, H.F. Arlinghaus,* Universität Münster, Germany

BI+PB-TuP6 Developments of Non-Stick Surfaces for Medical Devices: Beneficial Effects of Thin Film Metallic Glass Coating, *G.H. Jiang, C.C. Yu, C.L. Li, Y. Tanatsugu, Jinn P. Chu,* National Taiwan University of Science and Technology, Taiwan, Republic of China; *M.J. Chen, S.H. Chang,* Mackay Memorial Hospital Tamsui Campus, Taiwan, Republic of China

BI+PB-TuP7 Polyurethane Degradation by Wild Type and Hydrolase Deficient *Pseudomonas protegens* Pf-5 Unsaturated Biofilms, *Daniel Barlow*, US Naval Research Laboratory; *Ll. Nadeau, C.S. Hung,* Air Force Research Laboratory; *J.C. Biffinger,* US Naval Research Laboratory; *A.L. Crouch,* Air Force Research Laboratory; *J.N. Russell,* US Naval Research Laboratory; *W.J. Crookes-Goodson,* Air Force Research Laboratory

BI+PB-TuP8 Laser Irradiation of Mg Alloys: Reduced Kinetics and Enhanced Biocompatibility, M.A. Melia, **David Florian**, W. Steuer, J.R. Scully, J.M. Fitz-Gerald, University of Virginia

BI+PB-TuP9 Plasma-assisted Fabrication of Silver/Bacterial Cellulose/Chitosan Functional Nano-composites and Their Properties, *Shuquan Chang, A.R. Shetty, S.L. Arias Suarez, J.P. Allain, University of Illinois at Urbana-Champaign*

BI+PB-TuP11 A Non-toxic, Super-Hydrophilic Anti-Fog Coating for Lenses used in Closed Body Cavity Surgery: VitreOx TM— In Vivo Animal Clinical Trials, *Nicole Herbots*, SiO2 NanoTech LLC; *C.F. Watson*, SiO2 NanoTech LLC/Arizona State University Physics Dpt; *EJ. Culbertson*, University of California at Los Angeles; *PR. Thilmany*, *IPO. Martins*, SiO2 NanoTech LLC

Magnetic Interfaces and Nanostructures Room Hall D - Session MI-TuP MIND Poster Session 6:30pm

MI-TuP1 Static and Dynamic Magnetic Properties of FeGa/NiFe Multilayer Heterostructures for Multiferroic Applications, C.R. Rementer, Q. Xu, P. Nordeen, G.P. Carman, Y. Wang, Jane P. Chang, University of California Los Angeles

MI-TuP2 The Microstructure and Isotope Effects on Spin Response in Organic Spintronic Devices, *Nuradhika Herath*, *J. Keum*, *H. Zhang*, *K. Hong*, *J. Jakowski*, *J. Huang*, *J. Browning*, *S. Bennett*, *C. Rouleau*, *I. Ivanov*, *V. Lauter*, Oak Ridge National Laboratory

Manufacturing Science and Technology Room Hall D - Session MS-TuP Aspects of Manufacturing Science and Technology Poster Session 6:30pm

MS-TuP1 Transformations in Surface Films by Sublimation and Heating- the Cases of Naphthalene and Diamond, *Rahul Basu*, Alpha College of Engineering

MS-TuP2 Study of Mechanical Properties of Nanographene/Al Composite Materials for Purpose of Industrial Applications, *Yusuke Oguro*, A. Matsumuro, Aichi Institute of Technology, Japan

MS-TuP3 Development of High-Strength Resin Composite Materials Reinforced with Nanocarbon for 3D Printing Manufacturing, *Hiroaki Sakaguchi*, A. *Matsumuro*, Aichi Institute of Technology, Japan

MS-TuP4 Development of Innovative 3D Printer with Superior Multifunctional Surface Modification, *Kentaro Horiuchi*, *Y. Hasegawa*, *A. Matsumuro*, Aichi Institute of Technology, Japan

MS-TuP5 Controlling the Diameter, Uniformity, and Spatial Distribution of Electrospun PVDF Nanofibers through Experiment and Simulation, *Omar Ali, T. Grier, A. Ueda, C. Marvinney, S. Avanesyan, C.S. Carson, W.E. Collins,* Fisk University; *J. DeCoste,* US Army Research, Development, and Engineering Command; *R. Mu,* Fisk University

WORKING WITH NATIONAL LABS AND USER FACILITIES

MS-TuP6 (MS-TuA1) Southeastern Nanotechnology Infrastructure Corridor (SENIC) — A Nano Fabrication and Characterization Resource as part of the National Nanotechnology Coordinated Infrastructure (NNCI), P. Joseph, D. Gottfried, Gary Spinner, O. Brand, Georgia Institute of Technology

MS-TuP7 (MS-TuA2) The Cornell NanoScale Science and Technology Facility (CNF). *Michael Skyarla*. Cornell NanoScale Science and Technology Facility

MS-TuP8 (MS-TuA3) The CNST NanoFab at NIST: Nanofabrication for US Commerce, Vincent Luciani, NIST Center for Nanoscale Science and Technology

MS-TuP9 (MS-TuA4) In-Situ Characterization Tools for Materials Growth and Processing at NSLS-II, *Klaus Attenkofer*, *E. Stavitski*, *K. Evans-Lutterodt*, *C. Nelson*, Brookhayen National Laboratory

MS-TuP10 (MS-TuA7) The Center for Nanophase Materials Sciences, *Michael Simpson*, Oak Ridge National Laboratory

MS-TuP11 (MS-TuA8) User Opportunities at the Center for Nanoscale Materials, *Kathleen Carrado Gregar*, Center for Nanoscale Materials at Argonne National Laboratory

MS-TuP12 (MS-TuA9) The Center for Integrated Nanotechnologies--Resources and Capabilities, *Dale Huber*, Sandia National Laboratories

MS-TuP13 (MS-TuA10) Using EMSL Capabilities in Combination with those from other User Facilities to Address Fundamental and Applied Problems, *Donald Baer, M.H. Engelhard, T.J. Law, Pacific Northwest National Laboratory*

Nanometer-scale Science and Technology Room Hall D - Session NS-TuP Nanometer-scale Science & Technology Poster Session 6:30pm

NS-TuP1 tPA Loaded Fe_3O_4 Nanorods to Enhance and Target Stroke Treatment, *Weijie Huang*, University of Georgia; *J.N. Hu, S.W. Huang, K.L. Jin*, University of North Texas; *Y.P. Zhao*, University of Georgia

NS-TuP2 Gelatin Nanoparticle Encapsulation of Anti-Parasitic Compound and Characterization for Treatment of Leishmaniasis Disease, *Carlos Serna*, A. *Ornleas*, E. *Iniguez*, K. *Michael*, R. *Maldonado*, T. *Boland*, The University of Texas at El Paso

NS-TuP3 Synthesis and Size Dependent Magnetic Properties of Iron Oxide Nanoparticles, *Caleb Hoffman, J. Summers, S. Neupane, Middle Tennessee State Univ*

NS-TuP4 Templated Annealing of Gold Nanowires formed by Directed Assembly on DNA Origami, *Tyler Westover, M. Stoddard, B. Uptrey, R.F. Davis, J. Harb, A. Woolley,* Brigham Young University

NS-TuP5 Zinc Oxide Nanoprobe Spectroscopy for Sensing Trace Levels of Molecular Species in Solution, *Andrew Cook*, Vanderbilt University; *C.S. Carson*, Fisk University; *J. DeCoste*, Edgewood Chemical Biological Center; *T.D. Giorgio*, Vanderbilt University; *R. Mu*, Fisk University

NS-TuP6 Insights into Defect Emission in ZnO Nanoparticles from Simultaneous Infrared and Luminescence Measurements during Annealing and Exposure to Charge Scavengers, *Matthew Reish*, *S. Ma, Z. Zhang*, University of Virginia; *H.O. Everitt*, Redstone Arsenal

NS-TuP7 Effect of Deposition Temperature on the Formation of the SiO₂/ZnO/SiO₂ Heterostructure Deposited by Reactive RF Sputtering*, *R. Escobedo-Alcaraz, C. Atzin-Mondragon,* Cinvestav-IPN, Mexico; *A. Hernandez-Hernandez,* Escuela Superior de Apan, Mexico; *A. Garcia-Sotelo,* **MiguelAngel Melendez-Lira,** Cinvestav-IPN, Mexico

NS-TuP8 Design of High Performance Compact Plasmonic Optical Devices Based on Low Loss Silicon Hybrid Dielectric Loaded Plasmonic Waveguides, *Cheng-Hung Hsieh*, *C.M. Kuo*, National Tsing Hua University; *M.J. Huang*, Naitoal Tsing Hua University; *K.C. Leou*, National Tsing Hua University. Taiwan. Republic of China

NS-TuP9 Carbon Nanotube Based Digital X-ray Tube for a Very Short X-ray Pulse with High Dose Rates, *Jun-Tae Kang, J.W. Jeong, J.W. Kim, Y.C. Choi, S.H. Kim, H. Jeon, S. Park, M.S. Shin, J.H. Yeon, E. Go, J.W. Lee, Y.H. Song, Electronics and Telecommunications Research Institute (ETRI), Republic of Korea*

NS-TuP10 Processes of Adsorption and Encapsulation of Hydrogen Atoms during Scattering them onto Beam of Fullerene, *Danila Alyabev*, Institute of Ion Plasma and Laser Technology, Tashkent, Uzbekistan; *A.A. Dzhurakhalov*, University of Antwerp, Belgium; *I.D. Yadgarov*, Institute of Ion Plasma and Laser Technology, Tashkent, Uzbekistan

Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic

Room Hall D - Session SA-TuP

Novel Trends in Synchrotron and FEL-Based Analysis Poster Session

6:30pm

SA-TuP1 Transmission X-Ray Microscopy Characterization of PtNi Extended Surface Catalysts within MEAs for PEMFCs, *Sarah Shulda*, Colorado School of Mines; *J. Nelson Weker*, SLAC National Accelerator Laboratory; *C. Ngo*, Colorado School of Mines; *S. Mauger, K.C. Neyerlin, S. Alia, B. Pivovar*, National Renewable Energy Laboratory; *S. Pylypenko*, Colorado School of Mines

SA-TuP2 *In Operando* X-ray Imaging and Scattering from Detonating High Explosives, *M. Bagge-Hansen, M. Nielsen, L. Lauderbach, R. Hodgin, S. Bastea, L. Fried, D. Hansen, C. May, T. van Buuren, <i>Trevor Willey*, Lawrence Livermore National Laboratory

SA-TuP3 Electronic Structure of FeO, Fe $_3$ O $_4$, α -Fe $_2$ O $_3$ and γ -Fe $_2$ O $_3$ Thin Films, *GermanR. Castro, J. Rubio-Zuazo,* SpLine Spanish CRG BM25 Beamline at the ESRF, France; *A. Chainani,* RIKEN Spring-8 Centre, Japan

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

SE-TuP1 Room Temperature Bonding of Polymer and Silicon Wafer using Vacuum Ultraviolet Surface Activation, *Yoshihiro Fujiwara*, *T. Utsunomiya*, *T. Ichii*, *H. Sugimura*, Kyoto University, Japan

SE-TuP2 Improvement in Organic Solvent Resistance of Cyclo-Olefin Polymer by Coating with Silica-like Thin Film, *Taiki Kanzawa*, *T. Utsunomiya*, *T. Ichi*, *H. Sugimura*, Kyoto University, Japan

SE-TuP3 Microstructure and Properties of (ZrHf)N Thin Films Deposited by Sputtering at Room Temperature, *N.N. Chu, Yu-Wei Lin, C.-N. Hsiao*, ITRC, National Applied Research Laboratories, Tawain, Republic of China

SE-TuP4 Nanopatterned ZnO on Si-based Materials via Decoupled Ion Beam Modification and Metal Co-deposition, *Zachariah Koyn*, *B. Holybee*, *J.P. Allain*, University of Illinois at Urbana-Champaign

SE-TuP5 Propagating Exothermic Reactions in Al/Pt Multilayers of Varied Stoichiometry, *D.P. Adams*, Sandia National Laboratories; *R.V. Reeves*, Lawrence Livermore National Laboratory; *M. Abere*, *Cathy Sobczak*, Sandia National Laboratories

SE-TuP6 An Alternative for Material Plasma Etching: Ion Beam Etching Understanding and Improvement, *Anthony De Luca*, Ion Beam Etching, France; *J. Guerrero*, Dry etching process, France; *S. Barnola*, CEA, LETI, MINATEC Campus, France

SE-TuP7 Time-resolved Ion Energies in the Pulsed Cathodic Arc Plasma from Composite Niobium-aluminum Cathodes, *Siegfried Zoehrer*, Montanuniversität Leoben, Austria; *A. Anders*, Lawrence Berkeley National Laboratory; *R. Franz*, Montanuniversität Leoben, Austria

Scanning Probe Microscopy Focus Topic Room Hall D - Session SP-TuP Scanning Probe Microscopy Poster Session 6:30pm

SP-TuP1 New Directions in Ultrahigh Vacuum Tip-Enhanced Raman Spectroscopy with Molecular-Resolution Scanning Tunneling Microscopy, *z. Porach, P. Whiteman,* University of Illinois at Chicago; *N. Chiang,* Northwestern University; *Nan Jiang,* University of Illinois at Chicago

SP-TuP2 Atomic Force Microscopy in Liquid Metal, *Nobumasa Tagai*, *T. Ichii*, *T. Utsunomiya*, *H. Sugimura*, Kyoto University, Japan

SP-TuP3 Temperature-dependent Nanoscale Conductance on Water-Intercalated Graphene, *JinHeui Hwang*, *H. Lee, J.Y. Park*, Institute for Basic Science (IBS) & Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea

SP-TuP4 Phase Coexistence in Vanadium Dioxide Crystal Probed via Scanning Probe Microscopy, *Christina McGahan*, Vanderbilt University; *S. Gamage*, Georgia State University; *J. Liang*, Tianjin University, China; *B.G. Cross*, Georgia State University; *R.E. Marvel*, *R.F. Haglund*, Vanderbilt University; *Y. Abate*, Georgia State University

SP-TuP5 Single Virus Particle Spectroscopic Nano-Imaging, *Brendan Cross, S. Gamage, M. Howard, J.R. Terrell, M. Luo, Y. Abate, Georgia State University*

SP-TuP6 Spectroscopic Nano-Imaging Patterned InGaN Nanolayers, *Alireza Fali*, S. *Gamage*, D. *Seidlitz*, I. *Kankanamge*, N. *Dietz*, Georgia State University; Y. *Abate*, Georgia state university

SP-TuP7 Nanoscopy of Black Phosphorus Degradation, *Sampath Gamage*, Georgia State University; *L. Zhen*, University of Southern California; *V.E. Babicheva*, *M. Javani*, *V.S. Yakovlev*, Georgia State University; *H. Wang*, *S. Cronin*, University of Southern California; *Y. Abate*, Georgia State University

SP-TuP8 Periodically-pulsed Laser-Assisted Tunneling May Generate Terahertz Radiation, *Mark Hagmann*, University of Utah

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

SS-TuP1 Adsorption and Decomposition Properties of Dimethyl Trisulfide Over Au(111), *Isao Nakamura*, National Institute of Advanced Industrial Science and Technology (AIST), Japan; *M. Tokunaga*, Kyushu University, Japan; *T. Fujitani*, National Institute of Advanced Industrial Science and Technology (AIST), Japan

SS-TuP2 Spectroscopically Monitoring the Surface and Crystallinity of Titania Nanopowders Treated with Hydrogen Peroxide: an Endeavor in Simplifying the Atomic Picture of Complex Substrates, *Maria Kipreos*, *M. Foster*, University of Massachusetts, Boston

SS-TuP3 Efficacy of Ar⁺ CIRD Removal of Adsorbed O from Rh(111), *Marie Turano*, *R.G. Farber*, *D.R. Killelea*, Loyola University Chicago

SS-TuP4 Adsorption and Oxidation of n–Butane on the Stoichiometric RuO₂(110) Surface, *Tao Li, R. Rai, Z. Liang,* University of Florida, Gainesville; *M. Kim, A. Asthagiri,* Ohio State University; *J.F. Weaver,* University of Florida, Gainesville

SS-TuP5 Step-type Dependence of Water Desorption from Single-Crystalline Ag Surfaces, *Sabine Auras*, Leiden University, Netherlands; *J. Janlamool*, Chulalongkorn University, Bangkok

SS-TuP6 Topographical Changes of Liquid-Metal Alloys as a Function of Temperature, *Nelson Bello*, University of Massachusetts, Boston; *I. Tevis*, SAFI-Tech; *M. Thuo*, Iowa State University; *M. Foster*, University of Massachusetts, Boston

SS-TuP7 Interaction of Ethylene with Partially Chlorinated $RuO_2(110)$ Surfaces, **Zhu Liang**, T. Li, R. Rai, J.F. Weaver, University of Florida

SS-TuP8 Supramolecular Assemblies of Halogenated Molecules on the Si(111) V3×V3-Ag and Cu(100) Surfaces, *Renjie Liu*, Lakehead University, Canada; *C. Fu*, *A.G. Moiseev*, *D.F. Perepichka*, McGill University, Canada; *M.C. Gallagher*, Lakehead University, Canada

SS-TuP9 Synthesis and Reduction of Graphene Oxide, *Heike Geisler*, *J.M. Bachor*, *N.A. LaScala*, SUNY College at Oneonta

SS-TuP10 Nanomechanical Properties of Eutectic Gallium-Indium Particles by Atomic Force Microscopy, *Syeda Akhter*, University of Massachusetts, Boston; *I. Tevis*, SAFI-Tech; *M. Thuo*, Iowa State University; *M. Foster*, University of Massachusetts, Boston

SS-TuP11 Reactivity of CO₂ at Single-site Vanadium in Metal-Organic Coordination Networks at Surfaces, *C. Tempas, B. Cook,* Indiana University; *David Wisman,* Indiana University; NAVSEA Crane; *T. Morris, A. Polezhaev, D. Skomski, K. Smith, K. Caulton, S.L. Tait,* Indiana University

SS-TuP12 CO₂ Optical Phonons for Constraining Mixing in Interstellar Ices, *Ilsa Cooke*, University of Virginia; *K.I. Öberg*, Harvard University

SS-TuP17 Probe the Degradation Mechanism of Hybrid Perovskite by *In Situ* DRIFTs, *Q. Peng, X. Yu, Amanda Volk*, University of Alabama

SS-TuP18 X-ray Photoelectron Studies of Polycrystalline Samples (BiSb) $_3$ (Cu $_1$ $_x$ Co $_x$) $_2$ O $_1$ $_4$ Pyrochlore, *Lázaro Huerta, R. Escamilla, M. Romero,* Universidad Nacional Autónoma de México; *A. Zamora,* Universidad Autónoma Metropolitana, México

SS-TuP19 Interaction of Atomic Oxygen with Ag(111) and Ag(110) Surfaces: Oxygen Adsorption at Surface versus Subsurface, *Sara Isbill*, *S. Roy*, University of Tennessee, Knoxville

SS-TuP20 Isotope Fractionation Effect in Secondary Ions Mass Spectroscopy Analysis for Boron Quantification, *Yibin Zhang*, GLOBALFOUNDRIES U.S. Inc.

MORT TRAUM FINALISTS

SS-TuP21 (HC+SS-ThA6) The Impact of Structure on the Catalytic Behavior of Cu₂O Supported Pt Atoms, *Andrew Therrien**, Tufts University Department of Chemistry, *E.C.H. Sykes*, Tufts University

SS-TuP22 (2D+MI-TuM4) Synthesis of Borophenes: Anisotropic, Two-Dimensional Boron Polymorphs, *Andrew Mannix**, *B. Kiraly*, Northwestern University/Argonne National Lab.; *J.D. Wood, M.C. Hersam*, Northwestern University; *N.P. Guisinger*, Argonne National Laboratory

SS-TuP23 (SS1+AS+HC+NS-TuM11) Hindered Translator and Hindered Rotor Models for Calculating the Entropy of Adsorbed Species, *Lynza H. Sprowl**, Oregon State University; C.T. Campbell, University of Washington; L. Arnadottir, Oregon State University

SS-TuP24 (SS+AS-WeM13) Capture of Hyperthermal Atoms and Molecules by Amorphous Water Ice via Ballistic Embedding, *Grant Langlois**, S.J. Sibener, University of Chicago

SS-TuP25 (SS+AS+EM-WeA10) Adsorption of C_{60} Buckminster Fullerenes on a Carbon-free Hydrazine-modified Silicon Surface, *Fei Gao*, *A.V. Teplyakov*, University of Delaware

Vacuum Technology Room Hall D - Session VT-TuP VT Poster Session (and Student Poster Competition) 6:30pm

VT-TuP1 Smart Measurement and Diagnostics Module for Dry Vacuum Pumps, Wan-Sup Cheung, K. Baik, J.Y. Lim, KRISS, Republic of Korea

VT-TuP2 Vacuum System of Positron Damping Ring for SuperKEKB, *Kyo Shibata*, Y. Suetsugu, T. Ishibashi, M. Shirai, S. Terui, K. Kanazawa, H. Hisamatsu, KEK, Japan

VT-TuP3 Testing Pump Speed & Thermal Loading of Titanium Arc-Gettered High Speed (~2,000 m³/s for H₂) Cryoboxes, *Ernesto Barraza-Valdez*, Tri Alpha Energy

VT-TuP4 Formation and Characterization of Hydrogenated Amorphous Silicon (a-Si:H) Thin Films Deposited by ECR-CVD with Different RF Powers, *Hugo Alvarez*, A.R. Santos, J.G. Fo, F.H. Cioldin, J.A. Diniz, Universidade Estadual de Campinas, Brazil

VT-TuP5 Hydrogen Measurement Using a Thermal Desorption Spectrometer, *JongYeon Lim*, Korea Research Institute of Standards and Science, Republic of Korea; K.D. Kim, S.M. Joo, C.H. Lim, Y.D. Joh, Infinity Vacuum Technology, Republic of Korea.

VT-TuP6 Evaluation of Two-piston type Oil Flowmeter and Leak Standard System in KRISS, *HanWook Song*, S.M. Kim, T.H. Yang, N.-K. Chung, I.-Y. Park, S.Y. Woo, KRISS, Korea

VT-TuP7 Low-carbon Steel Chamber and Double Viton O-ring Sealing for Electron Microscope, *In-Yong Park*, *N.-K. Chung*, *B. Cho*, KRISS, Republic of Korea

Anticipated Schedule Wednesday, November 09, 2016

Anticipated Schedule Wednesday Morning, November 9

8:00 AM _	
8:20 AM	
8:40 AM	
9:00 AM	
9:20 AM	
9:40 AM	
10:00 AM	
10:20 AM	
10:40 AM	
11:00 AM	
11:20 AM	
11:40 AM	
12:00 PM	
	Anticipated Schedule Wednesday Lunch, November 9
When	Anticipated Schedule Wednesday Edition, November 5
Where	
With	
-	
	Anticipated Schedule Wednesday Afternoon, November 9
1:00 PM _	
1:20 PM _	
1:40 PM _	
2:00 PM _	
2:20 PM _	
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3:00 PM _	
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3:40 PM _	
4:00 PM _	
4:20 PM _	
4:40 PM _	
5:00 PM _	
5:20 PM _	
5:40 PM	
6:00 PM _	

Special Events Wednesday

6:15 AM	AVS 36th Annual 5 km Run (Register at the 5 km Booth before Wednesday)/TBD
7:30 AM	Diversity Committee Meeting & Breakfast/Commerce Street Grille, Renaissance Nashville (by invitation)
8:15 AM	ASED Executive Committee Meeting & Lunch/Ryman, Renaissance Nashville (by invitation)
12:10 PM	PSTD Coburn and Winters Adjudication Session (Closed Session)/104B (by invitation)
12:30 PM	Governance Committee Meeting & Lunch/Commerce Street Grille, Renaissance Nashville (by invitation)
12:30 PM	NSTD Graduate Student Award Competition/102B
12:30 PM	PacSurf Committee Meeting & Lunch/Boardroom 5th Avenue, Music City Center (by invitation)
12:30 PM	Professional Development: Federal Funding Town Hall and Lunch/102A
3:30 PM	History Committee Meeting/Classical, Renaissance Nashville (by invitation)
6:30 PM	AVS Awards Ceremony & Reception/Davidson Ballroom, Music City Center

Short Courses Wednesday

8:30 am Fundamentals of Vacuum Technology

LOCATION: All AVS Short Courses will be held at Music City Center

COURSE HOURS: All AVS Short Courses Hours: 8:30 a.m.—5:00 p.m. — with 1.5 hour break for Lunch

(Lunch not included)

8:00am	2D Materials Focus Topic Room 103B - Session 2D+TF-WeM 2D Materials: Growth and Fabrication Moderator: Masoud Mahjouri-Samani, Oak Ridge National Laboratory 2D+TF-WeM1 Synthesis and Characterization of Two-dimensional WSe2	Actinides and Rare Earths Focus Topic Room 103C - Session AC+MI-WeM Magnetism, Complexity, and Superconductivity in the Actinides and Rare Earths (8:00-11:00 am)/Actinide and Rare Earth Theory (11:00 am-12:20 pm) Moderators: Tomasz Durakiewicz, Los Alamos National Lab, Ladislav Havela, Charles University, Prague, Czech Republic, Alexander Lichtenstein, University of Hamburg, Germany INVITED: AC+MI-WeM1 Local Magnetic Properties of Uranium
8.00am	Grown using Chemical Vapor Deposition, <i>Avra S. Bandophadyay</i> , <i>G.A. Lara Saenz</i> , <i>C. Biswas</i> , <i>A.B. Kaul</i> , University of Texas at El Paso	Compounds Probed with XMCD, <i>Fabrice Wilhelm</i> , <i>A. Rogalev</i> , ESRF, France
8:20am	2D+TF-WeM2 Reduction of Graphene Oxide by a Selective Surface Modification Process via Chemical Route for Achieving Higher Proportion of Graphene, K. Dave, CSIR Centre for Cellular and Molecular Biology (CCMB), India; KyungHee Park, Chonnam National University, Republic of Korea; M. Dhayal, CCMB, India	Invited talk continues.
8:40am	INVITED: 2D+TF-WeM3 Scalabale Production of Molybdenum Disulfide- based Biosensors, A.T. Charlie Johnson, University of Pennsylvania	INVITED: AC+MI-WeM3 Neutron and X-ray Scattering as a Probe of Complex Order in Actinides, <i>Helen Walker</i> , STFC, UK
9:00am	Invited talk continues.	Invited talk continues.
9:20am	2D+TF-WeM5 Growth of Graphene on Cubic Silicon Carbide on Silicon Substrates, <i>Mehdi Rezaee</i> , <i>G.L. Harris, J. Griffin, C. Taylor</i> , Howard University; <i>E. Hu, D. Bell</i> , Harvard University	AC+MI-WeM5 Hydrogen Contributing to 5f-localization in UTX Compounds, Silvie Maskova, Charles University in Prague, Czech Republic; K. Miliyanchuk, Ivan Franko National University of Lviv, Ukraine; S. Danis, B. Vondrackova, Charles University in Prague, Czech Republic; O. Stelmakhovych, Ivan Franko National University of Lviv, Ukraine; L. Havela, Charles University in Prague, Czech Republic
9:40am	2D+TF-WeM6 Growth of Graphene on Cu Single Crystal Substrates, <i>Tyler Mowll</i> , University at Albany-SUNY; <i>Z.R. Robinson</i> , College at Brockport-SUNY; <i>C.A. Ventrice, Jr.</i> , SUNY Polytechnic Institute	AC+MI-WeM6 Radiation damage: Experimental Investigation of Aluminum Containing Helium Bubbles at Static High Pressure in a Diamond Anvil Cell, Itzhak Halevy, Physics Department; B. Glam, NRC Soreq, Israel; S. Maskova, Charles University, Prague, Czech Republic; D. Moreno, NRC Soreq, Israel; S. Eliezer, NRC Soreq Shalom Eliezer2, Israel
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	2D+TF-WeM10 Atomic Layered Large Area Growth of 2D Monolayers Over Different Substrates, <i>Joseph Waters</i> , <i>S. Garg</i> , <i>S. Balci</i> , <i>S. Kim</i> , <i>P. Kung</i> , University of Alabama	INVITED: AC+MI-WeM10 AVS Gaede Langmuir Award Talk: Multiplets and More for Core-Level Spectra, <i>Paul Bagus</i> , University of North Texas
11:20am	2D+TF-WeM11 Growth of Doped Graphene from Fullerene Precursors, <i>X. Fei, J. Neilson, V. Lopez,</i> California State University Northridge; <i>H.J. Gao,</i> Chinese Academy of Sciences, People's Republic of China; <i>L. Gan,</i> Peking University, People's Republic of China; <i>Li Gao,</i> California State University Northridge	Invited talk continues.
11:40am	2D+TF-WeM12 Evaluation of Precursor Chemistry for Controllable Growth of Molybdenum Disulfide by Pulsed Chemical Vapor Deposition, <i>Berc Kalanyan, J.E. Maslar, W.A. Kimes, B.A. Sperling, E. Garratt, B. Nikoobakht, R. Beams, S.J. Stranick, A.V. Davydov,</i> National Institute of Standards and Technology (NIST)	AC+MI-WeM12 Complex Magnetism of Gd Intermetallics: Ab-initio Theory and Experiment., <i>Leon Petit</i> , Daresbury Laboratory, UK; <i>D. Paudyal, Y. Mudryk, K.A. Gschneidner, V.K. Pecharsky</i> , Ames Laboratory, Iowa State University; <i>M. Lueders, Z. Szotek</i> , Daresbury Laboratory, UK; <i>J.B. Staunton</i> , Warwick University, United Kingdom of Great Britain and Northern Ireland
12:00pm	2D+TF-WeM13 In-situ Scanning Tunneling Microscopy Studies of Chemical Vapor Deposition of hexagonal Boron Nitride Monolayers on Pd(111), Pedro Arias, A. Ebnonnasir, F. Fankhauser, University of California at Los Angeles; C. Ciobanu, Colorado School of Mines; S. Kodambaka, University of California Los Angeles	AC+MI-WeM13 Thermodynamics of the Doped Sm(Co _{1-x} Fe _x) ₅ Alloys: <i>Ab Initio</i> Study, <i>Alexander I. Landa</i> , <i>A. Söderlind</i> , <i>E.A. Turchi</i> , Lawrence Livermore National Laboratory

^{*} Gaede Langmuir Award Winner

	Applied Surface Science	Biomaterial Interfaces
	Room 101B - Session AS+SS-WeM Applications where Surface Analysis is Your Only Hope Moderators: Jeffrey Fenton, Medtronic, Svitlana Pylypenko, Colorado School of Mines	Room 101A - Session BI+MI-WeM Biosensors and Diagnostics Moderators: Daniel Graham, University of Washington, Tobias Weidner, Max Planck Institute for Polymer Research, Germany
8:00am	AS+SS-WeM1 Accurate Ion Beam Analysis of Electrolytes via Rutherford Backscattering (RBS) and Positive Ion X-ray Emission (PIXE) of Uniform Thin Solid film of Blood congealed via HemaDrop™, <i>Yash Pershad</i> , <i>N.X. Herbots</i> , SiO2 NanoTech LLC; <i>C.F. Watson</i> , SiO2 NanoTech LLC/Arizona State University Physics Dpt; <i>EJ. Culbertson</i> , University of California at Los Angeles	BI+MI-WeM1 Bacteriophage-Derived Surfaces for the Targeting of Pathogenic Bacteria, <i>Stephane Evoy</i> , University of Alberta, Canada
8:20am	AS+SS-WeM2 Surface Analysis As a Valuable Tool to Study Chemistry of Metals in Environmental Problems, <i>Kateryna Artyushkova</i> , University of New Mexico; <i>J. Blake</i> , New Mexico Water Science Center; <i>L. Rodriguez-Freire</i> , <i>S. Avasarala</i> , <i>A. Ali</i> , <i>A. Brearley</i> , <i>E. Peterson</i> , <i>J.M. Cerrato</i> , University of New Mexico	BI+MI-WeM2 Biomolecule Sensing at Attogram Levels via Nanophotonic-Optomechanical Resonators, <i>Anandram Venkatasubramanian</i> , University of Alberta, Canada; V.T.K. Sauer, S.K. Roy, National Institute of Nanotechnology, Canada; D. Wishart, W.K. Hiebert, University of Alberta, Canada
8:40am	INVITED: AS+SS-WeM3 Surface Analysis Techniques — Hope Springs Eternal, John Newman, S.R. Bryan, D.M. Carr, G.L. Fisher, J.S. Hammond, J.E. Mann, Physical Electronics USA; T. Miyayama, ULVAC-PHI, Japan; J.F. Moulder, D. Paul, Physical Electronics USA; R. Inoue, ULVAC-PHI, Japan; B. Schmidt, Physical Electronics USA	BI+MI-WeM3 Hole-mask Colloidal Lithography Method to Fabricate Chiral Metal-Nanoparticles for Plasmon Enhanced CD Measurements, Gunnar Klös, Aarhus University, Denmark; D.S. Sutherland, Aarhus, Denmark
9:00am	Invited talk continues.	BI+MI-WeM4 Neuraminidase Assay using Glycan-Functionalized Graphene Field-Effect Transistors, <i>Kaho Kamada</i> , <i>T. Ono, Y. Kanai</i> , Osaka University, Japan; <i>Y. Ohno</i> , Tokushima University, Japan; <i>K. Maehashi</i> , Tokyo University of Agriculture and Technology, Japan; <i>K. Inoue</i> , Osaka University, Japan; <i>Y. Watanabe</i> , Kyoto Prefectural University of Medicine, Japan; <i>T. Kawahara</i> , <i>Y. Suzuki</i> , Chubu University, Japan; <i>S. Nakakita</i> , Kagawa University, Japan; <i>K. Matsumoto</i> , Osaka University, Japan
9:20am	AS+SS-WeM5 What Came First? The Black Ink or the Black Ink? That Is the Question, <i>Robyn E. Goacher</i> , <i>L.G. DiFonzo, K.C. Lesko</i> , Niagara University	INVITED: BI+MI-WeM5 Surface-sensitive Imaging of Supported Membranes and Single Lipid Vesicles for Medical Applications, Fredrik Höök, Chalmers University of Technology, Sweden
9:40am	AS+SS-WeM6 ToF-SIMS Analysis of Aerospace Topcoat Degradation, Taraneh Bozorgzad Moghim, M.L. Abel, J.F. Watts, University of Surrey, UK	Invited talk continues.
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	AS+SS-WeM10 Surface And Bulk: Are They Always The Same? X-Ray Photoelectron Spectroscopy Study, <i>Tatyana Bendikov</i> , <i>D. Barats-Damatov</i> , <i>B. Butschke</i> , <i>J. Bauer</i> , <i>J. Pellegrino Morono</i> , <i>T. Zell</i> , <i>R. Neumann</i> , <i>D. Milstein</i> , Weizmann Institute of Science, Israel	BI+MI-WeM10 Impedance Spectroscopy Reveals the Effect of Efflux Pumps on Paracellular Transport at the Blood Brain Barrier, Ramsey Kraya, Johns Hopkins University
11:20am	AS+SS-WeM11 In Situ Chemical Imaging of Biointerfaces Using Microfluidics and Molecular Imaging, Xiao-Ying Yu, Pacific Northwest National Laboratory	BI+MI-WeM11 Non-invasive Thermal Sensing using Thermographic Phosphors, <i>Firouzeh Sabri</i> , University of Memphis; <i>S. Allison</i> , EMCO; <i>P. Parajuli</i> , University of Memphis
11:40am	AS+SS-WeM12 Capturing the Transient Species at the Electrode- Electrolyte Interface by SALVI and Liquid ToF-SIMS, <i>Jiachao Yu, Y. Zhou, X. Hua</i> , Pacific Northwest National Laboratory; <i>S. Liu</i> , Southeast University, China; <i>Z. Zhu, XY. Yu</i> , Pacific Northwest National Laboratory	BI+MI-WeM12 Imaging Time-of-Flight Secondary Ion Mass Spectrometry to Characterize Tumor Progression and Regression, Lara Gamble, B.M. Bluestein, D.J. Graham, University of Washington; F. Morrish, D. Hockenbery, Fred Hutchinson Cancer Research Center
12:00pm	AS+SS-WeM13 Energy Storage Materials – Investigating the Surface, Jonathan Counsell, S.J. Coultas, C.J. Blomfield, Kratos Analytical Limited, UK; C. Moffitt, Kratos Analytical Limited	BI+MI-WeM13 Srl ₂ (Eu ²⁺)Gamma Camera for SPECT Imaging in Medical Applications, <i>LaNell Williams</i> , <i>M. Groza</i> , <i>E. Rowe</i> , <i>J. Butler</i> , Fisk University; <i>T. Peterson</i> , Vanderbilt University; <i>A. Burger</i> , Fisk University

	Electronic Materials and Photonics Room 102A - Session EM+NS-WeM Nanoparticles for Electronics and Photonics Moderators: Joseph Tischler, U.S. Naval Research Laboratory, Jessica Hilton, Mantis Deposition	Exhibitor Technology Spotlight Room Hall C - Session EW-WeM Exhibitor Technology Spotlight Session Moderator: Chris Moffitt, Kratos Analytical Limited
8:00am	INVITED: EM+NS-WeM1 Nanostructures on Surfaces: From Cluster Deposition to Low Energy Ion Bombardment, Luke Hanley, K. Steeves Lloyd, M.W. Majeski, I.L. Bolotin, University of Illinois at Chicago; M. Schmeling, Loyola University Chicago; I.V. Veryovkin, University of Illinois at Chicago	
8:20am	Invited talk continues.	
8:40am	INVITED: EM+NS-WeM3 Designer Nanocrystal Electronic and Optoelectronic Materials through Controlled Coupling and Doping, Cherie Kagan, University of Pennsylvania	
9:00am	Invited talk continues.	
9:20am	EM+NS-WeM5 Au Nanoparticle Modified Indium Tin Oxide Ultramicroelectrode for Single Particle Spectro-electrochemistry Study and Ultrasensitive Electrochemistry Sensing, <i>Yanxiao Ma</i> , The University of Alabama; <i>S. Pan</i> , The University of Alabama	
9:40am	EM+NS-WeM6 Band Gap-Control of Spray Pyrolysis Synthesized CZTS Nanoparticles, Stephen Exarhos, E. Palmes, A. Alvarez-Barragan, L. Mangolini, University of California, Riverside	
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	EW-WeM8 From Surface Spectrometry to 3D Analysis - Latest Trends and Instrumentation for TOF-SIMS, <i>Nathan Havercroft</i> , ION-TOF USA; <i>R. Moellers, A. Pirkl,</i> ION-TOF GmbH, Germany
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	EM+NS-WeM10 Designer Nanomaterials by Magnetron Sputtering and Ion Soft Landing, <i>Grant Johnson</i> , V. Prabhakaran, Pacific Northwest National Laboratory; T. Moser, Michigan Technological University; M.H. Engelhard, N. Browning, J. Laskin, Pacific Northwest National Laboratory	
11:20am	EM+NS-WeM11 A Facile Electrodeposition Method for Vertically Standing Plasmonic Nanorods for Surface Enhanced Photoelectrochemical Catalysis, <i>Jue Wang</i> , <i>S. Pan</i> , The University of Alabama	
11:40am	EM+NS-WeM12 Influence of Surface Reaction on the Infrared Localized Surface Plasmon Resonance of Indium Tin Oxide Nanocrystals, <i>Weize Hu, M.A. Filler</i> , Georgia Institute of Technology	
12:00pm	EM+NS-WeM13 Electrochemical Synthesis of Nanostructured Cu and Cu_xO Electrodes for the Reduction of CO_2 to Usable Fuels, <i>Nelly Kaneza</i> , <i>S</i> .	

	Wednesday Morning,	
	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Room 103A - Session HC+SS-WeM Bridging Gaps in Heterogeneously-catalyzed Reactions Moderator: Ashleigh Baber, James Madison University	MEMS and NEMS Room 102B - Session MN-WeM Multiscale Phenomena & Emerging Technologies in Micro- and Nano-Systems Moderators: Max Zenghui Wang, Case Western Reserve Univ.,
8:00am	HC+SS-WeM1 Vinyl Acetate Formation Pathways and Selectivity on Model Metal Catalyst Surfaces, <i>Theodore Thuening</i> , University of Wisconsin-Milwaukee	Robert Davis, Brigham Young University INVITED: MN-WeM1 Designing Microrobots to Interact with the Real World, Sarah Bergbreiter, R. St. Pierre, D. Vogtmann, University of Maryland, College Park; A. Gerratt, Ecole Polytechnique Fédérale de Lausanne (EPFL)
8:20am	HC+SS-WeM2 In situ Monitoring of Acetylene Hydrogenation over a Pd/Cu(111) Single Atom Alloy Surface with Polarization Dependent Infrared Spectroscopy, <i>Christopher M. Kruppe, J.D. Krooswyk, M. Trenary,</i> University of Illinois at Chicago	Invited talk continues.
8:40am	INVITED: HC+SS-WeM3 Novel in Situ Techniques for Studies of Model Catalysts, <i>Edvin Lundgren</i> , Lund University, Sweden	MN-WeM3 Ferroelectric and Piezoelectric Properties of [100]-textured PZT (52/48) Films Deposited on Pb _x TiO ₃ Nano-seed Layered Platinized Silicon, <i>Sushma Kotru, J. Zhong, V. Batra,</i> The University of Alabama
9:00am	Invited talk continues.	MN-WeM4 Methodology for Electromechanical Characterization of Resonant Micro Structures Actuated by Acoustic and Fringing Electrostatic Fields, S. Lulinsky, T. Shmilovich, Tel Aviv University, Israel; B.R. Ilic, National Institute of Standards and Technology; Slava Krylov, Tel Aviv University, Israel
9:20am	HC+SS-WeM5 Metastable Cluster Formation and Polymorphism of Hydrogen-bonding Molecules on Gold are a Consequence of the Pulse-deposition of a Solution into Vacuum, <i>Ryan Brown, S.A. Kandel,</i> University of Notre Dame	MN-WeM5 Nonlinear Interactions of Micromechanical Cantilevers through Fringing Electrostatic Fields, <i>Christopher Wallin</i> , Center for Nanoscale Science and Technology (CNST), National Institute of Standards and Technology (NIST), and University of Maryland (UMD); <i>D.A. Westly</i> , National Institute of Standards and Technology, Center for Nanoscale Science and Technology, Gaithersburg, MD; <i>S.J. Grutzik</i> , A.T. Zenhnder, R.H. Rand, Cornell University; <i>V. Aksyuk</i> , National Institute of Standards and Technology, Center for Nanoscale Science and Technology, Gaithersburg, MD; <i>S. Krylov</i> , Tel Aviv University, Israel; <i>B.R. Ilic</i> , National Institute of Standards and Technology, Center for Nanoscale Science and Technology, Gaithersburg, MD
9:40am	HC+SS-WeM6 Understanding the Activity of Pt-Re Bimetallic Clusters on Titania and Pt-Re Alloy Surfaces in the Water Gas Shift Reaction, Donna Chen , A.S. Duke, K. Xie, A.J. Brandt, T.D. Maddumapatabandi, University of South Carolina	MN-WeM6 Reduction in Frequency Noise through Mode Coupling in a MEMS Oscillator, <i>David Czaplewski</i> , <i>C. Chen, D. Lopez</i> , Argonne National Laboratory; <i>P.M. Polunin, O. Shoshani, S.W. Shaw, M.I. Dykman, Michigan State University</i>
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	INVITED: HC+SS-WeM10 Fundamental Studies of the Water-gas Shift and CO ₂ Hydrogenation on Metal/oxide Catalysts: From Model Systems to Powders, <i>Jose Rodriguez</i> , Brookhaven National Laboratory	MN-WeM10 Characterization of MEMS-based, Thin Film Silicon Carbide Diaphragms Using Multimode, Resonance Frequency Analysis, A.C. Barnes, Christian Zorman, Case Western Reserve University
11:20am	Invited talk continues.	MN-WeM11 High-resolution, MEMS-based Calorimeter for Quantitative Studies of Superconducting Phase Transitions in Thin Film Samples, <i>Zhu Diao</i> , <i>D. Campanini</i> , <i>A. Rydh</i> , Stockholm University, Sweden
11:40am	HC+SS-WeM12 The Use of EC-STM to Study the Chemical Reactivity and Nanoscale Structure of Metal Surfaces, A. Phillips, L. Jackson, H. Morgan, G. Jones, Erin Iski, University of Tulsa	MN-WeM12 Microelectrode Array of Carbon Nanotube Posts with High Aspect Ratio and Millimeter-length, and Its Electrochemical Response, <i>Guohai Chen, R.R. Vanfleet, R.F. Davis</i> , Brigham Young University
12:00pm	HC+SS-WeM13 Formation and Stability of Surface Oxides on Ag(111), Daniel Killelea, J. Derouin, R.G. Farber, M.E. Turano, Loyola University Chicago; E.V. Iski, The University of Tulsa	12:30 pm NANOMETER-SCALE SCIENCE AND TECHNOLOGY DIVISION GRADUATE STUDENT AWARD COMPETITION

	Plasma Science and Technology Room 104C - Session PS+TF-WeM	Plasma Science and Technology Room 104B - Session PS-WeM
	Atomic Layer Etching Moderator: Keren Kanarik, Lam Research Corporation	Plasma Sources and Novel Mechanisms for Generating Plasmas Moderator: David Lishan, Plasma-Therm LLC
8:00am	INVITED: PS+TF-WeM1 Selective Cyclic Plasma Etching of Thin Films in Two Heating Way, Ion Bombardment and Infrared Irradiation., M. Izawa, Hitachi High-Technologies Corp., Japan; Kazunori Shinoda, N. Miyoshi, H. Kobayashi, Hitachi, Japan; N. Yasui, M. Tanaka, Y. Sonoda, K. Kuwahara, Hitachi High-Technologies Corp., Japan; K. Ishikawa, M. Hori, Nagoya University, Japan	PS-WeM1 Multifrequency Impedance Matching Solutions for Plasma Excitation by Tailored Voltage Waveforms, <i>Erik V. Johnson</i> , Ecole Polytechnique, Palaiseau, France; <i>S. Dine</i> , SOLAYL SAS, France; <i>JP. Booth</i> , Ecole Polytechnique, Palaiseau, France
8:20am	Invited talk continues.	PS-WeM2 Effect of Tailored Voltage Waveforms on Surface Nanotexturing of Silicon in Capacitively Coupled SF ₆ /O ₂ Discharges, Guillaume Fischer, Institut Photovoltaïque d'Ile-de-France (IPVF), France; E. Drahi, G. Poulain, Total MS-Energies Nouvelles, France; B. Bruneau, E.V. Johnson, LPICM, Ecole Polytechnique, France
8:40am	PS+TF-WeM3 Concurrent Engineering of Atomic Layer Etch Patterning Processes Involving Oxide and Nitride Materials, <i>Mingmei Wang</i> , <i>P. Chan</i> , TEL Technology Center, America, LLC; <i>P. Ventzek</i> , Tokyo Electron America; <i>A. Ranjan</i> , TEL Technology Center, America, LLC	INVITED: PS-WeM3 Plasma Enhanced CVD processes: Dual Frequency PECVD with pulsing of liquid precursors and PEALD for Selective Deposition, <i>Christophe Vallee</i> , LTM, Univ. Grenoble Alpes, CEA-LETI, France; <i>R. Gassilloud</i> , CEA, LETI, MINATEC Campus; <i>R. vallat</i> , LTM, Univ. Grenoble Alpes, CEA-LETI; <i>F. Piallat</i> , Altatech, France; <i>M. Aoukar</i> , LTM, Univ. Grenoble Alpes, CEA-LETI; <i>P. Kowalczyk</i> , LTM - CEA/LETI, France; <i>P.D. Szkutnik</i> , LTM, Univ. Grenoble Alpes, CEA-LETI; <i>P. Noé</i> , CEA, LETI, MINATEC Campus; <i>A. Bsiesy, P. Gonon</i> , LTM, Univ. Grenoble Alpes, CEA-LETI
9:00am	PS+TF-WeM4 System Trade-offs of Atomic Layer Etching (ALE) of High Aspect Ratio 3D Features, <i>Chad Huard</i> , University of Michigan; <i>Y. Zhang</i> , <i>S. Sriraman</i> , <i>A. Paterson</i> , Lam Research Corp.; <i>M.J. Kushner</i> , University of Michigan	Invited talk continues.
9:20am	INVITED: PS+TF-WeM5 Molecular Dynamics Simulations of Atomic Layer Etching, <i>Jun-Chieh Wang</i> , <i>S. Rauf, J.A. Kenney, L. Dorf, K.S. Collins</i> , Applied Materials, Inc.	PS-WeM5 Customizing Ion Energy Distributions in Pulsed Plasmas with Chirped Bias Power, <i>Steven Lanham</i> , <i>M.J. Kushner</i> , University of Michigan
9:40am	Invited talk continues.	PS-WeM6 Nonlinear Frequency Pull in Pulsed Capacitively Coupled Plasmas, J. Poulose, Lawrence Overzet, M.J. Goeckner, The University of Texas at Dallas; S. Shannon, North Carolina State University; D. Coumou, MKS Instruments
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
	PS+TF-WeM10 Isotropic Atomic Layer Etching of Titanium Nitride Using Formation and Desorption of Ammonium Salt, <i>Kazunori Shinoda, N. Miyoshi, H. Kobayashi, M. Kurihara,</i> Hitachi, Japan; <i>S. Sakai, M. Izawa,</i> Hitachi High-Technologies, Japan; <i>K. Ishikawa, M. Hori,</i> Nagoya University, Japan	INVITED: PS-WeM10 Plasma Source Development for Fusion Relevant Material Testing, John Caughman, R.H. Goulding, T.M. Biewer, T.S. Bigelow, I.H. Campbell, S.J. Diem, A. Fadnek, D.T. Fehling, D.L. Green, C.H. Lau, E.H. Martin, P.V. Pesavento, J. Rapp, Oak Ridge National Laboratory; H.B. Ray, G.C. Shaw, M.A. Showers, University of Tennessee; P. Piotrowicz, D.N. Ruzic, University of Illinois at Urbana-Champaign; GN. Luo, Chinese Academy of Sciences
11:20am	PS+TF-WeM11 Organic Etchants Toward Atomic Layer Etching of Magnetic Metals, <i>Nicholas Altieri</i> , <i>L. Minardi</i> , <i>E.L. Chen</i> , <i>J.P. Chang</i> , University of California Los Angeles	Invited talk continues.
11:40am	PS+TF-WeM12 Conformality of Thermal Al ₂ O ₃ Atomic Layer Etching in High Aspect Ratio Structures, <i>Amy Marquardt</i> , <i>H. Sun</i> , University of Colorado Boulder; <i>S.M. George</i> , University of Colorado at Boulder	PS-WeM12 Linear Magnetron Magnet Pack for High Power Pulsed Magnetron Sputtering, <i>Jake McLain</i> , <i>P. Raman</i> , <i>I.A. Shchelkanov</i> , University of Illinois at Urbana Champaign; <i>J. Hrebik</i> , Kurt J. Lesker Company; <i>B. Jurczyk</i> , <i>R. Stubbers</i> , Starfire Industries; <i>D.N. Ruzic</i> , University of Illinois at Urbana-Champaign
	PS+TF-WeM13 Thermal Atomic Layer Etching of Crystalline Aluminum Nitride Using Sequential, Self-Limiting HF and Sn(acac) ₂ Reactions and Enhancement by H ₂ and Ar Plasmas, <i>Nicholas Johnon, H. Sun, K. Sharma, S.M. George,</i> University of Colorado at Boulder	

	Advanced Surface Engineering	Scanning Probe Microscopy Focus Topic
	Room 101C - Session SE+TR-WeM	Room 104A - Session SP+SS+TF-WeM
	Protective Coatings for Tribological Applications in	Probing Electronic Properties
	Surface Engineering	Moderator: Carl Ventrice, Jr., SUNY Polytechnic Institute
	Moderators: Andrey Voevodin, University of North Texas,	
	Michael Stueber, Karlsruhe Institute of Technology, Germany	
8:00am	SE+TR-WeM1 Correlative Theoretical and Experimental Investigation of the Formation of AlYB ₁₄ and Competing Phases, <i>Oliver Hunold, Y.T. Chen, D. Music, RWTH Aachen University, Germany; P.O.A. Persson, Linköping University, Sweden; <i>D. Primetzhofer, Uppsala University, Sweden; M. to Baben, GTT-Technologies; J. Achenbach, P. Keuter, J.M. Schneider, RWTH Aachen University, Germany</i></i>	INVITED: SP+SS+TF-WeM1 Local Probe Investigation of 1D Structures and Interfaces in 2D Materials, <i>Chenggang Tao</i> , Virginia Tech
8:20am	SE+TR-WeM2 Investigation of Friction and Wear for the Oxide-Oxide Contact in the Piston Ring-liner System, <i>P. Ernst, P. Luethy, Ch. Bohnheio,</i> Oerlikon Metco AG, Wohlen, Switzerland; <i>F. Seibert, B. Widrig, Jürgen Ramm,</i> Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein	Invited talk continues.
8:40am	INVITED: SE+TR-WeM3 Local Characterization Tools as the Key for Optimized Performance of Hard Coatings, Christian Mitterer, Montanuniversität Leoben, Austria	SP+SS+TF-WeM3 Investigation of Electronic Structures from Monolayers to Multilayers in Charge Transfer Complex, TTF-TCNQ using Low-temperature Scanning Tunneling Microscopy/Spectroscopy, Seokmin Jeon, P. Maksymovych, Oak Ridge National Laboratory
9:00am	Invited talk continues.	SP+SS+TF-WeM4 Investigation of Initial Stages of Oxidation of Ni-Cr and Ni-Cr-Mo Alloys by Scanning Tunneling Microscropy/Spectroscopy (STM/STS), Gopalakrishnan Ramalingam, P. Reinke, University of Virginia
9:20am	SE+TR-WeM5 High Temperature Oxidation in Pure Steam Environment of HIPIMS Deposited CrN/NbN Nanostructured Coatings, <i>Papken Hovsepian</i> , A.P. Ehiasarian, Y. Purandare, Sheffield Hallam University, UK; F.J. Perez, M.I. Lasanta, M.T. de Miguel, A. Illana, Universidad Complutense de Madrid, Spain; J. Juez-Lorenzo, Fraunhofer Instititute fur Chemische Technologie ICT, Germany; A. Aguero, Instituto Nacional de Tecnica Aeroespecial (INTA), Spain	INVITED: SP+SS+TF-WeM5 Au(111) Characterization, Single Atom Manipulation and Si(100):H Surface Imaging by LT-UHV-4 STM, <i>Corentin Durand</i> , D. Sordes, C. Joachim, CNRS, France
9:40am	SE+TR-WeM6 Improved Thermo-Mechanical Properties and Oxidation Resistance of Ti-Al-N Coatings by Alloying Ta and Modifying the Coating Architecture, <i>Christian Martin Koller</i> , <i>A. Kirnbauer</i> , Technische Universität Wien, Austria; <i>H. Bolvardi</i> , Oerlikon Balzers, Liechtenstein; <i>P. Polcik</i> , Plansee Composite Materials GmbH, Germany; <i>P.H. Mayrhofer</i> , Technische Universität Wien, Austria	Invited talk continues.
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	INVITED: SE+TR-WeM10 Tribochemistry between Graphene and Fe, Fe ₂ O ₃ , and Fe ₃ C Surfaces, <i>J. David Schall</i> , Oakland University	SP+SS+TF-WeM10 Heterochiral to Homochiral Transition in Pentahelicene 2D Crystallization induced by 2 nd -layer Nucleation, <i>Anaïs Mairena</i> , Universität Zürich, Switzerland
11:20am	Invited talk continues.	SP+SS+TF-WeM11 Two-stage Chiral Selectivity in the Molecular Self-Assembly of Tryptophan, <i>Nathan Guisinger</i> , Argonne National Laboratory; <i>B. Kiraly</i> , Northwestern University; <i>R. Rankin</i> , Villanova University
11:40am	SE+TR-WeM12 Tribological Testing of Leather Treated with Ag/TiO ₂ Nanoparticles for Footwear Industry, <i>M. Rebelo de Figueiredo</i> , Montanuniversität Leoben, Austria; <i>I. Carvalho</i> , S. Carvalho, Universidade do Minho, Portugal; <i>C. Gaidau</i> , Leather and Footwear Research Institute, Romania; <i>Robert Franz</i> , Montanuniversität Leoben, Austria	SP+SS+TF-WeM12 Mask Free Approach to Selective Growth of Transition Metal Dichalcogenides Heterostructures enabled with Scanning Probe based Nanolithography, R. Dong, L. Moore, N. Aripova, C. Williamson, R. Schurz, Saint Louis University; L.E. Ocola, Argonne National Laboratory; Irma Kuljanishvili, Saint Louis University
12:00pm	SE+TR-WeM13 Phase Formation of Cathodic Arc Evaporated Al_xCr_{1-x} and $Al_xCr_{1-x}O_6$ Thin Films, <i>Valentin Dalbauer</i> , CDL AOS TU Wien, Austria; <i>J. Ramm</i> , Oerlikon Balzers, Oerlikon Surface Solution AG, Liechtenstein; <i>S. Kolozsvári</i> , Plansee Composite Materials GmbH, Germany; <i>C.M. Koller</i> , CDL AOS TU Wien, Austria; <i>P.H. Mayrhofer</i> , Vienna University of Technology, Austria	SP+SS+TF-WeM13 Non-Destructive Electrical Depth Profiling across Nanometric SiO ₂ Layers, <i>Hagai Cohen</i> , Weizmann Institute of Science, Israel; <i>A. Givon</i> , Tel Aviv University, Israel

Surface Science Surface Science Room 104D - Session SS+2D-WeM Room 104E - Session SS+AS-WeM Synthesis, Characterization, and Surface Science of Environmental Interfaces, Ambient Surfaces, and In-**Novel Materials and Interfaces Operando Studies** Moderator: Talat Rahman, University of Central Florida Moderator: R. Scott Smith, Pacific Northwest National Lab. SS+2D-WeM1 Early Stages of the Thermal-Induced Mobility of Ag in SiC, INVITED: SS+AS-WeM1 In-situ Electron Microscopy of Synthesis, Daniel Velázquez, R. Seibert, J. Terry, Illinois Institute of Technology Chemistry and Self-assembly of Colloidal Nanostructures, Eli Sutter, University of Nebraska - Lincoln 8:20am | SS+2D-WeM2 Quantitative Chemical State base on XPS Energy Scan Invited talk continues. Image Applied to Ni Fe corroded Samples, Vincent Fernandez, J. Keraudy, Université de Nantes, France; N. Fairley, Casa Software Ltd, UK; P.Y. Jouan, Université de Nantes, France 8:40am | SS+2D-WeM3 Novel Approaches to Form Organic-Inorganic Interfaces: SS+AS-WeM3 Low Energy Electron Microscopy at Near Ambient Parallels between Coupling and Surface Modification Schemes in Pressures, Andreas Thissen, SPECS Surface Nano Analysis GmbH, Germany Vacuum and in Wet Chemistry, Andrew Teplyakov, University of Delaware SS+2D-WeM4 Adsorption of Hetero-bifunctional Urea on Ge(100)-2x1 SS+AS-WeM4 Probing Liquid-Vapor Interfaces of Ionic Solutions with Surface, Tania Sandoval, S.F. Bent, A.M. Crow, Stanford University Lab-based APXPS, John Newberg, C. Arble, Y. Khalifa, A. Broderick, S. Rani, University of Delaware SS+AS-WeM5 Effect of Surface Passivation on Stability of SS+2D-WeM5 Electronic Structure of Ferroelectric Nanodomains, Erie Methylammonium Lead Iodide Perovskite, Q. Peng, Xiaozhou(Joe) Yu, Morales, C. Perez, M. Brukman, D. Bonnell, The University of Pennsylvania University of Alabama 9:40am | SS+2D-WeM6 Using Data Analytics and Informatics in Understanding SS+AS-WeM6 STM Reveals the Formation of Near-Ideal Self Assembled Enhanced Conductivity, Mobility, and Transparency in ITO Bearing ZrO₂ Monolayers on TiO₂ in Air and Solution, William DeBenedetti, M.A. Hines, and reduced SnO₂, Timothy Peshek, Case Western Reserve University; J.M. E.S. Skibinski, A. Song, A. Ortoll-Bloch, Cornell University Burst, T. Coutts, T.A. Gessert, National Renewable Energy Laboratory 10:00am | BREAK - Complimentary Coffee in Exhibit Hall **BREAK - Complimentary Coffee in Exhibit Hall BREAK - Complimentary Coffee in Exhibit Hall BREAK - Complimentary Coffee in Exhibit Hall** 10:40am | BREAK - Complimentary Coffee in Exhibit Hall **BREAK - Complimentary Coffee in Exhibit Hall** 11:00am | INVITED: SS+2D-WeM10 Surface Composition and Atomic Structure of SS+AS-WeM10 Study of the Electrical Double Layer of Calcium Topological Insulator Materials, Jory Yarmoff, W. Zhou, H. Zhu, University of Carbonate Minerals, Yijue Diao, R.M. Espinosa-Marzal, University of Illinois at California - Riverside Urbana-Champaign 11:20am Invited talk continues SS+AS-WeM11 Observation of Water Adsorption Structures on Ultrathin ZnO/Au(111), Junseok Lee, D.C. Sorescu, X. Deng, National Energy Technology Laboratory 11:40am SS+2D-WeM12 Impact Collision Ion Scattering Spectroscopy of Bi₂Se₃ **SS+AS-WeM12** Surface and Bulk Crystallization Kinetics of Amorphous and Bi/Bi₂Se₃, Weimin Zhou, H. Zhu, J.A. Yarmoff, University of California -Solid Water Nanoscale Films, Chunging Yuan, R.S. Smith, B.D. Kay, Pacific Riverside Northwest National Laboratory 12:00pm | SS+2D-WeM13 Feature Scale Simulation for Materials Processing, Paul SS+AS-WeM13 Capture of Hyperthermal Atoms and Molecules by Moroz, TEL Technology Center, America, LLC; D.J. Moroz, University of Amorphous Water Ice via Ballistic Embedding, Grant Langlois**, S.J. Sibener, Pennsylvania University of Chicago

8:00 AM

Morton S. Traum Award Finalist

National Student Award Finalist

	Thin Film Room 105A - Session TF+MI+NS-WeM ALD and Nanostructures Moderators: Sean King, Intel Corporation, Mariadriana Creatore, Eindhoven University of Technology, Netherlands	Vacuum Technology Room 101D - Session VT-WeM Vacuum Technology – History and Innovation (8:20- 10:00 am)/Transfer and Manipulation (11:00 am-12:20 pm) Moderators: Jay Hendricks, National Institute of Standards and Technology, Gerardo Alejandro Brucker, MKS Instruments, Inc.
8:00am	INVITED: TF+MI+NS-WeM1 Scalable Manufacturing of Nanostructured Materials by Gas-Phase Deposition Techniques, <i>Ruud van Ommen</i> , Delft University of Technology, Netherlands	
8:20am	Invited talk continues.	VT-WeM2 A New Approach to Vacuum Technology Education at a Distance, <i>Del Smith</i> , <i>N. Louwagie</i> , Normandale Community College
8:40am	TF+MI+NS-WeM3 Surface Passivation of InP Nanowires by Atomic Layer Deposition, <i>Lachlan Black, Y. Cui, A. Cavalli, M.A. Verheijen, E.P.A.M. Bakkers, W.M.M. Kessels,</i> Eindhoven University of Technology, Netherlands	INVITED: VT-WeM3 It's All Because of the Vacuum, H. Frederick Dylla, American Institute of Physics
9:00am	TF+MI+NS-WeM4 Selectivity and Nucleation Effects in Atomic Layer Deposition of Copper for Plasmonic Nanostructures, <i>Jie Qi, B.G. Willis,</i> University of Connecticut	Invited talk continues.
9:20am	TF+MI+NS-WeM5 Metal Oxide Aerogel Patterning by CO ₂ Laser Etching of ALD-coated Carbon Nanotube Macro-Structures, <i>C. Aksu, P.D. Bradford, Jesse Jur,</i> North Carolina State University	INVITED: VT-WeM5 The Next Generation Quantum-based Metrology for Miniaturized Sensors and Standards, <i>Gregory F. Strouse</i> , National Institute of Standards and Technology
9:40am	TF+MI+NS-WeM6 Tungsten ALD in Porous Carbon Nanotube Forests, K. Hinton, N. Hollingworth, D.D. Allred, Richard Vanfleet, Brigham Young University	Invited talk continues.
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	TF+MI+NS-WeM10 Rational Design of Hyperbranched ZnO Nanowire Systems for Superomniphobic Surfaces Enabled by ALD, <i>Ashley Bielinski</i> , <i>M. Boban</i> , University of Michigan, Ann Arbor; <i>Y. He</i> , Pacific Northwest National Laboratory; <i>E. Kazyak</i> , University of Michigan, Ann Arbor; <i>C. Wang</i> , Pacific Northwest National Laboratory; <i>A. Tuteja</i> , <i>N.P. Dasgupta</i> , University of Michigan, Ann Arbor	INVITED: VT-WeM10 Vacuum Transport for Realization and Dissemination of the Redefined Kilogram at NIST, <i>Eric Benck</i> , <i>E. Mulhern</i> , NIST
11:20am	TF+MI+NS-WeM11 Bio-Templated <i>Morpho</i> Butterfly Wings by ALD for Photocatalysis, <i>Robin E. Rodriguez</i> , <i>D. Das, S.P. Agarwal</i> , University of Michigan, Ann Arbor; <i>W. Shang, T. Deng</i> , Shanghai Jiao Tong University, China; <i>N.P. Dasgupta</i> , University of Michigan, Ann Arbor	Invited talk continues.
11:40am	INVITED: TF+MI+NS-WeM12 Atomic Layer Deposition of Nanoscale Superconductors, <i>Jeffrey A. Klug</i> , Argonne National Laboratory	VT-WeM12 Handling, Transfer ,Storage, and Shipping of Commercial Thin Film Hydride Disk Target Samples, <i>James Provo</i> , J. L. Provo, Consulting
12:00pm	Invited talk continues.	VT-WeM13 Evaluation of the Oxidation of Air Sensitive Materials from Exposure to Trace Levels of Oxidants During their Environmental Transfer from a Glove Box to a Surface Analysis UHV Chamber, K. Ohlinger, Hugo Celio, University of Texas at Austin

Wednesday Lunch, November 9, 2016

	Exhibitor Technology Spotlight	
	Room Hall C - Session EW-WeL	
	Exhibitor Technology Spotlight Session	
	Moderator: Chris Moffitt, Kratos Analytical Limited	
12:20pm		
12:40pm	EW-WeL2 Ceramic-To-Metal Joint Design in Demanding and Harsh	
	Environmental Applications, <i>Jim Moore</i> , MDC Vacuum Products, LLC	
1:00pm	EW-WeL3 Why Test Inks Cannot Tell the Full Truth About Surface Free	
	Energy, <i>Thomas Willers, M. Jin,</i> KRUSS	
1:20pm	EW-WeL4 A Vacuum Species Sensor using Remote Plasma Emission	
·	Spectroscopy for Direct Monitoring of Vacuum Processes, <i>Joseph Brindley</i> ,	
	D. Benoit, V. Bellido-Gonzalez, Gencoa Limited, UK	
1:40pm	EW-WeL5 Raman Imaging of Samples with Complex surface	
	Topographies Using Renishaw's inVia Qontor, <i>Tim Prusnick</i> , RENISHAW, INC.	
2:00pm	EW-WeL6 Ampoules and Bubblers 101, William Kimmerle, K.S. Kimmerle, NSI	
	,	

	2D Materials Focus Topic Room 103B - Session 2D+NS-WeA Nanostructures including Heterostructures made of 2D Materials Moderators: Charlie Johnson, University of Pennsylvania, Arkady Krasheninnikov, Helmholtz Zentrum Dresden- Rossendorf, Germany	Actinides and Rare Earths Focus Topic Room 103C - Session AC+MI-WeA Actinide and Rare Earth Theory (2:20-3:40 pm)/Nuclear Power, Waste Remediation and Applications (4:20-6:20 pm) Moderators: Paul Bagus, University of North Texas, Leon Petit, Daresbury Laboratory, UK, Alexander I. Landa, Lawrence Livermore National Laboratory, Melissa Denecke, University of Manchester, UK, David Geeson, AWE, UK, Stefan Minasian, Lawrence Berkeley National Laboratory (LBNL)
2:20pm	2D+NS-WeA1 Single- and Few-Layer WTe₂ Nanosheets: New Raman Fingerprints, Nanomechanical Resonances, and Environmental Instability Studies, <i>Fan Ye, J. Lee,</i> Case Western Reserve University; <i>J. Hu, ZQ. Mao, J. Wei,</i> Tulane University; <i>P.XL. Feng,</i> Case Western Reserve University	INVITED: AC+MI-WeA1 Multiplets and f-Bands: Theory of Racah Materials, A.B. Schick, J. Kolorenc, Institute of Physics of the AS CR, Czech Republic; M.I. Katsnelson, Radboud University, The Netherlands; A.I. Lichtenstein, Institute for Theoretical Physics, University of Hamburg, Germany
2:40pm		Invited talk continues.
3:00pm	INVITED: 2D+NS-WeA3 Laser-based Synthesis and Processing of Two- dimensional Monolayers and Heterostructures, <i>Masoud Mahjouri-Samani</i> , C. M. Rouleau, A.A. Puretzky, D.B. Geohegan, Oak Ridge National Laboratory	INVITED: AC+MI-WeA3 First-Principle Calculations of Magnetic Properties of Actinide Complexes, <i>Hélène Bolvin</i> , IRSAMC, Université de Toulouse III
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	BREAK	BREAK
4:00pm	BREAK	BREAK
4:20pm	2D+NS-WeA7 Pulsed Laser Deposition of Single Layer, Hexagonal Boron Nitride on Fiber-oriented Ag(111)/SrTiO ₃ (001), <i>Jeff Terry</i> , <i>D. Velazquez</i> , <i>R. Seibert</i> , <i>L. Spentzouris</i> , Illinois Institute of Technology	INVITED: AC+MI-WeA7 Observations of Actinide-mineral Precipitation in Solution by <i>In Situ</i> Electron Microscopy, <i>Edgar Buck</i> , <i>M.A. Conroy</i> , <i>J.A. Soltis</i> , Pacific Northwest National Laboratory
4:40pm	2D+NS-WeA8 Fracture Toughness Measurements of Graphene Oxide, Tobin Filleter, C. Cao, University of Toronto, Canada; J.Y. Howe, Hitachi High	Invited talk continues.
	Technologies Canada Inc., Canada; <i>D. Perovic,</i> University of Toronto, Canada; <i>Y. Sun,</i> University of Toronto, Canada	
5:00pm		INVITED: AC+MI-WeA9 A Thin Film Approach to Modelling Nuclear Fuels, Ross Springell, University of Bristol, UK
5:00pm 5:20pm	Sun, Univeristy of Toronto, Canada INVITED: 2D+NS-WeA9 Strain, Solitons, and Bimorphs with 2D	
5:20pm	Sun, Univeristy of Toronto, Canada INVITED: 2D+NS-WeA9 Strain, Solitons, and Bimorphs with 2D Materials, Paul McEuen, Cornell University	Fuels, <i>Ross Springell</i> , University of Bristol, UK

2:20pm /	Applied Surface Science Room 101B - Session AS-WeA Multiple Technique Approaches for Real-World Industrial Problem Solving Moderators: Kateryna Artyushkova, University of New Mexico, Xia Dong, Eli Lilly and Company AS-WeA1 Integrated XPS/ Raman Spectroscopy for Comprehensive Structural, Molecular and Chemical Surface Analysis, Christopher Deeks, P. Mack, T.S. Nunney, J.P.W. Treacy, M. Meyer, N. Hibbard, Thermo Fisher Scientific, UK	Electronic Materials and Photonics Room 102A - Session EM+NS+SP+SS-WeA Nanoscale Imaging of Metals and Compound Semiconductor based Nanostructures, Surfaces and Interfaces Moderators: Yohannes Abate, Georgia State University, Andy Antonelli, Nanometrics INVITED: EM+NS+SP+SS-WeA1 The Importance of Contact Engineering for 2D Devices, Saptarshi Das, Pennsylvania State University
1	AS-WeA2 Extended Molecular Identification with TOF-SIMS Imaging MS/MS, <i>John Hammond</i> , <i>G.L. Fisher</i> , <i>S.R. Bryan</i> , Physical Electronics; <i>S. lida</i> , <i>T. Miyayama</i> , ULVAC-PHI, Japan	Invited talk continues.
!	INVITED: AS-WeA3 Practical Aspects of Multiple Technique Problem- Solving: Making it Work, <i>Kathryn Lloyd</i> , DuPont Corporate Center for Analytical Sciences	EM+NS+SP+SS-WeA3 Imaging Stress-Directed Compositional Patterning in Silicon Germanium with μ-Raman Spectroscopy, <i>Brian Rummel, S.M. Han,</i> University of New Mexico
3:20pm	Invited talk continues.	EM+NS+SP+SS-WeA4 Atomic-scale Characterization of III-V Nanowire Heterostructures and Devices, J. Knutsson, S. McKibbin, M. Hjort, J. Colvin, S. Yngman, A. Troian, O. Persson, A. Mikkelsen, Rainer Timm, Lund University, Sweden
3:40pm	BREAK	BREAK
4:00pm	BREAK	BREAK
1	AS-WeA7 Adhesion Aspects of Polymeric Methylene Diphenyl Diisocyanate on Different Steel Surfaces by XPS and ToF-SIMS, Jorge Bañuls Ciscar, M.L. Abel, J.F. Watts, University of Surrey, UK	INVITED: EM+NS+SP+SS-WeA7 Revealing Optical Properties of Reduced- Dimensionality Materials at Relevant Length Scales using Nanospectroscopic Imaging, <i>P. James Schuck</i> , The Molecular Foundry, Berkeley Lab
1	AS-WeA8 Migration of Erucamide in Polyethylene Films, <i>Michaeleen Pacholski, R. Sharma, J. Ngunjiri, K. Laughlin, M. Kapur, V. Kalihari,</i> The Dow Chemical Company	Invited talk continues.
ı	AS-WeA9 Probing the Impact of Process and Materials Variability of Medical Device Components with Surface Characterization, <i>Jeffrey Fenton</i> , L. Nygren, B. Tischendorf, R. Jahnke, J. Heffelfinger, Medtronic plc	EM+NS+SP+SS-WeA9 Polarizability Mapping of Nanolayers Based on Near-Field Edge Fringes, Viktoriia Babicheva, V.S. Yakovlev, S. Gamage, M.I. Stockman, Y. Abate, Georgia State University
	AS-WeA10 Multi-technique Characterization of PtNi Extended Surface Catalysts for Improvement of Electrocatalytic Activity and Durability, S. Shulda, C. Ngo, Colorado School of Mines; S. Alia, National Renewable Energy Laboratory; J. Nelson Weker, SLAC National Accelerator Laboratory; B. Pivovar, National Renewable Energy Laboratory; Svitlana Pylypenko, Colorado School of	EM+NS+SP+SS-WeA10 Wedding Cake Growth Mechanism in One-Dimensional and Two-Dimensional Nanostructure Evolution, Xin Yin*, University of Wisconsin-Madison; J. Shi, Rensselaer Polytechnic Institute; X. Niu, Northeastern University; D. Geng, University of Wisconsin-Madison; H. Huang, Northeastern University; X.D. Wang, University of Wisconsin-Madison
	Mines	
5:40pm		INVITED: EM+NS+SP+SS-WeA11 Detecting the Invisible - The Atomic Structure of Radiation Sensitive Nano-Materials, <i>Christian Kisielowski</i> , Molecular Foundry, Lawrence Berkeley National Laboratory; <i>P. Specht</i> , University of California Berkeley

^{*} NSTD Student Award Finalist

	Fundamental Discoveries in Heterogeneous Catalysis	Advanced Ion Microscopy Focus Topic
	Focus Topic	Room 104A - Session HI-WeA
	Room 103A - Session HC+NS+SS-WeA	10 Years of GFIS Microscopy
	Nanoscale Surface Structures in Heterogeneously	Moderators: Gregor Hlawacek, Helmholtz-Zentrum Dresden
	Catalyzed Reactions	Rossendorf, Germany
	Moderator: Arthur Utz, Tufts University	Richard Livengood, Intel Corporation
2:20pm	INVITED: HC+NS+SS-WeA1 Ceria Nanoclusters on Graphene/Ru(0001): A New Model Catalyst System, Z. Novotny, Pacific Northwest National Laboratory; F.P. Netzer, Karl-Franzens University, Austria; Zdenek Dohnalek, Pacific Northwest National Laboratory	a Doomed Technology Transforming the Impossible into the Helium
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	HC+NS+SS-WeA3 Lowering the Barrier to C-H Activation using Pt/Cu Single Atom Alloys, <i>Matthew Marcinkowski</i> , <i>M. El Soda, F.R. Lucci, E.C.H. Sykes,</i> Tufts University	HI-WeA3 Recent Developments of the Gas Field Ion Source, <i>John A. Notte,</i> Carl Zeiss Microscopy, LLC
3:20pm	HC+NS+SS-WeA4 Formation, Migration and Reactivity of Au-CO Complexes on Gold-Surfaces, <i>Jun Wang</i> , Oak Ridge National Laboratory; <i>M. McEntee, W. Tang, M. Neurock</i> , University of Virginia; <i>A.P. Baddorf, P. Maksymovych</i> , Oak Ridge National Laboratory; <i>J.T. Yates, Jr.</i> , University of Virginia	HI-WeA4 Monte-Carlo Simulations of Ion Beam Milling in Compound Targets, <i>Kyle Mahady</i> , <i>P.D. Rack</i> , University of Tennessee; <i>S. Tan</i> , <i>R.H. Livengood</i> , <i>Y. Greenzweig</i> , <i>A. Raveh</i> , Intel Corporation
3:40pm	BREAK	BREAK
4:00pm	BREAK	BREAK
4:20pm	INVITED: HC+NS+SS-WeA7 Sulfur-Metal Complexes on Surfaces of Copper, Silver, and Gold, <i>Patricia A. Thiel</i> , lowa State University; <i>H. Walen</i> , RIKEN Surface and Interface Science Laboratory, Wako, Saitama, Japan; <i>DJ. Liu</i> , Ames Laboratory, Ames, IA; <i>J. Oh</i> , RIKEN Surface and Interface Science Laboratory, Wako, Saitama, Japan; <i>H.J. Yang</i> , University College London, UK; <i>Y. Kim</i> , RIKEN Surface and Interface Science Laboratory, Wako, Saitama, Japan	HI-WeA7 Characterization of Structural Changes During HIM and SEM Imaging of Organic Films, <i>Shinichi Ogawa</i> , National Institute of Advanced Industrial Science and Technology (AIST), Japan; <i>T. Ohashi, S. Oyama</i> , Nissan Chemical Industries, Ltd.
4:40pm	Invited talk continues.	HI-WeA8 Laser-Assisted Focused Helium and Neon Beam Induced Processing, M.G. Stanford, The University of Tennessee Knoxville; S. Tan, R.H. Livengood, Intel Corporation; B.B. Lewis, University of Tennessee Knoxville; J.D. Fowlkes, Center for Nanophase Materials Sciences, Oak Ridge National Lab; Philip D. Rack, The University of Tennessee Knoxville
5:00pm	HC+NS+SS-WeA9 Titania/Gold Inverse Model Catalysts for Acetaldehyde Formation from Ethanol, <i>Ashleigh Baber</i> , <i>D.T. Boyle, W. Andahazy, V. Lam, D. Schlosser, N. Tosti, J. Wilke</i> , James Madison University	INVITED: HI-WeA9 Imaging and Lithography of Two-Dimensional Nanostructures with Helium Ions, <i>André Beyer</i> , Bielefeld University, Germany
5:20pm	HC+NS+SS-WeA10 Shape and Support Interaction of Size Selected Pt Nanoparticles in Presence of H ₂ , <i>Mahdi Ahmadi</i> , <i>F. Behafarid</i> , University of Central Florida; <i>B. Roldan Cuenya</i> , Ruhr-University Bochum, Germany	Invited talk continues.
5:40pm	INVITED: HC+NS+SS-WeA11 Single Atom Alloys as a Strategy for Selective Heterogeneous Hydrogenation and Dehydrogenation Reactions, <i>Charles Sykes</i> , Tufts University	HI-WeA11 High Resolution Elemental Imaging on the Helium Ion Microscope, <i>David Dowsett, JN. Audinot, F. Vollnhals, T. Wirtz,</i> Luxembourg Institute of Science and Technology (LIST), Luxembourg
6:00pm	Invited talk continues.	

In-Situ and Operando Spectroscopy and Microscopy for **MEMS and NEMS** Catalysts, Surfaces, & Materials Focus Topic Room 102B - Session MN+NS-WeA Room 101C - Session IS+HC-WeA **Optomechanics, Photonics, and Quantum Nanosystems Ambient Pressure XPS Studies of Surface and Chemistry** Moderators: Leonidas Ocola, Argonne National Laboratory, Robert Ilic, National Institute of Standards and Technology, Center for Nanoscale Science and Technology Moderators: Franklin (Feng) Tao, University of Kansas, Anatoly Frenkel, Yeshiva University 2:20pm | INVITED: IS+HC-WeA1 The Electronic Structure of Electrochemically INVITED: MN+NS-WeA1 Transducing between Microwaves and Light Active Interfaces, V. Pfeifer, Fritz-Haber-Institut der Max-Planck-Gesellschaft and using Mechanics, Andrew Cleland, University of Chicago Helmholtz-Zentrum Berlin, Germany; J.J. Velasco-Velez, Max-Planck-Institut für Chemische Energiekonversion, Germany; R. Arrigo, Diamond Light Source Ltd., UK; T.E. Jones, Fritz-Haber-Institut der Max-Planck-Gesellschaft, Germany; M. Hävecker, Max-Planck-Institut für Chemische Energiekonversion, Germany; E. Stotz, Fritz-Haber-Institut der Max-Planck-Gesellschaft, Germany; R. Schlögl, Fritz-Haber-Institut der Max-Planck-Gesellschaft and Max-Planck-Institut für chemische Energiekonversion, Germany; Axel Knop-Gericke, Fritz-Haber-Institut der Max-Planck-Gesellschaft, Germany 2:40pm Invited talk continues. Invited talk continues. IS+HC-WeA3 In situ AP-XPS and NEXAFS Studies on CO Oxidation and MN+NS-WeA3 Single Laser Modulated Drive and Detection of a Nano-CO₂ Dissociation on Copper Surfaces, B. Eren, Christian Heine, G.A. Somorjai, Optomechanical Cantilever, Vincent Sauer, J.N. Bachman, Z. Diao, M.R. M.B. Salmeron, Lawrence Berkeley National Laboratory (LBNL) Freeman, W.K. Hiebert, University of Alberta and The National Institute for Nanotechnology, Canada 3:20pm | IS+HC-WeA4 Alcohol Adsorption and Reaction on La_{0.7}Sr_{0.3}MnO₃(100) by MN+NS-WeA4 Optomechanical Limit Cycle Oscillations in Metallic APXPS, David Mullins, T.Z. Ward, S.H. Overbury, Oak Ridge National Laboratory Nanowires, Roberto De Alba, T.S. Abhilash, R.H. Rand, J.M. Parpia, Cornell University 3:40pm BREAK **BREAK** 4:00pm BREAK **BREAK** 4:20pm | INVITED: IS+HC-WeA7 Bridging the Material and Pressure Gaps in MN+NS-WeA7 Transducer Array with Optomechanical Read-out and Synchrotron Based Photoelectron In Situ/Operando Studies, Luca Integrated Actuation for Simultaneous High Sensitivity force Detection, Gregoratti, M. Amati, H. Sezen, Elettra - Sincrotrone Trieste SCpA, Italy Thomas Michels*, Ilmenau University of Technology, Germany; B.R. Ilic, V. Aksyuk, National Institute of Standards and Technology; I.W. Rangelow, Ilmenau University of Technology, Germany Invited talk continues. INVITED: MN+NS-WeA8 Magnetic Resonance Spectroscopy with Torsional Optomechanics, Mark Freeman, University of Alberta and The National Institute for Nanotechnology, Canada 5:00pm INVITED: IS+HC-WeA9 In situ Spectroscopy for Catalyst Design, Rosa Invited talk continues. Arrigo, Diamond Light Source, Oxfordshire, UK 5:20pm Invited talk continues. INVITED: IS+HC-WeA11 In Situ and Operando Characterization of Model Metal Nanoparticle Catalysts: Size, Shape, and Chemical State Effects, Beatriz Roldan Cuenya, Ruhr-University Bochum, Germany 6:00pm Invited talk continues.

NSTD Student Award Finalist

2:20pm	Plasma Science and Technology Room 104B - Session PS+TF-WeA Plasma Deposition and Plasma Assisted ALD Moderators: Noemi Leick, Colorado School of Mines, Adrie Mackus, Eindhoven University, Netherlands INVITED: PS+TF-WeA1 High Quality Film and Interface Formation using Appropriate Reaction Species, Akinobu Teramoto, Tohoku University, Japan	Plasma Science and Technology Room 104C - Session PS-WeA Atomic Layer Etching and Low Damage Processing Moderator: Eric Joseph, IBM Research Division, T.J. Watson Research Center PS-WeA1 Plasma-Based Removal of Native Oxide Layers on Si and SiGe Substrates While Minimizing Surface Residues, D. Metzler, Chen Li, University of Maryland, College Park; C.S. Lai, E.A. Hudson, Lam Research Corporation; G.S. Oehrlein, University of Maryland, College Park
2:40pm	Invited talk continues.	PS-WeA2 Electrical Characterization of SiN Modified by Hydrogen and Helium Plasma for New Atomic Layer Etching Processes, Florentin Chambettaz, L. Vallier, O. Joubert, Univ. Grenoble Alpes, France
3:00pm	PS+TF-WeA3 The Synergy of Diamond-like Carbon Film PECVD Systems: Plasma Diagnostics and Film Properties, <i>Tara Van Surksum</i> , <i>E.R. Fisher</i> , Colorado State University	PS-WeA3 Electron Beam Generated Plasmas Produced in Fluorine-Containing Gases, <i>David Boris</i> , <i>G.M. Petrov</i> , <i>Tz.B. Petrova</i> , <i>S.C. Hernandez</i> , <i>S.G. Walton</i> , Naval Research Laboratory
3:20pm	PS+TF-WeA4 ULK Film Dielectric Constant Restoration through Enhanced Organic Plasma Treatment, <i>Zhiguo Sun</i> , <i>J. Shu</i> , <i>P. Mennell</i> , <i>Q. Yuan</i> , <i>A. Madan</i> , <i>S. Molis</i> , <i>J. Mody</i> , <i>Y. Zhang</i> , <i>J. Shepard Jr</i> , GLOBALFOUNDRIES	PS-WeA4 Plasma-Enhanced Germanium Atomic Layer Etching (ALE), Wenbing Yang, S. Tan, K. Kanarik, R. Arghavani, T.B. Lill, Y. Pan, Lam Research Corp.
3:40pm	BREAK	BREAK
4:00pm	BREAK	BREAK
4:20pm	PS+TF-WeA7 Understanding of Low Temperature ALD of Silicon Nitride, H.C.M. Knoops, Oxford Instruments Plasma Technology, UK; R.H.E.C. Bosch, T. Faraz, M. van Drunen, L.E. Cornelissen, M. Creatore, Erwin Kessels , Eindhoven University of Technology, Netherlands	INVITED: PS-WeA7 Damage Monitoring of GaN Film for Material Processing, <i>Daisuke Ogawa</i> , Y. Banno, Y. Nakano, K. Nakamura, Chubu University, Japan
4:40pm	PS+TF-WeA8 Plasma Assisted Atomic Layer Deposition of SiC_xN_y Films with Methylamine as the Carbon Source, <i>Rafaiel Ovanesyan</i> , <i>N. Leick, R.J. Gasvoda</i> , Colorado School of Mines; <i>K.M. Kelchner</i> , <i>D.M. Hausmann</i> , Lam Research Corporation; <i>S. Agarwal</i> , Colorado School of Mines	Invited talk continues.
5:00pm	INVITED: PS+TF-WeA9 Plasma Enhanced Atomic Layer Deposition in the Semiconductor Industry, <i>Adrien LaVoie</i> , Lam Research Corporation	PS-WeA9 Neutral Beam Etching of Germanium Microstructure for Ge Fin-FET Devices, E.T. Lee, Shuichi Noda , Tohoku University, Japan; W. Mizubayashi, AIST; K. Endo, AIST; S. Samukawa, Tohoku University, Japan
5:20pm	Invited talk continues.	PS-WeA10 Selective Trimming of Surface Oxygenated Groups through Vacuum Ultraviolet Light Irradiation in an Evacuated Environment, Ahmed Soliman, T. Utsunomiya, T. Ichii, Kyoto University, Japan; H. Sugimura, Kyoto University, Japan
5:40pm	PS+TF-WeA11 Substrate Biasing during Remote Plasma-ALD On Planar and 3D Substrates, <i>Tahsin Faraz</i> , Eindhoven University of Technology, The Netherlands; <i>H.C.M. Knoops</i> , Oxford Instruments Plasma Technology, UK; <i>D.M. Hausmann</i> , <i>J. Henri</i> , Lam Research Corporation; <i>W.M.M. Kessels</i> , Eindhoven University of Technology, The Netherlands	PS-WeA11 Transistor Performance Improvement Through Low-Damage Plasma-Enhanced ALD Metal Gates, <i>Christopher Brennan, C. Neumann, S. Vitale, MIT Lincoln Laboratory</i>
6:00pm	$PS+TF-WeA12$ A Novel ABC-type ALD Process for Cobalt using $CoCp_2$ and N_2 and H_2 Plasmas, <i>Martijn Vos</i> , <i>N.F.W. Thissen, A.J. Mackus, W.M.M. Kessels</i> , Eindhoven University of Technology, Netherlands	PS-WeA12 <i>In situ</i> Optical Diagnostics during Atomic Layer Etching of SiO ₂ using Alternating Cycles of C ₄ F ₈ and Ar Plasma, <i>N. Leick, Ryan Gasvoda</i> , Colorado School of Mines; <i>A. van de Steeg</i> , Eindhoven University of Technology, Netherlands; <i>R.A. Ovanesyan</i> , Colorado School of Mines; <i>R. Bhowmick</i> , <i>E.A. Hudson</i> , Lam Research Corporation; <i>S. Agarwal</i> , Colorado School of Mines

	Advanced Surface Engineering Room 101D - Session SE+2D+EM-WeA	Surface Science Room 104D - Session SS+AS+EM-WeA
	Multifunctional Thin Films and Coatings	Semiconductor Surfaces and Interfaces
	Moderators: Jolanta Klemberg-Sapieha, Ecole Polytechnique de Montreal, Canada, Hana Barankova, Uppsala University, Sweden	Moderator: Andrew Gellman, Carnegie Mellon University
2:20pm	SE+2D+EM-WeA1 Investigation of H ₂ S Poisoning Process on Composite Material Made of Metal Oxides and Carbon Nanotubes, <i>Yichen Duan, A.V. Teplyakov</i> , University of Delaware	SS+AS+EM-WeA1 Adsorption of Triethylenediamine on Si(100)-2×1 Surface via N-Si Dative Bonding and C-N Dissociation, <i>Jing Zhao, M. Madachik,</i> University of Delaware; <i>K. O'Donnell,</i> Curtin University, Australia; <i>O. Warschkow,</i> University of Sydney, Australia; <i>L. Thomsen,</i> Australian Synchrotron, Australia; <i>G. Moore, S. Schofield,</i> University College London; <i>A.V. Teplyakov,</i> University of Delaware
2:40pm	SE+2D+EM-WeA2 Graphene-family Nanomaterials Co-assembled with Nanostructured Cobalt Oxide Polymorphs as Hybrid Supercapacitive Electrodes and Enzymeless Glucose Detection Platforms, <i>Sara Carrizosa</i> , <i>B. McDonald</i> , <i>S. Gupta</i> , Western Kentucky University	SS+AS+EM-WeA2 Chemoselective Adsorption of Functionalized Cyclooctynes on Silicon, M. Reutzel, N. Munster, M.A. Lipponer, Philipps-Universität Marburg, Germany; C. Langer, Justus Liebig University Giessen, Germany; U. Hofer, U. Koert, Philipps-Universität Marburg, Germany; Michael Durr, Justus Liebig University Giessen, Germany
3:00pm	SE+2D+EM-WeA3 Cross-Bonding between Silicon, Silica and III-V Surfaces at the Nano-Scale Using Energy Analysis via Three Liquid Contact Angle Analysis (3LCAA) to achieve Hermetic Wet NanoBonding™, Ashley Mascareno, SiO2 NanoTech LLC/Arizona State University Physics Dpt; N.X. Herbots, SiO2 NanoTech LLC; C.F. Watson, SiO2 NanoTech LLC/Arizona State University Physics Dpt	INVITED: SS+AS+EM-WeA3 Compositions, Structures, and Electronic Properties of Grain Boundaries of Cu(InGa)Se ₂ , <i>Xudong Xiao</i> , Chinese University of Hong Kong
3:20pm	SE+2D+EM-WeA4 Porous Materials for Solid Phase Microextraction by Sputtering and Chemical Vapor Deposition, <i>Tuhin Roychowdhury</i> , A. Diwan, B. Singh, M. Kaykhaii, M.R. Linford, Brigham Young University	Invited talk continues.
3:40pm	BREAK	BREAK
4:00pm	BREAK	BREAK
4:20pm	SE+2D+EM-WeA7 Ferroelectric Thin Films for Memory Applications, <i>Joyprokash Chakrabartty</i> , Institut national de la recherche scientifique (INRS), Canada	SS+AS+EM-WeA7 Thermal Self-limiting CVD Silicon and ALD Silicon Nitride Containing Control Layers on In _{0.53} Ga _{0.47} As(001)-{2x4}, Si _{0.5} Ge _{0.5} (110), and Si _{0.7} Ge _{0.3} (001), Steven Wolf, M. Edmonds, T. Kent, K. Sardashti, University of California at San Diego; M. Chang, J. Kachian, Applied Materials; R. Droopad, Texas State University; E. Chagarov, A.C. Kummel, University of California at San Diego
4:40pm	SE+2D+EM-WeA8 Thermoelectric and Optical Properties of Advanced Thermoelectric Devices from Ni/Bi ₂ Te ₃ /Ni and Ni/Sb ₂ Te ₃ /Ni Thin Films, <i>Satilmis Budak, Z. Xiao, J. Cole, A. Kassu, D. Price, T. Davis, T. Strong, J. Gray,</i> Alabama A&M University	SS+AS+EM-WeA8 Formation of Atomically Ordered and Chemically Selective Si-O-Ti Monolayer on Si _{0.5} Ge _{0.5} (110) for a MIS Structure via H ₂ O ₂ (g) Functionalization, SangWook Park, J.Y. Choi, University of California Diego; E. Chagarov, University of California, San Diego; B. Sahu, S. Siddiqui, GLOBALFOUNDRIES; N. Yoshida, J. Kachian, Applied Materials; A.C. Kummel, University of California, San Diego
5:00pm	SE+2D+EM-WeA9 Effects of Composition and Strain on Band Gaps of Pseudomorphic Ge _{1-x-y} Si _x Sn _y on Ge, <i>Nalin Fernando</i> , New Mexico State University; <i>R. Hickey, J. Hart, R. Hazbun, D. Zhang, J. Kolodzey,</i> University of Delaware; <i>S. Zollner</i> , New Mexico State University	SS+AS+EM-WeA9 The Effect of Ultrasonic Treatment (UST) on the Defect Structure of the Si–SiO ₂ System, <i>Daniel Kropman</i> , <i>T. Laas</i> , Tallinn University, Estonia
5:20pm	SE+2D+EM-WeA10 MBE Growth of Hexagonal Boron Nitride for use in Novel Electronic Devices, <i>Adam Barton</i> , <i>R. Yue</i> , <i>C.M. Smyth</i> , <i>R. Addou</i> , <i>L. Cheng</i> , <i>R.M. Wallace</i> , <i>J. Kim</i> , <i>M. Kim</i> , <i>J. Hsu</i> , <i>K.J. Cho</i> , The University of Texas at Dallas; <i>L. Colombo</i> , Texas Instruments; <i>C.L. Hinkle</i> , The University of Texas at Dallas	SS+AS+EM-WeA10 Adsorption of C ₆₀ Buckminster Fullerenes on a Carbon-free Hydrazine-modified Silicon Surface, <i>Fei Gao</i> *, <i>A.V. Teplyakov</i> University of Delaware
5:40pm	SE+2D+EM-WeA11 Passivation of Interfaces Between High-k Dielectrics and SiGe: Ex Situ Wet Sulfur Clean vs. In Situ Plasma Nitridation, Kasra Sardashti, M.S. Clemons, UC San Diego; M. Yakimov, SUNY College of Nanoscale Science and Engineering; K. Tang, Stanford University; S. Oktyabrsky, SUNY College of Nanoscale Science and Engineering; P.C. McIntyre, Stanford University; L. Dong, N. Yoshida, Applied Materials, Inc.; A.C. Kummel, UC San Diego	SS+AS+EM-WeA11 Passivation of SiGe Surfaces with Aqueous Ammonium Sulfide, <i>Stacy Heslop</i> , <i>A.J. Muscat</i> , University of Arizona
6:00pm	SE+2D+EM-WeA12 Enhanced Voltage Control of Perpendicular Magnetic Anisotropy in Magnetic Tunnel Junctions Using Ultrathin PZT Composite Oxide Tunneling Barriers, <i>Kevin Fitzell, X. Li, K. Wong, G. Yu, S. Robbennolt, S.H. Tolbert, P.K. Amiri, K.L. Wang, J.P. Chang,</i> University of California at Los Angeles	SS+AS+EM-WeA12 Novel Electrical Circuit Model for the Design of InGaAs/GaAs (001) Strained-Layer-Super-Lattice, <i>Tedi Kujofsa, J.E. Ayers,</i> University of Connecticut

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2:20 PM

Morton S. Traum Award Finalist

[†] National Student Award Finalist

	Thin Film Room 105A - Session TF+EM+MI-WeA Thin Films for Microelectronics	Thin Film Room 104E - Session TF+MI-WeA Thin Films for Magnetic and Optical Applications
	Moderators: Paul Poodt, Holst Centre / TNO, Netherlands, Christophe Vallee, LTM, Univ. Grenoble Alpes, CEA-LETI, France	Moderator: Subhadra Gupta, University of Alabama
2:20pm	TF+EM+MI-WeA1 Impact of ALD VO_2 Film Thickness on the Electrical and Optical Properties of the Metal-Insulator Phase Transition, <i>Virginia Wheeler</i> , B.P. Downey, J. Roussos, M. Currie, A. Giles, C. Ellis, J. Tischler, J. Caldwell, D.J. Meyer, C.R. Eddy Jr., U.S. Naval Research Laboratory	TF+MI-WeA1 Tuning Static and Dynamic Magnetic Properties of FeGa/NiFe Multilayer Heterostructures via Magnetic anisotropy Dispersion, <i>Colin Rementer</i> , <i>Q. Xu, P. Nordeen, G.P. Carman, Y. Wang, J.P. Chang,</i> University of California Los Angeles
2:40pm	TF+EM+MI-WeA2 Study of Ru Silicidation with and without Sub-nm ALD TiN and TaN Barrier/nucleation Layers for Ru Interconnect Applications, Sonal Dey, SUNY College of Nanoscale Science and Engineering; KH. Yu, S. Consiglio, K. Tapily, C.S. Wajda, G.J. Leusink, TEL Technology Center, America, LLC; J. Jordan-Sweet, C. Lavoie, IBM T.J. Watson Research Center; A.C. Diebold, SUNY College of Nanoscale Science and Engineering	TF+MI-WeA2 Magnetic Anisotropy of CoFe ₂ O ₄ Nanotubes Synthesized by Radical-Enhanced ALD, <i>Puilam(Cyrus) Cheung</i> , <i>J. Chang</i> , University of California Los Angeles
3:00pm	INVITED: TF+EM+MI-WeA3 2D - Material and Process Challenges of the Ultimate Thin Films in Nanoelectronics, <i>Stefan de Gendt</i> , KU Leuven, IMEC, Belgium; <i>S. Brems, D. Chiape</i> , IMEC, Belgium; <i>M. Heyne, K. Verguts</i> , KU Leuven, IMEC, Belgium; <i>R. Philipson</i> , KU Leuven, Belgium; <i>C. Lockhart de la Rosa, A. Delabie</i> , KU Leuven, IMEC, Belgium; <i>S. De Feyter</i> , KU Leuven, Belgium; <i>C. Huyghebaert</i> , IMEC, Belgium	INVITED: TF+MI-WeA3 Magnetic Anisotropy and Relaxation in Spintronic Materials, <i>Claudia Mewes</i> , <i>T. Mewes</i> , <i>J. Beik Mohammadi</i> , <i>A. Farrar</i> , <i>K. Cole</i> , The University of Alabama
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	BREAK	BREAK
4:00pm	BREAK	BREAK
4:20pm	TF+EM+MI-WeA7 Optimizing the Ductility and the Fracture Properties of Amorphous Metallic Thin Films on Polyimide, <i>Hai Tran, W. Cai,</i> University of South Florida	TF+MI-WeA7 Vacuum Furnace Annealing Block Copolymers for Bit Patterned Advanced Media, <i>Allen Owen</i> , <i>S. Gupta</i> , University of Alabama
4:40pm	TF+EM+MI-WeA8 Atomic Layer Deposition of Stoichiometric TaSi ₂ on Si(001), <i>JongYoun Choi</i> , <i>S.W. Park</i> , University of California San Diego; <i>R. Hung</i> , Applied Materials Inc.	TF+MI-WeA8 Atomic Layer Deposition Enabled Synthesis of Miltiferroic Composite Nanostructures, <i>Jeffrey Chang</i> , A. Buditama, University of California at Los Angeles; A. Rosenberg, Stanford University; L. Kornblum, Yale University; S.H. Tolbert, University of California at Los Angeles; K.A. Moler, Stanford University; C.H. Ahn, Yale University; J.P. Chang, University of California a Los Angeles
5:00pm	TF+EM+MI-WeA9 Different Approaches for Enhancing the Thermal Stability of Ge ₂ Sb ₂ Te ₅ Thin Films by Carbon Addition, <i>David Adams, K. Childs, T. Gurrieri, W. Rice,</i> Sandia National Laboratories	INVITED: TF+MI-WeA9 Thin Film Challenges for High Performance Ir Plasmon Enhanced Photodiodes: from Simulation to Focal Plane Array Integration and Characterization, <i>François Boulard</i> , Univ. Grenoble Alpes, France; <i>O. Gravrand</i> , Univ. Grenoble Alpes, France; <i>D. Fowler</i> , Univ. Grenoble Alpes, France; <i>G. Badano</i> , Univ. Grenoble Alpes, France; <i>P. Ballet</i> , Univ. Grenoble Alpes, France; <i>M. Duperron</i> , Univ. Grenoble Alpes, France; <i>L. Adelmini</i> , <i>R. Espiau de Lamaestre</i> , Univ. Grenoble Alpes, France
5:20pm	TF+EM+MI-WeA10 Comparison of Electromigration and Resistivity in On-chip Co and Cu Damascene Nanowires, CK. Hu, J. Kelly, J.H-C. Chen, H. Huang, Y. Ostrovski, R. Patlolla, B. Peethala, P. Adusumilli, T. Spooner, IBM Research Division, Albany; L. Gignac, S. Cohen, IBM Research Division, T.J. Watson Research Center; R. Long, G. Hornicek, T. Kane, G. Lian, M. Ali, IBM Systems; V.M. Kamineni, F. Mont, S. Siddiqui, GLOBALFOUNDRIES	Invited talk continues.
5:40pm	TF+EM+MI-WeA11 UV/VUV Curing Process for Low-k Organosilicate Dielectrics, <i>Huifeng Zheng, X. Guo, D. Pei, W. Li, J. Blatz, K. Hsu, D. Benjamin,</i> University of Wisconsin-Madison; <i>Y. Lin, H. Fung, C. Chen,</i> National Synchrotron Radiation Research Center, Taiwan, Republic of China; <i>Y. Nishi,</i> Stanford University; <i>J.L. Shohet,</i> University of Wisconsin-Madison	TF+MI-WeA11 Tuning the Transition Temperature of Vanadium Oxide Films for Smart Window Application, <i>Ravi Ranjan Pandey, J. Sharma, C. Kant, K. Saini,</i> CSIR-National Physical Laboratory, India
6:00pm	TF+EM+MI-WeA12 Effects of Cesium Ion Implantation on the Mechanical and Electrical Properties of Organosilicate Low-k Films, <i>Weiyi Li, D. Pei, X. Guo, MK. Cheng, S. Lee,</i> University of Wisconsin-Madison; <i>Q. Lin,</i> IBM Research Division, T.J. Watson Research Center; <i>S.W. King,</i> Intel Corporation; <i>J.L. Shohet,</i> University of Wisconsin-Madison	TF+MI-WeA12 Watching Thin-film Aluminum Oxidize, <i>David Allred, M. Miles, S. Thomas, S. Willett, M.J. Greenburg, A. Vance, R.S. Turley, Brigham Young University</i>

	Tribology Focus Topic	
	Room 101A - Session TR+AS+NS+SS-WeA	
	Nanoscale Wear: Applications to Nanometrology and	
	Manufacturing	
	Moderators: Tevis Jacobs, University of Pittsburgh,	
	Filippo Mangolini, University of Leeds, UK	
2:20pm	INVITED: TR+AS+NS+SS-WeA1 A Multi-Bond Model of Single-Asperity	
	Wear at the Nano-Scale, Y. Shao, Johns Hopkins University; T.D.B. Jacobs,	
	University of Pittsburgh; <i>Michael L. Falk,</i> Johns Hopkins University	
2.40		
2:40pm	Invited talk continues.	
3:00pm	INVITED: TR+AS+NS+SS-WeA3 Surface Chemical and Tribological Studies	
	of Solid Lubricants for Space, <i>Jeffrey Lince</i> , The Aerospace Corporation	
3:20pm	Invited talk continues.	
3:40pm	BREAK	
4:00pm	BREAK	
4:20nm	INVITED: TR+AS+NS+SS-WeA7 Molecular Control of Friction, Roland	
4.20pm	Bennewitz, INM - Leibniz Institute for New Materials, Germany; J. Blass, BL. Bozna,	
	INM - Leibniz Institute for New Materials; M. Albrecht, G. Wenz, Saarland	
	University	
4:40pm	Invited talk continues.	
E.00	INVITED. TO LACENCE COMPAND Planting Company to A State Company	
5:00pm	INVITED: TR+AS+NS+SS-WeA9 Plasticity Controlled Friction and Wear in Single-Asperity Contacts, <i>Izabela Szlufarska</i> , <i>L. Zhao</i> , <i>A. Li</i> , <i>C. Tangpatjaroen</i> , <i>D.</i>	
	Grierson, University of Wisconsin - Madison	
	·	
5:20pm	Invited talk continues.	
5:40pm	TR+AS+NS+SS-WeA11 Applying Analytical Roughness Models to Real	
	Surfaces: Reconstructing the Power Spectral Density from Surface Topography Measurements, <i>Tevis Jacobs</i> , <i>A. Gujrati</i> , <i>S.R. Khanal</i> , University of	
	Pittsburgh; T. Junge, L. Pastewka, Karlsruhe Institute of Technology (KIT), Germany	
6:00nm	TR+AS+NS+SS-WeA12 Universal Ageing Mechanism for Static and	
00pm	Sliding Friction of Metallic Nanoparticles, M. Feldmann, Dirk Dietzel, A.	
	Schirmeisen, Institute of Applied Physics, Justus-Liebig-University Giessen,	
	Germany	

Anticipated Schedule Thursday, November 10, 2016

Anticipated Schedule Thursday Morning, November 10

8:00 AM _	
8:20 AM _	
8:40 AM _	
9:00 AM _	
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10:40 AM _	
11:00 AM _	
11:20 AM _	
11:40 AM _	
12:00 PM _	
	Anticipated Schedule Thursday Lunch, November 10
When	Anticipated Schedule Marsday Editer, November 10
Where	
With	
	Anticipated Schedule Thursday Afternoon, November 10
1:00 PM _	
1:20 PM _	
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2:00 PM _	
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4:40 PM _	
5:00 PM _	
5:20 PM _	
5:40 PM _ 6:00 PM _	

Special Events Thursday

7:30 AM	Membership Comm. Meeting & Breakfast/Commerce Street Grille, Renaissance Nashville (by invitation)
8:00 AM	ASED Business Meeting/Ryman, Renaissance Nashville
12:20 PM	Exhibit Finale & Refreshments/Hall C
12:20 PM	PSTD Coburn and Winters Award Ceremony/104B
12:20 PM	Surface Science Division Mort Traum Awards Ceremony/104D
12:30 PM	2017 Program Committee Chairs' Meeting & Lunch/108 (by invitation)
12:30 PM	AVS Business Meeting/Boardroom 5th Avenue, Music City Center
6:00 PM	Thursday Poster Session/Hall D
6:30 PM	2016/2017 Program Committee Reception and Dinner/Belmont, Renaissance Nashville (by invitation)
7:00 PM	SSS Editorial Board Dinner/Music City Ballroom, Renaissance Nashville (by invitation)

Short Courses Thursday

8:30 am Fundamentals of Vacuum Technology

LOCATION: All AVS Short Courses will be held at Music City Center

COURSE HOURS: All AVS Short Courses Hours: 8:30 a.m.—5:00 p.m. — with 1.5 hour break for Lunch

(Lunch not included)

	2D Materials Focus Topic	Actinides and Rare Earths Focus Topic
	Room 103B - Session 2D+MI-ThM	Room 103C - Session AC+AS+SA-ThM
	Properties of 2D Materials including Electronic,	Chemistry and Physics of the Actinides and Rare Earths
	Magnetic, Optical, Mechanical, Thermal Properties Moderators: Paul Sheehan, US Naval Research Laboratory,	Moderators: David Shuh, Lawrence Berkeley National Laboratory,
	Zhaohui Zhong, University of Michigan, Ann Arbor	Art Nelson, Lawrence Livermore National Laboratory
8:00am	2D+MI-ThM1 Mechanics and Fracture of 2D Materials with Defects and Grain Boundaries, <i>Zhao Qin</i> , <i>G.S. Jung</i> , Massachusetts Institute of Technology; <i>S. Wang</i> , University of Oxford, UK; <i>F.J. Martin-Martinez</i> , Massachusetts Institute of Technology; <i>J.H. Warner</i> , University of Oxford, UK; <i>M.J. Buehler</i> , Massachusetts Institute of Technology	INVITED: AC+AS+SA-ThM1 Covalency in Oxidized Uranium, James G. Tobin, University of Wisconsin-Oshkosh
8:20am	2D+MI-ThM2 Effects of Non-local Screening and Effective Mass Anisotropy on Excitons in 2D Materials, I.I. Oleynik, Joseph Gonzales, University of South Florida	Invited talk continues.
8:40am	INVITED: 2D+MI-ThM3 2D Materials: A New Platform for Strong Light- Matter Interactions, <i>Ajit Srivastava</i> , Emory University	AC+AS+SA-ThM3 An In Situ X-ray Diffraction Study of Plutonium Oxidation, <i>Paul Roussel, W. Lake,</i> AWE, UK
9:00am	Invited talk continues.	AC+AS+SA-ThM4 Advanced Applications of Synchrotron Sources to Describe Water Soluble Plutonium Colloids, <i>Thomas Dumas</i> , CEA, France; <i>E. Dalodière, M. Virot</i> , ICSM Marcoule; <i>V. Morosini</i> , CEA Marcoule; <i>T. Chave</i> , ICSM Marcoule; <i>C. Hennig</i> , Helmholtz Zentrum Dresden-Rossendorf; <i>T. Wiss</i> , European Commission, Joint Research Centre (JRC), Institute for Transuranium Elements; <i>D.K. Shuh</i> , <i>T. Tyliszcaak</i> , Lawrence Berkeley National Laboratory; <i>P. Moisy</i> , CEA Marcoule; <i>I. Nikitenko</i> , ICSM Marcoule
9:20am	2D+MI-ThM5 Electronic Transport and Localization in Nitrogen-Doped Graphene Devices Using Hyperthermal Ion Implantation, <i>Adam Friedman</i> , <i>C.D. Cress</i> , Naval Research Laboratory; <i>S.W. Schmucker</i> , National Research Council postdoc working at Naval Research Laboratory; <i>J.T. Robinson</i> , <i>O.M.J. van 't Erve</i> , Naval Research Laboratory	AC+AS+SA-ThM5 In Pristinum Observation of Plutonium Hydride, Martin Brierley, J.P. Knowles, AWE
9:40am	2D+MI-ThM6 Metal Contacts to Transition Metal Dichalcogenide Films: Understanding and Avoiding the Formation of a Schottky-like Barrier, M. Gomez, J. Martinez, M. Valentin, E. Preciado, V. Klee, C. Merida, Ludwig Bartels , University of California - Riverside	AC+AS+SA-ThM6 Evidence for f- and d-orbital Mixing in Lanthanide and Actinide Dialuminides, MAl ₂ (M = Ce, Sm, Eu, Yb, Lu, U, Pu), Stefan Minasian, Lawrence Berkeley National Laboratory (LBNL); A.B. Altman, J. Arnold, University of California at Berkeley; E.D. Bauer, Los Alamos National Laboratory; C.H. Booth, J.I. Pacold, C.D. Pemmaraju, D.G. Prendergast, D.K. Shuh, T. Tyliszczak, Lawrence Berkeley National Laboratory (LBNL)
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	2D+MI-ThM10 Multilayer Graphene Suspension Over Millimeter Size Openings and Mechanical Testing, <i>Joseph Rowley</i> , R.F. Davis, R.R. Vanfleet, Brigham Young University; J. Abbott, Moxtek, Inc.	AC+AS+SA-ThM10 Comparative Analysis of Uranium Oxide Films, Miguel Santiago Cordoba, Los Alamos National Laboratory
11:20am	2D+MI-ThM11 Modeling Excitons in Transition-Metal Dichalcogenides, F. Tseng, NRC Research Associate; E. Simsek, George Washington University; Daniel Gunlycke , Naval Research Laboratory	AC+AS+SA-ThM11 Soft X-ray Spectroscopy of Actinide Materials, David Shuh, S.G. Minasian, C. Pemmaraju, A. Canning, D.G. Prendergast, Lawrence Berkeley National Laboratory; T. Tyliszczak, Lawrence Berkeley Lab, University of California, Berkeley; A. Modin, S. Butorin, J. Nordgren, L. Werme, P. Oppeneer, Uppsala University, Sweden
11:40am	INVITED: 2D+MI-ThM12 Characterization of Collective Ground States in Single-layer NbSe ₂ , <i>Miguel M. Ugeda</i> , CIC nanoGUNE, Spain; <i>A.J. Bradley</i> , University of California at Berkeley; <i>Y. Zhang</i> , Advanced Light Source, Lawrence Berkeley National Laboratory; <i>S. Onishi, W. Ruan, Y. Chen, C. Ojeda-Aristizabal</i> , University of California at Berkeley; <i>H. Ryu</i> , Advanced Light Source, Lawrence Berkeley National Laboratory; <i>M.T. Edmonds</i> , <i>H.Z. Tsai</i> , <i>A. Riss</i> , University of California at Berkeley; <i>S.K. Mo</i> , Advanced Light Source, Lawrence Berkeley National Laboratory; <i>D. Lee</i> , <i>A. Zettl</i> , University of California at Berkeley; <i>Z. Hussain</i> , Advanced Light Source, Lawrence Berkeley National Laboratory; <i>D. Lee</i> , <i>A. Zettl</i> , University of California at Berkeley; <i>Z. M. Shen</i> , Stanford Institute for Materials and Energy Sciences, SLAC National Accelerator Laboratory; <i>M.F. Crommie</i> , University of California at Berkeley	INVITED: AC+AS+SA-ThM12 The Quantum Phase of Tunneling Polarons in O- and Photo-Doped UO _{2(+x)} : Loss of the Mott Gap and Formation of a Superthermal Metal, <i>Steven Conradson</i> , Institute Josef Stefan, Slovenia
12:00pm	Invited talk continues.	Invited talk continues.

	Applied Surface Science	Biomaterial Interfaces
	Room 101B - Session AS+SS-ThM	Room 101A - Session BI+AS+SA-ThM
	Depth Profiling, Buried Interfaces, and 3D Analyses	Synthesis and Processing of Biomaterials/Biologically
	Moderators: Gregory Fisher, Physical Electronics USA,	Inspired Materials
	Karen Gaskell, University of Maryland, College Park	Moderators: Daniel Barlow, US Naval Research Laboratory, Lara Gamble, University of Washington
8:00am	AS+SS-ThM1 Pushing the Limits of Bonded Multi-Wafer Stack Heights	BI+AS+SA-ThM1 Response of PC 12 Cells to Mesoporous Substrates with
	while Maintaining High Precision Alignment, <i>Alireza Narimannezhad</i> , <i>J. Jennings, M.H. Weber, K.G. Lynn,</i> Washington State University	and without DC Bias, F. Sabri, University of Memphis; Kyle Lynch, University of Memphis; O. Skalli, University of Memphis
8:20am	AS+SS-ThM2 Porous Si Stack Analysis by Model Based Infrared Reflectometry (MBIR), <i>Sukti Chatterjee</i> , <i>L. Scudder</i> , <i>P. Narwankar</i> , Applied Materials Inc.	BI+AS+SA-ThM2 Collagen Functionalized with ALD-TiO ₂ : A Novel Biomaterial for Bone Grafting, <i>ArghyaKamal Bishal</i> , <i>C. Sukotjo</i> , <i>C.G. Takoudis</i> , University of Illinois at Chicago
8:40am	INVITED: AS+SS-ThM3 Applications of Atom Probe Tomography on 3D Semiconductor Devices, <i>AjayKumar Kambham</i> , <i>D. Flatoff, P.A.W. van der Heide</i> , GLOBALFOUNDRIES U.S. Inc.	BI+AS+SA-ThM3 Nanostructure Formation on Biomaterials by Directed Irradiation Synthesis (DIS) for Tissue Regeneration and Maximize Corrosion Resistance, <i>Jean Paul Allain</i> , A.R. Shetty, University of Illinois at Urbana-Champaign; S. Arias, A. Barnwell, University of Illinois at Urbana Champaign; F. Echeverria, L.F. Berrio, University of Antioquia, Colombia
9:00am	Invited talk continues.	BI+AS+SA-ThM4 Controlled Peptide Surfaces of Various Ratios that Guide Neural Stem Cell Differentiation, HalaShakib Dhowre, M. Zelzer, H. Sahaf, C. Towlson, N.A. Russell, University of Nottingham, UK
9:20am	AS+SS-ThM5 Analysis of ALD/CVD Thin Film Conformality using Lateral High Aspect Ratio (LHAR) Structures: Experimental Characteristics and Proposed Classifications, <i>Riikka Puurunen</i> , VTT Technical Research Centre of Finland; <i>J. Dendooven, V. Cremers, C. Detavernier</i> , Ghent University, Belgium	INVITED: BI+AS+SA-ThM5 Biofunctional Hydrogels for Tissue Repair, Andres Garcia, Georgia Institute of Technology
9:40am	AS+SS-ThM6 <i>In Situ</i> Liquid SIMS Investigation of Chemical Components of the Solid-Electrolyte Interface in Li Ion Batteries, <i>Zihua Zhu</i> , <i>C. Wang</i> , <i>Y. Zhou</i> , <i>D.R. Baer</i> , <i>W. Xu</i> , <i>R. Cao</i> , <i>X. Yu</i> , <i>P. Yan</i> , <i>R. Zhao</i> , Pacific Northwest National Laboratory	Invited talk continues.
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	AS+SS-ThM10 Electronic and Physical Changes to Soft Materials Caused by Gas Cluster Sputtering, <i>Christopher Goodwin, Z.E. Voras, T.P. Beebe, Jr.,</i> University of Delaware	BI+AS+SA-ThM10 Nanoscale Domain Formation Induced by Partial Polymerization Creates Planar Supported Lipid Bilayers that are Fluid and Stable, N.Malithi Fonseka, B. Liang, K.S. Orosz, C.A. Aspinwall, S.S. Saavedra, University of Arizona
11:20am	AS+SS-ThM11 FIB-TOF Characterization of Organic and Organic/Inorganic Structures, <i>David Carr</i> , <i>G.L. Fisher</i> , <i>S.R. Bryan</i> , Physical Electronics; <i>S. lida</i> , <i>T. Miyayama</i> , ULVAC-PHI, Japan	BI+AS+SA-ThM11 Stabilization of Lipid Films by Hyaluronic Acid and Polymeric Substitutes in a Joint Model System, <i>Felicitas Schwoerer</i> , Universität Heidelberg, Germany; <i>M. Trapp, R. Steitz</i> , Helmholtz-Zentrum Berlin für Materialien und Energie GmbH; <i>R. Dahint</i> , Universität Heidelberg
11:40am	AS+SS-ThM12 Molecular Depth Profiling with a New Hybrid 3D SIMS instrument for Improved Molecular Identification, <i>Alexander Pirkl, R. Moellers, H.F. Arlinghaus,</i> ION-TOF GmbH, Germany; <i>N.J. Havercroft,</i> ION-TOF USA; <i>E. Niehuis,</i> ION-TOF GmbH, Germany; <i>A.A. Makarov, S. Horning,</i> Thermo Fisher Scientific; <i>R. Havelund, M.K. Passarelli, A.G. Shard, I.S. Gilmore,</i> National Physical Laboratory, UK	INVITED: BI+AS+SA-ThM12 New Substrates and Patterning Methods for Supported Lipid Bilayers, <i>Sally McArthur</i> , <i>L. Askew</i> , Swinburne University of Technology, Australia
12:00pm	AS+SS-ThM13 3-D Analysis of Binding-Medium Degradation as Related to Renaissance-Era Artwork, <i>Zachary Voras</i> , <i>C.M. Goodwin</i> , University of Delaware; <i>J.L. Mass</i> , Rijksmuseum; <i>K.R. DeGhetaldi</i> , Winterthur Museum; <i>T.P. Beebe, Jr.</i> , University of Delaware	Invited talk continues.

	Electronic Materials and Photonics	Fundamental Discoveries in Heterogeneous Catalysis
	Room 102A - Session EM+AC+SS+TF-ThM	Focus Topic
	Radiation Detection Materials and Devices	Room 103A - Session HC+SS-ThM
	Moderators: Sean King, Intel Corporation,	Dynamics of Gas-surface Interactions in Heterogeneous
	Michelle Paquette, University of Missouri-Kansas City	
	Michelle Paquette, Offiversity of Missouri-Karisas City	Catalysis
		Moderator: Daniel Killelea, Loyola University Chicago
8:00am	INVITED: EM+AC+SS+TF-ThM1 Novel High Energy Resolution Scintillator Detectors, Arnold Burger, E. Rowe, L. Matei, P. Bhattacharya, M. Groza, Fisk University; K. Stassun, Vanderbilt University; A. Stowe, Consolidated Nuclear Security Y-12; N. Cherepy, S. Payne, Lawrence Livermore National Laboratory	HC+SS-ThM1 Adsorption and Hydrogenation of Acrolein on Ru(001), Dominic Esan, Y.D. Ren, University of Illinois at Chicago; I.B. Waluyo, Brookhaven National Laboratory; M. Trenary, University of Illinois at Chicago
8:20am	Invited talk continues.	HC+SS-ThM2 Dynamics of Formate Synthesis from CO ₂ and Formate Decomposition on Cu Surfaces, <i>J. Quan, T. Kozarashi, T. Ogawa, T. Kondo, Junji Nakamura,</i> University of Tsukuba, Japan
8:40am	EM+AC+SS+TF-ThM3 Improved p—n Heterojunction Device Performance Induced by Irradiation in Amorphous Boron Carbide Films, <i>George Peterson</i> , Q. Su, University of Nebraska - Lincoln; Y. Wang, Los Alamos National Laboratory; P.A. Dowben, M. Nastasi, University of Nebraska - Lincoln	HC+SS-ThM3 Step-Type Selective Oxidation on Pt Surfaces, <i>Rachael Farber</i> , Loyola University Chicago; <i>C. Badan</i> , Leiden Institute of Chemistry, The Netherlands; <i>H. Heyrich</i> , Leiden Institute of Chemistry; <i>L.B.F. Juurlink</i> , Leiden Institute of Chemistry, The Netherlands; <i>D.R. Killelea</i> , Loyola University Chicago
9:00am	EM+AC+SS+TF-ThM4 Amorphous Hydrogenated Boron Carbide for Direct-Conversion Solid-State Neutron Detection, <i>Gyanendra Bhattarai</i> , <i>T.D. Nguyen, S. Dhungana, A.N. Caruso, M.M. Paquette</i> , University of Missouri-Kansas City	HC+SS-ThM4 Vibrational Symmetry Effects in the Dissociative Chemisorption of $\mathrm{CH_2D_2}$ on Ni(111), <i>Arthur Utz, N. Chen, E.H. High,</i> Tufts University
9:20am	EM+AC+SS+TF-ThM5 Radiation Damage of Low-κ Interlayer Dielectrics Studied with Electrically Detected Magnetic Resonance, <i>Michael Mutch</i> , <i>P.M. Lenahan</i> , Pennsylvania State University; <i>S.W. King</i> , Intel Corporation	INVITED: HC+SS-ThM5 Elementary Steps in Surface Reactions: Mechanisms, Kinetics and Thermodynamics, Swetlana Schauermann, Christian-Albrechts-Universität Kiel, Germany
9:40am	EM+AC+SS+TF-ThM6 Modeling Unit Displacement Damage in Amorphous Silicon Oxycarbides, <i>Hepeng Ding</i> , <i>M. Demkowicz</i> , MIT	Invited talk continues.
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	INVITED: EM+AC+SS+TF-ThM10 Position-Sensitive 3D CZT Gamma-Ray Detectors with Thickness Up to 50 mm, <i>Ralph James</i> , A.E. Bolotnikov, G.S. Camarda, Y. Cui, G. De Geronimo, J. Fried, A. Hossain, G. Mahler, U. Roy, E. Vernon, G. Yang, Brookhaven National Laboratory	HC+SS-ThM10 CO ₂ Hydrogenation on Rhodium: Comparative Study using Field Emission Techniques and 1-D Atom Probe, <i>Sten Lambeets</i> , Université Libre de Bruxelles, Belgium; <i>C. Barroo</i> , Harvard University; <i>S. Owczarek</i> , <i>N. Gilis</i> , Université Libre de Bruxelles, Belgium; <i>N. Kruse</i> , Washington State University; <i>T. Visart de Bocarmé</i> , Université Libre de Bruxelles, Belgium
11:20am	Invited talk continues.	HC+SS-ThM11 State-resolved Reactivity of Methane on Ir(110)-(1x2), Eric Peterson, E. Nicotera, E.K. Dombrowski, A.L. Utz, Tufts University
11:40am	EM+AC+SS+TF-ThM12 Understanding the Electrical Properties of U_3O_8 for Direct Conversion Neutron Detectors, <i>Brandon Shaver</i> , <i>S. Lawson</i> , <i>B. Musicó</i> , The University of Tennessee Knoxville; <i>S. Dhungana</i> , <i>G. Bhattarai</i> , <i>M.M. Paquette</i> , <i>A.N. Caruso</i> , University of Missouri-Kansas City; <i>T. Meek</i> , The University of Tennessee Knoxville	INVITED: HC+SS-ThM12 Curved Single Crystals As Tools to Study Structure Dependences in Surface Science and Gas-Surface Reactions Dynamics, <i>Ludo Juurlink</i> , Leiden University, Netherlands
12:00pm	EM+AC+SS+TF-ThM13 Radiation Damage in 4H SiC nMOSFETs Detected by Electrically Detected Magnetic Resonance, <i>Ryan Waskiewicz, M.A. Anders, P.M. Lenahan,</i> Pennsylvania State University; <i>A.J. Lelis,</i> U.S. Army Research Laboratory	Invited talk continues.

	Advanced Ion Microscopy Focus Topic Room 104A - Session HI+NS-ThM Fundamentals of Ion Beam Microscopy Moderators: Armin Gölzhäuser, Bielefeld University, Germany, Philip D. Rack, The University of Tennessee Knoxville	In-Situ and Operando Spectroscopy and Microscopy for Catalysts, Surfaces, & Materials Focus Topic Room 101C - Session IS-ThM In-situ and Operando Spectroscopy and Microscopy with Infrared Absorption Spectroscopy Moderators: Franklin (Feng) Tao, University of Kansas, Judith Yang, University of Pittsburgh
8:00am	HI+NS-ThM1 Generation of Hydrogen Beams using Single Atom and Trimer Nanotips, <i>Radovan Urban</i> , University of Alberta and The National Institute for Nanotechnology, Canada; <i>K. Nova</i> , University of Alberta, Canada; <i>M. Salomons</i> , National Institute for Nanotechnology, Canada; <i>R.A. Wolkow</i> , University of Alberta and The National Institute for Nanotechnology, Canada; <i>J.L. Pitters</i> , National Institute for Nanotechnology, Canada	INVITED: IS-ThM1 In-situ and Operando Characterization of Catalytic Reactions with Infrared Absorption Spectroscopy, Francisco Zaera, University of California, Riverside
8:20am	HI+NS-ThM2 High-brightness Xenon Gas Field Ion Source from a Single-Atom Tip, <i>Ing-Shouh Hwang</i> , Institute of Physics, Academia Sinica, Taipei, Taiwan, Taiwan, Republic of China; <i>W.T. Chang, W.C. Lai, PC. Li</i> , Institute of Physics, Academia Sinica, Taipei, Taiwan; <i>T.Y. Fu</i> , Department of Physics, National Taiwan Normal University, Taipei, Taiwan; <i>T.T. Tsong</i> , Institute of Physics, Academia Sinica, Taipei, Taiwan	Invited talk continues.
8:40am	INVITED: HI+NS-ThM3 New Ion Source for Nanofabrication and Microscopy, <i>Adam Steele</i> , <i>B. Knuffman</i> , <i>A. Schwarzkopf</i> , zeroK NanoTech Corporation; <i>J.J. McClelland</i> , National Institute of Standards and Technology (NIST)	INVITED: IS-ThM3 Studying Birth, Life and Death of Catalytic Solids with In-situ and Operando Spectroscopy, <i>Bert Weckhuysen</i> , Utrecht University, Netherlands
9:00am	Invited talk continues.	Invited talk continues.
9:20am	INVITED: HI+NS-ThM5 Recent Liquid Metal Ion Source developments for Improving Focused Ion Beam Machines, <i>Jacques Gierak</i> , LPN-CNRS, Route de Nozay France; <i>L. Bischoff</i> , Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, Germany; <i>P. Mazarov</i> , <i>L. Bruchhaus</i> , Raith GmbH, Germany; <i>P. Lozano</i> , <i>C. Perez Martinez</i> , Massachusetts Institute of Technology	INVITED: IS-ThM5 Direct Observation of CVD Graphene Growth and the Dynamics of Active Catalysts by <i>In situ</i> Scanning and Transmission Electron Microscopy, <i>Z-J. Wang, J. Cao, R. Farra, R. Schlögl, Marc Georg Willinger,</i> Fritz Haber Institute of the Max Planck Society, Germany
9:40am	Invited talk continues.	Invited talk continues.
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	HI+NS-ThM10 Elucidating the Directed Nanoscale Transformations when Building with Ions in Liquid, A. Ievlev, V. Iberi, J. Jakowski, M.J. Burch, H. Hysmith, A. Belianinov, R.R. Unocic, Olga Ovchinnikova, Oak Ridge National Laboratory	INVITED: IS-ThM10 Characterizing Working Catalysts with Correlated Electron and Photon Probes, <i>Eric Stach</i> , Brookhaven National Laboratory; <i>Y. Li</i> , Yeshiva University; <i>S. Zhao</i> , University of Illinois at Urbana Champaign; <i>A. Gamalski</i> , Brookhaven National Laboratory; <i>D. Liu</i> , <i>R. Nuzzo</i> , University of Illinois at Urbana Champaign; <i>J. G. Chen</i> , Columbia University/Brookhaven National Laboratory; <i>A.I. Frenkel</i> , Yeshiva University
11:20am	HI+NS-ThM11 Determination of an Upper Limit of Ionization Probability during SIMS Experiments using Laser Post-ionization, <i>Nicholas Popczun, L. Breuer</i> , Pennsylvania State University; <i>A. Wucher</i> , University of Duisburg-Essen, Germany; <i>N. Winograd</i> , Pennsylvania State University	Invited talk continues.
11:40am	HI+NS-ThM12 Studying Gas Cluster Ion Beam Sputter Yields and Surface Topography in the Helium Ion Microscope, <i>Anders Barlow</i> , <i>N. Sano, J.F. Portoles, P.J. Cumpson</i> , Newcastle University, UK	IS-ThM12 Tracking Atoms and Charges in Metal Catalysts under Reaction Conditions, <i>Anatoly Frenkel</i> , Yeshiva University
12:00pm		IS-ThM13 STEM Imaging of Catalysts to the Single-Atom Level, via Closed-Cell <i>In Situ</i> Gas Reaction Technology, <i>Lawrence Allard</i> , Oak Ridge National Laboratory; <i>S. Duan</i> , <i>J. Liu</i> , Arizona State University

Thursday Morning, November 10, 2016

	MEMS and NEMS Room 102B - Session MN+BI-ThM 'Fantastic Voyage' – the New Micro/Nano/Bio Systems Frontiers	Plasma Science and Technology Room 104C - Session PS1-ThM Modeling of Plasmas and Plasma-Surface Interactions Moderator: Sumit Agarwal, Colorado School of Mines
8:00am	Moderators: Reza Ghodssi, University of Maryland, College Park, Christian Zorman, Case Western Reserve University INVITED: MN+BI-ThM1 Living Micromachines, M. Taher Saif, B. Williams, University of Illinois at Urbana Champaign	PS1-ThM1 The role of the Singlet Metastables and Energy-dependent Secondary Electron Emission Yields in Capacitively Coupled Oxygen Discharges, <i>Jon Gudmundsson</i> , <i>H. Hannesdottir</i> , University of Iceland
8:20am	Invited talk continues.	PS1-ThM2 A Computational Model for Magnetron Sputtering Devices using VSim, <i>James McGugan</i> , C.D. Zhou, Tech-X Corp.; J.D. Smith, Tech-X UK Ltd.; C.M. Roark, A.Y. Pankin, P.H. Stoltz, Tech-X Corp.
8:40am	MN+BI-ThM3 Inertial Imaging with Nanoelectromechanical Systems, Selim Hanay, Bilkent University, Turkey	PS1-ThM3 Three Dimensional Monte Carlo Simulation of Surface Charging on a Contact Hole during Pulsed Plasma Etching, <i>Yugo Osano</i> , <i>Y. Higuchi, Y. Nishizawa</i> , Samsung R&D Institute Japan; <i>M.H. Cha</i> , Samsung Electronics, Republic of Korea; <i>H. Kubotera</i> , Samsung R&D Institute Japan; <i>K.H. Lee</i> , Samsung Electronics, Republic of Korea
9:00am	MN+BI-ThM4 Dynamic Patterning of Breast Cancer Cells Using Silicon Nitride Multimode Membrane Resonators, <i>Hao Jia</i> , <i>H. Tang, P.XL. Feng,</i> Case Western Reserve University	PS1-ThM4 Characteristics of Capacitively Coupled Plasmas Excited by Tailored Voltage Waveforms, <i>Ankur Agarwal</i> , <i>S. Rauf, K.S. Collins</i> , Applied Materials Inc.
9:20am	INVITED: MN+BI-ThM5 Smart Drug Delivery through Gut, W. Yu, R. Rahimi, M. Ochoa, Babak Ziaie, Purdue University	PS1-ThM5 Multi-zone Equilibrium of ICP Discharge for Plasma Processing. Mechanism of Plasma Heating, <i>Vladimir Nagorny</i> , Mattson Technology
9:40am	Invited talk continues.	PS1-ThM6 Characterization of Transients in Pulsed Capacitively Coupled Plasmas, <i>Wei Tian</i> , <i>A. Agarwal</i> , <i>S. Rauf</i> , <i>K.S. Collins</i> , Applied Materials Inc.
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	INVITED: MN+BI-ThM10 Biopsy with Untethered Microgrippers, David Gracias, Johns Hopkins University	INVITED: PS1-ThM10 Modeling and Simulation of Nonequilibrium Atmospheric Pressure Plasma Flows, <i>Juan Trelles</i> , University of Massachusetts Lowell
11:20am	Invited talk continues.	Invited talk continues.
11:40am	MN+BI-ThM12 Bacterial Biofilms on 3D-printed Implant Materials, <i>Ryan Huiszoon</i> , <i>S. Subramanian, T.E. Winkler</i> , University of Maryland, College Park; <i>H.O. Sintim</i> , Purdue University; <i>W.E. Bentley, R. Ghodssi</i> , University of Maryland, College Park	PS1-ThM12 Multiscale Approach for Deep Silicon Etching Simulation under Bosch Process using SF ₆ and C ₄ F ₈ Plasma Chemistry, <i>Guillaume Le Dain, A. Rhallabi,</i> Institut des Matériaux Jean Rouxel − Université de Nantes, France; <i>M. Boufnichel, F. Roqueta,</i> ST Microelectronics, France
12:00pm		PS1-ThM13 Molecular Dynamics Simulation of Ni Etching by CO Plasmas, <i>Akito Kumamoto, N. Mauchamp, M. Isobe, K. Mizotani, H. Li, T. Ito, K. Karahashi, S. Hamaguchi,</i> Osaka University, Japan

^{*} MEMS/NEMS Best Paper Award Finalist

[†] National Student Award Finalist

Thursday Morning, November 10, 2016

	Plasma Science and Technology Room 104B - Session PS2-ThM Plasma Processing of Challenging Materials Moderator: David Ruzic, University of Illinois at Urbana- Champaign	Surface Science Room 104D - Session SS-ThM Chirality and Enantioselectivity on Surfaces; Ionic Liquid Interfaces Moderator: Eddy Tysoe, University of Wisconsin-Milwaukee
8:00am	INVITED: PS2-ThM1 Epitaxy of Doped Diamond for Electronics and Energy Applications Using Microwave Plasma CVD, <i>Robert Nemanich</i> , F.A. <i>Koeck</i> , Arizona State University	INVITED: SS-ThM1 Self-assembly and Dynamics for Chiral Conformational Switches on Surfaces Studied by UHV-STM, <i>Trolle Linderoth</i> , Aarhus University, Denmark
8:20am	Invited talk continues.	Invited talk continues.
8:40am	PS2-ThM3 Magnetic Degradation of Perpendicular CoFeB Film caused by Hydrogen Plasma, <i>Masaki Yamada</i> , Hitachi High-Technologies Corporation, Japan; <i>M. Satake</i> , Hitachi High-Technologies Corporation	SS-ThM3 Chiral Recognition among Non-planar Aromatic Hydrocarbons on Metal Surfaces, A. Mairena, Empa, Swiss Federal Laboratories for Materials Science and Technology; M. Parschau, Karl-Heinz Ernst, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland
9:00am	PS2-ThM4 Roughness and Selectivity Trade Off during Patterning using Next Generation Resist, <i>Vinayak Rastogi, A. Ranjan,</i> TEL Technology Center, America, LLC	SS-ThM4 Competing Forces in Chiral Surface Chemistry: Enantiospecificity versus Enantiomer Disproportionation, Andrew Gellman, Y. Yun, Carnegie Mellon University
9:20am	PS2-ThM5 Fabrication of Large Superhydrophobic Surfaces with Hierarchical Structures on Polymer Films – Influence of the Roughening and the Fluorination, <i>Jérôme Durret</i> , <i>N. Frolet</i> , <i>C. Gourgon</i> , CNRS - LTM, France	SS-ThM5 Probing Individual Binding Sites around Individual Chiral Molecules on a Metal Surface: Chemisorption and Non-Covalent Bonding in Heterogeneous Asymmetric Hydrogenation, <i>Peter McBreen</i> , Laval University, Canada; <i>B. Hammer</i> , Aarhus University, Denmark; <i>M. Goves</i> , Aarhus University; <i>JC. Lemay</i> , <i>Y. Dong</i> , Laval University, Canada
9:40am	PS2-ThM6 Chlorine-based Etching of InP Laser: Effect of Plasma Chemistry on Sidewall Roughness and Damages, <i>Guillaume Gay</i> , <i>E. Pargon</i> , <i>C. Petit-Etienne</i> , LTM - CEA/LETI, France; <i>M. Brihoum</i> , <i>S. Barnola</i> , CEA, LETI, MINATEC Campus, France; <i>S. Labau</i> , <i>S. Arnaud</i> , LTM - CEA/LETI, France	SS-ThM6 Enhanced Hydrogenation Activity and Diastereomeric Interactions of Methyl Pyruvate Co-adsorbed with R-1-(1-Naphthylethylamine) on Pd(111), <i>Mausumi Mahapatra</i> , W.T. Tysoe, University of Wisconsin-Milwaukee
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	PS2-ThM10 Using a Dielectric Barrier Discharge (DBD) Device to Produce Proton Exchange Membranes at Atmospheric Pressure for PEMFC Technology, Joffrey Baneton, D. Merche, Université Libre de Bruxelles, Belgium; G. Caldarella, N. Job, Université de Liège, Belgium; F. Reniers, Université Libre de Bruxelles, Belgium	INVITED: SS-ThM10 Structural Transitions of Ionic Liquids at Nanoconfined Interfaces, <i>Rosa M. Espinosa-Marzal,</i> University of Illinois at Urbana-Champaign
11:20am	PS2-ThM11 Laser-Enhanced Plasma Etching of Semiconductors and Metals, <i>Jason Peck</i> , G.A. Panici, I.A. Shchelkanov, S. Hammouti, D.N. Ruzic, University of Illinois at Urbana-Champaign	Invited talk continues.
11:40am	PS2-ThM12 Highly Selective Isotropic Etching of Silicon in Preference to Germanium, <i>Christopher Ahles, A.C. Kummel,</i> University of California, San Diego	SS-ThM12 Ionic Liquid Ordering at a Model Electrode Interface: 1-butyl-3-methylimidazolium Tetrafluoroborate, [C4C1Im][BF4], Interaction wit the Anatase TiO2 (101) Surface, <i>Michael Wagstaffe</i> , University of Manchester, UK
12:00pm	PS2-ThM13 Thermodynamic Prediction and Experimental Verification of Etch Selectivity for EUV Mask Materials, <i>Luke Minardi</i> , <i>N.D. Altieri, E.L. Chen, J.P. Chang</i> , University of California Los Angeles	SS-ThM13 In-Situ Photocurrent Measurements in Liquid-Phase Molecular Layer Deposition (LP-MLD), <i>Shi Bai</i> , Tokyo University of Technology, Japan
		12:20 PM SSD MORTON TRAUM AWARDS CEREMONY

Thursday Morning, November 10, 2016

	Thin Film Room 104E - Session TF1-ThM	Thin Film Room 105A - Session TF2-ThM
	Control and Modeling of Thin Film Growth and Film Characterization Moderators: Berc Kalanyan, National Institute of Standards and Technology (NIST), Richard Vanfleet, Brigham Young University	Area-selective Deposition and Sequential Infiltration Synthesis Moderator: Giovanna Scarel, James Madison University
8:00am	INVITED: TF1-ThM1 Adventures in Group IV Ordering: Superperiodicities at the Atomic/Nano/Meso/scale, Jerrold Floro, J. Amatya, C. Duska, C.W. Petz, University of Virginia; D. Yang, J. Levy, University of Pittsburgh	TF2-ThM1 Area Selective Deposition from an Aqueous Fog, N. Murari, R.F. Mansergh, Y. Huang, D.A. Keszler, John F. Conley, Jr., Oregon State University
8:20am	Invited talk continues.	TF2-ThM2 "Patterned-by-Printing" ZnO Vertical TFTs, Carolyn Ellinger, S.F. Nelson, Eastman Kodak Company
8:40am	TF1-ThM3 Combinatorial Fabrication of Cu-Fe ₂ O ₃ Composite Nanostructures by Oblique Angle Co-Deposition, S. Larson, W.J. Huang, Yiping Zhao, University of Georgia	INVITED: TF2-ThM3 Area-selective Atomic Layer Deposition of Metal and Magnetic Films, <i>John Ekerdt</i> , <i>H. Nallan</i> , <i>Z. Zhang</i> , <i>S. Chopra</i> , University of Texas at Austin
9:00am	TF1-ThM4 Structural and Electronic Properties of Titanium Doped Ga ₂ O ₃ Thin Films, <i>Sandeep Manandhar</i> , <i>E. Rubio</i> , <i>C.V. Ramana</i> , The University of Texas at El Paso	Invited talk continues.
9:20am	TF1-ThM5 Characterizing Patterns and Order in Self-Assembled Langmuir Films of Quantum Dots, <i>Zachary Whitfield</i> , <i>J.J. Weimer</i> , University of Alabama in Huntsville	TF2-ThM5 Selective Area Epitaxy of Magnesium Oxide Thin Films on Gallium Nitride Surfaces, <i>Mark Losego</i> , Georgia Institute of Technology; <i>J-P. Maria</i> , North Carolina State University; <i>E.A. Paisley</i> , Sandia National Laboratories
9:40am	TF1-ThM6 Radical-Based MBE Growth, Structure, Defects and Transport in High-Mobility Epitaxial La-doped BaSnO ₃ Films, A. Prakash, P. Xu, J. Dewey, Bharat Jalan, University of Minnesota	TF2-ThM6 Sequential Infiltration Synthesis (SIS) and its Applications in Nanofabrication, <i>Qing Peng</i> , University of Alabama
10:00am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
11:00am	TF1-ThM10 Reduction of Extended Defects in SiC Epilayers Grown on 2° Offcut Substrates, <i>Rachael Myers-Ward</i> , <i>N. Mahadik, R. Stahlbush, P. Klein, K.M. Daniels, A. Boyd, K. Gaskill</i> , Naval Research Laboratory	TF2-ThM10 Understanding Growth of Infiltrated ZnO an Atomic Step at a Time, <i>Leonidas Ocola</i> , <i>D.J. Gosztola</i> , <i>A. Yanguas-Gil</i> , Argonne National Laboratory; <i>A. Connolly</i> , Vassar College
11:20am	TF1-ThM11 Modeling the Structure and Medium Range order of ALD Amorphous Oxide Thin Films, <i>Angel Yanguas-Gil, J.W. Elam,</i> Argonne National Laboratory	TF2-ThM11 Investigation of Vapor Phase Infiltration Kinetics: Infusing Metalorganic Vapors in Polymer Thin Films, <i>Collen Leng*</i> , <i>M.D. Losego</i> , Georgia Institute of Technology
11:40am	TF1-ThM12 From Nano-porosity to Macro-scale Defects: Ellipsometric Porosimetry and Electrochemical Impedance Spectroscopy Characterization of Thin Inorganic Films, <i>Alberto Perrotta</i> *, <i>W.M.M. Kessels</i> , <i>M. Creatore</i> , Eindhoven University of Technology, Netherlands	TF2-ThM12 Pyrolysis of Organic-Inorganic Hybrid Materials Formed by Sequential Organometallic Vapor Infiltration, <i>Halil Akyildiz</i> , Uludag University, Turkey; <i>P.D. Bradford</i> , <i>J.S. Jur</i> , North Carolina State University
12:00pm	TF1-ThM13 Thermal Conductivity and Mechanical Properties of AlN-based Thin Films, <i>Vincent Moraes</i> , <i>H. Riedl</i> , Technische Universität Wien, Austria; <i>H. Bolvardi</i> , Oerlikon Balzers, Liechtenstein; <i>S. Kolozsvári</i> , Plansee Composite Materials GmbH, Germany; <i>M. Ikeda</i> , <i>L. Prochaska</i> , <i>S. Paschen</i> , <i>P.H. Mayrhofer</i> , Technische Universität Wien, Austria	TF2-ThM13 Carbon Nanofibers Derived from a Cellulosic Polymer Enabled by Vapor Infiltration of Diethyl Zinc for Carbon Based Supercapacitors, <i>Wenyi Xie</i> , <i>O.J. Rojas</i> , <i>S. Khan</i> , <i>G.N. Parsons</i> , North Carolina State University

[†] TFD James Harper Award Finalist

	2D Materials Focus Topic Room 103B - Session 2D-ThA	Applied Surface Science Room 101B - Session AS-ThA
	Surface Chemistry, Functionalization, Bio and Sensor Applications of 2D Materials Moderator: Li Tao, The University of Texas at Austin	Advances for Complicated Sample Preparation Strategies and Complex Systems Moderators: Christopher R. Anderton, Pacific Northwest National Laboratory, Michaeleen Pacholski, The Dow Chemical Company
2:20pm	INVITED: 2D-ThA1 Nanoelectronic Heterodyne Sensor: A New Electronic Sensing Paradigm, <i>Zhaohui Zhong</i> , University of Michigan, Ann Arbor	INVITED: AS-ThA1 Measuring Nanoparticle Properties: Are We High and Dry or All at Sea?, <i>Caterina Minelli</i> , National Physical Laboratory (NPL), UK
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm		AS-ThA3 The Secret Life of Nanoparticles: Often Ignored Characteristics of Nano-Objects That Limit Reproducibility and an Approach to Improving Data Collection and Reporting to Address the Challenges, <i>Donald Baer</i> , Pacific Northwest National Laboratory
3:20pm	2D-ThA4 Study of the Photoresponse and Transport Properties of Photoexcited Carriers in MoS ₂ Nanoflakes for Sensing Applications, <i>Sourav Garg, J. Waters, A. Shahab, M. Singla, S. Kim, P. Kung,</i> University of Alabama	AS-ThA4 Combined XPS/ISS/UPS Study of Ultra-thin HfO ₂ films on SiO ₂ /Si Substrateso, <i>Paul Mack</i> , Thermo Fisher Scientific, UK
3:40pm	BREAK	BREAK
4:00pm	INVITED: 2D-ThA6 Surface Engineering with Chemically Modified Graphene and other 2D Materials, <i>Paul Sheehan</i> , <i>SC. Hangarter</i> , <i>W.K. Lee</i> , <i>S.P. Mulvaney</i> , <i>J.T. Robinson</i> , <i>S.D. Tsoi</i> , <i>K.E. Whitener</i> , US Naval Research Laboratory	AS-ThA6 A Novel Method for Matrix Application in Matrix Enhanced SIMS Imaging, <i>Matthias Lorenz</i> , A.G. Shard, JL. Vorng, I.S. Gilmore, National Physical Laboratory, UK
4:20pm	Invited talk continues.	AS-ThA7 ToF-SIMS Imaging of Bee Brain Tissue – Comparing Lipid Distributions and Varying Sample Preparation Methodologies, <i>Jordan Lerach, E. Amsolem, C.M. Grozinger,</i> The Pennsylvania State University
4:40pm	2D-ThA8 Passivation of Transition Metal Chalcogenide Surface <i>via</i> Sulfur Layer to Enhanced Metal Contact, <i>JunHong Park</i> , Univeristy of California, San Diego; A. Rai, University of Texas at Austin; I.J. Kwak, Univeristy of California, San Diego; S. Bhattacharjee, K. Ganapathi, N. Bhat, Indian Institute of Science, Bangalore; S.K. Banerjee, University of Texas at Austin; A.C. Kummel, University of California, San Diego	AS-ThA8 Understanding Matrix Effects in Mass Spectrometry, Amy Walker, L.D. Gelb, University of Texas at Dallas
5:00pm	2D-ThA9 Development of Aptamer/Graphene Oxide FRET Biosensor for Ultrasensitive Detection of Bisphenol A and Analogues, S. Gupta, Rebecca Wood, Western Kentucky University	AS-ThA9 Reducing Matrix Effects in Organic Secondary Ion Mass Spectrometry, Lars Breuer, H. Tian, N.J. Popczun, The Pennsylvania State University; A. Wucher, University of Duisburg-Essen, Germany; N. Winograd, The Pennsylvania State University
5:20pm	2D-ThA10 Substrate Effects in CVD Synthesized Monolayer WS ₂ , <i>Kathleen McCreary</i> , A.T. Hanbicki, Naval Research Laboratory; G. Kioseoglou, University of Crete; M. Currie, B.T. Jonker, Naval Research Laboratory	AS-ThA10 Image Fusion for Improving the Visualization of Elemental and Isotopic Distributions in SIMS, <i>Jay Tarolli</i> , <i>B. Naes</i> , <i>B. Garcia</i> , <i>A. Fischer</i> , <i>D. Willingham</i> , Pacific Northwest National Laboratory
5:40pm	2D-ThA11 Driving Mechanochemical Wear on Graphene Using Local Stress and Heat, <i>S. Raghuraman</i> , <i>Jonathan Felts</i> , Texas A&M University	AS-ThA11 Evaluating the Utility of Uranium-Molybdenum Foils as Nuclear Fuels via Elemental and Isotopic Imaging, David Willingham, J. Tarolli, B. Naes, M. Rhodes, M. Dahl, A. Guzman, D. Burkes, Pacific Northwest National Laboratory
6:00pm	2D-ThA12 Functionalized Metallic Island Films as Enhancement Substrates for Raman and IR Microscopic Biosensing, C. Kratz, Leibniz- Institut für Analytische Wissenschaften - ISAS - e.V., Germany; D. Gkogkou, F. Rösicke, Humboldt-Universität zu Berlin, School of Analytical Sciences Adlershof (SALSA), Germany; T. Shaykhutdinov, T. Oates, A. Furchner, Leibniz-Institut für Analytische Wissenschaften - ISAS - e.V., Germany; Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany; Karsten Hinrichs, Leibniz- Institut für Analytische Wissenschaften - ISAS - e.V., Germany	AS-ThA12 Investigation of the Interaction Between a High Poly Vinylpyrrolidone Content Silicone Hydrogel Contact Lens and a Natural Humectant using Surface Imaging Techniques, <i>Katarzyna Wygladacz, D.J. Hook</i> , Bausch + Lomb

Spectroscopic Ellipsometry Focus Topic Room 104C - Session EL+AS+BI+EM+TF-ThA **Optical Characterization of Nanostructures and** Metamaterials (2:20-3:40 pm)/Application of Spectroscopic Ellipsometry for the Characterization of Thin Films (4:00-6:00 pm) and Biological Materials Interfaces

Moderators: Tino Hofmann, University of North Carolina at

Electronic Materials and Photonics Room 102A - Session EM+SS+TF-ThA **Materials and Interfaces for Energy Storage**

Moderators: Michelle Paquette, Univ. of Missouri-Kansas City, Lee Walsh, University of Texas at Dallas

	Charlotte, Stefan Zollner, New Mexico State University,	
	Heidemarie Schmidt, Technische Universität Chemnitz, Germany	
2:20pm	INVITED: EL+AS+BI+EM+TF-ThA1 Optical Properties of (Self-assembled) Nanostructured Surfaces Studied by Spectroscopic Mueller Matrix Ellipsometry and Local Direct Imaging Techniques, <i>Morten Kildemo</i> , Norwegian University of Science and Technology, Norway	EM+SS+TF-ThA1 Strain Engineering of Ultrathin Metal Oxide Coatings Deposited using Atomic Layer Deposition for Controlled Electrochemical Energy Storage, <i>Nitin Muralidharan</i> , <i>R.E. Carter, A.P. Cohn, L. Oakes, C.L. Pint,</i> Vanderbilt University
2:40pm	Invited talk continues.	EM+SS+TF-ThA2 Probing Li-Ion Transport in All-Solid-State Batteries through Electron Transparent Electrodes, Alexander Yulaev, Center for Nanoscale Science and Technology, NIST, Gaithersburg, MD, USA; A.A. Talin, Sandia National Laboratories; M.S. Leite, University of Maryland; A. Kolmakov, NIST/CNST
3:00pm	EL+AS+BI+EM+TF-ThA3 Optical Properties of Nanocrystalline Si ₃ N ₄ :TiN Thin Films, <i>Neil Murphy</i> , Air Force Research Laboratory; <i>L. Sun</i> , General Dynamics Information Technology; <i>J.G. Jones</i> , Air Force Research Laboratory; <i>J.T. Grant</i> , Azimuth Corporation	INVITED: EM+SS+TF-ThA3 Thin Film Battery Materials for Fundamental Studies and Applications, <i>Nancy Dudney</i> , <i>K. Kercher</i> , <i>M. Veith</i> , Oak Ridge National Laboratory
3:20pm	EL+AS+BI+EM+TF-ThA4 The Effect of Aluminum Content on Properties of Al-doped Zinc Oxide Thin Films Grown at Room Temperature, <i>Lirong Sun</i> , General Dynamics Information Technology; <i>N.R. Murphy</i> , Air Force Research Laboratory; <i>J.T. Grant</i> , Azimuth Corporation; <i>J.G. Jones</i> , Air Force Research Laboratory	Invited talk continues.
3:40pm	BREAK	BREAK
4:00pm	INVITED: EL+AS+BI+EM+TF-ThA6 Optical Monitoring of Growth (and Death) of Thin Film Materials for Solar Cells, <i>Nikolas Podraza</i> , <i>K. Ghimire</i> , <i>M.M. Junda</i> , <i>A.A. Ibdah</i> , <i>P. Koirala</i> , University of Toledo; <i>S. Marsillac</i> , Old Dominion University; <i>R.W. Collins</i> , <i>Y. Yan</i> , University of Toledo	EM+SS+TF-ThA6 Silicon Compatible Pseudocapacitors Based on Nickel Hydroxide Functionalization of Carbonized Porous Silicon, <i>Joshua Fain, J.W. Mares, S.M. Weiss,</i> Vanderbilt University
4:20pm	Invited talk continues.	EM+SS+TF-ThA7 In-situ Raman of Sodium Ion Cointercalation into Highly Crystalline Few-Layered Graphene, <i>Adam Cohn, C.L. Pint,</i> Vanderbilt University
4:40pm	EL+AS+BI+EM+TF-ThA8 Monitoring Nanometer-Thin Film Formation using Ellipsometry, <i>Bert Müller</i> , <i>F.M. Weiss, T. Töpper</i> , <i>B. Osmani</i> , University of Basel, Switzerland	EM+SS+TF-ThA8 Using X-ray Reflectivity to Measure the Vacuum Ultraviolet Absorption Spectrum in Low-k Dielectrics, Faraz Choudhury, H.M. Nguyen, W. Li, University of Wisconsin-Madison; Y. Nishi, Stanford University; J.L. Shohet, University of Wisconsin-Madison
5:00pm	EL+AS+BI+EM+TF-ThA9 Optical Determination of Electrical Response for Thin Film Transparent Conductors: Spectral Range Dependence, <i>Prakash Uprety, M.M. Junda, K. Lambright, R. Khanal, A. Phillips, M. Heben, D. Giolando, N.J. Podraza,</i> University of Toledo	
5:20pm	EL+AS+BI+EM+TF-ThA10 Spectroscopic Ellipsometry Studies of CdS-CdSe-CdTe Alloys: Applications in Thin Film Solar Cells, <i>Maxwell Junda</i> , <i>C.R. Grice, Y. Yan, N.J. Podraza</i> , University of Toledo	EM+SS+TF-ThA10 Dependence of Electrical Conductivity on Observed Microstructure of Sintered U ₃ O ₈ , Seth Lawson, B.C. Shaver, B. Musicó, The University of Tennessee Knoxville; S. Dhungana, G. Bhattarai, M.M. Paquette, A.N. Caruso, University of Missouri-Kansas City; T. Meek, The University of Tennessee Knoxville
5:40pm	EL+AS+BI+EM+TF-ThA11 Development of Growth Evolution Diagrams for RF Sputtered Nanocrystalline Hydrogenated Silicon Thin Films via Real Time Spectroscopic Ellipsometry, <i>Dipendra Adhikari</i> , <i>M. M. Junda</i> , <i>N. J. Podraza</i> , University of Toledo	EM+SS+TF-ThA11 The Role of Electron-Beam Deposition Rate in Controlling Properties of the Titanium/Semiconductor Interface, <i>Keren Freedy, A. Giri, B.M. Foley, University of Virginia; J. Bogan, R. O'Conner, Dublin City University, Ireland; P.E. Hopkins, S. McDonnell, University of Virginia</i>
6:00pm		EM+SS+TF-ThA12 Single Crystal Study of Layered U _n RhIn _{3n+2} Materials: Case of the Novel U ₂ RhIn ₈ Compound, Attila Bartha, M. Kratochvílová, Charles University, Czech Republic; M. Dušek, Institute of Physics ASCR, Czech Republic; M. Diviš, J. Custers, V. Sechovský, Charles University, Czech Republic

Fundamental Discoveries in Heterogeneous Catalysis Advanced Ion Microscopy Focus Topic Focus Topic Room 104A - Session HI+MI+NS-ThA Room 103A - Session HC+SS-ThA Ion Beam Based Imaging and Nanofabrication **Advances in Theoretical Models and Simulations of** Jacques Gierak, LPN-CNRS, Shinichi Ogawa, AIST, Japan **Heterogeneously-catalyzed Reactions** Moderator: Donna Chen, University of South Carolina 2:20pm | **HC+SS-ThA1** Theoretical Pathways to Predict (meta-)stability of Gas INVITED: HI+MI+NS-ThA1 Mask Repair Technology using Gas Field Ion Phase Metal Oxide Clusters: Beyond the Static Mono-Structure Source, Anto Yasaka, F. Aramaki, T. Kozakai, O. Matsuda, Hitachi High-Tech Description, Saswata Bhattacharya, Indian Institute of Technology Delhi, India; Science Corporation, Japan L.M. Ghiringhelli, Fritz-Haber-Institut der Max-Planck-Gesellschaft; N. Marom, **Tulane University** HC+SS-ThA2 Role of Oxygen at the Surface and Subsurface during Invited talk continues. Catalytic Oxidation by Silver, Sharani Roy, University of Tennessee INVITED: HC+SS-ThA3 Using Theory and Computation to Understand HI+MI+NS-ThA3 Application of an Advanced Bi Cluster LMIS for TOF-Plasma Enhanced Dry Reforming on Nickel Catalysts, George Schatz, SIMS Analysis at the Nano-scale, F. Kollmer, W. Paul, D. Rading, R. Moellers, ION-TOF GmbH, Germany; N.J. Havercroft, ION-TOF USA; E. Niehuis, Julia Zakel, Northwestern University ION-TOF GmbH, Germany 3:20pm Invited talk continues. HI+MI+NS-ThA4 Nanoscale Imaging and Characterization of Interface Driven Assembly of Soft Materials via He-Ion Beam Microscopy, Matthew Burch, A. Belianinov, D. Chang, Y. Luo, K. Hong, O.S. Ovchinikova, Oak Ridge National Laboratory 3:40pm BREAK **BREAK** HI+MI+NS-ThA6 Advances in Ex Situ Lift Out and Manipulation HC+SS-ThA6 The Impact of Structure on the Catalytic Behavior of Cu₂O Supported Pt Atoms, Andrew Therrien*, Tufts University Department of Techniques for FIB Applications, Lucille Giannuzzi, EXpressLO LLC Chemistry; E.C.H. Sykes, Tufts University 4:20pm | HC+SS-ThA7 Energetics of Water Dissociative Adsorption on NiO(111)-HI+MI+NS-ThA7 Helium Ion Microscopy Imaging of Carbon Nanofoams from Hydrothermal Carbonization of Sucrose, Natalie Frese, Bielefeld 2x2, Wei Zhao, University of Washington; M. Bajdich, Stanford University; S. Carey, University of Washington; M. Hoffmann, A. Vojvodic, J. Nørskov, Stanford University, Germany; S.T. Mitchell, A. Bowers, K. Sattler, University of Hawaii; A. University; C.T. Campbell, University of Washington Gölzhäuser, Bielefeld University, Germany 4:40pm INVITED: HC+SS-ThA8 Challenges in the First-Principles Description of HI+MI+NS-ThA8 Nanofabrication Limits in Layered Ferroelectric Reactions in Electrocatalysis, Axel Groß, Ulm University, Germany Semiconductors via He-ion Beam, Alexei Belianinov, A. Ievlev, V. Iberi, H. Hysmith, M.A. Susner, M. McGuire, S. Jesse, S.V. Kalinin, O.S. Ovchinnikova, Oak Ridge National Laboratory 5:00pm Invited talk continues. HI+MI+NS-ThA9 Focused Ion Beam Technology Challenges for Circuit Edit, Yuval Greenzweig, Y. Drezner, A. Raveh, Intel Corporation HC+SS-ThA10 Beyond the 2D Lattice Gas and 2D Ideal Gas Models for HI+MI+NS-ThA10 Ion-milling of Graphene Nanostructures While Adsorbates: The Hindered Translator / Hindered Rotor Model, Liney Supported and Unsupported: Considerations of Graphene Arnadottir, L.H. Sprowl, Oregon State University; C.T. Campbell, University of Contamination, Substrate Scattering and Beam Tailing, J. Swett, Lockheed Washington Martin Space Systems Company; V. Iberi, D. Cullen, Adam Rondinone, Oak Ridge National Laboratory HC+SS-ThA11 Methanol Partial Oxidation Catalyzed by Singly-dispersed HI+MI+NS-ThA11 Interaction of Gas Field Ionized Nitrogen with Silicon, Pd on ZnO(101⁻0), *Takat B. Rawal[†], S.R. Acharya, S. Hong, T.S. Rahman,* Marek Schmidt, Y. Oshima, L.T. Anh, X. Zhang, T. Kanzaki, M. Akabori, Japan Advanced Institute of Science and Technology, Japan; A. Yasaka, Hitachi High-Tech University of Central Florida Science Corporation, Japan: M. Muruaanathan, T. Shimoda, H. Mizuta, Japan Advanced Institute of Science and Technology, Japan 6:00pm | HC+SS-ThA12 Simulations of Surface Induced Dissociation, Soft Landing, HI+MI+NS-ThA12 Spatially Controlled Ripple Formation in the HIM using and Reactive Landing in Collisions of Protonated Peptide Ions with Low Voltages and High Temperatures, Gregor Hlawacek, L. Sottili, M. Engler, Organic Surfaces, William Hase, S. Pratihar, Texas Tech University S. Facsko, Helmholtz-Zentrum Dresden Rossendorf, Germany

Morton S. Traum Award Finalist

[†] National Student Award Finalist

	In-Situ and Operando Spectroscopy and Microscopy for Catalysts, Surfaces, & Materials Focus Topic Room 101C - Session IS-ThA Ambient Pressure Photoelectron Spectroscopy and Scanning Probe Techniques Moderator: Xiao-Ying Yu, Pacific Northwest National Laboratory	MEMS and NEMS Room 102B - Session MN+2D+NS-ThA Focused Session on Atomic Layer Nanomechanics and 2D MEMS Moderators: Wayne Hiebert, National Institute of Nanotechnology & University of Alberta, Canada, Max Zenghui Wang, Case Western Reserve University
2:20pm	IS-ThA1 The Influence of Oxygen on the Catalytic Interaction between CO ₂ and Copper studied by High Pressure X-ray Photoelectron Spectroscopy, A. Regoutz, G. Kerherve, I. Villar-Garcia, C.K. Williams, David Payne, Imperial College London, UK	INVITED: MN+2D+NS-ThA1 Exploring New Degrees of Freedom by Reducing Dimensions, <i>Lincoln Lauhon</i> , Northwestern University
2:40pm	IS-ThA2 Graphene Membranes for Atmospheric Pressure Photoelectron Spectroscopy, <i>Robert Weatherup</i> , <i>B. Eren, Y. Hao, H. Bluhm, M.B. Salmeron</i> , Lawrence Berkeley National Laboratory (LBNL)	Invited talk continues.
3:00pm	INVITED: IS-ThA3 Development of Graphene Environmental Cells for Atmospheric Pressure Photoelectron Spectroscopy and Microscopy, Andrei Kolmakov, Center for Nanoscale Science and Technology, NIST	INVITED: MN+2D+NS-ThA3 Manipulating Nonlinearities in 2D NEMS, Akshay Naik, Indian Institute of Science, India
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	BREAK	BREAK
4:00pm	INVITED: IS-ThA6 Probing Surface Structural and Chemical Evolutions at Atomic Scale in Bi-metallic Catalysts using <i>In Situ</i> STEM, <i>Miaofang Chi</i> , Oak Ridge National Laboratory; <i>C. Wang</i> , Johns Hopkins University; <i>K. More</i> , Oak Ridge National Laboratory; <i>Y. Xia</i> , Georgia Institute of Technology	MN+2D+NS-ThA6 Wide Bandgap β-Ga ₂ O ₃ Nanomechanical Resonators, <i>Xu-Qian Zheng</i> , <i>S. Rafique</i> , <i>J. Lee</i> , <i>L. Han</i> , <i>C.A. Zorman</i> , <i>H. Zhao</i> , <i>P.XL. Feng</i> , Case Western Reserve University
4:20pm	Invited talk continues.	MN+2D+NS-ThA7 Nonlinear Mode Coupling and Internal Resonances in MoS ₂ Nanoelectromechanical System, <i>Chandan Samanta</i> , <i>P. Gangavarapu</i> , <i>A.K. Naik</i> , Indian Institute of Science, India
4:40pm	IS-ThA8 Calculations of Electron Inelastic Mean Free Paths for Liquid Water at Energies from 50 eV to 30 keV, H. Shinotsuka, B. Da, S. Tanuma, H. Yoshikawa, National Institute for Materials Science (NIMS), Japan; Cedric Powell, DR. Penn, National Institute of Standards and Technology	MN+2D+NS-ThA8 Very-High-Frequency (VHF) Molybdenum Disulfide (MoS ₂) Nanomechanical Resonators Operating in Liquid, H. Jia, Rui Yang, P.XL. Feng, Case Western Reserve University
5:00pm	IS-ThA9 Structural Response of Compact Copper Surfaces to CO Adsorption and its Effects of Reactivity, <i>Baran Eren, G.A. Somorjai, M.B. Salmeron,</i> Lawrence Berkeley National Laboratory (LBNL)	
5:20pm	IS-ThA10 Using a Novel In-situ/Operando Chemical Cell to investigate Surface Reactions such as the Reduction of Oxygen and Surface Oxides, <i>Philipp Kerger, D. Vogel, M. Rohwerder,</i> Max-Planck-Institut fuer Eisenforschung, Germany	
5:40pm	IS-ThA11 Monitoring of Electrochemical Reactions on Metal Surfaces with Sub-monolayer Sensitivity by Means of Polarization Optical Spectroscopy and EC-STM, <i>Christoph Cobet</i> , MH. Chien, R. Sharif, V. Solokha, Gh. Barati, K. Hingerl, Johannes Kepler University, Austria	
6:00pm	IS-ThA12 A Liquid-Jet AP-XPS Study of TiO ₂ Nanoparticles in an Aqueous Electrolyte Solution, <i>Randima Galhenage</i> , <i>M.J. Makowski, J.M. Langford, J.C. Hemminger</i> , University of California, Irvine	

Nanometer-scale Science and Technology Room 101D - Session NS+BI-ThA Applied Nanoscale Microscopy Techniques/Biomaterial Interfaces – New Advances Plasma Science and Technology Room 104B - Session PS-ThA Plasma Chemistry and Plasma Surface

Plasma Chemistry and Plasma Surface Interactions Moderator: Steven Vitale, MIT Lincoln Laboratory

Moderators: Stephanie Allen, The University of Nottingham, UK,

2:20pm		INVITED: PS-ThA1 Nonthermal Plasma Driven Power to Gas, <i>Tomohiro Nozaki</i> , Tokyo Institute of Technology, Japan
2:40pm	NS+BI-ThA2 Advancing the Development of Nanocrystal Emitters <i>via</i> Advanced Electron Microscopy Techniques, <i>James McBride</i> , K.R. Reid, S.J. Rosenthal, Vanderbilt University	Invited talk continues.
3:00pm	NS+BI-ThA3 Demonstration of Electron Mirror for Quantum Electron Microscopy, <i>Navid Abedzadeh</i> , C.S. Kim, R.G. Hobbs, K.K. Berggren, MIT	INVITED: PS-ThA3 Plasma-based CO ₂ Conversion: Experiments and Modeling, A. Bogaerts, Ramses Snoeckx, University of Antwerp, Belgium
3:20pm	NS+BI-ThA4 Nanoscale Chemical Imaging by Photo-induced Force Microscopy, <i>Ryan Murdick</i> , Molecular Vista	Invited talk continues.
3:40pm	BREAK	BREAK
4:00pm	NS+BI-ThA6 Strong Coupling of Localized Surface Plasmon Resonances to Light-Harvesting Complexes from Plants and Bacteria, A. Tsargorodska, M. Cartron, C. Vasilev, University of Sheffield, UK; G. Kodali, University of Pennsylvania; J. Baumberg, University of Cambridge, UK; P.L. Dutton, University of Pennsylvania; CN. Hunter, University of Sheffield, UK; P. Torma, University of Aalto; Graham Leggett, University of Sheffield, UK	PS-ThA6 Revisiting HgCdTe Etching Mechanism in High Density CH₄-H₂ Plasmas in Terms of Langmuir Adsorption Kinetics and Taking into Account Etching Inhibition, <i>Christophe Cardinaud</i> , <i>A. Pageau</i> , CNRS - IMN, France; <i>L. Le Brizoual</i> , IETR - Univ. Rennes, France; <i>F. Boulard</i> , <i>J. Baylet</i> , CEA, LET MINATEC Campus, France
4:20pm	NS+BI-ThA7 Microfluidic Device For Aptamer-Based Cancer Cell Capture And Genetic Mutation Detection, <i>Sarah Reinholt</i> , <i>H.G. Craighead</i> , Cornell University	PS-ThA7 Temporal Evolution of Surface Chemistry in Ion and Radical Dominated Etch of Hydrocarbon Polymers, <i>Barton Lane</i> , <i>P. Ventzek</i> , <i>N. Eibagi</i> , Tokyo Electron America, Inc.; <i>A. Ranjan</i> , <i>V. Rastogi</i> , TEL Technology Cent America, LLC
4:40pm	NS+BI-ThA8 Molecular Processes in an Electrochemical Clozapine Sensor, <i>Thomas Winkler</i> , University of Maryland, College Park; S.L. Brady, East Carolina University; E. Kim, University of Maryland, College Park; H. Ben-Yoav, Ben- Gurion University of the Negev, Israel; D.L. Kelly, University of Maryland, Baltimore; G.F. Payne, R. Ghodssi, University of Maryland, College Park	PS-ThA8 Etching Mechanisms of Transparent Conducting Oxides by Hydrocarbon Plasmas, Hu Li, Osaka University, Japan; P. Friederich, K. Fink, Karlsruhe Institut for Technology (KIT); K. Karahashi, Osaka University; M. Fukasawa, K. Nagahata, T. Tatsumi, Sony Corporation, Japan; W. Wenzel, Karlsruhe Institut for Technology (KIT); S. Hamaguchi, Osaka University, Japan
5:00pm	NS+BI-ThA9 Quantitative Quartz Crystal Microbalance Measurements across Transients Produced by Switching Fluid Properties, <i>V. Mugnaini</i> , <i>Dmitri Petrovykh</i> , International Iberian Nanotechnology Laboratory, Portugal	PS-ThA9 The Role of the Dense Amorphous Carbon (DAC) Overlayer in Photoresist Etching, <i>Adam Pranda</i> , <i>Z. Tomova</i> , <i>S. Gutierrez Razo</i> , <i>J.T. Fourkas G.S. Oehrlein</i> , University of Maryland, College Park
5:20pm	NS+BI-ThA10 ToF-SIMS/XPS Characterization of Frozen-Hydrated Hydrogels, <i>Michael Taylor</i> , <i>M.R. Alexander</i> , The University of Nottingham, UK; <i>M. Zelzer</i> , National Physical Laboratory, UK	PS-ThA10 Transport Mechanism on Reactive Species in Downflow Reactors for F-based Etch, <i>Kenji Ishikawa</i> , <i>T. Tsutsumi</i> , <i>Y. Zhang</i> , <i>M. Sekine</i> , <i>Hayashi</i> , <i>M. Hori</i> , Nagoya University, Japan; <i>Y. Horiike</i> , Tsukuba University, Japa
5:40pm	NS+BI-ThA11 GCIB-SIMS for Studying Bacterial Surfaces, <i>John Stephen Fletcher</i> , <i>P. Wehrli</i> , University of Gothenburg, Sweden; <i>A. Farewell</i> , University of Gothenburg, Seweden; <i>T.B. Angerer</i> , <i>J. Gottfries</i> , University of Gothenburg, Sweden	PS-ThA11 Surface Reactions of Magnetic Materials by CO Cluster Bear <i>Kazuhiro Karahashi</i> , Osaka University, Japan; <i>T. Seki, J. Matsuo</i> , Kyoto Universit Japan; <i>K. Mizotani, K. Kinoshita, S. Hamaguchi</i> , Osaka University, Japan
6:00pm		PS-ThA12 A Method to Accelerate Creation of Plasma Etch Recipes Using Physics and Bayesian Statistics, <i>Meghali Chopra</i> , <i>R.T. Bonnecaze</i> , The University of Texas at Austin

	Surface Science Room 103C - Session SS+AS-ThA Celebrating a Life in Surface Science: A Symposium in Honor of JOHN T. YATES, JR. Moderators: John Russell, Jr., Naval Research Laboratory, Vincent Smentkowski, General Electric Global Research Center	Thin Film Room 104E - Session TF+BI-ThA Thin Films for Bio-related Applications Moderator: Angel Yanguas-Gil, Argonne National Laboratory
2:20pm	SS+AS-ThA1 Introductory Remarks About Prof. John T Yates Jr. and his Scientific Legacy, V. Smentkowski, General Electric Global Research Center; John Russell, US Naval Research Laboratory	TF+BI-ThA1 Self-healing Antifouling Fluorinated Monolayers and Polymer Brushes: One Fluorine Goes a Long Way!, Zhanhua Wang , H. Zuilhof, Wageningen University, Netherlands
2:40pm	SS+AS-ThA2 JOHN T. YATES, JR The Energizer Bunny (Invited Talk), J. William Gadzuk, NIST	TF+BI-ThA2 Sensitivity Enhancement in Grating Coupled Bloch Surface Wave Resonance by Azimuthal Control, <i>Vijay Koju</i> , <i>W.M. Robertson</i> , Middle Tennessee State University
3:00pm	SS+AS-ThA3 Polymer Precursors Studied by Mass Spectrometry, Ion Mobility and Computational Strategies (Invited Talk), <i>David M. Hercules</i> , Vanderbilt University	INVITED: TF+BI-ThA3 Biofunctional Coatings and Patterns with Special Wettability, <i>Pavel Levkin</i> , Karlsruhe Institute of Technology (KIT), Germany
3:20pm	SS+AS-ThA4 From Symmetry to Applications: One of Many Journeys Touched by John Yates (Invited Talk), <i>Ellen Williams</i> , Advanced Research Projects Agency - Energy	Invited talk continues.
3:40pm	BREAK	BREAK
4:00pm	SS+AS-ThA6 A Tribute to John T. Yates Jr. and His Pioneering Work with Graphitic Surfaces (Invited Talk), <i>Patricia A. Thiel</i> , Ames Laboratory	INVITED: TF+BI-ThA6 Thin Film Technologies for Biomedical Devices- Current State of Art and Future Opportunities, Mallika Kamarajugadda, Medtronic plc
4:20pm	SS+AS-ThA7 Surface Science influenced by Dopants (Invited Talk), Hajo Freund, Fritz Haber Institute of the Max Planck Society, Germany	Invited talk continues.
4:40pm	SS+AS-ThA8 Desorption: Out of the Vacuum, into the Liquid (Invited Talk), <i>Michael Grunze</i> , KIT, Germany; <i>H.J. Kreuzer</i> , Dalhousie University, Canada	INVITED: TF+BI-ThA8 Preparation and Characterization of Amino Coatings for Peptide Arrays, <i>Gaurav Saini</i> , <i>L. Howell</i> , <i>M. Greving</i> , <i>P. Walsh</i> , <i>D. Smith</i> , HealthTell Inc.
5:00pm	SS+AS-ThA9 Infrared Spectroscopy in Surface Science: The Legacy of John T. Yates, Jr. (Invited Talk), <i>Michael Trenary</i> , University of Illinois at Chicago	Invited talk continues.
5:20pm	SS+AS-ThA10 From Surface Science to New Catalysts (Invited Talk), Ib Chorkendorff, Technical University of Denmark	TF+BI-ThA10 Electronic Characterization of SWCNT/Block Copolymer-based Nanofiber for Biosensor Application, <i>Amrit Sharma</i> , Clark Atlanta University
5:40pm	SS+AS-ThA11 Activation of Carbon Dioxide on Metal and Carbide Surfaces (Invited Talk), <i>Jingguang Chen</i> , Columbia University	THIN FILM FLASH NETWORKING SESSION: MOHAMED HAFEZ, National Inst. of Laser Enhanced Sciences, Cairo Univ., Egypt (TF-ThP8); THOMAS GREHL, ION-TOF GmbH, Germany (TF-ThP19); MICHAEL LEE, Northern Arizona Univ. (TF-ThP29); MONIRUZZAMAN SYED, Lemoyne Owen College (TF-ThP17); PENG XU, Univ of Minnesota, (TF-ThP7);
6:00pm	SS+AS-ThA12 Thermodynamic Control of TTF-TCNQ Molecular Layers on Metallic Surfaces (Invited Talk), <i>Petro Maksymovych</i> , Oak Ridge National Laboratory	ZHONGSHAN ZHENG, Inst. of Micro. of Chinese Academy of Sciences, China (TF-ThP26); MIDORI KAWAMURA, Kitami Institute of Technology, Japan (TF-ThP9); HA NGUYEN, University of Wisconsin–Madison (TF-ThP32); NOBUYUKI KAWAKAMI, Kobe Steel, Ltd., Japan (TF-ThP33); SALAHUD DIN, Kurt J. Lesker Company, UK (TF-ThP44); FRANK GREER, Jet Propulsion Lab/California Institute of Technology (TF-ThP46)

	Thin Film Room 105A - Session TF-ThA Self-assembled Monolayers and Organic/Inorganic Interface Engineering Moderators: Matthew Linford, Brigham Young University, Adrienne Stiff-Roberts, Duke University	Tribology Focus Topic Room 101A - Session TR+BI+SE+TF-ThA Materials Tribology Moderator: Michael Chandross, Sandia National Laboratories
2:20pm	INVITED: TF-ThA1 Surface Affinity Control by Polymer Brushes for Direct Self-Assembly, R. Tiron, A. Gharbi, Maxime Argoud, F. Delachat, P. Pimenta Barros, CEA-LETI, MINATEC, France; X. Chevalier, ARKEMA FRANCE; S. Bouanani, STMicroelectronics, France; G. Claveau, C. Lapeyre, CEA-LETI, MINATEC; G. Chamiot-Maitrala, CEA-LETI, France; C. Monget, V. Farys, STMicroelectronics, France; C. Nicolet, C. Navarro, ARKEMA FRANCE	INVITED: TR+BI+SE+TF-ThA1 Reaction Pathways and Tribofilm Formation Kinetics at a Solid-Solid Interface, H.L. Adams, University of Wisconsin-Milwaukee; A. Martini, University of California Merced; Wilfred Tysoe, University of Wisconsin-Milwaukee
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	TF-ThA3 Measuring the Rate of Organic Reactions on Surfaces, <i>Rickdeb Sen, J. Escorihuela, M.M.J. Smulders, H. Zuilhof,</i> Wageningen University, Netherlands	TR+BI+SE+TF-ThA3 Nanotribology of Graphene Revisited: The Influence of Contact Size and Substrate Topography, A. Balkanci, Bilkent University, Turkey; Z. Ye, A. Martini, University of California Merced; Mehmet Z. Baykara, Bilkent University, Turkey
3:20pm		TR+BI+SE+TF-ThA4 Iron-Doped Diamond-Like Carbon Coatings (Fe-DLCs): Synthesis, Characterization, and TribologySeminal Results, <i>Parag Gupta</i> , Northwestern University/Argonne National Lab.; <i>M.E. Graham</i> , Northwestern University
3:40pm	BREAK	BREAK
4:00pm	TF-ThA6 Operando Investigation of Chemical Bonding at Hybrid Interfaces: the Effect of Humidity on Polymer/metal Oxide Bonds, Sven Pletincx, Vrije Universiteit Brussel, Belgium; L. Trotochaud, A.R. Head, O. Karslnöflu, Lawrence Berkeley Lab, University of California, Berkeley; L.I. Fockaert, J.M.C. Mol, TU Delft, Netherlands; H. Bluhm, Lawrence Berkeley Lab, University of California, Berkeley; H. Terryn, T. Hauffman, Vrije Universiteit Brussel, Belgium	INVITED: TR+BI+SE+TF-ThA6 Tribo-Rheometry of Soft Matter, J. Kim, Alison Dunn, University of Illinois at Urbana-Champaign
4:20pm	TF-ThA7 Integration of Redox-Active Diruthenium-based Molecular Layer onto Electrodes for Memory Device Applications, <i>Sujitra Pookpanratana</i> , National Institute of Standards and Technology (NIST); <i>H. Zhu</i> , George Mason University; <i>J.W.F. Robertson</i> , NIST; <i>S.N. Natoli</i> , Purdue University; <i>E.G. Bittle, C.A. Richter</i> , NIST; <i>T. Ren</i> , Purdue University; <i>Q. Li</i> , George Mason University; <i>C.A. Hacker</i> , NIST	Invited talk continues.
4:40pm	INVITED: TF-ThA8 Fabrication Methods of Organic-Inorganic Hybrids Based on Atomic Layer Deposition, <i>Myung Mo Sung</i> , Hanyang University, Korea	TR+BI+SE+TF-ThA8 Friction Coefficient Lowering in High-hardness Boron Nitride Films Under Ultra-high Vacuum, <i>Masao Noma</i> , Shinko Seiki Co., Ltd, Japan; <i>K. Eriguchi</i> , Kyoto University, Japan; <i>M. Yamashita</i> , Hyogo Prefectural Institute of Technology, Japan; <i>S. Hasegawa</i> , Osaka University, Japan
5:00pm	Invited talk continues.	TR+BI+SE+TF-ThA9 Nanoscale Friction Properties of Water Intercalated Graphene on Mica and its Isotope Effects, <i>Hyunsoo Lee</i> , Institute for Basic Science (IBS) & Korea Advanced Institute of Science and Technology (KAIST); <i>JH. Ko</i> , KAIST, Republic of Korea; <i>J.S. Choi</i> , Electronics and Telecommunications Research Institute, Republic of Korea; <i>J.H. Hwang</i> , IBS & KAIST, Republic of Korea; <i>YH. Kim</i> , KAIST, Republic of Korea; <i>M.B. Salmeron</i> , Lawrence Berkeley National Laboratory (LBNL); <i>J.Y. Park</i> , IBS & KAIST, Republic of Korea
5:20pm		TR+BI+SE+TF-ThA10 The Remarkable Friction Behavior of Copper at Cryogenic Temperatures, <i>Andrew Kustas</i> , Sandia National Laboratories; <i>J. Curry</i> , Lehigh University; <i>T. Babuska</i> , <i>M. Chandross</i> , <i>P. Lu</i> , <i>T.A. Furnish</i> , <i>N. Argibay</i> , Sandia National Laboratories
5:40pm		TR+BI+SE+TF-ThA11 Understanding Friction in MoS2, Part 1: Stress, Time and Temperature, <i>Tomas Babuska</i> , Sandia National Laboratories; <i>J. Curry</i> , Lehigh University; <i>M. Chandross, M.T. Dugger</i> , Sandia National Laboratories; <i>B. Krick</i> , Lehigh University; <i>N. Argibay</i> , Sandia National Laboratories
6:00pm		TR+BI+SE+TF-ThA12 Understanding Friction in MoS2, Part 2: Water, Oxidation and Run- in, <i>John Curry</i> , Lehigh University; <i>M. Chandross, T. Babuska</i> , Sandia National Laboratories; <i>N.C. Strandwitz, H. Luftman</i> , Lehigh University; <i>M.T.</i> Dugger, N. Argibay, Sandia National Laboratories; <i>B. Krick</i> , Lehigh University

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

2D-ThP1 Vacuum Properties and Operation Stability of the RFQ Accelerator in J-PARC Linac, *Takatoshi Morishita*, Japan Atomic Energy Agency, Japan

2D-ThP2 Inkjet Printing Of Liquid-Exfoliated, Highly Conducting Graphene Nanosheets, *J. Desai, M. Michel, C. Biswas, R. Hossain, Jorge Catalan, A.B. Kaul,* University of Texas at El Paso

2D-ThP3 Electronic Transport Properties of Hybrid Graphene-C60 Structures, *S. Chugh, C. Biswas, Avra S. Bandophadyay, G. Lara, L. Echegoyen, A.B. Kaul,* University of Texas at El Paso

2D-ThP4 Comparative Study of the Optical and Electrical Properties of Fluorine-doped Tin Oxide Films Obtained by Spray Pyrolysis Techniques, *Karim Monfil-Leyva*, *R.C. Ambrosio-Lázaro*, *J.A. Luna-López*, Benemerita Universidad Autónoma de Puebla, Mexico; *A.L. Muñoz-Zurita*, Universidad Politécnica Metropolitana de Puebla, Mexico

2D-ThP5 Selective Molecular attachment for 3D Printing of 2D Circuits, A.T. Juhl, N.R. Glavin, G.M. Leuty, R.J. Berry, R.R. Naik, M.F. Durstock, E.M. Heckman, R.S. Aga, E.B. Kreit, Air Force Research Laboratory; **Wenbi Lai**, C. Muratore, University of Dayton

2D-ThP6 Image Potential State of Graphene on Iridium Modulated by Oxygen Dosing, *Yi Lin, Y.Z. Li, J. Dadap, R. Osgood,* Columbia University

2D-ThP7 Raman Spectroscopy and Optical Characterization of Thermoelectric Devices From Ni/Bi₂Te₃/Sb₂Te₃/Ni Thin Films, *Aschalew Kassu, S. Budak, Z. Xiao, R. Hammond, X. Crutcher, A. Sharma,* Alabama A&M University

2D-ThP8 Thermoelectric Generators from SiO₂/SiO₂+Au Thin Films For Energy Harvesting, S. Budak, Z. Xiao, M. Curley, Justin Cole, C. Birchfield, M. Howard, B. Rodgers, T. Strong, Alabama A&M University

2D-ThP9 Advanced Thermoelectric Devices from Ni/Bi₂Te₃/Sb₂Te₃/Ni Thin Films for Energy Harvesting, S. Budak, Z. Xiao, M. Curley, Cody Birchfield, J. Cole, M. Howard, B. Rodgers, T. Strong, Alabama A&M University

2D-ThP10 VUV-photoassisted Chemical Doping on Graphene Oxide, *Masahiro Soga*, Y. Tu, T. Utsunomiya, T. Ichii, H. Sugimura, Kyoto University, Japan

2D-ThP11 Tungsten Diselenide Nanoribbons Formed by Focused Helium Ion Beam Induced Etching, *Michael G. Stanford*, *P.R. Pudasaini*, *A.T. Wong*, *A. Hoffman*, *D.G. Mandrus*, *P.D. Rack*, The University of Tennessee Knoxville

2D-ThP12 Tuning the Electronic Structure of Metallic Single Crystal Surfaces through Ultra Thin Hetero-Junctions for Photocathode Applications, *ZhengRong Lee, R. Seibert, D. Velázquez, L. Spentzouris, J. Terry,* Illinois Institute of Technology

2D-ThP13 Electronic Structure of Bulk WSe₂ and Multilayer WS₂, *Iori Tanabe*, University of Nebraska-Lincoln; *T. Komesu*, University of Nebraska - Lincoln; *E.F. Schwier*, Hiroshima Synchrotron Radiation Center; *M. Gomez*, *L. Bartels*, University of California - Riverside; *M. Zheng*, *Y. Kojima*, Hiroshima University; *E.M. Echeverria*, University of Nebraska-Lincoln; *A.V. Barinov*, *S.K. Balijepalli*, *V. Kandyba*, Elettra - Sincrotrone Trieste; *K. Shimada*, Hiroshima Synchrotron Radiation Center; *P.A. Dowben*, University of Nebraska - Lincoln

Spectroscopic Ellipsometry Focus Topic Room Hall D - Session EL+AS+EM+TF-ThP Spectroscopic Ellipsometry Poster Session 6:00pm

EL+AS+EM+TF-ThP1 FTIR Ellipsometry Studies of Thermally Grown GeO₂ on Ge, *Jaime Moya*, *T.N. Nunley*, *N.S. Fernando*, *N. Samarasingha*, *S. Zollner*, New Mexico State University

EL+AS+EM+TF-ThP2 Anisotropic Bruggeman Effective Medium Approach for Modeling Spectroscopic Ellipsometry Data of Porous Samples, *Stefan Schöeche*, *J. VanDerslice*, *J.A. Woollam*, J.A. Woollam Co., Inc.

EL+AS+EM+TF-ThP3 Optical Constants of M2-phase VO₂ Measured by Spectroscopic Ellipsometry, *SamuelT. White, R.F. Haglund, K. Hallman,* Vanderbilt University

Electronic Materials and Photonics Room Hall D - Session EM-ThP EMPD Poster Session 6:00pm

EM-ThP1 The Effects of VUV Radiation on Low-k Organosilicate Glass (SiCOH) as Measured with Electron-Spin Resonance, *Panpan Xue*, *W. Li*, University of Wisconsin-Madison; *J. de Marneffe*, *M. Baklanov*, IMEC, KU Leuven Belgium; *V. Afanas'ev*, Catholic University of Leuven, Belgium; *Y. Nishi*, Stanford University; *J.L. Shohet*, University of Wisconsin-Madison

EM-ThP2 Effect of Initial Substrate Conditioning on Structural and Optoelectronic Properties of $In_xGa_{1-x}N$ Grown by MEPA-MOCVD, *Indika Senevirathna*, D. Seidlitz, A. Fali, Y. Abate, N. Dietz, Georgia State University

EM-ThP3 An In-Depth Study of Cu₂ZnSnS₄ Films Synthesized by Sulfurization of Stacked Metallic Layers, A. Alvarez Barragan, S.A. Exarhos, Lorenzo Mangolini, University of California Riverside

EM-ThP4 Optical and Magneto-Optical Properties of ZnO/Zn_{1-x}Co_xO Thin Films Grown by Pulsed Laser Deposition, *Da-Ren Liu, C.J. Weng,* Instrument Technology Research Center, National Applied Research Laboratories

EM-ThP5 A bi-functional Bolometer with Sensitivity to IR Radiation and Hot Air Induced Temperature Variation, *Evgenia Vaganova*, The Hebrew University of Jerusalem, Israel

EM-ThP6 Proton-Induced Effects on HfOx-Based Resistive Random Access Memory, K. Hsu, T. Chang, University of Wisconsin-Madison; L. Zhao, Z. Wang, Stanford University; R. Agasie, T. Betthauser, J. Nickles, J. Chang, University of Wisconsin-Madison; Y. Nishi, Stanford University; Z. Ma, J. Leon Shohet, University of Wisconsin-Madison

EM-ThP7 SiGe $_{\rm x}$ (100) (x=0.25, 0.5, 0.75) and Ge (100) MOSCaps with Aqueous Ammonium Sulfide Passivation, *Lauren Peckler*, S.L. Heslop, A.J. Muscat, University of Arizona

EM-ThP8 Investigating U_3O_8 for Solid-State Direct-Conversion Neutron Detection Applications, *Shailesh Dhungana*, *G. Bhattarai*, University of Missouri-Kansas City; *B.C. Shaver*, *S. Lawson*, *B. Musicó*, *T. Meek*, The University of Tennessee Knoxville; *M.M. Paquette*, *A.N. Caruso*, University of Missouri-Kansas City

EM-ThP9 Investigation of Electro-Optical and Chemical properties InN epilayer grown on Ga-face GaN by RF-MOMBE, W.-C. Chen, Chien-Nan Hsiao, Instrument Technology Research Center, National Applied Research Laboratories, Taiwan, Republic of China

EM-ThP10 Soft Nitridation of Thin Films of Silicon Oxide and Hafnium Oxide, J.A. Torres-Ochoa, **Orlando Cortazar-Martinez**, Y.L. Chipatecua-Godoy, Z. Montiel-Gonzalez, Cinvestav-Unidad Queretaro, Mexico; A. Herrera-Gomez, CINVESTAV-Queretaro, Mexico

EM-ThP11 Low Energy Solvothermal Deposition of Graphene on Ni foams for Electrochemical Supercapacitor Applications, *Zhypargul Abdullaeva*, Kumamoto University, Japan

EM-ThP12 Temperature-Resistance Effect of Carbon Black / Polydimethylsiloxane Composite, *Jing Xu*, *L.Z. Ouyang*, Tennessee State University

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

HI-ThP1 Gas Field Ion Sources from Single-Atom Tips, W.T. Chang, C.Y. Lin, W.C. Lai, Y.F. Yu, Institute of Physics, Academia Sinica, Taipei, Taiwan, Taiwan, Republic of China; T.Y. Fu, National Taiwan Normal University, Taipei, Taiwan, Taiwan, Republic of China; T.T. Tsong, I.S. Hwang, Institute of Physics, Academia Sinica, Taipei, Taiwan, Taiwan, Republic of China

In-Situ and Operando Spectroscopy and Microscopy for Catalysts, Surfaces, & Materials Focus Topic Room Hall D - Session IS-ThP In-Situ and Operando Spectroscopy and Microscopy for Catalysts, Surfaces, & Materials Poster Session

IS-ThP1 Laser Diagnostics for Studies of Heterogeneous Catalysis, *Jianfeng Zhou*, S. Blomberg, J. Gustafson, E. Lundgren, J. Zetterberg, Lund University, Sweden

6:00pm

IS-ThP3 Challenges and Current Progress in Characterizing the Solid Electrolyte Interface in Lithium-Sulfur Batteries, *Manjula Nandasiri*, *A.M. Schwarz*, *V. Shutthanandan*, Pacific Northwest National Laboratory; *P. Kandasamy*, Pusan National University, Republic of Korea; *S.A. Thevuthasan*, Qatar Environment and Energy Research Institute; *V. Murugesan*, Pacific Northwest National Laboratory

IS-ThP4 Traceable Calibration of High-Quality Pitch Standards Based on an Atomic Force Microscopy System Combined with a Piezo-Actuated Flexure Stage, *Chien-ying Su*, *N.N. Chu*, *M.H. Shiao*, *C.N. Hsiao*, *F.Z. Chen*, *J.A. Yeh*, Instrument Technology Research Center, National Applied Research Laboratories, Taiwan, Republic of China

IS-ThP5 XPS Enables Visualization of Charge Screening in Metal-ionic Liquid Interfaces with Temporal- and Lateral-resolution, *M.T. Camci*, Mrs, Turkey; *P. Aydogan*, *B. Ulgut*, *C. Kocabas*, *Sefik Suzer*, Bilkent University, Turkey

IS-ThP6 Ambient Pressure Photoemission Instrumental Development and Applications within the Field of Energy Related Research, *John Åhlund*, Scienta Omicron, Sweden

IS-ThP7 Highly Sensitive Ion Trap Mass Spectrometer for Inline Process Control, *Gennady (G.) Fedosenko*, H.-Y. Chung, M. Aliman, A. Laue, R. Reuter, V. Derpmann, M. Antoni, L. Gorkhover, T. Graber, Carl Zeiss SMT GmbH, Germany

IS-ThP8 Real-time State-resolved Reactivity Measurements as a Probe of Carbon Dissolution Kinetics on Ni(111), *Eric Dombrowski*, E.H. High, A.L. Utz, Tufts University

IS-ThP9 Design and Performance of Large Surface Area Graphene Liquid Cell for in Situ Electron Spectroscopy and Microscopy, *Hongxuan Guo*, National Institute of Standards and Technology (NIST); *A. Yulaev*, *A. Kolmakov*, National Institute of Standards and Technology

IS-ThP10 In situ Studies of Structural Evolution of Model Catalyst Rh(110) at Atomic Scale during Catalysis, *Franklin (Feng) Tao*, University of Kansas

MEMS and NEMS Room Hall D - Session MN-ThP MEMS/NEMS Poster Session 6:00pm

MN-ThP1 Method for Patterning Poly-Acrylic Acid Sacrificial Layers for Use in Solder Based Self-Assembly for 3D Integration, *Connor Smith, Y. Feng, S.L. Burkett,* The University of Alabama

MN-ThP2 An Application of Aligned Electrospun PVDF Nanofibers, Akira Ueda, O. Ali, Fisk University; Y. Zhang, Vanderbilt University; B. Storr, A. Byrne, C.S. Carson, Fisk University; C. Marvinney, A.L. Cook, Vanderbilt University; S. Avanesyan, W.E. Collins, R. Mu, Fisk University

Plasma Science and Technology Room Hall D - Session PS-ThP Plasma Science and Technology Division Poster Session 6:00pm

PS-ThP1 RF Assisted Reactive High Power Impulse Magnetron Sputtering Deposition of Titanium Nitride Thin Film for Plasmonic Applications, *Ru-Jing Sun*, National Tsing Hua University, Taiwan, Republic of China; *B.H. Liao, C.-N. Hsiao*, Instrument Technology Research Center, Taiwan, Republic of China; *K.C. Leou*, National Tsing Hua University, Taiwan, Republic of China

PS-ThP2 Transport Line for Laser Multicharged Ion Implantation and Deposition System, *MdHaider Shaim*, *M.M. Rahman*, *O. Balki*, Old Dominion University; *A. Sarkissian*, Plasmionic Technologies; *M.L. Korwin-Pawlowski*, University Du Quebec en outaouais, Canada; *H.E. Elsayed-Ali*, Old Dominion University

PS-ThP3 Comprehensive Study of Plasma Emission and its Relation to the Properties of SiO_xN_y Thin Films during Reactive DC Magnetron Sputtering, *Roberto Sangines*, *N. Abundiz-Cisneros*, *O. Hernandez Utrera*, *R. Machorro*, *C. Diliegros-Godines*, UNAM - Center of Nanosciences and Nanotechnology, Mexico

PS-ThP4 Monitoring and Determination of Cleaning Level of the Target Before Deposition in a Reactive DC Magnetron Sputtering, *Oscar Hernandez Utrera*, *N. Abundiz-Cisneros*, *R. Sangines*, *R. Machorro*, *C. Diliegros*, UNAM - Center of Nanosciences and Nanotechnology, Mexico

PS-ThP5 Optimizing Process Parameters for Plasma Assisted Atomic Layer Epitaxy (PA-ALE) of Nitrides, *Virginia Anderson*, D.R. Boris, N. Nepal, S.D. Johnson, A.C. Kozen, Naval Research Laboratory; Z. Robinson, Boston University; S.C. Hernandez, C.R. Eddy, Jr., S.G. Walton, Naval Research Laboratory

PS-ThP6 Plasma Treatment of Plated Surfaces, *Christopher Fields*, *M.J. Buie*, Coherent Inc

PS-ThP7 Customizing Arrays of Microplasmas for Controlling Properties of Electromagnetic Waves, *Chenhui Qu, P. Tian, M.J. Kushner*, University of Michigan

PS-ThP8 Optical Emission Diagnostics of a Non-equilibrium Helium Plasma Jet at 1 Atm in Ambient Air, *Tam Nguyen*, *E. Hernández*, *D.J. Economou*, *V.M. Donnelly*, University of Houston

PS-ThP9 Etching Capability of Silicon Nitride using a Low Electron Temperature Plasma Source, *Hiroyuki Miyazoe*, A.V. Jagtiani, S.U. Engelmann, IBM T.J. Watson Research Center; D.R. Boris, S.C. Hernández, E.H. Lock, S.G. Walton, Naval Research Laboratory; E.A. Joseph, IBM T.J. Watson Research Center

PS-ThP10 Deep GaAs Etching with V-shaped Trench Profile Using Inductively Coupled Plasma Technology, *T. Sugahara*, SAMCO Inc., Japan; *Shogo Uehara*, SAMCO Inc.; *M. Hiramoto*, SAMCO Inc., Japan

PS-ThP11 Poly-Si Planarization by ICP Plasma Etch at FinFET Technology, *Yan Wang*, *Q. Han, H. Zhang*, Semiconductor Manufacturing International Corporation

PS-ThP12 Ion Beam Etch Process Optimization for the Patterning of High Density STTRAM Pillars, *Vincent Ip*, Veeco; *S. Huang*, Lam Research Corporation; *S.D. Carnevale*, Veeco; *I.L. Berry*, Lam Research Corporation; *K. Rook*, Veeco; *T.B. Lill*, Lam Research Corporation; *A.P. Paranipe*, *F. Cerio*, Veeco

PS-ThP13 Down Stream Plasma Ash Process Impact on Metal Electrode Oxidation and Nitridation for 10nm and Below Logic Technology, *B. Elliston, G. Kishko, V. Vaniapura, V.P. Nagorny, Shawming Ma, Mattson Technology*

PS-ThP14 Atomic Layer Etching of Conventional and 2D Materials, *Mike Cooke*, *A.L. Goodyear*, *R. Sundaram*, *B. Halsall*, Oxford Instruments Plasma Technology, UK

PS-ThP15 Rapid *In Situ* H Plasma Carbon and Oxygen Cleaning of In_{0.53}Ga_{0.47}As(001) and Si_{0.5}Ge_{0.5}(110), *S. Wolf, M. Edmonds,* University of California at San Diego; *X. Jiang,* PIE Scientific; *R. Droopad,* Texas State University; *N. Yoshida, L. Dong,* Applied Materials; *R. Galatage, S. Siddiqui, B. Sahu,* GLOBALFOUNDRIES; *A.C. Kummel,* University of California at San Diego; *Mahmut Kavrik,* University of California San Diego

PS-ThP16 The Study on the Method to Improve the Ash Rate and Uniformity in a 450 mm Wafer Capable Ashing Chamber, *JinKwan Lee, P.Y. Lin, W.L. Collison, N. Fish, C.-M. Sun, J.H. Lim, Global 450mm Consortium*

PS-ThP17 Backside Via Last Process Technologies for Wafer Level 3D Stacking., *Toshiyuki Sakuishi, T. Murayama, Y. Morikawa*, ULVAC Inc., Japan

PS-ThP18 New Deep SiO₂ Etching Process Issues for Silicon Photonics Device Fabrications, *Keizo Kinoshita*, PETRA, Japan; *M. Noguchi*, PETRA; *T. Horikawa*, AIST; *T. Nakamura*, *T. Mogami*, PETRA

PS-ThP19 A Study of the Transient Behavior of Pulsed Dual-frequency Capacitive Discharges, *Byungkeun Na*, *G.J. Park*, *I. Bae*, *H.-Y. Chang*, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea

PS-ThP20 Modeling of Remote Plasma Sources using CFD-ACE+, Abhra Roy, P. Shukla. K. Jain. A.N. Bhoi. ESI US R&D Inc.

PS-ThP21 Controllable Deposition of TiO₂ Films by Atmospheric Pressure Dielectric Barrier Discharge: Gas Composition Effect and Mechanism, *Qianqian Chen, A. Ozkan, S. Collette, J. Mertens, J. Baneton, M.P. Delplancke, F. Reniers*, Université Libre de Bruxelles, Belgium

PS-ThP22 Synthesis of Acrylate Coatings with Tunable and Permanent Wettability by Atmospheric Plasma, *B. Nisol, J. Guesquière, Delphine Merche, N. Vandencasteele, F. Reniers,* Université Libre de Bruxelles, Belgium

PS-ThP23 A High-flux Low-energy Hydrogen Ion Beam Using an end-Hall Ion Source, *Jacqueline van Veldhoven, E. te Sligte, J.P.B. Janssen,* TNO Technical Sciences, Netherlands; *I. Ament,* Carl Zeiss SMT GmbH, Germany

PS-ThP24 A System of Radical Probes for Plasma Characterization, *Dren Qerimi*, University of Illinois at Urbana-Champaign; *I.A. Shchelkanov*, University of Illinois at Urbana Champaign; *D.N. Ruzic*, University of Illinois at Urbana-Champaign

PS-ThP25 Using Optical Emission and Broadband Absorption Spectroscopy to Elucidate Energy Partitioning Trends Within Inductively Coupled Plasma Systems, *Angela Hanna*, *J.M. Blechle*, *E.R. Fisher*, Colorado State University

PS-ThP27 Modeling of Electron Kinetics in rf Discharges at Low and High Pressures, *Ananth Bhoj, Z.A. Xiong,* ESI US R&D Inc.; *V.I. Kolobov,* CFD Research Corporation

PS-ThP29 Nanoparticle Synthesis via a High Voltage Pulsed DC Atmospheric-Pressure Microplasma Jet, *Steven Doyle*, *K.G. Xu*, University of Alabama in Huntsville

PS-ThP30 Extending the Volume and Processing Area of Atmospheric Pressure Plasma Jets, *Eric Gillman*, *D.R. Boris*, *M.H. Helle*, *S.C. Hernández*, *Tz.B. Petrova*, *G.M. Petrov*, *S.G. Walton*, Naval Research Laboratory

PS-ThP31 Characteristics of Cutoff Probe for Magnetized Plasma Measurement, *Jung-Hyung Kim*, Korea Research Institute of Standards and Science, Republic of Korea; *K.H. You*, Korea Research Institute of Standards and Science; *S.J. You*, Chungnam National University; *H.C. Lee, D.J. Seong*, Korea Research Institute of Standards and Science

PS-ThP32 Development of the Gas Cherenkov Detector (GCD-3) and the Unique Engineering Challenges Associated with the ASME Boiler and Pressure Vessel Code, *Frank Lopez*, H.W. Herrmann, J.A. Oertel, S.H. Batha, Y.H. Kim, J.R. Griego, T.N. Archuleta, R.J. Aragonez, V.E. Fatherley, C.S. Young, A. Hsu, R.M. Malone, Los Alamos National Laboratory

PS-ThP33 Magnetic Tunnel Junctions Etch and Encapsulation Process Optimization for High-Density STT-MRAM Applications, *Laurent Souriau*, *D. Radisic*, *S. Kundu*, *V. Paraschiv*, imec, Belgium; *F. Yamashita*, *K. Fujimoto*, *S. Tahara*, *K. Maeda*, TEL, Japan; *W. Kim*, *S. Rao*, *G. Donadio*, *D. Crotti*, *D. Tsvetanova*, *J. Swerts*, *S. Mertens*, *T. Lin*, *S. Couet*, *D. Piumi*, *G.S. Kar*, *A. Furnemont*, imec, Belgium

PS-ThP34 Effect of High DC Bias on Silicon Oxide Coatings Deposited by Plasma Enhanced Chemical Vapor Deposition, *Norihiro Jiko*, Kobe Steel, Ltd., Japan; A. Narai, Kobe Steel, Ltd.; N. Kawakami, T. Okimoto, Kobe Steel, Ltd., Japan

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

TF-ThP2 Interfaces in Hybrid Structures: A 'non'-Destructive, In Situ Insight in Bonds and Failure, *Tom Hauffman*, *S. Pletincx*, *K. Marcoen*, Vrije Universiteit Brussel, Belgium; *P. Kerger*, Max Planck Institut fur Eisenforschung GmbH (Düsseldorf-Germany), Germany; *L.I. Fockaert*, Technical University of Delft, Netherlands; *M. Rohwerder*, Max Planck Institut fur Eisenforschung GmbH (Düsseldorf- Germany), Germany; *J.M.C. Mol*, Technical University of Delft, Netherlands; *H. Terryn*, Vrije Universiteit Brussel, Belgium

TF-ThP3 Nitrogen Doped ZnO Films: Structural, Morphological and Optical Studies, *Mujdat Caglar*, Anadolu University, Turkey; *K. Gorgun*, Eskisehir Osmangazi University, Turkey; *S. Ilican*, *Y. Caglar*, Anadolu University, Turkey

TF-ThP4 Ion Beam Deposition of VOx Films for Uncooled Bolometers and Their Characterization, *David Pearson*, Oxford Instruments Plasma Technology, UK; *S.C.R. Pochon, P. Alvarez*, Oxford Instruments Plasma Technology, United Kingdom of Great Britain and Northern Ireland

TF-ThP5 Valence Band Investigation of Cu(In,Ga)Se₂ Semiconductor: Improvements by Ag Alloying, *Kevin Jones*, *R.L. Opila*, *F. Fang*, University of Delaware; *L. Chen, W. Shafaraman*, University of Delaware and Institute of Energy Conversion at University of Delaware

TF-ThP6 Ultra-Low Resistivity ZnO Thin Films on Flexible Substrates Using Sol Gel Solution Deposition, *R. Kraya*, *Nitish Thakor*, Johns Hopkins University

TF-ThP7 Internal Charge Transfer at the MBE-Grown Complex Oxide Interface, *Peng Xu*, University of Minnesota; *T.C. Droubay*, Pacific Northwest National Laboratory; *J.S. Jeong, K.A. Mkhoyan*, University of Minnesota; *P.V. Sushko*, *S.A. Chambers*, Pacific Northwest National Laboratory; *B. Jalan*, University of Minnesota

TF-ThP8 Growth of Graphene on Cu Foil and Ni/Cu Surface by Pulsed Laser Deposition at Reduced Temperatures, *Mohamed Hafez, A. Abd Elhamid,* National Institute of Laser Enhanced Sciences, Cairo University, Egypt; *A. Aboulfotouh,* Cairo University, Egypt; *I. Azzouz,* National Institute of Laser Enhanced Sciences, Cairo University, Egypt

TF-ThP9 Preparation of a Transparent Conductive Multilayer Consists of $MoO_3/Ag/MoO_3$ and its Application in OLEDs, *Midori Kawamura*, *T. Chiba*, *T. Kiba*, *Y. Abe*, *K.H. Kim*, Kitami Institute of Technology, Japan

TF-ThP10 Copper Migration into and Breakdown of Low-k Organosilicate Dielectrics from Vacuum-Ultraviolet Irradiation during Plasma Processing, *Xiangyu Guo*, University of Wisconsin-Madison; *S.W. King*, Intel Corporation; *Y. Nishi*, Stanford University; *J.L. Shohet*, University of Wisconsin-Madison

TF-ThP11 X-Ray Analysis of Metamorphic In_xGa_{1-x}As/In_yGa_{1-y}As Superlattices on GaAs (001) Substrates, *Fahad Althowibi*, *J.E. Ayers*, University of Connecticut

TF-ThP12 Synthesis of Novel Ta Precursor and its Application in Atomic Layer Deposition of TaN Film, *J.H. Han*, Korea Research Institute of Chemical Technology, Republic of Korea; *S.C. Lee*, *H.Y. Kim*, *T.M. Chung*, Korea Research Institute of Chemical Technology; *ChangGyun Kim*, Korea Research Institute of Chemical Technology, Republic of Korea

TF-ThP13 Transmission of Plasma-Generated Free Radicals through Silicon Nitride Dielectric Films, F.A. Choudhury, G. Sabat, M. Sussman, University of Wisconsin-Madison; Y. Nishi, Stanford University; J.L. Shohet, University of Wisconsin-Madison

TF-ThP14 Characterizing the Performance of Liquid Precursor Delivery Control Methods for Deposition Processes, *James Maslar*, W.A. Kimes, NIST/Material Measurement Laboratory; W. Kimmerle, NSI; E. Woelk, CeeVeeTech LLC

TF-ThP16 PEALD BSG PSG Doping Diffusion Characterization, *Jeff Shu*, *Y. Zhang, H. Sheng, J. Liu*, GLOBALFOUNDRIES U.S. Inc.

TF-ThP17 Low Temperature Deposition of nc-Silicon Thin Films using SiH_4/H_2 mixture, *Moniruzzaman Syed*, Lemoyne Owen College; *Tong. Goh*, University of Malaya, Malaysia; *N.F.F.B. Nazarudin*, University of Malaya, Kuala Lumpur; *A. Jahangir*, University of Memphis; *Y. Hamada*, Lemoyne Owen College; *A.M. Ali*, King Khalid University, Saudi Arabia

TF-ThP18 Elimination of Optical Artifacts from a-SiC:H Thin Film Transmission FTIR Spectra and Partial Least Squares Elemental Analysis, *Milan Milosevic*, MeV Technologies; *S.W. King*, Intel Corporation

TF-ThP19 Low Energy Ion Scattering (LEIS) Analysis of ALD Deposited GaSb Films on SiO_2 , *Thomas Grehl, P. Brüner,* ION-TOF GmbH, Germany; *R. ter Veen, M. Fartmann,* Tascon GmbH, Germany; *T. Blomberg, M. Tuominen,* ASM Microchemistry Ltd., Finland

TF-ThP21 Characterization and Use of Porous Materials for Solid Phase Microextraction by Sputtering and CVD, *Massoud Kaykhaii*, *T. Roychowdhury*, *A. Diwan*, *B. Singh*, *M.R. Linford*, Brigham Young University

TF-ThP22 Simulation and Characterization of Short Channel Organic Thin Film Transistors Fabricated Using Ink-jet Printing and Imprint Process, *Juhyun Bae*, Sungkyunkwan University, Republic of Korea; *K.H. Kim, N.Y. Kwon*, Samsung Electronics Co., LTD., South Korea; *I.S. Chung*, Sungkyunkwan University, Republic of Korea

TF-ThP24 Toward Reliable Production of Well-Structured, Self-Assembled Thin Films of Quantum Dots for Surface Coatings, *Cuong Nguyen*, *J.J. Weimer*, The University of Alabama in Huntsville

TF-ThP25 *IN SITU* Spectroscopic Analysis of Perovskite/Graphene Hybrid Films for Graphene-Based Perovskite Solar Cells, *Seth B. Darling*, Argonne National Laboratory, University of Chicago; *M.A. Acik*, Argonne National Laboratory

TF-ThP26 Synergetic Effect of Nitrogen and Fluorine on the Total Dose Radiation Hardness of the Buried Oxide Layer in SOI Wafers, *Zhongshan Zheng*, Institute of Microelectronics of Chinese Academy of Sciences, China

TF-ThP27 The Effect of Vacuum Ultraviolet Irradiation on the Dielectric Constant, Leakage Currents and Time-Dependent Dielectric Breakdown of Low-k Dielectric Films, *Dongfei Pei*, W. Li, P. Xue, University of Wisconsin-Madison; S.W. King, Intel Corp; Y. Nishi, Stanford University; J.L. Shohet, University of Wisconsin-Madison

TF-ThP28 Fabrication of and Photovoltaic Characterization of SnS Solar Cell, *YoungKuk Lee, S.G. Kang, C.G. Kim,* Korea Research Institute of Chemical Technology, Republic of Korea

TF-ThP29 Solution Deposition of Pentacene Thin Films for Solar Cells and Organic Electronics, *Michael Lee, R. Mendoza, R.T. Rodriguez, B.F. Kunzler,* Northern Arizona University

TF-ThP30 Protected Aluminum Mirrors in the DUV Spectral Range for Astronomical applications, *Hung-Pin Chen, W.H. Cho, C.-N. Hsiao,* Instrument Technology Research Center, National Applied Research Laboratories, Taiwan, Republic of China; *C.C. Lee,* National Central University, Taiwan, Republic of China

TF-ThP31 Physical Characteristics of TiO_x Thin Films Obtained by DC Reactive Sputtering, *Victor Lima*, *I. Doi, J.A. Diniz, R.R. César,* State University of Campinas,

TF-ThP32 Modification of the Vacuum-ultraviolet Absorption Spectrum during Plasma Exposure of Low-k Dielectrics: A Time-dependent Density Functional Theory Analysis, *Ha Nguyen*, F.A. Choudhury, J.L. Shohet, University of Wisconsin - Madison

TF-ThP33 High Moisture-Barrier Films using Roll-to-Roll-Plasma CVD grown SiO_x on Room-Temperature ALD treated PEN Substrates, *Nobuyuki Kawakami, N. Jiko, T. Okimoto,* Kobe Steel, Ltd., Japan; *K. Kanomata, F. Hirose,* Yamagata University, Japan

TF-ThP34 Determination of the Characteristic Times of Surface Coverage of HfO₂ in Si Substrates by ALD, *PierreGiovanni Mani-Gonzalez*, UACJ, Mexico; *M.M.M. Contreras-Turrubiartes*, UASLP, Mexico; *P.E. Garcia-Casillas*, *H. Leos-Mendez*, UACJ, Mexico; *H. Hernandez-Arriaga*, UASLP, Mexico; *J.A. Hernandez-Marquez*, *J.L. Enriquez-Carrejo*, UACJ, Mexico; *M. Melendez-Lira*, CINVESTAV-IPN, Mexico; *E. Lopez-Lura*, UASLP, Mexico

TF-ThP35 Nanostructured Electrocatalysts Synthesized using Atomic Layer Deposition for Lithium- and Sodium-Oxygen Batteries, *Yu Lei*, University of Alabama in Huntsville; *J. Lu*, Argonne National Laboratory

TF-ThP36 High Quality ALD of Silicon Nitride Films Via Microwave Plasma, *Kihyun Kim*, Samsung Electronics Co., LTD., South Korea, Republic of Korea

TF-ThP37 Linear Scanning Magnetron for Solar Cell PVD Applications, Vladimir Kudriavtsev, A. Riposan, L. Mandrell, C.W. Smith, T.M. Bluck, Intevac

TF-ThP38 Elastic Fields of Buried Hexagonal Dislocation Networks Adapted to Order the Epitaxial Bonding of Semiconductor Nanostructures, *Outtas Toufik*, *M. Salah*, University of Batna, Algeria

TF-ThP39 Chemical Vapor Deposition of Manganese Nitride from bis(2,2,6,6 tetramethylpiperidido) Manganese (II), Mn(tmp)₂, and Ammonia, *E. Mohimi, B. Trinh, Shaista Babar, G.S. Girolami, J.R. Abelson,* University of Illinois at Urbana Champaign

TF-ThP40 Effect of Substrate Temperature and Pulse Frequency on the Properties of SiC Film on Si (111) Deposited by Pulsed dc Magnetron Sputtering, H.-P. Chen, C.-T. Lee, P.-K. Chiu, D. Chiang, **Wei-Chun Chen**, ITRC, National Applied Research Laboratories, Taiwan, Republic of China; S.-L. Ou, Da-Yeh University, Taiwan, Republic of China

TF-ThP41 Reactive Magnetron Sputtering of Epitaxial Scandium Nitride for High Performance Electronics, *Amber Reed*, Air Force Research Laboratory, Wright Patterson Air Force Base; *D.C. Look, V. Vasilyev*, Air Force Research Laboratory, Wright-Patterson Air Force Base; *H.M. Jeon, H.A. Smith, M.R. Schmitt,* Air Force Research Laboratory, Wright Patterson Air Force Base; *J.S. Cetnar*, Air Force Research Laboratory, Wright-Patterson Air Force Base; *B.M. Howe*, Air Force Research Laboratory, Wright Patterson Air Force Base

TF-ThP42 Amorphous Phase Content Determination in TiO₂ Thin Films on Glass Substrates using the PONKCS Approach, *T. Malek, Stanislav Danis*, Charles University in Prague, Czech Republic; *L. Matejova*, Technical University of Ostrava, Czech Republic; *M. Cerhova*, Czech Academy of Sciences, Czech Republic

TF-ThP43 The Atomic Layer Deposited SrTiO₃Films using Thin Seed Layer and their Improvement of Dielectric Properties for DRAM Capacitor, *Sang Hyeon Kim*, Samsung Electronics, Republic of Korea; *C.S. Hwang*, Seoul National University, Republic of Korea

TF-ThP44 Water Cooled Low Temperature Evaporation (LTE) Source for Thin Film Organic Semiconducting Materials, *Salahud Din*, Kurt J. Lesker Company, UK

TF-ThP45 Reactive RF Magnetron Sputtering of Vanadium Oxides: Substrate Bias Issues, *Sergey Jr. Maklakov, V.I. Polozov, I.A. Ryzhikov, V.N. Kisel,* Institute for Theoretical and Applied Electromagnetics RAS, Russian Federation

TF-ThP46 Development of TiN/VN ALD Nanolaminates for Astronomy Applications, *Frank Greer*, *L. Baker*, *P. Day*, *B. Eom*, *H. Leduc*, Jet Propulsion Laboratory/California Institute of Technology

TF-ThP47 Corrosion Behavior Of Transition Metal Nitrides Deposited By HIPIMS And DCMS With Synchronized Substrate Bias, *YuriLizbeth Chipatecua-Godoy*, Cinvestav-Unidad Queretaro, Mexico; *O. Tengstrand*, Linköping University, Sweden; *J.J. Olaya-Florez*, Universidad Nacional de Colombia; *G. Greczynski*, Linköping University, Sweden; *J.E. Greene*, *I. Petrov*, University of Illinois at Urbana-Champaign; *A. Herrera-Gomez*, CINVESTAV-Queretaro, Mexico

TF-ThP48 Optical, Structural, and Magnetic Properties of Ti doped ZnO Grown by RF/DC Magnetron Sputtering, *M. Baseer Haider, M.F. Al-Kuhaili,* King Fahd University of Petroleum & Minerals, Saudi Arabia; *I. Roqan, V. Singaravelu,* King Abdullah University of Science and Technology (KAUST), Saudi Arabia

Tribology Focus Topic Room Hall D - Session TR-ThP Tribology Poster Session 6:00pm

TR-ThP1 Wear Behavior of Nitrided Cast Iron D6510 and Cast Steel S0050A under Normal Sliding and Inclined Sliding Conditions, *Chen Zhao, J. Zhang, X. Nie,* University of Windsor, Canada

Anticipated Schedule Friday, November 11, 2016

Anticipated Schedule Friday Morning, November 11

8:20 AM	
8:40 AM	
9:00 AM	
9:20 AM	
9:40 AM	
10:00 AM	
10:20 AM	
10:40 AM	
11:00 AM	
11:20 AM	
11:40 AM	
12:00 PM	
	Anticipated Schedule Friday Lunch, November 11
When	
Where	
With	

NOTES

Special Events Friday 158

	2D Materials Focus Topic Room 103B - Session 2D+NS-FrM 2D Materials: Device Physics and Applications Moderator: Miguel M. Ugeda, CIC nanoGUNE, Spain	Spectroscopic Ellipsometry Focus Topic Room 104C - Session EL+AS+EM+MI+TF-FrM Spectroscopic Ellipsometry: Novel Applications and Theoretical Approaches Moderators: Morten Kildemo, Norwegian University of Science and Technology, Nikolas Podraza, University of Toledo
8:20am	2D+NS-FrM1 Direct Writing of 2D Flexible Electronic Devices via Illumination-based Techniques, <i>M.E. McConney, N.R. Glavin, A.T. Juhl,</i> Air Force Research Laboratory; <i>J.E. Bultman, J.J. Hu,</i> University of Dayton Research Institute/Air Force Research Laboratory; <i>M.F. Durstock,</i> Air Force Research Laboratory; <i>A.A. Voevodin,</i> University of North Texas; <i>Christopher Muratore,</i> University of Dayton	INVITED: EL+AS+EM+MI+TF-FrM1 Magnetoopticalproperties of Metals, Half-Metals, and Garnets Probed by Vector-Magneto-Optical Generalized Ellipsometry, <i>Heidemarie Schmidt</i> , Technische Universität Chemnitz, Nano-Spintronics Group, Germany
8:40am	2D+NS-FrM2 Resolving and Tuning Mechanical Anisotropy in Black Phosphorus Nanoelectromechanical Resonators, Zenghui Wang , H. Jia, P.XL. Feng, Case Western Reserve University	Invited talk continues.
9:00am	INVITED: 2D+NS-FrM3 2D Devices for Flexible and Topological Nanoelectronics, <i>Li Tao</i> , <i>W. Zhu</i> , <i>D. Akinwande</i> , The University of Texas at Austin	EL+AS+EM+MI+TF-FrM3 In Situ Terahertz Optical Hall Effect Measurements of Ambient Doping Effects in Epitaxial Graphene, Sean Knight, University of Nebraska-Lincoln; C. Bouhafs, N. Armakavicius, P. Kühne, V. Stanishev, R. Yakimova, Linköping University, Sweden; S. Wimer, M. Schubert, University of Nebraska-Lincoln; V. Darakchieva, Linköping University, Sweden; T. Hofmann, University of North Carolina at Charlotte
9:20am	Invited talk continues.	EL+AS+EM+MI+TF-FrM4 Excitons at Interfaces in Ellipsometric Spectra, Nuwanjula Samarasingha, C. Rodriguez, J.M. Moya, N.S. Fernando, S. Zollner, New Mexico State University; P. Ponath, K. Kormondy, A. Demkov, University of Texas at Austin; D. Pal, A. Mathur, A. Singh, S. Dutta, J. Singhal, S. Chattopadhyay, Indian Institute of Technology Indore, India
9:40am	2D+NS-FrM5 Optical Detectors Based on Bismuth Telluride Nanowire Arrays Capped by Graphene, <i>Tito Huber, T. Brower, O. Abana,</i> Howard University	EL+AS+EM+MI+TF-FrM5 Infrared and Visible Dielectric Properties of (LaAlO ₃) _{0.3} (Sr ₂ AlTaO ₆) _{0.35} , <i>Jacqueline Cooke</i> , <i>N.T. Nunley, T. Willett-Gies</i> , <i>S. Zollner</i> , New Mexico State University
10:00am	2D+NS-FrM6 Graphene Nanoelectromechanical Resonators with Eletrothermal Excitation and Tuning, F. Ye, Jaesung Lee, P.XL. Feng, Case Western Reserve University	EL+AS+EM+MI+TF-FrM6 A New Constant of Product of Electronic Scattering Time and Resistivity in Thin Silver Refractive Index Calculation from Ellipsometry and Resistivity Measurements, Guowen Ding, C. Clavero, D. Schweigert, M. Le, Intermolecular, Inc.
10:20am	INVITED: 2D+NS-FrM7 Pushing the Performance Limit of 2D Semiconductor Transistors, <i>Xiangfeng Duan</i> , California Nanosystems Institute, University of California, Los Angeles	EL+AS+EM+MI+TF-FrM7 Realization of an In Situ Mueller-matrix Imaging Ellipsometer for the Real Time Observation of Surface Properties in an Ultra-high Vacuum EUV Facility, Pim Muilwijk, N.B. Koster, F.T. Molkenboer, E. Sligte, te, A.F. Deutz, P. Walle, van der, TNO Technical Sciences, Netherlands
10:40am	Invited talk continues.	EL+AS+EM+MI+TF-FrM8 Conducting, Semi-Conducting and Insulating 2D-Materials Characterized by Spectroscopic Imaging Ellipsometry, <i>Matthias Duwe, S. Funke,</i> Accurion GmbH, Germany; <i>U. Wurstbauer,</i> Technical University of Munich, Germany; <i>A. Matkovic,</i> University of Belgrade, Serbia; <i>A. Green,</i> SUNY College of Nanoscale Science and Engineering; <i>A. Molina-Mendoza</i> Universidad Autonoma de Madrid, Spain; <i>A. Castellanos-Gomez,</i> IMDEA Nanoscience, Spain; <i>P.H. Thiesen,</i> Accurion GmbH, Germany
11:00am	2D+NS-FrM9 Low Temperature Al_2O_3 ALD on 2D Semiconductors, II Jo Kwak , J.H. Park, A.C. Kummel, University of California at San Diego	
11:20am	2D+NS-FrM10 Atomic Layer Deposition of High-k Dielectrics on WSe ₂ for High Performance Electronic Devices, <i>Pushpa Raj Pudasaini</i> , <i>M.G. Stanford</i> , <i>A. Hoffman</i> , The University of Tennessee Knoxville; <i>T.Z. Ward</i> , Oak Ridge National Laboratory; <i>D.G. Mandrus</i> , <i>P.D. Rack</i> , The University of Tennessee Knoxville	
11:40am	2D+NS-FrM11 Layer-dependent Measurements of Electronic Band Alignment for Individual MoS ₂ Flakes Supported on SiO ₂ using Photoemission Electron Microscopy (PEEM) with Deep Ultraviolet Illumination, <i>Morgann Berg</i> , Sandia National Laboratories; <i>K. Keyshar</i> , Rice University; <i>I. Bilgin</i> , <i>F. Liu</i> , Northeastern University, Los Alamos National Laboratory; <i>H. Yamaguchi</i> , Los Alamos National Laboratories; <i>R. Vajtai</i> , Rice University; <i>C. Chan</i> , Sandia National Laboratories; <i>G. Gupta</i> , Los Alamos National Laboratories; <i>S. Kar</i> , Northeastern University; <i>P. Ajayan</i> , Rice University; <i>T. Ohta</i> , Sandia National Laboratories; <i>A. Mohite</i> , Los Alamos National Laboratories	
12:00pm	2D+NS-FrM12 Visualizing Light Scattering in Silicon Waveguides with few-layer Black Phosphorous Photodetectors, <i>Tianjiao Wang</i> , S. Hu, Vanderbilt University; B. Chamlagain, Z. Zhou, Wayne State University; S.M. Weiss, Y. Xu, Vanderbilt University	

Friday Morning, November 11, 2016 159 8:20 AM

	Electronic Materials and Photonics Room 102A - Session EM-FrM Late Breaking News on Electronic Materials and Devices Moderator: Nikolaus Dietz, Georgia State University	In-Situ and Operando Spectroscopy and Microscopy for Catalysts, Surfaces, & Materials Focus Topic Room 101C - Session IS-FrM In situ Characterization of Nanomaterials Moderators: Stephen Nonnenmann, University of Massachusetts - Amherst, Xiao-Ying Yu, Pacific Northwest National Laboratory
8:20am	EM-FrM1 Phase Change Memory Properties of Arsenic Doped Ge ₂ Sb ₂ Te ₅ alloys, <i>Vinod Erkkara Madhavan</i> , Qatar Environment and Energy Research Institute, Hamad Bin Khalifa University, Qatar Foundation, Qatar; <i>K. K. S.</i> , Indian Institute of Science, Bangalore, India	INVITED: IS-FrM1 In-situ High-Energy X-ray Scattering for Probing Colloidal Nanoparticles in Solution, <i>Yugang Sun</i> , Temple University
8:40am	EM-FrM2 Pulsed Laser Deposition of In ₂ O ₃ -SnO ₂ : From Films to Nanowires, <i>Davide Del Gaudio</i> , <i>C. Reese, C. Boone, S. Yarlagadda, J.T. Heron,</i> University of Michigan, Ann Arbor; <i>I. Shalish,</i> Ben-Gurion University of the Negev, Beersheba, Israel; <i>R.S. Goldman,</i> University of Michigan, Ann Arbor	Invited talk continues.
9:00am	EM-FrM3 ZnSnN ₂ : Band Gap Engineering Through Cation Disorder, R. Makin, Western Michigan University; N. Senabulya, J.P. Mathis, R. Clarke, University of Michigan; T. Veal, University of Liverpool; Steven Durbin, Western Michigan University	INVITED: IS-FrM3 Microfluidics Applied to Ultrafast Spectroscopy, Adrien Chauvet, University of Sheffield, UK
9:20am	EM-FrM4 Role of Single Dopants in Inter-Band Current Enhancement of Nano-pn Tunnel Diodes: An Atomistic Study, Manoharan Muruganathan, Japan Advanced Institute of Science and Technology, Japan; D. Moraru, M. Tabe, Research Institute of Electronics, Shizuoka University; H. Mizuta, Japan Advanced Institute of Science and Technology, Japan	Invited talk continues.
9:40am	EM-FrM5 CVD growth of Hexagonal Boron Nitride Films on Cu-Ni Alloys, Karthik Sridhara, Texas A&M University; B.N. Feigelson, J.K. Hite, V. Anderson, A. Nath, F. Kub, US Naval Research Laboratory; L.O. Nyakiti, Texas A&M University Galveston	IS-FrM5 Adsorbate-Induced Structural Changes Precious Metal Nano Catalysts, <i>Zheng Lu</i> , <i>Y. Lei</i> , University of Alabama in Huntsville
10:00am	EM-FrM6 p-GaAs/AlGaAs Heterostructures with a Current Blocking Barrier for Mid-infrared Detection, <i>Dilip Chauhan</i> , <i>A.G.U. Perera</i> , Georgia State University; <i>L.H. Li</i> , <i>L. Chen</i> , <i>E.H. Linfield</i> , University of Leeds, United Kingdom	IS-FrM6 Understanding the Role of Atmospheric Surface Adsorbates on the Chemical Reactivity of Zirconium Hydroxide Nanopowders using Operando Vibrational Spectroscopy, Robert Balow, NRC/NRL Postdoctoral Fellow; W. Gordon, Edgewood Chemical Biological Center; D.E. Barlow, Naval Research Laboratory; I. Iordanov, C. Knox, Edgewood Chemical Biological Center; V. Bermudez, J. Lundin, J. Wynne, Naval Research Laboratory; G.W. Peterson, C. Karwacki, Edgewood Chemical Biological Center; P.E. Pehrsson, Naval Research Laboratory
10:20am	EM-FrM7 SSI-LEDs - 20,000 Hrs of Lifetime and Failure Mechanism Study, <i>Yue Kuo</i> , <i>S. Zhang</i> , Texas A&M University	IS-FrM7 In Situ Molecular Characterization of the Solid-Electrolyte Interface on Lithium Metal Anode, Y. Zhou, Xiaofei Yu, R. Cao, W. Xu, M. Su, Z. Xu, D.R. Baer, C. Wang, Z. Zhu, Pacific Northwest National Laboratory
10:40am		IS-FrM8 In Situ DRIFTS of TiO ₂ Nanoparticles, <i>Michelle Foster</i> , University of Massachusetts, Boston
11:00am		IS-FrM9 In situ Characterization of Green Rust Synthesized in Ionic Liquids by Liquid ToF-SIMS and SALVI, <i>Juan Yao</i> , <i>X. Sui</i> , <i>D. Lao</i> , <i>J. Weisenfeld</i> , <i>Y. Zhou</i> , <i>S. Nune</i> , <i>D. Heldebrant</i> , <i>Z. Zhu</i> , <i>XY. Yu</i> , Pacific Northwest National Laboratory
11:20am		IS-FrM10 Direct Observation of the Growth and Dissolution Process of SnO ₂ Nanowires, <i>Bethany Hudak</i> , YJ. Chang, University of Kentucky; L.F. Allard, Oak Ridge National Laboratory; B.S. Guiton, University of Kentucky
11:40am		IS-FrM11 Probing Glyoxal Aqueous Surface Chemistry by In Situ Molecular Imaging, <i>Fei Zhang</i> , <i>Y. Zhou</i> , <i>X. Sui</i> , Pacific Northwest National Laboratory; <i>J. Chen</i> , Shandong University; <i>Z. Zhu</i> , <i>XY. Yu</i> , Pacific Northwest National Laboratory
12:00pm		IS-FrM12 Bridging the Pressure Gap in Scanning Electron Microscopy: Imaging Charge Transport in Nanowires under Atmospheric Pressures, Ana Stevanovic, NIST CNST/ University of Maryland; A. Kolmakov, NIST/CNST; J. Velmurugan, NIST CNST/ University of Maryland; F. Yi, D. LaVAn, NIST

	MEMS and NEMS Room 102B - Session MN+MS-FrM	Surface Science Room 104E - Session SS+HC-FrM
	Radiation Effect in Emerging Micro/Nano Structures, Devices, and Systems Moderators: Michael Alles, Vanderbilt University, Philip Feng, Case Western Reserve University	Deposition and Analysis of Complex Interfaces Moderators: Bruce D. Kay, Pacific Northwest National Laboratory, Daniel Killelea, Loyola University Chicago
8:20am	MN+MS-FrM1 Radiation Effects in Emerging MEMS/NEMS Devices, <i>Jacob Calkins</i> , Defense Threat Reduction Agency	SS+HC-FrM1 A Quantitative, Experimentally Supported Model for Surface Energy (SE) as a Function of Surface Defect Density (DD): the SEDD Model - Comparison with Three Liquid Contact Angle Analysis and AFM, <i>Abijith Krishnan</i> , Arizona State University/BASIS HS Scottsdale/SiO2 Innovates LLC; <i>N.X. Herbots</i> , Arizona State University/SiO2 Innovates LLC; <i>Y.W. Pershad</i> , Arizona State University/BASIS HS Scottsdale/SiO2 Innovates LLC; <i>S.D. Whaley</i> , SiO2 Innovates LLC/Arizona State University; <i>R.J. Culbertson</i> , <i>R.B. Bennett-Kennett</i> , Arizona State University
8:40am	INVITED: MN+MS-FrM2 Effect of Top Electrode Material on Radiation-Induced Degradation of Ferroelectric Thin Films, <i>Nazanin Bassiri-Gharb</i> , <i>S.J. Brewer, C.Z. Deng, C.P. Callaway</i> , Georgia Institute of Technology; <i>M.K. Paul</i> , Woodward Academy; <i>K.J. Fisher</i> , Riverwood International Charter School; <i>J.E. Guerrier, J.L. Jones</i> , North Carolina State University; <i>R.Q. Rudy, R.G. Polcawich</i> , Army Research Laboratory; <i>E.R. Glaser, C.D. Cress</i> , Naval Research Laboratory	SS+HC-FrM2 Ab initio Analysis of Elementary Reactions during ALD Tungsten Nucleation on Selective Substrates, <i>Mariah King, G.N. Parsons,</i> North Carolina State University
9:00am	Invited talk continues.	SS+HC-FrM3 Design and Synthesis of Nanofence Cerium Oxide Coated Platinum Catalysts via Facet-selective Atomic Layer Deposition, <i>Kun Cao, J.M. Cai,</i> State Key Laboratory of Digital Manufacturing Equipment and Technology, Huazhong University of Science and Technology, China; <i>R. Chen,</i> State Key Laboratory of Digital Manufacturing Equipment and Technology, School of Mechanical Science and Engineering, School of Optical and Electronic Information, Huazhong University of Science and Technology, China
9:20am	INVITED: MN+MS-FrM4 Radiation Survivability of MEMS Microelectronic Circuits with CNT Field Emitters, Jason Amsden, E.J. Radauscher, T. von Windheim, Duke University; K.H. Gilchrist, RTI International; S.T. Di Dona, Z.E. Russell, Duke University; L.Z. Scheick, Jet Propulsion Laboratory, California Institute of Technology; J.R. Piascik, RTI International; C.B. Parker, Duke University; B.R. Stoner, RTI International; J.T. Glass, Duke University	SS+HC-FrM4 Dehydrogenation and Rehybridization of ZnTPP on Ag(100) and Ag(111), C. Ruggieri, S. Rangan, Robert Bartynski, Rutgers, the State University of New Jersey; E. Galoppini, Rutgers - Newark
9:40am	Invited talk continues.	SS+HC-FrM5 A Case Study of the SMSI Effects: CO Oxidation on the TiO _x /Pt(111) Model Surfaces, <i>Mingshu Chen, H. Li, X.F. Weng, H. Zhang, H.L. Wan,</i> Xiamen University, China
10:00am	INVITED: MN+MS-FrM6 Radiation Effects in Integrated Photonics and Nano-OptoMechanical Systems, Q. Du, Massachusetts Institute of Technology; B Li, University of Minnesota; D. Ma, A. Agarwal, Juejun Hu, Massachusetts Institute of Technology; M. Li, University of Minnesota	SS+HC-FrM6 Toluene and Benzyl Radical Formation during Deoxygenation of Phenylmethanol on Rutile TiO ₂ (110), <i>Long Chen, R.S. Smith, B.D. Kay, Z. Dohnalek,</i> Pacific Northwest National Laboratory
10:20am	Invited talk continues.	
10:40am	INVITED: MN+MS-FrM8 Radiation Effects in 2D Materials and Nano Electrical Mechanical Devices, Michael Alles, K.I. Bolotin, Vanderbilt University; A. Zettl, University of California at Berkeley; B. Homeijer, Sandia National Laboratories; J.L. Davidson, R.D. Schrimpf, R.A. Reed, R.A. Weller, D.M. Fleetwood, W. Liao, R.J. Nicholl, Vanderbilt University	
11:00am	Invited talk continues.	
11:20am	INVITED: MN+MS-FrM10 Influence of Radiation on MEMS Oscillators, Bruce Alphenaar, University of Louisville; M.L. Alles, H. Gong, Vanderbilt University; P. Deb Shurva, J.T. Lin, University of Louisville; J.L. Davidson, Vanderbilt University; S. McNamara, K. Walsh, University of Louisville; W. Liao, R.A. Reed, Vanderbilt University	
11:40am	Invited talk continues.	
12:00pm	MN+MS-FrM12 Radiation Effects on Silicon Carbide (SiC) Nanomechanical Devices, <i>Philip Feng</i> , Case Western Reserve University	

Friday Morning, November 11, 2016 161 8:20 AM

	Thin Film	
	Room 105A - Session TF-FrM	
	CVD, ALD and Film Characterization	
	Moderators: David Adams, Sandia National Laboratories,	
	Halil Akyildiz, North Carolina State University	
8·20am	TF-FrM1 Assessing the Role of Temperature and Pressure on the	
0.200111	Tungsten ALD Selectivity Window on Si/SiO ₂ Substrates, <i>Paul Lemaire</i> ,	
	G.N. Parsons, North Carolina State University	
	·	
8:40am	TF-FrM2 X-ray Absorption Spectroscopy Study of Nanocomposite Thin	
0.40aiii	Films Grown by Atomic Layer Deposition, <i>Anil Mane, S. Babar, A. Yanguas</i> -	
	Gil, Argonne National Laboratory; A. O'Mahony, Incom, Inc.; T. Wu, J.W. Elam,	
	Argonne National Laboratory	
9:00am	TF-FrM3 A Fundamental Study of Thermal Conductivity in ALD-	
3.00am	deposited Amorphous Oxide Thin Films of Varying Density, Brandon	
	<i>Piercy</i> , Georgia Institute of Technology; <i>K.E. Meyer</i> , <i>P.E. Hopkins</i> , University of	
	Virginia; M.D. Losego, Georgia Institute of Technology	
9:20am	TF-FrM4 The Development of ALD Barrier Layers for Harsh Environment	
	Applications, <i>Ankit Singh</i> , Georgia Institute of Technology; <i>A. Perrotta</i> ,	
	Eindhoven University of Technology, Netherlands; S. Graham, Georgia Institute of	
	Technology	
9:40am	TF-FrM5 Conformal CVD Growth of HfB _x C _v and HfB _x Al _v Hard Coatings	
	with Low Coefficient of Friction and High Oxidation Resistance, <i>Elham</i>	
	Mohimi, T. Ozkan, S. Babar, Z. Zhang, S. Liu, G.S. Girolami, A.A. Polycarpou,	
	J.R. Abelson, University of Illinois at Urbana Champaign	
10:00am	TF-FrM6 Chemical Vapor Deposition of Silanes for Surface Modification,	
	Brian Johnson, M.R. Linford, Brigham Young University	
10:20am	TF-FrM7 Iron CVD from Iron Pentacarbonyl: Growth Inhibition by CO	
	Dissociation and Use of Ammonia to Restore Constant Growth, P. Zhang,	
	E. Mohimi, T. Talukdar, G.S. Girolami, John Abelson, University of Illinois at Urbana	
	Champaign	
10:40am	TF-FrM8 New Insights on the Structure and Chemistry of the Tin Oxide-	
	emitter Interface in CdTe Solar Cells as revealed by Thermomechanical	
	Cleavage and Electron Spectroscopy, <i>Craig Perkins</i> , <i>C. Beall, J.M. Burst</i> ,	
	A. Kanevce, M.O. Reese, T.M. Barnes, National Renewable Energy Laboratory	
11:00am	TF-FrM9 Defect Tolerance in Methylammonium Lead Triiodide	
	Perovskite, <i>Xerxes Steirer</i> , P. Schulz, G. Teeter, V. Stevanovic, M. Yang, K. Zhu,	
	J.J. Berry, National Renewable Energy Laboratory	
11:20am	TF-FrM10 Non Uniform Deposition Rate Profile during the Growth of	
	SiO ₂ Films Deposited by Atmospheric Pressure PECVD, <i>Anna Meshkova</i> ,	
	FOM Institute DIFFER, Netherlands; F.M. Elam, S.A. Starostin, FUJIFILM Manufacturing Europe, Netherlands; M.C.M. van de Sanden, FOM Institute DIFFER,	
	Netherlands; H.W. de Vries, FOM institute DIFFER, Netherlands	
4::-		
11:40am	TF-FrM11 X-Ray Diffraction from Pseudomorphic GaAs/In _{0.3} Ga _{0.7} As	
	Superlattice High Electron Mobility Transistor Heterostructures on GaAs (001) Substrates Enhand Although: LE Avers University of Connecticut	
	(001) Substrates, Fahad Althowibi, J.E. Ayers, University of Connecticut	
12:00pm	, , , , , , , , , , , , , , , , , , , ,	
	M. Brozak, K.M. Al-Mayalee, F. Keles, T. Karabacak, University of Arkansas at Little Rock	

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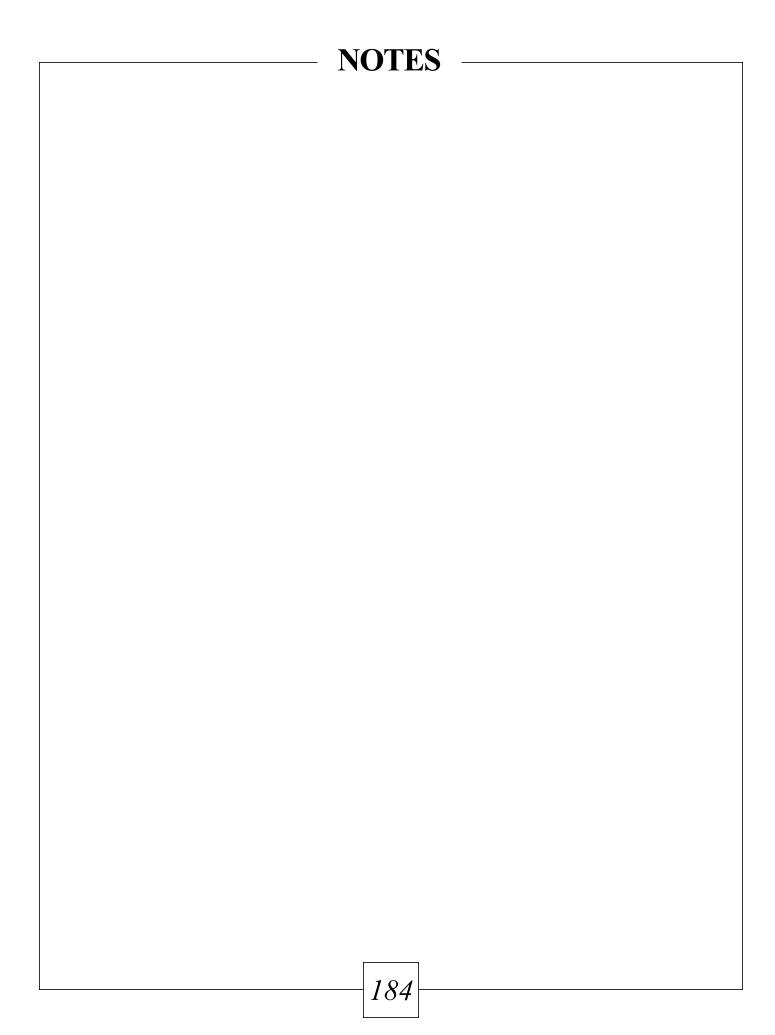
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Nov.	8	Tuesday	10am - 5:00pm
Nov.	9	Wednesday	10am - 4:30pm
Nov. 1	0	Thursday	10am - 2:30pm

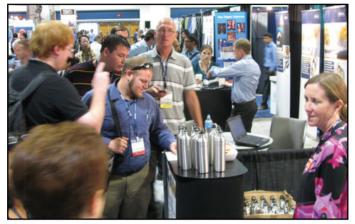








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Pfeiffer Vacuum Technology

Physical Electronics

Plasmaterials Inc

Plasma-Therm

Precision Plus Vacuum Parts

Process Materials Inc

R.D. Mathis Company

RBD Instruments. Inc.

Reynard Corporation

RF VII Inc.

RHK Technology Inc.

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PRODUCT LOCATOR

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ANALYTICAL INSTRUMENTATION		Hiden Analytical, Inc.	417
Accurion GmbH	316	McAllister Technical Services, Inc.	623
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INFICON	522	Ricor USA, Inc.	722
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BELLOWS: MINIATURE METAL	Воотн	Consulting	Воотн
BellowsTech, LLC	418	Amuneal Mfg Corporation	708
MDC Vacuum Products, LLC	208	Anderson Dahlen Vacuum	119
NiCoForm, Inc.	313	Applied Vacuum Technology, LLC.	119
UHV Design Ltd.	201	AVS - Ask the Experts - Vacuum Technology	544
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Bonding Techniques		Gencoa	409
ColdQuanta, Inc.	704	Impedans Ltd.	438
Kurt J. Lesker Company	201	ION-TOF USA	217
NIST/CNST	102	Kruss USA	510
Omley Industries, Inc.	530	McAllister Technical Services, Inc.	623
Plasmaterials, Inc.	328	NIST/CNST	102
Scientific Instrument Services, Inc.	518	PHPK Technologies	523
Solid Sealing Technology, Inc.	224	Semicore Equipment, Inc.	628
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Yugyokuen Ceramics Co., Ltd.	609	Synergy Systems Corporation	211
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CONAX TECHNOLOGIES	702	COUPLINGS: FLEXIBLE SHAFT	
Impedans Ltd.	438	Anderson Dahlen Vacuum	119
LDS Vacuum Products, Inc.	446	Applied Vacuum Technology, LLC.	119
MKS Instruments	445	BellowsTech, LLC	418
Scientific Instruments, Inc.	310	Kurt J. Lesker Company	201
Semicore Equipment, Inc.	628	MDC Vacuum Products, LLC	208
		NiCoForm, Inc.	313
CHEMICAL: SURFACE TREATING SERVICES		UHV Design Ltd.	201
NIST/CNST	102	CUSTOM VACUUM SYSTEMS	
Scientific Instrument Services, Inc.	518	A&N Corporation	441
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CHILLERS, COOLING SYSTEMS		Agilent Technologies, Vacuum Products Division	538
Ace Glass, Inc.	719	AJA International, Inc.	109
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RF VII Inc.	617	Applied Vacuum Technology, LLC.	119
Ricor USA, Inc.	722	Atlas Technologies	104
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		LDS Vacuum Products, Inc.	446
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CUSTOM VACUUM SYSTEMS	Воотн	E-BEAM GUN SWEEPS	<u>Воотн</u>
Leybold USA Inc.	622	Impedans Ltd.	438
MANTIS Deposition, Inc.	207	Kimball Physics Inc.	100
McAllister Technical Services, Inc.	623	MeiVac, Inc.	333
MDC Vacuum Products, LLC	208	Prevac sp. z o.o.	318
MeiVac, Inc.	333	Telemark	114
MKS Instruments	445		
Modion Vacuum (J.B. Anderson & Son, Inc	.) 605	E-BEAM GUNS	
Nor-Cal Products, Inc.	618	HeatWave Labs Inc.	214
NSI	705	Kimball Physics Inc.	100
OCI Vacuum Microengineering, Inc.	607	Kurt J. Lesker Company	201
Omley Industries, Inc.	530	MANTIS Deposition, Inc.	207
PHPK Technologies	523	McAllister Technical Services, Inc.	623
Prevac sp. z o.o.	318	MeiVac, Inc.	333
RF VII Inc.	617	Micro Photonics	615
RHK Technology Inc.	501	Prevac sp. z o.o.	318
Ricor USA, Inc.	722	Staib Instruments	229
Rocky Mountain Vacuum Tech., Inc.	524	Super Conductor Materials	514
Scienta Omicron, Inc.	723	Telemark	114
Semicore Equipment, Inc.	628	Yugyokuen Ceramics Co., Ltd.	609
Staib Instruments	229	rugyonaon oorannoo oon, maa	
Synergy Systems Corporation	211	ELECTROFORMING SERVICES	
cynology cycleme corporation		BellowsTech, LLC	418
DETECTORS / MULTIPLIERS		NiCoForm, Inc.	313
Extrel	341		
Hiden Analytical, Inc.	417	ELECTROFORMS: CUSTOM	
Horiba Scientific	528	BellowsTech, LLC	418
Micro Photonics	615	NiCoForm, Inc.	313
RBD Instruments, Inc.	222		
Scientific Instrument Services, Inc.	518	EMPLOYMENT SERVICES / RECRUITING	
SPECS Surface Nano Analysis, Inc.	317	AVS E-MAIL PAVILION	122
SPI Supplies	601		
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E-BEAM GUN POWER SUPPLIES		Blue Wave Semiconductors, Inc.	327
INFICON	522	Duniway Stockroom Corp.	507
International Ceramic Engineering	415	Eagle Instrument Services	516
Kimball Physics Inc.	100	Ebara Technologies	414
Kurt J. Lesker Company	201	Hine Automation	624
MANTIS Deposition, Inc.	207	LDS Vacuum Products, Inc.	446
MeiVac, Inc.	333	Pfeiffer Vacuum Technology, Inc.	406
Micro Photonics	615	RBD Instruments, Inc.	222
Prevac sp. z o.o.	318	RF VII Inc.	617
Staib Instruments	229	Semicore Equipment, Inc.	628
Telemark	114	Synergy Systems Corporation	211
. O. O. Harris		Trillium US, Inc.	308





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A&N Corporation	441	Ace Glass, Inc.	719
Ace Glass, Inc.	719	Anderson Dahlen Vacuum/ AVT	119
Anderson Dahlen Vacuum	119	CeramTec North America	315
Applied Vacuum Technology, LLC.	119	COSMOTEC, Inc.	519
Atlas Technologies	104	Hiden Analytical, Inc.	417
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CeramTec North America	315	MKS Instruments	445
Clark Industries Inc.	716	NSI	705
CONAX TECHNOLOGIES	702		
COSMOTEC, Inc.	519	GAUGES, TUBES	
Duniway Stockroom Corp.	507	A&N Corporation	441
Ebara Technologies	414	Ace Glass, Inc.	719
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INFICON	522	Clark Industries Inc.	716
International Ceramic Engineering	415	Duniway Stockroom Corp.	507
Kimball Physics Inc.	100	Edwards Vacuum	426
Kurt J. Lesker Company	201	Hiden Analytical, Inc.	417
LDS Vacuum Products, Inc.	446	INFICON	522
Leybold USA Inc.	622	Instrutech, Inc.	216
McAllister Technical Services, Inc.	623	International Ceramic Engineering	415
MDC Vacuum Products, LLC	208	Kurt J. Lesker Company	201
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Nonsequitur Technologies	407	MKS Instruments	445
Nor-Cal Products, Inc.	618	Pfeiffer Vacuum Technology, Inc.	406
Omley Industries, Inc.	530	Precision Plus Vacuum Parts	640
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Precision Plus Vacuum Parts	640	Scienta Omicron, Inc.	723
RBD Instruments, Inc.	222	Scientific Instrument Services, Inc.	518
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Thermo Scientific	223	AdValue Technology	700
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		Glas-Col, LLC	606





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HeatWave Labs Inc.	214	Duniway Stockroom Corp.	507
Hiden Analytical, Inc.	417	Hiden Analytical, Inc.	417
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Kimball Physics Inc.	100	Leybold USA Inc.	622
Kratos Analytical	301	MKS Instruments	445
Kurt J. Lesker Company	201	Pfeiffer Vacuum Technology, Inc.	406
MANTIS Deposition, Inc.	207	Ricor USA, Inc.	722
Micro Photonics	615	Scientific Instrument Services, Inc.	518
NIST/CNST	102	Shimadzu Industrial Equipment	301
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Prevac sp. z o.o.	318		
RBD Instruments, Inc.	222	LITHOGRAPHY SYSTEMS	440
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SPECS Surface Nano Analysis, Inc.	317	NIST/CNST	102
Staib Instruments	229	Scienta Omicron, Inc.	723
Telemark	114		
Yugyokuen Ceramics Co., Ltd.	609	MACHINING (BULK AND SPECIAL)	
Lou Bour Donouviou Systems/Comp		Anderson Dahlen Vacuum	119
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CeramTec North America	315	ColdQuanta, Inc.	704
COSMOTEC, Inc.	519	International Ceramic Engineering	415
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Hiden Analytical, Inc.	417	McAllister Technical Services, Inc.	623
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Semicore Equipment, Inc.	628	Applied Vacuum Technology, LLC.	119
		Atlas Technologies	104
COMMONTOR		Clark Industries Inc.	716
D SEL AOUIGIEL		International Ceramic Engineering	415
ion ion		LDS Vacuum Products, Inc.	446
ELE ORMED		McAllister Technical Services, Inc.	623
PEILS		Modion Vacuum (J.B. Anderson & Son, In	
		Precision Ceramics USA, Inc.	212
		Precision Plus Vacuum Parts	640
ASS ASS	NE CAN	Scientific Instrument Services, Inc.	518
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Magnetron Sputtering Cathodes	<u>Воотн</u>	MATERIALS TESTING	<u>Воотн</u>
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Kurt J. Lesker Company	201	CeramTec North America	315
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MeiVac, Inc.	333	Filmetrics	408
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Blue Wave Semiconductors, Inc.	327	NIST/CNST	102
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Geib Refining Corp	513	Thermo Scientific	223
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Precision Ceramics USA, Inc.	212	Hiden Analytical, Inc.	417
R.D. Mathis Company	423	Hine Automation	624
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Ovens, Vacuum	Воотн	PUMPS, EQUIPMENT, SERVICES & SUPPLIES	Воотн
Ace Glass, Inc.	719	Ace Glass, Inc.	719
Anderson Dahlen Vacuum	119	Agilent Technologies, Vacuum Products Division	538
Applied Vacuum Technology, LLC.	119	Anderson Dahlen Vacuum	119
Blue Wave Semiconductors, Inc.	327	Applied Vacuum Technology, LLC.	119
Electron Microscopy Sciences	701	Brooks Automation	337
Glas-Col, LLC	606	Clark Industries Inc.	716
HeatWave Labs Inc.	214	ColdQuanta, Inc.	704
Heraeus Noblelight America LLC	429	CS Clean Solutions, Inc.	506
Hiden Analytical, Inc.	417	Duniway Stockroom Corp.	507
Prevac sp. z o.o.	318	Eagle Instrument Services	516
Rocky Mountain Vacuum Tech., Inc.	524	Ebara Technologies	414
		Edwards Vacuum	426
PARTICLE MONITORING		Electron Microscopy Sciences	701
Horiba Scientific	528	Extrel	341
		Gamma Vacuum	424
PLANAR MAGNETRON CATHODS		Glas-Col, LLC	606
AJA International, Inc.	109	HeatWave Labs Inc.	214
Gencoa	409	Inland Vacuum Industries, Inc.	525
Kurt J. Lesker Company	201	International Ceramic Engineering	415
MeiVac, Inc.	333	Kashiyama-USA Inc.	218
NIST/CNST	102	Kurt J. Lesker Company	201
Refining Systems	306	LDS Vacuum Products, Inc.	446
Super Conductor Materials	514	Leybold USA Inc.	622
·		Modion Vacuum (J.B. Anderson & Son, Inc	.) 605
PROCESS CONTROLLERS/MONITORS		Omley Industries, Inc.	530
Blue Wave Semiconductors, Inc.	327	Pfeiffer Vacuum Technology, Inc.	406
Extrel	341	PHPK Technologies	523
Gencoa	409	Precision Plus Vacuum Parts	640
Glas-Col, LLC	606	RBD Instruments, Inc.	222
Horiba Scientific	528	Ricor USA, Inc.	722
Impedans Ltd.	438	SAES Group	541
INFICON	522	Scientific Instrument Services, Inc.	518
Kurt J. Lesker Company	201	Semicore Equipment, Inc.	628
MeiVac, Inc.	333	Shimadzu Industrial Equipment	301
MKS Instruments	445	SPI Supplies	601
Scientific Instruments, Inc.	310	Synergy Systems Corporation	211
Telemark	114	Trillium US, Inc.	308
		Vacuum Research Corporation	529
Publishers			
AIP Publishing	433	PURIFICATION SYSTEMS	
American Institute of Physics	436	CS Clean Solutions, Inc.	506
AVS Publications	430	R.D. Mathis Company	423
AVS Surface Science Spectra Data Browser	431		
CRC Press/Taylor & Francis Group	411	RAMAN SPECTROSCOPY	
IOP Publishing, Inc.	517	Horiba Scientific	528
Physics Today	144	NIST/CNST	102
		Renishaw, Inc.	111
		Shimadzu Scientific Instruments	301
		Thermo Scientific	223





RECRUITER/JOB PLACEMENT/CAREER SERVICES	Воотн	SPECTROMETER ACCESSORIES	Воотн
American Institute of Physics	436	CeramTec North America	315
American Vacuum Society	138	COSMOTEC, Inc.	519
Intel Corporation	236	Extrel	341
Micron Technology, Inc.	137	Hiden Analytical, Inc.	417
		Horiba Scientific	528
RF Systems/Generators/Power Supplies		RBD Instruments, Inc.	222
Extrel	341	Ricor USA, Inc.	722
Impedans Ltd.	438	SAES Group	541
International Ceramic Engineering	415	Scientific Instrument Services, Inc.	518
Kurt J. Lesker Company	201	Shimadzu Industrial Equipment	301
MANTIS Deposition, Inc.	207	Thermo Scientific	223
MeiVac, Inc.	333		
Micro Photonics	615	Sputtering Deposition System	
MKS Instruments	445	AJA International, Inc.	109
Modion Vacuum (J.B. Anderson & Son, Inc.)	605	Blue Wave Semiconductors, Inc.	327
RF VII Inc.	617	Brooks Automation	337
Semicore Equipment, Inc.	628	CeramTec North America	315
SPI Supplies	601	COSMOTEC, Inc.	519
T&C Power Conversion, Inc.	233	Electron Microscopy Sciences	701
TDK-Lambda Americas	515	Hiden Analytical, Inc.	417
		Impedans Ltd.	438
SAMPLE MANIPULATION & HEATING		International Ceramic Engineering	415
AdValue Technology	700	Intlvac Thin Film	331
Anderson Dahlen Vacuum/AVT	119	Kurt J. Lesker Company	201
Blue Wave Semiconductors, Inc.	327	Leybold USA Inc.	622
Glas-Col, LLC	606	MANTIS Deposition, Inc.	207
International Ceramic Engineering	415	McAllister Technical Services, Inc.	623
Kurt J. Lesker Company	201	MDC Vacuum Products, LLC	208
McAllister Technical Services, Inc.	623	MeiVac, Inc.	333
MDC Vacuum Products, LLC	208	Micro Photonics	615
UHV Design Ltd.	201	NIST/CNST	102
		Nor-Cal Products, Inc.	618
SCANNING PROBE MICROSCOPY SYSTEMS		RF VII Inc.	617
Asylum Research an Oxford Instruments Company	322	Ricor USA, Inc.	722
ION-TOF USA	217	Rocky Mountain Vacuum Tech., Inc.	524
Prevac sp. z o.o.	318	Scienta Omicron, Inc.	723
RHK Technology Inc.	501	Semicore Equipment, Inc.	628
Ricor USA, Inc.	722	SPECS Surface Nano Analysis, Inc.	317
Scienta Omicron, Inc.	723	SPI Supplies	601
Sigma Surface Science GmbH	207		
SPECS Surface Nano Analysis, Inc.	317	TEMPERATURE SENSORS	
		Ace Glass, Inc.	719
SOFTWARE		CONAX TECHNOLOGIES	702
Ace Glass, Inc.	719		
Impedans Ltd.	438		
MKS Instruments	445		
RBD Instruments, Inc.	222		
Scientific Instrument Services, Inc.	518		
Surface Analysis Consulting	231		
Tech-X Corporation	226_		
	—— <i>,</i>	200	





THICKNESS MONITORS/MEASUREMENT	<u>Воотн</u> 441	ToF SIMS INSTRUMENTS
A&N Corporation		Hiden Analytical, Inc. ION-TOF USA
Accurion GmbH	316	
Filmetrics	408	Physical Electronics
Hiden Analytical, Inc.	417	SPECS Surface Nano Analysis, Inc.
Horiba Scientific	528	
INFICON	522	TUBING/PIPING/BELLOWS ASSEMBLIES
J.A. Woollam Co., Inc.	307	A&N Corporation
Kurt J. Lesker Company	201	AdValue Technology
Micro Photonics	615	Anderson Dahlen Vacuum
NIST/CNST	102	Applied Vacuum Technology, LLC.
Prevac sp. z o.o.	318	Atlas Technologies
RBD Instruments, Inc.	222	BellowsTech, LLC
SPI Supplies	601	Duniway Stockroom Corp.
Telemark	114	Ebara Technologies
		International Ceramic Engineering
Turn Fu w Va cum Coating		LDS Vacuum Products, Inc.
THIN FILM VACUUM COATING	700	MDC Vacuum Products, LLC
AdValue Technology	700	MKS Instruments
Blue Wave Semiconductors, Inc.	327	NiCoForm, Inc.
CeramTec North America	315	Nor-Cal Products, Inc.
ColdQuanta, Inc.	704	NSI
COSMOTEC, Inc.	519	Omley Industries, Inc.
Electron Microscopy Sciences	701	Scientific Instrument Services, Inc.
Gencoa	409	UHV Design Ltd.
Hiden Analytical, Inc.	417	_
Hine Automation	624	Vacuum Research Corporation
Impedans Ltd.	438	11// 1/10
Intlvac Thin Film	331	UV VIS
Kurt J. Lesker Company	201	Accurion GmbH
Leybold USA Inc.	622	AdValue Technology
MANTIS Deposition, Inc.	207	Horiba Scientific
MDC Vacuum Products, LLC	208	Shimadzu Scientific Instruments
Micro Photonics	615	Thermo Scientific
NIST/CNST	102	orce Microscopy D
Nor-Cal Products, Inc.	618	o innovative research Park
OCI Vacuum Microengineering, Inc.	607	(A)
Prevac sp. z o.o.	318	kAFM.com SYSTEM
RBD Instruments, Inc.	222	
RF VII Inc.	617	
Ricor USA, Inc.	722	
Rocky Mountain Vacuum Tech., Inc.	524	
Scienta Omicron, Inc.	723	
SPECS Surface Nano Analysis, Inc.	317	
SPI Supplies	601	
·	514	II.
Super Conductor Materials		
Telemark	114	
Ultratech/Cambridge NanoTech	603	





VACUUM SYSTEM ACCESSORIES	Воотн	Vacuu	M System Accessories	Воотн
A&N Corporation	441		ky Mountain Vacuum Tech., Inc.	524
Ace Glass, Inc.	719	SAE	S Group	541
Agilent Technologies, Vacuum Products Division	538	Scie	ntific Instrument Services, Inc.	518
Anderson Dahlen Vacuum	119	Sem	nicore Equipment, Inc.	628
Applied Vacuum Technology, LLC.	119		d Sealing Technology, Inc.	224
Atlas Technologies	104		Supplies	601
BellowsTech, LLC	418		o Instruments	229
Blue Wave Semiconductors, Inc.	327	Syn	ergy Systems Corporation	211
Brooks Automation	337	•	mark	114
CeramTec North America	315		um US, Inc.	308
Clark Industries Inc.	716		Components	323
ColdQuanta, Inc.	704		/ Design Ltd.	201
COSMOTEC, Inc.	519		uum Research Corporation	529
CS Clean Solutions, Inc.	506		yokuen Ceramics Co., Ltd.	609
Duniway Stockroom Corp.	507	•		
Ebara Technologies	414		M SYSTEM REPLACEMENT PARTS	740
Edwards Vacuum	426		Glass, Inc.	719
Extrel	341		ent Technologies, Vacuum Products Division	538
Glas-Col, LLC	606		erson Dahlen Vacuum	119
HeatWave Labs Inc.	214		ied Vacuum Technology, LLC.	119
Heraeus Noblelight America LLC	429		s Technologies	104
•	417		owsTech, LLC	418
Hiden Analytical, Inc. Hine Automation	624		Wave Semiconductors, Inc.	327
			oks Automation	337
Huntington Mechanical Labs	311	Cera	amTec North America	315
HVA, LLC	215	Clar	k Industries Inc.	716
INFICON	522	COS	SMOTEC, Inc.	519
Inland Vacuum Industries, Inc.	525	Eba	ra Technologies	414
Instrutech, Inc.	216	Edw	ards Vacuum	426
International Ceramic Engineering	415	Extr	el	341
Kimball Physics Inc.	100	Hea	tWave Labs Inc.	214
Kurt J. Lesker Company	201	Hine	Automation	624
LDS Vacuum Products, Inc.	446	Hun	tington Mechanical Labs	311
Leybold USA Inc.	622		national Ceramic Engineering	415
McAllister Technical Services, Inc.	623		Vacuum Products, Inc.	446
MDC Vacuum Products, LLC	208		C Vacuum Products, LLC	208
Micro Photonics	615		o Photonics	615
MKS Instruments	445		ion Vacuum (J.B. Anderson & Son, Inc.)	605
Modion Vacuum (J.B. Anderson & Son, Inc.)	605		oForm, Inc.	313
NiCoForm, Inc.	313		Cal Products, Inc.	618
Nonsequitur Technologies	407		cision Plus Vacuum Parts	640
Nor-Cal Products, Inc.	618		/ac sp. z o.o.	318
Omley Industries, Inc.	530		. Mathis Company	423
Pfeiffer Vacuum Technology, Inc.	406		Instruments, Inc.	222
PHPK Technologies	523		VII Inc.	617
Precision Plus Vacuum Parts	640		S Group	541
Prevac sp. z o.o.	318		·	
R.D. Mathis Company	423		ntific Instrument Services, Inc.	518
RBD Instruments, Inc.	222	•	ergy Systems Corporation	211
RF VII Inc.	617		um US, Inc.	308
RHK Technology Inc.	501		Components	323
Ricor USA, Inc.	722	UH\	/ Design Ltd.	201
TRIOUT GOTT, IIIO.		202		





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VALVES	Воотн
A&N Corporation	441
Agilent Technologies, Vacuum Products Division	538
Anderson Dahlen Vacuum/AVT	119
Duniway Stockroom Corp.	507
Ebara Technologies	414
Edwards Vacuum	426
Hiden Analytical, Inc.	417
Huntington Mechanical Labs	311
HVA, LLC	215
International Ceramic Engineering	415
Kurt J. Lesker Company	201
LDS Vacuum Products, Inc.	446
Leybold USA Inc.	622
McAllister Technical Services, Inc.	623
MDC Vacuum Products, LLC	208
MeiVac, Inc.	333
MKS Instruments	445
Nor-Cal Products, Inc.	618
Pfeiffer Vacuum Technology, Inc.	406
PHPK Technologies	523
Precision Plus Vacuum Parts	640
Scientific Instrument Services, Inc.	518
Trillium US, Inc.	308
Vacuum Research Corporation	529
VAT	201
K-RAY PHOTOELECTRON SPECTROMETERS	
CeramTec North America	315
COSMOTEC, Inc.	519
Kratos Analytical	301
NIST/CNST	102
Physical Electronics	101
Prevac sp. z o.o.	318
RBD Instruments, Inc.	222

Ricor USA, Inc.

Thermo Scientific

Scienta Omicron, Inc.

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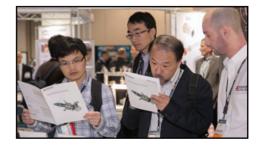
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AVS Exhibitor Technology Sessions 800

The Exhibitor Technology Spotlight Sessions are 20 minute presentations featuring exhibitor's products/ services and/or applications and are scheduled during the session breaks in the stage area of the exhibit hall. Come learn about the latest technology from the vendors exhibiting at AVS! The three best new products or services will be featured in the January issue of Physics Today.

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745

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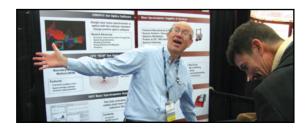
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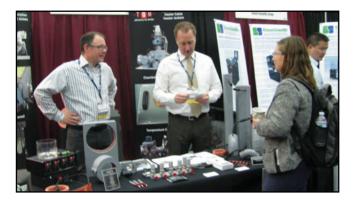
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April 24-28, 2017 San Diego, California

17th International Conference onAtomic Layer Deposition and ALE Workshop

July 15-18, 2017 Denver, Colorado

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