AVS 64th International Symposium & Exhibition

TECHNICAL & EXHIBITOR PROGRAM

OCT. 29–NOV. 3, 2017 • TAMPA CONVENTION CENTER, TAMPA, FL

EXHIBIT HOURS:

Tuesday, October 31:	*10:00 a.m. - 5:00 p.m.*
Wednesday, November 1:	*10:00 a.m. - 4:30 p.m.*
Thursday, November 2:	*10:00 a.m. - 2:30 p.m.*

AVS

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Greetings

On behalf of everyone at AVS, we welcome you to Tampa, Florida, for the AVS 64th International Symposium and Exhibition (AVS 64). We wish you a productive and exciting week filled with discussions, new insights and networking opportunities as you enjoy the technical program, exhibition and the many related events and activities.

We are very fortunate to have ***Professor Paul Weiss,*** Distinguished Professor of Chemistry & Biochemistry and of Materials Science & Engineering, UCLA, starting the week on Monday evening with his Plenary Lecture on **"Precise Chemical, Physical, and Electronic Nanoscale Contacts."** This subject is particularly appropriate because the theme of our Symposium is "Surfaces, Interfaces and Materials: A New Vision." Prof. Weiss' lecture connects to researchers across the AVS spectrum, from those doing basic research in academia, to those conducting applied research in an industrial setting. It also addresses many of the questions in our sessions encompassing this theme which include, "Properties of 2D Materials including Electronic, Magnetic, Mechanical, Optical, and Thermal Properties;" "Beyond Traditional Surface Analysis: Pushing the Limits Engineering a Paradigm Shift in Control of Microbes and Fouling;" "Materials for Quantum Information Bridging Gaps in Heterogeneously-Catalyzed Reactions;" "Novel Magnetic Order at Interfaces Surfaces and Interfaces in Micro- and Nano-Systems Nanotechnology for Renewable Energy;" "Frontiers of Photoelectron Spectroscopy in Studies of Surface and Interfacial Processes with Variable Depth Probe, High Spatial or Temporal Resolution;" "New Challenges and Opportunities in Surface Engineering;" "New Imaging and Spectroscopy Methodologies;" "Organic/Inorganic Surfaces and Interfaces Membranes and Materials for Food/Water;" and "Processing Industry Needs/Research Opportunities in Thin Film Technology." We are sure that you will find new insights and knowledge as you enjoy these sessions.

In addition, our Program will include a number of special features. For example, the Plasma Science and Technology Division will have a special all-invited session commemorating the Life and Career of Harold Winters. On Wednesday afternoon there will be a special session titled "History and Future of Materials, Surfaces and Interfaces." This special all-invited session will begin with Joe Greene speaking on the "The History of Materials." Joe is the first scientist to win the prestigious George Sarton Award for Science History given by the History of Science Society. We will then take a look at what's to come with talks given by the future stars of AVS. The Biomaterial Interfaces Division is also celebrating both the 70th Birthday of Michael Grunze and the 65th Birthday of Dave Castner with special sessions. Finally, we shall also feature programming on cutting edge topical areas. Focus Topics that will be featured at this meeting include 2D Materials; Actinides and Rare Earths; Fundamental Discoveries in Heterogeneous Catalysis; Advanced Ion Microscopy; Novel Trends in Synchrotron and FEL-Based Analysis; Plasma Processing for Biomedical Applications; Scanning Probe Microscopy; Spectroscopic Ellipsometry; Sustainability; Tandem MS; and Tribology.

The result is an exciting program that has ~130 sessions, ~1000 talks and ~250 invited speakers complemented by lively poster sessions on Tuesday and Thursday evenings. You will also be able to visit our extensive equipment and product exhibition, where the latest technology that enables cutting edge research will be displayed.

Whether this is your first time at the AVS meeting or you are returning, we invite you to take advantage of the many networking, professional development and recruitment events, as well as our new AVS Member Center. Thank you for participating in AVS 64 and being part of the AVS community!

Finally, we extend special thanks to all the dedicated volunteers and to the exceptional AVS Staff who worked long hours to create this exciting, world-class technical program and exhibition.

Enjoy the week!

Amy V. Walker
2017 Program Chair
University of Texas at Dallas

Eric A. Joseph
2017 Program Vice-Chair
IBM T.J. Watson Research Center

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New York, NY 10038
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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.

SYMPOSIUM REGISTRATION FEES

	Pre-registration (Pre-Paid)	Registration (On-Site)
Member***	$685.00	$825.00
Non-Member**	$810.00	$975.00
Student Member*** *	$225.00	$275.00
Student Non-Member** *	$265.00	$325.00
Early Career Member*** *	$345.00	$420.00
Early Career Non-Member** *	$410.00	$495.00
Technical Specialist Member	$325.00	$395.00
Technical Specialist Non-Mem	$370.00	$450.00
One Day	$405.00	$490.00
Two Day	$705.00	$875.00
Exhibits Only	FREE	FREE

Pre-registration deadline: October 9, 2017
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 2018 AVS membership – stop by the AVS Member Center – Room 18

***Full Week, Student, Early Career & Technical Specialist member registration fee INCLUDES your 2018 membership renewal dues. For more information stop by the AVS Member Center – Room 18.

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OFFICE LOCATIONS

AVS Publications	Booth #634
AVS Store	Booth #635
Presenters Preview Room	Room 1
Staff Office & Press Room	Room 3-4
Member Center	Room 18
Program Office	Room 2

Registration Area – West Registration
Exhibitor – Symposium – 5K Run

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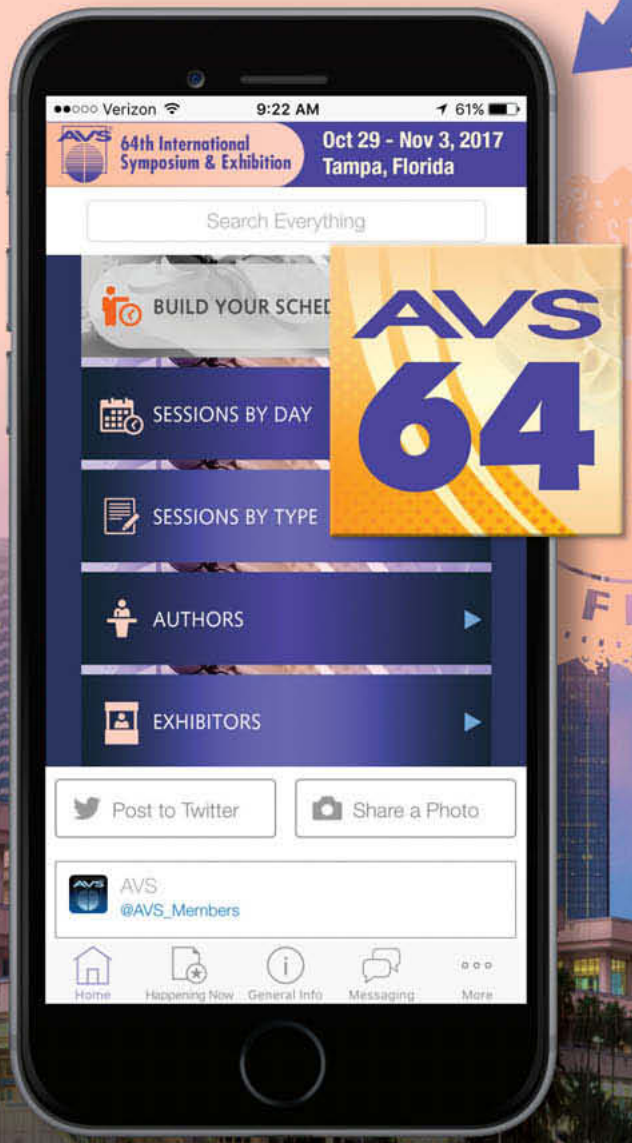

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AVS 64 Technical Program at a Glance

Room /Time	10	11	12	13	14	15	16	18	19	20
SuA										
MoM	SP+AS+NS+SS-MoM: New Imaging and Spectroscopy Method.		BI-MoM: Eng. a Paradigm Shift in Cont. of Microbes & Fouling	AS+BI+MI-MoM: Prac Surf An: Get Most of Anal. using Comp Techs.	EM+MI+TF-MoM: Growth, Elec, and Mag Prop of Heusler Compounds	2D+EM+MI+MN-MoM: Prop of 2D Mtls inc. El, Mag, Mec, Opt, Therm Prop.				TF+EM-MoM: ALD for Energy Conv, Storage, & Electrochem Processes
MoA	SP+2D+AS+NS+SS-MoA: Probing Elect and Transport Properties	MI+BI+EM+SA-MoA: Role of Chirality in Spin Transport & Mag.	PB+BI+PS-MoA: Plasma Agriculture & Processing of Biomaterials	AS+BI-MoA: Prac Surf Anal: Complex, Organic and Bio-systems	EM-MoA: Novel Materials and Devices for Electronics	2D+MI-MoA: Novel 2D Materials			NS+HC+SS-MoA: Oxides in Nano-technology	TF-MoA: Emerging Applications for ALD
MoPL										
TuM	SP+AS+MI+NS+SS-TuM: Probing Chem Reactions at the Nanoscale	MI+2D+AC+SA+SS-TuM: Novel Mag. Order at Interfaces	PB+BI+PS-TuM: Plasma Medicine	AS+MI+SS-TuM: QSA: Effective Quantitation Strategies	EM+NS-TuM: Nanostructures & Nano Films for Elec & Photo. Devices	2D+AS+SA+SP-TuM: 2D Mtls Charact incl. Microscopy & Spectroscopy			NS+EM+MI+SS-TuM: Nanoscale Electronics and Magnetism	TF-TuM: Adv. CVD and ALD Proc., ALD Mfg and Spatial-ALD
TuL										
TuA	SP+AS+MI+NS+SS-TuA: Probe-Sample Interactions	MI+2D+AC+NS-TuA: Spin-Orbit Phenom at Surf. & Interfaces	BI+AS+MI+SA-TuA: Bio from 2D to 3D: Chall. in Fab & Char & Flash Present.	AS+TF-TuA: Prob. Solving Using Surf. Anal. in the Ind. Laboratory	EM+SS-TuA: Surface & Int. Challenges in Semi. Materials and Devices	2D-TuA: Growth of 2D Materials	2D+BI+MN+SS-TuA: Surface Chem., Funct, Bio & Sensor Applications		NS+EM+MN+PS+SS-TuA: Nano-Photon, Plasmonics and Mechanics	TF-TuA: ALD Precursors and Surface Reactions
TuP										
WeM	SP+SS+TF-WeM: Probing & Manipulating Nanoscale Structure	MI+SA-WeM: Control Mag in Oxides & Multif & Chira in Spin Trans & Mag	BI+NS-WeM: Bio & Nano Fab & In Honor of Davs Castner's 65th Birthday	AS+BI+MI+NS+SA+SS-WeM: Beyond Trad. Sur. Anals: Push the Limits	EM-WeM: Charge Transport in Disordered Materials	2D+EM+SS+TF-WeM: 2D Materials Growth and Fabrication	MN+2D-WeM: 2D NEMS		NS+SS+SU-WeM: Nanotech for Renewable Energy	TF-WeM: Thin Film for Photovoltaics
WeA	TR+AS+HI+NS+SS-WeA: Molecular Origins of Friction	SE+2D+NS+SS+TF-WeA: Nanostructured Thin Films and Coatings	BI+AS-WeA: In Honor of Dave Castner's 65th Bday:Multi Bio-Surf Charact II	AS+2D+NS+SA-WeA: 2D, 3D & nD Imag of Surf, Buried Inter & Nano	EM+2D+MI+MN-WeA: Mats & Devices for Quantum Infor Processing	2D-WeA: Properties and Characteriz-ation of 2D Materials	2D+EM+MN+NS-WeA: 2D Device Physics and Applications		NS+MN+MS+SS-WeA: Nanopatt., Nanofab & 3D Nano	VT-WeA: The History & Future of Matls, Surf. and Int. (ALL INVITED)
ThM	TR+AC+TF+VT-ThM: Lubricant, Coatings, and Biotribology	SE+PS+SS-ThM: Plasma-assisted Surf Mod & Dep. Processes	BI+AS+SA-ThM: Charactiz. of Biological and Biomaterial Surfaces	AS+BI+SA+SS-ThM: Spectros-copy of the Changing Surface	EM+MI+NS+SP+SS-ThM: Phot, Optoelect-ronics, & Light Manipulation	2D+MI-ThM: Novel Quantum Phenomena in 2D Materials			NS+AS+EM+MI+SP+SS-ThM: Nanoscale Imaging and Charactization	TF+SE-ThM: Control, Characteriz., and Modeling of Thin Films I
ThA			BI+AS-ThA: Biomolecules and Biophysics at Interfaces	AS+SS-ThA: Adv in Instrum-entation and Data Analysis	EM+NS-ThA: Wide Band Gap Mtls for Elect Dev: Growth, Model & Props.	2D+AS+SS-ThA: Dopants, Defects, and Interfaces in 2D Materials		MS-ThA: Working with Government Labs and User Facilities	NS+SP+SS-ThA: Advances in Scanning Probe Microscopy	TF+MI-ThA: Control, Characteriz., and Modeling of Thin Films II
ThP										
FrM				AS+MS-FrM: Unlocking the Sample History: Forens & Failure Anal.		2D+MI+NS+SS+TF-FrM: Nanostruc incl. Hetero & Patt. of 2D Materials				TF-FrM: Self-assembled Mono & Org-anic/Inorg Int. Engineering

AVS 64 Technical Program at a Glance

21	22	23	24	25	5 & 6	7 & 8	9	Ballroom B	Central Hall	West Hall
	BP-SuA: Plen– In Honor of M. Grunze's 70th Bday: Shift in Cont of Mic & Fouling									
PS+AS+SE-MoM: Atmospheric Pressure Plasmas	AC+MI+SA+SU-MoM: Mag, Com, & Super in Act & Rare Earths	PS+AS-MoM: Plasma Processing of Challenging Materials	MN+BI+NS-MoM: Feature Session: Large Scale Integ. of Nanosensors	SS+AS+MI-MoM: Organic/Inorganic Surfaces and Interfaces	TM+AS-MoM: New Instrument-ation Featuring Tandem MS	VT+MN-MoM: Progress with Measurement in Vacuum	EL+AS+EM+TF-MoM: App of SE for the Char. of TF & Nanostructs.			
	AC+AS+SA+SU-MoA: Chem & Physics of Actinides and Rare Earths	PS+AS+SS-MoA: Plasma Surface Interactions	MN+EM+NS-MoA: Nano Opto Systems/ Multiscale Nanomanufact.	SS+AS+HC-MoA: Surface Science for Energy and the Environment	TM-MoA: Apps in Mass Spectrometry Imaging using Tandem MS	VT-MoA: Mat. Outgassing, Adsorption/ Desorption and XHV	EL+AS+EM-MoA: Spect Ellip: Novel Apps & Theo Approaches			
								PLS-MoPL: AVS Plenary: Precise Chemical, Physical, & Elect Nanoscale Contacts		
	AC+AS+SA-TuM: Nuc. Power, Forens, & Other Applications	PS-TuM: Advanced FEOL/Gate Etching	MN+BI+EM+SS+TR-TuM: Mic: Relays to RF/ Surf in Micro- & Nano- Syst.	SS+HC-TuM: Control Mech of Surface Chemical Reactions	SU+AC+MI+MS-TuM: Critical Materials and Energy Sustainability	VT-TuM: Large Vacuum Systems	SA+MI-TuM: Over the Temp & Spat Lmts of XRay Scat Mds for In-Situ Anal			EW-TuM: Exhibitor Technology Spotlight
										EW-TuL: Exhibitor Technology Spotlight
	AC+MI+SA+SU-TuA: Actinide and Rare Earth Theory	PS+SS-TuA: Sci. of Plas. & Surf: Career of Harold Winters (ALL INVITED)		HC+SS-TuA: Adv in Theo Models & Sim of Heterogen Cat. Reactions	SU+2D+MS+NS-TuA: Membranes, Thin Films, and Sensors	VT+MN-TuA: Pumping	SA+AS+HC+SS-TuA: Frontiers of Photoelectron Spectroscopy			EW-TuA: Exhibitor Technology Spotlight Session
									Poster Sessions: AC, BI, EL, MI, MN, PS, SA, SP, SS, VT	
TF+EM+MI-WeM: Thin Films for Micro-electronics	PS+NS+SS-WeM: Plasma Proc. for Nanomatls. & Nanoparticles	PS-WeM: Advanced BEOL/ Interconnect Etching	HC+NS+SS-WeM: Nano Surf. Struct. in Hetero-Catal. Reactions	SS-WeM: Deposition and Growth at Surfaces	SU+AS+EM+MS-WeM: Piezo, Thermoelec, & Super-conductors	VT-WeM: Trans & Ultraclean Systs, Particle Control, and History	SA+2D+AC+MI-WeM: Rec Adv of Diff/Scatt & Spect Meth for Corr & 2D Mtls			EW-WeM: Exhibitor Technology Spotlight Session
	PS+SS+TF-WeA: Plasma Deposition	PS-WeA: Modeling of Plasmas	HC+SA+SS-WeA: Bridging Gaps in Hetero-Catal Reactions	SS+HC+NS-WeA: Dynamical Processes at Surfaces	MS+AS-WeA: Adv Surf, Int, & Struct. Charac for Hi Volume Manufacturing	HI-WeA: Emerging Ion Sources and Optics	SA+AS+HC+SS-WeA: In Situ & Oper Char of Inter React. in & Elec Devices			
TF-ThM: Area-selective Dep & Infiltration Growth Methods	PS-ThM: Plasma Sources	PS+NS+SS+TF-ThM: Atomic Layer Etching I	HC+SA+SS-ThM: Mechs & React. Paths in Heter. Catal. Reactions	SS+EM+HC+MI-ThM: Oxides: Structures and Reactions	MS-ThM: Additive and Other Novel Manufacturing Techniques	HI+BI+NS+TR-ThM: Advanced Ion Microscopy Applications	SA+AC+MI-ThM: Front in Prob Props & Dyn of Nano & Cor Spectros			
TF+MI+NS-ThA: ALD and Nano-structures	PS+VT-ThA: Plasma Diagnostics, Sensors and Control	PS+TF-ThA: Plasma Enhanced ALD	HC+SS-ThA: Combined Ex. & Theor Expl. of the Dyn. of Het. Cat. React	SS+AS+EM-ThA: Semiconductor Surfaces		HI+NS+TR-ThA: Novel Beam Induced Surf Anal & Nano-Pattern	VT-ThA: Surface Science for Accelerators			
									Poster Sessions 2D, AS, EM, HC, HI, MS, NS, SE, TF,TR	
		PS+NS+SS+TF-FrM: Atomic Layer Etching II	SS+HC-FrM: Recent Adv. in the Chemistry and Physics of Interfaces							

DIVISION, GROUP, & FOCUS TOPIC CHAIRS & CHAMPIONS

Robert Franz
Advanced Surface Engineering (SE)

Tony Ohlhausen
Applied Surface Science (AS)

Axel Rosenhahn
Biomaterial Interfaces & Biomater Plenary (BI/BP)

Michael Filler
Electronic Materials & Photonics (EM)

Wayne Hiebert
MEMS/NEMS

Sushma Kotru
MEMS/NEMS

Valeria Lauter
Magnetic Interfaces & Nanostructures (MI)

Bridget Rogers
Manufacturing Science & Technology (MS)

Stephane Evoy and Robert Ilic
Nanometer-scale Science & Technology (NS)

Steven Vitale
Plasma Science & Technology (PS)

Bruce Koel
Surface Science (SS)

Jesse Jur
Thin Films (TF)

Martin Wüest and Gerardo Brucker
Vacuum Technology (VT)

Ivan Oleynik and Daniel Gunlycke
2D Materials

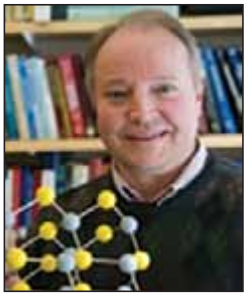
Dan Killelea and Ashleigh Baber
Fundamental Discoveries in Heterogeneous Catalysis (HC)

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

DIVISION, GROUP, & FOCUS TOPIC CHAIRS & CHAMPIONS


Olivier Renault and Zahid Hussain
Novel Trends in Synchrotron and FEL-Based Anaylsis (SA)

David Shuh
Actinides and Rare Earths (AC)

Lynnette Madsen and Robert Lad
Sustainability (SU)


Rick Livengood
Advanced Ion Microscopy (HI)



Tino Hofmann, Alain Diebold, Shiyuan Liu and Stefan Zollner
Spectroscopic Ellipsometry (EL)

Deborah O'Connell
Plasma Processing for Biomedical Applications (PB)

An-Ping Li
Scanning Probe Microscopy (SP)


Melissa Passarelli and Chris Anderton
Tandem Mass Spectrometry (TM)


David Schall and Michael Chandross
Tribology (TR)

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Chair: Rosenhahn, Axel, Ruhr-University Bochum, Germany

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Tischler, Joseph, U.S. Naval Research Laboratory
Tsai, Wilman, Taiwan Semiconductor Manufacturing Company (TSMC)
Vitale, Steven, MIT Lincoln Laboratory

Fundamental Discoveries in Heterogeneous Catalysis
Co-Chair: Baber, Ashleigh, James Madison University
Co-Chair: Killelea, Daniel, Loyola University Chicago
Chen, Donna, University of South Carolina
Jackson, Bret, University of Massachusetts–Amherst
Kimmel, Greg, Pacific Northwest National Laboratory
Koel, Bruce, Princeton University
Utz, Arthur, Tufts University

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Chair: Lauter, Valeria, Oak Ridge National Laboratory
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GENERAL INFORMATION

AVS 64 Mobile App!

The AVS 64 Event App allows users to build their personal daily schedule, receive reminders and updates, engage and network with peers, find what they are looking for, take notes, bookmark, and filter, synchronize across all of devices, and access the conference program, schedule, or animated maps without WiFi! Simply download the app at: https://www.avs.org/Symposium/Mobile-app. To login, please enter your Registration ID and Last Name to access messaging, enable the synchronization of notes, favorites, and scheduled items between devices and the online planner. Please contact AVS64app@avs.org should you need any assistance using the App. You can also stop by the Registration desk with any app questions and be sure to visit the Member Center for a Mobile App demo on Monday, October 30th, at 8:30 a.m.

Wi-Fi Login

Wi-Fi is available throughout the Convention Center

SSID: AVS
Username: AVS64
Password: Tampa

***** Username and Password are case sensitive *****

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 #AVS64 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 64 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 2017 EVENTS

Welcome Mixer for Attendees & Exhibitors

Welcome Mixer will take place on Monday, October 30, from 6:30 p.m.–8:00 p.m on the Riverwalk at the Tampa Convention Center. 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 Member Center – Room #18

The AVS Member Center will showcase membership benefits, professional development activities, diversity and educational events, and provide networking opportunities to all attendees throughout the week. It will be a one-stop-shop, where attendees can stop in at any time to participate in our scheduled events, ask questions or to give us your MyAVS story. 2017 Members, remember to bring your membership card to receive a special gift!

AVS Store – Booth #635

Official AVS logo items including graphic tees and other merchandise will be available for purchase throughout the week.

AVS Career Center – Booth #132

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 #634

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

Art Zone – Ghoulish Art Gallery & Pumpkin Contest – Booth #731

See the entries into the 2017 art and pumpkin contest and vote for your favorites. Winners will take home cash prizes! To enter the contest, stop by the Staff Office (Room 3-4) 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 #739

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 #335

The AVS Vacuum Technology Division is hosting an Ask The Experts (ATE) booth which will offer a special open forum to discuss and help solve vacuum related issues. Are you experiencing: Puttering Pumps? Garbled Gauges? Spurious Species? Come and Ask the Experts!

Students and Early Career Members

The Professional Leadership is sponsoring special events/session at the Member Center Room 18. Please see the Member Center Agenda for more information.

Special Events Booths

Visit the special events booths for special treats and giveaways.

Internet Access E-mail Pavilion

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 9, 2017** (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 65 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.
- A $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 2018 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 2018 membership will take effect on January 1, 2018. Any questions, see Angela Klink at the AVS Member Center (Room 18).

Manuscript Publication Information

Journal of Vacuum Science & Technology A & B

Biointer*phases*

Authors are invited to submit an article to *JVST A*, *JVST B* or Biointer*phases* 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 12, 2018. You can choose either *JVST A*, *JVST B* or Biointer*phases* 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 64 Special Issue."** You can find easy to use templates and instructions for authors at http://avs.scitation.org/jva/authors/manuscript, http://avs.scitation.org/jvb/authors/manuscript and http://avs.scitation.org/bip/authors/manuscript

For more information, stop by the AVS Publications Booth 634 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 nonmember registration fee, you will receive a complimentary AVS electronic membership for 2018. For more information, stop by the AVS Member Center 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.

Photo Policy

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.

GENERAL INFORMATION

Videos and Photos 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.

***Those who do not comply with the AVS Recording Equipment/Photo policy may be asked to leave the premises.**

Additional Notes for Presenters

AVS will provide Windows laptop computers running Windows 10 Pro and MS Office 2013, screens, microphones, and projectors in all session rooms, as well as an HDMI connection from podium to projector. We encourage you to use the system and to test your presentation on our equipment in our Presenter's Preview Room #1 at the Tampa Convention Center 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 AVS-provided 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, wide format screens. The projector is expected to be compatible with both PCs and MACs; however, please bring any necessary adapters/dongles as well as a copy of your presentation on a flash drive as a back-up

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, 2017; Closes: October 5, 2017)*

Hotel	Room Rates	Parking
Tampa Marriott Waterside Hotel & Marina (Headquarters) 700 South Florida Ave. Tampa, FL 33602	Single/Double: $199* Wireless: Complimentary in Guest Room *Government Rates Available	Parking: $28 Valet
Embassy Suites Tampa Downtown 513 South Florida Ave. Tampa, FL 33602	Single/Double: $200* (includes breakfast) Wireless: Complimentary in Guest Room *Government Rates Available	Parking: $24 Valet
Westin Tampa Harbour Island 725 South Harbour Island Blvd. Tampa, FL 33602 Nashville, TN 37201	Single/Double: $185	Parking: $26 Valet $10 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@experient-inc.comuntil 11:00 pm EST on October 5, 2017. Please contact the hotel directly after October 13, 2017, for all cancellations and changes. Please do not call the hotel prior to October 13, 2017, as the hotel may not have record of your reservation.

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, 2017. Reservations cancelled AFTER 5:00 p.m. EST on September 1, 2017, 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 5, 2017. Please contact the hotel directly after October 13, 2017, for all cancellations and changes. Please do not call the hotel prior to October 13, 2017, as the hotel may not have record of your reservation.

FLASH NETWORKING SESSIONS

BIOMATERIAL INTERFACES DIVISION, Tuesday, October 31, 2017, 6:00 pm-6:30 pm, Room 12

6:00 pm	**BI-TuP2** Dynamic Field Testing of Fouling Release Coatings by a Rotating Disk System, **JULIAN KOC**, K.A. NOLTE, Ruhr-University Bochum, Germany; A. STEPHENS, Florida Institute of Technology; M.P. SCHULTZ, United States Naval Academy; G. SWAIN, K. HUNSUCKER, Florida Institute of Technology; A. ROSENHAHN, Ruhr-University Bochum, Germany
6:04 pm	**BI-TuP3** Bioinspired Vascularized Polymers for Controlled Drug Delivery, **KAYLA MARQUIS**, A. WEBBER, C. HOWELL, University of Maine
6:08 pm	**BI-TuP5** *In Vitro* Degradation Performance and Increased Biological Response of a Surface Modified Mg-Al-Zn Alloy, **MICHAEL MELIA**, D.C. FLORIAN, J.R. SCULLY, J.M. FITZ-GERALD, University of Virginia
6:12 pm	**BI-TuP6** Interactions between Single Molecules and Surfaces, **CHRISTINE KLINGER**, TU Bergakademie Freiberg, Germany; L. MORENO-OSTERTAG, MPI for Iron Research, Germany; C. WEBER, P. SCHILLER, M. VALTINER, TU Bergakademie Freiberg, Germany
6:16 pm	**BI-TuP7** Proton Transfers Involved in Melanin Biosynthesis: Binding of Cysteine to Dopaquinone Investigated by Density Functional Theory based Calculation, **RYO KISHIDA**, Osaka University, Japan
6:20 pm	**BI-TuP10** Interferometry: A New Way to Study Corrosion at Confined Interfaces, **CLAUDIA MEROLA**, H.-W. CHENG, Max Planck Institute for Iron Research, Germany; M. VALTINER, University of Freiberg, Germany
6:30 pm	**BIOMATERIAL INTERFACES POSTER SESSION, TUESDAY, OCTOBER 31ST, 6:30-8:30 PM, CENTRAL HALL**

VACUUM TECHNOLOGY DIVISION, Tuesday, October 31, 2017, 6:00-6:30 pm, Room 7 & 8

6:00 pm	**VT-TuP1** Ion-Cathode Bombardment in a DC Deuterium Glow Discharge for High-Density Deuterium Cluster Formation in Metals, **ERIK ZIEHM**, G.H. MILEY, University of Illinois at Urbana-Champaign
6:03 pm	**VT-TuP2** Low-cost Device Fabrication and Vacuum Packaging for Energy Efficient Field Emission Lighting, **SUSHMA SHRINIVASAN**, C.E. HUNT, University of California - Davis
6:06 pm	**VT-TuP3** High Precision Measurement Of Tube Conductance From Pressure Decay Curve, **TIM VERBOVŠEK**, B. ŠETINA BATIČ, J. ŠETINA, Institute of Metals and Technology, Slovenia
6:09 pm	**VT-TuP4** Using a High Vacuum Equipment Trainer (HVET) System for Hands-on Learning, **DEL SMITH**, N. LOUWAGIE, Normandale Community College
6:12 pm	**VT-TuP5** Advanced Metal Sealing Solutions for Critical Industry Applications, **RYAN MCCALL**, Technetics Group
6:15 pm	**VT-TuP6** Development of the Residual Gas Analysis for Large Air Tight Packages, **YUSUKE NISHIKAWA**, Advanced Technology R&D Center Mitsubishi Electric Corp., Japan; M. KINUGAWA, Advanced Technology R&D Center Mitsubishi Electric Corp.
6:18 pm	**VT-TuP7** ARIEL RIB Transport line Vacuum System, **GEOFFREY HODGSON**, TRIUMF, Canada
6:21 pm	**VT-TuP8** Operational Regime of 2 million L/s Cryobox Pump on Tri Alpha Energy's C2W Machine, **ERNESTO BARRAZA-VALDEZ**, A. VAN DRIE, Tri Alpha Energy, Inc.
6:24 pm	**VT-TuP9** NEG Coating of 6mm ID Copper Beam Pipes, **SOL OMOLAYO**, Lawrence Berkeley National Lab
6:30 pm	**VACUUM TECHNOLOGY POSTER SESSION, TUESDAY, OCTOBER 31ST, 6:30-8:30 PM, CENTRAL HALL**

ADVANCED ION MICROSCOPY FOCUS TOPIC, Thursday, November 2, 2017, 5:40-6:00 pm, Room 7 & 8

5:40 pm	**HI-ThP1** Sub-10 nm Width High Aspect Ratio Trench Patterning of Gold Film using Helium Ion Microscope, **ETSUO MAEDA**, The University of Tokyo, Japan; T. IIJIMA, National Institute of Advanced Industrial Science and Technology (AIST), Japan; R. KOMETANI, The University of Tokyo, Japan; S. MIGITA, S. OGAWA, National Institute of Advanced Industrial Science and Technology (AIST), Japan
5:50 pm	**HI-ThP2** Optimized *ex situ* Lift Out of FIB Prepared Specimens, **LUCILLE GIANNUZZI**, EXpressLO LLC
6:30 pm	**ADVANCED ION MICROSCOPY POSTER SESSION, THURSDAY, NOVEMBER 2ND, 6:30-8:30 PM, CENTRAL HALL**

AVS MEMBER CENTER

About: The AVS Member Center will showcase membership benefits, professional development activities, diversity and educational events, and provide networking opportunities to all attendees throughout the week. It will be a one-stop-shop, where attendees can stop in at any time to participate in our scheduled events, ask questions, or just have a place where they will be made to feel welcome.

Location: Tampa Convention Center, Room 18

Agenda

Monday	
7:30 a.m.	**Member Giveaway-**Show Your 2017 Membership Card for a FREE Beverage
8:30 a.m.	**Demo Hour-**AVS Events and Activities/AVS 64 Mobile App
10:20 a.m.	**Diversity and Inclusion-**Speed Networking "Navigating a Career in Science and Engineering: Successes & Challenges"
12:15 p.m.	**Professional Development-**"Welcome to AVS Overview" *Lunch
3:40 p.m.	**Professional Development**-Student/Young Scientist Meet and Greet with Plenary Lecturer, Paul S. Weiss, Distinguished Professor of Chemistry & Biochemistry and of Materials Science & Engineering, UCLA
Tuesday	
7:00 a.m.	**Diversity and Inclusion-**"The Science of Team Science" Breakfast ***Preregistration FEE Required**
10:00 a.m.	**Demo Hour-***eSpectra: Surface Science*
12:30 p.m.	**Professional Development-**Job Information Forum and *Lunch
3:40 p.m.	**Professional Development-**Speed Networking for Young Professionals
6:45 p.m.	**Professional Development**-Electronic Materials and Photonics Division Forum: "Careers at LAM Research"
Wednesday	
7:30 a.m.	**Member Giveaway-**Show Your 2017 Membership Card for a FREE Beverage
10:00 a.m.	**Advocacy and Outreach-**"How to Interact with Your Congressional Representative" with Robert Boege, CEO of ASTRA
12:30 p.m.	**Professional Development**-Federal Funding Town Hall and *Lunch
3:40 p.m.	**Member Giveaway**-Show Your 2017 Membership Card for a FREE Beverage
Thursday	
7:30 a.m.	**Member Giveaway**-Show Your 2017 Membership Card for a FREE Beverage
10:00 a.m.	**Advocacy and Outreach**-Frontiers of Materials Research: A Decadal Survey
12:30 p.m.	**Professional Development**-*Lunch with the Editors: AVS Writer's Workshop
2:20 p.m.	**Professional Development**-Working with National Labs and User Facilities

*Lunch While Supplies Last

➲ View Descriptions

Advocacy and Outreach

Wednesday

10:00 a.m.	**Advocacy and Outreach**-"How to Interact with Your Congressional Representative" with Robert Boege, CEO of ASTRA (Room 18)

Moderator: Mikel "Micky" Holcomb, West Virginia Univ.

Our community of scientists is notoriously blasé about the need to be proactively engaged with politicians, assuming instead that our research results are sufficient to open doors and purses. This approach may have been the norm some decades ago, but is definitely a losing strategy for reversing the funding trends prevailing in recent decades, a situation that is especially acute today in view of the proposed draconian cuts in S&T funding contemplated by the new administration. A reversal can only be accomplished through community-wide effective communication and engagements with our congressional delegations. Our speaker for this special session, Robert Boege, CEO of the pro-research federation ASTRA, The Alliance for Science & Technology Research in America, and co-organizer of the annual Congressional Visits Day, has decades of experience promoting science support on the Hill. During this session, he will share the most effective means of engagement with our congressional delegates, which range from traditional communication efforts all the way to quest of becoming a trusted science resource to your delegate and staff.

Thursday

10:00 a.m.	**Advocacy and Outreach**-Frontiers of Materials Research: A Decadal Survey (Room 18)

Moderator: Bridget Rogers, Vanderbilt Univ.

The National Academies of Science, Engineering, and Medicine need **YOUR** input to determine:

- What has been the progress, achievements, and changes in the materials R&D landscape over the past decade?
- What are the key areas in materials research that have major scientific gaps or have promising investment opportunities for 2020-2030?
- What are the challenges in materials research for the next decade and how might these challenges be addressed?

The National Academies is conducting a decadal study to help guide the direction of future materials related research funding, including topics ranging from traditional materials science and engineering, to surface science and condensed matter physics). Please join members of the study committee at this Town Hall meeting to discuss future directions for materials research. The committee is coming to listen to the AVS community before writing its recommendations. This Town Hall is your opportunity to give the committee your thoughts to guide their recommendations.

MyAVS Stories

Would you like to share your AVS story with us? Stop by to record your message that relates to your experience at an AVS event or to tell an inspiring tale that is relevant to the AVS membership and you will receive a free gift.

Demos

Monday

8:30 a.m.	**Demo Hour-**AVS Events and Activities/AVS 64 Mobile App (Room 18)

Moderator: Keith Mitchell, AVS IT Systems/Web Administrator

Want to see all the really cool features available on the new AVS Events and Activities and AVS 64 Mobile App. Need help downloading the app? Stop by to find out what all the buttons can do for you. AVS is here to answer your questions.

Tuesday

10:00 a.m.	**Demo Hour-***eSpectra: Surface Science* (Room 18)

Moderator: Jessica Hoy, Journal Manager, AIP Publishing

When you search through scientific scholarly journals for specific information within the data, do you sometimes wish you didn't have to sort through multiple papers and the static figures buried within them but instead an organized set of graphs, datasets, or peak assignments? *eSpectra: Surface Science* is an online platform where you can access and plot peer-reviewed datasets of more than 4,000 spectra from 700 materials published in over 600 articles in *Surface Science Spectra (SSS)*, the definitive international journal of spectral data published by the AVS. The only interactive tool of its kind, *eSpectra* includes XPS, AES, and UPS experimental techniques. Upload and plot your own data and compare it to SSS data to better understand, analyze, and validate your results. Download and print plotted graphs, or save, share, and store your graphs and data in a secure environment. We offer both free and Premium Access options. When you register for free, you also receive a 30-day free trial of Premium Access. Learn more today at eSpectra.aip.org.

Diversity and Inclusion

Monday

10:20 a.m.	**Diversity and Inclusion-**Speed Networking "Navigating a Career in Science and Engineering: Successes & Challenges" (Room 18)

Moderators: Anthony Muscat, Univ. of Arizona and Vincent Smentkowski, General Electric ERC

Attend this one-hour event to hear different talks from members of our Divisions and Groups about the challenges they faced in their career and how a professional society helped them overcome some of the hurdles. Panel members will be from across gender, nationality and will be followed by a small group interactive Q&A session.

Tuesday

7:00 a.m.	**Diversity and Inclusion-**"The Science of Team Science" Breakfast ***Preregistration FEE Required** (Room 18)

Moderator: Anthony Muscat, Univ. of Arizona

What makes for successful research teams? Can collaboration be encouraged and enhanced? What can evidence-based research provide us in forming more effective teams? One attribute linked to team success is the percentage of women on the team. Successful teams often have higher percentages of women. Two other factors found to be important are high "social sensitivity" and "even turn taking" among group members. Come join Ellen Fisher and Jeni Cross who will discuss what they have learned working with a cross disciplinary group consisting of two sociologists, an engineer, a statistician, and a chemist to improve the effectiveness of research teams at Colorado State Univ. They will present an interactive program focused on recent research results and proactive and practical steps to help you create and nurture research teams.

Ellen Fisher, is a Professor of Chemistry and the Director of the School of Advanced Materials Discovery at Colorado State Univ. Her research interests span a wide range of topics including optical diagnostics, plasma science, and materials development across several technology sectors, as well as responsible conduct of research and the science of team science. Current projects include nanostructured gas sensors, 3D antimicrobial materials for biomedical and environmental applications, and the fundamental science behind plasma-assisted catalysis.

Jeni Cross, is a Professor of Sociology at Colorado State Univ. Her research interests include community attachment/sense of place, land use and conservation, sustainability, inter-agency collaboration, social networks, and social norms. Her current projects include research on land conservation decision-making, the built environment, energy conservation and sustainability in public schools as well as the science of team science.

Member Giveaways

Monday	
7:30 a.m.	**Member Giveaway**-Show Your 2017 Membership Card for a FREE Beverage
Wednesday	
7:30 a.m.	**Member Giveaway**-Show Your 2017 Membership Card for a FREE Beverage
3:40 p.m.	**Member Giveaway**-Show Your 2017 Membership Card for a FREE Beverage
Thursday	
7:30 a.m.	**Member Giveaway**-Show Your 2017 Membership Card for a FREE Beverage

Professional Development

Monday	
12:15 p.m.	**Professional Development**-"Welcome to AVS Overview" *Lunch (Room 18)

Moderator: Charles Eddy, Naval Research Lab and AVS President

Ever 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 through roundtable interval discussions. Table topics include:

Table 1: Membership: Dave Surman
Table 2: Education: Tim Gessert
Table 3: Publishing: Eray Aydil
Table 4: Professional Development: Susan Burkett
Table 5: Symposia and Conferences: Jim Fitz-Gerald
Table 6: Chapters Divisions and Groups: Vin Smentkowski

3:40 p.m.	**Professional Development**-Student/Young Scientist Meet and Greet with Plenary Lecturer, Paul S. Weiss, Distinguished Professor of Chemistry & Biochemistry and of Materials Science & Engineering, UCLA (Room 18)

Moderator: Amy Walker, Univ. of Texas Dallas and AVS 64 Program Chair

Have you ever wondered how to choose a problem and put all the resources together to solve it? Do you know how to make your next career move? Have you wondered what it is like to be the editor of a major journal? Please join us for a "Meet & Greet" with Prof. Paul Weiss, this year's Plenary Speaker, to talk about these questions and many more!

Tuesday

12:30 p.m. **Professional Development-**Job Information Forum and *Lunch (Room 18)

Moderators: Heather Canavan, Univ. of New Mexico and Jeffrey Fenton, Medtronic

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. Speakers include:

- Erica A. Douglas, Principal Member of Technical Staff, Microsystems Science, Technology and Components, Sandia National Laboratories
- Nick Carroll, Associate Professor, Department of Chemical and Biological Engineering Univ. of New Mexico
- Shalini Gupta, Fellow Engineer and R&D Program Manager, Northrup Grumman Corporation

3:40 p.m. **Professional Development-**Speed Networking for Young Professionals (Room 18)

Moderator: Angela Klink, AVS Member Services Administrator

Come join us for a fun networking event where you will make connections, build new relationships and mix and mingle with other young professionals in a structured group environment. During this meet up you will rotate from table to table and discuss your technical interests. After the initial meet and greet you will have the opportunity to network with those who have similar interests or career paths. Don't miss out on this chance to connect with your peers. Speakers include:

- Erica Douglas, Sandia National Laboratories (Government)
- Caitlin Howell, University of Maine (Academia)
- Jessica Hilton, RHK Technology, Inc. (Industry)
- Jason Kawasaki, Univ. of Wisconsin (Academia)

6:45 p.m. **Professional Development**-Electronic Materials and Photonics Division Forum: "Careers at LAM Research" (Room 18)

Moderator: Shalini Gupta, PhD, Fellow Engineer and R&D Program Manager, Northrup Grumman Corporation

This Forum will provide an open dialogue between an industrial liaison and young scientists and engineers. Thorsten Lill, LAM Research, VP of Etch Products, will describe Lam Research Corporation, its technical thrusts as well as challenges, its products, future directions, and career opportunities.

Wednesday

12:30 p.m. **Professional Development**-Federal Funding Town Hall and *Lunch (Room 18)

Moderator: Sean Jones, National Science Foundation

Come join us for a Town Hall discussion of some of the changes occurring at our federal agencies. Agency representatives will provide insight into research priorities and current issues, and will then field questions from the audience. You will hear from the below listed speakers who will share their perspective on the current funding climate and compare it to previous years.

- Tomasz Durakiewicz, Program Director, Division of Materials Research (DMR), National Science Foundation (NSF)
- David Rampulla, Program Director, National Institute of Biomedical Imaging and Bioengineering (NIBIB), National Institutes of Health (NIH)

Thursday

12:30 p.m. **Professional Development**-*Lunch with the Editors: AVS Writer's Workshop (Room 18)

Moderator: Susan L. Burkett, The Univ. of Alabama

This session is intended for anyone interested in how the peer-review technical publication process works. Journal editors will talk to you about what they look for in a quality manuscript submission, the peer-review process, and an average time frame from manuscript submission to article in press. This could give you an edge in getting published. Speakers include:

- Eray Aydil, Editor-in-Chief of AVS Journals
- Anna Belu, Editor, Biointer*phases*
- Phil Szuromi, Senior Editor of *Science*

2:20 p.m. **Professional Development**-Working with National Labs and User Facilities (Room 18)

Moderators: Bridget Rogers, Vanderbilt Univ. and Mikel "Micky" Holcomb, West Virginia Univ.

Researchers at government labs perform cutting edge research with really cool tools. Have you ever wondered how you might be able to work with these researchers and tools? What facilities are available that might help you with your research? What are the costs associated with using these facilities? Come to this session to learn the answers to these and many more questions. Representatives from Government Labs and User Facilities will give 20-minute presentations about research at their labs, their capabilities, facilities, and how to gain access to them. A panel discussion featuring all the presenters follows the individual presentations. Interactions will continue at the Thursday Poster session where attendees can engage in extended discussions with the presenters at their posters.

- Tackling Fundamental and Applied Problems Using EMSL Capabilities- Examples of Applying Surface and Interface Sensitive Tools to Biological Systems, C.R. Anderton, D.R. Baer, M.H Engelhard, S. Lea, Pacific Northwest National Lab
- Opportunities for Users at the Center for Nanoscale Materials, K. Carrado Gregar, Argonne National Lab
- The CNST NanoFab at NIST: Nanofabrication for US Commerce, V.K. Luciani, C. Zhang, National Institute of Standards and Technology, Center for Nanoscale Science and Technology
- Research Opportunities at the Cornell NanoScale Science and Technology Facility, M. Skvarla, Cornell NanoScale Science and Technology Facility
- SHyNE- Allowing Users to Leverage $800 Million in Nanotechnology Research, Education, Infrastructure & Facilities at Northwestern and the Univ. of Chicago, P. Duda, Univ. of Chicago, B. Meyers, Northwestern Univ.
- Science Opportunities with Soft X-Rays for Users at the Advanced Light Sources, Z. Hussain, Lawrence Berkeley National Lab
- Research Opportunities and How to Become a User at the Center for Functional Nanomaterials, S. Tenney, Brookhaven National Lab
- Opportunities at the Center for Nanophase Materials Sciences, A.P. Baddorf, Oak Ridge National Lab
- Research Opportunities at the National High Magnetic Field Laboratory, E. Palm, National High Magnetic Field Lab
- Panel Discussion

AVS 37TH ANNUAL 5K RUN

Wednesday, November 1st

2017

When: Wed., November 1, 2017, 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 Tampa Convention Center by Tuesday, October 31 to register and/or pick up your materials and schedule.

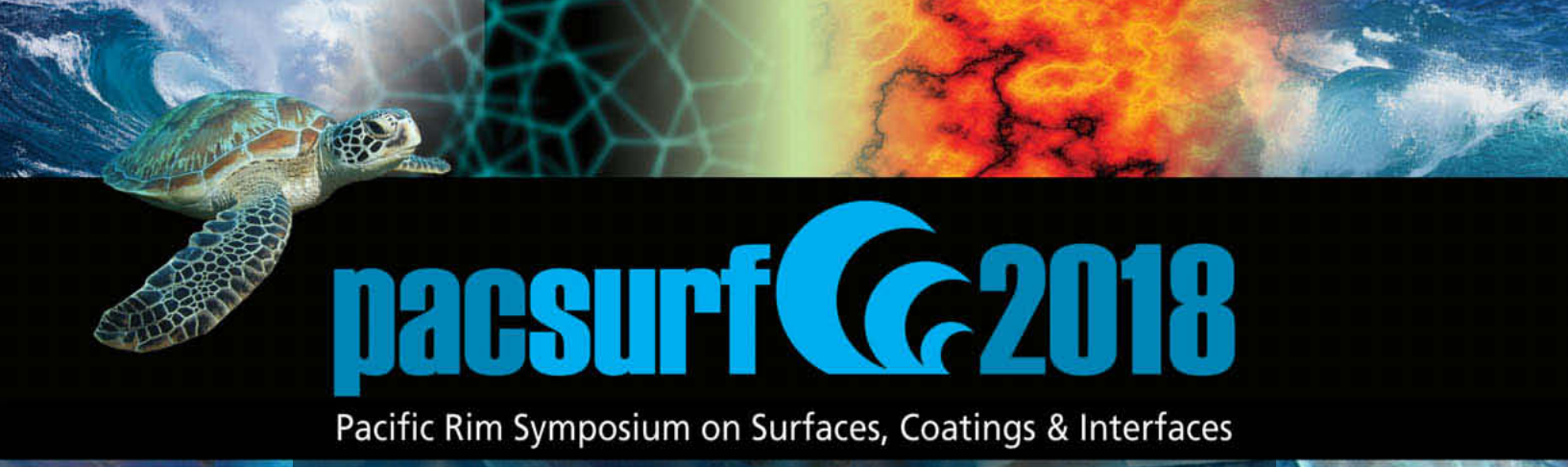
Details and Awards: This year's race will take place either along the River Walk or the Bayshore Sidewalk, both of which are within walking distance of the Tampa Convention Center. Florida Road Race Management will professionally time this year's race. The awards ceremony will be held at the Run Registration 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, October 31—make sure each team member has registered for the run.

Run Director:
Bridget Rogers, bridget_rogers@avs.org



pacsurf 2018

Pacific Rim Symposium on Surfaces, Coatings & Interfaces

SAVE THE DATE

Watch for details in early 2018 at www.pacsurf.org.

December 2-6, 2018, Waikoloa Beach, Hawaii

Waikoloa Beach Marriott Resort & Spa

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.

General Chair: Dave Castner, University of Washington, USA

Program Chair: Alberto Herrera-Gomez, CINVESTAV, Mexico

KEY DATES

Call for Abstract Details Coming May 2018

Abstract Submission Deadline: August 3, 2018

Watch for details in early 2018 at **www.pacsurf.org**.

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Stop by the AVS Member Center in Room 18
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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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AVS Apparel & Logo Items

Visit the AVS Store at **Booth 635**

Tuesday: 10:00 a.m. - 5:00 p.m.

Wednesday: 10:00 a.m. - 4:30 p.m.

Thursday: 10:00 a.m. - 2:30 p.m.

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Contact us for details at
heather@avs.org
530-896-0477

AVS 64 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 #132

Sunday	Oct. 29	2:00 p.m. – 6:00 p.m.	Career Center Registration Area (Submit Job Openings/Resumes)
Monday	Oct. 30	7:30 a.m. – 5:00 p.m.	Career Center Registration Area (Submit Job Openings/Resumes)
Tuesday	Oct. 31	10:00 a.m. – 5:00 p.m.	Exhibit Hall, Booth #132 – Job Fair Open
Wednesday	Nov. 1	10:00 a.m. – 4:30 p.m.	Exhibit Hall, Booth #132 – Job Fair Open
Thursday	Nov. 2	10:00 a.m. – 2:30 p.m.	Exhibit Hall, Booth #132 – Job Fair Open
Thursday	Nov. 2	2:30 p.m. – 5 :00 p.m.	Career Center Registration Area

EMPLOYERS		**JOB SEEKERS**
Post Job Openings	↔	Submit Resume/CV
Review Resumes	↔	Review Job Openings
Interview Onsite	↔	Interview Onsite

Biomaterial Interfaces Division Plenary Session and Reception

Sunday, October 29, 2017, 3:00–6:00 p.m., Room 22, Tampa Convention Center

The Biomaterial 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 the field of biointerfaces. The plenary has a focus on non-fouling surfaces and honors the 70th birthday of Michael Grunze and his substantial contributions in the field of protein and adhesion resistant interfaces. In his talk he will illustrate how surface functionalization can control fundamental adhesion processes, hematocompatibility, and fouling. In particular are the correlation of fundamental physical surface parameters and quantitative biological data as well as the application and the development of spectroscopic methods for in situ and in vivo investigations of biointerfaces and cells. Morgan Alexander will describe new approaches to materials discovery for biological environments, including high-throughput approaches that integrate combinatorial materials synthesis with sophisticated, stateof-the-art surface analytical measurements. Understanding these relationships is critical in the development of the biomaterials of the future and is the theme running through his group's work across a variety of biomedical application areas spanning bacterial adhesion to controlling stem cell response. Joanna Aizenberg will talk about her substantial contributions in understanding basic principles of biological architectures and the elegance with which biology solves complex problems. She uses biological principles as guidance in developing new, bio-inspired synthetic routes and nanofabrication strategies that lead to advanced materials and devices, with broad implications in fields ranging from architecture to energy efficiency to medicine. Among recent innovations are SLIPS coatings that provide non-toxic antifouling protection of surfaces. The session will close with the opportunity for further discussions at our traditional Plenary Reception.

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

Monday, October 30, 2017, 7:30 p.m., Room 20, Tampa Convention 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 David Bergsman, Stanford University, Jeffrey Chang, UCLA, Rafaiel Ovansyan, Colorado School of Mines, and Michael Stanford, University of Tennessee. 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.

SPECIAL SESSIONS/WORKSHOPS

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

Tuesday, October 31, 2017, 8:00 p.m., Florida Salon VI, Tampa Marriott Waterside Hotel & Marina

I. "J.J. Thompson's Ghost: Modern SIMS Developments Enable Interface Engineering at the Technology Forefront"

Fred Stevie, *North Carolina State University*

SIMS is one of the keystone surface analysis techniques in the labs of the world, providing unmatched speciation and sensitivity to the surface analyst. Developments in SIMS technologies continue to advance the role of the technique, extending its reach into previously inaccessible analytical research regimes, and providing more complete information from materials traditionally analyzed using SIMS. Recognizing the implications of these developments is essential to understanding the ever-expanding place of SIMS in the laboratory, and to fully deploying its analytical potential.

II. "On the Origin of the Surface Analysis Species: The Shared DNA of ASSD and ASTM-E42 in the Formation of the Symposium on Applied Surface Analysis and the Quantitative Surface Analysis Conference"

John Grant, *Surface Analysis Consulting*

Cedric Powell, *NIST*

ASSD and E42 have an intertwining history and they provided the foundation for the development of both the Symposium on Applied Surface Analysis and the topical conference on Quantitative Surface Analysis (QSA). These meetings offer a forum for the needs of researchers and analysts to solidify their understanding of the surface analysis techniques, contribute in their development, and improve the quality of research results. Having coursed through the changing trail marked out by the needs of the community, the happy (or haunting) histories of these meetings will be revealed and discussed.

III. "SESSA Unmasked"

Wolfgang Werner, *Vienna University of Technology*

Cedric Powell, *NIST*

Simulation and modeling are becoming indispensable tools throughout surface analysis, just as they have across the broad range of scientific and engineering disciplines. Simulation of Electron Spectra for Surface Analysis (SESSA) is a graphical simulation tool that gives the analyst the ability to see how the resulting photoelectron spectrum changes when the model of the surface structure is modified. SESSA includes effects of elastic scattering, and its models extend to nanomaterials structures, revealing critical surface chemistry information. The details of its development will be presented, and SESSA will be demonstrated, followed by lively discussion.

Surface Science Morton M. Traum Presentation

Thursday, November 2, 2017, 12:20 p.m., Room 25, Tampa Convention 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 Symposium. The 2017 Winner will be announced in the Traum Student Award Ceremony.

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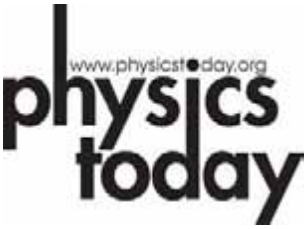

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1992 Ernst Bauer
1993 George Comsa
1994 John Yates, Jr.
1995 Gerhard Ertl
1996 Peter J. Feibelman
1997 Phaedon Avouris
1998 David E. Aspnes
1999 John H. Weaver
2000 D. Phillip Woodruff
2001 E. Ward Plummer
2002 Buddy Ratner
2003 Matthias Scheffler
2004 Rudolf M. Tromp
2005 Charles S. Fadley
2006 John C. Hemminger
2007 Jerry Tersoff
2008 Miquel Salmeron
2009 Robert J. Hamers
2010 Mark J. Kushner
2011 Wilson Ho
2012 Yves Chabal
2013 Chris G. Van de Walle
2014 Patricia A. Thiel
2015 Charles T. Campbell
2016 Maki Kawai
2017 Hans-Peter Steinrück

GAEDE-LANGMUIR AWARDEES

1978 Pierre V. Auger
1980 Daniel Alpert
1982 Alfred H. Sommer
1984 Alfred Benninghoven
1986 Rointan F. Bunshah
1988 Alfred Y. Cho
1988 John R. Arthur, Jr.
1990 Francois M. d'Heurle
1992 Russell D. Young
1994 Robert J. Celotta
1994 Daniel T. Pierce
1996 Gerald J. Lapeyre
1998 Paul D. Palmberg
2000 Gary W. Rubloff
2002 Cristoforo Benvenuti
2004 Kunio Takayanagi
2006 Leonard J. Brillson
2008 Daniel Auerbach
2010 Gerald Lucovsky
2012 Dietrich Menzel
2014 Hans-Joachim Freund
2016 Paul S. Bagus

ALBERT NERKEN AWARDEES

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

JOHN A. THORNTON MEMORIAL AWARDEES AND LECTURES

1989 Eric Kay
1990 Maurice Francombe
1991 Joseph E. Greene
1992 Thomas R. Anthony
1993 John W. Coburn
1993 Harold F. Winters
1994 David Hoffman
1995 Jan-Eric Sundgren
1997 James M.E. Harper
1999 Timothy Coutts
2001 Samuel D. Bader
2003 William D. Sproul
2005 Stan Veprek
2007 Stephen J. Pearton
2009 Frances A. Houle
2011 Vincent M. Donnelly
2013 Ivan Petrov
2015 Alfred Grill
2017 Steven George

PETER MARK AWARDEES

1980 Christopher R. Brundle
1981 Lawrence L. Kazmerski
1982 Charles M. Magee
1983 D. James Chadi
1984 Barbara J. Garrison
1985 Franz J. Himpsel
1986 Richard A. Gottscho
1987 Raymond T. Tung
1988 Jerry D. Tersoff
1989 Randall M. Feenstra
1990 Stephen M. Rossnagel
1991 William J. Kaiser
1993 Robert Hamers
1994 Marjorie Olmstead
1995 Emily Carter
1996 Brian E. Bent
1997 Brian Swartzentruber
1998 David G. Cahill
1999 Eray S. Aydil
2000 Stacey F. Bent
2001 Eli Rotenberg
2002 Rachel S. Goldman
2003 Charles H. Ahn
2004 Kathryn W. Guarini
2005 Jane P. Chang
2006 Mark C. Hersam
2007 W.M.M. Kessels
2008 Sergei Kalinin
2009 Beatriz Roldan Cuenya
2010 Arutiun Ehiasarian
2011 Mohan Sankaran
2012 E. Charles H. Sykes
2013 Daniel Gunlycke
2014 Joshua Zide
2015 Petro Maksymovych
2017 Markus Valtiner

AVS AWARD WINNERS

HONORARY MEMBERSHIP

1959 Rudy A. Koehler
1963 Benjamin B. Dayton
1981 Leonard C. Beavis
1981 N. Rey Whetten
1982 Charles B. Duke
1984 J. Roger Young
1985 Kai Siegbahn
1986 Manfred S. Kaminsky
1988 Jack H. Singleton
1991 John W. Coburn
1991 J. Lyn Provo
1992 Marsbed Hablanian
1996 Howard Patton
1997 Paul Holloway
1997 William D. Westwood
1999 Donna Bakale Sherwin
1999 James S. Murday
2000 Lawrence L. Kazmerski
2001 Robert Willis
2003 H. Frederick Dylla
2003 Gary E. McGuire
2004 Arthur O. Fuente, Jr.
2004 J.W. Rogers, Jr.
2005 Gerald Lucovsky
2006 Alvin Czanderna
2007 Paula J. Grunthaner
2008 Eric Kay
2009 Rudolf Ludeke
2009 William D. Sproul
2011 Robert A. Childs
2012 Cedric Powell
2013 David Castner
2013 Stephen M. Rossnagel
2014 John N. Russell, Jr.
2016 Dawn Bonnell

JOHN L. VOSSEN MEMORIAL AWARDEES

1997 Robert Shaner
1998 Hasan Fakhruddin
1999 Chris Ann Slye
2000 Charles J. Miltenberger
2001 Paul Lulai
2002 Toni L. Evans
2004 Jacqueline G. Kane

GEORGE T. HANYO AWARDEES

1997 Mark Engelhard
1998 David A. Lubelski
1999 Robert A. Childs
2001 John E. Bultman
2003 Ernest A. Sammann
2004 Richard E. Muller
2006 Jeffrey D. Kelley
2010 Arthur W. Ellis
2011 Jonathan Koch
2012 Percy Zahl
2013 Steven R. Blankenship
2014 Ewald E. Chaban
2015 Marc D. Landry
2016 Stanley B. Christman
2017 Mark C. Reuter

DOROTHY M. AND EARL S. HOFFMAN AWARDEES

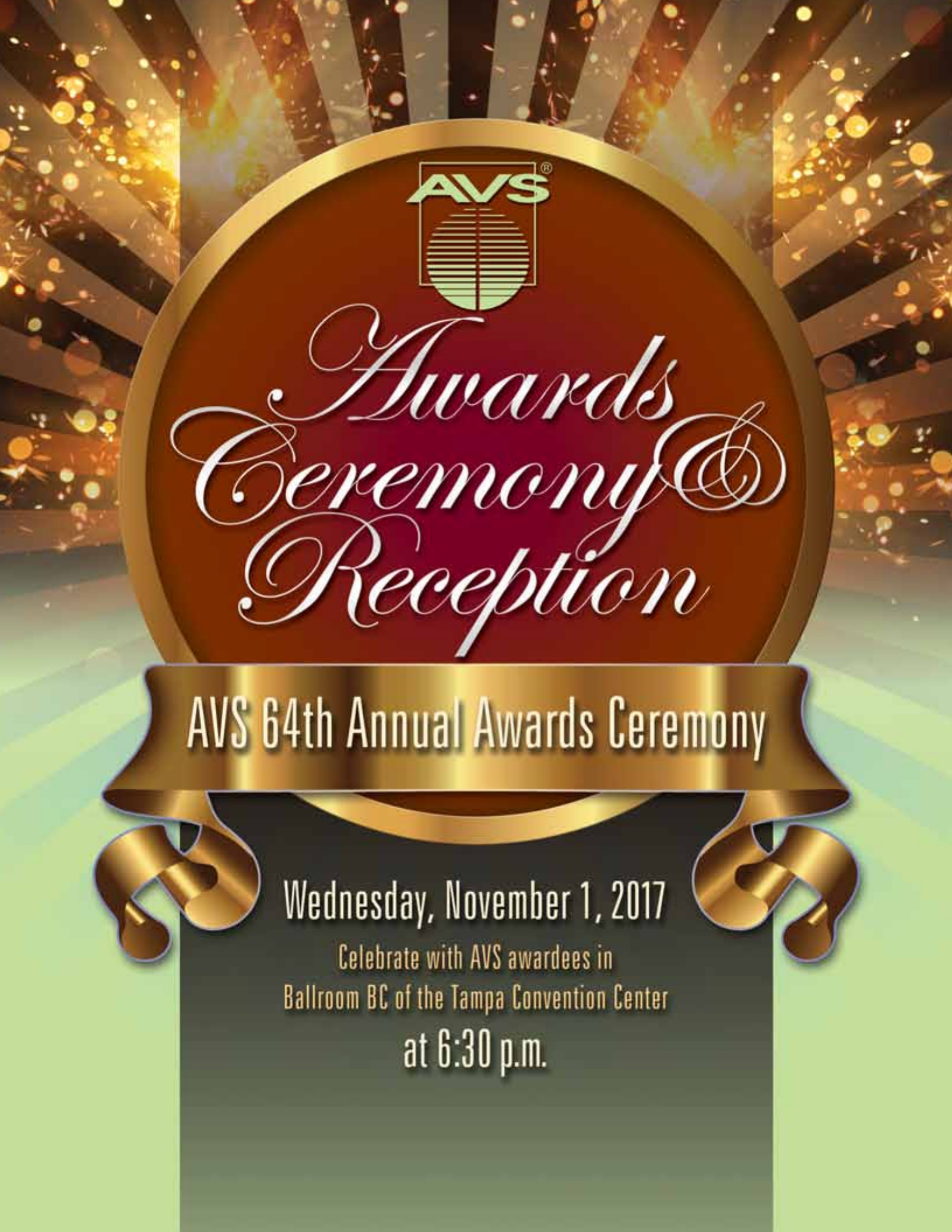
2003 Kenneth Bratland (Univ. of Illinois at Urbana-Champaign)
2004 Michael Filler (Stanford University)
2005 Michael Zellner (University of Delaware)
2006 Xingyi Deng (Harvard University)
2007 Thomas Mullen (Pennsylvania State University)
2008 Gregory Rutter (Georgia Institute of Technology)
2009 Juan Carlos Rodriguez-Reyes (University of Delaware)
2010 Esther Amstad (ETH Zurich, Switzerland)
2011 Kangkang Wang(Ohio University)
2012 Davide Sangiovanni (Linkoping University)
2013 Zhu Liang (University of Illinois at Chicago)
2014 Jingjing Qiu (University of Florida)
2015 Jiayu Wan (University of Maryland, College Park)
2016 Andrew Mannix (Northwestern University)

NELLIE YEOH WHETTEN AWARDEES

1990 Jani C. Ingram (University of Arizona)
1991 Lucia Markert (University of Illinois)
1992 Hope Michelson (IBM Almaden Research Center)
1993 Laura Tedder (University of California, San Diego)
1994 Monica Katiyar (University of Illinois)
1995 Cynthia Kelchner (Iowa State University)
1996 Tracey E. Caldwell (University of California, Davis)
1997 Catherine Labelle (Massachusetts Institute of Technology)
1998 Jennifer S. Hovis (University of Wisconsin)
1999 Nerissa Taylor (University of Illinois)
2000 Jennifer E. Gerbi (University of Illinois)
2001 Tanhong Cai (Iowa State University)
2002 Lyudmila Goncharova (Rutgers University)
2003 Meredith L. Anderson (Carnegie Mellon University)
2004 Wensha Yang (University of Wisconsin, Madison)
2005 Natalia Farkas (University of Akron)
2006 Jessica Hilton (University of Minnesota)
2007 Andrea Munro (University of Washington)
2008 Brittany Nelson-Cheeseman (University of California, Berkeley)
2009 Sarah Bishop (University of California, San Diego)
2010 Xiaoyu Wang (University of Wisconsin, Madison)
2011 Sondra Hellstrom (Stanford University)
2012 Nour Nijem (University of Texas, Dallas)
2013 Indira Seshadri (Rensselaer Polytechnic Institute)
2014 Jiechang Hou (University of Pennsylvania)
2015 Leeya Engel (Tel Aviv University)
2016 Debalaya Sarker (Indian Institute of Technology)

AVS RUSSELL AND SIGURD VARIAN AWARDEES

1983 J.S. Villarubia (Cornell University)
1984 Kenneth T.Y. Kung (MIT)
1985 Anne L. Testoni (Northwestern University)
1986 Jingguang G. Chen (University of Pittsburgh)
1987 Joanne R. Levine (Northwestern University)
1988 Christopher E. Aumann (University of Wisconsin)
1989 Brian S. Swartzentruber (University of Wisconsin)
1990 Guangquan Lu (University of California, San Diego)
1991 Michael Flatte (University of California, Santa Barbara)
1992 Rex Ramsier (University of Pittsburgh)
1993 Daniel Kelly (University of California, Santa Barbara)
1994 Britt Turkot (University of Illinois)
1995 Robert Carpick (University of California, Berkeley)
1996 Kevin Robbie (University of Alberta)
1997 Kimberly S. Turner (Cornell University)
1998 John S. Lewis, III (University of Florida)
1999 Sanjit Singh Dang (University of Illinois, Chicago)
2000 Michelle L. Steen (Colorado State University)
2001 Jianwei Dong (University of Minnesota)
2002 Wei Tan (University of Illinois)
2003 John R. Kitchin (University of Delaware)
2004 Vassil Antonov (Univ. of Illinois at Urbana-Champaign)
2005 Liam Pingree (Northwestern University)
2006 Gregory Ten Eyck (Rensselaer Polytechnic Institute)
2007 H. Lee Mosbacker (Ohio State University)
2008 Erik Wallen (Linkoping University)
2009 Sudhakar Shet (New Jersey Institute of Technology/NREL)
2010 Christine Tan (Cornell University)
2011 David A. Siegel (University of California, Berkeley)
2012 April Jewell (Tufts University)
2013 Jason Kawasaki (University of California, Santa Barbara)
2014 Deep Jariwala (Northwestern University)
2015 Andrada-Oana Mandru (Ohio University)
2016 Thomas Winkler (University of Maryland, College Park)


AVS
Awards Ceremony & Reception
AVS 64th Annual Awards Ceremony
Wednesday, November 1, 2017
Celebrate with AVS awardees in
Ballroom BC of the Tampa Convention Center
at 6:30 p.m.

AVS AWARDS

AWARDS CEREMONY & RECEPTION

The AVS Awards Ceremony will be held on Wednesday, November 1, 2017, at 6:30 p.m. in Ballrooms BC within the Tampa Convention Center to be followed immediately by an Awards Reception. This year, AVS honors the following awardees:

Hans-Peter Steinrück, Medard W. Welch Award

Steven George, John A. Thornton Memorial Award and Lecture

Markus Valtiner, Peter Mark Memorial Award

Mark C. Reuter, George T. Hanyo Award

The newly elected AVS Fellows

The 2017 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.

HANS-PETER STEINRÜCK

Medard W. Welch Award Lecture:
"Ionic Liquid Surface Science"

Tuesday, 2:20 pm, Room 9

Hans-Peter Steinrück, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany "for his pioneering studies on the properties and reactivity of the surfaces of ionic liquids employing the methods of surface science"

Hans-Peter Steinrück is Full Professor for Physical Chemistry at the Friedrich-Alexander-University Erlangen-Nürnberg (FAU) in Germany, and is investigating the chemistry and physics of surfaces since more than 30 years. He studied physics at the TU Graz, Austria (PhD: 1985), was a postdoc in Chemical Engineering at Stanford University, USA (1985–1986), and received his Habilitation at the TU München, Germany in 1992. After a sabbatical at Rutgers University/USA, he became Professor of Experimental Physics at the University of Würzburg, Germany in 1993. In 1998, he was appointed to the prestigious Chair of Physical Chemistry II at FAU and built up an active interdisciplinary and internationally visible research group with presently 25 scientific coworkers. He is involved in numerous collaborative research projects, and is Principle Investigator in the Cluster-of-Excellence *"Engineering of Advanced Materials"* at the FAU (2007–2017). From 2009–2015, he was Guest Professor at the University of Science and Technology of China (USTC) in Hefei, China. In 2016, he received a very prestigious ERC Advanced Investigator Grant.

Prof. Steinrück's track record includes more than 310 publications in peer-reviewed journals and more than 200 invited lectures at international conferences and institutions. He performs ground breaking research in the area of surface and interface science. His main interests are the development of new materials with novel electronic, geometric and chemical properties, the investigation of elementary steps of surface reactions, and the construction of advanced scientific apparatus. A large variety of experimental methods is applied, including synchrotron radiation-based photoelectron spectroscopy, scanning tunneling microscopy, and molecular beam methods. He contributed to a variety of quite different fields. In the last 10 years, his focus has been on the surface and interface properties of ionic liquids, the surface chemistry of tetrapyrroles, in situ studies of surface reactions, hydrogen storage in liquid organic molecules, and chemically modified graphene layers.

Hans-Peter Steinrück is member of the German Academy of Sciences Leopoldina, the Austrian Academy of Sciences, and Academia Europaea. He is Fellow of the American Physical Society (APS) and the American Association for the Advancement of Science (AAAS). In 2015, he received an honorary doctoral degree from the University of Szeged, Hungary.

Prof. Steinrück served the academic and scientific communities in multiple ways. At FAU, he was member of the Senate, Dean of the Faculty of Sciences II, and Vice-President. For the science community, he was chairman of the Surface Science Division of the German Physical Society, and member of the Scientific Advisory Committees of the European Synchrotron Radiation Facility (ESRF), the Berlin Storage Ring for Synchrotron Radiation (BESSY), and the Helmholtz-Zentrum Berlin (HZB). He was chairman of the "German Committee for Research with Synchrotron Radiation" and member of the "German Committee for Research with Large Scale Facilities." Since 2010, he is chairman of the Fachbeirat of the Fritz-Haber-Institute and since 2016 member of the DFG Senate Commission for Collaborative Research Centers. He also organized numerous international conferences, including the Gordon Conference "Chemical Reactions on Surfaces," and presently is Editor of *Surface Science*.

JOHN A. THORNTON MEMORIAL AWARD AND LECTURE

The John A. Thornton Memorial Award and Lecture was established in 1989 as a memorial to Dr. John A. Thornton for his devotion to science, his singular contributions to the generation and study of thin films, his effectiveness as an educator, and his unfailing humility, which won him the uncommon esteem and affections of his colleagues. It is presented to recognize outstanding research or technological innovation in the areas of interest to AVS, with emphasis on the fields of thin films, plasma processing, and related topics. The award is conferred biennially. It consists of a cash award, a plaque, and an honorary lectureship at a regular session of the International Symposium.

STEVEN GEORGE

John A. Thornton Memorial Award and Lecture: "Atomic Layer Deposition: Highlights from the Last 25 Years"

Tuesday, 5:40 pm, Room 20

Steven George, University of Colorado, "for seminal contributions to understanding, development and applications of atomic layer deposition"

Steven George is a Professor of Chemistry and Mechanical Engineering at the University of Colorado at Boulder. He received his B.S. in Chemistry from Yale University (1977) and his Ph.D. in Chemistry from the University of California at Berkeley (1983). After postdoctoral research at Caltech and Exxon Research & Development, Dr. George joined the Dept. of Chemistry at Stanford University as an Assistant Professor (1984). He then moved to the Dept. of

Chemistry at the University of Colorado at Boulder as an Associate Professor (1992) and subsequently as a Full Professor (1995). Dr. George received a joint appointment as Professor in the Dept. of Chemical Engineering (2001) and then moved his joint appointment to the Dept. of Mechanical Engineering (2013).

Dr. George and his research group have authored more than 400 publications in the areas of thin film growth and etching, surface science and physical chemistry. These publications have been cited more than 20,000 times with an h-index of 73. He has served as research advisor for 52 Ph.D. students and 28 postdoctoral research associates. He is also an inventor on 19 issued U.S. patents and 11 pending U.S. patents. Dr. George is a Fellow of the American Physical Society (1997) and the AVS (2000). He has been active in the AVS as Trustee (2007–2009), Board of Directors (2010–2012) and President (2014). He also serves as an AVS Short Course Instructor for the one-day short course on atomic layer deposition (ALD).

Dr. George is best known for his research on the understanding, development and applications of ALD. His contributions have helped define the ALD field for more than 20 years. His initial studies of Al_2O_3 ALD were foundational and Al_2O_3 ALD is now the model ALD system. He also developed many ALD systems, such as W ALD, that are used by ALD scientists today. Dr. George's studies of ALD at low temperatures opened up new applications of ALD such as ALD on polymers. He pioneered the molecular layer deposition (MLD) of hybrid organic-inorganic polymers. He also demonstrated that ALD films on polymers led to extremely effective gas diffusion barriers and ALD coatings on Li ion battery electrodes enhanced their capacity stability. His work on ALD on particles led to the creation of ALD NanoSolutions, a company co-founded by Dr. George in 2001 that is working to commercialize ALD technology. This work on ALD on particles also resulted in an R&D 100 Award for *Particle-ALD*™ (2004).

Dr. George has been a leader in the ALD community. He chaired the first AVS International Conference on ALD (ALD2001) and has been a key member of the ALD conference leadership. He received the *ALD Innovation Award* from the AVS International Conference on ALD for original work and leadership in ALD (2013). His ALD research remains on the cutting edge with the recent development of electron-enhanced ALD for ALD at room temperature. Dr. George is also working on spatial ALD and MLD for scale-up applications. In addition, he has recently developed thermal atomic layer etching (ALE) which is the "reverse of ALD." Thermal ALE uses sequential, self-limiting surface reactions to remove films with atomic layer control. Dr. George is active in the ALE community and was the co-chair of the last International ALE Workshop (ALE2017).

PETER MARK MEMORIAL AWARD

The Peter Mark Memorial Award was established in 1979 in memory of Dr. Peter Mark who served as Editor of the *Journal of Vacuum Science and Technology* from 1975 to 1979. The award is presented to a young scientist or engineer (35 years of age or under) for outstanding theoretical or experimental work, at least part of which must have been published in an AVS Journal. The award consists of a cash award, a plaque, and an honorary lectureship at a regular session of the International Symposium.

MARKUS VALTINER

Peter Mark Memorial Award Lecture:
"A Combined Experimental–Simulation Approach for Unraveling Hydrophobic Interactions at the Molecular Scale"

Thursday, 11:00 am, Room 12

Markus Valtiner, Technical University Bergakademie Freiberg, Germany, "for advancing understanding of physical and chemical mechanisms at molecular, nano- and microscales that impact adhesion and friction at electrified interfaces and for the development of novel stimuli-responsive materials "

Dr. Markus Valtiner is Full-Professor in the Chemistry and Physics Department at the Freiberg University for Mining and Technology in Freiberg, Germany. Markus received his Master with Distinction in Applied Chemistry from Vienna University of Technology in Austria in 2005. In 2008 he earned his Doctorate in Chemistry at the Max-Planck-Institut für Eisenforschung GmbH in Düsseldorf, Germany under the supervision of Prof. Guido Grundmeier and Prof. Jörg Neugebauer. This thesis work focused on correlating theory and experiment at reactive solid|liquid interfaces of ZnO single crystals. In particular, Markus studied the dissolution mechanism of ZnO(0001) using in-situ scanning probe microscopy, and simulated ZnO surface and interface structures using *ab inito* thermodynamics. For his PhD thesis he received the Otto Hahn Medal of the Max-Planck Society.

After completing his PhD with highest distinctions, Markus was awarded a Marie-Curie Outgoing Fellowship by the European Union to work as a PostDoc in the group of Jacob Israelachvili at UC Santa Barbara. During this time, his research interest focused on electrochemical interfaces and together with Jacob he pioneered the development an electrochemical surface forces apparatus (SFA) with well-defined metal surfaces for probing solid/electrolyte interface structuring in electrochemical systems. During his time at UCSB Markus also became interested in biological interfaces, smart and responsive materials, as well as molecular interactions at solid/liquid interfaces. In particular, he studied interaction forces of macroscopic hydrophobic surfaces with polymer molecules, as well as mussel-protein based glues.

After completing his PostDoc in 2012, Markus started his independent career as a research group leader at the Max-Planck Institute in Düsseldorf. In 2016 he was appointed full professor for Colloid and Interface Science at the Freiberg University for Mining and Technology. Markus research interest is now focused on the broad areas of adhesion, friction, corrosion as well as interfacial forces in biologic and inorganic materials systems. In particular, he is interested in the experimental characterization and modelling of interactions of single molecules with solid surfaces in various electrolytes. He uses AFM force spectroscopy to directly probe how various single molecules bind to well-defined surfaces, and he correlates this experimental single molecule data with simulation data. This work made substantial progress towards a detailed understanding of molecular interactions and non-equilibrium processes at hydrated model interfaces, bridging UHV based surface science with colloid and interface science. His work on single molecule surface interactions earned him an ERC starting grant in 2015 and several national research grants in Germany. Markus served as a program committee member as well as organizer for numerous conferences, and as guest editor for the journal *Biointerphases*. He has authored or coauthored over 50 peer-reviewed publications.

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, long-time 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.

MARK C. REUTER

Mark C. Reuter, IBM T. J. Watson Research Center "for designing, building, continuously improving and training users on the unique instruments that underpin the ultrahigh vacuum electron microscopy program at IBM"

Mark Reuter is an Advisory Engineer at IBM's T. J. Watson Research Center providing support and development in both the Nanoscale Materials Analysis Department and the MRAM Materials and Devices Department. He maintains a variety of custom vacuum systems, while instructing and advising staff scientists, visiting scientists, and post-doc's with their research using the systems.

Mark received a B.A. in Physics from Allegheny College in 1976 and a Ph.D. in Physics from Lehigh University in 1984. As a postdoc, also at Lehigh, he began learning vacuum technology and surface physics techniques by setting up an Ultra High Vacuum (UHV) system for Thermal Desorption Spectroscopy (TDS) and High Resolution Electron Energy Loss Spectroscopy (HREELS).

In 1986 Mark began an engineering position at IBM where he continues to enjoy employment. During the first few years he learned many skills by maintaining a UHV Medium Energy Ion Scattering (MEIS) system and adding a UHV side chamber with X-ray Photoelectron Spectroscopy (XPS) and e-beam evaporation sources for material science studies. In the next few years Mark worked closely with R. M. Tromp helping design and build IBM's first Low Energy Electron Microscope (LEEM) and two similar versions, all of which were sold to universities. These were differentially pumped systems with a UHV sample chamber with *in situ* heating. Building these UHV microscopes from scratch was a tremendous learning experience. Having done so, they had the confidence to then split-open a commercial Hitachi H9000 UHV Transmission Electron Microscope (TEM) and add a sample heating modification to the double tilt holder and additional electrical contacts for biasing. Also, through custom holes in the objective pole piece they added capillaries fed by external gases as well as an exchangeable evaporator mounted on the objective lens. Mark spent several years on these modifications helping F. M. Ross develop advanced *in situ* microscopy techniques allowing Chemical and Physical Vapor Deposition (CVD and PVD) to be conducted within a UHV-TEM. This microscope continues to be used with Ross to study nanowire growth and its applications. Working with Ross, Mark went on to set up a custom UHV system comprising Focused Ion Beam (FIB), Scanning Electron Microscope (SEM), and a four probe low temperature Scanning Tunneling Microscope (STM). In addition Mark helped Ross develop *in situ* liquid cell microscopy techniques for studying energy storage devices. Working with S. Guha, Mark designed and constructed a custom furnace for UHV CVD and used it to explore processes for silicon and silicon nanowire growth. In recent years at IBM Mark has worked in the MRAM department helping to maintain and operate sputter deposition tools, while continuing to support many of the aforementioned systems. Mark has worked closely with many IBM and visiting scientists on all of these tools and been included in many publications and patent filings.

In the summer Mark golfs. In the winter he skis. And in the evening he plays a pretty good blues harmonica.

AVS GRADUATE STUDENT AWARDS

2017 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:

David Bergsman, Stanford University
Oren Ben Dor, The Hebrew University of Jerusalem
Rachael Farber, Loyola University Chicago
Yuanwen Jiang, University of Chicago
Xiaolong Liu, Northwestern University
Tania E. Sandoval, Stanford University
Michael G. Stanford, University of Tennessee
Mackenzie Williams, University of Delaware

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.

2017 AVS FELLOWS

Eric Altman, Yale University
Arthur P. Baddorf, Oak Ridge National Laboratory
Robert Bartynski, Rutgers University
Anna M. Belu, Medtronic
Chia-Seng Chang, Academia Sinica, Taiwan
Mariadriana Creatore, Eindhoven University of Technology, The Netherlands
Zdenek Dohnalek, Pacific Northwest National Laboratory
James Fitz-Gerald, University of Virginia
Axel Hoffmann, Argonne National Laboratory
An-Ping Li, Oak Ridge National Laboratory
Kathryn G. Lloyd, DuPont Experimental Station
Lynnette Madsen, National Science Foundation
Yiping Zhao, University of Georgia
Stefan Zollner, New Mexico State University
Christian Zorman, Case Western Reserve University

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 2017 winner will be announced in the Traum Student Award Ceremony, to be held on Thursday, November 2, at 12:30 pm in Room 25 of the Tampa Convention 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	2016	Andrew Therrien

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 2 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	2016	Souvik Ghosh

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 64th 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 Bharat Jalan, University of Minnesota, as the 2017 awardee of the Paul H. Holloway Young Investigator Award. Dr. Jalan 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:

2009 Suneel Kodambaka, UCLA
2010 O. Martin Ntwaaborwa, Univ. of the Free State, South Africa
2011 Sumit Agarwal, Colorado School of Mines
2012 Franklin Tao, University of Notre Dame
2013 Per Eklund, Linköping University
2014 Andrea Illiberi, Dutch Inst for Applied Scientifc Res (TNO)
2015 Cunjian Yu, University of Houston
2016 Neil Dasgupta, University of Michigan

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
2003 Cheol-Soo Yang
2004 Qiguang Li
2005 Kiu-Yuen Tse
2006 Tracie Colburn
2006 Dirk Weber
2007 Jacob Palmer
2008 Qing Hua Wang
2009 Mehmet Baykara
2010 Farzad Behafarid
2011 Justice Alaboson
2012 David Reid
2013 Cédric Barroo
2014 Deep Jariwala
2015 Wei Bao
2016 Alma Perez-Perinno

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 2017 Awardee is Mark Hersam, Northwestern University.

Past Winners:

2001 Nancy Burnham, Worcester Polytechnic Institute
2004 Harold Craighead, Cornell University
2009 Joseph Stroscio, NIST
2010 Roland Wiesendanger, University of Hamburg
2011 Phaedon Avouris, IBM Yorktown Heights
2012 Fleming Besenbacher, Aarhus University
2013 Joseph Lyding, University of Illinois
2014 Dawn A. Bonnell, University of Pennsylvania
2015 Meyya Meyyapan, NASA Ames Research Center
2016 Ricardo Garcia, CSIC

AVS Student Activities

Did you know that 25% of AVS membership is comprised of students? You represent the future of AVS and we encourage you to take advantage of the following opportunities and services:

Student Chapters

Meet future colleagues and employers and form friendships while sharing common interests in a range of science and technology topics during various chapter activities.

Student Awards

Apply for both a **National and Divisional Level Award**. National Student Awards include **five top-level awards and multiple Graduate Research Awards**. All AVS National Student Awards are presented during the Awards Ceremony at the International Symposium and **include travel support as well as a cash award**.

Career Services

Connect with the finest job seekers and companies in physics, engineering, vacuum science, and technology using the **AVS Online Career Center** which partners with the Physics Today, American Association of Physics Teachers, American Physical Society, and IEEE Computer Society.

Attend our annual **Onsite Career Center/Mini Job Fair** at the AVS International Symposium and Exhibition and **meet with potential employers and gain interviewing skills during the conference**.

Short Courses

Broaden your knowledge and develop new job skills by attending an **AVS Short Course**. Courses offer basic and advanced training in vacuum, materials, processing, and interfaces.

AVS Publications and Technical Libraries

Delve into our **four journals that cover a variety of materials, processing, and interfaces topics**—access is easy using the online **AVS Publications Digital Library** or **iAVS**.

No time to attend a talk? Discover our newest benefit in the **AVS Technical Library, Presentations on Demand** featuring recorded talks from AVS Symposia. The Technical Library also provides access to books, monographs, and other scientific resource materials.

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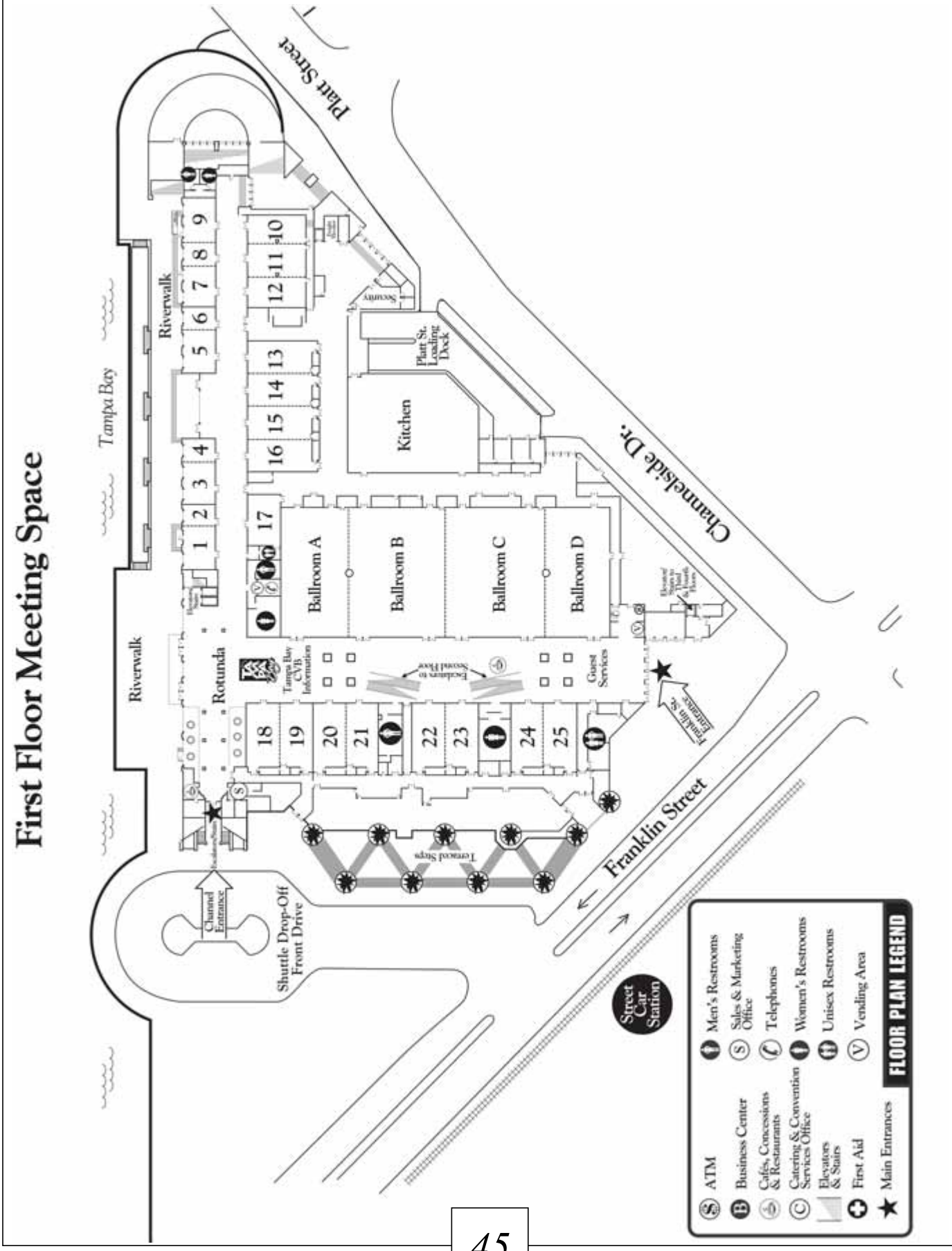

EXHIBIT HALL EVENTS

Visit the Exhibit Hall to visit the AVS 64 Exhibitors and see the most innovative technology and services available in the industry. Technology Spotlight Sessions take place during session breaks and will showcase the newest technology. A variety of other activities takes place in the exhibit hall including the AVS Career Center, Free Caricatures, Chair Massages, Raffles, E-mail Pavilion, free coffee, lunches and SO much more!

FREE EXHIBIT HALL ATTRACTIONS

AVS Career Center
Technology Spotlight Sessions
AVS Membership & Education Booth
Ask The Experts - Vacuum Technology
AVS Publications
Free Morning Coffee
Free Lunch & Afternoon Refreshments
Art Zone Display & Pumpkin Competition
Daily Raffle Drawings
AVS Store: Gifts/Souvenirs/Books and More
E-Mail Pavilion with printing capabilities
Free Caricatures & Chair Massages
Foosball Tournament

Join us !

EXHIBIT FINALE

THURSDAY, NOVEMBER 2

EVENTS:

- Free Lunch & Refreshments
- Art Contest Prize Winners
- Raffle Drawings
- Foosball Championship
- Caricatures & Chair Massage

EXHIBIT SCHEDULE

Oct. 31	Tuesday	10am - 5:00pm
Nov. 1	Wednesday	10am - 4:30pm
Nov. 2	Thursday	10am - 2:30pm

Exhibitors displaying their latest technology

Foosball Tournament

Caricatures

Media, Editors & Publications

Art Zone & Pumpkin Carving Contests

Tampa Convention Center West Hall

EXHIBITING COMPANIES

Bold listings reflect our Sponsors and Corporate Members

Booth	Company
437	AARD Technology
429	AdValue Technology
535	**Agilent Technologies, Vac. Products Div.**
407	**AIP Publishing**
310	**AJA International, Inc.**
631	**American Institute of Physics**
211	Amuneal Mfg Corporation
628	**ANCORP**
519	Anderson Dahlen-Applied Vacuum Div.
313	Applied Surface Technologies
622	Atlas Technologies
717	AVEM
335	AVS-Ask The Experts - VacTechDiv
731	AVS Art Zone / Contest
132	AVS Career Center
222	AVS Caricatures
725	AVS E-Mail Pavilion
145	AVS Exhibitor Technology Sessions
336	AVS Foosball Tournament
633	AVS Future Sites
709	AVS Massage Booth
634	AVS Publications
730	AVS Pumpkin Carving Contest
739	AVS Raffle Zone
635	AVS Store & Membership
604	BJA Magnetics
328	Brooks Automation
719	Bruker Nano Surfaces
206	Centrotherm Clean Solutions
609	Coastal Instruments
406	COSMOTEC, Inc.
435	CS Clean Solutions, Inc.
715	DataPhysics Instruments GmbH
210	Delong America, Inc.
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417	**Duniway Stockroom Corp.**
716	Ebara Technologies
423	**Edwards Vacuum**
536	**Elsevier BV**
624	Extrel
219	Ferrovac GmbH
311	Film Sense
334	**Gamma Vacuum**
703	General Ruby & Sapphire Company
315	HeatWave Labs Inc.
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714	HHV Ltd.
322	Hiden Analytical, Inc.

Booth	Company
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705	Innovative Vacuum Solutions Inc.
701	Instrument Technology Research Center, NARLabs
514	InstruTech, Inc.
230	Intel Corporation
611	International Ceramic Engineering
316	**ION-TOF USA**
332	IOP Publishing, Inc.
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629	Kashiyama-USA Inc.
505	**Kimball Physics Inc.**
317	KP Technology Ltd.
434	**Kratos Analytical, Inc.**
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301	**Kurt J. Lesker Company**
722	LDS Vacuum Products, Inc.
430	Leybold USA Inc.
601	MANTIS-SIGMA
212	McAllister Technical Services, Inc.
700	McVac Manufacturing
223	MDC Vacuum Products, LLC
702	MeiVac, Inc.
600	Micro Photonics
131	Micron Technology, Inc.
523	**MKS Instruments**
208	MPF Products Inc
411	N2 Biomedical
215	National Institute of Standards and Technology
530	neaspec GmbH
217	NIST / CNST
506	Nonsequitur Technologies
616	**Nor-Cal Products, Inc.**
130	NRL/ASEE Postdoctoral Fellowship Program
431	Omley Industries, Inc.
728	Osaka Vacuum USA, Inc.
209	Park Systems, Inc.
618	**Pfeiffer Vacuum Technology, Inc.**
308	**PHPK Technologies**
201	**Physical Electronics**

Booth	Company
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216	Phytron, Inc.
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710	Pie Scientific
331	Precision Ceramics USA, Inc.
325	**Precision Plus Vacuum Parts**
323	Prevac sp. z o.o.
512	PVD Products
422	**R.D. Mathis Company**
319	**RBD Instruments, Inc.**
615	Refining Systems
428	**RF VII Inc.**
401	**RHK Technology Inc.**
605	Ricor-USA, Inc.
518	**SAES Group**
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413	**UC Components**
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511	Veeco Instruments
412	YES CLEAN ENERGY LLC
532	Yugyokuen Ceramics Co., Ltd.
213	zeroK NanoTech

Bold Listings: Corporate Members
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EXHIBITOR TECHNOLOGY SPOTLIGHT SESSIONS

Stage Area of Exhibit Hall (Booth 145) • Tampa 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, OCTOBER 31

10:20am MKS Instruments, Inc.
Development of a Novel Single Cold Cathode Ionization Gauge with Operation from High Vacuum to Atmosphere using Advanced Manufacturing Techniques
Presenter: Dave Kelly

10:40am Thermo Fisher Scientific
New Developments from Thermo Fisher Scientific
Presenter: Timothy Nunney

12:40pm Physical Electronics
Design and Application of a New Laboratory-Based Scanning XPS/HAXPES Instrument
Presenter: John Newman

1:00pm Kratos Analytical
Application of X-ray Photoelectron Spectroscopy for the Characterisation of Biomaterials
Presenter: Jonathan Counsell

1:20pm Prevac
Advanced Photoelectron Spectroscopies Setup as a Key for Current Research
Presenter: Lukasz Walczak

1:40pm AARD
Advanced Ion Beam Techniques for Thin Films and Structuring
Presenter: Marcus Demmler

2:00pm Ion-Tof USA
From Surface Spectrometry to 3D Analysis - Latest Trends and Instrumentation for TOF-SIMS
Presenter: Nathan Havercroft

TUESDAY, OCTOBER 31

4:00pm AIP Publishing
eSpectra: Surface Science
Presenter: Jessica Hoy

WEDNESDAY, NOVEMBER 1

10:20am Agilent Technologies - Session 1 of 2
State-of-the-art Pump Technologies for Clean High and Ultra-high Vacuum
Presenter: Jim Ramsden

10:40am Agilent Technologies - Session 2 of 2
State-of-the-art Pump Technologies for Clean High and Ultra-high Vacuum
Presenter: Jim Ramsden

ASK THE EXPERTS !!!!!!

Troubleshooting Mysteries? Contamination Problems?
System Configuration Questions? Just want to make your vacuum better?

What's the best gauge for the 1e-10 Torr range ?	How do I detect a Virtual Leak ?	What is my RGA telling me?	How do I control/eliminate water outgassing?

Are you having problems with troubleshooting, process control? 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 335.

Who are we? We are volunteers from the AVS Vacuum Technology Division and our goals are to understand the intricacies of vacuum technology and to help you solve problems.

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... maybe you can even provide us with some new tips and suggestions!!

Receive a UL Listed Power Bank just for stopping by! While they last !

Ask the Experts!... Exhibit Hall Booth #335

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

Exhibit Hall • Booth 335

SYMPOSIUM PLENARY LECTURE

"Precise Chemical, Physical, and Electronic Nanoscale Contacts"

Monday, October 30, 2017, 5:30 p.m., Ballroom B
Tampa Convention Center

Dr. Paul S. Weiss

Distinguished Professor of Chemistry & Biochemistry
and Materials Science & Engineering, UCLA

The physical, electronic, mechanical, and chemical connections that materials make to one another and to the outside world are critical. Just as the properties and applications of conventional semiconductor devices depend on these contacts, so do nanomaterials, many nanoscale measurements, and devices of the future. I discuss the important roles that these contacts can play in preserving key transport and other properties. Initial nanoscale connections and measurements guide the path to future opportunities and challenges ahead. Band alignment and minimally disruptive connections are both targets and can be characterized in both experiment and theory. I discuss our initial forays into this area in a number of materials systems.

Paul S. Weiss holds a UC Presidential Chair and is a distinguished professor of chemistry & biochemistry and of materials science & engineering at UCLA. He received his SB and SM degrees from MIT and his PhD from UC Berkeley. He was a postdoctoral member of technical staff at Bell Laboratories and a visiting scientist at IBM Almaden Research Center. He is the founding and current editor-in-chief of the leading nanoscience and nanotechnology journal *ACS Nano*.

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 130 oral sessions, more than 1,000 talks, over 250 invited speakers and two evenings of poster sessions. Start filling your week's schedule with must-see, career enhancing sessions.

EXHIBITS

The exhibition showcases equipment and instrumentation used to perform cutting edge research. 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, October 31–November 2. There are many attractions in the exhibit hall, including Technology Spotlight Sessions, Career Center, Vacuum Technology Division's "Ask The Experts," the AVS Store, E-Mail Pavilion, Massage Station, Free Caricatures, Ghoulish Art Gallery including Art & Pumpkin Contests, free morning coffee, refreshments, lunches, daily raffles and much more!

SHORT COURSES

The Tampa Convention 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) focuses on all topics related to engineering the properties and functionalities of surfaces of all kinds. Both fundamental scientific and application-oriented contributions presenting experimental and/or theoretical and computational results are included. The session "Plasma-assisted Surface Modification and Deposition Processes" presents contributions aimed at understanding or further developing techniques and processes to alter the appearance of surfaces or to synthesise thin films and coatings on surfaces of interest. Two invited talks will address reactive high power impact magnetron sputtering and the plasma surface engineering of biomaterials. Topics related to analysis, characterisation and application of such modified surfaces and new and advanced characterisation techniques will be covered by the session "Nanostructured Thin Films and Coatings." An invited talk will present the optimized synthesis of TiB_2 coatings using different deposition techniques. The frequent application of coatings to protect the underlying surface from environmental influences will be addressed by a second invited talk on adaptive ceramic coatings for extreme environments. All invited lectures will review and highlight the state-of-the-art and latest findings in the respective topic. Academic, industry and national laboratory scientists, technicians and especially junior researchers and PhD students from various disciplines and all countries contribute to our diverse and interesting technical program including two oral sessions and one poster session.

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 fundamentals supporting the measurement science. We also encourage contributions from nontraditional techniques such as Atom Probe Tomography. 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-64, we are supporting several topics outside of ASSD: Tribology (TR), Spectroscopic Ellipsometry (EL), Scanning Probe Microscopy (SP), Novel Trends in Synchrotron and FEL-Based Analysis (SA), Actinides and Rare Earths (AC), Biointerfaces (BI), Nanoscale Imaging (NS) and Tandem MS (TM). Several special sessions this year are designed to showcase industrial and novel applications of surface analysis.

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 and cells at materials interfaces, and interactions between biomolecules, is being driven by the rapid growth in environmental and biomedical research and the role these applications play in the fields of biology, biotechnology, antifouling technology, 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: Engineering a paradigm shift in control of microbes and fouling, Bio from 2D to 3D: Challenges in fabrication and characterization, Biomaterials and Nanomaterials Fabrication, Characterization of Biological and Biomaterial Surfaces, Biomolecules and Biophysics at interfaces, and a session in honor of Dave Castner's 65th birthday on multitechnique bio-surface characterization. On Tuesday evening we will feature FLASH Oral Presentations, with an accompanying Networking Session involving associated traditional poster presentations. Prizes will be awarded for the best FLASH/Poster Presentation.

BIOMATERIALS 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 the field of biointerfaces. The plenary has a focus on non-fouling surfaces and honors the 70th birthday of Michael Grunze and his substantial contributions in the field of protein and adhesion resistant interfaces. In his talk he will illustrate how surface functionalization can control fundamental adhesion processes, hematocompatibility, and fouling. In particular are the correlation of fundamental physical surface parameters and quantitative biological data as well as the application and the development of spectroscopic methods for in situ and in vivo investigations of biointerfaces and cells. Morgan Alexander will describe new approaches to materials discovery for biological environments, including high-throughput approaches that integrate combinatorial materials synthesis with sophisticated, state-of-the-art surface analytical measurements. Understanding these relationships is critical in the development of the biomaterials of the future and is the theme running through his group's work across a variety of biomedical application areas spanning bacterial adhesion to controlling stem cell response. Joanna Aizenberg will talk about her substantial contributions in understanding basic principles of biological architectures and the elegance with which biology solves complex problems. She uses biological principles as guidance in

developing new, bio-inspired synthetic routes and nanofabrication strategies that lead to advanced materials and devices, with broad implications in fields ranging from architecture to energy efficiency to medicine. Among recent innovations are SLIPS coatings that provide non-toxic antifouling protection of surfaces. The session will close with the opportunity for further discussions at our traditional Plenary Reception.

ELECTRONIC MATERIALS AND PHOTONICS

The Electronic Materials and Photonics Division (EMPD) encompasses the science and engineering of materials, interfaces, and processing that advance electronic, photonic, or optoelectronic device technologies. AVS 64 will include sessions on emerging topics such as quantum information, valleytronic devices, nanophotonics, and phase change and ultrawide band gap materials, in addition to core topics such as computing beyond Moore's Law, III-V materials and their heterostructures, Heusler compounds, nanostructures, and more. EMPD consistently attracts distinguished invited speakers from around the globe. We will host over 15 invited speakers this year including: Tony Heinz (Stanford University), Teri Odom (Northwestern University), David Awschalom (University of Chicago), Robert Wallace (University of Texas at Dallas), Efrat Lifschitz (Technion), Arka Majumdar (University of Washington), Masataka Higashiwaki (National Institute of Information and Communications Technology), and Paul McIntyre (Stanford University). A new poster competition will be held at AVS 64 with winning presenters receiving a $500 cash prize. The EMPD industrial forum will also return and provide an intimate opportunity for students to meet with company representatives.

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 Nanostructure (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. This year we focus on challenges in additive manufacturing, advanced characterization and metrology challenges for IC manufacturing, and sustainable manufacturing. Our session on working with government labs and user facilities enables representatives of these labs and user facilities to present the capabilities of their organizations and how the AVS attendees can work with them.

MEMS AND NEMS

The AVS64 MN program opens the symposium with a feature session on the frontiers of large scale integration and nanosensors: from gas sensing to mass spectrometry and from integrated neural probes to cilia inspired smart microfluidics (with dancing cancer cells to boot). Our Monday afternoon optomechanics session highlights RF acoustic interaction with nano-optomechanics, touches on in situ microring "trimming," and finishes with nano-manufactured metamaterials from plates to conducting inks to nanoimprinted micro caps. On Tuesday morning, we welcome an industry presentation that brings high power relays to the MEMS regime, watch an electron-phonon waltz in acoustoelectrics, and see a MEMS that just keeps on ringing after turning off power. Surfaces finishes this session with self-assembled synthetic nanostructures and heat-sustained plastrons (underwater surface bubbles). On Wednesday morning, we delve into 2D NEMS with highlights of ion radiation effects, strain engineered sensors, parametric amplification, and evidence for directional thermal conductivity. Two student award nominees also speak at this session. Our Tuesday night poster session showcases two more student award nominee presentations. Highlights from our partner sessions include a Tuesday afternoon optomechanics session from NS and a MEMS scale vacuum pump from VT (first thing TuA). In general, the MN program highlights the latest advances in broad areas of micro/nanoelectromechanical systems (MEMS/NEMS). It covers novel materials, processes, devices, and emerging functions and applications of MEMS/NEMS, within various areas including manufacturing, energy, communication, and healthcare. The ability to manipulate and engineer mechanical structures in emerging low-dimensional materials creates intriguing possibilities of integrating these devices with existing fluidic, electronic and optical on-chip networks. MN themes cover multiscale phenomena, emerging materials and technologies, new devices, advanced and additive manufacturing, novel fabrication, characterization, integration, and packaging of MEMS/NEMS. Additional themes continue in optical MEMS/NEMS, micro/nanophotonics, optomechanics, quantum MEMS/NEMS, 2D MEMS/NEMS, resonant systems, CMOS-MEMS, mesoscopic dynamics and dissipation processes, inertial sensors, chemical sensors and lab-on-chip analytical microsystems, harsh-environment transducers, parametric and nonlinear effects, MEMS/NEMS-enabled energy technologies, soft materials, flexible and implantable MEMS/NEMS for biosensing, bio-inspired microsystems, wearables, and wireless healthcare.

NANOMETER-SCALE SCIENCE AND TECHNOLOGY

At the most inclusive level, nanotechnology is anything that involves materials that have structure 100 nm or smaller. Many of the most interesting areas of nanotechnology involve materials or systems whose properties change dramatically as they decrease in size from the bulk, or as surfaces become dominant. 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) A session focusing on the science and technology of oxides at the nanoscale; (b) Advances in the fabrication and manufacturing at the nanoscale; (c) Recent developments in the characterization of materials at the nanometer scale, and including a joint session on recent advances in scanned probe microscopy; (d) Areas of convergence between nanotechnology and electrical, magnetic, mechanical, and optical devices and phenomena. (e) The program will also include a special session on the applications of nanotechnology in renewable energies.

PLASMA SCIENCE AND TECHNOLOGY

The 2017 Plasma Science and Technology Division (PSTD) program highlights state-of-the-art advances in plasma research, ranging from fundamental studies of plasma physics and chemistry to applied research in plasma etching, deposition, and nanomaterials enablement. Two parallel sessions each day feature topics of interest to both the atmospheric pressure plasma community and the semiconductor processing community. The week opens with sessions on atmospheric pressure plasma processing, alongside two sessions on medical, biomaterial, and agricultural applications offered by the Plasma for Biomedical Applications Focus Topic. Following we have sessions on FEOL and BEOL plasma etching, plasma deposition, and plasma-enhanced ALD. Of particular note are two complete sessions on the extremely hot topic of Atomic Layer Etching featuring talks from both industry and academia. Additional elements of the program include the always-popular sessions on Plasma Surface Interactions, Plasma Diagnostics, Plasma Sources, and Nanomaterials. The Plasma Modeling session this year offers a special invited presentation: the Plasma Prize Talk given by Professor Satoshi Hamaguchi. Finally, the Plasma Science and Technology Division is honored to be the host of a very Special Session on Tuesday Afternoon on "The Science of Plasmas and Surfaces: Commemorating the Career of Harold Winters" which features tutorials looking backward and opportunities looking forward given by ten of the most notable plasma science and technology researchers of our time.

SURFACE SCIENCE

The program of the Surface Science Division (SS) provides a forum for cutting-edge and foundational research that involves solid surfaces and interfaces. Phenomena that take place at the gas-solid and liquid-solid interfaces are prominent within the SS Division programs. Technical sessions address atomistic, structural, electronic, and chemical phenomena at surfaces and interfaces, their impact on materials properties, and their implication for technological and environmental processes. Surface chemistry is an important divisional theme, encompassing the kinetics and dynamics of surface processes and 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, including 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 Division sessions are listed below. Many of the sessions are co-sponsored with other Divisions, Groups, and Focus Topics and should be of broad interest to attendees. In particular several SS sessions complement the Fundamental Discoveries in Heterogeneous Catalysis Focus Topic (HC) sessions beginning on Tuesday afternoon and running throughout the rest of the week. Tuesday's SS poster session features the finalists for the Morton M. Traum Surface Science Division Student Award.

THIN FILMS

The Thin Film Division continues its strong presence at AVS by offering several core oral sessions and one poster session. This year, we are excited about the broad range of outstanding invited speakers that will touch on topics across the breadth of thin film science and technology. There are several sessions dedicated to atomic layer deposition (ALD), encompassing energy conversion and storage, emerging applications, nanostructures, precursors, surface reactions, as well as advances in high throughput and spatial processes. These sessions highlight basic science and the pursuit of applications. Of particular note is the John A. Thorton Memorial Award lecture provided on Tuesday afternoon by Stephen George (Univ. Colorado at Boulder that provides highlights of ALD over the past 25 years.

The Thin Film Division is also excited about the continuation of core sessions on the growth and characterization of thin films and the formation of self-assembled thin films. We offer thin film application inspired sessions on sessions on thin films for synchrotron radiation, magnetics, photovoltaics, and microelectronics. These talks are aligned with AVS vision of exploring the industrial needs of thin films community and are highlighted by an invited talk by Mahendra Pakala (Applied Materials) who will provide a unique industry perspective on thin film processing of emerging resistive memory devices.

Furthermore, we offer students the possibility to give a 2–3 minute talk to introduce their posters at the end of the oral sessions. For the 5th year, we will host a student-only session to highlight the Harper Award candidates in which the student finalists will present their work in an interactive "TED Talk" type of Forum. This is an excellent opportunity for graduate and undergraduate students in the Thin Film area to get together informally for discussions and to provide feedback for the Harper Award presentations of their fellow students.

VACUUM TECHNOLOGY

The Vacuum Technology Division (VTD) provides a forum for research in achieving, maintaining, measuring, and analyzing vacuum across a wide range of pressures and applications. The 2017 VT oral program topics include: (1) Progress in Vacuum Measurement, especially in the area of optical and MEMS total pressure sensors for calibration standards and industry as well as with partial pressure instruments, (2) Vacuum Pumping, (3) Wall-Vacuum interface, (4) Vacuum transportation and clean systems and (5) Accelerator and Large Vacuum Systems. Additionally, we present a special session in Vacuum History. The VT Poster session Tuesday evening features the VT Student Poster Competition, with a first place award of up to $500, 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. To be eligible for a student prize, the presenter must be registered as a student and present the work in a VT poster or oral session.

2D MATERIALS

The two-dimensional materials (2D) focus topic (FT) is a cross-cutting AVS-wide interdisciplinary forum for discussion of fundamental science and novel applications of emerging 2D materials. Our program, which spans the full conference week, offers 11 oral sessions and 1 poster session, which are co-sponsored by several AVS Divisions and Focus Topics. The 2D FT will review of the latest develop-

ments in this interdisciplinary field through 17 invited talks, 76 contributed papers, and 14 posters, covering 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. Several important themes, which will be highlighted in invited talks, include 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 resulting in large part to the complexity of their 5f and 4f electronic structure. The Actinide and Rare Earth Focus Topic Sessions focus on the chemistry, physics and materials science of f–electron materials. Emphasis will be placed upon the 4f/5f electronic and magnetic structure, surface science, thin film properties, and applications to energy–related issues. The role of fundamental f–electron science in resolving technical challenges posed by actinide materials will be stressed, particularly with regard to energy applications, novel nuclear fuels, and chemistry for environmental management. Both basic and applied experimental approaches, including user facility-based investigations, as well as theory and computational simulations, will be featured to reconcile the observed behavior in these complex materials. Of particular importance are the issues important to nuclear energy and security, including fuel synthesis, oxidation, corrosion, intermixing, stability in extreme environments, prediction of properties via bench-marked simulations, separation science, and forensics. Shared sessions are held with Applied Surface Science (AS), Magnetic Interfaces (MI), Synchrotron Radiation (SA), and Sustainability (SU).

ADVANCED ION MICROSCOPY

AVS 64 will again be host to the Advanced Ion Microscopy focus topic (formerly Helium Ion Microscopy FT). The 2017 program will continuing with the theme of featuring emerging ion beam technology research and ion beam based nano-scale microscopy, surface science, and nano-patterning research-applications. In addition, the sessions will continue with the focus topic's historical theme of presenting the latest research in helium gas field ion source microscopy. This year will consist of four sessions: (i) Emerging Ion Sources and Optics; (ii) Advances in Ion Microscopy; (iii) Novel Beam Induced Surface Analysis and Nano-patterning; and (iv) Advanced Ion Microscopy Poster Session. Talks include the latest industry research in cesium cold beams from Anne DeLobbe (Tescan-Orsay Physics) and Adam Steel (zeroK NanoTech); emerging developments in ion beam based nano spectroscopy from Robert Hull (Rensselaer Polytechnic Institute), Olga Ovchinnikova (Oak Ridge NL), and Tom Wirtz (Luxembourg Institute of Science and Technology); and novel developments in nano-resolution ion beam patterning and microscopy from Hiroshi Mizuta (Japan Advanced Institute of Science and Technology) and Paul Dastoor (University of Newcastle, Australia). This list of talks from academia, national labs, and industry, along with many more novel talks on advances ion beam microscopy applications, will continue the tradition of making this a must attend focus topic for ion beam researchers.

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 second time the HC focus topic has been organized, and is coordinated with the Surface Science (SS) division. Session topics include theoretical models, nanoscale structures, gas-surface dynamics, novel studies of active surfaces, and bridging gaps in surface science and catalysis. 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.

NOVEL TRENDS IN SYNCHROTRON AND FEL-BASED ANALYSIS

The AVS 64 Focus Topic Novel Trends in Synchrotron & FEL-Based Analysis will disseminate the recent successes of scattering, spectroscopic and imaging techniques in characterization of functional materials, where the complexity of matter encompasses multiple energy, time and length-scales. The presentations are selected to present the exciting opportunities offered at the large scale synchrotron radiation and Free Electron Laser facilities for 'seeing' how matter evolves down to fs and to the level of nano-units, atoms and molecules. The emphasis will be on processes occurring at surfaces and interfaces where interaction-related motions involve numerous reaction and transport steps that relate directly to desirable chemical, electric and magnetic properties. The five oral sessions will cover important fields spanning over catalysis, interfacial reactions in energy devices, 2D materials, correlated systems and magnetism. In most of these systems the major challenge is to understand the origin of emergent behavior at heterointerfaces and how the interfacial structure and functionality respond to external stimuli such as temperature, electric field, light or changes in the chemical composition by exposing to various environments.

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. The Focus Topic will address the most up to date challenges and latest developments of plasmas interfacing biomaterials and biological systems. This will include plasma processing of biomaterials, pharmaceuticals, and living organisms for biological, therapeutic and agricultural applications. There are two major topical categories in this Focus Topic. One is concerned with plasma synthesis or modification of biomaterials and pharmaceuticals and the other is concerned with the use of plasmas for biological applications as direct therapeutics, including treating infected tissue, wound healing, and cancer treatment, and agricultural applications for example plant growth, and sterilization. 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, plasma seed and plant treatments, and plasma-cell or tissue interaction. Presentations on the underpinning methodologies including plasma and liquid diagnostic techniques, biological assay development and simulations are also included. 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) New Imaging and Spectroscopy Methodologies, (2) Probing Electronic and Transport Properties, (3) Probing Chemical Reactions at the Nanoscale, (4) Probe-Sample Interactions, (5) Probing and Manipulating Nanoscale Structure. The highlighted speakers include Joseph Lyding on STM-Based Nanofabrication and Integrating Nanostructures with Clean Semiconductor Surfaces, Chih-Kang Shih on 2D Electronic Materials and their Heterostructures, and Andrew Wee on Molecule-2D interfaces.

SPECTROSCOPIC ELLIPSOMETRY

The FT Spectroscopic Ellipsometry integrates themes ranging from classical material science and thin film characterization to physical and chemical processes at biomaterial interfaces and nanometer scale science. AVS 64 will host two oral and one poster session dedicated to traditional applications of spectroscopic ellipsometry in optical materials and thin film characterization as well as new and emerging topics. In the first session, classical research topics of ellipsometry as for instance optical coatings and inorganic thin films characterization as well as contemporary areas like nanostructured materials will be presented. In the second session of the Spectroscopic Ellipsometry FT we will host presentations on novel experimental and theoretical approaches including imaging ellipsometry or optical critical dimension analysis techniques as well as contributions related to the microscopic origin of depolarization and decoherence. As a highlight of this FT, the best student paper, which is selected based on the quality of the research, its presentation, and the discussion during the symposium, will be awarded with the Spectroscopic Ellipsometry FT award. 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.

SUSTAINABILITY

In keeping with worldwide trends and needs, the National Science Foundation (NSF) started an initiative in 2013 to encourage and foster research in Sustainable Chemistry, Engineering, and Materials (SusChEM); in particular, this initiative addresses the interrelated challenges of sustainable supply, engineering, production, and use of sustainable materials and integrated materials systems. Presentations under this Focus Topic will include oral sessions of invited and contributed talks, covering the areas of (i) critical materials for energy sustainability including fuel cells and batteries, (ii) membranes and sensors for food and water quality and other applications based on graphene, nanocellulose and other materials, and (iii) thermoelectric, piezoelectric, and superconducting materials and devices. All of these areas cover fundamental research themes such as the replacement of rare, expensive, and/or toxic materials with earth-abundant, inexpensive, and benign materials; recycling of materials that cannot be replaced; development and characterization of low cost, sustainable, and scalably manufactured materials with improved properties; and increased conservation of natural resources, such as water, raw materials, and energy. Co-sponsored sessions are also being held with Actinides and Rare Earths (AC) and Nanometer-Scale Science & Technology (NS).

TANDEM MS

Tandem Mass Spectrometry involves isolating selected ions, fragmenting the mass selected species, and detection of the fragmented ions to assist in elucidating the chemical structure of these analytes. The ability to identify ions in the complex and congested mass spectra produced by organic macromolecules pose a major challenge, particularly for in situ techniques such as mass spectrometry imaging (MSI). However, tandem MS provides a versatile analytical method to elucidate and validate peak assignments. The 2017 tandem MS Focus Topic will feature sessions on i) the recent expansion of tandem MS in surface science, ii) its application in the analysis of complex organic materials, including but not limited to the polymers, organic-electronics, peptides, and metabolites, as well as, its versatile range of applications in MSI methodologies (i.e. MALDI, DESI, and SIMS), iii) fundamental investigations and advanced tandem MS methodologies and iv) data processing methods (i.e. database searching, in silico fragment analysis software). The FT will also include applications, new instrumentation, and advanced data analysis methods that utilize high mass resolution to improve confidence in peak assignments (i.e. Fourier transform-based MS).

TRIBOLOGY

The 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, self-healing 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 Lecture

Mon. 5:30 p.m., Ballroom B (CC)
"Precise Chemical, Physical, and Electronic Nanoscale Contacts"
Dr. Paul S. Weiss, Distinguished Professor of Chemistry & Biochemistry and of Materials Science & Engineering, UCLA

Advanced Surface Engineering

Wed. PM	Room 11	Nanostructured Thin Films and Coatings
Thu. AM	Room 11	Plasma-assisted Surface Modification and Deposition Processes
Thu. PM	Central Hall	Advanced Surface Engineering Poster Session

Applied Surface Science

Mon. AM	Room 13	Practical Surface Analysis: Getting the Most Out of Your Analysis using Complementary Techniques
Mon. PM	Room 13	Practical Surface Analysis: Complex, Organic and Bio-systems
Tue. AM	Room 13	Quantitative Surface Analysis: Effective Quantitation Strategies
Tue. PM	Room 13	Problem Solving Using Surface Analysis in the Industrial Laboratory
Wed. AM	Room 13	Beyond Traditional Surface Analysis: Pushing the Limits
Wed. PM	Room 13	2D, 3D and nD Imaging of Surfaces, Buried Interfaces and Nanostructures
Thu. AM	Room 13	Spectroscopy of the Changing Surface
Thu. PM	Room 13	Advances in Instrumentation and Data Analysis
Thu. PM	Central Hall	Applied Surface Science Poster Session
Fri. AM	Room 13	Unlocking the Sample History: Forensics and Failure Analysis

Biomaterial Interfaces

Mon. AM	Room 12	Engineering a Paradigm Shift in Control of Microbes and Fouling
Tue. PM	Room 12	Bio from 2D to 3D: Challenges in Fabrication and Characterization & Flash Presentations
Tue. PM	Central Hall	Biomaterial Interfaces Poster Session with Flash presentations
Wed. AM	Room 12	Biomaterials and Nanomaterials Fabrication & In Honor of Dave Castner's 65th Birthday: Multitechnique Bio-Surface Characterization I
Wed. PM	Room 12	In Honor of Dave Castner's 65th Birthday: Multitechnique Bio-Surface Characterization II
Thu. AM	Room 12	Characterisation of Biological and Biomaterial Surfaces
Thu. PM	Room 12	Biomolecules and Biophysics at Interfaces

Biomaterials Plenary Session

Sun. PM	Room 22	Plenary – Engineering a Paradigm Shift in Control of Microbes and Fouling: In Honor of Michael Grunze's 70th Birthday

Electronic Materials and Photonics

Mon. AM	Room 14	Growth, Electronic, and Magnetic Properties of Heusler Compounds
Mon. PM	Room 14	Novel Materials and Devices for Electronics
Tue. AM	Room 14	Nanostructures and Nanometer Films for Electronic and Photonic Devices
Tue. PM	Room 14	Surface and Interface Challenges in Semiconductor Materials and Devices
Wed. AM	Room 14	Charge Transport in Disordered Materials
Wed. PM	Room 14	Materials and Devices for Quantum Information Processing
Thu. AM	Room 14	Photonics, Optoelectronics, and Light Manipulation
Thu. PM	Room 14	Wide and Ultra-wide Band Gap Materials for Electronic Devices: Growth, Modeling, and Properties
Thu. PM	Central Hall	Electronic Materials and Photonics Poster Session

Magnetic Interfaces and Nanostructures

Mon. PM	Room 11	Role of Chirality in Spin Transport and Magnetism
Tue. AM	Room 11	Novel Magnetic Order at Interfaces
Tue. PM	Room 11	Spin-Orbit Phenomena at Surfaces and Interfaces
Tue. PM	Central Hall	Magnetic Interfaces and Nanostructures Poster Session
Wed. AM	Room 11	Controlling Magnetism in Oxides and Multiferroics and Chirality in Spin Transport and Magnetism (cont.)

Manufacturing Science and Technology

Wed. PM	Room 5 & 6	Advanced Surface, Interface, and Structural Characterization for High Volume Manufacturing
Thu. AM	Room 5 & 6	Additive and Other Novel Manufacturing Techniques
Thu. PM	Room 18	Working with Government Labs and User Facilities
Thu. PM	Central Hall	Topics in Manufacturing Science and Technology

MEMS and NEMS

Mon. AM	Room 24	Feature Session: Large Scale Integration of Nanosensors
Mon. PM	Room 24	Nano Optomechanical Systems/ Multiscale Nanomanufacturing
Tue. AM	Room 24	Microelectromechanics: Relays to RF/ Surfaces in Micro- and Nano-Systems
Tue. PM	Central Hall	MEMS/NEMS Poster Session
Wed. AM	Room 16	2D NEMS

Nanometer-scale Science and Technology

Mon. PM	Room 19	Oxides in Nanotechnology
Tue. AM	Room 19	Nanoscale Electronics and Magnetism
Tue. PM	Room 19	Nano-Photonics, Plasmonics and Mechanics
Wed. AM	Room 19	Nanotechnology for Renewable Energy
Wed. PM	Room 19	Nanopatterning, Nanofabrication and 3D Nanomanufacturing
Thu. AM	Room 19	Nanoscale Imaging and Characterization
Thu. PM	Room 19	Advances in Scanning Probe Microscopy
Thu. PM	Central Hall	Nanometer Scale Science and Technology Poster Session

SESSION OVERVIEW

Plasma Science and Technology

Mon.	AM	Room 21	Atmospheric Pressure Plasmas
Mon.	AM	Room 23	Plasma Processing of Challenging Materials
Mon.	PM	Room 23	Plasma Surface Interactions
Tue.	AM	Room 23	Advanced FEOL/Gate Etching
Tue.	PM	Room 23	The Science of Plasmas and Surfaces: Commemorating the Career of Harold Winters (ALL INVITED SESSION)
Tue.	PM	Central Hall	Plasma Science and Technology Poster Session
Wed.	AM	Room 22	Plasma Processing for Nanomaterials & Nanoparticles
Wed.	AM	Room 23	Advanced BEOL/Interconnect Etching
Wed.	PM	Room 22	Plasma Deposition
Wed.	PM	Room 23	Modeling of Plasmas
Thu.	AM	Room 23	Atomic Layer Etching I
Thu.	AM	Room 22	Plasma Sources
Thu.	PM	Room 23	Plasma Enhanced ALD
Thu.	PM	Room 22	Plasma Diagnostics, Sensors and Control
Fri.	AM	Room 23	Atomic Layer Etching II

Surface Science

Mon.	AM	Room 25	Organic/Inorganic Surfaces and Interfaces
Mon.	PM	Room 25	Surface Science for Energy and the Environment
Tue.	AM	Room 25	Controlling Mechanisms of Surface Chemical Reactions
Tue.	PM	Central Hall	Surface Science Poster Session
Wed.	AM	Room 25	Deposition and Growth at Surfaces
Wed.	PM	Room 25	Dynamical Processes at Surfaces
Thu.	AM	Room 25	Oxides: Structures and Reactions
Thu.	PM	Room 25	Semiconductor Surfaces
Fri.	AM	Room 24	Recent Advances in the Chemistry and Physics of Interfaces

Thin Film

Mon.	AM	Room 20	ALD for Energy Conversion, Storage, and Electrochemical Processes
Mon.	PM	Room 20	Emerging Applications for ALD
Tue.	AM	Room 20	Advanced CVD and ALD Processing, ALD Manufacturing and Spatial-ALD
Tue.	PM	Room 20	ALD Precursors and Surface Reactions
Wed.	AM	Room 21	Thin Films for Microelectronics
Wed.	AM	Room 20	Thin Film for Photovoltaics
Thu.	AM	Room 20	Control, Characterization, and Modeling of Thin Films I
Thu.	AM	Room 21	Area-selective Deposition and Infiltration Growth Methods
Thu.	PM	Room 21	ALD and Nanostructures
Thu.	PM	Room 20	Control, Characterization, and Modeling of Thin Films II
Thu.	PM	Central Hall	Thin Films Poster Session
Fri.	AM	Room 20	Self-assembled Monolayers and Organic/Inorganic Interface Engineering

Vacuum Technology

Mon.	AM	Room 7 & 8	Progress with Measurement in Vacuum
Mon.	PM	Room 7 & 8	Material Outgassing, Adsorption/Desorption and XHV
Tue.	AM	Room 7 & 8	Large Vacuum Systems
Tue.	PM	Room 7 & 8	Pumping
Tue.	PM	Central Hall	Vacuum Technology Poster (and Student Poster Competition)
Wed.	AM	Room 7 & 8	Transfer and Ultraclean Systems, Particle Control, and History
Wed.	PM	Room 20	The History and Future of Materials, Surfaces and Interfaces (ALL INVITED SESSION)
Thu.	PM	Room 9	Surface Science for Accelerators

Exhibitor Technology Spotlight Workshops

Tue.	AM	West Hall	Exhibitor Technology Spotlight
Tue.	Lunch	West Hall	Exhibitor Technology Spotlight
Tue.	PM	West Hall	Exhibitor Technology Spotlight
Wed.	AM	West Hall	Exhibitor Technology Spotlight

2D Materials Focus Topic

Mon.	AM	Room 15	Properties of 2D Materials including Electronic, Magnetic, Mechanical, Optical, and Thermal Properties
Mon.	PM	Room 15	Novel 2D Materials
Tue.	AM	Room 15	2D Materials Characterization including Microscopy and Spectroscopy
Tue.	PM	Room 16	Surface Chemistry, Functionalization, Bio and Sensor Applications
Tue.	PM	Room 15	Growth of 2D Materials
Wed.	AM	Room 15	2D Materials Growth and Fabrication
Wed.	PM	Room 16	2D Device Physics and Applications
Wed.	PM	Room 15	Properties and Characterization of 2D Materials
Thu.	AM	Room 15	Novel Quantum Phenomena in 2D Materials
Thu.	PM	Room 15	Dopants, Defects, and Interfaces in 2D Materials
Thu.	PM	Central Hall	2D Materials Focus Topic Poster Session
Fri.	AM	Room 15	Nanostructures including Heterostructures and Patterning of 2D Materials

Actinides and Rare Earths Focus Topic

Mon.	AM	Room 22	Magnetism, Complexity, and Superconductivity in the Actinides and Rare Earths
Mon.	PM	Room 22	Chemistry and Physics of the Actinides and Rare Earths
Tue.	AM	Room 22	Nuclear Power, Forensics, and Other Applications
Tue.	PM	Room 22	Actinide and Rare Earth Theory
Tue.	PM	Central Hall	Actinide and Rare Earth Posters

Advanced Ion Microscopy Focus Topic

Wed.	PM	Room 7 & 8	Emerging Ion Sources and Optics
Thu.	AM	Room 7 & 8	Advanced Ion Microscopy Applications
Thu.	PM	Room 7 & 8	Novel Beam Induced Surface Analysis and Nano-Patterning
Thu.	PM	Central Hall	Advances in Ion Microscopy Poster Session

Fundamental Discoveries in Heterogeneous Catalysis Focus Topic

Tue.	PM	Room 25	Advances in Theoretical Models and Simulations of Heterogeneously Catalyzed Reactions

Wed. AM	Room 24	Nanoscale Surface Structures in Heterogeneously-Catalyzed Reactions
Wed. PM	Room 24	Bridging Gaps in Heterogeneously-Catalyzed Reactions
Thu. AM	Room 24	Mechanisms and Reaction Pathways in Heterogeneously Catalyzed Reactions
Thu. PM	Room 24	Combined Experimental and Theoretical Explorations of the Dynamics of Heterogeneously Catalyzed Reactions
Thu. PM	Central Hall	Fundamental Discoveries in Heterogeneous Catalysis Poster Session

Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic

Tue. AM	Room 9	Overcoming the Temporal and Spatial Limits of X-Ray Scattering Methods for In-Situ Analysis
Tue. PM	Room 9	Frontiers of Photoelectron Spectroscopy: Surface & Interface Processes with Variable Depth Probe, High Spatial or Temporal Resolution
Tue. PM	Central Hall	Synchrotron and FEL-Based Analysis Poster Session
Wed. AM	Room 9	Recent Advances of Diffracting/Scattering and Spectroscopic Methods for Correlated and 2D Materials
Wed. PM	Room 9	In Situ and Operando Characterization of Interfacial Reactions in Energy & Electronic Devices
Thu. AM	Room 9	Frontiers in Probing Properties and Dynamics of Nanostructures and Correlation Spectroscopy

Plasma Processing for Biomedical Applications Focus Topic

Mon. PM	Room 12	Plasma Agriculture & Processing of Biomaterials
Tue. AM	Room 12	Plasma Medicine

Scanning Probe Microscopy Focus Topic

Mon. AM	Room 10	New Imaging and Spectroscopy Methodologies
Mon. PM	Room 10	Probing Electronic and Transport Properties
Tue. AM	Room 10	Probing Chemical Reactions at the Nanoscale
Tue. PM	Room 10	Probe-Sample Interactions
Tue. PM	Central Hall	Scanning Probe Microscopy Poster Session
Wed. AM	Room 10	Probing and Manipulating Nanoscale Structure

Spectroscopic Ellipsometry Focus Topic

Mon. AM	Room 9	Application of SE for the Characterization of Thin Films and Nanostructures
Mon. PM	Room 9	Spectroscopic Ellipsometry: Novel Applications and Theoretical Approaches
Tue. PM	Central Hall	Spectroscopic Ellipsometry Poster Session

Sustainability Focus Topic

Tue. AM	Room 5 & 6	Critical Materials and Energy Sustainability
Tue. PM	Room 5 & 6	Membranes, Thin Films, and Sensors
Wed. AM	Room 5 & 6	Piezoelectrics, Thermoelectrics, and Superconductors

Tandem MS Focus Topic

Mon. AM	Room 5 & 6	New Instrumentation Featuring Tandem MS
Mon. PM	Room 5 & 6	Applications in Mass Spectrometry Imaging using Tandem MS

Tribology Focus Topic

Wed. PM	Room 10	Molecular Origins of Friction
Thu. AM	Room 10	Lubricant, Coatings, and Biotribology
Thu. PM	Central Hall	Tribology Poster Session

Call for Research Articles

AVS 64 Special and In Focus Issues
JVST A - *JVST B* - Biointer*phases*

Research articles are being solicited based on presentations made at the AVS 64th International Symposium and Exhibition for publication in Special and In Focus AVS 64 sections appearing in each of the journals' June 2018 issues.

You can submit your articles/letters based on your talk at the AVS 64th International Symposium at any time before the **deadline, January 12, 2018**. Online, you will have an opportunity to tell us that your paper is a part of the special issue by choosing **"Special/In Focus Issue on AVS 64."**

Papers will be reviewed using the same criteria as regular journal articles and must meet the journal standards for both technical content and written English. To be published in one of these journals, the manuscript must:

(1) present original findings, conclusions or analysis that have not been published previously
(2) be free of errors and ambiguities,
(3) support conclusions with data and analysis,
(4) written clearly, and
(5) have high impact in its field.

Depending on topic, please submit your manuscripts using the journals' online manuscript submission sites at either http://jvsta.peerx-press.org, http://jvstb.peerx-press.org or http://biointerphases.peerx-press.org.

In preparing your article, you should follow the instructions for contributors, which can be found on each journal site on the "Author" tab. Authors are encouraged to use the Article Template files available on the sites above.

Manuscript Deadline:
January 12, 2018

Manuscript Details & Submission:
www.jvsta.org
www.jvstb.org
www.biointerphases.org

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Journal of Vacuum Science & Technology A

- **Surfaces**
- **Films**
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Website Features Editor's Picks, Most Cited, and Most Read

Topics include but are not limited to:

- Applied and fundamental surface science
- Atomic layer deposition
- Electronic and photonic materials and their processing
- Magnetic thin films and interfaces
- Materials and thin films for energy conversion and storage
- Photovoltaics including thin-film solar cells and organic and hybrid solar cells
- 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

JVST A January/February Annual Special Issue Features

- Atomic Layer Deposition
- Atomic Layer Etching

Editor-in-Chief: Eray S. Aydil, University of Minnesota

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JVSTB

Journal of Vacuum Science & Technology B

- **Nanotechnology**
- **Microelectronics**
- **Processing, Measurement, Phenomena**

www.jvstb.org

The *Journal of Vacuum Science and Technology B* is devoted to publishing reports of original research, letters, and review articles on microelectronics and nanometer structures and devices. The emphasis is on processing, measurement and phenomena associated with micrometer and nanometer structures and devices. Processing may include vacuum processing, plasma processing and microlithography among others, while measurement refers to a wide range of materials and device characterization methods for understanding the physics and chemistry of submicron and nanometer structures and devices.

Website Features Editor's Picks, Most Cited, and Most Read

Topics include but are not limited to:

- Compound semiconductor electronics and optoelectronics
- Devices for energy conversion and storage
- Dielectrics in micro- and nanoelectronics
- Graphene, carbon nanotubes and fullerenes: materials & devices
- Group IV semiconductor microelectronics
- Lithography
- Microelectromechanical and nanoelectromechanical systems and devices (MEMS & NEMS)
- Nanometer science and technology
- Nanostructured materials and devices including nanowires, nanoparticles and quantum dots,
- Organic and molecular electronics
- Photovoltaics based on nanostructured materials, dye-sensitized and other excitonic solar cells
- Plasmonics
- Spintronics and magnetic devices
- Vacuum nanoelectronics

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Biointer*phases* is the leading journal for quantitative characterization of biomaterials and biological interfaces. As an interdisciplinary journal, a strong foundation of chemistry, physics, biology, engineering, theory, and/or modeling are incorporated into originated articles, reviews, and opinionated essays. Topics covered include bio-surface modification, interface spectroscopy, protein-surface interactions, cell-surface interactions, interface modeling, adhesion phenomena, biotribology / biorheology, ambient diagnostic methods, and *in vivo* and *in vitro* systems. Biointer*phases* is an international journal with excellence in scientific peer-review. Researchers have open access options for their publications. Works are published rapidly online and advertised through several venues for high visibility.

Recent and Upcoming In Focus Collections

- Organic Bioelectronics
- Biointerface Dynamics
- Bacterial-Surface Interactions
- SIMS XXI
- Nanoparticle Interfaces
- Protein Structures at Biointerfaces
- Biointerface Science & Engineered Biomaterials, Honoring Buddy Ratner

Editor: Dr. Anna Belu, Medtronic

"Biointerphases is an excellent information source for research in the field of cell adhesion and mechanics with growing importance."
— Dr. Joachim Spatz, MPI Intelligent Systems & University of Heidelberg

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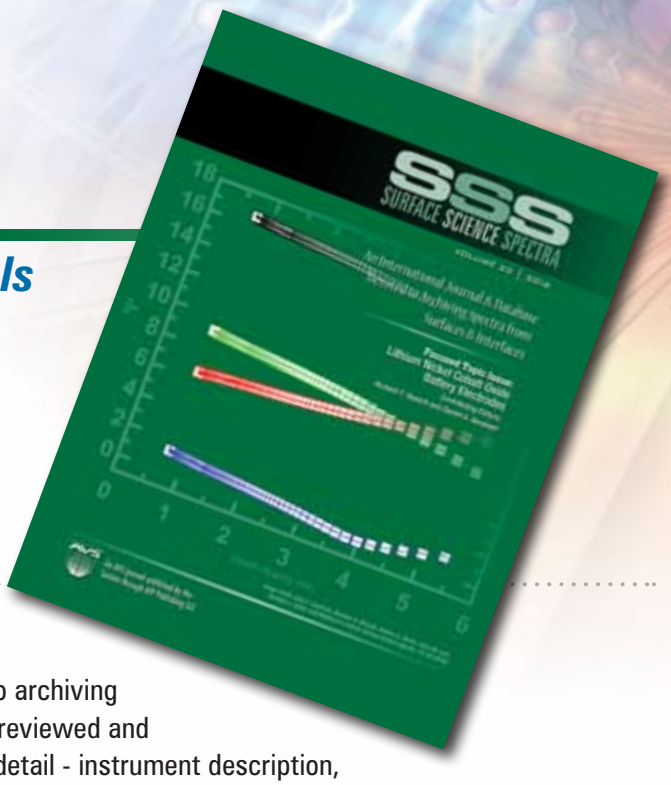
SSS
SURFACE SCIENCE SPECTRA



Journal and Database for Individuals or Analytical Laboratories

- **Reference Spectra**
- **Spectra from Technological Materials**
- **Comparison Spectra from Well-Defined Materials**

http://avspublications.org/sss

Surface Science Spectra is an international journal devoted to archiving spectra from surfaces and interfaces. Data records are peer-reviewed and technically edited. Spectral descriptions include much more detail - instrument description, calibration, and raw spectral data - than traditional journals. *SSS* offers XPS, Auger, UPS, SIMS, EELS/HREELS and Spectroscopic Ellipsometry spectra from a wide range of materials.

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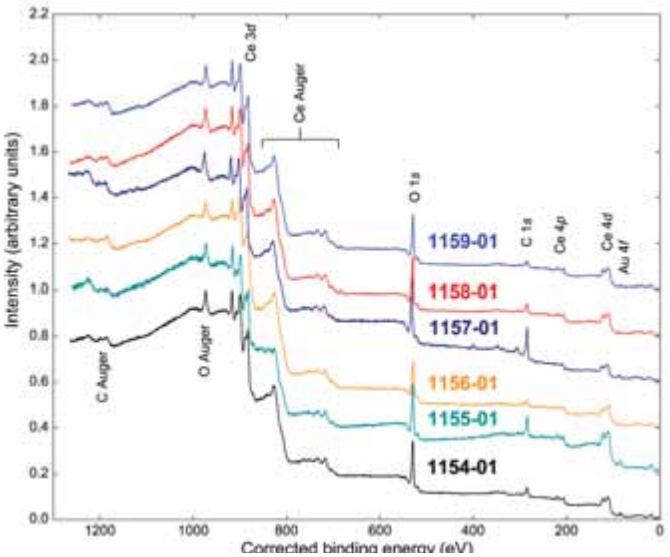
— Dr. Davide Barreca, U. Padova



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45th ICMCTF

International Conference on
Metallurgical Coatings and Thin Films
April 23-27, 2018

San Diego, CA, USA

Town & Country Hotel
&
Convention Center

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

Sponsored by the AVS Advanced Surface Engineering Division • http://www2.avs.org/conferences/icmctf/

The International Conference on Metallurgical Coatings and Thin Films (ICMCTF) is the premier international conference on thin-film deposition, characterization, and advanced surface engineering. It provides a forum and networking venue for scientists, engineers, and technologists from academia, government laboratories and industry. Attendees from all over the world come to present their findings, exchange ideas, share insights, make new friends and renew old acquaintances. The Conference offers 40 oral technical sessions and a well-attended Thursday evening poster session. Several special interest lectures are being featured throughout the conference week.

ICMCTF 2018 will address experimental, theoretical and manufacturing issues associated with the development of new coating materials and processes, novel methods of analysis and characterization, and approaches to scale-up for commercial applications.

The Conference features a two-day industrial exhibition, Tuesday and Wednesday, April 24 and 25, showcasing the latest in equipment, materials and services used for the deposition, monitoring, and characterization of coatings and thin films.

An educational program of Short Courses and Focused Topic Sessions will be offered throughout the week.

Each year, the R.F. Bunshah Award Laureate and three outstanding Graduate Student Award winners are celebrated during a special convocation late Wednesday afternoon, April 25, followed by a festive poolside buffet reception in the evening.

The Town and Country Resort Hotel and Convention Center, located in sunny San Diego of Southern California, will be the official conference venue, providing a relaxed atmosphere for discussion and networking among attendees.

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

PLENARY LECTURE

Predictive Synthesis and Characterization of Oxide Films with Metastable Structures
Monday, April 23, 2018 at 8:00 a.m.

Gregory S. Rohrer
Carnegie Mellon University, PIttsburgh, PA

PROGRAM CHAIR
Michael Stuber

GENERAL CHAIR
Yip-Wah Chung

2018 Technical Symposia

- A Coatings for use at High Temperatures
- B Hard Coatings and Vapor Deposition Technology
- 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

2018 Topical Symposia

- TS1 Thermal and Kinetic Spray Deposition
- TS2 High Entropy and Other Multi-principal-element Materials
- TS3 Coating of Synthetic Materials – Engineering for the Future
- TS4 Materials Modeling and Simulation

ICMCTF 2018 DATES & LOCATION:

Town and Country Resort & Convention Center
San Diego, CA 92108 • April 23 - 27, 2018

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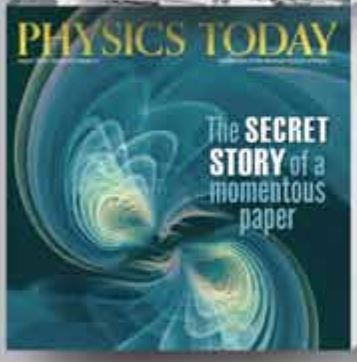

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- **Interactive Networking Forums**
  Forums, Discussion Groups & Expert's Corner

Education Program: May 5–10

- **Problem-Solving Tutorial Courses**

- Coatings for Energy Conversion and Related Processes
- Protective, Tribological and Decorative
- Coatings and Processes for Biomedical and Environmental Applications
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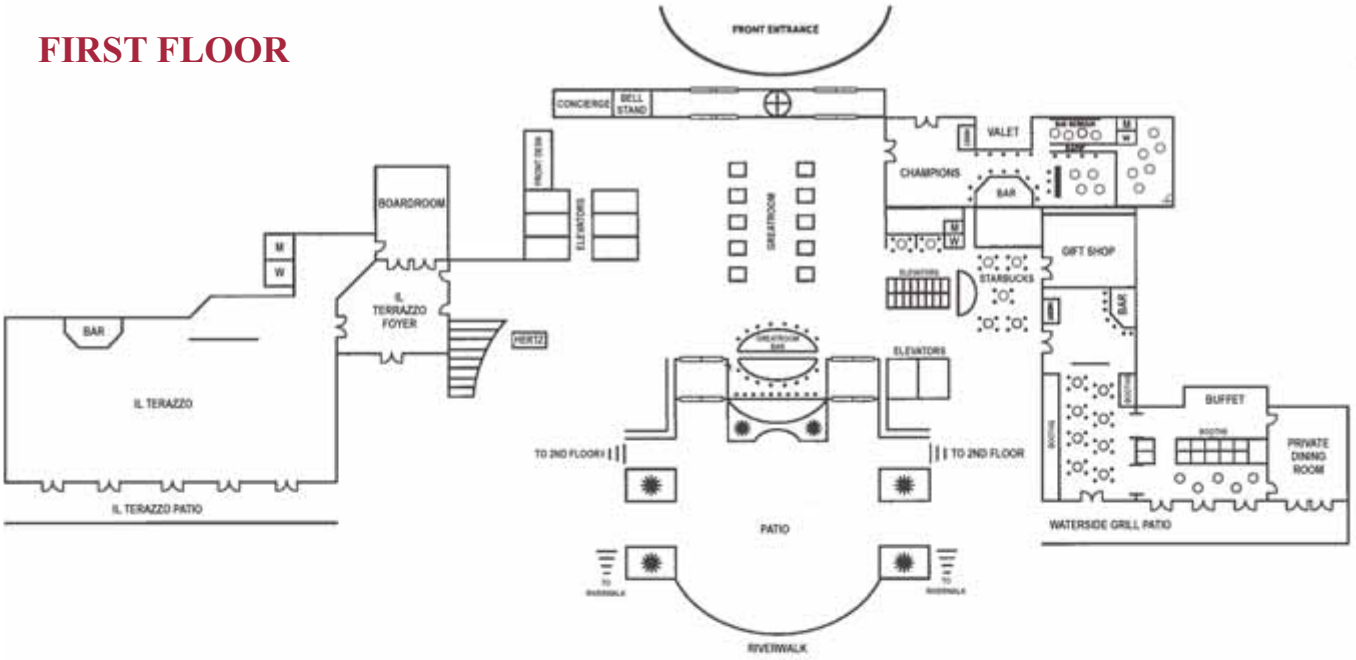
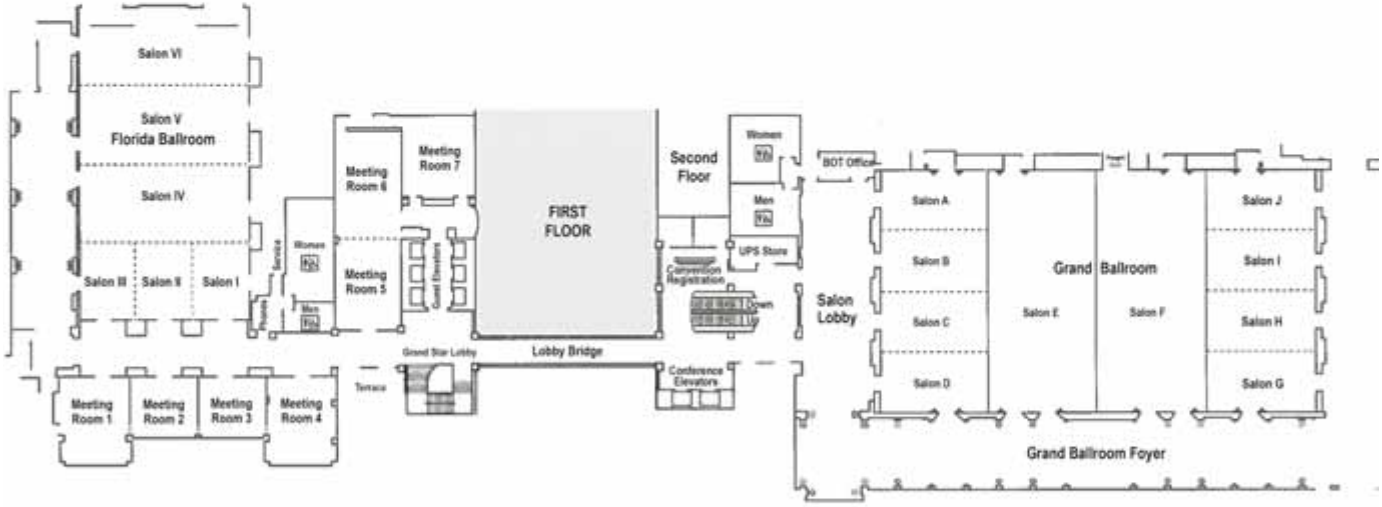


SECOND FLOOR



THIRD FLOOR

MEETINGS AND SPECIAL EVENTS

SATURDAY, OCTOBER 28, 2017

3:00 p.m.	Education Committee Meeting	Meeting Room 9 (H)
6:30 p.m.	Education Committee Dinner	Cafe Waterside (H)

SUNDAY, OCTOBER 29, 2017

8:00 a.m.	AVS Board of Directors' Meeting Executive Session (Closed Session-Board Only)	Florida Salon IV (H)
9:00 a.m.	AVS Board of Directors' Meeting	Florida Salon IV (H)
1:00 p.m.	AVS Board of Directors' Lunch	Meeting Room 1 (H)
3:00 p.m.	Biomaterials Plenary Session and Reception	22 (CC)
3:00 p.m.	*JVST* Associate Editors' Meeting	Meeting Room 10 (H)
6:00 p.m.	ASTM E-42 Business Meeting	Meeting Room 9 (H)
6:00 p.m.	Science Educators' Workshop Teachers' Reception	Meeting Room 2 (H)
6:00 p.m.	Vacuum Technology Division Executive Committee Meeting and Dinner	Meeting Room 4 (H)
7:00 p.m.	International Dignitaries & Chapter Chairs Reception (Invitation Only)	Il Terrazzo (H)
7:00 p.m.	Short Course Executive Committee Meeting and Dinner	Bayshore Boardroom (H)

MONDAY, OCTOBER 30, 2017

7:00 a.m.	Professional Leadership Committee Meeting and Breakfast	Cafe Waterside (H)
8:00 a.m.	Science Educators' Workshop	Meeting Room 12 (H)
10:20 a.m.	AVS Member Center: Diversity and Inclusion Speed Networking-"Navigating a Career in Science and Engineering: Successes & Challenges"	18 (CC)
12:00 p.m.	Science Educators' Workshop Lunch	Meeting Room 10 (H)
12:05 p.m.	Biomaterial Interfaces Division Business Meeting	12 (CC)
12:15 p.m.	2018 AVS Program Committee Meeting and Lunch	Meeting Room 7 (H)
12:15 p.m.	AVS Member Center: Professional Development-"Welcome to AVS Overview" Lunch	18 (CC)
12:15 p.m.	Recommended Practices Committee Meeting and Lunch	Florida Salon III (H)
1:00 p.m.	Biointer*phases* Strategic Planning Meeting	Greco Boardroom (H)
3:40 p.m.	AVS Member Center: Professional Development -Student/Young Scientist Meet and Greet with Plenary Lecturer, Paul S. Weiss, Distinguished Professor of Chemistry & Biochemistry and of Materials Science & Engineering, UCLA	18 (CC)
4:00 p.m.	Publications Committee Meeting	Florida Salon III (H)
5:30 p.m.	Plenary Lecture: Paul S. Weiss, Distinguished Professor of Chemistry & Biochemistry and of Materials Science & Engineering, UCLA, "Precise Chemical, Physical, and Electronic Nanoscale Contacts"	Ballroom B (CC)
6:30 p.m.	Welcome Mixer	Riverwalk (CC)
6:30 p.m.	Biointer*phases* Reception (Invitation Only)	TBD (Offsite)
7:00 p.m.	Applied Surface Science Division Executive Committee Meeting and Dinner	Meeting Room 7 (H)
7:30 p.m.	Publications Committee Meeting and Dinner (Invitation Only)	TBD (Offsite)
7:30 p.m.	MEMS and NEMS Technical Group Executive Committee Meeting and Dinner	Florida Salon III (H)
7:30 p.m.	Thin Film Division/Harper Award TED-Talk Competition (Invitation Only)	20 (CC)

TUESDAY, OCTOBER 31, 2017

7:00 a.m.	AVS Member Center: Diversity and Inclusion-"The Science of Team Science" Breakfast	18 (CC)
7:30 a.m.	Awards Committee Meeting and Lunch	31-32 (CC)
8:00 a.m.	Science Educators' Workshop	Meeting Room 12 (H)
10:00 a.m.	AVS Member Center: *eSpectra: Surface Science* Demo	18 (CC)
10:00 a.m.	Session Coffee Break	West Exhibit Hall (CC)
12:00 p.m.	Science Educators' Workshop Lunch	Meeting Room 10 (H)
12:20 p.m.	Exhibit Hall Lunch	West Exhibit Hall (CC)
12:30 p.m.	AVS Member Center: Professional Development-Job Information Forum and Lunch	18 (CC)
12:30 p.m.	Chapters, Divisions, and Groups Meeting and Lunch (Invitation Only)	Meeting Room 11 (H)
12:30 p.m.	Manufacturing Science and Technology Group Committee Meeting and Lunch	Il Terrazzo Boardroom (H)
2:20 p.m.	Medard W. Welch Award Lecture: "Ionic Liquid Surface Science," Hans-Peter Steinrück, University Erlangen-Nuernberg, Germany	9 (CC)
3:40 p.m.	Session Refreshment Break	West Exhibit Hall (CC)
3:40 p.m.	AVS Member Center: Professional Development-Speed Networking for Young Professionals	18 (CC)
5:40 p.m.	John A Thornton Memorial Award and Lecture: "Atomic Layer Deposition: Highlights from the Last 25 Years," Steven George, Univ. of Colorado at Boulder	20 (CC)
6:05 p.m.	Magnetic Interfaces and Nanostructures Division Business Meeting	11 (CC)
6:05 p.m.	Surface Science Division Business Meeting	25 (CC)
6:05 p.m.	Vacuum Technology Division Business Meeting	7-8 (CC)
6:25 p.m.	Electronic Materials and Photonics Division Business Meeting	14 (CC)

CC = Tampa Convention Center
H = Tampa Marriott Waterside Hotel & Marina

= New Attendee Networking Events

6:25 p.m.	Nanometer-scale Science and Technology Division Business Meeting	19 (CC)
6:25 p.m.	Plasma Science and Technology Division Business Meeting and 2017 Plasma Prize Award Announcement	23 (CC)
6:25 p.m.	Thin Film Division Business Meeting	20 (CC)
6:30 p.m.	Poster Session and Refreshments	Central Exhibit Hall (CC)
6:45 p.m.	AVS Member Center: Professional Development-Electronic Materials and Photonics Division Forum: "Careers at LAM Research"	18 (CC)
7:00 p.m.	Magnetic Interfaces and Nanostructures Division Executive Committee Meeting and Dinner	Meeting Room 2 (H)
7:00 p.m.	Nanometer-scale Science and Technology Division Executive Committee Meeting and Dinner	Meeting Room 1 (H)
7:00 p.m.	Surface Science Division Executive Committee Meeting and Dinner	Meeting Room 4 (H)
7:30 p.m.	Applied Surface Science Division Business Meeting	Florida Salon VI (H)
7:30 p.m.	Plasma Science and Technology Division Executive Committee Meeting and Dinner	Florida Salons I-II (H)
7:30 p.m.	Thin Film Division Executive Committee Meeting and Dinner	Il Terrazzo (H)
7:45 p.m.	Biomaterial Interfaces Division Executive Committee Meeting and Dinner	Meeting Room 3 (H)
7:45 p.m.	Electronic Materials and Photonics Division Executive Committee Meeting and Dinner	Florida Salon V (H)
8:00 p.m.	ASTM E-42 and Applied Surface Science Division Joint Workshop: "Frontiers of Surface Science"	Florida Salon VI (H)
10:00 a.m.-5:00 p.m.	*Equipment Exhibition*	*West Exhibit Hall (CC)*

WEDNESDAY, NOVEMBER 1, 2017

6:15 a.m.	37th Annual AVS Run (Register at Run Booth before Wednesday in the Convention Center)	TBD
8:00 a.m.	Advanced Surface Engineering Division Business Meeting	Grand Salon E (H)
8:15 a.m.	Advanced Surface Engineering Division Executive Committee Meeting (Lunch Offsite)	Grand Salon E (H)
10:00 a.m.	AVS Member Center: Advocacy & Outreach-"How to Interact with Your Congressional Representative," with Bob Boege, CEO of ASTRA	18 (CC)
10:00 a.m.	Session Coffee Break	West Exhibit Hall (CC)
12:20 p.m.	Exhibit Hall Lunch	West Exhibit Hall (CC)
12:20 p.m.	Nanometer-scale Science and Technology Division Graduate Student and Postdoc Award Competitions	19 (CC)
12:20 p.m.	Plasma Science and Technology Division Coburn and Winters Adjudication Session (Closed Session)	23 (CC)
12:30 p.m.	AVS Member Center: Professional Development-Federal Funding Town Hall and Lunch	18 (CC)
12:30 p.m.	Governance Committee Meeting and Lunch	Cafe Waterside (H)
12:30 p.m.	PacSurf Committee Meeting and Lunch	Meeting Room 4 (H)
3:40 p.m.	Session Refreshment Break	West Exhibit Hall (CC)
4:30 p.m.	E&M Reception (Invitation Only)	West Exhibit Hall (CC)
6:30 p.m.	AVS Awards Ceremony and Reception	Ballrooms B-C (CC)
10:00 a.m.-4:30 p.m.	*Equipment Exhibition*	*West Exhibit Hall (CC)*

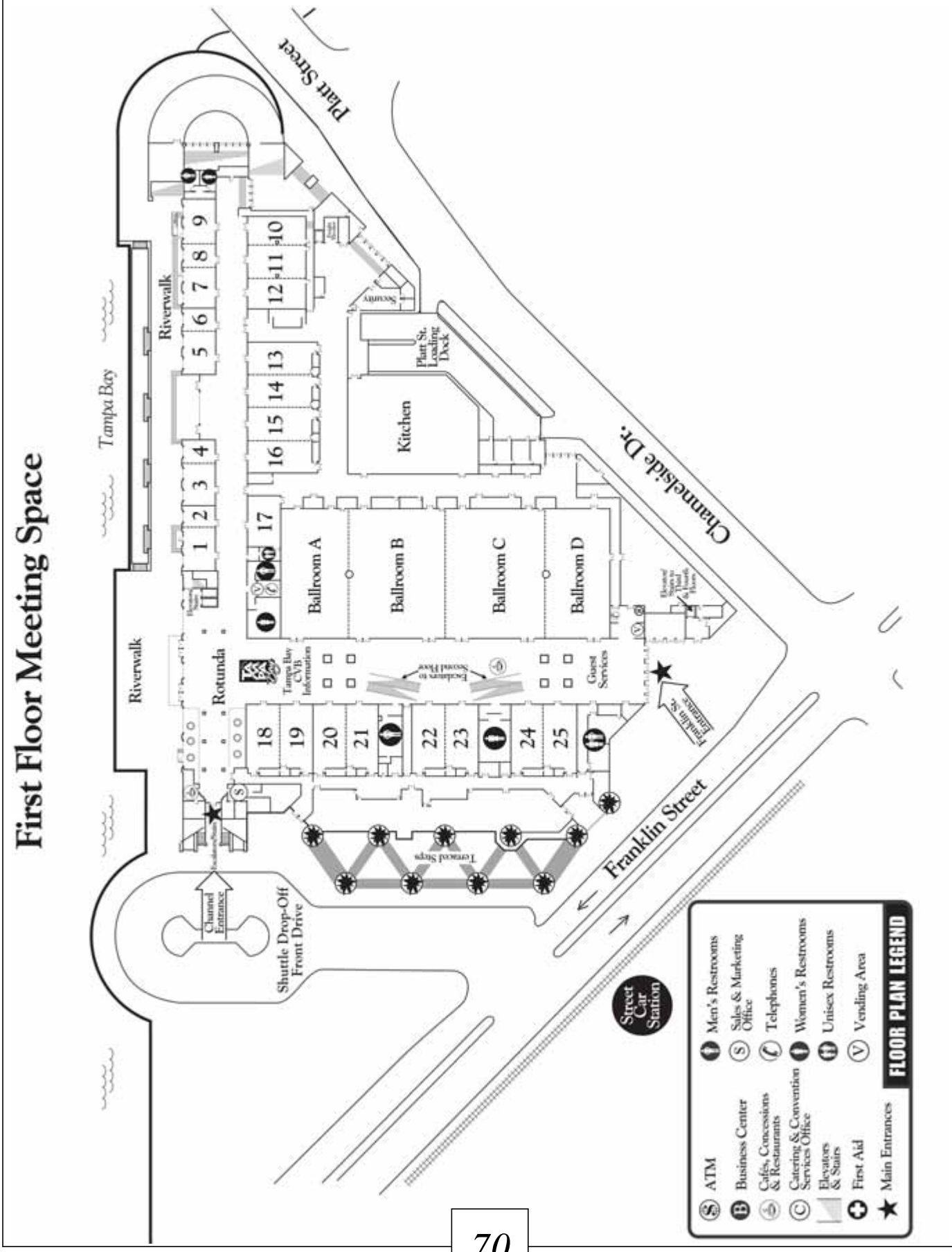
THURSDAY, NOVEMBER 2, 2017

10:00 a.m.	AVS Member Center: Advocacy & Outreach-Frontiers of Materials Research: A Decadal Survey	18 (CC)
10:00 a.m.	Session Coffee Break	West Exhibit Hall (CC)
11:00 a.m.	Peter Mark Memorial Award Lecture: "A Combined Experimental–Simulation Approach for Unraveling Hydrophobic Interactions at the Molecular Scale," Markus Valtiner, TU Bergakademie Freiberg, Germany	12 (CC)
12:20 p.m.	Exhibit Hall Lunch/Finale	West Exhibit Hall (CC)
12:20 p.m.	Plasma Science and Technology Division Coburn and Winters Award Ceremony	23 (CC)
12:20 p.m.	Surface Science Division Mort Traum Awards Ceremony	25 (CC)
12:30 p.m.	2018 AVS Program Committee Chairs' Meeting and Lunch	Grand Salons A-B (H)
12:30 p.m.	AVS Member Center: Professional Development-Lunch with the Editors: AVS Writer's Workshop	18 (CC)
12:30 p.m.	AVS Business Meeting	5-6 (CC)
2:20 p.m.	AVS Member Center: Professional Development-Working with National Labs and User Facilities	18 (CC)
3:30 p.m.	History Committee Meeting	Meeting Room 3 (H)
6:30 p.m.	Poster Session and Refreshments	Central Exhibit Hall (CC)
6:30 p.m.	2017/2018 Program Committee Reception and Dinner	Grand Salons C-D (H)
7:00 p.m.	*Surface Science Spectra* Editorial Board Dinner	Meeting Room 2 (H)
10:00 a.m.-2:30 p.m.	*Equipment Exhibition*	*West Exhibit Hall (CC)*

CC = Tampa Convention Center
H = Tampa Marriott Waterside Hotel & Marina

= New Attendee Networking Events

TAMPA CONVENTION CENTER



Program Key

SYMPOSIUM TOPICS

2D 2D MATERIALS FOCUS TOPIC
AC ACTINIDES AND RARE EARTHS FOCUS TOPIC
AS APPLIED SURFACE SCIENCE
BI 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
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
SU SUSTAINABILITY
TF THINS FILM
TM TANDEM MS FOCUS TOPIC
TR TRIBOLOGY FOCUS TOPIC
VT VACUUM TECHNOLOGY

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. SS**1**, SS**2**),
then a dash followed by the first two characters of the day of the week:
Monday, **Tu**esday, **We**dnesday, **Th**ursday, **Fr**iday,
then a single letter for **M**orning, **A**fternoon, **E**vening, **P**oster,
and finally a number indicating the starting time slot for the paper.
Example: SS1-MoM9 (Surface Science, Monday morning, 11:00 am).

AVS 64 Technical Program at a Glance

Room /Time	10	11	12	13	14	15	16	18	19	20
SuA										
MoM	SP+AS+NS+SS-MoM: New Imaging and Spectroscopy Method.		BI-MoM: Eng. a Paradigm Shift in Cont. of Microbes & Fouling	AS+BI+MI-MoM: Prac Surf An: Get Most of Anal. using Comp Techs.	EM+MI+TF-MoM: Growth, Elec, and Mag Prop of Heusler Compounds	2D+EM+MI+MN-MoM: Prop of 2D Mtls inc. El, Mag, Mec, Opt, Therm Prop.				TF+EM-MoM: ALD for Energy Conv, Storage, & Electrochem Processes
MoA	SP+2D+AS+NS+SS-MoA: Probing Elect and Transport Properties	MI+BI+EM+SA-MoA: Role of Chirality in Spin Transport & Mag.	PB+BI+PS-MoA: Plasma Agriculture & Processing of Biomaterials	AS+BI-MoA: Prac Surf Anal: Complex, Organic and Bio-systems	EM-MoA: Novel Materials and Devices for Electronics	2D+MI-MoA: Novel 2D Materials			NS+HC+SS-MoA: Oxides in Nano-technology	TF-MoA: Emerging Applications for ALD
MoPL										
TuM	SP+AS+MI+NS+SS-TuM: Probing Chem Reactions at the Nanoscale	MI+2D+AC+SA+SS-TuM: Novel Mag. Order at Interfaces	PB+BI+PS-TuM: Plasma Medicine	AS+MI+SS-TuM: QSA: Effective Quantitation Strategies	EM+NS-TuM: Nanostructures & Nano Films for Elec & Photo. Devices	2D+AS+SA+SP-TuM: 2D Mtls Charact incl. Microscopy & Spectroscopy			NS+EM+MI+SS-TuM: Nanoscale Electronics and Magnetism	TF-TuM: Adv. CVD and ALD Proc., ALD Mfg and Spatial-ALD
TuL										
TuA	SP+AS+MI+NS+SS-TuA: Probe-Sample Interactions	MI+2D+AC+NS-TuA: Spin-Orbit Phenom at Surf. & Interfaces	BI+AS+MI+SA-TuA: Bio from 2D to 3D: Chall. in Fab & Char & Flash Present.	AS+TF-TuA: Prob. Solving Using Surf. Anal. in the Ind. Laboratory	EM+SS-TuA: Surface & Int. Challenges in Semi. Materials and Devices	2D-TuA: Growth of 2D Materials	2D+BI+MN+SS-TuA: Surface Chem., Funct, Bio & Sensor Applications		NS+EM+MN+PS+SS-TuA: Nano-Photon, Plasmonics and Mechanics	TF-TuA: ALD Precursors and Surface Reactions
TuP										
WeM	SP+SS+TF-WeM: Probing & Manipulating Nanoscale Structure	MI+SA-WeM: Control Mag in Oxides & Multif & Chira in Spin Trans & Mag	BI+NS-WeM: Bio & Nano Fab & In Honor of Davs Castner's 65th Birthday	AS+BI+MI+NS+SA+SS-WeM: Beyond Trad. Sur. Anals: Push the Limits	EM-WeM: Charge Transport in Disordered Materials	2D+EM+SS+TF-WeM: 2D Materials Growth and Fabrication	MN+2D-WeM: 2D NEMS		NS+SS+SU-WeM: Nanotech for Renewable Energy	TF-WeM: Thin Film for Photovoltaics
WeA	TR+AS+HI+NS+SS-WeA: Molecular Origins of Friction	SE+2D+NS+SS+TF-WeA: Nanostructured Thin Films and Coatings	BI+AS-WeA: In Honor of Dave Castner's 65th Bday:Multi Bio-Surf Charact II	AS+2D+NS+SA-WeA: 2D, 3D & nD Imag of Surf, Buried Inter & Nano	EM+2D+MI+MN-WeA: Mats & Devices for Quantum Infor Processing	2D-WeA: Properties and Characterization of 2D Materials	2D+EM+MN+NS-WeA: 2D Device Physics and Applications		NS+MN+MS+SS-WeA: Nanopatt., Nanofab & 3D Nano	VT-WeA: The History & Future of Matls, Surf. and Int. (ALL INVITED)
ThM	TR+AC+TF+VT-ThM: Lubricant, Coatings, and Biotribology	SE+PS+SS-ThM: Plasma-assisted Surf Mod & Dep. Processes	BI+AS+SA-ThM: Charactiz. of Biological and Biomaterial Surfaces	AS+BI+SA+SS-ThM: Spectroscopy of the Changing Surface	EM+MI+NS+SP+SS-ThM: Phot, Optoelectronics, & Light Manipulation	2D+MI-ThM: Novel Quantum Phenomena in 2D Materials			NS+AS+EM+MI+SP+SS-ThM: Nanoscale Imaging and Charactization	TF+SE-ThM: Control, Characteriz., and Modeling of Thin Films I
ThA			BI+AS-ThA: Biomolecules and Biophysics at Interfaces	AS+SS-ThA: Adv in Instrumentation and Data Analysis	EM+NS-ThA: Wide Band Gap Mtls for Elect Dev: Growth, Model & Props.	2D+AS+SS-ThA: Dopants, Defects, and Interfaces in 2D Materials		MS-ThA: Working with Government Labs and User Facilities	NS+SP+SS-ThA: Advances in Scanning Probe Microscopy	TF+MI-ThA: Control, Characteriz., and Modeling of Thin Films II
ThP										
FrM				AS+MS-FrM: Unlocking the Sample History: Forens & Failure Anal.		2D+MI+NS+SS+TF-FrM: Nanostruc incl. Hetero & Patt. of 2D Materials				TF-FrM: Self-assembled Mono & Organic/Inorg Int. Engineering

AVS 64 Technical Program at a Glance

21	22	23	24	25	5 & 6	7 & 8	9	Ballroom B	Central Hall	West Hall
	BP-SuA: Plen– In Honor of M. Grunze's 70th Bday: Shift in Cont of Mic & Fouling									
PS+AS+SE-MoM: Atmospheric Pressure Plasmas	AC+MI+SA+SU-MoM: Mag, Com, & Super in Act & Rare Earths	PS+AS-MoM: Plasma Processing of Challenging Materials	MN+BI+NS-MoM: Feature Session: Large Scale Integ. of Nanosensors	SS+AS+MI-MoM: Organic/Inorganic Surfaces and Interfaces	TM+AS-MoM: New Instrument-ation Featuring Tandem MS	VT+MN-MoM: Progress with Measurement in Vacuum	EL+AS+EM+TF-MoM: App of SE for the Char. of TF & Nanostructs.			
	AC+AS+SA+SU-MoA: Chem & Physics of Actinides and Rare Earths	PS+AS+SS-MoA: Plasma Surface Interactions	MN+EM+NS-MoA: Nano Opto Systems/ Multiscale Nanomanufact.	SS+AS+HC-MoA: Surface Science for Energy and the Environment	TM-MoA: Apps in Mass Spectrometry Imaging using Tandem MS	VT-MoA: Mat. Outgassing, Adsorption/ Desorption and XHV	EL+AS+EM-MoA: Spect Ellip: Novel Apps & Theo Approaches			
								PLS-MoPL: AVS Plenary: Precise Chemical, Physical, & Elect Nanoscale Contacts		
	AC+AS+SA-TuM: Nuc. Power, Forens, & Other Applications	PS-TuM: Advanced FEOL/Gate Etching	MN+BI+EM+SS+TR-TuM: Mic: Relays to RF/ Surf in Micro- & Nano- Syst.	SS+HC-TuM: Control Mech of Surface Chemical Reactions	SU+AC+MI+MS-TuM: Critical Materials and Energy Sustainability	VT-TuM: Large Vacuum Systems	SA+MI-TuM: Over the Temp & Spat Lmts of XRay Scat Mds for In-Situ Anal			EW-TuM: Exhibitor Technology Spotlight
										EW-TuL: Exhibitor Technology Spotlight
	AC+MI+SA+SU-TuA: Actinide and Rare Earth Theory	PS+SS-TuA: Sci. of Plas. & Surf: Career of Harold Winters (ALL INVITED)		HC+SS-TuA: Adv in Theo Models & Sim of Heterogen Cat. Reactions	SU+2D+MS+NS-TuA: Membranes, Thin Films, and Sensors	VT+MN-TuA: Pumping	SA+AS+HC+SS-TuA: Frontiers of Photoelectron Spectroscopy			EW-TuA: Exhibitor Technology Spotlight Session
									Poster Sessions: AC, BI, EL, MI, MN, PS, SA, SP, SS, VT	
TF+EM+MI-WeM: Thin Films for Micro-electronics	PS+NS+SS-WeM: Plasma Proc. for Nanomatls. & Nanoparticles	PS-WeM: Advanced BEOL/ Interconnect Etching	HC+NS+SS-WeM: Nano Surf. Struct. in Hetero-Catal. Reactions	SS-WeM: Deposition and Growth at Surfaces	SU+AS+EM+MS-WeM: Piezo, Thermo, & Super-conductors	VT-WeM: Trans & Ultraclean Systs, Particle Control, and History	SA+2D+AC+MI-WeM: Rec Adv of Diff/Scatt & Spect Meth for Corr & 2D Mtls			EW-WeM: Exhibitor Technology Spotlight Session
	PS+SS+TF-WeA: Plasma Deposition	PS-WeA: Modeling of Plasmas	HC+SA+SS-WeA: Bridging Gaps in Hetero-Catal Reactions	SS+HC+NS-WeA: Dynamical Processes at Surfaces	MS+AS-WeA: Adv Surf, Int, & Struct. Charac for Hi Volume Manufacturing	HI-WeA: Emerging Ion Sources and Optics	SA+AS+HC+SS-WeA: In Situ & Oper Char of Inter React. in & Elec Devices			
TF-ThM: Area-selective Dep & Infiltration Growth Methods	PS-ThM: Plasma Sources	PS+NS+SS+TF-ThM: Atomic Layer Etching I	HC+SA+SS-ThM: Mechs & React. Paths in Heter. Catal. Reactions	SS+EM+HC+MI-ThM: Oxides: Structures and Reactions	MS-ThM: Additive and Other Novel Manufacturing Techniques	HI+BI+NS+TR-ThM: Advanced Ion Microscopy Applications	SA+AC+MI-ThM: Front in Prob Props & Dyn of Nano & Cor Spectros			
TF+MI+NS-ThA: ALD and Nano-structures	PS+VT-ThA: Plasma Diagnostics, Sensors and Control	PS+TF-ThA: Plasma Enhanced ALD	HC+SS-ThA: Combined Ex. & Theor Expl. of the Dyn. of Het. Cat. React	SS+AS+EM-ThA: Semiconductor Surfaces		HI+NS+TR-ThA: Novel Beam Induced Surf Anal & Nano-Pattern	VT-ThA: Surface Science for Accelerators			
									Poster Sessions 2D, AS, EM, HC, HI, MS, NS, SE, TF,TR	
		PS+NS+SS+TF-FrM: Atomic Layer Etching II	SS+HC-FrM: Recent Adv. in the Chemistry and Physics of Interfaces							

Anticipated Schedule Sunday, October 29, 2017

Anticipated Schedule Sunday Afternoon, October 29

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 _____

Special Events Sunday

8:00 AM	AVS Board of Directors' Executive Session/Florida Salon IV-Marriott (Invitation Only)
9:00 AM	AVS Board of Directors' Meeting/Florida Salon IV-Marriott
3:00 PM	JVST Associate Editors' Meeting/Meeting Room 10-Marriott (Invitation Only)
6:00 PM	ASTM E-42 Business Meeting/Meeting Room 9-Marriott
6:00 PM	Science Educators' Workshop Teachers' Reception/Meeting Room 2-Marriott (Invitation Only)
6:00 PM	Vacuum Technology Division Executive Committee Meeting & Dinner/Meeting Room 4-Marriott (Invitation Only)
7:00 PM	International Dignitaries & Chapter Chairs Reception/Il Terrazzo-Marriott (Invitation Only)
7:00 PM	Short Course Executive Committee Meeting/Bayshore Boardroom-Marriott (Invitation Only)

Biomaterials Plenary Session
Room 22 - Session BP-SuA
Plenary - Engineering a Paradigm Shift in Control of Microbes and Fouling: In Honor of Michael Grunze's 70th Birthday
Moderator: Axel Rosenhahn, Ruhr-University Bochum, Germany

3:00pm	**INVITED: BP-SuA1** Non-toxic Surfaces which Prevent Biofouling:Quo Vadis?, ***Michael Grunze,*** Karlsruhe Institute of Technology (KIT), Germany	
3:20pm	Invited talk continues.	
3:40pm	**INVITED: BP-SuA3** Engineering Serendipity: High-throughput Discovery of Materials that Resist Bacterial Attachment, ***Morgan Alexander,*** The University of Nottingham, UK	
4:00pm	Invited talk continues.	
4:20pm	**INVITED: BP-SuA5** Say 'No' to Biofouling: Slippery Coatings that Resist Adhesion of Biological Matter, ***Joanna Aizenberg,*** Harvard University	
4:40pm	Invited talk continues.	

Anticipated Schedule Monday, October 30, 2017

Anticipated Schedule Monday Morning, October 30

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, October 30

When _____

Where _____

With _____

Anticipated Schedule Monday Afternoon, October 30

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 _____

5:20 PM _____

Special Events Monday

7:00 AM	Professional Leadership Committee Meeting & Breakfast/Café Waterside-Marriott (Invitation Only)
8:00 AM	Science Educators' Workshop/Meeting Room 12-Marriott (Invitation Only)
10:20 AM	AVS Member Center: Diversity & Inclusion Speed Networking--"Navigating a Career in Science and Engineering: Successes & Challenges"/18
12:05 PM	BID Business Meeting/12
12:15 PM	2018 AVS Program Committee Meeting and Lunch/Meeting Room 7-Marriott (Invitation Only)
12:15 PM	AVS Member Center: Professional Development-"Welcome to AVS Overview"/18
12:15 PM	Recommended Practices Committee Meeting & Lunch/Florida Salon III-Marriott (Invitation Only)
1:00 PM	Biointerphases Strategic Planning Meeting/Greco Boardroom-Marriott (Invitation Only)
3:40 PM	AVS Member Center: Professional Development-Student/Young Scientist Meet and Greet with Plenary Lecturer, Paul S. Weiss/18
4:00 PM	Publications Committee Meeting/Florida Salon III-Marriott (Invitation Only)
5:30 PM	Plenary Lecture: Paul Weiss, Distinguished Professor of Chemistry & Biochemistry and of Materials Sci. & Eng., UCLA, "Precise Chemical, Physical, and Electronic Nanoscale Contacts"/ Ballroom B
6:30 PM	Biointerphases Reception/Offsite (Invitation Only)
6:30 PM	Welcome Mixer/Riverwalk
7:00 PM	ASSD Executive Committee Meeting & Dinner/Meeting Room 7-Marriott (Invitation Only)
7:30 PM	MEMS/NEMS Executive Committee Meeting and Dinner/Florida Salon III-Marriott (Invitation Only)
7:30 PM	Publications Committee Meeting & Dinner/Offsite (Invitation Only)
7:30 PM	Thin Film Division/Harper Award TED-Talk Competition/20 (Invitation Only)

	2D Materials Focus Topic **Room 15 - Session 2D+EM+MI+MN-MoM** **Properties of 2D Materials including Electronic, Magnetic, Mechanical, Optical, and Thermal Properties** **Moderator:** Andrey Turchanin, Friedrich Schiller University Jena, Germany	**Actinides and Rare Earths Focus Topic** **Room 22 - Session AC+MI+SA+SU-MoM** **Magnetism, Complexity, and Superconductivity in the Actinides and Rare Earths** **Moderator:** Tomasz Durakiewicz, Los Alamos National Laboratory
8:20am	**2D+EM+MI+MN-MoM1** Spontaneous Mechanical Buckling in Two-Dimensional Materials: A Power Source for Ambient Vibration Energy Harvesters, ***Paul Thibado***, *P. Kumar, S. Singh,* University of Arkansas	**INVITED: AC+MI+SA+SU-MoM1** Magnetic and Transport Characteristics in the Uranium Intermetallic Compounds with the $HoCoGa_5$-type Structure, ***Yoshinori Haga***, Japan Atomic Energy Agency, Japan
8:40am	**2D+EM+MI+MN-MoM2** Topological Toughening of Graphene and other 2D Materials, ***Bo Ni***, Brown university; *H.J. Gao,* Brown University	Invited talk continues.
9:00am	**2D+EM+MI+MN-MoM3** Ferroelectric Domain Control of Photoluminescence in Monolayer WSe_2 / PZT Hybrid Structures, ***Berry Jonker***, *C.H. Li, K.M. McCreary,* Naval Research Laboratory	**AC+MI+SA+SU-MoM3** Magnetic Structures of Layered U_nRhIn_{3n+2} Materials, ***Attila Bartha***, *M. Klicpera,* Charles University, Prague, Czech Republic; *P. Čermák,* Forschungszentrum Juelich GmbH, Germany; *B. Ouladdiaf,* Institut Laue Langevin, France; *P. Javorský, J. Custers,* Charles University, Prague, Czech Republic
9:20am	**2D+EM+MI+MN-MoM4** Mechanical Instability-driven Architecturing of Atomically-thin Materials, ***SungWoo Nam***, University of Illinois at Urbana-Champaign	**AC+MI+SA+SU-MoM4** U_3Si_2 – Physical Properties and Resistance to Hydrogen, ***Silvie Maskova***, Charles University, Prague, Czech Republic; *K. Miliyanchuk,* Ivan Franko National University of Lviv, Lviv, Ukraine; *S. Middleburgh,* Westinghouse Electric Sweden AB, Vasteras, Sweden; *L. Havela,* Charles University, Prague, Czech Republic
9:40am	**INVITED: 2D+EM+MI+MN-MoM5** Excitons and Exciton Complexes in Transition Metal Dichalcogenide Monolayers, ***Mark Hybertsen***, Brookhaven National Laboratory	**INVITED: AC+MI+SA+SU-MoM5** Understanding Surface Chemistry of f-element Oxides using First-principle Methods, ***Ping Yang***, Los Alamos National Laboratory
10:00am	Invited talk continues.	Invited talk continues.
10:20am	**BREAK**	**BREAK**
10:40am	**2D+EM+MI+MN-MoM8** Band Gap Tuning of MBE Grown WSe_2 via Solution Treatment of Ammonium Sulfide $(NH_4)_2S$ and Ozone (O_3), ***Jun Hong Park***, Institute for Basic Science (IBS), Ewha Womans University, Republic of Korea; *I.J. Kwak,* University of California at San Diego; *A. Rai, S.K. Banerjee,* University of Texas at Austin; *A.C. Kummel,* University of California at San Diego	**INVITED: AC+MI+SA+SU-MoM8** Inelastic X-ray Scattering Study of the Crystal Dynamics of Neptunium and Uranium Dioxide, ***Roberto Caciuffo***, European Commission, Joint Research Centre, Karlsruhe, Germany; *P. Maldonado,* Uppsala University, Sweden; *L. Paolasini,* European Synchrotron Radiation Facility, France; *P.M. Oppeneer,* Uppsala University, Sweden; *T.R. Forrest,* European Synchrotron Radiation Facility, France; *A. Prodi,* Consiglio Nazionale delle Ricerche, Italy; *N. Magnani,* European Commission, Joint Research Centre, Karlsruhe, Germany; *A. Bosak,* European Synchrotron Radiation Facility, France; *G.H. Lander,* European Commission, Joint Research Centre, Karlsruhe, Germany
11:00am	**2D+EM+MI+MN-MoM9** Mechanical Properties of Polycrystalline and Defective Graphene, ***Joseph Gonzales***, *I.I. Oleynik, J.T. Willman,* University of South Florida; *R. Perriot,* Los Alamos National Laboratory	Invited talk continues.
11:20am	**INVITED: 2D+EM+MI+MN-MoM10** Properties of Single Layer Transition Metal Dichalcogenides Grown by Van der Waals Epitaxy, ***Matthias Batzill***, University of South Florida	**INVITED: AC+MI+SA+SU-MoM10** Emergent Phenomena in 4f Heavy-Fermion Systems: from Bulk to Thin-Films, ***Priscila Rosa***, Los Alamos National Laboratory
11:40am	Invited talk continues.	Invited talk continues.

	Applied Surface Science Division **Room 13 - Session AS+BI+MI-MoM** **Practical Surface Analysis: Getting the Most Out of Your Analysis using Complementary Techniques** **Moderators:** Mark Engelhard, EMSL, Pacific Northwest National Laboratory, Michaeleen Pacholski, The Dow Chemical Company	**Biomaterial Interfaces Division** **Room 12 - Session BI-MoM** **Engineering a Paradigm Shift in Control of Microbes and Fouling** **Moderators:** Joe Baio, Oregon State University, Daniel Barlow, US Naval Research Laboratory
8:20am	**AS+BI+MI-MoM1** Obtaining Complete Characterisation of Core-shell Nanoparticle Structure and Composition *via* the use of Complementary Techniques, ***David Cant***, *C. Minelli,* National Physical Laboratory, UK; *K. Sparnacci,* Università degli Studi del Piemonte Orientale, Italy; *W. Unger,* Bundesanstalt für Materialforschung und -prüfung (BAM), Germany; *A. Hermanns,* Bundesanstalt für Materialforschung und -prüfung (BAM); *W.S.M. Werner, H. Kalbe,* TU Wien, Austria; *R. Garcia-Diez, C. Gollwitzer, M. Krumrey,* Physikalisch-Technische Bundesanstalt, Germany; *A.G. Shard,* National Physical Laboratory, UK	**BI-MoM1** Characterization of Adult Barnacle Adhesion Upon Reattachment to Hydrophobic Surfaces, ***Manuel Figueroa***, *G. Dickinson,* The College of New Jersey
8:40am		**BI-MoM2** Constructing and Deconstructing the Barnacle Adhesive Interface, *C.R. So, K.P. Fears,* US Naval Research Laboratory; *H. Ryou,* ASEE Research Fellow at US Naval Research Laboratory; *D.E. Barlow, D.H. Leary, J.A. Wollmershauser, C.M. Spillmann,* ***Kathryn Wahl***, US Naval Research Laboratory
9:00am	**INVITED: AS+BI+MI-MoM3** Correlative Microscopy based on Secondary Ion Mass Spectrometry for High-Resolution High-Sensitivity Nano-Analytics, ***Tom Wirtz***, *J.-N. Audinot, D.M.F. Dowsett, S. Eswara,* Luxembourg Institute of Science and Technology (LIST), Luxembourg	**BI-MoM3** Live Confocal Microscopy of *Balanus Amphitrite* Reveals Anti-Fouling Strategy of a Marine Fouler, ***Kenan Fears***, US Naval Research Laboratory; *B. Orihuela, D. Rittschof,* Duke University Marine Laboratory; *K.J. Wahl,* US Naval Research Laboratory
9:20am	Invited talk continues.	**BI-MoM4** Considering the Consequences of a Paradigm Shift in Biofouling Management, ***Daniel Rittschof***, *B. Orihuela,* Duke University; *K. Efimenko, J. Genzer,* NC State University
9:40am	**AS+BI+MI-MoM5** New Insights on Layered Polymer Systems, Polymer Networks and Polymerization in Defined Geometries by Combining Surface Analysis with Depth Profiling using ToF-SIMS and XPS as Analytical Tools, ***Sven Steinmüller***, Institute for Applied Materials, Karlsruhe Institute of Technology, Germany; *A. Llevot,* Institute of Organic Chemistry, Karlsruhe Institute of Technology, Germany; *D. Moock,* Institute for Applied Materials, Karlsruhe Institute of Technology, Germany; *B. Bitterer,* Institute of Organic Chemistry, Karlsruhe Institute of Technology, Germany; *F. Cavalli,* Institute for Biological Interfaces, Karlsruhe Institute of Technology, Germany; *S. Hurrle,* Institute for Chemical Technology and Polymer Chemistry, Karlsruhe Institute of Technology, Germany; *M. Bruns,* Institute for Applied Materials, Karlsruhe Institute of Technology, Germany	**BI-MoM5** Microbiological Fouling on Aircraft: Understanding the Mechanisms of Polyurethane Topcoat Deterioration by Fungal Isolates, ***Daniel Barlow***, *J.C. Biffinger,* US Naval Research Laboratory; *C.-S. Hung,* Air Force Research Laboratory; *L.J. Nadeau,* Air Force Institute of Technology; *A.L. Crouch, T. Zicht,* Air Force Research Laboratory; *J.N. Russell, Jr.,* US Naval Research Laboratory; *W.J. Crookes-Goodson,* Air Force Research Laboratory
10:00am	**AS+BI+MI-MoM6** Combining Monoatomic- and Cluster Ion Sputtering in ToF-SIMS and XPS Depth Profiling of Organic-inorganic Multilayer Structures, ***Eric Langer***, *J.-P. Barnes, O.J. Renault, T. Maindron,* CEA-Leti, France; *L. Houssiau,* University of Namur, Belgium	**BI-MoM6** Dynamic Accumulation Assays under Laminar Flow Conditions to Probe Attachment of Marine Biofilm Formers, ***Kim Alexander Nolte***, *J. Schwarze, A. Rosenhahn,* Ruhr-University Bochum, Germany
10:20am	**BREAK**	**BREAK**
10:40am	**AS+BI+MI-MoM8** Ultra High Surface Sensitivity – Elemental Analysis of the Outer Layer, ***Thomas Grehl***, *P. Brüner, H.H. Brongersma,* ION-TOF GmbH, Germany	**BI-MoM8** Coatings with Amphiphilic Surfaces Via Self-Stratification for Marine Fouling-Release Applications, ***Dean Webster***, *T. Galhenage, S. Stafslien, L. Vanderwal,* North Dakota State University
11:00am	**AS+BI+MI-MoM9** Towards Predictive Understanding of Li-S Battery Materials through Multimodal Analysis, ***Vijayakumar Murugesan***, *K. Han, M.I. Nandasiri, V. Shutthanandan, S. Thevuthasan, K.T. Mueller,* Pacific Northwest National Laboratory	**BI-MoM9** Zero-Energy Flux Recovery in Biofouled Liquid Gated Membranes, *J.C. Overton,* ***Caitlin Howell***, University of Maine
11:20am	**AS+BI+MI-MoM10** Combined use of Back Side SIMS and FIB Sample Preparation, ***Mikhail Klimov***, University of Central Florida	**INVITED: BI-MoM10** Stimuli Responsive Polymers in Biofouling and Bioadhesion, ***Gabriel Lopez***, University of New Mexico
11:40am	**AS+BI+MI-MoM11** Phase Quantification of Mixed TiO_2 Powders by X-ray Photoemission Valence Band Analysis and Raman Spectroscopy, ***Paul Mack***, *T.S. Nunney,* Thermo Fisher Scientific, UK; *R.G. Palgrave,* University College London, United Kingdom of Great Britain and Northern Ireland	Invited talk continues. **12:05 BID BUSINESS MEETING**

	Spectroscopic Ellipsometry Focus Topic **Room 9 - Session EL+AS+EM+TF-MoM** **Application of SE for the Characterization of Thin Films and Nanostructures** **Moderator:** Tino Hofmann, University of North Carolina at Charlotte	**Electronic Materials and Photonics Division** **Room 14 - Session EM+MI+TF-MoM** **Growth, Electronic, and Magnetic Properties of Heusler Compounds** **Moderators:** Rehan Kapadia, University of Southern California, Seth King, University of Wisconsin - La Crosse
8:20am	**INVITED: EL+AS+EM+TF-MoM1** Ultra-thin Plasmonic Metal Nitrides: Optical Properties and Applications, ***Alexandra Boltasseva,*** Purdue University	**EM+MI+TF-MoM1** Semiconducting Half-Heusler Heterostructures Grown by Molecular Beam Epitaxy, ***Anthony Rice,*** *S.D. Harrington, D.J. Pennachio, M. Pendharkar, C.J. Palmstrøm,* University of California at Santa Barbara
8:40am	Invited talk continues.	**EM+MI+TF-MoM2** Towards Topotronics: Combining Chemical Potential Tuning and Strain Engineering to Realize Surface Dominated Transport in Topological Heusler Thin Films, ***Shouvik Chatterjee,*** *J.A. Logan, N.S. Wilson, M. Pendharkar, C.J. Palmstrøm,* University of California at Santa Barbara
9:00am	**EL+AS+EM+TF-MoM3** Magnetron Sputtering of TiN Coatings: Optical Monitoring of the Growth Process by Means of Spectroscopic Ellipsometry, ***Jiri Bulir,*** *J. More Chevalier, L. Fekete, J. Remiasova, M. Vondracek, M. Novotny, J. Lancok,* Institute of Physics ASCR, Czech Republic	**INVITED: EM+MI+TF-MoM3** Topology, Magnetism, and Superconductivity in Ternary Half-Heusler Semimetals, ***Johnpierre Paglione,*** University of Maryland, College Park
9:20am	**EL+AS+EM+TF-MoM4** Variable Temperatures Spectroscopic Ellipsometry Study of the Optical Properties of InAlN/GaN Grown on Sapphire, *Y. Liang,* Guangxi University, China*; H.G. Gu,* Huazhong University of Science and Technology, China*; J. Xue,* Xidian University, China*;* ***Chuanwei Zhang,*** Huazhong University of Science and Technology, China*; Q. Li,* Guangxi University, China*; Y. Hao,* Xidian University, China*; S.Y. Liu,* Huazhong University of Science and Technology, China*; Q. Yang, L. Wan, Z.C. Feng,* Guangxi University, China	Invited talk continues.
9:40am	**EL+AS+EM+TF-MoM5** Optical Properties of $Cs_2AgIn_{(1-x)}Bi_xCl_6$ Double Perovskite Studied by Spectroscopic Ellipsometry, ***Honggang Gu,*** *S.R. Li, B.K. Song, J. Tang, S.Y. Liu,* Huazhong University of Science and Technology, China	**EM+MI+TF-MoM5** Electron Counting, Surface Reconstructions, and Electronic Structure of 18 Electron Half Heuslers, ***Jason Kawasaki,*** University of Wisconsin - Madison*; A. Janotti,* University of Delaware*; C.J. Palmstrøm,* University of California at Santa Barbara
10:00am	**EL+AS+EM+TF-MoM6** Charge Carrier Dynamics of Aluminum-doped Zinc Oxide Deposited by Spatial Atomic Layer Deposition, ***Daniel Fullager,*** *G. Boreman, T. Hofmann,* University of North Carolina at Charlotte*; C.R. Ellinger,* Eastman Kodak Company	**EM+MI+TF-MoM6** Computational Investigation of Heusler Compoundss for Spintronic Applications, ***Jianhua Ma,*** University of Virginia*; W.H. Butler,* University of Alabama
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: EL+AS+EM+TF-MoM8** Broad Range Ellipsometry Shining Light onto Multiphase Plasmonic Nanoparticles Synthesis, Properties and Functionality, ***Maria Losurdo,*** CNR-NANOTEC, Italy	**EM+MI+TF-MoM8** Electronic Structure of Half-Heusler-based Heterostructures, ***Anderson Janotti,*** *A. Sharan,* University of Delaware
11:00am	Invited talk continues.	**EM+MI+TF-MoM9** Growth, Electronic, and Magnetic Properties of Half-Heusler $CoTi_{1-x}Fe_xSb$, ***Sean Harrington,*** *A.D. Rice, T. Brown-Heft, A.P. McFadden, M. Pendharkar,* University of California at Santa Barbara*; O. Mercan, L. Çolakerol Arslan,* Gebze Technical University, Turkey*; C.J. Palmstrøm,* University of California at Santa Barbara
11:20am	**EL+AS+EM+TF-MoM10** Use of Evolutionary Algorithms for Ellipsometry Model Development and Validation using Eureqa, ***Neil Murphy,*** Air Force Research Laboratory*; L. Sun,* General Dynamics Information Technology*; J.G. Jones,* Air Force Research Laboratory*; J.T. Grant,* Azimuth Corporation	**EM+MI+TF-MoM10** High Spin-Polarization and Perpendicular Magnetic Anisotropy in Single-Crystal Full-Heusler Co_2MnAl/Fe_2MnAl Superlattice, ***Tobias Brown-Heft,*** *A.P. McFadden, J.A. Logan,* University of California at Santa Barbara*; C. Guillemard,* University of Lorraine, France*; P. Le Fevre, F. Bertran,* Synchrotron SOLEIL, France*; S. Andrieu,* University of Lorraine, France*; C.J. Palmstrøm,* University of California at Santa Barbara
11:40am	**EL+AS+EM+TF-MoM11** Excitonic Effects on the Optical Properties of Thin ZnO Films on Different Substrates, ***Nuwanjula Samarasingha,*** *Z. Yoder, S. Zollner,* New Mexico State University*; D. Pal, A. Mathur, A. Singh, R. Singh, S. Chattopadhyay,* Indian Institute of Technology Indore, India	**EM+MI+TF-MoM11** Formation of the Epitaxial MgO/Full-Heusler Co_2MnSi Interface: Oxygen Migration and Elemental Segregation, ***Anthony McFadden,*** *T. Brown-Heft, N.S. Wilson, J.A. Logan, C.J. Palmstrøm,* University of California at Santa Barbara

	MEMS and NEMS Group **Room 24 - Session MN+BI+NS-MoM** **Feature Session: Large Scale Integration of Nanosensors** **Moderators:** Wayne Hiebert, National Institute for Nanotechnology, Canada, Robert Davis, Brigham Young University	**Plasma Science and Technology Division** **Room 21 - Session PS+AS+SE-MoM** **Atmospheric Pressure Plasmas** **Moderators:** Olivier Guaitella, Ecole Polytechnique - CNRS, France, Seiji Samukawa, Tohoku Univeversity, AIST, Japan
8:20am	**INVITED: MN+BI+NS-MoM1** Large Scale Integration: A Not-so-simple Cure for Loneliness of Silicon Nanoresonators, ***Sébastien Hentz,*** Cea Leti, France	**PS+AS+SE-MoM1** Study of Atmospheric-pressure kHz Multi-jet Plasma System, ***Vladimir Milosavljevic,*** *J. Lalor, L. Scally, P.J. Cullen,* Dublin Institute of Technology, Ireland
8:40am	Invited talk continues.	**PS+AS+SE-MoM2** Synthesis of Nitrates by Atmospheric Microplasma Over Water : Effect of the Experimental Parameters and Intermediate Species, ***Nicolas Maira,*** *C. De Vos, F. Reniers,* Université Libre de Bruxelles, Belgium
9:00am	**INVITED: MN+BI+NS-MoM3** Nanomechanical Sensors (MSS, AMA) Toward IoT Olfactory Sensor System, ***Genki Yoshikawa,*** National Institute for Materials Science, Japan	**PS+AS+SE-MoM3** Plasma Catalysis for CO_2 and CH_4 Conversion at Atmospheric Pressure, *A. Ozkan, S. Chorfi, L. Brune, T. Visart de Bocarmé,* ***François Reniers,*** Université Libre de Bruxelles, Belgium
9:20am	Invited talk continues.	**PS+AS+SE-MoM4** Aluminium Surface Plasma Treatment at Atmosphere Pressure, ***Lucia Bonova,*** *I.A. Shchelkanov, C. Ahn, S. Chaudhuri, D.N. Ruzic,* University of Illinois at Urbana-Champaign
9:40am	**MN+BI+NS-MoM5** Micro-Gas Chromatography Linked with Nano-optomechanical Systems for Breath Analysis, ***Khulud Almutairi,*** University of Alberta, Canada; *W.K. Hiebert,* National Institute for Nanotechnology, Canada	**INVITED: PS+AS+SE-MoM5** The Role of Bulk Liquid Transport Processes in the Plasma-Liquid Interfacial Chemistry, ***Selma Mededovic Thagard,*** *M. Vasilev, D. Bohl, P. Conlon,* Clarkson University
10:00am	**MN+BI+NS-MoM6** Micro Chladni Figures and Multimode Manipulation of Breast Cancer Cells in Liquid, ***Hao Jia,*** *H. Tang,* Case Western Reserve University; *X. Liu, H. Liu,* Northwestern University; *P.X.-L. Feng,* Case Western Reserve University	Invited talk continues.
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: MN+BI+NS-MoM8** Microfabrication and Assembly Processes for Integrating Microelectrode Arrays into Tissue-Engineered Scaffolds for Novel Nerve Interfaces, ***Jack Judy,*** *C. Kuliasha, P. Rustogi, S. Natt, B. Spearman, S. Mohini, J.B. Graham, E.W. Atkinson, E.A. Nunamaker, K.J. Otto, C.E. Schmidt,* University of Florida	**PS+AS+SE-MoM8** Efficiency of Electrolytic Reduction of Aqueous Metal Salts to Metal Nanoparticles at a Plasma-Liquid Interface, *S. Ghosh,* ***Ryan Hawtof,*** Case Western Reserve University; *P. Rumbach, D.B. Go,* University of Notre Dame; *R. Akolkar, R.M. Sankaran,* Case Western Reserve University
11:00am	Invited talk continues.	
11:20am	**INVITED: MN+BI+NS-MoM10** Magnetically Actuated Synthetic Cilia for Microfluidics, ***Peter Hesketh,*** *S.K.G. Hanasoge, M. Ballard,* Georgia Institute of Technology; *M. Erickson,* University of Georgia; *A. Alexeev,* Georgia Institute of Technology	**INVITED: PS+AS+SE-MoM10** Amorphous Indium Zinc Oxide (IZO) Semiconductor Films Grown by Atmospheric Plasma-Enhanced Spatial ALD for Application as High-Mobility Channel in Thin Film Transistors, *A. Illiberi, I. Katsouras, S. Gazibegović, B. Cobb, E. Nekovic,* TNO-Holst Centre, Netherlands; *W. van Boekel, C. Frijters,* TNO-Solliance, Netherlands; *J. Maas,* TNO-Holst Centre, Netherlands; ***Fred Roozeboom,*** TNO-Holst Centre & Eindhoven University of Technology, Netherlands; *Y.L.M. Creyghton,* TNO-Solliance, Netherlands; *P. Poodt,* TNO-Holst Centre, Netherlands; *G. Gelinck,* TNO-Holst Centre & Eindhoven University of Technology, Netherlands
11:40am	Invited talk continues.	Invited talk continues.

	Plasma Science and Technology Division **Room 23 - Session PS+AS-MoM** **Plasma Processing of Challenging Materials** **Moderators:** Erik V. Johnson, LPICM, Ecole Polytechnique, France, Osamu Sakai, The University of Shiga Prefecture	**Scanning Probe Microscopy Focus Topic** **Room 10 - Session SP+AS+NS+SS-MoM** **New Imaging and Spectroscopy Methodologies** **Moderators:** Wonhee Ko, Oak Ridge National Laboratory, An-Ping Li, Oak Ridge National Laboratory
8:20am	**PS+AS-MoM1** Control of Plasma Doping Conformality in FinFET Arrays, ***Mona Ebrish,*** *O. Gluschenkov,* IBM Research Division*; M.J.P. Hopstaken,* IBM T.J. Watson Research Center*; F. Torregrosa,* Ion Beam Services	**INVITED: SP+AS+NS+SS-MoM1** Charge Transport through Nanostructures measured with a Multi-Tip STM, ***Bert Voigtländer,*** Forschungszentrum Juelich, Germany
8:40am	**PS+AS-MoM2** Study of Plasma-etching Parameter Impacts on Two-dimensional Electron Gas Degradation in AlGaN/GaN Heterostructures, ***Frédéric Le Roux,*** *P. Burtin, N. Possémé, A. Torres, S. Barnola,* CEA-Leti, France	Invited talk continues.
9:00am	**INVITED: PS+AS-MoM3** Spatiotemporal Non-uniformity of CVD Plasmas and Film Qualities, ***Masaharu Shiratani,*** Kyushu University, Japan	**SP+AS+NS+SS-MoM3** Robust High-Resolution Imaging and Quantitative Force Spectroscopy in Vacuum with Tuned-Oscillator Atomic Force Microscopy, ***Omur Dagdeviren,*** *J. Goetzen,* Yale University*; H. Holscher,* Karlsruhe Institute of Technology (KIT), Germany*; E.I. Altman, U.D. Schwarz,* Yale University
9:20am	Invited talk continues.	**SP+AS+NS+SS-MoM4** Electrical Transport Measurements with Atomically Precise Probes, ***Markus Maier,*** *J. Koeble, R. Thiel, M. Fenner, A. Pirou, D. Stahl, T. Roth,* Scienta Omicron GmbH
9:40am	**PS+AS-MoM5** Surface-driven CH_4 generation from CO_2 in Low-pressure Non-thermal Plasma, ***Kazunori Koga,*** *S. Toko, S. Tanida, M. Shiratani,* Kyushu University, Japan	**INVITED: SP+AS+NS+SS-MoM5** Planar Two-probe Scanning Tunneling Spectroscopy Measurements at the Atomic Level, ***Marek Kolmer,*** Jagiellonian University, Krakow, Poland
10:00am	**PS+AS-MoM6** Plasma Modification of Carbon Fibres for Tough Carbon Fibre Composites, ***Sally McArthur,*** *R. Radjef, BL. Fox,* Swinburne University of Technology, Australia	Invited talk continues.
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: PS+AS-MoM8** Damage Free Plasma Etching Processes of III-V Semiconductors for Microelectronic and Photonic Applications, ***Erwine Pargon,*** *M. Bizouerne, C. Petit-Etienne, L. Vallier, G. Gay, M. Fahed, K. Rovayaz, M. Fouchier, C. Bellegarde, V. Renaud, G. Cunge, O. Joubert,* CNRS-LTM, Université Grenoble Alpes, France*; E. Martinez, N. Rochat,* CEA-Leti, France	**SP+AS+NS+SS-MoM8** An Ultrafast Scanning Probe Microscopy Technique for Imaging Polarization Switching in Ferroelectric Materials, ***Suhas Somnath,*** *S.V. Kalinin, S. Jesse,* Oak Ridge National Laboratory
11:00am	Invited talk continues.	**SP+AS+NS+SS-MoM9** Direct Probing of the Graphene-Electrolyte Double Layer Potential, ***Evgheni Strelcov,*** NIST Center for Nanoscale Science and Technology / University of Maryland*; A. Tselev,* University of Aveiro, Portugal*; H.X. Guo, A. Yulaev,* NIST Center for Nanoscale Science and Technology / University of Maryland*; I. Vlassiouk,* Oak Ridge National Laboratory*; N.B. Zhitenev, W. McGehee, B. Hoskins, J.J. McClelland, A. Kolmakov,* NIST Center for Nanoscale Science and Technology
11:20am	**PS+AS-MoM10** Fabrication of Metal Nanoparticle-dispersed Nanocomposite Films by *In Situ* Plasma Reduction of Metal Cation-containing Polymer Films, *D.R. Boris,* Naval Research Laboratory*;* ***Souvik Ghosh,*** Case Western Reserve University*; S.C. Hernandez,* Naval Research Laboratory*; C.A. Zorman,* Case Western Reserve University*; S.G. Walton,* Naval Research Laboratory*; R.M. Sankaran,* Case Western Reserve University	**SP+AS+NS+SS-MoM10** Quasiparticle Interference Mapping of ZrSiS, ***Michael Lodge,*** University of Central Florida*; G. Chang, B. Singh,* National University of Singapore*; J. Hellerstedt, M.T. Edmonds,* Monash University, Australia*; D. Kaczorowski,* Polish Academy of Sciences*; M.M. Hosen, M. Neupane,* University of Central Florida*; H. Lin,* National University of Singapore, Singapore*; M. Fuhrer,* Monash University, Australia*; B. Weber,* Nanyang Technological University, Singapore*; M. Ishigami,* University of Central Florida

	Surface Science Division **Room 25 - Session SS+AS+MI-MoM** **Organic/Inorganic Surfaces and Interfaces** **Moderators:** Liney Arnadottir, Oregon State University, Bruce Koel, Princeton University	**Thin Films Division** **Room 20 - Session TF+EM-MoM** **ALD for Energy Conversion, Storage, and Electrochemical Processes** Moderator: **Mark Losego, Georgia Institute of Technology**
8:20am	**INVITED: SS+AS+MI-MoM1** The Use of EC-STM to Study the Nanoscale Structure and Behavior of Atomically Thin Ag Films on Au Surfaces, *J.A. Phillips, H.R. Morgan, L.E. Jackson, G. LeBlanc,* ***Erin Iski,*** University of Tulsa	**TF+EM-MoM1** Synthesis and Characterization of All Solid-State SnO_xN_y/LiPON/Li Batteries, ***David Stewart,*** *A.J. Pearse, K. Gregorczyk, G. Rubloff,* University of Maryland, College Park
8:40am	Invited talk continues.	**TF+EM-MoM2** Molecular Layer Deposition for Applications in Lithium-Ion Batteries, *K. Van de Kerckhove, F. Mattelaer, J. Dendooven,* ***Christophe Detavernier,*** Ghent University, Belgium
9:00am	**SS+AS+MI-MoM3** Decomposition and Self-Assembly of Coronene on Pt(111), ***Chen Wang,*** University of California Irvine; *K. Thurmer, N. Bartelt,* Sandia National Laboratories	**TF+EM-MoM3** Engineering Hybrid Thin Film Electrolytes for 3D Lithium-ion Battery Applications, ***Ryan Sheil,*** *J. Lau,* University of California at Los Angeles; *P. Moni,* MIT; *C. Choi,* University of California at Los Angeles; *K. Jungjohann,* Sandia National Laboratories; *J. Yoo,* Los Alamos National Laboratory; *K. Gleason,* MIT; *B. Dunn, J.P. Chang,* University of California at Los Angeles
9:20am	**SS+AS+MI-MoM4** Understanding of Single-layer ZnS Supported on Au(111), ***Xingyi Deng,*** *D.C. Sorescu, J. Lee,* National Energy Technology Laboratory	**TF+EM-MoM4** Carbon Encapsulated CNT Micropillars for Silicon Lithium Ion Battery Electrodes, ***Kevin Laughlin,*** *E. Laughlin, R. Fan, R.F. Davis, R.R. Vanfleet, J. Harb,* Brigham Young University
9:40am	**SS+AS+MI-MoM5** X-ray Microscopy and Spectroscopy Insights of Metal-Organics Contacts, ***Der-Hsin Wei,*** *K.T. Lu, T.H. Chuang, C.I. Lu, Y.J. Hsu,* National Synchrotron Radiation Research Center, Taiwan, Republic of China	**TF+EM-MoM5** Porous Oxide Shell on the Supported Gold Nanoparticles Synthesized via Polymer-Templated Atomic Layer Deposition, ***Haoming Yan,*** *X.Z. Yu, Q. Peng,* University of Alabama
10:00am	**SS+AS+MI-MoM6** Anchoring of Carboxylic and Phosphonic Acids on Atomically Defined Oxide Surfaces: The Role of Protons, Hydroxyl Groups and Water, *M. Schwarz, T. Xu, S. Mohr, C. Schuschke,* ***Joerg Libuda,*** University Erlangen-Nuernberg, Germany	**TF+EM-MoM6** Three-Dimensional Solid State Batteries Grown Via Atomic Layer Deposition, ***Alexander Pearse,*** *T. Schmitt, D. Stewart, E. Sahadeo, K. Gregorczyk,* University of Maryland, College Park; *K. Gerasopoulos,* Johns Hopkins Applied Physics Lab; *G. Rubloff,* University of Maryland, College Park
10:20am	**BREAK**	**BREAK**
10:40am	**SS+AS+MI-MoM8** Thiolate *versus* Selenolate: Structure, Binding Strenght, Thermal Stability, and Charge Transfer Properties, *J. Ossowski,* Jagiellonian University, Poland; *T. Wächter,* Universität Heidelberg, Germany; *T. Žaba,* Jagiellonian University, Poland; *L. Silies, M. Kind,* Universität Frankfurt, Germany; *A. Noworolska,* Jagiellonian University, Poland; *F. Blobner,* Technische Universität München, Germany; *D. Gnatek, J. Rysz,* Jagiellonian University, Poland; *M. Bolte,* Universität Frankfurt, Germany; *P. Feulner,* Technische Universität München, Germany; *A. Terfort,* Universität Frankfurt, Germany; *M. Zharnikov,* Universität Heidelberg, Germany; ***Piotr Cyganik,*** Jagiellonian University, Poland	**INVITED: TF+EM-MoM8** Systematic Investigation of Geometric Effects in Porous Electrodes for Energy Conversion Reactions, ***Julien Bachmann,*** University of Erlangen, Germany
11:00am	**SS+AS+MI-MoM9** Preserving Material Morphology by Gas-Phase Functionalization: Surface Modification of ZnO with Propiolic Acid, *F. Gao,* University of Delaware; *S. Aminane,* Université Pierre et Marie Curie, France; *S. Bai,* ***Andrew Teplyakov,*** University of Delaware	Invited talk continues.
11:20am	**SS+AS+MI-MoM10** Enhanced Long-range Magnetic Order by the Organic-Ferromagnetic Hybrid Interface, ***Yao-Jane Hsu,*** *M.W. Lin,* National Synchrotron Radiation Research Center, Taiwan, Republic of China; *P.H. Chen,* National Tsing-Hua University, Taiwan, Republic of China; *Y.L. Lai,* National Synchrotron Radiation Research Center, Taiwan, Republic of China; *T.N. Lam,* National Chiao-Tung University, Taiwan, Republic of China; *D.H. Wei, H.J. Lin, Y.Y. Chin,* National Synchrotron Radiation Research Center, Taiwan, Republic of China; *J.H. Wang,* National Taiwan Normal University, Taiwan, Republic of China	**TF+EM-MoM10** Development of a Reduction-resistant Oxide Electrode for Dynamic Random Access Memory Capacitor, ***CheolJin Cho,*** *M.-S. Noh, W.C. Lee,* Korea Institute of Science and Technology, Republic of Korea; *C.H. An,* Seoul National University, Republic of Korea; *C.-Y. Kang,* Korea Institute of Science and Technology, Republic of Korea; *C.S. Hwang,* Seoul National University, Republic of Korea; *S.K. Kim,* Korea Institute of Science and Technology, Republic of Korea
11:40am	**SS+AS+MI-MoM11** Interaction of Coronene with Mo-C_{60} Nanospheres: The Effects of Substrate Curvature on Molecular Adsorption, ***Nathaniel W. Kabat,*** *E. Monazami, P. Reinke,* University of Virginia	

	Tandem MS Focus Topic **Room 5 & 6 - Session TM+AS-MoM** **New Instrumentation Featuring Tandem MS** **Moderators:** Chris Anderton, Pacific Northwest National Laboratory, Daniel Graham, University of Washington	**Vacuum Technology Division** **Room 7 & 8 - Session VT+MN-MoM** **Progress with Measurement in Vacuum** **Moderators:** Martin Wüest, INFICON Ltd., Liechtenstein, Steve Borichevsky, Applied Materials, Varian Semiconductor Equipment
8:20am	**INVITED: TM+AS-MoM1** *In Situ* MS/MS Analysis on Biological Samples using Imaging Secondary Ion Mass Spectrometry (SIMS), ***Hua Tian,*** Pennsylvania State University	**VT+MN-MoM1** New Vacuum Standard by Ultra-Precise Refractive Index Measurement, ***Jay Hendricks,*** *J.E. Ricker, J.A. Stone, P. Egan, G.E. Scace, K.O. Douglass, D.A. Olson, G.F. Strouse,* NIST
8:40am	Invited talk continues.	**VT+MN-MoM2** Construction and Testing of the NIST Variable Length Optical Cavity Pressure Standard, ***Jacob Ricker,*** *J. Hendricks, G.E. Scace, P. Egan, J.A. Stone,* NIST
9:00am	**TM+AS-MoM3** Molecular Depth Profiling with a New Hybrid SIMS Instrument for Improved Molecular Identification using Tandem MS, ***Alexander Pirkl,*** *R. Moellers, H.F. Arlinghaus, J. Zakel, D. Rading, E. Niehuis,* ION-TOF GmbH, Germany	**INVITED: VT+MN-MoM3** Fast-Switching Dual Fabry-Perot Cavity-based Optical Refractometry – A Powerful Technique for Drift-Free Assessment of Gas Refractivity and Density, ***Ove Axner,*** *I. Silander, T. Hausmaninger,* Umeå University, Sweden*; M. Zelan,* RISE Research Institutes of Sweden, Sweden
9:20am	**TM+AS-MoM4** Spatially-resolved Tandem Mass Spectrometry Increases Molecular Confidence in a Multimodal Mass Spectrometry Imaging Investigation of a Tripartite Plant-fungus-cyanobacteria Interaction, ***Dušan Veličković,*** Pacific Northwest National Laboratory*; A.A. Carrell,* Duke University*; R.K. Chu,* Pacific Northwest National Laboratory*; D. Pelletier,* Oak Ridge National Laboratory*; L. Paša-Tolić,* Pacific Northwest National Laboratory*; D.J. Weston,* Oak Ridge National Laboratory*; C.R. Anderton,* Pacific Northwest National Laboratory	Invited talk continues.
9:40am	**TM+AS-MoM5** The Biosynthesis of Protective Metabolites in Amazonian *Sextonia rubra* Revealed by 100 nm-Scale TOF-SIMS Tandem MS Imaging, ***Gregory L. Fisher,*** Physical Electronics*; T. Fu, D. Touboul,* Institut de Chimie des Substances Naturelles, CNRS, France*; S. Della-Negra,* Institut de Physique Nucléaire, CNRS, France*; E. Houël, N. Amusant, C. Duplais,* Cirad, UMR EcoFoG, AgroParisTech, CNRS, INRA, France*; A. Brunelle,* Institut de Chimie des Substances Naturelles, CNRS, France	**VT+MN-MoM5** Cold Cathode Gauge Improvements Extend Performance into UHV Pressure Range, ***Timothy Swinney,*** *G. Brucker,* MKS Instruments, Inc., Pressure and Vacuum Measurement Group
10:00am		**VT+MN-MoM6** Sapphire MEMS based Capacitance Diaphragm Vacuum Gauge for 0-0.1Torr Operating at 200 °C, ***Takuya Ishihara,*** Azbil Corporation, Japan*; M. Sekine, M. Soeda, M. Nagata,* Azbil Corporation
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: TM+AS-MoM8** Metabolite Annotation for Ultra-HR Imaging Mass Spectrometry: MS1 and Beyond, ***Theodore Alexandrov,*** European Molecular Biology Laboratory, Germany	**INVITED: VT+MN-MoM8** ROSINA/Rosetta: Exploring the Origin of our Solar System with Mass Spectrometry in Space, ***Kathrin Altwegg,*** University of Bern, Switzerland
11:00am	Invited talk continues.	Invited talk continues.
11:20am	**TM+AS-MoM10** Multivariate Analysis of combined ToF-SIMS and Orbitrap-SIMS data, ***Henrik Arlinghaus,*** *M.R. Keenan, A. Pirkl, R. Moellers, E. Niehuis,* ION-TOF GmbH, Germany	**VT+MN-MoM10** Stabilization of Emission Current from Cold Field Emitters by Reducing Pressure to 10^{-10} Pa, ***Keigo Kasuya,*** *T. Ohshima, S. Katagiri, T. Kawasaki,* Hitachi, Ltd., Japan
11:40am		**VT+MN-MoM11** Measurement and Prediction of Quadrupole Mass Spectrometer Sensitivities, ***Robert Ellefson,*** REVac Consulting

	2D Materials Focus Topic Room 15 - Session 2D+MI-MoA Novel 2D Materials **Moderator:** Kathleen McCreary, Naval Research Laboratory	Actinides and Rare Earths Focus Topic Room 22 - Session AC+AS+SA+SU-MoA Chemistry and Physics of the Actinides and Rare Earths **Moderator:** David Shuh, Lawrence Berkeley National Laboratory
1:40pm	**2D+MI-MoA1** Novel 2-D Superlattice Structure Proposed for Low Loss High Frequency RF Applications, ***Sheena Hussaini,*** Nokia	**AC+AS+SA+SU-MoA1** Oxidation and Crystal Field Effects in Uranium, ***James G. Tobin,*** University of Wisconsin-Oshkosh; *S.W. Yu,* Lawrence Livermore National Laboratory; *C.H. Booth,* Lawrence Berkeley National Laboratory; *T. Tyliszczak,* Lawrence Berkeley Lab, University of California, Berkeley; *D.K. Shuh,* Lawrence Berkeley National Laboratory; *G. van der Laan,* Diamond Light Source, UK; *D. Sokaras, D. Nordlund, T.C. Weng,* Stanford Synchrotron Radiation Lightsource; *P.S. Bagus,* University of North Texas
2:00pm	**2D+MI-MoA2** Computational Characterization of 2D Perovskite Oxides Nanosheets, ***Yanfu Lu,*** *S. Sinnott,* Pennsylvnia State University	**AC+AS+SA+SU-MoA2** Electron Spectroscopy Studies of U and U-Mo Hydrides, ***Ladislav Havela,*** *M. Paukov, M. Dopita, L. Horak, M. Divis, I. Turek,* Charles University, Prague, Czech Republic; *T. Gouder, A. Seibert, F. Huber,* European Commission, Joint Research Centre, Karlsruhe, Germany; *D. Legut,* VSB - Technical University of Ostrava
2:20pm	**INVITED: 2D+MI-MoA3** Electronic and Optoelectronic Physics in the van der Waals Heterojunctions, ***Philip Kim,*** Harvard University	**INVITED: AC+AS+SA+SU-MoA3** Comparative Structural Studies of Tetravalent f ions in Solids and in Aqueous Solutions, ***Lynda Soderholm,*** Argonne National Laboratory
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**2D+MI-MoA5** Discovery of over 1000 New Two-dimensional Materials, 487 One-dimensional Molecular Wires and 98 Naturally Occurring Heterostructures, ***Gowoon Cheon,*** *K.-A.N. Duerloo, A.D. Sendek, C. Porter, Y. Chen, E.J. Reed,* Stanford University	
3:20pm	**2D+MI-MoA6** Group III Phosphates as Two Dimensional van der Waals Materials, ***Eric Altman,*** Yale University	
3:40pm	**BREAK**	**BREAK**
4:00pm	**2D+MI-MoA8** Anisotropic 2D Palladium Diselenide with High Mobility for Air-stable Electronics, ***Akinola Oyedele,*** University of Tennessee; *L. Liang, A.A. Puretzky, S. Yang, A. Strasser,* Oak Ridge National Laboratory; *C.M. Rouleau,* Oak Ridge National Laboratory; *B.G. Sumpter, D.B. Geohegan,* Oak Ridge National Laboratory; *K. Xiao,* Center for Nanophase Materials Sciences, Oak Ridge National Laboratory	**INVITED: AC+AS+SA+SU-MoA8** Interfacial Dynamics in Radiation Environments and Materials: An Energy Frontier Research Center, ***Sue Clark,*** Pacific Northwest National Laboratory
4:20pm	**2D+MI-MoA9** Hexagonal Boron-Carbon-Nitrogen – A Two-dimensional Direct Band Gap Semiconductor, ***Axel Enders,*** University of Bayreuth, Germany; *S. Beniwal,* University of Nebraska - Lincoln; *J. Hooper,* Jagiellonian University, Poland; *DP. Miller,* SUNY Buffalo; *P.S. Costa,* University of Nebraska - Lincoln; *S.Y. Liu,* Boston College; *E.C.H. Sykes,* Tufts University; *E. Zurek,* SUNY Buffalo	Invited talk continues.
4:40pm	**INVITED: 2D+MI-MoA10** Fundamentals and Applications of Pseudo-1D / Anisotropic Atomically Thin Materials, ***Sefaattin Tongay,*** Arizona State University	**AC+AS+SA+SU-MoA10** Real Structure of Nanocrystalline Uranium based Hydrides Studied By the X-ray Scattering Methods, ***Milan Dopita,*** *L. Havela, L. Horak, M. Paukov,* Charles University, Prague, Czech Republic; *Z. Matej,* MAX-IV, Lund, Sweden
5:00pm	Invited talk continues.	

	Applied Surface Science Division **Room 13 - Session AS+BI-MoA** **Practical Surface Analysis: Complex, Organic and Bio-systems** **Moderators:** Scott Lea, Pacific Northwest National Laboratory, Paulina Rakowska, National Physical Laboratory, UK	**Spectroscopic Ellipsometry Focus Topic** **Room 9 - Session EL+AS+EM-MoA** **Spectroscopic Ellipsometry: Novel Applications and Theoretical Approaches** **Moderator:** Maria Losurdo, CNR-NANOTEC
1:40pm		**EL+AS+EM-MoA1** Temperature Dependent Mueller Matrix Measurements of Magnetised Ni near the Curie Temperature, ***Farzin Abadizaman**, S. Zollner,* New Mexico State University
2:00pm	**AS+BI-MoA2** Environmental Charge Compensation - Near Ambient Pressure XPS as a Tool for Surface Chemical Analysis of Iinsulators without Charging Effects, ***Paul Dietrich**, A. Thissen,* SPECS Surface Nano Analysis GmbH, Germany*; S. Bahr,* Enviro Analytical Instruments GmbH, Germany	**EL+AS+EM-MoA2** Ellipsometry Based Observation of Material Ordering Process in Holography, ***Hao Jiang**, H. Peng, Y. Liao, S. Liu,* Huazhong University of Science and Technology, China
2:20pm	**AS+BI-MoA3** Does Time Play a Role in Glyoxal and Hydrogen Peroxide Photochemical Aging?, ***Fei Zhang**, X.F. Yu, X. Sui,* Pacific Northwest National Laboratory*; J.M. Chen,* Fudan University*; Z.H. Zhu, X.Y. Yu,* Pacific Northwest National Laboratory	**INVITED: EL+AS+EM-MoA3** Coherence in Polarimetry and Ellipsometry: Synthesizing Mueller Matrices in an Ellipsometer, ***Oriol Arteaga**,* Departament de Física Aplicada, Universitat de Barcelona, Spain
2:40pm	**AS+BI-MoA4** Study of Drug Uptake and Action on Metabolic Processes at the Single-Cell Level using the 3D OrbiSIMS, ***Ian S. Gilmore**, M.K. Passarelli, M. Lorenz,* National Physical Laboratory, UK*; C.F. Newman, P.S. Marshall, A. West,* GlaxoSmithKline, UK*; P.D. Rakowska, R. Havelund, C.T. Dollery,* National Physical Laboratory, UK	Invited talk continues.
3:00pm	**AS+BI-MoA5** TOF-SIMS Cluster Beam Depth Profiling and 3D Imaging of Oral Drug Delivery Films, ***Greg Gillen**, S. Muramoto, J. Staymates, E. Robinson,* NIST	**EL+AS+EM-MoA5** Femtosecond Spectroscopic Ellipsometry on Optoelectronic Materials and Photonic Structures, ***Mateusz Rebarz**, S.J. Espinoza,* ELI Beamlines - Czech Academy of Science, Czech Republic*; S. Richter, O. Herrfurth, R. Schmidt-Grund,* Universität Leipzig, Germany*; J. Andreasson,* Chalmers University of Technology, Sweden*; S. Zollner,* New Mexico State University
3:20pm	**AS+BI-MoA6** Characterisation of Bioelectronic Material Surfaces using Surface Spectroscopies, ***Sarah Coultas**,* Kratos Analytical Limited, UK*; W. Boxford,* Kratos Analytical Ltd, UK*; C.J. Blomfield,* Kratos Analytical Limited, UK*; M. Firlak, J. Hardy,* Lancaster University, UK	**EL+AS+EM-MoA6** Temperature Dependence of the Dielectric Function and Interband Critical Points of Bulk Germanium, ***Carola Emminger**, N. Samarasingha, F. Abadizaman, N.S. Fernando, S. Zollner,* New Mexico State University
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: AS+BI-MoA8** High-resolution SIMS Imaging of Subcellular Structures, ***Mary Kraft**, A.N. Yeager,* University of Illinois at Urbana-Champaign*; P.K. Weber,* Lawrence Livermore National Laboratory	**EL+AS+EM-MoA8** VUV Magneto-Optical Transient Ellipsometer, ***Shirly Espinoza**, J. Andreasson,* Institute of Physics ASCR, Czech Republic
4:20pm	Invited talk continues.	**EL+AS+EM-MoA9** Infrared Ellipsometric Spectroscopy of $Hg_{1-x}Cd_xTe$ Bulk Samples, ***Yanqing Gao**,* Shanghai Institute of Technical Physics, Chinese Academy of Sciences, China
4:40pm	**AS+BI-MoA10** EnviroESCA – Routine Surface Chemical Analysis under Environmental Conditions For Biological Samples, ***Andreas Thissen**, P. Dietrich,* SPECS Surface Nano Analysis GmbH, Germany*; S. Bahr,* Enviro Analytical Instruments GmbH, Germany*; M. Kjaervik, W. Unger,* Bundesanstalt für Materialforschung und -prüfung (BAM), Germany	**EL+AS+EM-MoA10** Infrared Ellipsometry Study of the Photo-generated Charge Carriers at the (001) and (110) Surfaces of $SrTiO_3$ Crystals and the Interface of Corresponding $LaAlO_3/SrTiO_3$ Heterostructures, ***Meghdad Yazdi-Rizi**, P. Marsik, B. Mallett,* University of Fribourg, Switzerland*; K. Sen, A. Cerreta,* University of Fribourg*; A. Dubroka,* Masaryk University*; M. Scigaj, F. Sánchez, G. Herranz,* Institut de Ciència de Materials de Barcelona*; C. Bernhard,* University of Fribourg, Switzerland
5:00pm	**AS+BI-MoA11** Probing Structural Changes Required for Membrane Fusion in Single Enveloped Virus Particles Using Nano-Infrared Spectroscopic Imaging, ***Yohannes Abate**, S. Gamage, M. Howard, H. Makita, B. Cross, G. Hastings, M. Luo,* Georgia State University	

Monday Afternoon, October 30, 2017

	Electronic Materials and Photonics Division **Room 14 - Session EM-MoA** **Novel Materials and Devices for Electronics** **Moderators:** Shalini Gupta, Northrop Grumman ES, Rehan Kapadia, University of Southern California	**Magnetic Interfaces and Nanostructures Division** **Room 11 - Session MI+BI+EM+SA-MoA** **Role of Chirality in Spin Transport and Magnetism** **Moderators:** Greg Szulczewski, The University of Alabama, Hendrik Ohldag, SLAC National Accelerator Laboratory
1:40pm	**INVITED: EM-MoA1** 2D Materials for Advanced Devices: Integration Challenges and Opportunities, ***Robert M. Wallace,*** University of Texas at Dallas	**INVITED: MI+BI+EM+SA-MoA1** Spin Transport and Polarization in Chiral Molecules: Theory and Possible Applications, ***Karen Michaeli,*** Weizmann Institute of Science, Israel
2:00pm	Invited talk continues.	Invited talk continues.
2:20pm	**INVITED: EM-MoA3** Development of Chalcogenide Phase Change Materials for RF Switch Applications, ***Matthew King,*** *N. El-Hinnawy, P. Borodulin, A. Ezis, C. Padilla, V. Luu, B. Wagner, E. Jones, D. Nichols, M. Lee, R. Young,* Northrop Grumman	**MI+BI+EM+SA-MoA3** Enantio-sensitive Charge Transfer in Adsorbed Chiral Molecules Probed with X Ray Circular Dichroism, *F.J. Luque,* Universidad Autónoma de Madrid, Spain*; I.A. Kowalik,* Polish Academy of Sciences, Poland*; M.Á. Niño,* IMDEA-Nanoscience, Spain*; D. Arvanitis,* Uppsala University, Sweden*;* ***Juan José de Miguel,*** Universidad Autónoma de Madrid, Spain
2:40pm	Invited talk continues.	**MI+BI+EM+SA-MoA4** Evolving of Soliton Phase in Exfoliated 2D $Cr_{1/3}NbS_2$ Nanolayers, *S. Tang,* Oak Ridge National Laboratory and Central South University, China*; J. Yi, R. Fishman, S. Okamoto, Q. Zou,* Oak Ridge National Laboratory*; D.G. Mandrus,* University of Tennessee*;* ***Zheng Gai,*** Oak Ridge National Laboratory
3:00pm	**EM-MoA5** Enhancement-mode AlGaN/GaN HEMTs Enabled by ALD ZrO2 Gate Dielectrics, ***Charles Eddy, Jr.,*** *V.D. Wheeler,* U.S. Naval Research Laboratory*; D.I. Shahin,* University of Maryland*; T.J. Anderson, M.J. Tadjer, A.D. Koehler, K.D. Hobart,* U.S. Naval Research Laboratory*; A. Christou,* University of Maryland*; F.J. Kub,* U.S. Naval Research Laboratory	**MI+BI+EM+SA-MoA5** Tailoring the Chirality of Domain Walls via Interface Modification, ***Arantzazu Mascaraque,*** *S. Ruiz-Gomez, M.A. Gonzalez Barrio, L. Perez,* Universidad Complutense de Madrid, Spain*; G. Chen, A.K. Schmid,* Lawrence Berkeley National Laboratory*; E.G. Michel,* Universidad Autonoma de Madrid, Spain
3:20pm	**EM-MoA6** Interface Engineering with Al_2O_3-HfO_2 Nanolaminate Gate oxides on Silicon Germanium, ***Mahmut Kavrik,*** University of California at San Diego*; K. Tang,* Stanford University*; E. Thomson, J. Cheng, A.C. Kummel,* University of California at San Diego	**MI+BI+EM+SA-MoA6** Spin Transport in an Electron Conducting Polymer, ***Greg Szulczewski,*** *T. Sutch, M. Lockart, H. Chen, P. Rupar, M. Bowman,* The University of Alabama
3:40pm	**BREAK**	**BREAK**
4:00pm	**EM-MoA8** Encapsulation of AlGaN/GaN High Electron Mobility Transistor based Hydrogen Sensor for Humid Ambient Sensing Application, *S. Jung, H. Kim,* Dankook University*; K.H. Baik,* Hongik University*; F. Ren, S.J. Pearton,* University of Florida*;* ***Soohwan Jang,*** Dankook University	**INVITED: MI+BI+EM+SA-MoA8** Utilizing the Chiral induced Spin Selectivity Effect to Achieve Simple Spintronics Devices, ***Yossi Paltiel,*** The Hebrew University of Jerusalem, Israel
4:20pm	**EM-MoA9** Work Function Measurements of Metal Gate - TiAlC by Ultraviolet Photoelectron Spectroscopy, ***Yibin Zhang,*** *H. Wang, D. Shao, Y. Liang,* GlobalFoundries Inc	Invited talk continues.
4:40pm	**INVITED: EM-MoA10** Nitride Based Avalanche Photodiode Detector Structures for Nuclear Detection Applications, ***Vincent Woods,*** *L. Hubbard, L. Campbell,* Pacific Northwest National Laboratory*; N. Dietz,* Georgia State University*; Z. Sitar,* North Carolina State University	**MI+BI+EM+SA-MoA10** Magnetic Nano Platelets based Spin Memory Device Operating at Ambient Temperatures, ***Guy Koplovitz,*** The Hebrew University of Jerusalem*; Y. Paltiel,* The Hebrew University of Jerusalem, Israel
5:00pm	Invited talk continues.	**MI+BI+EM+SA-MoA11** Magnetization Switching in Ferromagnets by Adsorbed Chiral Molecules without Current or External Magnetic Field, ***Oren Ben Dor*** [*†], The Hebrew University of Jerusalem, Israel

[*] **Falicov Student Award Finalist**

[†] **National Student Award Finalist**

	MEMS and NEMS Group Room 24 - Session MN+EM+NS-MoA Nano Optomechanical Systems/Multiscale Nanomanufacturing **Moderators:** Robert Ilic, NIST, Meredith Metzler, University of Pennsylvania	Nanometer-scale Science and Technology Division Room 19 - Session NS+HC+SS-MoA Oxides in Nanotechnology **Moderator:** Nancy Burnham, Worcester Polytechnic Institute
1:40pm	**INVITED: MN+EM+NS-MoA1** GHz Integrated Acousto-Optics, ***Mo Li***, University of Minnesota	
2:00pm	Invited talk continues.	**NS+HC+SS-MoA2** Epitaxial Growth and Characterization of WO3 and $WO_{3-\delta}$ Thin Films, ***Yingge Du***, *Z. Yang, Z.H. Zhu, C. Wang,* Pacific Northwest National Laboratory
2:20pm	**INVITED: MN+EM+NS-MoA3** Coupling Piezoelectric MEMS to Cavity Optomechanics, ***Kartik Srinivasan***, NIST	**INVITED: NS+HC+SS-MoA3** Oxide Surfaces: Structure, Adsorption, Growth, ***Ulrike Diebold***, TU Wien, Austria
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**MN+EM+NS-MoA5** Collective Nano-optomechanics for Sensing Applications, ***Eduardo Gil Santos***, *W. Hease,* Universite Paris Diderot, France; *A. Lemaitre,* Centre de Nanosciences et Nanotechnologies, France; *M. Labousse, C. Ciuti, G. Leo, I. Favero,* Universite Paris Diderot, France	**NS+HC+SS-MoA5** Imaging and Sensor Applications of infiltrated Zinc Oxide, ***Leonidas Ocola***, Argonne National Laboratory; *V. Sampathkumar,* University of Chicago; *N. Kasthuri, R.P. Winarski,* Argonne National Laboratory; *Y. Wang, J.H. Chen,* University of Wisconsin - Milwaukee
3:20pm	**MN+EM+NS-MoA6** Microporous Nanophotonic Mechanical Cantilevers for Mass Sensing, ***Anandram Venkatasubramanian***, *V.T.K. Sauer, J.N. Westwood-Bachman,* University of Alberta and The National Institute for Nanotechnology, Canada; *K. Cui, S.K. Roy, M. Xia,* National Institute for Nanotechnology, National Research Council, Canada; *D. Wishart,* University of Alberta, Canada; *W.K. Hiebert,* University of Alberta and The National Institute for Nanotechnology, Canada	**NS+HC+SS-MoA6** Plasma Modified Gas Sensors: Bridging the Gap Between Tin Oxide Nanomaterials and Paper-Based Devices, ***Kimberly Hiyoto***, *E.R. Fisher,* Colorado State University
3:40pm	**BREAK**	**BREAK**
4:00pm	**MN+EM+NS-MoA8** Tunable Resistivity in Inkjet Printed Circuit by Plasma Reduction of Particle-free, Stabilizer-free Ink, *Y. Sui, S. Ghosh, C. Miller, R.M. Sankaran,* ***Christian Zorman***, Case Western Reserve University	**NS+HC+SS-MoA8** Understanding the Initial Stages of Oxidation in Nickel-Chromium Alloys, *P. Reinke,* ***William H. Blades***, *G. Ramalingam,* University of Virginia
4:20pm	**MN+EM+NS-MoA9** Cold Forming of Shallow Spherical Micro Caps by Nano Imprinting, ***Asaf Asher***, *E. Benjamin, L. Medina, S. Lulinsky,* Tel Aviv University, Israel; *R. Gilat,* Ariel University, Israel; *S. Krylov,* Tel Aviv University, Israel	**NS+HC+SS-MoA9** Evaluation of Titanium Doped β-Ga_2O_3 Thin Films in Extreme Environment for Application in Oxygen Sensors, ***Sandeep Manandhar***, *A.K. Battu, C.V. Ramana,* University of Texas at El Paso
4:40pm	**INVITED: MN+EM+NS-MoA10** Plate Mechanical Metamaterials: The Thinnest Plates You Can Pick Up by Hand, ***Igor Bargatin***, University of Pennsylvania	**NS+HC+SS-MoA10** Characterization of Infiltrated ZnO in PS-b-PMMA Nanostructures, ***Paris Blaisdell-Pijuan***, University of Chicago; *L.E. Ocola,* Argonne National Laboratory
5:00pm	Invited talk continues.	

	Plasma Processing for Biomedical Applications **Focus Topic** **Room 12 - Session PB+BI+PS-MoA** **Plasma Agriculture & Processing of Biomaterials** **Moderator:** Kristian Wende, INP Greifswald, Germany	**Plasma Science and Technology Division** **Room 23 - Session PS+AS+SS-MoA** **Plasma Surface Interactions** **Moderators:** Michael Gordon, University of California at Santa Barbara, Ying Zhang, Applied Materials, Inc.
1:40pm	**INVITED: PB+BI+PS-MoA1** Control for Plant Disease and Development by Atmospheric Pressure Plasma, ***Gyungsoon Park,*** Kwangwoon University, Republic of Korea	**PS+AS+SS-MoA1** Exploring the Gas-Surface Interface in NxOy Plasma Surface Modification of Zeolite Materials for Environmental Applications, ***Angela Hanna****, *E.R. Fisher,* Colorado State University
2:00pm	Invited talk continues.	**PS+AS+SS-MoA2** Effects of Ion induced Damages on Etching Characteristics of ITO Thin Films, ***Hu Li,*** *K. Karahashi,* Osaka University, Japan*; M. Fukasawa, A. Hirata, K. Nagahata, T. Tatsumi,* Sony Semiconductor Solutions Corporation, Japan*; S. Hamaguchi,* Osaka University, Japan
2:20pm	**PB+BI+PS-MoA3** Biomass Pyrolysis Using Low Temperature Plasma, *Y. Gao, N.B. Uner, J. Meyer, M. Foston,* ***Elijah Thimsen,*** Washington University in St. Louis	**PS+AS+SS-MoA3** Nitriding Process for Next-generation Semiconductor Devices by VHF (162 MHz) Plasma Source, ***YouJin Ji,*** *K.S. Kim, K.H. Kim, G.Y. Yeom,* Sungkyunkwan University, Republic of Korea
2:40pm	**PB+BI+PS-MoA4** Growth of Plasma-Treated Corn Seeds under Realistic Conditions, ***Chisung Ahn,*** *I.A. Shchelkanov,* University of Illinois at Urbana-Champaign*; J. Gill,* AgReliant Genetics, LLC*; D.N. Ruzic,* University of Illinois at Urbana-Champaign	**PS+AS+SS-MoA4** Defect Generation in Graphene Films by Low-Pressure Inductively Coupled Argon Plasmas Treatments, *X. Glad, P. Vinchon, S. Boivin, G. Robert-Bigras,* ***Luc Stafford,*** Université de Montréal, Canada
3:00pm	**PB+BI+PS-MoA5** Advanced Control of Plasma Medical Devices, ***David Graves,*** University of California, Berkeley*; A. Mesbah, D. Gidon,* University of California at Berkeley	**PS+AS+SS-MoA5** The Role of Plasma Species and Sample Composition on Dense Amorphous Carbon Layer Formation and Polymer Etching Behavior, ***Adam Pranda,*** *S.A. Gutierrez-Razo, Z. Tomova, J.T. Fourkas, G.S. Oehrlein,* University of Maryland, College Park
3:20pm	**PB+BI+PS-MoA6** Fingerprinting Different Plasma Sources for Biomedical Applications, ***Katharina Stapelmann,*** North Carolina State University*; K. Wende,* INP Greifswald, Germany*; B. Offerhaus,* Ruhr University Bochum, Germany*; C. Verlackt,* University of Antwerp, Belgium*; C. Klinkhammer, F. Kogelheide, M. Havenith,* Ruhr University Bochum, Germany*; A. Bogaerts,* University of Antwerp, Belgium*; P. Awakowicz, J-W. Lackmann,* Ruhr University Bochum, Germany	**PS+AS+SS-MoA6** Control of Ion Energy Distributions on Insulating Surfaces, ***Tyler List,*** *T. Ma, V.M. Donnelly, D.J. Economou,* University of Houston
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: PB+BI+PS-MoA8** Exploring Plasma Coatings Comprising Vertical Chemical Gradients and Multilayers for Biomedical Applications, ***Dirk Hegemann,*** *M. Vandenbossche, M. Heuberger,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	**PS+AS+SS-MoA8** Ultra-high Si_3N_4 to SiO_2 Selective Etching by Fluorocarbon Based Remote Plasma, ***Chen Li,*** University of Maryland, College Park*; T. Hofmann, K. Edinger,* Carl Zeiss SMT GmbH*; G.S. Oehrlein,* University of Maryland, College Park
4:20pm	Invited talk continues.	**PS+AS+SS-MoA9** Effect of Temporal Variation of Discharge on Photon-induced Interface Defects in Pulse-modulated Inductively Coupled Plasma, ***Yasufumi Miyoshi,*** *M. Fukasawa, K. Nagahata,* Sony Semiconductor Solutions Corporation, Japan*; K. Ishikawa, M. Sekine, M. Hori,* Nagoya University, Japan*; T. Tatsumi,* Sony Semiconductor Solutions Corporation, Japan
4:40pm		**INVITED: PS+AS+SS-MoA10** Surface Mechanisms on Dielectric Surfaces Exposed to Low Pressure Glow Discharge and Atmospheric Pressure Plasma Jets, ***Olivier Guaitella,*** *A.S. Morillo-Candas,* Ecole Polytechnique - CNRS, France*; A. Sobota,* Eindhoven University of Technology, The Netherlands*; E. Slikboer, D. Marinov,* Ecole Polytechnique - CNRS, France*; B. Klarenaar, R. Engeln,* Eindhoven University of Technology, The Netherlands*; V. Guerra,* Instituto Superior Tecnico, Lisbon, Portugal
5:00pm		Invited talk continues.

*** Coburn & Winters Student Award Finalist**

	Scanning Probe Microscopy Focus Topic **Room 10 - Session SP+2D+AS+NS+SS-MoA** **Probing Electronic and Transport Properties** **Moderators:** Phillip First, Georgia Institute of Technology, Chuanxu Ma, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory	**Surface Science Division** **Room 25 - Session SS+AS+HC-MoA** **Surface Science for Energy and the Environment** **Moderators:** Steven Bernasek, Yale-National University of Singapore, Bruce Koel, Princeton University
1:40pm	**INVITED: SP+2D+AS+NS+SS-MoA1** Probing Atomic and Electronic Structures of 2D Electronic Materials and their Heterostructures, ***Chih-Kang Shih,*** University of Texas at Dallas	**INVITED: SS+AS+HC-MoA1** A Challenge for the Surface Science Community: Understanding and Quantifying Heterogeneous Reactions on Surfaces in the Lower Atmosphere, ***Barbara Finlayson-Pitts,*** University of California Irvine
2:00pm	Invited talk continues.	Invited talk continues.
2:20pm	**SP+2D+AS+NS+SS-MoA3** SP-STM Study of Antiferromagnetic CuMnAs Thin Film, ***Giang Nguyen,*** Oak Ridge National Laboratory*; P. Wadley, R. Campion, K. Edmonds,* University of Nottingham, UK*; F. Maccherozzi, S. Dhesi,* 3Diamond Light Source, UK*; T. Jungwirth,* University of Nottingham, UK*; A.-P. Li,* Oak Ridge National Laboratory	**INVITED: SS+AS+HC-MoA3** Photochemistry of CO, Acetone and O_2 on Reduced Rutile TiO_2(110), ***Greg Kimmel,*** *N.G. Petrik, M.A. Henderson,* Pacific Northwest National Laboratory
2:40pm	**SP+2D+AS+NS+SS-MoA4** Probing Spin-Dependent Chemical Potential in Topological Insulator by Spin-Polarized Four-Probe Scanning Tunneling Microscopy, ***Wonhee Ko,*** *S.M. Hus,* Oak Ridge National Laboratory*; Y.P. Chen,* Purdue University*; A.-P. Li,* Oak Ridge National Laboratory	Invited talk continues.
3:00pm	**INVITED: SP+2D+AS+NS+SS-MoA5** Spin-charge Transport Phenomena on the Atomic Scale Studied by Multi-probe STM, ***Christoph Tegenkamp,*** Leibniz Universität Hannover, Germany	**SS+AS+HC-MoA5** The Role of Band Alignment in Ketone Photooxidation on TiO_2(110), ***Amanda Muraca,*** Stony Brook University*; M.G. White,* Brookhaven National Lab and Stony Brook University
3:20pm	Invited talk continues.	**SS+AS+HC-MoA6** Storing Gases in Nanoporous Metal organic Frameworks Materials with a Surface Barrier Layer, ***Kui Tan,*** the University of Texas at Dallas*; S. Jensen, S. Zuluaga,* Wake Forest University*; E. Fuentes, E. Mattson, J.-F. Veyan,* University of Texas at Dallas*; H. Wang, J. Li,* Rutgers University*; T. Thonhauser,* Wake Forest University*; Y.J. Chabal,* University of Texas at Dallas
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: SP+2D+AS+NS+SS-MoA8** Site-specific Superconducting Atomic Contacts Studied by Scanning Tunneling Microscopy, ***Yukio Hasegawa,*** The Institute for Solid State Physics, The University of Tokyo, Japan	**SS+AS+HC-MoA8** Active Species and Structures of Modified Oxide Catalysts for the Oxygen Evolution Reaction (OER), *Z. Chen,* Princeton University*; L. Cai,* Xi'an Jiaotong University, China*;* ***Bruce Koel,*** Princeton University
4:20pm	Invited talk continues.	**SS+AS+HC-MoA9** First-principles Modelling of Oxygen Reduction Reaction at Doped Graphene-Metal Interface, *E. Schiavo, A.B. Muñoz-García,* ***Michele Pavone,*** University of Naples Federico II, Italy
4:40pm	**SP+2D+AS+NS+SS-MoA10** The Difference between Electron and Hole Dopant of Magnetic Element to the Superconductivity in $BaFe_2As_2$, ***Qiang Zou,*** *L. Li, A. Sefat, D.S. Parker, Z. Gai,* Oak Ridge National Laboratory	**SS+AS+HC-MoA10** Cactus Based-Mucilage as an Alternative Natural Dispersant for Oil Spill Applications, ***Fei Guo,*** *D. Steebins, S. Thomas, R. Toomey, N. Alcantar,* University of South Florida
5:00pm	**SP+2D+AS+NS+SS-MoA11** Rapid Measurement of I-V Curves in Scanning Probe Microscopy via Bayesian Inference, *S. Somnath, K. Law, R. Archibald, S.V. Kalinin, S. Jesse,* ***Rama Vasudevan,*** Oak Ridge National Laboratory	**SS+AS+HC-MoA11** The Effect of Humidity on Chemical Interactions at Hybrid Interfaces: An In Situ Investigation of Polymer/Metal Oxide Bonds, ***Sven Pletincx,*** Vrije Universiteit Brussel, Belgium*; L. Trotochaud,* Lawrence Berkeley National Laboratory*; L.-L. Fockaert,* TU Delft, Netherlands*; A.R. Head, O. Karslıoğlu,* Lawrence Berkeley National Laboratory*; J.M.C. Mol,* TU Delft, Netherlands*; H. Bluhm,* Lawrence Berkeley National Laboratory*; H. Terryn, T. Hauffman,* Vrije Universiteit Brussel, Belgium

	Thin Films Division **Room 20 - Session TF-MoA** **Emerging Applications for ALD** **Moderator:** Giovanna Scarel, James Madison University	**Tandem MS Focus Topic** **Room 5 & 6 - Session TM-MoA** **Applications in Mass Spectrometry Imaging using Tandem MS** **Moderators:** Gregory L. Fisher, Physical Electronics, Alexander Pirkl, ION-TOF GmbH, Germany
1:40pm	**TF-MoA1** Probe the Reaction Chemistry during Atomic Layer Deposition onto $CH_3NH_3PbI_3$, ***Qing Peng***, *X.Z. Yu*, University of Alabama	
2:00pm	**TF-MoA2** Digital Doping of ALD Nb:VO_2 Thin Films for Thermochromic Applications, ***Alexander Kozen***, *M. Currie, B.P. Downey, C.R. Eddy, Jr., V.D. Wheeler,* U.S. Naval Research Laboratory	
2:20pm	**TF-MoA3** Mechanisms in Organic and Hybrid Organic-Inorganic Molecular Layer Deposition, ***David Bergsman****†, *S.F. Bent,* Stanford University	**TM-MoA3** Single Cell Workflows based on 3D-MSI-TOF-SIMS and MALDI FT-ICR MS for the Study of Diet-induced Molecular Changes in Ovarian Reserves of *Aedes Aegypti*, *A. Castellanos, P. Benigni, F.G. Noriega,* ***Francisco Fernandez-Lima***, Florida International University
2:40pm	**TF-MoA4** Inorganic Modification of Cellulosic Fibers for Enhanced Oil Sorption Capacity, ***Andrew Short***, *S. Pamidi, Z. Bloomberg, M.D. Losego,* Georgia Institute of Technology	**TM-MoA4** Utilization of Complementary Multimodal Techniques for *in situ* Identification of Soybean Root Nodule Metabolites, *S. Stopka,* The George Washington University*; D. Veličković,* Pacific Northwest National Laboratory*; B. Agtuca,* University of Missouri*; D.W. Koppenaal, L. Paša-Tolić,* Pacific Northwest National Laboratory*; G. Stacey,* University of Missouri*; A. Vertes,* The George Washington University*;* ***Christopher R. Anderton***, Pacific Northwest National Laboratory
3:00pm		**INVITED: TM-MoA5** Coupling Front-end Electron Transfer Dissociation to Ultra-High Field FTICR-MS, ***Chad Weisbrod***, *D.F. Smith, L.C. Anderson, L. He, A.G. Marshall, C.L. Hendrickson,* The National High Magnetic Field Laboratory
3:20pm	**TF-MoA6** Atomic Layer Deposition of Nano-Coatings on Fabrics for Antibacterial Applications, ***Renee Puvvada***, *M. Bellavia, T.A. Sulchek, M.D. Losego,* Georgia Institute of Technology	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: TF-MoA8** ALD-based Functionalization of Biomaterials: Recent Developments and Future Challenges, ***Christos Takoudis***, University of Illinois at Chicago	
4:20pm	Invited talk continues.	
4:40pm	**TF-MoA10** Titanium Nitride ALD using Ultra-high Purity Hydrazine at Low Temperature, ***Dan Alvarez***, *J. Spiegelman, R. Holmes, S. Allanson,* RASIRC*; A.C. Kummel, S. Wolf, M. Kavrik,* University of California, San Diego*; K. Andachi,* RASIRC	
5:00pm	**TF-MoA11** ALD Barriers for Protection of Electronic Devices in Biological Environment, ***Ankit Singh***, *K. Adstedt, S. Graham,* Georgia Institute of Technology	

* **National Student Award Finalist**

† **TFD James Harper Award Finalist**

Vacuum Technology Division
Room 7 & 8 - Session VT-MoA
Material Outgassing, Adsorption/Desorption and XHV
Moderators: Giulia Lanza, SLAC National Accelerator Laboratory, Jacob Ricker, NIST

1:40pm	**INVITED: VT-MoA1** Weight of Water on the Solid Surface in Air and Vacuum, ***Richard Green,*** National Research Council of Canada, Canada	
2:00pm	Invited talk continues.	
2:20pm	**VT-MoA3** Hydrogen Measurement using a Thermal Desorption Spectrometer, ***JongYeon Lim,*** Korea Research Institute of Standards and Science, Republic of Korea; *K.D. Kim, H.S. Oh, C.H. Lim, Y.D. Joh,* Infinity Vacuum Technology, Republic of Korea	
2:40pm	**VT-MoA4** Automatic Flowmeter and Dynamic Expansion System for UHV/XHV Studies, ***James Fedchak,*** *J. Scherschligt, D. Barker, S. Eckel,* NIST	
3:00pm	**INVITED: VT-MoA5** Development of a New UHV/XHV Pressure Standard (Cold Atom Vacuum Standard), ***Julia Scherschligt,*** *J.A. Fedchak, S. Eckel, D. Barker,* NIST	
3:20pm	Invited talk continues.	
3:40pm	**BREAK**	
4:00pm	**INVITED: VT-MoA8** VTD Early Career Award Invited Talk: Modern Metrology Practice for Calibration and Reliability Testing of Vacuum Measurement Products, ***Scott Heinbuch****, MKS Instruments, Inc.	
4:20pm	Invited talk continues.	
4:40pm	**VT-MoA10** Outgassing Rate Measurements of New Materials at NIST, ***Makfir Sefa,*** *J.A. Fedchak, J. Scherschligt, A. Zeeshan,* NIST	
5:00pm	**VT-MoA11** Scaling up an Ion Implant Process Chamber Cryopumping for 450mm Wafer Processing, ***Steve Borichevsky,*** Applied Materials, Varian Semiconductor Equipment	

* **VTD Early Career Award**

NOTES

Anticipated Schedule Tuesday, October 31, 2017

Anticipated Schedule Tuesday Morning, October 31

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 Tuesday Lunch, October 31

When _____

Where _____

With _____

Anticipated Schedule Tuesday Afternoon, October 31

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 _____

5:20 PM _____

5:40 PM _____

6:00 PM _____

Special Events Tuesday

7:00 AM	AVS Member Center: Diversity & Inclusion-"Science of Team Science" Breakfast/18
7:30 AM	Awards Committee Meeting and Lunch/31-32 (Invitation Only)
8:00 AM	Science Educators' Workshop/Meeting Room 12-Marriott (Invitation Only)
10:00 AM	AVS Member Center: eSpectra: Surface Science/18
12:30 PM	AVS Member Center: Professional Development-Job Information Forum and Lunch/18
12:30 PM	Chapters, Divisions, and Groups Meeting and Lunch/Meeting Room 11-Marriott (Invitation Only)
12:30 PM	MSTG Technical Group Executive Committee Meeting and Lunch/Il Terrazzo Boardroom-Marriott (Invitation Only)
3:40 PM	AVS Member Center: Professional Development-Speed Networking for Young Professionals/18
6:05 PM	MIND Business Meeting/11
6:05 PM	SSD Business Meeting/25
6:05 PM	VTD Business Meeting/7 & 8
6:25 PM	EMPD Business Meeting/14
6:25 PM	NSTD Business Meeting/19
6:25 PM	PSTD Business Meeting & 2017 Plasma Prize Award Announcement/23
6:25 PM	TFD Business Meeting/20
6:30 PM	Tuesday Poster Session & Refreshments/Central Hall
6:45 PM	AVS Member Center: Professional Development-EMPD Forum: "Careers at LAM Research"/18
7:00 PM	MIND Executive Committee Meeting and Dinner/Meeting Room 2-Marriott (Invitation Only)
7:00 PM	NSTD Executive Committee Meeting and Dinner/Meeting Room 1-Marriott (Invitation Only)
7:00 PM	SSD Executive Committee Meeting and Dinner/Meeting Room 4-Marriott (Invitation Only)
7:30 PM	ASSD Business Meeting/Florida Salon VI-Marriott
7:30 PM	PSTD Executive Committee Meeting and Dinner/Florida Salons I-II-Marriott (Invitation Only)
7:30 PM	TFD Executive Committee Meeting and Dinner/Il Terrazzo-Marriott (Invitation Only)
7:45 PM	BID Executive Committee Meeting and Dinner/Meeting Room 3-Marriott (Invitation Only)
7:45 PM	EMPD Executive Committee Meeting and Dinner/Florida Salon V-Marriott (Invitation Only)
8:00 PM	ASTM E-42 and Applied Surface Science Joint Workshop: "Frontiers of Surface Science"/ Florida Salon VI-Marriott
8:00 PM	ASTM E-42/ASSD Joint Workshop, "Frontiers of Surface Analysis"/Florida Salon VI-Marriott

	2D Materials Focus Topic **Room 15 - Session 2D+AS+SA+SP-TuM** **2D Materials Characterization including Microscopy and Spectroscopy** **Moderator:** Sara Barja, Materials Physics Center, San Sebastián, Spain	**Actinides and Rare Earths Focus Topic** **Room 22 - Session AC+AS+SA-TuM** **Nuclear Power, Forensics, and Other Applications** **Moderator:** James G. Tobin, University of Wisconsin-Oshkosh
8:00am	**2D+AS+SA+SP-TuM1** Electronic Structure of Oxygen-Intercalated Graphene on Iridium Interface, ***Yi Lin***, *Y. Li,* Columbia University; *J. Sadowski,* Brookhaven National Laboratory; *J. Dadap, W. Jin, R. Osgood,* Columbia University; *M.S. Hybertsen,* Brookhaven National Laboratory	**INVITED: AC+AS+SA-TuM1** Design of Synergistic Protein-ligand Systems for f-element Coordination, where Separation, Decontamination and Nuclear Medicine Meet, ***Rebecca Abergel,*** Lawrence Berkeley National Laboratory
8:20am	**2D+AS+SA+SP-TuM2** Graphene Moiré Pattern Ultra-High Resolution Atomic Force Microscopy, ***Gerald Pascual***, *B. Kim, K. Lee,* Park Systems Inc.	Invited talk continues.
8:40am	**INVITED: 2D+AS+SA+SP-TuM3** Surface and Interface Properties of 2D MoS_2 and WS_2 Materials, ***Chia-Seng Chang***, Institute of Physics, Academia Sinica, Taiwan, Republic of China; *Y.H. Lee,* National Tsing-Hua University, Taiwan, Republic of China	**AC+AS+SA-TuM3** Image Processing And Particle Analysis Of Fission-Truck-Analysis In Nuclear Forensic, ***Itzhak Halevy***, Department of Physics, NRCN, Israel; *U. Admon,* (Retiree), IAEC-NRCN, Department of Materials, Beer-Sheva Israel; *E. Chinea-Cano,* Office of Safeguards Analytical Services (SGAS), International Atomic Energy Agency (IAEA), Austria; *A.M. Weiss,* Faculty of Engineering, Bar-Ilan University, Israel; *N. Dzigal,* Office of Safeguards Analytical Services (SGAS), Austria; *E. Boblil,* Department of Physics, IAEC-NRCN, Israel
9:00am	Invited talk continues.	**AC+AS+SA-TuM4** Application of Linear Least Squares to the Analysis of AES Depth Profiles of Plutonium Oxides, ***Scott Donald***, *A.J. Nelson,* Lawrence Livermore National Laboratory
9:20am	**2D+AS+SA+SP-TuM5** Spectroscopic Investigation of Plasma-Fluorinated Monolayer Graphene and Application for Gas Sensing, ***Hui Zhang***, Shanghai Institute of Microsystem And Information Technology, China; *J.-H. Guo,* Lawrence Berkeley National Laboratory; *X. Sun,* Soochow University	**INVITED: AC+AS+SA-TuM5** Physical and Chemical Characterization of Solid Pu and Np Sources after Multi-year Exposure to Environmental Conditions, ***Brian Powell***, Clemson University
9:40am	**2D+AS+SA+SP-TuM6** Photoemission Electron Microscopy as a New Tool to Study the Electronic Properties of 2D Crystals on Silicon Oxide, ***Taisuke Ohta***, *M. Berg,* Sandia National Laboratories, Center for Integrated Nanotechnologies; *C. Chan,* Sandia National Laboratories; *K. Keyshar,* Rice University; *G. Gupta,* University of Louisville; *P. Ajayan,* Rice University; *A. Mohite,* Los Alamos National Laboratory	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**2D+AS+SA+SP-TuM10** STM and STS Study of MoS_2/WS_2 Heterostructures Grown by Chemical Vapor Deposition, ***Fan Zhang***, Virginia Polytechnic Institute and State University; *Z. Lu,* Tsinghua University, PR China; *H. Zheng, K. Park,* Virginia Polytechnic Institute and State University; *L. Jiao,* Tsinghua University, PR China; *C. Tao,* Virginia Polytechnic Institute and State University	**AC+AS+SA-TuM10** Synchrotron Radiation Investigation of f-element Extraction from a Carboxylic Acid Functionalized Porous Aromatic Framework, ***David Shuh***, Lawrence Berkeley National Laboratory; *S. Demir, N.K. Brune,* University of California Berkeley, LBNL; *J.F. Van Humbeck, J.A. Mason,* University of California Berkeley; *T.V. Plakhova,* Lomonsov Moscow State University, Russia; *S. Wang,* University of California Berkeley, LBNL; *G. Tian, S.G. Minasian, T. Tyliszczak,* Lawrence Berkeley National Laboratory; *T. Yaita, T. Kobayashi,* Japan Atomic Energy Agency; *S. Kalmykov,* Lomonsov Moscow State University, Russia; *H. Shiwaku,* Japan Atomic Energy Agency; *J.R. Long,* University of California Berkeley
11:20am	**2D+AS+SA+SP-TuM11** Determine the Band Alignment of 2D Semiconductor Heterostructures by Photoelectron Spectromicriscopy, *L.Y. Chang,* National Synchrotron Radiation Research Center, Taiwan, Republic of China; *Y.-X. Wang, Y.-H. Ku,* National Tsing Hua University, Republic of China; *Y.-C. Kuo, H.-W. Shiu,* ***Chia-Hao Chen***, National Synchrotron Radiation Research Center, Taiwan, Republic of China	**AC+AS+SA-TuM11** The Effect of Al_2O_3 Encapsulation Using Atomic Layer Deposition on the Photoluminescent, Water and Thermostability Properties of $SrAl_2O_4$ Based Phosphors, ***Erkul Karacaoglu***, *E. Özturk,* Karamanoglu Mehmetbey University, Turkey; *M. Uyaner,* Selcuk University, Turkey
11:40am	**INVITED: 2D+AS+SA+SP-TuM12** Atomic Resolution Analysis and Local Property Measurement of 2D Layered Materials in TEM, ***Kazu Suenaga***, National Institute of Advanced Industrial Science and Technology (AIST), Japan	
12:00pm	Invited talk continues.	

	Applied Surface Science Division **Room 13 - Session AS+MI+SS-TuM** **Quantitative Surface Analysis: Effective Quantitation Strategies** **Moderators:** Kateryna Artyushkova, University of New Mexico, Gregory L. Fisher, Physical Electronics	**Electronic Materials and Photonics Division** **Room 14 - Session EM+NS-TuM** **Nanostructures and Nanometer Films for Electronic and Photonic Devices** **Moderators:** Jessica Hilton, RHK Technology, Joseph Tischler, U.S. Naval Research Laboratory
8:00am	**AS+MI+SS-TuM1** Effective Attenuation Lengths for Different Quantitative Applications of XPS*, A. Jablonski,* Institute of Physical Chemistry, Warsaw, Poland*;* ***Cedric Powell****,* NIST	**INVITED: EM+NS-TuM1** Spin Properties in Semiconductor Colloidal Quantum Dots*,* ***Efrat Lifshitz****,* Russell Berrie Nanotechnology Institute, Solid State Institute, Israel
8:20am	**AS+MI+SS-TuM2** Plumbing the Depths using the XPS Inelastic Background*,* ***Alexander Shard****, S.J. Spencer,* National Physical Laboratory, UK	Invited talk continues.
8:40am	**INVITED: AS+MI+SS-TuM3** Quantitative Organic Depth Profiling and 3D Imaging using Secondary Ion Mass Spectrometry*,* ***Rasmus Havelund****,* National Physical Laboratory, UK	**EM+NS-TuM3** Title: Growth and Electronic, Optical and Spin-related Phenomena in SiGe Quantum Dot Heterostructures*,* ***Anatoliy Dvurechenskii****, A.Y. Yakimov, A.V. Nenashev, A.F. Zinovieva, V.A. Zinovyev,* Rzhanov Institute of Semiconductor Physics, Russian Federation
9:00am	Invited talk continues.	**EM+NS-TuM4** A Platform for Growth of Crystalline Thin-Film Compound Semiconductors on Oxides, Metals, and 2-D Materials*,* ***Rehan Kapadia****, D. Sarkar, W. Wang,* University of Southern California
9:20am	**AS+MI+SS-TuM5** Coupling Effects on the Intensity and Background of the Cr 3*p* Photoemission Spectrum around the Cr 2*s* Threshold*,* ***Alberto Herrera-Gomez****,* CINVESTAV-Unidad Queretaro, Mexico*; D. Cabrera-German,* Universidad de Sonora*; F.-S. Aguirre-Tostado,* CIMAV-Monterrey*; A. Dutoi,* University of the Pacific*; M.-O. Vazquez-Lepe,* Universidad de Guadalajara*; P. Pianetta,* Stanford University*; D. Nordlund,* Stanford Synchrotron Radiation Lightsource*; O. Cortazar-Martínez,* CINVESTAV-Unidad Queretaro, Mexico*; L. Gomez-Muñoz,* Cinvestav-Unidad Queretaro, Mexico*; A. Torrea-Ochoa,* CINVESTAV-Unidad Queretaro	**EM+NS-TuM5** Surface Engineered Nanostructured Based GaN UV Photodetectors*,* ***Govind Gupta****,* National Physical Laboratory, India*; M. Mishra, A. Gundimeda, S. Krishna, N. Aggarwal,* Academy of Scientific and Innovative Research, India
9:40am	**AS+MI+SS-TuM6** Using Main Peak Intensities for XPS Quantitation: Strengths, Weaknesses, Issues*,* ***B. Vincent Crist****,* XPS International LLC*; C.R. Brundle,* C. R. Brundle and Associates	**EM+NS-TuM6** Nanometer Thick Diffused Metal Oxide Light Sensing Film Structures*,* ***Fred Cadieu****,* Queens College of CUNY and Graduate Center of CUNY*; J.S. Monaco,* Queens College of CUNY*; L. Mourokh,* Queens College of CUNY and Graduate Center of CUNY
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+MI+SS-TuM10** XPS Spin-Orbit Splitting; Multiplet Splitting; Shake-up Losses: Implications for Determining Covalent Interactions and for Quantitative Analysis*,* ***C. Richard Brundle****,* C.R Brundle & Associates*; P.S. Bagus,* University of North Texas	**INVITED: EM+NS-TuM10** Integration of Metallic Nanoparticles in Sensing and Memory Devices for Resistance Modulation and Enhanced Switching*,* ***Dimitris Tsoukalas****,* National Technical University of Athens, Greece
11:20am	**AS+MI+SS-TuM11** The Cu *2p* Photoemission Spectra from Mixed Oxidation States*,* ***Jorge-Alejandro Torres-Ochoa****,* CINVESTAV-Unidad Queretaro, Mexico*; D. Cabrera-German,* Universidad de Sonora, Mexico*; M. Bravo-Sanchez,* Instituto Potosino de Investigación Científica y Tecnológica A.C, Mexico*; A. Herrera-Gomez,* CINVESTAV-Unidad Queretaro, Mexico	Invited talk continues.
11:40am	**AS+MI+SS-TuM12** Quantifying Valence Band Offsets at Metal\(Hf,Zr)O_2 Interfaces for Ferroelectric Devices*,* ***Michael Brumbach****, S. Smith, M.D. Henry, J. Dickerson, D. Robinson Brown, J. Ihlefeld,* Sandia National Laboratories	**EM+NS-TuM12** Thin-film Metallic Glass: An Effective Diffusion Barrier for Microelectronic Packaging, CIGS Solar Cell and Thermoelectric Modules*, C.C. Yu,* National Taiwan University of Science and Technology, Taiwan, Republic of China*; H.J. Wu,* National Sun Yat-sen University, Taiwan, Republic of China*;* ***Jinn Chu****,* National Taiwan University of Science and Technology, Taiwan, Republic of China
12:00pm	**AS+MI+SS-TuM13** Quantitative Peak-Fitting Analysis of the Photoemission Spectra of Metallic Zinc and Zinc Oxide Films*,* ***Dagoberto Cabrera-German****,* Universidad de Sonora, Mexico*; G. Molar-Velazquez, G. Gómez-Sosa,* CINVESTAV-Unidad Queretaro, Mexico*; W. De la Cruz,* Universidad Nacional Autónoma de México*; A. Herrera-Gomez,* CINVESTAV-Unidad Queretaro, Mexico	**EM+NS-TuM13** Ultra-Fast Silicon Photodiodes Achieve High Efficiency via the Integration of Light-trapping Micro-/nanoholes*,* ***Hilal Cansizoglu****, Y. Gao, K.G. Polat, S. Ghandiparsi, C. Bartolo Perez, A. Kaya, H.H. Mamtaz, A.S. Mayet,* University of California, Davis*; E. Ponizovskaya Devine,* W&WSens Devices, Inc.*; Y. Yamada,* University of California, Santa Cruz*; A.F. Elrefaie, S.Y. Wang,* W&WSens Devices, Inc.*; M.S. Islam,* University of California, Davis

Tuesday Morning, October 31, 2017

	Exhibitor Technology Spotlight Workshops Room West Hall - Session EW-TuM Exhibitor Technology Spotlight **Moderator:** Chris Moffitt, Kratos Analytical, Inc.	Magnetic Interfaces and Nanostructures Division Room 11 - Session MI+2D+AC+SA+SS-TuM Novel Magnetic Order at Interfaces **Moderators:** Axel Enders, University of Bayreuth, Germany, Valeria Lauter, Oak Ridge National Laboratory
8:00am		
8:20am		**MI+2D+AC+SA+SS-TuM2** Transition from Spatial to Magnetic Confinement in Graphene Quantum Dots, ***Fereshte Ghahari,*** *D. Walkup, C. Gutierrez,* NIST; Maryland NanoCenter UMD*; J.R. Rodiguez-Nieva,* Harvard University*; K.G. Watanbe, T. Taniguchi,* National Institute for Materials Science, Japan*; L.S. Levitov,* MIT*; N.B. Zhitenev, J.A. Stroscio,* NIST
8:40am		**INVITED: MI+2D+AC+SA+SS-TuM3** Chiral and Proximity Induced Magnetism in Magnetic Multilayers and 2D Heterostructures, ***Hyunsoo Yang,*** National University of Singapore, Singapore
9:00am		Invited talk continues.
9:20am		**MI+2D+AC+SA+SS-TuM5** Surface Magnetism Induced by Interstitial Defects in PbO, ***Elvis Arguelles,*** Osaka University, Japan*; S. Amino,* A.L.M.T. Corp, Japan*; H. Nakanishi, S. Aspera, H. Kasai,* National Institute of Technology, Akashi College, Japan*; W.A. Dino,* Osaka University, Japan
9:40am		**MI+2D+AC+SA+SS-TuM6** XMCD Quest for Magnetic Proximity Effect in Ferromagnetic Insulator/Non-Magnetic Metal Interfaces, ***Andrei Rogalev,*** *F. Wilhelm,* European Synchrotron Radiation Facility, France
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**EW-TuM8** Development of a Novel Single Cold Cathode Ionization Gauge with Operation from High Vacuum to Atmosphere using Advanced Manufacturing Techniques, ***Dave Kelly,*** *G. Brucker,* MKS Instruments, Inc., Pressure and Vacuum Measurement Group	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**EW-TuM9** New Developments from Thermo Fisher Scientific, ***Timothy Nunney,*** *P. Mack, C. Deeks, A. Bushell,* Thermo Fisher Scientific, UK	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am		**INVITED: MI+2D+AC+SA+SS-TuM10** High Magnetization by Interface Interaction, ***Jiabao Yi,*** *X. Ding, A. Sohail,* The University of New South Wales, Australia*; W.T. Lee,* ANSTO*; V. Lauter,* Oak Ridge National Laboratory
11:20am		Invited talk continues.
11:40am		**MI+2D+AC+SA+SS-TuM12** Depth-Dependent Measurement of Atomic Valence and Magnetization in $La_{0.7}Sr_{0.3}MnO_3$ Magnetic Thin Films, ***Mikel Holcomb,*** *R. Trappen, S. Kumari, N. Mottaghi, S. Yousefi Sarraf, C.-Y. Huang, G. Cabrera,* West Virginia University
12:00pm		**MI+2D+AC+SA+SS-TuM13** Coherent Magnetization Rotation of FeGa/NiFe Multilayers via Strain-Inducing Electric Field, ***Colin Rementer,*** University of California at Los Angeles*; M.E. Jamer,* NIST*; A. Barra,* University of California at Los Angeles*; J. Borchers, A.J. Grutter, B.J. Kirby,* NIST*; G.P. Carman, J.P. Chang,* University of California at Los Angeles

Tuesday Morning, October 31, 2017

	MEMS and NEMS Group Room 24 - Session MN+BI+EM+SS+TR-TuM Microelectromechanics: Relays to RF/Surfaces in Micro- and Nano- Systems **Moderators:** Sushma Kotru, The University of Alabama, Roya Maboudian, University of California at Berkeley	Nanometer-scale Science and Technology Division Room 19 - Session NS+EM+MI+SS-TuM Nanoscale Electronics and Magnetism **Moderators:** Keith Brown, Boston University, Aubrey Hanbicki, Naval Research Laboratory
8:00am	**INVITED: MN+BI+EM+SS+TR-TuM1** The Industrialization of MEMS through Materials Innovations, ***Chris Keimel,*** Menlo Micro	**INVITED: NS+EM+MI+SS-TuM1** Nanometrology and Nanocharacterization in Nanoelectronics, ***Alain C. Diebold,*** SUNY Polytechnic Institute
8:20am	Invited talk continues.	Invited talk continues.
8:40am	**INVITED: MN+BI+EM+SS+TR-TuM3** Electron-Phonon Waltz: Acoustoelectrics in MEMS, ***Dana Weinstein,*** Purdue University	**NS+EM+MI+SS-TuM3** All Optical Backend for Atomic Precision Fabrication, *D. Ward, M. Marshall, D. Campbell,* Center for Integrated Nanotechnologies; *T. Lu, J. Koepke,* Center for Integrated Nanotechnologies, Sandia National Laboratories; ***Shashank Misra,*** Center for Integrated Nanotechnologies
9:00am	Invited talk continues.	**NS+EM+MI+SS-TuM4** Measurement of Resistance Induced by a Single Potassium Atom on Chiral-Angle Known Nanotubes: Understanding the Impact of a Model Scatterer for Nanoscale Sensors, ***Masahiro Ishigami,*** University of Central Florida; *R. Tsuchikawa,* University of Utah; *D. Heligman,* Ohio State University; *B.T. Blue,* University of Central Florida; *Z.Y. Zhang,* Columbia University; *A. Ahmadi, E.R. Mucciolo,* University of Central Florida; *J. Hone,* Columbia University
9:20am	**MN+BI+EM+SS+TR-TuM5** Autonomous Oscillations of a MEMS Resonator, ***David Czaplewski,*** Center for Nanoscale Materials, Argonne National Laboratory; *C. Chen, D. Lopez,* Argonne National Laboratory; *D.H. Zanette,* Centro Atomico Bariloche and Instituto Balseiro; *S.W. Shaw,* Florida Institute of Technology	**INVITED: NS+EM+MI+SS-TuM5** Atomic Electronics for Quantum Computing, ***Michelle Simmons,*** University of New South Wales, Australia
9:40am	**MN+BI+EM+SS+TR-TuM6** Metallic Glass for MEMS Microphone Device, ***MaiPhuong Nguyen,*** WPI-Advanced Institute for Materials Research (WPI-AIMR)/ Micro System Integration Center (μSIC), Tohoku University, Japan; *J. Froemel,* WPI-Advanced Institute for Materials Research (WPI-AIMR), Tohoku University, Japan; *S. Tanaka,* Graduate School of Engineering/ Micro System Integration Center (μSIC), Tohoku University, Japan	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: MN+BI+EM+SS+TR-TuM10** Role of Surfaces in Assembly of Ceria Nanostructures, ***Sudipta Seal,*** University of Central Florida	**NS+EM+MI+SS-TuM10** Electronically Abrupt Borophene/organic Lateral Heterostructures, ***Xiaolong Liu**†,*** *Z. Wei, I. Balla, A.J. Mannix,* Northwestern University; *N.P. Guisinger,* Argonne National Laboratory; *E. Luijten, M.C. Hersam,* Northwestern University
11:20am	Invited talk continues.	**NS+EM+MI+SS-TuM11** Mechanical Characterization of Heat Dissipation in a Current-driven Ferromagnetic Resonance System, *S.U. Cho, M. Jo, S. Park, J.-H. Lee, C. Yang, S. Kang,* Seoul National University; ***Yun Daniel Park,*** Seoul National University, Republic of Korea
11:40am	**MN+BI+EM+SS+TR-TuM12** Optimization and Nano-characterization of Electrostrictive Response of Gd-doped Ceria Actuators, ***Sidney Cohen,*** *E. Mishuk, E. Makagon, E. Wachtel, K. Rechav, R. Popovitz-Biro, I. Lubomirsky,* Weizmann Institute of Science, Israel	**INVITED: NS+EM+MI+SS-TuM12** The Exciting Physics of Spin Chains Coupled to a Metallic Substrate, ***Roland Wiesendanger,*** University of Hamburg, Germany
12:00pm	**MN+BI+EM+SS+TR-TuM13** Sustainable Thermoregeneration of Plastrons on Superhydrophobic Surfaces, ***Tomer Simovich,*** Ruhr-University Bochum, Germany; *J. Arnott,* The University of Melbourne, Australia; *A. Rosenhahn,* Ruhr-University Bochum, Germany; *R.N. Lamb,* Canadian Light Source, Canada	Invited talk continues. **NSTD BUSINESS MEETING**

*** National Student Award Finalist**
† NSTD Student Award Finalist

	Plasma Processing for Biomedical Applications **Focus Topic** **Room 12 - Session PB+BI+PS-TuM** **Plasma Medicine** **Moderator:** Katharina Stapelmann, Ruhr-University Bochum, Germany	**Plasma Science and Technology Division** **Room 23 - Session PS-TuM** **Advanced FEOL/Gate Etching** **Moderators:** Kazunori Koga, Kyushu University, Japan, Erwine Pargon, CNRS-LTM, Université Grenoble Alpes, France
8:00am	**INVITED: PB+BI+PS-TuM1** Spatial Distribution of Biological Effects Induced by Plasma Reactive Species, ***Sylwia Ptasinska,*** University of Notre Dame	**PS-TuM1** Highly Selective Silicon Dry Chemical Etch Technique for 7nm FinFET Technology and Beyond, ***Zhenxing Bi,*** *T. Devarajan, L. Young, B. Miao, S. Devries, N. Loubet, C. Yeung, J. Zhang, A. Greene, H. Zhou, M. Wang, J. Strane,* IBM Semiconductor Technology Research*; Y. Yao,* IBM*; D. Canaperi, C. Surisetty,* IBM Semiconductor Technology Research
8:20am	Invited talk continues.	**PS-TuM2** Anisotropic and Selective Isotropic Etching of Si / SiGe Multilayers in Surface Wave Plasmas, ***Nick Joy,*** *S.A. Voronin, P. Biolsi,* TEL Technology Center, America, LLC*; A. Ranjan,* Tokyo Electron Miyagi Limited, Japan
8:40am	**PB+BI+PS-TuM3** Mechanisms of Cell Death in Prostate Epithelial Cells after Treatment with Low Temperature Plasma*, J. Packer, A.M. Hirst, F.M. Frame,* ***Deborah O'Connell,*** *N.J. Maitland,* University of York, UK	**PS-TuM3** Control of Anisotropic Simultaneous SiGe-Si Etching for Dual Channel Fin Applications, ***Yohei Ishii,*** *M. Walker, R. Scott-McCabe, A. Yu,* Hitachi High Technologies America, Inc.*; K. Okuma,* Hitachi High-Technologies Corp., Japan*; K. Maeda, J. Sebastian, J. Manos,* Hitachi High Technologies America, Inc.
9:00am	**PB+BI+PS-TuM4** Selective Antitumor Effect of the Plasma-Activated Medium Produced by Atmospheric Pressure Plasma with High Plasma Density, ***Yohei Takahashi,*** *Y. Taki,* Nikon Corporation, Japan*; K. Takeda,* Meijo University, Japan*; H. Hashizume, H. Tanaka, M. Hori,* Nagoya University, Japan	**PS-TuM4** Etch Rate and Profile Tailoring of Si and SiO_2 through Laser-Stimulated Thermal Desorption, ***Jason Peck,*** *D.N. Ruzic,* University of Illinois at Urbana-Champaign
9:20am	**PB+BI+PS-TuM5** Multiplex Coherent Anti-Stokes Raman Scattering (CARS) Observations of HeLa Cells Cultured in Non-equilibrium Atmospheric Pressure-Plasma-Activated Medium (PAM), ***Kenji Ishikawa,*** *R. Furuta,* Nagoya University, Japan*; K. Takeda, T. Ohta, M. Ito,* Meijo University, Japan*; H. Hashizume, H. Tanaka, H. Kondo, M. Sekine, M. Hori,* Nagoya University, Japan	**INVITED: PS-TuM5** Prediction and Control of Fluctuation of Etching Properties by Simulation Technology, ***Nobuyuki Kuboi,*** *M. Fukasawa, T. Tatsumi,* Sony Semiconductor Solutions Corporation, Japan
9:40am	**PB+BI+PS-TuM6** Plasma Medicine - From Bench to Bedside, ***Kai Masur,*** *T. von Woedtke, K.D. Weltmann,* Leibniz Institute for Plasma Research and Technology, Germany	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: PB+BI+PS-TuM10** Plasma Medicine, RONS, Tissue and Cell Models, ***Rob Short,*** University of Lancaster, UK*; E. Szili,* University of South Australia, Australia	**PS-TuM10** Novel Solution for Metal Hard Mask Patterning at 7nm and Beyond, ***Vinayak Rastogi,*** *K. Tapily, A. Nolan,* TEL Technology Center, America, LLC*; P.L.G. Ventzek,* Tokyo Electron America*; A. Ranjan,* Tokyo Electron Miyagi Limited, Japan
11:20am	Invited talk continues.	**PS-TuM11** Underlayer Impact on Line Width Roughness in Extreme Ultraviolet Lithography and Etch, ***Indira Seshadri,*** *A. DeSilva, Y. Mignot, W. Xu, L. Meli, J. Guo, S. Sieg, J.C. Arnold, N. Felix,* IBM Research Division
11:40am	**PB+BI+PS-TuM12** Non-thermal Plasmas in Biomedical Applications–Beyond the Long Lived Species, ***Kristian Wende,*** *J. Volzke,* INP Greifswald, Germany*; J-W. Lackmann,* Ruhr University Bochum, Germany*; H. Jablonowski, S. Bekeschus,* INP Greifswald, Germany*; K. Stapelmann,* Ruhr-University Bochum, Germany*; S. Hasse,* INP Greifswald, Germany*; P.J. Bruggeman,* University of Minnesota*; K.D. Weltmann,* INP Greifswald, Germany	**INVITED: PS-TuM12** Patterning Challenges and Perspective Solutions for 5nm and Beyond, ***Ying Zhang,*** Applied Materials, Inc.
12:00pm	**PB+BI+PS-TuM13** Effects of Oxygen or Water in Plasma Jet Environment and Feed Gas on DNA Damage, ***Ek Adhikari,*** *V. Samara, S. Ptasinska,* University of Notre Dame	Invited talk continues.

	Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic **Room 9 - Session SA+MI-TuM** **Overcoming the Temporal and Spatial Limits of X-Ray Scattering Methods for In-Situ Analysis** **Moderators:** Olivier Renault, CEA/LETI-University Grenoble Alpes, France, Zahid Hussain, Advanced Light Source, Lawrence Berkeley National Laboratory, Maya Kiskinova, Elettra-Sincrotrone Trieste, Italy	**Scanning Probe Microscopy Focus Topic** **Room 10 - Session SP+AS+MI+NS+SS-TuM** **Probing Chemical Reactions at the Nanoscale** **Moderators:** Tae-Hwan Kim, Pohang University of Science and Technology, Republic of Korea, Giang Nguyen, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory
8:00am		**SP+AS+MI+NS+SS-TuM1** Single Molecule Junction: Chemical Optimization of Charge Transport through Single Benzene Derivatives, ***Parisa Yasini****, S. Afsari, P. Pikma, E. Borguet,* Temple University
8:20am	**SA+MI-TuM2** SA Highlight Talk: Diffraction Limited Storage Rings and Free Electron Lasers --- Why do we need both?, ***Wolfgang Eberhardt****,* DESY-CFEL, Germany	
8:40am	**INVITED: SA+MI-TuM3** Understanding Solar Cells Structure and Functioning via GISAXS and GIWAXS, ***Peter Müller-Buschbaum****,* Technische Universität München, Germany	**SP+AS+MI+NS+SS-TuM3** How is Armchair Graphene Nanoribbon Oxidized?, ***Chuanxu Ma****, A.A. Puretzky, A.P. Baddorf,* Oak Ridge National Laboratory*; Z. Xiao, W. Lu,* North Carolina State University*; K. Hong,* Oak Ridge National Laboratory*; J. Bernholc,* North Carolina State University*; A.-P. Li,* Oak Ridge National Laboratory
9:00am	Invited talk continues.	**SP+AS+MI+NS+SS-TuM4** Molecular Chessboard Assemblies Sorted by Site-Specific Interactions of Out-of-Plane d-Orbitals with a Semi-metal Template*, T.A. Jung,* Paul Scherrer Institut (PSI), Switzerland*; A. Wäckerlin, S. Fatayer, T. Nijs, S. Nowakowska, S.F. Mousavi, O. Popova,* ***Aisha Ahsan****,* University of Basel, Switzerland*; C. Wäckerlin,* Paul Scherrer Institut (PSI), Switzerland
9:20am		**SP+AS+MI+NS+SS-TuM5** Imaging Successive Intermediate States of the On-Surface Ullmann Reaction on Cu(111): Role of the Metal Coordination, ***Andre Schirmeisen****, S. Zint, D. Ebeling, T. Schloeder, S. Ahles, H.A. Wegner, D. Mollenhauer,* Justus-Liebig University Giessen, Germany
9:40am	**SA+MI-TuM6** In situ Characterization of the Structure Formation in Printed Organic Thin Films for Photovoltaic Applications, ***Stephan Pröller****,* TU Munich, Germany*; F. Liu,* Shanghai Jiao Tong University, PR China*; C. Zhu,* Lawrence Berkeley National Laboratory (LBNL)*; D. Moseguí González,* TU Munich, Germany*; C. Wang, E. Schaible, T.P. Russell, A. Hexemer,* Lawrence Berkeley National Laboratory (LBNL)*; P. Müller-Buschbaum,* Technische Universität München, Germany*; E.M. Herzig,* University Bayreuth, Germany	
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: SA+MI-TuM10** Ultrafast X-ray Scattering Studies of Light-induced Processes in 2D Materials, ***Aaron Lindenberg****,* Stanford University	**SP+AS+MI+NS+SS-TuM10** ToF-SIMS Investigations of Tip-Surface Chemical Interactions in Atomic Force Microscopy on a Combined AFM/ToF-SIMS Platform, ***Chance Brown****,* University of Tennessee*; A.V. Ievlev, P. Maksymovych, S.V. Kalinin, O.S. Ovchinnikova,* Oak Ridge National Laboratory
11:20am	Invited talk continues.	**SP+AS+MI+NS+SS-TuM11** Nanoscale Chemical Analysis with Photo-induced Force Microscopy, ***Sung Park****,* Molecular Vista, Inc.
11:40am	**SA+MI-TuM12** Monitoring the Non-Metal to Metal Transition and Ultrafast Charge Carrier Dynamics of Supported Clusters by Femtosecond XUV Photoemission Spectroscopy, ***Mihai Vaida****,* University of Central Florida*; M. Marsh, B. Lamoureux, S.R. Leone,* University of California at Berkeley	**INVITED: SP+AS+MI+NS+SS-TuM12** STM Studies of the Molecule-2D Heterointerface, ***Andrew Wee****,* National University of Singapore, Singapore*; Y.L. Huang,* Institute of Materials Research & Engineering, Singapore*; Y.J. Zheng, Z.B. Song,* National University of Singapore*; S.Y. Quek,* Department of Physics, National University of Singapore
12:00pm	**SA+MI-TuM13** Direct Observation of TiO_2 Exciton Recombination, ***Geoff Thornton****,* Universty College London, UK*; Y. Zhang, D. Payne, C. Pang,* University College London, UK*; C. Cacho, R. Chapman, E. Springate,* STFC Rutherford Appleton Laboratory, UK	Invited talk continues.

	Surface Science Division **Room 25 - Session SS+HC-TuM** **Controlling Mechanisms of Surface Chemical Reactions** **Moderators:** Daniel Killelea, Loyola University Chicago, Andrew Teplyakov, University of Delaware	**Sustainability Focus Topic** **Room 5 & 6 - Session SU+AC+MI+MS-TuM** **Critical Materials and Energy Sustainability** **Moderators:** Erik B. Svedberg, The National Academies, Robert Lad, University of Maine
8:00am	**SS+HC-TuM1** Multifunctional Adsorption on Ge(100)-2x1 Surface: The Role of Interadsorbate Interactions, ***Tania Sandoval***[*†], *S.F. Bent,* Stanford University	**INVITED: SU+AC+MI+MS-TuM1** How Critical Materials Affect Emerging Technologies, ***Alexander King,*** The Ames Laboratory
8:20am	**SS+HC-TuM2** Steering the Chemical Reactions on Surfaces Toward Targeted Products, *Q.T. Fan, T. Wang,* ***Junfa Zhu,*** University of Science and Technology of China	Invited talk continues.
8:40am	**INVITED: SS+HC-TuM3** Spectroscopic Characterization of Reaction Pathways over a Pd-Cu(111) Single-Atom Alloy, *C.M. Kruppe,* ***Michael Trenary,*** University of Illinois at Chicago	**INVITED: SU+AC+MI+MS-TuM3** First-Principles Design of Mixed Proton-Electron Conducting Oxides and Their Application as Solid-Oxide Fuel Cell Electrodes, ***AnaBelén Muñoz-García,*** University of Naples Federico II, Italy
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**SS+HC-TuM5** Reactivity of Pt and Rh Adatoms, Dimers, and Small Clusters on Fe_3O_4 (001), ***Jan Hulva***[*], TU Wien, Austria; *M. Meier,* University of Vienna, Austria; *M. Setvin, Z. Jakub, R. Bliem, M. Schmid, U. Dieblod,* TU Wien, Austria; *C. Franchini,* University of Vienna, Austria; *G.S. Parkinson,* TU Wien, Austria	**SU+AC+MI+MS-TuM5** The Role of Oxidation and Charging Rates on Li Electrochemical Deposition in Solid State Batteries, ***Alexander Yulaev,*** University of Maryland; *V. Oleshko,* NIST; *P. Haney,* NIST Center for Nanoscale Science and Technology; *A.A. Talin,* Sandia National Laboratories; *M.S. Leite,* University of Maryland; *A. Kolmakov,* NIST Center for Nanoscale Science and Technology
9:40am	**SS+HC-TuM6** An AP-XPS Study to Investigate the Reaction Mechanism of the Oxidation of CO on Pt/TiO_2 Nanoparticles: A Step Towards Closing both the Pressure and the Materials Gap, ***Randima Galhenage,*** *J.P. Bruce, D. Ferrah,* University of California Irvine; *I. Waluyo, A. Hunt,* Brookhaven National Laboratory; *J.C. Hemminger,* University of California Irvine	**SU+AC+MI+MS-TuM6** Unique Super-Ionicity Achieved on the Nanoscale with Applications in Next-Generation Lithium Ion Batteries, ***Progna Banerjee,*** *D. Dumett Torres, P. Jain,* University of Illinois at Urbana-Champaign
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	**SS+HC-TuM10** Oxygen Reduction Reaction of Graphite Decorated by the Pyridinic-Nitrogen Contained Molecules with High Density, ***Riku Shibuya,*** *T. Kondo,* University of Tsukuba, Japan; *J. Nakamura,* University of Tsukuba, Japam	**INVITED: SU+AC+MI+MS-TuM10** Electric Cell Potential Driving Changes in Perovskite Surface Termination and Enabling Catalysis, ***Monika Backhaus,*** Corning; *L. Gregoratti, M. Amati,* Elettra-Sincrotrone Trieste, Italy
11:20am	**SS+HC-TuM11** Spectroscopic and Computational Studies of Room-Temperature Decomposition of a Chemical Warfare Agent Simulant on Copper Oxide, ***Lena Trotochaud,*** Lawrence Berkeley National Laboratory; *R. Tsyshevsky, S. Holdren,* University of Maryland, College Park; *K.P. Fears,* U.S. Naval Research Laboratory; *A.R. Head,* Lawrence Berkeley National Laboratory; *Y. Yu,* University of Maryland, College Park; *O. Karslioglu,* Lawrence Berkeley National Laboratory; *S. Pletincx,* Vrije Universiteit Brussel, Belgium; *B. Eichhorn,* University of Maryland, College Park; *J. Owrutsky, J. Long,* U.S. Naval Research Laboratory; *M. Zachariah, M.M. Kuklja,* University of Maryland, College Park; *H. Bluhm,* Lawrence Berkeley National Laboratory	Invited talk continues.
11:40am	**SS+HC-TuM12** Atomic View of Acid Zeolite Chemistry: Surface Chemistry Studies on 2D Silicate Materials, ***Jin-Hao Jhang,*** *G.S. Hutchings, C. Zhou, U.D. Schwarz, E.I. Altman,* Yale University	**SU+AC+MI+MS-TuM12** Possibilities of Hydrogen Energy Utilization in Kazakhstan: Preparation of TiCrMn Hydrogen Storage Alloys and Investigation of Their Absorption Properties, ***Saule Zholdayakova,*** *H.-H. Uchida, Y. Matsumura,* Tokai University, Japan
12:00pm	**SS+HC-TuM13** Establishing Rules for Oriented SURMOF Growth Beyond Template Effects, *X.-J. Yu,* University of Frankfurt, Germany; *J.-L. Zhuang,* Guizhou Normal University, P.R. China; ***Andreas Terfort,*** University of Frankfurt, Germany	

[*] **Morton S. Traum Award Finalist**
[†] **National Student Award Finalist**

Tuesday Morning, October 31, 2017

	Thin Films Division **Room 20 - Session TF-TuM** **Advanced CVD and ALD Processing, ALD Manufacturing and Spatial-ALD** **Moderator:** Paul Poodt, Holst Centre / TNO, Netherlands	**Vacuum Technology Division** **Room 7 & 8 - Session VT-TuM** **Large Vacuum Systems** **Moderators:** Jason Carter, Argonne National Laboratory, Marcelo Ferreira, European Spallation Source ERIC
8:00am	**TF-TuM1** Aluminum-Doped Zinc Oxide via Spatial ALD: Process Impact on Film Morphology, Electrical Conductivity and Stability, *S.F. Nelson,* ***Lee Tutt****, C.R. Ellinger,* Eastman Kodak Company	**INVITED: VT-TuM1** The Role of Vacuum Technology in Discovering the Gravitational Waves from Merging Black Holes*, Rainer Weiss,* ***Michael Zucker,*** LIGO Project Caltech and MIT
8:20am	**TF-TuM2** Fast Pulsing of Precursor and Reactant to Merge ALD and CVD Processes: Example of Thick Al_2O_3 Deposition*,* ***Fabien Piallat****, L. Bonnet, J. Vitiello,* KOBUS, France	Invited talk continues.
8:40am	**TF-TuM3** Employing Atmospheric Pressure Micro-Plasma Printer for ALD of TiO_2 Thin Films*,* ***Morteza Aghaee****, J. Verheijen,* Eindhoven University of Technology, The Netherlands*; A. Stevens,* InnoPhysics B.V., The Netherlands*; W.M.M. Kessels, M. Creatore,* Eindhoven University of Technology, The Netherlands	**VT-TuM3** Vacuum System Engineering for Cornell Brookhaven ERL Test Accelerator, ***Yulin Li****, D.C. Burke, B. Johnson,* Cornell Laboratory for Accelerator-Based Sciences and Education
9:00am	**TF-TuM4** Large-Area Atmospheric Pressure Spatial ALD*, C. Frijters, F. van den Bruele, F. Grob,* ***Paul Poodt****,* Holst Centre / TNO, Netherlands	**VT-TuM4** Vacuum System for CHESS-U Upgrade at CESR*,* ***Xianghong Liu****, S. Barret, D.C. Burke, J.V. Conway, A.T. Holic, Y. Li, A. Lyndaker,* Cornell Laboratory for Accelerator-Based Sciences and Education
9:20am	**INVITED: TF-TuM5** High Speed ALD of Multifunctional ALD Ultrabarriers for Flexible OLED Encapsulation*,* ***Jacques Kools****,* Encapsulix, France	**VT-TuM5** Newly Designed Alumina Ceramics Beam Pipe with Large Aperture for RCS in J-PARC*,* ***Junichiro Kamiya****, M. Kinsho,* Japan Atomic Energy Agency*; K. Abe,* HIPSD, Japan
9:40am	Invited talk continues.	**VT-TuM6** Vacuum Performance of Taiwan Photon Source Storage Ring*,* ***Hsin-Pai Hsueh****, G.Y. Hsiung, J.R. Chen,* National Synchrotron Radiation Research Center, Taiwan, Republic of China
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-TuM10** Simulation of Atomic Layer Deposition*,* ***Paul Moroz****,* TEL Technology Center, America, LLC*; D. Moroz,* Harvard University	**VT-TuM10** The Vacuum System Design of a New FEL Test Facility (CLARA) at STFC Daresbury Laboratory*,* ***Keith Middleman****,* STFC, UK
11:20am	**TF-TuM11** Boron Nitride Film Growth at Room Temperature Using Electron Enhanced Atomic Layer Deposition (EE-ALD)*,* ***Jaclyn Sprenger****, H. Sun, A.S. Cavanagh, S.M. George,* University of Colorado Boulder	**VT-TuM11** EBL2: Realization and Qualification of an EUV Exposure System*,* ***Michel van Putten****, 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, F.T. Molkenboer, A.M. Hoogstrate, P. van der Walle, J.R.H. Diesveld, A. Abutan,* TNO, Netherlands
11:40am	**TF-TuM12** CVD of sp^2-BN on Si(111) Substrates*,* ***Laurent Souqui****, H. Pedersen, H. Högberg,* Linköping University, Sweden	**VT-TuM12** Construction and Commissioning of Tri Alpha Energy C2W machine*,* ***Alan Van Drie****,* Tri Alpha Energy
12:00pm	**TF-TuM13** Microcontroller-based Sequential Deposition Control Systems using Behavior Tree Algorithms: ALD for the "App Generation", ***Brandon Piercy****, J. Crane, M.D. Losego,* Georgia Institute of Technology	

Exhibitor Technology Spotlight Workshops
Room West Hall - Session EW-TuL
Exhibitor Technology Spotlight
Moderator: Chris Moffitt, Kratos Analytical, Inc.

12:20pm		
12:40pm	**EW-TuL2** Design and Application of a New Laboratory-Based Scanning XPS/HAXPES Instrument*, R. Inoue, H. Yamazui, K. Watanabe,* ULVAC-PHI, Japan*; S.R. Bryan,* ***John Newman****, J.E. Mann,* Physical Electronics	
1:00pm	**EW-TuL3** Application of X-ray Photoelectron Spectroscopy for the Characterisation of Biomaterials*, C. Moffitt,* Kratos Analytical Ltd*; D. Surman,* Kratos Analytical Limited*; S.J. Coultas,* ***Jonathan Counsell****,* Kratos Analytical Limited, UK	
1:20pm	**EW-TuL4** Advanced Photoelectron Spectroscopies Setup As a Key for Current Research*,* ***Lukasz Walczak****,* PREVAC, Poland	
1:40pm	**EW-TuL5** Advanced Ion Beam Techniques for Thin Films and Structuring*,* ***Marcel Demmler****,* AARD	
2:00pm	**EW-TuL6** From Surface Spectrometry to 3D Analysis - Latest Trends and Instrumentation for TOF-SIMS*,* ***Nathan Havercroft****,* ION-TOF USA*; R. Moellers, A. Pirkl,* ION-TOF GmbH, Germany	

	2D Materials Focus Topic **Room 16 - Session 2D+BI+MN+SS-TuA** **Surface Chemistry, Functionalization, Bio and Sensor Applications** **Moderator:** Matthias Batzill, University of South Florida	**2D Materials Focus Topic** **Room 15 - Session 2D-TuA** **Growth of 2D Materials** **Moderator:** Taisuke Ohta, Sandia National Laboratories, Center for Integrated Nanotechnologies
2:20pm	**2D+BI+MN+SS-TuA1** Preserving Chemically Modified Graphene from Thermal and Chemical Loss of Functionality, ***Keith Whitener****, W.-K. Lee,* Naval Research Laboratory*; R. Stine,* NOVA Research*; J.T. Robinson, D. Kidwell, C. Tamanaha, P.E. Sheehan,* Naval Research Laboratory	**2D-TuA1** A New Approach to the Synthesis of High-quality Graphene on Silicon Carbide, ***Piotr Ciochoń****, J.J. Kołodziej,* Institute of Physics, Jagiellonian University, Poland
2:40pm	**2D+BI+MN+SS-TuA2** Chemical Vapor Sensing with 1T/2H Phase Engineered MoX_2 Films, ***Adam Friedman****, A.T. Hanbicki, F.K. Perkins, G.G. Jernigan, J.C. Culbertson, P.M. Campbell,* Naval Research Laboratory	**2D-TuA2** Cation-Eutectic Transition via Sublattice Melting in $CuInP_2S_6/In_{4/3}P_2S_6$ van der Waals Layered Crystals*, M.A. Susner,* Air Force Research Laboratory*; M. Chyasnavichyus, Q. He, B.S. Conner, D.A. Cullen, P. Ganesh, D. Shin, J.W. McMurray, A. Borisevich, M.A. McGuire,* Oak Ridge National Laboratory*; Y. Ren,* Argonne National Laboratory*;* ***Petro Maksymovych****,* Oak Ridge National Laboratory
3:00pm	**INVITED: 2D+BI+MN+SS-TuA3** Nanopores in 2D Materials, ***Aleksandra Radenovic****,* Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland	**2D-TuA3** Direct, Real-Time Observation of Layer-by-Layer Growth of a 2D Semiconductor using *In Situ* X-ray Synchrotron Radiation*, H.J. Bullen, R.K. Nahm, S. Vishwanath, G. Xing,* ***James Engstrom****,* Cornell University
3:20pm	Invited talk continues.	**2D-TuA4** Crystallization Kinetics of Photonically Annealed 2D Materials*, N.R. Glavin, R.A. Vila, R. Kim, R.S. Rao, M.E. McConney, B. Maruyama, L.J. Bissell,* Air Force Research Laboratory*; R.H. Rai,* Air Force Research Laboratory; University of Dayton*;* ***Christopher Muratore****,* University of Dayton
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**2D+BI+MN+SS-TuA7** Spectroscopic Observation of Oxygen Dissociation on Nitrogen-Doped Graphene, ***Mattia Scardamaglia****,* University of Mons, Belgium*; T. Susi,* University of Vienna, Austria*; C. Struzzi,* Unviersity of Mons, Belgium*; R. Snyders,* University of Mons, Belgium*; G. Di Santo, L. Petaccia,* Elettra-Sincrotrone Trieste, Italy*; C. Bittencourt,* University of Mons, Belgium	**2D-TuA7** Intercalation Then Ordering of Oxygen Leading to Isolation Then Etching of Monolayer *h*-BN on Copper*, C. Ma, J. Park,* Oak Ridge National Laboratory*; L. Liu,* University of Tennessee*; Y.-S. Kim, M. Yoon,* ***Arthur Baddorf****,* Oak Ridge National Laboratory*; G. Gu,* University of Tennessee*; A.-P. Li,* Oak Ridge National Laboratory
4:40pm	**2D+BI+MN+SS-TuA8** Back to Black: Can Molecular Networks Preserve the Surface of Black Phosphorus?, ***Vladimir Korolkov****,* The University of Nottingham, UK*; I.G. Timokhin, R. Haubrichs,* CristalTech Sàrl, Switzerland*; S. Yang, M. Schröder,* University of Manchester, UK*; P.H. Beton,* The University of Nottingham, UK	**2D-TuA8** Polished Nickel Substrates for Large-area Multilayer Graphene Films, ***Stefan Lehnardt****, J.T. Rowley, K. Larsen,* Brigham Young University*; J. Abbott,* Moxtek*; R.R. Vanfleet, R.F. Davis,* Brigham Young University
5:00pm	**INVITED: 2D+BI+MN+SS-TuA9** Defect-mediated Properties of Single-layer $MoSe_2$, ***Sara Barja****,* Materials Physics Center, San Sebastián, Spain*; S. Wickenburg, Z.-F. Liu, Y. Zhang,* Molecular Foundry, Lawrence Berkeley Lab*; A. Pulkin,* Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland*; S. Refaely-Abramson, B. Schuler,* Molecular Foundry, Lawrence Berkeley Lab*; H. Ryu,* Lawrence Berkeley National Laboratory*; D. Qiu,* University of California at Berkeley*; M. M. Ugeda,* CIC nanoGUNE, Spain*; Z.-X. Shen,* Stanford Institute of Materials and Energy Sciences*; S.-K. Mo, M.B. Salmeron,* Lawrence Berkeley National Laboratory*; M.F. Crommie,* University of California at Berkeley*; D.F. Ogletree,* Molecular Foundry, Lawrence Berkeley Lab*; O.V. Yazyev,* Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland*; J.B. Neaton, A. Weber-Bargioni,* Molecular Foundry, Lawrence Berkeley Lab	**2D-TuA9** Heterostructures of Carbon Nanomembranes and Graphene as a Platform for Electrochemical Sensing*, D. Kaiser, A. Winter, C. Neumann,* Friedrich Schiller University Jena, Germany*; A. Centeno, A. Zurutuza,* Graphenea, Spain*; T. Weimann,* Physikalisch-Technische Bundesanstalt, Germany*;* ***Andrey Turchanin****,* Friedrich Schiller University Jena, Germany
5:20pm	Invited talk continues.	**2D-TuA10** Nucleation of 2D WS_2 by Plasma Enhanced Atomic Layer Deposition from WF_6, H_2 Plasma and H_2S – Impact on Grain Size and Charge Transport*,* ***Benjamin Groven****, A. Nalin Mehta,* University of Leuven, Belgium*; Q. Smets, T. Schram, H. Bender, W. Vandervorst, I. Radu, M. Caymax, M. Heyns, A. Delabie,* IMEC, Belgium
5:40pm	**2D+BI+MN+SS-TuA11** Scalable Flexible Graphene Gate TMD Biosensors*,* ***RamSurya Gona****, C.H. Naylor, A.T. Johnson,* University of Pennsylvania	**2D-TuA11** *Surface* Intercalation of Two Disparate Metals in Graphite: Copper and Dysprosium*,* ***Ann Lii-Rosales****[*], P.A. Thiel,* Iowa State University and Ames Laboratory
6:00pm	**2D+BI+MN+SS-TuA12** Development and Validation of Polarized Models for Peptide-Graphene Interactions*,* ***Amanda Garley****,* University of Colorado Boulder*; N. Saikia,* Michigan Technological University*; R. Berry,* Air Force Research Laboratory*; H. Heinz,* University of Colorado Boulder	

[*] **NSTD Student Award Finalist**

	Actinides and Rare Earths Focus Topic **Room 22 - Session AC+MI+SA+SU-TuA** **Actinide and Rare Earth Theory** **Moderator:** Ladislav Havela, Charles University, Prague, Czech Republic	**Applied Surface Science Division** **Room 13 - Session AS+TF-TuA** **Problem Solving Using Surface Analysis in the Industrial Laboratory** **Moderators:** Jeffrey Fenton, Medtronic, Paul Vlasak, The Dow Chemical Company
2:20pm	**INVITED: AC+MI+SA+SU-TuA1** Magnetic Susceptibility, Magnetic Resonance, and Bonding in Actinide Complexes: Ab-initio Calculations, ***Jochen Autschbach,*** University of Buffalo, SUNY	**AS+TF-TuA1** TOF-SIMS MS/MS for Industrial Problem Solving, *G.L. Fisher, D.M. Carr,* Physical Electronics*; T. Miyayama, S. Iida,* ULVAC-PHI, Japan*;* ***Scott Bryan,*** Physical Electronics
2:40pm	Invited talk continues.	**AS+TF-TuA2** *In Situ* Molecular Imaging of Switchable Ionic Liquids, ***Juan Yao,*** *D. Lao, X.F. Yu, S. Nune, D. Heldebrant, Z.H. Zhu, X.Y. Yu,* Pacific Northwest National Laboratory
3:00pm	**INVITED: AC+MI+SA+SU-TuA3** Combining DMRG with Standard Relativistic Multireference Methods to Probe the Properties of Strongly Correlated Systems: Plutonium Oxides, ***Valérie Vallet,*** *S. Kervazo,* CNRS / University of Lille, France*; F. Réal,* University of Lille, France*; A. Severo Pereira Gomes,* CNRS / University of Lille, France*; F. Virot,* IRSN, France	**INVITED: AS+TF-TuA3** Employing a Surface and Bulk Analytical Approach for the Synthesis and Characterization of Ophthalmic Biomaterials, ***Daniel Hook,*** *A. Hoteling, W. Nichols, I. Nuñez, K. Wygladacz,* Bausch + Lomb, Inc.
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: AC+MI+SA+SU-TuA7** Unified Character of Correlation Effects in Intermediate Valence Actinide Materials, ***Alexander Shick,*** Institute of Physics ASCR, Czech Republic*; J. Kolorenc,* Institute of Physics of the AS CR, Czech Republic*; A.I. Lichtenstein,* University of Hamburg, Germany	**AS+TF-TuA7** Surface Properties and Interfacial Bonding of Anodic Aluminium Oxides and Organic Resins, ***Shoshan Abrahami,*** *T. Hauffman,* Vrije Universiteit Brussel (VUB), Belgium*; De KoK,* Fokker Aerostructures BV, Papendrecht, The Netherlands*; Gudla, Ambat,* Technical University of Denmark (DTU), Denmark*; J.M.C. Mol,* TU Delft, Netherlands*; H. Terryn,* Vrije Universiteit Brussel, Belgium
4:40pm	Invited talk continues.	**AS+TF-TuA8** Practical Considerations of Different Ion Sources for Industrial Applications: The Good, the Bad, and the Indifferent, ***William Stickle,*** *C.N. Young, M.D. Johnson,* HP Inc.*; B. Schmidt,* Physical Electronics USA
5:00pm	**AC+MI+SA+SU-TuA9** The Thermal Expansion of UC and UO_2 from First Principles Calculations - The Importance of Correlations Effects and Spin-orbit Coupling, ***Dominik Legut,*** IT4Innovations Center, VSB - Technical University of Ostrava, Czech Republic*; U.D. Wdowik,* Pedagogical University, Poland*; P. Piekarz,* Polish Academy of Sciences, Poland*; G. Jaglo,* Pedagogical University, Poland*; L. Havela,* Charles University, Prague, Czech Republic	**INVITED: AS+TF-TuA9** Surface Analysis in an Industrial Setting: Non-ideal Real World Samples, ***Vincent Smentkowski,*** General Electric Global Research Center
5:20pm		Invited talk continues.
5:40pm		**AS+TF-TuA11** C 1s Peak of Adventitious Carbon Aligns to the Vacuum Level: Dire Consequences for Material's Bonding Assignment by Photoelectron Spectroscopy, ***Grzegorz Greczynski,*** *L. Hultman,* Linköping University, Sweden
6:00pm		**AS+TF-TuA12** Band Energy Alignment Studies at Heterojunction by X-ray Photoelectron Spectroscopy (XPS), ***Jisheng Pan,*** Institute of Materials Research and Engineering, A*STAR (Agency for Science, Technology and Research), Singapore

	Biomaterial Interfaces Division **Room 12 - Session BI+AS+MI+SA-TuA** **Bio from 2D to 3D: Challenges in Fabrication and Characterization & Flash Presentations** **Moderators:** Lara Gamble, University of Washington, Anna Belu, Medtronic	**Electronic Materials and Photonics Division** **Room 14 - Session EM+SS-TuA** **Surface and Interface Challenges in Semiconductor Materials and Devices** **Moderator:** Anthony Muscat, University of Arizona
2:20pm	**INVITED: BI+AS+MI+SA-TuA1** Cell-instructive Polymer Matrices for Therapies and Tissue Models, ***Carsten Werner,*** Leibniz Institute of Polymer Research Dresden and TU Dresden, Deutschland	**EM+SS-TuA1** Selective Atomic Layer Deposition of $MoSi_x$ -on Si (001) in Preference to Silicon Nitride and Silicon Oxide, ***JongYoun Choi,*** *C.F. Ahles,* University of California, San Diego*; R. Hung, N. Kim,* Applied Materials, Inc.*; A.C. Kummel,* University of California, San Diego
2:40pm	Invited talk continues.	**EM+SS-TuA2** DFT-MD Study of the Mechanism of Ferroelectric Stability in HfO_2, ZrO_2, and HZO ($Hf_xZr_{1-x}O_2$), *E. Chagarov,* ***Andrew Kummel,*** University of California at San Diego*; N. Stanford, A. Davydov, M. Katz,* NIST*; M.-H. Lee,* NTNU
3:00pm	**BI+AS+MI+SA-TuA3** Plant Virus Particles for 2D and 3D Architectures on Surfaces*, V. Rink,* University of Kaiserslautern, Germany*; M. Braun,* RLP Agroscience GmbH, Germany*; M. Ani,* University of Kaiserslautern, Germany*; K. Boonrood,* RLP Agroscience GmbH, Germany*; C. Müller-Renno,* University of Kaiserslautern, Germany*; G. Krczal-Gehring,* RLP Agroscience GmbH, Germany*;* ***Christiane Ziegler,*** University of Kaiserslautern, Germany	**INVITED: EM+SS-TuA3** Interface and Border Traps, their Passivation and the Reliability of Alumina Dielectric / Indium Gallium Arsenide Gate Stacks, ***Paul McIntyre,*** Stanford University
3:20pm	**BI+AS+MI+SA-TuA4** Designing Thermo-responsive Nanocomposites that Provides Multiple Defense Mechanisms against Fouling, ***Ya Liu,*** University of Pittsburgh*; C. Zhang, S. Kolle, J. Aizenberg,* Harvard University*; A.C. Balazs,* University of Pittsburgh	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: BI+AS+MI+SA-TuA7** 3D Ink-jet Printing for Tissue Engineering, ***Thomas Boland,*** The University of Texas at El Paso	**EM+SS-TuA7** Controlling GaAs and Si Oxide Surface Energies, ***Karen L Kavanagh,*** Simon Fraser University, Canada*; N. Herbots, A. Brimhall, R. Van Haren, Y.W. Pershad, S. Suhartono, E. Landeros, R.J. Culbertson,* Arizona State University*; R. Islam,* Cactus Materials
4:40pm	Invited talk continues.	**EM+SS-TuA8** *In Situ* Si_3N_4 Surface Layer on GaN-on-Si Heterostructure for High Power Operation, ***Chien-Fong Lo,*** *O. Laboutin, X. Gao, C.K. Kao, H. Marchand, W. Johnson, R. Pelzel,* IQE
5:00pm	**BI+AS+MI+SA-TuA9** Digging for Answers: Challenges in ToF-SIMS Tissue Depth Profiling, ***Daniel Graham,*** *T.B. Angerer, L.J. Gamble,* University of Washington, Seattle	**EM+SS-TuA9** In-Vacuo Studies of Surface Structure and Surface Chemistry During Plasma-Assisted Atomic Layer Epitaxial Growth of InN Thin Films on GaN Substrates, ***Samantha Rosenberg,*** ASEE (residing at NRL)*; D.J. Pennachio,* University California Santa Barbara*; V.R. Anderson,* ASEE (residing at NRL)*; N. Nepal,* U.S. Naval Research Laboratory*; C. Wagenbach,* Boston University*; A.C. Kozen,* ASEE (residing at NRL)*; Z.R. Robinson,* SUNY Brockport*; J.A. Logan, S. Choi,* University California Santa Barbara*; J.K. Hite,* US Naval Research Laboratory*; K.F. Ludwig,* Boston University*; C.J. Palmstrøm,* University California Santa Barbara*; C.R. Eddy, Jr.,* U.S. Naval Research Laboratory
5:20pm	**BI+AS+MI+SA-TuA10** Cryo-SIMS – Metrology of Biological Sample Preparation Methods for Preservation of Cell Ultrastructure and Chemistry, ***Paulina Rakowska,*** *J.-L. Vorng, I.S. Gilmore,* National Physical Laboratory, UK	**EM+SS-TuA10** Aqueous Ammonium Sulfide Treatments on SiGe Surfaces, ***Stacy Heslop,*** *L. Peckler, A.J. Muscat,* University of Arizona
5:40pm	**BI+AS+MI+SA-TuA11** Towards Cryogenic 3D Nano-XRF Imaging of Biological Samples, ***Axel Rosenhahn,*** *S. Stuhr, C. Rumancev, T. Senkbeil, T. Gorniak, A. von Gundlach, J. Reinhardt,* Ruhr-University Bochum, Germany*; Y. Yang, P. Cloetens,* ESRF, France*; M. Grunze,* Karlsruhe Institute of Technology (KIT), Germany*; J. Garrevoet, G. Falkenberg, W. Schröder,* DESY, Germany	**EM+SS-TuA11** Acceptor Doping of the Si Surface by Scanning Tunneling Microscope Lithography and Diborane, ***Pamela Pena Martin,*** *J.W. Lyding,* University of Illinois at Urbana-Champaign
6:00pm	**BID FLASH NETWORKING SESSION:** **JULIAN KOC**, Ruhr-University Bochum, Germany (**BI-TuP2); KAYLA MARQUIS**, University of Maine (**BI-TuP3); MICHAEL MELIA**, University of Virginia (**BI-TuP5); CHRISTINE KLINGERr**, TU Bergakademie Freiberg, Germany (**BI-TuP6); RYO KISHIDA**, Osaka University, Japan (**BI-TuP7); CLAUDIA MEROLA**, Max Planck Institute for Iron Research, Germany (**BI-TuP10**)	**EM+SS-TuA12** The Structural Stability and Phase Transition of $MoTe_2$ Activated by Thermal Annealing, ***Hui Zhu,*** *Q. Wang, C. Zhang, R. Addou, K.J. Cho, M. Kim, R.M. Wallace,* University of Texas at Dallas **EMPD BUSINESS MEETING**

	Exhibitor Technology Spotlight Workshops **Room West Hall - Session EW-TuA** **Exhibitor Technology Spotlight Session** **Moderator:** Chris Moffitt, Kratos Analytical, Inc.	**Fundamental Discoveries in Heterogeneous Catalysis Focus Topic** **Room 25 - Session HC+SS-TuA** **Advances in Theoretical Models and Simulations of Heterogeneously Catalyzed Reactions** **Moderator:** Xiaofeng Feng, University of Central Florida
2:20pm		**INVITED: HC+SS-TuA1** Hindered Translator/Rotor Models for Calculating the Entropy of Adsorbed Species for Improved Micro Kinetic Models Based on Density Functional Theory Calculations, ***Liney Arnadottir***, *L.H. Sprowl,* Oregon State University; *C. Campbell,* University of Washington
2:40pm		Invited talk continues.
3:00pm		**HC+SS-TuA3** CO_2 Dynamics as a Product of Formate Decomposition on Cu(111), ***Fahdzi Muttaqien***, Osaka University, Japan
3:20pm		**HC+SS-TuA4** Bound Nuclear Spin States of H_2 on a Stepped Metal Surface: Spin Isomer Separation and Conversion, *E.F. Arguelles,* Osaka University, Japan; *H. Kasai,* National Institute of Technology, Akashi College, Japan; ***Wilson Dino***, Osaka University, Japan
3:40pm	**BREAK**	**BREAK**
4:00pm	**EW-TuA6** eSpectra: Surface Science, ***Jessica Hoy***, AIPP/AVS	**BREAK**
4:20pm		**INVITED: HC+SS-TuA7** Reaction Mechanisms and Nature of Active Sites on Alloy Catalysts: Combining First-principles, Microkinetic Modeling, and Reaction Kinetics Experiments, ***Manos Mavrikakis***, University of Wisconsin - Madison
4:40pm		Invited talk continues.
5:00pm		**HC+SS-TuA9** CO_2 Hydrogenation on Defect-Laden Hexagonal Boron Nitride, ***Tao Jiang***, *T.B. Rawal, D. Le, R. Blair, T.S. Rahman,* University of Central Florida
5:20pm		**HC+SS-TuA10** Interaction of Atomic Oxygen with Ag(111) and Ag(110) Surfaces: Oxygen Adsorption and Kinetics at Surface versus Subsurface, ***Sara Isbill***, *S. Roy,* University of Tennessee
5:40pm		**HC+SS-TuA11** Electronic Structure and Catalytic Properties of Au/h-BN Composite System, ***Takat Rawal***, *T. Jiang, D. Le,* University of Central Florida; *P.A. Dowben,* University of Nebraska - Lincoln; *T.S. Rahman,* University of Central Florida **SSD BUSINESS MEETING**

	Magnetic Interfaces and Nanostructures Division **Room 11 - Session MI+2D+AC+NS-TuA** **Spin-Orbit Phenomena at Surfaces and Interfaces** **Moderators:** Markus Donath, Westfälische Wilhelms-Universität Münster, Germany, Axel Hoffmann, Argonne National Laboratory	**Nanometer-scale Science and Technology Division** **Room 19 - Session NS+EM+MN+PS+SS-TuA** **Nano-Photonics, Plasmonics and Mechanics** **Moderators:** Joshua Ballard, Zyvex Labs, Christian Zorman, Case Western Reserve University
2:20pm	**INVITED: MI+2D+AC+NS-TuA1** Coherent Control over Spin-polarized Dirac Surface State in Topological Insulators, ***Kenta Kuroda,*** The Institute for Solid State Physics, The University of Tokyo, Japan	**NS+EM+MN+PS+SS-TuA1** Nonlinear Interactions of Coupled MEMS Cantilevers, ***Christopher Wallin,*** National Institute of Standards and Technology, Center for Nanoscale Science and Technology; *R. De Alba, D.A. Westly,* NIST/CNST; *S. Grutzik,* Sandia National Laboratories; *A.T. Zehnder, R.H. Rand,* Cornell University; *V.A. Aksyuk,* NIST/CNST; *S. Krylov,* Tel Aviv University, Israel; *B.R. Ilic,* NIST/CNST
2:40pm	Invited talk continues.	**NS+EM+MN+PS+SS-TuA2** Silicon Carbonitride Nanoresonator Arrays for Proteomic Analysis, *W. Zheng,* University of Alberta, Canada; *R. Du,* University of Alberta and The National Institute for Nanotechnology; *Y. Cao,* University of Alberta and The National Institute for Nanotechnology, Canada; *M.A. Mohammad, S.K. Dew,* University of Alberta, Canada; *M.T. McDermott,* University of Alberta and The National Institute for Nanotechnology; ***Stephane Evoy,*** University of Alberta, Canada
3:00pm	**MI+2D+AC+NS-TuA3** Enhancement of Voltage-Controlled Magnetic Anisotropy Through Metallic Insertion at the CoFeB|MgO Interface, ***Kevin Fitzell,*** *X. Li, C.T. Karaba, A. Buditama, G. Yu, K. Wong,* University of California at Los Angeles (UCLA); *D. Wu,* UCLA; Fudan University, Republic of China; *N. Altieri, C. Grezes,* UCLA; *N. Kioussis,* CSU, Northridge; *S.H. Tolbert,* UCLA; *Z. Zhang,* Fudan University, Republic of China; *J.P. Chang, P.K. Amiri, K.L. Wang,* UCLA	**INVITED: NS+EM+MN+PS+SS-TuA3** Cavity Optomechanical Coupling in Chip-Scale Plasmonic and Photonic Transducers for Nanoscale Measurements and Optical Signal Control, ***Vladimir A. Aksyuk,*** *S. An,* NIST Center for Nanoscale Science and Technology; *B. Dennis,* Rutgers University and NIST CNST; *T. Michels, B.J. Roxworthy, J. Zou,* NIST Center for Nanoscale Science and Technology
3:20pm	**MI+2D+AC+NS-TuA4** THz Radiation Generated from Interfacial Rashba Spin-orbit Coupling, *M.B. Jungfleisch,* Argonne National Laboratory; *Q. Zhang,* Argonne National Laboratory; *W. Zhang,* Oakland University; *J.E. Pearson, H. Wen,* ***Axel Hoffmann,*** Argonne National Laboratory	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: MI+2D+AC+NS-TuA7** Spin-orbit Coupled d-electron Surface States of Delafossite Oxides, ***Phil King,*** University of St Andrews, UK	**NS+EM+MN+PS+SS-TuA7** An Active Plasmomechanical System for Optical Modulation and Mechanical Lasing, ***Brian Roxworthy,*** *V.A. Aksyuk,* NIST
4:40pm	Invited talk continues.	**NS+EM+MN+PS+SS-TuA8** Plasmon-enhanced Photo-catalysis Using Collapsible Nano-fingers, ***Yunxiang Wang,*** *B. Song, W. Wu, S. Cronin,* University of Southern California
5:00pm	**MI+2D+AC+NS-TuA9** Understanding the Interfacial Interaction and Isotope Effects in Organic Spin Valve Structures, ***Alexandra Steffen,*** *N. Herath, J. Keum, H. Zhang, K. Hong, J. Jakowski, J. Huang, J. Browning, C.M. Rouleau, I.N. Ivanov, V. Lauter,* Oak Ridge National Laboratory	**INVITED: NS+EM+MN+PS+SS-TuA9** Towards Active and Sustainable Plasmonics, ***Naomi Halas,*** Rice University
5:20pm	**MI+2D+AC+NS-TuA10** Dispersion and Spin Structure of Conduction Bands of Single-layer TMDC's on Au(111), ***Philipp Eickholt**,*** *M. Holtmann,* Westfälische Wilhelms-Universität Münster, Germany; *C.E. Sanders, M. Dendzik, M. Bianchi, P. Hofmann,* Aarhus University, Denmark; *M. Donath,* Westfälische Wilhelms-Universität Münster, Germany	Invited talk continues.
5:40pm	**MI+2D+AC+NS-TuA11** Unraveling the Spin Structure of Unoccupied States in Bi_2Se_3, ***Markus Donath,*** *C. Datzer, A. Zumbülte,* Westfälische Wilhelms-Universität Münster, Germany; *J. Braun,* LMU München, Germany; *T. Förster, A.B. Schmidt,* Westfälische Wilhelms-Universität Münster, Germany; *J. Mi, B. Iversen, P. Hofmann,* Aarhus University, Denmark; *J. Minár,* University of Pilzen, Czech Republic; *H. Ebert,* LMU München, Germany; *P. Krüger, M. Rohlfing,* Westfälische Wilhelms-Universität Münster, Germany	**NS+EM+MN+PS+SS-TuA11** Ultra-High Resolution Photonics-based Thermometry, ***Nikolai Klimov,*** *T. Herman, K.O. Douglass, M.J. Chojnacky, Z. Ahmed,* National Institute of Standards and Technology
6:00pm	**MIND BUSINESS MEETING**	**NS+EM+MN+PS+SS-TuA12** Size-Controlled Synthesis of Gold Nanostars and their Excellent SERS and Fluorescence Quenching Properties, ***Waqqar Ahmed,*** *H.I. Khan, M.U. Khalid,* COMSATS Institute of Information Technology Islamabad, Pakistan

* **Falicov Student Award Finalist**

	Plasma Science and Technology Division **Room 23 - Session PS+SS-TuA** **The Science of Plasmas and Surfaces: Commemorating the Career of Harold Winters (ALL INVITED SESSION)** **Moderators:** Sumit Agarwal, Colorado School of Mines, Selma Mededovic, Clarkson University	**Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic** **Room 9 - Session SA+AS+HC+SS-TuA** **Frontiers of Photoelectron Spectroscopy: Surface & Interface Processes with Variable Depth Probe, High Spatial or Temporal Resolution** **Moderators:** Geoff Thornton, University College London, Carla Bittencourt, University of Mons, Belgium
2:20pm	**PS+SS-TuA1** History and Legacy of the Coburn and Winters Paper, ***R.Mohan Sankaran,*** Case Western Reserve University*; M.C.M. van de Sanden,* FOM Institute DIFFER, Netherlands	**INVITED: SA+AS+HC+SS-TuA1** AVS 2017 Medard W. Welch Award Lecture: Ionic Liquid Surface Science, ***Hans-Peter Steinrück****, University Erlangen-Nuernberg, Germany
2:40pm	**PS+SS-TuA2** The Reaction of Fluorine Atoms with Silicon: Controversies 38 Years in the Making, ***Vincent M. Donnelly,*** University of Houston	Invited talk continues.
3:00pm	**PS+SS-TuA3** The Long Quest to Understand Etch Mechanisms and Surface Science: The Legacy of Harold Winters and its Impact on Semiconductor Industry, ***Sebastian Engelmann,*** *N.C.M. Fuller,* IBM Research Division, T.J. Watson Research Center	**SA+AS+HC+SS-TuA3** *In Situ* Characterization of Semiconductor Nanowire Devices by Nano-Focus X-ray Photoemission Microscopy and Spectroscopy, *S. McKibbin,* ***Andrea Troian,*** *S. Yngman,* Lund University, Sweden*; H. Sezen, M. Amati, L. Gregoratti,* Elettra-Sincrotrone Trieste, Italy*; A. Mikkelsen, R. Timm,* Lund University, Sweden
3:20pm	**PS+SS-TuA4** Surface Science Aspects of (Plasma) ALD reactions*, V. Vandalon, M.C.M. van de Sanden,* ***Erwin Kessels,*** Eindhoven University of Technology, The Netherlands	**SA+AS+HC+SS-TuA4** Introducing Ionic-Current Detection for X-ray Absorption Spectroscopy in Liquid Cells, ***Daniela Schoen,*** Helmholtz-Zentrum Berlin, Germany
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**PS+SS-TuA7** Harold Winters and Plasma-Surface Interactions, ***David Graves,*** University of California at Berkeley	**INVITED: SA+AS+HC+SS-TuA7** Synchrotron-based Studies of Interfaces and Interphases in Li-ion and Na-ion Batteries, ***Kristina Edström****, M. Hahlin, B. Philippe, H. Rensmo,* Uppsala University, Sweden
4:40pm	**PS+SS-TuA8** Illuminating the Black Box: Plasma-Surface Interactions at the Atomic Scale, ***Jane Chang,*** UCLA	Invited talk continues.
5:00pm	**PS+SS-TuA9** Controlling Low Temperature Plasma Surface Interactions for Atomic Layer Etching of Electronic Materials And Atmospheric Pressure Plasma-Treatments of Model Polymers and Biomolecules, ***Gottlieb S. Oehrlein,*** University of Maryland, College Park	**SA+AS+HC+SS-TuA9** Non-destructive Depth Profiling of $LaAlO_3/SrTiO_3$ Interfaces, ***Conan Weiland,*** NIST*; A.K. Rumaiz,* National Synchrotron Light Source II, Brookhaven National Laboratory*; G.E. Sterbinsky,* Advanced Photon Source, Argonne National Laboratory*; J.C. Woicik,* NIST
5:20pm	**PS+SS-TuA10** H-induced Defect Kinetics in a-Si:H: Obtaining Kinetic Parameters from Temperature-Dependent Data, *F.J.J. Peeters,* DIFFER, Netherlands*; J. Zheng,* Peking University, China*; I.G.M. Aarts,* ASML*; A.C.R. Pipino,* ONR*; W.M.M. Kessels,* Eindhoven University of Technology, Netherlands*;* ***Richard van de Sanden,*** DIFFER, Netherlands	**SA+AS+HC+SS-TuA10** Hard X-ray Photoelectron Spectroscopy Study of the Resistive Switching in Te-based Conductive Bridging Random Access Memories, ***Munique Kazar Mendes****, E. Martinez, O.J. Renault, R. Gassilloud, M. Bernard, M. Veillerot,* CEA/LETI-University Grenoble Alpes, France*; J.M. Ablett,* Synchrotron SOLEIL, France*; N. Barrett,* SPEC, CEA Saclay - University Paris-Saclay, France
5:40pm	**PS+SS-TuA11** Translating Fundamental Science to Technology Development in Plasma Assisted Materials Processing: Contributions by Harold Winters and Their Impact on Modeling, ***Mark Kushner,*** *C.M. Huard, S.J. Lanham, S. Huang, P. Tian,* University of Michigan	**SA+AS+HC+SS-TuA11** Correlation of the Magnetic and Magnetotransport Properties, Electronic and Atomic Structure of Strongly Correlated Complex-oxide Thin Films with the Oxygen Vacancies and Films Thickness, ***German Rafael Castro****,* Spanish CRG BM25 Beamline at the ESRF, France*; J. Rubio Zuazo,* SpLine Spanish CRG BM25 Beamline at the ESRF, France
6:00pm	**PS+SS-TuA12** Extending the Legacy of Harold Winters: Probing the Energetics and Plasma-Surface Interface of Halogenated Plasmas, ***Ellen Fisher,*** Colorado State University **PSTD BUSINESS MEETING/2017 PLASMA PRIZE ANNOUNCEMENT**	**SA+AS+HC+SS-TuA12** Synchrotron–Based X-ray Spectroscopy Studies of Inorganic-Organic Hybrid Halide Perovskite Materials Surfaces and Properties, ***Deidra Hodges****, S. Shahriar, A.K. Mishra, V. Castaneda, V. Vidal, M. Martinez, N. Garcia, J. Munoz, J. Lopez,* University of Texas at El Paso

* **Medard W. Welch Award Winner**

Tuesday Afternoon, October 31, 2017

	Scanning Probe Microscopy Focus Topic **Room 10 - Session SP+AS+MI+NS+SS-TuA** **Probe-Sample Interactions** **Moderators:** Suhas Somnath, Oak Ridge National Laboratory, Carl Ventrice, Jr., SUNY Polytechnic Institute	**Sustainability Focus Topic** **Room 5 & 6 - Session SU+2D+MS+NS-TuA** **Membranes, Thin Films, and Sensors** **Moderators:** Keith Brown, Boston University, Roya Maboudian, University of California at Berkeley
2:20pm	**SP+AS+MI+NS+SS-TuA1** Atomic Manipulation of Atomic Oxygen on Graphene, *H.K. Kim, T. Ahn, T.S. Youn, D.G. Lee,* ***Tae-Hwan Kim,*** Pohang University of Science and Technology, Republic of Korea	**INVITED: SU+2D+MS+NS-TuA1** Protecting Food and Water Quality: Considerations for Materials Innovation, ***Susan Duncan,*** Virginia Polytechnic Institute and State University
2:40pm	**SP+AS+MI+NS+SS-TuA2** Revealing Distance-Dependence of Chemical Interactions and Image Contrast Reversal in Noncontact Atomic Force Microscopy: A Case Study on Highly Oriented Pyrolytic Graphite, *O.E. Dagdeviren*[*]*, J. Goetzen, E.I. Altman,* ***UdoD. Schwarz,*** Yale University	Invited talk continues.
3:00pm	**INVITED: SP+AS+MI+NS+SS-TuA3** Absence of a Band Gap at Metal-Monolayer MoS_2 Interface, ***Abhay Pasupathy,*** Columbia University	**INVITED: SU+2D+MS+NS-TuA3** Real-time Detection of Water Contaminants Using a Graphene-based Field-Effect Transistor Sensing Platform, ***Junhong Chen,*** University of Wisconsin - Milwaukee
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**SP+AS+MI+NS+SS-TuA7** Imaging of MOS Interface Trap Distribution using Local Deep Level Transient Spectroscopy Based on Scanning Nonlinear Dielectric Microscopy, *N. Chinone,* ***Yasuo Cho,*** Tohoku University, Japan	**INVITED: SU+2D+MS+NS-TuA7** Biomass to BioPlus™: Nanocellulose Composites, ***Kim Nelson,*** American Process Inc.
4:40pm	**SP+AS+MI+NS+SS-TuA8** Quantum State Readout of Individual Quantum Dots by Electrostatic Force Detection, ***Yoichi Miyahara,*** *A. Roy-Gobeil, P.H. Grutter,* McGill University, Canada	Invited talk continues.
5:00pm	**SP+AS+MI+NS+SS-TuA9** Cryogenic Near-field Imaging and Spectroscopy at the 10-Nanometer-scale, ***Max Eisele,*** *A. Huber,* neaspec GmbH	**INVITED: SU+2D+MS+NS-TuA9** Nanocellulose Thin Films and Nanocellulose Aerogels, ***Kenneth Carter,*** University of Massachusetts - Amherst*; A. Chang, K.L. Martin, Y. Li,* University of Massachusetts – Amherst
5:20pm	**SP+AS+MI+NS+SS-TuA10** Atomic Scale Proximity Effect at a Molecular Superconductor-Metal Boundary, ***KyawZin Latt,*** *S. Khan,* Ohio University*; A. Ngo,* Argonne National Laboratory*; H. Chang,* Ohio University*; A. Hassanien,* J. Stefan Inst., Slovenia*; L. Curtiss,* Argonne National Laboratory*; S.W. Hla,* Ohio University and Argonne National Laboratory	Invited talk continues.
5:40pm	**SP+AS+MI+NS+SS-TuA11** Breaking the Time Barrier in Scanning Probe Force Microscopy: Fast Free Force Reconstruction (F^3R) for Non-contact SPM, *L. Collins,* ***Stephen Jesse,*** *S.V. Kalinin,* Oak Ridge National Laboratory	**SU+2D+MS+NS-TuA11** Fabrication and Characterization of Thermal Treated Si/Si+Ge Thin Films For Energy Harvesting, *S. Budak, Z. Xiao,* ***Michael Howard,*** *B. Rodgers, M. Alim,* Alabama A&M University
6:00pm	**SP+AS+MI+NS+SS-TuA12** Ultrafast G Mode-Kelvin Probe Force Microscopy and its application to probing ionic transport mechanisms in perovskite solar cells., ***Liam Collins,*** *S. Jesse, S.V. Kalinin,* Oak Ridge National Laboratory	**SU+2D+MS+NS-TuA12** Thermoelectric Properties of Bi_2Te_3/Sb_2Te_3 Thin Films Annealed at Different Temperatures, *S. Budak, Z. Xiao, M. Howard,* ***Breonna Rodgers,*** *M. Alim,* Alabama A&M University

[*] **NSTD Student Award Finalist**

Tuesday Afternoon, October 31, 2017

	Thin Films Division Room 20 - Session TF-TuA ALD Precursors and Surface Reactions **Moderators:** Qing Peng, University of Alabama, Riikka Puurunen, Aalto University, Finland	Vacuum Technology Division Room 7 & 8 - Session VT+MN-TuA Pumping **Moderators:** Tamirisa Apparao, SHI Cryogenics Group, Julia Scherschligt, NIST
2:20pm	**TF-TuA1** Accelerated Searching of Potential Precursors for Silicon Carbide-atomic Layer Deposition from Ab-initio Machine Learning Methods, ***Zhigang Mei***, *S. Bhattacharya, A. Yacout,* Argonne National Laboratory	**INVITED: VT+MN-TuA1** Silicon-micromachined Turbomolecular Pump, ***Wei Yang,*** PD Sciences LLC
2:40pm	**TF-TuA2** Surface Chemistry of Ru Atomic Layer Deposition Precursors, *X. Qin,* ***Francisco Zaera,*** University of California	Invited talk continues.
3:00pm	**TF-TuA3** Mechanistic Aspects of ALD Ru Thin Film Growth based on $Ru(DMBD)(CO)_3$ and H_2O using Downstream Quadrupole Mass Spectrometry, ***Zhengning Gao,*** Washington University in St. Louis; *R. Kanjolia,* EMD Performance Materials; *P. Banerjee,* Washington University in St. Louis	**INVITED: VT+MN-TuA3** A Rigorous Approach to Effluent Gas Management for the Vacuum Processing Industry, ***Paul Dozoretz,*** MKS Instruments, Inc.
3:20pm	**TF-TuA4** Nucleation of Al_2O_3 Atomic Layer Deposition with Water or H_2O_2, ***Adam Hinckley,*** *A.J. Muscat,* University of Arizona	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**TF-TuA7** Direct Measurements of Half-Cycle Reaction Heats during Atomic Layer Deposition Provide Mechanistic Insights, ***Charles T. Campbell,*** *J. Lownsbury,* University of Washington; *K.S. Kim, A.B.F. Martinson,* Argonne National Laboratory	**VT+MN-TuA7** Compatibility of NEG Pumps with Particle-sensitive Applications: A Review of Recent Experimental Evidences, *P. Manini, E. Maccallini, M. Urbano, M. Mura, T. Porcelli,* ***Fabrizio Siviero,*** SAES Getters, Italy
4:40pm	**TF-TuA8** Cyclic Silane Precursors in Atomic and Molecular Layer Deposition, ***Nicholas Strandwitz,*** *L. Ju,* Lehigh University	**VT+MN-TuA8** NEG Coated Chambers for XHV, ***Marcy Stutzman,*** *P.A. Adderley, M. Poelker,* Thomas Jefferson National Accelerator Facility
5:00pm	**INVITED: TF-TuA9** Area Selective Atomic Layer Deposition Via Precursor Selective Adsorption: Theory, Strategy, and Applications in Catalysis, ***Rong Chen,*** Huazhong University of Science and Technology, PR China	**VT+MN-TuA9** Ion Pump Noble Gas Stability Mechanism of Titanium Cathode Material, ***Anthony Wynohrad,*** Gamma Vacuum
5:20pm	Invited talk continues.	**VT+MN-TuA10** Ricor's MicroStar/Nanostar Compact Water Vapor Cryopump: Applications and Model Overview, ***Rodney Harris,*** Ricor-USA, Inc.; *I. Nachman, T. Tauber, M. Kootzenko, B. Barak, E. Aminov, D. Gover,* RICOR Cryogenic & Vacuum Systems, Israel
5:40pm	**INVITED: TF-TuA11** AVS 2017 John A Thornton Memorial Award and Lecture: Atomic Layer Deposition: Highlights from the Last 25 Years, ***Steven George****, University of Colorado at Boulder	**VT+MN-TuA11** Measurements of Sensitivity, Minimum Detectable Partial Pressure and Minimum Detectable Concentration with Different Modes of QMS According to ISO TS 20175, ***Sefer Avdiaj,*** University of Prishtina, Albania; *K. Jousten,* Physikalische Technische Bundesanstalt (PTB), Germany
6:00pm	Invited talk continues. **TFD BUSINESS MEETING**	**VTD BUSINESS MEETING & FLASH NETWORKING SESSION:** **ERIK ZIEHM,** Univ. of Illinois at Urbana-Champaign **(VT-TuP1); SUSHMA SHRINIVASAN**, Univ. of California-Davis **(VT-TuP2); TIM VERBOVŠEK**, Inst. of Metals & Tech., Slovenia (**VT-TuP3); DEL SMITH**, Normandale Community College (**VT-TuP4); RYAN McCALL**, Technetics Group (**VT-TuP5); YUSUKE NISHIKAWA**, Mitsubishi Electric Corp., Japan (**VT-TuP6**); **GEOFFREY HODGSON**, TRIUMF, Canada (**VT-TuP7); ERNESTO BARRAZA-VALDEZ**, Tri Alpha Energy, Inc. (**VT-TuP8**); **SOL OMOLAYO**, Lawrence Berkeley Natl Lab **(VT-TuP9)**

* **John A. Thornton Memorial Award Winner**

Actinides and Rare Earths Focus Topic
Room Central Hall - Session AC-TuP
Actinide and Rare Earth Poster Session
6:30pm

AC-TuP1 Graphene Oxide and Reduced Graphene Oxide as Promising Materials for Removing Biological Pollutions, ***Alexander Gusev***, *O.V. Zakharova,* Derzhavin Tambov State University, Russia; *I.A. Rybkin, D.N. Bratashov,* National Research Saratov State University, Russia; *I. Ilinykh, P. Rozhin, D.V. Kuznetsov,* National University of Science and Technology "MISiS", Russia; *A. Sinitskii,* Nebraska Center for Materials and Nanoscience, University of Nebraska - Lincoln

AC-TuP2 Sputter-Deposited Layers for Solid Phase Microextraction, ***Tuhin Roychowdhury***, *D. Patel, M.R. Linford,* Brigham Young University

AC-TuP3 Mechanical Behavior Improvement of Coated Epoxy Resins Exposed To Environmental Effects, ***Dorina Mihut***, *A. Afshar, S. Hill,* Mercer University; *G. Negrea,* Technical University Cluj Napoca, Romania; *R. Alyamani, A. Aldhubaie,* Mercer University

Biomaterial Interfaces Division
Room Central Hall - Session BI-TuP
Biomaterial Interfaces Poster Session with Flash presentations
6:30pm

BI-TuP1 Optimizing Micropost Arrays to Break Up Biofilms, ***James Waters***, *A.C. Balazs,* University of Pittsburgh

BI-TuP2 Dynamic Field Testing of Fouling Release Coatings by a Rotating Disk System, ***Julian Koc***, *K.A. Nolte,* Ruhr-University Bochum, Germany; *A. Stephens,* Florida Institute of Technology; *M.P. Schultz,* United States Naval Academy; *G. Swain, K. Hunsucker,* Florida Institute of Technology; *A. Rosenhahn,* Ruhr-University Bochum, Germany

BI-TuP3 Bioinspired Vascularized Polymers for Controlled Drug Delivery, ***Kayla Marquis***, *A. Webber, C. Howell,* University of Maine

BI-TuP4 Measuring the Mechanical Properties of Hydrophobic Anti-Fouling Surfaces, ***Samantha Zanetti***, *S. Moorzitz, G. Dickinson, M. Figueroa,* The College of New Jersey

BI-TuP5 *In Vitro* Degradation Performance and Increased Biological Response of a Surface Modified Mg-Al-Zn Alloy, ***Michael Melia***, *D.C. Florian, J.R. Scully, J.M. Fitz-Gerald,* University of Virginia

BI-TuP6 Interactions between Single Molecules and Surfaces, ***Christine Klinger***, TU Bergakademie Freiberg, Germany; *L. Moreno-Ostertag,* MPI for Iron Research, Germany; *C. Weber, P. Schiller, M. Valtiner,* TU Bergakademie Freiberg, Germany

BI-TuP7 Proton Transfers Involved in Melanin Biosynthesis: Binding of Cysteine to Dopaquinone Investigated by Density Functional Theory based Calculation, ***Ryo Kishida***, Osaka University, Japan

BI-TuP10 Interferometry: A New Way to Study Corrosion at Confined Interfaces, ***Claudia Merola***, *H.-W. Cheng,* Max Planck Institute for Iron Research, Germany; *M. Valtiner,* University of Freiberg, Germany

BI-TuP11 Stimuli-responsive Thin Films made from the Mucilage of *Opuntia Ficus-indica* Cactus, ***Zeinab Veisi***, University of South Florida; *M. Cardenas, A. Cardenas-Valencia,* SRI International; *R. Toomey, N. Alcantar,* University of South Florida

BI-TuP12 Programming Hierarchical Phase Separated Assemblies Comprising Intrinsically Disordered Polypeptides, ***Nichlaus Carroll***, *G.P. Lopez,* University of New Mexico

BI-TuP13 Effect of Topography on Retinal Stem Cell Viability and Regrowth, ***Aleksandr Filippov***, *Y. Tian, Y. Xie,* SUNY Polytechnic Institute

BI-TuP14 DNA Interactions with Elastin like Polypeptide Coacervates, ***Telmo Diez***, *P.A.H. Nguyen, N. Carroll, J. Satterfield, G.P. Lopez,* University of New Mexico

BI-TuP15 Bovine Aortical Endothelial Cell Encapsulation with Elastin-like polypeptides (ELP) and bis(sulfosuccinimidyl)suberate (BS3)., ***Phuong Anh Nguyen***, *T. Diez Perez, H.E. Canavan,* University of New Mexico; *N.J. Carroll,* Universiity of New Mexico

BI-TuP16 Direct Electron Beam Imaging of Proteinaceous Fibrils, *T.M. Thieu,* KRISS, Republic of Korea; *T.H. Ha,* KRIBB; ***SangJung Ahn***, KRISS, Korea, Republic of Korea

BI-TuP17 Textured TNZT Foams for Bone Implant Applications, ***Elizabeth Blackert***, *S. Murguia, M. Kramer, M. Young, S.M. Aouadi,* University of North Texas

BI-TuP18 Synthesis and Immobilization of Silver Nanoparticles in Natural Hydrogels by Directed Liquid-plasma Nanosynthesis, ***Camilo Jaramillo***, *A.R. Shetty, A.F. Civantos, S.L. Arias, J.C. Devorkin,* University of Illinois at Urbana-Champaign; *S. Chang,* Nanjing University of Aeronautics and Astronautics, China; *J.P. Allain,* University of Illinois at Urbana-Champaign

Spectroscopic Ellipsometry Focus Topic
Room Central Hall - Session EL-TuP
Spectroscopic Ellipsometry Poster Session
6:30pm

EL-TuP1 Ultra High-speed Spectroscopic Ellipsometry and its Applications, ***Gai Chin***, ULVAC, Japan

EL-TuP2 Comparing and Evaluating the Calculation Results of Measurement Uncertainty for Various Types of Rotating-element Spectroscopic Ellipsometers, ***YongJai Cho***, *W. Chegal, H.M. Cho,* Korea Research Institute of Standards and Science, Republic of Korea

EL-TuP3 Ellipsometry Analysis of a Germanium-on-insulator Wafer, ***Rigo Carrasco***, *N. Samarasingha Archichchege,* New Mexico State University; *B.Y. Nguyen,* Soitec, France; *S. Zollner,* New Mexico State University

Magnetic Interfaces and Nanostructures Division
Room Central Hall - Session MI-TuP
Magnetic Interfaces and Nanostructures Poster Session
6:30pm

MI-TuP1 Correlation Between Spin Selectivity and Chiroptical Properties of Cysteine CdSe Capped Quantum Dots, ***Vaibhav Varade***, Weizmann Institute of Science, Israel; *B.P. Bloom,* University of Pittsburgh; *K. Vankayala,* Weizmann Institute of Science; *D. Waldeck,* University of Pittsburgh; *R. Naaman,* Weizmann Institute of Science, Israel

MEMS and NEMS Group
Room Central Hall - Session MN-TuP
MEMS/NEMS Poster Session
6:30pm

MN-TuP1 Method for Patterning Crystal Colloidal Masks Using Poly (Acrylic Acid), ***Connor Smith***[*], *S.L. Burkett,* The University of Alabama

MN-TuP2 Understanding the Influence of Space Charge Region on Electrical Behavior of ($Pb_{0.95}La_{0.05}$)($Zr_{0.54}Ti_{0.46}$)O_3 Thin Film Capacitors Designed using Top Electrodes of Different Various Work Functions, ***Vaishali Batra***[†], *S. Kotru, G.D. Cabot II, V.N. Harshan,* The University of Alabama

MN-TuP3 Tribology and Locomotion of Untethered Scratch Drive Actuators with Applications to MEMS Microrobotics, ***Ratul Majumdar***, University of Illinois at Chicago; *L. Stan, R. Divan,* Argonne National Laboratory; *I. Paprotny,* University of Illinois at Chicago

MN-TuP4 Palladium Nanoparticle Effect of Carbon Nanotube Based Hydrogen Gas Sensor, ***Jae-Keon Kim***, *D. Jung,* Korea Institute of Industrial Technology (KITECH), Republic of Korea

MN-TuP5 Effect of Seeding Material on $Sc_{0.125}Al_{0.875}N$ c-axis Orientation, ***Erica Douglas***, *M.D. Henry, T.R. Young, B. Griffin,* Sandia National Laboratories

MN-TuP6 Interference Analysis and Optmization in Microbolometers Array, *M.E.B.G.N. Silva,* ***LeandroTiago Manera***, *F. Fruett, S. Finco,* University of Campinas, Brazil

MN-TuP7 Carbon Nanotube Yarn Based Sensors, *J.K. Kim, J.P. Yun, D.S. Kim, M. Han, J.H. Park,* ***Daewoong Jung***, Korea Institute of Industrial Technology (KITECH), Republic of Korea

MN-TuP8 MEMS-Based, High-Resolution Nanocalorimeter for Characterizing Phase Transitions in Samples in the Sub-Microgram Range, ***Zhu Diao***, Stockholm University / Halmstad University, Sweden; *D. Campanini, A. Rydh,* Stockholm University, Sweden

MN-TuP9 PLD covering the Innovation Chain to Accelerate the Commercial Uptake of Novel Thin Film Materials, ***Matthijn Dekkers***, *J.A. Janssens,* Solmates, Netherlands

[*] **MEMS/NEMS Best Paper Award Finalist**

[†] **MEMS/NEMS Best Paper Award Finalist**

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

PS-TuP1 Particle Kinetic Simulation of Low-temperature Low-pressure HiPIMS Plasma, *N.T. Lauer,* ***Natale Ianno,*** University of Nebraska-Lincoln

PS-TuP2 QDB: the Quantemol Database of Plasma Processes, *C. Hill, S. Rahimi, D.B. Brown,* ***Anna Dzarasova,*** *J.R. Hamilton, S. Zand-Lashani,* Quantemol LTD, UK; *J. Tennyson,* University College London, UK

PS-TuP3 Self-neutralized Ion Beam by Pulsed Plasma with Synchronous Afterglow Bias, ***Ya-Ming Chen,*** *R. Sawadichai, V.M. Donnelly, D.J. Economou,* University of Houston

PS-TuP4 Gold Nanoparticle Catalyst for Plasma Nitridation of Thin Films, ***Takeshi Kitajima,*** *Y. Kariya, T. Nakano,* National Defense Academy of Japan, Japan

PS-TuP5 Development of Microwave Resonant Probes for Measurement of Plasma Density, ***Bo-Jr Chen,*** *Y.C. Wu, J.S. Chiou, K.C. Leou,* National Tsing Hua University, Taiwan, Republic of China

PS-TuP6 Measurement of Hydrogen Dissociation Rates in Hydrogen Discharge Plasmas, ***Abigail Cotter,*** *J.R. Doyle,* Macalester College

PS-TuP7 Molecular Dynamics Simulation of Ni Self-sputtering and Modeling of Interatomic Potential Functions, ***Nicolas Mauchamp,*** *M. Isobe, S. Hamaguchi,* Osaka University, Japan

PS-TuP8 Atomic Layer Etching of Silicon Dioxide Using Alternating C_4F_8 and Energetic Ar^+ Plasma Beams, *S. Kaler, Q. Lou, V.M. Donnelly,* ***Demetre Economou,*** University of Houston

PS-TuP9 Si, SiO_2, and Si_3N_4 Etching Characteristics of Silicon Halide Ions (SiF_x^+, $SiCl_x^+$, and $SiBr_x^+$), ***Kazuhiro Karahashi,*** *T. Ito, H. Li, Y. Muraki,* Osaka University, Japan; *M. Matsukuma,* Tokyo Electron Limited, Japan; *S. Hamaguchi,* Osaka University, Japan

PS-TuP10 The Interactions of Atmospheric Pressure Plasma Jets with Surfaces: *In Situ* Measurements of Local Excitations in Thin Films, ***Eric Gillman,*** Naval Research Laboratory; *B.M. Foley, J. Tomko,* University of Virginia; *D.R. Boris, 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; *S.G. Walton,* Naval Research Laboratory

PS-TuP11 Modeling of a Plasma Discharge in an ICP Plasma Source for a Strip Tool, ***Vladimir Nagorny,*** Mattson Technology, Inc.; *V.V. Olshansky,* Kharkiv Institute of Physics and Technology, Ukraine; *S. Ma,* Mattson Technology, Inc.

PS-TuP12 Characterization of Ion Lasers with Paschen Curves, ***Steven Flores,*** San Jose State University and Coherent Inc.; *C. Fields,* Coherent Inc.

PS-TuP13 Plasma Simulation of Capacitively Coupled Plasma for High Aspect Ration Contact Process of Semiconductor, ***Hyowon Bae,*** Samsung Electronics Co. Ltd.; *J. Kim,* Pusan National University, Republic of Korea; *M. Lin,* Hanyang University, Republic of Korea; *J. Um, S. Han, T. Kang,* Samsung Electronics Co. Ltd.; *H.J. Lee,* Pusan National University, Republic of Korea

PS-TuP14 N_2, O_2, and NF_3 Dissociation in a Low Frequency, High Density Plasma Source, ***Hanyang Li,*** *Y. Zhou, V.M. Donnelly,* University of Houston; *K. Wenzel, J. Chiu, J. Lamontagne, X. Chen,* MKS Instruments, Inc.

PS-TuP16 Improvement of Adhesion Strength between Copper and Composite Materials using Plasma Press Method, ***DooSan Kim,*** *W.O. Lee, J.W. Park, M.K. Mun, K.S. Kim, K.H. Kim, Y.J. Ji, J.S. Oh, G.Y. Yeom,* Sungkyunkwan University, Republic of Korea

PS-TuP17 Experimental and Simulation Study on Hydrogen Atom Kinetics in Low-pressure Capacitively Coupled Plasmas, *S. Nunomura, K. Katayama,* ***Isao Yoshida,*** National Institute of Advanced Industrial Science and Technology (AIST), Japan

PS-TuP18 Effect of Superimposed Multi-frequency on Plasma Characteristics of an Inductively Coupled Plasma Source, ***Kyung Chae Yang,*** *H.S. Lee, S.G. Kim, D.I. Sung, M.K. Mun, G.Y. Yeom,* Sungkyunkwan University, Republic of Korea

PS-TuP19 Numerical Simulation of Capacitively Coupled Radio Frequency Plasma Discharges - Effect of Hollow Cathode Structure, ***Hsin-Chang Chang,*** *C.Y. Chen, P.S. Luo, K.C. Leou,* National Tsing Hua University, Taiwan, Republic of China

PS-TuP20 Photocatalytic Effects of Ag-TiO_2 Nanotubes Fabricated by BCP Lithography, *G.Y. Yeom,* ***Dain Sung,*** *J.S. Oh, K.C. Yang, D.W. Kim,* Sungkyunkwan University, Republic of Korea

PS-TuP21 Prediction of Particle Generation by Machine Learning in Plasma Etching Tools, ***Yoshito Kamaji,*** Hitachi High-Technologies Corp., Japan; *M. Sumiya, A. Kagoshima,* Hitachi High-Technologies Corp.; *M. Izawa,* Hitachi High-Technologies Corp., Japan

PS-TuP22 Investigation of Wear-Resistance Enhancement of Plasma-functionalized Carbon-nanotube Composite Polyurethane Film, ***Daisuke Ogawa,*** *H. Uchida, K. Nakamura,* Chubu University, Japan

PS-TuP23 Dynamics of Power-Modulated Chlorine Plasmas, ***Tianyu Ma,*** *T. List, P. Arora, Y. Zhou, V.M. Donnelly,* University of Houston; *S. Nam,* Samsung Electronics, Republic of Korea

PS-TuP25 Investigation of Electromagnetic Effects in Very High Frequency Linear Plasma Source, ***Xiaopu Li,*** *K. Bera, J.A. Kenney, S. Rauf, K.S. Collins,* Applied Materials, Inc.

PS-TuP26 Modeling of High-Density Magnetically Enhanced Inductive Plasmas Generated by Symmetrical Solenoid Coils, ***Bocong Zheng,*** *M. Shrestha, Q.H. Fan,* Michigan State University

PS-TuP27 Plasma Modeling in the OpenFOAM Framework, *A.K. Verma,* ***Venkattraman Ayyaswamy,*** University of California Merced

PS-TuP29 The Role of Charge Exchange Collisions in Selective Etching of Si, ***Sergey Voronin,*** *P. Biolsi,* TEL Technology Center, America, LLC; *A. Ranjan,* Tokyo Electron Miyagi Limited, Japan

PS-TuP30 Development of an Aluminum Nitriding Process using Electrostatic Plasma Mass Spectroscopy and Energy Analysis and In Vacuuo Auger Electron Spectroscopy, ***Christopher Muratore,*** m-Nanotech Ltd., University of Dayton; *A. Korenyi-Both,* Tribologix Inc.

PS-TuP31 A New Transformer Model for Solenoidal ICP Discharge Expandable to Low Density Plasma, ***Jang-Jae Lee,*** *S.J. Kim, K.-K. Kim, Y.S. Lee, S.J. You,* Chungnam National University, Republic of Korea

PS-TuP32 Development of a Novel VI Sensor for RF Power Measurement, ***Kwang-Ki Kim,*** *S.J. You,* Chungnam National University, Republic of Korea

PS-TuP33 Transmission Line Model of Cutoff Probe, ***Si-Jun Kim,*** *J.-J. Lee, K.-K. Kim, Y.S. Lee,* Chungnam National University, Republic of Korea; *D.W. Kim,* Korea Institute of Machinery and Materials, Republic of Korea; *J.H. Kim,* Korea Institute of Standards and Science, Republic of Korea; *S.J. You,* Chungnam National University, Republic of Korea

PS-TuP34 Fault Detection in Radio-frequency Plasma Processing using Voltage-current (VI) Probes and Statistical Models, ***Thomas Gilmore,*** Impedans Ltd, Ireland

PS-TuP35 Finding Adequate Global Model of Non-Maxwellian Distribution based on PIC Simulation, ***Young-Seok Lee,*** *S.J. Kim, J.-J. Lee, S.J. You,* Chungnam National University, Republic of Korea

Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic
Room Central Hall - Session SA-TuP
Synchrotron and FEL-Based Analysis Poster Session
6:30pm

SA-TuP2 Inelastic Background Analysis using a Reference on Technologically Relevant Samples: Determination of Input Parameters, ***Charlotte Zborowski,*** *O.J. Renault,* CEA/LETI-University Grenoble Alpes, France; *A. Torres,* CEA/LETI-University Grenoble Alpes, Francee; *Y. Yamashita,* NIMS, Japan; *G. Grenet,* Inl, Ecl, France; *S. Tougaard,* SDU, Denmark

SA-TuP3 Hard X-ray Photoelectron Spectroscopy in the Home Laboratory: A Commercially Available System, ***Susanna Eriksson,*** *P.P. Palmgren, M.P. Patt, M.H. Heiss, P.B. Baumann, P.Z. Zeigermann, P.W. Wiell, K.B. Backlund, C.L. Liljenberg, M.L. Lundqvist,* Scienta Omicron

SA-TuP4 Vacuum System of the ESS Cold Linac, Update on Design and Status, ***Fabio Ravelli,*** *S.M. Scolari, M.J. Ferreira,* European Spallation Source ERIC, Sweden

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

SP-TuP1 Pycroscopy – A Community-Driven Software Package for Analyzing Microscopy Data, *S. Somnath,* ***Chris Smith****, S. Jesse, R. Vasudevan, N. Laanait,* Oak Ridge National Laboratory

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

SS-TuP1 Self-assembly of Organic Thin Films on Metal Surfaces, ***David Wisman,*** Indiana University, Department of Chemistry and NSWC Crane*; C. Tempas, T. Morris,* Indiana University*; S. Kim, D. Lee,* Seoul National University*; S.L. Tait,* Indiana University Department of Chemistry

SS-TuP2 Periodic Modulation of Graphene by a 2D-FeO/Ir(111) Moiré Interlayer, ***Yujing Ma****, M. Batzill,* University of South Florida

SS-TuP3 CO Oxidation on Single and Multiple Layer PdO(101) Structures Grown on Pd(100), ***Vikram Mehar****, C. Wu,* University of Florida, Gainesville*; M. Shipilin, E. Lundgren,* Lund University, Sweden*; H. Gronbeck,* Chalmers University of Technology, Sweden*; A. Ashtagiri,* The Ohio State University*; J.F. Weaver,* University of Florida, Gainesville

SS-TuP4 Evaluation of Dynamic Wettability on 2D Inverse Opal Structure, ***Naoya Yoshida****, T. Genma, K. Fukasawa, T. Okura,* Kogakuin University, Japan

SS-TuP5 Direct Attachment and *In Situ* Metalation of 29,31-H Phthalocyanine on Chlorine-terminated Si(111) Surface, ***Chuan He****, A.V. Teplyakov,* University of Delaware

SS-TuP6 Structural Growth and Oxidation of TbO_x Thin Films on Pt(111), ***Christopher Lee****, V. Mehar,* University of Florida*; S. Keil, V. Zielasek, M. Bäumer,* University of Bremen, Germany*; J.F. Weaver,* University of Florida

SS-TuP7 Surface Spectroscopy and Thermal Desorption Studies of Sulfur-Doped Tungsten Oxide, ***Anthony Babore****, J.M. Langford, J.C. Hemminger,* University of California Irvine

SS-TuP8 Preparation and Characterization of Metal-doped Calcium Phosphate, ***Yuki Iwai****, N. Yoshida, T. Okura,* Kogakuin University, Japan

SS-TuP9 Multiscale Investigation of Catalytic Activity of Ultra-Thin Molybdenum Nitride for Hydrogendenitrogenation Process, ***Asim Khaniya,*** University of Central Florida

SS-TuP11 Infrared Analysis of Competitive Surface Adsorption in Superconformal Chemical Vapor Deposition, ***Zhejun Zhang****, E. Mohimi, T.K. Talukdar, G.S. Girolami, J.R. Abelson,* University of Illinois at Urbana-Champaign

SS-TuP13 Determination of Pumping Properties of Quaternary Alloy of TiZrVAl Non Evaporable Getter, ***Omid Seify****, R. Valizadeh, O.B. Malyshev,* ASTeC Vacuum Science Group, STFC Daresbury Laboratory, UK*; A. Hannah,* ASTeC Vacuum Science Group, STFC Daresbury Laboratory, UK; University of Liverpool, UK*; R. Sirvinskaite,* ASTeC Vacuum Science Group, STFC Daresbury Laboratory, UK; Loughborough University, UK*; V.R. Dhanak,* University of Liverpool, UK

SS-TuP14 Advances in HIPIMS Technology for R&D and Small Scale Production Applications, ***Jason Hrebik,*** Kurt J. Lesker Company

SS-TuP15 Universal Calibration of Computationally Predicted N 1s Binding Energies for Interpretation of XPS Experimental Measurements, ***Jing Zhao***[*]*, A.V. Teplyakov,* University of Delaware

SS-TuP18 Vibrational Spectroscopy of Hydrogen Sulfide Adsorbed on Metallic W (100) and Oxygen Adsorbed W (100), ***Joel Langford****, A.D. Babore, J.C. Hemminger,* University of California Irvine

SS-TuP19 Lubricity of Gold Nanocrystals on Graphene Measured using Quartz Crystal Microbalance, *M.S. Lodge,* University of Central Florida*; C. Tang,* University of California Merced*;* ***Brandon Blue****,* University of Central Florida*; W. Hubbard,* University of California at Los Angeles*; A. Martini,* University of California Merced*; B. Dawson, M. Ishigami,* University of Central Florida

SS-TuP20 Controllable Synthesis of Ru/Pt Core Shell Nanoparticles with Bi-functional Interfaces towards PROX Reactions, ***Yun Lang****, J.Q. Yang, K. Cao, M. Gong, B. Shan, R. Chen,* Huazhong University of Science and Technology, PR China

SS-TuP21 Corrosion Resistance of Yttrium Trifluoride (YF3) and Yttrium Oxyfluoride (YOF) used in Plasma Process Chamber, ***Yoshinobu Shiba****, A. Teramoto, T. Goto,* Tohoku university, Japan*; Y. Kishi,* Nippon Yttrium Co., Ltd, Japan*; Y. Shirai, S. Sugawa,* Tohoku university, Japan

MORT TRAUM FINALISTS

SS-TuP22 (HC+SA+SS-WeA10) Structural Consequences of High Oxygen Coverages on Rh(111), ***Rachael Farber***[†‡]*, M.E. Turano, D.R. Killelea,* Loyola University Chicago

SS-TuP23 (SS+HC-TuM1) Multifunctional Adsorption on Ge(100)-2x1 Surface: The Role of Interadsorbate Interactions, ***Tania Sandoval***[§**]*, S.F. Bent,* Stanford University

SS-TuP24 (SS+HC+NS-WeA12) Experimental and Theoretical Study of Rotationally Inelastic Diffraction of $H_2(D_2)$ from Methyl-Terminated Si(111), ***Kevin Nihill***[††]*, Z.M. Hund,* University of Chicago*; A. Muzas, C. Diaz, M. del Cueto,* Universidad Autónoma de Madrid, Spain*; T. Frankcombe,* University of New South Wales, Australia*; N. Plymale, N.S. Lewis,* California Institute of Technology*; F. Martin,* Universidad Autónoma de Madrid, Spain*; S.J. Sibener,* University of Chicago

SS-TuP25 (SS+HC-TuM5) Reactivity of Pt and Rh Adatoms, Dimers, and Small Clusters on Fe_3O_4 (001), ***Jan Hulva***[*] , TU Wien, Austria*; M. Meier,* University of Vienna, Austria*; M. Setvin, Z. Jakub, R. Bliem, M. Schmid, U. Dieblod,* TU Wien, Austria*; C. Franchini,* University of Vienna, Austria*; G.S. Parkinson,* TU Wien, Austria

SS-TuP15 Universal Calibration of Computationally Predicted N 1s Binding Energies for Interpretation of XPS Experimental Measurements, ***Jing Zhao***[‡‡]*, A.V. Teplyakov,* University of Delaware

Vacuum Technology Division
Room Central Hall - Session VT-TuP
Vacuum Technology Poster (and Student Poster Competition)
Moderators: James Fedchak, NIST, Yevgeniy Lushtak, SAES Getters USA
6:30pm

VT-TuP1 Ion-Cathode Bombardment in a DC Deuterium Glow Discharge for High-Density Deuterium Cluster Formation in Metals, ***Erik Ziehm****, G.H. Miley,* University of Illinois at Urbana-Champaign

VT-TuP2 Low-cost Device Fabrication and Vacuum Packaging for Energy Efficient Field Emission Lighting, ***Sushma Shrinivasan****, C.E. Hunt,* University of California - Davis

VT-TuP3 High Precision Measurement Of Tube Conductance From Pressure Decay Curve, ***Tim Verbovšek****, B. Šetina Batič, J. Šetina,* Institute of Metals and Technology, Slovenia

VT-TuP4 Using a High Vacuum Equipment Trainer (HVET) System for Hands-on Learning, ***Del Smith****, N. Louwagie,* Normandale Community College

VT-TuP5 Advanced Metal Sealing Solutions for Critical Industry Applications, ***Ryan McCall,*** Technetics Group

VT-TuP6 Development of the Residual Gas Analysis for Large Air Tight Packages, ***Yusuke Nishikawa,*** Advanced Technology R&D Center Mitsubishi Electric Corp., Japan*; M. Kinugawa,* Advanced Technology R&D Center Mitsubishi Electric Corp.

VT-TuP7 ARIEL RIB Transport line Vacuum System, ***Geoffrey Hodgson,*** TRIUMF, Canada

VT-TuP8 Operational Regime of 2 million L/s Cryobox Pump on Tri Alpha Energy's C2W Machine, ***Ernesto Barraza-Valdez****, A. Van Drie,* Tri Alpha Energy, Inc.

VT-TuP9 NEG Coating of 6mm ID Copper Beam Pipes, ***Sol Omolayo,*** Lawrence Berkeley National Lab

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

[†] **National Student Award Finalist**
[‡] **Morton S. Traum Award Finalist**
[§] **Morton S. Traum Award Finalist**
[**] **National Student Award Finalist**
[††] **Morton S. Traum Award Finalist**
[‡‡] **Morton S. Traum Award Finalist**

Anticipated Schedule Wednesday, November 1, 2017

Anticipated Schedule Wednesday Morning, November 1

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 1

When _____

Where _____

With _____

Anticipated Schedule Wednesday Afternoon, November 1

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 _____

5:20 PM _____

5:40 PM _____

6:00 PM _____

Special Events Wednesday

6:15 AM	AVS 37th Annual 5 km Run (Register at the 5 km Booth before Wednesday)/Offsite
8:00 AM	ASED Business Meeting/Grand Salon E-Marriott
8:15 AM	ASED Executive Committee Meeting & Lunch/Grand Salon E-Marriott (Invitation Only)
10:00 AM	AVS Member Center: Advocacy & Outreach-"How to Interact with your Congressional Representative," with Bob Boege, ASTRA CEO/18
12:20 PM	NSTD Graduate Student and Postdoc Award Competitions/19
12:20 PM	PSTD Coburn and Winters Adjudication Session (Closed Session)/23 (Invitation Only)
12:30 PM	AVS Member Center: Professional Development: Federal Funding Town Hall and Lunch/18
12:30 PM	Governance Committee Meeting & Lunch/Café Waterside-Marriott (Invitation Only)
12:30 PM	PacSurf Committee Meeting & Lunch/Meeting Room 4-Marriott (Invitation Only)
4:30 PM	Exhibitors & Manufacturers' Reception (Invitation Only)/West Hall (Invitation Only)
6:30 PM	AVS Awards Ceremony & Reception/Ballroom B

Wednesday Morning, November 1, 2017

	2D Materials Focus Topic Room 15 - Session 2D+EM+SS+TF-WeM 2D Materials Growth and Fabrication **Moderator:** Aleksandra Radenovic, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland	Applied Surface Science Division Room 13 - Session AS+BI+MI+NS+SA+SS-WeM Beyond Traditional Surface Analysis: Pushing the Limits **Moderators:** Tamlin Matthews, The Dow Chemical Company, Svitlana Pylypenko, Colorado School of Mines
8:00am	**2D+EM+SS+TF-WeM1** Chemical Bath Deposition of Phase Selective MoS_2 on Templated Surfaces, ***Jenny Hedlund***, *A.V. Walker,* University of Texas at Dallas	**AS+BI+MI+NS+SA+SS-WeM1** Photolysis of Pyruvic Acid in Aqueous Solution as a Source of Aqueous Secondary Organic Aerosol, ***Yao Fu***, *X.F. Yu, F. Zhang, Z.H. Zhu,* Pacific Northwest National Laboratory; *J.M. Chen,* Fudan University; *X.Y. Yu,* Pacific Northwest National Laboratory
8:20am	**2D+EM+SS+TF-WeM2** Atomic Layer and Metalorganic Chemical Vapor Deposition of MoS_2 and WS_2 from bis(tert-butylimido)-bis(dialkylamido) Compounds, ***Berc Kalanyan***, *J.E. Maslar, W.A. Kimes, B.A. Sperling,* NIST; *R. Kanjolia,* EMD Performance Materials	**AS+BI+MI+NS+SA+SS-WeM2** XPS Depth Profiling of $SrTiO_3$ and HfO_2 with Small Argon Clusters, ***Christopher Deeks***, Thermo Fisher Scientific, UK; *M. Baker,* University of Surrey, UK; *P. Mack,* Thermo Fisher Scientific, UK
8:40am	**INVITED: 2D+EM+SS+TF-WeM3** Epitaxial Growth of Atomically Thin Transition Metal Dichalcogenides and their Electronic Structures, ***Sung-Kwan Mo***, Lawrence Berkeley National Laboratory	**INVITED: AS+BI+MI+NS+SA+SS-WeM3** Surface Analysis of Intact Biomolecules: the Bigger They Are the Harder They Fly, ***Nina Ogrinc Potocnik***, *R. Heeren,* Maastricht University, The Netherlands
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**2D+EM+SS+TF-WeM5** Terminations and Treatments of Silicon Carbide Surfaces to Promote Epitaxial Hexagonal Boron Nitride Deposition by Chemical Beam Epitaxy, ***Daniel Pennachio***, *N.S. Wilson, A.P. McFadden, T. Brown-Heft,* University of California at Santa Barbara; *K.M. Daniels, R.L. Myers-Ward, D.K. Gaskill, C.R. Eddy, Jr.,* U.S. Naval Research Laboratory; *C.J. Palmstrøm,* University of California at Santa Barbara	**AS+BI+MI+NS+SA+SS-WeM5** Hydrogen/Deuterium Exchange Using Vapor Phase D_2O to Enhance SIMS Characterizations, ***Paul Vlasak***, The Dow Chemical Company
9:40am	**2D+EM+SS+TF-WeM6** Photo-Chemical Modification of Monolayer Transition Metal Dichalcogenides, ***Tariq Afaneh***, *P.K. Sahoo, H.R. Gutierrez,* University of South Florida	**AS+BI+MI+NS+SA+SS-WeM6** Fragmentation and Backscattering of Large Ar_n^+ Clusters as a Probe of Polymer Glass Transition, *C. Poleunis,* Université Catholique de Louvain, Belgium; *V. Cristaudo,* Université Catholique de Louvain, Belguim; ***Arnaud Delcorte***, Université Catholique de Louvain, Belgium
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**2D+EM+SS+TF-WeM10** Bottom-up synthesis of Graphene Nanomembranes with Tunable Porosity, ***Christof Neumann***, Friedrich Schiller University Jena, Germany; *M. Füser,* Goethe University Frankfurt, Germany; *M. Mohn,* Ulm University, Germany; *D. Kaiser,* Friedrich Schiller University Jena, Germany; *A. Gölzhäuser,* Bielefeld University, Germany; *U. Kaiser,* Ulm University, Germany; *A. Terfort,* Goethe University Frankfurt, Germany; *A. Turchanin,* Friedrich Schiller University Jena, Germany	**INVITED: AS+BI+MI+NS+SA+SS-WeM10** Evolution of the Bi Cluster LMIS as a Universal Source for High Performance SIMS Analysis, ***Felix Kollmer***[*], ION-TOF GmbH, Germany
11:20am	**2D+EM+SS+TF-WeM11** Cu Single Crystal Substrates for Growth of CVD Graphene, ***Tyler Mowll***, University at Albany, SUNY; *Z.R. Robinson,* SUNY Brockport; *C.A. Ventrice, Jr.,* SUNY Polytechnic Institute	Invited talk continues.
11:40am	**INVITED: 2D+EM+SS+TF-WeM12** Paper and Circuits, only Atoms Thick, ***Jiwoong Park***, University of Chicago	**AS+BI+MI+NS+SA+SS-WeM12** Evaluating the Benefits of Cs Cluster Analysis in ToF-SIMS and Cs/Xe Co-sputtering for Depth Profiling Layered Thin Films, ***James Ohlhausen***, *P.T. Vianco, M.T. Brumbach, R. Chow,* Sandia National Laboratories
12:00pm	Invited talk continues.	**AS+BI+MI+NS+SA+SS-WeM13** Real-Time Monitoring Electrochemical Reaction Intermediates using *In Situ* Time-of-Flight Secondary Ion Mass Spectrometry, ***Jun-Gang Wang***, East China University of Science and Technology; Pacific Northwest National Laboratory (PNNL); *Y. Zhang, X.Y. Yu, Z.H. Zhu,* PNNL

[*] **ASSD Peter Sherwood Award**

Wednesday Morning, November 1, 2017

	Biomaterial Interfaces Division **Room 12 - Session BI+NS-WeM** **Biomaterials and Nanomaterials Fabrication & In Honor of Dave Castner's 65th Birthday: Multitechnique Bio-Surface Characterization I** **Moderator:** Caitlin Howell, University of Maine	**Electronic Materials and Photonics Division** **Room 14 - Session EM-WeM** **Charge Transport in Disordered Materials** **Moderator:** Michelle Paquette, University of Missouri-Kansas City
8:00am	**BI+NS-WeM1** Plasma-Enhanced Chemical Vapor Deposition of an Antibacterial Coating from an Essential Oil-Derived Precursor, ***Michelle Mann****, E.R. Fisher,* Colorado State University	**INVITED: EM-WeM1** Electrons and Phonons in Amorphous Semiconductors, ***David Drabold****, K. Prasai,* Ohio University*; P. Biswas,* University of Southern MIssissippi
8:20am	**BI+NS-WeM2** Transition Metal Nanoparticles and Quantum Dots with Tunable Electronic Properties by Bacterial Precipitation: Synthesis and Applications*, K.E. Marusak, Y. Feng, E. Ngaboyamahina, Y. Cao, J.T. Glass, L. You,* ***Stefan Zauscher****,* Duke University	Invited talk continues.
8:40am	**INVITED: BI+NS-WeM3** Plasma Surface Modification of 2D and 3D Constructs: Creating and Evaluating New Materials for Biomedical Applications*,* ***Ellen Fisher****,* Colorado State University	**EM-WeM3** Percolation Resistivity in Nanostructured Transparent Conductor Networks Consisting of Curvy Nanowires*,* ***Junying Li****, C. Ying, J. Hicks, A. Ural,* University of Florida
9:00am	Invited talk continues.	**EM-WeM4** Surface Chemical Control of Charge Transport and Infrared Plasmonic Response in Nanocrystal Thin Films*,* ***Dmitriy Boyuk****, W. Hu, M.A. Filler,* Georgia Institute of Technology
9:20am	**INVITED: BI+NS-WeM5** The Ins and Outs of Functionalized Natural Materials for Applications in Drug Delivery and Separations*,* ***Norma Alcantar****, R. Toomey, Z. Veisi,* University of South Florida*; A. Cardenas-Valencia, M. Cardenas,* SRI International*; R. Falahat,* Moffitt Cancer Center*; T. Peng, F. Guo,* University of South Florida	**EM-WeM5** Study of Cation Exchange and Transport in Crystalline Solids Through Density Functional Theory Calculations*,* ***Daniel Dumett Torres****,* University of Illinois at Urbana-Champaign
9:40am	Invited talk continues.	**EM-WeM6** Probing Charge Transport in Amorphous Hydrogenated Boron Carbide*,* ***Gyanendra Bhattarai****, S. Dhungana, R. Thapa, T.D. Nguyen, A.N. Caruso, M.M. Paquette,* University of Missouri-Kansas City
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	**BI+NS-WeM10** Combinatorial Material Chemistry-Topography Screening: The ChemoTopo Chip, ***Britta Koch****,* University of Nottingham, UK*; A. Vasilevich, N. Beijer, J. de Boer,* Maastricht University, The Netherlands*; M.R. Alexander,* The University of Nottingham, UK	**EM-WeM10** On the Abnormality in Mobility of ZnO Thin Film Transistors Based on Sol-Gel Deposited Channel Layers*,* ***Vahid Mirkhani****, K. Yapabandara, S. Wang, M.P. Khanal, S. Uprety,* Auburn University*; M.H. Sk,* Qatar University, Qatar*; A. Ahyi, M.C. Hamilton, M. Park,* Auburn University
11:20am	**Dave Castner's 65th Birthday: Multitechnique Bio-Surface Characterization I Session** BI+NS-WeM11 **Combining Surface Analytical and Computational Techniques to Investigate Orientation Effects of Immobilized Proteins,** *Elisa Harrison,* ***G. Interlandi, D.G. Castner,*** **University of Washington, Seattle**	**EM-WeM11** Electrical Characterization and Localized Density of States Extraction of Thin-Film Transistors Based on Sol-Gel Derived ZnO Channel Layers with Different Annealing Temperatures*,* ***Shiqiang Wang****, R. Cheng, M.C. Hamilton, V. Mirkhani, K. Yapabandara, S. Uprety, A. Ahyi, M. Park,* Auburn University*; M.H. Sk,* Qatar University, Qatar
11:40am	**BI+NS-WeM12** Characterizing the Tumor Microenvironment and Tumor Progression*,* ***Blake Bluestein****,* University of Washington*; F. Morrish, D. Hockenbery,* Fred Hutchinson Cancer Research Center*; L.J. Gamble,* University of Washington	**EM-WeM12** Real-space Characterizations of Photo-generated Carriers in P3HT-based Nanostructures using Kelvin Probe Force Microscopy*,* ***Eunah Kim****, S. Kwon, D.H. Kim,* Ewha Womans University, Republic of Korea*; H.-H. Park,* Korea Advanced Nano Fab Center, Republic of Korea*; J. Kim,* Incheon National University, Republic of Korea*; D.-W. Kim,* Ewha Womans University, Republic of Korea
12:00pm	**BI+NS-WeM13** Observing the Molecular Mechanisms of Insect Adhesion by Sum Frequency Generation Spectroscopy*, J.E. Fowler,* Oregon State University*; S.N. Gorb,* Kiel University, Germany*; T. Weidner,* Aarhus University, Denmark*;* ***Joe Baio****,* Oregon State University	**EM-WeM13** Electrically Detected Magnetic Resonance Study of the Relationship Between Silicon Nitride Stoichiometries and Defect Structure and Energy Levels*,* ***Ryan Waskiewicz****,* Pennsylvania State University*; M.J. Mutch,* Micron Technology*; P.M. Lenahan,* Pennsylvania State University*; S.W. King,* Intel Corporation

* **BID Early Career Researchers Award**

Wednesday Morning, November 1, 2017

	Exhibitor Technology Spotlight Workshops **Room West Hall - Session EW-WeM** **Exhibitor Technology Spotlight Session** Moderator: Chris Moffitt, Kratos Analytical, Inc.	**Fundamental Discoveries in Heterogeneous Catalysis Focus Topic** **Room 24 - Session HC+NS+SS-WeM** **Nanoscale Surface Structures in Heterogeneously-Catalyzed Reactions** **Moderator:** Erin Iski, University of Tulsa
8:00am		**HC+NS+SS-WeM1** The Role of Nanoparticle Edges in Water Dissociation and Oxidation/reduction Reactions in Layered Cobalt Oxides Supported on Au(111) and Pt(111), ***Jakob Fester,*** *J.V. Lauritsen,* Aarhus University, Denmark*; M. Garcia-Melchor,* Trinity College Dublin*; A.S. Walton,* University of Manchester, UK*; M. Bajdich,* Stanford Institute for Materials and Energy Sciences, SLAC National Accelerator Laboratory*; A. Vojvodic,* University of Pennsylvania*; Z. Sun, J. Rodríguez-Fernández,* Aarhus University, Denmark
8:20am		**HC+NS+SS-WeM2** Analysis of Bulk and Surface Properties of Catalytically-Active Nickel Carbide/Nitride Nanostructures using X-ray Techniques, ***Samuel Gage****, K. Fong, C. Ngo, S. Shulda,* Colorado School of Mines*; C. Tassone, D. Nordlund,* SLAC National Accelerator Laboratory*; R. Richards, S. Pylypenko,* Colorado School of Mines
8:40am		**HC+NS+SS-WeM3** Catalytic Reactivity of a Single Nanoparticle of Pt-Rh: Imaging by Field Emission Microscopy, ***Cédric Barroo****, Y. De Decker, T. Visart de Bocarmé,* Université Libre de Bruxelles, Belgium
9:00am		**HC+NS+SS-WeM4** Grain-Boundary-Supported Active Sites for Electrochemical Catalysis, ***Xiaofeng Feng,*** University of Central Florida
9:20am		**INVITED: HC+NS+SS-WeM5** Molecule-Surface Interaction on TiO_2 and MoS_2, ***Zhenrong Zhang,*** Baylor University
9:40am		Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**EW-WeM8** State-of-the-art Pump Technologies for Clean High and Ultra-high Vacuum*, M. Audi,* Agilent Technologies, Italy*;* ***Jim Ramsden,*** Agilent Technologies	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	Invited talk continues.	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am		**INVITED: HC+NS+SS-WeM10** Enantioselectivity: The Quintessential Structure Sensitive Surface Chemistry, ***Andrew Gellman****, P. Kondratyuk, D. Rienicker, M.A. Payne,* Carnegie Mellon University
11:20am		Invited talk continues.
11:40am		**HC+NS+SS-WeM12** Understanding the Growth and Chemical Activity of Pt-Re Clusters on HOPG and Titania Surfaces, ***Donna Chen****, T.D. Maddumapatabandi, A.J. Brandt, G. Seuser,* University of South Carolina
12:00pm		**HC+NS+SS-WeM13** *Single Atom Alloys* for Efficient and Cost-effective Catalysis, ***E. Charles Sykes,*** Tufts University

	Magnetic Interfaces and Nanostructures Division **Room 11 - Session MI+SA-WeM** **Controlling Magnetism in Oxides and Multiferroics and Chirality in Spin Transport and Magnetism (cont.)** **Moderator:** Valeria Lauter, Oak Ridge National aboratory	**MEMS and NEMS Group** **Room 16 - Session MN+2D-WeM** **2D NEMS** **Moderators:** Zenghui Wang, Case Western Reserve University, Zhu Diao, Halmstad University/Stockholm University
8:00am		**MN+2D-WeM1** Micro-patterned Graphene Temperature Sensors on Different Substrates, *B. Davaji,* Marquette University, Cornell University*; H.D. Cho,* Dongguk University*;* ***Jong-Kwon Lee,*** National Nanofab Center in Korea*; T.W. Kang,* Dongguk University*; C.H. Lee,* Marquette University
8:20am	**INVITED: MI+SA-WeM2** Integrated Magnetics and Multiferroics for Compact and Power Efficient Sensing, Power, RF, Microwave and mm-Wave Tunable Electronics, ***Nian Sun,*** Northeastern University	**MN+2D-WeM2** Characterizing the Resonant Behavior and Quality Factors of 3C-SiC Diaphragms Using Frequency Analysis and the Ring-Down Technique, ***Yongkun Sui,*** *H. Chong, K. Shara, C.A. Zorman,* Case Western Reserve University
8:40am	Invited talk continues.	**MN+2D-WeM3** Ion Radiation Effects in Silicon Carbide (SiC) Crystal Probed by Multimode Diaphragm Resonators, ***Hailong Chen****, V. Pashaei,* Case Western Reserve University*; W. Liao, C.N. Arutt,* Vanderbilt University*; H. Jia,* Case Western Reserve University*; M.W. McCurdy,* Vanderbilt University*; C.A. Zorman,* Case Western Reserve University*; R.A. Reed, R.D. Schrimpf, M.L. Alles,* Vanderbilt University*; P.X.-L. Feng,* Case Western Reserve University
9:00am		**MN+2D-WeM4** High-Aspect Ratio, Multi-Electrode, Carbon Nanotube Array, ***Berg Dodson****, G. Chen, R.R. Vanfleet, R.F. Davis,* Brigham Young University
9:20am	**MI+SA-WeM5** Controlling Spin Selectivity in Photoinduced Charge Transfer through Patterned DNA Microarrays, ***John Abendroth****, N. Nakatsuka, M. Ye, D. Stemer,* University of California at Los Angeles*; D. Kim, E. Fullerton,* University of California at San Diego*; A. Andrews, P. Weiss,* University of California at Los Angeles	
9:40am	**MI+SA-WeM6** Anomaly in Electric Transport Behaviour of Fe_3O_4 Thin Films, ***Murtaza Bohra,*** Mahindra Ecole Centrale, India	
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: MI+SA-WeM10** Intrinsic Interfacial Phenomena and Spin Structure in Nano and Heterostructures, ***Carlos Vaz,*** Paul Scherrer Institut, Switzerland	**MN+2D-WeM10** Interferometric Motion Detection in Atomic Layer 2D Nanoelectromechanical Systems (NEMS), ***Zenghui Wang,*** University of Electronic Science and Technology of China, China*; P.X.-L. Feng,* Case Western Reserve University
11:20am	Invited talk continues.	**MN+2D-WeM11** NEMS on Flexible Substrates for Strain Engineering in Sensing Applications, ***Swapnil More,*** Indian Institute of Science, India
11:40am	**MI+SA-WeM12** Enantiomer-dependent Spin Orientation in Photoelectron Transmission through Heptahelicene Molecules, ***Matthias Kettner****, D. Nürenberg,* University of Münster, Germany*; J. Seibel,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland*; H. Zacharias,* University of Münster, Germany*; K.-H. Ernst,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	**MN+2D-WeM12** Parametric Amplification in MoS2 Drum Resonator, ***Parmeshwar Prasad***†*, N. Arora, A.K. Naik,* Indian Institute of Science, India
12:00pm	**MI+SA-WeM13** Spin-selective Electron Transmission through Self-Assembled Layers of PNA, ***Paul Möllers****, M. Kettner, D. Nürenberg,* Westfälische Wilhelms-Universität Münster, Germany*; F. Tassinari, T. Markus,* Weizmann Institute of Science, Israel*; C. Achim,* Carnegie Mellon University*; R. Naaman,* Weizmann Institute of Science, Israel*; H. Zacharias,* Westfälische Wilhelms-Universität Münster, Germany	**MN+2D-WeM13** Anisotropic Thermal Conductivity of Suspended Black Phosphorous Probed by Opto-thermomechanical Resonance Spectromicroscopy, ***Arnob Islam***†*, P.X.-L. Feng,* Case Western Reserve University

* **Falicov Student Award Finalist**

† **MEMS/NEMS Best Paper Award Finalist**

Wednesday Morning, November 1, 2017

	Nanometer-scale Science and Technology Division Room 19 - Session NS+SS+SU-WeM Nanotechnology for Renewable Energy **Moderator:** Robert Ilic, NIST	Plasma Science and Technology Division Room 22 - Session PS+NS+SS-WeM Plasma Processing for Nanomaterials & Nanoparticles **Moderators:** Hisataka Hayashi, Toshiba, Japan, Kazunori Koga, Kyushu University, Japan
8:00am		**INVITED: PS+NS+SS-WeM1** Plasma Catalysis: a Powerful Blend of the Four States of Matter, ***Kostya (Ken) Ostrikov,*** Queensland University of Technology and CSIRO, Australia
8:20am		Invited talk continues.
8:40am	**INVITED: NS+SS+SU-WeM3** Can "Photovoltaic" Halide Perovskites ($MAPbI_3$ & $MAPbBr_3$) be Ferroelectric?, ***David Cahen,*** Weizmann Institute of Science, Israel	**PS+NS+SS-WeM3** Vaporization of Nanoparticles in Low Temperature Plasmas, ***Necip Berker Uner,*** *E. Thimsen,* Washington University in St. Louis
9:00am	Invited talk continues.	**PS+NS+SS-WeM4** Nanowires, Trusses and Pillars Produced by Assembly of Plasma Generated Nanoparticles, ***Ulf Helmersson,*** *S. Ekeroth, S. Askari, R. Boyd, N. Brenning,* Linköping University, Sweden
9:20am	**INVITED: NS+SS+SU-WeM5** NSTD-Recognition Award Talk: Mixed-Dimensional Nanomaterial Heterostructures for Electronic and Energy Applications, ***Mark Hersam,*** Northwestern University	**INVITED: PS+NS+SS-WeM5** Non-Equilibrium Plasmas for Nanoparticle Synthesis: from Semiconductors to Metals, ***Rebecca Anthony,*** Michigan State University
9:40am	Invited talk continues.	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**NS+SS+SU-WeM10** Magnetron Sputtered Nanostructured TiO_2 Thin Films for Dye Sensitized Solar Cells Applications, ***Pierre-Antoine Cormier,*** *J. Dervaux,* ChIPS, University of Mons, Belgium*; Y. Pellegrin, F. Odobel,* CEISAM, University of Nantes, France*; R. Snyders,* ChIPS, University of Mons, Belgium	**PS+NS+SS-WeM10** Photochemical Insulator-Metal Transition in Plasma-Synthesized ZnO Nanocrystal Networks, ***Benjamin Greenberg,*** *Z. Robinson, K. Reich,* University of Minnesota*; C. Gorynski,* University of Duisburg-Essen, Germany*; B. Voigt,* University of Minnesota*; G. Nelson,* Creighton University*; L. Francis, B. Shklovskii, E.S. Aydil, U.R. Kortshagen,* University of Minnesota
11:20am	**NS+SS+SU-WeM11** Spectroscopic Evolution of Halide Perovskite Growth on Graphene Oxide Surfaces for Photovoltaics, ***Muge Acik,*** Argonne National Laboratory*; G. Lee,* Ulsan National Institute of Science and Technology, Korea*; R.A. Rosenberg,* Argonne National Laboratory	**PS+NS+SS-WeM11** Elucidating Energetic Trends in Hydrocarbon Plasma Systems for Plasma-Assisted Catalysis, ***Tara Van Surksum,*** *E.R. Fisher,* Colorado State University
11:40am	**NS+SS+SU-WeM12** 2D Material Laminates for Ultra-fast and Selective Molecular-scale Separation, ***Saeed Moghaddam,*** University of Florida	**PS+NS+SS-WeM12** Synthesis of Metal Nanoparticle Electrocatalysts for Fuel Cell Applications by Atmospheric-Pressure Plasma Reduction, ***Joffrey Baneton**,*** Université Libre de Bruxelles, Belgium*; Y. Busby,* Université de Namur, Belgium*; W. Debouge,* Université Libre de Bruxelles, Belgium*; G. Caldarella,* Université de Liège, Belgium*; J.-J. Pireaux,* Université de Namur, Belgium*; V. Debaille,* Université Libre de Bruxelles, Belgium*; N. Job,* Université de Liège, Belgium*; M.J. Gordon,* University of California at Santa Barbara*; R.M. Sankaran,* Case Western Reserve University*; F. Reniers,* Université Libre de Bruxelles, Belgium
12:00pm		**PS+NS+SS-WeM13** Microplasma Spray Deposition of Metal Oxide Nanostructures for Energy Applications, ***Katherine Mackie,*** *M.J. Gordon,* University of California at Santa Barbara

* **Coburn & Winters Student Award Finalist**

Wednesday Morning, November 1, 2017

	Plasma Science and Technology Division **Room 23 - Session PS-WeM** **Advanced BEOL/Interconnect Etching** **Moderators:** Fred Roozeboom, TNO-Holst Centre & Eindhoven University of Technology, The Netherlands, GeunYoung Yeom, Sungkyunkwan University, Republic of Korea	**Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic** **Room 9 - Session SA+2D+AC+MI-WeM** **Recent Advances of Diffracting/Scattering and Spectroscopic Methods for Correlated and 2D Materials** **Moderators:** Hans-Peter Steinrück, University Erlangen-Nuernberg, Germany, Kristina Edström, Uppsala University, Sweden
8:00am	**PS-WeM1** Plasma Etch Considerations for EUV Quad-layer Patterning Stacks, ***Angélique Raley,*** TEL Technology Center, America, LLC*; J.C. Shearer, I.P. Seshadri, A. De Silva, J.C. Arnold, N. Felix,* IBM Research Division, Albany, NY*; H. Cottle, A. Metz,* TEL Technology Center, America, LLC	**INVITED: SA+2D+AC+MI-WeM1** Studies of Surfaces and Catalysis in real time with X-ray Free Electron Laser, ***Anders Nilsson,*** Stockholm University, Sweden
8:20am	**PS-WeM2** Direct Metal Etch Evaluation for Advanced Interconnect, ***Sara Paolillo****, F. Lazzarino, N. Rassoul, D. Wan, D. Piumi, Z. Tokei,* IMEC	Invited talk continues.
8:40am	**INVITED: PS-WeM3** Evolution of Dielectric Etchers, ***Hiromasa Mochiki,*** Tokyo Electron Miyagi Limited, Japan	**INVITED: SA+2D+AC+MI-WeM3** New Generation RIXS of 3*d*-TM Oxides, ***Giacomo Ghiringhelli,*** Politechnico Milano, Italy
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**PS-WeM5** Etch Residue Formation and Growth on Patterned Porous Dielectrics: Angle-resolved XPS and Infrared Characterization, ***QuocToan Le****, E. Kesters, F. Holsteyns,* IMEC, Belgium	**INVITED: SA+2D+AC+MI-WeM5** Resonant Inelastic X-ray Scattering on Low-Dimensional Correlated Transition Metal Oxides and Oxide Heterostructures, ***Thorsten Schmitt,*** Paul Scherrer Institut, Switzerland
9:40am	**PS-WeM6** Etch Challenges Associated with Sub-36nm Pitch BEOL EUV Patterning, ***Jeffrey Shearer,*** IBM Research Division*; A. Raley,* TEL Technology Center, America, LLC*; A. De Silva, L. Meli, I.P. Seshadri, R.K. Bonam, N.A. Saulnier, B. Briggs,* IBM Research Division*; T. Oh,* Samsung Electronics Co. Ltd.*; A. Metz,* TEL Technology Center, America, LLC*; J.C. Arnold,* IBM Research Division	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	**PS-WeM10** ALD-SiO2 Chamfer-Less-Flow for Dual Damascene Integration, ***Xinghua Sun****, T. Yamamura, A. Metz, P. Biolsi,* TEL Technology Center, America, LLC*; H. Nagai, R. Asako,* Tokyo Electron Limited PCDC, Japan	**INVITED: SA+2D+AC+MI-WeM10** Doping of Graphene Exploited with Spectromicroscopy, ***Carla Bittencourt,*** University of Mons, Belgium
11:20am	**PS-WeM11** Tone Reversal Technology Development Targeting Below 5nm Technology Node Applications, ***Stefan Decoster****, F. Lazzarino, X. Piao, N. Rassoul,* IMEC, Belgium*; Y. Fourprier,* TEL Technology Center, America, LLC*; D. Piumi,* IMEC, Belgium	Invited talk continues.
11:40am	**PS-WeM12** Towards the Elimination of Ultra-Low *k* Ash Damage Using an *In Situ*- Plasma Polymerized Film during Etch, ***Katie Lutker,*** TEL Technology Center, America, LLC	**INVITED: SA+2D+AC+MI-WeM12** Multi-modal and Multi-dimensional Synchrotron Investigation of Functional Materials, ***Karen Chen-Wiegart,*** Stony Brook University/Brookhaven National Laboratory
12:00pm	**PS-WeM13** Direct Metal Nanowire Patterning Using Ion Beam Etch, ***Shreya Kundu,*** IMEC, Belgium*; S. Dutta,* KU Leuven, IMEC, Belgium*; A. Gupta, G. Jamieson, D. Piumi, J. Boemmels, C.J. Wilson, Z. Tokei, C. Adelmann,* IMEC, Belgium	Invited talk continues.

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	Scanning Probe Microscopy Focus Topic **Room 10 - Session SP+SS+TF-WeM** **Probing and Manipulating Nanoscale Structure** **Moderators:** Zheng Gai, Oak Ridge National Laboratory, Qiang Zou, Oak Ridge National Laboratory	**Surface Science Division** **Room 25 - Session SS-WeM** **Deposition and Growth at Surfaces** **Moderators:** Kathryn Perrine, Michigan Technological Univ., Arthur Utz, Tufts University
8:00am	**INVITED: SP+SS+TF-WeM1** STM-Based Nanofabrication and Integrating Nanostructures with Clean Semiconductor Surfaces, ***Joseph Lyding,*** University of Illinois at Urbana-Champaign	**INVITED: SS-WeM1** Metal Growth on and under Graphene: Morphology, Intercalation and Magnetization, ***Michael Tringides,*** Iowa State University and Ames Laboratory
8:20am	Invited talk continues.	Invited talk continues.
8:40am	**SP+SS+TF-WeM3** Calcium Mediates Adhesion in Reservoir Fluids, *S.L. Eichmann,* Aramco Research Center - Boston*;* ***Nancy Burnham,*** Worcester Polytechnic Institute	**SS-WeM3** Nonequilibrium Growth of an Ordered ZnTPP Overlayer on a Ag(100), ***Robert Bartynski,*** Rutgers, the State University of New Jersey*; P.K. Kim, S. Rangan,* Rutgers University*; C. Ruggieri,* Rutgers, the State University of New Jersey*; D. Lu,* CFN, Brookhaven National Laboratory*; S. Whitelam,* The Molecular Foundry, LBNL
9:00am	**SP+SS+TF-WeM4** Nanoscopy of Muscovite Mica, ***Sampath Gamage,*** *M. Howard, A. Fali,* Georgia State University*; K. Bolotin,* Free University of Berlin, Germany*; Y. Abate,* Georgia State University	**SS-WeM4** Growth and Motion of Liquid Alloy Droplets of Au on Ge(110), *B.H. Stenger, A.L. Dorsett, J.H. Miller, E.M. Russell, C.A. Gabris,* ***Shirley Chiang,*** University of California Davis
9:20am	**INVITED: SP+SS+TF-WeM5** Probe and Manipulation of Individual Magnetic Atoms/Molecules on Solid Surfaces, ***Haiming Guo,*** Institute of Physics, Chinese Academy of Sciences, PR China	**SS-WeM5** Photodeposition of Pt Clusters on HOPG Supported TiO_2 Nanoparticles: Development of a Nanomaterial Model Catalyst System, ***Jared Bruce,*** *A.D. Babore, R.P. Galhenage, J.C. Hemminger,* University of California Irvine
9:40am	Invited talk continues.	**SS-WeM6** In Vacuo Low-energy Ions Scattering Studies of ZrO_2 Growth by Magnetron Sputtering, ***Marko Sturm,*** *R. Coloma Ribera, R.W.E. van de Kruijs, A.E. Yakshin, F. Bijkerk,* MESA+ Institute for Nanotechnology, University of Twente, Netherlands
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: SP+SS+TF-WeM10** Investigation of Energy Transfer and Conversion at a Single Molecule with an STM, ***Yousoo Kim,*** RIKEN, Japan	**SS-WeM10** Dihydrotetraazapentcene Growth on Alumina Thin Films and Sapphire: from the Submonolayer to nm Thick Films, ***Anthony Thomas,*** *T. Léoni, A. Ranguis, L. Masson, O. Siri,* Aix-Marseille University, France*; B. Kaufmann, A. Matkovic, M. Kratzer, C.K. Teichert,* Montanuniversität Leoben, Austria*; C. Becker,* Aix-Marseille University, France
11:20am	Invited talk continues.	**SS-WeM11** Zintl Template Formation and Function during Atomic Layer Deposition Growth of Crystalline Perovskites on Ge (001), ***Shen Hu,*** *A. Posadas, A. Demkov, J.G. Ekerdt,* The University of Texas at Austin
11:40am		**SS-WeM12** Role of the Surface Charge Density in the Surface Relaxation: The Case of Au(111), *M. Valbuena,* Universidad Autonoma de Madrid*; C. Quiros,* Universidad de Oviedo*; E. Salagre,* Universidad Autónoma de Madrid*; A. Oliva, M. Plaza, J. Martinez-Blanco, P. Segovia,* ***Enrique G. Michel,*** Universidad Autonoma de Madrid
12:00pm		**SS-WeM13** Modeling Physical Vapor Deposition of Energetic Materials, ***Koroush Shirvan,*** MIT*; E. Forrest,* Sandia National Laboratories

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	Sustainability Focus Topic **Room 5 & 6 - Session SU+AS+EM+MS-WeM** **Piezoelectrics, Thermoelectrics, and Superconductors** **Moderators:** George Nolas, University of South Florida, Kimberly Cook-Chennault, Rutgers University	**Thin Films Division** **Room 21 - Session TF+EM+MI-WeM** **Thin Films for Microelectronics** **Moderators:** Erwin Kessels, Eindhoven University of Technology, The Netherlands, Adrie Mackus, Eindhoven University of Technology, The Netherlands
8:00am		**TF+EM+MI-WeM1** Electrode Modulated Electric Field Capacitance Nonlinearity in ALD Al_2O_3 and HfO_2 Metal-Insulator-Metal Capacitors, *D.Z. Austin, K. Holden,* ***John Conley, Jr.,*** Oregon State University
8:20am	**SU+AS+EM+MS-WeM2** Investigation into Novel p-type Thermoelectric Materials, ***Dean Hobbis,*** *K. Wei, G.S. Nolas,* University of South Florida	**TF+EM+MI-WeM2** Difference of the Hysteresis in Capacitance-voltage Characteristics of ALD-Al_2O_3 MIS Capacitors on Si and GaN Substrate, ***Masaya Saito,*** *T. Suwa, A. Teramoto,* Tohoku University, Japan; *T. Narita,* Toyota Central R&D Labs. Inc., Japan; *T. Kachi,* Nagoya University, Japan; *R. Kuroda, S. Sugawa,* Tohoku University, Japan
8:40am	**INVITED: SU+AS+EM+MS-WeM3** Thermoelectrics for Sustainable Energy Harvesting, ***Mary Anne White,*** Dalhousie University, Canada	**TF+EM+MI-WeM3** Monolithic Integration of C-type Erbium Oxide on GaN(0001) by Atomic Layer Deposition, ***Pei-Yu Chen,*** *A. Posadas,* The University of Texas at Austin; *S. Kwon, Q. Wang, M. Kim,* The University of Texas at Dallas; *A. Demkov, J.G. Ekerdt,* The University of Texas at Austin
9:00am	Invited talk continues.	**TF+EM+MI-WeM4** High-Performance p-Type Thin Film Transistors Using Atomic-Layer-Deposited SnO Films, *S.H. Kim, I.-H. Baek, J.J. Pyeon,* Korea Institute of Science and Technology, Republic of Korea; *T.-M. Chung, J.H. Han,* Korea Research Institute of Chemical Technology, Republic of Korea; ***SeongKeun Kim,*** Korea Institute of Science and Technology, Republic of Korea
9:20am	**INVITED: SU+AS+EM+MS-WeM5** Toward a Greener World: The (Re)search for Lead-Free Piezoelectrics, ***Xiaoli Tan,*** Iowa State University	**INVITED: TF+EM+MI-WeM5** Recent Progresses of Atomic Layer Deposited Oxide Semiconductors for Emerging Display Applications, ***Jin-Seong Park,*** *J. Sheng, J.H. Lee,* Hanyang University, Republic of Korea
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	**SU+AS+EM+MS-WeM10** Growth of $ZnSnO_3$ Nanowire Arrays on Silica Nanosphere Monolayer Templates, *D. Mateo-Feliciano,* ***Aayat Sabah,*** *S. Witanachchi, P. Mukherjee,* University of South Florida	**TF+EM+MI-WeM10** Silicon Nitride Thin Films Grown by Hollow Cathode Plasma-Enhanced ALD using a Novel Chlorosilane Precursor, ***Xin Meng,*** *H.S. Kim, A.T. Lucero, J.S. Lee, Y.-C. Byun, J. Kim,* University of Texas at Dallas; *B.K. Hwang, X. Zhou, M. Telgenhoff, J. Young,* Dow Chemical
11:20am	**SU+AS+EM+MS-WeM11** Thermal Annealing Effects on the Thermoelectric Properties of Si/Si+Sb Thin Films, ***Satilmis Budak,*** *Z. Xiao, M. Curley, M. Howard, B. Rodgers, M. Alim,* Alabama A&M University	**TF+EM+MI-WeM11** Removal of Charge Centers in Hafnia Films by Remote Plasma Nitruration, ***Orlando Cortazar-Martínez,*** *J.A. Torres-Ochoa, C.L. Gomez-Muñoz, A. De Luna-Bugallo, A. Herrera-Gomez,* CINVESTAV-Unidad Queretaro, Mexico
11:40am	**INVITED: SU+AS+EM+MS-WeM12** Critical Current by Design, ***George Crabtree,*** *U. Welp,* Argonne National Laboratory; *K. Kihlstrom,* University of Illinois at Chicago; *A. Koshelev,* Argonne National Laboratory; *A. Glatz,* Northern Illinois University; *I. Sadovskyy, W.K. Kwok,* Argonne National Laboratory	**TF+EM+MI-WeM12** Seam-free Bottom-up Filling of Trenches with HfO_2 using Low Temperature CVD, ***Tushar Talukdar,*** *W.B. Wang, E. Mohimi, G.S. Girolami, J.R. Abelson,* University of Illinois at Urbana-Champaign
12:00pm	Invited talk continues.	**TF+EM+MI-WeM13** Low-κ Organosilicon Thin Films Deposited by iCVD for Electrical Insulation of Through Silicon Vias, ***Mélanie Lagrange,*** *C. Ratin, M. Van-Straaten, C. Ribière, T. Mourier, V. Jousseaume,* CEA-Leti, France

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	Thin Films Division **Room 20 - Session TF-WeM** **Thin Film for Photovoltaics** **Moderators:** Mariadriana Creatore, Eindhoven University of Technology, The Netherlands, Virginia Wheeler, U.S. Naval Research Laboratory	**Vacuum Technology Division** **Room 7 & 8 - Session VT-WeM** **Transfer and Ultraclean Systems, Particle Control, and History** **Moderators:** Jason Alfrey, Vacuum Technology, Inc., Marcy Stutzman, Thomas Jefferson National Accelerator Facility
8:00am	**INVITED: TF-WeM1** Stable Perovskite Solar Cells by 2D/3D Interface Engineering, ***Mohammad Khaja Nazeeruddin,*** *G. Grancini, C. Roldán-Carmona, I. Zimmermann, Y. Lee,* Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland	**INVITED: VT-WeM1** Applications and Challenges of UHV- and Cryo Transfer of Samples Between Independent Analytical Systems, ***Urs Maier,*** *S.A. Köster, D. von Gunten,* Ferrovac GmbH, Switzerland*; S. Yoshizawa, T. Uchihashi,* National Institute for Materials Science, Japan*; S. Rauschenbach,* Max-Planck-Institute for Solid State Research, Germany
8:20am	Invited talk continues.	Invited talk continues.
8:40am	**TF-WeM3** Single-step, Atmospheric CVD of Methylammonium Bismuth Iodide Perovskite Thin Films, *X. Chen,* Washington University in St. Louis*; Y. Myung,* Sejong University, Republic of Korea*; A. Thind, Z.N. Gao, B. Yin, B. Sadtler, R. Mishra,* ***Parag Banerjee,*** Washington University in St. Louis	**VT-WeM3** Ultra-clean Sample Transportation in an EUV Exposure System, ***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, W.F.W. Mulckhuyse, M. van Putten, P. van der Wall, A.M. Hoogstrate, J.R.H. Diesveld, A. Abutan,* TNO, Netherlands
9:00am	**TF-WeM4** Atomic Layer Deposition of TiO_2 Charge Recombination Blocking Layer and SnO_2 Electron Transport Layer for Perovskite Solar Cells, *Y. Kuang,* Eindhoven University of Technology, Netherlands*; V. Zardetto,* Solliance Solar Research, Netherlands*; R.J. van Gils,* Eindhoven University of Technology, Netherlands*; F. di Giacomo,* Solliance Solar Research, Netherlands*; G. Lucarelli,* University of Rome Tor Vergata, Italy*; W.M.M. Kessels,* Eindhoven University of Technology, Netherlands*; T.M. Brown,* University of Rome Tor Vergata, Italy*;* ***Mariadriana Creatore,*** Eindhoven University of Technology, Netherlands	**VT-WeM4** Oxidation and Contamination Monitoring Methods for Air Sensitive Materials Transfer: From Glove Box to UHV Surface Analysis, ***Hugo Celio,*** *K.B. Ohlinger,* University of Texas at Austin
9:20am	**TF-WeM5** The Reaction Between Pyridine and $CH_3NH_3PbI_3$ Surface-Confined Reaction or Bulk Transformation?, ***XiaoZhou Yu,*** University of Alabama*; H.M. Yan, Q. Peng,* University of alabama	**INVITED: VT-WeM5** Particle Contamination Control in the Accelerator Vacuum Systems of the European XFEL, ***Lutz Lilje,*** *S. Lederer,* DESY, Germany
9:40am	**TF-WeM6** GaN-stabilized Ta_3N_5 Thin Film as a Photoanode for Solar Water Splitting, ***Taro Yamada,*** *Y. Sasaki,* The University of Tokyo, Japan*; S. Suzuki,* Shinshu University, Japan*; M. Zhong,* The University of Tokyo, Japan*; K. Teshima,* Shinshu University, Japan*; K. Domen,* The University of Tokyo, Japan	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: VT-WeM10** Development, Solution of Design Issues, Final Design and Performance of an Electrostatic Triode Getter-Ion Pump, 1967-1973, ***Paul Arnold,*** MKS Instruments, Inc.
11:20am	**TF-WeM11** A Viable Magnetron Sputtering Process for Thin Film CdTe Solar Cells, ***John Walls,*** *F. Bittau, R.C. Greenhalgh, A. Abbas, S. Yilmaz,* Loughborough University, UK	Invited talk continues.
11:40am	**TF-WeM12** Hybrid Single Layer Organic Solar Cell Based on Polyvinyl Alcohol and Zinc Oxide Nanoparticles, ***Monas Shahzad,*** Forman Christian College (A Chartered University), Pakistan	**VT-WeM12** The Modern View of the Vacuum, ***H. Frederick Dylla,*** American Institute of Physics
12:00pm	**TF-WeM13** Phase Stability and Cation Site Distribution during Thermal Annealing of CZTS Nanoparticle-Coatings, ***Stephen Exarhos,*** *E. Palmes, R. Xu, L. Mangolini,* University of California, Riverside	**VT-WeM13** History of Very Thick Film and Bulk Sample Group IIIB, IVB, VB and Rare Earth Materials for Various Vacuum Applications, ***James L. Provo,*** J.l. Provo Consulting

	2D Materials Focus Topic **Room 16 - Session 2D+EM+MN+NS-WeA** **2D Device Physics and Applications** **Moderator:** Humberto Gutierrez, University of South Florida	**2D Materials Focus Topic** **Room 15 - Session 2D-WeA** **Properties and Characterization of 2D Materials** **Moderator:** Tien-Ming Chuang, Academia Sinica, Taiwan
2:20pm	**2D+EM+MN+NS-WeA1** Capacitance-voltage Characteristics of Graphene-gate MOS Devices: The Effect of Graphene Quantum Capacitance, ***Ruixue Lian***, *A. Ural,* University of Florida	**2D-WeA1** Multi-scale Mechanics of Graphene Oxide, ***Changhong Cao***, *M. Daly, C.V. Singh, Y. Sun, T. Filleter,* University of Toronto, Canada
2:40pm	**2D+EM+MN+NS-WeA2** *in-situ* Electrical Characterization of Surface Functionalization and Gate Dielectric Deposition Processes on 2D Transition Metal Dichalcogenides Transistors, ***Antonio T. Lucero***, *J.B. Lee, L. Cheng, H.S. Kim, S.J. Kim, J. Kim,* University of Texas at Dallas	**2D-WeA2** Modification of Density of States in Iron Chloride Intercalated Epitaxial Graphene with Electric Bias, *K.D. McAllister, A.P. Sharma,* Clark Atlanta University; *K. Shepperd, E.H. Conrad,* Georgia Institute of Technology; ***Michael Williams***, Clark Atlanta University
3:00pm	**2D+EM+MN+NS-WeA3** High-K Gate oxide by Low Temperature ALD Technique for 2D Materials and Inert Metal Surfaces, ***Il Jo Kwak***, *J.H. Park,* University of California at San Diego; *S. Fathipour, A. Seabaugh,* University of Notre Dame; *C.S. Pang, Z. Chen,* Purdue University; *A.C. Kummel,* University of California at San Diego	**2D-WeA3** Anisotropic MoS_2 Nanosheets Grown on Self-Organized Nanopatterned Substrates, *FrancescoBuatierdeMongeot. Buatier de Mongeot,* ***Carlo Mennucci***, Università di Genova, Italy; *C. Martella, E. Cinquanta, A. Lamperti,* IMM-CNR, Agrate Brianza (MB), Italy; *E. Cappelluti,* Istituto dei Sistemi Complessi (ISC)-CNR U.O.S. Sapienza Roma, Italy; *A. Molle,* IMM-CNR, Agrate Brianza (MB), Italy
3:20pm	**2D+EM+MN+NS-WeA4** Exploration and Comparison of Optoelectronic Properties of MoS_2 Monolayers with Multilayer Flakes and $Mo_xW_{1-x}S_2$ Ternary Compounds, ***Sourav Garg***, *J. Waters, A. Mollah, S. Kim, P. Kung,* University of Alabama	**2D-WeA4** The Potential for Fast van der Waals Computations for Layered Materials using a Lifshitz Model, ***Yao Zhou***, *L.A. Pellouchoud, E.J. Reed,* Stanford University
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**2D+EM+MN+NS-WeA7** Moire Engineering in 2D Materials Beyond Graphene via Dislocation Mechanics, ***Harley Johnson***, *B. McGuigan,* University of Illinois at Urbana-Champaign; *P. Pochet,* L_SIM, INAC, CEA-Grenoble, France; *J. Coraux,* CNRS, Neel Institute, Grenoble, France	**2D-WeA7** Tip Enhanced Optical Spectroscopy: A Unique Tool to Address Nanoscale Heterogeneity in 2D Materials, ***Andrey Krayev***, AIST-NT Inc.; *M. Chaigneau,* Horiba Scientific, France; *V. Zhizhimontov, A.E. Robinson,* AIST-NT Inc
4:40pm	**2D+EM+MN+NS-WeA8** Dielectric Properties of Carbon Nanomembranes prepared from aromatic Self-Assembled Monolayers investigated by Impedance Spectroscopy, ***Paul Penner***, *E. Marschewski, X. Zhang,* Bielefeld University, Germany; *T. Weimann, P. Hinze,* Physikalisch-Technische Bundesanstalt, Germany; *A. Beyer, A. Gölzhäuser,* Bielefeld University, Germany	**2D-WeA8** Lithium-Free Covalent Chemical Functionalization of Two-Dimensional Molybdenum Disulfide, *X.S. Chu, A. Yousaf, D.O. Li, A.A. Tang, A. Debnath, D. Ma, A.A. Green,* Arizona State University; *E.J.G. Santos,* Queen's University Belfast, UK; ***Qing Hua Wang***, Arizona State University
5:00pm	**INVITED: 2D+EM+MN+NS-WeA9** 2D Crystals for Next-Generation Ultra Energy-Efficient Electronics, ***Kaustav Banerjee***, University of California at Santa Barbara	**2D-WeA9** Spatially Resolved Modification of Graphene's Band Structure by Surface Oxygen Atoms, *C. Harthcock, A. Jahanbekam, Y. Zhang,* ***David Y. Lee***, Washington State University
5:20pm	Invited talk continues.	**2D-WeA10** Enabling Atmospheric Pressure Photoelectron Imaging and Spectroscopy using Graphene, *H.X. Guo,* National Institute of Standards and Technology; *E. Strelcov,* NIST Center for Nanoscale Science and Technology / University of Maryland; *A. Yulaev,* University of Maryland; ***Ivan Vlassiuok***, Oak Ridge National Laboratory; *A. Kolmakov,* NIST Center for Nanoscale Science and Technology
5:40pm	**2D+EM+MN+NS-WeA11** Investigation On Metal-Graphene-Semiconductor Interfaces For Device Applications, ***Arezki Benfdila***, University M. Mammeri, Algeria	**2D-WeA11** Direct Write Mask Free Fabrication of Semiconductor 2D Architectures on Different Substrates using Aqueous Inks, ***Irma Kuljanishvili***, *D. Alameri, R. Dong,* Saint Louis University; *L.E. Ocola,* Argonne National Laboratory
6:00pm	**2D+EM+MN+NS-WeA12** Influence of Electron Interference Effects on Reflection of Electron Waves from Potential Barrier in 2D Semiconductor Nanostructures, ***Victor Petrov***, *A.V. Nikitin,* Institute of Radio Engineering and Electronics, Russian Academy of Science, Moscow, Russia, Russian Federation, Russia	

	Applied Surface Science Division **Room 13 - Session AS+2D+NS+SA-WeA** **2D, 3D and nD Imaging of Surfaces, Buried Interfaces and Nanostructures** **Moderators:** Michael Brumbach, Sandia National Laboratories, Kathryn Lloyd, DuPont	**Biomaterial Interfaces Division** **Room 12 - Session BI+AS-WeA** **In Honor of Dave Castner's 65th Birthday: Multitechnique Bio-Surface Characterization II** **Moderators:** Lara Gamble, University of Washington, Daniel Graham, University of Washington
2:20pm	**AS+2D+NS+SA-WeA1** Laser-SNMS Imaging of Organic and Biological Systems in Two and Three Dimensions., ***Bonnie June Tyler,*** *A. Pelster, M. Heeger, H.F. Arlinghaus,* Universität Münster, Germany	**INVITED: BI+AS-WeA1** A Physical Chemist and a Chemical Engineer Walk into a Bar… Reflections on Surface and Interface Analysis, ***Matthew Wagner,*** The Procter & Gamble Company
2:40pm	**AS+2D+NS+SA-WeA2** Distribution of Surfactants and Polymer in a Coating using GCIB-SIMS, ***Michaeleen Pacholski,*** *Z. Qu, W. Ouyang,* The Dow Chemical Company	Invited talk continues.
3:00pm	**INVITED: AS+2D+NS+SA-WeA3** Correlation of Morphological and Hyperspectral Characterization Techniques for Nanoelectronic and Energy Applications, ***Jean-Paul Barnes,*** *A. Priebe, G. Goret, I. Mouton, A. Grenier, G. Audoit, P. Bleuet, Y. Mazel, E. Nolot,* Univ. Grenoble Alpes, CEA, LETI, France*; S. Legendre, A.L. Tempez,* Horiba France S.a.s., France*; R. Estivill, M. Juhel,* STMicroelectronics, France*; S. Duguay, F. Vurpillot, D. Blavette,* Normandie Univ, UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, France	**BI+AS-WeA3** Characterization of Bio-Molecules with GCIB-SIMS equipped with MS/MS Spectrometer, ***Jiro Matsuo,*** *T. Seki, T. Aoki,* Kyoto University, SENTA, JST, Japan
3:20pm	Invited talk continues.	**BI+AS-WeA4** Linking Nanosilver (AgNP) Toxicity to the Physicochemical Properties of the Particles which can Change as a Function of Experimental and Biological Conditions, ***Donald Baer,*** Pacific Northwest National Laboratory*; J.M. Brown,* University of Colorado at Denver*; A. Porter,* Imperial College London, UK*; B.D. Thrall,* Pacific Northwest National Laboratory*; T.D. Tetley,* Imperial College London, UK*; L.S. Van Winkle,* University of California at Davis*; T. Xia,* University of California at Los Angeles
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: AS+2D+NS+SA-WeA7** Insights into Corrosion and Radiation Damage Processes Through 2D and 3D Imaging at the Nanoscale, ***Karen Kruska,*** *D.K. Schreiber, D.J. Edwards, Z. Zhai, M.J. Olszta, I. Arslan, M.A. Conroy, C. Wang, R.J. Kurtz, S.M. Bruemmer,* Pacific Northwest National Laboratory	**BI+AS-WeA7** Protein Imaging from the Subcellular Level to the Single Protein Level, ***DaeWon Moon,*** DGIST, Republic of Korea
4:40pm	Invited talk continues.	**BI+AS-WeA8** Integrating Biological and Surface Chemical Characterisation to Probe Bacterial and Lipid Vessicle Interactions at Surfaces, ***Sally McArthur,*** Swinburne University of Technology and CSIRO, Australia*; M. Abrigo, H. Askew, K.L. Jarvis,* Swinburne University of Technology, Australia
5:00pm	**AS+2D+NS+SA-WeA9** XPS Spectroscopic Imaging of 2D-Materials, ***Olivier Renault,*** CEA-Leti, France*; H. Kim,* EPFL, France*; D. Ferrah,* UCl, France*; N. Fairley,* Casa Software, France*; M. Gay,* CEA-Leti, France*; M. Frégnaux,* UVSQ, France*; A. Kis,* EPFL, France	**INVITED: BI+AS-WeA9** Contributions Advancing Surface Technologies: NEXAFS, ESCA, Rhodium (and More), ***Buddy D. Ratner,*** University of Washington, Seattle
5:20pm	**AS+2D+NS+SA-WeA10** Carboxylic Acid Headgroups – Towards a New Standard in SAMs, ***Anna Krzykawska,*** Jagiellonian Univeristy, Poland*; J. Ossowski, T. Żaba, P. Cyganik,* Jagiellonian University, Poland	Invited talk continues.
5:40pm	**AS+2D+NS+SA-WeA11** 2-D and 3-D Characterization of Functionalized Nanostructured Carbons, ***Chilan Ngo,*** *D.R. Diercks, M.B. Strand, M.J. Dzara, J. Hagen, S. Pylypenko,* Colorado School of Mines	**BI+AS-WeA11** Investigating the Cytotoxicity of Commercially Available Poly(*N*-isopropyl Acrylamide)-coated Surfaces, *L. Stapleton, M.A. Cooperstein, P.A.H. Nguyen,* ***Heather Canavan,*** University of New Mexico
6:00pm	**AS+2D+NS+SA-WeA12** Characterization of Natural Photonic Crystals in Glitterwing (*Chalcopteryx rutilans*) Dragonfly Wings using 3D TOF-SIMS, ***Ashley Ellsworth,*** *D.M. Carr, G.L. Fisher,* Physical Electronics*; W.W. Valeriano, R.R. de Andrade, J.P. Vasco, E.R. da Silva, A.B.M. Machado, P.S.S. Guimarães, W.N. Rodrigues,* Universidade Federal de Minas Gerais, Brazil	**BI+AS-WeA12** Development of Surface Analysis Methods for Characterizing Immobilized Proteins, ***David Castner,*** University of Washington

	Electronic Materials and Photonics Division **Room 14 - Session EM+2D+MI+MN-WeA** **Materials and Devices for Quantum Information Processing** **Moderators:** Rachael Myers-Ward, U.S. Naval Research Lab., Steven Vitale, MIT Lincoln Laboratory	**Fundamental Discoveries in Heterogeneous Catalysis Focus Topic** **Room 24 - Session HC+SA+SS-WeA** **Bridging Gaps in Heterogeneously-Catalyzed Reactions** **Moderator:** Yu Lei, University of Alabama in Huntsville
2:20pm	**INVITED: EM+2D+MI+MN-WeA1** Controlling the Valley Degree of Freedom in 2D Transition Metal Dichalcogenides, ***Tony Heinz,*** Stanford University / SLAC National Accelerator Laboratory	**HC+SA+SS-WeA1** Oxygen Reduction Reaction Activity for Pt/Co/Pt(111) and Pt/Co-N/Pt(111) Model Catalyst Surfaces Fabricated by Arc-plasma Depositions, *S. Kaneko, R. Myochi, S. Takahashi, N. Todoroki,* ***Toshimasa Wadayama,*** Graduate School of Environmental Studies, Tohoku University, Japan*; T. Tanabe,* Graduate School of Engineering, Tohoku University, Japan
2:40pm	Invited talk continues.	**HC+SA+SS-WeA2** The Mechanism of Oxygen Induced p(2×3) Reconstruction on Mo(112), ***Teng Ma,*** Shenyang Agricultural University, PR China
3:00pm	**INVITED: EM+2D+MI+MN-WeA3** VOI-based Valleytronics in Graphene, ***Yu-Shu Wu,*** National Tsing-Hua University, Taiwan, Republic of China	**INVITED: HC+SA+SS-WeA3** Gas-Liquid Scattering Studies of Atmospheric Reactions at the Surfaces of Sea-Spray Mimics, *M.A. Shaloski, J.R. Gord,* University of Wisconsin - Madison*; S. Staudt,* University of Wisconsin-Madison*; S.L. Quinn, T.H. Bertram,* University of Wisconsin - Madison*;* ***Gilbert Nathanson,*** University of Wisconsin-Madison
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: EM+2D+MI+MN-WeA7** Creating Quantum Technologies with Spins in Semiconductors, *B.B. Zhou,* ***David Awschalom,*** University of Chicago	**HC+SA+SS-WeA7** In-situ Investigation of Methane Activation on MO_x/CeO_2 (111) Surfaces {M=Co, Ni and Cu} using Ambient-Pressure XPS, *J. Rodriguez,* ***Zongyuan Liu,*** Brookhaven National Laboratory
4:40pm	Invited talk continues.	**HC+SA+SS-WeA8** Ambient Pressure XPS Study of Catalytic Conversion of Carbon Dioxide by CuO_x Nanoparticles Photodeposited on TiO_2 Nanoparticles, ***Djawhar Ferrah,*** *R.P. Galhenage, J.P. Bruce, A.D. Babore, J.C. Hemminger,* University California, Irvine
5:00pm	**EM+2D+MI+MN-WeA9** Diamond as an Electronic Material: Opportunities and Challenges, ***Steven Vitale,*** *J.O. Varghese, M.F. Marchant, T. Wade, M.W. Geis, T.H. Fedynyshyn, D.M. Lennon, M.A. Hollis,* MIT Lincoln Laboratory	**HC+SA+SS-WeA9** Atomic-Scale Characterization of Pt/Ag Surface Alloys, ***Dipna Patel,*** *E.C.H. Sykes,* Tufts University
5:20pm	**EM+2D+MI+MN-WeA10** Studies on Influence of Processing on Optical Characteristics of Electron Irradiated 4H-SiC Nanostructures, ***Shojan Pavunny,*** ASEE Research Fellow at U.S. Naval Research Laboratory*; H. Banks,* NRC Research Fellow at U.S. Naval Research Laboratory*; P.B. Klein,* U.S. Naval Research Laboratory*; K.M. Daniels,* NRC Research Fellow at U.S. Naval Research Laboratory*; M.T. DeJarld,* ASEE Research Fellow at U.S. Naval Research Laboratory*; E.R. Glaser, S.G. Carter, R.L. Myers-Ward, D.K. Gaskill,* U.S. Naval Research Laboratory	**HC+SA+SS-WeA10** Structural Consequences of High Oxygen Coverages on Rh(111), ***Rachael Farber****†, *M.E. Turano, D.R. Killelea,* Loyola University Chicago
5:40pm	**INVITED: EM+2D+MI+MN-WeA11** Ab Initio Simulations of Point Defects in Solids Acting as Quantum Bits, ***Adam Gali,*** Wigner Research Centre for Physics, Hungarian Academy of Sciences, Hungary	**INVITED: HC+SA+SS-WeA11** Reactivity and Electronic Properties of Supported Metal Oxide and Sulfide Clusters, ***Michael White,*** Brookhaven National Laboratory*; X. Meng, K. Goodman,* Stonybrook University*; P. Liu,* Brookhaven National Laboratory
6:00pm	Invited talk continues.	Invited talk continues.

* **National Student Award Finalist**
† **Morton S. Traum Award Finalist**

	Advanced Ion Microscopy Focus Topic **Room 7 & 8 - Session HI-WeA** **Emerging Ion Sources and Optics** **Moderator:** John A. Notte, Carl Zeiss Microscopy, LLC	**Manufacturing Science and Technology Group** **Room 5 & 6 - Session MS+AS-WeA** **Advanced Surface, Interface, and Structural Characterization for High Volume Manufacturing** **Moderator:** Alain C. Diebold, Colleges of Nanoscale Science and Engineering, SUNY Polytechnic Institute
2:20pm	**INVITED: HI-WeA1** COLDFIB – The New FIB Source from Laser Cooled Atoms, ***Anne Delobbe***, *M. Viteau,* Orsay Physics, France; *D. Comparat,* CNRS Lac Orsay, France; *A. Houel, M. Reveillard,* Orsay Physics, France	**INVITED: MS+AS-WeA1** The Cornell High Energy Synchrotron Source Upgrade: Current and Future Capabilities for Thin-film Research, ***Arthur Woll,*** Cornell University
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**HI-WeA3** FIB Platform Employing a Low-Temperature Ion Source, ***Adam Steele,*** *A. Schwarzkopf,* zeroK NanoTech; *J.J. McClelland,* National Institute of Standards and Technology; *B. Knuffman,* zeroK NanoTech	**INVITED: MS+AS-WeA3** Using Synchrotron XRD Techniques to Impact Microelectronics Manufacturing Technologies, ***Jean Jordan-Sweet,*** *C. Lavoie,* IBM T.J. Watson Research Center; *A.V. Carr,* IBM Research, Albany, NY; *N. Breil,* IBM SRDC, East Fishkill; now with Applied Materials Inc.; *M.M. Frank,* IBM T.J. Watson Research Center
3:20pm	**HI-WeA4** Focused Cs Ion Beam Nanomachining and Material Interaction Characterization for Semiconductor Applications, ***Richard Livengood,*** *R. Hallstein, S. Tan,* Intel Corporation, USA; *Y. Greenzweig, Y. Drezner, A. Raveh,* Intel Corporation, Israel; *A.V. Steele, B. Knuffman, A. Schwarzkopf,* zeroK NanoTech, USA	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: HI-WeA7** Spectroscopy in the Focused Ion Beam, ***Robert Hull,*** Rensselaer Polytechnic Institute; *H. Parvaneh,* Global Foundries	**INVITED: MS+AS-WeA7** Development of Ultra-thin ALD Grown high-k Dielectrics and Interconnect Diffusion Barrier Layers aided by Advanced X-ray Structural Analysis for sub 10nm Nodes, ***Steven Consiglio,*** *K. Tapily, R.D. Clark, C.S. Wajda, K.-H. Yu, T. Hakamata, G.J. Leusink,* TEL Technology Center, America, LLC; *S. Dey, A.C. Diebold,* Colleges of Nanoscale Science and Engineering, SUNY Polytechnic Institute
4:40pm	Invited talk continues.	Invited talk continues.
5:00pm	**HI-WeA9** Spark-discharge Coupled Laser Multicharged Ion Implantation and Deposition System, ***Md Haider Shaim,*** *M. Rahman, O. Balki, H.E. Elsayed-Ali,* Old Dominion University	**MS+AS-WeA9** Stress Control of rf Sputter Deposition of Piezoelectric $Sc_{0.12}Al_{0.88}N$, ***Michael Henry,*** *R.P. Timon, T.R. Young, E.A. Douglas, B. Griffin,* Sandia National Laboratories

	Nanometer-scale Science and Technology Division Room 19 - Session NS+MN+MS+SS-WeA Nanopatterning, Nanofabrication and 3D Nanomanufacturing **Moderator:** Brian Borovsky, St. Olaf College	Plasma Science and Technology Division Room 22 - Session PS+SS+TF-WeA Plasma Deposition **Moderators:** Jeffrey Shearer, IBM Research Division, Albany, NY, Thorsten Lill, Lam Research Corporation
2:20pm	**NS+MN+MS+SS-WeA1** Site-controlled Si Nanodot Formation for a RT-SET via Ion Beam Mixing and Phase Separation, ***Xiaomo Xu**** *, G. Hlawacek, D. Wolf, T. Prüfer, R. Hübner, L. Bischoff,* Helmholtz Zentrum Dresden-Rossendorf, Germany*; M. Perego,* Institute for Microelectronics and Microsystems (IMM-CNR), France*; A. Gharbi,* Laboratoire d'électronique des technologies de l'information (CEA-Leti), France*; H.-J. Engelmann, S. Facsko, K.-H. Heinig, J. von Borany,* Helmholtz Zentrum Dresden-Rossendorf, Germany	**PS+SS+TF-WeA1** Correlation Between Ion Energies in CCRF Discharges and Film Characteristics of Titanium Oxides Fabricated via Plasma Enhanced Atomic Layer Deposition, ***Shinya Iwashita****, T. Moriya, T. Kikuchi, N. Noro, T. Hasegawa,* Tokyo Electron Limited, Japan*; A. Uedono,* University of Tsukuba, Japan
2:40pm	**NS+MN+MS+SS-WeA2** Scanning Tunneling Microscope Fabrication of Atomically Precise Devices, ***Richard Silver****,* NIST*; X. Wang,* University of Maryland, College Park*; P. Namboodiri, J. Wyrick, S.W. Schmucker, M.D. Stewart, R. Murray, J.A. Hagmann, C. Richter,* NIST	**PS+SS+TF-WeA2** Functionalized Titanium-Nitride Surfaces Formed by Femtosecond-Laser Processing, ***David Ruzic****, S. Hammouti, B.J. Holybee,* University of Illinois at Urbana-Champaign*; B.E. Jurczyk,* Starfire Industries
3:00pm	**NS+MN+MS+SS-WeA3** Contacting Buried Atomic-Precision Devices in Si using Kelvin Probe and Optical Microscopy, ***Jonathan Wyrick****, P. Namboodiri, X. Wang, R. Murray, J.A. Hagmann, K. Li, S.W. Schmucker, M.D. Stewart, C. Richter, R.M. Silver,* NIST	**PS+SS+TF-WeA3** Controlling the Thin Film Properties of Silica Synthesised by Atmospheric Pressure-Plasma Enhanced CVD, ***Fiona Elam****, A.S. Meshkova,* FOM institute DIFFER, Netherlands*; B.C.A.M. van der Velden-Schuermans, S.A. Starostin,* FUJIFILM Manufacturing Europe B.V.*; M.C.M. van de Sanden,* FOM Institute DIFFER, Netherlands*; H.W. de Vries,* FOM institute DIFFER, Netherlands
3:20pm	**NS+MN+MS+SS-WeA4** Quantifying Liquid Transport and Patterning using Atomic Force Microscopy*, N. Farmakidis,* ***Keith Brown****,* Boston University	**PS+SS+TF-WeA4** Plasma Information Based Virtual Metrology for Nitride Thickness in Multi-Layer Plasma-Enhanced Chemical Vapor Deposition*,* ***Hyun-Joon Roh**†**, S. Ryu, Y. Jang, N.-K. Kim, Y. Jin, G.-H. Kim,* Seoul National University, Republic of Korea
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: NS+MN+MS+SS-WeA7** Positioning and Manipulating Single Dopant Atoms Inside Silicon*,* ***Andrew Lupini****, B.M. Hudak, J. Song,* Oak Ridge National Laboratory*; H.R. Sims,* Vanderbilt University*; M.C. Troparevsky,* Oak Ridge National Laboratory*; S.T. Pantelides,* Vanderbilt University*; P.C. Snijders,* Oak Ridge National Laboratory	**INVITED: PS+SS+TF-WeA7** Sidewall Effects in the Modulation of Deposition Rate Profiles of a Capacitively Coupled Plasma Reactor*,* ***Hojun Kim****,* Samsung Electronics Co. Ltd., Republic of Korea
4:40pm	Invited talk continues.	Invited talk continues.
5:00pm	**NS+MN+MS+SS-WeA9** Characterization of Butyl Tin Photoresists for Nanoscale Patterning*, J.T. Diulus, R.T. Frederick,* Oregon State University*; M. Li,* Rutgers University*; D. Hutchison, M.R. Olsen, I. Lyubinetsky, L. Árnadóttir,* Oregon State University*; E.L. Garfunkel,* Rutgers University*; M. Nyman,* Oregon State University*; H. Ogasawara,* SLAC National Accelerator Laboratory*;* ***Gregory Herman****,* Oregon State University	**PS+SS+TF-WeA9** Carbon and Hydrocarbon Removal using Electrostatics during Low Temperature Plasma Assisted Growth of GaN*,* ***K.Scott Butcher****,* Meaglow Ltd., Canada*; R. Gergova,* Lakehead University, Canada*; G.R. Mount,* Evans Analytical Group
5:20pm	**NS+MN+MS+SS-WeA10** Impact of Polymer Templated Annealing on Gold Nanowires*,* ***Tyler Westover****, R.F. Davis, B. Uptrey, J. Harb, A. Woolley, S. Noyce,* Brigham Young University	**PS+SS+TF-WeA10** Linear Magnetron Magnetic Field Optimization for HiPIMS Industrialization*,* ***Ian Haehnlein****, J. McLain, B. Wu, I. Schelkanov,* University of Illinois at Urbana-Champaign*; B.E. Jurczyk,* Starfire Industries*; D.N. Ruzic,* University of Illinois at Urbana-Champaign
5:40pm	**NS+MN+MS+SS-WeA11** Dynamic Growth of Nanopores on Graphene via Helium Ion Microscope*, S. Kim,* ***Anton Ievlev****, M.J. Burch, I. Vlassiouk, A. Belianinov, S.V. Kalinin, S. Jesse, O.S. Ovchinnikova,* Oak Ridge National Laboratory	**PS+SS+TF-WeA11** Investigating the Effect of the Substrate at Short Deposition Times for Plasma Polymerised Films*,* ***Karyn Jarvis****, N.P. Reynolds,* Swinburne University of Technology, Australia*; L.D. Hyde,* Melbourne Centre for Nanofabrication, Australia*; S.L. McArthur,* Swinburne University of Technology and CSIRO, Australia
6:00pm		

***** **NSTD Student Award Finalist**

† **Coburn & Winters Student Award Finalist**

	Plasma Science and Technology Division **Room 23 - Session PS-WeA** **Modeling of Plasmas** **Moderators:** Kostya (Ken) Ostrikov, Queensland University of Technology and CSIRO, Richard van de Sanden, DIFFER	**Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic** **Room 9 - Session SA+AS+HC+SS-WeA** **In Situ and Operando Characterization of Interfacial Reactions in Energy & Electronic Devices** **Moderators:** Karen Chen-Wiegart, Stony Brook University/Brookhaven National Laboratory, Elke Arenholz, Lawrence Berkeley National Laboratory
2:20pm	**PS-WeA1** TSV Etch Plasma Modelling from Chamber to Feature , ***Sebastian Mohr,*** Quantemol LTD*; S. Rahimi, A. Dzarasova,* Quantemol LTD, UK	**INVITED: SA+AS+HC+SS-WeA1** Probing Solid-Gas and Solid-Liquid Interface Using APXPS, ***Zhi Liu,*** *J. Cai, Q. Liu,* ShanghaiTech University, PR China*; Y. Han,* Chinese Academy of Sciences, PR China*; J. Liu,* ShanghaiTech University, PR China*; M. Mao, H. Zhang,* Chinese Academy of Sciences, PR China*; Y. Li,* ShanghaiTech University, PR China
2:40pm	**PS-WeA2** Global Model based Framework for Prediction of Ion Energy Distributions Under Pulsed RF-bias Conditions in Plasma Etching Processes, ***Shogo Sakurai,*** ET Center, Samsung R&D Institute Japan*; S. Lim,* Samsung Electronics, Korea*; R. Sakuma, S. Nakamura, H. Kubotera, K. Ishikawa,* Samsung R&D Institute Japan*; K. Lee,* Samsung Electronics	Invited talk continues.
3:00pm	**INVITED: PS-WeA3** Understanding Particle-Surface Interactions and Their Importance in Plasma Processing: a Plasma Modelling Perspective, ***Andrew Gibson****, S. Schroeter, D. O'Connell, T. Gans,* University of York, UK*; M.J. Kushner,* University of Michigan*; J.-P. Booth,* LPP-CNRS, Ecole Polytechnique, France	**SA+AS+HC+SS-WeA3** Graphene Capped Static and Fluidic Systems for In-Liquid Atmospheric Pressure XPS/AES/SEM and PEEM Studies of Electrochemical Interfaces, ***Hongxuan Guo****, E. Strelcov, A. Yulaev,* NIST, Center for Nanoscale Science and Technology*; S. Nemšák, D.N. Mueller, C.M. Schneider,* Peter Grünberg Institute and Institute for Advanced Simulation, Germany*; A. Kolmakov,* NIST, Center for Nanoscale Science and Technology
3:20pm	Invited talk continues.	**SA+AS+HC+SS-WeA4** A 3D Printed Liquid Cell for Soft X-ray Absorption Spectroscopy, ***Tom Regier****, T.D. Boyko, J. Dynes, Z.N. Arthur,* Canadian Light Source, Inc.*; M.N. Banis,* University of Western Ontario, Canada
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**PS-WeA7** Investigation of Pulsed $Ar/O_2/CF_4$ Capacitively Coupled Plasmas, ***Wei Tian****, S. Rauf, K.S. Collins,* Applied Materials, Inc.	**INVITED: SA+AS+HC+SS-WeA7** In Operando Quantification of Valence Changes in Memristive Devices, *R. Dittmann,* ***Christoph Baeumer,*** Peter Gruenberg Institute, Forschungszentrum Juelich GmbH, Juelich, Germany*; D. Cooper,* Université Grenoble Alpes & CEA, LETI, Minatec Campus, Grenoble, France*; C. Schmitz, S. Menzel, C.M. Schneider, R. Waser,* Peter Gruenberg Institute, Forschungszentrum Juelich GmbH, Juelich, Germany
4:40pm	**PS-WeA8** Modeling of Silicon Etching using Bosch Process: Effects of Oxygen Addition on the Plasma and Surface Properties, ***Guillaume Le Dain,*** STMicroelectronics / CNRS-IMN, France*; A. Rhallabi,* Cnrs - Imn, France*; S. Elidrissi,* University of Nantes*; C. Cardinaud, A. Girard,* Cnrs - Imn, France*; F. Roqueta, M. Boufnichel,* STMicroelectronics, France	Invited talk continues.
5:00pm	**PS-WeA9** A Mixed Mode Parameter/Physical Driven Particle-in-cell (PIC) Code for Capturing Transient Response and Evolution Behavior of Laboratory Plasma, ***Noel Lauer****, N.J. Ianno,* University of Nebraska-Lincoln	**INVITED: SA+AS+HC+SS-WeA9** Magnetic Skyrmions in Ultrathin Magnetic Films and Nanostructures, ***Jan Vogel,*** Institut Néel, CNRS/UGA, Grenoble, France*; O. Boulle, R. Juge,* SPINTEC, CNRS/CEA/UGA, Grenoble, France*; D.S. Chaves, S. Pizzini,* Institut Néel, CNRS/UGA, Grenoble, France*; S.G. Je, G. Gaudin,* SPINTEC, CNRS/CEA/UGA, Grenoble, France*; T.O. Mentes, A. Locatelli,* Elettra-Sincrotrone Trieste, Italy*; M.U.J. Foerster, L. Aballe,* ALBA Synchrotron Light Facility, Spain
5:20pm	**PS-WeA10** Investigating Mode Transitions in Pulsed Inductively Coupled Plasmas, ***Steven Lanham****, M.J. Kushner,* University of Michigan	Invited talk continues.
5:40pm	**INVITED: PS-WeA11** Science of Plasma-Surface Interaction for Modern Semiconductor Process Technologies, ***Satoshi Hamaguchi****[*]*, *K. Karahashi,* Osaka University, Japan	**SA+AS+HC+SS-WeA11** O_2 Pressure Dependence of SiO_2/Si Interfacial Oxidation Rate Studied by Real-time Photoelectron Spectroscopy, ***Shuichi Ogawa,*** Tohoku University, Japan*; A. Yoshigoe,* JAEA, Japan*; S. Ishidzuka,* National Institute for of Technology, Akita College, Japan*; Y. Takakuwa,* Tohoku University, Japan
6:00pm	Invited talk continues.	**SA+AS+HC+SS-WeA12** Highly Time-resolved Insights into the Sputter Deposition of Metal Electrodes on Polymer Thin Films for Organic Electronics, ***Franziska Löhrer****, V. Körstgens,* Technische Universität München, Germany*; M. Schwartzkopf,* Deutsches Elektronensynchrotron DESY, Germany*; A. Hinz, O. Polonskyi, T. Strunskus, F. Faupel,* Christian-Albrechts-Universität zu Kiel, Germany*; S.V. Roth,* Deutsches Elektronensynchrotron DESY, Germany*; P. Müller-Buschbaum,* Technische Universität München, Germany

[*] **PSTD Plasma Prize Winner**

	Advanced Surface Engineering Division **Room 11 - Session SE+2D+NS+SS+TF-WeA** **Nanostructured Thin Films and Coatings** **Moderators:** Jianliang Lin, Southwest Research Institute, Matjaz Panjan, Jozef Stefan Institute, Slovenia	**Surface Science Division** **Room 25 - Session SS+HC+NS-WeA** **Dynamical Processes at Surfaces** **Moderators:** Ashleigh Baber, James Madison University, Kathryn Perrine, Michigan Technological University
2:20pm	**INVITED: SE+2D+NS+SS+TF-WeA1** Plasma Process Development and Optimized Synthesis of TiB_2 Coatings from DC Magnetron Sputtering, High Power Impulse Magnetron Sputtering, and DC Vacuum Arc, ***Johanna Rosen,*** Linköping University, Sweden	**INVITED: SS+HC+NS-WeA1** Towards a Molecular Level Understanding of the Structure and Dynamics of Water at Interfaces, ***Angelos Michaelides,*** University College London, UK
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**SE+2D+NS+SS+TF-WeA3** Multi-technique Approach for Studying Co-sputtered M-Si-O Thin Films, ***Lirong Sun,*** General Dynamics Information Technology*; N.R. Murphy,* Air Force Research Laboratory*; J.T. Grant,* Azimuth Corporation	**INVITED: SS+HC+NS-WeA3** Quantum Molecular Machines, ***Saw-Wai Hla,*** Ohio University and Argonne National Laboratory
3:20pm	**SE+2D+NS+SS+TF-WeA4** Ultra-high Vacuum Magnetron Sputter-deposition of $Zr/Al_2O_3(0001)$: Effect of Substrate Temperature on Zr Thin Film Microstructure and Thermal Stability of $Zr\text{-}Al_2O_3$ Interfaces, *K. Tanaka, J. Fankhauser,* University of California at Los Angeles*; M. Sato,* Nagoya University, Japan*; D. Yu, A. Aleman, A. Ebnonnasir, C. Li,* University of California at Los Angeles*; M. Kobashi,* Nagoya University, Japan*; M.S. Goorsky,* ***Suneel Kodambaka,*** University of California at Los Angeles	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**SE+2D+NS+SS+TF-WeA7** Structural, Mechanical, Optical Properties of Molybdenum Incorporated $\beta\text{-}Ga_2O_3$ Nanocrystalline Films for Extreme Environment Applications, ***Anil Battu****, S. Manandhar, C.V. Ramana,* University of Texas at El Paso	**SS+HC+NS-WeA7** Collective, Multi-atom Diffusion in Epitaxially Grown Metallic Films, ***Matt Hershberger****, M. Hupalo, P.A. Thiel,* Iowa State University Ames Laboratory –USDOE*; M.K.L. Man, M.S. Altman,* Hong Kong University of Science and Technology, Hong Kong*; C.H. Mullet, S. Chiang,* University of California-Davis*; M.C. Tringides,* Iowa State University Ames Laboratory –USDOE
4:40pm	**SE+2D+NS+SS+TF-WeA8** Investigating Mass Transport and other Events underlying Rapid, Propagating Formation Reactions in Pt/Al Multilayer Films, ***David Adams****, M.J. Abere, C. Sobczak, D.E. Kittell, C.D. Yarrington, C.B. Saltonstall, T.E. Beechem,* Sandia National Laboratories	**SS+HC+NS-WeA8** Quantitative Molecular Beam Study for CO_2 Hydrogenation on Cu (111) and Cu(100) Surfaces, ***Jiamei Quan****, T. Kondo, T. Kozarashi, T. Mogi, J. Nakamura,* University of Tsukuba, Japan
5:00pm	**INVITED: SE+2D+NS+SS+TF-WeA9** Adaptive Ceramic Coatings for Extreme Environments, ***Samir Aouadi,*** University of North Texas*; C. Muratore,* University of Dayton*; A.A. Voevodin,* University of North Texas	**INVITED: SS+HC+NS-WeA9** A New Approach for Controlling the Rotational Orientation of a Molecule and Studying the Stereodynamics of a Molecule-Surface Collision, ***Gil Alexandrowicz,*** Technion – Israel Institute of Technology, Israel
5:20pm	Invited talk continues.	Invited talk continues.
5:40pm	**SE+2D+NS+SS+TF-WeA11** Ultralow Wear of Stable Nanocrystalline Metals, ***Nicolas Argibay****, T.A. Furnish, T.F. Babuska, C.J. O'Brien, J.F. Curry, B.L. Nation, A.B. Kustas, P. Lu, M. Chandross, D.P. Adams, M.A. Rodriguez, M.T. Dugger, B.L. Boyce, B.G. Clark,* Sandia National Laboratories	**SS+HC+NS-WeA11** Surface Temperature Effects in CH_4 Dissociation on Flat and Stepped Nickel Single Crystals, ***Eric High****, E.K. Dombrowski, A.L. Utz,* Tufts University
6:00pm	**SE+2D+NS+SS+TF-WeA12** From Ab-Initio Design to Synthesis of Multifunctional Coatings with Enhanced Hardness and Toughness, ***Daniel Edström****, D. Sangiovanni, L. Hultman, I. Petrov, J. Greene, V. Chirita,* Linköping University, University of Illinois at Urbana-Champaign	**SS+HC+NS-WeA12** Experimental and Theoretical Study of Rotationally Inelastic Diffraction of $H_2(D_2)$ from Methyl-Terminated Si(111), ***Kevin Nihill****, Z.M. Hund,* University of Chicago*; A. Muzas, C. Diaz, M. del Cueto,* Universidad Autónoma de Madrid, Spain*; T. Frankcombe,* University of New South Wales, Australia*; N. Plymale, N.S. Lewis,* California Institute of Technology*; F. Martin,* Universidad Autónoma de Madrid, Spain*; S.J. Sibener,* University of Chicago

* **Morton S. Traum Award Finalist**

	Tribology Focus Topic **Room 10 - Session TR+AS+HI+NS+SS-WeA** **Molecular Origins of Friction** **Moderators:** J. David Schall, Oakland University, Paul Sheehan, US Naval Research Laboratory	**Vacuum Technology Division** **Room 20 - Session VT-WeA** **The History and Future of Materials, Surfaces and Interfaces (ALL INVITED SESSION)** **Moderators:** Gregory Exharos, Pacific Northwest National Lab., Amy Walker, University of Texas at Dallas
2:20pm	**TR+AS+HI+NS+SS-WeA1** On the Stochastic Nature of Bonding in Contact: Simulations of Indentation and Sliding of DLC Tips on Diamond Surfaces, ***J. David Schall,*** Oakland University*; R.A. Bernal,* University of Texas at Dallas*; Z. Miline,* University of Pennsylvania*; P. Chen, P. Tsai, Y.-R. Jeng,* National Chung Cheng University, Taiwan, Republic of China*; K.T. Turner, R.W. Carpick,* University of Pennsylvania*; J.A. Harrison,* United States Naval Academy	**INVITED: VT-WeA1** The 14-billion Year History of the Universe Leading to Modern Materials Science, ***Joe Greene,*** University of Illinois
2:40pm	**TR+AS+HI+NS+SS-WeA2** New Insights about the Fundamental Mechanisms of Friction of MoS_2, ***John Curry,*** Lehigh University*; M. Wilson, T.F. Babuska, M. Chandross,* Sandia National Laboratories*; H. Luftman, N.C. Strandwitz, B.A. Krick,* Lehigh University*; N. Argibay,* Sandia National Laboratories	Invited talk continues.
3:00pm	**INVITED: TR+AS+HI+NS+SS-WeA3** The Influence of Environmental Exposure and the Substrate on the Lubricating Properties of Two-Dimensional Materials, *P. Gong,* University of Calgary, Canada*; Z. Ye,* Miami University*; L. Yuan,* ***Philip Egberts,*** University of Calgary, Canada	Invited talk continues.
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BREAK**	**BREAK**
4:20pm	**INVITED: TR+AS+HI+NS+SS-WeA7** Fundamental Understanding of Interfacial Adhesion and Tribochemistry by Ab Initio Calculations, ***M.Clelia Righi,*** University of Modena and Reggio Emilia, Italy	**VT-WeA7** Controlling Microorganisms with Bio-inspired Materials, ***Caitlin Howell,*** University of Maine
4:40pm	Invited talk continues.	**VT-WeA8** Comparison of Oxygen Adsorption and Absorption on Rhodium, Silver, and Stepped Platinum Surfaces, ***Daniel Killelea,*** *R.G. Farber, M.E. Turano,* Loyola University Chicago*; E.V. Iski,* University of Tulsa*; L.B.F. Juurlink,* Leiden Institute of Chemistry, The Netherlands*; J. Derouin,* Loyola University Chicago
5:00pm	**TR+AS+HI+NS+SS-WeA9** Friction Between 2D Solids during Lattice Directed Sliding, ***Paul Sheehan,*** US Naval Research Laboratory*; CM. Lieber,* Harvard University	**VT-WeA9** Single Asperity Contact and Sliding, ***Ashlie Martini,*** University of California Merced
5:20pm		**VT-WeA10** Structure of Sub-nm Oxides Synthesized by Atomic Layer Deposition: From Isolated Cations to the Emergence of Crystallinity, ***Angel Yanguas-Gil,*** Argonne National Laboratory
5:40pm	**TR+AS+HI+NS+SS-WeA11** Single Molecule Force Measurement: Mechanic and Symmetry Dependent Lateral Force, ***Yuan Zhang,*** Argonne National Laboratory*; S. Khadka,* Ohio University*; B. Narayanan, A. Ngo,* Argonne National Laboratory*; Y. Li,* Ohio University*; B. Fisher, L. Curtiss, S. Sankaranarayanan, S.W. Hla,* Argonne National Laboratory	**VT-WeA11** The Power of Atomic Layer Deposition – Moving Beyond Amorphous Films, ***Virginia Wheeler,*** *A.C. Kozen, B.P. Downey, M. Currie, N. Nepal,* U.S. Naval Research Laboratory*; L.O. Nyakiti,* Texas A&M University*; D.J. Meyer, D.R. Boris, S.G. Walton, C.R. Eddy, Jr.,* U.S. Naval Research Laboratory
6:00pm	**TR+AS+HI+NS+SS-WeA12** Elucidating Atomic-scale Adhesion and Wear Processes in Hydrocarbon-based Materials via MD, *In Situ* Nanoindentation, and AFM, ***Judith Harrison,*** United States Naval Academy*; R.A. Bernal,* University of Texas at Dallas*; Z. Miline,* University of Pennsylvania*; P. Tsai, P. Polun Chen, Y.-R. Jeng,* National Chung Cheng University, Taiwan, Republic of China*; K.T. Turner, R.W. Carpick,* University of Pennsylvania*; J.D. Schall,* Oakland University	**VT-WeA12** The Cathodic Arc Plasma from Multi-Element Cathodes, ***Robert Franz,*** Montanuniversität Leoben, Austria

Anticipated Schedule Thursday, November 2, 2017

Anticipated Schedule Thursday Morning, November 2

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 Thursday Lunch, November 2

When _____

Where _____

With _____

Anticipated Schedule Thursday Afternoon, November 2

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 _____

5:20 PM _____

5:40 PM _____

6:00 PM _____

Special Events Thursday

10:00 AM	AVS Member Center: Advocacy & Outreach-Frontiers of Materials Research: A Decadal Survey/18
12:20 PM	Exhibit Finale & Refreshments/West Hall
12:20 PM	PSTD Coburn and Winters Award Ceremony/23
12:20 PM	Surface Science Division Mort Traum Awards Ceremony/25
12:30 PM	2018 Program Committee Chairs' Meeting & Lunch/Grand Salons A-B-Marriott (Invitation Only)
12:30 PM	AVS Business Meeting/5 & 6
12:30 PM	AVS Member Center: Professional Development-Lunch with the Editors: AVS Writer's Workshop/18
2:20 PM	AVS Member Center: Professional Development-Working with National Labs and User Facilities/18
3:30 PM	History Committee Meeting/Meeting Room 3-Marriott (Invitation Only)
6:30 PM	2017/2018 Program Committee Reception and Dinner/Grand Salons C-D-Marriott (Invitation Only)
6:30 PM	Thursday Poster Session & Refreshments/Central Hall
7:00 PM	SSS Editorial Board Dinner/Meeting Room 2-Marriott (Invitation Only)

Thursday Morning, November 2, 2017

	2D Materials Focus Topic Room 15 - Session 2D+MI-ThM Novel Quantum Phenomena in 2D Materials **Moderator:** Kai Xiao, Oak Ridge National Laboratory	Applied Surface Science Division Room 13 - Session AS+BI+SA+SS-ThM Spectroscopy of the Changing Surface **Moderators:** Timothy Nunney, Thermo Fisher Scientific, UK, Tony Ohlhausen, Sandia National Laboratory
8:00am	**2D+MI-ThM1** Quantum Plasmonics with 2D Materials, ***Dmitri Voronine***, University of South Florida	**INVITED: AS+BI+SA+SS-ThM1** In Situ Investigation of the Dynamic Transformations of Model Catalyst Surfaces using Ambient Pressure XPS, ***Iradwikanari Waluyo***, Brookhaven National Laboratory
8:20am	**2D+MI-ThM2** Investigation and Manipulation of One-Dimensional Charge Density Waves in MoS_2, ***Wouter Jolie***, *C. Murray, J. Hall,* Institute of Physics II, University of Cologne, Germany; *F. Portner,* Institute for Theoretical Physics, University of Cologne, Germany; *B. Pielić,* Center of Excellence for Advanced Materials and Sensing Devices, Institute of Physics, Zagreb, Croatia; *N. Atodiresei,* Peter Grünberg Institute and Institute for Advanced Simulation, Forschungszentrum Jülich, Germany; *M. Kralj,* Center of Excellence for Advanced Materials and Sensing Devices, Institute of Physics, Zagreb, Croatia; *A. Rosch,* Institute for Theoretical Physics, University of Cologne, Germany; *C. Busse,* Institut für Materialphysik, Westfälische Wilhelms-Universität Münster, Germany; *T. Michely,* Institute of Physics II, University of Cologne, Germany	Invited talk continues.
8:40am	**2D+MI-ThM3** Configuring Electronic States in an Atomically Precise Array of Quantum Boxes, ***Seyedeh Fatemeh Mousavi***, *S. Nowakowska, A. Wäckerlin,* University of Basel, Switzerland; *I. Piquero-Zulaica,* Materials Physics Center, San Sebastián, Spain; *J. Nowakowski,* Paul Scherrer Institut (PSI), Switzerland; *S. Kawai,* University of Basel, Switzerland; *C. Wäckerlin,* Paul Scherrer Institut (PSI), Switzerland; *M. Matena, T. Nijs, S. Fatayer, O. Popova, A. Ahsan, T. Ivas, E. Meyer,* University of Basel, Switzerland; *M. Stöhr,* University of Groningen, Netherlands; *J.E. Ortega,* Materials Physics Center, San Sebastián, Spain; *J. Björk,* Linköping University, Sweden; *L.H. Gade,* Universität Heidelberg, Germany; *J. Lobo-Checa,* Universidad de Zaragoza, Spain; *T.A. Jung,* Paul Scherrer Institut (PSI), Switzerland	**AS+BI+SA+SS-ThM3** Observation of Oxygen Binding on PGM-free Electrocatalysts by Ambient Pressure XPS and XAS, ***Kateryna Artyushkova***, University of New Mexico; *M.J. Dzara, S. Pylypenko,* Colorado School of Mines; *P. Atanassov,* University of New Mexico
9:00am	**2D+MI-ThM4** A Quantum Berry Phase Switch in Circular Graphene Resonators, ***Daniel Walkup***[*], *F. Ghahari, C. Gutierrez,* NIST/CNST; *J.F. Rodriquez-Nieva,* Harvard University; *Y. Zhao, J. Wyrick, F.D. Natterer, W.G. Cullen,* NIST/CNST; *K. Watanabe, T. Tanaguchi,* National Institute for Materials Science, Japan; *L.S. Levitov,* MIT; *N.B. Zhitenev, J.A. Stroscio,* NIST/CNST	**AS+BI+SA+SS-ThM4** In situ Monitoring of Electrochemically Generated Carbene by XPS, ***Pinar Aydogan Gokturk***[†], *S.E. Donmez, Y.E. Turkmen, B. Ulgut, S. Suzer,* Bilkent University, Turkey
9:20am	**INVITED: 2D+MI-ThM5** Nanostructured Graphene: A Platform for Fundamental Physics and Applications, ***Antti-Pekka Jauho***, Technical University of Denmark, Denmark	**AS+BI+SA+SS-ThM5** The Influence of Water on the Ionic Liquid-Vapor Interface, ***John Newberg***, University of Delaware; *M.B. Shiflett,* University of Kansas; *A. Broderick, Y. Khalifa,* University of Delaware
9:40am	Invited talk continues.	**AS+BI+SA+SS-ThM6** Ambient Pressure XPS Studies of Model N-C and Fe-N-C Catalysts Under Oxygen Environment, ***Michael Dzara***, Colorado School of Mines; *K. Artyushkova,* University of New Mexico; *C. Ngo, M.B. Strand, J. Hagen, S. Pylypenko,* Colorado School of Mines
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** Anomalous Kondo Resonance Mediated by Graphene Nanoribbons, ***Yang Li***, Ohio University and Argonne National Laboratory; *A. Ngo,* Argonne National Laboratory; *K.Z. Latt,* Ohio University; *B. Fisher,* Argonne National Laboratory; *S.W. Hla,* Argonne National Laboratory and Ohio University	**AS+BI+SA+SS-ThM10** Real-time Photoelectron Spectroscopy Observation of Oxidation and Reduction Kinetics of Ni(111) Surface, ***Ryo Taga***, *S. Ogawa, Y. Takakuwa,* Tohoku University, Japan
11:20am	**2D+MI-ThM11** Valley Photoluminescence Polarization in Monolayer WSe_2, ***Aubrey Hanbicki***, *M. Currie,* Naval Research Laboratory; *G. Kioseoglou,* University of Crete; *A.L. Friedman, B.T. Jonker,* Naval Research Laboratory	**AS+BI+SA+SS-ThM11** Comparison of Initial Oxidation Kinetics between p- and n-type Si(001) Surfaces Studied by Real-time Photoelectron Spectroscopy, ***Yuki Sekihata***, *S. Ogawa,* Tohoku University, Japan; *A. Yoshigoe,* JAEA, Japan; *R. Taga,* Tohoku University, Japan; *S. Ishidzuka,* National Institute of Technology, Akita College, Japan; *Y. Takakuwa,* Tohoku University, Japan
11:40am	**INVITED: 2D+MI-ThM12** Imaging Superconducting Topological Surface States in Non-centrosymmetric $PbTaSe_2$, ***Tien-Ming Chuang***, Academia Sinica, Taiwan, Republic of China	**AS+BI+SA+SS-ThM12** Co-Pyrphyrin on $Cu_2O(111)$ and $TiO_2(110)$: Properties and Stability under Near Operando Conditions, ***Zbynek Novotny***, *W.-D. Zabka, M. Hotz, D. Leuenberger,* University of Zurich, Switzerland; *L. Artiglia, F. Orlando, M. Ammann,* Paul Scherrer Institut (PSI), Switzerland; *J. Osterwalder,* University of Zürich, Switzerland
12:00pm	Invited talk continues.	**AS+BI+SA+SS-ThM13** In Situ Probing of Electron Transfer in the Riboflavin Electrochemical Process by Dynamic Liquid ToF-SIMS, ***Rujia Yu***, *X.F. Yu, J. Yao, R. Komorek,* Pacific Northwest National Laboratory; *Y.T. Long,* East China University of Science and Technology, PR China; *Z.H. Zhu, X.Y. Yu,* Pacific Northwest National Laboratory

[*] **NSTD Postdoc Finalist**
[†] **ASSD Student Award Finalist**

	Biomaterial Interfaces Division **Room 12 - Session BI+AS+SA-ThM** **Characterisation of Biological and Biomaterial Surfaces** **Moderators:** Daniel Graham, University of Washington, Tobias Weidner, Aarhus University, Denmark	**Electronic Materials and Photonics Division** **Room 14 - Session EM+MI+NS+SP+SS-ThM** **Photonics, Optoelectronics, and Light Manipulation** **Moderators:** Yohannes Abate, Georgia State University, Nikolaus Dietz, Georgia State University
8:00am	**BI+AS+SA-ThM1** Lipid Involvement in the Regenerative Processes of *Dugesia dorotocephala* - A GCIB ToF-SIMS Imaging Study, ***Tina Angerrer,*** *M.J. Taylor, D.J. Graham, L.J. Gamble,* University of Washington	**INVITED: EM+MI+NS+SP+SS-ThM1** Evolutionary Design of Multi-functional Optical Metasurfaces, ***Teri Odom,*** Northwestern University
8:20am	**BI+AS+SA-ThM2** Can ToF-SIMS Imaging Explain Biology?, ***Lara Gamble,*** *D.J. Graham,* University of Washington	Invited talk continues.
8:40am	**INVITED: BI+AS+SA-ThM3** Applications of XPS for Novel Biomaterial Systems, ***Jonathan Counsell,*** *S.J. Coultas, C.J. Blomfield,* Kratos Analytical Limited, UK*; C. Moffitt,* Kratos Analytical*; S.J. Hutton,* Kratos Analytical Limited, UK	**INVITED: EM+MI+NS+SP+SS-ThM3** Dielectric Freeform Metasurfaces for Optical Sensing, ***Arka Majumdar,*** University of Washington, Seattle
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**BI+AS+SA-ThM5** Surface Characterization of Polymer Scaffolds: Understanding Surface Modification and Biological Interactions, ***Michael Taylor,*** University of Washington*; M.J. Hawker, M.N. Mann,* Colorado State University*; G.E. Hammer,* University of Washington*; E.R. Fisher,* Colorado State University*; D.J. Graham, L.J. Gamble,* University of Washington	**EM+MI+NS+SP+SS-ThM5** Moth eye-based, graded index surface treatments to control reflection and light extraction, *L. Chan, C. Pynn, P. Shapturenka, R. Ley, S. Denbaars, D. Morse,* ***Michael Gordon,*** University of California at Santa Barbara
9:40am	**BI+AS+SA-ThM6** Seawater Bacteria on Technical Surfaces: Lateral and Vertical Adhesion Forces and Nanomechanical Properties, *N. Davoudi, K. Huttenlochner,* University of Kaiserslautern, Department of Physics and Research Center Optimas, Germany*; C. Schlegel, M. Huster,* University of Kaiserslautern, Institute of Bioprocess Engineering, Germany*;* ***Christine Müller-Renno,*** University of Kaiserslautern, Department of Physics and Research Center Optimas, Germany*; R. Ulber,* University of Kaiserslautern, Institute of Bioprocess Engineering, Germany*; C. Ziegler,* University of Kaiserslautern, Department of Physics and Research Center Optimas, Germany, Germany	**EM+MI+NS+SP+SS-ThM6** Infrared Surface Plasmon-influenced Interfacial Chemistry of Semiconductor Nanocrystals*, W. Hu,* ***Michael Filler,*** Georgia Institute of Technology
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: BI+AS+SA-ThM10** AVS 2017 Peter Mark Memorial Award Lecture: A Combined Experimental–Simulation Approach for Unraveling Hydrophobic Interactions at the Molecular Scale*, P. Stock,* MPI for Iron Research, Germany*; J.I. Monroe,* UC Santa Barbara*; T. Utzig,* MPI for Iron Research, Germany*; D.J. Smith, M.S. Shell,* UC Santa Barbara*;* ***Markus Valtiner****, TU Bergakademie Freiberg, Germany	**EM+MI+NS+SP+SS-ThM10** Dynamically Tunable Polarization Response in a Si/Au Metamaterial, ***Nicole Pfiester,*** Tufts University*; C. Shemelya,* Technische Universität Kaiserslautern, Germany*; D. DeMeo, E. Carlson, T.E. Vandervelde,* Tufts University
11:20am	Invited talk continues.	**EM+MI+NS+SP+SS-ThM11** Imaging Stress Induced Lateral Quantum Barrier Manipulation of Indium Gallium Arsenide Quantum Wells, using Micro-Photoluminescence Spectroscopy, ***Brian Rummel,*** *M. Rimada, S. Addamane, G. Balakrishnan,* University of New Mexico*; T. Sinno,* University of Pennsylvania*; S.M. Han,* University of New Mexico
11:40am	**BI+AS+SA-ThM12** Quantitative Characterization of Bacterial Cells in Solution and on Surfaces*, C. Sousa, K. Jankowska, L. Parga Basanta, I.M. Pinto,* ***Dmitri Petrovykh,*** International Iberian Nanotechnology Laboratory, Portugal	**EM+MI+NS+SP+SS-ThM12** Silicon-Based Infrared Photodetectors Enabled by Hot Electrons, ***Seok-Jun Han,*** *S.M. Han, S.E. Han,* University of New Mexico
12:00pm	**BI+AS+SA-ThM13** *In Situ* Multimodal Imaging of Microbial Communities, ***Xiao-Ying Yu,*** Pacific Northwest National Laboratory	**EM+MI+NS+SP+SS-ThM13** Low Temperature Wafer Bonding of LTG-GaAs to Si3N4for Terahertz Photoconductive Switch Application*, X. Fu,* Illinois Institute of Technology and Argonne National Laboratory*; M. Haji-Sheikh, G. Westberg, S. Ross,* Northern Illinois University*; E. Landahl,* DePaul University*; K. Attenkofer,* Brookhaven National Laboratory*;* ***Thomas Wong,*** Illinois Institute of Technology

*** Peter Mark Memorial Award Winner**

	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic **Room 24 - Session HC+SA+SS-ThM** **Mechanisms and Reaction Pathways in Heterogeneously Catalyzed Reactions** **Moderator:** David Payne, Imperial College London	**Advanced Ion Microscopy Focus Topic** **Room 7 & 8 - Session HI+BI+NS+TR-ThM** **Advanced Ion Microscopy Applications** **Moderators:** Armin Golzhauser, Bielefeld University, Germany, Olga Ovchinikova, Oak Ridge National Laboratory
8:00am	**HC+SA+SS-ThM1** Effects of Phosphorus and Alkyl Substituents on C-H, C-C, and C-O Bond Rupture within Carboxylic Acids on Ru(0001), ***SiWei A. Chang***, *D.W. Flaherty,* University of Illinois at Urbana-Champaign	**INVITED: HI+BI+NS+TR-ThM1** Scanning Helium Atom Microscopy: Imaging with a Deft Touch, ***Paul Dastoor,*** University of Newcastle, Australia
8:20am	**HC+SA+SS-ThM2** Monitoring Cu(111) Restructuring under Elevated CO Pressures via Polarization Dependent Infrared Spectroscopy, ***Christopher Kruppe***, *M. Trenary,* University of Illinois at Chicago	Invited talk continues.
8:40am	**INVITED: HC+SA+SS-ThM3** Thermal and Plasma Heterogeneous Catalysis Compared: CO_2 and Hydrocarbon Dry Reforming, *Q. Huang, D.Y. Zhang,* Center of Interface Dynamics for Sustainability, Chengdu, PR China; *E. Schuler, M. Ronda Lloret, G. Rothenberg, N.R. Shiju,* van 't Hoff Institute for Molecular Sciences, Amsterdam, The Netherlands; ***Aart Kleyn,*** Center of Interface Dynamics for Sustainability, PR China	**HI+BI+NS+TR-ThM3** Biofilm Structure of Geobacter Sulfurreducens by Helium Ion Microscopy, ***Alex Belianinov,*** Oak Ridge National Laboratory; *M. Halsted, M.J. Burch,* Oak Ridge National Laboratory; *S. Kim, S. Retterer,* Oak Ridge National Laboratory
9:00am	Invited talk continues.	**HI+BI+NS+TR-ThM4** Channeling via Transmission He Ion Microscopy, ***Christoph Herrmann,*** Simon Fraser University, Canada; *S.A. Scott, M. Lagally,* University of Wisconsin-Madison; *K. Kavanagh,* Simon Fraser University, Canada
9:20am	**HC+SA+SS-ThM5** Imaging the Molecular Origins of Symmetry Breaking on Well-defined Surfaces, ***Amanda Larson***, *R.T. Hannagan, E.C.H. Sykes,* Tufts University	**HI+BI+NS+TR-ThM5** Rapid Imaging of Nano-Porous Catalyst Particles Via Helium Ion Microscopy, *M.J. Burch, A.V. Ievlev,* ***Holland Hysmith,*** Oak Ridge National Laboratory; *K. Mahady, P.D. Rack,* University of Tennessee; *L. Luo,* ExxonMobil Chemical Company; *A. Belianinov,* Oak Ridge National Laboratory; *S. Yakovlev,* ExxonMobil Chemical Company; *O.S. Ovchinikova,* Oak Ridge National Laboratory
9:40am		**HI+BI+NS+TR-ThM6** Ion Beam Induced Current Measurements of Solar Cells with Helium Ion Microscopy, *A. Belianinov, S. Kim,* ***Ryan Cannon,*** *M.J. Burch, S. Jesse, O.S. Ovchinnikova,* Oak Ridge 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: HC+SA+SS-ThM10** A Surface Science Approach for New Heterogeneous Catalyst, ***Ib Chorkendorff,*** Technical University of Denmark	**HI+BI+NS+TR-ThM10** Writing Magnetic Domains with a Helium Ion Microscope, ***Daniel Emmrich,*** Bielefeld University, Germany; *A. Gaul, D. Holzinger, A. Ehresmann,* University of Kassel, Germany; *F. Karimian, M. Klug, J. McCord,* Kiel University, Germany; *A. Beyer, A. Gölzhäuser,* Bielefeld University, Germany
11:20am	Invited talk continues.	**HI+BI+NS+TR-ThM11** Characterisation of Nanomaterials on the Helium Ion Microscope using Correlative Secondary Electron and Mass Filtered Secondary Ion Imaging, ***Jean-Nicolas Audinot,*** *D.M.F. Dowsett, F. Vollnhals, T. Wirtz,* Luxembourg Institute of Science and Technology (LIST), Luxembourg
11:40am	**HC+SA+SS-ThM12** Chemisorption and Oxidation of H_2 on $IrO_2(110)$, ***Tao Li,*** *Z. Liang,* University of Florida, Gainesville; *M. Kim, A. Asthagiri,* The Ohio State University; *J.F. Weaver,* University of Florida, Gainesville	

Thursday Morning, November 2, 2017

	Manufacturing Science and Technology Group **Room 5 & 6 - Session MS-ThM** **Additive and Other Novel Manufacturing Techniques** **Moderator:** Vincent Smentkowski, General Electric Global Research Center	**Nanometer-scale Science and Technology Division** **Room 19 - Session NS+AS+EM+MI+SP+SS-ThM** **Nanoscale Imaging and Characterization** **Moderators:** Stephane Evoy, University of Alberta, Canada, Indira Seshadri, IBM Research Division, Albany, NY
8:00am	**INVITED: MS-ThM1** Thermal Spray for Additive Manufacturing, *A. Agarwal,* ***Cheng Zhang,*** Florida International University	**NS+AS+EM+MI+SP+SS-ThM1** Characterizing Optoelectronically-Active Molecules via STM Imaging and Advanced Raman Spectroscopy Techniques, *J. Schultz, P. Whiteman, Z. Porach,* ***Nan Jiang,*** University of Illinois at Chicago
8:20am	Invited talk continues.	**NS+AS+EM+MI+SP+SS-ThM2** BCC to FCC Phase Transition of Pd_xCu_{1-x} at Nanoscale, ***Xiaoxiao Yu,*** Carnegie Mellon University; *A. Gellman,* Carnegie Mellon University, W.E. Scott Institute for Energy Innovation
8:40am	**MS-ThM3** Eliminating Excess Flow during Active Brazing through Surface Preparation with ALD, ***Ronald Goeke,*** *C.A. Walker, P. Sarobol, P.T. Vianco,* Sandia National Laboratories	**INVITED: NS+AS+EM+MI+SP+SS-ThM3** Hybrid Environmental Transmission Electron Microscope: An Integrated Platform for In situ Imaging and Spectroscopies, ***Renu Sharma,*** NIST
9:00am	**MS-ThM4** Analysis of Textile Surface Characteristics for Direct Write Printing of Ink-based Textile Electronics, ***Jesse Jur,*** *R. Bhakta, H. Shahariar, H. Soewardiman,* North Carolina State University	Invited talk continues.
9:20am	**MS-ThM5** Three-Dimensional Silicon Mesostructures for Bioelectric Interfaces, ***Yuanwen Jiang****, *B. Tian,* The University of Chicago	**NS+AS+EM+MI+SP+SS-ThM5** Critical Dimension Metrology by Localization Optical Microscopy, *C.R. Copeland, C.D. McGray, J.C. Geist, J.A. Liddle, B.R. Ilic,* ***Samuel Stavis,*** NIST
9:40am	**MS-ThM6** Microplasma Sputtering for 3D Printing of Metallic Microstructures, ***Yosef Kornbluth,*** Massachusetts Institute of Technology; *R. Matthews, L. Parameswaran, L. Racz,* MIT Lincoln Laboratory; *L. Velásquez-García,* Massachusetts Institute of Technology	**NS+AS+EM+MI+SP+SS-ThM6** Tunable Emission from Nanophotonic Structures in a Modified SEM: Characterizing Smith Purcell Radiation Generation from the VUV to the Near IR, ***Steven Kooi,*** *I. Kaminer, A. Massuda, M. Soljačić, C. Roques-Carmes,* MIT
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am		**INVITED: NS+AS+EM+MI+SP+SS-ThM10** Ultrafast Optical Response of Graphene/LaAlO3/SrTiO3 Heterostructure, *L. Chen, E. Sutton, J. Li, M. Huang, J.F. Hsu, B. D'Urso,* University of Pittsburgh; *J.W. Lee, H. Lee, C.B. Eom,* University of Wisconsin-Madison; *P. Irvin,* ***Jeremy Levy,*** University of Pittsburgh
11:20am		Invited talk continues.
11:40am		**NS+AS+EM+MI+SP+SS-ThM12** Single-Molecules Fluorescence Spectroscopy and Lifetime with Simultaneous Super-resolution Imaging for Materials Science Applications, ***James Marr,*** CNST/NIST and University of Maryland; *M. Davanço,* CNST/NIST; *S.J. Stranick,* NIST; *B.R. Ilic, J.A. Liddle,* CNST/NIST
12:00pm 12:30pm	**AVS BUSINESS MEETING**	**NS+AS+EM+MI+SP+SS-ThM13** Atomic Scale Surface Effects of Controlled Crystal Structure in III-V Semiconductor Nanowires: Preferential Surface Alloying and Local Electronic Properties., *J. Knutsson, M. Hjort,* Lund University, Sweden; *P. Kratzer,* University Duisburg-Essen, Germany; *J. Webb, S. Lehmann, K.D. Thelander,* Lund University, Sweden; *C.J. Palmstrom,* UCSB; *R. Timm,* ***Anders Mikkelsen,*** Lund University, Sweden

* **National Student Award Finalist**

Thursday Morning, November 2, 2017

	Plasma Science and Technology Division Room 23 - Session PS+NS+SS+TF-ThM Atomic Layer Etching I **Moderators:** Andrew Gibson, University of York, UK, Saravanapriyan Sriraman, Lam Research Corporation	Plasma Science and Technology Division Room 22 - Session PS-ThM Plasma Sources **Moderators:** Rebecca Anthony, Michigan State University, David Ruzic, University of Illinois at Urbana-Champaign
8:00am	**PS+NS+SS+TF-ThM1** Strategies to Control the Etch per Cycle During Atomic Layer Etching of SiO_2 and SiN_x, ***Ryan Gasvoda,*** Colorado School of Mines; *S. Wang, E.A. Hudson,* Lam Research Corporation; *S. Agarwal,* Colorado School of Mines	**PS-ThM1** New Plasma Source Generating High Radical Flux With Low Ion and Photon Flux, *Y. Pilloux,* ***David Lishan,*** *M. Segers,* Plasma-Therm LLC
8:20am	**PS+NS+SS+TF-ThM2** Enabling Atomic Layer Etching of Magnetic and Noble Metal Alloys, ***Nicholas Altieri****, *E. Chen,* University of California, Los Angeles; *J.K. Chen,* Lam Research Corporation; *J.P. Chang,* University of California, Los Angeles	**PS-ThM2** Towards Plug-and-Play Tailored Voltage Waveform Plasma Sources: Progress in Matching and Calibration, ***Erik V. Johnson,*** LPICM, Ecole Polytechnique, France; *K. Yamaki,* LPP-CNRS; *J.-P. Booth,* LPP-CNRS, Ecole Polytechnique, France
8:40am	**INVITED: PS+NS+SS+TF-ThM3** Directional Atomic Layer Etching: First Principles, Modelling and Applications, ***Thorsten Lill,*** *K. Kanarik, I.L. Berry, S. Tan, Y. Pan, V. Vahedi, R.A. Gottscho,* Lam Research Corporation	**PS-ThM3** Selective Radical Production in Remote Plasma Sources, ***Shuo Huang,*** University of Michigan; *V. Volynets, S. Lee, S. Nam, S. Lu,* Samsung Electronics Co. Ltd., Republic of Korea; *M.J. Kushner,* University of Michigan
9:00am	Invited talk continues.	**PS-ThM4** On Electron Heating in Magnetron Sputtering Discharges, ***Jon Tomas Gudmundsson,*** University of Iceland; *D. Lundin,* Université Paris-Sud, France; *M.A. Raadu,* KTH-Royal Institute of Technology, Sweden; *T.M. Minea,* Université Paris-Sud, France; *N. Brenning,* KTH-Royal Institute of Technology, Sweden
9:20am	**PS+NS+SS+TF-ThM5** Thermal Atomic Layer Etching of VO_2 Using Sequential Exposures of SF_4 and Either $Sn(acac)_2$ or BCl_3, ***Jonas Gertsch,*** *V.M. Bright, S.M. George,* University of Colorado Boulder	**INVITED: PS-ThM5** High-Density Plasma Generation in Low-Pressure Metamaterial Space, ***Osamu Sakai,*** The University of Shiga Prefecture, Japan
9:40am	**PS+NS+SS+TF-ThM6** Atomic Layer Etching of MoS_2 for Nanodevices, ***KiSeok Kim,*** *K.H. Kim, Y.J. Ji, G.Y. Yeom,* Sungkyunkwan University, Republic of Korea	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:20am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**INVITED: PS+NS+SS+TF-ThM10** Ge Atomic Layer Etching for High Performance FinFET, ***Wataru Mizubayashi,*** AIST, Japan; *S. Noda,* Tohoku University, Japan; *Y. Ishikawa, T. Nishi,* AIST, Japan; *A. Kikuchi,* Tohoku University, Japan; *H. Ota,* AIST, Japan; *P.-H. Su, Y. Li,* National Chiao Tung University, Taiwan; *S. Samukawa,* Tohoku University, AIST, Japan; *K. Endo,* AIST, Japan	**PS-ThM10** Optical Emission Spectroscopy of a Spark-coupled Laser Aluminum Plasma for Multicharged Ion Generation, ***Md Mahmudur Rahman,*** *O. Balki, M. Shaim, H.E. Ali,* Old Dominion University
11:20am	Invited talk continues.	**PS-ThM11** Investigation of Ion-neutral Collision Effect on Two-Ion-Stream-Instability near Plasma-Sheath Boundary in Two-Ion-Species Plasmas, ***Nam-Kyun Kim,*** *J. Song, H.-J. Roh, S. Ryu, Y. Jang, G.-H. Kim,* Seoul National University, Republic of Korea
11:40am	**PS+NS+SS+TF-ThM12** Numerical Simulations of Atomic-Layer Etching (ALE) for SiO_2 and SiN, ***Yuki Okada,*** Osaka University, Japan; *R. Sugano,* Hitachi, Ltd., Japan; *M. Isobe, T. Ito, H. Li, K. Karahashi, S. Hamaguchi,* Osaka University, Japan	**INVITED: PS-ThM12** Effect of Secondary Electrons on the Ionization Dynamics and Control of Ion Properties in Electronegative Capacitive Discharges, ***Aranka Derzsi,*** Wigner Research Centre for Physics, Hungarian Academy of Sciences, Hungary
12:00pm	**PS+NS+SS+TF-ThM13** Organometallic Etching Chemistry for Thermal Atomic Level Etching of Lanthanum Oxide, ***Yoshihide Yamaguchi,*** *K. Shinoda,* Hitachi, Japan; *Y. Kouzuma, S. Sakai, M. Izawa,* Hitachi High-Technologies Corp., Japan	Invited talk continues.
12:20pm	**PSTD COBURN AND WINTERS AWARDS CEREMONY**	

*** Coburn & Winters Student Award Finalist**

Thursday Morning, November 2, 2017

	Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic **Room 9 - Session SA+AC+MI-ThM** **Frontiers in Probing Properties and Dynamics of Nanostructures and Correlation Spectroscopy** **Moderators:** Jan Vogel, Inst. Néel, CNRS/UGA, Grenoble, France, Christian Gutt, University of Siegen, Germany	**Advanced Surface Engineering Division** **Room 11 - Session SE+PS+SS-ThM** **Plasma-assisted Surface Modification and Deposition Processes** **Moderators:** Jolanta Klemberg-Sapieha, Ecole Polytechnique de Montreal, Canada, Suneel Kodambaka, University of California at Los Angeles
8:00am	**INVITED: SA+AC+MI-ThM1** X-rays Revealing Exotic Properties of Magnetoelectric Multiferroics and Related Materials, ***Elke Arenholz,*** Lawrence Berkeley National Laboratory	**INVITED: SE+PS+SS-ThM1** Key Features of Reactive High Power Impulse Magnetron Sputtering, ***Daniel Lundin,*** CNRS/Paris-Sud University, France
8:20am	Invited talk continues.	Invited talk continues.
8:40am	**INVITED: SA+AC+MI-ThM3** X-ray Reflectivity Investigations of Ultrafast Dynamics in Magnetic Multilayer Structures, ***Christian Gutt,*** *T. Sant, D. Ksenzov, U. Pietsch,* University of Siegen, Germany; *J. Luening,* Sorbonne University; *F. Capotondi, E Pedersoli, M. Manfredda, M. Kiskinova,* Elettra-Sincrotrone Trieste, Italy; *M. Klaeui, H. Zabel,* University of Mainz	**SE+PS+SS-ThM3** Depositions of Al_2O_3 Coatings by HiPIMS via Closed-loop Control using a Plasma Emission Monitoring Sensor, ***Jianliang Lin,*** *R. Wei, K. Coulter,* Southwest Research Institute; *F. Papa,* Gencoa Ltd.
9:00am	Invited talk continues.	**SE+PS+SS-ThM4** The Influence of Spokes on Spatial and Energy Distributions of Ions in Magnetron Sputtering Discharges, ***Matjaz Panjan,*** Jozef Stefan Institute, Slovenia; *K. Tanaka, R. Franz, A. Anders,* Lawrence Berkeley National Laboratory
9:20am	**SA+AC+MI-ThM5** Spray Deposition of Water-processed Active Layers of Hybrid Solar Cells Investigated with In situ X-ray Scattering Methods, ***Volker Körstgens,*** *F. Buschek, M. Wörle,* Technische Universität München, Germany; *W. Ohm,* DESY, Germany; *H. Iglev,* Technische Universität München, Germany; *S.V. Roth,* DESY, Germany; *R. Kienberger, P. Müller-Buschbaum,* Technische Universität München, Germany	**SE+PS+SS-ThM5** Silicon Nitride Deposition for Organic Electronics by VHF (162MHz)- PECVD, *G.Y. Yeom,* ***KiHyun Kim,*** *K.S. Kim, Y.J. Ji, J.S. Oh,* Sungkyunkwan University, Republic of Korea
9:40am	**SA+AC+MI-ThM6** New Instrumentation for Spin-integrated and Spin-resolved Momentum Microscopy – METIS and KREIOS, ***Thomas Schulmeyer,*** *M. Wietstruk, A. Thissen,* SPECS Surface Nano Analysis GmbH, Germany; *G. Schoenhense,* Johannes Gutenberg-Universität, Germany; *A. Oelsner,* Surface Concept GmbH, Germany; *C. Tusche,* Max Planck Institute for Microstructure Physics, Germany	**SE+PS+SS-ThM6** Printed Circuit Board Assembly- an Ensemble of Different Surface Energy Components and their Surface Modification, ***Shailendra Vikram Singh,*** *S. Woollard, G. Aresta, A.S. Brooks, G. Hennighan,* R&D Semblant Limited
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
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11:00am	**INVITED: SA+AC+MI-ThM10** X-ray Photon Correlation Spectroscopy Studies of Soft Matter and Biomaterials, ***Laurence B. Lurio,*** Northern Illinois University	**INVITED: SE+PS+SS-ThM10** Plasma Surface Engineering of Biomaterials, ***Paul K. Chu,*** City University of Hong Kong, Hong Kong
11:20am	Invited talk continues.	Invited talk continues.
11:40am	**INVITED: SA+AC+MI-ThM12** Forefront Applications of XPCS, ***Anders Madsen,*** European XFEL GmbH, Germany	**SE+PS+SS-ThM12** Control of Morphology and Adhesion of Silver Nanorods from Glancing Angle Physical Vapor Deposition through Plasma Modification of Substrate Surfaces, *S. Stagon,* ***Christopher Tenore,*** *J. White,* University of North Florida
12:00pm	Invited talk continues.	**SE+PS+SS-ThM13** Tuning the Properties of Plasma Polymer Varying the Substrate Temperature: a Step Toward the Fabrication of Micro/nano Pattern, ***Damien Thiry,*** University of Mons, Belgium; *N. Vinx, F.J. Aparicio,* University of Mons; *T. Godfroid, S. Deprez,* Materia Nova; *R. Snyders,* University of Mons, Belgium

	Surface Science Division **Room 25 - Session SS+EM+HC+MI-ThM** **Oxides: Structures and Reactions** **Moderators:** Valeria Lauter, Oak Ridge National Laboratory, Charles Sykes, Tufts University	**Thin Films Division** **Room 20 - Session TF+SE-ThM** **Control, Characterization, and Modeling of Thin Films I** **Moderators:** Hilal Cansizoglu, University of California, Davis, Tansel Karabacak, University of Arkansas at Little Rock
8:00am	**SS+EM+HC+MI-ThM1** Influence of Iron Doping on Cobalt Oxide Bilayers on Au(111): Toward a Model of Synergistic Catalytic Effect in Oxygen Evolution Reaction, ***Jonathan Rodriguez-Fernandez****, Z. Sun, J. Fester, J.V. Lauritsen,* Aarhus University, Denmark	**TF+SE-ThM1** *In Situ* Synchrotron Characterization Techniques Enabled Nanostructured Materials using ALD, ***Yu Lei,*** University of Alabama in Huntsville
8:20am	**SS+EM+HC+MI-ThM2** An Ordered Mixed Oxide Monolayer formed by Iron Segregation on Rutile-TiO_2(011), ***Sandamali Halpegamage,*** University of South Florida*; L. Bignardi, P. Lacovig,* Elettra-Sincrotrone Trieste, Italy*; A. Kramer,* University of South Florida*; Z. Wen, X. Gong,* East China University of Science and Technology, PR China*; S. Lizzit,* Elettra-Sincrotrone Trieste, Italy*; M. Batzill,* University of South Florida	**TF+SE-ThM2** Probing the Atomic Scale Structure of Polar Oxide Interfaces, ***Sanaaz Koohfar****, D.P. Kumah,* North Carolina State University
8:40am	**INVITED: SS+EM+HC+MI-ThM3** Growth and Chemistry of rutile IrO_2 Surfaces, ***Jason Weaver****, Z. Liang, T. Li, R. Rai,* University of Florida, Gainesville*; M. Kim, A. Asthagiri,* The Ohio State University	**TF+SE-ThM3** CVD Chemistry of Trimethylboron - Gas Phase Reactions and Surface Poisoning Effects, ***Henrik Pedersen****, L. Souqui, M. Imam,* Linköping University, Sweden*; R. Tonner,* Philipps Universität Marburg*; H. Högberg,* Linköping University, Sweden
9:00am	Invited talk continues.	**TF+SE-ThM4** Advancement in Characterizing Thick Coatings, Metal-Oxide Films, and Ceramic Materials*, J. Brim,* ***Fuhe Li,*** Air Liquide Electronics - Balazs NanoAnalysis
9:20am	**SS+EM+HC+MI-ThM5** Formation and Manipulation of Water Clusters on Bilayer ZnO Surface, ***Junseok Lee****, D.C. Sorescu, X. Deng,* National Energy Technology Laboratory	**INVITED: TF+SE-ThM5** *In Situ* Synchrotron-based Characterization of Noble Metal ALD Processes*, J. Dendooven,* ***Eduardo Solano****, R.K. Ramachandran, M.M. Minjauw,* Ghent University, Belgium*; A. Coati,* Synchrotron SOLEIL, France*; D. Hermida-Merino,* ESRF, France*; C. Detavernier,* Ghent University, Belgium
9:40am	**SS+EM+HC+MI-ThM6** Formation of Metastable Water Chains on Anatase TiO_2(101), ***Arjun Dahal****, Z. Dohnálek,* Pacific Northwest National Laboratory	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
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10:40am	**BREAK - Complimentary Coffee in Exhibit Hall**	**BREAK - Complimentary Coffee in Exhibit Hall**
11:00am	**SS+EM+HC+MI-ThM10** The Structure of Fe_2O_3(012) and its Reactivity to Water, ***Gareth Parkinson****, F. Kraushofer, Z. Jakub, M. Bichler, J. Hulva, M. Schmid, U. Diebold, P. Blaha,* TU Wien, Austria	**TF+SE-ThM10** *In-situ* FTIR Study of the Atomic Layer Deposition of Scandium Oxide Films using Bis(methylcyclopentadienyl)3,5-dimethylpyrazolatoscandium with Ozone and with Water, ***Rezwanur Rahman****, J.P. Klesko, A. Dangerfield,* University of Texas at Dallas*; J.-S. Lehn, C.L. Dezelah, R. Kanjolia,* EMD Performance Materials*; Y.J. Chabal,* University of Texas at Dallas
11:20am	**SS+EM+HC+MI-ThM11** Interaction of Water with anatase TiO_2(001)-1x4, ***Igor Beinik****, K.C. Adamsen, S. Koust, J.V. Lauritsen, S. Wendt,* Aarhus University, Denmark	**TF+SE-ThM11** Ultra Fast Compositional Depth Profile Analysis for Microelectronics Applications, ***Agnès Tempez****,* Horiba France S.a.s., France*; Y. Mazel, J.-P. Barnes, E. Nolot,* CEA/LETI-University Grenoble Alpes, France*; S. Legendre,* Horiba France S.a.s., France*; M. Chausseau,* HORIBA Instruments Incorporated
11:40am		**TF+SE-ThM12** Surface Termination of Fe_3O_4(111) Films Studied by CO Adsorption, ***Francesca Mirabella****, E. Zaki, F. Ivars, S. Shaikhutdinov, H.-J. Freund,* Fritz-Haber-Institut der Max-Planck-Gesellschaft, Germany*; X. Li, J. Paier, J. Sauer,* Humboldt Universität zu Berlin, Germany
12:20pm	**SSD MORT TRAUM AWARDS CEREMONY**	

	Thin Films Division **Room 21 - Session TF-ThM** **Area-selective Deposition and Infiltration Growth Methods** **Moderator:** James Fitz-Gerald, University of Virginia	**Tribology Focus Topic** **Room 10 - Session TR+AC+TF+VT-ThM** **Lubricant, Coatings, and Biotribology** **Moderator:** J. David Schall, Oakland University
8:00am	**INVITED: TF-ThM1** Thin-Film Encapsulation Based on ALD Technology for Organic Light-Emitting Diodes, ***Tony Maindron,*** CEA-Leti, France	**INVITED: TR+AC+TF+VT-ThM1** Superlubricity of Hard Compliant Carbon Coatings with Green Lubricants: Role of Surface Chemistry and Structural Changes, ***Maria-Isabel De Barros Bouchet,*** Ecole Centrale de Lyon - LTDS, France
8:20am	Invited talk continues.	Invited talk continues.
8:40am	**TF-ThM3** Vapor Phase Infiltration: Unifying the Research Community Around Processing Science Fundamentals, ***Mark Losego,*** Georgia Institute of Technology	**TR+AC+TF+VT-ThM3** Role of Deuterium and Hydrogen in the Physical Understanding of Nano-friction in a-C:H/D Thin Films, *F.G. Echeverrigaray, S.R. Sales de Mello, A.F. Michels,* UCS, Brazil*; F. Alvarez,* UNICAMP, Brazil*;* ***Carlos Figueroa,*** UCS, Brazil
9:00am	**TF-ThM4** Vapor Phase Infiltration (VPI) of Polymers with Intrinsic Microporosity, ***Emily McGuinness,*** *F. Zhang, R.P. Lively, M.D. Losego,* Georgia Institute of Technology	**TR+AC+TF+VT-ThM4** Imaging X-Ray Absorption Spectroscopic Investigation of the Mechanisms Behind the Environmental Dependence of the Tribological Properties of Amorphous Carbon Surfaces, ***Filippo Mangolini,*** University of Leeds, UK*; M. Koshigan,* Ecole Polytechnique Montréal, Canada*; M.H. Van Benthem, J.A. Ohlhausen,* Sandia National Laboratories*; J.B. McClimon, J. Hilbert,* University of Pennsylvania*; J. Fontaine,* Ecole Centrale de Lyon, France*; R.W. Carpick,* University of Pennsylvania
9:20am	**TF-ThM5** Organic Solvent Resistance of Hybrid Organic-Inorganic Films Synthesized via Vapor Phase Infiltration, ***Collen Leng,*** *M.D. Losego,* Georgia Institute of Technology	**INVITED: TR+AC+TF+VT-ThM5** Structure Evolution in Tribological Interfaces Studied by Multilayer Model Alloys, ***Martin Dienwiebel,*** *E. Cihan,* Karlsruhe Institute for Technology (KIT), Germany
9:40am	**TF-ThM6** Surface Selective CVD of Metallic Thin Films Using Inhibitor Molecules, ***Elham Mohimi,*** *Z. Zhang, S. Liu, B.B. Trinh,* University of Illinois at Urbana-Champaign*; J.L. Mallek,* MIT Lincoln Laboratory*; G.S. Girolami, J.R. Abelson,* University of Illinois at Urbana-Champaign	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-ThM10** Toward Area Selective Atomic Layer Deposition on Co, W and Ru Metal/Silicon Patterns, ***Dara Bobb-Semple,*** *S.F. Bent,* Stanford University	**INVITED: TR+AC+TF+VT-ThM10** Carbon, Carbon Everywhere, from Catalysts to Hip Implants, ***Laurence Marks,*** Northwestern University
11:20am	**TF-ThM11** Area-selective ALD of Ru by Combining an ABC-type ALD Process and O_2 Plasma Etching, *S.N. Chopra, M.F.J. Vos,* Eindhoven University of Technology, The Netherlands*; J.G. Ekerdt,* The University of Texas at Austin*; W.M.M. Kessels,* ***Adrie Mackus,*** Eindhoven University of Technology, The Netherlands	Invited talk continues.
11:40am	**TF-ThM12** Enhancing the Inherent Area-selective ALD of TiO_2 using BCl_3, ***Seung Keun Song,*** *P.C. Lemarie, G.N. Parsons,* North Carolina State University	**INVITED: TR+AC+TF+VT-ThM12** Tribology of Cellular Interfaces, ***Angela Pitenis,*** *J.M. Urueña, S.M. Hart, T.T. Hormel, C.S. O'Bryan, S.L. Marshall, K.D. Schulze, P.P. Levings, T.E. Angelini, W.G. Sawyer,* University of Florida
12:00pm	**TF-ThM13** Selective ALD by Intercalation of Etching Cycles in PEALD Process, ***Rémi Vallat,*** *R. Gassilloud,* CEA/LETI-University Grenoble Alpes, France*; C. Vallée,* Université Grenoble Alpes & CEA, LETI, Minatec Campus, Grenoble, France	Invited talk continues.

Thursday Afternoon, November 2, 2017

	2D Materials Focus Topic Room 15 - Session 2D+AS+SS-ThA Dopants, Defects, and Interfaces in 2D Materials **Moderator:** Aubrey Hanbicki, Naval Research Laboratory	Applied Surface Science Division Room 13 - Session AS+SS-ThA Advances in Instrumentation and Data Analysis **Moderators:** Thomas Grehl, ION-TOF GmbH, Germany, Bonnie June Tyler, Universität Münster
2:20pm	**2D+AS+SS-ThA1** Electron Irradiation-induced Defects and Phase Transformations in Two-dimensional Inorganic Materials, ***Arkady Krasheninnikov,*** Helmholtz Zentrum Dresden-Rossendorf, Germany	**AS+SS-ThA1** Submicron Spot Sampling Resolution in Thermal Desorption Atomic Force Microscopy - Mass Spectrometry Via Rapid Heating Functions, *S. Somnath, S. Jesse,* ***Gary Van Berkel,*** *S.V. Kalinin, O.S. Ovchinnikova,* Oak Ridge National Laboratory
2:40pm	**2D+AS+SS-ThA2** Key Role of Rotated Domains in Oxygen Intercalation at Graphene on Ni(111), ***Luca Bignardi,*** *P. Lacovig, M. Dalmiglio,* Elettra-Sincrotrone Trieste, Italy*; F. Orlando,* Paul Scherrer Institut (PSI), Switzerland*; A. Ghafari,* Helmholtz-Zentrum Berlin, Germany*; L. Petaccia,* Elettra-Sincrotrone Trieste, Italy*; A. Baraldi,* University of Trieste, Italy*; R. Larciprete,* Istituto dei Sistemi Complessi - CNR, Italy*; S. Lizzit,* Elettra-Sincrotrone Trieste, Italy	
3:00pm	**INVITED: 2D+AS+SS-ThA3** Atomic Structure of Defect and Dopants in 2D Semiconductor Monolayer MoS_2 and WS_2, ***Jamie Warner,*** University of Oxford, UK	**INVITED: AS+SS-ThA3** Data Analysis in Thin Film Characterization: Learning More With Physical Models, ***Lev Gelb,*** *A.V. Walker,* University of Texas at Dallas
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**2D+AS+SS-ThA6** Interaction of an Energetic Ar Molecular Cluster Beam with Graphene, ***Songkil Kim,*** *A.V. Ievlev, J. Jakowski, I. Vlassiouk, M.J. Burch, C.C. Brown, A. Belianinov, B.G. Sumpter, S. Jesse, O.S. Ovchinnikova,* Oak Ridge National Laboratory	**INVITED: AS+SS-ThA6** Advanced Analysis of XPS and ToF-SIMS Data, ***Matthew Linford,*** *S. Chatterjee, B. Singh,* Brigham Young University*; N. Gallagher,* Eigenvector Inc.*; M.H. Engelhard,* EMSL, Pacific Northwest National Laboratory
4:20pm	**2D+AS+SS-ThA7** Efficient and Low-Damage N-doping of Graphene by Nitrogen Late-Afterglow Plasma Treatment, ***Xavier Glad,*** *G. Robert-Bigras, P. Levesque, R. Martel, L. Stafford,* Université de Montréal, Canada	Invited talk continues.
4:40pm	**2D+AS+SS-ThA8** Exploring the Electronic Signature of Disordered Monolayer MoS_2, ***Chinedu Ekuma,*** *D. Gunlycke,* Naval Research Laboratory	**AS+SS-ThA8** Using the Auger D-Parameter to Identify Polyatomic Molecular Species, ***Sabrina Tardio,*** *P.J. Cumpson,* NEXUS, Newcastle University, UK
5:00pm	**INVITED: 2D+AS+SS-ThA9** Heterogeneity in 2D Materials: From Localized Defects, Isoelectronic Doping to Macroscopic Heterostructures, ***Kai Xiao,*** *X. Li, M. Mahjouri-Samani, M.-W. Lin, L. Liang, A. Oyedele,* Oak Ridge National Laboratory*; M. Tian,* University of Tennessee*; A.A. Puretzky, J. Idrobe, M. Yoon, B.G. Sumpter,* Oak Ridge National Laboratory*; G. Duscher,* University of Tennessee*; C.M. Rouleau, D.B. Geohegan,* Oak Ridge National Laboratory	**AS+SS-ThA9** XPS Analysis of Multilayer HfO_2 Using Hard and Soft X-rays, ***Jennifer Mann,*** Physical Electronics*; R. Inoue, H. Yamazui, K. Watanabe,* ULVAC-PHI, Japan*; J. Newman,* Physical Electronics
5:20pm	Invited talk continues.	**AS+SS-ThA10** Novel Systems Toward Ambient Pressure Photoemission Spectroscopy, ***Lukasz Walczak,*** PREVAC, Poland
5:40pm	**2D+AS+SS-ThA11** Evidence of a One-dimensional Metal in Twin-grain Boundaries of $MoSe_2$, ***Horacio Coy Diaz,*** *M. Batzill,* University of South Florida	**AS+SS-ThA11** Fabrication and Characterization of Heusler-Based Fe-Mn-Ge Epitaxial Films, *B.D. Clark, N. Naghibolashrafi, S. Gupta, J. Jones, P.R. LeClair, A. Gupta,* ***Gary Mankey,*** University of Alabama

	Biomaterial Interfaces Division **Room 12 - Session BI+AS-ThA** **Biomolecules and Biophysics at Interfaces** **Moderators:** Stephanie Allen, The University of Nottingham, UK, Markus Valtiner, TU Bergakademie Freiberg	**Electronic Materials and Photonics Division** **Room 14 - Session EM+NS-ThA** **Wide and Ultra-wide Band Gap Materials for Electronic Devices: Growth, Modeling, and Properties** **Moderators:** Michael Filler, Georgia Institute of Technology, Rachael Myers-Ward, U.S. Naval Research Laboratory
2:20pm	**INVITED: BI+AS-ThA1** Engineering and Imaging Excitons for Brain Imaging of Modulatory Neurotransmitters, *M. Landry,* ***Abraham Beyene,*** University of California at Berkeley	**EM+NS-ThA1** Synthesis of β-Ga2O3 Thin Films on SiC by Molecular Beam Epitaxy, ***Neeraj Nepal,*** *D.S. Katzer, D.F. Storm, M.T. Hardy, B.P. Downey, D.J. Meyer,* U.S. Naval Research Laboratory
2:40pm	Invited talk continues.	**EM+NS-ThA2** Growth and Characterization of α-, β-, and ε-Ga_2O_3 Epitaxial Layers, ***Lisa Porter,*** *Y. Yao, L.A.M. Lyle,* Carnegie Mellon University*; S. Okur, G.S. Tompa, T. Salagaj, N. Sbrockey,* Structured Materials Industries, Inc.
3:00pm	**BI+AS-ThA3** Neurotrophin-like Peptides at the Interface with Gold Nanoparticles As New Nanoplatform for CNS Disorders, ***Cristina Satriano,*** *P. Di Pietro, N. Caporarello, C.D. Anfuso, G. Lupo,* University of Catania, Italy*; A. Magrì,* National Council of Research (IBB-CNR), Italy*; D. La Mendola,* University of Pisa, Italy*; E. Rizzarelli,* University of Catania, Italy	**INVITED: EM+NS-ThA3** Ultra-wide-bandgap Ga_2O_3 Material and Electronic Device Technologies, ***Masataka Higashiwaki,*** *M.H. Wong,* National Institute of Information and Communications Technology, Japan*; K. Konishi,* Tokyo University of Agriculture and Technology, Japan*; Y. Nakata, T. Kamimura,* National Institute of Information and Communications Technology, Japan*; K. Sasaki, K. Goto,* Tamura Corporation, Japan*; A. Takeyama, T. Makino, T. Ohshima,* National Institutes for Quantum and Radiological Science and Technology, Japan*; H. Murakami, Y. Kumagai,* Tokyo University of Agriculture and Technology, Japan*; A. Kuramata, S. Yamakoshi,* Tamura Corporation, Japan
3:20pm		Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**BI+AS-ThA6** Controlling and Probing the Orientation of Immobilized Protein G B1 on Gold Nanoparticles Using Time of Flight Secondary Ion Mass Spectrometry and X-ray Photoelectron Spectroscopy, ***Yung-Chen Wang,*** *D.G. Castner,* University of Washington, Seattle	**EM+NS-ThA6** Reactive Magnetron Sputtering of Titanium Nitride and Titanium Aluminum Nitride on Lithium Niobate for Electronic and Opto-Electronic Applications, ***Amber Reed,*** *H.A. Smith, D.C. Abeysinghe, P.J. Shah, L. Grazulis, M.J. Hill, M.E. McConney, B.M. Howe, A.M. Urbas,* Air Force Research Laboratory
4:20pm	**BI+AS-ThA7** Angiogenin Peptides and Gold Nanoparticles for Modulated Angiogenesis Processes, *L.M. Cucci, C. Satriano, E. Rizzarelli,* University of Catania, Italy*;* ***Diego La Mendola,*** University of Pisa, Italy	**EM+NS-ThA7** Growth and Property Analysis of Doped GaN-GaAlN Heterostructures on Low- and High-temperature AlN/Sapphire Templates, ***Nikolaus Dietz,*** *B.G. Cross, M. Vernon,* Georgia State University*; R. Collazo, R. Kirste, S. Mita, Z. Sitar,* North Carolina State University
4:40pm	**BI+AS-ThA8** Non-diffuse Parts of Electric Double Layers: What and How Can We Learn About Them?, ***Christian Weber,*** *M. Markus,* TU Bergakademie Freiberg, Germany	**INVITED: EM+NS-ThA8** A Thermodynamic Supersaturation model for the Growth of AlGaN by MOCVD, ***Ramón Collazo,*** *S. Washiyama, I. Bryan,* North Carolina State University*; P. Reddy, S. Mita,* Adroit Materials Inc.*; Z. Sitar,* North Carolina State University
5:00pm	**BI+AS-ThA9** Exploiting Protein-Polyelectrolyte Interactions to Control and Tune Protein Immobilization at Interfaces. Applications in Biocatalysis and Separation Technology, *C. Dupont-Gillain, A. Bratek-Skicki,* ***Aurélien vander Straeten,*** UC Louvain, Belgium	Invited talk continues.
5:20pm	**BI+AS-ThA10** Determination of Confined Molecular Structure by using X-ray-Surface Force Apparatus (XSFA) Study in Bio-interface Application, ***Hsiu-Wei Cheng,*** *M. Valtiner,* Technical University Freiberg, Germany*; C. Merola,* Max-Planck Institute for Iron Research, Germany*; K. Schwenzfeier,* Technical University Freiberg, Germany*; M. Mezger, H. Weiss,* Max-Planck Institute for Polymer Research, Germany	**EM+NS-ThA10** Anomalous Hall Effect in MOCVD-grown Gadolinium-doped Gallium Nitride, *V.G. Saravade, P. Patel, C. Ferguson, K. Yunghans, A. Ghods, C. Zhou,* ***Ian Ferguson,*** Missouri University of Science and Technology
5:40pm	**BI+AS-ThA11** The Mechanism of Diatom Silica Precipitation Studied at the Molecular Level by Sum Frequency Generation Spectroscopy, *H. Lutz,* MPI for Polymer Research, Germany*; V. Jaeger,* MPI for Biophysical Chemistry, Germany*; L. Schmüser,* University of Washington*; M. Bonn,* MPI for Polymer Research, Germany*; J. Pfaendtner,* University of Washington*;* ***Tobias Weidner,*** Aarhus University, Denmark	**EM+NS-ThA11** Valence and Conduction Band Offsets of Al_2O_3, $LaAl_2O_3$, AZO and ITO with Ga_2O_{-3}, ***Patrick Carey IV,*** *F. Ren, D. Hays, B. Gila, S.J. Pearton,* University of Florida*; S. Jang,* Dankook University, South Korea*; A. Kuramata,* Tamura Corporation, Japan
6:00pm	**BI+AS-ThA12** Direct Quantification of the Hydrophobic-to-Hydrophilic Transition of Interaction Forces, ***Laila Moreno Ostertag,*** *T. Utzig, P. Stock,* Max Planck Institute for Iron Research, Germany*; M. Valtiner,* TU Bergakademie Freiberg, Germany	**EM+NS-ThA12** *In Situ* Plasma Emission Spectroscopy of InN/GaN Heterostructures Grown by MEPA-MOCVD, ***Daniel Seidlitz,*** *B.G. Cross, Y. Abate,* Georgia State University*; A. Hoffmann,* Technical University of Berlin, Germany*; N. Dietz,* Georgia State University

	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic **Room 24 - Session HC+SS-ThA** **Combined Experimental and Theoretical Explorations of the Dynamics of Heterogeneously Catalyzed Reactions** **Moderator:** L. Gabriela Avila-Bront, College of the Holy Cross	**Advanced Ion Microscopy Focus Topic** **Room 7 & 8 - Session HI+NS+TR-ThA** **Novel Beam Induced Surface Analysis and Nano-Patterning** **Moderators:** Anne Delobbe, Orsay Physics, Shinichi Ogawa, National Institute of Advanced Industrial Science and Technology (AIST)
2:20pm	**INVITED: HC+SS-ThA1** Building the World's Greatest Microscope: Revealing the Atomic Scale Dynamics of Surface Chemistry, *A. Wodtke,* Max Planck Institute for Biophysical Chemistry, Germany; *O. Buenermann, H. Jiang, Y. Dorenkamp,* Institute for Physical Chemistry University of Goettingen, Germany; *A. Kandratsenka, S.M. Janke,* ***Daniel Auerbach,*** Max Planck Institute for Biophysical Chemistry, Germany	**INVITED: HI+NS+TR-ThA1** Multimodal Chemical Imaging of Nanoscale Interfacial Phenomena on a Combined HIM-SIMS Platform, ***Olga Ovchinnikova,*** Oak Ridge National Laboratory
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**HC+SS-ThA3** Calibrating Electronic Structure Calculations – A Joint Experimental-Theoretical Approach, ***Arthur Utz,*** *E.K. Dombrowski, E. High,* Tufts University	**HI+NS+TR-ThA3** Characterizing Surface Immobilized Antibodies using ToF-SIMS and Multivariate Analysis, *N.G. Welch,* CSIRO Manufacturing, Australia; *R.M.T. Madiona,* La Trobe University, Australia; *J.A. Scoble, B.W. Muir,* CSIRO Manufacturing, Australia; ***Paul Pigram,*** La Trobe University, Australia
3:20pm	**HC+SS-ThA4** CO_2, CO and H_2O on Copper Surfaces: A HPXPS Study Supported by DFT Calculations, *A. Regoutz, G. Kerherve, J.M. Kahk, J. Lischner,* ***David Payne,*** Imperial College London, UK	
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: HC+SS-ThA6** Dissociative Adsorption of Methane on Transition Metal Surfaces and Supported Atoms from First Principles Calculations, ***Heriberto Fabio Busnengo,*** CONICET and Universidad Nacional de Rosario, Argentina	**INVITED: HI+NS+TR-ThA6** Single-nanometer Functional Graphene Devices Patterned with Helium Ion Beam, ***Hiroshi Mizuta,*** *M.E. Schmidt, T. Kanzaki,* Japan Advanced Institute of Science and Technology (JAIST), Japan; *S. Ogawa,* National Institute of Advanced Industrial Science and Technology (AIST), Japan; *M. Muruganathan,* Japan Advanced Institute of Science and Technology (JAIST), Japan
4:20pm	Invited talk continues.	Invited talk continues.
4:40pm	**HC+SS-ThA8** Methane Steam Reforming: Using External Electric Fields to Enhance the Catalytic Performance of Ni-based Catalysts, ***Fanglin Che,*** University of Toronto, Canada; *J. Gray, S. Ha, J.-S. McEwen,* Washington State University	**HI+NS+TR-ThA8** Gas Flow Optimization of Gas Induced Deposition in the Helium Ion Microscope, ***Emile Van Veldhoven,*** *M.C. Doelman,* TNO, Netherlands; *P.F.A. Alkemade,* TU Delft, Netherlands; *D.J. Maas,* TNO, Norfolk Island
5:00pm	**HC+SS-ThA9** Mullite Support Boosts Active Oxygen Atoms for Enhanced Platinum Sub-nanometer Clusters Catalysis, ***Xiao Liu,*** *J.M. Cai, B. Shan, R. Chen,* Huazhong University of Science and Technology, China	**HI+NS+TR-ThA9** Monte Carlo Simulation Study of Gas Assisted Focused Ion Beam Induced Etching, ***Kyle Mahady,*** *P.D. Rack,* University of Tennessee; *S. Tan,* Intel Corporation; *Y. Greenzweig,* Intel Corporation, Israel; *R.H. Livengood,* Intel Corporation; *A. Raveh,* Intel Corporation, Israel
5:20pm	**HC+SS-ThA10** Calorimetric Energies of Small Adsorbates on Ni(111) and NiO(111) Surfaces, with Comparison to Pt(111) to Explain Differences in Catalytic Activity between Ni vs Pt, ***Wei Zhao,*** *S. Carey, Z. Mao, S. Morgan, C. Campbell,* University of Washington	**HI+NS+TR-ThA10** Direct Write of Complex 3-Dimensional Structures with Helium Ion Microscopy, ***Matthew Burch,*** *A.V. Ievlev,* Oak Ridge National Laboratory; *M.G. Stanford, B. Lewis,* University of Tennessee; *X. Sang, S. Kim, J. Fowlkes,* Oak Ridge National Laboratory; *P.D. Rack,* University of Tennessee; *R.R. Unocic, A. Belianinov, O.S. Ovchinikova,* Oak Ridge National Laboratory
5:40pm	**HC+SS-ThA11** Defect Formation on MoS_2 via Methanol to Methoxy Conversion, ***Prescott Evans,*** *H.K. Jeong, S. Beniwal, P.A. Dowben,* University of Nebraska - Lincoln; *D. Le, T.S. Rahman,* University of Central Florida	**HI FLASH NETWORKING SESSION:** **ETSUO MAEDA,** The University of Tokyo, Japan (**HI-ThP1)** **LUCILLE GIANNUZZI**, EXpressLO LLC (**HI-ThP2)**

	Manufacturing Science and Technology Group **Room 18 - Session MS-ThA** **Working with Government Labs and User Facilities** **Moderators:** Bridget Rogers, Vanderbilt University, Mikel Holcomb, West Virginia University	**Nanometer-scale Science and Technology Division** **Room 19 - Session NS+SP+SS-ThA** **Advances in Scanning Probe Microscopy** **Moderator:** Sergei Kalinin, Oak Ridge National Laboratory
2:20pm	**MS-ThA1** Tackling Fundamental and Applied Problems Using EMSL Capabilities - Examples of Applying Surface and Interface Sensitive Tools to Biological Systems, *C.R. Anderton, D.R. Baer, M.H. Engelhard,* ***Scott Lea,*** Pacific Northwest National Laboratory	**NS+SP+SS-ThA1** Mapping Stress in Polycrystals with sub-10 nm Spatial Resolution, ***Celia Polop,*** Universidad Autónoma de Madrid, Spain*; E. Vasco, A. Perrino, R. Garcia,* Instituto de Ciencia de Materiales de Madrid, CSIC, Spain
2:40pm	**MS-ThA2** Opportunities for Users at the Center for Nanoscale Materials, ***Kathleen Carrado Gregar,*** Argonne National Laboratory	
3:00pm	**MS-ThA3** The CNST NanoFab at NIST: *Nanofabrication for US Commerce, V.K. Luciani,* ***Chen Zhang,*** National Institute of Standards and Technology, Center for Nanoscale Science and Technology	**NS+SP+SS-ThA3** XTIP – A Dedicated Beamline for Synchrotron X-ray Scanning Tunneling Microscopy, *N. Shirato, M. Fisher, R. Reininger, S.W. Hla,* ***Volker Rose,*** Argonne National Laboratory
3:20pm	**MS-ThA4** Research Opportunities at the Cornell NanoScale Science and Technology Facility, ***Michael Skvarla,*** Cornell NanoScale Science and Technology Facility	**NS+SP+SS-ThA4** Kelvin Probe Force Microscopy for High-Resolution Imaging of Hydrogen in Steel Alloys, ***Joy McNamara****, P. Korinko, M. Morgan, A. Duncan,* Savannah River National Laboratory
3:40pm	**BREAK**	**BREAK**
4:00pm	**MS-ThA6** Shyne - Allowing Users to Leverage $800 Million in Nanotechnology Research, Education, Infrastructure & Facilities at Northwestern and the University of Chicago, ***Peter Duda,*** University of Chicago*; B. Meyers,* Northwestern University	**INVITED: NS+SP+SS-ThA6** Video-Rate Atomic Force Microscopy, ***Roger Proksch,*** Asylum Research
4:20pm	**MS-ThA7** Science Opportunities with Soft X-Rays for Users at the Advanced Light Sources, ***Zahid Hussain,*** Advanced Light Source, Lawrence Berkeley National Laboratory	Invited talk continues.
4:40pm	**MS-ThA8** Research Opportunities and How to Become a User at the Center for Functional Nanomaterials, ***Samuel Tenney,*** Brookhaven National Laboratory	**NS+SP+SS-ThA8** Novel AFM Probes Enable Highly Sensitive Chemical and Thermal Characterisation at the Nano Scale, ***Georg Ramer****, J. Chae, S. An,* NIST Center for Nanoscale Science and Technology / University of Maryland*; V.A. Aksyuk, A. Centrone,* NIST Center for Nanoscale Science and Technology
5:00pm	**MS-ThA9** Opportunities at the Center for Nanophase Materials Sciences, ***Arthur Baddorf,*** Oak Ridge National Laboratory	**NS+SP+SS-ThA9** Photoinduced Thermal Desorption Coupled with Atmospheric Pressure Chemical Ionization Mass Spectrometry for Multimodal Imaging, ***Matthias Lorenz****, C.C. Brown,* University of Tennessee*; R. Proksch, M. Viani, A. Labuda,* Oxford Instruments*; S. Jesse, O.S. Ovchinnikova,* Oak Ridge National Laboratory
5:20pm	**MS-ThA10** Research Opportunities at the National High Magnetic Field Laboratory, ***Eric Palm,*** National High Magnetic Field Laboratory	**NS+SP+SS-ThA10** Extending the Spectral Range of the Photo-Thermal Induced Resonance (PTIR) Technique from Infra-red to Visible Wavelength Range in the Top-Down Illumination Mode, ***Mohit Tuteja,*** CNST/NIST, University of Maryland at College Park*; A. Katzenmeyer, A. Centrone,* CNST/NIST
5:40pm	**PANEL DISCUSSION**	**NS+SP+SS-ThA11** Synchrotron X-ray Scanning Tunneling Microscopy Investigations of Magnetic and Electronic Properties of Nanoscale Metal-Clusters, ***Hao Chang,*** Ohio University and Argonne National Laboratory*; N. Shirato, M. Cummings,* Argonne National Laboratory*; H. Kersell,* Ohio University and Argonne National Laboratory*; D. Rosenmann, J.W. Freeland, V. Rose,* Argonne National Laboratory*; S.W. Hla,* Ohio University and Argonne National Laboratory

	Plasma Science and Technology Division **Room 23 - Session PS+TF-ThA** **Plasma Enhanced ALD** **Moderators:** Steven George, University of Colorado at Boulder, Mingmei Wang, TEL Technology Center, America, LLC	**Plasma Science and Technology Division** **Room 22 - Session PS+VT-ThA** **Plasma Diagnostics, Sensors and Control** **Moderators:** Aranka Derzsi, Wigner Research Centre for Physics, Hungarian Academy of Sciences, Hungary, Mohan Sankaran, Case Western Reserve University
2:20pm	**PS+TF-ThA1** Mechanical, Physical, and Electrical Properties of Plasma-Enhanced Atomic Layer Deposition of Vanadium Nitride using Tetrakis(Dimethylamido)Vanadium and Nitrogen Plasma, ***Mark Sowa,*** Ultratech, Inc.; *L. Ju, N.C. Strandwitz,* Lehigh University; *A.C. Kozen,* US Naval Research Laboratory; *G. Zeng, B.A. Krick,* Lehigh University	**PS+VT-ThA1** Quantitative Analysis of Composition and Temperature of Semiconductor Processing Plasmas via Terahertz Spectroscopy, ***Yaser Helal,*** *C.F. Neese, F.C. De Lucia,* The Ohio State University; *A. Niabati, M. Johnson, B. Craver, P.J. Stout, M.D. Armacost,* Applied Materials, Inc.
2:40pm	**PS+TF-ThA2** Optimizing Process Parameters for Plasma Assisted Atomic Layer Deposition, ***David Boris,*** *V.D. Wheeler,* Naval Research Laboratory; *V.R. Anderson,* ASEE (residing at NRL); *N. Nepal,* Naval Research Laboratory; *S.G. Rosenberg,* ASEE Postdoctoral Fellow; *A.C. Kozen,* ASEE (residing at NRL); *J.K. Hite, S.G. Walton,* Naval Research Laboratory; *C.R. Eddy, Jr.,* U.S. Naval Research Laboratory	**PS+VT-ThA2** *In Situ* Measurement of Electron Emission Yields from Plasma-Exposed Surfaces, ***Mark Sobolewski,*** National Institute of Standards and Technology
3:00pm	**PS+TF-ThA3** Tuning of Optical and Structural Properties of ZnO Deposited by Room Temperature-plasma Assisted Atomic Layer deposition, ***Alberto Perrotta,*** *J. Pilz, A.M. Coclite,* Graz University of Technology, Austria	**INVITED: PS+VT-ThA3** Studying Dynamic and Structured Plasma Systems Utilizing Laser-Collision Induced Fluorescence, ***Edward Barnat,*** *A. Fierro,* Sandia National Laboratories
3:20pm	**PS+TF-ThA4** Influence of Plasma Power on the Si Solar Cell Passivation Properties of Al_2O_3 Thin Films deposited by Atomic Layer Deposition at 90 °C, *Z. Zhu,* Beneq Oy, Finland; *P. Sippola,* Aalto University, Finland; ***Emma Salmi,*** Beneq Oy, Finland	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**PS+TF-ThA6** Optimizing MoO_3 Plasma-enhanced ALD Thin Films for use in Controllable 2D Material Synthesis, ***Brittney Burant,*** MIT Lincoln Laboratory	**PS+VT-ThA6** Effect of Ion Inertia on Ion Energy Broadness on Biased Electrode in Dual Frequency Capacitively Coupled Argon Plasma, ***Yunchang Jang,*** *H.-J. Roh, N.-K. Kim, S. Ryu, G.-H. Kim,* Seoul National University, Republic of Korea
4:20pm	**PS+TF-ThA7** Plasma ALD of Fluorides: Process Characterization and *In Situ* Study of AlF_3 ALD, ***Harm Knoops,*** Oxford Instruments Plasma Technology, UK; *M.F.J. Vos, W.M.M. Kessels, A.J.M. Mackus,* Eindhoven University of Technology, The Netherlands	**PS+VT-ThA7** Collision Frequency Estimation using Microwave Hairpin Resonator Probes, *D. Peterson,* ***Steven Shannon,*** North Carolina State University
4:40pm	**PS+TF-ThA8** Ion Energy Control During Remote Plasma ALD for Tuning Material Properties of Transition Metal Nitrides, ***Tahsin Faraz,*** Eindhoven University of Technology, Netherlands; *H.C.M. Knoops,* Oxford Instruments Plasma Technology, UK; *S. Karwal, M.A. Verheijen, A.A. van Helvoirt,* Eindhoven University of Technology, Netherlands; *D.M. Hausmann, J. Henri,* Lam Research Corporation; *M. Creatore, W.M.M. Kessels,* Eindhoven University of Technology, Netherlands	**INVITED: PS+VT-ThA8** In-Situ Diagnostics of Processing Plasma and Semiconductor Films for High-Efficiency Silicon Hetero-Junction Solar Cells, ***Shota Nunomura,*** National Institute of Advanced Industrial Science and Technology (AIST), Japan
5:00pm	**PS+TF-ThA9** Understanding the Challenges in Atomic Layer Deposition of SiN_x through Identification of the Surface Reaction Mechanisms, ***Rafaiel Ovanesyan****, Colorado School of Mines; *D.M. Hausmann,* Lam Research Corporation; *S. Agarwal,* Colorado School of Mines	Invited talk continues.
5:20pm	**PS+TF-ThA10** First-Principles Understanding and Kinetic Monte Carlo Analysis of Reaction Mechanisms in Plasma Enhanced Atomic Layer Deposition of Silicon Nitride, *G. Hartmann,* University of Texas at Austin; ***Peter Ventzek,*** *J.P. Zhao,* Tokyo Electron America; *T. Iwao, K. Ishibashi,* Tokyo Electron Tohoku Limited; *G. Hwang,* University of Texas at Austin	**PS+VT-ThA10** Towards *In Situ* Microwave Imaging in Plasmas, *A. Tselev,* University of Aveiro, Portugal; *J. Fagan,* NIST; ***Andrei Kolmakov,*** CNST/NIST
5:40pm	**PS+TF-ThA11** *High Quality Crystalline AlN Films Produced by PEALD with Microwave ECR Plasma below 200 ºC* , ***Jesse Kalliomäki,*** *V. Kilpi, T. Malinen,* Picosun Oy, Finland; *H. Enami, N. Mise,* Hitachi High-Technologies Corp., Japan; *H. Hamamura, T. Usui,* Hitachi R&D Group, Japan	**PS+VT-ThA11** Probe System for Radical Species Characterization in Vacuum with Centimeter Spatial Resolution, ***Ivan Shchelkanov,*** *D. Qerimi, A. Hayes, J.T. Wegner, D.N. Ruzic,* University of Illinois at Urbana-Champaign
6:00pm		**PS+VT-ThA12** Spatiotemporal Evolution of RF Magnetic Field and Plasma Current in a Very High Frequency Plasma Source, ***Jianping Zhao,*** *P.L.G. Ventzek, B. Lane, C. Campbell,* Tokyo Electron America; *T. Iwao, K. Ishibashi,* Tokyo Electron Limited

* **TFD James Harper Award Finalist**

Thursday Afternoon, November 2, 2017

	Surface Science Division Room 25 - Session SS+AS+EM-ThA Semiconductor Surfaces **Moderator:** James Ohlhausen, Sandia National Laboratories	Thin Films Division Room 21 - Session TF+MI+NS-ThA ALD and Nanostructures **Moderators:** Christophe Vallee, LTM, Univ. Grenoble Alpes, CEA-LETI, France, Richard Vanfleet, Brigham Young University
2:20pm	**INVITED: SS+AS+EM-ThA1** Visualizing the Nanoscale Electrostatics of Material Interfaces, ***Vincent LaBella***, SUNY Polytechnic Institute; *W. Nolting,* University at Albany, SUNY	**INVITED: TF+MI+NS-ThA1** Coating and Infilling 3D Geometries by Low-T CVD : HfB_2 throughout 0.5 mm Thick CNT Forests, ***John Abelson***, University of Illinois at Urbana-Champaign
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm		**TF+MI+NS-ThA3** Varying Penetration Depths in ALD on High Aspect Ratio Carbon Nanotube Forests, ***David Kane***, *RC. Kane, R.R. Vanfleet,* Brigham Young University
3:20pm	**SS+AS+EM-ThA4** Reactions of Benzoquinone with Hydrogen Terminated Silicon Surfaces, ***Meixi Chen***, *J.H. Hack, A. Iyer, R.L. Opila,* University of Delaware	**TF+MI+NS-ThA4** NiOx Decorated Platinum Nanoparticles Via Atomic Layer Deposition for Enhanced Sintering Resistance, ***Jiaming Cai***, *K. Cao, M. Gong, B. Shan, R. Chen,* Huazhong University of Science and Technology, PR China
3:40pm	**BREAK**	**BREAK**
4:00pm	**SS+AS+EM-ThA6** Uniform Reactivity and Bonding between Si(100) and GaAs(100) Wafers using Low Temperature (<180°C) Wet NanoBonding™ Optimized by Surface Energy Analysis, ***Nicole Herbots***, *R. Islam,* Cactus Materials	**TF+MI+NS-ThA6** Atomic Layer Deposition of HfO_2/Al_2O_3 Nanolaminates on Single-crystal GaN and Ga_2O_3: Investigation of Device Degradation in Power Semiconductor Devices, ***David Mandia***, *A. Yanguas-Gil, J.A. Libera, J.W. Elam,* Argonne National Laboratory
4:20pm	**SS+AS+EM-ThA7** Evaluation of Silicon Oxidation in Downstream Plasma Photoresist Strip with Reducing Chemistries, ***Tongchuan Gao***, *V. Vaniapura,* Mattson Technology, Inc.	**TF+MI+NS-ThA7** Atomic Layer Deposition Enabled Synthesis of Multiferroic Composite Nanostructures, ***Jeffrey Chang****, University of California at Los Angeles; *A. Rosenberg,* Stanford University; *A. Buditama,* University of California at Los Angeles; *E. Jin, L. Kornblum, C. Ahn,* Yale University; *S.H. Tolbert,* University of California at Los Angeles; *K.A. Moler,* Stanford University; *J.P. Chang,* University of California at Los Angeles
4:40pm	**SS+AS+EM-ThA8** Surface-sensitive Measurement of Dielectric Screening via Atom and Electron Manipulations, ***Daejin Eom***, *E. Seo, J.-Y. Koo,* Korea Research Institute of Standards and Science, Republic of Korea	**INVITED: TF+MI+NS-ThA8** Recent Developments in the Analysis of ALD/CVD Thin Film Conformality, ***Riikka Puurunen***, Aalto University, School of Chemical Engineering, Finland
5:00pm	**SS+AS+EM-ThA9** The Effects of UV Irradiation, Stage Temperature, and Radical Flux on UV-Ozone Treatment using High-aspect-Ratio Cave Structures, ***Shogo Uehara***, *T. Sugawara, P. Wood,* SAMCO Inc.	Invited talk continues.
5:20pm	**SS+AS+EM-ThA10** Density Functional Theory Study of the Effects of Surface Defects on the Interactions of Cl and α-Fe_2O_3 (0001) Surface, ***Qin Pang***, *H. DorMohammadi, O.B. Isgor, L. Árnadóttir,* Oregon State University	**TF+MI+NS-ThA10** Spatial Atomic Layer Deposition Reactor Design for Nano-laminates, *X.L. Wang,* ***Yun Li***, *J.L. Lin, J.M. Cai, R. Chen,* Huazhong University of Science and Technology, PR China

* **TFD James Harper Award Finalist**

Thursday Afternoon, November 2, 2017

	Thin Films Division Room 20 - Session TF+MI-ThA Control, Characterization, and Modeling of Thin Films II **Moderators:** Subhadra Gupta, University of Alabama, Angel Yanguas, Argonne National Laboratory	Vacuum Technology Division Room 9 - Session VT-ThA Surface Science for Accelerators **Moderators:** Jay Hendricks, NIST, Alan Van Drie, Tri Alpha Energy, Inc.
2:20pm	**TF+MI-ThA1** *In Situ* Monitoring of the Growth of Metallic, Nitride and Oxide Thin Films Prepared by Pulsed Laser Deposition, ***Michal Novotny***, *J. Bulir, E. Maresova,* Institute of Physics ASCR, Czech Republic; *P. Fitl, J. Vlcek,* University of Chemistry and Technology Prague, Czech Republic; *M. Vondracek, L. Fekete, J. Lancok,* Institute of Physics ASCR, Czech Republic; *N. Abdellaoui, A. Pereira,* University of Lyon, Université Claude Bernard Lyon, France	**INVITED: VT-ThA1** Adsorption/Desorption from Amorphous Carbon Coating at Cryogenic Temperatures, ***Anne-Laure Lamure***, *V. Baglin, P. Chiggiato, B. Henrist,* CERN, Switzerland
2:40pm	**TF+MI-ThA2** Perpendicular Magnetic Anisotropy in CoxPd100-x Alloys for Perpendicular Magnetic Tunnel Junctions and Bit Patterned Media, ***Subhadra Gupta***, *B.D. Clark, A.G. Owen,* University of Alabama	Invited talk continues.
3:00pm	**INVITED: TF+MI-ThA3** Combining Dynamic Shadowing Growth and Colloidal Monolayer to Design Plasmonic Metamaterials, ***Yiping Zhao***, University of Georgia	**INVITED: VT-ThA3** Heavy ion-induced Desorption and its Impact on Next Generation Accelerators, ***Markus Bender***, *H. Kollmus,* GSI Helmholtzzentrum für Schwerionenforschung GmbH, Germany; *E. Mahner,* CERN, Switzerland
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: TF+MI-ThA6** Physical Vapor Deposition of Emerging Resistive Memories, ***Mahendra Pakala***, Applied Materials, Inc.	**VT-ThA6** Outgassing Behavior of Different Oxide Ceramic Materials, ***Katharina Battes***, *C. Day, V. Hauer,* Karlsruhe Institute of Technology (KIT), Germany
4:20pm	Invited talk continues.	
4:40pm	**TF+MI-ThA8** Metal Oxide Nanostructure Growth by a Simple Hot Water Deposition (HWD) Method, ***Nawzat Saadi***, *T. Karabacak,* University of Arkansas at Little Rock	**VT-ThA8** APS-Upgrade Storage Ring Vacuum System Sector Mockup and Vacuum R&D Activities, ***Jason Carter***, Argonne National Laboratory
5:00pm	**TF+MI-ThA9** Microsphere-Based Disordered Coatings for Effective Radiative Cooling, ***Sarun Atiganyanun***, *J. Plumley, K. Hsu,* University of New Mexico; *J. Cytrynbaum,* Williams College; *T. Peng,* Air Force Research Laboratory; *S.M. Han, S.E. Han,* University of New Mexico	**VT-ThA9** Numerical Tools for Particle Accelerator Vacuum Systems, ***Giulia Lanza***, SLAC National Accelerator Laboratory; *R. Kersevan,* CERN, Switzerland
5:20pm	**INVITED: TF+MI-ThA10** Sputter Beam Epitaxy: Innovation towards Spin Control in Intermetallic Thin Films, ***Adam Hauser***, The University of Alabama	**VT-ThA10** Developing Particle Control Infrastructure for the ESS High Beta Project at STFC Daresbury Laboratory, ***Mark Pendleton***, STFC Daresbury Laboratory, UK
5:40pm	Invited talk continues.	**VT-ThA11** Functional Coatings for Gauges and Components, *B. Andreaus, C. Strietzel,* ***Martin Wüest***, INFICON Ltd., Liechtenstein; *C. Guerra-Nuñez, M. Ruoho, I. Utke, J. Michler, X. Mäder, M. Polyakov,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland
6:00pm		**VT-ThA12** 60 Years of Ion Pumps: From the Invention to the Latest Developments, ***Mauro Audi***, Agilent Technologies, Italy

2D Materials Focus Topic
Room Central Hall - Session 2D-ThP
2D Materials Poster Session
6:30pm

2D-ThP1 In-situ Analysis of Electronic Structure of monolayer MoS_2 using Photoemission Spectroscopy and Kelvin probe, ***JaeGwan Chung***, *U.J. Kim, D. Yun, Y.S. Kim, J. Shin,* Samsung Electronics, Republic of Korea

2D-ThP2 Reliable Passivation of Black Phosphorus by Thin Hybrid Coating, *S. Gamage,* ***Alireza Fali,*** *N. Aghamiri,* Georgia State University*; L. Yang, P.D. Ye,* Purdue University*; Y. Abate,* Georgia State University

2D-ThP3 Temperature-dependent Photo-current Behaviors of CVD-grown MoS_2 layers, ***Soyeong Kwon***, *E. Kim, Y. Cho,* Ewha Womans University, Republic of Korea*; Y. Kim, B. Cho, D.-H. Kim,* Korea Institute of Materials Science*; D.-W. Kim,* Ewha Womans University, Republic of Korea

2D-ThP4 Controlling Charge Density Wave Transition in Monolayer $TiSe_2$, ***Sadhu Kolekar***, *M. Batzill,* University of South Florida

2D-ThP5 Growth and Characterization of $MoTe_2$ on GaTe by Molecular Beam Epitaxy, ***Paula Mariel Coelho***, *M. Batzill,* University of South Florida

2D-ThP6 In-situ Characterisation of Gas Cluster Ion Beam Cleaning of CVD-grown Graphene with ToF-SIMS, XPS and Raman Spectroscopy, ***Barry Brennan***, National Physical Laboratory, UK*; A. Centeno, A. Zurutuza,* Graphenea, Spain*; P. Mack,* Thermo Fisher Scientific, UK*; A.G. Shard, A.J. Pollard,* National Physical Laboratory, UK

2D-ThP7 Single Layer VSe_2: A Ferromagnetic 2D Material, ***Manuel Bonilla***, *S. Kolekar, H. Coy Diaz, Y. Ma, M. Batzill,* University of South Florida

2D-ThP8 Surface Functionalization of Few-layer MoS_2 for Atomic Layer Deposition using Gold Chloride Salts, ***Jaron Kropp***, UMBC*; T. Gougousi,* University of Maryland, Baltimore County

2D-ThP10 Alternative Pathway to Silicene Synthesis via Surface Relaxation of Hexagonal-$MoSi_2$ Crystallites, ***Cameron Volders***, *E. Monazami, G. Ramalingam, P. Reinke,* University of Virginia

2D-ThP11 CVD Grown 2D Metal Carbides using Folded Cu/Metal Foils, ***Kwonjae Yoo***, *I.S. Kang, G. Kim, M.S. Hyun, Y.C. Park,* National Nanofab Center (KAIST), Republic of Korea*; S. Lee, C. Hwang,* Korea Research Institute of Standards and Science, Republic of Korea

2D-ThP12 Scanning Tunneling Microscopy and Spectroscopy of Wet Chemically Synthesized Porous Graphene Nanoribbons, ***Kaitlyn Parsons***, *A. Radocea,* University of Illinois at Urbana-Champaign*; M. Pour,* University of Nebraska - Lincoln*; T. Sun, N. Aluru,* University of Illinois at Urbana-Champaign*; A. Sinitskii,* University of Nebraska - Lincoln*; J.W. Lyding,* University of Illinois at Urbana-Champaign

2D-ThP13 Surfactant-Exfoliated 2D Molybdenum Disulphide (2D-MoS_2): The Role of Surfactant upon the Hydrogen Evolution Reaction, ***Simon Hutton***, Kratos Analytical Limited, UK*; S.J. Rowley-Neale, C.E. Banks,* Manchester Metropolitan University, UK*; C.J. Blomfield, S.J. Coultas, A.J. Roberts, J.D.P. Counsell,* Kratos Analytical Limited, UK

2D-ThP14 Low Damage Layer-controlled Thinning of Black Phosphorus by a Low Energy Ar^+ Ion Beam, ***Jinwoo Park***, *D.S. Kim, W.O. Lee, M.K. Mun, K.S. Kim, G.Y. Yeom,* Sungkyunkwan University, Republic of Korea

2D-ThP15 Controlled Growth of Multilayered Hexagonal Boron Nitride on Ni-Cu Alloys, ***Karthik Sridhara***, Texas A&M University*; B.N. Feigelson, J.K. Hite,* US Naval Research Laboratory*; L.O. Nyakiti,* Texas A&M University Galveston

2D-ThP16 Metal Oxide-/Functionalized Graphene Oxide Composite as Highly Stable Lithium Ion Battery Anode with Enhanced Performance, ***SunSook Lee***, Korea Research Institute of Chemical Technology(KRICT), Republic of Korea*; S. Ji, J.Y. Ju, S-K. Kim, J.K. Kim, S. Choi,* Korea Research Institute of Chemical Technology(KRICT)

2D-ThP18 Exploration of Hybrid 2DEG/Ferroelectric Heterostructure Fabrication Methodology, ***Stephan Young***, *E.J. Moon, R. Doucette, A.N. Caruso,* University of Missouri - Kansas City

2D-ThP19 Software for Nanoparticle Synthesis in Plasmas, ***Madhusudhan Kundrapu***, *S. Averkin, P. Stoltz,* Tech-X Corporation*; M. Keidar, X. Fang,* GWU

2D-ThP20 Effect of Stacking Orientation and Sag on the Strength and Fracture of Graphene Oxide, ***Teng Cui***, *C.H. Cao, S. Parambath Mundayodan, Y. Sun, T. Filleter,* University of Toronto, Canada

2D-ThP22 Single Atom Manipulation and Controllable Atom by Atom Assembly in 2D Materials via Scanning Transmission Electron Microscopy, ***Sergei Kalinin***, *O. Dyck, S. Kim, S. Jesse,* Oak Ridge National Laboratory

2D-ThP23 Self-assembly of Ordered Graphene Nanodot Arrays, ***Luca Camilli***, Technical University of Denmark*; J. Jørgensen,* Aarhus University, Denmark*; J. Tersoff,* IBM Research Division, T.J. Watson Research Center*; R. Balog, A. Cassidy,* Aarhus University, Denmark*; J. Sadowski,* Brookhaven National Laboratory*; P. Bøggild,* Technical University of Denmark*; L. Hornekær,* Aarhus University, Denmark

Applied Surface Science Division
Room Central Hall - Session AS-ThP
Applied Surface Science Poster Session
6:30pm

AS-ThP1 Depth Profiling Adventures in the Non-Semiconductor Chemical Industry, ***Kathryn Lloyd***, *J.R. Marsh,* DuPont

AS-ThP2 High-energy Cluster Ions - Minimising Depth Profiling Artifacts for Solid-state Electrolytes, *J.D.P. Counsell,* Kratos Analytical Limited, UK*;* ***Chris Moffitt***, Kratos Analytical Ltd*; A.J. Pearse,* University of Maryland, College Park*; C.J. Blomfield, S.J. Coultas,* Kratos Analytical Limited, UK*; G. Rubloff,* University of Maryland, College Park

AS-ThP3 The Internal Composition and Structure of Fish Scales Investigated by ESCA and SEM, ***Gerry Hammer***, *S. Murcia, E. Lavoie, L.J. Gamble, D. Arola, D.G. Castner,* University of Washington

AS-ThP4 Ambient Pressure X-ray Photoelectron Spectroscopy of the III-V Semiconductor/Water Interface, ***Pitambar Sapkota***, *S. Ptasinska,* University of Notre Dame

AS-ThP5 Spectroscopic and Structural Studies of Iron Gall Ink, ***Karen Gaskell***, *A.A. Ponce,* University of Maryland, College Park*; L.B. Brostoff,* Library of Congress*; S.K. Gibbons, B. Eichhorn, P. Zavalij,* University of Maryland, College Park*; C. Viragh,* The Catholic University of America*; S. Alnemrat, J. Hooper,* Naval Postgraduate School at Monterey

AS-ThP6 Modeling Ion Trajectory using TDDFT: Effects in Atom Probe Tomography, *K. Kaluskar,* Indian Institute of Sciene Education and Research, India*; J. Peralta,* ***Claudia Loyola***, Universidad Andres Bello, Chile*; S. Broderick,* University of Buffalo

AS-ThP7 Multicomponent Patterned Ultrathin Carbon Nanomembranes by Laser Ablation, ***Daniel Rhinow***, Max Planck Institute of Biophysics, Germany*; N. Frese,* Bielefeld University, Germany*; J. Scherr,* Goethe University Frankfurt, Germany*; A. Beyer,* Bielefeld University, Germany*; A. Terfort,* Goethe University Frankfurt, Germany*; A. Gölzhäuser,* Bielefeld University, Germany*; N. Hampp,* Philipps Universität Marburg, Germany

AS-ThP8 Characterization of Laser-Treated Al-Alloy Surfaces, ***Harry Meyer***, *D. Leonard, A. Sabau,* Oak Ridge National Laboratory

INVITED: AS-ThP9 A Mechanical Model for Thermal and Electron Coupling in Surface Films, ***Rahul Basu***, Adarsha Institute of Technology, VTU Bangalore, India

AS-ThP11 Space Weathering Effects on Ceres: Novel Application of Surface Analytical Techniques to Questions in Planetary Science, ***Gerard Rodriguez Lopez***, *C.A. Dukes, C. Bu,* University of Virginia*; L.A. McFadden,* NASA Goddard*; J-Y. Li,* Planetary Science Institute*; O. Ruesch,* NASA Goddard

AS-ThP12 Work Function Variations in Magnetron Sputtered Au and Atomic Layer Deposited Pt Thin Films, ***Alireza Narimannezhad***, *J.J. Jennings, M.H. Weber, K.G. Lynn,* Washington State University

AS-ThP13 Combustion Soot-derived Carbon Nanostructures: Microscopic and Spectroscopic Investigations, ***Ich Tran***, *T. Aoki,* University of California, Irvine*; J. Beardslee, C. Moffitt,* Kratos Analytical, Inc.

AS-ThP14 Probing the Chemical-State of Zinc centers in unknown Environments: A Comparison of Conventional and Core-core-core Auger Parameter Analyses, ***William Kaden***, University of Central Florida

Electronic Materials and Photonics Division
Room Central Hall - Session EM-ThP
Electronic Materials and Photonics Poster Session
6:30pm

EM-ThP1 Explore Intrinsic Properties and Interface Engineering of Nano-materials/devices by using Vacuum-interconnected Technology, ***Sunan Ding***, *H. Yang,* SuZhou Institute of Nano-Tech and Nano-Bionics, CAS

EM-ThP2 Investigation of W Pulsed Nucleation on different TiN/AlO underlayer, ***Dong-Hoon Han***, Samsung Electronics, Republic of Korea*; J. Lee, S. Lee, S. Kim, K. Lim, H. Lee, J. Kim, J. Bae, K. Kim,* Samsung Electronics

EM-ThP3 Electrolyte-Insulator-Semiconductor (EIS) device with Different Integrated Reference Electrodes for pH Detecting, ***Rodrigo Reigota,*** *J.A. Diniz,* University of Campinas (UNICAMP), Brazil

EM-ThP4 Optical and Magneto-optical Properties of $Zn_{1-x}Co_xO$ / ZnO Hollow Nanospheres, ***Da-Ren Liu,*** *C.J. Weng,* Instrument Technology Research Center, National Applied Research Laboratories

EM-ThP5 Low-k Cryo-etching: Comparison of Four Different High Boiling Point Organic (HBPO), ***Romain Chanson,*** IMEC, Belgium; *P.L. Lefaucheux, R. Dussart, T. Tillocher,* GREMI, France; *P. Shen, K. Urabe, C. Dussarat,* Air Liquide, Japan; *K. Maekawa,* TEL Technology Center, America, LLC; *K. Yatsuda,* Tokyo Electron Limited, Japan; *S. Tahara,* Tokyo Electron Miyagi Limited, Japan; *J.-F. de Marneffe,* IMEC, Belgium

EM-ThP6 Carrier Ion Exchange of Na_2O-Fe_2O_3-P_2O_5-SiO_2 Glass-Ceramics, ***Yoshikazu Kaji,*** *N. Yoshida, T. Okura,* Kogakuin University, Japan

EM-ThP7 Defect Doping ZnO Thin-Films with γ - Radiation, ***Seth King,*** *K.C. Slezak,* University of Wisconsin - La Crosse; *S.E. Chamberlin,* Lawrence University; *S.M. Lantvit,* University of Wisconsin - La Crosse

EM-ThP8 Design and Synthesis of Precursors for Photoassisted Chemical Vapor Deposition, ***Christopher Brewer,*** *O. Hawkins,* University of Florida; *B. Salazar, A.V. Walker,* University of Texas at Dallas; *L. McElwee-White,* University of Florida

EM-ThP9 Electrical and Mechanical Improvements with a Non-Thermal Curing Process for Porous SiCOH using Combined Ultraviolet and Vacuum-Ultraviolet Radiation, ***Sang-heum Kim,*** *J. Blatz, W. Li, H. Zhang, D. Pei, T. Guo, X. Zhou,* University of Wisconsin-Madison; *Y. Lin, H. Fung, C. Chen,* National Synchrotron Radiation Research Center, Taiwan, Republic of China; *S.W. King,* Intel Corporation; *Y. Nishi,* Stanford University; *J.L. Shohet,* University of Wisconsin-Madison

EM-ThP10 The Effects of Cesium Ion Implantation on the Mechanical and Electrical Properties of Porous SiCOH Low-k Dielectrics, ***Weiyi Li,*** *D.I. Benjamin, J. Chang,* University of Wisconsin - Madison; *Q. Lin,* IBM Research Division, T.J. Watson Research Center; *S.W. King,* Intel Corporation; *J.L. Shohet,* University of Wisconsin - Madison

EM-ThP11 The Effect of Proton Radiation on ALD HfO_2 Films and HfO_2 base RRAM, ***Panpan Xue,*** University of Wisconsin-Madison; *Z. Wang,* Stanford University; *T. Chang,* University of Wisconsin-Madison; *Y. Nishi,* Stanford University; *J.L. Shohet,* University of Wisconsin-Madison

EM-ThP12 Measurement of the Depth of Plasma Damage caused by VUV Photons and Oxygen Radicals using X-ray Reflectivity, ***Ha Nguyen,*** *F.A. Choudhury,* University of Wisconsin-Madison; *C. Lee,* National Tsing Hua University, Taiwan, Republic of China; *Y. Lin, H. Fung, C. Chen,* National Synchrotron Radiation Research Center, Taiwan, Republic of China; *J. Blatz, D.I. Benjamin, W. Li, J.L. Shohet,* University of Wisconsin-Madison

EM-ThP13 Oxygen Radical Transmission through and Damage to Freestanding Single and Multilayer Dielectric Films, ***Faraz Choudhury,*** *G. Sabat, M.R. Sussman,* University of Wisconsin-Madison; *Y. Nishi,* Stanford University; *J.L. Shohet,* University of Wisconsin-Madison

EM-ThP14 Deposition of Indium Bumps for Interconnection, ***George Papasouliotis,*** *R.J. O'Malley, M.A. Bah,* Denton Vacuum, LLC

EM-ThP15 Effect of Proton Irradiation on Device Characteristics of Bottom Gate ZnO Thin Film Transistors with Sol-Gel Derived Channel Layers, ***Kosala Yapabandara,*** *V. Mirkhani, S. Wang, M.P. Khanal, S. Uprety,* Auburn University; *M.H. Sk,* Qatar University, Qatar; *A. Ahyi, T. Isaacs-Smith, M.C. Hamilton, M. Park,* Auburn University

EM-ThP16 Characterization of the Buried MgO/Al Interfaces in Multilayer Heterostructures used as Photocathodes with Hard X-ray Photoelectron Spectroscopy, ***Jeff Terry,*** Illinois Institute of Technology

EM-ThP17 Gamma-Ray Irradiation Effects on HfO2 RRAM Studied via EDMR, ***Duane McCrory,*** *P.M. Lenahan,* Penn State University; *D. Nminibapiel, D. Veksler, J.T. Ryan, J.P. Campbell,* National Institute of Standards and Technology

EM-ThP18 Shallow Trench Isolation With a Novel Flowable Oxide Formed with Remote Plasma and Insitu UV Light Curing, ***Rishikesh Krishnan,*** *Y. Xu, J. Shepard, S. Molis, Z. Bayindir, J. Mody, G. Dibello,* GlobalFoundries Inc; *J. Lee, B. Colombeau,* Applied Materials, Inc.; *S. Hong,* Applied Materials, Inc

EM-ThP19 Defect Dependent Luminescence Dead Layers in CdS and CdSe, ***Richard Rosenberg,*** Argonne National Laboratory

EM-ThP20 High Breakdown Voltage (-201) β-Ga_2O_3 Schottky Rectifiers, ***Jiancheng Yang,*** *S.H. Ahn, F. Ren, S.J. Pearton,* University of Florida

EM-ThP21 Inelastic Electron Tunneling Spectroscopy and Electron Conduction Mechanisms of Porphyrin Molecular Junctions, ***Teresa Esposito,*** *P.H. Dinolfo, V. Meunier, K.M. Lewis,* Rensselaer Polytechnic Institute

EM-ThP22 Welding of Metal Nanowire Networks Using Eddy Current Method, ***JiSoo Oh,*** *D.I. Sung, D.S. Kim, K.H. Kim, G.Y. Yeom,* Sungkyunkwan University, Republic of Korea

EM-ThP23 Deep Ultraviolet Light Source with Carbon Nanotube based Electron Beam Pumping, ***KyuChang Park,*** *S.T. Yoo,* Kyung Hee University, Republic of Korea

EM-ThP24 An Unexpected Trend between Metal Work Function and Contact Resistance to Germanium Telluride, ***Kayla Cooley,*** *H. Simchi, H. Aldosari, J. O'Neil, S-Y. Yu, A. Molina, S.E. Mohney,* The Pennsylvania State University

EM-ThP25 RF Loss Improvement of GaN-HEMTs Grown on Silicon by Reduction of The Inversion Channel at Si Interface, ***TienTung Luong,*** *Y.H. Chen, J.Y. You, S. Chang, Y.T. Ho, Y.C. Lin,* National Chiao Tung University, Taiwan, Taiwan, Republic of China; *J.C.S. Woo,* University of California, Los Angeles; *E.Y. Chang,* National Chiao Tung University, Taiwan, Taiwan, Republic of China

EM-ThP26 The Photoelastic Coefficient P_{12} of H^+ Implanted GaAs as a Function of Defect Density, ***Andrey Baydin,*** *H.T. Krzyzanowska, R. Gatamov, N.H. Tolk,* Vanderbilt University

EM-ThP27 Manipulation of Elliptical Polarization and Modulation of Optical Activity using Terahertz Stereo-metamaterial Reflectors, ***Elizabath Philip,*** *S. Pal, S.E. Stephens, P. Kung, S.M. Kim,* The University of Alabama

Fundamental Discoveries in Heterogeneous Catalysis Focus Topic
Room Central Hall - Session HC-ThP
Fundamental Discoveries in Heterogeneous Catalysis Poster Session
6:30pm

HC-ThP1 Geometrical Effect of TiO_2 in Propylene Epoxidation Using Au/SiO_2 catalysts, ***Zheng Lu,*** University of Alabama in Huntsville; *C.H. Turner,* University of Alabama; *Y. Lei,* University of Alabama in Huntsville

HC-ThP2 Auger Electron Spectroscopy Analysis of Fresh and Aged Alumina Supported Ag Catalysts, ***Dennis Paul,*** *J. Newman,* Physical Electronics; *W. Suchanek,* Scientific Design Company, Inc.

HC-ThP3 CO Adsorption on Size-selected Pt_n Clusters Uniformly-Deposited on Al_2O_3/NiAl(110), ***Yoshihide Watanabe,*** *A. Beniya,* Toyota Central R&D Labs. Inc., Japan

HC-ThP4 Unexpected Formation of Catalytically Active Palladium Nanoparticles on Silica Surface in Organic Solvents, ***Megan Bornstein,*** *A. Quast, R. Park, J. Shumaker-Parry, I. Zharov,* University of Utah

HC-ThP5 Copper Activated Conversion of Ethanol to Higher Alcohols over Hydrotalcite Derived MgAl Mixed Oxides, ***Karthikeyan K. Ramasamy,*** *M. Guo, M. Gray, S. Subramaniam,* Pacific Northwest National Laboratory; *A. Karakoti,* Ahmedabad University, India; *V. Murugesan, V. Shutthanandan, S. Thevuthasan,* Pacific Northwest National Laboratory

HC-ThP6 Methane Dissociation on Ni(111) at High Surface Temperatures: The Observed role of Surface and Subsurface C on Reactivity, ***Eric Dombrowski,*** *E. High, A.L. Utz,* Tufts University

Advanced Ion Microscopy Focus Topic
Room Central Hall - Session HI-ThP
Advances in Ion Microscopy Poster Session
6:30pm

HI-ThP1 Sub-10 nm Width High Aspect Ratio Trench Patterning of Gold Film using Helium Ion Microscope, ***Etsuo Maeda,*** The University of Tokyo, Japan; *T. Iijima,* National Institute of Advanced Industrial Science and Technology (AIST), Japan; *R. Kometani,* The University of Tokyo, Japan; *S. Migita, S. Ogawa,* National Institute of Advanced Industrial Science and Technology (AIST), Japan

HI-ThP2 Optimized *ex situ* Lift Out of FIB Prepared Specimens, ***Lucille Giannuzzi,*** EXpressLO LLC

Manufacturing Science and Technology Group
Room Central Hall - Session MS-ThP
Topics in Manufacturing Science and Technology
6:30pm

MS-ThP1 Influence of Strain Rate on Deformation Behaviour of an AX52 Alloy Prepared by ECAP, ***Kristyna Halmesova,*** Comtes Fht, Czech Republic*; Z. Trojanova,* Charles University, Prague, Czech Republic*; J. Dzugan,* Comtes Fht, Czech Republic*; P. Minarik,* Charles University, Prague, Czech Republic

MS-ThP2 Inhibitive Tendency of Plant Extract for Steel in Sulphuric Acid Solution, ***Omotayo Sanni,*** *A.P.I. Popoola,* Tshwane University of Technology, South Africa

MS-ThP3 Atmospheric Vapor Deposition of the Runaway Protection Al_2O_3 Films for the Large Format Li-ion Batteries using a Two-dimensional Atmospheric Pressure Inductively Coupled Jet, ***Yuri Glukhoy,*** Nanocoating Plasma Systems Inc.

MS-ThP4 Material Characterization of Tungsten Dispenser Cathodes, ***Briana Fees,*** San Jose State University and Coherent Inc

MS-ThP5 Development of Metal Linear Evaporator for OLED Panel Mass Production of Gen.6 Half and Gen. 8 Lines, ***Jung-Hyung Kim,*** Korea Research Institute of Standards and Science, Republic of Korea*; M.S. Kang,* Fineva Co., Republic of Korea

MS: WORKING WITH NATIONAL LABS AND USER FACILITIES

MS-ThP6 (MS-ThA1) Tackling Fundamental and Applied Problems Using EMSL Capabilities - Examples of Applying Surface and Interface Sensitive Tools to Biological Systems, *C.R. Anderton, D.R. Baer, M.H. Engelhard,* ***Scott Lea,*** Pacific Northwest National Laboratory

MS-ThP7 (MS-ThA2) Opportunities for Users at the Center for Nanoscale Materials, ***Kathleen Carrado Gregar,*** Argonne National Laboratory

MS-ThP8 (MS-ThA3) The CNST NanoFab at NIST: *Nanofabrication for US Commerce, V.K. Luciani,* ***Chen Zhang,*** National Institute of Standards and Technology, Center for Nanoscale Science and Technology

MS-ThP9 (MS-ThA4) Research Opportunities at the Cornell NanoScale Science and Technology Facility, ***Michael Skvarla,*** Cornell NanoScale Science and Technology Facility

MS-ThP10 (MS-ThA6) Shyne - Allowing Users to Leverage $800 Million in Nanotechnology Research, Education, Infrastructure & Facilities at Northwestern and the University of Chicago, ***Peter Duda,*** University of Chicago*; B. Meyers,* Northwestern University

MS-ThP11 (MS-ThA7) Science Opportunities with Soft X-Rays for Users at the Advanced Light Sources, ***Zahid Hussain,*** Advanced Light Source, Lawrence Berkeley National Laboratory

MS-ThP12 (MS-ThA8) Research Opportunities and How to Become a User at the Center for Functional Nanomaterials, ***Samuel Tenney,*** Brookhaven National Laboratory

MS-ThP13 (MS-ThA9) Opportunities at the Center for Nanophase Materials Sciences, ***Arthur Baddorf,*** Oak Ridge National Laboratory

MS-ThP14 (MS-ThA10) Research Opportunities at the National High Magnetic Field Laboratory, ***Eric Palm,*** National High Magnetic Field Laboratory

Nanometer-scale Science and Technology Division
Room Central Hall - Session NS-ThP
Nanometer-scale Science and Technology Poster Session
6:30pm

NS-ThP1 Co-deposition of Nanoparticle – Diamond-Like Carbon Composite Thin Films, ***Ajai Iyer,*** *J. Etula, N. Wester, J. Koskinen,* Aalto University, School of Chemical Engineering, Finland

NS-ThP2 Atmospheric Pressure Plasma Functionalization of Diamond Particles, ***Gary McGuire,*** *O.A. Shenderova, N.J. Nunn,* Adamas Nanotechnologies, Inc.

NS-ThP3 Nanometer-scale Etch Characteristics of TiN Thin Films using Inductively Coupled Plasma of $Cl_2/C_2F_6/Ar$, ***JaeSang Choi,*** *J.Y. Lee, D.H. Cho, C.W. Chung,* Inha university, Republic of Korea

NS-ThP4 Etch Characteristics of Magnetic Tunnel Junction Stacks using Pulse-modulated RF Source Plasma, ***JaeYong Lee,*** *J.S. Choi, D.H. Cho, C.W. Chung,* Inha University, Republic of Korea

NS-ThP5 Dry Etching of Nanometer-scale Patterned CoFeB Thin Films under Pulse Modulated Plasma, ***DooHyeon Cho,*** *J.S. Choi, J.Y. Lee, C.W. Chung,* Inha University, Republic of Korea

NS-ThP6 The Formation of Stable GeO_2 Oxide using the High Pressure Oxidation, ***Juhyun Bae,*** *I.S. Chung,* Sungkyunkwan University, Republic of Korea

NS-ThP8 Controlling Kondo Resonances of Magnetic Molecules on Au(111) by Binding of Metal Atoms, ***MinHui Chang,*** Korea University, Republic of Korea*; Y.H. Chang,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea*; H. Kim, S.H. Lee,* Korea University, Republic of Korea*; Y.H. Kim,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea*; S.-J. Kahng,* Korea University, Republic of Korea

NS-ThP9 Nanolithography Toolbox: Design Solutions for Nanoscale Devices, ***Roberto De Alba,*** *K.C. Balram, D.A. Westly, M. Davanco, K.E. Grutter, Q. Li,* NIST*; T. Michels,* GenISys GmbH*; C.H. Ray, L. Yu, R.J. Kasica, C.B. Wallin,* NIST*; D.A. Czaplewski, L.E. Ocola,* Argonne National Laboratory*; S. Krylov,* Tel Aviv University, Israel*; P. Neuzil,* Brno University of Technology, Czech Republic*; K. Srinivasan, S.M. Stavis, V.A. Aksyuk, J.A. Liddle, B.R. Ilic,* NIST

NS-ThP10 Visualizing Silicide Formation via Interface Electrostatics with BEEM, ***Westly Nolting,*** SUNY Polytechnic Institute*; C. Durcan,* SUNY College of Nanoscale Science and Engineering*; V. LaBella,* SUNY Polytechnic Institute

NS-ThP11 Dimensionality Effects in $FeGe_2$ Nanowires: Enhanced Anisotropic Magnetization and Anomalous Electrical Transport, ***Ivan Kravchenko,*** Oak Ridge National Laboratory*; S. Tang,* Central South University, PR China*; T.Z. Ward, Q. Zou,* Oak Ridge National Laboratory*; J. Yi,* University of Tennessee*; C. Ma, M. Chi, G. Cao, A.-P. Li, D.G. Mandrus, Z. Gai,* Oak Ridge National Laboratory

NS-ThP12 A High Coherence Package for Quantum Circuits Containing Topologically Isolated Qubits, ***Vivekananda Adiga,*** *N.T. Bronn, S.B. Olivadese,* IBM Research Division, T.J. Watson Research Center*; X. Wu, D.P. Pappas,* NIST Boulder*; J.M. Chow,* IBM Research Division, T.J. Watson Research Center

NS-ThP15 Enhanced ZnO Nanorod-Nanotube Gas Sensor Coated with AZO Thin Films by Atomic Layer Deposition, ***Pengtao Lin,*** *X. Chen, K. Zhang, H. Baumgart,* Old Dominion University

NS-ThP16 Few-Wall Carbon Nanotube Coils, ***Dekel Nakar,*** *R. Popovitz-Biro, K. Rechav, E. Joselevich,* Weizmann Institute of Science, Israel

Advanced Surface Engineering Division
Room Central Hall - Session SE-ThP
Advanced Surface Engineering Poster Session, 6:30pm

SE-ThP1 Surface Passivation of Energetic Particles Via Atomic Layer Deposition, ***Kai Qu,*** Huazhong University of Science an Technology, PR China*; C.L. Duan, P.H. Zhu, J.M. Cai, R. Chen,* Huazhong University of Science and Technology, PR China

SE-ThP2 Temperature Dependence of Zinc Oxide Nanocolumnar Aspect Ratios Grown on Monolayer Templates, ***Domingo Mateo-Feliciano,*** *S. Witanachchi, P. Mukherjee,* University of South Florida

SE-ThP3 Study the Structural and Mechanical Properties of Laser Cladding and Thermal Spray Coatings of Calcia and Magnesia Stabilized Zirconium Oxide, ***Mohamed Hafez,*** *S. Akila, M. Khedr,* Cairo University, Egypt*; A. Khalil,* Tabbin Institute For Metallurgical Studies - Cairo Governorate, Egypt

SE-ThP4 Preparation and Characterization of Surface-Modified Nanocellulose using Octadecylamine and Various Linkers in the Liquid Media, ***Seonmin Kim,*** *M. Yoo,* Korea Electronics Technology Institute, Republic of Korea

SE-ThP5 Study on Volatile Product for SiO2 Etching at the Plasma Native-oxide Cleaning, ***Seung-Kook Yang,*** Eugene Technoloy, Republic of Korea*; G. Kim, C.S. Jeong, B.J. Jung, K.W. Kang, J. Lee,* Eugene Technology, Republic of Korea

SE-ThP6 Cooperative Deformability in Controlling Tribological Behavior of Hard Coatings Benefited from Deep Oscillation Magnetron Sputtering, ***Y.X. Ou,*** Tsinghua University, PR China*; M.K. Lei,* Dalian University of Technology, PR China*; J. Lin,* Southwest Research Institute, PR China

INVITED: SE-ThP7 Effect of Laser Power on the Microhardness and Wear Property of Tl6AL4V - B_4C - BN MMCS, ***Franklin Ochonogor,*** Ph.D Candidate, South Africa

SE-ThP9 Electrochemical and Microstructural Characterization of Laser Deposited Al-Fe-Si-Mn Coatings on AISI 1015 Steel, ***Olawale Fatoba***, *E.T. Akinlabi, M.E. Makhatha,* University of Johannesburg, South Africa

Thin Films Division
Room Central Hall - Session TF-ThP
Thin Films Poster Session, 6:30pm

TF-ThP1 Hydrogen Bond Mediated Supramolecular Self-Assembly To Direct Thin Film Morphology For Organic Electronic Applications, ***Daken Starkenburg***, University of Florida

TF-ThP2 Laser Characterization of Nano-power Generators Fabricated Using Thin Atomic Layer Deposited Films, ***Giovanna Scarel***, James Madison University; *M. Currie, V.D. Wheeler,* Naval Research Laboratory; *B.C. Utter,* Bucknell University

TF-ThP3 Highly Sensitive Ion Trap Mass Spectrometer for Inline Process Control, ***Leonid Gorkhover***, *G. Fedosenko,* Carl Zeiss SMT GmbH, Germany; *A. Laue,* Carl Zeiss SMT GmbH; *R. Reuter,* Carl Zeiss SMT GmbH, Germany; *V. Derpmann, H.-Y. Chung, M. Aliman, M. Antoni,* Carl Zeiss SMT GmbH

TF-ThP4 Thermal Annealing of Gold Thin Films on the Structure and Surface Morphology using RF Magnetron Sputtering, ***Moniruzzaman Syed***, LeMoyne-Owen College; *M. Syed,* Purdue University

TF-ThP5 Indium Doped ZnO Nanopowders Synthesized by MW-HTS and their Physical Characterization, ***Mujdat Caglar***, Anadolu University, Turkey; *K. Gorgun,* Eskisehir Osmangazi University, Turkey; *S. Aksoy,* Sinop University, Turkey; *S. Ilican, Y. Caglar,* Anadolu University, Turkey

TF-ThP6 Effect of Erbium on the Structural and Morphological Properties of ZnO Films by MW-CBD and its Application in Heterojunction, ***Yasemin Caglar***, Anadolu University, Turkey; *K. Gorgun,* Eskisehir Osmangazi University, Turkey; *S. Aksoy,* Sinop University, Turkey; *M. Caglar, S. Ilican,* Anadolu University, Turkey

TF-ThP7 Influence of Fluorine Incorporation on Structural and Optical Properties of ZnS Films, ***Tulay Hurma***, Anadolu University, Turkey

TF-ThP8 WO_3/Ag Electrochromic Multilayer Film by RF Magnetron Sputtering, ***Chao-Te Lee***, Instrument Technology Research Center, National Applied Research Laboratories, Taiwan, Republic of China; *P.K. Chiu, D. Chiang,* Instrument Technology Research Center, National Applied Research Laboratories; *W.-C. Chen,* Instrument Technology Research Center, National Applied Research Laboratories, Taiwan, Republic of China; *J.-H. Xie, C.-C. Jaing,* Department of Optoelectronic System Engineering, Minghsin University of Science and Technology

TF-ThP9 Crystalline Quality and Surface Roughness Optimization of Hetero-Epitaxial Titanium Nitride on Sapphire, ***Hadley Smith***, University of Dayton; *A.N. Reed,* Air Force Research Laboratory; *S. Elhamri,* University of Dayton; *B.M. Howe, L. Grazulis, M.J. Hill,* Air Force Research Laboratory

TF-ThP11 Water Repellency or Hydrophilicity of the PTFE Irradiated by an Ar^+Ion Beam, ***Yuki Yamashita***, *I. Takano,* Kogakuin University, Japan

TF-ThP12 Optical Chemical Sensors for the Detection of Taggants in Explosives, ***Sarka Havlova***, *P. Fitl, M. Vrnata, E. Maresova, J. Vlcek, D. Tomecek, J. Herbst,* University of Chemistry and Technology Prague, Czech Republic

TF-ThP13 The Effect of e-gun Deposition Process Variables on the Film Characteristics of the Chromium Oxide, ***Po-Kai Chiu***, National Applied Research Laboratories, Taiwan, Republic of China; *Y.T. Liao, H.Y. Tasi,* National Tsing Hua University, Taiwan, Republic of China; *D. Chiang,* National Applied Research Laboratories, Taiwan, Republic of China

TF-ThP14 Fabrication of High-period-number Resonant Transition Radiation Emitters for Generation of Femto-second Hard X-rays, ***Polly Wang***, National Tsing-Hua University, Taiwan, Republic of China; *C.T. Lee,* National Applied Research Laboratories, Taiwan, Republic of China; *A.P. Lee,* National Synchrotron Radiation Research Center, Taiwan, Republic of China; *K.C. Leou,* National Tsing-Hua University, Taiwan, Republic of China; *W.K. Lau,* National Synchrotron Radiation Research Center, Taiwan, Republic of China

TF-ThP16 Materials and Methods for Bottom-Up Semiconductor Device Manufacturing by Selective Surface Modification, ***Reuben Chacko***, *J. Lowes, J. Dai, S. Brown, D. Sweat,* Brewer Science, Inc.

TF-ThP17 Effects of the Electric Field Application for the Photocatalytic Property of TiO_2/Nithin Films, ***Taishi Segawa***, *I. Takano,* Kogakuin University, Japan

TF-ThP18 Investigations of Temperature and Humidity Sensors Constructed by Oxide Thin Films, ***Takahisa Kawaguchi***, *I. Takano,* Kogakuin University, Japan

TF-ThP19 Analysis of Surface Species and Film Structure of Thin Films from Atomic Layer Deposition using Surface-Enhanced Raman Spectroscopy, ***Ryan Hackler***, *P. Stair, R.P. Van Duyne,* Northwestern University

TF-ThP20 Carbon Thin Films Prepared by the Ion Assistance the Mass Spectrometric Analysis Type, ***Kenji Iwasaki***, *I. Takano,* Kogakuin University, Japan

TF-ThP21 Supramolecular Heterostructures - Engineering Organic Layered Materials with Tuneable Fluorescent Properties, *V.V. Korolkov,* The University of Nottingham, UK; *K. Watanabe, T. Taniguchi,* National Institute for Materials Science, Japan; ***Nicholas Besley***, *P.H. Beton,* The University of Nottingham, UK

TF-ThP22 Predicting Feature Size of AZ 9260 Positive Photoresist Processed by Two-photon Lithography, ***Shelby Maddox***, *M. Zou,* University of Arkansas

TF-ThP23 Analytical Model for Understanding Charge Transport and Behavior of Photovoltaics Parameters in Ferroelectric PLZT Thin Films using SETFOS, *V. Batra,* ***Sushma Kotru***, The University of Alabama

TF-ThP24 ALD of Titanium Oxide using Cyclopetadienyl Titanium Alkylamide and Ozone, ***Seongyoon Kim***, *J. Kim, T.R. Mayangsari, J.-M. Park,* Sejong University, Republic of Korea; *J.W. Park,* Hansol Chemical Co., Ltd., Republic of Korea; *W.-J. Lee,* Sejong University, Republic of Korea

TF-ThP25 Characteristics of Ge-Sb-Te Film Prepared by Atomic Layer Deposition and Tellurization of Ge-Sb Film, ***Yewon Kim***, *S. Kim, J. Gu, J.-M. Park,* Sejong University, Republic of Korea; *W. Koh,* UP Chemical Co., Ltd., Republic of Korea; *W.-J. Lee,* Sejong University, Republic of Korea

TF-ThP26 Molecular Layer Deposition of Boron Carbide from Carboranes, ***Michelle Paquette***, *L. Dorsett, S. Malik, T.D. Nguyen, D. Bailey, K. Rimpson,* University of Missouri-Kansas City; *J.D. Bielefeld, S.W. King,* Intel Corporation

TF-ThP27 Comparative Study of the Optical and Structural Properties of Single and Stacked SRO Thin Films Obtained by RF Sputtering, ***Karim Monfil Leyva***, *A.S.L. Salazar Valdez,* Benemérita Universidad Autónoma de Puebla, Mexico; *A. Morales Sánchez, F. Morales Morales,* CIMAV-Monterrey, Mexico; *J.A. Luna López,* Benemérita Universidad Autónoma de Puebla, Mexico; *A.L. Muñoz Zurita,* Universidad Politécnica Metropolitana de Puebla, Mexico

TF-ThP28 Dependence of the Corrosion Behavior of Transition Metal Nitride Films on the Sputtering Power Mode, ***Yuri Chipatecua***, CINVESTAV-Unidad Queretaro, Mexico; *O. Tengstrand,* Linköping University, Sweden; *J.J. Olaya-Florez,* Universidad Nacional de Colombia; *G. Greczynski,* Linköping University, Sweden; *I. Petrov, J.E. Greene,* University of Illinois at Urbana-Champaign; *A. Herrera-Gomez,* CINVESTAV-Unidad Queretaro, Mexico

TF-ThP29 Laser Microstructuring of Gas Sensing Thin Films, ***Premysl Fitl***, *J. Vlcek, D. Tomecek, E. Maresova, S. Havlova,* University of Chemistry and Technology Prague, Czech Republic; *M. Novotny, J. Lancok,* Institute of Physics ASCR, Czech Republic; *M. Vrnata,* University of Chemistry and Technology Prague, Czech Republic

TF-ThP30 Combinatorial Synthesis of BaClF-ReF_3 (Re = La, Pr, Er, Sm) Layers with Graded-Index as Antireflection Coatings in the Thermal Infrared, ***Bin Li***, Chinese Academy of Sciences, China

TF-ThP32 Low Temperature Growth of VO_2 Films on Flexible Plastic Substrates using TiO2 Buffer Layer, ***DaeHo Jung***, *H.S. So, J.S. Ahn, S.B. Hwang, H. Lee,* Kyung Hee University, Republic of Korea

TF-ThP33 Single Junction GaAs Thin Film Solar Cells on Flexible Metal Tapes for Low Cost Photovoltaics, ***Devendra Khatiwada***, *P. Dutta, M. Rathi, S. Sun, Y. Yao, Y. Gao, Y. Li, S. Pouladi, J.-H. Ryou, V. Selvamanickam,* University of Houston

TF-ThP34 Optical and Microstructural Characterization of Epitaxial VO2 on TiO2 (001) and Niobium Doped TiO2, ***Jason Creeden***, *I. Novikova, R.A. Lukaszew,* The College of William and Mary

TF-ThP35 Characterizing the Field of Atomic Layer Deposition: Authors, Topics, and Collaborations, ***Elsa Alvaro***, Northwestern University; *A. Yanguas-Gil,* Argonne National Laboratory

TF-ThP36 Magnetron Sputter Deposition of Thin VO_2 Films onto Polycrystalline Substrate, *S.S. Maklakov,* ***Sergey A. Maklakov***, *V.I. Polozov, A.D. Mishin, I.A. Ryzhikov, V.N. Kisel,* Institute for Theoretical and Applied Electromagnetics RAS, Russian Federation

TF-ThP37 Nano-laminates Encapsulation Films Fabricated via Spatially Separated Atomic Layer Deposition for High Stable Flexible OLED Electronics, *Y. Li,* ***Yuanyuan Liu***, *K. Cao,* Huazhong University of Science and Technology, China; *H. Hsu, J. Huang,* Wuhan China Star Optoelectronics Technology Co., Ltd (CSOT), China; *R. Chen,* Huazhong University of Science and Technology, PR China

TF-ThP38 Conductive Collagen: A Novel Material for Green, Transient Implantable Electronics, ***ArghyaKamal Bishal***, *C. Sukotjo, C.G. Takoudis,* University of Illinois at Chicago

TF-ThP39 Alkali Halide Assisted Atomic Layer Etching of Metal Oxides, *J. Hennessy,* ***April Jewell***, *S. Nikzad,* Jet Propulsion Laboratory

TF-ThP40 Tribocorrosion Behavior of Ti-6Al-4V Alloy Coated with TaN/Ta Layers in Two Simulated Body Fluids, ***Jessica Estefania González Sevilla***, *M. Flores, R. Rosas, E. García,* Universidad de Guadalajara, Mexico

TF-ThP41 The Leakage Current Reduction in Atomic Layer Deposition Of Al_2O_3-Inserted $SrTiO_3$ Films for Metal-Insulator-Metal Capacitors, ***Sang Hyeon Kim***, Seoul National University, Republic of Korea; *C.H. An,* Seoul National University, Korea, Republic of Korea; *D.S. Kwon, C.S. Hwang,* Seoul National University, Republic of Korea

Tribology Focus Topic
Room Central Hall - Session TR-ThP
Tribology Poster Session
6:30pm

TR-ThP1 Tribocorrosion Behaviour of Ti6Al4V Alloy Trated By Laser Shock Processing, ***Roman Angel Rosas Meza***, *G. Gómez Rosas, M. Flores Martínez,* Universidad de Guadalajara, Mexico; *C. Rubio González,* Centro de Ingeniería y Desarrollo Industrial, Mexico; *J.E. González Sevilla,* Universidad de Guadalajara, Mexico

TR-ThP2 Superlubricity of Graphene Oxide Enabled by Development of Transfer Films in Nitrogen Environment, ***Prabakaran Saravanan***, *R. Selyanchyn, H. Tanaka, J. Sugimura,* Kyushu University, Japan

TR-ThP4 Evidence for Low Friction in Pure Nanocrystalline FCC and BCC Metals, ***Andrew Kustas***, *T. Buchheit, H. Padilla, R. Garfield, S. Prasad, T. Renk, M. Chandross, N. Argibay,* Sandia National Laboratories

Anticipated Schedule Friday, November 3, 2017

Anticipated Schedule Friday Morning, November 3

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 _____

NOTES

Friday Morning, November 3, 2017

	2D Materials Focus Topic **Room 15 - Session 2D+MI+NS+SS+TF-FrM** **Nanostructures including Heterostructures and Patterning of 2D Materials** **Moderators:** Huamin Li, University of Buffalo, SUNY, Arkady Krasheninnikov, Helmholtz Zentrum Dresden-Rossendorf, Germany	**Applied Surface Science Division** **Room 13 - Session AS+MS-FrM** **Unlocking the Sample History: Forensics and Failure Analysis** **Moderators:** Karen Gaskell, University of Maryland, College Park, Matthew Linford, Brigham Young University
8:20am	**INVITED: 2D+MI+NS+SS+TF-FrM1** Electro-optics with 2D Semiconductors and Heterostructures, ***Goki Eda,*** National University of Singapore, Singapore	**INVITED: AS+MS-FrM1** *In Situ* Diagnostics of the Coupled Mechanical and Electrochemical Degradation of High Capacity Electrode Materials in Lithium Ion Batteries, ***Xingcheng Xiao,*** General Motors R&D Center
8:40am	Invited talk continues.	Invited talk continues.
9:00am	**2D+MI+NS+SS+TF-FrM3** Understanding Variations in Circularly Polarized Photoluminescence in Monolayer Transition Metal Dichalcogenides, ***Kathleen McCreary,*** *M. Currie, A.T. Hanbicki, B.T. Jonker,* Naval Research Laboratory	**AS+MS-FrM3** A Novel Approach to Characterizing the Silicon Anode Electrolyte Interface in Lithium Ion Batteries, ***Caleb Stetson,*** Colorado School of Mines, National Renewable Energy Laboratory*; C.S. Jiang, S. Harvey, K. Wood, G. Teeter, C. Ban, M. Al-Jassim,* National Renewable Energy Laboratory*; S. Pylypenko,* Colorado School of Mines
9:20am	**2D+MI+NS+SS+TF-FrM4** Multi-Junction Lateral 2D Heterostructures of Transition Metal Dichalcogenides, *P.K. Sahoo,* University of South Florida*; S. Memaran,* Florida State University*; Y. Xin,* National High Magnetic Field Laboratory*; L. Balicas,* Florida State University*; **Humberto Gutierrez,*** University of South Florida	**AS+MS-FrM4** In situ Liquid SIMS Investigation of Ion Solvation in Electrolytes for Lithium Ion Batteries, ***Zihua Zhu,*** *Y. Zhang, Z. Xu, M. Su, C. Wang, X.F. Yu, J.G. Wang,* Pacific Northwest National Laboratory
9:40am	**INVITED: 2D+MI+NS+SS+TF-FrM5** Novel Electronic, Optoelectronic, and Topological Properties of 2D Materials and Their Heterostructures, ***Xiaofeng Qian,*** Texas A&M University	**AS+MS-FrM5** Determining Bulk and Interface Chemical Damage Regimes in XPS Depth Profiling using Cluster Ion Beams, ***Benjamin Schmidt,*** *J. Newman, J.F. Moulder, J.E. Mann,* Physical Electronics
10:00am	Invited talk continues.	**AS+MS-FrM6** In Situ Studies on Radiation Resistance of Nanoporous Metals, ***Jin Li**,*** Texas A&M University*; C. Fan,* Purdue University*; Y. Chen,* Los Alamos National Laboratory*; X. Zhang,* Purdue University
10:20am	**2D+MI+NS+SS+TF-FrM7** Imaging Nanoscale Heterogeneity at the Two-dimensional Semiconductor-Metal Heterointerface by Correlated Scanning Probe Microscopy, ***Deep Jariwala†,*** California Institute of Technology*; A. Krayev, E. Robinson,* AIST-NT Inc.*; M.C. Sherrott,* California Institute of Technology*; M. Terrones,* Pennsylvania State University*; H.A. Atwater,* California Institute of Technology	**INVITED: AS+MS-FrM7** Surface Analysis in the World of Fine Art, ***Thomas Beebe, Jr.,*** *Z. Voras, C. Goodwin, K. deGhetaldi, B. Baade, J. Mass,* University of Delaware
10:40am	**2D+MI+NS+SS+TF-FrM8** Two-dimensional Circuitry Achieved by Defect Engineering of Transition Metal Dichalcogenides, ***Michael G. Stanford‡,*** *P.R. Pudasaini, A.N. Hoffman, P.D. Rack,* The University of Tennessee Knoxville	Invited talk continues.
11:00am	**2D+MI+NS+SS+TF-FrM9** Scanning Tunneling Microscopy and Spectroscopy Studies of Atomically Precise Graphene Nanoribbons on Semiconducting Surfaces, ***Ximeng Liu,*** *A. Radocea, T. Sun,* Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign*; M. Pour,* Nebraska Center for Materials and Nanoscience, University of Nebraska - Lincoln*; N. Aluru,* Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign*; A. Sinitskii,* Nebraska Center for Materials and Nanoscience, University of Nebraska - Lincoln*; J.W. Lyding,* Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign	**AS+MS-FrM9** Surface Characterization of Acrylic Artists' Paints After Wet Cleaning with Water-in-Oil Microemulsions., ***Michael Clark,*** *M. Keefe,* The Dow Chemical Company*; T. Learner,* The Getty Conservation Institute*; B. Ormsby,* Tate, UK*; A. Phenix,* The Getty Conservation Institute*; E. Willneff,* University of Leeds, UK
11:20am	**2D+MI+NS+SS+TF-FrM10** Perfectly Perforated Monolayer WSe_2, ***Kirby Smithe,*** *C. Bailey,* Stanford University*; A. Krayev,* AIST-NT Inc.*; E. Pop,* Stanford University	**AS+MS-FrM10** Surface and Depth Profiling of Soft Organic Thin Films. X-Ray Photoelectron Spectroscopy Study, ***Tatyana Bendikov,*** Weizmann Institute of Science, Israel*; S.J. Hutton,* Kratos Analytical Ltd, United Kingdom of Great Britain and Northern Ireland*; R. Balgley, G. de Ruiter, M. Lahav, M.E. Van der Boom,* Weizmann Institute of Science, Israel

*** ASSD Student Award Finalist**
† NSTD Postdoc Finalist
‡ National Student Award Finalist

Friday Morning, November 3, 2017

	Plasma Science and Technology Division **Room 23 - Session PS+NS+SS+TF-FrM** **Atomic Layer Etching II** **Moderators:** Edward Barnat, Sandia National Laboratories, Hojun Kim, Samsung Electronics Co. Ltd.	**Surface Science Division** **Room 24 - Session SS+HC-FrM** **Recent Advances in the Chemistry and Physics of Interfaces** **Moderators:** Robert Bartynski, Rutgers, the State University of New Jersey, Wei Zhao, University of Washington
8:20am	**PS+NS+SS+TF-FrM1** Quasi-Atomic Layer Etching of Silicon Nitride with Independent Control of Directionality and Selectivity, ***Sonam Sherpa***, *P.L.G. Ventzek, A. Ranjan,* Tokyo Electron Limited	**SS+HC-FrM1** Enantiomeric Separations of Chiral Pharmaceuticals using Chiral Tetrahexahedral Au Nanoparticles, ***Nisha Shukla***, *D. Yang, A. Gellman,* Carnegie Mellon University
8:40am	**PS+NS+SS+TF-FrM2** WO_3 and W Thermal Atomic Layer Etching Using "Conversion-Fluorination" and "Oxidation-Conversion-Fluorination" Etching Mechanisms, ***Nicholas Johnson***, *S.M. George,* University of Colorado at Boulder	**SS+HC-FrM2** Enantiospecific Chemistry of Aspartic acid on Copper Surfaces, ***Soham Dutta***, Carnegie Mellon University; *A. Gellman,* Carnegie Mellon University, W.E. Scott Institute for Energy Innovation
9:00am	**INVITED: PS+NS+SS+TF-FrM3** Solving the Grand Challenges of Plasma Etch with Concurrent Engineering, ***Mingmei Wang***, TEL Technology Center, America, LLC; *P.L.G. Ventzek, A. Ranjan,* Tokyo Electron Limited	**SS+HC-FrM3** Anchoring Carbon Nanotubes to Solid Supports via Direct Attachment Through the Cage, ***Mackenzie Williams****, *F. Gao,* University of Delaware; *I. Ben Dhiab,* Université Pierre et Marie Curie; *A.V. Teplyakov,* University of Delaware
9:20am	Invited talk continues.	**SS+HC-FrM4** Studying Trends in Aromatic Adsorption on Fe{110} using Density Functional Theory Calculations, ***Bianca Provost***, University of Cambridge, UK; *M.Y. Ho, T.L. Hughes,* Schlumberger Gould Research, UK; *J.M. Goodman, S.J. Jenkins,* University of Cambridge, UK
9:40am	**PS+NS+SS+TF-FrM5** Effect of Non-Uniform Polymer Deposition on the Atomic Layer Etching of 3D Features in SiO_2, ***Chad Huard***, University of Michigan; *Y. Zhang, S. Sriraman, A. Paterson,* Lam Research Corporation; *M.J. Kushner,* University of Michigan	**SS+HC-FrM5** Surface Heterogeneity and Inhomogeneous Broadening of Vibrational Line Profiles, *S. Taj, D. Baird, A. Rosu-Finsen,* ***Martin McCoustra***, Heriot-Watt University, UK
10:00am	**PS+NS+SS+TF-FrM6** Etching with Low Te Plasmas, ***Scott Walton***, *D.R. Boris, S.C. Hernández,* Naval Research Laboratory; *S.G. Rosenberg,* ASEE Postdoctoral Fellow, NRL; *H. Miyazoe, A.V. Jagtiani, S.U. Engelmann, E.A. Joseph,* IBM T.J. Watson Research Center	**SS+HC-FrM6** Oxygen-Coadsorbate-Enhanced Ultrafast Photoinduced Desorption of Carbon Monoxide from Palladium, *S.-Y. Hong,* Brookhaven National Laboratory; *S. Liu, P. Xu,* Stony Brook University; *P. Szymanski,* Georgia Institute of Technology; *P. Liu,* Brookhaven National Laboratory; *M.G. White,* Brookhaven National Lab and Stony Brook University; ***Nicholas Camillone***, Brookhaven National Laboratory
10:20am	**PS+NS+SS+TF-FrM7** Thermal Atomic Layer Etching of Titanium Nitride Using Sequential, Self-Limiting Oxidation and Fluorination Reactions, ***Younghee Lee***, *S.M. George,* University of Colorado at Boulder	**SS+HC-FrM7** Ab-Initio Study of Low Index Surface Planes of γ-Al2O3 and their Interface with Pt, ***Kofi Oware Sarfo***, *A.L. Clauser, Z.L. McClure, M. Santala,* Oregon State University; *L. Árnadóttir,* Oregon State University
10:40am	**PS+NS+SS+TF-FrM8** Atomistic Simulations of H_2 Plasma Modification of SiN Thin-Films for Advanced Etch Processes, ***Vahagn Martirosyan***, *E. Despiau-Pujo, O. Joubert,* LTM, Univ. Grenoble Alpes, CEA-LETI, France	**SS+HC-FrM8** Discovering Molecular Interactions on the Nanoscale via Machine Learning, ***Maxim Ziatdinov***, Oak Ridge National Laboratory; *A.B. Maksov,* University of Tennessee Knoxville; *S.V. Kalinin,* Oak Ridge National Laboratory
11:00am	**PS+NS+SS+TF-FrM9** Defectless Nanostructure Patterning of Germanium Using Neutral Beam Etching for Ge FinFET Devices, ***Shuichi Noda***, Tohoku University, Japan; *W. Mizubayashi, K. Endo,* AIST, Japan; *S. Samukawa,* Tohoku Univeversity, AIST, Japan	**SS+HC-FrM9** Ambient STM Study of Sequentially Adsorbed Octanethiol and Biphenylthiol Monolayers on Au(111), ***Gaby Avila-Bront***, College of the Holy Cross
11:20am	**PS+NS+SS+TF-FrM10** Thermally-Driven Atomic Layer Etching of Metallic Tungsten Films Using O_2 and WF_6, ***Wenyi Xie***, *P.C. Lemaire, G.N. Parsons,* North Carolina State University	**SS+HC-FrM10** Molecule Assembly Structure and Tilt Geometry Evaluation of 5,6,7-Trithiapentacene-13-one (TTPO) / Pentacene-Quinone on Au(111) with NC-AFM, *A. Larson,* University of New Hampshire; *P. Zahl,* Brookhaven National Laboratory; ***Karsten Pohl***, University of New Hampshire

* **National Student Award Finalist**

Thin Films Division
Room 20 - Session TF-FrM
Self-assembled Monolayers and Organic/Inorganic Interface Engineering
Moderator: Adrienne Stiff-Roberts, Duke University

8:20am	**TF-FrM1** Kinetics of Swelling and Deswelling in Thermoresponsive Polymers Deposited by Initiated Chemical Vapor Deposition, *P. Salzmann,* Graz University of Technology*; A. Perrotta,* Eindhoven University of Technology, Netherlands*; **AnnaMaria Coclite**,* Graz University of Technology, Austria	
8:40am	**TF-FrM2** Heterointerfacial Toughening using a Molecular Nanolayer during Stress Corrosion and Fatigue, ***Matthew Kwan**,* Rensselaer Polytechnic Institute*; M. Braccini,* CNRS-SIMAP, Université Grenoble Alpes, France*; J. Wong,* Rensselaer Polytechnic Institute*; M. Lane,* Emory and Henry College*; G. Ramanath,* Rensselaer Polytechnic Institute	
9:00am	**TF-FrM3** Substrate Temperature Dependent Metal-oxide Nucleation Properties on Au Surfaces for Inherently Selective Atomic Layer Deposition Recipes Towards Self-aligned MEMS and Microfluidic Device Fabrication, ***Necmi Biyikli**,* University of Connecticut*; A.K. Okyay,* Okyay Technologies, Inc., Turkey	
9:20am	**TF-FrM4** Synthesis and Properties of DLC Thin Films with High Adhesion for IR Optics, *A.S. Zolkin,* National Research Novosibirsk State University, Russian Federation*; **Anna Semerikova**,* National Research Novosibirsk State University	
9:40am	**TF-FrM5** the Curious Wetting Behavior of ALD Grown Al_2O_3 Thin Film Surfaces, ***Yi Li**, B.D. Piercy, M.D. Losego,* Georgia Institute of Technology	
10:00am	**TF-FrM6** Controlled Thicknesses of Vapor Deposited Silane Films, ***Brian Johnson**, A. Diwan, M.R. Linford,* Brigham Young University	
10:20am	**TF-FrM7** Supramolecular Heterostructures formed by Sequential Epitaxial Deposition of Two-Dimensional Hydrogen-Bonded Arrays, *V.V. Korolkov, M. Baldoni,* The University of Nottingham, UK*; K. Watanabe, T. Taniguchi,* National Institute for Materials Science, Japan*; E. Besley, **Peter Beton**,* The University of Nottingham, UK	
10:40am	**TF-FrM8** Functionalization and Stabilization of Ultrathin Alumina Films with Rhenium Photosensitizers, ***Wolf-Dietrich Zabka**, D. Leuenberger,* Department of Physics, University of Zürich, Switzerland*; G. Mette,* University of Zürich, Switzerland*; C. Monney,* University of Zürich, Switzerland*; M. Mosberger,* University of Zürich, Switzerland*; B. Probst-Rüd,* University of Zürich, Switzerland*; R. Alberto, J. Osterwalder,* University of Zürich, Switzerland	
11:00am	**TF-FrM9** Enabling Porous Low-k Dielectric Sealing in 22nm Half-Pitch (Dual) Damascene Interconnects by Deposition of sub-1nm Thin Organic Films: From Fundamentals to Reliability, ***Silvia Armini**,* IMEC, Belgium	

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AVS 64
EXHIBIT PROGRAM

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EXHIBIT HALL EVENTS

EXHIBIT HALL SCHEDULE

Oct. 31	Tuesday	10am - 5:00pm
Nov. 1	Wednesday	10am - 4:30pm
Nov. 2	Thursday	10am - 2:30pm

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- Instrumentation, Equipment & Services
- Technology Spotlight Sessions
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- Career Center / Employment Services
- AVS Membership & Education Booth
- Free Morning Coffee & Lunch
- Free Afternoon Refreshments
- Art Zone Display & Competition
- Caricatures & Neck & Shoulder Massages
- Daily Raffle Drawings
- Grand Prize Raffle (during Exibit Finale)
- Ask The Experts - Vacuum Technology
- E-Mail Pavilion with Printing Capabilities

Special Events & Attractions

Welcome Mixer - Monday 6:30pm - 8:00pm

Tampa Convention Center - River Walk

Monday, October 30 6:30 - 8:00

NETWORKING at its best! The Welcome Mixer offers food and refreshments and the opportunity to casually interface with fellow AVS attendees and exhibitors from around the world. Everyone is welcome at the Mixer! **Sponsored in part by AIP Journal of Applied Physics.**

Ask The Experts (ATE) BOOTH 335

Hosted by the AVS Vacuum Technology Division. An unbiased, open forum staffed by experts in various aspects of vacuum technology to discuss and help solve vacuum related issues. Challenge our experts and receive a free souvenir while supplies last!!

Sponsored by: SAES Getters and Kimball Physics

Career Center BOOTH 132

Make the right connections at AVS. Post job openings or search available positions. The AVS Career Center provides the opportunity for attendees and exhibitors to find a perfect match.

Interview Rooms Available

7th Annual Foosball Tournament

Join the competition in Booth 336. Great Prizes!! Sign up begins at Tuesday morning, October 31 in the Exhibit Hall at booth 334. Hosted and Sponsored by Gamma Vacuum.

Daily Raffle Prizes

Find your daily raffle tickets in your registration kit. Enter your ticket into the raffle drum in **Booth 739** in the Exhibit Hall Tuesday, Wednesday and Thursday mornings. Come back in the afternoon to see if you are a winner! The **Grand Prize Raffle** drawing will take place on Thursday during the Exhibit Finale. Make sure you get your ticket stamped at the R.D. Mathis booth before you drop your ticket in the drum! Great prizes including FitBits, BlueTooth Speakers, Head Phones and so much more!

E-Mail Pavilion BOOTH 725

A convenient place for attendees to keep in touch with the outside world. Check your e-mail, flights, print boarding passes, etc.

Generously sponsored by Ion-Tof USA

Special Events & Attractions

Caricaturists BOOTH 222

Visit the Special Events booth for your FREE AVS-64 Souvenir. Our caricature artists will be available during all Exhibit Hall hours. You will find your ticket in your registration kit. Ticket must be validated by our generous sponsor MKS.

AVS Store BOOTH 635

Membership Information - learn about the many advantages of AVS Membership, also browse through Educational Materials and AVS logo items.

- **Videos**
- **Books**
- **Monographs**
- **Membership Services**
- **AVS Logo Items**

Art Zone/Contest BOOTH 730/731

See graphic designs in the form of art from fellow AVS attendees who will compete in our annual art contest. Take a look at this amazing display and don't forget to vote! Prizes will be announced at the Exhibit Finale on Thursday. **CASH PRIZES !!!**

Exhibitor Technology Spotlight Sessions BOOTH 145

Keep up with the latest technology! Exhibitors showcase new products, services and applications. Sessions are scheduled during the technical session breaks in the stage area in the exhibit hall.

Neck & Shoulder Massage BOOTH 709

Had a rough day? Look in your registration kit for your ticket for a free massage and follow the instructions on teh ticket and enjoy a relaxing neck and shoulder massage in booth 709.

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SPI Supplies
Staib Instruments, Inc.
Super Conductor Materials Inc.
TDK-LAMBDA Americas HP Division
UC Components Inc.
Vacuum Research
VAT Inc
XEI Scientific Inc.

Exhibitor Quick Reference Guide

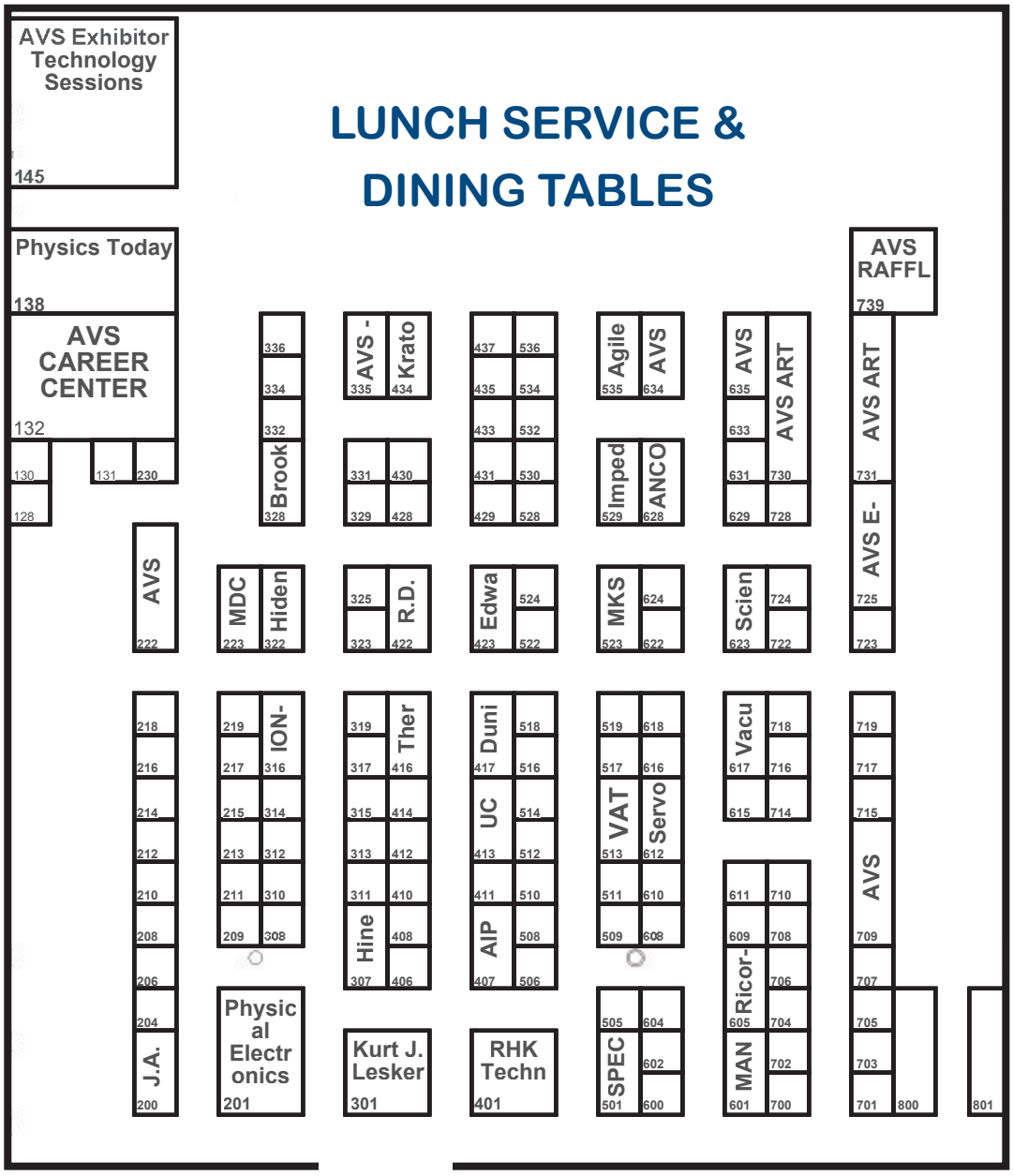
Booth	Company
437	AARD Technology
429	AdValue Technology
535	**Agilent Technologies, Vac. Products Div.**
407	**AIP Publishing**
310	**AJA International, Inc.**
631	**American Institute of Physics**
211	Amuneal Mfg Corporation
628	**ANCORP**
519	Anderson Dahlen-Applied Vacuum Div.
313	Applied Surface Technologies
622	Atlas Technologies
717	AVEM
335	AVS-Ask The Experts - VacTechDiv
731	AVS Art Zone / Contest
132	AVS Career Center
222	AVS Caricatures
725	AVS E-Mail Pavilion
145	AVS Exhibitor Technology Sessions
336	AVS Foosball Tournament
633	AVS Future Sites
709	AVS Massage Booth
634	AVS Publications
730	AVS Pumpkin Carving Contest
739	AVS Raffle Zone
635	AVS Store & Membership
604	BJA Magnetics
328	Brooks Automation
719	Bruker Nano Surfaces
206	Centrotherm Clean Solutions
609	Coastal Instruments
406	COSMOTEC, Inc.
435	CS Clean Solutions, Inc.
715	DataPhysics Instruments GmbH
210	Delong America, Inc.
414	**Denton Vacuum LLC**
417	**Duniway Stockroom Corp.**
716	Ebara Technologies
423	**Edwards Vacuum**
536	**Elsevier BV**
624	Extrel
707	Ferrotec (USA) Corporation
219	Ferrovac GmbH
311	Film Sense
334	**Gamma Vacuum**
703	General Ruby & Sapphire Company
315	HeatWave Labs Inc.
510	Heidelberg Instruments, Inc.
714	HHV Ltd.
322	Hiden Analytical, Inc.

Booth	Company
410	HIGHVAC CO
307	Hine Automation
528	**Horiba Scientific**
602	**HVA, LLC**
529	**Impedans Ltd.**
218	INFICON
534	Inland Vacuum Industries, Inc.
705	Innovative Vacuum Solutions Inc.
701	Instrument Technology Research Center, NARLabs
514	InstruTech, Inc.
230	Intel Corporation
611	International Ceramic Engineering
316	**ION-TOF USA**
332	IOP Publishing, Inc.
200	J.A. Woollam Co., Inc.
629	Kashiyama-USA Inc.
505	**Kimball Physics Inc.**
317	KP Technology Ltd.
434	**Kratos Analytical, Inc.**
314	Kruss USA
301	**Kurt J. Lesker Company**
722	LDS Vacuum Products, Inc.
430	Leybold USA Inc.
601	MANTIS-SIGMA
212	McAllister Technical Services, Inc.
700	McVac Manufacturing
223	MDC Vacuum Products, LLC
702	MeiVac, Inc.
600	Micro Photonics
131	Micron Technology, Inc.
523	**MKS Instruments**
208	MPF Products Inc
411	N2 Biomedical
215	National Institute of Standards and Technology
530	neaspec GmbH
217	NIST / CNST
506	Nonsequitur Technologies
616	**Nor-Cal Products, Inc.**
130	NRL/ASEE Postdoctoral Fellowship Program
431	Omley Industries, Inc.
728	Osaka Vacuum USA, Inc.
209	Park Systems, Inc.
618	**Pfeiffer Vacuum Technology, Inc.**
308	**PHPK Technologies**
201	**Physical Electronics**

Booth	Company
138	Physics Today Exhibitor Lounge
216	Phytron, Inc.
433	Picosun Oy
710	Pie Scientific
331	Precision Ceramics USA, Inc.
325	**Precision Plus Vacuum Parts**
323	Prevac sp. z o.o.
512	PVD Products
422	**R.D. Mathis Company**
319	**RBD Instruments, Inc.**
615	Refining Systems
428	**RF VII Inc.**
401	**RHK Technology Inc.**
605	Ricor-USA, Inc.
518	**SAES Group**
437	scia Systems GmbH
623	Scienta Omicron, Inc.
522	**Scientific Instrument Services, Inc.**
718	**Semicore Equipment, Inc.**
329	**Semilab SDI USA**
612	Servometer/Precision Mfg. Group, LLC
723	Solecon Laboratories, Inc.
508	**Solid Sealing Technology, Inc.**
516	Solmates
501	**SPECS Surface Nano Analysis, Inc.**
524	**SPI Supplies**
204	Springer
509	**Staib Instruments**
610	Strem Chemicals, Inc.
517	**Super Conductor Materials**
710	Surface Science Integration
608	Synergy Systems Corporation
724	T&C Power Conversion, Inc.
408	**TDK-Lambda Americas**
214	Tech-X Corporation
416	Thermo Fisher Scientific
413	**UC Components**
301	UHV Design Ltd.
708	Ulvac Technologies, Inc.
312	United Mineral and Chemical Corp.
617	**Vacuum Research Corporation**
513	**VAT**
511	Veeco Instruments
412	YES CLEAN ENERGY LLC
532	Yugyokuen Ceramics Co., Ltd.
213	zeroK NanoTech

Bold Listings: Corporate Members
Blue/Bold Listings: Sponsors and Sponsoring Corporate Members

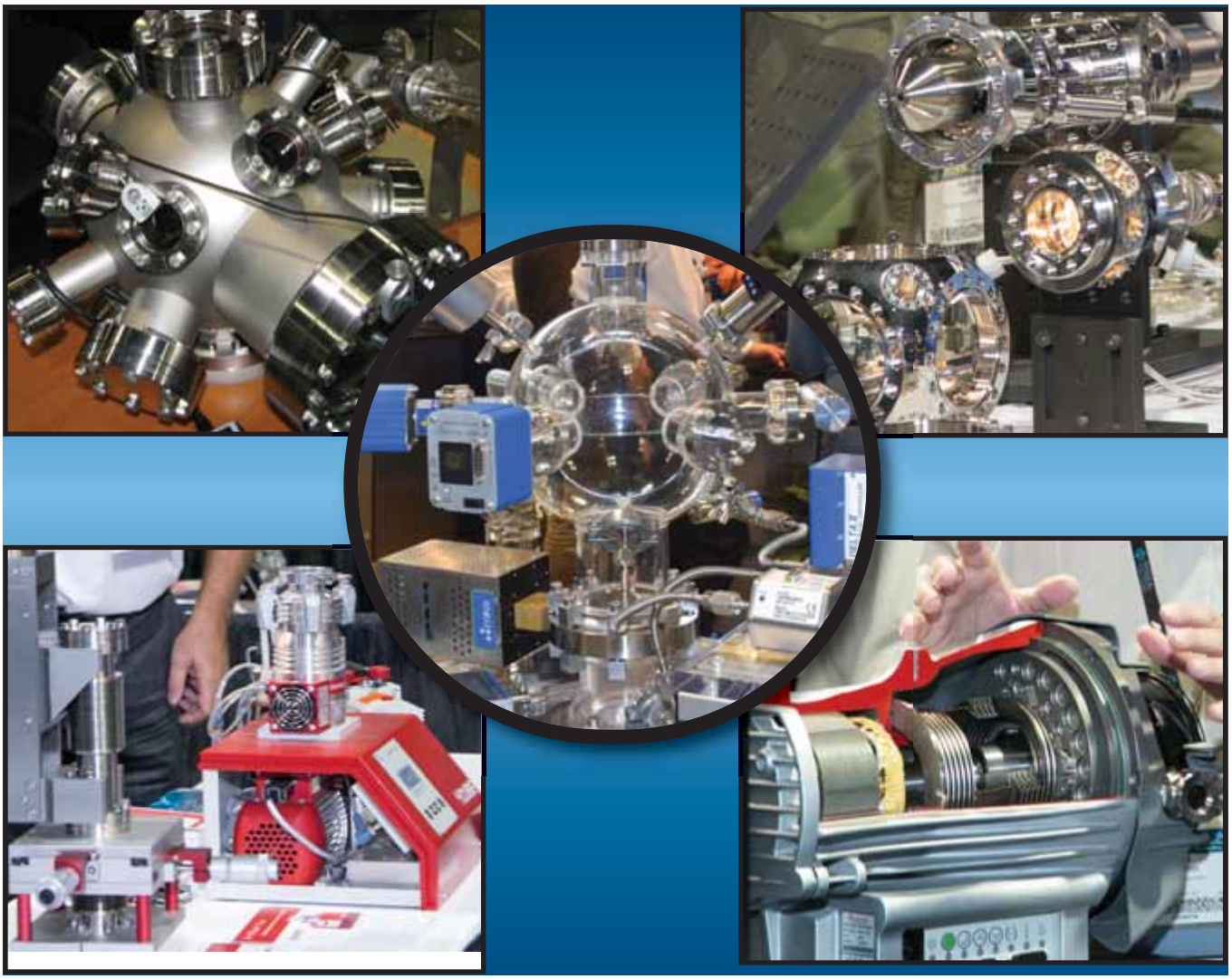
Exhibit Hall Floor Plan



PRODUCT LOCATOR

Not sure where to find what you're looking for?

The Product Locator will help you find the vendors you need. Product categories are listed alphabetically followed by the supplier(s) and their corresponding booth location.



Continued...

Bellows: Miniature Metal	Booth
McVac Manufacturing	700
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Bonding Techniques	
BJA Magnetics	604
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Chemical: Surface Treating Services	
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CONINTUED...

Process Controllers/Monitors

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Leybold USA Inc.	430
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Ricor-USA, Inc.	605
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Extrel	624
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Hiden Analytical, Inc.	322
Horiba Scientific	528
KP Technology Ltd.	317
McVac Manufacturing	700
RBD Instruments, Inc.	319
Ricor-USA, Inc.	605
SAES Group	518
Scientific Instrument Services, Inc.	522
Thermo Scientific	416

Sputtering Deposition System	Booth
AARD Technology	437
AJA International, Inc.	310
BJA Magnetics	604
Brooks Automation	328
COSMOTEC, Inc.	406
HHV Ltd.	714
Hiden Analytical, Inc.	322
Impedans Ltd.	529
International Ceramic Engineering	611
Kurt J. Lesker Company	301
Leybold USA Inc.	430
MANTIS-SIGMA	601
McAllister Technical Services, Inc.	212
McVac Manufacturing	700
MDC Vacuum Products, LLC	223
MeiVac, Inc.	702
Micro Photonics	600
N2 Biomedical	411
Nor-Cal Products, Inc.	616
PVD Products	512
RF VII Inc.	428
Ricor-USA, Inc.	605
scia Systems GmbH	437
Scienta Omicron, Inc.	623
Semicore Equipment, Inc.	718
SPECS Surface Nano Analysis, Inc.	501
SPI Supplies	524

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ANCORP	628
Bruker Nano Surfaces	719
Film Sense	311
Hiden Analytical, Inc.	322
Horiba Scientific	528
INFICON	218
J.A. Woollam Co., Inc.	200
Kurt J. Lesker Company	301
McVac Manufacturing	700
Micro Photonics	600
neaspec GmbH	530
Prevac sp. z o.o.	323
RBD Instruments, Inc.	319
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Ulvac Technologies, Inc.	708
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AARD Technology	437
AdValue Technology	429
Bruker Nano Surfaces	719
COSMOTEC, Inc.	406
General Ruby & Sapphire Company	703
HHV Ltd.	714
Hiden Analytical, Inc.	322
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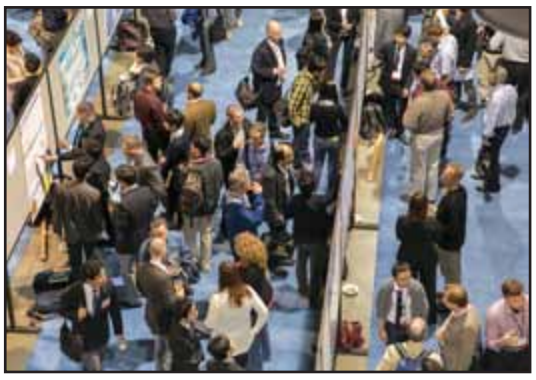

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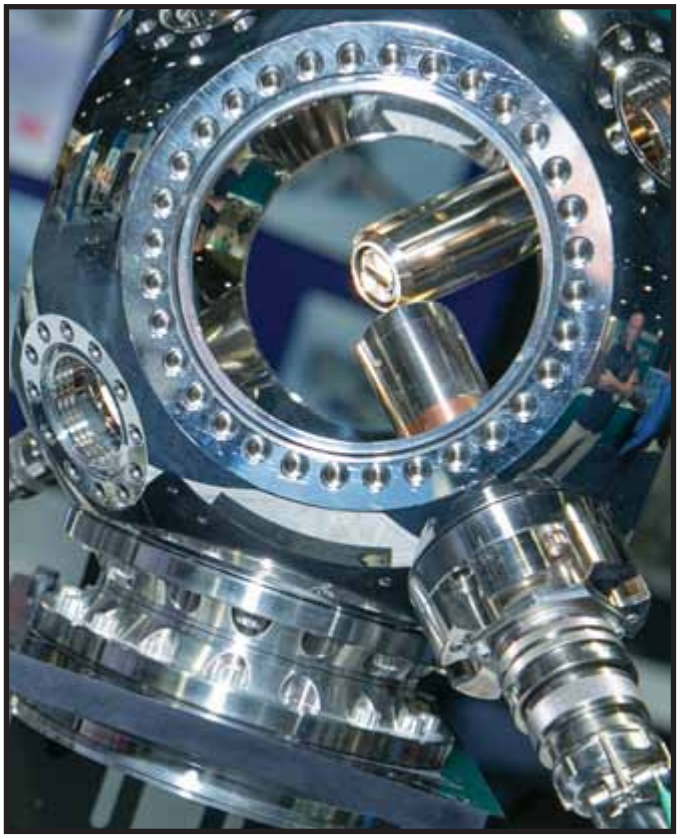

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AVS – Ask The Experts **335**
Vacuum Technology Division
http://www.avs.org/forum.aspx
Have questions? We have answers! The Vacuum Technology Division is pleased to again host Ask the Experts during the AVS-64 exhibit. We will help you solve issues with vacuum system specifications, troubleshooting, process control, contamination and more!. Ask the Experts is an unbiased, open forum with the resources to discuss and help solve vacuum related issues. Sponsored by SAES Getters and Kimball Physics. Archives and online discussion forum year round at http://www.avs.org/forum.aspx

AVS Art Zone & Contest **730 & 731**
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Often members of the AVS community use scientific images to convey information—sometimes these images contain aesthetic qualities that evoke a personal, intellectual, emotional, or spiritual response transforming them into objects of art. The question then is where does the science end and the art begin? Let your fellow colleagues be the judge or your artistic interpretations of science as art. Stop by to cast your vote for your favorite images.

This year for our Halloween festities, we will be showcasing our attendees best efforts in creating some amazing pumpkin carvings in the Art Zone. Stop by and check them out and cast your vote. Cash prizes for the top entries !! Contact Della Miller to obtain instructions for art submissions or entry into the pumpkin carving contest at della@avs.org

AVS Career Center **132**
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The AVS Professional Leadership Committee will be hosting the AVS Career Center, open to all attendees, at the International Symposium for the purpose of connecting job seekers with potential employers. The goal is to facilitate contact and networking during the Symposium and to assist empoyers to connect with potential candidates for job openings.

AVS E-Mail Pavilion **725**
Visit the AVS Email Pavilion in the Exhibit Hall for your convenience in checking your emails, flights, researching companies to visit in the hall.. even print your boarding pass.

AVS Exhibitor Technology Sessions **145**
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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 !

AVS Foosball Tournament **336**
Ready for some physical competition? Join the AVS Foosball Tournament sponsored and hosted by Gamma Vacuum. Great prizes and so much fun !! Sign up Tuesday morning to enter the tournament as soon as the show opens

AVS Future Sites **633**
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The AVS future sites booth will show you where the road leads AVS to next year! Stop by, pick up your free gift and find out where next year's venue will be. We promise that you won't be disappointed!

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AVS Raffle Zone **739**
Visit the Raffle Zone in the Exhibit Hall for the chance to win AWSOME prizes!! The raffles are sponsored by the AVS Exhibitors so please make sure you visit as many exhibitors as you can. Find your daily raffle tickets in your registration kit and follow the instructions on the ticket !!

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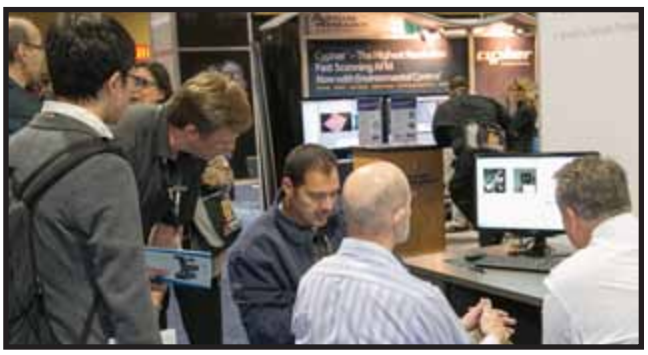

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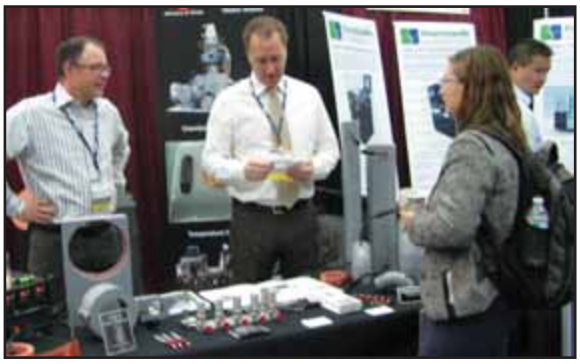

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Yugyokuen Ceramics Co., Ltd. **532**
1-46-2 Kamiikedai Otaku
Tokyo, 1450064
Japan
Phone: 81-3-3726-4455
www.yugyokuen-ceramics.com/en

Yugyokuen Ceramics Co., Ltd. is a manufacturer of ceramic components. We support non-destructive testing and analysis processes as well as the creation of vacuum environments. We developed various ceramic molded products, ceramic processed item, metalize brazing products based on ceramic, welding products, assembled products - electric furnace, electric furnace tube, emitter for the source of electric beam & filament. Our Products are made of precisely chosen high purity material, and due to its electric property, heat property and excellent low outgassing, widely approved for the parts of vacuum equipment, analysis equipment, and non-destructive inspection equipment.

zeroK NanoTech **213**
401 Professional Dr,
Suite 125
Gaithersburg, MD 20879-3468
Phone: 240-702-0081
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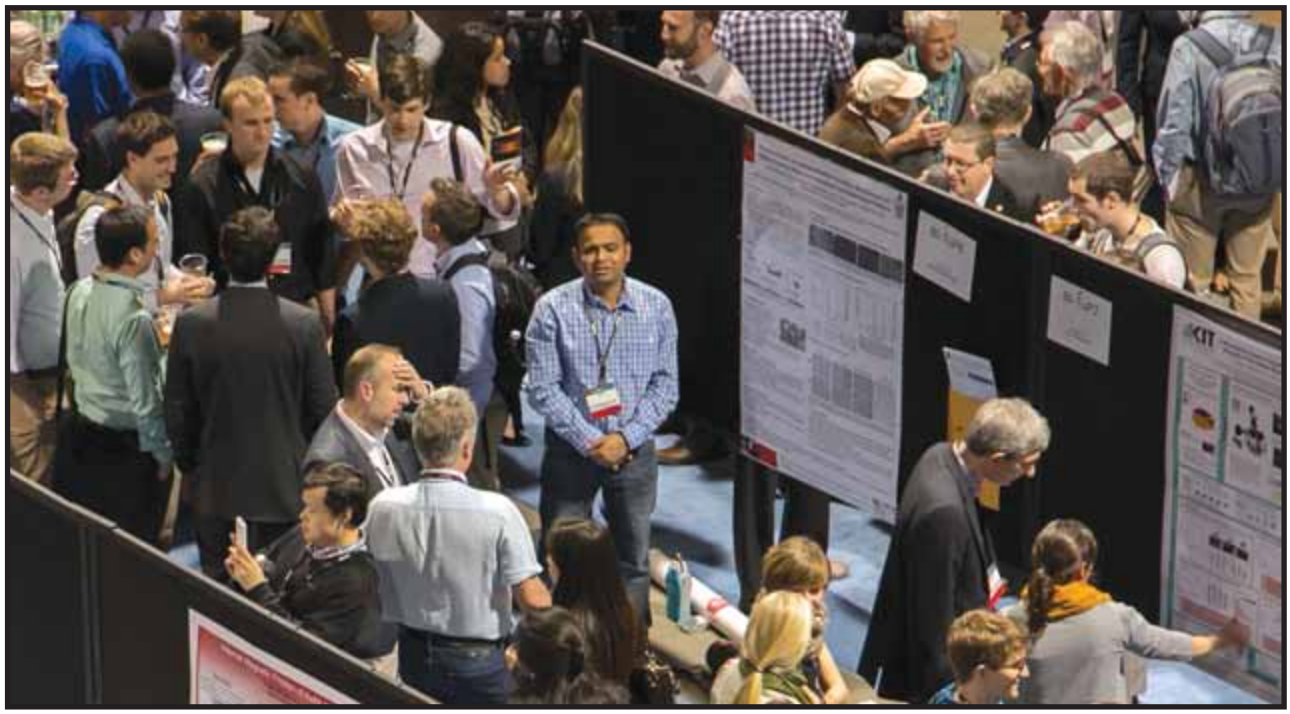
zeroK provides high performance focused ion beam instruments featuring our new ion source technology. These systems can help you mill smaller features in less time, and with less sample contamination. zeroK NanoTech's mission is to deliver enabling ion source technology to create the FIB instruments with unmatched precision and speed. Improving these fundamental performance metrics will enable scientists and engineers to achieve superior results in less time for critical applications and explore new possibilities for nanomachining and analytics



Poster Sessions - Tuesday and Thrusday Evening

Sponsored & Endorsed Topical Conferences

2017

International Conference on Thin Films
November 13-17, 2017
New Delhi, India
Web: www.ictf2017.in

Workshop on Innovative Nanoscale Devices and Systems
November 26-December 1, 2017
Kohala Coast, HI
Web: http://www.asu.edu/aine/WINDS17

10th Symposium on Vacuum Based Science and Technology
November 28-30, 2017
Kolobrzeg, Poland
Web: http://svbst.tu.koszalin.pl/

2018

2nd International Symposium of the Vacuum Society of the Philippines
January 9-12, 2018
Quezon, Philippines
Web: http://www.vacuumphilippines.org/isvsp2018/

The 45th International Conference on the Physics and Chemistry of Semiconductor Interfaces (PCSI-45)
January 14-18, 2018
Kona, HI
Web: http://pcsiconference.org/

Area Selective Deposition Workshop
April 2-6, 2018
Raleigh, NC
Web: TBD

ICMCTF 2018
April 23-27, 2018
San Diego, CA
Web: http://www2.avs.org/conferences/ICMCTF/2018/index.htm

Surface Analysis 2018 & AVS Pacific Northwest Chapter Annual Symposium
June 19-22, 2018
Richland, WA
Web: https://www.avs.org/Chapters/Pacific-Northwest

Atomic Layer Deposition and Etching (ALD/ALE 2018)
July 29-August, 1 2018
Incheon, South Korea
Web: www.ald-avs.org

The 14th International Conference on Mid-IR Optoelectronics: Materials and Devices
October 7-10, 2018
Flagstaff, AZ
Web: https://miomd2018.avs.org/

AVS 65th International Symposium & Exhibition
October 21-26, 2018
Long Beach, CA
Web: www.avs.org/symposium

PacSurf 2018
December 2-6, 2018
Waikoloa, Hawaii
Web: http://www.pacsurf.org/

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- TECHNICAL SESSIONS
- EXHIBITS
- SHORT COURSES

AVS 65th International Symposium & Exhibition

Long Beach Convention Center, Long Beach, CA

SYMPOSIUM: OCTOBER 21-26, 2018

Exhibit: October 23-25, 2018

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AVS Member Center Demo:

Tuesday, October 31st @ 10am

Exhibitor Technology Spotlight Session:

Tuesday, October 31st @ 4pm

AIP Publishing Booth 407

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