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Technical & Exhibitor Program • AVS 65th International Symposium & Exhibition • 2018

TECHNICAL & EXHIBITOR PROGRAM

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AVS 65th International Symposium & Exhibition

OCTOBER 21-26, 2018 • EXHIBITS: OCTOBER 23-25, 2018

LONG BEACH CONVENTION CENTER, LONG BEACH, CA

EXHIBIT HOURS:

Tuesday, October 23:	*10:00 a.m. - 5:00 p.m.*
Wednesday, October 24:	*10:00 a.m. - 4:30 p.m.*
Thursday, October 25:	*10:00 a.m. - 2:30 p.m.*

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Greetings

On behalf of the entire AVS community, we welcome you to the AVS 65th International Symposium and Exhibition (AVS 65) in beautiful Long Beach, California. We have an exciting slate of programming planned and wish you a productive and exciting week filled with discussions, new insights, and networking opportunities as you enjoy both the technical program and related activities.

This year's Symposium features a variety of topics, both time-honored and novel, across sixteen parallel sessions. The theme for this year is **"Materials, Interfaces and Process Technology for the IoT Era"** based on the predicted explosion of Internet of Things (IoT) devices in the coming years and promises to be more exciting and forward-looking than ever. We are very fortunate to have ***Dr. Kim Chaffin***, Distinguished Scientist and Bakken Fellow in Strategic and Scientific Operations at Medtronic, plc, presenting the Plenary Lecture Monday evening on **"The Internet of Things: Shaping the Future of the Medical Device Industry."** New for this year, we will also have a Plenary Panel, immediately following the Plenary Lecture to discuss the potential impact of IoT and areas of AVS engagement. Panelists include: **Dr. Scott Miller** – NextFlex, **Prof. Subu Iyer** – UCLA, **Dr. Enid Kivuti** – Multek Corp., **Prof. Michael Cima** – MIT, and **Prof. Gary Rubloff** – UMD, who will join Dr. Chaffin to field questions and engage with the AVS community.

Featured throughout the week, the IoT theme is also captured across nineteen different sessions programmed by our many Divisions, Groups and Focus Topics. An example of these sessions includes: *"Challenges of Sensor Manufacturing for the IoT," "MEMS for IoT: Chemical and Biological Sensing," "Thin Films for Flexible Electronics and IoT," "CMOS, Beyond the Roadmap and Over the Cliff," "Biofabrication, Bioanalytics, Biosensors and Diagnostics," "Flexible Electronics,"* and *"Vacuum System Design and Automation."* We are sure that you will gain new insights and knowledge as you enjoy these sessions.

In addition, the Symposium Program will include several special features. For example, the Plasma Science and Technology Division in collaboration with the Plasma Biology, Agriculture and Environment Focus Topic, will hold a special all-invited session on Monday afternoon titled *'Plasma and Polymers: The Legacy of Riccardo d'Agostino and Beyond'* commemorating the Life and Career of Riccardo d'Agostino. On Tuesday Morning, the Applied Surface Science Division will host a special session celebrating Nicholas Winograd titled *"Applied Surface Science: From Electrochemistry to Cell Imaging, a Celebration of the Career of Nicholas Winograd,"* while the Thin Film Division will host a special session in honor of Paul Holloway titled *"Special Session in Honor of Paul Holloway: Luminescent Materials Growth, Synthesis and Characterization."* Also on Tuesday Afternoon, the Applied Surface Science Division program will feature another special session in celebration of Barbara Garrison, titled *"The Impact of Modeling (Ion, Electron) and Data Analysis on Applied Surface Science, a Celebration of the Career of Barbara Garrison."* On Wednesday, there will be two special all-invited sessions (morning and afternoon) titled *"Current and Future Stars of the AVS Symposium"* and will feature presentations from **David G. Castner**, our AVS **Medard Welch Award** winner and **Peter Bruggeman**, our AVS **Peter Mark Award winner**, along with invited talks given by peer nominated 'Future Stars' of the AVS community. Moreover, we are honored to host the AIP sponsored **Industrial Physics Forum (IPF)** once again this year and have programming closely planned alongside the Biomaterial Interfaces Division beginning Sunday afternoon with the Bio Plenary session, and continuing throughout the week.

Finally, we also feature programming on cutting edge topical areas. Focus Topics that will be featured at this meeting include 2D Materials; Actinides and Rare Earths (2D); Fundamental Discoveries in Heterogeneous Catalysis (HC); Advanced Ion Microscopy (HI); Novel Trends in Synchrotron and FEL-Based Analysis (SA); Plasma Biology, Agriculture, and Environment (PB); Spectroscopic Ellipsometry (EL); and Tribology (TR). New Focus Topics include In-situ Microscopy, Spectroscopy and Microfluidics (MM); Processing and Characterization of Air-Liquid, Solid-Liquid and Air-Solid Interfaces (PC); Extending Additive Manufacturing to the Atomic Scale (AM); Reconfigurable Materials and Devices for Neuromorphic Computing (RM); Advanced Nanophotonics Metrology (AN), and Materials and Processes for Quantum Computing (MP). Lastly, all week there will be sessions across multiple divisions on Atomic Layer Processing, which highlight ongoing work in areas pertaining to the processing of materials with atomic scale precision, employing techniques such as Atomic Layer Deposition (ALD), Selective Deposition, and Atomic Layer Etching (ALE).

The result is an exciting program that has ~165 sessions, ~1,100 talks and ~270 invited speakers complemented by lively poster sessions on Tuesday and Thursday evenings (which include various poster presentation prizes). 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 Symposium and Exhibition or you are returning, we invite you to take advantage of the many networking, professional development and recruitment events, as well as our AVS Member Center in Room 103C, where a variety of special AVS engagement activities and talks are planned. Thank you for participating in AVS 65 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!

Eric A. Joseph
2018 Program Chair
IBM Research Division, T.J. Watson Research Center

Mariadriana Creatore
2018 Program Vice-Chair
Eindhoven University of Technology, The Netherlands

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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***	$700.00	$845.00
Non-Member**	$825.00	$995.00
Student Member*** *	$230.00	$280.00
Student Non-Member** *	$270.00	$330.00
Early Career Member*** *	$350.00	$425.00
Early Career Non-Member** *	$415.00	$505.00
Technical Specialist Member	$330.00	$400.00
Technical Specialist Non-Mem	$375.00	$455.00
One Day	$415.00	$505.00
Two Day	$715.00	$890.00
Exhibits Only	FREE	FREE

Pre-registration deadline: October 1, 2018
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 includes a complimentary 2019 AVS membership – stop by the AVS Member Center – Room 103C.

***Full Week, Student, Early Career & Technical Specialist member registration fee INCLUDES your 2019 membership renewal dues. For more information stop by the AVS Member Center – Room 103C.

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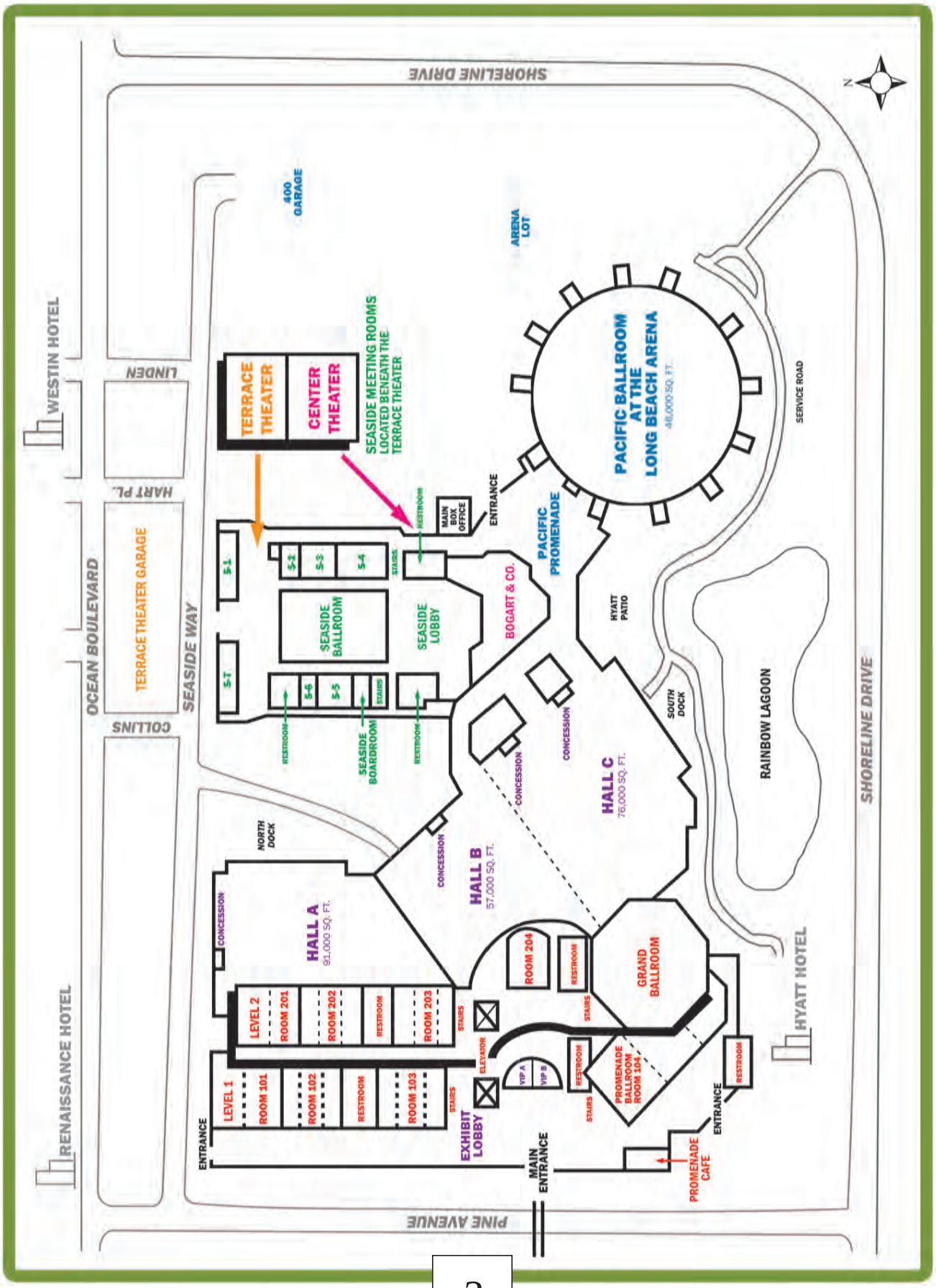
OFFICE LOCATIONS

AVS Publications	Booth #445
AVS Store	Booth #559
Presenters Preview Room	Room 103B
Staff Office & Press Room	Room 103A
Member Center	Room 103C
Program Office	Room 103A

Registration Area – Lobby
Exhibitor – Symposium – 5K Run

LONG BEACH CONVENTION CENTER



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AVS 65

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Get Your Game On... Play the AVS 65 Scavenger Hunt Today!

Login in using your reg ID and last name, check out the Hunt rules and task list. Complete as many tasks as possible throughout the week for the chance to earn points and

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Be sure to **CHECK THE LEADERBOARD** near the Member Center throughout the week to see how you are stacking up against the competition...

AVS 65 Technical Program

Room/ Day	101A	101B	102A	102B	103C MEMBER CTR/ PROF. DEV.	104A	104B	104C	201A
SuA		BP AVS BIP & AIP IPF Forum Plenary Session							
MoM	EM+ IoT Session: CMOS, Beyond the Roadmap and Over the Cliff	IPF+ Biofabrication: From Tissue to Organ	TF1 Precursors and Surface Reactions	NS+ IoT Session: Nanostructured Devices and Sensors	7:00 am Member Coffee 10:20 Demo: AVS Mobile Ap	PS+ Plasma-Surface Interactions	TF2 IoT Session: Thin Film Processes for Energy Storage	PS+ Plasma Deposition and Plasma-Enhanced ALD	TR+ Tribology Focus Session
MoA	EM+ ALP: Selective-Area Patterning (Assembly/Deposition/Etching)	BI+ Advanced Imaging and Structure Determination of Biomaterials Research	TF+ Thin Films for Advanced Memory Apps and Magnetics	NS+ SPM - New Imaging and Spectroscopy Methodologies	12:15 Welcome to AVS/3:00 pm Speed Networking for Young Professionals	PS+ Plasma and Polymers: 'The Legacy of Riccardo d'Agostino and Beyond'	TF IoT Session: Thin Films for Photovoltaics		MI+ IoT Session: Symp. on new Mag. Mtls, Devices & Concepts for the Info Society
TuM	TF Emerging Applications for ALD	IPF+ Advanced Imaging and Structure Determination of Biomaterials	TF+ Special Session in Honor of Paul Holloway: Luminescent Materials	NS+ Nanophotonics, Plasmonics, and Metamaterials	7:00 am Member Coffee 9:00 Demo: eSpectra	PS+ Plasma Processing of Challenging Materials - I	TF+ Atomic Layer Processing: Area Selective Deposition	PS+ Plasma Medicine	HC+ Nanochemistry in Heterogeneous Catalysis
TuB					10:00 am MS Working with Government Labs and other User Facilities				
TuL					12:30 pm Job Information Forum & Lunch				
TuA	EM+ Solar/Energy Harvesting and Quantum Materials and Applications	BI+ IoT Session: Biofabrication, Bioanalytics, Biosensors and Diagnostics & Flash Session	TF+ Organic/ Inorganic Materials and Interfaces	NS+ SPM – Probing & Manipulating Nanoscale Structures	6:45 pm EMPD Forum "Careers at Lam Research"	PS+ Plasma Processing of Challenging Materials - II	TF+ ALP: Chemistry & Surface Reactions for ALP	PS+ Atmospheric Pressure Plasmas	HC+ A Tale of Two Scales: Catalytic Processes and Surface Science
TuP									
WeM	EM+ Surface and Interface Challenges in Electronics and Photonics	IPF+ IoT Session: Bioanalytics, Biosensors and Diagnostics	TF+ Thin Film Processes for Electronics and Optics I	AM+ Nanofabrication with Focused Electron Beams Atomic Scale Manipulation	7:00 am Member Coffee 10:00 am "Inclusion & Diversity at the Workplace"	PS+ Advanced Patterning	PS+ Current and Future Stars of the AVS Symposium I	PS+ IoT Session: Enabling IoT Era	HC+ Mech & React. Pathways of Heterogeneo. Catal. Reactions
WeL					12:30 pm Lunch & Learn "XPS for the Non-Analyst"				
WeA	EM+ Wide and Ultra- Bandgap Mtls for Elect Devices:Growth Modeling and Properties	BI Microbes and Fouling at Surfaces	TF+ Thin Film Processes for Electronics and Optics II	AM+ Atomic Scale Manipulation with SPM	3:00 pm Get Involved: Tips on How to Moderate & Lead Sessions	PB+ Plasma Agriculture & Environmental Applications	BI+ Current and Future Stars of the AVS Symposium II	PS+ Advanced BEOL/Interconnect Etching	HC+ Theory & Dynamics of Heterogeneo. Catalyzed Reactions
ThM	EM+ Nanostructures for Electronic and Photonic Devices	BI Biomolecules and Biophysics at Interfaces	TF+ In-situ Charact. & Modeling of Thin Film Processes	NS+ Nanopatterning and Nano-fabrication	7:00 am Member Coffee 12:30pm "Improving Work-Life Satisfaction"	PS Plasma Sources	TF+ Deposition Processes for 3D and Extreme Geometries	PS+ Atomic Layer Processing: Atomic Layer Etching	HC+ In-situ Analysis of Heterogen. Catalyzed Reactions
ThA	EM+ IoT Session: Flexible Electronics & Flash Session	BI Biolubrication and Wear / Women in Bio-surface Science	SS+ Deposition, Etching and Growth at Surfaces	NS+ SPM – Probing Electronic and Transport Properties		PS Plasma Diagnostics, Sensors and Controls	TF+ IoT Session: Thin Films for Flexible Electronics and IoT	PS+ Atomic Layer Processing: Integration of ALD and ALE	HC+ Bridging Gaps in Hetero-geneously Catal. Reactions
ThP									
FrM		BI+ Characteriz. of Biological and Biomaterial Surfaces		NS+ SPM – Probing Chemical Reactions at the Nanoscale		PS Plasma Modeling			

at a Glance

201B	202A	202B	202C	203A	203B	203C	204	Hall A	Hall B
2D+ 2D Materials Growth and Fabrication	EL+ Application of SE for the Charact of Thin Films and Nanostructures	MM+ Mech, Elec Ther. Opt Syst for In situ TEMam/ Beam Ind Eff & Proc in Liquid/Gas	SE+ Nanostructured Thin Films and Coatings	MP+ Systems and Devices for Quantum Computing I	VT Vacuum Measurement	SS+ Dynamical Processes at Surfaces	AS Quantitative Surface Analysis		
2D+ 2D Materials Characterization including Microscopy and	EL+ Spectroscopic Ellipsometry: Novel Applications and	MM+ X-ray and Electron Spectrom. in Liquids & Gases & Flash Session	SE New Challenges and Opportunities in Surface Engineering	MP+ Systems and Devices for Quantum Computing II	VT Pumping and Outgassing	SS+ Theory and Modeling of Surfaces and Reactions	AS Multitechnique Applications- When More techniques are Better than		
2D+ Properties of 2D Materials including Elect, Mag, Mech, Optical, and Thermal	PC+ Solid-Liquid & Gas-Liquid Interfacial Proc & Charact.	MS+ IoT Session: Challenges of Neuromorphic Computing and Memristor	SE+ Plasma-assisted Surf. Modif & Dep. Processes	MP+ High Coherence Qubits for Quantum Computing	VT Large Vacuum Systems and Accelerator Vac Tech	SS+ Controlling Mechanisms of Surf. Chemical Reactions	AS+ From Electro to Cell Imaging, A Celeb of Nicholas Winograd		
								EW Exhibitor Technology Spotlight Session I	
								EW Exhibitor Technology Spotlight Session II	
2D+ 2D Device Physics and Applications	PC+ Progress in Industrial Proc. & Charact. of Int. and Gas-Solid Inter Proc & Char.	MS+ IoT Session: Challenges of Sensor Manufacturing for the IoT	SE Wear, Oxidation and Corrosion Protective Coatings	RM+ IoT Session: Reconfig. Mtls & Devices for Neuromorphic Computing	VT IoT Session: Vacuum Syst. Design & Autom. & Flash Session	SS+ Oxides/ Chalcogenides: Structures and Reactions	AS Impact of Mod (Ion, Elect Data Anal. on App Surf Sci a Celebration of B. Garrison	EW Exhibitor Technology Spotlight Session III	
									POSTER SESSIONS: AM, BI, EL, MM, MS, PB, PC, PS, RM, SE, SS, TR, VT
2D+ Dopants, Defects, and Interfaces in 2D Materials	PC+ Novel Approaches and Challenges of Interfaces	MN+ IoT Session: Multiscale Mfg: Enabling Mtls and Processes	AC+ Mag., Complexity, & Supercond in the Actinides & Rare Earths	NS+ Micro, Nano and Opto Mechanics	VT Vacuum Technology Developments	SS+ Catalytic Alloys: Understanding Heterogeneity	AS+ Beyond Traditional Surface Analysis	EW Exhibitor Technology Spotlight Session IV	
								EW Exhibitor Technology Spotlight Session V	
2D+ IoT Session: Surface Chemistry, Function, Bio and Sensor	SA+ Hard X-Ray Photoemission for Probing Buried Interfaces	MN+ IoT Session: MEMS for IoT: Chemical and Biological Sensing	AC+ Chemistry and Physics of the Actinides and Rare Earths	NS+ IoT Session: Bio at the Nanoscale	HI Novel Beam Induced Material Eng & Nano-Patterning	SS+ Semiconducting Surfaces	AS+ Industrial and Practical App. of Surface Analysis		
2D+ Novel 2D Materials	SA+ Ultra-fast Dynamics for Magnetic and Quantum Systems	MN+ Opto-mechanics and 2D NEMS	AC+ Nuclear Power, Forensics, and Other Applications	MI+ Magnetism at the Nanoscale	HI+ Advanced Ion Microscopy & Surface Analysis	SS+ Defects in and Functionalization of 2D Materials	AS+ Applied Surf. Analysis of Novel, Complex or Challenging Materials		
2D+ Novel Quantum Phenomena in 2D Materials	SA+ IoT Session: Multi-modal Char. Energy Mtls & Device Processing	MN+ Nonlinear and Thermal Resonators	AC Early Career Scientists	MI+ Inter-disciplinary Magnetism	HI Emerging Ion Sources, Optics, and Applications	SS+ Organic/ Inorganic Surfaces, Interfaces and Nanostructures	AS+ Profiling, Imaging and Other Multi-dimensional Pursuits		
									POSTER SESSIONS: 2D, AC, AS, EM, HC, HI, MI, MN, NS, SA, TF
2D+ Nanostructures including Heterostruct. and Patterning of 2D Materials			AC+ AC & Rare Earth Theory & Related Measure	MI+ Magnetism and Spin-Orbit Coupling at Surf., Int, & Thin Films		SS+ Near/Ambient Pressure and Bridging Gaps bet Surface Sci & Catalysis			

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Michaeleen Pacholski
Applied Surface Science (AS)

Joe Baio
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Electronic Materials & Photonics (EM)

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Nanometer-scale Science & Technology (NS)

Ankur Agarwal
Plasma Science & Technology (PS)

Charlie Sykes
Surface Science (SS)

Paul Poodt
Thin Films (TF)

Gerardo Bruker
Vacuum Technology (VT)

Ivan Oleynik and Daniel Gunlycke
2D Materials

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

David Shuh and Jim Tobin
Actinides and Rare Earths (AC)

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Filippo Mangolini and David Schall
Tribology (TR)



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Xiao Ying Su and Stephen Nonnenmann
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Vivek Adiga
Materials and Processes for Quantum Computing (MP)

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Weidner, Tobias, Aarhus University, Denmark

Biomaterials Plenary Session
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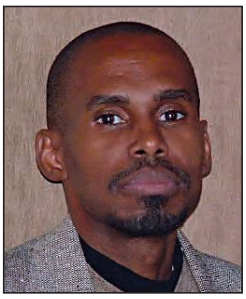

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GENERAL INFORMATION

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AVS 65 Mobile App!

The AVS 65 Event mobile app serves as your all-in-one event guide – giving you everything you need to know in the palm of your hand. 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 AVS65app@avs.org should you need any assistance using the App. You can also stop by the Registration desk and be sure to visit the Member Center for a Mobile App demo on Monday 22, 2018 October at 10:20 a.m.

Be sure to use the app to play the AVS65 Scavenger Hunt and vote for your favorite PSTD Student Poster (see more info on the next page).

Wi-Fi Login

Wi-Fi is available throughout the Convention Center

SSID: AVS
Username: AVS65
Password: longbeach

***** 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 #AVS65 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 65 Mobile app or here are the links:

Twitter: @AVS_Members – @JVSTAB – @biointerphases – @AVSALD

Facebook: www.facebook.com/AVS-143182759040976/

Linked in: https://www.linkedin.com/groups/1309457

Instagram: https://www.instagram.com/avs_events/

EXCITING 2018 EVENTS

Plenary Lecture & Panel Discussion

"The Internet of Things: Shaping the Future of the Medical Device Industry," by Dr. Kim Chaffin – Distinguished Scientist and Bakken Fellow in Strategic and Scientific Operations at Medtronic, plc., Monday, October 22, 5:00–6:00 pm, Grand Ballroom, followed by a special Plenary Panel Discussion from 6:15–7:00 p.m.

Welcome Mixer for Attendees & Exhibitors

The Welcome Mixer will immediately follow the Plenary Panel Discussion on Monday, October 22, from 7:00 p.m.–8:30 p.m. The Mixer is a casual gathering where attendees and exhibitors can enjoy some refreshments and spend time together prior to the opening of the Exhibit Hall.

AVS Member Center – Room #103C

Stop by the Member Center throughout the week to participate in professional development activities, diversity and educational events. Learn about the advantages and benefits of AVS membership and find out how to get more involved in Society events and activities. We will also be showcasing and demonstrating various membership benefits and all attendees are welcome to stop in to participate in our scheduled events, ask questions, or just have a place to meet and network with other attendees. 2018 Members, remember to bring your membership card.

AVS Store – Booth #559, Exhibit Hall

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

AVS Career Center – Booth #162, Exhibit Hall:

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.

Publications Booth – Booth #445, Exhibit Hall

Come meet with the AVS Journal editors, find out how to submit a manuscript, learn about exciting developments in all AVS Journals, and new Journal products and features coming soon.

Art Zone – Booth #543, Exhibit Hall

See the entries into the 2018 art contest and vote for your favorites. Winners will take home cash prizes!

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 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 #563, Exhibit Hall

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!

Special Events Booth – Booth #427, Exhibit Hall

Visit the special events booth for special treats and giveaways.

E-Mail Pavilion – Booth #146

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

AVS 65 Scavenger Hunt – (Mobile App Event)

While attending AVS 65, be sure to join our AVS 65 Scavenger Hunt where you will have the opportunity to earn points and win Great prizes for participating in various AVS 65 events and completing special tasks. Keep your eye on the app for more details.

PSTD Student Poster Award Competition – (Mobile App Event)

Use the Mobile App to vote for your favorite PSTD Student Poster during the Tuesday, 10/23/18, 6:30–8:30 pm Poster Session in Hall B. Look for posted instructions on all eligible posters and help your favorite poster win $200!

Symposium Registration Cancellation Policy

All cancellations must be sent in writing to Yvonne Towse by **October 1, 2018** (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 66 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

Please note that we will be imposing a $20 fee for replacement badges 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 2019 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 2019 membership will take effect on January 1, 2019. Any questions, see Angela Klink at the AVS Member Center (Room 103C).

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. **You can choose either *JVST A, JVST B* or Biointer*phases* depending on the topic**. 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 445 in the Exhibit Hall during the week of the Symposium or contact:

Nancy Schultheis
AVS Publications Office
51 Kilmayne Drive, Suite 104
Cary, NC 27511
Phone: 919-361-2787
Email: publications@avs.org

Complimentary AVS Membership Offer

If you have paid the Full, Student, Early Career, or Technical non-member registration fee, you will receive a complimentary AVS electronic membership for 2019. For more information, see Angela Klink at the AVS Member Center (Room 103C).

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.

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 103B at the Long Beach 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 Manager Director (Registration Area) or Events Manager (Staff Office 103A). 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, 2018; Closes: September 27, 2018)*

Hotel	Room Rates	Parking
Hyatt Regency Long Beach (Headquarters) 200 South Pine Avenue Long Beach, CA 90802	Single/Double: $210-$220	Parking: $29 overnight valet $26 self-parking overnight
Renaissance Long Beach 111 East Ocean Boulevard Long Beach, CA 90802	Single/Double: $220	Parking: $30 overnight valet $24 self-parking overnight
Hilton Long Beach 701 W. Ocean Blvd. Long Beach, CA 90831	Single/Double: $199	Parking: $28 overnight valet $22 self-parking overnight
Courtyard Long Beach 500 East First Street Long Beach, CA 90802	Single/Double: $199	Parking: $29 overnight valet $25 self-parking overnight

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.com until 11:00 pm EST on September 27, 2018. Please contact the hotel directly after October 10, 2018, for all cancellations and changes. Please do not call the hotel prior to October 10, 2018, 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 August 31, 2018. Reservations cancelled AFTER 5:00 p.m. EST on August 31, 2018, 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 September 27, 2018. Please contact the hotel directly after October 10, 2018, for all cancellations and changes. Please do not call the hotel prior to October 10, 2018, as the hotel may not have record of your reservation.

FLASH NETWORKING SESSIONS

IN-SITU MICROSCOPY, SPECTROSCOPY, AND MICROFLUIDICS

Tuesday, October 22, 2018, 2:40-3:00 pm, Room 202B

2:40 pm	PRESENTERS TO BE DETERMINED
6:30 pm	IN-SITU MICROSCOPY, SPECTROSCOPY, AND MICROFLUIDICS POSTER SESSION, TUESDAY, OCTOBER 23RD, 6:30-8:30 PM, HALL B

BIOMATERIAL INTERFACES DIVISION

Tuesday, October 23, 2018, 6:15 pm-6:30 pm, Room 101B

6:15 pm	BI-TuP3 Stimuli-responsive Thin Films made from Highly Methoxylated Citrus Pectin, ZEINAB VEISI, N. ALCANTAR, R. TOOMEY, University of South Florida
6:19 pm	BI-TuP7 Vapor-Deposited Porous Polymers for the Fabrication of Giant Lipid Vesicles, NAREH MOVSESIAN, M.T. MATTHEW TITTENSOR, G. DIANAT, N.M. MALMSTADT, M. GUPTA, University of Southern California
6:23 pm	BI-TuP8 Developing a pH Responsive Hydrogel for the Encapsulation of Poly(ethylene glycol) 3350, PHUONG ANH NGUYEN, B. MATHESON, D. CUYLEAR, H.E. CANAVAN, University of New Mexico
6:27 pm	BI-TuP9 Hemocompatibility of the Endexo™ Fluoro-oligomeric Surface, BILL THEILACKER, Medtronic; J. HO, J. SWENOR, Interface Biologics; M.F. WOLF, J.L. KALSCHEUE, S. THINAMANY, Medtronic; S. UBL, medtronic
6:30 pm	BIOMATERIAL INTERFACES POSTER SESSION, TUESDAY, OCTOBER 23RD, 6:30-8:30 PM, HALL B

VACUUM TECHNOLOGY DIVISION

Tuesday, October 23, 2018, 6:00-6:30 pm, Room 203B

6:15 pm	PRESENTERS TO BE DETERMINED
6:30 pm	VACUUM TECHNOLOGY POSTER SESSION, TUESDAY, OCTOBER 23RD, 6:30-8:30 PM, HALL B

ELECTRONIC MATERIALS & PHOTONICS DIVISION

Thursday, October 25, 2018, 4:00 pm-4:30 pm, Room 101A

4:00 pm	EM-ThP3 Thermal Engineering for High-Power, Flexible Electronics, KATHERINE BURZYNSKI, University of Dayton and Air Force Research Laboratory, Materials and Manufacturing Directorate; E.W. BLANTON, N.R. GLAVIN, E.R. HELLER, M. SNURE, E.M. HECKMAN, Air Force Research Laboratory; C. MURATORE, University of Dayton
4:05 pm	EM-ThP6 NH_4OH Solution Wet Etching for Silicon Channel Thinning of Junctionless-FET, LUCAS STUCCHI-ZUCCHI, A.R. SILVA, J.A. DINIZ, University of Campinas, Brazil
4:10 pm	EM-ThP10 Incorporation of Ferroelectric HfO_2 into Magnetoelectric Random-Access Memory (MeRAM) Devices, K. FITZELL, JEFFREY CHANG, A. ACOSTA, H. MA, X. LI, K.L. WANG, J.P. CHANG, University of California, Los Angeles
4:15 pm	EM-ThP14 High-mobility Helical Tellurium Field Effect Transistors Enabled by Transfer-free, Low-temperature Direct Growth, GUANYU ZHOU, R. ADDOU, Q. WANG, S. HONARI, C.R. CORMIER, L. CHENG, R. YUE, C.M. SMYTH, A. LATURIA, J. KIM, W.G. VANDENBERGHE, M.J. KIM, R.M. WALLACE, C.L. HINKLE, University of Texas at Dallas
4:20 pm	EM-ThP17 Photoemission under Different Mechanisms from Single- and Dual-gate Carbon Nanotubes Field Effect Transistors, S. YANG, BO WANG, S.B. CRONIN, University of Southern California
4:25 pm	EM-ThP18 100 keV Proton Irradiation Effects on AlGaN/GaN Epistructures, MIN KHANAL, S. UPRETY, K. YAPABANDARA, V. MIRKHANI, S. WANG, B. SCHOENECK, T. ISAACS-SMITH, A. AHYI, M.J. BOZACK, M. PARK, Auburn University
6:30 pm	ELECTRONIC MATERIALS & PHOTONICS POSTER SESSION, THURSDAY, OCTOBER 25th, 6:00-8:00 PM, HALL B

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: Long Beach Convention Center, Room 103C

Agenda

Monday	
7:00 a.m.	**Member Giveaway –** FREE Beverages for 2018 Members
10:20 a.m.	**Demo Hour –** AVS Events and Activities/AVS 65 Mobile App
12:15 p.m.	**Professional Development –** "Welcome to AVS Overview" Lunch*
3:00 p.m.	**Professional Development –** Speed Networking for Young Professionals
Tuesday	
7:00 a.m.	**Member Giveaway –** FREE Beverages for 2018 Members
9:00 a.m.	**Demo Hour –** *eSpectra: Surface Science*
10:00 a.m.	**Professional Development –** Working with National Labs and Other User Facilities
12:30 p.m.	**Professional Development –** Job Information Forum and Lunch*
4:00 p.m.	**Professional Development –** SCCAVS/NCCAVS Hospitality Hour (Invitation Only)
6:45 p.m.	**Professional Development –** Electronic Materials and Photonics Division Forum: "Careers at LAM Research"
Wednesday	
7:00 a.m.	**Member Giveaway –** FREE Beverages for 2018 Members
10:00 a.m.	**Diversity and Inclusion – "**Inclusion and Diversity at the Workplace: Your Suggestions for Best Practices"
12:30 p.m.	**Professional Development –** Lunch* and Learn: "XPS for the Non-Analyst"
3:00 p.m.	**Professional Development – "**Get Involved: Tips on How to Moderate and Lead Conference Sessions"
Thursday	
7:00 a.m.	**Member Giveaway –**FREE Beverages for 2018 Members
12:30 p.m.	**Professional Development and Diversity and Inclusion – "**Improving Work-Life Satisfaction" and Lunch*

*Lunch While Supplies Last

➲ View Descriptions

Demos

Monday

10:20 a.m.	**Demo Hour –** AVS Events and Activities/AVS 65 Mobile App (Room 103C)

Moderator: Keith Mitchell, AVS IT Systems/Web Administrator

Want to see all the really cool features available on the AVS Events and Activities and AVS 65 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

9:00 a.m.	**Demo Hour –** *eSpectra: Surface Science* (Room 103C)

Moderator: Jessica Hoy, Journal Manager, AIP Publishing

Do you like coffee? Are you looking for an easier way to analyze spectral data and share your results with your collaborators? Join us for 3 chances to win a $25 Starbucks® gift card and learn more about eSpectra, the new online platform where you can plot, compare and share your data in just a few clicks. Brought to you by AVS and AIP Publishing, eSpectra is the only interactive tool of its kind that lets you easily plot your data against peer-reviewed data, public data, or your team's 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. It includes XPS, AES, and UPS experimental techniques, with additional techniques planned for Fall 2018. Our Free and Individual or Team Premium Access options support a range of research needs from academic to corporate. When you register for Free, you receive a 30-day free trial of Premium Access. Can't wait for the demo? Sign up for free today at eSpectra.aip.org.

Diversity and Inclusion

Wednesday

10:00 a.m.	**Diversity and Inclusion – "**Inclusion and Diversity at the Workplace: Your Suggestions for Best Practices" (Room 103C)

Moderator: Talat Rahman, University of Central Florida

Attend this highly interactive one-hour session to hear from various speakers on how diversity and inclusion is in the workplace. We will start with a speaker who will lead the discussion on this topic and then we will break off into round tables with a speaker at each table to facilitate a 20 minute discussion. Afterward each table will present their suggestions followed by a group discussion. Speakers and table participants include:

- Pat Thiel, Iowa State University
- Stefan Zollner, New Mexico State University
- Mauro Sardela, University of Illinois
- Talat Rahman, University of Central Florida
- Sean Jones, NSF
- Michael Williams, Clark Atlanta University

Professional Development

Monday

12:15 p.m. **Professional Development –** "Welcome to AVS Overview" Lunch* (Room 103C)

Moderator: Charles R. "Chip", Jr., Naval Research Lab

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

- **Publications Editor-in-Chief:** Eray Aydil
- **Symposia and Conferences Chair:** Jim Fitz-Gerald
- **Education Chair:** Tim Gessert
- **Membership Chair:** Susan Burkett
- **Chapters, Divisions and Groups Chair:** Vin Smentkowski
- **Professional Development Chair:** Bridget Rogers

Come hear about the benefits now available to you as an AVS member – both at the symposium this week and throughout the whole year! Meet with key leaders in AVS and find out how you can get involved!
Welcome! We're really glad you're here and we want you to stay!

3:00 p.m. **Professional Development –** Speed Networking for Young Professionals (Room 103C)

Moderator: Angela Klink, AVS Member Services Administrator

First time attending an AVS event?
Need to polish up your elevator speech?

Come join us for this fun and fast-paced networking event designed to provide you with a unique and fun opportunity to share your goals for this symposium and get to know your fellow conference attendees. During this session, you will move from table to table and discuss your technical and personal interests. After the initial meet and greet, you will have the opportunity to network with those who have similar interests or career paths. The speed networking dynamic this creates also helps attendees, including introverts, break the ice more easily. Don't miss out on this chance to make new contacts and turn it into a lasting connection.

MyAVS Stories

Would you like to share your AVS story with us? Stop by the Member Center 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.

Tuesday

10:00 a.m.	**Professional Development –** Working with National Labs and Other User Facilities (Room 103C)

Moderators: Bridget Rogers, Vanderbilt University
Sponsors: AVS Professional Leadership Committee & the Manufacturing Science & Technology Group

Researchers at government labs and in the NSF supported National Nanotechnology Coordinated Infrastructure (NNCI) labs perform cutting edge research with really cool tools. During this hour a representative from the DOE and from the NNCI will give 20-minute presentations about research at their labs, their capabilities, facilities, and how to gain access to them. After the presentations there will be extended time for questions and discussion. Interactions will continue at the Tuesday Poster session where attendees can engage in extended discussions with the presenters at their posters. Speakers are:

- **NNCI:** Michael Skvarla, Cornell University: Joining the Research Community at the Cornell NanoScale Science and Technology Facility
- **DOE:** Arthur Baddorf, Oak Ridge National Labs

12:30 p.m.	**Professional Development –** Job Information Forum and Lunch* (Room 103C)

Moderators: Susan Burkett, The University of Alabama

Panelists provide an overview of their career pathways, what they look for when evaluating job applicants, how they made their career choices, and what it takes to succeed**.** Speakers include:

- **Industry**: Steve Pachuta, Lead Research Scientist, 3M
- **Academia**: Winny Dong, Professor and Dept. Head, Materials Science Department, Cal Poly Pomona
- **National Laboratory**: Matthew Jordan, Electrical Engineer, Mesa III-V and Heterogeneous Integration, Sandia National Laboratories
- **Technical Publishing:** Phillip Szuromi, Deputy Editor, *Science*

4:00 p.m.	**Professional Development –** SCCAVS/NCCAVS Hospitality Hour (Invite Only)

Moderator: Anna Corinne D'Ambrosio

The AVS Southern California Chapter has joined forces with the Northern California AVS to offer "happy hour" for our West Coast AVS members and supporters. Please join us for drinks and light appetizers as our way of saying THANK YOU to our local Chapter supporters, members-at-large, and leadership.

6:45 p.m.	**Professional Development –** Electronic Materials and Photonics Division Forum: "Careers at LAM Research" (Room 103C)

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. A representative from LAM Research 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 –** Lunch* and Learn: "XPS for the Non-analyst" (Room 103C)

Moderator: Jeffrey Fenton, Medtronic

Surface characterization methods, such as XPS, are becoming more commonly used in multidisciplinary environments where researchers use information from multiple technologies, but are not experts in all of them. This new "Lunch and Learn" session is targeted to the XPS non-expert. It will provide an overview of key factors that affect XPS analyses, important information about your samples that you will need to provide your analyst, and how samples must be handled before analysis. You will also learn what information needs to be reported along with analytical results when publishing your data to enable readers of your article to evaluate your XPS data and conclusions based on it. Additionally, sources for additional data and information related to XPS will be identified. Speakers include:

- Kateryna Artyushkova, Research Associate Professor , University of New Mexico
- Mark Engelhard, Sr. Research Scientist, Pacific Northwest National Laboratory

3:00 p.m.	**Professional Development –** Get Involved: Tips on How to Moderate and Lead Conference Sessions (Room 103C)

Moderator: Amy Walker, University of Texas, Dallas

Ever wonder how to get involved in a technical conference? In this one hour session hear from past symposia program chairs on what it takes to get your foot in the door, tips on how to interact with speakers, and how to meet and network with key people in the organization. In addition they will share their insights on what program chairs are looking for in session leaders. Come join us for this interactive session.

Panelists:

- Tino Hofmann, University of North Carolina Charlotte
- Bridget Rogers, Vanderbilt University
- Marcy Stutzman, Jefferson Lab

Thursday

12:30 p.m.	**Professional Development and Diversity and Inclusion – "**Improving Work-Life Satisfaction" and Lunch* (Room 103C)

Moderator: Micky Holcomb, West Virginia University
Sponsors: AVS Professional Leadership, Diversity and Inclusion Committees

Everyone, from students to faculty members, engineers and scientists, administrators, and CEOs, will experience times when they struggle with maintaining a happy work-life balance. This workshop will go over some tips and strategies for improving your own work-life satisfaction. The workshop leader is a funded tenured faculty member, mother of two young children and prior coach for the National Center for Faculty Development and Diversity.

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

AVS Technical Library


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

Presentations on Demand
Recommended Practices • Books • Monographs
Videos • Webinars • Virtual Programs
Conference Articles & Proceedings

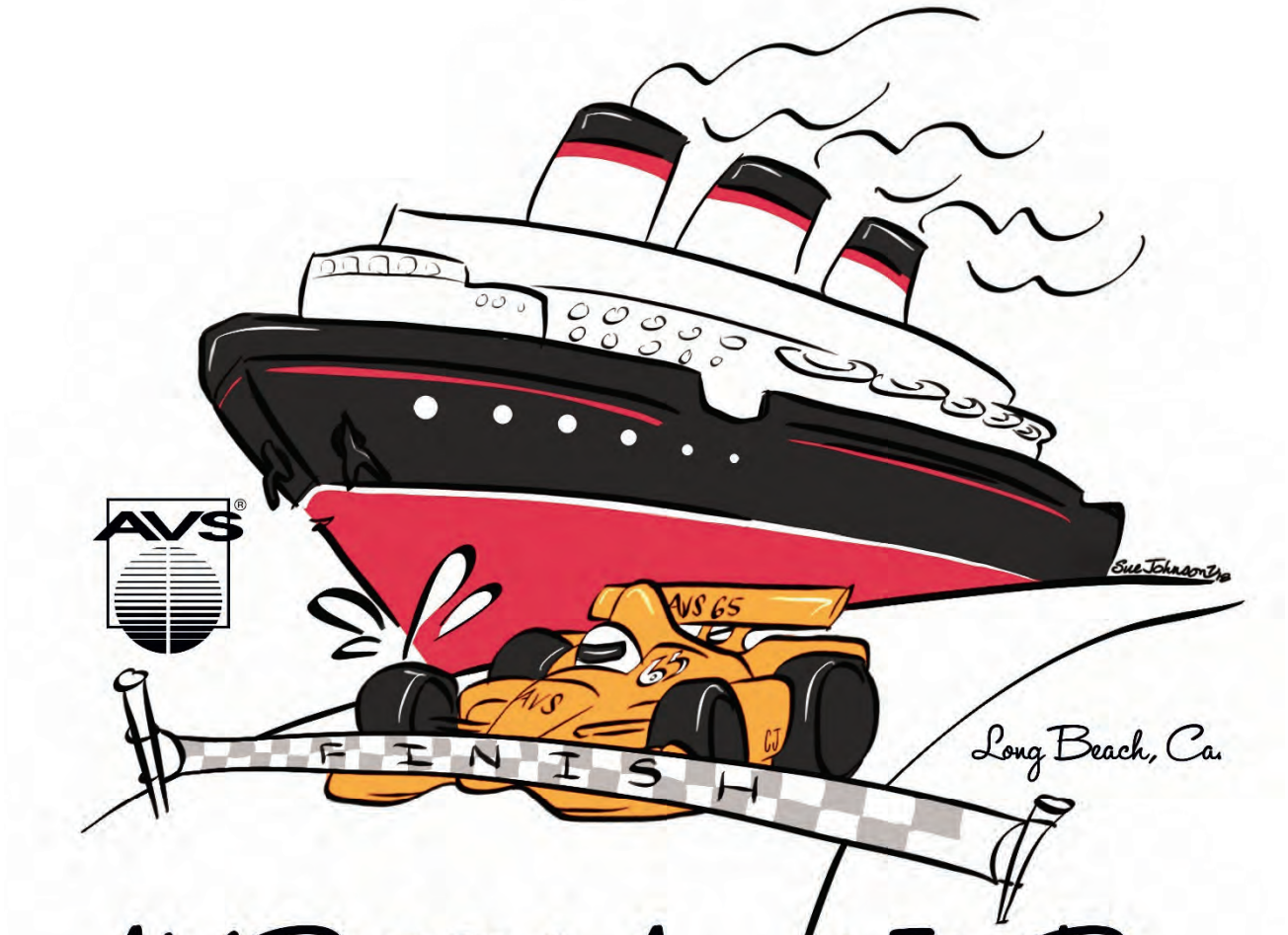
Login at **www.avs.org**

Stop by the AVS Member Center in Room 103 C
to learn more about the AVS Technical Library portal.

How Members Use the Technical Library...

"Presentations on Demand provides the ability to view talks I could not attend at the symposium, it also allows me to go back and capture details I missed. Colleagues who were not able to attend the symposium are viewing the presentations at their convenience!"
–Vincent S. Smentkowski, General Electric GRC

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



AVS 38th Annual 5K Run

Wednesday, October 24th 2018

When: Wed., October 24, 2018, 6:30 a.m.

Registration: $30 ($45 onsite) entry fee includes run t-shirt, race number, map of the course, and awards. Stop by the Run Registration Booth in the Long Beach Convention Center by Tuesday, October 23 to register and/or pick up your materials and schedule.

Details and Awards: This year's race will take place along Pacific Coastline. Come on out and enjoy the sunrise on the beach! The start and finish is within walking distance of the Long Beach Convention Center. With your entry fee you will receive a run t-shirt, race number, and awards. RaceWire Timing 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 23—make sure each team member has registered for the run.

Run Director:
Bridget Rogers, bridget_rogers@avs.org

Visit the AVS STORE

Selling AVS Apparel and Logo Items Year Round

AVS Apparel & Logo Items

Visit the AVS Store at **Booth 559**

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.

NEW! **AVS Zip Hoodie & AVS Pullover**

▶ *Shop Online* at www.avs.org

ICMCTF 46th International Conference on Metallurgical Coatings and Thin Films

May 19-24, 2019 • San Diego, CA, USA

Town & Country Hotel and Convention Center

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

CONFERENCE OVERVIEW

The International Conference on Metallurgical Coatings and Thin Films (ICMCTF) is the premier international conference in the field of **thin-film deposition**, **characterization**, and **advanced surface engineering** promoting global exchange of ideas and information among **scientists**, **technologists**, and **manufacturers**. The Conference includes more than 60 high-profile invited speakers, in over 50 sessions, across twelve technical and topical symposia, several featured **lectures**, as well as focused **topic sessions**, **short courses**, an **equipment exhibition**, an **awards** program, and daily **social networking events**.

Technical Symposia

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

Topical Symposia

- TS1 - High Entropy and Other Multi-principal-element Materials
- TS2 - Icephobic Surface Engineering
- TS3 - Surface Engineering for Lightweight Materials
- TS4 - Thin Film Materials for Flexible Electronics

PLENARY LECTURE

▶ **May 20, 2019, 8:00 a.m.**

"Soft Electronics for the Body"

- Prof. John Rogers, Louis Simpson and Kimberly Querrey Professor of Materials Science and Engineering, Biomedical Engineering and Neurological Surgery, Northwestern University

EXHIBITION KEYNOTE LECTURE

▶ **May 21, 2019, 11:00 a.m.**

"Advanced Performance of Tools in Sheet-metal Forming - The Synergy of Surface Technology and Tooling Material Selection"

- Dr. Farwah Nahif, voestalpine eifeler Vacotec, Germany

Special Interest Talks

"Advanced Monitoring of Thin Film Growth from Real-time Diagnostics"

- Gregory Abadias, Université de Poitiers, France

"Linking Intrinsic Plasma Characteristics to the Microstructure and Properties of Diverse Thin Film"

- Ivan Petrov, University of Illinois, USA, Linköping University, Sweden, USA

Upcoming Deadlines

- ▶ **Early Registration: April 8, 2019**
  (Presenting authors, you must register by April 8, to remain in the Program Book)
- ▶ **Manuscript Submission: April 8, 2019**

General Chair:

Michael Stüber
Karlsruhe Institute of Technology
michael.stueber@kit.edu

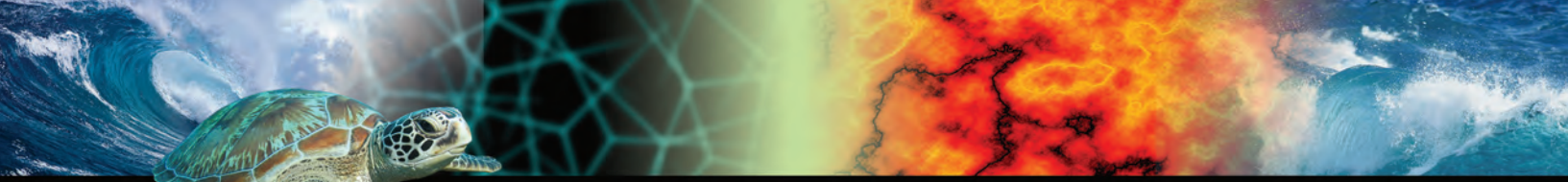
Program Chair:

Christopher Muratore
University of Dayton
cmuratore1@udayton.edu

Conference Management:

Yvonne Towse
Della Miller
Jeannette DeGennaro
Heather Korff
icmctf@icmctf.org

ICMCTF 2019 AVS



pacsurf 2018

Pacific Rim Symposium on Surfaces, Coatings & Interfaces

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, Philippines, 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

Early Registration & Hotel Deadline:
▶ **November 9, 2018**
Manuscript Deadline:
▶ **April 20, 2019**

Biomaterial Surfaces & Interfaces (BI)
BI1: Soft Surface and Biofunctional Coatings
BI2: Bioimaging and Bionanotechnology
BI3: Biomolecule/Material Interactions
BI4: Medical Applications
BI5: 35 Years of NESAC/BIO
BI6: Biomaterial Surfaces and Interfaces Poster Session

Energy Harvesting & Storage (EH)
EH1: Surfaces and Interfaces for Environmental Processes
EH2: Surfaces and Interfaces for Solar Cells and Solar Fuels
EH3: Battery/Supercapacitor Coatings, egs., Li* Batteries & Thermo-/Piezo-electrics
EH4: Surfaces and Interfaces for Efficient Power Conversion
EH5: Energy Harvesting and Storage Poster Session

Nanomaterials (NM)
NM1: Magnetic Properties
NM2: Nanocatalysis
NM3: Nanofabrication and Nanodevices
NM4: Nanocharacterization
NM5: Nanocomposites
NM6: Nanomaterials Poster Session

Plasma Processing (PS)
PS1: Plasma Modification of Surfaces and Materials
PS2: Practical Applications of Plasma
PS3: Plasma-material Interactions
PS4: Plasma Processing Poster Session

Thin Films (TF)
TF1: Nanostructured Surfaces and Thin Films: Synthesis and Characterization
TF2: Innovations in the Development of Multifunctional Thin Films
TF3: Next-generation Protective Coatings and Tribological Applications
TF4: Nanostructural and Surface Morphological Evolution: Experiment and Theory
TF5: Emerging Topics: Growth and Properties of Electronic Materials, 2D Layers, and Metallic-glass Thin Films
TF6: Thin Films Poster Session

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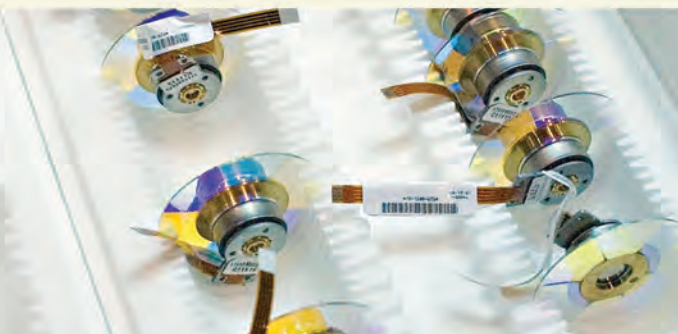
Vacuum and Equipment Technology - vacuum and processing equipment design, operation, and maintenance

Materials and Interface Characterization - chemical, physical, and electrical characterization of films, surfaces, particles, and interfaces

Materials Processing - materials processing, modification, and integration

www.avs.org

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



AVS 65 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 #162

Sunday	**Oct. 21**	**2:00 p.m. – 6:00 p.m.**	**Career Center Registration Area (Submit Job Openings/Résumés)**
Monday	**Oct. 22**	**7:30 a.m. – 5:00 p.m.**	**Career Center Registration Area (Submit Job Openings/Résumés)**
Tuesday	**Oct. 23**	**10:00 a.m. – 5:00 p.m.**	**Exhibit Hall, Booth #162 – Job Fair Open**
Wednesday	**Oct. 24**	**10:00 a.m. – 4:30 p.m.**	**Exhibit Hall, Booth #162 – Job Fair Open**
Thursday	**Oct. 25**	**10:00 a.m. – 2:30 p.m.**	**Exhibit Hall, Booth #162 – Job Fair Open**
Thursday	**Oct. 25**	**2:30 p.m. – 5 :00 p.m.**	**Career Center Registration Area**

EMPLOYERS		JOB SEEKERS
Post Job Openings	↔	**Submit Résumé/CV**
Review Résumés	↔	**Review Job Openings**
Interview Onsite	↔	**Interview Onsite**

SPECIAL SESSIONS/WORKSHOPS

Biomaterial Interfaces Division Plenary Session and Reception

Sunday, October 21, 2018, 3:00–5:30 p.m., Room 101B, Long Beach Convention Center

The Biomaterials Interfaces and AIP's Industrial Physics Forum program kicks off with the now traditional Biomaterials Plenary Session. This year we are pleased to have presentations from two eminent scientists who have made significant contributions to the fields of BioImaging and DNA Based Algorithms. The session will close with the opportunity for further discussions at our traditional Plenary Reception.

MIND Special Symposium: "Symposium on New Magnetic Materials, Devices and Concepts for the Information Society"

Monday, October 22, 2018; 1:20 p.m., Room 201A, Long Beach Convention Center

The symposium will feature four invited talks by renowned speakers from academia and industry who will discuss how we got to where we are today and where to go from here. Magnetic materials and magnetism in general have always been linked very closely to the area of sensing, information processing and storage, owing to its ability to provide long range order at the nanoscale that can be affected not only with magnetic fields but also with electric currents, external pressure etc. The program will address different aspects of how magnetism has played a role in the information society and how it will play a role in the future.

Thin Film Division Panel Discussion of Student Opportunities and the TFD Harper Award TED-Talk Competition (Student-Oriented Event)

Monday, October 22, 2018, 7:30 p.m., Room 102A, Long Beach Convention Center

This special session is an opportunity for the finalist for the Thin Film Division's Harper Award to present their work along the lines of a TED-talk, with 15 minute presentations. A panel of TFD members, in the role of execs and potential employers, will judge and critique these talks in real time for both content as well as presentation quality and originality. Following the talks, the Harper Award winner for the best overall presentation will be announced. This unique session is open to all students who are authors on an abstract presented in a TFD sponsored or TFD co-sponsored session. Prior to the TED-talks the Thin Film Division will host a panel discussion on opportunities for student involvement within the division. We encourage students to use session to inquire about AVS, Thin Film Division, or professional opportunities and jobs based in thin film fields of study. Food and drinks will be provided.

2018 Harper Award Finalists:

1. Devendra Khatiwada, *University of Houston*
2. Dibyashree Koushik, *Eindhoven University of Technology*
3. Jasmine Wallas, *University of Colorado at Boulder*
4. Timothy N. Walter, *The Pennsylvania State University*

SPECIAL SESSIONS/WORKSHOPS

Applied Surface Science Division Memorial Reception

Sunday, October 21, 2018, 6:30 p.m., Regency EF, Hyatt Regency Long Beach

Over the course of the last year we have lost several founding contributors to the field of applied surface science. At this year's meeting we come together to remember their contributions, friendship and leadership to our field, careers and instrumentation. Please join us for a reception as we give tribute to these important people and hear about their lives and achievements from key colleagues and peers.

Alfred Benninghoven
David Briggs
Drew Evans
Klaus Wittmaack

ASTM-E42/ASSD Joint Workshop: "A Tribute to the Careers of Barbara Garrison and Nicholas Winograd"

Tuesday, October 23, 2018, 8:00 p.m., Regency DE, Hyatt Regency Long Beach Hotel

This special session aims to recognize the esteemed careers of Barbara Garrison and Nicholas Winograd and their contributions to applied surface science. Barbara and Nick spent several decades researching the fundamentals and applications of ion/solid and neutral/solid interactions, resulting in hundreds of publications apiece and tens of thousands of combined citations. The extent of their reach will never be replicated and their work will always be remembered for its impact on our community.

Barbara and Nick will each provide a short presentation of their career highlights and Christopher Szakal, a former student of Nick's (also known as a 'Winograduate'), will lead a lighthearted tribute to Barbara and Nick. Audience participation will be paramount to the success of this endeavor, so all are invited to come to this celebratory event!

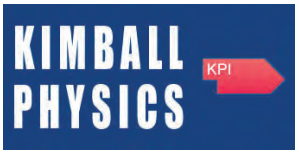
Surface Science Morton M. Traum Presentation

Thursday, October 25, 2018, 12:20 p.m., Room 203 C, Long Beach 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 Symposia. The 2018 Winner will be announced in the Traum Student Award Ceremony.

AVS 65 SPONSORS

AVS would like to acknowledge the following companies who have generously provided support for AVS 65 events.



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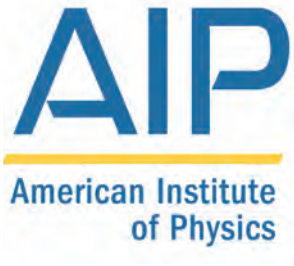

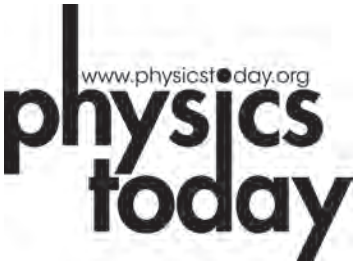

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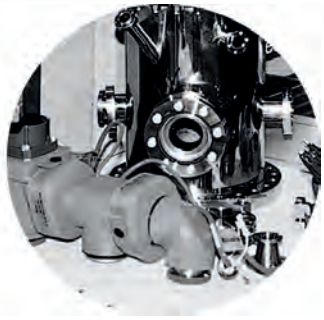

AVS AWARD WINNERS

MEDARD W. WELCH AWARDEES

1970 Erwin W. Mueller
1971 Gottfried K. Wehner
1972 Kenneth C.D. Hickman
1973 Lawrence A. Harris
1974 Homer D. Hagstrum
1975 Paul A. Redhead
1976 Leslie Holland
1977 Charles B. Duke
1978 Georg H. Hass
1979 Gert Ehrlich
1981 Harrison E. Farnsworth
1983 H.H. Wieder
1984 William S. Spicer
1985 Theodore E. Madey
1986 Harald Ibach
1987 Mark J. Cardillo
1988 Peter Sigmund
1989 Robert Gomer
1990 Jerry M. Woodall
1991 Max Lagally
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
2018 David Castner

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
2018 Michael Grunze

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
2018 Peter Bruggeman

AVS AWARD WINNERS

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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)
2017 Xiaolong Liu (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)
2017 Rachael Farber (Loyola University Chicago)

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)
2017 Tania E. Sandoval (Stanford University)

Awards Ceremony & Reception

AVS 65th Annual Awards

Celebrate with AVS awardees
in the Grand Ballroom of the
Long Beach Convention Center,
Long Beach, California

Wednesday, October 24, 2018
at 6:30 p.m.

AVS AWARDS

AWARDS CEREMONY & RECEPTION

The AVS Awards Ceremony will be held on Wednesday, October 24, 2018, at 6:30 pm in Grand Ballroom within the Long Beach Convention Center to be followed immediately by an Awards Reception. This year, AVS honors the following awardees:

David Castner, Medard W. Welch Award

Michael Grunze, Gaede Langmuir Award

Peter Bruggeman, Peter Mark Memorial Award

The newly elected AVS Fellows

The 2018 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.

DAVID CASTNER

Medard W. Welch Award Lecture:
"A Surface Scientist's Journey from Small Molecules to Biomolecules and Biomaterials"

Wednesday, 2:20 pm, Room 104B

David Castner, University of Washington "for leading advances in rigorous and state-of-the-art surface analysis methods applied to organic and biological samples"

David G. Castner is a Professor of Bioengineering and Chemical Engineering, the Director of the National ESCA and Surface Analysis Center for Biomedical Problems (NESAC/Bio), and the Director of the Molecular Analysis Facility at the University of Washington (UW). Prof. Castner received his Ph.D. in Physical Chemistry from University of California at Berkeley in 1979, where he studied small molecule chemisorption and reactivity on rhodium single crystal surfaces. He then spent seven years as a Research Chemist at the Chevron Research Company developing XPS and XAS methods for characterizing heterogeneous catalysts before moving to the UW in 1986 to pursue research in biomedical surface analysis. He was also the Director of the UW Center for Nanotechnology (2004–2005) and the Associate Dean of Engineering for Infrastructure (2009–2012). He has been a Guest Professor at the University of Paris since 2003. Prof. Castner is a Fellow of AVS, Biomaterials Science and Engineering, and American Institute for Medical & Biological Engineering. Prof. Castner received the 2003 Excellence in Surface Science Award from the Surfaces in Biomaterials Foundation, the 2004 Clemson Award for Basic Research from the Society of Biomaterials, the 2014 Rivière Prize from the UK Surface Analysis Forum, and the 2017 ECASIA Award. He was AVS President in 2010 and became an AVS Honorary Member in 2013.

Prof. Castner has an active research program in the areas of surface analysis, surface modification, biomaterials, nanomaterials and organic thin films, co-authoring more than 250 refereed publications and giving more than 220 invited presentations. Over the past 40+ years his surface science/analysis research has covered a wide range of surface modification and characterization topics. Since arriving at the UW in 1986 his research has focused developing new surface analysis methods and using a multi-technique approach to provide detailed characterization of biomedical materials, ranging from implanted biomaterials to diagnostic devices, with a special emphasis on characterizing the interactions of biomolecules (peptides, proteins, DNA, etc.) and cells with biologically relevant surfaces and interfaces. His research has included numerous research collaborations at the UW and around the world, as well as managing multi-disciplinary research projects and teams. He has also been the general chair and program chair for international conferences such as SIMS and PacSurf.

In the 1990s his research focused on using a complementary, multi-technique approach (XPS, ToF-SIMS, NEXAFS, etc.) to determine the composition and structure of organic surfaces ranging from SAMs to RF glow discharge deposited films and relating that information to their biological performance. Since 2000 a major thrust of his research program has been to develop methods for characterizing surface bound proteins and peptides to determine their identity, amount, conformation, orientation and spatial distribution. This research has shown combining ToF-SIMS, multivariate analysis, XPS, NEXAFS, SFG, etc. with molecular dynamics and Monte Carlo simulations is a powerful approach for investigating the structure of surface bound proteins and peptides. In the past 10 years another major research thrust has been the development of surface analysis methods using XPS and TEM measurements in combination with Monte Carlo simulations to characterize the composition and structure of nanoparticles.

GAEDE-LANGMUIR AWARD

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

MICHAEL GRUNZE

"Gaede Langmuir Award Lecture:
"From Description to Prediction of Biointerphase Reactions"

Wednesday, 3:00 pm, Room 101B

Michael Grunze, Ruprecht-Karls-University of Heidelberg, Germany, "taking surface science beyond small molecules at surfaces to complex liquid/surface interactions, including polymers, biointerphases, and biomedical applications, through development of novel experimental approaches, theoretical simulations, and inventions"

Michael Grunze received his Ph.D. in Physical Chemistry in 1974 from the Freie Universität Berlin on the reduction of ZnO with reactive gases. Under the supervision of Wolfgang Hirschwald, he used thermogravimetric methods to derive a kinetic model for the orientation dependence of the reduction of ZnO single crystals. Subsequently, he joined the research group of G. Ertl in Munich as a post-doc and was involved in the first iron single crystal experiments to study the mechanism of nitrogen

adsorption and nitrogen and ammonia dissociation in view of unsolved mechanistic questions related to the Haber Bosch Process. After a short stay with John Pritchard at Queen Mary College in London, he continued his work on catalytic surface reactions at the Fritz Haber Institute of the Max Planck Society in Berlin. The kinetic formalism he derived for nitrogen dissociation on Fe (111) surfaces provided the input for the modelling of the industrial Haber Bosch process. In 1983 he accepted a position as full professor of Physics at the University of Maine, where he developed strategies for the characterization of polymer/metal interfaces and the mechanism of adhesion in these technically important systems. During his tenure at the University of Maine, he also designed and build an x- ray photoelectron spectrometer capable to study adsorption and catalytic reactions on solid surfaces up into the mbar pressure range, a technique which is nowadays employed in several laboratories.

In 1987 M. Grunze accepted the Chair for Applied Physical Chemistry at the University of Heidelberg, where he kept his position until his retirement in 2012. His work continued to be focussed on the static and dynamic properties and applications of thin organic films, e.g. self-assembled monolayers, polymer brushes, and inorganic polymers for medical applications (polyphosphazenes). His group was the first to employ synchrotron-based methods and non-linear optical methods (SHG and SFG) to study the molecular conformation and orientation in adsorbed organic films in air and different solvents. These experiments led to an extended interest of his group in the properties of interfacial water and the forces between objects in an aqueous environment. The experimental work was complemented by collaborative theoretical and modelling work with Hans-Jürgen Kreuzer and Alexander Pertsin, respectively. In these studies, it was shown that the conformational changes of ethylene oxide oligomers in water explain the "inertness "of the respective SAM surfaces, and that by quantitative modelling of solvation forces and their range the forces between experimentally verifiable phospholipid layers and different SAM surfaces in water can be predicted. Over the last 15 years, and ongoing, Michael Grunze´s main research activity is on environmentally benign non-fouling surfaces for marine applications, which resulted in novel strategies and experimental methods to quantify the interaction of unicellular organisms with surfaces.

Michael Grunze´s advances in surface and interface science in research areas ranging from catalysis (e.g., ammonia synthesis) to organic films (e.g., polyimide films and self-assembled monolayers) to biological applications (e.g. non-fouling surfaces and medical implants) led to several national and international awards and honorary lectures and professorships. Together with his students (he supervised 180 graduate students during his academic career), post docs and coworkers he published over 430 publications and filed over 120 patents. Michael Grunze founded and cofounded four companies during his tenure at the Fritz Haber Institute, the University of Maine, the University of Heidelberg, and after his retirement.

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.

PETER BRUGGEMAN

Peter Mark Memorial Award Lecture:
"Plasma-bio Interactions: Investigating Mechanisms to Enable New Applications"

Wednesday, 11:40 am, Room 104B

Peter Bruggeman, University of Minnesota, "for studies that have provided fundamental insights into nonequilibrium atmospheric-pressure discharges and the underlying mechanisms enabling biomedical applications"

Dr. Peter Bruggeman is currently Professor of Mechanical Engineering and director of the High Temperature and Plasma Laboratory (HTPL) at the University of Minnesota. HTPL was founded in 1964 by Professor Emil Pfender and the lab has been a well-known center of plasma research for many decades. Peter obtained his PhD from Ghent University, Belgium, in 2008 and was an Assistant Professor of Applied Physics at the Eindhoven University of Technology, the Netherlands, from 2009 until he joined the University of Minnesota in 2013 as an Associate Professor. He was promoted to Full Professor in 2017.

His primary research interests are plasma-liquid interactions and non-equilibrium plasma kinetics and chemistry applied to plasma processes for environmental, biomedical and renewable energy technologies. A significant part of his research is focused on the fundamental physical and chemical processes of atmospheric pressure non-equilibrium plasmas enabling these applications. Peter has intensively worked on innovative diagnostics methods required due to the complex high collisional and non-equilibrium conditions of atmospheric pressure plasmas.

He has published over 95 papers in peer-reviewed journals of which 12 have been selected as journal highlights. He has delivered invited and keynote lectures at over 60 international meetings and was a lecturer at several summer schools in Germany, USA, Canada and Brazil. His research has been recognized by several awards including the 2012 Hershkowitz Early Career Award, the 2013 Institute of Pure and Applied Physics Young Scientist Medal and Prize in Plasma Physics and the 2016 US Department of Energy Early Career Award.

Peter is an active member of his research community. He is currently the section editor for Plasmas and Plasma-Surface Interactions of the Journal of Physics D: Applied Physics (Institute of Physics Publishing) and serves as an editorial board member of several other journals. He also co-edited the prestigious "2017 Plasma Roadmap" giving directions for the future development of the field of low temperature plasma. Peter is also an elected member of the board of directors of the International Society of Plasma Chemistry and was a member of the management committee of the European COST action MP1101 from 2011 until he relocated to the United States in 2013.

He has been a member of more than a dozen international scientific and organizing committees of meetings in his research field. He is the elected chair of the 2018 Gordon Research Conference on Plasma Processing Science that will take place this summer and organized the conference "Frontiers in Low Temperature Plasma Diagnostics X" in 2013 in the Netherlands. He has been for several years involved in the organization of the International Conference on Plasma Science (ICOPS) as organizing session chair or technical area coordinator and was a co-organizer of a session at the Material Research Symposium in 2015 and 2016. He was also a member of the program committee and session co-chair of the session "Plasma diagnostic and growth processes" at the "International Conference on Metallurgical Coatings and Thin Films" in 2017 organized by AVS.

AVS GRADUATE STUDENT AWARDS

2018 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:

William DeBenedetti, Cornell University
Ryan Hackler, Northwestern University
Angela Hanna, Colorado State University
Zahra Hooshmand, University of Central Florida
Ann Lii-Rosales, Iowa State University
Monu Mishra, CSIR-National Physical Laboratory
Phuong Anh Nguyen, University of New Mexico
Jiancheng Yang, University of Florida

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.

2018 AVS FELLOWS

Heather Canavan, University of New Mexico
Donna Chen, University of South Carolina
Jeffrey W. Elam, Argonne National Laboratory
Daniel Gall, Rensselaer Polytechnic Institute
Grzegorz (Greg) Greczynski, Linköping University, Sweden
Subhadra Gupta, University of Alabama
Jeffrey Hopwood, Tufts University
Robert J. Madix, Harvard University
Paul Mayrhofer, Technische Universität Wien (TU Wien), Austria
Leonidas E. Ocola, IBM T.J. Watson Research Center
Philip Rack, University of Tennessee
François Reniers, Université libre de Bruxelles, Belgium
E. Charles Sykes, Tufts 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 2018 winner will be announced in the Traum Student Award Ceremony, to be held on Thursday, October 25, at 12:30 pm in Room 203C of the Long Beach Convention Center.

Past Winners:

1981	Eric Stuve	1991	David Peale	2001	Jeppe Vang Lauritsen	2011	David Siegel
1982	Steven Gates	1992	Chaochin Su	2002	Seth B. Darling	2012	April Jewell
1983	Ann Smith	1993	Anna Swan	2003	Marcel A. Wall	2013	Xiaofeng Feng
1984	Hans Gossman	1994	Bert M. Müller	2004	Emrah Ozensoy	2014	Feng Zhang
1985	Duane Outka	1995	Frank Zimmermann	2005	Jan Haubrich	2015	Holly Walen
1986	Greg Sitz	1996	Joseph Carpinelli	2006	Petro Maksymovych	2016	Andrew Therrien
1987	Michael Henderson	1997	Barry Stipe	2007	Bogdan Diaconescu	2017	Rachael Farber
1988	Jeff Hanson	1998	Alexander Bogicevic	2008	Jeibin Sun		
1989	Yunong (Neal) Yang	1999	Jongin Hahn	2009	Qing Hua		
1990	Benjamin Wiegand	2000	Anders Carlsson	2010	Heather Tierney		

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 2018 winner will be announced in the Traum Student Award Ceremony, to be held on Thursday, October 25, at 12:30 pm in Room 104A of the Long Beach Convention Center.

Past Winners:

1994	Bruce Kellerman	2001	Nicholas Fuller	2008	Emile Despiau-Pujo	2014	Paul Rumbach
1995	Not Given	2002	Lin Sha	2009	Yang Yang	2015	Hu Li
1996	Jane Chang	2003	Jan Benedikt	2010	Bhavin Jariwala	2016	Souvik Ghosh
1997	Mikhail Malyshev	2004	Jun Belen	2011	Harald B. Profijt	2017	Hyun-Jwon Roh
1998	Catherine Labelle	2005	Joseph Végh	2012	Joe Lee		
1999	Erwin Kessels	2006	Lin Xu	2013	Rohan Chaukulkar		
2000	Siva Kanakasabapathy	2007	Joydeep Guha	2014	Bastien Bruneau		

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 65th 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	2017	Oren Ben Dor

DIVISION AWARDS

Paul H. Holloway Young Investigator Award

The Thin Film Division is pleased to announce Jason Kawasaki, University of Wisconsin, as the 2018 awardee of the Paul H. Holloway Young Investigator Award. Dr. Kawasaki has been given the award for epitaxial growth and elucidation of electronic structure of low-dimensional quantum materials, including Heusler compounds, transition metal oxides, and rare-earth compounds.

This award is named after Professor 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/or 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 consist of a cash prize, a certificate citing the accomplishment of the recipient, and an honorary lecture at one of the TFD 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
2017 Bharat Jalan, University of Minnesota

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
2017 Xiaolong Liu

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 2018 Awardee is Chennupati Jagadish, Australian National 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
2017 Mark Hersam, Northwestern University

TFD Distinguished Technologist Award

The Thin Film Division is pleased to announce Chris Tasker from Oregon State University as the 2018 awardee of the Distinguished Technologist Award.

This award was established to recognize individuals who have provided exceptional technical support for thin film research or related development activities, without whose support many advancements in thin film research would not be possible. Nominees must have provided significant technical support to a laboratory research or development program in an area of interest to the Thin Film Division. Nominations are expect to come from an active AVS member. This award was created and endowed in 2015 by the New Mexico Chapter of AVS to honor its founders and their many contributions. The award consists of a cash prize, travel support for the AVS International Symposium, and a plaque citing the accomplishments of the recipient.

Past Winners:

2015 Catherine Sobczak, Sandia National Labs
2016 Michael Lopez, Sandia National Labs
2017 Janneke Zeebregts, Eindhoven University of Technology

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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Spectra Simplified

LEARN MORE:

AVS Member Center Demo:

Tuesday, October 23rd @ 9am

Exhibitor Technology Spotlight Session:

Tuesday, October 23rd @ 4pm

AIP Publishing Booth 318

espectra.aip.org

Looking for an easier way to analyze spectral data and share your results with your collaborators?

eSpectra lets you plot, compare and share your data in just a few clicks.

eSpectra

EXHIBIT HALL EVENTS

The AVS 65 Exhibits provides you with the opptorunity to visit the companies who offer the products and services which enable you to perform your research. Come learn about the most innovative technology and services available in the industry. Technology Spotlight Sessions take place during session breaks and will showcase new products and services.

EXHIBIT HALL SPECIAL ATTRACTIONS & EVENTS

Ask The Experts - ***Hosted by the AVS Vacuum Technology Division***

AVS Career Center

Exhibitor Technology Spotlight Sessions

AVS Membership & Education Booth

AVS Store: Gifts & Souvenirs

Free Morning Coffee • Lunch • Afternoon Refreshments

Art Zone Display & Competition

Daily Raffle Drawings

E-Mail Pavilion with Laptops, Printing and Charging Station

Caricatures & Foosball Tournament

Competitions & Networking Evebnts

EXHIBIT HALL SCHEDULE

Oct. 23	**Tuesday**	**10am - 5:00pm**
Oct. 24	**Wednesday**	**10am - 4:30pm**
Oct. 25	**Thursday**	**10am - 2:30pm**

Exhibitors displaying their latest products

Media, Editors & Publications

Foosball Tournament

Art Zone/Contest

EXHIBIT FINALE

THURSDAY, OCTOBER 25

EVENTS:

- **Lunch & Refreshments**
- **Art Contest Prize Winners**
- **Raffle Drawings**
- **Grand Prize Rafle Drawing**
- **Foosball Championship**
- **Caricatures**

Long Beach Convention Center • Hall A

AVS-65 International Symposium & Exhibition

Long Beach Convention Center • Long Beach, California • October 21 - 26, 2018

AVS-65 EXHIBITING COMPANIES

Entrance to the Exhibits is Free and Open to the Public October 23 - 25, 2018 • www.avs.org

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Solid Sealing Technology, Inc.
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zeroK NanoTech

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EXHIBITOR TECHNOLOGY SPOTLIGHT SESSIONS

Stage Area of Exhibit Hall (Booth 168) • Long Beach 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 23

10:20am Kurt J. Lesker Company
IMPULSE HIPIMS Power Supply with Positive Pulse Option Advantages
Presenter: Jason Hrebik

10:40am Across International
Choosing the Proper Equipment for Vacuum Heat Treatment
Presenter: Rachael Stene

12:40pm Thermo Fischer Scientific UK
In this presentation we will highlight how the multi-technique capabilities of the Thermo Scientific Nexsa system can be used to analyse samples from a range of application areas.
Presenter: Tim Nunney

1:00pm Kratos Analytical
Exploring the Capabilities of a Modern XPS Spectrometer: In-situ Surface Preparation & Modification
Presenter: Adam Roberts

1:20pm Prevac
Design and Characterization of Nanomaterials using PREVAC's Research Platforms
Presenter: Lukasz Walczak

1:40pm Agilent, Vacuum Products Division
Agilent's New Helium Leak Detector
Presenter: John McLaren

2:00pm Physical Electronics
Auger Multi-Technique: EDS, EBSD, BSE, FIB
Presenter: John Newman

4:00pm AIP Publishing
eSpectra, your Data, and your Collaborations
An easier way to analyze spectral data and share your results with your collaborators. eSpectra lets you plot, compare and share your data in just a few clicks.
Presenter: Jessica Hoy

WEDNESDAY, OCTOBER 24

10:20am Scienta Omicron
HAXPES-Lab: A Laboratory Based System for HAXPES Measurements
Presenter: Susanna Eriksson

10:40am Fischer Scientific
Coatings Characterization Solution from Fischer Technology - XRF, Nanoindentation and Progressive Load Scratch
Presenter: Rahul Nair

12:40pm Scienta Omicron GmbH, Germany
The TESLA JT SPM
Presenter: Markus Maier

1:00pm MKS Instruments
Wide-Range Cold Cathode Transducer: Applications and Market Update
Presenter: David Kelly

THURSDAY, OCTOBER 25

10:00 AVS Presidential Panel
A special panel comprised of past AVS presidents discussing the evolution and direction of AVS as a Society and each president's initiatives, issues, and highlights of their Presidential years.
Joe Greene; Gary McGuire; Rudy Ludeke; John Russell; Alison Baski; Steve George

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 362.

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 or maybe you would like join our team of experts!!

Come challenge our experts and receive a UL Listed Power Bank (while supplies last) and join the A.T.E. raffle for an iPad!

Ask the Experts!...
Exhibit Hall Booth #362

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Hosted by the AVS Vacuum Technology Division

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Exhibit Hall • Booth 362

HISTORICAL PERSPECTIVES OF THE AVS: PAST PRESIDENTS' PANEL

Thursday, October 25, 2018, 10:00 a.m.–12:00 noon
Exhibit Hall A, Stage Area Booth 168, Long Beach Convention Center

Please join us as some of our Past Presidents share some highlights of their respective Presidencies as well as the scientific climate of that time. Their brief presentations will be followed by a Panel Discussion where questions from the audience will be welcome.

AVS 1989 President

Dr. Joe Greene is the D.B. Willett Professor of Materials Science at the University of Illinois, the Tage Erlander Professor of Materials Physics at Linköping University, Sweden, and a Chaired Professor at the National Taiwan University of Science and Technology. The focus of his research has been the development of an atomic-level understanding of adatom/surface interactions during the dynamic process of vapor-phase crystal growth in order to controllably manipulate nanochemistry, nanostructure, and, hence, physical properties. His work has involved film growth by all forms of sputter deposition, solid and gas-source MBE, UHV-CVD, MOCVD, and ALE. Joe has published more than 625 papers and review articles, 29 book chapters, and co-edited four books in the general areas of crystal growth, thin-film physics, and surface science.

He is currently Editor-in-Chief of *Thin Solid Films* and Past Editor of *CRC Critical Reviews in Solid State and Materials Sciences*. He is active in AVS where he has served as a Trustee, Chair of the Thin Film and Advanced Surface Engineering Divisions, member of the Board of Directors, President of the Society, and is currently Clerk. He has also chaired the Thin Film Division, the Education Committee, and the Emerging Countries Committee of the International Union for Vacuum Science, Technique, and Applications (IUVSTA) and served on the Governing Board of the American Institute of Physics and the Executive Committee of the Materials Physics Division of APS. He is presently the AVS representative to IUVSTA.

Major awards include the AVS John A. Thornton Memorial Award (1991); the Tage Erlander Award (1991) from the Swedish Natural Science Research Council; Senior University of Illinois Scholar (1991); an Honorary Doctor of Science Degree (1992) from Linköping University; Fellow of AVS (1993); the Technical Excellence Award from the Semiconductor Research Corporation (1994); the 1996 DOE Award for Sustained Outstanding Research; the 1998 David Adler Award in Materials Physics from the American Physical Society; Fellow of the American Physical Society (1998); the 1998 Aristotle Award from SRC; the D.B. Willett Professor of Engineering; the 1999 MRS David Turnbull Award; the 2001 International Scientist of the Year, election to the U.S. National Academy of Engineering in 2003; Fellow of the Materials Research Society (2013); Lifetime Achievement Award (2013) from the Taiwan Association for Coatings and Thin Film Technology; the SVC Mentor Award (2015); the 2016 World Expert Lecturer Award, University of the Philippines; the Sarton International History of Science Award from the History of Science Society (2016); elected in 2017 as a member of the EU Academy of Sciences, and received the Nathaniel Sugarman Award from SVC in 2018.

AVS 1997 President

Dr. Gary E. McGuire is the President and Chief Technical Officer of the **International Technology Center**, a non-profit research corporation which has fostered two spin-off small businesses, **Adámas Nanotechnologies, Inc.** and **Rivis, Inc.** Dr. McGuire received his Ph.D. from the University of Tennessee and conducted Post-doctoral studies at Oak Ridge National Laboratory before joining Texas Instruments where he conducted research on surfaces of semiconductor materials. Later after joining Tektronix he held several management positions directing research in electronic, display and color copier materials. He joined the Microelectronics Center of North Carolina in 1987 and was initially the Director of Electronic Materials and Devices and later Director of Business Development.

Dr. McGuire has over 130 publications plus 35 books and book chapters. He was Series Editor for *Electronic Materials and Processing* (48 text) for William-Andrews Publishers, an imprint of Elsevier. He has served as Editor of the *Journal of Vacuum Science and Technology B*, the *Journal of Electron Spectroscopy, Surface Science Spectra*, and served on the Editorial Boards of *Critical Reviews in Solid State and Materials Science* and the *Journal of Surface and Interface Analysis*.

He has served in a number of AVS capacities including President, member of Board of Directors, Board of Trustees and Chair of the Electronic and Photonics Division. He is an AVS Fellow and Honorary Member. He is recipient of the Nerkin Award jointly with Olga A. Shenderova for contributions to the development of nanodiamond synthesis, processing, science, and applications.

AVS 2002 President

Dr. Rudolf (Rudy) Ludeke is an Emeritus Research Staff Member of the **IBM Thomas J. Watson Research Center** in Yorktown Heights, NY. He studied electrical engineering at the University of Cincinnati and received an M.A. and Ph.D. degrees in applied physics from Harvard University in 1968. At IBM his research focused on the physics of semiconductors, specifically surface and interface characterization of heterostructures and Schottky barriers. He has published over 130 papers in the open literature and 3 book chapters. Among research highlights are the co-invention of the man-made semiconductor superlattice and the characterization of surface states using core level spectroscopies; both were recognized with IBM Corporate Outstanding Innovation Awards. External recognitions include an Alexander von Humboldt Fellowship in 1977–78 at the Max Planck Institute for Solid State Physics, Stuttgart, Germany, and election to Fellow of the American Physical Society. At IBM he has held a number of management positions.

For AVS, Rudy has served as chair of EMPD and the Constitution and By-Laws Committee. He was elected to the AVS Board of Directors in 1997, served as AVS President in 2002 and subsequently as Trustee. Rudy was presented with an AVS Honorary Membership award in 2009. Presently he serves on the Outreach/Governance/Public Science committee and coordinates AVS's annual participation in the Congressional Visits Day. He was also the lead organizer of 7 American Institute of Physics (AIP) co-sponsored Industrial Physics Forums held at AVS International Symposia.

Rudy is the AVS designated director on the Board of Directors of AIP. He was elected interim Chair of the AIP Board and of the AIP Publishing Board of Managers, serving for 9 months in 2016.

HISTORICAL PERSPECTIVES OF THE AVS: PAST PRESIDENTS' PANEL


AVS 2008 President

Dr. John N. Russell, Jr. is the Superintendent of the Chemistry Division at the **U.S. Naval Research Laboratory (NRL)**. As a member of the Senior Executive Service (SES), he provides executive and technical leadership to approximately 250 government scientists and engineers, military officers, contractors, postdoctoral associates, and students engaged in a materials chemistry program comprised of basic research, applied research, development, and evaluation, which leads to the creation, adoption, and application of new concepts, principles, methods, and techniques that meet the materials and analytical needs of the Navy.

Russell earned a Bachelor of Science (cum laude) in chemistry in 1981 from Dickinson College, and a doctorate in physical chemistry from the University of Pittsburgh in 1987. After a postdoctoral fellowship at the Corporate Research Laboratory of Exxon Research and Engineering Company, he joined the research staff at NRL in 1989. Since 1999, he has held successive roles of greater scope, leading the Functional Materials Section until 2005, and the Surface Chemistry Branch from 2005 to 2018; Russell was selected to the SES and his current position leading the Chemistry Division in June 2018.

As a researcher, he has authored more than 80 peer-reviewed scientific research papers, which have been cited more than 4,600 times with an h-index of 30 (Google Scholar), and holds one U.S. patent. He has given numerous invited and plenary presentations at universities, and international conferences, and from 2013–15 he was detailed part-time to the Chemical and Biological Defense Department (J9CB) of the Defense Threat Reduction Agency where he developed programs within the chemical defense portfolio focused on in operando surface science and plasmonically-assisted photo-catalysis.

Dr. Russell was recognized in 2006 as a Fellow of the American Vacuum Society (AVS). He served as AVS president in 2008, and is a recipient of the AVS Honorary Membership Award, the society's highest honor. He was selected in 2010 as a Fellow of the American Chemical Society (ACS), and is a member of the editorial board of Chemical and Engineering News. He also serves on the ACS Joint-Board Council Committee on Publications, which oversees all ACS journals and editors. As a member of the NRL research staff, Dr. Russell received the Navy Meritorious Unit Commendation Award in 1996 and 2006, and an NRL Research Publication (Berman) Award in 1997.


AVS 2012 President

Dr. Alison A. Baski is Dean of the **College of Science** and Professor of Physics at **California State Polytechnic University, Pomona**. Prior to her arrival at Cal Poly Pomona in 2016, she spent 20 years at Virginia Commonwealth University and served as department chair (2006–2011), executive associate dean (2011–2015) and interim dean (2015–2016) in the College of Humanities and Sciences. Alison earned a B.S. in engineering physics from the University of Colorado-Boulder (1987) and a Ph.D. in applied physics from Stanford University (1991), followed by postdocs at BASF (1991–1993) and the Naval Research Laboratory (1993–1996). She has authored 110 publications in peer reviewed journals and proceedings and has given numerous invited and conference talks on her research. Alison was recognized as an AAAS Fellow in 2010 and as an AVS Fellow in 2015 for her "contributions to the fundamental investigation of semiconductor surfaces using scanning probe techniques and for STEM leadership with the university, community and profession." Since 1990, Alison has been an active member of AVS and has served in a variety of capacities, including as Program Chair (2005–2006) and Chair (2006–2007) of the Surface Science Division, as a member of the Board of Directors (2008–2010), President (2012), chair of the Governance Committee (2014–2015), member of the Publications Committee (2015–present) and as the AVS Member Society representative to AIP (2015–present). For more than a decade, she has also helped represent AVS during its annual participation in STEM Congressional Visits Day to highlight the importance of STEM research and education to our congressional representatives. This event is organized by ASTRA (Alliance for Science and Technology Research in America) and in 2018 Alison joined their Board of Directors to provide her perspective as a STEM researcher/educator and as a member of AVS for nearly three decades.


AVS 2014 President

Dr. Steven M. George is a Professor in the Department of Chemistry 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). Dr. George is directing a research effort focusing on atomic layer deposition (ALD), atomic layer etching (ALE) and molecular layer deposition (MLD). This research is examining new surface chemistry, measuring thin film growth and etching rates, and developing new applications and reactors for ALD, ALE and MLD. Dr. George has more than 400 publications in the areas of thin film growth and etching, surface science, and physical chemistry. He has over 24,000 total citations and his H-index is 78 (September 2018). In addition, he currently has 19 issued U.S. or PCT patents and 11 U.S. or PCT patent applications undergoing review.

Dr. George has been active in the AVS. He was a Trustee (2007–2009), Chair of the Trustees (2009) and on the Board of Directors (2010–2012). He also served as President-Elect (2013), President (2014) and Past-President (2015). Dr. George was also Program Chair for the AVS-52 International Symposium in Boston, Massachusetts (2005). He was Vice Chair (2001) and Chair (2002) of the Thin Film Division (TFD). In addition, he has been on the TFD Program Committee since 1999 and the PSTD Program Committee since 2016. He was also a member of the Executive Committee of the Electronic Materials and Processing Division (1996–1997). Dr. George is currently on the AVS Steering Committees for the International Conference on Atomic Layer Deposition and the International Atomic Layer Etching Workshop. He also teaches a one-day short course on ALD and introduced a half-day webinar on ALE in 2018.

Dr. George has received a number of awards including the AVS John A. Thornton Memorial Award (2017) and the ALD Innovation Award from the AVS International Conference on Atomic Layer Deposition (2013). He also received an R&D 100 Award for Particle-ALD™ (2004), an NSF Creativity Award (2002–2004), an NSF Presidential Young Investigator Award (1988–1993), and an Alfred P. Sloan Foundation Fellowship (1988). Dr. George is a Fellow of the AVS (2000) and the APS (1997). He is also a co-founder of ALD NanoSolutions, Inc., a company that is working to commercialize ALD technology.

SYMPOSIUM PLENARY LECTURE

"The Internet of Things: Shaping the Future of the Medical Device Industry"

Monday, October 22, 2018, 5:00 p.m., Grand Ballroom
Long Beach Convention Center

Dr. Kim Chaffin

Distinguished Scientist and Bakken Fellow in Strategic and Scientific Operations at Medtronic, plc.

The internet has irreversibly changed the way humans interact with each other. Now, we are faced with the Internet of THINGS (IoT). Not only are people connected through a digital network, so are our THINGS. THINGS include our cell phones, our houses and even our medical devices. These THINGS have the capability to store and track data. Prediction is the next evolutionary step of our connected THINGS. Sensors are key enablers to a future where patients are online, and their medical devices are predictive. There are several technical challenges facing sensors development in the medical device industry, which include long term material stability, recharge, integrated data streams, and improved assimilation at biological-device interface. The unique location of these sensors living within the human body make technical solutions particularly challenging. In addition, sensors integration is made more difficult because of our high reliability requirements and regulated medical device industry where the ecosystem creation lags the technology advancements of IoT. We need to define how IoT will impact the Medical Device industry and improve patient outcomes. Who should have access to onboard medical device data streams? How should these data streams be repackaged to change patient behavior? Innovation in this space will change the role of medical devices in patient management, setting us on a new trajectory, perhaps where healthy people are implanted as a preventative measure. Imagine a future where a medical device not only reacts to a medical event after it has occurred but proactively alerts, providing critical instructions for self-intervention and offering an opportunity to avoid the event entirely.

Plenary Panel

"Potential Impact of IoT and Areas of AVS Engagement" (Immediately following Plenary Lecture), 6:15–7:00 p.m.

Panelists:

Dr. Kim Chaffin – *Medtronic, plc* • Prof. Michael Cima – *MIT* • Prof. Subu Iyer – *UCLA* • Dr. Enid Kivuti – *Multek Corp.* • Gary W. Rubloff, *University of Maryland* • Dr. Art Wall – *NextFlex*

Panelists will field questions and engage with the AVS community.

Kim Chaffin has responsibility for leading the enterprise wide technology forecasting effort as well as directing research projects within the Corporate research organization. In her technology forecasting role, Kim works with the four business groups to predict the technology areas that will be critical to the future of the enterprise. Recently, Kim has lead a deep dive into the medical sensors space assessing technology gaps that need to be filled to meet a future where patients will be online through their sensor data and as a result they will expect prediction algorithms to prevent hospitalization. Currently, Kim is leading a technology deep dive into the regenerative medicine space to help assess the scalability of academic discoveries to the large patient population that is served by Medtronic. Kim is an expert in polymer thermodynamics and characterization, especially as it relates to structure-property relationships that govern the long-term stability of and performance copolymers, the bio-resbable properties of scaffold materials, the strength of adhesives and associated cure kinetics, diffusion and drug delivery, polymer processing, and accelerated testing. Kim is frequently consulted for her technical problem-solving expertise (both within and external to Medtronic) and participates on numerous technical review boards and maintains active research collaborations with her academic colleagues. Kim actively teaches both inside and outside of Medtronic, where her focus includes polymer mechanics, adhesion, and medical device reliability. Kim has a strong track record for mentoring in both the Medtronic technical community and in the community at large, where her outside focus is science outreach for young people. Kim has a Ph.D. in Chemical Engineering from the University of Minnesota and master's and bachelor's degrees in Chemical Engineering from the University of Michigan. She is a licensed Professional Engineer in the state of Minnesota. Prior to joining Medtronic in 1999, Kim worked in the automotive industry (Ford Motor Company) on the design and use of adhesives in both product development and manufacturing roles. She is an inventor on 15 issued patents and an author on many peer reviewed publications. Kim recently returned to Minneapolis after a three-and-a-half-year assignment in Switzerland.

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. Start filling your week's schedule with must-see, career enhancing sessions.

2D MATERIALS FOCUS TOPIC (2D):

The 2D materials focus topic will review the world-wide effort exploring 2D materials, including their synthesis, characterization, properties, and applications. More specifically, the presentations will cover growth and fabrication; properties including electronic, magnetic, optical, mechanical, thermal properties; characterization including microscopy and spectroscopy; surface chemistry, functionalization, bio and sensor applications; dopants, defects, and interfaces; nanostructures including heterostructures; device physics and applications; novel 2D materials; and novel quantum phenomena in 2D materials.

ACTINIDES AND RARE EARTHS FOCUS TOPIC (AC):

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, including energy generation, novel nuclear fuels, and structural materials. Both basic and applied experimental approaches, including synchrotron–radiation-based and neutron–based investigations, as well as theoretical modeling 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. Specific sessions will be devoted to a continued, focused emphasis on the advances in the theory and measurements of core-level spectroscopies for the study of actinides and rare earths. Focus Topic emphasis will address advances in chemistry/materials sciences for environmental management and the participation of early career scientists. The shared sessions will be with Applied Surface Science, Magnetic Interfaces/Nanostructures, and the Synchrotron Radiation and FEL Focus Area.

EXTENDING ADDITIVE MANUFACTURING TO THE ATOMIC SCALE FOCUS TOPIC (AM):

This Focus Topic will highlight progress in nanometer and atomic scale fabrication processes leveraging focused electron beams and scanned probe techniques as manipulation tools. Topics will include 3D nanoprinting, single atom manipulation, feedback control and automation, and atomic-scale device fabrication.

As the cutting edge of manufacturing edges into sub ten-nanometer length scales, subtractive processes such as lithography will become inadequate for many applications, motivating nanoscale additive processes. Analogous to macroscopic Additive Manufacturing, micro- and nanoscale additive manufacturing is becoming commonplace with E-beam/ion-beam induced deposition (E/IBID) used routinely in dual beam systems as a miniaturized "welding" method for sample preparation. Additionally, scanned probe techniques have shown demonstrations of additive manufacturing by various methods. Controlled movement of single atoms and construction of materials/molecules atom-by-atom hold great promise for future nanotechnology and miniaturization, both with scanned probe as well as electron beam techniques. Here, we will highlight the recent progress in this field and provide a forum for researchers to push the boundaries of additive manufacturing to the ultimate precision at the atomic level.

ADVANCED NANOPHOTONICS METROLOGY FOCUS TOPIC (AN):

The newly emerged field of nanophotonics have recently brought considerable interest in developing photonics-based nanodevices for various metrology solutions, which have the potential to outperform and replace legacy based metrology. The "Advances in Nanophotonics Metrology" (AN) focus topic will highlight the challenges and the latest development in nanophotonics metrology. It will cover various sensing application such as metrology of physical, chemical and biological properties, frequency synthesis on a photonic chip, and cold-atom based nanophotonic sensors.

APPLIED SURFACE SCIENCE DIVISION (AS):

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 measurement science. We also encourage contributions from other 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. This year we are celebrating the careers of Nicholas Winograd and Barbara Garrison from Penn State with two special sessions dedicated to them. Several special sessions this year are designed to showcase industrial and novel applications of surface analysis.

BIOMATERIAL INTERFACES DIVISION (BI):

The Biomaterials Interfaces Division program begins with the traditional Sunday afternoon Plenary Session with presentations by top scientists in biomaterials and bio-related research. The BI program will then continue with a series of sessions throughout the week to provide an interdisciplinary forum for the presentation and discussion of fundamental aspects of bio-interface science and engineering. 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 for biological systems. This year the BI division is cosponsoring the Industrial Physics Forum (IPF) with the American Institute of Physics. The IPF will showcase exciting, upcoming fields of interest related to biosciences including imaging, sensing, diagnostics, and biomaterial assembly. The IPF will complement our BI sessions with invited speakers representing the leaders in these fields. Areas of interest are: Microbes and Fouling at Surfaces, including control of microbes and fouling, biofilms, biofouling, attachment and adhesion of microbes, assessment of antifouling and fouling release function, antifouling coatings, motility at interfaces, colonization analysis, biofilms and EPS; Biomolecules and Biophysics at Interfaces, including proteins at surfaces, nucleic acids, polysaccharides, adsorption, blood-contacting materials, bioadhesion, and infection and immunity; Characterization of Biological and Biomaterials Surfaces, including spectroscopy, imaging, microscopy, optical and mechanical methods

of thin film analysis, characterization in biological media, quantification, chemometrics, microfluidics, time- and spatial resolution measurements, and scanning probe techniques; Bioanalytics, Biosensors and Diagnostics, including biological membranes, vesicles, membrane processes, forces, recognition, signaling, biosensors, microfluidics, point-of-care devices, paper based sensors, and electrochemistry; Biomaterials and Nanomaterials fabrication, including organic thin films, polymer coatings, hybrid coatings, biologically inspired materials, plasma produced biomaterials, patterning, nanofabrication, rapid prototyping, additive manufacturing, 3D structures, tissue formation, implant integration, artificial organs, 3D biofilm structures; Advanced 3D Imaging of Biological Materials, 3D chemical analysis, 3D tomographic analysis, microscopy, 3D tracking. The BI division is also hosting a special session to honor the contributions of Women in Bio-surface Science. We also invite submissions of Flash/Poster Presentations, to be made in a dedicated session with an accompanying Networking Session involving associated poster presentations. Joint BID/Biointerphases prizes will be awarded for the best student Flash/Poster presentations.

BIOMATERIALS PLENARY SESSION (BP):

The Biomaterials Interfaces and AIP's Industrial Physics Forum program kicks off with the now traditional Biomaterials Plenary Session. This year we are pleased to have presentations from two eminent scientists who have made significant contributions to the fields of BioImaging and DNA Based Algorithms.

SPECTROSCOPIC ELLIPSOMETRY FOCUS TOPIC (EL):

The Spectroscopic Ellipsometry Focus Topic integrates themes ranging from classical material science and thin film characterization to nanometer scale science and novel optical sensing concepts. We will host two oral sessions dedicated to traditional applications of spectroscopic ellipsometry in optical materials and thin film characterization as well as new and emerging topics. The first session will focus on classical research topics of ellipsometry as for instance optical coatings and inorganic thin films characterization. Furthermore, presentations on the ellipsometric investigation of novel optical and electronic materials and materials with subwavelength structures will be included. In the second oral session, we will host presentations on novel experimental and theoretical approaches including for instance imaging ellipsometry or optical critical dimension analysis techniques. The oral sessions will be anchored by two outstanding invited speakers Prof. Mathias Schubert, University of Nebraska-Lincoln and Prof. Vanya Darakchieva, University of Linköping, Sweden. As a highlight of our Spectroscopic Ellipsometry focus topic, 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 Focus Topic student award. Spectroscopic Ellipsometry will also host a poster session. 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.

ELECTRONIC MATERIALS AND PHOTONICS DIVISION (EM):

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 65 will include sessions on emerging topics such as quantum information, nanophotonics, and ultra-wide band gap materials, in addition to core topics such as beyond CMOS, III-V materials and their heterostructures, nanostructures, and more. EMPD consistently attracts distinguished invited speakers from around the globe. We will host 12 invited speakers this year including: Inge Asselberghs (IMEC), Robert Clark (TEL Technology Center), James Enstrom (Cornell University), Suzanne Mohney (Pennsylvania State University), Jelena Vuckovic (Stanford University), Deidre O'Carroll (Rutgers, the State University of New Jersey), Jay Switzer (Missouri University of Science and Technology), Christopher Muratore (University of Dayton), Parag Banerjee (Washington University in St. Louis), Srabanti Chowdhury (UC Davics), Maiken Mikkelsen (Duke University) and Jim Schuck (Columbia University). A poster competition will again be held at AVS 65 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.

FUNDAMENTAL DISCOVERIES IN HETEROGENEOUS CATALYSIS FOCUS TOPIC (HC):

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 third time the HC focus topic has been organized, and is coordinated with the Surface Science Division (SSD). Emphasis this year will be on facilitating dialogue between surface science-based and more applied communities studying heterogeneously catalyzed systems. Session topics include theoretical models, nanoscale structures, gas-surface dynamics, and other novel studies of active surfaces. 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.

ADVANCED ION MICROSCOPY FOCUS TOPIC (HI):

AVS 65 will again be host to the Advanced Ion Microscopy & Beam Induced Nano Engineering Focus Topic, targeting research in focused ion beam technologies including: Nano-engineering; Nano-patterning/machining; Surface analysis (SIMS), Ion microscopy (HIM, Ga FIB); and Emerging ion beam source technologies (GFIS, LMIS, Neutral Beam, Cold beams), as well as other emerging ion beam microscopy applications. This year's sessions will kick off Wednesday afternoon with the Novel Beam Induced Material Engineering & Nano-Patterning session, featuring invited talks from Francis Allen (UC, Berkeley); Yuichi Naitou (AIST, Japan), and Shida Tan (Intel Corp.). The sessions will continue all day Thursday with the Advanced Ion Microscopy & Surface Analysis session in the morning, Emerging Ion Sources, Optics, and Applications session in the afternoon, and Advanced Ion Microscopy Poster session in the evening. Thursday's invited speakers list includes Alex Belianinov (Oakridge NL), Ilari Maasilta (U. of Jyvaskyla, Finland), Shinichi Matsubara (Hitachi, Japan), and Greg Schwind (Thermal Fisher Scientific). These 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 for researchers in the field of ion beam technology and novel ion beam applications.

INDUSTRIAL PHYSICS FORUM (IPF):

The IPFs, scientific gatherings sponsored by the American Institute of Physics and hosted by its member societies, are unique, topic-specific conferences addressing application-focused research in the physical sciences emerging from academia and the private sector. They consist solely of invited talks grouped around several subtopics. The present Forum, the seventh at AVS since 2006, focuses for the first time exclusively on the biophysical/medical sciences and is

co-hosted by the Biomaterials Interfaces Division (BID). The program was designed to broaden the interest and perspective of the BID community through talks partially overlapping research areas of their interest, yet not routinely covered at prior AVS Symposia. The program focuses on innovations in three sub-topics of the biosciences: imaging and structural determination, bioanalytic sensing and diagnostics, and biomaterial assembly. Each topic is covered by five invited speakers in three consecutive morning sessions starting Monday October 22. The afternoons are set aside for contributed talks on topics related to the respective morning sessions. The event is preceded by the traditional BID Plenary session on Sunday afternoon October 21, with topics complementary to those of the IPF.

The session on imaging and structural determination highlights diverse experimental approaches based on infrared, visible, X-ray and mass spectrometric technologies, and encompasses advanced nonlinear optical, fluorescence and Raman spectroscopy, as well as synchrotron and X-ray free electron laser (XFEL) studies for dynamic and 3D imaging of biomolecules and sub-cellular structures at nanoscale resolution. The bioanalytic, biosensor and diagnostic session covers diverse sensing approaches from activated surfaces to discreet nano-sized biomolecular and patterned structures. Topics include advances in in-vitro and in-vivo approaches to disease detection, nanoparticles for monitoring biomolecular functions in their biological environment, subcellular sensors to probe biological processes in live cells, and sensitized surfaces acting as pressure and tunable photo-responsive sensors. The biofabrication session encompasses a structured build-up from basic tissue assembly to the prospects of full organ fabrication. The intermediary steps of vascular co-assembly and its accompanying challenges of supplying life sustaining nutrients and oxygen to the living cells will be amply covered. In addition, the scaffolding required to maintain the integrity of the assembling organ will be discussed, as well as the different approaches and challenges in 3D printing.

MAGNETIC INTERFACES AND NANOSTRUCTURES DIVISION (MI):

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. In detail, the MI program will feature pioneering, controversial, introductory and emerging results in topical areas related to magnetic interfaces and nanostructures. The program will highlight the synergy of our division with other groups within the AVS by featuring magnetic systems that rely on atomic control of surfaces and interfaces. Topics include: (1) Spin-orbit Coupling at Surfaces, Interfaces and Thin Films; (2) Magnetism at the Nanoscale and (3) Interdisciplinary Magnetism. In particular the session on interdisciplinary magnetism will focus on the intersection between magnetism, life sciences and chemistry, highlighting the role of chirality in chemistry and magnetic nanostructures in biology. In addition, we would like to especially focus on the synergy between the research areas covered by MI and their role for the development of new materials and devices for the information society this year. For this reason the program will feature a special symposium on "New Magnetic Materials, Devices and Concepts for the Information Society".

The Magnetic Interfaces and Nanostructures Division will be selecting the best graduate student presentation from finalists for the Leo Falicov Award. MI will also offer an award for postdoctoral fellows who will be presenting papers at this International Symposium. The winners of both awards will be announced towards the end of the meeting.

MIND will also present a special symposium on "New Magnetic Materials, Devices and Concepts for the Information Society" that will be held Monday afternoon in room 201A. The symposium will feature four invited talks by renowned speakers from academia and industry who will discuss how we got to where we are today and where to go from here. Magnetic materials and magnetism in general have always been linked very closely to the area of sensing, information processing and storage, owing to its ability to provide long range order at the nanoscale that can be affected not only with magnetic fields but also with electric currents, external pressure etc. The program will address different aspects of how magnetism has played a role in the information society and how it will play a role in the future.

IN-SITU MICROSCOPY, SPECTROSCOPY, AND MICROFLUIDICS FOCUS TOPIC (MM):

Transmission and scanning electron and X-ray microscopes provide exceptional spatial and spectroscopic resolution through many different signals, and have resulted in countless advances in materials science, electrochemistry, biomedical and environmental research. The MEMS and Microfluidics for In Situ TEM, SEM and X-ray Microscopy Focus Topic session will feature devices that allow the application of different stimuli during imaging: mechanical, electrical, optical etc. – under controlled environmental conditions – gaseous, liquid, high/low-temperature, high-pressure. The session will emphasize the design, fabrication and application of these devices, and will include liquid/gas cells for TEM, SEM and X-ray microscopes, as well as mechanical and electrical test devices and their combinations. We will host prominent invited speakers this year from academia, national labs and industry including: Frances Ross (MIT/IBM), Ray Unocic (ORNL), Luca Gregoratti (ELETTRA), Daan Hein Alsem (Hummingbird Scientific).

MEMS AND NEMS GROUP (MN):

The MEMS and NEMS Technology Group (MN) program will highlight recent advances in the broad areas of micro/nanoelectromechanical systems (MEMS/NEMS), especially latest fundamental studies of novel materials, processes, devices, and emerging functions and applications of MEMS/NEMS, in various areas. This AVS65 MN program will include a focus on sensing, communication, and energy scavenging for internet of things (IoT). Another highlight will be multiscale manufacturing of systems including microfluidics systems and bioMEMS with applications to chemical analytics and healthcare. Our program will include resonant low-dimensional materials and parametric and nonlinear MEMS/NEMS resonators which create intriguing possibilities of integrating these devices with existing fluidic, electronic and optical on-chip networks. The program continues to embrace latest progresses in optical MEMS/NEMS, micro/nanophotonics, optomechanics, quantum MEMS/NEMS, resonant systems, CMOS-MEMS, mesoscopic dynamics and dissipation processes, inertial sensors, harsh-environment transducers, and MEMS/NEMS-enabled energy technologies, etc. It also aims to capture some of the latest advances in soft materials, flexible and implantable MEMS/NEMS for biosensing, bio-inspired microsystems, wearable and wireless healthcare.

MATERIALS AND PROCESSES FOR QUANTUM COMPUTING FOCUS TOPIC (MP):

Materials and processes for quantum computing will highlight the recent advances and challenges in quantum computing. Sessions will cover devices, materials and systems that enable quantum computing. These include single photon amplifiers, ion traps, multiplexers, and advances in cryogenic systems, vacuum technology, microwave to optical conversion schemes etc. Topics will include technological advances in accessing isolated qubits (TSV's, Airbridges, Bump bonds, Pogo pins etc.), materials and processes used to achieve high coherence devices. Apart from the oral sessions, we will have a poster

session, which will provide an opportunity for researchers to interact with their peers in the field.

MANUFACTURING SCIENCE AND TECHNOLOGY GROUP (MS):

The MSTG sessions bring together invited speakers to highlight the challenges needing to be addressed for successful manufacturing of next generation devices and technologies. Our sessions are meant to bring together people working across the spectrum of these technologies, including basic science research, metrology, processing, and development, to encourage everyone to keep these manufacturing challenges in mind as they move the technologies forward. This year we are highlighting the areas of Sensor Manufacturing for the IoT and Neuromorphic Computing and Memristor Manufacturing.

NANOMETER-SCALE SCIENCE AND TECHNOLOGY DIVISION (NS):

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 ubiquitous 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) Nanoscale chemical and biological studies; (b) Advances in fabrication and manufacturing at the nanoscale; (c) Recent developments in the characterization of materials at the nanometer scale, transport, and recent advances in scanned probe microscopy; (d) Areas of convergence between nanotechnology and electrical, magnetic, mechanical, and optical devices and phenomena.

PLASMA BIOLOGY, AGRICULTURE, AND ENVIRONMENT FOCUS TOPIC (PB):

This Focus Topic will address the latest advances and innovations in plasma technology related to biological, agriculture and environment. Topics that this program highlights include: Plasma medicine and therapeutics e.g. wound healing and cancer treatment, microbe inactivation, biomaterials, plasma fertilizer and ammonia production, nitrogen fixation, seed germination, plant and crop treatment, soil treatment, chemical degradation, environmental remediation, waste and water treatment, reduction of greenhouse gas emissions, air and exhaust cleaning, electrostatic precipitation, VOC removal, biofilm and bio-fouling treatments, plasma chemical reactors, hydrogen production, CO production, CO_2 conversion and renewable energy applications. In addition to collaboration of this Focus Topic with the 'Biointerfaces (BI)' and 'Plasma Science and Technology (PS)' Division program, this AVS offers new links with the 'Processing and Characterization of Air-Liquid, Solid-Liquid and Air-Solid Interfaces (PC)' Focus Topic. In commemoration of Prof. Riccardo d'Agostino and his outstanding scientific contributions and service to our community we are also hosting a session 'Plasma and Polymers: the legacy of Riccardo d'Agostino and beyond.'

PROCESSING AND CHARACTERIZATION OF AIR-LIQUID, SOLID-LIQUID AND AIR-SOLID INTERFACES FOCUS TOPIC (PC):

Chemical and physical processes occurring in the surface and interface including the gas-liquid, solid-liquid, and gas-solid interface are important in many applications yet represent grand scientific and engineering challenges. This symposium aims to promote the latest developments of emerging techniques and scientific understanding using in situ/ex situ/non situ/operando imaging, spectroscopy and microscopy to investigate challenging surfaces and interfaces with diverse applications in biology, catalysis, energy storage, environment, and material sciences. Contributions are invited including but not limited to fundamental research, industrial applications, novel approaches, and metrology of surface and interfacial phenomena.

PLASMA SCIENCE AND TECHNOLOGY DIVISION (PS):

The 2018 Plasma Science & Technology Division (PSTD) program highlights state-of-the-art advances in plasma research, ranging from fundamental studies of plasma physics and chemistry to new applications such as IoT, Atomic Layer Processing in semiconductor fabrication, II-VI/III-V, enabling nanomaterials/nanoparticles and plasmas for environmental and medicinal applications. The core PSTD program features fifteen oral sessions and a poster session, as well as joint sessions with the "Applied Surface Science", "Electronic Materials", "Nanometer-scale Science and Tech" divisions and "2D Materials", and "Plasma Biology, Agriculture, and Environment" focus topics. With the "Thin Films Division", a new session track of "Atomic Layer Processing" is also featured illustrating the synergy between ALD and ALE. The session on AVS65 theme of IoT features talks by 2018 Plasma Prize Winner, Dr. Meyya Meyyappan (NASA) in addition to Prof. Iyer (UCLA), Dr. Seddon (ON Semi) and Dr. Meyya Meyyappan, the 2018 Plasma Prize Winner. A special highlight for 2018 is a session to commemorate the Life and Legacy of Riccardo d'Agostino.

RECONFIGURABLE MATERIALS AND DEVICES FOR NEUROMORPHIC COMPUTING FOCUS TOPIC (RM):

Since traditional computing systems have begun to reach the theoretical limits of their performance, alternative, biologically inspired approaches to computing have become increasingly important. These neuromorphic computer systems often require new devices and materials beyond those typically available in traditional CMOS and semiconductor foundries and have both reconfigurable and continuously tunable properties. This Focus Topic will explore both the new materials used in these next generation systems as well as nanoscale, integrated demonstrations of next generation computing systems.

NOVEL TRENDS IN SYNCHROTRON AND FEL-BASED ANALYSIS FOCUS TOPIC (SA):

Advanced scattering, diffraction, spectroscopic and imaging techniques developed at electron accelerator based X-ray light sources have made revolutionary contributions to understanding of structure-dynamic-function relationships in various complex functional materials where interfaces are an inherent feature. At AVS 65th dedicated to processing and interfaces for the IoT era this topical session will provide a forum for communicating the latest research paradigm in exploration of complex interfacial systems that have allowed to go beyond periodic and equilibrium structures for obtaining unprecedented insights into the relationships between synthesis, processing and properties that enable the desired functionality. The selected topical presentations will

illustrate the unique opportunities, opened by several novel tools for in-situ studies, to uncover peculiar atomic arrangements and composition profiles across the interfaces and explore how the interfacial structure and functionality respond to external stimuli such as temperature, electric or magnetic field, light and changes in the chemical composition by exposing to various environments.

ADVANCED SURFACE ENGINEERING DIVISION (SE):

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 synthesize thin films and coatings on surfaces of interest. Topics related to analysis and characterization of such modified surfaces are covered by the session "Nanostructured Thin Films and Coatings." This includes also contributions on new and advanced characterization techniques in order to gain further details. A frequent application of coatings is to protect the underlying surface from environmental influences. The session "Wear, Oxidation and Corrosion Protective Coatings" deals with all different kinds of protective coatings in academic research, but also in industrial and 'real-world' applications. Last but not least the session "New Challenges and Opportunities in Surface Engineering" serves as a forum to gather new ideas and developments in the field and to show its broadness. The main focus is on topics and contributions that show how surface engineering can assist to solve present-day and future problems. All invited lectures 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 four oral sessions and one poster session.

SURFACE SCIENCE DIVISION (SS):

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 DIVISION (TF):

The Thin Film Division offers several core oral sessions and one poster session. A broad range of outstanding invited speakers will touch on topics across the breadth of thin film science, technology and applications. There are several sessions dedicated to thin film deposition and processing, including energy conversion and storage, electronics, photovoltaics, 3D and extreme geometries, precursors, surface reactions, memory, magnetics and organic-inorganic hybrid materials. These sessions highlight basic science and the pursuit of applications. Furthermore, we offer sessions on in-situ diagnostics for CVD and ALD processes, organic-inorganic interface engineering and modeling of thin film processes. There will also be new sessions around emerging applications and thin film processes for flexible electronics and IoT. We are also excited to announce, in collaboration with the Plasma Science & Technology Division, a new session track on Atomic Layer Processing (ALP), to highlight the synergy between ALD and ALE. Abstracts are solicited on topics ranging from atomic layer etching (plasma or thermal), area selective deposition, chemistry and surface reactions for ALP and integration of ALD and ALE. Other relevant ALP topics also include area selective patterning, plasma-enhanced ALD, emerging applications, diagnostics and high volume manufacturing of ALP. Again this year, we will host a student-focused session to highlight the Harper Award candidates in which the student finalists will present their work in an interactive "TEDTalk" type of forum. Finally, we will host a special session in honor of Paul Holloway to celebrate his contributions to the AVS: Luminescent Materials Growth, Synthesis and Characterization.

TRIBOLOGY FOCUS TOPIC (TR):

The Tribology Focus Topic will feature talks on nanoscale wear with applications in nano-metrology and nano-manufacturing, molecular origins of friction, lubricants and coatings, and friction in biological systems. This focus session is jointly sponsored by the Applied Surface Science (ASSD) Division, Thin Films (TF), Nanometer-scale Science and Technology (NSTD), and Biointerfaces (BI). Particular emphasis is given to scientific advancements in our understanding of the links between nanoscale information (either simulations or experiments, but preferably both) and 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.

VACUUM TECHNOLOGY DIVISION (VT):

The Vacuum Technology Division (VTD) provides a forum for research in achieving, maintaining, measuring, and analyzing vacuum across a wide range of pressures, gas compositions and applications. The 2018 VT oral program topics include: (1)Vacuum Measurement,(2)Vacuum Pumping and Outgassing,(3) Large Vacuum System and Accelerator Vacuum Technology and(4) Vacuum System Design and Automation. The VTD 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 oral presentations. To be eligible for a student prize, the presenter must be registered as a student and present the work in a VTD poster or oral session.

SESSION OVERVIEW

Symposium Plenary Lecture

Mon. 5:00 PM, Grand Ballroom (CC)
"The Internet of Things: Shaping the Future of the Medical Device Industry"
Dr. Kim Chaffin – Distinguished Scientist and Bakken Fellow in Strategic & Scientific Operations at Medtronic, plc.

Advanced Surface Engineering

Mon.	AM	Room 202C	Nanostructured Thin Films and Coatings
Mon.	PM	Room 202C	New Challenges and Opportunities in Surface Engineering
Tue.	AM	Room 202C	Plasma-assisted Surface Modification and Deposition Processes
Tue.	PM	Room 202C	Wear, Oxidation and Corrosion Protective Coatings
Tue.	PM	Room Hall B	Advanced Surface Engineering Division Poster Session

Applied Surface Science

Mon.	AM	Room 204	Quantitative Surface Analysis
Mon.	PM	Room 204	Multitechnique Applications – When More Techniques are Better than One
Tue.	AM	Room 204	Applied Surface Science: From Electrochemistry to Cell Imaging, a Celebration of the Career of Nicholas Winograd
Tue.	PM	Room 204	The Impact of Modeling (Ion, Electron) and Data Analysis on Applied Surface Science, a Celebration of the Career of Barbara Garrison
Wed.	AM	Room 204	Beyond Traditional Surface Analysis
Wed.	PM	Room 204	Industrial and Practical Applications of Surface Analysis
Thu.	AM	Room 204	Applied Surface Analysis of Novel, Complex or Challenging Materials
Thu.	PM	Room 204	Profiling, Imaging and Other Multidimensional Pursuits
Thu.	PM	Room Hall B	Applied Surface Science Division Poster Session

Biomaterial Interfaces

Mon.	PM	Room 101B	Advanced Imaging and Structure Determination of Biomaterials Research
Tue.	PM	Room 101B	IoT Session: Biofabrication, Bioanalytics, Biosensors and Diagnostics
Tue.	PM	Room Hall B	Biomaterial Interfaces Division Flash Poster Session
Wed.	PM	Room 104B	Current and Future Stars of the AVS Symposium II
Wed.	PM	Room 101B	Microbes and Fouling at Surfaces
Thu.	AM	Room 101B	Biomolecules and Biophysics at Interfaces
Thu.	PM	Room 101B	Biolubrication and Wear / Women in Bio-surface Science
Fri.	AM	Room 101B	Characterization of Biological and Biomaterial Surfaces

Biomaterials Plenary

Sun.	PM	Room 101B	AVS BIP & AIP IPF Forum Plenary Session

Electronic Materials and Photonics

Mon.	AM	Room 101A	IoT Session: CMOS, Beyond the Roadmap and Over the Cliff
Mon.	PM	Room 101A	Atomic Layer Processing: Selective-Area Patterning (Assembly/Deposition/Etching)
Tue.	PM	Room 101A	Solar/Energy Harvesting and Quantum Materials and Applications
Wed.	AM	Room 101A	Surface and Interface Challenges in Electronics and Photonics
Wed.	PM	Room 101A	Wide and Ultra-Wide Bandgap Materials for Electronic Devices: Growth, Modeling and Properties
Thu.	AM	Room 101A	Nanostructures for Electronic and Photonic Devices
Thu.	PM	Room 101A	IoT Session: Flexible Electronics & Flash Networking Session
Thu.	PM	Room Hall B	Electronic Materials and Photonics Division Poster Session

Industrial Physics Forum

Mon.	AM	Room 101B	Biofabrication: From Tissue to Organ
Tue.	AM	Room 101B	Advanced Imaging and Structure Determination of Biomaterials
Wed.	AM	Room 101B	IoT Session: Bioanalytics, Biosensors and Diagnostics

Magnetic Interfaces and Nanostructures

Mon.	PM	Room 201A	IoT Session: Symposium on New Magnetic Materials, Devices and Concepts for the Information Society
Thu.	AM	Room 203A	Magnetism at the Nanoscale
Thu.	PM	Room 203A	Interdisciplinary Magnetism
Thu.	PM	Room Hall B	Magnetic Interfaces and Nanostructures Division Poster Session
Fri.	AM	Room 203A	Magnetism and Spin-Orbit Coupling at Surfaces, Interfaces and Thin Films

Manufacturing Science and Technology

Tue.	AM	Room 202B	IoT Session: Challenges of Neuromorphic Computing and Memristor Manufacturing
Tue.	AM	Room 103C	Working with Government Labs and other User Facilities
Tue.	PM	Room 202B	IoT Session: Challenges of Sensor Manufacturing for the IoT
Tue.	PM	Room Hall B	Topics in Manufacturing Science and Technology Poster Session

MEMS and NEMS

Wed.	AM	Room 202B	IoT Session: Multiscale Manufacturing: Enabling Materials and Processes
Wed.	PM	Room 202B	IoT Session: MEMS for IoT: Chemical and Biological Sensing
Thu.	AM	Room 202B	Optomechanics and 2 D NEMS
Thu.	PM	Room 202B	Nonlinear and Thermal Resonators
Thu.	PM	Room Hall B	MEMS and NEMS Group Poster Session

Nanometer-scale Science and Technology

Mon.	PM	Room 102B	SPM – New Imaging and Spectroscopy Methodologies
Tue.	PM	Room 102B	SPM – Probing and Manipulating Nanoscale Structures
Wed.	PM	Room 203A	IoT Session: Bio at the Nanoscale
Thu.	PM	Room 102B	SPM – Probing Electronic and Transport Properties
Thu.	PM	Room Hall B	Nanometer-scale Science and Technology Division Poster Session
Fri.	AM	Room 102B	SPM – Probing Chemical Reactions at the Nanoscale

SESSION OVERVIEW

Plasma Science and Technology

Mon.	AM	Room 104A	Plasma-Surface Interactions
Mon.	AM	Room 104C	Plasma Deposition and Plasma-Enhanced ALD
Mon.	PM	Room 104A	Plasma and Polymers: The Legacy of Riccardo d'Agostino and Beyond
Tue.	AM	Room 104A	Plasma Processing of Challenging Materials – I
Tue.	AM	Room 104C	Plasma Medicine
Tue.	PM	Room 104A	Plasma Processing of Challenging Materials – II
Tue.	PM	Room 104C	Atmospheric Pressure Plasmas
Tue.	PM	Room Hall B	Plasma Science and Technology Division Poster Session
Wed.	AM	Room 104B	Current and Future Stars of the AVS Symposium I
Wed.	AM	Room 104A	Advanced Patterning
Wed.	AM	Room 104C	IoT Session: Enabling IoT Era
Wed.	PM	Room 104C	Advanced BEOL/Interconnect Etching
Thu.	AM	Room 104C	Atomic Layer Processing: Atomic Layer Etching
Thu.	AM	Room 104A	Plasma Sources
Thu.	PM	Room 104C	Atomic Layer Processing: Integration of ALD and ALE
Thu.	PM	Room 104A	Plasma Diagnostics, Sensors and Controls
Fri.	AM	Room 104A	Plasma Modeling

Surface Science

Mon.	AM	Room 203C	Dynamical Processes at Surfaces
Mon.	PM	Room 203C	Theory and Modeling of Surfaces and Reactions
Tue.	AM	Room 203C	Controlling Mechanisms of Surface Chemical Reactions
Tue.	PM	Room 203C	Oxides/Chalcogenides: Structures and Reactions
Tue.	PM	Room Hall B	Surface Science Division Poster Session
Wed.	AM	Room 203C	Catalytic Alloys: Understanding Heterogeneity
Wed.	PM	Room 203C	Semiconducting Surfaces
Thu.	AM	Room 203C	Defects in and Functionalization of 2D Materials
Thu.	PM	Room 203C	Organic/Inorganic Surfaces, Interfaces and Nanostructures
Thu.	PM	Room 102A	Deposition, Etching and Growth at Surfaces
Fri.	AM	Room 203C	Near/Ambient Pressure and Bridging Gaps between Surface Science and Catalysis

Thin Films

Mon.	AM	Room 102A	Precursors and Surface Reactions
Mon.	AM	Room 104B	IoT Session: Thin Film Processes for Energy Storage
Mon.	PM	Room 102A	Thin Films for Advanced Memory Applications and Magnetics
Mon.	PM	Room 104B	IoT Session: Thin Films for Photovoltaics
Tue.	AM	Room 104B	Atomic Layer Processing: Area Selective Deposition
Tue.	AM	Room 102A	Special Session in Honor of Paul Holloway: Luminescent Materials Growth, Synthesis and Characterization
Tue.	AM	Room 101A	Emerging Applications for ALD
Tue.	PM	Room 104B	Atomic Layer Processing: Chemistry & Surface Reactions for Atomic Layer Processing
Tue.	PM	Room 102A	Organic/Inorganic Materials and Interfaces
Wed.	AM	Room 102A	Thin Film Processes for Electronics and Optics I
Wed.	PM	Room 102A	Thin Film Processes for Electronics and Optics II
Thu.	AM	Room 102A	In-situ Characterization and Modeling of Thin Film Processes
Thu.	AM	Room 104B	Deposition Processes for 3D and Extreme Geometries
Thu.	PM	Room 104B	IoT Session: Thin Films for Flexible Electronics and IoT
Thu.	PM	Room Hall B	Thin Film Poster Session

Vacuum Technology

Mon.	AM	Room 203B	Vacuum Measurement
Mon.	PM	Room 203B	Pumping and Outgassing
Tue.	AM	Room 203B	Large Vacuum Systems and Accelerator Vacuum Technology
Tue.	PM	Room 203B	IoT Session: Vacuum System Design and Automation & Flash Networking Session
Tue.	PM	Room Hall B	Vacuum Technology Division – Poster Session
Wed.	AM	Room 203B	Vacuum Technology Developments

Exhibitor Technology Spotlight Workshops

EW-TuB	Exhibitor Technology Spotlight Session I
EW-TuL	Exhibitor Technology Spotlight Session II
EW-TuAB	Exhibitor Technology Spotlight Session III
EW-WeB	Exhibitor Technology Spotlight Session IV
EW-WeL	Exhibitor Technology Spotlight Session V

2D Materials Focus Topic

Mon.	AM	Room 201B	2D Materials Growth and Fabrication
Mon.	PM	Room 201B	2D Materials Characterization including Microscopy and Spectroscopy
Tue.	AM	Room 201B	Properties of 2D Materials including Electronic, Magnetic, Mechanical, Optical, and Thermal Properties
Tue.	PM	Room 201B	2D Device Physics and Applications
Wed.	AM	Room 201B	Dopants, Defects, and Interfaces in 2D Materials
Wed.	PM	Room 201B	IoT Session: Surface Chemistry, Functionalization, Bio and Sensor Applications
Thu.	AM	Room 201B	Novel 2D Materials
Thu.	PM	Room 201B	Novel Quantum Phenomena in 2D Materials
Thu.	PM	Room Hall B	2D Materials Poster Session
Fri.	AM	Room 201B	Nanostructures including Heterostructures and Patterning of 2D Materials

Actinides and Rare Earths Focus Topic

Wed.	AM	Room 202C	Magnetism, Complexity, and Superconductivity in the Actinides and Rare Earths
Wed.	PM	Room 202C	Chemistry and Physics of the Actinides and Rare Earths
Thu.	AM	Room 202C	Nuclear Power, Forensics, and Other Applications
Thu.	PM	Room 202C	Early Career Scientists
Thu.	PM	Room Hall B	Actinides and Rare Earths Poster Session

Fri.	AM	Room 202C	Actinide and Rare Earth Theory and Related Measurements

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

Advanced Nanophotonics Metrology Focus Topic (within NS)

Mon.	AM	Room 102B	IoT Session: Nanostructured Devices and Sensors
Tue.	AM	Room 102B	Nanophotonics, Plasmonics, and Metamaterials
Wed.	AM	Room 203A	Micro, Nano and Opto Mechanics
Thu.	AM	Room 102B	Nanopatterning and Nanofabrication

Extending Additive Manufacturing to the Atomic Scale Focus Topic

Tue.	PM	Room Hall B	Extending Additive Manufacturing to the Atomic Scale Poster Session
Wed.	AM	Room 102B	Nanofabrication with Focused Electron Beams (8:00–10:00 am)/Atomic Scale Manipulation with Focused Electron Beams (11:00 am–12:20 pm)
Wed.	PM	Room 102B	Atomic Scale Manipulation with SPM

Fundamental Discoveries in Heterogeneous Catalysis Focus Topic

Tue.	AM	Room 201A	Nanochemistry in Heterogeneous Catalysis
Tue.	PM	Room 201A	A Tale of Two Scales: Catalytic Processes and Surface Science
Wed.	AM	Room 201A	Mechanisms and Reaction Pathways of Heterogeneously Catalyzed Reactions
Wed.	PM	Room 201A	Theory and Dynamics of Heterogeneously Catalyzed Reactions
Thu.	AM	Room 201A	In-situ Analysis of Heterogeneously Catalyzed Reactions
Thu.	PM	Room 201A	Bridging Gaps in Heterogeneously Catalyzed Reactions
Thu.	PM	Room Hall B	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Poster Session

In-situ Microscopy, Spectroscopy, and Microfluidics Focus Topic

Mon.	AM	Room 202B	Mechanical, Electrical, Thermal and Optical Systems for In situ TEM (9:00–10:10 am)/Beam Induced Effects and Processing in Liquid/Gas Cells for TEM/SEM (10:40–11:40 am)
Mon.	PM	Room 202B	X-ray and Electron Spectromicroscopy in Liquids and Gases & Flash Networking Session
Tue.	PM	Room Hall B	In-situ Microscopy, Spectroscopy, and Microfluidics Focus Topic Poster Session

Materials and Processes for Quantum Computing Focus Topic

Mon.	AM	Room 203A	Systems and Devices for Quantum Computing I
Mon.	PM	Room 203A	Systems and Devices for Quantum Computing II
Tue.	AM	Room 203A	High Coherence Qubits for Quantum Computing

Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic

Wed.	PM	Room 202A	Hard X-Ray Photoemission for Probing Buried Interfaces
Thu.	AM	Room 202A	Ultra-fast Dynamics for Magnetic and Quantum Systems
Thu.	PM	Room 202A	IoT Session: Multi-modal Characterization of Energy Materials & Device Processing
Thu.	PM	Room Hall B	Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic Poster Session

Plasma Biology, Agriculture, and Environment Focus Topic

Tue.	PM	Room Hall B	Plasma Biology, Agriculture, and Environment Focus Topic Poster Session
Wed.	PM	Room 104A	Plasma Agriculture & Environmental Applications

Processing and Characterization of Air-Liquid, Solid-Liquid and Air-Solid Interfaces Focus Topic

Tue.	AM	Room 202A	Solid-Liquid and Gas-Liquid Interfacial Processes and Characterization
Tue.	PM	Room 202A	Progress in Industrial Processes and Characterization of Interfaces and Gas-Solid Interfacial Processes and Characterization
Tue.	PM	Room Hall B	Processing and Characterization of Gas-Liquid, Solid-Liquid, and Gas-Solid Interfaces
Wed.	AM	Room 202A	Novel Approaches and Challenges of Interfaces

Reconfigurable Materials and Devices for Neuromorphic Computing Focus Topic

Tue.	PM	Room 203A	IoT Session: Reconfigurable Materials and Devices for Neuromorphic Computing
Tue.	PM	Room Hall B	Reconfigurable Materials and Devices for Neuromorphic Computing Poster Session

Spectroscopic Ellipsometry Focus Topic

Mon.	AM	Room 202A	Application of SE for the Characterization of Thin Films and Nanostructures
Mon.	PM	Room 202A	Spectroscopic Ellipsometry: Novel Applications and Theoretical Approaches
Tue.	PM	Room Hall B	Spectroscopic Ellipsometry Focus Topic Poster Session

Tribology Focus Topic

Mon.	AM	Room 201A	Tribology Focus Session
Tue.	PM	Room Hall B	Tribology Focus Topic Poster Session

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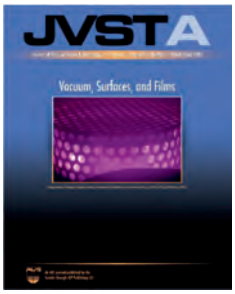

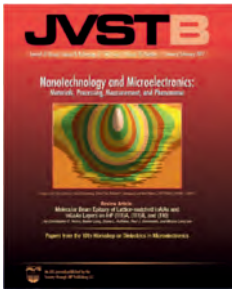

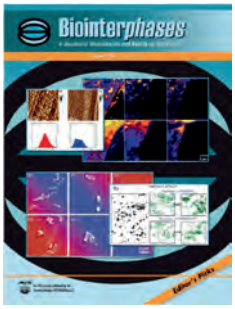

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- Surface Engineering
- Thin film deposition, etching, properties and characterization
- Transmission electron microscopy including in *situ* methods
- Tribology
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JVST A January/February Annual Special Issue Features:

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- Group IV semiconductor microelectronics
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- Spintronics and magnetic devices
- Vacuum nanoelectronics

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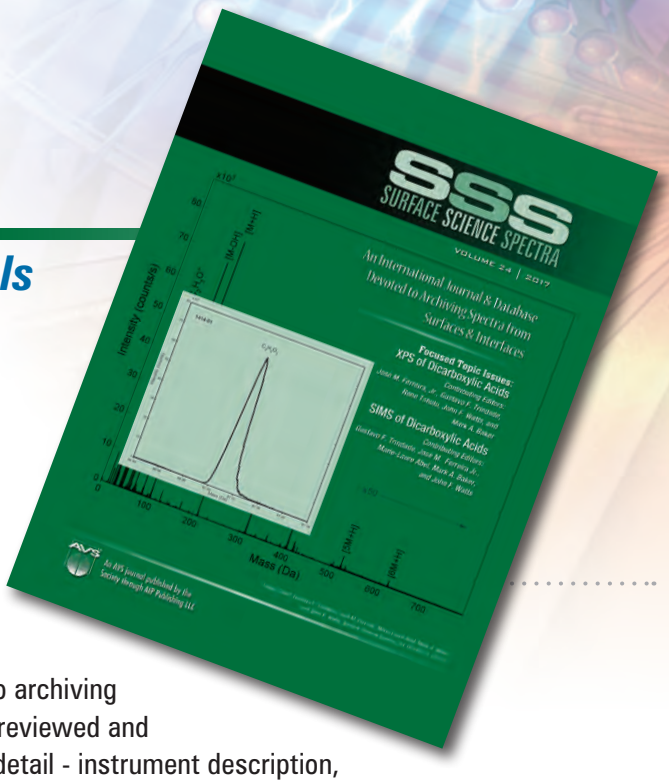

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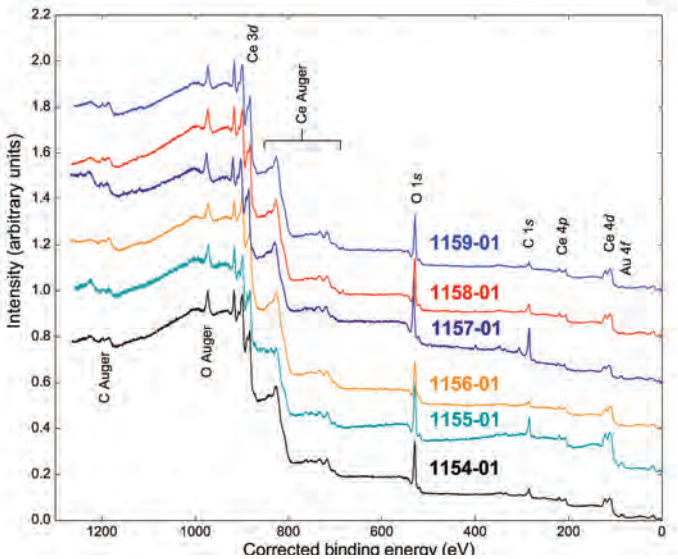

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- Bacterial-Surface Interactions
- SIMS XXI
- Biomedical Surface Analysis: In Celebration of NESAC/Bio's 35th Anniversary
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- Coatings and Processes for Biomedical Applications
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- WebTech Roll-to-Roll Coatings
- Fundamental Aspects of Coatings
- HIPIMS and Emerging Technologies
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- Vendor Innovator Showcase

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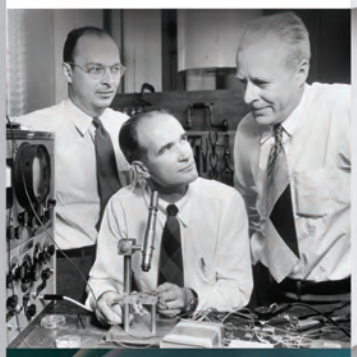

AIP History Center Newsletter
Information for history buffs of all ages.
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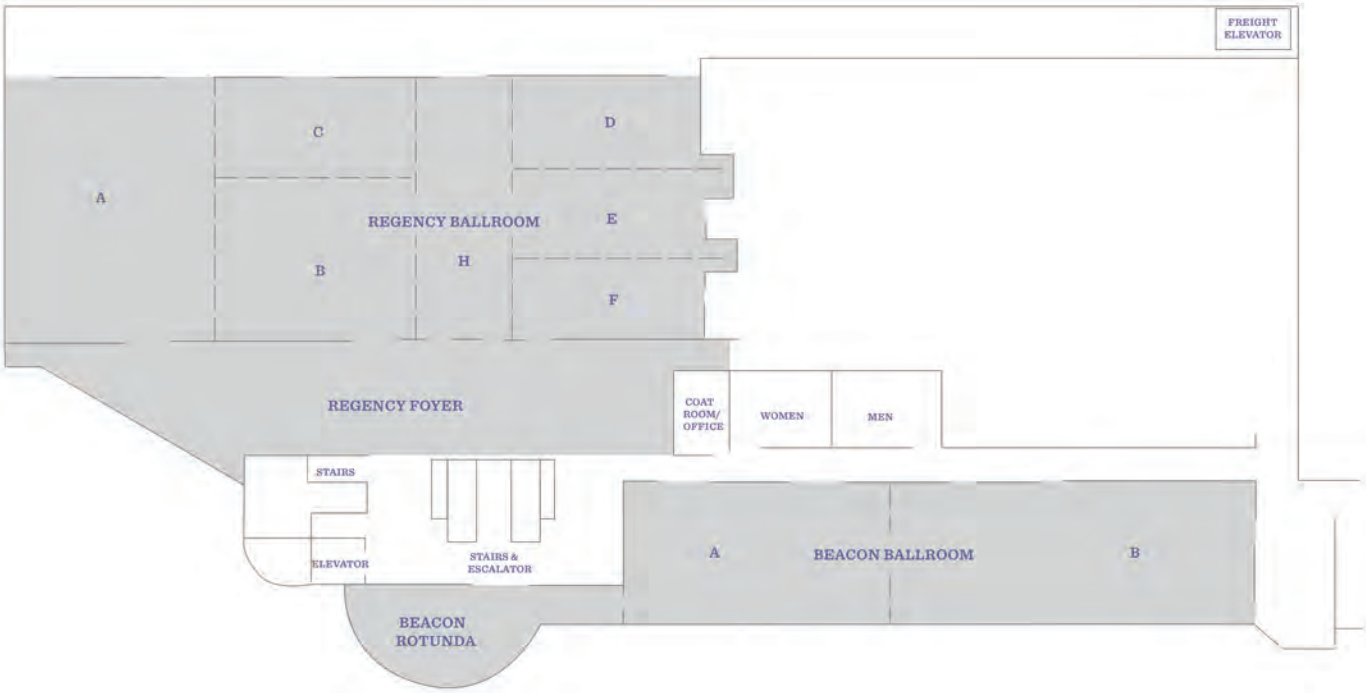
HYATT REGENCY LONG BEACH

Lower Level (First Floor)

Upper Level (Fourth Floor)



MEETINGS AND SPECIAL EVENTS

SATURDAY, OCTOBER 20, 2018

2:00 p.m.	Educational Materials & Outreach Committee Meeting	Regency Club Boardroom (H)
6:30 p.m.	Education Committee Dinner	TBD (Offsite)

SUNDAY, OCTOBER 21, 2018

7:30 a.m.	Seventeenth Topical Conference on Quantitative Surface Analysis (QSA17): "Data Reproducibility"	101A (CC)
8:00 a.m.	AVS Board of Directors' Meeting Executive Session (Closed Session-Board Only)	Seaview AB (H)
9:00 a.m.	AVS Board of Directors' Meeting	Seaview AB (H)
1:15 p.m.	AVS Board of Directors' Lunch	Seaview C (H)
3:00 p.m.	Biomaterials Plenary Session and Reception	101B (CC)
3:00 p.m.	*JVST* Associate Editors' Meeting	Harbor (H)
5:30 p.m.	ASTM E-42 Business Meeting	Regency D (H)
6:00 p.m.	Science Educators' Workshop Teachers' Reception	Seaview Rotunda (H)
6:00 p.m.	Vacuum Technology Division Executive Committee Meeting and Dinner	Shoreline A (H)
6:30 p.m.	Applied Surface Science Division Memorial Reception	Regency EF (H)
7:00 p.m.	International Dignitaries & Chapter Chairs Reception (Invitation Only)	Tides Restaurant (H)
7:00 p.m.	Short Course Executive Committee Meeting and Dinner	Shoreline B (H)

MONDAY, OCTOBER 22, 2018

7:00 a.m.	Professional Leadership Committee Meeting and Breakfast	Tides Restraunt (H)
8:00 a.m.	Science Educators' Workshop	Seaview (H)
10:20 a.m.	AVS Member Center: Demo Hour-AVS Events and Activities/AVS 65 Mobile App	103C (CC)
12:00 p.m.	Science Educators' Workshop Lunch	Shoreline A (H)
12:05 p.m.	Magnetic Interfaces and Nanostructures Division Business Meeting	201A (CC)
12:15 p.m.	2019 AVS Program Committee Meeting and Lunch	Regency A (H)
12:15 p.m.	AVS Member Center: Professional Development-"Welcome to AVS Overview" Lunch	103C (CC)
12:15 p.m.	Recommended Practices Committee Meeting and Lunch	Pacific (H)
1:20 p.m.	Symposium on New Magnetic Materials, Devices and Concepts for the Information Society	201A (CC)
3:00 p.m.	AVS Member Center: Professional Development-Speed Networking for Young Professionals	103C (CC)
4:00 p.m.	Publications Committee Meeting	Shoreline A (H)
4:45 p.m.	Vacuum Technology Division Business Meeting	203B (CC)
5:00 p.m.	Plenary Lecture: Kim Chaffin - Distinguished Scientist and Bakken Fellow in Strategic and Scientific Operations at Medtronic, plc., "The Internet of Things: Shaping the Future of the Medical Device Industry"	Grand Ballroom (CC)
6:15 p.m.	AVS Symposium Plenary Panel	Grand Ballroom (CC)
7:00 p.m.	Applied Surface Science Division Executive Committee Meeting and Dinner	Pacific (H)
7:00 p.m.	Welcome Mixer	Hall B (CC)
7:30 p.m.	Thin Film Division Panel Discussion of Student Opportunities and the Thin Film Division Harper Award TED-Talk Competition	102A (CC)
7:45 p.m.	Magnetic Interfaces and Nanostructures Division Executive Committee Meeting and Dinner	Shoreline A (H)
7:45 p.m.	Publications Committee Meeting and Dinner (Invitation Only)	Parker's Lighthouse (Offsite)
8:30 a.m.-5:00 p.m.	*Short Course Program*	*Various Rooms (H)*

TUESDAY, OCTOBER 23, 2018

7:30 a.m.	Awards Committee Meeting and Lunch	Pacific (H)
8:00 a.m.	Science Educators' Workshop	Seaview (H)
9:00 a.m.	AVS Member Center: Professional Development- *eSpectra:* Surface Science	103C (CC)
10:00 a.m.	AVS Member Center: Professional Development-Working with National Labs and Other User Facilities	103C (CC)
10:00 a.m.	Session Coffee Break	Hall A (CC)
11:40 a.m.	Professional Development- Federal Funding Town Hall	202B (CC)
12:00 p.m.	Science Educators' Workshop Lunch	Shoreline A (H)
12:20 p.m.	Exhibit Hall Lunch	Hall A (CC)
12:30 p.m.	AVS Member Center: Professional Development-Job Information Forum and Lunch	103C (CC)
12:30 p.m.	Chapters, Divisions, and Groups Meeting and Lunch (Invitation Only)	Regency D (H)
12:30 p.m.	Manufacturing Science and Technology Group Committee Meeting and Lunch	Tides Restraunt (H)
3:40 p.m.	Biointer*phases* Reception (Invitation Only)	Shoreline A (H)
3:40 p.m.	Session Refreshment Break	Hall A (CC)
4:00 p.m.	AVS Member Center: Professional Development-SCCAVS/NCCAVS Members Hospitality Hour (Invitation Only)	103C (CC)
6:05 p.m.	Biomaterial Interfaces Division Business Meeting	101B (CC)
6:25 p.m.	Electronic Materials and Photonics Division Business Meeting	101A (CC)
6:25 p.m.	Nanometer-scale Science and Technology Division Business Meeting	102B (CC)
6:25 p.m.	Plasma Science and Technology Division Business Meeting and 2018 Plasma Prize Award Announcement	104A (CC)

CC = Long Beach Convention Center
H = Hyatt Regency Long Beach

= New Attendee Networking Events

MEETINGS AND SPECIAL EVENTS

	6:25 p.m.	Surface Science Division Business Meeting	203C (CC)
	6:25 p.m.	Thin Film Division Business Meeting	102A (CC)
	6:30 p.m.	Poster Session and Refreshments	Hall B (CC)
	6:45 p.m.	AVS Member Center: Professional Development-Electronic Materials and Photonics Division Forum: "Careers at LAM Research"	103C (CC)
	7:00 p.m.	MEMS and NEMS Technical Group Executive Committee Meeting and Dinner	Regency F (H)
	7:00 p.m.	Nanometer-scale Science and Technology Division Executive Committee Meeting and Dinner	Seaview A (H)
	7:00 p.m.	Surface Science Division Executive Committee Meeting and Dinner	Regency C (H)
	7:30 p.m.	Applied Surface Science Division Business Meeting	Regency DE (H)
	7:30 p.m.	Plasma Science and Technology Division Executive Committee Meeting and Dinner	Seaview C (H)
	7:30 p.m.	Thin Film Division Executive Committee Meeting and Dinner	Seaview B (H)
	7:45 p.m.	Biomaterial Interfaces Division Executive Committee Meeting and Dinner	Pacific (H)
	7:45 p.m.	Electronic Materials and Photonics Division Executive Committee Meeting and Dinner	Regency B (H)
	8:00 p.m.	ASTM E-42 and Applied Surface Science Division Joint Workshop: "A Tribute to the Careers of Barbara Garrison and Nicholas Winograd"	Regency DE (H)
	8:30 a.m.-5:00 p.m.	*Short Course Program*	*Various Rooms (H)*
	10:00 a.m.-5:00 p.m.	*Equipment Exhibition*	*Hall A (CC)*

WEDNESDAY, OCTOBER 24, 2018

	6:15 a.m.	38th Annual AVS Run (Register at Run Booth before Wednesday in the Convention Center)	TBD
	7:30 a.m.	AVS Diversity & Inclusion Committee Breakfast	Tides Restraunt (H)
	8:00 a.m.	Advanced Surface Engineering Division Business Meeting	Shoreline (H)
	8:15 a.m.	Advanced Surface Engineering Division Executive Committee Meeting (Lunch Offsite)	Shoreline (H)
	8:20 a.m.	Current and Future Stars of the AVS Symposium I	104B (CC)
	10:00 a.m.	AVS Member Center: Diversity and Inclusion- "Inclusion and Diversity at the Workplace: Your Suggestions for Best Practices"	103C (CC)
	10:00 a.m.	Session Coffee Break	Hall A (CC)
	11:40 a.m.	Peter Mark Memorial Award: "Plasma-bio Interactions: Investigating Mechanisms to Enable New Applications," Peter Bruggeman, Univ. of Minnesota	104B (CC)
	12:20 p.m.	Exhibit Hall Lunch	Hall A (CC)
	12:20 p.m.	Nanometer-scale Science and Technology Division Graduate Student and Postdoc Award Competitions	102B (CC)
	12:20 p.m.	Plasma Science and Technology Division Coburn and Winters Adjudication Session (Closed Session)	104A (CC)
	12:30 p.m.	AVS Member Center: Professional Development-Lunch and Learn: "XPS for the Non-Analyst"	103C (CC)
	12:30 p.m.	Governance Committee Meeting and Lunch	Tides Restraunt (H)
	12:30 p.m.	PacSurf Committee Meeting and Lunch	Tides Restraunt (H)
	1:00 p.m.	Biointer*phases* Strategic Planning Meeting	Seaview A (H)
	2:20 p.m.	Current and Future Stars of the AVS Symposium II	104B (CC)
	2:20 p.m.	Medard W. Welch Award Lecture: "A Surface Scientist's Journey from Small Molecules to Biomolecules and Biomaterials," David G. Castner, Univ. of Washington	104B (CC)
	3:00 p.m.	AVS Member Center: Professional Development-"Get Involved: How to Moderate and Lead Conference Sessions"	103C (CC)
	3:00 p.m.	Gaede-Langmuir Award Lecture: "From Description to Prediction of Biointerphase Reactions," Michael Grunze, Max Planck Institute for Medical Research, Germany	101B (CC)
	3:40 p.m.	Session Refreshment Break	Hall A (CC)
	4:30 p.m.	E&M Reception (Invitation Only)	Hall A (CC)
	5:30 p.m.	Heterogeneous Catalysis Graduate Student Presentation Award Reception	201A (CC)
	6:30 p.m.	AVS Awards Ceremony and Reception	Grand Ballroom (CC)
	8:30 a.m.-5:00 p.m.	*Short Course Program*	*Various Rooms (H)*
	10:00 a.m.-4:30 p.m.	*Equipment Exhibition*	*Hall A (CC)*

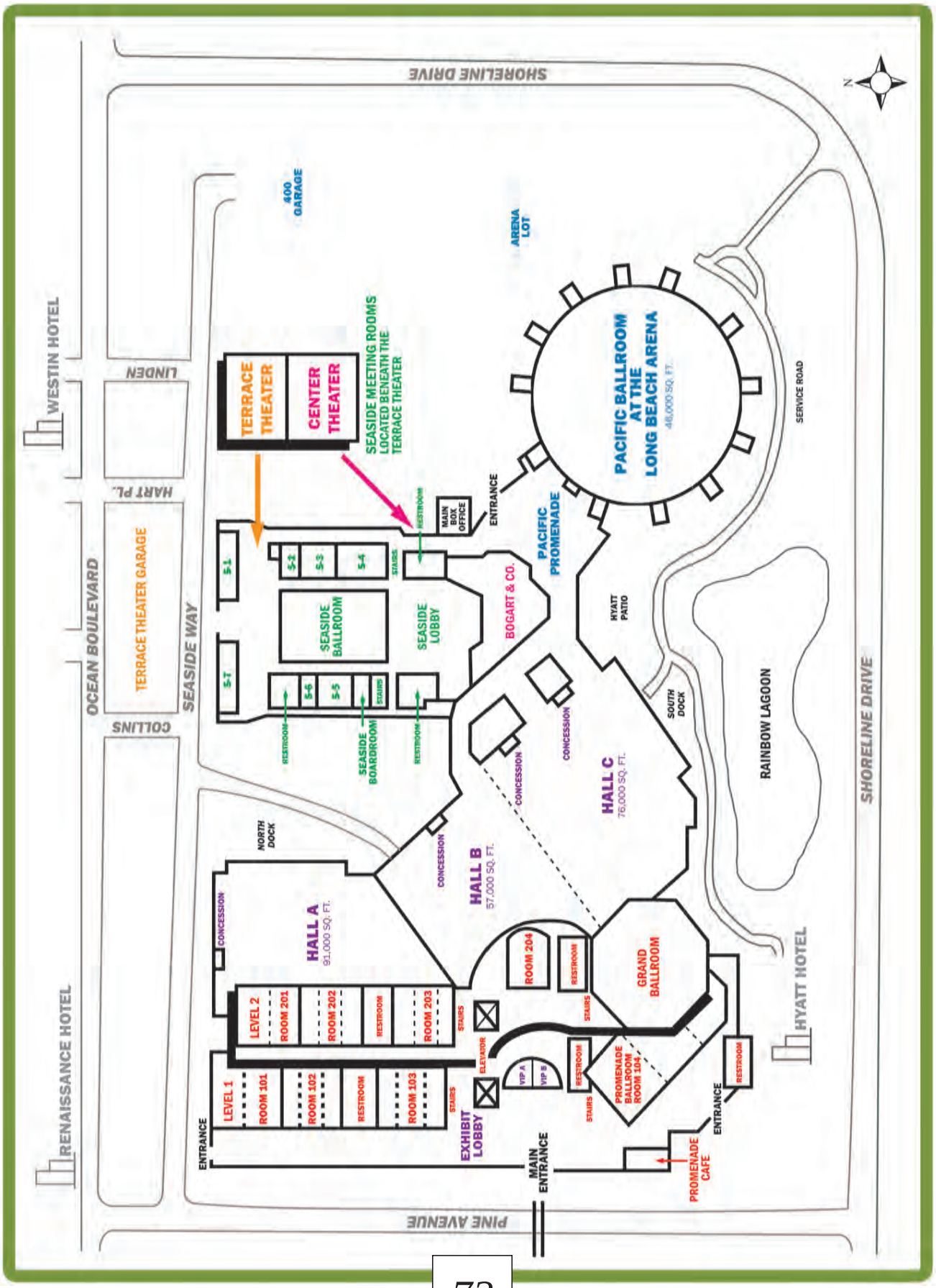
THURSDAY, OCTOBER 25, 2018

	10:00 a.m.	AVS Presidents Panel	Hall A (CC)
	10:00 a.m.	Session Coffee Break	Hall A (CC)
	12:20 p.m.	Exhibit Hall Lunch/Finale	Hall A (CC)
	12:20 p.m.	Plasma Science and Technology Division Coburn and Winters Award Ceremony	104A (CC)
	12:20 p.m.	Surface Science Division Mort Traum Awards Ceremony	203C (CC)
	12:30 p.m.	2019 AVS Program Committee Chairs' Meeting and Lunch	Seaview (H)
	12:30 p.m.	AVS Member Center: Professional Development-"Improving Work-Life Satisfaction" and Lunch	103C (CC)
	12:30 p.m.	AVS Business Meeting	101A (CC)
	3:30 p.m.	History Committee Meeting	Shoreline B (H)
	6:00 p.m.	Poster Session and Refreshments	Hall B (CC)
	6:30 p.m.	2018/2019 Program Committee Reception and Dinner	Seaview (H)
	7:00 p.m.	*Surface Science Spectra* Editorial Board Dinner	Shoreline A (H)
	8:30 a.m.-5:00 p.m.	*Short Course Program*	*Various Rooms (H)*
	10:00 a.m.-2:30 p.m.	*Equipment Exhibition*	*Hall A (CC)*

CC = Long Beach Convention Center
H = Hyatt Regency Long Beach

= New Attendee Networking Events

LONG BEACH CONVENTION CENTER



Program Key

AVS 65 SYMPOSIUM TOPICS

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

KEY TO SESSION/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, **P**oster,
and finally a number indicating the starting time slot for the paper.
Example: SS1-MoM9 (Surface Science, Monday morning, 11:00 am).

Room/ Day	101A	101B	102A	102B	103C	104A	104B	104C	201A
					MEMBER CTR/ PROF. DEV.				
SuA		BP AVS BIP & AIP IPF Forum Plenary Session							
MoM	EM+ IoT Session: CMOS, Beyond the Roadmap and Over the Cliff	IPF+ Biofabrication: From Tissue to Organ	TF1 Precursors and Surface Reactions	NS+ IoT Session: Nanostructured Devices and Sensors	7:00 am Member Coffee 10:20 Demo: AVS Mobile Ap	PS+ Plasma-Surface Interactions	TF2 IoT Session: Thin Film Processes for Energy Storage	PS+ Plasma Deposition and Plasma-Enhanced ALD	TR+ Tribology Focus Session
MoA	EM+ ALP: Selective-Area Patterning (Assembly/Deposition/Etching)	BI+ Advanced Imaging and Structure Determination of Biomaterials Research	TF+ Thin Films for Advanced Memory Apps and Magnetics	NS+ SPM - New Imaging and Spectroscopy Methodologies	12:15 Welcome to AVS/3:00 pm Speed Networking for Young Professionals	PS+ Plasma and Polymers: 'The Legacy of Riccardo d'Agostino and Beyond'	TF IoT Session: Thin Films for Photovoltaics		MI+ IoT Session: Symp. on new Mag. Mtls, Devices & Concepts for the Info Society
TuM	TF Emerging Applications for ALD	IPF+ Advanced Imaging and Structure Determination of Biomaterials	TF+ Special Session in Honor of Paul Holloway: Luminescent Materials	NS+ Nanophotonics, Plasmonics, and Metamaterials	7:00 am Member Coffee 9:00 Demo: eSpectra	PS+ Plasma Processing of Challenging Materials - I	TF+ Atomic Layer Processing: Area Selective Deposition	PS+ Plasma Medicine	HC+ Nanochemistry in Heterogeneous Catalysis
TuB					10:00 am MS Working with Government Labs and other User Facilities				
TuL					12:30 pm Job Information Forum & Lunch				
TuA	EM+ Solar/Energy Harvesting and Quantum Materials and Applications	BI+ IoT Session: Biofabrication, Bioanalytics, Biosensors and Diagnostics & Flash Session	TF+ Organic/ Inorganic Materials and Interfaces	NS+ SPM – Probing & Manipulating Nanoscale Structures	6:45 pm EMPD Forum "Careers at Lam Research"	PS+ Plasma Processing of Challenging Materials - II	TF+ ALP: Chemistry & Surface Reactions for ALP	PS+ Atmospheric Pressure Plasmas	HC+ A Tale of Two Scales: Catalytic Processes and Surface Science
TuP									
WeM	EM+ Surface and Interface Challenges in Electronics and Photonics	IPF+ IoT Session: Bioanalytics, Biosensors and Diagnostics	TF+ Thin Film Processes for Electronics and Optics I	AM+ Nanofabrication with Focused Electron Beams Atomic Scale Manipulation	7:00 am Member Coffee 10:00 am "Inclusion & Diversity at the Workplace"	PS+ Advanced Patterning	PS+ Current and Future Stars of the AVS Symposium I	PS+ IoT Session: Enabling IoT Era	HC+ Mech & React. Pathways of Heterogeneo. Catal. Reactions
WeL					12:30 pm Lunch & Learn "XPS for the Non-Analyst"				
WeA	EM+ Wide and Ultra- Bandgap Mtls for Elect Devices:Growth Modeling and Properties	BI Microbes and Fouling at Surfaces	TF+ Thin Film Processes for Electronics and Optics II	AM+ Atomic Scale Manipulation with SPM	3:00 pm Get Involved: Tips on How to Moderate & Lead Sessions	PB+ Plasma Agriculture & Environmental Applications	BI+ Current and Future Stars of the AVS Symposium II	PS+ Advanced BEOL/Interconnect Etching	HC+ Theory & Dynamics of Heterogeneo. Catalyzed Reactions
ThM	EM+ Nanostructures for Electronic and Photonic Devices	BI Biomolecules and Biophysics at Interfaces	TF+ In-situ Charact. & Modeling of Thin Film Processes	NS+ Nanopatterning and Nano-fabrication	7:00 am Member Coffee 12:30pm "Improving Work-Life Satisfaction"	PS Plasma Sources	TF+ Deposition Processes for 3D and Extreme Geometries	PS+ Atomic Layer Processing: Atomic Layer Etching	HC+ In-situ Analysis of Heterogen. Catalyzed Reactions
ThA	EM+ IoT Session: Flexible Electronics & Flash Session	BI Biolubrication and Wear / Women in Bio-surface Science	SS+ Deposition, Etching and Growth at Surfaces	NS+ SPM – Probing Electronic and Transport Properties		PS Plasma Diagnostics, Sensors and Controls	TF+ IoT Session: Thin Films for Flexible Electronics and IoT	PS+ Atomic Layer Processing: Integration of ALD and ALE	HC+ Bridging Gaps in Hetero-geneously Catal. Reactions
ThP									
FrM		BI+ Characteriz. of Biological and Biomaterial Surfaces		NS+ SPM – Probing Chemical Reactions at the Nanoscale		PS Plasma Modeling			

at a Glance

201B	202A	202B	202C	203A	203B	203C	204	Hall A	Hall B
2D+ 2D Materials Growth and Fabrication	EL+ Application of SE for the Charact of Thin Films and Nanostructures	MM+ Mech, Elec Ther. Opt Syst for In situ TEMam/ Beam Ind Eff & Proc in Liquid/Gas	SE+ Nanostructured Thin Films and Coatings	MP+ Systems and Devices for Quantum Computing I	VT Vacuum Measurement	SS+ Dynamical Processes at Surfaces	AS Quantitative Surface Analysis		
2D+ 2D Materials Characterization including Microscopy and	EL+ Spectroscopic Ellipsometry: Novel Applications and	MM+ X-ray and Electron Spectrom. in Liquids & Gases & Flash Session	SE New Challenges and Opportunities in Surface Engineering	MP+ Systems and Devices for Quantum Computing II	VT Pumping and Outgassing	SS+ Theory and Modeling of Surfaces and Reactions	AS Multitechnique Applications- When More techniques are Better than		
2D+ Properties of 2D Materials including Elect, Mag, Mech, Optical, and Thermal	PC+ Solid-Liquid & Gas-Liquid Interfacial Proc & Charact.	MS+ IoT Session: Challenges of Neuromorphic Computing and Memristor	SE+ Plasma-assisted Surf. Modif & Dep. Processes	MP+ High Coherence Qubits for Quantum Computing	VT Large Vacuum Systems and Accelerator Vac Tech	SS+ Controlling Mechanisms of Surf. Chemical Reactions	AS+ From Electro to Cell Imaging, A Celeb of Nicholas Winograd		
								EW Exhibitor Technology Spotlight Session I	
								EW Exhibitor Technology Spotlight Session II	
2D+ 2D Device Physics and Applications	PC+ Progress in Industrial Proc. & Charact. of Int. and Gas-Solid Inter Proc & Char.	MS+ IoT Session: Challenges of Sensor Manufacturing for the IoT	SE Wear, Oxidation and Corrosion Protective Coatings	RM+ IoT Session: Reconfig. Mtls & Devices for Neuromorphic Computing	VT IoT Session: Vacuum Syst. Design & Autom. & Flash Session	SS+ Oxides/ Chalcogenides: Structures and Reactions	AS Impact of Mod (Ion, Elect Data Anal. on App Surf Sci a Celebration of B. Garrison	EW Exhibitor Technology Spotlight Session III	
									POSTER SESSIONS: AM, BI, EL, MM, MS, PB, PC, PS, RM, SE, SS, TR, VT
2D+ Dopants, Defects, and Interfaces in 2D Materials	PC+ Novel Approaches and Challenges of Interfaces	MN+ IoT Session: Multiscale Mfg: Enabling Mtls and Processes	AC+ Mag., Complexity, & Supercond in the Actinides & Rare Earths	NS+ Micro, Nano and Opto Mechanics	VT Vacuum Technology Developments	SS+ Catalytic Alloys: Understanding Heterogeneity	AS+ Beyond Traditional Surface Analysis	EW Exhibitor Technology Spotlight Session IV	
								EW Exhibitor Technology Spotlight Session V	
2D+ IoT Session: Surface Chemistry, Function, Bio and Sensor	SA+ Hard X-Ray Photoemission for Probing Buried Interfaces	MN+ IoT Session: MEMS for IoT: Chemical and Biological Sensing	AC+ Chemistry and Physics of the Actinides and Rare Earths	NS+ IoT Session: Bio at the Nanoscale	HI Novel Beam Induced Material Eng & Nano-Patterning	SS+ Semiconducting Surfaces	AS+ Industrial and Practical App. of Surface Analysis		
2D+ Novel 2D Materials	SA+ Ultra-fast Dynamics for Magnetic and Quantum Systems	MN+ Opto-mechanics and 2D NEMS	AC+ Nuclear Power, Forensics, and Other Applications	MI+ Magnetism at the Nanoscale	HI+ Advanced Ion Microscopy & Surface Analysis	SS+ Defects in and Functionalization of 2D Materials	AS+ Applied Surf. Analysis of Novel, Complex or Challenging Materials		
2D+ Novel Quantum Phenomena in 2D Materials	SA+ IoT Session: Multi-modal Char. Energy Mtls & Device Processing	MN+ Nonlinear and Thermal Resonators	AC Early Career Scientists	MI+ Inter-disciplinary Magnetism	HI Emerging Ion Sources, Optics, and Applications	SS+ Organic/ Inorganic Surfaces, Interfaces and Nanostructures	AS+ Profiling, Imaging and Other Multi-dimensional Pursuits		
									POSTER SESSIONS: 2D, AC, AS, EM, HC, HI, MI, MN, NS, SA, TF
2D+ Nanostructures including Heterostruct. and Patterning of 2D Materials			AC+ AC & Rare Earth Theory & Related Measure	MI+ Magnetism and Spin-Orbit Coupling at Surf., Int, & Thin Films		SS+ Near/Ambient Pressure and Bridging Gaps bet Surface Sci & Catalysis			

Anticipated Schedule Sunday, October 21, 2018

Anticipated Schedule Sunday Lunch, October 21

When _____

Where _____

With _____

Anticipated Schedule Sunday Afternoon, October 21

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 _____

Special Events Sunday

Special Events Sunday

7:30 AM	QSA 17 "Data Reproducibility"/101A
8:00 AM	AVS Board of Directors' Executive Session (CLOSED SESSION)/Seaview AB-Hyatt Regency (by invitation)
9:00 AM	AVS Board of Directors' Meeting/Seaview AB-Hyatt Regency
3:00 PM	JVST Associate Editors' Meeting/Harbor-Hyatt Regency (by invitation)
5:30 PM	ASTM E-42 Business Meeting/Regency D-Hyatt Regency
6:00 PM	Science Educators' Workshop Teachers' Reception/Seaview Rotunda-Hyatt Regency (by invitation)
6:00 PM	Vacuum Technology Division Executive Committee Meeting & Dinner/Shoreline A-Hyatt Regency (by invitation)
6:30 PM	Applied Surface Science Division Memorial Reception/Regency EF-Hyatt Regency
7:00 PM	International Dignitaries & Chapter Chairs Reception/Tides Restaurant-Hyatt Regency (by invitation)
7:00 PM	Short Course Executive Committee Meeting/Shoreline B-Hyatt Regency (by invitation)

Sunday Afternoon, October 21, 2018

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

3:00pm	**INVITED: BP-SuA1** Integrating Single Molecule Devices with Conventional Microfabrication using DNA Origami, ***Paul Rothemund***, California Institute of Technology	
3:20pm	Invited talk continues.	
3:40pm	**INVITED: BP-SuA3** High Resolution Cryo-EM Structures of Macromolecular Complexes, ***Wah Chiu***, Stanford University	
4:00pm	Invited talk continues.	
4:20pm		
4:40pm		
5:00pm		
5:20pm		
5:40pm		

Anticipated Schedule Monday, October 22, 2018

Anticipated Schedule Monday Morning, October 22

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 22

When _____

Where _____

With _____

Anticipated Schedule Monday Afternoon, October 22

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 Monday

Special Events Monday

7:00 AM	Professional Leadership Committee Meeting & Breakfast/Tides Restaurant-Hyatt Regency (by invitation)
8:00 AM	Science Educators' Workshop/Seaview-Hyatt Regency (by invitation)
10:20 AM	AVS Member Center: Demo Hour--AVS Events & Activities/AVS 65 Mobile App/103C
12:05 PM	MIND Business Meeting/201A
12:15 PM	2019 AVS Program Committee Meeting and Lunch/Regency A-Hyatt Regency (by invitation)
12:15 PM	AVS Member Center: Professional Development-"Welcome to AVS Overview & Lunch*"/103C
12:15 PM	Recommended Practices Committee Meeting & Lunch/Pacific-Hyatt Regency (by invitation)
3:00 PM	AVS Member Center: Professional Development--"Speed Networking for Young Professionals"/103C
4:00 PM	Publications Committee Meeting/Shoreline A-Hyatt Regency (by invitation)
4:45 PM	VTD Business Meeting/203B
5:00 PM	Plenary Lecture: Kim Chaffin, Distinguished Scientist & Bakken Fellow in Strategic and Scientific Operations, Medtronic, plc,"The Internet of Things: Shaping the Future of the Medical Device Industry"/Grand Ballroom
6:15 PM	AVS Symposium Plenary Panel/Grand Ballroom
7:00 PM	ASSD Executive Committee Meeting & Dinner/Pacific-Hyatt Regency (by invitation)
7:00 PM	Welcome Mixer/Hall B
7:30 PM	Thin Film Division/Harper Award TED-Talk Competition/102A
7:45 PM	MIND Executive Committee Meeting and Dinner/Shoreline A-Hyatt Regency (by invitation)
7:45 PM	Publications Committee Meeting & Dinner/Offsite (by invitation)
8:30 AM–5:00 PM	Short Course Program/Various Rooms

	2D Materials Focus Topic **Room 201B - Session 2D+EM+MI+NS+TF-MoM** **2D Materials Growth and Fabrication** **Moderator:** Jing Xia, University of California Irvine	**Applied Surface Science Division** **Room 204 - Session AS-MoM** **Quantitative Surface Analysis** **Moderators:** Kateryna Artyushkova, University of New Mexico, Tim Nunney, Thermo Fisher Scientific, UK
8:20am	**2D+EM+MI+NS+TF-MoM1** Wafer Scale Epitaxial Growth of Monolayer and Few-Layer WS_2 by Gas Source Chemical Vapor Deposition, ***Mikhail Chubarov***, *T.H. Choudhury, J.M. Redwing,* The Pennsylvania State University	**INVITED: AS-MoM1** A Fistful of Data: The Good, the Bad and the Ugly of Quantitative Surface Analysis, ***Alexander Shard***, National Physical Laboratory, UK
8:40am	**2D+EM+MI+NS+TF-MoM2** Wafer Scale Deposition of Monolayer Transition Metal Dichalcogenides, ***Kortney Almeida***, *M. Wurch, G. Stecklein, L. Bartels,* University of California, Riverside	Invited talk continues.
9:00am	**INVITED: 2D+EM+MI+NS+TF-MoM3** Crystal Growth of 2D Materials: From Model Systems to Integrated Manufacturing, ***Stephan Hofmann***, University of Cambridge, UK	**AS-MoM3** XPS and the Reproducibility Crisis, ***Donald Baer***, *M.H. Engelhard,* Pacific Northwest National Laboratory
9:20am	Invited talk continues.	**AS-MoM4** Rapid Calculation Method of the Voigt Function for Use in the Analysis of Photoelectron Spectroscopic Data, ***Peter Sherwood***, University of Washington
9:40am	**2D+EM+MI+NS+TF-MoM5** Understanding the Edge-Controlled Growth and Etching in Two-Dimensional Materials, ***Kai Xiao***, *X. Li, X. Sang,* Center for Nanophase Materials Sciences, Oak Ridge National Laboratory; *W. Zhao, J. Dong,* Center for Multidimensional Carbon Materials (CMCM), Institute for Basic Science (IBS), Ulsan,44919, South Korea; *A. Purektzy,* Center for Nanophase Materials Sciences, Oak Ridge National Laboratory; *C. Rouleau,* Center for Functional Nanomaterials Brookhaven National Laboratory; *F. Ding,* Center for Multidimensional Carbon Materials (CMCM), Institute for Basic Science (IBS), Ulsan,44919, South Korea; *R.R. Unocic, D.B. Geohegan,* Center for Nanophase Materials Sciences, Oak Ridge National Laboratory	**AS-MoM5** Statistical Analysis and Peak Fitting of X-ray Photoelectron Spectroscopy Data. Good Practices and Procedures for Working up this Information., ***Matthew Richard Linford***, *V. Jain,* Brigham Young University
10:00am	**2D+EM+MI+NS+TF-MoM6** Synthesis and Characterization of 1T, 1T', and 2H $MoTe_2$ Thin Films, ***Thomas Empante***, University of California, Riverside; *Y. Zhou,* Stanford University; *S.A. Naghibi Alvillar,* El Camino College; *E.J. Reed,* Stanford University; *L. Bartels,* University of California, Riverside	**AS-MoM6** Modeling the Shirley Background, ***Alberto Herrera-Gomez***, *D. Mulato-Gomez,* Cinvestav-Unidad Queretaro, Mexico; *A.D. Dutoi,* University of the Pacific
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: 2D+EM+MI+NS+TF-MoM8** 2D Anisotropic Semiconductors: Competing Phases by Alloys Engineering, ***Sefaattin Tongay***, Arizona State University	**AS-MoM8** XPS Spectra and Bonding In Ionic Transition Metal Compounds, ***C. Richard Brundle***, C. R. Brundle and Associates; *P.S. Bagus,* University of North Texas
11:00am	Invited talk continues.	**AS-MoM9** Combinatorial Group XPS Analysis of Novel Material Systems, ***Sarah Coultas***, Kratos Analytical Ltd, UK; *J.D.P. Counsell,* Kratos Analytical Limited, UK; *C. Moffitt,* Kratos Analytical Inc.; *C.J. Blomfield, A.J. Roberts,* Kratos Analytical Limited, UK
11:20am	**2D+EM+MI+NS+TF-MoM10** Low-Defect, High-Uniformity Transfer-Free Graphene on SiO_2 by Thermal Chemical Vapor Deposition, ***Leslie Chan***, *D.S. Tsai, Z. Wang, C. Carraro, R. Maboudian,* University of California, Berkeley	**AS-MoM10** Towards Spatially Resolved Quantification of Gold Nanoparticles Embedded in an Organic Matrix using Secondary Ion Mass Spectrometry, ***Shin Muramoto***, *J. Bennett,* National Institute of Standards and Technology (NIST)
11:40am	**2D+EM+MI+NS+TF-MoM11** Barrier Based Approach to Modify Vapor Phase Concentrations for High Quality MoS_2 Growth, ***Dongzhi Chi***, *S.L. Wong,* Institute of Materials Research and Engineering, Agency for Science Technology and Research, Singapore	**AS-MoM11** Correction-Free Analysis of SIMS Data at High Mass Resolution in the Presence of Detector Saturation, ***Lev Gelb***, *A.V. Walker,* University of Texas at Dallas

	Spectroscopic Ellipsometry Focus Topic **Room 202A - Session EL+AS+EM-MoM** **Application of SE for the Characterization of Thin Films and Nanostructures** **Moderators:** Alain C. Diebold, SUNY Polytechnic Institute, Mathias Schubert, University of Nebraska-Lincoln	**Electronic Materials and Photonics Division** **Room 101A - Session EM+MP+PS-MoM** **IoT Session: CMOS, Beyond the Roadmap and Over the Cliff** **Moderators:** Sean King, Intel Corporation, Wilman Tsai, Taiwan Semiconductor Manufacturing Co. (TSMC)
8:20am	**INVITED: EL+AS+EM-MoM1** Stealth Technology-based Terahertz Frequency-domain Ellipsometry, ***Vanya Darakchieva,*** Linköping University, Sweden	**EM+MP+PS-MoM1** Aluminum Gettering Gate for Improving Defect Density in SiGe MOSCAP Devices, ***Emily Thomson,*** *M. Kavrik, A.C. Kummel,* University of California at San Diego
8:40am	Invited talk continues.	**EM+MP+PS-MoM2** Direct Growth of Single Crystal Compound Semiconductor Materials on Diverse Substrates for Beyond the Roadmap Multifunctional Integrated Circuits, ***Debarghya Sarkar,*** *R. Kapadia,* University of Southern California
9:00am	**EL+AS+EM-MoM3** Spectroscopic Ellipsometry and Finite Element Modeling based Optical Characterization of Highly Coherent Au-Si Slanted Columnar Periodic Nanostructures, ***Ufuk Kilic,*** University of Nebraska-Lincoln; *A. Mock,* Linköping University, Sweden; *R. Feder,* Fraunhofer IMWS, Germany; *D. Sekora, M. Hilfiker, R. Korlacki, E. Schubert, C. Argyropoulos, M. Schubert,* University of Nebraska-Lincoln	**INVITED: EM+MP+PS-MoM3** Going Beyond Traditional CMOS, ***Inge Asselberghs,*** *I. Radu,* IMEC, Belgium
9:20am	**EL+AS+EM-MoM4** Temperature Dependent Dielectric Function and Critical Point Comparison of bulk Ge and α-Sn on InSb, ***Rigo Carrasco,*** *C. Emminger, N. Samarasingha, F. Abadizaman, S. Zollner,* New Mexico State University	Invited talk continues.
9:40am	**EL+AS+EM-MoM5** Elastomer Thin Films and Conducting Nanostructures for Soft Electronics and Dielectric Elastomer Transducers, ***Bert Müller,*** *B. Osmani, T. Töpper,* University of Basel, Switzerland	**EM+MP+PS-MoM5** Suppression of Electronic Defects at HfO_2-SiGe Interface with Selective Surface Oxidation Using Ozone, ***Mahmut Sami Kavrik,*** University of California at San Diego; *V. Hou,* TSMC, Taiwan, Republic of China; *E. Thomson,* University of California at San Diego; *K. Tang,* Stanford University; *Y. Taur,* University of California at San Diego; *P.C. McIntyre,* Stanford University; *A.C. Kummel,* University of California at San Diego
10:00am	**EL+AS+EM-MoM6** Spectroscopic Ellipsometry Investigation of Temperature Effects in Heated Self-organized 2D Arrays of Au Nanoparticles, ***Michele Magnozzi,*** *M. Ferrera, M. Canepa,* Università di Genova, Italy; *F. Bisio,* CNR-SPIN, Italy	**EM+MP+PS-MoM6** Surface Free Energy and Interfacial Strain in HfO2 and HZO Ferroelectric Formation, ***Andrew Kummel,*** *E. Chagarov, M. Kavrik,* University of California at San Diego; *M. Katz, N. Sanford, A. Davydov,* National Institute of Standards and Technology (NIST); *M. Lee,* National Taiwan University
10:20am	**BREAK**	**BREAK**
10:40am	**EL+AS+EM-MoM8** Spectroscopic Ellipsometry of 2D WSe_2 Films, ***Baokun Song,*** *H.G. Gu, M.S. Fang,* Huazhong University of Science & Technology, China; *Y.L. Hong, W.C. Ren,* Shenyang National Laboratory for Materials Science Institute of Metal Research Chinese Academy of Sciences, China; *X.G. Chen, S.Y. Liu,* Huazhong University of Science & Technology, China	**INVITED: EM+MP+PS-MoM8** The Role of Selective Processes in the Atomic Scale Era, ***Robert Clark,*** *J. Smith, K.-H. Yu, K. Tapily, G. Pattanaik, S. Consiglio, T. Hakamata, C.S. Wajda, A. Raley, G.J. Leusink,* TEL Technology Center, America, LLC
11:00am	**EL+AS+EM-MoM9** Thermal Evolution Process of $MaPbI_3$ Film Based on Spectroscopic Ellipsometry, *X.Q. Wang, X.Y. Shan, H. Siddique,* ***Rucheng Dai,*** *Z.P. Wang, Z.J. Ding, Z.M. Zhang,* University of Science and Technology of China	Invited talk continues.
11:20am	**EL+AS+EM-MoM10** a-Si as a Protective Layer to Block the Oxidization of Al mirrors, ***Yhoshua Wug,*** University of California at Los Angeles; *D.D. Allred, R.S. Turley,* Brigham Young University	**EM+MP+PS-MoM10** Selective Patterning of Silicon/Germanium Surfaces and Nanostructures via Surface Initiated Polymerization, ***Amar Mohabir,*** *T. Weiss, G. Tutuncuoglu, E.M. Vogel, M.A. Filler,* Georgia Institute of Technology
11:40am	**EL+AS+EM-MoM11** Terahertz to Mid-infrared Dielectric Response of Poly-methacrylates for Stereolithographic Single Layer Assembly, *D.B. Fullager,* ***Serang Park,*** *Y. Li, J. Reese,* University of North Carolina at Charlotte; *E. Sharma, S. Lee,* Harris Corporation; *S. Schöche, C.M. Herzinger,* J.A. Woollam Co. Inc; *G.D. Boreman, T. Hofmann,* University of North Carolina at Charlotte	**EM+MP+PS-MoM11** Chemically Selective Imaging of Sequential Infiltration Synthesis with nm-scale Spatial Resolution, *D. Nowak,* ***Tom Albrecht,*** Molecular Vista

	Industrial Physics Forum **Room 101B - Session IPF+AS+BI+NS-MoM** **Biofabrication: From Tissue to Organ** **Moderators:** Jason Bardi, American Institute of Physics, Jim Hollenhorst, Agilent Technologies	**In-situ Microscopy, Spectroscopy, and Microfluidics Focus Topic** **Room 202B - Session MM+AS+NS+PC-MoM** **Mechanical, Electrical, Thermal and Optical Systems for In situ TEM (9:00-10:100 am)/** **Beam Induced Effects and Processing in Liquid/Gas Cells for TEM/SEM (10:40-11:40 am)** **Moderators:** Suneel Kodambaka, Univ. of California, Los Angeles, Olga Ovchinnikova, Oak Ridge National Laboratory
8:20am	**INVITED: IPF+AS+BI+NS-MoM1** Strategic Thinking on the Architecture and Design of Scaffolds for Regenerative Medicine, ***Buddy D. Ratner,*** University of Washington, Seattle	
8:40am	Invited talk continues.	
9:00am	**INVITED: IPF+AS+BI+NS-MoM3** Sequential Bottom-up Assembly of Synthetic Cells, ***Joachim Spatz,*** Max Planck Institute for Medical Research, Germany	**INVITED: MM+AS+NS+PC-MoM3** Cantilever Substrates for Quantitative Growth Experiments in the Environmental Transmission Electron Microscope, ***Frances Ross,*** IBM T. J. Watson Research Center, MIT
9:20am	Invited talk continues.	Invited talk continues.
9:40am	**INVITED: IPF+AS+BI+NS-MoM5** Activation of Inkjet Printed Cells Enhances Microvasculature Formation in Host Tissues, ***Thomas Boland,*** *B. Oropeza, L.H. Solis,* University of Texas at El Paso*; M. Yanez,* University of South Carolina	**MM+AS+NS+PC-MoM5** In Situ Laser Heating and Excitation in the Transmission Electron Microscope: Recrystallization, Grain Growth, Phase Separation and Dewetting in $Ag_{0.5}Ni_{0.5}$ Thin Films, ***Philip D. Rack,*** University of Tennessee Knoxville*; Y. Wu,* University of Notre Dame*; C. Liu,* University of Tennessee Knoxville*; T.M. Moore, G.A. Magel,* Waviks Inc.*; D. Garfinkel,* University of Tennessee Knoxville*; J.P. Camden,* University of Notre Dame*; M.G. Stanford, G. Duscher,* University of Tennessee Knoxville
10:00am	Invited talk continues.	**MM+AS+NS+PC-MoM6** In situ Transmission Electron Microscopy Study of the Mechanical and Electrical Properties of Single III-V Semiconductor Nanowires, ***Lunjie Zeng,*** Chalmers University of Technology, Gothenburg, Sweden*; C. Gammer,* Austrian Academy of Sciences, Austria*; B. Ozdol,* Lawrence Berkeley National Laboratory*; T. Nordqvist, P. Krogstrup,* University of Copenhagen, Denmark*; A.M. Minor,* Lawrence Berkeley National Laboratory*; W. Jäger, E. Olsson,* Chalmers University of Technology, Gothenburg, Sweden
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: IPF+AS+BI+NS-MoM8** Challenges in Organ-specific Vascular Engineering and Tissue Assembly, ***Ying Zheng,*** University of Washington	**INVITED: MM+AS+NS+PC-MoM8** Radiolytic Synthesis of Nanostructured Materials using *In situ* Liquid Cell Microscopy, ***Raymond Unocic,*** *X. Sang, A. Belianinov, O.S. Ovchinnikova, K. More, S. Jesse,* Oak Ridge National Laboratory
11:00am	Invited talk continues.	Invited talk continues.
11:20am	**INVITED: IPF+AS+BI+NS-MoM10** Bioprinting for Translational Applications: *The Quest for Whole Organ Fabrication,* ***James J. Yoo,*** Wake Forest School of Medicine	**MM+AS+NS+PC-MoM10** Electron Beam Induced Cross-Linking in Liquid Hydrogels, ***Tanya Gupta,*** *A. Kolmakov,* National Institute of Standards and Technology (NIST)
11:40am	Invited talk continues.	**MM+AS+NS+PC-MoM11** Nanoscale Chemical Reactor Based on Localized Surface Plasmon Energy in Environmental Transmission Electron Microscope, ***Canhui Wang***[1]*, W.-C. Yang,* UMD/NIST*; R. Sharma,* National Institute of Standards and Technology

[1] **NSTD Postdoc Finalist**

	Materials and Processes for Quantum Computing Focus Topic **Room 203A - Session MP+EM+MN+NS-MoM** **Systems and Devices for Quantum Computing I** **Moderator:** Vivekananda Adiga, IBM, T.J. Watson Research Center	**Nanometer-scale Science and Technology Division** **Room 102B - Session NS+2D+AN+EM+MN+MP+PC+RM-MoM** **IoT Session: Nanostructured Devices and Sensors** **Moderators:** David Czaplewski, Argonne National Laboratory, Liya Yu, NIST Center for Nanoscale Science and Technology
8:20am		**INVITED: NS+2D+AN+EM+MN+MP+PC+RM-MoM1** Integrating Nanodiamonds with Augmented Artificial Intelligence and Digital Health to Optimize Combination Therapy, ***Dean Ho,*** UCLA
8:40am		Invited talk continues.
9:00am	**INVITED: MP+EM+MN+NS-MoM3** Quantum Supremacy: Checking a Quantum Computer with a Classical Supercomputer, ***John Martinis,*** Google Inc	**NS+2D+AN+EM+MN+MP+PC+RM-MoM3** Morphology-Controlled Large-Scale Tin Oxide Nanostructures for Highly Sensitive Room Temperature Gas Sensor, ***Amrit Sharma,*** Norfolk State University
9:20am	Invited talk continues.	**NS+2D+AN+EM+MN+MP+PC+RM-MoM4** Improving the Localized Surface Plasmonic Resonance Sensing Properties by Composite Metal/Dielectric Mixtures, ***Steven Larson***[1]***,*** *Y. Zhao,* University of Georgia
9:40am	**MP+EM+MN+NS-MoM5** Active Protection of a Superconducting Qubit against Josephson Amplifier Backaction, ***Baleegh Abdo,*** *N.T. Bronn, O. Jinka, S.B. Olivadese, A. Corcoles, M. Brink,* IBM T. J. Watson Research Center*; R. Lake, D.P. Pappas,* National Institute of Standards and Technology*; J.M. Chow,* IBM T. J. Watson Research Center	**NS+2D+AN+EM+MN+MP+PC+RM-MoM5** Improving the Selectivity of Tin (IV) Oxide Paper Based Gas Sensors with Plasma Surface Modification, ***Kimberly Hiyoto,*** *E.R. Fisher,* Colorado State University
10:00am	**MP+EM+MN+NS-MoM6** Nonlinear Light-matter Interaction: From Superconducting Qubits to Spins in Diamond, ***Eyal Buks,*** Israel Institute of Technology, Israel	**NS+2D+AN+EM+MN+MP+PC+RM-MoM6** TiN@Si_3N_4 Core-shell Heterostructures as Nanoantennas for Photocatalytic Reforming of Methanol, ***Alejandro Alvarez Barragan,*** *L. Mangolini,* University of California, Riverside
10:20am	**BREAK**	**BREAK**
10:40am	**MP+EM+MN+NS-MoM8** Variations in Surface Dipole-Moment Density with Coverage for C/Au(110) – (2 × 1) and Electroplated Au Ion-trap Electrodes, ***Dustin Hite,*** *K.S. McKay,* National Institute of Standards and Technology (NIST)*; H.Z. Jooya,* ITAMP, Harvard-Smithsonian Center for Astrophysics*; E. Kim,* University of Nevada, Las Vegas*; P.F. Weck,* Sandia National Laboratories*; H.R. Sadeghpour,* ITAMP, Harvard-Smithsonian Center for Astrophysics*; D.P. Pappas,* National Institute of Standards and Technology (NIST)	**INVITED: NS+2D+AN+EM+MN+MP+PC+RM-MoM8** Nanostructured Sensor and Device Applications of Infiltrated Zinc Oxide, ***Leonidas Ocola,*** Argonne National Laboratory*; Y. Wang, J. Chen,* University of Wisconsin-Milwaukee*; P. Blaisdell-Pijuan,* California State University-Fullerton*; R. Divan,* Argonne National Laboratory
11:00am	**MP+EM+MN+NS-MoM9** A Compact Cryogenic Setup for Quantum Computing with Trapped Atomic Ions, ***Ismail Inlek,*** *R. Spivey, G. Vrijsen, Z. Jia, J. Kim,* Duke University	Invited talk continues.
11:20am	**INVITED: MP+EM+MN+NS-MoM10** Advances in Trapped Ion Quantum Computing, ***Jungsang Kim,*** Duke University	**NS+2D+AN+EM+MN+MP+PC+RM-MoM10** Templates for the Investigation of Size-Selected Nanocluster Networks, ***Patrick Edwards,*** *V.V. Kresin,* University of Southern California
11:40am	Invited talk continues.	**NS+2D+AN+EM+MN+MP+PC+RM-MoM11** High Performance Detection for X-ray and g -ray with $MAPbX_3$ Perovskite Single Crystals, *X. Wang, Z. Zhu, Q. Li, J. Wu, X. Zhang, B. Wang,* ***Wei Lei,*** Southeast University

[1] **NSTD Student Award Finalist**

	Plasma Science and Technology Division **Room 104A - Session PS+AS+EM+SS-MoM** **Plasma-Surface Interactions** **Moderators:** Yohei Ishii, Hitachi High Technologies America Inc., Erik V. Johnson, LPICM, CNRS, Ecole polytechnique, Université Paris-Saclay	**Plasma Science and Technology Division** **Room 104C - Session PS+TF-MoM** **Plasma Deposition and Plasma-Enhanced ALD** **Moderators:** Kazunori Koga, Kyushu University, Japan, Erwine Pargon, LTM, Univ. Grenoble Alpes, CEA-LETI, France
8:20am	**PS+AS+EM+SS-MoM1** Atomic-scale Numerical Simulation of a Nanometer-Scale Hole Etching of SiO2 with a Carbon Mask, ***Charisse Marie Cagomoc****, M. Isobe, S. Hamaguchi,* Osaka University, Japan	**PS+TF-MoM1** ZrO_2 Deposition using a 2.45 GHz Atmospheric Pressure Plasma Torch, ***Dhruval Patel****, L. Bonova, C. Ahn, D.V. Krogstad, D.N. Ruzic,* University of Illinois at Urbana-Champaign*; S. Chaudhuri,* University of Illinois at Chicago
8:40am	**PS+AS+EM+SS-MoM2** SF_6/O_2 Plasma Nanotexturing of Silicon: Decoupling How Ion Flux and Ion Energy Matter, ***Guillaume Fischer***[1]*,* Institut Photovoltaïque d'Ile-de-France (IPVF), France*; E. DRAHI, S.A. FILONOVICH,* Total SA Renewables, France*; E.V. Johnson,* LPICM, CNRS, Ecole polytechnique, Université Paris-Saclay, France	**PS+TF-MoM2** Ion Energy Characteristics during Plasma-Enhanced Atomic Layer Deposition and their Role in Tailoring Material Properties, ***Tahsin Faraz***[1]*, K. Arts, S. Karwal, M.C. Creatore,* Eindhoven University of Technology, The Netherlands*; H.C.M. Knoops,* Oxford Instruments, The Netherlands*; W.M.M. Kessels,* Eindhoven University of Technology, The Netherlands
9:00am	**PS+AS+EM+SS-MoM3** Corrosion Resistance to F and Cl plasma of Yttrium Oxyfluoride (YOF) formed by Sintering, ***Akinobu Teramoto****, Y. Shiba, T. Goto,* Tohoku University, Japan*; Y. Kishi,* Nippon Yttrium Co., Ltd, Japan*; S. Sugawa,* Tohoku University, Japan	**INVITED: PS+TF-MoM3** Plasma Deposition of Functional, Nanostructured Coatings on Materials and Nanomaterials Derived from the Wood Biomass, ***Luc Stafford****,* Université de Montréal, Canada
9:20am	**PS+AS+EM+SS-MoM4** Decay of Hydrogen in NF_3/Ar and O_2/Ar Cleaning Process by Optical Emission Spectroscopy, ***Hanyang Li****, Y. Zhou, V.M. Donnelly,* University of Houston*; J. Chiu, X. Chen,* MKS	Invited talk continues.
9:40am	**INVITED: PS+AS+EM+SS-MoM5** Plasma-surface Interactions in the Strongly Coupled Regime, ***Thomas Morgan****,* DIFFER, Netherlands	**PS+TF-MoM5** Mechanisms of Halogenated Silane Decomposition on an N-rich Surface during Atomic Layer Deposition of Silicon Nitride, ***Gregory Hartmann****,* University of Texas at Austin*; P.L.G. Ventzek,* Tokyo Electron America, Inc.*; K. Ishibashi, T. Iwao,* Tokyo Electron Technology Solutions Ltd., Japan*; G.S. Hwang,* University of Texas at Austin
10:00am	Invited talk continues.	**PS+TF-MoM6** Characterization of Inductively Coupled Plasma Source for Plasma Enhanced Atomic Layer Deposition, ***Premkumar Panneerchelvam****, A. Agarwal,* KLA-Tencor*; D.R. Boris, S.G. Walton,* Naval Research Laboratory
10:20am	**BREAK**	**BREAK**
10:40am	**PS+AS+EM+SS-MoM8** Tailoring the Surface Properties of Porous Zeolite Constructs using Plasma Processing, ***Angela Hanna***[2]*, E.R. Fisher,* Colorado State University	**PS+TF-MoM8** Structural, Optical, and Electrical Properties of Plasma-Enhanced Atomic Layer Deposited ZnO: Influence of Substrate Temperature, ***Julian Pilz****, A. Perrotta, A.M. Coclite,* Graz University of Technology, Austria
11:00am	**PS+AS+EM+SS-MoM9** Generation Kinetics of Plasma-induced Electronic Defects in Semiconductor Materials, ***Shota Nunomura****, I. Sakata, K. Matsubara,* National Institute of Advanced Industrial Science and Technology (AIST), Japan	**PS+TF-MoM9** Critical Effect of the Presence and Position of Double Bonds in the Atmospheric Plasma Synthesis of Organic Coatings, ***Jérémy Mertens***[1]*, J. Baneton, A. Ozkan, F. Reniers,* Université Libre de Bruxelles, Belgium
11:20am	**PS+AS+EM+SS-MoM10** Evolution of Photoresist Layer Structure and Surface Morphology under Fluorocarbon-Based Plasma Exposure, ***Adam Pranda****, S.A. Gutierrez Razo, J.T. Fourkas, G.S. Oehrlein,* University of Maryland, College Park	**PS+TF-MoM10** Capacitively Coupled DC/RF Discharges for PEALD Process of Titanium Dioxide Films, ***Shinya Iwashita****, A. Suzuki, T. Shindo, T. Kikuchi, T. Matsudo, Y. Morita, T. Moriya,* Tokyo Electron Technology Solutions Ltd., Japan*; A. Uedono,* University of Tsukuba, Japan
11:40am	**PS+AS+EM+SS-MoM11** Fundamental Studies of Plasma Species with Organic Materials of Varying Hydrogen and Oxygen Composition by Computational and Experimental Approaches, ***Yusuke Fukunaga****,* Nagoya University, Japan*; P.L.G. Ventzek, B. Lane,* Tokyo Electron America, Inc.*; A. Ranjan,* TEL Technology Center America, LLC*; M. Sekine, T. Tsutsumi, H. Kondo, K. Ishikawa,* Plasma Nanotechnology Research Center, Japan*; R. Upadhyay,* Esgee Technologies*; L. L. Raja,* The University of Texas at Austin*; G. Hartmann,* McKetta Department of Chemical Engineering, The University of Texas at Austin*; G. S. Hwang,* The University of Texas at Austin*; M. Hori,* Institute of innovation for future society, Japan	**PS+TF-MoM11** The effects of Varying Plasma Conditions on Plasma Enhanced Atomic Layer Epitaxy*, D.R. Boris, V.D. Wheeler,* U.S. Naval Research Laboratory*; V.R. Anderson,* Kennesaw State University*; N. Nepal,* U.S. Naval Research Laboratory*; S.G. Rosenberg, A.C. Kozen,* ASEE Postdoctoral Fellow*; S.G. Walton,* ***Charles Eddy****,* U.S. Naval Research Laboratory

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

[2] **National Student Award Finalist**

	Advanced Surface Engineering Division **Room 202C - Session SE+NS+TF-MoM** **Nanostructured Thin Films and Coatings** **Moderators:** Jianliang Lin, Southwest Research Institute, Matjaz Panjan, Jozef Stefan Institute, Slovenia	**Surface Science Division** **Room 203C - Session SS+HC+MI-MoM** **Dynamical Processes at Surfaces** **Moderator:** Gareth Parkinson, TU Wien
8:20am	**SE+NS+TF-MoM1** The Role of Mechanical and Chemical Bonding Mechanisms in Adhesion of Nanoporous Anodic Aluminium Oxides (AAO), ***Shoshan Abrahami,*** Vrije Universiteit Brussel (VUB), Belgium; *V.C. Gudla,* Technical University of Denmark; *K. Marcoen,* Vrije Universiteit Brussel, Belgium; *J.M.M. de Kok,* Fokker Aerostructres; *T. Hauffman,* Vrije Universiteit Brussel, Belgium; *R. Ambat,* Technical University of Denmark; *J.M.C. Mol,* Technical University Delft, Netherlands; *H. Terryn,* Vrije Universiteit Brussel, Belgium	**INVITED: SS+HC+MI-MoM1** Light Induced Single-Molecule Dynamics at Surfaces, ***Wilson Ho,*** University of California, Irvine
8:40am	**SE+NS+TF-MoM2** Tuning Surface States of Nanocrystalline ZnO Films by Atomic Layer Deposited TiO_x, *C. Yi,* ***Ich Tran,*** *M. Law,* University of California, Irvine	Invited talk continues.
9:00am	**SE+NS+TF-MoM3** Two-dimensional Hexagonal Boron Nitride (hBN) Layer Promoted Growth of Highly-oriented, Trigonal-structured Ta_2C(0001) Thin Films via Ultra-high Vacuum Sputter-deposition on Al_2O_3(0001), ***Koichi Tanaka,*** *P. Arias, M.E. Liao, Y. Wang, H. Zaid, A. Aleman, M.S. Goorsky, S. Kodambaka,* University of California, Los Angeles	**SS+HC+MI-MoM3** Probing the Effects of Surface Structure on the Dissociative Chemisorption of Methane, ***Eric High***[1], *D.G. Tinney, A.L. Utz,* Tufts University
9:20am	**SE+NS+TF-MoM4** Nitride High Entropy Alloy Thin Films Deposited by Magnetron Sputtering and Cathodic Arc on Polymer Substrates: Structure and Electro-Mechanical Properties, ***Ao Xia,*** Montanuniversität Leoben, Austria; *R. Dedoncker,* Ghent University, Belgium; *M.J. Cordill,* Erich Schmid Institute of Materials Science, Austria; *D.J.M.G. Depla,* Ghent University, Belgium; *R. Franz,* Montanuniversität Leoben, Austria	**SS+HC+MI-MoM4** Adsorption and Diffusion of NH_3 on Anatase-TiO_2 (101), ***Kræn Christoffer Adamsen,*** *S. Koust, E.L. Kolsbjerg, B. Hammer, S. Wendt, J.V. Lauritsen,* Aarhus University, Denmark
9:40am	**SE+NS+TF-MoM5** Isomeric Phase Composition and Mechanical Properties of NbN Nanocomposite Coatings Deposited by Modulated Pulsed Power Magnetron Sputtering, ***Y.G. Li,*** *H. Yuan, Z.T. Jiang, N. Pan, M.K. Lei,* Dalian University of Technology, China	**SS+HC+MI-MoM5** Non-equilibrium Growth of Metastable Clusters as a Means of Controlling Supramolecular Structure., ***Ryan Brown,*** Clarkson University; *A.S.A. Kandel,* University of Notre Dame
10:00am	**SE+NS+TF-MoM6** Ab initio Guided Development of Ternary Borides: A Case Study of Ti-B-N, Ti-Zr-B, Ti-W-B, Ta-W-B, and V-W-B Systems, *V. Moraes, R. Hahn, M. Bartosik, H. Riedl,* TU Wien, Austria; *H. Euchner,* Ulm University, Austria; *D. Holec,* Montanuniversität Leoben, Austria; ***Paul Heinz Mayrhofer,*** TU Wien, Austria	**SS+HC+MI-MoM6** Ultrafast Dynamics of Reaction Pathways on Metal Surfaces, ***Jerry LaRue,*** Chapman University
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: SE+NS+TF-MoM8** Toughness Enhancement in Hard Ceramic Films by Alloy Design, ***Hanna Kindlund,*** Department of Mechanical and Aerospace Engineering, University of California Los Angeles (UCLA)	**INVITED: SS+HC+MI-MoM8** Designer Solids via Multi-Heteroepitaxy: Layer-by-Layer Deposition of Molecular Frameworks on Solid Substrates, ***Christof Wöll,*** Karlsruhe Institute of Technology, Germany
11:00am	Invited talk continues.	Invited talk continues.
11:20am	**SE+NS+TF-MoM10** From Ab-Initio Design to Synthesis of Multifunctional Coatings with Enhanced Hardness and Toughness, *D. Edström, D. Sangiovanni, L. Hultman,* Linköping University, Sweden; *I. Petrov, J. Greene,* University of Illinois at Urbana Champaign; ***Valeriu Chirita,*** Linköping University, Sweden	**SS+HC+MI-MoM10** Isotope Enrichment via Non-Equilibrium Differential Condensation and Reflection using Supersonic Beam Gas-Surface Scattering, ***Jacob Graham,*** *A. McMillan, K. Nihill, S.J. Sibener,* University of Chicago
11:40am	**SE+NS+TF-MoM11** Mechanical Properties of $V_{0.5}Mo_{0.5}N_{1-x}O_x$ Thin Films, ***Daniel Edström,*** *D. Sangiovanni,* Linköping University, Sweden; *L. Landälv,* Linköping University, Sandvik Coromant AB, Sweden; *L. Hultman,* Linköping University, Sweden; *I. Petrov, J. Greene,* University of Illinois at Urbana Champaign, Linköping University, Sweden; *P. Eklund, V. Chirita,* Linköping University, Sweden	**SS+HC+MI-MoM11** Structural Reorganization of Sequentially Adsorbed Two-component Self-assembled Monolayers after Soft Ultraviolet Irradiation, *C. Gerber,* ***Rebecca Quardokus,*** University of Connecticut

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

	Thin Films Division **Room 102A - Session TF1-MoM** **Precursors and Surface Reactions** **Moderators:** Cathleen Crudden, Queen's University, Canada, Markku Leskela, University of Helsinki, Finland	**Thin Films Division** **Room 104B - Session TF2-MoM** **IoT Session: Thin Film Processes for Energy Storage** **Moderators:** Virginia Wheeler, U.S. Naval Research Laboratory, Paul Poodt, Holst Centre / TNO, The Netherlands
8:20am	**TF1-MoM1** Monitoring the Transient Surface Species during TiO_2 Atomic Layer Deposition using Surface-Enhanced Raman Spectroscopy, ***Ryan Hackler***[1], *G. Kang, G.C. Schatz, P.C. Stair, R.P. Van Duyne,* Northwestern University	**INVITED: TF2-MoM1** Thin Films for Next Generation Batteries, ***Brecht Put,*** Imec, Belgium*; S. Hollevoet, N. Labyedh,* KULeuven & Imec, Belgium*; M. Debucquoy,* Imec, Belgium*; W.M.M. Kessels, M.C. Creatore,* Eindhoven University of Technology, The Netherlands*; P.M. Vereecken,* KULeuven & Imec, Belgium
8:40am	**TF1-MoM2** Theoretical Study on the Effect of Precursor Ligand in Atomic Layer Deposition of Al_2O_3 on SiO_2, ***Tania Sandoval,*** Universidad Técnica Federico Santa María*; T-L. Liu,* Stanford University*; R. Tonner,* Philipps-Universität Marburg*; S.F. Bent,* Stanford University	Invited talk continues.
9:00am	**TF1-MoM3** Relevance of Dimeric and Tetrameric Structures to the Surface Chemistry of Metal Amidinate Atomic Layer Deposition Precursors, ***Bo Chen****, Y. Yao, Q. Ma, F. Zaera,* University of California, Riverside*; Y. Duan, A.V. Teplyakov,* University of Delaware*; J. Coyle, S. Barry,* Carleton University	**TF2-MoM3** Radical Enhanced Atomic Layer Deposition of Cobalt Oxide Based Electrodes for 3D Lithium-ion Battery Applications, ***Ryan Sheil****, J. Lau, B. Dunn, J.P. Chang,* University of California at Los Angeles
9:20am	**TF1-MoM4** Low Temperature Dielectric ALD with the use of Hydrogen Peroxide: Comparison of Growth and Film Characteristics for Anhydrous H_2O_2, H_2O_2/H_2O Mixtures and H_2O, ***Daniel Alvarez****, K. Andachi, J. Spiegelman,* RASIRC	**TF2-MoM4** Fast-charging 3D Battery Electrodes with High-Capacity Materials Using Large Area Atmospheric Pressure Spatial ALD, ***Lucas Haverkate****, S. Unnikrishnan, D. Hermes,* Holst Centre / TNO, The Netherlands*; F. Roozeboom,* Eindhoven University of Technology, The Netherlands*; F. Zorro, F. Grob, E. Balder,* Holst Centre / TNO, The Netherlands*; P. Poodt,* Holst Centre / TNO and SALDtech B.V., Netherlands*; M. Tulodziecki,* Holst Centre / TNO, The Netherlands
9:40am	**INVITED: TF1-MoM5** Putting More Chemistry into CVD. Precursors, Superconformality, and Selectivity, ***Gregory Girolami****, J.R. Abelson,* University of Illinois at Urbana-Champaign	**INVITED: TF2-MoM5** Thin Film Technology - Opening New Frontiers for Solid State Batteries, ***Gary Rubloff****, K. Gregorczyk,* University of Maryland, College Park*; A. Pearse,* Control Electron*; S.B. Lee,* University of Maryland, College Park*; A.A. Talin,* Sandia National Laboratories, Livermore
10:00am	Invited talk continues.	Invited talk continues.
10:20am	**BREAK**	**BREAK**
10:40am	**TF1-MoM8** Insight into the "Residual Methyls" during ALD of Al_2O_3 from TMA/H_2O using *in situ* RAIRS, ***Brent Sperling****, B. Kalanyan, J.E. Maslar,* National Institute of Sandards and Technology (NIST)	**INVITED: TF2-MoM8** Atomic Layer Deposition: A Scalable Process for Enabling the Next Generation of High Performance Materials, ***Arrelaine Dameron****,* Forge Nano
11:00am	**TF1-MoM9** Low Temperature Atomic Layer Deposition of Silicon Nitride using Hexachlorodisilane and Ultra-High Purity Hydrazine, ***Aswin Kondusamy****, A.T. Lucero, S. Hwang, X. Meng, H.S. Kim,* University of Texas at Dallas*; D. Alvarez Jr., J. Spiegelman,* RASIRC*; J. Kim,* University of Texas at Dallas	Invited talk continues.
11:20am	**TF1-MoM10** Investigating Low-Temperature Atomic Layer Deposition of Nickel Oxide using Ni(^{tBu2}DAD)$_2$ and Ozone, ***Konner Holden****, J.F. Conley, Jr.,* Oregon State University*; C.L. Dezelah,* EMD Performance Materials	**TF2-MoM10** A Facile CVD Route for the Large-scale Fabrication of Silicon-graphite Core-shell Composites, ***Giorgio Nava****, J. Schwan, L. Mangolini,* University of California, Riverside
11:40am		

[1] **National Student Award Finalist**

Monday Morning, October 22, 2018

	Tribology Focus Topic Room 201A - Session TR+AS+NS+SS-MoM Tribology Focus Session **Moderator:** Filippo Mangolini, University of Texas at Austin	Vacuum Technology Division Room 203B - Session VT-MoM Vacuum Measurement **Moderators:** Marcy Stutzman, Thomas Jefferson National Accelerator Facility, Alan Van Drie, TAE Technologies
8:20am	**INVITED: TR+AS+NS+SS-MoM1** Structural Superlubricity: History, Breakthroughs, and Challenges, ***Mehmet Z. Baykara,*** University of California, Merced	**INVITED: VT-MoM1** Pharmaceutical Freeze-Drying and Vacuum-Drying: Challenges and Opportunities, ***Evgenyi Shalaev,*** Allergan
8:40am	Invited talk continues.	Invited talk continues.
9:00am	**INVITED: TR+AS+NS+SS-MoM3** An Examination of the Nature of Bonding during Indentation and Sliding using MD and in-situ Nanoindentation, ***Judith Harrison,*** United States Naval Academy	**VT-MoM3** Fixed Length Optical Cavities for Primary Traceability to the Pascal, ***Jay Hendricks,*** *J.E. Ricker, K.O. Douglass,* National Institute of Standards and Technology*; G. Brucker, E. Fuchs, A. Ocepek, P. Sullivan, S. Venkatesan,* MKS Instruments, Inc., Pressure and Vacuum Measurement Group
9:20am	Invited talk continues.	**VT-MoM4** Fundamental Quantum-based Vacuum Metrology at NIST, ***Julia Scherschligt,*** National Institute of Standards and Technology
9:40am	**INVITED: TR+AS+NS+SS-MoM5** The Chemistry of Friction, Wear, and Tribofilm Growth on 2D Materials, ***Jonathan Felts,*** Texas A&M University	**VT-MoM5** Moving the FLOC to the Telecom, ***Kevin Douglass,*** *J.E. Ricker,* National Institute of Standards and Technology*; J. Hendricks,* National Institute of Standards and Technology (NIST)
10:00am	Invited talk continues.	**VT-MoM6** Transient Method of Permeability Measurements for Microporous Media, *M.V. Johansson,* Aix Marseille University, France*; M. Wuest,* INFICON, Liechtenstein*; P. Perrier,* ***Irina Graur Martin,*** Aix Marseille University, France
10:20am	**BREAK**	**BREAK**
10:40am	**INVITED: TR+AS+NS+SS-MoM8** Nanomechanics of Soft, Hierarchical Polymer- and Biological-Networks, ***Prathima Nalam,*** University at Buffalo – SUNY	**INVITED: VT-MoM8** Beamline Technology and Current Modeling Capabilities for Ion Implantation, ***Svetlana Radovanov,*** Applied Materials, Varian Semiconductor Equipment
11:00am	Invited talk continues.	Invited talk continues.
11:20am	**INVITED: TR+AS+NS+SS-MoM10** Mechanisms for Controlling Friction and New Approaches for Achieving Superlubricity Regime in 2D Materials, ***Diana Berman,*** University of North Texas*; A. Erdemir, A.V. Sumant,* Argonne National Laboratory	**VT-MoM10** Design of a New Thermal Vacuum Chamber for Space instrument Calibration, ***Freek Molkenboer,*** *R. Jansen, R.G. Veraar, G.C.J. Otter, W.P. van Werkhoven, N.B. Koster, F.P.G. Driessen,* TNO, Netherlands
11:40am	Invited talk continues.	**VT-MoM11** Pressure Measurements from Combining Non-evaporable Getter Pumps and a Novel Extreme High Vacuum Cryopump, ***Marcy Stutzman,*** Thomas Jefferson National Accelerator Facility*; A. Segovia Miranda,* Universidad Aut´onoma de Zacatecas*; P.A. Adderley, M. Poelker,* Thomas Jefferson National Accelerator Facility
12:05pm	**MIND BUSINESS MEETING**	

	2D Materials Focus Topic **Room 201B - Session 2D+MI+NS-MoA** **2D Materials Characterization including Microscopy and Spectroscopy** **Moderators:** Stephan Hofmann, University of Cambridge, UK, Richard Vanfleet, Brigham Young University	**Applied Surface Science Division** **Room 204 - Session AS-MoA** **Multitechnique Applications-When More techniques are Better than One** **Moderator:** Karen Gaskell, University of Maryland, College Park
1:20pm	**INVITED: 2D+MI+NS-MoA1** Observing the Mechanisms of Graphene Growth during Chemical Vapor Deposition: Routes to Controlling Layer Number and Domain Size, ***Robert Weatherup,*** University of Manchester, UK	**AS-MoA1** Overcoming Obstacles in Surface and Interface Characterization of All Solid-State Lithium Battery Materials, ***Natalie Seitzman,*** Colorado School of Mines*; H. Guthrey, D. Sulas, S. Johnston,* National Renewable Energy Laboratory*; J. Nelson Weker,* SLAC National Accelerator Laboratory*; H. Platt,* Solid Power, Inc.*; M. Al-Jassim,* National Renewable Energy Laboratory*; S. Pylypenko,* Colorado School of Mines
1:40pm	Invited talk continues.	**AS-MoA2** *In-situ* Complementary XPS and Raman Analysis of Technologically Important Materials, ***Paul Mack,*** Thermo Fisher Scientific, UK
2:00pm	**2D+MI+NS-MoA3** Band Alignment of 2-D Materials by Internal Photoemission, *Q. Zhang, S. Zhang,* Theiss Research & National Institute of Standards and Technology*; B. Sperling,* ***Nhan Nguyen,*** National Institute of Standards and Technology	**INVITED: AS-MoA3** Integration of Laboratory Experiments. Spectroscopy, and Microscopy to Investigate the Reactivity of Metals in Mine Wastes, ***José Cerrato,*** University of New Mexico
2:20pm	**2D+MI+NS-MoA4** Visible to mid-IR Nanoscale Characterization of 2D Materials via Photo-induced Force Microscopy, ***Padraic O'Reilly****, D. Nowak, S. Park,* Molecular Vista	Invited talk continues.
2:40pm	**INVITED: 2D+MI+NS-MoA5** Polymorphic Structures and Diversified Properties of Low-dimensional Materials Investigated by In situ Electron Microscopy, ***Kazu Suenaga,*** National Institute of Advanced Industrial Science and Technology (AIST), Japan	**AS-MoA5** Degradation Methodology of Reinforced Concrete in South Asia analyzed using Surface Analysis and other Techniques, ***Nirmalya Karar,*** CSIR-National Physical Laboratory, India*; S.K. Singh,* CSIR-CBRI Roorkee India
3:00pm	Invited talk continues.	**AS-MoA6** Surface Phase, Morphology, and Charge Distribution Transitions on Vacuum and Ambient Annealed Perovskites: A Case Study on $SrTiO_3$(100), ***Omur Dagdeviren***[1]*, G. Simon, K. Zou, C. Ahn, F.J. Walker, E.I. Altman, U.D. Schwarz,* Yale University
3:20pm	**BREAK**	**BREAK**
3:40pm	**INVITED: 2D+MI+NS-MoA8** Probing Interlayer Interaction in van der Waals Materials by Low-energy Electron Microscopy (LEEM), ***Johannes Jobst****, D. Geelen,* Leiden University, Netherlands*; R.M. Tromp,* IBM, T.J. Watson Research Center*; S.J. van der Molen,* Huygens-Kamerlingh Onnes Laboratory, Netherlands	**AS-MoA8** In-situ Characterisation of Graphene using combined XPS and Raman Spectroscopy: Removal of Polymer Residue by Ar Gas Cluster Ion Beams, ***Barry Brennan,*** National Physical Laboratory, UK*; P. Mack,* Thermo Fisher Scientific, UK*; A. Centeno, A. Zurutuza,* Graphenea, Spain*; A.J. Pollard,* National Physical Laboratory, UK
4:00pm	Invited talk continues.	**AS-MoA9** Topography-corrected TOF-SIMS Chemical Imaging of Chip Interconnect Surfaces, ***Conor Thomas****, B. Singh, R. Wang,* IBM Systems Division
4:20pm	**2D+MI+NS-MoA10** Fast Full Wafer Analysis for Graphene and 2D-materials by Imaging Ellipsometry, ***Sebastian Funke,*** Accurion GmbH, Germany*; P. Braueniger-Weimer, S. Hofmann,* University of Cambridge, UK*; P.H. Thiesen,* Accurion GmbH, Germany	**AS-MoA10** Combining the Benefits of GCIB-ToF-SIMS, MALDI-FTICR-MS and LC-MS/MS for Location specific Lipid Identification in Planarian Flatworm Tissue Sections, ***Tina Angerer,*** University of Washington*; D. Velickovic, C. Nicora, C.R. Anderton,* Pacific Northwest National Laboratory*; D.J. Graham, L.J. Gamble,* University of Washington
4:40pm		

[1] **NSTD Student Award Finalist**

	Biomaterial Interfaces Division **Room 101B - Session BI+AS+IPF+MN-MoA** **Advanced Imaging and Structure Determination of Biomaterials Research** **Moderators:** Dan Graham, University of Washington, Axel Rosenhahn, Ruhr-University Bochum, Germany	**Spectroscopic Ellipsometry Focus Topic** **Room 202A - Session EL+EM-MoA** **Spectroscopic Ellipsometry: Novel Applications and Theoretical Approaches** **Moderators:** Vanya Darakchieva Stefan Zollner, New Mexico State University,
1:20pm	**INVITED: BI+AS+IPF+MN-MoA1** NMR Relaxometry as a Medical Diagnostic, ***Michael J. Cima,*** Massachusetts Institute of Technology	**INVITED: EL+EM-MoA1** The Physics of Low Symmetry Metal Oxides with Special Attention to Phonons, Plasmons and Excitons and their Potential for Uses in Power Electronics and Quantum Technologies, ***Mathias Schubert,*** University of Nebraska - Lincoln, Linköping University, Sweden, Leibniz Institute for Polymer Research, Dresden, Germany*; A. Mock, R. Korlacki, S. Knight,* University of Nebraska - Lincoln*; V. Darakchieva,* Linköping University, Sweden*; B. Monemar,* Linköping University, Sweden, Tokyo University of Agriculture and Tech., Japan*; H. Murakami, Y. Kumagai,* Tokyo University of Agriculture and Technology, Japan*; K. Goto,* Tokyo University of Agriculture and Technology, Tamura Corporation, Japan*; M. Higashiwaki,* National Institute of Information and Communications Technology, Japan
1:40pm	Invited talk continues.	Invited talk continues.
2:00pm	**BI+AS+IPF+MN-MoA3** Direct Observation of Cell Signaling Proteins Interacting with a Model Cell Membrane by Sum Frequency Generation Vibrational Spectroscopy*, T.W. Golbek,* Oregon State University*; T. Weidner,* Aarhus University, Denmark*; C.P. Johnson,* ***Joe Baio,*** Oregon State University	**EL+EM-MoA3** Mueller Matrix Spectroscopic Ellipsometry Based Scatterometry of Nanowire Gate-All-Around (GAA) Transistor Structures*, M. Korde,* ***Alain C. Diebold,*** SUNY Polytechnic Institute
2:20pm	**BI+AS+IPF+MN-MoA4** Vibrational Sum-frequency Scattering Spectroscopy for the Characterization of Protein Fiber Structures and their Surface Interactions in Biological Environments*,* ***Patrik K. Johansson****, D.G. Castner,* University of Washington	**EL+EM-MoA4** Anomaly in the Optical Constants of Ni near the Curie Temperature*,* ***Farzin Abadizaman****, S. Zollner,* New Mexico State University
2:40pm	**BI+AS+IPF+MN-MoA5** How Proteins Grow Calcium Carbonates – The Mechanism of Vaterite Bioprecipitation Studied at the Molecular Level by Sum Frequency Generation Spectroscopy*, H. Lu,* Max Planck Institute for Polymer Research, Germany*; S. Roeters,* Aarhus University, Denmark*; H. Lutz, M. Hood, A. Schäfer,* Max Planck Institute for Polymer Research, Germany*; R. Muñoz-Espí,* Universidad de Valencia, Spain*; M. Bonn,* Max Planck Institute for Polymer Research, Germany*;* ***Tobias Weidner,*** Aarhus University, Denmark	**EL+EM-MoA5** Phonon Confinement and Excitonic Absorption in the Optical Properties of ZnO Films, ***Nuwanjula Samarasingha****, S. Zollner,* New Mexico State University*; D. Pal, A. Mathur, A. Singh, R. Singh, S. Chattopadhyay,* Indian Institute of Technology Indore, India
3:00pm	**BI+AS+IPF+MN-MoA6** ToF-SIMS Imaging of Chemical Modifications in Topographically Challenging Materials*,* ***Michael Taylor****, D.J. Graham, L.J. Gamble,* University of Washington	**EL+EM-MoA6** High Aspect Ratio Etch Tilt Detection with Full 4x4 Mueller Matrix Spectroscopic Ellipsometry and Its Application to 3DNAND Channel Hole Etch Process and Chamber Monitoring*,* ***Peilin Ong,*** Micron Semiconductor Asia Pte. Ltd., Singapore*; S. Ng,* Nanometrics Incorporated*; G.B. Chu,* Micron Semiconductor Asia Pte. Ltd., Singapore*; P. Murphy,* Nanometrics Incorporated*; L.C. Liong, W. Fu,* Micron Semiconductor Asia Pte. Ltd., Singapore*; Y. Wen,* Nanometrics Incorporated*; L.W. Ho,* Micron Semiconductor Asia Pte. Ltd., Singapore
3:20pm	**BREAK**	**BREAK**
3:40pm	**BI+AS+IPF+MN-MoA8** Imaging Plant and Plant Growth-Promoting Bacteria Interactions Using Time-of-Flight Secondary Ion Mass Spectrometry*,* ***Xiao-Ying Yu****, R. Komorek, Z.H. Zhu, C.J. Jansson,* Pacific Northwest National Laboratory	**EL+EM-MoA8** Ultra-High-Speed Spectroscopic Ellipsometry and its Applications*,* ***Gai Chin,*** ULVAC Inc., Japan
4:00pm	**BI+AS+IPF+MN-MoA9** Imaging of Cells and Tissues with Helium Ion Microscopy*, J.A. Notte, D. Wei,* ***Chuong Huynh,*** Carl Zeiss Microscopy, LLC	**EL+EM-MoA9** Use of Ellipsometry to Monitor Implant Damage in Methane Plasma Implant*,* ***Nicholas Bateman,*** Varian Semiconductor Equipment, Applied Materials
4:20pm	**BI+AS+IPF+MN-MoA10** Quantitative Analysis of Electrolytes in Microliter-size Blood Drops Congealed via HemaDrop™ using Ion Beam Analysis and SIMNRA*,* ***Harshini Thinakaran****, S.R. Narayan, J.M. Day, N. Herbots, F.J. Ark, B. Wilkens, M. Mangus, R.J. Culbertson,* Arizona State University	**EL+EM-MoA10** Study of the Thickness-dependent Optical Constants of Metallic Thin Films based on Ellipsometry and Reflectivity*,* ***Jiamin Liu****, H. Jiang, S.Y. Liu,* Huazhong University of Science and Technology, China
4:40pm		

	Electronic Materials and Photonics Division **Room 101A - Session EM+AM+NS+PS-MoA** **Atomic Layer Processing: Selective-Area Patterning (Assembly/Deposition/Etching)** **Moderators:** Michael Filler, Georgia Institute of Technology, Jessica Hilton, RHK Technology	**Magnetic Interfaces and Nanostructures Division** **Room 201A - Session MI+2D+EM+NS-MoA** **IoT Session: Symposium on new Magnetic Materials, Devices and Concepts for the Information Society** **Moderator:** Hendrik Ohldag, SLAC National Accelerator Laboratory
1:20pm	**EM+AM+NS+PS-MoA1** Area-Selective Deposition of Crystalline Perovskites, *E. Lin,* ***Brennan Coffey****, Z. Zhang, P.Y. Chen, B. Edmondson, J.G. Ekerdt,* University of Texas at Austin	**INVITED: MI+2D+EM+NS-MoA1** "ZOOMING in on Data Storage and the Superb HDD", ***Roger Wood****,* Western Digital
1:40pm	**EM+AM+NS+PS-MoA2** A Dry NF_3/NH_3 Plasma Clean for Removing Si Native Oxide and Leaving a Smooth Si Surface, ***Christopher Ahles****, J.Y. Choi,* University of California, San Diego*; A.C. Kummel,* University of California at San Diego	Invited talk continues.
2:00pm	**INVITED: EM+AM+NS+PS-MoA3** Probing Strategies for Selective Deposition that Exploit Competitive Interactions, ***James Engstrom****,* Cornell University	**INVITED: MI+2D+EM+NS-MoA3** Physics and Applications of Spin-transfer Torques, ***Andrew Kent****,* New York University
2:20pm	Invited talk continues.	Invited talk continues.
2:40pm	**EM+AM+NS+PS-MoA5** The Interconnect Resistivity Bottleneck, ***Daniel Gall****, T. Zhou, E. Milosevic,* Rensselaer Polytechnic Institute*; P.Y. Zheng,* Micron Technology	**INVITED: MI+2D+EM+NS-MoA5** Hybrid Magnetic Heterostructures, ***Ivan K. Schuller****, A. Basaran,* University of California, San Diego*; J. de la Venta,* Colorado State University*; J.G. Ramirez,* Universidad de los Andes, Colombia*; T. Saerbeck,* Institute Laue-Langevin, France*; I. Valmianski,* University of California, San Diego*; X. Batlle,* University of Barcelona, Spain
3:00pm	**EM+AM+NS+PS-MoA6** Sub 0.3 micrometer Copper Patterns Etched with a Plasma-Based Process and Pattern Dependent Electromigration Failure Mechanism, ***Yue Kuo****,* Texas A&M University	Invited talk continues.
3:20pm	**BREAK**	**BREAK**
3:40pm	**INVITED: EM+AM+NS+PS-MoA8** The Effect of Metal Diffusion on Contacts to Semiconducting Chalcogenides: Examples for 2D and 3D Materials, ***Suzanne E. Mohney****, K.A. Cooley, M. Abraham, A.C. Domask, H. Simchi, L. Kerstetter, C. Lawrence, T.N. Walter,* The Pennsylvania State University	**INVITED: MI+2D+EM+NS-MoA8** Organismic Materials and Intelligence, ***Shriram Ramanathan****,* Purdue University
4:00pm	Invited talk continues.	Invited talk continues.
4:20pm	**EM+AM+NS+PS-MoA10** TiN_x and TaN_x Films via Low-T Thermal ALD using Anhydrous N_2H_4, ***Steven Wolf****, M. Breeden, M. Kavrik,* University of California at San Diego*; D. Alvarez, J. Spiegelman,* RASIRC*; M. Naik,* Applied Materials*; A.C. Kummel,* University of California at San Diego	
4:40pm		

	In-situ Microscopy, Spectroscopy, and Microfluidics Focus Topic **Room 202B - Session MM+AS+NS+PC+SS-MoA** **X-ray and Electron Spectromicroscopy in Liquids and Gases & Flash Networking Session** **Moderator:** Piran Kidambi, Vanderbilt University	**Materials and Processes for Quantum Computing Focus Topic** **Room 203A - Session MP+AM+EM+NS-MoA** **Systems and Devices for Quantum Computing II** **Moderator:** Josh Mutus, Google Inc
1:20pm	**INVITED: MM+AS+NS+PC+SS-MoA1** Bridging the Material and Pressure Gap in Synchrotron based Photoelectron in Situ/Operando Studies, ***Luca Gregoratti,*** *M. Amati, P. Zeller,* Elettra-Sincrotrone Trieste, Italy	**INVITED: MP+AM+EM+NS-MoA1** Quantum Engineering of Superconducting Qubits, ***William Oliver,*** MIT Lincoln Laboratory
1:40pm	Invited talk continues.	Invited talk continues.
2:00pm	**MM+AS+NS+PC+SS-MoA3** Transition Metal Complexes in Aqueous Solutions Characterized by Liquid Jet Ambient Pressure X – ray Photoelectron Spectroscopy, ***Jared Bruce,*** *J.C. Hemminger,* University of California, Irvine	**INVITED: MP+AM+EM+NS-MoA3** The Quantum Socket: A Wiring Method for Superconducting Quantum Computing, ***Matteo Mariantoni,*** University of Waterloo, Canada
2:20pm	**MM+AS+NS+PC+SS-MoA4** Interfacial Electrochemistry in Liquids Probed with Photoemission Electron Microscopy, *S. Nemsak,* Forschungszentrum Juelich GmbH, Germany*; E. Strelcov,* NIST Center for Nanoscale Science and Technology*;* ***Tomas Duchon,*** Forschungszentrum Juelich GmbH, Germany*; H.X. Guo,* National Institute of Standards and Technology*; J. Hackl,* Forschungszentrum Juelich GmbH, Germany*; A. Yualev,* NIST Center for Nanoscale Science and Technology*; I. Vlassiouk,* Oak Ridge National Laboratory*; D.N. Mueller, C.M. Schneider,* Forschungszentrum Juelich GmbH, Germany*; A. Kolmakov,* NIST Center for Nanoscale Science and Technology	Invited talk continues.
2:40pm	**MM FLASH NETWORKING SESSION**	**MP+AM+EM+NS-MoA5** Pogo Pin Packaging for High Coherence Qubits, ***Nicholas Bronn,*** *V.P. Adiga, S.B. Olivadese, O. Jinka,* IBM, T.J. Watson Research Center*; X. Wu,* National Institute of Standards and Technology*; J.M. Chow,* IBM, T.J. Watson Research Center*; D.P. Pappas,* National Institute of Standards and Technology
3:00pm		**MP+AM+EM+NS-MoA6** 50 Ohm Superconducting Kinetic Inductance Traveling-Wave Amplifier with flexible pump frequency for Four Wave Mixing and Three Wave Mixing, ***Xian Wu,*** *M. Bal, J. Long, H.S. Ku, R. Lake, D.P. Pappas,* National Institute of Standards and Technology
3:20pm	**BREAK**	**BREAK**
3:40pm	**INVITED: MM+AS+NS+PC+SS-MoA8** Practical Liquid Cell Microscopy - Opportunities and Challenges, ***Daan Hein Alsem****, K. Karki,* Hummingbird Scientific*; J.T. Mefford, W.C. Chueh,* Stanford University*; N.J. Salmon,* Hummingbird Scientific	**INVITED: MP+AM+EM+NS-MoA8** Near Term Development of Short Depth Quantum Processors, ***Jerry Chow,*** IBM Research Division, T.J. Watson Research Center
4:00pm	Invited talk continues.	Invited talk continues.
4:20pm	**MM+AS+NS+PC+SS-MoA10** Observation of Electric Double Layer under Graphene by Scanning Electron Microscopy, ***Hongxuan Guo****, A. Yulaev, E. Strelcov,* National Institute of Standards and Technology (NIST)/ University of Maryland, College Park*; A. Tselev,* CICECO and Department of Physics, University of Aveiro,Portugal*; A. Kolmakov,* National Institute of Standards and Technology	**MP+AM+EM+NS-MoA10** Frequency Crowding in Lattices of Transmon Qubits, ***Sami Rosenblatt****, J.B. Hertzberg, J. Chavez-Garcia, N.T. Bronn, H. Paik, M.O. Sandberg, E. Magesan, J. Smolin, J.B. Yau, V.P. Adiga, M. Brink, J.M. Chow,* IBM, T.J. Watson Research Center
4:40pm		

	Nanometer-scale Science and Technology Division Room 102B - Session NS+2D+AS+PC-MoA SPM - New Imaging and Spectroscopy Methodologies **Moderators:** Aubrey Hanbicki, Naval Research Laboratory, Sidney Cohen, Weizmann Institute of Science, Israel	Plasma Science and Technology Division Room 104A - Session PS+PB-MoA Plasma and Polymers: 'The Legacy of Riccardo d'Agostino and Beyond' **Moderators:** Ankur Agarwal, KLA-Tencor, Mohan Sankaran, Case Western Reserve University
1:20pm	**INVITED: NS+2D+AS+PC-MoA1** A Connection Between Stability of STM Control System and Local Barrier Height: Implications on Imaging and Lithography, ***S.O. Reza Moheimani,*** University of Texas at Dallas	**PS+PB-MoA1** Foreword/introduction to the session: "Reflections on the Legacy of Riccardo d'Agostino", *P. Favia,* University of Barii, Italy
1:40pm	Invited talk continues.	**PS+PB-MoA2** Atmospheric Pressure PE-CVD of Drug-containing Nanometric Capsules, ***Pietro Favia****, C. Lo Porto, A. Treglia,* University of Bari, Italy*; F. Palumbo,* CNR Institute of Nanotechnology NANOTEC, Italy
2:00pm	**NS+2D+AS+PC-MoA3** Distinctive Microstructures in a Complex Polymer Evolve with Time and Composition*, x. Yu,* Worcester Polytechnic Institute*; S. Granados-Focil,* Clark University*; M. Tao,* ***Nancy Burnham****,* Worcester Polytechnic Institute	**PS+PB-MoA3** Ultrathin Metal-Organic Covalent Networks by initiated Plasma Enhanced Chemical Vapor Deposition (iPECVD) for Gas Separation Membranes, ***Karen Gleason****, M. Wang,* MIT*; N.D. Boscher,* Luxembourg Institute of Science and Technology (LIST), Luxembourg*; M.C. Creatore, A. Perrotta,* Eindhoven University of Technology, The Netherlands*; K. Heinze,* Johannes Gutenberg-Universität, Mainz, Germany
2:20pm	**NS+2D+AS+PC-MoA4** Offering new Characterization Capabilities at the XTIP beamline by Combining Scanning Tunneling Microscopy with Synchrotron Radiation, ***Volker Rose****, H. Chang, M. Fisher, S.W. Hla, N. Shirato,* Argonne National Laboratory	**PS+PB-MoA4** Influence of Energetic Conditions on the Plasma Polymerization of Cyclopropylamine in Capacitively Coupled Discharges, ***Lenka Zajickova****, M. Michlicek,* Masaryk University, Czech Republic*; S. Hamaguchi,* Osaka University, Japan
2:40pm	**INVITED: NS+2D+AS+PC-MoA5** Scanning Probe Microscopy Based Spectroscopy Measurement for Nanoscale Chemical Identification, ***Chanmin Su,*** Bruker-Nano, Inc.	**PS+PB-MoA5** Electrochromic Investigation of PEDOT Film Deposited by Plasma Radicals Assisted Polymerization *via* CVD, ***Bianca Rita Pistillo****, G. Lamblin, J. Polesel-Maris,* Luxembourg Institute of Science and Technology (LIST), Luxembourg*; K. Menguelti,* Luxembourg Institute of Science and Technology (LIST)*; D. Arl, D. Lenoble,* Luxembourg Institute of Science and Technology (LIST), Luxembourg
3:00pm	Invited talk continues.	**PS+PB-MoA6** Initial ZnO Crystallite Formation by Plasma Enhanced ALD, ***Alberto Perrotta****, J. Pilz, A.M. Coclite,* Graz University of Technology, Austria
3:20pm	**BREAK**	**BREAK**
3:40pm	**NS+2D+AS+PC-MoA8** Quantifying Tip-Sample Interactions in Vacuum Using Cantilever-based Sensors: An Analysis, *O.E. Dagdeviren, C. Zhou, E.I. Altman,* ***Udo D. Schwarz****,* Yale University	**PS+PB-MoA8** On Fluorocarbons and Fish: Creating a Global Impact on Generations of Plasma Chemists, ***Ellen Fisher****,* Colorado State University
4:00pm	**NS+2D+AS+PC-MoA9** AFM + Nanoscale Vis-IR Spectroscopy via Photo-induced Force Microscopy, ***Derek Nowak****, T. Albrecht, S. Park,* Molecular Vista	**PS+PB-MoA9** DIRECT and Remote Surface Functionalization using Atmospheric Pressure Dielectric Barrier Discharges, ***Francesco Fracassi****,* University of Bari, Institute of Nanotechnology (NANOTEC), NRC, Italy, Italia*; F. Fanelli,* Institute of Nanotechnology (NANOTEC), NRC, Italy, Italia*; V. Armenise, A. Uricchio, R. d'Agostino,* University of Bari, Italy, Italia
4:20pm		**PS+PB-MoA10** Quest for Durable Low-index Optical Coatings: From Plasma Polymerized Fluorocarbons to Hybrid Organic-inorganic and Nanostructured Films, *Martinu,* ***Jolanta Klemberg-Sapieha****, O. Zabeida,* Ecole Polytechnique de Montreal, Canada
4:40pm		

	Advanced Surface Engineering Division **Room 202C - Session SE-MoA** **New Challenges and Opportunities in Surface Engineering** **Moderators:** Robert Franz, Montanuniversität Leoben, Austria, Jianliang Lin, Southwest Research Institute	**Surface Science Division** **Room 203C - Session SS+HC-MoA** **Theory and Modeling of Surfaces and Reactions** **Moderators:** Liney Arnadottir, Oregon State University, Petra Reinke, University of Virginia
1:20pm	**INVITED: SE-MoA1** From Passive to Active Optical Coatings - Challenges and Opportunities for Pulsed Plasma Deposition Processes, ***Ludvik Martinu,*** Ecole Polytechnique de Montreal, Canada	**INVITED: SS+HC-MoA1** Elucidating the Chemical Nature of Single-Site Catalysts from First Principles, *A.J.R. Hensley,* Washington State University*; A.J. Therrien,* Tufts University*; R. Zhang,* Washington State University*; A.C. Schilling,* Tufts University*; K. Groden,* Washington State University*; E.C.H. Sykes,* Tufts University*;* ***Jean-Sabin McEwen****,* Washington State University
1:40pm	Invited talk continues.	Invited talk continues.
2:00pm	**SE-MoA3** Anomalous Orientation-dependent Slip during Uniaxial Compression of TaC Crystals*, M. Chen,* ETH Zurich, Switzerland*; D.G. Sangiovanni,* Ruhr-University Bochum, Germany and Linköping University, Sweden*; A. Aleman, H. Zaid,* University of California at Los Angeles*; J.M. Wheeler,* ETH Zurich, Switzerland*; G. Po,* ***Suneel Kodambaka****,* University of California at Los Angeles	**SS+HC-MoA3** Unravelling the Complex Features in STM Images of O/Ag(110) System, ***Takat B. Rawal****,* University of Central Florida*; M. Smerieri,* IMEM-CNR, UOS Genova, Italy*; J. Pal,* University of Genova, Italy*; S. Hong,* Brewton-Parker College*; M. Alatalo,* University of Oulu, Finland*; L. Savio, L. Vattuone,* University of Genova, Italy*; T.S. Rahman,* University of Central Florida*; M. Rocca,* University of Genova, Italy
2:20pm	**SE-MoA4** Selectable Phase Formation in Al-based Transition Metal Nitride Films by Controlling Al^+ Subplantation depth during HIPIMS Deposition*,* ***Grzegorz Greczynski****,* Linköping University, Sweden*; S. Mraz, M. Hans,* RWTH Aachen University*; J. Lu, L. Hultman,* Linköping University, Sweden*; J.M. Schneider,* RWTH Aachen University, Germany	**SS+HC-MoA4** First Principles Investigations on CO_2 Adsorption and Dissociation on $Cu_{cluster}$ / Cu(111) Surfaces: Influence of Co-adsorbed CO Molecule*,* ***Allan Abraham Padama****,* University of the Philippines Los Baños, Philippines*; H. Nakanishi, H. Kasai,* National Institute of Technology, Akashi College, Japan*; J.D. Ocon,* University of the Philippines Diliman, Philippines
2:40pm	**INVITED: SE-MoA5** Metallic-Glass Nanotube Arrays: A Novel Device for Various Applications*,* ***Jinn P. Chu****, J.K. Chen, C.C. Yu,* National Taiwan University of Science and Technology, Taiwan, Republic of China	**SS+HC-MoA5** Step-Spacing Distributions Revisited: New Motivations from Curved Crystals and Other Systems*,* ***Theodore L. Einstein****,* University of Maryland, College Park
3:00pm	Invited talk continues.	**SS+HC-MoA6** Small Molecule Activation Using Computational Catalysis and Machine Learning*,* ***Yousung Jung****,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea
3:20pm	**BREAK**	**BREAK**
3:40pm	**SE-MoA8** Biocompatibility and Antibacterial Behaviors of TaON(porous)/TaN/TaN-Ag/Ta Multi-layered Thin Films*,* ***Joe. H. Hsieh****,* Ming Chi University of Technology, Taiwan, Republic of China*; C. Li,* National Yang Ming University, Taiwan, Republic of China*; C.C. Hsu,* Ming Chi University of Technology, Taiwan, Republic of China	**SS+HC-MoA8** Elucidating Mechanisms of Alkanol Catalysis on $SrTiO_3$ Perovskite Surfaces using Density Functional Theory, ***Robert Chapleski****, S. Roy,* University of Tennessee Knoxville
4:00pm	**SE-MoA9** Electrochemically Deposited Coating with Antibacterial Properties against the Spread of Heath Care-associated Infections*,* ***Nicole Ciacotich****,* Technical University of Denmark, Denmark*; J.B. Rasmussen,* Elplatek A/S, Denmark*; K.N. Kragh,* University of Copenhagen, Denmark*; P. Møller, L. Gram,* Technical University of Denmark, Denmark	
4:20pm	**SE-MoA10** Tunable Self-Healing Thermal Barrier Coatings*, S.S. Joshi,* ***J.J. Gu****, Y.-S. Ho, B.W. Wei, T.Y. Hung, Y.Y. Liu, N.B. Dahotre, S.M. Aouadi,* University of North Texas	
4:40pm		

	Thin Films Division **Room 102A - Session TF+EM+MI+PS-MoA** **Thin Films for Advanced Memory Applications and Magnetics** **Moderator:** Robert Grubbs, Micron Technology	**Thin Films Division** **Room 104B - Session TF-MoA** **IoT Session: Thin Films for Photovoltaics** **Moderators:** Matthew Richard Linford, Brigham Young Univ., Mark Losego, Georgia Institute of Technology
1:20pm		**INVITED: TF-MoA1** Atomic Layer Deposition for Organic and Perovskite Solar Cells, ***Thomas Riedl,*** University of Wuppertal, Germany
1:40pm	**TF+EM+MI+PS-MoA2** ---Multiferroic Integration of Undoped Ferroelectric HfO_2 and Ferrimagnetic $CoFe_2O_4$ Thin films by Radical-Enhanced Atomic Layer Deposition, *J. Chang,* ***Adrian Acosta,*** *J.P. Chang,* University of California at Los Angeles	Invited talk continues.
2:00pm	**TF+EM+MI+PS-MoA3** Growth and Characterization of BeO Thin Films Grown by Atomic Layer Deposition using H_2O and O_3 as Oxygen Sources, ***Lee Woo Chul,*** *C. Cheol Jin,* Center for Electronic Materials, Korea Institute of Science and Technology, Korea; *K. Sangtae,* Center for Electronic Materials, Korea Institute of Science and Technology, Korea; *L. Eric S., Y. Jung Hwan,* Center for Multidimensional Carbon Materials (CMCM), Institute for Basic Science (IBS), South Korea; *H. Cheol Seong,* Department of Materials Science and Engineering, and Inter-University Semiconductor Research Center, College of Engineering, Seoul National University, South Korea; *B. Christopher W.,* Center for Multidimensional Carbon Materials (CMCM), Institute for Basic Science (IBS), South Korea; *K. Seong Keun,* Center for Electronic Materials, Korea Institute of Science and Technology, Korea	**TF-MoA3** Insights into ALD Al_2O_3 Growth on Hybrid Organic-Inorganic Perovskite, ***Dibyashree Koushik***[1], *L. Hazendonk,* Eindhoven University of Technology, The Netherlands; *V. Zardetto,* TNO-Solliance, The Netherlands; *W.M.M. Kessels, M.C. Creatore,* Eindhoven University of Technology, The Netherlands
2:20pm	**TF+EM+MI+PS-MoA4** Atomic Layer Deposition of Magnetic Films and Patterned Features with Tunable Magnetic Properties, *Z. Zhang,* ***John Ekerdt,*** University of Texas at Austin	**TF-MoA4** Single Junction GaAs Thin Film Solar Cells on Flexible Metal Tapes for Low Cost Photovoltaics, ***Devendra Khatiwada***[1], *M. Rathi, P. Dutta, S. Sun, Y. Yao, Y. Gao, Y. Li, S. Pouladi, J.-H. Ryou, V. Selvamanickam,* University of Houston
2:40pm	**INVITED: TF+EM+MI+PS-MoA5** Tuning of the Magnetic and Electronic Properties of Epitaxial Heusler Compound Heterostructures, ***Christopher Palmstrøm,*** University of California, Santa Barbara	**TF-MoA5** New Insights into the Microstructure and Composition of New Generation CdSeTe/CdTe/MZO Photovoltaic Devices, *T.A.M. Fiducia, A. Abbas,* Loughborough University, UK; *K. Li, C.R.M. Grovenor,* University of Oxford, UK; *A. Munshi, K.L. Barth, W.S. Sampath,* Colorado State University; ***John Walls,*** Loughborough University, UK
3:00pm	Invited talk continues.	**TF-MoA6** Schottky Barrier Metal-Insulator-Silicon Photovoltaics: Influence of Fixed Charge and Dipoles in Atomic Layer Deposited Alumina, ***Nicholas Strandwitz,*** Lehigh University
3:20pm	**BREAK**	**BREAK**
3:40pm	**TF+EM+MI+PS-MoA8** Stabilization of Ferroelectric Phase of $Hf_{0.5}Zr_{0.5}O_2$on NbN at 4 K, ***Michael David Henry,*** *S. Smith, R. Lewis,* Sandia National Laboratories; *J. Ihlefeld,* University of Virginia	**TF-MoA8** Sulfur Vacancies as the Origin of *n*-type Doping in Pyrite FeS_2Single Crystals, *B. Voigt, W. Moore, J. Walter, D. Ray, M. Manno,* University of Minnesota; *J.D. Jeremiason,* Gustavus Adolphus College; *L. Gagliardi,* ***Eray Aydil,*** *C. Leighton,* University of Minnesota
4:00pm	**TF+EM+MI+PS-MoA9** Atomic Layer Deposition of Co/Pt Multilayer films for Perpendicular Magnetic Anisotropy, ***Devika Choudhury,*** *A.U. Mane, C.M. Phatak, A.K. Petford Long, J.W. Elam,* Argonne National Laboratory	**TF-MoA9** Strong Effect of Reaction Temperature on the Nucleation of Atomic Layer Deposition of Al_2O_3 on Methylamine Lead Perovskite, ***Xiaozhou Yu,*** *H.M. Yan, Q. Peng,* University of Alabama
4:20pm		**TF-MoA10** Synthesis of Gas Barrier Coatings for Hybrid Halide Perovskites by Atomic Layer Deposition, *X.Z. Yu, H.M. Yan,* ***Qing Peng,*** University of Alabama
4:40pm		

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

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

1:20pm	**INVITED: VT-MoA1** Gas Adsorption and Desorption Properties of 3D Printed Objects, ***Matt Hartings***, American University; *J. Scherschligt, J.A. Fedchak, Z. Ahmed,* National Institute of Standards and Technology	
1:40pm	Invited talk continues.	
2:00pm	**VT-MoA3** Outgassing, Desorption, and Gas Uptake of 3D-Printed Materials, ***James Fedchak***, NIST; *J. Scherschligt, Z. Ahmed,* National Institute of Standards and Technology; *M. Hartings,* American University	
2:20pm	**VT-MoA4** Performance Prediction Approaches for Liquid Ring Vacuum Pumps with Mercury as Working Fluid, ***Santiago Ochoa Guaman***, *T. Giegerich,* Karlsruhe Institute of Technology, Germany; *C. Dahlke,* HERMETIC-Pumpen GmbH, Germany; *C. Day,* Karlsruhe Institut of Technology (KIT), Germany	
2:40pm	**VT-MoA5** Particle Emission from Ion Pumps: Optimized Shielding without Severe Conductance Limitation, ***Mauro Audi***, *C. Paolini,* Agilent Technologies, Italy; *P. Manassero,* Agilent Technologies	
3:00pm	**VT-MoA6** Extension of the Range of Primary Vacuum Calibration Methods with the Use of Non-evaporable Getters, ***Sefer Avdiaj***, University of Prishtina, Albania	
3:20pm	**BREAK**	
3:40pm	**INVITED: VT-MoA8** VTD Early Career Award Invited Talk: The Development of the Spacecraft Atmosphere Monitor, ***Steven Schowalter***[1], Jet Propulsion Laboratory	
4:00pm	Invited talk continues.	
4:20pm	**VT-MoA10** Surface Modification to Reduce Species Retention and Outgassing Rate from Vacuum Components, ***Quirinius Grindstaff***, *J. Peak, C. Miracle,* CNS, LLC	
4:40pm	**4:45 PM VTD BUSINESS MEETING**	

[1] **VTD Early Career Award**

Anticipated Schedule Tuesday, October 23, 2018

Anticipated Schedule Tuesday Morning, October 23

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 23

When _____

Where _____

With _____

Anticipated Schedule Tuesday Afternoon, October 23

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

Special Events Tuesday

7:30 AM	Awards Committee Meeting and Lunch/Pacific-Hyatt Regency (by invitation)
8:00 AM	Science Educators' Workshop/Seaview-Hyatt Regency (by invitation)
9:00 AM	AVS Member Center: eSpectra: Surface Science/103C
10:00 AM	AVS Member Center: Professional Development--Working with National Labs and Other User Facilities/103C
10:00 AM	Session Coffee Break/Hall A
11:40 AM	Federal Funding Town Hall/202C
12:20 PM	Exhibit Hall Lunch/Hall A
12:30 PM	AVS Member Center: Professional Development--Job Information Forum and Lunch/103C
12:30 PM	Chapters, Divisions, and Groups Meeting and Lunch/Regency D-Hyatt Regency (by invitation)
12:30 PM	MSTG Technical Group Executive Committee Meeting and Lunch/Tides Restaurant-Hyatt Regency (by invitation)
3:40 PM	Biointerphases Reception/Shoreline A-Hyatt Regency (by invitation)
3:40 PM	Session Refreshment Break/Hall A
4:00 PM	AVS Member Center: Professional Development--SCCAVS/NCCAVS Members Hospitality Hour/103C (by invitation)
6:05 PM	BID Business Meeting/101B
6:25 PM	EMPD Business Meeting/101A
6:25 PM	NSTD Business Meeting/102B
6:25 PM	PSTD Business Meeting & 2018 Plasma Prize Award Announcement/104A
6:25 PM	SSD Business Meeting/203C
6:25 PM	TFD Business Meeting/102A
6:30 PM	Tuesday Poster Session & Refreshments/Hall B
6:45 PM	AVS Member Center: Professional Development--EMPD Forum: "Careers at LAM Research"/103C
7:00 PM	MEMS/NEMS Executive Committee Meeting and Dinner/Regency F-Hyatt Regency (by invitation)
7:00 PM	NSTD Executive Committee Meeting and Dinner/Seaview A-Hyatt Regency (by invitation)
7:00 PM	SSD Executive Committee Meeting and Dinner/Regency C-Hyatt Regency (by invitation)
7:30 PM	ASSD Business Meeting/Regency DE-Hyatt Regency
7:30 PM	PSTD Executive Committee Meeting and Dinner/Seaview C-Hyatt Regency (by invitation)
7:30 PM	TFD Executive Committee Meeting and Dinner/Seaview B-Hyatt Regency (by invitation)
7:45 PM	BID Executive Committee Meeting and Dinner/Pacific-Hyatt Regency (by invitation)
7:45 PM	EMPD Executive Committee Meeting and Dinner/Regency B-Hyatt Regency (by invitation)
8:00 PM	ASTM E-42 and Applied Surface Science Joint Workshop: "A Tribute to the Careers of Barbara Garrison and Nicholas Winograd"/Regency DE-Hyatt Regency
8:30 AM–5:00 PM	Short Course Program/Various Rooms

	2D Materials Focus Topic **Room 201B - Session 2D+EM+MI+NS-TuM** **Properties of 2D Materials including Electronic, Magnetic, Mechanical, Optical, and Thermal Properties** **Moderator:** Johannes Jobst, Leiden University	**Applied Surface Science Division** **Room 204 - Session AS+BI-TuM** **Applied Surface Science: From Electrochemistry to Cell Imaging, a Celebration of the Career of Nicholas Winograd** **Moderators:** Arnaud Delcorte, Université Catholique de Louvain, Belgium, Michaeleen Pacholski, The Dow Chemical Company
8:00am	**2D+EM+MI+NS-TuM1** Effect of Lattice Stacking Orientation and Local Thickness Variation on the Mechanical Behavior of Few Layer Graphene Oxide, ***Teng Cui***, *S. Mukherjee, C.H. Cao, P.M. Sudeep, J. Tam,* University of Toronto, Canada*; P.M. Ajayan,* Rice University*; C.V. Singh, Y. Sun, T. Filleter,* University of Toronto, Canada	**INVITED: AS+BI-TuM1** Surface Analysis and Beyond, Using Ion Beams and Lasers, ***Nicholas Lockyer***, *J.C. Vickerman,* University of Manchester, UK
8:20am	**2D+EM+MI+NS-TuM2** Out-of-Plane Mechanical Properties of 2D Hybrid Organic-Inorganic Perovskites by Nanoindentation, ***Qing Tu***, *I. Spanopoulos, S. Hao, C. Wolverton, M. Kanatzidis, G. Shekhawat, V. Dravid,* Northwestern University	Invited talk continues.
8:40am	**2D+EM+MI+NS-TuM3** Mechanical Properties of Many-layer CVD Graphene, ***Kyle Larsen***, *S. Lehnardt, J.T. Rowley, B. Anderson, R.R. Vanfleet, R.C. Davis,* Brigham Young University	**AS+BI-TuM3** A High Resolution Tandem MS Imaging Method to Probe the Composition of Organelles in Single Cells, ***Gregory L. Fisher***, Physical Electronics*; C.E. Chini,* University of Illinois at Urbana-Champaign*; B. Johnson, M.M. Tamkun,* Colorado State University*; M.L. Kraft,* University of Illinois at Urbana-Champaign
9:00am	**2D+EM+MI+NS-TuM4** Electronic Structure and Magneto-transport Properties of Nanostructured Graphene on SiC(001), ***Victor Aristov***, DESY Hamburg, Germany*; H.-C. Wu,* BIT, Beijing, China*; O.V. Molodtsova,* DESY Hamburg, Germany*; N. Chaika,* ISSP RAS, Russia	**AS+BI-TuM4** SIMS and MALDI-MS. Competitive, Complimentary or Complementary Techniques for Bio-imaging?, ***John Stephen Fletcher***, *I. Kaya,* University of Gothenburg, Sweden
9:20am	**INVITED: 2D+EM+MI+NS-TuM5** Discovering and Visualizing Ferromagnetism in Intrinsic Two Dimensional Materials, ***Jing Xia***, University of California Irvine	**AS+BI-TuM5** High Spatial Resolution Metabolic Imaging using the 3D OrbiSIMS - Fundamentals of Metabolite Fragmentation and Biological Applications, *C. Newell, Y. Panina,* Francis Crick Institute, UK*; L. Matjacic, V. Cristaudo,* National Physical Laboratory, UK*; A.P. Bailey,* Francis Crick Institute, UK*; R. Havelund,* National Physical Laboratory, UK*; M. Yuneva, A.P. Gould,* Francis Crick Institute, UK*;* ***Ian S. Gilmore***, National Physical Laboratory, UK
9:40am	Invited talk continues.	**AS+BI-TuM6** Small Molecule Imaging in Single Frozen-Hydrated Cells using High-Resolution Gas Cluster Ion Beam Secondary Ion Mass Spectrometry (GCIB-SIMS), ***Hua Tian***, *N. Winograd,* Pennsylvania State Univeristy
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall –** **Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**2D+EM+MI+NS-TuM10** Onset of Buckling Folding and Slipping Instabilities in 2D Materials under Compressive Strain, ***Jaehyung Yu***, *E. Ertekin, A.M. van der Zande,* University of Illinois at Urbana-Champaign	**INVITED: AS+BI-TuM10** Pushing the Limits of Measurement Science with SIMS, ***Christopher Szakal***, *D.S. Simons, J.D. Fassett, T.P. Forbes,* National Institute of Standards and Technology (NIST)
11:20am	**2D+EM+MI+NS-TuM11** Title: Spatially-Resolved Contact-Free Electrical Characterization of Transition Metal Dichalcogenide Films Grown by Chemical Vapor Deposition., ***Miguel Isarraraz***, *L. Bartels,* University of California, Riverside	Invited talk continues.
11:40am	**INVITED: 2D+EM+MI+NS-TuM12** Electronic, Thermal, and Unconventional Applications of 2D Materials, ***Eric Pop***, *E. Yalon, C. McClellan, K. Smithe, C. English, M. Mleczko, M. Muñoz Rojo, N. Wang, S. Suryavanshi, I. Datye, C. Bailey, A. Gabourie, M. Chen, V. Chen, K. Schauble, R. Grady,* Stanford University	**AS+BI-TuM12** Multiplexed Ion Beam Imaging: Cell and Tissue Imaging using Secondary Ion Mass Spectrometry for Pathology, ***Jay Tarolli***, *R. Finck, M. Aksoy, D. Stumbo,* Ionpath, Inc.
12:00pm	Invited talk continues.	**AS+BI-TuM13** Combined ToF-SIMS and AFM Protocol for Accurate 3D Chemical Analysis and Data Visualization, ***Maiglid Andreina Moreno Villavicencio***, *N. Chevalier, J.-P. Barnes, I. Mouton,* Univ. Grenoble Alpes, CEA, LETI, France*; F. Bassani,* Univ. Grenoble Alpes, CNRS, LTM, France*; B. Gautier,* Université de Lyon, INSA Lyon, Institut des Nanotechnologies de Lyon, UMR CNRS 5270, F-69621 Villeurbanne cedex, France

Tuesday Morning, October 23, 2018

	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic Room 201A - Session HC+SS-TuM Nanochemistry in Heterogeneous Catalysis **Moderator:** Matthew Marcinkowski, Pacific Northwest National Laboratory	Industrial Physics Forum Room 101B - Session IPF+AS+BI+MN-TuM Advanced Imaging and Structure Determination of Biomaterials **Moderators:** David G. Castner, University of Washington, Michael Grunze, Max Planck Institute for Medical Research
8:00am	**HC+SS-TuM1** Probing Oxide Supported Single Rh Atoms as Model Catalysts for CO Oxidation, ***Alex C. Schilling***, *E.C.H. Sykes,* Tufts University	**INVITED: IPF+AS+BI+MN-TuM1** Chemical Imaging as a Tool to asses Molecular and Morphologic Content in Natural Tissues and Fabricated Models, ***Rohit Bhargava***, *T. Comi, M. Gryka,* University of Illinois at Urbana-Champaign
8:20am	**HC+SS-TuM2** Methanol Partial Oxidation Mechanisms on a Single-site Catalyst Pt_1/ZnO(10-10): A First-principles Study, ***Tao Jiang***, University of Central Florida; *T.B. Rawal,* Oak Ridge National Laboratory; *D. Le, T.S. Rahman,* University of Central Florida	Invited talk continues.
8:40am	**HC+SS-TuM3** Imaging the Ordering of Weakly Adsorbed CO_2 Molecules on Rutile Titania using Ambient Pressure Microscopy and Spectroscopy, ***Rebecca Hamlyn***[1], Brookhaven National Lab; *J.A. Rodriguez, S. Senanayake, M. Mahapatra, F. Xu, D. Grinter, S. Luo, P. Liu, R. Palomino, I. Waluyo, S. Kattel, D.J. Stacchiola,* Brookhaven National Laboratory	**INVITED: IPF+AS+BI+MN-TuM3** Fluorescence Dynamics and Nonlinear Optical Imaging Methods for Biomedical Applications, ***Alba Alfonso Garcia***, *L. Marcu,* University of California at Davis
9:00am	**HC+SS-TuM4** Using Sn Atomic Layer Deposition to Tune the Coking Resistance of Size-selected Pt Model Catalysts, ***Timothy Gorey***[1], *E. Baxter, A. Cass, S. Anderson,* University of Utah; *B. Zandkarimi, A. Alexandrova,* University of California at Los Angeles	Invited talk continues.
9:20am	**HC+SS-TuM5** Synergistic Effects of Pd and PdO Domains on Thin Film TbOx(111)/Pt(111), ***Christopher Lee***[1], *J.F. Weaver,* University of Florida	**INVITED: IPF+AS+BI+MN-TuM5** Single Molecule Imaging of Receptor Signalling, ***Katharina Gaus***, University of New South Wales, Australia
9:40am	**HC+SS-TuM6** Copper Vapor Adsorption Calorimetry on $HCa_2Nb_3O_{10}$(001) Nanosheets: Energetics and Adsorbate Structure, ***Wei Zhang***[1], *J.E. Eichler,* University of Washington; *R. Uppuluri, T.E. Mallouk,* The Pennsylvania State University; *C.T. Campbell,* University of Washington	Invited talk continues.
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**HC+SS-TuM10** Adsorption and Adhesion of Ni on MgO(100) at 300 and 100 K by Calorimetry, ***Zhongtian Mao***, *W. Zhao, Z. Almualem, C.T. Campbell,* University of Washington	**INVITED: IPF+AS+BI+MN-TuM10** Developing a Google-earth View of Tumour Metabolism through Multiscale Molecular Imaging, *J. Bunch,* ***Rory T. Steven***, National Physical Laboratory, UK
11:20am	**HC+SS-TuM11** The atomic-scale Structure of the Active CoO(OH)/Au Interface in Electrochemical Water Splitting, *J. Fester, Z. Sun, J. Rodríguez-Fernandez,* Aarhus University, Denmark; *R. Gutzler,* Max Planck Institute for Solid State Research, Germany; *D. Grumelli,* Universidad Nacional de La Plata, Argentina; *K. Kern,* Max Planck Institute for Solid State Research, Germany; ***Jeppe Vang Lauritsen***, Aarhus University, Denmark	Invited talk continues.
11:40am	**INVITED: HC+SS-TuM12** *In situ* Microscopy of Oxide Growth and Transformation under Reaction Conditions, ***Jan Ingo Flege***, University of Bremen, Germany	**INVITED: IPF+AS+BI+MN-TuM12** X-ray Diffraction and Coherent Imaging with Nano-focused Radiation: A Multi-scale Approach from Biomolecular Assembly to Cell, Tissue and Organ, ***Jan-David Nicolas***, *T. Salditt,* University of Göttingen, Germany
12:00pm	Invited talk continues.	Invited talk continues.

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

Tuesday Morning, October 23, 2018

	Materials and Processes for Quantum Computing Focus Topic Room 203A - Session MP+EM+NS-TuM High Coherence Qubits for Quantum Computing **Moderator:** Robert Ilic, National Institute of Standards and Technology	Manufacturing Science and Technology Group Room 202B - Session MS+MI+RM-TuM **IoT Session: Challenges of Neuromorphic Computing and Memristor Manufacturing (8:00-10:00 am)/Federal Funding Opportunities (11:40 am-12:20 pm)** **Moderators:** Christopher L. Hinkle, Univ. of Texas at Dallas, Sean Jones, National Science Foundation (NSF), Alain C. Diebold, SUNY Polytechnic Institute
8:00am	**MP+EM+NS-TuM1** MBE Grown Nitride Superconductors for Quantum Circuits, ***Christopher Richardson***, *A. Alexander, C. Weddle,* Laboratory for Physical Sciences	**INVITED: MS+MI+RM-TuM1** ReRAM – Fabrication, Characterization, and Radiation Effects, ***David Hughart***, *R.B. Jacobs-Gedrim, K.E. Knisely, N.J. Martinez, C.D. James, B.L. Draper, E.S. Bielejec, G. Vizkelethy, S. Agarwal,* Sandia National Laboratories; *H.J. Barnaby,* Arizona State University; *M.J. Marinella,* Sandia National Laboratories
8:20am	**MP+EM+NS-TuM2** Towards Improved Coherence Times in Transmon Qubits, ***Sam Stanwyck***, Rigetti Computing	Invited talk continues.
8:40am	**INVITED: MP+EM+NS-TuM3** Design and Fabrication for High Coherence Quantum Circuits, ***David Pappas***, *X. Wu, R. Lake, M. Bal, J. Long, C.R. McRae, H.S. Ku,* National Institute of Standards and Technology (NIST)	**INVITED: MS+MI+RM-TuM3** Memristive Synapses – Tuning Memristors for Performance and CMOS Integration, ***Nathaniel Cady***, SUNY Polytechnic Institute
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**MP+EM+NS-TuM5** Effect of Surface Treatment on Superconducting Qubit Coherence, ***Bradley Christensen***, University of Wisconsin-Madison; *P. Kumar,* University of Wisconsin - Madison; *J.J. Nelson, Y. Liu, A. Ballard, B.L.T. Plourde,* Syracuse University; *R. McDermott,* University of Wisconsin - Madison	**INVITED: MS+MI+RM-TuM5** Analog In-Memory Computing for Deep Neural Network Acceleration, ***Hsinyu Tsai***, *S. Ambrogio, P. Narayanan, R.M. Shelby, G.W. Burr,* IBM Almaden Research Center
9:40am	**MP+EM+NS-TuM6** Metrology of Dielectric Loss using Lumped-Element Microwave Resonators, ***Corey Rae McRae***, *X. Wu, M. Bal, J. Long, H.S. Ku, D.P. Pappas, R. Lake,* National Institute of Standards and Technology	Invited talk continues.
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**INVITED: MP+EM+NS-TuM10** Direct Observation of Atomic Structure of Ultra Thin AlO_x Barriers in Al/AlO_x/Al Josephson Junctions for Quantum Devices, ***Eva Olsson***, Chalmers University of Technology, Gothenburg, Sweden	**INVITED: MS+MI+RM-TuM10** Computation Immersed in Memory: Integrating 3D vertical RRAM in the N3XT Architecture, ***Weier Wan***, *W. Hwang, H. Li, T.F. Wu, Y.H. Malviya,* Stanford University; *M.M.S. Aly,* Nanyang Technological University, Singapore; *S. Mitra, H.-S.P. Wong,* Stanford University
11:20am	Invited talk continues.	Invited talk continues.
11:40am	**MP+EM+NS-TuM12** Metrology of Tunnel Junctions for Superconducting Qubits, ***Russell Lake***, National Institute of Standards and Technology (NIST); *X. Wu, H.S. Ku, J. Long, M. Bal, C.R. McRae,* National Institute of Standards and Technology (NIST) and University of Colorado Boulder; *D.P. Pappas,* National Institute of Standards and Technology (NIST)	**MS+MI+RM-TuM12** Materials for the Second Quantum Revolution, ***Tomasz Durakiewicz***, Los Alamos National Laboratory
12:00pm		**MS+MI+RM-TuM13** SynBio(medicine): The Intersection Biomaterials and Living Systems, ***David Rampulla***, National Institute of Health

	Nanometer-scale Science and Technology Division **Room 102B - Session NS+AN+EM+MN+MP+RM-TuM** **Nanophotonics, Plasmonics, and Metamaterials** **Moderators:** Alokik Kanwal, NIST Center for Nanoscale Science and Technology, Nikolai Klimov, National Institute of Standards and Technology	**Processing and Characterization of Air-Liquid, Solid-Liquid and Air-Solid Interfaces Focus Topic** **Room 202A - Session PC+AS+BI+NS+PB+SS-TuM** **Solid-Liquid and Gas-Liquid Interfacial Processes and Characterization** **Moderators:** Stephen Nonnenmann, University of Massachusetts - Amherst, Juan Yao, Pacific Northwest National Laboratory
8:00am	**INVITED: NS+AN+EM+MN+MP+RM-TuM1** Parametric Nonlinear Interactions in Nanofabricated Silicon-based Photonics, ***Amy Foster,*** Johns Hopkins University	**INVITED: PC+AS+BI+NS+PB+SS-TuM1** Liquefied Gas Electrolytes for Electrochemical Energy Storage Devices, ***Y. Shirley Meng,*** University of California San Diego; *Y. Yang,* University of California at San Diego
8:20am	Invited talk continues.	Invited talk continues.
8:40am	**INVITED: NS+AN+EM+MN+MP+RM-TuM3** Ultrafast Optical Pulse Shaping using Dielectric Metasurfaces, ***Amit Agrawal,*** *S. Divitt, W. Zhu, C. Zhang, H.J. Lezec,* NIST Center for Nanoscale Science and Technology	**INVITED: PC+AS+BI+NS+PB+SS-TuM3** An *In situ* Molecular-scale View of Nucleation and Self-assembly at Solid-liquid Interfaces, ***James De Yoreo,*** Pacific Northwest National Laboratory
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**INVITED: NS+AN+EM+MN+MP+RM-TuM5** Single-Particle Nanophotonics and Materials Investigations with Optical Microresonator Spectrometers, ***Erik Horak,*** University of Wisconsin - Madison; *K.D. Heylman, K.A. Knapper, M.T. Rea, F. Pan, L.T. Hogan, R.H. Goldsmith,* University of Wisconsin-Madison	**INVITED: PC+AS+BI+NS+PB+SS-TuM5** Non-linear Surface Spectroscopy at the Aerosol Particle/Gas Interface, *Geiger,* ***Ariana Gray Be,*** Northwestern University
9:40am	Invited talk continues.	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall –** **Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
10:20am		
10:40am		
11:00am	**INVITED: NS+AN+EM+MN+MP+RM-TuM10** Optomechanical Interactions for Metrology and Signal Processing, ***Karen Grutter,*** The Laboratory for Physical Sciences	**PC+AS+BI+NS+PB+SS-TuM10** The Influence of Electrochemical Potential and Water Vapor on Ionic Liquid Binding Energy Shifts Examined by AP-XPS, ***Meng Jia,*** Unversity of Delaware; *A. Broderick, J.T. Newberg,* University of Delaware
11:20am	Invited talk continues.	**PC+AS+BI+NS+PB+SS-TuM11** Role of Air Gas at the Interface between Water and Graphite Surfaces, ***Ing-Shouh Hwang,*** Institute of Physics, Academia Sinica, Taiwan, Republic of China; *C.W. Yang, C.K. Fang,* Institute of Physics, Academia Sinica,Taiwan, Republic of China; *Y.H. Lu,* Institute of Physics, Academia Sinica, Taiwan, Republic of China; *H.C. Ko,* Institute of Physics, Academia Sinica,Taiwan, Republic of China
11:40am	**INVITED: NS+AN+EM+MN+MP+RM-TuM12** Cold-atom based Sensors and Standards, ***Stephen Eckel,*** *D.S. Barker, J.A. Fedchak, N.N. Klimov, E. Norrgard, J. Scherschligt,* National Institute of Standards and Technology	**INVITED: PC+AS+BI+NS+PB+SS-TuM12** Probing Cluster and Nanoparticle Growth Processes with X-Ray Spectroscopy and Mass Spectrometry, ***Musahid Ahmed,*** *O. Kostko,* Lawrence Berkeley National Laboratory
12:00pm	Invited talk continues.	Invited talk continues.

	Plasma Science and Technology Division **Room 104A - Session PS+EM+SE-TuM** **Plasma Processing of Challenging Materials - I** **Moderators:** Necmi Biyikli, University of Connecticut, Jun-Chieh Wang, Applied Materials	**Plasma Science and Technology Division** **Room 104C - Session PS+PB-TuM** **Plasma Medicine** **Moderator:** Deborah O'Connell, University of York, UK
8:00am	**PS+EM+SE-TuM1** Development and Understanding of Isotropic Etching Process of Si Selectively to $Si_{0.7}Ge_{0.3}$, ***Sana Rachidi***, *A. Campo, V. Loup,* CEA-LETI, France*; N. Posseme,* CEA, LETI, France*; J.M. Hartmann, S. Barnola,* CEA-LETI, France	**PS+PB-TuM1** Lessons from Tesla for Plasma Medicine, ***David Graves***, University of California at Berkeley
8:20am	**PS+EM+SE-TuM2** III-V/Ge Heterostructure Etching for Through Cell Via Contact Multijunction Solar Cell, ***Mathieu de Lafontaine***, *G. Gay, C. Petit-Etienne, E. Pargon,* LTM, Univ. Grenoble Alpes, CEA-LETI, France*; M. Darnon, A. Jaouad, M. Volatier, S. Fafard, V. Aimez,* 3IT, Univ. de Sherbrooke, Canada	**PS+PB-TuM2** Characterization of a Helium Atmospheric Pressure Plasma Jet by Measuring the Total Yield of Reactive Species in Real Time, ***Ek Adhikari***, *V. Samara, S. Ptasinska,* University of Notre Dame
8:40am	**PS+EM+SE-TuM3** Feature Scale Modeling of Etching of High Aspect Ratio Silicon Structures in Pulsed Plasmas, ***Wei Tian***, *J.-C. Wang, S. Sadighi, J. Kenny, S. Rauf,* Applied Materials	**PS+PB-TuM3** Dry Etching of Patterned Medical Grade Titanium Alloys, ***Eitan Barlaz***, *J. Mettler, D.N. Ruzic,* University of Illinois at Urbana-Champaign
9:00am	**PS+EM+SE-TuM4** Plasma Etching of High Aspect Ratio Oxide-Nitride-Oxide Stacks, *S. Huang, C. Hurard,* University of Michigan*; S. Nam, S. Shim, W. Ko,* Samsung Electronics Co., Ltd., Republic of Korea*;* ***Mark Kushner****,* University of Michigan	**PS+PB-TuM4** Electron Temperature And Plasma Density Of Ar Plasma In Atmospheric Pressure Micro-DBD, ***Pradoong Suanpoot***, *J. Sornsakdanuphap,* Maejo University Phrae Campus, Thailand*; B. Ghimire, Y.J. Hong,* Plasma Bioscience Research Center, Republic of Korea*; G. Cho,* Charged Particle Beam and Plasma Laboratory, Republic of Korea*; E.H. Choi,* Plasma Bioscience Research Center, Republic of Korea
9:20am	**PS+EM+SE-TuM5** Etch Profile Evolution in Poly-silicon using Halogen Containing Plasmas for Next Generation Device Fabrication, ***Shyam Sridhar***, *S.A. Voronin, P. Biolsi, A. Ranjan,* TEL Technology Center, America, LLC	**INVITED: PS+PB-TuM5** Plasma Immunotherapy of Cancers, ***Vandana Miller***, *A. Lin, P. Ranieri,* Drexel University*; A. Snook,* Thomas Jefferson University*; A. Fridman,* Drexel University
9:40am	**PS+EM+SE-TuM6** Flux and Energy of Reactive Species Arriving at the Etch Front in High Aspect Ratio Features During Plasma Etching of SiO_2 in $Ar/CF_4/CHF_3$ Mixtures, ***Soheila Mohades***, University of Michigan*; M. Wang, A. Mosden,* TEL Technology Center America, LLC*; M.J. Kushner,* University of Michigan	Invited talk continues.
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall –** **Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**INVITED: PS+EM+SE-TuM10** Wafer-scale Fabrication of Suspended Graphene Nanoribbon Arrays -from Growth Dynamics to Optoelectrical Applications-, ***Toshiaki Kato***, *T. Kaneko,* Tohoku University, Japan	**PS+PB-TuM10** Hydroxyl Radical Footprinting with Plasma-Induced Modification of Biomolecules (PLIMB): A Novel Tool for Protein Structural Analysis, ***Faraz Choudhury***, *D.I. Benjamin, B.B. Minkoff, J. Blatz, M.R. Sussman, J.L. Shohet,* University of Wisconsin-Madison
11:20am	Invited talk continues.	**PS+PB-TuM11** Biological Effects of Plasma-Irradiated Organic Molecules in Plasma- Treated Liquids, ***Kenji Ishikawa***, *Y. Hosoi, D. Kanno, Y. Kurokawa, H. Tanaka, M. Mizuno, F. Kikkawa, M. Hori,* Nagoya University, Japan
11:40am	**PS+EM+SE-TuM12** Investigation of Surface Reactions for GeSbTe-based Phase Change Material: From Etching to Final Sealing Process, ***Yann Canvel***, *S. Lagrasta,* STMicroelectronics, France*; C. Boixaderas, S. Barnola,* CEA-LETI, France*; E. Martinez,* CEA/LETI-University Grenoble Alpes, France	**PS+PB-TuM12** OH-Radical Generation in an Atmospheric-Pressure Plasma Discharge for use in Three-Dimensional Protein Structural Analysis, ***Joshua Blatz***, *B.B. Minkoff, F.A. Choudhury, D.I. Benjamin, J.L. Shohet, M.R. Sussman,* University of Wisconsin-Madison
12:00pm	**PS+EM+SE-TuM13** Behaviors of Charged Species in Afterglow of Dual Frequency Pulsed Capacitively Coupled Plasma with a Synchronous Negative DC-bias, ***Takayoshi Tsutsumi***, *T. Ueyama, K. Ishikawa, H. Kondo, M. Sekine,* Nagoya University, Japan*; Y. Ohya,* Tokyo Electron Miyagi Limited*; M. Hori,* Nagoya University, Japan	**PS+PB-TuM13** Plasma-Surface Interaction at Atmospheric Pressure: From Mechanisms with Model Polymers to Applications for Sterilization, ***Pingshan Luan***[1]*, G.S. Oehrlein,* University of Maryland, College Park

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

	Advanced Surface Engineering Division **Room 202C - Session SE+PS-TuM** **Plasma-assisted Surface Modification and Deposition Processes** **Moderators:** Jolanta Klemberg-Sapieha, Ecole Polytechnique de Montreal, Canada, Matjaz Panjan, Jozef Stefan Institute, Slovenia	**Surface Science Division** **Room 203C - Session SS+HC+NS+PS-TuM** **Controlling Mechanisms of Surface Chemical Reactions** **Moderators:** Bruce D. Kay, Pacific Northwest National Laboratory, Arthur Utz, Tufts University
8:00am	**SE+PS-TuM1** Surface Modification of 304 Stainless Steel by Neutral Nitriding, ***Petros Abraha,*** Meijo University, Japan	**INVITED: SS+HC+NS+PS-TuM1** Bond Making and Bond Breaking at Wet and Dry Surfaces, ***Angelos Michaelides,*** University College London, UK
8:20am	**SE+PS-TuM2** Plasma Cratering and Hardening for Friction Reduction and Wear Resistance of Cast Iron, ***Wei Zha,*** Univesity of Windsor, Canada; *C. Zhao, X. Nie,* University of Windsor, Canada	Invited talk continues.
8:40am	**SE+PS-TuM3** Area-selective Deposition by Surface Engineering for Applications in Nanoelectronics. From Blanket to Confined Dimensions, ***Silvia Armini,*** IMEC, Belgium	**SS+HC+NS+PS-TuM3** Stability and Reactivity of Isolated Rh_1 Atoms on $Fe_3O_4(001)$, ***Gareth Parkinson,*** TU Wien, Austria
9:00am	**SE+PS-TuM4** Experimental and Numerical Evaluation of Cohesive and Adhesive Failure Modes during Indentation of TiAlN Coatings on Si(100) Deposited by MPPMS, ***Z.T. Jiang,*** *M.K. Lei,* Dalian University of Technology, China	**SS+HC+NS+PS-TuM4** The Mechanism of Glaser Coupling Reactions on Ag(111) and Cu(111) Surfaces: a Case for Halogen Substituted Terminal Alkyne, *T. Wang, H.F. Lv, L. Feng, J.M. Huang, X.J. Wu,* University of Science and Technology of China; ***Junfa Zhu,*** National Synchrotron Radiation Laboratory and Department of Chemical Physics, University of Science and Technology of China
9:20am	**SE+PS-TuM5** Growth of TiB_x Thin Films by DC Magnetron Sputtering and High-Power Impulse Magnetron Sputtering: Effect of Pressure and Substrate Temperature, ***Niklas Hellgren,*** Messiah College; *J. Thörnberg, I. Zhirkov,* Linköping University, Sweden; *G. Greczynski,* Linköping University, Sweden; *J.P. Palisaitis,* Linköping University, Sweden; *M. Sortica,* Uppsala University, Sweden; *P.O.A. Persson,* Linköping University, Sweden; *I. Petrov, J.E. Greene,* University of Illinois at Urbana-Champaign; *L. Hultman, J. Rosen,* Linköping University, Sweden	**SS+HC+NS+PS-TuM5** Sulfur-driven Switching of the Ullmann Coupling on Au(111), ***Jonathan Rodríguez-Fernández,*** *S.B. Schmidt, J.V. Lauritsen,* Aarhus University, Denmark
9:40am	**SE+PS-TuM6** Time-resolved Analysis of the Cathodic Arc Plasma from Nb-Al Cathodes, *S. Zöhrer,* Montanuniversität Leoben, Austria; *A. Anders,* Lawrence Berkeley National Laboratory, Leibniz Institute of Surface Engineering (IOM), Leipzig, Germany; *D. Holec,* ***Robert Franz,*** Montanuniversität Leoben, Austria	**SS+HC+NS+PS-TuM6** The Step Sites of Ultrathin ZnO Promote Methanol Oxidation to Formaldehyde, ***Xingyi Deng,*** *D.C. Sorescu, J. Lee,* National Energy Technology Laboratory
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall - Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**INVITED: SE+PS-TuM10** Dedicated Experiments to Challenge a Model for Reactive Magnetron Sputtering, ***Diederik Depla,*** Ghent University, Belgium	**SS+HC+NS+PS-TuM10** Investigation of Configuration Change in Water Clusters on a Bilayer ZnO Surface, ***Junseok Lee,*** *D.C. Sorescu, X. Deng,* National Energy Technology Laboratory
11:20am	Invited talk continues.	**SS+HC+NS+PS-TuM11** Oxygen Reduction Reaction on Fullerene, ***Yosuke Kikuchi,*** *J.N. Nakamura,* The University of Electro-Communications (UEC-Tokyo), Japan
11:40am	**SE+PS-TuM12** Current-voltage-time Characteristics of HiPIMS Discharges Revisited, ***André Anders,*** Leibniz Institute of Surface Engineering (IOM), Germany	**SS+HC+NS+PS-TuM12** Surface Structure and Reactivity of Ni-Cu Single-Atom Alloys, ***Dipna Patel,*** *E.C.H. Sykes,* Tufts University
12:00pm	**SE+PS-TuM13** Advantages Associated with Applying a Positive Pulse Option to a HIPIMS Power Supply, ***Jason Hrebik,*** Kurt J. Lesker Company	**SS+HC+NS+PS-TuM13** Effective Local Structure for Bottom-up Designed ORR Catalyst Using Pyridinic Nitrogen Containing Molecules, ***Kotarou Takeyasu,*** *Y. Shimoyama, M. Furukawa, S. Singh, J. Nakamura,* University of Tsukuba, Japan

	Thin Films Division **Room 104B - Session TF+AM+EM+PS-TuM** **Atomic Layer Processing: Area Selective Deposition** **Moderators:** Christophe Vallee, LTM, Univ. Grenoble Alpes, CEA-LETI, France, Steven George, University of Colorado at Boulder	**Thin Films Division** **Room 102A - Session TF+AS-TuM** **Special Session in Honor of Paul Holloway: Luminescent Materials Growth, Synthesis and Characterization** **Moderators:** Sean Jones, National Science Foundation (NSF), Jay Lewis, Defense Advanced Research Projects Agency
8:00am	**INVITED: TF+AM+EM+PS-TuM1** New Approaches for Area-Selective Atomic Layer Deposition: Inspiration from Etching, ***Adrie Mackus,*** Eindhoven University of Technology, The Netherlands, Nederland	**TF+AS-TuM1** INTRO: Special Session Honoring Professor Paul H. Holloway, ***Gary McGuire,*** Adamas Nanotechnologies
8:20am	Invited talk continues.	**TF+AS-TuM2** Harnessing Disorder in Detectors, ***Jay Lewis,*** Defense Advanced Research Projects Agency
8:40am	**TF+AM+EM+PS-TuM3** Nucleation of HfO_2 on Si, SiO_2 and TiN Substrates in PE-ALD Processes Investigated by In situ Ellipsometry and Optical Emission Specroscopy (OES), ***Marceline Bonvalot,*** *S. belahcen, V. Pesce, A. Chaker, P. Gonon, C. Vallée, A. Bsiesy,* LTM, Univ. Grenoble Alpes, CEA-LETI, France	**INVITED: TF+AS-TuM3** Luminescent Materials for Solid State Lighting and Solar Cell Applications, ***Hendrik C Swart,*** *J.J. Terblans, R.E. Kroon, E. Coetsee, M.M. Duvenhage, E. Hasabeldaim, A. Balakrishna, A. Kumar,* University of the Free State, Republic of South Africa*; P.H. Holloway,* University of Florida
9:00am	**TF+AM+EM+PS-TuM4** Topographical Selectivity with BN Electron-Enhanced ALD, ***Jaclyn Sprenger,*** *A.S. Cavanagh, H. Sun,* University of Colorado at Boulder*; A. Roshko, P. Blanchard,* National Institute of Standards and Technology*; S.M. George,* University of Colorado at Boulder	Invited talk continues.
9:20am	**TF+AM+EM+PS-TuM5** Optimization by In situ Ellipsometry of ALD and ALE Successive Steps for the Selective Atomic Layer Deposition of Ta_2O_5 on TiN and Si., ***Vincent Pesce,*** *C. Vallée,* LTM, Univ. Grenoble Alpes, CEA-LETI, France*; R. Gassilloud,* Cea Leti, France*; A. Chaker, M. Bonvalot, B. Pelissier,* LTM, Univ. Grenoble Alpes, CEA-LETI, France*; N. Nicolas,* Cea, France*; A. Bsiesy,* LTM, Univ. Grenoble Alpes, CEA-LETI, France	**INVITED: TF+AS-TuM5** Fluorescent Nanodiamond for Applications in Whole Body Imaging, ***Olga Shenderova,*** *M.D. Torelli,* Adamas Nanotechnologies*; A. Rickard,* Duke University*; N.J. Nunn,* Adamas Nanotechnologies*; M. Backer,* SibTech*; G.M. Palmer,* Duke University*; G. McGuire,* Adamas Nanotechnologies
9:40am	**TF+AM+EM+PS-TuM6** ALD and PEALD of ZnO on MoS_2 and WSe_2, ***Timothy N. Walter***[1]*, S. Lee,* The Pennsylvania State Univeristy*; M. Chubarov,* The Pennsylvania State University*; X. Zhang,* The Pennsylvania State Univeristy*; T.H. Choudhury, J.M. Redwing,* The Pennsylvania State University*; T.N. Jackson, S.E. Mohney,* The Pennsylvania State Univeristy	Invited talk continues.
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall - Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**INVITED: TF+AM+EM+PS-TuM10** From Fundamental Insights into Growth and Nucleation Mechanisms to Area-selective Deposition, ***Annelies Delabie,*** IMEC & KU Leuven, Belgium*; J. Soethoudt,* KU Leuven, Belgium*; G. Pourtois, S. Van Elshocht, K. Barla,* Imec, Belgium*; F. Grillo, E. Marques, J.R. van Ommen,* TU Delft, Netherlands	**INVITED: TF+AS-TuM10** The Apple does not Fall Far from the Tree: A Serendipitous Journey from Luminescent Materials to Nanoscale Focused Electron (and Ion) Beam Induced Processing, ***Philip D. Rack,*** University of Tennessee Knoxville
11:20am	Invited talk continues.	Invited talk continues.
11:40am	**TF+AM+EM+PS-TuM12** DETA SAMs as ALD Ru Inhibitor for Area-selective Bottom-up Interconnects, ***Ivan Zyulkov,*** IMEC & KU Leuven*; S. Armini,* IMEC, Belgium*; S. De Gendt,* IMEC, KU Leuven, Belgium	**INVITED: TF+AS-TuM12** Atomic Layer Deposition of Optoelectronic Materials, ***Markku Leskela,*** *M.K. Ritala,* University of Helsinki, Finland
12:00pm		Invited talk continues.

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

	Thin Films Division Room 101A - Session TF-TuM Emerging Applications for ALD **Moderators:** Arrelaine Dameron, Forge Nano, Qing Peng, University of Alabama	Vacuum Technology Division Room 203B - Session VT-TuM Large Vacuum Systems and Accelerator Vacuum Technology **Moderator:** Yevgeniy Lushtak, SAES Getters USA
8:00am	**TF-TuM1** Atomic Layer Deposition of the Metal Pyrites FeS_2, CoS_2, and NiS_2, ***Xinwei Wang***, Shenzhen Graduate School, Peking University, China	**INVITED: VT-TuM1** Design of Vacuum Control System for the Linac Coherent Light Source II (LCLS-II) at SLAC National Accelerator Laboratory, ***Shweta Saraf***, *S. Kwon, G. Lanza, D. Gill,* SLAC National Accelerator Laboratory
8:20am	**TF-TuM2** Atomic Layer Deposition of Yttrium Fluoride and Yttrium Oxyfluoride Films with Tunable Stoichiometry, ***Jasmine Wallas***[1], *J.A. Murdzek, D.K. Lancaster, A.S. Cavanagh, S.M. George,* University of Colorado at Boulder	Invited talk continues.
8:40am	**TF-TuM3** Synthesis of Single Phase Two-dimensional SnS_2 by Plasma-enhanced Atomic Layer Deposition, *J.J. Pyeon, I.-H. Baek,* Korea Institute of Science and Technology; *T.-M. Chung,* Korea Research Institute of Chemical Technology; *J.H. Han,* Seoul National University of Science and Technology; *C.-Y. Kang,* ***SeongKeun Kim***, Korea Institute of Science and Technology, Republic of Korea	**VT-TuM3** Vacuum System Design for Advanced Light Source Upgrade (ALS-U), ***Sol Omolayo***, Lawrence Berkeley Lab, University of California, Berkeley
9:00am	**TF-TuM4** Phase Selective, Low Temperature Growth of TiO2 by Atomic Layer Epitaxy, ***Jason Avila***, *D.R. Boris, S.B. Qadri, J.A. Freitas, S.G. Walton, C.R. Eddy Jr., V.D. Wheeler,* U.S. Naval Research Laboratory	**VT-TuM4** Vacuum System for CHESS-U: Design, Manufacturing, and Installation, *X. Liu*, *D.C. Burke, A.T. Holic,* ***Yulin Li***, *A. Lyndaker,* Cornell University
9:20am	**TF-TuM5** Substrate Biasing During Plasma Atomic Layer Deposition: From Stress-controlled Oxides to Low-resistivity Nitrides, ***Harm Knoops***, Oxford Instruments, The Netherlands; *T.F. Faraz, K. Arts, S. Karwal, M.C. Creatore, W.M.M. Kessels,* Eindhoven University of Technology, The Netherlands	**VT-TuM5** Design and Fabrication of CHESS-U Crotch Absorbers, *Y. Li*, ***Xianghong Liu***, *A. Lyndaker, K. Smolenski, A. Woll, L. Smieska,* Cornell Laboratory of Accelerator-based Sciences and Education
9:40am	**TF-TuM6** Development of Novel Superconducting ALD Films for Astronomy Applications, ***Frank Greer***, *P. Day, B. Eom, H. Leduc,* Jet Propulsion Laboratory, California Institute of Technology	**VT-TuM6** Simulation and Measurement of the Tritium Retention in the Beamline of the KATRIN Experiment, ***Joachim Wolf***, Karlsruhe Institute of Technology, Germany
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall - Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**TF-TuM10** Atomic Layer Deposition of Cobalt Nanoparticles, ***Gerben van Straaten***, *W.M.M. Kessels, M.C. Creatore,* Eindhoven University of Technology, The Netherlands	**VT-TuM10** NSLS-II Beamline Vacuum Challenges: Design, Commissioning, and Operations, ***Robert Todd***, *C. Hetzel,* Brookhaven National Laboratory
11:20am	**TF-TuM11** Atomic Layer Deposition of Ni-Al-O Catalysts for Water Oxidation, ***Jon Baker***, *J.R. Schneider, J.A. Singh, A.J. Mackus, S.F. Bent,* Stanford University	**VT-TuM11** Thin film Heterostructures for Superconducting Photocathode Applications, ***Mark Warren***, Illinois Institute of Technology
11:40am	**TF-TuM12** Atomic Layer Deposition of Bismuth Vanadate Photoanodes, ***Sudarat Lee***, *A.R. Bielinski, S.L. Esarey, J.J. Brancho,* University of Michigan, Ann Arbor; *B.M. Bartlett,* University of Michigan, Ann Arbor; *N.P. Dasgupta,* University of Michigan, Ann Arbor	**VT-TuM12** TPD Results on Electrode Materials for Pulsed Power Vacuum Environments, ***Ronald Goeke***, *S.C. Simpson, K.R. Coombes, M.K. Alam, D.P. Adams,* Sandia National Laboratories
12:00pm	**TF-TuM13** ALD of Cobalt Phosphate Electro-catalyst for Oxygen Evolution Reaction, ***Valerio Di Palma***, Eindhoven University of Technology, The Netherlands; *G. Zafeiropoulos, M.N. Tsampas,* DIFFER; *W.M.M. Kessels, M.C. Creatore,* Eindhoven University of Technology, The Netherlands	**VT-TuM13** Radio Frequency Surface Resistance Measurement of Metals for Accelerator Vacuum Chamber, ***Omid Seify***, STFC/DL/ASTeC, Daresbury, Warrington, Cheshire, UK

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

Tuesday Morning, October 23, 2018

	Exhibitor Technology Spotlight Workshops **Room Hall A - Session EW-TuB** **Exhibitor Technology Spotlight Session I** **Moderator:** Christopher Moffitt, Kratos Analytical Inc	**Manufacturing Science and Technology Group** **Room 103C - Session MS-TuB** **Working with Government Labs and other User Facilities** **Moderator:** Bridget Rogers, Vanderbilt University
10:00am		**MS-TuB1** Joining the Research Community at the Cornell NanoScale Science and Technology Facility, ***Michael Skvarla,*** Cornell University
10:20am	**EW-TuB2** IMPULSE HIPIMS Power Supply with Positive Pulse Option Advantages, ***Jason Hrebik,*** Kurt J. Lesker Company	**MS-TuB2** Opportunities at DOE Nanoscale Science Research Centers, ***Arthur Baddorf,*** Oak Ridge National Laboratory
10:40am	**EW-TuB3** Choosing the Proper Equipment for Vacuum Heat Treatment, ***Rachael Stene,*** Across International	
11:00am		

Tuesday Lunch, October 23, 2018

	Exhibitor Technology Spotlight Workshops **Room Hall A - Session EW-TuL** **Exhibitor Technology Spotlight Session II** **Moderator:** Christopher Moffitt, Kratos Analytical Inc	
12:00pm		
12:20pm	**FREE LUNCH IN EXHIBIT HALL*** **(See Registration Tickets)** ***while supplies last**	
12:40pm	**EW-TuL3** Correlative Spectroscopy with the Thermo Scientific Nexsa, ***Tim Nunney****, P. Mack, R.E. Simpson,* Thermo Fisher Scientific, UK	
1:00pm	**EW-TuL4** Exploring the Capabilities of a Modern XPS Spectrometer: In-situ Surface Preparation & Modification, ***Adam Roberts,*** Kratos Analytical Limited, UK*; D. Surman, C. Moffitt,* Kratos Analytical Inc*; J.D.P. Counsell,* Kratos Analytical Ltd, UK	
1:20pm	**EW-TuL5** Design and Characterization of Nanomaterials using PREVAC's Research Platforms, ***Lukasz Walczak,*** PREVAC sp. z o.o., Poland	
1:40pm	**EW-TuL6** Agilent's New Helium Leak Detector, ***John McLaren,*** Agilent	
2:00pm	**EW-TuL7** Auger Multi-Technique: EDS, EBSD, BSE, FIB, ***John Newman,*** Physical Electronics	

Tuesday Afternoon, October 23, 2018

	2D Materials Focus Topic **Room 201B - Session 2D+EM+MI+MN+NS-TuA** **2D Device Physics and Applications** **Moderator:** Roland Kawakami, The Ohio State University	**Applied Surface Science Division** **Room 204 - Session AS-TuA** **The Impact of Modeling (Ion, Electron) and Data Analysis on Applied Surface Science, a Celebration of the Career of Barbara Garrison** **Moderators:** Gregory L. Fisher, Physical Electronics, Alexander Shard, National Physical Laboratory, UK
2:20pm	**2D+EM+MI+MN+NS-TuA1** Spin Relaxation and Proximity Effect in WS_2/Graphene/Fluorographene Non-local Spin Valves, ***Adam Friedman***, Laboratory for Physical Sciences; *K.M. McCreary, J.T. Robinson, O.M.J. van 't Erve, B.T. Jonker,* US Naval Research Laboratory	**INVITED: AS-TuA1** Collective Action, the Key to Soft Molecule Desorption under Particle Bombardment, ***Arnaud Delcorte***, Université catholique de Louvain, Belgium
2:40pm	**2D+EM+MI+MN+NS-TuA2** Two-dimensional Field-effect Light Emitting Transistors, ***Junyoung Kwon***, *H. Ryu,* Yonsei University, Republic of Korea; *J.Y. Lee, C.H. Lee,* Korea University, Republic of Korea; *G.H. Lee,* Yonsei University, Republic of Korea	Invited talk continues.
3:00pm	**INVITED: 2D+EM+MI+MN+NS-TuA3** Quantum Devices with 2D Materials, *H. Overweg, M. Eich, R. Pisoni, T. Ihn, P. Rickhaus,* ETH Zurich, Switzerland; ***Klaus Ensslin***, ETH Zürich, Switzerland	**AS-TuA3** Mechanisms of the Generation of Nanoparticles and Surface Modification in Short Pulse Laser Ablation of Metal Targets in Liquids, ***Leonid Zhigilei***, *C.-Y. Shih, M. Shugaev,* University of Virginia
3:20pm	Invited talk continues.	**AS-TuA4** First Principles Thermodynamics and Molecular Modeling of Surfaces in Aqueous Environments, ***Donald Brenner***, *Z. Rak, L. Su, J. Krim,* North Carolina State University
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall - Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
4:20pm	**2D+EM+MI+MN+NS-TuA7** GaN Microdisk Light-emitting Diode Display Fabricated on Graphene, ***Youngbin Tchoe***, *K. Chung, K. Lee, M.S. Song, J.B. Park, H. Kim, J.Y. Park, G.-C. Yi,* Seoul National University, Republic of Korea	**INVITED: AS-TuA7** Computer Modeling of Cluster Projectile Impacts for SIMS Applications, ***Zbigniew Postawa***, Jagiellonian University, Krakow, Poland
4:40pm	**2D+EM+MI+MN+NS-TuA8** Room Temperature Magnetron Sputtering and Laser Annealing of Ultrathin MoS_2 for Transistor Device Fabrication on Flexible Polymer Substrates, ***Benjamin Sirota***, University of North Texas; *N.R. Glavin,* Air Force Research Laboratory; *C. Arnold, A.A. Voevodin,* University of North Texas	Invited talk continues.
5:00pm	**INVITED: 2D+EM+MI+MN+NS-TuA9** Black Phosphorus: Fundamental Properties and Emerging Applications, ***Han Wang***, University of Southern California	**AS-TuA9** Use of Ion-Solid Interactions Modeling and Theory for Real Applications in FIB Milling, ***Lucille Giannuzzi***, L.A. Giannuzzi & Associates LLC
5:20pm	Invited talk continues.	**AS-TuA10** The Influence of the Projectile Cluster on the Molecular Ionization Probability in SIMS, ***Lars Breuer***, *A. Wucher,* Universität Duisburg-Essen, Germany; *N. Winograd,* The Pennsylvania State University
5:40pm	**2D+EM+MI+MN+NS-TuA11** Patterned Growth of Hybrid Bulk-2D Tungsten Diselenide for Transistor Applications, ***Quinten Yurek***, *I. Liao, D. Barroso, A.E. Nguyen, N. Duong, G. Stecklein, L. Bartels,* University of California, Riverside	**INVITED: AS-TuA11** In Situ Liquid SIMS, a Molecular Eye for Examination of Liquids and Liquid Interfaces, ***Zihua Zhu***[1], *Y. Zhang,* Pacific Northwest National Laboratory
6:00pm	**2D+EM+MI+MN+NS-TuA12** Enhanced Ionic Sensitivity in Solution-Gated Graphene-Hexagonal Boron Nitride Heterostructure Field-Effect Transistors, *A.D. Radadia,* ***Nowzesh Hasan***, *B. Hou, A.L. Moore,* Louisiana Tech University	Invited talk continues.

[1] **ASSD Peter Sherwood Award**

Tuesday Afternoon, October 23, 2018

	Biomaterial Interfaces Division Room 101B - Session BI+AS+IPF+NS-TuA **IoT Session: Biofabrication, Bioanalytics, Biosensors and Diagnostics and Flash Networking Session** **Moderators:** Graham Leggett, University of Sheffield, UK, Tobias Weidner, Aarhus University, Denmark	Electronic Materials and Photonics Division Room 101A - Session EM+2D+AN+MI+MP+NS-TuA **Solar/Energy Harvesting and Quantum Materials and Applications** **Moderators:** Yohannes Abate, Georgia State University, Nicholas Strandwitz, Lehigh University
2:20pm	**BI+AS+IPF+NS-TuA1** Functionalization of Silica Materials *via* Click Reaction of Surface Silanol Groups with Vinyl Sulfones, ***Fang Cheng**, H. Wang, W. He, B. Sun, J. Qu,* Dalian University of Technology, China	**INVITED: EM+2D+AN+MI+MP+NS-TuA1** Plasmonic Metasurface Electrodes for Excitonic Solar Cells., ***Deirdre O'Carroll**,* Rutgers, the State University of New Jersey
2:40pm	**BI+AS+IPF+NS-TuA2** Organosilica pH Nanosensors Applied to Realtime Metabolite Monitoring, ***Kye Robinson**,* Monash University, Australia*; K. Thurecht,* University of Queensland, Australia*; S. Corrie,* Monash University, Australia	Invited talk continues.
3:00pm	**BI+AS+IPF+NS-TuA3** Impact of Different Receptor Binding Modes on Surface Morphology and Electrochemical Properties of PNA-based Sensing Platforms, ***Johannes Daniel Bartl**,* Walter Schottky Institut (WSI) and Physics Department, Technische Universität München, Germany*; P. Scarbolo,* Dipartimento Politecnico di Ingegneria e Architettura (DPIA), Università degli Studi di Udine, Italy*; S. Gremmo, G. Rziga, M. Stutzmann,* Walter Schottky Institut (WSI) and Physics Department, Technische Universität München, Germany*; M. Tornow,* Molecular Electronics Group and Department of Electrical and Computer Engineering, Technische Universität München, Germany*; L. Selmi*, Dipartimento di Ingegneria "Enzo Ferrari" (DIEF), Università di Modena e Reggio Emilia, Italy*; A. Cattani-Scholz,* Walter Schottky Institut (WSI) and Physics Department, Technische Universität München, Germany	**EM+2D+AN+MI+MP+NS-TuA3** Photoemission Electron Microscopy as a New Tool to Study the Electronic Properties of an Inhomogeneous Semiconductor for Photovoltaics, *M. Berg,* Sandia National Laboratories*; J. Kephart, A. Munshi, W.S. Sampath,* Colorado State University*; **Taisuke Ohta**, C. Chan,* Sandia National Laboratories
3:20pm	**BI+AS+IPF+NS-TuA4** Biosensor for Detection of Gasotransmitter from Living Cells Employing Silver Nanorods Array, ***Shashank Gahlaut**, C. Sharan, J.P. Singh,* Indian Institute of Technology Delhi, India	**EM+2D+AN+MI+MP+NS-TuA4** Modification of Bandgap for Lead-Free Double Perovskite $Cs_2AgInCl_6$ with Bi Doping, ***Hassan Siddique**, H. Da, X.Q. Wang, R.C. Dai, Z.P. Wang, Z.J. Ding, Z.M. Zhang,* University of Science and Technology of China
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall - Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
4:20pm	**BI+AS+IPF+NS-TuA7** Conversion of Human Stem Cells into Insulin Producing Cells Through 2D Platforms for Enhanced in-vitro Insulin Production, *S.K. Vishwakarma, A.A. Khan,* Central Laboratory for Stem Cell Research and Translational Medicine, Centre for Liver Research and Diagnostics, Deccan College of Medical Sciences, India*; **Marshal Dhayal**,* IIT (BHU), Varanasi, India	**INVITED: EM+2D+AN+MI+MP+NS-TuA7** Optimized (Quantum) Photonics, ***Jelena Vuckovic**,* Stanford University
4:40pm	**BI+AS+IPF+NS-TuA8** Polyzwitterion-modified Nanoparticles for Selective Antibody Separation, *F. Cheng, C. Zhu,* ***Wei He**, B. Sun, J. Qu,* Dalian University of Technology, China	Invited talk continues.
5:00pm	**BI+AS+IPF+NS-TuA9** Orienting Proteins on Surfaces with Site-specific Bioorthgonal Ligations, ***Riley Bednar**, R.A. Mehl,* Department of Biochemistry and Biophysics, Oregon State University	**EM+2D+AN+MI+MP+NS-TuA9** Optical Properties of Single Silicon Vacancies in 4H-SiC, *H.B. Banks,* National Research Council Postdoc residing at the Naval Research Laboratory*; O. Soykal,* Sotera Defense Solutions, Inc, residing at the Naval Research Laboratory*; S.P. Pavunny, R.L. Myers-Ward, D.K. Gaskill,* ***Samuel Carter**,* U.S. Naval Research Laboratory
5:20pm	**BI+AS+IPF+NS-TuA10** High-throughput Study of the Role of Spatial Organization on the Activity of Surface-Bound Enzymes, ***Nourin Alsharif**,* Boston University*; T. Lawton, J. Uzarski,* Natick Soldier Research, Development and Engineering Center*; K.A. Brown,* Boston University	**EM+2D+AN+MI+MP+NS-TuA10** Photoluminescence Studies on Patterned Silicon Vacancy Defects in Li Ion Implanted 4H-SiC for Scalable Quantum Device Applications, ***Shojan Pavunny**,* U. S. Naval Research Laboratory*; S.G. Carter, H.B. Banks, R.L. Myers-Ward, P. Klein,* U.S. Naval Research Laboratory*; E.S. Bielejec,* Sandia National Laboratories*; M.T. DeJarld, A.S. Bracker, E.R. Glaser, D.K. Gaskill,* U.S. Naval Research Laboratory
5:40pm	**BI+AS+IPF+NS-TuA11** Fabrication of Amino acid Contained Poly-lactic Acid Nanofibers by Electrospinning, *C. Li,* National Yang Ming University, Taiwan, Republic of China*; J.H. Hsieh,* Ming Chi University of Technology, Taiwan, Republic of China*; **P.H. Lin**,* National Yang Ming University, Taiwan, Republic of China	**EM+2D+AN+MI+MP+NS-TuA11** Processing of Cavities in SiC Material for Quantum Technologies, ***Rachael Myers-Ward**, K. Hobart, K.M. Daniels, A.J. Giles, M.J. Tadjer, L.E. Luna, F.J. Kub, S.P. Pavunny, S.G. Carter, H.B. Banks, E.R. Glaser,* U.S. Naval Research Laboratory*; P.B. Klein,* Sotera Defense Solutions*; K. Qiao, Y. Kim, J. Kim,* Massachusetts Institute of Technology*; D.K. Gaskill,* U.S. Naval Research Laboratory
6:00pm	**6:05pm BID BUSINESS MEETING; 6:15pm BID FLASH SESSION: ZEINAB VEISI**, Univ. of S. Florida (**BI-TuP3**); **NAREH MOVSESIAN**, Univ.of Southern CA (**BI-TuP7**); **PHUONG ANH NGUYEN**, Univ. of New Mexico (**BI-TuP8**); **BILL THEILACKER**, Medtronic(**BI-TuP9**)	**EM+2D+AN+MI+MP+NS-TuA12** Investigation of Localized Electronic structures of PbSe Quantum Dot Superlattice on a Highly Oriented Pyrolytic Graphite (HOPG), ***Il Jo Kwak**, S. Ueda,* University of California at San Diego*; A. Abelson, C. Qian, M. Law,* University of California, Irvine*; A.C. Kummel,* University of California at San Diego

Tuesday Afternoon, October 23, 2018

	Fundamental Discoveries in Heterogeneous Catalysis Focus Topic **Room 201A - Session HC+SS-TuA** **A Tale of Two Scales: Catalytic Processes and Surface Science** **Moderator:** Ashleigh Baber, James Madison University	**Manufacturing Science and Technology Group** **Room 202B - Session MS+MN-TuA** **IoT Session: Challenges of Sensor Manufacturing for the IoT** **Moderator:** Robert Lad, University of Maine
2:20pm	**HC+SS-TuA1** CO_2 Reduction on the Surface of Cu/TiO_2 NPs Supported on Graphite Studied using Ambient Pressure-XPS and Differential Electrochemical Mass Spectrometer, ***Djawhar Ferrah,*** *A. Haines, R.P. Galhenage,* University of California at Irvine*; A. Javier,* California Institute of Technology*; J.P. Bruce,* University of California at Irvine*; M. Soriaga,* California Institute of Technology*; J.C. Hemminger,* University of California at Irvine	**INVITED: MS+MN-TuA1** Manufacturing Strategies for Flexible Hybrid Electronics*,* ***Scott Miller,*** NextFlex
2:40pm	**HC+SS-TuA2** Influence of Bi and Sb on the Structure of Pd-based Catalysts*,* ***Joo Kang,*** *W.-S. Lee, P.R. Vlasak,* The Dow Chemical Company*; A.V. Kirilin,* The Dow Chemical Company, Netherlands*; H. Clements, C. Menzies, S. Yusuf,* The Dow Chemical Company	Invited talk continues.
3:00pm	**INVITED: HC+SS-TuA3** The Molecular Surface Chemistry Approach to Heterogeneous Catalysts*,* ***Peter Stair,*** Northwestern University	**INVITED: MS+MN-TuA3** Enabling Smart and Connected Living through High Volume Roll to Roll Manufacturing*,* ***Enid Kivuti,*** Sheldahl Flexible Technologies
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall - Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
4:20pm	**HC+SS-TuA7** Formation and Stability of Subsurface Oxygen on Ag(111)*,* ***Marie Turano,*** Loyola University Chicago*; S. Isbill, S. Roy,* University of Tennessee Knoxville*; R.G. Farber,* Loyola University Chicago*; E.V. Iski,* University of Tulsa*; D.R. Killelea,* Loyola University Chicago	**INVITED: MS+MN-TuA7** New Generation Chemical and Biological Sensors: From New Ideas to Manufacturable Products in the era of Internet of Things and Industrial Internet*,* ***Radislav Potyrailo,*** General Electric Global Research Center
4:40pm	**HC+SS-TuA8** Mechanistic Insights into Catalytic Transfer Hydrogenation and Decarbonylation of Aromatic Aldehydes on P_x-Ru(0001)*,* ***Abinaya Sampath,*** *D.W. Flaherty,* University of Illinois at Urbana-Champaign	Invited talk continues.
5:00pm	**HC+SS-TuA9** Hot Electron Flux under Methanol Oxidation on Pt/TiO_2 Catalytic Nanodiode; Intrinsic Relation between Selectivity and Chemicurrent*,* ***Si Woo Lee,*** *S. Lee,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea*; H. Lee,* Institute for Basic Science (IBS), Republic of Korea*; W. Park, Y. Jung, J.Y. Park,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea	**INVITED: MS+MN-TuA9** The Unique Challenges Implantable Sensor Manufacture*,* ***Kimberly Chaffin,*** *S. Terry,* Medtronic plc
5:20pm	**HC+SS-TuA10** Online Kinetics Study of Oxidative Coupling of Methane over La_2O_3 for C_2 Activation: What is Behind the Distinguished Light-off Temperatures*,* ***Yong Yang,*** *Z. Liu, E.I. Vovk, X. Zhou, C. Guan,* ShanghaiTech University, China	Invited talk continues.
5:40pm	**INVITED: HC+SS-TuA11** Non-Innocent Solvents, Hydrogen Transfer, Oxygen Dissociation on Nanoparticles during the Direct Synthesis of H_2O_2*,* ***David W. Flaherty,*** University of Illinois, Urbana-Champaign	
6:00pm	Invited talk continues.	

	Nanometer-scale Science and Technology Division **Room 102B - Session NS+AM+MI+MN+SS+TR-TuA** **SPM – Probing and Manipulating Nanoscale Structures** **Moderators:** Renu Sharma, NIST Center for Nanoscale Science and Technology, Carl Ventrice, Jr., SUNY Polytechnic Institute	**Processing and Characterization of Air-Liquid, Solid-Liquid and Air-Solid Interfaces Focus Topic** **Room 202A - Session PC+AS+BI+EM+NS+PB+SS-TuA** **Progress in Industrial Processes and Characterization of Interfaces and Gas-Solid Interfacial Processes and Characterization** **Moderators:** Jeffrey Fenton, Medtronic, Xiao-Ying Yu, Pacific Northwest National Laboratory
2:20pm	**INVITED: NS+AM+MI+MN+SS+TR-TuA1** Building Artificial Quantum Matter with Dopant Atoms, ***Sven Rogge***, University of New South Wales, Australia	**INVITED: PC+AS+BI+EM+NS+PB+SS-TuA1** Near Ambient Pressure XPS as a Standard Tool for True Non-destructive High-throughput Surface Chemical Analysis in Industrial Applications, ***Andreas Thissen***, *P. Dietrich,* SPECS Surface Nano Analysis GmbH, Germany*; M. Kjaervik, W.E.S. Unger,* Bundesanstalt für Materialforschung und -prüfung (BAM), Germany
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**NS+AM+MI+MN+SS+TR-TuA3** Scanning Tunneling Microscopy Study of Structure Control of a Nanocarbon Catalyst through a Surface-Activated coupling Reaction, ***Jeremy Schultz***, *P. Whiteman, N. Jiang,* University of Illinois at Chicago	**INVITED: PC+AS+BI+EM+NS+PB+SS-TuA3** Surface Modifications in the Medical Device Field – Understanding of Methods to Control Adhesion and Reactions That Materials Undergo, ***Jeffrey Fenton***, *B. Theilacker, A. Belu, B. Tischendorf,* Medtronic
3:20pm	**NS+AM+MI+MN+SS+TR-TuA4** Detecting the Tip Shape Dependence of the Plasmonic Photon Emission under STM, ***Songbin Cui***, Pohang University of Science and Technology, Republic of Korea*; U. Ham,* Institute for Basic Science (IBS), Republic of Korea*; T.-H. Kim,* Pohang University of Science and Technology, Republic of Korea	Invited talk continues.
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall - Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
4:20pm	**INVITED: NS+AM+MI+MN+SS+TR-TuA7** Advances in SPM Methods for Energy-relevant Materials, ***Marina Leite***, University of Maryland College Park	**INVITED: PC+AS+BI+EM+NS+PB+SS-TuA7** Ambient Pressure X-Ray Photoelectron Spectroscopy Studies of Catalytically Active Interfaces using Electron Transparent Graphene Membranes, *R. Mom, L. Frevel,* Fritz-Haber Institute of the Max Planck Society, Germany*; J.J. Velasco-Velez,* MPI CEC Mülheim, Germany*; T.E. Jones, M. Plodinec,* Fritz-Haber Institute of the Max Planck Society, Germany*; R. Schlögl,* MPI CEC Mülheim, Germany*;* ***Axel Knop-Gericke***, Fritz Haber Institute of the Max Planck Society, Germany
4:40pm	Invited talk continues.	Invited talk continues.
5:00pm	**NS+AM+MI+MN+SS+TR-TuA9** Coherent Electrical Contact to Semiconducting Graphene Nanoribbon, ***Chuanxu Ma***, *L. Liang,* Oak Ridge National Laboratory*; Z. Xiao,* North Carolina State University*; A.A. Puretzky, K. Hong,* Oak Ridge National Laboratory*; W. Lu, J. Bernholc,* North Carolina State University*; A.-P. Li,* Oak Ridge National Laboratory	**INVITED: PC+AS+BI+EM+NS+PB+SS-TuA9** The Influence of Density and Chemical Bonding on Atomic and Molecular Structures of Alcohols, Water and Oxides, ***Gabor A. Somorjai***, University of California at Berkeley
5:20pm	**NS+AM+MI+MN+SS+TR-TuA10** Visualizing Coordination Structures of Small Gas Molecules to Metallo-porphyrin on Au(111) Using Scanning Tunneling Microscopy, ***MinHui Chang***, Korea University, Republic of Korea*; Y.H. Chang, N.Y. Kim,* Korea Advanced Institute of Science and Technology (KAIST)*; U.S. Jeon, H. Kim,* 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	Invited talk continues.
5:40pm	**NS+AM+MI+MN+SS+TR-TuA11** Effects of Dimensionality on the Reactivity of Carboxylic-Acid-Terminated Monolayers, ***Dominic Goronzy***[1], *E. Avery, N.M. Gallup,* University of California, Los Angeles*; J. Staněk, J. Macháček, T. Baše,* Institute of Inorganic Chemistry, Academy of Sciences of the Czech Republic*; K.N. Houk,* Chemistry and Biochemistry, University of California, Los Angeles*; P.S. Weiss,* University of California at Los Angeles	**PC+AS+BI+EM+NS+PB+SS-TuA11** Atomic Scale Observation of Oxidation and Reduction of Palladium Surface, ***Takehiro Tamaoka***, *H. Yoshida, S. Takeda,* Osaka University, Japan
6:00pm		**PC+AS+BI+EM+NS+PB+SS-TuA12** Polymorphism of Hydrogen-Bonded Clusters at the Vacuum-Solid Interface, ***Angela Silski***, *J. Petersen,* University of Notre Dame*; R.D. Brown,* Clarkson University*; S. Corcelli, S.A. Kandel,* University of Notre Dame

[1] **NSTD Student Award Finalist**

	Plasma Science and Technology Division **Room 104A - Session PS+EM+NS+SS-TuA** **Plasma Processing of Challenging Materials - II** **Moderators:** Michael Gordon, University of California at Santa Barbara, Wei Tian, Applied Materials Inc.	**Plasma Science and Technology Division** **Room 104C - Session PS+PB+SE-TuA** **Atmospheric Pressure Plasmas** **Moderators:** Francois Reniers, Université Libre de Bruxelles, Steven Vitale, MIT Lincoln Laboratory
2:20pm	**INVITED: PS+EM+NS+SS-TuA1** Self-limiting Growth of III-nitride Materials via Hollow-cathode Plasma-ALD: Structural and Chemical Analysis, ***Necmi Biyikli***, *A. Mohammad, D. Shukla,* University of Connecticut	**PS+PB+SE-TuA1** Compact, Low Cost Atmospheric Pressure Plasma Jets Driven by Piezoelectric Transformers, ***Michael Johnson***, National Research Council; *D.R. Boris, L. Petrova, S.G. Walton,* Naval Research Laboratory
2:40pm	Invited talk continues.	**PS+PB+SE-TuA2** Process Regimes of Atmospheric Pressure Plasma-enhanced Chemical Vapor Deposition with Source Materials Highly Diluted in Inert Gases, ***SeungJae Baik***, *J. Jang,* Hankyong National University, Republic of Korea; *H.-J. Oh,* Yonsei University, Republic of Korea
3:00pm	**PS+EM+NS+SS-TuA3** Electrostatic Charge of Solution-droplet in Plasma-coupled Micro Reactor, ***Tae Hwan Kim***, *SW. Lee,* National Fusion Research Institute, Republic of Korea	**PS+PB+SE-TuA3** Plasma-enhanced Chemical Film Conversion (PECFC): Direct, Low-temperature Growth of Solution-processible and Printable Layered Thin Films, *T. Liu,* ***R. Mohan Sankaran***, Case Western Reserve University
3:20pm	**PS+EM+NS+SS-TuA4** Surfactant-free and Stable Colloidal Metal Oxide Ultra-small Quantum Dots via Plasma-liquid Electrochemistry, ***Dillibabu Padmanaban***, *D. Carolan, R. McGlynn, T. Velusamy, P. Maguire, D. Mariotti,* Nanotechnology & Integrated Bio-Engineering Centre, Ulster University, UK	**PS+PB+SE-TuA4** Plasma-based Remediation of Nanoscale Particulate Matter in Charbroiler Smoke Emissions, ***Sisi Yang***, *S. Subramanian,* University of Southern California, Los Angeles; *D. Singleton,* Transient Plasma Systems; *C. Schroeder, W. Schroeder, M. Gundersen, S.B. Cronin,* University of Southern California, Los Angeles
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall - Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
4:20pm	**PS+EM+NS+SS-TuA7** From Organometallic Precursors to Bimetallic Nanocatalysts using Atmospheric-pressure Plasma Processes, ***Joffrey Baneton***, *J. Mertens, M. Smiljanic, S. Cauchies, T. Segato,* Université Libre de Bruxelles, Belgium; *Y. Busby,* Université de Namur, Belgium; *G. Caldarella,* Université de Liège, Belgium; *V. Debaille, S. Godet,* Université Libre de Bruxelles, Belgium; *J.-J. Pireaux,* Université de Namur, 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	**PS+PB+SE-TuA7** The Interactions of Atmospheric Pressure Plasma Jets with Surfaces: *In situ* Measurements of Electron Heating in Materials, ***Scott Walton***, U.S. Naval Research Laboratory; *J. Tomko, B.M. Foley,* University of Virginia; *D.R. Boris,* U.S. Naval Research Laboratory; *M.J. Johnson,* National Research Council; *Tz.B. Petrova,* U.S. Naval Research Laboratory; *A. Giri, P.E. Hopkins,* University of Virginia
4:40pm	**PS+EM+NS+SS-TuA8** Synthesis of Hydrogenated Amorphous Carbon Nanoparticles using High-Pressure CH_4+Ar Plasmas and Their Deposition, ***Kazunori Koga***, *S.H. Hwang, K. Kamataki, N. Itagaki,* Kyushu University, Japan; *T. Nakatani,* Okayama University of Science, Japan; *M. Shiratani,* Kyushu University, Japan	**PS+PB+SE-TuA8** Surface Activation by Atmospheric Plasma: the Right Technology for the Right Application, *A. Ozkan, D. Merche,* ***Francois Reniers***, Université Libre de Bruxelles, Belgium
5:00pm	**PS+EM+NS+SS-TuA9** Antimony-doped Tin Oxide Nanocrystals Synthesized by Low Temperature Plasma, ***Qinyi Chen***, *E. Thimsen,* Washington University in St. Louis	**PS+PB+SE-TuA9** Aluminum Alloy Surface Cleaning by Atmospheric Pressure Microwave Discharge, ***Lucia Bonova***, *W. Zhu, A. Farrokhpanah, D.V. Krogstad, Z.K. Jeckell, S. Chaudhuri, D.N. Ruzic,* University of Illinois at Urbana-Champaign
5:20pm	**PS+EM+NS+SS-TuA10** Femtosecond Laser Texturing of Plasma-immersed Ti to Create TiN, ***Chisung Ahn***, *E. Barlaz, D.N. Ruzic,* University of Illinois at Urbana-Champaign	**PS+PB+SE-TuA10** Temporal and Spatial Study of a Parallel pin-plate Plasma Reactor, ***Vladimir Milosavljević***, *M. Gulan, L. Scally, P.J. Cullen,* BioPlasma Research Group, Dublin Institute of Technology, Dublin, Ireland
5:40pm	**PS+EM+NS+SS-TuA11** Modeling Chemical Reactions in Contact Glow Discharge Electrolysis, ***Bocong Zheng***, *M. Shrestha, K.L. Wang, T. Schuelke, Q.H. Fan,* Michigan State University	**PS+PB+SE-TuA11** Plasma-modulated Metamaterials and Photonic Crystals, ***Jeffrey Hopwood***, *H. Kim,* Tufts University
6:00pm	**PS+EM+NS+SS-TuA12** Effects of Light Ion Beam Irradiation in Plasma Etching Processes, ***Kazuhiro Karahashi***, *T. Ito, H. Li, M. Isobe, K. Mizotani, S. Shigeno,* Osaka University, Japan; *M. Fukasawa, A. Hirata, T. Tatsumi,* Sony Semiconductor Solutions Corporation, Japan; *S. Hamaguch,* Osaka University, Japan	**PS+PB+SE-TuA12** Generation of Large-Volume Transient Glow Discharge Plasma by an External Fast Ionization Wave (FIW) from a Plasma Jet, ***Hamid Razavi***, *M. Laroussi,* Old Dominion University

	Reconfigurable Materials and Devices for Neuromorphic Computing Focus Topic **Room 203A - Session RM+EM+NS-TuA** **IoT Session: Reconfigurable Materials and Devices for Neuromorphic Computing** **Moderators:** Gina Adam, National Institute for R&D in Microtechnologies (IMT Bucharest), Brian Hoskins, National Institute of Standards and Technology (NIST)	**Advanced Surface Engineering Division** **Room 202C - Session SE-TuA** **Wear, Oxidation and Corrosion Protective Coatings** **Moderators:** Suneel Kodambaka, University of California, Los Angeles, Andrey Voevodin, University of North Texas
2:20pm	**INVITED: RM+EM+NS-TuA1** Non-volatile Memories for Neuromorphic Computing, ***Alec Talin,*** Sandia National Laboratories	**INVITED: SE-TuA1** Dissociative Extraction of Carbon-based Tribofilms from Hydrocarbon Molecules on Catalytically Active Nanocomposite Coatings, ***Ali Erdemir,*** *G. Ramirez, O.L. Eryilmaz,* Argonne National Laboratory
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**INVITED: RM+EM+NS-TuA3** Anionic and Protonic Transfer Materials for ReRAM and Neuromorphic Computing, ***Jennifer Rupp,*** Massachusetts Institute of Technology	**SE-TuA3** Use of Carbon Nanotube-Silver Metal Matrix Composite Thin Films to Enhance Mechanical Properties of Grid Fingers and Busbars on Photovoltaic Cells, ***Cayla Nelson,*** University of New Mexico*; O.K. Abudayyeh,* Osazda Energy, LLC*; Y. Shen, S.M. Han,* University of New Mexico
3:20pm	Invited talk continues.	**SE-TuA4** Study of Effects of Synergistic Environmental Exposures on Fiber-Reinforce Polymer Composites Protected by Metallic Coatings, ***Arash Afshar,*** *D. Mihut, S. Hill,* Mercer University School of Engineering
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall - Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
4:20pm	**INVITED: RM+EM+NS-TuA7** Memristor Neural Networks for Brain-Inspired Computing, ***Qiangfei Xia,*** University of Massachusetts Amherst	**SE-TuA7** Atomistic View of Mg Metal Corrosion Using *in-situ* cryo-XPS and *ab initio* Computation, ***Vaithiyalingam Shutthanandan,*** *A. Martinez, P.V. Sushko, A. Devaraj, E. Stevens, O.A. Marina, V. Joshi, S. Thevuthasan, V. Murugesan,* Pacific Northwest National Laboratory
4:40pm	Invited talk continues.	**SE-TuA8** Scratch Behavior and Modelling of Cu/Si(100) Thin Films Deposited by Modulated Pulsed Power Magnetron Sputtering, *D. Meng, Y.G. Li,* ***M.K. Lei,*** Dalian University of Technology, China
5:00pm	**RM+EM+NS-TuA9** Indium Phosphide Synaptic Device on Silicon for Scalable Neuromorphic Computing, ***Jun Tao,*** *D. Sarkar, R. Kapadia,* University of Southern California	**INVITED: SE-TuA9** Corrosion Resistance of Mechanically Reinforced Aluminium based Coatings obtained by PVD Techniques, ***Frederic Sanchette,*** UTT - Université de Technologie de Troyes, France*; J. Creus,* Université de La Rochelle, France*; A. Billard,* FEMTO-ST, France
5:20pm	**RM+EM+NS-TuA10** Ultra-low Power Microwave Oscillators based on Phase Change Oxides as Solid-State Neurons, ***Boyang Zhao,*** *J. Ravichandran,* University of Southern California	Invited talk continues.
5:40pm	**INVITED: RM+EM+NS-TuA11** Leveraging Nanodevice Volatility for Low Energy Computing Inspired from Nature, ***Alice Mizrahi,*** NIST/University of Maryland*; T. Hirtzlin,* Centre de Nanosciences et Nanotechnologies*; B. Hoskins,* NIST Center for Nanoscale Science and Technology*; A. Fukushima,* AIST*; A. Madhavan,* NIST Center for Nanoscale Science and Technology*; H. Kubota, S. Yuasa,* AIST*; N.B. Zhitenev, J. McClelland, M.D. Stiles,* NIST Center for Nanoscale Science and Technology*; D. Querlioz,* Centre de Nanosciences et Nanotechnologies, France*; J. Grollier,* UMR CNRS/Thales	**SE-TuA11** High Temperature Mechanical Properties of CrAlN and CrAlSiN Hard Coatings, ***Aljaž Drnovšek,*** *M. Rebelo de Figueiredo, A. Xia,* Montanuniversität Leoben, Austria*; S. Kolozsvári,* Plansee Composite Materials GmbH, Germany*; H. Vo, P. Hosemann,* Univeristy of California Berkeley*; R. Franz,* Montanuniversität Leoben, Austria
6:00pm	Invited talk continues.	**SE-TuA12** Thick CrN/AlN Superlattice Coatings for Solid Particle Erosion and High Temperature Wear Resistant Applications, ***Jianliang Lin,*** Southwest Research Institute

	Surface Science Division Room 203C - Session SS+HC+MI-TuA Oxides/Chalcogenides: Structures and Reactions **Moderator:** Andrew Teplyakov, University of Delaware	Thin Films Division Room 104B - Session TF+PS-TuA Atomic Layer Processing: Chemistry & Surface Reactions for Atomic Layer Processing **Moderators:** Jessica Kachian, Intel Corporation, Keren Kanarik, Lam Research Corporation
2:20pm	**INVITED: SS+HC+MI-TuA1** New Eyes for Nanocatalysis: Atomic Scale Investigations of TiO_2 Chemistry, ***Melissa Hines,*** Cornell University	**INVITED: TF+PS-TuA1** N-heterocyclic Carbenes on Au and Cu Surfaces, ***Cathleen Crudden,*** Queen's University, Canada
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**SS+HC+MI-TuA3** Coverage-dependent Water Agglomerates on Fe_3O_4 Surfaces, ***Zdenek Jakub,*** Vienna University of Technology, Austria; *M. Meier,* University of Vienna, Austria; *J. Hulva, J. Pavelec, M. Setvin, M. Schmid, U. Diebold,* Vienna University of Technology, Austria; *C. Franchini,* University of Vienna, Austria; *G.S. Parkinson,* Vienna University of Technology, Austria	**TF+PS-TuA3** Enhancing Nucleation in Platinum Atomic Layer Deposition by Surface Pre-Treatment with Small Organometallic Molecules, ***Camila de Paula,*** *L. Zeng, S.F. Bent,* Stanford University
3:20pm	**SS+HC+MI-TuA4** Reversible Structural Evolution and Identification of the Catalytically Active Phase of $NiCoO_xH_y$ During the Oxygen Evolution Reaction (OER), ***Bruce E. Koel,*** Princeton University	**TF+PS-TuA4** Mass Spectrometer Studies of Volatile Etch Products Produced by Ligand-Exchange Reactions During Thermal Atomic Layer Etching, ***Joel Clancey,*** *A.S. Cavanagh, S.M. George,* University of Colorado Boulder
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall - Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
4:20pm	**SS+HC+MI-TuA7** Understanding the Growth and Chemical Activity of Titania-Supported MoS_x Clusters, ***Donna Chen,*** University of South Carolina; *R.P. Galhenage,* University of California at Irvine; *H. Yan,* University of Louisiana Layfette; *D. Le, T.B. Rawal, T.S. Rahman,* University of Central Florida	**INVITED: TF+PS-TuA7** Beyond Conventional Lithography – Using Self-assembly to Create Patterns for New Device Fabrication Techniques, ***Michael Morris,*** Trinity College Dublin, Ireland
4:40pm	**SS+HC+MI-TuA8** Analyzing Single Atom Catalysts using Low Energy Ion Scattering (LEIS), ***Thomas Grehl,*** IONTOF GmbH, Germany; *R. ter Veen,* Tascon GmbH, Germany; *D. Kunwar, A. Datye,* University of New Mexico; *H.H. Brongersma,* IONTOF GmbH and Tascon GmbH, Germany	Invited talk continues.
5:00pm	**SS+HC+MI-TuA9** Synthesis and Characterization of Metals Supported on ZnO Nanoparticles, ***Amanda Haines,*** *D.F. Ferrah, J.C. Hemminger,* University of California at Irvine	**TF+PS-TuA9** Calculations of Etch Products from Thermal Atomic Layer Etching Using Fluorination and Ligand-Exchange Reactions, ***Andrew Cavanagh,*** *J.W. Clancey, S. Sharma, S.M. George,* University of Colorado at Boulder
5:20pm	**SS+HC+MI-TuA10** Molecular Water Adsorption and Reactions on α-Al_2O_3(0001) and α-Alumina Particles, ***Greg Kimmel,*** *N.G. Petrik,* Pacific Northwest National Laboratory; *P.L. Huestis, J.A. LaVerne,* University of Notre Dame; *A.B. Aleksandrov, T.M. Orlando,* Georgia Institute of Technology	**TF+PS-TuA10** Formation of Monolayers and Multilayers During the Vapor-Phase Deposition of Dodecanethiols on Copper Oxide, ***David Bergsman,*** *T-L. Liu, R.G. Closser, S.F. Bent,* Stanford University
5:40pm	**SS+HC+MI-TuA11** Applying Low Temperature Titration for Determination of Metallic Sites on Active Oxide Supported Catalysts, ***Jerry Pui Ho Li,*** *Z. Liu, Y. Yang,* ShanghaiTech University, China	**TF+PS-TuA11** Exchange Reactions During Atomic Layer Deposition: ZnO Conversion to Al_2O_3 by Trimethylaluminum, ***Tyler Myers,*** *A.M. Cano, J.W. Clancey, D.K. Lancaster, S.M. George,* University of Colorado at Boulder
6:00pm	**SS+HC+MI-TuA12** Giant Optical Anisotropy in Hexagonal Perovskite Chalcogenides with Quasi-1D Structures, ***Shanyuan Niu,*** University of Southern California; *G. Joe,* University of Wisconsin - Madison; *H. Zhao, M. Mecklenburg,* University of Southern California; *T. Tiwald,* J.A. Woollam Co. Inc; *K. Mahalingam,* Air Force Research Laboratory; *H. Wang,* University of Southern California; *M. Kats,* University of Wisconsin - Madison; *J. Ravichandran,* University of Southern California	**TF+PS-TuA12** 3D Feature Profile Simulation Coupled with Realistic Plasma Surface Reaction Model for ALE Process, ***YeongGeun Yook,*** *H.S. You, J.H. Park,* Chonbuk National University, Republic of Korea; *D.H. You,* KW Tech, Republic of Korea; *K.S. Choi,* Chonbuk National University, Republic of Korea; *W.S. Chang,* National Fusion Research Institute, Republic of Korea

Tuesday Afternoon, October 23, 2018

	Thin Films Division Room 102A - Session TF+SS-TuA Organic/Inorganic Materials and Interfaces **Moderator:** Matthew Richard Linford, Brigham Young University	Vacuum Technology Division Room 203B - Session VT-TuA IoT Session: Vacuum System Design and Automation & Flash Networking Session **Moderators:** Julia Scherschligt, National Institute of Standards and Technology, Martin Wuest, INFICON
2:20pm	**TF+SS-TuA1** Chemical Interactions at Hybrid Interfaces: An In Situ Investigation of Organic/Inorganic Systems, ***Sven Pletincx***, Vrije Universiteit Brussel, Belgium; *L. Trotochaud,* Lawrence Berkeley Lab, University of California, Berkeley; *L.-L. Fockaert, M. Meeusen, J.M.C. Mol,* Technical University Delft, Netherlands; *H. Bluhm,* Lawrence Berkeley Lab, University of California, Berkeley; *H. Terryn, T. Hauffman,* Vrije Universiteit Brussel, Belgium	**INVITED: VT-TuA1** The Importance of Vacuum Cleanliness in Semiconductor Process Control SEM Tools, ***Irit Ruach Nir***, Applied Materials, Israel; *M. Eilon, K. Luria, G. Eytan,* Applied Materials
2:40pm	**TF+SS-TuA2** Microscopic and Spectroscopic evidence of Odd-Even Effect in Self-Assembled Monolayers of Biphenyl-Substituted Fatty Acid on Ag(111), ***Anna Krzykawska***, Jagiellonian University, Polska; *P. Cyganik, M. Szwed, J. Ossowski,* Jagiellonian University, Poland	Invited talk continues.
3:00pm	**INVITED: TF+SS-TuA3** CVD of Thin Polymer Films for Engineered Material Properties, ***AnnaMaria Coclite***, Graz University of Technology, Austria	**INVITED: VT-TuA3** Vacuum Chamber Design and Fabrication., ***Steve Greuel***, Nor-Cal Products
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall - Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
4:20pm	**TF+SS-TuA7** Organosilicon Functionally Nanostructured Films as Engineered Interlayers for Hybrid Materials, ***Vladimir Cech***, Brno University of Technology, Czech Republic; *J. Houdkova,* Institute of Physics, Academy of Sciences of the Czech Republic; *M. Branecky, T. Plichta,* Brno University of Technology; *J. Zemek,* Institute of Physics, Academy of Sciences of the Czech Republic	**INVITED: VT-TuA7** Compact Ultra High Vacuum Systems for Applications of Cold Matter, ***Evan Salim***, *S. Hughes, M.A. Perez, D.Z. Anderson,* ColdQuanta Inc.
4:40pm	**TF+SS-TuA8** Studying Electron Induced Chemical Changes of Hafnium Oxide-Methacrylate EUV Photoresists with *In Situ* IR Spectroscopy and Model Flat Surfaces, ***Yasiel Cabrera***, *E. Mattson, K. Oyekan, Y. Wang, Y.J. Chabal,* University of Texas at Dallas	Invited talk continues.
5:00pm	**TF+SS-TuA9** Photoactivated Molecular Layer Deposition of Fluoropolymer Thin Films, ***Richard Closser***, Stanford University; *M. Lillethorup,* Radisurf Aps, Denmark; *D.S. Bergsman, J. Shi, S.F. Bent,* Stanford University	**INVITED: VT-TuA9** Plasma Window as Vacuum Atmosphere Interface for Various Applications, ***Ady Hershcovitch***, Brookhaven National Laboratory
5:20pm	**TF+SS-TuA10** Sputter-Deposited Porous Coatings for Solid Phase Microextraction, ***Tuhin Roychowdhury***, *D.I. Patel, M.R. Linford,* Brigham Young University	Invited talk continues.
5:40pm	**TF+SS-TuA11** Interfacial Electron Transfer of Ferrocene Immobilized onto Indium Tin Oxide through Noncovalent Interactions, ***Caitlin Hanna***, *J. Yang,* University of California, Irvine	**VT-TuA11** Applications of IoT in Vacuum Technology, ***Jacob Ricker***, *J. Hendricks,* NIST
6:00pm	**TF+SS-TuA12** Vapor Phase Infiltration of Polymers with Intrinsic Microporosity: Structure and Chemical Separation Performance, ***Mark Losego***, *E.K. McGuinness, F. Zhang, R. Lively,* Georgia Institute of Technology	**VTD FLASH NETWORKING SESSION**

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

3:40pm		
4:00pm	**EW-TuAB2** eSpectra, your Data, and your Collaborations, ***Jessica Hoy***, AIPP/AVS	

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

AM-TuP1 Direct-Write Fabrication of 3D Nano-Probes for Thermal Microscopy, *J. Sattelkow, J. Froech, R. Winkler,* Graz University of Technology, Austria*; C. Schwalb, E.J. Fantner,* GETec Microscopy Inc., Austria*;* ***Harald Plank,*** Graz University of Technology, Austria

AM-TuP2 Laser Induced Formation of Eutectic Nanostructures in Al-Cu Powder for Additive Manufacturing, ***Jonathan Skelton****, C.V. Headley, J.A. Floro, J.M. Fitz-Gerald,* University of Virginia

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

BI-TuP1 An Ultrasensitive, Selective, Multiplexed Superbioelectronic NoseThat Mimics the Human Sense of Smell, ***Sungeun Seo****, O.S. Kwon,* Korea Research Institute of Bioscience & Biotechnology(KRIBB), Republic of Korea

BI-TuP2 Graphene Field-effect Transistor Microfluidics Sensor for Real-time Bacteria Detection, ***KyungHo Kim****, J.Y. Lee,* Korea Research Institute of Bioscience & Biotechnology(KRIBB), Republic of Korea

BI-TuP3 Stimuli-responsive Thin Films made from Highly Methoxylated Citrus Pectin, ***Zeinab Veisi****, N. Alcantar, R. Toomey,* University of South Florida

BI-TuP4 Fluorescent DNA Nanosphere Barcdoe System by Rolling Circle Amplification for Tumor Cells Detection, *SW. Han,* ***JongBum Lee****,* University of Seoul, Republic of Korea

BI-TuP5 Conducting Polymer Nanotubes-based Field Effect Transistor Dopamine sensor, ***Jiyeon Lee****, S.Y. Park,* Korea Research Institute of Bioscience & Biotechnology(KRIBB), Republic of Korea

BI-TuP6 A study of Dopamine Receptor D1 Agonism and Antagonism Using GPCR-based FET biosensor, ***Sanghyuck Lee****,* Korea Research Institute of Bioscience and Biotechnology (KRIBB), Republic of Korea*; S.J. Park,* Korea Research Institute of Bioscience & Biotechnology(KRIBB), Republic of Korea

BI-TuP7 Vapor-Deposited Porous Polymers for the Fabrication of Giant Lipid Vesicles, ***Nareh Movsesian****, M.T. Matthew Tittensor, G. Dianat, N.M. Malmstadt, M. Gupta,* University of Southern California

BI-TuP8 Developing a pH Responsive Hydrogel for the Encapsulation of Poly(ethylene glycol) 3350, ***Phuong Anh Nguyen***[1]*, B. Matheson, D. Cuylear, H.E. Canavan,* University of New Mexico

BI-TuP9 Hemocompatibility of the Endexo™ Fluoro-oligomeric Surface, ***Bill Theilacker****,* Medtronic*; J. Ho, J. Swenor,* Interface Biologics*; M.F. Wolf, J.L. Kalscheue, S. Thinamany,* Medtronic*; S. Ubl,* medtronic

BI-TuP10 High Performance Dopamine Sensor Based on Field-Effect Transistor (FET) with H uman Dopamine Receptor Integrated-Multidimensional Conducting Polymer Nanofiber, ***Jinyeong Kim****, S.J. Park,* Korea Research Institute of Bioscience and Biotechnology (KRIBB), Republic of Korea

BI-TuP11 Detection of B-type Natriuretic Peptide in Human Serum Based on Flexible Biosensors and Data Analysis Methodology, ***Xinruo Yi,*** *A. Khalaf, R. Gunasekeran, M.H. Yun, M. Akcakaya,* University of Pittsburgh*; Y.Z. Zhang, S. Marc, N. Petroni,* UPMC

BI-TuP12 Characterizing Hetero-oligomer of Amyloid-beta and Alpha-synuclein with Bio-AFM, ***Eun Ji Shin****, J.W. Park,* Pohang University of Science and Technology, Republic of Korea

BI-TuP13 Creation of de novo Nucleic Acid Binding Disordered Proteins using the Thermally Responsive Behavior of Elastin-like Polypeptides, ***Telmo Diez****, G.P. Lopez, N.J. Carroll,* University of New Mexico

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

EL-TuP1 An In situ Spectroscopic Ellipsometry Study of Cerium Oxidation, ***Wayne Lake****, P. Roussel,* AWE, UK

EL-TuP2 In-situ Multi-wavelength Ellipsometric Monitoring of the Reactive Sputter Deposition of WO_x Films, ***Ned Ianno****, G. Kaufman, C. Luth,* University of Nebraska-Lincoln*; C. Exstrom, S.A. Darveau,* University of Nebraska at Kearney*; B. Johs,* Film Sense

EL-TuP3 Mid-infrared Optical Constants of InAsSb Alloys and Bulk GaSb, ***Pablo Paradis****, S. Zollner, R. Carrasco,* New Mexico State University, Department of Physics*; J. Carlin, V. Dahiya, A. Kazemi, S. Krishna,* The Ohio State University, Department of Electrical and Computer Engineering

EL-TuP4 Temperature-dependent Ellipsometry and Thermal Stability of Ge2Sb2Te5:C Phase Change Memory Alloys, ***Cesy Zamarripa****, N. Samarasingha, F. Abadizaman, R. Carrasco, S. Zollner,* New Mexico State University

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

MM-TuP1 In-situ Low Energy Electron Microscopy at Near Ambient Pressures, ***Thomas Schulmeyer****,* SPECS Surface Nano Analysis GmbH

MM-TuP2 NanoESCA III: Recent Progress and Applications, *M. Merkel, N.B. Weber, M. Escher, T.-J. Kühn,* FOCUS GmbH, Germany*;* ***Marten Patt****,* Scienta Omicron GmbH, Germany

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

MS-TuP1 Formation of High Entropy Film for Cutting Tool by Magnetron Sputtering, ***Ki Buem Kim****,* Sejong University, Republic of Korea*; T. Choi,* Sejong university, Korea, Republic of Korea*; H.Y. Lee,* Korea Institute of Industrial Technology, Republic of Korea*; J.K. Lee,* Kongju National University, Republic of Korea*; Y.S. Kim,* Sejong University, Republic of Korea*; Y.K. Park, K.S. Kim, S.I. Jeong,* YG-1 Co. LTD, Republic of Korea

MS-TuP2 Plasma Diagnostics Technique using Floating Harmonic Method for Pulsed Plasma Monitoring, ***Yusin Kim****,* Samsung Electronics, Republic of Korea*; CW. Chung,* Hanyang University, Republic of Korea*; J. Kim,* Samsung Electronics, Republic of Korea

MS-TuP3 Trace Level Detection of Gas Impurities Using Atmospheric Pressure Ionization Mass Spectrometry, ***Gregory Thier****,* Extrel CMS

MS-TuP4 Novel Safe Approach to Process Gas Delivery, ***Richard Elzer****,* Entegris*; K.W. Olander,* Retired co-founder of ATMI Corp

MS-TuP5 Advanced Characterization to Support Development of Next Generation Phosphors, ***Vincent Smentkowski****, R. Davis, J. Murphy, A. Setlur, M. Butts, J. Lu,* General Electric Global Research Center*; W. Beers,* Current by GE

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

PB-TuP1 Detection of Metallic Ions in Solution Using Optical Emission Spectroscopy of Plasma Driven by Bipolar Pulsed Power Sources, ***Ching-Yu Wang****, C.-C. Hsu,* National Taiwan University, Taiwan, Republic of China

[1] **National Student Award Finalist**

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

PC+AS+BI+EM+NS+PB+SS-TuP1 Operando Photoelectron Spectroscopic Study of Copper-based Oxide Semiconductor Interface with Water, ***Pitambar Sapkota***, *S. Ptasinska,* University of Notre Dame*; A. Cabrera,* Instituto de Física, Pontificia Universidad Católica de Chile

PC+AS+BI+EM+NS+PB+SS-TuP2 Interfacial Water in Silicon-based Catalytic Motors, ***Jordi Fraxedas***, *K. Zhang, B. Sepulveda, M.J. Esplandiu,* Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and BIST, Spain*; X. Garcia, J. Llorca,* Institute of Energy Technologies, Department of Chemical Engineering and Barcelona Research Center in Multiscale Science and Engineering. Universitat Politècnica de Catalunya, Spain*; V. Perez-Dieste, C. Escudero,* Alba Synchrotron Light Source, Spain

PC+AS+BI+EM+NS+PB+SS-TuP3 Chiral Modification of Oxide-Supported Pt Surfaces: An in-situ ATR-IR Study, ***Yufei Ni,*** University of California, Riverside*; F. Zaera,* University of California, Riverside

PC+AS+BI+EM+NS+PB+SS-TuP4 Wettability Behaviour of Synthesized Carbon Nanospheres and its Application as a Photocatalyst, ***Sonal Singhal***, *A.K. Shukla,* IIT Delhi, India

PC+AS+BI+EM+NS+PB+SS-TuP5 Thermally Driven Solid-solid Li^+ Transfer into Nanostructured TiO_2, ***Tiffany Kaspar***, *T. Varga,* Pacific Northwest National Laboratory*; D.A. Shapiro,* Advanced Light Source, Lawrence Berkeley National Laboratory*; A. Martinez, Y. Shin, K.S. Han, M.-S. Lee, S. Thevuthasan, V. Murugesan,* Pacific Northwest National Laboratory

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

PS-TuP1 Surface Modification for the Enhancement of the Patterning Margin by Using Plasma Treatment, ***Wanjae Park***, *L. Huli, S.D. Chae, A. Ko, P. Biolsi,* TEL Technology Center, America, LLC

PS-TuP2 N_2/H_2, O_2 and NF_3 Dissociation Percentages in a Remote, Low Frequency, High Density Plasma Source, ***Yingliang Zhou***, *H. Li, V.M. Donnelly,* University of Houston*; J. Chiu, X. Chen,* MKS Instruments, Inc., Pressure and Vacuum Measurement Group

PS-TuP3 Thermal Atomic Layer Etching of Silicon and Silicon Nitride Using an Oxidation and "Conversion-Etch" Mechanism, ***Aziz Abdulagatov***, *S.M. George,* University of Colorado at Boulder

PS-TuP4 Annihilation Kinetics of Plasma-induced Electronic Defects in Semiconductor Materials, *S. Nunomura,* ***Isao Sakata***, *K. Matsubara,* National Institute of Advanced Industrial Science and Technology (AIST), Japan

PS-TuP5 High efficiency Magnetic Induction Plasma Source for Remote Plasma Removal Process, ***TaeSeung Cho***, *S. Park, D. Lubomirsky,* Applied Materials

PS-TuP6 Aspect-ratio and Line-edge Fluctuation Controlled Nanolithography using Poly(styrene-*b*-Dimethylsiloxane) and Amorphous Carbon Layer, ***JiSoo Oh***, *G.Y. Yeom,* Sungkyunkwan University, Republic of Korea

PS-TuP7 Development of A Low-Cost ZnO Nanorods-Based Gas Sensor with an Integerated Microplasma Generation Unit for Ethanol Sensing, ***Sz-Yun Lin***, *F.-H. Huang, C.-C. Hsu,* National Taiwan University, Taiwan, Republic of China

PS-TuP8 Development of a Plasma Generation Device Integrated with a Piezoelectric Spray to Detect Metal Ions in Solution, ***Ting-Ting Pan***, *S.-Y. Lin, C.-C. Hsu,* National Taiwan University, Taiwan, Republic of China

PS-TuP9 Development of a Light-weight System for Detection of Metal Ions in Solutions Using Plasma Spectroscopy, ***Ching-Yu Su***, *S.-Y. Lin, C.-C. Hsu,* National Taiwan University, Taiwan, Republic of China

PS-TuP10 Inductively Coupled Plasma Reactive Ion Etching of Nanometer-scale Patterned Copper Thin Films using Alcohol-based Gases, ***Jinsu Ryu***, *E.T. Lim, D.W. Park, C.W. Chung,* INHA University, Republic of Korea

PS-TuP11 Etch Characteristics of Nanometer-scale Patterned Cu Thin Film Using Pulse- modulated RF Source Plasma, ***Euntaek Lim***, *J.S. Ryu, C.W. Chung,* INHA University, Republic of Korea

PS-TuP12 Etch Characteristics of Magnetic Tunneling Junction Materials by Using Noble Gas and Hydrogen, ***SooGang Kim***, *K.C. Yang, Y.J. Shin, D.I. Sung, G.Y. Yeom,* Sungkyunkwan University, Republic of Korea

PS-TuP13 Particle Temperature Histories in a Tubular Low Temperature Plasma Reactor: Relevance to the Synthesis of Amorphous Metal Alloys, *N.B. Uner,* ***Elijah Thimsen***, Washington University in St. Louis

PS-TuP14 Building Tailored Chemistry Sets for Plasma Modelling using a Statistical Approach Embedded in an Online Engine, ***Sebastian Mohr***, *G. Evans, A. Dzarasova,* Quantemol Ltd., UK*; M. Virdee,* University College London, UK

PS-TuP15 Easy Synthesis of Hybrid Laterally or Vertically Patterned Hydrophobic/Hydrophilic Surfaces using a Dielectric Barrier Discharge, ***Annaëlle Demaude***, Université Libre de Bruxelles, Belgique*; M.J. Gordon,* University of California at Santa Barbara*; F. Reniers,* Université Libre de Bruxelles, Belgium

PS-TuP16 Plasma-based Approach to Driving an Amorphous-To-Crystalline Phase Change in MoS_2 Grown on Polymers, *S.G. Walton, D.R. Boris,* U.S. Naval Research Laboratory*; A.C. Kozen,* American Society for Engineering Education*;* ***Gary Kushto***, U.S. Naval Research Laboratory*; M.J. Johnson,* National Research Council*; R.H. Rai,* University of Dayton*; N.R. Glavin,* Air Force Research Laboratory*; C. Muratore,* University of Dayton

PS-TuP17 Atmospheric Plasma Deposition of Vanadium Oxide Thin Coatings on Cold and Heated Substrates, ***Antoine Remy***, Université Libre de Bruxelles, Belgium*; M.J. Gordon,* University of California at Santa Barbara*; F. Reniers,* Université Libre de Bruxelles, Belgium

PS-TuP18 The Increased Efficiency Of The Amorphous/Silicon Heterojunction Solar Cells With Silicon Micro-Channels In Back Side Substrate, ***Hugo Alvarez***, *G.L. Bertão, A.R. Silva, F.H. Ciodin, J.A. Diniz,* University of Campinas, Brazil

PS-TuP19 Effect of RF Plasma on H Radical Generation on DCMS Produced a-Si:H, ***Jan Uhlig***, *E. Barlaz, D.N. Ruzic,* University of Illinois at Urbana-Champaign

PS-TuP20 Hardmasks of TiN and Al for Silicon Micro-Channel Definition via ICP Plasma Etching Process, ***Camila Ruiz***, Plasma Nanotechnology Research Center, UNICAMP, Brazil*; J.A. Diniz, A.M. Rosa,* Plasma Nanotechnology Research Center, University of Campinas, Brazil

PS-TuP21 Time- and space-resolved Diagnostics of a Self-Neutralized Ion Beam Extracted from a Pulsed Plasma, ***Ryan Sawadichai***, *Y.-M. Chen,* University of Houston*; S. Tian,* Lam Research Corporation*; V.M. Donnelly, P. Ruchhoeft, D.J. Economou,* University of Houston

PS-TuP22 Vacuum-ultraviolet-radiation Damage of Low-k Dielectrics, ***J. Leon Shohet***, *S.-H. Kim, H.M. Nguyen, P. Xue, J. Blatz, H. Cheng,* University of Wisconsin-Madison*; Y.-H. Lin,* NSRRC, Taiwan*; J.-F. de Marneffe, M. Redzheb, S. Armini,* IMEC, Belgium*; C.-C. Chen,* NSRRC, Taiwan*; Y. Wu,* University of Wisconsin-Madison

PS-TuP23 Porous Alumina as a Vacuum Ultraviolet Transmission Window, ***Yuting Wu***, *H. Cheng,* University of Wisconsin-Madison*; Y.-H. Lin, C.-C. Chen, H-S. Fung,* NSRRC, Taiwan*; J.L. Shohet,* University of Wisconsin-Madison

PS-TuP24 Frequency Response of Microwave Excited Argon Microplasmas using Continuum Simulations, ***Ayyaswamy Venkattraman***, *A.K. Verma,* University of California Merced

PS-TuP25 Development of an In-situ Plasma Enhanced Atomic Layer Etching System for III-group Nitride Device Process, ***C.P. Lin***, *Y.H. Lin, C.C. Chen, M.K. Wang,* National Applied Research Laboratories, Taiwan, Republic of Korea*; C.N. Hsiao,* National applied research Laboratories,Taiwan, Republic of Korea*; F.Z. Chen,* National Applied Research Laboratories, Taiwan, Republic of Korea

PS-TuP26 Advances in the Spectroscopic Characterization of Ceramic Films and Coatings, ***Fuhe Li***, *A. Tavakoli, J. Brim,* Air Liquide Electronics - Balazs NanoAnalysis

PS-TuP27 Effect of Plasma Configuration on Defect-free Functional Doping on Graphene Surface, ***Goo-Hwan Jeong***, *S.-I. Jo,* Kangwon National University, Republic of Korea

PS-TuP28 Fluid Model Numerical Simulation Analysis of Microwave Plasma Discharges, ***Wan-Ting Chiu***, National Tsing-Hua University, Taiwan, Taiwan, Republic of China*; I.N. Yeh, K.C. Leou,* National Tsing-Hua University, Taiwan, Republic of China

PS-TuP29 Evaluation of Simulation Tool for a Plasma Generation based on the Dual Property of Electrons, ***Shinichiro Kitamoto***, *P. Abraha,* Meijo University, Japan

PS-TuP30 Plasma Nitriding of Highly Polished Metallic Surfaces, ***Yoshiki Handa***, *P. Abraha,* Meijo University, Japan

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

RM-TuP1 Selector-less Crossbar Array through Self-rectifying Characteristic of Pt/HfO_2/Ti Memristor, ***Yong Kim,*** *S.Y. Ryu, W.H. Jeong,* Seoul National University of Science and Technology, Republic of Korea*; K.-S. Min,* Kookmin University, Republic of Korea*; B.J. Choi,* Seoul National University of Science and Technology, Republic of Korea

RM-TuP2 Electron Beam Induced Current Microscopy of Interfacial Barrier Effects in Al_2O_3/TiO_x Resistive Switches, ***Brian Hoskins,*** National Institute of Standards and Technology (NIST)*; G. Adam,* National Institute for R&D in Microtechnologies (IMT Bucharest), Romania*; E. Strelcov,* National Institute of Standards and Technology (NIST)/University of Maryland*; A. Kolmakov, N.B. Zhitenev,* National Institute of Standards and Technology (NIST)*; D. Strukov,* University of California at Santa Barbara*; J. McClelland,* National Institute of Standards and Technology (NIST)

RM-TuP3 Ion-insertion Electrodes for Brain Inspired Computing, ***Elliot Fuller,*** Sandia National Laboratories*; S.T. Keene,* Stanford University*; Z. Wang,* University of Massachusetts Amherst*; S. Agarwal, R.B. Jacobs-Gedrim, J. Niroula, C. Bayley, U. Sohi,* Sandia National Laboratories*; A. Melianas, Y. Tuchman,* Stanford University*; M.J. Marinella,* Sandia National Laboratories*; J.J. Yang,* University of Massachusetts Amherst*; A. Salleo,* Stanford University*; A. Talin,* Sandia National Laboratories

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

SE-TuP1 Deposition and Characterization of Ga-doped TaON Thin Films*, J.H. Hsieh,* ***Shi Jei Lin,*** Ming Chi University of Technology, Taiwan, Republic of China

SE-TuP2 Fabrication of Porous Membranes of Controlled Porosity and Chemical Functionality, ***Golnaz Dianat,*** *M. Gupta, S. Seidel, M.M. Deluna,* University of Southern California

SE-TuP3 Plasma Treatment of Thiol-Carborane Self-Assembled Monolayers on Copper, ***Michelle Paquette,*** *R. Thapa, L. Dorsett, S. Malik, S. Wagner, A.N. Caruso,* University of Missouri-Kansas City*; D. Merrill, J.D. Bielefeld, S.W. King,* Intel Corporation

SE-TuP4 Improved Light Extraction Efficiency using Homeotropic Thin Films on SiO_2 Micro Pillars, ***J.H. Lee,*** *Y. Lin, G. Wu,* Chang Gung University, Taiwan

SE-TuP5 Investigating the Influence of Substrate Cleaning on the Solution Stability of Plasma Polymer Films, ***Karyn Jarvis,*** Swinburne University of Technology, Australia*; S.L. McArthur,* Swinburne University of Technology and CSIRO, Australia

SE-TuP6 Tribological Systems Solutions for Gas Turbine Engines, ***Pantcho Stoyanov,*** Pratt & Whitney

SE-TuP7 Effect of Laser Processing on the Atmospheric Corrosion Behavior of Mg Alloy AZ31B and Weldments, *M.A. Melia,* Sandia National Laboratories*; L. Agnew, J.M. Skelton, J.R. Scully,* ***James Fitz-Gerald,*** University of Virginia

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

SS-TuP1 Encapsulation of Metallic Nanoparticles near the Surface of Graphite, ***Ann Lii-Rosales[12],*** *P.A. Thiel,* Iowa State University and Ames Laboratory

SS-TuP2 Uncovering the Mechanism of Thermal Dry Etching of Cobalt Thin Films Using Hexafluoroacetylacetone (hfacH), ***Mahsa Konh,*** *J. Zhao, A.V. Teplyakov,* University of Delaware

SS-TuP3 Revealing the Atomic Scale Insights for CO_2 Dissociation on the Rh(111) Surfaces at Ambient Pressure, ***Won Hui Doh,*** Institute for Basic Science (IBS), Republic of Korea*; J. Kim,* Institute for Basic Science (IBS), Republic of Korea*; J.Y. Park,* Institute for Basic Science (IBS), Republic of Korea

SS-TuP4 Study of Spin Dependent Electrochemical Charge Transfer Across the Ferromagnetic Electrode/Solution Interface, ***Mika Tamski,*** *F. Blumenschein, C. Roussel, J.-P. Ansermet,* Ecole Polytechnique Fédérale de Lausanne, Switzerland

SS-TuP5 Two-faced Steps: How Molecular Alignment does and does not Impacts O_2 Sticking Dynamics on Pt., *K. Cao,* Leiden University, Nederland*; M. Kurahashi,* National Institute for Materials Science, Japan*;* ***Ludo Juurlink,*** Leiden University, Nederland

SS-TuP6 Secondary Electron Emission from Borosilicate Glass Under Electron Impact, *C. Li,* University of Science and Technology of China*; L. Repetto,* Università di Genova, Italy*; Z.J. Ding,* University of Science and Technology of China, China*;* ***Karoly Tokesi,*** Institute for Nuclear Research, Hungarian Academy of Sciences (ATOMKI), Hungary

SS-TuP7 Crystallinity-Transport Investigations of Nanoscale Ru Conductors at Al_2O_3 and/or SiO_2 Interfaces, ***Asim Khaniya,*** *S. Ezzat, W.E. Kaden, K.R. Coffey,* University of Central Florida

SS-TuP8 Iron Oxide Surface Transformations Revealed by AP-XPS for Ammonia Synthesis, ***Mikhail Trought,*** Michigan Technological University*; E.J. Crumlin, S. Nemsak,* Advanced Light Source, Lawrence Berkeley National Laboratory*; K.A. Perrine,* Michigan Technological University

SS-TuP9 Surface Energies of Thin Oxides of Si(100) as Function of Thickness, Composition and Surface Processing, ***Saaketh Narayan,*** *J.M. Day, N. Herbots, A. Brimhall, A. Mascareno,* Arizona State University*; A. Krishnan,* Harvard University*; S.D. Whaley,* Arizona State University*; R.B. Bennett-Kennett,* Stanford University*; K.L. Kavanagh,* Simon Fraser University, Canada

SS-TuP10 Space Weathering Effects at the Surface of Thin-Film Aluminosilicate Model Regolith, ***Bijoya Dhar,*** *W.E. Kaden,* University of Central Florida

SS-TuP11 Identification of Surface Processes in Individual Minerals of a Complex Ore through the Analysis of Polished Sections using Polarization Microscopy and X-ray Photoelectron Spectroscopy (XPS), ***Dhamelyz Silva Quiñones,*** UTEC, Perú*; C.H. He,* University of Delaware*; J.C. Rodriguez,* UTEC, Perú*; A.V. Teplyakov,* University of Delaware*; C. Benndorf,* UTEC, Perú

SS-TuP12 Effect of Surface Roughness, Etch Pits, and Adsorbates on the Surface Phonon Density of States of Graphite, ***Krishnan Swaminathan-Gopalan,*** *K. Stephani,* University of Illinois at Urbana-Champaign

SS-TuP13 Variation of Structure Colors of Copper with LIPSS(Laser-Induced Periodic Surface Structure) by Femtosecond Laser Irradiation, ***TaeHoon Park,*** *J.H. Kim, T.Y. Hwang, J.J. Kang,* Korea Institute of Industrial Technology (KITECH), Republic of Korea*; K.B. Kim,* Sejong University, Republic of Korea*; H.S. Lee,* Korea Institute of Industrial Technology (KITECH), Republic of Korea

SS-TuP14 Bio-synthesis of Finely Distributed Ag Nanoparticle-decorated TiO_2 Nanorods for Sunlight-induced Photoelectrochemical Water Splitting, ***Moo Hwan Cho,*** *S.Y. Sawant, M.S. Sayed, T.H. Han, J.-J. Shim,* Yeungnam University, Republic of Korea

SS-TuP15 Oxidation of Nb(100) and Kinetics of Surface to Bulk Transport and Extension to Nb_3Sn, ***Rachael Farber,*** *D.R. Veit, S.J. Sibener,* The University of Chicago

MORT TRAUM FINALISTS

SS-TuP1 Encapsulation of Metallic Nanoparticles near the Surface of Graphite, ***Ann Lii-Rosales[34],*** *P.A. Thiel,* Iowa State University and Ames Laboratory

SS+EM+PS+TF-ThA10 (SS-TuP16) Adsorption and Reactions on Topological Insulators Surfaces Probed by Low Energy Ion Scattering, ***Haoshan Zhu[5],*** *W. Zhou, J.A. Yarmoff,* University of California – Riverside

SS+AS+EM-WeA10 (SS-TuP17) In-situ Characterization of Photon induced Chemistries in Organotin Clusters with Ambient Pressure XPS, ***J. Trey Diulus[6],*** *R.T. Frederick,* Oregon State University*; M. Li,* Rutgers, the State University of New Jersey*; D.C. Hutchison, I. Lyubinetsky, L. Árnadóttir, M.R. Olsen,* Oregon State University*; E.L. Garfunkel,* Rutgers, the State University of New Jersey*; M. Nyman,* Oregon State University*; H. Ogasawara,* SLAC National Accelerator Laboratory*; G.S. Herman,* Oregon State University

SS+HC+MI-MoM3 (SS-TuP18) Probing the Effects of Surface Structure on the Dissociative Chemisorption of Methane, ***Eric High[7],*** *D.G. Tinney, A.L. Utz,* Tufts University

HC-ThP3 (SS-TuP19) Activity of Bimetallic Pt-Re Surfaces and Influence of the Support for the Water-Gas Shift Reaction, ***Amy Brandt[8],*** *T.D. Maddumapatabandi, D. Shakya, S. Farzandh, D.A. Chen,* University of South Carolina

[1] **Morton S. Traum Award Finalist**
[2] **National Student Award Finalist**
[3] **Morton S. Traum Award Finalist**
[4] **National Student Award Finalist**
[5] **Morton S. Traum Award Finalist**
[6] **Morton S. Traum Award Finalist**
[7] **Morton S. Traum Award Finalist**
[8] **Morton S. Traum Award Finalist**

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

TR-TuP1 Measurements of Microscale Friction on Molybdenum Disulfide using an Integrated Quartz Crystal Microbalance and Nanoindentation System, ***Brian Borovsky***, *G.R. McAndrews, R.J. Wieser,* St. Olaf College

TR-TuP2 Sliding Wear Behavior of Tool Steel Functionalized with Organic Monolayers Against Aluminum, ***Stephan Prünte***, *D. Music,* RWTH Aachen University, Germany; *V.L. Terziyska, C. Mitterer,* Montanuniversität Leoben, Austria; *J.M. Schneider,* RWTH Aachen University, Germany

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

VT-TuP1 Characterization and Imaging of Surface Acoustic Waves on GaAs with Raman Spectroscopy, ***Brian Rummel***, University of New Mexico; *M.D. Henry,* Sandia National Laboratory; *S.M. Han,* University of New Mexico

VT-TuP2 Sapphire MEMS based Capacitance Manometer for Vacuum Freeze-Drying Device, ***Masashi Sekine***, *M. Soeda, T. Ishihara, M. Nagata,* Azbil Corporation, Japan

VT-TuP3 Development of Vacuum Equipment Trainer (VET) Systems for Off-site Students, ***Delmer Smith***, *N. Louwagie,* Normandale Community College

VT-TuP4 Vacuum System of the SuperKEKB Main Ring in the Phase - 2 Commissioning, ***Yusuke Suetsugu***, *K. Shibata, T. Ishibashi, M. Shirai, S. Terui, K. Kanazawa, H. Hisamatsu,* KEK, Japan

VT-TuP5 Smart Diagnostics for Dry Vacuum Pumps Running in Semiconductor Processes, ***Wan-Sup Cheung***, *J. Lim,* KRISS, Republic of Korea; *N.K. LEE, J.B. LEE, T.J. Park, T.H. Kim,* SK Hynix, Republic of Korea

VT-TuP6 Commissioning of Vacuum System for Positron Damping Ring for SuperKEKB, ***Kyo Shibata***, *Y. Suetsugu, T. Ishibashi, M. Shirai, S. Terui, K. Kanazawa, H. Hisamatsu,* KEK, Japan

VT-TuP7 Development of a Measurement System for Pressures in Vacuum Regions using an Optical Method, ***Yoshinori Takei***, *K. Arai, H. Yoshida, Y. Bitou, S. Telada, T. Kobata,* National Institute of Advanced Industrial Science and Technology (AIST), Japan

VT-TuP8 Study on a Performance of a Sniffer Leak Detector based on EN 14624, ***Kenta Arai***, *H. Yoshida,* National Institute of Advanced Industrial Science and Technology (AIST), Japan

VT-TuP9 Elimination of Electron-Beam-Induced Carbonaceous Contamination in SEMs and the new RGM 10100 NIST Contamination Testing Artifact, ***Andras Vladar***, *K. Purushotham,* National Institute of Standards and Technology (NIST)

VT-TuP10 PAL-XFEL Vacuum System, ***Donghyun Na***, Pohang Accelerator Laboratory, Republic of Korea

VT-TuP11 Extreme 2 Million Liter/sec Hydrogen Pump Speed Measurements of C-2W Divertors, ***Ernesto Barraza-Valdez***, *A. Van Drie,* TAE Technologies

VT-TuP12 KICT Dirty Thermal Vacuum Chamber: design, fabrication, and performance test, *T. Chung,* Korea Institute of Civil Engineering and Building Technology, Republic of Korea; ***Jong Yeon Lim***, Korea Research Institute of Standards and Science, Republic of Korea; *Y. Yoo, hss. Shin,* Korea Institute of Civil Engineering and Building Technology, Republic of Korea

Anticipated Schedule Wednesday, October 24, 2018

Anticipated Schedule Wednesday Morning, October 24

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, October 24

When _____

Where _____

With _____

Anticipated Schedule Wednesday Afternoon, October 24

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

Special Events Wednesday

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

Wednesday Morning, October 24, 2018

	2D Materials Focus Topic Room 201B - Session 2D+AM+EM+NS-WeM Dopants, Defects, and Interfaces in 2D Materials **Moderator:** Eric Pop, Stanford University	Actinides and Rare Earths Focus Topic Room 202C - Session AC+MI+SA-WeM Magnetism, Complexity, and Superconductivity in the Actinides and Rare Earths **Moderators:** Melissa Denecke, University of Manchester, UK, David Geeson, AWE, UK, James Tobin, UW Oshkosh
8:00am	**2D+AM+EM+NS-WeM1** Carbon Doping of 2D Transition Metal Dichalcogenides by Plasma Enhanced CVD, ***Yanfu Lu***, *F. Zhang, S. Sinnott, M. Terrones,* The Pennsylvania State University	**INVITED: AC+MI+SA-WeM1** Strong electron-electron Interactions in the Actinides: Using Organometallics to Probe Delocalization Effects, ***Corwin Booth***, Lawrence Berkeley National Laboratory
8:20am	**2D+AM+EM+NS-WeM2** Methoxy Formation Induced Defects on MoS_2*, ***Duy Le***, University of Central Florida; *P. Evans,* University of Nebraska - Lincoln; *Z. Hooshmand,* University of Central Florida; *T.B. Rawal,* Oak Ridge National Laboratory; *L. Bartels,* University of California, Riverside; *P.A. Dowben,* University of Nebraska-Lincoln; *T.S. Rahman,* University of Central Florida	Invited talk continues.
8:40am	**INVITED: 2D+AM+EM+NS-WeM3** Defect Engineering of 2D Materials for Advanced Electronic Devices, ***Gwan-Hyoung Lee***, Yonsei University, Republic of Korea	**INVITED: AC+MI+SA-WeM3** Structure and Magnetism of U-based Thin Films and Heterostructures, ***Evgeniya Tereshina-Chitrova***, Institute of Physics, Academy of Sciences of the Czech Republic; *L. Havela,* Charles University, Prague, Czech Republic; *T. Gouder, Z. Bao,* Institute for Transuranium Elements, Germany; *M. Dopita,* Charles University, Prague, Czech Republic; *R. Caciuffo,* Institute for Transuranium Elements, Germany
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**2D+AM+EM+NS-WeM5** Modeling Defects and Electron-electron Interactions in Low-dimensional Materials, ***Daniel Gunlycke***, *C.E. Ekuma,* U.S. Naval Research Laboratory	**INVITED: AC+MI+SA-WeM5** Field Induced Lifshitz Transitions in URu2Si2, *EJ. Calegari,* Univ Federale Santa Maria, Brazil; *S.G. Magalhaes,* Universidade Federale Rio Grande do Sul, Brazil; ***Peter Riseborough***, Temple University
9:40am	**2D+AM+EM+NS-WeM6** Post-Synthesis Modifications of Two-Dimensional $MoSe_2$ or $MoTe_2$ by Incorporation of Excess Metal Atoms into the Crystal Structure, ***Paula Mariel Coelho***, University of South Florida; *H. Komsa,* Aalto University, Finland; *H. Coy Diaz, Y. Ma,* University of South Florida; *A.V. Krasheninnikov,* Institute of Ion Beam Physics and Materials Research, Germany; *M. Batzill,* University of South Florida	Invited talk continues.
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**2D+AM+EM+NS-WeM10** Dry Cleaning and Doping of MX_2 for Contact Engineering, ***Daniil Marinov***, IMEC, Belgium; *J. Ludwig,* IMEC & KU Leuven, Belgium; *D. Chiappe,* IMEC, Belgium; *E. Voronina, T. Rakhimova,* Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University; *J.-F. de Marneffe, I. Asselberghs,* IMEC, Belgium; *S. De Gendt,* IMEC, KU Leuven, Belgium	**AC+MI+SA-WeM10** New Form of Uranium Hydride - UH_2, ***Ladislav Havela***, *M. Paukov, M. Dopita, L. Horak, P. Minarik, M. Divis, I. Turek,* Charles University, Prague, Czech Republic; *D. Legut,* VSB-Technical University of Ostrava, Czech Republic; *T. Gouder, A. Seibert, F. Huber,* European Commission - Joint Research Centre; *E.A. Tereshina-Chitrova,* Institute of Physics, Academy of Sciences of the Czech Republic
11:20am	**2D+AM+EM+NS-WeM11** Deep Learning for Atomically-Resolved Scanning Transmission Electron Microscopy Experiments on 2D Materials, ***Maxim Ziatdinov***, *S.V. Kalinin,* Oak Ridge National Laboratory	**AC+MI+SA-WeM11** Tuning of Electronic Properties of U- and RE-Metallic Systems by H Absorption, ***Silvie Maskova***, Charles University, Prague, Czech Republic; *K. Miliyanchuk,* Ivan Franko National University of Lviv, Lviv, Ukraine; *A. Kolomiets,* Lviv Polytechnic National University, Lviv, Ukraine; *L. Havela,* Charles University, Prague, Czech Republic
11:40am	**2D+AM+EM+NS-WeM12** Magnetic Doping in 2D MBE-grown-$MoSe_2$/graphene Heterostructures Studied by Photoelectron Spectroscopy and Band Structure Imaging, ***Maxime Gay***, *O.J. Renault,* CEA-LETI, France; *MT. Dau, C. Vergnaud, M. Jamet,* CEA-INAC-SPINTEC, France	**AC+MI+SA-WeM12** Magnetic Structures of U_nRhIn_{3n+2} Materials, ***Attila Bartha***, *M. Klicpera,* Charles University, Prague, Czech Republic; *P. Cermak,* Forschungszentrum Juelich GmbH, Germany; *B. Ouladdiaf,* Institute Laue-Langevin, France; *J. Custers,* Charles University, Prague, Czech Republic
12:00pm		**AC+MI+SA-WeM13** Insights into the Magnetic Dead Layer in $La_{0.7}Sr_{0.3}MnO_3$ Thin Films from Temperature, Magnetic Field and Thickness Dependence of their Magnetization, ***Navid Mottaghi***, *S. Seehra, R. Trappen, S. Kumari, C.-Y. Huang, S.F. Yousefi, G.B. Cabrera, A. Romero, M.B. Holcomb,* West Virginia University

Wednesday Morning, October 24, 2018

	Extending Additive Manufacturing to the Atomic Scale Focus Topic **Room 102B - Session AM+NS+SS-WeM** **Nanofabrication with Focused Electron Beams (8:00-10:00 am)/Atomic Scale Manipulation with Focused Electron Beams (11:00 am-12:20 pm)** **Moderator:** Ondrej Dyck, Oak Ridge National Laboratory	**Applied Surface Science Division** **Room 204 - Session AS+NS+SA-WeM** **Beyond Traditional Surface Analysis** **Moderators:** Mark Engelhard, Pacific Northwest National Laboratory, Kathryn Lloyd, DuPont Corporate Center for Analytical Sciences
8:00am	**INVITED: AM+NS+SS-WeM1** 3D Nano-Printing via Focused Electron Beams: An Emerging Technology for Novel Applications, ***Harald Plank***, *R. Winkler, J. Sattelkow,* Graz University of Technology, Austria*; J.D. Fowlkes,* Oak Ridge National Laboratory*; P.D. Rack,* University of Tennessee Knoxville	**AS+NS+SA-WeM1** Solar Wind Interaction with Carbonate Deposits on Asteroid (1) Ceres' Surface: The Role of Surface Analysis in Laboratory Planetary Science, ***Catherine Dukes***, *G. Rodriguez Lopez, C. Bu,* University of Virginia
8:20am	Invited talk continues.	**AS+NS+SA-WeM2** Looking Deeper and Smaller: Enhancing XPS by Hard X-ray Probes and High-resolution Imaging, ***Olivier Renault***, CEA/LETI-University Grenoble Alpes, France*; C. Zborowski,* University of Southern Denmark*; J.-P. Rueff,* Synchrotron SOLEIL, L'orme des Merisiers, France*; Y. Yamashita, S. Ueda,* NIMS, Japan*; G.A. Grenet,* Lyon Institute of Nanotechnology, France*; S. Tougaard,* University of Southern Denmark
8:40am	**INVITED: AM+NS+SS-WeM3** 3D Nanoprinting using an Electron Beam: Simulations and Computer-aided Design, ***Jason Fowlkes***, Oak Ridge National Laboratory*; R. Winkler,* Graz Centre for Electron Microscopy, Austria*; B.B. Lewis,* Carl Zeiss Microscopy, LLC*; A. Fernandez-Pacheco, L. Skoric, D. Sanz-Hernandez,* University of Cambridge*; M.G. Stanford, E. Mutunga, P.D. Rack,* University of Tennessee*; H. Plank,* Graz University of Technology, Austria	**INVITED: AS+NS+SA-WeM3** Reenvisioning Amphiphilicity: Translating Cell Membrane Design Principles to Synthetic 2D Materials, ***Shelley Claridge***, Purdue University
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**INVITED: AM+NS+SS-WeM5** 2D/3D Nano-printed Functional Structures for Application and Device Development using Focused Electron Beams, ***Michael Huth***, Institute of Physics, Goethe University, Frankfurt am Main, Germany	**AS+NS+SA-WeM5** Microstructural Effects on Surface Potential of Amorphous Solid Water, ***Caixia Bu***, *C.A. Dukes,* University of Virginia
9:40am	Invited talk continues.	**AS+NS+SA-WeM6** Speciation and Reactivity of Organic Matter in Uranium Mine Wastes from Laguna- New Mexico: An Application of Surface Sciences in Environmental Systems., ***Carmen A. Velasco***, *A.M. Ali,* University of New Mexico*; C. Osburn,* North Carolina State University*; K. Artyushkova, J.M. Cerrato,* University of New Mexico
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**INVITED: AM+NS+SS-WeM10** Single Atom Scale Manipulation of Matter by Scanning Transmission Electron Microscopy, ***Stephen Jesse***, *O. Dyck, S.V. Kalinin,* Oak Ridge National Laboratory	**AS+NS+SA-WeM10** Optical Constants Measured for Iridium and Samarium by Reflection Electron Energy-loss Spectroscopy Spectra, ***LiHao Yang***, *H. Xu,* University of Science and Technology of China*; A. Sulyok, M. Menyhard,* Institute for Technical Physics and Materials Science Centre for Energy Research, Hungarian Academy of Sciences (MTA)*; K. Tokesi,* Institute for Nuclear Research, Hungarian Academy of Sciences (ATOMKI)*; Z.J. Ding,* University of Science and Technology of China
11:20am	Invited talk continues.	**AS+NS+SA-WeM11** X-Ray Photoelectron Spectroscopy and Electrical Modeling of Electrowetting on Dielectric Devices, ***Pinar Aydogan Gokturk***, Bikent University, Turkey*; B. Ulgut, S. Suzer,* Bilkent University, Turkey
11:40am	**INVITED: AM+NS+SS-WeM12** Single Atom Modification of 2D Materials: Fabrication and Electronic Structure, ***Demie Kepaptsoglou***, *F. Hage,* SuperSTEM Laboratory, UK*; T. Susi, J. Kotakoski, J. Meyer,* University of Vienna, Austria*; Y.C. Lin, K. Suenaga,* National Institute of Advanced Industrial Science and Technology (AIST), Japan*; T. Hardcastle,* University of Leeds, UK*; U. Bangert,* University of Limerick, Republic of Ireland*; JA. Amani, H. Hofsaess,* University of Göttingen, Germany*; Q. Ramasse,* SuperSTEM Laboratory, UK, United Kingdom of Great Britain and Northern Ireland	**AS+NS+SA-WeM12** Near Ambient Pressure XPS Study of Oxygen Binding to the Surface of Transition Metal-nitrogen-carbon Electrocatalysts for Oxygen Reduction, *K. Artyushkova,* ***Yechuan Chen***, *P. Atanassov,* University of New Mexico
12:00pm	Invited talk continues.	**AS+NS+SA-WeM13** Surface Chemistry of Scandium, ***Michael Brumbach***, *D.A. Casalnuovo, E.V. Barnat, C. Winters, D. Robinson Brown, C.S. Snow, A.M. Grillet,* Sandia National Laboratories
12:20pm	**NSTD Graduate Student and Postdoc Award Competitions**	

Wednesday Morning, October 24, 2018

	Electronic Materials and Photonics Division **Room 101A - Session EM+AN+MI+SS-WeM** **Surface and Interface Challenges in Electronics and Photonics** **Moderators:** Andy Antonelli, Nanometrics, Michael Filler, Georgia Institute of Technology	**Fundamental Discoveries in Heterogeneous Catalysis Focus Topic** **Room 201A - Session HC+SS-WeM** **Mechanisms and Reaction Pathways of Heterogeneously Catalyzed Reactions** **Moderator:** Johan Gustafson, Lund University
8:00am	**INVITED: EM+AN+MI+SS-WeM1** Few Monolayer Atomic Layer Deposition (ALD) to Engineer New Surfaces and Interfaces, ***Parag Banerjee,*** Washington University in St. Louis	**HC+SS-WeM1** Surface Reactions of Methanol on Fe_3O_4(001) and Pd/Fe_3O_4(001) Model Catalysts, ***Matthew Marcinkowski,*** *N. Doudin, R.S. Smith, B.D. Kay, Z. Dohnalek,* Pacific Northwest National Laboratory
8:20am	Invited talk continues.	**HC+SS-WeM2** Hydrogen Activation and Spillover on Single Palladium Atoms Supported on Fe_3O_4(001) Surface, ***Nassar Doudin,*** Pacific Northwest National Laboratory*; J. Cheng Liu,* Tsinghua University, China*; M.D. Marcinkowski, M.-T. Nguyen,* Pacific Northwest National Laboratory*; J. Li,* Tsinghua University, China*; V.-A. Glezakou,* Pacific Northwest National Laboratory*; G.S. Parkinson,* Vienna University of Technology, Austria*; R. Rousseau, Z. Dohnálek,* Pacific Northwest National Laboratory
8:40am	**EM+AN+MI+SS-WeM3** Lattice-alignment mechanism of SiGe on Sapphire, ***HyunJung Kim,*** National Institute of Aerospace*; S. Choi,* NASA Langley Research Center	**INVITED: HC+SS-WeM3** Model Studies on Ligand-assisted Heterogeneous Catalysis, ***Swetlana Schauermann,*** Christian-Albrechts-University Kiel, Germany
9:00am	**EM+AN+MI+SS-WeM4** An Effort to Resolve Band Offset Anomalies in ZnO/GaN Heterostructures, ***Monu Mishra***[1]*, A. Gundimeda, V. Vandana, G. Gupta,* CSIR-National Physical Laboratory, India	Invited talk continues.
9:20am	**EM+AN+MI+SS-WeM5** Stress Relaxation in the Si-SiO2 System and its Influence on the Interface Properties, ***Daniel Kropman,*** *T. Laas,* Tallinn University, Estonia*; A. Medvids,* Riga Technical University, Latvia	**HC+SS-WeM5** *In situ* Structural Studies and Gas Phase Visualization of Model Catalysts at Work, ***Sara Blomberg***[2]*, J. Zetterberg, J. Zhou, J. Gustafson, E. Lundgren,* Lund University, Sweden
9:40am	**EM+AN+MI+SS-WeM6** Unique Sensitivity to Deep Trap States Demonstrated by CREM of Broad Bandgap Dielectric Layers, ***Hagai Cohen,*** Weizmann Institute of Science, Israel*; K.X. Steirer,* Colorado School of Mines	**HC+SS-WeM6** Adsorption, Thermal Stability, and Kinetics of Atomic Oxygen at Ag(111) and Ag(110) Surfaces, ***Sara Isbill***[2]*, S. Roy,* University of Tennessee Knoxville
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**EM+AN+MI+SS-WeM10** Fabrication of Multilayered Optically Active Nanocrystal Solids by Surface Passivation using Metal Oxides: ALD vs CVD, ***Riya Bose,*** *A.D. Dangerfield,* University of Texas at Dallas*; S.M. Rupich,* University of Texas*; Y.J. Chabal, A.V. Malko,* University of Texas at Dallas	**HC+SS-WeM10** Understanding the Intrinsic Surface Reactivity of Multilayer vs. Single-layer PdO(101) on Pd(100), ***Jason Weaver,*** *V. Mehar,* University of Florida*; M. Kim,* Ohio State University*; M. Shipilin,* Lund University, Sweden*; M. van den Bossche,* Chalmers University of Technology, Gothenburg, Sweden*; J. Gustafson,* Lund University, Sweden*; L. Merte,* Chalmers University of Technology, Gothenburg, Sweden*; U. Hejral,* Lund University, Sweden*; H. Gronbeck,* Chalmers University of Technology, Gothenburg, Sweden*; E. Lundgren,* Lund University, Sweden*; A. Asthagiri,* Ohio State University
11:20am	**EM+AN+MI+SS-WeM11** The Role of Surface Oxides for the Optoelectronic Performance of III-V Semiconductor Nanowires, *J. Colvin, A. Troian, O. Persson, A. Mikkelsen,* ***Rainer Timm,*** Lund University, Sweden	**HC+SS-WeM11** Simultaneous Study of Catalyst Structure, Gas Phase and Morphology, ***Sebastian Pfaff,*** *J. Zhou, S. Albertin,* Lund University, Sweden*; M. Shipilin,* Stockholm University, Sweden*; J. Gustafson, S. Blomberg, E. Lundgren, J. Zetterberg,* Lund University, Sweden
11:40am	**EM+AN+MI+SS-WeM12** Photonic Annealing of 2D Transition Metal Dichalcogenides for Tailored Optical Properties, ***Rachel Rai,*** *K. Gliebe,* University of Dayton; Air Force Research Laboratory*; N.R. Glavin, R. Kim, A. Jawaid, R. Wheeler, L. Bissell,* Air Force Research Laboratory*; C. Muratore,* University of Dayton	**INVITED: HC+SS-WeM12** New Catalysis for Light Alkanes – From Methane Functionalization to Light Akenes, ***Johannes Lercher,*** Pacific Northwest National Laboratory and TU München, United States of America/Germany
12:00pm	**EM+AN+MI+SS-WeM13** Polarity Control of GaN Nanowires on Diamond: Experiment and Theory, ***Karin Larsson,*** Uppsala University, Sweden*; M. Hetzl, M. Kraut, T. Hoffmann, M. Stutzmann,* Technical University Munich, Germany	Invited talk continues.

[1] **National Student Award Finalist**

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

	Industrial Physics Forum Room 101B - Session IPF+AS+BI+NS-WeM IoT Session: Bioanalytics, Biosensors and Diagnostics **Moderators:** Anna Belu, Medtronic, Sally McArthur, Swinburne University of Technology and CSIRO, Australia	MEMS and NEMS Group Room 202B - Session MN+NS+PS-WeM IoT Session: Multiscale Manufacturing: Enabling Materials and Processes **Moderators:** Susan Burkett, The University of Alabama, Roya Maboudian, University of California, Berkeley
8:00am		**INVITED: MN+NS+PS-WeM1** Miniaturizing 3D Printed Microfluidics: State-of-the-Art and Outlook, ***Greg Nordin***, Brigham Young University
8:20am		Invited talk continues.
8:40am	**INVITED: IPF+AS+BI+NS-WeM3** Harnessing Bacteria for Fabrication of Photoelectrodes and Pressure Sensors, *Y. Feng, K.E. Marusak, Y. Cao, E. Ngaboyamahina, J. Glass, L. You,* ***Stefan Zauscher***, Duke University	**MN+NS+PS-WeM3** A Novel Inkjet Printing Technology Based on Plasma Conversion of Metal-Salt Based Inks for the Fabrication of Microfabricated Sensors, *Y. Sui, R.M. Sankaran,* ***Christian Zorman***, Case Western Reserve University
9:00am	Invited talk continues.	**MN+NS+PS-WeM4** Full Wafer Thickness Through Silicon Vias for MEMS Devices, ***Andrew Hollowell***, *E. Baca, D. Dagel, M.B. Jordan, L. Menk, K. Musick, T. Pluym, J. McClain,* Sandia National Laboratories
9:20am	**INVITED: IPF+AS+BI+NS-WeM5** Surface Chemistry and Surface Analysis: Their Importance and Application in Industrial Genomics, ***Fiona Black***, Illumina Inc.	**MN+NS+PS-WeM5** Scaling from Die Level to Full 150 mm Wafer TSV Filling through Fluid Dynamics Modeling and Current Controlled Deposition, ***Ehren Baca***, *M.B. Jordan, L. Menk, K. Musick, P. Yeh, A.E. Hollowell,* Sandia National Laboratories
9:40am	Invited talk continues.	**MN+NS+PS-WeM6** Batch Level Electroless Under Bump Metallization for Singulated Semiconductor Die, ***Matthew Jordan***, *E. Baca, J. Pillars, C. Michael, A.E. Hollowell,* Sandia National Laboratories
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**INVITED: IPF+AS+BI+NS-WeM10** Design and Evaluation of Organosilica Nanosensors for Continuous Molecular Monitoring in Complex Biological Environments, ***Simon Corrie***, Monash Univ., Melbourne AU	**INVITED: MN+NS+PS-WeM10** MEMS-based Atomic Force Microscopy Probes: From Electromechanical to Optomechanical Vibrating Sensors, ***Bernard Legrand***, LAAS-CNRS, France; *L. Schwab,* LAAS-CNRS, Univ Tououse, France; *P. Allain, I. Favero,* MPQ, CNRS, Univ Paris Diderot, France; *M. Faucher, D. Théron,* IEMN, CNRS, Univ Lille, France; *B. Walter,* Vmicro SAS, France; *J.P. Salvetat,* CRPP, CNRS, Univ Bordeaux, France; *S. Hentz, G. Jourdan,* CEA-LETI, France
11:20am	Invited talk continues.	Invited talk continues.
11:40am	**INVITED: IPF+AS+BI+NS-WeM12** Optoregulated Biointerfaces, ***Aránzazu del Campo***, INM-Leibniz Institute for New Materials, Germany	**MN+NS+PS-WeM12** Suppressing Secondary Grain Growth in $Sc_{0.125}Al_{0.875}N$ Using a CMOS Compatible Electrode, ***Giovanni Esteves***, *M. Berg, M.D. Henry, B.A. Griffin, E.A. Douglas,* Sandia National Laboratories
12:00pm	Invited talk continues.	**MN+NS+PS-WeM13** A Low Voltage NEMS Relay. Design, Fabrication and Challenges, *A. Solot, A. Dinescu,* National Institute for R&D in Microtechnologies (IMT), Bucharest, Romania; *M. Fernandez-Bolaños, A.M. Ionescu,* École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; ***Gina Adam***, National Institute for R&D in Microtechnologies (IMT Bucharest), Romania

	Nanometer-scale Science and Technology Division **Room 203A - Session NS+2D+AN+MN+MP+SE-WeM** **Micro, Nano and Opto Mechanics** **Moderators:** Robert Ilic, National Institute of Standards and Technology, Alokik Kanwal, NIST Center for Nanoscale Science and Technology	**Processing and Characterization of Air-Liquid, Solid-Liquid and Air-Solid Interfaces Focus Topic** **Room 202A - Session PC+AS+BI+EM+PB+SS-WeM** **Novel Approaches and Challenges of Interfaces** **Moderators:** Andrei Kolmakov, National Institute of Standards and Technology (NIST), Xiao-Ying Yu, Pacific Northwest National Laboratory
8:00am		**INVITED: PC+AS+BI+EM+PB+SS-WeM1** Probing Chemical Species and Potential Profiles of Electrified Interfaces, ***Ethan J. Crumlin,*** Advanced Light Source, Lawrence Berkeley National Laboratory
8:20am	**NS+2D+AN+MN+MP+SE-WeM2** The Collective Behavior of Large Ensembles of Coupled MEMS Cantilevers with Varying Natural Frequencies, ***Christopher Wallin,*** National Institute of Standards and Technology, Center for Nanoscale Science and Technology; *N. Dick,* Tel Aviv University, Israel; *R. De Alba, D.A. Westly,* National Institute of Standards and Technology, Center for Nanoscale Science and Technology; *S. Grutzik,* Sandia National Laboratories; *A.T. Zehnder, R.H. Rand,* Cornell University; *V.A. Aksyuk,* National Institute of Standards and Technology, Center for Nanoscale Science and Technology; *S. Krylov,* Tel Aviv University, Israel; *B.R. Ilic,* National Institute of Standards and Technology, Center for Nanoscale Science and Technology	Invited talk continues.
8:40am	**INVITED: NS+2D+AN+MN+MP+SE-WeM3** Piezoelectric Optomechanical Systems, ***Krishna Coimbatore Balram,*** University of Bristol, UK	**PC+AS+BI+EM+PB+SS-WeM3** Observation of Electron Transfer in Riboflavin Reduction by In Situ Liquid SIMS, ***Rachel Komorek,*** *X.F. Yu, Z.H. Zhu, X-Y. Yu,* Pacific Northwest National Laboratory
9:00am	Invited talk continues.	**PC+AS+BI+EM+PB+SS-WeM4** Electrowetting of Liquid Drops Revisited by XPS, ***Sefik Suzer,*** *P. Gokturk, B. Ulgut,* Bilkent University, Turkey
9:20am	**NS+2D+AN+MN+MP+SE-WeM5** Absolute Deflection Measurements in a MEMS/NEMS Fabry-Perot Interferometry System, ***Roberto De Alba,*** *C.B. Wallin, G. Holland,* National Institute of Standards and Technology; *S. Krylov,* Tel Aviv University, Israel; *B.R. Ilic,* National Institute of Standards and Technology	**INVITED: PC+AS+BI+EM+PB+SS-WeM5** Probing Interfaces in Heterogeneous Catalysts at Atomic Scale: Current and Emerging STEM Techniques, ***Miaofang Chi,*** Oak Ridge National Laboratory
9:40am	**NS+2D+AN+MN+MP+SE-WeM6** Silicon on Insulator Electrostatically Actuated Bistable Cantilevers for Resonant Displacement/Acceleration Sensing, *O. HaLevy, E. Benjamin, N. Krakover, Y. Kessler,* ***Slava Krylov,*** Tel Aviv University, Israel	Invited talk continues.
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall –** **Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**INVITED: NS+2D+AN+MN+MP+SE-WeM10** Electron-Photon-Phonon Hybrid Systems Based on Compound Semiconductor Mechanical Resonators, ***Hiroshi Yamaguchi,*** NTT Basic Research Laboratories, Nippon Telegraph and Telephone Corporation, Japan	**PC+AS+BI+EM+PB+SS-WeM10** From 2D to Advanced 3D Surface Functionalization using Self-limiting Reactions in the Fluidized Bed Reactor Technology, ***Didier Arl,*** *T. Da Cunha, N. Adjeroud, K. Menguelti, M. Gerard, D. Lenoble,* Luxembourg Institute of Science and Technology (LIST), Luxembourg
11:20am	Invited talk continues.	
11:40am	**NS+2D+AN+MN+MP+SE-WeM12** Size Dependent Mechanics of Elastomers, ***Le Li,*** *N. Alsharif, K.A. Brown,* Boston University	
12:00pm		

Wednesday Morning, October 24, 2018

	Plasma Science and Technology Division Room 104B - Session PS+AS+EL+EM+SE-WeM Current and Future Stars of the AVS Symposium I **Moderator:** Eric A. Joseph, IBM Research Division, T.J. Watson Research	Plasma Science and Technology Division Room 104A - Session PS+EM-WeM Advanced Patterning **Moderators:** Jeffrey Shearer, IBM Research Division, Albany, NY, Yiting Zhang, KLA-Tencor
8:00am		**PS+EM-WeM1** Study of High Selective Silicon Nitride Etching Mechanisms in Remote Plasmas: Impact of Wafer Temperature, ***Emilie Prevost,*** STMicroelectronics, France*; L. Vallier, G. Cunge,* LTM, Univ. Grenoble Alpes, CEA-LETI, France*; C. De Buttet,* CEA-LETI, France*; S. Lagrasta,* STMicroelectronics, France*; C. Petit-Etienne,* LTM, Univ. Grenoble Alpes, CEA-LETI, France
8:20am	**PS+AS+EL+EM+SE-WeM2** Invited Talk-Future Stars of AVS Session: Ellipsometry at THz Frequencies: New Approaches for Metrology and Metamaterial-based Sensing, ***Tino Hofmann***[1], University of North Carolina at Charlotte	**PS+EM-WeM2** Mechanism of Highly Selective SiO_2 Etching over Si_3N_4 using a Cyclic Process with BCl_3 and Fluorocarbon Gas Chemistries, ***Miyako Matsui,*** Hitachi Ltd., Japan*; K. Kuwahara,* Hitachi High-Technologies Corp., Japan
8:40am	**PS+AS+EL+EM+SE-WeM3** Invited Talk-Future Stars of AVS Session: Remote Epitaxy – The Future for Stackable SiC Electronics, ***Rachael Myers-Ward***[1], U.S. Naval Research Laboratory*; J. Kim,* Massachusetts Institute of Technology*; M.T. DeJarld,* US Naval Research Laboratory*; K. Qiao, Y. Kim,* Massachusetts Institute of Technology*; S.P. Pavunny, D.K. Gaskill,* U.S. Naval Research Laboratory	**INVITED: PS+EM-WeM3** DSA Patterning for and Beyond CMOS, ***Patricia Pimenta Barros,*** CEA-LETI, France*; N. Posseme,* CEA, LETI, France*; S. Barnola,* CEA-LETI, France*; R. Tiron,* CEA-LETI, MINATEC, France*; A. Gharbi, MA. Argoud, Z. Chalupa, M.-G. Gusmao-Cacho,* CEA-LETI, France*; A. Paquet,* Arkema, France*; F. Delachat,* CEA-LETI, France*; C. Nicolet, C. Navarro,* Arkema, France
9:00am	**PS+AS+EL+EM+SE-WeM4** Invited Talk-Future Stars of AVS Session: Low-Temperature Growth for 3D Integration of van der Waals Materials, ***Christopher L. Hinkle***[1], University of Texas at Dallas	Invited talk continues.
9:20am	**PS+AS+EL+EM+SE-WeM5** Invited Talk-Future Stars of AVS Session: Engineering the Properties at Heusler Interfaces, ***Jason Kawasaki***[1], University of Wisconsin - Madison	**PS+EM-WeM5** Composition Modulation of SiGe for Si/SiGe Dual Channel Fin Application, ***Yohei Ishii,*** Hitachi High Technologies America Inc.*; Y.-J. Lee,* National Nano Divice Laboratories*; W.-F. Wu,* National Nano Device Laboratories*; K. Maeda,* Hitachi High Technologies America Inc.*; H. Ishimura,* Hitachi High-Technologies Taiwan Corp.*; M. Muira,* Hitachi High-Technologies Corp.
9:40am	**PS+AS+EL+EM+SE-WeM6** Invited Talk-Future Star of AVS Session: Atom Probe Tomography for 3D Semiconductor Devices Applications, ***Ajay Kumar Kambham***[1], GLOBALFOUNDRIES U.S. Inc.	**PS+EM-WeM6** Etching Mechanisms of Si Containing Materials in Remote Plasma Source using NF3 based Gas Mixture, ***Erwine Pargon****, V. Renaud, C. Petit-Etienne, L. Vallier, G. Tomachot, G. Cunge, O. Joubert,* Univ. Grenoble Alpes, CNRS, LTM, Grenoble, France*; J.-P. Barnes, N. Rochat,* Univ. Grenoble Alpes, CEA, LETI, Grenoble , France
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**PS+AS+EL+EM+SE-WeM10** Invited Talk-Future Stars of AVS Session: Three-Dimensional Imaging of Complex Oxide Interfaces, ***Divine P. Kumah***[1], North Carolina State University	**PS+EM-WeM10** Precise Control of Silicon Nitride Spacer Etching Selectively to Silicon for 3D CMOS Device*, V. Ah-Leung, N. Possémé,* ***Olivier Pollet****, S. Barnola,* CEA-LETI, France
11:20am	**PS+AS+EL+EM+SE-WeM11** Invited Talk-Future Stars of AVS Session: lluminating Physics of Magnetron Sputtering Discharges, ***Matjaz Panjan***[1], Jozef Stefan Institute, Slovenia	**PS+EM-WeM11** A Study on the Distortion of Poly Si Nano Hole Profile with High Aspect Ratio in sub X nm, ***Jin Won Lee****, J.Y. Lee, K.J. Seong, T.S. Kwon, H.H. Jeong, S.S. Hong, D.W. Han, B.R. Lim, A.R. Ji, Y.M. Oh, J.C. Park,* Samsung Electronics, Republic of Korea
11:40am	**INVITED: PS+AS+EL+EM+SE-WeM12** Peter Mark Memorial Award: Plasma-bio Interactions: Investigating Mechanisms to Enable New Applications, ***Peter Bruggeman***[2], University of Minnesota	**INVITED: PS+EM-WeM12** Etching Recipe Optimization Using Machine Learning, ***Takeshi Ohmori,*** *H. Nakada, M. Ishikawa, N. Kofuji, T. Usui, M. Kurihara,* Hitachi, Ltd., Japan
12:00pm	Invited talk continues.	Invited talk continues.

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

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

	Plasma Science and Technology Division **Room 104C - Session PS+MN-WeM** **IoT Session: Enabling IoT Era** **Moderators:** Ankur Agarwal, KLA-Tencor, David Lishan, Plasma-Therm LLC	**Surface Science Division** **Room 203C - Session SS+HC-WeM** **Catalytic Alloys: Understanding Heterogeneity** **Moderators:** April Jewell, Jet Propulsion Laboratory, Jean-Sabin McEwen, Washington State University
8:00am	**INVITED: PS+MN-WeM1** A "Moore's Law" for Packaging, ***Subramanian Iyer,*** University of California at Los Angeles	**INVITED: SS+HC-WeM1** Toward Surface Science-informed Design of Bifunctional Deoxygenation Catalysts, ***J. Will Medlin,*** University of Colorado Boulder
8:20am	Invited talk continues.	Invited talk continues.
8:40am	**PS+MN-WeM3** Fabrication, Chemical Lift-Off and Optical Characterization of Nanoscale III-Nitride Light Emitters, ***Lesley Chan***[1]*, C.D. Pynn, P. Shapturenka, T. Margalith, S.P. DenBaars, M.J. Gordon,* University of California at Santa Barbara	**SS+HC-WeM3** Computationally Assisted Correlative STEM and EXAFS Characterization for Multiscale Structure Determination of Tunable Rh/Au Bimetallic Nanoparticle Catalysts*, S. House, C.S. Bonifacio,* University of Pittsburgh*; J. Timoshenko,* Stony Brook University*; P. Kunal, H. Wan, Z. Duan, H. Li,* University of Texas at Austin*;* ***Judith Yang,*** University of Pittsburgh*; A.I. Frenkel,* Stony Brook University*; S. Humphrey, R. Crooks, G. Henkelman,* University of Texas at Austin
9:00am	**PS+MN-WeM4** High Radical Flux, with Low Ion and Photon Flux, Plasma Source, for MEM'S Technology, ***Marc Segers****, Y. Pilloux, D. Lishan, S. FERRAND,* Plasma-Therm LLC	**SS+HC-WeM4** Designing Heterogeneous Alloy Catalysts from First Principles and Surface Science, ***Charles Sykes,*** Tufts University
9:20am	**INVITED: PS+MN-WeM5** Use of Plasma in Advanced Packaging, ***Michael Seddon,*** ON Semi	**SS+HC-WeM5** Extracting Diffusing Parameters for Cu and S from Surface Segregation Data Recorded with AES on a Ni-Cu(S) Ternary Alloy, ***Jacobus Terblans,*** University of the Free State, South Africa*; X.-L. Yan,* University of the Free State, China*; J.Y. Wand,* Shantou University, China*; H.C. Swart,* University of the Free State, Republic of South Africa
9:40am	Invited talk continues.	**SS+HC-WeM6** Atomic and Electronic Structure of CoO Nanoislands on Au(111), ***Ana Sanchez-Grande,*** IMDEA Nanoscience, Spain*; J. Rodriguez-Fernandez,* Aarhus University, Denmark*; E. Carrasco, B. Cirera, K. Lauwaet,* IMDEA Nanoscience, Spain*; J. Fester,* Aarhus University, Denmark*; R. Miranda,* Universidad Autonoma Madrid, Spain*; J.V. Lauritsen,* Aarhus University, Denmark*; D. Ecija,* IMDEA Nanoscience, Spain
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**INVITED: PS+MN-WeM10** Low Temperature Plasmas in Nanotechnology Applications, ***Meyya Meyyappan,*** NASA Ames Research Center	**INVITED: SS+HC-WeM10** Using Water as a Co-catalyst in Heterogeneous Catalysis to Improve Activity and Selectivity, ***Lars Grabow,*** University of Houston
11:20am	Invited talk continues.	Invited talk continues.
11:40am	**PS+MN-WeM12** Gas Phase Synthesis of Pure III-V Semiconductor Nanoparticles from Bulk Metals by using Low Temperature Plasma, ***Necip Berker Uner****, E. Thimsen,* Washington University in St. Louis	**SS+HC-WeM12** Experimental and Theoretical Evaluation of Water Chemistry on Two-dimensional Silica and Aluminosilicate, ***Jin-Hao Jhang****, G.S. Hutchings,* Yale University*; J.A. Boscoboinik,* Center for Functional Nanomaterials Brookhaven National Laboratory*; E.I. Altman,* Yale University
12:00pm	**PS+MN-WeM13** Investigation of Fundamental Hydrocarbon Plasma Chemistry for Unraveling Film Deposition Processes on Nanomaterials, ***Tara Van Surksum****, E.R. Fisher,* Colorado State University	**SS+HC-WeM13** Double Layer Formation of Water Molecules on Graphene*, A. Akaishi, T. Yonemaru,* ***Jun Nakamura,*** The University of Electro-Communications (UEC-Tokyo), Japan

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

	Thin Films Division **Room 102A - Session TF+EM+MI-WeM** **Thin Film Processes for Electronics and Optics I** **Moderators:** Joe Becker, Kurt J. Lesker Company, Virginia Wheeler, U.S. Naval Research Laboratory	**Vacuum Technology Division** **Room 203B - Session VT-WeM** **Vacuum Technology Developments** **Moderators:** Jason Carter, Argonne National Laboratory, Yulin Li, Cornell University
8:00am	**INVITED: TF+EM+MI-WeM1** Crystalline Conductors: Transition Metal Nitride Materials and Device Applications, ***David Meyer,*** *D.S. Katzer, N. Nepal, B.P. Downey, M.T. Hardy, D.F. Storm,* U.S. Naval Research Laboratory	**VT-WeM1** Trace Helium Effects from High Pressure Swing Adsorption Nitrogen Generator on Semiconductor Capital Equipment Manufacturer, ***William Johnson,*** Applied Materials, Varian Semiconductor Equipment
8:20am	Invited talk continues.	**VT-WeM2** Remote Handling Clamps for Flange Connections in Vacuum Service, ***Ryan McCall,*** Technetics Group
8:40am	**TF+EM+MI-WeM3** Growth Mechanism and Characteristics of Hf-Si-O Film by PE-ALD using TDMAS and TDMAH Precursors and Oxygen Plasma Gas, ***Toshihide Nabatame,*** National Institute for Materials Science (NIMS), Japan; *M. Inoue,* National Institute for Materials Science (NIMS); *E. Maeda, K. Yuge, M. Hirose,* Shibaura Institute of Technology, Japan; *M. Takahashi, K. Ito,* Joining and Welding Research Institute, Osaka University, Japan; *N. Ikeda,* National Institute for Materials Science (NIMS), Japan; *T. Ohishi,* Shibaura Institute of Technology, Japan; *A. Ohi,* National Institute for Materials Science (NIMS), Japan	
9:00am	**TF+EM+MI-WeM4** Atomic Layer Epitaxy of Ultra-wide Bandgap Ga_2O_3 Films, ***Virginia Wheeler,*** *N. Nepal,* U.S. Naval Research Laboratory; *L.O. Nyakiti,* Texas A&M University; *D.R. Boris, S.G. Walton, B.P. Downey, D.J. Meyer, C.R. Eddy Jr.,* U.S. Naval Research Laboratory	**VT-WeM4** Role of Rotor Surface Conditions on Calibration Constant of Spinning Rotor Gauges, ***Tim Verbovsek,*** Institute of Metals and Technology, Slovenia
9:20am	**TF+EM+MI-WeM5** Effects of Process Gases and Gate TiN Electrode during the Post Deposition Anneal to ALD-Al_2O_3 Dielectric Film, ***Masaya Saito,*** *A. Teramoto, T. Suwa, K. Nagumo, Y. Shiba, R. Kuroda, S. Sugawa,* Tohoku University, Japan	**VT-WeM5** Condensation-based Low-grade Heat Powered Dual-chamber Vacuum Technology, ***Tony Guo,*** New Jersey Institute of Technology
9:40am	**TF+EM+MI-WeM6** Controlling the NbO_xMaterials System for Neuromorphic Computing, ***Alexander C. Kozen,*** U.S. Naval Research Laboratory; *Z.R. Robinson, A.H. Rowley,* The College at Brockport - SUNY; *T.J. Larrabee, M.E. Twigg, H.S. Cho, S.M. Prokes,* U.S. Naval Research Laboratory	**VT-WeM6** Vacuum Design and Testing of the ARIEL Radio Frequency Quadrupole Buncher and Cooler (ARQB), ***Geoff Hodgson,*** *B. Barquest,* TRIUMF, Canada
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall –** **Technology Spotlight Sessions in Booth #168, Exhibit Hall**	
11:00am	**TF+EM+MI-WeM10** Sputtering Power Dependent on Switching Characteristics of ZnO-based Transparent Resistive Memory Devices, ***Firman Mangasa Simanjuntak,*** Tohoku University, Japan; *T. Ohno,* Oita University, Japan; *S. Samukawa,* Tohoku University, Japan	
11:20am	**TF+EM+MI-WeM11** Influence of Iintrinsic and Extrinsic Dopants in HfO_x Films for Resistive Switching Memory, ***SungYeon Ryu,*** *Y. Kim,* Seoul National University of Science and Technology, Republic of Korea; *W.Y. Park, S.G. Kim,* SK Hynix Inc., Republic of Korea; *B.J. Choi,* Seoul National University of Science and Technology, Republic of Korea	
11:40am	**TF+EM+MI-WeM12** Scaling up of an Electrochemical Atomic Layer Deposition of Copper, *D. Dictus,* Lam Research Corporation, Belgium; ***Aniruddha Joi,*** Lam Research Corporation; *G. Alessio Verni,* Lam Research Corporation, Belgium; *K. Vandersmissen,* Imec, Belgium; *B. Frees,* Lam Research Corporation, Belgium; *Y. Yezdi,* Lam Research Corporation	
12:00pm	**TF+EM+MI-WeM13** A Novel High-deposition-rate PECVD Process based on Hollow Cathode Plasma Technique, *S. Shayestehaminzadeh, N. Rivolta,* AGC Glass Europe, Belgium; *M. Datz,* Interpane E&B GmbH; ***John Chambers,*** AGC North America; *H. Wiame,* AGC Glass Europe, Belgium	

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

10:00am		
10:20am	**EW-WeB2** HAXPES-Lab: A Laboratory Based System for HAXPES Measurements, ***Susanna Eriksson,*** Scienta Omicron	
10:40am	**EW-WeB3** Coatings Characterization Solution from Fischer Technology - XRF, Nanoindentation and Progressive Load Scratch, ***Rahul Nair,*** Fischer Scientific	
11:00am		

Wednesday Lunch, October 24, 2018

	Exhibitor Technology Spotlight Workshops **Room Hall A - Session EW-WeL** **Exhibitor Technology Spotlight Session V** **Moderator:** Christopher Moffitt, Kratos Analytical Inc	
12:00pm		
12:20pm	**FREE LUNCH IN EXHIBIT HALL*** **(See Registration Tickets)** ***while supplies last**	
12:40pm	**EW-WeL3** The TESLA JT SPM, ***Markus Maier,*** Scienta Omicron GmbH, Germany	
1:00pm	**EW-WeL4** MKS Instruments, Inc., 523 Granville-Phillips® Wide-Range Cold Cathode Transducer: Applications and Market Update, ***David Kelly,*** MKS Instruments	
1:20pm		
1:40pm		
2:00pm		

	2D Materials Focus Topic **Room 201B - Session 2D+MN+NS+SS-WeA** **IoT Session: Surface Chemistry, Functionalization, Bio and Sensor Applications** **Moderator:** Daniel Walkup, National Institute of Standards and Technology (NIST)/ University of Maryland, College Park	**Actinides and Rare Earths Focus Topic** **Room 202C - Session AC+AS+SA-WeA** **Chemistry and Physics of the Actinides and Rare Earths** **Moderators:** Krzysztof Gofryk, Idaho National Laboratory, Ladislav Havela, Charles University, Prague, Czech Republic, David Shuh, Lawrence Berkeley National Laboratory
2:20pm	**2D+MN+NS+SS-WeA1** Impact of Hydrogen on Graphene-based Materials: Atomistic Modeling and Simulation of HRSTEM Images, *C. Guedj,* Univ. Grenoble Alpes, CEA, LETI, France; *L. Jaillet, F. Rousse,* ***Stéphane Redon,*** Univ. Grenoble Alpes, CNRS, INRIA, Grenoble INP*, LJK, France	**INVITED: AC+AS+SA-WeA1** New Directions in f-Block Separations Chemistry based on Metal and Ligand Redox Activity, ***Eric Schelter,*** *A. McSkimming,* University of Pennsylvania; *J. Su,* Los Alamos National Laboratory,; *T. Cheisson, H. Fang,* University of Pennsylvania; *L. Moreau,* Lawrence Berkeley National Laboratory, Berkeley; *B.E. Cole, B.C. Manor, M.R. Gau, P.J. Carroll,* University of Pennsylvania; *E.R. Batista, P. Yang,* Los Alamos National Laboratory; *C. Booth,* Lawrence Berkeley National Laboratory; *Y. Qiao, J.A. Bogart,* University of Pennsylvania
2:40pm	**2D+MN+NS+SS-WeA2** High Density H2 and He Plasmas: Can They be used to Treat Graphene?, ***Hasan-Al Mehedi,*** Laboratoire des Technologies de la Microélectronique, CNRS-UJF, France; *D. Ferrah,* Cea, Leti, Minatec, France; *J. Dubois, C. Petit-Etienne,* Laboratoire des Technologies de la Microélectronique, CNRS-UJF; *H. Okuno,* Cea, Inac/sp2m/lemma; *V. Bouchiat,* Institut Néel, CNRS-UJF-INP; *O.J. Renault,* CEA/LETI-University Grenoble Alpes, France; *G. Cunge,* Laboratoire des Technologies de la Microélectronique, CNRS-UJF, France	Invited talk continues.
3:00pm	**2D+MN+NS+SS-WeA3** Novel Binder-free Ag@Ni(OH)$_2$ over Graphene/Ni Foam and Glucose Sensing, ***Tong-Hyun Kang,*** *J.-S. Yu,* DGIST, Republic of Korea	**INVITED: AC+AS+SA-WeA3** Bond Distance Variations for Lanthanide and Actinide Compounds and its Implication, ***Tsuyoshi Yaita,*** Japan Atomic Energy Agency, Japan; *S. Suzuki, T. Kobayashi, H. Shiwaku,* Materials Sciences Research Center, Japan Atomic Energy Agency, Japan
3:20pm	**2D+MN+NS+SS-WeA4** Surface Modification and Magnetization of Carbon Based Nanostructures, ***Rina Tannenbaum,*** University of Stony Brook; *I.T. Kim,* Gachon University, Korea; *S. Sharma,* University of Stony Brook	Invited talk continues.
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall**	
4:20pm	**2D+MN+NS+SS-WeA7** Chemical Modification of Graphene and Carbon Nano Tubes as viewed by XPS and NEXAFS Spectroscopies underpinned by DFT Spectra Simulation, *C. Ehlert, E. Donskyi,* Bundesanstalt für Materialforschung und -prüfung (BAM), Germany; *P.L. Girard-Lauriault,* McGill University, Canada; *R. Illgen,* Bundesanstalt für Materialforschung und -prüfung (BAM), Germany; *A. Lippitz,* Bundesanstalt für Materialforschung und -prüfung (BAM); *R. Haag, M. Adeli,* Freie Universität Berlin, Germany; ***Wolfgang Unger,*** Bundesanstalt für Materialforschung und -prüfung (BAM), Germany	**INVITED: AC+AS+SA-WeA7** Spectroscopic Studies of Trivalent Actinide Coordination, ***Benjamin Stein,*** *M.G. Kerlin, A.L. Morgenstern, E. Batista, S.E. Bone, S.K. Cary,* Los Alamos National Laboratory; *J. Lezama Pacheco,* SLAC National Accelerator Laboratory; *S.A. Kozimor, P. Yang,* Los Alamos National Laboratory
4:40pm	**2D+MN+NS+SS-WeA8** Elastic Spongy Graphene-Functionalized Silicon Anode with Excellent Cycle Stability in Li battery, ***Byong-June Lee,*** *J.-S. Yu,* DGIST, Republic of Korea	Invited talk continues.
5:00pm	**2D+MN+NS+SS-WeA9** Electrical and Structural Changes of Multilayer WSe_2 Transistors: Atmospheric Gas Adsorption and Long Term Aging, ***Anna Hoffman,*** *M.G. Stanford, C. Zhng,* University of Tennessee Knoxville; *I. Ivanon,* Oak Ridge National Laboratory; *A.D. Oyedele, D.G. Mandrus,* University of Tennessee Knoxville; *L. Liang, B.G. Sumpter, K. Xiao,* Oak Ridge National Laboratory; *P.D. Rack,* University of Tennessee Knoxville	**AC+AS+SA-WeA9** Speciation of Rare Earth Elements in Coal Harvesting Byproducts, ***Xu Feng,*** *M. Council-Troche, J.R. Morris, A. Noble, R.-H. Yoon,* Virginia Polytechnic Institute and State University
5:20pm	**2D+MN+NS+SS-WeA10** Ion Migration Studies in Exfoliated 2D Molybdenum Oxide via Ionic Liquid Gating for Neuromorphic Device Applications, ***Cheng Zhang,*** *P.R. Pudasaini, A.D. Oyedele,* University of Tennessee Knoxville; *A.V. Ivelev, K. Xiao, T.Z. Ward,* Oak Ridge National Laboratory; *D.G. Mandrus,* University of Tennessee Knoxville; *O.S. Ovchinnikova,* Oak Ridge National Laboratory; *P.D. Rack,* University of Tennessee Knoxville	**AC+AS+SA-WeA10** Exotic Electronic Properties of Strongly Correlated Compounds $NpPd_3$ and $PuPd_3$, ***Krzysztof Gofryk,*** Idaho National Laboratory; *J.-C. Griveau, E. Colineau,* Institute for Transuranium Elements; *K.A. McEwen,* University College London; *W.J. Nellis,* Harvard University; *J.L. Smith,* Los Alamos National Laboratory
5:40pm	**2D+MN+NS+SS-WeA11** Infrared Absorption of Nanometer-scale Thermally Reduced Graphene Oxide, ***Erin Cleveland,*** *J. Nolde, G. Jernigan, E. Aifer,* U.S. Naval Research Laboratory	
6:00pm	**2D+MN+NS+SS-WeA12** Dielectric Properties of Carbon Nanomembranes prepared from aromatic Self-Assembled Monolayers and their application in All-Carbon Capacitors, ***Xianghui Zhang,*** *P. Penner, E. Marschewski,* Bielefeld University, Germany; *T. Weimann, P. Hinze,* Physikalisch-Technische Bundesanstalt, Braunschweig, Germany; *A. Gölzhäuser,* Bielefeld University, Germany	

	Extending Additive Manufacturing to the Atomic Scale **Focus Topic** **Room 102B - Session AM+MP+NS-WeA** **Atomic Scale Manipulation with SPM** **Moderator:** Sven Rogge, University of New South Wales, Australia	**Applied Surface Science Division** **Room 204 - Session AS+SE-WeA** **Industrial and Practical Applications of Surface Analysis** **Moderators:** Jeffrey Fenton, Medtronic, Svitlana Pylypenko, Colorado School of Mines
2:20pm	**INVITED: AM+MP+NS-WeA1** Advanced Scanning Probe Lithography: Processes, Nanopatterning and Nanoelectronics, ***Ricardo Garcia,*** Inst Ciencia Materiales Madrid, CSIC, Spain	**AS+SE-WeA1** Identification of Unknown Contaminants in Industrial Applications Using MS/MS in Combination with High Resolution Mass Spectrometry, *A. Pirkl,* ***Julia Zakel,*** *D. Rading,* IONTOF GmbH, Germany*; N.J. Havercroft,* IONTOF USA*; S. Kayser, H. Arlinghaus, R. Moellers, E. Niehuis,* IONTOF GmbH, Germany
2:40pm	Invited talk continues.	**AS+SE-WeA2** ToF-SIMS Analysis of Glass and Glass Coatings, ***Christine Mahoney,*** Corning Inc.
3:00pm	**AM+MP+NS-WeA3** Integrated Devices made Using Atomically Precise Advanced Manufacturing, *D. Ward, D. Campbell, M. Marshall, T.-M. Lu, L. Tracy, L. Maurer, A. Baczweski,* ***Shashank Misra,*** Sandia National Laboratories	**INVITED: AS+SE-WeA3** Problem Solving with Valence Band Spectroscopy and SIMS MS/MS, ***Steven Pachuta,*** *D.M. Poirier,* 3M Company
3:20pm		Invited talk continues.
3:40pm	**BREAK - Complimentary Refreshments in Exhibit Hall**	
4:00pm		
4:20pm	**AM+MP+NS-WeA7** Electrical Transport Properties of Si:P δ-layer Devices, ***Ranjit Kashid,*** *X. Wang, Namboodiri, J. Hagmann,* National Institute of Standards and Technology (NIST)*; S.W. Schmucker,* University of Maryland College Park*; J. Wyrick, C. Richter, R.M. Silver,* National Institute of Standards and Technology (NIST)	**AS+SE-WeA7** *Surface and In-depth XPS Characterization of Liquid and Cured Control Release Additives (CRAs) Used in Silicone-Based Release Coatings,* ***Brian Strohmeier,*** *K. Rhodes, R. Munigeti, J. Orlowski,* Avery Dennison Corporation
4:40pm	**AM+MP+NS-WeA8** Atomically Precise Tip Positioning for Automated Writing of Atomic-scale Devices, ***James Owen,*** *E. Fuchs, J.N. Randall, J.R. Von Ehr,* Zyvex Labs	**AS+SE-WeA8** Differentiating Silicones Using SIMS, ***Paul Vlasak,*** *M.L. Pacholski,* The Dow Chemical Company
5:00pm	**INVITED: AM+MP+NS-WeA9** Kilobyte Scale Data Storage through Autonomous Atom Assembly, *A.F. Otte,* ***David Coffey,*** Delft University of Technology, Netherlands	**AS+SE-WeA9** Uranium Particles Analysis and Imaging Using ToF-SIMS for Source Identification, ***Juan Yao,*** *E. Krogstad, S. Shen, Z.H. Zhu, X-Y. Yu,* Pacific Northwest National Laboratory
5:20pm	Invited talk continues.	**AS+SE-WeA10** XPS Depth Profiling of Organic Resins with Inorganic Inclusions, ***Benjamin Schmidt,*** *J. Newman, J.E. Mann, L. Swartz,* Physical Electronics
5:40pm	**INVITED: AM+MP+NS-WeA11** Extending the Capabilities of STM-based Dopant Device Fabrication, *T. Skeren, N. Pascher, S.A. Köster,* ***Andreas Fuhrer,*** IBM Research - Zurich, Switzerland	**AS+SE-WeA11** Application of X-ray Photoelectron Spectroscopy to Degradation Studies of Electrodes in Fuel Cells and Electrolyzers, ***Kateryna Artyushkova,*** University of New Mexico*; N. Danilovic,* Lawrence Berkeley Lab, University of California, Berkeley*; C. Capuano,* Proton on site*; A. Serov,* Pajarito Powder LLC*; P. Atanassov,* University of New Mexico
6:00pm	Invited talk continues.	**AS+SE-WeA12** Application of X-ray Photoelectron Spectroscopy in Semiconductor Industry, ***Yibin Zhang,*** *Z. Bayindir, Z. Sun, M. Zhu, J. Gao, X. Wang, T. Han, J. Shu, D. Shao, J. Riendeau, J. Liu,* GLOBALFOUNDRIES

Wednesday Afternoon, October 24, 2018

	Biomaterial Interfaces Division Room 104B - Session BI+AC+AS+HC+NS+SS+TF-WeA Current and Future Stars of the AVS Symposium II **Moderator:** David Boris, U.S. Naval Research Laboratory	Biomaterial Interfaces Division Room 101B - Session BI-WeA Microbes and Fouling at Surfaces **Moderator:** Caitlin Howell, University of Maine
2:20pm	**INVITED: BI+AC+AS+HC+NS+SS+TF-WeA1** Medard W. Welch Award Lecture: A Surface Scientist's Journey from Small Molecules to Biomolecules and Biomaterials, ***David G. Castner***[1], University of Washington	
2:40pm	Invited talk continues.	
3:00pm	**BI+AC+AS+HC+NS+SS+TF-WeA3** Invited Talk-Future Stars of AVS Session: Making, Studying, and Designing Hierarchically Structured Soft Materials, ***Keith A. Brown***[2], Boston University	**INVITED: BI-WeA3** Gaede-Langmuir Award Lecture: From Description to Prediction of Biointerphase Reactions, ***Michael Grunze***[3], Max Planck Institute for Medical Research, Germany; *H.J. Kreuzer,* Dalhousie University, Canada
3:20pm	**BI+AC+AS+HC+NS+SS+TF-WeA4** Invited Talk-Future Stars of AVS Session: Vapor Phase Infiltration for Transforming Polymers into Hybrid Materials: Processing Kinetics and Applications, ***Mark Losego***[2], Georgia Institute of Technology	Invited talk continues.
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall**	
4:20pm	**BI+AC+AS+HC+NS+SS+TF-WeA7** Invited Talk-Future Stars of AVS Session: Surface Preparation Methods for the Selective Oxidation of Ethanol to Acetaldehyde over TiO_2/Au(111), ***Ashleigh Baber***[2], *D.T. Boyle, J. Wilke, V. Lam, D. Schlosser,* James Madison University	**INVITED: BI-WeA7** Unraveling Complexities at the Adhesive Interface of Acorn Barnacles, ***Kenan Fears***, *C.R. So, D.H. Leary, H. Ryou, J. Schultzhaus, C. Wang,* US Naval Research Laboratory; *B. Orihuela, D. Rittschof,* Duke University Marine Laboratory; *C.M. Spillmann, K.J. Wahl,* US Naval Research Laboratory
4:40pm	**BI+AC+AS+HC+NS+SS+TF-WeA8** Invited Talk-Future Stars of AVS Session: Single Atom Catalysis: An Atomic-Scale View, ***Gareth Parkinson***[2], TU Wien, Austria	Invited talk continues.
5:00pm	**BI+AC+AS+HC+NS+SS+TF-WeA9** Invited Talk-Future Stars of AVS Session: Multimodal Chemical and Functional Imaging of Nanoscale Transformations Away from Equilibrium, ***Olga Ovchinnikova***[2], Oak Ridge National Laboratory	**BI-WeA9** Ultra Low Fouling Zwitterionic Coatings – Influence of Molecular Architecture on Fouling Inhibition, ***Axel Rosenhahn***, *J. Koc,* Ruhr-University Bochum, Germany; *S. Bauer,* Ruhr-Universität Bochum, Germany; *J. Finlay, A.S. Clare,* Newcastle University; *E. Schoenemann,* University of Potsdam; *A. Laschewsky,* University of Potsdam
5:20pm	**BI+AC+AS+HC+NS+SS+TF-WeA10** Invited Talk-Future Stars of AVS Session: Expanding the Structural Toolkit to Characterize Heavy Actinide Complexes, ***Rebecca Abergel***[2], Lawrence Berkeley Lab, University of California, Berkeley; *G. Deblonde, A. Mueller, P. Ercius,* Lawrence Berkeley National Laboratory; *A.M. Minor,* Lawrence Berkeley Lab, University of California, Berkeley; *C.H. Booth, W.A. de Jong,* Lawrence Berkeley National Laboratory; *R. Strong,* Fred Hutchinson Cancer Research Center	**BI-WeA10** Biomimetic Surfaces on Chitosan Membranes with Enhanced Antibacterial Properties Produced by Directed Plasma Nanosynthesis, ***Camilo Jaramillo***, *A.F. Civantos, J.P. Allain,* University of Illinois at Urbana-Champaign
5:40pm	**BI+AC+AS+HC+NS+SS+TF-WeA11** Invited Talk-Future Stars of AVS Session: Trends in Adsorbate Interactions with Bimetal Surfaces, ***Liney Arnadottir***[2], *L.H. Sprowl,* Oregon State University	**BI-WeA11** How Do Geobacter Aggregates Communicate: New Understanding from In Situ Liquid SIMS, ***Wenchao Wei***, *R. Komorek,* Pacific Northwest National Laboratory; *C. Yang, F. Liu,* Yantai Institute of Coastal Zone Research; *Z.H. Zhu, X-Y. Yu,* Pacific Northwest National Laboratory
6:00pm		

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

	Electronic Materials and Photonics Division **Room 101A - Session EM+2D+SS-WeA** **Wide and Ultra-Wide Bandgap Materials for Electronic Devices: Growth, Modeling and Properties** **Moderators:** Erica Douglas, Sandia National Laboratories, Rachael Myers-Ward, U.S. Naval Research Laboratory	**Fundamental Discoveries in Heterogeneous Catalysis Focus Topic** **Room 201A - Session HC+SS-WeA** **Theory and Dynamics of Heterogeneously Catalyzed Reactions** **Moderator:** Erin Iski, University of Tulsa
2:20pm		**HC+SS-WeA1** First-Principles Kinetic Monte Carlo Simulation of CO Oxidation on PdO(101): Role of Oxygen Vacancies, ***Minkyu Kim***[1], *A. Asthagiri,* Ohio State University
2:40pm	**EM+2D+SS-WeA2** 2300 V Reverse Breakdown Voltage Ga_2O_3 Schottky Rectifiers, ***Jiancheng Yang***[2], *F.R. Ren,* University of Florida; *M.J. Tadjer,* U.S. Naval Research Laboratory; *S.J. Pearton,* University of Florida; *A. Kuramata,* Tamura Corporation and Novel Crystal Technology, Inc., Japan	**HC+SS-WeA2** Surface Reactivity of Activated CO_2, ***Richard van Lent***[1], Leiden University, Netherlands; *A.J. Walsh, M.A. Gleeson,* DIFFER, Netherlands; *L.B.F. Juurlink,* Leiden University, Netherlands
3:00pm	**EM+2D+SS-WeA3** Characterization of β-$(Al,Ga,In)_2O_3$ Epitaxial Films for UV Photodetector Applications, ***Luke Lyle***, *L.M. Porter, R. Davis,* Carnegie Mellon University; *S. Okur, G.S. Tompa,* Structured Materials Industries, Inc.; *M. Chandrashekhar, V. Chava, J. Letton,* University of South Carolina	**INVITED: HC+SS-WeA3** Shining Light on Complexity: State- and Energy-Resolved Studies of Gas-Surface Reaction Dynamics and Mechanism, ***Arthur Utz***, Tufts University
3:20pm	**EM+2D+SS-WeA4** High Three-terminal Breakdown Voltage Quasi-two-dimensional β -Ga_2O_3 Field-effect Transistors with a Dual Field Plate Structure, ***Jinho Bae***, Korea University, Republic of Korea; *H.W. Kim, I.H. Kang,* Korea Electrotechnology Research Institute (KERI), Republic of Korea; *G.S. Yang, S.Y. Oh, J.H. Kim,* Korea University, Republic of Korea	Invited talk continues.
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall**	
4:20pm	**INVITED: EM+2D+SS-WeA7** GaN Vertical Device Technology and its Future, ***Srabanti Chowdhury***, UC Davis	**HC+SS-WeA7** Vibration-driven Reaction of CO_2 on Cu Surfaces via Eley-Rideal Type Mechanism, ***Junji Nakamura***, *J.M. Quan, T. Kozarashi, T. Mogi, T. Imabayashi, K. Takeyasu, T. Kondo,* University of Tsukuba, Japan
4:40pm	Invited talk continues.	**INVITED: HC+SS-WeA8** First Principles Reaction Kinetics over Metals, Oxides and Nanoparticles, ***Henrik Grönbeck***, Chalmers University of Technology, Gothenburg, Sweden
5:00pm	**EM+2D+SS-WeA9** Effects of Proton Irradiation Energy on SiN_x/AlGaN/GaN Metal-insulator-semiconductor High Electron Mobility Transistors, ***Chaker Fares***, *F.R. Ren,* University of Florida; *J.H. Kim,* Korea University, Republic of Korea; *S.J. Pearton,* University of Florida; *C.F. Lo, J.W. Johnson,* IQE; *G.S. Yang,* Korea University, Republic of Korea	Invited talk continues.
5:20pm	**EM+2D+SS-WeA10** Cesium-Free III-Nitride Photocathodes Based on Control of Polarization Charge, ***Douglas Bell***, Jet Propulsion Laboratory, California Institute of Technology; *E. Rocco, F. Shahedipour-Sandvik,* SUNY Polytechnic Institute; *S. Nikzad,* Jet Propulsion Laboratory, California Institute of Technology	**HC+SS-WeA10** Formation of Pd/Ag Sandwiches, a Stable PdAg Subsurface Alloy, and the Pd Segregation induced by CO and O_2, Studied with STM, Ambient-pressure XPS, and DFT, ***Matthijs van Spronsen***, Lawrence Berkeley National Laboratory; *K. Duanmu,* UCLA; *R. Madix,* Harvard University; *M.B. Salmeron,* Lawrence Berkeley National Laboratory; *P. Sautet,* UCLA; *C. Friend,* Harvard University
5:40pm	**EM+2D+SS-WeA11** Current Enhancement for Ultra-Wide Bandgap AlGaN High Electron Mobility Transistors by Regrowth Contact Design, ***Erica Douglas***, *B. Klein, S. Reza, A.A. Allerman, R.J. Kaplar, A.M. Armstrong, A.G. Baca,* Sandia National Laboratories	**5:30pm Heterogeneous Catalysis Graduate Student Presentation Awards Reception**
6:00pm	**EM+2D+SS-WeA12** Understanding Homoepitaxial GaN Growth, ***Jennifer Hite***, *T.J. Anderson, M.A. Mastro, L.E. Luna, J.C. Gallagher, J.A. Freitas, C.R. Eddy,* U.S. Naval Research Laboratory	

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

[2] **National Student Award Finalist**

	Advanced Ion Microscopy Focus Topic **Room 203B - Session HI-WeA** **Novel Beam Induced Material Engineering & Nano-Patterning** **Moderators:** Armin Gölzhäuser, Bielefeld University, Germany, Olga Ovchinnikova, Oak Ridge National Laboratory	**MEMS and NEMS Group** **Room 202B - Session MN+2D+AN+NS-WeA** **IoT Session: MEMS for IoT: Chemical and Biological Sensing** **Moderators:** Robert Davis, Brigham Young University, Sushma Kotru, The University of Alabama
2:20pm	**INVITED: HI-WeA1** Delving into the Finer Details of Helium FIBID, ***Frances Allen,*** University of California, Berkeley	**INVITED: MN+2D+AN+NS-WeA1** BioMEMS for Eye Applications, ***Yu-Chong Tai,*** California Institute of Technology
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**INVITED: HI-WeA3** Anderson localization of Graphene by Helium Ion Irradiation, ***Yuichi Naitou,*** *S. Ogawa,* National Institute of Advanced Industrial Science and Technology (AIST), Japan	**MN+2D+AN+NS-WeA3** Real-Time, Single Cell, Size Measurements using a Facile, Multimode Microwave Resonator, ***Selim Hanay,*** *H. Aydogmus, A. Secme, H.S. Pisheh, M. Kelleci,* Bilkent University, Turkey
3:20pm	Invited talk continues.	
3:40pm	**BREAK - Complimentary Refreshments in Exhibit Hall**	
4:00pm		
4:20pm	**INVITED: HI-WeA7** The Frontiers of Focused Ion Beam in Semiconductor Applications, ***Shida Tan,*** Intel Corporation	**INVITED: MN+2D+AN+NS-WeA7** Magnetic Microsystems for Communications, ***Rob Candler,*** University of California at Los Angeles
4:40pm	Invited talk continues.	Invited talk continues.
5:00pm	**HI-WeA9** 2D Materials Under Ion Irradiation: In-situ Experiments and the Role of the Substrate, ***Gregor Hlawacek,*** *S. Kretschmer,* Helmholtz Zentrum Dresden-Rossendorf, Germany; *M. Maslov,* Moscow Institute of Physics and Technology; *S. Ghaderzadeh, M. Ghorbani-Asl, A.V. Krasheninnikov,* Helmholtz Zentrum Dresden-Rossendorf, Germany	**INVITED: MN+2D+AN+NS-WeA9** MEMS-Based Resonant Sensors for IoT Applications, ***Oliver Brand,*** *M. Kim, P. Getz,* Georgia Institute of Technology
5:20pm	**HI-WeA10** Sample Heating Effects from Light Ions in Thin Films, ***John A. Notte,*** *B.B. Lewis,* Carl Zeiss Microscopy, LLC	Invited talk continues.
5:40pm	**HI-WeA11** Helium Ion Direct Write Patterning of Superconducting Electronics, ***Shane Cybart,*** *E.Y. Cho, H. Li,* UC Riverside; *Y. Naitou, S. Ogawa,* National Institute of Advanced Industrial Science and Technology (AIST), Japan	**MN+2D+AN+NS-WeA11** Etched Silicon Microcolumn For Tunable Thermal Gradient Gas Chromatography, ***Aaron Davis,*** *P. Schnepf, P.S. Ng, R.R. Vanfleet, R.C. Davis, B.D. Jensen,* Brigham Young University
6:00pm		

	Nanometer-scale Science and Technology Division **Room 203A - Session NS+MN+PC+SS-WeA** **IoT Session: Bio at the Nanoscale** **Moderators:** Juraj Topolancik, Roche Sequencing Solutions, Liya Yu, NIST Center for Nanoscale Science and Technology	**Plasma Biology, Agriculture, and Environment Focus Topic** **Room 104A - Session PB+BI+PC+PS-WeA** **Plasma Agriculture & Environmental Applications** **Moderator:** Deborah O'Connell, University of York, UK
2:20pm		**INVITED: PB+BI+PC+PS-WeA1** Pulsed Power Applications for Farming and Food Processing, ***Koichi Takaki,*** Iwate University, Japan
2:40pm		Invited talk continues.
3:00pm	**NS+MN+PC+SS-WeA3** Nanoscale Label-free Imaging of Protein Molecules via Photo-induced Force Microscopy, *D. Nowak,* ***Sung Park,*** Molecular Vista	**INVITED: PB+BI+PC+PS-WeA3** Stimulus Control on Organisms Using Pulsed Power Technology, ***Douyan Wang,*** *T. Namihira,* Institute of Pulsed Power Science, Kumamoto University, Japan
3:20pm	**NS+MN+PC+SS-WeA4** Evaluating Reaction-diffusion Immunoassays via High-resolution Imaging Techniques, ***Imanda Jayawardena,*** University of Queensland, Australia*; S. Corrie,* Monash University, Australia*; L. Grondahl,* University of Queensland, Australia	Invited talk continues.
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall**	
4:20pm	**INVITED: NS+MN+PC+SS-WeA7** The Last Nanometer – Hydration Structure of DNA and Solid Surfaces Probed by Ultra-High Resolution AFM, ***Uri Sivan,*** *K. Kuchuk, I. Schlesinger,* Technion - Israel Institute of Technology, Israel	**PB+BI+PC+PS-WeA7** Synthesis of Nitrates by Atmospheric Microplasma in Aqueous Solution, ***Nicolas Maira,*** *F. Reniers,* Université Libre de Bruxelles, Belgium
4:40pm	Invited talk continues.	
5:00pm	**INVITED: NS+MN+PC+SS-WeA9** Open-hardware, High-speed Atomic Force Microscopy using Photothermal Off-resonance Tapping, ***Georg Fantner,*** École Polytechnique Fédéral de Lausanne, Switzerland	**INVITED: PB+BI+PC+PS-WeA9** Design Considerations for Plasma-based Water Purification Reactor Scale-up, ***John Foster,*** *S.M. Mujovic, J.R. Groele, J.C.Y. Lai,* The University of Michigan-Ann Arbor
5:20pm	Invited talk continues.	Invited talk continues.
5:40pm	**NS+MN+PC+SS-WeA11** Development of Multimodal Chemical Nano-Imaging for *in situ* Investigations of Microbial Systems, *A. Bhattarai, B.T. O'Callahan, P.Z. El Khoury,* ***Scott Lea,*** Pacific Northwest National Laboratory*; K.-D. Park, E.A. Muller, M.B. Raschke,* University of Colorado Boulder	**PB+BI+PC+PS-WeA11** Radicals and Ozone Generated in Ar/He and Ar/He/H_2O Plasma by using Atmospheric Pressure Plasma Jet Systems and their use in Methylene Blue Degradation, *J.H. Hsieh,* ***YiJinWei Wei,*** Ming Chi University of Technology, Taiwan, Republic of China*; C. Li,* National Yang Ming University, Taiwan, Republic of China
6:00pm		

	Plasma Science and Technology Division **Room 104C - Session PS+EM-WeA** **Advanced BEOL/Interconnect Etching** **Moderators:** Michael Morris, Trinity College Dublin, Tetsuya Tatsumi, Sony Semiconductor Solutions Corporation	**Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic** **Room 202A - Session SA+AS+MI-WeA** **Hard X-Ray Photoemission for Probing Buried Interfaces** **Moderators:** Zahid Hussain, Advanced Light Source, Lawrence Berkeley National Laboratory, Olivier Renault, CEA-LETI, France
2:20pm	**PS+EM-WeA1** Etch Strategies for Reducing Defects and Pattern Roughness in BEOL EUV Patterning, ***Jeffrey Shearer,*** IBM Research Division, Albany, NY*; A. Raley, Q. Lou, J. Kaminsky,* TEL Technology Center, America, LLC*; L. Meli,* IBM Research Division, Albany, NY	**SA+AS+MI-WeA1** Element-resolved Electronic Band Structure of Ga(Mn)As Measured by Standing-wave Hard X-ray Angle-resolved Photoemission, ***Slavomir Nemsak,*** Advanced Light Source, Lawrence Berkeley National Laboratory*; M. Gehlmann, C.-T. Kuo,* University of California, Davis*; T.-L. Lee,* Diamond Light Source Diamond House, Harwell Science and Innovation Campus*; L. Plucinski,* Forschungszentrum Juelich GmbH, Germany*; J. Minar,* University of West Bohemia*; C.M. Schneider,* Forschungszentrum Juelich GmbH, Germany*; C.S. Fadley,* University of California, Davis
2:40pm	**PS+EM-WeA2** Influence of Topological Constraints on the Ion Damage Resistance of Low-*k* Dielectrics, ***Qing Su,*** University of Nebraska-Lincoln*; T. Wang, J. Gigax, L. Shao,* Texas A&M University*; W. Lanford,* University at Albany*; M. Nastasi,* University of Nebraska-Lincoln*; L. Li,* Intel Corporation*; G. Bhattarai, M.M. Paquette,* University of Missouri-Kansas City*; S.W. King,* Intel Corporation	**SA+AS+MI-WeA2** Probing Surface Band Bending of Polar GaN by Hard X-ray Photoemission Combined with X-ray Total Reflection, ***Shigenori Ueda,*** NIMS, Japan
3:00pm	**INVITED: PS+EM-WeA3** BEOL Patterning Challenges for 14nm and Beyond High Volume Manufacturing, ***Xiang Hu,*** GLOBALFOUNDRIES*; Y. Ren,* GLOBALFOUDRIES*; D. Medeiros, P. Lee,* GLOBALFOUNDRIES	**INVITED: SA+AS+MI-WeA3** Interfaces in Cycled Battery Electrodes: Insights from HAXPES Studies, ***Julia Maibach,*** Karlruhe Institut of Technology (KIT), Germany
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall**	
4:20pm	**INVITED: PS+EM-WeA7** Innovative Approaches for Future Challenges in MOL/BEOL Etch, ***Ryukichi Shimizu,*** Tokyo Electron Miyagi Limited, Japan	**INVITED: SA+AS+MI-WeA7** Development of Ambient Pressure HAXPES and other HAXPES Measurements at SPring-8 for Buried Interface, ***Yasumasa Takagi,*** Japan Synchrotron Radiation Research Institute (JASRI), Japan
4:40pm	Invited talk continues.	Invited talk continues.
5:00pm	**PS+EM-WeA9** Gas-phase Pore Stuffing for Low-damage Patterning of Organo-silicate Glass Dielectric Materials, ***Jean-Francois de Marneffe,*** IMEC, Belgium*; M. Fujikama, T. Yamaguchi, S. Nozawa, R. Niino, N. Sato,* Tokyo Electron Technology Solutions Limited*; R. Chanson, K. Babaei Gavan,* IMEC, Belgium*; A. Rezvanov,* IMEC, Belgium/Moscow Institute of Physics and Technology*; F. Lazzarino, Z. Tokei,* IMEC, Belgium	**SA+AS+MI-WeA9** Operando HAXPES Investigations of La Manganite-based Resistive Memories, ***Eugénie Martinez,*** CEA/LETI-University Grenoble Alpes, France*; BM. Meunier,* Univ. Grenoble Alpes, CEA, LETI & LMGP, CNRS, France*; DP. Pla,* Univ. Grenoble Alpes, LMGP, CNRS, France*; RRL. Rodriguez-Lamas,* Univ. Grenoble Alpes, LMGP, CNRS France*; MB. Burriel, CJ. Jimenez,* Univ. Grenoble Alpes, LMGP, CNRS, France*; JPR. Rueff,* Synchrotron SOLEIL, France*; Y. Yamashita, S. Ueda,* NIMS, Japan*; O.J. Renault,* CEA/LETI-University Grenoble Alpes, France
5:20pm	**PS+EM-WeA10** ALD-Sequential Etch to Address Advanced BEOL Etch/Integration Challenges, ***Xinghua Sun,*** *Y.-T. Lu, K. Lutker-Lee, A. Raley,* TEL Technology Center, America, LLC*; D. O'Meara,* Tokyo Electctron, America, Inc.*; T. Yamamura,* Tokyo Electron Miyagi Limited*; Y. Kikuchi,* TEL Technology Center, America, LLC	**INVITED: SA+AS+MI-WeA10** Combining Hard and Soft X-ray Angle-resolved Photoemission to Probe the Bulk Electronic Structure of Engineered Quantum Solids, ***Alexander Gray,*** Temple University
5:40pm	**PS+EM-WeA11** The Underlying Role of Mechanical Rigidity and Topological Constraints in Reactive Ion Etching of Amorphous Materials, ***Gyanendra Bhattarai****, S. Dhungana, B.J. Nordell, A.N. Caruso, M.M. Paquette,* University of Missouri-Kansas City*; W. Lanford,* University at Albany*; S.W. King,* Intel Corporation	Invited talk continues.
6:00pm	**PS+EM-WeA12** Plasma Processing of Phase Change Materials for PCRAM*, N.D. Altieri,* ***Ernest Chen****, J.P. Chang,* University of California, Los Angeles*; S.W. Fong, C.M. Neumann, H.-S. Wong,* Stanford University*; M. Shen, T.B. Lill,* Lam Research Corporation	**SA+AS+MI-WeA12** Surface/Interface Coupling in Buried Oxide Interfaces, ***Conan Weiland,*** National Institute of Standards and Technology (NIST)*; A.K. Rumaiz,* Brookhaven National Laboratory*; G.E. Sterbinsky,* Argonne National Laboratory*; J.C. Woicik,* National Institute of Standards and Technology (NIST)

	Surface Science Division **Room 203C - Session SS+AS+EM-WeA** **Semiconducting Surfaces** **Moderators:** Melissa Hines, Cornell University, Ludo Juurlink, Leiden University	**Thin Films Division** **Room 102A - Session TF+EM+MI-WeA** **Thin Film Processes for Electronics and Optics II** **Moderators:** Hilal Cansizoglu, University of California, Davis, John F. Conley, Jr., Oregon State University
2:20pm	**INVITED: SS+AS+EM-WeA1** Functionalizing Semiconductor Surfaces and Interfaces, ***Stacey Bent,*** Stanford University	**INVITED: TF+EM+MI-WeA1** What can we Benefit from Nanochemistry of Crystalline Silicon?, ***Naoto Shirahata,*** National Institute for Materials Science, Tsukuba, Japan
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**SS+AS+EM-WeA3** Atomic Structure of UHV-prepared GaP(111)A Surface and its Reactivity Towards Simple Molecules, ***Denis Potapenko****, X. Yang, B.E. Koel,* Princeton University	**TF+EM+MI-WeA3** Low-temperature Homoepitaxial Growth of Two-dimensional Antimony Superlattices in Silicon, ***April Jewell****, M.E. Hoenk, A.G. Carver, S. Nikzad,* Jet Propulsion Laboratory
3:20pm	**SS+AS+EM-WeA4** Stabilization Mechanism of the Se- or S-treated GaAs(111)B Surface, ***Shunji Goto,*** The University of Electro-Communications (UEC-Tokyo), Japan*; A. Ohtake,* National Institute for Materials Science (NIMS), Japan*; J.N. Nakamura,* The University of Electro-Communications (UEC-Tokyo), Japan	
3:40pm 4:00pm	**BREAK - Complimentary Refreshments in Exhibit Hall**	
4:20pm	**SS+AS+EM-WeA7** Novel Pathways in Reaching Buried Interfaces of Organic/Inorganic Hybrid Systems: A Mechanistic Understanding of Polymer Adsorption on Passivated Metal Oxide Surfaces, ***Tom Hauffman****, S. Pletincx, K. Marcoen, F. Cavezza,* Vrije Universiteit Brussel, Belgium*; L.-L. Fockaert, J.M.C. Mol,* Technical University Delft, Netherlands*; H. Terryn,* Vrije Universiteit Brussel, Belgium	**TF+EM+MI-WeA7** Electron-Doped $BaZrO_3$ Thin Films Prepared by Topochemical Reduction, ***Thomas Orvis,*** University of Southern California
4:40pm	**SS+AS+EM-WeA8** Surface Modification of Metal Oxide Surfaces with Gas-Phase Propiolic Acid for Dye Sensitization by Click Reaction, ***Chuan He****, A.V. Teplyakov, B. Abraham, M. Konh, Z. Li, L. Gundlach, S. Bai,* University of Delaware*; E. Galoppini, H. Fan, R. Harmer,* Rutgers, the State University of New Jersey	**TF+EM+MI-WeA8** Epitaxial Growth and Electrical Properties of VO_2Thin Films, ***Yang Liu****, S. Niu, T. Orvis, H. Zhang, H. Wang, J. Ravichandran,* University of Southern California
5:00pm	**SS+AS+EM-WeA9** Solar Energy Storage in the Norbornadiene-quadricyclane System: From Surface Science to In-situ Photochemistry and photospectroelectrochemistry*, M. Schwarz, F. Waidhas, C. Schuschke,* Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*; S. Mohr,* Friedrich-Alexander-Universität Erlangen-Nürnberg*; O. Brummel, T. Döpper, C. Weiss, K. Civale,* Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*; M. Jevric,* Chalmers University of Technology, Gothenburg, Sweden*; J. Bachmann,* Friedrich-Alexander-Universität Erlangen-Nürnberg. Germany*; A. Görling, A. Hirsch,* Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*; K. Moth-Poulsen,* Chalmers University of Technology, Gothenburg, Sweden*;* ***Jörg Libuda****,* Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany	**TF+EM+MI-WeA9** A Novel Technique for the Growth of Gallium Oxide Nanowires for UV Detection, ***Badriyah Alhalaili,*** UC, Davis*; R.J. Bunk, H. Mao,* UC Davis*; R. Vidu,* UC, Davis*; H. Cansizoglu,* UC Davis*; M.S. Islam,* UC, Davis
5:20pm	**SS+AS+EM-WeA10** In-situ Characterization of Photon induced Chemistries in Organotin Clusters with Ambient Pressure XPS, ***J. Trey Diulus***[1]*, R.T. Frederick,* Oregon State University*; M. Li,* Rutgers, the State University of New Jersey*; D.C. Hutchison, I. Lyubinetsky, L. Árnadóttir, M.R. Olsen,* Oregon State University*; E.L. Garfunkel,* Rutgers, the State University of New Jersey*; M. Nyman,* Oregon State University*; H. Ogasawara,* SLAC National Accelerator Laboratory*; G.S. Herman,* Oregon State University	**TF+EM+MI-WeA10** Enhanced Efficiency in Photon-trapping Ge-on-Si Photodiodes for Optical Data Communication, ***Hilal Cansizoglu****, C. Bartolo Perez, Y. Gao, E. Ponizovskaya Devine, S. Ghandiparsi, K.G. Polat, H.H. Mamtaz, M.F. Cansizoglu,* University of California, Davis*; T. Yamada,* University of California, Santa Cruz*; A.F. ElRefaie, S.Y. Wang,* W&WSens Devices, Inc.*; M.S. Islam,* University of California, Davis
5:40pm	**SS+AS+EM-WeA11** Integrated Photonics Driven Electron Emission from LaB_6 Nanoparticles, ***Fatemeh Rezaeifar****, R. Kapadia,* University of Southern California	**TF+EM+MI-WeA11** Correlating Composition and Structure with Optical Properties of Combinatorial Sputtered Thin Film Au_xAl_{1-x} Alloys, ***Robyn Collette,*** University of Tennessee Knoxville*; Y. Wu, J.P. Camden,* University of Notre Dame*; P.D. Rack,* University of Tennessee Knoxville
6:00pm	**SS+AS+EM-WeA12** Photon Stimulated Desorption and Diffusion of CO on TiO_2(110), ***Nikolay Petrik****, R. Mu, A. Dahal, Z.-T. Wang, Z. Dohnalek, I. Lyubinetsky, G.A. Kimmel,* Pacific Northwest National Laboratory	**TF+EM+MI-WeA12** The Multifunctional TiO2 Thin Films Sensor, ***Awais Ali,*** *M. Alam, S. Nasser, N. Akbar, A. Saeed, A.S. Bhatti,* COMSATS Institute of Information Technology, Islamabad Pakistan

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

Anticipated Schedule Thursday, October 25, 2018

Anticipated Schedule Thursday Morning, October 25

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, October 25

When _____

Where _____

With _____

Anticipated Schedule Thursday Afternoon, October 25

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 _____

Special Events Thursday

Special Events Thursday

10:00 AM AVS Presidents Panel/Hall A
10:00 AM Session Coffee Break/Hall A
12:20 PM Exhibit Finale & Refreshments/Hall A
12:20 PM PSTD Coburn and Winters Award Ceremony/104A
12:20 PM Surface Science Division Mort Traum Awards Ceremony/203C
12:30 PM 2019 Program Committee Chairs' Meeting & Lunch/Seaview-Hyatt Regency (by invitation)
12:30 PM AVS Business Meeting/101A
12:30 PM AVS Member Center: Professional Development--"Work Life Satisfaction" & Lunch/103C
3:30 PM History Committee Meeting/Shoreline B-Hyatt Regency (by invitation)
6:00 PM Thursday Poster Session & Refreshments/Hall B
6:30 PM 2018/2019 Program Committee Reception and Dinner/Seaview-Hyatt Regency (by invitation)
7:00 PM SSS Editorial Board Dinner/Shoreline A-Hyatt Regency (by invitation)
8:30 AM–5:00 PM Short Course Program/Various Rooms

Thursday Morning, October 25, 2018

	2D Materials Focus Topic Room 201B - Session 2D+EM+MI+MN+NS+SS-ThM Novel 2D Materials **Moderator:** Han Wang, University of Southern California	Actinides and Rare Earths Focus Topic Room 202C - Session AC+AS+SA-ThM Nuclear Power, Forensics, and Other Applications **Moderator:** Ladislav Havela, Charles University, Prague, Czech Republic
8:00am		**INVITED: AC+AS+SA-ThM1** Electron Microscopy in Nuclear Forensics, ***Edgar Buck***, *D.R. Reilly, J.M. Schwantes, J.A. Soltis, T.Q. Meadows, D.A. Meier, J.F. Corbey,* Pacific Northwest National Laboratory
8:20am	**2D+EM+MI+MN+NS+SS-ThM2** Controlled Growth of 2D Ni-Silicate and Silica Films on Ni_xPd_{1-x} (111) Substrates, ***Chao Zhou***, *X. Liang, G.S. Hutchings, Z. Fishman, J.-H. Jhang, S. Hu, S. Ismail-Beigi, U.D. Schwarz, E.I. Altman,* Yale University	Invited talk continues.
8:40am	**INVITED: 2D+EM+MI+MN+NS+SS-ThM3** Topological Materials, ***Hsin Lin***, Institute of Physics, Academia Sinica	**INVITED: AC+AS+SA-ThM3** New Frontiers with Fission Track Analysis and TOF-SIMS Techniques, ***Itzhak Halevy***, Nrcn Israel; *R. Radus,* Ben Gurion University, Israel; *S. Maskova,* Charles University, Prague, Czech Republic; *A. Kogan, S. Samuha, D. Gridchin, E. Grinberg, E. Boblil, N. Haikin,* IAEC-NRCN, Israel; *I. Orion,* Ben-Gurion University -Negev, Israel; *A. Weiss,* Faculty of Engineering, Bar-Ilan University, Israel
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**2D+EM+MI+MN+NS+SS-ThM5** Few-Layer Rhenium Disulfide Synthesized Via Chemical Vapor Deposition, ***Michael Valentin***, Army Research Laboratory; *A. Guan, A.E. Nguyen, I. Lu, C.S. Merida, M.J. Gomez,* University of California, Riverside; *R.A. Burke, M. Dubey,* Army Research Laboratory; *L. Bartels,* University of California, Riverside	**INVITED: AC+AS+SA-ThM5** Predictive Nuclear Forensics: Fundamental Frameworks to Fill Missing Pieces, ***Jenifer Shafer***, *M. Koehl, A. Baldwin, D. Wu,* Colorado School of Mines; *R. Rundberg,* Los Alamos National Laboratory; *M. Servis,* Washington State University; *T. Kawano,* Los Alamos National Laboratory
9:40am	**2D+EM+MI+MN+NS+SS-ThM6** Dipolar Disorder of a van-der-Waals Surface Revealed by Direct Atomic Imaging, *M.A. Susner,* Air Force Research Laboratory; *M.A. McGuire,* ***Petro Maksymovych***, Oak Ridge National Laboratory	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall – AVS Presidents Panel, Booth #168, Exhibit Hall**	
10:20am		
10:40am		
11:00am	**2D+EM+MI+MN+NS+SS-ThM10** Advanced ARPES Analyzer and Momentum Microscope KREIOS 150 – Concepts and first results on layered materials and topological insulators, ***Paul Dietrich***, *M. Wietstruk, T.U. Kampen, A. Thissen,* SPECS Surface Nano Analysis GmbH, Germany	**AC+AS+SA-ThM10** Soft X-ray Synchrotron Radiation Spectromicroscopy Studies of Radioactive Materials, ***David Shuh***, Lawrence Berkeley National Laboratory; *A. Altman,* Lawrence Berkeley National Laboratory and UC Berkeley; *A.L.D. Kilcoyne, S.G. Minasian, J.I. Pacold, D.E. Smiles, T. Tyliszczak, D. Vine,* Lawrence Berkeley National Laboratory; *L. He, J. Harp, M. Meyer,* Idaho National Laboratory; *C. Degueldre,* University of Lancaster, Switzerland
11:20am	**2D+EM+MI+MN+NS+SS-ThM11** Carbon Nanomembranes with Sub-nanometer Channels: 2D Materials for Water Purification with High Selectivity and Highest Permeance, *Y. Yang, P. Dementyev, N. Biere, D. Emmrich, P. Stohmann, R. Korzetz, X.H. Zhang, A. Beyer, S. Koch, D. Anselmetti,* ***Armin Gölzhäuser***, Bielefeld University, Germany	**AC+AS+SA-ThM11** Comparison of the Oxidation Rates for Alpha Versus Delta Plutonium by X-ray Photoelectron Spectroscopy, ***Art Nelson***, *S.B. Donald, D.J. Roberts, W. McLean,* Lawrence Livermore National Laboratory
11:40am	**INVITED: 2D+EM+MI+MN+NS+SS-ThM12** Discovery of Dirac Monolayers and Elucidation of Functonalites by Advanced Soft X-ray Spectroscopy, ***Iwao Matsuda***, University of Tokyo, Japan	**AC+AS+SA-ThM12** A Single-Stage AMS Detector for Secondary Ion Mass Spectrometry and its Applications to Nuclear Materials Analyses, ***David Willingham***, *E.E. Groopman, K.S. Grabowski,* U.S. Naval Research Laboratory; *L. Sangely,* International Atomic Energy Agency; *A.P. Meshik, O.V. Pravdivtseva,* Washington University in St. Louis; *D.G. Weisz, K.B. Knight,* Lawrence Livermore National Laboratory
12:00pm	Invited talk continues.	**AC+AS+SA-ThM13** Physicochemical Properties of Ag in Annealed ZrN/SiC/Ag Heterostructures Used to Simulate TRISO Nuclear Fuels, ***Jeff Terry***, *M. Warren, R. Seibert,* Illinois Institute of Technology

	Applied Surface Science Division **Room 204 - Session AS+SE-ThM** **Applied Surface Analysis of Novel, Complex or Challenging Materials** **Moderators:** Michael Brumbach, Sandia National Laboratories, Thomas Grehl, IONTOF GmbH, Germany	**Biomaterial Interfaces Division** **Room 101B - Session BI-ThM** **Biomolecules and Biophysics at Interfaces** **Moderator:** Joe Baio, Oregon State University
8:00am	**INVITED: AS+SE-ThM1** Understanding the Surface of Complex Oxides used in High Temperature Electrochemical Devices, ***John Kilner,*** Imperial College London, UK; *J.W. Druce,* International Institute for Carbon Neutral Energy Research (I2CNER), Japan; *H. Tellez, A. Staykov,* International Institute for Carbon Neutral Energy Research (I2CNER)	**INVITED: BI-ThM1** Bioinspired Adaptive Reconfigurable Material Systems based on Smart Hydrogels, ***Ximin He,*** University of California, Los Angeles
8:20am	Invited talk continues.	Invited talk continues.
8:40am	**AS+SE-ThM3** Vectorial Method used to Monitor a XPS Evolving System: Titanium Oxide Thin Films under UV Illumination, *S. Bechu,* Institut Photovoltaïque d'Ile-de-France; *N. Fairley,* Casa Software Ltd, UK; *L. Brohan,* Institut des materiaux Jean Rouxel, France; ***Vincent Fernandez,*** Université de Nantes, Institut des matériaux Jean Rouxel, France; *M. Richard-Plouet,* Institut des matériaux Jean Rouxel, France	**BI-ThM3** Importance of a In Depth Characterisation for the Design of Functional Gold Nanoparticles for Bioapplications, *R. Capomaccio, I. Ojea-Jimenez, D. Mehn, P. Colpo, D. Gilliland,* European Commission - Joint Research Centre, Italy; *R. Hussain, G. Siligardi,* Diamond Light Source Diamond House, Harwell Science and Innovation Campus, UK; *L. Calzolai,* ***Giacomo Ceccone,*** European Commission - Joint Research Centre, Italy
9:00am	**AS+SE-ThM4** XPS Characterization of Copper and Silver Nanostructures, ***Tatyana Bendikov,*** *M.D. Susman, F. Muench, A. Vaskevich, I. Rubinstein,* Weizmann Institute of Science, Israel	**BI-ThM4** A Model Membrane Microsystem for Measurement of the Kinetics of Transmembrane Proton Transport, *J.P. Madsen, A. Johnson, M.L. Cartron, N.C. Hunter, S.P. Armes,* ***Graham Leggett,*** University of Sheffield, UK
9:20am	**AS+SE-ThM5** Quantification of Hydroxyl, Major Element and Trace Element Concentrations in Oxide Glasses by Quadrupole SIMS., ***Albert Fahey,*** *A.R. Sarafian, T. Dimond,* Corning Inc.	**BI-ThM5** Theranostics Gold Nanoparticles for Brain Cancer Applications, *I. Naletova, L.M. Cucci, F. D'Angeli, C.D. Anfuso, G. Lupo,* University of Catania, Italy; *A. Magrì,* National Council of Research (CNR), Italy; *C. Satriano,* University of Catania, Italy; ***Diego La Mendola,*** University of Pisa, Italy
9:40am	**AS+SE-ThM6** Modification of Sputtered Carbon Surfaces in Biosensor Arrays, ***Varun Jain,*** *M.R. Linford,* Brigham Young University	**BI-ThM6** Repeated Biorecognition Assays Based on Reversibly Biofunctionalized Surfaces, *A. Francesko,* University of Minho, Portugal; *S. Lanceros-Mendez,* IKERBASQUE, Basque Foundation for Science, Spain; *J.A.E. Määttä, V.P. Hytönen,* University of Tampere, Finland; *E. Fernandes,* International Iberian Nanotechnology Laboratory (INL), Portugal; *J.R. Guerreiro,* International Iberian Nanotechnology Laboratory (INL), Portugal; ***Dmitri Petrovykh,*** International Iberian Nanotechnology Laboratory, Portugal
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – AVS Presidents Panel, Booth #168, Exhibit Hall**	
11:00am	**AS+SE-ThM10** The Role of Surface Analysis in Characterization of Synthetic Opioids: TOF-SIMS imaging of Fentanyl and Fentanyl Analogs for Forensics and First Responder Safety, ***Greg Gillen,*** *S. Muramoto, J. Verkouteren, E. Sisco,* National Institute of Standards and Technology (NIST)	**BI-ThM10** Non-equilibrium Thermodynamic Model for DNA at Nanochannel Junctions, ***Saroj Dangi,*** North Carolina State University
11:20am	**AS+SE-ThM11** 3D TOF SIMS, Parallel Imaging MS/MS, and XPS Analysis of Glitterwing (*Chalcopteryx rutilans*) Damselfly Wings, ***Ashley Ellsworth,*** *D.M. Carr, G.L. Fisher, B.W. Schmidt,* Physical Electronics; *W.W. Valeriano, W.N. Rodrigues,* UFMG, Brazil	**BI-ThM11** Dipeptide Nanocontainers Immobilised on Graphene Nanoplatforms for Drug-delivery Applications, *V.C.L. Caruso,* University of Catania, Italy; *G. Trapani,* University of Catania and Scuola Superiore di Catania, Italy; *L.M. Cucci, I. Naletova,* University of Catania, Italy; *D. La Mendola,* University of Pisa, Italy; ***Cristina Satriano,*** University of Catania, Italy
11:40am	**AS+SE-ThM12** Characterization of Aniline Dyes in the Modern Colored Papers and the Prints of José Posada, *J.K. Hedlund, L.D. Gelb,* ***Amy Walker,*** University of Texas at Dallas	**BI-ThM12** Seriatim Operando STM and FTIR Study of Phospholipid Membrane Phase Transition Driven by Electrochemical Potential Control, ***Taro Yamada,*** RIKEN, Japan; *S. Matsunaga, H. Shimizu,* The University of Tokyo; *T. Kobayashi,* RIKEN, Japan; *M. Kawai,* The University of Tokyo
12:00pm	**AS+SE-ThM13** GaAs and Si Surface Energies derived from Three Liquid Contact Angle Analysis (3LCAA), as a Function of Oxygen Coverage for Heterogeneous Nano-Bonding™, ***Sukesh Ram,*** Arizona State University; *K.L. Kavanagh,* Simon Fraser University, Canada; *F.J. Ark, C.E. Cornejo, T.C. Diaz, M.E. Bertram, S.R. Narayan, J.M. Day, M. Mangus, R.J. Culbertson, N. Herbots,* Arizona State University; *R. Islam,* Cactus Materials, Inc.	**BI-ThM13** Mitochondria Localized Polymerization for New Cancer Therapy, ***Ja-Hyoung Ryu,*** Ulsan Natioanl Institute of Science and Technology, Republic of Korea

	Electronic Materials and Photonics Division **Room 101A - Session EM+MI+MN+NS-ThM** **Nanostructures for Electronic and Photonic Devices** **Moderators:** Sang M. Han, University of New Mexico, Jason Kawasaki, University of Wisconsin - Madison	**Fundamental Discoveries in Heterogeneous Catalysis Focus Topic** **Room 201A - Session HC+SS-ThM** **In-situ Analysis of Heterogeneously Catalyzed Reactions** **Moderator:** Sharani Roy, University of Tennessee Knoxville
8:00am	**INVITED: EM+MI+MN+NS-ThM1** Extreme Nanophotonics from Ultrathin Metallic Junctions, ***Maiken Mikkelsen,*** Duke University	**HC+SS-ThM1** Structural Characterization of ZnO on Cu(111) by using STM and XPS: Role of Cu-ZnO Interface in Methanol Synthesis, ***Mausumi Mahapatra,*** *J.A. Rodriguez,* Brookhaven National Laboratory
8:20am	Invited talk continues.	**HC+SS-ThM2** Dissociative Adsorption of CO_2 on Cu-surfaces, ***Benjamin Hagman,*** Lund University, Sweden*; A. Posada-Borbón, A. Schaefer,* Chalmers University of Technology, Gothenburg, Sweden*; C. Zhang,* Lund University, Sweden*; M. Shipilin,* Stockholm University, Sweden*; N.M. Martin,* Chalmers University of Technology, Gothenburg, Sweden*; E. Lundgren,* Lund University, Sweden*; H. Grönbeck,* Chalmers University of Technology, Gothenburg, Sweden*; J. Gustafson,* Lund University, Sweden
8:40am	**EM+MI+MN+NS-ThM3** The Geode Process: A Route to the Large-Scale Manufacturing of Functionally-Encoded Semiconductor Nanostructures, *M. Mujica, G. Tutuncuoglu, V. Breedveld, S.H. Behrens,* ***Michael Filler,*** Georgia Institute of Technology	**HC+SS-ThM3** Infrared Spectroscopy of Carbon Dioxide Hydrogenation over the Cu(111) Surface Under Ambient Pressure Conditions, *C.M. Kruppe,* ***Michael Trenary,*** University of Illinois at Chicago
9:00am	**EM+MI+MN+NS-ThM4** Disordered Microsphere-Based Coatings for Effective Radiative Cooling under Direct Sunlight, *S. Atiganyanun, J. Plumley, K. Hsu,* University of New Mexico*; T.L. Peng,* Air Force Research Laboratory*;* ***Sang M. Han,*** *S.E. Han,* University of New Mexico	**HC+SS-ThM4** Oxide Formation on Ir(100) Studied by in-Situ Surface X-ray-Diffraction, ***Stefano Albertin,*** *U. Hejral,* Lund University, Sweden*; R. Felici,* SPIN-CNR, Italy*; R. Martin,* University of Florida*; M. Jankowski,* ESRF, France*; J.F. Weaver,* University of Florida*; E. Lundgren,* Lund University, Sweden
9:20am	**EM+MI+MN+NS-ThM5** Assessing Strain Relaxation in Nanostructured InGaN Multiple Quantum Wells Using X-Ray Diffraction Reciprocal Space Mapping and Photoluminescence Spectroscopy, ***Ryan Ley,*** *C.D. Pynn, M. Wong, S.P. DenBaars, M.J. Gordon,* University of California at Santa Barbara	**INVITED: HC+SS-ThM5** Dynamic Nanocatalysts: Environmental Effects, ***Beatriz Roldan Cuenya,*** Fritz-Haber Institute of the Max Planck Society
9:40am	**EM+MI+MN+NS-ThM6** Scalable, Tunable, and Polarization-Independent High Contrast Grating Reflectors for Integration into Resonant-Cavity micro-LEDs, ***Pavel Shapturenka,*** *S.P. DenBaars, M.J. Gordon,* University of California at Santa Barbara	Invited talk continues.
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – AVS Presidents Panel, Booth #168, Exhibit Hall**	
11:00am	**INVITED: EM+MI+MN+NS-ThM10** Nano-optical Activation of Defect-bound Excitons in Monolayer WSe_2: Towards Room-temperature 2D Single-photon Optoelectronics, ***Jim Schuck,*** Columbia University	**HC+SS-ThM10** Atomic Layer Deposition (ALD) Synthesis of Au/TiO_2/SBA-15 Catalysts, *W. Ke, X. Qin,* ***Francisco Zaera,*** University of California, Riverside
11:20am	Invited talk continues.	**HC+SS-ThM11** Enhanced Stability of Pt/Cu Single-Atom Alloy Catalysts: In Situ Characterization of the Pt/Cu(111) Surface in an Ambient Pressure of CO, ***Juan Pablo Simonovis Santamaria,*** Brookhaven National Laboratory
11:40am	**EM+MI+MN+NS-ThM12** Light Scattering Properties of Silver Nanoprisms in Different Environments, ***Yuri Strzhemechny,*** Texas Christian University*; S. Requena,* Harris Night Vision*; H. Doan,* Texas Christian University*; S. Raut,* University of North Texas Health Science Center*; Z. Gryczynski,* Texas Christian University*; I. Gryczynski,* University of North Texas Health Science Center	**INVITED: HC+SS-ThM12** Multiscale Modelling of Metal Oxide Interfaces and Nanoparticles, ***Kersti Hermansson,*** *P. Mitev, J. Kullgren, P. Broqvist,* Dept of Chemistry-Ångström, Uppsala University, Sweden
12:00pm	**EM+MI+MN+NS-ThM13** Core-Shell Processing of BTO Nanocomposites for Optimal Dielectric Properties, ***Kimberly Cook-Chennault,*** Rutgers University	Invited talk continues.

	Advanced Ion Microscopy Focus Topic **Room 203B - Session HI+AS-ThM** **Advanced Ion Microscopy & Surface Analysis** **Moderators:** Gregor Hlawacek, Helmholtz Zentrum Dresden-Rossendorf, Germany, Shida Tan, Intel Corporation	**Magnetic Interfaces and Nanostructures Division** **Room 203A - Session MI+2D-ThM** **Magnetism at the Nanoscale** **Moderators:** Axel Enders, University of Bayreuth, Germany, Hendrik Ohldag, SLAC National Accelerator Laboratory
8:00am	**INVITED: HI+AS-ThM1** Pushing the Limits: Secondary Ion Mass Spectrometry with Helium Ion Microscopy, ***Alex Belianinov,*** Oak Ridge National Laboratory*; S. Kim,* Pusan National University, South Korea*; M. Lorenz,* University of Tennessee Knoxville*; A.V. Ievlev, A. Trofimov, O.S. Ovchinnikova,* Oak Ridge National Laboratory	
8:20am	Invited talk continues.	**MI+2D-ThM2** Magnetic Competition in $La_{0.7}Sr_{0.3}MnO_3$ Thin Films*,* ***Mikel B. Holcomb,*** West Virginia University
8:40am	**HI+AS-ThM3** When HIM meets SIMS*,* ***Tom Wirtz,*** Luxembourg Institute of Science and Technology (LIST), Luxembourg*; O. De Castro, J. Lovric,* Luxembourg Institute of Science and Technology (LIST)*; J.-N. Audinot,* Luxembourg Institute of Science and Technology (LIST), Luxembourg	**INVITED: MI+2D-ThM3** Ferromagnetism in 2D Materials*,* ***Jiabao Yi,*** The University of New South Wales, Australia
9:00am	**HI+AS-ThM4** Deciphering Chemical Nature of Ferroelastic Twin Domain in $MAPbI_3$ perovskite by Helium Ion Microscopy Secondary Ion Mass Spectrometry*,* ***Yongtao Liu,*** University of Tennessee*; L. Collins,* Oak Ridge National Laboratory*; R. Proksch,* Asylum Research an Oxford Instruments Company*; S. Kim,* Oak Ridge National Laboratory*; B.R. Watson,* University of Tennessee*; B.L. Doughty,* Oak Ridge National Laboratory*; T.R. Calhoun, M. Ahmadi,* University of Tennessee*; A.V. Ievlev, S. Jesse, S. Retterer, A. Belianinov, K. Xiao, J. Huang, B.G. Sumpter, S.V. Kalinin,* Oak Ridge National Laboratory*; B.H. Hu,* University of Tennessee*; O.S. Ovchinnikova,* Center for Nanophase Materials Sciences, Oak Ridge National Laboratory	Invited talk continues.
9:20am	**INVITED: HI+AS-ThM5** Helium and Neon Ion Microscopy for Microbiological Applications*,* ***Ilari Maasilta,*** University of Jyvaskyla, Finland	**INVITED: MI+2D-ThM5** New Insights into Nanomagnetism by Low-temperature Spin-polarized Scanning Tunneling Microscopy*,* ***Dirk Sander,*** Max Planck Institute of Microstructure Physics, Germany
9:40am	Invited talk continues.	Invited talk continues.
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – AVS Presidents Panel, Booth #168, Exhibit Hall**	
11:00am	**HI+AS-ThM10** Characterization of Soot Particles by Helium Ion Microscopy*,* ***André Beyer****, D. Emmrich, M. Salamanca, L. Ruwe, H. Vieker, K. Kohse-Höinghaus, A. Gölzhäuser,* Bielefeld University, Germany	**INVITED: MI+2D-ThM10** Materials Optimization to Form Skyrmion and Skyrmion Lattices*,* ***Eric Fullerton,*** University of California at San Diego
11:20am	**HI+AS-ThM11** Development of a Surface Science Spectra Submission Form for Low Energy Ion Scattering (LEIS)*, M.R. Linford,* ***Tahereh Gholian Avval,*** Brigham Young University*; H.H. Brongersma, T. Grehl,* IONTOF GmbH, Germany	Invited talk continues.
11:40am	**HI+AS-ThM12** Time of Flight Backscatter and Secondary Ion Mass Spectrometry in the Helium Ion Microscope*,* ***Nico Klingner****, R. Heller, G. Hlawacek, J. von Borany, S. Facsko,* Helmholtz Zentrum Dresden-Rossendorf, Germany	**MI+2D-ThM12** Giant Magnetostriction and Low Loss in FeGa/NiFe Nanolaminates for Strain-Mediated Multiferroic Micro-Antenna Applications*,* ***Kevin Fitzell***[1]*, C.R. Rementer,* University of California, Los Angeles*; N. Virushabadoss,* University of Texas at Dallas*; M.E. Jamer,* National Institute of Standards and Technology (NIST)*; A. Barra,* University of California, Los Angeles*; J.A. Borchers, B.J. Kirby,* National Institute of Standards and Technology (NIST)*; G.P. Carman,* University of California, Los Angeles*; R.M. Henderson,* University of Texas at Dallas*; J.P. Chang,* University of California, Los Angeles
12:00pm	**HI+AS-ThM13** Helium and Neon Focused Ion Beam Hard Mask Lithography on Atomic Layer Deposition Films*,* ***Matthew Hunt,*** California Institute of Technology*; J. Yang,* University of Texas at Austin*; S.A. Wood, O.J. Painter,* California Institute of Technology	**MI+2D-ThM13** Structural and Electronic Origin of Stable Perpendicular Magnetic Anisotropy in Pt/Co/Pt magnetic ultra-thin film with Ti Buffer Layer*,* ***Baha Sakar,*** Gebze Technical University, Turkey*; Z. Balogh-Michels, A. Neels,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland*; O. Öztürk,* Gebze Technical University, Turkey

[1] **Falicov Student Award Finalist**

Thursday Morning, October 25, 2018

	MEMS and NEMS Group Room 202B - Session MN+2D+AN+MP+NS-ThM Optomechanics and 2D NEMS **Moderator:** Max Zenghui Wang, University of Electronic Science and Technology of China	Nanometer-scale Science and Technology Division Room 102B - Session NS+AN+EM+MI+MN+MP+PS+RM-ThM Nanopatterning and Nanofabrication **Moderators:** Brian Hoskins, National Institute of Standards and Technology (NIST), Meredith Metzler, University of Pennsylvania, Leonidas Ocola, T.J. Watson Research Center
8:00am	**INVITED: MN+2D+AN+MP+NS-ThM1** Towards Microwave to Telecom Wavelength Quantum Information Transfer using Cavity Optomechanics, ***John Davis,*** University of Alberta, Canada	**NS+AN+EM+MI+MN+MP+PS+RM-ThM1** Femtosecond Laser Processing of Ceria-Based Micro Actuators, ***Jenny Shklovsky,*** Tel Aviv University, Israel; *E. Mishuk,* Weizmann Institute of Science, Israel; *Y. Berg,* Orbotech Ltd, Israel; *N. Vengerovsky, Y. Sverdlov,* Tel Aviv University, Israel; *I. Lubomirsky,* Weizmann Institute of Science, Israel; *Z. Kotler,* Orbotech Ltd; *S. Krylov, Y. Shacham-Diamand,* Tel Aviv University, Israel
8:20am	Invited talk continues.	**NS+AN+EM+MI+MN+MP+PS+RM-ThM2** Synthesis of Functional Particles by Condensation and Polymerization of Monomer Droplets in Silicone Oils, ***Prathamesh Karandikar,*** *M. Gupta,* University of Southern California
8:40am	**INVITED: MN+2D+AN+MP+NS-ThM3** 1D/2D NEMS Quantum Information Processing, ***Guangwei Deng,*** Institute of Fundamental and Frontier Sciences, University of Electronic Science and Technology of China 610054, Chengdu, Sichuan, China.0	**INVITED: NS+AN+EM+MI+MN+MP+PS+RM-ThM3** Competition Between Scale and Perfection in Self-assembling Structures, ***James Liddle,*** NIST Center for Nanoscale Science and Technology
9:00am	Invited talk continues.	Invited talk continues.
9:20am		**NS+AN+EM+MI+MN+MP+PS+RM-ThM5** Polymer Templated Annealing of DNA Patterned Gold Nanowires, ***Tyler Westover,*** *B. Aryal, R.C. Davis, A. Woolley, J. Harb,* Brigham Young University
9:40am		
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall – AVS Presidents Panel, Booth #168, Exhibit Hall**	
10:20am		
10:40am		
11:00am		**INVITED: NS+AN+EM+MI+MN+MP+PS+RM-ThM10** Directed Self-assembly of Block Copolymers for Applications in Nanolithography, ***Paul Nealey,*** University of Chicago
11:20am	**MN+2D+AN+MP+NS-ThM11** Reconfigurable Resonant Responses in Atomic Layer 2D Nanoelectromechanical Systems (NEMS), ***Zenghui Wang,*** University of Electronic Science and Technology of China; *R. Yang, P.X.-L. Feng,* Case Western Reserve University	Invited talk continues.
11:40am	**INVITED: MN+2D+AN+MP+NS-ThM12** Cavity Optomechanics: Dynamics and Applications, ***Eyal Buks,*** Israel Institute of Technology, Israel	**NS+AN+EM+MI+MN+MP+PS+RM-ThM12** Three Dimensional Mesoporous Silicon Nanowire Network Fabricated by Metal-Assisted Chemical Etching, ***Deepak Ganta,*** *C. Guzman, R. Villanueva,* TAMIU
12:00pm	Invited talk continues.	**NS+AN+EM+MI+MN+MP+PS+RM-ThM13** Enhancing Light Extraction from Free-standing InGaN/GaN light Emitters Using Bio-inspired Backside Surface Structuring, *L. Chan, C.D. Pynn, S.P. DenBaars,* ***Michael Gordon,*** University of California at Santa Barbara

	Plasma Science and Technology Division Room 104C - Session PS+EM+TF-ThM Atomic Layer Processing: Atomic Layer Etching **Moderators:** Erwin Kessels, Eindhoven University of Technology, The Netherlands, Mingmei Wang, TEL Technology Center, America, LLC	Plasma Science and Technology Division Room 104A - Session PS-ThM Plasma Sources **Moderators:** TaeSeung Cho, Applied Materials, GeunYoung Yeom, Sungkyunkwan University, Republic of Korea
8:00am	**INVITED: PS+EM+TF-ThM1** Precise Flux Control of Ions and Radicals using Electron Beam Generated Plasmas, ***David Boris***, U.S. Naval Research Laboratory	**PS-ThM1** Model of a Radio-Frequency Low Electron Temperature Plasma Source, ***Shahid Rauf***, *L. Dorf, K.S. Collins,* Applied Materials
8:20am	Invited talk continues.	**PS-ThM2** Electron-beam Sustained Plasma with Unique Characteristic of Low Electron Temperature at Very Low Pressure, ***Zhiying Chen***, Tokyo Electron America, Inc.*; K. Nagaseki,* Tokyo Electron Miyagi, Ltd., Japan*; J. Blakeney, M. Doppel, P.L.G. Ventzek,* Tokyo Electron America, Inc.*; A. Ranjan,* TEL Technology Center, America, LLC.
8:40am	**PS+EM+TF-ThM3** Demonstration of Self-limiting Nature and Selectivity Control in Annealing Procedures for Rapid Thermal-Cyclic ALE of W, TiN, and SiN, ***Kazunori Shinoda***, *H. Kobayashi,* Hitachi, Japan*; N. Miyoshi, K. Kawamura, M. Izawa,* Hitachi High-Technologies, Japan*; K. Ishikawa, M. Hori,* Nagoya University, Japan	**INVITED: PS-ThM3** Hydrid Plasma Source with Inductive and Capacitive Fields: Fundamental Understanding and Nano-applications, ***Hyo-Chang Lee***, Korea Research Institute of Standards and Science (KRISS)
9:00am	**PS+EM+TF-ThM4** Mechanisms for Atomic Layer Etching of Metal Films by the Formation of Beta-diketonate Metal Complexes, ***Tomoko Ito***, *K. Karahashi, S. Hamaguchi,* Osaka University, Japan	Invited talk continues.
9:20am	**INVITED: PS+EM+TF-ThM5** Thermal Atomic Layer Etching of Transition Metal Films, ***Charles Winter***, Wayne State University	**PS-ThM5** Improving RF Power Delivery for Pulsed Operation, *J. Brandon, C. Smith, K. Ford,* North Carolina State University*; S.K. Nam,* Samsung Electronics*;* ***Steven Shannon***, North Carolina State University
9:40am	Invited talk continues.	**PS-ThM6** Optimizing Transients Using Low-High Pulsed Power in Inductively Coupled Plasmas, ***Chenhui Qu***, *S.J. Lanham,* University of Michigan*; T. Ma, T. List, P. Arora, V.M. Donnelly,* University of Houston*; M.J. Kushner,* University of Michigan
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – AVS Presidents Panel, Booth #168, Exhibit Hall**	
11:00am	**INVITED: PS+EM+TF-ThM10** Gas Cluster Ion Beam Etching under Organic Vapor for Atomic Layer Etching, ***Noriaki Toyoda***, University of Hyogo, Japan	**PS-ThM10** Silicon Nitride Film Formations Using Magnetic-Mirror Confined New Plasma Source, ***Tetsuya Goto***, Tohoku University, Japan*; S.K. Kobayashi,* Kotec Company, Ltd., Japan*; S. Sugawa,* Tohoku University, Japan
11:20am	Invited talk continues.	**PS-ThM11** Resonant Element Microwave Plasma Source, ***Barton Lane***, *P.L.G. Ventzek, A. Bhakta,* Tokyo Electron, America, Inc.*; K. Nagaseki,* Tokyo Electron Miyagi, Ltd.*; A. Ranjan,* Tokyo Technology Center America
11:40am	**PS+EM+TF-ThM12** Utilizing Chemical Structure of Hydrofluorocarbon Precursors to Achieve Ultra-High Selective Material Removal in Atomic Layer Etching, ***Kang-Yi Lin***, *C. Li,* University of Maryland, College Park*; S.U. Engelmann, R.L. Bruce, E.A. Joseph,* IBM Research Division, T.J. Watson Research Center*; D. Metzler,* IBM Research Division, Albany, NY*; G.S. Oehrlein,* University of Maryland, College Park	**INVITED: PS-ThM12** Microwave Plasma Enabling Efficient Power-To-X Conversion, ***Gerard van Rooij***, DIFFER, The Netherlands
12:00pm	**PS+EM+TF-ThM13** Etch Selectivity Mechanisms of Implanted Over Pristine SiN Materials in NH_3/NF_3 Remote Plasma for Quasi Atomic Layer Etching with the Smart Etch Concept, ***Vincent Renaud***, *E. Pargon, C. Petit-Etienne,* LTM, Univ. Grenoble Alpes, CEA-LETI, France*; J.-P. Barnes, N. Rochat,* Cea, Leti, Minatec, France*; L. Vallier, G. Cunge, O. Joubert,* LTM, Univ. Grenoble Alpes, CEA-LETI, France	Invited talk continues.

	Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic **Room 202A - Session SA+MI-ThM** **Ultra-fast Dynamics for Magnetic and Quantum Systems** **Moderator:** Claus Michael Schneider, Forschungszentrum Juelich GmbH, Germany	**Surface Science Division** **Room 203C - Session SS+EM+NS-ThM** **Defects in and Functionalization of 2D Materials** **Moderators:** Lars Grabow, University of Houston, Greg Kimmel, Pacific Northwest National Laboratory
8:00am	**SA+MI-ThM1** New Opportunities at the APS: Using Intermediate Energy X-rays to Investigate Collective Behavior in Interacting Electron Systems, ***Jessica McChesney***, *F. Rodolakis,* Argonne National Laboratory	**INVITED: SS+EM+NS-ThM1** Holes, Pinning Sites and Metallic Wires in Monolayers of 2D Materials, ***Thomas Michely***, University of Cologne, Germany
8:20am	**SA+MI-ThM2** Observation of Surface Recombination in Ultra-fast Carrier Dynamics of $La_{0.7}Sr_{0.3}MnO_3$ Thin Films, ***Saeed Yousefi Sarraf***, *G.B. Cabrera, R. Trappen, N. Mottaghi, S. Kumari, C.-Y. Huang, A. Bristow, M.B. Holcomb,* West Virginia University	Invited talk continues.
8:40am	**INVITED: SA+MI-ThM3** Non-equilibrium Control of Charge & Spin Motion in Quantum Materials, ***Hermann Dürr***, Uppsala University, Sweden	**SS+EM+NS-ThM3** CO Chemisorption at Pristine, Doped and Defect Sites on Graphene/Ni(111), ***Mario Rocca***, *G. Carraro,* University of Genova, Italy; *M. Smerieri, L. Savio,* IMEM-CNR, UOS Genova, Italy; *E. Celasco, L. Vattuone,* University of Genova, Italy
9:00am	Invited talk continues.	**SS+EM+NS-ThM4** Geometry of Cu Islands Buried Beneath the Surface of Graphite, *A. Lii-Rosales,* Ames Laboratory and Iowa State University; *S. Julien,* Northeastern University; *Y. Han, J.W. Evans,* Ames Laboratory and Iowa State University; *K.-T. Wan,* Northeastern University; ***Patricia A. Thiel***, Ames Laboratory and Iowa State University
9:20am	**INVITED: SA+MI-ThM5** XUV-transient Grating: Probing Fundamental Excitations at the Nanoscale, ***Laura Foglia***, *F. Capotondi, R. Mincigrucci, D. Naumenko, E. Pedersoli, A. Simoncig, G. Kurdi, M. Manfredda, L. Raimondi,* Elettra-Sincrotrone Trieste, Italy; *N. Mahne,* IOM-CNR, Italy; *M. Zangrando, C. Masciovecchio, F. Bencivenga,* Elettra-Sincrotrone Trieste, Italy	**SS+EM+NS-ThM5** Intercalation of O_2 and CO between Graphene and Ru(0001) and the Role of Defects, ***Jory Yarmoff***, *T. Li,* University of California, Riverside
9:40am	Invited talk continues.	**SS+EM+NS-ThM6** Organic-2D Transition Metal Dichalcogenide van der Waals Heterostructures, ***Yu Li Huang***, Institute of Materials Research & Engineering (IMRE), A*STAR, Singapore; *Z. Song,* National University of Singapore; *D. Chi,* Institute of Materials Research & Engineering (IMRE), A*STAR, Singapore; *A.T.S. Wee,* National University of Singapore
10:00am 10:20am 10:40am	**BREAK - Complimentary Coffee in Exhibit Hall – AVS Presidents Panel, Booth #168, Exhibit Hall**	
11:00am	**INVITED: SA+MI-ThM10** Study of Photo-induced Dynamics in Quantum Materials using Femtosecond Time-resolved X-ray Scattering, ***Wei-Sheng Lee***, SLAC National Accelerator Laboratory	**SS+EM+NS-ThM10** Influence of Surface Functionalization on Surface Topography and Growth of Metal Oxide Structures on HOPG, ***Kathryn Perrine***, *M. Trought, I. Wentworth, C. de Alwis, T.R. Leftwich,* Michigan Technological University
11:20am	Invited talk continues.	**SS+EM+NS-ThM11** Impurity Induced Chemical Properties of BN on Rh(111) Studied by First Principle Calculations: A New Phase, ***Zahra Hooshmand***[1], *D. Le, T.S. Rahman,* University of Central Florida
11:40am	**SA+MI-ThM12** HAXPES Lab- A Home Lab System for HAXPES Measurements, *S. Eriksson,* Scienta Omicron; ***Anna Regoutz***, Imperial College London, UK	**SS+EM+NS-ThM12** Texture of Atomic-layer Deposited MoS: A polarized Raman Study, ***Vincent Vandalon***, *A. Sharma, W.M.M. Kessels,* Eindhoven University of Technology, The Netherlands; *A.A. Bol,* Eindhoven University of Technology, Netherlands
12:00pm		

[1] **National Student Award Finalist**

	Thin Films Division **Room 102A - Session TF+AS+EL+PS-ThM** **In-situ Characterization and Modeling of Thin Film Processes** **Moderator:** Thomas Riedl, University of Wuppertal	**Thin Films Division** **Room 104B - Session TF+PS-ThM** **Deposition Processes for 3D and Extreme Geometries** **Moderators:** Richard Vanfleet, Brigham Young University, AnnaMaria Coclite, Graz University of Technology
8:00am	**INVITED: TF+AS+EL+PS-ThM1** Defects in Thin Films: A First Principles Perspective, ***Douglas Irving***, *J.S. Harris, J.N. Baker, S. Washiyama, M.H. Breckenridge,* North Carolina State University*; P. Reddy,* Adroit Materials*; R. Collazo, Z. Sitar,* North Carolina State University	**TF+PS-ThM1** ALD and Diffusion in High Aspect Ratio Carbon Nanotube Forests, ***David Kane***, *R.C. Davis, R.R. Vanfleet,* Brigham Young University
8:20am	Invited talk continues.	**TF+PS-ThM2** Nanoporous Reference Substrates for ALD on High Aspect Ratio High Surface Area Materials, ***Dmitri Routkevitch***, InRedox
8:40am	**TF+AS+EL+PS-ThM3** Advances in Numerical Simulation of SiN ALD, ***Paul Moroz***, TEL Technology Center, America, LLC	**TF+PS-ThM3** Fine-tuned Resistive Coatings for Detector Applications, ***Maximilian Gebhard***, *A.U. Mane, D. Choudhury, S. Letourneau, D.J. Mandia, Y. Zhang, J.W. Elam,* Argonne National Laboratory
9:00am	**TF+AS+EL+PS-ThM4** Diffusion Kinetics Study of Adatom Islands: Activation Energy Barriers Predicted using Data-driven Approaches, ***ShreeRam Acharya***, *T.S. Rahman,* University of Central Florida	**TF+PS-ThM4** Tungsten Atomic Layer Deposition on Vertically Aligned Carbon Nanotube Structures, ***Ryan Vanfleet***, *R.C. Davis, D.D. Allred, R.R. Vanfleet,* Brigham Young University
9:20am	**TF+AS+EL+PS-ThM5** Using Ellipsometry and XPS to Understand the Degradation of Thin-film Aluminum Mirrors Protected by Ultrathin Fluorides, *M.R. Linford,* ***Brian I. Johnson***, *R.S. Turley, D.D. Allred,* Brigham Young University	**INVITED: TF+PS-ThM5** ALD in Metal Organic Frameworks: Toward Single Site Synthesis and Sinter-Resistant Catalysts, ***Alex Martinson***, Argonne National Laboratory
9:40am	**TF+AS+EL+PS-ThM6** Model for Amorphous Thin Film Formation and Validation, ***Rahul Basu***, VTU, India	Invited talk continues.
10:00am	**BREAK - Complimentary Coffee in Exhibit Hall – AVS Presidents Panel, Booth #168, Exhibit Hall**	
10:20am		
10:40am		
11:00am	**INVITED: TF+AS+EL+PS-ThM10** 2D TMD Monolayer of MoS_2 BY ALD and Insight in the Mechanism by Surface Organometallic Chemistry, ***Elsje Alessandra Quadrelli***, CNRS CPE Lyon, France	**TF+PS-ThM10** Alumina Deposition by Atomic Layer Deposition (ALD) on Flat Surfaces and High Aspect Ratio Structures, ***Dhruv Shah***, *D.I. Patel, D.J. Jacobsen, J.E. Erickson, M.R. Linford,* Brigham Young University
11:20am	Invited talk continues.	**TF+PS-ThM11** Resistivity of the Alumina Diffusion Barrier in Catalytic Carbon Nanotube Growth, ***Berg Dodson***, *G. Chen, R.C. Davis, R.R. Vanfleet,* Brigham Young University
11:40am	**TF+AS+EL+PS-ThM12** A Novel Fourier Transform Ion Trap Mass Spectrometer for Semiconductor Processes, ***Gennady Fedosenko***, *H.-Y. Chung, R. Reuter, A. Laue, V. Derpmann, L. Gorkhover, M. Aliman, M. Antoni,* Carl Zeiss SMT GmbH, Germany	**TF+PS-ThM12** High Temperature Active CeO_2 Nanorods Generated via Diffusion Limited Atomic Layer Deposition, ***Haoming Yan***, *X.Z. Yu, Q. Peng,* University of Alabama
12:00pm	**TF+AS+EL+PS-ThM13** Realization of Shifts in Threshold Voltage and Subthreshold Swing in Atomic Layer Deposited Zinc Oxide As Channel Layer through *in-situ* Half-Cycle Analysis, ***Harrison Sejoon Kim***, *A.T. Lucero, S.J. Kim, J. Kim,* University of Texas at Dallas	**12:20 pm FREE LUNCH IN EXHIBIT HALL* (See Registration Tickets)** ***while supplies last**

	2D Materials Focus Topic **Room 201B - Session 2D+EM+MN+NS-ThA** **Novel Quantum Phenomena in 2D Materials** **Moderator:** Hsin Lin, Institute of Physics, Academia Sinica	**Actinides and Rare Earths Focus Topic** **Room 202C - Session AC-ThA** **Early Career Scientists** **Moderators:** Tomasz Durakiewicz, National Science Foundation, David Shuh, Lawrence Berkeley National Laboratory
2:20pm	**2D+EM+MN+NS-ThA1** Double Indirect Interlayer Exciton in a $MoSe_2/WSe_2$ van der Waals Heterostructure, ***Aubrey Hanbicki***, *H.-J. Chuang, M. Rosenberger, C.S. Hellberg, S.V. Sivaram, K.M. McCreary, I. Mazin, B.T. Jonker,* Naval Research Laboratory	**INVITED: AC-ThA1** Complexation, Characterization and Separation of the Lanthanides and Actinides: Shedding Light to Subtle Differences within the f-element Series, ***Gauthier Deblonde***, *C.H. Booth,* Lawrence Berkeley National Laboratory*; M. Kelley, J. Su, E. Batista, P. Yang,* Los Alamos National Laboratory*; A. Müller, P. Ercius, A.M. Minor, R.J. Abergel,* Lawrence Berkeley National Laboratory
2:40pm	**2D+EM+MN+NS-ThA2** Comparison of A- and B-exciton Intensity and Polarization in Transition Metal Dichalcogenide Monolayers and Heterostructures, ***Kathleen McCreary***, *A.T. Hanbicki, S.V. Sivaram, B.T. Jonker,* U.S. Naval Research Laboratory	Invited talk continues.
3:00pm	**INVITED: 2D+EM+MN+NS-ThA3** Optospintronics and Magnetism with 2D Materials and Heterostructures, ***Roland Kawakami***, The Ohio State University	**INVITED: AC-ThA3** Improving the Understanding of Actinides Through Spectroscopy, ***Samantha Cary***, *J. Su,* Los Alamos National Laboratory*; S.S. Galley, T.E. Albrecht-Schmitt,* Florida State University*; E. Batista, M.G. Ferrier, S.A. Kozimor, V. Mocko, B.L. Scott, B.W. Stein,* Los Alamos National Laboratory*; F.D. White,* Florida State University*; P. Yang,* Los Alamos National Laboratory
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**2D+EM+MN+NS-ThA6** Giant Electromechanical Response in Van-der-Waals Layered Crystals, ***Sabine Neumayer***, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory*; E.A. Eliseev,* National Academy of Sciences of Ukraine*; A. Tselev,* CICECO and Department of Physics, University of Aveiro, Portugal*; A.N. Morozovska,* National Academy of Sciences of Ukraine*; M.A. Susner, M.A. McGuire,* Oak Ridge National Laboratory*; J. Brehm, S. Pantelides,* Vanderbilt University*; N. Balke, P. Maksymovych,* Center for Nanophase Materials Sciences, Oak Ridge National Laboratory	**INVITED: AC-ThA6** Structural Chemistry of M(IV) (M = Ce, Th, and U) Complexes Isolated from Aqueous Solution, ***Karah Knope***, Georgetown University
4:20pm	**2D+EM+MN+NS-ThA7** A Universal Method for Measuring Valleytronic Quality of 2D Materials using Conventional Raman Spectroscopy, ***Steven Vitale***, *J.O. Varghese, D.A. Nezich, M. Rothschild,* MIT Lincoln Laboratory	Invited talk continues.
4:40pm	**INVITED: 2D+EM+MN+NS-ThA8** Discovery of Intrinsic Ferromagnetism in 2D van der Waals Crystals, ***Xiang Zhang***, *C. Gong,* University of California, Berkeley	**INVITED: AC-ThA8** Hundess, Coherence and Magnetism in URu2Si2- and USb2-family Materials, ***L. Andrew Wray***, *L. Miao, H. He,* New York University*; S. Ran,* University of Maryland, College Park*; N.P. Butch,* Nist / Umd*; J.D. Denlinger, Y.-D. Chuang,* Advanced Light Source, Lawrence Berkeley National Laboratory
5:00pm	Invited talk continues.	Invited talk continues.
5:20pm	**2D+EM+MN+NS-ThA10** Spectroscopic Evidence of Pair-mediated Bosonic Modes in Superconductor $FeSe/SrTiO_3(100)$ Film, ***Minjun Lee***, Seoul National University, Republic of Korea*; M. Oh, H. Jeon, S. Yi, I. Zoh,* Seoul National University, Republic of Korea*; C. Zhang,* Seoul National University, Republic of Korea*; J. Chae, Y. Kuk,* Center for Quantum Nanoscience, Institute for Basic Science, Republic of Korea	
5:40pm		

	Applied Surface Science Division **Room 204 - Session AS+NS-ThA** **Profiling, Imaging and Other Multidimensional Pursuits** **Moderators:** Ashley Ellsworth, Physical Electronics, Jordan Lerach, ImaBiotech Corp.	**Biomaterial Interfaces Division** **Room 101B - Session BI-ThA** **Biolubrication and Wear / Women in Bio-surface Science** **Moderators:** Anna Belu, Medtronic, Sally McArthur, Swinburne University of Technology and CSIRO, Australia
2:20pm	**AS+NS-ThA1** Surface Science Study of Au/Ni/Cr/n-SiC and Au/Cr/Ni/n-SiC Thin Film Ohmic Contact Material, ***Martyn Kibel,*** La Trobe University, Australia; *A.J. Barlow,* La Trobe University, Australia; *P.W. Leech,* RMIT University, Australia	**INVITED: BI-ThA1** Super Lubrication and Extremewear Protection using Bioinspired Polymers, ***Xavier Banquy,*** *J. Faivre,* Universite de Montreal, Canada; *G. Xie, M. Olszewski,* Carnegie Mellon University; *L. David, T. Delair, G. Sudre, A. Montembault,* Univ. Claude Bernard Lyon I; *K. Matyjaszewski,* Carnegie Mellon University; *R. Shrestha,* Universite de Montreal, Canada
2:40pm	**AS+NS-ThA2** 3D Imaging of InGaN/GaN based Nanowires and Nanotubes using Time-of-flight Secondary Ion Mass Spectrometry, ***Jean-Paul Barnes,*** Univ. Grenoble Alpes, CEA, LETI, France; *A. Kapoor,* Univ. Grenoble Alpes, CEA, France; *C. Durand,* Univ. Grenoble Alpes, CEA, France; *C. Bougerol,* Univ. Grenoble Alpes, CNRS, France; *J. Eymery,* Univ. Grenoble Alpes, CEA, France	Invited talk continues.
3:00pm	**INVITED: AS+NS-ThA3** Atom Probe Tomography: Applications and Prospects for Surface and Interface Science, ***Austin Akey,*** *D.C.. Bell,* Harvard University	**BI-ThA3** A Billion Force Runs: The AFM/Single-molecule Version of the Pitch Drop Experiment, ***Laila Moreno Ostertag,*** Vienna University of Technology, Austria; *T. Utzig,* Max Planck Institute for Iron Research, Germany; *C. Klinger,* TU Bergakademie Freiberg, Germany; *M. Valtiner,* Vienna University of Technology, Austria
3:20pm	Invited talk continues.	**BI-ThA4** Ionic Liquid Behaviour in Biologic Environments: Structuring and Lubrication at Aqueous Solid/liquid Interfaces, *H.-W. Cheng,* TU Wien, Germany; *H. Weiss, M. Mezger,* Max Planck Institute for Polymer Research, Germany; ***Markus Valtiner,*** Vienna University of Technology, Austria
3:40pm	**BREAK**	**BREAK**
4:00pm	**AS+NS-ThA6** TOF-SIMS Analysis with High Lateral and High Mass Resolution in Parallel, *F. Kollmer,* IONTOF GmbH, Germany; *N.J. Havercroft,* IONTOF USA; *A. Henß,* Justus-Liebig University Giessen, Germany; *J. Zakel, D. Rading, H. Arlinghaus,* ***Ewald Niehuis,*** IONTOF GmbH, Germany	**INVITED: BI-ThA6** Synergistic Mechanisms of Selenium and Tellurium based Nano-Alloys Towards Biofilm Inhibition, ***Kelly Nash,*** *S. Tek, B. Vincent, C. Smith, R. Robledo,* University of Texas at San Antonio
4:20pm	**AS+NS-ThA7** Industrial Applications of Surface Analysis in Chemical Mechanical Planarization, ***Hong Piao,*** *Y.N. Liang, J. McDonough, C. Ballesteros,* FUJIFILM Planar Solutions, LLC, FUJIFILM Electronic materials USA., Inc.; *E. Turner,* FUJIFILM Planar Solutions, LLC, FUJIFILM Electronic materials USA., Inc; *A. Mishra, R. Wen,* FUJIFILM Planar Solutions, LLC, FUJIFILM Electronic materials USA., Inc.	Invited talk continues.
4:40pm	**AS+NS-ThA8** Correlative Images of Microscopy Spectroscopy: Beyond the 3D Characterization in Surface Analysis, ***Tanguy Terlier,*** Korea Institute of Science and Technology, Republic of Korea; *R. Verduzco,* Shared Equipment Authority, Rice University; *Y. Lee,* Korea Institute of Science and Technology, Republic of Korea	**BI-ThA8** From Bedside Back to Bench: Combining Human Centered Design with Biointerfacial Research, *P.A. Nguyen, T. Martin, D. Cuylear, L. Mckenney, B. Matheson, A. Yingling, L. Ista,* ***Heather Canavan,*** University of New Mexico
5:00pm	**AS+NS-ThA9** 3D Structure of Atomically Dispersed Metal Species on an Oxide Single Crystal Surface Studied by Polarization-dependent Total Reflection Fluorescence (PTRF)-XAFS, ***Satoru Takakusagi,*** *K. Asakukra,* Hokkaido University, Japan	**BI-ThA9** Liquid-Infused Surfaces Coated on Paper Improve Bacteria Handling Efficiency and Detection, *D. Regan, C. Lilly, A. Weigang, H. Patanwala,* ***Caitlin Howell,*** University of Maine
5:20pm	**AS+NS-ThA10** XPS Imaging and Spectromiscroscopy Investigation of Extended Release Pharmaceutical Tablets, ***Jonathan Counsell,*** *S.J. Coultas, C.J. Blomfield,* Kratos Analytical Ltd, UK; *D.J. Scurr,* The University of Nottingham, UK; *L. Mason,* University of Nottingham, UK; *V. Ciarnelli, J.M. Garfitt, S. Rigby-Singleton,* Juniper Pharma Services Ltd, UK; *M.R. Alexander,* The University of Nottingham, UK; *M.C. Davies,* University of Nottingham, UK; *C. Moffitt,* Kratos Analytical Inc.; *S.J. Hutton,* Kratos Analytical Ltd, UK	**BI-ThA10** Tailoring Interactions at the Nanoparticle-nucleic Acid Interface using Molecular Modelling, *M. Manning, J.A. Nash,* ***Yaroslava Yingling,*** North Carolina State University
5:40pm	**AS+NS-ThA11** An experimental Guide to Conversion of Tof-SIMS Spectrum to BIG DATA: Application in Analysis of Ultrathin Coatings, ***Kevin Abbasi,*** *A.A. Avishai,* Swagelok Center for Surface Analysis of Materials, Case school of Engineering, Case Western Reserve University	**BI-ThA11** Biomolecule Interaction with Polymer Thin Films Based on Zwitterions and Polymer Nanoparticles, ***Eva Bittrich,*** *C. Naas,* Leibniz-Institut für Polymerforschung Dresden e.V., Germany; *F. Mele,* Leibniz-Institut für Polymerforschung Dresden e.V. and Polytechnic University of Turin, Italy; *A. Münch,* Leibniz-Institut für Polymerforschung Dresden e.V., Germany; *P. Uhlmann,* Leibniz-Institut für Polymerforschung Dresden e.V.,Germany; *D. Appelhans, K.-J. Eichhorn, B. Voit,* Leibniz-Institut für Polymerforschung Dresden e.V., Germany

	Electronic Materials and Photonics Division **Room 101A - Session EM+2D+NS+PS+RM+TF-ThA** **IoT Session: Flexible Electronics & Flash Networking Session** **Moderators:** Shalini Gupta, Northrop Grumman ES, Sang M. Han, University of New Mexico	**Fundamental Discoveries in Heterogeneous Catalysis Focus Topic** **Room 201A - Session HC+SS-ThA** **Bridging Gaps in Heterogeneously Catalyzed Reactions** **Moderator:** Ryan Brown, Clarkson University
2:20pm	**INVITED: EM+2D+NS+PS+RM+TF-ThA1** Epitaxial Electrodeposition of Electronic and Photonic Materials onto Wafer-size Single Crystal Gold Foils for Flexible Electronics, ***Jay Switzer,*** Missouri University of Science and Technology	**HC+SS-ThA1** Hydrogen Adsorption and Reaction on RuO_2(110) Surface, *A. Dahal, I. Lyubinetsky,* ***Zdenek Dohnalek,*** Pacific Northwest National Laboratory
2:40pm	Invited talk continues.	**HC+SS-ThA2** The Role of Oxides for CO Oxidation over Pd and Rh, and How to Deal with Oxygen Poisoning, ***Johan Gustafson,*** Lund University, Sweden; *O. Balmes,* MAX IV Laboratory, Sweden; *C. Zhang,* Lund University, Sweden; *M. Shipilin,* Stockholm University, Sweden; *A. Schaefer,* Chalmers University of Technology, Gothenburg, Sweden; *B. Hagman,* Lund University, Sweden; *L. Merte, N.M. Martin, P-A. Carlsson,* Chalmers University of Technology, Gothenburg, Sweden; *M. Jankowski,* ESRF, France; *E.J. Crumlin,* Advanced Light Source, Lawrence Berkeley National Laboratory; *E. Lundgren,* Lund University, Sweden
3:00pm	**EM+2D+NS+PS+RM+TF-ThA3** Flexible Electronic Devices Based on Two Dimensional Materials, *R. Kim, N.R. Glavin,* Air Force Research Laboratory; *R.H. Rai, K. Gliebe, M. Beebe,* University of Dayton; Air Force Research Laboratory; *J. Leem, S. Nam,* University of Illinois at Urbana-Champaign; *R. Rao,* Air Force Research Laboratory; ***Christopher Muratore,*** *Katherine Burzynski,* University of Dayton	**INVITED: HC+SS-ThA3** Simplifying the Relationships between Catalyst Structure and Reaction Rates for Complex Mechanisms, ***Charles T. Campbell,*** University of Washington
3:20pm	**EM+2D+NS+PS+RM+TF-ThA4** Contact Resistances and Schottky Barrier Heights of Metal-SnS Interfaces, ***Jenifer Hajzus,*** *L. Porter,* Carnegie Mellon University; *A. Biacchi, S. Le, C. Richter, A. Hight Walker,* National Institute of Standards and Technology (NIST)	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**EM FLASH SESSION: KATHERINE BURZYNSKI**, Univ.of Dayton (**EM-ThP3); LUCAS STUCCHI-ZUCCHI**, Univ. of Campinas, Brazil **(EM-ThP6); JEFFREY CHANG,** UCLA (**EM-ThP10); GUANYU ZHOU**, Univ. of Texas at Dallas **(EM-ThP14); BO WANG**, Univ. of Southern California **(EM-ThP17); MIN KHANAL**, Auburn Univ. (**EM-ThP18)**	**HC+SS-ThA6** Spectroscopic Techniques for Identifying Reactive Intermediate Structures during Decomposition of Formic Acid over Metals and Metal Oxides, ***Megan Witzke,*** *D.W. Flaherty,* University of Illinois at Urbana-Champaign
4:20pm		**HC+SS-ThA7** Self-sustained Reaction Oscillations in a New Light, ***Uta Hejral,*** *S. Albertin, J. Zhou, S. Pfaff,* Lund University, Sweden; *M. Shipilin,* Stockholm University, Sweden; *S. Blomberg,* Lund University, Sweden; *O. Gutowski, A. Dippel,* Deutsches Elektronen-Synchrotron DESY, Germany; *J. Gustafson, J. Zetterberg, E. Lundgren,* Lund University, Sweden
4:40pm		**INVITED: HC+SS-ThA8** Operando Catalysis--A First-Principles Perspective, ***William Schneider,*** University of Notre Dame
5:00pm		Invited talk continues.
5:20pm		**HC+SS-ThA10** Chiral Selectivity in Heterogeneous Catalysis, *R. Chapleski,* ***Sharani Roy,*** University of Tennessee Knoxville
5:40pm		**HC+SS-ThA11** Combining *in situ* Environmental TEM and Multiscale Simulations to Study the Dynamic Processes of Copper Oxidation, ***Meng Li,*** *M.T. Curnan, W.A. Saidi, J.C. Yang,* University of Pittsburgh

	Advanced Ion Microscopy Focus Topic **Room 203B - Session HI-ThA** **Emerging Ion Sources, Optics, and Applications** **Moderators:** John A. Notte, Carl Zeiss Microscopy, LLC, Shinichi Ogawa, National Institute of Advanced Industrial Science and Technology (AIST)	**Magnetic Interfaces and Nanostructures Division** **Room 203A - Session MI+BI-ThA** **Interdisciplinary Magnetism** **Moderator:** Markus Donath, Westfälische Wilhelms-Universität Münster, Germany
2:20pm	**INVITED: HI-ThA1** Development of Gas Field Ionization Source using Gas with Low Ionization Energy that Enables Sample Processing and Observation, ***Shinichi Matsubara**, H. Shichi, T. Hashizume,* Hitachi, Japan	
2:40pm	Invited talk continues.	**MI+BI-ThA2** Chiral Induced Spin Selectivity in Molecular Bond Dissociation, ***Richard Rosenberg**,* Argonne National Laboratory
3:00pm	**HI-ThA3** Development of Scanning Helium Microscopy (SHeM), ***Susanne Schulze**, D.J. Ward, M. Bergin, S. Lambrick, W. Allison, J. Ellis, A. Jardine,* University of Cambridge, UK	**INVITED: MI+BI-ThA3** The Chiral Induced Spin Selectivity Effect- From Spintronics to Controlling Chemistry, ***Ron Naaman**,* Weizmann Institute of Science, Israel
3:20pm	**HI-ThA4** Fabrication of Trimer/Single Atom Tip for GFIS by Field Evaporation without Tip Heating, ***Kwang-Il Kim**,* University of Science and Technology, Republic of Korea*; Y.H. Kim, T. Ogawa,* Korea Research Institute of Standards and Science (KRISS), Republic of Korea*; S.J. Choi,* Kyungpook National University, Republic of Korea*; B. Cho, S.J. Ahn, I.-Y. Park,* Korea Research Institute of Standards and Science (KRISS), Republic of Korea	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: HI-ThA6** Nano Aperture Ion Source, ***Greg Schwind**, A. Botman, S. Kellogg,* Thermal Fisher Scientific*; L. van Kouwen, P. Kruit,* Delft University of Technology, Netherlands	**INVITED: MI+BI-ThA6** Multifunctional Ferromagnetic Disks for Life Sciences Applications, ***Elena Rozhkova**, V. Novosad,* Argonne National Laboratory
4:20pm	Invited talk continues.	Invited talk continues.
4:40pm	**HI-ThA8** Avoiding Amorphization Related Shape Changes of Nano-structures during Medium Fluence Ion Beam Irradiation of Semiconductor Materials, ***Xiaomo Xu**, G. Hlawacek, H.-J. Engelmann, K.-H. Heinig,* Helmholtz Zentrum Dresden-Rossendorf, Germany*; W. Möller,* Helmholtz-Zentrum Dresden-Rossendorf, Germany*; A. Gharbi,* CEA-LETI, France*; R. Tiron,* CEA-LETI, MINATEC, France*; L. Bischoff, T. Prüfer, R. Hübner, S. Facsko, J. von Borany,* Helmholtz Zentrum Dresden-Rossendorf, Germany	**INVITED: MI+BI-ThA8** Magnetic Nanoparticles in Biomedicine: Recent Developments in Imaging, Diagnostics and Therapy, ***Kannan Krishnan**,* University of Washington
5:00pm		Invited talk continues.
5:20pm		
5:40pm		

Thursday Afternoon, October 25, 2018

	MEMS and NEMS Group Room 202B - Session MN+2D+AN+NS-ThA Nonlinear and Thermal Resonators **Moderators:** Meredith Metzler, University of Pennsylvania, Christian Zorman, Case Western Reserve University	Nanometer-scale Science and Technology Division Room 102B - Session NS+2D+AS+MN+PC-ThA SPM – Probing Electronic and Transport Properties **Moderators:** Ondrej Dyck, Oak Ridge National Laboratory, Sergei Kalinin, Oak Ridge National Laboratory, Indira Seshadri, IBM Research Division, Albany, NY
2:20pm	**INVITED: MN+2D+AN+NS-ThA1** Embracing Nonlinearity and Thermal Fluctuations in Nanomechanics, ***Daniel Lopez,*** *D.A. Czaplewski, C. Chen,* Argonne National Laboratory*; D. Zanette,* Centro Atomico Bariloche, Argentina*; S. Shaw,* Michigan State Univrsity	**INVITED: NS+2D+AS+MN+PC-ThA1** Imaging Currents in Two-dimensional Quantum Materials, ***Katja Nowack,*** Cornell University
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**MN+2D+AN+NS-ThA3** Probing Ion Radiation Effects in Silicon Crystals by 3D Integrated Resonating Thin Diaphragms, ***Hailong Chen,*** *H. Jia, V. Pashaei,* Case Western Reserve University*; W. Liao, C.N. Arutt, M.L. McCurdy,* Vanderbilt University*; P. Hung,* The Aerospace Corporation*; R.A. Reed, R.D. Schrimpf, M.L. Alles,* Vanderbilt University*; P.X.-L. Feng,* Case Western Reserve University	**NS+2D+AS+MN+PC-ThA3** Side-gate Construct for Probing Active Energy Levels in Electron Transport through a Solid-state Surface-bound Protein Monolayer, ***Sidney Cohen,*** *B. Kayser, C. Gua, M. Sheves, I. Pecht, D. Cahen,* Weizmann Institute of Science, Israel
3:20pm	**MN+2D+AN+NS-ThA4** An Array of Thermally-actuated Nanoresonators for Real-time Mass Spectrometry, ***Martial Defoort,*** *M. Sansa, M. Gély, G. Jourdan, S. Hentz,* CEA/LETI-University Grenoble Alpes, France	**NS+2D+AS+MN+PC-ThA4** Adding Electrons One at a Time to Electrostatically Confined Graphene Quantum Dots, ***Daniel Walkup,*** *C. Gutierrez, F. Ghahari,* National Institute of Standards and Technology (NIST)/ University of Maryland, College Park*; C. Lewandowski,* MIT*; J. Rodriguez-Nieva,* Harvard University*; T. Taniguchi, K. Watanabe,* National Institute for Materials Science (NIMS), Japan*; L. Levitov,* MIT*; N.B. Zhitenev, J.A. Stroscio,* National Institute of Standards and Technology (NIST)
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: MN+2D+AN+NS-ThA6** Nonlinear and Noise Induced Dynamics of High Q Nanomechanical Resonators, ***Jana Huber,*** *E.M. Weig,* University of Konstanz, Germany	**NS+2D+AS+MN+PC-ThA6** Bulk and Surface Contribution to the Charge and Spin Transport in Topological Insulators Observed with a Four-Probe Scanning Tunneling Microscope, ***Wonhee Ko,*** *G.D. Nguyen,* Oak Ridge National Laboratory*; H. Kim, J.S. Kim,* Pohang University of Science and Technology, Republic of Korea*; A.-P. Li,* Oak Ridge National Laboratory
4:20pm	Invited talk continues.	**NS+2D+AS+MN+PC-ThA7** Modulation of Single-Walled Carbon Nanotube Electronic Structure by External Electronic Perturbations: Scanning Tunneling Spectroscopy and Density Functional Theory, ***Benjamen Taber***[1]*, G.V. Nazin,* University of Oregon
4:40pm	**MN+2D+AN+NS-ThA8** SNIC Bifurcation Generated Mechanical Frequency Comb, ***David Czaplewski,*** *D. Lopez,* Center for Nanoscale Materials, Argonne National Laboratory*; O. Shoshani,* Ben-Gurion University -Negev, Israel*; A.M. Eriksson,* Chalmers University of Technology, Gothenburg, Sweden*; S.W. Shaw,* Florida Institute of Technology	**NS+2D+AS+MN+PC-ThA8** Single Charge and Exciton Dynamics probed on the Molecular Scale, ***Anna Roslawska,*** *P. Merino, C. Grosse, C.C. Leon, O. Gunnarsson, M. Etzkorn, K. Kuhnke, K. Kern,* Max Planck Institute for Solid State Research, Germany
5:00pm	**MN+2D+AN+NS-ThA9** A Buckling-based, DC Controlled, Non-volatile Nanoelectromechanical Logic Memory, *S.O. Erbil, U. Hatipoğlu,* Bilkent University, Turkey*; C. Yanık,* Sabancı University*; M. Ghavami,* ***Mehmet Selim Hanay,*** Bilkent University, Turkey	**NS+2D+AS+MN+PC-ThA9** Microscopic Understanding of the Temperature-dependent Carrier Transport in Ge Nano - Crystal s Films, ***Dan Shan,*** Yangzhou Polytechnic Institute, China*; J. Xu,* Nanjing Universityy, China
5:20pm		
5:40pm		

[1] **NSTD Postdoc Finalist**

	Plasma Science and Technology Division **Room 104C - Session PS+EM+TF-ThA** **Atomic Layer Processing: Integration of ALD and ALE** **Moderator:** Scott Walton, U.S. Naval Research Laboratory	**Plasma Science and Technology Division** **Room 104A - Session PS-ThA** **Plasma Diagnostics, Sensors and Controls** **Moderator:** Steven Shannon, North Carolina State University
2:20pm	**PS+EM+TF-ThA1** Atomic-Layer Etching (ALE) of Nickel or Nickel Oxide Films by Hexafluoroacetylacetone (HFAC) Molecules, ***Abdulrahman Basher***, *M. Isobe, T. Ito, K. Karahashi,* Osaka University, Japan*; M. Kiuchi,* National Institute of Advanced Industrial Science and Technology (AIST), Japan*; T. Takeuchi,* Nara Women's University, Japan*; S. Hamaguchi,* Osaka University, Japan	**PS-ThA1** In-situ Measurement of Electron Emission and Electron Reflection Yields, ***Mark Sobolewski***, National Institute of Standards and Technology (NIST)
2:40pm	**PS+EM+TF-ThA2** Thermal Atomic Layer Etching of HfO_2 Using HF for Fluorination and $TiCl_4$ for Ligand-Exchange, *Y. Lee,* ***Steven George***, University of Colorado at Boulder	**PS-ThA2** Electron Energy Distribution Measurements in Dusty Non-thermal Plasmas, ***Austin Woodard***, *L. Mangolini,* University of California, Riverside
3:00pm	**PS+EM+TF-ThA3** Rapid thermal-cyclic Atomic Layer Etching of SiO_2 Using Infrared Annealing, ***Nobuya Miyoshi***, Hitachi High-Technologies, Japan*; H. Kobayashi, K. Shinoda, M. Kurihara,* Hitachi, Japan*; K. Kawamura, K. Ookuma, Y. Kouzuma, M. Izawa,* Hitachi High-Technologies, Japan	**INVITED: PS-ThA3** The Surface Plasmon Energy and the Secondary Electron Emission on an Oxidized Aluminum Surface, *J.-T. Li, J. Qiu,* ***Yi-Kang Pu***, Tsinghua University, China
3:20pm	**PS+EM+TF-ThA4** The Smoothing Effect in Atomic Layer Etching (ALE), ***Keren Kanarik***, *S. Tan, W. Yang, I.L. Berry, T.B. Lill, Y. Pan, R.A. Gottscho,* Lam Research Corporation	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**INVITED: PS+EM+TF-ThA6** Prospects for Combining ALD and ALE in a Single Chamber, ***Mike Cooke***, Oxford Instruments, UK	**PS-ThA6** Transient Phenomena in Power Modulated Chlorine Plasma, ***Priyanka Arora***, *T. List, T. Ma,* University of Houston*; S. Shannon,* North Carolina State University*; S. Nam,* Samsung Electronics Co., Ltd., Republic of Korea*; V.M. Donnelly,* University of Houston
4:20pm	Invited talk continues.	**PS-ThA7** Measurements of RF Magnetic Fields and Plasma Current in Coupled Low and Very High Dual-Frequency Plasma Sources, *J.P. Zhao, P.L.G. Ventzek, B. Lane,* Tokyo Electron America, Inc.*;* ***Toshihiko Iwao***, *K. Ishibashi,* Tokyo Electron Technology Solutions Ltd., Japan
4:40pm	**PS+EM+TF-ThA8** Low Temperature Surface Preparation of GaN Substrates for Plasma Assisted-Atomic Layer Epitaxial Growth, ***Samantha G. Rosenberg***, U.S. Naval Research Laboratory*; D.J. Pennachio,* University of California, Santa Barbara*; M. Munger,* SUNY Brockport*; C. Wagenbach,* Boston University*; V.R. Anderson,* U.S. Naval Research Laboratory*; S.D. Johnson,* U. S. Naval Research Laboratory*; N. Nepal, A.C. Kozen, J.M. Woodward,* U.S. Naval Research Laboratory*; Z.R. Robinson,* SUNY Brockport*; K.F. Ludwig,* Boston University*; C.J. Palmstrøm,* University of California, Santa Barbara*; C.R. Eddy, Jr.,* U. S. Naval Research Laboratory	**PS-ThA8** Self-neutralized Nearly Monoenergetic Positive Ion Beam Extracted From a Pulsed Plasma, ***Ya-Ming Chen***, *R. Sawadichai,* University of Houston*; S. Tian,* Lam Research Corporation*; V.M. Donnelly, D.J. Economou, P. Ruchhoeft,* University of Houston
5:00pm	**PS+EM+TF-ThA9** Chemical Interactions with Alkali Compounds for Controlling the Transition between Thermal HF-based Atomic Layer Etching and Deposition, ***John Hennessy***, Jet Propulsion Laboratory, California Institute of Technology	**PS-ThA9** Diagnostics of Plasma Neutral Species in a Very High Frequency Oxygen Plasma with High Sensitivity Broadband Absorption Spectroscopy, ***Jianping Zhao***, *P.L.G. Ventzek, B. Lane,* Tokyo Electron America, Inc.*; T. Iwao, K. Ishibashi,* Tokyo Electron Technology Solutions Ltd., Japan*; J.-P. Booth,* CNRS, Ecole Polytechnique, France
5:20pm	**INVITED: PS+EM+TF-ThA10** Selective Processing to Enable High Fidelity Control for the 5 nm Node, ***Benjamen Rathsack***, Tokyo Electron America, Inc.*; A. Ranjan,* TEL Technology Center, America, LLC.*; P.L.G. Ventzek,* Tokyo Electron America, Inc.*; H. Mochiki,* Tokyo Electron Miyagi, Ltd., Japan*; J. Bannister,* Tokyo Electron America, Inc.	**PS-ThA10** Development of the Virtual Metrology Using a Plasma Information Variable (PI-VM) for Monitoring SiO_2 Etch Depth, ***Yunchang Jang***, *H.-J. Roh, S. Ryu, J.-W. Kwon, G.-H. Kim,* Seoul National University, Republic of Korea
5:40pm	Invited talk continues.	**PS-ThA11** Model Predictive Control of Plasma Density in Ar/SF_6 Capacitively Coupled Plasma Source, ***Sangwon Ryu***, *H.-J. Roh, Y. Jang, D. Park, J. Koo, J.M. Lee, G.-H. Kim,* Seoul National University, Republic of Korea

Thursday Afternoon, October 25, 2018

	Novel Trends in Synchrotron and FEL-Based Analysis Focus Topic **Room 202A - Session SA+AS+HC+SS-ThA** **IoT Session: Multi-modal Characterization of Energy Materials & Device Processing** **Moderators:** Maya Kiskinova, Elettra-Sincrotrone Trieste, Italy, Slavomir Nemsak, Advanced Light Source, Lawrence Berkeley National Laboratory	**Surface Science Division** **Room 203C - Session SS+AS+BI+MI+NS-ThA** **Organic/Inorganic Surfaces, Interfaces and Nanostructures** **Moderator:** Denis Potapenko, Princeton University
2:20pm	**INVITED: SA+AS+HC+SS-ThA1** Revealing Structure-Function Correlations in Fuel-Cells and Batteries., ***Klaus Attenkofer***, *E. Stavitski, M. Liu, D. Lu, M. Topsakal, D.J. Stacchiola, M.S. Hybertsen,* Brookhaven National Laboratory	**SS+AS+BI+MI+NS-ThA1** Investigation of the Stability of Ag Monolayers on Au(111) as a Function of Metal Adatom Diffusion, *J.A. Phillips, L.K. Harville, H.R. Morgan, L.E. Jackson, G. LeBlanc,* ***Erin Iski,*** University of Tulsa
2:40pm	Invited talk continues.	**SS+AS+BI+MI+NS-ThA2** Chain-Length Dependent Reactivity of Thiolate Self-Assembled Monolayers with Atomic Gas Species, ***Jeffrey Sayler***, *S. Brown, S.J. Sibener,* University of Chicago
3:00pm	**INVITED: SA+AS+HC+SS-ThA3** Soft X-ray Spectroscopy for High Pressure Liquid, ***Ruimin Qiao***, *J.-H. Guo, W. Chao,* Lawrence Berkeley National Laboratory	**INVITED: SS+AS+BI+MI+NS-ThA3** Scan Probe Studies of Lithium Transfer through Solid State Electrochemical Interfaces, ***Janice Reutt-Robey***, University of Maryland College Park
3:20pm	Invited talk continues.	Invited talk continues.
3:40pm	**BREAK**	**BREAK**
4:00pm	**SA+AS+HC+SS-ThA6** Surface Action Spectroscopy Using FHI FEL Infrared Radiation, ***Zongfang Wu***, *H. Kuhlenbeck, W. Schöllkopf, H.J. Freund,* Fritz-Haber Institute of the Max Planck Society, Germany	**SS+AS+BI+MI+NS-ThA6** Adsorption and Self-assembly of Halogenated Organic Molecules on the Si(111) √3×√3-Ag Surface, ***Renjie Liu***, Lakehead University, Canada; *C. Fu, A.G. Moisseev, M.R. Rao, Y. Chen, D.F. Perepichka,* McGill University, Canada; *M.C. Gallagher,* Lakehead University, Canada
4:20pm	**SA+AS+HC+SS-ThA7** Spectroscopic Insight into Resistive Switching Processes in Oxides, *C. Baeumer, C. Schmitz,* Forschungszentrum Juelich GmbH, Germany; *A. Kindsmüller,* RWTH Aachen University, Germany; *N. Raab, V. Feyer, D.N. Mueller, J. Hackl, S. Nemsak,* Forschungszentrum Juelich GmbH, Germany; *O.T. Mentes, A. Locatelli,* Elettra-Sincrotrone Trieste, Italy; *R. Waser, R. Dittmann,* ***Claus Michael Schneider***, Forschungszentrum Juelich GmbH, Germany	**SS+AS+BI+MI+NS-ThA7** Electron Interactions with Alkanethiol Self-assembled Monolayers on Au(111), ***Jodi Grzeskowiak***, University at Albany-SUNY; *C.A. Ventrice, Jr.,* SUNY Polytechnic Institute
4:40pm	**INVITED: SA+AS+HC+SS-ThA8** Visualizing Electronic Structures of Topological Quantum Materials by Synchrotron Based Photoemission Spectroscopy, ***Yulin Chen***, Oxford University, UK	**SS+AS+BI+MI+NS-ThA8** Measuring the Electronic Properties of Organic Single Crystals, ***Sujitra Pookpanratana***, *E.G. Bittle, C.A. Hacker, S.W. Robey,* National Institute of Standards and Technology (NIST); *R. Ovsyannikov, E. Giangrisostomi,* Helmholtz-Zentrum Berlin, Germany
5:00pm	Invited talk continues.	**SS+AS+BI+MI+NS-ThA9** Surface Functionalization of Porous Substrates via Initiated Chemical Vapor Deposition, ***Christine Cheng***, *M. Gupta,* University of Southern California
5:20pm	**SA+AS+HC+SS-ThA10** Electronic Structure of FeO, γ-Fe_2O_3 and Fe_3O_4 Epitaxial Films using High-energy Spectroscopies, ***German Rafael Castro***, Spanich CRG BM25-SpLine Beamline at the ESRF,, France; *J. Rubio Zuazo,* Spanish CRG BM25-SpLine at the ESRF, France; *A. Chainani,* Condensed Matter Physics Group, NSRRC, Taiwan, Republic of China; *M. Taguchi,* RIKEN SPring-8 centre, Japan; *D. Malterre,* Institut Jean Lamour, Universite de Lorraine, France; *A. Serrano Rubio,* Spanich CRG BM25-SpLine Beamline at the ESRF, France	**SS+AS+BI+MI+NS-ThA10** Atomic-Scale Understanding of Anatase Nanocatalyst Activation, ***William DeBenedetti***[1], *E.S. Skibinski, M.A. Hines,* Cornell University
5:40pm	**SA+AS+HC+SS-ThA11** Single-Bunch Imaging of Detonation Fronts Using Scattered Synchrotron Radiation, *M.H. Nielsen, J.A. Hammons, M. Bagge-Hansen, L.M. Lauderbach, R. Hodgin, K. Champley, W. Shaw,* Lawrence Livermore National Laboratory; *N. Sinclair,* Washington State University; ***Trevor Willey***, Lawrence Livermore National Laboratory	**SS+AS+BI+MI+NS-ThA11** Mechanistic view of Solid-Electrolyte Interphase Layer Evolution at Li-metal Anode, ***Venkateshkumar Prabhakaran***, Physical Sciences Division, Pacific Northwest National Laboratory; *M.H. Engelhard, A. Martinez,* Environmental Molecular Science Laboratory, Pacific Northwest National Laboratory; *G.E. Johnson,* Physical Sciences Division, Pacific Northwest National Laboratory; *S. Thevuthasan,* Environmental Molecular Science Laboratory, Pacific Northwest National Laboratory; *V. Murugesan,* Physical Sciences Division, Pacific Northwest National Laboratory

[1] **National Student Award Finalist**

Thursday Afternoon, October 25, 2018

	Surface Science Division Room 102A - Session SS+EM+PS+TF-ThA Deposition, Etching and Growth at Surfaces **Moderator:** Bruce E. Koel, Princeton University	Thin Films Division Room 104B - Session TF+AS+EL+EM+NS+PS+SS-ThA IoT Session: Thin Films for Flexible Electronics and IoT **Moderators:** Jesse Jur, North Carolina State University, Siamak Nejati, University of Nebraska-Lincoln
2:20pm	**INVITED: SS+EM+PS+TF-ThA1** Controlled Deposition and High-Resolution Analysis of Functional Macromolecules in Ultrahigh Vacuum, ***Giovanni Costantini,*** University of Warwick, UK	**INVITED: TF+AS+EL+EM+NS+PS+SS-ThA1** Ultraflexible Organic Electronics for Bio-medical Applications, ***Tomoyuki Yokota,*** *T. Someya,* The University of Tokyo, Japan
2:40pm	Invited talk continues.	Invited talk continues.
3:00pm	**SS+EM+PS+TF-ThA3** Unconventional Nucleation and Growth Kinetics: *in situ* Variable-temperature Scanning Tunneling Microscopy Studies of Chemical Vapor Deposition of Inorganic Monolayers on Metallic Substrates, ***Pedro Arias,*** University of California, Los Angeles; *A. Abdulslam,* Colorado School of Mines; *A. Ebnonnasir,* University of California at Los Angeles; *C.V. Ciobanu,* Colorado School of Mines; *S. Kodambaka,* University of California, Los Angeles	**TF+AS+EL+EM+NS+PS+SS-ThA3** Molecular Surface Chemistry for Improved Interfaces in Organic Electronics, ***Jacob W. Ciszek,*** Loyola University Chicago
3:20pm	**SS+EM+PS+TF-ThA4** Redox-Active Ligands for Single-Site Metal-Organic Complexes on Surfaces as Heterogeneous Catalysts, ***Tobias Morris,*** Indiana University; *D.L. Wisman,* Indiana University, NAVSEA Crane; *I.J. Huerfano, N.A. Maciullis, K.G. Caulton, S.L. Tait,* Indiana University	**TF+AS+EL+EM+NS+PS+SS-ThA4** Investigation of Low Temperature ALD-deposited SnO_2 Films Stability in a Microfabrication Environment, ***Tony Maindron,*** *S.M. Sandrez, N.V. Vaxelaire,* CEA/LETI-University Grenoble Alpes, France
3:40pm	**BREAK**	**BREAK**
4:00pm	**SS+EM+PS+TF-ThA6** Oxidation and Ablation of HOPG Using Supersonic Beams of Molecular Oxygen Combined with STM Visualization, ***Ross Edel,*** *T. Grabnic, B. Wiggins, S.J. Sibener,* University of Chicago	**TF+AS+EL+EM+NS+PS+SS-ThA6** Dopant Distribution in Atomic Layer Deposited ZnO:Al and In_2O_3:H Films Studied by Atom Probe Tomography and Transmission Electron Microscopy, *Y. Wu, B. Macco,* Eindhoven University of Technology, The Netherlands; *A.D. Giddings, T.J. Prosa, D.J. Larson,* CAMECA Instruments Inc.; *S. Kölling, P.M. Koenraad, F. Roozeboom,* ***Erwin Kessels,*** *M.A. Verheijen,* Eindhoven University of Technology, The Netherlands
4:20pm	**SS+EM+PS+TF-ThA7** Kinetically Trapped Molecular Growth during the Self-assembly of ZnTPP on Ag(100), ***Sylvie Rangan,*** *P.K. Kim, C. Ruggieri, R.A. Bartynski,* Rutgers, the State University of New Jersey; *S. Whitelam,* Lawrence Berkeley National Laboratory	**TF+AS+EL+EM+NS+PS+SS-ThA7** Roll-to-Roll Processable OTFT Sensors and Amplifier, ***Kai Zhang,*** University of Oxford, Department of Materials, UK; *C.-M. Chen, B. Choubey, H.E. Assender,* University of Oxford, UK
4:40pm	**SS+EM+PS+TF-ThA8** Early Stage Oxidation and Evolution of Surface Oxides in Ni(100) and Ni-Cr(100) Thin Films, ***William H. Blades,*** *P. Reinke,* University of Virginia	**TF+AS+EL+EM+NS+PS+SS-ThA8** Functionalization of Indium Gallium Zinc Oxide Surfaces for Transparent Biosensors, *X. Du, S. John, J. Bergevin,* ***Gregory Herman,*** Oregon State University
5:00pm	**SS+EM+PS+TF-ThA9** DLC Films by Modified HiPIMS with Effect from Pulse Parameters on Plasma Parameters and Film Quality, ***David Ruzic,*** *I. Haehnlein,* University of Illinois at Urbana-Champaign; *B. Wu,* Southwest Jiaotong University; *D. Barlaz,* University of Illinois at Urbana-Champaign; *B.E. Jurczyk,* Starfire Industries	**TF+AS+EL+EM+NS+PS+SS-ThA9** Large Area Atmospheric Pressure Spatial ALD of IZO and IGZO Thin-film Transistors, *C. Frijters, I. Katsouras, A. Illiberi, G. Gelinck,* Holst Centre / TNO, Netherlands; ***Paul Poodt,*** Holst Centre / TNO and SALDtech B.V., Netherlands
5:20pm	**SS+EM+PS+TF-ThA10** Adsorption and Reactions on Topological Insulators Surfaces Probed by Low Energy Ion Scattering, ***Haoshan Zhu***[1], *W. Zhou, J.A. Yarmoff,* University of California - Riverside	**TF+AS+EL+EM+NS+PS+SS-ThA10** Thin Film Ink-Jet Printing on Textiles for Flexible Electronics, ***Jesse Jur,*** *I. Kim, H. Shahariar,* North Carolina State University
5:40pm	**SS+EM+PS+TF-ThA11** Atomically Controlled Metallation of Porphyrinoid Species with Lanthanides on Surfaces, ***Borja Cirera,*** IMDEA Nanoscience, Spain; *J. Björk,* Linköping University, Sweden; *G. Bottari, T. Torres,* Universidad Autonoma Madrid, Spain; *R. Miranda, D. Ecija,* IMDEA Nanoscience, Spain	**TF+AS+EL+EM+NS+PS+SS-ThA11** Flexography Oil Patterning for In-line Metallization of Aluminium Electrodes onto Polymer Webs: Commercial Roll to Roll Manufacturing of Flexible and Wearable Electronics, ***Bryan Stuart,*** *T. Cosnahan, A.A.R. Watt, H.E. Assender,* University of Oxford, Department of Materials, UK

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

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

2D-ThP1 Activated Reduction Plasma Assisted Sulfurization in Layered WS_2 Synthesis, ***Chien-Pao Lin,*** *C.-N. Hsiao,* ITRC,NARL, Taiwan, Republic of China*; P.-S. Chen, C.-A. Jong,* No Matching Affiliation, Taiwan, Republic of China

2D-ThP2 Quantized States, Berry Phases, and Quantum-Hall Wedding-Cake structures in Graphene Quantum Dots, ***Fereshte Ghahari Kermani,*** *D. Walkup, C. Gutiérrez,* National Institute of Standards and Technology (NIST)/ University of Maryland, College Park*; C. Lewandowski,* Department of Physics, Massachusetts Institute of Technology*; J. Rodriguez-Nieva,* Massachusetts Institute of Technology*; K. Watanabe, T. Taniguchi,* National Institute for Materials Science, Japan*; L. Levitov,* Massachusetts Institute of Technology*; N.B. Zhitenev, J.A. Stroscio,* National Institute of Standards and Technology (NIST)

2D-ThP3 Growth Phenomena and Mechanism of MoS2 Formed by Conventional Chemical Vapor Deposition, ***Cheol-Min Hyun,*** *J.H. Choi, S.W. Lee, J.-H. Ahn,* Korea Maritime and Ocean University, Republic of Korea

2D-ThP4 Graphene Micro Wires Defined by Photolithography and Plasma Etching for Field Effect Transistors, *F.C. Rufino, A.M. Pascon,* University of Campinas, Brazil*; D.G. Larrude,* Mackenzie Presbyterian University, Brazil*; W.C. Mariano,* ***José Alexandre Diniz,*** University of Campinas, Brazil

2D-ThP5 Elucidating the Influence of Chemical Functionalizationand Structural Defects in 2D Material Properties, ***Sanjini Nanayakkara,*** *H. Zhang,* National Renewable Energy Laboratory*; M.A. Todt, J.B. Sambur,* Colorado State University*; J.L. Blackburn, E.M. Miller,* National Renewable Energy Laboratory

2D-ThP6 In-Operando AFM/STM and Transport Measurements of a Graphene Hall Bar Device, ***Johannes Schwenk,*** National Institute of Standards and Technology (NIST)/ University of Maryland, College Park*; S. Kim,* National Institute of Standards and Technology (NIST) / Department of Physics and Astronomy, Seoul National University, Seoul, Korea*; F. Ghahari,* National Institute of Standards and Technology (NIST)/ University of Maryland, College Park*; J. Berwanger,* Institut für Experimentelle und Angewandte Physik, Universität Regensburg, Germany*; W.G. Cullen, S.R. Blankenship,* National Institute of Standards and Technology (NIST)*; Y. Kuk,* Department of Physics and Astronomy, Seoul National University, Seoul, Korea*; F.J. Giessibl,* Institut für Experimentelle und Angewandte Physik, Universität Regensburg, Germany*; N.B. Zhitenev, J.A. Stroscio,* National Institute of Standards and Technology (NIST)

2D-ThP7 Mechanical Properties of Graphynes under Tension and Shearing, ***Te-Hua Fang,*** National Kaohsiung University of Science and Technology, Taiwan*; C.-W. Hung,* National Kaohsiung University of Science and Technology

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

AC-ThP1 Upconversion Photoluminescence Efficiency Dependence of Yb ions in Gd0.91-xNbO4: Ybx3+, Er0.09*, S.S. Yi,* ***Seung Gon Lee,*** Silla University, Republic of Korea

AC-ThP2 Luminescence Characteristics of $(Gd_{0.85-x}Yb_{0.15})NbO_4:Er_x^{3+}$ Phosphors, *S.S. Yi,* ***DongGyu Lee,*** Silla University, Republic of Korea

AC-ThP3 Exploring the Electronic Structure of Molecular Lanthanide Complexes in the +2 Oxidation State Using Photoelectron Spectroscopy, ***Daniel Huh,*** *J.P. Bruce, J.C. Hemminger, W. Evans,* University of California, Irvine

AC-ThP4 Effects of Cerium Content on Local Structure in U1-xCexO2 Solid Solution, *H.J. Cao,* Shanghai Institute of Applied Physics, Chinese Academy of Science., China*;* ***Yuying Huang,*** Shanghai Institute of Applied Physics, Chinese Academy of Science, China

AC-ThP5 Magnetism of the $(Nd,R)_2Fe_{14}B$ - H system with R = Er and Tm, *I. Tereshina,* ***Lev Ivanov,*** M.V. Lomonosov Moscow State University, Russian Federation*; D. Gorbunov,* Helmholtz-Zentrum Dresden-Rossendorf, Germany*; M. Paukov,* Charles University, Prague, Czech Republic*; E.A. Tereshina-Chitrova,* Institute of Physics, Academy of Sciences of the Czech Republic*; M. Doerr,* Technische Universität Dresden, Germany*; L. Havela,* Charles University, Prague, Czech Republic*; A.V. Andreev,* Institute of Physics ASCR, Czech Republic

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

AS-ThP1 Toward an Improved Understanding of the role of soil organic matter in NOy cycling through Investigation of Heterogeneous Reactions with NO2+, *R. Hansen,* Indiana University*;* ***Mark Engelhard,*** Pacific Northwest National Laboratory*; J. Raff,* Indiana University

AS-ThP2 Measuring the Damage Depth and Recovery of PEMA Thin Films using Multiple Technique Analysis, ***William Sgammato,*** *R.E. Simpson,* Thermo Fisher Scientific, UK

AS-ThP3 Determination of Band Offsets in Semiconductor Heterostructures (2D/3D) by using XPS, ***Mohamed Hedhili,*** King Abdullah University of Science and Technology (KAUST), Core Labs, Saudi Arabia*; M. Tangi, P. Mishra, T.K. Ng, B. Janjua, C.C. Tseng,* Photonics Laboratory, King Abdullah University of Science and Technology (KAUST), Saudi Arabia*; D.H. Anjum,* King Abdullah University of Science and Technology (KAUST), Core Labs, Saudi Arabia*; M.S. Alias,* Photonics Laboratory, King Abdullah University of Science and Technology (KAUST), Saudi Arabia*; N. Wei,* King Abdullah University of Science and Technology (KAUST), Core Labs, Saudi Arabia*; L.J. Li,* Physical Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST), Saudi Arabia*; B.S. Ooi,* Photonics Laboratory, King Abdullah University of Science and Technology (KAUST), Saudi Arabia

AS-ThP4 Multi-technique Characterization of Nanowire-based Catalysts and Electrodes, ***Sarah Zaccarine,*** *C. Ngo,* Colorado School of Mines*; S. Shulda, S. Mauger, S.M. Alia, K.C. Neyerlin, B.S. Pivovar,* National Renewable Energy Laboratory*; S. Pylypenko,* Colorado School of Mines

AS-ThP5 Detailed Peak-Fitting Analysis of the Photoemission Spectra of the Early Oxidation Stages of Cobalt Thin Films, ***Dagoberto Cabrera-German,*** Universidad de Sonora, México*; O. Cortazar-Martinez, G. Vázquez, J.A. Torres-Ochoa,* Cinvestav-Unidad Queretaro, Mexico*; A. Herrera-Gomez,* CINVESTAV-Unidad Queretaro, Mexico

AS-ThP6 Characterization of Laser-Treated Ti-6Al-4V-Surfaces, ***Harry Meyer,*** *D. Leonard, A. Sabau,* Oak Ridge National Laboratory

AS-ThP7 Cross-Sectional Mapping vs. Depth Profiling Analysis: Is the Choice Always Clear?, ***Kathryn Lloyd,*** *J.R. Marsh,* DuPont Corporate Center for Analytical Sciences

AS-ThP8 Investigation on Human Evidences using ToF-SIMS Combined with Advanced Matching Recognition, *T. Terlier,* Korea Institute of Science and Technology*; J. Lee, M. Kang,* ***Yeonhee Lee,*** Korea Institute of Science and Technology, Republic of Korea

AS-ThP9 Calculation of Multiplet Structure in a Mixture of Copper Oxides, ***Diego Fernando Mulato-Gómez,*** *J.A. Torres Ochoa,* Cinvestav-Unidad Queretaro, Mexico*; D. Cabrera-German,* Universidad de Sonora, México*; A. Herrera-Gomez,* CINVESTAV-Unidad Queretaro, Mexico

AS-ThP10 Wafer Bonding Between LiTaO3(100) and Alpha-quartz SiO2(100) via Low Temperature (<220°C) NanoBonding™ Using Surface Energy Modification, ***Brian Baker,*** *J. Kintz, A. Yano, N. Herbots,* Arizona State University*; W.-L. Lee,* Cactus Materials, Inc.*; S.R. Narayan, J.M. Day,* Arizona State University*; R. Islam,* Cactus Materials, Inc.*; Y. Watznabe,* TDC Coporation*; M. Koury, M. Johnson, R.J. Culbertson, M. Magnus,* Arizona State University

AS-ThP11 Structural, Morphological and Electrical Properties of Multilayer Sequentially Sputtered Nb_3Sn Films for Different Layer Thicknesses, ***Md. Nizam Sayeed,*** Old Dominion University*; U. Pudasaini,* College of William and Mary*; H. E. Elsayed-Ali,* Old Dominion University*; G. Eremeev,* Thomas Jefferson National Accelerator Facility

AS-ThP12 Corrosive and Thermal Properties of ZrO_2- Y_2O_3 Thermal Barrier Coatings, ***Byung-Koog Jang,*** Kyushu University, Japan*; H.T. Kim,* Korea Institute of Ceramic Engineering and Technology

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

EM-ThP1 Femtosecond-Pulsed Laser Deposition of Erbium-Doped Glass Nanoparticles in Polymer Layers for Hybrid Optical Waveguide Amplifiers., ***Eric Barimah,*** University of Leeds, UK, United Kingdom of Great Britain and Northern Ireland*; M.W. Ziarko, N.A. Bamiedakis, I.H. White, R.V. Penty,* University of Cambridge, United Kingdom of Great Britain and Northern Ireland*; G.J. Jose,* University of Leeds, UK

EM-ThP2 Precisely Determining the Band Offset at GaN/AlGaN Interfaces by Effectively Control the Surface and Interface States, ***Sunan Ding***, *H. Yang,* SuZhou Institute of Nano-Tech and Nano-Bionics, CAS, China

EM-ThP3 Thermal Engineering for High-Power, Flexible Electronics, ***Katherine Burzynski***, University of Dayton and Air Force Research Laboratory, Materials and Manufacturing Directorate; *E.W. Blanton, N.R. Glavin, E.R. Heller, M. Snure, E.M. Heckman,* Air Force Research Laboratory; *C. Muratore,* University of Dayton

EM-ThP4 Growth and Magneto-optical Properties of $ZnO/Zn_{1-x}Mn_xO$ Thin Films on Si Substrates, ***Da-Ren Liu***, ITRC,NARL,Taiwan, Republic of Korea; *C.-J. Weng,* ITRC,NARL, Taiwan, Republic of Korea

EM-ThP5 The Formation of Stable GeO_2 Oxide on Germanium Epitaxial Layer using the High Pressure Oxidation, ***Nakjun Choi***, *J.H. Bae,* Sungkyunkwan University, Republic of Korea

EM-ThP6 NH_4OH Solution Wet Etching for Silicon Channel Thinning of Junctionless-FET, ***Lucas Stucchi-Zucchi***, *A.R. Silva, J.A. Diniz,* University of Campinas, Brazil

EM-ThP7 Fabrication of Highly-Efficient Nanoscale Multilayered Thin-Film Thermoelectric Devices, ***Alandria Henderson***, *J. Kimbrough, Z. Duncan, K. Davis, M. Howard, J. Elike, T. Wimbley, M. Glenn, Z. Xiao,* Alabama A&M University

EM-ThP8 Plasmonic Studies of Metallic Nanostructures Fabricated by DNA Origami, ***Enrique Samano***, *D. Ruiz, K.L. Cardos,* Universidad Nacional Autónoma de México, Mexico

EM-ThP9 Control of Randomness in Microsphere-Based Photonic Crystals Assembled by Langmuir-Blodgett Process, ***Sarun Atiganyanun***, *O.K. Abudayyeh, S.M. Han, S.E. Han,* University of New Mexico

EM-ThP10 Incorporation of Ferroelectric HfO_2 into Magnetoelectric Random-Access Memory (MeRAM) Devices, *K. Fitzell,* ***Jeffrey Chang***, *A. Acosta, H. Ma, X. Li, K.L. Wang, J.P. Chang,* University of California, Los Angeles

EM-ThP11 Extreme Environment Operation of $Al_{0.85}Ga_{0.15}N/Al_{0.7}Ga_{0.3}N$ High Electron Mobility Transistors, ***Patrick Carey***, *F.R. Ren,* University of Florida; *A.G. Baca, B. Klein, A.A. Allerman, A.M. Armstrong, E.A. Douglas, R.J. Kaplar,* Sandia National Laboratories; *S.J. Pearton,* University of Florida

EM-ThP12 Electrical Characterization of the Reduced Effective Schottky Barrier Height by Nanoscale Ge bi-layer of CZTSe Solar Cells, ***Sanghyun Lee***, Indiana State University

EM-ThP13 Optimal Contact Photolithography Techniques For HEMT Substrates using I-line Photoresist, ***Whitney Ingram***, *A. Jones, B. Klein, A.G. Baca, A.M. Armstrong, A.A. Allerman, E.A. Douglas,* Sandia National Laboratories

EM-ThP14 High-mobility Helical Tellurium Field Effect Transistors Enabled by Transfer-free, Low-temperature Direct Growth, ***Guanyu Zhou***, *R. Addou, Q. Wang, S. Honari, C.R. Cormier, L. Cheng, R. Yue, C.M. Smyth, A. Laturia, J. Kim, W.G. Vandenberghe, M.J. Kim, R.M. Wallace, C.L. Hinkle,* University of Texas at Dallas

EM-ThP16 Investigation of Field Emission from Single ZnO Nanowire, ***Yicong Chen***, *X. Song, Y. Wang, Z. Zhang, Z. Li, J. She, S. Deng, N. Xu, J. Chen,* State Key Lab of Optoelectronic Materials and Technologies, Guangdong Province Key Lab of Display Material and Technology, Sun Yat-sen University

EM-ThP17 Photoemission under Different Mechanisms from Single- and Dual-gate Carbon Nanotubes Field Effect Transistors, *S. Yang,* ***Bo Wang***, *S.B. Cronin,* University of Southern California

EM-ThP18 100 keV Proton Irradiation Effects on AlGaN/GaN Epistructures, ***Min Khanal***, *S. Uprety, K. Yapabandara, V. Mirkhani, S. Wang, B. Schoeneck, T. Isaacs-Smith, A. Ahyi, M.J. Bozack, M. Park,* Auburn University

EM-ThP19 Properties of WSe_2 Thin Films Grown by Molecular Beam Epitaxy, *P. Litwin, K.M. Freedy, T. Zhu, M. Zebarjadi,* ***Stephen McDonnell***, University of Virginia

EM-ThP20 Effects of O_2 Partial Pressure on Ga_2O_3 Thin-films, ***Seth King***, University of Wisconsin - La Crosse

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

HC-ThP1 Analyses of Nano-Crystalline Structure in Precipitated Iron-Based Catalysts for Fischer-Tropsch Synthesis, ***Dong Hyun Chun***, *G.B. Rhim, J.C. Park,* Korea Institute of Energy Research, Republic of Korea; *C.S. Kim,* Kookmin University, Republic of Korea; *J.-S. Bae, M.H. Youn, H. Jeong, S.W. Kang, H.-T. Lee, J.-I. Yang, H. Jung,* Korea Institute of Energy Research, Republic of Korea

HC-ThP2 *In situ* Infrared and Catalytic Reaction Studies of Active Sites on Pt Nanoparticles Supported on Nanosponge Oxides under CO oxidation, ***Sunyoung Oh***, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea; *C.H. Jung,* Institute for Basic Science (IBS), Republic of Korea; *H. Ha,* Chungnam National University, Republic of Korea; *C. Jo,* Institute for Basic Science (IBS), Republic of Korea; *S.Y. Moon, Y.K. Kim,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea; *W.H. Doh,* Institute for Basic Science (IBS), Republic of Korea; *H.Y. Kim,* Chungnam National University, Republic of Korea; *R. Ryoo, J.Y. Park,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea

HC-ThP3 Activity of Bimetallic Pt-Re Surfaces and Influence of the Support for the Water-Gas Shift Reaction, ***Amy Brandt***[1], *T.D. Maddumapatabandi, D. Shakya, S. Farzandh, D.A. Chen,* University of South Carolina

HC-ThP4 In-Operando Photoluminescence Imaging of a Single-Layer Molybdenum Disulfide Catalyst, ***Koichi Yamaguchi***, University of California - Riverside; *S. Naghibi, W. Coley, L. Bartels,* University of California, Riverside

HC-ThP5 Efficient Photoelectrochemical Water Splitting in Band Edge Engineered Metal Oxide Heterostructure Photoanode for Solar Fuel Production, ***Nisha Kodan***, Thin Film Laboratory, Department of Physics, IIT Delhi, India; *A.P. Singh,* Division of Chemical Physics, Department of Physics, Chalmers University of Technology, SE-412 96 Göteborg, Sweden; *B.R. Mehta,* Thin Film Laboratory, Department of Physics, IIT Delhi, India

HC-ThP6 Comparative Reactivity of Oxide and Metallic Phases on Rh(111), *R.G. Farber, M.E. Turano, W. Walkosz,* ***Christopher Smith***, *D.R. Killelea,* Loyola University Chicago

HC-ThP7 Hybrid Adsorbent Catalyst for Siloxane Removal: Fe-BEA Zeolites, ***Alba Cabrera-Codony***, University of Girona, Spain; *E. Santos-Clotas, J. Martin,* University of Girona

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

HI-ThP1 He+ and Ne+ Ion Beam Resolution Dependency on Beam Energy, ***Waqas Ali***, Intel Corporation, USA; *S. Tan,* Intel Corporation; *R.M. Hallstein, R.H. Livengood,* Intel Corporation, USA

HI-ThP2 *Focused Cs Ion Beam-Induced Deposition and Gas Assisted Etch Characterization Results for 10nm Circuit Edit Applications,* ***Roy Hallstein***, *R.H. Livengood, M.P. Ly,* Intel Corporation, USA; *Y. Greenzweig, Y. Drezner,* Intel Corporation, Israel; *B.J. Knuffman, A.V. Steele, A.B.J. Knuffman,* zeroK NanoTech

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

MI-ThP1 Synthesis and Size Dependent Magnetic Properties of Iron Oxide Nanoparticles, ***Jeremy Winsett***, *A. Moilanen, S. Neupane,* Middle Tennessee State University

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

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

MN-ThP1 The Ni-Co Micro-porous Array with High Dimensional Accuracy Control by Electroforming Process, ***YuHsin Lin***, *H.J. Wen,* ITRC,NARL, Taiwan, Republic of China*; C.J. Tsia,* NCTU, Taiwan, Republic of China*; M.-K. Wang, N.N. Chu, C.C. Chen, C.-N. Hsiao,* ITRC,NARL, Taiwan, Republic of China

MN-ThP2 Reactive Etching of AlGaN using BCl_3 and Ar/BCl_3, ***Meng-Kun Wang***, *Y.-H. Lin, C.-N. Hsiao, C.C. Chen, J.S. Su, N.C. Chu, C.-T. Lee,* ITRC,NARL, Taiwan, Republic of China

MN-ThP3 Self-Assembled Poly(Ethylene Glycol) Initated Spatial And Temporal Profiling Of Micro Devices For Selectively Growing Human Liver Cancer Cells, ***Juhi Jaiswal***, *M.D. Dhayal,* IIT (BHU), Varanasi, India

MN-ThP4 III-V_Si Wafer Bonding using Silicon Oxide Interlayer, ***WoongSun Lim***, *S.H. Jung,* Korea Advanced Nano Fab Center, Republic of Korea*; S.Y. Hwang,* Korea Advancnced Nano Fab Center, Republic of Korea*; G.Y. Yeom,* Sungkyunkwan University, Republic of Korea

MN-ThP5 Flexible Nanocomposite Sensors for Biomedical and Energy Harvesting Applications, *A.K. Batra,* ***Bir Bohara,*** Alabama A&M University*; R. Currie,* NASA

MN-ThP6 Comparative Studies of Electrical Behavior of PLZT Thin Film Capacitors using Coplanar and Interplanar Configurations, ***Vaishali Batra***, *R. Paul, S. Kotru,* The University of Alabama

MN-ThP7 Carbon Nanotube Yarn Based Strain Sensor, ***Maeum Han***, *J.Y. Lee, J.K. Kim, J.H. Park, D. Jung,* Korea Institute of Industrial Technology (KITECH), Republic of Korea

MN-ThP8 Carbon Nanotube Yarn Based Gas Sensor, *J.Y. Lee, M. Han, J.K. Kim,* ***Daewoong Jung***, Korea Institute of Industrial Technology (KITECH), Republic of Korea

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

NS-ThP1 Intermolecular Interactions in Self-Assembled Monolayers on Metal Surfaces Characterized by Ultrahigh Vacuum Tip-Enhanced Raman Spectroscopy, *J. Schultz, P. Whiteman,* ***Nan Jiang,*** University of Illinois at Chicago

NS-ThP2 Nanoscale Detection of Surface Plasmon-driven Hot Electron Flux on Au/TiO_2 Nanodiodes with Atomic Force Microscopy, ***Hyunhwa Lee***, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea*; H. Lee,* Institute for Basic Science (IBS), Republic of Korea*; J.Y. Park,* Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea

NS-ThP3 Surface Functionalization of 2D Mo_2C, ***Yang Zeng***, *P.H. McBreen, T. Zhang,* Laval University, Canada

NS-ThP4 a-Si:H Spacer Lithography Using Different Mandrels (Al, SiN_x and Photoresist) and Etching Processes (RIE, ECR and ICP), ***Andressa Rosa***, *J.A. Diniz,* UNICAMP, Brazil

NS-ThP5 Optimization of Stitching Multiple Fields of View for Large Scale Two Photon Lithography, ***Steven Kooi,*** Massachusetts Institute of Technology

NS-ThP6 Fabrication of Carbon Nanotube-Based Electronic Devices with the Dielectrophoresis Method, ***Joevonte Kimbrough***, *S. Chance, B. Whitaker, Z. Duncan, K. Davis, A. Henderson, Q. Yuan, Z. Xiao,* Alabama A&M University

NS-ThP7 Fabrication and Electrical Characterization of a Flagella-Scaffolded Metallic Nanocluster Network, ***Marko Chavez***, *P.J. Edwards, M.Y. El-Naggar, V.V. Kresin,* University of Southern California

NS-ThP8 High-contrast Infrared Polymer Photonic Crystals Fabricated by Direct Laser Writing, ***Yanzeng Li***, *D.B. Fullager, S. Park,* University of North Carolina at Charlotte*; D. Childers,* USC Conec, Ltd.*; G.D. Boreman, T. Hofmann,* University of North Carolina at Charlotte

NS-ThP9 Controlled Water-repellent Behavior by Modulating the Density of Nanoscale Si Nanopillar Structure Fabricated with Bio-template and Neutral Beam Etching Technique, ***Daisuke Ohori***, *S. Samukawa,* Tohoku University, Japan

NS-ThP10 An Empirical Model of Fences Formation during Ion Beam Processing, ***Anthony De Luca***, *J. Guerrero, C. Ligaud,* Cea, Leti, Minatec, France

NS-ThP11 Towards Molecular-Level Control of Reactions on Organic Semiconductor Surfaces, ***Gregory Deye***, *J.W. Ciszek,* Loyola University Chicago*; J. Chen, J. Vicente,* Ohio University*; S. Dalke, S. Piranej,* Loyola University Chicago

NS-ThP12 The TESLA JT SPM, ***Markus Maier***, *D. Stahl, A. Piriou, M. Fenner, J. Koeble, K. Winkler, T. Roth,* Scienta Omicron GmbH, Germany

NS-ThP13 Recent Developments of Home-made UHV SPM Systems and their Applications, ***Qing Huan***, *R.T. Wu, L.H. Yan, D.L. Bao, R.S. Ma, Z.B. Wu,* Institute of Physics, CAS, China*; Z.Y. Gao, X.Y. Chen,* University of Chinese Academy of Scineces, China*; J.H. Ren,* Institute of Physicsics, CAS, China*; L. Dong, A.W. Wang, H. Yang, Y.Q. Xing, L.M. Wu, J.H. Yan, Y.L. Wang, L.H. Bao, S.X. Du, H.J. Gao,* Institute of Physics, CAS, China

NS-ThP14 Novel *In-situ* Diagnostic tools to Analyze Chemical Composition and Energy Spectrum of Vapor in Thin Film Deposition Process, ***Mikhail Strikovski***, *S.H. Kolagani,* Neocera LLC

NS-ThP15 Towards Automated High Throughput Drug Delivery with Plasmonic Nanopipettes, ***Naihao Chiang***, *Y. Gong, L. Scarabelli, N. Wattanatorn, C. Zhao, J. Belling,* University of California at Los Angeles*; N.-J. Cho,* Nanyang Technological University*; S. Jonas, P.S. Weiss,* University of California at Los Angeles

NS-ThP16 High Fidelity and Sustainable Anti-reflective Moth-eye Nanostructures and Large Area Sub-wavelength Applications, ***Shuhao Si***, Technische Universität Ilmenau, Germany*; M. Hoffmann,* Ruhr-Universität Bochum, Germany

NS-ThP17 Fano Resonances at Interference of Electron Waves in Geometrically Inhomogeneous Semiconductor 2D Nanostructures, ***Victor Petrov***, Institute of Radio Engineering and Electronics, Russian Academy of Sciences, Moscow, Russia, Russian Federation

NS-ThP18 Indirect Transition and Opposite Circular Polarization of Interlayer Exciton in a MoSe2/WSe2 van der Waals Heterostructure, ***Hsun-Jen Chuang***[1], *A.T. Hanbicki, M. Rosenberger, C.S. Hellberg, S.V. Sivaram, K.M. McCreary, I. Mazin, B.T. Jonker,* Naval Research Laboratory

NS-ThP19 Pycroscopy – A Community-driven Approach for Analyzing and Storing Materials Imaging and Spectroscopy Data, *S. Somnath, C.R. Smith, R. Vasudevan,* ***Sergei Kalinin***, *S. Jesse,* Oak Ridge National Laboratory

NS-ThP20 Auto-dispersing Cellulose Nanoparticles with High Uniformity via Self-assembly in Ionic Liquids, *Y. Ahn,* ***Seung-Yeop Kwak***, Seoul National University, Republic of Korea

NS-ThP21 The Silicon Atomic Layer Etching by Two-step PEALD Consisting of Oxidation and $(NH_4)_2SiF_6$ formation, *E.-J. Song,* Korea Institute of Materials Science, Republic of Korea*; J.-H. Ahn,* Korea Maritime and Ocean University, Republic of Korea*;* ***Jung-Dae (J.-D.) Kwon***, Korea Institute of Materials Science, Republic of Korea*; S.-H. Kwon,* Pusan National University, Republic of Korea

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

SA-ThP1 Relative Sensitivity Factors in Hard X-ray Photoelectron Spectroscopy up to 10 keV for Quantitative Analysis, ***Satoshi Yasuno***, Japan Synchrotron Radiation Research Institute, Japan*; N. Ikeno,* Aichi Synchrotron Radiation Center, Japan*; H. Oji,* Nagoya University Synchrotron Radiation Research Center, Japan

SA-ThP2 In Situ Characterization of Freeze-Cast Metal Nanowire Aerogels, ***Tyler Fears***, *J.A. Hammons, F. Qian, T. Braun, A.L. Troksa, M.H. Nielsen, J.B. Forien, T.F. Baumann, T.Y. Han, S.O. Kucheyev, M. Bagge-Hansen,* Lawrence Livermore National Laboratory

SA-ThP3 In situ Probing of the Potential Distribution in a Thin Film All-solid-state Li-ion Battery, ***Evgheni Strelcov***, National Institute of Standards and Technology (NIST)/University of Maryland*; E.J. Fuller,* Sandia National Laboratories*; W. McGehee, N.B. Zhitenev, J. McClelland,* National Institute of Standards and Technology (NIST)*; A. Talin,* Sandia National Laboratories

SA-ThP4 A New Route for the Determination of Protein Structure in Physiological Environment through Coherent Diffraction Imaging., ***Danny Fainozzi***, university of Trieste / Elettra Synchrotron, Italy

SA-ThP5 The League of European Accelerator-Based Photon Sources: New strategic partnerships in Europe and beyond, ***Maya Kiskinova***, Elettra-Sincrotrone Trieste, Italy

[1] **NSTD Postdoc Finalist**

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

TF-ThP2 Investigation of Target State by Plasma Emission and Target Voltage Measurements for Reactive Sputtering of Ni oxide thin films with water vapor injection, ***Yuki Yokoiwa***, *Y. Abe, M. Kawamura, K.H. Kim, T. Kiba,* Kitami Institute of Technology, Japan

TF-ThP3 Rectification and Non-linearity in Ferroelectric Tunnel Junction based on $BiFeO_3$ Ultra-thin Film, ***Taekjib Choi***, Sejong University, Republic of Korea

TF-ThP7 Optical and Electrochemical Properties of Rhodium Oxide Thin Films prepared by Reactive Sputtering in O_2 or H_2O Atmosphere, ***ChanYang Jeong***, *Y. Abe, M. Kawamura, K.H. Kim, T. Kiba,* Kitami Institute of Technology, Japan

TF-ThP8 Interfacial Self-assembled Monolayers as Copper Diffusion Barrier for IGZO Semiconductor Thin Film Transistor, ***Sung-Eun Lee***, *K.-H. Lim, J. Park, J.-E. Huh, J. Lee, E.G. Lee, C.I. Im, Y.S. Kim,* Seoul National University, Republic of Korea

TF-ThP9 Atmospheric-pressure Plasma Treatment Effect of Solution-processed Aluminum Oxide Gate Insulator for Oxide Semiconductor Thin-film Transistors, ***Jintaek Park***, *K.-H. Lim, S.-E. Lee, J.-E. Huh, J. Lee, E.G. Lee, C.I. Im, Y.S. Kim,* Seoul National University, Republic of Korea

TF-ThP10 Microstructural and Electrical Properties of Ni Stanogermanides formed on $Ge_{0.92}Sn_{0.08}$ epi-layer Grown on Si(100) Substrate, ***HanSoo Jang***, Semiconductor Physics Reasearch Center(SPRC), Chonbuk National Universityh, Republic of Korea

TF-ThP11 Radiation Effects on Al_2O_3 Thin Films, *H.P. Zhu, X. Chen,* ***Zhong-Shan Zheng***, *D.L. Li, J.T. Gao, B. Li, J.J. Luo,* Institute of Microelectronics of Chinese Academy of Sciences, China

TF-ThP12 Comparative Study of Erosion on Various Polymers and Composites both Coated Using a DC Magnetron Sputtering Process and Uncoated, *S. Hill,* ***Dorina Mihut***, *A. Afshar, K.J. Culp, Z. Grantham,* Mercer University School of Engineering

TF-ThP13 Plasma-enhanced Atomic Layer Deposition of Molybdenum Compounds Thin Films Using $Mo(CO)_6$ with Various Plasma Gases, ***Jeong-Hun Choi***, *S.W. Lee, C.M. Hyun, J.-H. Ahn,* Korea Maritime and Ocean University, Republic of Korea

TF-ThP14 Development of Metal Linear Evaporator for OLED Panel Mass Production of Gen.6 half and Gen. 8 lines, ***Jung Hyung Kim***, Korea Research Institute of Standards and Science (KRISS), Republic of Korea; *M.S. Kang, K.S. Shin, D.M. Lim,* Fineva Co., Republic of Korea

TF-ThP15 Study of W Film Properties on Various Treated TiN/AlO Underlayer, ***Dong-Hoon Han***, *D. Lee, M. Park, JY. Bae, J. Lee, Y. Koo,* Samsung Electronics, Republic of Korea

TF-ThP16 Fabrication of Mo/B_4C Periodic Films on the High Reflective Mirror for Applications in Beyond Extreme Ultraviolet Lithography, ***Chao-Te Lee***, *W.-C. Chen, H.-P. Chen, M.-K. Wang,* Instrument Technology Research Center, Taiwan, Republic of China

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

TF-ThP18 Crystallization Behavior and Thermal Stability of Zr-based Metallic Glasses, *J.S. Park, D.H. Song,* ***JinKyu Lee***, Kongju National University, Republic of Korea

TF-ThP19 The Investigation of the Chemical State of the PTFE Surface Treated by Ar Plasma, ***Koki Iesaka***, *I. Takano,* Kogakuin University, Japan

TF-ThP20 The Influence of ZnO Layers for Photovoltage of $Cu_2O/ZnO/TiO_2$ Thin Films Prepared by Reactive Sputtering, ***Keisuke Ishizaka***, Kogakuin University,Japan; *I. Takano,* Kogakuin University, Japan

TF-ThP21 The Formation of Amorphous Carbon Thin Films by Ion Beam Mixing, ***Kenji Iwasaki***, *I. Takano,* Kogakuin University, Japan

TF-ThP22 Enhancing Ultra-violet Optical Properties of Aluminum Mirrors with a Single Step Approach to Oxide Removal and Fluorine Passivation, ***David Boris***, U.S. Naval Research Laboratory; *A.C. Kozen,* ASEE Postdoctoral Fellow; *J. del Hoyo, M.A. Quijada,* NASA Goddard Space Flight Center; *S.G. Walton,* U.S. Naval Research Laboratory

TF-ThP23 Cu Films on Thermoelectric ZnSb, ***Terje Finstad***, *G. Song, H.G. Riis, O. Prytz,* University of Oslo, Norway

TF-ThP24 Using a Semitransparent Underlayer to Determine Optical Constants of a Mostly Opaque Layer by Thin Film Interference: Application to AlF_3 on Al in the Extreme Ultraviolet, ***Gabriel Richardson***, *K.M. Wolfe, M.D. Barona, R.S. Turley, D.D. Allred,* Brigham Young University

TF-ThP25 Thermoelectric Properties of Sb_2Te_3 Thin Films, ***Eshirdanya McGhee***, *B. Bohara, C. Payton, S. Gere, S. Budak,* Alabama A&M University

TF-ThP26 Thermal Annealing Effects on the Thermoelectric Properties of CoAg Thin Films, ***Satilmis Budak***, *S. Gere, E. McGhee, E. Gamble,* Alabama A&M University

TF-ThP28 Interlayer Effect for Photocatalytic Properties of TiO_2/Cu_2O Thin Films Prepared by Reactive Sputtering, ***Akihiro Joichi***, *I. Takano,* Kogakuin University, Japan

TF-ThP29 The effect of Proton Radiation on ALD HfO_2 Films and HfO_2 based RRAM, ***Panpan Xue***, University of Wisconsin-Madison; *Z. Wang,* Stanford University; *T. Chang,* University of Wisconsin-Madison; *Y. Nishi,* Stanford University; *Z. Ma, J.L. Shohet,* University of Wisconsin-Madison

TF-ThP30 Comparison of Hafnium Oxide and Zirconium Oxide for Fabricating Electronic Devices, ***Kenneth Davis***, *Z. Duncan, M. Howard, T. Wimbley, Z. Xiao,* Alabama A&M University

TF-ThP31 Development of the Synchrotron-based Capabilities for Direct, *In-situ* XANES/XAFS Measurements of Thermal ALD: Initial Proof-of-Concept Study Exploring ZrO_2 ALD, ***David Mandia***, *B. Kucukgok, S. Letourneau, M.J. Ward, A. Yanguas-Gil, J.W. Elam,* Argonne National Laboratory

TF-ThP32 Nitridation of Transition Metal Oxide Films, ***Li Chang***, *W.-L. Chen, K.A. Chiu, Y.S. Fang,* National Chiao Tung University, Hsinchu, Taiwan, Taiwan, Republic of China

TF-ThP33 The Evolution of Atomic Layer Processing as a Field: Atomic Layer Etching, and its Connections with Atomic Layer Deposition, ***Elsa Alvaro***, Northwestern University; *A. Yanguas-Gil,* Argonne National Laboratory

TF-ThP34 Optical Characterization of SiC Thin Films on Si(111), ***Kjeld Pedersen***, Aalborg University, Danmark; *R. Juluri,* Aarhus University, Denmark; *P. Kjaer Kristensen,* Aalborg University, Denmark; *J. Lundsgaard Hansen, B. Julsgaard,* Aarhus University, Danmark

TF-ThP35 Nanocarbon based Field Assisted Electron Emitter Arrays for Development of Electrical Propulsion for Nano Satellite, ***Nirupama Prasad***, Jain University,Bangalore, India

TF-ThP36 Investigation of Synthesis Yield Variation of Single-Walled Carbon Nanotubes inside Horizontal Chemical Vapor Deposition Systems, *G.-H. Jeong,* ***Sung-Il Jo***, Kangwon National University, Republic of Korea

TF-ThP37 Optical and Mechanical Properties of Diamond-like Carbon Thin Film deposited by Filtered Cathodic Vacuum Arc Source for Durable Coating of Infrared Optics, ***Jung-Hwan In***, *M.W. Seo, H.Y. Jung, S.H. Kim, J.H. Choi,* Korea Photonics Technology Institute, Republic of Korea

TF-ThP38 Influence of Temperature and Plasma Gas Chemistry on Atomic Layer Epitaxial Growth of InN on GaN Assessed with *In Situ* Grazing Incidence Small-Angle X-ray Scattering, ***Jeffrey Woodward***, *S.G. Rosenberg,* American Society for Engineering Education (residing at U.S. Naval Research Laboratory); *N. Nepal, S.D. Johnson,* U.S. Naval Research Laboratory; *C. Wagenbach,* Boston University; *A.C. Kozen,* American Society for Engineering Education (residing at U.S. Naval Research Laboratory); *Z.R. Robinson,* The College at Brockport - SUNY; *D.R. Boris, S.G. Walton,* U.S. Naval Research Laboratory; *K.F. Ludwig,* Boston University; *C.R. Eddy,* U.S. Naval Research Laboratory

TF-ThP39 Water-based Superconcentrated Electrolytes as Gate Dielectric for High-performance Solution-processed Oxide Thin Film Transistors, ***Eun Goo Lee***, *K.-H. Lim, J.T. Park, S.-E. Lee, J.H. Lee, C.I. Im, Y.S. Kim,* Seoul National University, Republic of Korea

TF-ThP40 Atomic Layered Deposition and Characterizations of HfO_2 for OLED Encapsulation, ***Nak-Kwan Chung***, Korea Research Institute of Standards and Science (KRISS), Republic of Korea; *S. Kim, J.Y. Yun, J.T. Kim,* Korea Research Institute of Standards and Science (KRISS)

TF-ThP41 Reaction Mechanism Study on the Atomic Layer Deposition of Titanium Oxide Film using Heteroleptic Precursors, ***Jaemin Kim***, *H.-L. Kim, J. Gu, S. Kim, H. Jung, R. Hidayat, Y. Myung, W.-J. Lee,* Sejong University, Korea

Anticipated Schedule Friday, October 26, 2018

Anticipated Schedule Friday Morning, October 26

8:20 AM _____

8:40 AM _____

9:00 AM _____

9:20 AM _____

9:40 AM _____

10:00 AM _____

10:20 AM _____

10:40 AM _____

11:00 AM _____

11:20 AM _____

11:40 AM _____

12:00 PM _____

Anticipated Schedule Friday Lunch, October 26

When _____

Where _____

With _____

NOTES

Friday Morning, October 26, 2018

	2D Materials Focus Topic Room 201B - Session 2D+EM+MN+NS-FrM Nanostructures including Heterostructures and Patterning of 2D Materials **Moderator:** Xiang Zhang, University of California, Berkeley	Actinides and Rare Earths Focus Topic Room 202C - Session AC+MI+SA-FrM Actinide and Rare Earth Theory and Related Measurements **Moderators:** Paul S. Bagus, University of North Texas, David Shuh, Lawrence Berkeley National Laboratory
8:20am	**2D+EM+MN+NS-FrM1** Interfacial Strength and Surface Damage Characteristics of Two-dimensional h-BN, MoS_2 and Graphene, ***Frank DelRio,*** National Institute of Standards and Technology*; B.C. Tran Khac, K.H. Chung,* University of Ulsan, South Korea	**INVITED: AC+MI+SA-FrM1** Periodic Boundary Condition and Embedded Cluster DFT Calculations of Water Adsorption on AnO_2 (An = U, Pu) Surfaces, ***Nikolas Kaltsoyannis,*** University of Manchester, UK, United Kingdom of Great Britain and Northern Ireland
8:40am	**2D+EM+MN+NS-FrM2** Optical and Optoelectronic Properties in 2D Homo- and Hetero-junctions, ***Juan Xia,*** Nanyang Technological University, Singapore	Invited talk continues.
9:00am	**INVITED: 2D+EM+MN+NS-FrM3** Sequential Edge-epitaxy: Towards Two-dimensional Multi-junctions Heterostructures and Superlattices, ***Humberto Rodriguez Gutierrez,*** University of South Florida	**INVITED: AC+MI+SA-FrM3** Understanding the Role of Oxidation States on the Chemistry of Actinides through Integration of Theory and Experiment, ***Wibe de Jong,*** *J.K. Gibson,* Lawrence Berkeley National Laboratory*; R.J. Abergel,* Lawrence Berkeley Lab, University of California, Berkeley
9:20am	Invited talk continues.	Invited talk continues.
9:40am	**2D+EM+MN+NS-FrM5** Interpretation of π-band Replicas Observed for Mono- and Multi-layer Graphene Grown on 4H SiC(0001), *T.B. Balasubramanian, M. Leandersson, J. Adell, C. Polley,* Lund University, Sweden*;* ***Leif Johansson,*** *R. Yakimova, C. Jacobi,* Linkoping University, Sweden	**AC+MI+SA-FrM5** An Experimentalist's Viewpoint: The Tremendous Strengths and Occasional Weaknesses of Actinide Cluster Calculations, ***James G. Tobin,*** University of Wisconsin-Oshkosh
10:00am	**2D+EM+MN+NS-FrM6** Effect of SiC(0001) Substrate Morphology and Termination on Multilayer Hexagonal Boron Nitride Epitaxy by Plasma-Enhanced CBE, ***Daniel J. Pennachio,*** *N.S. Wilson, E.C. Young, A.P. McFadden, T.L. 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	**AC+MI+SA-FrM6** Ligand and Metal XAS Edges In Heavy Metal Compounds, ***Paul S. Bagus,*** University of North Texas*; C.J. Nelin,* Consultant
10:20am	**2D+EM+MN+NS-FrM7** Nanoelectromechanical Drumhead Resonators from 2D Material Bimorphs, ***Sun Phil Kim,*** *J. Yu, E. Ertekin, A.M. van der Zande,* University of Illinois at Urbana-Champaign	**AC+MI+SA-FrM7** Thermal Expansion and Conductivity of Th and Ac from First Principles Calculations, ***Dominik Legut,*** *L. Kyvala,* VSB-Technical University of Ostrava, Czech Republic*; U.D. Wdowik,* Pedagogical University, Poland
10:40am	**2D+EM+MN+NS-FrM8** Atomically-precise Graphene Etch Masks for 3D Integrated Systems from 2D Material Heterostructures, ***Jangyup Son,*** University of Illinois at Urbana-Champaign*; A.M. van der Zande,* University of Illinois at Urbana Champaign	**AC+MI+SA-FrM8** XANES Investigation into the Electronic Structure of Ce Coordination Complexes, ***Liane Moreau,*** *C.H. Booth,* Lawrence Berkeley National Laboratory*; Y. Qiao, E. Schelter,* University of Pennsylvania
11:00am	**2D+EM+MN+NS-FrM9** Insights into the O Atom Adsorption and O_2 Dissociation on Halogenated Graphene Surfaces, ***Reynaldo Geronia,*** University of the Philippines Diliman*; A.A.B. Padama,* University of the Philippines Los Baños, Philippines*; J.D. Ocon,* University of the Philippines Diliman, Philippines*; P.-Y. A. Chuang,* University of California, Merced	**AC+MI+SA-FrM9** Structure and Properties of Reactively Deposited Uranium Hydride Coatings Studied by the X-ray Scattering Methods, ***Milan Dopita,*** *L. Havela, L. Horák, E. Chitrova,* Charles University, Prague, Czech Republic*; D. Legut,* VSB-Technical University of Ostrava, Czech Republic*; M. Cieslar,* Charles University, Prague, Czech Republic*; Z. Matěj,* MAX-IV, Lund, Sweden
11:20am		**AC+MI+SA-FrM10** Ligand Induced Shape Transformation of Thorium Dioxide Nanocrystals, ***Gaoxue Wang,*** *E. Batista, P. Yang,* Los Alamos National Laboratory
11:40am		**AC+MI+SA-FrM11** Perspectives on the Synthesis, Characterization and Applications of Upconversion and Downconversion Nanomaterials, ***Martin Ntwaeaborwa,*** University of the Witwatersrand, South Africa
12:00pm		

	Biomaterial Interfaces Division **Room 101B - Session BI+AS+NS-FrM** **Characterization of Biological and Biomaterial Surfaces** **Moderator:** Bill Theilacker, Medtronic	**Magnetic Interfaces and Nanostructures Division** **Room 203A - Session MI+EM-FrM** **Magnetism and Spin-Orbit Coupling at Surfaces, Interfaces and Thin Films** **Moderator:** Valeria Lauter, Oak Ridge National Laboratory
8:20am	**INVITED: BI+AS+NS-FrM1** Novel Insights into Skin Biology and Permeation of Actives using ToF-SIMS and 3D OrbiSIMS., ***David Scurr,*** The University of Nottingham, UK	**INVITED: MI+EM-FrM1** Interfacial Spin-orbitronics: Spin-charge Current Conversion in Topological Insulators and Rashba Interfaces, ***Juan Carlos Rojas Sánchez,*** Institut Jean Lamour, Universite de Lorraine, France
8:40am	Invited talk continues.	Invited talk continues.
9:00am	**BI+AS+NS-FrM3** Multivariate Analysis of ToF-SIMS Data using Mass Segmented Data Matrices: Polymers and Biointerfaces, *R.M.T. Madiona,* La Trobe University, Australia*; N.G. Welch,* CSIRO Manufacturing, Australia*; D.A. Winkler,* La Trobe University, Australia*; J.A. Scoble,* CSIRO, Austalia*; B.W. Muir,* CSIRO, Australia*;* ***Paul Pigram,*** La Trobe University, Australia	**MI+EM-FrM3** Spin-orbit Coupling in Ion-surface Collisions Observed by a Polarized $^4He^+$ Ion Beam, ***Taku Suzuki,*** *O. Sakai,* National Institute for Materials Science, Japan
9:20am	**BI+AS+NS-FrM4** Can you dig it? ToF-SIMS Tissue Depth Profiling, ***Daniel Graham,*** *T.B. Angerer, L.J. Gamble,* University of Washington	**MI+EM-FrM4** Transport and Magnetic Properties of $LaAlO_3/SrTiO_3$ Heterostructure during Cooling and Warming, ***Zengming Zhang,*** *X.Q. Wang, M. Zhang, A. Rahman, R.C. Dai, Z.P. Wang, Z.J. Ding, L. Cheng,* University of Science and Technology of China
9:40am	**BI+AS+NS-FrM5** Characterization of Biologic Release and Transformation Processes of Clay-sorbed Ammonia using ToF-SIMS and XPS, ***Liuqin Huang,*** *W. Liu,* State Key Laboratory of Biogeology and Environmental Geology, China University of Geosciences, China*; Z.H. Zhu,* Pacific Northwest National Laboratory*; H. Dong,* Miami University	**INVITED: MI+EM-FrM5** Engineering the Magnetic Properties of Complex Oxide Heterostructures, ***Yayoi Takamura,*** University of California at Davis
10:00am	**BI+AS+NS-FrM6** Novel Insights into Drug Release by a Functionalized Biomaterial and Dispersion into Bone using Surface Analytical Techniques, ***Marcus Rohnke,*** *C. Kern, B. Mogwitz, S. Ray,* Justus-Liebig University Giessen, Germany*; J. Thomas,* IFW Dresden, Germany	Invited talk continues.
10:20am	**BI+AS+NS-FrM7** Spatial Distributions of Epithelial Growth Factors in Hydrogels Studied by ToF-SIMS and TIRF Microscopy for the Development of Biocompatible Multiple-protein Delivery Systems for Wound Healing, ***Shohini Sen-Britain,*** State University of New York, Buffalo*; W. Hicks,* Roswell Park Comprehensive Cancer Center*; J.A. Gardella Jr.,* State University of New York, Buffalo	**MI+EM-FrM7** Location of the Valence Band Maximum in the Band Structure of Anisotropic 1T'-$ReSe_2$, ***Markus Donath,*** *P. Eickholt, J. Noky,* Westfälische Wilhelms-Universität Münster, Germany*; E. Schwier, K. Shimada, K. Miyamoto, T. Okuda,* Hiroshima University, Japan*; C. Datzer, M. Drüppel, P. Krüger, M. Rohlfing,* Westfälische Wilhelms-Universität Münster, Germany
10:40am		**MI+EM-FrM8** Controlling Antiferromagnetic Order at the Surface of La doped $BiFeO_3$, ***Hendrik Ohldag,*** SLAC National Accelerator Laboratory*; B.-K. Jang,* Korea Advanced Institute of Science and Technology*; J.H. Lee, K-E. Kim,* Korea Advanced Institute of Science and Technology, Republic of Korea*; H. Jang,* SLAC National Accelerator Laboratory*; K.-T. Ko,* Max Planck Institute for Chemical Physics of Solids*; M.H. Jung,* Pohang University of Science and Technology, Republic of Korea*; T.Y. Koo,* Pohang Light Source*; Y.H. Jeong,* Pohang University of Science and Technology, Republic of Korea*; J.-S. Lee,* SLAC National Accelerator Laboratory*; C-H. Yang,* Korea Advanced Institute of Science and Technology, Republic of Korea
11:00am		**INVITED: MI+EM-FrM9** Control of Magnetism at the Antiperovskite/Perovskite Interface, *D.-F. Shao, T.R. Paudel,* ***Evgeny Tsymbal,*** University of Nebraska-Lincoln
11:20am		Invited talk continues.
11:40am		
12:00pm		

Friday Morning, October 26, 2018

	Nanometer-scale Science and Technology Division Room 102B - Session NS+AM+AS+MN+PC+PS+SS+TR-FrM SPM – Probing Chemical Reactions at the Nanoscale **Moderators:** Phillip First, Georgia Institute of Technology, An-Ping Li, Oak Ridge National Laboratory	Plasma Science and Technology Division Room 104A - Session PS-FrM Plasma Modeling **Moderators:** Venkattraman Ayyaswamy, University of California Merced, Premkumar Panneerchelvam, KLA-Tencor
8:20am	**INVITED: NS+AM+AS+MN+PC+PS+SS+TR-FrM1** Using Self-Assembly to Engineer Electronic Properties in 1D and 2D Molecular Nanostructures, ***Michael F. Crommie,*** University of California at Berkeley Physics Dept.	**PS-FrM1** Investigation of Electrical Asymmetric Effect in Very High Frequency Plasma Source using Electromagnetic Plasma Model, ***Xiaopu Li,*** *K. Bera, S. Rauf, K.S. Collins,* Applied Materials
8:40am	Invited talk continues.	**PS-FrM2** Simulation of Pulsed Inductively Coupled Plasmas, ***Jun-Chieh Wang,*** *W. Tian, S. Rauf, S. Sadighi, J.A. Kenney, P.J. Stout, V. Vidyarthi, J. Guo, K. Delfin, N. Lundy,* Applied Materials
9:00am	**NS+AM+AS+MN+PC+PS+SS+TR-FrM3** Chemical and Electronic Structure of Aniline Films on Silica Surfaces, ***Christopher Goodwin,*** University of Delaware; *A.J. Maynes,* Virginia Polytechnic Institute and State University; *Z.E. Voras,* University of Delaware; *S.A. Tenney,* Center for Functional Nanomaterials Brookhaven National Laboratory; *T.P. Beebe,* University of Delaware	**INVITED: PS-FrM3** The Important Role of Metal Vapour in Arc Welding: New Insights from Modelling, ***Anthony Murphy,*** *J. Xiang, H. Park, F.F. Chen,* CSIRO, Australia
9:20am	**NS+AM+AS+MN+PC+PS+SS+TR-FrM4** Electric Field Driven Chemical Reaction of Individual Molecular Subunits by Scanning Tunneling Microscopy, ***Tomasz Michnowicz,*** Max Planck Institute for Solid State Research, Germany, Deutschland; *B. Borca,* Max Planck Institute for Solid State Research, Germany; *R. Pétuya,* Donostia International Physics Centre, Spain; *M. Pristl, R. Gutzler, V. Schendel, I. Pentegov, U. Kraft, H. Klauk,* Max Planck Institute for Solid State Research, Germany; *P. Wahl,* University of St Andrews, UK; *A. Arnau,* Donostia International Physics Centre, Spain; *U. Schlickum, K. Kern,* Max Planck Institute for Solid State Research, Germany	Invited talk continues.
9:40am	**NS+AM+AS+MN+PC+PS+SS+TR-FrM5** Characterising Conjugated Polymers for Organic Electronics by High-resolution Scanning Probe Microscopy, ***Giovanni Costantini,*** University of Warwick, UK	**PS-FrM5** Molecular Dynamics Study on Collision Cascade Dynamics for Sputtering of Lennard-Jones Particles, ***Nicolas Mauchamp,*** *M. Isobe, S. Hamaguchi,* Osaka University, Japan
10:00am	**NS+AM+AS+MN+PC+PS+SS+TR-FrM6** Probing Electrical Degradation of Lithium Ion Battery Electrodes with Nanoscale Resolution, ***Seong Heon Kim,*** Samsung Advanced Institute of Technology, Republic of Korea; *S.Y. Park, H. Jung,* Samsung Advanced Institue of Technology, Republic of Korea	**PS-FrM6** Surface Reaction Analysis by Molecular Dynamics (MD) Simulation for SiO2 Atomic Layer Etching (ALE), ***Satoshi Hamaguchi,*** *Y. Okada, M. Isobe, T. Ito, K. Karahashi,* Osaka University, Japan
10:20am		**PS-FrM7** Atomistic Simulations of He Plasma Modification of SiO2 Thin Films for Advanced Etch Processes, ***Florian Pinzan,*** *R. Blanc, F. Leverd,* STMicroelectronics, France; *E. Despiau-Pujo,* LTM, Univ. Grenoble Alpes, CEA-LETI, France
10:40am		**PS-FrM8** Plasma Characteristics in a Capacitively Coupled System at Moderately High Pressure: Model and Experiment Comparison, ***David J. Peterson,*** *S. Shannon,* North Carolina State University; *W. Tian, P. Kraus, K. Bera, S. Rauf, T. Chua, T. Koh,* Applied Materials Inc.
11:00am		**PS-FrM9** Numerical Modeling of Capacitively Coupled Plasma Process Chamber using CCPFoam, ***Abhishek Kumar Verma***[1], University of California Merced; *K. Bera, S. Rauf,* Applied Materials; *A. Venkattraman,* University of California Merced
11:20am		**PS-FrM10** Silicon Carbide Nanoparticles for Thermoelectric Composites and Graphene Coatings for Plasmonics, ***Devin Coleman,*** University California, Riverside; *A. Hosseini, A. Greaney,* University of California, Riverside; *S. Bux, J.P. Fleurial,* Jet Propulsion Laboratory, California Institute of Technology; *L. Mangolini,* University of California, Riverside
11:40am		**PS-FrM11** Electromagnetic Effects in Wide Area Very High Frequency Linear Plasma Source, ***Kallol Bera,*** *X. Li, S. Rauf, K.S. Collins,* Applied Materials
12:00pm		**PS-FrM12** External Circuitry Models for PIC Simulations of Cylindrical Magnetron Sputtering Chamber, ***Nate Crossette,*** *T.G. Jenkins, D.N. Smithe, J.R. Cary,* Tech-X Corporation

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

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

8:20am	**INVITED: SS+AS+HC-FrM1** Ambient Pressure Electron Spectroscopy (XPS, XAS) and Electron Microscopy Studies of the Structure and Chemistry of Nanostructured Model Catalysts, ***John Hemminger***, University of California Irvine	
8:40am	Invited talk continues.	
9:00am	**SS+AS+HC-FrM3** *In-operando* Investigation of the Initial Oxidation Stages for NiCr-(W) Alloys with X-ray Photoelectron Spectroscopy, ***Cameron Volders***, *V. Angelici Avincola, P. Reinke,* University of Virginia	
9:20am	**SS+AS+HC-FrM4** Surface Hydroxylation of Polar (000-1) and Non-polar (11-20) ZnO Probed with AP-XPS, ***Sana Rani***, *A. Broderick, J.T. Newberg,* University of Delaware	
9:40am	**SS+AS+HC-FrM5** Reason of High Stability and Reactivity of Ni/silicalite-1 Catalyst for Dry Reforming of Methane, ***Evgeny Vovk***, *X. Zhou, Z. Liu, C. Guan, Y. Yang,* ShanghaiTech University, China; *W. Kong,* Shanghai Advanced Research Institute, China; *R. Si,* Shanghai Synchrotron Radiation Facility, Shanghai Institute of Applied Physics, Chaina	
10:00am	**SS+AS+HC-FrM6** Recent Development in XPS and Ambient Pressure XPS Techniques, ***Lukasz Walczak***, PREVAC sp. z o.o., Poland	
10:20am	**SS+AS+HC-FrM7** Quantum Mechanics and Reaction Kinetics Study on SiO_2 and SiN Dry Isotropic Chemical Etching Process, ***Taiki Kato***, *M. Matsukuma, K. Matsuzaki, L. Chen,* Tokyo Electron Technology Solutions Limited, Japan	
10:40am	**SS+AS+HC-FrM8** Viscosity and Surface Tension Effects on Metal Sputtered onto Low Vapor Pressure Liquids, ***Mark De Luna***, *M. Gupta,* University of Southern California	
11:00am		
11:20am		
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12:00pm		

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AVS 65
EXHIBIT PROGRAM

Exhibit Hall Special Events • Exhibitor Profiles • Exhibitor Product Locator • Exhibit Schedule
Sponsors • Corporate Members • Free Attractions

EXHIBIT HALL EVENTS

Welcome to the AVS International Symposium and Exhibition! The Symposium will address cutting-edge issues associated with materials, processing and interfaces in the research and manufacturing communities.

Visit the exhibits where you will find an extensive display of tools, equipment, services and consulting for film deposition, surface and interface measurements and analysis, materials, chemicals, supplies, vacuum production & measurement and related instrumentation for surface, interface and film measurements as well as professional literature and publications.
Exhibit Entry is FREE !

EXHIBIT HALL ATTRACTIONS & EVENTS

150 Exhibitors Showcasing their Latest Technology

Ask The Experts - *Hosted by the AVS Vacuum Technology Division*

AVS Career Center

Exhibitor Technology Spotlight Sessions

AVS Membership & Education Booth

AVS Store: Gifts & Souvenirs

Free Morning Coffee • Lunch • Afternoon Refreshments

Art Zone Display & Competition

Daily Raffle Drawings

Free Internet Access & Printing Station

Caricatures & Foosball Tournament

Competitions & Networking Events

2018 Exhibit Schedule

Oct. 23	Tuesday	10am - 5:00pm
Oct. 24	Wednesday	10am - 4:30pm
Oct. 25	Thursday	10am - 2:30pm

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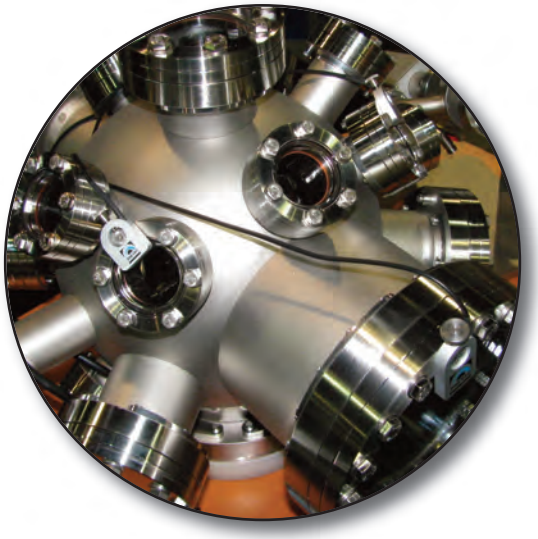
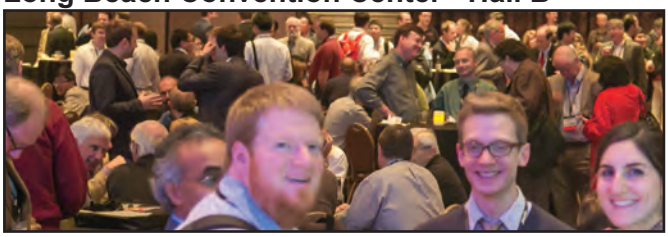


Special Events & Attractions

Welcome Mixer - Monday 7:00pm - 8:00pm

Long Beach Convention Center - Hall B



Monday, October 22 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 362

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!!

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Career Center BOOTH 162

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

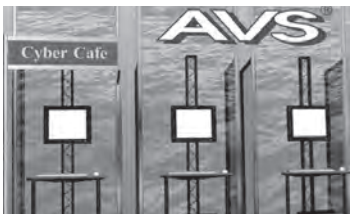
8th Annual Foosball Tournament

Join the competition in Booth 465. Great Prizes!! Sign up begins at Tuesday morning, October 22 in the Exhibit Hall at booth 463. Hosted and Sponsored by Gamma Vacuum.

Daily Raffle Prizes

Find your daily raffle tickets in your registration kit. Enter your tickets into the raffle drum in **Booth 563** in the Exhibit Hall Tuesday, Wednesday & Thursday mornings. Come back in the afternoons 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; Amazon Echo and so much more!

E-Mail Pavilion BOOTH 146



A convenient place for attendees to keep in touch with the outside world. Check your e-mail, flights, print boarding passes, etc. New this year... Charging Station for your phones and laptops !!

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Special Events & Attractions

Caricaturists — BOOTH 427

Visit the Special Events booth for your FREE AVS-65 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 559

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- **Books**
- **Monographs**
- **Membership Services**
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Art Zone/Contest — BOOTH 543

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 168

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.

Need to charge
your cell phone or laptop ?

Stop by the E-Mail Pavilion
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Bold Listings represent AVS Corporate Members and Symposium Sponsors

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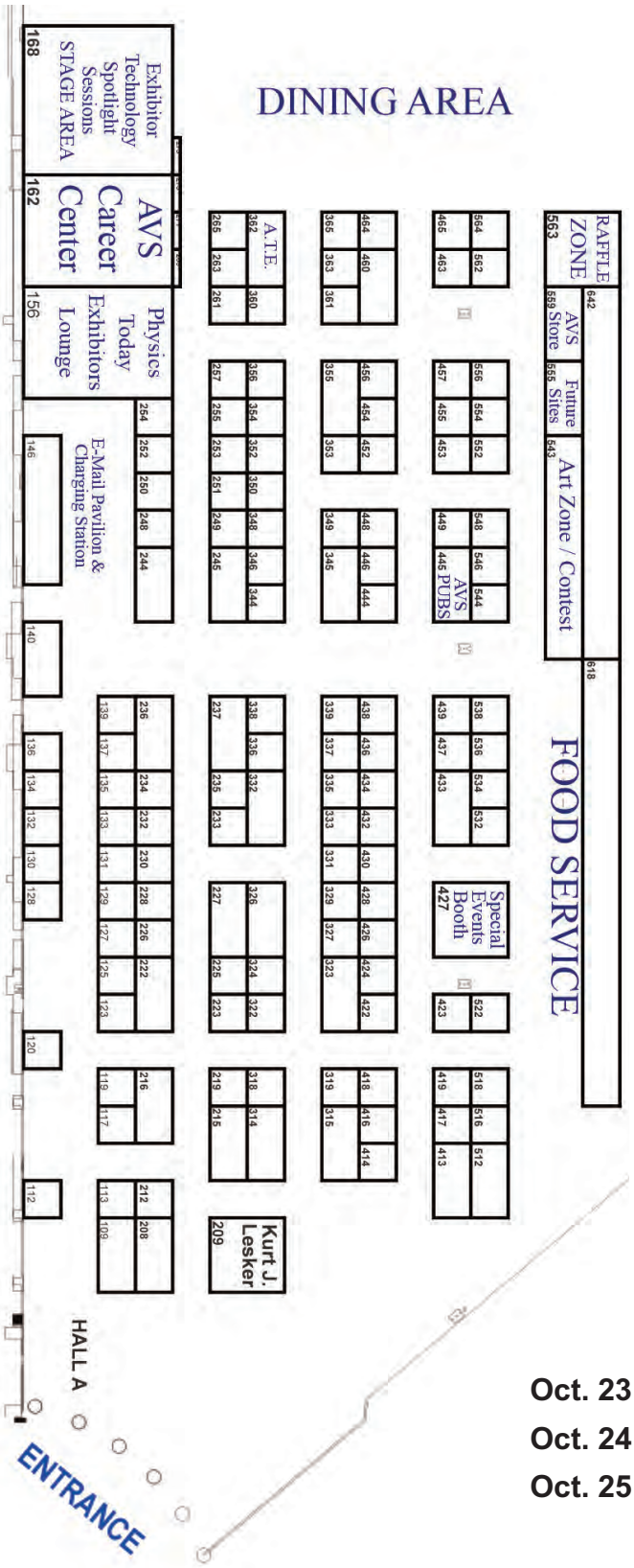


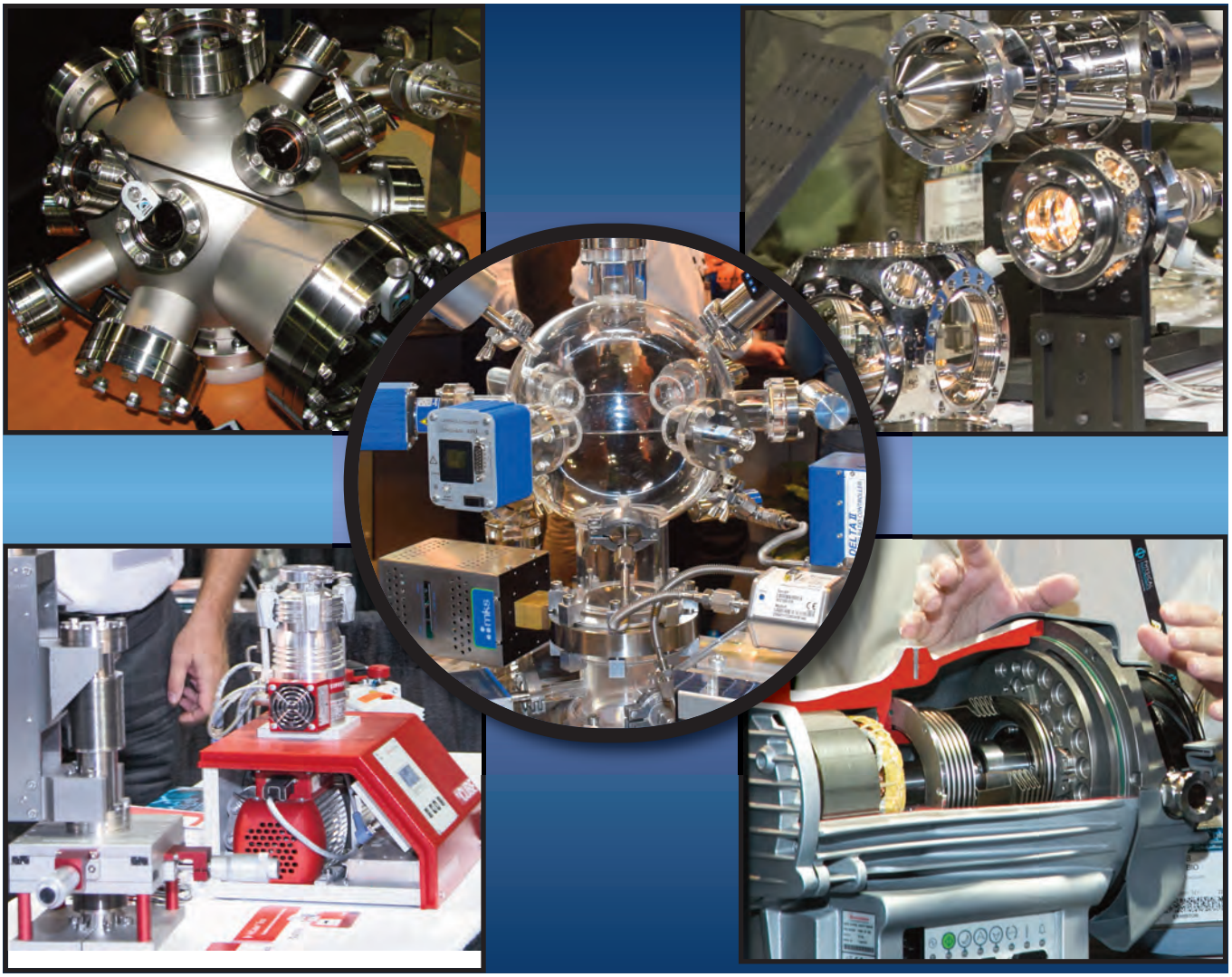
2018 Exhibit Schedule

Oct. 23	Tuesday	10am - 5:00pm
Oct. 24	Wednesday	10am - 4:30pm
Oct. 25	Thursday	10am - 2:30pm

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.



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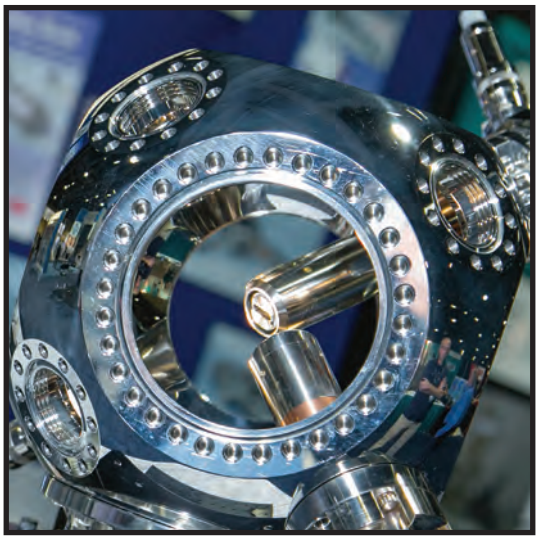

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Visit the AVS Email Pavilion in the Exhibit Hall to check your emails, flights, research companies in the hall.. even print your boarding pass. Our new charging station lounge will help you keep your phone and laptop ready to go all week long!

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20 minute presentations featuring exhibitor's products/services and/or applications and are featured during the session breaks in the stage area of the exhibit hall. Come learn about the latest technology from the vendors exhibiting at AVS !

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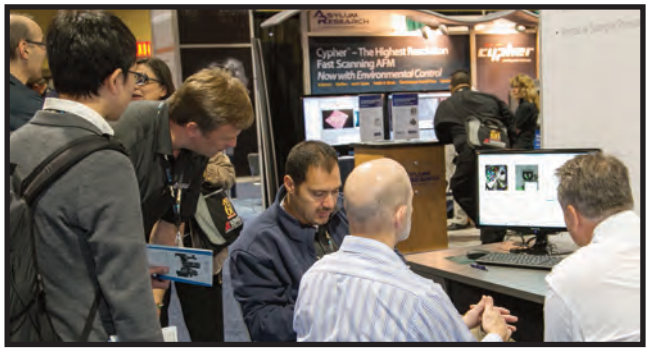

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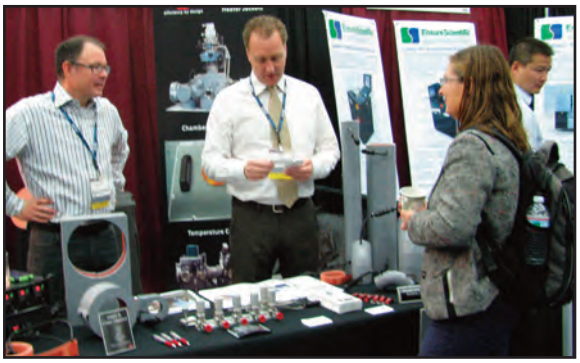

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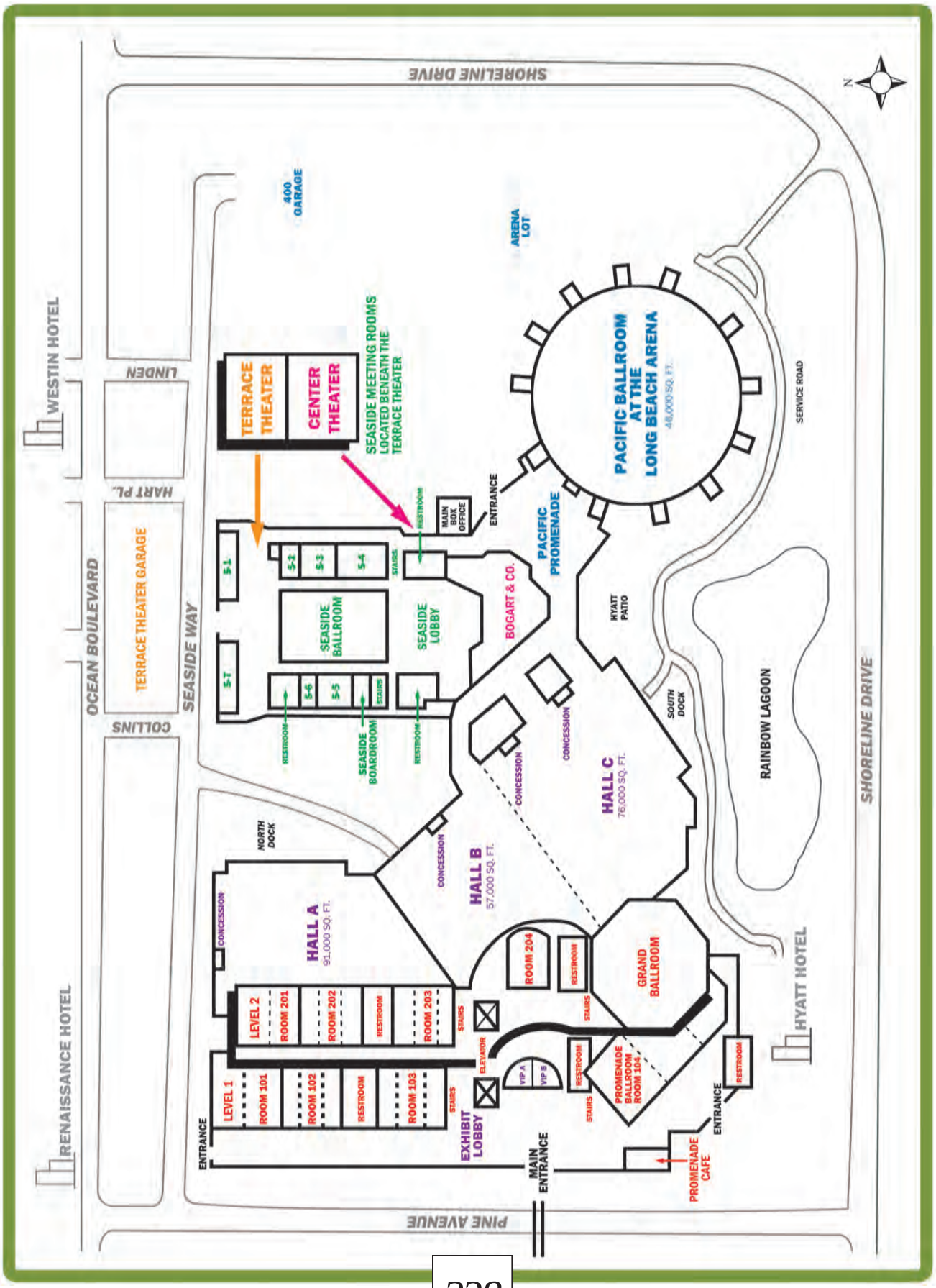

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Featuring AVS Meetings and Sponsored/Endorsed Topical Conferences

2018

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

40th International Symposium on Dry Process (DPS2018)
November 13-15, 2018
Nagoya-city, Aichi, Japan
Web: www.dry-process.org/2018/

International Joint Symposium of "Interfacial Science for Green Innovation"
November 20, 2018
Kobe, Japan
Contact: kfukui@chem.es.osaka-u.ac.jp

Workshop on Innovative Nanoscale Devices & Systems (WINDS) 2018
November 25-30, 2018
Kohala Coast, Hawaii
Web: www.iue.tuwien.ac.at/winds2018/

2019

The 46th International Conference on the Physics and Chemistry of Semiconductor Interfaces (PCSI-46)
January 13-17, 2019
Santa Fe, New Mexico
Web: www.pcsiconference.org

Frontiers of Characterization and Metrology for Nanoelectronics (FCMN 2019)
April 1-4, 2019
Monterey, California
Web: http://www2.avs.org/conferences/FCMN/index.htm

ICMCTF 2019
May 19-24, 2019
San Diego, California
Web: http://www2.avs.org/conferences/ICMCTF/

Atomic Layer Deposition and Etching (ALD/ALE 2019)
July 21-24, 2019
Bellevue, Washington
Web: www.ald2019.avs.org

55th North American Molecular Beam Epitaxy Conference (NAMBE 2019)
September 25-29, 2019
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October 20-25, 2019
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