AVS 58th International Symposium & Exhibition

October 30 - November 4, 2011 • Nashville Convention Center • Nashville, Tennessee

Technical Program

TECHNICAL & POSTER SESSIONS • SHORT COURSES • WORKSHOPS • TUTORIAL • EXHIBITS

EXHIBIT HALL EVENTS & ACTIVITIES:

Ask the Experts Area • Daily Raffles
FREE Wireless Internet • FREE Coffee Breaks & Lunches
Career Center • Exhibitors & Manufacturers Technology
Spotlights • Thursday Exhibit Finale • Art Zone Contest
AVS Store • AVS Membership & Publications Booth

Registration & Housing Online: www.avs.org
Housing Deadline: October 6, 2011
Early Registration Deadline: October 10, 2011

AVS®

Greetings

On behalf of all the AVS community and the numerous individuals who have worked tirelessly to put together another outstanding program, we welcome you to Nashville and to the AVS 58th International Symposium and Exhibition.

We are very fortunate to have Dr. Thom Mason, Director of Oak Ridge National Laboratory, kicking off the week on Monday with his plenary lecture on "**Oak Ridge National Laboratory: Scientific Discovery and Innovation for the Energy Challenge**." This subject is particularly appropriate because a key feature of this year's program is Energy Frontiers, one of the thirteen focus topics featured in this year's symposium. The Energy Frontiers focus topic encompasses several aspects of energy science and technology and includes the AIP Industrial Physics Forum that will address such issues as Global Energy Prospects, The Supply/Demand Challenge of the Electric Economy and Materials for a Sustainable Future. The other twelve focus topics featured in the symposium are Graphene and Related Materials, Helium Ion Microscopy, Biofabrication and Novel Devices, Nanomanufacturing Science and Technology, Neutron Scattering, Transparent Conductors and Printable Electronics, Actinides and Rare Earths, Marine Biofouling, Spectroscopic Ellipsometry, Tribology, Electron Transport in Low Dimensional Materials and *In Situ* Spectroscopy and Microscopy. Sessions in these topics are in addition to our core program on exciting topics ranging from fundamental surface science to interfacial phenomena, surface engineering, micro- and nano-electronics, nanometer science and technology, thin films, micro- and nano-electromechanical systems, plasma science and technology, electronic and magnetic materials, and vacuum science and technology.

The end result is a program that consists of ~140 oral sessions, more than ~1,300 talks, over 250 invited speakers, and two evenings of poster presentations where stimulating and passionate scientific discussions will be facilitated with low temperature libations. Many of us will also get a chance to visit the Exhibition Hall where ever-increasing numbers of exhibitors will be displaying their latest technology and equipment that make cutting edge science and the latest applications possible.

If this is your first time at an AVS meeting, we want to invite you to be a regular member of the AVS community. Stop by the division business meetings (most are on Tuesday in the late afternoon); get involved with next year's programming by talking to Chip Eddy, who will Chair next year's Symposium in Tampa, Florida; attend the awards ceremony on Wednesday evening; stop by the AVS Journal booth to talk to the Staff and the Editors; take advantage of your membership and become engaged in the dynamic and diverse research community that is AVS. The only way to find out what AVS has to offer is to experience the AVS community and there is no better time to start than this week.

Thank you for your participation and contribution to this year's AVS Symposium and thanks to all the dedicated volunteers and the outstanding AVS staff who have invested many hours of work to create this exciting program.

Enjoy the week!

Susan B. Sinnott
Program Chair
University of Florida

Charles (Chip) R. Eddy, Jr.
Vice-Program Chair
U.S. Naval Research Lab.

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SYMPOSIUM

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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 5:30 p.m.	Fri.	7:30 a.m. to 12 Noon

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Tues	7:00 a.m. to 5:30 p.m.	Fri.	7:30 a.m. to 9:30 a.m.

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	Pre-registration (Pre-Paid)	Registration (On-Site)
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Pre-registration deadline: October 10, 2011

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*A bonafide full-time university student must present student I.D. Part-time students do not qualify for a student rate. If your highest degree is within 5 years you may register as an Early Career.

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EXHIBIT SHOW HOURS

Tuesday, November 1	10:00 a.m. to 5:30 p.m.
Wednesday, November 2	10:00 a.m. to 4:30 p.m.
Thursday, November 3	10:00 a.m. to 2:00 p.m.

OFFICE LOCATIONS/PHONE NUMBERS

Symposium Registration	Lobby Level 1
Short Course Registration	Lobby Level 1
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AVS Store	Exhibit Hall Booth 1217
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Publications Booth	Exhibit Hall Booth 1117
Presenters Preview Room	Room 214

AVS 58th INTERNATIONAL SYMPOSIUM & EXHIBITION
Nashville, TN, USA October 30-November 4, 2011

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Please print clearly

First Name **Initial** **Last Name** **Job Title**

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Telephone Number **Fax Number** **E-mail Address (required field)** **Year of highest degree**

Please complete entire Registration Form.

Please circle one number from each section below.

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1A. Industry
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2. PRINCIPLE AREA OF INTEREST
2A. Advanced Surface Engineering
2B. Applied Surface Science
2C. Biomaterial Interfaces/Plenary
2D. Electronic Materials & Processing
2E. Magnetic Interfaces & Nanostructures
2F. MEMS and NEMS
2G. Manufacturing Science & Technology
2H. Nanometer-Scale Science & Tech.
2I. Plasma Science & Technology
2J. Surface Science
2K. Thin Film
2L. Vacuum Technology
2M. Exhibit

3. FOCUS TOPICS
3A. Actinides & Rare Earths
3B. Biofabrication & Novel Devices
3C. Electron Transport
3D. Energy Frontiers
3E. Graphene and Related Materials
3F. Helium Ion Microscopy
3G. *In Situ* Spectroscopy & Microscopy
3H. Marine Biofouling
3I. Nanomanufacturing
3J. Neutron Scattering
3K. Spectroscopic Ellipsometry
3L. Transparent Conductors
3M. Tribology

(please check appropriate fee)		PRE-REGISTRATION	ON-SITE
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J) Sunday K) Monday L) Tuesday M) Wednesday N) Thursday O) Friday			
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(Sunday) **Batteries/Energy** Tutorial		T) ☐ $100	T) ☐ $115
(Sunday) **Batteries/Energy** Tutorial (Student)		U) ☐ $75	U) ☐ $85
EXHIBITS ONLY		X) ☐ $0	X) ☐ $15

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Room/ Day	102	103	104	105	106	107	108	109	110
SuA							**BP** Challenges in Biomaterials Analysis		
MoM	**AS** Quantitative Surface Chemical Analysis & Technique Development - Part I	**EN+PS** Plasmas for Photovoltaics & Energy Applications	**EN** Industrial Physics Forum on Energy I	**MB** Interfacial Aspects of Marine Biofouling	**IS+AS+SS** In Situ Studies of Catalysis and Gas-Solid Reactions	**TF** Thin Films: Growth and Characterization I	**BI** Biomolecules at Interfaces	**SS1** Water Films & Environmental Interfaces	**SS2** Surface Chemical Dynamics
MoA	**AS** Quantitative Surface Chemical Analysis & Technique Development - Part II	**EN+EM+NS** Nanostructured Materials for Third Generation Solar Cells	**EN** Industrial Physics Forum on Energy II	**MB+BI+PS** Marine Antifouling Coatings	**IS+AS+SS** In Situ Characterization of Solids: Film Growth, Defects, and Interfaces	**TF** Emerging ALD Applications	**BI** Sensors and Fluidics for Biomedical Applications	**SS1** Selectivity and Reactivity of Chemisorbed Species	**SS2** Molecular Ordering and Electrochemical Interfaces
TuM	**AS** Imaging and 3D Chemical Analysis	**EN+NS** Ultrafast Charge and Energy Transfer in Nanomaterials	**TF+SE** Glancing Angle Deposition (GLAD) I	**BN+NM** Biofabrication Applications	**IS+AS+SS** In Situ Studies of Organic and Soft Materials and Liquid-Solid Interfaces	**TF+EN** ALD for Energy	**EN** Industrial Physics Forum on Energy III	**SS1** Chemisorption & Surface Reactions	**SS2** Self Assembled Monolayers and Networks
TuL									
TuA	**AS** Imaging and 3D Chemical Analysis - Part II	**EN+NS** Nanostructured Matls for Thermo-photovoltaics, Thermoelectrics & Plasmonics	**SE+TF** Glancing Angle Deposition (GLAD) II	**BI** Protein-Membrane Interactions **BN** Biofabrication Methods and Devices	**HI+AS** Basics of Helium Ion Microscopy	**TF** ALD: Fundamental Reactions and Film Properties	**EN+TF** Thin Films for Solar Cells	**SS** Catalysis on Metals and Alloys	**SS+EM** Organic Electronic Interfaces
TuP									
WeM	**AS+BI+NS** Advances in Scanning Probe Microscopy	**EN+EM+NS** Quantum Dot and Nanowire Solar Cells	**SE+SS** Surface Engineering for Thermal Management	**MI** Fundamental Problems in Magnetism	**HI+AS+BI+NS** Nano- and Bio-Imaging with Helium Ion Microscopy	**SS1** Atomistic Control of Structure & Evolution	**BI** Cells at Interfaces	**SS2** Chemisorption on Metal & Oxide Nanoparticles	**TF1+EM** ALD/MLD: Hybrid Organic Films
WeL									
WeA	**AS** Correlative Analysis - A Multi-technique Approach for Identification & Structure-Property Relationships	**EN1+TF** Thin Film Chalcogenide Solar Cells (CIGS, CZTS, CdTe and Related Materials)	**SE+PS** Atmospheric Pressure Plasmas	**MI** Spintronics, Magnetoelectronics, Multiferroics, and Dilute Magnetic Semiconductor Applications	**EN2+TF** Thin Films for Solar Fuels	**SS** Adsorption & Reactions on Oxide Surfaces	**BI+AS+NS+SS** Functionalization and Characterization of Nanostructures	**TF1+EM** Nonvolatile Memory	**TF2+EM** Nanostructuring Thin Films
ThM	**AS** Analysis of Insulators and Challenging Samples	**EN+NS** Nanostructures for Energy Storage and Fuel Cells I	**SE** Nanostructured Thin Films and Coatings	**MI** Emerging Magnetic Characterization and Results	**TC+AS+EM** Transparent / Printable Electronics Part 1	**SS** Oxide Surface Structure & Reactivity	**BI** Biomedical Materials	**TF1** Post-Deposition Processing and Characterization of Thin Films	**TF2** Modeling and Analysis of Thin Films
ThA	**EN+MS+VT** Photovoltaics Manufacturing	**EN+NS** Nanostructures for Energy Storage and Fuel Cells II	**SE+PS** Pulsed Plasmas in Surface Engineering	**MN** Multi-scale Interactions of Materials and Fabrication at the Micro- and Nano-scale	**TC+EM+NS** Transparent / Printable Electronics Part 2	**SS** Semiconducting & Ferroelectric Surface			**TF+EM+SS** Applications of Self Assembled Monolayers
ThP									
FrM				MN Characterization of Materials and Structures at the Micro- and Nano-scale		**SS** Surface Science on Graphene			**TF** Thin Films: Growth and Characterization II

at a Glance

111	201	202	203	207	208	209	210	East Exhibit Hall / West Exhibit Hall
VT Vacuum Measurement, Calibration & Primary Standards, Gas Flow and Permeation	**PS** Advanced FEOL / Gate Etching I		**NS+EM** Nanowires and Nanoparticles I: Assembly and Devices	**NM+MS+NS+TF** ALD for Nanomanufacturing	**GR** Graphene Growth	**ET+EM+SS** Quantum Transport: From 0- to 2-Dimensions	**EM** Dielectrics for Novel Devices and Process Integration	
VT Optical and Mass Spectroscopy for Gas Analysis and Pump Modeling	**PS+SE** Advanced FEOL / Gate Etching II	**PS+BI** Multiphase (Liquid, Solid, Gas) and Biological Related Plasmas	**NS** Frontiers in Nanophotonics and Plasmonics	**NM+MS** Challenges Facing Nanomanufacturing (All Invited Session)	**GR+TF+ET** Graphene: Electronic Properties and Charge Transport	**EM1** Group III-Nitrides and Hybrid Devices	**EM2** Dielectrics for Ultra Dense Memory Devices	
VT Accelerator and Large Vacuum System Design, Outgassing and Pumping	**PS** Advanced BEOL / Interconnect Etching I	**PS+MN+TF** Plasma Processing for Disruptive Technologies	**NS** Nanowires and Nanoparticles II: Characterization and Synthesis	**NM+MN+MS+TF** Lithography Strategies for Nanomanufacturing	**GR+EM** Graphene: Optical Properties, Optoelectonics and Photonics	**ET+EM+NS+GR** Electron Behaviors in Nanoelectronics, Interconnect, and Carbon-based Materials	**EM+TF** High-k Dielectrics for MOSFETs Part 1	**EW** Exhibitor Technology Spotlight **(West Exhibit Hall)**
								EW Exhibitor Technology Spotlight **(West Exhibit Hall)**
VT+MN+NS+SS+AS Surface Science for Future Electronic Materials and Accelerator Applications	**PS2** Plasma Diagnostics, Sensors and Control I	**PS1** Advanced BEOL / Interconnect Etching II	**NS+AS** Frontiers in Nanoscale Imaging and Characterization	**NM+NS+MS** Manufacturable Nanoscale Devices and Processes	**GR+MI** Graphene: Magnetic Properties and Spin-Dependent Phenomena	**GR** Graphene on Dielectrics, Graphene Transfer to Novel Substrates	**EM** High-k Dielectrics for MOSFETs Part 2	
								POSTER SESSIONS (AS, BN, GR, HI, IS, NM, NS, NT, SE, SS, TF, VT)
NM+AS+MS Nanomanufacturing Issues: Metrology and Environmental Concerns	**PS+SE** Atmospheric Plasma Processing and Micro Plasmas	**PS+SS** Plasma Surface Interactions (Fundamentals & Applications) I	**NS** Carbon-Based Nanomaterials	**NT+AS+MI** Applications of Neutron Scattering I	**GR+MN** Graphene: Mechanical and Thermal Properties, Graphene MEMS and NEMS	**EN+NS** Organic Photovoltaics	**EM** Low-k Materials and Devices	**EW** Exhibitor Technology Spotlight **(West Exhibit Hall)**
								EW Exhibitor Technology Spotlight **(West Exhibit Hall)**
TR Emerging Interfaces of Tribological Importance	**PS** Plasma Sources	**PS+EM** Low-K Materials & Integration		**NT+AS** Applications of Neutron Scattering II	**GR** Graphene Characterization including Microscopy and Spectroscopy	**AC+MI** Magnetic and Electron Correlation Effects in Actinides and Rare Earths	**EM** Defects in Electronic Materials	
TR+AS+SS Atomic-scale Characterization of Tribological Interfaces	**PS** Neutral Beam and Low Damage Processing	**PS+TF** Plasma Deposition and Plasma Enhanced ALD	**NS** Molecular Assembly and Devices	**AC+SS** The Surface Science of Actinides and Rare Earths	**GR+NS+PS+SS** Graphene: Surface Chemistry, Functionalization, Plasma Processing and Sensor Applications	**EL+AS+EM+MS +PS+TF** Spectroscopic Ellipsometry of Biological Materials and Organic Films	**EM+TF** Hybrid Electronic Materials and Interfaces	
TR Advanced Tribological Materials	**PS** Plasma Diagnostics, Sensors and Control II	**PS+SS** Plasma Surface Interactions (Fundamentals & Applications) II	**NS** Biological Nanomaterials	**AC+TF** The Structure, Properties and Chemistry of Thin Films of Actinides and Rare Earths	**GR+TF+NS** Graphene Nanoribbons and Related Structures	**EL+AS+EM+MS +PS+TF** Spectroscopic Ellipsometry for Photovoltaics, Metals & Oxide Thin Films		
								POSTER SESSIONS (BI, EL, EM, EN, MI , PS, TC, TR)
	PS Plasma Modeling		**EN+AC** Materials Challenges for Nuclear Energy		**GR+MS+EM** Graphene Device Physics and Applications	**EL+AS+EM+MS +PS+TF** Spectroscopic Ellipsometry: Future Directions and New Techniques	**EM+SS** Surfaces and Materials for Next Generation Electronics	

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Chabal, Yves J., University of Texas at Dallas
Diebold, Alain, The University at Albany-SUNY
Gölzhäuser, Armin, University of Bielefeld, Germany
Jernigan, Glenn, U.S. Naval Research Laboratory
Opila, Robert, University of Delaware
Sheehan, Paul E., U.S.Naval Research Laboratory
Spenser, Michael, Cornell University

Helium Ion Microscopy Focus Topic

Chair: Chair: Gölzhäuser, Armin, U of Bielefeld, Germany

***In Situ* Spectroscopy and Microscopy Focus Topic**

Chair: Cumings, John, University of Maryland
Artyushkova, Kateryna, University of New Mexico
McGaughey, Alan J.H., Carnegie Mellon University
Yang, Judith C., University of Pittsburgh
Zhou, Guangwen, SUNY at Binghamton

Marine Biofouling Focus Topic

Chair: Barlow, Daniel E., U.S. Naval Research Lab
Co-Chair: Rosenhahn, Axel, Karlsruhe IT, Germany

Nanomanufacturing Science &Technology Focus Topic

Chair: Rogers, Bridget, Vanderbilt University
Co-Chair: Madsen, Lynnette, Natl Science Foundation
Ku, Victor, Satcon Technology Corporation

Neutron Scattering Focus Topic

Chair: Lauter, Valeria, Oak Ridge National Laboratory
Ekkebus, Allen, Oak Ridge National Laboratory
Majewski, Jaroslaw, Los Alamos National Laboratory
Mankey, Gary J., University of Alabama
te Velthuis, Suzanne, Argonne National Laboratory

Spectroscopic Ellipsometry Focus Topic

Chair: Creatore, Mariadriana, Eindhoven U of Tech, Netherlands
Diebold, Alain, The University at Albany-SUNY
Durbin, Steve, University at Buffalo
Goeckner, Matthew J., University of Texas at Dallas
Lloyd, Kathryn G., DuPont Corp Ctr for Analytical Sci
Schubert, Mathias, Univ. of Nebraska - Lincoln
Wagner, Matthew, Proctor and Gamble
Woollam, John, J.A. Woollam Co., Inc.
Wormeester, Herbert, University of Twente, Netherlands

Transparent Conductors and Printable Electronics Focus Topic

Chair: Porter, Lisa M., Carnegie Mellon University
Co-Chair: Coutts, Tim, Comcast
Durbin, Steve, University at Buffalo
Gilmore, Ian, National Physical Laboratory, UK
Haasch, Richard, U of Illinois at Urbana-Champaign
Herman, Greg, Oregon State University

Tribology Focus Topic

Chair: Perry, Scott S., University of Florida

Exhibitor & Manufacturers Technology Spotlight

Co-Chair: DeGennaro, J., AVS
Co-Chair: Surman, D., Kratos

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Email: alison_baski@avs.org

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Linkoping University

Gregory N. Parsons, Director
North Carolina State University

Susan B. Sinnott, Director
University of Florida

GENERAL INFORMATION

Symposium Registration Procedures

(See page 3 for form)

We strongly encourage you to pre-register using our on-line registration program (www.avs.org), which will ensure faster confirmation. Those of you wishing to register via mail or fax may complete the form on page ?? and send it to the following address to be received no later than **October 10, 2011:**

AVS
c/o Experient
P.O. Box 4088
Frederick, MA 21705
Fax: 301-694-5124

All pre-registered attendees will collect their badge, tickets, and other materials when they report to the AVS-58 Registration Area at the Nashville Convention Center. You will use the Pre-Registration terminals to generate your badge and collect your materials from the Print Station. All registrants must have their badge and badgeholder to gain admission to the technical sessions and exhibition.

Symposium Registration Cancellation Policy

All Symposium cancellation/refund requests must be submitted by **Monday, October 24, 2011** in writing to:

Yvonne Towse, Registration Coordinator
AVS
125 Maiden Lane, 15th Floor
New York, NY 10038
Fax: 212-248-0245
Email: yvonne@avs.org

Please note that all refunds will be issued via check within 30 days after the meeting. All refunds are subject to a $25 cancellation fee.

OTHER 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.

- No one under the age of 12 (including infants and toddlers) will be permitted on the show 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.

JVST Manuscript Publication Information

Authors are invited to submit an article to *JVST A* or *B* on their presentation/poster topic given at the AVS International Symposium. Articles can be submitted anytime between the abstract submission deadline and the end of the year. Please indicate in the cover letter that the article is based on a talk or poster given at the AVS Symposium. Papers can be submitted to JVST *A* or *B* depending on the topic. You can find easy to use templates and instructions for authors on the journal home pages http://avspublications.org/jvsta or http://avspublications.org/jvstb. Please submit your J*VST A* & *B* articles at http://jvsta.peerx-press.org or at http://jvstb.peerx-press.org for *JVST A* & *B* respectively.

For more information, stop by the AVS Publications Booth 1117 in the Exhibit Hall during the week of the Symposium or contact:

Nancy Schultheis
AVS Publications Office
Caller Box 13994
100 Park Drive, Suite 105
Research Triangle Park, NC 27709
919-361-2787 Fax: 919-361-1378
Email: publications@avs.org

AVS Membership Renewal Feature

The 2012 membership renewal dues will be included within the symposium registration fees for all Full, Student, Early Career, Honorary, and Emeritus members. No further action will be required and 2012 membership will take effect on January 1, 2012. Any questions, see Angela Klink at the AVS Store (Booth 1217) or via email (angela@avs.org)

Complimentary AVS Membership Offer

If you have paid the Full, Student, or Early Career non-member registration fee, you will receive a complimentary AVS electronic membership for 2012. If you wish to receive a *JVST* print subscription you must pay any additional fees. For more information, stop by AVS Booth 1217 in the Exhibit Hall during the week of the Symposium or contact:

Angela Klink
AVS
125 Maiden Lane, 15th Floor
New York, NY 10038
212-248-0200 X221 Fax: 212-48-0245
Email: membership@avs.org

Recording Equipment Policy

The use of video recording equipment, cameras, or audio equipment at any AVS International Symposium and Exhibition, or Short Course is prohibited without prior written approval of AVS.

Anyone in violation of these policies will be removed from the premises immediately. AVS reserves the right to reproduce, by any means selected, any or all of these presentations and materials.

Internet Access E-mail Pavilion–Booth 618

AVS will be sponsoring internet access in the Exhibition Hall at the Convention Center from Tuesday-Thursday. Attendees are welcome to use the computers provided in the Exhibit Hall E-mail Pavilion (generously sponsored by Kratos Analytical and Vacuum Research Corporation.) or log in directly using their own laptops at various wireless spots marked throughout the Exhibit Hall. Complimentary wireless is available in the hotel lobbies.

Securing Visas

International Attendees: Due to increasing delays in securing visas to the U.S. it is strongly encouraged that prospective international attendees begin this process as early as possible to ensure approval. Please refer to the following website for additional information and assistance:
http://www.national-academies.org/visas

You may also contact Yvonne Towse (yvonne@avs.org) for additional assistance.

Additional Notes

•AVS will be providing PCs in all session rooms in addition to switchboxes which should allow for a quick and easy transition between presentations. All authors are encouraged to visit the Presenters Preview Room 214 to test the equipment prior to their presentation.

•AVS will not publish an **Abstract Book** so you must refer to www.avs.org to review and print abstracts of interest. All abstracts, as well as a personal scheduler, have been available on our website since early July. Computer terminals with a program link will be available on the second level of the Convention Center Still having should you need to reference any abstracts during the week.

Exciting 2011 Events

Welcome Mixer for Attendees & Exhibitors

Will take place on Monday from 5:30 p.m.–7:30 p.m. in the West Ballroom of the Renaissance Nashville Hotel. 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 Membership Booth and Store Booth 1217

Browse through AVS Educational materials (books, training DVDs and monographs); trinkets, souvenirs and logo items. Learn about the advantages and benefits of AVS membership and find out how to get more involved in AVS events and activities in Booth 1217 in the Exhibit Hall.

AVS Career Center Booth 1217

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 in Booth 1217.

AVS Publications Booth 1117

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

Art Zone Booth 817

See the entries in the 2011 art contest and vote for your favorites. Winners will take home cash prizes! Generously sponsored by AJA International. To participate in the contest, contact Della Miller della@avs.org for instructions on how to submit your art. Submission deadline October 14, 2011.

1st Place takes home $500!
2nd Place: $250
3rd Place: $100

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

Attendees who pay for a full week registration (Full, Student, Early Career) will receive two free lunch vouchers redeemable on Tuesday and Wednesday for lunch concessions located in the Exhibit Hall. Stop by the Exhibit Hall between 12:00–2:00 p.m. to grab a bite to eat and network with exhibitors and fellow colleagues.

AVS Raffle Zone Booth 1217

Be sure to enter your raffle tickets to participate in the daily raffles being held Tuesday–Thursday in the Exhibit Hall Raffle Zone Booth 1217! Thanks to our generous sponsors we have some really exciting prizes this year.

Ask The Experts Booth 913

The AVS Vacuum Technology Division and Duniway Stockroom, SAES Getters and Brooks Automation are sponsoring an Ask The Experts (ATE) booth which will offer a special open forum to discuss and help solve vacuum related issues. Are you experiencing: Puttering Pumps? Garbled Gauges? Spurious Species? Come and Ask the Experts!

Students and Early Career Members

•On Monday afternoon there will be a *JVST* Writer's Workshop held during the last half of the lunch break to provide guidance and insight on the publishing process for AVS Student and Early Career Members.

•On Monday evening there will be a special Professional Development session entitled "Town Hall Meeting: Federal Funding & Research Opportunities", featuring program managers from several U.S. government agencies.

•The Job Information Forum, which provides an opportunity to learn from the career experiences of young industrial, academic and national lab professionals, will again be held on Tuesday during lunch.

AVS Companion Tours

In addition to the technical program, AVS offers tours of Nasvhille and the surrounding area for your enjoyment. For additional information, contact Marilyn Ruzic, Tour Coordinator, companiontours@avs.org or visit www.avs.org

Free Caricature

Visit Booth #600 (Kratos Analytical) in the Exhibit Hall to get your ticket validated for a free caricature!

Free Massage

Visit Booth #500 (Vacuum Research Corp.) in the Exhibit Hall to get your ticket validated for a free massage!

GENERAL INFORMATION

Hotel Reservations

AVS is pleased to offer special rates at two Nashville hotels—Renaissance Nashville Hotel (Headquarters) and the Courtyard Nashville Downtown.

Keep in mind that reserving a room in this convention block helps AVS meet its financial commitments to the host city and retain lower registration fees as well as a high quality conference with the features and services you are accustomed too. To make these properties more attractive, AVS will be offering several incentives for you to book your stay—watch for these specials from July-September.

Reservations
Opens: July 11, 2011
Closes: October 6, 2011

By Web
https://resweb.passkey.com/Resweb.do?mode=welcome_ei_new&eventID=3372060

By email
avs@experient-inc.com

By phone
847-996-5876 or Toll Free 800-974-3084

Cancellation Policy
All reservation cancellations must be received by the AVS Housing Bureau by October 6, 2011. If you need to cancel after October 6, 2011, you must do so directly with the hotel and provide a 72 hour notice to avoid being charged one night's room and tax.

Climate

Situated in the center of middle Tennessee on the Cumberland River, Nashville is rimmed on three sides by an escarpment rising three to four hundred feet (Elevation is 550 feet at lowest point and 1,100 feet at highest point.). Nashville's climate is moderate, with seasonal variation rarely lapsing into temperature extremes. Its humidity is also considered moderate for the Southeast (average humidity is 58%). Precipitation is heaviest in winter and early spring, though when it falls in the form of snow it is seldom disruptive (average annual precipitation is 48.4 inches).

Fall is a celebrated time throughout Tennessee. Visitors come from all over to see the annual changing of the leaves in mid-October. Days are warm and pleasant, but evenings are cool, requiring a sweater or light jacket. Temperatures range between 40 to 80 degrees.

Rates, Parking and Directions

Renaissance Nashville Hotel (Headquarters)
611 Commerce Street
Nasville, TN 37203
Single/Double: $189*****
Parking: $27 valet; $8 self parking
*****Government Rates Available

From Nashville International Airport (BNA) to Renaissance Nashville (8 Miles):

- Take I-40 West to Exit 209A (Broadway).
- Turn right on Broadway to 7th Ave.
- Turn left on 7th Ave.
- Go 1 block to Commerce St. Hotel on corner of 7th Ave. and Commerce.

Courtyard Nashville Downtown Hotel
170 Fourth Ave. North
Nasvhille, TN 37219
Single/Double: $156
Parking: $22 valet parking

From Nashville International Airport (BNA) to Courtyard Nashville Downtown (9 Miles):

- Take I-40 West to exit 209 (Church Street, Charlotte Ave.).
- At the second red light, turn right onto Church Street.
- Follow Church Street all the way to 4th Ave.
- The hotel is across 4th Ave. on the corner, on the right side.

Airport

Nashville International Airport (BNA)
Nashville International Airport (BNA) is located at One Terminal Drive, Nashville, TN 37214-4114. It is approximately eight (8) miles west of downtown Nashville. For more information please visit http://www.flynashville.com

Ground Transportation from the airport
Taxi Ride: $25 each direction.
Shuttle Ride: $12-$15 each direction

Parking at the Convention Center

For an interactive map of parking options downtown, please visit http://www.parkit-downtown.com/parking. Costs range from $8–$20 per day.

2012 Symposium Suggestions

We hope that you will be satisfied and well-served by the content and activities of the 58th International Symposium of AVS whether your main interests lie in the technical sessions, short courses, equipment exhibition, or special events and functions which are scheduled throughout the week. The AVS Program Committee strives to ensure that the International Symposium meets the needs of its membership and the larger community which utilizes all aspects of vacuum science and technology. To assist the Committee in meeting this objective for next year's symposium, suggestions for improvement in any aspect should be directed to the Program Committee Chair:

Charles (Chip) R. Eddy, Jr., U.S. Naval Research Laboratory, Code 6882, 4555 Overlook Ave. SW, Washington, DC 20375, chip_eddy@avs.org

Help us to serve you better!

AVS 59th International Symposium
TAMPA CONVENTION CENTER
TAMPA, FLORIDA
OCTOBER 28–NOVEMBER 2, 2012

AVS Membership...

Expands Your Network

- Form valuable contacts in academia, industry, and government
- Collaborate with engineers, physicists, chemists, mathematicians, and biologists all working in materials, interfaces, and processing

Enhances Your Scientific and Professional Knowledge

- International Symposia & Exhibitions and Topical Conferences (discounts available)
- Local Chapter Activities and Meetings
- Publications and Technical Resources (Free Subscriptions to *JVST A* & *B* (plus no page charges), *Physics Today*, and the *AVS Newsletter*)
- Professional Development Training and Workshops (discounts available)

Provides Opportunities to Develop and Practice Your Leadership Skills

- Lead or volunteer on a local, national, or international committee or division
- Develop symposia programming
- Serve as an AVS Director or Officer
- Participate in advocacy programs

Offers Discounts on Subscriptions, Meeting Attendance, Hotels, Insurance, and Much More

Full week attendees of the AVS International Symposium automatically receive full AVS Membership for the next calendar year.
Stop by the Membership **Booth 1217** to join or to take advantage of these benefits.

Hours & Schedule
Tuesday 10 a.m. - 5:30 p.m. Exhibit Hall Booth 1217
Wednesday 10 a.m. - 4:30 p.m. Exhibit Hall Booth 1217
Thursday 10 a.m. - 2:00 p.m. Exhibit Hall Booth 1217

AVS is a volunteer-driven, technical society comprised of academic, industrial, government, and consulting professionals involved in a variety of disciplines – chemistry, physics, biology, mathematics, all engineering disciplines, business, and sales – through common interests related to the basic science, technology development, and commercialization of materials, interfaces, and processing.

AVS
212-248-0200
avsnyc@avs.org
www.avs.org

AVS® STORE

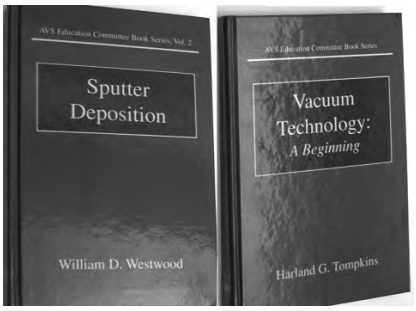
Visit the AVS Store

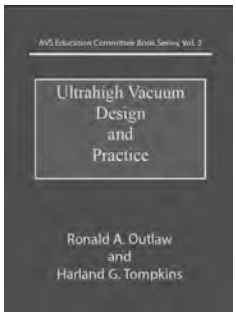
Booth 1217 in the Exhibit Hall

Store Hours

Tue	**10:00am - 5:30pm**	**Exhibit Hall Booth 1217**
Wed	**10:00am - 4:30pm**	**Exhibit Hall Booth 1217**
Thu	**10:00am - 2:00pm**	**Exhibit Hall Booth 1217**

Educational Material





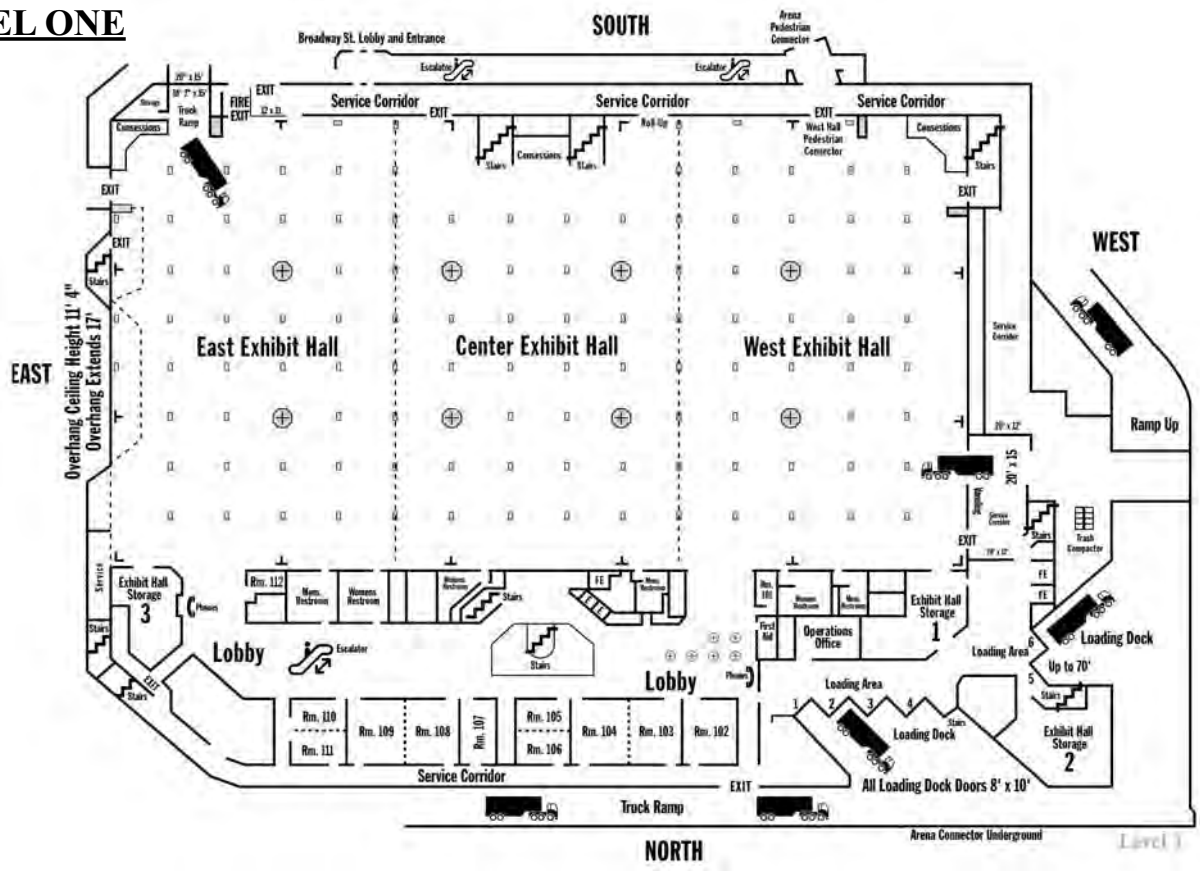
Novelty Items

Business Necessities

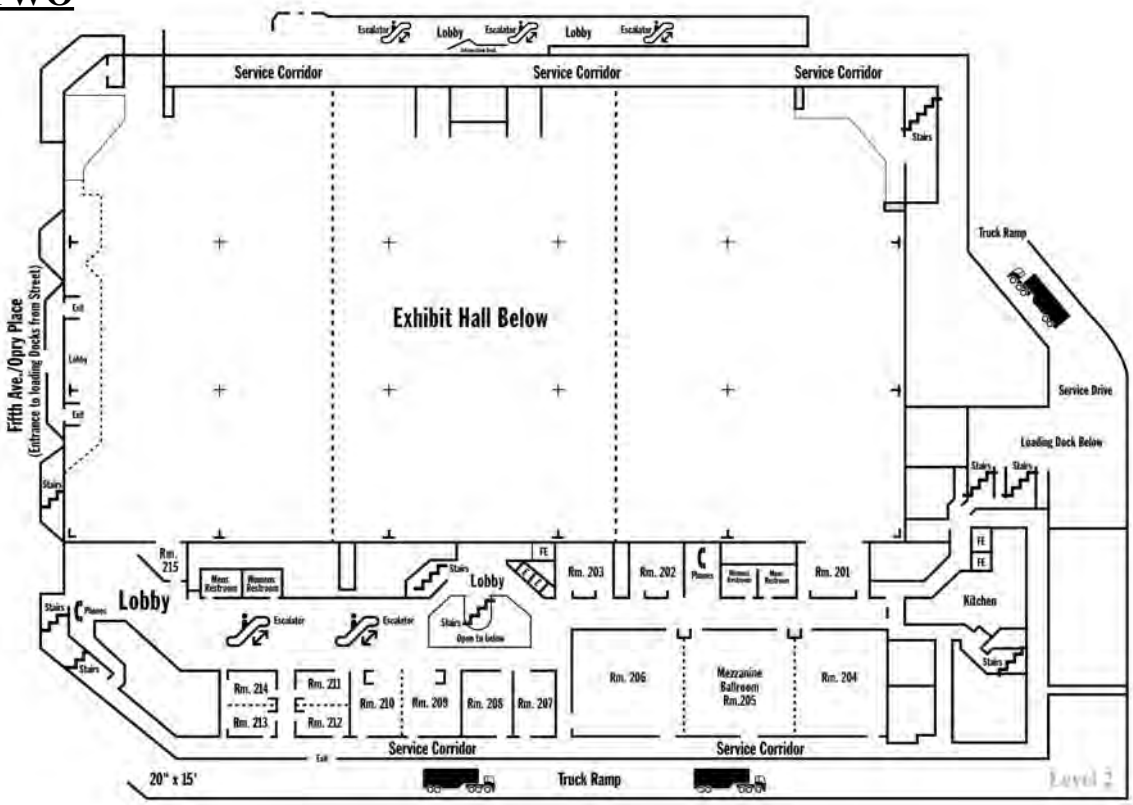
AVS Logo Apparel

NASHVILLE CONVENTION CENTER

LEVEL ONE



LEVEL TWO



SPECIAL SESSIONS/WORKSHOPS

An Introduction to Energy Storage Technology Tutorial

Sunday, October 30, 2011, 1:00–5:00 p.m., Room 109, Nashville Convention Center

Presenter: Robert Spotnitz, President, Battery Design LLC

This tutorial provides an introduction to batteries, fuel cells, and capacitors, with an emphasis on batteries, especially lithium-ion batteries. The tutorial begins with a broad overview of energy storage technology, including markets and applications, and then describes opportunities and technical challenges for the technology. Following this broad overview, a more detailed description of lithium-ion battery technology is provided.

A complete picture of lithium-ion technology, from raw materials to cells to packs and to applications is provided. The product offering of major suppliers is surveyed along with a roadmap for next generation products. The economics of lithium-ion cells is discussed, including a cost breakdown of materials and manufacturing costs. A detailed look at the major components of lithium-ion batteries including active materials, separators and electrolytes is followed by a discussion of manufacturing methods and the principles involved in battery design.

To register for this tutorial please use our online registration system
http://registration2.experient-inc.com/showAVS111/Default.aspx
or complete the registration form on page 3.
$100 or $75 (students/early career)

ASTM E-42 Workshop on Surface Analysis

"Establishing Best Analytical Practice"
Bonnie Tyler, University of the West Indies
Ian Gilmore, National Physical Laboratory
Don Baer, Pacific Northwest National Laboratory

Sunday, October 30, 2011, 2:00 p.m., Fisk, Renaissance Nashville Hotel

Abstract

In recent years, the number of surface science researchers using multivariate statistics and other advanced data analysis methods has been growing rapidly. Since these advanced data reduction techniques are forms of quantitative analysis, their use demands high analytical standards. Advances in the field require that best analytical practices be established for all steps in the data collection and reduction process, including instrument operation and tuning, calibration, data processing and reporting. There is a pressing need for standard data formats that allow easy transfer of data between computer programs. Clear understanding of all pretreatment steps is essential, including those performed within the instrument software. Establishing these best practices will require the cooperative efforts of agencies, researchers, instrument manufacturers, reviewers and publishers.

SPECIAL SESSIONS/WORKSHOPS

Biomaterial Interfaces Division Plenary Session

Sunday, October 30, 2011, 3:00-6:00 p.m., Room 108, Nashville Convention Center, followed by a reception

In the tradition of the Biomaterial Interfaces Division (BID), a broad technical program has been established that is focused on progress in biointerface science and engineering and brings together an interdisciplinary group of experts that work at the intersection of biosurface and interface science, the nanosciences, and biomedical engineering. The annual BID sessions will commence on Sunday afternoon with the annual **Biomaterials Plenary (BP) session**. This year we are joining up our Plenary Session with the Applied Surface Science (AS) Division with the theme "Challenges in Biomaterials Analysis." Talks address current needs and issues in biomedical surface analysis and translation to challenging areas. This year the Plenary session will also include a presentation from the 2011 Biointerphases Lectureship awardee. The event will close with the opportunity for further discussions at our traditional industry sponsored Plenary Reception.

Surface Science for Future Electronic Materials and Accelerator Applications

Tuesday, November 1, 2011 2:00 p.m., Room 111, Nashville Convention Center

New this year, VT is hosting a multi-disciplinary session on surface treatments for accelerators, including research regarding the processing of niobium and novel materials for successful incorporation into the cryogenic vacuum environment of superconducting radio-frequency (SRF) accelerator cavities. This session also highlights surface analysis for future electronic materials with an invited talk by Joe Stroscio of NIST.

Surface Science Morton M. Traum Presentation

Thursday, November 3, 2011 12:00 Noon, Room 107, Nashville Convention Center

The Tuesday Evening Poster Session features presentations by the five Mort Traum Student Award Finalists. The Morton M. Traum Surface Science Student Award will be presented for the best student paper submitted to any session sponsored or jointly sponsored by the Surface Science (SS) Division at the AVS International Symposia. The 2011 Winner will be announced in the Traum Student Award Ceremony, to be held Thursday at noon immediately following SS-ThM in Room 107.

STUDENT/EARLY CAREER FUNCTIONS

JVST Writer's Workshop

Monday, October 31, 2011, 1:15 pm
Belmont Ballroom, Renaissance Nashville Hotel

- Wonder how the technical publication process works?
- Want to know what editors look for in a quality submission?
- Want an edge in getting published?

If you answered yes to any of these questions, then you should make time to attend the first *JVST* Writer's Workshop being held at this week's AVS Symposium. Editors from major scientific publications will be on hand to offer insights into the process of technical publications and suggestions on how to get your work published.

Editors participating in this inaugural *JVST* Writer's Workshop include:
- Dr. Eray Aydil, Editor-in-Chief of ***JVST***
- Dr. Phillip Szuromi, Senior Editor of ***Science***

The Workshop is open to all Symposium student and early-career attendees (no advanced registration is required); invitations will be distributed to all Symposium registrants when they collect their materials at Conference Registration.

A COMPLIMENTARY LUNCH WILL BE PROVIDED TO ALL ATTENDEES.

Job Information Forum

Tuesday, November 1, 2011, 12:00 Noon
Belmont Ballroom, Renaissance Nashville Hotel

- Want to know more about starting a successful career?
- Not sure whether industry, academia, or government should be the next step?

Speakers from industry, academia, and government will 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 at this year's Job Information Forum include:
- Assistant Professor Sharon Weiss (Vanderbilt University)
- Surface Scientist Gilad Zorn (GE Global Research)
- Research Scientist Zac Ward (Oak Ridge National Laboratory)

The Forum is open to all Symposium student and early-career attendees (no advanced registration is required); invitations will be distributed to all Symposium registrants when they collect their materials at Conference Registration.

A COMPLIMENTARY LUNCH WILL BE PROVIDED TO ALL ATTENDEES.

STUDENT CHAPTERS

Student Chapter Information

AVS Student Chapters were established in 2003 to provide students tailored opportunities for career and professional development within the AVS the materials, processing, and interfaces communities. If there is a Chapter at your college or university, we urge you to join. If there isn't a Chapter at your location, then maybe you're the person to get one started.

Please visit the AVS Student Chapter Displays (Lobby Level 2) during the Symposium to find out how to form a student chapter or to network with current students and compare notes on recent activities and issues of common concern. AVS will be happy to assist your university in establishing a chapter. Please visit www.avs.org or contact Angela Klink (angela@avs.org) for more information.

AVS Student Chapters:

Northwestern University
UCLA
University of Alabama at Tuscaloosa
University of Central Florida
University of Florida
University of Illinois at Urbana-Champaign
University of Washington

Get Involved in AVS

If you want to join an existing Student Chapter or start a Student Chapter at your university, please contact AVS directly (membership@avs.org).

CAREER CENTER

The AVS Professional Leadership and Outreach Committee will be hosting the AVS Career Center, open to all attendees, at the International Symposium for the purpose of connecting job seekers with potential employers. The goal is to facilitate contact and networking during the Conference. In an attempt to create more opportunities for employers to find qualified applicants for job openings and for qualified applicants to have more opportunities to learn about potential employers there will be a mini Job Fair during the AVS 58th International Symposium and Exhibition, October 30–November 4, 2011 in Nashville, TN.

With the Job Fair Table option, not only can you post your job(s) on the bulletin board, you can display any pertinent company information, interact throughout the day with individuals interested in your company and still host interviews in a semi-private interview room. Greater exposure is guaranteed!

Career Center services include collect job postings/résumés (prior to and during the event), complete timecards, schedule/coordinate interviews, supply a message board and have résumé binders available for review. Interviews may be scheduled Tuesday through Friday (Friday interviews will be at a location TBD between Employer and Applicant as necessary)

EMPLOYERS:

Job Fair Table: Includes 1 skirted table (6' x 2') with 2 chairs, 1 or more job postings on the Career Center bulletin board, and one copy of the résumé binder; ability to review résumé binder and host interviews in a semi-private room during the job fair. The Career Center will be a carpeted area within the exhibit hall. **Must register by September 23, 2011 ($500)**.

General Registration: Includes 1 or more job postings on the Career Center bulletin board and ability to review résumé binder and host interviews in a semi-private room during the job fair.. **(FREE prior to 10/15; $50 After 10/15).**
Résumé Binder only: After the symposium you will receive one copy of all participating job seeker résumés/CVs. **($125)**
Job Posting(s) only: Includes 1 or more job postings on the Career Center bulletin board. **(FREE)**

Potential Employers:

- Submit registration form in advance - *registration form is available online*
- Email job postings by **October 14**, or bring 2 copies of each job posting onsite
- Complete a time card at beginning of the week at the Career Center Registration area
- Check for messages from interested applicants (regularly each day)
- Review Résumé Binders
- Reply to messages (i.e. interview, regrets, etc.)
- Schedule/conduct interviews (onsite and informal)

Advance Submission Deadlines:

Job Fair Table:	**Sepember 23, 2011**
Job Postings:	**October 14, 2011**
Résumés/CVs:	**October 14, 2011**

Job Seekers:

- Email your résumé by October 14, or bring 6 Copies of your résumé (stapled and 3-hole punched)
- Complete a time card at beginning of the week at the Career Center Registration area
- Review job boards daily
- Leave messages for employers/check back for replies (frequently each day)
- Be available for onsite/informal interviews
- *Bring EXTRA, clean copies of your résumé to hand out as needed*

Your résumé will be included in binders available for review by potential employers. When you leave a message of interest for an employer, you are responsible to check back for a reply message (i.e. interview/regrets, etc.). It is important to check in often each day so you do not miss any opportunities for an interview.

AVS Career Center Online Registration and Information:

http://www2.avs.org/symposium/AVS58/pages/career_center.html Click on Meetings/Events/Services and then Career Center (there is a section for Employers and Job Seekers in addition to the Employer registration form)

Hours/Location October 30-November 3, 2011

Sunday	**2:00 pm - 6:00 pm**	**Career Center Registration Area**
Monday	**7:30 am - 5:00 pm**	**Career Center Registration Area**
Tuesday	**10:00 am - 5:30 pm**	**Exhibit Hall Booth 1217**
Wednesday	**10:00 am - 4:30 pm**	**Exhibit Hall Booth 1217**
Thursday	**10:00 am - 2:00 pm**	**Exhibit Hall Booth 1217**
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Advance résumés may be sent to:
AVS Career Center Att: Heather Korff
110 Yellowstone Drive, Suite 120
Chico, CA 95973
Phone: 530-896-0477 FAX:530-896-0487
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For additional career resources, please visit the AVS Online Career Center at: http://careers.avs.org

Questions: 301-209-3189; jobs@avs.org

PROFESSIONAL LEADERSHIP

TOWNHALL MEETING: Federal Funding & Research Opportunities

7:00 p.m.–8:45 p.m., Belmont Ballroom, Renaissance Nashville Hotel
Monday, October 31, 2011

Open to ALL Symposium Attendees Refreshments provided

7:00 p.m. **Introduction of Panelists** Moderators: Drs. Ellen D Williams, BP and Glenn Glass, Intel
Dr. James W Davenport: Department of Energy (DOE)
Dr. Brian Holloway: Defense Advanced Research Projects Agency (DARPA)
Drs. Ian M. Robertson, Lynnette D. Madsen, Z. Charles Ying & Sean L. Jones: National Science Foundation (NSF)

7:10 p.m. **Briefings from NSF, DARPA and DOE** (10 minutes each) **with Q&A** after each presentation
NSF's Response to the Nanotechnology Signature Initiatives
Getting Funded through the DOE's Office of Basic Energy Sciences
How DARPA Evolves

7:45 p.m. **Panel Discussion across the Agencies** (in turn a response will be provided from each agency)
What is New & Important
International Opportunities
Getting Started as a New Faculty Member
Proposal Cycle Timeline
Making a Lasting Positive Impression
Best Responses after a Proposal Declination
Three Things You Want to Know

Biographies of Panelists:

Dr. James W Davenport joined the Materials Sciences and Engineering Division at the **Department of Energy** in 2011 after many years at Brookhaven National Laboratory, where he served as Director of the Computational Science Center, Chair of the Department of Applied Science, and Associate Chair of the Physics Department. He is a Fellow of the American Physical Society and served as Chair of the Division of Materials Physics. He is co-author on more than 110 publications in areas such as density functional theory, electronic structure of metallic alloys, first principles molecular dynamics, hydrogen ab/adsorption, photoemission, and inverse photoemission.

Dr. Brian Holloway joined **DARPA** as a program manager in 2009. His interests focus on creating new capabilities for the war fighter via improvement of critical materials-based limitations. Prior to joining DARPA, Dr. Holloway established the Nano-Materials Research Group within the Technology Development Division of Luna Innovations Incorporated in order to apply innovative nano-materials solutions to significant problems across the government and private sector business space. From 1998 to 2006, Dr. Holloway was a faculty member in the Applied Science Department at the College of William & Mary, most recently as the Arts and Science Distinguished Associate Professor (with tenure). Prior to joining the faculty at William & Mary, Dr. Holloway served in the office of Senator John. D. Rockefeller (WV) first as a MRS/OSA Congressional Fellow and, then as a Legislative Assistant. Dr. Holloway received a bachelor's degree in mechanical engineering (Highest Honors) in 1992 from the University of Florida and a master's degree (1993) and doctorate (1997) in mechanical engineering with a materials science minor from Stanford University. Dr. Holloway is a named inventor on multiple U.S. patents, has authored more than 40 articles in peer-reviewed technical publications, and presented his work in more than 30 invited talks.

Dr. Sean L. Jones has served as a Program Director in the Division of Materials Research at **NSF** since 2009. He co-manages the Materials Research Science and Engineering Centers (MRSEC), the Partnership for Research and Education in Materials (PREM), and the Instrumentation for Materials Research (IMR) Programs. Prior to joining NSF, Dr. Jones was a Research Faculty member in the Department of Materials Science and Engineering at the University of Florida. He has also served as the Director of Engineering for Applied Plasmonics, Chair and Professor at Norfolk State University for the optical and electronic engineering department, and as Technical Manager and Distinguished Member of Technical Staff at Bell Laboratories of Lucent Technologies. Dr. Jones received his B.S. in Ceramic Engineering from Clemson University and his Ph.D. from the University of Florida in Materials Science and Engineering in 1997. He has received numerous awards and belongs to several honor societies and professional organizations, including the Optical Society of America and the AVS, where he has recently served as a member of Thin Film Division Exec. Committee. He has authored >26 peer-reviewed publications & has been awarded >9 U.S. patents with several pending.

Dr. Lynnette Madsen has served as the Program Director for Ceramics at the **National Science Foundation (NSF)** since 2000. She has a B.A.Sc. in Electrical Engineering and a B.A. in Psychology from the University of Waterloo, an M.Eng. in Electronics from Carleton University, and a Ph.D. in Materials Science and Engineering from McMaster University. To date she has written over 40 refereed journal articles, been awarded 2 patents, and delivered more than 50 invited scientific or professional talks (covering research, ceramics, nanotechnology, and careers). In addition to recommending the distribution of the Ceramics Program budget (now ~$11M), Dr. Madsen has led new co-operative activities with European researchers in materials; been involved in programs or initiatives on nanotechnology, energy, education, and gender issues; and carries out independent research. Her achievements at NSF were recognized with Director Awards in 2007 and 2008. In terms of the AVS, she serves on both the Membership and Professional Leadership committees, and in 2009, she chaired the Energy Focus Topic at the Annual Meeting.

Dr. Ian Robertson received his B.Sc. degree in applied physics from the University of Strathclyde, Glasgow, Scotland, in 1978 and his D.Phil. in metallurgy from Oxford University, England, in 1982. He joined the faculty at UIUC in 1983. In 1984 he shared, with Professor H. K. Birnbaum, the Department of Energy Outstanding Science Award in Metals and Ceramics. In 2009, he was named a Fellow of ASM. In 2011, he became the Division Director for Materials Research at **NSF**. Dr. Robertson has authored or co-authored more than 150 invited and peer reviewed publications and has been invited to present his work at professional meetings, government and academic institutions, both nationally and internationally. He has served as a key reader for Metallurgical Transactions, as a Principal Editor for the Journal of Materials Research and as a member of the editorial board of International Materials Review.

Dr. Charles Ying co-manages the Electronic and Photonic Materials (EPM) and Materials Research Science and Engineering Centers (MRSEC) Programs in the **NSF** Division of Materials Research. He also manages a Nanoscale Science and Engineering Center and a Science and Technology Center. These centers have active collaborative efforts with industry and national laboratories. In addition, he is active in NSF workgroups that manage multidisciplinary research programs such as CHE-DMR-DMS Solar Energy Initiative and Emerging Frontiers in Research and Innovation. Dr. Ying obtained his Ph.D. degree in physics at Cornell University in 1990 and received his postdoctoral training at the University of Pennsylvania. His employments prior to joining NSF in 2006 provided him first-hand experience in academia and national laboratories. He worked at Oak Ridge National Laboratory as a Eugene P. Wigner Fellow and Research Scientist, at NM State University as a faculty member, and at National Institute of Standards and Technology. He is a co-inventor of two U.S. patents and has authored >60 scientific papers.

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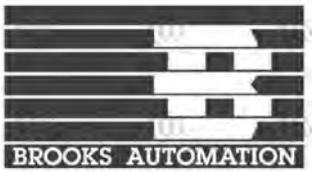

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AVS 58th Annual
Awards Ceremony & Reception
Celebrate with AVS awardees at the
58th Awards Ceremony
Wednesday, November 2, 2011
in the Nashville Convention Center Rooms 204-206
at 6:15 p.m.
Followed by the
58th Awards Reception
in the Renaissance Nashville Hotel
Grand Ballroom East & Center
AVS
Complete details available online at www.avs.org

AVS AWARDS

AWARDS CEREMONY & RECEPTION

The AVS Awards Ceremony will be held on Wednesday, November 2, 2011 at 6:15 p.m. in Room 204-206 of the Nashville Convention Center to be followed immediately by an Awards Reception in the Grant Ballroom East and Center of the Renaissance Nashville Hotel. This year, AVS honors the following awardees:

Wilson Ho, Medard W. Welch Award

John E. Rowe, Albert Nerken Award

Vincent M. Donnelly, John A. Thornton Memorial Award and Lecture

Mohan Sankaran, Peter Mark Award

Jonathan Koch, George T. Hanyo Award

The newly elected AVS Fellows

The 2011 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 struck gold medal, a certificate, and an honorary lectureship at a regular session of the International Symposium.

WILSON HO

Dr. Wilson Ho, University of California, Irvine, "for the development and application of atomic scale inelastic electron tunneling with the scanning tunneling microscope."

Wilson Ho spent his early childhood in Changhwa, a city near the middle of Taiwan, where he received his primary school education. His parents believed that there were more opportunities abroad for their four children. In 1965, when he reached the age of 12, his family moved to Rokko, a suburb of Kobe, Japan, and two years later they immigrated to San Francisco, California. In 1971, he attended the California Institute of Technology and received B.S. and M.S. degrees in Chemistry in 1975. He had fond memories of carrying out research each summer with different professors: Aron Kuppermann, Wilse Robinson, William Goddard, and Henry Weinberg. Surface science was a rapidly emerging field at that time and he went to the University of Pennsylvania to carry out Ph.D. studies under the guidance of Professors Ward Plummer and Robert Schrieffer. During this period, he learned to appreciate the design and fabrication of novel instruments and became fully ingrained with the belief that development of new techniques could lead to discoveries in science. In 1979, he received his Ph.D. degree in Physics and joined AT&T Bell Laboratories as a Member of Technical Staff. In 1980, he started his academic career as a faculty member in Physics at Cornell University, prior to joining the University of California, Irvine in 2000 as Donald Bren Professor of Physics and Chemistry.

His research has been focused on understanding quantum phenomena by studying molecules on solid surfaces. He discovered impact scattering and a new selection rule for high resolution electron energy loss (vibrational) spectroscopy (EELS). Recognizing the importance of time resolved measurements, he constructed multichannel electron detectors in EELS and femtosecond lasers for time resolved studies on surfaces. Over the last 15 years, he has been fascinated by precision measurements on single atoms, molecules, and artificial nanostructures, in particular their interiors that can be uniquely probed by homemade, low temperature (10 K to 700 mK), ultrahigh vacuum scanning tunneling microscopes (STM). The desire to push the limits of measurement led to the detection of vibrations of a single bond; single molecule rotation, diffusion, intramolecular vibrational relaxation, bond breaking and formation; the synthesis of new molecules and quantum structures by atomic and molecular manipulation; single-molecule optical phenomena with 0.1 nm resolution, including fluorescence spectroscopy, optical imaging, and cw and femtosecond laser-induced electron transfer; as well as single-spin excitation spectroscopy and imaging, spin-vibronic coupling, and the detection of spin-related properties in molecules without unpaired electrons. His research continues to focus on the exploration of the interior of single molecules and nanostructures and its coupling to external perturbations by photons, electrons, and magnetic fields (up to 9 Tesla). He is currently extending the STM into the frequency (up to 2 GHz) and time (< 30 fs) domains as well as high energy resolution spectroscopy and imaging (~100 μV or sub-cm^{-1}). He is particularly proud that some of his research results have found their way into textbooks and the successes his former students have achieved in their careers.

ALBERT NERKEN AWARD

The Albert Nerken Award was established in 1984 by Veeco Instruments, Inc. in recognition of its founder, Albert Nerken, a founding member of AVS. Albert Nerken's work was in the field of high vacuum and leak detection and he made contributions to the commercial development of the instrumentation. The Albert Nerken Award is presented to recognize outstanding contributions to the solution of technological problems in areas of interest to AVS. The award consists of a cash award, a certificate and an honorary lectureship at a regular session of the International Symposium.

JOHN E. ROWE

Dr. John E. Rowe, North Carolina State University, "for his fundamental role in the development of electron energy loss spectroscopy, photoemission and synchrotron radiation techniques and their applications to surface and interface studies."

J. E. (Jack) Rowe is currently Research Professor of Physics at NC State University in the Department of Physics. Prior to returning full-time to NC State, he held the position of Deputy Director of the UNC Institute for Advanced Materials, Nanoscience and Technology where he was also an Adjunct Professor of Physics and Astronomy from late 2003 until early 2007. Previously for nearly 8 years he was a Senior Research Scientist (ST) with specialty in Solid State Physics at the Army Research Office (ARO) in Research Triangle Park, NC where he was in charge of Special Studies in Solid State Physics as a member of the Physics Sciences Directorate. While at ARO, he also was Associate Director of Biological Science Division at ARO for ~1 ½ years. Rowe was the most cited scientist in the U.S. Army (Over 5500 citations) and an Army Research Lab Fellow as well as a Distinguished Visiting Professor, Rutgers University. He was also North American Editor, Applied Surface Science, a member of the editorial board of *JVST*, an active member of AVS and the MSTG, and a fellow of APS, AVS and AAAS. Rowe has used novel approaches to photoemission spectroscopy and microscopy of semiconductor surfaces, spintronic materials, and complex oxides and transition-metal surfaces; he is using synchrotron radiation photo-

emission studies to determine electronic structure and bonding of ultra-thin transition-metal oxides and silicates, as well as other oxide and oxy-nitride interfaces on Si(100) and Si(111). He has also studied model bimetallic catalyst systems, i.e., Pt, Pd, Au and Ir films on W(211) and Ir(111) with high resolution photoemission at the Brookhaven NSLS. In addition, Rowe has research interests in electronic structure and microscopy of conducting carbon, graphene, diamond, fullerene films and carbon nanotubes. In 1995 while at Bell Laboratories, Murray Hill, NJ, he discovered the Photon Channeling Effect in the far VUV and soft X ray spectral region where total external reflection does not apply. He demonstrated feasibility experiments in collaboration with N.V. Smith and developed a prototype scanning microscope to study nanoscale electronic properties of diamond films on Si(100), Au/GaAs interfaces, and surface segregation structure of SiGe alloys.

JOHN A. THORNTON MEMORIAL AWARD AND LECTURE

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

VINCENT M. DONNELLY

Prof. Vincent M. Donnelly, University of Houston, "for innovation of surface and plasma diagnostics to evaluate the complex kinetics of plasma processing, and for the development of fundamental reaction mechanisms to explain that complexity."

Vincent Donnelly is a John and Rebecca Moores Professor in the Department of Chemical and Biomolecular Engineering at the University of Houston. Prior to 2002, he was a Distinguished Member of Technical Staff at Bell Laboratories, in Murray Hill, New Jersey, and before that was a National Research Council postdoctoral fellow at the Naval Research Laboratory. His field of research involves experimental studies of plasmas used to manufacture integrated circuits. He received a B.A. in Chemistry from LaSalle University and a Ph.D. in Physical Chemistry from the University of Pittsburgh. His research includes studies of plasmas and plasma etching, plasma-surface interactions, new nano-patterning methods, and atmospheric pressure micro-discharges.

Plasmas are widely used to deposit and etch thin films in integrated circuits. In plasma etching, bombardment by positive ions allows patterns to be transferred into thin films, making it possible to fabricate integrated circuits with device dimensions of the order of only a hundred atoms. Such precise control has been realized through experiments and modeling, advancing our understanding of the underlying plasma physics and chemistry. Nonetheless, the lack of a more thorough understanding and control continues to hamper the extension of this process to ever smaller, nanometer-scale dimensions. In addition, plasmas have the potential for "disruptive" alternatives to current methods in other applications.

In his early work at Bell Laboratories, Professor Donnelly studied plasma etching reactions and mechanisms, including the first measurements of the reaction probability for fluorine atom etching of silicon and SiO_2. He also was among the first to use laser-induced fluorescence to probe processing plasmas, and later introduced a laser desorption method to probe surfaces immersed in plasmas. He also refined optical emission spectroscopy as a quantitative technique for measuring selected reactant species concentrations and electron temperatures in plasmas.

In 2002 he moved to the University of Houston's Chemical Engineering Department and began to explore a new "Nanopantography" method for massively parallel nanopatterning over large areas, using a monoenergetic, broad ion beam extracted from a DC-biased, pulsed inductively-coupled plasma. Arrays of electrostatic microlenses on the substrate focus "beamlets" entering the lenses to spots that write identical nanofeatures that are 100X smaller than the diameters of the lenses.

He has also introduced a new "Spinning Wall" method for studying plasma interactions with the chamber walls, one of the more important yet least understood aspects of plasma processing. His method involves rapidly rotating a cylindrical substrate embedded in the wall of the plasma chamber, allowing its surface to repeatedly move from the plasma to an analysis chamber in times of less than 1 millisecond. He has used this method to measure reaction probabilities for products that form on prepared surfaces that are exposed to chlorine or oxygen plasmas.

Professor Donnelly has published 200 papers and holds 12 patents. He is a member of the American Chemical Society and the American Institute of Chemical Engineers, and is a Fellow of AVS. He was the recipient of the 2003 Plasma Science and Technology Division's Plasma Prize.

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 certificate, and an honorary lectureship at a regular session of the International Symposium.

MOHAN SANKARAN

Dr. Mohan Sankaran, Case Western Reserve University, "for the development of a tandem plasma synthesis method to grow carbon nanotubes with unprecedented control over the nanotube properties and chirality."

Mohan Sankaran is currently an Associate Professor in the Department of Chemical Engineering at Case Western Reserve University (CWRU). He joined CWRU in January 2005 after his post doctoral research in the Department of Chemical Engineering at the California Institute of Technology (Caltech) where he also obtained his Ph.D. with Prof. Konstantinos P. Giapis in 2004. Mohan completed his B.S. in Chemical Engineering at the University of California at Los Angeles (UCLA) in 1998.

Mohan began his research career at UCLA working with Prof. Harold G. Monbouquette and Prof. Brian A. Korgel (now at the University of Texas at Austin) on the synthesis of doped cadmium sulfide nanocrystals using phospho-

lipid vesicles as nanoreactors. As a Ph.D. student at Caltech, Mohan received fellowships from the National Science Foundation (NSF), Intel, and Applied Materials, and the Constantin G. Economou Prize which is awarded to the top Ph.D. candidate in Chemical Engineering. Mohan's Ph.D. research explored a new class of high-pressure plasmas, termed microplasmas, for materials processing. He designed and later patented a microplasma technology that allows a plasma to be stably formed at atmospheric pressure and near room temperature. Through his studies, microplasmas were found to be a convenient source of electrons, ions, and radical species and implemented in various applications including non-lithographic etching of silicon, deposition of diamond films, and extreme ultraviolet radiation. Additionally, in collaboration with Prof. Richard P. Flagan, Mohan demonstrated that microplasmas could be used as short residence time reactors to synthesize photoluminescent silicon nanoparticles.

In 2005, Mohan joined CWRU to start an independent research program focused on microplasmas for nanomaterials synthesis and assembly. His group is particularly interested in the synthesis of metal and semiconducting nanoparticles, carbon nanotubes, semiconducting nanowires, and graphene, for applications in electronics, optics, and renewable energy. Mohan's research addresses challenges related to polydispersity, purity, cost, scalability, and device integration of nanomaterials. He has successfully shown that size- and compositionally-tuned bimetallic nanocatalysts can be prepared by microplasma-assisted dissociation of vapor precursors. This has allowed chirally-enriched single-walled carbon nanotubes to be produced and provided insight into the mechanism for nanotube nucleation. Recently, Mohan has developed an electrochemical process based on microplasmas as an electron source for cathodic reduction. These studies have opened up an entirely new approach to nanomaterial synthesis and enabled the fabrication of patterned and/or assembled films of nanomaterials.

Mohan has been recognized for his research activities with the NSF CAREER Award in 2008, the Air Force Young Investigator Program Award in 2009, the Camille Dreyfus Teacher-Scholar Award in 2010, and the CWRU School of Engineering Research Award in 2010. He is the author of 22 peer-reviewed publications, 1 book chapter, and the editor of a book currently in press, and has given 38 invited talks at conferences and universities.

Mohan has also received the Glennan and Learning Fellowships at CWRU for teaching and is actively involved in several outreach activities. He has created a new course in nano-technology for high school students at Hathaway Brown in Shaker Heights, OH, and mentors several high school students each summer from Hathaway Brown High School and Hawken High School in Gates Mills, OH. He has helped establish an international program with the University of Botswana, which includes an NSF-funded international research experience and a study abroad course for undergraduate students. Within AVS, Mohan is currently serving as a member of the Executive Committee in the Plasma Science and Technology Division.

GEORGE T. HANYO AWARD

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

JONATHAN KOCH

Mr. Jonathan Koch, NIST, "for the creative and technical ingenuity in vacuum sciences that has supported over 18 years of innovation at the National Institute of Standards and Technology."

Jonathan Koch is a key member of the team that maintains and operates the Quantum Fabrication Facility within the Quantum Devices Group in the Physical Measurement Laboratory of the National Institute of Standards and Technology (NIST) in Boulder, CO. This Class 100 cleanroom facility allows over 70 active users to create unique superconducting integrated circuits that support some of NIST's most advanced measurement research, in areas such as Josephson Array Voltage Standards, Johnson Noise Thermometry, Quantum Information and Computing, Single Photon Detection, atomic clocks, and ultra-sensitive microcalorimeters for astrophysical observation, cosmology research, and x-ray and gamma-ray spectrometers.

Mr. Koch began his career as an automotive technician, 1975 to 1986. In 1992, he received a Bachelor of Science degree in Engineering-Physics from the Colorado School of Mines. Upon graduation, Mr. Koch accepted a position at NIST in Boulder in the Electromagnetic Technology Division. An ongoing mission of the Electromagnetic Technology Division was the development and operation of its Class 100 cleanroom to meet the growing needs at NIST for microcircuit fabrication. Mr Koch's technical automotive skills along with his recently obtained scientific knowledge made him a valuable asset in the maintenance and expansion of this Quantum Fabrication Facility.

Mr. Koch's primary contributions to the Quantum Fabrication Facility are ensuring that the infrastructure and fabrication tools remain safe and operational on a 24/7 basis. His responsibilities include maintaining the environmental monitoring and control systems, ensuring proper operation of safety systems and alarms, keeping the key fabrication tools in correct operational condition, and bringing on-line new tools to advance the capabilities of the Quantum Fabrication Facility. Key assets exhibited by Mr. Koch are the willingness and ability to attack an extraordinarily broad range of non-standard and complex problems from a variety of perspectives, and to apply his scientific and mechanical knowledge to develop novel, practical, and efficient solutions to these problems. His effectiveness in this role has made Mr. Koch a highly valued team member, keeping diverse projects on track and advancing NIST's measurement science mission.

AVS GRADUATE STUDENT AWARDS

2011 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:

Justice Alaboson, Northwestern University
Joseph E. Baio, Univ. of Washington, Seattle
John G. Gibbs, University of Georgia
Sondra Hellstrom, Stanford University
Andrew J. Lohn, Univ. of California, Santa Cruz
David A. Siegel, Univ. of California, Berkeley
Kangkang Wang, Ohio University
Bingjun Xu, Harvard University

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.

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.

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.

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

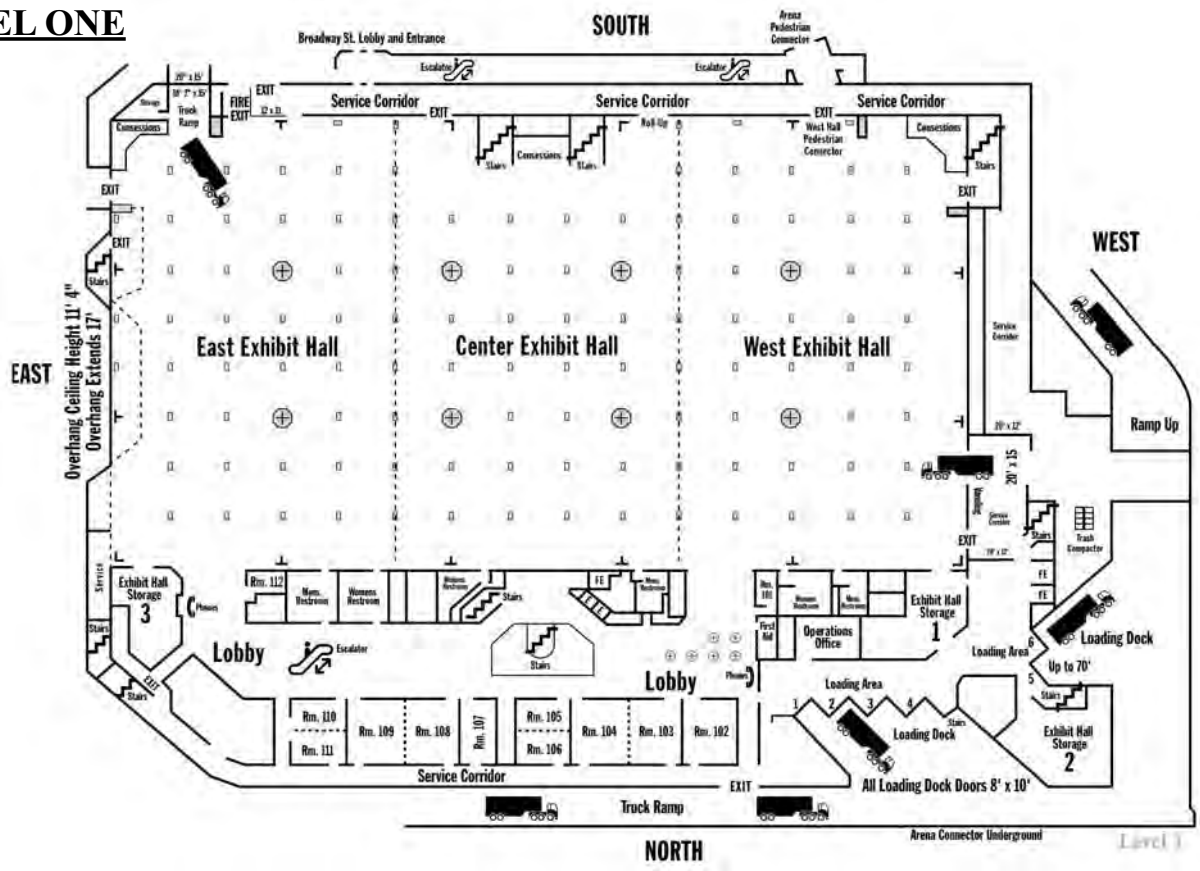
The membership level designated "Fellow of the Society" was established in 1993 to recognize members who have made sustained and outstanding scientific and technical contributions in areas of interest to AVS. These contributions can be in research, engineering, technical advancement, academic education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

2011 AVS FELLOWS

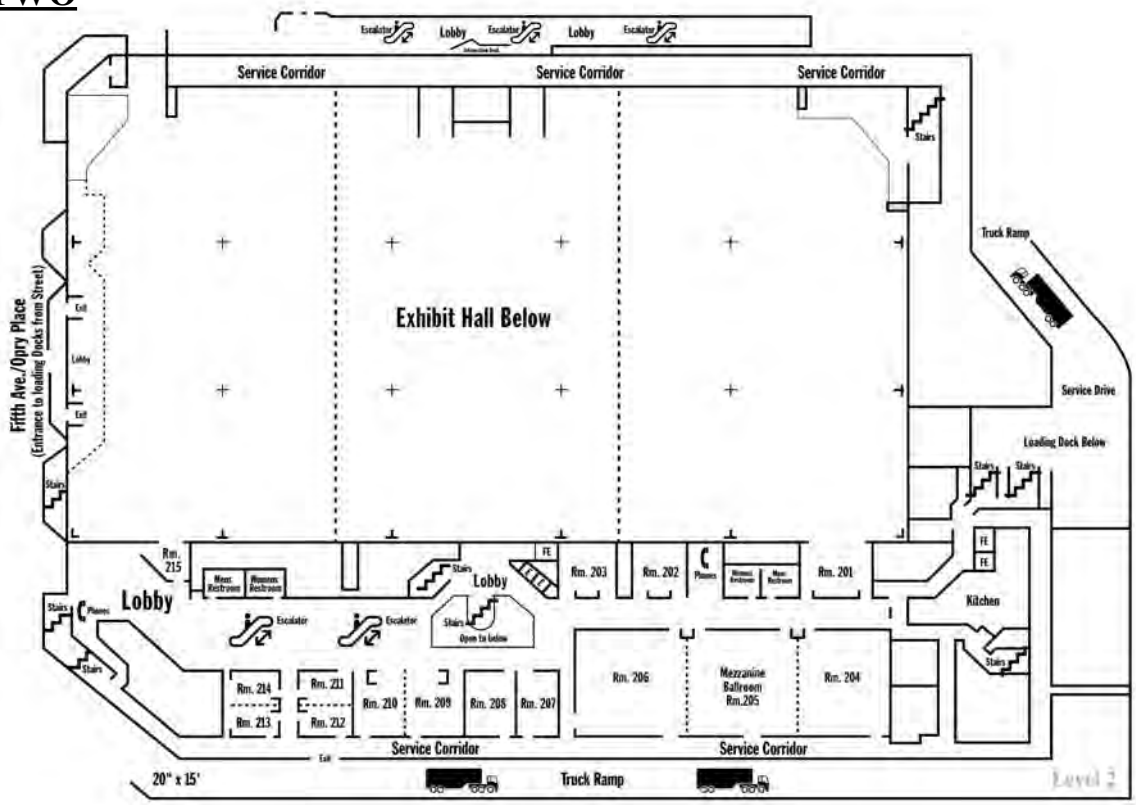
André Anders, Lawrence Berkeley National Lab.
David Cahen, Weizmann Institute of Science
James E. Castle, University of Surrey
Robert E. Ellefson, REVac Consulting
Timothy A. Gessert, National Renewable Energy Lab.
Satoshi Hamaguchi, Osaka University
Judith A. Harrison, United States Naval Academy
Sherman L Rutherford, Duniway Stockroom, Corp.
Stephanie Watts Butler, Texas Instruments
Jory Yarmoff, University of California, Riverside

NASHVILLE CONVENTION CENTER

LEVEL ONE



LEVEL TWO



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 2011 winner will be announced in the Traum Student Award Ceremony, to be held on Thursday, November 3 at noon immediately following SS-ThM in Room 107 of the Nashville Convention Center.

Past winners:

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

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 they have enhanced the graduate experiences of students by both example and mentorship. The Coburn-Winters Award winner will be announced at 2:00 p.m. in the Thursday, November 2 afternoon session.

Past winners:

1994	Bruce Kellerman	1999	Erwin Kessels	2004	Jun Belen	2009	Yang Yang
1995	Not Given	2000	Siva Kanakasabapathy	2005	Joseph Végh	2010	Bhavin Jariwala
1996	Jane Chang	2001	Nicholas Fuller	2006	Lin Xu		
1997	Mikhail Malyshev	2002	Lin Sha	2007	Joydeep Guha		
1998	Catherine Labelle	2003	Jan Benedikt	2008	Emile Despiau-Pujo		

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 58th 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	2003	Tiffany Kaspar	2007	David Wisbey	2010	Abhijit Chincore
2000	R.D. Portugal	2004	Maria Torija	2007	John Strachan		
2001	D.B. Schultz	2005	Jessica Hilton	2008	Zhuhua Cai		
2002	E.L. Biizdaca	2006	Randy Dumas	2009	Wei Han		

Paul H. Holloway Young Investigator Award

The Thin Film Division is pleased to announce that Dr. Sumit Agarwal from the Colorado School of Mines in Golden, CO, is the 2011 awardee of the Paul H. Holloway Young Investigator Award. Professor Agarwal has been given the award for his use of in-situ surface diagnostics in the study of surface reactions, including Atomic Layer Deposition reactions.

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 experimental work in an area important to the Thin Film Division of AVS. The nominee's Ph.D. or equivalent degree must have been earned less than 7 years prior to January 1 of the award year. The award consists of a cash prize, a certificate citing the accomplishments of the recipient, and an honorary lecture at one of the TFD oral sessions at the International Symposium.

Past winners:

2009 Suneel Kodambaka, UCLA

2010 O. Martin Ntwaaborwa, Univ. of the Free State, South Africa

Shop Note Award

The Shop Note Award is given by the Vacuum Technology Division to recognize a novel solution of an instrumental or experimental problem that was published as a Shop Note in the *Journal of Vacuum Science and Technology*. The award is intended to encourage the publication of practical methods in vacuum technology. The **2011 Awarded Authors are:** "Resurrecting dirty atomic force microscopy calibration standards" by Donald A. Chernoff and Robert Sherman

DIVISION AWARDS

Biointerphases Lecturship

The AVS Biomaterial Interfaces Division (BID) Biointerphases Lecturship was initiated in 2011. The Lectureship carries an invitation for a plenary lecture at the 2011 AVS International Symposium, and includes travel support to encourage the presentation and dissemination of Biointerphase Science. The 2011 Biointerphases Lecturer is expected to give a minimum of 5 technical and/or public lectures explaining and promoting interdisciplinary research at the interface of Biology, Physics, Chemistry and Engineering during the years 2011 and 2012, and must publish an article in Biointerphases (BiP) in 2012 (or have previously been published in BiP within the last year).

Past winners:

2011 Buddy Ratner

Nanometer-scale Science and Technology Division Student Award

The Nanometer-scale Science and Technology Division (NSTD) Student Award was established in 2002 to bring recognition to outstanding dissertation work by students giving oral presentations in NSTD sessions at AVS International Symposia. In addition to presenting their work in the standard NSTD sessions, student finalists will also present their talks at the NSTD student competition. The NSTD student competition is open to the public and will be held at noon on Tuesday of the symposium in the same room as the standard NSTD sessions. The winner will be selected based on the quality of the talk, the responses to questions, and the level of the research. The winner will be announced at the NSTD business meeting on Tuesday afternoon.

Past 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
2009 Mehmet Baykara
2010 Farzad Behafarid

Nanometer-scale Science and Technology Division 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.

Past winners:

2001 Nancy Burnham
2004 Harold Craighead
2009 Joseph Stroscio
2010 Roland Wiesendanger
2011 Phaedon Avouris

Get Involved in AVS

If you have any questions about AVS or want to know how to get involved, please contact AVS directly at avsnyc@avs.org

VISIT THE EXHIBITS AT AVS-58 !

EXHIBIT HALL HOURS

Tuesday	10am - 5:30pm
Wednesday	10am - 4:30pm
Thursday	10am - 2:00pm

See the Latest Technology & Services in the Exhibit Hall

- Surface Analysis
- Thin-Film Deposition
- MEMS and NEMS
- Biomaterials
- Nanoscience & Nanotechnology
- Lasers and Optics
- Materials Characterization
- Microscopy
- Manufacturing Science & Technology
- Semiconductor Materials & Processing
- Vacuum Technology
- Vacuum Metallurgy

EXHIBIT HALL SPECIAL ATTRACTIONS

FREE FREE FREE FREE FREE FREE FREE FREE FREE FREE FREE

- Caricatures / Massages
- Free Lunches
- AVS History Booth
- E-Mail Pavilion
- Daily Raffle Drawings
- AVS Career Center
- Ask The Experts - Vacuum Technology
- AVS Membership & Education Booth
- Technology Spotlight Sessions
- Art Zone Display & Contest
- AVS Store: Gifts/Souvenirs/Supplies
- Free Coffee & Refreshments

EXHIBIT FINALE

THURSDAY 12PM - 2PM

EVENTS:

- Snacks & Refreshments
- Art Contest Prize Winners
- Raffle Drawings and MORE!

Join Us !

Bold listings: AVS Corporate Members & Symposium Sponsors

AVS-58 EXHIBITORS

as of July, 2011

A&N Corporation
Accu-Glass Products Inc.
Agilent Technologies, Varian Vacuum Division
AJA International, Inc.
Alicat Scientific, Inc.
American Institute of Physics
Ametek Process Instruments
ASK THE EXPERTS
AVS Vacuum Tech. Div.
Association of Vacuum Equipment Manufacturers
Asylum Research
Atlas Technologies
AVS Special Events Booth
AVS Art Zone & Contest
AVS Career Center / Job Fair
AVS Exhibitor Technology Sessions
AVS Membership Booth
AVS Publications
AVS Raffle Zone
BellowsTech, LLC
Beneq
Brooks Automation
Cambridge NanoTech, Inc.
CAMECA Instruments, Inc.
Capitol Vacuum
Carl Zeiss NTS, LLC
CeramTech North America
Drytek LLC
Duniway Stockroom Corp
Eagle Instrument Services
Ebara Technologies
Edwards Vacuum
Elsevier (NY)
Extrel CMS
FEI Company
Gamma Vacuum
HeatWave Labs Inc.
Hiden Analytical, Inc.
Hine Automation
Horiba Scientific
HVA, LLC
Impedans Ltd.
Inland Vacuum Industries, Inc.
InstruTech, Inc.
Intel Corporation
ION-TOF USA
J.A. Woollam Co., Inc.
Kashiyama-USA Inc.
Key High Vacuum Products, Inc.
Kimball Physics Inc.
Kratos Analytical
Kurt J Lesker Company
Lake Shore Cryotronics, Inc.
Larson Electronic Glass
Mantis Deposition
Mass-Vac, Inc.
McAllister Technical Services
MDC Vacuum Products, LLC
MEWASA North America, Inc.
Micromatter
NanoAndMore USA, Inc.
National Nanotechnology Infrastructure Network (NNIN)
Nor-Cal Products, Inc.
Olympus America Inc.
Omicron Nanotechnology USA
Omley Industries, Inc.
Pfeiffer Vacuum Technology, Inc.
PHPK Technologies
Physical Electronics
Physics Today Exhibitor Lounge
Phytron, Inc.
Plasmaterials, Inc.
Plasma-Therm
Precision Plus Vacuum Parts
Prevac sp. z o.o.
Process Materials Inc.
R.D. Mathis Company
RBD Instruments, Inc.
Refining Systems
RF VII Inc.
RHK Technology Inc.
Rocky Mountain Vacuum Tech.Inc.
Roth & Rau Muegge, GmbH
SAES Getters USA
Scientific Instrument Services, Inc.
Semicore Equipment, Inc.
Semilab Sopra
Sequoia Brass & Copper, Inc.
Shimadzu Precision Instruments
Shimadzu Scientific Instruments
Sierra Applied Sciences, Inc.
Solid Sealing Technology, Inc.
SPECS Surface Nano Analysis, Inc.
Spectroscopy Magazine
Staib Instruments
Sumitomo (SHI) Cryogenics of America Incorporated
Super Conductor Materials
TDK-Lambda Americas
Tech-X Corporation
Ted Pella, Inc.
Thermionics Vacuum Products
Thermo Scientific
Transfer Engineering & Manufacturing, Inc.
Trek, Inc.
Trillium US, Inc.
UC Components
Vacuubrand, Inc.
Vacuum Research Corp.
VAT
VG Scienta
Zeon Chemicals L.P.

BOLD LISTINGS INDICATE CORPORATE MEMBERS AND AVS-58 SPONSORS. AVS SINCERELY APPRECIATES THE SUPPORT OF THESE COMPANIES.

EXHIBIT HALL HOURS

Tuesday	**10am - 5:30pm**
Wednesday	**10am - 4:30pm**
Thursday	**10am - 2:00pm**

TECHNOLOGY SPOTLIGHT SESSIONS

AVS Exhibitor Technology Spotlight Sessions

Stage Area of Exhibit Hall (Booth 117) • Nashville Convention Center

Tuesday, Novermber 1 and Wednesday, November 2

Exhibitor Workshops are a series of 20-minute interactive presentations scheduled during the technical session breaks on Tuesday and Wednesday 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 & Free AVS-58 Souvenirs while they last!

TUESDAY, November 1

10:20am Kurt J. Lesker
Novel Thin Film Technology
Presenter: Duane Bingaman

12:20pm Thermo Scientific
New Developments in Surface Analysis from Thermo Fisher Scientific
Presenter: Richard White

12:40pm Thermo Scientific
Characterization of Carbon Nanomaterials Using XPS and Raman
Presenter: Tim Nunney

1:00pm Kratos Analytical
Optimized XPS Depth Profiling of Organic Materials Using Polyatomic Ion Sources
Presenter: D. Surman

1:20pm Physical Electronics
Latest Developments at PHI
Presenter: John Hammond

WEDNESDAY, November 2

10:20am Semicore
Using the Apple IPAD with your PVD System Maintenance
Presenter: Chris Malocsay

12:20pm Brooks Automation
Granville Phillips Autoresonant IonTrap Mass Spectrometer
Author/Presenter: Steve Lass

12:40pm SAES Getters
Combining NEG and Sputter Ion Pump Technologies to Meet the Challenges of UHV-XHV Systems
Presenter: Bob Garcia

1:00pm Agilent – Varian Vacuum Division
Presenter: Steve Palmer

1:20pm Asylum Research
Smaller, Quieter, Faster AFM Imaging with Cypher™
Presenter: Keith Jone

ASK THE EXPERTS !!!!!!

Troubleshooting Mysteries?

Contamination Problems?

System Configuration Questions?

Just Wanna Make Your Vacuum Better?

What is the best gauge for the 10-11 Torr Range?

How do I control, eliminate water?

What is my RGA telling me?

How do I detect a Virtual Leak?

Problems with troubleshooting, process control, contamination or just want to bounce an idea off other people in the vacuum field? Maybe all our years of experience, successes and failures can help point you in the right direction or spark an idea! Ask the Experts is an unbiased, open forum with the resources and the desire to discuss and help solve vacuum related issues.

Ask the Experts!... Exhibit Hall Booth #913

Sponsored by Duniway Stockroom, SAES Getters & Brooks Automation

Hosted by the AVS Vacuum Technology Division

saes getters

DUNIWAY STOCKROOM CORP.

BROOKS AUTOMATION

Free Gift
for our visitors!
while supplies last

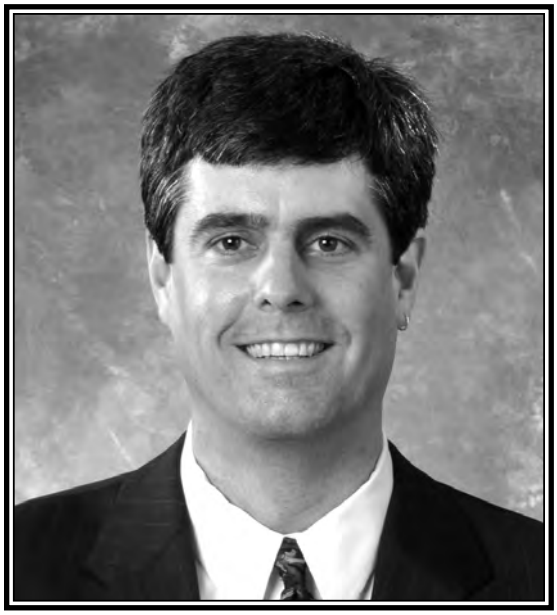
Archives and online discussion forum year round at www.avs.org/forum.aspx

Exhibit Hall • Booth 913

SYMPOSIUM PLENARY LECTURE

*"Oak Ridge National Laboratory: Scientific Discovery and Innovation for the Energy Challenge"**

Monday, October 31, 2011 12:00 Noon
Ballroom 204/205/206, Nashville Convention Center



Thomas E. Mason, Oak Ridge National Laboratory

Increasing global demands for adequate and affordable energy, coupled with growing awareness of the environmental impacts of energy production and use, present a set of complex issues with scientific, technical, and societal implications. Many of these issues can be addressed only through transformational scientific discoveries and technology innovations. As the U.S. Department of Energy's largest science and energy laboratory, Oak Ridge National Laboratory (ORNL) is applying an exceptionally broad set of capabilities to the energy challenge. These capabilities enable ORNL not only to attack fundamental scientific challenges, but also to carry out the translational research and development required to accelerate the delivery of solutions to pressing national and global problems. Plans for continuing the translation of ORNL's signature strengths into transformational outcomes in scientific discovery and innovation, clean energy, and global security will be described.

Thomas Mason received his B.S. in physics from Dalhousie University in Halifax and received his Ph.D. in experimental condensed matter physics from McMaster University. He was a postdoc at AT&T Bell Laboratories, a Senior Scientist at Risø National Laboratory in Denmark, and on the faculty of the Department of Physics at the University of Toronto before joining Oak Ridge National Laboratory (ORNL) as Scientific Director for the Department of Energy's Spallation Neutron Source (SNS) project. After holding several other administrative positions at ORNL, Thom was named Director of Oak Ridge National Laboratory in 2007.
Thom has coauthored over 100 refereed publications describing experimental studies of novel magnetic materials and superconductors. As Director of the largest science and energy laboratory in the Department of Energy, he is focused on translating breakthroughs in fundamental science to applications relevant to energy technology and national security and the advantages to economic, environmental, and national security that this will entail. Thom is a Fellow of the American Association for the Advancement of Science, the Institute of Physics, the American Physical Society, and the Neutron Scattering Society of America. He received the Distinguished Alumni Award for the Sciences from McMaster University in 2008.

TECHNICAL PROGRAM

The AVS 58th International Symposium and Exhibition will be held at the Nashville Convention Center in Nashville, TN, October 30 through November 4, 2011. Once again our technical program is second to none, providing cutting-edge content over a very broad range of diverse yet complementary topics. Brief summaries of each program theme are provided below, with the full schedule of oral and poster presentations following them. Note the amazing list of distinguished invited speakers in each program. They represent the best and the brightest work from around the world, from industrial, academic, and governmental research labs. Peruse the whole technical program, over 1300 papers presented in over 145 oral and poster sessions, and start filling your week's schedule with must-see, career enhancing sessions. Do not forget to stop by the Exhibitors & Manufacturers Technology Spotlight Sessions during the in the technical session breaks. They will be held in the Exhibit area. Stop by and see twenty minute presentations given by representatives from several of our exhibitors. They will be introducing new products, demonstrating capabilities, discussing applications, and more.

EXHIBITS

This year's exhibition showcases equipment and instrumentation needed to perform cutting edge research presented in our technical program. Visit the exhibit hall and take the opportunity to speak to experts representing the very best in components, systems, instrumentation, services and consumables. The exhibit hall will be open Tuesday through Thursday, November 1-3. There are many attractions in the exhibit hall, including the AVS Membership & Education Booth, Career Center with available job postings, Vacuum Technology Division's "Ask The Experts" booth, E-Mail Pavilion, Free Caricatures, Free Massages, Art Zone/Contest, AVS History Booth, Free coffee, refreshments, lunches, daily raffles and more! Your symposium badge will get you in the door. Exhibits Only badges are also available (free of charge for preregistered visitors).

SHORT COURSES

The Nashville Convention Center will be the site for the short course program where courses on a variety of topics will be offered. These courses will run concurrently with the AVS Symposium. Full details are available in the technical program on pages 56–57.

TECHNICAL PROGRAM

ADVANCED SURFACE ENGINEERING

The Advanced Surface Engineering Division (SE) focuses its interest on new materials, technologies, characterization, manufacturing, applications, and fundamentals of surface engineering and coating technologies. The SE oral sessions at AVS 58 cover Glancing Angle Deposition, Surface Engineering for Thermal Management, Atmospheric Pressure Plasmas and Treatments, Nanostructured Thin Films and Coatings as well as Pulsed Plasmas and HIPIMS/HPPMS. These sessions provide a balance between fundamental understanding and applications of these topics. The presentations cover novel coating materials, processes, design and modeling, diagnostic and growth control, structural, chemical, and mechanical characterizations, wear and corrosion protection, oxidation resistance and thermal stability and other aspects related to surface engineering and coatings.

This year's program features several invited and numerous contributed talks as well as con-tributions to the poster session on Tuesday evening. Our program starts on Tuesday afternoon with a joint session with the Thin Film's Division on "Glancing Angle Deposition." It opens with an invited lecture by Gwo-Ching Wang from Rensselaer Polytechnic Institute on the "Evolution of Crystal Orientation during Oblique Angle Deposition". In Wednesday morning's session on "Surface Engineering for Thermal Management", Gang Chen from MIT presents and invited lecture on "Near-Field Radiation Heat Transfer". The afternoon session is devoted to Atmospheric Pressure Plasmas with Michael Kong from Longborough University in the UK being invited to speak on "Cold Atmospheric Plasma Sources for Treatment of Cell-Containing Surfaces". Our session on Hard and Nanostructured Coatings on Thursday morning will feature an invited talk by Sam Zhang from Nanyang Technological University in Singapore entitled "Tensile Testing of Substrates for Fracture Toughness of Thin Films". The afternoon session deals with Pulsed Plasmas in Surface Engineering, starting with the invited talk of Jaroslav Vlček from Plzen, Czech Republic on "Pulsed Magnetron Sputtering Systems for Reactive Deposition of Oxide and Nitride Films". In addition to these topics, the Advanced Surface Engineering Division cosponsors additional sessions with the divisions Thin Films, Surface Science and Plasma Science and Technology.

CODE	SESSION
SE+TF-TuA	GLAD II Glancing Angle Deposition II *Gwo-Ching Wang, Rensselaer Polytechnic Inst*
SE-TuP	Advanced Surface Engineering Poster Session
SE+SS-WeM	Surface Engineering for Thermal Management *Gang Chen, MIT*
SE+PS-WeA	Atmospheric Pressure Plasmas *Michael Kong, Loughborough University, UK*
SE-ThM	Nanostructured Thin Films and Coatings *Sam Zhang, Nanyang Technological U., Singapore*
SE+PS-ThA	Pulsed Plasmas in Surface Engineering *Jaroslav Vlcek, U. of W. Bohemia, Czech Republic*

APPLIED SURFACE SCIENCE

The use of applied surface science to understand interfacial and surface properties is essential in order to solve materials challenges in the fields of energy, semiconductor processing, nanoscience and biotechnology as well as fundamental research. ASSD is delighted to have a packed program featuring core topics to our members as well as co and are co-sponsoring excellent focus topics on spectroscopic ellipsometry, helium ion microscopy, in situ microscopy and transparent conductors. We are also delighted to give joint sessions that focus on techniques for biointerface and biomaterials analysis, characterization and imaging at the nanoscale including the use of scanning probes, and in situ analysis of film growth. We start the week focusing on developments in quantitative chemical analysis and technique development. Sven Tougaard begins the day with an invited paper on recent developments in characterizing and 3D imaging of nanostructures using XPS. Ralf Richter will give an invited talk discussing the use of characterization methods in biology in particular structure-function relationships. On Tuesday we move on to discussion of advances in imaging and 3D chemical analysis. Toshio Miyayama will give an invited presentation on characterizing organic electronics using a recently introduced gas cluster ion beam (GCIB) SIMS source and then Wilfried Vandervorst will discuss advances in probing 3D semiconductor structures. Tuesday night is our popular poster session. On Wednesday, we

focus on scanning probe microscopy with Toshio Ando and Christopher Yip giving invited presentations on exciting developments in atomic force microscopy. In the afternoon, our session highlights the importance of correlative analysis and a multi-technique approach for chemical characterization and the determination of structure-function relationships. Kathryn Lloyd will describe the important challenges in combining data from multiple techniques. On Wednesday, we will also have a parallel joint session with Biomaterials focusing on the analysis and functionalization of nanostructures where Emile Schweikert presents fundamental studies of characterizing nano-objects using cluster SIMS. We end the week focusing on the analysis of challenging samples. D. Baer will give an invited talk on approaches to sample preparation and analysis of samples ranging from nanostructures to catalysts to biological samples. We look forward to seeing you in Nashville!

CODE	SESSION
AS-MoM	Quantitative Surface Chemical Analysis and Technique Development – Part I *Sven Tougaard, U of Southern Denmark*
AS-MoA	Quantitative Surface Chemical Analysis and Technique Development – Part II *Ralf Richter, CIC biomaGUNE & MPI for Intelligent Systems, Spain*
AS-TuM	Imaging and 3D Chemical Analysis *Takuya Miyayama, ULVAC-PHI Inc., Japan*
AS-TuA	Imaging and 3D Chemical Analysis – Part II *Wilfried Vandervorst, IMEC, Belgium*
AS-TuP	Applied Surface Science Poster Session
AS+BI+NS-WeM	Advances in Scanning Probe Microscopy *Toshio Ando, Kanazawa University, Japan* *Christopher Yip, University of Toronto, Canada*
AS-WeA	Correlative Analysis - A Multi-technique Approach for Identification and Structure-Property Relationships *Kathryn Lloyd, DuPont Corp Ctr for Analytical Sciences*
AS-ThM	Analysis of Insulators and Challenging Samples *Don Baer, Pacific Northwest National Lab*

BIOMATERIAL INTERFACES

In the tradition of the Biomaterial Interfaces Division (BID), a broad technical program has been established that is focused on progress in biointerface science and engineering and brings together an interdisciplinary group of experts that work at the intersection of biosurface and interface science, the nanosciences, and biomedical engineering.

The BID technical program for the week incorporates classical topics such as "Cells at Interfaces" (including stem cells and bacteria), "Biomolecules at Interfaces" (e.g. protein, peptide, DNA and sugar interactions with surfaces), "Characterization of Biomedical Materials" and "Sensors and Fluidics for Biomedical Applications". These sessions are designed to appeal to the core of the Biomaterials Interface Division and bring it back to some of the key strengths that have appealed to our members, while also including some new ways of looking at these classic BI topics. Additionally, the BI division is sponsoring a new focus session on "Biofabrication and Novel Devices". Joint sessions with other AVS divisions such as the Applied Surface Science Division (AS) and Plasma Science Division (PS) explore other areas of surface analysis such as "Advances in Scanning Probe Microscopy and Quantitative Chemical Analysis of Soft Materials and Biomaterials".

The annual BID sessions will commence on Sunday afternoon with the annual Biomaterials Plenary (BP) session. This year we are joining up our Plenary Session with the Applied Surface Science (AS) division with the theme "Challenges in Biomaterials Analysis". Talks address current needs and issues in biomedical surface analysis and translation, traditional strengths of the BID division. The event will close with the opportunity for further discussions at our traditional industry sponsored Plenary Reception.

CODE	SESSION
BP-SuA	Challenges in Biomaterials Analysis *David Castner, University of Washington* *Yves Dufrene, U Catholique de Louvain, Belgium* *Buddy Ratner, U of Washington Engineered Biomatls* *Alexander Shard, National Physical Lab, UK*
BI-MoM	Biomolecules at Interfaces *Rein Uljin, The University of Strathclyde, UK*
BI-MoA	Sensors and Fluidics for Biomedical Applications *Jennifer Shumaker-Perry, University of Utah*
BI-TuA	Protein-Membrane Interactions *Matthias Lösche, Carnegie Mellon U and NIST*
BI-WeM	Cells at Interfaces *Pieter Dorrestein, Univ of California, San Diego* *Todd McDevitt, Georgia Institute of Technology*
BI+AS+NS+SS-WeA	Functionalization and Characterization of Nanostructures *Holger Schönherr, Univ of Siegen, Germany* *Emile Schweikert, Texas A&M University*
BI-ThM	Biomedical Materials *Erika Johnston, Genzyme* *Lawrence Salvati, DePuy Orthopaedics*
BI-ThP	Biomaterial Interfaces Poster Session

ELECTRONIC MATERIALS AND PROCESSING

The Electronic Materials and Processing Division (EM) will sponsor nine oral sessions containing over 60 talks and a poster session on electronic materials synthesis, processing, characterization, and structure-property relationships. Inorganic and organic electronic and optical materials will be covered as well as hybrid devices and interfaces. Six sessions are devoted to high-k, low-k, and memory dielectrics and defects in materials. Highlights include papers by Marc Heyns (IMEC) on high mobility channel materials and novel devices for scaling electronic devices beyond the Si roadmap, by Kang Wang (UCLA) on oxides for spintronics, by Mihaela Balseanu (AMAT) on BN for sub-20 nm devices, by Minghwei Hong (NTHU/NTU) on III-V and Ge MOSFETs, by Alfred Grill (IBM) on the development and process integration of ultralow-k dielectrics, and by E. Zhang (Vanderbilt) on X-ray induced defect formation in graphene. A session on "Surfaces and Materials for Next-Generation Electronics" will be led by Jack Rowe's (NC State) Albert Nerken Award Lecture on electron spectroscopy of semiconductor surfaces and will wrap up with invited talks on topological insulators, GaN, and graphene. There will be

talks on group III nitrides, organic photovoltaics, conducting polymers, conductive coatings on textiles, and quantum dot processing and devices. Other sessions will focus on hybrid organic/inorganic materials and self-assembled monolayers for activating and deactivating surfaces. A poster session containing over 20 papers will be held in conjunction with the oral sessions. EMPD will also cosponsor sessions with TFD, PSTD, NSTD, and SSD as well as separate focus topics on Transparent Conductors and Printable Electronics, Energy Frontiers, and Graphene.

CODE	SESSION
EM-MoM	Dielectrics for Novel Devices and Process Integration *Mihaela Balseanu, Applied Materials, Inc.* *Tetsuo Endoh, Tohoku University, Japan* *Alan Seabaugh, University of Notre Dame* *DoYeung Yoon, Seoul National Univ, Korea*
EM1-MoA	Group III-Nitrides and Hybrid Devices
EM2-MoA	Dielectrics for Ultra Dense Memory Devices *Cheol Seong Hwang, Seoul Natl Univ, Korea* *Derchang Kau, Intel Corporation* *Gabriel Molas, CEA Leti Minatec Campus, France* *Kang Wang, Univ of California Los Angeles*
EM+TF-TuM	High-k Dielectrics for MOSFETs Part 1 *Minghwei Hong, Natl Tsing Hua Univ, Taiwan* *Eric Vogel, University of Texas at Dallas*
EM-TuA	High-k Dielectrics for MOSFETs Part 2 *Marc Heyns, IMEC, Belgium* *Paul McIntyre, Stanford University*
EM-WeM	Low-k Materials and Devices *Reinhold Dauskardt, Stanford University* *Alfred Grill, IBM Research* *Dimitri Kioussis, GLOBALFOUNDRIES*
EM-WeA	Defects in Electronic Materials *Leonard Brillson, The Ohio State Univ.*
EM+TF-ThM	Hybrid Electronic Materials and Interfaces *Seongil Im, Yonsei University, Korea* *W. Grant McGimpsey, Kent State University*
EM-ThP	Electronic Materials and Processing Poster Session
EM+SS-FrM	Surfaces and Materials for Next Generation Electronics *M. Zahid Hasan, Princeton University* *Tomas Palacios, MIT* ***Jack Rowe, North Carolina State University****

MAGNETIC INTERFACES AND NANOSTRUCTURES

The 2011 Magnetic Interfaces and Nanostructures program features pioneering invited and contributed talks from William Butler and Greg Szulczewski, that both review and recommend solutions to long standing barriers in enhancing fundamental magnetic properties and interfacial spin polarized carrier transport/injection. Of significant interest, Markus Donath will present the first spin-resolved measurements of the Rashba-split surface state of Au(111), and Claudia Felser, the significant and controversial, diversity and wealth, the Heusler intermetallics bring in controlling both the surface and bulk spin polarized electronic structure. Rounding out the program is a contributed talk from Ohio University concerning the spin-polarized carrier interaction with Molecular Machines as well as an invited talk from Hermann Durr, who will review the state-of-the-art in ultra fast magnet spectroscopies capable of resolving real time magnetization dynamics on the hundreds of femptosecond scale.

CODE	SESSION
MI-WeM	Fundamental Problems in Magnetism *William Butler, The University of Alabama* *Claudia Felser, Johannes Gutenberg University Mainz, Germany* *Elio Vescovo, Brookhaven National Laboratory*
MI-WeA	Spintronics, Magnetoelectronics, Multiferroics, and Dilute Magnetic Semiconductor Applications *Kirill Belashchenko, Univ of Nebraska-Lincoln* *Mairbek Chshiev, SPINTEC, UMR 8191 CEA/CNRS/UJF Grenoble, France* *Qi-Kun Xue, Tsinghua University, China*
MI-ThM	Emerging Magnetic Characterization and Results *Hermann Durr, SLAC National Accelerator Lab* *T. Zac Ward, Oak Ridge National Laboratory*
MI-ThP	Magnetic Interfaces and Nanostructures Poster Session

MANUFACTURING SCIENCE AND TECHNOLOGY

This year, the Manufacturing Science and Technology Group concentrated on manufacturing challenges facing "beyond CMOS" devices based on graphene and co-sponsored sessions on spectroscopic ellipsometry and in vacuum technology. Over the past year, the semiconductor industry continues to work with academia and the national laboratories and NIST to advance graphene nanoelectronics. A number of transistor devices have been fabricated and simple circuits have been fabricated across SiC wafers. One of the strengths of the AVS in the interplay between research and industry is again demonstrated at the national symposium in the all invited session: "Low Dimensional Carbon Device Manufacturing". This session covers the fabrication of large area graphene with materials properties suitable for circuit fabrication, the measurement methods used to characterize the graphene, device fabrication and the electrical properties of the devices. Also in the area of graphene, the MSTG is co-sponsoring a session called "Graphene and Carbon-based Devices". An invited talk will cover the fabrication of large area graphene sheets. Measurement methods have long been a topic of interest to the MSTG. This year, we are co-sponsoring a number of sessions on spectroscopic ellipsometry with the Applied Surface Science, Electronic Materials, and the Thin Films group. SE is used in research, development and manufacturing by a great number of industries. In addition, recent advances have pushed SE capability in the area of nano-scale structures. Vacuum technology continues to be a critical area for manufacturing, and this year the MSTG is co-sponsoring session on gas analysis and contamination control with the Vacuum Technology Group.

MEMS AND NEMS

The MEMS and NEMS Technical Group (MN) program will highlight recent advances in emerging areas of mechanical systems at the micro and nanoscale ranging from fundamental studies of functional, integrated devices to novel applications of micro and nanoelectromechanical systems (MEMS/NEMS). The ability to collectively manipulate, control and detect vibrational dynamics of MEMS/NEMS raises intriguing possibilities of integrating these devices with existing fluidic, electronic and optical on-chip networks. This year's session will cover these areas which are thematically related to fabrication and multi-scale interactions of ultra-thin, lithographically defined atomic sheets for biological and chemical sensing, integra-

*Albert Nerken Award Winner

tion, packaging and reliability of MEMS and NEMS, and characterization of micro- and nano-electromechanical systems. Additionally, the application of MEMS and NEMS devices to the sensing arena by employing local biochemically functionalized nanoscale sites on the surface of NEMS oscillator arrays for selective biomolecular adsorption, integration with active CMOS architectures for RF-MEMS applications, high-Q resonant dynamics in air, ultra-nanocrystalline diamond nanowires and thin film nanostructuring, an integrated micro gas chromatography system, and advanced nanofabrication techniques are the core topics of discussion.

MEMS and NEMS has organized a strong program consisting of two core oral sessions and joint sessions with Nanomanufacturing Science and Technology (NM), Plasma Science and Technology Division (PS), Graphene and Related Materials (GR), Vacuum Technology Division (VT), Nanometer-scale Science and Technology Division (NS), Applied Surface Science Division (AS), Surface Science Division (SS), and Thin Film Division (TF). The program opens with an invited talk from K. Bohringer covering heterogeneous microsystem integration through the use self assembly. The second session opens with an invited talk from D. Lopez discussing the fundamentals of near-field interactions between mechanical systems and their relevance as devices evolve from micro- to nanoscale structures. The third invited talk by C. S. Gudeman will discuss wafer scale hermetic packaging of MEMS devices, including the diverse methods used to achieve truly hermetic packaged structures, the integration of Through Silicon Vias (TSV), as well as presenting insights into the performance of these techniques from a manufacturing perspective. The final invited talk from M. A. Guillorn will discuss the unique role lithography and patterning play in determing the performance of densely scaled CMOS devices employing non-planar multi-gate structures.

CODE	SESSION
MN-ThA	Multi-scale Interactions of Materials and Fabrication at the Micro- and Nano-scale *Karl Bohringer, University of Washington*
MN-FrM	Characterization of Materials and Structures at the Micro- and Nano-scale *Daniel Lopez, Argonne National Laboratory*

NANOMETER-SCALE SCIENCE AND TECHNOLOGY

The Nanometer-scale Science and Technology Division (NS) explores the exciting and rapidly evolving science and technology enabled by nanoscale structures. Researchers from around the globe will present their work on topics ranging from fabricating atomically precise devices to exploiting nano-scale control of materials for biological applications and to control light. Multiple themes are explored such as assembly of nanoparticles and nanowires, molecular patterning and devices, and the challenges of characterizing such structures. We have invited leading figures who will provide perspective from the forefront of their respective fields and will highlight the sessions on frontiers of imaging and characterization at the nanoscale, nanowires and nanoparticles – synthesis and characterization, nanowires and nanoparticles – assembly, applications, and devices, carbon-based nanomaterials, biological nanomaterials, and nano-photonics and plasmonics. Additional co-sponsored sessions cover the areas of manufacturing nanoscale devices, nanostructures for energy conversion, nanostructures for energy storage, nanomechanics and nanotribology, graphene chemistry, graphene nanoribbons, organic photovoltaics, and in-situ scanning probe microscopy and spectroscopy.

CODE	SESSION
NS+EM-MoM	Nanowires and Nanoparticles I: Assembly and Devices *Theresa Mayer, Penn State University* *Lars-Erik Wernersson, Lund Univ, Sweden*
NS-MoA	Frontiers in Nanophotonics and Plasmonics *Evelyn Hu, Harvard University*
NS-TuM	Nanowires and Nanoparticles II: Characterization and Synthesis *Lars Samuelson, Lund University, Sweden*
NS+AS-TuA	Frontiers in Nanoscale Imaging and Characterization *Don Eigler, IBM Almaden Research Center* ***Wilson Ho, University of California, Irvine****
NS-TuP	Nanometer-scale Science and Technology Division Poster Session
NS-WeM	Carbon-Based Nanomaterials *Phaedon Avouris, IBM T.J. Watson Res Ctr*
NS-ThM	Molecular Assembly and Devices *Latha Venkataraman, Columbia University*
NS-ThA	Biological Nanomaterials *Weiwei Gao, Brigham and Women's Hospital and Harvard Medical School* *Stanislav Gorb, Zoological Institute at the University of Kiel, Germany*

PLASMA SCIENCE AND TECHNOLOGY

The 2011 Plasma Science and Technology Division (PSTD) highlights state-of-the-art advances in plasma research, ranging from fundamental studies of plasma physics and chemistry to applications for electronic, bio-medical and memory device fabrication. The core program includes sixteen oral sessions and a poster session, as well as additional joint sessions with new focus topics "Spectroscopic Ellipsometry for Photovoltaics and Inorganic Thin Films", "Plasmas for Photovoltaics & Energy Applications", "Marine Antifouling Coatings" and plasma processing for graphene. The week begins with a focus on advanced FEOL and BEOL etch topics relevant to the semiconductor industry, as well as sessions on multiphase and biological related plasmas. The week continues with sessions covering the emerging areas of plasma science such as atmospheric plasma processing, neutral beam and low damage plasma processing and plasmas for disruptive technologies such as 3D integration (TSVs) & Non-Volatile memory device fabrication. The first of multiple sessions that cover plasma-surface interactions and diagnostics begins on Wednesday morning. The program is rounded out with PSTD core interests including plasma modeling, thin films, and novel plasma sources.

Professor Vincent Donnelly will deliver the 2011 John A. Thornton Memorial Award & Lecture entitled "As Device Dimensions Continue to Shrink… A Journey through Thirty Years of Plasma Etching Diagnostics and Mechanisms" on Tuesday Afternoon. Professor Mohan Jankaran, who received the Peter Mark Memorial Award for outstanding theoretical or experimental work by a young scientist or engineer, will present a lecture entitled "Microscale, Atmospheric-Pressure Plasmas: A Platform For Nanomaterials Synthesis At Different Length Scales" on Wednesday morning.

Lastly, both Professor Eray Aydil (2009) and Prof. Seji Samukawa (2010) will deliver Plasma Prize invited lectures on Thursday. Professor Samukawa will deliver his talk entitled "Super-low Damage Top-down Processing for Future Nanoscale Devices" on Thursday morning while Professor Aydil will present his lecture on "The Role of Atomic Hydrogen on Plasma Synthesis of Carbon Nanotubes" on Thursday afternoon.

*Medard W. Welch Award Winner

There are multiple finalists for the 2011 Coburn and Winters Student Award, who will be presenting throughout the week (see program for specific times). The winner will be announced at 2pm on Thursday. The 2011 Plasma Prize winner will also be announced at the PSTD Business Meeting on Tuesday evening at 5:40p.m immediately following the John A Thornton Memorial Award Lecture.

CODE	SESSION
PS-MoM	Advanced FEOL / Gate Etching I *Maxime Darnon, CNRS-LTM, France*
PS+BI-MoA	Multiphase (Liquid, Solid, Gas) and Biological Related Plasmas *Peter Bruggeman, Eindhoven U of Tech, Netherlands*
PS+SE-MoA	Advanced FEOL / Gate Etching II *Deirdre Olynick, Lawrence Berkeley National Lab*
PS+MN+TF-TuM	Plasma Processing for Disruptive Technologies *Christopher Gudeman, IMT* *Mark Kiehlbauch, Micron Technology, Inc.* *Yasuhiro Morikawa, ULVAC, Inc., Japan*
PS-TuM	Advanced BEOL / Interconnect Etching I *Masanaga Fukasawa, Sony Corporation, Japan*
PS1-TuA	Advanced BEOL / Interconnect Etching II *Eric A. Hudson, Lam Research Corp.*
PS2-TuA	Plasma Diagnostics, Sensors and Control I ***Vincent Donnelly, University of Houston****
PS+SE-WeM	Atmospheric Plasma Processing and Micro Plasmas *Jan Benedikt, Ruhr-University Bochum, Germany* ***Mohan Sankaran, Case Western Reserve Univ****
PS+SS-WeM	Plasma Surface Interactions (Fundamentals & Applications) I *Takeshi Kitajima, Natl Defense Academy, Japan*
PS+EM-WeA	Low-K Materials & Integration *Tony Heinz, Columbia University*
PS-WeA	Plasma Sources *John Caughman, Oak Ridge National Laboratory* *Lee Chen, Tokyo Electron America*
PS+TF-ThM	Plasma Deposition and Plasma Enhanced ALD *Colin Wolden, Colorado School of Mines*
PS-ThM	Neutral Beam and Low Damage Processing *Seiji Samukawa, Tohoku University, Japan*
PS+SS-ThA	Plasma Surface Interactions (Fundamentals & Applications) II *Eray Aydil, University of Minnesota*
PS-ThA	Plasma Diagnostics, Sensors and Control II *Edward Barnat, Sandia National Laboratories*
PS-ThP	Plasma Science and Technology Poster Session
PS-FrM	Plasma Modeling *Natalia Yu Babaeva, University of Michigan*

SURFACE SCIENCE

The Surface Science Division (SS) provides a forum for cutting-edge research that involves solid surfaces and interfaces. Phenomena that take place at the gas-solid and liquid-solid interfaces are prominent within the Division programs. Technical sessions address atomistic, electronic and chemical phenomena at surfaces and interfaces, their impact on materials properties, and their implication for technology and environmental processes.

Surface Chemistry is an important divisional theme, encompassing the kinetics and dynamics of surface chemical events from adsorption and reaction to catalysis. Film 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 is an important focus, as is the interaction of surfaces with radiation, energetic species and charged particles. This year's program offers lively sessions devoted to the surface science of newly discovered materials and their emergent properties, as well as the metallic, semiconductor, oxide and organic surfaces that support unique chemical activity and electronic properties. Surface science applications in high-impact areas - particularly energy science, nanotechnology, and environmental science - are prominent at the 2011 Symposium: The latest findings in reaction activation and mechanisim of energetic processes are showcased in sessions devoted to surface chemical reaction, catalysis and dynamics. The impact of nanoparticle shape, size, and composition on reaction selectivity is explored in papers based upon direct experiment and computational surface science. Sessions devoted to Self Assembled Monolayers, Organic, Semiconductor and Ferroelectric Interfaces describe the controlled formation of materials interfaces for efficient charge separation, chemical and bioanalytical sensing. Sessions devoted to experimental and theoretical study of environmental systems, electrochemistry, and oxide surfaces present new model systems and approaches to understand atomistic processes at mineral – aqueous and aerosol-vapor interfaces. The Surface Science Division is also co-sponsoring focused sessions on tribology, transparent conductors, graphene on SiC, GaN, actinides, photocatalysis and solar fuels, in-situ microscopy, and spectroscopy of interfacial chemistry/catalysis.

The Tuesday Evening Poster Session features presentations by the five Mort Traum Student Award Finalists. The Morton M. Traum Surface Science Student Award will be presented for the best student paper submitted to any session sponsored or jointly sponsored by the Surface Science (SS) Division at the AVS International Symposia. The 2011 Winner will be announced in the Traum Student Award Ceremony, to be held Thursday at noon immediately following SS-ThM.

CODE	SESSION
SS1-MoM	Water Films & Environmental Interfaces *John Hemminger, Univ of California, Irvine* *Bruce D. Kay, Pacific Northwest Natl Lab*
SS2-MoM	Surface Chemical Dynamics *Karina Morgenstern, Leibniz U Hannover, Germany*
SS1-MoA	Selectivity and Reactivity of Chemisorbed Species *Bjoerk Hammer, Aarhus University, Denmark*
SS2-MoA	Molecular Ordering and Electrochemical Interfaces *Klaus Wandelt, University of Bonn, Germany*
SS1-TuM	Chemisorption & Surface Reactions *Manos Mavrikakis, U of Wisconsin Madison*
SS2-TuM	Self Assembled Monolayers and Networks *Trolle Rene Linderoth, U of Aarhus, Denmark* *Steven Tait, Indiana University*
SS+EM-TuA	Organic Electronic Interfaces *Francesco Stellacci, EPFL, Switzerland*
SS-TuA	Catalysis on Metals and Alloys *D. Wayne Goodman, Texas A & M University*
SS-TuP	Surface Science Poster Session

*John A. Thornton Memorial Award and Lecture Winner

*Peter Mark Memorial Award Winner

SS1-WeM	Atomistic Control of Structure & Evolution
SS2-WeM	Chemisorption on Metal & Oxide Nanoparticles *Martin Sterrer, Fritz-Haber-Institute of the Max-Planck-Society, Germany*
SS-WeA	Adsorption & Reactions on Oxide Surfaces
SS-ThM	Oxide Surface Structure & Reactivity *Susannah Scott, U of California, Santa Barbara*
SS-ThA	Semiconducting & Ferroelectric Surface *Eric I. Altman, Yale University* *Andrew Kummel, U of California, San Diego*
SS-FrM	Surface Science on Graphene *Norman Bartelt, Sandia National Labs* *Yves J. Chabal, University of Texas at Dallas*

THIN FILM

This year's Thin Film Division Program has 12 core oral sessions, several co-sponsored sessions, and one poster session. A range of outstanding invited speakers will present talks on a variety of exciting topics in each session. TFD will again highlight Atomic Layer Deposition (ALD) with 4 full sessions, focusing on Energy, Hybrid Organic Films, Fundamental Reactions, and Emerging Applications. Invited speakers include Mato Knez of Max Planck Institute speaking on ALD applications of hybrid materials, Helmut Baumgart of Old Dominion University speaking on mechanical properties of ALD films, Eric Dickey of Lotus Applied Technology speaking about roll-to-roll processing of ALD films, Myung Mo Sung of Hanyang University speaking of organic-inorganic ALD films, Brian Willis from the University of Connecticut speaking on oxide ALD films, and Gary Rubloff from the University of Maryland speaking on ALD for energy applications, to name a few.

Other core sessions include "Thin Film Growth and Characterization", featuring Jon-Paul Maria from North Carolina State University speaking about Flux and Surfactant-Assisted PVD. A session on "Modeling and Analysis of Thin Films" will feature Oleg Mryasov from the University of Alabama who will be discussing magnetic thin films. We expect another year of an exciting session on "Glancing Angle Deposition (GLAD)", co-sponsored by Surface Engineering. The Thin Film-led session features Motofumi Suzuki, who will be speaking about GLAD for practical applications. Nanostructuring Thin Films will highlight Carl Thompson from MIT, who will be discussing template solid-state dewetting for patterning thin films. In its second year Non-volatile Memories will feature Eric Joseph from IBM speaking about phase change and spin torque memory technologies and Christian Wenger from IHP, who will be discussing RRAM technology. New to this year is an exciting session on Self Assembled Monolayers that is co-sponsored by EMPD and will feature Han Zuilhof from Wageningen University, who will be discussing organic monolayers on silicon substrates.

The Thin Film Division is proud to contribute numerous sessions to various Focus Topics that include: 3 sessions to the Energy Frontiers Topical Symposium; 2 sessions in the Graphene Focus Topic; several co-sponsored sessions in the Focus Topic on Spectroscopic Ellipsometry; etc... A Thin Films Poster Sessions held on Tuesday evening will cover a diverse range of topics drawn from all the Thin Film sessions.

CODE	**SESSION**
TF-MoM	Thin Films: Growth and Characterization I *Jon-Paul Maria, North Carolina State Univ*
TF-MoA	Emerging ALD Applications *Vladimir Kuznetsov, Levitech BV, Netherlands*
TF+EN-TuM	ALD for Energy *Gary Rubloff, University of Maryland*
TF+SE-TuM	Glancing Angle Deposition (GLAD) *Motofumi Suzuki, Kyoto University, Japan*
TF-TuA	ALD: Fundamental Reactions and Film Properties *Sumit Agarwal, Colorado School of Mines* *Helmut Baumgart, Old Dominion University* *Brian Willis, University of Connecticut*
TF-TuP	Thin Films Poster Session
TF1+EM-WeM	ALD/MLD: Hybrid Organic Films *Mato Knez, Max-Planck-Inst Mikrostrukturphysik, Germany* *Myung Mo Sung, Hanyang University, Korea*
TF1+EM-WeA	Nonvolatile Memory *Eric Joseph, IBM T.J. Watson Res. Ctr.* *Christian Wenger, IHP, Germany*
TF2+EM-WeA	Nanostructuring Thin Films *Carl Thompson, MIT*
TF1-ThM	Post-Deposition Processing and Characterization of Thin Films *Yue Kuo, Texas A&M University*
TF2-ThM	Modeling and Analysis of Thin Films *Oleg Mryasov, University of Alabama*
TF+EM+SS-ThA	Applications of Self Assembled Monolayers *Nitin Chopra, Univ of Alabama, Tuscaloosa* *Han Zuilhof, Wageningen Univ, Netherlands*
TF-FrM	Thin Films: Growth and Characterization II

VACUUM TECHNOLOGY

The Vacuum Technology Division (VT) program covers a broad array of research including vacuum measurement, calibration, gas flow, permeation, pumping, outgassing, gas analysis, and vacuum for accelerators & large systems. A multi-disciplinary session highlights the impact of surface science advances on the development of the next generation of novel electronic materials, as well as surface science applied to accelerators. Our oral sessions have an impressive list of invited speakers. Joe Stroscio of NIST will share his expertise with building a new UHV low temperature scanning probe microscopy facility for the study of future electronic materials. Roberto Kersevan will present numerical methods for the design of vacuum systems, emphasizing the Molflow+ software used for the ITER tokamak under construction in France. Dick Hseuh, Brookhaven National Lab, will discuss his experiences with the construction of the National Synchrotron Light Source vacuum system. Joe Hodges, NIST, will share his cutting edge developments in using optical methods to determine ultra-low concentrations of water vapor. Christian Day of Karlsruhe Institute of Technology will cover modeling and simulation of the ITER pumping systems. Mike Duncan of Oak Ridge National Laboratory will discuss current work on extending the range of the spinning rotor gauge. In joint session between VT and energy frontiers (EN), Lindsey Van-Mannes, South Park Platinum, will cover the use of vacuum processing in the refining of rare earth elements used in Photovoltaics manufacturing. The VTD poster session and student poster competition Tuesday evening represents contributions on a wide variety of vacuum research topics. VTD will again host the "Ask the Experts" booth where experienced vacuum scientists, engineers and technicians will strive to answer perplexing vacuum technology issues. The booth is located in the exhibit area and staffed during exhibit hours. Bring your questions!

CODE	SESSION
VT-MoM	Vacuum Measurement, Calibration & Primary Standards, Gas Flow and Permeation *Michael Duncan, Oak Ridge Natl Lab*
VT-MoA	Optical and Mass Spectroscopy for Gas Analysis and Pump Modeling *Joseph Hodges, NIST* *Roberto Kersevan, ITER Intl Organization, France*
VT-TuM	Accelerator and Large Vacuum System Design, Outgassing and Pumping *Christian Day, Karlsruhe Inst of Tech, Germany* *Hsiao-Chaun Hseuh, Brookhaven Natl Lab*
VT+MN+NS+SS+AS-TuA	Surface Science for Future Electronic Materials and Accelerator Applications *Joseph Stroscio, NIST*
VT-TuP	Vacuum Technology Poster Session & Student Poster Competition

FOCUS TOPICS

ACTINIDES AND RARE EARTHS

Actinides and Rare Earths exhibit many unique and diverse physical, chemical and magnetic properties, due in large part to the complexity of their 5f and 4f electronic structure. These Special Topic Sessions will focus upon the chemistry, physics and material science in the Lanthanide and Actinide materials, driven by the 4f and 5f electronic structure. Particular emphasis will be placed upon the 4f/5f magnetic structure, surface science and thin film properties and their applications to energy related issues. For the actinides, fundamental actinide science and its role in resolving technical challenges posed by actinide materials will be stressed, particularly with regard to energy applications, including energy generation, novel nuclear fuels and structural materials, waste remediation and waste disposal. Both basic and applied experimental approaches, including synchrotron- radiation-based and neutron-based investigations, as well as theoretical modeling computational simulations, are to be part of the Special Sessions. Of particular importance are the issues connected to potential renaissance in Nuclear Energy, including fuel synthesis, oxidation, corrosion, intermixing, stability in extreme environments, prediction of properties via bench-marked simulations, separation science, environmental impact and disposal of waste products. The shared sessions will be with MIND, Surface Science, Thin Films and Energy Frontiers. Invited Speakers include: P.M. Oppeneer; Uppsala University, Sweden; T. Durakiewicz, Los Alamos National Laboratory; L. Havela; Charles University, Prague, CR; P.S. Bagus; University of North Texas; D.L. Pugmire, Los Alamos National Laboratory; M. Schmidt, Argonne National Laboratory; P.C. Burns; University of Notre Dame; S.W. Yu, Lawrence Livermore National Laboratory; and G.M. Stocks; Oak Ridge National Laboratory.

CODE	SESSION
AC+MI-WeA	Magnetic and Electron Correlation Effects in Actinides and Rare Earths *Tomasz Durakiewicz, Los Alamos National Lab* *Ladislav Havela, Charles Univ., Czech Republic* *Peter M. Oppeneer, Uppsala University, Sweden*
AC+SS-ThM	The Surface Science of Actinides and Rare Earths *Paul Bagus, University of North Texas* *David Pugmire, Los Alamos National Lab*
AC+TF-ThA	The Structure, Properties and Chemistry of Thin Films of Actinides and Rare Earths *Moritz Schmidt, Argonne National Laboratory*

BIOFABRICATION AND NOVEL DEVICES

Opportunities in regenerative medicine, point-of-care diagnosis, and toxicological analysis of drugs emphasize the need for fabrication methods that accommodate labile biological materials, allow spatially-controlled assembly in 2 and 3 dimensions, and yield adaptive/responsive structures that can promote cell proliferation and tissue differentiation. Biofabrication refers to the design, construction and performance of such biologically-relevant structures, and advances in biofabrication often reside at the interface between the physical, chemical and biological sciences, and engineering. This focus topic addresses the use of biological materials and mechanisms for bottom-up hierarchical assembly as well as methods to fabricate materials with controlled architectures (e.g., through rapid prototyping or microfluidic contacting), approaches for cell and tissue printing, interfacing of biology to electronics, and the evolution of structure and function (e.g., in response to cell-matrix interactions or due to biological activities).

CODE	SESSION
BN+NM-TuM	Biofabrication Applications *William Bentley, U. of Maryland, College Park* *Michael L. Shuler, Cornell University*
BN-TuA	Biofabrication Methods and Devices *Ali Khademhosseini, Brigham and Women's Hospital, Harvard Medical School, MIT, and Harvard Univ*
BN-TuP	Biofabrication and Novel Devices Poster Session

ELECTRON TRANSPORT IN LOW DIMENSIONAL MATERIALS

Electron transport in low-dimensional materials is the key to the novel applications of nanomaterials in electronic and energy technologies. Due to the restricted dimensionality, one distinctive character of these systems is that the transport properties are critically dependent on the structural details. Therefore, an important requirement for transport research of a specific low dimensional system is to examine its structures and properties in a coherent manner. The Electron Transport (ET) Focus Topic sessions provide a forum for the discussions on fundamental transport properties of electrons and the correlations with the structures, especially defect structures in low-dimensional materials. The ET topic encompasses both fundamental transport phenomena and material applications in electronics and nanotechnology. Materials of interest include metal, semiconductor, complex oxide and carbon based nanostructures, confined in the forms of nanodots, nanowires, nanojunctions, interfaces, and grain/domain boundaries. The oral sessions will start on Monday morning with four invited talks on the fundamental transport phenomena in 0-, 1-, 2-D systems. It will continue on Tuesday morning with a focus on the defect scattering effects in nanoelectronics, interconnect, and carbon nanotubes and graphene structures. A number of transport characterization capabilities with nanoscale spatial resolution, including STM, AFM, luminescence, Raman, and mesoscopic transport, have been utilized to study structure and transport property relationships. This focus topic is co-sponsored by the Nanometer-scale Science and Technology Division, Surface Science Division, and the Electronic Materials and Processing Division, and Graphene Focus Topic.

CODE	SESSION
ET+EM+SS-MoM	Quantum Transport: From 0- to 2-Dimensions *Arthur Baddorf, Oak Ridge National Laboratory* *Harold Baranger, Duke University* *Shuji Hasegawa, University of Tokyo, Japan* *Hanno H. Weitering, U of Tennessee and ORNL*
ET+EM+NS+GR-TuM	Electron Behaviors in Nanoelectronics, Interconnect, and Carbon-based Materials *Stephen Cronin, U of Southern California* *Tae-Hwan Kim, POSTECH, South Korea*

ENERGY FRONTIERS

In response to growing interests in the fundamental science and technology of energy conversion and storage, AVS has organized a week-long conference on energy related research topics. The Energy Frontiers focus topic conference will dovetail into this year's American Institute of Physics Industrial Physics Forum (AIP-IPF) where the theme will also be energy. On Monday afternoon and Tuesday morning AIP-IPF will feature two sessions with all invited talks. These talks will be given by prominent leaders in the energy field and emphasize sustainability and materials. The talks will cover a wide range of energy sources from photovoltaics to nuclear energy. The talks will cover a wide range of topics, from photovoltaics and photocatalysis to materials and thin films for energy conversion and storage, including nanostructured materials such as nanoparticles and nanowires. The week will begin with sessions on thermophotovoltaics, plasmonics and thermoelectrics, electron transfer processes at interfaces and third generation photovoltaics including solar cells based on quantum dots and nanaowires. On Tuesday and Wednesday, the focus will shift to thin film solar cells. There will be sessions on solar cells based on silicon, organic materials and chalcogenides. The sessions on solar cells will culminate on Thursday with an all-invited session on photovoltaics manufacturing. Thursday will include a full day of talks on lithium ion batteries and fuel cells. Following the tradition of AVS science and technology, applied and fundamental talks are interspersed.

The Industrial Physics Forum (IPF), an American Institute of Physics (AIP) outreach event hosted at AIP member society meetings is returning after a three year hiatus for the fourth time to the AVS International Symposium with the topic "Energy: Transition to a Sustainable Future". The topic of energy at the AVS International Symposium is an ever increasing presence as evidenced by the large number of energy related topical sessions. The IPF was devised to stimulate communication and encourage networking and cooperation among scientists and engineers from industry, academia and national laboratories, as well as to enhance the appreciation by IPF attendees of the opportunities in the non-academic sector, the largest employer of technical and scientific personnel.

By design this year's IPF on "Energy: Transition to a Sustainable Future" is composed of select topics that address not only global issues necessary to gain a proper perspective of the intricate interdependence of scientific, technical and geopolitical issues that constrain or redirect development towards a sustainable energy future, but also address specific technical challenges and novel approaches to energy supply issues, some of which are not typically covered at the AVS Symposium. The IPF thus serves as a lead-in into the more detailed talks presented throughout the Symposium week.

The IPF consists of three sessions of all invited talks: 1) "Energy: Global Prospects", 2) "The Electric Economy: The Supply/Demand Challenge", and 3) "Materials for a Sustainable Future". The total of 13 invited speakers from industry (6), academia (5) and national labs (2) include internationally acclaimed experts in energy policy and electric infrastructure, energy strategy leaders from industry and national laboratories with diverse scientific and technical responsibilities for future technologies, as well as prominent researchers in leading-edge energy sciences and technology covering bio-systems, energy storage technologies and nano-structural application to energy issues. The talks will stress the scientific and technical hurdles facing the energy supply challenge and the status of emerging technologies anticipated to be needed for a sustainable energy future.

The Energy Frontiers Focus Topic Sessions and a list of invited speakers are as follows.

CODE	SESSION
EN+PS-MoM	Plasmas for Photovoltaics & Energy Applications *Erwin Kessels, Eindhoven U of Tech, Netherlands* *Suk Jae Yoo, Natl Fusion Res Inst, Korea*
EN-MoM	Industrial Physics Forum on Energy I *William Hogan, Harvard University* *Omkaram Nalamasu, Applied Materials, Inc.* *Aristides Patrinos, Synthetic Genomics (SGI)* *Edward Steinfeld, MIT* *Ellen Williams, BP plc, UK*
EN+EM+NS-MoA	Nanostructured Materials for Third Generation Solar Cells *Ethan Klem, RTI International*
EN-MoA	Industrial Physics Forum on Energy II *John Kassakian, MIT* *Harold McFarlane, Idaho Natl Laboratory* *Mark Perry, Nissan Americas* *Gary Yang, Pacific Northwest Natl Lab*
EN+NS-TuM	Ultrafast Charge and Energy Transfer in Nanomaterials *Victor Klimov, Los Alamos National Lab* *William Tisdale, MIT* *Emily Weiss, Northwestern University*
EN-TuM	Industrial Physics Forum on Energy III *Todd R. Allen, Univ of Wisconsin, Madison* *Stacey Bent, Stanford University* *Gregory Meisner, GM Res & Development* *Sally Swanson, IBM Almaden Research Ctr*
EN+NS-TuA	Nanostructured Materials for Thermophotovoltaics, Thermoelectrics & Plasmonics *Rana Biswas, Iowa State U & Ames LabUS DOE* *David Norris, ETH Zurich, Switzerland* *Rachel Segalman, Univ of California, Berkeley* *Dmitri Talapin, University of Chicago*
EN+TF-TuA	Thin Films for Solar Cells *Liwei Li, ENN Solar Energy Co. Ltd.* *Craig Taylor, Colorado School of Mines* *Baojie Yan, United Solar Ovonic LLC*
EN+EM+NS-WeM	Quantum Dot and Nanowire Solar Cells *Michael Filler, Georgia Inst of Technology* *Ali Javey, University of California Berkeley* *Uwe Kortshagen, University of Minnesota*
EN+NS-WeM	Organic Photovoltaics *Marc Baldo, MIT*
EN1+TF-WeA	Thin Film Chalcogenide Solar Cells (CIGS, CZTS, CdTe and Related Materials) *David Mitzi, IBM T.J. Watson Research Ctr*
EN2+TF-WeA	Thin Films for Solar Fuels *Kevin Sivula, Ecole Polytechnique Federale de Lausanne, Switzerland*

EN+NS-ThM	Nanostructures for Energy Storage and Fuel Cells *Khalil Amine, Argonne National Laboratory* *Jianyu Huang, Sandia National Laboratories* *Andreas Stein, University of Minnesota*
EN+MS+VT-ThA	Photovoltaics Manufacturing *Salah Bedair, North Carolina State University* *Pradeep Haldar, College of Nanoscale Sci & Engrg and U.S. Photovoltaic Mfg Consortium* *Lindsey V. Maness, Jr., South Park Platinum* *Eric Seymour, Advanced Energy Industries*
EN+NS-ThA	Nanostructures for Energy Storage and Fuel Cells II *Fritz Prinz, Stanford University*
EN-ThP	Energy Frontiers Poster Session
EN+AC-FrM	Materials Challenges for Nuclear Energy *Peter Burns, University of Notre Dame* *G. Malcolm Stocks, Oak Ridge Natl Lab* *Sung Woo Yu, Lawrence Livermore Natl Lab*

GRAPHENE AND RELATED MATERIALS

Graphene, one-atom-thick sheet of carbon atoms, has attracted an enormous attention due to its unique physical and chemical properties, which open up exciting avenues for both fundamental research and novel applications. The AVS focus topic on graphene and related materials, is an interdisciplinary forum, which will review the world-wide effort in exploring the fundamental properties of graphene, its synthesis, characterization, processing and applications. This year's program consists of 10 Focus Topic sessions co-sponsored by 9 AVS divisions, which will highlight recent major breakthroughs, progress, and challenges in rapidly developing the science and technology of graphene.

Our program will start on Monday morning with the session on graphene growth and invited talk by L. Colombo on atomic layer growth on graphene. Monday afternoon's session on graphene's electronic properties and charge transport will include two invited talks by D. Gunlycke "Electronic and magnetic properties of line defect" and M. Fuhrer "Graphene: scratching the surface". Our session on graphene's optical properties, optoelectronics and photonics will start with an invited talk "Graphene optoelectronics: from ultrafast lasers to flexible displays" by A. Ferrari. On Tuesday afternoon we will run two parallel graphene sessions "Graphene on Dielectrics, Graphene Transfer to Novel substrates" and "Graphene: Magnetic Properties and Spin-Dependent Phenomena", the latter will begin with the invited talk "Magnetic impurities on graphene" by K. Kern. On Wednesday morning, the session on graphene's mechanical and thermal properties will begin with invited talk by P. McEuen "Graphene atomic membranes: from patchwork quilts to atomic drums". The Wednesday afternoon session on graphene's characterization will feature two invited talks, by J. Rabe on scanning probe and optical microscopy of graphenes on molecular layers, and by N. Guisinger on graphene synthesis, characterization and processing. Graphene's surface chemistry, functionalization, plasma processing and sensor applications will be highlighted at the session on Thursday morning which will include an invited talk by J. Robinson "Tailoring graphene's properties through chemistry". Thursday afternoon session on graphene nanoribbons and related structures will begin with the invited talk on rationally-patterned large-area semiconducting graphene materials by M. Arnold. The graphene and related materials focus topic program will conclude with the session on graphene device physics and applications, which include invited talk by J.U. Lee on fabrication and characterization of graphene p-n junction devices.

CODE	SESSION
GR-MoM	Graphene Growth *Luigi Colombo, Texas Instruments Inc.*
GR+TF+ET-MoA	Graphene: Electronic Properties and Charge Transport *Michael Fuhrer, U of Maryland College Park* *Daniel Gunlycke, Naval Research Lab*
GR+EM-TuM	Graphene: Optical Properties, Optoelectonics and Photonics *Andrea Ferrari, Univ of Cambridge, UK*
GR+MI-TuA	Graphene: Magnetic Properties and Spin-Dependent Phenomena *Klaus Kern, Max Planck Institute for Solid State Research, Germany*
GR-TuA	Graphene on Dielectrics, Graphene Transfer to Novel Substrates
GR-TuP	Graphene and Related Materials Focus Topic Poster Session
GR+MN-WeM	Graphene: Mechanical and Thermal Properties, Graphene MEMS and NEMS *Paul McEuen, Cornell University*
GR-WeA	Graphene Characterization including Microscopy and Spectroscopy *Nathan Guisinger, Argonne National Lab* *Jürgen Rabe, Humboldt U Berlin, Germany*
GR+NS+PS+SS-ThM	Graphene: Surface Chemistry, Functionalization, Plasma Processing and Sensor Applications *Jeremy Robinson, Naval Research Lab*
GR+TF+NS-ThA	Graphene Nanoribbons and Related Structures *Michael Arnold, U of Wisconsin-Madison*
GR+MS+EM-FrM	Graphene Device Physics and Applications *Ji Ung Lee, University at Albany-SUNY*

HELIUM ION MICROSCOPY

Focused Topic on Helium Ion Microscopy (HIM) provides a forum for scientists working with Helium Ion Microscopes and those interested in its prospects and capabilities. The Focus Topic starts with a keynote presentation by John Notte (Carl Zeiss) on "Principles of Helium Ion Microscopy", in which the fundamentals of this recently developed imaging and lithography technique are reviewed. In the following "HI1: Basics of Helium Ion Microscopy" session, experimental aspects such as UHV-HIM, HIM-lithography as well as theoretical treatments of ion-materials interactions and secondary electron emission by Helium ions are covered. Another highlight of the session is the invited talk by David Bell (Harvard) on "Contrast Performance in Helium Ion Microscopy". The HIM is capable to image conductive as well as insulating samples without special treatment, in particular it allows imaging of unstained biomaterials and cell surfaces. In the session "HI2: Nano- and Bio- Imaging with Helium Ion Microscopy" this capability is further explored by demonstrating the wide range of HIM imaging of diverse objects. Invited talks by Hongzhou Zhang (Dublin), Shinchi Ogawa (AIST, Japan), and Dan Pickard (Singapore) explore the aspects of Nano- and Bio- Imaging and Nanomodification with HIM. Examples of imaging semiconductors, nanoparticles and nanomembranes with helium ions are given. In the poster session "HI3: Aspects of Helium Ion Microscopy" a wide range of imaging and lithography aspects is shown: nanopores, nanomem-

branes, biological tissues and Self-Assembled Monolayers. This is accompanied by a poster presentation on the novel "NIM: Neon Ion Microscopy". HIM has the potential to become the routine microscopy for material science and nanotechnology, as well as in life science and biotechnology. The focused topic covers all aspects of science currently explored with the HIM, ranging from image formation and contrast mechanisms to materials imaging, bioimaging and lithography.

CODE	SESSION
HI+AS-TuA	Basics of Helium Ion Microscopy *David Bell, Harvard University* *John Notte, Carl Zeiss NTS*
HI-TuP	Aspects of Helium Ion Microscopy Poster Session
HI+AS+BI+NS-WeM	Nano- and Bio- Imaging with Helium Ion Microscopy *Shinichi Ogawa, AIST, Japan* *Daniel Pickard, Natl Univ of Singapore* *Hongzhou Zhang, Trinity College Dublin, Ireland*

IN SITU SPECTROSCOPY & MICROSCOPY

Characterization of complex systems, such as advanced materials, living tissues, and dynamic operational devices are challenging goals for research spanning a variety of scientific disciplines. Often, samples of the system are captured and analyzed at various locations in the system and at various times during the normal course of evolution, methodically *ex post facto*. However, this approach can be costly, and it can lead to an incomplete picture of a material or process, resulting is mistaken conclusions. A long-standing but nevertheless fast-growing area of research seeks to circumvent these limitations by creating controlled and miniaturized environments for observing dynamic materials structure and properties *in situ* during advanced characterization. Such environments can include, but are not limited to: gas or liquid environments, applied stress, variable temperature processing, electric and magnetic fields, and electromagnetic radiation (from MHz up through optical frequencies)

This symposium presents some of the most advanced techniques seeking to further the capabilities of *in-situ* characterization and diagnostic tools and to present some of the surprising new conclusions that these studies have produced. The first session highlights investigations of gas-solid reactions, showcasing some systems at the forefront of catalysis science. The second session focuses on all-solid systems. Here, there is an emphasis on non-uniform structures, such as defects and interfaces. These play key roles in the deformation and annealing of materials and the growth of solid thin films on surfaces. The third session focuses on organic and biological systems and other liquid-solid interface systems. Here new results on the evolution of surfaces and the imaging of whole and living tissues with high resolution electron microscopy will be presented. Overall, the symposium should give a feel for the existing capabilities and moreover, should inspire new and collaborative research directions.

CODE	SESSION
IS+AS+SS-MoM	*In Situ* Studies of Catalysis and Gas-Solid Reactions *Anatoly Frenkel, Yeshiva University*
IS+AS+SS-MoA	*In Situ* Characterization of Solids: Film Growth, Defects, and Interfaces *Guus Rijnders, U of Twente, Netherlands* *Ian Robertson, U of Illinois Urbana-Champaign*
IS+AS+SS-TuM	*In Situ* Studies of Organic and Soft Materials and Liquid-Solid interfaces *Niels De Jonge, Vanderbilt U School of Medicine* *Miquel Salmeron, LBNL*
IS-TuP	In Situ Spectroscopy and Microscopy Focus Topic Poster Session

MARINE BIOFOULING

In the marine environment, a broad diversity of organisms robustly adhere to many types of surfaces as an adaptation for survival. Unfortunately, ship hulls and other man-made structures tend to provide ideal substrates for settlement of these biofouling organisms, causing billions in additional annual costs from decreased performance and for biofoulant removal. Toxic antifouling coatings have been highly effective as they are able to non-specifically kill the many different types of organisms which come in contact, but are being banned due to their environmental harm. Therefore, environmentally friendly methods to defeat marine biofouling are in great need, but present highly difficult and complex problems to achieve. This focus topic will provide an interdisciplinary forum on research aimed at achieving effective, long-lasting antifouling methods that are environmentally friendly. On the organism side of the issue, presentations will focus on interfacial aspects of marine biofouling, with topics ranging from the chemistry of bioadhesive interfaces to the effects of substrate morphologies on bioadhesion. On the coatings side, a session will be held in conjunction with the biomaterial interfaces and plasma science and technology divisions. Topics will include advances in environmentally friendly coatings strategies, materials, and surface functionalities, as well as the assessment of coating effectiveness towards fouling organisms.

CODE	SESSION
MB-MoM	Interfacial Aspects of Marine Biofouling *Robert Lamb, Univ of Melbourne, Australia* *Jim McQuillan, U Otago, Dunedin, New Zealand*
MB+BI+PS-MoA	Marine Antifouling Coatings *John A. Schetz, U of North Texas Health Science Ctr* *Dean Webster, North Dakota State Univ*

NANOMANUFACTURING SCIENCE AND TECHNOLOGY

The AVS-58 Nanomanufacturing Science and Technology program has been developed through a collaboration between the Manufacturing Science and Technology Group, the MEMS/NEMS group, the Nanoscale Science Division, and the Thin Film Division. This program highlights the AVS's strength in bringing together basic science and applied technology to support cutting edge industry. To move forward from bench-top demonstration to full-scale production, scalable, high-throughput, controllable processes are needed. Invited speakers from the NSF, academia, and the DOD will highlight the challenges facing sustainable

nanomanufacturing in our Monday afternoon session scheduled with extended discussion periods. Presentations of work in the areas of scalable devices, top-down and bottom-up high-throughput processes, metrology methods, and environmental concerns for sustainable nanomanufacturing are scheduled.

CODE	SESSION
NM+MS+NS+TF-MoM	ALD for Nanomanufacturing *Jill Becker, Cambridge NanoTech, Inc.* *Eric Dickey, Lotus Applied Technology* *Steven M. George, U of Colorado Boulder* *Gert Leusink, TEL Tech Ctr America, LLC*
NM+MS-MoA	Challenges Facing Nanomanufacturing (All Invited Session) *John Busbee, Wright-Patterson AFBase* *Mihail Roco, NSF* *Mark Tuominen, U of Massachusetts Amherst*
NM+MN+MS+TF-TuM	Lithography Strategies for Nanomanufacturing *Michael Guillorn, IBM T.J. Watson Res Ctr* *Paul Nealey, University of Wisconsin* *Teri Odom, Northwestern University*
NM+NS+MS-TuA	Manufacturable Nanoscale Devices and Processes *Brian E. Goodlin, Texas Instruments Inc.* *Brian Lu, AIXTRON Inc.* *Rodney Ruoff, University of Texas at Austin* *Stan Williams, Hewlett-Packard Labs*
NM-TuP	Nanomanufacturing Science and Technology Poster Session
NM+AS+MS-WeM	Nanomanufacturing Issues: Metrology and Environmental Concerns *Dawn Bonnell, University of Pennsylvania* *Vicki Colvin, Rice University*

NEUTRON SCATTERING

During the past decade, neutron reflectometry has increasingly become a key technique for the investigation of a broad spectrum of thin films and multilayers. The program of the topical Conference on Neutron Scattering will feature recent pioneering results on the application of neutron reflectometry for the investigation of magnetic, polymer and biological thin films. This year's program includes sessions addressing fundamental science topics such as: (i) Magnetic nanosystems and thin films; (ii) Neutron scattering for energy conversion; and (iii) Biological interfaces, membranes and thin films. The sessions will be introduced by the invited talks by Prof. Thomas Brueckel from Forschungszentrum Jülich, Germany on "A Deeper Look into Spintronic Material Systems with Neutrons and Synchrotron Radiation", Prof. Chris Leighton from the University of Minnesota on "Nanoscopic Magnetic Phase Separation at the $SrTiO_3(001)/La1\text{-}xSr_xCoO_3$ Interface", Prof.J.B. Chlistunoff from Los Alamos National Laboratory will talk on "Electrochemical and Neutron Reflectometry Studies of Nafion-Carbon-Platinum Interfaces". The application of neutron scattering to biological systems will be highlighted by invited talks of Prof. E. Y. Chi, University of New Mexico on "Interaction of Alzheimer's Disease Tau Protein with Model Lipid Membranes", Prof. Maikel Rheinstädter from McMaster University, Canada on "Nanobiology: Membranes and Proteins in Motion" and Prof. Michael Kent, on Cellulase enzyme cocktails.

Considerable advancements in the instrument performance, sample environment and data analysis make it possible to obtain with nano-meter accuracy information about the depth-dependent composition and in-plane correlations in thin films, multilayers and nanostructures.

CODE	SESSION
NT-TuP	Neutron Scattering Poster Session
NT+AS+MI-WeM	Applications of Neutron Scattering I *Thomas Brueckel, Forschungszentrum Jülich, Germany* *Chris Leighton, Univ. of Minnesota* *Maikel Rheinstädter, McMaster U, Canada and Canadian Neutron Beam Ctre, Canada*
NT+AS-WeA	Applications of Neutron Scattering II *Eva Y. Chi, Univ. of New Mexico* *Jerzy Chlistunoff, Los Alamos Natl Lab* *Michael Kent, Sandia National Labs*

SPECTROSCOPIC ELLIPSOMETRY

The Spectroscopic Ellipsometry Focus Topic will provide a fertile terrain of discussion and exchange on the most recent progresses in the field of spectroscopic ellipsometry. Given the extensive, yet complementary interest of the AVS community in material science and characterization, in the physics and chemistry principles at the basis of surface modification and (thin) film growth, and in novel applications, the Focus Topic will host three oral sessions and a poster session. The following research areas will be highlighted: Spectroscopic Ellipsometry of Biological Materials and Organic Films; Spectroscopic Ellipsometry for Photovoltaics, Metals and Inorganic Thin Films; Spectroscopic Ellipsometry: Future Directions and New Techniques.

Furthermore, the Focus Topic Program Committee will award the three best contributed papers given by graduate students and young postdoc researchers. The Committee gratefully acknowledges J.A. Woollam Co., Inc. for sponsoring the awards.

CODE	SESSION
EL+AS+EM+MS+PS+TF-ThM	Spectroscopic Ellipsometry of Biological Materials & Organic Films *Klaus-Jochen Eichhorn, Leibniz-Institut für Polymerforschung Dresden e.V., Germany*
EL+AS+EM+MS+PS+TF-ThA	Spectroscopic Ellipsometry for Photovoltaics, Metals and Oxide Thin Films *Dean Levi, National Renewable Energy Lab*
EL-ThP	Spectroscopic Ellipsometry Poster Session
EL+AS+EM+MS+PS+TF-FrM	Spectroscopic Ellipsometry: Future Directions and New Techniques *James Hilfiker, J.A. Woollam Co., Inc.*

TRANSPARENT CONDUCTORS AND PRINTABLE ELECTRONICS

The future of electronics is moving toward greater versatility, e.g., via printability and/or flexibility over large areas while maintaining or enhancing the properties of functional elements such as transparent conductors. This focus topic addresses research on a range of transparent and printable electronics, from conductors to complete transistors. Presentations address synthesis, growth, fab-

rication, theory, characterization, and processing of transparent and printable electronics, based on both novel and more established materials. Topics include growth, processing and characterization of TCOs, alternative approaches to transparent conductors, printable metals, and processing and characterization of printable transistors. The sessions will begin with talks on growth, processing, and modeling of TCOs, highlighted by an invited talk by S.-H. Wei of NREL on multi-component TCOs. Transparent and printable transistors, highlighted by invited talks by H. von Wenckstern of Universität Leipzig and J. Wager of Oregon State University, are emphasized in the second session. A poster session will also be held in the evening to complement the oral sessions.

CODE	SESSION
TC+AS+EM-ThM	Transparent /Printable Electronics Part 1 *Manuel Quevedo-Lopez, U of Texas Dallas* *Su-Huai Wei, Natl Renewable Energy Lab*
TC+EM+NS-ThA	Transparent / Printable Electronics Part 2 *Holger von Wenckstern, U Leipzig, Germany* *John Wager, Oregon State University*
TC-ThP	Transparent Conductors & Printable Electronics Poster Session

TRIBOLOGY

The Tribology Focus Topic (TR) program will feature topics including novel tribological materials advanced tribological measurements, characterization of tribological interfaces, atomistic and multi-scale modeling of friction and wear events, and evaluation of environmental influences, with individual sessions jointly sponsored by Applied Surface Science (AS) and Surface Science. Presentations will carry a materials focus in areas such as biomaterials, thin film deposition, solid lubricants, nanocomposites designed for tribological function, self-healing interfaces, and wear-resistant polymers. 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. Invited speakers will specifically address the tribology of biological, low-wear, and nanocomposite interface and state of the art modeling developments. In addition to the three oral sessions, we will have a poster session, which will provide an opportunity for personal exchange and discussion of results with colleagues.

CODE	SESSION
TR-WeA	Emerging Interfaces of Tribological Importance *David Burris, University of Delaware* *W. Gregory Sawyer, University of Florida*
TR+AS+SS-ThM	Atomic-scale Characterization of Tribological Interfaces *Michael Falk, Johns Hopkins University*
TR-ThA	Advanced Tribological Materials *Thomas Scharf, University of North Texas*
TR-ThP	Tribology Focus Topic Poster SessionTransparent/ Printable Electronics Part 2

SESSION OVERVIEW

Symposium Plenary Lecture

Mon. 12 Noon Ballrm 204/205/206
Oak Ridge Natl Lab: Scientific Discovery and Innovation for the Energy Challenge
Thomas E. Mason, Oak Ridge Natl Lab

Advanced Surface Engineering

Tue. PM	Room 104	GLAD II Glancing Angle Deposition II
Tue. PM	East Exhibit Hall	Advanced Surface Engineering Poster Session
Wed. AM	Room 104	Surface Engineering for Thermal Management
Wed. PM	Room 104	Atmospheric Pressure Plasmas
Thu. AM	Room 104	Nanostructured Thin Films and Coatings
Thu. PM	Room 104	Pulsed Plasmas in Surface Engineering

Applied Surface Science

Mon. AM	Room 102	Quantitative Surface Chemical Analysis and Technique Development – Part I
Mon. PM	Room 102	Quantitative Surface Chemical Analysis and Technique Development – Part II
Tue. AM	Room 102	Imaging and 3D Chemical Analysis
Tue. PM	Room 102	Imaging and 3D Chemical Analysis – Part II
Tue. PM	East Exhibit Hall	Applied Surface Science Poster Session
Wed. AM	Room 102	Advances in Scanning Probe Microscopy
Wed. PM	Room 102	Correlative Analysis – A Multi-technique Approach for Identification and Structure-Property Relationships
Thu. AM	Room 102	Analysis of Insulators and Challenging Samples

Biomaterial Interfaces

Sun. PM	Room 108	Challenges in Biomaterials Analysis
Mon. AM	Room 108	Biomolecules at Interfaces
Mon. PM	Room 108	Sensors and Fluidics for Biomedical Applications
Tue. PM	Room 105	Protein-Membrane Interactions
Wed. AM	Room 108	Cells at Interfaces
Wed. PM	Room 108	Functionalization and Characterization of Nanostructures
Thu. AM	Room 108	Biomedical Materials
Thu. PM	East Exhibit Hall	Biomaterial Interfaces Poster Session

Electronic Materials and Processing

Mon. AM	Room 210	Dielectrics for Novel Devices and Process Integration
Mon. PM	Room 209	Group III-Nitrides and Hybrid Devices
Mon. PM	Room 210	Dielectrics for Ultra Dense Memory Devices
Tue. AM	Room 210	High-k Dielectrics for MOSFETs Part 1
Tue. PM	Room 210	High-k Dielectrics for MOSFETs Part 2
Wed. AM	Room 210	Low-k Materials and Devices
Wed. PM	Room 210	Defects in Electronic Materials
Thu. AM	Room 210	Hybrid Electronic Materials and Interfaces
Thu. PM	East Exhibit Hall	Electronic Materials and Processing Poster Session
Fri. AM	Room 210	Surfaces and Materials for Next Generation Electronicss

Magnetic Interfaces and Nanostructures

Wed. AM	Room 105	Fundamental Problems in Magnetism
Wed. PM	Room 105	Spintronics, Magnetoelectronics, Multiferroics, and Dilute Magnetic Semiconductor Applications
Thu. AM	Room 105	Emerging Magnetic Characterization and Results
Thu. PM	East Exhibit Hall	Magnetic Interfaces and Nanostructures Poster Session

MEMS and NEMS

Thu. PM	Room 105	Multi-scale Interactions of Materials and Fabrication at the Micro- and Nano-scale
Fri. AM	Room 105	Characterization of Materials and Structures at the Micro- and Nano-scale

Nanometer-Scale Science and Technology

Mon. AM	Room 203	Nanowires and Nanoparticles I: Assembly and Devices
Mon. PM	Room 203	Frontiers in Nanophotonics and Plasmonics
Tue. AM	Room 203	Nanowires and Nanoparticles II: Characterization and Synthesis
Tue. PM	Room 203	Frontiers in Nanoscale Imaging and Characterization
Tue. PM	East Exhibit Hall	Nanometer-scale Science and Technology Division Poster Session
Wed. AM	Room 203	Carbon-Based Nanomaterials
Thu. AM	Room 203	Molecular Assembly and Devices
Thu. PM	Room 203	Biological Nanomaterials

Plasma Science and Technology

Mon. AM	Room 201	Advanced FEOL / Gate Etching I
Mon. PM	Room 202	Multiphase (Liquid, Solid, Gas) and Biological Related Plasmas
Mon. PM	Room 201	Advanced FEOL / Gate Etching II
Tue. AM	Room 202	Plasma Processing for Disruptive Technologies
Tue. AM	Room 201	Advanced BEOL / Interconnect Etching I
Tue. PM	Room 202	Advanced BEOL / Interconnect Etching II
Tue. PM	Room 201	Plasma Diagnostics, Sensors and Control I
Wed. AM	Room 201	Atmospheric Plasma Processing and Micro Plasmas
Wed. AM	Room 202	Plasma Surface Interactions (Fundamentals & Applications) I
Wed. PM	Room 202	Low-K Materials & Integration
Wed. PM	Room 201	Plasma Sources
Thu. AM	Room 202	Plasma Deposition and Plasma Enhanced ALD
Thu. AM	Room 201	Neutral Beam and Low Damage Processing
Thu. PM	Room 202	Plasma Surface Interactions (Fundamentals & Applications) II

SESSION OVERVIEW

Thu.	PM	Room 201	Plasma Diagnostics, Sensors and Control II
Thu.	PM	East Exhibit Hall	Plasma Science and Technology Poster Session
Fri.	AM	Room 201	Plasma Modelings

Surface Science

Mon.	AM	Room 109	Water Films & Environmental Interfaces
Mon.	AM	Room 110	Surface Chemical Dynamics
Mon.	PM	Room 109	Selectivity and Reactivity of Chemisorbed Species
Mon.	PM	Room 110	Molecular Ordering and Electrochemical Interfaces
Tue.	AM	Room 109	Chemisorption & Surface Reactions
Tue.	AM	Room 110	Self Assembled Monolayers and Networks
Tue.	PM	Room 110	Organic Electronic Interfaces
Tue.	PM	Room 109	Catalysis on Metals and Alloys
Tue.	PM	East Exhibit Hall	Surface Science Poster Session
Wed.	AM	Room 107	Atomistic Control of Structure & Evolution
Wed.	AM	Room 109	Chemisorption on Metal & Oxide Nanoparticles
Wed.	PM	Room 107	Adsorption & Reactions on Oxide Surfaces
Thu.	AM	Room 107	Oxide Surface Structure & Reactivity
Thu.	PM	Room 107	Semiconducting & Ferroelectric Surface
Fri.	AM	Room 107	Surface Science on Graphene

Thin Film

Mon.	AM	Room 107	Thin Films: Growth and Characterization I
Mon.	PM	Room 107	Emerging ALD Applications
Tue.	AM	Room 107	ALD for Energy
Tue.	AM	Room 104	Glancing Angle Deposition (GLAD)
Tue.	PM	Room 107	ALD: Fundamental Reactions and Film Properties
Tue.	PM	East Exhibit Hall	Thin Films Poster Session
Wed.	AM	Room 110	ALD/MLD: Hybrid Organic Films
Wed.	PM	Room 109	Nonvolatile Memory
Wed.	PM	Room 110	Nanostructuring Thin Films
Thu.	AM	Room 109	Post-Deposition Processing and Characterization of Thin Films
Thu.	AM	Room 110	Modeling and Analysis of Thin Films
Thu.	PM	Room 110	Applications of Self Assembled Monolayers
Fri.	AM	Room 110	Thin Films: Growth and Characterization II

Vacuum Technology

Mon.	AM	Room 111	Vacuum Measurement, Calibration and Primary Standards, Gas Flow and Permeation
Mon.	PM	Room 111	Optical and Mass Spectroscopy for Gas Analysis and Pump Modeling
Tue.	AM	Room 111	Accelerator and Large Vacuum System Design, Outgassing and Pumping
Tue.	PM	Room 111	Surface Science for Future Electronic Materials and Accelerator Applications
Tue.	PM	East Exhibit Hall	Vacuum Technology Poster Session & Student Poster Competition

Exhibitors and Manufacturers Technology Spotlight

Tue.	AM	West Exhibit Hall	10:20–10:40 AM
Tue.	PM	West Exhibit Hall	12:20–2:00 PM
Wed.	AM	West Exhibit Hall	10:20–10:40 AM
Wed.	PM	West Exhibit Hall	12:20–2:00 PM

Actinides and Rare Earths Focus Topic

Wed.	PM	Room 209	Magnetic and Electron Correlation Effects in Actinides and Rare Earths
Thu.	AM	Room 207	The Surface Science of Actinides and Rare Earths
Thu.	PM	Room 207	The Structure, Properties and Chemistry of Thin Films of Actinides and Rare Earths

Biofabrication and Novel Devices Focus Topic

Tue.	AM	Room 105	Biofabrication Applications
Tue.	PM	Room 105	Biofabrication Methods and Devices
Tue.	PM	East Exhibit Hall	Biofabrication and Novel Devices Poster Sessions

Electron Transport in Low Dimensional Materials Focus Topic

Mon.	AM	Room 209	Quantum Transport: From 0- to 2-Dimensions
Tue.	AM	Room 209	Electron Behaviors in Nanoelectronics, Interconnect, and Carbon-based Materials

Energy Frontiers Focus Topic/Industrial Physics Forum

Mon.	AM	Room 103	Plasmas for Photovoltaics & Energy Applications
Mon.	AM	Room 104	Industrial Physics Forum on Energy I
Mon.	PM	Room 103	Nanostructured Materials for Third Generation Solar Cells
Mon.	PM	Room 104	Industrial Physics Forum on Energy II
Tue.	AM	Room 103	Ultrafast Charge and Energy Transfer in Nanomaterials
Tue.	AM	Room 108	Industrial Physics Forum on Energy III
Tue.	PM	Room 103	Nanostructured Materials for Thermo-photovoltaics, Thermoelectrics & Plasmonics
Tue.	PM	Room 108	Thin Films for Solar Cells
Wed.	AM	Room 103	Quantum Dot & Nanowire Solar Cells
Wed.	AM	Room 209	Organic Photovoltaics
Wed.	PM	Room 103	Thin Film Chalcogenide Solar Cells (CIGS, CZTS, CdTe & Related Materials)
Wed.	PM	Room 106	Thin Films for Solar Fuels
Thu.	AM	Room 103	Nanostructures for Energy Storage and Fuel Cells
Thu.	PM	Room 102	Photovoltaics Manufacturing
Thu.	PM	Room 103	Nanostructures for Energy Storage and Fuel Cells II
Thu.	PM	East Exhibit Hall	Energy Frontiers Poster Session
Fri.	AM	Room 203	Materials Challenges for Nuclear Energy

SESSION OVERVIEW

Graphene and Related Materials Focus Topic

Mon.	AM	Room 208	Graphene Growth
Mon.	PM	Room 208	Graphene: Electronic Properties and Charge Transport
Tue.	AM	Room 208	Graphene: Optical Properties, Optoelectonics and Photonics
Tue.	PM	Room 208	Graphene: Magnetic Properties and Spin-Dependent Phenomena
Tue.	PM	Room 209	Graphene on Dielectrics, Graphene Transfer to Novel Substrates
Tue.	PM	East Exhibit Hall	Graphene and Related Materials Focus Topic Poster Session
Wed.	AM	Room 208	Graphene: Mechanical and Thermal Properties, Graphene MEMS and NEMS
Wed.	PM	Room 208	Graphene Characterization including Microscopy and Spectroscopy
Thu.	AM	Room 208	Graphene: Surface Chemistry, Functionalization, Plasma Processing and Sensor Applications
Thu.	PM	Room 208	Graphene Nanoribbons and Related Structures
Fri.	AM	Room 208	Graphene Device Physics and Applications

Helium Ion Microscopy Focus Topic

Tue.	PM	Room 106	Basics of Helium Ion Microscopy
Tue.	PM	East Exhibit Hall	Aspects of Helium Ion Microscopy Poster Session
Wed.	AM	Room 106	Nano- and Bio- Imaging with Helium Ion Microscopys

***In Situ* Spectroscopy and Microscopy Focus Topic**

Mon.	AM	Room 106	In Situ Studies of Catalysis and Gas-Solid Reactions
Mon.	PM	Room 106	In Situ Characterization of Solids: Film Growth, Defects, and Interfaces
Tue.	AM	Room 106	In Situ Studies of Organic and Soft Materials and Liquid-Solid interfaces
Tue.	PM	East Exhibit Hall	In Situ Spectroscopy and Microscopy Focus Topic Poster Session

Marine Biofouling Focus Topic

Mon.	AM	Room 105	Interfacial Aspects of Marine Biofouling
Mon.	PM	Room 105	Marine Antifouling Coatings

Nanomanufacturing Science and Technology Focus Topic

Mon.	AM	Room 207	ALD for Nanomanufacturing
Mon.	PM	Room 207	Challenges Facing Nanomanufacturing (All Invited Session)
Tue.	AM	Room 207	Lithography Strategies for Nanomanufacturing
Tue.	PM	Room 207	Manufacturable Nanoscale Devices and Processes
Tue.	PM	East Exhibit Hall	Nanomanufacturing Science and Technology Poster Session
Wed.	AM	Room 111	Nanomanufacturing Issues: Metrology and Environmental Concerns

Neutron Scattering Focus Topic

Tue.	PM	East Exhibit Hall	Neutron Scattering Poster Session
Wed.	AM	Room 207	Applications of Neutron Scattering I
Wed.	PM	Room 207	Applications of Neutron Scattering II

Spectroscopic Ellipsometry Focus Topic

Thu.	AM	Room 209	Spectroscopic Ellipsometry of Biological Materials and Organic Films
Thu.	PM	Room 209	Spectroscopic Ellipsometry for Photovoltaics, Metals and Oxide Thin Films
Thu.	PM	East Exhibit Hall	Spectroscopic Ellipsometry Poster Session
Fri.	AM	Room 209	Spectroscopic Ellipsometry: Future Directions and New Techniques

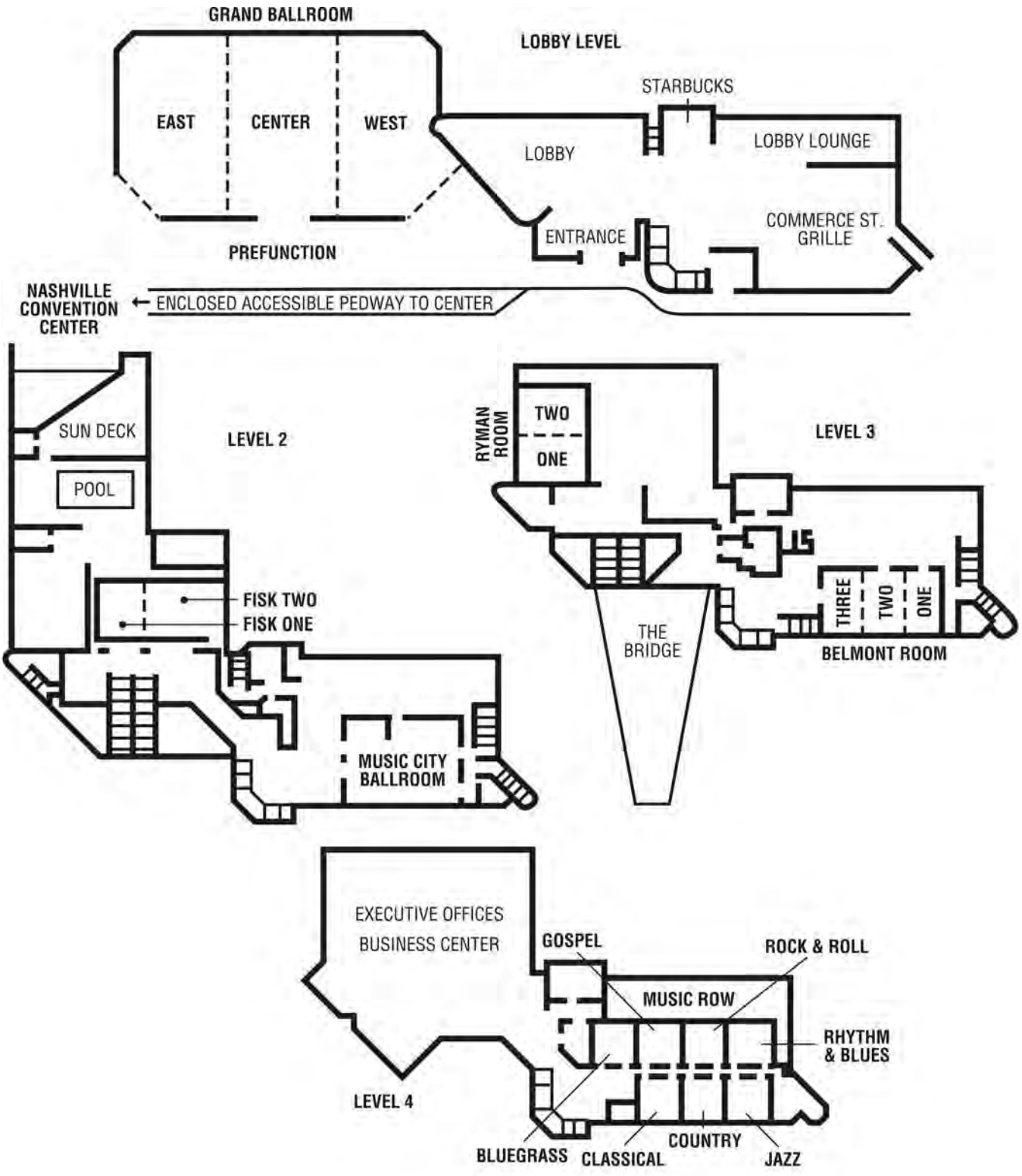
Transparent Conductors and Printable Electronics Focus Topic

Thu.	AM	Room 106	Transparent / Printable Electronics Part 1
Thu.	PM	Room 106	Transparent / Printable Electronics Part 2
Thu.	PM	East Exhibit Hall	Transparent Conductors and Printable Electronics Poster Session

Tribology Focus Topic

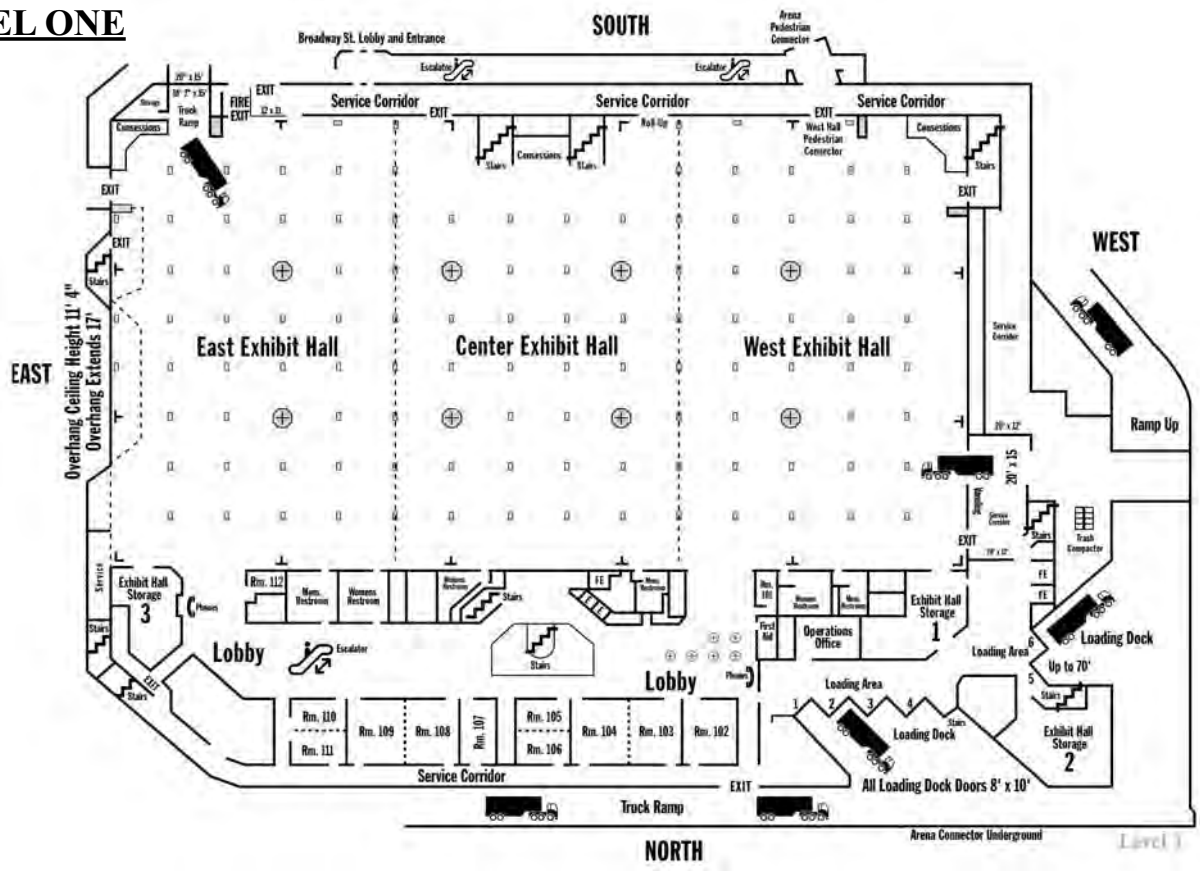
Wed.	PM	Room 111	Emerging Interfaces of Tribological Importance
Thu.	AM	Room 111	Atomic-scale Characterization of Tribological Interfaces
Thu.	PM	Room 111	Advanced Tribological Materials
Thu.	PM	East Exhibit Hall	Tribology Focus Topic Poster Session

RENAISSANCE® NASHVILLE HOTEL

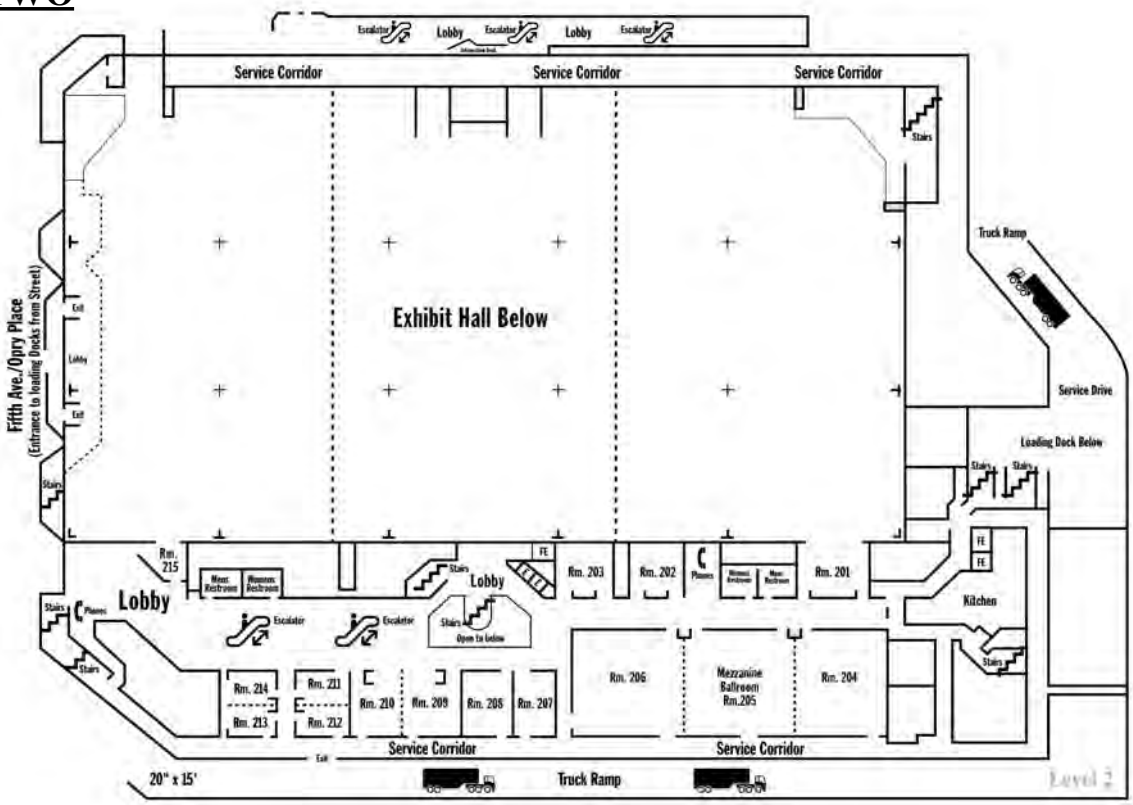


NASHVILLE CONVENTION CENTER

LEVEL ONE



LEVEL TWO



MEETINGS AND SPECIAL EVENTS

SATURDAY, OCTOBER 29, 2011

2:00 p.m.	Education Committee Meeting	Classical (H)
6:30 p.m.	Education Committee Dinner	Commerce Street Grill (H)

SUNDAY, OCTOBER 30, 2011

8:30 a.m.	AVS Board of Director's Meeting	Ryman I & II (H)
12:00 p.m.	AVS Board of Director's Lunch	Belmont I (H)
1:00 p.m.	Tutorial: An Introduction to Energy Storage Technology	109 (CC)
2:00 p.m.	ASTM Workshop-Panel Discussion: "Establishing Best Analytical Practice"	Fisk (H)
2:00 p.m.	Companion Tour Registration	Level 1 Lobby (CC)
3:00 p.m.	AIP Corporate Associates Advisory Committee Meeting	Gospel (H)
3:00 p.m.	History Committee Meeting	Belmont I (H)
3:00 p.m.	Biomaterials Plenary Session and Reception	108 (CC)
4:30 p.m.	ASTM E-42 Committee and Subcommittee Business Meetings	Fisk (H)
	E-42.02 Terminology	Fisk (H)
	E-42.03 AES/XPS	Fisk (H)
	E-42.06 SIMS	Fisk (H)
	E-42.08 Ion Beam Sputtering	Fisk (H)
	E-42.13 Vacuum Technology	Fisk (H)
	E-42.14 STM/AFM	Fisk (H)
	E-42.15 Electron Probe Microanalysis/Electron Microscopy	Fisk (H)
	E-42.92 US TAG ISO TC201	Fisk (H)
	E-42.94 US TAG ISO TC112	Fisk (H)
	E-42.96 US TAG ISO TC202	Fisk (H)
	E-42.90 Executive Committee	Fisk (H)
6:00 p.m.	Science Educators' Workshop Teachers' Reception	Jazz (H)
6:00 p.m.	Vacuum Technology Division Executive Committee Meeting and Dinner	Belmont I (H)
7:00 p.m.	Short Course Committee Meeting	Gospel (H)
7:00 p.m.	International Dignitaries Reception (Invitation Only)	Presidential Suite (H)

MONDAY, OCTOBER 31, 2011

7:00 a.m.	Companion Tour Registration	Rhythm & Blues (H)
8:00 a.m.	Science Educators' Workshop	Ryman I & II (H)
10:20 a.m.	Vacuum Technology Division Business Meeting	111 (C)
12:00 p.m.	Plenary Lecture, Thomas E. Mason, Director Oakridge National Lab, "Scientific Discovery and Innovation for the Energy Challenge "	204-206 (CC)
12:00 p.m.	Science Educators' Workshop Lunch	Bluegrass (H)
1:00 p.m.	2012 AVS Program Committee Meeting and Lunch	Rhythm & Blues (H)
1:15 p.m.	Professional Development Seminar: JVST Writer's Workshop	Belmont Ballroom (H)
5:30 p.m.	Welcome Mixer	Grand Ballroom West (H)
7:00 p.m.	Applied Surface Science Division Executive Committee Dinner	Gospel (H)
7:00 p.m.	Professional Development Seminar: Federal Funding & Research Opportunities Town Hall	Belmont Ballroom (H)
7:15 p.m.	Publications Committee Meeting and Dinner	TBD (Offsite)
8:30 a.m.-4:30 p.m.	*Short Course Program*	*Various Rooms (CC)*

TUESDAY, NOVEMBER 1, 2011

7:00 a.m.	Companion Tour Registration	Rhythm & Blues (H)
7:00 a.m.	Professional Leadership Committee Meeting and Breakfast	Country (H)
8:00 a.m.	Advanced Surface Engineering Division Business Meeting	Gospel (H)
8:00 a.m.	Science Educators' Workshop	Ryman I & II (H)
8:15 a.m.	Advanced Surface Engineering Division Executive Committee Meeting (Lunch Offsite)	Gospel (H)
8:30 a.m.	Awards Committee Meeting and Lunch	Classical (H)
9:00 a.m.	AVS Governance Committee Meeting and Breakfast	Rhythm & Blues (H)
10:00 a.m.	Session Coffee Break	Center/West Exhibit Hall (CC)
12:00 p.m.	Chapters, Divisions, and Groups Meeting and Lunch	Jazz (H)
12:00 p.m.	Exhibit Hall Lunch	Center/West Exhibit Hall (CC)
12:00 p.m.	Job Information Forum and Lunch	Belmont Ballroom (H)
12:00 p.m.	Recommended Practices Committee Meeting and Lunch	Country (H)
12:00 p.m.	Science Educators' Workshop Lunch	Bluegrass (H)
12:30 p.m.	Industrial Physics Forum Workshop (Invitation Only)	Gospel (H)
3:00 p.m.	Marketing and Communications Committee Meeting	Gospel (H)
3:20 p.m.	Session Refreshment Break	Center/West Exhibit Hall (CC)

CC = Nashville Convention Center
H = Renaissance Nashville Hotel

4:20 p.m.	Medard Welch Award Lecture, W. Ho, Univ. of California, Irvine	203 (CC)
5:00 p.m.	John A. Thornton Award Lecture, V.M. Donnelly, Univ. of Houston	201 (CC)
5:45 p.m.	Biomaterial Interfaces Division Business Meeting	105 (CC)
5:45 p.m	Plasma Science and Technology Division Business Meeting	201 (CC)
6:00 p.m.	Poster Session and Refreshments	East Exhibit Hall (CC)
6:05 p.m.	Electronic Materials and Processing Division Business Meeting	210 (CC)
6:05 p.m.	Magnetic Interfaces and Nanostructures Division Business Meeting	208 (CC)
6:05 p.m.	Nanometer-scale Science and Technology Business Meeting	203 (CC)
6:05 p.m	Surface Science Division Business Meeting	109 (CC)
6:05 p.m.	Thin Film Division Business Meeting	107 (CC)
6:30 p.m.	Chapter, Divisions, and Groups Committee Meeting and Dinner	Commerce Street Grill (H)
6:30 p.m.	Nanometer-scale Science and Technology Division Meeting and Dinner	Bluegrass (H)
6:30 p.m.	Manufacturing Science and Technology Group Committee Meeting and Dinner	Classical (H)
7:00 p.m.	Biomaterial Interfaces Division Executive Committee Meeting and Dinner and Biointer*phases* Editorial Board Meeting and Dinner	TBD (Offsite)
7:00 p.m.	Electronic Materials and Processing Division Executive Committee Meeting and Dinner	Gospel (H)
7:00 p.m.	Magnetic Interfaces and Nanostructures Division Executive Committee Meeting and Dinner	Rhythm & Blues (H)
7:00 p.m.	Plasma Science and Technology Executive Committee Meeting and Dinner	Jazz (H)
7:00 p.m.	Surface Science Division Executive Committee Meeting and Dinner	Belmont III (H)
7:00 p.m.	Thin Film Division Executive Committee Meeting and Dinner	Belmont I (H)
7:30 p.m.	Applied Surface Science Division Business Meeting	Fisk (H)
8:00 p.m.	ASTM E-42/ASSD Workshop, "Challenges in SIMS: A Symposium in Honor of Sally Asher	Fisk (H)
8:30 a.m.-4:30 p.m.	*Short Course Program*	*Various Rooms (CC)*
10:00 a.m.-5:30 p.m.	*Equipment Exhibition*	*Center/West Exhibit Hall (CC)*
10:20 a.m.-10:40 a.m.	*Exhibitors & Manufacturers Technology Spotlight*	*Center/West Exhibit Hall (CC)*
12:20 p.m.-2:00 p.m.	*Exhibitors & Manufacturers Technology Spotlight*	*Center/West Exhibit Hall (CC)*

WEDNESDAY, NOVEMBER 2, 2011

8:00 a.m.	Peter Mark Award Lecture, M. Sankaran, Case Western Reserve Univ.	201 (CC)
10:00 a.m.	Session Coffee Break	Center/West Exhibit Hall (CC)
12:00 p.m.	Exhibit Hall Lunch	Center/West Exhibit Hall (CC)
12:00 p.m.	Nanometer-Scale Science and Technology Division Best Student Paper Awards Ceremony	203 (H)
12:15 p.m.	Finance Committee Meeting and Lunch	Gospel (H)
3:20 p.m.	Session Refreshment Break	Center/West Exhibit Hall (CC)
4:30 p.m.	E&M Reception (Invitation Only)	Center/West Exhibit Hall (CC)
6:00 p.m.	MEMS and NEMS Technical Group Executive Committee Meeting and Dinner	Gospel (H)
6:15 p.m.	AVS Awards Ceremony	204-206 (CC)
7:15 p.m.	AVS Awards Reception	Grand Ballroom West (H)
8:30 a.m.-4:30 p.m.	*Short Course Program*	*Various Rooms (CC)*
10:00 a.m.-4:30 p.m.	*Equipment Exhibition*	*Center/West Exhibit Hall (CC)*
10:20 a.m.-10:40 a.m.	*Exhibitors & Manufacturers Technology Spotlight*	*Center/West Exhibit Hall (CC)*
12:20 p.m.-2:00 p.m.	*Exhibitors & Manufacturers Technology Spotlight*	*Center/West Exhibit Hall (CC)*

THURSDAY, NOVEMBER 3, 2011

7:00 a.m.	Companion Tour Registration	Rhythm & Blues (H)
10:00 a.m.	Session Coffee Break	Center/West Exhibit Hall (CC)
12:00 p.m.	Exhibit Finale and Refreshments	Center/West Exhibit Hall (CC)
12:00 p.m.	Surface Science Division Mort Traum Awards Ceremony	107 (CC)
12:00 p.m.	Plasma Science and Technology Division Coburn and Winters Award Ceremony	201 (CC)
12:15 p.m.	2012 AVS Program Committee Chairs' Lunch	Fisk I (H)
12:15 p.m.	AVS Business Meeting	111 (CC)
6:00 p.m.	Poster Session and Refreshments	East Exhibit Hall (CC)
6:30 p.m.	2012 Program Committee Reception and Dinner	Belmont III (H)
7:00 p.m.	*Surface Science Spectra* Editorial Board Dinner	Jazz (H)
8:30 a.m.-4:30 p.m.	*Short Course Program*	*Various Rooms (CC)*
10:00 a.m.-2:00 p.m.	*Equipment Exhibition*	*Center/West Exhibit Hall (CC)*

FRIDAY, NOVEMBER 4, 2011

11:00 a.m.	Albert Nerken Award Lecture, J.E. Rowe, North Carolina State Univ.	210 (CC)
8:30 a.m.-4:30 p.m.	*Short Course Program*	*Various Rooms (CC)*

CC = Nashville Convention Center
H = Renaissance Nashville Hotel

October 31 – November 4, 2011
Nashville Convention Center
Nashville, Tennessee

Course Location and Hotel Accommodations

All short courses will be held at the Nashville Convention Center (in conjunction with the AVS 58th International Symposium and Exhibition) located at 601 Commerce St, Nashville, TN. AVS is pleased to offer special rates at two Nashville hotels—the Renaissance Nashville Hotel (HQ-$189 single/double occupancy) and the Courtyard Nashville Downtown ($156 single/double occupancy), plus tax. Housing reservations can be made online at http://www2.avs.org/symposium/AVS58/pages/greetings.html and click on Housing & Travel tab. Reservations must be made no later than October 6, 2011.

Registration Deadline Policy

Complete and return the registration form to enroll. Upon receipt of your registration form and payment, you will receive an e-mail confirmation with specific registration/course details.

- **Early Registration--Important!** To ensure early registration rates please be sure your registration form and payment are received by the AVS office no later than September 30, 2011.
- **Late (or Onsite) Registration-**Following the September 30 early registration deadline, course fees will be marked up $50 per course ($25 per course for students). If you choose to register onsite, it is on a first-come first-served basis. Please check class/space availability, 530-896-0477, heather@avs.org.
- **Cancellations:** If notice of cancellation is received on or before October 14*, 2011*, fees will be fully refunded. After ***October 14***, refunds will be given, less a $100 processing fee. No refunds/course credit for individuals who do not show up for their course(s).

Registration Fee Discounts

(Apply only one discount per registrant)

- **Multi-Course Discount** provides a $300 discount for every three courses taken, by one person, at a specific short course program (i.e., the same location and calendar week). This offer excludes student members.
- **Member's Discount** provides a $75 discount per location offering for current AVS members. This offer excludes student members.
- **Full-time students** may register at a discounted rate of $100/day for any course (student rates for each course are listed on the registration form). Please note, some courses include a supplemental textbook, however, as a student registrant the textbook is not included with your registration.

AVS is not responsible for applying, or being aware that you may qualify for any discount. You may only select one discount option when registering. If you qualify for more than one discount, please select the greater of the two to be applied.

How To Register

- **By WWW:** Complete the online registration form and press "Submit."
- **By Fax/Phone:** Fax your completed registration form to AVS at 530-896-0487. If you prefer to pay by check, you may first confirm your registration, call 530-896-0477.
- **By Mail:** Mail your completed registration form and payment to: AVS, 110 Yellowstone Dr., Ste. 120, Chico, CA 95973 (AVS tax ID# 04-2392373).

You will receive an e-mail confirmation letter with specific registration/course details. To check on the status of your registration, call 530-896-0477, or e-mail heather@avs.org.

Schedule and Class Materials

Courses will begin at 8:30 a.m., finish at 5:00 p.m., and have a 1½ hour lunch break. Students are encouraged to visit the exhibition during lunch and the morning/afternoon breaks. *Lunch is NOT included.*

Attendees may obtain class materials at the short course registration desk during conference registration hours. The short course fee for some of the courses includes the cost of a published, hardcover textbook. Certificates of completion will be given to all students attending the full course.

Dress Code

Casual business attire. However, since room temperatures fluctuate, please bring a light sweater or jacket.

Onsite Courses, Courses by Request and Information Request Forms

Let AVS bring our short courses to you, complete the *Onsite Course Request* form, http://www.avs.org/education.onsite.form.aspx.

Don't see a course you want? Use the online *Courses by Request* form at http://www.avs.org/education.byrequest.aspx to make a suggestion.

If you would like more information or would like to begin receiving notifications on upcoming course offerings in your area, contact AVS, 530-896-0477, or complete the *Information Request* form, http://www.avs.org/education.shortcourse.request.aspx.

AVS Short Course Registration Form

October 31 – November 4, 2011
Nashville Convention Center
Nashville, Tennessee

For each course you wish to attend, please circle the cost listed to the right of the course name. For onsite registration, please add a $50 per course surcharge to your registration total.

Courses	**(Regular/Student)**
Vacuum and Equipment Technology :	
Fundamentals of Vacuum Technology, 10/31–11/3	$1,495/$400
Vacuum System Design, 11/4	$575/$100
Materials and Interface Characterization:	
X-ray Photoelectron Spectroscopy (XPS or ESCA) & Auger Electron Spectroscopy (AES), 11/1 (1-day)	$575/$100
Focused Ion Beams (FIB) and Secondary Ion Mass Spectrometry (SIMS), 11/2 (1-day)	$575/$100
Comprehensive Course on Surface Analysis by XPS or ESCA, AES, FIB & SIMS, 11/1-2 (2-days)	$850/$200
Materials Processing:	
Atomic Layer Deposition, 11/3	$575/$100
Photovoltaics: The Engineering, Technology and Application of Solar Cells, 11/4	$575/$100
Sputter Deposition, 10/31	$675/$100

Subtotal:
2011 AVS member's discount
subtract $75 from the subtotal: _____
Multi-course discount (3 or more courses)
subtract $300 from the subtotal: _____
For onsite registration add $50 per course
($25 per course for students) to your total: _____

Tutorial	**(Regular/Student)**
An Introduction to Energy Storage Technology	$100/$75

Total enclosed: _____

Full time students may register at a discounted rate of $100 per day for any course. Please note, some courses include a supplemental textbook, however, as a student registrant the textbook is not included with your registration

Payment Information:
❑ Check enclosed (payable to AVS, 110 Yellowstone Dr., Ste. 120, Chico, CA 95973—**AVS tax ID# 04-2392373**)

❑ Cash/Travelers Check

Charge My: ❑ MasterCard ❑ VISA ❑ AMEX

Cardholder Name:_____

Card Number:_____

Exp. Date:_____ CCID#:_____

Signature:_____

Registration Information

Name:_____

Title:_____

Company:_____

Address:_____

Mail Stop:_____

City:_____ State:_____ Zip Code:_____

Country:_____ Province:_____

Phone:_____ Fax:_____

E-mail:_____

❑ Check here if you are a full time student (12 or more units)

Advisor Name:_____

Advisor E-mail:_____

An Introduction to Energy Storage Technology Tutorial
Sunday, October 30, 2011, 1:00 – 5:00 p.m.
This tutorial provides an introduction to batteries, fuel cells, and capacitors, with an emphasis on batteries, especially lithium-ion batteries. The tutorial begins with a broad overview of energy storage technology, including markets and applications, and then describes opportunities and technical challenges for the technology. Following this broad overview, a more detailed description of lithium-ion battery technology is provided.

A complete picture of lithium-ion technology, from raw materials to cells to packs and to applications is provided. The product offering of major suppliers is surveyed along with a roadmap for next generation products. The economics of lithium-ion cells is discussed, including a cost breakdown of materials and manufacturing costs. A detailed look at the major components of lithium-ion batteries including active materials, separators and electrolytes is followed by a discussion of manufacturing methods and the principles involved in battery design.

For more information on this tutorial, please visit
http://www.avs.org/education.schedule.aspx

AVS-58 Companion Tours 2011




We have an exciting, full-filled week planned for discovering a new location for AVS, Nashville, TN, for both companions **AND** attendees and exhibitors. Whether you're a civil war buff, a country and western music fan, Jack Daniels connoisseur or you just like touring exciting new places, we have something planned for you.

We're introducing a nighttime tour this year on Tuesday night to The Grand Ole Opry. Nashville is a music lover's town with a creative spirit that has spread from the music venues and recording studios into every aspect of the city. The Grand Ole Opry is the longest running live radio show in the United States. This is a must see for anyone coming to Nashville. The Grand Ole Opry is a part of Americana and the show itself is responsible for launching the careers of almost every well known Country artist throughout the history of Country Music. Tickets to this event are limited so please sign up early.

Historic Nashville….Learn about some of the most historical places to be found in Nashville and Middle Tennessee from old Antebellum Mansions to some of Nashville's favorite historic neighborhoods, buildings and much more. We will be touring several historical places and their surrounding towns where shopping time has been built in since the AVS companions have a knack for finding bargains.

Fall in Tennessee presents sprawling panoramas, boldly colored landscapes, fascinating history and vibrant culture--all woven together through the sights, sounds and stories of people you meet along the way. We will experience the vibrant splendor of Tennessee's brilliant autumn as we travel south to Lynchburg, TN where we will tour the world famous Jack Daniels Distillery and the Walking Horse Museum.

Again this year, we will have a room to gather in every morning, so plan to bring your breakfast and join us even if you are not coming on a tour that day.

I hope you will enjoy the program, and invite your comments and suggestions. I hope to see you in Nashville!

Marilyn Ruzic, Tour Coordinator
companiontours@avs.org

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Marilyn Ruzic will be available in the AVS Registration area in the East Lobby of the Nashville Convention Center from 2 -6 pm on Sunday evening, and in our breakfast area before the start of each tour, and she will be happy to assist with any questions. If Marilyn is not available, please consult the staff at the AVS Registration Manager's counter and they will contact her for you.

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Monday, October 31: Nashville City Tour



8:00 a.m. We will meet in the gathering breakfast room

8:45 a.m. We will be meeting our tour guide in the lobby and boarding our bus.

9:00 a.m. We will be departing for our city tour of Nashville which will include driving by of the following: Bicentennial Mall, Historic Second Avenue, Music Row, Vanderbilt University, The Parthenon, and Historic Downtown, Fort Nashborough. Our tour includes admission into the Historic Ryman Auditorium, known as the "Mother Church of Country Music" and the Country Music Hall of Fame & Museum. This 37 million dollar facility is a beautiful tribute to Country Music and to the city of Nashville.

12:30 p.m. We will have lunch on own in the downtown area

2:00 p.m. We will be departing for the Belle Mead Plantation. The mansion, built in 1853, is the centerpiece of the plantation which was home to 5 generations of the Harding-Jackson family, the original owners of the plantation. In the late 19th century, the farm encompassed 5,400 acres and was one of the largest private estates in Nashville. The farm was a thoroughbred nursery famous for breeding and training championship race horses. Recent Kentucky derby winners like Funny Cide and Barbaro, even racing legends like Secretariat can trace their bloodlines back to the breeding stock at Belle Meade. New at Belle Meade is their winery where we will have a wine tasting.

4:30 p.m. We will return to hotel

PRICE: **$80 by Sept. 25th** **$90 after Sept. 25th**

Tuesday Morning, November 1: Civil War Tour: Battle of Franklin


8:45 a.m. We will be meeting our tour guide in the lobby and boarding the bus

9:00 a.m. We will begin our guided tour of the Carter House, a National Historic Landmark. The modest farmhouse was caught in the middle of the Battle of Franklin on November 30, 1864. The battle was one of the bloodiest battles in the Civil War. The Carter Family and the Lotz Family took refuge in the cellar during the five hour battle. The evidence of the battle remains with over 1,000 bullet holes on site, including the most damaged building from the war. Our tour includes a video presentation, a visit to the museum, and a guided tour of the farmhouse and grounds. After the Cater House, our group will tour the Lotz House, a National

Historic Landmark. The Lotz House was built by Johann Lotz, a master carpenter and a piano maker. The house served as his "show house" to demonstrate his carpentry work for potential clients. The house was at the epicenter of the Battle of Franklin. The home does have several battle scars including the charred rounded indentation in the wood flooring from a cannonball that went through the roof. The house also served as a hospital for the wounded soldiers on both sides.

12:00 p.m. We will have lunch on own and free time in downtown Franklin

2:30 p.m. We will continue our guided tour at the Carnton Plantation, a National Historic Place. The Carnton was home to the John McGavock family and became witness to the Battle of Franklin. During the battle the home was ordered to be a Confederate field hospital by a Southern General. In several rooms heavy blood stains still mar the floors. In 1866, The McGavocks donated land near their home as a final resting place for 1,481 southern soldiers who died in the battle. Today, it is the largest private Confederate Cemetery in the United States. Robert Hicks immortalized these events in best seller "The Widow of the South."

4:30 p.m. We will return to hotel

PRICE: $75 by Sept. 25th $85 after Sept. 25th

Tuesday Afternoon, November 1: Grand Ole Opry


5:45 p.m. We will be meeting in the lobby and boarding our bus.

7:00 p.m. We are going to enjoy a fabulous evening of country music at the legendary Grand Ole Opry!

The Grand Ole Opry is the show that made country music famous. Early Opry performers such as Roy Acuff, Minnie Pearl, Ernest Tubb and Bill Monroe became musical foundations for the Opry during its years in residence at the historic Ryman Auditorium, later welcoming to the stage artists who would become entertainment icons in their own right, including Loretta Lynn, Dolly Parton and Bill Anderson.

The Opry said good-bye to the Ryman Auditorium on Friday night, March 15, 1974. The next night, President Richard Nixon joined Roy Acuff on stage at the Grand Ole Opry House. Still, they could keep in touch with the traditions of the Ryman because an eight-foot circle of hardwood was taken from the Ryman and placed center stage at the Opry House.

Today the magic continues. Trace Adkins, Dierks Bentley, Vince Gill, Martina McBride, Brad Paisley, Ricky Skaggs, Marty Stuart, Mel Tillis and Carrie Underwood are among the stars that are part of the Opry family.

PRICE: $55 by Sept. 25th $65 after Sept. 25th

Wednesday, November 2: The Hermitage Mansion Tour

8:45 a.m. We will be meeting our tour guide in the lobby and boarding the bus

9:00 a.m. We will tour the stately manor of our nation's seventh President, Andrew Jackson. We'll be guided by costumed historical interpreters, weaving tales of Jackson's colorful and controversial life, stories of his family and the slaves who lived and worked there. The tour is highlighted by the complete restoration of the mansion that appears just as Jackson would have seen it in 1837. Also on tour are a film, museum, church, formal garden, Jackson's tomb, and original log cabins.

12:00 p.m. You can enjoy a buffet luncheon at the Hermitage House Smorgasbord for $14 per person **OR** You can have lunch on own in area of town

1:30 pm We will be returning to the hotel

PRICE: $40 by Sept. 25th $50 after Sept. 25th

Thursday, November 3: Lynchburg Tennessee
Jack Daniels Distillery Tour & Tennessee Walking Horse Museum

8:45 a.m. We will be meeting our tour guide in the lobby and boarding the bus

9:00 a.m. The Tennessee countryside comes alive on this tour. We will view the spectacular vistas of Middle Tennessee as we travel from Nashville to the Jack Daniel's Distillery, the oldest registered distillery in the United States located in Lynchburg. Our group will have a guided tour of the distillery where we will learn the history of Jack Daniels and observe the famous whiskey-making process.

After our tour, we will enjoy discovering Lynchburg where the quaint downtown square and 100 year old courthouse provide a perfect setting for antiques shopping, perfect country dining, store browsing, and relaxation. Lunch will be on our own.

After lunch, you can continue exploring Lynchburg or join our group visiting the Tennessee Walking Horse Museum.

The Tennessee Walking Horse Museum is the only institution solely devoted to preserving the history of the Walking Horse. Located on the square in Lynchburg, Tennessee, the museum features exhibits on nearly every aspect of the Tennessee Walking Horse. There are exhibits on the formation of the breed registry, foundation bloodlines, World Grand Champions, Celebration history, Versatility, and care and training. There are also special rotating exhibits focusing on the current World Grand Champion, a featured breeder, and a featured trainer.

3:00 p.m. Depart Lynchburg for Nashville

PRICE: $60 by Sept. 25th $70 after Sept. 25th

Register for Companion Tours online at:
https://www2.avs.org/symposium/AVS58/pages/companion.html

31st Annual AVS Run

. . . the Oldest Professional Society Run in the World!

When: Wednesday, November 2, 2011
Venue: 58th AVS International Symposium
Distance: 5 x 10^{12} nm (5 Km for non-nanos)
Time and Place: 6:15 a.m.–Nashville!
Fee: $25

Our 31st Annual AVS Run, the oldest professional society run on our planet, will be held with our 58th International AVS Symposium in Dolly-esk Nashville, TN. This year's race will take place along a suitable hilly course specially desgined by race-connoisseur Bridget Rogers. The entry fee gives you a run shirt (tastefully designed), race number, refreshments, awards, and some special surprises as usual! The run records are still held by Mike Mantini (who ran this event in an astounding 14:46!) and by Heidi Denton (18:17). The race will be held on Wednesday morning at a time that will allow runners to make the first sessions. The awards ceremony will be held Wednesday noon—at the run-registration area. The CORPORATE RACE and the DIVISIONS AND GROUPS RACE will be highlights again this year. Each team representing a corporate entity (university, unemployed, research organization, stimulus applicant, manufacturer, homeless, etc.) or Division/Group must have 3 team members to qualify. Times are handicapped by age and sex. In the interest of enhancing the already billowing AVS membership, non-AVS members will be time penalized. The CORPORATE CUP is still held by the fast, but now-ageing BATTELLE PNL team—which expects to be challenged more than ever this year—*in Opryland*! The DIVISIONS/GROUPS CUP in San Jose was captured by the VTD (I think)! Details on the AVS Run registration can be accessed through the AVS website (www.AVS.org). You can contact the Race Director if you have questions or suggestions (kaz@nrel.gov). Nashville is a great place to run!

PLEASE REGISTER BY OCTOBER 14 IF POSSIBLE

Sex: M ___ F ___ Age: ___

Name _____
Address _____
_____
Team _____

AVS Member : Yes ___ No ___
Shirt Size: XXL XL L M S
Race and Shirt [$25] ___
Race only, no shirt [$15] ___
Shirt only, no race [$18] ___
No Shirt, no race [$50] ___

In consideration of acceptance of my entry in the 31st Annual AVS Run, I am intending to be legally bound for myself, my heirs, executors, and administrators, do hereby release and discharge any and all sponsors and organizations (including the AVS, the AIP, race directors and volunteers, the City of Nashville and other municipalities, the Parks and Recreation Department, the Nashville Convention Center and organizations associated with it, any Symposium hotels) from any and all liability arising from illness and damages I may suffer as a result of my participation in this event. I understand that entry fees are nonrefundable. I also attest to my physical fitness to participate in this approximately 5-Km run. I agree to allow the AVS to publicize race results, including my participation.

Signature _____

AVS Membership and Publications

Be Part of the AVS Community – Join Us in Advancing the Science & Technology of Materials, Processing, & Interfaces

- Networking
- Career Services
- Training & Professional Development
- Technical Conferences, Meetings, & Exhibits
- Professional & Student Awards
- Leadership Opportunities
- Technical Resources & Online Forums

JVST A:

- Surfaces
- Films
- Vacuum

Full AVS Members receive **FREE subscriptions** to ***JVST A & JVST B*** & a **FREE *SSS*** online subscription

JVST B:

- Nanometer Structures
- Microelectronics
- Processing, Measurement, & Phenomena

Biointer*phases:*

- Open Access
- Quantitative Data on Biological & Soft Matter Interfaces
- Experiments, Modeling, Theory, & Applications

Surface Science Spectra (SSS):

- Reference Spectra & Database for Individuals or Analytical Laboratories
- Technological Materials

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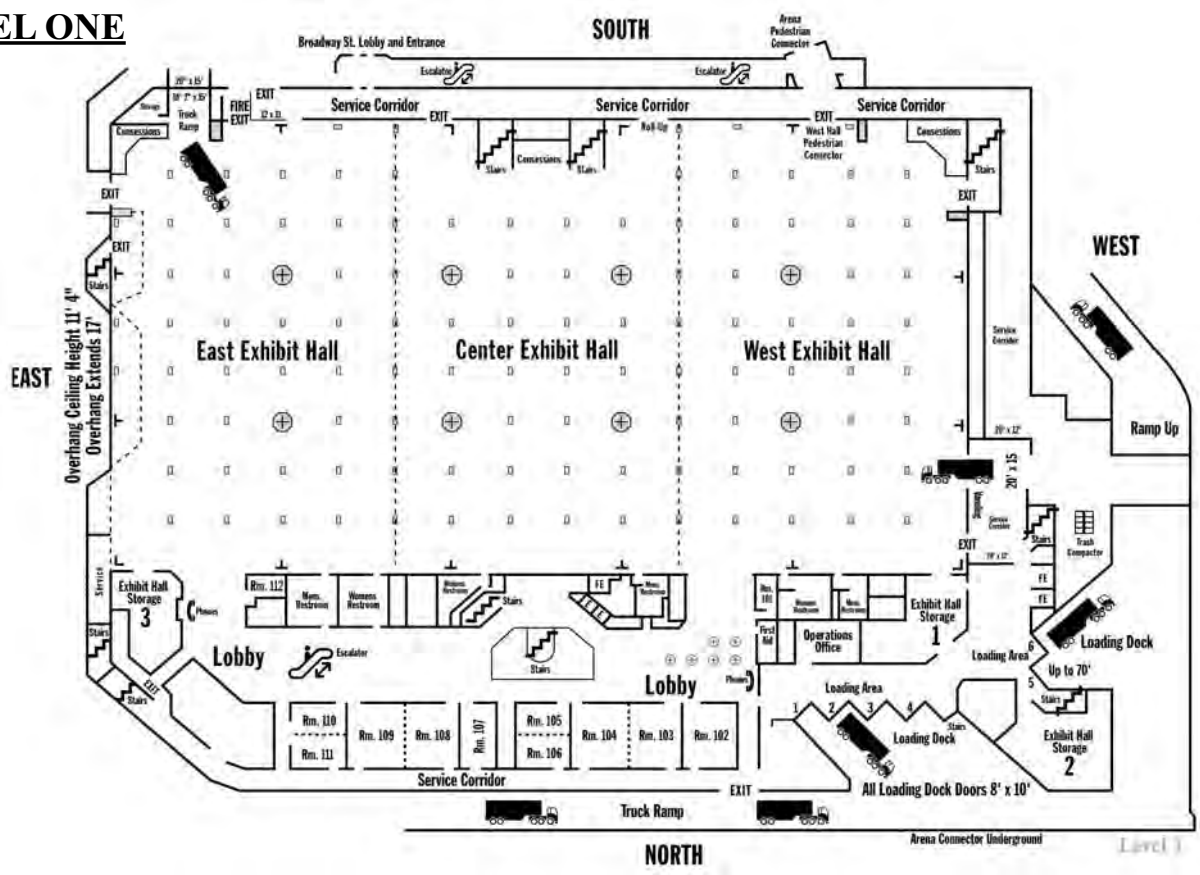
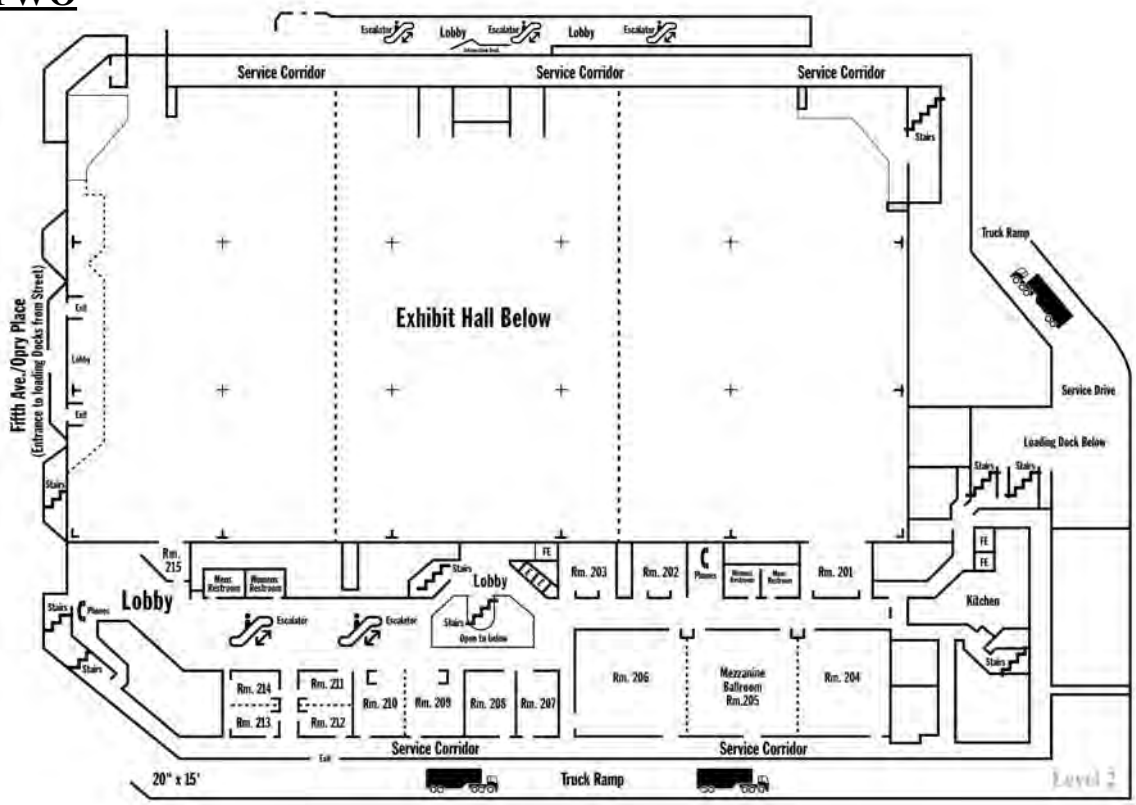
For more details visit us online at www.avs.org

NASHVILLE CONVENTION CENTER

LEVEL ONE



LEVEL TWO



Technical Sessions
Key to Session/Paper Numbers

AC Actinides and Rare Earths Focus Topic
AS Applied Surface Science
BI Biomaterial Interfaces
BN Biofabrication and Novel Devices Focus Topic
BP Biomaterials Plenary Session
EL Spectroscopic Ellipsometry Focus Topic
EM Electronic Materials and Processing
EN Energy Frontiers Focus Topic
ET Electron Transport in Low Dimensional Materials Focus Topic
EW Exhibitor Technology Spotlight
GR Graphene and Related Materials Focus Topic
HI Helium Ion Microscopy Focus Topic
IS In Situ Spectroscopy and Microscopy Focus Topic
MB Marine Biofouling Focus Topic
MI Magnetic Interfaces and Nanostructures
MN MEMS and NEMS
NM Nanomanufacturing Science and Technology Focus Topic
NS Nanometer-scale Science and Technology
NT Neutron Scattering Focus Topic
PS Plasma Science and Technology
SE Advanced Surface Engineering
SS Surface Science
TC Transparent Conductors and Printable Electronics Focus Topic
TF Thin Film
TR Tribology Focus Topic
VT Vacuum Technology

Sessions sponsored by two divisions are labeled with both acronyms (e.g. **EM+SS**),
then: a number to indicate parallel sessions sponsored by the same division (e.g. **SS1, SS2**),
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: **M**orning, **A**fternoon, **L**unch, **P**oster,
then: a number to indicate the time slot scheduled for each paper.
Example: SS1-MoM9 (Surface Science, Monday morning, 11:00 am).

Room/ Day	102	103	104	105	106	107	108	109	110
SuA							**BP** Challenges in Biomaterials Analysis		
MoM	**AS** Quantitative Surface Chemical Analysis & Technique Development - Part I	**EN+PS** Plasmas for Photovoltaics & Energy Applications	**EN** Industrial Physics Forum on Energy I	**MB** Interfacial Aspects of Marine Biofouling	**IS+AS+SS** In Situ Studies of Catalysis and Gas-Solid Reactions	**TF** Thin Films: Growth and Characterization I	**BI** Biomolecules at Interfaces	**SS1** Water Films & Environmental Interfaces	**SS2** Surface Chemical Dynamics
MoA	**AS** Quantitative Surface Chemical Analysis & Technique Development - Part II	**EN+EM+NS** Nanostructured Materials for Third Generation Solar Cells	**EN** Industrial Physics Forum on Energy II	**MB+BI+PS** Marine Antifouling Coatings	**IS+AS+SS** In Situ Characterization of Solids: Film Growth, Defects, and Interfaces	**TF** Emerging ALD Applications	**BI** Sensors and Fluidics for Biomedical Applications	**SS1** Selectivity and Reactivity of Chemisorbed Species	**SS2** Molecular Ordering and Electrochemical Interfaces
TuM	**AS** Imaging and 3D Chemical Analysis	**EN+NS** Ultrafast Charge and Energy Transfer in Nanomaterials	**TF+SE** Glancing Angle Deposition (GLAD) I	**BN+NM** Biofabrication Applications	**IS+AS+SS** In Situ Studies of Organic and Soft Materials and Liquid-Solid Interfaces	**TF+EN** ALD for Energy	**EN** Industrial Physics Forum on Energy III	**SS1** Chemisorption & Surface Reactions	**SS2** Self Assembled Monolayers and Networks
TuL									
TuA	**AS** Imaging and 3D Chemical Analysis - Part II	**EN+NS** Nanostructured Matls for Thermo-photovoltaics, Thermoelectrics & Plasmonics	**SE+TF** Glancing Angle Deposition (GLAD) II	**BI** Protein-Membrane Interactions **BN** Biofabrication Methods and Devices	**HI+AS** Basics of Helium Ion Microscopy	**TF** ALD: Fundamental Reactions and Film Properties	**EN+TF** Thin Films for Solar Cells	**SS** Catalysis on Metals and Alloys	**SS+EM** Organic Electronic Interfaces
TuP									
WeM	**AS+BI+NS** Advances in Scanning Probe Microscopy	**EN+EM+NS** Quantum Dot and Nanowire Solar Cells	**SE+SS** Surface Engineering for Thermal Management	**MI** Fundamental Problems in Magnetism	**HI+AS+BI+NS** Nano- and Bio-Imaging with Helium Ion Microscopy	**SS1** Atomistic Control of Structure & Evolution	**BI** Cells at Interfaces	**SS2** Chemisorption on Metal & Oxide Nanoparticles	**TF1+EM** ALD/MLD: Hybrid Organic Films
WeL									
WeA	**AS** Correlative Analysis - A Multi-technique Approach for Identification & Structure-Property Relationships	**EN1+TF** Thin Film Chalcogenide Solar Cells (CIGS, CZTS, CdTe and Related Materials)	**SE+PS** Atmospheric Pressure Plasmas	**MI** Spintronics, Magnetoelectronics, Multiferroics, and Dilute Magnetic Semiconductor Applications	**EN2+TF** Thin Films for Solar Fuels	**SS** Adsorption & Reactions on Oxide Surfaces	**BI+AS+NS+SS** Functionalization and Characterization of Nanostructures	**TF1+EM** Nonvolatile Memory	**TF2+EM** Nanostructuring Thin Films
ThM	**AS** Analysis of Insulators and Challenging Samples	**EN+NS** Nanostructures for Energy Storage and Fuel Cells I	**SE** Nanostructured Thin Films and Coatings	**MI** Emerging Magnetic Characterization and Results	**TC+AS+EM** Transparent / Printable Electronics Part 1	**SS** Oxide Surface Structure & Reactivity	**BI** Biomedical Materials	**TF1** Post-Deposition Processing and Characterization of Thin Films	**TF2** Modeling and Analysis of Thin Films
ThA	**EN+MS+VT** Photovoltaics Manufacturing	**EN+NS** Nanostructures for Energy Storage and Fuel Cells II	**SE+PS** Pulsed Plasmas in Surface Engineering	**MN** Multi-scale Interactions of Materials and Fabrication at the Micro- and Nano-scale	**TC+EM+NS** Transparent / Printable Electronics Part 2	**SS** Semiconducting & Ferroelectric Surface			**TF+EM+SS** Applications of Self Assembled Monolayers
ThP									
FrM				MN Characterization of Materials and Structures at the Micro- and Nano-scale		**SS** Surface Science on Graphene			**TF** Thin Films: Growth and Characterization II

at a Glance

111	201	202	203	207	208	209	210	East Exhibit Hall / West Exhibit Hall
VT Vacuum Measurement, Calibration & Primary Standards, Gas Flow and Permeation	**PS** Advanced FEOL / Gate Etching I		**NS+EM** Nanowires and Nanoparticles I: Assembly and Devices	**NM+MS+NS+TF** ALD for Nanomanufacturing	**GR** Graphene Growth	**ET+EM+SS** Quantum Transport: From 0- to 2-Dimensions	**EM** Dielectrics for Novel Devices and Process Integration	
VT Optical and Mass Spectroscopy for Gas Analysis and Pump Modeling	**PS+SE** Advanced FEOL / Gate Etching II	**PS+BI** Multiphase (Liquid, Solid, Gas) and Biological Related Plasmas	**NS** Frontiers in Nanophotonics and Plasmonics	**NM+MS** Challenges Facing Nanomanufacturing (All Invited Session)	**GR+TF+ET** Graphene: Electronic Properties and Charge Transport	**EM1** Group III-Nitrides and Hybrid Devices	**EM2** Dielectrics for Ultra Dense Memory Devices	
VT Accelerator and Large Vacuum System Design, Outgassing and Pumping	**PS** Advanced BEOL / Interconnect Etching I	**PS+MN+TF** Plasma Processing for Disruptive Technologies	**NS** Nanowires and Nanoparticles II: Characterization and Synthesis	**NM+MN+MS+TF** Lithography Strategies for Nanomanufacturing	**GR+EM** Graphene: Optical Properties, Optoelectonics and Photonics	**ET+EM+NS+GR** Electron Behaviors in Nanoelectronics, Interconnect, and Carbon-based Materials	**EM+TF** High-k Dielectrics for MOSFETs Part 1	**EW** Exhibitor Technology Spotlight **(West Exhibit Hall)**
								EW Exhibitor Technology Spotlight **(West Exhibit Hall)**
VT+MN+NS+SS+AS Surface Science for Future Electronic Materials and Accelerator Applications	**PS2** Plasma Diagnostics, Sensors and Control I	**PS1** Advanced BEOL / Interconnect Etching II	**NS+AS** Frontiers in Nanoscale Imaging and Characterization	**NM+NS+MS** Manufacturable Nanoscale Devices and Processes	**GR+MI** Graphene: Magnetic Properties and Spin-Dependent Phenomena	**GR** Graphene on Dielectrics, Graphene Transfer to Novel Substrates	**EM** High-k Dielectrics for MOSFETs Part 2	
								POSTER SESSIONS (AS, BN, GR, HI, IS, NM, NS, NT, SE, SS, TF, VT)
NM+AS+MS Nanomanufacturing Issues: Metrology and Environmental Concerns	**PS+SE** Atmospheric Plasma Processing and Micro Plasmas	**PS+SS** Plasma Surface Interactions (Fundamentals & Applications) I	**NS** Carbon-Based Nanomaterials	**NT+AS+MI** Applications of Neutron Scattering I	**GR+MN** Graphene: Mechanical and Thermal Properties, Graphene MEMS and NEMS	**EN+NS** Organic Photovoltaics	**EM** Low-k Materials and Devices	**EW** Exhibitor Technology Spotlight **(West Exhibit Hall)**
								EW Exhibitor Technology Spotlight **(West Exhibit Hall)**
TR Emerging Interfaces of Tribological Importance	**PS** Plasma Sources	**PS+EM** Low-K Materials & Integration		**NT+AS** Applications of Neutron Scattering II	**GR** Graphene Characterization including Microscopy and Spectroscopy	**AC+MI** Magnetic and Electron Correlation Effects in Actinides and Rare Earths	**EM** Defects in Electronic Materials	
TR+AS+SS Atomic-scale Characterization of Tribological Interfaces	**PS** Neutral Beam and Low Damage Processing	**PS+TF** Plasma Deposition and Plasma Enhanced ALD	**NS** Molecular Assembly and Devices	**AC+SS** The Surface Science of Actinides and Rare Earths	**GR+NS+PS+SS** Graphene: Surface Chemistry, Functionalization, Plasma Processing and Sensor Applications	**EL+AS+EM+MS +PS+TF** Spectroscopic Ellipsometry of Biological Materials and Organic Films	**EM+TF** Hybrid Electronic Materials and Interfaces	
TR Advanced Tribological Materials	**PS** Plasma Diagnostics, Sensors and Control II	**PS+SS** Plasma Surface Interactions (Fundamentals & Applications) II	**NS** Biological Nanomaterials	**AC+TF** The Structure, Properties and Chemistry of Thin Films of Actinides and Rare Earths	**GR+TF+NS** Graphene Nanoribbons and Related Structures	**EL+AS+EM+MS +PS+TF** Spectroscopic Ellipsometry for Photovoltaics, Metals & Oxide Thin Films		
								POSTER SESSIONS (BI, EL, EM, EN, MI , PS, TC, TR)
	PS Plasma Modeling		**EN+AC** Materials Challenges for Nuclear Energy		**GR+MS+EM** Graphene Device Physics and Applications	**EL+AS+EM+MS +PS+TF** Spectroscopic Ellipsometry: Future Directions and New Techniques	**EM+SS** Surfaces and Materials for Next Generation Electronics	

SUNDAY SPECIAL EVENTS

8:30 a.m. AVS Board of Director's Meeting—Ryman I & II (H)
12:00 p.m. AVS Board of Director's Lunch—Belmont I (H)
1:00 p.m. Tutorial: An Introduction to Energy Storage Technology—109 (CC)
2:00 p.m. ASTM Workshop-Panel Discussion: "Establishing Best Analytical Practice"—Fisk (H)
2:00 p.m. Companion Tour Registration—Level 1 Lobby (CC)
3:00 p.m. AIP Corporate Associates Advisory Committee Meeting—Gospel (H)
3:00 p.m. History Committee Meeting—Belmont I (H)
3:00 p.m. Biomaterials Plenary Session and Reception—108 (CC)
4:30 p.m. ASTM E-42 Committee and Subcommittee Business Meetings—Fisk (H)
- E-42.02 Terminology—Fisk (H)
- E-42.03 AES/XPS—Fisk (H)
- E-42.06 SIMS—Fisk (H)
- E-42.08 Ion Beam Sputtering—Fisk (H)
- E-42.13 Vacuum Technology—Fisk (H)
- E-42.14 STM/AFM—Fisk (H)
- E-42.15 Electron Probe Microanalysis/Electron Microscopy—Fisk (H)
- E-42.92 US TAG ISO TC201—Fisk (H)
- E-42.94 US TAG ISO TC112—Fisk (H)
- E-42.96 US TAG ISO TC202—Fisk (H)
- E-42.90 Executive Committee—Fisk (H)

6:00 p.m. Science Educators' Workshop Teachers' Reception—Jazz (H)
6:00 p.m. Vacuum Technology Division Executive Committee Meeting and Dinner—Belmont I (H)
7:00 p.m. Short Course Committee Meeting—Gospel (H)
7:00 p.m. International Dignitaries Reception (Invitation Only)—Presidential Suite (H)

CC = Nashville Convention Center
H = Renaissance Nashville Hotel

NOTES

Biomaterials Plenary Session
Room: 108 - Session BP-SuA

Challenges in Biomaterials Analysis
Moderator: L. Gamble, University of Washington

3:00 pm	BP-SuA1 Invited Wants, Needs, and Challenges in Biomedical Surface Analysis, D.G. CASTNER, University of Washington	
3:20 pm	Invited talk continued.	
3:40 pm	BP-SuA3 Invited Depth Profiling and 3D Analysis of Organic Surfaces, A.G. SHARD, National Physical Laboratory, UK	
4:00 pm	Invited talk continued.	
4:20 pm	BP-SuA5 Invited Nanoscale Surface Analysis of Living Cells using Atomic Force Microscopy, Y.F. DUFRENE, Université catholique de Louvain, Belgium	
4:40 pm	Invited talk continued.	
5:00 pm	BP-SuA7 Invited AVS 2011 Biointerphases Lecture - Tissue Engineering and Surface Science: 2D to 3D, Dry to Wet, Dead to Living and the Challenges to the Instrumentation, B.D. RATNER*, University of Washington Engineered Biomaterials	
5:20 pm	Invited talk continued.	

* AVS 2011 Biointerphases Lecture

Anticipated Schedule
Sunday Morning, October 30, 2011

TIME	SESSION	ROOM
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		

Lunch

when _____

with _____

where _____

Anticipated Schedule
Sunday Afternoon, October 30, 2011

TIME	SESSION	ROOM
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		

MONDAY SPECIAL EVENTS

7:00 a.m.	Companion Tour Registration—Rythm & Blues (H)
8:00 a.m.	Science Educators' Workshop—Ryman I & II (H)
10:20 a.m.	Vacuum Technology Division Business Meeting—111 (C)
12:00 p.m.	Plenary Lecture, Thomas E. Mason, Director Oakridge National Lab, "Scientific Discovery and Innovation for the Energy Challenge "—204-206 (CC)
12:00 p.m.	Science Educators' Workshop Lunch—Bluegrass (H)
1:00 p.m.	2012 AVS Program Committee Meeting and Lunch—Rhythm & Blues (H)
1:15 p.m.	Professional Development Seminar: *JVST* Writer's Workshop—Belmont Ballroom (H)
5:30 p.m.	Welcome Mixer—Grand Ballroom West (H)
7:00 p.m.	Applied Surface Science Division Executive Committee Dinner—Gospel (H)
7:00 p.m.	Professional Development Seminar: Federal Funding & Research Opportunities Town Hall—Belmont Ballroom (H)
7:15 p.m.	Publications Committee Meeting and Dinner—TBD (Offsite)

CC = Nashville Convention Center
H = Renaissance Nashville Hotel

MONDAY SHORT COURSES

8:30 a.m.	Fundamentals of Vacuum Technology
8:30 a.m.	Sputter Deposition

LOCATION: All AVS Short Courses will be held at – Nashville Convention Center
COURSE HOURS: All AVS Short Course Hours: 8:30 a.m. – 5:00 p.m. – with 1.5 hour break for Lunch (Lunch not included)

	Applied Surface Science Room: 102 - Session AS-MoM Quantitative Surface Chemical Analysis and Technique Development - Part I Moderator: I.S. Gilmore, National Physical Laboratory, UK	Biomaterial Interfaces Room: 108 - Session BI-MoM Biomolecules at Interfaces Moderator: A. Rosenhahn, Karlsruhe Institute of Technology, Germany
8:20 am	AS-MoM1 Invited Characterization of Nano-structures from Analysis of the XPS Background: Automation and 3D-imaging, S. TOUGAARD, University of Southern Denmark	BI-MoM1 Invited Cell Instructive Biomaterials by Non-Equilibrium Self-Assembly, R.V. ULJIN, V. JAYAWARNA, S. ROY, M.J. DALBY, The University of Strathclyde, UK
8:40 am	Invited talk continued.	Invited talk continued.
9:00 am	AS-MoM3 Characterization of Model Gradient Inorganic Thin Films with XPS Spectral Modeling, L. LOHSTRETER, Medtronic, Inc, R. SANDERSON, J. DAHN, Dalhousie University, Canada	BI-MoM3 Lipid Vesicle Fusion for Studies of Cell Functions, L. SIMONSSON, A. GUNNARSSON, M. KURCZY, P. JÖNSSON, AS. CANS, F. HÖÖK, Chalmers University of Technology, Sweden
9:20 am	AS-MoM4 Corrections for Backscattering Effects in Quantitative Auger Analyses, A. JABLONSKI, Polish Academy of Sciences, Poland, C.J. POWELL, National Institute of Standards and Technology	BI-MoM4 Watching Biomineralization at Work: The Specific Interactions of Statherin with Hydroxyapatite Surfaces Probed at the Molecular Level, T. WEIDNER, M. DUBEY, K. LI, J. ASH, J.E. BAIO, University of Washington, C. JAYE, D.A. FISCHER, National Institute of Standards and Technology, G.P. DROBNY, D.G. CASTNER, University of Washington
9:40 am	AS-MoM5 Effect of Monochromator X-ray Bragg Reflection on Photoelectric Cross Section, A. HERRERA-GOMEZ, CINVESTAV-Unidad Queretaro, Mexico	BI-MoM5 ECM Ordering Effects as a Marker for Early Tissue Formation on Artificial Substrates - A Sum-Frequency-Generation Spectroscopy Study, M.-O. DIESNER, P. KOELSCH, Karlsruhe Institute of Technology (KIT), University of Heidelberg, Germany
10:00 am	AS-MoM6 An XPS Investigation of CdS Based Photoresistor During Operation, S. SUZER, H. SEZEN, Bilkent University, Turkey	BI-MoM6 Structure and Function of von Willebrand Factor on Synthetic Surfaces and Collagen, E. HILLENMEYER, O. YAKOVENKO, R. PENKALA, W. THOMAS, D.G. CASTNER, University of Washington
10:20 am	BREAK	BREAK
10:40 am	AS-MoM8 Coronene Ion Bombardment Effects in the Quantitative Analysis of Polymeric Materials by XPS, G.E. HAMMER, L.J. GAMBLE, D.G. CASTNER, University of Washington	BI-MoM8 ToF-SIMS Study of Orientation of $FnIII_{9-10}$ Fibronectin Fragment on Self-Assembled Monolayers, L. ÁRNADÓTTIR, L.J. GAMBLE, University of Washington
11:00 am	AS-MoM9 Using A C60 Ion Source For Routine Surface Chemical Analyses, W. STICKLE, M.D. JOHNSON, D.K. BILICH, HP ADL Corvallis, C. KNUTSON, W. WANG, W. COWELL, Oregon State University	BI-MoM9 Single Protein Manipulation with STM, S. KHAN, K. CLARK, C. HENNEKEN, E. RAUH, S.-W. HLA, Ohio University
11:20 am	AS-MoM10 Large Area Quantitative XPS Imaging for Small Feature Compositional Screening, S.J. COULTAS, C.J. BLOMFIELD, S.J. HUTTON, A.J. ROBERTS, Kratos Analytical Ltd, UK, D.J. SURMAN, Kratos Analytical Inc.	BI-MoM10 DNA Origami from Inkjet Synthesis Produced Strands, I. SAAEM, A. MARCHI, J. TIAN, T. LABEAN, Duke University
11:40 am	AS-MoM11 A New Type of Detector for Dynamic XPS Measurements, K. WINKLER, P. BAUMANN, B. KROEMKER, G. PRUEMPER, A. FELTZ, Omicron NanoTechnology, Taunusstein, Germany	BI-MoM11 Solid State Electron Transport across Proteins, D. CAHEN, M. SHEVES, I. PECHT, L. SEPUNARU, Weizmann Institute of Science, Israel

	Electronic Materials and Processing Room: 210 - Session EM-MoM Dielectrics for Novel Devices and Process Integration Moderator: S. King, Intel Corporation	Energy Frontiers Focus Topic Room: 103 - Session EN+PS-MoM Plasmas for Photovoltaics & Energy Applications Moderator: S. Agarwal, Colorado School of Mines
8:20 am	EM-MoM1 Surface Cleaning and Monolayer Seeding for ALD of High-k Studied by In Situ STM, STS, and XPS, W. MELITZ, T. KENT, J. SHEN, A.C. KUMMEL, University of California San Diego	EN+PS-MoM1 Invited Plasma Energy R&D at National Fusion Research Institute (NFRI): Fusion Energy, Silicon Quantum Dot Solar Cell, and Plasma-Enhanced Coal Gasification, S.J. YOO, National Fusion Research Institute, Republic of Korea
8:40 am	EM-MoM2 Selective Area Regrowth of Self-Aligned, Low-Resistance Ohmic Contacts on InGaAs, J.J.M. LAW, A.D. CARTER, G.B. BUREK, B. THIBEAULT, M.J.W. RODWELL, A.C. GOSSARD, University of California, Santa Barbara	Invited talk continued.
9:00 am	EM-MoM3 Invited Boron Nitride Development and New Applications for sub-20nm Device Fabrication, M. BALSEANU, L.Q. XIA, V. NGUYEN, M. NAIK, D. CUI, K. ZHOU, J. PENDER, B. MEBARKI, Applied Materials, Inc.	EN+PS-MoM3 Synthetic Fuel Processing through Plasma-Assisted CO_2 Conversion, S. WELZEL, S. PONDURI, F. BREHMER, M. CREATORE, M.C.M. VAN DE SANDEN, R. ENGELN, Eindhoven University of Technology, Netherlands
9:20 am	Invited talk continued.	EN+PS-MoM4 Effective Light Trapping for Crystalline Silicon Solar Cells by Plasma Texturing, F.M.M. SOUREN, Eindhoven University of Technology, Netherlands, J. RENTSCH, Fraunhofer Institute for Solar Energy Systems (ISE), Germany, M.C.M. VAN DE SANDEN, Eindhoven University of Technology, Netherlands
9:40 am	EM-MoM5 Invited Novel Organosilicate Polymers for Ultralow-Dielectric Films with High Modulus, Low CTE, and Closed-Pore Morphology, D.Y. YOON, J.H. SIM, Seoul National University, Korea, M. LIU, University of Michigan, H.W. RO, C.L. SOLES, National Institute of Standards and Technology, D.W. GIDLEY, University of Michigan	EN+PS-MoM5 RF-PECVD Processes Excited by Asymmetric Voltage Waveforms, P.-A. DELATTRE, S. POULIQUEN, Laboratoire de Physique des Plasmas, France, E.V. JOHNSON, Laboratory of Physics of Interfaces and Thin Films, France, J.-P. BOOTH, Laboratoire de Physique des Plasmas, France
10:00 am	Invited talk continued.	EN+PS-MoM6 Spontaneous and High Rate Synthesis of Nanocrystalline Silicon by Expanding Thermal Plasma, İ. DOĞAN, NJ. KRAMER, M.A. VERHEIJEN, Eindhoven University of Technology, Netherlands, K. DOHNALOVA, T. GREGORKIEWICZ, University of Amsterdam, Netherlands, M.C.M. VAN DE SANDEN, Eindhoven University of Technology, Netherlands
10:20 am	BREAK	BREAK
10:40 am	EM-MoM8 Invited Interface Traps and Low Subthreshold Swing in III-V Tunnel FETs, A. SEABAUGH, S.-D. CHAE, P. FAY, W.-S. HWANG, T. KOSEL, R. LI, Q. LIU, Y. LU, T. VASEN, M. WISTEY, H. XING, G. ZHOU, Q. ZHANG, University of Notre Dame, R.M. WALLACE, University of Texas at Dallas	EN+PS-MoM8 SiH_4 and SiF_4 Dissociation in Matrix Distributed ECR Sources, and Potential for High Deposition Rate of Thin Film Silicon Alloys, S. KASOUIT, Total S.A, France, P. BULKIN, P. ROCA I CABARROCAS, LPICM, France
11:00 am	Invited talk continued.	EN+PS-MoM9 The Effects of Showerhead Hole Structure on the Deposition of uc-Si:H Thin Films by VHF PECVD, S.-S. WI, Y.-G. KIM, H.-J. LEE, Pusan National University, Republic of Korea, D. KIM, D. HWANG, W.S. CHANG, LG Electronics, Republic of Korea
11:20 am	EM-MoM10 Invited Impact of Vertical Structured Devices for Future Nano LSI, T. ENDOH, Tohoku University, Japan	EN+PS-MoM10 Invited Plasma-Enhanced CVD and ALD Prepared Nanolayers for High-Efficiency Solar Cell Manufacturing, W.M.M. KESSELS, Eindhoven University of Technology, the Netherlands
11:40 am	Invited talk continued.	Invited talk continued.

	Energy Frontiers Focus Topic Room: 104 - Session EN-MoM Industrial Physics Forum on Energy I Moderators: R.A. Sears, Massachusetts Institute of Technology, B. Clark, Schlumberger	Electron Transport in Low Dimensional Materials Focus Topic Room: 209 - Session ET+EM+SS-MoM Quantum Transport: From 0- to 2-Dimensions Moderators: A.-P. Li, Oak Ridge National Laboratory, K. Varga, Vanderbilt University
8:20 am	EN-MoM1 Invited Energy Security and Energy Policy, W.W. HOGAN, Harvard University	ET+EM+SS-MoM1 Invited Charge and Spin Transports at Surfaces of Strong Spin-Orbit-Coupling Materials, S. HASEGAWA, T. HIRAHARA, University of Tokyo, Japan
8:40 am	Invited talk continued.	Invited talk continued.
9:00 am	EN-MoM3 Invited Technology Innovation and China's Skyrocketing Demand for Energy, E. STEINFELD, Massachusetts Institute of Technology	ET+EM+SS-MoM3 Invited Electron Transport in Ferroelectric Domains and Walls, A. BADDORF, Oak Ridge National Laboratory
9:20 am	Invited talk continued.	Invited talk continued.
9:40 am	EN-MoM5 Invited Making Energy Sustainable – Scientific Challenges in Determining the Pathways to the Future, E.D. WILLIAMS, BP plc, UK	ET+EM+SS-MoM5 Invited Electronic Instabilities, Fluctuations, and Transport in Epitaxial Nanowires, H.H. WEITERING, University of Tennessee and Oak Ridge National Laboratory
10:00 am	Invited talk continued.	Invited talk continued.
10:20 am	BREAK	BREAK
10:40 am	EN-MoM8 Invited Synthetic Biology for Energy and the Environment, A.A.N. PATRINOS, Synthetic Genomics (SGI)	ET+EM+SS-MoM8 Invited Grain Boundary Resistivity in Copper Nanowires, T.H. KIM, POSTECH, South Korea
11:00 am	Invited talk continued.	Invited talk continued.
11:20 am	EN-MoM10 Invited Manufacturing Innovations for a Sustainable Energy Future, R. CASTRO, O. NALAMASU, Applied Materials, Inc.	ET+EM+SS-MoM10 Tunable Coulomb Blockade and Giant Coulomb Blockade Magnetoresistance in a Double Quantum Dot System, X.-G. ZHANG, Oak Ridge National Laboratory, T. XIANG, Chinese Academy of Sciences
11:40 am	Invited talk continued.	ET+EM+SS-MoM11 Quantum Transport in Crossbar Devices, B. COOK, P. DIGNARD, K. VARGA, Vanderbilt University

	Graphene and Related Materials Focus Topic Room: 208 - Session GR-MoM Graphene Growth Moderator: M. Spencer, Cornell University	In Situ Spectroscopy and Microscopy Focus Topic Room: 106 - Session IS+AS+SS-MoM In Situ Studies of Catalysis and Gas-Solid Reactions Moderator: G. Rijnders, University of Twente, the Netherlands
8:20 am	GR-MoM1 Invited Atomic Layer Growth of Graphene, L. COLOMBO, Texas Instruments Incorporated, C. MAGNUSON, Y. HAO, X. LI, R.S. RUOFF, University of Texas at Austin	IS+AS+SS-MoM1 Invited In Situ X-ray Studies of Model and Real Catalysts: Bridging the Complexity Gap, A.I. FRENKEL, Yeshiva University
8:40 am	Invited talk continued.	Invited talk continued.
9:00 am	GR-MoM3 Graphene on Ni(111): Growth and Defects, M. BATZILL, University of South Florida, J. LAHIRI, Brookhaven National Laboratory, I.I. OLEYNIK, L. ADAMSKA, University of South Florida	IS+AS+SS-MoM3 Communicating Nanostructures: Spillover Processes Studied on Ceria-supported Platinum Nanoparticles, M. HAPPEL, Friedrich-Alexander-Univ. , Germany, Y. LYKHACH, T. STAUDT, Friedrich-Alexander-Univ., Germany, N. TSUD, Charles Univ., Czech Republic, T. SKÁLA, K.C. PRINCE, Sincrotrone Trieste, Italy, V. MATOLÍN, Charles Univ., Czech Republic, A. MIGANI, Univ. de Barcelona, Spain, G.P. PETROVA, Univ. of Sofia, Bulgaria, A. BRUIX, F. ILLAS, K.M. NEYMAN, Univ. de Barcelona, Spain, G.N. VAYSSILOV, Univ. of Sofia, Bulgaria, J. LIBUDA, Friedrich-Alexander-Univ. Erlangen-Nuremberg, Germany
9:20 am	GR-MoM4 Investigating Graphene Nucleation on C-Face SiC via Electron Channeling Contrast Imaging and Raman Mapping, J.K. HITE, J.D. CALDWELL, J.L. TEDESCO, R.L. MYERS-WARD, C.R. EDDY, JR., D.K. GASKILL, U.S. Naval Research Laboratory	IS+AS+SS-MoM4 HPXPS Study of the Oxidation of 10 nm PdAg Nanoparticles, S. BLOMBERG, J. GUSTAFSON, N.M. MARTIN, M.E. MESSING, K. DEPPERT, J.N. ANDERSEN, Lund University, Sweden, L.E. WALLE, A. BORG, Norwegian University of Science and Technology, Norway, H. GRÖNBECK, Chalmers University of Technology, Sweden, M.E. GRASS, Z. LIU, Lawrence Berkeley National Laboratory, E. LUNDGREN, Lund University, Sweden
9:40 am	GR-MoM5 Graphene Band Engineering on One-Dimensionally-Modulated SiC Substrate, K. NAKATSUJI, T. YOSHIMURA, University of Tokyo, Japan, K. MORITA, S. TANAKA, Kyushu University, Japan, F. KOMORI, University of Tokyo, Japan	IS+AS+SS-MoM5 New Assignment for Ag(III) from *In Situ* XPS of Highly Oxidized Silver Films, T.C. KASPAR, T. DROUBAY, S.A. CHAMBERS, Pacific Northwest National Laboratory, P.S. BAGUS, University of North Texas
10:00 am	GR-MoM6 Graphene Growth on Au(111), J. WOFFORD, University of California at Berkeley and Lawrence Berkeley National Laboratory, E. STARODUB, N.C. BARTELT, K. MCCARTY, Sandia National Laboratories, O. DUBON, University of California at Berkeley and Lawrence Berkeley National Laboratory	IS+AS+SS-MoM6 The Oxidation of Methane Over Pd, A. HELLMAN, Chalmers Univ. of Tech., Sweden, A. RESTA, European Synch. Rad. Fac., France, J. GUSTAFSON, N.M. MARTIN, Lund Univ., Sweden, A. TRINCHERO, P.-A. CARLSSON, Chalmers Univ. of Tech., Sweden, O. BALMES, European Synch. Rad. Fac., France, J.N. ANDERSEN, Lund Univ., Sweden, R. FEICI, European Synch. Rad. Fac., France, E. LUNDGREN, Lund Univ., Sweden, H. GRÖNBECK, Chalmers Univ. of Tech., Sweden
10:20 am	BREAK	BREAK
10:40 am	GR-MoM8 Synthesizing Pristine Epitaxial Graphene and its Impact on Electronic Properties, V.D. WHEELER, G.G. JERNIGAN, N.Y. GARCES, L.O. NYAKITI, R.L. MYERS-WARD, C.R. EDDY, JR., D.K. GASKILL, U.S. Naval Research Laboratory	IS+AS+SS-MoM8 New In-house (Using Al Kα) Ambient Pressure XPS and High Pressure STM and Their Applications to Nanocatalysis, F. TAO, University of Notre Dame
11:00 am	GR-MoM9 Growth and Characterization of Graphene Films on Cu(111), Z.R. ROBINSON, P. TYAGI, H. GEISLER, C.A. VENTRICE, JR., University at Albany, H. YANG, T. VALLA, Brookhaven National Laboratory, A.A. BOL, J.B. HANNON, IBM T.J. Watson Research Center	IS+AS+SS-MoM9 The New Ambient Pressure X-ray Photoelectron Spectroscopy Instrument at MAX-lab - An Instrument also for Ultrahigh Vacuum Studies, J. SCHNADT, J. KNUDSEN, A,. PIETZSCH, N. JOHANSSON, A. OLSSON, F. HENNIES, Lund University, Sweden, N. MÅRTENSSON, H. SIEGBAHN, Uppsala University, Sweden, J.N. ANDERSEN, Lund University, Sweden
11:20 am	GR-MoM10 Graphene Growth on Cu(111), S. NIE, Sandia National Laboratories, J. WOFFORD, University of California at Berkeley and Lawrence Berkeley National Laboratory, N.C. BARTELT, Sandia National Laboratories, O. DUBON, University of California at Berkeley and Lawrence Berkeley National Laboratory, K. MCCARTY, Sandia National Laboratories	IS+AS+SS-MoM10 Control of Surface Chemistry during the Oxidation of H-Si(111) by Carrier Concentration and Strain: A Second-Harmonic Generation Study, B. GOKCE, D.E. ASPNES, K. GUNDOGDU, NC State University
11:40 am	GR-MoM11 Epitaxial Graphene Growth on Non-Polar 6H-SiC Substrates, L.O. NYAKITI, R.L. MYERS-WARD, V.D. WHEELER, F.J. BEZARES, N.Y. GARCES, J.K. HITE, C.R. EDDY JR., J.D. CALDWELL, D.K. GASKILL, U.S. Naval Research Laboratory	IS+AS+SS-MoM11 In Situ XPS and STM Studies of Ge_2H_6 Interactions with the Si(100) Surface, S. MCDONNELL, J.F. VEYAN, University of Texas at Dallas, J. BALLARD, J.H.G. OWEN, J.N. RANDALL, Zyvex Labs, Y.J. CHABAL, R.M. WALLACE, University of Texas at Dallas

	Marine Biofouling Focus Topic Room: 105 - Session MB-MoM Interfacial Aspects of Marine Biofouling Moderator: D. Barlow, Naval Research Laboratory	Nanomanufacturing Science and Technology Focus Topic Room: 207 - Session NM+MS+NS+TF-MoM ALD for Nanomanufacturing Moderator: B. Lu, AIXTRON Inc.
8:20 am	MB-MoM1 Invited Fouling in the Face of a "Little" Surface Roughness, R. LAMB, A. WU, K. CHO, H. ZHANG, The University of Melbourne, Australia	
8:40 am	Invited talk continued.	
9:00 am	MB-MoM3 Chemistry Depending Surface Conditioning and its Implication for Colonization by Microorganisms, I. THOMÉ, Karlsruhe Inst. of Tech. (KIT), Germany, M.E. PETTITT, University of Birmingham, UK, S. KIRCHEN, T. SCHWARZ, S. HEISSLER, Karlsruhe Inst. of Tech. (KIT), Germany, M.E. CALLOW, J.A. CALLOW, Univ. of Birmingham, UK, G. SWAIN, Florida Inst. of Tech., M. GRUNZE, A. ROSENHAHN, Karlsruhe Inst. of Tech. (KIT), Univ. of Heidelberg, Germany	NM+MS+NS+TF-MoM3 Invited Industrialization of Atomic Layer Deposition: From Design to Deposition, J.S. BECKER, A. BERTUCH, R. BHATIA, L. LECORDIER, G. LIU, M. SERSHEN, M. SOWA, R. COUTU, G.M. SUNDARAM, Cambridge NanoTech, Inc.
9:20 am	MB-MoM4 Unraveling the Barnacle-Substrate Interface, S. RAMAN, R. KUMAR, Indian Institute of Technology-Madras, India	Invited talk continued.
9:40 am	MB-MoM5 Invited Probing Molecular Details of Marine Bioadhesion with In Situ Infrared Spectroscopy, A.J. MCQUILLAN, University of Otago, Dunedin, New Zealand	NM+MS+NS+TF-MoM5 Invited Manufacturability and Performance Comparison for Single Wafer and Batch Furnace Atomic Layer Deposition, G.J. LEUSINK, D. O'MEARA, TEL Technology Center, America, LLC
10:00 am	Invited talk continued.	Invited talk continued.
10:20 am	BREAK	BREAK
10:40 am	MB-MoM8 Relationships between Cement Production Cycles and Adhesive Strength of the Barnacle Balanus Amphitrite, D.K. BURDEN, D.E. BARLOW, U.S. Naval Research Laboratory, B. ORIHUELA, D. RITTSCHOF, Duke University Marine Laboratory, K.J. WAHL, U.S. Naval Research Laboratory	NM+MS+NS+TF-MoM8 Invited Atomic Layer Deposition for Continuous Roll-to-Roll Processing, S.M. GEORGE, P.R. P. RYAN FITZPATRICK, University of Colorado at Boulder
11:00 am	MB-MoM9 Micro to Nanostructured Stimuli-Responsive Surfaces for Study and Control of Bioadhesion, G.P. LOPEZ, Duke University	Invited talk continued.
11:20 am	MB-MoM10 Surface Topographic Features to Control Biofouling, L. XIAO, University of Heidelberg, Germany, M. RÖHRIG, Karlsruhe Institute of Technology, Germany, S.E. THOMPSON, M.E. CALLOW, J.A. CALLOW, University of Birmingham, UK, A. ROSENHAHN, M. GRUNZE, University of Heidelberg, Germany	NM+MS+NS+TF-MoM10 Invited High Rate Continuous Roll-to-Roll Atomic Layer Deposition, E. DICKEY, Lotus Applied Technology
11:40 am	MB-MoM11 Biofouling: It's a Rough Business, A. WU, R. LAMB, A. MCDONALD, The University of Melbourne, Australia	Invited talk continued.

	Nanometer-scale Science and Technology Room: 203 - Session NS+EM-MoM	Plasma Science and Technology Room: 201 - Session PS-MoM
	Nanowires and Nanoparticles I: Assembly and Devices Moderator: M. Hines, Cornell University	Advanced FEOL / Gate Etching I Moderator: A. Agarwal, Applied Materials, Inc.
8:20 am	NS+EM-MoM1 ZnO Nanowire Logic Inverter with the Difference of Two Gate Electrode, J.K. KIM, Y.T. LEE, R. HA, H.J. CHOI, S.I. IM, Yonsei University, Republic of Korea	PS-MoM1 Impact of Synchronized Plasma Pulsing Technologies on Key Parameters Governing STI Etch Processes, M. HAASS*, M. DARNON, G. CUNGE, P. BODART, C. PETIT-ETIENNE, M. BRIHOUM, L. VALLIER, LTM-CNRS, France, S. BANNA, Applied Materials, Inc., O. JOUBERT, LTM-CNRS, France
8:40 am	NS+EM-MoM2 Control of Growth Kinetics for Three-Dimensional III-nitride Nano-Heterostructures Towards Nanowire Devices, S.D. CARNEVALE, P.J. PHILLIPS, T.F. KENT, J. YANG, M.J. MILLS, R.C. MYERS, Ohio State University	PS-MoM2 Effect of Si Damage on Shallow Source-Drain (SSD) Recess Structures, J. GUHA, S. SRIRAMAN, Lam Research Corporation
9:00 am	NS+EM-MoM3 Invited III-V Nanowire MOSFETs, L.-E. WERNERSSON, Lund University, Sweden	PS-MoM3 Invited Improving Etch Processes by using Pulsed Plasmas, M. DARNON, M. HAASS, P. BODART, G. CUNGE, C. PETIT-ETIENNE, M. BRIHOUM, R. BLANC, CNRS-LTM, France, T. DAVID, Cea Leti Minatec Campus, France, E. PARGON, L. VALLIER, O. JOUBERT, CNRS-LTM, France, S. BANNA, T. LILL, Applied Materials, Inc.
9:20 am	Invited talk continued.	Invited talk continued.
9:40 am	NS+EM-MoM5 Optimizing Quantum Efficiency in Quantum Dot Display, S.J. LIM, J. KWON, Y. OH, Seoul National University, Republic of Korea, B.L. CHOI, K. CHO, Samsung Advanced Institute of Technology, Republic of Korea, Y. KUK, Seoul National University, Republic of Korea	PS-MoM5 HfO_2 Etching by Pulsed BCl_3/Ar Plasma, P. BODART, C. PETIT-ETIENNE, G. CUNGE, F. BOULARD, M. DARNON, L. VALLIER, E. PARGON, CNRS-LTM, France, S. BANNA, T. LILL, Applied Materials, Inc., O. JOUBERT, CNRS-LTM, France
10:00 am	NS+EM-MoM6 Polarization Engineered 1-Dimensional Electron Gas, D.N. NATH, P.S. PARK, M. ESPOSTO, Ohio State University, D. BROWN, S. KELLER, U.K. MISHRA, University of California Santa Barbara, S. RAJAN, Ohio State University	PS-MoM6 Study of Metallic Interfaces Etching for High-K Metal Gate stacks in CMOS 28 nm Technology, F. CHAVE, STMicroelectronics, France, L. VALLIER, CNRS-LTM, France, P. GOURAUD, C. VÉROVE, STMicroelectronics, France, O. JOUBERT, CNRS-LTM, France
10:20 am	BREAK	BREAK
10:40 am	NS+EM-MoM8 Invited Adding New Capabilities to Silicon CMOS via Deterministic Nanowire Assembly, T.S. MAYER, M. LI, T. MORROW, J. KIM, B. WON, K. SUN, X. ZHONG, K. LIDDELL, J.S. MAYER, C.D. KEATING, Penn State University	PS-MoM8 Understanding Sidewall Deposition on Feature Profile in Advanced Etch Structures, A. LE GOUIL, B. JINNAI, M. PEREZ, Y. YAMAGUCHI, A. EPPLER, J. GUHA, Lam Research Corporation
11:00 am	Invited talk continued.	PS-MoM9 Double Patterning Challenges for the sub 22nm CMOS Nodes, S. KANAKASABAPATHY, R. JUNG, M. HARTIG, S. SCHMITZ, Y. YIN, IBM Research, S. RAGHUNATHAN, L. JANG, GlobalFoundries, E. MCLELLAN, S. BURNS, S. HOLMES, C.S. KOAY, IBM Research, R.H. KIM, GlobalFoundries, G. LANDIE, ST Microelectronics, D. HORAK, IBM Research, Y. MIGNOT, ST Microelectronics, S. SEO, S.T. CHEN, J. ARNOLD, M. COLBURN, B. HARAN, IBM Research
11:20 am	NS+EM-MoM10 Solid-State Dewetting of Direct Nanoimprinted Metallic Thin Films, R. CLEARFIELD, North Carolina State University, J.D. FOWLKES, Oak Ridge National Laboratory, P.D. RACK, University of Tennessee Knoxville, N. SAMATOVA, Oak Ridge National Laboratory, A.V. MELECHKO, North Carolina State University	PS-MoM10 Novel Etch Mechanism for High Selectivity Etching of Silicon Nitride over Silicon and Silicon Oxide for Spacer Applications, S. ENGELMANN, J. CHANG, E.A. JOSEPH, R.L. BRUCE, N.C.M. FULLER, W.S. GRAHAM, E.M. SIKORSKI, S. BALAKRISHNAN, A. BANIK, M. GORDON, IBM T.J. Watson Research Center, M. NAKAMURA, G. MATSUURA, ZEON Chemicals L.P., H. MATSUMOTO, A. ITOU, Zeon Corporation
11:40 am	NS+EM-MoM11 Spinodal Dewetting to Create Self-Assembled and Organized Nanoparticles: A High-Throughput Approach, W.D. MICHALAK, J.B. MILLER, A.J. GELLMAN, Carnegie Mellon University	PS-MoM11 High-Aspect Silicon Trench Oxidation in Downstream of Surface-wave Oxygen Plasma, Y. TANIUCHI, H. SHINDO, Tokai University, Japan

* Coburn & Winters Student Award Finalist

	Surface Science Room: 109 - Session SS1-MoM Water Films & Environmental Interfaces Moderator: H. Fairbrother, Johns Hopkins University	Surface Science Room: 110 - Session SS2-MoM Surface Chemical Dynamics Moderator: L. Bartels, University of California, Riverside
8:20 am	SS1-MoM1 Surface Science of Acetonitrile on Model Interstellar Ices and Grains, A. ABDULGALIL, M. COLLINGS, M. MCCOUSTRA, Heriot-Watt University, UK	SS2-MoM1 STM Dynamics Studies of Tip-Induced Reactions of Anthracene Derivatives on TiO_2(110), D.V. POTAPENKO, R.M. OSGOOD, Columbia University
8:40 am	SS1-MoM2 Energetic Xenon Sputtering and Embedding at Ice Surfaces, D.R. KILLELEA, K.D. GIBSON, H. YUAN, S.J. SIBENER, University of Chicago	SS2-MoM2 Atom Specific Ultrafast Surface Chemistry using Soft X-ray Free Electron Laser: CO on Ru(0001), M. BEYE, Helmholtz Zerntrum Berlin, Germany, R. COFFEE, SLAC Nat. Accel. Lab, M. DELL'ANGELA, Univ. of Hamburg, Germany, A. FOEHLISCH, Helmholtz Zerntrum Berlin, Germany, J. GLADH, Stockholm Univ., Sweden, T. KATAYAMA, S. KAYA, O. KRUPIN, A. NILSSON, D. NORDLUND, SLAC Nat. Accel. Lab, H. OBERG, Stockholm Univ., Sweden, H. OGASAWARA, SLAC Nat. Accel. Lab, H. OSTROM, L.G.M. PETTERSSON, Stockholm Univ., Sweden, W.F. SCHLOTTER, J.A. SELLBERG, SLAC Nat. Accel. Lab, F. SORGENFREI, Univ. of Hamburg, Germany, J.J. TURNER, SLAC Nat. Accel. Lab, M. WOLF, Fritz-Haber-Inst., Germany, W. WURTH, Univ. of Hamburg, Germany
9:00 am	SS1-MoM3 Invited Composition and Chemistry at the Liquid/Vapor Interface of Aqueous Solutions: Liquid-Jet XPS Experiments Coupled with MD Simulations, J.C. HEMMINGER, University of California, Irvine	SS2-MoM3 A Comparative Study of the Dynamics of Five-Fold Aromatic Adsorbates on Cu(111), B.A.J. LECHNER, H. HEDGELAND, A.P. JARDINE, W. ALLISON, J. ELLIS, Cavendish Laboratory, Cambridge, UK, B.J. HINCH, Rutgers University
9:20 am	Invited talk continued.	SS2-MoM4 Determination of the Structure and Vibrational Dynamics of Methyl-Terminated Si(111) Using Helium Atom Scattering, R.D. BROWN, S.J. SIBENER, University of Chicago
9:40 am	SS1-MoM5 In Situ Studies of Sulfuric Acid Aqueous Solutions by X-ray Photoelectron Spectroscopy, A. MARGARELLA, T. LEWIS, University of California, Irvine, M. FAUBEL, Max-Plank-Institut fur Dynamik und Selbstorganisation, Germany, B. WINTER, Hemholtz-Zentrum Berlin fur Materialien und Energie, Germany, J.C. HEMMINGER, University of California, Irvine	SS2-MoM5 Invited STM Insights into Single-Molecule Dynamics, K. MORGENSTERN, Leibniz University of Hannover, Germany
10:00 am	SS1-MoM6 Infrared Spectroscopy of Thin Water Films on TiO_2(110): Anisotropy and the Hydrogen-Bonding Network, G.A. KIMMEL, M. BAER, N.G. PETRIK, C.J. MUNDY, R.J. ROUSSEAU, Pacific Northwest National Laboratory	Invited talk continued.
10:20 am	BREAK	BREAK
10:40 am	SS1-MoM8 Invited Using Nanoscale Amorphous Solid Water Films to Create and Study Deeply Supercooled Liquid Water, R.S. SMITH, B.D. KAY, Pacific Northwest National Laboratory	SS2-MoM8 State-resolved Reactivity of Methane (v_2+v_4) on Ni(111), N. CHEN, Y. HUANG, A. UTZ, Tufts University
11:00 am	Invited talk continued.	SS2-MoM9 Molecular Beam Scattering of CO and CO_2 on CuO_x Nanoclusters Supported on Silica Fabricated by Electron Beam Lithography, M. KOMARNENI, U. BURGHAUS, North Dakota State University
11:20 am	SS1-MoM10 Origins of the Molecular Volcano: Dewetting and Crystallization Effects Leading to Rapid Desorption from Amorphous Solid Water Overlayers, R.A. MAY, R.S. SMITH, B.D. KAY, Pacific Northwest National Laboratory	SS2-MoM10 Precursor-Mediated Reactivity of Vibrationally Hot Molecules, D. DELSESTO, E. PETERSON, E. DOMBROWSKI, A. UTZ, Tufts University
11:40 am	SS1-MoM11 Proton Diffusion in Proton Deficient Ultra-Thin Ice Films, P. UVDAL, Lund University, Sweden, J. BLOMQUIST, Malmo University, Sweden, M.P. ANDERSSON, University of Copenhagen, Denmark	SS2-MoM11 Three-Dimensional Spatial Distribution of Desorbing N_2 and N_2O from Pd(211), M. SAKURAI, T. KONDO, J. NAKAMURA, University of Tsukuba, Japan

	Thin Film Room: 107 - Session TF-MoM Thin Films: Growth and Characterization I Moderator: J.M. Fitz-Gerald, University of Virginia	Vacuum Technology Room: 111 - Session VT-MoM Vacuum Measurement, Calibration & Primary Standards, Gas Flow and Permeation Moderator: R. Garcia, SAES Getters
8:20 am	TF-MoM1 Heavy Ion Irradiation Effects on Ti/Al Multilayer Thin Films, R.S. VEMURI, The University of Texas at El Paso, T. VARGA, S.V. SHUTTHANADAN, S.V.N.T. KUCHIBHATLA, M.H. ENGELHARD, P. NACHIMUTHU, C.H. HENAGER, C.M. WANG, S. THEVUTHASAN, Pacific Northwest National Laboratory, C.V. RAMANA, The University of Texas at El Paso	VT-MoM1 Transportable NIST Traceable Vacuum Standards for Secondary Calibration Laboratories and International Key Comparisons, J.H. HENDRICKS, D.A. OLSON, J.E. RICKER, National Institute of Standards and Technology
8:40 am	TF-MoM2 Invited Flux and Surfactant-Assisted Physical Vapor Deposition: New Approaches for Improving Complex Oxide Thin Film Growth, J.-P. MARIA, E.A. PAISLEY, B.E. GADDY, North Carolina State University, M.D. BIEGALSKI, Oak Ridge National Laboratory, D.L. IRVING, A.R. RICE, R. COLLAZO, Z. SITAR, North Carolina State University	VT-MoM2 Invited Extending the Range of the Spinning Rotor Gage for Vacuum Measurements and Calibrations, M.L. DUNCAN, J.A. KECK, Oak Ridge National Laboratory
9:00 am	Invited talk continued.	Invited talk continued.
9:20 am	TF-MoM4 Initiated – Chemical Vapor Deposition of Organosilicones: from Growth Mechanism to Multilayer Moisture Diffusion Barriers, G. ARESTA, J. PALMANS, M.C.M. VAN DE SANDEN, M. CREATORE, Eindhoven University of Technology, Netherlands	VT-MoM4 Cold Electron Source Used as Electron Source in Familiar Vacuum Measurement Devices, P.C. ARNOLD, Brooks Automation, Inc., G.A. BRUCKER, Brooks Automation, Inc., Granville-Phillips Products
9:40 am	TF-MoM5 Processing and Characterization of Iron and Fluorine Co-Doped $Ba_{0,6}Sr_{0,4}TiO_3$ Thin Films, F. STEMME, H. GESSWEIN, C. AZUCENA, Karlsruhe Institute of Technology (KIT), Germany, M. SAZEGAR, Darmstadt University of Technology, Germany, J.R. BINDER, M. BRUNS, Karlsruhe Institute of Technology (KIT), Germany	VT-MoM5 Review of Thermal Conductivity Vacuum Gauges, M. WÜEST, INFICON Ltd, Liechtenstein
10:00 am	TF-MoM6 Advances in the Growth of Epitaxial Oxides for Neuromorphic Computing Applications, J.D. GREENLEE, W.L. CALLEY, W.A. DOOLITTLE, Georgia Institute of Technology	VT-MoM6 Investigation of the Hot Cathode Ionization Vacuum Gauge; Stability and Reliability on the Point of View of Traceability, N. TAKAHASHI, ULVAC Inc., Japan
10:20 am	BREAK	VTD Business Meeting
10:40 am	TF-MoM8 New Method to Produce High-Quality Epitaxial Ge on Si Using SiO_2-Lined Etch Pits and Epitaxial Lateral Overgrowth for III-V Multijunction Solar Cells, D. LEONHARDT, S.M. HAN, University of New Mexico	VT-MoM8 On the Stability of Capacitance-Diaphragm Gauges with Ceramic Membranes, K. JOUSTEN, Physikalisch-Technische Bundesanstalt, Germany, S.P. NAEF, INFICON Ltd, Liechtenstein
11:00 am	TF-MoM9 Three Dimensional Reciprocal Space Measurements by X-ray Diffraction using Linear and Area Detectors: Application to Texture and Defect Determination in Oriented Thin Films and Nanoprecipitates, S. GAUDET, S. LAMBERT-MILOT, P. DESJARDINS, École Polytechnique de Montréal, Canada, K. DEKEYSER, C. DETAVERNIER, Ghent University, Belgium, J.L. JORDAN-SWEET, C. LAVOIE, IBM T.J. Watson Research Center	VT-MoM9 Thermal Transpiration Effects in Capacitance Diaphragm Gauges with Helicoidal Baffle System, M. VARGAS, Institute of Mechanics - Bulgarian Academy of Sciences, M. WÜEST, INFICON Ltd, Liechtenstein, S.K. STEFANOV, Institute of Mechanics - Bulgarian Academy of Sciences
11:20 am	TF-MoM10 Surface Characterization of Zr/Ti/Nb Tri-layered Films Deposited by Magnetron Sputtering on Si(111) and Stainless Steel Substrates, D.A. TALLARICO, Federal University of Sao Carlos, Brazil, A.L. GOBBI, Brazilian Synchrotron Light Laboratory, Brazil, P.I. PAULIN-FILHO, Federal University of Sao Carlos, Brazil, A. GALTAYRIES, Ecole Nationale Superieure de Chimie de Paris, France, P.A.P. NASCENTE, Federal University of Sao Carlos, Brazil	VT-MoM10 Direct Conductance Measurements of Laser-Drilled Pinhole Apertures, J.A. FEDCHAK, D.R. DEFIBAUGH, National Institute of Standards and Technology
11:40 am	TF-MoM11 PECVD Synthesis of Hybrid Organic-Inorganic Nanolaminates, R. PATEL, C.A. WOLDEN, Colorado School of Mines	VT-MoM11 Gas Permeation Characterization of Elastomeric Seals Used in Semiconductor Wafer Processing, J.M. LEGARE, S. SOGO, M.J. HELLER, J. CHEN, DuPont Performance Polymers

NOTES

	Applied Surface Science Room: 102 - Session AS-MoA Quantitative Surface Chemical Analysis and Technique Development - Part II Moderator: M.S. Wagner, The Procter & Gamble Company	Biomaterial Interfaces Room: 108 - Session BI-MoA Sensors and Fluidics for Biomedical Applications Moderator: E. Reimhult, University of Natural Resources and Life Sciences, Austria
2:00 pm	AS-MoA1 Invited Surface-based Model Systems of Biomolecular Hydrogels - From Supramolecular Organization and Dynamics to Biological Function, N.S. BARANOVA, S. ATTILI, CIC biomaGUNE, Spain, R.P. RICHTER, CIC biomaGUNE & MPI for Intelligent Systems, Spain	BI-MoA1 Invited Three-dimensional Microfluidic Flow Cell Array Integrated with SPR Microscopy for Multi-channel Bioassays, J.S. SHUMAKER-PERRY, University of Utah
2:20 pm	Invited talk continued.	Invited talk continued.
2:40 pm	AS-MoA3 Soft Cluster-Induced Desorption and Ionization of Biomolecules – Influence of Surface Load and Sample Morphology on Desorption Efficiency, M. BAUR, B.-J. LEE, HS Esslingen, Germany, C.R. GEBHARDT, Bruker Daltonik, Germany, H. SCHRODER, K.-L. KOMPA, MPI for Quantum Optics, Germany, M. DURR, HS Esslingen, Germany	BI-MoA3 Transport Properties of Proteins and Quantum Dots in Nanochannels in Multi-Gated Field-Effect-Transistor Configuration, L. TRIBBY, University of New Mexico, F. VAN SWOL, Sandia National Laboratories, C.F. IVORY, Washington State University, S.M. HAN, University of New Mexico
3:00 pm	AS-MoA4 Sensitive Elemental Analysis of Materials via Femtosecond Ablation Time of Flight Mass Spectrometry, J.F. MOORE, MassThink, S. MILASINOVIC, Y. CUI, J.S. PENZAK, Y. LIU, R.J. GORDON, L. HANLEY, University of Illinois at Chicago	BI-MoA4 High Sensitivity Recessed AlGaN/GaN HFET Protein Sensors, X. WEN, H. KIM, P. CASAL, S. LEE, W. LU, The Ohio State University
3:20 pm	BREAK	BREAK
3:40 pm	AS-MoA6 Interlaboratory Study on Consistency and Reproducibility of Sputter Rate Measurements, M.H. ENGELHARD, D.R. BAER, Pacific Northwest National Laboratory	BI-MoA6 AlGaN/GaN HFETs for DNA Sensing: Charge Layer Distance Dependence, Y. WANG, W. LU, The Ohio State University
4:00 pm	AS-MoA7 Post-Acquisition Mass Resolution Improvement in Time-Of-Flight Secondary Ion Mass Spectrometry (TOF-SIMS), S.J. PACHUTA, P.R. VLASAK, 3M Company	BI-MoA7 Effect of Analyte Flow Rate on the Sensitivity of Microcantilever Biosensors, R.P. DESIKAN, C.W. VAN NESTE, T.G. THUNDAT, University of Alberta, Canada
4:20 pm	AS-MoA8 ToF-SIMS Analysis of Iron Oxide Particle Oxidation by Isotopic and Multivariate Analysis, J. OHLHAUSEN, E. COKER, A. AMBROSINI, J. MILLER, Sandia National Laboratories	BI-MoA8 Fabrication of Nanowire FETs for pH Sensing, C. D'EMIC, S. ZAFAR, A. AFZALI, B. FLETCHER, T. NING, M.A. GUILLORN, D.-G. PARK, IBM T.J. Watson Research Center
4:40 pm	AS-MoA9 Informatics for SIMS: Identifying Molecules in Complex Mass Spectra, I.S. GILMORE, F.M. GREEN, M.P. SEAH, J.L.S. LEE, National Physical Laboratory, UK	BI-MoA9 La^{3+} doped TiO_2 Nano-engineered Platforms for Biosensor, R.R. PANDEY, Centre for Cellular and Molecular Biology, India, K.K. SAINI, National Physical Laboratory, India, M. DHAYAL, Centre for Cellular and Molecular Biology, India
5:00 pm	AS-MoA10 keV Ion Impact Effect on the IonCCD™ Surface and Mass Spectra Peak Shape in Non-Scanning Sector-Field Instrument, O. HADJAR, G. KIBELKA, S. KASSAN, C. CAMERON, K. KUHN, OI Analytical	BI-MoA10 Spray Deposition of Functional Antibody Films, J. FIGUEROA, S. MAGANA, D. GOMEZ, D.V. LIM, R. SCHLAF, University of South Florida
5:20 pm		

	Electronic Materials and Processing Room: 209 - Session EM1-MoA Group III-Nitrides and Hybrid Devices Moderators: K. Kavanagh, Simon Fraser University, L. Porter, Carnegie Mellon University	Electronic Materials and Processing Room: 210 - Session EM2-MoA Dielectrics for Ultra Dense Memory Devices Moderator: A.C. Kummel, University of California San Diego
2:00 pm	EM1-MoA1 Electrically-Monitored Gate-Recess for Normally-Off AlGaN/GaN High-Electron Mobility Transistors, H. KIM, M. SCHUETTE, W. LU, The Ohio State University	EM2-MoA1 Invited A Survey of Cross Point Phase Change Memory Technologies, D. KAU, Intel Corporation
2:20 pm	EM1-MoA2 Atom Probe Tomography Studies on Green Light Emitting InGaN/GaN Multi Quantum Wells Grown on GaN Substrates, F. LIU, L. HUANG, Carnegie Mellon University, S.V.N.T. KUCHIBHATLA, D.K. SCHREIBER, Pacific Northwest National Laboratory, M. ZHANG, University of Michigan, E.A. PREBLE, T. PASKOVA, K.R. EVANS, Kyma Technologies, Inc., L. PORTER, R.F. DAVIS, Carnegie Mellon University	Invited talk continued.
2:40 pm	EM1-MoA3 Local Surface Electrical Characterization of Polar GaN Surfaces, J.D. FERGUSON, M.A. RESHCHIKOV, A.A. BASKI, Virginia Commonwealth University	EM2-MoA3 Invited Charge Trap Memories and 3D Approaches, G. MOLAS, CEA Leti Minatec Campus, France
3:00 pm	EM1-MoA4 The Effect of Ammonia - TMI Pulse Separation on the Structural Properties of InN Epilayers, R. ATALAY, Georgia State University, M. BUEGLER, Technische Universität Berlin, Germany, S. GAMAGE, I. SENEVIRATHNA, A.G.U. PERERA, Georgia State University, J.S. TWEEDIE, R. COLLAZO, North Carolina State University, N. DIETZ, Georgia State University	Invited talk continued.
3:20 pm	BREAK	BREAK
3:40 pm	EM1-MoA6 Neutron Scattering Provides a New Model for Optimal Morphologies in Organic Photovoltaics: Rivers and Streams, M. DADMUN, W. YIN, University of Tennessee, J. ANKNER, K. XIAO, Oak Ridge National Laboratory	EM2-MoA6 Invited Oxides for Spintronics, K.L. WANG, P. KHALILI, F. XIU, University of California Los Angeles
4:00 pm	EM1-MoA7 The Effect of Annealing and Compatibilizer on the Phase and Crystalline Morphology of Organic Photovoltaic Poly(3-hexylthiophene)/Phenyl-C61-Butyric Acid Methyl Ester (P3HT/PCBM) Thin Films, J.F. BROWNING, J. KEUM, K. XIAO, K. HONG, I. IVANOV, Oak Ridge National Laboratory	Invited talk continued.
4:20 pm	EM1-MoA8 Novel Boron Carbide-Based Semiconducting Polymers for Enhanced Electronic Properties, F. PASQUALE, J. KELBER, University of North Texas	EM2-MoA8 Invited Johnson-Mehl-Avrami Type Kinetic Model for Resistance Switching in TiO_2, S.J. SONG, J.Y. SEOK, K.M. KIM, G.H. KIM, M.H. LEE, J.H. YOON, C.S. HWANG, Seoul National University, Korea
4:40 pm	EM1-MoA9 Analysis and Application of Hybrid Electronic Structures Formed by Nanoscale Conductive Coatings on Textiles, J.S. JUR, W. SWEET, C.J. OLDHAM, G.N. PARSONS, North Carolina State University	Invited talk continued.
5:00 pm	EM1-MoA10 Quantum Dot Transfer using Patterned Self-Assembled Monolayers, S. MILLER, A.J. MUSCAT, University of Arizona	EM2-MoA10 ALD/PEALD CMOS Compatible Oxides for Resistive RAM Devices, A. SALAÜN, V. BEUGIN, H. GRAMPEIX, C. LICITRA, N. ROCHAT, E. MARTINEZ, P. GERGAUD, CEA Leti, France, P. GONON, LTM CNRS/CEA Leti, France, C. VALLÉE, LTM-CNRS/CEA Leti, France, C. MANNEQUIN, CEA Leti, France, C. GAUMER, S. JEANNOT, STMicroelectronics, France, J. BUCKLEY, V. JOUSSEAUME, J.P. BARNES, M. VEILLEROT, F. PIERRE, I. KIEFFER, CEA Leti, France
5:20 pm	EM1-MoA11 Solution Processed Quantum Dots for Infrared Imaging, J. LEWIS, E.J.D. KLEM, C. GREGORY, G. CUNNINGHAM, D. TEMPLE, RTI International	EM2-MoA11 Resistive Switching in HfO_2 Metal-Insulator-Metal Devices (RRAM), M. BONVALOT, Laboratoire des Technologies de la Microélectronique (LTM), France, C. MANNEQUIN, P. GONON, C. VALLEE, LTM-CNRS, France, V. JOUSSEAUME, H. GRAMPEIX, Minatec, France

	Energy Frontiers Focus Topic Room: 103 - Session EN+EM+NS-MoA Nanostructured Materials for Third Generation Solar Cells Moderator: W.A. Tisdale, Massachusetts Institute of Technology	Energy Frontiers Focus Topic Room: 104 - Session EN-MoA Industrial Physics Forum on Energy II Moderators: J.W. Rogers, Idaho National Laboratory, J.N. Hollenhorst, Agilent
2:00 pm	EN+EM+NS-MoA1 Fabrication of Two-dimensional Array of Sub-10nm GaAs Nanodisk using Bio-template Neutral Beam Etching Process, S.-H. LIN, X.-Y. WANG, C.-H. HUANG, Y. OHNO, M. IAGARASHI, Tohoku University, Japan, A. MURAYAMA, Hokkaido University, Japan, S. SAMUKAWA, Tohoku University, Japan	EN-MoA1 Invited The Role of Nuclear Energy in a Sustainable Energy Scenario, H.F. MCFARLANE, Idaho National Laboratory
2:20 pm	EN+EM+NS-MoA2 Photoemission Investigation on CuPc/MWNT Interface, L. D'ORTENZI, F. BISTI, L. LOZZI, S. SANTUCCI, University of L'Aquila, Italy	Invited talk continued.
2:40 pm	EN+EM+NS-MoA3 Invited Solution Processed Quantum Dots for Low Cost Photovoltaics, E.J.D. KLEM, J. LEWIS, C. GREGORY, G. CUNNINGHAM, D. TEMPLE, RTI International	EN-MoA3 Invited What's So Smart about the "Smart Grid?", J.G. KASSAKIAN, Massachusetts Institute of Technology
3:00 pm	Invited talk continued.	Invited talk continued.
3:20 pm	BREAK	BREAK
3:40 pm	EN+EM+NS-MoA6 Role of Quantized and Mid-Gap States in "Dark" Charge Transport and Photoconductivity in Semiconductor Nanocrystal Films, P. NAGPAL, Los Alamos National Laboratory	EN-MoA6 Invited Electrochemical Energy Storage for Renewable Integration and Grid Applications: Status, Challenges and Opportunities, Z.G. YANG, Pacific Northwest National Laboratory
4:00 pm	EN+EM+NS-MoA7 Using Surface Chemistry to Modulate the Bandgap of Ge Nanowires, S. SIVARAM, M.A. FILLER, Georgia Institute of Technology	Invited talk continued.
4:20 pm	EN+EM+NS-MoA8 Production of Multi-milligram Yields of Ternary II-VI Semiconductor Nanocrystals Under Non-coordinating Amine Activated Synthesis, M. PLAISANT, P.H. HOLLOWAY, University of Florida	EN-MoA8 Invited Automotive Challenges in an Electric Economy, M. PERRY, Nissan Americas
4:40 pm	EN+EM+NS-MoA9 Type-II ZnTe/ZnSe Quantum Dots for Intermediate Band Solar Energy Conversion, C. CHEN, B. JUANG, J. HWANG, S. KIM, X. PAN, J. PHILLIPS, University of Michigan	Invited talk continued.
5:00 pm		
5:20 pm		

	Graphene and Related Materials Focus Topic Room: 208 - Session GR+TF+ET-MoA Graphene: Electronic Properties and Charge Transport Moderator: L. Colombo, Texas Instruments Incorporated	In Situ Spectroscopy and Microscopy Focus Topic Room: 106 - Session IS+AS+SS-MoA In Situ Characterization of Solids: Film Growth, Defects, and Interfaces Moderator: M. Salmeron, Lawrence Berkeley National Laboratory
2:00 pm	GR+TF+ET-MoA1 Invited Electronic and Magnetic Properties of a Graphene Line Defect, D. GUNLYCKE, Naval Research Laboratory	IS+AS+SS-MoA1 Invited A New Approach to Defect Evolution Studies – Combined In Situ Experiments and Electron Tomography, I.M. ROBERTSON, J. KACHER, G. LIU, University of Illinois at Urbana-Champaign
2:20 pm	Invited talk continued.	Invited talk continued.
2:40 pm	GR+TF+ET-MoA3 Hydrogenation Induced Graphene-Metal Contact - Observation of States at Fermi Level, S. RAJASEKARAN, Stanford University, S. KAYA, T. ANNIYEV, Stanford Synchrotron Light Source, F. YANG, D. STACCHIOLA, Brookhaven National Laboratory, H. OGASAWARA, A. NILSSON, Stanford Synchrotron Light Source	IS+AS+SS-MoA3 Invited Real-time Oxide Growth Characterization using Atomic Force Microscopy, G. RIJNDERS, University of Twente, the Netherlands
3:00 pm	GR+TF+ET-MoA4 First-Principles Studies of Atomic and Electronic Structure of Graphene on Sn/Ni(111) Surface Alloy, L. ADAMSKA, R.Q. ADDOU, A. DAHAL, M. BATZILL, I.I. OLEYNIK, University of South Florida	Invited talk continued.
3:20 pm	BREAK	BREAK
3:40 pm	GR+TF+ET-MoA6 Charge Transport through Graphene: the Role of Metal Contacts, M.Y. CHOU, M.E. KINDERMANN, S. BARRAZA-LOPEZ, Georgia Institute of Technology	IS+AS+SS-MoA6 An Auger Electron Analyzer System for ***In Situ*** MBE Growth Monitoring, W.L. CALLEY, Georgia Institute of Technology, P.G. STAIB, Staib Instruments, J.E. LOWDER, J.D. GREENLEE, M.W. MOSELEY, W.E. HENDERSON, W.A. DOOLITTLE, Georgia Institute of Technology
4:00 pm	GR+TF+ET-MoA7 Layer Number Determination and Thickness-dependent Properties of Graphene Grown on SiC, W. ZHU, C. DIMITRAKOPOULOS, M. FREITAG, PH. AVOURIS, IBM T.J. Watson Research Center	IS+AS+SS-MoA7 Quantum Size Effect Driven Structure Modifications of Bi-films on Ni(111), T.R.J. BOLLMANN, R. VAN GASTEL, H. ZANDVLIET, B. POELSEMA, University of Twente, The Netherlands
4:20 pm	GR+TF+ET-MoA8 Invited Graphene: Scratching the Surface, M. FUHRER, University of Maryland at College Park	IS+AS+SS-MoA8 Growth and Structure of Sm on an Ultrathin $Al_2O_3/Ni_3Al(111)$ Film: A Comprehensive Study, J.F. ZHU, Q. XU, S. HU, X. FENG, D. CHEN, University of Science and Technology of China
4:40 pm	Invited talk continued.	IS+AS+SS-MoA9 In Situ Study of the Reaction Mechanism Kinetics of Pt ALD from (^{Me}Cp)$PtMe_3$ and O_2, I.J.M. ERKENS, A.J.M. MACKUS, H.C.M. KNOOPS, F. ROOZEBOOM, W.M.M. KESSELS, Eindhoven University of Technology, Netherlands
5:00 pm	GR+TF+ET-MoA10 Metallic and Insulating Adsorbates on Graphene, K.M. MCCREARY, R.K. KAWAKAMI, University of California, Riverside	IS+AS+SS-MoA10 In Situ Surface Analytical Characterization of Electronic Devices: Thin Film Solar Cells and Lithium Ion Batteries as Examples, A. THISSEN, SPECS Surface Nano Analysis GmbH, Germany
5:20 pm	GR+TF+ET-MoA11 Electron Transport in Carbon Nanotube - Graphene Contacts, B. COOK, W. FRENCH, K. VARGA, Vanderbilt University	IS+AS+SS-MoA11 Atomic-scale Evolution of Local Electronic Structure across $LaAlO_3/SrTiO_3$ Interfaces, B.C. HUANG, Y.P. CHIU, M.C. SHIH, National Sun Yat-Sen University, Taiwan, Republic of China, V.T. TRA, J.C. YANG, Y.H. CHU, National Chiao Tung University, Taiwan, Republic of China

	Marine Biofouling Focus Topic Room: 105 - Session MB+BI+PS-MoA Marine Antifouling Coatings Moderator: A. Rosenhahn, Karlsruhe Institute of Technology, Germany	Nanomanufacturing Science and Technology Focus Topic Room: 207 - Session NM+MS-MoA Challenges Facing Nanomanufacturing (All Invited Session) Moderators: S. Rosenthal, Vanderbilt University, S. Butler, Texas Instruments Incorporated
2:00 pm	MB+BI+PS-MoA1 Invited Advances in Sustainable Technologies for the Prevention of Marine Biofouling, R. DESHMUKH, University of Texas at Arlington, P. SHETH, University of North Texas Health Science Center, R.B. TIMMONS, University of Texas at Arlington, J.A. SCHETZ, University of North Texas Health Science Center	
2:20 pm	Invited talk continued.	NM+MS-MoA2 Invited Sustainable Nanomanufacturing, M. ROCO, National Science Foundation
2:40 pm	MB+BI+PS-MoA3 A Potential Role for Molecular Signals and Metabolites in Controlling Marine Biofouling, R.J. CASE, University of Alberta, Canada, M. SEYEDSAYAMDOST, E. SHANK, Harvard Medical School, L. LABEEUW, University of Alberta, Canada, J. CLARDY, R. KOLTER, Harvard Medical School	Invited talk continued.
3:00 pm	MB+BI+PS-MoA4 Development of a Comparative Protocol for Anti-Fouling Surfaces Based on Polymer Brushes, A. SERRANO, S. ZÜRCHER, S. TOSATTI, SuSoS AG, Switzerland, N.D. SPENCER, ETH Zurich, Switzerland	Extended Discussion
3:20 pm	BREAK	BREAK
3:40 pm	MB+BI+PS-MoA6 Invited Surface Modification of Polymers via Self-Stratification: Decoupling of Bulk and Surface Properties, D.C. WEBSTER, North Dakota State University	NM+MS-MoA6 Invited The National Nanomanufacturing Network: Opportunities, Challenges, and Strategies, M.T. TUOMINEN, University of Massachusetts Amherst
4:00 pm	Invited talk continued.	Invited talk continued.
4:20 pm	MB+BI+PS-MoA8 Antifouling Behavior on the Surface of Polyelectrolyte Brushes in Water, M. KOBAYASHI, M. TERADA, Jst, Erato, Japan, A. TAKAHARA, IMCE, Kyushu University, Japan	Extended Discussion
4:40 pm	MB+BI+PS-MoA9 Non-fouling Polymer Chemical Gradients for the Investigation of Marine Bioadhesion, O. STERNER, ETH Zurich, Switzerland, S. ZÜRCHER, SuSoS AG and ETH Zurch, Switzerland, S. TOSATTI, SuSoS AG and ETH Zurich, Switzerland, N.D. SPENCER, ETH Zurich, Switzerland	NM+MS-MoA9 Invited Nanomanufacturing: The Future of Manufacturing?, J. BUSBEE, Wright-Patterson Air Force Base
5:00 pm	MB+BI+PS-MoA10 Development of Poly(silyl urethanes) with Tethered Quaternary Ammonium Biocides as Antifouling Marine Coatings, P.N. CONESKI, N.K. WEISE, J.H. WYNNE, Naval Research Laboratory	Invited talk continued.
5:20 pm	MB+BI+PS-MoA11 A Preliminary Study on Porous Pt-TiO_2/Ti Electrodes with Electrochemically Microbubble-Induced Superhydrophobic Surfaces for Drag Reduction and Antifouling, K.R. WU, C.H. HUNG, C.W. YEH, J.C. SUN, J.K. WU, National Kaohsiung Marine University, Taiwan, Republic of China	Extended Discussion

Monday Afternoon, October 31, 2011

	Nanometer-scale Science and Technology Room: 203 - Session NS-MoA Frontiers in Nanophotonics and Plasmonics Moderator: N. Camillone III, Brookhaven National Laboratory	Plasma Science and Technology Room: 202 - Session PS+BI-MoA Multiphase (Liquid, Solid, Gas) and Biological Related Plasmas Moderator: A.M. Coclite, Massachusetts Institute of Technology
2:00 pm	NS-MoA1 Probing the Metal-Insulator Transition of Vanadium Dioxide using Gold Nanoantennas, D.W. FERRARA, J. NAG, E.R. MACQUARRIE, R.F. HAGLUND, Vanderbilt University	PS+BI-MoA1 Atmospheric-Pressure Microplasmas for Novel Electrochemical Applications, S.W. LEE, R.M. SANKARAN, Case Western Reserve University
2:20 pm	NS-MoA2 Metamaterial Nanosensors based on the Metal-Insulator transition in VO_2, K. APPAVOO, R.F. HAGLUND JR., Vanderbilt University	PS+BI-MoA2 Invited Water Containing Non-Equilibrium Atmospheric Pressure Plasmas, P.J. BRUGGEMAN, Eindhoven University of Technology, the Netherlands
2:40 pm	NS-MoA3 Enhanced Photoluminescence from $Gd_2O_3:Eu^{3+}$ Based Core/Multi-shell Nanoparticles, J. CHOI, M.R. DAVIDSON, P.H. HOLLOWAY, University of Florida	Invited talk continued.
3:00 pm	NS-MoA4 Au|SiO_2|Yb:Er:Y_2O_3 Core|Shell Optical Nanoantenna: Experiment & Simulation, V. JANKOVIC, J.P. CHANG, University of California Los Angeles	PS+BI-MoA4 Mechanism of Au Nanoparticles Formation in Solution Plasma, M.A. BRATESCU, O. TAKAI, N. SAITO, Nagoya University, Japan
3:20 pm	BREAK	BREAK
3:40 pm	NS-MoA6 Invited Gap-Mode Plasmonic Cavities: Engineering Light-Matter Interactions in Metallic Structures, E.L. HU, K.J. RUSSELL, T.-L. LIU, S. CUI, K. YEUNG, Harvard University	PS+BI-MoA6 Pulsed Plasma Studies of 2-chloro-p-xylene, I.C. ESTRADA-RAYGOZA, G. PADRON-WELLS, P.L.S. THAMBAN, L.J. OVERZET, M.J. GOECKNER, University of Texas at Dallas
4:00 pm	Invited talk continued.	PS+BI-MoA7 Deactivation of Lipopolysaccharide and Lipid A by Ar/H_2 Inductively Coupled Plasma, E. BARTIS, University of Maryland, College Park, T.-Y. CHUNG, N. NING, J.-W. CHU, D.B. GRAVES, University of California, Berkeley, J. SEOG, G.S. OEHRLEIN, University of Maryland, College Park
4:20 pm	NS-MoA8 Direct Characterization of Surface Plasmon Enhanced Electromagnetic Fields on Single Ag Nanostructure, W.D. WEI, J. WANG, Y. WANG, University of Florida, G. XIONG, S. PEPPERNICK, A. JOLY, K. BECK, W.P. HESS, Pacific Northwest National Laboratory	PS+BI-MoA8 Development of Plasma Treated Mn Induced Nano-arrayed Structures in Sol-gel Derived TiO_2 Matrix for Biosensing Applications, R.R. PANDEY, Centre for Cellular and Molecular Biology, India, K.K. SAINI, National Physical Laboratory, India, M. DHAYAL, Centre for Cellular and Molecular Biology, India
4:40 pm	NS-MoA9 Comparisons of Optical and Magneto-Optical Properties between Core-Shell Fe-Ag and Co-Ag Nanoparticles based on Localized Surface Plasmon Resonance, L. WANG, C. CLAVERO, K. YANG, A. NELSON, College of William and Mary, K. CARROLL, Z. HUBA, E. CARPENTER, Virginia Commonwealth University, D. GU, Applied Research Center, R.A. LUKASZEW, College of William and Mary	PS+BI-MoA9 Growth Promotion of Bread Yeast using Atmospheric Pressure Dielectric Barrier Discharges, S. KITAZAKI, K. KOGA, M. SHIRATANI, Kyushu University, Japan, N. HAYASHI, Saga University, Japan
5:00 pm	NS-MoA10 Plasmon Induced Current in Metal/Organic Hybrid Nanostructures, D. CONKLIN, S. NANAYAKKARA, T. PARK, University of Pennsylvania, J. STETCHER, M. THERIEN, Duke University, D.A. BONNELL, University of Pennsylvania	PS+BI-MoA10 Plasma Deactivation of Pyrogenic Biomolecules: Vacuum Ultraviolet Photon and Radical Beam Effects on Lipid A, T.-Y. CHUNG*, N. NING, J.-W. CHU, D.B. GRAVES, University of California, Berkeley, E. BARTIS, J. SEOG, G.S. OEHRLEIN, University of Maryland, College Park
5:20 pm	NS-MoA11 Direct-bandgap Infrared Light Emission from Tensilely Strained Germanium Nanomembranes, J.R. SANCHEZ-PEREZ, University of Wisconsin Madison, C. BOZTUG, Boston University, F. CHEN, University of Wisconsin Madison, F. SUDRADJAT, Boston University, D.M. PASKIEWICZ, R.B. JACOBSON, University of Wisconsin Madison, R. PAIELLA, Boston University, M.G. LAGALLY, University of Wisconsin Madison	

* Coburn & Winters Student Award Finalist

	Plasma Science and Technology Room: 201 - Session PS+SE-MoA Advanced FEOL / Gate Etching II Moderator: A. Kadavanich, Mattson Technology	Surface Science Room: 109 - Session SS1-MoA Selectivity and Reactivity of Chemisorbed Species Moderator: A.J. Gellman, Carnegie Mellon University
2:00 pm	PS+SE-MoA1 Mechanical Analysis of the Line Edge Roughness in the sub-20nm Line Patterns, S.W. PARK, K.H. BAEK, Samsung Electronics Co., Ltd, Republic of Korea, S.H. CHOI, J.S. HONG, Lam Research Corporation, K.S. SHIN, Y.G. SHIN, H.G. KANG, Samsung Electronics Co., Ltd, Republic of Korea	SS1-MoA1 Invited Observation and Modeling of Chiral Modifier-Substrate Complexes on Pt(111), B. HAMMER, Aarhus University, Denmark, V. DEMERS-CARPENTIER, P.H. MCBREEN, Université Laval, Quebec, Canada
2:20 pm	PS+SE-MoA2 Dependence of ArF Photoresist Polymer Structure on Line-Edge-Roughness Formation during Plasma Etching Processes, T. UESUGI, A. WADA, Tohoku University, Japan, S. MAEDA, K. KATO, A. YASUDA, S. SAKUMA, Mitsubishi Rayon, Japan, S. SAMUKAWA, Tohoku University, Japan	Invited talk continued.
2:40 pm	PS+SE-MoA3 193nm Photoresist Pre-Treatments Before Plasma Transfer to Improve LWR Transfer and CD Control, E. PARGON, CNRS-LTM, France, L. AZARNOUCHE, ST Microelectronics, France, M. FOUCHIER, K. MENGUELTI, O. JOUBERT, CNRS-LTM, France	SS1-MoA3 Enantiospecific Decomposition of Tartaric Acid on Spherically Curved Copper Single Crystals, B. HOLSCLAW, P. KONDRATYUK, A. DE ALWIS, A. REINICKER, V. PUSHKAREV, A.J. GELLMAN, Carnegie Mellon University
3:00 pm	PS+SE-MoA4 Plasma Smoothing of Extreme Ultraviolet Photoresist: LWR Reduction at 30nm Half Pitch, E. ALTAMIRANO-SANCHEZ, A. PRET VAGLIO, R. GRONHEID, D. MARC, W. BOULLART, IMEC, Belgium	SS1-MoA4 Reaction Pathways of Alcohols with Transition Metal Oxides: A Comparison between WO_3 and MoO_3, Z.J. LI, Y.K. KIM, R.J. ROUSSEAU, B.D. KAY, Z. DOHNÁLEK, Pacific Northwest National Laboratory
3:20 pm	BREAK	BREAK
3:40 pm	PS+SE-MoA6 Controlling Line Edge Roughness for Aggressively Scaled CMOS Devices by Reducing Organic Underlayer Deformation, H. MIYAZOE, S.U. ENGELMAN, M. GLODDE, M.A. GUILLORN, M. BRINK, A. BANIK, W.S. GRAHAM, E.M. SIKORSKI, N.C.M. FULLER, IBM T.J. Watson Research Center	SS1-MoA6 Molecular Dynamics Simulations of Oligomer Film Stabilization through Ion-Beam Deposition, T. KEMPER, University of Florida, D. LEE, Lawrence Livermore National Laboratory, S.R. PHILLPOT, S.B. SINNOTT, University of Florida
4:00 pm	PS+SE-MoA7 Invited Single Digit Nano Plasma Etching, D.L. OLYNICK, Lawrence Berkeley National Laboratory	SS1-MoA7 Structure-Reactivity Relationships in the Electron Induced Reactions of Surface Bound Organometallics, H. FAIRBROTHER, S. ROSENBERG, J. WNUK, Johns Hopkins University, C. HAGEN, W. VANDORP, K. LANDHEER, Delft University of Technology, Netherlands
4:20 pm	Invited talk continued.	SS1-MoA8 Role of Substituents in Reactivity of Isocyanates Pre-Adsorbed on Ge(100)-2×1, K.T. WONG, S.F. BENT, Stanford University
4:40 pm	PS+SE-MoA9 Ar and He Plasma Pretreatments of Organic Masking Materials for Performance Improvements during Plasma Pattern Transfer, D. METZLER, F. WEILNBOECK, N. KUMAR, G.S. OEHRLEIN, University of Maryland, S. ENGELMANN, R.L. BRUCE, N.C.M. FULLER, IBM T.J. Watson Research Center	SS1-MoA9 Investigation of Adsorbed Sodium Dodecyl Sulfate Films Formed on Charged and Hydrophilic Surfaces, S.-H. SONG, T. WEIDNER, National ESCA and Surface Analysis Center for Biomedical Problems, M.S. WAGNER, The Procter & Gamble Company, D.G. CASTNER, National ESCA and Surface Analysis Center for Biomedical Problems
5:00 pm	PS+SE-MoA10 Sub-32nm Node Mask Patterning for Deep Silicon Trench Etch, J. YARMUSH, H. HAGA, Y. CHIBA, K. KUMAR, P. BIOLSI, TEL Technology Center, America, LLC, J. AN, H. HICHRI, B. DIRAHOUI, X. LI, IBM Microelectronics, R. WISE, IBM Research	SS1-MoA10 Photon Stimulated Desorption of the Sub-Nanometer Size Clusters of Water, Methane, Ethylene, and Their Mixtures, I. ARAKAWA, D. MATSUMOTO, S. TAKEKUMA, R. TAMURA, T. MIURA, Gakushuin University, Japan
5:20 pm		SS1-MoA11 Nanobonding between 2-nm β-crystobalite SiO_2 on OH(1x1)Si(100) and SiO_x for Monolithic Electronics by Surface Smoothing via Wet Chemical and Spin Processing: TMAFM Study and Modelling of Interphases, S.D. WHALEY, ASU, N.X. HERBOTS, ASU / SiO2 NanoTech Inc. / SiO2 Associates, LLC, J.D. BRADLEY, SiO2 Associates LLC / ASU, R.J. CULBERTSON, M.A. HART, D.A. SELL, Q.X. BRADLEY, ASU, R.L. RHOADES, S.N. DREWS, Entrepix, Inc., R.B. BENNETT-KENNETT, ASU

	Surface Science Room: 110 - Session SS2-MoA Molecular Ordering and Electrochemical Interfaces Moderator: S.L. Tait, Indiana University	Thin Film Room: 107 - Session TF-MoA Emerging ALD Applications Moderator: G. Scarel, James Madison University
2:00 pm	SS2-MoA1 Self-assembled Chains of 4,4'-azopyridine on Cu(100) Stabilized by Metal-Organic Coordination Interactions, H. LIM, S.L. TAIT, Indiana University	TF-MoA1 Invited Atmospheric ALD of Al_2O_3 for a High Throughput c-Si Solar Cell Passivation, V.I. KUZNETSOV, P. VERMONT, E.H.A. GRANNEMAN, Levitech BV, Netherlands
2:20 pm	SS2-MoA2 Molecular Self-assembly of Terephthalic Acid and Sodium Chloride on the Cu(100) Surface, D. SKOMSKI, S. ABB, S.L. TAIT, Indiana University	Invited talk continued.
2:40 pm	SS2-MoA3 Characterization of Azulene-Based Self-Assembled Monolayer Films, C.L. BERRIE, M. BARYBIN, B. NEAL, A. DELA ROSA, University of Kansas	TF-MoA3 Atomic Layer Deposition of Al_2O_3 for Quantum Computing, A.C. KOZEN, M. KHALIL, B. SARABI, K.D. OSBORN, University of Maryland, College Park, C. MUSGRAVE, University of Colorado, Boulder, C. LOBB, G.W. RUBLOFF, University of Maryland, College Park
3:00 pm	SS2-MoA4 Formation of Closed Shell Quantum Dots as a Driving Force for Molecular Ordering, L. BARTELS, J. WYRICK, Z. CHENG, D. SUN, D. KIM, University of California, Riverside, T.L. EINSTEIN, University of Maryland	TF-MoA4 Supported Core-Shell Pt-Pd Nanoparticles Synthesized by Atomic Layer Deposition, M.J. WEBER, A.J.M. MACKUS, Eindhoven University of Technology, Netherlands, M.A. VERHEIJEN, C. VAN DER MAREL, Philips Innovation Services, Netherlands, W.M.M. KESSELS, Eindhoven University of Technology, Netherlands
3:20 pm	BREAK	BREAK
3:40 pm	SS2-MoA6 Invited Redox Activity and Structural Transitions at Electrochemical Interfaces, K.R. WANDELT, University of Bonn, Germany	TF-MoA6 Photoluminescence Characteristics of TiO_2 Film Deposited on Vertically Oriented Si Nanowire by Remote Plasma Atomic Layer Deposition, J.S. LEE, T.Y. PARK, Y.B. KO, H.Y. JEON, J.G. PARK, J.H. RYU, H.T. JEON, Hanyang University, Republic of Korea
4:00 pm	Invited talk continued.	TF-MoA7 Fast Atomic Layer Deposition for High Throughput and Low Temperature Applications, P. POODT, A. ILLIBERI, M. SMETS, R. KNAAPEN, TNO, Netherlands, F. ROOZEBOOM, TNO & Eindhoven University of Technology, Netherlands, A. VAN ASTEN, TNO, Netherlands
4:20 pm	SS2-MoA8 Influence of Solvent on the Chiral Resolution of Organic Molecules on Au(111): EC-STM Study of Biphenyl Dicarboxylic Acid on Au (111) in an Aqueous Environment, B.I. KIM, J.A. HANSON, M.W. TURNER, L.J. REEDER, Boise State University	TF-MoA8 Industrial ALD Equipment for PV and OLED Applications, M. PUTKONEN, Beneq Oy, Finland
4:40 pm	SS2-MoA9 Surface and Interface Forces between Dissimilar Surfaces in Aqueous Solution: The Effect of Electrochemical Surface Potentials, Surface Roughness and Hydration Layers, M. VALTINER, K. KRISTIANSEN, G.W. GREENE, J.N. ISRAELACHVILI, University of California, Santa Barbara	TF-MoA9 Conductive Coatings on Nonwoven Fiber Mats by Atomic Layer Deposition, W. SWEET, J.S. JUR, G.N. PARSONS, North Carolina State University
5:00 pm	SS2-MoA10 Diffusion of Single Water and Hydrogen Sulfide Molecules on Ag(111): A DFT Study, D.-J. LIU, Ames Laboratory - US DOE	
5:20 pm		

Vacuum Technology
Room: 111 - Session VT-MoA

Optical and Mass Spectroscopy for Gas Analysis and Pump Modeling

Moderator: R. Versluis, TNO Science and Industry, The Netherlands

2:00 pm	VT-MoA1 Invited Low Uncertainty Measurements of Trace Water Vapor Based on Cavity Ring-Down Spectroscopy, T. HODGES, National Institute of Standards and Technology	
2:20 pm	Invited talk continued.	
2:40 pm	VT-MoA3 Comparison of Cavity Ring-Down Spectroscopy, Oscillating Quartz Crystal and Electrical Impedance Technologies for Trace Water Vapor Detection below 100 ppb, M.W. RAYNOR, J. FENG, Matheson	
3:00 pm	VT-MoA4 Commercial Applications and Benefits of Continuous-Wave Cavity Ring-Down Spectroscopy, Y. CHEN, Tiger Optics	
3:20 pm	BREAK	
3:40 pm	VT-MoA6 Vacuum Quality Measurement at UHV Levels with AutoResonant Ion Trap Mass Spectrometers, G.A. BRUCKER, Brooks Automation, Inc., J. RATHBONE, B.J. HORVATH, Brooks Automation, Inc., Granville-Phillips Products	
4:00 pm	VT-MoA7 Reducing Uncertainties for Hydrogen Loading Determination of 1,4-bis(phenethyl)benzene (DEB) Using GC/MS Instead of the Traditionally-used CHN Analysis Method, S.M. THORNBERG, J.M. HOCHREIN, M.I. WHITE, Sandia National Laboratories	
4:20 pm	VT-MoA8 Sampling Equilibration Times of Chemical Species for Different Capillary Surfaces, R. ELLEFSON, REVac Consulting, D. MCCLELLAND, Mound Technical Solutions, Inc.	
4:40 pm	VT-MoA9 Invited Numerical Methods for the Design of Vacuum Systems with Examples, R. KERSEVAN, ITER International Organization, France	
5:00 pm	Invited talk continued.	
5:20 pm	VT-MoA11 Numerical Modeling of Compact Siegbahn Molecular Drag Stages, H. TELIB, Politecnico di Torino, Italy, R. ARPA, Optimad Engineering s.r.l., Italy, L. CAMPAGNA, I.F. COZZA, E. EMELLI, Agilent Technologies s.p.a., Italy	

Anticipated Schedule
Monday Morning, October 31, 2011

TIME	SESSION	ROOM
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		

Lunch

when _____

with _____

where _____

Anticipated Schedule
Monday Afternoon, October 31, 2011

TIME	SESSION	ROOM
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		

TUESDAY SPECIAL EVENTS

7:00 a.m.	Companion Tour Registration—Rhythm & Blues (H)
7:00 a.m.	Professional Leadership Committee Meeting and Breakfast—Country (H)
8:00 a.m.	Advanced Surface Engineering Division Business Meeting—Gospel (H)
8:00 a.m.	Science Educators' Workshop—Ryman I & II (H)
8:15 a.m.	Advanced Surface Engineering Division Executive Committee Meeting (Lunch Offsite)—Gospel (H)
8:30 a.m.	Awards Committee Meeting and Lunch—Classical (H)
9:00 a.m.	AVS Governance Committee Meeting and Breakfast—Rhythm & Blues (H)
10:00 a.m.	Session Coffee Break—Center/West Exhibit Hall (CC)
12:00 p.m.	Chapters, Divisions, and Groups Meeting and Lunch—Jazz (H)
12:00 p.m.	Exhibit Hall Lunch—Center/West Exhibit Hall (CC)
12:00 p.m.	Job Information Forum and Lunch—Belmont Ballroom (H)
12:00 p.m.	Recommended Practices Committee Meeting and Lunch—Country (H)
12:00 p.m.	Science Educators' Workshop Lunch—Bluegrass (H)
12:30 p.m.	Industrial Physics Forum Workshop (Invitation Only)—Gospel (H)
3:00 p.m.	Marketing and Communications Committee Meeting—Gospel (H)
3:20 p.m.	Session Refreshment Break—Center/West Exhibit Hall (CC)
4:20 p.m.	Medard Welch Award Lecture, W. Ho, Univ. of California, Irvine—203 (CC)
5:00 p.m.	John A. Thornton Award Lecture, V.M. Donnelly, Univ. of Houston—201 (CC)
5:45 p.m.	Biomaterial Interfaces Division Business Meeting—105 (CC)
5:45 p.m	Plasma Science and Technology Division Business Meeting—201 (CC)
6:00 p.m.	Poster Session and Refreshments—East Exhibit Hall (CC)
6:05 p.m.	Electronic Materials and Processing Division Business Meeting—210 (CC)
6:05 p.m.	Magnetic Interfaces and Nanostructures Division Business Meeting—208 (CC)
6:05 p.m.	Nanometer-scale Science and Technology Business Meeting—203 (CC)
6:05 p.m	Surface Science Division Business Meeting—109 (CC)
6:05 p.m.	Thin Film Division Business Meeting—107 (CC)
6:30 p.m.	Chapter, Divisions, and Groups Committee Meeting and Dinner—Commerce Street Grill (H)
6:30 p.m.	Nanometer-scale Science and Technology Division Meeting and Dinner—Bluegrass (H)
6:30 p.m.	Manufacturing Science and Technology Group Committee Meeting and Dinner—Classical (H)
7:00 p.m.	Biomaterial Interfaces Division Executive Committee Meeting and Dinner and Biointer*phases* Editorial Board Meeting and Dinner—TBD (Offsite)
7:00 p.m.	Electronic Materials and Processing Division Executive Committee Meeting and Dinner— Gospel (H)
7:00 p.m.	Magnetic Interfaces and Nanostructures Division Executive Committee Meeting and Dinner—Rhythm & Blues (H)
7:00 p.m.	Plasma Science and Technology Executive Committee Meeting and Dinner—Jazz (H)
7:00 p.m.	Surface Science Division Executive Committee Meeting and Dinner—Belmont III (H)
7:00 p.m.	Thin Film Division Executive Committee Meeting and Dinner—Belmont I (H)
7:30 p.m.	Applied Surface Science Division Business Meeting—Fisk (H)
8:00 p.m.	ASTM E-42/ASSD Workshop, "Challenges in SIMS: A Symposium in Honor of Sally Asher—Fisk (H)

10:00 a.m.-5:30 p.m.	*Equipment Exhibition*	*Center/West Exhibit Hall (CC)*
10:20 a.m.-10:40 a.m.	*Exhibitors & Manufacturers Technology Spotlight*	*Center/West Exhibit Hall (CC)*
12:20 p.m.-2:00 p.m.	*Exhibitors & Manufacturers Technology Spotlight*	*Center/West Exhibit Hall (CC)*

CC = NashvilleConvention Center
H = Renaissance Nashvill Hotel

TUESDAY SHORT COURSES

8:30 a.m.	Fundamentals of Vacuum Technology
8:30 a.m.	X-ray Photoelectron Spectroscopy (XPS or ESCA) & Auger Electron Spectroscopy (AES), 11/1
8:30 a.m.	Comprehensive Course on Surface Analysis by XPS or ESCA, AES, FIB & SIMS

LOCATION: All AVS Short Courses will be held at – Nashville Convention Center
COURSE HOURS: All AVS Short Course Hours: 8:30 a.m. – 5:00 p.m. – with 1.5 hour break for Lunch (Lunch not included)

	Applied Surface Science Room: 102 - Session AS-TuM Imaging and 3D Chemical Analysis Moderators: V.S. Smentkowski, GE-GRC, X. Dong, Eli Lilly and Company	Biofabrication and Novel Devices Focus Topic Room: 105 - Session BN+NM-TuM Biofabrication Applications Moderator: G.F. Payne, University of Maryland, College Park
8:00 am	AS-TuM1 Invited Recent Applications of GCIB Depth Profiling with XPS and TOF-SIMS, T. MIYAYAMA, N. SANADA, ULVAC-PHI Inc., Japan, J.S. HAMMOND, Physical Electronics	BN+NM-TuM1 Bio-MEMS Fabrication using Ink Jet Technology, D.J. HAYES, MicroFab Technologies, Inc.
8:20 am	Invited talk continued.	BN+NM-TuM2 Electrically Controlled Biofabrication with Stimuli-Responsive Polysaccharide and Their Visualization in Microfluidic Devices, Y. CHENG, X.L. LUO, J. BETZ, C.Y. TSAO, H.C. WU, G.F. PAYNE, W.E. BENTLEY, G.W. RUBLOFF, University of Maryland, College Park
8:40 am	AS-TuM3 Molecular Depth Profiling of Organic Heterojunction Photovoltaic Layers: Comparison between C_{60} and Large Ar Cluster Ions, T. MOUHIB, Universite catholique de Louvain, Belgium, J.J. MICHELS, Y.O. GALAGAN, Holst Center, Netherlands, R. MOELLERS, E. NIEHUIS, ION-TOF GmbH, Germany, P. BERTRAND, A. DELCORTE, Universite catholique de Louvain, Belgium	BN+NM-TuM3 Invited Biofabrication for Interrogating Cell Signaling, W.E. BENTLEY, University of Maryland, College Park
9:00 am	AS-TuM4 Advances in Organic Depth Profiling for Polymer Devices, J.L.S. LEE, I.S. GILMORE, National Physical Laboratory, UK, A. LICCIARDELLO, University of Catania, Italy	Invited talk continued.
9:20 am	AS-TuM5 TOF-SIMS Depth Profiling and 3D Analysis of Polymer Materials Using C_{60} and Ar Cluster Ion Beams for Sputtering, D. RADING, ION-TOF GmbH, Germany, N. HAVERCROFT, ION-TOF USA, Inc., R. MOELLERS, E. NIEHUIS, ION-TOF GmbH, Germany	BN+NM-TuM5 Surface Modified Magnetic Microparticles for Bioreactor Applications, A. KHAING, E. MILKANI, A. MAZIARZ, C. LAMBERT, W. MCGIMPSEY, Worcester Polytechnic Institute
9:40 am	AS-TuM6 The zcorrectorgui for 3D ToF-SIMS Depth Profiles, D.J. GRAHAM, M. ROBINSON, D.G. CASTNER, University of Washington	BN+NM-TuM6 Bacterial Communication in Controlled 3D Microenvironments, X.L. LUO, H.C. WU, C.Y. TSAO, Y. CHENG, J. BETZ, G.W. RUBLOFF, W.E. BENTLEY, University of Maryland
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	AS-TuM9 3D Analysis of Organic Multilayer Structures by TOF-SIMS Using Ar Cluster Ions, R. MOELLERS, ION-TOF GmbH, Germany, R. KERSTING, TASCON GmbH, Germany, D. RADING, E. NIEHUIS, ION-TOF GmbH, Germany	BN+NM-TuM9 Invited "Body-On-A-Chip": Combining Microfabrication, Cell Cultures, and Mathematical Models, M.L. SHULER, Cornell University
11:00 am	AS-TuM10 Molecular Imaging of Cells and Tissues with Novel Ion Beams, J. MATSUO, QSEC, Kyoto University, CREST, Japan, K. ICHIKI, T. YAMANOBE, Y. YAMAMOTO, Kyoto University, Japan, S. IBUKI, QSEC, Kyoto University, CREST, Japan, T. AOKI, T. SEKI, Kyoto Univeristy, CREST, Japan	Invited talk continued.
11:20 am	AS-TuM11 High Resolution TOF-SIMS Imaging of Barrier Layers in Mouse Skin Stratum Corneum, I. ISHIZAKI, ULVAC-PHI inc., Japan, A. KUBO, Keio University, Japan, Y. OHASHI, A. YAMAMOTO, ULVAC Inc., Japan, J.S. HAMMOND, G.L. FISHER, S.R. BRYAN, Physical Electronics	BN+NM-TuM11 Simultaneous Bacterial Transformation and Localization within a Microfluidic Device, J. BETZ, Y. CHENG, C.Y. TSAO, G.F. PAYNE, W.E. BENTLEY, G.W. RUBLOFF, University of Maryland
11:40 am		

	Electronic Materials and Processing Room: 210 - Session EM+TF-TuM High-k Dielectrics for MOSFETs Part 1 Moderator: R.M. Wallace, University of Texas at Dallas	Energy Frontiers Focus Topic Room: 103 - Session EN+NS-TuM Ultrafast Charge and Energy Transfer in Nanomaterials Moderator: J.B. Baxter, Drexel University
8:00 am		EN+NS-TuM1 Controlled Deposition of Nanocrystal Quantum Dots on Silicon Surfaces: Demonstration and Application of Forster Resonant Energy Transfer, O. SEITZ, H.M. NGUYEN, Y.N. GARTSTEIN, A.V. MALKO, University of Texas at Dallas, Y.J. CHABAL, The University of Texas at Dallas
8:20 am	EM+TF-TuM2 ***In Situ*** TMA Pre-Treatment Study of GaAs and $In_{0.53}Ga_{0.47}As$ Surfaces, B. BRENNAN, D.M. ZHERNOKLETOV, H. DONG, R.V. GALATAGE, J. KIM, E.M. VOGEL, R.M. WALLACE, University of Texas at Dallas	EN+NS-TuM2 Orbital-dependent Charge Transfer Dynamics in Potential Molecular Wires, H. HAMOUDI, Universität Heidelberg, Germany, S. NEPPL, Technische Universität München, Germany, P. KAO, Penn State University, B. SCHÜPBACH, Universität Frankfurt, Germany, P. FEULNER, Technische Universität München, Germany, A. TERFORT, Universität Frankfurt, Germany, D.L. ALLARA, Penn State University, M. ZHARNIKOV, Universität Heidelberg, Germany
8:40 am	EM+TF-TuM3 Half-cycle Atomic Layer Deposition Studies of HfO_2 on the GaSb(001) Surface, D.M. ZHERNOKLETOV, H. DONG, B. BRENNAN, J. KIM, R.M. WALLACE, University of Texas at Dallas	EN+NS-TuM3 Invited Photophysics of Semiconductor Nanostructures in Relation to Problems of Solar Energy Conversion, V.I. KLIMOV, Los Alamos National Laboratory
9:00 am	EM+TF-TuM4 Invited Remote Phonon and Surface Roughness Limited Universal Electron Mobility of $In_{0.53}Ga_{0.47}As$ Surface Channel MOSFETs, E.M. VOGEL, A.M. SONNET, R.V. GALATAGE, University of Texas at Dallas, P.K. HURLEY, E. PELUCCHI, K. THOMAS, A. GOCALINSKA, Tyndall National Institute, J. HUANG, N. GOEL, G. BERSUKER, SEMATECH, W.P. KIRK, C.L. HINKLE, University of Texas at Dallas	Invited talk continued.
9:20 am	Invited talk continued.	EN+NS-TuM5 Invited Hot Electron Transfer from Semiconductor Nanocrystals, W.A. TISDALE, Massachusetts Institute of Technology
9:40 am	EM+TF-TuM6 Structural Characterization of Ultra-thin High-***k*** Gate Oxide Films through a Multi-technique Approach, E.J. BERSCH, J.D. LAROSE, I.B. WELLS, University at Albany, S.P. CONSIGLIO, R.D. CLARK, K.N. TAPILY, G.J. LEUSINK, TEL Technology Center, America, LLC, A.C. DIEBOLD, University at Albany	Invited talk continued.
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	EM+TF-TuM9 Invited Research Advances on III-V and Ge MOS/MOSFETs Beyond Si CMOS, T.D. LIN, M.L. HUANG, Y.C. CHANG, W.C. LEE, National Tsing Hua University, Taiwan, Republic of China, T.W. PI, National Synchrotron Radiation Research Center, Taiwan, Republic of China, J. KWO, National Tsing Hua Univ. and National Taiwan Univ., Taiwan, Republic of China, M. HONG, National Tsing Hua University, Taiwan, Republic of China	EN+NS-TuM9 Single Molecule Study of Charge Transfer in 6T-TBrPP-Co Molecular Complex, Y. ZHANG, U.G.E. PERERA, S.-W. HLA, Ohio University
11:00 am	Invited talk continued.	EN+NS-TuM10 NEGF Quantum Simulation of Nanotip Thermionic Emitters for Direct Energy Conversion, T.D. MUSHO, D.G. WALKER, Vanderbilt University
11:20 am	EM+TF-TuM11 SiO_2 Interlayer Thickness Dependence of the Density and Polarity of Charges in $Si/SiO_2/Al_2O_3$ stacks, N.M. TERLINDEN, G. DINGEMANS, M.M. MANDOC, M.C.M. VAN DE SANDEN, W.M.M. KESSELS, Eindhoven University of Technology, Netherlands	EN+NS-TuM11 Invited Mechanisms of Heterogeneous Charge Transfer at the Quantum Dot-Organic Interface, A. MORRIS-COHEN, M. FREDERICK, L. CASS, E.A. WEISS, Northwestern University
11:40 am	EM+TF-TuM12 Study of the Interface Barrier of Atomic Layer Deposited (ALD) Al_2O_3 on GaN, M. ESPOSTO, S. KRISHNAMOORTHY, D.N. NATH, S. BAJAJ, S. RAJAN, Ohio State University	Invited talk continued.

	Energy Frontiers Focus Topic Room: 108 - Session EN-TuM Industrial Physics Forum on Energy III Moderators: D.G. Seiler, National Institute of Standards & Technology, J.S. Murday, University of Southern California	Electron Transport in Low Dimensional Materials Focus Topic Room: 209 - Session ET+EM+NS+GR-TuM Electron Behaviors in Nanoelectronics, Interconnect, and Carbon-based Materials Moderators: J. Wendelken, Oak Ridge National Laboratory, A. Swan, Boston University
8:00 am	EN-TuM1 Invited Materials for Low Risk Nuclear Reactors, T.R. ALLEN, University of Wisconsin, Madison	ET+EM+NS+GR-TuM1 Electron Transport Study of Graphene on SiC Using Scanning Tunneling Potentiometry, K. CLARK, S. QIN, Oak Ridge National Laboratory, G. HE, Carnegie Mellon University, G. GU, The University of Tennessee, R.M. FEENSTRA, Carnegie Mellon University, A.-P. LI, Oak Ridge National Laboratory
8:20 am	Invited talk continued.	ET+EM+NS+GR-TuM2 Engineering the Electronic States of CVD Grown Few Layer Graphene by Twisting and Lattice Distortion, M.H. PAN, Oak Ridge National Laboratory, X.T. JIA, S. BHAVIRIPUDI, Massachusetts Institute of Technology, V. MEUNIER, Rensselaer Polytechnic Institute, M.S. DRESSELHAUS, J. KONG, Massachusetts Institute of Technology
8:40 am	EN-TuM3 Invited Battery 500 - the Li-Air Battery Opportunity, S.A. SWANSON, IBM Almaden Research Center	ET+EM+NS+GR-TuM3 Invited Unique One- and Two-Dimensional Phenomena Observed in Carbon Nanotubes and Graphene, S. CRONIN, University of Southern California
9:00 am	Invited talk continued.	Invited talk continued.
9:20 am	EN-TuM5 Invited Advanced Thermoelectric Technology for Waste Heat Recovery, G.P. MEISNER, General Motors Research & Development	ET+EM+NS+GR-TuM5 Probing Surface Band Conduction through Back-Gated Conductance Measurements on Si Nanomembranes, W.N. PENG*, J. ENDRES, S. SCOTT, Z. AKSAMIJA, D.E. SAVAGE, I. KNEZEVIC, M.G. LAGALLY, M. ERIKSSON, University of Wisconsin Madison
9:40 am	Invited talk continued.	ET+EM+NS+GR-TuM6 Ferroelectric Field-Effect Transistor Behavior in CdS Nanotetrapods, S. QIN, Oak Ridge National Laboratory, W. FU, L. LIU, Chinese Academy of Sciences, T.H. KIM, Oak Ridge National Laboratory, S.L. HELLSTROM, Stanford University, W. WANG, W. LIANG, X. BAI, E. WANG, Chinese Academy of Sciences, A.-P. LI, Oak Ridge National Laboratory
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	EN-TuM9 Invited Improving Solar Energy Conversion with Nanoscale Materials, S.F. BENT, Stanford University	ET+EM+NS+GR-TuM9 Invited Probing Electron-Electron Correlations in Quantum Dots Using Transport: Quantum Monte Carlo Studies, H.U. BARANGER, Duke University
11:00 am	Invited talk continued.	Invited talk continued.
11:20 am		ET+EM+NS+GR-TuM11 Resistivity Increase due to Electron Scattering at Surfaces and Grain Boundaries in Metal Thin Films and Nanowires, J.S. CHAWLA, D. GALL, Rensselaer Poltechnic Insitute
11:40 am		ET+EM+NS+GR-TuM12 Control of Contact Formation via Electrodeposition on GaAs Nanowires, C. LIU, O. EINABAD, S. WATKINS, K.L. KAVANAGH, Simon Fraser University, Canada

* NSTD Student Award Finalist

	Exhibitor Technology Spotlight Room: West Exhibit Hall - Session EW-TuM Exhibitor Technology Spotlight Moderator: D. Surman, Kratos Analytical Inc.	Graphene and Related Materials Focus Topic Room: 208 - Session GR+EM-TuM Graphene: Optical Properties, Optoelectonics and Photonics Moderator: P.E. Sheehan, U.S. Naval Research Laboratory
8:00 am		GR+EM-TuM1 Invited Graphene Optoelectronics: From Ultrafast Lasers to Flexible Displays, A.C. FERRARI, University of Cambridge, UK
8:20 am		Invited talk continued.
8:40 am		GR+EM-TuM3 Optical Absorption Spectra of Graphene and Few-layer Graphene, L. YANG, Washington University in St. Louis
9:00 am		GR+EM-TuM4 Quantum Mechanics-Based Exploration of Graphene-Like Systems to Model Magnetic Resonators, X.W. SHA, E.N. ECONOMOU, D.A. PAPACONSTANTOPOULOS, George Mason University, M.R. PEDERSON, M.J. MEHL, Naval Research Laboratory, M. KAFESAKI, University of Crete, Greece
9:20 am		GR+EM-TuM5 Infrared Optical Conductance of CVD-grown Graphene, J.W. WEBER, M.C.M. VAN DE SANDEN, Eindhoven University of Technology, Netherlands
9:40 am		GR+EM-TuM6 Optical Properties of Graphene on MgO and SiC Polytypes Determined by Spectroscopic Ellipsometry, A. BOOSALIS, T. HOFMANN, S. SCHOCHE, P.A. DOWBEN, University of Nebraska - Lincoln, S. GADDAM, C. VAMALA, J. KELBER, University of North Texas, V. DARAKCHIEVA, Linköping University, Sweden, D.K. GASKILL, U.S. Naval Research Laboratory, M. SCHUBERT, University of Nebraska - Lincoln
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	EW-TuM8 Novel Thin Film Technology, D. BINGAMAN, Kurt J. Lesker Company	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am		GR+EM-TuM9 Plasmon Resonance in Individual Nanogap Electrodes Studied Using Graphene Nanoconstrictions as Photodetectors, S.-F. SHI, Cornell University, X. XU, University of Washington, P.L. MCEUEN, D.C. RALPH, Cornell University
11:00 am		GR+EM-TuM10 Large Area Graphene Growth for Optoelectronic Applications, C. EDWARDS, C.L. BERRIE, J. LIU, J. WU, University of Kansas
11:20 am		GR+EM-TuM11 Stable Chemical Doping of Graphene: Transport, Raman Spectroscopy, SEM, and Transmittance Studies, K. BERKE, S. TONGAY, M. LEMAITRE, Z. NASROLLAHI, D.B. TANNER, B.R. APPLETON, A.F. HEBARD, University of Florida
11:40 am		GR+EM-TuM12 Electrical and Optical Properties of Graphene Nanostructures (Nanoribbons and Quantum Dots) with Controlled Dimensions and Shape, V. BERRY, Kansas State University

	In Situ Spectroscopy and Microscopy Focus Topic Room: 106 - Session IS+AS+SS-TuM In Situ Studies of Organic and Soft Materials and Liquid-Solid Interfaces Moderator: A.I. Frenkel, Yeshiva University	Nanomanufacturing Science and Technology Focus Topic Room: 207 - Session NM+MN+MS+TF-TuM Lithography Strategies for Nanomanufacturing Moderator: T.S. Mayer, Penn State University
8:00 am	IS+AS+SS-TuM1 Invited Solid-Vacuum, Solid-Gas, and Solid-Liquid Interfaces: Structure and Dynamics under Environmentally Relevant Conditions, M. SALMERON, Lawrence Berkeley National Laboratory	NM+MN+MS+TF-TuM1 Invited A SANE Approach to Programmable Soft Lithography, T.W. ODOM, Northwestern University
8:20 am	Invited talk continued.	Invited talk continued.
8:40 am	IS+AS+SS-TuM3 Invited Imaging Tagged Proteins in Whole Eukaryotic Cells in Liquid with Scanning Transmission Electron Microscopy, N. DE JONGE, D.B. PECKYS, Vanderbilt University School of Medicine	NM+MN+MS+TF-TuM3 Micromolding Surface-Initiated Polymerization: A Versatile Route for Microscale Replication onto a Solid Support, C.A. ESCOBAR, J.C. TUBERQUIA, N. NIZAMIDIN, G.K. JENNINGS, Vanderbilt University
9:00 am	Invited talk continued.	NM+MN+MS+TF-TuM4 Si Mold Etching with Hard Mask for Bit-Patterned Media, M. KURIHARA, Hitachi, Ltd., Tokyo, M. SATAKE, Y. TSUCHIYA, T. NISHIDA, Central Research Laboratory, Hitachi, Ltd., Japan, Y. TADA, H. YOSHIDA, Hitachi Research Laboratory, Hitachi, Ltd., Japan, N. NEGISHI, Central Research Laboratory, Hitachi, Ltd., Japan
9:20 am	IS+AS+SS-TuM5 Imaging Live Cells in Liquid with Scanning Transmission Electron Microscopy, D.B. PECKYS, N. DE JONGE, Vanderbilt University School of Medicine	NM+MN+MS+TF-TuM5 Invited Directed Assembly of Block Copolymers to Advance the Performance of Conventional Lithography, P.F. NEALEY, University of Wisconsin
9:40 am	IS+AS+SS-TuM6 Microscopic Imaging of Biological Samples using Coherent Soft X-rays from Free-Electron Laser and Synchrotron Sources, T. GORNIAK, T. SENKBEIL, M. BECKERS, C. CHRISTOPHIS, University of Heidelberg, Germany, K. GIEWEKEMEYER, University of Göttingen, Germany, M. GRUNZE, University of Heidelberg, Germany, T. SALDITT, University of Göttingen, Germany, A. ROSENHAHN, University of Heidelberg, Germany	Invited talk continued.
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	IS+AS+SS-TuM9 Surface Chemistry of Amino Acids at Near Ambient Pressure of Water Vapor, A. SHAVORSKIY, Lawrence Berkeley National Laboratory, T. ERALP, The University of Reading, UK, F. AKSOY, Nigde University, Turkey, M.E. GRASS, Z. LIU, H. BLUHM, Lawrence Berkeley National Laboratory, G. HELD, The University of Reading, UK	NM+MN+MS+TF-TuM9 Measured Backscattered Electron Profile for Optimized Proximity Effect Correction, D.A. CZAPLEWSKI, L.E. OCOLA, Argonne National Laboratory
11:00 am	IS+AS+SS-TuM10 STM Tip Catalyzed Adsorption of Thiol Molecules and Functional Group-Selective Adsorption of Bi-Functional Molecule Using This Catalysis, Y.H. MIN, S. KIM, S.J. JUNG, Y.-S. YOUN, Korea Advanced Institute of Science and Technology, Republic of Korea, D.H. KIM, Daegu University, Republic of Korea, E.H. PARK, Korea Advanced Institute of Science and Technology, Republic of Korea	NM+MN+MS+TF-TuM10 Invited CMOS Density Scaling in Non-Planar Multi-Gate Devices: A Patterning Perspective, M.A. GUILLORN, J. CHANG, S. BANGSARUNTIP, C.-H. LIN, W.E. HAENSCH, IBM T.J. Watson Research Center
11:20 am	IS+AS+SS-TuM11 CO_2 Capture in Aqueous Monoethanolamine Solutions: Role of the Solution Interface Investigated with X-ray Photoelectron Spectroscopy, T. LEWIS, University of California, Irvine, B. WINTER, Helmholtz-Zentrum Berlin für Materialien und Energie, Germany, M. FAUBEL, Max-Planck-Institut für Dynamik und Selbstorganisation, Germany, J.C. HEMMINGER, University of California, Irvine	Invited talk continued.
11:40 am	IS+AS+SS-TuM12 Fundamental Aspects of Organic Heterostructure Formation Examined using Supersonic Molecular Techniques and *In Situ* Real Time X-ray Synchrotron Radiation, E.R. KISH, T.V. DESAI, A.R. WOLL, J.R. ENGSTROM, Cornell University	

	Nanometer-scale Science and Technology Room: 203 - Session NS-TuM Nanowires and Nanoparticles II: Characterization and Synthesis Moderator: U.D. Schwarz, Yale University	Plasma Science and Technology Room: 202 - Session PS+MN+TF-TuM Plasma Processing for Disruptive Technologies Moderator: M.C.M. van de Sanden, Eindhoven University of Technology
8:00 am	NS-TuM1 Formation of Metallic Glass Nanofiber, K.S. NAKAYAMA, Y. YOKOYAMA, T. WADA, N. CHEN, Tohoku University, Japan	PS+MN+TF-TuM1 Invited Scallop Free TSV Etching Method for 3-D LSI Integration, Y. MORIKAWA, T. MURAYAMA, T. SAKUISHI, S. TOYODA, K. SUU, ULVAC, Inc., Japan
8:20 am	NS-TuM2 Plasma-assisted Dissociation of Organometallic Vapors for Continuous, Gas-Phase Preparation of Multimetallic Nanoparticles, R.M. SANKARAN, P. LIN, Case Western Reserve University	Invited talk continued.
8:40 am	NS-TuM3 Electrical Characterization of III-V Semiconductor Freestanding Nanowires with Scanning Tunneling Microscopy, O. PERSSON, D. SUYATIN, J. WALLENTIN, L. SAMUELSON, A. MIKKELSEN, R. TIMM, Lund University, Sweden	PS+MN+TF-TuM3 Deep Silicon Etching of 0.8 μm to Hundreds of Microns Wide Trenches with the STiGer Process, T. TILLOCHER, W. KAFROUNI, GREMI, France, J. LADROUE, STMicroelectronics - GREMI, France, P. LEFAUCHEUX, GREMI, France, M. BOUFNICHEL, STMicroelectronics, France, P. RANSON, R. DUSSART, GREMI, France
9:00 am	NS-TuM4 Invited Semiconductor Nanowires: From Materials Physics to Devices, L. SAMUELSON, Lund University, Sweden	PS+MN+TF-TuM4 Evaluation of Alternative Passivation Chemistries for TSV Applications, E.A. JOSEPH, IBM T.J. Watson Research Center, G. MATSUURA, ZEON Chemicals L.P., S. ENGELMANN, IBM T.J. Watson Research Center, M. NAKAMURA, ZEON Chemicals L.P., N.C.M. FULLER, E.M. SIKORSKI, M. GORDON, B.N. TO, IBM T.J. Watson Research Center, H. MATSUMOTO, A. ITOU, Zeon Corporation
9:20 am	Invited talk continued.	PS+MN+TF-TuM5 Invited Wafer Scale Hermetic Packaging of MEMS, C.S. GUDEMAN, IMT
9:40 am	NS-TuM6 Self-Catalyzed Growth of $InP_{1-x}Sb_x$ Nanowires on InP(111)B, C. NGO, M. POZUELO, M. MECKLENBURG, H. ZHOU, B.C. REGAN, R.F. HICKS, S. KODAMBAKA, University of California Los Angeles	Invited talk continued.
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	NS-TuM9 The Surface Hydrogen-Controlled Crystal Structure of Group IV Nanowires, N. SHIN, M.A. FILLER, Georgia Institute of Technology	PS+MN+TF-TuM9 Invited Challenges in Plasma Etch for NVM: Scaling and Materials, M. KIEHLBAUCH, Micron Technology, Inc.
11:00 am	NS-TuM10 Inhomogeneous Longitudinal and Radial Dopant Distribution Measurements in Si Nanowires Using Scanning Auger, J.S. HAMMOND, D.F. PAUL, Physical Electronics, U. GIVEN, Northwestern University	Invited talk continued.
11:20 am	NS-TuM11 Crystal Structure Engineering of Ge Nanowires, I.R. MUSIN, M.A. FILLER, Georgia Institute of Technology	PS+MN+TF-TuM11 Dry Etching of GST Stack Patterns using Spinning on Coating Hard Mask for Phase-Change Memory Applications, P. PETRUZZA, MICRON Semiconductor Italia, Italy
11:40 am	NS-TuM12 Towards an Understanding of Ligand Selectivity in Nanocluster Synthesis, S. HONG, G. SHAFAI, University of Central Florida, M. BERTINO, Virginia Commonwealth University, T.S. RAHMAN, University of Central Florida	PS+MN+TF-TuM12 Mechanisms of Selective Etching for Magnetic Materials: Ni, Co and Ta Etching by Carbon Monoxide/Methyl Alcohol Based Plasmas, K. KARAHASHI, T. ITO, S. HAMAGUCHI, Osaka University, Japan

	Plasma Science and Technology Room: 201 - Session PS-TuM Advanced BEOL / Interconnect Etching I Moderator: A. Balakrishna, Applied Materials, Inc.	Surface Science Room: 109 - Session SS1-TuM Chemisorption & Surface Reactions Moderator: D.A. Chen, University of South Carolina
8:00 am	PS-TuM1 Narrow Pitch Dual Damascene Patterning using EUV Lithography in Association with a Spin-On Trilayer Resist System, F. LAZZARINO, V. TRUFFERT, B. VEREECKE, S. DEMUYNCK, IMEC, Belgium	SS1-TuM1 XANES and EXAFS Analysis of the Effects of Cobalt Incorporation Into Silica Supports for Fischer-Tropsch Synthesis, B.M. GOUNDIE, I.T. GHAMPSON, M.C. WHEELER, W.J. DESISTO, B.G. FREDERICK, R.W. MEULENBERG, University of Maine
8:20 am	PS-TuM2 TiN Hard Mask Integration Line Wiggling Onset: Etching Time Dependence, G.A. DELGADINO, Lam Research Corp.	SS1-TuM2 Measurement of the C-Pt Bond Energy for Adsorbed Methyl on Pt(111) by Methyl Iodide's Dissociative Adsorption Energy, E.M. KARP, T.L. SILBAUGH, C.T. CAMPBELL, University of Washington
8:40 am	PS-TuM3 Invited Surface Reaction Control for BEOL Application, M. FUKASAWA, T. TATSUMI, Sony Corporation, Japan	SS1-TuM3 A DFT Study of Methanol Reaction Pathways on the $Au_{13}/TiO_2(110)$ Surface, S. HONG, University of Central Florida, D.A. CHEN, University of South Carolina, T.S. RAHMAN, University of Central Florida
9:00 am	Invited talk continued.	SS1-TuM4 Turning Aluminum into a Noble-metal like Catalyst for Low Temperature Molecular Hydrogen Activation, I. CHOPRA, University of Texas at Dallas, S. CHAUDHURI, Washington State University, J.F. VEYAN, Y.J. CHABAL, University of Texas at Dallas
9:20 am	PS-TuM5 Trench First Metal Hard Mask RIE for the 22 nm Node and Beyond, Y. FEURPRIER, R. GAYLORD, Y. CHIBA, K. KUMAR, D. TRICKETT, TEL Technology Center, America, LLC, Y. MIGNOT, ST Microelectronics, R. SRIVASTAVA, T. KWON, R. KOSHY, C. LABELLE, GlobalFoundries, Y.J. PARK, Samsung, E. WORMYO, S. ALLEN, IBM Research, E. SODA, Renesas Electronics, D. HORAK, Y. YIN, J. ARNOLD, IBM Research, M. ISHIKAWA, H. TOMIZAWA, Toshiba America Electronic Components	SS1-TuM5 Invited On the Role of Hydrogen in Heterogeneously Catalyzed Reactions, M. MAVRIKAKIS, University of Wisconsin Madison
9:40 am	PS-TuM6 Plasma Processing of Ti and TiN Metal Hardmasks for Dielectric Etch, F. WEILNBOECK*, E. BARTIS, S. SHACHAR, G.S. OEHRLEIN, University of Maryland, College Park, D. FARBER, T. LII, C. LENOX, Texas Instruments Incorporated	Invited talk continued.
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am		SS1-TuM9 Prediction of Surface Ensembles in Au-based Bimetallic Alloys using Combined DFT and Monte Carlo Simulations, J.A. STEPHENS, H.C. HAM, G.S. HWANG, University of Texas at Austin
11:00 am	PS-TuM10 Superposition of High Negative DC Voltage in Capacitively Coupled Plasma, A. RANJAN, A. METZ, A. LISI, Y. CHIBA, W. LI, Y. FEURPRIER, K. KUMAR, P. BIOLSI, TEL Technology Center, America, LLC, L. CHEN, P. VENTZEK, R. SUNDARARAJAN, Tokyo Electron America	SS1-TuM10 Adsorption and Electron-induced Dissociation of CO_2 on $TiO_2(110)$, J. LEE, X. DENG, D. SORESCU, National Energy Technology Laboratory
11:20 am	PS-TuM11 Evaluation of C5HF7: A High Etch Selectivity Hydrogen-Containing Fluorocarbon Gas for Oxide Etch, R.L. BRUCE, IBM T.J. Watson Research Center, M. NAKAMURA, ZEON Chemicals L.P., S. ENGELMANN, E.A. JOSEPH, IBM T.J. Watson Research Center, G. MATSUURA, ZEON Chemicals L.P., N.C.M. FULLER, E.M. SIKORSKI, W.S. GRAHAM, Y. ZHANG, IBM T.J. Watson Research Center, A. ITOU, Zeon Corporation	SS1-TuM11 Adsorption and Dissociation of Propane-1, 3-diol Molecules on Reduced $TiO_2(110)$ Surface- A Scanning Tunneling Microscopy Study, D. ACHARYA, X. LIN, B.D. KAY, Z. DOHNÁLEK, Z. ZHANG, Pacific Northwest National Laboratory
11:40 am	PS-TuM12 Etch Uniformity Improvement Using Mid-Gap Capacitively Coupled Plasma, C. COLE, A. KO, A. RANJAN, T. ENOMOTO, A. METZ, K. KUMAR, P. BIOLSI, TEL Technology Center, America, LLC, E. WORNYO, H. YUSUFF, S. ALLEN, R. WISE, IBM Research, C. LABELLE, T. CHEN, GlobalFoundries, S. KANAKASABAPATHY, IBM Research, Y. MIGNOT, STMicroelectronics	SS1-TuM12 Oxygen-Vacancy Assisted Formation of Enolate Species on Reduced $CeO_2(111)$ Surfaces, F.C. CALAZA, Y. XU, D.R. MULLINS, S.H. OVERBURY, Oak Ridge National Laboratory

* Coburn & Winters Student Award Finalist

	Surface Science Room: 110 - Session SS2-TuM Self Assembled Monolayers and Networks Moderator: J.E. Reutt-Robey, University of Maryland	Thin Film Room: 107 - Session TF+EN-TuM ALD for Energy Moderator: W.M.M. Kessels, Eindhoven University of Technology, the Netherlands
8:00 am	SS2-TuM1 In Situ UHV Growth and XPS/NEXAFS Characterization of Aromatic Self-Assembled Monolayers on Gold Substrates, A. NEFEDOV, Karlsruhe Institute of Technology, Germany, H. MUZIK, University of Bielefeld, Germany, M. NABOKA, Karlsruhe Institute of Technology, Germany, A. TURCHANIN, A. GÖLZHÄUSER, University of Bielefeld, Germany, C. WÖLL, Karlsruhe Institute of Technology, Germany	
8:20 am	SS2-TuM2 Template Directed Assembly of Oriented Poly(acetylene) Polymer Brushes on Activated Self-Assembled Monolayers at Planar and Curved Surfaces, D.L. ALLARA, N. SULLIVAN, J.V. BADDING, J.A. CALKINS, Pennsylvania State University	TF+EN-TuM2 Controlling the Dispersion and Size of Platinum Nanoparticles Using Pt Atomic Layer Deposition and Surface Treatments, V.R. ANDERSON, University of Colorado, Boulder, N. LEICK, Eindhoven University of Technology, Netherlands, K.E. HURST, National Renewable Energy Laboratory, A.S. CAVANAGH, University of Colorado, Boulder, S. KOCHA, K. JONES, A.C. DILLON, National Renewable Energy Laboratory, S.M. GEORGE, University of Colorado, Boulder
8:40 am	SS2-TuM3 Invited Structure, Bonding and Electronic Properties of Self-assembled 2D Organic Nanostructures at Surfaces: Negatively Charged TCNQ Networks and Other Systems, S.L. TAIT, Indiana University	TF+EN-TuM3 Nucleation & Growth of Continuous and Ultrathin Pt ALD Films for Improved Oxygen Reduction Activity in Fuel Cells Using W ALD Adhesion Layers, L. BAKER, A.S. CAVANAGH, S.M. GEORGE, University of Colorado, Boulder, A. KONGKANAND, F.T. WAGNER, General Motors Research & Development
9:00 am	Invited talk continued.	TF+EN-TuM4 Engineering $Li_xAl_ySi_zO$ Ion Conducting Thin Films by Atomic Layer Deposition for Lithium-ion Battery Applications, Y.-C. PERNG, J. CHO, D. MEMBRENO, N. CIRIGLIANO, B. DUNN, J.P. CHANG, University of California Los Angeles
9:20 am	SS2-TuM5 Ultrafast Self-Assembly of 1-Adamantanethiol and ***p***-Terphenylthiol on Au(111)-surface, V.V. KOROLKOV, S.A. ALLEN, C.J. ROBERTS, S.J.B. TENDLER, The University of Nottingham, UK	TF+EN-TuM5 Invited ALD: Enabling Designer Nanostructures for Energy Applications, G.W. RUBLOFF, University of Maryland
9:40 am	SS2-TuM6 Role of van der Waals Interaction in the Binding of 1,4 diaminebenzene to the Au(111) Surface, D. LE, M. AMINPOUR, University of Central Florida, A. KIEJNA, University of Wroclaw, Poland, T.S. RAHMAN, University of Central Florida	Invited talk continued.
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	SS2-TuM9 Invited Conformational Chirality, Chiral Switching and Chiral Induction in Self-Assembled Molecular Structures, T.R. LINDEROTH, University of Aarhus, Denmark	TF+EN-TuM9 Functionalized Quartz Fibers by Atomic Layer Deposition for Dye-Sensitized Solar Cells, D. KIM, H.J. KOO, M. WOODROOF, J.S. JUR, B. KALANYAN, K. LEE, C.K. DEVINE, G.N. PARSONS, North Carolina State University
11:00 am	Invited talk continued.	TF+EN-TuM10 Angle Dependent Electromotive Force in an Al_2O_3/Al/Thermoelectric Power Generator System Interacting with Infrared Radiation, A.J. VINCENT-JOHNSON, K.A. VASQUEZ, James Madison University, A.E. MASTERS, Custom Thermoelectric, X. HU, G. SCAREL, James Madison University
11:20 am	SS2-TuM11 Electronic Structure and Charge Injection Barriers of Self Assembled Peptide Nucleic Acid Monolayers on Au, M.A. WOLAK, University of South Florida, A. BALAEFF, Duke University, S. GUTMANN, M.M. BEERBOM, University of South Florida, E. WIERZBINSKI, D.H. WALDECK, University of Pittsburgh, S. BEZER, C. ACHIM, Carnegie Mellon University, D.N. BERATAN, Duke University, R. SCHLAF, University of South Florida	
11:40 am	SS2-TuM12 Immobilization of Single-Stranded DNA Probe on InAs Surfaces for Biosensor Application, E.K. CHO, University of Wisconsin, A. BROWN, Duke University, T.F. KUECH, University of Wisconsin	

	Thin Film Room: 104 - Session TF+SE-TuM Glancing Angle Deposition (GLAD) I Moderator: T. Karabacak, University of Arkansas at Little Rock	Vacuum Technology Room: 111 - Session VT-TuM Accelerator and Large Vacuum System Design, Outgassing and Pumping Moderator: Y. Li, Cornell University
8:00 am		VT-TuM1 Continued Work toward XHV for the Jefferson Lab Polarized Electron Source, M.L. STUTZMAN, P.A. ADDERLEY, Thomas Jefferson National Accelerator Facility
8:20 am	TF+SE-TuM2 Invited Progress in Glancing Angle Deposition Technology for Practical Applications, M. SUZUKI, Kyoto University, Japan	VT-TuM2 Invited Status of National Synchrotron Light Source II Vacuum Systems, H.C. HSEUH, A. BLEDNYKH, L. DOOM, M.J. FERREIRA, C. HETZEL, J.P. HU, S. LENG, C. LONGO, V. RADINDRANATHH, K. ROY, S. SHARMA, F. WILLEKE, K. WILSON, D. ZIGROSSER, Brookhaven National Laboratory
8:40 am	Invited talk continued.	Invited talk continued.
9:00 am	TF+SE-TuM4 Engineering Columnar Nanostructures for Organic Photovoltaics, R.T. TUCKER, Univ. of Alberta, Canada, D.A. RIDER, NRC-Nat. Inst. for Nanotech., Canada, J.G. VAN DIJKEN, M. THOMAS, B.J. WORFOLK, A. LALANY, K.M. KRAUSE, Univ. of Alberta, Canada, M.D. FLEISCHAUER, NRC-Nat. Inst. for Nanotech., Canada, M.T. TASCHUK, Univ. of Alberta, Canada, K.D. HARRIS, NRC-Nat. Inst. for Nanotech., Canada, J.M. BURIAK, M.J. BRETT, Univ. of Alberta, Canada	VT-TuM4 The Large Cryopump System for the Heating Neutral Beam Injection of ITER, S. HANKE, M. SCANNAPIEGO, X. LUO, C. DAY, Karlsruhe Institute of Technology (KIT), Germany, F. FELLIN, P. ZACCARIA, Consorzio RFX, Italy
9:20 am	TF+SE-TuM5 Enhanced Photoconductivity Response of Glancing Angle Deposited Indium Sulfide Nanorod Arrays for Photodetector Device Applications, H. IS, M.F. CANSIZOGLU, T. KARABACAK, University of Arkansas at Little Rock	VT-TuM5 Design and Construction of the Vacuum System for SuperKEKB, Y. SUETSUGU, K. SHIBATA, H. HISAMATSU, M. SHIRAI, T. ISHIBASHI, K. KANAZAWA, KEK, Japan
9:40 am	TF+SE-TuM6 Approaching a Complete Atomic Model of Physical Vapour Deposition, K. ROBBIE, J. YANG, Queen's University, Canada	VT-TuM6 New Perspectives in UHV-XHV via a Novel Combination of NEG and Sputter Ion Pump Technologies, F. SIVIERO, A. CONTE, L. VIALE, A. BONUCCI, P. MANINI, L. CARUSO, SAES Getters, Italy, L. DI GIACOMO, G. SANTELLA, SAES Advanced Technologies, Italy
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	TF+SE-TuM9 Catalytic Nanomotor Control: Design Techniques Using Dynamic Shadowing Growth, J.G. GIBBS, Y.P. ZHAO, University of Georgia	VT-TuM9 Modeling Hydrogen Outgassing in a Small Vacuum Chamber, R.F. BERG, National Institute of Standards and Technology
11:00 am	TF+SE-TuM10 Fabrication of Cr-doped TiO_2 Nanorod Arrays by Oblique Angle Co-Deposition and Their Photocatalytic Properties, G.K. LARSEN, University of Georgia, R. FITZMORRIS, J.Z. ZHANG, University of California Santa Cruz, Y.P. ZHAO, University of Georgia	VT-TuM10 Invited Modelling and Simulation of the ITER Cryopumping Systems, C. DAY, Karlsruhe Institute of Technology, Germany
11:20 am	TF+SE-TuM11 Optimal Conditions for Visualization of Fingerprints with the Conformal-Evaporated-Film-By-Rotation Technique, D.P. PULSIFER, S.A. MUHLBERGER, R.J. MARTÍN-PALMA, R.C. SHALER, A. LAKHTAKIA, Pennsylvania State University	Invited talk continued.
11:40 am		VT-TuM12 Design and Construction of the Ultrahigh Vacuum System for the 3 GeV TPS Accelerator, G.Y. HSIUNG, H.P. HSUEH, C.L. CHEN, J.R. CHEN, National Synchrotron Radiation Research Center, Taiwan, Republic of China

NOTES

Tuesday Lunch, November 1, 2011

Exhibitor Technology Spotlight
Room: West Exhibit Hall - Session EW-TuL

Exhibitor Technology Spotlight
Moderator: Langley

12:00 pm		
12:20 pm	EW-TuL2 New Developments in Surface Analysis from Thermo Fisher Scientific, T.S. NUNNEY, R.G. WHITE, A. BUSHELL, P. MACK, Thermo Fisher Scientific, UK	
12:40 pm	EW-TuL3 Characterization of Carbon Nanomaterials using XPS and Raman, T. NUNNEY, M. WALL, Thermo Fisher Scientific	
1:00 pm	EW-TuL4 Optimized XPS Depth Profiling of Organic Materials using Polyatomic Ion Sources, D. SURMAN, C. BLOMFIELD, S. PAGE, A. ROBERTS, Kratos Analytical Inc.	
1:20 pm	EW-TuL5 Advances in XPS Chemical Imaging and Depth Profiling, J.S. HAMMOND, D.G. WATSON, P.E. LARSON, S.N. RAMAN, Physical Electronics	
1:40 pm		

NOTES

	Applied Surface Science Room: 102 - Session AS-TuA Imaging and 3D Chemical Analysis - Part II Moderator: W. Stickle, HP ADL Corvallis	Biomaterial Interfaces Room: 105 - Session BI-TuA Protein-Membrane Interactions Moderator: L.J. Gamble, University of Washington
2:00 pm	AS-TuA1 Integration of an External Cavity Quantum Cascade Laser Into a Scattering-Type Infrared Scanning Near-Field Optical Microscope, A.S. LEA, M.S. TAUBMAN, M.C. PHILLIPS, Pacific Northwest National Laboratory, M. RASCHKE, University of Colorado, Boulder	
2:20 pm	AS-TuA2 An Investigation Into the Aging of Paintings using Surface Analysis Techniques, T.S. NUNNEY, Thermo Fisher Scientific, UK, J.J. BOON, AMOLF, Netherlands, E.S.B. FERREIRA, Swiss Institute for Art Research (SIK-ISEA), Switzerland	
2:40 pm	AS-TuA3 Probing Insect Tissue by NEXAFS Imaging: A Chemical Characterization of Cuticle from an African Flower Scarab ***(Eudicella gralli)***, J.E. BAIO, University of Washington, C. JAYE, National Institute of Standards and Technology, E. SULLIVAN, Woodland Park Zoo, D.A. FISCHER, National Institute of Standards and Technology, D.G. CASTNER, T. WEIDNER, University of Washington	
3:00 pm	AS-TuA4 Surface Cleaning of Organic and Inorganic Materials with Argon Cluster Ion Beams, A.E. WRIGHT, P. MACK, O. GREENWOOD, Thermo Fisher Scientific, UK	
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	AS-TuA7 Structure Determination of Heterogeneous Materials through 3D Imaging using XPS and Multivariate Analysis, K. ARTYUSHKOVA, The University of New Mexico, S.J. COULTAS, S.J. HUTTON, A.J. ROBERTS, Kratos Analytical Inc.	BI-TuA7 Invited Membrane Binding, Structure and Regulation of the PTEN Phosphatase, M. LÖSCHE, Carnegie Mellon University and National Institute of Standards and Technology
4:20 pm	AS-TuA8 Interface Orientation Dependent Field Evaporation Behavior in Multilayer Thin Films, J.G. BRONS, University of Alabama, A.A. HERZING, K.L. HENRY, I.M. ANDERSON, National Institute of Standards and Technology, G.B. THOMPSON, University of Alabama	Invited talk continued.
4:40 pm	AS-TuA9 Atom Probe Tomography and Spectroscopic Analysis of Wide Bandgap Nanostructures, N. DAWAHRE, G. SHEN, W. BAUGHMAN, S. BALCI, S. WILBERT, N. HARRIS, L. BUTLER, S. KIM, P. KUNG, University of Alabama	BI-TuA9 Biomimetic Lipid Membrane Systems Applied to HIV-1 Neutralization, G. HARDY, M. ALAM, S. ZAUSCHER, Duke University
5:00 pm	AS-TuA10 Invited Probing 3D-Semiconductor Structures, VANDERVORST, IMEC, Belgium	BI-TuA10 Interactions between the Norovirus and Glycosphingolipids Studied with Cell Membrane Mimics, M. BALLY, Chalmers University of Technology, Sweden, G. LARSON, University of Gothenburg, Sweden, F. HÖÖK, Chalmers University of Technology, Sweden
5:20 pm	Invited talk continued.	BI-TuA11 Binding of C-reactive Protein to Lipoprotein Nanoparticle Mimics: A Gel Electrophoresis Study, M.S. WANG, S.M. REED, University of Colorado Denver
5:40 pm		

	Biofabrication and Novel Devices Focus Topic Room: 105 - Session BN-TuA Biofabrication Methods and Devices Moderator: L. Gamble, University of Washington	Electronic Materials and Processing Room: 210 - Session EM-TuA High-k Dielectrics for MOSFETs Part 2 Moderator: A.C. Kummel, University of California San Diego
2:00 pm	BN-TuA1 Invited Microengineered Hydrogels for Stem Cell Bioengineering and Tissue Regeneration, A. KHADEMHOSSEINI, Brigham and Women's Hospital, Harvard Medical School, MIT, and Harvard University	EM-TuA1 Invited High Mobility Channel Materials and Novel Devices for Scaling of Nanoelectronics beyond the Si Roadmap, M. HEYNS, IMEC, Belgium
2:20 pm	Invited talk continued.	Invited talk continued.
2:40 pm	BN-TuA3 Nanoscale Architectures for Probing Cell Mechanics, S. WIND, M. SCHVARTZMAN, M. PALMA, M. BIGGS, T. FAZIO, R. PIQUERAS JOVER, M. SHEETZ, Columbia University	EM-TuA3 Local Profile of the Dielectric Constant Near the Oxygen Vacancy in the GeO_2 Films, J. NAKAMURA, M. TAMURA, The University of Electro-Communications (UEC-Tokyo), Japan
3:00 pm	BN-TuA4 Production of Functionalized 3D Micro Environment for Cell Culture, J. NOWAK, D. MEHN, P. COLPO, M. ZURN, T. MARTIN, F.J. ROSSI, European Commission, JRC Institute for Health and Consumer Protection, Italy	EM-TuA4 Two Step Passivation and ALD Monolayer Nucleation on Ge(100), T. KAUFMAN-OSBORN, J.S. LEE, K. KIANTAJ, W. MELITZ, A.C. KUMMEL, University of California San Diego, A. DELABIE, S. SIONCKE, M. CAYMAX, G. POURTOIS, IMEC, Belgium
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm		EM-TuA7 Invited Bilayer High-k Gate Stacks on Ge and InGaAs, P.C. MCINTYRE, Stanford University
4:20 pm		Invited talk continued.
4:40 pm		EM-TuA9 Effect of Post Deposition Anneal on the Characteristics of InP MOS Capacitors with High-k Dielectrics, R.V. GALATAGE, B. BRENNAN, H. DONG, D.M. ZHERNOKLETOV, C.L. HINKLE, R.M. WALLACE, E.M. VOGEL, The University of Texas at Dallas
5:00 pm		EM-TuA10 ALD Half Cycle Study of HfO_2 on InP by ***In Situ*** XPS, H. DONG, D.M. ZHERNOKLETOV, B. BRENNAN, J. KIM, R.M. WALLACE, University of Texas at Dallas
5:20 pm		EM-TuA11 Nonvolatile Memresistive Nano-Crossbar Switches in Pt/Ta2O5/Cu Solid Electrolytes, P.R. SHRESTHA, K.P. CHEUNG, National Institute of Standards and Technology (NIST), H. BAUMGART, Old Dominion University
5:40 pm		EM-TuA12 Metrology for Interfaces and Mass Transport in C-MOS Related Nanofilms, A. HERRERA-GOMEZ, A. SANCHEZ-MARTINEZ, O. CEBALLOS-SANCHEZ, M.O. VAZQUEZ-LEPE, CINVESTAV-Unidad Queretaro, Mexico, P. LYSAGHT, SEMATECH

	Energy Frontiers Focus Topic Room: 103 - Session EN+NS-TuA Nanostructured Materials for Thermophotovoltaics, Thermoelectrics & Plasmonics Moderator: P. Nagpal, Los Alamos National Laboratory	Energy Frontiers Focus Topic Room: 108 - Session EN+TF-TuA Thin Films for Solar Cells Moderator: C.A. Wolden, Colorado School of Mines
2:00 pm	EN+NS-TuA1 Invited Thermal Plasmonics as a Route to Photovoltaics?, D.J. NORRIS, ETH Zurich, Switzerland	EN+TF-TuA1 Invited Thin Film Silicon Approaches to Future Generations of PV Materials, P.C. TAYLOR, Colorado School of Mines
2:20 pm	Invited talk continued.	Invited talk continued.
2:40 pm	EN+NS-TuA3 Invited Nanocrystal Assemblies: A Modular Approach to Materials Design, D.V. TALAPIN, University of Chicago	EN+TF-TuA3 On the Influence of the Amorphous Silicon Microstructure on the Crystallization Kinetics Towards Poly-Crystalline Silicon for Solar Cells, M. CREATORE, K. SHARMA, M.C.M. VAN DE SANDEN, Eindhoven University of Technology, the Netherlands
3:00 pm	Invited talk continued.	EN+TF-TuA4 Deposition of Microcrystalline Silicon Thin Films by Radio Frequency PECVD using Voltage Waveform Tailoring, S. POULIQUEN, P.-A. DELATTRE, E.V. JOHNSON, J.-P. BOOTH, Ecole Polytechnique (Palaiseau), France
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	EN+NS-TuA7 Invited Photonic and Plasmonic Crystals for Thermophotonics and Energy Conversion, R. BISWAS, Iowa State University & Ames Laboratory - US DOE	EN+TF-TuA7 Invited Amorphous and Nanocrystalline Silicon Thin Film Photovoltaic Technology on Flexible Substrates, B. YAN, A. BANERJEE, J. YANG, S. GUHA, United Solar Ovonic LLC
4:20 pm	Invited talk continued.	Invited talk continued.
4:40 pm	EN+NS-TuA9 Invited Molecular and Hybrid Solution Processible Thermoelectrics, R.A. SEGALMAN, S. YEE, University of California, Berkeley, N. COATES, J. URBAN, Lawrence Berkeley National Laboratory	EN+TF-TuA9 Invited High Efficiency, Large Area Silicon Thin Film Solar Modules, L. LI, T. GUO, Y. MENG, Z. XU, F. DAI, F. ZHANG, W. LI, Z. LEI, C. CAI, H. LI, B. TANG, D. ZHOU, ENN Solar Energy Co. Ltd.
5:00 pm	Invited talk continued.	Invited talk continued.
5:20 pm	EN+NS-TuA11 Semiconductor Nanowire Networks as Thermoelectric Platforms, A.J. LOHN*, University of California Santa Cruz, E. COLEMAN, G.S. TOMPA, Structured Materials Industries, Inc., N.P. KOBAYASHI, University of California Santa Cruz	EN+TF-TuA11 Metal-Modulated Epitaxy Growth of InGaN/GaN p-i-n Solar Cells, B. GUNNING, M.W. MOSELEY, J.E. LOWDER, W.A. DOOLITTLE, Georgia Institute of Technology, J. WIERER, S. LEE, D. KOLESKE, Q. LI, Sandia National Laboratories
5:40 pm	EN+NS-TuA12 Diamond as an Electrode Material for the Direct Conversion of Thermal to Electrical Energy through Thermionic Emission, W.F. PAXTON, J.L. DAVIDSON, W.P. KANG, Vanderbilt University	EN+TF-TuA12 Applications of Secondary Ion Mass Spectrometry for the Physical Characterization of Photo-Voltaic Materials and Cells, M.J.P. HOPSTAKEN, D. PFEIFFER, J. KIM, J.P. DESOUZA, E. MARSHALL, H.J. HOVEL, B. HEKMATSHOARTABARI, D. SHAHRJERDI, D.K. SADANA, IBM T.J. Watson Research Center

* NSTD Student Award Finalist

	Graphene and Related Materials Focus Topic Room: 208 - Session GR+MI-TuA Graphene: Magnetic Properties and Spin-Dependent Phenomena Moderator: A.C. Ferrari, University of Cambridge, UK	Graphene and Related Materials Focus Topic Room: 209 - Session GR-TuA Graphene on Dielectrics, Graphene Transfer to Novel Substrates Moderator: A. Turchanin, University of Bielefeld, Germany
2:00 pm	GR+MI-TuA1 Invited Magnetic Impurities on Graphene, K. KERN, Max Planck Institute for Solid State Research, Germany	GR-TuA1 Atomistic Configuration Induced Electron Transfer Across Graphene-SiO_2 Interface, M.Z. HOSSAIN, University of Illinois at Urbana Champaign
2:20 pm	Invited talk continued.	GR-TuA2 A Scanning Tunneling Microscopy and Spectroscopy Study of Artificially Modified Bilayer Graphene, H. BAEK, J. HA, B. HWANG, J. KWON, Seoul National University, Republic of Korea, J.A. STROSCIO, National Institute of Standards and Technology, Y. KUK, Seoul National University, Republic of Korea
2:40 pm	GR+MI-TuA3 Electron Spin Transport in Exfoliated and Epitaxial Graphene Grown on SiC, J. ABEL, A. MATSUBAYASHI, J.J. GARRAMONE, University at Albany, C. DIMITRAKOPOULOS, A. GRILL, SUNG, IBM T.J. Watson Research Center, V.P. LABELLA, University at Albany	GR-TuA3 Low-Voltage Graphene Field-Effect Transistors, C. MATTEVI, F.M. COLLEAUX, H.K. KIM, J.M. BALL, G. EDA, Imperial College, UK, M. CHHOWALLA, Rutgers University, T.D. ANTHOPOULOS, Imperial College, UK
3:00 pm	GR+MI-TuA4 Landau Levels of Dirac Fermions Observed at Zero External Magnetic Fields on Modified Graphite by STS, T. KONDO, D. GUO, T. MACHIDA, T. SUZUKI, K. IWATAKE, S. OKADA, J. NAKAMURA, University of Tsukuba, Japan	GR-TuA4 Dry Transfer of Single Layer Graphene to Polymers, E.H. LOCK, S.G. WALTON, M. BARAKET, M. LASKOSKI, S. MULVANEY, W.K. LEE, P.E. SHEEHAN, Naval Research Laboratory (NRL), D. HINES, Laboratory for Physical Sciences (LPS), J.T. ROBINSON, Naval Research Laboratory (NRL), J. TOSADO, M. FUHRER, University of Maryland, College Park
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	GR+MI-TuA7 Tunneling Spectroscopy of Adsorbed Iron Phthalocyanine on Epitaxial Graphene on SiC(0001), A.A. SANDIN, D.B. DOUGHERTY, J.E. ROWE, North Carolina State University	GR-TuA7 Studies on Ozone Based Atomic Layer Deposition of High-k Dielectrics on Graphene, S. JANDHYALA, G. MORDI, B. LEE, J. KIM, University of Texas at Dallas, P.-R. CHA, Kookmin University, Korea
4:20 pm	GR+MI-TuA8 Atomic Scale Determination of the Bilayer Graphene Energy Gap, S. JUNG, N.N. KLIMOV, D.B. NEWELL, N.B. ZHITENEV, J.A. STROSCIO, NIST	GR-TuA8 Fluorine Functionalization of Epitaxial Graphene for Uniform Deposition of Ultrathin High-κ Dielectrics, V.D. WHEELER, N.Y. GARCES, L.O. NYAKITI, R.L. MYERS-WARD, J. CULBERTSON, C.R. EDDY JR., D.K. GASKILL, U.S. Naval Research Laboratory
4:40 pm	GR+MI-TuA9 Atomic, Electronic, and Magnetic Properties of Metal-Graphene Interfaces, I.I. OLEYNIK, L. ADAMSKA, Y. LIN, University of South Florida, A. ROSS, Saint Anselm College, M. BATZILL, University of South Florida	GR-TuA9 Improving Performance of CVD Graphene Field Effect Transistors by Reducing Water Trapped at the Graphene/Substrate Interface, J. CHAN, A. VENUGOPAL, A. PIRKLE, S. MCDONNELL, D. HINOJOS, The Univ. of Texas at Dallas, C. MAGNUSON, R.S. RUOFF, The Univ. of Texas at Austin, L. COLOMBO, Texas Instruments Inc., R.M. WALLACE, E.M. VOGEL, The Univ. of Texas at Dallas
5:00 pm	GR+MI-TuA10 Spin-Dependent Scattering from Gated Potential Obstacles in Graphene Systems, M. ASMAR, S. ULLOA, Ohio University	GR-TuA10 Improved Performance of Top-Gated Graphene-on-Diamond Devices, A.V. SUMANT, Argonne National Laboratory, J. YU, G. LIU, A. BALANDIN, University of California, Riverside
5:20 pm	GR+MI-TuA11 Suppression of Weak-Localization Effect in Strained CVD – grown Graphene, X. MIAO, S. TONGAY, M. LEMAITRE, B.R. APPLETON, A.F. HEBARD, University of Florida	GR-TuA11 Growth of Turbostratic Graphene on Sapphire, S. ROTHWELL, P.I. COHEN, University of Minnesota, M. KUMAR, National Physical Laboratory, India
5:40 pm	GR+MI-TuA12 Simulation of Electron-Ion Dynamics in Pristine and Functionalized Graphene in External Fields, S. BUBIN, K. VARGA, Vanderbilt University	GR-TuA12 Scanning Tunneling Microscopy and Nanomanipulation of Graphene-Coated Water on Mica, J.D. WOOD, K.T. HE, E. POP, J.W. LYDING, University of Illinois at Urbana Champaign

	Helium Ion Microscopy Focus Topic Room: 106 - Session HI+AS-TuA Basics of Helium Ion Microscopy Moderators: A. Gölzhäuser, University of Bielefeld, Germany, V.S. Smentkowski, GE-GRC	Nanomanufacturing Science and Technology Focus Topic Room: 207 - Session NM+NS+MS-TuA Manufacturable Nanoscale Devices and Processes Moderators: R. Maboudian, University of California at Berkeley, R. Mu, Fisk University
2:00 pm	HI+AS-TuA1 Invited Principles of Helium Ion Microscopy, J.A. NOTTE, L. SCIPIONI, L.A. STERN, Carl Zeiss NTS	NM+NS+MS-TuA1 Invited Assessing Nanotechnologies for Volume Manufacturing, B.E. GOODLIN, S. BUTLER, L. COLOMBO, R. DOERING, Texas Instruments Incorporated
2:20 pm	Invited talk continued.	Invited talk continued.
2:40 pm	HI+AS-TuA3 Design and Performance of a Near Ultra High Vacuum Helium Ion Microscope, R. VAN GASTEL, University of Twente, The Netherlands, L. BARRISS, J.A. NOTTE, Carl Zeiss NTS, G. HLAWACEK, University of Twente, The Netherlands, L. SCIPIONI, A.P. MERKLE, D. VOCI, Carl Zeiss NTS, C. FENNER, LVestus Energy Inc., H. ZANDVLIET, B. POELSEMA, University of Twente, The Netherlands	NM+NS+MS-TuA3 Invited Material and Tool Design Challenges for Taking ALD to High-volume Production Beyond 30nm Node, B. LU, Z. KARIM, S. RAMANANTHAN, AIXTRON Inc.
3:00 pm	HI+AS-TuA4 Sub-10 nm Scanning Helium Ion Beam Lithography, K. VAN LANGEN, E.W.J.M. VAN DER DRIFT, Delft University of Technology, Netherlands, E. VAN VELDHOVEN, D.J. MAAS, TNO, Netherlands, P.F.A. ALKEMADE, Delft University of Technology, Netherlands	Invited talk continued.
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	HI+AS-TuA7 Invited Contrast Performance in Helium Ion Microscopy, D.C. BELL, Harvard University	NM+NS+MS-TuA7 Invited The Metal-Oxide-Metal Vacancy Drift Memristor - A CMOS Compatible, High Speed, Non-Volatile Switch for Universal Memory and Storage, R.S. WILLIAMS, Hewlett-Packard Labs
4:20 pm	Invited talk continued.	Invited talk continued.
4:40 pm	HI+AS-TuA9 Secondary Electron Energy Distribution in Helium Ion Microscope, O.F. VYVENKO, Y.V. PETROV, St.-Petersburg State University, Russian Federation	NM+NS+MS-TuA9 Invited Large Scale Graphene: Progress and Challenges, R.S. RUOFF, The University of Texas at Austin
5:00 pm	HI+AS-TuA10 Helium Ion Beam Induced Deposition Examined using a 3D Monte Carlo Simulation, D.A. SMITH, P.D. RACK, University of Tennessee Knoxville, P.F.A. ALKEMADE, H. MIRO, Delft University of Technology, The Netherlands	Invited talk continued.
5:20 pm	HI+AS-TuA11 TEM Specimen Preparation with Light Ions, L. GIANNUZZI, L.A. Giannuzzi & Associates LLC	NM+NS+MS-TuA11 Laser-Assisted Electron-Beam Induced Deposition and Etching, N.A. ROBERTS, University of Tennessee and Omniprobe, Inc., J.D. FOWLKES, Oak Ridge National Laboratory, P.D. RACK, University of Tennessee and Oak Ridge National Laboratory, G.A. MAGEL, H.M. MARCHMAN, C.D. HARTFIELD, T.M. MOORE, Omniprobe, Inc.
5:40 pm	HI+AS-TuA12 The Possibilities of the HIM for Imaging and Nanopatterning of EUVL Masks, D.J. MAAS, E. VAN VELDHOVEN, N.B. KOSTER, TNO, Netherlands, P.F.A. ALKEMADE, E.W.J.M. VAN DER DRIFT, Delft University of Technology, Netherlands	NM+NS+MS-TuA12 Channel SiGe Selective Epitaxy Process for DRAM High K Peripheral Transistors, J. YEO, H. HWANG, S. LEE, W. YOO, S. AHN, I. JEON, B. KIM, S. NAM, S. KIM, K. JUNG, J. LEE, S. JANG, T. LEE, K. HUH, S. YAMADA, Samsung Electronics Co., Ltd, Republic of Korea

	Nanometer-scale Science and Technology Room: 203 - Session NS+AS-TuA Frontiers in Nanoscale Imaging and Characterization Moderator: E.I. Altman, Yale University	Plasma Science and Technology Room: 202 - Session PS1-TuA Advanced BEOL / Interconnect Etching II Moderator: S. Sriraman, Lam Research Corp.
2:00 pm	NS+AS-TuA1 Proximity, Phonon in Nanometer Size Superconducting Nb Islands : A STM Study, S. JEON, Seoul National University, Republic of Korea, H. SUH, Samsung Advanced Institute of Technology, Republic of Korea, Y. OH, S. KIM, Y. KUK, Seoul National University, Republic of Korea, M. MACHIDA, Japan Atomic Energy Agency, Japan	PS1-TuA1 Feature Profile Evolution for HARC Etching in SiO_2, P. MOROZ, Tokyo Electron US Holdings Ltd., S.-Y. KANG, Tokyo Electron Ltd., Japan
2:20 pm	NS+AS-TuA2 Invited Spin Excitation Spectroscopy, D. EIGLER, IBM Almaden Research Center	PS1-TuA2 Invited Hybrid Strip Process to Minimize Low-k Dielectric Damage, E.A. HUDSON, T. CHOI, K. TAKESHITA, S. SIRARD, B. JI, M. KATO, M. MORAVEJ, O. TURMEL, G.A. DELGADINO, S. HEO, A.D. BAILEY III, Lam Research Corp.
2:40 pm	Invited talk continued.	Invited talk continued.
3:00 pm	NS+AS-TuA4 Atom-Specific Interaction Quantification and Identification by Combined Scanning Tunneling and Atomic Force Microscopy, M.Z. BAYKARA, H. MÖNIG, Yale University, T.C. SCHWENDEMANN, Southern Connecticut State University, M. TODOROVIC, R. PEREZ, Universidad Autónoma de Madrid, Spain, E.I. ALTMAN, U.D. SCHWARZ, Yale University	PS1-TuA4 Model for High Aspect Ratio Dielectric Etch Process in a Capacitively-Coupled Plasma, J.A. KENNEY, A. BALAKRISHNA, A. AGARWAL, N. MISRA, S. RAUF, K. COLLINS, Applied Materials, Inc.
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	NS+AS-TuA7 The Role of Surface States in Inelastic Electron Tunneling Into Metal Surfaces, P. MAKSYMOVYCH, M.H. PAN, Q. LI, Oak Ridge National Laboratory	PS1-TuA7 Plasma-induced Damage Reduction in Porous SiOCH Dielectrics by Replacement of H_2 and N_2 by CH_2F_2 and Ar in Fluorocarbon Based Plasmas, L. SOURIAU, F. LAZZARINO, L. CARBONELL, I. CIOFI, P. VERDONCK, J.F. DE MARNEFFE, M. BAKLANOV, IMEC, Belgium
4:20 pm	NS+AS-TuA8 Invited 2011 AVS Medard Welch Award Lecture - Inelastic Electron Tunneling Spectroscopy and Imaging of Single Molecules, W. HO*, University of California, Irvine	PS1-TuA8 Using Pulsed Power to Control Etch Properties of SiO_2 in Ar/CF_4/O_2Capacitively Coupled Plasmas, S.-H. SONG, M.J. KUSHNER, University of Michigan
4:40 pm	Invited talk continued.	PS1-TuA9 Chemical Mechanisms for Dielectric Product Development, A. BALAKRISHNA, A. AGARWAL, J.A. KENNEY, S. BELOSTOTSKIY, S. RAUF, K. COLLINS, Applied Materials, Inc.
5:00 pm	NS+AS-TuA10 Two-Color Ultrafast-Laser-Assisted STM, A. DOLOCAN, D. ACHARYA, P. ZAHL, P. SUTTER, N. CAMILLONE, Brookhaven National Laboratory	PS1-TuA10 Optimization of CF_3I Process for Low-K Etching, A.J. GILDEA, J.C. LONG, E. EISENBRAUN, College of Nanoscale Science and Engineering, the University at Albany-SUNY, V. OMARJEE, F. DONIAT, N. STAFFORD, C. DUSSARRAT, American Air Liquide – Delaware Research and Technology Center
5:20 pm	NS+AS-TuA11 High Precision local electrical Probing: A New Low Temperature 4-Tip STM with Gemini UHV-SEM Navigation, B. GUENTHER, A. BETTAC, M. MAIER, M. OERTEL, Omicron NanoTechnology, Germany, F. MATTHES, C.M. SCHNEIDER, Forschungszentrum Juelich, Germany, A. FELTZ, Omicron NanoTechnology, Germany	
5:40 pm	NS+AS-TuA12 Spin-Polarized VLEED: Experimental Access to the Spin-Dependent Surface Barrier, K. WULFF, A.B. SCHMIDT, Westfälische Wilhelms-Universität Münster, Germany, J. BRAUN, Ludwig-Maximilians-Universität München, Germany, M. DONATH, Westfälische Wilhelms-Universität Münster, Germany	

* Medard W. Welch Award Winner

	Plasma Science and Technology Room: 201 - Session PS2-TuA Plasma Diagnostics, Sensors and Control I Moderator: V. Nagorny, Mattson Technology, Inc.	Advanced Surface Engineering Room: 104 - Session SE+TF-TuA Glancing Angle Deposition (GLAD) II Moderator: K. Robbie, Queen's University, Canada
2:00 pm	PS2-TuA1 Prediction of Ion Sheath Shape and Ion Trajectory during Plasma Etching Processing using On-Wafer Monitoring Technique, R. ARAKI, K. MIWA, T. KUBOTA, Tohoku University, Japan, T. IWASAKI, K. ONO, Mizuho Information & Research Institute, Inc., Japan, S. SAMUKAWA, Tohoku University, Japan	SE+TF-TuA1 Invited Evolution of Crystal Orientation during Oblique Angle Deposition, G.-C. WANG, T.-M. LU, Rensselaer Polytechnic Institute
2:20 pm	PS2-TuA2 Measuring Electron Density, Electron Temperature, and Plasma Potential with RF Frequency Probes, D.R. BORIS, R.F. FERNSLER, S.G. WALTON, Naval Research Laboratory (NRL)	Invited talk continued.
2:40 pm	PS2-TuA3 Effects of Wire Thickness, Neutral Pressure and Gas Composititon on the Inflection Point Technique, B. DECHAWATANAPISAL, N. HERSHKOWITZ, J.P. SHEEHAN, CS. YIP, University of Wisconsin-Madison	SE+TF-TuA3 Vapor-Liquid-Solid Glancing Angle Deposition (VLS-GLAD): A New Way of Shaping Crystalline Nanowires, A.S. ALAGOZ, T. KARABACAK, University of Arkansas at Little Rock
3:00 pm	PS2-TuA4 A New Diagnostic Tool System of Radio- Frequency Plasmas by Employing Floating-Emissive Probe, Y. TANIUCHI, M. UTSUMI, Tokai University, Japan, M. YANAGISAWA, Landmark Technology Corporation, Japan, H. SHINDO, Tokai University, Japan	SE+TF-TuA4 Lithographic Processing of Nanostructured Thin Films Grown Using Oblique Angle Deposition Method, P. SHAH, University of Dayton Research Institute, A. SARANGAN, University of Dayton
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	PS2-TuA7 A Comparison of Emissive Probe Techniques for Electric Potential Measurements in a Complex Plasma, J.P. SHEEHAN*, University of Wisconsin-Madison, Y. RAITSES, Princeton Plasma Physics Laboratory, N. HERSHKOWITZ, University of Wisconsin-Madison, I. KAGANOVICH, N.J. FISCH, Princeton Plasma Physics Laboratory	SE+TF-TuA7 Automated Measurement Technique for Growth Scaling in Glancing-Angle Deposited Films, J.M. SIEWERT, J.M. LAFORGE, M.T. TASCHUK, M.J. BRETT, University of Alberta, Canada
4:20 pm	PS2-TuA8 Probe Diagnostics Instrument for Laboratory and Industrial RF Plasmas, V. GODYAK, RF Plasma Consulting	SE+TF-TuA8 Heterogeneous Nanorod Arrays Fabrication by a Two-Source Dynamic Shadowing Growth System, Y.P. HE, Y.P. ZHAO, University of Georgia
4:40 pm	PS2-TuA9 Ion Energy Distributions in Pulsed Plasmas with Synchronous DC Bias: Effect of Noble Gas, W. ZHU, H. SHIN, V.M. DONNELLY, D.J. ECONOMOU, University of Houston	
5:00 pm	PS2-TuA10 Invited 2011 AVS John A. Thornton Award Lecture - As Device Dimensions Continue to Shrink… A Journey Through Thirty Years of Plasma Etching Diagnostics and Mechanisms, V.M. DONNELLY†, University of Houston	
5:20 pm	Invited talk continued.	
5:40 pm		

* Coburn & Winters Student Award Finalist

†John A. Thornton Memorial Award Winner

	Surface Science Room: 110 - Session SS+EM-TuA Organic Electronic Interfaces Moderator: J.R. Engstrom, Cornell University	Surface Science Room: 109 - Session SS-TuA Catalysis on Metals and Alloys Moderator: G. Fisher, University of Michigan
2:00 pm	SS+EM-TuA1 Invited The Effect of Structure on Interfacial Energy, F. STELLACCI, EPFL, Switzerland	SS-TuA1 La1-xCexMnO$_3$ Perovskites: Structural Features and Performance for Preferential CO Oxidation Reaction, S.S. MALUF, Federal University of Sao Carlos, Brazil, B.E. HAYDEN, University of Southampton, UK, C.R.M. AFONSO, Federal University of Sao Carlos, Brazil, E.M. ASSAF, University of Sao Paulo, Brazil, P.A.P. NASCENTE, Federal University of Sao Carlos, Brazil
2:20 pm	Invited talk continued.	SS-TuA2 Faceted Metal Surfaces: Surface Chemistry and Growth of Metallic Nanoclusters, W. CHEN, Q. SHEN, R.A. BARTYNSKI, Rutgers University
2:40 pm	SS+EM-TuA3 Interfacial Electronic Structure of Dipolar Organic Semiconductors, O.L.A. MONTI, M.P. STEELE, N. ILYAS, L.L. KELLY, D.A. RACKE, University of Arizona	SS-TuA3 Invited Modeling the Complexities of Heterogeneous Catalysts, D.W. GOODMAN, Texas A & M University
3:00 pm	SS+EM-TuA4 Characterization of Quinonoid Zwitterion Molecular Films on Metal Surfaces, L. ROUTABOUL, P. BRAUNSTEIN, Lab. de Chimie de Coordination (UMR 7177 CNRS), France, B. DOUDIN, Inst. de Phys. et Chimie des Mat. de Strasbourg, France, J. XIAO, Z. ZHANG, Nebraska Ctr. for Mat. & Nanosci., Y.B. LOSVYJ, O. KIZILKAYA, The J. Bennett Johnston Sr. Ctr. for Adv. Microstructures & Devices, L.G. ROSA, Univ. of Puerto Rico-Humacao, P.A. DOWBEN, Nebraska Ctr. for Mat. & Nanosc.	Invited talk continued.
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	SS+EM-TuA7 Directed Organization of C_{70} Kagome Lattice by TiOPc-Monolayer Template, J.E. REUTT-ROBEY, Y. WEI, University of Maryland	SS-TuA7 Nanocatalysis: New Developments in Catalytic Performance of Size- and Shape-Controlled Metal Nanoparticles, B. ROLDÁN CUENYA, University of Central Florida
4:20 pm	SS+EM-TuA8 Solvation - Assisted Growth of ZnPc and 4NO_2-ZnPc Monolayer Films on Au(111), L. TSKIPURI, Q. SHAO, J.E. REUTT-ROBEY, University of Maryland, College Park	SS-TuA8 Oxidative-Coupling Reactions via Nucleophilic Attack on Gold Surface, B. XU*, C.M. FRIEND, R.J. MADIX, Harvard University
4:40 pm	SS+EM-TuA9 Direct Observation of NO_2 Adsorption onto CuPc Monolayers with STM, J.H. PARK, J. ROYER, S. LEE, T. KENT, W. TROGLER, A.C. KUMMEL, University of California San Diego	SS-TuA9 Understanding the Enhanced Activity for Methanol Reaction on Titania-supported Au Clusters, D.A. CHEN, S.A. TENNEY, B.A. CAGG, M.S. LEVINE, University of South Carolina, S. HONG, T.S. RAHMAN, University of Central Florida
5:00 pm	SS+EM-TuA10 Tunneling Spectroscopy of Benzoic Acid Monolayers: The Role of the Metal-Molecule Interface, J. KREIL, P. LECLAIR, G.J. SZULCZEWSKI, The University of Alabama	SS-TuA10 Oxygen Chemisorption, Formation, and Thermal Stability of Pt Oxides on Pt Nanoparticles Supported on SiO_2/Si(001): Size-Effects, L.K. ONO, J.R. CROY, H. HEINRICH, B. ROLDAN CUENYA, University of Central Florida
5:20 pm	SS+EM-TuA11 Interfacial Engineering of Organic Light Emitting Diodes with Sputter Treated Molybdenum Oxides as Hole Injection Layers, C.I. WU, P. WANG, I. WU, National Taiwan University, Republic of China	SS-TuA11 Alloy Surface Reactivity on $Cu_xAu_yPd_{1-x-y}$ Composition Spread Alloy Films, A.J. GELLMAN, J.B. MILLER, P. KONDRATYUK, D. PRIYADARSHINI, Carnegie Mellon University, B.D. MORREALE, National Energy Technology Laboratory
5:40 pm	SS+EM-TuA12 Probing Surface Photovoltage Development by Dynamical XPS Measurements, S. SUZER, Bilkent University, Turkey	SS-TuA12 Pd Ensemble Effects on Enhancing Low Temperature CO Oxidation and Tolerance on AuPd Alloys: A First Principles Study, H.C. HAM, J.A. STEPHENS, G.S. HWANG, University of Texas at Austin

* Morton S. Traum Award Finalist

	Thin Film Room: 107 - Session TF-TuA ALD: Fundamental Reactions and Film Properties Moderator: S.M. George, University of Colorado, Boulder	Vacuum Technology Room: 111 - Session VT+MN+NS+SS+AS-TuA Surface Science for Future Electronic Materials and Accelerator Applications Moderator: M. Wüest, INFICON Ltd, Liechtenstein
2:00 pm	TF-TuA1 Indium Oxide Atomic Layer Deposition Facilitated by the Synergy between Oxygen and Water, J.A. LIBERA, J.N. HRYN, J.W. ELAM, Argonne National Laboratory	VT+MN+NS+SS+AS-TuA1 Invited New UHV Low Temperature Scanning Probe Microscopy Facility for the Study of Future Electronic Materials, J.A. STROSCIO, National Institute of Standards and Technology
2:20 pm	TF-TuA2 Engineering AlN Thin Films by Atomic Layer Deposition on Wide Bandgap Semiconductors as Gate Dielectric, Y.-C. PERNG, J.P. CHANG, University of California Los Angeles	Invited talk continued.
2:40 pm	TF-TuA3 Invited Paul Holloway Award Lecture - Gas-Surface Interactions during Atomic Layer Deposition, S. AGARWAL*, Colorado School of Mines	VT+MN+NS+SS+AS-TuA3 Contact Resistance of RF MEMS at a Randomly Rough Surface in the Presence and Absence of Adsorbed Organic Monolayers, D. BERMAN, J. KRIM, M.J. WALKER, North Carolina State University
3:00 pm	Invited talk continued.	VT+MN+NS+SS+AS-TuA4 Surface Issues for Solid Niobium SRF Accelerator Cavities, M. KELLEY, College of William and Mary
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	TF-TuA7 Invited Mechanical Properties of ALD Thin Films, H. BAUMGART, Old Dominion University	VT+MN+NS+SS+AS-TuA7 Examples of Surface Related R&D on Nb Samples and SRF Cavities for Particle Accelerators at JLab, A.T. WU, Thomas Jefferson National Accelerator Facility
4:20 pm	Invited talk continued.	VT+MN+NS+SS+AS-TuA8 Early Stages of Nb Growth on Cu for SRF Accelerator Applications, C. CLAVERO, The College of William and Mary, N.P. GUISINGER, Argonne National Laboratory, R.A. LUKASZEW, The College of William and Mary
4:40 pm	TF-TuA9 Effect of Atomic Layer Deposition on the Mechanical Properties of Synthetic Nonwoven and Electrospun Polymer Fibers, C.K. DEVINE, C.J. OLDHAM, J.S. JUR, G.N. PARSONS, North Carolina State University	VT+MN+NS+SS+AS-TuA9 Epitaxial Niobium Thin Films for Accelerator Cavities, W.M. ROACH, D. BERINGER, C. CLAVERO, College of William and Mary, C. REECE, Thomas Jefferson National Accelerator Facility, R.A. LUKASZEW, College of William and Mary
5:00 pm	TF-TuA10 Invited In Situ Studies of Oxide ALD for Crystalline Oxide Growth on Silicon, B.G. WILLIS, H. WANG, University of Connecticut, C. ZHANG, Chinese Academy of Sciences, China, X. JIANG, University of Connecticut	VT+MN+NS+SS+AS-TuA10 Development via Energetic Condensation of Niobium Thin Films Tailored for Superconducting RF Applications, A.-M. VALENTE-FELICIANO, Jefferson Lab
5:20 pm	Invited talk continued.	VT+MN+NS+SS+AS-TuA11 Evaluation of Secondary Electron Emission Yield Suppression Coatings at CesrTA, Y. LI, X. LIU, J. CALVEY, J. CONWAY, J.A. CRITTENDEN, M.A. PALMER, J.P. SIKORA, Cornell University, S.DE. SANTIS, Lawrence Berkeley National Laboratory
5:40 pm	TF-TuA12 Nucleation and Interface Formation of Al_2O_3 on HF-treated InGaAs(100) by Atomic Layer Deposition, A.J. MUSCAT, B. GRANADOS, F.L. LIE, University of Arizona	VT+MN+NS+SS+AS-TuA12 Electron Cloud Mitigation for the Large Hadron Collider (LHC), V. BAGLIN, G. BREGLIOZZI, P. CHIGGIATO, P. COSTA PINTO, J.M. JIMENEZ, G. LANZA, M. TABORELLI, C. YIN VALLGREN, CERN, Switzerland

* Paul Holloway Award Winner

Anticipated Schedule
Tuesday Morning, November 1, 2011

TIME	SESSION	ROOM
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		

Lunch

when _____

with _____

where _____

Anticipated Schedule
Tuesday Afternoon, November 1, 2011

TIME	SESSION	ROOM
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		

NOTES

Applied Surface Science
Room: East Exhibit Hall - Session AS-TuP

Applied Surface Science Poster Session
6:00 pm

AS-TuP1 Understanding Chemical Kinetics of Plasma Polymerization from Macroscoping Scaling Parameters(Power), J. ARUMUGAM CHELLAPPA, R. SHORT, K. VASILEV, A. BACHHUKA, Mawson Institute, Australia

AS-TuP2 An Electrostatic Analytical Microscope for SEM/SAM Surface Studies with 3nm-7nm Spatial Resolution, A.R. WALKER, M. RIGNALL, Shimadzu Research Laboratory (Europe) Ltd., UK

AS-TuP3 Core Level Shift from Experiment and First-Principles-Theory – A Comparison, B. KIEFER, New Mexico State University, B. HALEVI, K. ARTYUSHKOVA, University of New Mexico

AS-TuP4 Evaluation of C_{60} Depth Profiling Conditions for XPS Organic Films Analysis, S. ALNABULSI, S.R. BRYAN, J. MOULDER, Physical Electronics

AS-TuP5 Development and Application of Novel Electron Energy Analyzers for Chemical Analysis of Surfaces, D. CUBRIC, Shimadzu Research Laboratory (Europe) Ltd., UK, N. KHOLINE, Institute for Analytical Instrumentation, RAS, Russian Federation

AS-TuP6 Extreme Brightness: Reaching the Ultimate Limits of the Electron Beam, J.D. JARVIS, J.L. KOHLER, B. IVANOV, N. DE JONGE, B.K. CHOI, A.B. HMELO, C.A. BRAU, Vanderbilt University

AS-TuP7 Quantitative Nanoscale Surface Potential Analysis through Kelvin Probe Force Microscopy, C.Y. SU, N.N. CHU, C.C. YANG, M.H. SHIAO, National Applied Research Laboratories, Taiwan, Republic of China

AS-TuP8 Surface Characterization of Disposable Laboratory Gloves by X-ray Photoelectron Spectroscopy (XPS), B.R. STROHMEIER, C. BAILY, T.S. NUNNEY, Thermo Fisher Scientific, UK, A. PLASENCIA, Thermo Fisher Scientific, J.D. PIASECKI, RJ Lee Group, Inc.

AS-TuP9 Influence of Coating on Drills for Drilling of Iron Austempered Ductile, W. MATTES, J.S.A. ROSA, Centro Universitário - Católica de Santa Catarina, Brazil

AS-TuP10 Large Area Cross Sectional Microstructural Characterization of ToF-SIMS Depth Profile Crater Walls, V.S. SMENTKOWSKI, D. ELLIS, GE-GRC

AS-TuP11 Microphase Separation of Various Diblock Copolymers Investigated by TOF-SIMS Depth Profiling, Y. LEE, Korea Institute of Science and Technology, Republic of Korea, J. LEE, Korea University, W.C. LIM, Korea Institute of Science and Technology, K. SHIN, Sogang University, Korea, K.-J. KIM, Korea University

AS-TuP12 Analysis of Passivated Surfaces for Mass Spectrometer Inlet Systems by Auger Electron and X-Ray Photoelectron Spectroscopy, H.M. AJO, D.W. BLANKENSHIP, E.A. CLARK, Savannah River National Laboratory

AS-TuP13 Surface Characterization of Gunshot Residue (GSR) by X-ray Photoelectron Spectroscopy (XPS) and High Resolution Electron Microscopy, A.J. SCHWOEBLE, RJ Lee Group, Inc., B.R. STROHMEIER, Thermo Fisher Scientific, K.L. BUNKER, D.R. MCALLISTER, J.P. MARQUIS, JR.,, J.D. PIASECKI, N.M. MCALLISTER, RJ Lee Group, Inc., W. SGAMMATO, Thermo Fisher Scientific

AS-TuP14 Analysis of Graphene and Other Graphitic Materials using XPS and AES, H.M. MEYER III, Oak Ridge National Laboratory

AS-TuP15 Investigation of Precious-Metal/Metal-Oxide-Support Interactions in Automotive Catalytic Converters using a Pd/ Ce0.7Zr0.3O2 Model Planar Catalyst System, O.K. EZEKOYE, University of Michigan, M.I. NANDASIRI, Western Michigan University, T. VARGA, P. NACHIMUTHU, W. JIANG, S.V.N.T. KUCHIBHATLA, S. THEVUTHASAN, Pacific Northwest National Laboratory, X. PAN, G.W. GRAHAM, University of Michigan

AS-TuP16 Conformal Growth and Characterization of Atomic Layer Deposited Hafnium Oxide on Nanoporous TiO_2, M. SHANMUGAM, M. FARROKH BAROUGHI, South Dakota State University

AS-TuP17 Cleaning and Characterization of InP Surface using Atomic Hydrogen and STM, W. MELITZ, J. SHEN, T. KENT, University of California San Diego, R. DROOPAD, Texas State University, P.K. HURLEY, Tyndall National Institute, A.C. KUMMEL, University of California San Diego

AS-TuP18 Highly Selective and Low Damage Etching of GaAs/ AlGaAs Heterostructure using Cl_2/ O_2 Neutral Beam, J.S. OH, K.S. MIN, C.K. KIM, G.Y. YEOM, Sungkyunkwan University, Korea

AS-TuP19 TiO_2 Nanotube Growth Mechanism Studied with Scanning Auger Spectroscopy, D.F. PAUL, Physical Electronics, S. BERGER, F. SCHMIDT-STEIN, S.P. ALBU, H. HILDEBRAND, P. SCHMUKI, University of Erlangen-Nürnberg, Germany, J.S. HAMMOND, Physical Electronics

AS-TuP20 Effect of Annealing TiN/Al_2O_3 Nanofilms Grown on InGaAs, O. CEBALLOS-SANCHEZ, A. SANCHEZ-MARTINEZ, M.O. VAZQUEZ-LEPE, CINVESTAV-Unidad Queretaro, Mexico, P. LYSAGHT, SEMATECH, A. HERRERA-GOMEZ, CINVESTAV-Unidad Queretaro, Mexico

AS-TuP21 Comparison between the Continuous and Discrete Model to Assess the Thickness of SiO_2 Layers on Si with XPS Data, M.O. VAZQUEZ-LEPE, P.G. MANI-GONZALEZ, A. MENDOZA-GALVAN, A. HERRERA-GOMEZ, Cinvestav Queretaro Mexico

AS-TuP22 Electrical and Surface Studies of the High-k Gate Dielectrics Al_2O_3, HfO_2, and $Al_xHf_yO_z$ on Silicon via Atomic Layer Deposition, S. HOGAN, G. HERNANDEZ, R. CANDLER, S. FRANZ, Y.S. LIN, UCLA

AS-TuP23 Enhanced Green Emission from UV Down-Converting Ce^{3+}- Tb^{3+} Co-Activated $ZnAl_2O_4$ Phosphor, K.G. TSHABALALA, University of the Free State, South Africa, S. CHO, J. PARK, Korea Institute of Science and Technology, Republic of Korea, H.C. SWART, O.M. NTWAEABORWA, University of the Free State, South Africa

AS-TuP24 Characterization of $Al_xGa_{1-x}N$ Thin Film Light Emitting Diode (LED) Device by Spectroscopic Ellipsometry, K. UPPIREDDI, L. YAN, HORIBA Scientific

AS-TuP25 Photodegradation of Parathion by TiO_2 Nanoparticles, T.J. YANG, Feng Chia University, Taiwan, Republic of China

Biofabrication and Novel Devices Focus Topic
Room: East Exhibit Hall - Session BN-TuP

Biofabrication and Novel Devices Poster Session

6:00 pm

BN-TuP1 Photoluminescence Characterization of Polythiophene Films Incorporated with Highly-Functional Molecules Such as Metallophthalocyanines, H. KOBE, K. ONAKA, H. KATO, S. TAKEMURA, T. HIRAMATSU, K. SHIMADA, K. MATSUI, Kanto Gakuin University, Japan

BN-TuP2 Columbic Diffusion based Titration ISFETs for Autonomous Oceanic Alkalinity and pH Sensing, D.T. MARTIN, Y. TAKESHITA, A.C. KUMMEL, T.R. MARTZ, University of California San Diego

BN-TuP3 Towards F_1-ATPsynthase Based Hybrid Nanobiodevice Fabrication, J.K. SETTLE, M.L. RICHTER, C.L. BERRIE, University of Kansas

Graphene and Related Materials Focus Topic
Room: East Exhibit Hall - Session GR-TuP

Graphene and Related Materials Focus Topic Poster Session

6:00 pm

GR-TuP1 Each Exfoliated Graphene may be Different and Defected — STM *In Situ* Preparation and Characterization of Single Layer Graphene with Moiré Patterns and Intersecting Grain Boundaries, Y. GAN, Harbin Institute of Technology, China

GR-TuP2 Solution Plasma Assisted Surface Decoration of Chemically Converted Graphene Sheet with Various Metallic Nanoparticles, K. SADASUE, N. ZETTSU, T. UENO, O. TAKAI, N. SAITO, Nagoya University, Japan

GR-TuP3 Synthesis of Carbon Nanoballs, Covered by CNTs with Metallic Conductivity, K. OHNO, N. ZETTSU, T. UENO, O. TAKAI, N. SAITO, Nagoya University, Japan

GR-TuP4 Electronic Transport in Quasiperiodic Graphene p–n–p Junctions, S. VASCONCELOS, Universidade Federal do Rio grande do Norte, Brazil

Helium Ion Microscopy Focus Topic
Room: East Exhibit Hall - Session HI-TuP

Aspects of Helium Ion Microscopy Poster Session

6:00 pm

HI-TuP1 From HIM to NIM: The Prospects of a Neon Ion Microscope, F.H.M. RAHMAN, L.A. STERN, J.A. NOTTE, Carl Zeiss NTS

HI-TuP2 Helium Ion Microscope (HIM) Milling of Solid-State Nanopores for Single-Molecule Detection Devices, A.R. HALL, University of North Carolina Greensboro, J. YANG, D. FERRANTI, L.A. STERN, J. HUANG, J.A. NOTTE, Carl Zeiss NTS

HI-TuP3 Imaging and Identification of Self Assembled Monolayers using HIM, G. HLAWACEK, A. GEORGE, J.E. TEN ELSHOF, R. VAN GASTEL, H. ZANDVLIET, B. POELSEMA, University of Twente, The Netherlands

HI-TuP4 Analysis of Metal Nanoparticles in Biological Tissues Specimens Using the Helium Ion Microscope, V.S. SMENTKOWSKI, L. DENAULT, D. WARK, GE-GRC, L. SCIPIONI, D. FERRANTI, Carl Zeiss SMT

HI-TuP5 Fabrication of Carbon Nanomembranes by Helium Ion Beam Lithography, X. ZHANG, H. VIEKER, A. BEYER, A. GÖLZHÄUSER, Bielefeld University, Germany

HI-TuP6 Layer Thickness Homogeneity Determination via Rutherford Backscattering in Helium-Ion Microscopy, H. VIEKER, K. ROTT, A. BEYER, G. REISS, A. GÖLZHÄUSER, University of Bielefeld, Germany

HI-TuP7 Multi-Technique Approach to Study the Degradation Mechanism of used JLab Photocathode Samples, V. SHUTTHANANDAN, Z. ZHU, M.I. NANDASIRI, S.V.N.T. KUCHIBHATLA, S. THEVUTHASAN, W.P. HESS, Pacific Northwest National Laboratory, C. HERNANDEZ-GARCIA, Jefferson Lab

In Situ Spectroscopy and Microscopy Focus Topic
Room: East Exhibit Hall - Session IS-TuP

In Situ Spectroscopy and Microscopy Focus Topic Poster Session

6:00 pm

IS-TuP1 In Situ Infrared Spectroscopy of Oxidation Process of Amorphous Carbon Film, Depending on Substrate Temperatures, M. SHINOHARA, Y. TAKAKI, K. HARA, Y. TAKAMI, Y. MATSUDA, H. FUJIYAMA, Nagasaki University, Japan

IS-TuP2 Radiative Recombination Processes in InN Nanostructures Grown by MOMBE, F.-I. LAI, W.T. LIN, D.H. HSIEH, Yuan-Ze University, Taiwan, W.C. CHEN, C.N. HSIAO, National Applied Research Laboratories, Taiwan, S.Y. KUO, Chang Gung University, Taiwan

IS-TuP3 In Situ TEM Studies of Nanoparticle Growth in a Fluorozirconate (ZBLAN) Glass Matrix, J. JOHNSON, University of Tennessee Space Institute

Nanomanufacturing Science and Technology Focus Topic
Room: East Exhibit Hall - Session NM-TuP

Nanomanufacturing Science and Technology Poster Session
6:00 pm

NM-TuP1 Nanoscopic Polymerization of Polyaniline on the Nanostructured Alumina Surface and the Nano-Contact Transfer of the Nanofabricated Polyanil, Y. WATANABE, T. MORI, H. KATO, S. TAKEMURA, T. HIRAMATSU, Kanto Gakuin University, Japan

NM-TuP2 Dielectric Performance of Post Deposition Treated Al_2O_3 Films Prepared by Using Parallel-Plate Electrode PEALD, C.C. YU, National Applied Research Laboratories, Taiwan, Republic of China, H.D. TRINH, National Chiao Tung University, Taiwan, Republic of China, B.H. LIU, C.C. KEI, C.N. HSIAO, D.P. TSAI, National Applied Research Laboratories, Taiwan, Republic of China

NM-TuP3 Effect of Growth Temperature on Optical Properties of TiO_2 Films by Atomic Layer Deposition, M.H. CHAN, C.C. KEI, C.N. HSIAO, W.-H. CHO, C.C. YU, B.H. LIU, W.C. CHEN, D.P. TSAI, National Applied Research Laboratories, Taiwan, Republic of China

NM-TuP4 Fabrication of Double Nanohoneycombs (Pt/ZnO) with Controllable Size using Nanosphere Lithography and Plasma Enhanced Atomic Layer Deposition, C.-T. LEE, W.-H. CHO, B.H. LIU, C.C. KEI, D.P. TSAI, National Applied Research Laboratories, Taiwan, Republic of China

NM-TuP7 Fabrication of Nanopattern Sapphire Substrate by Nanosphere and Nanoimprint Lithography Technology, C.M. CHANG, M.H. SHIAO, D.Y. CHIANG, National Applied Research Laboratories, Taiwan, Republic of China, C.T. YANG, Industrial Technology Research Institute, Taiwan, Republic of China, M.J. HUANG, National Applied Research Laboratories, Taiwan, Republic of China, W.J. HSUEH, National Taiwan University, Taiwan, Republic of China

NM-TuP8 Fabrication of Single-Electron Transistor Utilizing Multi-Coated Self-Assembled Monolayer, N. KWON, K. KIM, I. CHUNG, Sungkyunkwan Univ., Republic of Korea

NM-TuP9 Photoluminescence Studies of Nanostructured Alumina Surfaces Coated by Polythiophene Film and Copper Phthalocyanine, A. ISHII, R. NAKASHIMA, H. KATO, S. TAKEMURA, H. KOBE, Y. WATANABE, T. HIRAMATSU, Kanto Gakuin University, Japan

NM-TuP10 Fabrication of Nanostructured Surfaces on Polystyrene Films with Assistance of Nanobubbles, Y. WANG, H. WANG, B. GUO, Harbin Institute of Technology, China

NM-TuP11 Optimization of Criss-Cross Photolithography for 3D NAND, J. GERMAIN, J. SMITH, J.M. KIM, K.Y. KO, Applied Materials, Inc.

Nanometer-scale Science and Technology
Room: East Exhibit Hall - Session NS-TuP

Nanometer-scale Science and Technology Poster Session
6:00 pm

NS-TuP1 Electromigration Assisted Single Silver Nanowire Ammonia Sensing, W. XING, S. KUNG, R. PENNER, University of California, Irvine

NS-TuP2 Inhomogeneous Density Distribution of Silicon Dioxide Thin Film Thermally Grown at 1000 °C on Si (100) Surface, K. ODAKA, A. KUROKAWA, Y. AZUMA, L. ZHANG, T. FUJIMOTO, National Institute of Advanced Industrial Science and Technology (AIST), Japan

NS-TuP3 Growth and Characterization of Au-implanted MBE Grown CeO_2 Thin Films for Plasmonic Based Chemical Sensors, N.A. JOY, University of Albany-SUNY, M.I. NANDASIRI, Western Michigan University, T. VARGA, V. SHUTTHANANDAN, W. JIANG, P. NACHIMUTHU, S.V.N.T. KUCHIBHATLA, S. THEVUTHASAN, Pacific Northwest National Laboratory, M.A. CARPENTER, University of Albany-SUNY

NS-TuP4 Facile Metal Oxide Nanosheet Synthesis using Atomic Layer Deposition, K. LEE, G.N. PARSONS, North Carolina State University

NS-TuP5 One-Dimensional Quantum Confinement in the Growth of GaAs(631) MQWs, V.H. MÉNDEZ-GARCÍA, D. VÁZQUEZ-CORTÉS, Coordinación para la Innovación y Aplicación de la Ciencia y la Tecnología, Mexico, S. SHIMOMURA, Ehime University, Japan, A. CISNEROS-DE-LA-ROSA, D. COMPEAN, J.J. ORTEGA-SIGALA, E. LOPEZ-LUNA, E. CRUZ-HERNANDEZ, Coordinación para la Innovación y Aplicación de la Ciencia y la Tecnología, Mexico

NS-TuP6 Nanoscale Surface Patterning for Controllable Metal Deposition, G. SMITH, C.L. BERRIE, University of Kansas

NS-TuP7 Probing the Size-Induced Electronic Structures of CdSe Quantum Dots, P. NACHIMUTHU, A.S. KARAKOTI, S.P. SANGHAVI, P. YANG, V. SHUTTHANANDAN, L.J. TERMINELLO, S. THEVUTHASAN, Pacific Northwest National Laboratory

NS-TuP8 Plasmon-Enhanced Emission With GLAD-Functionalized ZnO Nanowires, D.C. MAYO, A.T. MAYO, A. UEDA, Z. PAN, R. MU, Fisk University

NS-TuP9 Fabrication of High-Performance Carbon Nanotube Field-Effect Transistors with Semiconductors as the Source/Drain Contact Material, Z. XIAO, Alabama A&M University, F.E. CAMINO, Brookhaven National Laboratory

NS-TuP10 Negative Affinity to Oxygen as a Determinative Factor in the Formation of Metal Oxide Grains on Silicon, N.M. SUSHKOVA, Self-Employed

NS-TuP11 Preparation of Triethylamine Stabilized Silver Nanoparticles for Low-Temperature Sintering, S.L.C. HSU, J.T. WU, National Cheng-Kung University, Taiwan, R.O.C.

Neutron Scattering Focus Topic
Room: East Exhibit Hall - Session NT-TuP

Neutron Scattering Poster Session

6:00 pm

NT-TuP1 High Pressure and High Temperature Neutron Reflectometer Cell for Solid-Fluid Interface Research, P. WANG, D. HICKMOTT, A. LERNER, J. MAJEWSKI, Los Alamos National Laboratory

NT-TuP2 Polarized Neutron Reflectivity of Exchange Inversion Layers, H. LEE, J. YU, N. PACHAURI, S. KESHAVARZ, P. LECLAIR, G.J. MANKEY, University of Alabama, H. AMBAYE, V. LAUTER, Oak Ridge National Laboratory

Advanced Surface Engineering
Room: East Exhibit Hall - Session SE-TuP

Advanced Surface Engineering Poster Session

6:00 pm

SE-TuP1 Impact of Si Substrate Crystallographic Orientation on the Structure and Properties of Obliquely Deposited SiOx Films and nc-Si-SiOx Thin Film Light-Emitting Systems, M.V. SOPINSKYY, I.Z. INDUTNYI, K.V. MICHAILOVSKA, P.E. SHEPELIAVYI, V. Lashkaryov Institute of Semiconductor Physics, NASU, Kyiv, Ukraine

SE-TuP2 Fabrication of Multilayer X-ray Gratings on Staircase Substrates, C. LIU, Argonne National Laboratory, S. LYNCH, National Heart, Lung, and Blood Institute, L. ASSOUFID, Argonne National Laboratory, H. WEN, National Heart, Lung, and Blood Institute

SE-TuP3 Investigations on Physical Processes for Low Temperature Plasma Activated Wafer Bonding, T. THOMAS PLACH, K. HINGERL, Johannes Kepler University, Austria, V. DRAGOI, M. WIMPLINGER, EV Group, Austria

SE-TuP4 Crystalline Thin Film Materials with Ultra-Low Thermal Conductivity, C. MURATORE, V. VARSHNEY, A. REED, J. HU, J. BULTMAN, T. SMITH, A.A. VOEVODIN, Air Force Research Laboratory

SE-TuP5 Investigation on the Nanoindentation Research Trend in the Surfacing and Joining Technologies, H.T. KIM, S.C. KIL, Korea Institute of Science and Technology Information, Republic of Korea

Surface Science
Room: East Exhibit Hall - Session SS-TuP

Surface Science Poster Session
6:00 pm

SS-TuP1 Oxidative-Coupling Reactions via Nucleophilic Attack on Gold Surface, B. XU*, C.M. FRIEND, R.J. MADIX, Harvard University

SS-TuP2 Many-Body Interactions in Quasi-Freestanding Graphene, D.A. SIEGEL*, C.H. PARK, University of California, Berkeley, C.G. HWANG, Lawrence Berkeley National Laboratory, J. DESLIPPE, University of California, Berkeley, A.V. FEDOROV, Lawrence Berkeley National Laboratory, S.G. LOUIE, A. LANZARA, University of California, Berkeley

SS-TuP3 Edge Termination of Modified Graphene Oxide during Thermal Exfoliation, M. ACIK*, Y.J. CHABAL, The University of Texas at Dallas

SS-TuP4 Electrocatalytic Surfaces: Structure, Reactivity and Nanotemplating, X.F. YANG*, Lehigh University, B.E. KOEL, Princeton University

SS-TuP5 Characterization and Chemical Activity of Pt-Au and Ni-Au Bimetallic Clusters on TiO_2(110), S.A. TENNEY*, B.A. CAGG, W. HE, M.S. LEVINE, R.P. GALHENAGE, D.A. CHEN, University of South Carolina

SS-TuP6 Pattern Formation through Leveled Copper Etching after Dysfunctional Electropolishing, A.D. PAURIC, P. KRUSE, McMaster University, Canada

SS-TuP7 Surface Chemistry of Atomic Layer Deposition of Manganese Thin Films, H. SUN, X. QIN, F. ZAERA, University of California, Riverside

SS-TuP8 Spin Effects on Metal Surface Reactions: O_2 on Ferromagnetic Pt, M.C. ESCANO, T.Q. NGUYEN, H. NAKANISHI, Osaka University, Japan, E. GYENGE, The University of British Columbia, Canada, H. KASAI, Osaka University, Japan

SS-TuP9 X-ray Diffraction Study on Hydrogen-Induced Pd(110) Surface Reconstruction, M. TAKAHASI, S. FUJIKAWA, W. HU, Japan Atomic Energy Agency, H. TAJIRI, Japan Synchrotron Radiation Institute

SS-TuP10 Single Molecule Force Spectroscopy Studies on Nanoclay Surfaces, B. OZKAYA, G. GRUNDMEIER, University of Paderborn, Germany

SS-TuP11 Atomic Structure of Aluminum on Si(110): STM and First-principles Study of "4 × 6" Reconstruction, M. YOSHIMURA, D. MATSUOKA, Toyota Technolgocial Institute, Japan

SS-TuP12 Adsorption Dynamics of Ethylene on Si(001), M.A. LIPPONER, N. ARMBRUST, University of Marburg, Germany, M. DURR, HS Esslingen, Germany, U. HOFER, University of Marburg, Germany

SS-TuP13 Surface Characterization of Polymeric Materials using TOF-SIMS and XPS, J. LEE, K.-J. KIM, Korea University, Republic of Korea, Y. LEE, Korea Institute of Science and Technology, Republic of Korea

SS-TuP14 Prediction of Surface Ensembles in Au-based Bimetallic Alloys using Combined DFT and Monte Carlo Simulations, J.A. STEPHENS, H.C. HAM, G.S. HWANG, University of Texas at Austin

SS-TuP15 Nitrogen-Rich Heterocycles and Stimulus-Induced Switching Imaged by Liquid STM, B.E. HIRSCH, K.P. MCDONALD, A.H. FLOOD, S.L. TAIT, Indiana University

SS-TuP16 Diamond Surface Potential Modification As a Function of Plasma Exposure Times, W.W. ARAUJO, M.C.S.B. SALVADORI, F.S. TEIXEIRA, M.S.D. CATTANI, University of Sao Paulo, Brazil, I.G. BROWN, Lawrence Berkeley National Laboratory

SS-TuP17 Electrical, Physical, and Chemical Properties of the Metal to Amorphous Hydrogenated Boron Carbide Interface, M.S. DRIVER, S. KARKI, A.N. CARUSO, University of Missouri - Kansas City

SS-TuP19 Electronic Properties of Size-Selected Metal Nanoparticles Supported on Oxides, J. MATOS, L.K. ONO, B. ROLDAN CUENYA, University of Central Florida

SS-TuP20 Surface Compositional Study of Pre-And Post-Welded Vitreloy 101 ($Cu_{47}Ti_{34}Zr_{11}Ni_8$), N.A. BACA, S.J. GARRETT, California State University Northridge

SS-TuP21 Comparing the Physisorption of Aromatic Molecules on Highly Oriented Pyrolytic Graphite, S.J. GARRETT, A. WIJESURIYA, California State University Northridge

SS-TuP22 Electron Stimulated Reactions on Graphene-Coated Ru: Relevance to Extreme Ultraviolet Lithography (EUVL), B.V. YAKSHINSKIY, R.A. BARTYNSKI, Rutgers University

SS-TuP23 Photoelectron Spectroscopy Studies of Superconducting Mo_2B and Mo_2BC, L. HUERTA, Universidad Nacional Autonoma de Mexico, R. FALCONI, Universidad Juárez Autónoma de Tabasco, Mexico, M. FLORES, Universidad de Guadalajara, Mexico, A. DURAN, R. ESCAMILLA, Universidad Nacional Autonoma de Mexico

SS-TuP24 Electrical and Photo-Functional Properties of Copper Oxide Thin Films Prepared by Reactive Magnetron Sputtering, A. SHUKUR, H. SHUKUR, M. SATO, I. TAKANO, Kogakuin University, Japan

SS-TuP25 Influence of Crystal Structure for Electrochromism of WO_3 Thin Films Prepared by Reactive Magnetron Sputtering, H. SUZUKI, H. SHUKUR, S. IBRAHIM, I. TAKANO, Kogakuin University, Japan

SS-TuP26 The Friction Properties of F-Doped DLC Thin Film Prepared in a C_7H_8 Atmosphere by the Ion-Beam Assisted Method, M. KUROSU, I. TAKANO, Kogakuin University, Japan

SS-TuP27 Photo-functional Properties of Cu-Added Titanium Dioxide Thin Films Prepared by Reactive Magnetron Sputtering, S. ARAHARA, H. SHUKUR, M. SATO, I. TAKANO, Kogakuin University, Japan

SS-TuP28 Deviation from Wulff Structures for Pt Nanoparticles Supported on TiO_2(110): A STM Study, F. BEHAFARID, B. ROLDAN CUENYA, University of Central Florida

SS-TuP29 Slope Selection in Au Growth Fronts by Protrusion Interactions, J.L. SACEDÓN, A. GONZÁLEZ GONZÁLEZ, J.A. AZNÁREZ, E. RODRÍGUEZ CAÑAS, E. VASCO, Consejo Superior de Investigaciones Científicas, Spain

* Morton S. Traum Award Finalist

Thin Film
Room: East Exhibit Hall - Session TF-TuP

Thin Films Poster Session
6:00 pm

TF-TuP1 Spatially Varied Orientation Selective Epitaxial Growth of CeO_2(100) and (110) Areas on Si(100) Substrates by Reactive Magnetron Sputtering Utilizing Electron Beam Irradiation, T. INOUE, S. SHIDA, Iwaki Meisei University, Japan

TF-TuP2 Influence of Growth-Rate on the Epitaxial Orientation and the Crystalline Quality of CeO_2 Thin Films Grown on Al_2O_3(0001) by Molecular Beam Epitaxy, M.I. NANDASIRI, Western Michigan University, P. NACHIMUTHU, T. VARGA, V. SHUTTHANANDAN, W. JIANG, S.V.N.T. KUCHIBHATLA, S. THEVUTHASAN, Pacific Northwest National Laboratory, S. SEAL, University of Central Florida, A. KAYANI, Western Michigan University

TF-TuP3 Influence of Target Type on Surface Texture-etched AZO Films Prepared by Magnetron Sputtering for Solar Cell Transparent Electrode Applications, T. MINAMI, T. MIYATA, T. HIRANO, Y. NOGUCHI, J. NOMOTO, Kanazawa Institute of Technology, Japan

TF-TuP4 XPS and ToFSIMS Characterization of Laser Modified Films for Li-Ion Battery Cathodes, M. BRUNS, R. KOHLER, J. PROELL, C. ZIEBERT, W. PFLEGING, Karlsruhe Institute of Technology, Germany

TF-TuP5 Effect of Temperature on the Native Oxide Consumption during the ALD of Ta_2O_5 and TiO_2 on GaAs (100) Surfaces, L. YE, T. GOUGOUSI, UMBC

TF-TuP6 Surface Morphology Control of Plasma-Enhanced Atomic Layer Deposition (PEALD) Silver Thin Films for Applications in Plasmonics and Surface-Enhanced Raman Scattering, E. CLEVELAND, Naval Research Laboratory ASEE Postdoctoral Associate, J. NIINISTÖ, M. RITALA, University of Helsinki, Finland, E. FOOS, S. PROKES, Naval Research Laboratory (NRL)

TF-TuP7 Influence of Doped Al Content on Electrical Properties and Light Management Obtainable by Texture-etched AZO Films Prepared by DC Magnetron Sputtering, J. NOMOTO, T. MIYATA, T. HIRANO, T. MINAMI, Kanazawa Institute of Technology, Japan

TF-TuP8 Reciprocal-Space Mapping of Lateral Single-Crystal Domains with GIXD for a Tetracene Film on H/Si(001), A. TERSIGNI, University of Guelph, Canada, X.R. QIN, Univeristy of Guelph, Canada, D.-T. JIANG, University of Guelph, Canada, C.-Y. KIM, Canadian Light Source Inc., Canada, R.A. GORDON, Argonne National Laboratory

TF-TuP9 Structure and Photo-Functional Properties of N^+ Ion Irradiated TiO_2 Thin Film under Various Substrate Temperatures, H. SHUKUR, M. SATO, Kogakuin University, Japan, I. NAKAMURA, Tokyo Metropolitan Industrial Technology Research Institute, Japan, I. TAKANO, Kogakuin University, Japan

TF-TuP10 Solid State Mixed-Graphene Based Thin Films for Lithium-Ion Battery Applications, N. BADI, University of Houston, R. SINGH, Green Energy Enabling Technologies Company (GEETCO), T. KARABACAK, University of Arkansas at Little Rock

TF-TuP11 Study of Electronic Structure in In-Ga-ZnO Amorphous Semiconductor Films, Y. LI, Z. LIU, X. HU, J. REN, Xi'an Jiaotong University, China

Vacuum Technology
Room: East Exhibit Hall - Session VT-TuP

Vacuum Technology Poster Session & Student Poster Competition
6:00 pm

VT-TuP1 Measurement of Molar Mass and Viscosity of a Viscous Flowing Gas with a Resonant Vibrating Sensor, A. KUROKAWA, National Institute of Advanced Industrial Science and Technology (AIST), Japan, H. HOJO, T. KOBAYASHI, VPI Co., Japan

VT-TuP2 Simulation of Vacuum Pressure at NSLS' X-Ray Ring after Scraper Installation, J.P. HU, S. KRAMER, V. RAVINDRANATH, J. DABROWSKI, Brookhaven National Laboratory

VT-TuP3 Pumping Performance of Scroll Pump, F.C. HSIEH, P.H. LIN, J.C. LU, F.Z. CHEN, National Applied Research Laboratories, Taiwan, Republic of China

VT-TuP4 A System for Vacuum Gauge Calibration in the Pressure Range of 10^{-5} to 10^5 Pa, Y.W. LIN, C.P. LIN, C.N. HSIAO, National Applied Research Laboratories, Taiwan, Republic of China

VT-TuP5 Application of AutoResonant Ion Trap Mass Spectrometry (ART MS) to Vacuum Quality Measurement, P.D. ACOMB, G.A. BRUCKER, J. RATHBONE, B.J. HORVATH, Brooks Automation, Inc., Granville-Phillips Products

VT-TuP6 Combination of NEG and Sputter-Ion Pumps for Particle Accelerator Vacuum Systems, P. CHIGGIATO, J.M. JIMENEZ, S. MEUNIER, I. WEVERS, CERN, Switzerland, A. BONUCCI, A. CONTE, P. MANINI, SAES Getters

VT-TuP7 Cryogenic Viscous Compressor Design and Development for the ITER Vacuum System, S.J. MEITNER, L.R. BAYLOR, C.N. BARBIER, S.K. COMBS, R.C. DUCKWORTH, T.D. EDGEMON, M.P. HECHLER, D.A. RASMUSSEN, Oak Ridge National Laboratory, R. KERSEVAN, M. DREMEL, R.J.H. PEARCE, ITER International Organization, France

VT-TuP8 A Robust Optical Gas Analyzer for Extreme Environments, E.P. CARLSON, HY-Tech Research Corporation, C.C. KLEPPER, Oak Ridge National Laboratory, R.C. HAZELTON, M.K. KEITZ, HY-Tech Research Corporation

VT-TuP9 Development of Niobium Thin Films Tailored for SRF Applications, J.S. SPRADLIN, A.-M. VALENTE-FELICIANO, Jefferson Lab

WEDNESDAY SPECIAL EVENTS

8:00 a.m.	Peter Mark Award Lecture, M. Sankaran, Case Western Reserve Univ.—201 (CC)
10:00 a.m.	Session Coffee Break—Center/West Exhibit Hall (CC)
12:00 p.m.	Exhibit Hall Lunch—Center/West Exhibit Hall (CC)
12:00 p.m.	Nanometer-Scale Science and Technology Division Best Student Paper Awards Ceremony—203 (H)
12:15 p.m.	Finance Committee Meeting and Lunch—Gospel (H)
3:20 p.m.	Session Refreshment Break—Center/West Exhibit Hall (CC)
4:30 p.m.	E&M Reception (Invitation Only)—Center/West Exhibit Hall (CC)
6:00 p.m.	MEMS and NEMS Technical Group Executive Committee Meeting and Dinner—Gospel (H)
6:15 p.m.	AVS Awards Ceremony—204-206 (CC)
7:15 p.m.	AVS Awards Reception—Grand Ballroom West (H)

10:00 a.m.-4:30 p.m.	*Equipment Exhibition*	*Center/West Exhibit Hall (CC)*
10:20 a.m.-10:40 a.m.	*Exhibitors & Manufacturers Technology Spotlight*	*Center/West Exhibit Hall (CC)*
12:20 p.m.-2:00 p.m.	*Exhibitors & Manufacturers Technology Spotlight*	*Center/West Exhibit Hall (CC)*

CC = Nashville Convention Center
H = Renaissance Nashville Hotel

WEDNESDAY SHORT COURSES

8:30 a.m.	Fundamentals of Vacuum Technology
8:30 a.m.	Focused Ion Beams (FIB) and Secondary Ion Mass Spectrometry (SIMS)
8:30 a.m.	Comprehensive Course on Surface Analysis by XPS or ESCA, AES, FIB & SIMS

LOCATION:	All AVS Short Courses will be held at – Nashville Convention Center
COURSE HOURS:	All AVS Short Course Hours: 8:30 a.m. – 5:00 p.m. – with 1.5 hour break for Lunch (Lunch not included)

NOTES

	Applied Surface Science Room: 102 - Session AS+BI+NS-WeM Advances in Scanning Probe Microscopy Moderator: S.A. Allen, The University of Nottingham, UK	Biomaterial Interfaces Room: 108 - Session BI-WeM Cells at Interfaces Moderator: M.R. Alexander, University of Nottingham, UK
8:00 am	AS+BI+NS-WeM1 Invited High-Speed Atomic Force Microscopy for Filming Biomolecular Processes, T. ANDO, Kanazawa University, Japan	BI-WeM1 Real Time Analysis of Polymer Film Integrity Upon Exposure to Bacteria and Aqueous Medium, D.E. BARLOW, J.C. BIFFINGER, Naval Research Laboratory, E.R. PETERSEN, Nova Research, Inc., J.N. RUSSELL, P.E. PEHRSSON, Naval Research Laboratory, W.J. GOODSON, Air Force Resarch Laboratory
8:20 am	Invited talk continued.	BI-WeM2 Early Stages of Bacterial Biofilm Formation – A Numerical Study of Bioadhesion on Biomaterials, D. SIEGISMUND, A. SCHROETER, S. SCHUSTER, M. RETTENMAYR, Friedrich Schiller University Jena, Germany
8:40 am	AS+BI+NS-WeM3 Invited Integrated Imaging: Probing Molecular Interactions by Correlated Atomic Force Microscopy Approaches, C. YIP, University of Toronto, Canada	BI-WeM3 A Library of Polymer Gradients for Understanding Bacteria-Material Interactions, A.L. HOOK, J. YANG, C.-Y. CHANG, University of Nottingham, UK, D.G. ANDERSON, R. LANGER, Massachusetts Institute of Technology, S. ATKINSON, P. WILLIAMS, M.C. DAVIES, M.R. ALEXANDER, University of Nottingham, UK
9:00 am	Invited talk continued.	BI-WeM4 Invited Developing Tools to Observe Microbial Metabolic Exchange in 2D and 3D, J. WATROUS, University of California, San Diego, T. ALEXANDROV, University of Bremen, Germany, W.-T. LIU, A. LAMSA, D. GONZALEZ, N. BANDEIRA, M. HAMBY, R. KERSTEN, K. POGLIANO, B. MOORE, P.C. DORRESTEIN, University of California, San Diego
9:20 am	AS+BI+NS-WeM5 Visible Light Emission from Fluorescent Proteins on Silver Substrate Induced by Tunneling Electrons, T. YAMADA, RIKEN, Japan, T. IWAYA, S. MATSUNAGA, M. KAWAI, The University of Tokyo, Japan	Invited talk continued.
9:40 am	AS+BI+NS-WeM6 Characterization of Peptide Nanotubes by Atomic Force Microscopy, J.L. REMMERT, M.C. VASUDEV, Air Force Research Laboratory, L. ELIAD, E. GAZIT, Tel Aviv University, Israel, T.J. BUNNING, R.R. NAIK, A.A. VOEVODIN, Air Force Research Laboratory	BI-WeM6 Analysis of Cancer Cell Lines with ToF-SIMS and PCA, M. ROBINSON, University of Washington, F. MORRISH, D. HOCKENBERRY, Fred Hutchinson Cancer Research Center, L.J. GAMBLE, University of Washington
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	AS+BI+NS-WeM9 Determination of Molecular Polarization at Protein-Electrode Interfaces with Combined Optical, Transport, and Dielectric Scanning Probe Microscopy, X. CHEN, K. KATHAN-GALIPEAU, B.M. DISCHER, D.A. BONNELL, University of Pennsylvania	BI-WeM9 Invited Engineering Stem Cell Differentiation via Material Properties, T. MCDEVITT, Georgia Institute of Technology
11:00 am	AS+BI+NS-WeM10 Scanning Local Capacitance Measurements with High Spatial and Dielectric Resolution, M.J. BRUKMAN, S. NANAYAKKARA, D.A. BONNELL, University of Pennsylvania	Invited talk continued.
11:20 am	AS+BI+NS-WeM11 Parallel Momentum Conservation of Hot Electrons across a Metal Semiconductor Interface, J.J. GARRAMONE, J. ABEL, R. BALSANO, V.P. LABELLA, College of Nanoscale Science and Engineering, the University at Albany-SUNY	BI-WeM11 Adhesion and Rolling of Leukemic Cells on Immobilized Hyalurons, A. ROSENHAHN, Karlsruhe Institute of Technology, Germany, C. CHRISTOPHIS, I. TAUBERT, G.R. MESECK, A.D. HO, M. GRUNZE, University of Heidelberg, Germany
11:40 am	AS+BI+NS-WeM12 High Resolution Scanning Probe Imaging of 2D-Supramolecular Networks on Au(111), Graphite and Molybdenite, V.V. KOROLKOV, S. ALLEN, C.J. ROBERTS, S.J.B. TENDLER, The University of Nottingham, UK	BI-WeM12 Control of Cell Growth and Morphology through Surface Roughness and Chemistry, M.M. STANTON, Worcester Polytechnic Institute

	Electronic Materials and Processing Room: 210 - Session EM-WeM Low-k Materials and Devices Moderator: B. French, Intel Corporation	Energy Frontiers Focus Topic Room: 103 - Session EN+EM+NS-WeM Quantum Dot and Nanowire Solar Cells Moderator: K. Leschkies, Applied Materials Inc.
8:00 am		EN+EM+NS-WeM1 Invited Hybrid Quantum-Dot/Organic Solar Cells Based on Silicon Nanocrystals, U. KORTSHAGEN, C.Y. LIU, Z. HOLMAN, J. YANG, University of Minnesota
8:20 am		Invited talk continued.
8:40 am	EM-WeM3 Invited Ultralow-k PECVD pSiCOH Dielectrics and their Implementation in VLSI Interconnects, A. GRILL, S.M. GATES, IBM Research, E.T. RYAN, GlobalFoundries, S. NGUYEN, IBM Research	EN+EM+NS-WeM3 Invited Precision Engineering of Semiconductor Nanowires for Advanced Photovoltaic Devices, N. SHIN, I.R. MUSIN, S. SIVARAM, M.A. FILLER, Georgia Institute of Technology
9:00 am	Invited talk continued.	Invited talk continued.
9:20 am	EM-WeM5 Limitations in Dielectric Constant Scaling for low-k a-SiC(N):H Diffusion Barriers in Nanoelectronic Applications, S. KING, D. JACOB, Intel Corporation, M. LIU, D.W. GIDLEY, University of Michigan	EN+EM+NS-WeM5 Electrophoretic Deposition of CdSe Nanocrystals in Quantum Dot Sensitized Solar Cells, N.J. SMITH, Middle Tennessee State University
9:40 am	EM-WeM6 Fundamental Characterization of Amorphous Hydrogenated Boron Carbide Toward its use as a Low-***k*** Dielectric Material, B.J. NORDELL, S. KARKI, C. CLAYTON, M.S. DRIVER, M.M. PAQUETTE, A.N. CARUSO, University of Missouri-Kansas City	EN+EM+NS-WeM6 Selective and Highly Efficient Photo-Induced Activity Over Nano-Scale Sites in Porous Silicon: Potential Application for Hybrid Organic-Silicon PV, M. ASSCHER, The Hebrew University of Jerusalem, Israel, G. TOKER, A. NAHOR, O. BERGER, S. YITZCHAIK, A. SA'AR, Hebrew University, Israel
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	EM-WeM9 Invited Robust PECVD Ultra-Low-k Dielectric (κ≤2.55) Development for sub-28nm Generations, D. KIOUSSIS, E.T. RYAN, GLOBALFOUNDRIES, S.M. GATES, IBM T.J. Watson Res. Ctr., A. MADAN, N. KLYMKO, C. PARKS, S. MOLIS, IBM, R. AUGUR, GLOBALFOUNDRIES, H. MASUDA, Toshiba America, D. RESTAINO, IBM, Z. SUN, GLOBALFOUNDRIES, S. HOSADURGA, IBM, S. COHEN, IBM T.J. Watson Res. Ctr., K. VIRWANI, IBM Almaden Res. Ctr., A. GRILL, IBM T.J. Watson Res. Ctr.	EN+EM+NS-WeM9 Invited High-Performance, Low-Cost Nanopillar Array Photovoltaics, A. JAVEY, University of California Berkeley
11:00 am	Invited talk continued.	Invited talk continued.
11:20 am	EM-WeM11 Invited Molecular Strengthening Mechanisms for Low-k Dielectrics, R.H. DAUSKARDT, Stanford University	EN+EM+NS-WeM11 Extremely Thin Absorber Solar Cells Based on CdSe-Coated ZnO Nanowires, H. MAJIDI, T.P. LE, G.W. GUGLIETTA, J.B. BAXTER, Drexel University
11:40 am	Invited talk continued.	EN+EM+NS-WeM12 Hybrid Photovoltaics Devices Based on Quantum Dot Functionalized ZnO Nanowire Arrays Embedded in a Polymer Matrix, N. HARRIS, L. BUTLER, G. SHEN, N. DAWAHRE, S. WILBERT, W. BAUGHMAN, S. BALCI, P. KUNG, S. KIM, University of Alabama

	Energy Frontiers Focus Topic Room: 209 - Session EN+NS-WeM Organic Photovoltaics Moderator: R.A. Quinlan, Naval Surface Warfare Center, Carderock Division	Exhibitor Technology Spotlight Room: West Exhibit Hall - Session EW-WeM Exhibitor Technology Spotlight Moderator: D. Surman, Kratos Analytical Inc.
8:00 am	EN+NS-WeM1 Sol-gel Prepared Ca Doped ZnO and Its Application in Polymer–Oxide Bilayer Hybrid Solar Cells, M. WANG, I. HILL, Dalhousie University, Canada	
8:20 am	EN+NS-WeM2 The Influence of ITO Surface Treatments on Spatially Localized Photocurrent Variation in Organic Photovoltaic Devices, B.J. LEEVER, Air Force Research Laboratory, I.P. MURRAY, Northwestern University, M.F. DURSTOCK, Air Force Research Laboratory, T.J. MARKS, M.C. HERSAM, Northwestern University	
8:40 am	EN+NS-WeM3 Electronically Monodisperse Single-Walled Carbon Nanotube Thin Films as Transparent Conducting Anodes in Organic Photovoltaics, T.P. TYLER, R.E. BROCK, H.J. KARMEL, T.J. MARKS, M.C. HERSAM, Northwestern University	
9:00 am	EN+NS-WeM4 In Situ Characterization of Lifetime and Morphology in Operating Bulk Heterojunction Organic Photovoltaic Devices by Impedance Spectroscopy, B.J. LEEVER, C.A. BAILEY, Air Force Research Laboratory, T.J. MARKS, M.C. HERSAM, Northwestern University, M.F. DURSTOCK, Air Force Research Laboratory	
9:20 am	EN+NS-WeM5 Invited Singlet Exciton Fission in Tetracene and Diphenyltetracene, P. JADHAV, A. MOHANTY, J. SUSSMAN, M. BALDO, Massachusetts Institute of Technology	
9:40 am	Invited talk continued.	
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	EW-WeM8 Using the Apple IPAD with your PVD System Maintenance, C. MALOCSAY, Semicore
10:40 am	EN+NS-WeM9 Charge Separation and Relaxation in Phthalocyanine-C_{60} Photovoltaic Systems, G.J. DUTTON, University of Maryland -College Park, S.W. ROBEY, National Institute of Standards and Technology	
11:00 am	EN+NS-WeM10 Low Energy Ion-Assisted Modification of PbS Nanocrystal-Sexithiophene Composite Films, F.D. PLETICHA, University of Illinois at Chicago, L. DONGHWA, University of Florida, I.L. BOLOTIN, University of Illinois at Chicago, S.R. PHILLPOT, S.B. SINNOTT, University of Florida, L. HANLEY, University of Illinois at Chicago	
11:20 am	EN+NS-WeM11 Molecular Modulation of Solar Cells: Where Inorganic, Molecular and Organic Electronics Meet, D. CAHEN, R. HARLAVAN, O. YAFFE, Weizmann Institute of Science, Israel	
11:40 am	EN+NS-WeM12 Correlation of Interfacial Electronic Structures and Open Circuit Voltages in Organic Solar Cells, M.H. CHEN, National Dong Hwa University, Taiwan, Republic of China, W.H. TSENG, J.Y. WANG, C.T. TSENG, C.I. WU, National Taiwan University	

	Graphene and Related Materials Focus Topic Room: 208 - Session GR+MN-WeM Graphene: Mechanical and Thermal Properties, Graphene MEMS and NEMS Moderator: J. Rabe, Humboldt University Berlin, Germany	Helium Ion Microscopy Focus Topic Room: 106 - Session HI+AS+BI+NS-WeM Nano- and Bio- Imaging with Helium Ion Microscopy Moderators: A. Gölzhäuser, University of Bielefeld, Germany, V.S. Smentkowski, GE-GRC
8:00 am	GR+MN-WeM1 Invited Graphene Atomic Membranes: From Patchwork Quilts to Atomic Drums, P.L. MCEUEN, Cornell University	HI+AS+BI+NS-WeM1 Invited The Helium Ion Microscope for Nanomodification, H.Z. ZHANG, G. BEHAN, D. FOX, D. ZHOU, Trinity College Dublin, Ireland
8:20 am	Invited talk continued.	Invited talk continued.
8:40 am	GR+MN-WeM3 Nanomechanics of Graphene: Non-Linear Response, Fracture, and Crack Propagation, R. PERRIOT, Y. LIN, University of South Florida, X. GU, Aalto University School of Science and Technology, Finland, V.V. ZHAKHOVSKY, I.I. OLEYNIK, University of South Florida	HI+AS+BI+NS-WeM3 Invited Helium Ion Microscopy Techniques for Imaging and Characterization of nano-Device Materials and Structures, S. OGAWA, T. IIJIMA, National Institute of Advanced Industrial Science and Technology (AIST), Japan
9:00 am	GR+MN-WeM4 The Effect of the Environment on Electrical and Mechanical Properties of Graphene, K. BOLOTIN, Vanderbilt University	Invited talk continued.
9:20 am	GR+MN-WeM5 Nanoscale Friction and Adhesion Behavior of Graphene: The Effect of Sliding History, X.-Z. LIU, Q. LI, B. ZHANG, R.W. CARPICK, University of Pennsylvania	HI+AS+BI+NS-WeM5 He Ions Image the Au (111) Herringbone Reconstruction, V. VELIGURA, G. HLAWACEK, R. VAN GASTEL, H. ZANDVLIET, B. POELSEMA, MESA+ Institute for Nanotechnology, University of Twente, Enschede, The Netherlands
9:40 am	GR+MN-WeM6 Tunable Thermal Transport and Thermal Rectification in Strained Graphene Nanoribbons, K.G.S. GUNAWARDANA, K.J. MULLEN, University of Oklahoma, J. HU, Y.P. CHEN, X. RUAN, Purdue University	HI+AS+BI+NS-WeM6 Imaging of Graphenoid Nanomembranes with Helium-Ion Microscopy, A. BEYER, A. TURCHANIN, A. GÖLZHÄUSER, University of Bielefeld, Germany
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	GR+MN-WeM9 Molecular Dynamics Simulations of Melting of Graphene, B. STEELE, V.V. ZHAKHOVSKY, R. PERRIOT, I.I. OLEYNIK, University of South Florida	HI+AS+BI+NS-WeM9 Invited Nanofabrication and Biological Imaging with the Helium Ion Microscope, D.S. PICKARD, National University of Singapore
11:00 am	GR+MN-WeM10 Inhomogeneous Strain in Monolayer Epitaxial Graphene, D.A. SCHMIDT, Ruhr-University Bochum, Germany, T. OHTA, L.B. BIEDERMANN, T.E. BEECHEM, S.W. HOWELL, G.L. KELLOGG, Sandia National Laboratories	Invited talk continued.
11:20 am	GR+MN-WeM11 Gap Opening in Graphene by Simple Periodic Inhomogeneous Strain, A.M. BRATKOVSKY, I. NAUMOV, Hewlett-Packard Laboratories	HI+AS+BI+NS-WeM11 Imaging and Characterizing Cellular Interaction of Nanoparticles using Helium Ion Microscopy, B.W. AREY, V. SHUTTHANANDAN, Y. XIE, A. TOLIC, G. ORR, Pacific Northwest National Laboratory
11:40 am	GR+MN-WeM12 Molecular Dynamics Simulation of DNA Translocation through Graphene Nanopores, C. SATHE, X. ZOU, J.P. LEBURTON, K. SCHULTEN, University of Illinois at Urbana Champaign	HI+AS+BI+NS-WeM12 Application of Helium Ion Microscope on Semiconductor Surface Imaging and Metrology, H.X. GUO, National Institute for Materials Science, Japan, H. ITOH, National Institute of Advanced Industrial Science and Technology (AIST), Japan, K. ONISHI, T. IWASAKI, D. FUJITA, National Institute for Materials Science, Japan

	Magnetic Interfaces and Nanostructures Room: 105 - Session MI-WeM Fundamental Problems in Magnetism Moderator: A.N. Caruso, University of Missouri-Kansas City	Nanomanufacturing Science and Technology Focus Topic Room: 111 - Session NM+AS+MS-WeM Nanomanufacturing Issues: Metrology and Environmental Concerns Moderators: J. Johnson, University of Tennessee Space Institute, W. Collins, Fisk University
8:00 am	MI-WeM1 Invited Fundamental Problems in Magnetism, W.H. BUTLER, The University of Alabama	
8:20 am	Invited talk continued.	
8:40 am	MI-WeM3 Progress toward Understanding the Sign of Spin-Polarization at Interfaces in Organic Spin-Valves, G.J. SZULCZEWSKI, University of Alabama	
9:00 am	MI-WeM4 Invited Rational Design of New Spintronics Materials: From Topological Insulators and Spin Torque Applications, C. FELSER, Johannes Gutenberg University Mainz, Germany	NM+AS+MS-WeM4 Invited Size Dependent Toxicity, V. COLVIN, Rice University
9:20 am	Invited talk continued.	Invited talk continued.
9:40 am	MI-WeM6 Interfacial Effect on the Magnetic Properties of Core-Shell Co/Pt Supported Nanodots, P. CAMPIGILO, N. MOREAU, V. REPAIN, C. CHACON, Lab. Mat. et Phénomènes Quantiques, France, H. BULOU, F. SCHEURER, Inst. de Phys. et Chimie des Mat. de Strasbourg, France, P. OHRESSER, Synchrotron SOLEIL, France, H. MAGNAN, Service de Phy. et Chimie des Surfaces et Interfaces, France, E. FONDA, Synchrotron SOLEIL, France, J. LAGOUTE, Y. GIRARD, Lab. Mat. et Phénomènes Quantiques, France, C. GOYHENEX, Inst. de Phys. et Chimie des Matériaux de Strasbourg, France, S. ROUSSET, Lab. Mat. et Phénomènes Quantiques, France	NM+AS+MS-WeM6 Sampling for Airborne Nanoparticles and Selecting Respiratory Protection, S.M. HAYS, Gobbell Hays Partners, Inc., J.R. MILLETTE, MVA Scientific Consultants
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	MI-WeM9 Invited Spin-Split Bands in Non-Magnetic Systems, E. VESCOVO, Brookhaven National Laboratory	NM+AS+MS-WeM9 Invited Local Probes Enabling Science and Manufacturing, D.A. BONNELL, University of Pennsylvania
11:00 am	Invited talk continued.	Invited talk continued.
11:20 am	MI-WeM11 Unoccupied Electron States in Rashba Systems Studied by Spin-Resolved Inverse Photoemission, M. DONATH, S.N.P. WISSING, A. ZUMBÜLTE, C. EIBL, A.B. SCHMIDT, Muenster University, Germany	NM+AS+MS-WeM11 The Influence of Surrounding Materials on the Optical Properties of Nanoscale Films: An Unforeseen Complication in Nanoscale Metrology, A.C. DIEBOLD, V.K. KAMINENI, University at Albany
11:40 am	MI-WeM12 MBE Growth of Topological Insulator Bi_2Se_3 on Epitaxial Graphene on 6H-SiC(0001), Y. LIU*, M. WEINERT, L. LI, University of Wisconsin-Milwaukee	

* Postdoc Award Finalist

	Nanometer-scale Science and Technology Room: 203 - Session NS-WeM Carbon-Based Nanomaterials Moderator: M.C. Hersam, Northwestern University	Neutron Scattering Focus Topic Room: 207 - Session NT+AS+MI-WeM Applications of Neutron Scattering I Moderator: V. Lauter, Oak Ridge National Laboratory
8:00 am	NS-WeM1 Characterization of Large Area Graphene Crystallites Grown on Cu Foil Substrates, P. TYAGI, Z.R. ROBINSON, H. GEISLER, C.A. VENTRICE, JR., University at Albany, H. YANG, T. VALLA, Brookhaven National Laboratory, Y. HAO, R.S. RUOFF, University of Texas at Austin	NT+AS+MI-WeM1 Invited A Deeper Look into Spintronic Material Systems with Neutrons and Synchrotron Radiation, T. BRUECKEL, Forschungszentrum Jülich, Germany
8:20 am	NS-WeM2 Gas Adsorption on Pt-Clusters Supported by Graphene, J. KNUDSEN, Lund University, Sweden, T. GERBER, University of Cologne, Germany, E. GRAANÄS, Lund University, Sweden, P.J. FEIBELMAN, Sandia National Laboratories, K. SCHULTE, Lund University, Sweden, P. STRATMAN, C. BUSSE, T. MICHELY, University of Cologne, Germany, J.N. ANDERSEN, Lund University, Sweden	Invited talk continued.
8:40 am	NS-WeM3 Seeding Atomic Layer Deposition of High-k Dielectrics on Epitaxial Graphene with Organic Self-Assembled Monolayers, J.M.P. ALABOSON*, Q.H. WANG, J.D. EMERY, A.L. LIPSON, M.J. BEDZYK, Northwestern University, J.W. ELAM, M.J. PELLIN, Argonne National Laboratory, M.C. HERSAM, Northwestern University	NT+AS+MI-WeM3 Magnetic Properties of FePtRh Films and Multilayers Studied by Neutron Scattering, D. LOTT, J. FENSKE, Helmholtz-Zentrum Geesthacht, Germany, G.J. MANKEY, Univ. of Alabama, W. SCHMIDT, K. SCHMALZL, Forschungszentrum Juelich, Germany, E. TARTAKOWSKAYA, National Academy of Science, Ukraine, H. AMABYE, ORNL, F. KLOSE, A. MULDERS, ANSTO, Menai, Australia, A. SCHREYER, Helmholtz-Zentrum Geesthacht, Germany, V. LAUTER, ORNL
9:00 am	NS-WeM4 Invited Graphene-based Electronics and Optoelectronics, PH. AVOURIS†, IBM T.J. Watson Research Center	NT+AS+MI-WeM4 Spectroscopic and Magnetic Characterization of the Spin-Crossover Transition in Thin Films of $Fe(C_{12}H_8N_2)_2(NCS)_2$, E.C. ELLINGSWORTH, G.J. SZULCZEWSKI, The University of Alabama, Tuscaloosa, V. LAUTER, Oak Ridge National Laboratory
9:20 am	Invited talk continued.	NT+AS+MI-WeM5 Invited Nanoscopic Magnetic Phase Separation at the $SrTiO_3(001)/La_{1-x}Sr_xCoO_3$ Interface, M. SHARMA, M.A. TORIJA, Univ. of Minnesota, J. GAZQUEZ, M. VARELA, ORNL, J. SCHMITT, C. HE, Univ. of Minnesota, J.A. BORCHERS, M. LAVER, NIST, S. EL-KHATIB, American University of Sharjah, V. LAUTER, H. AMBAYE, R. GOYETTE. ORNL. C. LEIGHTON. Univ. of Minnesota
9:40 am	NS-WeM6 Plasma-based Approach to Controlling the Properties of Graphene, S.C. HERNÁNDEZ, M. BARAKET, S.G. WALTON, W.K. LEE, C.R. TAMANAHA, P.E. SHEEHAN, J.T. ROBINSON, V.D. WHEELER, R.L. MYERS-WARD, L.O. NYAKITI, EDDY, D.K. GASKILL, Naval Research Laboratory (NRL)	Invited talk continued.
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	NS-WeM9 Solution Plasma-Assisted Surface Functionalization of Chemically Converted Graphene Sheet toward an Enhancement of Solubility in Solution, N. TSUDA, T. UENO, N. ZETTSU, S. CHO, O. TAKAI, N. SAITO, Nagoya University, Japan	NT+AS+MI-WeM9 Study of $L1_0$ Ordering in $^{57}Fe/Pt$ Multilayers, K. SRIKANTI, Ugc-Dae, Csr, India
11:00 am	NS-WeM10 Horizontally Aligned Carbon Nanotubes on Quartz Substrate for Electrolyte-Gated Chemical and Biological Sensing, S. OKUDA, Y. OHNO, K. MAEHASHI, K. INOUE, K. MATSUMOTO, Osaka University, Japan	NT+AS+MI-WeM10 Influence of Capping Layer Rigidity on Properties of Supporting Temperature Sensitive Hydrogel Polymers Using Neutron Reflectivity, M. DUBEY, Los Alamos National Laboratory, M.S. JABLIN, Carnegie Mellon University, M. ZHERNENKOV, Los Alamos National Laboratory, R. TOOMEY, University of South Florida, J. MAJEWSKI, Los Alamos National Laboratory
11:20 am	NS-WeM11 Gas-phase Studies and Growth of Well-Defined Carbon Nanotubes, A. KUMAR, P. LIN, R.M. SANKARAN, Case Western Reserve University	NT+AS+MI-WeM11 Invited Nanobiology: Membranes and Proteins in Motion, M.C. RHEINSTÄDTER, McMaster University, Canada and Canadian Neutron Beam Centre, Canada
11:40 am	NS-WeM12 Visualizing Defect Distributions in Carbon Nanotubes using Linear Dichroism Signals in Scanning Transmission X-ray Microscopy (STXM) and TEM-EELS, E. NAJAFI, A.P. HITCHCOCK, D. ROSSOUW, G. BOTTON, McMaster University, Canada	Invited talk continued.

* NSTD Student Award Finalist
† NSTD Recognition Award

	Plasma Science and Technology Room: 201 - Session PS+SE-WeM Atmospheric Plasma Processing and Micro Plasmas Moderator: P.L.S. Thamban, University of Texas at Dallas	Plasma Science and Technology Room: 202 - Session PS+SS-WeM Plasma Surface Interactions (Fundamentals & Applications) I Moderator: C. Labelle, GLOBALFOUNDRIES
8:00 am	PS+SE-WeM1 Invited 2011 AVS Peter Mark Award Lecture - Microscale, Atmospheric-Pressure Plasmas: A Platform for Nanomaterials Synthesis at Different Length Scales, M. SANKARAN*, Case Western Reserve University	PS+SS-WeM1 Investigation of Sidewall Passivation Mechanism in a 'CMOS-compatible' Plasma Etching Process for InP-based Photonic Devices, S. BOUCHOULE, CNRS-LPN, France, L. VALLIER, CNRS-LTM, France, L. GATILOVA, G. PATRIARCHE, S. GUILET, L. LE GRATIET, CNRS-LPN, France
8:20 am	Invited talk continued.	PS+SS-WeM2 Coupling of Surface Mixed-Layer Kinetics and Monte Carlo Modeling for Profile Evolution in Patterning Complex Oxides, N. MARCHACK†, C.D. PHAM, J.P. CHANG, University of California Los Angeles
8:40 am	PS+SE-WeM3 Surface and In-Depth Modification of LDPE using an Atmospheric Plasma Torch, S. ABOU RICH, P. LEROY, Universite Libre de Bruxelles, Belgium, N. WEHBE, Universiy of Namur, Belgium, N. AVRIL, L. HOUSSIAU, University of Namur, Belgium, F. RENIERS, Universite Libre de Bruxelles, Belgium	PS+SS-WeM3 Invited Plasma Diagnostics and Nanoscale Surface Processing - Application to SiO_2, High-k PVD and ALD, T. KITAJIMA, National Defense Academy, Japan
9:00 am	PS+SE-WeM4 Surface Analysis of Polymers Treated by Remote Atmospheric Pressure Plasma, R.F. HICKS, University of California Los Angeles, E. GONZALEZ, Intel Corporation, T.S. WILLIAMS, University of California Los Angeles	Invited talk continued.
9:20 am	PS+SE-WeM5 Invited Deposition of SiO_x Films by Means of Atmospheric Pressure Microplasma Jets: Study of Deposition Mechanism, J. BENEDIKT, R. REUTER, D. ELLERWEG, K. RUEGNER, T. DE LOS ARCOS, A. VON KEUDELL, Ruhr-University Bochum, Germany	PS+SS-WeM5 Nitric Oxide Reactivity Investigation via Plasma Processing, J.M. BLECHLE, E.R. FISHER, Colorado State University
9:40 am	Invited talk continued.	PS+SS-WeM6 Near-Threshold Ion-Enhanced Silicon Etching, H. SHIN, W. ZHU, V.M. DONNELLY, D.J. ECONOMOU, University of Houston
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	PS+SE-WeM9 ICP Atmospheric Plasma Nanocoating System for Anti-Corrosive Protection of Semiconductor Equipment, G. GLUKHOY, Nanocoating Plasma Systems Inc.	PS+SS-WeM9 Atomic Chlorine Absolute Densities and Surface Recombination Coefficients in Inductively-Coupled Plasmas in Pure Cl_2, J.-P. BOOTH, LPP-CNRS, France, N. SIRSE, NCPST Dublin City University, Ireland, Y. AZAMOUM, P. CHABERT, LPP-CNRS, France
11:00 am	PS+SE-WeM10 Synthesis of $Li_4Ti_5O_{12}$ Nanoparticles Using an Atmospheric Pressure Plasma Jet, S.M. CHANG, E.F. RODRIGUEZ, H.C. LI, Y.J. YANG, N.L. WU, C.C. HSU, National Taiwan University, Taiwan, Republic of China	PS+SS-WeM10 Silicon Etching Characteristics by Hydrogen Halide Ions (HCl^+ and HBr^+) and Ions of Desorbed Species ($SiClx^+$), T. ITO, K. KARAHASHI, Osaka University, Japan, S.-Y. KANG, Tokyo Electron Ltd., Japan, S. HAMAGUCHI, Osaka University, Japan
11:20 am	PS+SE-WeM11 Laser-Assisted Plasma Coating at Atmospheric Pressure: Production of Yttria-Stabilized Zirconia Thermal Barriers, Z. OUYANG, P. RAMAN, Y.L. WU, L. MENG, T.S. CHO, D.N. RUZIC, University of Illinois at Urbana-Champaign	PS+SS-WeM11 Interaction of Chlorine Plasma with Si_xCl_y Coated Plasma Reactor Chamber Walls, R. KHARE†, A. SRIVASTAVA, V.M. DONNELLY, University of Houston
11:40 am	PS+SE-WeM12 Investigation on the Discharge Formation Mechanisms and Surface Analysis of SiO_2-like Layers on Polymers Synthesized using High Current Dielectric Barrier Discharge at Atmospheric Pressure, M.C.M. VAN DE SANDEN, FOM-Inst. for Plasma Phys. Rijnhuizen & Eindhoven Univ. of Tech., Netherlands, A. PREMKUBAR, Eindhoven Univ. of Tech. & M2i, Netherlands, S. STAROSTIN, H. DE VRIES, Fujifilm Tilburg, Netherlands, M. CREATORE, Eindhoven Univ. of Tech., Netherlands	PS+SS-WeM12 Numerical Simulation of Enhanced Oxygen Diffusion in Silicon as a Cause of Si Recess, K. MIZOTANI, M. ISOBE, Osaka University, Japan, M. FUKASAWA, T. TATSUMI, Sony Corporation, Japan, S. HAMAGUCHI, Osaka University, Japan

*Peter Mark Memorial Award Winner

† Coburn & Winters Student Award Finalist

	Advanced Surface Engineering Room: 104 - Session SE+SS-WeM Surface Engineering for Thermal Management Moderators: A.A. Voevodin, Air Force Research Laboratory, H. Barankova, Uppsala University, Sweden	Surface Science Room: 107 - Session SS1-WeM Atomistic Control of Structure & Evolution Moderator: T.S. Rahman, University of Central Florida
8:00 am		
8:20 am	SE+SS-WeM2 Invited Near-Field Radiation Heat Transfer, A. MAVROKEFALOS, P. SAMBEGORO, K. ESFARJANI, G. CHEN, Massachusetts Institute of Technology	
8:40 am	Invited talk continued.	SS1-WeM3 Destabilization of Ag Nanoislands on Ag(100) by Adsorbed Sulfur, M. SHEN, S.M. RUSSELL, Iowa State University, D.-J. LIU, Ames Laboratory - US DOE, P.A. THIEL, Iowa State University & Ames Laboratory - US DOE
9:00 am	SE+SS-WeM4 Atomic Level Temperature Measurements and Nearfield Thermal Energy Tunneling, A.A. VOEVODIN, I. ALTFEDER, J. HU, V. VARSHNEY, A. ROY, Air Force Research Laboratory	SS1-WeM4 Pt Terminated Mono- and Multilayer CuPt Alloys Supported on Ru(0001) Single Crystals as Model System for Core Shell Particles, A.K. ENGSTFELD, R.J. BEHM, Ulm University, Germany
9:20 am	SE+SS-WeM5 Two-Color Time-Domain Thermoreflectance with an Optical Parametric Oscillator, J. GENGLER, Spectral Energies, LLC, C. MURATORE, Air Force Research Laboratory, S. ROY, Spectral Energies, LLC, J.R. GORD, Air Force Research Laboratory	SS1-WeM5 Carbon-induced Nano-Faceting of Re(11-21): Synthesis and Performance of a Pt ML-C/Re(11-21) Electrocatalyst, X.F. YANG, Lehigh University, H. WANG, Columbia University, W. CHEN, R.A. BARTYNSKI, Rutgers University, B.E. KOEL, Princeton University
9:40 am	SE+SS-WeM6 Low-Friction V-alloyed ZrO_2 Thin Films with Temperature Homogenization Functions for High Temperature Sliding Interfaces, O. JANTSCHNER, C. WALTER, C. MITTERER, University of Leoben, Austria, C. MURATORE, A.A. VOEVODIN, Air Force Research Laboratory	SS1-WeM6 Nucleation and Growth of Ag Islands on the $(\sqrt{3}x\sqrt{3})R30^{o}$ Phase of Ag on Si(111), A. BELIANINOV, Iowa State University & Ames Laboratory - US DOE
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	SE+SS-WeM9 Thermal Characterization of Metal/Carbon Interfaces: Comparison of Metallized Nanotubes and Graphite, C. MURATORE, S. SHENOGIN, A. WAITE, A. REED, J. GENGLER, T. SMITH, J. HU, J. BULTMAN, A.A. VOEVODIN, Air Force Research Laboratory	SS1-WeM9 Surface Diffusion of In and Sn on Si(001) at Room Temperature, N. TO, S. DOBRIN, J. NOGAMI, University of Toronto, Canada
11:00 am	SE+SS-WeM10 The Experiment of Surface Tension Driven Flow with Various Parameters on JEM/ISS, S. YODA, Japanese Aerospace Exploration Agency, S. MATSUMOTO, JAXA, Japan, A. KOMIYA, Tohoku University, Japan	SS1-WeM10 Remote Plasma Processing of Sapphire Substrates for Remote Plasma Enhanced Chemical Vapor Deposition of TiN and TiO_2, J.W. KIM, G. LUCOVSKY, North Carolina State Univeristy
11:20 am		SS1-WeM11 The Effect of Surface Fluoride on the Crystallization and Photocatalytic Activity of Titania, J.I. BRAUER, G.J. SZULCZEWSKI, University of Alabama
11:40 am		SS1-WeM12 Microscale Corrosion of an Aerospace Al 2024 Alloy with Low Mg and the Effect of Chromate and Cerium Based Conversion Coatings, J.A. DEROSE, T. SUTER, EMPA, Switzerland, A. BAŁKOWIEC, J. MICHALSKI, K.J. KURZYDLOWSKI, Warsaw University of Technology, Poland, I. DE GRAEVE, H. TERRYN, Vrije Universiteit Brussel, Belgium, P. SCHMUTZ, EMPA, Switzerland

	Surface Science Room: 109 - Session SS2-WeM Chemisorption on Metal & Oxide Nanoparticles Moderator: B. Roldan Cuenya, University of Central Florida	Thin Film Room: 110 - Session TF1+EM-WeM ALD/MLD: Hybrid Organic Films Moderator: Q. Peng, Argonne National Laboratory
8:00 am	SS2-WeM1 Temperature Program Desorption and X-ray Photoelectron Spectroscopy Study of Cu_x on CeO_2/YSZ (111), J.C. LOFARO, JR., Stony Brook University, M.G. WHITE, Stony Brook University and Brookhaven National Laboratory	TF1+EM-WeM1 Invited Vapor-Phase Fabrication of Organic-Inorganic Hybrid Thin Films Using Molecular Layer Deposition with Atomic Layer Deposition, M.M. SUNG, Hanyang University, Korea
8:20 am	SS2-WeM2 X-ray Photoelectron Spectroscopy and Scanning Tunneling Microscopy Characterization of the Active Edge Sites of MoS_2 Nanoclusters, A. TUXEN, S. PORSGAARD, H. GOEBEL, F. BESENBACHER, J.V. LAURITSEN, Aarhus University, Denmark	Invited talk continued.
8:40 am	SS2-WeM3 Invited Charge-Mediated Chemisorption on Supported Clusters, M. STERRER, Fritz-Haber-Institute of the Max-Planck-Society, Germany	TF1+EM-WeM3 Metalcone and Metalcone/Metal Oxide Alloys Grown Using Atomic & Molecular Layer Deposition Techniques, B.H. LEE, V.R. ANDERSON, S.M. GEORGE, University of Colorado, Boulder
9:00 am	Invited talk continued.	TF1+EM-WeM4 Sequential Vapor Infiltration and Atomic Layer Deposition on Surfactant Films for Mesoporous Metal Oxide, B. GONG, D. KIM, G.N. PARSONS, North Carolina State University
9:20 am	SS2-WeM5 The Structure and Chemical Activity of Two-dimensional Gold Islands on Single-layer Graphene/Ru(0001), L. LIU, Texas A&M University, Y. XU, Oak Ridge National Laboratory, Z. ZHOU, Texas A&M University, Q. GUO, Chinese Academy of Sciences, China, Z. YAN, Y. YAO, Texas A&M University, L. SEMIDEY-FLECHA, Oak Ridge National Laboratory, D.W. GOODMAN, Texas A&M University	TF1+EM-WeM5 Flexibility and Water Vapor Transmission Rates for Al-, Hf-, and Zr-based ALD Films and Nanolaminates Utilizing Water and Glycerol Co-Reactants, M.J. SOWA, E.W. DEGUNS, Cambridge NanoTech, Inc.
9:40 am	SS2-WeM6 Spatially Resolved Measurements of Catalytic Activity on Variable-Composition Pd-Cu and Pd-Cu-Au Thin Films using a Microfluidic Reactor Array, P. KONDRATYUK, G. GUMUSLU, Carnegie Mellon University, B.D. MORREALE, National Energy Technology Laboratory, J.B. MILLER, A.J. GELLMAN, Carnegie Mellon University	TF1+EM-WeM6 Polymer Wires Containing Quantum Dots with Different Lengths Grown by Molecular Layer Deposition: Potential Applications to Sensitization in Photovoltaics, T. YOSHIMURA, R. EBIHARA, A. OSHIMA, Tokyo University of Technology, Japan
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	SS2-WeM9 Surface Structure Dependence by Monofaceted CeO_2 Nanoparticles: Catalytic Oxidation Reactions, M. LI, Z. WU, F.C. CALAZA, D.R. MULLLINS, S.H. OVERBURY, Oak Ridge National Laboratory	TF1+EM-WeM9 Invited Hybrid Materials by Vapor Phase Infiltration, M. KNEZ, Max-Planck-Institut für Mikrostrukturphysik, Germany
11:00 am	SS2-WeM10 Tuning the Adsorption Properties of an Oxide Material Via Doping: Au Clusters onto Cr-doped MgO(001) Films, F. STAVALE, N. NILIUS, H.-J. FREUND, Fritz-Haber-Institute of the Max-Planck-Society, Germany	Invited talk continued.
11:20 am	SS2-WeM11 Hydrogen Adatom Manipulation on the Rutile TiO_2(110) Surface using LT-STM, P. SUTTER, D. ACHARYA, N. CAMILLONE III, Brookhaven National Laboratory	TF1+EM-WeM11 Titanicone Molecular Layer Deposition Using $TiCl_4$ and Sugar Alcohols and Porous TiO_2 Films Produced by Annealing, R.A. HALL, A.I. ABDULAGATOV, S.M. GEORGE, University of Colorado, Boulder
11:40 am	SS2-WeM12 Reaction of Water with Terminal Hydroxyls on TiO_2(110) Surface, I. LYUBINETSKY, Y.G. DU, Pacific Northwest National Laboratory, N.A. DESKINS, Worcester Polytechnic Institute, Z. ZHANG, Baylor University, Z. DOHNALEK, M. DUPUIS, Pacific Northwest National Laboratory	

NOTES

Exhibitor Technology Spotlight
Room: West Exhibit Hall - Session EW-WeL

Exhibitor Technology Spotlight
Moderator: Langley

12:00 pm		
12:20 pm	EW-WeL2 Granville Phillips Autoresonant Ion Trap Mass Spectrometer, S. LASS, Brooks Automation, Inc.	
12:40 pm	EW-WeL3 Combining NEG and Sputter Ion Pump Technologies to Meet the Challenges of UHV-XHV Systems, B. GARCIA, F. SIVIERO, A. CONTE, L. VIALE, A. BONUCCI, P. MANINI, L. CARUSO, A. CADOPPI, SAES Getters	
1:00 pm	EW-WeL4 EW - No Title - EW - No Title, S. PALMER, Agilent - Varian Vacuum Division	
1:20 pm	EW-WeL5 Faster, Higher Resolution and More Accurate Imaging with the Cypher™ Atomic Force Microscope, K. JONES, Asylum Research	
1:40 pm		

NOTES

	Actinides and Rare Earths Focus Topic Room: 209 - Session AC+MI-WeA Magnetic and Electron Correlation Effects in Actinides and Rare Earths Moderator: J.G. Tobin, Lawrence Livermore National Laboratory	Applied Surface Science Room: 102 - Session AS-WeA Correlative Analysis - A Multi-technique Approach for Identification and Structure-Property Relationships Moderator: K. Artyushkova, The University of New Mexico
2:00 pm	AC+MI-WeA1 Invited Electronic Structure Theory of Complex Ordered Actinide Materials, P.M. OPPENEER, Uppsala University, Sweden	AS-WeA1 Complementary Ultra Thin Film Analysis using Low Energy Ion Scattering (LEIS) and TOF-SIMS, T. GREHL, P. BRUENER, ION-TOF GmbH, Germany, N. HAVERCROFT, ION-TOF USA, Inc., H. BRONGERSMA, E. NIEHUIS, ION-TOF GmbH, Germany
2:20 pm	Invited talk continued.	AS-WeA2 Multi-technique Characterization of Polymer Surfaces and Diamond-Like Carbon Films, P. MACK, R.G. WHITE, A.E. WRIGHT, Thermo Fisher Scientific, UK
2:40 pm	AC+MI-WeA3 Invited Anomalous Quasiparticle Dynamics in the Hidden Order state of URu_2Si_2, T. DURAKIEWICZ, G.L. DAKOVSKI, Y. LI, S.M. GILBERTSON, G. RODRIGUEZ, A.V. BALATSKY, J.X. ZHU, K. GOFRYK, E.D. BAUER, P.H. TOBASH, A. TAYLOR, J.L. SARRAO, Los Alamos National Lab, P.M. OPPENEER, Uppsala Univ., Sweden, P.S. RISEBOROUGH, Temple Univ., J.A. MYDOSH, Leiden Univ., the Netherlands	AS-WeA3 Invited Challenges Associated with Mathematically Correlating Data from Multiple Surface Characterization Techniques, K.G. LLOYD, D.J. WALLS, L. ZHANG, J.P. WYRE, DuPont Corporate Center for Analytical Sciences
3:00 pm	Invited talk continued.	Invited talk continued.
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	AC+MI-WeA7 Advanced X-ray Spectroscopies on 4f and 5f Systems, J. BRADLEY, M. LIPP, Lawrence Livermore National Laboratory, A. SORINI, SLAC National Accelerator Laboratory	AS-WeA7 Multi-technique Characterization for Interfacial Analysis, Depth Profile and Chemical Imaging, S.V.N.T. KUCHIBHATLA, V. SHUTTHANANDAN, B.W. AREY, C.M. WANG, M.I. NANDASIRI, N. PONNUSAMY, T. VARGA, S. THEVUTHASAN, Pacific Northwest National Laboratory, F. LIU, L. HUANG, L. PORTER, R.F. DAVIS, Carnegie Mellon University, T. PROSA, Cameca Instruments Inc.
4:20 pm	AC+MI-WeA8 Hard X-Ray Photoelectron Spectroscopy and Electronic Structure of Single Crystal UPd_3, UGe_2, and USb_2, M.F. BEAUX, T. DURAKIEWICZ, J.J. JOYCE, E.D. BAUER, J.L. SARRAO, Los Alamos National Laboratory, L. MORESCHINI, M. GRIONI, Ecole Polytechnique Federale, Switzerland, F. OFFI, Universita Roma Tre, Italy, M.T. BUTTERFIELD, KLA-Tencor, G. MONACO, European Synchrotron Radiation Facility, France, G. PANACCIONE, Laboratorio Nazionale TASC-INFM-CNR, Italy, E. GUZIEWICZ, Polish Academy of Sciences	AS-WeA8 Characterization of Lubricant Coated Cartridges Using Multiple Surface Analytical Techniques, X. DONG, Z. XIAO, C. KEMP, Eli Lilly and Company
4:40 pm	AC+MI-WeA9 Actinide Dioxides under Pressure, L. PETIT, Daresbury Laboratory, UK	AS-WeA9 Challenges in Surface and Interface Analysis of Thin Films, H. PIAO, General Electric Co., Y.F. HU, Canadian Light Source Inc., Canada, J. FRONHEISER, General Electric Co., V. TILAK, General Electric Co., India, M. KARADGE, M. MORRA, General Electric Co.
5:00 pm	AC+MI-WeA10 Hybridization and Electronic Structure in Pu Compounds, J.J. JOYCE, T. DURAKIEWICZ, K.S. GRAHAM, M.F. BEAUX, E.D. BAUER, J.N. MITCHELL, T.M. MCCLESKEY, E. BAUER, Q.X. JIA, R.L. MARTIN, J.X. ZHU, J.M. WILLS, Los Alamos National Laboratory, L. ROY, Savannah River National Laboratory, G.E. SCUSERIA, Rice University	AS-WeA10 A Comparison of AES and XPS Depth Profiling for Characterization of Multicomponent Thin Films, B.R. ROGERS, R.R. HARL, Vanderbilt University
5:20 pm	AC+MI-WeA11 Invited Structure and Magnetic Properties of Actinide-Based Thin Films, L. HAVELA, Charles University, Czech Republic, N.-T. KIM-NGAN, Pedagogical University Cracow, Poland, A. ADAMSKA, Charles University, Czech Republic, A.G. BALOGH, TU Darmstadt, Germany, T. GOUDER, European Commission, JRC Institute for Transuranium Elements, Germany	AS-WeA11 Characterization and Fabrication of Patterned, Infiltrated Carbon Nanotube Forests with Applications to Thin Layer Chromatography, M.R. LINFORD, D. JENSEN, R. DAVIS, S. KANYAL, Brigham Young University, A. DADSON, M. VAIL, US Synthetic Corporation
5:40 pm	Invited talk continued.	

	Biomaterial Interfaces Room: 108 - Session BI+AS+NS+SS-WeA	Electronic Materials and Processing Room: 210 - Session EM-WeA
	Functionalization and Characterization of Nanostructures Moderator: A. Belu, Medtronic, Inc.	**Defects in Electronic Materials** Moderator: B.D. Schultz, University of California, Santa Barbara
2:00 pm	BI+AS+NS+SS-WeA1 Invited Characterization of Nano-objects by Cluster-SIMS, E.A. SCHWEIKERT, Texas A&M University	EM-WeA1 Invited Controlling Schottky Barriers and Doping with Native Point Defects, L.J. BRILLSON, Y. DONG, The Ohio State Univ., F. TUOMISTO, Helsinki Univ. of Tech., Finland, B. SVENSSON, A.YU. KUZNETSOV, Univ. of Oslo, Norway, D. DOUTT, The Ohio State Univ., H.L. MOSBACKER, Traycer Diagnostic, G. CANTWELL, J. ZHANG, J.J. SONG, ZN Technology, Z.-O. FANG, Univ. of Dayton, D.C. LOOK, Air Force Research Lab
2:20 pm	Invited talk continued.	Invited talk continued.
2:40 pm	BI+AS+NS+SS-WeA3 Strategies for Studying the Surface Chemistry of Engineered Nanoparticles with SIMS, C. SZAKAL, J. MCCARTHY, National Institute of Standards and Technology, K. LOUIS, R.J. HAMERS, University of Wisconsin-Madison, R.D. HOLBROOK, National Institute of Standards and Technology	EM-WeA3 High Level of Mg Alloying Effects on the Deep Level Defects in $Mg_xZn_{1-x}O$, E. GUR, The Ohio State University, G. TABARES, Ciudad Universitaria, Spain, A. AREHART, The Ohio State University, J.M. CHAUVEAU, University of Nice Sophia Antipolis, France, A. HIERRO, Ciudad Universitaria, Spain, S.A. RINGEL, The Ohio State University
3:00 pm	BI+AS+NS+SS-WeA4 Unusual Hydrogenation Isotherms for Pd Nanoring Model Systems Observed Via Nanoplasmonic Sensing, C.B. LANGHAMMER, E.M.K. LARSSON, I.L. ZORIC, Chalmers University of Technology, Sweden, V.P. ZHDANOV, Boreskov Institute of Catalysis, Russian Federation	EM-WeA4 Comparative Depth Resolved Cathodoluminescence and X-ray Excited Optical Luminescence Studies of $SrTiO_3$, R.A. ROSENBERG, Y. CHOI, V. KALYANARAMAN, Argonne National Laboratory, M. KAREEV, J. TCHAKHALIAN, University of Arkansas at Fayetteville, S. BALAZ, L.J. BRILLSON, Ohio State University
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	BI+AS+NS+SS-WeA7 Invited Surface Functionalization and Analysis of Functional "Soft" Nanostructures: From 2 to 3 Dimensions, H. SCHÖNHERR, University of Siegen, Germany	EM-WeA7 Quantifying the Surface Generation Rate for Bulk Point Defects in TiO_2, K. PANGAN-OKIMOTO, A. HOLLISTER, P. GORAI, E.G. SEEBAUER, University of Illinois at Urbana Champaign
4:20 pm	Invited talk continued.	EM-WeA8 Metastable Defects and Recoverable Degradation in InAs/AlSb HEMTs, X. SHEN, S. DASGUPTA, R.A. REED, R.D. SCHRIMPF, D.M. FLEETWOOD, S.T. PANTELIDES, Vanderbilt University
4:40 pm	BI+AS+NS+SS-WeA9 Large Area Fabrication of Biological Nanostructures, G. TIZAZU, O. EL-ZUBIR, University of Sheffield, UK, S. BRUECK, University of New Mexico, D. LIDZEY, G. LEGGETT, University of Sheffield, UK, G.P. LOPEZ, Duke University	EM-WeA9 Room-Temperature Native Defect Diffusion in Semiconductors, K.H. WARNICK, Y.S. PUZYREV, T. ROY, D.M. FLEETWOOD, R.D. SCHRIMPF, Vanderbilt University, S.T. PANTELIDES, Vanderbilt University and ORNL
5:00 pm	BI+AS+NS+SS-WeA10 Functionalization of Mesoporous Silicon Biosensors to Achieve Tunable DNA Bioreceptor Density, J. LAWRIE, R.R. HARL, B.R. ROGERS, P. LAIBINIS, S.M. WEISS, Vanderbilt University	EM-WeA10 Defect Interactions at Grain Boundaries in Polycrystalline Graphene, Y.S. PUZYREV, B. WANG, Vanderbilt University, S.T. PANTELIDES, Vanderbilt University and ORNL
5:20 pm	BI+AS+NS+SS-WeA11 Composite Fluorocarbon Membranes by Surface-Initiated Polymerization, C.A. ESCOBAR, A.R. ZULKIFLI, G.K. JENNINGS, Vanderbilt University	EM-WeA11 X-ray Induced Defect Formation in Graphene, E.X. ZHANG, A.K.M. NEWAZ, S. BHANDARU, M.L. ALLES, D.M. FLEETWOOD, R.D. SCHRIMPF, K. BOLOTIN, R.A. REED, R.A. WELLER, S.M. WEISS, S.T. PANTELIDES, Vanderbilt University
5:40 pm		

	Energy Frontiers Focus Topic Room: 103 - Session EN1+TF-WeA Thin Film Chalcogenide Solar Cells (CIGS, CZTS, CdTe and Related Materials) Moderator: L.W. Rieth, University of Utah	Energy Frontiers Focus Topic Room: 106 - Session EN2+TF-WeA Thin Films for Solar Fuels Moderator: A.J. Muscat, University of Arizona
2:00 pm	EN1+TF-WeA1 Comparative Study of Structure and Morphology of $CuIn_{1-x}Ga_xS_2$ and $CuIn_{1-x}Ga_xSe_2$ Thin Film Absorbers Using EBSD, A. KAUL, E. SCHNELLER, N.G. DHERE, Florida Solar Energy Center, H.R. MOUTINHO, National Renewable Energy Laboratory	
2:20 pm	EN1+TF-WeA2 Improving the Damp-Heat Stability of Copper Indium Gallium Diselenide Solar Cells, B.S. TOSUN, University of Minnesota, R.K. FEIST, The Dow Chemical Company, S.A. CAMPBELL, E.S. AYDIL, University of Minnesota	
2:40 pm	EN1+TF-WeA3 Invited Progress Towards a High-Efficiency Cu-Zn-Sn-S-Se Thin-Film PV Technology, D.B. MITZI, O. GUNAWAN, T.K. TODOROV, D.A.R. BARKHOUSE, S. BAG, R. HAIGHT, T. GOKMEN, T. GOISLARD DE MONSABERT, S.J. CHEY, S. THIRUVENGADAM, IBM T.J. Watson Research Center	
3:00 pm	Invited talk continued.	
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	EN1+TF-WeA7 Solar Cells from Colloidal Dispersions of Cu2ZnSnS4 Nanocrystals, A. KHARE, Y. LI, B. CHERNOMORDIK, B.S. TOSUN, A.W. WILLS, D.J. NORRIS, E.S. AYDIL, University of Minnesota	EN2+TF-WeA7 N-doped $SrTiO_3$(100) Epitaxial Films for Fundamental Studies of Visible Light Active Photocatalysts, T. LUTTRELL, M. BATZILL, University of South Florida
4:20 pm	EN1+TF-WeA8 Surface Structure of Pyrite Thin Films Grown by MOCVD, M. CHENG, Y. LIU, N. BERRY, A. MARGARELLA, J.C. HEMMINGER, M. LAW, University of California, Irvine, H. BLUHM, Z. LIU, Lawrence Berkeley National Laboratory	EN2+TF-WeA8 Photoelectrochemical Water Splitting by Hematite Nanostructures Prepared by Chemical Bath Deposition, R. MORRISH, Colorado School of Mines, M. RAHMAN, J.M.D. MACELROY, University College Dublin, C.A. WOLDEN, Colorado School of Mines
4:40 pm	EN1+TF-WeA9 Effect of the Use of a c-CdS Nanocrystalline Layer on the Photovoltaic Characteristics of the Screen Printed CdS/CdTe Heterostructure, L.G. RANGEL-CHAVEZ, UAM-Azcapotzalco, Mexico, M. GARCIA-AGUIRRE, F.A. CUEVAS-ORTIZ, Cinvestav-IPN, Mexico, M.I. NERIA-GONZALEZ, Instituto Tecnologico de Estudios Superiores de Ecatepec, Mexico, M.A. MELENDEZ-LIRA, Cinvestav-IPN, Mexico	EN2+TF-WeA9 Invited Nanostructured Thin Films for Solar Water Splitting, K. SIVULA, Ecole Polytechnique Federale de Lausanne, Switzerland
5:00 pm	EN1+TF-WeA10 Surface Structure and Chemistry of $AgInSe_2$ Studied by Scanning Tunneling Microscopy, P. PEÑA MARTIN, J.W. LYDING, A. ROCKETT, University of Illinois at Urbana-Champaign	Invited talk continued.
5:20 pm		EN2+TF-WeA11 TiO_2 N-doped Nanofibers Deposited by Electrospinning for Photocatalytic Applications, D. DI CAMILLO, F. RUGGIERI, L. LOZZI, S. SANTUCCI, University of L'Aquila, Italy
5:40 pm		

	Graphene and Related Materials Focus Topic Room: 208 - Session GR-WeA Graphene Characterization including Microscopy and Spectroscopy Moderator: J.T. Robinson, Naval Research Laboratory	Magnetic Interfaces and Nanostructures Room: 105 - Session MI-WeA Spintronics, Magnetoelectronics, Multiferroics, and Dilute Magnetic Semiconductor Applications Moderator: A.N. Caruso, University of Missouri-Kansas City
2:00 pm	GR-WeA1 Invited Scanning Probe and Optical Microscopy and Spectroscopy of Graphenes on (sub-) Molecular Layers on Atomically Flat Substrates, J. RABE, N. SEVERIN, P. LANGE, M. DORN, S. EILERS, Humboldt University Berlin, Germany	MI-WeA1 Invited Novel Properties of Topological Insulator Thin Films Prepared by Molecular Beam Epitaxy, Q.-K. XUE, Tsinghua University, China
2:20 pm	Invited talk continued.	Invited talk continued.
2:40 pm	GR-WeA3 Scanning Tunneling Microscopy and Spectroscopy of Suspended Graphene Membranes, N.N. KLIMOV, PML/CNST/NIST and Maryland NanoCenter UMD, S. JUNG, CNST/NIST and Maryland NanoCenter UMD, N.B. ZHITENEV, CNST/NIST, D.B. NEWELL, PML/NIST, J.A. STROSCIO, CNST/NIST	MI-WeA3 Kondo Effect in a Molecular Machine, U.G.E. PERERA*, Y. ZANG, H. KERSELL, Ohio Univerisity, G. VIVES, G. RAPENNE, CNRS, Cemes, France, S.-W. HLA, Ohio University
3:00 pm	GR-WeA4 Moiré Twist and Absence of Chirality in Graphene on Ru(0001), K.L. MAN, M.S. ALTMAN, Hong Kong University of Science and Technology, China	MI-WeA4 Spin-Polarized Photoemission of Long-Range Metal-Organic Supramolecular Networks, S.Z. JANJUA, University of Missouri - Kansas City, E. VESCOVO, Brookhaven National Laboratory, K.I. POKHODNYA, North Dakota State University, A.N. CARUSO, University of Missouri - Kansas City
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	GR-WeA7 Invited Graphene Synthesis, Characterization, and Processing: An Atomic-Scale Investigation, N.P. GUISINGER, Argonne National Laboratory	MI-WeA7 Invited Spin Transport Phenomena in Nanostructures with Non-Collinear Magnetic Moments, M. CHSHIEV, SPINTEC, UMR 8191 CEA/CNRS/UJF Grenoble, France
4:20 pm	Invited talk continued.	Invited talk continued.
4:40 pm	GR-WeA9 Thermionic Emission of Graphene on Metal Surfaces, E. STARODUB, N.C. BARTELT, K. MCCARTY, Sandia National Laboratories	MI-WeA9 Invited Concepts based on Magnetoelectrics and Half-Metals for Spintronic Applications, K.D. BELASHCHENKO, University of Nebraska-Lincoln
5:00 pm	GR-WeA10 Imaging Epitaxial Graphene on SiC(0001) using STM with Functionalized W Tips, S.H. RHIM, Y. QI, G.F. SUN, Y. LIU, M. WEINERT, L. LI, University of Wisconsin-Milwaukee	Invited talk continued.
5:20 pm	GR-WeA11 Hydrogenation of Epitaxial Graphene on 6H-SiC(0001): The Formation of Hydrogen-Vacancy Complex, Y. LIU, M. WEINERT, L. LI, University of Wisconsin-Milwaukee	MI-WeA11 Magnetic, Structural and Morphological Characterization of Self Assembled Dilute Magnetic Mn_xGe_{1-x} Quantum Dots, J.K. KASSIM, J.A. FLORO, P. REINKE, C.A. NOLPH, University of Virginia
5:40 pm	GR-WeA12 Many-Body Interactions in Quasi-Freestanding Graphene, D.A. SIEGEL†, C.H. PARK, University of California, Berkeley, C.G. HWANG, Lawrence Berkeley National Laboratory, J. DESLIPPE, University of California, Berkeley, A.V. FEDOROV, Lawrence Berkeley National Laboratory, S.G. LOUIE, A. LANZARA, University of California, Berkeley	MI-WeA12 Alterations in the Electronic Band Structure and Magnetic Properties of EuO Films via Rare Earth Doping, J.A. COLÓN SANTANA‡, J. AN, N. WU, K.D. BELASHCHENKO, University of Nebraska-Lincoln, X. WANG, P. LIU, J. TANG, University of Wyoming, YA. LOSOVYJ, Center for Advanced Microstructure & Devices, I.N. YAKOVKIN, National Academy of Science of Ukraine, P.A. DOWBEN, University of Nebraska-Lincoln

* Postdoc Award Finalist
† Morton S. Traum Award Finalist
‡ Falicov Student Award Finalist

	Neutron Scattering Focus Topic Room: 207 - Session NT+AS-WeA Applications of Neutron Scattering II Moderator: J. Majewski, Los Alamos National Laboratory	Plasma Science and Technology Room: 202 - Session PS+EM-WeA Low-K Materials & Integration Moderator: S. King, Intel Corporation
2:00 pm	NT+AS-WeA1 Invited Electrochemical and Neutron Reflectometry Studies of Nafion-Carbon-Platinum Interfaces, J.B. CHLISTUNOFF, Los Alamos National Laboratory	PS+EM-WeA1 Invited Electric and Optical Characterization of Leakage and Breakdown in Low-k Dielectric Materials, J.M. ATKIN, R. LAIBOWITZ, Columbia University, T.M. SHAW, IBM T.J. Watson Research Center, T.F. HEINZ, Columbia University
2:20 pm	Invited talk continued.	Invited talk continued.
2:40 pm	NT+AS-WeA3 Conformation Changes of Regioregular Poly(3-hexylthiophene) Induced by Solvent Quality and the Impact of Conformation on the Crystalline Morphology of Solution Casted Thin Film, J. KEUM, J.F. BROWNING, G.S. SMITH, K. XIAO, K. HONG, I. IVANOV, Oak Ridge National Laboratory	PS+EM-WeA3 Electron Spin Resonance Study of Low-K Dielectrics and Etch Stop Layers, B.C. BITTEL, P.M. LENAHAN, T.A. POMORSKI, Penn State University, S. KING, Intel Corporation
3:00 pm	NT+AS-WeA4 Probing Fractals by the Combined Ultra-Small- and Small-Angle Neutron Scattering (USANS/SANS) Technique, M. AGAMALIAN, Oak Ridge National Laboratory	
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	NT+AS-WeA7 Neutron Reflectivity of Self-Assembled Monolayers of Voltage Sensor Domain from KvAP within a Phospholipid Bilayer at Solid/Vapor and Solid/Liquid Interfaces: Structure Profiles and Hydration State, S. GUPTA, University of Pennsylvania, D. KREPKIY, K. SWARTZ, NIH, J.K. BLASIE, University of Pennsylvania	PS+EM-WeA7 The Nature of Defects in Low-***k*** Organosilicate Glass and their Response to Plasma Exposure, H. REN, M.T. NICHOLS, University of Wisconsin-Madison, G. JIANG, G.A. ANTONELLI, Novellus Systems, Y. NISHI, Stanford University, J.L. SHOHET, University of Wisconsin-Madison
4:20 pm	NT+AS-WeA8 Invited Interaction of Alzheimer's Disease Tau Protein with Model Lipid Membranes, E.M. JONES, Univ. of New Mexico, M. DUBEY, Los Alamos National Lab, P.J. CAMP, B.C. GIVLER, Univ. of New Mexico, J. BIERNAT, E. MANDELKOW, Max Planck Unit for Structural Biology, Germany, J. MAJEWSKI, Los Alamos National Lab, E.Y. CHI, Univ. of New Mexico	PS+EM-WeA8 The Effects of Plasma Exposure on the Time Dependent Dielectric Breakdown of Low-k Porous Organosilicate Glass, M.T. NICHOLS, H. SINHA, University of Wisconsin-Madison, G.A. ANTONELLI, Novellus Systems, Inc., Y. NISHI, Stanford University, J.L. SHOHET, University of Wisconsin-Madison
4:40 pm	Invited talk continued.	PS+EM-WeA9 Modeling the Penetration of Vacuum Ultraviolet Photons in Porous-ULK Films, J. LEE, D.B. GRAVES, University of California, Berkeley
5:00 pm	NT+AS-WeA10 Stabilization of a Lipid Multilayer System by Polysaccharides, M. KREUZER, M. STROBL, University of Heidelberg, Germany, M. REINHARDT, R. STEITZ, Helmholtz-Zentrum Berlin für Materialien und Energie, Germany, R. DAHINT, University of Heidelberg, Germany	PS+EM-WeA10 Characterization of Plasma-Induced Damages on Low-k during Interconnection Integration by Scatterometric Porosimetry, R. HURAND, STMicroelectronics, France, M. DARNON, T. CHEVOLLEAU, D. FUARD, CNRS-LTM, France, F. BAILLY, R. BOUYSSOU, STMicroelectronics, France, T. DAVID, CEA Leti, France, O. JOUBERT, CNRS-LTM, France, F. LEVERD, STMicroelectronics, France
5:20 pm	NT+AS-WeA11 Invited Neutron Reflectometry, QCM-D, and TIRF Study of the Interaction of Endoglucanases with Films of Amorphous Cellulose, M. KENT, Sandia National Laboratories	PS+EM-WeA11 Photon Effects in Damage of Porous Low-k SiOCH During Plasma Cleaning, J. SHOEB, Iowa State University, M.J. KUSHNER, University of Michigan
5:40 pm	Invited talk continued.	PS+EM-WeA12 X-ray Photoelectron Spectroscopy Investigation of the Schottky Barrier at BN/Cu Interfaces, M. FRENCH, M. JAEHNIG, M. KUHN, J. BIELEFELD, S. KING, B. FRENCH, Intel Corporation

	Plasma Science and Technology Room: 201 - Session PS-WeA Plasma Sources Moderator: S.C. Shannon, North Carolina State University	Advanced Surface Engineering Room: 104 - Session SE+PS-WeA Atmospheric Pressure Plasmas Moderator: H. Barankova, Uppsala University, Sweden
2:00 pm	PS-WeA1 Integrated Power Delivery Systems for Next Generation Plasma Processes, F.G. TOMASEL, M. WATANABE, D. CARTER, Advanced Energy Industries	SE+PS-WeA1 An Investigation of the Influence of Hybrid Current Modes on the Plasma Behavior during Plasma Electrolytic Oxidation (PEO) Coating Process on Mg and Mg- Alloys, R.O. HUSSEIN, D.O. NORTHWOOD, X. NIE, University of Windsor, Canada
2:20 pm	PS-WeA2 Remote VHF Source for High Efficiency Plasma Generation, D. CARTER, D.J. HOFFMAN, R. GRILLEY, K. PETERSON, Advanced Energy Industries	SE+PS-WeA2 Aging Mechanism of the Hydrophilic Silicon (100) Native Oxide Surface, T.S. WILLIAMS, R.F. HICKS, University of California Los Angeles
2:40 pm	PS-WeA3 Invited Study of Radio Frequency Breakdown Mechanisms in a Plasma Environment, J.B.O. CAUGHMAN, R.H. GOULDING, D.A. RASMUSSEN, Oak Ridge National Laboratory, C.H. CASTANO GIRALDO, M. AGHAZARIAN, University of Illinois at Urbana Champaign, E.H. MARTIN, S.C. SHANNON, North Carolina State University	SE+PS-WeA3 Polyimide Surface Treatment to Hydrophobic Surface with Self Assembled Mask Layer for Direct Inkjet Patterning Process, J.B. PARK, G.Y. YEOM, Sungkyunkwan University, Republic of Korea
3:00 pm	Invited talk continued.	SE+PS-WeA4 In Situ Fabricating Blue Ceramic Coatings on Al Alloy by Plasma Electrolytic Oxidation, Z.J. WANG, R.O. HUSSEIN, X. NIE, H. HU, University of Windsor, Canada
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	PS-WeA7 A Narrow Ion Energy Distribution Bias System, V. BROUK, Advanced Energy Industries, S.C. SHANNON, North Carolina State University, D.J. HOFFMAN, D. CARTER, W. HATTEL, Advanced Energy Industries	SE+PS-WeA7 Invited Cold Atmospheric Plasma Sources for Treatment of Cell-Containing Surfaces, M.G. KONG, Loughborough University, UK
4:20 pm	PS-WeA8 Effect of Multi-frequency Bias on Ion Energy Distribution in Inductively Coupled Plasma, A. AGARWAL, A. BALAKRISHNA, S. RAUF, K. COLLINS, Applied Materials, Inc.	Invited talk continued.
4:40 pm	PS-WeA9 Electron Energy Distribution at Electrode in a Low Pressure Capacitively Coupled Plasma, S. RAUF, L. DORF, A. AGARWAL, K. COLLINS, Applied Materials, Inc.	SE+PS-WeA9 High Performance of 60-Hz Atmospheric Pressure Plasma: Basic Characteristics and Applications, F. JIA, K. TAKEDA, K. ISHIKAWA, H. INUI, S. ISEKI, Nagoya University, Japan, H. KANO, NU Eco-Engineering Co., Ltd., Japan, H. KONDO, M. SEKINE, M. HORI, Nagoya University, Japan
5:00 pm	PS-WeA10 Invited The Control of Electron Shading and Plasma EED^{f} in a DC/RF Parallel-Plate Etcher, L. CHEN, Tokyo Electron America	SE+PS-WeA10 Dense Atmospheric Pressure Discharges for Surface and Gas Treatment, M.J. KELLY, B.D. SCHULTZ, W.M. HOOKE, International Technology Center
5:20 pm	Invited talk continued.	SE+PS-WeA11 Time-Resolved Phase Contrast Imaging of Induced Gas flow by a Dielectric Barrier Discharge Plasma Actuator, S.N. NOURGOSTAR, N. HERSHKOWITZ, University of Wisconsin-Madison
5:40 pm	PS-WeA12 Negative Plasma Potentials Produced by Electropositive Plasmas in a Multi-Dipole Chamber, N. HERSHKOWITZ, University of Wisconsin-Madison, L. OKSUZ, Suleyman Demirel University, Turkey, J.P. SHEEHAN, University of Wisconsin-Madison	SE+PS-WeA12 Investigation of Discharge Modes of Cylindrical Dielectric Barrier Discharge Configuration for Surface Treatment at Atmospheric-Pressure, T.S. CHO, Y.L. WU, J.M. HONG, Z. OUYANG, D.N. RUZIC, University of Illinois at Urbana Champaign

	Surface Science Room: 107 - Session SS-WeA Adsorption & Reactions on Oxide Surfaces Moderator: S.L. Scott, University of California, Santa Barbara	Thin Film Room: 109 - Session TF1+EM-WeA Nonvolatile Memory Moderator: S. Gupta, University of Alabama
2:00 pm	SS-WeA1 Direct Observation of O_2 Molecular Chemisorption at Two Distinctive Sites of TiO_2(110), Z.T. WANG, Y.G. DU, Z. DOHNÁLEK, I. LYUBINETSKY, Pacific Northwest National Laboratory	TF1+EM-WeA1 Application of Amorphous Zinc Tin Oxide for Memristor Devices, G.S. HERMAN, J.S. RAJACHIDAMBARAM, S. MURALI, J. CONLEY, Oregon State University, S.P. SANGHAVI, P. NACHIMUTHU, V. SHUTTHANANDAN, T. VARGA, S. THEVUTHASAN, Pacific Northwest National Laboratory
2:20 pm	SS-WeA2 The Interaction of Carboxylic Acids with Rutile TiO_2 (110) Single Crystal Surfaces: Results from IR-Spectroscopy, M. KESTING, Karlsruhe Institute of Technology (KIT), Germany, M.C. XU, Y.M. WANG, Ruhr-University Bochum, Germany, A. NEFEDOV, C. WÖLL, Karlsruhe Institute of Technology (KIT), Germany	TF1+EM-WeA2 PE-MOCVD of GeTe Materials for Phase Change Memory Applications, E. DESPIAU-PUJO, L. DUSSAULT, C. VALLÉE, LTM/CNRS-UJF, France, E. GOURVEST, ST Microelectronics, France, D. JOURDE, S. MAITREJEAN, P. MICHALLON, CEA Leti Minatec Campus, France
2:40 pm	SS-WeA3 The Adsorption Dynamics and Interfacial Charge Trapping Behavior for Acetic Acid on Rutile TiO_2 Surfaces, J. TAO, T. LUTTRELL, M. BATZILL, University of South Florida	TF1+EM-WeA3 Invited Embedded HfO_2 based 1T1R Cells for Future RRAM Applications, CH. WENGER, T. BERTAUD, CH. WALCZYK, D. WALCZYK, M. MALGORZATA, IHP, Germany
3:00 pm	SS-WeA4 Effect of the Adsorption Geometry of Zinc-Tetraphenylporphyrin Derivatives on ZnO and TiO_2, on the Exciton Delocalization Pathways, S. RANGAN, S. COH, R.A. BARTYNSKI, K. CHITRE, J. ROCHFORD, E. GALOPPINI, Rutgers University, C. JAYE, D.A. FISCHER, National Synchrotron Light Source	Invited talk continued.
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	SS-WeA7 Adsorption of Trimethylacetic Acid on Stoichiometric and Reduced CeO_2(111) Surfaces, S.P. SANGHAVI, A.S. KARAKOTI, M.I. NANDASIRI, W. WANG, P. NACHIMUTHU, P. YANG, S.V.N.T. KUCHIBHATLA, S. THEVUTHASAN, Pacific Northwest National Laboratory	TF1+EM-WeA7 Synthesis and Characterization of Multiferroic Oxides by Radical Enhanced Atomic Layer Deposition, C.D. PHAM, J.H. CHOI, J.P. CHANG, University of California Los Angeles
4:20 pm	SS-WeA8 Reactivity Differences between CeO_2(100) and CeO_2(111) Thin Films, D.R. MULLINS, F.C. CALAZA, S.H. OVERBURY, M.D. BIEGALSKI, H.M. CHRISTEN, Oak Ridge National Laboratory	TF1+EM-WeA8 Perpendicular Magnetic Tunnel Junctions based on Thin CoFeB Free Layer and Co-based Multilayer SAF Pinned Layers, A. NATARAJARATHINAM, S. GUPTA, University of Alabama
4:40 pm	SS-WeA9 Adsorption and Photo-Reactivity of CO on TiO_2(110), N.G. PETRIK, G.A. KIMMEL, Pacific Northwest National Laboratory	TF1+EM-WeA9 Invited Characterizing the Effects of Processing on Materials for Phase Change and Spin Torque based Non-Volatile Memory Technologies, E.A. JOSEPH, R.M. MARTIN, J.S. WASHINGTON, D.W. ABRAHAM, S. RAOUX, J.L. JORDAN-SWEET, IBM T.J. Watson Res. Ctr., D. MILLER, IBM Almaden Res. Ctr., H.-Y. CHENG, Macronix International Co., Ltd, Taiwan, R.O.C., M.C. GAIDIS, M. GAJEK, M. BREITWISCH, IBM T.J. Watson Res. Ctr., S.-C. LAI, Macronix International Co., Ltd, Taiwan, R.O.C., Y. ZHU, R. DASAKA, R. SAWANT, D. NEUMAYER, IBM T.J. Watson Res. Ctr., R.M. SHELBY, IBM Almaden Res. Ctr., H.-L. LUNG, Macronix International Co., Ltd, Taiwan, R.O.C., C.H. LAM, N.C.M. FULLER, IBM T.J. Watson Res. Ctr.
5:00 pm	SS-WeA10 Adsorption of Carbon Dioxide on Rutile TiO_2(110): A Scanning Tunneling Microscopy Study, X. LIN, B.D. KAY, Z.T. WANG, I. LYUBINETSKY, Z. DOHNALEK, Pacific Northwest National Laboratory	Invited talk continued.
5:20 pm	SS-WeA11 Interaction of ZnO-supported Cu Oxides with CO and CO_2, Z. ZHANG, F. WANG, M. LE, M. REN, J. FLAKE, P. SPRUNGER, R. KURTZ, Louisiana State University	
5:40 pm	SS-WeA12 Microfabricated Nitrogen-Phosphorus Detectors: Surface Work Function and Thermionic Emission, M.T. BRUMBACH, R.F. HESS, R.J. SIMONSON, M.W. MOORMAN, T.J. BOYLE, Sandia National Laboratories	

	Thin Film Room: 110 - Session TF2+EM-WeA Nanostructuring Thin Films Moderator: A.V. Melechko, North Carolina State University	Tribology Focus Topic Room: 111 - Session TR-WeA Emerging Interfaces of Tribological Importance Moderator: T. Scharf, The University of North Texas
2:00 pm	TF2+EM-WeA1 Invited Templated Solid-State Dewetting for Patterning of Films, C.V. THOMPSON, J. YE, A.L. GIERMANN, Massachusetts Institute of Technology	
2:20 pm	Invited talk continued.	TR-WeA2 Composition and Friction Analysis of Copolymer Solution Treatments of Silicone Hydrogel Contact Lens Surfaces, S. PERRY, Y. HUO, A. RUDY, University of Florida
2:40 pm	TF2+EM-WeA3 Dynamics of Solid Thin-Film Dewetting in the Silicon-On-Insulator System, E. BUSSMANN, F. CHEYNIS, F. LEROY, P. MÜLLER, CINaM-CNRS, France	TR-WeA3 Invited In Situ Studies of Cartilage Microtribology, D.L. BURRIS, E.D. BONNEVIE, V.J. BARO, L. WANG, University of Delaware
3:00 pm	TF2+EM-WeA4 Self and Directed Assembly of Thin Metallic Films by Pulsed Laser Induced Dewetting, Y. WU, University of Tennessee, J.D. FOWLKES, Oak Ridge National Laboratory, L. KONDIC, New Jersey Institute of Technology, J. DIEZ, Universidad Nacional del Centro de la Provincia de Buenos Aires (UNCPBA), Argentina, N.A. ROBERTS, P.D. RACK, University of Tennessee	Invited talk continued.
3:20 pm	BREAK	BREAK
3:40 pm	BREAK	BREAK
4:00 pm	TF2+EM-WeA7 Directed Self-Assembly of Ge Heteroepitaxial Quantum Dots with sub-35nm Spacing, C. PETZ, University of Virginia, D. YANG, J. LEVY, University of Pittsburgh, J.A. FLORO, University of Virginia	TR-WeA7 Invited "Going No Wear?", W.G. SAWYER, University of Florida
4:20 pm	TF2+EM-WeA8 Surface Functionalization of Zeolites and Nanoparticles: Understanding and Applying Plasma Modification Strategies for Unusually Shaped Particles, J.C. SHEARER, E.R. FISHER, Colorado State University	Invited talk continued.
4:40 pm	TF2+EM-WeA9 Role of Ion Flux on Alignment of Carbon Nanofibers Synthesized by DC Plasma on Transparent Insulating Substrates, R.C. PEARCE, North Carolina State University, A.W. VASENKOV, CFD Research Corporation, D.K. HENSLEY, M.L. SIMPSON, T.E. MCKNIGHT, Oak Ridge National Laboratory, A.V. MELECHKO, North Carolina State University	TR-WeA9 Surface Analysis for the Research of Tribological Processes like Wear, Boundary Layer Formation and Degradation of Molecular Lubricants by ToF-SIMS of Tribosurfaces of Real Tribological Systems, U. GUNST, Westfälische Wilhelms-Universität, Germany
5:00 pm	TF2+EM-WeA10 High-Performance Poly-3-alkylthiophene-Carbon Nanotube Composites for Transparent Electrodes, S.L. HELLSTROM, R.Z. JIN, R.M. STOLTENBERG, Z. BAO, Stanford University	TR-WeA10 Study on the Fatigue Wear Behaviour of TiN and WC DLC-coated Stainless Steel under Inclined Impact-Sliding Load Tests, Y. CHEN, X. NIE, University of Windsor, Canada
5:20 pm	TF2+EM-WeA11 SiGe Nanomembranes: Defect-Free Single-Crystalline Growth Substrates for High- Quality Strained Epitaxial Materials, D.M. PASKIEWICZ, B. TANTO, D.E. SAVAGE, M.G. LAGALLY, University of Wisconsin Madison	TR-WeA11 Scaling Laws of Structural Lubricity for Amorphous and Crystalline Nanoparticles, D. DIETZEL, T. MOENNINGHOFF, M. FELDMANN, Westfaelische Wilhelms-Universitaet Muenster, Germany, U.D. SCHWARZ, Yale University, A. SCHIRMEISEN, Justus-Liebig University Giessen, Germany
5:40 pm	TF2+EM-WeA12 Multilayer Barrier Coatings for Organic Photovoltaics, A.M. COCLITE, K.K. GLEASON, Massachusetts Institute of Technology	TR-WeA12 Auger Surface Analysis of Deposits Formed on Magnetic Tape Recording Head Surfaces, F.E. SPADA, University of California, San Diego, D.F. PAUL, J.S. HAMMOND, Physical Electronics

Anticipated Schedule
Wednesday Morning, November 2, 2011

TIME	SESSION	ROOM
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		

Lunch

when _____

with _____

where _____

Anticipated Schedule
Wednesday Afternoon, November 2, 2011

TIME	SESSION	ROOM
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		

THURSDAY SPECIAL EVENTS

7:00 a.m.	Companion Tour Registration—Rhythm & Blues (H)
10:00 a.m.	Session Coffee Break—*Center/West Exhibit Hall (CC*)
12:00 p.m.	Exhibit Finale and Refreshments—*Center/West Exhibit Hall (*CC)
12:00 p.m.	Surface Science Division Mort Traum Awards Ceremony—107 (CC)
12:00 p.m.	Plasma Science and Technology Division Coburn and Winters Award Ceremony—201 (CC)
12:15 p.m.	2012 AVS Program Committee Chairs' Lunch—Fisk I (H)
12:15 p.m.	AVS Business Meeting—111 (CC)
6:00 p.m.	Poster Session and Refreshments—East Exhibit Hall (CC)
6:30 p.m.	2012 Program Committee Reception and Dinner—Belmont III (H)
7:00 p.m.	*Surface Science Spectra* Editorial Board Dinner—Jazz (H)

10:00 a.m.-2:00 p.m. Equipment Exhibition..... Center/West Exhibit Hall (CC)

CC = Nashville Convention Center
H = Renaissance Nashville Hotel

THURSDAY SHORT COURSES

8:30 a.m.	Fundamentals of Vacuum Technology
8:30 a.m.	Atomic Layer Deposition

LOCATION: All AVS Short Courses will be held at – Nashville Convention Center
COURSE HOURS: All AVS Short Course Hours: 8:30 a.m. – 5:00 p.m. – with 1.5 hour break for Lunch *(lunch not included)*

NOTES

	Actinides and Rare Earths Focus Topic Room: 207 - Session AC+SS-ThM The Surface Science of Actinides and Rare Earths Moderator: R. Schulze, Los Alamos National Laboratory	Applied Surface Science Room: 102 - Session AS-ThM Analysis of Insulators and Challenging Samples Moderator: D.J. Gaspar, Pacific Northwest National Laboratory
8:00 am	AC+SS-ThM1 Invited The XPS of Heavy Metal Oxides: New Insights Into Chemistry, P.S. BAGUS, University of North Texas, E.S. ILTON, Pacific Northwest National Laboratory, C.J. NELIN, Consultant	AS-ThM1 Imaging and Differentiation of Epicuticular Waxes on ***Arabidopsis thaliana*** Organs by TOF-SIMS, G.L. FISHER, Physical Electronics, P. WONG, C. BUSCHHAUS, R. JETTER, University of British Columbia, Canada
8:20 am	Invited talk continued.	AS-ThM2 Aqueous SIMS – Towards in Situ Detection of Chemical Reaction Intermediates in Aqueous Solutions, Z. ZHU, L. YANG, X. YU, M.J. IEDEMA, J.P. COWIN, Pacific Northwest National Laboratory
8:40 am	AC+SS-ThM3 Invited New Insights into the Oxidation/Corrosion of Plutonium, D.L. PUGMIRE, H.G. GARCIA FLORES, D.P. MOORE, A.L. BROACH, Los Alamos National Laboratory, P. ROUSSEL, Atomic Weapons Establishment, UK	AS-ThM3 Challenges of the XPS Analysis of the Ionic Liquid [BMIM][PF_6], R.R. HARL, B.D. BOOTH, G.K. JENNINGS, B.R. ROGERS, Vanderbilt University
9:00 am	Invited talk continued.	AS-ThM4 Invited Working with Difficult Samples - Preparation, Damage, Charging and Data Analysis, D.R. BAER, M.H. ENGELHARD, A.S. LEA, P. NACHIMUTHU, Z. ZHU, Pacific Northwest National Laboratory
9:20 am	AC+SS-ThM5 The Oxidation of Uranium Dioxide at High Pressures in Pure Oxygen, J.C. CROWHURST, Z. DAI, J.M. ZAUG, K.B. KNIGHT, A.J. NELSON, W.J. SIEKHAUS, I.D. HUTCHEON, Lawrence Livermore National Laboratory	Invited talk continued.
9:40 am	AC+SS-ThM6 Radiation Effects on Hydrogen Reactivity in Narrow Uranium-Uranium and Uranium-LiD (or Air) Gaps using MCNPX Code, M.A. SCHILDBACH, W.J. SIEKHAUS, Lawrence Livermore National Laboratory	
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	AC+SS-ThM9 Study of the Gd_5Ge_4 (010) Surface, C. YUEN, G. MILLER, P.A. THIEL, Ames Laboratory - US DOE	AS-ThM9 Transient Electron Emission from Insulators under Pulsed Electron Beam Injection, Y. KIMURA, H. KOYAMA, H. MAKINO, H. SHINADA, Hitachi, Ltd., Japan, Y. MOCHIZUKI, H. KAZUMI, Hitachi High-Technologies Corp., Japan
11:00 am	AC+SS-ThM10 Using Spatially Controlled Thin-Films Coatings Around Rare-Earth doped Nanophosphors for High Efficiency Energy Applications, J.A. DORMAN, A. JOSHI, G. KUZMANICH, J.H. CHOI, J.P. CHANG, University of California Los Angeles	AS-ThM10 High Resolution XPS Chemical State Imaging of Fuel Cell Membranes, S.N. RAMAN, P.E. LARSON, J. MOULDER, J.S. HAMMOND, S. ALNABULSI, Physical Electronics USA
11:20 am	AC+SS-ThM11 Growth and Characterization of Scandia Stabilized Zirconia and Samaria Doped Ceria Multi-Layer Thin Films, S. THEVUTHASAN, Pacific Northwest National Laboratory, M.I. NANDASIRI, Western Michigan University, T. VARGA, V. SHUTTHANANDAN, S.P. SANGHAVI, S.V.N.T. KUCHIBHATLA, Pacific Northwest National Laboratory, A. KAYANI, Western Michigan University	AS-ThM11 Gas-Cluster Ion Beam Secondary Ion Mass Spectrometry Characterization of Thin Films for Organic Electronics Applications, D.J. GASPAR, Pacific Northwest National Laboratory, S.R. BRYAN, Physical Electronics USA, T. MIYAYAMA, ULVAC-PHI, Japan, A.B. PADMAPERUMA, J.S. SWENSEN, E. POLIKARPOV, Pacific Northwest National Laboratory
11:40 am		

	Biomaterial Interfaces Room: 108 - Session BI-ThM Biomedical Materials Moderator: S.L. McArthur, Swinburne University of Technology, Australia	Spectroscopic Ellipsometry Focus Topic Room: 209 - Session EL+AS+EM+MS+PS+TF-ThM Spectroscopic Ellipsometry of Biological Materials and Organic Films Moderators: M. Creatore, Eindhoven University of Technology, the Netherlands, K.G. Lloyd, DuPont Corporate Center for Analytical Sciences
8:00 am		EL+AS+EM+MS+PS+TF-ThM1 Invited Application of Various Spectroscopic Ellipsometry Techniques for In Situ Studies of Thin Polymer Films on Solid Substrates, K.-J. EICHHORN, Leibniz-Institut für Polymerforschung Dresden e.V., Germany
8:20 am	BI-ThM2 Invited Surface Characterization: A Critical Component in Understanding the Biocompatibility of Biomaterials, L. SALVATI, S. VASS, DePuy Orthopaedics	Invited talk continued.
8:40 am	Invited talk continued.	EL+AS+EM+MS+PS+TF-ThM3 Hard Matter Meets Thin Polymer Films-Spectroscopic Ellipsometry as a Versatile Tool to Investigate Properties of Responsive Poly(N-isopropylacrylamide) Systems with Incorporated Magnetic Nanoparticles, S. RAUCH, Leibniz-Institut für Polymerforschung Dresden e. V., Germany
9:00 am	BI-ThM4 XPS Sputter Depth Profiling of Organic Materials Using a Coronene Ion Source, S.J. HUTTON, C.J. BLOMFIELD, A.J. ROBERTS, S.C. PAGE, S.J. COULTAS, Kratos Analytical Ltd, UK, C.E. MOFFITT, D.J. SURMAN, Kratos Analytical Inc	EL+AS+EM+MS+PS+TF-ThM4 The White Scarab Beetle *Cyphochilus insulanus* –Scattering and Polarization Properties, C. AKERLIND, Swedish Defence Research Agency / Linköping University, Sweden, H. ARWIN, Linköping University, Sweden, T. HALLBERG, H. KARIIS, Swedish Defence Research Agency, Sweden, J. LANDIN, K. JÄRRENDAHL, Linköping University, Sweden
9:20 am	BI-ThM5 Investigation of Structure of Multilayered Thin Films Fabricated Using Layer-by-Layer Assembly, S. SINGH, J. MAJEWSKI, M. DUBEY, Los Alamos National Laboratory	EL+AS+EM+MS+PS+TF-ThM5 Real-time Spectroscopic Ellipsometry and Quartz Crystal Microbalance with Dissipation Characterization of Biomolecule Adsorption within Sculptured Thin Films, T. KASPUTIS, D. SCHMIDT, K.B. RODENHAUSEN, H. WANG, A.K. PANNIER, M. SCHUBERT, University of Nebraska - Lincoln
9:40 am	BI-ThM6 Amino-rich Plasma Polymer Films Prepared by RF Magnetron Sputtering, J. HANUŠ, G. CECCONE, F.J. ROSSI, European Commission, JRC. Institute for Health and Consumer Protection, Italy	EL+AS+EM+MS+PS+TF-ThM6 Characterization of Multilayer Organic Thin Film for Use as an Aptamer Biosensor with Hybrid Spectroscopic Ellipsometry and Quartz Crystal Microbalance with Dissipation, J.Y. GERASIMOV, K.B. RODENHAUSEN, H. WANG, R.Y. LAI, M. SCHUBERT, University of Nebraska - Lincoln
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	BI-ThM9 Invited Surface Analysis in Biotech & Pharma: A Surfeit of Frontiers, E. JOHNSTON, Genzyme	EL+AS+EM+MS+PS+TF-ThM9 Contamination Processes of EUV Optics Characterized by Spectroscopic Ellipsometry, L.J. RICHTER, C. TARRIO, S. GRANTHAM, S.B. HILL, T.B. LUCATORTO, National Institute of Standards and Technology, N.S. FARADZHEV, University of Virginia
11:00 am	Invited talk continued.	
11:20 am	BI-ThM11 Enhancing Monoclonal Antibody Drug Detection by Developing a Microparticle-based Immunoassay, N. MENDEZ, M.E. RUIDIAZ, A.B. SANCHEZ, B.T. MESSMER, A.C. KUMMEL, University of California San Diego	
11:40 am	BI-ThM12 Controlling the Hydroaffinity of Silicone/Hydrophobic Acrylic Surfaces of Intraocular Lenses using Visco-Elastic Colloids and Blood Proteins, N.X. HERBOTS, ASU / SiO2 NanoTech Inc. / SiO2 Associates, LLC, R.J. CULBERTSON, Q.X. BRADLEY, D.A. SELL, A.M. MURPHY, Arizona State U., C.H. SELL, Arizona Vitro-Retinal Consultants, H.M. KWONG, Arizona Vitro-Retinal Consultants / ASU, T. KUTZ, A.S. BENITEZ, M.A. HART, B.J. WILKENS, R.B. BENNETT-KENNETT, Arizona State U.	

	Electronic Materials and Processing Room: 210 - Session EM+TF-ThM	Energy Frontiers Focus Topic Room: 103 - Session EN+NS-ThM
	Hybrid Electronic Materials and Interfaces Moderator: A.J. Muscat, University of Arizona	Nanostructures for Energy Storage and Fuel Cells I Moderator: J. Lewis, RTI International
8:00 am	EM+TF-ThM1 Invited Chemical Modification of Surfaces for Biological Applications, W.G. MCGIMPSEY, Kent State University	EN+NS-ThM1 Exploring Intercalation Chemistry of Modified Graphene with Ionic Liquids for Energy Storage Applications, M. ACIK, The University of Texas at Dallas, D.R. DREYER, C. BIELAWSKI, The University of Texas at Austin, Y.J. CHABAL, The University of Texas at Dallas
8:20 am	Invited talk continued.	EN+NS-ThM2 Electronic Structure and Chemical Composition of Candidate Conversion Material Iron Oxyfluoride, R. THORPE, S. RANGAN, R.A. BARTYNSKI, O. CELIK, N. PEREIRA, G. AMATUCCI, Rutgers University
8:40 am	EM+TF-ThM3 Modification of Oxide-Free Silicon Surfaces with Phosphonic Acid Self-Assembled Monolayers, P. THISSEN, T. PEIXOTO, A. VEGA, Y.J. CHABAL, University of Texas at Dallas	EN+NS-ThM3 Invited Lithium Ion Batteries: Present and Future Technologies, K. AMINE, W. WU, I. BELHAROUAK, A. ABOUIMRANE, Z. ZHANG, J. LU, Argonne National Laboratory
9:00 am	EM+TF-ThM4 Competing Effects of Interfacial Organic Layers on the Nucleation of Inorganic Thin Films Deposited Via Atomic Layer Deposition, K.J. HUGHES, J.R. ENGSTROM, Cornell University	Invited talk continued.
9:20 am	EM+TF-ThM5 Towards Molecular Electronics: Solution-Based Methods for Selective Deposition of Metals and Semiconductors, Z. SHI, J. YANG, P. LU, A.V. WALKER, University of Texas at Dallas	EN+NS-ThM5 Invited Templating of Porous Materials for Energy Storage and Generation, A. STEIN, J. DAVIDSON, N. PETKOVICH, Y. QIAN, S. RUDISILL, L. VENSTROM, A. VU, University of Minnesota
9:40 am	EM+TF-ThM6 Sensing Mechanism for Peroxide and Hydroperoxide Vapors in Phthalocyanine Thin Film Transistors, J. ROYER, E. KAPPE, W. TROGLER, A.C. KUMMEL, University of California San Diego	Invited talk continued.
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	EM+TF-ThM9 Invited Organic/Oxide Hybrid Thin-Film Applications for Photo-detector Cells and Complementary Inverters, S.I. IM, Yonsei University, Republic of Korea	EN+NS-ThM9 Combined In Situ Spectroscopic Ellipsometry-Electrochemical Impedance Spectroscopy of Lithium Ion Intercalation in GLAD Three-Dimensional Nanostructure Films, E.A. MONTGOMERY, M. SCHUBERT, T. HOFMANN, E. SCHUBERT, D. SCHMIDT, C. BRILEY, University of Nebraska - Lincoln, C. BEASLEY, Gamry Instruments
11:00 am	Invited talk continued.	EN+NS-ThM10 Exploration of the Effects of Si Nanowire Length and Doping on Li-ion Battery Anode Performance, F. RUSLI, V. CHAKRAPANI, M.A. FILLER, P.A. KOHL, Georgia Institute of Technology
11:20 am	EM+TF-ThM11 Near-ideal Schottky-Mott Behavior of n-Si / Hg Diodes with Hydroquinone-Alcohol Monolayers, A. VILAN, R. HAR-LAVAN, O. YAFFE, P. JOSHI, R. KAZAZ, D. CAHEN, Weizmann Institute of Science, Rehovot Israel	EN+NS-ThM11 Invited In Situ TEM Electrochemistry of Anode Materials in Lithium Ion Batteries, J.Y. HUANG, Sandia National Laboratories
11:40 am	EM+TF-ThM12 Electroless Deposition of Metals on SiO_2 Surfaces Modified by a Self-Assembled Monolayer, R. JAIN, A. NG, A.J. MUSCAT, University of Arizona	Invited talk continued.

	Graphene and Related Materials Focus Topic Room: 208 - Session GR+NS+PS+SS-ThM Graphene: Surface Chemistry, Functionalization, Plasma Processing and Sensor Applications Moderator: G.G. Jernigan, U.S. Naval Research Laboratory	Magnetic Interfaces and Nanostructures Room: 105 - Session MI-ThM Emerging Magnetic Characterization and Results Moderator: E. Vescovo, Brookhaven National Laboratory
8:00 am	GR+NS+PS+SS-ThM1 Invited Tailoring Graphene's Properties through Chemistry, J.T. ROBINSON, Naval Research Laboratory	MI-ThM1 Invited The X-ray View of Ultrafast Nano Magnetism, H.A. DURR, SLAC National Accelerator Laboratory
8:20 am	Invited talk continued.	Invited talk continued.
8:40 am	GR+NS+PS+SS-ThM3 Water Splits Epitaxial Graphene on Ru(0001) from Domain Boundaries, X. FENG, S. MAIER, M. SALMERON, Lawrence Berkeley National Laboratory	MI-ThM3 Spectroscopy of Magnetic Thin Films, S.N. GILBERT, N.H. TOLK, Vanderbilt University
9:00 am	GR+NS+PS+SS-ThM4 Novel Strategies for the Chemical Functionalization of Graphene: Towards Graphene/Molecular Nanosheet Heretostructures, A. TURCHANIN, C.T. NOTTBOHM, Z. ZHENG, M. SCHNIETZ, A. BEYER, University of Bielefeld, Germany, M. HEILEMANN, M. SAUER, Julius-Maximilians-University Würzburg, Germany, A. GÖLZHÄUSER, University of Bielefeld, Germany	MI-ThM4 Invited Detection and Control of Electronic Phase Competition in Complex Oxides, T.Z. WARD, Oak Ridge National Laboratory
9:20 am	GR+NS+PS+SS-ThM5 Biosensors Based on Chemically Modified Graphene, R. STINE, J.T. ROBINSON, P.E. SHEEHAN, C.R. TAMANAHA, U.S. Naval Research Laboratory	Invited talk continued.
9:40 am	GR+NS+PS+SS-ThM6 Controllable Defect Healing and N-doping of Graphene by CO and NO Molecules, B. WANG, Vanderbilt University, S.T. PANTELIDES, Vanderbilt University and ORNL	MI-ThM6 Room-Temperature Spin-Polarized Scanning Tunneling Microscopy of Topological Antiferromagnetic Nanopyramids on Mn_3N_2(001) Surfaces, K. WANG*, A.V. CHINCHORE, W. LIN, A.R. SMITH, Ohio University
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	GR+NS+PS+SS-ThM9 Aptamer Modified Graphene Bio Sensor, K. MAEHASHI, Y. OHNO, K. MATSUMOTO, Osaka University, Japan	MI-ThM9 Growth Strategies for Mn Doping of Ge Quantum Dots: An STM Study of Reactions, Bonding and Phase Formation, C.A. NOLPH*, K.R. SIMOV, P. REINKE, University of Virginia
11:00 am	GR+NS+PS+SS-ThM10 A Molecular Dynamics Study of Chemical Modification of Graphene Oxide Sheets, T. LIANG, B. DEVINE, S.R. PHILLLPOT, S.B. SINNOTT, University of Florida	MI-ThM10 Novel Iron-Induced Structures on Gallium Nitride (0001) and (000-1) Studied Using Scanning Tunneling Microscopy and First Principles Theory, W. LIN, Ohio University Nanoscale and Quantum Phenomena Institute, H.A.H. AL-BRITHEN, Ohio University Nanoscale and Quantum Phenomena Institute and KAIN, King Saud Univ., Saudi Arabia, K.K. WANG, A.V. CHINCHORE, M. SHI, Y. LIU, N. TAKEUCHI, A.R. SMITH, Ohio University Nanoscale and Quantum Phenomena Institute
11:20 am	GR+NS+PS+SS-ThM11 Enhancing and Controlling the Chemical Reactivity of Epitaxial Graphene via Growth Induced Strain, J.E. JOHNS, Northwestern University, MD.Z. HOSSAIN, Gunma University, Japan, M.C. HERSAM, Northwestern University	MI-ThM11 Scanning Tunneling Microscopy and Spectroscopy Performed on Single Mn Monolayer on Wurtzite (000-1) GaN, A.V. CHINCHORE, K.K. WANG, A.R. SMITH, Ohio University, V. FERRARI, A. BARRAL, University of Buenos Aires, Argentina
11:40 am	GR+NS+PS+SS-ThM12 Plasma-based Functionalization of Graphene with Primary Amines for Biomaterials Applications, S.G. WALTON, M. BARAKET, S.C. HERNANDEZ, R. STINE, W.K. LEE, C.R. TAMANAHA, P.E. SHEEHAN, J.T. ROBINSON, C.E. JUNKERMEIER, T.L. REINECKE, Naval Research Laboratory (NRL)	MI-ThM12 Designing of Engineered Multiferroic Composites by Radical Enhanced Atomic Layer Deposition, J.H. CHOI, T.E. QUICKEL, S. TOLBERT, J.P. CHANG, University of California Los Angeles

12:00 pm Falicov and Postdoc Awards Announced

* Falicov Student Award Finalist

	Nanometer-scale Science and Technology Room: 203 - Session NS-ThM Molecular Assembly and Devices Moderator: W. Gao, Brigham and Women's Hospital and Harvard Medical School	Plasma Science and Technology Room: 202 - Session PS+TF-ThM Plasma Deposition and Plasma Enhanced ALD Moderator: S.-P. Tay, Mattson Technology Inc.
8:00 am		PS+TF-ThM1 High Quality SiNx by Microwave RLSA Plasma Enhanced Atomic Layer Deposition, T. KARAKAWA, M. OKA, N. FUKIAGE, H. UEDA, T. NOZAWA, Tokyo Electron Technology Development Institute, INC., Japan
8:20 am	NS-ThM2 Chemical Modification and Patterning of Self Assembled Monolayers using Scanning Electron and Ion-Beam Lithography, M.J. PEREZ ROLDAN, C. PASCUAL GARCIA, G. MARCHESINI, D. GILLILAND, G. CECCONE, P. COLPO, F.J. ROSSI, European Commission, JRC Institute for Health And Consumer Protection, Italy	PS+TF-ThM2 Composition, Morphology and Optical Dispersion of Plasma Polymerized Titanium Oxide Derived Using PECVD, L. SUN, General Dynamics Information Technology, A. REED, Air Force Resarch Laboratory, H. JIANG, General Dynamics Information Technology, J.T. GRANT, University of Dayton Research Institute, R. JAKUBIAK, Air Force Resarch Laboratory
8:40 am	NS-ThM3 Interlocking Pinwheel Chains Formed by Self Assembly of Aromatic Cyanides, M. LUO, W. LU, E. CHU, D. KIM, Z. CHENG, D. SUN, K. COHEN, Y. ZHU, J. WYRICK, University of California, Riverside, T.L. EINSTEIN, University of Maryland, College Park, L. BARTELS, University of California, Riverside	PS+TF-ThM3 Invited Plasma Deposition of Carbide-Based Composite Membranes for Hydrogen Purification, C.A. WOLDEN, Colorado School of Mines
9:00 am	NS-ThM4 Invited Electronics and Mechanics of Single Molecule Circuits, L. VENKATARAMAN, Columbia University	Invited talk continued.
9:20 am	Invited talk continued.	PS+TF-ThM5 Quantum Dot Sensitized Solar Cells using Nanoparticles of Si Compounds Fabricated by Multihollow Discharge Plasma CVD, M. SHIRATANI, G. UCHIDA, M. SATO, Y. WANG, K. KOGA, N. ITAGAKI, Kyushu University, Japan
9:40 am	NS-ThM6 Complex Rotation Mechanisms of a Molecular Machine Probed by STM, H. KERSELL, U.G.E. PERERA, Y. ZHANG, Ohio University, C. JOACHIM, G. RAPENNE, G. VIVES, X. BOUJU, CNRS, Cemes, France, S.-W. HLA, Ohio University	PS+TF-ThM6 Structure of Organosilicon Polymeric Films Obtained by Expanding Thermal Plasma Chemical Vapor Deposition, P.H. TCHOUA NGAMOU, M.C.M. VAN DE SANDEN, M. CREATORE, Eindhoven University of Technology, the Netherlands
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	NS-ThM9 Self-Assembled Double Strand DNA Monolayers as Spin Filters, Z. XIE, S.R. COHEN, T.Z. MARKUS, R. NAAMAN, Weizmann Institute of Science, Rehovot Israel	PS+TF-ThM9 Impact of VUV Photons and Ions on Metal Oxide Films Prepared by Plasma-Assisted ALD with Substrate Biasing, H.B. PROFIJT*, M.C.M. VAN DE SANDEN, W.M.M. KESSELS, Eindhoven University of Technology, Netherlands
11:00 am	NS-ThM10 Controllable Phase Transition Using a Probing Tip, Q. LI, Oak Ridge National Laboratory	PS+TF-ThM10 Spectroscopic Detection of Medium Range Order in Hydrogenated Amorphous Silicon, a-$Si_{1-x}H_x$, for x ~ 0.1, with Monohydride Si-H Bonding Dominating, G. LUCOVSKY, G.N. PARSONS, D. ZELLER, K. WU, J.L. WHITTEN, North Carolina State University, R. LUJAN, Palo Alto Research Center
11:20 am	NS-ThM11 How Size, Shape, and Bond Strain Affect Electronic Structure in sp^3 Carbon-Cage Molecules, T.M. WILLEY, J.R.I. LEE, Lawrence Livermore National Lab, L. LANDT, D. WOLTER, Technische Univ. Berlin, Germany, M. BAGGE-HANSEN, Lawrence Livermore National Lab, P.R. SCHREINER, A.A. FOKIN, B.A. TKACHENKO, N.A. FOKINA, Justus-Liebig Univ. Giessen, Germany, T. VAN BUUREN, Lawrence Livermore National Lab, D. BREHMER, Stanford Synchrotron Light Source	PS+TF-ThM11 Plasma Enhanced Atomic Layer Deposition and Plasma Etching of Gadolinium Oxide High-k Gate Dielectrics, S.A. VITALE, MIT Lincoln Laboratory, C. HODSON, Oxford Instruments Plasma Technology, UK
11:40 am		

* Coburn & Winters Student Award Finalist

	Plasma Science and Technology Room: 201 - Session PS-ThM Neutral Beam and Low Damage Processing Moderator: S. Bouchoule, CNRS-LPN	Advanced Surface Engineering Room: 104 - Session SE-ThM Nanostructured Thin Films and Coatings Moderators: P.H. Mayrhofer, Montanuniversität Leoben, Austria, C. Mitterer, University of Leoben, Austria
8:00 am	PS-ThM1 Invited 2010 Plasma Prize Lecture - Super-low Damage Top-down Processing for Future Nanoscale Devices, S. SAMUKAWA*, Tohoku University, Japan	
8:20 am	Invited talk continued.	SE-ThM2 Invited Tensile Testing of Substrate for Fracture Toughness of Thin Films, S. ZHANG, X. ZHANG, Nanyang Technological University, Singapore
8:40 am	PS-ThM3 A Numerical Simulation Method for Plasma-induced Damage Profile in SiO_2 Etching, N. KUBOI, T. TATSUMI, S. KOBAYASHI, J. KOMACHI, M. FUKASAWA, T. KINOSHITA, H. ANSAI, Sony Corporation, Japan	Invited talk continued.
9:00 am	PS-ThM4 Theoretical Analysis of Electron Transfer during the Process of Neutral Beam Generation, N. WATANABE, S. OHTSUKA, T. IWASAKI, K. ONO, Y. IRIYE, Mizuho Information & Research Institute, Inc., Japan, S. UEKI, BEANS Project 3D BEANS Center, Japan, O. NUKAGA, Fujikura Ltd.,Japan, T. KUBOTA, Tohoku University, Japan, M. SUGIYAMA, University of Tokyo, Japan, S. SAMUKAWA, Tohoku University, Japan	SE-ThM4 Structure and Properties of TaN-(Ag,Cu) Nanocomposite Thin Films, J.H. HSIEH, S.Y. HUNG, Ming Chi University of Technology, Taiwan, Republic of China, S.Y. CHANG, National Chung Hsing University, Taiwan, Republic of China, C. LI, National Central University, Taiwan, Republic of China
9:20 am	PS-ThM5 Energy and Angular Distribution Analysis for Neutral Beam and Application for Etching Simulation, S. OHTSUKA, N. WATANABE, T. IWASAKI, K. ONO, Mizuho Information & Research Institute, Inc., Japan, Y. IRIYE, O. NUKAGA, S. UEKI, BEANS Project 3D BEANS Center, Japan, T. KUBOTA, Tohoku University, Japan, M. SUGIYAMA, University of Tokyo, Japan, S. SAMUKAWA, Tohoku University, Japan	SE-ThM5 Nanoporous Osmium-Ruthenium Thin Film Coatings for Dispenser Cathodes, P. SWARTZENTRUBER, T.J. BALK, University of Kentucky
9:40 am	PS-ThM6 High-Aspect-Ratio Silicon Etching using Large-Diameter Neutral Beam Source, T. KUBOTA, Tohoku University and BEANS Project, Japan, A. WADA, Tohoku University, Japan, S. OHTSUKA, K. ONO, Mizuho Information & Research Institute, Inc., Japan, H. OHTAKE, Tohoku University, Japan, S. UEKI, Y. NISHIMORI, BEANS Project, Japan, G. HASHIGUCHI, Shizuoka University and BEANS Project, Japan, S. SAMUKAWA, Tohoku University, Japan	SE-ThM6 Influence of Chemistry and Structure on the Thermal Stability and Oxidation Resistance of Ti-Al-N, P.H. MAYRHOFER, L. CHEN, J. PAULITSCH, Montanuniversität Leoben, Austria, Y. DU, Central South University, China
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	PS-ThM9 Improvement in the Evaluation Technique for Plasma-Etch Si Damage using Photoreflectance Spectroscopy with Temperature Control, A. MATSUDA, Y. NAKAKUBO, Y. TAKAO, K. ERIGUCHI, K. ONO, Kyoto University, Japan	SE-ThM9 Design of Catalytically Active Nanostructured Coatings for Severe Tribological Applications, A. ERDEMIR, O.L. ERYILMAZ, Argonne National Laboratory
11:00 am	PS-ThM10 The Mechanism of Thin SiO_2 and GeO_2 Film Formation during Low-Temperature Neutral Beam Oxidation Process, A. WADA, Tohoku University, Japan, K. ENDO, M. MASAHARA, AIST, Japan, S. SAMUKAWA, Tohoku University, Japan	SE-ThM10 Structure and Electrical Properties of Nb-Ge-C Nanocomposite Coatings, O. TENGSTRAND, Linköping University, Sweden, N. NEDFORS, Uppsala University, Sweden, L. FAST, SP Tech. Res. Inst. of Sweden, A. FLINK, Impact Coatings AB, Sweden, A.M. ANDERSSON, ABB AB, Corporate Research, Sweden, U. JANSSON, Uppsala University, Sweden, P. EKLUND, L. HULTMAN, Linköping University, Sweden
11:20 am	PS-ThM11 Room Temperature Radical Annealing of Plasma Damaged Gallium Nitride, S. CHEN†, Y. LU, K. TAKEDA, K. ISHIKAWA, H. KONDO, Nagoya University, Japan, H. KANO, NU Eco-engineering Co., Ltd, Japan, H. AMANO, Nagoya University, Japan, Y. TOKUDA, Aichi Insititute of Technology, Japan, T. EGAWA, Nagoya Institute of Technology, Japan, M. SEKINE, M. HORI, Nagoya University, Japan	SE-ThM11 Tuning the Properties of Chromium Oxynitride Coatings, L. CASTALDI, Oerlikon Balzers AG, Liechtenstein, J. PATSCHEIDER, EMPA, Switzerland, V. SHKLOVER, ETH Zurich, Switzerland, D. KURAPOV, A. REITER, Oerlikon Balzers AG, Liechtenstein
11:40 am	PS-ThM12 Effect of Rapid Thermal Annealing on Si Surface Damage by HBr/O_2- and H_2-Plasma, Y. NAKAKUBO, A. MATSUDA, Kyoto University, Japan, M. FUKASAWA, Sony Corporation, Japan, Y. TAKAO, Kyoto University, Japan, T. TATSUMI, Sony Corporation, Japan, K. ERIGUCHI, K. ONO, Kyoto University, Japan	SE-ThM12 Synthesis of Al-Cr-O and Al-Cr-O-N Thin Films in Corundum-Type Structure by Reactive r.f. Magnetron Sputtering, M. STUEBER, Karlsruhe Institute of Technology (KIT), Germany, D. DIECHLE, Walter AG, Germany, H. LEISTE, S. ULRICH, Karlsruhe Institute of Technology (KIT), Germany

* 2010 Plasma Prize Winner

†Coburn & Winters Student Award Finalist

	Surface Science Room: 107 - Session SS-ThM Oxide Surface Structure & Reactivity Moderator: G.A. Kimmel, Pacific Northwest National Laboratory	Transparent Conductors and Printable Electronics Focus Topic Room: 106 - Session TC+AS+EM-ThM Transparent / Printable Electronics Part 1 Moderator: R. Haasch, University of Illinois at Urbana Champaign
8:00 am	SS-ThM1 Bond Activation of Alkanes on CaO(100), A. CHAKRADHAR, U. BURGHAUS, North Dakota State University	TC+AS+EM-ThM1 Growth Characteristic and Films Properties of Ga doped ZnO (GZO) by Low Temperature Atomic Layer Deposition, T.W. NAM, JM. KIM, W.S. LEE, H. KIM, Yonsei University, Republic of Korea
8:20 am	SS-ThM2 Reaction Chemistry of Methyl and Methylene Species on Cr_2O_3(0001), Y. DONG, D.F. COX, Virginia Tech	TC+AS+EM-ThM2 Enhancement of C-Axis Orientation of Ga-doped ZnO Films Deposited on Unintentionally Heated Glass Substrates using Nanosheet Seed Layers, H. MAKINO, Kochi Univ. of Tech., Japan, T. SHIBATA, NIMS, Japan, N. YAMAMOTO, Kochi Univ. of Tech., Japan, T. SASAKI, NIMS, Japan, T. YAMAMOTO, Kochi Univ. of Tech., Japan
8:40 am	SS-ThM3 Invited Organometallics as Probes of Functional Group Distribution on Oxide Surfaces, S.L. SCOTT, University of California, Santa Barbara	TC+AS+EM-ThM3 Invited Multi-component Transparent Conducting Oxides: Progress in Materials Modeling, S.-H. WEI, National Renewable Energy Laboratory
9:00 am	Invited talk continued.	Invited talk continued.
9:20 am	SS-ThM5 Are MgO Thin Films More Reactive Than Bulk MgO Surfaces?, G. CABAILH, R. LAZZARI, H. CRUGUEL, J. JUPILLE, UPMC and CNRS, France, L. SAVIO, IMEM-CNR, France, M. SMERIERI, A. ORZELLI, L. VATTUONE, M. ROCCA, Università di Genova, Italy and IMEM-CNR, France	TC+AS+EM-ThM5 Composition Control of Electron Beam Deposited Nb-TiO_2 Thin Films, N.A. BECKERS, R.T. TUCKER, University of Alberta, Canada, M.D. FLEISCHAUER, NRC-National Institute for Nanotechnology, Canada, M.J. BRETT, University of Alberta, Canada
9:40 am	SS-ThM6 The Adsorption of Silver on Fe_3O_4(111) Studied by Adsorption Microcalorimetry, LEIS, and AES, J.C. SHARP, Y.X. YAO, C.T. CAMPBELL, University of Washington	TC+AS+EM-ThM6 Laboratory and Production-Scale Low-Temperature Transparent Conducting Oxide Deposition, E. RITZ, University of Illinois at Urbana Champaign, G.B. RAYNER, Kurt J. Lesker Company, D. ANDRUCZYK, University of Illinois at Urbana Champaign, T. DOCKSTADER, Kurt J. Lesker Company, D.N. RUZIC, University of Illinois at Urbana Champaign
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	SS-ThM9 Properties of TiO_2 Nanoparticle Arrays Functionalized with Pt Photodeposition, Y. LIU, J. TAING, M. CHENG, University of California, Irvine, H. BLUHM, Lawrence Berkeley National Laboratory, J.C. HEMMINGER, University of California, Irvine	TC+AS+EM-ThM9 Optical and Electronic Properties of Photonic Crystal Based Transparent Conductors, S. NARAYANAN, M. BOCKSTALLER, L. PORTER, Carnegie Mellon University
11:00 am	SS-ThM10 Atomic-scale Structure of the Polar Spinel $MgAl_2O_4$(100) Surface, M.K. RASMUSSEN, K. MEINANDER, Aarhus U., Denmark, A.S. FOSTER, Tampere Univ. of Tech., Finland, B. HINNEMANN, Haldor Topsøe A/S, Denmark, F.F. CANOVA, Tampere Univ. of Tech., Finland, S. HELVEG, Haldor Topsøe A/S, Denmark, N.M. MARTIN, J. KNUDSEN, Lund U., Sweden, A. VLAD, Max-Planck-Institut für Metallforschung, Germany, E. LUNDGREN, Lund U., Sweden, A. STIERLE, Max-Planck-Institut für tallforschung, Germany, F. BESENBACHER, J.V. LAURITSEN, Aarhus U., Denmark	TC+AS+EM-ThM10 Effect of Plasma Treatment and Annealing on the Electrical Properties of Spin-Coated Colloidal ITO Films, S.M. JOSHI, G.W. BOOK, R.A. GERHARDT, Georgia Institute of Technology
11:20 am	SS-ThM11 Growth and Characterization of Cu/ZnO on Au(111) as a Model Catalyst System, X. DENG, J. LEE, C. MATRANGA, National Energy Technology Laboratory	TC+AS+EM-ThM11 Invited Hybrid Organic/Inorganic Materials and Devices for Flexible Electronics Applications, M.A. QUEVEDO-LOPEZ, J.I. MEJIA, A. SALAS-VILLASENOR, A. CARRILLO-CASTILLO, B.E. GNADE, University of Texas at Dallas, D. ALLEE, Arizona State University
11:40 am	SS-ThM12 Iron Oxide Growth on YSZ(001) and YSZ(111), I. ERMANOSKI, G.L. KELLOGG, Sandia National Laboratories	Invited talk continued.

	Thin Film Room: 109 - Session TF1-ThM Post-Deposition Processing and Characterization of Thin Films Moderator: C. Vallée, LTM/CNRS-UJF, France	Thin Film Room: 110 - Session TF2-ThM Modeling and Analysis of Thin Films Moderator: P.D. Rack, University of Tennessee Knoxville
8:00 am	TF1-ThM1 Protrusions, Surface Grains and Extended Single-Crystalline Plates, A. GONZÁLEZ GONZÁLEZ, Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas, Spain, G.M. ALONZO MEDINA, A.I. OLIVA, Centro de Investigaciones y de Estudios Avanzados del IPN, CINVESTAV Unidad de Mérida, Mexico, C. POLOP, Universidad Autónoma de Madrid, Facultad de Ciencias, Spain, E. RODRÍGUEZ CAÑAS, J.L. SACEDÓN, E. VASCO, Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas, Spain	TF2-ThM1 Aluminum Molecular Model for DSMC Simulations of Thin Film Deposition, A. VENKATTRAMAN, A. ALEXEENKO, Purdue University
8:20 am	TF1-ThM2 Characterization of Mg Acceptors in GaN:Mg Grown by Metal Modulated Epitaxy and MOCVD, J.E. LOWDER, M.W. MOSELEY, B. GUNNING, W.A. DOOLITTLE, Georgia Institute of Technology, M.E. ZVANUT, J. DASHDORJ, University of Alabama	TF2-ThM2 ISSG Chemistry Modeling to Understand Uniformity Issues in RTP, S. GUPTA, U. KELKAR, Applied Materials, Inc.
8:40 am	TF1-ThM3 Invited Post Deposition Annealing Effects on Thin Film Material, Process, and Device Properties, Y. KUO, Texas A&M University	TF2-ThM3 Invited Composition and Finite Size Effects in Thin Magnetic Films for Data Storage Applications: Magnetic and Transport Properties, O.N. MRYASOV, University of Alabama
9:00 am	Invited talk continued.	Invited talk continued.
9:20 am	TF1-ThM5 Semiconductor Thin Film Metrology using Coherent Acoustic Phonon Spectroscopy, A.D. STEIGERWALD, K. VARGA, A.B. HMELO, Vanderbilt University, L. FELDMAN, Rutgers University, N.H. TOLK, Vanderbilt University	TF2-ThM5 Large Scale TiN Thin Films Growth Simulations via Improved Modified Embedded Atom Parameterization, D.G. SANGIOVANNI, V. CHIRITA, L. HULTMAN, Linkoping University, Sweden, I. PETROV, J.E. GREENE, University of Illinois at Urbana Champaign
9:40 am	TF1-ThM6 On the Phase Formation of Reactively Sputtered ZrO_2 Thin Films, R. SNYDERS, G. GEUMEZ, S. KONSTANTINIDIS, UMons, Belgium	TF2-ThM6 Hard, yet Tough, Transition Metal Nitride Thin Films by Alloying and Valence Electron Concentration Tuning, D.G. SANGIOVANNI, V. CHIRITA, L. HULTMAN, Linkoping University, Sweden
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	BREAK - Complimentary Coffee in Exhibit Hall
10:40 am	TF1-ThM9 Effect of 10 keV X-rays on Silicon Oxidation, S. BHANDARU, S.M. WEISS, E.X. ZHANG, D.M. FLEETWOOD, R.A. REED, R.A. WELLER, B.R. ROGERS, R.R. HARL, Vanderbilt University	TF2-ThM9 Using Crystallographic Space Group-Subgroup Relations to Analyze Phase Selection and Transition in HfO_2 and Hf-based Ternary Oxide Films, C.R. AITA, University of Wisconsin-Milwaukee
11:00 am	TF1-ThM10 Investigating the Local Physical Structure of Amorphous Hydrogenated Boron Carbide, M.M. PAQUETTE, W. LI, M.S. DRIVER, S. KARKI, N.A. OYLER, A.N. CARUSO, University of Missouri - Kansas City	TF2-ThM10 Experimental and Theoretical Investigations Using SiO_2 Nanotemplates to Relieve Stress Caused by Thermal Expansion Coefficient Mismatch in Epitaxial Germanium Grown on Silicon, S. GHOSH, D. LEONHARDT, S.M. HAN, University of New Mexico
11:20 am	TF1-ThM11 Characterization of Amorphous and Nanocomposite Nb-Si-C Thin Films Deposited by dc-Magnetron Sputtering, N. NEDFORS, Uppsala University, Sweden, O. TENGSTRAND, Linköping University, Sweden, A. FLINK, Impact Coatings AB, Sweden, A.M. ANDERSSON, ABB AB, Corporate Research, Sweden, P. EKLUND, L. HULTMAN, Linköping University, Sweden, U. JANSSON, Uppsala University, Sweden	TF2-ThM11 Controlling Heteroepitaxy through Surfactant-Enabled Growth: An *Ab Initio* Thermodynamics Study, B.E. GADDY, E.A. PAISLEY, M.D. LOSEGO, J.S. TWEEDIE, North Carolina State University, R. COLLAZO, North Carolina State Univeristy, Z. SITAR, D.L. IRVING, J.-P. MARIA, North Carolina State University
11:40 am	TF1-ThM12 Evaluation of Mn-based Cu Barriers for Interconnect Applications, E. VAN BESIEN, N. JOURDAN, IMEC, Belgium, L. ZHAO, Intel assignee at IMEC, Belgium, K. CROES, Y.K. SIEW, S. VAN ELSHOCHT, ZS. TŐKEI, IMEC, Belgium	TF2-ThM12 Deposition and Modeling of Nanoscale Organic Porous Polymeric Layers and their Characterization with Visual and Electrical Methods, G. FRANZ, F. SCHAMBERGER, Munich University of Applied Sciences, Germany

Tribology Focus Topic
Room: 111 - Session TR+AS+SS-ThM

Atomic-scale Characterization of Tribological Interfaces
Moderator: S. Perry, University of Florida

8:00 am	TR+AS+SS-ThM1 Electrochemical Control of Atomic Friction, F. HAUSEN, INM - Leibniz Institute for New Materials, Germany, A. LABUDA, McGill University, Canada, N.N. GOSVAMI, R. BENNEWITZ, INM - Leibniz Institute for New Materials, Germany	
8:20 am	TR+AS+SS-ThM2 Surface Alterations Effects on Ice Adhesion Strength, C. ELLIS-TERRELL, M. MILLER, Southwest Research Institute, M. ZOU, University of Arkansas at Fayetteville, R. WEI, Southwest Research Institute, S. BECKFORD, University of Arkansas at Fayetteville, G. HATTON, Shell Global Solutions, Inc.	
8:40 am	TR+AS+SS-ThM3 Atomistic Simulations of Nanoindentation and Nanoscratching of SiO_2/Si and HfO_2/Si Systems using COMB Potentials, T.-R. SHAN, X. SUN, S.R. PHILLPOT, S.B. SINNOTT, University of Florida	
9:00 am	TR+AS+SS-ThM4 Invited Accelerated Molecular Dynamics Simulations of Nanoscale Friction, W.K. KIM, University of Minnesota, M.L. FALK, Johns Hopkins University	
9:20 am	Invited talk continued.	
9:40 am	TR+AS+SS-ThM6 Molecular Dynamics Simulations of Contact between Carbon-Based Materials: Isolating the Effects of Experimental Variables, J.A. HARRISON, K.E. RYAN, P.L. KEATING, US Naval Academy, D.S. GRIERSON, J. LIU, K.T. TURNER, University of Wisconsin Madison, R.W. CARPICK, University of Pennsylvania	
10:00 am	BREAK - Complimentary Coffee in Exhibit Hall	
10:20 am	BREAK - Complimentary Coffee in Exhibit Hall	
10:40 am	TR+AS+SS-ThM9 Modeling the Pressure Dependence of Shear Strength in Sliding, Boundary-Layer Friction, M. GARVEY, M. WEINERT, W.T. TYSOE, University of Wisconsin-Milwaukee	
11:00 am	TR+AS+SS-ThM10 Lubrication Mechanisms of MoS_2 Fullerene-Like Nanoparticles: Coupling Computer and Experimental Works, E.W. BUCHOLZ, University of Florida, I. LAHOUIJ, F. DASSENOY, Ecole Centrale de Lyon, France, S.B. SINNOTT, University of Florida, J.M. MARTIN, Ecole Centrale de Lyon, France	
11:20 am	TR+AS+SS-ThM11 Shape-Independent Lateral Force Calibration, E.V. ANDERSON, N.A. BURNHAM, Worcester Polytechnic Institute	
11:40 am	TR+AS+SS-ThM12 Atomic Stick-Slip Friction Studied by Optimally-Matched Accelerated MD Simulations and AFM Experiments, Y. DONG, Purdue University, Q. LI, R.W. CARPICK, University of Pennsylvania, A. MARTINI, Purdue University	

	Actinides and Rare Earths Focus Topic Room: 207 - Session AC+TF-ThA The Structure, Properties and Chemistry of Thin Films of Actinides and Rare Earths Moderator: L. Havela, Charles University, Czech Republic	Spectroscopic Ellipsometry Focus Topic Room: 209 - Session EL+AS+EM+MS+PS+TF-ThA Spectroscopic Ellipsometry for Photovoltaics, Metals and Oxide Thin Films Moderator: M. Creatore, Eindhoven University of Technology, the Netherlands
2:00 pm	AC+TF-ThA1 Invited Plutonium Sorption and Reactivity at the Solid/Water Interface, M. SCHMIDT, P.A. FENTER, S.S. LEE, R.E. WILSON, L. SODERHOLM, Argonne National Laboratory	EL+AS+EM+MS+PS+TF-ThA1 Invited Applications of Ellipsometry in Photovoltaics, D. LEVI, National Renewable Energy Laboratory
2:20 pm	Invited talk continued.	Invited talk continued.
2:40 pm	AC+TF-ThA3 Crystal Chemistry of Thorium Oxy Compounds Containing Tetrahedral Oxyanions, A.J. ALBRECHT, P.C. BURNS, University of Notre Dame	EL+AS+EM+MS+PS+TF-ThA3 Comparison between Ex Situ and Real Time Spectroscopic Ellipsometry Measurements of Structurally Graded Si:H Thin Films, N.J. PODRAZA, University of Toledo
3:00 pm	AC+TF-ThA4 Solution Route to High Quality Epitaxial Actinide Films Form Oxides to Carbides, T.M. MCCLESKEY, E. BAUER, A.K. BURRELL, B.L. SCOTT, Q.X. JIA, T. DURAKIEWICZ, J.J. JOYCE, S.A. KOZIMOR, S.D. CONRADSON, R.L. MARTIN, Los Alamos National Laboratory	EL+AS+EM+MS+PS+TF-ThA4 Real-Time Spectroscopic Ellipsometry of Cu(In,Ga)Se_2 Thin Film Deposition: Copper Transition in 3-Stage Co-Evaporation Process, D. ATTYGALLE, University of Toledo, V. RANJAN, Old Dominion University, P. ARYAL, University of Toledo, S. MARSILLAC, Old Dominion University, R.W. COLLINS, University of Toledo
3:20 pm	BREAK	BREAK
3:40 pm	AC+TF-ThA6 U(VI) Uranyl Cation-Cation Interactions in Framework Germanates, J.M. MORRISON, P.C. BURNS, University of Notre Dame	EL+AS+EM+MS+PS+TF-ThA6 Bulk Hetrojunction Solar Cell Characterization by Phase Modulated Spectroscopic Ellipsometry, K. UPPIREDDI, L. YAN, HORIBA Scientific
4:00 pm	AC+TF-ThA7 Actinide Epitaxial Thin Films Grown by Polymer-assisted Deposition, E. BAUER, T.M. MCCLESKEY, A.K. BURRELL, B.L. SCOTT, Q.X. JIA, T. DURAKIEWICZ, J.J. JOYCE, K.S. GRAHAM, S.A. KOZIMOR, S.D. CONRADSON, R.L. MARTIN, Los Alamos National Laboratory	EL+AS+EM+MS+PS+TF-ThA7 *In Situ* Spectroscopic Ellipsometry during Atomic Layer Deposition of Pt, Pd and Ru, N. LEICK, J.W. WEBER, M.J. WEBER, A.J.M. MACKUS, H.C.M. KNOOPS, W.M.M. KESSELS, Eindhoven University of Technology, Netherlands
4:20 pm	AC+TF-ThA8 The Crystal Chemistry of Uranyl Selenates and their Relations with Uranyl Sulfates, E.M. WYLIE, P.C. BURNS, University of Notre Dame	EL+AS+EM+MS+PS+TF-ThA8 Manipulating the Optical Properties of Metals: Sculptured Thin Films Coated by Atomic Layer Deposition, D. SCHMIDT, N. IANNO, E. SCHUBERT, M. SCHUBERT, University of Nebraska - Lincoln
4:40 pm	AC+TF-ThA9 Radiation-Induced Degradation of Photoluminescence in YAG:Ce, S.G. GOLLUB, D.G. WALKER, S.L. WEEDEN-WRIGHT, Vanderbilt University	EL+AS+EM+MS+PS+TF-ThA9 Ellipsometric Characterisation of Porous Aluminium Oxide Supports, W. OGIEGLO, N.E. BENES, H. WORMEESTER, MESA+ Institute for Nanotechnology, University of Twente, Enschede, The Netherlands
5:00 pm	AC+TF-ThA10 The Behavior of Uranyl Peroxide Pyrophosphate Nanoscale Cage Clusters in Aqueous Solution, K.L. PELLEGRINI, P.C. BURNS, J. SZYMANOWSKI, J. LING, J. QIU, University of Notre Dame	EL+AS+EM+MS+PS+TF-ThA10 Optical Properties and Structure of Vanadium Oxide Thin Films, M.A. MOTYKA, M.W. HORN, Pennsylvania State University, N.J. PODRAZA, University of Toledo
5:20 pm		EL+AS+EM+MS+PS+TF-ThA11 Sensitivity of Dielectric Properties of Vanadium Dioxide Thin Films to Growth Conditions, D.W. FERRARA, R.E. MARVEL, J. NAG, R.F. HAGLUND, Vanderbilt University

	Energy Frontiers Focus Topic Room: 102 - Session EN+MS+VT-ThA Photovoltaics Manufacturing Moderator: V. Ku, Satcon Technology Corporation	Energy Frontiers Focus Topic Room: 103 - Session EN+NS-ThA Nanostructures for Energy Storage and Fuel Cells II Moderator: J. Lewis, RTI International
2:00 pm	EN+MS+VT-ThA1 Invited Waste Not, Want Not, L.V. MANESS, JR., South Park Platinum, Inc.	EN+NS-ThA1 Charge-Storage Processes in Model MnO_2-Li-HOPG Systems: UHV-STM Investigations, S.C. BHARATH, W. SONG, J.E. REUTT-ROBEY, University of Maryland, College Park, K.R. ZAVADIL, Sandia National Laboratories
2:20 pm	Invited talk continued.	EN+NS-ThA2 The Influence of Surface Chemistry as a Function of Salt Composition on the Rate Capability of $LiNi_{0.5}Mn_{0.5}O_2$ Composite Electrodes for Li-ion Rechargeable Batteries as Investigated using XPS, R.A. QUINLAN, Naval Surface Warfare Center, Carderock Division, Y.C. LU, Massachusetts Institute of Technology, A.N. MANSOUR, Naval Surface Warfare Center, Carderock Division, Y. SHAO-HORN, Massachusetts Institute of Technology
2:40 pm	EN+MS+VT-ThA3 Invited The U.S. PV Manufacturing Consortium – Bringing the Supply Chain Together, P. HALDAR, College of Nanoscale Science & Engineering and U.S. Photovoltaic Manufacturing Consortium	EN+NS-ThA3 Hydrogen Storage in Metal Organic Frameworks (MOFs), N. NIJEM, University of Texas at Dallas, L. KONG, H. WU, Y. ZHAO, J. LI, D.C. LANGRETH, Rutgers University, Y.J. CHABAL, University of Texas at Dallas
3:00 pm	Invited talk continued.	EN+NS-ThA4 Nanostructure Engineering and Modeling of 3D Electrostatic Nanocapacitors, L.C. HASPERT, G.W. RUBLOFF, S.B. LEE, University of Maryland, College Park
3:20 pm	BREAK	BREAK
3:40 pm	EN+MS+VT-ThA6 Invited Application Considerations of Photovoltaic Module Design, E. SEYMOUR, Advanced Energy Industries, Inc.	EN+NS-ThA6 Invited Atomic Scale Engineering for Energy Conversion Efficiency, F. PRINZ, DASGUPTA, CHAO, Stanford University
4:00 pm	Invited talk continued.	Invited talk continued.
4:20 pm	EN+MS+VT-ThA8 Invited Potentials and Challenges for High Efficiency Multi Junction Solar Cells, BEDAIR, North Carolina State University	EN+NS-ThA8 Nanoscale Characterization of Water Distributions in PEM Fuel Cell Membrane Electrode Assemblies Measured by Scanning Transmission Soft X-ray Microscopy, A.P. HITCHCOCK, V. BEREJNOV, McMaster University, Canada, D. SUSAC, J. STUMPER, Automotive Fuel Cell Cooperation Co, Canada
4:40 pm	Invited talk continued.	EN+NS-ThA9 Industrial Magnetron Sputtering of Nanocrystalline Coatings Containing Cr-C for Fuel Cell Applications, K. NYGREN, Uppsala University, Sweden, M. SAMUELSSON, Linköping University, Sweden, U. JANSSON, Uppsala University, Sweden
5:00 pm		EN+NS-ThA10 Probing Physical and Interfacial Confinement Effects on Multilayered Piezoelectric Polymeric Films using Second Harmonic Generation Laser Spectroscopy, J. JONES, Fisk University, H. PARK, Vanderbilt University, L. ZHU, Case Western Reserve University, N.H. TOLK, Vanderbilt University, R. MU, Fisk University
5:20 pm		EN+NS-ThA11 Electrical Transport in Ultrathin Ruthenium Films formed by Atomic Layer Deposition, K.E. GREGORCZYK, P. BANERJEE, G.W. RUBLOFF, University of Maryland, College Park

	Graphene and Related Materials Focus Topic Room: 208 - Session GR+TF+NS-ThA Graphene Nanoribbons and Related Structures Moderator: Y.J. Chabal, University of Texas at Dallas	MEMS and NEMS Room: 105 - Session MN-ThA Multi-scale Interactions of Materials and Fabrication at the Micro- and Nano-scale Moderator: A.V. Sumant, Center for Nanoscale Materials, Argonne National Laboratory
2:00 pm	GR+TF+NS-ThA1 Invited Rationally Patterned Large-Area Semiconducting Graphene Materials from the Top-Down and the Bottom-Up, N. SAFRON, M. KIM, P. GOPALAN, M. ARNOLD, University of Wisconsin-Madison	MN-ThA1 Invited Heterogeneous Microsystem Integration with Self-Assembly, K. BOHRINGER, University of Washington
2:20 pm	Invited talk continued.	Invited talk continued.
2:40 pm	GR+TF+NS-ThA3 Quantum Pumping in Graphene Nanoribbons, T. KAUR, Ohio University, L. ARRACHEA, Universidad de Buenos Aires, Argentina, N. SANDLER, Ohio University	MN-ThA3 A Study of Solder Bridging for the Purpose of Assembling Three Dimensional Structures, M.R. RAO, J.C. LUSTH, S.L. BURKETT, The University of Alabama
3:00 pm	GR+TF+NS-ThA4 First-principles Study of Field Emission from Graphene Nanoribbons, J. DRISCOLL, K. VARGA, Vanderbilt University	MN-ThA4 Fabricating Arrays of Graphene Nanomechanical Resonators with High, Size-Dependent Quality Factors, R.A. BARTON, A.M. VAN DER ZANDE, R.B. ILIC, C.S. RUIZ-VARGAS, J.S. ALDEN, W.S. WHITNEY, J. PARK, P.L. MCEUEN, J.M. PARPIA, H.G. CRAIGHEAD, Cornell University
3:20 pm	BREAK	BREAK
3:40 pm	GR+TF+NS-ThA6 Quantum Transport Properties of Modified Graphene Nanoribbons with Boron Nitride Domains at the Nanoscale, A. LOPEZ-BEZANILLA, Oak Ridge National Laboratory	MN-ThA6 Modal Dependence of Dissipation in Ultra Thin Silicon Nitride Drum Resonators, V.P. ADIGA, R.B. ILIC, R.A. BARTON, Cornell University, I. WILSON-RAE, Technische Universität München, Germany, H.G. CRAIGHEAD, J.M. PARPIA, Cornell University
4:00 pm	GR+TF+NS-ThA7 Simple and Scalable Route for the 'Bottom-Up' Synthesis of Few-Layer Graphene Platelets and Thin Films, K. COLEMAN, University of Durham, UK	MN-ThA7 Stress-based Flammable Gas Sensing with Nanocoated Resonant Microbridge at Critically-Buckled State, D.J. JOE, Y. LINZON, V.P. ADIGA, R.A. BARTON, M. KIM, B. ILIC, Cornell University, S. KRYLOV, Tel Aviv University, Israel, J.M. PARPIA, H.G. CRAIGHEAD, Cornell University
4:20 pm	GR+TF+NS-ThA8 Approaching the Intrinsic Bandgap in Suspended High-Mobility Graphene Nanoribbons, M.-W. LIN, C. LING, Wayne State University, L.A. AGAPITO, N. KIOUSSIS, California State University Northridge, Y. ZHANG, M.-C. CHENG, Wayne State University, W.L. WANG, E. KAXIRAS, Harvard University, Z.X. ZHOU, Wayne State University	MN-ThA8 Rapid Serial Prototyping of Magnet-Tipped Attonewton-Sensitivity Cantilevers, J.G. LONGENECKER, E.W. MOORE, J.A. MAROHN, Cornell University
4:40 pm	GR+TF+NS-ThA9 Fabrication of Polymer-Protected Graphene Nanoribbons by Thermal Dip-Pen Nanolithography (tDPN), W.K. LEE, J.T. ROBINSON, R. STINE, A.R. LARACUENTE, Naval Research Laboratory, W.P. KING, University of Illinois at Urbana Champaign, P.E. SHEEHAN, Naval Research Laboratory	MN-ThA9 Microfabrication of On-Chip Electrodeposited CoNiP Micromagnets and Integration into MEMS Sensors, D. SCHREIBER, O. BERKH, S. KRYLOV, Y. SHACHAM-DIAMAND, Tel Aviv University, Israel
5:00 pm	GR+TF+NS-ThA10 Edge Termination of Modified Graphene Oxide during Thermal Exfoliation, M. ACIK*, Y.J. CHABAL, The University of Texas at Dallas	MN-ThA10 Towards an Integrated Nano-optomechanical Platform for Molecular Sensing and Magnetometry, W.K. HIEBERT, Z. DIAO, J.N. WESTWOOD, V.T.K. SAUER, M.R. FREEMAN, National Institute for Nanotechnology (NRC Canada) and University of Alberta, Canada
5:20 pm	GR+TF+NS-ThA11 Study of Ridges on Epitaxial Graphene on 6H-SiC(0001), Y.Y. LI, Y. LIU, L. LI, University of Wisconsin-Milwaukee	

* Morton S. Traum Award Finalist

	Nanometer-scale Science and Technology Room: 203 - Session NS-ThA Biological Nanomaterials Moderator: N.A. Burnham, Worcester Polytechnic Institute	Plasma Science and Technology Room: 202 - Session PS+SS-ThA Plasma Surface Interactions (Fundamentals & Applications) II Moderator: A. Kumar, Case Western Reserve University
2:00 pm		PS+SS-ThA1 Invited Plasma Prize Lecture - The Role of Atomic Hydrogen on Plasma Synthesis of Carbon Nanotubes, E.S. AYDIL*, University of Minnesota
2:20 pm	NS-ThA2 Invited Biologically-Inspired Reversible Adhesives: Where Are We Now?, S. GORB, Zoological Institute at the University of Kiel, Germany	Invited talk continued.
2:40 pm	Invited talk continued.	PS+SS-ThA3 CF and CF_2 Contributions to Plasma-Enhanced Chemical Vapor Deposition of Fluorocarbon Films in C_xF_y Systems, M.F. CUDDY, E.R. FISHER, Colorado State University
3:00 pm	NS-ThA4 Ultrastable Superparamagnetic Nanoparticle Design for Membrane Assembly and Triggered Release, E. AMSTAD, M. TEXTOR, ETH Zurich, Switzerland, E. REIMHULT, University of Natural Resources and Life Sciences Vienna, Austria	PS+SS-ThA4 Polymer Surface Modification: Real-time In Situ Electron Spin Resonance Study for Plasma Processes, K. ISHIKAWA, N. SUMI, Nagoya University, Japan, A. KONO, H. HORIBE, Kanazawa Institute of Technology, Japan, K. TAKEDA, H. KONDO, M. SEKINE, M. HORI, Nagoya University, Japan
3:20 pm	BREAK	BREAK
3:40 pm	NS-ThA6 Nanoscale Electrical Interaction between Carbon Nanotubes and DNA, Y. CAO, Y. XU, Vanderbilt University	PS+SS-ThA6 Control of Hydrocarbon Surface Density during H_2/D_2/Ar Low Temperature Plasma Interaction, N. FOX-LYON, G.S. OEHRLEIN, University of Maryland, College Park, N. NING, D.B. GRAVES, University of California, Berkeley
4:00 pm	NS-ThA7 Invited Surface Functionalization of Nanomaterials: From Heterogeneous Catalysis to Nanoparticle Drug Delivery, W. GAO, Brigham and Women's Hospital and Harvard Medical School	PS+SS-ThA7 Atomic Force Microscopy Determination of the Elastic Modulus of Nanometer Thick, Ultra-Stiff Modified Layers after Plasma Etching of a Polymer Film, T. LIN, University of Maryland, College Park, H.C. KAN, National Chung Cheng University, Taiwan, Republic of China, R.L. BRUCE, G.S. OEHRLEIN, R.J. PHANEUF, University of Maryland, College Park
4:20 pm	Invited talk continued.	PS+SS-ThA8 Polymer Hardening Technique for Enhancement in Etch Selectivity/Durability Using DC Superimposed Capacitively-Coupled Plasma, S. OKAMOTO, A. NAKAGAWA, F. INOUE, H. OKA, Tokyo Electron Miyagi Ltd., Japan, H. MOCHIKI, K. YATSUDA, Tokyo Electron Ltd., Japan
4:40 pm	NS-ThA9 Perfluoropentane Filled Boron Doped Hollow Silica Microspheres for Ultrasound Guided Surgery, A. LIBERMAN, H.P. MARTINEZ, Z. WU, S.L. BLAIR, Y. KONO, R.F. MATTREY, A.C. KUMMEL, W. TROGLER, University of California, San Diego	PS+SS-ThA9 H_2O Plasma Surface Modification of Track-Etched Polycarbonate Membranes Leading to Polar Surface Functionalization and Improved Wettability, B.D. TOMPKINS, J.M. DENNISON, E.R. FISHER, Colorado State University
5:00 pm		PS+SS-ThA10 Plasma Printing: A New Inline Technology for Polymers Surface Modification, E.A.D. CARBONE, M.W.G.M. VERHOEVEN, Eindhoven University of Technology, Netherlands, W.J.M. BROK, A. STEVENS, Innophysics B.V., Netherlands, J.J.A.M. VAN DER MULLEN, Eindhoven University of Technology, Netherlands
5:20 pm		PS+SS-ThA11 Design of a Plasma Cleaning Unit to Clean Backside Contamination on Substrates, F.T. MOLKENBOER, N.B. KOSTER, A.J. DE JONG, J.C.J. VAN DER DONCK, A.M.C.P. DE JONG, O. KIEVIT, TNO, Netherlands

* 2009 Plasma Prize Winner

	Plasma Science and Technology Room: 201 - Session PS-ThA Plasma Diagnostics, Sensors and Control II Moderator: J.-P. Booth, CNRS/Ecole Polytechnique, France	Advanced Surface Engineering Room: 104 - Session SE+PS-ThA Pulsed Plasmas in Surface Engineering Moderator: J. Patscheider, EMPA, Switzerland
2:00 pm	PS-ThA1 Characterization of Atomic Oxygen Emission by PROES and Ion-Flux Measurement in an ECR Plasma Etcher, V. MILOSAVLJEVIC, Dublin City University, Ireland and University of Belgrade, Serbia, B. DOLINAJ, D. GAHAN, Impedans Ltd., Ireland, N. MACGARAILT, Dublin City University, Ireland, MB. HOPKINS, Impedans Ltd., Ireland, S. DANIELS, Dublin City University, Ireland	SE+PS-ThA1 High-Power Impulse Magnetron Sputtering of WO_3 - Influence of the Pulse Parameters on the Discharge, A. HEMBERG, F. RENAUX, J.P. DAUCHOT, Materia Nova, Belgium, R. SNYDERS, S. KONSTANTINIDIS, UMons, Belgium
2:20 pm	PS-ThA2 Optical Diagnostics of Electron Energy Distributions in Low Temperature Plasmas, J. BOFFARD, L.E. ANESKAVICH, R.O. JUNG, C.C. LIN, A.E. WENDT, University of Wisconsin-Madison	SE+PS-ThA2 A Versatile Magnetized Pulsed Cascaded Arc Source for Surface Modifications and Efficient Material Deposition, G. DE TEMMERMAN, J.J. ZIELINSKI, FOM Institute for Plasma Physics Rijnhuizen, Netherlands, L. MAROT, D. MATHYS, University of Basel, Switzerland, W. MELISSEN, FOM Institute for Plasma Physics Rijnhuizen, Netherlands, M.C.M. VAN DE SANDEN, FOM-Instituut for Plasma Physics Rijnhuizen & Eindhoven University of Technology, Netherlands
2:40 pm	PS-ThA3 Invited Two Dimensional Laser-Collision Induced Fluorescence Measurements in Low Pressure Plasmas, E.V. BARNAT, Sandia National Laboratories	SE+PS-ThA3 Invited Pulsed Magnetron Sputtering Systems for Reactive Deposition of Oxide and Nitride Films, J. VLCEK, J. REZEK, P. STEIDL, University of West Bohemia, Czech Republic
3:00 pm	Invited talk continued.	Invited talk continued.
3:20 pm	BREAK	BREAK
3:40 pm	PS-ThA6 Controlled Electron Beam Excitation Method to Study Process Chemistries, P.L.S. THAMBAN, G. PADRON-WELLS, University of Texas at Dallas, J. HOSCH, Verity Instruments Incorporated, M.J. GOECKNER, University of Texas at Dallas	SE+PS-ThA6 Structure Evolution and Wear Mechanism in TiAlCN/VCN Nanoscale Multilayer Coatings Deposited by Reactive High Power Impulse Magnetron Sputtering Technology, P. HOVSEPIAN, A.P. EHIASARIAN, G.K. KAMATH, Sheffield Hallam University, UK, R. HAASCH, I. PETROV, University of Illinois at Urbana Champaign
4:00 pm	PS-ThA7 Experimental Implementation of Robust Multivariable Real-time Feedback Control Design for RIE Plasma Processing System, Y. ZHANG, B.J. KEVILLE, A. HOLOHAN, S. DANIELS, NCPST Dublin City University, Ireland	SE+PS-ThA7 Plasma Study and Interconnect Metallization using a Modulated Pulse Power (MPP) Hollow Cathode Magnetron, L. MENG, H. YU, T.S. CHO, S. JUNG, D.N. RUZIC, University of Illinois at Urbana Champaign
4:20 pm	PS-ThA8 Real Time, Multivariable Control of an $SF_6/O_2/Ar$ Plasma, B.J. KEVILLE, M.M. TURNER, Dublin City University, Ireland	SE+PS-ThA8 Structural and Optical Properties of Ultra-Thin Silver Films Deposited via High Power Impulse Magnetron Sputtering (HiPIMS) on Various Adhesion Layers, R. JAKUBIAK, Air Force Research Laboratory, L. SUN, General Dynamics Information Technology, N. MURPHY, Air Force Research Laboratory, A. WAITE, Universal Technology Corporation, J. JONES, Air Force Research Laboratory
4:40 pm	PS-ThA9 Maxwell Demon and its Instabilities, CS. YIP, N. HERSHKOWITZ, University of Wisconsin-Madison	SE+PS-ThA9 Inductively Coupled Impulse Sputtering (ICIS): A Novel Technique for Ionised PVD, A.P. EHIASARIAN, D. LOCH, Sheffield Hallam University, UK
5:00 pm	PS-ThA10 Reliable Arc Detection and Arc Mitigation in RF Plasma Systems, D. COUMOU, R. CHOUIERY, MKS, ENI Products	
5:20 pm		

	Surface Science Room: 107 - Session SS-ThA Semiconducting & Ferroelectric Surface Moderator: J. Millunchik, University of Michigan	Transparent Conductors and Printable Electronics Focus Topic Room: 106 - Session TC+EM+NS-ThA Transparent / Printable Electronics Part 2 Moderator: S. Durbin, University at Buffalo
2:00 pm	SS-ThA1 Invited Polarization Dependence of the Surface and Interfacial Chemistry of Ferroelectric Oxides, E.I. ALTMAN, Yale University	TC+EM+NS-ThA1 Invited ZnO-based Schottky Diodes and Their Utilization in Transparent Electronics, H. VON WENCKSTERN, Universität Leipzig, Germany
2:20 pm	Invited talk continued.	Invited talk continued.
2:40 pm	SS-ThA3 Surface Reconstructions of $BaTiO_3$(001): STM Study, E.H. MORALES, D.A. BONNELL, University of Pennsylvania	TC+EM+NS-ThA3 Photoresponse of Amorphous In-Ga-Zn-O / Pt Schottky Junction, D.H. LEE, K. NOMURA, T. KAMIYA, H. HOSONO, Tokyo Institute of Technology, Japan
3:00 pm	SS-ThA4 Polarization Dependent Interactions at Ferroelectric Surfaces, J. GARRA, M. ZHAO, J.M. VOHS, E.H. MORALES, D.A. BONNELL, University of Pennsylvania	TC+EM+NS-ThA4 Novel Metal-organic Precursors for Printed Electronics - Synthesis, Implementation, and Properties, J.A. BELOT, R.A. POTASH, R.D. MCCULLOUGH, K.A. SINGH, L. PORTER, Carnegie Mellon University
3:20 pm	BREAK	BREAK
3:40 pm	SS-ThA6 Invited An Atomic View of ALD of Dielectrics on Semiconductors Using STM, A.C. KUMMEL, W. MELITZ, J.B. CLEMENS, J.S. LEE, T. KAUFMAN-OSBORN, T. KENT, E.A. CHAGAROV, J. SHEN, University of California, San Diego, R. DROOPAD, Texas State University-San Marcos	TC+EM+NS-ThA6 A New Application for a-IGZO TFTs: An Addressable Microfluidic Electrowetting Channel Device, J. NOH, J.H. NOH, University of Tennessee, E. KREIT, J. HEIKENFELD, University of Cincinnati, P.D. RACK, University of Tennessee
4:00 pm	Invited talk continued.	TC+EM+NS-ThA7 Invited Amorphous Oxide Semiconductor Thin-Film Transistors, J.F. WAGER, K. HOSHINO, Oregon State University, B. YEH, R.L. HOFFMAN, Hewlett-Packard Company
4:20 pm	SS-ThA8 Electrostatic Coupling of Surface Charge to Bulk Defect Behavior in Metal Oxides, P. GORAI, K. PANGAN-OKIMOTO, A. HOLLISTER, E.G. SEEBAUER, University of Illinois at Urbana-Champaign	Invited talk continued.
4:40 pm	SS-ThA9 Surface Photovoltage Behavior of n-type GaN as a Function of Orientation, M. FOUSSEKIS, A.A. BASKI, M.A. RESHCHIKOV, Virginia Commonwealth University	TC+EM+NS-ThA9 Why Optimum Oxygen Pressure Range Exists for Fabricating Amorphous In-Ga-Zn-O Thin-Film Transistor and How it Should be Optimized, K. IDE, K. NOMURA, T. KAMIYA, H. HOSONO, Tokyo Institute of Technology, Japan
5:00 pm	SS-ThA10 Coverage Dependence, Surface Electronic/Atomic Structure and Magnetic Properties of Ultrathin Mn Germanide Films on Ge(111), J. HIRVONEN GRYTZELIUS, L.S.O. JOHANSSON, H.M. ZHANG, Karlstad University, Sweden	TC+EM+NS-ThA10 Effects of Low-Temperature Annealing and Deep Traps in Operation Characteristics of Amorphous In-Ga-Zn-O Thin-Film Transistors, T. KAMIYA, Y. KIKUCHI, K. IDE, K. NOMURA, H. HOSONO, Tokyo Institute of Technology, Japan
5:20 pm	SS-ThA11 The Surface States of Lithium Tetraborate, L. WANG, W.-N. MEI, University of Nebraska at Omaha, D. WOOTEN, J. MCCLORY, J. PETROSKY, Air Force Institute of Technology, V. ADAMIV, YA. BURAK, Institute of Physical Optics, Ukraine, I. KETSMAN, University of Nebraska - Lincoln, YA. LOSOVYJ, The J. Bennett Johnston Sr. Center for Advanced Microstructures and Devices, P.A. DOWBEN, University of Nebraska - Lincoln	TC+EM+NS-ThA11 β-alumina (SBA): A Promising High Dielectric Constant Gate Material for Solution Processed, Transparent and Low Voltage Transistor Devices, B. ZHANG, Y. LIU, H. KATZ, Johns Hopkins University

	Thin Film Room: 110 - Session TF+EM+SS-ThA Applications of Self Assembled Monolayers Moderator: M.R. Linford, Brigham Young University	Tribology Focus Topic Room: 111 - Session TR-ThA Advanced Tribological Materials Moderator: D.L. Burris, University of Delaware
2:00 pm	TF+EM+SS-ThA1 Invited Organic Monolayers on Silicon-rich Substrates: Methods and Mechanisms, H. ZUILHOF, Wageningen University, Netherlands	TR-ThA1 Nanomechanics and Nanotribology of ZrB_2 Thin Films Deposited by DC Magnetron Sputtering, E. BROITMAN, H. HÖGBERG, L. HULTMAN, Linköping University, Sweden
2:20 pm	Invited talk continued.	TR-ThA2 Structural and Tribological Properties of CrN_{MPP}/TiN_{DCMS} Multilayer Coatings, J. PAULITSCH, C. MARINGER, D. HOLEC, P.H. MAYRHOFER, Montanuniversität Leoben, Austria
2:40 pm	TF+EM+SS-ThA3 Molecularly Modulated Electrical Transport at Chemically Passivated Silicon Surfaces, G. DUBEY, NRC-SIMS, Canada, F. ROSEI, INRS-EMT, Canada, G.P. LOPINSKI, NRC-SIMS, Canada	TR-ThA3 Tribological Properties of Plasma Electrolytic Oxidation (PEO) Coatings on an Aluminum A356 Alloy, J.F. SU, X. NIE, University of Windsor, Canada
3:00 pm	TF+EM+SS-ThA4 Micrometer- and Nanometer-Scale Patterning of Azide-Functionalized Self-assembled Monolayers on Gold and Aluminum Oxide Surfaces, O. EL ZUBIR, I. BARLOW, G. LEGGETT, N. WILLIAMS, University of Sheffield, UK	TR-ThA4 Tribocorrosion Behavior of Nanocomposite Coating of nc-TiN/Si_3N_4 Codeposited with Platinum on Ti6Al4V Substrates for Biomedical Applications, J. GARCIA, M. FLORES, O. JIMENEZ, Universidad de Guadalajara, Mexico, E. ANDRADE, Universidad Nacional Autonoma de Mexico, J. MUÑOZ SALDAÑA, Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, Mexico
3:20 pm	BREAK	BREAK
3:40 pm	TF+EM+SS-ThA6 Free-standing, SAM-based, Hybrid Biocompatible Nanomembranes for Biological Applications, N. MEYERBRÖKER, W. ECK, M. ZHARNIKOV, Universität Heidelberg, Germany	TR-ThA6 Invited Tribochemical and Microstructural Evolution during Friction and Wear of Nanocomposite Coatings, T. SCHARF, The University of North Texas
4:00 pm	TF+EM+SS-ThA7 Invited Development of Nanoscale Heterostructures: From Single Component Nanostructures to Multicomponent Nanosystems, N. CHOPRA, The University of Alabama, Tuscaloosa	Invited talk continued.
4:20 pm	Invited talk continued.	TR-ThA8 Study of Failure Mechanisms of a PVD TiAlN Coating by an Impact-Sliding Tester, J.F. SU, X. NIE, University of Windsor, Canada
4:40 pm	TF+EM+SS-ThA9 Physical and Electrical Characterization of Metal Incorporated SAM-based Molecular Electronic Junctions, S. POOKPANRATANA, M.A. WALSH, C.A. RICHTER, C.A. HACKER, National Institute of Standards and Technology	TR-ThA9 A Study of Sliding Friction Across Velocity Regimes for Alternative MEMS-type Interfaces using Atomic Force Microscopy and Combined Nanoindentation / Quartz Microbalance, N. ANSARI, Auburn University, S. BARKLEY, Luther College, C. BOUXSEIN, M. DERAM, N. EIGENFELD, Saint Olaf College, O. MATTHEWS, Luther College, A. PODA, W.R. ASHURST, Auburn University, E.E. FLATER, Luther College, B.P. BOROVSKY, Saint Olaf College
5:00 pm	TF+EM+SS-ThA10 Examining the Role of Laminin-Derived Peptides in Neuronal Attachment, N.A. LAFRANZO, J.A. MAURER, Washington University in St. Louis	TR-ThA10 Nanotribological Characterization of Percolating Lead Films Above and Below T_c, K. STEVENS, J. KRIM, North Carolina State University
5:20 pm	TF+EM+SS-ThA11 Contact-Free Electrical Characterization of Molecular Layers using CREM, H. COHEN, Weizmann Inst. of Science, Israel	TR-ThA11 Advanced SP3EC Carbon Nanocomposite Coatings, J. LARSON, United Protective Technologies

Anticipated Schedule
Thursday Morning, November 3, 2011

TIME	SESSION	ROOM
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		

Lunch

when _____

with _____

where _____

Anticipated Schedule
Thursday Afternoon, November 3, 2011

TIME	SESSION	ROOM
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		

Biomaterial Interfaces
Room: East Exhibit Hall - Session BI-ThP

Biomaterial Interfaces Poster Session
6:00 pm

BI-ThP1 Physicochemical Characterization of Loop Polymer Brushes Prepared by Immobilization of End-Functionalized Poly(dimethylsiloxane), S. SAKURAI, H. WATANABE, Jst, Erato, Japan, A. TAKAHARA, Kyushu University, Japan

BI-ThP2 Surface Modification of Polylactic Acid (PLA) Fibers for Use as Tissue Engineering Scaffolds, N.M. TAMBE, M.W. KING, A. EL SHAFEI, North Carolina State University

BI-ThP3 Application of Layer-By-Layer Coatings to Tissue Scaffolds – A Novel Approach for Developing a Pro-Angiogenic Biomaterial, C.D. EASTON, CSIRO Materials Science and Engineering, Australia, S.L. MCARTHUR, Swinburne University of Technology, Australia, A.J. BULLOCK, S. MACNEIL, University of Sheffield, UK

BI-ThP4 In Situ Surface Initiated Enzymatic DNA Polymerization: Potential for Multiplexed Molecular Detection, L. TANG, V. TJONG, A. CHILKOTI, S. ZAUSCHER, Duke University

BI-ThP5 Plasma-based Approaches for Biointerface Preparation, E.H. LOCK, S.H. NORTH, S.G. WALTON, C.R. TAITT, Naval Research Laboratory (NRL)

BI-ThP6 A Novel ALD Al_2O_3-Parylene Bi-Layer Encapsulation for Biomedical Implantable Devices, X. XIE, L.W. RIETH, F. SOLZBACHER, University of Utah

BI-ThP7 Complementary Electronic and Vibrational Circular Dichroism Analysis of Bovine Serum Albumin Adsorbed on Hydroxyapatite Microspheres, K.P. FEARS, Naval Research Laboratory, D.E. DAY, Missouri University of Science and Technology, D.Y. PETROVYKH, International Iberian Nanotechnology Laboratory, T.D. CLARK, Naval Research Laboratory

BI-ThP9 Binding Affinities of *wt* and H93R PTEN to Lipid Membranes Containing PS and $PI(4,5)P_2$, S. SHENOY, Carnegie Mellon University, A. GERICKE, Kent State University, A.H. ROSS, University of Massachusetts Medical School, M. LÖSCHE, Carnegie Mellon University and National Institute of Standards and Technology

BI-ThP10 Membrane Binding and Structure for Cytoplasmic Domain of Zeta Subunit of T Cell Receptor, P. SHEKHAR, Carnegie Mellon University, F. HEINRICH, Carnegie Mellon University and National Institute of Standards and Technology, K. ZIMMERMAN, University of Massachusetts Medical School, M. LÖSCHE, Carnegie Mellon University and National Institute of Standards and Technology, L.J. STERN, University of Massachusetts Medical School

BI-ThP11 Microfluidic Bacterial Adhesion Assay to Characterize the Easy to Clean Properties of Surfaces, M.P. ARPA SANCET, C. CHRISTOPHIS, S. BAUER, A. ROSENHAHN, M. GRUNZE, Universität Heidelberg, Germany

Spectroscopic Ellipsometry Focus Topic
Room: East Exhibit Hall - Session EL-ThP

Spectroscopic Ellipsometry Poster Session
6:00 pm

EL-ThP1 Microstructure and Dispersive Optical Parameters of Tungsten, Titanium and Tungsten-Titanium Films, V.V. ATUCHIN, T.I. GRIGORIEVA, A.S. KOZHUKHOV, V.N. KRUCHININ, L.D. POKROVSKY, Institute of Semiconductor Physics, Russian Federation, C.V. RAMANA, University of Texas at El Paso

EL-ThP2 Temperature Dependences of the Dielectric Response of InSb Measured by Spectroscopic Ellipsometry, J.J. YOON, T.J. KIM, S.Y. HWANG, M.S. DIWARE, Y.D. KIM, Kyung Hee University, Republic of Korea, Y.C. CHANG, Academia Sinica, Taiwan, Republic of China

EL-ThP3 Tailored Helical Nanostructures Investigated with Mueller Matrix Ellipsometry, R. MAGNUSSON, J. BIRCH, C.-L. HSAIO, P. SANDSTRÖM, H. ARWIN, K. JÄRRENDAHL, Linköping University, Sweden

EL-ThP4 Study of the Thin Film Growth of Volatile Condensable Material via In Situ Ellipsometry and Quartz Crystal Microbalance Measurements, J. PU, F. ZHOU, N.J. IANNO, The University of Nebraska

EL-ThP5 Combined Electrochemical Impedance Spectroscopy and In Situ Spectroscopic Ellipsometry of Anodically Grown SiO_2, E.A. MONTGOMERY, University of Nebraska - Lincoln, T.E. TIWALD, J.A. Woollam Co., Inc., E. SCHUBERT, M. SCHUBERT, University of Nebraska - Lincoln, C. BEASLEY, Gamry Instruments, C. BRILEY, University of Nebraska - Lincoln

EL-ThP7 In Situ Spectroscopic Ellipsometry of Nanoscale Germanium Films Deposited via High Power Impulse Magnetron Sputtering, N. MURPHY, Air Force Research Laboratory, L. SUN, Air Force Research Laboratory and General Dynamics Information Technology, A. WAITE, Air Force Research Laboratory and Universal Technology Corporation, J. JONES, R. JAKUBIAK, Air Force Research Laboratory

Electronic Materials and Processing
Room: East Exhibit Hall - Session EM-ThP

Electronic Materials and Processing Poster Session

6:00 pm

EM-ThP1 Novel Quantized Edge States on Ag(111), A.R. DILULLO, Ohio University, D. ACHARYA, Pacific Northwest National Laboratory, N. TAKEUCHI, Universidad Nacional Autonoma de Mexico, S. ULLOA, S.-W. HLA, Ohio University

EM-ThP2 Fabrication of Multilayered Bi_2Te_3/Sb_2Te_3 and $Bi_2Te_3/Bi_2Te_{3-x}Se_x$ Thin Film Cooling Devices, M. HINES, J. LENHARDT, Alabama A&M University, M. LU, Brookhaven National Laboratory, Z. XIAO, Alabama A&M University

EM-ThP3 Solution-Based High Performance and Fully Patterned Chalcogenide Thin Film Transistors, J.I. MEJIA, A. SALAS-VILLASENOR, A. CARRILLO-CASTILLO, B.E. GNADE, M.A. QUEVEDO-LOPEZ, University of Texas at Dallas

EM-ThP4 Novel Materials and Device Structures for Solid-State Charged Particle Detectors, J.W. MURPHY, J.I. MEJIA, B.E. GNADE, M.A. QUEVEDO-LOPEZ, University of Texas at Dallas

EM-ThP5 Structural and Electrical Characteristics of TaN Film Deposited by DC Sputtering for MOS Capacitor and Schottky Diode Upper Electrodes, L.P.B. LIMA, J.A. DINIZ, State University of Campinas, Brazil, C. RADTKE, Federal University of Rio Grande do Sul, Brazil, I. DOI, J. MIYOSHI, A.R. SILVA, J. GODOY FO, State University of Campinas, Brazil

EM-ThP6 TiAlO and TiAlON Obtained by e-Beam Evaporation with Additional Electron Cyclotron Resonance (ECR) Plasma Oxidation and Oxynitridation on Si for MOS Gate Dielectric, J. MIYOSHI, A.R. SILVA, F.A. CAVARSAN, J.A. DINIZ, L.P.B. LIMA, State University of Campinas, Brazil

EM-ThP7 Exploring Thermal Reduction Efficiency of Reduced Graphene Oxide with Alcohols Studied by First - Principles Calculations and Infrared Spectroscopy, R.M. ABOLFATH, C.G. GONG, M. ACIK, Y.J. CHABAL, K. CHO, The University of Texas at Dallas

EM-ThP8 Characterization of Ion Implantation-Induced Vacancy Defects and Graphitization in Diamond Lattices by Coherent Acoustic Phonon Spectroscopy, J.M. GREGORY, A.D. STEIGERWALD, Vanderbilt University, H. TAKAHASHI, Japan Advanced Institute of Science and Technology, Japan, N.H. TOLK, Vanderbilt University

EM-ThP9 New Reconstruction Mechanism of Dense SiC(111) on Sparse Si(110) Interface, E. ABAVARE, University of Tokyo, Japan, J.-I. IWATA, University of Tsukuba, Japan, A. OSHIYAMA, University of Tokyo, Japan

EM-ThP10 The Influence of the Layer Thickness on the Optoelectronic Properties of InN, M.K.I. SENEVIRATHNA, S. GAMAGE, R. ATALAY, Georgia State University, J. HONG, Georgia Institute of Technology, N. DIETZ, A.G.U. PERERA, Georgia State University

EM-ThP11 The Effect of Reactor Pressure on the Optoelectronic Properties of InN Epilayers Grown by HPCVD, M.K.I. SENEVIRATHNA, S. GAMAGE, M. BUEGLER, R. ATALAY, Georgia State University, J. HONG, Georgia Institute of Technology, N. DIETZ, A.G.U. PERERA, Georgia State University

EM-ThP12 Effect of Buffer Layers on Structural and Optical Properties of InN Films by RF-MOMBE, W.C. CHEN, National Applied Research Laboratories, Taiwan, Republic of China, S.Y. KUO, Chang Gung University, Taiwan, Republic of China, F.-I. LAI, Yuan-Ze University, Taiwan, Republic of China, C.-T. LEE, C.N. HSIAO, D.P. TSAI, National Applied Research Laboratories, Taiwan, Republic of China

EM-ThP13 The Influence of Ammonia - MO Precursors Pulse Separation on the Gallium Incorporation in Indium-Rich $In_xGa_{1-x}N$ Epilayers, S. GAMAGE, R. ATALAY, M.K.I. SENEVIRATHNA, Georgia State University, J. HONG, Georgia Institute of Technology, J.S. TWEEDIE, R. COLLAZO, North Carolina State University, N. DIETZ, Georgia State University

EM-ThP14 Thermal Stability of HPCVD Grown InN Epilayers, A.R. ACHARYA, S. GAMAGE, N. DIETZ, B.D. THOMS, Georgia State University

EM-ThP15 Substrate Template and V/III-Ratio Effects on the Surface and Structural Properties of HPCVD Grown InN Films, A.R. ACHARYA, M. BUEGLER, R. ATALAY, S. GAMAGE, Georgia State University, J.S. TWEEDIE, R. COLLAZO, North Carolina State University, N. DIETZ, B.D. THOMS, Georgia State University

EM-ThP16 P-Si / N-type GaN Heterojunction, J. KIM, J. AHN, Korea University, Republic of Korea

EM-ThP17 CIGS Thin Film Prepared by One-Step Sputtering Process by Using a Powder Target, S. OH, G. CHO, N. KIM, Chosun University, Republic of Korea

EM-ThP18 Effects of Ta Addition on the Characteristics of ITO Thin Film Transistors by Sputtering, S.M. CHUNG, J.H. SHIN, C.H. HONG, W.S. CHEONG, ETRI, Republic of Korea

EM-ThP19 Infrared Absorption Enhancement in Silicon via Silicidation and Nanoparticle Incorporation, C.M. GONZALEZ, R. SACHAN, G. DUSCHER, R. KALYANARAMAN, P.D. RACK, University of Tennessee, Knoxville

EM-ThP20 Fabrication of Shape-Controlled Metal Nanodot Array by Electrostatistically-Driven Self-Assembly as well as their Charge Injection Properties, R. SUMI, Nagoya University, Japan, T. HOSOI, H. WATANABE, Osaka University, Japan, X. HU, O. TAKAI, N. SAITO, N. ZETTSU, Nagoya University, Japan

EM-ThP21 Small-Molecule Scaffolds for Directed Self-Assembly, P. MANCHENO-POSSO, A.J. MUSCAT, University of Arizona

EM-ThP22 Deposition of Organic and Inorganic Hybrid Laminates using Ozone Based ALD (Atomic Layer Deposition), S. LEE, NCD Technology, J. HUANG, M. LEE, University of Texas at Dallas, P.-R. CHA, University of Texas at Dallas and Kookmin Univ., Korea, J. KIM, University of Texas at Dallas

EM-ThP23 Simple Methods to High Quality Self-Assembled Monolayers of Alkylsilanes on Oxides, B.D. GATES, Y. GONG, A. LIU, H.W. NG, M. WANG, Simon Fraser University, Canada

EM-ThP24 Deposition and Characterization of Hydrophobic Coatings on Electronic Devices, V. GUPTA, S.C. KUNZLER, M.R. LINFORD, Brigham Young University

Energy Frontiers Focus Topic
Room: East Exhibit Hall - Session EN-ThP

Energy Frontiers Poster Session

6:00 pm

EN-ThP1 Development of Analysis System for Evaluating Carrier Lifetime in Organic Thin Film Solar Cell, K. NAITO, KAST, Chuo Univ., Japan, M. SAKAI, H. TAKEI, KAST, Japan, K. NAKATA, KAST, Tokyo Univ. Sci., Japan, K. KATAYAMA, Chuo University, Japan, K. TAKAGI, KAST, Japan, A. FUJISHIMA, KAST, Tokyo Univ. Sci., Japan

EN-ThP2 Reactivation of Thermionic Electron Emission from Nitrogen Doped Diamond Films by Atomic Hydrogen Exposure, M. ZUMER, V. NEMANIC, B. ZAJEC, Jozef Stefan Institute, Slovenia, F.A.M. KOECK, R.J. NEMANICH, Arizona State University

EN-ThP3 Self-powered Environmental Sensor System Driven by Nanogenerators, M. LEE, J. BAE, Georgia Institute of Technology, J.H. LEE, Seoul National University, Republic of Korea, C. LEE, Korea Electronics Technology Institute, Republic of Korea, S. HONG, Seoul National University, Republic of Korea, Z. WANG, Georgia Institute of Technology

EN-ThP4 Effect of Inserting a Thin Buffer Layer on Obtainable Efficiency in n-ZnO/p-Cu_2O Heterojunction Solar Cells, T. MINAMI, T. MIYATA, Y. NISHI, J. NOMOTO, Kanazawa Institute of Technology, Japan

EN-ThP5 Surface Texturing of Silicon for Solar Cells for CMOS Technology, A.R. SILVA, J. MIYOSHI, F.A. CAVARSAN, L.P.B. LIMA, J.A. DINIZ, State University of Campinas, Brazil

EN-ThP6 Plasma Characterization of HF-PECVD Amorphous Si Thin Film Solar Cells by Optical Emission Spectroscopy, Y.Y. CHANG, S.Y. LIEN, Y.S. CHO, C.F. CHEN, Mingdao University, Taiwan, Republic of China

EN-ThP7 Carrier Life Time of Several Organic Photovaltanic Cells by using Micro Wave Photoconductive Decay, M. SAKAI, Kanagawa Academy of Science and Technology (KAST), Japan, K. NAITO, KAST, Chuo Univ., Japan, H. TAKEI, KAST, Japan, K. NAKATA, KAST, Tokyo Univ. Sci., Japan, K. KATAYAMA, Chuo University, Japan, K. TAKAGI, KAST, Japan, A. FUJISHIMA, KAST, Tokyo Univ. Sci., Japan

EN-ThP8 Making Molecular Multilayers using "Click" Chemistry: Growth, Characterization, and Application in p-Type Dye Sensitized Solar Cells, P.K.B. PALOMAKI, P.H. DINOLFO, Rensselaer Polytechnic Institute

EN-ThP9 Powder-Sputtered Cu(In,Ga)Se_2 Thin Films: Nonstoichiometric Influences on Optical and Electrical Characteristics, N. KIM, J. JEON, W. LEE, Chosun University, Republic of Korea

EN-ThP10 Indium-Doped CdS Thin Film by He-Ne Laser Exposure for CIGS Solar Cells, K. MYUNG, N. KIM, W. LEE, Chosun University, Republic of Korea

EN-ThP11 Three-Terminal Tandem Devices for PV, TPV and CPV Applications, M. EMZIANE, Masdar Institute, United Arab Emirates

EN-ThP12 The Advantage of State of the Art DC Power Supplies Over the Pulsed DC Power Supplies for TCO Magnetron Sputtering, P. ROZANSKI, P. OZIMEK, M. ZELECHOWSKI, P. LACH, W. GLAZEK, Huettinger Electronic Company, Poland

EN-ThP13 Photogenerated Current Enhanced by Surface Plasmon Resonance in Metal Grating, D.J. LEE, Inha University, Republic of Korea

EN-ThP14 The Science of Precision Multifunctional Nanostructures for Electrical Energy Storage, A. PREDITH, University of Maryland, College Park

EN-ThP15 Photosystem I-Based Solar Cells, D. GUNTHER, D.E. CLIFFEL, G.K. JENNINGS, Vanderbilt University

EN-ThP16 Thickness Dependent Photo-Voltaic Effect In Ferroelectric PLZT Thin Films, S. KOTRU, H.V. NAMPOORI, The University of Alabama, Tuscaloosa

EN-ThP17 Nanostructure Analysis of Diamond Cold-Cathode Field Emitter, T.C. WADE, N. GHOSH, J.E. WITTIG, W.P. KANG, Vanderbilt University, L.F. ALLARD, K. UNOCIC, Oak Ridge National Laboratory, J.L. DAVIDSON, N.H. TOLK, Vanderbilt University

Magnetic Interfaces and Nanostructures
Room: East Exhibit Hall - Session MI-ThP

Magnetic Interfaces and Nanostructures Poster Session

6:00 pm

MI-ThP1 Investigations of Ni and Co Magnetic Overlayers at the Advanced Photon Source, G.D. WADDILL, T. KOMESU, Missouri University of Science and Technology, S.W. YU, J.G. TOBIN, Lawrence Livermore National Laboratory

MI-ThP2 Microstructure, Static and Dynamic Magnetic Properties of Thin Co Films Obtained using DC-Magnetron Sputtering, S.A. MAKLAKOV, I.A. RYZHIKOV, K.N. ROZANOV, A.V. OSIPOV, O.YU. KASURKIN, Institute for Theoretical and Applied Electromagnetics RAS (ITAE RAS), Russian Federation, V.A. AMELICHEV, Moscow State University, Russian Federation

MI-ThP3 A Facile and Controllable Two-Step Electrodeposition Technique in Synthesis of Nanostructures of Metal Oxides on Carbon Nanotube S, J. YANG, S. GUNASEKARAN, University of Wisconsin-Madison

MI-ThP4 Magnetic Properties and Size Control of $Zn_{0.95}Mn_{0.05}O$ Nanorods Deposited by Pulsed Laser Deposition, T.C. WU, Y.C. YEH, D.R. LIU, D.Y. CHIANG, National Applied Research Laboratories, Taiwan, Republic of China

MI-ThP5 Characterization of Metal Oxides Tunnel Barriers for use in a Non-Local Spin Detection Device, A. MATSUBAYASHI, College of Nanoscale Science and Engineering, the University at Albany-SUNY

MI-ThP6 ***In Situ*** Scanning Tunneling Spectroscopy on Ordered, Epitaxial $La_{5/8-x}Pr_xCa_{3/8}MnO_3$ Films, Z. GAI, Oak Ridge National Laboratory, M. GAO, Chinese Academy of Sciences, P.C. SNIJDERS, H.W. GUO, T.Z. WARD, Oak Ridge National Laboratory, H.J. GAO, Chinese Academy of Sciences, J. SHEN, Fudan University, China

Plasma Science and Technology
Room: East Exhibit Hall - Session PS-ThP

Plasma Science and Technology Poster Session
6:00 pm

PS-ThP1 Anomalous Copper Contamination Observed during Hydrogen Plasma Processing, A. ZAKHAROV, GlobalFoundries, Germany, P. GEISSBUHLER, C. WALDFRIED, Axcelis Technologies, R. SONNEMANS, Axcelis Technologies, GmbH, Germany, I.L. BERRY III, Axcelis Technologies

PS-ThP2 Real-Time Monitoring of Reactors Wall Status during Silicon and Metal Gate Etching, A.P. MARCHELLI, G.M. PIETROGRANDE, MICRON Semiconductor Italia, Italy

PS-ThP3 Reaction Process of Si Surfaces with Hydrogen Plasma, K. HARA, M. SHINOHARA, Y. TAKAMI, Y. TAKAKI, Y. MATSUDA, H. FUJIYAMA, Nagasaki University, Japan

PS-ThP4 Comparative Study on Atmospheric Pressure Plasma Modification on Packaging Material using Microwave and DBD Sources, J.M. HONG, Y.L. WU, T.S. CHO, D.N. RUZIC, University of Illinois at Urbana Champaign

PS-ThP6 Inductively Coupled Plasma-Enhanced Atomic Layer Deposition of Platinum Nano-particles and Platinum Thin Films Using Ar/O_2 Plasma, B.H. LIU, C.C. KEI, C.C. YU, D.Y. CHIANG, C.N. HSIAO, National Applied Research Laboratories, Taiwan, Republic of China

PS-ThP7 Properties and Performance of TiN, TiCN Coatings on Stainless Steel for Commercial Production Equipment, Y.L. WU, J.M. HONG, T.S. CHO, D.N. RUZIC, University of Illinois at Urbana Champaign

PS-ThP8 The Dry Etching Properties of $Na_{0.5}K_{0.5}NbO_3$ Thin Films in Inductively Coupled Plasma, Y.H. JOO, J.C. WOO, C.I. KIM, Chung-Ang University, Republic of Korea

PS-ThP9 The Dry Etching Properties of IZO Thin Films in High Density CF_4/Ar Plasma, J.C. WOO, C.I. KIM, Chung-Ang University, Republic of Korea

PS-ThP10 The Dry Etching Properties of TaN Thin Film Using Inductively Coupled Plasma, J.C. WOO, Y.H. JOO, C. LI, C.I. KIM, Chung-Ang University, Republic of Korea

PS-ThP11 Mass Spectroscopy of Metastable Atomic Species in Gas Analysis and Processing Plasmas at High Spectrometer Source Pressures, D. SEYMOUR, A.J. REES, C. GREENWOOD, S. DAVIES, M. BUCKLEY, Hiden Analytical

PS-ThP12 Cutoff Probe Using Fourier Analysis for Electron Density Measurement, B.K. NA, K.H. YOU, D.W. KIM, Korea Advanced Institute of Science and Technology, Republic of Korea, S.J. YOU, Korea Research Institute of Standards and Science, Republic of Korea, S.H. SEO, H.Y. CHANG, Korea Advanced Institute of Science and Technology, Republic of Korea

PS-ThP13 Full Wave Simulation Study of Multi-mode Plasma Absorption Probes, C.Y. KAO, W.C. CHEN, K.C. LEOU, C.H. HSIEH, National Tsing Hua University, Taiwan, Republic of China

PS-ThP14 Characteristics of SiO_2 Etching with $Ar/C_4F_8/CHF_3/O_2$ Gas Mixture in 60 MHz/2 MHz Dual Frequency Capacitive Coupled Plasmas, M.H. JEON, S.-K. KANG, J.Y. PARK, G.Y. YEOM, Sungkyunkwan University, Republic of Korea

PS-ThP15 An Experimental Study on Large-Area Multi-Electrode Discharge for the Deposition of Microcrystalline Silicon Thin Film for Solar Cell, Y.S. LEE, S.H. SEO, H.Y. CHANG, Korea Advanced Institute of Science and Technology, Republic of Korea

PS-ThP16 Qualitative Research on Low-Damage Neutral Beam Etching Effect of Mechanical Properties, Y. NISHIMORI, U. SHINJI, K. TOMOHIRO, BEANS Project, Japan, S. MASAKAZU, University of Tokyo and BEANS Project, Japan, G. HASHIGUCHI, Shizuoka University and BEANS Project, Japan

PS-ThP17 Free-standing Anodic Aluminum Oxide on Silicon Substrate by using Neutral Beam Etching, C.K. KIM, K.S. MIN, J.S. OH, G.Y. YEOM, Sungkyunkwan University, Republic of Korea

PS-ThP18 Synchronous Pulsed Inductively Coupled Plasma Source for Controllable Charged Process, K.S. MIN, J.S. OH, C.K. KIM, G.Y. YEOM, Sungkyunkwan University, Republic of Korea

PS-ThP19 Initial Studies of a-Si Deposition and Nano-Crystallization using a Novel Reactor with Rotating Substrates, Z. CHEN, J.A. MUCHA, V.M. DONNELLY, D.J. ECONOMOU, University of Houston, Y. LEE, A.J. AKEY, I.P. HERMAN, Columbia University

PS-ThP20 Fundamental Overview on a Controllable Optical Emission Spectroscopy Diagnostic System for Analysis of Process Chemistry, G. PADRON-WELLS, P.L.S. THAMBAN, The University of Texas at Dallas, J. HOSCH, Verity Instruments Incorporated, L.J. OVERZET, M.J. GOECKNER, The University of Texas at Dallas

PS-ThP21 Fluid Model Simulation of Controllable E-beam, D. URRABAZO, G. PADRON-WELLS, P.L.S. THAMBAN, M.J. GOECKNER, University of Texas at Dallas

PS-ThP22 Characterization of an ECR Etching Reactor using a Retarding Field Energy Analyzer, B. DOLINAJ, D. GAHAN, P. SCULLIN, D. O' SULLIVAN, MB. HOPKINS, Impedans Ltd., Ireland, V. MILOSAVLJEVIC, S. DANIELS, NCPST Dublin City University, Ireland

PS-ThP23 Simulations of the Radial Line Slot Antenna Plasma Source, P. VENTZEK, Tokyo Electron America, S. MAHADEVAN, L. RAJA, Esgee Technolgies, T. IWAO, Tokyo Electron Technology Development Institute, INC., L. CHEN, M. FUNK, B. LANE, R. SUNDARARAJAN, Tokyo Electron America, J. YOSHIKAWA, Tokyo Electron Technology Development Institute, INC., J. ZHAO, Tokyo Electron America, T. NOZAWA, C. TIAN, K. ISHIBASHI, Tokyo Electron Technology Development Institute, INC.

PS-ThP24 Dual-Coil, Dual-Frequency ICP Source for Plasma Processing, V. NAGORNY, D. LEE, Mattson Technology, Inc.

PS-ThP25 Development of Inductively Coupled Hydrogen Plasma Source with a Ceramic Tube, J. CHO, J. YANG, PSK Inc., Republic of Korea, S. PARK, D. LEE, Inha University, Republic of Korea

PS-ThP26 Capability of Microwave Plasma Source for 450 mm Etching Apparatus, S. OBAMA, M. IZAWA, H. TAMURA, Hitachi High-Technologies Corp., Japan, K. MAEDA, Hitachi Ltd., Japan

PS-ThP27 Plasma-based Techniques for Doping Three-Dimensional Structures, G. PAPASOULIOTIS, K. HAN, H. PERSING, L. GODET, Varian Semiconductor Equipment Associates, Inc.

PS-ThP28 Study of Low-k Dielectric Damage in a Radial Line Slot Antenna (RLSA) Reactor, Y. SUSA, Tokyo Electron Technology Development Institute, INC., R. SUNDARARAJAN, J. ZHAO, L. CHEN, Tokyo Electron US Holdings Ltd., T. NOZAWA, Tokyo Electron Technology Development Institute, INC., J.A. MUCHA, D.J. ECONOMOU, V.M. DONNELLY, University of Houston, R. WISE, IBM Research

Transparent Conductors and Printable Electronics Focus Topic
Room: East Exhibit Hall - Session TC-ThP

Transparent Conductors and Printable Electronics Poster Session
6:00 pm

TC-ThP1 A Combinatorial Thin Film Sputtering Approach of the Synthesis and Characterization of Al_2O_3-TiO_2 High-k Dielectrics for Oxide TFT Application, J.H. NOH, J. NOH, P.D. RACK, The University of Tennessee

TC-ThP2 Fabrication and Characterization of Sub-micron OTFT Using Ink Jet Combined Imprint Process, K. KIM, N. KWON, I. CHUNG, Sungkyunkwan Univ., Republic of Korea

TC-ThP3 Study on Multiple Stacked 6,13-bis(triisopropylsilylethynyl) (TIPS) Pentacene for Improved Organic Thin Film Transistor, J.J. HAN, K. KIM, I.J. BAE, I. CHUNG, Sungkyunkwan Univ., Republic of Korea

TC-ThP4 Catalyst-assisted Pulsed Laser Deposition of Tin (IV) Oxide on Si Substrates: Growth Evolution of Low-dimensional Nanostructures, K.T. LEUNG, University of Waterloo, Canada

TC-ThP5 From Discrete and Hollow Nanocavities to the Formation of Continuous Indium-Filled Indium Oxide Nanotubes, M. KUMAR, South Dakota State University, B.R. MEHTA, J.P. SINGH, Indian Institute of Technology-Delhi, India

Tribology Focus Topic
Room: East Exhibit Hall - Session TR-ThP

Tribology Focus Topic Poster Session
Moderator: S. Perry, University of Florida

6:00 pm

TR-ThP1 Subsurface Characteristics of an Abraded Fe-0.4wt%C Martensitic Steel using Nanoindentation and Cross-Sectional TEM Techniques, F. KATSUKI, Sumitomo Metal Industries, Limited, Japan

TR-ThP2 The Lubrication Characteristics of Molybdenum Disulfide Films by RF Magnetron Sputter, A. KASAHARA, M. GOTO, M. TOSA, National Institute for Materials Science (NIMS), Japan, T. MARUYAMA, J. NAKAGAWA, K. ENDO, Toyama Co., Ltd., Japan

TR-ThP3 Structure of Thin Diamond-Like Carbon Films and its Relationship to its Tribological Performance, F.J. FLORES-RUIZ, F.J. ESPINOZA-BELTRAN, M.O. VAZQUEZ-LEPE, A. HERRERA-GOMEZ, CINVESTAV-Unidad Queretaro, Mexico

TR-ThP4 Tribological Investigations of Octadecylphosphonic Acid (ODP) and Octadecyltrichlorosilane (OTS) Self-Assembled Monolayers: A Comparative Study of MEMS-type Interfaces, N. ANSARI, Auburn University, S. BARKLEY, Luther College, C. BOUXSEIN, M. DERAM, N. EIGENFELD, Saint Olaf College, O. MATTHEWS, Luther College, A. PODA, W.R. ASHURST, Auburn University, B.P. BOROVSKY, Saint Olaf College, E.E. FLATER, Luther College

TR-ThP5 Tribocorrosion of Multi-Layered ZrN/(Ti,Al)N Magnetron Sputtered Coatings, O. JIMENEZ, M. FLORES, E. RODRIGUEZ, J. GARCIA, Universidad de Guadalajara, Mexico

TR-ThP6 The Effect of Test Parameters on the Tribocorrosion Behavior of Multilayers, M. FLORES, O. JIEMNEZ, J. GARCIA, E. RODRIGUEZ, Universidad de Guadalajara, Mexico, L. HUERTA, Universidad Nacional Autononoma de Mexico

FRIDAY SPECIAL EVENTS

11:00 a.m. Albert Nerken Award Lecture, J.E. Rowe, North Carolina State Univ.—210 (CC)

CC = Nashville Convention Center
H = Renaissance Nashville Hotel

FRIDAY SHORT COURSES

8:30 a.m. Vacuum System Design
8:30 a.m. Photovoltaics: The Engineering, Technology and Application of Solar Cells

LOCATION: All AVS Short Courses will be held at – Nashville Convention Center
COURSE HOURS: All AVS Short Course Hours: 8:30 a.m. – 5:00 p.m. – with 1.5 hour break for Lunch *(lunch not included)*

	Spectroscopic Ellipsometry Focus Topic Room: 209 - Session EL+AS+EM+MS+PS+TF-FrM Spectroscopic Ellipsometry: Future Directions and New Techniques Moderators: A.C. Diebold, University at Albany, H. Wormeester, MESA, The Netherlands	Electronic Materials and Processing Room: 210 - Session EM+SS-FrM Surfaces and Materials for Next Generation Electronics Moderators: E.X. Zhang, Vanderbilt University, L. Porter, Carnegie Mellon University
8:20 am	EL+AS+EM+MS+PS+TF-FrM1 Invited Current Trends and Future Outlook for Spectroscopic Ellipsometry, J.N. HILFIKER, B. JOHS, C.M. HERZINGER, T.E. TIWALD, J.A. Woollam Co., Inc.	EM+SS-FrM1 Growth of 3C-SiC Epitaxial Layers on 4H-SiC Step-Free Mesas, R.L. MYERS-WARD, E.A. IMHOFF, J.D. CALDWELL, L.O. NYAKITI, V.D. WHEELER, K.D. HOBART, C.R. EDDY, JR., D.K. GASKILL, Naval Research Laboratory (NRL)
8:40 am	Invited talk continued.	EM+SS-FrM2 Growth of Epitaxial Rare Earth Nanostructures in III-V Semiconductors, B.D. SCHULTZ, J.K. KAWASAKI, C.J. PALMSTRØM, University of California, Santa Barbara
9:00 am	EL+AS+EM+MS+PS+TF-FrM3 THz Optical Hall-effect and MIR-VUV Ellipsometry Characterization of 2DEG Properties in a HfO_2 Passivated AlGaN/GaN HEMT Structure, S. SCHÖCHE, U. of Nebraska - Lincoln, J. SHI, Cornell U., A. BOOSALIS, P. KÜHNE, U. of Nebraska - Lincoln, C.M. HERZINGER, J.A. WOOLLAM, J.A. Woollam Co., Inc., W.J. SCHAFF, L.F. EASTMAN, Cornell U., V. DARAKCHIEVA, Linkoping U., Sweden, M. SCHUBERT, T. HOFMANN, U. of Nebraska - Lincoln	EM+SS-FrM3 Invited Bulk Topological Insulators and Superconductors: Discovery and the Frontier, M.Z. HASAN, Princeton University
9:20 am	EL+AS+EM+MS+PS+TF-FrM4 Vector-Magneto-Optical Generalized Ellipsometry on Sculptured Thin Films, D. SCHMIDT, C. BRILEY, E. SCHUBERT, M. SCHUBERT, University of Nebraska - Lincoln	Invited talk continued.
9:40 am	EL+AS+EM+MS+PS+TF-FrM5 THz Dielectric Anisotropy of Metal Slanted Columnar Thin Films, T. HOFMANN, D. SCHMIDT, A. BOOSALIS, P. KÜHNE, R. SKOMSKI, University of Nebraska-Lincoln, C.M. HERZINGER, J.A. WOOLLAM, J.A. Woollam Co., Inc., M. SCHUBERT, E. SCHUBERT, University of Nebraska-Lincoln	EM+SS-FrM5 Invited High Frequency Electronics based on GaN and Graphene, T. PALACIOS, Massachusetts Institute of Technology
10:00 am	EL+AS+EM+MS+PS+TF-FrM6 A Compact High-speed Spectroscopic Ellipsometer, G. CHIN, ULVAC Inc., Japan	Invited talk continued.
10:20 am		EM+SS-FrM7 Inter-band GaN/InGaN/GaN Tunnel Diodes, S. KRISHNAMOORTHY, D.N. NATH, S. BAJAJ, S. RAJAN, Ohio State University
10:40 am		EM+SS-FrM8 Probing Surface-Induced Fluctuations in Organic Materials using an Atomic Force Microscope, N.C. HOEPKER, S. LEKKALA, R.F. LORING, J.A. MAROHN, Cornell University
11:00 am		EM+SS-FrM9 Invited 2011 AVS Albert Nerken Award Lecture - Electron Spectroscopy of Reconstructed Surfaces: From Silicon to Graphene, J.E. ROWE*, North Carolina State University
11:20 am		Invited talk continued.
11:40 am		EM+SS-FrM11 Molecular Motion Confined to Self-Assembled Quantum Corrals, E. YITAMBEN, R.A. ROSENBERG, N.P. GUISINGER, Argonne National Laboratory

* Albert Nerken Award Winner

	Energy Frontiers Focus Topic Room: 203 - Session EN+AC-FrM Materials Challenges for Nuclear Energy Moderator: L. Petit, Daresbury Laboratory, UK	Graphene and Related Materials Focus Topic Room: 208 - Session GR+MS+EM-FrM Graphene Device Physics and Applications Moderator: D. Gunlycke, Naval Research Laboratory
8:20 am	EN+AC-FrM1 Multi-Electron Correlation in UO2 from Soft X-ray Spectroscopy, J.G. TOBIN, S.W. YU, Lawrence Livermore National Laboratory	GR+MS+EM-FrM1 Invited Fabrication and Characterization of Graphene p-n Junction Devices, J.U. LEE, University at Albany-SUNY
8:40 am	EN+AC-FrM2 Invited New Results from the DOE EFRC on the Materials Science of Actinides, P.C. BURNS, University of Notre Dame	Invited talk continued.
9:00 am	Invited talk continued.	GR+MS+EM-FrM3 Assembled Bilayer Graphene for Electronic Applications, G.G. JERNIGAN, T.J. ANDERSON, J.T. ROBINSON, J.D. CALDWELL, M.D. ANCONA, V.D. WHEELER, L.O. NYAKITI, J. CULBERTSON, A.L. DAVIDSON, A.L. FRIEDMAN, P.M. CAMPBELL, D.K. GASKILL, U.S. Naval Research Laboratory
9:20 am	EN+AC-FrM4 Invited Proof that UO2 is an f-f Electron Correlated System, S.W. YU, J.G. TOBIN, J.C. CROWHURST, Lawrence Livermore National Laboratory, S. SHARMA, J.K. DEWHURST, Max Planck Institute, Halle, Germany, P. OLALDE-VELASCO, W.L. YANG, Lawrence Berkeley National Laboratory, W.J. SIEKHAUS, Lawrence Livermore National Laboratory	GR+MS+EM-FrM4 Metallic Nanowire-Graphene Hybrid Nanostructures and its Application for Flexible Field Emission Devices, M. ARIF, K.H. HEO, B.Y. YANG LEE, J.H. LEE, Seoul National University, Republic of Korea, D.H. SEO, Samsung Advanced Institute of Technology, Republic of Korea, S. SEO, Sejong University, Republic of Korea, J. JIAN, Xinjiang University, China, S. HONG, Seoul National University, Republic of Korea
9:40 am	Invited talk continued.	
10:00 am	EN+AC-FrM6 Atomistic Models for Actinide-Actinde Oxide Interfaces, S.M. VALONE, Los Alamos National Laboratory	GR+MS+EM-FrM6 Rectification at Graphene / Semiconductor Junctions: Applications Beyond Silicon Based Devices, S. TONGAY, X. MIAO, K. BERKE, M. LEMAITRE, B.R. APPLETON, A.F. HEBARD, University of Florida
10:20 am	EN+AC-FrM7 Structure and Properties of New Actinide Oxalates, Precursors of Fuel Materials, C. TAMAIN, B. ARAB-CHAPELET, CEA Marcoule, France, M. RIVENET, F. ABRAHAM, UCCS, France, S. GRANDJEAN, CEA Marcoule, France	GR+MS+EM-FrM7 Imaging of Electron Beam Induced Current in Epitaxial Graphene, S. MOU, J. BOECKL, W.C. MITCHEL, J.H. PARK, Air Force Research Laboratory, S. TETLAK, Wyle Laboratories, W. LU, Fisk University
10:40 am	EN+AC-FrM8 Invited Recent Work on Magnetism, Actinides and Defects at ORNL, G.M. STOCKS, B.C. LARSON, Oak Ridge National Laboratory	GR+MS+EM-FrM8 Potassium-Ion Sensors Based on Valinomycin-Modified Graphene Field-Effect Transistors, Y. SOFUE, Y. OHNO, K. MAEHASHI, K. INOUE, K. MATSUMOTO, The Institute of Scientific and Industrial Research, Osaka University, Japan
11:00 am	Invited talk continued.	GR+MS+EM-FrM9 Band-gap Generation by using Ionic-Liquid Gate in Bilayer Graphene, Y. YAMASHIRO, Y. OHNO, K. MAEHASHI, K. INOUE, K. MATSUMOTO, Osaka University, Japan
11:20 am		GR+MS+EM-FrM10 Electronic Transport in Hydrogenated Graphene Films, B.R. MATIS, J.S. BURGESS, NRC/NRL Postdoctoral Associate, A.L. FRIEDMAN, J.T. ROBINSON, Naval Research Laboratory (NRL), F.A. BULAT, Sotera Defense Solutions, Inc., B.H. HOUSTON, J.W. BALDWIN, Naval Research Laboratory (NRL)
11:40 am		GR+MS+EM-FrM11 First-principles Study of Electronic Properties of Two Dimensional Carbon and Boron Nitride Nanomaterials, S. MUKHERJEE, S.N. Bose National Centre for Basic Sciences, India

	MEMS and NEMS Room: 105 - Session MN-FrM Characterization of Materials and Structures at the Micro- and Nano-scale Moderator: M. Metzler, Cornell University	Plasma Science and Technology Room: 201 - Session PS-FrM Plasma Modeling Moderator: K. Bera, Applied Materials, Inc.
8:20 am	MN-FrM1 Invited Nanomechanics: Controlling Near-Field Interactions between Mechanical Systems, D. LOPEZ, Argonne National Laboratory	PS-FrM1 Delivering Activation Energy to Surfaces in Atmospheric Pressure Plasmas: Local and Remote, Z. XIONG, N.YU. BABAEVA, M.J. KUSHNER, University of Michigan
8:40 am	Invited talk continued.	PS-FrM2 Kinetic Effects in Low Pressure Capacitively Coupled Plasmas, A. LIKHANSKII, P. STOLTZ, Tech-X Corp.
9:00 am	MN-FrM3 Pull-in Experiments on Electrostatically Actuated Microfabricated Meso Scale Beams, Y. GERSON, I. SOKOLOV, Tel Aviv University, Israel, T. NACHMIAS, RAFAEL LTD, Israel, S. LULINSKY, S. KRYLOV, Tel Aviv University, Israel	PS-FrM3 Invited Challenges in Modeling of Plasma Interactions in Medicine and Biology: What Insights Can You Expect?, N.YU. BABAEVA, M.J. KUSHNER, University of Michigan
9:20 am	MN-FrM4 Absorption and Emission of Plasmonic Antenna Arrays, K.E. O'BRIEN, P.H. HOLLOWAY, M.R. DAVIDSON, University of Florida	Invited talk continued.
9:40 am	MN-FrM5 Fast Non-Destructive Method for Measuring Young's Modulus of Diamond Thin Films for MEMS/NEMS Applications, N. MOLDOVAN, Advanced Diamond Technologies	PS-FrM5 Charging Effects in Feature Profile Modeling, P.J. STOUT, A. AGARWAL, S. RAUF, Applied Materials, Inc.
10:00 am	MN-FrM6 Fabrication and Characterization of Structural and Electrical Properties of Ultrananocrystalline Diamond Nanowires, X. WANG, University of Puerto Rico, A.V. SUMANT, V. JOSHI, L.E. OCOLA, B. KABIUS, D. LOPEZ, Argonne National Laboratory	PS-FrM6 Magnetic Field - Plasma Interaction in Low Pressure VHF Capacitively Coupled Plasmas using PIC-MCC/Fluid Hybrid Model, K. BERA, A. AGARWAL, S. RAUF, K. COLLINS, Applied Materials, Inc.
10:20 am	MN-FrM7 Investigation of Heat Transfer Enhancement in Nanofluids with Molecular Dynamics Simulations – Role of Particle Charge and Fluid Polarity, J.D. SCHALL, Oakland University, A.S. COMFORT, U.S. Army RDECOM-TARDEC	PS-FrM7 Simulations of SF_6 Plasma Etching in the GEC Reference Cell, S. LOPEZ-LOPEZ, Quantemol - University College London, UK, J.J. MUNRO, D. BROWN, Quantemol Ltd., UK, J. TENNYSON, University College London, UK
10:40 am	MN-FrM8 Novel CMOS MEMS Double Parallel Plate Capacitive Tactile Sensors For Blood Flow Monitoring, C.J. HSIEH, J.C. LIOU, C.T. SUN, Y.C. LIN, W.-C. TIAN, National Taiwan University	PS-FrM8 Simulation of InP Etching under ICP $Ar/Cl_2/N_2$ Plasma Discharge: Role of N_2 in the Sidewall Passivation, R. CHANSON, A. RHALLABI, M.C. FERNANDEZ, CH. CARDINAUD, J.P. LANDESMAN, Institut des Matériaux Jean Rouxel (IMN), France, S. BOUCHOULE, A. TALNEAU, Laboratoire de Photonique et de Nanostructures (LPN), France
11:00 am	MN-FrM9 A Highly Sensitive Nanomachined TiO_2 Gas Sensor for Micro Gas Chromatography, C.H. CHOU, C.H. CHEN, W.-C. TIAN, National Taiwan University, T.H. CHAN, C.-J. LU, National Taiwan Normal University	PS-FrM9 Three-Dimensional Modeling and Formation Mechanisms of Atomic-Scale Surface Roughness during Si Etching in Chlorine-Based Plasmas, H. TSUDA, Y. TAKAO, K. ERIGUCHI, K. ONO, Kyoto University, Japan
11:20 am		PS-FrM10 Control of the Ion Energy Distribution on a Plasma Electrode, P. DIOMEDE, D.J. ECONOMOU, V.M. DONNELLY, University of Houston
11:40 am		PS-FrM11 Molecular Dynamic Simulation for Selective Etching of Silicon Nitride and Silicon Oxide by Hydrofluorocarbon Ions, R. SHIGEKAWA, M. ISOBE, Osaka University, Japan, M. FUKASAWA, T. TATSUMI, Sony Corporation, Japan, S. HAMAGUCHI, Osaka University, Japan

	Surface Science Room: 107 - Session SS-FrM Surface Science on Graphene Moderator: I.I. Oleynik, University of South Florida	Thin Film Room: 110 - Session TF-FrM Thin Films: Growth and Characterization II Moderator: N.P. Guisinger, Argonne National Laboratory
8:20 am	SS-FrM1 Towards Controlled Growth of a Single-Layer of MoS_2, D. SUN, W. LU, D. KIM, J. MANN, L. BARTELS, University of California, Riverside	TF-FrM1 Low-temperature CVD with Growth Inhibitors to Afford Uniform, nm-thick Films in Structures with Aspect Ratio ~ 200, S. BABAR, J. ABELSON, University of Illinois at Urbana Champaign
8:40 am	SS-FrM2 Oxygen Adsorption on Electronically Modified Graphite Surfaces Studied by Molecular Beam Scattering, J.P. OH, T. KONDO, K. ARAKAWA, Y. SAITO, J. NAKAMURA, University of Tsukuba, Japan	TF-FrM2 Understanding the Role of Hydrogen Impurity Scattering in Manganese Thin Films on the Si(001) Surface, A.J. STOLLENWERK, B.J. FRIEND, University of Northern Iowa
9:00 am	SS-FrM3 Invited Interaction and Thermal Stability of Oxygen Species in Graphene Oxide and Graphene Defects, M. ACIK, C. GONG, G. LEE, K. CHO, C. MATTEVI, M. CHHOWALLA, Y.J. CHABAL, University of Texas at Dallas	TF-FrM3 Elimination of Indium Surface Segregation in InGaN Grown Throughout the Miscibility Gap, M.W. MOSELEY, B. GUNNING, J.E. LOWDER, Georgia Institute of Technology, G. NAMKOONG, Old Dominion University, W.A. DOOLITTLE, Georgia Institute of Technology
9:20 am	Invited talk continued.	TF-FrM4 Aging Effect on the Hydrophilicity of Metal Nanorod Arrays, N. ALBARAKATI, D. YE, Virginia Commonwealth University
9:40 am	SS-FrM5 Graphene on Pt(111) as a Template for Pt Nanocluster Formation, Z. LIANG, H. KHOSRAVIAN, A. UHL, R. MEYER, M. TRENARY, University of Illinois at Chicago	TF-FrM5 Cubic ZnMgO and NiMgO for UV-C Applications, R.C. BOUTWELL, J.W. MARES, M. WEI, W.V. SCHOENFELD, University of Central Florida
10:00 am	SS-FrM6 Ripening Behavior of Pt Clusters on Monolayer Graphene Supported by Ru(0001) and the System's Thermal Stability, C.U. LORENZ, A.K. ENGSTFELD, Ulm University, Germany, H.E. HOSTER, Technische Universität München, Germany, R.J. BEHM, Ulm University, Germany	TF-FrM6 Growth of Fe-Pd Nanoparticles and Thin Films via Pulsed Laser Deposition and the Matrix Assisted Pulsed Laser Evaporation of Metal Based Acetates, M.A. STEINER, J.M. FITZ-GERALD, University of Virginia
10:20 am	SS-FrM7 Invited Mechanisms of Graphene Growth on Metals, N.C. BARTELT, Sandia National Laboratories	TF-FrM7 Remote Plasma Deposited GeO_2 on Ge and Si Substrates, D. ZELLER, G. LUCOVSKY, North Carolina State Univeristy
10:40 am	Invited talk continued.	TF-FrM8 Surface Plasmon Resonance Excited in RuO_2 Films Grown on Glass and on Crystalline (001) TiO_2, L. WANG, K. YANG, C. CLAVERO, E. CRISMAN, V. DINAVAHI, I. NOVIKOVA, R.A. LUKASZEW, College of William and Mary
11:00 am	SS-FrM9 Graphene Moiré Polymorphism on Hydrogenated Ruthenium Surfaces, B. DIACONESCU, University of New Hampshire, F. HAGELBERG, East Tennessee State University, K. POHL, University of New Hampshire	TF-FrM9 Towards Achieving a High Degree of Carbon Ionization in Magnetron Sputtering Discharges, A. AIJAZ, K. SARAKINOS, D. LUNDIN, U. HELMERSSON, Linköping University, Sweden
11:20 am	SS-FrM10 Modifying Ni(111)/Graphene Interfaces by Sn-Ni Interface Alloy Formation, R.Q. ADDOU, A. DAHAL, L. ADAMSKA, I.I. OLEYNIK, M. BATZILL, University of South Florida	TF-FrM10 Kinetics of Sputtered Metal Film Growth on Vertically Aligned Carbon Nanotube Arrays, C. MURATORE, A. REED, A. WAITE, J. BULTMAN, J. HU, T. SMITH, A.A. VOEVODIN, Air Force Research Laboratory
11:40 am		

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Anticipated Schedule
Friday Morning, November 4, 2011

TIME	SESSION	ROOM
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		

Lunch

when _____

with _____

where _____

Anticipated Schedule
Friday Afternoon, November 4, 2011

TIME	SESSION	ROOM
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		

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AVS Co-sponsored/endorsed 2012 Topical Conferences

PCSI 39 (39th International Conference on the Physics and Chemistry of Semiconductor Interfaces)
January 22-26, 2012, Santa Fe, New Mexico
Web: www.pcsiconference.org

Surface Analysis 2012
June 19-22, 2012, Richland, Washington
Web: http://divisions.avs.org/assd/SurfaceAnalysis 2012/default.html

ICMCTF 2012 (International Conference on Metallurgical Coatings & Thin Films)
April 23-27, 2012 San Diego, California
http://www2.avs.org/conferences/ICMCTF

FUTURE SYMPOSIA LOCATIONS

2012 October 28–November 2
Tampa Convention Center
Tampa, Florida

2013 October 27–November1
Long Beach Convention Center
Long Beach, California

2014 November 9–14
Baltimore Convention Center
Baltimore, Maryland

The Tampa Convention Center, Tampa, Florida home of the 2012 Symposium & Exhibition.

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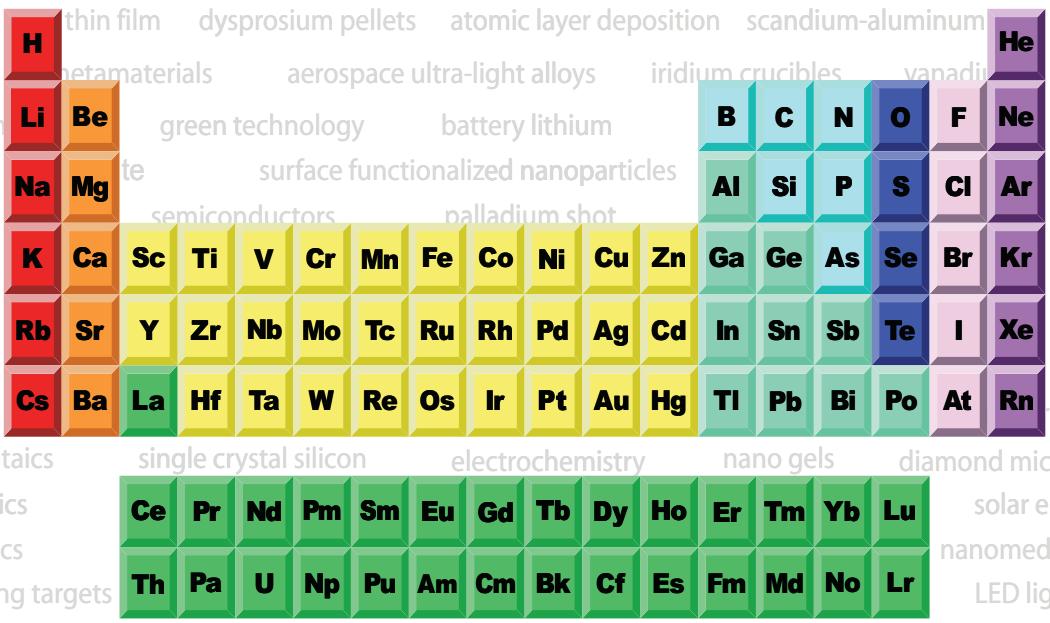

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