



Boston hosts 2008 AVS symposium

GREATER BOSTON CVB

AVS: Science and Technology of Materials, Interfaces, and Processing will present its 55th International Symposium and Exhibition Sunday–Friday, 19–24 October, at the John B. Hynes Veterans Memorial Convention Center in Boston. Titled “From Nano to Astronomical,” it features technical symposia, topical conferences, short courses, exhibitor workshops, and a technical exhibition. Some 3000 scientists, engineers, academics, and students from the US and abroad are expected to attend.

Technical program

Technical symposia span many topics, including biomaterial interfaces, plasma science and technology, and vacuum technology. Program chair Bridget Rogers, associate professor of chemical and biomolecular engineering at Vanderbilt University, says a number of special events have been planned. “We have put together an amazing program this year,” says Rogers. “I am really excited.” Albert Fert of the Université Paris–Sud, winner of the 2007 Nobel Prize in Physics, will present a talk entitled “Spin Transport Between Spin-Polarized Sources and Drains: Advantage of Carbon Nanotubes on Semiconductors” on Wednesday afternoon. On Tuesday morning the frontiers of nanoscience will be explored during an invited session hosted by the nanometer-scale science and technology division. Talks will center on such topics as nanoelectronic circuits, nanolithography, and atomic force and scanning tunneling microscopy.

“We’re doing things a little differently this year,” says Rogers. “We’ve taken four topics that cross the boundaries of all the divisions, grouped them together, and called them focus topics.” The four focus topics center on biological, organic, and soft materials; energy; nanomanufacturing; and tribology. Representatives of all divisions put together the sessions, thereby providing a much broader view of each topic, according to Rogers. Four topical conferences—on bioMEMS, graphene, in situ microscopy and spectroscopy, and synchrotron-based spectroscopy and spectro-microscopy—also will be offered.

The 50th annual Industrial Physics Forum will be located with the AVS symposium. Titled “Frontiers in Imaging: From Cosmos to Nano,” it will be held 19–22 October and centers on the theme of digital imaging, with sessions on astronomical imaging, bio-imaging, materials imaging, and marine and terrestrial imaging. The IPF finishes off with its always popular session on frontiers in physics, which highlights the most exciting current research in all fields.

As is tradition, the biomaterial interfaces division will open the AVS meeting with its Sunday afternoon plenary session. “Bio-inspired Catalysis, Energy Production, and Transduction: Opportunities and Challenges” centers on bio-based energy production, with particular emphasis on the development of artificial photosynthetic devices and advances in the field of bio-fuel cells. On Monday afternoon, the division will also present an invited ses-

sion honoring Bengt Kasemo of Sweden’s Chalmers University of Technology for his contributions to the field.

On Monday afternoon the plasma science and technology division honors the contributions to plasma science of retiring MIT professor Herbert Sawin. World-renowned industrial and academic leaders will speak on advances in plasma–surface interactions. The session is followed by a dinner reception at the Sheraton Hotel. On Tuesday afternoon Sawin will deliver the Plasma Prize Lecture entitled “Three-dimensional Modeling of Surface Profile Evolution During Plasma Etching.”

Special events

Various short courses will be offered from 20 October to 23 October on vacuum and equipment technology, materials processing, and materials and interface characterization. The annual science educators’ workshop for middle- and high-school science teachers, a combination of lecture and hands-on experience, will take place 20–21 October.

The annual exhibition of equipment, services, literature, and new technologies is scheduled for 21–23 October in the convention center. The exhibit attracts international attendees from a variety of industries. Last year’s successful Ask the Experts booth, hosted by the vacuum technology division, returns, so attendees can again bring their questions and problems.

Also in the exhibit hall Tuesday–Thursday will be the AVS Art Zone, entitled “Where Science and Technology Meet Art.” Symposium attendees can submit examples of their research that relate to the meeting’s science and technology, and the submissions will be judged for their aesthetic qualities. The top 50 images will be displayed, and all attendees can vote for their favorite.

As always, several social events have been planned. A welcome mixer is set for Monday, 5:30–7:00pm, in the convention center. On Wednesday morning, the 28th annual 5K run is scheduled at 6:15am. Wednesday evening, the AVS awards ceremony will be presented at the convention center. A list of award recipients is available on PHYSICS TODAY’s website in the We Hear That section, <http://blogs.physicstoday.org/wht/>.

With all the varied programming of the AVS symposium, “We encourage people to think beyond vacuum—the AVS is much more than that,” says Rogers. For more information, go to AVS’s website at <http://www.avs.org>.

Sessions with invited speakers

Sunday, 19 October

afternoon

Bio-inspired Catalysis, Energy Production, and Transduction: Opportunities and Challenges. *Leadbetter, Moore, Heller*
IPF: Astronomical Imaging. *Bernstein, Fabricant, Ellerbroek, Monnier*

Monday, 20 October

morning

Integrative Materials and Processes for MEMS/NEMS. *Piazza*
Catalysis and Alloy Formation. *Goodman*
Atomic Layer Deposition of Hybrid Materials and ALD on 3D Nanostructures. *Engstrom, Nielsch, Pellin*
Plasma Etching for Advanced Interconnects. *Chevolleau*
Graphene and 2D Carbon Nanostructures. *Wu, Chen*
CMOS Extension and Metrology. *Doris, Opila*
IPF: Bio-Imaging. *Cohen, Rugar, Kirchhausen, Hess, Olivier*

afternoon

Honorary Session for Bengt Kasemo. *Besenbacher, Frank, Brisson, Kasemo*
Hydrogen Storage. *Mitlin, Sutter*
Vacuum Cleanliness, Outgassing, Contamination, and Gas Dynamics. *Herbert*
Fabrication at the Micro- and Nanoscales for MEMS/NEMS. *Ocola*
Electron Spectroscopies. *Watts, Fadley*
Reactivity at Oxide Surfaces. *Freund*
Invited Highlights on Plasma-Surface Interactions—Honoring the Distinguished Career of Herbert H. Sawin. *Gottscho*
Materials Issues in Graphene from SiC. *Jernigan, First*
IPF: Materials Imaging with Subatomic Resolution. *Ho, Stockman, Batson, Giessibl, Luecken*

Tuesday, 21 October

morning

Protein and Cell Interactions at Interfaces. *Leckband*
Catalysis for Energy Sustainability. *Marshall, Yudasaka, Norskov*
Vacuum Pumping Technologies, Large Vacuum Systems, Vacuum Modeling. *Conte, Jimenez*
Materials Processing and Characterization for MEMS/NEMS. *Manalis*
Use of Cluster Ion Beams for Surface Analysis. *Wücher*
Dynamics at Surfaces. *Auerbach*
ZnO Materials and Devices. *McConville, Jackson*
Applications of Atomic Layer Deposition I. *Summers*
Advanced Gate Etching. *Turkot*
Graphene and Carbon Electronics. *Bolotin, Geim*
MEMS/NEMS for Biology and Medicine. *Jensen, Paulaitis, Polla, Madou*
Synchrotron-based Spectroscopy and Spectro-Microscopy. *Nilsson, Heske, Zharnikov, Kiskinova*
The Frontiers of Nanoscience. *Williams, Allara, Bonnell, Bode, Morita*
IPF: Marine/Terrestrial Imaging. *Ackleson, Mazel, Widder, Wozencraft, Hubbard*

afternoon

Plasma-deposited Polymer and Organic Surfaces in Biological Applications. *Alexander, Fridman, Wendt*
Protein and Cells Interactions on Micro- and Nanofabricated Substrates. *Lutolf*
Photovoltaics. *van de Sanden, Siebentritt*
Photocatalytic Coatings. *Watanabe, Herrmann*
Vacuum Gauging and Calibration. *Chung*
Magnetic Microscopy and Magnetization Dynamics. *Heinrich, von Bergmann, Mewes*
Practical Surface Analysis. *Fletcher*
Reactions on Gold and Bimetallics. *Hrbek*
Dynamics and Novel Probes. *Wodtke, Havenith*
Complex and Multifunctional Oxides. *Ahn*
Applications of Atomic Layer Deposition II. *Kim*
Fundamentals of Plasma-Surface Interactions I. *Sawin*
Graphene: Characterization, Properties, and Application. *Cho, Chhowalla*
Microfluidics/Lab-on-a-Chip. *Bashir, Grainger, Gerber, Roy*
Synchrotron-based Spectroscopy and Spectro-Microscopy. *Würth, Hitchcock, Perucchi, Lamb*
IPF: Frontiers in Physics. *Gordon, Flanz, Ye, Quigg*

Wednesday, 22 October

morning

Organized and Structured Organic Interfaces. *Zhang, Bussetti, Laskin*

Quantitative Nanoscale Sensing and Single-Molecule Techniques. *Klennerman, Armani*
Electrochemical Storage. *Dillon, Hammond, Nazar*
Atmospheric Pressure Treatments and Hard and Nanocomposite Coatings. *O'Neill, Weltmann, Janssen*
Surfaces and Interfaces in MEMS/NEMS. *Brenner*
Magnetic Thin Films, Nanoparticles, and Nanostructures. *Majetch*
Advanced Data Analysis for Surface Characterization. *Artyushkova*
Surface Structure and Morphology. *Thiel*
High-k Oxides and High Mobility Substrates. *Vogel*
Chemical Vapor Deposition. *Ramanathan*
Plasma Sources. *Holber*
Beyond CMOS. *Lee, Awo-Affouda, MacDonald, Fuhrer*
In Situ Spectroscopy—Interfacial Science and Catalysis. *Salmeron, Tylliszczak, Ade*
Characterization and Imaging of Nanostructures. *Kalinin*

afternoon

Advances in Surface Analytical Methods for Organic and Biological Interfaces. *Nygren*
Quantitative Analysis of Biointerfaces. *Grunze, Roke*
Energy: Tools and Approaches. *Sampath*
Hard and Nanocomposite Coatings: Synthesis, Structure, and Properties II. *Riviere*
Nanotribology and Nanomechanics. *Haugstad*
New Directions in Spintronics. *Moodera, Ross, Pratt, Fert*
Frontiers of Analysis and Combined Materials. *Gilmore*
Structure of Oxide Surfaces and Oxide Heterostructures. *Risse*
Electrons and Electronic Spectra at Surfaces. *Osterwalder*
Molecular and Organic Electronics. *Tao*
Computational and Experimental Studies of Thin Films. *Fichtthorn*
Fundamentals of Plasma-Surface Interactions II. *Graves*
Nanomanufacturing I: Plasma Processing and Materials. *Kortshagen, Humfeld*
In Situ Microscopy and Spectroscopy—Interfacial Science and Catalysis. *Bañares, Däyge, Saka*
Nanoscale Devices and Sensors. *Lim*

Thursday, 23 October

morning

Semiconducting Biointerfaces and Sensors. *Lu*
Engineering Biointerfaces. *Parikh, Steinem*
Energy: Tools and Approaches. *Lin*
Glancing Angle Deposition (GLAD) I. *Lakhtakia*
Advances in Surface Engineering for Friction and Wear Control. *Cavaleiro, Lince*
Magnetic Surfaces, Interfaces, Thin Films, and Heterostructures. *Caruso*
Growth and Etching on Surfaces. *Hines*
Catalysis on Nanoclusters. *Metiu*
Contacts, Interfaces, and Defects in Semiconductors. *Talin, Shur*
Atmospheric Plasma Processing and Micro Plasmas. *Tachibana*
Plasma Modeling. *Bogaerts*
Printable Lithography and Processing. *Rogers, Kumar*
In Situ Spectroscopy—Dynamic Nanoscale Processes. *Sharma, Stach, Yang*
Nanoscale Assembly. *Nealey*

afternoon

Biological and Molecular Applications of Nanostructures. *Spatz*
Plasmonics and Magnetoplasmonics Aimed at Biosensing. *Zhang, Clavero, Lazarides*
Glancing Angle Deposition (GLAD) II. *Zhao*
Water-Surface Interactions. *Kay*
Novel Reactive Surfaces. *Gellman*
Thin Films for Displays and Flexible Electronics. *Ma*
Plasma Diagnostics, Sensors, and Control II. *O'Connell*
Plasma Deposition and Plasma-Enhanced Atomic Layer Deposition and Etching. *Hodson*
Nanomanufacturing II: Nanostructures. *Ferreira, Bawendi, Samuelson*
In Situ Microscopy—Dynamic Nanoscale Processes. *Zaluzec, Huang, Ross, Zhang*
Nanolithography and Manipulation. *Ruiz, Hla*

Friday, 24 October

morning

Pulsed Plasmas in Surface Engineering. *Gudmundsson, Emmerlich*
Environmental Surfaces and Water Interaction with Oxide Surfaces. *Rosso*
Semiconductor Surfaces. *Soukiasian*
Plasma Processing for 3D Integration, Photonics, Optoelectronics, and Memory Devices. *Chebi*
Nanoscale Processes. *Pfefferle*