



Annual AVS symposium convenes in Seattle

SEATTLE CONVENTION AND VISITORS BUREAU

Focusing on interfacial phenomena and nanotechnology, AVS's 54th annual International Symposium and Exhibition takes place 14–19 October at the Washington State Convention Center in Seattle. This year's gathering features conferences, lectures, workshops, and short courses on cutting-edge topics in the ever-expanding field of vacuum technology. All those interested in the development of controlled environments, the measurement and processing of material interfaces and surfaces, and materials and processes in the nanoscale—in not only vacuum but also plasma and biological systems—should attend.

Held every fall by AVS: Science and Technology of Materials, Interfaces, and Processing, the symposium draws some 3000 scientists, professors, engineers, technicians, and students from the US and abroad. Subjects cover such diverse areas as biomaterials, environmental science, microelectromechanical and nanoelectromechanical systems (MEMS/NEMS), plasma science and technology, and thin films. This year's schedule includes 121 technical sessions and presentation of more than 1300 papers and posters.

The Energy Challenge

For the second consecutive year, the American Institute of Physics's Industrial Physics Forum will meet in conjunction with the AVS annual symposium. The theme this year is the Energy Challenge. "AVS was planning a topical conference on renewable energy," says John Russell, head of the surface chemistry branch at the US Naval Research Laboratory and this year's AVS symposium program chair. "And we thought that the energy challenge was a theme which the IPF could augment. So it's a topic we are covering synergistically." The IPF will host five half-day sessions on automotive energy, energy efficiency, nuclear energy, energy for low-

carbon impact, and frontiers in physics. And at AVS's topical conference on renewable energy science and technology, car-company representatives will speak on future automotive developments and experts will discuss hydrogen and other fuel alternatives.

Nanoscience and nanotechnology dominate the AVS program this year, with 37 technical sessions devoted to nanoscale technology. A topical conference on nanomanufacturing features four sessions, spread out over Tuesday and Wednesday, 16–17 October, and includes discussion of MEMS/NEMS, semiconductor nanostructures, nanomanufacturing of materials, and information technologies.

AVS's plenary lecture will be given at noon Monday by James Heath, the Elizabeth W. Gilloon Professor and professor of chemistry at Caltech, professor of molecular and medical pharmacology at UCLA, and director of the National Cancer Institute's nanosystems biology cancer center. In his lecture, "Nanosystems Biology and New Technologies for In Vitro and In Vivo Diagnostics of Cancer," he will discuss new medical practices and quantitative measuring tools, which involve microfluidics and nanotechnology. Using cancer as an example, he will discuss state-of-the-art diagnostic technologies and how they will impact treatment.

Another hot topic is in the area of plasmonics. Harry Atwater, Howard Hughes Professor and professor of applied physics and materials science at Caltech, will speak on Monday, at 8:40am, on "Plasmonics: A Route to Optical Metamaterials and Nanoscale Optical Devices." He will discuss new optical device technologies and methods of transmitting optical signals through nanoscale structures.

Besides energy, nanomanufacturing, and plasmonics, other topical conferences include in situ electron microscopy, marine biofouling, and study-

ing biointerphases and magnetism with neutrons. Two featured topics are tribology and global health technologies. Session topics in tribology include friction, wear, and lubrication, as well as adhesion and nanomechanics. The biomaterials plenary session features three lectures addressing public health needs on a global scale, including discussion of new diagnostic techniques.

Prevailing throughout is the theme of surfaces/interfaces and their measurement, manipulation, and processing. There are technical sessions on advanced surface engineering, applied surface science, biomaterial interfaces, magnetic interfaces and nanostructures, surface science, and, of course, vacuum technology. Nine short courses will be offered, spanning three broad categories: vacuum and equipment technology, materials and interface characterization, and materials processing.

Special events

AVS will present its honors at its annual Awards Assembly, scheduled for Wednesday, 17 October, at 6:15pm, followed by a reception. For the second year in a row, AVS is sponsoring the Art Zone Contest, in which participants can enter scientific images to be judged by the other attendees for their artistic merit. The top 50 will be on display during the symposium, and monetary prizes will be awarded for first, second, and third place. Also on display will be examples of glasswork by local artists. At the Ask the Experts booth in the Exhibit Hall, experts in the field of vacuum technology will be on hand to answer questions about particular problems. The booth will be open Tuesday–Thursday during normal exhibit hours. To promote social and scientific networking among attendees and exhibitors, a welcome mixer will be held Monday, 15 October, from 5:30pm to 7:00pm in the convention center. For more information, go to AVS's website at <http://www.avs.org>.

Sessions with invited speakers

Sunday, 14 October

afternoon

IPF: Automotive Energy. *Sperling, Turner, Tamor, McCormick*
Biomaterials Plenary Session. *Durvasula, Rodriguez, Yager*

Monday, 15 October

morning

IPF: Energy Efficiency. *Kazmerski, King, Bell, Nakamura, Kenderdine*
Plasma Modeling. *Makabe*
Plasma Etching for Advanced Interconnects I. *Nozawa, Neureuther*
Catalysis on Clusters and Nanoparticles. *Bowker*
Biological Interactions at the Marine Interface. *Callow, Liedberg, Walker, Chen*
Quantitative Surface Analysis I. *Baer, Powell, Walton*
Organic Materials and Devices. *Street*
Atomic Layer Deposition and Applications. *Gleason, Gladfelter*
Materials Processing, Characterization, and Fabrication Aspects. *Pacheco*
Nanoscale Assembly and Manipulation I. *Wolf*
Hard and Nanocomposite Coatings. *Vetter, Petrov*
Structure-Property Characterization. *Dahmen, Kabius, Robertson, Zuo, Howe*
Plasmonic Nanostructures and Plasmon Manipulation. *Atwater, Hohenau, Nordlander*

afternoon

IPF: Nuclear Energy. *Hawryluk, Campbell, Peters, Hill*
Plasma Processing for High-*k*, III-V, and Smart Materials. *Pearton*
Water-Surface Interactions. *Held*
Control of Marine Bioadhesion. *Genzer, Wooley, Rosenhahn, Brennan*
Quantitative Surface Analysis II. *Vickerman, Seah, Renaud*
Electronic and Vibrational Structure. *Ueba*
Emerging Topics in Atomic Layer Deposition. *Knez*
Materials Processing, Characterization, and Fabrication Aspects. *McEuen, Edelstein*
Pulsed Plasmas in Surface Engineering. *Martinu, Ehiassarian*
Dynamics of Nanostructures. *Takeda, Sharma, Stach, Olsson*
Plasmon Dynamics and Magnetoplasmonics. *Stockman, Guyot-Sionnest, Petek*

Tuesday, 16 October

morning

IPF: Energy for Low-Carbon Impact. *Carlson, Bierbaum, de Jager, Himmel, Burruss*
Plasma Enhanced Atomic Layer Deposition and Plasma Deposition. *Jeon, Kessels, Massines*
Advanced Gate Etch. *Lill*
Catalytic Chemistry of Hydrocarbons. *Mavrikakis*
Proteins at Interfaces. *Elbert, Heinecke*
Surface Analysis and Related Methods for Biological Materials. *Moon*
Surface Structure and Growth on Metals. *Weitering*
Molecular Electronics. *Kushmerick*
Two-Dimensional Carbon Nanostructures. *de Heer*
Integration and Packaging in MEMS/NEMS. *Lal*
Imaging of Nanostructures. *Klie, Ginger*
Glancing Angle Deposition. *Brett*
Applications to Biological Materials and Soft Matter. *Katsaras, Chen, Lu, Nylander, Tanaka*
Plasmon-Mediated Sensing and Biosensing. *Corn, Perez-Luna, Coe*

afternoon

IPF: Frontiers in Physics. *Gabrielse, Kasianowicz, Engheta, Bottke*
Plasma Sources. *Chabert*
Bimetallics and Alloys. *Chen*
Engineered Cellular Interfaces. *Hauch, Parker*
Three-Dimensional Characterization. *Kisielowski*
Excitations at Surfaces. *Sanche*
Semiconductor Nanostructures for Electronics and Optoelectronics II. *Tersoff, Xu*
Surface Chemistry for Atomic Layer Deposition. *Musgrave*
Nanomanufacturing of Materials. *Halas, Postek*
Characterization of Nanostructures. *Hasegawa, Economou*
Naturally and Artificially Nanolaminated Coatings. *Schneider, Högberg*
Magnetism. *Nagler, Klose, Plumer, Wiedenmann*

Wednesday, 17 October

morning

Catalysis for Hydrogen Storage and the Hydrogen Economy. *Schmidt*
Plasmas in Nanotechnology. *Hatakeyama*

Plasma-Surface Interactions I. *Gordon*
Oxide Surface Reactivity. *Netzer*
Nano-engineered Biointerfaces. *Gao, Pun*
Chemical Imaging at High Spatial Resolution and Nanoscale Materials. *Weiss, Eggleston, Lillehei*
Contacts, Interfaces, and Defects in Semiconductors. *Okojie*
Thin Film and Nanoparticle Growth and Characterization. *Palmer*
Nanomanufacturing for Information Technologies. *Herr, Whitman, Wu*
Nanoscale Devices and Nanowires I. *Ross, Ferry*
Photocatalytic Coatings. *Gray, Fujishima*
Phospholipid Bilayers and Membranes. *Lösche, Charitat, Huang, Rheinstadter, Weik*
Magnetic Thin Films and Nanostructures. *Jenkins, Lin*

afternoon

Photovoltaics, Fuel Cells, and Alternative Energy Materials and Applications. *Yang*
Plasma-Wall Interactions. *Singh*
Plasmas and Polymers. *Pargon*
Reactions on Metal Surfaces. *Matsushima*
Nucleic Acid Sequencing and Technology. *Edwards, Barron*
Fabrication and Characterization of Functional Soft Material Surfaces. *Braun*
Oxide Surface Structure I. *Reichling*
Growth and Characterization of Complex Oxides. *Schlom*
Oblique Angle Deposition. *Amar, Karabacak*
Biological and Molecular Applications of Nanoscale Structures. *Vogel*
Nanoscale Devices and Nanowires II. *Fujimoto*
Surfaces and Interfaces in MEMS. *Krim, Maboudian*
Miniature, Portable, and Space Vacuum Applications. *Kline-Schoder, Valek, Semancik*
Nanomagnetic Imaging and Spectroscopy. *Kern*

Thursday, 18 October

morning

Surface Science Challenges for Solar Energy Conversion. *Lewis*
Plasma-Surface Interactions II. *Benedikt*
Plasma Diagnostics I. *Sobolewski*
Oxide Surface Structure II. *Chambers*
Biomimetic Phospholipid Interfaces. *Hristova, Parikh*
Surface Structure of Compound Semiconductors. *Bermudez*
Zinc Oxide. *Look*
Thin Films for Electronic Applications. *Li*
Metrology and Characterization for Manufacturing. *Notte, Kelly*
Biolubrication, Sensing, and Adhesion. *Spencer*
Pumping, Pressure Measurement, and Calibration. *Chew*
Magnetic Semiconductors I. *MacDonald*

afternoon

Plasma Diagnostics II. *Gans*
Plasmas in Bioscience. *Yamashita*
Environmental Surfaces. *Fairbrother*
Surface Analysis and Related Methods for Biological Materials. *Boxer*
Organics and Carbon Films on Silicon. *Buriak*
High-*k*/High-Mobility Substrates and Power Electronics. *Ngo, Ye*
Computational Aspects of Thin Films. *Sinnott*
MEMS Manufacturing. *Winterton, Evans*
Nanoscale Sensors. *Hegner, Colton*
Nanotribology and Nanomechanics. *Warren, Marks*
Adsorption/Desorption Phenomena on Vacuum Materials. *Leisch*
Large Vacuum Systems. *Collins*
Magnetic Semiconductors II. *Zhang*

Friday, 19 October

morning

Thin Films for Displays and Flexible Electronics. *Paine*
Surface Dynamics. *Pascual*
Microbioanalytical Systems. *Parviz, Gomez*
Organic Films II. *Liu*
Nanoparticles. *White*
Nanolithography and Nanoprocess Technology. *Brugger, Simmons, Culpepper*
Friction and Wear of Engineered Surfaces, Macro- to Nanoscale Approaches. *Carpick, Muratore*
Spin Injection, Transfer, and Tunneling. *Flatté, Russek, LeClair*