



Science and Technology of Materials, Interfaces, and Processing

Topical Areas
Biomaterials
Environmental S&T
Magnetic Materials
Manufacturing S&T
Materials Characterization
Materials Processing
MEMS
Microelectronic Materials
Nanometer-Scale S&T
Plasma S&T
Surface Engineering
Surface Science
Thin Films
Vacuum Technology

Contacts
Managing Director
212-248-0200, ext. 222
Exhibition
212-248-0200, ext. 229
Finance
212-248-0200, ext. 224
Marketing/Meetings
530-896-0477

Member Services
212-248-0200, 221
Publications
919-361-2787

Short Courses
530-896-0477

Web/IT
212-248-0200, ext. 223

Officers
President
Gregory J. Exarhos

President-Elect
David G. Castner

Past-President
John N. Russell, Jr.

Secretary
Joe Greene

Treasurer
Stephen M. Rossnagel

Directors
Alison A. Baski
Michael Grunze
Luke D. Hinkle
Ivan G. Petrov
Angus A. Rockett
Susan B. Sinnott

AVS
125 Maiden Lane, 15th Floor
New York NY 10038

Phone: 212-248-0200
Fax: 212-248-0245
E-mail: avsny@avs.org
Web: www.avs.org

MAJOR NANOTECHNOLOGY, ENERGY, AND BIOMEDICAL CONFERENCE AVS 56th
International Symposium & Exhibition in San Jose, CA, Nov.
8-13, 2009

For Immediate Release

For more information contact
Jason Socrates Bardi,
American Institute of Physics
301-209-3091 office
858-775-4080 cell
jbardi@aip.org

Della Miller, AVS
530-896-0477
della@avs.org

October 14, 2009 -- Next month in San Jose, CA, the AVS 56th International Symposium & Exhibition will showcase a spectrum of science and engineering research that is leading to breakthroughs in nanotechnology, alternative energy, materials research, and medicine -- from fuel cells and batteries of the future to programmable materials and innovative approaches to drug design.

The symposium takes place November 8-13, 2009 at the San Jose Convention Center, and reporters are invited to attend the conference free of charge. Registration information can be found at the end of this release.

PRELIMINARY MEETING HIGHLIGHTS

Preliminary meeting highlights are listed below. The full meeting program can be accessed at <http://www.avssymposium.org/Overview.aspx>

- 1) Plenary Lectures on Nanoparticles
- 2) Skin Creams Face Off at Atomic Level
- 3) Thin Films Mimic Gecko Feet and Insect Wings
- 4) A Scaffold for Spinal Cord Injuries
- 5) Growing Neurons on Glass
- 6) Drive-Head/Disk Spacing
- 7) A New Way to Make Mirrors
- 8) Bioink: Printing the Way to Better Health
- 9) Nano-Copper Improves Methanol Production
- 10) Making Fuel Cells with Less Platinum
- 11) Tungsten Nanotubes
- 12) Long Particles Flow with Blood to Deliver Drugs
- 13) Programmable Matter
- 14) Extraordinary Magnetoresistance in Graphene
- 15) Racetrack Memory

1) PLENARY LECTURES ON NANOPARTICLES

The three plenary talks that open the conference will explore nanoparticles, a new class of materials with diverse shapes, size, chemical properties, and programmable functions.

- Joseph DeSimone (UNC-Chapel Hill & NC State University) will describe a roll-to-roll technique developed in his laboratory that exploits lithographic precession from semiconductor processing that allows the fabrication of precisely defined nanoparticles with control over size, shape, deformability and surface chemistry for potential applications in drug delivery. See:

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=BP+NS-SuA-1>

- Sharon Glotzer (University of Michigan, Ann Arbor) will show how computer simulations play a critical role in elucidating how nanoparticle shapes, interactions, and programmability can be exploited to make self-assembled materials as sheets, wires, helices, shells and other complex structures. See:

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=BP+NS-SuA-3>

- Andre Nel (University of California, Los Angeles) will discuss the UC Center for the Environmental Impact of Nanotechnology (CEIN) and its work developing ways to assess the biocompatibility and toxicity of nanomaterials. See:

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=BP+NS-SuA-5>

Also see the CEIN website: <http://cein.cnsi.ucla.edu>

2) SKIN CREAMS FACE OFF AT ATOMIC LEVEL

"The durability of various skin creams were studied by repeated cycling tests. The health and feel of skin are significantly affected by its surface charging and the surface potential of virgin skin, and various cream treated skin was measured to determine the effects of various skin cream using the Kelvin probe method with the AFM..."

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=TR+SS-TuA-11>

3) THIN FILMS MIMIC GECKO FEET AND INSECT WINGS "We have demonstrated that nanostructured polymer thin films can be fabricated by an oblique angle polymerization method. These structures are composed of approximately 40,000,000 aligned columns (approximately 100-150 nm in diameter) per square millimeter similar to the gecko footpad or insect wing. Nanostructured polymer films are envisioned to be useful for specific controlled drug release, metallization (SERS and catalyst applications), tissue targeting as well as antifouling applications..."

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=TF1+SE-TuM-5>

4) A SCAFFOLD FOR SPINAL CORD INJURIES

"Spinal cord injuries are one of the most catastrophic and costly types of injuries since damaged axons in the central nervous system are unable to spontaneously regenerate. Although reconstruction of damaged and diseased neural pathways remains a major hurdle, recent research has shown that aligned electrospun fiber mats can provide contact guidance cues to direct axon growth by acting as a bridging device..."

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=BI-MoA-8>

5) GROWING NEURONS ON GLASS

"Here, we describe a novel hybrid technology of multi-layered microfluidics with compartmentalized chambers containing multiple neuron types for engineering robust and complex neural networks with high resolution organization of synaptic connections..."

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=BM+MN+MS+TF+BI-ThA-3>

6) DRIVE-HEAD/DISK SPACING

"In this talk, I will first review the key surface engineering features (slider air bearing surface, disk topography, overcoat, lubricant, etc.) that enable today's disk drive sliders to fly at nanometer clearances over disk surfaces. I will then describe work going on in our laboratory both to determine the nanoscale origins of friction and to use this understanding to develop future head-disk interfaces that are expected to run in continuous contact..."

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=TR+SE-WeA-7>

7) A NEW WAY TO MAKE MIRRORS

"This paper examines the preparation of silver mirrors by plasma beam deposition, a relatively new technique for thin film fabrication developed and patented by Plasma Quest, Ltd., and licensed by The Aerospace Corporation..."

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=TF2-MoA-10>

8) BIOINK: PRINTING THE WAY TO BETTER HEALTH "We will present the inkjetting of bioink, which may include active compounds such as drugs and living cells as well as non-active, scaffolding materials to build two- and three-dimensional constructs for medical treatment..."

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=IJ+BI+MN+SE+AS-ThM-3>

9) NANO-COPPER IMPROVES METHANOL PRODUCTION "The synthesis of methanol from CO₂ and H₂ (CO₂+3H₂ -> CH₃OH+ H₂O) has attracted considerable attention. It is not only environmentally important due to its application in the conversion of greenhouse gas, CO₂, it is also of great industrial significance because the product, methanol, can serve as a raw material for the synthesis of other organic compounds, besides being used as a liquid fuel..."

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=SS3-TuA-4>

10) MAKING FUEL CELLS WITH LESS PLATINUM "Since cost of this precious metal is one of the main barriers for commercialization of fuel cells, many research efforts are addressed to obtaining higher catalytic activity than the standard carbon-supported platinum particle catalysts used in current PEM fuel cells, with a reduced amount of metal..."

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=PS2+TF-WeM-6>

11) TUNGSTEN NANOTUBES

Following upon the extensive research into the possible use of carbon nanotubes, scientists explore alternative structures. Nanotubes from tungsten disulfide, with tough mechanical properties, might just be defect free, early experiments show.

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=TR+SS-TuA-10>

12) LONG PARTICLES FLOW WITH BLOOD TO DELIVER DRUGS "Many dispersions of colloidal particles with application in materials processing, biological assays, or medicine contain elongated particles ... Recently these particles have been used in drug delivery applications because of the inability of leukocytes to easily rid them from the circulation..."
<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=J+BI+MN-WeM-11>

13) PROGRAMMABLE MATTER

"In this talk I present an overview of our approach and detail some of the analytical and experimental advances towards a programmable matter system we have recently made..."
<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=BM+MN+MS+TF+BI-ThA-1>

14) EXTRAORDINARY MAGNETORESISTANCE IN GRAPHENE "Graphene, a single atom-thick layer of graphite, is a promising electronic material, given its high mobility, high current carrying capabilities and linearly dispersive electronic bands. These qualities make it a promising candidate for magnetic field sensing in an extraordinary magnetoresistance device, allowing for the conceptually smallest magnetic spacing in a structure that is free from thermal magnetic noise..."

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=GR+MI-WeM-2>

15) RACETRACK MEMORY

"Racetrack Memory promises a novel storage-class memory with the low cost per bit of magnetic disk drives but the high performance and reliability of conventional solid state memories. Unlike conventional memories, the fundamental concept of Racetrack Memory is to store multiple data bits, perhaps as many as 10 to 100, per access point, rather than the typical single bit per transistor..."

<http://www.avssymposium.org/Open/SearchPapers.aspx?PaperNumber=MI-ThM-3>

SHORT COURSES

AVS promotes communication, dissemination of knowledge, recommended practices, research, and education in a broad range of technologically relevant topics. One way that it does this is by offering short courses in areas such as - Photovoltaics: The Engineering, Technology and Application of Solar Cells; - Surface Analysis, Interface, and Thin Film Analysis: The Major Methods; and - Reactive Sputtering and Deposition.

To access the complete short course schedule, see:

<http://www.avs.org/education.schedule.aspx>

INFORMATION FOR JOURNALISTS

The AVS 56th International Symposium & Exhibition lasts from November 8-13, 2009 in San Jose, CA. All meeting information, including directions to the San Jose Convention Center is at:<http://www2.avs.org/symposium/>.

Staff reporters and freelance journalists working on assignment for major media outlets are invited to attend the conference free of charge.

Journalist registration instructions can be found at:

<http://www.avs.org/pdf/pressinvite.pdf>.

USEFUL LINKS

Online press room: <http://www.avs.org/inside.press.aspx>

Searchable abstracts:<http://www.avssymposium.org/Open/SearchPapers.aspx>

Full meeting program: <http://www.avssymposium.org/Overview.aspx>

Main meeting page: <http://www2.avs.org/symposium/AVS56/pages/info.html>

ONSITE MEETING PRESS ROOM

The AVS press room will be located in Concourse 1 of the San Jose Convention Center.

Press room hours are Monday-Thursday, 8:00-5:00 pm.

The phone number there is 408-271-6100. Press Kits containing company product announcements and other news will be available on CD-ROM in the press room.

ABOUT AVS

As a professional membership organization, AVS fosters networking within the materials, processing, and interfaces community at various local, national or international meetings and exhibits throughout the year. AVS publishes four journals, honors and recognizes members through its prestigious awards program, offers training and other technical resources, as well as career services