



## Preview: 2011 Materials Research Society Fall Meeting

Hynes Convention Center,  
Boston, Massachusetts

**Meeting:** November 28–December 2

**Exhibit:** November 29– December 1

[www.mrs.org/fall2011](http://www.mrs.org/fall2011)

sulators, oxide semiconductors, diamond electronics, compound semiconductors, ferroelectric and multiferroic materials, and magnetoelectric composites. Novel solution processing strategies for inorganic and hybrid materials, large-area processing and patterning methods, and compliant devices will be featured. The properties of photons in nanomaterials and charges in organic semiconductors will be discussed. New developments in highly energetic materials and multi-functional polymers will be addressed.

**Nanomaterials** explores functional metal-oxide nanostructures, carbon-based nanostructures, nanowires, nanotubes, semiconductor nanocrystals, and metal-hybrid structures. Developments in understanding transport properties in polymer nanocomposites, and self organization and nanoscale pattern formation will be covered. Mechanical methods for nanofabrication, nanopatterning, and nanoassembly, and the safety and toxicity control of nanomaterials will round out the program.

**Biomaterials** addresses the materials science of bioelectronics and biological microelectromechanical systems. Both nanomaterials for cancer applications and biomaterials for tissue regeneration are vital topics that will be covered. The formation and properties of synthetic and biological gels, the processing of biomaterials, the nucleation and growth of biological and biomimetic materials, and the multiscale mechanics of hierarchical materials will be featured.

**Materials exploration** covers materials characterization, including three-dimensional tomography, and advanced scanning probe studies. The dynamics of confined systems and interfaces and the

### 2011 MRS FALL MEETING • Meeting Chairs



**Cammy R. Abernathy**  
University of Florida



**Paul V. Braun**  
University of Illinois-Urbana



**Masashi Kawasaki**  
University of Tokyo



**Kathryn J. Wahl**  
Naval Research  
Laboratory

MRS

The Materials Research Society will hold its 2011 Fall Meeting at the Hynes Convention Center in Boston, Mass., November 28–December 2, 2011. The meeting will include a technical program, tutorials, a plenary session, an awards ceremony, an equipment exhibit, poster sessions, a career center, funding seminars, and other special activities. Symposium proceedings will be published and made available free online to MRS members.

The increasingly cross-disciplinary worldwide activity on materials research culminates every year in the MRS Fall Meeting. Symposium organizers from around the world have created a program of 46 symposia that addresses leading-edge research and captures the extraordinary progress in materials science and technology, featuring an exciting mix of well-established and popular topics. The symposia are organized into the following clusters.

**Energy and the environment** addresses materials challenges in nuclear

energy, fuel cells, and energy storage. The emerging area of solar-fuel generation will be highlighted. The critical materials issues in organic, inorganic, excitonic, and plasmonic solar energy harvesting will be discussed, with a focus on transformational developments. High-performance optical materials, the energy applications of hierarchical three-dimensional structures, and sustainable synthesis of nanomaterials will be covered.

**Functional materials** covers synthesis, fabrication, assembly, and integration of a broad range of materials at different length scales, including topological in-

#### 2011 MRS Fall Meeting Registration Rates

	<b>Pre-Registration</b> Before 5:00 p.m. (EST) November 11, 2011	<b>On-Site Registration</b> After 5:00 p.m. (EST) November 11, 2011
Member	\$470	\$570
Student Member	\$110	\$140
Nonmember	\$570	\$670
Student Nonmember	\$135	\$165
Unemployed/Retired	\$135	\$165

## Hotels in Boston

The 2011 MRS Fall Meeting will be held at the Hynes Convention Center and Sheraton Hotel in Boston, Massachusetts. For your convenience, special room rates have been arranged at the hotels listed below. Rooms are limited at these rates, so make your reservation early. Your patronage of the official hotels enables MRS to secure the meeting space at a greatly reduced cost. Check the MRS website for more information: [www.mrs.org/fall2011](http://www.mrs.org/fall2011).

### ■ Sheraton Hotel

Deadline: November 4, 2011  
Tel: 617-236-2000  
Single - \$184 + tax  
Double - \$194 + tax

### ■ Marriott Boston Copley Place

Deadline: November 4, 2011  
Tel: 617-236-5800  
Single - \$178 + tax  
Double - \$195 + tax

### ■ The Park Plaza Hotel

Deadline: November 4, 2011  
Tel: 617-426-2000  
Single/Double occupancy - \$167 + tax

### ■ The Westin Copley Place Hotel

Deadline: November 4, 2011  
Tel: 617-262-9600  
Single - \$181 + tax  
Double - \$201 + tax

### ■ Hilton Boston Back Bay

Deadline: November 4, 2011  
Tel: (617) 236-1100  
Single/Double - \$181 + tax  
Triple - \$201 + tax  
Quad - \$221 + tax

### ■ Embassy Suites Boston at Logan Airport

Deadline: December 5, 2011  
Tel: (617) 567-5000  
Single/Double - \$129  
Each additional person - \$10

*State and local taxes are currently at 14.45%*



mechanics of materials at the nanoscale will be discussed. New materials and devices for MEMs as well as new combinatorial and high-throughput methods for materials science will be highlighted.

To complement the scientific sessions, tutorials will be offered in several technical areas. Symposium X: *Frontiers of Materials Research* will feature lunchtime lectures aimed at a broad audience to provide meeting attendees with an overview of leading-edge topics. Poster sessions, an integral feature of MRS meetings, will be held during the evenings. The meeting chairs will award the best posters during each session with prizes of up to \$500.

### Special sessions and events

The **Plenary Session** will be held on Monday, Nov. 28 at 6:30 p.m. in the Grand Ballroom of the Sheraton Hotel. This year's plenary speaker is **Eric J. Amis**, director of Physical Sciences at the United Technologies Research Center. Amis will address recent developments in advanced materials in aerospace, power, and construction from both a basic science and industrial perspective.

The **Awards Ceremony** will convene on Wednesday, Nov. 30 at 6:30 p.m. in the Grand Ballroom of the Sheraton Hotel, at which the Von Hippel Award, Turnbull Lectureship, MRS Medal, inaugural Materials Theory Award, and Graduate Student Awards will be presented. The ceremony will be followed by the **Von Hippel Award** address by **A. Paul Alivisatos**, Larry and Diane Bock Professor of Nanotechnology and Director of the Lawrence Berkeley National Laboratory, University of California–Berkeley on the topic of colloidal nanocrystals.

**Phaedon Avouris** of IBM's T.J. Watson Research Center in New York, is the recipient of the **David Turnbull Lectureship**. He will present his lecture on the topic of nanoscience and nanotechnology on Tuesday, Nov. 29 at 5:15 p.m. **MRS Medalist Peidong Yang** of the University of California–Berkeley and founder of Alphabet Energy, Inc. will present his award talk on nanowires on Wednesday, Nov. 30 at 12:15 p.m. Both award lectures will be given in the Grand

Ballroom of the Sheraton Hotel. **Mark Davis** of the California Institute of Technology has been selected to receive the **Fred Kavli Distinguished Lectureship in Nanoscience**. His lecture is scheduled for Sunday, Nov. 27 at 7:00 p.m. in the Grand Ballroom of the Sheraton Hotel.

A special **Acta Materialia Materials and Society Award forum** on vehicle electrification will be held in honor of award recipient Alan Taub, vice president of General Motors Global Research & Development. The full-day forum, chaired by Mark W. Verbrugge of GM Global R&D, will be on Sunday, Nov. 27 beginning at 8:45 a.m. The forum will address the key technology areas required for vehicle electrification and explore the critical materials issues in each area. Developing the required materials solutions will be crucial to realizing the promise of electric vehicles and providing significant energy, environmental, and economic benefits to society.

The **Symposium X lunchtime series** will open on Monday at 12:15 p.m. with a special forum on the U.S. Materials Genome Initiative for Global Competitiveness. This initiative offers a unique opportunity for the research community to discover, develop, manufacture, and deploy advanced materials at least twice as fast as is currently possible and at a fraction of the cost. The panelists will be Harriet Kung, director of Basic Energy Sciences at the Department of Energy; Ian Robertson, director of the Division of Materials Research at the National Science Foundation; and Cyrus Wadia, assistant director of Clean Energy & Materials R&D at the White House Office of Science and Technology Policy.

Two presentations in Symposium X will address materials for energy. MRS Medalist Peidong Yang will speak on Wednesday about nanowires for solar energy conversion. Yang said, "The generation of fuels by the direct conversion of solar energy in a fully integrated system is an attractive goal." Yang will describe several recent examples using semiconductor nanowires and their heterostructures for the purpose of solar-to-electricity and solar-to-chemical energy conversion. On Thursday, Hideomi



Koinuma, professor emeritus of the University of Tokyo and founding member of the Sahara Solar Breeder project, will also discuss challenges to a global energy future. The goal of his project is to utilize the high silicon content of desert sand to provide energy worldwide. The project is a collaborative effort between Japan and Algeria.

Symposium X speaker David G. Cahill of the University of Illinois at Urbana-Champaign will present “eXtremes of heat conduction—Pushing the boundaries of the thermal conductivity of materials.” Recently, long-established limits in the thermal conductivity of materials have successfully been pushed back. Cahill will describe measurements of nanoscale thermal transport properties using various ultrafast optical pump-probe metrology tools covering a broad thermal conductivity spectrum from nanotube interfaces to low-dimensional quantum magnets. Cahill’s presentation is on Tuesday.

A number of exciting free events will take place on **SUPER SUNDAY**, November 27. Events include **tutorials** and professional development seminars including the **Women’s Professional Development Workshop**, which will feature consultant Jan Yager. Yager, who has a PhD degree in sociology, will lead the workshop on “Effective Time Management for the New Millennium.”

The **Women in Materials Science and Engineering Breakfast** will feature **Gwendolyn Boyd**, executive assistant to the Chief of Staff at Johns Hopkins University Applied Physics Laboratory, on the topic of Women in Engineering: A Premier Power Source.

**Government agency seminars** will be held including representatives from

the National Science Foundation (NSF), the Department of Energy (DOE), the National Institutes of Health (NIH), and additional agencies who will offer attendees information on funding opportunities in materials research.

Additional instructional seminars include **Making the Most Out of Broadcast Media Workshop** and a **Mastering Science Presentations Seminar**, both given by communications specialist Tim Miller of Spoken Science. In Broadcast Media, participants can get some training in how to publicize their research in the media, including how to craft a newsworthy message, and how to best prepare for and execute a media interview. In this popular professional development session, attendees learn the fundamentals of sharing science, and how to choose the very best tools to do the job of communication.

In addition, a **Science as Art** competition will be held. The competition is open to all registered meeting attendees. Prizes of up to \$400 will be awarded. The deadline for entries closes on October 18, 2011.

On November 29, 7:00 p.m. to 9:00 p.m., a re-training session will be held for evaluators for the Accreditation Board for Engineering and Technology, Inc. (ABET).

### Career services, student events, and networking opportunities

MRS will host a **Career Center** for meeting attendees, to be held Nov. 29–Dec. 1 at the Hynes Convention Center. Services include access to current job postings, a resume file for prospective employers, and onsite interview opportunities.

The Meeting Chairs are also arrang-

ing an interactive session on careers in academia. This will take place on Sunday, Nov. 27, at 1:30 p.m. to 5:00 p.m.

**Gold and Silver Graduate Student Awards** will be presented during the Awards Ceremony to graduate students whose academic achievements and current materials research display a high level of excellence and distinction.

Graduate students and members of MRS University Chapters are invited to attend the **student mixer**, and chapter officers and faculty advisors are invited to attend a **meeting of MRS University Chapter representatives** to compare notes on recent activities and brainstorm new projects and issues of common concern. Those interested in starting new chapters are also welcome. Details will be available on the MRS website.

### For more information

See the following pages for a list of exhibitors and more Meeting announcements.

**The deadline to pre-register for the meeting is November 11, 2011, 5:00 p.m. (EST).** International travelers are reminded to allow ample time to obtain a visa, if necessary. For additional details about the meeting, contact MRS Member Services, Materials Research Society, 506 Keystone Drive, Warrendale, PA 15086-7573, USA; e-mail [info@mrs.org](mailto:info@mrs.org), tel. 724-779-3003, and fax 724-779-8313. Details of various events and activities will be published in the *Meeting Guide* available on-site. The MRS website can be accessed for updated information on confirmed talks and details of special events, for more information on obtaining a visa, and for pre-registration: [www.mrs.org/fall2011](http://www.mrs.org/fall2011).

ANNOUNCING...



The 6th International Conference  
of the Africa Materials Research Society

December 11– 16, 2011  
Elephant Hills Resort, Victoria Falls, Zimbabwe



For more details visit  
[www.mrs.org/africa-2011](http://www.mrs.org/africa-2011)





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 Carl Zeiss MicroImaging, LLC  
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 CrystalMaker Software Ltd.  
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 Fischione Instruments  
 FM Lab  
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 Gamry Instruments  
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 Gelest Inc.  
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 Goodfellow Corporation  
 Hamamatsu Corporation  
 HeatWave Labs, Inc.  
 Herzan LLC  
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 Hitachi High Technologies America, Inc.  
 HORIBA Scientific  
 Hummingbird Scientific LLC  
 Huntington Mechanical Laboratories, Inc.  
 Hysitron, Inc.  
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 Data (ICDD)  
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 KP Technology Ltd.  
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 Kyoto Environmental  
 Nanotechnology Cluster  
 Lake Shore Cryotronics, Inc.  
 Laser Quantum Ltd.  
 Leica Microsystems Inc.  
 M. Braun, Inc.  
 MANTIS Deposition Ltd.

Materials Preparation Center,  
 Ames Laboratory  
 Materion Advanced Chemicals  
 MDC Vacuum Products, LLC  
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 METTLER TOLEDO  
 Micro Materials Limited  
 Micro Photonics Inc.  
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 MikroMasch USA  
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 Montana Instruments Corporation  
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 Nano-Master, Inc.  
 NanoAndMore USA Inc.  
 Nanofactory Instruments AB  
 Nanograde LLC  
 Nanolnk, Inc.  
 NANOLANE  
 NanoMagnetics Instruments Ltd.  
 Nanomechanics, Inc.  
 Nanonics Imaging Ltd.  
 Nanosurf, Inc.  
 Nanotec Electronica S.L.  
 Nanotrons Corporation  
 Nanounity  
 Nanovea  
**National Electrostatics Corp.\***  
 National Nanotechnology  
 Infrastructure Network  
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 Nature Publishing Group  
 NBM Design, Inc.  
 Neocera, LLC  
 Netzsch Instruments N.A. LLC  
 NIST/MSD  
 Nor-Cal Products, Inc.  
 NT-MDT Co.  
 Oerlikon Leybold Vacuum  
 Ohio Carbon Blank Inc.  
 Olympus America  
 Omicron NanoTechnology USA  
 omt optische messtechnik gmbh  
 OriginLab Corporation  
 Oxford Applied Research  
 Oxford Instruments America Inc.  
 Oxford University Press  
 PANalytical Inc.  
 Park Systems Inc.  
 PCS Instruments  
 PerkinElmer  
 Photon Technology International, Inc.  
 Physical Electronics  
 Phytron, Inc.  
 Plasma-Therm LLC  
 Plasmaterials, Inc.  
 Plasmionique Inc.  
 Postnova Analytics Inc.  
 Powder Processing and Technology, LLC  
 Princeton Scientific Corp.  
 Process Materials, Inc.  
 Protochips, Inc.  
 PVD Products, Inc.  
 Quantum Design, Inc.

### Hynes Convention Center Level 2

Tuesday, November 29  
 11:00 am – 5:30 pm

Wednesday, November 30  
 11:00 am – 6:00 pm

Thursday, December 1  
 10:00 am – 1:30 pm

Radiant Technologies, Inc.  
 Refining Systems, Inc.  
 Renishaw Inc.  
 Research and PVD Materials Corporation  
 Resodyn Acoustic Mixers, Inc.  
 RHK Technology, Inc.  
 Rigaku Americas Corporation  
 Rigaku Innovative Technologies, Inc.  
 Rocky Mountain Vacuum Tech, Inc.  
 RSC Publishing  
 SAGE Publications  
 Seki Technotron USA  
 Semicore Equipment Inc.  
 Shanghai Optics Inc.  
**Solartron Analytical (AMETEK)\***  
 South Bay Technology, Inc.  
 SP Scientific  
 SPECS Surface Nano Analysis GmbH  
 SPEX SamplePrep LLC  
 SPI Supplies  
 Springer  
 STAB Instruments, Inc.  
 Strem Chemicals, Inc.  
 Super Conductor Materials, Inc.  
 SVT Associates, Inc.  
 TA Instruments  
 Taylor & Francis-CRC Press  
 TCI America  
 TDK-Lambda Americas Inc.  
 Ted Pella, Inc.  
 The Mellen Company, Inc.  
 Thermionics Vacuum Products  
**Thermo Scientific\***  
 Toho Technology  
 Topcon Positioning Systems, Inc.  
 Trek, Inc.  
 Trion Technology, Inc.  
 TSI Inc.  
 UES, Inc.  
 ULVAC Technologies, Inc.  
 VAT, Inc.  
 VG Scienta, Inc.  
 Wafer World Inc.  
 Wiley  
 WITec Instruments Corp.  
**J.A. Woollam Company, Inc.\***  
 World Scientific Publishing Co.  
 XEI Scientific, Inc.  
 XOS  
 Yeagle Technology Inc.  
 Zeta Instruments  
 Zygo Corporation

\*See Ad in This Issue



Join us for a  
**Wine & Cheese  
 Happy Hour Reception**  
 on Wednesday  
 from 5:00 to 6:00 pm