



## Preview: 2016 Materials Research Society Spring Meeting & Exhibit in Phoenix

Phoenix Convention Center, Phoenix, Arizona  
**Meeting:** March 28–April 1 • **Exhibit:** March 29–31  
[www.mrs.org/spring2016](http://www.mrs.org/spring2016)

The 2016 Materials Research Society (MRS) Spring Meeting will be held for the first time in Phoenix, Ariz., March 28–April 1, 2016. The scientific sessions will include many new and developing areas of materials research as well as some well-established and popular topics. To complement the scientific sessions, tutorials will provide detailed introductions to particularly exciting areas of research, while the exhibit will showcase products of interest to the materials community.

Making up the core of the Meeting are six topical clusters of the technical program, encompassing 62 symposia. They are grouped into the following clusters:

**Characterization and Modeling of Materials:** This cluster highlights recent advances in ultrafast spectroscopy and high-resolution structural and functional imaging by electron microscopy and scattering techniques, as well as *in situ* imaging. Several sessions focus on the latest progress in different material fabrication techniques, with oxide-based materials prominently featured.

Innovation can also be found in the symposium where materials science meets architecture.

**Energy and Environment:** Photovoltaics, solar photoelectrochemical energy conversion, fuel cells and electrocatalysis, thermoelectric power generators, and batteries are covered in this large cluster. *Operando* and *in situ* analytical methods are well represented. While solar energy conversion takes center stage in this cluster, we expect a strong presence of the electrochemical energy storage and conversion communities.

**Electronics and Photonics:** This cluster spans the range of electric charge-carrier management to photonic light management and their application in circuits and actual devices. This includes applications in energy harvesting and power management. The role of structural order, disorder, defects and phase changes, and the control thereof down to single defect or photon level are covered at the fundamental level and

at the device level. Flexible device platforms are also covered.

**Materials Design:** Materials can be designed today by tailoring specific structures or interfaces using specific phase transformations, or by using specific materials with unique characteristics. The ultimate goal is to fine-tune and tailor the properties of a material for a specific application. The symposia in this cluster will discuss deliberately designing the interfaces and selecting materials in devices, creating heterostructures, using elastic strain engineering to tune properties, and developing micro-assembly technologies. Phase-change materials, magnetic materials, lanthanide materials, and organic semiconductors all offer routes to specific designed materials and applications. Other symposia are focused on incorporating electronics in textiles, and understanding and applying magnetic materials. Finally, keeping with this theme, one symposium focuses on understanding multiscale behavior in extreme environments.

**Nanotechnology:** This cluster includes sessions on the synthesis, characterization, and properties of nanomaterials, with additional symposia devoted to new trends in one- and two-dimensional nanomaterials, ultrasmall clusters, piezotronic and magnetic nanostructures, carbon-based materials, and metal oxides. Besides the traditional symposia, there are new symposia on responsive optical and magnetic nanomaterials and applications.

**Soft Materials and Biomaterials:** The symposia in this cluster cover a wide

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**Meeting  
 Chairs**

**Christopher A. Bower**  
 X-Celeprint, Ltd.

**Andrew M. Minor**  
 University of California, Berkeley,  
 Lawrence Berkeley National Laboratory

**Roger Narayan**  
 UNC/NCSU  
 Joint Department of Biomedical Engineering

**Izabela Szlufarska**  
 University of Wisconsin–Madison

**Osamu Ueda**  
 Kanazawa Institute of Technology

range of topics, including bioelectronics, self-assembly and hybrid materials, bionanotechnology, and multifunctional biomaterials. Several symposia explore the critical issues involved in interfacing biological systems with synthetic materials for regeneration, imaging, cancer therapies, and sensing. Other areas covered in this cluster include cell-instructive materials, cellular micro-environments and drug delivery, and the biofunctionalization of organic and inorganic materials.

**Symposium X—Frontiers of Materials Research** will feature lectures for the broad materials community on topics at the forefront of research on materials science and engineering. Catherine Oertel, of Oberlin College, and Annette Richards, of Cornell University, will present a talk on Tuesday evening at 5:15 p.m. at the Phoenix Convention Center followed by a short reception. Gerbrand Ceder, University of California, Berkeley, will give a lunchtime lecture at 12:15 p.m. on Wednesday, and John Spence, Arizona State University, will give a lecture at the same time on Thursday, both at the Phoenix Convention Center.

An award ceremony will be held to honor this year's Outstanding Young Investigators and MRS Fellows as well as the recipients of the Innovation in Materials Characterization Award—endowed by Toh-Ming Lu and Gwo-Ching Wang, the Mid-Career Researcher Award—endowed by Aldrich Materials Science, the Postdoctoral Awards, and the Gold and Silver Graduate Student Awards.

## Hotels in Phoenix

MRS receives meeting space at a greatly discounted rate as a result of contracting a large block of sleeping rooms at the official meeting hotels. In order to keep meeting costs as low as possible, we encourage you to utilize official MRS housing while you are attending a MRS meeting. Hotels offering discounted rates for the 2016 MRS Spring Meeting are listed below. To make reservations, visit <http://www.mrs.org/spring-2016-hotels>.

<p>■ <b>Sheraton Grand Phoenix</b> 340 North 3rd St., Phoenix, AZ 85004 602-262-2500 Group Rate: \$149 single/double plus applicable taxes and fees <b>Deadline: March 2, 2016</b></p>	<p>■ <b>SpringHill Suites Phoenix Downtown</b> 802 East Van Buren St., Phoenix, AZ 85006 602-307-9929 Group Rate: \$159 single/double plus applicable taxes and fees <b>Deadline: March 2, 2016</b></p>
<p>■ <b>Hyatt Regency Phoenix</b> 122 North Second St., Phoenix, AZ 85004 602-252-1234 Group rate: \$159 single/double plus applicable taxes and fees <b>Deadline: March 3, 2016</b></p>	<p>■ <b>Radisson Hotel Phoenix Airport</b> 427 North 44th St., Phoenix, AZ 85008 602-220-4400 Group Rate: \$189 single/double plus applicable taxes and fees <b>Deadline: March 5, 2016</b></p>
<p>■ <b>Renaissance Phoenix Downtown Hotel</b> 50 East Adams St., Phoenix, AZ 85004 602-333-0000 Group Rate: \$159 single/double plus applicable taxes and fees <b>Deadline: March 2, 2016</b></p>	<p>■ <b>Hilton Phoenix Suites (4 night minimum)</b> 10 East Thomas Rd., Phoenix, AZ 85012 602-222-1111 Group Rate: \$209 single/double, \$219 triple, \$229 quadruple plus applicable taxes and fees <b>Deadline: February 28, 2016</b></p>
<p></p>	<p>■ <b>Palomar Phoenix</b> 2 East Jefferson St., Phoenix, AZ 85004 602-253-6633 Group Rate: \$239 single/double, \$259 triple, \$279 quadruple plus applicable taxes and fees <b>Deadline: February 26, 2016</b></p>

The Meeting will include a plenary address and a presentation by the recipient of the Fred Kavli Distinguished Lectureship in Materials Science, yet to be announced.

The second edition of iMatSci—Innovation in Materials Science—provides materials-based innovators with a platform to demonstrate the practical applications of their technologies, while connecting these innovators to potential sources of venture capital. An international pool of start-ups will be judged by professional technology innovators and will compete for cash prizes. Spanning parts of two days, iMatSci will begin with Startup Bootcamp: A Skills Workshop on Tuesday afternoon. Wednesday's Innovator Demonstration program will kick off with a keynote address by Stephen Forrest, University of Michigan, on “Transformational innovation” followed by a panel on early stage investing.

2016 MRS Spring Meeting Registration Rates		
	Pre-Registration Valid before 5:00 p.m. ET on March 11, 2016	On-Site Registration Valid after 5:00 p.m. ET on March 11, 2016
Member	\$505	\$625
Student Member	\$110	\$140
Nonmember	\$630	\$750
Student Nonmember	\$135	\$165
Retired	\$165	\$195
Unemployed	\$135	\$165

Poster sessions will be held in the Sheraton, Third Level, Phoenix Ballroom, on Tuesday, Wednesday, and Thursday from 8:00 p.m. to 10:00 p.m. The Meeting chairs will sponsor a Best Poster Award competition, selecting recipients each night on the basis of the posters' technical content, appearance, graphic excellence, and presentation quality.

The popular Science as Art competition will be held again at this Meeting. The competition is open to all registered Meeting attendees. Multiple first-place and second-place awards of \$400 and \$200, respectively, will be presented. Guidelines and the deadline for entries will be available on the 2016 MRS Spring Meeting website.

MRS will host a Career Fair as an extension of its online Career Central Job Board ([jobs.mrs.org](http://jobs.mrs.org)). The Career Fair will provide an opportunity for job

seekers and top employers to discuss career opportunities.

Public outreach activities will include a *Sustainability in Your Community* poster exhibition by MRS University Chapters; engaging stage presentations and hands-on demonstrations about materials sustainability; and career development programs, including a new program on how to integrate sustainability principles into materials research. The Public Outreach Center will feature the Society's outreach programs, highlighting the Focus on Sustainability and Impact of Materials on Society programs. Stop by to meet sustainability leaders and learn about opportunities to participate in MRS outreach.

Graduate students and members of MRS University Chapters are invited to attend the student mixer reception. Also, chapter officers and faculty advisors are invited to attend a meeting of

MRS University Chapter representatives to compare notes on recent activities and brainstorm on new projects and issues of common concern. Those interested in starting new chapters are welcome.

Government Agency Presentations, which include funding opportunities from US and non-US agencies, and various events for professional development and public outreach are also planned.

**The deadline to pre-register for the MRS Spring Meeting is March 11, 2016 (5:00 p.m. EST).** International travelers are reminded to begin the visa process early. For additional information, contact MRS Member Services, e-mail [info@mrs.org](mailto:info@mrs.org); and tel. 724-779-3003.

The MRS website can be accessed for updated information on confirmed talks and details on special events, information on obtaining a visa, and pre-registration at [www.mrs.org/spring2016](http://www.mrs.org/spring2016).

## TUTORIALS Monday, March 28

The 2016 MRS Spring Meeting will feature 14 tutorial sessions covering a variety of topics. Thirteen of the tutorials will complement the scientific sessions, while the fourteenth is a broader impact tutorial that will explore nontraditional information acquisition in materials science. There is no charge to attend the tutorials. All tutorials will be held on Monday, March 28.

An option to purchase tutorial notes, now available in color, at the preregistration price of \$35 will be available on the registration form. After the preregistration period ends, notes will be priced at \$45 and will be available at the Publications Desk on-site at the Meeting.

### BROADER IMPACT TUTORIAL BI-T1:

**Green's Function Method for Multiscale Simulation of Advanced Materials**

1:30 pm–5:00 pm, Room 128 B

### TUTORIAL CM1:

**Aberration-Corrected (Scanning) Transmission Electron Microscopy**

1:30 pm–4:00 pm, Room 122 C

### TUTORIAL EE4:

**Electrode Materials and Electrolytes for Next-Generation Rechargeable Batteries**

8:30 am–12:00 pm, Room 124 A

### TUTORIAL EE9:

**Electrochemical Interfaces—Fundamentals and Applications**

1:30 pm–5:00 pm, Room 125 B

### TUTORIAL EE11:

**Caloric Materials—From Fundamental to Application**

8:30 am–12:00 pm, Room 126 B

### TUTORIAL EE15:

**Teaching the Role of Materials in Sustainable Development—Analytical Frameworks, Crossing Disciplines and Student Engagement**

1:00 pm–5:00 pm, Room 123

### TUTORIAL EP1:

**Organic Excitonic Materials and Devices—OLEDs and Lasers**

8:30 am–12:00 pm, Room 125 B

### TUTORIAL EP4:

**Silicon and Related Materials for Energy Conversion and Storage**

9:00 am–5:00 pm, Room 124 B

### TUTORIAL MD1:

**Creating the Materials Innovation Infrastructure for Materials by Design**

8:30 am–5:00 pm, Room 121 B

### TUTORIAL MD3:

**Discovery of Functional Oxides by Computational and Epitaxial Design**

1:30 pm–5:00 pm, Room 125 A

### TUTORIAL MD4:

**Phase-Change Materials—From Fundamental Properties to Recent Applications**

8:30 am–2:45 pm, Room 121 A

### TUTORIAL NT5:

**The Synthesis, Properties and Applications of Nanodiamond**

8:30 am–11:30 am, Room 125 A

### TUTORIAL NT7:

**Fundamentals of Nanoparticle Adhesion and Removal**

1:30 pm–5:00 pm, Room 128 A

### TUTORIAL SM5:

**Image Analysis for Materials Science and Engineering Using Open-Access Software**

1:30 pm–5:00 pm, Room 126 C



# 2016 **MRS**<sup>®</sup> SPRING EXHIBIT

## PHOENIX CONVENTION CENTER

North Building, Lower Level, Hall 5

### Exhibit Hours

**Tuesday, March 29** 9:30 am–7:00 pm

**Wednesday, March 30** 11:00 am–5:30 pm

**Thursday, March 31** 11:00 am–1:30 pm

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Across International LLC  
AdValue Technology, LLC  
Advanced Research Systems, Inc.  
Aereotech  
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Aldrich Materials Science  
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KP Technology USA Inc.  
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Micro Photonics Inc.  
MMR Technologies, Inc.  
MTI Corporation  
NanoAndMore USA Corp.  
NanoMEGAS USA  
Nanoscience Instruments, Inc.  
Nanoscribe GmbH  
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Park Systems Inc.  
Pine Research Instrumentation  
Plasmaterials, Inc.  
PROTO Manufacturing  
Protochips, Inc.  
Quantachrome Instruments  
Quantum Design, Inc.  
R.D. Mathis Company  
Renishaw Inc.  
Rigaku Americas Corporation  
Rocky Mountain Vacuum Tech, Inc.  
Seki Diamond Systems  
Semicore Equipment Inc.  
Sonoplot, Inc.  
SPECS Surface Nano Analysis, Inc.  
Spectradyne LLC  
SPI Supplies/Structure Probe, Inc.  
Springer  
SPS-Europe B.V.  
STAIB Instruments, Inc.  
Superior Silica, LLC  
SURFACE  
Surface Electro Optics (S.E.O.)  
SVCS Process Innovation  
SVT Associates, Inc.  
Synton-MDP AG  
Taylor & Francis  
Ted Pella, Inc.  
Thermo Scientific  
UC Components Inc.  
Vacuum Technology Inc.  
Verder Scientific, Inc.  
J.A. Woollam Company, Inc.

**For information about exhibit and sponsorship opportunities, visit [www.mrs.org/spring-2016-exhibit](http://www.mrs.org/spring-2016-exhibit)**