



Preview: 2017 Materials Research Society Fall Meeting & Exhibit

Hynes Convention Center and Sheraton Boston Hotel, Boston, Massachusetts

Meeting: November 26–December 1, 2017 Exhibit: November 28–30

www.mrs.org/fall2017

The Materials Research Society (MRS) will hold its 2017 MRS Fall Meeting at the Hynes Convention Center and the Sheraton Boston Hotel in Boston, Mass., November 26–December 1. The Meeting will include technical programming, tutorials, an award ceremony, poster sessions, career fair, and other special activities.

MRS Meetings focus on interdisciplinary materials research worldwide. Symposium organizers from around the world have created a technical program of 54 symposia that address leading-edge research and capture the progress in materials science and technology. The symposia are organized into the following seven clusters.

Symposium clusters

The **Biomaterials and Soft Materials** cluster includes 12 symposia that cover a diverse range of topics, including bio-inspired materials, 2D nanomaterials in health care, and biomaterials for regenerative engineering. The 2D nanomaterials area will include electronic materials and

devices; nanosensors in clinical applications; biosensors in clinical applications; nanomaterials as a sensor platform; biomarker sensing; carbon-based nanomaterials in clinical applications; point-of-care devices for medical applications; and specialized sensors for pediatric, cardiology, and other diseases.

The **Electronics, Magnetics, and Photonics** symposia cover a broad range of advanced materials in electronic and photonic devices and their applications. Ten symposia will cover organic semiconductors, multiferroics and magnetoelectrics, oxide interfaces, diamond electronics, sensors and biotechnology, electronic and ionic dynamics at solid-liquid interfaces, and other materials.

The **Energy and Sustainability** cluster will focus on perovskite materials and devices, a circular materials economy, sustainable solar fuels, energy storage, nuclear materials, and silicon for photovoltaics.

The **Nanomaterials** symposia include carbon quantum dots, anisotropic carbon nanomaterials, functional 1D

nanostructures, 2D noncarbon materials and systems, and nanostructure-based optical bioprobes.

The **Processing and Manufacturing** cluster has roots in materials science, where processing is an essential component. The focus lies in the use of ion beams and plasmas in manufacturing, the importance of modeling in the manufacturing process, the development of sensor technology for environmental modeling, and roll-to-roll manufacturing to achieve hybrid and hierarchical structures in device applications.

The **Theory, Characterization, and Modeling** symposia cover multifunctional and multifrequency scanning probe microscopy, ion-beam technology and applications, mechanical behavior at the micro- and nanoscale, and design, control, and advanced characterization of functional defects in materials.

The **Broader Impact** cluster includes two symposia regarding materials science education partnerships and materials innovation in sustainable agriculture and industry. A panel discussion will focus



2017 MRS[®] FALL MEETING & EXHIBIT

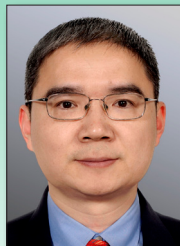
MEETING CHAIRS



Ilke Arslan
Pacific Northwest
National Laboratory



Jason A. Burdick
University of
Pennsylvania



Tao Deng
Shanghai Jiao Tong
University



James B. Hannon
IBM T.J. Watson
Research Center



Sanjay Mathur
University of Cologne

on effective partnerships between community college/university/business for a seamless transition of students from lower division programs into upper division degree programs and workforce.

To complement these sessions, 11 tutorials will be offered covering a variety of topics. All tutorial sessions will be held on Sunday, November 26.

Plenary session and awards

The **Plenary Session Featuring The Fred Kavli Distinguished Lectureship in Materials Science** presentation will be held on Monday, November 27, at 6:30 pm, in the Sheraton Boston Hotel, Grand Ballroom. This year's plenary speaker, **James A. Warren**, is the Director of the Materials Genome Program in the Material Measurement Laboratory at the National Institute of Standards and Technology (NIST). NIST has framed its support for the Materials Genome Initiative around the need for a data infrastructure that enables the rapid discovery of existing data and models, the tools to assess and improve the quality of those data, and the development of new methods and metrologies based on those data.

The **Awards Ceremony** will convene on Wednesday, November 29, at 6:30 pm, in the Sheraton Grand Ballroom. The David Turnbull Lectureship, MRS Medal, Materials Theory Award, MRS Postdoctoral Awards, The Kavli Foundation Early Career Lectureship in Materials Science, Graduate Student Gold and Silver Awards, the Arthur Nowick Graduate Student Award, and Von Hippel Award will be presented. The inaugural *MRS Bulletin* Postdoctoral Publication Prize will be presented during the ceremony. For up-to-date award recipient information, please visit www.mrs.org/fall2017.

Special sessions and events

Throughout the Meeting week, a range of events and activities will honor **Mildred "Millie" Dresselhaus**, the "Queen of Carbon," pioneer of nanoscience and longtime member of MRS. Featured on Monday is the daylong *Special Workshop on Nanomaterials and Their Applications—In Honor of Professor*

TUTORIALS

The 2017 MRS Fall Meeting will feature 11 tutorials covering a variety of topics to complement the symposium sessions.

All tutorial sessions will be held on Sunday, November 26.

Tutorials are free of charge for all registered attendees. Tutorial notes will be available for purchase at the preregistration price of \$35. After the preregistration period ends, notes will be available for purchase for \$45 on-site.

Visit www.mrs.org/fall-2017-tutorial-sessions for locations and tutorial information.

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- BM06** **Future Perspective of 3D Graphene and Beyond**
8:30 am – 12:00 pm
 - EM02** **Magnetic and Magnetoelectric Materials for Memory and Sensing Applications**
1:30 pm – 5:00 pm
 - EM08** **Materials Science of Quantum Computing**
1:30 pm – 5:00 pm
 - ES04** **Grid-Scale Energy Storage Materials and Systems**
1:30 pm – 5:00 pm
 - ES05** **Energy Storage System Materials and Design Safety Considerations—A Materials Perspective**
1:30 pm – 5:00 pm
 - ES07** **Scattering Methods for the Characterization of Materials**
8:30 am – 5:00 pm
 - ES10** **Sustainable Development of Materials**
8:30 am – 5:00 pm
 - ES11** **High-Efficiency Crystalline Silicon Photovoltaics: Fabrication, Devices and Testing**
1:30 pm – 5:00 pm
 - TC01/TC03** **Advanced Imaging and Spectral Data Analysis via Multivariate Statistical Methods**
8:30 am – 5:00 pm
 - TC02** **In Situ Studies of Materials Transformations (TEM and X-Ray)**
1:30 pm – 5:00 pm
 - TC04** **Long Timescale Atomic Simulations in Materials Science**
8:30 am – 5:00 pm

WWW.MRS.ORG/FALL-2017-TUTORIAL-SESSIONS

Millie Dresselhaus for her life-long contribution and impact to materials research.

Symposium X talks provide Meeting attendees with an overview of leading-edge topics. **Margaret Murnane**, University of Colorado Boulder, will

present "Capturing Nanoscale Materials Properties Using Tabletop Coherent Soft X-Ray Beams" on Monday, November 27; **Yunan Xia**, Georgia Institute of Technology, will present "Toward Affordable and Sustainable Use of

Noble-Metal Nanocrystals in Catalysis and Nanomedicine” on Tuesday, November 28; **Jennifer A. Lewis**, Harvard University, will address “Printing Soft Matter in Three Dimensions” on Wednesday, November 29; and **Nam-Gyu Park**, Sungkyunkwan University, South Korea, will discuss “History, Progress, and Perspective of Halide Perovskite Photovoltaics” on Thursday, November 30. All talks will take place from 12:15 to 1:15 pm at the Sheraton Boston Hotel.

Poster sessions, an integral feature of MRS Meetings, will be held in the evenings. The Meeting chairs will award

prizes of up to \$500 for the best posters during each evening session.

The **Focus on Sustainability** program will run seminars on incorporating sustainability into research in a comprehensive way, while considering real-world applications of these principles to product design and manufacture. The seminars are aimed at materials researchers at all career stages, from students to postdocs to faculty and industry researchers. There will also be a panel discussion “Materials Needs for Energy Sustainability by 2050: The Role of the Circular Economy” on Thursday, November 28, at 7:00 pm.

Throughout the week, **Science in Videos (SciVid)**, a high-impact materials science video competition, will showcase finalists as they compete for recognition and prizes. Members will be asked to vote on their favorite videos from the SciVid competition finalists to determine the People’s Choice winner. A viewing station and instructions will be located at the Public Outreach Center in the The Hub—Hall D, Level 2, Hynes Convention Center, and in several locations throughout the Meeting. The SciVid award ceremony will take place on The Hub Stage, Wednesday, November 29 at 4:30 pm. For more information, visit www.mrs.org/sci-vid.

An **ABET (Accreditation Board for Engineering and Technology) Information and Evaluator Retraining Session** will be offered to anyone who wants to learn more about the process, is preparing for an upcoming accreditation visit, or wants to ask questions about how to prepare a materials department for an accreditation visit. The training session will be held on Tuesday, November 28, from 7:15 to 9:30 pm, and can be attended without registering for the Meeting. Remote access will be available if unable to attend in person. New to this Meeting, there will be an ABET Information Booth. The MRS Accreditation Subcommittee and Charles Hickman, Chief Constituent Relations Officer at ABET, will host an informational discussion about the ABET accreditation program on Monday, November 27, from 5:30 to 6:30 pm, on The Hub Stage, and are available for follow-up at the ABET Booth in the Exhibit Hall.

The **National Science Foundation** will provide speed coaching sessions for Meeting attendees at the Public Outreach Center on Tuesday, November 28 and Wednesday, November 29. The Division of Materials Research will be present to discuss funding opportunities, future program ideas, and sustainability.

iMatSci (Innovation in Materials Science) Innovator Showcase will be held Monday and Tuesday, November 27–28 in the The Hub. Each of the selected innovators will have space in The Hub. These finalists will present their technologies using various forms of media

HOTELS IN BOSTON

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 and minimize the financial risk to MRS, we encourage you to utilize official MRS housing while you are attending an MRS meeting. Hotels offering discounted rates for the 2017 MRS Fall Meeting are listed below. To make reservations, visit www.mrs.org/fall-2017-hotels.

■ Sheraton Boston Hotel

Deadline: November 5, 2017

39 Dalton St., Boston, MA 02199

617.236.2000 or 888.627.7054

Group Rate: \$203/single; \$213/double; \$20/each additional person.*

■ Boston Park Plaza

Deadline: November 3, 2017

50 Park Plaza at Arlington St., Boston, MA 02116

617.426.2000 or 800.225.2008

Group Rate: \$175/single; \$175/double; \$195/triple; \$215/quad.*

■ Boston Marriott Copley Place

Deadline: November 1, 2017

110 Huntington Ave., Boston, MA 02116

617.236.5800

Group rate: \$198 single; \$215 double; \$225/triple; \$235/quad.*

■ Embassy Suites Boston at Logan Airport

Deadline: November 6, 2017

207 Porter St., Boston, MA 02128

617.567.5000

Group Rate: \$159/single; \$10/each additional person.*

■ Hilton Boston Back Bay Hotel

Deadline: November 3, 2017

40 Dalton St., Boston, MA 02115

617.236.1100

Group Rate: \$210 single/double; \$230 triple/quad.*

■ The Colonnade Hotel

Deadline: November 3, 2017

120 Huntington Ave., Boston, MA 02116

617.424.7000

Group Rate: \$197/single; \$197/double; \$227/triple; \$257/quad.*

■ The Westin Copley Place

Deadline: November 5, 2017

10 Huntington Ave., Boston, MA 02116

617.262.9600

Group Rate: \$199/single; \$209/double; \$20/each additional person.*

* plus applicable taxes and fees

Discounted room rates will be available until specified deadlines or until the group block is sold out, whichever comes first.

WWW.MRS.ORG/FALL-2017-HOTELS

such as videos and prototypes. iMatSci is designed to showcase technologies that have not yet been productized, but where there is a working prototype or evidence of a repeatable process. The entities behind these innovations will generally be early stage and pre-revenue; however, iMatSci will also consider showcasing innovative technologies that are emerging from an existing corporate entity. Visit www.mrs.org/fall-2017-imatsci for more information.

The **Women in Materials Science and Engineering Breakfast** will be held on Wednesday, November 29, at 7:00 am. The guest speaker will be Linda Sapochak from the National Science Foundation.

Representatives from several government agencies will present overviews of **Research Funding Opportunities** on Tuesday, November 28 and Thursday, November 30, at 5:30 pm. This event has been reformatted to allow MRS Meeting attendees the opportunity to meet directly with various program officers after an overview from each agency in a small group setting to allow for one-on-one interactions, questions, and comments.

The **2017 MRS Fall Meeting Career Fair** will be held in The Hub, Tuesday and Wednesday, from 11:00 am to 5:00 pm. The Career Fair will provide an opportunity for Meeting participants and top employers to discuss career opportunities, and will feature recruiters and on-site interviews, career development sessions, and resume critiques and mock interviews. Students, postdocs, and seasoned professionals are all welcome.

The **Research Mentor Training Workshop** will be held on Sunday, November 26, from 1:00 to 4:00 pm, with a networking reception to follow, in the Sheraton Boston Hotel. Preregistration is required.

REGISTRATION RATES

2017 MRS Fall Meeting registration includes a complimentary one-year membership to MRS beginning January 1, 2018, through December 31, 2018.*

| | PREREGISTRATION before 5:00 pm (ET) November 10, 2017 | ON-SITE REGISTRATION after 5:00 pm (ET) November 10, 2017 |
|---|---|---|
| Meeting Registration | \$655 | \$795 |
| Meeting Registration with MRS Member Discount | \$530 | \$660 |
| Student Registration | \$150 | \$180 |
| Student Registration with MRS Member Discount | \$115 | \$145 |
| Unemployed | \$140 | \$170 |
| Retired | \$170 | \$200 |

* For a complete list of member benefits, visit www.mrs.org/membership.

The popular **Science as Art** competition will be held again at this Meeting. The competition is open to all registered Meeting attendees, with entries to be on display in the Exhibit Hall at the Hynes Convention Center. Multiple first-place and second-place awards of \$400 and \$200, respectively, will be presented. Guidelines and deadlines for entry will be available on the 2017 MRS Fall Meeting website.

A number of other events will take place throughout the Meeting, including professional development opportunities. To stay up to date with additional events and activities, access www.mrs.org/fall2017.

For more information
Registration for the 2017 MRS Fall Meeting includes a complimentary

one-year membership to MRS beginning January 1, 2018, through December 31, 2018. The deadline to preregister for the Meeting is November 10, 2017, 5:00 pm (ET). 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; email info@mrs.org, tel. 724-779-3003, and fax 724-779-8313. Details of various events and activities will be available via the MRS Meeting App and in the Program & Exhibit Guide available on site. The MRS website can also be accessed for updated information on confirmed talks, details of special events, information on obtaining a visa, and for preregistration: www.mrs.org/fall2017.



SciVid Science in Video
COMpetition

www.mrs.org/sci-vid

Submit your video today!
SUBMISSION DEADLINE: October 30, 2017

2017 MRS® FALL EXHIBIT

Hynes Convention Center | Level 2

WWW.MRS.ORG/FALL-2017-EXHIBIT

Tuesday, November 28 11:00 am – 5:30 pm
Wednesday, November 29 11:00 am – 5:30 pm
Thursday, November 30 10:00 am – 1:30 pm

1-Material Inc.
abcr GmbH
ABET
Across International
ACS Publications
Admiral Instruments
AdValue Technology, LLC
Advanced Polymer Materials Inc.
Advanced Research Systems, Inc.
Aerotech, Inc.
AIP Publishing
AJA International, Inc.
Alemnis AG
American Physical Society
Amunel Manufacturing Corp.
Anasys Instruments
ANCORP
Andeen-Hagerling, Inc.
Anderson Dahlen Inc., Applied Vacuum Division
Angstrom Engineering Inc.
Angstrom Sciences Inc.
Angstrom Scientific Inc.
Annealsys
Anton Paar USA
Applied Surface Technologies
Asahi Spectra Co., Ltd.
Asylum Research, an Oxford Instruments Company
attocube systems Inc.
B&W Tek
Barnett Technical Services
Bio-Logic USA, LLC
Biolin Scientific, Inc.
Blue Wave Semiconductors, Inc.
BNNT, LLC
Brooks Automation, Inc.
Bruker
Bruker AFM Probes
Bruker Nano Surfaces
Cambridge Polymer Group, Inc.
Cambridge University Press/Materials Research Society
Chemat Scientific
Cornell University
CRAIC Technologies, Inc.
CRC Press, Taylor & Francis Group
CrystalMaker Software Ltd.
CVD Equipment Corporation
DCA Instruments, Inc.
De Gruyter
Delong America Inc.
DigiM Solution LLC
Digital Surf
Direct Electron, LP
Dr. Fritsch FAST/SPS Systems and Powder Shaping Technologies
Duniway Stockroom Corporation

Dutch Diamond Technologies BV
Ebara Technologies, Inc.
Ecopia Corp.
EDAX Inc., AMETEK Materials Analysis Division
Edinburgh Instruments Ltd.
Edwards Vacuum
Electron Microscopy Sciences
Elsevier Ltd.
EmCrafts Co., Ltd.
Energetiq Technology, Inc.
Evactron® by XEI Scientific, Inc.
FemtoTools AG
Ferrotec (USA) Corporation
Film Sense
Filmetrics, Inc.
Fischione Instruments
Form-Tech Scientific Inc.
Fraunhofer USA Center for Coatings and Diamond Technologies
Furuya Metal Americas, Inc.
Gamry Instruments
Gatan
Geib Refining Corporation
Gencoa USA
Glines & Rhodes, Inc.
GNB Corporation
Goodfellow Corporation
Heidelberg Instruments Inc.
Herzan LLC
Hitachi High Technologies America, Inc.
HORIBA Scientific
Hummingbird Scientific
Huntington Mechanical Laboratories, Inc.
HYPRES, Inc.
Image Metrology A/S
INFRA Technology
Integrated Dynamics Engineering
International Centre for Diffraction Data (ICDD)
Intlvac Thin Film
InVacuo, Inc.
ION-TOF USA, Inc.
Ionomr Innovations Inc.
IOP Publishing
ISS, Inc.
J microTechnology, Inc.
Janis Research Company, LLC
Japan Science and Technology Agency
Japan Society of Applied Physics
JASCO
JEOL USA, Inc.
Kaufman & Robinson, Inc.
Keysight Technologies
KLA-Tencor Corporation
Kleindiek Nanotechnik
KP Technology USA Inc.

Kurt J. Lesker Company
Lake Shore Cryotronics, Inc.
Leica Microsystems Inc.
Leybold USA Inc.
Linseis Inc.
M. Braun Inc.
MANTIS-SIGMA
Materion
McGraw-Hill Education
MDC Vacuum Products, LLC
MDPI AG
Metrohm USA, Inc.
Micro Materials Ltd.
MICROCERTEC INC
MilliporeSigma (Sigma-Aldrich Materials Science)
MKS Instruments
MMR Technologies, Inc.
Montana Instruments Corporation
MTI Corporation
Naieel Technology
Namiki Precision Jewel Co., Ltd.
NanoAndMore USA, Inc.
NanoMagnetics Instruments Ltd.
Nanomechanics, Inc.
Nanonics Imaging Ltd.
NanoScience Solutions
Nanoscribe GmbH
Nanosurf, Inc.
NANOVEA
National Reconnaissance Office
neaspec GmbH
Neocera, LLC
NETZSCH Instruments North America, LLC
Nor-Cal Products, Inc.
NT-MDT America, Inc.
Olympus America Inc.
OptiGrate Corporation
OriginLab Corporation
Ostec-ArtTool Ltd.
Oxford Instruments
Oxford University Press
PANalytical Inc.
Park Systems Inc.
Particle Sizing Systems, LLC
Pfeiffer Vacuum
Physics Today
PIEZOCONCEPT
Plasmaterials, Inc.
Princeton Scientific Corp.
PROTO
Protochips
PVD Products, Inc.
Quantachrome Instruments
Quantum Design, Inc.
R.D. Mathis Company

Radiant Technologies, Inc.
Raith America, Inc.
Reliable Corporation
Renishaw Inc.
RHK Technology, Inc.
Rigaku Americas
Royal Society of Chemistry
SAES Group
SAGE Publishing
Scienta Omicron, Inc.
Seki Diamond Systems
Semiconsoft, Inc.
Semilab
SmarAct Inc.
Solartron Analytical, AMETEK Advanced Measurement Technology
Solid State Cooling Systems, Inc.
SPECS Surface Nano Analysis, Inc.
SPEX SamplePrep LLC
SPI Supplies, a Division of Structure Probe, Inc.
Springer Nature
SPS-Europe B.V.
STAIB Instruments, Inc.
Strem Chemicals, Inc.
Super Conductor Materials, Inc.
SVT Associates, Inc.
Synton-MDP AG
TA Instruments
TDC Corporation
Tecum AG
Ted Pella, Inc.
Telemark
Tescan USA Inc.
Thermo-Calc Software Inc.
Thermo Fisher Scientific
THINKY USA, Inc.
TMC, AMETEK Ultra Precision Technologies
Toho Technology Inc.
Toshima Manufacturing Co., Ltd.
TREK, INC.
Trion Technology, Inc.
UC Components Inc.
ULVAC Technologies, Inc.
Vacuum Technology Inc.
VAT Group
Vigor Tech USA
Wafer World Inc.
Wiley
WITec Instruments Corp.
J.A. Woollam Company, Inc.
ZEISS Microscopy
Zurich Instruments Ltd.
Zygo Corporation, AMETEK Ultra Precision Technologies