



2015 **MRS**® FALL MEETING & EXHIBIT
November 29 – December 4, 2015 | Boston, Massachusetts

2015 MRS FALL MEETING SYMPOSIA

REGISTER BY 5:00 PM (ET) NOVEMBER 13TH AND SAVE!

A Engaged Learning of Materials Science and Engineering in the 21st Century

BIOMATERIALS AND SOFT MATERIALS

- B Stretchable and Active Polymers and Composites for Electronics and Medicine
- C Tough, Smart and Printable Hydrogel Materials
- D Biological and Bioinspired Materials in Photonics and Electronics—Biology, Chemistry and Physics
- E Engineering and Application of Bioinspired Materials
- F Biomaterials for Regenerative Engineering
- G Plasma Processing and Diagnostics for Life Sciences
- H Multifunctionality in Polymer-Based Materials, Gels and Interfaces
- I Nanocellulose Materials and Beyond—Nanoscience, Structures, Devices and Nanomanufacturing
- J Wetting and Soft Electrokinetics
- K Materials Science, Technology and Devices for Cancer Modeling, Diagnosis and Treatment
- L Nanofunctional Materials, Nanostructures and Nanodevices for Biomedical Applications

NANOMATERIALS AND SYNTHESIS

- M Micro- and Nanoscale Processing of Materials for Biomedical Devices
- N Magnetic Nanomaterials for Biomedical and Energy Applications
- O Plasmonic Nanomaterials for Energy Conversion
- P Synthesis and Applications of Nanowires and Hybrid 1D-0D/2D/3D Semiconductor Nanostructures
- Q Nano Carbon Materials—1D to 3D
- R Harsh Environment Sensing—Functional Nanomaterials and Nanocomposites, Materials for Associated Packaging and Electrical Components and Applications

MECHANICAL BEHAVIOR AND FAILURE OF MATERIALS

- S Mechanical Behavior at the Nanoscale
- T Strength and Failure at the Micro- and Nanoscale—From Fundamentals to Applications
- U Microstructure Evolution and Mechanical Properties in Interface-Dominated Metallic Materials
- V Gradient and Laminated Materials
- W Materials under Extreme Environments (MuEE)
- Y Shape Programmable Materials

ELECTRONICS AND PHOTONICS

- Z Molecularly Ordered Organic and Polymer Semiconductors—Fundamentals and Devices
- AA Organic Semiconductors—Surface, Interface and Bulk Doping
- BB Innovative Fabrication and Processing Methods for Organic and Hybrid Electronics
- CC Organic Bioelectronics—From Biosensing Platforms to Implantable Nanodevices
- DD Diamond Electronics, Sensors and Biotechnology—Fundamentals to Applications
- EE Beyond Graphene—2D Materials and Their Applications
- FF Integration of Functional Oxides with Semiconductors
- GG Emerging Materials and Platforms for Optoelectronics
- HH Optical Metamaterials—From New Plasmonic Materials to Metasurface Devices
- II Phonon Transport, Interactions and Manipulations in Nanoscale Materials and Devices—Fundamentals and Applications
- JJ Multiferroics and Magnetolectrics
- KK Materials and Technology for Non-Volatile Memories

ENERGY AND SUSTAINABILITY

- LL Materials and Architectures for Safe and Low-Cost Electrochemical Energy Storage Technologies
- MM Advances in Flexible Devices for Energy Conversion and Storage
- NN Thin-Film and Nanostructure Solar Cell Materials and Devices for Next-Generation Photovoltaics
- OO Nanomaterials-Based Solar Energy Conversion
- PP Materials, Interfaces and Solid Electrolytes for High Energy Density Rechargeable Batteries
- QQ Catalytic Materials for Energy
- RR Wide-Bandgap Materials for Energy Efficiency—Power Electronics and Solid-State Lighting
- SS Progress in Thermal Energy Conversion—Thermoelectric and Thermal Energy Storage Materials and Devices

THEORY, CHARACTERIZATION AND MODELING

- TT Topology in Materials Science—Biological and Functional Nanomaterials, Metrology and Modeling
- UU Frontiers in Scanning Probe Microscopy
- VV *In Situ* Study of Synthesis and Transformation of Materials
- WW Modeling and Theory-Driven Design of Soft Materials
- XX Architected Materials—Synthesis, Characterization, Modeling and Optimal Design
- YY Advanced Atomistic Algorithms in Materials Science
- ZZ Material Design and Discovery via Multiscale Computational Materials Science
- AAA Big Data and Data Analytics for Materials Science
- BBB Liquids and Glassy Soft Matter—Theoretical and Neutron Scattering Studies
- CCC Integrating Experiments, Simulations and Machine Learning to Accelerate Materials Innovation
- DDD Lighting the Path towards Non-Equilibrium Structure-Property Relationships in Complex Materials
- X *Frontiers of Material Research*

www.mrs.org/fall2015

The MRS/E-MRS Bilateral Energy Conference will be comprised of the energy-related symposia at the 2015 MRS Fall Meeting.

Meeting Chairs

T. John Balk University of Kentucky
Ram Devanathan Pacific Northwest National Laboratory
George G. Malliaras Ecole des Mines de St. Etienne
Larry A. Nagahara National Cancer Institute
Luisa Torsi University of Bari "A. Moro"

Don't Miss These Future MRS Meetings!

2016 MRS Spring Meeting & Exhibit
March 28 - April 1, 2016
Phoenix, Arizona

2016 MRS Fall Meeting & Exhibit
November 27 - December 2, 2016
Boston, Massachusetts

MRS MATERIALS RESEARCH SOCIETY®
Advancing materials. Improving the quality of life.

506 Keystone Drive • Warrendale, PA 15086-7573
Tel 724.779.3003 • Fax 724.779.8313
info@mrs.org • www.mrs.org

1ST YEAR IN
PHOENIX



2016 MRS® SPRING MEETING & EXHIBIT
March 28–April 1, 2016 | Phoenix, Arizona

CALL FOR PAPERS

Abstract Submission Opens
September 15, 2015

Abstract Submission Deadline
October 15, 2015

CHARACTERIZATION AND MODELING OF MATERIALS

- CM1 New Frontiers in Aberration Corrected Transmission Electron Microscopy
- CM2 Quantitative Tomography for Materials Research
- CM3 Mechanics and Tribology at the Nanoscale—*In Situ* and *In Silico* Investigations
- CM4 Verification, Validation and Uncertainty Quantification in Multiscale Materials Simulation

ENERGY AND ENVIRONMENT

- EE1 Emerging Materials and Phenomena for Solar Energy Conversion
- EE2 Advancements in Solar Fuels Generation—Materials, Devices and Systems
- EE3 Materials and Devices for Full Spectrum Solar Energy Harvesting
- EE4 Electrode Materials and Electrolytes for Lithium and Sodium Ion Batteries
- EE5 Next-Generation Electrical Energy Storage Chemistries
- EE6 Research Frontiers on Liquid-Solid Interfaces in Electrochemical Energy Storage and Conversion Systems
- EE7 Mechanics of Energy Storage and Conversion—Batteries, Thermoelectrics and Fuel Cells
- EE8 Grid-Scale Energy Storage
- EE9 Hydrogen and Fuel Cell Technologies for Transportation—Materials, Systems and Infrastructure
- EE10 Recent Advances in Materials for Carbon Capture
- EE11 Caloric Materials for Renewable Energy Applications
- EE12 Radiation Damage in Materials—A Grand Multiscale Challenge
- EE13 Actinides—Fundamental Science, Applications and Technology
- EE14 Titanium Oxides—From Fundamental Understanding to Applications
- EE15 Materials for Sustainable Development—Integrated Approaches

ELECTRONICS AND PHOTONICS

- EP1 Organic Excitonic Systems and Devices
- EP2 Silicon Carbide—Substrates, Epitaxy, Devices, Circuits and Graphene
- EP3 Perovskite-Based Photovoltaics and Optoelectronic Devices
- EP4 Emerging Silicon Science and Technology
- EP5 Metal Oxide Hetero-Interfaces in Hybrid Electronic Platforms
- EP6 Integration of Heterovalent Semiconductors and Devices
- EP7 Material and Device Frontiers for Integrated Photonics
- EP8 Resonant Optics—Fundamentals and Applications
- EP9 Materials and Processes for Nonlinear Optics
- EP10 Optoelectronic Devices of Two-Dimensional (2D) Materials
- EP11 Novel Materials for End-of-Roadmap Devices in Logic, Power and Memory
- EP12 Materials Frontiers in Semiconductor Advanced Packaging
- EP13 Tailoring Superconductors—Materials and Devices from Basic Science to Applications
- EP14 Materials for Next-Generation Displays
- EP15 Diamond Power Electronic Devices

MATERIALS DESIGN

- MD1 Materials, Interfaces and Devices by Design
- MD2 Tuning Properties by Elastic Strain Engineering—From Modeling to Making and Measuring
- MD3 Functional Oxide Heterostructures by Design
- MD4 Phase-Change Materials and Applications
- MD5 Fundamentals of Organic Semiconductors—Synthesis, Morphology, Devices and Theory
- MD6 Electronic Textiles
- MD7 Advances in Lanthanide Materials for Imaging, Sensing, Optoelectronics and Recovery/Recycling
- MD8 Multiscale Behavior of Materials in Extreme Environments
- MD9 Magnetic Materials—From Fundamentals to Applications
- MD10 Micro-Assembly Technologies

NANOTECHNOLOGY

- NT1 Functional Nanostructures and Metamaterials for Solar Energy and Novel Optical Phenomena
- NT2 Oxide and Chalcogenide-Based Thin Films and Nanostructures for Electronics and Energy Applications
- NT3 Carbon Nanofluidics
- NT4 Emerging Non-Graphene 2D Materials
- NT5 Nanodiamonds—Fundamentals and Applications
- NT6 Colloidal Nanoparticles—From Synthesis to Applications
- NT7 Nanoparticle Characterization and Removal
- NT8 Silicon Nanostructures—Doping, Interface Effects and Sensing

SOFT MATERIALS AND BIOMATERIALS

- SM1 Liquid Crystalline Materials—Displays and Beyond
- SM2 Bioinspired Dynamic Materials—Synthesis, Engineering and Applications
- SM3 Soft Materials for Compliant and Bioinspired Electronics
- SM4 Engineering Biointerfaces with Nanomaterials
- SM5 Surfaces and Interfaces for Biomaterials
- SM6 Transient and Biologically-Inspired Electronics
- SM7 Future Healthcare Needs through Biomaterials, Bioengineering and the Cellular Building Block
- SM8 Bioinspired Metal Nanoparticles—Synthesis, Properties and Application
- SM9 Structure and Properties of Biological Materials and Bioinspired Designs
- SM10 Biofabrication-Based Biomaterials and Tissues

www.mrs.org/spring2016

Meeting Chairs

Christopher A. Bower X-Celeprint Ltd.
Andrew M. Minor University of California, Berkeley
Lawrence Berkeley National Laboratory
Roger Narayan UNC/NGSU Joint Department
of Biomedical Engineering
Izabela Szlufarska University of Wisconsin-Madison
Osamu Ueda Kanazawa Institute of Technology

Don't Miss These Future MRS Meetings!

2016 MRS Fall Meeting & Exhibit
November 27 – December 2, 2016
Boston, Massachusetts

2017 MRS Spring Meeting & Exhibit
April 17 – 21, 2017
Phoenix, Arizona

MRS MATERIALS RESEARCH SOCIETY®
Advancing materials. Improving the quality of life.

506 Keystone Drive • Warrendale, PA 15086-7573
Tel 724.779.3003 • Fax 724.779.8313
info@mrs.org • www.mrs.org

MATERIALS RESEARCH SOCIETY

2015 Board of Directors

Officers

Oliver Kraft, *President*
Tia Benson Tolle, *Immediate Past President*
Kristi S. Anseth, *Vice President/President-Elect*
Sean J. Hearne, *Secretary*
Michael R. Fitzsimmons, *Treasurer*
Todd M. Osman, *Executive Director*

Directors

Charles T. Black
Alexandra Boltasseva
C. Jeffrey Brinker
David Cahen
Stephen J. Eglash
Sossina M. Haile
Andrea M. Hodge
Hideo Hosono
Karen L. Kavanagh
Fiona C. Meldrum
Kornelius Nielsch
Christine Ortiz
David J. Parrillo
Sabrina Sartori
Eric A. Stach
Loucas Tsakalakos
Anke Weidenkaf

2015 Publications Committee

R.A. Vaia, *Chair*
S.P. Baker, *Editors Subcommittee*
A.J. Hurd, *New Publication Products Subcommittee*
J.M. Phillips, *Publications Quality Subcommittee*

2015 MRS Committee Chairs

B.M. Clemens, *Academic Affairs*
A. Polman, *Awards*
K. Whittlesey, *Government Affairs*
D.S. Ginley, *Meetings Committee*

Y. Chabal, *Member Engagement*
R.A. Vaia, *Publications*
A. Risbud, *Public Outreach*

MRS Headquarters

T.M. Osman, *Executive Director*
J.A. Dillen, *Director of Finance and Administration*
D. Dozier, *Director of Government Affairs*
P.A. Hastings, *Director of Meeting Activities*
E.M. Kiley, *Director of Communications*

About the Materials Research Society

The Materials Research Society (MRS) is a not-for-profit scientific association founded in 1973 to promote interdisciplinary goal-oriented basic research on materials of technological importance. Membership in the Society includes almost 16,000 scientists from industrial, government, and university research laboratories in the United States and abroad.

The Society's interdisciplinary approach to the exchange of technical information is qualitatively different from that provided by single-discipline professional societies because it promotes technical exchange across the various fields of science affecting materials development. MRS sponsors three major international annual meetings encompassing many topical symposia, as well as numerous single-topic scientific meetings each year. It recognizes professional and technical excellence, conducts tutorials, and fosters technical exchange in various local geographical regions through Section activities and Student Chapters on university campuses.

MRS publishes symposia proceedings, the *MRS Bulletin*, and other volumes on current scientific developments. The *Journal of Materials Research*, the archival journal spanning fundamental developments in materials science, is published twenty-four times a year by Cambridge University Press for the MRS.

MRS Communications is a full-color letters and perspectives journal focused on groundbreaking work across the spectrum of materials research.

MRS is an Affiliated Society of the American Institute of Physics and participates in the international arena of materials research through associations with professional organizations such as the International Union of Materials Research Societies.

For further information on the Society's activities, contact MRS Headquarters, 506 Keystone Drive, Warrendale, PA 15086-7573; telephone (724) 779-3003; fax (724) 779-8313.



A publication of the



CAMBRIDGE
UNIVERSITY PRESS

ISSN: 2159-6859

For further information about this journal please
go to the journal website at:

www.mrs.org/mrc