2015 MRS® SPRING MEETING & EXHIBIT

April 6–10, 2015 | San Francisco, California

CALL FOR PAPERS

Abstract Submission Opens September 23, 2014 | Abstract Submission Deadline October 23, 2014

Energy

- A Emerging Silicon Science and Technology
- B Thin-Film Compound Semiconductor Photovoltaics
- C Perovskite Solar Cells
- D Organic-Based Photovoltaics
- E Advanced Solar Cells—Components to Systems
- F Biohybrid Solar Cells—Photosynthesis-Based Photovoltaics and Photocatalytic Solar Cells
- G Next-Generation Electrochemical Energy Storage and Conversion Systems—Synthesis, Processing, Characterization and Manufacturing
- H Mechanics of Energy Storage and Conversion—Batteries, Thermoelectrics and Fuel Cells
- I High Capacity Anode Materials for Lithium Ion Batteries
- J Latest Advances in Solar Water Splitting
- K The Development of Oxygen Reduction Reaction (ORR) and Oxygen Evolution Reaction (OER) Materials in Energy Storage and Conversion Systems

Nanomaterials

- L Bioinspired Micro- and Nano-Machines—Challenges and Perspectives
- M Nanoscale Heat Transport—From Fundamentals to Devices
- N From Molecules to Colloidal Compound Semiconductor Nanocrystals—Advances in Mechanism-Enabled Design and Syntheses
- O Emerging Non-Graphene 2D Materials
- P Nanogenerators and Piezotronics
- Q Externally Actuated Responsive Nanomaterials—Design, Synthesis, Applications and Challenges
- R Photoactive Nanoparticles and Nanostructures
- S Semiconductor Nanowires and Devices for Advanced Applications
- T Graphene and Carbon Nanotubes

Electronics and Photonics

- U The Interplay of Structure and Carrier Dynamics in Energy-Relevant Nanomaterials
- V Resonant Optics—Fundamentals and Applications
- W Light-Matter Processes in Molecular Systems and Devices
- Y Phase-Change Materials for Data Storage, Cognitive Processing and Photonics Applications
- Z Plasmonics and Metamaterials—Synthesis, Characterization and Integration
- AA Materials for Beyond the Roadmap Devices in Logic, Power and Memory
- BB Innovative Interconnects/Electrodes for Advanced Devices, Flexible and Green-Energy Electronics
- CC Reliability and Materials Issues of Semiconductors—Optical and Electron Devices and Materials III
- DD Tailored Disorder—Novel Materials for Advanced Optics and Photonics
- EE Quantum Photonics, Information Technology and Sensing
- FF Defects in Semiconductors—Relationship to Optoelectronic Properties

Soft and Biomaterials

- GG Foundations of Bio/Nano Interfaces—Synthesis, Modeling, Design Principles and Applications
- HH Supramolecular Materials—Assembly and Dynamics
- II Organic Bioelectronics—Materials, Processes and Applications
- JJ Exploiting Bioinspired Self-Assembly for the Design of Functional and Responsive Materials
- KK Nanomaterials in Translational Medicine
- LL Soft Electronics—From Electronic Skin to Reliable Neural Interfaces
- MM Crystal Engineering—Design, New Materials and Applications

General—Fabrication and Characterization

- NN Adaptive Architecture and Programmable Matter—Next-Generation Building Skins and Systems from Nano to Macro
- OO Metal-Assisted Chemical Etching of Silicon and Other Semiconductors
- PP Gold-Based Materials and Applications
- QQ Plasma-Based Materials Science and Engineering
- RR Solution Syntheses of Inorganic Functional/Multifunctional Materials
- SS Oxide Thin Films and Nanostructures for Advanced Electrical, Optical and Magnetic Applications
- TT Metal Oxides—From Advanced Fabrication and Interfaces to Energy and Sensing Applications
- UU Titanium Oxides—From Fundamental Understanding to Applications
- VV Science and Technology of Superconducting Materials
- WW Ultrafast Dynamics in Complex Functional Materials
- XX Multiscale Modeling and Experiments on Microstructural Evolution in Nuclear Materials
- YY Insights for Energy Materials Using *In-Situ* Characterization
- ZZ Materials Information Using Novel Techniques in Electron Microscopy

www.mrs.org/spring2015

Meeting Chairs

Artur Braun Swiss Federal Laboratories for Materials Science and Technology
Hongyou Fan Sandia National Laboratories
Ken Haenen Hasselt University and IMEC vzw
Lia Stanciu Purdue University
Jeremy A. Theil Quantumscape, Inc.

Don't Miss These Future MRS Meetings!

2015 MRS Fall Meeting & Exhibit
November 29 – December 4, 2015
Hynes Convention Center & Sheraton Boston Hotel
Boston, Massachusetts

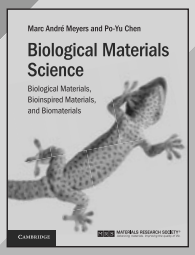
2016 MRS Spring Meeting & Exhibit
March 28 – April 1, 2016
Phoenix Convention Center
Phoenix, Arizona

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

Recent Titles

from the Materials Research Society and Cambridge University Press

Book Collection

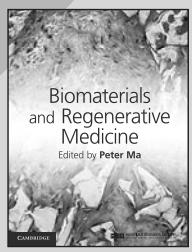


Biological Materials Science
Biological Materials, Bioinspired Materials, and Biomaterials

AUTHORS: Marc André Meyers and Po-Yu Chen
ISBN: 9781107010451
List Price: $99.00
MRS Member Discount Price: $79.00

Split into three sections—Basic Biology Principles, Biological Materials, and Bioinspired Materials and Biomimetics—this book presents biological materials along with the structural and functional classification of biopolymers, bioelastomers, foams, and ceramic composites.

www.cambridge.org/bms

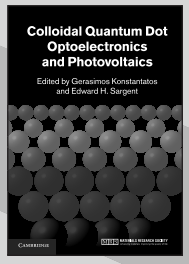


Biomaterials and Regenerative Medicine

EDITOR: Peter Ma
ISBN: 9781107012097
List Price: $185.00
MRS Member Discount Price: $148.00

Emphasizing basic principles and methodology, this book covers stem cell interactions, fabrication technologies, design principles, physical characterization and biological evaluation, across a broad variety of systems and biomaterials.

www.cambridge.org/biomaterials

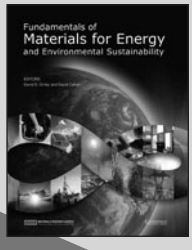


Colloidal Quantum Dot Optoelectronics and Photovoltaics

EDITORS: Gerasimos Konstantatos and Edward H. Sargent
ISBN: 9780521198264
List Price: $130.00
MRS Member Discount Price: $104.00

Written in an accessible style by the world's leading experts, this book captures the most up-to-date research in colloidal quantum dot devices.

www.cambridge.org/colloidal

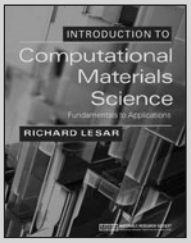


Fundamentals of Materials for Energy and Environmental Sustainability

EDITORS: David S. Ginley and David Cahen
ISBN: 9781107000230
List Price: $105.00
MRS Member Discount Price: $84.00

A unique, interdisciplinary textbook with contributions from more than 100 experts in energy and the environment from around the world.

www.cambridge.org/ginley

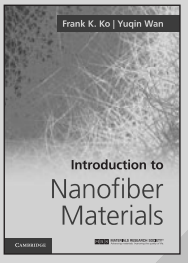


Introduction to Computational Materials Science
Fundamentals to Applications

AUTHOR: Richard LeSar
ISBN: 9780521845878
List Price: $95.00
MRS Member Discount Price: $76.00

Emphasizing essential methods and universal principles, this textbook provides everything students need to understand the basics of simulating materials behavior.

www.cambridge.org/lesar

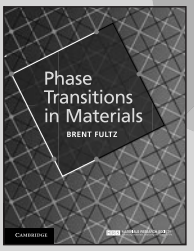


Introduction to Nanofiber Materials

AUTHORS: Frank K. Ko and Yuqin Wan
ISBN: 9780521879835
List Price: $99.00
MRS Member Discount Price: $79.00

Presenting the latest coverage of the fundamentals and applications of nanofibrous materials and their structures for graduate students and researchers, this book bridges the communication gap between fiber technologists and materials scientists and engineers.

www.cambridge.org/nanofiber

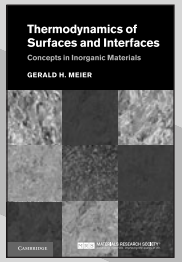


Phase Transitions in Materials

AUTHOR: Brent Fultz
ISBN: 9781107067240
List Price: $90.00
MRS Member Discount Price: $72.00

Offering a fresh viewpoint on phase changes and the thermodynamics of materials, this textbook covers the thermodynamics and kinetics of the most important phase transitions in materials science, spanning classical metallurgy through to nanoscience and quantum phase transitions.

www.cambridge.org/fultz



Thermodynamics of Surfaces and Interfaces
Concepts in Inorganic Materials

AUTHOR: Gerald H. Meier
ISBN: 9780521879088
List Price: $120.00
MRS Member Discount Price: $96.00

This book provides an accessible yet rigorous discussion of the thermodynamics of surfaces and interfaces, delivering a comprehensive guide without an overwhelming amount of mathematics.

www.cambridge.org/meier

Enter Discount Code **MRSMEMBER** at checkout to apply the MRS Member discount.

Not an MRS Member? Join today at **www.mrs.org/join.**

MRS MATERIALS RESEARCH SOCIETY

CAMBRIDGE UNIVERSITY PRESS

MEETING SYMPOSIA

2014 MRS® FALL MEETING & EXHIBIT

November 30 - December 5, 2014 | Boston, Massachusetts

www.mrs.org/fall2014

PREREGISTRATION OPENS MID-SEPTEMBER

BIOMATERIALS AND SOFT MATERIALS

- A Organic Bioelectronics
- B Multifunctional Polymeric and Hybrid Materials
- C Medical Applications of Noble Metal Nanoparticles (NMNPs)
- D Materials and Concepts for Biomedical Sensing
- E Hard-Soft Interfaces in Biological and Bioinspired Materials—Bridging the Gap between Theory and Experiment
- F Reverse Engineering of Bioinspired Nanomaterials
- G Plasma Processing and Diagnostics for Life Sciences
- H Micro/Nano Engineering and Devices for Molecular and Cellular Manipulation, Stimulation and Analysis
- I Emerging 1D and 2D Nanomaterials in Health Care

ELECTRONICS AND PHOTONICS

- J Emerging Non-Graphene 2D Atomic Layers and van der Waals Solids
- K Graphene and Graphene Nanocomposites
- L Optical Metamaterials and Novel Optical Phenomena Based on Nanofabricated Structures
- M Materials and Technology for Nonvolatile Memories
- N Frontiers in Complex Oxides
- O Oxide Semiconductors
- P Hybrid Oxide/Organic Interfaces in Organic Electronics
- Q Fundamentals of Organic Semiconductors—Synthesis, Morphology, Devices and Theory
- R Diamond Electronics and Biotechnology—Fundamentals to Applications

ENERGY AND SUSTAINABILITY

- S Advances in Materials Science, Processing and Engineering for Fuel Cells and Electrolyzers
- T Wide-Bandgap Materials for Solid-State Lighting and Power Electronics
- U Organic Photovoltaics—Fundamentals, Materials and Devices
- V Sustainable Solar-Energy Conversion Using Earth-Abundant Materials
- W Perovskite-Based and Related Novel Material Solar Cells
- Y Technologies for Grid-Scale Energy Storage
- Z Materials Challenges for Energy Storage across Multiple Scales
- AA Synthesis, Processing and Mechanical Properties of Functional Hexagonal Materials for Energy Applications
- BB Molecular, Polymer and Hybrid Materials for Thermoelectrics
- CC Advanced Materials and Devices for Thermoelectric Energy Conversion
- DD Materials for Advanced Nuclear Technologies
- EE Scientific Basis for Nuclear Waste Management XXXVIII
- FF Materials as Tools for Sustainability

NANOMATERIALS AND SYNTHESIS

- GG Nanomaterials for Harsh Environment Sensors and Related Electronic and Structural Components—Design, Synthesis, Characterization and Utilization
- HH Flame and High-Temperature Synthesis of Functional Nanomaterials—Fundamentals and Applications
- II Semiconductor Nanocrystals, Plasmonic Metal Nanoparticles, and Metal-Hybrid Structures
- JJ 3D Mesoscale Architectures—Synthesis, Assembly, Properties and Applications
- KK Directed Self-Assembly for Nanopatterning
- LL Semiconductor Nanowires—Growth, Physics, Devices, and Applications
- MM Carbon Nanotubes—Synthesis, Properties, Functionalization and Applications

THEORY, CHARACTERIZATION AND MODELING

- NN Mathematical and Computational Aspects of Materials Science
- OO *In Situ* Characterization of Dynamic Processes during Materials Synthesis and Transformation
- PP Advances in Scanning Probe Microscopy for Multimodal Imaging at the Nanoscale
- QQ Advances in Nanoscale Subsurface, Chemical and Time-Resolved Studies of Soft Matter
- RR Scaling Effects in Plasticity—Synergy between Simulations and Experiments
- SS Informatics and Genomics for Materials Development
- TT Advanced Materials Exploration with Neutrons and X-Rays—The State-of-the-Art in the International Year of Crystallography

GENERAL

- UU Structure-Property Relations in Amorphous Solids
- VV Reactive Materials—Past, Present and Future
- WW Defects and Radiation Effects in Advanced Materials
- XX Bridging Scales in Heterogeneous Materials
- YY Advanced Structural and Functional Intermetallic-Based Alloys
- ZZ Hierarchical, High-Rate, Hybrid and Roll-to-Roll Manufacturing
- AAA Undergraduate Research in Materials Science—Impacts and Benefits

Meeting Chairs

Husam N. Alshareef King Abdullah University of Science and Technology
Amit Goyal Oak Ridge National Laboratory
Gerardo Morell University of Puerto Rico
José A. Varela University of São Paulo State - UNESP
In Kyeong Yoo Samsung Advanced Institute of Technology

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

Don't Miss This Future MRS Meeting!

2015 MRS Spring Meeting & Exhibit
April 6-10, 2015

Moscone West & San Francisco Marriott Marquis
San Francisco, California

MATERIALS RESEARCH SOCIETY®

Journal of Materials Research Founding Sponsors

Allied-Signal Inc.
Xerox Corporation

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 over 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 prospectives journal focused on groundbreaking work across the spectrum of materials research.

MRS regular and student members may subscribe to *Journal of Materials Research.* See inside front cover for subscription rates for *Journal 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.

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.

Journal of MATERIALS RESEARCH

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

Periodical Rate Postage Paid at New York, NY
and Additional Mailing Offices

Postmaster—Send change of address notice to:

Cambridge University Press
100 Brook Hill Drive
West Nyack, NY 10994-2113, USA

ISSN: 0884-2914