

# 5 THINGS TO KNOW ABOUT

MRS  **Communications**  
The Letters and Perspectives Journal

## EDITOR-IN-CHIEF

Peter F. Green, University of Michigan, USA

## PRINCIPAL EDITORS

Jason A. Burdick, University of Pennsylvania, USA

Luca Dal Negro, Boston University, USA

Horacio Espinosa, Northwestern University, USA

Nicola Marzari, Ecole Polytechnique

Fédérale de Lausanne, Switzerland

Paul McIntyre, Stanford University, USA

Albert Salleo, Stanford University, USA

Alec Talin, Sandia National Laboratories, USA

Nagarajan (Nagy) Valanoor, University  
of New South Wales, Australia

## ADVISORY BOARD

Kristi Anseth, University of Colorado, USA

A. Lindsay Greer, University of Cambridge,  
United Kingdom

Supratik Guha, IBM Research, USA

Howard E. Katz, Johns Hopkins University, USA

Nicholas A. Kotov, University of Michigan, USA

George Malliaras, École Nationale Supérieure  
des Mines, France

Tobin Marks, Northwestern University, USA

Linda F. Nazar, University of Waterloo, Canada

Ramamoorthy Ramesh, Oak Ridge National  
Laboratory, USA

Henning Riechert, Paul-Drude-Institut  
für Festkörperelektronik, Germany

Thomas P. Russell, University of Massachusetts, USA

Darrell G. Schlom, Cornell University, USA

James S. Speck, University of California,  
Santa Barbara, USA

For more information about *MRS Communications*,  
visit [www.mrs.org/mrc](http://www.mrs.org/mrc) or email [mrc@mrs.org](mailto:mrc@mrs.org).

For manuscript submission instructions,  
visit [www.mrs.org/mrc-instructions](http://www.mrs.org/mrc-instructions).

 MATERIALS  
RESEARCH  
SOCIETY

CAMBRIDGE  
UNIVERSITY PRESS

**1** *MRS Communications* is publishing high-quality, rigorously reviewed materials science communications within **14 days of acceptance**.

**2** *MRS Communications* received its **first Impact Factor (IF)** from the 2012 Thomson Science Citation Index (SCI) Journal Citation Reports® in record time—based upon only the first published issue and just one year of citations. Watch for our building success in 2014!

**3** *MRS Communications* offers an **Open Access** publication option with, for a limited time only, a reduced article processing charge.

**4** *MRS Communications* is a digital journal. Readers enjoy a **variety of access options** including mobile format, dynamic page-turning edition and iTunes and Android apps.

**5** *MRS Communications* has published high-impact papers in its first three volumes. Look for each new issue at [www.journals.cambridge.org/mrc](http://www.journals.cambridge.org/mrc). **Prospectives articles**, a unique feature of this journal, include:

**Materials processing strategies for colloidal quantum dot solar cells: advances, present-day limitations and pathways to improvement**

Graham H. Carey, Kang W. Chou, Buyi Yan, Ahmad R. Kirmani,  
Aram Amassian, Edward H. Sargent

**Hairy nanoparticle assemblies as one-component functional polymer nanocomposites: opportunities and challenges**

Nikhil J. Fernandes, Hilmar Koerner, Emmanuel P. Giannelis,  
Richard A. Vaia

**Recent developments in ductile bulk metallic glass composites**

Michael Ferry, Kevin Laws, Christopher White, David Miskovic,  
Karl Shamlaye, Wangiang Xu, Olga Biletska

**Catalytic polymeric nanoreactors: more than a solid supported catalyst**

Pepa Cotanda, Nikos Petzetakis, Rachel K. O'Reilly

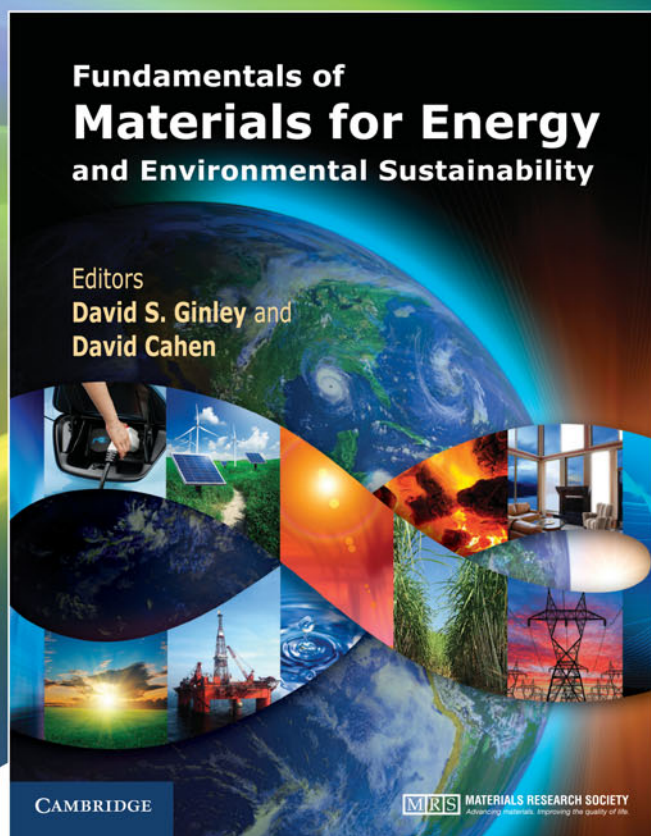
**Spectroscopic imaging in PFM: new opportunities for studying polarization dynamics in ferroelectrics and multiferroics**

Rama Krishnan Vasudevan, Stephen Jesse, Yunseok Kim,  
Amit Kumar, Sergei V. Kalinin

**Biomaterials-based strategies for the engineering of mechanically active soft tissues**

Zhixiang Tong and Xinqiao Jia

# ORDER TODAY!



Hardback  
ISBN: 9781107000230

**\$79.00 MRS Member Price**  
**\$99.00 List Price**

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

Whether you are a student taking an energy course or a newcomer to the field, this **TEXTBOOK** will help you understand critical relationships among environment, energy and sustainability.

Leading experts provide comprehensive coverage of each topic, bringing together diverse subject matter by integrating theory with engaging insights. Each chapter includes helpful features to aid understanding, including a historical overview to provide context, suggested further reading and questions for discussion. Every subject is beautifully illustrated and brought to life with full-color images and color-coded sections for easy browsing, making this a **COMPLETE EDUCATIONAL PACKAGE**.

**Sections Include:**

- Energy and the Environment—The Global Landscape
- Nonrenewable Energy Sources
- Renewable Energy Sources
- Transportation
- Energy Efficiency
- Energy Storage, High-Penetration Renewables and Grid Stabilization

**Fundamentals of Materials for Energy and Environmental Sustainability**

Editors

**David S. Ginley**  
and  
**David Cahen**

Published in partnership by the **Materials Research Society** and **Cambridge University Press**

# MEETING SYMPOSIA



## 2014 MRS® FALL MEETING & EXHIBIT

November 30 - December 5, 2014 | Boston, Massachusetts

[www.mrs.org/fall2014](http://www.mrs.org/fall2014)

### 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

## 2014 Board of Directors

### *Officers*

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

### *Directors*

Shenda M. Baker  
Alexandra Boltasseva  
C. Jeffrey Brinker  
David Cahen  
Stephen J. Eglash  
Chang-Beom Eom  
Susan Ermer  
Eric Garfunkel  
Sossina M. Haile  
Andrea M. Hodge  
Hideo Hosono  
Fiona C. Meldrum  
Kornelius Nielsch  
Eric A. Stach  
Stephen K. Streiffer  
Lucas Tsakalacos

## 2014 Publications Committee

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

## 2014 MRS Committee Chairs

Bruce M. Clemens, *Academic Affairs*  
C.B. Carter, *Awards*  
N. Bassim, *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*  
P.A. Hastings, *Director of Meeting Activities*  
E.K. Novak, *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](http://www.mrs.org/mrc)