



**jmr**

Journal of  
**MATERIALS RESEARCH**  
FOCUS ISSUE · SEPTEMBER 2018

**Submission Deadline—February 1, 2018**



CALL FOR PAPERS

## Interconnect and Interface Materials for High-Temperature Energy Conversion Technologies

One major roadblock to the wide-scale commercialization of state-of-the-art energy materials (e.g., SOFC, high-temperature PV, and high-temperature thermoelectrics) is the great difficulty involved with interfacing these materials with electrical interconnects in a way that results in low parasitic electrical losses and low degradation rates. Many of these materials consist of reactive and sometimes volatile elements from the chalcogen (including oxygen), pnictogen, and halogen groups, which tend to react strongly with metallic interconnect and interface materials that are usually desired for low Ohmic losses at the device level.

This *JMR* Focus Issue will cover advances in the synthesis, processing, and performance of both conventional alloys and unconventional compounds designed for use as electrical interconnects and interfacing materials for these high-temperature energy conversion technologies. Special attention may be given to work relating to experimental and theoretical assessment of the reaction and diffusion kinetics of these interface materials and the volatile, reactive species of energy materials.

### Manuscripts are solicited in the following areas:

- ◆ Development and performance of *in-situ*-formed diffusion barriers
- ◆ Modeling of high-temperature interface evolution (kinetics and properties evolution)
- ◆ Reaction kinetics of volatile “p-block” elements with transition metals and alloys
- ◆ Mechanical properties of interconnect-energy material interfaces
- ◆ Interface degradation mechanisms and mitigation
- ◆ Characterization and improvement of electrical and thermal contact/interface resistance

### GUEST EDITORS

**Tim C. Holgate**, Teledyne Energy Systems, Inc., USA

**Vincenzo Esposito**, Technical University of Denmark, Denmark

**Neil Dasgupta**, University of Michigan, USA

### MANUSCRIPT SUBMISSION

To be considered for this issue, new and previously unpublished results significant to the development of this field should be presented. The manuscripts must be submitted via the *JMR* electronic submission system by **February 1, 2018**. Manuscripts submitted after this deadline will not be considered for the issue due to time constraints on the review process. Please select “Focus issue: *Interconnect and Interface Materials for High-Temperature Energy Conversion Technologies*” as the manuscript type. **Note our manuscript submission minimum length of 6000 words, with a maximum of 6-8 figures. Review articles must be pre-approved by proposal to the Editor-in-Chief. The proposal form and author instructions may be found at [www.mrs.org/jmr-instructions](http://www.mrs.org/jmr-instructions).** All manuscripts will be reviewed in a normal but expedited fashion. Papers submitted by the deadline and subsequently accepted will be published in the Focus Issue. Other manuscripts that are acceptable but cannot be included in the issue will be scheduled for publication in a subsequent issue of *JMR*.

**[jmr@mrs.org](mailto:jmr@mrs.org)**  
Please contact [jmr@mrs.org](mailto:jmr@mrs.org) with questions.

# MATERIALS RESEARCH SOCIETY®

## 2017 Board of Directors

### Officers

Susan Trolier-McKinstry, *President*  
Kristi S. Anseth, *Past President*  
Sean J. Hearne, *Vice President*  
Eric A. Stach, *Secretary*  
David J. Parrillo, *Treasurer*  
Todd M. Osman, *Executive Director*

### Directors

Charles T. Black  
Li-Chyong Chen  
Matt Copel  
Paul Drzaic  
Dawnielle Farrar-Gaines  
Yury Gogotsi  
Claudia Gutierrez-Wing  
Young-Chang Joo  
Karen L. Kavanagh  
Lincoln Lauhon  
Christine Ortiz  
Sabrina Sartori  
Magaly Spector  
Molly M. Stevens  
Anke Weidenkaff

## 2017 Publications Committee

S.P. Baker, *Chair*  
T.J. Balk, *Editors Subcommittee*  
A.J. Hurd, *New Publication Products Subcommittee*  
R.J. Nemanich, *Publications Quality Subcommittee*

## 2017 MRS Committee Chairs

B.M. Clemens, *Academic Affairs*  
A. Polman, *Awards*  
K. Whittlesey, *Government Affairs*  
T. Aselage, *Meetings*

S.M. Haile, *Member Engagement*  
E. Kupp, *Public Outreach*  
S.P. Baker, *Publications*

## 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*

## 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 two 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.

Disclaimer: Authors of each article appearing in this Journal are solely responsible for all contents in their article(s) including accuracy of the facts, statements, and citing resources. Facts and opinions are solely the personal statements of the respective authors and do not necessarily represent the views of the editors, the Materials Research Society, or Cambridge University Press.

MRS journals maintain a proud tradition of editorial excellence in scientific literature. The *Journal of Materials Research*, the archival journal spanning fundamental developments in materials science, is published twenty-four times a year by MRS and Cambridge University Press. *MRS Bulletin* is a premier source for comprehensive research trends and a timely scan of professional activities. *MRS Communications* is a full-color letters and perspectives journal focused on groundbreaking work across the spectrum of materials research. *MRS Energy & Sustainability—A Review Journal* publishes reviews on key topics in materials research and development as they relate to energy and sustainability. *MRS Advances* is a peer-reviewed online-only journal featuring impactful and emerging research, designed to reflect the way materials researchers work, write, publish and share their results.

The *Journal of Materials Research* is free electronically to all MRS regular and student members. 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.



Postmaster—Send change of address notice to:

Cambridge University Press  
One Liberty Plaza, 20th Floor,  
New York, NY 10006

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

ISSN: 0884-2914