jmr Journal of MATERIALS RESEARCH
FOCUS ISSUE · JULY 2018

Submission Deadline—December 1, 2017

CALL FOR PAPERS

Stabilization of Organic Electronic Materials and Devices

The unique properties of organic semiconductors grant unrivaled potential for highly efficient, low-cost, and sustainable optoelectronic applications, e.g., in light and power generation, sensor technology, and electronic circuitry. Semiconducting polymers and small molecules can be scaled up to satisfy industrial needs and be processed onto plastic substrates using high throughput technologies. This makes a technological and economic breakthrough in the near future possible.

Despite the widespread potential, organic electronics face important challenges. A critical factor in the overall cost assessment is the lifetime of a final product. The current generation of organic electronics offers limited stability and need to be encapsulated using costly barrier materials. A fundamental understanding of the processes governing performance decay paired with innovative material approaches is essential for enhancing the longevity of organic optoelectronic devices and thus guaranteeing market readiness. This Focus Issue will address both mechanistic aspects that determine the lifetime of materials and devices as well as future strategies with practical relevance for increasing the lifespan and reliability of organic electronics.

Contributed articles are sought in the following areas:

- Fundamental degradation mechanisms in active materials and finished devices (photophysical and spectroscopic studies)
- Novel material concepts leading to enhanced intrinsic material stability (materials design, predictive simulations, materials synthesis, etc.)
- Extrinsic material concepts for stabilizing organic electronics materials (stabilizing additives, optimal microstructure, crystallinity, etc.)
- Realization of stabilization approaches in device structures with practical relevance

GUEST EDITORS

Christoph Brabec, Friedrich-Alexander University Erlangen-Nuremberg, Germany

Hans-Joachim Egelhaaf, Bavarian Center for Applied Energy Research (ZAE Bayern), Germany

Michael Salvador, King Abdullah University of Science and Technology, Saudi Arabia

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To be considered for this issue, new and previously unpublished results significant to the development of this field should be presented.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 **December 1, 2017.** Manuscripts submitted after this deadline will not be considered for the issue due to time constraints on the review process. Please select "Focus issue: *Stabilization of organic electronic materials and devices*" as the manuscript type. **Note our manuscript submission minimum length of 5500 words, with a maximum of 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.** 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

Please contact **jmr@mrs.org** with questions.

jmr Journal of MATERIALS RESEARCH

FOCUS ISSUE · JUNE 2018

Submission Deadline—November 1, 2017

CALL FOR PAPERS

Wide Energy Gap Semiconductors: Material Issues and Device Implications

Wide energy gap semiconductors, as distinct from their more conventional counterparts, silicon and gallium arsenide, offer considerable promise for novel electronic and optoelectronic device applications. Due to their higher polar optical phonon energies, the saturation electron drift velocities exhibited by these materials tend to be higher. In addition, the dielectric constants, both static and high-frequency, associated with the wider energy gap semiconductors tend to be smaller than with conventional semiconductors. These factors favor improved electron device performance. Another benefit is their great tolerance to high applied electric field strengths, the breakdown field of a semiconductor material increasing with the magnitude of its energy gap. The high thermal conductivities and resistance to radiation offered by some of these materials further contribute to their appeal.

The past three decades have seen numerous developments in the wide energy gap semiconductor field, both at the materials level and in the range of device applications now offered. This Focus Issue will present results corresponding to both traditional wide energy gap semiconductors, and some of more recent interest. An emphasis will be placed on the material properties of these semiconductors, and the role that such properties play in defining the range of device applications possible. The range of materials considered will include, but is not limited to, silicon carbide and its polytypes, the III-V nitrides, oxide-based semiconductors, and some more recently developed wide energy gap semiconductor materials.

Contributed articles are sought in the following areas:

- Advances in the growth of the wide energy gap semiconductors
- Developments in the processing of the wide energy gap semiconductors
- New device applications possible as a result of the distinct material properties associated with newer wide energy gap semiconductors
- Material properties and how they are distinct from their more conventional counterparts
- Brief overviews of developments in the field over the past three decades
- Brief perspectives on future opportunities for the wide energy gap semiconductors

GUEST EDITORS

Stephen K. O'Leary, The University of British Columbia, Canada
Michael S. Shur, Rensselaer Polytechnic Institute, 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 **November 1, 2017.** Manuscripts submitted after this deadline will not be considered for the issue due to time constraints on the review process. Please select "Focus issue: *Wide Energy Gap Semiconductors: Material Issues and Device Implications"* 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.** 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

Please contact **jmr@mrs.org** with questions.

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 prospectives 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.

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:

ISSN: 0884-2914

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