

Submission Deadline—August 14, 2020



CALL FOR PAPERS

Advanced Nanomechanical Testing

Small-scale mechanical characterization is essential for ensuring the service performance and lifetime of small components, such as thin films and coatings, electronic sensors, and MEMS. The first mechanical measurements on the submicrometer scale were enabled by the development of nanoindentation in the 1980s. *JMR* has long been the flagship journal for this field. In addition to countless contributed articles, previous Focus Issues published over the past two decades have disseminated the latest in method developments and trends in the field.

In addition to providing a long-expected update, this Focus Issue will expand the scope of nanomechanical testing methods beyond classical nanoindentation. Recent years have seen numerous attempts to access specific materials parameters and to better account for the typical operational conditions of the sample of interest. We therefore welcome contributions related to, but not limited to, focused ion beam (FIB) enabled methods, complex loading conditions, *in-situ* testing, and testing in extreme environments. Application of nanomechanical testing methods to new types of materials are also encouraged. This Focus Issue is a unique opportunity to highlight and share recent significant developments and achievements with the greater nanomechanics community.

Contributing papers are solicited in the following areas:

- ◆ Nanoindentation, micromechanical, and nanomechanical testing
- ◆ New developments, e.g., for the acquisition of the full stress-strain response
- ◆ Application to new types of materials
- ◆ Complex loading conditions (cyclic fatigue, fracture testing)
- ◆ Extreme testing environments (high and low temperatures, irradiation, high strain rates)
- ◆ *In-situ* testing (in scanning electron microscope, transmission electron microscope, or synchrotron)

GUEST EDITORS

Benoit Merle, University Erlangen-Nuremberg (FAU), Germany

Verena Maier-Kiener, Montanuniversitaet Leoben, Austria

Timothy J. Rupert, University of California, Irvine, USA

George M. Pharr, Texas A&M University

MANUSCRIPT SUBMISSION

To be considered for this issue, new and previously unpublished results or review articles significant to the development of this field should be presented. The manuscripts must be submitted via the *JMR* electronic submission system by August 14, 2020. Manuscripts submitted after this deadline will not be considered for the issue due to time constraints on the review process. Please select "Advanced Nanomechanical Testing" as the Focus Issue designation. **Note our manuscript submission minimum length of 3250 words, excluding figures, captions, and references, with at least 6 and no more than 10 figures and tables combined. Review articles may be longer but must be pre-approved by proposal to the Guest Editors via jmr@mrs.org. 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.

jmr@mrs.org

Please direct questions to jmr@mrs.org

MATERIALS RESEARCH SOCIETY®

2020 Board of Directors

Officers

Matt Copel, *President*
Cherie R. Kagan, *Vice President*
Michael R. Fitzsimmons, *Past President*
Dawnielle Farrar-Gaines, *Secretary*
Shenda Baker, *Treasurer*
Todd M. Osman, *Executive Director*

Directors

Griselda Bonilla
Leonard J. Brillson
Kristen H. Brosnan
Coray M. Colina
Catherine Dubourdieu
Sarah Heilshorn
Frances A. Houle
Monica Jung de Andrade
Sergei V. Kalinin
Kisuk Kang
Paul C. McIntyre
Linda S. Schadler
Christopher A. Schuh
Rachel A. Segalman
Ting Xu
Yusheng Zhao
Ehrenfried Zschech

2020 Publications Committee

S.P. Baker, *Chair*
W. Weber, *Editors Subcommittee*

2020 MRS Committee Chairs

S. Mathur, *Academic Affairs*
J. L. MacManus-Driscoll, *Awards*
D. P. Norton, *Government Affairs*
L. Lauhon, *Meetings*

TBD, *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 14,000 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* provides thematic materials overviews, original research and review articles, research news, industry and policy developments, and MRS and materials community news and events. *MRS Communications* is a full-color letters and perspectives journal focused on groundbreaking work across the spectrum of materials research. *MRS Energy & Sustainability* publishes reviews and original research 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.



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