Journal of Materials Research Editor's Report

After a little over one year as Editor-in-Chief of the "official" journal of the Materials Research Society I would like to share a few thoughts about our journal. As Editor, I feel privileged to hold a position which lets me in effect eavesdrop on the most exciting developments in materials as they are happening. I can assure you that plenty of good science and engineering is happening in materials and that a good fraction of it is presented to the world through the Journal of Materials Research (IMR). From the earliest days of superconductivity, diamond thin films, and carbon tubes, JMR has been home to a substantial fraction of exciting papers. Characterization using electron microscopy, mechanical properties, microscopic and macroscopic defects are burgeoning areas with many IMR papers. From the beginning, JMR has served as a home for exciting papers on ceramics ranging from sintering and phase equilibria to new electronic compositions. Electronic materials and metals are among the leaders in number and quality of JMR papers.

Materials are already central to the solution of environmental problems and it is not an exaggeration to say that economic survival dictates that *ab initio* green materials and processes must become more important. *JMR* has a special section in the March 1995 issue, edited by Julian Szekely of MIT, focused on Green Materials and Processes. We particularly encourage contributions on this subject on a continuing basis.

The need for laying the foundation for more scientifically based materials processing and its connection to competitiveness has been pointed out by numerous studies in the United States and other countries over the past decade. A special *JMR* "focus issue" dedicated to materials processing, edited by Peter Esherick of Sandia National Laboratory, is planned for April 1996 with a manuscript deadline of August 1, 1995. A Call for Papers with further details [see page 61] will be printed shortly in *JMR*. We invite submissions for this issue and in the processing subject area on a continuing basis.

Rapid publication of brief manuscripts serves an important need in all scientific disciplines. The increased pace of materials science has caused me to revamp *JMR*'s procedures for Communications with the recent appointment of Patrick K. Gallagher, of The Ohio State University, as Communications Editor. Prompt refereing and rapid turnaround (30-day review) will now be SOP (see *JMR* April 1995, Vol. 10, No. 4 for procedures).

A number of other areas of materials are growing and to ensure *JMR* competence in these areas I have, during the past year, appointed a number of individual experts as New Principal Editors. These include

Robert Cammarata (Johns Hopkins University)—mechanical properties, especially microhardness:

Seshu Desu (Virginia Polytechnic Institute and State University)—processing, electronic materials;

Andrew Holmes (University of Cambridge, U.K.)—polymers, especially active polymers including conducting polymers, light-emitting polymers, NLO's, and photorefractivity;

Lisa Klein (Rutgers University)—sol-gel, electronic ceramics;

Zuhair Munir (University of California, Davis)—combustion synthesis, phase equilibria;

Ian Robertson (University of Illinois at Urbana-Champaign)—microscopies and radiation effects in materials field microscopy;

Kenneth Sandhage (The Ohio State University)—thermodynamics, phase equilibria, superconductors, oxidation processing;

Yuh Shiohara (International Superconductivity; Technology Center)—superconductivity;

Julian Szekely (Massachusetts Institute of Technology)—green materials and processes;

Carl Thompson (Massachusetts Institute of Technology)—silicon, electromigration, reliability, defects, thin-film microstructure, interconnect reliability; and

Yoshihisa Watanabe (National Defense Academy, Japan)—physical ceramics.

To better serve European and Asian countries we continue to have a special European Editor, Paul Siffert (CNRS, Laboratoire PHASE) and a Japanese Editor, Shigeyuki Sōmiya (The Nishi Tokyo University).

Principal Editors in Europe include

Rüdiger Bormann (GKSS, Research Center Geesthacht)—nanostructured materials, thermodynamics, metallic glasses, intermetallics; and

Jean-Paul Issi (Unité de Physico-Chimie et de Physique des Materiaux)—band structure, metals, superconductors.

Principal Editors in Japan include

Masao Doyama (The Nishi Tokyo University)—theory, computer modeling;

Shiushichi Kimura (Yamanashi University)—ceramics, composites, diamond;

Yoshiaki Kogure (The Nishi Tokyo

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Kiyoshi Kuribayashi (The Nishi Tokyo University)—ceramics, ferroelectrics, thin films; and

Shigehiko Yamada (The Nishi Tokyo University)—composites.

JMR continues its traditional interest in radiation effect in materials and nuclear waste encapsulants, and continues to draw on a cadre of Principal Editors appointed in earlier years, including

R.P.H. Chang (Northwestern University)—superconductivity, thin films;

Mildred S. Dresselhaus (Massachusetts Institute of Technology)—inorganics, carbon fibers and tubes, fullerenes;

Dean Face (DuPont Experimental Station)—superconductors, piezoelectrics, thin films;

Frank Fradin (Argonne National Laboratory)—NMR, EPR, neutron diffraction, superconductivity, magnetism;

Harry Leamy (University of North Carolina at Charlotte)—thermodynamics, thin films, composites, crystal growth, characterization;

Werner Lutze (The University of New Mexico)—glasses, radioactive waste encapsulants:

Julia Phillips (AT&T Bell Laboratories) superconductivity, thin films, epitaxy and ionbeam analysis;

Rustum Roy (The Pennsylvania State University)—high pressure, hydrothermal materials;

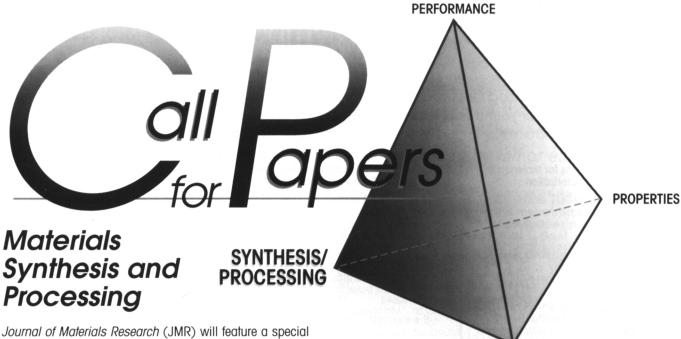
Karl Sieradzki (Arizona State University) mechanics and fracture, thin films/surfaces, scanning tunneling microscopy, corrosion/ electrochemistry, computer simulation of material behavior; and

David Turnbull (Harvard University)—theory, nucleation.

Lately, I have decided that reviews of leading edge fields in materials conveying a sense of excitement and introducing readers to hot areas at a rate of one per month would be a service to our readers and will begin these reviews in mid-1995. I solicit proposals by individuals willing to write such reviews. A title and brief abstract together with proposed date for submission should be sent to me.

Finally, my thanks to the authors and reviewers; the editorial staff (especially Helen Miller) at MRS headquarters in Pittsburgh, Pennsylvania; and especially to my fellow editors for their work, excellence, enthusiasm, and good humor.

ROBERT A. LAUDISE
Editor-in-Chief
Journal of Materials Research



Journal of Materials Research (JMR) will feature a special section of original research papers on materials synthesis and processing in the April 1996 issue.

Since at least the time of the National Academy of Sciences' 1989 study "Materials Science and Engineering for the 90's" it has been generally recognized that in materials synthesis and processing there is "a serious weakness in the U.S. research effort" and "there are opportunities for progress in areas ranging from the basic science of synthesis and processing to materials manufacturing, that, if seized will markedly increase U.S. competitiveness."

MRS has sponsored several symposia on processing issues, but while JMR has accepted papers it has not until now focused in that area.

The April 1996 issue will focus on synthesis and processing of engineered materials. For the purpose of this call for papers we will use the 1993 Federal Coordinating Council for Science. Engineering and Technology (FCCSET) definition of synthesis and processing as "the conversion of materials in their natural, atomic or molecular states to advanced materials suitable for specific intended uses, featuring precisely tailored properties and enhanced performance."2 Papers on all aspects of synthesis and processing as defined above are solicited. Atomic and molecular level engineering of materials processes, modeling of processes, fundamental understanding of generic processes such as plasma processing, chemical vapor deposition, sintering, etching, etc., are all suitable topics. Studies of yield and reliability of manufacturing processes as they are connected to processing of high-technology materials are appropriate. Papers on synthesis and processing of semiconductors, ceramics, composites and other "high-technology" materials would be of particular interest. Dr. Peter Esherick of Sandia National Laboratories will serve as editor for these papers.

To be considered for this issue, manuscripts must be received at the USA Editorial Office by **August 1**, **1995**. No extensions of the deadline will be granted.

All manuscripts submitted for this special section of the April 1996 issue will be reviewed in a normal but expedited fashion. The top 15-20 manuscripts of all those accepted will be scheduled for publication in the April 1996 issue of JMR, appearing in the standard JMR format in a separate section of the issue. Any manuscripts that are accepted for publication but cannot be included in the group scheduled for publication in the April issue will be scheduled to appear in the next available issue of JMR.

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Indicate that the manuscripts are intended for the JMR April 1996 special section on Materials Synthesis and Processing.

- "Materials Science and Engineering for the 1990's Maintaining Competitiveness in the Age of Materials," p. 3, National Academy Press, Washington, 1989.
- *Advanced Materials and Processing: The Fiscal Year 1993 Program in Materials Science and Technology," p. 10, FCCSET Committee on Industry and Technology, NIST, Gaithersburg, MD, 1992.



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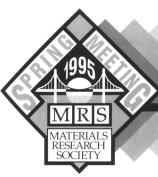
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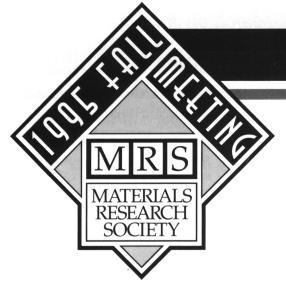
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F: Defects in High-Temperature Superconductors - Characterization and Relations to Processing and Properties

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G: Epitaxial Oxide Thin Films II

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Self-Assembling Materials and Structures

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