

MRS Workshop Series Presents High- κ Gate Dielectrics and Transparent Conducting Oxides

The Materials Research Society has established the MRS Workshop Series, which deal with highly focused and compelling subjects, as do the MRS Fall and Spring Meeting symposia. However, Workshops differ significantly in that they

- allow attendees to focus their full attention to a designated topic over a 2–3-day period;
- offer much more interaction and discussion between speakers and the audience;
- limit the size of the audiences to promote interaction; and
- offer attendees a more in-depth review of important topics than is typically allowed in a “snapshot” symposium.

The Workshop schedule consists of presentations by acknowledged experts, while also allowing for selected solicited talks and posters.

High- κ Gate Dielectrics

The first Workshop presented this year is High- κ Gate Dielectrics, June 1–2, in New Orleans, LA. The Workshop Chair is Glen Wilk (Lucent Technologies) and the co-organizers are Veena Misra (North Carolina State University) and Eric Vogel (National Institute of Standards and Technology). The scaling of the gate oxide in complementary metal oxide semiconductor (CMOS) technology has rapidly accelerated over the past several years. This rate of scaling is manifested by the 1999 ITRS (International Technology Roadmap for Semiconductors) timeline, which now calls for an SiO₂ gate oxide thickness less than 2.0 nm for sub-0.13 μm technology nodes. This extremely aggressive march toward ultrathin oxide layers has placed a very high priority on finding a high- κ replacement for SiO₂ that will allow CMOS scaling to continue at this remarkable pace.

This MRS workshop will span two days of invited presentations to create a focused meeting on the topic of high- κ gate dielectrics. It is intended to bring together leading researchers in this field for discussion on the critical issues which must be addressed and solved in order for high- κ materials to successfully replace SiO₂. Along these lines, only minimal discussion will take place on issues related to ultrathin SiO₂. The critical issues will include interface stability, physical and electrical analysis, and CMOS process integration compatibility.

To permit in-depth discussion, invited presentations will be 30–45 minutes, with appropriate time for questions. Two panel discussions will address the key roadblocks facing high- κ gate dielectrics. Representatives from major tool vendors will be present at the Workshop and in the panel discussions, as their input will be essential for understanding the requirements of process capability and tool development timelines. This Workshop will set the course for the integration of high- κ gate dielectrics into CMOS technology.

Transparent Conducting Oxides

The second Workshop in the series is Transparent Conducting Oxides, to be held June 19–20, in Denver, CO. The co-organizers of the Workshop are David Ginley and Timothy Coutts of NREL and the co-organizers are Tom Mason (Northwestern University) and Clark Bright (Delta V Technologies). Transparent conducting oxides (TCOs) are vital thin-film components in several potentially large-volume applications such as photovoltaic modules, flat-panel displays, and architectural coatings. Although TCO coatings were not initially a performance-limiting


factor for these applications, the indications are that in next-generation of these and other high performance applications, they may well be. The purpose of the Workshop is to bring together a critical mass of representatives from industry, the national laboratories, and universities to discuss prospects, needs, challenges and opportunities for TCOs. The expected outcome is the formation of a coordinated effort of research and development for improved and new TCOs by developing synergies between the various sectors represented.

Keynote addresses will be made on the following critical topics in order to develop a perspective on the current challenges and opportunities in the TCO field:

- large area deposition,
- commercialization problems/issues,
- new TCO materials,
- fundamental TCO research, and
- novel applications.

Attendees will participate in working group discussions based on the topical areas. Each group will focus on the key aspects of that topic, particularly the problems, opportunities, and resources required to achieve success.

The proceedings of the Workshop will be published which will present both a summary as to the state of the TCO field and a picture of the needs and opportunities in the area. The cost of the proceedings volume will be covered in the registration fees for the workshop.

For more information, contact the Materials Research Society, MRS Workshop Series, 506 Keystone Drive, Warrendale, PA 15086; tel. 724-779-3003; fax 724-779-8313; e-mail info@mrs.org. Watch *MRS Bulletin* or the MRS website (www.mrs.org) for details on future Workshops. 

www.mrs.org/meetings/

VISIT THE MRS WEBSITE FOR MEETING INFORMATION

- ◆ 2000 MRS Fall Meeting
Technical Symposia
- ◆ 2000 MRS Spring Meeting
Program
- ◆ MRS Workshop Series
Information about MRS Workshops including the two MRS Workshops held in 1999, as well as Extended Abstracts for the 1999 Workshop on Tribology.
- ◆ Upcoming MRS Meetings
Looking ahead to future MRS meetings
- ◆ Previous MRS Meetings
Archived information on previous MRS Meetings highlights, abstracts, programs and more
- ◆ Other Materials-Related Meetings
Compilation of upcoming meetings of relevance to materials researchers, including MRS co-sponsored Meetings

www.mrs.org/meetings/

MRS Invites Nominations for the Von Hippel Award, Turnbull Lectureship, and MRS Medal

The Materials Research Society is seeking nominations for the Von Hippel Award, the Turnbull Lectureship, and the MRS Medal. The deadline for nominations is **June 1, 2000**. These awards will be presented at the 2000 MRS Fall Meeting, November 27–December 1, in Boston.

The MRS Awards Program recognizes outstanding contributors to the progress of materials research. Nomination forms and details about eligibility and nomination criteria are available from Sue Novosel, Materials Research Society, 506 Keystone Drive, Warrendale, PA 15086-7573; phone 724-779-3004 ext. 102; fax 724-779-8313. Further information about each award can also be obtained from the MRS website at www.mrs.org.

Von Hippel Award Acknowledges Outstanding Interdisciplinary Work in Materials Research

The Von Hippel Award, first presented to Arthur R. von Hippel whose interdis-

iplinary and pioneering research typified the spirit of the award, is the Materials Research Society's highest honor. The recipient is recognized for brilliance and originality combined with vision that transcends the boundaries of conventional scientific disciplines. The Award includes a \$10,000 cash prize, honorary membership in MRS, and a unique trophy—a mounted ruby laser crystal symbolizing the many-faceted nature of materials research.

Turnbull Lectureship Honors Career of an Outstanding Researcher and Communicator


The David Turnbull Lectureship recognizes the career of a scientist who has made outstanding contributions to understanding materials phenomena and properties through research, writing, and lecturing, as exemplified by the life work of David Turnbull. While honoring the accomplishments of the recipient, the Turnbull Lectureship is intended to sup-

port and enrich the materials research community.

The recipient will give a technical lecture of broad appeal at a designated session of the 2000 MRS Fall Meeting. The Turnbull Lecturer will receive a \$5,000 honorarium and a citation plaque, along with travel expenses paid to enable the recipient to address MRS Sections and University Chapters, and/or participate in the production of a video version of the lecture.

MRS Medal Recognizes Recent Discovery or Advancement in Materials Science

The MRS Medal offers public and professional recognition of an exceptional recent achievement in materials research, which is expected to have a major impact on the progress of any materials-related field.

The award consists of a \$3,000 cash prize, an engraved and mounted medal, and a citation certificate. 

PREVIOUS AWARD RECIPIENTS

Von Hippel Award

Arthur R. Von Hippel, 1977
Massachusetts Institute of Technology

William O. Baker, 1978
AT&T Bell Laboratories

David Turnbull, 1979
Harvard University

W. Conyers Herring, 1980
Stanford University

James W. Mayer, 1981
Cornell University

Clarence M. Zener, 1982
Carnegie Mellon University

Sir Peter B. Hirsch, 1983
University of Oxford

Walter L. Brown, 1984
AT&T Bell Laboratories

John W. Cahn, 1985
National Bureau of Standards

Minko Balkanski, 1986
Universite Pierre et Marie Curie

Sir Charles Frank, 1987
University of Bristol

Jacques Friedel, 1988
Universite de Paris-Sud

John B. Goodenough, 1989
University of Texas—Austin

Robert W. Balluffi, 1990
Massachusetts Institute of Technology

Theodore H. Geballe, 1991
Stanford University

Michael F. Ashby, 1992
Cambridge University

Frederick Seitz, 1993
The Rockefeller University

Alfred Y. Cho, 1994
AT&T Bell Laboratories

William W. Mullins, 1995
Carnegie Mellon University

Sir Alan H. Cottrell, 1996
Cambridge University

Gabor A. Somorjai, 1997
University of California—Berkeley

Larry L. Hench, 1998
Imperial College

Richard S. Stein, 1999
University of Massachusetts

David Turnbull Lectureship

Thomas R. Anthony, 1992
General Electric Company

Morris Cohen, 1993
Massachusetts Institute of Technology

Arthur S. Nowick, 1994
Columbia University

Didier R. de Fontaine, 1995
University of California—Berkeley

Robert E. Newnham, 1996
Pennsylvania State University

Merton C. Flemings, 1997
Massachusetts Institute of Technology

H. Eugene Stanley, 1998
Boston University

Joseph E. Greene, 1999
University of Illinois

MRS Medalists

Arthur J. Freeman, 1990
Northwestern University

Duward F. Shriver, 1990
Northwestern University

Bernard S. Meyerson, 1991
IBM

Shigeyuki Sōmiya, 1991
Nishi Tokyo University

L. Eric Cross, 1992
The Pennsylvania State University

Stephen J. Pennycook, 1992
Oak Ridge National Laboratory

Wolfgang Krätschmer, 1993
Max-Planck Institute für Kernphysik

Donald R. Huffman, 1993
University of Arizona

Max G. Lagally, 1994
University of Wisconsin—Madison

Kenneth S. Suslick, 1994
University of Illinois—Urbana-Champaign

Federico Capasso, 1995
AT&T Bell Laboratories

Rudolf M. Tromp, 1995
IBM T.J. Watson Research Center

Jerry D. Tersoff, 1996
IBM T.J. Watson Research Center

Shuji Nakamura, 1997
Nichia Chemical Industries Ltd.

William L. Johnson, 1998
California Institute of Technology

M. George Craford, 1999
Hewlett Packard

Stephen Forrest, 1999
Princeton University