

Preview of 1987 Spring Short Course Program

Four New Courses Offered

Twenty-one short courses on materials science topics will be presented over a five-day period during the 1987 MRS Spring Meeting, April 21-25 in Anaheim, CA. Courses which relate directly to symposia topics have been scheduled for the end of the week so that short course participants can also attend the MRS Meeting. These courses include Rapid Thermal Processing, Amorphous Semiconductor Materials and Devices, Ion Beam Processes for Materials Modification, and Plasma Enhanced CVD of Thin Films for Microelectronics. In addition to many other popular MRS courses covering thin film technology, characterization of films and coatings, materials characterization, and epitaxial growth of compound semiconductors, the Spring program will feature four new short courses designed to be of special interest to the materials science community.

Vacuum Technology for Materials Processing: In many cases, the processing of materials and the resulting materials properties are sensitive to gaseous and particulate contamination. Vacuum technology is playing an increasing role in contamination control, especially in plasma, low-pressure, and ultrahigh vacuum processing. Donald M. Mattox has developed for MRS a unique vacuum technology course which stresses the interaction of processing techniques, parameters, and requirements on system design, operation, and maintenance. The course will have cameo presentations by materials scientists and equipment designers who use the vacuum environment for materials processing and fabrication. Some safety aspects of system design and operation will be discussed in this course.

IC Failure Analysis: An important aspect of the production of microelectronic and semiconductor materials and devices, failure analysis is often like a detective story. Various clues are used to isolate and evaluate the cause of a failure or to indicate a potential failure. Giorgio Riga has developed for MRS a course on IC failure analysis which presents the techniques and tools used to evaluate failure. The course will also discuss the origin of failure and will draw on Riga's long experience in this area.

Solid Lubricants and Tribological Properties of Solids in Contact: The behavior of metal and ceramic surfaces in contact determines the wear, erosion, and friction properties of precision mechanical components. These properties are important in such technologies as aerospace, SDI, and military technologies. Donald H. Buckley

has developed for MRS a course which will address the fundamental and practical aspects of surfaces in contact. In particular, the use of solid lubricants, which have some important advantages over liquid lubricants, will be discussed. Buckley has had many years of experience with NASA in this field and is uniquely qualified to present such a course.

Metallization for VLSI Technology: Metallization of semiconductor materials, an important part of device fabrication, is very sensitive to the materials and processes used. This course has been developed for MRS by K.S. Sree Harsha and Subhash Mahajan. The course will cover the latest metallization systems and techniques in the rapidly changing field of semiconductor metallization. This course will precede the one on IC Failure Analysis for attendees desiring a broad treatment of this aspect of semiconductor device processing.

Future issues of the MRS BULLETIN will feature other groups of short courses which address important aspects of materials science and technology. In addition, new courses under development for presentation later in 1987 will be previewed. Individuals with ideas or energy they would like to contribute to the Short Course Program can contact either Alton D. Romig, Jr., cochairman of the MRS Education Committee at (505) 844-8358, or Vivienne Harwood Mattox, MRS short course manager at (505) 294-9532.

See the complete Short Course Program for the 1987 MRS Spring Meeting listed elsewhere in this issue.

First MRS 'Stand-Alone' Short Course Program Cosponsored With University of New Mexico

*Vivienne Harwood Mattox
MRS Short Course Manager*

In early October, the Materials Research Society offered a successful 'stand-alone' short course program for the first time. The stand-alone short course program is not associated with an MRS Fall or Spring Meeting and does not have a guaranteed audience as in an On-Site course program requested by an organization.

This program was cosponsored by the Department of Chemical and Nuclear Engineering at the University of New Mexico, allowing the Society to take advantage of laboratory facilities for hands-on demonstrations.

Two three-day courses were presented: Characterization of Powders and Porous Materials and Plasma Modeling, Pattern



Dr. J. Shields (left), associate professor at Long Island University and vice president of Quantachrome, demonstrates a particle size analyzer.

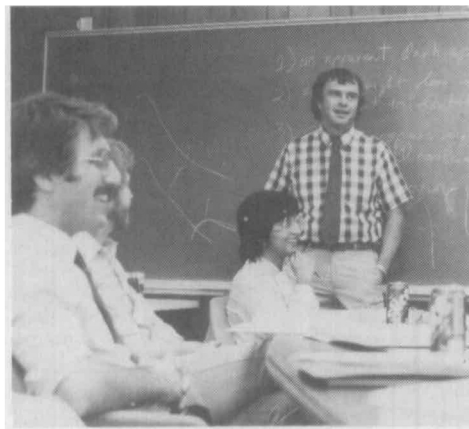
Transfer, and Nonintrusive Plasma Diagnostics for IC Fabrication. Local interest in the courses was strong but attendees came from all parts of the United States. The two course coordinators, Prof. Douglas Smith and Prof. Harold Anderson of the University of New Mexico worked closely with the MRS Short Course Manager, Vivienne Harwood Mattox, to make the program a success. It was also encouraging that seven graduate students participated in the short course program. It was an advantageous opportunity for them to be exposed to the broad background of the instructors and also to the questions posed by attendees working with practical problems in industry.

The coordinator for the course on Characterization of Powders and Porous Materials, Prof. Douglas Smith, is also co-director of the Powders and Granular Materials Laboratory at the University of New Mexico. His co-instructors were Dr. Joan Shields, vice president of Quantachrome and Professors Abhaya Datye and Mohsen Shahinpoor of the University of New Mexico. Unique to this program was the opportunity for laboratory demonstrations to be shown to small individual groups of attendees by the instructors. Equipment demonstrated included a particle size analyzer, scanning electron microscope, and nuclear magnetic resonance instruments.

The coordinator for the course on Plasma Modeling and Plasma Diagnostic Techniques was Prof. Harold Anderson. His co-instructors were Ron Light from Sandia National Laboratories, Prof. Steve Brueck from the Center for High Technology Materials at the University of New Mexico, and Alan Stanton and Joel Silver of Southwest Sciences.

The short course program and the Materials Research Society are fortunate to

Continued



Prof. H. Anderson of the University of New Mexico lectures to short course attendees.

have had the enthusiastic support of the MRS New Mexico Section in this venture. Valuable assistance was provided by Prof. Harold Anderson, president of the New Mexico Section, in identifying the local interest for these courses and assisting with the campus arrangements. The second evening of the short course program offered attendees an opportunity to attend a wine and cheese reception before the New Mexico Section meeting. (See Section News in this issue.)

MRS Short Course Program Expands in 1986

Total short course activity increased dramatically during 1986 compared with 1985. The number of courses presented at the 1986 Spring and Fall Meetings, together with On-Site presentations and a Stand-Alone program presented in conjunction with the University of New Mexico, totaled 41 courses compared with 13 courses presented during 1985. This is a substantial increase in the participation of course attendees in this vital educational service provided by MRS. Many course attendees have taken the opportunity to register for related groups of courses now that the courses are scheduled over a one-week period.

During 1986, thirty-nine graduate students took advantage of the scholarship program which offered greatly reduced short course fees for full-time students. This type of national scholarship program is unique within the community of professional societies that offers short course programs. The program gives students an opportunity to interact with course attendees from industry and government laboratories who have "real world" problems to solve.

Many individuals, including previous course attendees, have distributed brochures within their organizations as part of a growing network of support. In addition, the following publications and organizations provided assistance to the MRS Short Course Program during 1986: *Solid State Technology*, *Microelectronics*, *Manufacturing and Testing*, Elsevier Science Publishing, Semicon East, SAMPE, Fine Particle Society, Quantachrome, Hitachi Scientific Instruments, American Instruments Inc., Ion Tech, Spire Corporation, Perkin-Elmer, R.D. Mathis, Duniway Stock Room, Morton Thiokol, JEOL USA, Philips Electronics, Drytek, and Surface Science Laboratories. On behalf of the Materials Research Society, I wish to thank all these organizations and individuals.

Our gratitude is also extended to our short course instructors. Without these hard-working and enthusiastic experts who also enjoy teaching and sharing their knowledge with newcomers to their fields, we would not have a truly excellent MRS Short Course Program.

V.H. MATTOX

JOURNAL OF MATERIALS RESEARCH SUBSCRIPTION ORDER FORM - 1987

The Official Journal of the Materials Research Society (*six issues annually*)

A central source for chemists, ceramists, engineers, metallurgists, physicists, and materials scientists who need the latest research on the preparation, processing, characterization, and properties of materials.

_____ Please send me a complimentary copy.

_____ Please enter _____ subscription (s) for *Journal of Materials Research* at the following rates:

_____ \$250-U.S. Surface _____ \$262-Foreign Surface _____ \$270-European Optional Air Freight _____ \$285-Asia Optional Air Freight

Name _____

Address _____

City _____ State/Zip _____

Country _____

Institution/Company _____

Business Telephone _____

Remittance must accompany all orders. Foreign payments must be made by check payable in U.S. dollars drawn on a bank in the United States. Letters of credit will not be accepted. Send your order, check, request for complimentary copies, and inquiries to: American Institute of Physics, Marketing Services, 335 East 45th Street, New York, NY 10017. For telephone inquiries and requests for sample copies, call (212) 661-9404 (extension 536).

See contents of January/February issue of JMR listed elsewhere in the BULLETIN.