

Workshop Focuses on Analysis and Interpretation of Neutron Reflectivity Data

A workshop held August 23-25, 1990 at the Intense Pulsed Neutron Source (IPNS) at Argonne National Laboratory focused on the status of instrumental, theoretical and analytical techniques in neutron reflectivity. The workshop was sponsored by the Department of Energy's Office of Basic Energy Sciences, the University of Chicago, and the Division of Education Programs at Argonne National Laboratory. The workshop brought together 65 scientists from the international polymer science, materials science, condensed matter physics and mathematics communities who are actively performing research using neutron and x-ray reflectivity, and who are pursuing studies on the surface and interfacial behavior of materials. The proceedings of the workshop will be published in a special issue of *Physica B*.

The first day's presentations surveyed the different observables in the grazing incidence geometry. J. Penfold (Rutherford-Appleton Laboratory) began with a discussion of time-of-flight and fixed-wavelength neutron reflectometers. S. Sinha (Brookhaven National Laboratory) followed with a critical comparison and description of the complementary nature of x-ray and neutron reflectivity. His lecture, along with that of A. Steyerl (University of Rhode Island), also dealt with the measurement and interpretation of, and problems associated with off-specular or diffuse scattering. Finally, C.F. Majkrzak (National Institute of Standards and Technology) discussed the experimental methods for producing and detecting polarized neutrons for the study of surface magnetism.

The second day was dedicated to the methods for extracting information (depth profiles) from reflectivity data. J. Lekner (Victoria University of Wellington) began with a lecture on the theory of reflectivity and some limitations on interpreting reflectivity experiments. Complementing this was a lecture by D.S. Sivia (Los Alamos National Laboratory) dealing with the details of maximum entropy and Bayesian spectral analysis for determining the scattering length density profiles from experiment and elucidated several pitfalls encountered in handling data. Contrast variation techniques for suppressing background and highlighting specific components of a specimen were treated by R.

Thomas (Oxford University). The unsolved "inverse problem" was then discussed by T. Roberts (Ames Laboratory), who presented some analytic approaches coupled with numerical analysis by which the "inverse problem" could be addressed. At the end of the day, D. Mill (Argonne National Laboratory) presented the potentials of x-ray reflectivity and other surface sensitive techniques at the planned Advanced Photon Source.

On the third morning, some experienced users presented their views on neutron reflectivity. In particular, lectures were presented by J. Higgins (Imperial College) and E.J. Kramer (Cornell University). In the first presentation the possibility of performing straightforward and simple analyses of reflectivity results akin to that in small-angle x-ray or neutron scattering was addressed and the conclusion was that the potential exists but not presently. The final lecture dealt with the importance of using complementary techniques (for example,

ion beam scattering, secondary ion mass spectrometry or photoelectron spectroscopy) to assist in studies on interfacial phenomena. At the least such studies set stringent boundaries on the models derived from reflectivity experiments.

This workshop, organized by G.P. Felcher (Argonne National Laboratory) and T.P. Russell (IBM), was designed to maximize discussions among the attendees. Equal time was allowed for the presentations and for the discussion periods, and each was monitored by a discussion leader. Aside from the invited lectures, contributed presentations were made by some of the attendees to provide additional information or to elucidate points made during the invited presentations. The success of this workshop, prompted the suggestion to hold a second but different workshop on reflectivity within a year, which would be geared toward educating the growing user community in this new experimental technique.

Workshop Marks Inauguration of Glass, Liquid and Amorphous Materials Diffractometer

A two-day meeting was held at Argonne on April 16-17, 1990 to celebrate the inauguration of a new diffractometer that recently came into operation at Argonne's Intense Pulsed Neutron Source (IPNS). The Glass, Liquid and Amorphous Materials Diffractometer (GLAD) was built by a team of Argonne staff members headed by David L. Price, with funding from DOE's Division of Materials Sciences to a participating research team headed by Simon Moss, University of Houston.

The first neutron diffractometer optimized to measure the structures of glasses and liquids, GLAD takes advantage of the copious supply of short-wavelength neutrons available at a pulsed spallation source such as IPNS. The use of wavelengths as low as 0.1 Å will make it possible to obtain complete diffraction patterns at low scattering angles and avoid the systematic errors due to absorption and inelasticity effects. For more details, see the

article on p. 8 of the August 1990 *MRS BULLETIN*.

More than 70 scientists from various international laboratories and universities attended the workshop. In keynote talks on current interest areas related to amorphous materials, experts outlined the important scientific issues and their structural implications. The speakers included Frank Bates, University of Minnesota; John Cahn, NIST, Sow-Hsin Chen, MIT; John Enderby, Argonne Distinguished Fellow/Bristol University; Lynn Gladden, Cambridge University; Masakatsu Misawa, KEK, Tsukuba; Simon Moss, University of Houston; Sidney Nagel, University of Chicago; Sunil Sinha, Exxon/Brookhaven; Roland Winter, University of Marburg; and Adrian Wright, Reading University. The last half-day of the workshop addressed the use of GLAD, the needs of users, prospects for upgrading the instrument, and plans for research.

7th International IBMM Conference Held in Knoxville

450 Scientists from 27 Countries Attend

More than 450 scientists from 27 countries attended the Seventh International Conference on Ion Beam Modification of Materials (IBMM 90) held September 9-14 in Knoxville, Tennessee. It was the largest attendance by far for an IBMM conference. This substantial increase over previous conferences in the IBMM series demonstrates the growing importance and activity in ion beam processing. The IBMM series is the most comprehensive conference of those concerned with this field. This year's conference was sponsored by Oak Ridge National Laboratory and co-sponsored by the Materials Research Society and the International Union of Pure and Applied Physics.

Approximately 400 papers were presented during eight oral and seven poster sessions. Each half day consisted of a two-hour oral session followed by a two-hour poster session. This format was chosen to provide the maximum opportunity for attendees to interact with their colleagues from around the world.

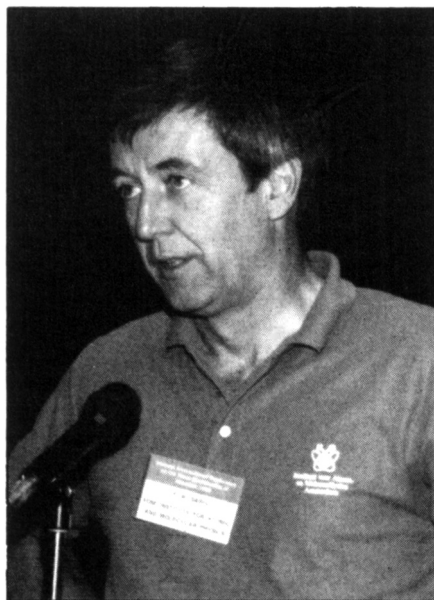
Topical sessions focused on experimental and theoretical work involving beam interactions with a wide range of materials, including semiconductors, metals, ceramics, insulators, and polymers. Other sessions focused on ion-enhanced deposition, tribology, beam-induced crystallization and amorphization, and recent developments in equipment design and experimental techniques. An evening session entitled "New Directions for Ion Beam Processing and Analysis" featured presentations on advanced ion beam processing projects in Japan, new initiatives for ion beam modification of materials, and the use of ion beams in analysis of art and architecture.

In a wrap-up session on the last day of the conference, Frans Saris of the FOM Institute in Amsterdam, the Netherlands, analyzed the most interesting work presented. Topping his list was the use of ion beams to prepare waveguides and electro-optical materials, which he suggested would be an important future direction for research in materials modification.

Other developments of special interest to the ion beam community included experimental results challenging earlier claims concerning thin film deposition using ion beam clusters, and molecular dy-



C.W. White, co-chair of IBMM 90 with B.R. Appleton, welcomes participants.



F. Saris, FOM Institute, Amsterdam, describes the use of ion beams to prepare waveguides and electro-optical materials.

amic calculations that gave a new picture of considerable mixing occurring during the interaction of a cluster with a surface. In another area of ion beam research, the adhesion of overlayer films was found to be enhanced for ion species, implanted at the film substrate interface, which exhibit relatively equal chemical reactivity with both the substrate and overlayer atoms. Interesting work on defect tailoring in Si using multiple implants and multiple anneals was also presented.

An equipment show, new to IBMM conferences, was very successful, featuring booths from 27 corporations and research laboratories. The equipment show and technical poster sessions were held concurrently in the same venue, enhancing interaction of the conferees with both events. All posters for the two poster sessions each day were displayed the entire day.

A reception for conference participants was held Sunday evening, and a buffet lunch was served each day. After the Tuesday evening session, a reception was hosted by the Kaiserlich-Königliche Böhmisches Physikalische Gesellschaft. On Wednesday afternoon attendees were able to choose from a selection of outings, including hiking or touring in the nearby Great Smoky Mountains National Park, or visiting the world-famous Museum of Appalachia near Oak Ridge.

Following the outing, conferees attended a most unusual conference banquet at the Dixie Stampede, a local tourist attraction in Pigeon Forge, Tennessee. The banquet featured wild west Americana and music. Long after some of the science presented at IBMM 90 has been surpassed or refuted, the banquet show, which featured several conferees, will certainly be remembered. Fourteen persons won't soon forget the hour they were trapped in an elevator while their fellow conferees were enjoying post-outing refreshments. A spouses program included visits to many local attractions.

The IBMM 90 Conference proceedings (edited by Stephen P. Withrow and David B. Poker, Oak Ridge National Laboratory) will be published in *Nuclear Instruments and Methods-B*. The next conference in the IBMM series will be held in the summer of 1992 in Heidelberg, Germany.

Stephen P. Withrow

CHAPMAN AND HALL

NEW AND FORTHCOMING BOOKS

for researchers,
professional engineers
and academics

ADVANCED JOINING TECHNOLOGIES

T. H. North
256 pp, \$75.00/Cloth

JOINING OF CERAMICS

Edited by M. G. Nicholas
232 pp, \$79.50/Cloth

FUNCTIONALIZED POLYMERS AND THEIR APPLICATIONS

A. Akelah and A. Moet
368 pp, \$89.95/Cloth

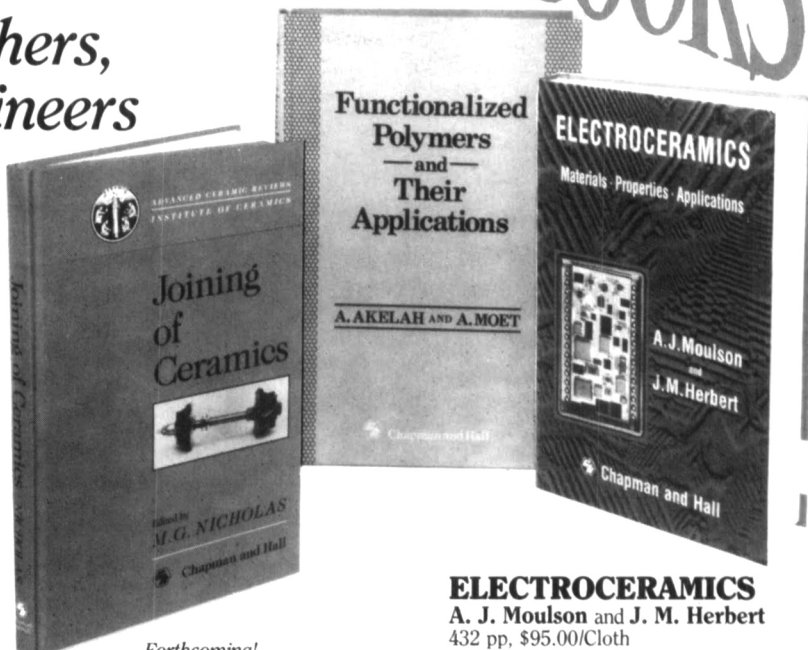
POLYIMIDES

Edited by D. Wilson,
H. D. Stenzenberger and
P. M. Hergenrother
298 pp, \$139.95/Cloth

Forthcoming text!

INTRODUCTION TO MAGNETISM AND MAGNETIC MATERIALS

D. C. Jiles
376 pp, \$115.00/Cloth; \$39.95/Paper



Forthcoming!

METALLIC MATERIALS SPECIFICATION HANDBOOK

Fourth Edition
R. B. Ross
960 pp, \$185.00/Cloth

POLYMER CHARACTERIZATION

D. Campbell and J. R. White
362 pp, \$87.50/Cloth; \$36.00/Paper

ELECTROCERAMICS

A. J. Moulson and J. M. Herbert
432 pp, \$95.00/Cloth

POLYMER PROCESSING

D. H. Morton-Jones
260 pp, \$69.50/Cloth; \$29.95/Paper
"...an excellent, qualitative compendium..." —*Polymers*

CHEMISTRY OF GLASSES

Second Edition

A. Paul
384 pp, \$77.50/Cloth
"...a must for scholars in this field." —*Glass Technology*

CHAPMAN AND HALL JOURNALS

25th Anniversary!!

JOURNAL OF MATERIALS SCIENCE

(Vol. 26) ISSN#0022-2461

JOURNAL OF MATERIALS SCIENCE LETTERS

(Vol. 10) ISSN#0261-8028

Edited by Prof. William Bonfield

JOURNAL OF MATERIAL SCIENCE: MATERIALS IN MEDICINE

(Vol. 2) ISSN#0957-4530

Edited by Prof. William Bonfield

JOURNAL OF MATERIAL SCIENCE: MATERIALS IN ELECTRONICS

(Vol. 2) ISSN#0957-4522

Edited by Prof. Arthur Willoughby

Annual Subscription Rate for all four journals (56 issues total): \$2395.00

To be launched in 1991:

PROCESSING OF ADVANCED MATERIALS

(Vol. 1) ISSN#0960-3158

Edited by J.A. McGeogh FRSE/ U.S. Editor: M. Datta

Annual Subscription Rate (4 issues): \$145.00

If you'd like a catalog containing information on all Chapman and Hall Journals, please contact:

*Ian Farrell
Chapman and Hall
29 West 35th St.
NY, NY 10001-2291*

**20% meeting discount available on all books
Come see us at booth #308**



Chapman and Hall

29 West 35th Street
New York, NY 10001-2291

NIST Workshop Highlights Cold Neutron Research Facility

The National Institute of Standards and Technology (NIST), which operates a 20 MW research reactor as part of its Materials Science and Engineering Laboratory (MSEL), is expanding the reactor's experimental facilities. A Cold Neutron Research Facility (CNRF) to fully exploit the 16 liter D₂O cold source installed in 1987 is scheduled for its first operation in late 1990. The 1800 m² experimental hall of the CNRF will eventually house at least 15 new experimental stations on seven neutron guide tubes, with capabilities beyond any currently available in the United States.

In order to inform and involve a broad-based community of researchers in many fields of science and technology during detailed planning for the CNRF, NIST held a series of workshops, each focusing on a major area of cold neutron research and applications. The third workshop held May 22-23, 1989, focused on analytical measurements with cold neutrons, using prompt gamma neutron activation analysis (PGAA) and neutron depth profiling (NDP). These nondestructive quantitative techniques, now in use at NIST with thermal neutron beams, will take advantage of the special properties of cold neutrons to address applications in chemical analysis, materials science, and physics research.

The workshop was organized by R. Lindstrom (NIST) and R.G. Downing (NIST), and attended by 46 scientists and business representatives from academic, industrial, and government laboratories. Invited speakers reviewed current work with instrumental neutron techniques in a variety of disciplines including semiconductors, polymers, metallurgy, superconductors, biology, environmental monitoring, and fundamental physics. Additional presentations covered projected improvements with the CNRF instruments in detection limits, throughput, spatial resolution, and additional capabilities in ap-

plied and research applications. Participants discussed present and future measurement needs in order to better design the PGAA and NDP instruments to serve both research and applied users. User policies for the facility were presented.

An important part of the workshop was the active participation of the attendees in assessing the capabilities of and the need for various types of instrumentation. The workshop afforded potential users a unique opportunity to guide the development of the CNRF through discussions. After the presentations, participants toured the CNRF reactor and the guide hall.

The cold-neutron NDP instrument has been installed, and the first measurements are now being made. In addition to higher neutron flux than in the current instrument, the new apparatus offers multiple detectors, the ability to manipulate 100-mm samples in three axes, and controlled atmosphere for *in-situ* modification of surfaces. The first measurements will be made with the PGAA instrument before the end of 1990. Because of the extreme purity of the beam, this system will feature greatly improved background, especially for hydrogen; experience with similar cold neutron beams elsewhere suggests that a few micrograms of hydrogen should be measurable in a wide variety of sample matrices.

Neutron Diffraction Workshop Considers Residual Stress

On May 22-23, 1990, a workshop on the Application of Neutron Diffraction to the Determination of Residual Stress in Engineering Materials was held at Argonne National Laboratory, Argonne, Illinois. The workshop was sponsored by the Materials and Components Technology and the Intense Pulsed Neutron Source Divisions with partial support from the Division of Educational Programs.

Organized by David Kupperman (Argonne) and Aaron D. Krawitz (University of Missouri), the workshop provided a mix of tutorials, a panel discussion, a demonstration experiment and also time for information exchange among the attendees. More than 30 scientists and engineers from England, Canada, France, and Denmark

attended, representing industry, academia, and government institutions and giving the workshop an international flavor.

Talks were given by recognized experts in the field with ample time provided for attendees and speakers to address issues and concerns regarding the use of neutron diffraction. Examples covered a wide range of materials and geometries from pipe welds to advanced composites, with applications in a wide variety of industries.

The success of the workshop was largely due to the enthusiasm and quality of the participants. As a result, the possibility of a second workshop in 1992 is being discussed. □

NOW AVAILABLE!

- Microform copies of the *MRS BULLETIN* and *Journal of Materials Research*. Back volumes are available in 16 mm or 35 mm microfilm, or 105 mm microfiche.
- Single Article Reprints from MRS Books.

Order from University Microfilms Inc., 300 North Zeeb Road, Ann Arbor, MI 48106

Lasers and Mass Spectrometry

Edited by DAVID M. LUBMAN
(Oxford Series on Optical Sciences)
1990 • 560 pp.; 281 illus. • \$75.00

Scanning Tip Microscopy

DROR SARID
(Oxford Series on Optical Sciences)
1990 • 224 pp.; 100 illus. • \$45.00

Now available in paperback

Solid State Chemistry Techniques

Edited by A.K. CHEETHAM and PETER DAY
1990 • 416 pp.; 179 illus. •
paper \$35.00/cloth \$70.00

Now available in paperback

Principles of Nuclear Magnetic Resonance in One and Two Dimensions

RICHARD R. ERNST,
GEOFFREY BODENHAUSEN and
ALEXANDER WOKAUN
(International Series of Monographs on
Chemistry 14)
1987 (paper 1990) • 640 pp.; 253 illus. •
paper \$45.00/cloth \$110.00

Chemical Oscillations and Instabilities

Non-Linear Chemical Kinetics
PETER GRAY and STEPHEN K. SCOTT
(International Series of Monographs on
Chemistry 21)
1990 • 472 pp.; 201 illus. • \$98.00

Disorder in Physical Systems A Volume in Honour of John Hammersley

Edited by G.R. GRIMMETT and
D.J.A. WELSH
1990 • 392 pp.; 26 illus. • \$75.00

Introduction to Crystallography

C. HAMMOND
(Royal Microscopical Society Microscopy
Handbooks 19)
1990 • 112 pp.; 60 illus. • paper \$15.95

Nuclear Structure from a Simple Perspective

RICHARD F. CASTEN
(Oxford Studies in Nuclear Physics 13)
1990 • 400 pp.; 164 illus. • \$59.00

The Operation of Transmission and Scanning Electron Microscopes

DAWN CHESCOE and PETER J. GOODHEW
(Royal Microscopical Society Microscopy
Handbooks 20)
1990 • 96 pp.; 53 illus. • \$18.95

Introduction to Surface Analysis by Electron Spectroscopy

JOHN F. WATTS
(Royal Microscopical Society Microscopy
Handbooks 22)
October 1990 • 96 pp.; 40 illus. •
paper \$15.95

Semiconductor Contacts An Approach to Ideas and Models

HEINZ K. HENISCH
(International Series of Monographs on
Physics 70)
1985 (paper 1989) • 400 pp.; 161 illus. •
paper \$39.95/cloth \$89.00

The Physics of Interacting Electrons in Disordered Systems

HIROSHI KAMIMURA and HIDEO AOKI
(International Series of Monographs on
Physics 76)
1990 • 272 pp.; 159 illus. • \$69.00

Undulators and Free-electron Lasers

P. LUCHINI and H. MOTZ
(International Series of Monographs on
Physics 79)
1990 • 336 pp.; 67 illus. • \$85.00

Very High Speed MOS Devices

Edited by SUSUMO KOHYAMA
December 1990 • 448 pp.; 293 illus. •
\$125.00

Composite Materials Technology

Processes and Properties
Edited by P.K. MALLICK and S. NEWMAN
(Hanser Publishers)
1990 • 408 pp.; 203 illus. • \$99.00

Analysis and Characterization of Polymeric Systems Chromatography, Microscopy, Computerized Methods, Electro- chemical and Spectroscopic Techniques, Volume 2

Edited by JOHN MITCHELL
(Hanser Publishers)
November 1990 • 450 pp.; 163 illus. • \$125.00

**VISIT THE
OXFORD BOOTH, #408**

To order, or for more information,
please write:

OXFORD UNIVERSITY PRESS

200 MADISON AVENUE, NEW YORK, NY 10016
Attn: Marketing Director for Science and Medical Books
Prices and publication dates are subject to change.

Polymeric Materials and Processing

Plastics, Elastomers and Composites
JEAN-MICHEL CHARRIER
(Hanser Publishers)
1990 • 650 pp.; 615 illus. • \$55.00

High Performance Polymers Structure, Properties, Composites, Fibers

Edited by ERIC BAER and A. MOET
(Hanser Publishers)
1990 • 244 pp.; 218 illus. • \$85.00

Fundamentals of Piezoelectricity

TAKINO IKEDA
1990 • 280 pp.; 62 illus. • \$98.00

Surface Analytical Techniques

J.C. RIVIÈRE
(Monographs on the Physics and
Chemistry of Materials)
1990 • 750 pp.; 466 illus. • \$135.00

Principles of Dielectrics

B.K.P. SCAIFE
(Monographs on the Physics and
Chemistry of Materials 45)
1989 • 416 pp.; 53 illus. • \$105.00

Energy-Beam Processing of Materials

**Advanced Manufacturing Using
Various Energy Sources**
NORIO TANIGUCHI, MASAYUKI IKEDA,
IWAO MIYAMOTO and
TOSHIYUKI MIYAZAKI
(Oxford Series on Advanced
Manufacturing 5)
1989 • 328 pp.; 230 illus. • \$90.00

Now available in paperback

Principles of Electron Tunneling Spectroscopy

E.L. WOLF
(International Series of Monographs on
Physics 71)
1985 (paper 1989) • 590 pp.; 260 illus. •
paper \$45.00

Modern Theories of Nuclear Moments

B. CASTEL and I.S. TOWNER
(Oxford Studies in Nuclear Physics 12)
1990 • 288 pp.; 41 illus. • \$73.00

The Solid State

From Superconductors to Superalloys
ANDRÉ GUINIER and REMI JULLIEN
(International Union of Crystallography
Texts on Crystallography 1)
1989 • 288 pp.; 143 illus. •
paper \$29.95/cloth \$80.00





CALL FOR PAPERS

Conference Chairs

- A. Wayne Johnson
Sandia National Laboratories
Telephone: (505) 844-8782
FAX: (505) 844-3211
- Paul S. Peercy
Sandia National Laboratories
Telephone: (505) 844-4309
FAX: (505) 846-2009
- Julia M. Phillips
AT&T Bell Laboratories
Telephone: (201) 582-4428
FAX: (201) 582-2521
- James B. Roberto
Oak Ridge National Laboratory
Telephone: (615) 576-0227
FAX: (615) 574-4143

The Program Committee will be pleased to consider abstracts on the topics listed above. To receive further announcements about the Washington Materials Forum, contact Jane Stokes at MRS Headquarters:

Washington Materials Forum
Materials Research Society
9800 McKnight Road
Pittsburgh, PA 15237
Telephone (412) 367-3003
FAX (412) 367-4373

Abstract Deadline: December 10, 1990

Abstracts of contributed papers (two copies) must be received by the Conference Chairs no later than December 10, 1990. Abstract templates may be obtained from MRS Headquarters at the address listed above, or you may construct your own template as follows: using heavy, white bonded paper, trace a block 5 inches (12.7 cm) wide by 6 inches (15.2 cm) long in non-reproducing blue ink or in dark lines on a back-up sheet. The text must be confined to the area within these borders.

Washington Materials Forum: Superconductors and Semiconductors February 28 - March 1, 1991 Washington, DC

Industrial Competitiveness and Consortia

*High T_c Superconducting Films
for Electronic Applications*

*The Science Behind Semiconductor Processing:
Advances in Plasma and CVD Research*

*The Conference will be held in
Washington, DC, February 28
and March 1 following the
Wednesday, February 27, 1991,
Solid State Sciences
Committee Spring Forum.*

Sponsoring Societies



The American Physical Society

Division of Condensed Matter Physics
Materials Physics Topical Group



American Chemical Society (ACS)



AMERICAN VACUUM SOCIETY
Member Society of the American Institute of Physics

TMS

Minerals • Metals • Materials

The Minerals, Metals and Materials Society (TMS)

FMS

Federation of Materials Societies

Start Your Research with Our Research.

Please visit Booth No. 306 at the MRS Show in Boston, November 27-29, 1990.

Quantum Theory of the Solid State

Second Edition

Joseph Callaway

From the Reviews of the First Edition:
"The book reflects [Professor Callaway's] deep understanding of his subject...a very valuable addition to the literature which I found very stimulating to read."

—NATURE

This new edition features tutorial discussions of a number of current research topics including:

- renormalization group theory
- integer and fractional quantum Hall effect
- transport in mesoscopic systems, and
- numerical methods in many-body theory.

The book includes updated treatments of topics that have developed significantly within the past several years such as superconductivity, magnetic impurities in metals, methods for electronic structure calculations, magnetic ordering in insulators and metals, and linear response theory. Advanced level graduate students and practicing condensed matter physicists will find this to be an important source of information.

February 1991, c. 960 pp., \$149.95 (tentative)
ISBN: 0-12-155203-9

Prepublication Price: \$125.00

(Expires February 1991)

Still available for a limited time, the first edition paperback version:

1976, 830 pp., \$49.50/ISBN: 0-12-155256-X

Strained Layer Superlattices

Physics and Materials Science and Technology

edited by
Thomas P. Pearsall

Volumes 32 and 33 of
SEMICONDUCTORS
AND SEMIMETALS

Strained-layer superlattices are an important new form of semiconducting material with applications in integrated electrooptics and electronics. Edited by a pioneer in the field, this two-volume survey offers a comprehensive discussion of the physics of strained-layer superlattices (Volume 32), as well as detailing fabrication technology and applications of the material (Volume 33). Although each volume is edited to stand alone, the two books combine to cover a broad spectrum of topics, including molecular beam epitaxy, quantum wells and superlattices, strain-effects in semiconductors, optical and electrical properties of semiconductors, and semiconductor devices.

Physics (Volume 32): August 1990, 272 pp.
\$74.50/ISBN: 0-12-752132-1

Materials Science and Technology (Volume 33):
December 1990, 440 pp.
\$89.50/ISBN: 0-12-752133-X

Plasma Deposition, Treatment, and Etching of Polymers

edited by
Riccardo d'Agostino

PLASMA
DEPOSITION

THE TREATMENT AND ETCHING OF POLYMERS

Edited by
Riccardo d'Agostino

PLASMA - MATERIALS INTERACTIONS

This work takes a broad look at the basic principles, the chemical processes, and the diagnostic procedures in the interaction of plasmas with polymer surfaces. It appeals to a broad range of industries from microelectronics to space technology because of the wide array of new uses for plasma polymers.

October 1990, 544 pp., \$89.50
ISBN: 0-12-200430-2

The Electrical Characterisation of Semiconductors *Measurement of Minority Carrier Properties*

J.W. Orton and P. Blood

This is the first comprehensive and unified treatment to describe the physical principles behind experimental techniques used for measuring the electrical properties of semiconductors. These principles are illustrated by selected examples drawn from the world of semiconductor materials. By concentrating on the physical principles of each technique and enumerating its inherent limitations, the authors have produced a text that will be helpful in solving a variety of problems in semiconductor characterization and one that will not be quickly outdated by developments in the materials themselves.

October 1990, 312 pp., \$69.00
ISBN: 0-12-528625-2

Order from your local bookseller or directly from

ACADEMIC PRESS

Harcourt Brace Jovanovich, Publishers
Book Marketing Department #28110
1250 Sixth Avenue, San Diego, CA 92101

CALL TOLL FREE

1-800-321-5068

Quote this reference number for free postage and handling on your prepaid order # 28110

Prices subject to change without notice. © 1990 by Academic Press, Inc. All Rights Reserved. SF/DV — 28110.