



November 28 - December 2, 1994
 Boston Marriott Hotel and
 Westin Hotel/Copley Place
 Sheraton Boston Hotel
 Boston, Massachusetts

Meeting Chairs:

Theodore M. Besmann,

Oak Ridge National Laboratory

Timothy D. Sands,

University of California-Berkeley

Gary S. Was, University of Michigan.

The 1994 MRS Fall Meeting swells beyond previous MRS meetings in scope and magnitude. The meeting offers 34 symposia and over 4,000 oral and poster presentations—1,000 more than last year. To accommodate the size of the meeting, the Sheraton Hotel, which is connected to the Marriott through a shopping mall, will be used in addition to the Marriott and the Westin Hotels. Evening poster sessions will be in the Westin and Sheraton Hotels and integrated into oral sessions. Exhibits will be held in the Marriott and Westin Hotels.

The technical program expands on traditional materials research topics and explores areas that are new to the MRS community. Traditional areas include beam-solid interactions, high T_c superconductors, disordered materials, epitaxy, interfaces, thin films and layered structures, semiconductors, high-temperature intermetallics, ceramics, cement-based materials, optical materials, and ferroelectric materials. Symposia in areas of growing interest in the materials community include polymers, catalysis, fullerenes, biological materials, porous materials, nanocrystalline materials, computational approaches, and materials for smart systems.

The interconnections among the topics are emphasized by clustered symposia representing several themes: surface, film, and interface science; novel materials and material systems; synthesis and processing; novel metal-oxide applications; polymeric materials; characterization and multi-user facilities; and radiation in materials science.

Atomic-scale observations and *in situ* real-time monitoring of growth processes represent an expanding venue, as presented in Symposium D, Atomic-Level Control of Epitaxial Heterostructures. Atomic-scale crystal growth can be observed directly using field ion microscopy, CVD can be monitored in real-time, and STM and SEM can be used for luminescence spectroscopy on individual nanostructures and impurity atoms to determine electronic properties.

Sometimes the most interesting research happens in small places, as will be presented in Symposium N, which encompasses talks on x-ray scattering studies used to observe ordering at interfaces, use of "optical tweezers" to observe stretching and relaxation of a single polymer chain, and novel statistical behavior predicted for surface diffusion at bulk-liquid interfaces.

The symposium on High-Temperature Intermetallics will grapple with some of the issues of moving a high-technology development from the research lab to industry, such as moving TiAl into mass production for automotive engine valves.

Included in Symposia I1 and I2, Materials for Smart Systems and Ferroelectric Thin Films, are topics related to materials and fabrication of microelectromechanical systems, which have potential as sensors, actuators, or miniature medical devices. Also showing their smarts are electrostrictive actuators for recovering the optical performance of the hubble space telescope and shape-memory alloys used in eyeglass frames, so deformed frames can be returned to their original shape.

Tighter control on CVD and MBE processing will be described for materials such as diamond and cubic boron nitride in Symposium K, CVD of Refractory Metals and Ceramics. Understanding and improving materials processing through interpreting and manipulating predictive models are among concepts that will be discussed.

Researchers in Symposium Ob, Applications of Innovative Knowledge Bases in Materials Design, will show how new compounds can be predicted using empirical data by finding patterns in the data and matching these patterns to

known properties. This symposium is balanced by Symposium Oa, Computational Approaches and Applications to Predicting the Properties of Complex Materials.

The polymer cluster includes Symposium Q, Characterization and Properties of Defects in Polymer Materials, and Symposium R, Polymer Matrix Composites. Also, Symposium S on biomolecular and biomimetic materials shows a diverse array of topics, from ways of putting hard impermeable coatings on soft materials, to making new textile fibers from cellulose and blending inorganic and organic materials.

Optical materials will be addressed in a pair of symposia. Symposium Za examines such topics as metal-semiconductor-metal waveguide structures, Si-based integrated optics for data storage, micro-machined photonic bandgap materials, glass hosts for optical amplifiers, bio/chemical optic sensor technology for novel clinical, environmental, and process analytical applications. Symposium Zb covers optical limiting, for example, building devices for vision and sensor protection by using nonlinear interactions that render transparent materials opaque when exposed to high intensity light.

Radiation techniques and their effects will be touched on in several settings. Ion beams have found a variety of niches, and in Symposium A, Beam-Solid Interactions for Materials Synthesis and Characterization, papers will report on ion-beam-assisted etching, light from Si LEDs, and wear-resistant ion beam processed polymers, among other topics. Microstructure in Irradiated Materials, Symposium Y, further examines the effect of various types of radiation on a spectrum of material classes. Symposia AA and BB, address synchrotron radiation and neutron scattering, respectively, and Symposium BB includes a panel discussion on instrumentation at major U.S. neutron facilities.

Special Events

The plenary speaker Monday night will be Sig Hecker, director of Los Alamos National Laboratory.

Recipients of the Von Hippel Award, the MRS Medals, the Turnbull Lectureship, and the graduate student awards will be honored Wednesday evening, November 30 during the awards ceremony. Immediately following the ceremony, the Von Hippel Award recipient will give a presentation, and a reception will follow. Talks by the other award recipients will be integrated into the technical pro-

gram. Watch for a flier in the mail and next month's *MRS Bulletin* for more information.

A forum will be held to address materials manufacturing issues Tuesday at noon. Speakers include Robert A. Laudise, AT&T Bell Laboratories, talking about Industrial Ecology—A Materials Ethic for the 21st Century, and John H. Hopps Jr., director of materials research, National Science Foundation, on Results of an NSF Workshop on Materials for the "Clean Car."

Authoritative reviews for nonspecialists are scheduled for Symposium X on Monday, Wednesday, and Thursday from noon to 1:30 p.m. These lectures will cover pulsed laser deposition, fuel cells, isotopically engineered semiconductors, blue/green laser diodes, carbon nitride, and microelectromechanical systems.

A major exhibit displaying analytical and processing equipment and services will be held in the Boston Marriott and the Westin Hotels Tuesday through Thursday, accompanied by a reception Tuesday evening. Job placement services are offered Tuesday through Thursday. The meeting also incorporates short courses and tutorials (see below) and a student mixer (see p. 64 in this issue).

For further details about the meeting see the 1994 MRS Fall Meeting Program, which has been mailed to all MRS members. If you need a program or would like to register, call the MRS Meetings Department (412) 367-3004 ext. 310; fax (412) 367-4373.

See page 18 in this issue for a list of the 1994 Fall Meeting symposium proceedings being published by the Materials Research Society.

MRS

Register for the 1994 MRS Fall Meeting

N • O • W!

Use the registration form on
p. 19 of the September
MRS Bulletin,
or call (412) 367-3004, ext. 310
between 8 a.m. and 5 p.m.
Eastern time.

SHORT COURSE PROGRAM at the 1994 MRS FALL MEETING

Selected short courses and a tutorial covering the latest developments in materials science and technology will be offered in conjunction with the 1994 Fall Meeting of the Materials Research Society. These up-to-date presentations are at the forefront of science and technology and complement Fall Meeting symposium topics.

SPECIALTY, REVIEW, AND SURVEY COURSES and **TUTORIALS** are designed to meet the needs of scientists, engineers, professional staff, and managers who want to know the latest techniques in materials science and technology. For information about registration, student scholarships, and special meeting registration discounts, contact MRS Headquarters: Phone (412) 367-3004 ext. 320; FAX (412) 367-4373.

Characterization of Materials

- C-08 Introduction to Ceramic Matrix Structured Composites \$595
Instructors: Jack Mecholsky and Maurice F. Amateau
Sunday, November 27, 8:30 a.m. - 4:30 p.m.
Monday, November 28, 8:30 a.m. - 4:30 p.m.
- C-14 Scanning Tunneling Microscopy and Atomic Force Microscopy \$395
Instructor: Dawn A. Bonnell
Wednesday, November 30, 8:30 a.m. - 4:30 p.m.
- C-29 Practical Electron Diffraction \$595
Instructor: Ronald M. Anderson
Wednesday, November 30, 8:30 a.m. - 4:30 p.m.
Thursday, December 1, 8:30 a.m. - 4:30 p.m.
- C-31 Super Resolution Imaging & Spectroscopy with Near-Field Scanning Optical Microscopy (NSOM) \$395
Instructors: Hans Hallen & Michael Paesler
Sunday, November 27, 8:30 a.m. - 4:30 p.m.

Fabrication of Materials

- F-02 Plasma Etching for Microelectronic Fabrication \$395
Instructor: G. Kenneth Herb
Thursday, December 1, 8:30 a.m. - 4:30 p.m.
- F-10 Fundamentals and Applications of Ion Beam Assisted Deposition \$395
Instructor: James K. Hirvonen
Sunday, November 27, 8:30 a.m. - 4:30 p.m.

Advanced Materials

- M-12 Introduction to Cementitious Materials \$395
Instructors: J. Francis Young, Gregory J. McCarthy, & Della M. Roy
Sunday, November 27, 8:30 a.m. - 4:30 p.m.

- M-14 Engineering Aspects of Shape Memory Alloys \$395
Tom Deurig
Thursday, December 1, 8:30 a.m. - 4:30 p.m.
- M-15 Biological Processes for Materials Synthesis \$450
Mark Alper
Monday, November 28, 8:30 a.m. - 4:30 p.m.
Tuesday, November 29, 8:30 a.m. - 12:00 noon
- M-16 Ferroelectric Thin Films \$450
Instructors: Angus I. Kingon and Seshu B. Desu
Monday, November 28, 8:30 a.m. - 4:30 p.m.
Tuesday, November 29, 8:30 a.m. - 12:00 noon
- M-19 Wide Bandgap II-VI Semiconductor Microstructures: Growth, Characterization and Optical Devices \$395
Instructor: Leslie A. Kolodziejcki
Tuesday, November 29, 8:30 a.m. - 4:30 p.m.
- ★M-20 Light Emitting Porous Silicon - Fabrication Properties, and Device Applications \$395
Instructor: Phillipe M. Fauchet
Monday, November 28, 8:30 a.m. - 4:30 p.m.

Preparation of Materials

- P-02 Molecular Beam Epitaxy \$595
Instructor: Gary W. Wicks
Tuesday, November 29, 8:30 a.m. - 4:30 p.m.
Wednesday, November 30, 8:30 a.m. - 4:30 p.m.
- P-14 Film Formation, Adhesion, Surface Preparation and Characterization of Thin-Film Structures \$595
Instructor: Donald M. Mattox
Thursday, December 1, 8:30 a.m. - 4:30 p.m.
Friday, December 2, 8:30 a.m. - 4:30 p.m.

Ancillary Topics **NEW**

- ★A-01 The Whole Internet - Usage and Futures \$395
Instructor: Edward Krol
Wednesday, November 30, 8:30 a.m. - 4:30 p.m.

Tutorial Program

- TP-1 Transfer of Technology from R&D to Manufacturing \$125
Instructors: Donald M. Mattox & Alton D. Romig, Jr.
Tuesday, November 29, 8:30 a.m. - 4:30 p.m.
- TP-2 Fractals in Materials Science \$95
Instructor: James E. Martin
Sunday, November 27, 1:00 p.m. - 5:00 p.m.
- TP-6 Challenges in Design & Processing of Materials By Biomimetics \$95
Instructors: Mehmet Sarikaya, Paul Calvert, Kevin P. McGrath & James H. Fendler
Sunday, November 27, 1:00 p.m. - 5:00 p.m.
- ★TP-8 Thin Films: Stresses & Mechanical Properties \$95
Instructors: Paul H. Townsend & Shefford P. Baker
Sunday, November 27, 1:00 p.m. - 5:00 p.m.
- ★TP-9 Capillary Optics for X-Rays and Neutrons \$95
Instructor: Walter M. Gibson
Wednesday, November 30, 8:30 a.m. - 12:30 p.m.
- ★TP-10 Low Energy Electron Microscopy (LEEM) and Related Techniques in Materials Sciences \$95
Instructor: Shirley Chiang
Friday, December 2, 8:30 a.m. - 12:30 p.m.
- ★TP-11 Federal Materials Research Programs and Opportunities \$95
Instructor: Louis Ianniello
Sunday, November 27, 8:30 a.m. - 12:00 noon

★New Course



November 28 - December 2, 1994
 Boston Marriott Hotel and
 Westin Hotel/Copley Place
 Sheraton Boston Hotel
 Boston, Massachusetts

MRS Exhibit

University Hall (U) • Atrium Lounge (A) • Westin Hotel (W) • 3rd & 4th Floors
 Tuesday-Thursday, November 29-December 1, 1994

As part of the 1994 MRS Fall Meeting, a major exhibit will be held to display analytical and processing equipment closely paralleling the nature of the technical symposia. The exhibit will be in the Marriott/Westin Hotel, Copley Place. The technical program has been arranged to allow meeting participants ample opportunity to visit the exhibit.

Exhibit Hours

Marriott

Tuesdaynoon-7:00 p.m.
 Complimentary Reception5:00 p.m.-7:00 p.m.
 Wednesday9:00 a.m.-5:00 p.m.
 Thursday9:00 a.m.-2:00 p.m.

Westin

Tuesday9:00 a.m.-5:00 p.m.
 Wednesday9:00 a.m.-5:00 p.m.
 Thursday9:00 a.m.-1:00 p.m.

Coffee will be available during morning and afternoon breaks in the Exhibit area, Tuesday afternoon through Thursday morning.

Indicates MRS Corporate Affiliate Member

Academic Press, Inc. #U113

Harcourt Brace & Company
 525 B Street, Ste 1900
 San Diego, CA 92101-4495
 Contact: Elizabeth Bellanger
 Telephone: (619) 699-6390
 FAX: (619) 699-6580

New and classic titles from Academic Press include *Fullerenes*, Volume 48 in *Solid State Physics* (Ehrenreich/Spaepen), *Fourier Transfer Raman Spectroscopy* (Chase/Raboult), *Introductory Raman Spectroscopy* (Ferraro/Nakamoto), *Materials Science of Thin Films* (Ohring), *Optical Characterization of Superconductors* (Perkovitz), *Intermolecular and Surfaces Forces, 2nd ed.* (Israelachvili), *Thin Film Processes I and II* (Vossen/Kern), and *Quantum Semiconductor Structures* (Weisbuch/Vinter).

Advanced Control Systems Corporation #W26

10 Old Mine Rock Way
 Hingham, MA 02043
 Contact: Leopold Bric
 Telephone: (617) 740-0223
 FAX: (617) 740-4227

ACS designs and manufactures controllers and drivers for stepping motors. Featuring bi-level drives, which avoid most RFI and motor shaft perturbation associated with chopper drives, and integrated controllers which communicate with host computer via serial port in straight ASCII type messages. The host requests operation; the controller acknowledges each request.

AIXTRON, Inc. #W30

9150 S.W. Pioneer Court
 Suite D-1
 Wilsonville, OR 97070
 Contact: Terry Lovis
 Telephone: (503) 682-4564
 FAX: (503) 682-5673

Manufacturer of MOCVD and CVD equipment for the growth of

III-V, II-VI, HT, SC including SiC. Outstanding quality in manufacturing, reliability in safety, and highest uniformity results for epilayers. System: AIX-200, AIX-200RD, AIX-200/4, AIX-2000, AIX-2400.

AJA International #U500

809 Country Way
 P.O. Box 246
 North Scituate, MA 02060
 Contact: William Hale
 Telephone: (617) 545-7365
 FAX: (617) 545-4105

Circular and Rectangular Magnetron Sputtering Sources and Targets, ATC R&D Sputtering Systems, Microwave Power Supplies and Components, "ECR" Sources, Diamond Film Equipment, Electrostatic Chucks and LN2 Cooled Electrodes, Electron Beam Sources and Systems, Vacuum Components.

Alcatel Vacuum Products, Inc. #U403

67 Sharp Street
 Hingham, MA 02043-4348
 Contact: Robert D. Chapman
 Telephone: (617) 331-4200
 FAX: (617) 331-4230

Exhibiting: Comprehensive range of Standard and Chemical series ceramic ball bearing Turbomolecular, Molecular DRAG and "HYBRID" pumps, plus Dry Pumping Systems. Full range of portable and console leak detectors-including totally "Dry" with MID 10^{12} ATM cc/sec (He) range sensitivity. Pascal Series Standard and Chemical Series oil sealed Mechanical pumps.

Alfa Aesar Division #A12

Johnson Matthey Catalog Company
 30 Bond Street
 Ward Hill, MA 01835
 Contact: Kathryn Whitenack,

Catalog Sales: Ray Dubasak, Bulk Specialty Sales, Derek N. McCall, General Manager
 Telephone: (508) 521-6300
 Sales: (800) 343-0660
 FAX: (508) 521-6350

Alfa® Aesar® offers a broad range of chemicals and accessories for all levels of materials research. Alfa® Aesar® markets Johnson Matthey's Puratronic® high purity inorganics, REActon® rare earth products, Specpure® analytical products, precious metals and precious metals labware, organometallics, single crystals, as well as electronic grade solvents, substrates, precursors, and much more.

American Institute of Physics (AIP) #U306

500 Sunnyside Blvd.
 Woodbury, NY 11797-2999
 Contact: William Phillips
 Telephone: (516) 576-2484
 FAX: (516) 576-2374

E-mail: wrp@aip.org
 AIP introduces its first electronic journal, *Applied Physics Letters Online*, and a new document delivery service, *Articles in Physics*. Free samples available of *Physics Today*, *Computers in Physics*, and *Chaos*. AIP PRESS books on display include: *Statistical Physics of Macromolecules*, *AIP Handbook of Modern Sensors*, and a NEW paperback edition of *Measurement Errors*.

AMRAY, Inc. #A14

160 Middlesex Turnpike
 Bedford, MA 01730
 Contact: James H. Connors, Jr.
 Telephone: (617) 275-1400
 FAX: (617) 275-0740

Scanning Electron Microscopes including our latest Field Emission Source SEM. Research grade, Integrated SEM/EDS models as well as our new Environment Controlled Operation SEM, the 1920 ECO.

Anatech, Ltd. #A16

6621-F Electronic Drive
 Springfield, VA 22151
 Contact: George Barr
 Telephone: (703) 941-8860
 FAX: (703) 941-8077

Ron Nickerson and David Lavelli, both from LFE, bring Anatech decades of experience in barrel, planar and RIE plasma technology. Robert Barr has twenty five years experience with HUM-MER™ RF/DC sputtering systems with over four thousand installed systems. Robert designed and patented Anatech's unique filamentless ion sources for 100% oxygen operation.

APD Cryogenics, Inc. #A4

1833 Vultee Street
 Allentown, PA 18103
 Contact: Robyn H. Gross
 Telephone: (610) 791-6700
 FAX: (610) 791-0440

APD Cryogenics' open and closed cycle cryogenic equipment offers customers superior products for low-temperature research from below 2.0K to 450K. Featured at the Fall MRS will be our exceptional two-stage 6.5K Displex® and the new OMNIPLEX™ top loading exchange gas cryostat. APD's laboratory systems are used for a diverse range of standard and customized university, government, and industrial research and development applications.

ASTeX (Applied Science and Technology, Inc.) #U936

35 Cabot Road
 Woburn, MA 01801
 Contact: Rich Myer
 Telephone: (617) 937-5131
 FAX: (617) 933-0750

CVD diamond reactors and turnkey systems; range of ECR sources for etching, CVD and

1994 MRS FALL MEETING EXHIBIT

MBE of advanced materials, e.g. GaN, SiC, cBn; high concentration ozone generators for semiconductor use; microwave downstream sources including a new microwave torch and precision power supplies; sophisticated Raman Imaging Microscope for materials and stress analysis.

Bal-Tec Products, Inc. #A19

984 Southford Road
Middlebury, CT 06762-1221
Contact: George C. Lane
Telephone: (203) 598-3660
FAX: (203) 598-3658

BAL-TEC is a supplier of preparation equipment for microscopy for thirty-five years. The benchmark RES 010 Rapid Ion Beam Etching System will be shown. The unit produces remarkable specimens for optical, SEM and TEM; and with the optional 20mm diameter beam can be used for surface preparation. The full line of sputter and evaporation systems will be shown.

Balzers #U801

8 Sagamore Park Road
Hudson, NH 03051
Contact: Julie Coutu
Telephone: (603) 889-6888
FAX: (603) 889-8573

Balzers will highlight its complete line of wide-range and molecular drag turbomolecular pumps; helium leak detectors; sputter process monitors; compact total pressure gauges, cryogenic refrigerators and Bal-Tec EM sample preparation.

Bio-Logic Company #U921

1 rue de l'Europe
38640 Claix-Grenoble
France
Contact: Michael de Courtenay
Telephone: (33) 76-98-68-31
FAX: (33) 76-98-69-09

Created in 1983, develops, produces and sells scientific instruments. Their development is based on the collaboration of leading research laboratories in Electrochemistry, Chemistry, Biophysics, Physiology and Neuroscience. The main lines of products are:

- multichannel Potentiostatic and Galvanostatic system
 - multichannel digital tape recorders
 - multiwire proportional X-Ray detectors
 - rapid scan system with diode array detector
 - stopped and quenched flow instruments
 - instruments for electrophysiology and neuroscience
- BioLogic has sales representatives in most countries. For all technical and commercial information contact Michael de Courtenay.

Biosym Technologies #U931, U932

9685 Scranton Road
San Diego, CA 92121
Contact: Cindy Dudy
Telephone: (619) 597-9710
FAX: (619) 597-9777

Investigate solutions to your research needs with BIOSYM's broad range of software solutions. Receive demonstrations of our advanced molecular modeling programs that assist you in determining the atomic structures of materials, understanding structural principles, and predicting how changes in composition or conditions affect structures and properties.

Blake Industries, Inc. #U708, U709

660 Jerusalem Road
Scotch Plains, NJ 07076
Contact: David G. Rognli
Telephone: (908) 233-7240
FAX: (908) 233-1354

Blake Industries will exhibit Blake and Huber instruments for thin film analysis, single crystal, Laue apparatus, and double crystal spectrometer for precise lattice determinations. Standard line of X-Ray diffraction and synchrotron accessories, including rotary table, translation stages, slits and goniometer heads will be shown.

M. Braun, Inc. #W15

2 Centennial Drive, Unit 4F
Peabody, MA 01960
Contact: Peter M. Calandra, Jr.
Telephone: (508) 531-6217
FAX: (508) 531-7245

M. Braun, Inc. will be exhibiting a new PC based Position Sensitive X-ray Detector System and information on inert Atmosphere Glove Boxes and Gas Purification Systems. Also introducing a system for simultaneous small and wide-angle x-ray measurements using a Kratky Collimation System and two Position Sensitive Detectors.

Buehler, Ltd. #U103

41 Waukegan Road
Lake Bluff, IL 60044
Contact: Barbara L. Savino
Telephone: (708) 295-6500
FAX: (708) 295-7929

Burleigh Instruments, Inc. #U502

Burleigh Park
P.O. Box E
Fishers, NY 14453-0755
Contact: Patricia Payne
Telephone: (716) 924-9355
FAX: (716) 924-9072

NEW Affordable Personal AFM, STM, UHV/STM 3-D measuring microscopes are designed for routine imaging of fine surface topography with precise 3-D quantitation. Instructional STM

microscopes use atomic resolution to improve teaching about atoms. Linear positioning stages and UHV Motors for sub-Angstrom and nanometer applications.

Cambridge University Press #U114

40 West 20th Street
New York, NY 10011-4211
Contact: James Murphy
Telephone: (212) 924-3900 x325
FAX: (212) 691-3239

Please stop by our booth to see these and other recent titles—
Boyd: *The Science of Polymer Molecules*; Woodruff: *Modern Techniques of Surface Science, 2nd edition*; Wiedendanger: *Scanning Probe Microscopy and Spectroscopy*; and Henrich: *The Surface Science of Metal Oxides*.

Cameca Instruments #W28

2001 West Main Street
Stamford, CT 06902

Contact: Andrew Davis
Telephone: (203) 348-5252
FAX: (203) 348-5516
E-mail: p01592@psilink.com
CAMECA, world leader in analytical instrumentation, offers the most advanced magnetic sector IMS 6f, ultra high mass resolution IMS 1270, and time-of-flight TOF SIMS VI SIMS instruments; as well as the workstation-based SX 100 electron probe microanalyzer.

Ceramaseal #U510

U.S. Route 20
P.O. Box 260
New Lebanon, NY 12125
Contact: René Nichols
Telephone: (518) 794-7800
FAX: (518) 794-8080

Ceramaseal, the industry pioneer in ceramic-to-metal seal technology, offers a full range of standard ultra-high vacuum feedthroughs, connectors, thermocouples, cables, viewports and related hardware. With over 40 years experience in designing and manufacturing standard and custom components, we can meet your most demanding applications.

CHA Industries #U908

4201 Business Center Drive
Fremont, CA 94538

Contact: Gerry Wies
or Gunard Mahl
Telephone: (510) 683-8554
FAX: (510) 683-3848

CHA Industries is a manufacturer and OEM supplier of standard and custom High Vacuum systems. Systems include Evaporation; Thermal and Electron Beam, Sputtering; Magnetron and Ion Beam, Ion Beam etch, and combinations. Systems are complemented by CHA's full line of Fixturing and other components.

Chapman & Hall #U309

One Penn Plaza
New York, NY 10119
Contact: Steve Hawe
Telephone: (212) 564-1060
FAX: (212) 564-1505
E-mail: HAWE@CHAPHALL.COM

Chapman & Hall, publisher of the *Journal of Materials Science* and a range of high quality textbooks and reference works, will display new titles including Jiles' new textbook, *Introduction to Electronic Materials*; Matthews and Rawlings' *Composite Materials: Engineering and Science*; and the new edition of Loretto's *Electron Beam Analysis of Materials*.

Clarkson University #W21

Ctr for Advanced Materials
Processing
Box 5665
Potsdam, NY 13699-5665
Contact: Edward P. McNamara
Telephone: (315) 268-2336
FAX: (315) 268-7615

CAMP's research is focused on colloids, surfaces and small particles; in particular, where they play an important role in the processing or the properties of the final product.

- Particle Synthesis and Properties
 - Uniform particle synthesis
 - Inorganic/organic composites
 - Adhesion and coagulation
- Thin Films and Coatings
 - Coated particles and fibers
 - CVD, PECVD, DLC films; adhesion
- Particle Transport, Deposition and Removal
 - Modeling of fluid flows
 - Wet particulate cleaning processes
- Colloidal Dispersions and Processing
 - Emulsions and Microemulsions
 - Foams, surfactants, gels, sols

CoDAS #U111

Elsevier Science
655 Avenue of the Americas
New York, NY 10010
Contact: Customer Service
Telephone: (212) 633-3950
FAX: (212) 633-3990

Make your own journal! CoDAS (Condensed Matter Direct Alerting Service) is a new service that automatically delivers titles, authors, and abstracts directly to your computer every week, from a large range of Institute of Physics Publishing and Elsevier Science condensed matter and materials science journals. CoDAS uses the academic networks, and avoids all the complications of existing on-line services. Stop by the booth for a demonstration and sign up for a free one-month subscription!

1994 MRS FALL MEETING EXHIBIT

Commercial Crystal Laboratories, Inc. #W23

4406 Arnold Avenue
Naples, FL 33942
Telephone: (813) 643-5959
FAX: (813) 643-6058
Manufacturer of III-V, II-VI, metal and oxide single crystals, IR prisms, polarizers, integrated optics, waveguides, silicon, semiconductor and superconductor substrates, GaP and rutile for acousto-optic devices, fluoride crystals. Custom crystal growth, custom optical fabrication and custom polishing. Materials R&D services. Manufacturer of custom grinding and polishing equipment and X-ray fixtures. MIL-1 shop.

Commonwealth Scientific Corporation #U938

500 Pendleton Street
Alexandria, VA 22314
Contact: David Day
Telephone: (703) 548-0800
FAX: (703) 548-7405
Commonwealth Scientific Corporation (CSC) is the leader in ion beam technology, manufacturing a complete line of products for dry etching and thin film deposition processes. CSC's will be displaying their complete line of ion sources ranging from 3cm to 38cm in diameter. New products include the 1m gridless linear and the Carbon Cathodic Arc Source.

Cooke Corporation #U509

900 Hertel Avenue
P.O. Box 866
Buffalo, NY 14207-0866
Contact: Steve Daicos
Telephone: (716) 833-8274
FAX: (716) 836-2927
Two examples of non-contact electro-optical extensometers will be on exhibit. The models 200X (high resolution, high strain rate) and 200XF (computer controlled) extensometers are capable of direct strain and compression measurements of specimens over very long periods of time (creep testing) and over a wide range of testing temperatures (up to 3000°C).

CRYO Industries of America, Inc. #U202

11 Industrial Way
Atkinson, NH 03811
Contact: George J. Svenconis
Telephone: (603) 893-2060
FAX: (603) 893-5278
'Performance by Design' Dewars, Flow Cryostats, Superconducting Magnet Systems, Closed Cycle Refrigerators, Helium 3 Inserts and Accessories. Self-operating cryostats with CRYO auto control software for windows, liquid nitrogen and helium auto fill systems and computer controlled supervaritemp variable tempera-

ture platform with electronic flow control.

Cryomech, Inc. #U602

1630 Erie Blvd. East
Syracuse, NY 13210
Contact: Peter Gifford
Telephone: (315) 475-9692
FAX: (315) 422-1202
Cryomech Inc. will exhibit the following new products: A new Closed Cycle Cryostat that cools to 2.2 K, the portable LNP40 Liquid Nitrogen Plant (40 liters/day), and the soon to be introduced Liquid Helium Plant (30 liters/day). Cryomech will also exhibit standard cryostats and cryorefrigerators for temperatures down to 2.2 K.

Cryostar Associates, Inc. #A18

518 N. Plumer Avenue
Tucson, AZ 85719
Contact: John Hess
Telephone: (602) 322-5818
FAX: (602) 322-0929
E-mail: jhess@cryostar.com
Cryostar Associates applies its proprietary Perpendicular Loading technology to all types of materials measurements where cryogenic systems are used. One basic interface covers the entire spectrum of physics type measurements encompassing High T_c , hyperfine, optical, IR, NMR, EPR, neutron scattering, Hall Effect and others. A Perpendicular Loader will be displayed.

DANFYSIK/GMW #A22

P.O. Box 2578
Redwood City, CA 94064
Contact: Ian J. Walker
Telephone: (415) 368-4884
FAX: (415) 368-0816
Information and technical support will be available on the Danfysik 1080 Ion Accelerator and 1090 High Current Implanter for materials modification with pure ion beams. Powerful new options include: full color graphics computer control and monitoring, non-intercepting continuous current and dose measurement, end station for implantation or IBAD.

DCA Instruments, Inc. #U942

400 West Cummings Park
Suite 3900
Woburn, MA 01801
Contact: Jari Vanhatalo
Telephone: (617) 937-6550
FAX: (617) 935-2405
E-mail: dcambe@village.com
DCA Instruments specializes in the design and manufacture of UHV deposition systems, offering standard systems for the following techniques: III-V, II-VI, CMT-MBE, metal MBE, UHV Sputtering, UHV Laser Ablation,

Si/Ge epitaxy and UHV CVD. We also offer a wide range of components including effusion cells, a wobble-free substrate manipulator and a self-regulating Mercury source. On display will be the new Valved Cracking Source for Selenium.

Denton Vacuum, Inc. #U404

1259 N. Church Street
Moorestown, NJ 08057
Contact: James L. Campbell
Telephone: (609) 439-9100
FAX: (609) 439-9111
Denton Vacuum is a premier manufacturer of High Vacuum Thin Film Deposition Systems. For applications ranging from the preparation of samples for electron microscopy; semiconductor failure analysis and quality control; thin film research; and production size optical coating systems, Denton Vacuum offers an appropriate system to meet a wide range of technical requirements. In addition to its system offerings, DVI also has a wide variety of accessory equipment such as Electron Beam Evaporation Guns and Power supplies, Ion sources, Optical Monitors, Sputter Cathodes, Feedthroughs, and Thermal Evaporation Supplies.

Digital Equipment Corporation #U912

50 Nagog Park
Acton, MA 01720
Contact: Angela Loh
Telephone: (508) 264-7803
FAX: (508) 264-7134
E-mail: loh@akocoa.enet.dec.com
Digital Equipment Corporation, Acton, MA: Check out our very affordable, high performance Alpha AXP workstations. Researchers find them excellent and reliable computing tools to advance their research. Modeling and simulation software will be demonstrated. You can get an update on applications available, product specs, pointers to the Alpha AXP systems on the Internet (available for testing your own codes), and other information.

Digital Instruments #U701, U702

520 E. Montecito Street
Santa Barbara, CA 93101
Contact: Terry Mehr
Telephone: (805) 899-3380
FAX: (805) 899-3392
E-mail: info@di.com
The world leader in Scanning Probe Microscopy (SPM) will be exhibiting its complete line of NanoScope® SPMs, including the MultiMode™ Atomic Force Microscope (AFM), the world's best selling and highest resolution SPM. Featured at MRS this

year is the new Dimension™ 3000 SPM, offering the complete range of SPM techniques for small or large samples, including topography, magnetic force, lateral force, electrochemistry, force modulation and others.

East/West Technology Partners, Ltd. #W16

4001 N. Fairfax Drive, Suite 765
Arlington, VA 22203
Contact: Gregory M. Finn
Telephone: (703) 351-6925
FAX: (703) 351-6909
E-mail: gfinn@vas.bdm.com
Exhibiting: Diamond films, metallurgical and magnetic materials. East/West Technology Partners, Ltd. is a three-way US/Russian joint enterprise. The company utilizes the strengths of the three partners to provide a credible, efficient, and complete technology transfer source for technology developed in the former Soviet Union.

Edwards High Vacuum International #U924

301 Ballardvale Street
Wilmington, MA 01887
Telephone: (508) 658-5410
FAX: (508) 658-7969
Edwards High Vacuum International, a division of the BOC Group, is a world leading manufacturer of high vacuum components and systems. Some of Edwards' products include the EXP70-a compact turbomolecular pumping station, the AUTO306 vacuum coater, Active vacuum gauges, and the Barocel® Capacitance Manometers. These products will be on display at the 1994 MRS Show.

Elsevier Science, Inc. #U208, U209, U210

655 Avenue of the Americas
New York, NY 10010-5107
Contact: Christine Orr
Telephone: (212) 633-3765
FAX: (212) 633-3764
Elsevier Science (imprints: North Holland & Pergamon) will exhibit a wide range of materials science and related solid state physics publications. Titles on display include:
• Journals such as Materials Letters, Computational Materials Science, Nanostructured Materials and Applied Superconductivity. Free Samples are available.
• New editions of The Handbook of Semiconductors and the Handbook of Crystal Growth.
• Newly published: The Encyclopedia of Advanced Materials, the first and only complete treatment of the synthesis, processing, theory and applications of all classes of advanced materials.

1994 MRS FALL MEETING EXHIBIT

- Electronic information services such as CONTENTS-Alert.
- See ad in this issue.

EMCORE Corporation #U902

35 Elizabeth Avenue
Somerset, NJ 08873
Contact: Bill Kroll
Telephone: (908) 271-9090
FAX: (908) 271-9686

EMCORE Corporation is the manufacturer of TurboDisc Deposition systems producing highest quality thin film compound semiconductor wafers with uniformity of thickness, doping and composition, and interface abruptness required for modern electronic, microwave and optoelectronic devices. EMCORE's TurboDisc systems are further distinguished by throughput, capacity and process conditions and utilize major deposition technologies including MOCVD, ALE, and CVD depending on application requirements.

Evans East #U603

666 Plainsboro Road
Suite 1236
Plainsboro, NJ 08536
Contact: William L. Harrington
Telephone: (609) 799-1904
FAX: (609) 799-8691

Analytical services performed using SIMS, RBS, AES, XPS (ESCA), and SEM with additional access to the network of services through Charles Evans & Associates. Protocols include: bulk analysis, surface analysis, and depth profiling. Typical materials for analysis are semiconductors, metals, insulating films, ceramics, glasses, catalysts, biomaterials, and polymer surfaces.

Extrel, Division of Waters #U919

575 Epsilon Drive
Pittsburgh, PA 15239
Telephone: (412) 963-7530
FAX: (412) 963-6578

For 30 years Extrel has been the premier leader in the manufacturing of high-quality quadrupole mass spectrometers. Systems and parts include: Quadrupole Power Supplies with mass ranges up to 4000 amu; Quadrupole Mass Filters - 9.5 mm, 16 mm and 19 mm diameter quadrupole rods; Electron Impact Ionizers- axial, crossbeam and direct inlet; and the electronics of Quadrupole Mass Spectrometers. All are used in applications such as: Thermal Desorption, Surface Analysis, Molecular Beam and Cluster Chemistry.

FEI Company #U406

7451 N.E. Evergreen Parkway
Hillsboro, OR 97124
Contact: Andree Kraker
Telephone: (503) 640-7500
FAX: (503) 640-7509

FEI Company features a new, compact 2-lens liquid metal ion (LMI) focusing column. Superior milling and imaging performance, reliable UHV construction and a modular design philosophy are combined in this new component ion focusing column. Also featured are single-lens ion and electron field emission columns, LaB₆/CeB₆ electron sources, and FIB workstations.

E.A. Fischione Instruments, Inc. #U710

9003 Corporate Circle
Export, PA 15632
Contact: Paul E. Fischione
Telephone: (412) 325-5444
FAX: (412) 325-5443

E.A. Fischione Instruments, Inc. features a full line of TEM Specimen Preparation devices. New product introductions include the Model 3000 ION MILL, a table-top, turbo-pumped, microprocessor-based device incorporating variable milling angles and high milling rates, and the Model 330 Ultrasonic Disk Cutter for the preparation of TEM specimen disks from ceramic and semi-conductor materials. Other devices on display are the Twin-Jet Electropolisher, for preparing metallic TEM specimens, and the Model 2000 Specimen Prep System (a state-of-the-art, microprocessor based, ultra-precision dimpling grinder). Also featured are SEM and TEM Specimen Holders, including the new Cryo-Prep Station/TEM Holder.

Fisons Instruments #U933

55 Cherry Hill Drive
Beverly, MA 01915
Contact: Marie Mello
Telephone: (508) 524-1000
FAX: (508) 524-1100

Fisons Instruments, the world's largest supplier of surface analysis equipment, molecular beam epitaxy systems, and high precision UHV components, will have information available. Information will also be available on the Keve Sigma, a state-of-the-art Microanalyzer based on a PC workstation computer platform with an advanced graphical user interface.

Gatan, Inc. #U900

6678 Owens Drive
Pleasanton, CA 94588-3334
Contact: Paul Miller
Telephone: (510) 463-0200
FAX: (510) 463-0204

Gatan is a technology leader in the manufacture of instrumenta-

tion for TEM, STEM and SEM. Products include a complete selection of side-entry TEM specimen holders, TEM specimen preparation equipment, TV-rate and slow-scan CCD cameras for TEM, multi-signal digital imaging system for SEM & STEM, parallel detection electron energy loss spectrometer, and energy filtered imaging system.

Goodfellow Corporation #A13

800 Lancaster Avenue
Berwyn, PA 19312-1780
Contact: James Woods
Telephone: (610) 640-1612
Toll free: (800) 821-2870
FAX: (800) 283-2020

Manufacturers of a unique range of metals and materials for research, development and small scale production. Goodfellow offer a wider selection than any other source. 69 metals, from Aluminum through Zirconium, - in both commercial and high purity - and 192 alloys including the common and the unusual. 21 different forms are available for immediate shipment including foil, wire, rod, tube, powder and all are available in a wide range of sizes. In addition, we have available single crystals, ceramics and polymers.

Gordon & Breach Publishers, Inc. #U105

820 Town Center Drive
Langhorne, PA 19047
Contact: Andrew Margolis
Telephone: (215) 750-2642 x131
FAX: (215) 750-6343

Gordon & Breach publishes books and journals of interest to scientists and engineers in condensed matter physics and materials science, including nanotechnology, optics and lasers, surface physics, nonlinear dynamics, and superconductivity.

High Voltage Engineering Europa B.V. #U941

P.O. Box 99
3800 AB Amersfoort
The Netherlands
Contact: Henri van Oosterhout
Telephone: (31) 33-619741
FAX: (31) 33-615291

Ion accelerator systems for science and industry; Ion Implantation, Ion Beam Analysis by RBS, PIXE, NRA, ERD, MEIS and AMS.

–See ad in this issue.

Hitachi Scientific Instruments #U203, U204, U205

755 Ravendale Drive
Mountain View, CA 94043
Contact: Hideo Naito
Telephone: (415) 969-1100
FAX: (415) 961-0368

Hitachi, a world leader in electron microscope advancements and proven technologies, represents our full line of exceptional scanning, transmission and field emission electron microscopes by giving demonstrations of our Model S-4500. The Model S-4500 FE-SEM (with in-lens SE detector) gives resolution of 45Å guaranteed at 1KV, and 15Å guaranteed at 15KV. This detection method yields ultimate surface detail not seen with a standard SE detector.

–See ad in this issue.

Hi-Tech Ceramics, Inc. #U303

P.O. Box 788
Alfred, NY 14802
Contact: Dawn Burnett
Telephone: (607) 587-9146
FAX: (607) 587-8770

Hi-Tech Ceramics is a manufacturer of advanced reticulated ceramics for use in severe environments. A leader in the supply of molten metal filters for ferrous and non-ferrous alloys, HTC applies its materials expertise to generate creative solutions to problems in thermal insulation, low NO_x combustion, incineration, hot gas filtration and other areas.

HK Equipment, Inc. #W32

235 Andover Street
Wilmington, MA 01887
Contact: William Kovacs
Telephone: (508) 988-9466
FAX: (508) 988-9477

HK Equipment, Inc. maintains an inventory of 35,000 Ft² of high quality, low cost *preowned* equipment for advanced material processing. Typically HKE has 25 to 35 vacuum furnaces, 5-8 coaters, 100 vacuum pumps, vacuum components, leak detectors, 30 ovens, kilns, diffusion furnaces, glass polish equipment, advanced ceramic equipment (ball mills, etc.), powered metal, tungsten carbide, heat treating furnaces, laboratory equipment, shop and material handling equipment. HKE specializes in vacuum and offers systems rebuilt, modified or new. HKE also would like to buy your surplus equipment. Arrange to visit our warehouse while in Boston.

Huntington Mechanical Laboratories #U812

1040 L'Avenida
Mountain View, CA 94043
Contact: Ken Bertken
Telephone: (415) 964-3323
FAX: (415) 964-6153

Huntington Laboratories is an integrated supplier of UHV component hardware including valves, roughing components, and viewports as well as position-

1994 MRS SPRING MEETING EXHIBIT

ers, feedthroughs, and custom chambers. Huntington also offers prototype and high volume production support services for custom or standard UHV requirements including engineering design assistance.
-See ad in this issue.

IBM Analytical Services #A8

1580 Route 52
Hopewell Junction, NY 12533
Contact: David Fouts
Telephone: (914) 892-2450
FAX: (914) 892-2003
E-mail: dpfouts@unet.ibm.com
Offers a broad range of capabilities from failure analysis to chemical and electrical characterization, all performed by a highly experienced staff of experts in their specific fields. We offer high-quality work performed on state-of-the-art equipment in a timely and cost-competitive environment.

Inel, Inc. #U915

P.O. Box 147
Stratham, NH 03885
Contact: Gregory Stollstorff
Telephone: (603) 778-9161
FAX: (603) 778-9171
X-ray diffraction. Curved 90 and 120 degree and linear position sensitive x-ray detectors for simultaneous XRD measurements. Time resolved high temperature, thin film, powder, microsample analysis. Decrease data collection times by magnitudes of order. Upgrades for existing goniometers or new, complete systems available. Also 3.0kw generators, tubes, radiation safety enclosures, horizontal or vertical goniometers.

Innovative Technology, Inc. #U901

2 New Pasture Road
Newburyport, MA 01950
Contact: Kenneth J. O'Brien
Telephone: (508) 462-4415
FAX: (508) 462-3338
We will be exhibiting a PC controlled Position Sensitive Detector and Multichannel Analyzer System.

Institute for Scientific Information (ISI) #U207

3501 Market Street
Philadelphia, PA 19104
Contact: Jacqueline H. Trolley
Telephone: (215) 386-0100
FAX: (215) 387-1125
E-mail: JTROLLEY@ISINET.COM
Have instant access to full bibliographic data, cited references, and abstracts...for every important journal article and proceedings paper published in your field. No materials science database is this current. Bimonthly updates on CD-ROM. See a demonstration and enter the

drawing for a free-one year subscription!

Instron Corporation #U304

100 Royall Street
Canton, MA 02021
Contact: Kathy Hendry
Telephone: (617) 828-2500
FAX: (617) 575-5751
Wilson Instruments Division of Instron Corp. will exhibit new UMIS-2000 micro indentation system. The UMIS-2000 is an ultra micro-indentation system for investigating the elastic, plastic, strain hardness, creep, fracture, and other mechanical properties of coatings and very near surface regions of materials. It has applications in characterizing a wide range of materials such as hard coatings of titanium nitride and diamond film as well as, for example, polymers and soft rubbers. Instron Corporation will be exhibiting the new Mini Tester system.

Instruments S.A. #A10

3880 Park Avenue
Edison, NJ 08820
Contact: Jean Berthold
Telephone: (908) 549-7144
FAX: (908) 549-5125
Instruments SA is committed to serving our customers with superior products and technical support for optical spectroscopy. ISA offers many versatile research and low cost Raman spectrometers as well as scanning and imaging spectrometer systems, fluorescence systems, ellipsometry systems, photo diode array (PDA) and charge coupled device (CCD) detectors.

Ion Tech, Inc. #U501

2330 East Prospect
Fort Collins, CO 80525
Contact: Gerald Isaacson
Telephone: (303) 221-1807
FAX: (303) 493-1439
Ion Tech, Inc. provides a complete range of ion beam equipment from linear, round DC and filamentless RF sources. This equipment can be used for etching, precleaning and the production of sophisticated thin films such as diamondlike carbon (DLC), complex alloys, and high precision optical films. Though known mainly for being the leader in ion beam components, Ion Tech, Inc. also offers a full line of processing systems.

IOP Publishing #U206

Public Ledger Bldg., Suite 1035
Philadelphia, PA 19106
Contact: Tom Robertson
Telephone: (215) 627-0880
FAX: (215) 627-0879
Institute of Physics Publishing is a primary international publisher of high quality books and jour-

nals in physics and related subjects such as condensed matter and materials science. Journals in these areas include *Journal of Hard Materials*, *Journal of Physics: Condensed Matter and Modelling* and *Simulation in Materials Science and Engineering*. Institute of Physics Publishing will also be exhibiting new and recent books including *Artifice and Artefacts* by Cahn and *Semiconductor Interfaces, Microstructures and Devices* edited by Feng.

Janis Research Company, Inc. #U804

2 Jewel Drive
Wilmington, MA 01887-0696
Contact: Lori McLaughlin
Telephone: (508) 657-8750
FAX: (508) 658-0349
Janis combines over 30 years of experience with extensive engineering capabilities to provide cryogenic systems for all research applications. Janis offers closed cycle refrigerators, continuous flow and variable temperature cryostats, superconducting magnet systems, detector cooling dewars, dilution refrigerators, Helium-3 cryostats, and custom designs to meet any specific requirement.

JCPDS-ICDD #A15

12 Campus Boulevard
Newtown Square, PA 19073
Contact: M.M. Fornoff
Telephone: (215) 325-9810
FAX: (215) 325-9823
The JCPDS-ICDD maintains and distributes the Powder Diffraction File (PDF) database for use in materials characterization through X-Ray diffraction analysis. Updated annually, the PDF presently contains approximately 59,800 diffraction patterns of crystalline phases of both inorganic and organic/organometallic materials. Available in print and on CD-ROM. Educational materials and programs are also offered.

JEOL USA, Inc. #A7

11 Dearborn Road
Peabody, MA 01960
Contact: Mike Kersker(TEM) or Charlie Nielsen(SEM)
Telephone: (508) 535-5900
FAX: (508) 536-2205
JEOL has always relied on sound technology, steady service and support, and quality manufacturing to meet the scientific demands of the Materials Science community. Today, JEOL remains committed to providing the same reliable, high performance SEMs and TEMs to challenge the needs of applied and basic materials research in the future.

k-Space Associates, Inc. #U930

2231 Stone Drive
Ann Arbor, MI 48105
Contact: Darryl Barlett
Telephone: (313) 763-8747
FAX: (313) 763-8747
k-Space Associates specializes in instrumentation and control software for monitoring and analysis of surface structure and thin-film growth. We will demonstrate our popular CCD-based KSA300 system for real-time RHEED/LEED imaging and analysis. New features include accurate growth control using phase-locked epitaxy and precision strained layer monitoring.

Keithley Instruments #U935

28775 Aurora Road
Solon, OH 44139
Contact: Kristin Rice
Telephone: (216) 248-0400
FAX: (216) 248-6168
E-mail: Rice_Kristin@Keithley.com
Keithley will display its line of sensitive test instrumentation for making very accurate low current and low voltage DC measurements. Keithley will demonstrate two new electrometers perfectly suited for materials research applications. Other products to be shown include picoammeters, source-measure units, and a new DMM.

Kimball Physics, Inc. #U504

311 Kimball Hill Road
Wilton, NH 03086-9742
Contact: Faye M. Bigarel
Telephone: (603) 878-1616
FAX: (603) 878-3700
UHV Electron Sources, Ion Sources, Systems: 5 eV to 100 keV. 10⁻¹⁵ A to 1 A; μ m to m Diameters. Applications: Surface Physics, RHEED, ESD, MBE, Heating, Space Physics, Semiconductor Processing, Microscopy, etc. UHV Components: Cathodes, Cathode Mounts, Wehnelt, and Cartridges; Faraday Cups, Multi-CF Fittings, Phosphor Screens, eV Parts, Insulators, Materials.

Kluwer Academic Publishers #U106

101 Philip Drive
Norwell, MA 02061
Contact: Jane Strone
Telephone: (617) 871-6600
FAX: (617) 871-6528
E-mail: JSKLUPER@WORLD.STD.COM
Visit Kluwer Academic Publishers at the Fall MRS Meeting and receive a sample copy of one of the new materials research journals: Sol-Gel Science and Technology; Interface Science; The Journal of Porous Materials; Advanced Performance Materials; and Applied

1994 MRS FALL MEETING EXHIBIT

Composite Materials. Also on display, the latest research books.

Kratos Analytical #W22

535 East Crescent Avenue
Ramsey, NJ 07446
Contact: David Surman
Telephone: (201) 825-7500
FAX: (201) 825-8659

Kratos Analytical is a leading supplier and manufacturer of high performance surface analysis instrumentation. The instruments produced include dedicated XPS/ESCA Systems; Auger instruments and multi-technique combination instruments. A range of secondary ion mass spectrometry equipment and vacuum components are also produced.

Lake Shore Cryotronics, Inc. #U703, U704

64 East Walnut Street
Westerville, OH 43081
Telephone: (614) 891-2243
FAX: (614) 891-1392

Cryogenic temperature sensors including diodes, resistors, capacitance, rhodium-iron, magnetic field Hall generators and Cernox™ sensors with low magnetic field dependence; analog and autotuning temperature controllers, helium level monitors, temperature transmitters and current sources; gaussmeters for benchtop and hand-held applications; AC Susceptometers/DC Magnetometers; Vibrating Sample Magnetometers; true, four-quadrant Magnet Power Supplies for electromagnets and superconducting magnets and electromagnets.

Lambda Physik, Inc. #U928

289 Great Road
Acton, MA 01720-4739
Contact: Gerard J. Zaal
Telephone: (508) 263-1100
FAX: (508) 263-4296

Kurt J. Lesker Company #U939, U940

1515 Worthington Avenue
Clairton, PA 15025
Contact: Mike McKeown
or Bill Zinn
Telephone: (412) 233-4200
FAX: (412) 233-4275

As exclusive agents, we are displaying: Vacuum Generators high precision, UHV sample manipulators; VG Microtech's surface science instrumentation (XPS, AES, UPS, ARUPS, LEED & RHEED); and VG Quadrupoles residual gas analyzers. Other products include our Torus sputter sources and materials, electrical feedthroughs, flanges/hardware and our complete line of vacuum gauges.

-See ad in this issue.

Leybold Inficon, Inc. #U937

2 Technology Place
East Syracuse, NY 13057
Contact: Betty Ann Kram
Telephone: (315) 434-1126
FAX: (315) 437-3803

Leybold Inficon's advanced instrumentation techniques combine unique sensing technology with specialized electronics. The company's expertise includes the new PC based and quadrupole mass spectrometers and partial pressure controllers for Residual Gas Analysis, Thin Film Deposition Controllers, high sensitivity Helium Leak Detectors and a complete family of digital and analog Vacuum Gauge Controllers.

Los Alamos National Laboratory #U409

MST-DO MS G756
Los Alamos, NM 87545
Contact: Lynne M. Johnson
Telephone: (505) 665-1499
FAX: (505) 665-3748

E-mail: L.johnson@lanl.gov
LOS ALAMOS NATIONAL LABORATORY (Los Alamos, NM)—Los Alamos National Laboratory supports all aspects of materials processing and advanced materials development: from synthesis and fabrication to characterization and analysis to hazardous materials processing. We maintain a variety of science and technology programs as well as state-of-the-art facilities and unique capabilities.

LUXTRON Corporation #U104

2775 Northwestern Parkway
Santa Clara, CA 95051-0941
Contact: William Kolbeck
Telephone: (408) 727-1600
FAX: (408) 727-1677

Optical fiber temperature measurement and control instrumentation. Offers non-contact and contact temperature measurement from -200°C to 4000°C with resolution to 0.01°C.

Marcel Dekker, Inc. #U112

270 Madison Avenue
New York, NY 10016
Contact: Gina Coppola
Telephone: (212) 696-9000
FAX: (212) 685-4540

Marcel Dekker, Inc. displays professional books and journals of great interest to conference participants. Discount order forms can be picked up at the booth.

MDC Vacuum Products Corporation #U943

23842 Cabot Boulevard
Hayward, CA 94545
Contact: Mike Weiss
Telephone: (510) 887-6100
FAX: (510) 887-0626

Complete line of UHV compo-

nents including: Flanges and fittings, valves, roughing components, instrumentation, electrical feedthroughs, XYZ manipulators, rotary and linear feedthroughs, fast entry load-lock systems, all-metal sealed right angle valves and M.E.S.A. compatible rectangular gate valves. Featured products will be a complete line of electron beam evaporation sources in single pocket and multi-pocket configuration with matching 6kW, 10kW and 15kW solid state switching power supplies.

-See ad in this issue.

Microcal Software, Inc. #U407

One Roundhouse Plaza
Northampton, MA 01060
Contact: Nicole Baker
Telephone: (413) 586-2013
FAX: (413) 585-0126

Origin, a Microsoft Windows based software, is designed to meet the needs of modern laboratories. Origin provides an integrated solution for data acquisition, data analysis and publication graphics. Origin's powerful scripting language and friendly interface make it easy to automate routine laboratory tasks.

Microchemistry, Ltd. #U913

P.O. Box 45
FIN-02151 Espoo
Finland
Contact: Heli Vaara
Telephone: (358) 0-450-5702
FAX: (358) 0-450-5700

Microchemistry, Ltd. supplies machinery for Atomic Layer Epitaxy (ALE) process as well as research services in advanced surface chemistry and thin film processing technology. Microchemistry's ALE reactors make it possible to apply Atomic Layer Epitaxy onto substrates up to 1.5 ft'. Customized reactors can be supplied to specific materials and applications.

Micro Photonics, Inc. #U920

4949 Liberty Lane, Suite 170
P.O. Box 3129
Allentown, PA 18106-0129
Telephone: (215) 366-7103
FAX: (215) 366-7105

Micro Photonics offers the NanoTest 550 and MicroTest 200 instruments for mechanical properties measurements on thin films, surface layers and bulk materials; the High Temperature Tribometer for pin-on-disc wear testing to 800°C; the Micro Scratch Tester for thin film adhesion testing; and the Universal Wear Machine for pin-on-disc, pin-on-plate and block-on-ring testing.

MKS Instruments, Inc. #U705, U706

6 Shattuck Road
Andover, MA 01810
Telephone: (508) 975-2350
FAX: (508) 975-0093

MKS will exhibit its full line of vacuum/pressure/flow instrumentation, including mass flow meters and controllers, vacuum gauges, pressure transducers, pressure control systems, HPS vacuum valves and hardware, and NGS mass spectrometers and primary and secondary calibration systems. New products this year include systems for Direct Liquid Chemical Injection.

MMR Technologies, Inc. #U508

1400 N. Shoreline Blvd, Suite A-5
Mountain View, CA 94043-1346
Contact: Robert L. Paugh
Telephone: (415) 962-9620
FAX: (415) 962-9647

MMR Technologies will exhibit Temperature Controlled Systems — Cryogenic Cooling Systems and Wide Temperature Range Thermal Stages — which find application in Materials Research, Cooling and Characterization of Electronic Devices, Laser Diodes, and Thermal Imaging Devices as a function of Temperature, and Low Temperature Physics & Chemistry Applications. Seebeck Effect, Hall Effect, DLTS, and up to Seven Probe Measurement Systems are available.

Molecular Simulations #U802, U803

16 New England Executive Park
Burlington, MA 01803
Telephone: (617) 229-9800
FAX: (617) 229-9899

Apply the Predictive PowerSM of CeriusTM to your most challenging materials research needs. The new Quantum Mechanics Workbench includes *ab initio* solid state quantum software that is easy to use and affordable. Only Cerius² offers a comprehensive suite of tools for the determination of organic crystal structures. This latest release also features breakthrough capabilities that address thin-films, semiconductors, analysis of EXAFS data and the prediction of mechanical properties for bulk materials. With Cerius² you get more than a wide array of analytical tools, an intuitive interface and on-line support - you get results.

MR Semicon, Inc. #A9

6200 Eubank Blvd., N.E. #415
Albuquerque, NM 87111-7313
Contact: Roger Waldock
or Patricia Ferguson
Telephone: (505) 294-5761
Toll free: (800) 832-1518
FAX: (505) 294-5772

1994 MRS FALL MEETING EXHIBIT

MR Semicon Inc. markets & refurbishes a complete range of crystal growth equipment, production, research & proof of concept. Czochralski, Bridgman, Top Seeded Flux & Float Zone. Full range of Bench Top Cutting & Polishing Equipment & Services. Laboratory Furnaces. Spares & Consumables for Metals Research/Cambridge Pullers & MOVPE systems. Crystals for your custom requirements.

MTS Systems Corporation #U918

14000 Technology Drive
Eden Prairie, MN 55344-2290
Contact: Larry Mosiman
Telephone: (612) 937-4656
FAX: (612) 937-4515

MTS provides a wide variety of systems and accessories for virtually every test possible on traditional and advanced materials. MTS capabilities include systems for simulating in-service environments such as high pressure, high temperature hydrogen; high pressure vacuum and low temperature. MTS systems include software capable of the most complex tests.

Nano Instruments, Inc. #U609

P.O. Box 14211
Knoxville, TN 37914
Contact: Michael O'Hern
Telephone: (615) 927-0500
FAX: (615) 927-3110

Nano Instruments features the Nano Indenter® II, the original mechanical properties micro-probe (MPM) with the most flexible software and sensitive hardware available. And now, precision friction and scratch testing can be performed with the same premier MPM. NEW: Nano Instruments is announcing a new model, the Nano Indenter® IIs, which has nearly all of the capabilities of the Nano Indenter® II, but lists at 35% lower cost.

Nanophase Technologies Corporation #U910

8205 S. Cass Avenue, Suite 105
Darien, IL 60561
Contact: Jody W. Maerz
Telephone: (708) 963-0282
FAX: (708) 963-0317
E-mail: nanophase@aol.com

Nanophase Technologies offers nanocrystalline ceramic and metal particulates. Powders are available in a range of sizes from 5-100 nm (0.005 micron-1 micron). Standard materials include Al₂O₃, TiO₂, Fe₂O₃, CeO₂, Cr₂O₃, Y₂O₃, Al, Co, Cu, Fe, Ni, Si, Au, Ag, Pd. Inquiries are encouraged for your specific application needs.

—See ad in this issue.

National Electrostatics Corporation #U707

7540 Graber Road
P.O. Box 620310
Middleton, WI 53562-0310
Contact: Gregory A. Norton
Telephone: (608) 831-7600
FAX: (608) 256-4103
E-mail: nec@well.sf.ca

NEC manufactures a wide range of ion beam systems from 100 keV to the 100's of MeV region. These systems include dedicated analysis instruments for RBS, PIXE, NRA and other analysis procedures. Also available is information concerning NEC's electron beam and x-ray systems in the MeV region.

—See ad in this issue.

Naval Research Laboratory #W33

4555 Overlook Avenue S.W.
Washington, DC 20375-5322
Contact: Linda Greenway
Telephone: (202) 767-2541
FAX: (202) 767-6991

The Naval Research Laboratory (NRL) has major facilities on the banks of the Potomac River in Southwest Washington D.C.; at the Stennis Space Center, Mississippi; in Monterey, California; and in Orlando, Florida. NRL was dedicated on July 2, 1923 and is the Navy's only corporate laboratory, charged with the mission of conducting a broadly based, multi-disciplinary program of scientific research and advanced technological development. Research is directed toward maritime applications of new and improved materials; techniques; equipment; systems; ocean, atmospheric, and space sciences; and related technologies. The Navy has established NRL as its lead laboratory in space technology, fire research and artificial intelligence.

Neocera, Inc. #U929

335 Paint Branch Drive
College Park, MD 20742-3261
Contact: Tracy L. Fortuna
Telephone: (301) 314-9212
FAX: (301) 405-9256

Specialists in pulsed laser deposition (PLD) and advanced thin film technologies will be exhibiting and demonstrating a fully operational PLD laboratory. Also displayed will be different PLD accessories and custom metal oxide films deposited on a variety of substrates. Literature will be available regarding our unique R&D efforts, products and services.

New Focus, Inc. #U911

1275 Reamwood Avenue
Sunnyvale, CA 94089
Contact: Milton Chang
Telephone: (408) 734-8988

FAX: (408) 734-8882
E-mail: NewFocus@AOL.COM

Award-winning products demonstrated at MRS for the first time feature important new building blocks for absorption, FM, and nonlinear spectroscopy such as tunable diode lasers, multi-pass absorption cell, differential optical receivers, modulators, ultra-high-speed photodetectors and amplifiers. Laser tools include new motorized positioners, waveplates, polarizers, optics, and integrated optic devices.

—See ad in this issue.

Nor-Cal Products, Inc. #U927

1967 S. Oregon Street
P.O. Box 518
Yreka, CA 96097
Contact: Tom Deany
Telephone: (916) 842-4457
FAX: (916) 842-9130

Manufacturer of stainless steel vacuum components. Standard products include: NW, ISO, ASA, CF, and Wire Seal Flanges; fittings, viewports, feedthroughs and flexible hoses; manual and pneumatically actuated valves; and liquid nitrogen, molecular sieve, water-cooled and particulate foreline traps. Custom chambers, manifolds, feedthrough collars and baseplates can be manufactured from customer specifications, sketches or drawings.

North Eastern Analytical Corporation #U610

17 Sherman Road
P.O. Box 25
Millis, MA 02054-0025
Contact: Joan A. Flanagan
Telephone: (508) 376-4132
FAX: (508) 376-8687

Displaying Bede Scientific QC2A, D³ and 200/D³ High Resolution X-Ray Diffractometer Systems. Glancing Incidence Reflectometer Systems. "RADS" Rocking Curve and "REFS" Reflectivity Simulation Software. X-Ray Generators, X-Ray Tubes and Radiation Enclosures.

Omicron Associates #U903

1738 N. Highland Road,
Suite G-100
Pittsburgh, PA 15241
Contact: Frederic Henn
Telephone: (412) 831-2262
FAX: (412) 831-9828

OMICRON offers surface science and material research laboratories a complete range of analytical equipment including a comprehensive series of UHV Scanning Probe Microscopes. One of the key objectives of OMICRON is to offer complete solutions to major materials research groups who require multi-technique systems, with guaranteed performance, to allow presentation of results in the fastest practical time.

Oxford Applied Research #W27

Crawley Mill
Witney, Oxon
United Kingdom
Contact: Christian Bradley
Telephone: (44) 993-773575
FAX: (44) 993-702326

Manufacturers of scientific instruments for thin film research. The Reactive Atom Source facilitates: GaN growth; ZnSe p-doping; in-situ substrate cleaning; Oxidation; Other products include RHEED, magnetrons, mini e-beam evaporators, focused scanning ion and electron guns for cleaning, depth profiling, patterning and milling. Special and custom instrument design problems welcomed.

Oxford Instruments, Inc. #U917

Microanalysis Group
130a Baker Avenue Extension
Concord, MA 01742
Contact: Mei Li
Telephone: (508) 369-9933
FAX: (508) 369-8287

The Link ISIS microanalysis system offers comprehensive software packages for all your analysis needs, featuring Cameo, a radically different approach to imaging and microanalysis, which visualizes complete topography and composition simultaneously; Theta, a product which dramatically simplifies combined ED/WD analysis; GEM, a high resolution detector; and Tetra backscattered detector.

Oxford Instruments, Inc. #U916

Scientific Research Division
130a Baker Avenue Extension
Concord, MA 01742
Contact: John Stephens
Telephone: (508) 369-9933
FAX: (508) 369-6616

Oxford Instruments, the world's leading cryogenic and superconducting magnet systems supplier, will display the new UHV CryoSTM, a powerful Scanning Tunneling Microscopy (STM) system providing high resolution imaging from room temperature to 4K. The UHV CryoSTM consists of an STM head with an integral vibration isolation mounted on a continuous flow cryostat, complete with TOPS data and control computer system. Visit Oxford's product engineers at the MRS Fall Exhibit.

Oxford University Press #U308

200 Madison Avenue
New York, NY 10016
Contact: Jan Arrigo
Telephone: (212) 679-7300 x7130
FAX: (212) 725-2972

Oxford University Press publishes a wide range of scholarly

1994 MRS FALL MEETING EXHIBIT

monographs, practical handbooks and useful texts in Materials Science.

Park Scientific Instruments #U405

1171 Borregas Avenue
Sunnyvale, CA 94089
Contact: Lindsey Mitobe
Telephone: (408) 747-1600
Toll free: (800) 776-1602
FAX: (408) 747-1601

AutoProbe scanning probe microscopes combine high performance and advanced data management in an easy-to-use tool for surface imaging and analysis. Versatile entry-level AutoProbe SA can image solid surfaces of any size or weight, in multiple modes. High resolution 3D imaging and reliable measurements on conducting or nonconducting materials. Key products: Scanning probe microscopes (SPMs), atomic force microscopes (AFMs), scanning tunneling microscopes (STMs), AFM/STM in ultra-high vacuum, cantilevers and tips.

Peabody Scientific #U503

P.O. Box 2009
Peabody, MA 01960
Contact: Frank Chmara
Telephone: (508) 535-0444
FAX: (508) 535-5827

Ion beam equipment for materials modification and analysis. Products include heavy ion accelerators for surface modification and heavy ion backscattering, time of flight medium energy backscattering spectrometer, cesium ion source for SIMS and ion microprobes. Also, a complete line of ion beam components.

Philips Electronic Instruments Company #U606, U607

85 McKee Drive
Mahwah, NJ 07430
Contact: Lisa Schroeder
Telephone: (201) 529-6246
FAX: (201) 529-5084

Philips Electronic Instruments Company is the leading manufacturer of X-Ray Diffraction and X-Ray Fluorescence equipment as well as a full line of Scanning and Transmission Electron Microscopes. Information is available on all product lines. Philips Electronic Instruments Company is ISO 9001 certified. We adhere to the most stringent of the three ISO classifications which requires an established, effective quality system be in place.

Physical Electronics #U809, U810

6509 Flying Cloud Drive
Eden Prairie, MN 55344
Contact: Robert Jaynes
Telephone: (612) 828-6100
FAX: (612) 828-6322

Physical Electronics (PHI) develops, manufactures and markets a complete line of surface analysis instrumentation, surface analysis subsystems, components and ultrahigh vacuum equipment. Surface analysis instruments from PHI utilize the Auger, ESCA/XPS and TOFSIMS techniques. Vacuum products include ion pumps, gauge controllers and ion pump power supplies.

Plasma Sciences, Inc. #A3

7200A Telegraph Sq. Drive
Lorton, VA 22079
Contact: Steven L. Collins
Telephone: (703) 550-7888
FAX: (703) 339-9860

Plasma Sciences, Inc. specializes in the manufacture of high quality thin film deposition and etching systems for research and pilot production. Available are single and multi source DC/RF planar magnetron sputtering systems, broad beam ion beam R&D etching systems, and reactive ion etchers.

—See ad in this issue.

Plenum Publishing Corporation #U107

233 Spring Street
New York, NY 10013
Contact: Eleonore Jentsch
Telephone: (212) 620-8459
FAX: (212) 647-1898

Exhibiting books and journals in all areas of materials science and related topics including Case Studies in Superconducting Magnets by Y. Iwasa; Introduction to Superconductivity by T. Sheahen; X-Ray Spectrometry and Electron Beam Instruments edited by D. Williams et al; Advances in Acoustic Microscopy edited by D. Briggs; the third edition of Structure Determination by X-Ray Crystallography by M.F.C. Ladd and R.A. Palmer; and Journal of Materials Synthesis and Processing, Journal of Superconductivity; Journal of Computer Assisted Microscopy; Journal of Environmental Polymer Degradation; Journal of Science Education and Technology and announcing a new quarterly dedicated to Plasmas and Polymers.

Polysciences, Inc. #W3

400 Valley Road
Warrington, PA 18976
Telephone: (215) 343-6484
FAX: (215) 343-0291

Polysciences offers both the ultra pure raw materials to manufac-

ture new materials and the supplies necessary to test your results. Our new Microscopy/Histology catalog has over 1000 new items to assist with SEM procedures as well as our traditionally strong products for light and TEM specimen processing. For research on new materials our Monomer/Polymer catalog highlights such materials as various MW polymers, ultrahigh purity (>99%) monomers and related specialty additives.

Princeton Gamma-Tech #U311, U312

1200 State Road
Princeton, NJ 08540
Contact: Jeannie Weakleim
Telephone: (609) 924-7310
FAX: (609) 924-1729

Introduces PRISM™, the first digital EDS Spectrometer with Digital Pulse Processing. Noise-free digital circuitry has replaced the out-dated analog components of the X-ray pulse processing chain to provide extraordinary enhancement in the quality of X-ray detector performance. Coupled with the IMIX-XD, this breakthrough represents the most advanced EDS system available in the industry today.
—See ad in this issue.

Princeton Instruments, Inc. #U925

3660 Quakerbridge Road
Trenton, NJ 08619
Telephone: (609) 587-9797
FAX: (609) 587-1970

Princeton Instruments is a major manufacturer of advanced detectors for spectroscopy and of electronic cameras for low light imaging. We offer high dynamic range, high resolution and fast readout. Models are available which have been optimized for visible light, infra-red, ultraviolet and x-ray wavelength ranges.

Princeton Research Instruments, Inc. #U811

P.O. Box 1174
Princeton, NJ 08542
Contact: Charles A. Crider
Telephone: (609) 924-0570

ProChem, Inc. #U914

826 Roosevelt Road
Rockford, IL 61109
Contact: Reno Novak
Telephone: (815) 398-1788
FAX: (815) 398-1810

ProChem Inc specializes in manufacturing high purity inorganic, organometallic and biochemical reagents. A chemical catalog with over 1,000 compounds will be available. Custom synthesis of exotic or novel compounds are available. The products produced at ProChem have applications in semiconductors, superconduc-

tors, ceramics and other high tech fields.

Pure Tech, Inc. #U604

Commerce Drive
P.O. Box 1319
Carmel, NY 10512
Contact: Matthew T. Willson
Telephone: (914) 878-4499
FAX: (914) 878-4727

Pure Tech is an American business devoted to the quality manufacture of high purity materials for sputtering and evaporation. We specialize in difficult or unusual materials for research and development as well as production lots of more standard items. Our in-house capabilities include vacuum melting, hot pressing, metal and ceramic machining, custom designed backing plates and target bonding services. Pure Tech is an ISO 9002 Certified Supplier of P.V.D. Materials.

Quantum Design #U608

11578 Sorrento Valley Road
San Diego, CA 92121
Contact: Chris Gardner
Telephone: (619) 481-4400
FAX: (619) 481-7410

E-mail: INFO@QUANDSN.COM
Will display its new high field, large bore, variable temperature platform. This platform (PPMS) has an optional AC Susceptometry/DC Magnetometry insert for fast, economical measurements. Other magnetometers displayed will include the SQUID based MPMS. We will also display our new single channel dc SQUID system along with our multi-channel dc SQUID controller.

Radiant Technologies, Inc. #W13

1009 Bradbury Drive S.E.
Albuquerque, NM 87106
Contact: Michelle Bell
Telephone: (505) 842-8007
FAX: (505) 842-0366

Ferroelectric thin film/bulk ceramic test system (RT6000HVS) allows the user to test nonlinear materials up to $\pm 4000V$. System includes 486-33 MHz driven test and measurement hardware which combines function generator, electrometer, and oscilloscope in one self-calibrating package with an accuracy of 0.01 $\mu C/cm$. The RT6000 Series system configurations include: RT6000S-Nonlinear Thin Film Test System, RT6000SI-4 X 96 Switch Matrix Channel System for testing multiple thin film samples. Future system configurations include: RT6000F-performs pulse response measurements at $<1 \mu s/pulse$.

1994 MRS FALL MEETING EXHIBIT

Rees Instruments #W31

P.O. Box 1031
Leominster, MA 01453
Contact: Mary Mullahy
Telephone: (508) 534-9491
FAX: (508) 534-9491

Rees Instruments will display a range of optical spectrum analyzers which feature our unique fast-scanning monochromator and a PC based data collection and processing system for a wide range of spectroscopic measurements. Typical applications include plasma monitor, end point detection in coating deposition, quality control measurements of filters, mirrors, etc.

Research & PVD Materials Corporation #U905

P.O. Box 4796
Wayne, NJ 07474
Contact: Melvin J. Hollander
Telephone: (201) 575-4245
FAX: (201) 575-6460

Research and PVD Materials Corporation has established a unique SERVICECENTER, manufacturing a comprehensive offering of highly characterized materials for the diverse and sophisticated requirements of the semiconductor, electronics, electro optic and related research communities. Products from this single quality source include but are not limited to fabricated forms of specialty and exotic metals, alloys, ceramics and custom "one off" vacuum components.

RHK Technology, Inc. #U507

1750 West Hamlin Road
Rochester Hills, MI 48309
Contact: John M. Green
Telephone: (810) 656-3116
FAX: (810) 656-8347

We will be exhibiting our line of high performance SPM control and software solutions. Silicon Graphics and PC based scanning probe microscopy control systems will be on display and our STiImage and STMCPs data acquisition, image processing and visualization software will be demonstrated throughout the show. SPM control accessories including: the IWC 100 Inchworm Motor Controller and AFM 100 Interface Control Module will also be displayed.

RIGAKU/USA, Inc. #U601

Northwoods Business Park
199 Rosewood Drive, Suite 190
Danvers, MA 01923
Contact: Greg Hamill
Telephone: (508) 777-2446
FAX: (508) 777-3594

Rigaku will show for the first time in the U.S. the first theta/theta X-Ray diffractometer with rotating anode generator. The theta/theta configuration has

shown its usefulness and versatility for several years but with the added benefit of significantly increased X-Ray intensity from the rotating anode. This system will create new horizons particularly in the study of thin films and surface science.

Royal Society of Chemistry #U310

Thomas Graham House
Science Park, Milton Road
Cambridge CB4 4WF
United Kingdom
Contact: F.L. Powers
Telephone: (44) 223 420066
FAX: (44) 223 423429

The RSC produces books, journals, and databases on all aspects of chemistry. Featured at this meeting will be our Journal of Materials Chemistry and our wide selection of books covering polymer and material science.

Sandia National Laboratories #U410

P.O. Box 5800
Albuquerque, NM 87185
Contact: Kim Mahin
Telephone: (505) 844-2222
FAX: (505) 844-7910

The Sandia National Laboratories Materials Core Competency provides reliable, comprehensive, and integrated solutions to materials and process problems critical to the security, prosperity, and well-being of the nation. We perform research, development, and application engineering for our customers in Sandia, government, industry, and academia.

Schumacher #U401

1969 Palomar Oaks Way
Carlsbad, CA 92009
Contact: Mary McAdams
Telephone: (619) 931-9555
FAX: (619) 931-7819

Schumacher is a leading supplier of ultra-high purity chemicals and chemical delivery equipment to the semiconductor industry. In addition to our standard line of production chemicals for diffusion, oxidation and CVD processes, Schumacher also supplies precursors for CVD copper (CupraSelect®) titanium nitride (TDMAT, TDEAT), tantalum oxide (TAETO), BST, plus many others.

Scientific Instruments, Inc. #A5

4400 West Tiffany Drive
West Palm Beach, FL 33407
Contact: R. Michael Capers
Telephone: (407) 840-4005
FAX: (407) 881-8556

Scientific Instruments Inc. is a manufacturer of Cryogenic Temperature Sensor & Instrumentation Products. Sensor products offer ranges from 0.05K to

600.0K and may be used in magnetic field applications. Instrumentation products include temperature indicators, temperature controllers, and data acquisition systems.

Scintag, Inc. #A11

707 Kifer Road
Sunnyvale, CA 94086
Contact: Elisabeth Rippstein
Telephone: (408) 737-7200
FAX: (408) 737-9841

Semiconductor Processing Company #W20

409 E. First Street
Boston, MA 02127
Contact: Sean Quinn
Telephone: (617) 269-4422
FAX: (617) 269-4659

Since 1967, Semiconductor Processing Company has supplied silicon, germanium, and gallium arsenide materials and services to electronic and optoelectronic device manufacturers worldwide. Known for UNMATCHED PRECISION manufacturing of ultra flat silicon wafers for surface bonding and sensor applications, Semiconductor Processing Company also provides custom fabrication services.

Siemens Industrial Automation, Inc. #U505, U506

6300 Enterprise Lane
Madison, WI 53719-1173
Contact: Richard Ortega
Telephone: (608) 276-3048
FAX: (608) 276-3006

Siemens Analytical Instruments specializes in X-ray diffraction and fluorescence, including configurations for phase-ID, quantitative analysis, and single crystal molecular structure determination. Specialized equipment and software developments include high resolution optics for analyzing epitaxial materials, two-dimensional detectors for reciprocal space mapping and texture analysis, and advanced monochromators to increase X-ray flux.

SKION/Structured Materials Industries #U922

612 River Street
Hoboken, NJ 07030
Contact: Seong Kim
Telephone: (201) 216-5633
FAX: (201) 798-5999

The SKION Corporation/Structured Materials Industries, Inc. (SMI) are a collaboration of two companies. SKION is developing several advanced ion sources and ion beam deposition equipment. SMI is developing advanced photonic and tribological materials as well as equipment modules in support of these advanced materials.

Solid State Equipment Corporation #U923

1015 Virginia Drive
Fort Washington, PA 19034
Contact: Richard D. Richardson
Telephone: (215) 643-7900 x741
FAX: (215) 643-7910

Evergreen Model 50 Fully Automatic Cleaner for single or double sided cleaning of wafers, masks and substrates. The Model 50 provides advanced capabilities such as edge grip handling with feedback, high resolution automatic scrub, in-line chemical mixing, heated or ambient dispenses, high pressure cleaning, megasonic nozzle dispense and more. The Evergreen series provides the reliability and value of a PC based system.

-See ad in this issue.

SOPRA, Inc. #U305

33 Nagog Park
P.O. Box 2619
Acton, MA 01720-6619
Contact: William Henderson
Telephone: (508) 263-2520 x107
FAX: (508) 263-2790

The GESP5 is the first commercially available instrument to combine spectroscopic ellipsometry with accurate measurement of light scattering transmittance, and reflectance as a function of wavelength, incidence angle and polarization.

South Bay Technology, Inc. #A1, A2

1120 Via Callejon
San Clemente, CA 92673
Contact: David Henriks
Telephone: (714) 492-2600
Toll-free: (800) 728-2233
FAX: (714) 492-1499

South Bay Technology manufactures sample preparation equipment and supplies for metallography, crystallography and electron microscopy. New products on display include:

- Diamond Band Saw
- Ezorient™ system for digitizing laue patterns
- Omnilap™ 2000 lapping and polishing system
- Tripod Polisher™ cross sectioning systems
- New Abrasive pads for ultra-fine finishing
- A Single Vertical-jet electro-polisher for TEM

Springer-Verlag New York, Inc. #U307

175 Fifth Avenue
New York, NY 10010
Contact: Ken Quinn
Telephone: (212) 460-1577
FAX: (212) 533-5587
E-mail: kquinn@springer-ny.com
Key new titles include Auerbach's INTERACTING ELECTRONS & QUANTUM MAGNETISM, Sapoval's

1994 MRS FALL MEETING EXHIBIT

PHYSICS OF SEMICONDUCTORS, Vainshtein's FUNDAMENTALS OF CRYSTALS, and Shinde & Rudman's INTERFACES OF HIGH-Tc SUPERCONDUCTING SYSTEMS. Stop by to take advantage of our 15% and 20% discounts on any Springer book.

SSC, Inc. #U906

16130 Woodinville Redmond Road #7
Woodinville, WA 98072
Contact: Greg Smith
Telephone: (800) 745-7457
FAX: (206) 487-1859

SSC manufactures a wide variety of ceramic oxide powders which are used in research on superconductor, ferroelectric, and electrochemical applications. The company uses a unique and patented combustion spray pyrolysis process to manufacture fine particle size powders with molecular scale homogeneity. These powders are also used to produce both sputtering and laser ablation targets.

Staib Instrumente #W29

Obere Hauptstrasse 45
Freising D-85354
Germany
Contact: Philippe Staib
Telephone: (49) 8161-7740
FAX: (49) 8161-7709

Manufacturing electron-optical equipment for material analysis also to customer specification. The RHEED-Systems and RHEED-Vision are instruments to study structure, quality and growth of thin films in semiconductors, superconductors and coatings. PEEM is a new technique for dynamic studies of surface chemistry and work function distribution with high time and spatial resolution.

Structure Probe, Inc. #U926

569 E. Gay Street
P.O. Box 656
West Chester, PA 19381-0656
Contact: Charles A. Garber
Telephone: (610) 436-5400
Toll free: (800) 2424-SPI
FAX: (610) 436-5755

Structure Probe, Inc.: Independent laboratory providing innovative electron microscopy and surface analysis services for solving materials science problems, including HTC materials, diamond coatings and complex polymer systems. SPI Supplies: Sample preparation instruments and consumable supply items for electron microscopy and surface analysis laboratories. Exclusive SPI-Module™ Sputter/Carbon Coating System, Plasma Prep II™ etcher/Asher, Plasma Prep X™ Parallel Plate all solid state Plasma Etcher for anisotropic etching. Be sure to pick up our current catalog.

Superior Vacuum Technology #U408

7620 Executive Drive
Eden Prairie, MN 55344
Contact: Jim Tolan
Telephone: (612) 934-1993
FAX: (612) 934-2021

Superior Vacuum Technology (SVT), a leading MBE and sputter UHV deposition manufacturer, has successfully pioneered the way for custom MBE systems and more recently complex sputter UHV deposition systems with complete integration of high quality components including surface analysis and computer controlled system automation resulting in improved performance.

Sycon Instruments, Inc. #U909

6757 Kinne Street
East Syracuse, NY 13057
Contact: Gwen Stell
Telephone: (315) 463-5297
FAX: (315) 463-5298

Sycon Instruments Inc. is a manufacturer of Thin Film Deposition Monitors and Controllers utilizing the quartz crystal sensing techniques. A complete line of HV and UHV sensors and shutters for these products are available. A multi-pocket E-Beam Source Indexer for the control of 4 and 6 pocket E-Beam Guns is now available from Sycon. A new deposition monitor based on the principle of Atomic Absorption has been added to the Sycon Product Line. This product is used for continuous monitoring of film deposition.

Synergistic Technologies #W8

P.O. Box 14847
Research Triangle Park, NC 27709
Contact: Michelle Enke
Telephone: (919) 544-4936
FAX: (919) 544-5084

Synergistic Technologies, Inc. (STI) provides connections to research professionals in key technology areas through its research profile directories and databases. The profiles provide detailed information on research efforts, resources and technology developments, enabling industry, government and academia to quickly locate researchers who meet their specific high-tech needs.

Taylor & Francis #U108

1900 Frost Road, Suite 101
Bristol, PA 19007-1598
Contact: Dayna Ramsay
Telephone: (215) 785-5800
FAX: (215) 785-5515

Taylor & Francis is an international publisher and distributor of scientific, technical and professional books and journals in physics, fiber optics, optoelec-

tronics and other related disciplines. Titles include *Philosophical Magazine*, *International Journal of Optoelectronics* and *Liquid Crystals*.

Technotrade International, Inc. #U907

P.O. Box 543
Londonderry, NH 03053-0543
Contact: Albrecht Auwaerter
Telephone: (603) 437-2991
FAX: (603) 437-3091

Technotrade will display the MECO® Chain a quick connector for high and UHV applications. The Wolf GmbH UHV-Instrumentation feedthrough for SUB-D Connectors, a new innovative product and Pink Vakuumtechnik GmbH with expertise in vacuum supported process machinery and system design, producing custom chambers, components for accelerators, and UHV systems.

Telemark #U402

51 Whitney Place
Fremont, CA 94539
Contact: Chris Johnson
Telephone: (510) 770-8700
FAX: (510) 770-8879

Telemark provides PVD components, including Electron Beam Guns, E-Beam Power Supplies, Sputter Cathodes, Sputter Power Supplies, Optical Monitors, Deposition Controllers, and related accessories. New products include inexpensive 3kW E-Guns and Power Supplies, as well as a 2kW Sputter Power Supply and small cathodes.

Tencor Instruments #U808

2400 Charleston Road
Mountain View, CA 94043
Contact: Roberta Emerson
Telephone: (415) 969-6767
FAX: (415) 969-6371

Surface profiling systems for a variety of applications and budgets, providing comprehensive surface analysis on even very soft films. Guaranteed repeatability ensures highly accurate measurements. Large sample profiler for flat panel displays. Thin film stress measurement systems for analysis at temperatures from -65 to 900°C and automated film stress measurement systems with radial stress mapping.
-See ad in this issue.

Thermionics Laboratory, Inc. #U805, U806

22815 Sutro Street
P.O. Box 3711
Hayward, CA 94540
Contact: John Brooks
Telephone: (510) 538-3304
FAX: (510) 538-2889

Thermionics manufactures UHV systems, hardware and components. TLI offers the industry's only 5 year guarantee. Products

featured are custom MBE systems, a demountable growth flange with up to 8 evaporation sources, e-Guns and power supplies, RHEED Systems (15-30 KeV), precision XYZ manipulators, UHV sample manipulation components and systems, high temperature sample heaters, transferrable sample thermocouple, differentially pumped rotary platform seals, ion pumps and titanium sublimators, UHV gate valves and all metal sealed bakeable valves. Thermionics NW manufactures a range of components for PLD, MBE and PLD/MBE combined processes.

Topsil Semiconductor A/S #W18

25 Burlington Mall Road, Suite 300
Burlington, MA 01803
Contact: John Regan
Telephone: (617) 270-0622
FAX: (617) 229-9358

Topsil Semiconductor produces Float Zone silicon used primarily for the electronics, and optoelectronics industries. Topsil can produce Boron and Phosphorous doped silicon from 1 to 50,000 ohm-cm, specializing in HPS and NTD material. Topsil can produce crystal up to 125 mm, with full wafer capabilities including 2X polished.

TSL, Inc. #A20

1095 E. 2100 South #270
Salt Lake City, UT 84106
Contact: John Bennion
Telephone: (801) 467-8930
FAX: (801) 344-8990
E-mail: 73251.1424@compuserve.com

TSL introduces Orientation Imaging Microscopy™, a revolutionary new technique for analyzing local texture and grain boundary structure of polycrystalline materials. By rapidly capturing and processing BKD patterns from bulk samples on an SEM, OIM systems produce thousands of orientation measurements within minutes, linking local lattice orientation with grain morphology.

Varian Vacuum Products #U934

121 Hartwell Avenue
Lexington, MA 02173
Contact: Phil Ciaccio
Telephone: (800) 926-3000 x3118
FAX: (603) 382-3451

Varian VP manufactures a full line of leak detectors, turbo pumps, vacuum instrumentation and hardware. Special pumping systems and carts are also available.

1994 MRS FALL MEETING EXHIBIT

VAT, Inc. #A6

600 West Cummings Park
Woburn, MA 01801
Contact: Lucille Costa
Telephone: (617) 935-1446
FAX: (617) 935-3940

VAT will display a variety of viton-sealed and all-metal sealed vacuum valves for pump isolation, load-locks, downstream pressure control, beam lines, and other applications. Patented VATSEALS, a simple method for metal sealing flat surfaced flanges in any shape, from 2°K to 300°C, will also be shown.

VCH Publishers, Inc. #U110

220 E. 23rd Street
New York, NY 10010
Contact: Katherine Erjavac
Telephone: (212) 683-8333
FAX: (212) 481-0897

International publisher of research monographs, journals, and reference sets in the fields of materials science, physics, chemistry and chemical engineering, food science, and life sciences. New and featured titles include: *Advanced Materials; Nanoscale Characterization of Surfaces; The Chemistry of Metals CVD; Materials Science and Technology; Chaos & Complexity; A Random Walk through Fractal Dimensions 2nd Edition; An Introduction to Plastics; Scanning Tunneling Microscopy and Spectroscopy; Sensors; and Ternary Alloys.*

Virginia Semiconductor, Inc. #U807

1501 Powhatan Street
Fredericksburg, VA 22401
Contact: N. Perry Cook
Telephone: (703) 373-2900
FAX: (703) 371-0371

Featuring Ultrathin™ and Ultra-machining™ silicon wafers with flatness within $\leq 3\mu$, planarity of $\leq 3\mu$, and taper $\leq 2.5\mu$; also offering back side polishing services, custom or research wafer and ingot preparations, and conventional small diameter single and double side polished Cz or Fz wafers. For precisely engineered silicon products, "If we can't make it, you don't need it!"
-See ad in this issue.

Voltaix, Inc. #U605

197 Meister Avenue
North Branch, NJ 08876
Contact: John P. deNeufville
Telephone: (908) 231-9060
FAX: (908) 231-9063

Voltaix Inc., a six year MRS Corporate Affiliate and Equipment Exhibitor, manufactures and supplies gases like germane, silane, diborane, disilane, methylsilane, trimethylboron and phosphine for the CVD of semiconducting materials such as a-Si, epi-silicon and InP for projects ranging from fundamental research to device manufacture. Call 1-800-VOLTAIX for product information and MSDS's.
-See ad in this issue.

John Wiley & Sons #U109

605 Third Avenue
New York, NY 10158
Telephone: (212) 850-6046
FAX: (212) 850-6799

Visit the Wiley booth and have a look at our fine selection of books and journals. The display will include new titles, such as Chrisey & Hubler's *Pulsed Deposition of Thin Films*, Khoo's

Liquid Crystals, and Doremus' *Glass Science, 2nd Edition* as well as *Intermetallic Compounds: Principles and Practice, Volumes 1 & 2* by Westbrook and Fleischer.

J.A. Woollam Company, Inc. #U904

650 J Street, Suite 39
Lincoln, NE 68508
Contact: Kevin Lilly
Telephone: (402) 477-7501
FAX: (402) 477-8214

NON-DESTRUCTIVE multi-layer and multi-constituent materials analysis by SPECTROSCOPIC ELLIPSOMETRY. Measure film thicknesses, optical constants, alloy fractions and surface and interfacial roughness. In situ and ex situ configurations for industrial and research applications including semiconductors, magnetic materials, optical coatings and flat panel displays. New, FAST, multiwavelength in situ ellipsometer supports process monitoring and control.
-See ad in this issue.

World Scientific Publishing Co., Inc. #U115

1060 Main Street
River Edge, NJ 07661
Contact: Jo Anne Dingler
Telephone: (201) 487-9655
FAX: (201) 487-9656

E-mail: WSPC@SCRI.FSU.EDU
New books on display: Firing Ceramics (B. Remmey Jr.)
Research Frontiers in Magnetochimistry (C. O'Connor)
Electrodynamics of High Temperature Superconductors (A. Portis) and
An Introduction to Bioceramics (Hench & Wilson). Sample jour-

nal copies are available including the latest edition of Surface Review and Letters (SRL). All conference orders are discounted.

Carl Zeiss, Inc. #U302

Microscope Division
One Zeiss Drive
Thornwood, NY 10594
Contact: John Fitch
Telephone: (800) 233-2343
FAX: (914) 681-7446

Visit the Carl Zeiss exhibit to see and discuss the latest instrumentation for materials microscopy, including the new series of *Axiotech* reflected light microscopes featuring outstanding optical performance & stability at low cost. Zeiss metallographs, research upright microscopes, and stereo microscopes will also be exhibited.

Zygo Corporation #A17

Laurel Brook Road
Middlefield, CT 06455
Contact: Polly White
Telephone: (203) 347-8506 x222
FAX: (203) 347-8372

Zygo Corporation is a world leader in surface information technology and surface manufacturing. Zygo designs and manufactures precision noncontact measuring instruments, and fabricate precision surfaces on a variety of materials. Interferometric microscopes and interferometers for quantitative analysis of surface structure, surface shape, and optical quality; distance measuring interferometers for ultra-precision positioning; and precision optical fabrication and coating capability.

940230



ATTENTION



1994 MRS Fall Meeting attendees and visitors:

VISIT THE MRS EXHIBIT...

...free coffee!

...complimentary reception!

- See some of the latest analytical and processing equipment.
- Try out some of the newest software programs.
- Find out about the latest publications in your field.
- Enjoy free coffee and beverages during morning and afternoon breaks in the technical schedule.
- Beat the lunch crowd by buying a deli-style lunch every day from noon until 1:30 p.m.
- Network with colleagues during the complimentary reception in the Exhibit, Marriott Hotel Tuesday, November 29.....5:00 p.m. - 7:00 p.m.