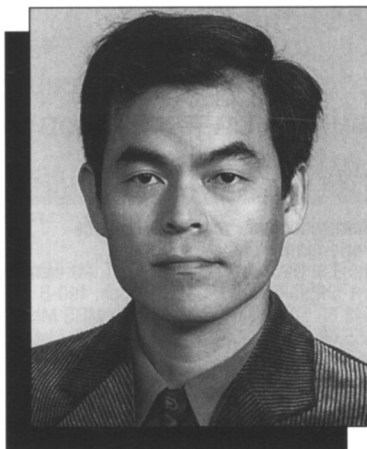


## Shuji Nakamura Named 1997 MRS Medalist

A scientist from a small Japanese chemical company who has stunned the materials community with his accomplishments on blue and green light-emitting diodes (LEDs) has been selected to receive the 1997 MRS Medal Award. This honor recognizes recent distinguished and innovative achievements or discoveries which are expected to have a major impact on the progress of any materials-related field. Shuji Nakamura (Nichia Chemical Industries) has been recognized for "the development of lattice-mismatched GaN based heteroepitaxy and its application to the creation of blue and green light-emitting diodes and short wavelength laser diodes."

Nakamura has single-handedly transformed a materials system (GaN, AlN, InN) that as recently as 1989 was a scientific backwater into a continuous series of compelling research accomplishments. He not only developed commercially available, high-brightness blue and green LEDs, but also produced the first electrically pumped, continuous-wave blue laser diodes. He established the growth of the very difficult InGaN alloys as active layers in the devices, despite their vastly different growth temperatures relative to the AlGaIn cladding layers, GaN contact layers, and phase separation, to produce quantum dots that dominate the emission process and the influence of growth reactor atmosphere, geometry, and V/III ratio on material quality.




Shuji Nakamura

Nakamura started his research on group III-nitrides in 1989, and succeeded in developing a blue LED with a luminous intensity as high as 2 cd in 1993. In 1995, he developed high brightness, single-quantum-well-structure blue LEDs with luminous intensities about 100 times greater than those of conventional blue SiC LEDs and green GaP LEDs. In 1995, he also developed a bluish-violet laser diode using III-nitride materials.

Nakamura's influence has ranged from crystal growth and basic materials science to full-scale commercialization. Nitride lasers appear destined to become the tech-

nology of choice for information storage and related fields requiring short wavelengths and high energy density. The LEDs and lasers have enormous potential for such areas as optical data storage, full-color displays, traffic lights of vastly improved brightness and reliability, white light sources (currently made at Nichia using blue LEDs to excite white light from phosphors), solar blind ultraviolet detectors, and covert communications. This work has also opened the possibility for high performance power electronics by demonstrating the superb transport characteristics of the nitride materials. Applications for GaN power electronics include switching on power grids, automotive (especially the all-electric vehicle), military avionics, and industrial motor drives.

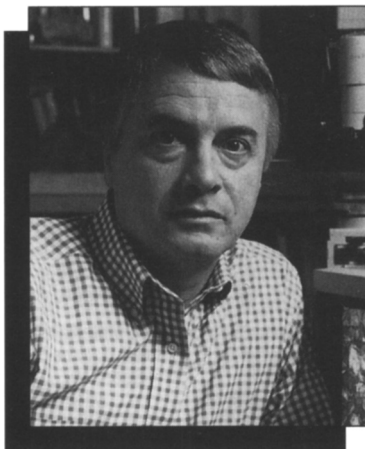
Nakamura received BE, MS, and PhD degrees in electrical engineering from the University of Tokushima, and joined Nichia Chemical Industries in 1979. In 1988, he was a visiting research associate at the University of Florida. He has published 58 papers and holds numerous patents in Japan, Europe, Korea, Taiwan, and the United States.

Nakamura will give his award talk "III-Nitride Lasers and Optoelectronic Devices" for Symposium X of the 1997 MRS Fall Meeting in Boston, Massachusetts, on Thursday, December 4, at 12:05 p.m. in Salon E, Marriott Hotel. 

## Plenary Speaker Harry Y. McSween Jr. to Address Materials Findings of the Mars Pathfinder

According to Harry Y. McSween Jr., professor and former head of the Department of Geological Sciences at the University of Tennessee, the Mars Pathfinder mission "provided the first chemical analyses of martian rocks, as well as new analyses of soils." McSween, currently a member of science teams for both the Mars Pathfinder and Mars Global Surveyor spacecraft missions, will address these studies in his plenary talk at the Fall 1997 Materials Research Society Meeting in Boston on December 1, at 6:00 p.m. in Salon E of the Boston Marriott.


The rock and soil samples from Mars were tested with the Alpha-Proton-X-ray-Spectrometer (APXS), through which three kinds of interactions with matter occur: alpha backscattering, production of protons from alpha-proton reactions, and excitation of x-rays. Rocks were found to contain higher contents of Si, Al, and alkalis than martian meteorites previously studied. Chemicals in soil were found



Harry Y. McSween Jr.

to be similar to those occurring during the formation of terrestrial palagonite, which, McSween said, suggest "a role for water in determining soil chemistry."

McSween's research interests focus on mineralogic and chemical studies of meteorites, particularly those from Mars. He has been an often-quoted voice of caution in interpreting reported evidence for early Martian life in one of those meteorites.

With degrees from The Citadel (BS in chemistry), the University of Georgia (MS in geology), and Harvard University (PhD in geology), McSween has recently served as president of the Meteoritical Society, chair of the Planetary division of the Geological Society of America, national lecturer for the Mineralogical Society of America, and as a member of numerous advisory panels for the National Aeronautics and Space Administration (NASA) and the National Academy of Sciences. He is author of over 100 papers, a geochemistry textbook, and popular science books including *Stardust to Planets: A Geological Tour of the Solar System* and *Fanfare for Earth: The Origin of Our Planet and Life*. 

# 1997 Fall Meeting Symposium Proceedings

Place your order today for proceedings of the  
1997 MRS Fall Meeting in Boston and SAVE!

*Special premeeting prices effective until December 15, 1997 (After that, pay the higher price on the right.)*

**B: Phase Transformations and Systems Driven Far From Equilibrium**

Editors: E. Ma, P. Bellon, M. Atzmon, R. Trivedi  
ISBN: 1-55899-386-X Code: 481-B  
\$56.00 ~~\$66.00~~ MRS Member  
\$64.00 ~~\$76.00~~ U.S. List  
\$74.00 ~~\$88.00~~ Non-U.S.

**D: Nitride Semiconductors**

Editors: F.A. Ponce, S.P. DenBaars, B.K. Meyer, S. Nakamura, S. Strite  
ISBN: 1-55899-387-8 Code: 482-B  
\$56.00 ~~\$66.00~~ MRS Member  
\$64.00 ~~\$76.00~~ U.S. List  
\$74.00 ~~\$88.00~~ Non-U.S.

**E: Power Semiconductor Materials and Devices**

Editors: S.J. Pearton, R.J. Shul, E. Wolfgang, F. Ren, S. Tenconi  
ISBN: 1-55899-388-6 Code: 483-B  
\$50.00 ~~\$60.00~~ MRS Member  
\$58.00 ~~\$68.00~~ U.S. List  
\$66.00 ~~\$79.00~~ Non-U.S.

**F: Infrared Applications of Semiconductors II**

Editors: S. Sivanathan, M.O. Manasreh, R.H. Miles, D.L. McDaniel, Jr.  
ISBN: 1-55899-389-4 Code: 484-B  
\$52.00 ~~\$62.00~~ MRS Member  
\$60.00 ~~\$71.00~~ U.S. List  
\$69.00 ~~\$82.00~~ Non-U.S.

**G: Thin-Film Structures for Photovoltaics**

Editors: E.D. Jones, R. Noufi, B.L. Sopori, J. Kalejs  
ISBN: 1-55899-390-8 Code: 485-B  
\$50.00 ~~\$60.00~~ MRS Member  
\$58.00 ~~\$68.00~~ U.S. List  
\$66.00 ~~\$79.00~~ Non-U.S.

**H: Materials and Devices for Silicon-Based Optoelectronics**

Editors: J.E. Cunningham, S. Coffa, A. Polman, R. Soref  
ISBN: 1-55899-391-6 Code: 486-B  
\$50.00 ~~\$60.00~~ MRS Member  
\$58.00 ~~\$68.00~~ U.S. List  
\$66.00 ~~\$79.00~~ Non-U.S.

**I: Semiconductors for Room-Temperature Radiation Detector Applications II**

Editors: R.B. James, T.E. Schlesinger, P. Siffert, M. Cuzin, M. Squillante, W. Dusi  
ISBN: 1-55899-392-4 Code: 487-B  
\$52.00 ~~\$62.00~~ MRS Member  
\$60.00 ~~\$71.00~~ U.S. List  
\$69.00 ~~\$82.00~~ Non-U.S.

**J: Electrical, Optical, and Magnetic Properties of Organic Solid-State Materials IV**

Editors: J.R. Reynolds, A. K-Y. Jen, L.R. Dalton, M.F. Rubner, L.Y. Chiang  
ISBN: 1-55899-393-2 Code: 488-B  
\$56.00 ~~\$66.00~~ MRS Member  
\$64.00 ~~\$76.00~~ U.S. List  
\$74.00 ~~\$88.00~~ Non-U.S.

**K: Materials Science of the Cell**

Editors: B. Mulder, V. Vogel, C. Schmidt  
ISBN: 1-55899-394-0 Code: 489-B  
\$55.00 ~~\$65.00~~ MRS Member  
\$63.00 ~~\$75.00~~ U.S. List  
\$73.00 ~~\$86.00~~ Non-U.S.

**Q: Semiconductor Process and Device Performance Modeling**

Editors: J.S. Nelson, C.D. Wilson, S.T. Dunham  
ISBN: 1-55899-395-9 Code: 490-B  
\$48.00 ~~\$57.00~~ MRS Member  
\$55.00 ~~\$66.00~~ U.S. List  
\$63.00 ~~\$76.00~~ Non-U.S.

**R: Tight-Binding Approach to Computational Materials Science**

Editors: P.E.A. Turchi, A. Gonis, L. Colombo  
ISBN: 1-55899-396-7 Code: 491-B  
\$50.00 ~~\$60.00~~ MRS Member  
\$58.00 ~~\$68.00~~ U.S. List  
\$66.00 ~~\$79.00~~ Non-U.S.

**S: Microscopic Simulation of Interfacial Phenomena in Solids and Liquids**

Editors: S.R. Phillpot, P.D. Bristowe, D.G. Stroud, J.R. Smith  
ISBN: 1-55899-397-5 Code: 492-B  
\$52.00 ~~\$62.00~~ MRS Member  
\$60.00 ~~\$71.00~~ U.S. List  
\$69.00 ~~\$82.00~~ Non-U.S.

**U: Ferroelectric Thin Films VI**

Editors: R.E. Treece, R.E. Jones, S.B. Desu, C.M. Foster, I.K. Yoo  
ISBN: 1-55899-398-3 Code: 493-B  
\$52.00 ~~\$62.00~~ MRS Member  
\$60.00 ~~\$71.00~~ U.S. List  
\$69.00 ~~\$82.00~~ Non-U.S.

**V: Science and Technology of Magnetic Oxides**

Editors: M. Hundley, J. Nickel, R. Ramesh, Y. Tokura  
ISBN: 1-55899-399-1 Code: 494-B  
\$50.00 ~~\$60.00~~ MRS Member  
\$58.00 ~~\$68.00~~ U.S. List  
\$66.00 ~~\$79.00~~ Non-U.S.

**W: Chemical Aspects of Electronic Ceramics Processing**

Editors: P.N. Kumta, A.F. Hepp, D.N. Beach, J.J. Sullivan, B. Arkles  
ISBN: 1-55899-400-9 Code: 495-B  
\$52.00 ~~\$62.00~~ MRS Member  
\$60.00 ~~\$71.00~~ U.S. List  
\$69.00 ~~\$82.00~~ Non-U.S.

**Y: Materials for Electrochemical Energy Storage and Conversion II—Batteries, Capacitors and Fuel Cells**

Editors: D.S. Ginley, D.H. Doughty, T. Takamura, Z. Zhang, B. Scrosati  
ISBN: 1-55899-401-7 Code: 496-B  
\$52.00 ~~\$62.00~~ MRS Member  
\$60.00 ~~\$71.00~~ U.S. List  
\$69.00 ~~\$82.00~~ Non-U.S.

**Z: Recent Advances in Catalytic Materials**

Editors: N.M. Rodriguez, S.L. Soled, J. Hrbek  
ISBN: 1-55899-402-5 Code: 497-B  
\$50.00 ~~\$60.00~~ MRS Member  
\$58.00 ~~\$68.00~~ U.S. List  
\$66.00 ~~\$79.00~~ Non-U.S.

**AA: Covalently Bonded Disordered Thin-Film Materials**

Editors: M.P. Siegal, J.E. Jaskie, W. Milne, D. McKenzie  
ISBN: 1-55899-403-3 Code: 498-B  
\$50.00 ~~\$60.00~~ MRS Member  
\$58.00 ~~\$68.00~~ U.S. List  
\$66.00 ~~\$79.00~~ Non-U.S.

**DD: High-Pressure Materials Research**

Editors: R.M. Wentzcovitch, R.J. Hemley, W.J. Nellis, P.Y. Yu  
ISBN: 1-55899-404-1 Code: 499-B  
\$52.00 ~~\$62.00~~ MRS Member  
\$60.00 ~~\$71.00~~ U.S. List  
\$69.00 ~~\$82.00~~ Non-U.S.

**EE: Electrically Based Microstructural Characterization II**

Editors: R.A. Gerhardt, M.A. Alim, S.R. Taylor  
ISBN: 1-55899-405-X Code: 500-B  
\$50.00 ~~\$60.00~~ MRS Member  
\$58.00 ~~\$68.00~~ U.S. List  
\$66.00 ~~\$79.00~~ Non-U.S.

**FF: Surface-Controlled Nanoscale Materials for High-Added-Value Applications**

Editors: K.E. Gonsalves, M.-I. Baraton, J.X. Chen, J.A. Akkara  
ISBN: 1-55899-406-8 Code: 501-B  
\$50.00 ~~\$60.00~~ MRS Member  
\$58.00 ~~\$68.00~~ U.S. List  
\$66.00 ~~\$79.00~~ Non-U.S.

**II: In Situ Process Diagnostics and Intelligent Materials Processing**

Editors: P.A. Rosenthal, W.M. Duncan, J.A. Woollam  
ISBN: 1-55899-407-6 Code: 502-B  
\$55.00 ~~\$65.00~~ MRS Member  
\$63.00 ~~\$75.00~~ U.S. List  
\$73.00 ~~\$86.00~~ Non-U.S.

**JJ: Nondestructive Characterization of Materials in Aging Systems**

Editors: R.L. Crane, S.P. Shah, R. Gilmore, J.D. Achenbach, P.T. Khuri-Yakub, T.E. Matikas  
ISBN: 1-55899-408-4 Code: 503-B  
\$48.00 ~~\$57.00~~ MRS Member  
\$55.00 ~~\$66.00~~ U.S. List  
\$63.00 ~~\$76.00~~ Non-U.S.

**KK: Atomistic Mechanisms in Beam Synthesis and Irradiation of Materials**

Editors: J.C. Barbour, S. Roorda, D. Ila  
ISBN: 1-55899-409-2 Code: 504-B  
\$52.00 ~~\$62.00~~ MRS Member  
\$60.00 ~~\$71.00~~ U.S. List  
\$69.00 ~~\$82.00~~ Non-U.S.

**NN: Thin-Films—Stresses and Mechanical Properties VII**

Editors: R.C. Cammarata, E.P. Busso, M. Nastasi, W.C. Oliver  
ISBN: 1-55899-410-6 Code: 505-B  
\$52.00 ~~\$62.00~~ MRS Member  
\$60.00 ~~\$71.00~~ U.S. List  
\$69.00 ~~\$82.00~~ Non-U.S.

*These books are scheduled for publication by spring or early summer 1998.*



|                         | Marriott Hotel<br>University Hall & Atrium Lounge | Westin Hotel<br>3rd & 4th Floors                | Sheraton Hotel<br>1st Floor                     |
|-------------------------|---|---|---|
| Tuesday<br>December 2   | 11:30 a.m. – 6:30 p.m.                            | 9:30 a.m. – 5:00 p.m.                           | 9:30 a.m. – 5:00 p.m.                           |
| Wednesday<br>December 3 | 9:30 a.m. – 5:00 p.m.                             | 9:30 a.m. – 5:00 p.m.<br>7:30 p.m. – 10:00 p.m. | 9:30 a.m. – 5:00 p.m.<br>7:30 p.m. – 10:00 p.m. |
| Thursday<br>December 4  | 9:30 a.m. – 2:30 p.m.                             | 9:30 a.m. – 1:30 p.m.                           | 9:30 a.m. – 1:30 p.m.                           |

Complimentary Reception will be held in University Hall on Tuesday evening from 5:00 p.m. to 6:30 p.m.

The MRS Exhibit, held in conjunction with the 1997 MRS Fall Meeting, will encompass the full spectrum of equipment, instrumentation, products, software, publications and services for materials research. As always, the exhibit will closely parallel the nature of the symposia, and the technical program has been arranged to allow meeting participants ample opportunity to attend the exhibit. MRS encourages attendees to visit the exhibit by scheduling coffee breaks, deli-style lunches, and a meeting-wide reception in University Hall.

Partial List of 1997 Fall Exhibitors (as of September 9, 1997) ♦ denotes MRS Corporate Affiliate

### A & N Corporation

707 SW 19th Avenue  
Williston, FL 32696  
Telephone: 352-528-4100  
Fax: 352-528-3441

A&N Corporation has been a manufacturer of high vacuum components since 1965. Our product lines include: ISO-KF (QF) flanges, ISO-MF (LF) flanges, UHV (CF) flanges, ASA flanges, vacuum couplings, feedthroughs, and vacuum ball valves. We maintain extensive inventories of all catalogued items, and routinely ship products on a same or next day basis.

### Academic Press, Inc.

525 B Street, Suite 1900  
San Diego, CA 92100  
Telephone: 619-699-6774  
Fax: 619-699-6580  
http://apnet.com

With 50+ year of experience, Academic Press continues its quest for excellence in scientific, technical publishing. Our three offices, San Diego, California; Cambridge, Massachusetts; and London, England, collectively publish 400 new book titles and 212 journals each year.

### Advanced Research Systems

1942 Riverbend Road  
Allentown, PA 18103  
Telephone: 610-439-8022  
Fax: 610-439-1184  
E-mail: arscryo@aol.com

Advanced Research Systems is exhibiting cryogenic temperature controllers, including the new state-of-the-art Genesis Controller along with ruthenium oxide and silicon diode sensors manufactured by Scientific Instruments, Inc. Nitrogen and helium storage dewars from International Cryogenics will also be displayed. Technical information will be available for vacuum systems and components from Johnson Ultravac and MBE software from EpiSoft.

### AIXTRON, Inc.

1569 Barclay Blvd.  
Buffalo Grove, IL 60089  
Telephone: 847-215-7335  
Fax: 847-215-7341

AIXTRON, the leading manufacturer of MOCVD and VPE equipment for the growth of all III-V, including nitrides, II-VI, oxides and SiC. Outstanding quality in manufacturing, reliability in safety, and highest uniformity results for epilayers. Systems AIX-200, AIX200/4, AIX-2400, and the world's largest, the AIX-3000.

### AJA International, Inc.

P.O. Box 246  
809 Country Way  
N. Scituate, MA 02060  
Telephone: 617-545-7365  
Fax: 617-545-4105  
E-mail: topgun@ajaint.com  
http://www.ajaint.com

Circular and rectangular MAGNETRON SPUTTERING SOURCES and targets, ATC R&D sputtering systems, microwave power supplies and components, "Planar ECR" sources, diamond film equipment, electrostatic chucks and LN<sub>2</sub> cooled electrodes, vacuum components.

### Alcatel Vacuum Products, Inc.

67 Sharp Street  
Hingham, MA 02043  
Telephone: 617-331-4200  
Fax: 617-331-4230

Manufactures a complete and comprehensive range of DRY pumps and pumping systems, ceramic ball bearing, turbomolecular pumps, DRYTEL pumping systems, maglev turbomolecular pumps, helium leak detector line (that includes cleanroom, compatible dry leak detectors), rotary vane direct drive pumps and blower packages, valves, gauges and drive accessories.

### Aldrich Chemical Company, Inc.

1001 W. St. Paul Avenue  
Milwaukee, WI 53233  
Telephone: 414-298-7910  
Fax: 414-298-7960  
E-mail: aldrich@sial.com

Aldrich produces and stocks a wide range of chemical products—including elemental forms, alloys, high purity inorganics, gases, anhydrous metal halides, organometallics, deposition precursors and substrates, ligands, polymers, ACS reagents and analytical standards—used in scientific research, product development and analysis in the inorganic, organometallic and materials science fields.

### Alfa Aesar

A Johnson Matthey Company  
30 Bond Street  
Ward Hill, MA 01835  
Telephone: 508-521-6300  
Toll Free: 800-343-0660  
Fax: 508-521-6350  
E-mail: info@alfa.com  
http://www.alfa.com

The NEW Alfa Aesar main catalog features over 12,000 products, including high-purity inorganics, organics, organometallics, pure elements, precious metal compounds and catalysts, and rare earths. The supplemental Organics catalog contains an additional line of over 7,000 organic compounds. Stop by to reserve your catalogs and pick up a free copy of our new full color periodic table poster.

### The American Ceramic Society (ACers)

735 Ceramic Place  
Westerville, OH 43081-8720  
Telephone: 614-890-4700  
Fax: 614-899-6109  
http://www.acers.org

The American Ceramic Society is an international association dedicated to the dissemination of technical, scientific, commercial and educational information about ceramics. ACers displays recently published books and journals, and demonstrates its Phase Equilibria Diagrams CD-ROM database. Visit Booth 120 for a 20% discount on books and the Phase Equilibria Diagrams CD-ROM database.

### American Chemical Society

1155 16th Street N.W., Room 517  
Washington, DC 20036  
Telephone: 202-872-4600  
Fax: 202-833-7736  
E-mail: i\_wartell@acs.org

Displayed will be numerous periodicals including *Chemistry of Materials*, *Macromolecules*, *Langmuir*, the *Journal of Physical Chemistry*, now published in two separate editions, and the newly revised *Chemical Health & Safety* for the

laboratory setting. Also featured will be the latest books on polymer science, industrial and applied chemistry of interest to materials researchers. Literature will also be available describing the ACS journals now offered on the Internet and CD-ROM formats.

### American Institute of Physics, Inc.

500 Sunnyside Blvd.  
Woodbury, NY 11797  
Telephone: 516-576-2484  
Fax: 516-576-2374  
E-mail: corr@aip.org  
http://www.aip.org

The American Institute of Physics represents the interests of scientists through service to its member societies. AIP also publishes a wide range of physics information in the form of journals, magazines, and conference proceedings. Stop by our booth for a demonstration of the Online Journal Service, now featuring reference linking. See how AIP provides much more than just electronic versions of our print journals. Don't forget to apply for your FREE subscription to *The Industrial Physicist*.

### The American Physical Society

One Physics Ellipse  
College Park, MD 20740-3844  
Telephone: 301-209-3202  
Fax: 301-209-0844  
E-mail: chung@aps.org  
http://www.aps.org

Explore APS research journals and services on the Web—*Physical Review*, *Physical Review Letters*, *Reviews of Modern Physics*, the Author Status and Inquiry System, and the APS E-Print Server. Founded in 1899 to further the advancement and diffusion of the knowledge of physics, The American Physical Society is a leading publisher of physics research.

### Amptek, Inc.

6 DeAngelo Drive  
Bedford, MA 01730  
Telephone: 617-275-2242  
Fax: 617-275-3470  
E-mail: sales@amptek.com  
http://www.amptek.com

XR-100T: compact, low cost, thermoelectrically cooled x-ray and gamma ray detectors with 180 eV resolution. Electron and ion detectors for UHV applications. Ultra low noise preamplifiers, digital pulse processors, 8000 channel pocket MCAs and ultraminiature pyroelectric x-ray generators.

### Andeen-Hagerling, Inc.

31200 Bainbridge Road  
Cleveland, OH 44139-2231  
Telephone: 216-349-0370  
Fax: 216-349-0359  
E-mail: info@ahc.com

Manufacturers of ultra-precision capacitance bridges and standards. The AH 2500A / Option E automatic capacitance/loss bridge: accuracy 3 ppm; stability 0.5 ppm/year; resolution 0.5 attofarad. Applications include dielectric, impurity and pressure studies; low temperature thermometry; thermal expansion; optics and semiconductor development. A multi-frequency bridge (50 Hz to 20 kHz) is being introduced.

### Angstrom Sciences

1200 Lebanon Road  
West Mifflin, PA 15122  
Telephone: 412-462-2777  
Fax: 412-462-2780  
http://www.angstromsciences.com

Angstrom Sciences specializes in the design and manufacture of the ONYX™ high performance magnetron sputtering cathodes for both research and development, and production applications. Angstrom Sciences also provides a complete line of sputtering targets, evaporation materials, target backing plates and target bonding services. Angstrom Sciences has the experience and technology to assist you in achieving your process requirements.

### APD Cryogenics, Inc.

1833 Vultee Street  
Allentown, PA 18103  
Telephone: 610-791-6700  
Fax: 610-791-0561  
E-mail: sales@apdcryogenics.com  
http://www.apdcryogenics.com

APD's Displex® product line, the industry-standard for 2-stage GM expanders, allows the user the versatility of a broad temperature range (6.5-450 kelvin) coupled with an enormous variety of specialized attachments for customization to your application. Also from APD, Heli-tran® open cycle systems, Heliplex® for experimentation to 4.2 kelvin, the OmniPlex® exchange gas cryostat, and CRYOTIGER®, a closed-cycle system for use instead of LN<sub>2</sub>.

### ASM International

9639 Kinsman Road  
Materials Park, OH 44073  
Telephone: 216-338-5151  
Fax: 216-338-4634  
E-mail: pebrooks@po.asm-intl.org  
http://www.asm-intl.org

ASM International, "The Materials Information Society," will display and demo various information products and services. Reference publications on materials understanding and application will be a central focus. Both print and electronic publications will be available for browsing by attendees. Product categories include: *Advanced Materials and Processes*, (the ASM monthly 'flagship' magazine), ASM technical journals, the 19-volume ASM Handbook set on metals and other engineered materials, databooks, technical books, alloy phase diagram references as well as many CD-ROM products, to include *Alloy Finder*, *Heat Treating Library*, *Binary Alloy Phase Diagram CD*, *Failure Analysis Library*, *MAPP* and *Rover* materials properties databases, and *Alloy Digest*, electronic data sheets of physical and mechanical properties and processing information. Show discounts will be given on most products.

### ASTeX/Applied Science and Technology, Inc.

35 Cabot Road  
Woburn, MA 01801  
Telephone: 617-933-5560  
Fax: 617-933-0750  
E-mail: sales@astex.com  
http://www.astex.com

ASTeX provides microwave power generators, high concentration ozone generators and systems, a range of ECR plasma sources for etching and deposition, downstream microwave plasma sources for ashing, etching and oxidation of thin films, and turnkey diamond CVD systems.

## Australian Scientific Instruments

(A Division of ANUTECH Pty Ltd)  
111 Gladstone Street  
Fyshwick, ACT 2609  
Australia  
Telephone: 61-6-2807570  
Fax: 61-6-2804985  
E-mail: kathy.irvin@asi.anutech.com.au  
http://www.anutech.com.au/asi

ASI manufactures a range of easy-to-use instruments for the materials research community. ASI is exhibiting: MASIF—measures microscopic forces between surfaces; NANOTRIBOLOGY DEVICE—measures microscopic shear forces between sliding surfaces; UNI-BALL-MILL II—synthesizes novel materials by mechano-chemical processes; HIGH-PRESSURE HIGH TEMPERATURE TESTING MACHINE—exposes materials up to pressures of 500 MPa and temperatures of 1600 K.  
(see ad in this issue)

## Barnstead/Thermolyne Corporation

2555 Kerper Blvd.  
Dubuque, IA 52001  
Telephone: 319-556-2241  
Fax: 319-556-0695  
E-mail: barnstead@aol.com  
http://www.barnsteadthermolyne.com

Barnstead/Thermolyne Corporation is a manufacturer of laboratory, liquid handling and water purification equipment such as hot plates, stirrers, mixers, incubators, sterilizers, furnaces, cryogenic equipment, dri baths, heating tapes, deionization, distillation, and reverse osmosis systems, and bottle top dispensers and pipettors.

## Barr Associates, Inc.

2 Lyberty Way  
Westford, MA 01886  
Telephone: 978-692-7513  
Fax: 978-392-9394  
E-mail: barr@barrassociates.com  
http://www.barrassociates.com

Barr Associates designs, develops and manufactures precision optical filters for analytical, biomedical and other commercial instrumentation. All services are customized to match the customer's specific applications. A broad spectral range, flexibility of product design and communication with product designer contribute in setting us apart.

## Bede Scientific Incorporated

14 Inverness Drive East, Suite G-104  
Englewood, CO 80112  
Telephone: 303-790-8647  
Fax: 303-790-8648  
E-mail: info@bede.com  
http://www.bede.co.uk

Bede Scientific is a world leader in materials characterization, established for many years in high resolution x-ray diffraction and scattering techniques, largely in the semiconductor industry. Bede developed the world's first quality control diffractometer, while recent advances include combined XRD and photoluminescence mapping and the first commercial Brillouin Spectrometer.

## BetaBeam (Entrepreneur)

500 W. Fourth Street  
Lima, OH 45804  
Telephone: 248-244-1573  
Fax: 248-689-3779  
E-mail: sthams@rust.net

BetaBeam is pleased to offer fast turn-around for all of your radiation processing needs. Our new facility features a highly consistent Thomson-CSE, 10 MeV, 20 kW electron accelerator and a state-of-the-art dosimetry laboratory. Services offered by BetaBeam include polymer crosslinking, radiation polymerization, radiation hardening and contract sterilization.

## Bio-Logic Co.

Dept. Electrochemical Techniques  
1, rue de l'Europe  
38640 Claix  
France  
Telephone: 33-476-98-6831  
Fax: 33-476-98-6909  
E-mail: infob@bio-logic.fr  
http://www.bio-logic.fr

Bio-Logic Co., established since 1983, manufactures and sells research instruments worldwide. In 1990, Bio-Logic started a department related to solid-state electrochemistry and bio-electrochemistry. This comprises micro-electrode NO measuring systems and full computer controlled, single channel potentiostats and multi-channel potentiostats for studies of batteries, supercapacitors and electrochromic compounds.

## Blake Industries, Inc.

660 Jerusalem Road  
Scotch Plains, NJ 07076  
Telephone: 908-233-7240  
Fax: 908-233-1354  
E-mail: blake4xray@worldnet.att.net

Blake Industries will be exhibiting Huber rotary tables, translation stages, goniometer heads, X-Y slits for synchrotron and rotating anode experiments. Blake monochromators, thin-film cameras, and Laue equipment will also be displayed.

## Buehler, Ltd.

41 Waukegan Road  
Lake Bluff, IL 60044  
Telephone: 847-295-6500  
Fax: 847-295-7929

Buehler proudly introduces the MPC™ 2000 Micro-Precise Integrated Circuit Cross-Sectioning System. The MPC™ 2000 is designed to accurately remove pre-specified amounts of material from a microelectronic sample without the need for operator intervention. Accurate cross sectioning within 1 µm of a target feature is possible due to the high precision provided by the combination of the precision power head, the zero runout drive plate, and the lapped, tool-steel platen. This high accuracy eliminates the fear of grinding beyond the target plane.

## Burleigh Instruments, Inc.

Burleigh Park  
Fishers, IN 46033-0755  
Telephone: 716-924-9355  
Fax: 716-924-9072  
E-mail: info@burleigh.com  
http://www.burleigh.com

Burleigh Instruments manufactures scanning probe microscopes and interferometric optical profilers. This family of products can scan atoms and up to 1.75 mm in X and Y. Z resolution is accurate to a fraction of an angstrom while maximum Z range is 100 µm.

## Cambridge University Press

40 West 20th Street  
New York, NY 10011-4211  
Telephone: 212-924-3900  
Fax: 212-691-3239  
E-mail: jmurphy@cup.org  
http://www.cup.org

Please stop by our booth to see these and other recent titles—Barabasi and Stanley: *Fractal Concepts in Surface Growth*; Mandel and Wolf: *Optical Coherence and Quantum Physics*; Dugdale: *The Electrical Properties of Disordered Metals*; and Tsvetlik: *Quantum Field Theory in Condensed Matter Physics*.

## Cameca Instruments, Inc.

204 Spring Hill Road  
Trumbull, CT 06611-1356  
Telephone: 203-459-0623  
Fax: 203-261-5506  
E-mail: salescii@aol.com

Cameca's analytical instrument product line:
 

- SX 100 Electron Probe MicroAnalyzer Spanning five decades of innovative EPMA technology for materials and geological research.
- TOF SIMS IV Time-of-Flight Secondary Ion Mass Spectrometer Flexibility and performance in practical solutions to polymer, semiconductor, organic and inorganic surface problems.

- IMS 6f Universal, Magnetic Sector Secondary Ion Mass Spectrometer Workhorse of microelectronics and geochemical research, and wafer fabrication support.
- IMS Wf Wafer-Inspection, Magnetic Sector Secondary Ion Mass Spectrometer New instrumentation for in-line wafer process monitoring of implants.
- NanoSims 50 Micro-Area, Analytical/Imaging Magnetic Sector SIMS New instrumentation with parallel secondary-ion collection, and normal incidence, high density, primary beam.
- IMS 1270 Large-Radius, Magnetic Sector Secondary Ion Mass Spectrometer The ultimate in high accuracy, high precision measurements of heavy isotopes in geochronology, trace elements in petrology, and isotope ratios in geochemistry.
- TAP Tomographic Atom Probe New instrumentation, based on a position-sensitive, mass-dependent detector, for 3D atomic resolution in metallurgy.

## CERAC, Inc.

P.O. Box 1178  
407 North 13th Street  
Milwaukee, WI 53201-1178  
Telephone: 414-289-9800  
Fax: 414-289-9805  
E-mail: marketing@cerac.com  
http://www.cerac.com

CERAC manufactures advanced specialty inorganics and thin film materials for high-tech research and industrial applications. Powders, targets and evaporation materials can be made to specification in quantities ranging from R&D to final production requirements. Extensive in-house technical expertise facilitates scale-up while maintaining initial product integrity.

## Ceramaseal

P.O. Box 260  
US Route 20  
New Lebanon, NY 12125  
Telephone: 518-794-7800  
Fax: 518-794-8080  
E-mail: laier@globalone.com  
http://www.ceramaseal.com

Ceramaseal offers a full range of standard ultra-high vacuum feedthroughs, connectors, thermocouples, cables, viewports and related hardware. New products include crystal quartz viewports pressure rated to 500 psi and high temperature micro "D" series connectors 9 pin through 50 pin.

## CHA Industries

4201 Business Center Drive  
Fremont, CA 94538-6357  
Telephone: 510-683-8554  
Fax: 510-683-3848  
http://www.chaindustries.com

CHA Industries is vertically integrated, with over 50 years of experience as a manufacturer and OEM supplier of standard and custom high-vacuum systems. Manufacturers of semiconductor, XTAL, LEDs, optics, automotive, and aerospace devices use various versions of CHA's sputtering, evaporation, and ion beam systems. CHA manufactures roll coaters, box coaters, clean-room compatible R&D, and production systems (and components) for medium- and high vacuum applications.

## Chapman & Hall

115 Fifth Avenue, 4th Floor  
New York, NY 10003  
Telephone: 606-525-6600  
Fax: 606-260-1730  
E-mail: order@chaphall.com

Chapman & Hall, an imprint of Thomson Science, is renowned as the publishers of the *Journal of Materials Science*. Stop by our booth to view our new books, including *Materials Science on CD-ROM* and *Materials Selector*.

## Chemglass, Inc.

3861 North Mill Road  
Vineland, NJ 08360  
Telephone: 609-696-0014  
Toll Free: 800-843-1794  
Fax: 609-696-9102  
Toll Free Fax: 800-922-4361  
http://www.sciquest.com/chemglass

Laboratory and research glassware, supplies and equipment featured in the new 50th

anniversary catalog include AIRFREE® manifolds, Teflon pumps, vacuum systems, Schlenk components, plastic-coated glassware, reactors, clamps and support frames, spatulas, heavy wall flasks, pressure vessels, NMR accessories, rotary evaporator replacement glassware, and custom-made products in glass, metal or plastic.

## Commonwealth Scientific Corporation

500 Pendleton Street  
Alexandria, VA 22314  
Telephone: 703-548-0800  
Fax: 703-548-7405  
E-mail: csc@ionbeam.com

Commonwealth Scientific Corporation (CSC) is the leader in ion beam technology, manufacturing a complete line of ion beam sources and systems for surface modification processes including nitriding, dry etching and thin film deposition. R&D and production batch, load lock and cluster tool system configurations to perform ion beam deposition and etching for MR, GMR and DLC applications.

## Cree Research, Inc.

2810 Meridian Parkway, Suite 144  
Durham, NC 27713  
Telephone: 919-361-5709  
Fax: 919-361-4630  
http://www.cree.com

Cree manufactures 4H-SiC and 6H-SiC substrates and epitaxy, semi-insulating 4H-SiC substrates, high intensity blue LEDs and SiC UV photodiodes. SiC is an exceptional material for nitride deposition and the fabrication of semiconductor devices for high temperature, high power, high frequency power and optoelectronic applications. Custom device/design services available.

## CRI, Inc.

80 Ashford Street  
Boston, MA 02134  
Telephone: 617-491-2627  
Fax: 617-864-3730  
E-mail: sales@cri-inc.com

CRI Inc.'s new LC-PolScope is a new tool for visualizing and quantifying microstructure in transparent objects. It uses a technique called birefringence imaging that measures sample birefringence magnitude and orientation at each pixel of a CCD imaging sensor. CRI also manufactures liquid crystal tunable filters and LC-based laser "noise-eaters."

## CRYO Industries of America, Inc.

11 Industrial Way  
Atkinson, NH 03811  
Telephone: 603-893-2060  
Fax: 603-893-5278  
E-mail: cryo@cryoindustries.com  
http://www.cryoindustries.com

"Performance by Design" cryogenic equipment, including standard and customized systems for material testing and characterizations. These include susceptibility, resistivity and Hall effect measurements, under full automatic temperature control. Dewars and flow cryostats operating with liquid nitrogen and helium, or cryogen-free, closed-cycle refrigerators offer variable temperature environments from 1 kelvin to 1000 kelvin.

## Cryomech Inc.

113 Falso Drive  
Syracuse, NY 13211  
Telephone: 315-455-2555  
Fax: 315-455-2544  
E-mail: specs@cryomech.com  
http://www.cryomech.com

Cryomech Inc. manufactures Gifford-McMahon cycle cryorefrigerators, cryostats and liquid nitrogen plants. From the standard laboratory cryostat to the customized cryostat for the unique experiment, Cryomech has the experience and the cryogenic equipment to meet your requirements in all capacity/temperature ranges. Systems available down to 2.2 K.

**CrysTec GmbH (Entrepreneur)**

Köpenicker Straße 325  
D-12555 Berlin  
Germany  
Telephone: 49-3065-762806  
Fax: 49-3065-762808  
E-mail: crystec@aol.com

CrysTec presents itself as a team of committed engineers who are highly experienced in the field of processing crystalline materials, especially oxides to manufacture substrates for the deposition of superconducting, ferroelectric, metal or nitride semiconductor films. In addition to this main product group, for which processes of high-precision x-ray oriented cutting of crystals, sizing of crystal plates, lapping and polishing at wafer quality as well as surface measurement by AFM are employed, the technical equipment can also be used for the specialized small-scale production of custom-made silicon and germanium and a great variety of other special crystals. CrysTec does not grow single crystals. To procure the different material systems, stable connections have been established with proven material suppliers. This type of business also includes purchasing and sales activities of products made on an industrial large-scale basis, such as standard wafer from silicon and III-V semiconductors. At this field, we want to meet the demands of the research market with small and medium-sized quantities.

**DCA Instruments, Inc.**

400 West Cummings Park, Suite 3900  
Woburn, MA 01801  
Telephone: 617-937-6550  
Fax: 617-935-2405  
E-mail: jari@dca.fi  
http://www.dca.co.uk

DCA Instruments specializes in the design and manufacture of high-quality UHV deposition systems, offering standard systems for the following deposition techniques: III-V, II-VI, CMT-MBE, metal MBE, UHV sputtering, UHV laser ablation, and UHV CVD. DCA Instruments also offers a wide range of MBE components which are retrofittable to the majority of existing systems. Components include effusion cells, soft-actuator magnetically driven linear shutters, a 'zero-wobble' substrate manipulator and a self-regulating mercury source.

**Denton Vacuum, Inc.**

1259 North Church Street  
Moorestown, NJ 08057  
Telephone: 609-439-9100  
Fax: 609-439-9111  
E-mail: j\_campbell@dentonvacuum.com  
http://www.dentonvacuum.com

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 Instruments, Inc.**

112 Robin Hill Road  
Santa Barbara, CA 93117  
Telephone: 805-967-1400  
Fax: 805-967-7717  
E-mail: info@di.com  
http://www.di.com

Digital Instruments, the world leader in scanning probe microscopy (SPM), manufactures a complete line of NanoScope® SPMs, including the MultiMode™ Atomic Force Microscope (AFM), the world's highest resolution SPM and the Dimension Series™ SPMs, the world's best selling SPMs, offering the complete range of AFM techniques for small or large samples for the full range of materials science applications, including metals, films, ceramics, optics, plastics/polymer, paints and coatings, data storage devices, semiconductors and many others. We'll also be demonstrating our new Phase Imaging Technique, a fast and easy method of differenti-

ating regions of differing composition, friction, adhesion, viscoelasticity, etc. on sample surfaces. (see ad in this issue)

**Diversified Technologies, Inc.**

35 Wiggins Avenue  
Bedford, MA 01730-2345  
Telephone: 617-275-9444  
Fax: 617-275-6081  
E-mail: info@divtvecs.com

Diversified Technologies, Inc.'s PowerMod™ High Power Modulators deliver reliable performance and versatility to your cutting-edge plasma processes. DTT's patented technology features solid-state submicrosecond switching at high voltage and high power. DTT's HV switching power supplies provide up to 200 kW of DC power at up to 160 kV, in a 19-in. rack. DTT also offers custom solutions, consulting, and systems integration.

**Duniway Stockroom Corp.**

1305 Space Park Way  
Mountain View, CA 94043-1336  
Toll Free: 800-446-8811  
Fax: 415-965-0764  
E-mail: info@duniway.com  
http://www.duniway.com

New replacement parts for ion pumps, leak detectors, and vacuum systems; including 12-point bolts, copper gaskets, TC gauges, ion gauges, oil for diffusion pumps, etc. Surplus vacuum equipment for sale, rebuilt to original performance. 48-page catalog, including prices, shows new and surplus equipment.

**Dynamic Systems Inc.**

P.O. Box 1234  
Route 355  
Poestenkill, NY 12140  
Telephone: 518-283-5350  
Fax: 518-283-3160  
E-mail: info@gleeble.com  
http://www.gleeble.com

Dynamic Systems Inc. manufactures thermal/mechanical materials testing machines which feature fully digital closed-loop control systems. Applications include hot ductility, dilatometry, melting and controlled solidification, hot compression and fatigue tests, as well as multi-stand rolling, forging, continuous casting, weld HAZ and continuous strip annealing simulations, to name a few.

**EDAX International**

91 McKee Drive  
Mahwah, NJ 07430  
Telephone: 201-529-4880  
Fax: 201-529-3156  
E-mail: info@edax.com  
http://www.edax.com

EDAX International will exhibit two brand new systems: Phoenix, the first WindowsNT®-based EDS system; and Boston, the newest generation of intuitively easy-to-use Windows95®-based EDS systems for SEM and TEM. Sapphire EDS detectors will also be shown, demonstrating the ultimate in light element sensitivity, resolution and reliability. Also displayed will be the DX-95—the easiest to use and most powerful energy dispersive x-ray fluorescence system available today.

**Edwards High Vacuum International**

301 Ballardvale Street  
Wilmington, MA 01887  
Telephone: 508-658-5410  
Fax: 508-658-7969  
http://www.edwards.boc.com

Edwards High Vacuum International manufactures and services a complete line of high-quality vacuum components and systems. Products include drypumps, mechanical pumps, turbomolecular pumps, rotary vane pumps, vacuum instrumentation, leak detectors, thin film deposition systems and a wide range of vacuum accessories.

**Elsevier Science**

655 Avenue of the Americas  
New York, NY 10010-5107  
Telephone: 212-633-3766  
Fax: 212-633-3764  
E-mail: usinfo@elsevier.com  
http://www.elsevier.com

Elsevier Science (imprints North-Holland, Elsevier and Pergamon) will exhibit a wide

range of materials science and related solid state physics publications. Products on display include:

- Electronic information services such as CoDAS, CONTENTS-Alert and CONTENTS-Direct
- Solid State Communications Online
- Journals, such as *Materials Letters*, *Ultrasonics*, *Surface Science*, *Acta Materialia*, *Scripta Materialia*, *Nanostructured Materials* and the *Journal of Magnetism and Magnetic Materials*. Free sample copies are available!
- Newly published books: volume 10 of the *Handbook of Magnetic Materials*, volume 24 of the *Handbook on the Physics and Chemistry of Rare Earths*, volume 2 of the *Handbook of Surface Science* and volume 3 of the *Handbook of Biological Physics*
- Cahn: *Physical Metallurgy*

**EMCORE Corporation**

394 Elizabeth Avenue  
Somerset, NJ 08873  
Telephone: 908-271-9090  
Fax: 908-271-9686  
E-mail: peter@emcore.com  
http://www.emcore.com

EMCORE Corporation manufactures TurboDisc Deposition Systems for the MOCVD of semiconductor, advanced oxide and other electronic material thin films. TurboDisc technology produces films with the interface abruptness and uniformity of thickness, composition, and doping required by the most advanced devices. EMCORE systems are further distinguished by low cost of ownership, high throughput, excellent reproducibility, low maintenance needs, and high reliability.

**EMISPEC Systems, Inc.**

2409 S. Rural Road, Suite D  
Tempe, AZ 85282  
Telephone: 602-894-6443  
Fax: 602-894-6458  
E-mail: ruijter@emispec.com  
http://www.emispec.com

EMISPEC Systems, Inc. designs and produces computer data acquisition systems and software for integrated electron microscope imaging and spectroscopy. These PC-based systems provide flexible and powerful single-computer control, acquisition, processing and analysis using SEM, TEM, STEM, EDXS, WDXS, serial EELS, parallel EELS, Auger, CL and most other microscope detectors. Capabilities of the systems include EDX and EELS elemental mapping and spectrum imaging.

**Epichem Inc.**

Westfield Corporate Center  
4905 Tilghman Street, Suite 150  
Allentown, PA 18104  
Telephone: 610-706-0606  
Fax: 610-706-0888  
E-mail: muhrgt@epichem.com

Epichem manufactures and supplies a range of specialty chemicals and gases used in the electronic and glass coating industries. We are the leading worldwide supplier of high purity metal organics for the growth of III-V and II-VI compound semiconductors and related growth techniques. Our proprietary state-of-the-art technology is able to provide precursors of aluminum, arsenic, gallium, indium, magnesium, phosphorus, zinc, etc. with unmatched purity for optoelectronic and electronic devices. Epichem's value-added services include local stocking, local emergency response, dual production capability, leading-edge analytical instrumentation, ISO certification, technical and customer support and growth testing.

**EPI MBE Products Group**

1290 Hammond Road  
St. Paul, MN 55110  
Telephone: 612-653-0488  
Fax: 612-653-0725  
E-mail: info@epimbe.com  
http://www.epimbe.com

EPI leads the MBE industry by offering innovative designs and breakthrough technologies to enhance the performance of new and existing MBE systems. With over 10 years experience delivering effusion cell products, EPI has pioneered the development of material specific effusion cells. Contact EPI for more information.

**Epion/PVD Products**

4R Alfred Circle  
Bedford, MA 01730  
Telephone: 617-275-3703  
Fax: 617-275-3709  
E-mail: jgreerpvd@aol.com

Epion Corporation is a supplier of ion and laser beam processing equipment and related services. Products include gas cluster ion beam systems, fullerene sublimators, diamondlike coating equipment, coatings and ion implantation services. Epion's PVD Products Division offers large area PLD systems, intelligent laser windows, target manipulators, and substrate heaters.

**Epitaxial Technologies, LLC (Entrepreneur)**

1450 South Rolling Road  
Baltimore, MD 21227  
Telephone: 410-455-5594  
Fax: 410-455-5595  
E-mail: ainal@worldnet.att.net

Epitaxial Technologies offers custom compound semiconductor epitaxial wafer structures and standard wafer products on all substrates for wireless, optical, photovoltaic and thermovoltaic applications. We also offer material processing consultation services. Stop by our booth at the 1997 MRS Fall Meeting and Exhibit or give us a call for a free brochure. "Epitaxial Technologies—a solid foundation for all your products!"

**Epitronics Corp./ATMI**

7 Commerce Drive  
Danbury, CT 06810  
Telephone: 203-794-1100  
Fax: 203-830-4116  
E-mail: wafers@atmi.com  
http://www.atmi.com

Epitronics offers a broad spectrum of compound semiconductor wafers and epitaxy. Products manufactured by Epitronics include gallium arsenide epitaxial wafers, silicon carbide wafers and gallium nitride epitaxial wafers. Epitronics distributes low dose SIMOX SOI wafers manufactured by Nippon Steel Corporation and III-V compounds manufactured by Wafer Technology, England.

**ESCETE B.V.**

P.O. Box 3896  
NL-7500 DW  
Enschede  
The Netherlands  
Telephone: 31-53-4356146  
Fax: 31-53-4352134  
U.S. Contact: First Reaction  
Telephone: 603-929-3583

ESCETE B.V. is a producer of high-quality oxide single crystal substrates, with a leading position in manufacturing HTSC-substrates, optical isolators, laser rods, and other components for the electrical and photonic industry. ESCETE is also involved in research projects to develop future materials and devices in national and international projects.

**ESM Software**

2234 Wade Court  
Hamilton, OH 45013  
Telephone: 513-738-4773  
Fax: 513-738-4407  
E-mail: info@esm-software.com  
http://www.esm-software.com

ESM Software develops and distributes materials science software including TAPP—a database of properties of pure compounds; MAPP—a database of engineering alloys and polymers; HSC Chemistry and ChemSage—for calculation of complex thermochemical equilibria; phase diagram CD-ROMS; Sci Glass and Sci Polymer for prediction of glass and polymer properties; and software for rendering and manipulating crystal structures.

## ◆ Evans East

666 Plainsboro Road, Suite 1236  
Plainsboro, NJ 08536  
Telephone: 609-799-1904  
Fax: 609-799-8691  
E-mail: staff@evanseast.com  
http://www.evanseast.com

Evans East is a commercial analysis laboratory specializing in surface, thin-film, and trace element characterization. Services are designed to help solve problems, support research and development, and provide guides for quality control. Techniques offered are SIMS, XPS, TOF-SIMS, AES, and SEM, with additional techniques offered through the Evans International network of laboratories.

## ◆ E.A. Fischione Instruments, Inc.

9003 Corporate Circle  
Export, PA 15632  
http://www.fischione.com  
East: Telephone: 412-325-5444  
Fax: 412-325-5443  
E-mail: pef@fischione.com  
West: Telephone: 510-454-8860  
Fax: 510-454-8861  
E-mail: dclough@fischione.com

E.A. Fischione Instruments, Inc. features a full line of TEM specimen preparation instruments including our Disk Punch, Ultrasonic Disk Cutter, Cross-Sectioning Kit, Dimpling Grinder, Twin Jet Electropolisher and Ion Mill. NEW PRODUCTS include the Model 1400 Plasma Cleaner for the elimination of contamination from TEM specimens and specimen holders. Also displayed is a full range of TEM specimen holders. NEW: For TEM and SEM analysis, EAF now offers the PC-based EMISPEC Vision System which is a SCANNED IMAGE ACQUISITION SYSTEM supporting EELS, Parallel EELS, GIF, EDS, Auger, CL, SEM and STEM.

## Fries Research & Technology GmbH, FRT

Friedrich-Ebert-Straße  
51429 Bergisch Gladbach  
Germany  
Telephone: 49-2204-842430  
Fax: 49-2204-842431  
E-mail: frtgmh@aol.com  
http://www.users.aol.com/frtgmh/welcome.html

Products include surface analysis instruments, MicroGlider®, and evaluation and control software (SPM, LEED, AES). Services include surface analysis (damage analysis, quality assurance, processing optimization, development); in-line control (manufacture and integration); consultancy work (surfaces, new materials, new technology); and applied basic research. In addition, "special" services include scanning probe microscopy; examining nano-hardness; and project work and studies.

## ◆ Gatan, Inc.

780 Commonwealth Drive  
Warrendale, PA 15086  
Telephone: 412-776-5260  
Fax: 412-776-3360  
E-mail: pmiller@gatan.com  
http://www.gatan.com  
Gatan, Inc. is the world's leading manufacturer of instrumentation and software used to enhance and extend the operation and performance of electron microscopes. Gatan's products, which are fully compatible with all brand-selectron microscopes, cover the entire range of the analytical process from specimen preparation and manipulation to imaging and analysis. Our customer base spans the complete spectrum of end-users of analytical instrumentation typically found in industrial, governmental, and academic laboratories. The applications addressed by these scientists and researchers include metallurgy, semiconductors, electronics, biological science, new materials research and biotechnology. The Gatan brand name is very recognized and respected throughout the worldwide scientific community and has been synonymous with high quality products and the industry's leading technology.

## General Vacuum, Inc. (Entrepreneur)

190A Alpha Drive  
Cleveland, OH 44143  
Telephone: 216-646-9986  
Fax: 216-646-9987  
E-mail: info@genvac.com  
http://www.genvac.com  
General Vacuum manufactures vacuum deposited thin films including indium tin oxide (ITO), diamond, diamond-like carbon (DLC), single and multilayer AR, metallization, and custom coatings for electronic, electro-optic, and optical devices including flat panel displays and IR windows. Vacuum system design/construction and surface analysis are also offered.

## Glassman High Voltage Inc.

Route 22 East, Salem Industrial Park  
P.O. Box 551  
Whitehouse Station, NJ 08889  
Telephone: 908-534-9007  
Fax: 908-534-5672  
E-mail: glassmanus@aol.com  
Glassman High Voltage manufactures high voltage DC power supplies ranging from 1 kV-500 kV up to 15 kW of output power. The units all use high frequency switching techniques and have air as their primary dielectric medium. This makes for a reliable, lightweight and serviceable product with low-stored energy.

## ◆ Goodfellow Corporation

800 Lancaster Avenue  
Berwyn, PA 19312-1780  
Toll Free: 800-821-2870  
Fax: 800-283-2020  
E-mail: info@goodfellow.com  
http://www.goodfellow.com  
Goodfellow supplies small quantities of metals and materials for research and development. Our capabilities range from one off prototypes to production quantities.

## ◆ Gordon and Breach/Harwood Academic

820 Town Center Drive  
Langhorne, PA 18966  
Telephone: 215-750-2642  
Fax: 215-750-6343  
E-mail: shannon.d@gbhap.com  
Gordon and Breach/Harwood Academic 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.

P.O. Box 99  
3800 AB Amersfoort  
The Netherlands  
Telephone: 31-33-4619741  
Fax: 31-33-4615291  
High Voltage Engineering, an engineering-oriented company, designs, manufactures, sells and markets custom-made, high-tech capital equipment for the world market. Specializing in the development and manufacture of ion beam technology-based equipment, High Voltage Engineering is the largest and most diverse manufacturer of particle accelerator systems for the scientific, educational and industrial research communities. Major product lines include: Ion Accelerator Systems, Research Ion Implanters, Systems for Ion Beam Analysis, and various components such as HV power supplies, electron and ion accelerator tubes, ion sources, beamline components, beam monitoring equipment, etc.  
(see ad in this issue)

## Hinds Instruments, Inc.

3175 NW Aloclek Drive  
Hillsboro, OR 97124-7135  
Telephone: 503-690-2000  
Fax: 503-690-3000  
E-mail: info@hindsperm.com  
Hinds Instruments manufactures photoelastic modulator (PEM) systems for a broad range of polarization modulation applications. These include birefringence measurements, measuring thin film and semiconductor layer thickness, circular and linear dichroism measurements, reflectance difference spectroscopy, ellipsometry, and polarimetry. PEMs operate by varying the polarization of light at a fixed frequency (20 kHz to 100 kHz).

## ◆ Hitachi Scientific Instruments

Nissei Sangyo America, Ltd.  
755 Ravendale Drive  
Mountain View, CA 94043  
Telephone: 415-969-1100  
Fax: 415-961-0368  
E-mail: sidsales@nissei.com  
http://www.nissei.com  
Hitachi, a world leader in electron microscope advancements and proven technologies, represents our full line of exceptional scanning, transmission and field emission electron microscopes. Visit our booth for demonstrations and information.  
(see ad in this issue)

## ◆ Huntington Mechanical Laboratories, Inc.

1040 L'Avenida Street  
Mountain View, CA 94043-1422  
Telephone: 415-964-3323  
Fax: 415-964-6153  
E-mail: huntvac.com  
http://www.huntvac.com  
The industry's largest selection of vacuum valves, flanges, fittings, and feedthroughs is available when you need it at Huntington. Also available are a wide assortment of roughing components including flexible hoses, traps, thermocouple and ionization gauge tubes, sorption and jet roughing pumps. Standard, custom, or modified UHV positioning and motion devices can be provided to meet your special needs. Stainless steel custom chambers, tees, and crosses are supported by a quarter of a century of experience in vacuum chamber design and fabrication at Huntington.  
(see ad in this issue)

## ◆ Hysitron Incorporated

2010 E. Hennepin Avenue  
Minneapolis, MN 55413  
Telephone: 612-379-4179  
Fax: 612-379-0678  
E-mail: hysitron@hysitron.com  
http://www.hysitron.com  
Hysitron, Inc. is an engineering firm specializing in the design and manufacture of force and displacement transducers. Patents exist on its transducer technology and several creative applications. The current successful commercialization is for the nano-mechanical community with a nanoindenter that stands alone or retrofits to atomic force microscopes. Features include *in situ* imaging of ultrashallow nano-indentation and nano-scratch.

## IBM Analytical and Test Services

Dept. 16W, MS/EM1  
1580 Route 52  
Hopewell Junction, NY 12533  
Telephone: 914-892-2627  
Fax: 914-892-2003  
E-mail: labs@vnet.ibm.com  
http://www.chips.ibm.com/services/asg  
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.

## Implant Sciences Corporation

107 Audubon Road, #5  
Wakefield, MA 01880  
Telephone: 781-246-0700  
Fax: 781-246-1167  
E-mail: mail@implantsciences.com  
http://www.implantsciences.com  
Implant Sciences offers ion implantation services with over 60 species available, including noble metals and rare earths. Heated implants and cryogenic implants done in research applications. Profile Code™ Software will be on display for accurate simulation of ion implantation. Pin-on disk friction and wear testing equipment also are available.

## Industrial Science & Technology Network, Inc. (Entrepreneur)

1600 Pennsylvania Avenue, Suite 21  
York, PA 17404  
Telephone: 717-843-0300  
Fax: 717-843-0705  
E-mail: istn@blazenet.net  
http://www.istn-thermal.com  
Industrial Science and Technology Network, Inc. offers innovative energy measurement methods for thermal conductivity and heat capacity on materials such as films, insulation, and composite sheets through service and instrument sale. The company also performs contract research (PA Ben Franklin, Federal DOE) in areas such as microcellular foaming, advanced thermal insulation, kinetics of nucleation, and related industrial process design.

## Inel, Inc.

P.O. Box 147  
Stratham, NH 03885  
Telephone: 603-778-9161  
Fax: 603-778-9171  
E-mail: inelinc@aol.com  
http://www.valcofim.fr/inel  
Manufacturers of diffractometer systems incorporating curved or linear position sensitive detectors. Applications include texture analysis, powders, thin films, reflectometry, polymers, *in situ*, on line, and dynamic studies. Representing Cilas neutron guides and diffractometers and GMI beam line instrumentation such as rotary tables. Representing Diacell Products' high-pressure diamond cells.

## Innotec Group Inc.

61 W. Moreland Road  
Simi Valley, CA 93065  
Telephone: 805-522-9040  
Fax: 805-522-6017  
Innotec will display sputtering systems in sputter up, sputter down, side sputter and in-line configurations, electron beam gun and thermal evaporation systems in belljar, box chamber and load lock configurations. RF, DC plasma and electron beam gun power supplies, electron beam guns and a complete range of vacuum components.

## InnoVac Corporation

P.O. Box 3367  
50 Harrison Street  
Hoboken, NJ 07030  
Telephone: 201-963-5450  
Fax: 201-963-5449  
E-mail: info@skion.com  
http://www.skion.com  
InnoVac provides various custom thin film deposition equipment (sputtering, evaporation and ion beam deposition). InnoVac introduces various innovative vacuum parts such as a SiC heating stage for oxygen environment, a rotational liquid nitrogen sample cooling stage, magnetron sputter gun and sample load lock assembly. InnoVac also specializes in providing custom vacuum chambers and systems.

## Innovative Technology, Inc.

2 New Pasture Road  
Newburyport, MA 01950  
Telephone: 508-462-4415  
Fax: 508-462-3338  
E-mail: 75014.1767@compuserve.com  
Innovative Technology is a manufacturer of glove boxes and gas purification systems. We will exhibit the System One Glove Box and gas purification package. Some applications include: solid-state chemistry, inorganic chemistry, synthesis, and crystal mounting for x-ray diffraction. We also specialize in mini and micro environments, isolation technology and oxygen barriers for pharmaceutical applications. Custom configurations available upon request. We will also exhibit the System 20/20 position sensitive detector system.

#### ◆ Inorgtech

25 James Carter Road  
Mildenhall, Suffolk IP28 7DE  
United Kingdom  
Telephone: 44-1638-714423  
Fax: 44-1638-718259  
E-mail: sales@inorg.demon.co.uk  
http://www.q-ten.co.uk/inorgtech  
U.S. Agent: First Reaction  
Telephone: 603-929-3583

Inorgtech is a manufacturer of precursor chemicals in gram to multi-kilo quantities for a range of oxide and nitride thin films. A stock list of 30 products is backed by synthesis experience in one hundred further items. Inorgtech supports University science for harnessing precursor chemistry to deposition technology.

#### Instruments SA, Inc.

Raman Division  
3880 Park Avenue  
Edison, NJ 08820  
Telephone: 908-494-8660  
Fax: 908-549-2571  
E-mail: catherine\_pawlowski@isainc.com  
http://www.isainc.com

ISA's state-of-the-art Raman and thin film products continue to provide analytical capabilities by integrating emerging technologies. The LabRam is a compact, benchtop microprobe with options for confocal imaging, macro-sampling, and remote probes, including a multipass gas probe. The XY provides similar functions but with higher spectral resolution. The UVISEL provides information on thickness, optical properties, composition, surface properties and morphology of thin films.  
(see ad in this issue)

#### ◆ Insulator Seal Inc.

6460 Parkland Drive  
Sarasota, FL 34243  
Telephone: 800-548-9509  
Fax: 941-751-3841  
E-mail: sales@isi-seal.com  
http://www.isi-seal.com

Manufacturer of hermetic electrical feedthroughs and optical viewports utilizing high-purity ceramic, sapphire and quartz. These ceramic-to-metal seals are suitable for high- and ultra-high vacuum applications. Our new 230-page catalog displays a full range of products including multi-pin, coaxial, thermocouple, power, RF power feedthroughs, and our patented VacOptix Viewports.

#### ◆ Ion Tech, Inc.

2330 East Prospect  
Ft. Collins, CO 80525  
Telephone: 970-221-1807  
Fax: 970-493-1439

Ion Tech, Inc. is the industry leader in the design and manufacture of ion beam equipment to meet any research or production requirement. Our product line features linear, round DC and filamentless RF ion beam sources, power supplies, gas flow controllers and full process ion beam systems for etching, deposition, diamondlike coating and cleaning.

#### IOP Publishing Inc.

The Public Ledger Building, Suite 1035  
150 S. Independence Mall West  
Philadelphia, PA 19106  
Telephone: 215-627-0880  
Fax: 215-627-0879  
E-mail: moore@iopubusa.com

From its origin in learned publishing, Institute of Physics Publishing has gradually expanded its range of media to include books, magazines and newsletters, and now major reference works and electronic products. On display will be a wide selection of relevant journals, magazines, and books. We will be demonstrating our 33 electronic journals. Come along to our stand to claim your 20% discount on book orders.

#### Janis Research Company, Inc.

Two Jewel Drive  
Wilmingon, MA 01887-0696  
Telephone: 508-657-8750  
Fax: 508-658-0349  
E-mail: janis@janis.com  
http://www.janis.com

Janis combines over 35 years of manufacturing experience with extensive engineering capabilities

ties to provide cryogenic systems for all research applications. Janis offers closed-cycle refrigerators, 4 K 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 requirements.

#### ◆ JCPDS-ICDD

12 Campus Blvd.  
Newtown Square, PA 19073-3273  
Telephone: 610-325-9810  
Fax: 610-325-9823  
E-mail: info@icdd.com  
http://www.icdd.com

The JCPDS-International Centre for Diffraction Data (ICDD) maintains and distributes the Powder Diffraction File Database for use in materials characterization through x-ray analysis. The database contains approximately 66,000 numeric diffraction patterns of crystalline phases. Specialized products include forensics, minerals, and metals & alloys subfiles as well as various educational publications.

#### ◆ JEOL USA, Inc.

P.O. Box 6043  
11 Dearborn Road  
Peabody, MA 01960  
Telephone: 508-535-5900  
Fax: 508-536-2205  
E-mail: eod@jeol.com  
http://www.jeol.com

A 200 kV FEG with better than 0.2 nm point resolution in STEM; a 4.0 degree K UHV STM; a UHV AFM/STM with non-contact, atomic resolution; a new ambient/environmental SPM with cold and hot stage; a new SEM with 2.5 nm resolution and a new, really intuitive user interface; all the other high performance, reliable instruments in the JEOL product line. Ask for more information.

#### ◆ Johnson Matthey Electronics

East 15128 Euclid Avenue  
Spokane, WA 99216  
Telephone: 509-891-2278  
Fax: 509-922-8734

Johnson Matthey Electronics, a major supplier of single-crystal compound semiconductors used in infrared systems and optoelectronic devices, is a primary producer of high-quality sapphire products for semiconductor and optical applications. JME refines and fabricates high-purity metals used in single-crystal semiconductors, die attach materials, sputtering targets, seal lids, and profiling thermocouples.

#### ◆ K-Space Associates, Inc.

555 S. Forest Avenue, Suite 4B  
Ann Arbor, MI 48104  
Telephone: 313-668-4644  
Fax: 313-668-4663  
E-mail: ksa@kspace.com

K-Space offers real-time image and data acquisition systems for surface science and thin film research. The KSA 400 family of turn-key RHEED and LEED imaging systems feature a peltier cooled integration selectable CCD imager and integrated 32-bit NT/95 software to provide real-time analysis of film strain, growth rate and coherence length. K-Space also offers the new MOS Sensor system: a multi-beam optical sensor to measure film stress *in situ* based on wafer curvature.

#### Kaiser Optical Systems, Inc.

371 Parkland Plaza  
P.O. Box 983  
Ann Arbor, MI 48106-0983  
Telephone: 313-665-8083  
Fax: 313-665-8199  
E-mail: sales@kosi.com  
http://www.kosi.com

The HoLoLab Series of Raman instruments represent the state-of-the-art in compact, fully integrated, and rugged Raman spectrometers specifically designed for research, analytical, educational and process applications. The confocal Raman microscope provides <1 micron spatial resolution and <3 micron axial resolution, making it the ideal choice for materials analysis.

#### ◆ Keithley Instruments, Inc.

28775 Aurora Road  
Solon, OH 44139  
Telephone: 216-248-0400  
Fax: 216-248-6168  
E-mail: product\_info@keithley.com  
http://www.keithley.com

Keithley will display its line of sensitive test instrumentation designed for materials research applications. Included will be the Model 6517 high-resistance measurement system with outstanding high-resistance measurement capability (100 mΩ) and superior low current measurements (100 nA to 20 mA). Also on display will be the Model 248.5 kV low noise power supply and the Model 2400 Digital SourceMeter™.

#### KeveX Instruments, Inc.

24911 Avenue Stanford  
Valencia, CA 91355  
Telephone: 805-295-5226  
Fax: 805-295-8714  
E-mail: jeniferem@keveX.com  
http://www.keveX.com

KeveX manufactures x-ray elemental analyzers capable of analyzing sample sizes ranging from microns to millimeters, thickness from angstroms to microns, and elemental concentrations from PPM to weight percents. The KeveX SIGMA provides a microanalyzer capable of spectral and image quantification, elemental mapping, feature analysis, EM column and stage automation. The KeveX SUPERDRY No-LN detector is available for both the Sigma and 771 products.

#### ◆ Kimball Physics, Inc.

311 Kimball Hill Road  
Wilton, NH 03086  
Telephone: 888-KIM-PHYS (888-546-7497)  
Fax: 603-878-3700  
E-mail: info@kimphys.com  
http://www.kimphys.com

UHV ELECTRON AND ION SOURCES/SYSTEMS: Beam energies 5 eV to 100 keV. High brightness sources, cathodes, cathode cartridges, Faraday cups, phosphor screens. SYSTEM OPTIONS: Energy sweeping, fast pulsing, deflection. UHV COMPONENTS: Multi-CFM™ fittings, miniature vacuum systems, eV Parts®. APPLICATIONS: Surface physics, vacuum physics, charge neutralization, cathodoluminescence, space physics, semiconductor processing, RHEED, ESD. Custom designs.

#### ◆ KLA-Tencor

160 Rio Robles  
San Jose, CA 95134  
Telephone: 408-434-4200  
Fax: 408-434-4270  
http://www.kla-tencor.com

KLA-Tencor is the world's leading manufacturer of yield management and process control systems for the semiconductor industry. KLA-Tencor offers a broad range of products including automated systems for in-line defect monitoring on patterned and unpatterned wafers, reticle and photomask defect inspection, thin film and resistivity measurement, wafer overlay and CD-SEM metrology, flat panel display measurement, thin film head and disk inspection and metrology. Also provided are defect data analysis products and yield management consulting services, which span the company's product lines.

#### Kluwer Academic Publishers

101 Philip Drive  
Norwell, MA 02061  
Telephone: 617-871-6600  
Fax: 617-871-6528  
E-mail: kluwer@wkap.com  
http://www.wkap.nl

Kluwer Academic Publishers presents new books (20% discount for meeting attendees!), and the BRAND NEW *Journal of Electroceramics*, as well as other outstanding journals such as *Adsorption*, *Advanced Performance Materials*, *Applied Composite Materials*, *Interface Science*, the *Journal of Porous Materials*, and the *Journal of Sol-Gel Technology*.

#### ◆ Kratos Analytical Inc.

535 E. Crescent Avenue  
Ramsey, NJ 07046  
Telephone: 201-825-7500  
Fax: 201-825-8659  
E-mail: jd@kratos.com  
http://www.kratos.com

New during MRS from Kratos is the market leading Axis Ultra XPS spectrometer providing real-time imaging and small spot spectroscopy >15 μm. Also being featured is Amicus, a compact XPS system ideal for QC applications. Kratos also introduces Shimadzu's XRD-6000 x-ray Diffractometer, providing qualitative, quantitative and state change analysis within a material.

#### Ladd Research Industries, Inc.

13 Dorset Lane  
Williston, VT 05495  
Telephone: 802-878-6711  
Fax: 802-878-8074  
E-mail: ladres@worldnet.att.net

Specialties include:

- Apertures—Moly, platinum, strips and discs for any electron microscope. Holes as small as five microns.
- Microholes—Small holes in various sizes and configurations for applications as widespread as satellites, FBs, x-ray equipment, to the manufacture of precise-sized solder droplets.
- Equipment—Evaporators, sputter coaters, punches.
- Supplies/Accories—Tweezers, specimen mounts, calibration standards, small tools, etc.

#### ◆ Lake Shore Cryotronics, Inc.

575 McCorkle Blvd.  
Westerville, OH 43082-8888  
Telephone: 614-891-2244  
Fax: 614-818-1600  
E-mail: sales@lakeshore.com  
http://www.lakeshore.com

Integrated Hall effect and magnetoresistance semiconductor material characterization systems with Van der Pauw resistivity measurements; features QMSA, a new data-manipulation algorithm which simultaneously derives concentrations and mobilities for multiple distributions of electrons and holes in layered semiconductor device structures. Also vibrating sample magnetometers, AC susceptometers/DC magnetometers, cryogenic platforms; high-level, Windows™-based instrument management software; new Model 340 dual loop temperature controller with multiple sensor inputs, cryogenic temperature sensors, gaussmeters, Hall generators, electromagnets, and four quadrant power supplies.

#### ◆ Lambda Physik, Inc.

3201 West Commercial Blvd., Suite 110  
Fort Lauderdale, FL 33309  
Telephone: 954-486-1500  
Fax: 954-486-1501  
E-mail: lambdausa@aol.com  
http://www.cohr.com/cohr/lp/lp\_home.html

LAMBDA PHYSIK, one of the leading manufacturers of lasers worldwide. Product spectrum: excimer, solid-state and tunable lasers for industry, medicine and science. Industrial applications are marking, drilling, microstructuring, thin-film deposition, annealing, cleaning and sterilization. Medical applications of LAMBDA PHYSIK lasers are in ophthalmology (photo refractive keratectomy), surgery, angioplasty, cancer therapy.

#### ◆ Lambda Technologies

960 Aviation Parkway, Suite 900  
Morrisville, NC 27560  
Telephone: 919-462-1919  
Fax: 919-462-1929  
E-mail: lambda@vari-wave.com  
http://www.vari-wave.com

Lambda Technologies employs variable frequency microwave concepts to provide uniform and controlled heating over large volumes with efficient and selective energy coupling. Lambda's proprietary technology has been applied in areas of polymer and composite processing, bonding of dissimilar materials, encapsulant and epoxy curing, ceramic sintering, surface treatments, biomedical uses and chemical reaction enhancement.

## Leighton Electronics, Inc.

P.O. Box 328  
First and South Streets  
Leighton, PA 18235-0328  
Telephone: 610-377-5990  
Toll Free: 800-535-1112  
Fax: 610-377-6820  
E-mail: lei@ptd.net  
http://www.leighton.com

LEI's contactless sheet resistance/resistivity measurement and mapping systems save some users \$250,000+ per year. Bulk and conductive thin films and flat panels. Robotics and sorting. Non-destructive 2DEG mobility measurements on PHEMT to eliminate operator-intensive Hall measurement. High spatial N vs. X profiling of thin EPI and sharp structures. DLTS, PR, performance and DUT boards. Contact pin rings.

## Kurt J. Lesker Company

1515 Worthington Avenue  
Clairton, PA 15025-2700  
Telephone: 800-245-1656  
Fax: 412-234-4275  
E-mail: sales@lesker.com  
http://www.lesker.com

We will display: surface science components from VG Microtech for XPS, AES, UPS, LEED and RHEED; AccuQuad™, a sophisticated, yet affordable, solution for RGA applications; TORUS® sputter sources; pure materials; high vacuum and UHV custom chambers together with flanges, hardware, electrical and rotary feedthroughs.

## Leibold Inficon Inc.

Two Technology Place  
East Syracuse, NY 13057  
Telephone: 315-434-1100  
Fax: 315-437-3803

Leibold Inficon combines specialized electronics and sensor technologies for analysis and advanced process monitoring and control. The company's expertise includes quadrupole mass spectrometers (RGAs), thin film deposition controllers and monitors, high sensitivity helium leak detectors and vacuum gauge controllers.

## LUXTRON Corporation

2775 Northwestern Parkway  
Santa Clara, CA 95051-0941  
Telephone: 408-727-1600  
Fax: 408-727-1677  
E-mail: linda@luxtron.com  
http://www.luxtron.com

LUXTRON Corporation develops, manufactures, and markets unique sensors and instrumentation, based on optical and heat flow technologies, for a wide range of semiconductor, medical, industrial, and R&D applications.

## Magnet Sales & Manufacturing

11248 Playa Court  
Culver City, CA 90230  
Telephone: 310-391-7213  
Fax: 310-390-4357  
E-mail: louisromo@aol.com  
http://www.magnetsales.com

Design and manufacture of high-grade permanent magnets and assemblies. We offer magnetite finite element design assistance, a large inventory of permanent magnet materials and a complete in-house magnet and metal working machine shop. We specialize in small quantities and short lead times as well as complex and developmental designs.

## MARCH Instruments, Inc.

4057 Port Chicago Highway  
Concord, CA 94520  
Telephone: 510-827-1240  
Fax: 510-827-1189  
E-mail: march@plasmod.com  
http://www.plasmod.com

Featuring a new in-line plasma cleaning system enabling interfacing with any conveyor process: boards, panels, boats, or cassettes. A small section of a standard conveyor allows the product to move from the previous station into the MARCH plasma systems and into the next station. This system is microprocessor and/or PC-controlled.

## MaTeck

Buero fuer Forschungsmaterialien  
Karl-Heinz-Beckurts, Str. 13  
D-52428 Juelich  
Germany  
Telephone: 49-2461-690740  
Fax: 49-2461-690749  
E-mail: mateck.schlich@t-online.de

MaTeck company is working on the processing of "high-tech materials" for research, development and production. This includes: metal single crystals of pure elements and alloys (purity 99.9% to 99.99999%); shape forming of metal single crystals (sawing, cutting, drilling and spark erosion); chemomechanical polishing of metals with a roughness of <0.03 µm and orientation accuracy of <0.25° (high surface quality); production of pure elements and alloys (rods, foils, wire, powder, etc.); fabrication of substrates, wafers and targets (III-V, II-VI and IV-VI semiconductors, substrates and bicrystals; e.g., for HT<sub>2</sub> superconductors); and sputter targets and other research materials.

## M. Braun, Inc.

65 Parker Street, Unit 5  
Newburyport, MA 01950  
Telephone: 508-462-1770  
Fax: 508-462-1862  
E-mail: mbgloveboxes@msn.com  
http://www.mbraun.com

M. Braun, Inc. will exhibit a display of its PLC-controlled inert atmosphere glove box systems and attachments and its PC-based position sensitive detector with platinum wire proportional counter. Applications include crystallography, inorganic/organometallic chemistry, semiconductor/thin film processing, lithium battery/electrolyte production, sodium/xenon bulb production, etc.

## MCNC

3021 Cornwallis Road  
P.O. Box 12889  
Research Triangle Park, NC 27709  
Telephone: 919-248-1800  
Fax: 919-248-1455  
E-mail: alab@mcnc.org  
http://www.mcnc.org

MCNC is a not-for-profit corporation located in Research Triangle Park, North Carolina. MCNC maintains advanced equipment and expertise in microfabrication. MCNC is pleased to offer analytical laboratory services as well as references used to calibrate these tools. MCNC is always looking for partners with product development ideas.

## MDC Vacuum Products Corporation

23842 Cabot Blvd.  
Hayward, CA 94545  
Telephone: 510-265-3500  
Fax: 510-887-0626  
E-mail: sales@mdc-vacuum.com  
http://www.mdc-vacuum.com

Complete line of UHV components 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. A complete line of electron beam evaporation sources in single-pocket and multi pocket configuration with matching 6 kw, 10 kw, and 15 kw solid-state switching power supplies. (see ad in this issue)

## Micrion Corporation

One Corporation Way  
Peabody, MA 01960-7990  
Telephone: 508-531-6464  
Fax: 508-531-9648  
E-mail: mktg@micrion.com  
http://www.micrion.com

Micrion Corporation manufactures focused ion beam (FIB) systems for a variety of applications including TEM sample preparation, failure analysis, device modification, micromachining, and phase shift mask repair. Two new systems include the 9800 FlipChip for design debug of flip chips and the 9500IL for in-line process monitoring and defect review.

## Micro Photonics Inc.

4949 Liberty Lane, Suite 160  
P.O. Box 3129  
Allentown, PA 18106-0129  
Telephone: 610-366-7103  
Fax: 610-366-7105  
E-mail: info@microphotonics.com  
http://www.microphotonics.com

Micro Photonics supplies surface test instruments for indentation hardness testing, scratch adhesion testing, wear testing, non-contact surface profiling and dynamic single fiber testing; thin film analysis/endpoint detection instruments utilizing ellipsometry, interferometry and OES; and CCD cameras for low-light imaging applications in the physical and life sciences.

## Microcal Software, Inc.

One Roundhouse Plaza  
Northampton, MA 01060  
Telephone: 413-586-2013  
Fax: 413-586-9665  
E-mail: info@microcal.com  
http://www.microcal.com

Microcal Software, Inc. offers Origin 5.0, a data analysis and graphics software package for Windows 95 and NT. Utilize an accessible interface including dockable toolbars and shortcut menus. Open Excel workbooks in Origin, combining Excel's spreadsheet and Origin's graphing and analysis tools. Share your Origin graphs with other Windows presentation applications.

## MicroPyretics Heaters International Inc. (MHI Inc.) (Entrepreneur)

1776 Mentor Avenue  
Cincinnati, OH 45212  
Telephone: 513-631-6065  
Fax: 513-631-0505

MHI Inc. is a quality manufacturer of high temperature heating products. These include custom and standard high temperature lines of moly-disilicide heating elements, devices such as furnaces (front loading box, bottom loading, vertical and horizontal tube); hot air blowers, Thermoblower™, Thermoplate™ and RTP devices; furnace and device electronics and accessories.

## MKS Instruments, Inc.

Six Shattuck Road  
Andover, MA 01810  
Telephone: 508-975-2350  
Fax: 508-975-0093  
E-mail: mks@mksinst.com  
http://www.mksinst.com

MKS Instruments, Inc. will feature several new products across its entire product line oriented towards advanced materials research such as DRAM, SRAM, LOGIC manufacturing processes. These products represent the latest in measurement and control technology as well as *in situ* process diagnostics. (see ad in this issue)

## MMR Technologies, Inc.

1400 N. Shoreline Blvd., Suite A-5  
Mountain View, CA 94043-1346  
Telephone: 650-962-9620  
Fax: 650-962-9647  
E-mail: mmmr@mrm.com  
http://www.mmr.com

MMR Technologies manufactures temperature controlled systems—cryogenic cooling systems and wide temperature range thermal stages—which find application in materials research in electrical engineering, physics, biology and chemistry applications over the temperature range of 10 K to 730 K. They are also used in the cooling of computer chips, electronic devices, laser diodes, and thermal imaging devices, and in the characterization of the performance and properties of such devices as a function of temperature. (see ad in this issue)

## Molecular Metrology, Inc.

2 New Pasture Road  
Newburyport, MA 01950  
Telephone: 508-462-4415  
Fax: 508-462-3338  
E-mail: molmet@seacoast.com

Molecular Metrology, Inc. designs and constructs custom x-ray optics and instrumentation for our customers' specific applications. In particular, we specialize in surface and small-angle x-ray spectrometers. We also provide low noise,

high resolution position sensitive detectors and x-ray monochromator crystals, including flat, curved, asymmetric, channel-cut, etc.

## Molecular Simulations, Inc.

9685 Scranton Road  
San Diego, CA 92121  
Telephone: 619-458-9990  
Fax: 619-458-0136  
http://www.msi.com

Visit MSI to find out how computer modeling predicts properties, designs and characterizes new materials, and helps you to optimize processes. Application areas include electronics—where researchers study defect structures, interpret analytical data and understand chemical vapor deposition; and catalysis—where MSI's consortium develops technologies to understand reactions in zeolites and at surfaces. See how MSI will make simulation available on the Web and take away a free CD of MSI's WebLab Viewer molecular visualization software.

## Morton International, Inc.

150 Andover Street  
Danvers, MA 01923  
Telephone: 508-750-9276  
Fax: 508-750-4298

Morton Performance Chemicals manufactures MorPure™ metalorganic sources, including MorPure TMG, MorPure TMA, MorPure TMI, which are suitable for the most demanding compound semiconductor applications. These sources are manufactured under the ISO 9001 quality system. Morton's MorPure certification is a quality designation which signifies manufacture for the most demanding commercial quality assurance requirements.

## MTI Corporation

5327 Jacuzzi Street, Unit 3G  
Richmond, CA 94804  
Telephone: 510-525-3070  
Fax: 510-234-5235  
E-mail: mtixpj@aol.com

Manufacturer of various single crystal substrates for photoelectronics, III-V nitrides, compound semiconductors and superconductor thin films. Major products include MgAl<sub>2</sub>O<sub>4</sub>, Al<sub>2</sub>O<sub>3</sub>, BaTiO<sub>3</sub>, LaAlO<sub>3</sub>, SrTiO<sub>3</sub>, SrLaAlO<sub>4</sub>, GaP, GaAs, GaSb, InP, etc. crystals and substrates. MTI also supplies high quality 20 to 100 nm nanopowders, including SiC, Si<sub>3</sub>N<sub>4</sub>, Si/C/N and Si.

## Nano Instruments, Inc.

1001 Larson Drive  
Oak Ridge, TN 37830  
Telephone: 423-481-8451  
Fax: 423-481-8455  
E-mail: nano@nanoinst.com  
http://www.nanoinst.com

Our latest development, the Nano Indenter® XP series indenters are robust, simple to use, and extremely reliable and consistent. Simplicity, reliability and speed—without compromising the quality of the data. The XP systems are now available with the options already available with the Nano Indenter® II series, Continuous Stiffness Measurement (CSM), scratch/friction/profiling, and high load indentation. Using Nano Instruments' patented CSM technique, the true hardness and modulus of a thin film or bulk material can be determined as a function of depth of indent with a single indentation.

## National Electrostatics Corporation

P.O. Box 620310  
7540 Graber Road  
Middleton, WI 53562-0310  
Telephone: 608-831-7600  
Fax: 608-256-4103  
E-mail: nec@well.com  
http://www.pelletron.com

National Electrostatics Corporation manufactures a wide variety of ion beam systems from below 100 keV to the hundreds of MeV region. These systems include complete materials analysis systems using MeV ion beams. NEC also manufactures a wide range of beam handling and vacuum components including vacuum isolators for vacuum pumps. (see ad in this issue)



**Naval Research Laboratory (NRL)**

Code 5251  
Washington, DC 20375  
Telephone: 202-404-1865  
Fax: 202-767-0649  
E-mail: chill@ccf.nrl.navy.mil  
http://www.nrl.navy.mil

The Naval Research Laboratory (NRL) is the Department of the Navy's corporate laboratory. NRL conducts a broad program of scientific research, technology and advanced development. The Laboratory, with a total complement of nearly 4,000 personnel, is located in Washington, DC, with other major sites at the Stennis Space Center, MS; and Monterey, CA.

**◆ Neocera, Inc.**

10000 Virginia Manor Road, Suite 300  
Beltsville, MD 20705-4215  
Telephone: 301-210-1010  
Fax: 301-210-1042  
E-mail: gdoman@neocera.com  
http://www.neocera.com

Specialists in pulsed laser deposition (PLD) and advanced thin film technologies, Neocera 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 regarding our R&D efforts, products, and services will be available.

**NFT-Nanofilm Technologie GmbH (Entrepreneur)**

Robert-Bosch-Breite 10  
Goettingen 37079  
Germany  
Telephone: 49-551-62145  
Fax: 49-551-62146  
E-mail: 100573.3164@compuserve.com  
http://www.nanofilm.de

NFT specializes in advanced inspection technology best suited for surface analysis. Using the camera as the actual detector, NFT's instruments analyze thin film structures using real-time ellipsometric or Brewster angle imaging as the contrast enhancement technique. NFT also supplies accessories for monolayer handling such as Langmuir film balances and anti-vibration systems.

**Nicolet Instrument Corporation**

5225 Verona Road  
Madison, WI 53711  
Telephone: 608-276-6100  
Fax: 608-273-5046  
E-mail: nicinfo@nicolet.com  
http://www.nicolet.com

Nicolet will exhibit the compact Protégé 460 spectrometer with powerful OMNIC software. The FT-IR spectrometer system utilizes DSP technology to provide performance, efficiency and serviceability in an affordable FT-IR system. It offers increased flexibility when coupled with the InSpecIR FT-IR microsampling and video imaging accessory.

**NORAN Instruments Inc.**

2551 West Bellline Highway  
Middleton, WI 53562  
Telephone: 608-831-5125  
Fax: 608-831-4461  
E-mail: info@noran.com  
http://www.noran.com

NORAN Instruments presents VOYAGER®, the world's best-selling workstation-based microanalysis system, the NEW MAXray™ Parallel Beam Spectrometer, IbeX and APeX WDS spectrometers, EBSP analysis and imaging products and a complete line of standard and no-LN Si(Li) detectors.

**◆ Noranda Advanced Materials**

4950 rue Levy  
St. Laurent, Quebec H4R 2P1  
Canada  
Telephone: 514-856-6956  
Fax: 514-856-6925  
E-mail: bensonm@advmat.noranda.com  
http://www.noranda.advancedmaterials.com

Noranda Advanced Materials develops, produces and sells innovative products which take full advantage of Noranda's technical resources, expertise, production capabilities and markets. Our high purity metals business is primarily focused on the thermoelectric, photoreceptor, and infrared detector markets. We produce tel-

lurium, cadmium, zinc and selenium with purities ranging from 99.999% to 99.99999+%.

**NOVOCONTROL**

611 November Lane / Autumn Woods  
Willow Springs, NC 27592-7738  
Telephone: 919-639-8491  
Fax: 919-639-7523  
E-mail: vinson@ntwrks.com

NOVOCONTROL applies its know-how of dielectric analysis to scientific research and industrial quality control. The dielectric spectrometers offered by NOVOCONTROL cover a frequency range from 10 μHz to 1.8 GHz and a temperature range from -160°C to +500°C. For high resolution measurements, tailored sample cells and dielectric converters have been developed.

(see ad in this issue)

**NYS Center for Advanced Thin Film Technology**

CESTM  
251 Fuller Road, L136  
Albany, NY 12203  
Telephone: 518-437-8686  
Fax: 518-437-8687

E-mail: adamczak@cscpop.albany.edu  
The NYS Center for Advanced Thin Film Technology focuses on semiconductor, optoelectronic and energy technology development. The Center has over \$30 million of state-of-the-art and industry-standard equipment it employs to assist companies to rapidly commercialize new products. The Center has 12 200-mm vapor deposition tools that it utilizes to deposit ceramic, intermetallic and metal films. Film nucleation work is completed on the Center's analytical UHV cluster tool, which includes XPS, Auger, SIMS, FTIR, STM and AFM capability.

**Olympus America Inc.**

Precision Instrument Division  
Two Corporate Center Drive  
Melville, NY 11747-3157  
Toll Free: 800-446-5967  
Fax: 516-844-5112  
E-mail: olympus@performark.com  
http://www.olympus.com

Olympus America Inc. will be exhibiting their SZH10 zoom stereo microscopes, BX-P polarizing microscope, the MX50 semiconductor inspection microscope, and the PM30 photomicrography system. These microscopes incorporate a user-friendly, ergonomic design for greater operational comfort. In addition, Olympus will introduce the new VASII Video Archiving System for capturing and archiving images.

**◆ Omicron Associates**

1226 Stoltz Road  
Bethel Park, PA 15102  
Telephone: 412-831-2262  
Fax: 412-831-9828  
E-mail: omiasoc@aol.com

http://www.omicron-instruments.com  
Omicron are the world leaders in the design and development of new instrumentation for UHV surface analysis. We offer an extremely wide range of products that vary from complete multi-technique systems (the Multiprobe series) to our comprehensive series of scanning probe microscopes. Recently introduced innovations include: the CMA 150—capable of collecting AES data in analogue or pulse-counting modes with unparalleled signal-to-noise specifications; the NG LEED power supply—making any of our Spectaleed reverse-view LEED instruments AES capable without the need for additional power supplies or a separate lock-in amplifier; SNOM—a completely new instrument design which can operate in both transmission and reflection modes; plus our unique Needle Sensor AFM technology, which allows us to offer the proven variable temperature and large sample UHV SPM's for imaging insulating materials.

**On-Line Technologies, Inc.**

87 Church Street  
East Hartford, CT 06108  
Telephone: 860-291-0719  
Fax: 860-289-7975  
http://www.online-ftir.com

On-Line Technologies, Inc. will be displaying rugged and compact process FT-IR systems for monitoring gas mixtures and thin film proper-

ties including temperature, film thickness and composition. These instruments are designed specifically for *in situ* integration with thin film and related process equipment, and can be operated via a Lab View™ software interface.

**Osaka Vacuum, Ltd.**

911 Bern Court, Suite 140  
San Jose, CA 95112  
Telephone: 408-441-7658  
Fax: 408-441-7660

Global innovator of turbomolecular pump technology offering highly durable pump designs ideally suited for the research and development community where clean ultrahigh vacuum is required and the semiconductor industry where high throughput of corrosive gases is often necessary. Five product lines; turbomolecular and compound turbomolecular pumps, bearing type and magnetically suspended models where dry, vibration-free pumping is important, and our unique line of helical groove pumps capable of providing 10,000 sccm throughput.

**◆ Osmic, Inc.**

1788 Northwood Drive  
Troy, MI 48084  
Telephone: 810-362-1290  
Fax: 810-362-4043  
E-mail: grupido@osmic.com  
http://www.osmic.com

Multilayer coated optics for x-ray and neutron applications including Ovonix™ multilayer WD-XRF analyzing crystal replacements, Gutman Optics™ graded multilayer monochromators for XRD, and Neumir™ supermirror coated optics for neutron applications. Osmic also offers engineered solutions for applications from astronomy to x-ray lithography.

**Oxford Applied Research**

Crawley Mill, Witney  
Oxfordshire OX8 5JT  
United Kingdom  
Telephone: 44-1993-773575  
Fax: 44-1993-702326  
E-mail: sales@oxfordar.demon.co.uk  
http://www.oaresearch.co.uk

Manufacturers of scientific instruments for thin film research. Our RF plasma sources produce atomic beams of a range of gases/solids for high quality growth, doping and cleaning applications; e.g., N, O, H, As, P, Se, S, C, etc. Other products include our highly successful mini e-beam evaporators, RHEED, magnetrons, ion and electron sources and quartz crystal microbalances.

**◆ Oxford Instruments America, Inc.**

130A Baker Avenue Ext.  
Concord, MA 01742  
Telephone: 508-369-9933  
Fax: 508-369-6616  
E-mail: info@oxford.usa.com

Visit Oxford Instruments America's stand to find out about the latest integrated measurement systems, including the MagLab System 2000, designed for transport, thermal and magnetic measurements. Also discover our new SPM instruments, UHV variable temperature STM 50 to 1000 K; TOPSIII, the new Windows-based SPM control unit; and the MiniCryoSTM, designed for operation at temperatures down to 1.5 K and in high magnetic fields. A variety of Teslatron Superconducting Magnet systems are also available to explore the "BT" environment to 20 Tesla and 5 mK.

**Oxford University Press**

198 Madison Avenue  
New York, NY 10016  
Telephone: 212-726-6063  
Fax: 212-726-6441

E-mail: jan@oup-usa.org  
http://www.oup-usa.org  
Oxford University Press publishes a wide range of resources including textbooks, scholarly monographs and reference works of interest to the materials science community.

**◆ Park Scientific Instruments**

1171 Borregas Avenue  
Sunnyvale, CA 94089-1306  
Telephone: 408-747-1600  
Fax: 408-747-1601  
E-mail: info@park.com  
http://www.park.com

Scanning probe microscopes (SPM), including atomic force (AFM) and scanning tunneling (STM) for ambient, liquid and UHV environments. Advanced microscopy techniques for force modulation (FMM), phase detection (PDM), magnetic force (MFM), electrostatic force (EFM), lateral force (LFM), and nanolithography. New life science SPM product and solutions for biological applications and image analysis. Cantilevers, software and other SPM accessories.

**◆ Pfeiffer Vacuum Technology, Inc.**

24 Trafalgar Square  
Nashua, NH 03063  
Telephone: 603-578-6500  
Fax: 603-578-6550  
E-mail: 103064.3250@compuserve.com  
http://www.pfeiffer-vacuum.com

Pfeiffer Vacuum is a global leader in the production of vacuum products used in a broad spectrum of high technology applications, including electronics, materials science and research. Products include a complete line of turbomolecular, mechanical and dry vacuum pumps, quadrupole mass spectrometers, gas analyzers, helium and gas leak detectors, compact gauges and valves.

**◆ Philips Analytical X-Ray**

85 McKee Drive  
Mahwah, NJ 07430  
Telephone: 201-529-6246  
Fax: 201-529-5084  
E-mail: lisa\_schroeder@pei.philips.com  
http://www.philips.com/axr

Philips Analytical X-Ray 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 Analytical X-Ray 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.

**◆ Philips Electron Optics Inc.**

85 McKee Drive  
Mahwah, NJ 07430  
Telephone: 201-529-3800  
Fax: 201-529-2252  
http://www.philips.com/axr

Philips Electron Optics is the world's leading supplier of instrumentation and software for XRD and XRF analytical x-ray equipment as well as a full line of SEM and TEM microscopes. Our philosophy is to provide targeted solutions to customer's application needs in markets as diverse as materials research, cement, metals, pharmaceuticals and semiconductors. Our product lines includes the X'Pert MRD, PW2400, PLM-100, XL30 and XL40. (see ad in this issue)

**◆ Physical Electronics, Inc.**

6509 Flying Cloud Drive  
Eden Prairie, MN 55344  
Telephone: 612-828-6100  
Fax: 612-828-6322  
E-mail: marketing@phi.com  
http://www.philips.com

Physical Electronics (PHI) develops, manufactures and markets surface analysis instrumentation to perform auger electron spectroscopy (AES), x-ray photoelectron spectroscopy (XPS), secondary ion mass spectrometry (SIMS) and time-of-flight SIMS. These techniques characterize the top few atomic layers of a surface, providing spatially resolved information about elemental composition, chemical bonding and molecular structure.

## ◆ Plenum Publishing Corporation

233 Spring Street  
New York, NY 10013  
Telephone: 212-620-8459  
Fax: 212-647-1898

Exhibiting the most up-to-date textbooks, journals, and reference works in all areas of materials science including: *Transmission Electron Microscopy* by D. Williams and B. Carter; *Scanning Electron Microscopy and X-Ray Microanalysis* by J. Goldstein et al.; *Functional and Smart Materials* by Z.L. Wang and C. Kang; *Introduction to Electron Holography* by D. Joy et al.; *Quantum Statistical Theory of Superconductivity* by S. Fujita and S. Godoy; *The New Superconductors* by F. Owens and C. Poole; *Rapid Thermal Processing of Semiconductors* by Borisenko and Hesketh; *Thermodynamic Properties of Cryogenic Fluids* by R. Jacobsen et al.; *Journal of Materials Synthesis and Processing*; *Journal of Superconductivity*; *Plasmas and Polymers*; and *Journal of Science Education and Technology*.

## ◆ Praxair Specialty Ceramics

16130 Wood-Red Road, Suite 7  
Woodinville, WA 98072  
Telephone: 425-487-1769  
Fax: 425-487-1859

E-mail: hihomps@geof.pst.praxair.com  
Praxair Specialty Ceramics (PSC), formerly Seattle Specialty Ceramics, manufactures high phase purity, high surface area, multicomponent ceramic oxide powders and targets for diverse markets: superconductivity, solid oxide fuel cells (SOFCs), and catalysts. By leveraging PSCs unique and patented combustion spray pyrolysis (CSP) technology, we are aggressively expanding into other advanced ceramics markets such as ferroelectrics (doped PZTs and PLZTs) and yttrium iron garnets (YIG). (see ad in this issue)

## ◆ Princeton Gamma-Tech, Inc.

1200 State Road  
Princeton, NJ 08540  
Telephone: 609-924-7310  
Fax: 609-924-1729  
E-mail: jeannie@pgt.com  
http://www.pgt.com

Microanalysis systems for SEM, (S) TEM and TEM: Si and Ge detectors with PGT's patented digital pulse processor for better x-ray data in less time. Highlighted is the large 60 mm<sup>2</sup> area PRISM for optimized analysis on field emission microscopes. *Comprehensive x-ray analysis* software and EM control in a multitasking environment. Computer-aided applications for EM and light microscopy include particle size and shape analysis, metallography, fractography, coatings thickness measurement, critical dimension measurement, stereo depth measurement and microscope automation.

## ◆ Princeton Instruments, Inc.

3660 Quakerbridge Road  
Trenton, NJ 08619  
Telephone: 609-587-9797  
Fax: 609-587-1970  
E-mail: postmaster@prinst.com  
http://www.prinst.com

Princeton Instruments, Inc., the world's largest manufacturer of scientific-cooled CCD cameras, will display its complete line of cooled CCD cameras for electron microscopy, plasma monitoring and imaging. The highest dynamic range systems offer 65000:1 intensity detection. Visit our booth and discuss your specific application and requirements with our specialists.

## ◆ Princeton Scientific Corp.

P.O. Box 143  
Princeton, NJ 08542  
Telephone: 609-924-3011  
Fax: 609-924-3018  
E-mail: princesci@aol.com  
http://www.princesci.com

Princeton Scientific Corp. offers various metal and oxide single crystals, like W, Mo, Au, SrTiO<sub>3</sub>, TiO<sub>2</sub>, MgO, etc. Cutting and polishing services are also provided. Also on display is a "precision wire saw" which allows for a very accurate cutting process and yields surfaces with almost 'lapped' quality.

## ◆ Pure Tech, Inc.

P.O. Box 1319  
Commerce Drive  
Carmel, NY 10512  
Telephone: 914-878-4499  
Fax: 914-878-4727  
E-mail: puretech@gannett.inf.net  
http://www.puretechinc.com

Pure Tech is an ISO 9002 certified American manufacturer of high purity materials for sputtering and evaporation. Pure Tech produces both standard and custom materials for R&D as well as production applications. In-house capabilities include vacuum melting, inert gas hot pressing, metal and ceramic machining, custom designed backing plates, target bonding, and analytical services.

## ◆ Quad Group

1815 South Lewis Street  
Spokane, WA 99204  
Telephone: 509-458-4558  
Fax: 509-458-4555  
E-mail: quadgroup@spokane.net  
http://www.spokane.net/quadgroup

A Complete Material Science Test Lab (and Coatings Lab) in a Box...Romulus III-A executes tensile stress/strain (eng. or true), or in seconds switch to flexural modulus of rupture (3-point or 4-point loading) with automatic operation and parameter reporting—no operator judgment or errors. Coming soon...instrumented indentation products to do the same tests in minutes, using proven Hertzian concepts and simple polished metallurgical sample mounts. For the coating test lab, execute optional stud pull adhesion, shear, peel, tear, blade cutting, scratch, for electronics, functional coatings, or disk and head coatings. AND, micro range tests for multiple micro electronic applications. Plus, Oh So Much More!

## ◆ Quantum Design, Inc.

11578 Sorrento Valley Road  
San Diego, CA 92121  
Telephone: 619-481-4400  
Fax: 619-481-7410  
E-mail: info@quandsn.com  
http://www.quandsn.com

Quantum Design manufactures its Magnetic Property Measurement System (MPMS) and Physical Property Measurement System (PPMS). The MPMS, with its SQUID technology, is the industry standard for ultra-sensitive magnetic measurements. The PPMS performs automated magnetic, torque, electro-transport, thermo-electric, and optical measurements over a broad range of temperatures and applied magnetic fields.

## ◆ Quesant Instrument Corporation

28038 Dorothy Drive, Suite 2  
Agoura Hills, CA 91301  
Telephone: 818-597-0311  
Fax: 818-991-5490

Quesant Instrument Corporation produces a state-of-the-art scanning probe microscope with some remarkable breakthroughs in the scanning mechanism, ease of use and cost reduction. We continually invest in research and development, assuring that our instruments employ the latest technology. Our continuous goal is to produce technically superior SPMs and to maintain low fabrication costs that make our instruments affordable.

## ◆ Radiant Technologies, Inc.

2021 Girard, SE, Suite 100  
Albuquerque, NM 87106  
Telephone: 505-842-8007  
Fax: 505-842-0366  
E-mail: radiant@ferrodevices.com  
http://www.ferrodevices.com

The RT6000 line of test systems is designed to electrically test and characterize nonlinear thin-film and bulk ceramic devices with voltage ranges of 4000V. It combines a function generator, an electrometer, and a digital oscilloscope in an integrated 19-in. rackmount package. New RT6000S1 software gives you the ability to automate your wafer and die testing operations.

## ◆ Renishaw Inc.

623 Cooper Court  
Schaumburg, IL 60173  
Telephone: 847-843-3666  
Fax: 847-843-1744  
E-mail: renmktsvcs@aol.com  
http://www.renishaw.co.uk

Products: Ramscope, the revolutionary Raman microscope for Raman and photoluminescence. Features include rapid measurement (typically <10s), 1 μm lateral by 2 μm depth resolution, 1.5 cm<sup>-1</sup> spectral resolution, measurement range 240 nm to 1100 nm, Renishaw proprietary extended scan facility, direct 2-D imaging, fiber probes, xyz0 mapping and GRAMS/32™ software. Accessories for variable temperature 4 K to 1500°C, high pressure and electrochemical measurements are also available.

## ◆ Research and PVD Materials Corporation

P.O. Box 4796  
Wayne, NJ 07474  
Telephone: 973-575-4245  
Fax: 973-575-6460

Research and PVD Materials Corporation manufactures a wide variety of highly characterized, high purity 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 sputtering targets, thin-film deposition materials, fabricated forms of specialty and exotic metals, alloys, ceramics, intermetallics, custom fabrications and "one off" components.

## ◆ Ribier Division/ISA Inc.

3880 Park Avenue  
Edison, NJ 08820  
Telephone: 908-494-8660  
Fax: 908-494-8796  
E-mail: ribier@isainc.com  
http://www.riber.com

Largest installed base of molecular beam and gas source epitaxial systems and components for all material applications including III-V, II-VI, silicon MBE, CBE, nitrides, and multi-wafer MBE. R&D and production models, including automated multiwafer (4 times 4) and dedicated system for GaN. Solid source cracker cells for phosphorus, arsenic, sulfur, selenium, magnesium. Fast switching gas cells for CBE.

## ◆ Rigaku/USA, Inc.

199 Rosewood Drive  
Danvers, MA 01923  
Telephone: 508-777-2446  
Fax: 508-777-3594  
E-mail: rigaku@aol.com

Rigaku has been one of the leaders in x-ray analytical instrumentation for more than 50 years and continues at the leading edge of x-ray analysis. Rigaku provides a wide range of equipment for x-ray diffraction and x-ray fluorescence which can be used for many different applications.

## ◆ RJ Lee Instruments Ltd.

515 Pleasant Valley Road  
Trafford, PA 15085  
Telephone: 412-744-0100  
Fax: 412-744-0506  
E-mail: rjleesem@sgi.net  
http://www.rjleest.com

RJ Lee Instruments is the manufacturer of the applications-oriented PERSONAL SEM® and the PERSONAL EDS®, an affordable x-ray analysis system that also offers superior light element detection. The PERSONAL EDS is retrofitable to most models of SEMs. Our novel approach to SEM instrumentation and our ability to solve materials analysis problems continues to be a winning combination.

## ◆ RMC

3450 S. Broadmont Drive, #100  
Tucson, AZ 85713  
Telephone: 520-903-9366  
Fax: 520-903-0132  
E-mail: sales@rmc-scientific.com or  
rmccryo@aol.com  
http://www.rmc-scientific.com/microtomes/

RMC's exhibit this fall will include the latest in ultramicrotomy instrumentation, the MT-XL

ultramicrotome. Also on display will be the CR-X cryo-sectioning system and cryogenic systems such as 3He insertable cryostat, micro-manipulated probe and closed-cycle systems.

## ◆ SC Technology/Telemark

51 Whitney Place  
Fremont, CA 94539  
Telephone: 510-770-0900  
Fax: 510-770-1061  
E-mail: garyh@sctec.com

SC: *in situ* multi-wavelength plasma diagnostic and endpoint instruments. *In situ* instruments to measure reflectivity, film thickness, and develop rate on track coaters. TELEMARK: Evaporation sources, power supplies, quartz crystal controllers, optical monitors, sputter components, wafer services including stepper lithography to 0.25 micron.

## ◆ Scintag Inc.

10040 Bubb Road  
Cupertino, CA 95014  
Telephone: 408-253-6100  
Fax: 408-253-6300  
E-mail: er@scintag.com

Powder x-ray diffraction systems, accessories and Windows NT-based software packages. Experts in customized and special systems.

## ◆ Siemens Analytical x-ray Systems, Inc.

6300 Enterprise Lane  
Madison, WI 53719  
Toll Free: 800-234-XRAY  
Fax: 608-276-3006

Siemens specializes in x-ray diffraction and fluorescence instrumentation, including configurations for phase identification, wafer analysis, thin film analysis, 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 texture and stress analysis, small angle scattering and microdiffraction, and advanced optics to increase x-ray flux.

## ◆ SKION Corporation

50 Harrison Street  
Hoboken, NJ 07030  
Telephone: 201-963-5450  
Fax: 201-963-5449  
E-mail: info@skion.com  
http://www.skion.com

SKION introduces a revolutionary Metal Ion Beam Deposition Process. Unlike other recent secondary means of energy enhancement in thin-film deposition techniques, the metal ion beam deposition process provides a direct energy transfer. The technique has demonstrated various applications such as amorphous diamond coating on computer hard disks, hetero-epitaxial growth, field emission display, and synthesis of a new meta-stable material.

## ◆ Solartron Inc.

964 Marcon Blvd., Suite 200  
Allentown, PA 18103  
Telephone: 610-264-5034  
Fax: 610-264-5329  
E-mail: lab\_info@solartron.com  
http://www.solartron.com

Solartron frequency response and gain-phase analyzers set the worldwide standard for quality and reliability in impedance measurement for electrochemistry and materials characterization. Solartron also manufactures high-speed potentiostats with uniform frequency response in all ranges for impedance, DC electrochemistry and EC noise analysis with the most advanced software available. (see ad in this issue)

**Soleras Ltd.**

P.O. Box BC  
589 Elm Street  
Biddeford, ME 04005  
Telephone: 207-282-5699  
Fax: 207-284-6118  
E-mail: soleras@soleras.com  
http://www.soleras.com

Soleras is a manufacturer of sputter targets, original and enhanced backing plates and vacuum related spare parts. The company has product design, reverse engineering, failure analysis, CAD/CAM and full traceability/analysis of materials. Soleras specializes in enhancing original parts, such as water cooled copper/stainless parts, to allow increased power and uniformity.

**SOPRA, Inc.**

33 Nagok Park  
P.O. Box 2619  
Acton, MA 01720-6619  
Telephone: 508-263-2520  
Fax: 508-263-2790  
http://www.sopra-sa.com

Manufacturer of high quality, thin film measurement instruments. The products are ranging from spectroscopic ellipsometers for *in situ* process monitoring, basic research bench top model to fully automated production machines for the wafer and flat panel industry. Also available are high resolution double pass monochrometers (0.025 cm<sup>-1</sup> q 500 nm), turnkey spectrometers to characterize non-linear liquid or solid materials.

(see ad in this issue)

**South Bay Technology, Inc.**

1120 Via Callejon  
San Clemente, CA 92673  
Telephone: 714-492-2600  
Toll Free: 800-728-2233  
Fax: 714-492-1499  
E-mail: sbt@southbaytech.com  
http://www.southbaytech.com

South Bay Technology, Inc. will be exhibiting the industry's most advanced sample preparation systems and supplies.

Featured will be systems for:

- Plasma cleaning for TEM
- Orienting, cutting and polishing single crystals
- Ultra-precise thinning of cross-section TEM samples
- Selective etching of GaAs/AlGaAs heterostructures
- Damage-free cutting and polishing of soft single crystals
- The MicroCleave™ Technique, a simple and inexpensive method of producing superior cross sectional TEM specimens

Featured products include:

- PC150 Plasma Cleaner, built under license from Argonne National Laboratory pursuant to their (U.S. Patent 5,510,624), inventor Dr. Nestor J. Zaluzec
  - IV3 Research Grade Ion Milling System for TEM, SEM and optical microscopy
  - Tripod™ Polisher, BiPod™ Polisher for TEM and SEM polishing
  - MAC\*™ CAL, calibration sample, world's smallest ruler
  - MicroCleave™ Kit, Model 520, cross-sectional TEM specimens
  - 900 Series lapping and polishing systems
  - BEAPS™ Backside Emission Analysis Preparation System
  - Real-time Back Reflection Laue Camera
- Applications engineers will be on hand to help you solve your most difficult sample preparation problems. For further information, please contact us by telephone at 800-728-2233; fax at 714-492-1499; or E-mail at sbt@southbaytech.com.

**SPECS USA, Inc.**

635 South Orange Avenue  
Sarasota, FL 34236  
Telephone: 941-362-4877  
Fax: 941-364-9706  
E-mail: didi@specs-usa.com  
http://www.specs.de

SPECS USA, Inc. is a leading manufacturer of UHV systems and components for surface analysis. Systems are built to customers needs for XPS, UPS, AES, SAM, ISS, SIMS, SNMS and EELS. SPECS presents its new fully automatic ESCA instrument, SAGE 150, for routine analy-

sis. Components manufactured are: hemispherical analyzers, mass spectrometers, x-ray and UV sources, ion- and electron guns.

**SPI Supplies/Structure Probe, Inc.**

P.O. Box 656  
569 E. Gay Street  
West Chester, PA 19381-0656  
Telephone: 610-436-5400  
Fax: 610-436-5755  
E-mail: spi2spi@spi.com  
http://www.2spi.com

Structure Probe, Inc. is an independent analytical 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 and "Tacky Dot" slides.

**Springer-Verlag New York, Inc.**

175 Fifth Avenue  
New York, NY 10010  
Toll Free: 800-SPRINGER  
Fax: 212-533-5587  
E-mail: custserv@springer-ny.com  
http://www.springer-ny.com

Springer's materials science program grows broader and deeper with the addition of AIP Press books, both published and planned. In addition to Springer's distinguished research monographs and references, you'll now find Yate's *Experimental Innovations in Surface Science*, Mark's *Physical Properties of Polymers Handbook*, and Fraden's *Handbook of Modern Sensors, 2e*. Also available are Nakamura's *The Blue Diode Laser*, Borchardt-Ott's *Crystallography*, and Yu & Cardona's *Fundamentals of Semiconductors*. All books are available for one month at 20% discount to conference attendees.

**Stalb Instruments**

813 Diligence Drive, Suite121E  
Newport News, VA 23606-4285  
Telephone: 757-873-0099  
Fax: 757-873-0130  
E-mail: stalbinstruments@worldnet.att.net  
http://www.stalb-instruments.com

Manufacturers of compact, high-performance electron-optical equipment for *in situ* material analysis, including: RHEED systems and RHEED energy analyzer, with data acquisition, to study structure and quality of thin films; photo-emission electron microscopes (PEEM), for dynamic studies of chemical distribution with high time and space resolution; energy analyzers for AES, XPS and UPS; and electron guns for analytical surface studies. Visit our new website at www.stalb-instruments.com.

**Strem Chemicals Inc.**

7 Mulliken Way  
Newburyport, MA 01950  
Telephone: 508-462-3191  
Fax: 508-465-3104  
E-mail: info@strem.com  
http://www.strem.com

Chemicals for research, including chiral ligands, metalloenes, metal carbonyls and derivatives, metal acetylacetonates, acetates, halides and oxides, precious-metal chemicals, rare-earth chemicals, organometallic precursors for MOCVD and CVD, high-purity alkali metals, metals and elements, pharmaceutical intermediates under GMP, and fullerenes.

**Struers/Logitech Product Group**

810 Sharon Drive  
Westlake, OH 44145  
Telephone: 216-871-0071  
Fax: 216-871-8188

Struers is the world's leading manufacturer of equipment and consumables for metallographic surface preparation of solid materials—metals, ceramics, and plasma spray coatings. The Logitech Product Group designs and manufactures a range of precision sawing, lapping and polishing equipment, and has a significant involvement in materials processing.

**Superconductive Components, Inc.**

1145 Chesapeake Avenue  
Columbus, OH 43212  
Telephone: 614-486-0261  
Fax: 614-486-0912  
E-mail: scimax@aol.com  
http://www.superconductivecomp.com

Manufacturers of high temperature superconductors. Ferroelectric and fuel cell materials as powders, sputtering targets and melt-processed levitation devices. In addition, our Target Materials Division supplies thin film materials for optics, hardness and decorative coatings. Stop by our booth for a unique demonstration and a copy of our '97 - '98 catalog.

**SURFACE**

Rheinstrasse 7  
D-41836 Hueckelhoven  
Germany  
Telephone: 49-2433-970305  
Fax: 49-2433-970302  
E-mail: surface@compuserve.com

SURFACE has been working for many years in the field of plasma-related technologies. The developments of the last years were focused on the large area of pulsed laser deposition and the design and manufacturing of such equipment. A family of high-flexible process systems is available. From inexpensive systems for max. 1-in. samples to high-complex 4-in. multichamber semiproduction systems, SURFACE offers the widest range of PLD systems on the market. As a new technology, large area laser annealing systems are available and are used for different applications like flat-panel displays, sol-gel coatings and ceramics. As a new product, SURFACE presents a DC-plasma source which is flexible to use and generates a high dense but low ion energy plasma.

**Surface/Interface, Inc.**

260 Santa Ana Court  
Sunnyvale, CA 94086  
Telephone: 408-732-7111  
Fax: 408-732-7191  
E-mail: sii@surfaceinterface.com  
http://www.surfaceinterface.com

Surface/Interface provides innovative product solutions to meet the needs of ultrahigh vacuum, semiconductor manufacturing and surface analysis customers. S/I specializes in "ultra-clean" components and UHV-compatible motors for analytical systems and vacuum and manufacturing applications. S/I also offers highly pure, characterized reference materials and custom products and consulting services to industry and the materials science community.

**Surface™ Corporation**

(previously Surface Forces Instruments, Inc.)  
2233 Foothill Lane  
Santa Barbara, CA 93105  
Telephone: 805-899-9292  
Fax: 805-899-9190  
E-mail: info@surface.com

Surface™ Corporation produces Surface Forces Apparatuses, especially the SFA3™, and attachments for measuring intermolecular and intersurface forces between surfaces in liquids and vapors. Both adhesion and colloidal interactions can be measured, as well as friction forces and other dynamic (non-equilibrium) interactions. The SFA technique, coupled with FECO optics, is the only technique available that can directly and simultaneously measure surface forces and exact surface separations (to 1 Å) while visualizing surface profiles and shape changes during an interaction.

**SVT Associates**

7620 Executive Drive  
Eden Prairie, MN 55344  
Telephone: 612-934-2100  
Fax: 612-934-2737  
E-mail: svta@svta.com

Manufacturer of leading deposition and process monitoring equipment for III-V MBE and UHV/CVD Si-Ge materials research. SVTA offers a new III-Nitride MBE system with guaranteed material specifications, and a complete line of sources including effusion cells, RF plasma sources, and compact E-beam sources. We offer analysis equipment such as pyrometric interferometer, RHEED, and cathodoluminescence instruments. We also provide epi-wafer research and service.

**Sycon Instruments, Inc.**

6757 Kinne Street  
East Syracuse, NY 13057  
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 also available from Sycon. A new deposition monitor based on the principle of atomic absorption is a unique product added to the Sycon product line. This product is used for continuous monitoring of film deposition.

**Taylor & Francis**

1900 Frost Road, Suite 101  
Bristol, PA 19007-1598  
Telephone: 215-785-5800  
Fax: 215-785-5515  
E-mail: bkorders@tandfpa.com  
http://www.tandf.com

Taylor & Francis is an international publisher of books and journals in physics, fiber optics, optoelectronics and related disciplines. Stop by to check out our new *Elastic and Inelastic Stress Analysis*, the new edition of *Introductory Solid State Physics*, and our new journals *Microscale Thermophysical Engineering*, *Mechanics of Composite Structures*, and *Reviews in Process Chemistry and Engineering*.

**TECHNOTRADE International, Inc.**

7 Perimeter Road  
Manchester, NH 03103  
Telephone: 603-622-5011  
Fax: 603-622-5211

Representing the following products:

BAL-TEC—sample preparation systems and accessories for electron microscopy; MECCO—chain clamps and metal seals for all HV and UHV applications; SASKIA—oil-free diaphragm and piston pumps; WOLF—UHV instrument feedthroughs utilizing sub "D" connectors.

**TexSEM Laboratories (TSL), Inc.**

392 East 12300 South, Suite H  
Draper, UT 84020  
Telephone: 801-495-2750  
Fax: 801-495-2758  
E-mail: tsl@oim.com  
http://www.oim.com

TSL was founded in 1993 to develop Orientation Imaging Microscopy™ (OIM™). OIM automates the imaging of crystallographic data obtained via electron backscatter diffraction. OIM systems produce thousands of spatially specific orientation measurements within minutes, permitting quantitative analysis of local texture, grain boundaries and phase. OIM provides unprecedented detail and precision in the discovery, creation, and control of new microstructures.

**Thermionics Laboratory, Inc.**

22815 Sutto Street  
P.O. Box 3711  
Hayward, CA 94540-3711  
Telephone: 510-538-3304  
Fax: 510-538-2889  
E-mail: sales@thermionicscorp.com  
http://www.thermionics.com

Thermionics manufactures vacuum systems, components, and hardware for all vacuum applications including: DRS-1000™, an *in situ*, remote substrate temperature measurement/control system; 3-20 kW e-Gun™ evaporation sources and power supplies; ion pumps, titanium sublimators; XYZ manipulators, sample handling and transfer devices, differentially pumped rotary seals; gate, angle and all metal valves; feedthroughs, gauges and controls, flanges, fittings; surface science, deposition, PLD, RHEED, and custom systems.

## ◆ Thomas Swan & Co., Ltd.

Unit 1c, Button End  
Harston  
Cambridge CB2 5NX  
United Kingdom  
Telephone: 44-1223-872282  
Fax: 44-1223-871714  
E-mail: thomas-swan@dialpiper.com  
Thomas Swan supplies high quality equipment and instrumentation for MOCVD. New products include Epison III for *in situ* control of metal-organic delivery, Epitor II for multi-wafer production of critical structures, Epitor GaN, a novel proven reactor for GaN deposition, and equipment for reflectance anisotropy. Over 100 MOCVD systems have been supplied.

## ◆ TopoMetrix Corp.

5403 Betsy Ross Drive  
Santa Clara, CA 95054-1162  
Telephone: 408-982-9700  
Fax: 408-982-9751  
E-mail: inquiry@topometrix.com  
http://www.topometrix.com  
TopoMetrix manufactures scanning probe microscopes (scanning tunneling, atomic force and near field scanning optical microscopes) for sales worldwide. It produces a large range of probe stages for the analysis of both large and small samples. We will be displaying the newly introduced Accurex II SPM as well as the Lumina NSOM/Inverted microscope. The company has field offices worldwide for sales, applications development and support.

## ULTRA TEC Mfg., Inc.

1025 E. Chestnut Avenue  
Santa Ana, CA 92701-6425  
Telephone: 714-542-0608  
Fax: 714-542-0627  
E-mail: info@ultratecusa.com  
ULTRA TEC Mfg., Inc. are designers and manufacturers of cutting, grinding and polishing instrumentation equipment for microscopy, failure analysis, production and R&D applications in the materials, semiconductor, electro-optic, medical and related industries. Our products are designed with precision and versatility in mind. Our ULTRASLICE slicing/dicing machines and MICROSOLVE annular precision saws provide surfaces which may be an end in themselves, or a starting point for polishing on the MULTIPOL and ULTRAPOL systems. We also offer a wide range of consumable items.

## ◆ Union Carbide Crystal Products

750 South 32nd Street  
Washougal, WA 98671  
Telephone: 360-835-2001  
Fax: 360-835-9848  
Crystal Products, located in the Pacific Northwest, offers Czochralski-grown sapphire substrates for blue LED, superconductors, and SOI, radiation-hardened, IC devices. Sizes are 2-in. and 3-in. diameter, C-plane; 2-in. to 6-in. diameter, R-plane; and SOS epitaxial wafers. See our Sapphire Research Kits containing substrates oriented to M, A, R & C axes.

## Vacuum Atmospheres Company

P.O. Box 1043  
4652 West Rosecrans Avenue  
Hawthorne, CA 90250-6896  
Telephone: 310-644-0255  
Fax: 310-970-0980  
E-mail: sales@vac-atm.com  
http://www.vac-atm.com/  
Vacuum Atmospheres Company manufactures inert atmosphere glove boxes, gas purification systems and trace gas analysis equipment. Applications include inorganic chemistry, crystallography, organometallic chemistry and solid-state chemistry. Custom designs for isolation barriers used in battery, semiconductor, pharmaceutical and laser applications.

## Vacuum Research Corporation

2419 Smallman Street  
Pittsburgh, PA 15222  
Toll Free: 800-426-9340  
Fax: 412-261-7220  
E-mail: vrc@city-net.com  
Dry pumps. Low-cost pumps from 6 to 32 CFM (170 l/min to 960 l/min) with ultimate pressures of 20 mTorr (3 Pa). Prices start at \$4400. Smart pumps with optional soft start.

Convection, pirani, thermocouple and diaphragm gauges 10<sup>-5</sup> to 1500 Torr, sensors heated to 100°C. Aluminum gate and angle valves; 2 to 20 inch (63 to 500 mm). Vacuum switches with sensitivity of ±1 mTorr and ranges from 10<sup>-5</sup> to 1500 Torr.

## Varian Vacuum Products

121 Hartwell Avenue  
Lexington, MA 02173-3133  
Telephone: 800-926-3000  
Fax: 603-382-3451  
E-mail: phil.ciaccio@sgl.varian.com  
Varian Vacuum Products will exhibit a broad range of high vacuum equipment including the MacroTorr, maintenance-free ceramic-bearing turbo pump and the Starcell® ion pump. On display will be a dry turbo pump station, a model 956 turbo leak detector and the new senTorr™ gauge controller.

## VAT, Inc.

500 West Cummings Park  
Woburn, MA 01801  
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.

## ◆ Virginia Semiconductor, Inc.

1501 Powhatan Street  
Fredericksburg, VA 22401  
Telephone: 540-373-2900  
Fax: 540-371-0371  
Featuring Ultrathin™ and Ultramachining™ silicon wafers with flatness ≤ 3 μm, planarity of ≤ 3 μm, and taper ≤ 2.5 μm; 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.

197 Meister Avenue  
P.O. Box 5357  
North Branch, NJ 08876  
Telephone: 908-231-9060  
Fax: 908-231-9063  
E-mail: info@voltaix.com  
http://www.voltaix.com  
Voltaix, Inc. manufactures and distributes gases used for CVD and ion implantation applications including diborane, germane, trimethylboron and methylsilane. These gases, as well as silane, phosphine, silicon and germanium tetrafluoride and boron trifluoride, are available as pure gases and in a variety of mixtures. We also supply isotopically enriched versions (e.g., <sup>10</sup>B, <sup>11</sup>B, <sup>29</sup>Si, D) of most of our gases, which have shown promise in ion implantation and CVD applications. (see ad in this issue)

## ◆ VSI Vacuum Science Instruments, Inc.

1633 E. Vine Street, Suite 208  
Kissimmee, FL 34744  
Telephone: 407-935-9422  
Fax: 407-935-9983  
E-mail: vsisurfsci@aol.com  
VSI manufactures ErLEED reverse view optics with digital electronics and software for LEED and LEED/AES; DELTA 0.5 ultimate resolution HREELS with user-friendly PC control and software; DELTA - A and HSA series high resolution electron energy analyzers with the latest PC-driven electronics; UVS300 high intensity UV lamp; and AHS100 atomic hydrogen source.

## WCB/McGraw-Hill

1333 Burr Ridge Parkway  
Burr Ridge, IL 60521  
Telephone: 630-789-4000  
Fax: 630-789-6945  
http://www.mhhe.com  
WCB/McGraw-Hill has long been a premier publisher of materials science and engineering textbooks. You are invited to visit the WCB/McGraw-Hill booth to examine and request complimentary copies of our newest

offerings in materials science: Hyer, *Stress Analysis of Fiber Reinforced Composite Materials*, Mahajan, *Principles of Growth and Processing of Semiconductors*, Barsoum, *Fundamental of Ceramics*. Also available for examination are additional titles in Introductory Materials Science, Composite Materials, Metallurgy, Polymers, Mechanical Behavior of Materials, Microelectronic Processing and Thermodynamics.

## Well Diamond Wire Saws, Inc.

East Woods Business Center  
4708 S. Old Peachtree Road  
Bldg. 500, Unit D  
Norcross, GA 30071  
Telephone: 770-582-9887  
Fax: 770-582-9339  
Well Precision Diamond Wire Saws are well known in Europe; used mainly in laboratories for cutting all types of materials. These saws are uniquely designed to make precise cuts and slices through ceramic, glass, metals, rubber, plastics and exotic-bonded materials. Valuable applications are quality control, development testing, and post failure analysis.

## ◆ John Wiley & Sons, Inc.

605 Third Avenue  
New York, NY 10158  
Telephone: 212-850-6000  
Fax: 212-850-6088  
E-mail: dimus@wiley.com  
http://www.wiley.com  
Founded in 1807, John Wiley & Sons, Inc. is an independent, global publisher of print and electronic products. Wiley specializes in scientific and technical books, journals, textbooks and education materials for colleges and universities, and professional and consumer books and subscription services. Stop by the booth and browse through the latest publications in statistics and related areas. Wiley's Internet site can be accessed at <http://www.wiley.com>.

## J.A. Woollam Co., Inc.

645 M Street, Suite 102  
Lincoln, NE 68508  
Telephone: 402-477-7501  
Fax: 402-477-8214  
E-mail: sales@jwoollam.com  
Spectroscopic ellipsometers for non-destructive materials characterization: multi-layer thickness, optical constants, growth and etch rates, composition and more. Real-time process con-

trol with low cost, simple to use, multi-wavelength ellipsometers (M-44™, M-88™ and M-2000™). *In situ* applications include monitor and control of sputter deposition, MBE, CVD, e-beam evaporation, plasma etching, and more.

## X-ray Instrumentation Associates

2513 Charleston Road, #207  
Mountain View, CA 94043  
Telephone: 650-903-9880  
Fax: 650-903-9887  
E-mail: bill@xia.com  
http://www.xia.com  
XIA develops high performance electronics for x-ray and gamma ray research. We are introducing the DXP-1S, a stand-alone, fully digital x-ray spectrometer, including both shaping amplifier and multichannel analyzer, whose functions are all controlled via a PC parallel port. The DXP-4C is a 4-channel CAMAC module for inexpensively instrumenting multi-element detector arrays.

## X-Ray Optical System, Inc.

Five Avis Drive  
Latham, NY 12110  
Telephone: 518-783-5375  
Fax: 518-783-5389  
E-mail: pbly@xos.com  
http://www.xos.com  
We design and fabricate both standard and custom capillary-based optics for use with x-rays and neutrons. Options for focusing, collimating, and beam bending are available. These optics guide the beam using hollow capillary fibers. The principle behind the operation of these lenses is the multiple total external reflection of either x-rays or neutrons from the smooth inner walls of the hollow capillary channels.

## Zygo Corporation

Laurel Brook Road  
Middlefield, CT 06455  
Telephone: 860-347-8506  
Fax: 860-347-8372  
E-mail: inquire@zygo.com  
http://www.zygo.com  
Zygo Corporation, a world leader in surface measurement technology, designs and manufactures precision noncontact measuring instruments and automation systems, providing productivity and yield improvement solutions for manufacturers of precision components. Zygo also produces precision surfaces on a variety of materials and optical components.

Visit the 1997 **MRS** Fall Exhibit

**FREE**  
Exhibit Admission Pass

Visit more than 200 exhibitors who will be displaying a full spectrum of equipment, instrumentation, products, software, publications and services for materials research.

1997 MRS Fall Exhibit  
December 2-4, 1997

Boston Marriott Hotel/  
Copley Place  
Westin Hotel/Copley Place  
Sheraton Boston Hotel  
& Towers

Call Mary E. Kaufold  
at 412-779-8312 or  
Donna Watterson at  
412-779-3004, ext. 542  
for your application today.  
Form is also available on the  
MRS Web site at  
<http://www.mrs.org/>.