

# 1995 MRS Fall Meeting

The 1995 MRS Fall Meeting offers a rich diversity of topics in 34 symposia featuring about 4,000 oral and poster presentations. For the second year, the meeting will include the Sheraton Boston Hotel in addition to the Boston Marriott and Westin Hotels. There will be four evenings of poster sessions, and the Exhibit (Tuesday through Thursday) has expanded into all three hotels and includes a Wednesday evening session.

A new tutorial program debuts at this meeting which integrates half- and full-day tutorials into the technical program of selected symposia. These tutorials are scheduled Sunday through Tuesday, and are listed in the following pages and in the Meeting Program.

## Technical Features

Several symposia address electronic materials, with an emphasis on wide bandgap semiconductors and electronic ceramics. Symposium AAA will feature the latest results in the very rapidly growing field of group III-nitrides, highlighting achievements in diode laser heterostructures and in InGaN and GaN/SiC LEDs. Symposium DD will cover electronic applications of diamond and diamond-like materials, including their use as cathodes in field emission flat panel displays, sensing applications, and switching devices. Symposia G and BB address oxide and ceramic thin films for a variety of electronic applications. The formation of quantum wires by strain-induced lateral-layer ordering will be one of the topics on optoelectronic materials covered in Symposium EE, with potential applications for quantum wire lasers.

Ion beam technology will be featured in Symposium A, which will include sessions on surface optical property modifications, computer simulations of energetic particle/surface interactions, and the formation of nanocrystals and quantum dots in insulators by ion implantation. A summary of a DOE panel study, Energetic Ion Beams in Semiconductor Processing, is also planned.

The areas of thin film growth and processing will be covered in several symposia which will individually focus on laser processing, phase transformations, epitaxial structure, and metastable phases. In Symposium I, a technique using orientation imaging will be described for determining grain orientations, an important issue for magnetic disk storage media.

The development of diagnostic techniques for semiconductor materials processing and characterization techniques for probing surfaces and interfaces will be represented in several symposia (K, L, CC, and J). These include advances in *in situ* techniques which make it possible to observe electromigration induced void dynamics in metal interconnects, as well as

**November 27–December 1, 1995**  
**Boston Marriott Hotel and Westin Hotel/Copley Place**  
**Sheraton Boston Hotel**  
**Boston, Massachusetts**

## Meeting Chairs:

**Michael J. Aziz,**

Harvard University

**Berend T. Jonker,**

Naval Research Laboratory

**Leslie J. Struble,**

University of Illinois-Urbana

new techniques which can probe the dynamics of gas-solid surface interactions at the atomic level.

The study of crystal defects continues to be an underlying theme of high- $T_c$  superconductor research. The nature of defects in these materials and their role in determining microscopic and macroscopic properties will be explored in Symposium F, with several joint sessions planned with Symposium G.

Symposium G will address several classes of epitaxial oxide thin films, and will include presentations on a new class of lanthanum manganate materials with large magnetoresistive properties, which have possible applications in thin-film heads for magnetic data storage.

A wide variety of topics in the areas of organic and polymeric materials will be covered in Symposia W and Y. Symposium W will address electrical, optical, and magnetic properties, while Symposium Y will focus on long-term performance issues, such as the in-service weatherability of plastics and coatings and the physical aging of polymers.

Several symposia cover topics in the biological sciences and other complex or "soft" material systems. Symposium U will consider how lessons learned in nature may be applied to develop new materials, and Symposium Z addresses the development of materials suitable for interfacing with human tissue, as may be encountered in implants or joint replacements. Symposium O will describe how self-assembled materials and micron- to submicron-sized arrays have been developed as substitutes for gel electrophoresis to fractionate DNA. Symposium N covers a variety of topics related to foams, emulsions, colloids, and liquid crystals.

Symposium P will provide a representative picture of how computer simulations are complementing, and in some cases replacing real experiments in materials research, making it possible to obtain insight of unprecedented detail and depth. The power of massively parallel computers to study fractures will be demonstrated in Symposium Q. Molecular dynamics simulation techniques can model the time

evolution of 106 to 108 atoms, several orders of magnitude beyond what was possible only a few years ago, providing new capabilities to model ductile and brittle fracture of crystals at the atomic scale.

Symposium R emphasizes the relationship between microstructure and chemical degradation of cement-based systems. Topics include the transport of aggressive ions in limiting the rate of chemical attack and the changes in the microstructure due to this attack.

As part of Symposium V, Richard L. Garwin, IBM Fellow Emeritus who has been involved in science policy issues relating to arms control and nuclear war, will discuss the disposition of excess weapons-grade plutonium. Other speakers in this symposium will address issues such as treatment alternatives to incineration, and mineral studies that reveal the types of alteration that may occur due to repository emplacement.

Various symposia also cover energetic materials; low-cost manufacturing; silicide thin films; fullerenes and buckytubes; electrically based microstructural characterization; and Frontiers of Materials Research, which provides reviews for the nonspecialist in areas of active research.

## Special Features

The plenary speaker Monday night will be Robert Walker, chair of the Committee on Science in the U.S. House of Representatives, whose jurisdiction includes space and aeronautics, basic research, energy and environment research and development, and technology. This talk will set the stage for a panel on the Changing Character of Science Policy, moderated by D. Allan Bromley on Tuesday at 8:00 a.m.

A workshop on materials education will be held Thursday, including an open lunchtime forum on materials curricula.

Recipients of the Von Hippel Award, the MRS Medals, the Turnbull Lecture-ship, and the graduate student awards will be honored at a Wednesday evening awards ceremony. Immediately following the ceremony, the Von Hippel Award recipient will give a presentation, and a reception will follow. Talks by the other award recipients have been integrated into the technical program. See the following pages and next month's *MRS Bulletin* for more information on award recipients and their presentations.

Other events include a student mixer and a Women in MRS meeting.

For further details about the meeting see the following pages and the 1995 MRS Fall Meeting Program, which has been mailed to all MRS members and is available on the MRS homepage (<http://www.mrs.org/>). To obtain a copy of the program or to register, contact MRS at (412) 367-3003; fax (412) 367-4373; or e-mail [info@mrs.org](mailto:info@mrs.org).

# MRS 1995 FALL MEETING

Boston, MA

## Meeting Activities

### Plenary Session

Robert S. Walker, U.S. Congressman

Monday, November 27 • 6:00 p.m., Salon E • Boston Marriott

### Forums

#### ► The Changing Character of Science Policy

Tuesday, November 28, 8:00-9:00 a.m.

Boston Marriott - Salon F

Moderator: D. Allan Bromley

Panelists: (to be announced)

With the recent rapid change in university, industrial, and government research environments due to such factors as limited funding, global competition, government agency restructuring, and the refocusing of government missions, there is widespread interest among scientists and engineers in understanding and responding to new realities. The long-lasting impact on when, where and how future research is conducted will be the focus of the forum speakers followed by an open discussion.

#### ► Workshop on Materials Education

Thursday, November 30 • Boston Marriott

8:30-10:30 a.m. Invited Presentations and Discussion  
Boston University Room

10:30-noon Lab/PC Demonstration, Displays, and Posters  
Simmons Room

noon-1:30 p.m. Lunchtime Forum on "Materials Curricula"  
Boston University Room  
(Box lunches available in the Exhibit Hall)

1:30-5:00 p.m. Invited Presentations  
Boston University Room

### Tumbull Lectureship

Didier de Fontaine

University of California, Berkeley

Department of Materials Science and Engineering

Monday, November 27

Symposium P: *Materials Theory, Simulations,  
and Parallel Algorithms*, Session P2.1

10:15 a.m., Essex South

Westin Hotel

The Turnbull Lectureship Award will be presented to de Fontaine on Wednesday evening, November 29, Salon E, Boston Marriott.

### MRS Medal Awards

R.M. Tromp

IBM T.J. Watson Research Center

Tromp will present his talk, "Si(001) Homoepitaxial Growth," on Thursday, November 30, at 9:00 a.m., in Symposium J: *In-Situ Electron and Tunneling Microscopy of Dynamic Processes*, Session J6.1, in the Wellesley Room, Boston Marriott.

Federico Capasso

AT&T Bell Laboratories

Capasso will present his talk, "Bandgap Engineering of Compositionally Graded Semiconductors: Physics and Applications to Electronics and Photonics," on Thursday, November 30, at 1:30 p.m., in Symposium CC: *Spectroscopy of Heterojunctions*, Session CC7.1, in the Yarmouth/Vineyard Room, Boston Marriott.

#### ► Women at MRS

Tuesday, November 28, 7:00 - 8:00 a.m.

(Check the Meeting Guide for details.)

#### ► Job Placement

A Job Placement Center will be conducted at the 1995 Fall Meeting of the Materials Research Society by the American Institute of Physics.

The Job Placement Center, including interviewing space, posting and call boards, will be open from 8:00 a.m. - 5:00 p.m., Tuesday, November 28, through Thursday, November 30, Boston Marriott. You need not attend, however, to have your résumé included on file.

Fees: None for MRS Members and Meeting Attendees

To register, or for more information, contact:

Career Planning & Placement

American Institute of Physics

One Physics Ellipse

College Park, MD 20740

Phone: (301) 209-3190 • Fax: (301) 209-0841

Information and application forms are also available on the MRS Homepage (<http://www.mrs.org>).

#### ► Career Workshop

A career workshop is scheduled for Sunday afternoon, November 26 (time and location to be announced), in conjunction with the 1995 Fall Meeting. Topics are expected to include: how to market your MS&E education and experience; how to

network successfully; and effective résumés and interviews. Date, location, and program details to be announced.

For more information, contact:

MRS Member Services, Materials Research Society

9800 McKnight Road, Pittsburgh, PA 15237

Phone: (412) 367-3004, dial 1, ext. 400, #

Fax: (412) 367-4373

e-mail: [info@mrs.org](mailto:info@mrs.org)

MRS Homepage: <http://www.mrs.org>

#### ► Student Mixer

All graduate students and members of MRS University Chapters are invited to attend a reception (date/time/location to be announced). Student chapters are a vital part of MRS, providing discussion between students and faculty and promoting student interest in materials science. Don't miss this opportunity to meet with others involved in MRS student activities.

#### ► Symposium Aide Positions

Graduate students who plan to attend the 1995 Fall Meeting and are willing to assist in the symposium presentations by operating audio-visual equipment are encouraged to apply for a Symposium Aide position. By assisting in a minimum of four half-day sessions, aides will earn a waiver of the student registration fee, a complimentary full-year MRS student membership (January 1 through December 31, 1996), and a small stipend to help defray expenses. Symposium preferences are assigned on a first-come, first-serve basis. To request an application form and/or information, contact MRS Headquarters, (412) 367-3004 • Fax (412) 367-4373, E-mail: [info@mrs.org](mailto:info@mrs.org).

# MRS 1995 FALL MEETING

## Boston, MA

### Location/Lodging/Travel

Boston Marriott/Copley Place  
110 Huntington Avenue  
Boston, MA 02116  
(800) 228-9290  
(617) 236-5800 (Direct)  
Fax (617) 236-5885  
Rate: \$120/Single  
\$134/Double

Westin Hotel/Copley Place  
10 Huntington Avenue  
Boston, MA 02116  
(800) 228-3000  
(617) 262-9600 (Direct)  
Fax (617) 424-7483  
Rate: \$124/Single  
\$144/Double

Sheraton Boston Hotel and Towers  
Prudential Plaza  
39 Dalton Street  
Boston, MA 02199  
(617) 236-2000 (Main Desk)  
(617) 236-2020 (Reservations)  
Fax (617) 236-1702  
Rate: \$112/Single  
\$122/Double

#### DEADLINE FOR HOTEL RESERVATIONS: NOVEMBER 1, 1995

Blocks of rooms have been reserved for MRS meeting attendees at the Boston Marriott, Westin, and Sheraton Boston Hotels. **Call your preferred hotel and refer to the Materials Research Society's meeting to receive the special rates.**

A list of alternate lodging accommodations can be obtained via e-mail ([info@mrs.org](mailto:info@mrs.org)) or the MRS Homepage (<http://www.mrs.org/>).

### Airline Transportation

The official travel management company for the Materials Research Society's 1995 Fall Meeting is Giselle's Travel Bureau. They will guarantee the lowest fares on any airline at time of booking. Call Giselle's, **1-800-523-0100**, and mention the Materials Research Society's meeting, **Monday - Friday, 7:00 a.m. - 5:30 p.m. PST, or fax (916) 565-0936**.

MRS meeting attendees receive the following travel benefits and services:

- Lowest fares on any airline guaranteed
- Free flight insurance of \$100,000
- Vouchers for discounts on vacation packages
- Computerized driving instructions from Logan International Airport to your hotel
- Car rental savings

### Local Transportation

Shuttle service to the Boston Marriott, Westin, and Sheraton Boston Hotels from Logan International Airport departs every half-hour, 7:00 a.m. - 7:00 p.m., from the designated shuttle stop in front of each terminal. The cost is approximately \$7.50 one way. Cab fares range between \$15-\$18 per ride (up to four persons can share one cab).

There is a free shuttle from airport terminals to the airport subway station (The "T"). Copley Station is within one block of the Marriott, Westin, and Sheraton Hotels on the "Green Line."

### Parking

A parking garage is adjacent to the hotels at a daily cost of approximately \$21.

### Child Care

Check with the Concierge Desk at the individual hotels for a comprehensive roster of licensed and bonded sitters.

## All New! MRS 1995 Fall Meeting Tutorial Program

SUNDAY November 26	MONDAY November 27	TUESDAY November 28
Symposium G 8:30 a.m. – 4:30 p.m. Epitaxial Metal Oxide Thin Films and Heterostructures	Symposium J 8:30 a.m. – 12:00 p.m. <i>In Situ</i> Electron Microscopy: Methodology & Range of Applications	
	Symposium K 8:30 a.m. – 12:00 p.m. Effects Of Strain on Elec. & Vibrational Properties Of Semiconductors & Semiconductor Microstructures	
Symposium W 1:30 p.m. – 5:00 p.m. Electrical, Optical and Magnetic Properties of Organic Solids	Symposium Q 8:30 a.m. – 12:00 p.m. Introduction to Fracture: Brittle/Ductile Transition & Dynamic Instabilities in Crack Properties	Symposium CC 1:30 p.m. – 5:00 p.m. Novel Materials Research Opportunities at National Synchrotron & Free Electron Laser Facilities
Symposium X 1:30 p.m. – 5:00 p.m. Federal Materials Research Programs and Opportunities	Symposium H 1:30 p.m. – 5:00 p.m. Silicides for Integrated Circuits: Materials Aspects & Technical Implementation	Symposium DD 1:00 p.m. – 5:00 p.m. Electron Emission from Diamond

**MAIL** Return this form with payment to:  
Materials Research Society  
Meeting Registration  
9800 McKnight Road  
Pittsburgh, PA 15237-6006

**PHONE** Call the MRS Meeting Registration Desk,  
(412) 367-3004, between 8:00 a.m. and 5:00 p.m.  
Eastern time. **Telephone registration requires  
credit card payment**; have your credit card and  
this form in front of you for easy reference.

**FAX** Transmit this form via Fax to the  
MRS Meeting Registration Desk,  
(412) 367-4373, in service 24 hours  
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credit card payment.**

## Preregistration Deadline: November 10, 1995

NOTE: Please enter MRS I.D. No. (0...) from your mailing label if available. If not known, draw a line through code box at right.

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### A Meeting Preregistration

Please check category and enter amount in payment section below.

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| <input type="checkbox"/> \$275 MRS Member | <input type="checkbox"/> \$ 75 MRS Student Member |
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|---|---|
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| <input type="checkbox"/> \$365 Nonmember  | <input type="checkbox"/> \$ 95 Student Nonmember  |
| <input type="checkbox"/> \$105 Retired    | <input type="checkbox"/> \$105 Unemployed         |

Student registration will not be processed without proof of full-time student status.  
All registrations include complimentary MRS membership through December 31, 1996.

Enter total here and in box below at right. **TOTAL \$** \_\_\_\_\_

Symposium interest (please check all that apply):

- AAA  C  F  I  L  O  R  U  Y  BB  EE  
 A  D  G  J  M  P  S  V  Z  CC  FF  
 B  E  H  K  N  Q  T  W  AA  DD  GG

### B Proceedings (published after this meeting)

These rates apply only to meeting attendees and MRS members.  
Nonmembers must contact MRS headquarters for prices.

	No. Copies	Total
AAA: Gallium Nitride.....	\$50 x	= \$
A: Ion-Solid Interactions.....	\$50 x	= \$
B: Advanced Laser Processing of Materials.....	\$54 x	= \$
C: Thermodynamics and Kinetics of Phase Transform.....	\$52 x	= \$
D: Epitaxial Structure and Morphology.....	\$55 x	= \$
E: Metastable Metal-Based Phases and Microstructures.....	\$54 x	= \$
G: Epitaxial Oxide Thin Films II.....	\$51 x	= \$
H: Silicide Thin Films.....	\$54 x	= \$
I: Polycrystalline Thin Films II.....	\$50 x	= \$
J: In-Situ Electron & Tunneling Microscopy.....	\$54 x	= \$
K: Electronic Material Nanostructures.....	\$54 x	= \$
L: Diagnostics for Semiconductor Materials Processing II.....	\$52 x	= \$
M: Disordered Materials and Interfaces.....	\$64 x	= \$
P: Materials Theory and Simulations.....	\$50 x	= \$
Q: Fracture.....	\$54 x	= \$
S: Covalent Ceramics III.....	\$54 x	= \$
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BB: MOCVD of Electronic Ceramics II.....	\$54 x	= \$
DD: Diamond for Electronic Applications.....	\$52 x	= \$
EE: Optoelectronic Materials.....	\$54 x	= \$
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	Sub-Total	\$
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	<b>TOTAL</b>	<b>\$</b>

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### C Journal of Materials Research 1996

Subscription at U.S. Member Rate (one per registrant).....  \$75  
 Subscription at Non-U.S. Member Rate (one per registrant).....  \$88  
 Optional Air Freight (non-U.S.).....  \$72  
 Enter total here and in box below. **TOTAL \$** \_\_\_\_\_

### D Tutorials

Tutorial fee is for **course materials only**. Meeting attendees may participate in all tutorial sessions at no additional charge, but will only receive the tutorial materials if preregistered for the tutorial.

There will be no refund for cancellation; however, tutorial notes will be provided.

To preregister, check each tutorial for which you want to receive materials.

- FTG Epitaxial Metal Oxide Thin Films and Heterostructures.....\$25
- FTH Silicides for Integrated Circuits: Materials Aspects and Technological Implementation.....\$25
- FTJ In Situ Electron Microscopy: Methodology and Range of Applications.....\$25
- FTK Effects of Strain on the Electronic and Vibrational Properties of Semiconductors and Semiconductor Microstructures.....\$25
- FTQ Introduction to Fracture: The Brittle/Ductile Transition and Dynamical Instabilities in Crack Propagation.....\$25
- FTW Electrical, Optical and Magnetic Properties of Organic Solids.....\$25
- FTX Federal Materials Research Programs.....\$25
- FTc Novel Materials Research Opportunities at National Synchrotron and Free Electron Laser Facilities.....\$25
- FTd Electron Emission from Diamond.....\$25

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|---|-----------------|
| <b>A</b> Meeting Preregistration (from left)        | \$ _____        |
| <b>B</b> Proceedings (from left)                    | \$ _____        |
| <b>C</b> Journal of Materials Research (from above) | \$ _____        |
| <b>D</b> Tutorials (from above)                     | \$ _____        |
| <b>TOTAL FEES PAID</b>                              | <b>\$ _____</b> |

**PAYMENT MUST ACCOMPANY PREREGISTRATION.**

#### Cancellation/Refunds

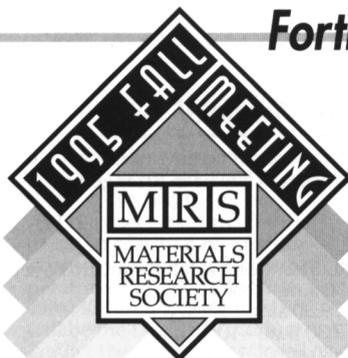
If you have already registered and find that you are unable to attend the meeting, **you must notify MRS in writing of your request for a refund**. Refunds will be made upon receipt of this written notice, less a \$25 service charge. If you apply a portion of this refund to member dues or any MRS publications, the service charge will be waived. **MRS will not honor requests made more than one calendar month after the close of the meeting.**

**Tutorial Registrants:** There will be no refund for cancellation; however, tutorial notes will be provided.

**MRS 1995 FALL MEETING SESSION SCHEDULE • NOVEMBER 27 - DECEMBER 1, 1995**

Symposium	Location	Monday, 11/27			Tuesday, 11/28			Wednesday, 11/29			Thursday, 11/30			Friday, 12/1	
		a.m.	p.m.	eve.*	a.m.	p.m.	eve.*	a.m.	p.m.	eve.*	a.m.	p.m.	eve.*	a.m.	p.m.
AAA: Gallium Nitride	Republic (S)			(S)			(S)			(S)			(S)		
A: Ion-Solid Interactions	Salon E (M)			(W)			(W)			(W)			(W)		
B: Adv. Laser Process. of Mats.	Salon A/B (M)			(S)						(S)					
C: Thermody/Kinetics of Phase Transf.	Salon H/I (M)												(S)		
D: Evol. of Epitaxial Structure & Morph.	Salon C/D (M)			(S)									(S)	St. Geo. B (W)	St. Geo. B (W)
E: Metast. Metal-Based Phases/Microstructure	Suffolk (M)			(W)											
F: Defects in High T <sub>c</sub>	Salon G (M)			(W)			(W)	Sal. G Salon J/K	Sal. G Salon J/K	(W)					
G: Epitax. Oxide Thin Films II (Sunday Tutorial)	Salon J/K (M)			(S)			(S)	Sal. G	Sal. G	(W)					
H: Silicide Thin Films	Essex East (W)		Tutorial				(W)						(W)		
I: Polycrystalline Thin Films	Salon F (M)									(W)					
J: In Situ Electron & Tunnel. Micros. of Dynamic Proc.	Wellesley (M)	Tutorial											(W)		
K: Electronic Material Nanostructures	Essex North Center (W)	Tutorial					(W)								
L: Semiconductor Mats. Processing	Essex West (W)						(W)								
M: Disordered Mats. & Interfaces	America Center (W)			(W)			(W)			(W)					
N: Complex Fluids	America South (W)		Amer. Ctr. (W)	(W)				Amer. Ctr. (W)							
O: Self-Assembling Mats./Structures	Fairfax A (S)									(S)					
P: Mats. Theory, Sim. Parallel Algorithms	Essex South (W)									(W)			(W)		
Q: Fracture	Staffordshire (W)	Tutorial						Essex So. (W)	Essex So. (W)				(W)		
R: Cement-Based Systems	Essex Center (W)							Amer. N. (W)				Ind. W. (S)			
S: Covalent Ceramics	Independence East			(S)											
T: Elec. Based Micro-Struc. Characteriz.	Independence West (S)			(S)											
U: Materials Inspired by Biology	Fairfax B (S)						(S)								
V: Nuclear Waste Management	America North (W)						(S)								
W: Organic Solid State Materials (Sunday Tutorial)	Commonwealth (S)			(W)						(S)				Essex Ctr. (W)	Essex Ctr. (W)
X: Frontiers of Mats. Research (Sunday Tutorial)	Salon C/D (M)														
Y: Performance in Polymers	Berkeley (S)														
Z: Thin Films/Surf. for Bioactivity/Biomed. Appl.	Jefferson (S)														
AA: Low-Cost Mfg. Materials	Regis (M)														
BB: MOCVD of Elec. Ceramics	Hampton (S)						(S)								
CC: Spectroscopy of Heterojunctions	Yarmouth/Vineyard (M)					Tutorial									
DD: Diamond for Electr. Appl.	Constitution (S)					Tutorial	(S)								
EE: Optoelectronic Materials	Gardner (S)									(S)			(S)		
FF: Fullerenes, Buckytubes etc.	Indepen. Centre (S)									(W)					
GG: Energetic Materials	St. George B (W)														

eve\* = Evening Poster Session (M) Boston Marriott (S) Sheraton Boston; Posters: Grand Ballroom/Constitution (W) Westin; Posters: America Ballroom  
 Note: Shaded blocks indicate sessions



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# 1995 Fall Meeting Symposium Proceedings

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Editors: R.D. Dupuis, J.A. Edmond, F.A. Ponce, S. Nakamura  
ISBN: 1-55899-298-7 Code: 395-B

\$50.00	\$60.00	MRS Member
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## A: Ion-Solid Interactions for Materials Modification and Processing

Editors: D.B. Paker, D. Ila, Y-S. Cheng, L.R. Harriott, T.W. Sigmon  
ISBN: 1-55899-299-5 Code: 396-B

\$50.00	\$60.00	MRS Member
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\$65.00	\$70.00	Non-U.S.

## B: Advanced Laser Processing of Materials - Fundamentals and Applications

Editors: R.K. Singh, D. Norton, J. Narayan, J. Cheung, L.D. Laude  
ISBN: 1-55899-300-2 Code: 397-B

\$54.00	\$68.00	MRS Member
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## C: Thermodynamics and Kinetics of Phase Transformations

Editors: J.S. Im, B. Park, A.L. Greer, G.B. Stephenson  
ISBN: 1-55899-301-0 Code: 398-B

\$52.00	\$65.00	MRS Member
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## D: Evolution of Epitaxial Structure and Morphology

Editors: A. Zangwill, D. Jesson, D. Chambliss, R. Clarke  
ISBN: 1-55899-302-9 Code: 399-B

\$55.00	\$69.00	MRS Member
\$69.00	\$76.00	U.S. List
\$76.00	\$81.00	Non-U.S.

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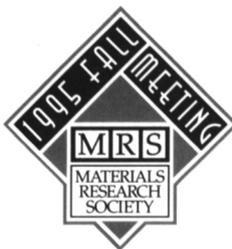
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As part of the 1995 MRS Fall Meeting, a major exhibit will be held to display analytical and processing equipment and publications closely paralleling the nature of the technical symposia. The technical program has been arranged to allow meeting participants ample opportunity to visit the exhibit.

## Exhibit Hours:

**Marriott Hotel, University Hall & Atrium Lounge**

Tuesday, noon - 7:00 p.m.  
**Complimentary Reception 5:00 - 7:00 p.m.**  
Wednesday, 9:30 a.m. - 5:00 p.m.  
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*Partial List of 1995 Fall Exhibitors (as of September 8, 1995) ♦ denotes Corporate Affiliate:*

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E-mail: crowan@cymer.cts.com

Cymer Laser Technologies manufactures excimer lasers for industrial use. Cymer has two lines of products, a spectrally narrowed and wavelength stabilized krypton fluoride excimer laser, to be used as the photolithography stepper's illuminator source, and the high power KrF excimer laser for use in micromachining, surface modification and annealing.

## ◆DCA Instruments #U950

400 W. Cummings Park, Suite 3900  
Woburn, MA 01801  
Contact: Jari Vanhatalo  
Telephone: (617) 937-6550  
Fax: (617) 935-2405

## ◆Denton Vacuum, Inc. #U404

1259 North Church Street  
Moorestown, NJ 08057  
Contact: James L. Campbell  
Telephone: (609) 439-9100  
Fax: (609) 439-9111

Denton Vacuum, Inc. (DVI), established for over 30 years, is one of America's premier manufacturers of research and production thin film deposition systems. DVI currently offers a wide variety of standard systems to meet applications ranging from the preparation of samples for electron microscopy to thin film research requiring computer controlled, multi-source thin film sputtering systems and electron beam evaporation systems. Representatives will be available at the Fall Meeting to discuss your specific application and to suggest solutions to your equipment requirements.

## ◆Digital Instruments #U817-818

520 E. Montecito Street  
Santa Barbara, CA 93103  
Contact: Terry Mehr  
Telephone: (805) 899-3380  
Fax: (805) 899-3392  
E-mail: info@di.com

World Wide Web:  
<http://www.di.com/>  
Digital Instruments, the world leader in Scanning Probe Microscopy (SPM), will be exhibiting its NanoScope® SPMs including the Multi-Mode™ Atomic Force Microscope (AFM), the world's best selling and highest resolution SPM. Featured at MRS this year is the Dimension™ 3000 SPM/AFM (Atomic Force Microscope), offering the complete range of SPM techniques

for small or large samples, including topography, magnetic force, lateral force, electrochemistry, TappingMode™, force modulation and others. (see ad in this issue)

## Duniway Stockroom Corp. #U957

1305 Space Park Way  
Mountain View, CA 94043  
Contact: Ralph R. Duniway  
Telephone: (415) 969-8811  
Fax: (415) 965-0764

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. 44 page catalog, including prices, shows new and surplus equipment.

## Edwards High Vacuum International #U409

301 Ballardvale Street  
Wilmington, MA 01887  
Contact: Lisa Doody  
Telephone: (800) 848-9800  
Fax: (508) 657-6546

Edwards High Vacuum International, a division of the BOC Group, is a world leading manufacturer of vacuum components and systems. Some of Edwards' products include the RV range of rotary vacuum pumps, EXP pumping units including turbo pump, controller and backing pump, active vacuum gauges, and the Barocel® Capacitance Manometers. These products will be on display at the 1995 MRS Show.

## ◆Elsevier Science #U307-310

655 Avenue of the Americas  
New York, NY 10010  
Contact: Traci Taylor  
Telephone: (212) 633-3766  
Fax: (212) 633-3764

(see ad in this issue)

## ◆EMCORE Corporation #U913

394 Elizabeth Avenue  
Somerset, NJ 08873  
Contact: Mark McKee  
Telephone: (908) 271-9090  
Fax: (908) 271-9686

E-mail: MARK@EMCORE.com  
EMCORE Corporation manufacturer of TurboDisc Deposition systems producing highest quality thin film compound and silicon semiconductor wafers with uniformity of thickness, doping and composition, and interface abruptness required for modern electronic, microwave and optoelectronic devices. EMCORE's TurboDisc systems are further distinguished by low cost of ownership, reliability (high MTBF), throughput, capacity and process conditions and utilize major deposition technologies including MOCVD, ALE, and CVD depending on applications requirements.

## ◆EPI MBE Products Group #U100

1290 Hammond Road  
St. Paul, MN 55110  
Contact: Dave Reamer  
Telephone: (612) 653-0488  
Fax: (612) 653-0725

E-mail: daver@epimbe.com  
EPI is North America's leading manufacturer of MBE equipment and one of the largest in the world. EPI has set the standard for excellence and has been the international leader in quality and innovation in this field since 1986. EPI provides materials-specific effusion cells and MBE systems for use with GaAs/AlGaAs, silicon, nitrides, antimonides, phosphides, and II-VI materials. In addition, EPI manufactures a Flat Panel Probe Tool for testing Field Emission Displays.

## ◆E S Microwave #U408

2234 Wade Court  
Hamilton, OH 45013  
Contact: Scott McCormick  
Telephone: (513) 738-4773  
Fax: (513) 738-4407

E-mail: ESMicro@IAC.NET  
E S Microwave develops and markets materials-related software for Windows and Macintosh platforms. Products include TAPP, a database of thermodynamic and physical properties of solids, liquids and gases, ChemSage, for calculation of complex thermodynamic phase equilibria, and Mat.DB, a database of properties of engineering materials.

## ◆Evans East #U705

666 Plainsboro Road, Suite 1236  
Plainsboro, NJ 08536  
Contact: Rennie Harrington  
Telephone: (609) 799-1904  
Fax: (609) 799-8691

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

## ◆FEI Company #U802

7451 N.E. Evergreen Parkway  
Hillsboro, OR 97124-5830  
Contact: Doug Rathkey  
Telephone: (503) 640-7500  
Fax: (503) 640-7509

E-mail: dsr@feico.com  
FEI Company features a new, compact two-lens Schottky field emission electron beam focusing column. Superior imaging and analytical performance, reliable UHV construction, and a modular design philosophy are combined in this component focusing column. Other products include single-lens Schottky emission electron and two-lens Ga liquid metal ion columns, LaB<sub>6</sub> and CeB<sub>6</sub> electron sources, and Focused Ion Beam (FIB) workstations.



# 1995 MRS Fall Meeting Exhibit

## ◆E.A. Fischione Instruments, Inc. #U710

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

E.A. Fischione Instruments, Inc. features a complete line of TEM Specimen Preparation devices including the Model 3000 Ion Mill, the Model 330 Ultrasonic Disk Cutter, the Model 2000 Specimen Prep System (dimple grinder), and the Automatic Twin-Jet Electropolisher. New product introductions include the Model 1400 Plasma Cleaner for the elimination of contamination from both TEM specimens and TEM Specimen Holders. Also displayed are SEM and TEM Specimen Holders including the Cryo-Prep Station/TEM Holder.

## ◆Fisons Instruments #U905

55 Cherry Hill Drive  
Beverly, MA 01915  
Contact: Phil Sullivan  
Telephone: (508) 524-1000  
Fax: (508) 524-1100  
E-mail: PHILIPS587@aol.com  
Fisons Instruments Surface Systems is the world's largest supplier of surface analysis equipment, molecular beam epitaxy systems and dedicated scanning transmission electron microscopes.

## ◆Gatan, Inc. #U701

6678 Owens Drive  
Pleasanton, CA 94588-3334  
Contact: Paul V. Miller  
(Eastern Sales), Sheri Kurland  
(Western Sales)  
Telephone: (510) 463-0200  
Fax: (510) 463-0204  
Gatan is a technology leader in the manufacture of instrumentation for TEM, STEM and SEM. Products include a complete selection of side-entry TEM specimen holders, TEM specimen preparation equipment, TV-rate and slow-scan CCD cameras for TEM, multi-signal digital imaging system for SEM & STEM, parallel detection electron energy loss spectrometer, and energy filtered imaging system.

## ◆Gelest #U962

612 William Leigh Drive  
Tullytown, PA 19007  
Contact: Barry Arkles  
Telephone: (215) 547-1015  
Fax: (215) 547-2484

## ◆Gordon and Breach Publishers/ Harwood Academic Publishers #U311

820 Town Center Drive  
Langhorne, PA 19047  
Contact: Michelle McKenna  
Telephone: (215) 750-2642 ext. 158  
Fax: (215) 750-6343  
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.

## Harris Diamond Corporation #U302

100 Stierli Court, Suite 106  
Mt. Arlington, NJ 07856  
Contact: David Slaperud  
Telephone: (201) 770-1420  
Fax: (201) 770-1549  
Harris Diamond Corporation is a proud supplier of Drukker diamond ultramicrotome knives manufactured by Drukker International BV, The Netherlands. Advantages include superb wetting behavior, guaranteed compression-free sections of soft biological tissue, and an immediate exchange program. Other Advanced Diamond Products include natural and CVD diamond windows and thermal management substrates.

## Heraeus Amersil, Inc. #U911

3473 Satellite Blvd.  
Duluth, GA 30136-5831  
Contact: Howard Young  
Telephone: (408) 281-3529  
Fax: (408) 225-3830  
Heraeus Amersil, Inc. is the largest fabricator of quartz glass products in the United States. It is a wholly owned subsidiary of Heraeus Quarzglas, GmbH; the world's largest producer of high-purity quartz materials for semiconductor and optical applications.

## ◆High Voltage Engineering Europa B.V. #U700

P.O. Box 99  
3800 AB Amersfoort  
The Netherlands  
Contact: Henri van Oosterhout  
Telephone: (31) 33-619741  
Fax: (31) 33-615291  
Ion accelerator systems for science and industry; Ion Implantation, Ion Beam Analysis by RBS, PIXE, NRA, ERD, MEIS, and AMS.  
(see ad in this issue)

## ◆Hitachi Scientific Instruments #U201-203

755 Ravendale Drive  
Mountain View, CA 94043  
Contact: Robert Gordon  
Telephone: (415) 969-1100  
Fax: (415) 961-0368  
Hitachi, a world leader in electron microscope advancements and proven technologies, represents our full line of exceptional scanning, transmission and field emission electron microscopes by giving demonstrations of our Model S-4500. The Model S-4500 FE-SEM (with in-lens SE detector) gives resolution of 40Å guaranteed at 1KV, and 15Å guaranteed at 15KV. This detector yields ultimate surface detail not seen with a standard SE detector.  
(see ad in this issue)

## ◆Huntington Mechanical Laboratories #A14

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

## ◆IBM Analytical Services #A8

1580 Route 52  
Hopewell Junction, NY 12533-6531  
Contact: David Fouts  
Telephone: (914) 892-2450  
Fax: (914) 892-2003  
E-mail: dpfouts@vnet.ibm.com  
Offers a broad range of capabilities from failure analysis to chemical and electrical characterization, all performed by a highly experienced staff of experts in their specific fields. We offer high-quality work performed on state-of-the-art equipment in a timely and cost-competitive environment.

## Implant Sciences Corporation #U101

107 Audubon Road,  
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Fax: (617) 246-1167  
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 on display for accurate simulation of ion implantation. Pin-on-disk friction and wear testing equipment also on display.

## Inel, Inc. #U104

P.O. Box 147  
Stratham, NH 03885  
Contact: Greg Stollstorff  
Telephone: (603) 778-9161  
Fax: (603) 778-9171  
Inel specializes in manufacturing Position Sensitive Detectors (PSD), both curved and linear, for many diffraction applications including powders, polymers, dynamics, in situ, on-line, thin film grazing angle, reflectometry and small angle scattering. Complete PSD diffractometer systems are available, or enhance performance of existing goniometers by retrofitting a PSD.

## Innovative Technology, Inc. #U903

2 New Pasture Road  
Newburyport, MA 01950  
Contact: Kenneth J. O'Brien  
Telephone: (508) 462-4415  
Fax: (508) 462-3338  
Innovative Technology, Inc. will exhibit our new position sensitive detector and multichannel analyzer package. We will also display a new small angle X-ray camera.

## ◆Inorgtech, Ltd. #U965

25 James Carter Road  
Mildenhall  
Suffolk IP28 7DE  
United Kingdom  
Contact: Tim Leedham  
Telephone: (44) 1638-714423  
Fax: (44) 1638-718259  
Manufacturer of inorganic chemicals, especially precursors for deposition of oxide and nitride thin films by MOCVD and sol-gel. Products include tantalum ethoxide, tin tertiary butoxide, titanium dimethylamide and zirconium tertiary butoxide. Available from stock in gram to kilo quantities. Custom synthesis service.

## ◆Institute for Scientific Information (ISI) #U208

3501 Market Street  
Philadelphia, PA 19104  
Contact: Frank Spiecker  
Telephone: (215) 386-0100  
Fax: (215) 386-6362  
E-mail: spiecker@isinet.com  
A secondary publisher of scientific, technical and medical information, ISI products are unique in that they allow one to search on the cited references of an article. Stop by to see a Windows version of Current Contents® and learn more about the Materials Science Citation Index and our Electronic Library Project.

## ◆Institute of Physics Publishing (IOP) #U209

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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, and we will be demonstrating CoDAS Version 2.0, our condensed matter science alerting service. Come along to our stand to claim your 20% discount on book orders.



# 1995 MRS Fall Meeting Exhibit

## **◆Instron Corporation #U814**

100 Royall Street  
Canton, MA 02021  
Contact: Kathy Hendry  
Instron will be showing its latest *Fast Track* software and 8500 plus fatigue testing system and the UMIS 2000 NANO-SCALE testing system. Materials test innovations for both static and dynamic testing will be on display.

## **◆Instruments SA, Inc./ Jobin-Yvon-Spex #U908**

3880 Park Avenue  
Edison, NJ 08820  
Contact: Victor Yakovkv, Fran Adar  
Telephone: (908) 494-8660  
Fax: (908) 549-2571  
Instruments SA, Inc. is committed to serving our customers with superior products and technical support for optical spectroscopy. ISA offers many versatile research and low cost Raman spectrometers as well as scanning and imaging spectrometer systems, fluorescence systems, ellipsometry, and RDS systems, photo diode array (PDA) and charge coupled device (CCD) detectors.

## **◆Ion Tech, Inc. #U501**

2330 East Prospect  
Fort Collins, CO 80525  
Contact: Gerald Isaacson  
Telephone: (303) 221-1807  
Fax: (303) 493-1439  
Ion Tech, Inc. is the industry leader for providing superior ion beam equipment. The product line ranges from linear and round DC sources to filamentless RF sources, power supplies and complete systems. This equipment can be used for etching, precleaning and the production of sophisticated thin films such as diamondlike carbon (DLC), complex alloys and high precision optical films.

## **Janis Research Company, Inc. #U803**

2 Jewel Drive  
Wilmington, MA 01887-0696  
Contact: Munir Jirmanus  
Telephone: (508) 657-8750  
Fax: (508) 658-0349  
E-mail: 74211.1613@compuserve.com  
Janis combines over 30 years of experience with extensive engineering capabilities to provide cryogenic systems for all research applications. Janis offers closed cycle refrigerators, continuous flow and variable temperature cryostats, superconducting magnet systems, detector cooling dewars, dilution refrigerators, Helium-3 cryostats including top loading, and custom designs to meet any specific requirement.

## **◆JCPDS-ICDD #A15**

12 Campus Boulevard  
Newtown Square, PA 19073  
Contact: Mario Fornoff  
Telephone: (610) 325-9810  
Fax: (610) 325-9823  
E-mail: FORNOFF@ICDD.COM  
The JCPDS International Centre

for Diffraction Data maintains and distributes the Powder Diffraction File database for use in materials characterization through X-ray analysis. The database contains approximately 62,000 numeric diffraction patterns of crystalline phases. Specialized products include Forensics, Minerals, and Metals & Alloys subfiles as well as various educational publications.

## **◆JEOL USA, Inc. #A7**

11 Dearborn Road  
Peabody, MA 01960  
Contact: Michael Kersker  
Telephone: (508) 535-5900  
Fax: (508) 536-2205  
E-mail: Kersker@jeol.com  
JEOL has always relied on sound technology, steady service and support, and quality manufacturing to meet the scientific demands of the materials science community. Today, JEOL remains committed to providing the same reliable, high performance SEMs and TEMs to challenge the needs of applied and basic materials research in the future.

## **◆Johnsen Ultravac #A12**

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Burlington, ON L7M 1A8  
Canada  
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Telephone: (905) 335-7022  
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JUV manipulators are available with 6-axis of rotation, heating/cooling stages, and the widest range in XYZ motions. Of particular interest is the new 4100 series featuring a payload capacity of 250 kilos. Our uhv systems include ECR, Evaporation, Ion Sputtering, LASER Ablation, MBE, RF/DC Sputtering and surface analysis.

## **k-Space Associates, Inc. #U910**

2231 Stone Road  
Ann Arbor, MI 48105  
Contact: Darryl Barlett  
Telephone: (313) 763-8747  
Fax: (313) 763-8747  
E-mail: kspace@dial.cic.net  
The KSA 300 family of CCD-based imaging and analysis systems are for the scientist who wants to exploit the full power of RHEED and LEED. Computer-controlled, user-selectable on-chip time integration, combined with advanced data extraction, storage, fitting, and analysis techniques, allow users to quantitatively study, monitor, and control thin film deposition processes.

## **◆Keithley Instruments #U909**

28775 Aurora Road  
Solon, OH 44139  
Contact: Kristin Rice  
Telephone: (216) 498-2481  
Fax: (216) 248-6168

## **◆Kimball Physics, Inc. #U504**

311 Kimball Hill Road  
Wilton, NH 03086  
Contact: Faye Bigarel  
Telephone: (603) 878-1616  
Fax: (603) 878-3700  
E-mail: faye@kimphys.com  
UHV Electron Sources, Ion Sources, Components: 5 eV to 100 keV. 10<sup>-15</sup> A to 1 A;  $\mu$ m to m Diameters. Applications: Surface Physics, RHEED, ESD, IPES, MBE, Heating, Space Physics, Semiconductor Processing, Microscopy, etc. New UHV Components available include innovative Multi-CF™ Fittings for making small UHV Chambers. Also available: Cathodes, Faraday Cups, Phosphor Screens, eV Parts.

## **Kluwer Academic Publishers**

**#U306**  
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Norwell, MA 02061  
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Kluwer Academic Publishers will have on display the latest scientific books and journals in the area of materials science including ceramics, optics, chemical and structural properties research. Visit our booth and pick up a sample copy of Kluwer's new materials science journals: Adsorption; The Journal of Porous Materials, Advanced Performance Materials; Applied Composite Materials; Interface Science and The Journal of Sol-Gel Science.

## **◆Kratos Analytical, Inc. #W65**

535 East Crescent Avenue  
Ramsey, NJ 07446  
Contact: David Surman  
Telephone: (201) 825-7500  
Fax: (201) 825-8659  
E-mail: dsurman@kratos.com  
Kratos Analytical is a leading supplier of surface analysis instrumentation, with an emphasis on XPS, AES/SAM, SIMS and ISS. The instrumentation is designed with an emphasis on materials characterization in areas such as polymers, ceramics and electronics, and is suitable for both quality control and R&D applications.

## **◆Lake Shore Cryotronics, Inc.**

**#U706-707**  
64 East Walnut Street  
Westerville, OH 43081  
Contact: Michael Swartz  
Telephone: (614) 891-2243  
Fax: (614) 891-1392  
E-mail: lsci-sales@bronze.coil.com

## **◆Lambda Physik, Inc. #U954**

289 Great Road  
Acton, MA 01720  
Contact: Gerard Zaal  
Telephone: (508) 263-1100  
Fax: (508) 263-4296  
Lambda Physik, the world leader in excimer and pulsed dye laser technology, has recently introduced the

COMPex series excimer laser with state-of-the-art efficiency and ease of use as well as a new FAMP Femtosecond UV-visible-NIR laser for all ultrafast applications. Our complete line of excimer and pulsed dye lasers are ideal for all high energy pulsed laser applications, such as PLD, etc.

## **◆Kurt J. Lesker Company #U955**

1515 Worthington Avenue  
Clairton, PA 15025-2700  
Contact: Michael McKeown  
Telephone: (412) 233-4200  
Toll-free: (800) 245-1656  
Fax: (412) 233-4275  
E-mail: 73377.1045@compuserve.com  
We are exclusive North American agents for Vacuum Generators, displaying their economical high precision XYZ manipulators, unique UHV sample distribution center and their surface science components for XPS, AES, UPS, LEED, RHEED. We will show our manufacturing capability for high vacuum and UHV custom chambers together with flanges, hardware, electrical and rotary feedthroughs.

## **Leybold Inficon, Inc. #U902**

Two Technology Place  
East Syracuse, NY 13057  
Contact: Lou Landman  
Telephone: (914) 279-4105  
Fax: (914) 279-2889  
Leybold Inficon's advanced instrumentation techniques combine unique sensing technology with specialized electronics. The company's expertise includes quadrupole-based mass spectrometers and partial pressure controllers for Residual Gas Analysis, Thin Film Deposition Controllers, high sensitivity Helium Leak Detectors, a complete family of digital and analog Vacuum Gauge Controllers.

## **LUXTRON Corporation #U952**

2775 Northwestern Parkway  
Santa Clara, CA 95051-0941  
Contact: William R. Kolbeck  
Telephone: (408) 727-1600  
Fax: (408) 727-1677  
Optical fiber temperature measurement and control instrumentation. Offers non-contact and contact temperature measurement from -200°C to 4000°C with resolution to 0.01°C.

## **◆Magnet Sales & Manufacturing #A16**

11248 Playa Court  
Culver City, CA 90230-6162  
Contact: Louis Romo  
Telephone: (310) 391-7213  
Fax: (310) 390-4357  
E-mail: magnetix@aol.com  
Magnet Sales & Manufacturing is a leading manufacturer of custom magnet designs for the research of new technologies. Design assistance is provided by experienced magnetics engineers and a highly trained sales

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staff. Precise measurement, cutting, and fabrication of magnets and assemblies are accomplished with state-of-the-art in-house facilities.  
(see ad in this issue)

## **Maxtek, Inc. #W66**

2908 Oregon Court, G-3  
Torrance, CA 90506-2683  
Contact: Ferne Hildebrand  
Telephone: (310) 320-6604  
Fax: (310) 320-6609

Maxtek manufactures two product lines: one for Thin Film Deposition, the other for liquid applications. Our Deposition Controllers combine Windows-based PC software with dedicated hardware providing the most powerful and easy to use deposition control system anywhere. Plating monitors are applicable for electroless and electrolytic processes. Both product lines utilize QCM technology.

## **M. Braun, Inc. #W67**

2 Centennial Drive Unit 4F  
Peabody, MA 01960  
Contact: Rodney F. Denman  
Telephone: (508) 531-6217  
Fax: (508) 531-7245

M. Braun, Inc. will exhibit its PC-based Position Sensitive X-Ray Detector System, the most advanced in the industry. The platinum wire counter can perform stationary and independent/simultaneous small and wide angle measurements (with Kratky Collimator and 2 PSD's), and fast powder diffraction. Information available on our full line of Inert Atmosphere Glove Boxes and Attachments.

## **McPherson, Inc. #S82**

530 Main Street  
Acton, MA 01720  
Contact: Christl M. Schoeffel  
Telephone: (508) 263-7733  
Fax: (508) 263-1458  
E-mail: 72234.2257@compuserve.com

McPherson designs and manufactures monochromators/spectrometers/spectrographs and turn-key spectroscopic systems for the XUV, VUV, UV, VIS, and IR range. Accessories such as light sources, detectors, and components for sample handling as well as accessories for systems in X-ray lithography and synchrotron radiation are standard catalog items.

## **◆MDC Vacuum Products Corporation #U702**

23842 Cabot Blvd.  
Hayward, CA 94545  
Contact: Mike Weiss, Phil Crane  
Telephone: (510) 887-6100  
Fax: (510) 887-0626

MDC manufactures a complete line of UHV stainless steel vacuum components including flanges and fittings, valves, chambers, electron beam sources, electrical feedthroughs, motion feedthroughs, roughing components, instrumentation

and other accessories. A full technical staff is maintained to assist with technical questions and the design and manufacture of custom components and chambers.  
(see ad in this issue)

## **Media Cybernetics #U200**

8484 Georgia Avenue  
Silver Spring, MD 20910  
Contact: Shahira Hoffman  
Telephone: (301) 495-3305  
Fax: (301) 495-5964

Media Cybernetics will demonstrate Image-Pro Plus and is introducing Materials-Pro Analyzer. Image-Pro is an image analysis software package which provides counting, sizing, statistical and image enhancement operations with an intuitive and consistent interface designed to produce results quickly. Materials-Pro Analyzer is a set of powerful applications with a focused design on materials analysis and reporting of grains, porosity, inclusions, particles, phase discrimination, and nodularity.

## **Melles Griot #A17**

1770 Kettering Street  
Irvine, CA 92714  
Telephone: (714) 261-5600  
Toll-free: (800) 835-2626  
Fax: (714) 261-7589

Melles Griot, worldwide manufacturers of Optics, Lasers, Opto-Mechanics and Instruments, will be demonstrating a variety of optical assemblies and components, optical instrumentation, colored HeNe lasers, diode laser assemblies and positioning equipment. Representatives will be ready to assist you in a wide variety of photonic applications.

## **Micro Instrument Company #A18**

2250 Micro Place  
Escondido, CA 92029  
Contact: Curt Haas,  
Charlie Marks, or Ted Nation  
Telephone: (619) 746-2010  
Fax: (619) 746-0433

Micro Instrument Company provides turn-key system solutions for integrated circuit reliability testing including Time Dependent Dielectric Breakdown (including v-ramp), Electromigration (including Temperature Coefficient of Resistance, Continuous Current, and SWEAT), and Hot Carried Induced Degradation. Systems provide testing capability for packaged products and wafers. Micro Instrument Company solutions feature self-calibration, temperature and measurement accuracy, and full system specifications. Robust control and analysis software provide integrated solutions for the quality researcher. Visit the Micro Instrument Company booth for a hands-on demonstration of the Model PE9020, a small-lot test system for electro-

migration and time dependent dielectric breakdown.

## **Micro Photonics, Inc. #W61**

Surface Test Division  
P.O. Box 3129  
Allentown, PA 18106  
Contact: George Ferrio  
Telephone: (610) 366-7103  
Fax: (610) 366-7105  
E-mail: surfstest@aol.com

Surface Test, a division of Micro Photonics, offers instrumentation for measuring mechanical properties of thin films and bulk materials including hardness, friction, adhesion, scratch resistance, wear resistance and surface roughness. Also offered are ellipsometers, laser interferometers and optical emission spectrometers for in-situ monitoring and process control.

## **Microcal Software, Inc. #U959**

One Roundhouse Plaza  
Northampton, MA 01060  
Contact: Claudine Witmer  
Telephone: (413) 586-2013  
Fax: (413) 585-0126

Microcal Software, Inc. offers Origin, a technical graphics, data analysis, and data acquisition software in Windows. Origin is widely recognized as the most powerful, fast, and easy-to-use software of its kind. Features built-in and user-defined statistical, mathematical, and curve-fitting functions, and an open-ended architecture supporting numerous add-on modules.

## **Mikron Instrument Company, Inc. #A20**

445 West Main Street  
Wyckoff, NJ 07481  
Contact: Mel Jenkins  
Telephone: (201) 891-7330  
Fax: (201) 891-1205

Mikron's M9000 Imaging Pyrometer uses a unique patented solid state detector array camera to operate in the near infrared part of the spectrum, measuring from 500-300°C. Performance is enhanced by high resolution with 640x480 pixel image, 30 frames per second response and elimination of image blooming and light scattering.

## **◆MKS Instruments, Inc. #U708-709**

Six Shattuck Road  
Andover, MA 01810  
Contact: Applications  
Engineering Dept.  
Telephone: (800) 227-8766  
Fax: (508) 975-0093

MKS will exhibit its full line of vacuum/pressure/flow instrumentation, including mass flow meters and controllers, vacuum gauges, pressure transducers, pressure control systems, HPS vacuum valves and hardware, and NGS mass spectrometers and primary and secondary calibration systems. Direct Liquid Chemical Injection systems will also be featured.

## **MMR Technologies #U509**

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

MMR Technologies manufactures Temperature Controlled Systems—Cryogenic Cooling Systems and Wide Temperature Range Thermal Stages—which find application in Materials Research. These systems are used in Physics and Chemistry Research Applications over the temperature range of 10K to 580K. They are also used in the Cooling of 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.

## **◆MR Semicon, Inc. #A9**

P.O. Box D-1900  
Pomona, NY 10970-0499  
Contact: Patricia Ferguson  
Telephone: (914) 362-6771  
Toll-free: (800) 832-1518  
Fax: (914) 362-7723

MR Semicon, Inc. will be showing a full range of bench top sample preparation equipment, featuring the NEW LabOne chemically resistant polishing system and LabTrim, the inexpensive cutoff saw. Also manufactures, markets and refurbishes a complete range of crystal manufacturing equipment for production, research and proof of concept; Czochralski, top seeded flux, Bridgman & float zone.

## **◆n & k Technology, Inc. #U606**

3150 De La Cruz Blvd., Suite 105  
Santa Clara, CA 95054  
Contact: Iris Bloomer  
Telephone: (408) 982-0840  
Fax: (408) 982-0252  
E-mail: n&k@ix.netcom.com

n&k Analyzer simultaneously and unambiguously determines: thickness and *n* and *k* spectra of semiconductor, dielectric and thin metal films. Applications include: a-C:H, a-Si:H, Si<sub>x</sub>N<sub>x</sub>:H, SiO<sub>x</sub>:H, ITO, and magnetic films deposited on a variety of substrates. The *n* and *k* spectra are correlated to %H, Si:N ratio, Si:O ratio, conductivity.

## **◆Nanophase Technologies Corp. #U904**

453 Commerce Street  
Burr Ridge, IL 60521  
Contact: Jody W. Maerz  
Telephone: (708) 323-1200  
Fax: (708) 323-1221

E-mail: nanophase@aol.com  
Nanophase Technologies Corporation (NTC) currently manufactures nanocrystalline ceramic powders in a range of sizes from 5-100 nm (0.005  $\mu$ m - 0.100  $\mu$ m). Standard oxides include Al<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, Fe<sub>2</sub>O<sub>3</sub>, CeO<sub>2</sub>, Cr<sub>2</sub>O<sub>3</sub>, and Y<sub>2</sub>O<sub>3</sub>. Inquiries are encouraged with regard to different materials,

# 1995 MRS Fall Meeting Exhibit

size ranges, phases, dispersions, and other variables for your specific application needs. (see ad in this issue)

## **National Electrostatics Corp.** **#U711**

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

National Electrostatics Corp. manufactures multi-million volt ion beam systems for materials analysis and modification. These systems include dedicated instruments for RBS, PIXE, hydrogen profiling and other MeV ion beam techniques. Related ion sources, components and subsystems are also available. (see ad in this issue)

## **Neocera, Inc.** #U953

10000 Virginia Manor Road,  
Suite 300  
Beltsville, MD 20705-4215  
Contact: Tracy Fortuna  
Telephone: (301) 210-1010  
Fax: (301) 210-1042

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

## **New Focus, Inc.** #U907

2630 Walsh Avenue  
Santa Clara, CA 95051-0905  
Contact: Milton Chang  
Telephone: (408) 980-8088  
Fax: (408) 980-8883  
E-mail: contact@NewFocus.com

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## **Nicolet Instrument Corporation** **#A13**

5225 Verona Road  
Madison, WI 53711  
Contact: Katie Stahl  
Telephone: (608) 276-6345  
Fax: (608) 273-5045

Nicolet will exhibit our research FT-IR spectrometer, the Magna-IR 850. The 850 provides advanced DSP-driven electronics and firmware for collection of step scan, kinetics and rapid scan data, and a spectral range from 25,000 - 50cm<sup>-1</sup>. Nicolet's

FT-Raman Accessory Module will also be shown. The FT-Raman accessory allows both IR and Raman data collection, processing and searching from one system.

## **Omicron Associates** #U303

1738 N. Highland Road,  
Suite G101  
Pittsburgh, PA 15241  
Contact: Peter H. Sales  
Telephone: (412) 831-2262  
Fax: (412) 831-9328

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## **Oxford Applied Research** #W77

Crawley Mill  
Witney  
Oxon OX8 5TJ  
United Kingdom  
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Telephone: (44) 1993-773575  
Fax: (44) 1993-702326  
E-mail: sales@oxfordar.demon.co.uk

Manufacturers of scientific instruments for thin film research. Our range of RF and thermal crackers facilitate: GaN growth; ZnSe p-doping; *in situ* substrate cleaning; Atomic As, Se, S for doping and bulk material growth; Oxidation. Other products include RHEED, mini e-beam evaporators, magnetrons, focused scanning ion and electron guns for SIMS, cleaning and beam neutralization.

## **Oxford Instruments, Inc.** #U508

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Telephone: (508) 369-9933  
Fax: (508) 369-6616

Oxford Instruments presents MagLab Measurement Probes, a range of inserts designed to enhance experimental flexibility within MagLab "ultimate sensitivity" systems for materials characterization. Also shown are Teslatron measurement systems and the new Teslatron Probe System, with transport, thermal and susceptibility inserts. Cryostats for optical microscopy and spectroscopy will be available. Oxford Instruments, Inc., Microanalysis Group is a leading instrumentation company, offering innovative microanalytical technolo-

gies. Intuitive Windows software, superior throughput, and easy data management make the Link ISIS and Link GEM the most popular microanalysis in the world. (see ad in this issue)

## **Oxford University Press** #U205

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Telephone: (212) 726-6200 ext. 6063  
Fax: (212) 726-6441

Oxford University Press publishes a wide range of scholarly monographs, practical handbooks and useful texts in Materials Science.

## **Park Scientific Instruments**

#U812-813  
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Contact: David Campbell  
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Fax: (408) 747-1601

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## **Philips Electronic Instruments** **Co.** #U800-801

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

## **Philips Semiconductors/** **Materials Analysis Group** **#U963**

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Telephone: (408) 991-4868  
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E-mail: morgana@scs.philips.com  
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Physical Electronics (PHI) develops, manufactures and markets a complete line of surface analysis instrumentation, surface analysis subsystems, components and ultrahigh vacuum equipment. Surface analysis instruments from PHI utilize the Auger, ESCA/XPS and TOF-SIMS techniques. Vacuum products include ion pumps, gauge controllers and ion pump power supplies.

## **Plasma Sciences, Inc.** #A3

7200A Telegraph Sq. Drive  
Lorton, VA 22079  
Contact: Steven Collins  
Telephone: (703) 550-7888  
Toll-free: (800) 207-9776  
Fax: (703) 339-9860

Plasma Sciences, Inc. specializes in the manufacture of high quality planar magnetron thin film deposition systems for research and pilot production. Multiple source DC/RF sputtering systems with recipe drive PC control are available as well as manual cost effective sputtering systems for smaller development applications. Other products include R&D scale RIE and reactive plasma etchers.

## **Plasmaterials, Inc.** #U304

3223 Crow Canyon Road, Suite 290  
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Contact: Barry Nudelman  
Telephone: (510) 277-0440  
Fax: (510) 277-0469

Plasmaterials, Inc. is a worldwide producer and marketer of materials used in the production of thin films. Primary products include sputtering targets and evaporation materials along with backing plates and metallic bonding services. Materials are produced through Vacuum Casting and Powder Metallurgy for use in research and development as well as production.

## **Plenum Publishing Corporation** **#U109**

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**◆Princeton Gamma-Tech, Inc.**  
#U815-816

1200 State Road  
Princeton, NJ 08540  
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Fax: (609) 924-1729  
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**Princeton Instruments, Inc. #U961**  
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**Princeton Scientific Corp.**  
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Fax: (914) 878-4727  
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.

**◆Quantum Design #U610**

11578 Sorrento Valley Road  
San Diego, CA 92121  
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Telephone: (619) 481-4400  
Fax: (619) 481-7410  
E-mail: blz@QUANDSN.com  
Quantum Design will be displaying its Magnetic Property Measurement System (MPMS) and Physical Property Measurement System (PPMS). The MPMS is the industry standard for ultra-sensitive magnetic measurements. The PPMS offers a turn-key platform on which to run a number of different experiments under full automation. Stop by and see our latest product advancements in expanding the capabilities of the MPMS and PPMS.  
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Fax: (201) 575-6490

**◆RHK Technology, Inc. #W63**

1750 West Hamlin Road  
Rochester Hills, MI 48309  
Contact: John M. Green  
Telephone: (810) 656-3116  
Fax: (810) 656-8347  
E-mail: green@rhk-tech.com  
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Northwoods Business Park  
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Telephone: (508) 777-2446  
Fax: (508) 777-3594  
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RJ Lee Instruments, Ltd. manufactures the PERSONAL SEM®, an applications-oriented, all digital scanning electron microscope, affordable, yet high in value and functionality with "point and click" operation; distributes SPECS GmbH surface analysis systems and components including the EA10+ Energy Analyzer, IQE 12/38 Ion Source, and UVS 10/35 Source.

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**Scientific Instruments, Inc. #A5**

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**◆Siemens Industrial Automation, Inc. #U600-601**

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Madison, WI 53719-1173  
Contact: Kevin Kienast  
Telephone: (608) 276-3043  
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Fax: (608) 276-3006  
Siemens specializes in X-ray diffraction and fluorescence



instrumentation, including configurations for phase identification, quantitative analysis, and single-crystal molecular structure determination. Specialized equipment developments include high-resolution optics for analyzing epitaxial materials, two-dimensional detectors for texture analysis, small angle scattering, and microdiffraction; and advanced optics to increase X-ray flux.

**SKION Corporation #U918**

612 River Street  
Hoboken, NJ 07030  
Contact: Seong I. Kim  
Telephone: (201) 216-5633  
Fax: (201) 216-8929  
E-mail: m1son@vaxc.stevens-tech.edu  
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**Solartron Instruments, Inc. #U964**

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Houston, TX 77082  
Contact: Mary A. Betts  
Telephone: (713) 558-4930  
Fax: (713) 558-4701  
E-mail: 100431.3503@compuserve.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.

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Fax: (508) 263-2790  
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**South Bay Technology, Inc. #A1-2**

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Fax: (714) 492-1499  
E-mail: 73531.1344@compuserve.com  
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**Springer-Verlag New York, Inc. #U210**

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Fax: (804) 873-0130  
Staub Instruments manufactures compact, high performance electron-optical equipment for in-situ materials analysis, including: RHEED and RHEED Vision to study structure and quality of thin films; Photo Emission Electron Microscopy (PEEM), a new technique for dynamic studies of chemical distributions with high time and spacial resolution; and Auger spectrometers for analytical surface studies.

**Structure Probe, Inc./SPI Supplies #U915**

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West Chester, PA 19381-0656  
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Toll-free: (800) 2424-SPI  
Fax: (610) 436-5755  
E-mail: StructPro@aol.com or SpiSupp@aol.com  
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**Superconductive Components/Target Materials, Inc. #A10**

1145 Chesapeake Avenue  
Columbus, OH 43212  
Contact: J.R. Gaines  
Telephone: (614) 486-0261  
Fax: (614) 486-0012  
E-mail: JRGSCI@aol.com  
TMI manufactures high quality sputtering targets for Research and Industrial applications. Our product offering includes materials for FPD, Photovoltaic, Resistor, Hardness and other coating applications. Our parent company, SCI, specializes in High T<sub>c</sub> superconductors as powders, targets, thin films, and Levitators. Stop by our booth for a demonstration of our new Melt Processed YBCO.

**Sycon Instruments, Inc. #U506**

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Telephone: (315) 463-5297  
Fax: (315) 463-5298  
Sycon Instruments, Inc. will display its complete line 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 will also be displayed. A deposition monitor based on the principle of Atomic Absorption will also be displayed for continuous monitoring of film deposition. A multi-pocket E-Beam Source Indexer for the control of 4 x 6 pocket E-Beam Guns will also be displayed.

**Taylor & Francis #U111**

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Bristol, PA 19007  
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**TEC #U917**

10737 Lexington Drive  
Knoxville, TN 37933  
Contact: Lise Bender  
Telephone: (615) 966-5856  
Fax: (615) 675-1241  
TEC specializes in fast, accurate stress measurements that help companies gauge how manufacturing and rework processes affect metallic and ceramic parts. We offer both products and lab services for measuring residual and loading stresses, and retained austenite content in steels.

**Telemark #U406**

51 Whitney Place  
Fremont, CA 94539  
Contact: Gerald G. Henderson  
Telephone: (510) 770-8700  
Fax: (510) 770-8879  
Telemark produces a wide range of PVD Components. Our E-Beam Sources range from 1.5cc to 345cc and our EB supplies cover the band from 3kW to 30kW. We also offer multi-wavelength instruments for plasma analysis, thin film monitors for reflection, transmission, or color measurement, and a quartz crystal deposition controller.

**Tencor Instruments #U603**

2400 Charleston Road  
Mountain View, CA 94043  
Contact: Judy Elliott  
Telephoner: (415) 969-6767  
Fax: (415) 968-9482  
Surface profiling systems for a variety of applications and budgets, providing comprehensive surface analysis on even very soft films. Guaranteed repeatability ensures highly accurate measurements. Large sample profiler for flat panel displays. Thin film stress measurement systems for analysis at temperatures from -65 to 900°C and automated film stress measurement systems with radial stress mapping.



# 1995 MRS Fall Meeting Exhibit

## TexSEM Laboratories, Inc. #U607

226 West 2230 No. #120  
Provo, UT 84604  
Contact: John Bennion  
Telephone: (801) 344-8990  
Fax: (801) 344-8997  
E-mail: 73251.1424@compuserve.com  
TopoMetrix manufactures the TMX 2000, the world's most complete range of scanning probe microscope (SPM) and offers the widest range of scanning modes. Microscopes include Aurora™ NSOM (nearfield scanning optical microscope), Observer™ SPM for SEM, Voyager™ automated semiconductor-wafer SPM, and Accurex™, Discoverer™ and Explorer™ research grade SPMs with TrueMetrix™ closed loop linearization for calibrated quantitative measurements.

## Textron Defense Systems #U400-401

2385 Revere Beach Parkway  
Everett, MA 02149  
Contact: R. E. Gannon  
Telephone: (617) 381-4630  
Fax: (617) 381-4160  
TDS has developed an affordable instrumentation package, LaserWave™, for the remote measurement of changes in material properties as a function of changes in the material's ultrasound characteristics. Thus, real time changes in surface or bulk properties, i.e. phase continuity, microstructure, hardness, etc. can be measured without physical contact of the material.

## Thermionics Laboratory, Inc. #U810-811

22815 Sutro Street  
P.O. Box 3711  
Hayward, CA 94540  
Contact: Mark Trujillo  
Telephone: (510) 538-3304  
Fax: (510) 538-2889  
Thermionics manufactures vacuum systems, components, and hardware for all vacuum applications, including: ion pumps, titanium sublimators; XYZ manipulators, sample handling and transfer devices, differentially pumped rotary seals; gate, angle, and all-metal valves; 3-20 kW e-Gun™ evaporation sources and power supplies; feedthroughs, gauges and controls, flanges, fittings; surface science, deposition, PLD, R-HEED, and custom systems; DRST™, an in-situ, remote substrate temperature measurement/control system.

## TopoMetrix #U956

5403 Betsy Ross Drive  
Santa Clara, CA 95054  
Contact: Rich Fiore  
Telephone: (717) 639-1210  
Fax: (717) 639-5521  
E-mail: 74132,3040@compuserve.com  
TopoMetrix manufactures the TMX 2000, the world's most complete range of scanning probe microscope (SPM) and offers the widest range of scanning modes. Microscopes include Aurora™ NSOM (nearfield scanning optical microscope), Observer™ SPM for SEM, Voyager™ automated semiconductor-wafer SPM, and Accurex™, Discoverer™ and Explorer™ research grade SPMs with TrueMetrix™ closed loop linearization for calibrated quantitative measurements.

## Union Carbide Crystal Products #S80

750 South 32nd Street  
Washougal, WA 98671  
Contact: Jack Mellone  
Telephone: (360) 835-9812  
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" and 3" diameter, C-plane; 2" to 6" diameter, R-plane; and SOS epitaxial wafers. See our Sapphire Research Kits containing substrates oriented to M, A, R, and C axes.

## Varian Vacuum Products #U900

121 Hartwell Avenue  
Lexington, MA 02173  
Contact: Phil Ciaccio  
Telephone: (800) 926-3000 ext. 3118  
Fax: (603) 382-3451  
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. #A6

500 West Cummings Park  
Woburn, MA 01801  
Contact: Sue Morin  
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.  
(see ad in this issue)

## VCH Publishers, Inc. #U108

220 East 23rd Street  
New York, NY 10010-4606  
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Telephone: (212) 683-8333  
Fax: (212) 481-0897  
E-mail: order@vch.com  
International publisher of research monographs, reference sets, textbooks, and journals in the fields of materials science, physics, chemistry and chemical engineering, food science, and life sciences. New and featured titles include: *Advanced Materials; Materials Science and Technology; Statistical Mechanics of Phases, Interfaces and Thin Films; Polymerization Process Modeling; Electrochromism; One-Dimensional Metals; Materials Science of Microelectronics; Scanning Tunneling Microscopy and Spectroscopy; Sensors; and Transition Metal Oxides.*

## Virginia Semiconductor, Inc. #U806

1501 Powhatan Street  
Fredericksburg, VA 22401  
Contact: N. Perry Cook  
Telephone: (703) 373-2900  
Fax: (703) 371-0371  
(see ad in this issue)

## Voltaix, Inc. #U605

197 Meister Avenue  
P.O. Box 5357  
North Branch, NJ 08876  
Contact: Debra A. Wagner  
Telephone: (908) 231-9060  
Fax: (908) 231-9063  
Voltaix manufactures and distributes gases used for CVD and implant 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. Examples of new applications for our products include plasma deposited dry processable photoresist based on Methylsilane and non-mass-selective boron implantation using boron-11 Diborane/Hydrogen mixtures.  
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Fax: (212) 850-6264  
E-mail: bschacht@wiley.com  
Please visit the Wiley booth and review our books and journals: *Principles of Ceramics Processing, 2E* by James S. Reed; *Intermetallic Compounds, Volumes 1 and 2* edited by J. H. Westbrook and R. L. Fleischer; *Principles of Plasma Discharges and Materials Processing* by Michael A. Liberman and Allan J. Lichtenberg; and *Phase*

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## World Scientific Publishing Co., Inc. #U107

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Fax: (201) 487-9656  
E-mail: wspan@tiger.jvnc.net  
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## X-Ray Optical Systems, Inc. #U916

90 Fuller Road  
Albany, NY 12205  
Contact: J. Philip Bly  
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Fax: (518) 442-5292  
E-mail: XOSPB@CNSVAX.ALBANY.EDU  
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 multichannel hollow capillary fibers. The X-rays or neutrons are transmitted via multiple total external reflections from the smooth inner walls of the hollow capillary channels.

## Zygo Corporation #U402

Laurel Brook Road  
Middlefield, CT 06455  
Contact: Polly White  
Telephone: (203) 347-8506  
Fax: (203) 346-4188  
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