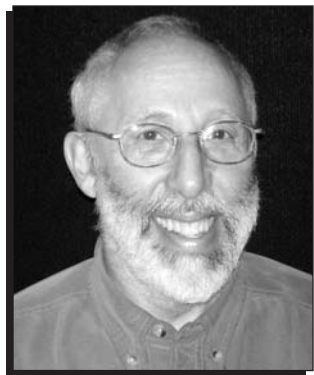


## 2007 MRS Secretary, Treasurer, and Governing Committee Chairs Appointed



David S. Ginley



Julia W.P. Hsu



Bethanie J.H. Stadler



Shefford P. Baker

During the 2006 Materials Research Society Fall Meeting, the MRS Board of Directors appointed director **David S. Ginley** (National Renewable Energy Laboratory) as MRS Secretary and director **Julia W.P. Hsu** (Sandia National Laboratories) as Treasurer to serve in 2007. Also at the Meeting, 2007 MRS President Alan J. Hurd announced the chairs of the governing committees: **Hsu** for Operational Oversight, **Bethanie J.H. Stadler** (University of Minnesota) for Planning, and **Shefford P. Baker** (Cornell University) for External Relations.

The Operational Oversight Committee is accountable for overseeing MRS's operational and financial performance, as well as the operations and effectiveness of the Society's operating committees, ensuring that volunteer involvement in the Society's programs is highly productive and satisfying. The Planning Committee is accountable for developing and leading the Board's participation in all MRS planning, including the annual budget preparation. The External Relations Committee is responsible for developing policy and strategy recommendations for establishing and maintaining effective relationships with the Society's various external constituencies.

### David S. Ginley Secretary

David S. Ginley is Group Manager of the Process Technology and Advanced Concepts group at the National Renewable Energy Laboratory in Golden, Colorado. His current work focuses on the development and basic science of very high quality materials and combination of these materials with new process technology for materials and device development to produce both a new understanding as well as new practical technologies. Ginley received a PhD degree in inorganic chemistry from the Massachusetts Institute of Technology.

In addition to MRS, Ginley is involved in numerous professional societies, including the Electrochemical Society (Fellow) and the Institute of Electrical and Electronics Engineers. He has published more than 320 papers, received 28 patents, and been honored with a Department of Energy Award for Sustained Research in Superconducting Materials, four R&D 100 awards, and two FLC technology transfer awards. He is an adjunct professor of physics at Colorado University—Boulder, and of materials science at the Colorado School of Mines.

### Julia W.P. Hsu Treasurer; Chair, Operational Oversight Committee

Julia W.P. Hsu is a Principal Member of Technical Staff at Sandia National Laboratories at Albuquerque. Her research focuses on nanoscale materials physics. She received her PhD degree in physics from Stanford University in 1991. After a two-year postdoctorate at Bell Labs, she joined the faculty at the University of Virginia as an assistant professor of physics, earning tenure there in 1997. From 1999 to 2003, she was a Member of Technical Staff at Bell Laboratories, Lucent Technologies. Hsu's honors include a Hertz Foundation Fellowship (1985), the American Physical Society's Apker Award (1986), a National Science Foundation Young Investigator Award (1993), and a Sloan Foundation Research Fellowship (1994). She is a fellow of the American Physical Society. For MRS, she has co-chaired the 2004 Fall Meeting, served as a symposium organizer, and contributed to the *MRS Bulletin*. She is the author or co-author of over 100 publications and holds two patents.

### Bethanie J.H. Stadler Chair, Planning Committee

Bethanie J.H. Stadler is an associate pro-

fessor in the Electrical and Computer Engineering Department at the University of Minnesota. Currently, her group's mission is the growth and integration of magnetic and optical films and nanostructures for use in photonics, memory, and sensors. Stadler received her PhD degree from the Massachusetts Institute of Technology (1994) in materials science. Prior to joining the University of Minnesota, she was a National Research Council postdoctoral fellow working in the Optoelectronics Division of the Air Force Rome Laboratory. In addition to her NRC fellowship, Stadler's honors and awards include various teaching awards and the NSF CAREER award. For MRS, Stadler has co-chaired the 2004 Fall Meeting, co-organized three symposia, and has served as chair of the Academic Affairs committee, and as chair or member of various subcommittees and task forces.

### Shefford P. Baker Chair, External Relations Committee

Shefford P. Baker is a faculty member in the Department of Materials Science and Engineering at Cornell University. His main research interests are in the mechanical behavior of materials in small dimensions. He received a Bachelor of Music (1982) degree from the University of New Mexico and MS (1988) and PhD (1993) degrees in Materials Science and Engineering from Stanford University. He was a staff scientist at the Max-Planck-Institut für Metallforschung in Stuttgart (1993–1997), and joined Cornell in 1998 where he has received numerous teaching awards. Baker has been an active member of MRS since 1987, serving as co-chair of the 2004 Fall Meeting, co-organizer of five symposia, instructor of four tutorials, guest editor of an issue of *MRS Bulletin*, and member on the Public Outreach Committee and the Proceedings and Books Subcommittee.

## Preview: 2007 MRS Spring Meeting

Moscone West and San Francisco Marriott Hotel, San Francisco, Calif.  
Meeting: April 9–13 • Exhibit: April 10–12  
[www.mrs.org](http://www.mrs.org)

### Meeting Chairs:

**Timothy J. Bunning**  
*Air Force Research Laboratory*

**Harold Y. Hwang**  
*University of Tokyo*

**Debra Kaiser**  
*National Institute of Standards and Technology*

**Jennifer A. Lewis**  
*University of Illinois, Urbana-Champaign*

The 2007 Materials Research Society Spring Meeting will be held April 9–13, 2007 in San Francisco, Calif. The technical meeting and exhibits will be located at the Moscone West Convention Center, and will include 36 symposia. The Meeting will highlight advances in microelectronic device processing and fabrication; materials research for photonics, electronics, magnetics, and sensors; polymeric, hybrid, and biological materials; and nanoscale materials, properties, and applications. To complement the scientific sessions, tutorials will provide a detailed introduction to particularly exciting areas of research, and the Equipment Exhibit will showcase products of interest to the materials community.

The scientific sessions will include many new and developing areas of materials research as well as some well-established and popular topics. Topics in the electronics and magnetic materials cluster (Symposia A–M) include amorphous and polycrystalline silicon thin films, functional oxide interfaces, and nanoscale magnetics. Polymer nanocomposites, organic electronics, sensors, and medical devices will be featured in the polymer, hybrid, and biomaterials cluster (Symposia N–W). The cluster on optical materials and phenomena (Symposia Y–CC) will highlight recent advances in photovoltaics, photonics, and negative index materials. Nanoscale materials and phenomena will be explored in symposia with topics that include synthesis and applications of low-dimensional mate-

rials, nanoscale mechanics and heat transport, engineered particles for disease diagnosis and treatment, and functional ceramics for energy systems (Symposia DD–JJ).

The plenary talk and awards ceremony will be held Wednesday evening, with a plenary address by Nathan Lewis of the California Institute of Technology. This year's Outstanding Young Investigator will be recognized during the ceremony, and Gold and Silver Graduate Student Awards will be presented to graduate students for symposium papers that exemplify significant and timely research.

Poster sessions will be held at the Marriott Hotel on Tuesday through Thursday evenings from 8:00 p.m. to 11:00 p.m. The meeting chairs will sponsor a Best Poster Award competition, selecting recipients each night on the basis of the posters' technical content, appearance, graphic excellence, and presentation quality.

Symposium X, "Frontiers of Materials Research," will feature topics at the forefront of materials science and engineering. Speakers include Shuji Nakamura (University of California–Santa Barbara), who will give the latest results of white light-emitting diodes; David Weitz (Harvard

University), who will describe the use of simple microfluidic devices to control fluid flow and produce a variety of new materials; and Frank Gayle (National Institute of Standards and Technology), who will reveal the major results and conclusions of the NIST metallurgical investigation of the World Trade Center disaster. Symposium X will be held in the Equipment Exhibit Hall.


In addition, the annual Science as Art contest is planned in which artwork related to materials science and aesthetic scientific pieces of art, for example, micrographs, will be displayed in the Equipment Exhibit Hall and judged, and awards will be given. The Equipment Exhibit Hall is also hosting the ZAP showcase of electric vehicles, offering hands-on driving opportunities.

Presentations for the second annual MRS Entrepreneurship Challenge, a competition designed to help MRS members develop their entrepreneurial skills to get ideas out of the laboratory and directly into the marketplace, will be held at the Spring Meeting.

Government information seminars will include the National Academies Town Hall Meeting on a newly commissioned study involving materials synthesis and crystal growth. MRS will also host a Career Center; services offered to attendees include access to current job postings, a resume file for prospective employers, and on-site interview opportunities.

Graduate students and members of MRS University Chapters are invited to attend a student mixer reception. Also, chapter officers and faculty advisors are invited to attend a meeting of MRS University Chapter representatives to compare notes on recent activities and brainstorm on new projects and issues of common concern. Those interested in starting new chapters are welcome.

See the following pages for a matrix of symposium sessions, a list of tutorials, profiles of exhibitors, and information on hotel and transportation arrangements. International travelers are reminded to begin the visa process early. The date, time, and location of various special events will be announced in the *Program & Exhibit Guide* at the meeting.

For additional information on the meeting, contact MRS Member Services, Materials Research Society, 506 Keystone Drive, Warrendale, PA 15086-7573, USA; e-mail [info@mrs.org](mailto:info@mrs.org), tel. 724-779-3003, and fax 724-779-8313. The deadline to preregister for the meeting is **March 23, 2007**. The MRS Web site can be accessed for updated information on confirmed talks and details on special events, visas, and preregistration at [www.mrs.org](http://www.mrs.org). 



# 2007 MRS SPRING MEETING SYMPOSIUM SESSION LOCATOR

SYMP.	TITLE	LOCATION	MONDAY, APRIL 9			TUESDAY, APRIL 10		
			a.m.	p.m.	eve.	a.m.	p.m.	eve.*
A	<b>Amorphous &amp; Polycrystalline Thin-Film Silicon Science &amp; Technology</b>	Room 3001 (Moscone West)	Tutorial (Room 2000)	Tutorial (Room 2000)		A1: Film Growth I A2: Defects & Metastability	A3: Solar Cells I A4: Alloys	A5, A6, A7, A8: Posters
B	<b>Materials, Processes, Integration, &amp; Reliability in Advanced Interconnects for Micro- &amp; Nano-Electronics</b>	Room 3002 (Moscone West)				B1: Dielectric Materials I	B2: Dielectric Materials II	B3, B4: Posters
C	<b>Advances &amp; Challenges in Chemical Mechanical Planarization</b>	Room 3000 (Moscone West)				C1: Polishing-Pad & Conditioning-Disc Characterization & Wear Mechanisms C2: Post-CMP Cleaning	C3: Consumables for Ultralow Topography & Advanced Barrier Metallization C4: Advances in Slurry Particle Mechanics, Surface Chemistry, & Metrology	
D	<b>Deposition on Nonplanar Substrates</b>	Room 3003 (Moscone West)				D1/AA1: Fabricating & Filling Complex 3D Structures	D2: Feature Filling in Supercritical Fluids & Electrolytes	
E	<b>Pb-Free &amp; RoHS-Compliant Materials &amp; Processes for Microelectronics</b>	Room 3005 (Moscone West)						
F	<b>Semiconductor Defect Engineering—Materials, Synthetic Structures, &amp; Devices II</b>	Room 3004 (Moscone West)		Tutorial (Room 2002)		F1: Dopant & Defect Issues in Oxide & Nitride Semiconductors	F2: Defect Properties, Activation, Passivation	F3: Posters
G	<b>Extending Moore's Law with Advanced Channel Materials</b>	Room 3005 (Moscone West)				G1: Challenges/ Directions of Current CMOS G2: Prospective Materials for CMOS Channels	G3: Advanced Channel Materials I—(110) Si, Ge G4: Advanced Channel Materials II	G5: Posters
H	<b>Characterization of Oxide/Semiconductor Interfaces for CMOS Technologies</b>	Room 3007 (Moscone West)				H1: Si Oxidation, High- <i>k</i> Growth	H2: Si & Oxidation & High- <i>k</i> Growth	
I	<b>Materials &amp; Processes for Nonvolatile Memories</b>	Room 3006 (Moscone West)	Tutorial (Room 2005)	Tutorial (Room 2005)		I1: Organic Nonvolatile Memories	I2: Nanoparticle & Advanced Flash Memories	I3: Posters
J	<b>Nanoscale Magnetics &amp; Device Applications</b>	Room 3008 (Moscone West)				J1: Magnetic Nanoclusters & Bio-Applications	J2: Spin Transfer	
K	<b>Novel Semiconductor Materials for Room-Temperature Ferromagnetism</b>	Room 3009 (Moscone West)				K1: Mechanisms & Transport	K2: Nitride DMS	
L	<b>Functional Interfaces in Oxides</b>	Room 3011 (Moscone West)				L1: Theory & Experiment I	L2: Theory & Experiment II	
M	<b>Progress in High-Temperature Superconductors</b>	Room 3024 (Moscone West)				M1: HTS Conductor Challenges & Flux Pinning M2: Processing by MOD Deposition	M3: REBCO-Coated Conductor Processing M4: YBCO-Coated Conductors	M5: Posters

# 2007 MRS SPRING MEETING SYMPOSIUM SESSION LOCATOR

WEDNESDAY, APRIL 11			THURSDAY, APRIL 12			FRIDAY, APRIL 13	
a.m.	p.m.	eve.*	a.m.	p.m.	eve.*	a.m.	p.m.
A9: Electronics on Flexible Substrates A10: Novel Applications	A11: Thin-Film Transistors I A12: Imagers & Sensors		A13: Crystallization Techniques I A14: Thin-Film Transistors II	A15: Solar Cells II A16: Crystallization Techniques II	A17, A18, A19, A20, A21, A22, A23: Posters	A24: Solar Cells III A25: Film Growth II	
B5: Emerging Interconnect Concepts & Materials	B6: Interconnect Reliability	B7, B8: Posters	B9: Atomic Layer Deposition & Metallization	B10: Novel Interconnects & Packaging			
C5: Chemical & Physical Mechanisms of Metal & Dielectric CMP C6: CMP-Unit Process Simulation & Monitoring	C7: Alternative Planarization Techniques & CMP in Emerging Technologies C8: CMP Defect & Corrosion Mechanisms	C9: Posters	C10: Challenges in CMP Integration & Reliability for 45nm & Beyond C11: Tool/Process Developments, e.g., eCMP & Low-Shear CMP	C12: Advanced CMP Process-Control Techniques C13: Multiscale Modeling of Feature Evolution During CMP			
D3: ALD & CVD for Trenches, Vias & Pillars	D4: Novel Fabrication & Stress-Mitigation Strategies						
E1: Global RoHS & Environmental Regulations	E2: Tin-Whisker Nucleation & Growth	E3: Posters	E4: Pb-Free Solder—Materials & Properties	E5: Next Generation RoHS-Compliant Materials & Processes			
F4: Defects in Nanostructures & Organic Semiconductors F5: Strained Layers & Quantum Wells	F6: Ion Implantation F7: Defect Characterization		F8: Heterojunctions & Interfaces F9: Process-Induced Defects	F10: Dopants & Defects in Group IV Semiconductors	F11: Posters	F12: Defects in Devices	
H3: High- <i>k</i> /Semiconductor Interfaces I	H4: High- <i>k</i> Interfaces—High Mobility Substrates & Metal Electrodes	H5: Posters	H6: Complex & Crystalline Oxides	H7: High- <i>k</i> /Semiconductor Interfaces II—SiC, Electrical Characterization			
I4: Resistive-Switching Nonvolatile Memories I	I5: Resistive-Switching Nonvolatile Memories II I6: Ferroelectric Nonvolatile Memories I	I7: Posters	I8: Ferroelectric Nonvolatile Memories II	I9/J7: MRAM Materials & Devices	I10: Posters	I11: Phase-Change Nonvolatile Memories II	I12: Phase-Change Nonvolatile Memories III (Room 2003)
J3: Magnetism at the Nanoscale	J4: Spin-Polarized Materials	J5: Posters	J6: Nanomagnetic Devices	J7/I9: MRAM Materials & Devices (Room 3006)	J8: Posters	J9: Surfaces & Spectroscopy	J10: Nanoengineered Magnetic Media & HDD Storage (Room 2005)
K3: Oxide DMS	K4: Mn-Containing DMS	K5: Posters	K6: Transition Metal-Doped DMS				
L3: Theory & Experiment III L4: Electron Gases & FETs I	L5: Electron Gases & FETs II	L6: Posters	L7: Ferroelectrics & Multiferroics	L8: Microscopy L9: Magnetism at Interfaces		L10: RRAMs L11: Interfacial Interactions	
M6: MgB <sub>2</sub> Deposition & Properties M7: Magnetic Flux Pinning in REBCO Superconductors I	M8: Magnetic Flux Pinning in REBCO Superconductors II M9: Magnetic Flux Pinning in REBCO Superconductors III	M10: Posters	M11: Low-Frequency AC Losses in YBCO-Coated Conductors M12: Diagnostics, Grain Boundaries, & Properties of HTS Conductors	M13: REBCO Superconductors & Flux-Pinning Mechanisms M14: Deposition Processes for High-Performance HTS			



## 2007 MRS SPRING MEETING SYMPOSIUM SESSION LOCATOR

SYMP.	TITLE	LOCATION	MONDAY, APRIL 9			TUESDAY, APRIL 10		
			a.m.	p.m.	eve.	a.m.	p.m.	eve.*
N	Printing Methods for Electronics, Photonics, & Biomaterials	Room 2003 (Moscone West)				N1: Organic Electronic & Photonics I	N2: Organic Electronics & Photonics II	
O	Organic Thin-Film Electronics—Materials, Processes, & Applications	Room 2002 (Moscone West)		Tutorial (Room 2006)		O1: Synthesis of Materials I	O2: Materials Physics & Characterization I	O3: Posters
P	Materials & Strategies for Lab-on-a-Chip—Biological Analysis, Microfactories, & Fluidic Assembly of Nanostructures	Room 2005 (Moscone West)				P1: Device-Surface Modification	P2: Device-Fabrication Strategies	P3: Posters
Q	Advances in Photo-Initiated Polymer Processes & Materials	Room 2007 (Moscone West)				Q1: Recent Advances in Photopolymerization	Q2: Cationic/Nano-structured Materials	Q3: Posters
R	Transport Behavior in Heterogeneous Polymeric Materials & Composites	Room 2000 (Moscone West)				R1: Electrically Conductive Polymeric Materials I	R2: Electrically Conductive Polymeric Materials II R3: Dielectric & Piezoelectric Behavior	
S	Synthesis, Processing, & Properties of Organic/ Inorganic Hybrid Materials	Room 2004 (Moscone West)		S1: Organo-siloxane-Based Materials		S2: Mesoporous Materials I	S3: Mesoporous Materials II	S4: Posters
T	The Nature of Design—Utilizing Biology's Portfolio	Room 2006 (Moscone West)				T1: Bioinspired Materials I	T2: Bioinspired Materials II	
U	Advanced Materials for Neuroprosthetic Interfaces	Room 2010 (Moscone West)						
V	Functional Materials for Chemical & Biochemical Sensors	Room 2008 (Moscone West)				V1: Inorganic Materials for Sensing I	V2: Inorganic Materials for Sensing II	V3: Posters
W	Materials for Architecture	Salon Level (Marriott Hotel)						
X	Frontiers of Materials Research	Exhibit Hall (Moscone West)					X1	
Y	Thin-Film Compound Semiconductor Photovoltaics	Room 2024 (Moscone West)	Tutorial (Room 2007)	Tutorial (Room 2007)		Y1: Growth & Performance of Compound Thin-Film Solar Cells	Y2: Novel Materials & Processes	Y3: Posters
Z	Organic & Nanoparticle Hybrid Photovoltaic Devices	Room 2009 (Moscone West)				Z1: Polymer-Based Devices I	Z2: Polymer-Based Devices II	
AA	Three-Dimensional Nano- & Micro-photonics	Room 2022 (Moscone West)				AA1/D1: Fabricating & Filling Complex 3D Structures (Room 3003)	AA2: Colloidal Self Assembly I	
BB	Hybrid Functional Materials for Optical Applications	Room 2020 (Moscone West)				BB1: Hybrid Chromophores for Linear & Nonlinear Optics Applications I	BB2: Hybrid Chromophores for Linear & Nonlinear Optics Applications II	BB3: Posters
CC	Materials & Material Structures Enabling Terahertz Technology	Room 3014 (Moscone West)				CC1: Detectors CC2: Spectroscopy & Characterization I	CC3: Vacuum Electronics & Waveguides CC4: Emitters I	

## 2007 MRS SPRING MEETING SYMPOSIUM SESSION LOCATOR

WEDNESDAY, APRIL 11			THURSDAY, APRIL 12			FRIDAY, APRIL 13	
a.m.	p.m.	eve.*	a.m.	p.m.	eve.*	a.m.	p.m.
N3: Nanoimprint & Applications	N4: Printing of Biomolecules		N5: Emerging Printing Technologies	N6: Bioapplications	N7: Posters	N8: Novel Applications of Patterning Technologies	
O4: Device Physics & Materials	O5: Materials Physics & Characterization II	O6: Posters	O7: Processing & Device Fabrication	O8: Synthesis of Materials II	O9: Posters	O10: Commercialization & Applications	O11: Novel Concepts & Devices
P4: Biochemical Analysis & Biosensors I	P5: Biochemical Analysis & Biosensors II		P6: Assembly & Synthesis of Micro/Nanostructures	P7: Fluid Transport & Modeling		P8: Micromanipulation of Droplets, Molecules, & Particles	
Q4: Liquid-Crystalline Materials	Q5: Two-Photon & Photopatterning		Q6: Thiolene/Biological Applications				
R4: Mixed-Matrix Membranes	R5: Ionic Transport for Batteries & Fuel Cells R6: Modeling & Biology	R7: Posters	R8: Barrier & Separation Membranes	R9: Thermal Behavior of Polymeric Materials			
S5: Mesoporous Materials III	S6: Self Assembly of Mesoporous Films S7: Layered Materials		S8: Controlled Release S9: Surface & Interface Modification & Characterization	S10: New Concepts S11: Nanoparticle Synthesis & Assembly I	S12: Posters	S13: Nanoparticle Synthesis & Assembly II S14: Nanoparticle Composites I	S15: Nanoparticle Composites II
T3: Abiotic/Biotic Interactions	T4: Student/Post-Doc Session	T5: Posters	T6: Bio-Direct/Self Assembly I	T7: Bio-Direct/Self Assembly II	T8: Posters	T9: Bioresponsive & Bio-Nanomaterials	T10: Biomedical Materials & Applications
U1: Surface Biofunctionalization U2: Electrode Materials & Functionalization	U3: Electrode Materials & Encapsulation U4: Encapsulation Materials	U5: Posters	U6: Compliant Neural Devices--New Process Fabrication U7: Guiding Neurons	U8: Listening to Neurons U9: Integrated Designs & Devices			
V4: Biosensors & Hybrid Sensors I	V5: Biosensors & Hybrid Sensors II		V6: Biosensors & Hybrid Sensors III	V7: Biosensors & Hybrid Sensors IV	V8: Posters	V9: New Approaches on Gas Sensing	
		W1: Posters					
	X2			X3			
Y4: Defects & Impurities	Y5: Industrial Perspectives Y6: Discussion Session I		Y7: Contacts & Interfaces Y8: Grain Boundaries & Inhomogeneities I	Y9: Grain Boundaries & Inhomogeneities II Y10: Structural, Optical, & Electronic Characterization I Y11: Discussion Session II	Y12: Posters	Y13: Structural, Optical, & Electronic Characterization II	
Z3: Variable Bandgap Materials & Nanostructured Devices I	Z4: Small Molecule-Based Devices		Z5: Nanostructured Devices II & Dye-Sensitized Cells I	Z6: Dye-Sensitized Cells II & Nanoparticle Hybrid Cells I	Z7: Posters	Z8: Nanoparticle Hybrid Cells II & Surfaces & Interfaces	
AA3: Colloidal Self Assembly II AA4: Direct Writing of 3D Photonic Crystals	AA5: Photonic Crystal Devices AA6: Holographically Defined Photonic Crystals I	AA7: Posters	AA8: Holographically Defined Photonic Crystals II	AA9: Lithographically Fabricated Photonic Crystals AA10: Plasmonics & Metamaterials		AA11: 3D Photonic Crystals--Simulation Coupled with Experiment	
BB4: Organic-inorganic Hybrid Materials for Light-Emitting Applications	BB5: Charge & Energy Transfer in Organic-Inorganic Hybrid Materials		BB6: Hybrid Composites for Optical Applications	BB7: Hybrid Nanoparticle Systems for Optical Applications			
CC5: Negative Index & Metamaterials CC6: Spectroscopy & Characterization II	CC7: Emitters II						

## 2007 MRS SPRING MEETING SYMPOSIUM SESSION LOCATOR

SYMP.	TITLE	LOCATION	MONDAY, APRIL 9			TUESDAY, APRIL 10		
			a.m.	p.m.	eve.	a.m.	p.m.	eve.*
DD	<b>Low-Dimensional Materials—Synthesis, Assembly, Property Scaling, &amp; Modeling</b>	Room 2001 (Moscone West)	DD1/EE1: Synthesis of Nanotubes & Nanowires DD2: (Room 2003)	DD3/EE2: Synthesis of Nanotubes & Nanowires II DD4: (Room 2003)		DD5: Properties of Nanocrystals	DD6: Properties of Nanorods DD7: Properties of Nanowires I	DD8: Posters
EE	<b>Applications of Nanotubes &amp; Nanowires</b>	Room 2016 (Moscone West)	EE1/DD1: Synthesis of Nanotubes & Nanowires (Room 2001)	EE2/DD3: Synthesis of Nanotubes & Nanowires II (Room 2001)		EE3: Functionalization, Charge Transfer, & Redox of Nanotubes & Nanowires	EE4: Spectroscopic Properties & Medical & Clinical Applications of Nanotubes & Nanowires	EE5, EE6, EE7: Posters
FF	<b>Engineered Nanoscale Materials for the Diagnosis &amp; Treatment of Disease</b>	Room 2018 (Moscone West)		Tutorial (Room 2008)		FF1: Special Invited Session—The Regulatory & Standards for Nano-Biotechnology: Institutional Perspectives & Panel Discussion	FF2: Nanoscale Drug-Delivery Systems	
GG	<b>Ion-Beam-Based Nanofabrication</b>	Room 3016 (Moscone West)				GG1: Ion-Beam Nanofab—Tools & Techniques	GG2: Pattern Fabrication	GG3: Posters
HH	<b>Surface &amp; Interfacial Nanomechanics</b>	Room 3018 (Moscone West)		Tutorial (Room 2009)		HH1: Nanoscale Mechanical Metrology & the Limits of Continuum Mechanics	HH2: Tools for Nanomechanics	
II	<b>Nanoscale Heat Transport—From Fundamentals to Devices</b>	Room 3020 (Moscone West)				II1: Biological & Soft Materials, Nanofluids	II2: Thermoelectrics	
JJ	<b>Functional Nanoscale Ceramics for Energy Systems</b>	Room 3022 (Moscone West)				JJ1: Nanoionics for SOFCs—Transport & Characterization	JJ2: Solid-Oxide Fuel Cells	

\*Poster Sessions: All Evening Poster Sessions Located on Salon Level, San Francisco Marriott Hotel      \*\*Refer to Tutorial Schedule  
Shaded Blocks: No Session

## 2007 MRS SPRING MEETING SYMPOSIUM TUTORIALS

MONDAY · APRIL 9 · MOSCONE WEST CONVENTION CENTER

### SYMPOSIUM A

**Thin-Film Silicon Materials and Devices for Large-Area and Flexible Electronics**  
9:00 am–5:00 pm, Room 2000

### SYMPOSIUM F

**Magnetic Resonance in Materials Science**  
1:30–5:00 pm, Room 2002

### SYMPOSIUM I

**Materials and Processes for Nonvolatile Memories**  
9:00 am–3:00 pm, Room 2005

### SYMPOSIUM O

**Organic Electronics—Materials Development, Device Physics, Processing, and Applications**  
1:30–5:00 pm, Room 2006

### SYMPOSIUM Y

**Young Scientist Tutorial on Characterization Techniques for Thin-Film Solar Cells**  
9:00 am–5:00 pm, Room 2007

### SYMPOSIUM FF

**Biological Concepts and Methods for the Materials Scientist**  
1:30–5:00 pm, Room 2008

### SYMPOSIUM HH

**Principles and Applications of Atomic Force Microscopy**  
1:30–5:00 pm, Room 2009

*TUTORIAL ATTENDANCE IS OPEN TO ALL MEETING ATTENDEES AT NO EXTRA CHARGE.*

## 2007 MRS SPRING MEETING SYMPOSIUM SESSION LOCATOR

WEDNESDAY, APRIL 11			THURSDAY, APRIL 12			FRIDAY, APRIL 13	
a.m.	p.m.	eve.*	a.m.	p.m.	eve.*	a.m.	p.m.
DD9: Properties of Nanowires II DD10: Assembly, Patterning, & Collective Properties I	DD11: Assembly, Patterning, & Collective Properties II	DD12: Posters	DD13: Devices & Applications of Low-Dimensional Materials I	DD14: Devices & Applications of Low-Dimensional Materials II DD15: Synthesis & Characterization of Nanoscale Materials I	DD16: Posters	DD17: Synthesis & Characterization of Nanoscale Materials II	DD18: Synthesis & Characterization of Nanoscale Materials III
EE8: Electrical Properties & Electronics of Nanotubes & Nanowires I	EE9: Electrical Properties & Electronics of Nanotubes & Nanowires II	EE10: Posters	EE11: Electrical Properties & Electronics of Nanotubes & Nanowires III	EE12: Photonics, Optics, & Optoelectronics of Nanotubes & Nanowires	EE13, EE14: Posters	EE15: Sensors, Emitters, & Structural Materials	EE16: Sensors, Emitters, & Structural Materials II
FF3: Multifunctional Nanoscale Platforms for Disease Therapeutics	FF4: Preclinical Characterization of Biomedical Nanomaterials I	FF5: Posters	FF6: Preclinical Characterization of Biomedical Nanomaterials II	FF7: Nanomaterials in Therapeutic & Regenerative Medicine		FF8: Nanomaterial-Based Imaging & Diagnostics	
GG4: Ripples & Self Assembly GG5: Surface Modification & Patterning	GG6: Nanoparticles, Nanocrystals, & Defects	GG7: Posters	GG8: Applications of Ion-Beam Nanofabrication				
HH3: Deformation Mechanisms at Nanoscale Contacts	HH4: Environmental & Interfacial Effects in Nanotribology	HH5: Posters	HH6: Mechanical Behavior of Nanoscale Structures	HH7: Nanoscale Elastic & Wear Behavior			
II3: Interfacial Materials	II4: Phonons		II5: Low-Dimensional Systems	II6: Experimental Methodologies		II7: Modelling & Simulation--Methods & Applications	
JJ3: Thermoelectrics & Batteries	JJ4: Batteries & Solid-Oxide Fuel Cells		JJ5:	JJ6: Dielectrics & Photoelectrochemical Systems	JJ7: Posters	JJ8: Solid-Oxide Fuel Cells JJ9:	

\*Poster Sessions: All Evening Poster Sessions Located on Salon Level, San Francisco Marriott Hotel      \*\*Refer to Tutorial Schedule  
Shaded Blocks: No Session

## 2007 MRS SPRING MEETING REGISTRATION AND LODGING

**Pre-registration deadline: March 23, 2007 · Hotel reservations deadline: March 21, 2007**

### REGISTRATION

#### Pre-Registration Rates

Valid through Friday, March 23, at 5:00 p.m. EST:

■ Member:	\$440
■ Student Member:	\$100
■ Nonmember:	\$515
■ Student Nonmember:	\$120
■ Retired:	\$120
■ Unemployed:	\$120

Tel. 724-779-3003; Monday–Friday 8:00 a.m.–5:00 p.m. EST

**Online: [www.mrs.org/s07\\_registration](http://www.mrs.org/s07_registration)**

#### On-Site Registration Rates

Valid AFTER 5:00 p.m. EST on Friday, March 23:

■ Member:	\$540
■ Student Member:	\$125
■ Nonmember:	\$615
■ Student Nonmember:	\$145
■ Retired:	\$145
■ Unemployed:	\$145

### LODGING

The Materials Research Society has negotiated special discounted hotel room rates at the San Francisco Marriott Hotel, 30 minutes from the San Francisco International Airport. Your patronage of the official hotel makes the meeting possible by securing the space needed for this event at a greatly reduced cost. Evening poster sessions and other networking events will be held in the Marriott for the convenience of our attendees.

The discounted MRS rate will be \$148 single/double. There will be a \$20 charge for each additional person. Rates do not include applicable taxes.

#### San Francisco Marriott Hotel

55 Fourth Street  
San Francisco, California 94103  
Phone: 1-415-896-1600  
Fax: 1-415-486-8101

**Online: [www.mrs.org/s07\\_lodging](http://www.mrs.org/s07_lodging)**



**EXHIBIT HOURS:**

Tuesday, April 10 11:00 am – 5:30 pm  
 Wednesday, April 11 11:00 am – 5:30 pm  
 Thursday, April 12 10:00 am – 1:30 pm

The MRS Exhibit, held in conjunction with the 2007 MRS Spring Meeting, will feature more than 100 international exhibitors from all sectors of the materials science and engineering communities. Meeting attendees are invited to visit the exhibit to learn more about the latest techniques and advances in the swiftly evolving world of materials research directly from the manufacturers, suppliers and developers. Convenient to the technical session rooms and scheduled to complement the program, the MRS Spring Exhibit offers everything you need all under one roof.

**ADVALUE TECHNOLOGY, LLC**

sales@advaluetech.com  
 www.advaluetech.com

**Key Products:** Crucibles; Sample Pans for Thermal Analysis; Tubes

A leading supplier of alumina, zirconia, and fused quartz products, including crucibles, tubes, plates, and thermal analysis sample pans. Products are widely used for high-temperature, chemical and wear-resistant applications.

**ADVANCED RESEARCH SYSTEMS, INC.**

ars@arscryo.com  
 www.arscryo.com

**Key Products:** Closed and Open Cycle Cryogenic Systems

ARS offers integrated Displex and Helitran Cryostats for Material Characterization. Cryostats are available for Optical, Transport, XRD, UHV and other applications. The Closed Cycle, ARS Displex Cryostats have been redesigned for a temperature range of sub 3K to 800K. With the lowest vibrations at the sample, it is the cryocooler of choice for sample characterization. The ARS Displex is now available for sub 1.5K sample temperature. ARS is introducing the low cost 77K closed cycle cryostats for optical and non-optical experiments as well as the Cryogenic Probe Station with up to 4 probes. ARS manufactures the Open and Closed Cycle cryocoolers, the vacuum shrouds, radiation shields and sample holders resulting in the most effective design with commitment to integrity and quality of the product.

**AGILENT TECHNOLOGIES**

afm-info@agilent.com  
 www.agilent.com



**Key Products:** Atomic Force Microscopes; Scanning Probe Microscopes

Agilent, the world's premier measurement company, has acquired Molecular Imaging, the premier manufacturer of Atomic Force Microscope (AFM) and Scanning Probe Microscope (SPM) systems. This portfolio of high-resolution AFM instruments is ideal for nanometer scale measurement while imaging in fluids, air or gases and under controlled temperature and environmental conditions.

**AJA INTERNATIONAL, INC.**

topgun@ajaint.com  
 www.ajaint.com

**Key Products:** Magnetron Sputtering Systems; Magnetron Sputtering Sources; Substrate Holders/Heaters

Sputtering and E-beam Systems for R&D and Pilot Production. Static and Rotating Magnetron Sputter Sources for HV and UHV, Substrate Holders with Rotation, RF Biasing, Heating and Cooling; Sputter Targets, Microwave, RF and DC Power Supplies, Microwave Components and Plasma Sources, RF Ion/Plasma Sources.

**AMBIOS TECHNOLOGY, INC.**

sales@ambiostech.com  
 www.ambiostech.com

**Key Products:** Surface Profilers; Non-Contact Optical Profiler; AFM/STM

Ambios manufactures high performance, state-of-the-art, surface topography measurement tools. The XP benchtop stylus profilometers offer both a low force head and 50,000 data point data collection as standard features. The XP offers unmatched measurement range and repeatability. The Xi-100 non-contact profiler features subnanometer resolution and a 100-µm range. This is an ideal instrument for measuring topographical features on a variety of materials, including thin films, optics and MEMS devices. The recently acquired Qesant family of AFM and SPM products rounds out the Ambios line which is designed for the researcher who is interested in getting fast repeatable data that is not encumbered by unneeded levels of complication.

**AMERICAN CHEMICAL SOCIETY, PUBLICATIONS**

help@acs.org  
 pubs.acs.org

**Key Products:** Journals (Web and Print); Magazines; Books

The American Chemical Society publishes 33 peer-reviewed journals, including *Nano Letters*, the rapid communications journal focused on nanoscience and nanotechnology. Achieving an impressive 8.449 impact factor, based on the 2004 ISI® Journal Citation Reports®, *Nano Letters* is the leading forum for scientists involved in nanoscale research in a range of disciplines. ACS also publishes *Chemistry of Materials*, the most cited journal in materials science with 26,511 citations and a 4.103 impact factor.

**ANASYS INSTRUMENTS CORP.**

www.anasysinstruments.com

**Key Products:** Nano-thermal Analysis

Our breakthrough thermal probe technology enables AFM users to heat local regions sub-100 nm in diameter and the accompanying hardware/software enables our customers to measure local thermal properties. Our nano-TA product (comprising hardware, software and probes) enables AFM users in polymers, materials science and pharmaceuticals to measure phase transitions of local regions so as to get local Tg and Tm information.

**ANFATEC INSTRUMENTS AG**

mailbox@anfatec.de  
 www.anfatec.de

**Key Products:** LockIn Amplifiers; AFM and STM; Controller

Anfatec Instruments AG is an established German company producing and distributing instrumentation for surface science. The product range implies scanning probe instruments like AFM (Atomic Force Microscopes) systems and STM (Scanning Tunneling Microscopes); PC-based, affordable SPM controllers as well as parts and accessories for scanning probe microscopes. The product range is completed with digital LockIn amplifiers. Anfatec is the German distributor for MikroMasch and other cantilever and grating suppliers.

**ANNEALSYS**

info@annealsys.com  
 www.annealsys.com



**Key Products:** RTP; LPCVD; MOCVD

Annealsys manufactures Rapid Thermal Processing and Chemical Vapor Deposition equipment for research and development and production niche applications. RTP systems are available from 2- to 8-inch wafer capability for RTP and RTCVD processes. Cold wall chamber, lamp furnace, high temperature (1400°C) and high vacuum capability are the main features. CVD systems: 4-inch MOCVD research and development tool dedicated to oxide and metal deposition and 4-inch LPCVD furnace. Annealsys provides worldwide sales and service support.

**ASYLUM RESEARCH**

sales@AsylumResearch.com  
 www.AsylumResearch.com



**Key Products:** Atomic Force Microscopes; Scanning Probe Microscopes

Asylum Research manufactures advanced Atomic Force Microscopes for nanoscale science. Featured is the MFP-3D AFM with unprecedented precision while maintaining image clarity. The MFP-3D features the NPS™ Nanopositioning System for precision and accuracy with closed-loop operation in all three axes; a low noise, fully-digital controller; MicroAngelo built-in nanolithography and manipulation; IGOR Pro open software for customized experiments including advanced 3D rendering; ORCA for conductive AFM measurements, and advanced optical capabilities for simultaneous AFM and fluorescence imaging. New capabilities include the NanoIndenter for quantitative mechanical

properties measurements; ferroelectric imaging capabilities and environmental controls including a BioHeater, Polymer Heater, Humidity Sensor, and Closed Fluid Cell.

## ATOMATE CORPORATION

info@atomate.com  
www.atomate.com

Atomate Corporation develops robust systems, components, and materials optimized for the synthesis of nanowires and nanotubes using the chemical vapor deposition (CVD) method. Atomate has a solution for researchers who desire enhancements to existing systems and for those who want to build or buy a new system. Atomate's mission is to develop products that enable the customer to focus their efforts on the science, not on engineering of equipment.

## ATOMISTIX INC.

atomistix@atomistix.com  
www.atomistix.com

**Key Products:** Atomistix Toolkit; Virtual NanoLab; Nano Language

A leading provider of software solutions for development of nanotechnology, Atomistix is the first company in the world to develop a system of integrated software modules based on quantum theory—the Atomistix Virtual NanoLab®—that can accurately calculate properties associated with electron distribution and transport, and simulate experiments with integrated nanoscale systems. With the software, nanotechnology scientists and engineers are able to establish competitive advantages by developing materials and designing products with radically new properties and functions.

## AXIC, INC.

info@axic.com  
www.axic.com

**Key Products:** Plasma Process Equipment; Rapid Thermal Process Systems; Metrology and CVD

AXIC, Inc. is the sole distributor in the USA for AnnealSys, NanoPhotronics, Nano-View, Secon and Ultech. Combined we provide process equipment including: Plasma Etch, PECVD, LPCVD, MOCVD, Rapid Thermal Processing, Defect Density, Ellipsometry, Wafer Thinning and Metrology systems. AXIC, Inc. manufactures a line of Plasma Etchers (including ICP) and Plasma Deposition systems for 2" to 8" wafers. AnnealSys supplies Rapid Thermal Process (RTP) and Rapid Thermal Annealing (RTA) equipment for annealing, alloying, phase change, and deposition. NanoPhotronics utilizes laser-based technology either in a Manual mode, Integrated or Fully automated to inspect surfaces for scratches, defects, and haze. Nano-View systems measures film thickness, index, adsorption applications as well as particle and defect surface analysis. Secon microwave systems are applicable for Etch, Deposition, and Texturization for Solar Cell applications. Sputtering Equipment, Evaporators, Ion Immersion, and Dry Etchers are provided by Ultech Co.

## BRINKMANN INSTRUMENTS, INC.

info@brinkmann.com  
www.brinkmann.com

Brinkmann Instruments offers the Eco Chemie Autolab family of potentiostats/galvanostats for material analysis and characterization. The modular PGSTAT systems provide advanced electrochemical techniques, including impedance analysis, low current and multiplexing measurements. Brinkmann also offers a wide range of micro-electrodes, macro-electrodes and low noise RDE systems. The Eco Chemie ESPR Biosensor surface plasmon resonance systems offer label-free and real-time analysis of molecular interactions, as well as Spin Coater options.

## BRUKER AXS INC.

info@bruker-axs.com  
www.bruker-axs.com

**Key Products:** X-Ray Diffraction Instruments; Detectors; Microanalysis X-Ray Instruments

Bruker AXS specializes in high-end X-ray diffraction solutions performing a wealth of applications in materials analysis. Our technology is used to investigate complex samples ranging from wafers, thin films, and powders to amorphous materials. We are the market leader in XRD, offering the largest, highest quality portfolio of cutting edge diffraction components and software. Our products include the D8 product line, Super Speed Solutions, NanoStar, Multex Area, Leptos, NanoFit and Topas.



## BUCHANAN INGERSOLL & ROONEY PC

www.buchananingersoll.com

Buchanan Ingersoll & Rooney has more than 550 attorneys and government relations professionals practicing throughout the United States. Buchanan performs intellectual property work for a variety of materials science industries that include ceramic, metallurgical and polymer science. Buchanan's Materials Science Group includes attorneys who are former patent examiners and who hold advanced degrees in metallurgical engineering or materials science and engineering. The firm serves national and international clients that include Fortune 500 corporations, start-ups and technology companies.

## CARL ZEISS SMT INC.

info-usa@smt.zeiss.com  
www.smt.zeiss.com

**Key Products:** Electron Microscopes; FIB

Carl Zeiss SMT's Nano Technology Systems Division offers a complete range of leading edge technology ultra high resolution GEMINI FESEMs, multi-purpose and extended pressure SEMs, energy filtering TEMs and CrossBeam® FIB systems. The ULTRA, based on the SUPRA GEMINI FESEM, comprises two high efficiency, high resolution in-column detectors which provides ultra high resolution simultaneous SE and BSE imaging. In addition, the CrossBeam® FIB workstations with the GEMINI FESEM column enable precise and fast 3-D analysis and TEM sample prep. The new LIBRA® EFTEM offers a unique in-column OMEGA filter concept combined with Koehler illumination for unrivalled flexibility in imaging and analysis combined with genuine ease of operation.

## CENTER FOR TRIBOLOGY, INC.

sales@cetr.com  
www.cetr.com

**Key Products:** Universal Nano+Micro+Macro Materials Testers

CETR is a world leading manufacturer of nano, micro and macro precision mechanical testers for coatings, thin films and bulk materials, with measurements of adhesion, delamination, scratch-resistance, nano- and micro- hardness, elastic modulus, friction, reciprocating and rotary wear, fatigue, elasticity, plasticity and other mechanical properties, including in controlled temperature (-25C to +1,000C), humidity or vacuum, for biomedical, microelectronics, data storage and other industries, as well as for basic materials research on nano and micro levels.

## CRYSTALMAKER SOFTWARE LTD.

info@crystallmaker.com  
www.crystallmaker.com

**Key Products:** CrystalMaker; CrystalDiffract; SingleCrystal

CrystalMaker Software Ltd. develops software for working with crystalline materials and their diffraction patterns, including the award-winning CrystalMaker® (interactive structures visualization) with its real-time photo-realistic graphics. This works seamlessly with our other products: CrystalDiffract™ (x-ray and neutron powder diffraction) and SingleCrystal™ (electron diffraction and stereographic projections). All products feature elegant, easy-to-use interfaces plus cross-platform compatibility for Windows XP/Vista and Mac OS X (PowerPC/Intel).

## CSM INSTRUMENTS INC.

usinfo@csm-instruments.com  
www.csm-instruments.com

**Key Products:** Scratch Testers; Indentation Testers; Tribometers; Calotest

CSM Instruments offers a wide range of instruments and testing services for surface mechanical properties characterization, including: nano and micro indentation (for hardness and modulus); Revetest, nano and micro scratch (thin film adhesion, fracture and deformation); tribometers (also high temperature and linear reciprocating options); and Calotest. 3D-imaging options are available with the ConScan or AFM objective. The new Compact and Open Platforms allow several measurement modules to be combined on an automated sample stage for high throughput quality control (multi-sample) applications. The new Nano Tribometer allows simulation of low load tribological contacts; e.g., in MEMS, microsystems and other devices. CSM Instruments offers complete contract testing and consulting services.

## DRYOGENIC LIMITED

info@dryogenic.com  
www.dryogenic.com

**Key Products:** Dryogenic Measurement System

The Dryogenic Cryogen-Free Measurement System: state-of-the-art integrated performance, with fast turnaround automated measurement options. Combines ultra-low-vibration pulse-tube cooling with optional and affordable millikelvin ADR technology. Base temperature of 100 mK, 300 mK, 1 K or 4 K. Magnetic field up to 14T. Resistivity, susceptibility, DC I-V, Hall Effect, Specific Heat. Optional double-axis piezo-rotation. Customizable probes: High frequency, optic fibre, shielded. The next generation system for sample characterization and device measurement.

## DUNIWAY STOCKROOM CORPORATION

info@duniway.com  
www.duniway.com

**Key Products:** Vacuum Pumps/Controls; Vacuum Gauges/Controls; Vacuum Supplies

Specializes in vacuum equipment and supplies: Ion pumps and controls; components (flanges, gaskets, bolts, nuts); vacuum gauges and controls from Terranova; mechanical pumps and rebuild kits; supplies (oils, greases, hoses, bell jars); and diffusion pumps and leak detectors. We offer rebuilding services and a large collection of reconditioned equipment. Free catalog.

## ECOPIA CORP.

sales@ecopia21.co.kr  
www.ecopia21.co.kr

**Key Products:** Hall Effect Measurement System; Probe Station; Heat Treatment System

Ecopia is one of the leading companies in measurement systems for semiconductors. The Hall Effect Measurement System measures electrical properties (Bulk/Sheet carrier concentration, mobility, hall coefficient, resistivity, magneto-resistance, etc.). It is reasonably priced, has a compact desk top design, is very powerful and easy-to-use and install. It shows I-V and I-R curve and the user can measure the sample under 77K using LN<sub>2</sub>. Permanent magnetic flux density (1T, 0.51T, 0.37T and 0.31Tesla).

## EDAX INC. /TSL

info.edax@ametech.com  
www.edax.com

**Key Products:** Energy Dispersive X-ray; EBSD; X-ray Detectors

EDAX raises the standard as the technical innovator with high performance and functionality that gives you "Confidence in Your Results." For many years EDAX has lead the industry as the world's largest supplier of EDS, EBSD and WDS systems and as the technical and performance leader. EDAX-TSL integrated products provide a powerful and unique combination of elemental information from EDS and structural information from EBSD in the EDAX Pegasus, while the EDAX Trident combines the EDS and EBSD capabilities with WDS to provide a complete solution.

## ELSEVIER

www.elsevier.com

**Key Products:** Books; Journals; Electronic Products

Come and visit the Elsevier booth... Browse through the latest books and journals in the field of materials science and take advantage of special discounts available to all MRS attendees. Find out how your institution can get six free print issues of Acta Biomaterialia, simply visit [www.elsevier.com/locate/actabiomat](http://www.elsevier.com/locate/actabiomat).

## EVANS ANALYTICAL GROUP

marketing@eaglabs.com  
www.eaglabs.com

**Key Products:** Analytical Services

Evans Analytical Group is the worldwide leader in surface analysis and materials characterization, serving high technology industries, including the semiconductor, communications, medical device, lasers/optics and data storage industries. We are the largest independent surface microanalytical services organization in the world with a global network of laboratories and sales offices. Techniques available include dynamic SIMS (both quadrupole and magnetic sector), TOF-SIMS (up to

200 mm), XPS, AES (up to 300 mm), FTIR, SEM/EDS, FIB (up to 200 mm), TXRF (up to 300 mm), AFM/SPM, RBS (NRA, HFS, PIXE and channeling), Raman, and GC/MS. Our extensive fleet of instruments provides capacity that enables fast turn around time, superior data quality and excellent detection limits.

## FEI COMPANY

sales@feico.com  
www.feicompany.com

MRS Corporate  
Affiliate

**Key Products:** SEM; TEM; DualBeam

New Titan™ S/TEM breaks the Ångström barrier, enabling the highest resolution characterization of nanostructures and functional materials. Nova NanoSEM™ dedicated field emission, high resolution, low vacuum SEM is ideal for ultra-high resolution characterization of charging or contaminating samples such as organic materials, glass substrates, porous materials, plastics and polymers. Nova NanoLab™ and Quanta 3D™ both offer high resolution SEM imaging and FIB cross-sectioning for the most comprehensive characterization of materials, while Tecnai TEMs delivers atomic scale resolution for advanced materials research.

## FISCHIONE INSTRUMENTS

info@fischione.com  
www.fischione.com

MRS Corporate  
Affiliate

**Key Products:** Electron Microscope Accessories; Plasma Cleaner; Ion Mill

Fischione Instruments features a full line of Electron Microscopy Instrumentation. TEM Specimen Preparation Instruments include the Twin-Jet Electropolisher, Dimpling Grinder, Ultrasonic Disk Cutter, Ion Mill, and the Plasma Cleaner which eliminates contamination in TEM and SEM applications. The new NanoMill combines ultra-low ion energies and a focused beam for artifact-free preparation. The Automated Sample Prep (ASaP) System (Patent Pending) significantly enhances the image quality and analytical data derived from SEM specimens. Imaging Instruments include the high angle Annular Dark Field (ADF) detector for high resolution STEM imaging. TEM Specimen Holder Technology includes the Advanced Tomography Holder (Patent Pending), affording high tilt and extended fields of view in high resolution TEMs.

## FRONTIER SEMICONDUCTOR

fsm100@frontiersemi.com  
www.frontiersemi.com

**Key Products:** Non-contact RS and Leakage Mapper; Non-contact Substrate Thickness; Film Stress and TDS

Film Stress (Cryo, room and high temperatures up to 1100°C). Materials Characterization (low-k, Cu) for Stress Hysteresis, TDS, Film Shrinkage, and Quantitative Adhesion Testers. Ultrathin Wafer and Membrane Thickness, Surface Roughness and Warpage Measurements during/after background, chemical etch for bumped, patterned, bare wafers and MEMS. In line Gate Oxide Integrity (GOI) metrology and metal contamination (MC) for product wafers. Non-Contact Rs, leakage current for ultra shallow junctions (USJ). High spectral and high spatial resolution, production ready UV/VIS Raman Spectroscopy for Strain in Si, SiGe, SiGe, STI and MEMS applications.

## FUJIFILM DIMATIX, INC.

info@dimatix.com  
www.dimatix.com

**Key Products:** Dimatix Materials Printer; Dimatix Materials Cartridge; Other Printheads and Systems

With the Dimatix Materials Printer (DMP), FUJIFILM Dimatix, Inc. has advanced ink jetting to enable high-performance micro-precision deposition of a wide range of "inks" tailor fit to specific applications. It is the industry's first low-cost, cartridge-based piezo ink jet printing system that enables direct deposition of fluids for proprietary research allowing faster and less expensive product development. The MEMS-based ink jet head coupled to a disposable cartridge allows researchers to deposit the materials they have synthesized today.

## GATAN, INC.

info@gatan.com  
www.gatan.com

MRS Corporate  
Affiliate

**Key Products:** TEM and SEM Instruments; Nanotechnology Holders; Material Science EM Instruments

Gatan designs and manufactures instruments and products for electron micro-

## 2007 MRS SPRING EXHIBITORS

scopes that enable and advance EM applications. Gatan is the recognized leader in the industry and our products set the industry standards. Our engineers understand the application criteria of our customers and provide them with the right solutions. GATAN GETS IT!

**GELEST INC.**  
info@gelest.com  
www.gelest.com



**Key Products:** Organosilanes; Organometallics; Silicones

Gelest is a manufacturer of silanes, modified and reactive silicones as well as metal organics including germanium and tin compounds. Gelest also manufactures a broad range of metal alkoxides and metal diketonates. Gelest provides materials at both R&D and commercial quantities. Products are used in microelectronic and optical coatings, sol-gel ceramics, composites and polymer synthesis.

**HALCYONICS**  
info@halcyonics.de  
www.halcyonics.de

**Key Products:** Active Vibration Isolation Systems

Halcyonics is the global market leader in compact active vibration isolation. The anti-vibration specialists manufacture seven product lines with more than 25 different standard versions and offer the greatest competence and flexibility in customized active vibration isolation technology. Halcyonics systems are used in many fields of advanced micro- and nanotechnology; for instance, in biotechnology, material sciences, in the semiconductor field, LCD manufacturing and many more areas. Halcyonics is presented through their own sales organizations in Germany and the USA; a global network of distributors offers support to customers worldwide.

**HIELSCHER USA, INC.**  
usa@hielscher.com  
www.hielscher.com

**Key Products:** Ultrasonic Processor

Ultrasonic devices made by Hielscher are used worldwide for the deagglomeration and primary particle size reduction of powders in liquids. This includes the processing of catalysts, coatings, conductive pastes, cosmetics, ceramic composites, magnetic storage media, phosphors, inks and pigments, polishing media, and toners. In the production of micron-size and nano-size particles, ultrasound has proven to be more effective than many other technologies on lab, bench-top and production level. Equipment for feasibility studies and process optimization is available on good terms.

**HITACHI HIGH TECHNOLOGIES AMERICA, INC.**  
emdwebsite@hitachi-hta.com  
www.hitachi-hta.com

**Key Products:** Scanning Electron Microscopes

Hitachi High Technologies America, a global leader serving the needs for material science and nanotechnology development, provides a wide array of advanced electron microscopes. Our product line-up includes Scanning Electron Microscopes (SEM), Transmission Electron Microscopes (TEM), Variable Pressure SEM (VP SEM), Field Emission SEM (FE SEM) and Focused Ion Beam Systems (FIB). Our customers can expect more experience, reliability and customer support when choosing Hitachi electron microscopes.

**HORIBA JOBIN YVON, INC.**  
Raman Spectroscopy and EDXRF, Thin Films, and Optical Spectroscopy Divisions  
www.jobinyvon.com

**Key Products:** Spectroscopic Ellipsometers; End Point Detectors;  
Raman Spectroscopy

HJY is a World Leading Manufacturer of Spectroscopic Instrumentation for all applications from Research and Development to routine analysis. We manufacture Spectroscopic Ellipsometers, End Point Detectors, Raman Systems, GDS, and ICP Spectrometers, Steady State and Lifetime Spectrofluorometers with both TCSPC and phase capability and EDXRF Microscopes. Ellipsometry measures film thickness and optical constants for all types of materials. End Point Detectors are used for plasma analysis and trench depth monitoring. Raman systems for materials analysis, stress measurement and defect/contaminant identification offer maximum flexibility with options such as Raman micro, macro and probe based sampling options, and

combined Raman-FTIR and Raman-AFM on the same microscope. We also provide imaging spectrometers and high performance CCDs for Photoluminescence (PL) measurements.

**HUNTINGTON MECHANICAL LABORATORIES, INC.**  
vacman@huntvac.com  
www.huntvac.com

*See ad in this issue*

**Key Products:** Combinatorial PLD Systems; Positioning Devices;  
Manipulators; Valves; Feedthroughs

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 35 years of experience in vacuum chamber design and fabrication. Our electrical feedthrough product line has been dramatically increased. We also now offer a Pulse Laser Deposition System! See all of our products on our website at www.huntvac.com.

**HVA, LLC**  
sales@highvac.com  
www.highvac.com

**Key Products:** Gate Valves; Rectangular Valves; Pendulum Valves

HVA is the premier manufacturer of high and ultrahigh vacuum valves for the semiconductor, scientific, and high-technology industries. Gate valves and rectangular valves are constructed out of 304 Stainless Steel, vacuum furnace brazed at 1100°C at 10<sup>-6</sup> for maximum joint integrity. Product line includes stainless-steel gate valves, 3-position valves, angle valves, complete throttle/isolation gate valve systems, stainless-steel/aluminum rectangular valves, pendulum valves, new rapid service slit valves for easy maintenance, and more.

**HYSITRON, INC.**  
info@hysitron.com  
www.hysitron.com



**Key Products:** TriboIndenter; TriboScope; nanoECR

Hysitron systems provide multiple analysis techniques for customized materials testing solutions of bulk materials, thin films and nanostructures (MEMS); from tribological films to biological materials. Stop by and learn about our new products, such as nanoECR™, which permits simultaneous measurements of Current-Voltage and Force-Displacement letting you correlate electrical and mechanical properties of materials at the nanoscale and our nanoTensile™ 5000, which redefines nanoscale tensile and pull testing with an extended force and displacement range enabled by dual-mode and dynamic operation.

**IMAGO SCIENTIFIC INSTRUMENTS CORPORATION**  
information@imago.com  
www.imago.com



**Key Products:** LEAP Atom Probe Tomography (APT) Microscope

Imago Scientific Instruments provides solutions for 3D, atomic resolution, compositional imaging and analysis. Materials are examined by removing and analyzing individual atoms. Material systems studied using Imago's technology include metal precipitates, Nanomagnetic interfaces, High-k dielectric/Si interfaces, and the 3D distribution of dopants in semiconductors.

**IMT i-SOLUTION INC.**  
sales@imt-digital.com  
www.imt-digital.com

**Key Products:** i-Solution Image Analysis Software; i-Solution DT Software;  
i-Solution Lite Software

IMT i-Solution Inc. is an international leading source of image analysis solutions for research laboratories and quality control. Our software packages, named i-Solution series, combine revolutionary measurement and analysis technology with an exceptional, user-friendly interface. Development of customized modules and features are always welcomed.



## JANIS RESEARCH COMPANY, INC.

sales@janis.com  
www.janis.com

See ad in this issue

**Key Products:** Micro-Manipulated Probe Systems; 4 K and 10 K Mechanical Closed-Cycle Refrigerators; Continuous Flow and Reservoir Cryostats

Janis combines over 40 years of manufacturing experience with extensive engineering capabilities to provide cryogenic systems for all research applications. Application-specific products include cryostats for optical microscopy, FTIR and Mössbauer spectroscopy, UHV-compatible systems, continuous-flow and Helium-3 cryostats, 4 K and 10 K closed-cycle refrigerators, dilution refrigerators, superconducting magnet systems and micro-manipulated probe stations. Our staff of physicists and engineers is on hand to tailor cryogenic systems to meet specific experimental requirements and budgets.

## JASCO, INC.

sales@jascoinc.com  
www.jascoinc.com

**Key Products:** Spectroscopy Instrumentation; Chromatography Instrumentation, Raman, RMP, FTIR Microscopy

JASCO specializes in analytical instrumentation in the areas of Spectroscopy and Chromatography. With 48 years of experience within the academic, pharmaceutical, biotechnology, and industrial markets worldwide, JASCO is an excellent choice for your laboratory needs. We offer a full line of reliable and robust instrumentation: Specializing in Raman including RMP, NFS 320 and 330, FT-IR Microscopy, FTIR, UV-Vis/NIR, Fluorescence, Circular Dichroism, Dissolution, FT-Raman, Polarimeters, SFE/SFC, HPLC, and X-LC (Extreme Pressure LC). JASCO is one of the few companies offering a single, cross platform software for our many different instruments.

## JEOL USA, INC.

eod@jeol.com  
www.jeolusa.com

MRS Corporate  
Affiliate

**Key Products:** SEM; TEM; SPM

JEOL is a global leader of electron optical instrumentation used for high-end scientific research and industrial applications. JEOL's business mission is to provide innovative technologies, products and services to promote advancements in the core markets we serve including materials science, nanotechnology, biotechnology, life science, forensics, and biology. Please stop by the booth to obtain information on our full line of TEMs, SEMs, FIBs, and AFMs. JEOL also sells Mass Spectrometers and NMR Spectrometers.

## k-SPACE ASSOCIATES, INC.

requestinfo@k-space.com  
www.k-space.com

MRS Corporate  
Affiliate

**Key Products:** kSA BandiT; kSA MOS; kSA RateRat

Since 1992, k-Space Associates has been a leading supplier of advanced instrumentation and software for the surface science and thin-film technology industry. k-Space sets the standard for analytical RHEED with the kSA400. kSA MOS yields *in situ* curvature, stress, and strain while the new kSA MOS Ultra Scan provides full two dimensional stress mapping of samples up to 200 mm. kSA RateRat monitors real-time deposition rate and optical constants. And, our kSA BandiT for monitoring semiconductor substrate wafer temperature during epitaxial growth now also works for GaN!

## KEMSTREAM S.A.S.

info@kemstream.com  
www.kemstream.com

**Key Products:** CVD and ALD Vaporizers; Atomizers for Spray Pyrolysis; Liquid Distribution Panels

KEMSTREAM manufactures advanced vaporizers specially designed for CVD, ALD and all other gas phase processes and precursors. KEMSTREAM vaporizers are able to vaporize most of solid and liquid precursors including low vapour pressure, thermally labile and viscous ones. They work from vacuum to atmospheric pressure and deliver accurate, repeatable and stable vapours flows. KEMSTREAM offers consulting services for selection of CVD and ALD precursors. KEMSTREAM provides stand-alone injection heads/atomizers for Spray Pyrolysis processes.

## KLA-TENCOR CORPORATION

info@kla-tencor.com  
www.kla-tencor.com

**Key Products:** Surface Metrology, P-16 Profiler; Alpha Step IQ, HRP 340

At KLA-Tencor's SMD product group, our market segments span semiconductor and data storage manufacturing, MEMS, optoelectronics, material science and general scientific research—a range of industries that measure surface topography to control their process. SMD's products range from benchtop stylus profilers used in research environments to automated high resolution profilers for advanced IC production fabs.

## KOBE STEEL LTD.

www.kobelco.co.jp/technobook/p238\_e.htm

**Key Products:** Ion Beam Surface Analyzer; Accelerator; Ion Beam Equipment

Kobe Steel Ltd. has been developing the ion beam technology for twenty years. Based on the compact ion beam accelerator technology, the High Resolution Rutherford Back Scattering Spectrometry system (HRBS-V500) is a 500 kV accelerating voltage-class surface-analyzing system which is brought to the market. Using the High Resolution RBS analyzing method, surface analyzing toll service can be available.

## KURT J. LESKER COMPANY

salesus@lesker.com; international@lesker.com  
www.lesker.com

See ad in this issue

**Key Products:** Pure Targets and Materials; Vacuum Components; Deposition Systems and Bonding Services

Stop by our booth to discuss your materials research challenges. We offer systems, components and services for a wide variety of materials research related activities including: target bonding of ceramics, oxides and metals; magnetron sputtering; e-beam evaporation; organic materials evaporation; and Atomic Layer Deposition (ALD).

## LAKE SHORE CRYOTRONICS, INC.

info@lakeshore.com  
www.lakeshore.com

MRS Corporate  
Affiliate

See ad in this issue

**Key Products:** Hall Effect Measurement Systems; Probe Stations; Cryogenic Instruments and Sensors

Manufactures cryogenic, magnet-based, load-lock, and high vacuum probe stations and Hall effect measurement systems (HMS). The probe stations can be used for DC, RF, microwave (up to 67 GHz), and magneto-transport measurements on devices and wafers. Features include temperatures from 1.5 K to 475 K, vertical or horizontal magnet fields, up to 6 manipulated probe arms, and up to 4-inch wafer probe capabilities. The HMS feature fields to 9 T, temperatures from 2 K to 800 K, up to 6-inch wafers, or accommodation of 4 samples. Measurements including resistance, I-V curves, Hall coefficient, mobility, and carrier concentration can be made on compound semiconductors, semi-insulators, and heterostructures. Quantitative Mobility Spectrum Analysis (QMSA<sup>®</sup>) software resolves individual carrier mobilities and densities in multi-carrier devices such as quantum wells and HEMTs.

## MCP METALSPECIALTIES, INC.

mcp-metspec@juno.com  
www.mcp-metspec.thomasregister.com

**Key Products:** High Purity Ga and In; CIGS Raw Materials; Metal Oxides

Worldwide leaders in Minor Metals including: Bismuth, Gallium, Germanium, Indium, Selenium, Tellurium. Material is available in commercial and high purity (99.999-99.99999%) grades, and manufactured to customer specification (ingot, shot and powder form). We produce CIGS raw materials, metal alloys and metal oxides in our ISO approved plants.

## MDC VACUUM PRODUCTS, LLC/INSULATOR SEAL

sales@mdcvacuum.com  
www.mdcvacuum.com

MDC and ISI stock thousands of off-the-shelf components and provide the widest product range of high and ultrahigh vacuum components in the industry. Both product lines are detailed in our catalogs and on our technically based



## 2007 MRS SPRING EXHIBITORS

websites. MDC products consist of flanges, fittings, valves, roughing hardware, vacuum gauge tubes, motion and manipulation instruments, thin film electron-beam evaporation systems, and surface science chambers. ISI products include Multi-pin, Low/high current power, Coaxial, liquid, Thermocouple and RF Feedthroughs, Optical viewports and Vacuum breaks and envelopes. MDC and ISI are ISO 9001:2000 registered companies.

### MMR TECHNOLOGIES, INC.

sales@mmr.com  
www.mmr.com

See ad in this issue

**Key Products:** Low Temperature Microprobe System; Hall Effect Measurement System; Seebeck Effect Measurement Systems

MMR Technologies manufactures temperature controlled systems—cryogenic cooling systems and wide temperature range thermal stages—which find application in materials research in chemistry, biology, electrical engineering, and physics. These systems operate over the temperature range of 10 K to 730 K. They are used for electrical resistivity, Hall effect, Seebeck effect, DLTS, MEMS, magnetoresistivity, and luminescence studies. They are also used in medical applications and the cooling and characterization of computer chips, electronic devices, laser diodes and thermal imaging devices as a function of temperature.

### MRK International, LLC

info@mrkus.com  
www.mrkus.com

**Key Products:** Ozone Generator; Vacuum-Break Filter; Valqua O-Rings

MRK International, LLC is committed to providing the highest quality in consulting, marketing and sales. Our services are available to small, medium or large high-tech global corporations that are looking to expand and/or develop new markets in the U.S.A. and abroad in Semiconductor, Flat Panel Display, Optoelectronics, MEMS, Nanotechnology, Pharmaceutical, Information Technology and Medical Equipment industry segments. As a consulting company, MRK provides a broad spectrum of services such as: marketing research, strategic business planning, sales and marketing, product promotion, distribution channels, manufacturers' reps and day-to-day sales activities for customized accounts.

### MTI CORPORATION

info@mticrystal.com  
www.mticrystal.com

MRS Corporate  
Affiliate

**Key Products:** Single Crystal Substrates; Nanopowders; Material Processing Machine

Our primary products are high quality single crystals of oxides, compound semiconductors and advanced optical materials as well as nanopowders that are produced by an innovative process of laser decomposition. We also manufacture crystal cutting and polishing equipments as well as consumable tools such as vacuum pens, crystal packing boxes, etc. Tailoring to customers' special requirements and very competitive pricing are our strengths.

### MTS NANO INSTRUMENTS

nano@mts.com  
www.mtsnano.com

MRS Corporate  
Affiliate

**Key Products:** Nano Indenter G200; Nano UTM Universal Testing System; TestWorks 4 Software

MTS Nano Instruments designs, engineers and manufactures instrumentation and software used to determine mechanical behavior of nano-scale materials and structures. Our Nano Indenter® systems, as well as our Nano UTM™ universal testing systems, offer the most accurate and robust means of characterizing nanomechanical behavior. Stop by our booth to experience a demonstration of the new Nano Indenter G200 system or ask about our Nano Vision™ nanomechanical microscopy option—for truly quantitative imaging that supports your studies of material properties. Visit our booth for more information on how nanomechanical testing solutions from MTS can support your materials research initiatives.

### NANOANDMORE USA INC.

usa@nanoandmore.com  
www.nanoandmore.com

**Key Products:** AFM Probes; Digital Holographic Microscope; Particle Analyzer  
NanoAndMore USA, Inc. (www.nanoandmore.com) is a nanotechnology distributor with a product line that includes SPM probes from NanoWorld™, NANOSENSORS™ and Budget Sensors™, plus accessories such as Image Metrology SPIP software,

Minus K mechanical vibration isolation products and Acoustic Nanoworks isolation chambers. We supply most of the AFM manufacturers so buy from us direct and avoid the markup. We stock most probes and can ship overnight. We can be reached at 877-521-1108 (toll free) or mcmurtry@nanoandmore.com.

### NANOINK, INC.

info@nanoink.net  
www.nanoink.net

**Key Products:** NSCRIPTOR™ DPN® System; 2D nano PrintArrays; Active Pen Arrays™

NanoInk, Inc. is an emerging growth technology company specializing in nanometer-scale manufacturing and applications development for the life science and semiconductor industries. With Dip Pen Nanolithography® (DPN®), a patented and proprietary nanofabrication technology that allows for unmatched flexibility, accuracy and also its high-resolution Nanoencryption™ technology, NanoInk is able to offer its pharmaceutical customers innovative solutions to fight counterfeiting and illegal diversion of blockbuster pharmaceutical products. Other key applications include nanoscale additive repair, and nanoscale rapid prototyping.

### NANONICS IMAGING LTD.

info@nanonics.co.il  
www.nanonics.co.il

**Key Products:** NSOM; AFM; SPM; Raman

Ultimate resolution AFM/NSOM/SPM systems including the first multi-probe SPM system. Hallmarked by transparent optical and electron/ion beam integration including microRaman, confocal, SEMs, TEMs, FIBs, 10°K operation. Optically transparent AFM probes surpassing nanotube profiling/deep trench capabilities, multiwire electrical, Nanoheater™ thermal conductivity, electrochemical, AFM-controlled gas and liquid nanochemical deposition.

### NATIONAL ELECTROSTATICS CORP.

nec@pelletron.com  
www.pelletron.com

MRS Corporate  
Affiliate

**Key Products:** Pelletron Accelerator; Accelerator Mass Spectrometry; RBS/PIXE

National Electrostatics Corp. is the manufacturer of multimillion volt ion and electron beam systems. Dedicated systems for RBS, PIXE, and NRA analysis are available along with dedicated Accelerator Mass Spectrometry (AMS) systems for archeology, geology, and drug development. Also available is a full line of ion beam handling and diagnostic components including positive and negative ion sources.

### NEOCERA, LLC

sales@neocera.com  
www.neocera.com

**Key Products:** Pulsed-Laser Deposition; Pulsed Electron Deposition

Neocera creates, develops, and promotes advanced thin film materials and deposition techniques. Founded in 1989 to commercialize technical expertise in cutting-edge materials, Neocera is now a world leader in the manufacture, application, and support of Pulsed Laser Deposition (PLD) and Pulsed Electron Deposition (PED) systems for research and production applications. Neocera also offers complex oxide thin films on a foundry basis.

### NIST

www.nist.gov/srm

MRS Corporate  
Affiliate

**Key Products:** Standard Reference Materials; Data and Calibration Services

NIST Standard Reference Materials supports accurate/compatible measurements by certifying and providing over 1100 SRMs with well-characterized composition or properties, or both. SRMs are used to perform instrument calibrations as part of quality assurance, accuracy of specific measurements and support new measurement methods. Standard Reference Data provides well-documented numeric data to scientists and engineers for use in technical problem-solving, research, and development. The Calibration Services are designed to help in achieving high levels of measurements.

### NOR-CAL PRODUCTS, INC.

nccsales@n-c.com  
www.n-c.com

**Key Products:** Custom Vacuum Chambers and Components; Valves and Traps; Flanges and Fittings

Since 1962, Nor-Cal Products, Inc. has manufactured high and ultra-high vacuum

components for many applications. Nor-Cal has earned a reputation worldwide for quality components, competitive prices and excellent customer service and is now ISO 9000-2001 registered. Standard products include: flanges; fittings, viewports, feedthroughs and flexible hoses; crystal monitors, manual and pneumatic valves; pressure control valves and controllers; heater jackets; foreline traps; and manipulators. Custom chambers, manifolds, feedthrough collars and baseplates can be manufactured from customer specifications, sketches or drawings. Entire systems can be supplied. Our extensive 3D Model Library is available on-line. Visit our website at [www.n-c.com](http://www.n-c.com) for more information.

## OMICRON NANOTECHNOLOGY USA

[info@omicronus.com](mailto:info@omicronus.com)  
[www.omicron-instruments.com](http://www.omicron-instruments.com)



**Key Products:** UHV SPM; Surface Science Instrumentation; MBE

Omicron NanoTechnology is the premier supplier of UHV systems and instruments for surface analytical and nanoscience-related research. From our award-winning variable temperature AFM/STM instruments to our family of multiprobe UHV systems for multi-technique surface science research, Omicron is continuously striving to develop new tools with increased performance for UHV microscopy and spectroscopy research. At this year's meeting we will be showing results from the Omicron Low Temperature with qPlus sensor. Also, new results from the UHV NanoProbe will be displayed.

## PACIFIC NANOTECHNOLOGY, INC.

[sales@pacificnano.com](mailto:sales@pacificnano.com)  
[www.pacificnano.com](http://www.pacificnano.com)

*See ad in this issue*

**Key Products:** Atomic Force Microscopes

Pacific Nanotechnology offers Atomic Force Microscopes (AFM) for research, product development, and process control applications. Each of the Pacific Nanotechnology AFM products offers high performance, is easy-to-use and is versatile. The latest product added to the product line, the NanoR™ Crystal, sets a new standard in AFM instrumentation.

## PANALYTICAL INC.

[amec.info@panalytical.com](mailto:amec.info@panalytical.com)  
[www.panalytical.com](http://www.panalytical.com)

**Key Products:** X-ray Diffraction; X-ray Fluorescence

PANalytical Inc. is the leading world supplier of analytical X-ray instrumentation and software for elemental analysis, phase characterization and small angle scattering. PANalytical has been providing X-ray instrumentation for over 50 years to nano-material, pharmaceutical, and materials research and process control applications. Our X-ray diffraction products are designed and engineered to supply our customers with solutions to solve complex problems such as thin film characterization; e.g., epitaxial, reflectivity and diffuse scattering, and determination of bulk material properties using the most advanced software algorithms for data collection, phase and structure determination. Additionally, our X-ray spectrometry systems provide elemental analysis for semiconductor and process control applications. Finally, our commitment to providing a customer based solution is exemplified by the largest and most dedicated customer support group in the X-ray business.

## TED PELLA, INC.

[sales@tedpella.com](mailto:sales@tedpella.com)  
[www.tedpella.com](http://www.tedpella.com)

**Key Products:** Vacuum Coaters; Calibration; Sample Preparation Supplies/Accessories

Ted Pella, Inc. offers a full range of compact versatile bench top vacuum coaters for thin film research and electron microscopy applications which can be equipped with high resolution thickness monitors and multi-angle rotary stages. New products are a full line of vacuum pumps and parts for research applications and small scale production. On display will also be a large selection of supplies, consumables, tools and sample preparation equipment for SEM, TEM, AFM, Raman light microscopy and nanotechnology.

## PHYSICAL ELECTRONICS

[sales@phi.com](mailto:sales@phi.com)  
[www.phi.com](http://www.phi.com)

**Key Products:** Scanning Auger; SIMS; XPS

Physical Electronics (PHI) is a wholly owned subsidiary of ULVAC-PHI and has partnered with the ULVAC Corporation since 1971 as the world's leading supplier

of surface analysis instrumentation. Together we design, manufacture and service surface analysis instruments that are used to accelerate the development of advanced materials for a broad range of high tech applications. Our product line includes: the PHI 700 Scanning Auger Nanoprobe, the Quanterra Scanning Probe XPS, the TRIFT-IV Time-of-Flight SIMS and the ADEPT-1010 dynamic SIMS. For additional information visit our website at [www.phi.com](http://www.phi.com).

## PLASMATERIALS, INC.

[info@plasmaterials.com](mailto:info@plasmaterials.com)  
[www.plasmaterials.com](http://www.plasmaterials.com)

**Key Products:** Sputtering Target; Backing Plates; Evaporation Material

Plasmaterials, Inc. provides high purity Physical Vapor Deposition (PVD) materials in nearly every element, alloy, composition and component available on the periodic table. Products include sputtering targets, backing plates and other segments of the materials market including evaporation material, crucible liners and electron beam starter sources. In addition to backing plates, we also provide metallic bonding services. The bonding process utilizes a proprietary process for affixing the target directly to the backing plate using low vapor pressure materials. These bonding materials provide the necessary mechanical strength, thermal and electrical conductivity while allowing differential expansion between the target and the backing plate. Backing plates for nearly all commercial available systems are usually in stock for immediate delivery. Customer designed backing plates can usually be provided within a short period of time. A full service company, Plasmaterials, Inc. can provide all of your deposition materials needs.

## PVD PRODUCTS, INC.

[sales@pvdproducts.com](mailto:sales@pvdproducts.com)  
[www.pvdproducts.com](http://www.pvdproducts.com)

**Key Products:** Sputtering Systems and Sources; Pulsed Laser Deposition Systems; Evaporation Systems

PVD Products sells a complete line of thin film deposition tools including magnetron sputtering, pulsed laser deposition, thermal and electron beam evaporation systems for both R&D and prototype production applications. We manufacture custom components such as magnetron sputter sources, substrate heaters, target manipulators, and optical trains and unique components for coated-conductor applications. PVD also provides thin film deposition, SEM, and EDS services.

## RENISHAW INC.

[usa@renishaw.com](mailto:usa@renishaw.com)  
[www.renishaw.com](http://www.renishaw.com)



Get chemical/molecular information from your SEM using the power of Raman spectroscopy. Renishaw Raman Microscopes provide chemical information confocally at sub-micron spatial resolution with auto-alignment, internal calibration and performance validation. Renishaw Raman spectrometers are configurable to include multiple excitation sources from the UV through NIR with automated laser switching and alignment, quick-launch fiber-optic probes, AFM/NSOM/Raman, SEM-Raman, PL, hot/cold cells, macro-sampling, global Raman imaging, near excitation analysis, 2D/3D mapping and depth-profiling.

## RHK TECHNOLOGY, INC.

[info@rhk-tech.com](mailto:info@rhk-tech.com)  
[www.rhk-tech.com](http://www.rhk-tech.com)



**Key Products:** SPM Universal Controls; UHV STM; UHV AFM/STM

Imaging the Future of Nanoscience: RHK is the chosen company for fundamental science at the atomic scale. Our UHV STM, AFM, 4-Probe systems, controllers, and electronics are engineered for the advanced researcher but comfortably systemized for the first-time buyer. To choose RHK means to experience peak performance, scalability, compatibility, and value. Celebrating 20 years of commitment to customer and quality, we partner with the researcher to support our products over a lifetime of experimental success.

## SONO PLOT, LLC

[info@sonoplot.com](mailto:info@sonoplot.com)  
[www.sonoplot.com](http://www.sonoplot.com)

**Key Products:** Ultrasonic Fluid Dispensers; Plasma-based Surface Treatment; Electronic Surface Calibration

SonoPlot designs and sells picoliter-scale ultrasonic fluid dispensing systems, ultrasonic surface height calibration sensors, and chemically functionalized substrates. SonoPlot's products are aimed at applications such as biological

microarrays, polymer-based and printable electronics, embedded passive components, and semiconductor packaging.

## **SOUTH BAY TECHNOLOGY, INC.**

**info@southbaytech.com**  
**www.southbaytech.com**

**Key Products:** Wire Saws; Lapping Machines; Low-speed Saws

South Bay Technology, Inc. manufactures materials processing equipment for applications in electron microscopy, optical microscopy, metallography, microelectronics and single crystal processing. Products include wire saws and diamond wheel saws for precision cutting; lapping and polishing machines and fixturing for controlled surface preparation; 2- and 3-axis goniometers for orientation, cutting and polishing of single crystals; ion milling, dimpling, disc cutting and plasma cleaning systems for TEM sample preparation; ion beam sputter deposition and etching systems to prepare fine grain thin films for high resolution imaging using FESEM; plasma etching, reactive ion etching (RIE) and backside polishing systems for microelectronic processing; and high precision polishing systems for nanotechnology applications. The SampleSaver™ is a new product being introduced for the transport and storage of oxygen sensitive samples in an inert environment.

## **SPECS SCIENTIFIC INSTRUMENTS, INC.**

**support@specs.com**  
**www.specs.com**

**Key Products:** LEEM; OLED; MBE; XPS; STM; Atom Probe; SIMS; EELS; Auger

Bio and Nano Technology, NanoAnalysis, NanoManipulation, NanoSpectroscopy, NanoMotion, Digital Robotics, GC/MS LC/MS, Surface Analysis Instruments and Materials Deposition Equipment for XPS, STM, AFM, LT-STM, MBE, CVD, ALD, OLED, PLD, 3D Laser Atom Probe, LEED, EELS, UPS, Auger, ESCA, SIMS, SNMS, PEEM, LEEM, KELVIN-Probe, RHEED, E-Beam Evaporation, Effusion Cells, Plasma Atom/Ion Sources, Magnetron Sputter Deposition, Bio-Organic Injectors, Beamlines, Monochromators, and Synchrotron Equipment.

## **SPECS USA CORP.**

**specsusa@specs.de**  
**www.specsinstruments.com**

**Key Products:** Electron Spectrometers; STM; MBE Equipment

SPECS is a leading manufacturer of components and systems for Surface Analysis, with a focus on spectroscopic methods like XPS, UPS, AES, SIMS, SNMS, LEED, and HREELS. Offering a variety of sources for deposition, sample preparation and analysis in UHV, as well as analyzers, monochromators and microscopes like LEEM, STM and LT-STM, SPECS is a worldwide supplier for research. SPECS is dedicated to customized solutions and integrated systems combining thin film preparation (MBE) with spectroscopic and microscopic analysis.

## **SPI SUPPLIES**

**Division of Structure Probe, Inc.**  
**mrs@2spi.com**  
**www.2spi.com**

**Key Products:** Electron Microscopy Supplies; AFM Probe Tips; Sputter Coaters

SPI Supplies will be featuring its newest products including the OPC Osmium Plasma Coater for "zero grain size" coating, Plasma Prep™ X parallel plate (anisotropic) plasma etcher (for no undercutting), MACO® TEM film, and the Secador® automatically regenerating desiccant module for sample storage. Also on display will be the popular line of SPI Module™ SEM/EDS coaters and the Plasma Prep™ II plasma etcher. Visit [www.2spi.com](http://www.2spi.com) to learn more about these innovative new products or to place an order using the on-line shopping cart.

## **SPRINGER**

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**Key Products:** Books; Journals; Periodicals

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## **STAIB INSTRUMENTS, INC.**

**staib-us@staibinstruments.com**  
**www.staibinstruments.com**

MRS Corporate  
Affiliate

**Key Products:** RHEED; Spectrometers; Surface Analysis

STAIB designs and manufactures innovative, high performance, reliable instruments for *in-situ* material analysis and Multi-technique Surface Analysis Chambers, including: a full range of Electron Guns for analytical surface studies (flood, microfocus, general purpose, low energy); RHEED systems (new in CVD-PLD-PVD environments) to study structure and quality of thin films; CMA energy spectrometers (Auger, SAM, XPS, and UPS) for analytical surface studies; SEM using our micro-focus guns; Photo-Electron Emission Microscopes (PEEM) for dynamic studies of chemical distributions; ESCA; and X-ray Sources.

## **SVT ASSOCIATES, INC.**

**sales@svta.com**  
**www.svta.com**

MRS Corporate  
Affiliate

**Key Products:** MBE, PECVD, RIE, Ellipsometer, Ozone, RF Plasma, Effusion Cells

SVT Associates offers a full range of thin film deposition and materials processing equipment for MBE, PVD, PECVD and RIE. In addition we offer *in situ* process monitoring and metrology systems for temperature, growth rate, curvature, flux measurement and ellipsometers. Our products come with guaranteed material specifications for organic and compound semiconductors. We manufacture deposition components including RF plasma sources, electron beam evaporators, effusion cells, OLED sources and Ozone delivery system. Call for our Epi-Wafer service.

## **THERMIONICS VACUUM PRODUCTS**

**sales@thermionicscorp.com**  
**www.thermionics.com**

**Key Products:** Sample Handling; Thin Film Deposition Equipment; Valves

Manufactures vacuum components, systems and accessories for production and research applications including: our new continuous rotation LN<sub>2</sub> and LHe cooled gearboxes; our PSC-600 programmable sweep controller with DeviceNet; our HMS specialized leak detector; our RC series of 3kW e-Guns™; HC series e-Guns™ with dual filament capability for demanding production coating applications; PyraFlat™ rectangular flanges and waveguides; TriBond™ bi-metallic flanges and fittings; gate and poppet valves; sample handling and transfer systems; ion pumps; maTChed™ thermocouple gauges; mechanical, electrical and fluid feedthroughs; and materials and surface science systems.

## **TMS (The Minerals, Metals & Materials Society)**

**www.tms.org**

**Key Products:** Membership; Meetings; Publications

The Minerals, Metals & Materials Society (TMS) is the professional organization advancing the global science and engineering community. The Society's work encompasses the entire range of materials science and engineering, from primary metals production to the advanced applications of materials. TMS provides networking opportunities and technical interchange through meetings, such as the TMS Annual Meeting, Electronic Materials Conference, Materials Science and Technology (MS&T), and Commercialization of NanoMaterials; continuing education; publications; and the Web, featuring Materials Technology@TMS. Visit [www.tms.org](http://www.tms.org).

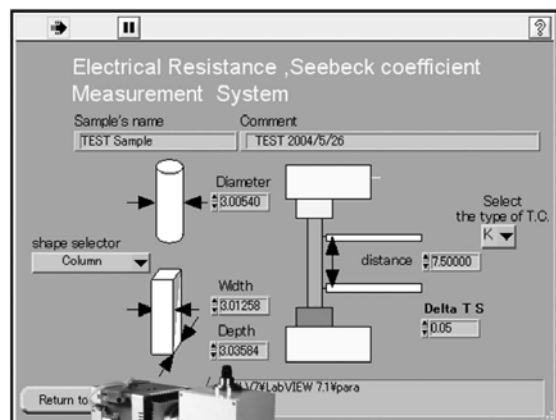
## **TRANSFER ENGINEERING & MANUFACTURING, INC.**

**team@transferengineering.com**  
**www.transferengineering.com**

**Key Products:** Wafer Transfer Systems, HV/UHV Magnetic Transporters; Loadlocks

Transfer Engineering provides innovative products for OEM, production and R&D customers in semiconductor, media, sputter deposition and R&D markets. Core expertise is in handling, transporting, positioning, and manipulation of samples, semiconductor wafers, substrates, flat panels, and other materials in HV, UHV and other controlled environments. Product lines include transfer arms, sample transfer and loadlock systems including MASCOt, TEAM-Mate and CAROUSEL MESC-compatible wafer transport systems, heating/cooling assemblies and motion and placement systems.

## Measure the Thermoelectric Effect with the Seebeck Coefficient Measuring System



Take advantage of how easy it is to measure the thermoelectric effect with the ZEM-2 from ULVAC.

It automatically measures both the Seebeck Coefficient and resistance of bulk samples, thin sheet or thin film deposited thermoelectric materials.

The bench top, computer-controlled ZEM-2 features:

- Fully automatic operation
- Operating range from -80 to 1,000°C
- Easy sample loading and pumpdown

Just enter your sample geometry, experimental parameters and data reporting preferences and the ZEM-2 does the rest. For the best in productivity and accuracy, choose the ZEM-2 system.

**With ZEM-2 –  
Just run the samples!**

**ULVAC**

ULVAC Technologies, Inc  
Methuen, MA 01844  
Phone: 978-686-7550  
www.ulvac.com  
sales@ulvac.com

**VARIAN, INC.**  
customer.service@varianinc.com  
www.varianinc.com

**Key Products:** Spectroscopy; NMR; Vacuum and Leak Detectors

Varian, Inc. is a world leader in providing total vacuum solutions. Product offerings include primary, high and ultra-high vacuum pumps, vacuum gauges, valves and fittings, and leak detectors for all applications. Varian offers unique expertise in applications, support, and system design to integrate these superior components into optimized vacuum solutions.

**VEECO INSTRUMENTS INC.**  
info@veeco.com  
www.veeco.com

MRS Corporate  
Affiliate

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**Key Products:** Atomic Force Microscopes; Optical Profilers; Epitaxial Equipment

Veeco is the world's leading supplier of equipment solutions for materials research. It is the only company offering both MBE and MOCVD technologies for the research, development and production of compound semiconductor devices. Veeco's complementary thin-film technologies and metrology tools make it the industry's most complete one-stop equipment supplier. Veeco will highlight the new GEN20 MBE System, automated and manual configurations, for R&D and pilot-production and newly released component product solutions.

**WITEC INSTRUMENTS CORP.**  
info@witec-instruments.com  
www.witec-instruments.com

**Key Products:** Confocal Raman Microscopes; AFM; NSOM

WITec is a manufacturer of high-resolution optical and scanning probe microscopy solutions for scientific and industrial applications. A modular product line allows the combination of different microscopy techniques such as Raman, NSOM or AFM in one single instrument for flexible analyses of optical, chemical and structural properties of a sample. WITec headquarters and production facilities are based in Ulm, Germany. WITec's US sales office, WITec Instruments Corp., is located in Savoy, IL.

**WYATT TECHNOLOGY CORPORATION**  
info@wyatt.com  
www.wyatt.com

**Key Products:** Light Scattering Instruments; Refractive Index Detectors; Particle Separators

DAWN and miniDAWN multi-angle static light scattering (MALS) instruments for determining absolute molar masses and sizes of polymers and biopolymers. These detectors interface with GPC/SEC/FFF/HPLC for characterizing molecular weights and sub-micrometer particle sizes without column calibration or reference standards. DynaPro line (Dynamic Light Scattering (DLS)) for analysis of protein solutions or the Dynapro Platereader for high throughput DLS measurements. Optilab rEX, RI detector with EXTended range capabilities and no gain settings, as well as the ViscoStar differential viscometer.

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**Key Products:** Anti-contamination Systems

XEI was founded in 1991 to make and sell anticontamination systems for the Electron Microscope community. The EVACTRON Anticontaminator, an RF plasma activated cleaning system, was introduced in 1999 to provide a faster and more complete cleaning process. XEI Scientific solves hydrocarbon contamination problems in Electron Microscopes and other high vacuum systems by RF plasma (glow discharge) cleaning with EVACTRON® plasma activated oxidation using air as the oxygen source. The Evactron® anticontamination system produces oxygen radicals for a fast, chemically reactive, oil and hydrocarbon removal process that is safe for most surfaces. Over 200 Evactron Anticontaminators have been installed worldwide.