

NEW AND/OR INTERESTING AT MICROSCOPY AND MICROANALYSIS 2000

In the following, as is our custom and for the hopeful interest of our readers who could not attend M&M 2000 recently in Philadelphia, we have attempted to summarize what was presented that was "new" and/or "interesting."

★ **4pi Analysis** demonstrated its high-performance EDS/Imaging system for light-element detection, high-resolution digital imaging, and x-ray & WDS map collection. The system includes a new digital pulse processor for high-throughput count rates. With 4pi Revolution for Windows and Macintosh, the company takes a unique approach to EDS software-qualitative analysis is available without quantitative analysis. Many users need to determine only what elements are present in a sample, not how much of an element is present. Those users can have a multi-featured software package with full-color x-ray mapping and peak ID without paying for quantitative analysis. If quantitative analysis is required at a later date, the software is simply upgraded. 4pi offers EDS and imaging systems and upgrades that provide superior performance and ease of use. 4pi Analysis, Inc.: (919)489-1757, sales@4pi.com, www.4pi.com.

★ **Advanced MicroBeam, Inc.** demonstrated the latest version of Probe for Windows-32 software, a complete acquisition, automation, and analytical package for WDS quantitative microanalysis, designed to be used on a wide variety of instruments including JEOL, CAMECA and ARL. Many new, leading-edge features were demonstrated, such as automated multiple sample and column conditions, improved volatile element correction, new image and random cluster coordinate digitization, live Excel linking, enhanced off-peak background correction options, and a graphical background modeling module. New imaging software was introduced. CalcImage is a fully quantitative imaging application that combines on- and off-peak images from MicroImage-32 (or another image source) and standardization intensities from Probe for Windows-32 to produce detailed and accurate quantitative images. Remove[®] is an Active-X application that provides an OLE interface for the microprobe that allows users to easily write Excel macros to control and automate the microprobe for special applications. Advanced MicroBeam, Inc.: (330)394-1255, dlesher@advancedmicrobeam.com, www.advancedmicrobeam.com

★ **Advanced Microscopy Techniques Corp.** introduced the first and only 2K side-mounted CCD Camera for TEMs. AMT was very pleased to demonstrate the integration of their camera system on Hitachi's H7600 which features Au to-Focusing. The new integration on the Tecnai 12 was also exhibited and demonstration. Advanced Microscopy Techniques: (978)774-5550, info@amtimaging.com, www.msa.microscopy.com/~amt/

★ **Allied High Tech Products, Inc.** introduced a new technique of preparing multiple FIB samples simultaneously on their MultiPrep[™] System. By being able to perform this technique on the MultiPrep, companies can save thousands of dollars in the cost of cleaving and dicing tools (the MultiPrep retails for less than \$13k). Allied also unveiled Micro-Vision[™], its state-of-the-art imaging/archiving software program which performs on-screen sample measurements and generates reports using Microsoft Word and Excel. Allied High Tech Products: (800)675-1118, info@alliedhightech.com, www.alliedhightech.com

★ **Ambios Technology, Inc.** of Santa Cruz, CA introduced their new XP series of high resolution stylus surface profilers. With an ability to measure precision step heights as small as 10 angstroms and as large as 265 microns, the XP series of profil-

ers provides more than five orders of magnitude of precision Z height measurement. The profilers incorporate a new optical deflection height measurement mechanism and magnetostatic force control system which results in a low force (loads as small as .05 mg) and low inertia stylus assembly. These innovations combine to produce a surface profiler capable of measuring soft films and substrates without surface damage. Starting at \$28,600, the XP series of profilers provides an affordable, high resolution step height measurement capability that nicely complements other analytical instruments. Ambios Technology, Inc.: (831) 429-4200, patrick@ambiostech.com, www.ambiostech

★ **ASPEX[™] Instruments** presented two new systems:

The AMT (Automated Microanalysis Tool) establishes new benchmarks for performance, productivity and simplicity. Designed to seamlessly provide the full gamut of micrographic imaging and elemental analysis capabilities with minimal operator input, the AMT can be utilized for automated general material characterization or customized for specific applications.

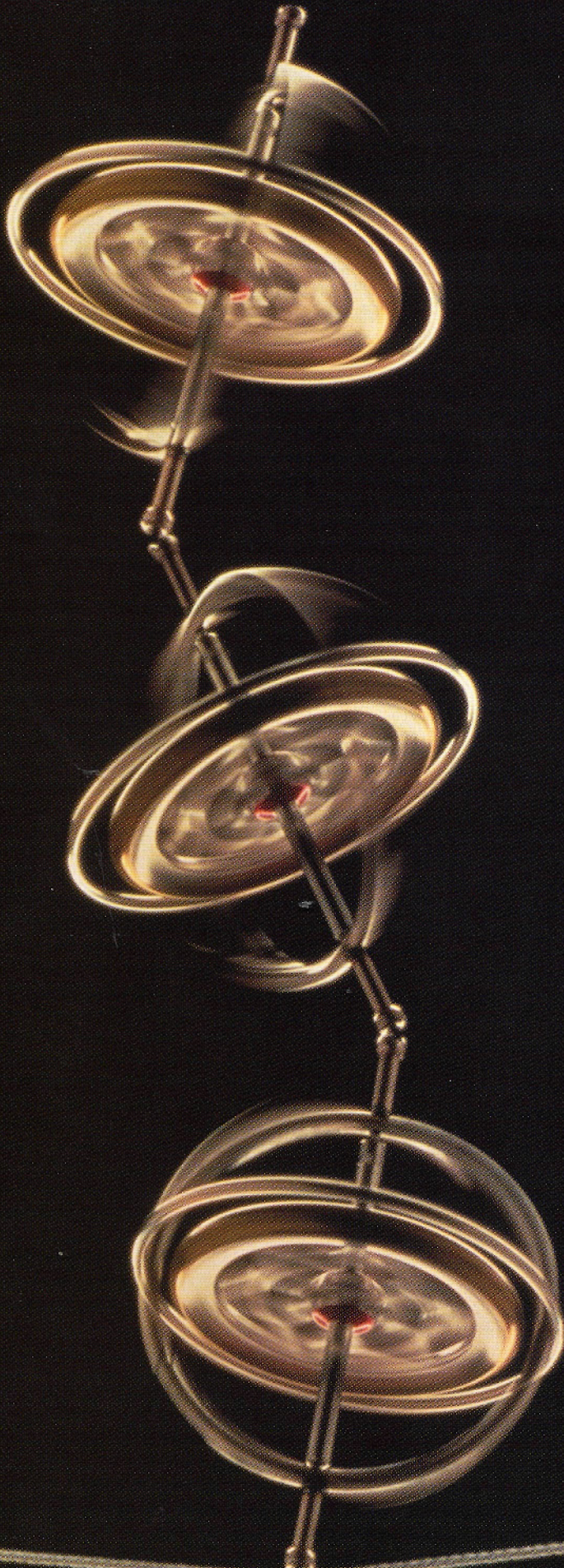
The MT (Microanalysis Tool) offers the same analytical capabilities for micrographic imaging and elemental analysis as the AMT, but allows operators more hands on control of the microanalysis process. This provides more versatility for a broader range of microanalysis. And, although the microanalysis processes for specific applications are not fully automated, the MT offers substantial automated features to enhance ease-of-use and productivity.

ASPEX Instruments: (724)744-0100, sales@ASPEXLLC.com, www.ASPEXLLC.com

★ **CamScan USA** demonstrated two SEMs in their booth. The various options and configurations available between the two microscopes (price and specifications) met most SEM needs in today's modern R&D, failure analysis and QC applications. The CamScan MX2500 SEM is suitable for customers who need a large chamber/stage configuration capable of handling heavy samples up to 10 KG while retaining optimum geometry for simultaneous analysis by EDX, WDX and EBSP. The MX2500 is a UNIX based computer controlled instrument. The MX2500 is available in W, LaB6 or TFE gun options. For customers preferring Windows[™] PC controlled SEMs, the Tescan VEGA series drew considerable attention. This newly announced microscope features a unique 4-lens column and 6-axis eucentric stage. The VEGA SEMs are available in standard, mid-size or large chamber configurations plus optional VP or environmental operating modes. To overcome the problems associated with high sample tilts (typically 70^o), necessary for EBSP, the X500 has a fixed 70^o tilted column allowing the sample to be mounted horizontally. CamScan USA Inc.: (724) 772-7433, info@camscan-usa.com,

★ **Cressington Scientific** displayed its newest version of the 308 coater, the 308EM, a system dedicated to electron microscope sample preparation with flexibility and convenience as key characteristics. This bench-top turbo pumped coating system has a 13" (300 mm) diameter baseplate and can be arranged for multi-user or single custom use applications. Sample chamber configuration can be by simple 12" diameter

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Getting All Your Detectors Working Together Can Be A Tough Balancing Act.

That's Where Emispec Comes In.

If balancing all components of your detectors has your head spinning, you should be talking to us.

You see, at Emispec Systems, Inc., we approach data acquisition differently. Instead of creating systems targeting one detector, we focus on integration. This concept can be applied equally to new and existing electron microscope installations. Core acquisition capabilities of our products include:

- **Digital scanning** for STEM.
- **Digital EDX** acquisition and analysis.
- **EELS** acquisition and analysis.
- **CCD** and **TV** imaging.

Integrated microscope control, imaging and spectroscopy allows automation of demanding experiments, such as **spectrum imaging**. Emispec enhances these capabilities with extensive on-line and off-line processing.

To find out how Emispec can help your lab keep in balance, visit our Web site today at **www.emispec.com**. See why we are fast becoming the leader in microscope detector technology solutions.

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2409 South Rural Road, Suite D
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thinking beyond the box™

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bell jar or customized chamber. A unique feature of this system is the vacuum feedthrough method. Instead of inserting devices up through small holes in a baseplate, a 4 to 6 inch high stainless steel collar with a series of standard sized KF and ISO ports welded into it is used. This enables multiple sources and/or devices of different types (hot or cold stage, residual gas analyzers, etc.) to easily be mounted in the chamber simultaneously while still providing easy access to change or service them. Deposition sources available are sputter heads and thermal evaporation of metals and carbon rod. Cressington Scientific Instruments: (724)772-0220, sales@cressington.com, www.cressington.com

★ **Delaware Diamond Knives (DDK)** places sharp, fine edges on hard materials, such as diamond, sapphire and tungsten carbide. Show attendees were particularly interested in DDK's Histo knife, which is known for its longevity and has been effective for sections with thickness between 1/2 and 10 microns. This knife, with a purchase price at about 50% less than a thin sectioning diamond knife, has been effective for material science as well as light microscopy applications. Additionally, visitors to the booth valued the company's selection of knives for cryo applications, which included diamond knives with stainless boats for both wet and dry approaches as well as steel and tungsten carbide cutting tools. The new triangular tungsten carbide knife is a highly productive replacement for glass as a trimming tool or in GMA/JB4 plastic applications. The DDK sapphire knife has become the industry's choice for vibrating microtome sectioning. Delaware Diamond Knives: (800)222-5143, services@ddk.com, www.ddk.com

★ **Diatome U.S.** had on display their new patented revolutionary Cryo-P knife with a section pick up platform which makes section retrieval easier. The new surface provides an area of high visibility for sections normally difficult to see. As well, on display was Diatomes' 35 and 45 degree cryo and room temperature Diamond knives for thick and thin sectioning as well as Diamond trimming tools. Diatome U.S.: (800)523-5874, sgkckk@aol.com, www.emsdiasum.com

★ **Dolan-Jenner Industries** introduced its new Fiber-Lite® MI-150R microscopy illuminator with remote capability. The unit can be tucked into a drawer or on a shelf away from the microscope, freeing up bench space, but also virtually eliminating vibration and noise for critical applications. Using a twelve foot or seven foot cord, users can adjust the 0 – 100% intensity control as well as on/off operation. The MI-150R is the same MI-150 illuminator introduced by the company in 1999. Also featured at the show was Dolan-Jenner's revised Web site which offers "click and go" ordering. Dolan-Jenner Industries: (800) 833=237, sales@dolan-jenner.com, www.dolan-jenner.com

★ **EASTMAN KODAK, Scientific Imaging Systems** introduced the MDS 290, a 2.1 mega-pixel CCD imaging system for optical microscopy imaging. Costing thousands less than competitive solutions, the MDS 290 has been designed to make capturing photo-quality digital images of your specimens fast, easy, and economical—effectively eliminating the cost of instant film and the guesswork of 35 mm film. And now, you can access, adjust, print, publish, or share your image files instantly from your Mac or PC. Off the microscope, the DC 290's built in macro/telephoto capabilities, along with its standard tripod mount and optional close-up lenses and filters provide a one-system solution to a variety of imaging needs. With its USB connection, the MDS 290 has been designed specifically for capturing photo-quality images (up to 8" x 10") of

your brightfield, darkfield, and bright fluorescence microscopy specimens. Eastman Kodak Co., Scientific Imaging Systems: (203)786-5657, sis-support@kodak.com, www.kodak.com/go/

★ **EDAX Inc.** presented a full line of analytical systems including: the Phoenix which featured the most advanced energy-dispersive x-ray analyzer system and the Falcon which offers automatic peak identification and deconvolution with the various data reduction routines for quantification. Grain orientation and phase identification is carried out with the TSL product line using electron backscatter diffraction. Grain mapping and grain size analysis combined with automatic spot pattern indexing in the TEM for nanocrystalline thin films are also provided by TSL. EDAX Inc.: (201)529-3156, info@edax.com, www.edax.com

★ **E. Fjeld Co., Inc.** displayed a series of new products including a HITACHI and LEO FE-SEM specimen stage, a sub-micron motorized control electronics and a stage drive software package. This leading edge drive technology enables stages to translate at ultra high magnifications (1,000,000x) in a smooth, continuous motion similar to the electronic image shift of the FE-SEM tool. The software drives the stage axes, stores coordinates and archives site locations. Semiconductor OEM wafer stages are available. A new family of vacuum airlocks was also introduced. The airlocks include a 4" motorized, an 8" pneumatic and a semi-automatic 8" loading system. These OEM subsystems incorporate a "turnkey" package of hardware, electronics and software for integration. E.FJELD Co., Inc.: (978) 667-1416, sales@efjeld.com

★ **E. A. Fischione Instruments, Inc.** demonstrated its current product line which is tailored to the demands of today's microscopists. Electron transparent specimens can now be produced and analyzed in a matter of hours, with the final cleaning effected by the Model 1020 Plasma Cleaner resulting in contamination-free analysis. Fischione Instruments has expanded its presence to include the high resolution imaging sector. The Model 3000 ADF detector is capable of acquiring high quality STEM images at the level of atomic resolution. Incoherent, inelastic ally scattered electrons are sampled at high angle; yielding "Z" or atomic number contrast. A related growth area is the offering of TEM specimen holders. The Model 2330 Cryotransfer System and Model 2040 Double Tilt Analytical Holder are embodiments of this effort. What began over 30 years ago with the Automatic Twin-Jet Electropolisher continues today, a commitment to serving the customer with innovative solutions to TEM specimen preparation and analysis. E.A. Fischione Instruments: (724)325-5444, m_migliulo@fischione.com, www.fischione.com

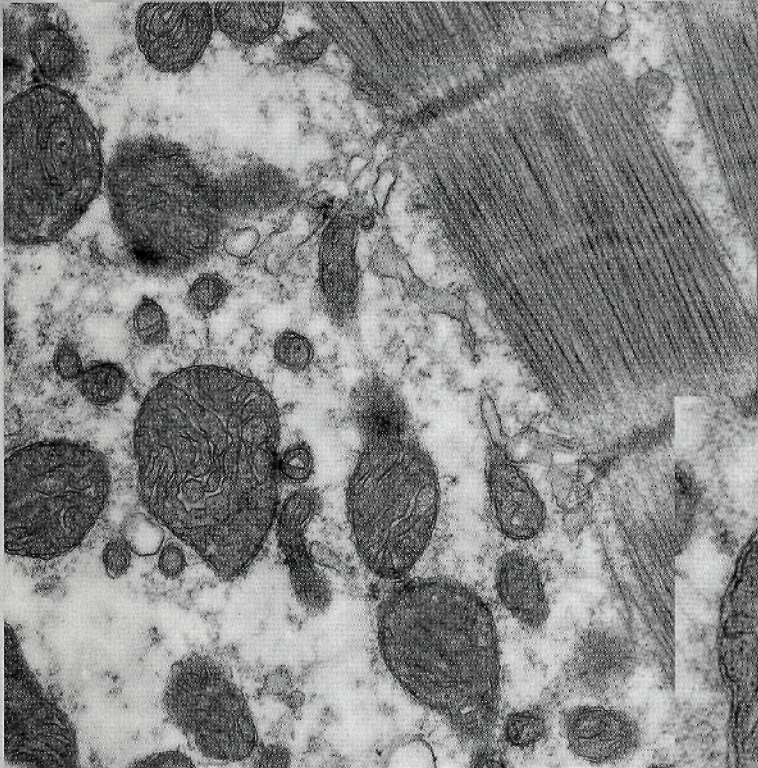
★ **Electrolmage's** Piezography™ BW is an Adobe Photoshop® plug-in software and quad tone black inks combination that automates the printing of grayscale images through the use of built-in ICQ profiles perfectly tailored for the archival grayscale printing process. This process increases the optical resolution of Epson 3000, 1160 and 860 printers from 720 x 720 dpi to 2160 x 2160 dpi, by replacing the EPSON dither in favor of a proprietary broad-band microweave system. The result is absolutely no visible dots even under magnification. Electrolmage Inc.: (516)773-4305,

★ **Electron Microscopy Sciences** had on display for the first time the newly updated Automated Lynx Tissue processor which affords the possibility of processing tissue extremely rapidly for EM from start to finish. As well, at the booth was the EMS 4000 Oscillating Tissue Slicer which allows for the cutting of sections down to 10 µm and a laboratory microwave oven for doing all the specimen preparation of the tissue including

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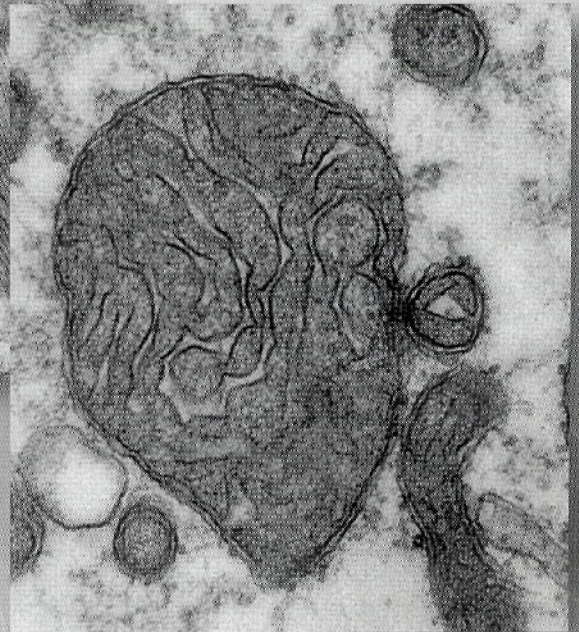
Digital Productivity vs Darkroom Drudgery

Advantage Series TEM Camera Systems

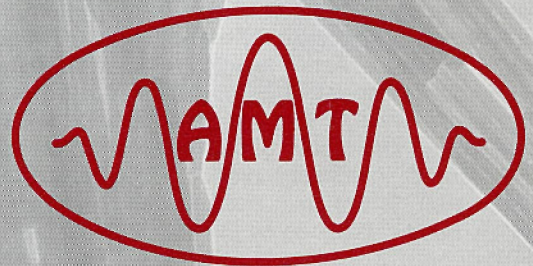


New!

**2000 Line
Side-Mount
Camera**



- ▶ **1024 to 2048 Pixel Resolution**
- ▶ **Axial or Side-Mount Systems**
- ▶ **Up to 65536 Gray Levels**
- ▶ **Fast, Live-Time Imaging**
- ▶ **Systems Delivered “Complete”**
- ▶ **Modular Designs**
- ▶ **Excellent Maintenance History**
- ▶ **“Easy Upgrade” Policy**



Advanced Microscopy Techniques Corporation
3 Electronics Avenue Danvers, MA 01923
Tel: (978)774-5550 Fax: (978)739-4313
Email: info@amtimaging.com
www.amtimaging.com

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embedding and polymerization. All of the chemicals, supplies, and equipment associated with microscopy was available as well. Electron Microscopy Sciences: (800)523-5874, sgkock@aol.com, www.emsdiasum.com

★ **Emispec Systems** displayed the new DXP-X10P Digital X-ray Processor (DXP). The DXP-X10P connects directly to most EDX detectors through a single cable. Data and control signals are routed between the DXP-X10P and the ES Vision computer via a standard parallel printer port. The DXP-X10P provides an ideal solution for upgrading existing EDX systems, as well as connecting to new detectors. ES Vision is now truly capable of supporting nearly all commercially available detectors, including slow-scan CCD cameras, video cameras, EELS spectrometers, and SE/BSE/BF/DF/HAADF scanning detectors. Two highly customized experiment scripts for ES Vision also debuted: automated TEM tomography and position resolved diffraction. The tomography script first generates calibration curves for x, y and z movements of the specimen during tilting, and then uses these calibration curves to adjust the stage and automatically acquire a tilt series of images. A series of images that would take 3 hours to acquire manually can now be done in 15 minutes. Emispec Systems, Inc.: (480) 894-6443, sales@emispec.com, www.emispec.com

★ **Energy Beam Sciences** again presented the V.G. Microtech/Polaron line of SEM preparation equipment, this year announcing the new SC7660 Chromium Coater, which is now in production testing. Also from V.G. Microtech, the redesigned and improved PP2000 Cryo-Preparation System for the observation of biologic materials in their natural "wet" state was displayed. Other equipment on display included the SC7640, High Resolution Sputter Coater with the unique annular target design to ensure true "cool" magnetron sputtering for general SEM and FESEM. The SC7620, Mini Sputter Coater and the CC7650, Dedicated Carbon Coater were also among the featured instruments. Other new and improved products were the Vibratome 1000 Plus and their own TEM film processor, the AP2000S, now with dual-developer capability. The company continues to manufacture a full line of Microwave Tissue Processors, including the popular H2800, as well as a wide variety of filaments. They are also the U.S. distributor for Denka cathodes. Energy Beam Sciences: (413)786-9322, ebs@ebsscience.com, www.ebsscience.com

★ **Evex Analytical** electrified attendees when it premiered its' new 3D Imaging for Electron Microscopy and 3D Elemental Mapping for X-ray Microanalysis, Evexium. Scientist can now view tilt, spin, annotate, and derive measurements from the 3D images acquired from a scanning electron microscope (SEM), this should give AFM(s) some competition. The 3D tools are in addition to the powerful Evex Microanalysis system, which includes Advanced Si(Li) and LN Free Detectors, Advanced Digital Pulse Processors, Active Imaging, Elemental Mapping, Remote Control, Advanced Image Analysis, and Advanced Report Writing. Evex Analytical also introduced its' Monte Carlo simulation software. The Monte Carlo simulation software is available either as a stand-alone product or as an option for the Evex Microanalysis system. The Evex Microanalysis systems are installed and maintained by Evex Analytical. Evex Analytical: (609) 252-9192, info@evex.com, www.evex.com

★ M&M 2000 marked the North American debut of three new instruments from **FEI Company**. The Morgagni 268 TEM is designed for diagnostic screening, cell biology, and pharmaceutical applications. The Strata DB 235 is a small chamber Dual-

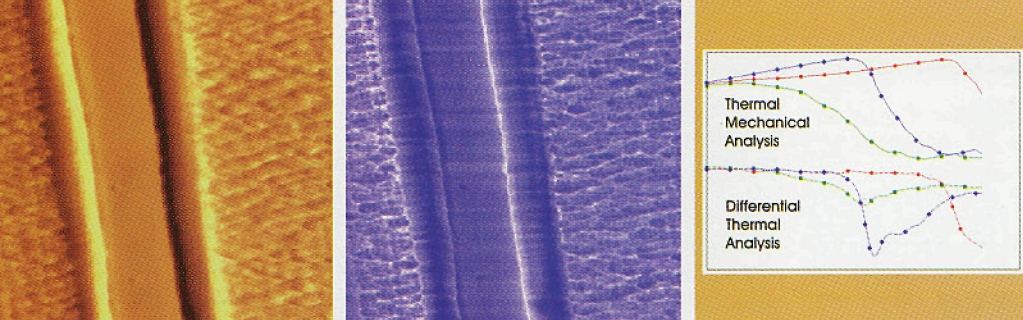
Beam system for TEM sample preparation and material analysis. The XL 40 ESEM offers low-vacuum, high-vacuum, and ESEM operation modes on a larger chamber design for increased sample flexibility. The XL 40 ESEM was used for the Tuesday evening tutorial on performing EDX analysis in a low vacuum SEM. Also at the booth was a Tecnai 12 TEM which is designed for use in life science applications. The Tecnai 12 is part of the award-winning Tecnai series of analytical TEMs featuring fully embedded peripherals and single user interface control for all microscope functions. FEI Company: (503)725-2780, semisales@feico.com, www.feico.com

★ **Fuji Photo Film U.S.A., Inc's** FinePix S1 Pro Digital Camera is the first professional SLR to utilize Fujifilm's new Super CCD, delivering a high signal-to-noise ratio, exceptional sensitivity and wide dynamic range that produces sharp, colorful images. Ideal for microscopic applications, it has adjustable ISO equivalents of 320, 400, 800 and 1600, shutter speeds of 30 to 1/2000 second, and continuous shooting of approximately 1.5 frames/second up to five frames. It also has a Nikon F lens mount, making the FinePix S1 Pro compatible with most Nikon series. Available now for a suggested "street" price under \$4,000. A fine companion for the S1 Pro is Fujifilm's Pictography 3500, a function-rich, high-end digital printer for producing colorful, detailed images. It produces brilliant color prints from digital camera output, computer graphics, scanned images and Photo CDs. It uses Fujifilm's Laser Exposure Thermal Development and Transfer Technology, a process that produces sharp, detailed pictures without chemicals or toner. Its LCD control allows independent setting of margins, brightness, color balance and other settings. Fuji Photo Film U.S.A.: (800)378-FUJI, www.fujifilm.com

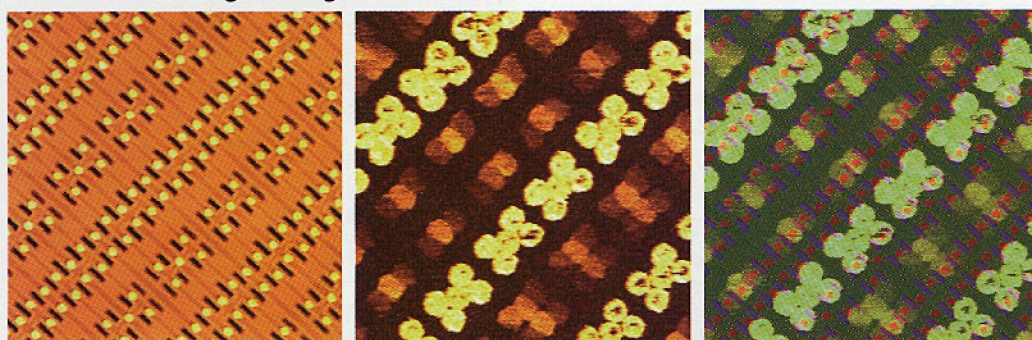
★ **Gresham Scientific Instruments and Advanced Analysis Techniques**, their US Sales and Service affiliate, announced two new EDS products: the Titan Digital X-Ray Pulse Processor (DXP), and the EDS detector "Performance Upgrade". The DXP will dramatically increase spectral throughput (up to 80Kcps) at short peaking times while maintaining or improving the spectral quality of your existing system at normal peaking times. The DXP can be interfaced to any existing detector as part of our "Digital Detector Upgrade" and will interface directly to any existing analyzer. The DXP, of course, can be purchased as an integral part of new Gresham detector systems. The Performance Upgrade will convert your existing Si (Li) detector, regardless of manufacturer and current condition, to better than 139eV using state-of-the-art Gresham components, for \$9500. Advanced Analysis Techniques: (215)493-8979, nbarbi@aol.com, www.xraydetectors.com or www.gsinst.com.

★ **GW Electronics** has recently introduced a new product nicknamed "PEEPERSCOPE". This product is designed to provide an optical view of a sample while in the SEM in order to allow location and identification of the area of interest. When multiple specimens are mounted on the same holder or when a specific region of a specimen is identified visually beforehand, "PEEPERSCOPE" will permit the operator of the SEM to quickly find the right spot on the right sample. "PEEPERSCOPE" looks straight down on the specimen or at a convenient angle depending on the method of mounting. The minimum field of view of 3 X 4 mm is obtained at a distance about 2 mm below the probe and varies with working distance. At this adjustment, the magnification, at 640 X 480 on a 1280 X 960 display, 17 inch monitor, is approximately X50. As the specimen is moved away from the probe, the field of view increases proportionately. The probe occupies 10 mm below

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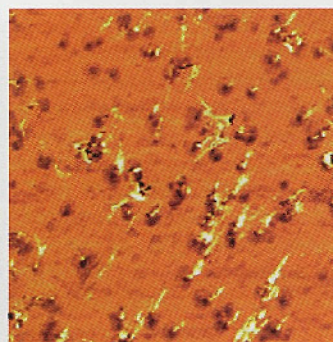
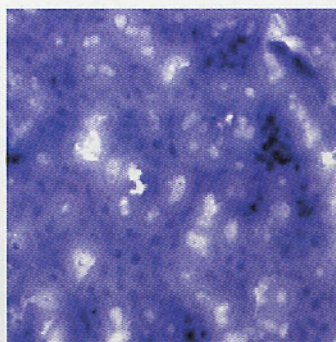


Using topography, thermal conductivity mapping and micro thermal analysis identifies layers in a polymer film. Courtesy of Duncan Price, Loughborough.



Topography and electrostatic force images combine to show misalignment of contacts and implants in SRAM.

When is an SPM



REGION GROUP	AREA	
	μm^2	%
Total area	67.69	100
Silicone lubricant	3.101	4.6
Teflon particles	7.007	10.4

Topography and phase images show area and percent coverage of Teflon[®] and lubricant in support matrix. Courtesy of Steve Pratt, Kodak.

more than a microscope?

(When it has PPT.™)

PPT is Proximal Probe Technology.™ And it's only available in Scanning Probe Microscopes from ThermoMicroscopes.

Proximal Probe Technology gives you a whole lot more than just an image. It gives you the full range of proximity measurements you need to get accurate, precise and meaningful data in the engineering terms you recognize. Whether you want to measure friction, stiffness, adhesion, thermal conductivity, electrical or magnetic forces, or a host of other material properties, there's a ThermoMicroscopes system with PPT that's just right for the job. And for process characterization at the nanoscale level, nothing compares to the power PPT gives you.

PPT is available on the full line of ThermoMicroscopes' instruments. Explorer™ for maximum versatility. CP Research,™ the SPM choice of research scientists demanding flexibility. AutoProbe M5™ for practical analytical and industrial applications. And Aurora,™ the world's leading NSOM system with exclusive, patented tuning fork technology.

To learn more about PPT and proximity measurement tools, and to get a free copy of "The Practical Guide to Scanning Probe Microscopy," call, fax or visit our web site today.



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the objective lens and is retractable. It can also be equipped with a motor driven retraction mechanism. The image can be viewed through either a Windows 93/98/NT computer display or on a color monitor. GW Electronics: (770)449-0707, sales@gwelectronics.com, www.gwelectronics.com

★ **Halcyonics'** MOD-2 system actively eliminates low frequency vibrations in mid-size set-ups. SEM users, one of main markets for the MOD-2 system, often have a difficult time retrofitting a SEM with a vibration solution. Consequently, Halcyonics has developed the MOD-2 Sandwich. The MOD-2 Sandwich is comprised of X MOD-2 elements (as many as are necessary for the weight load—150 kg/element), and a bottom and top plate casing system. The Sandwich is then essentially a full active vibration isolation platform that is only about 14 cm (6 inches) in height. So instead of having to deal with a difficult retrofitting problem, all you have to do is lift up the SEM and slide the Sandwich platform underneath. Halcyonics has also developed a special device for lifting the SEMs so that they can be raised to the necessary height without having to be disconnected. After the system is set up and turned on, no further maintenance is necessary. Halcyonics: +49-(0)551-999-062-0 (Germany), info@halcyonics.de, www.halcyonics.de

★ **Hitachi Scientific Instruments** introduced two new instruments: the S-2600N, a low cost Variable Pressure SEM, and the H-7600 TEM. The S-2600N retains the optical technology of higher end systems while providing a user-friendly interface for novice microscopists and multi-user labs. The H-7600 TEM features a new auto focus routine and high contrast imaging. The cold FE-SEM, S-4700, displayed Hitachi's new ExB filter that raises low kV imaging to new heights by controlling the ratio of backscattered electrons to secondary electrons. The new Environmental Secondary Electron Detector (ESED) for the S-3000 series (Variable Pressure SEM's) was demonstrated on the S-3500, displaying secondary images in variable pressure. Also on the S-3500 was an EDAX Phoenix system with its new PCI database integration. All x-ray data can be saved and recalled along with SEM images within the PCI software. In conjunction with Quartz PCI Imaging, Hitachi introduced their new web-based "Collaboration" system, based on the Quartz PCI database software with live video feed from the SEM, x-ray system, Chamberscope, and lab in Toronto, Canada. Hitachi Scientific Instruments: (800)227-8877, sidsales@nissei.com, www.nissei.com

★ **The International Centre for Diffraction Data** presented Release 2000, the latest installment of the Powder Diffraction File™. In addition to the new Release 2000, the ICDD® unveiled its first relational database (RDB) specialty product, the *Metals and Alloys 2000*. Boasting a powerful user interface along with enhanced searching and display capabilities, the RDB specialty products target specific subfiles found in the Powder Diffraction File™. Other exciting news included the announcement of on-line ordering for ICDD® products. Booth personnel distributed free ICDD® Demo Packs, featuring a variety of ICDD® product demos, to attendees visiting the booth. Free Demo Packs are still available upon request from the ICDD®. International Centre for Diffraction Data: (610)325-9814, info@icdd.com, www.icdd.com

★ **JEOL USA, Inc.** introduced several new products and innovations including the model JSM-6500F SEM and the JEM-2010 CryoTEM TEM instrument. The combination of the strongly exited conical lens design with a unique in-lens gun with Schottky emitter gives the JSM-6500F both high resolution

at all voltages and working distances and exceptional analytical capabilities. A stable beam current of up to 200 nA makes this an ideal platform for WDS (wave dispersive X-ray spectrometer), EBSF (electron backscattering patterns) cameras, CL (cathodoluminescence) spectrometers and EB (electron beam lithography) applications as well as for normal EDX (energy dispersive X-ray spectrometers). JEOL showed their new dedicated Cryo instrument the JEM-2010 CryoTEM with the FasTEM remote control attachment. The microscope has a new high tilt polepiece, an improved cryo-fin that effectively prevents contamination, cools to -170°C, and is equipped with a multitude of cryo software. JEOL gave workshop demonstrations using this instrument several times daily. The company also showed recent innovations and improvements in its JSPM-4200 multi-environmental SPM which is capable of imaging under either ambient or high vacuum as well as both high and low temperatures. JEOL USA, Inc.: (978)535-5900, eod@jeol.com, www.jeol.com

★ **K E Developments** introduced the latest additions to its range of Chamber surveillance equipment at M&M 2000 in Philadelphia. The colour zoomscope when mounted on an SEM chamber at an angle of around 45 degrees offers a 10:1 zoom facility allowing close inspection of the sample surface and accurate positioning. In addition the overall view of the chamber interior allows accurate and safe positioning of detectors around the stage. Whilst colour operation can help in the manipulation of the sample, the system retains the facility to used in an infra red illuminated B+W mode during operation even with light sensitive detectors. Enquiries are also being sought for the soon to be released 3D Stereoscope which permits even more accurate . K E Developments: +44 1223 263532 (U.K.), Postmaster@Kedev.com, www.Kedev.com

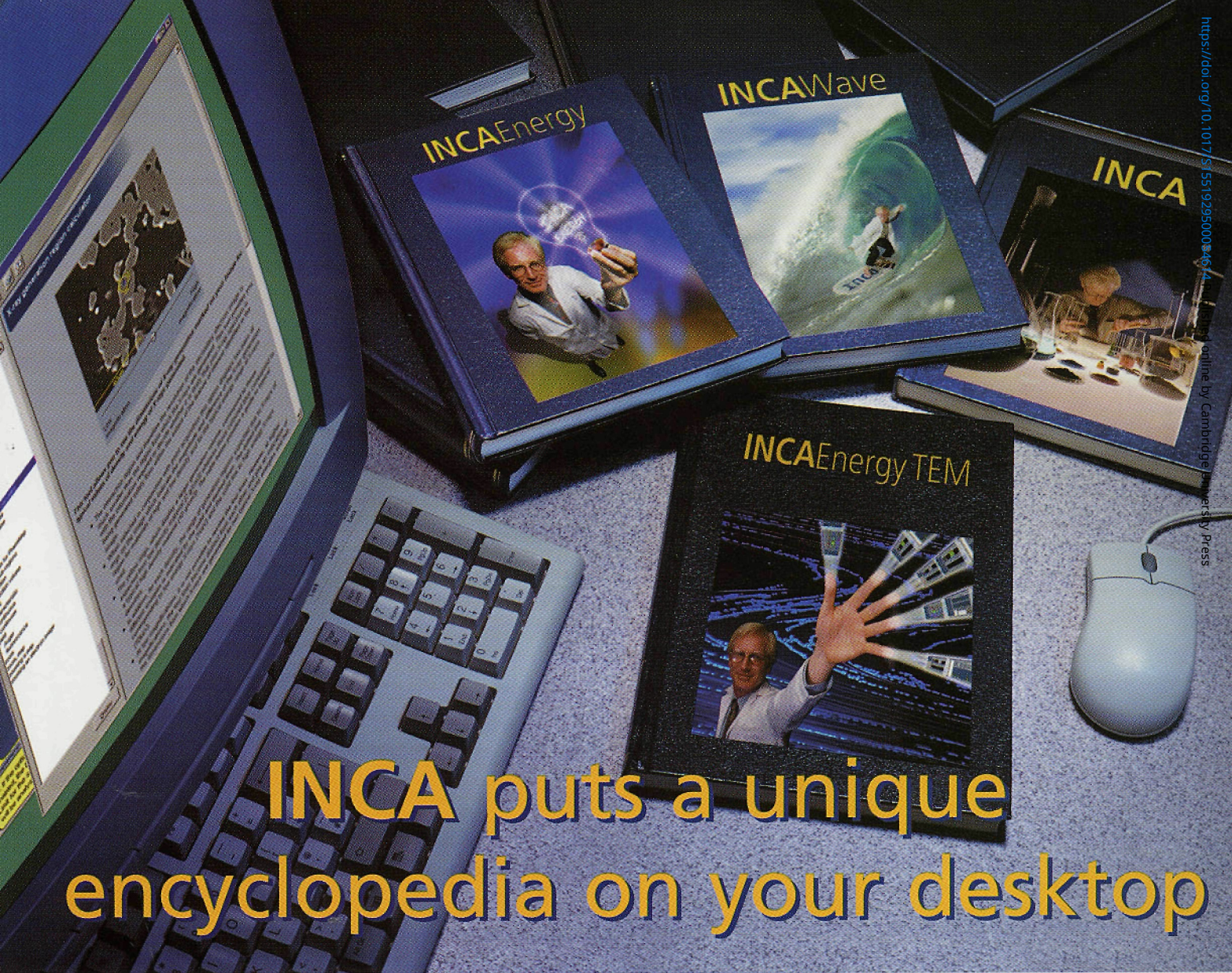
★ **Ladd Research Industries** featured its new line of cold sputter coaters, turbo and chromium coaters. Also introduced was the Zerostat anti-static instrument for neutralizing static electricity on a wide variety of surfaces. Ladd also announced its new web site: www.laddresearch.com. Ladd Research Industries: 800-451-3406, ladres@worldnet.att.net, www.laddresearch.com

★ **LEO Electron Microscopy** introduced the LEO 1530VP. The LEO 1530VP is a unique combination of a High Resolution FESEM utilizing the GEMINI column and LEO's Variable Pressure technology. High performance imaging and flexibility in specimen handling are the outstanding features of this instrument. Equipped with an in-lens detection system for high vacuum, and a patented SE-detection system for both, high vacuum and VP mode optimum imaging is possible at all pressure ranges. LEO Electron Microscopy: (800)356-1090, deulio@leo-usa.com, www.leo-em.co.uk

★ **Leica Microsystems** provides the tools required for specimen preparation and microscopic evaluation of biological and materials samples. The Leica Microsystems booth featured Leica's full line of specimen preparation products for TEM and SEM. The market leading Leica UCT ultramicrotome and FCS low temperature sectioning system were highlighted. Leica also presented the newest technology in high pressure freezing, the EM PACT. A variety of microscopes and image analysis instrumentation, including the automated DM RXA, were also on display. Leica Microsystems: (800)248-0123, info@leica-microsystems.com, www.leica-microsystems.com

★ **McCrone Microscopes & Accessories** introduced the 2000-2001 catalog featuring a complete line of Linkam Heating/

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New And/OR Interesting at M&M 2000

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Freezing stages and Clemex Image Analysis software to complement an existing line of Olympus BX2 microscopes, imaging equipment, and comprehensive lab accessories. Together with an online catalog, The Linkam thermal stages can be used for forensic melting & freezing point determinations, liquid crystal research and ice cream studies, x-ray technology, Raman spectroscopy, glass analysis, FTIR, cryo biology, pharmaceuticals, and more. Stages include a large area Heating and Freezing, Freeze Drying, Peltier, Shearing, and DSC. Major advantages include a wide temperature range from -196 C to 1500 C, accurate temperature sensing, easy sample loading/unloading, programming software for automated heating/cooling, and real time video allowing live image capture and analysis. Clemex Image Analysis Software with an automated, autofocus research stage can analyze thousands of particles in seconds at the touch of a button. Applications include particle sizing/counting, thickness determinations, grain sizing, porosity, crystallography, fiber length, and much more. Clemex features include mosaic image stitching, intuitive software and auto programming, the ability to customize stage patterns, and the multi-layer grab which acquires images at multiple z-levels to form a complete focused image. Also featured is the new line of Olympus BX2 polarized light microscopes. McCrone Microscopes & Accessories: (800) 622-8122, mma@mccrone.com, www.mccrone.com

★ **McCrone Research Institute (McRI)** announced the offering of these new microscopy courses:

Microtome Methods—3-5 September 2001

Microscopy of Caking and Tableting—24-26 September 2001

All of McRI intensive courses are designed to provide practicing scientists with training in critical microscopy. Some courses provide an overview and emphasize the proper use of the microscope and its accessories. Each course has lectures, demonstrations and hands-on laboratory practice so that students learn each technique by hearing about it, watching it being done and then doing it. Video microscopy is used extensively for lectures and classroom demonstration. Students learn powerful and effective methods for studying, characterizing and identifying materials of all kinds, and for rapidly solving research, production, and quality control problems. Information about all courses offered at McRI, INTER/MICRO-2001 and the Microscope Journal can be obtained by contacting Nancy Daerr: (312)842-7100, ndaerr@mcri.org, www.mcri.org

★ **M.E. Taylor Engineering, Inc.** is proud to announce the introduction of its new ITO-GOLD (pronounced eye-to-gold) SEM scintillator. The quartz substrate is plated with indium tin oxide (conductive and transparent) to which a gold plated ring is electrically bonded. The P47 phosphor is then deposited. The advantages we have experienced include the gold retaining ring making better electrical contact with scintillator without cutting into the phosphor material. The signal to noise ratio is better due to a decrease in the electronic noise created by a good electrical bond. There is a conductive layer under the phosphor that uniformly applies the bias voltage (10 KV usually). An aluminum overcoat is not required. In the event a pinhole develops in the phosphor, the exposed glass surface will not charge up. It is easier to handle during installation, and is recoatable. All this leads to a longer time between scintillator changes and a cost savings overall. M.E. Taylor Engineering, Inc.: (301)774-6246, metesem@aol.com, www.semsupplies.com

★ **Micro Star Technologies** introduced a new Cryo

Ultramicrotome for electron, optical or scanning probe microscopy. It is a very compact instrument which includes the precision ultramicrotome mechanism and all the electronic controls in one 16 Kg unit. Besides the standard collets, a magnetic chuck allows direct transfer of the specimen to an AFM. The instrument can be used in manual or automatic mode. In the automatic mode it sections from 25 nm to 5µ at speeds from 0.2 to 4mm/sec. Cryo sectioning can be performed down to -130° C. It reaches -80° C in 15 minutes. The liquid Nitrogen 5 liter Dewar lasts three hours and can be replenished during operation. The instrument includes a zoom stereo microscope with optional video camera and monitor. Included is a complete set of tools and attachments, plus a Micro Star diamond knife. Price is lower than other systems. Micro Star Technologies: (800)533-2509, mistar@msn.com, www.microstartech.com

★ **Motic Instruments, Inc.** presented a range of Digital Microscopes and drew a lot of attention from end users as well as suppliers of other microscope equipment. These microscopes feature an integrated Digital Camera with direct output via USB for plug and play connection to laptop or desktop computers, and some models include RCA composite output for TV or Video monitor as well as S Video for higher resolution monitors. There are currently 6 models available, starting with entry level dissecting microscopes, entry level monocular, student compound microscopes, Stereo microscopes, as well as higher level Binocular Clinical Lab microscopes, all reasonably priced from around US\$ 840.00 to US\$ 1,995.00. A Net meeting demonstration was shown where realtime microscope images could be viewed from remote sites, exchanged and discussed on line with a minimum of cost. Other Digital models will be added to the lineup in the near future. FGR Steinmetz Inc.: (604)584-8224, fgstein@direct.ca, www.motic.com.cn

★ **NORAN Instruments** unveiled three exciting new products at Microscopy and Microanalysis 2000. The newest version of the VANTAGE Digital X-ray Microanalysis system features Spectral Imaging. Using a combination of new acquisition electronics and software, Spectral Imaging provides a full EDS spectrum at every point in an x-ray map acquisition. This advanced technique gives users the ability to produce x-ray maps and linescans, as well as spectral analysis of any portion of the image even after the sample has been removed from the electron microscope. The new, value-priced Quest Digital X-ray Microanalysis System includes quick and easy qualitative and quantitative analysis programs, automatic match identification, and several report formats, including MS-Word and HTML. Quest features an extensive list of analytical tools and options normally found only on higher-end microanalysis systems. The new SuperDry II No-LN Detector combines the best of NORAN and Kevex electrically-cooled EDS detector technologies. The SuperDry II is capable of producing 138 eV @ Mn resolution, as well as light element detection (B, C, N, O, F) using the new PleXus high transmission one-atmosphere thin window. NORAN Instruments: (608)831-6511, info@noran.com, www.noran.com

★ **Optem Intl** introduced the OptiGrid, a product that will redefine affordable confocal microscopy. The OptiGrid offers enhanced viewing flexibility for all types of biological and industrial applications. This unique technology projects a carrier frequency onto the specimen. Utilizing a video camera and OptiGrid software, only the in-focus image data portion of the sample is captured and processed. The processed image is displayed on your computer monitor with enhanced contrast and high signal-to-noise ratios. The OptiGrid attaches to any exist-

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The most powerful bio-imaging software is the easiest to handle.

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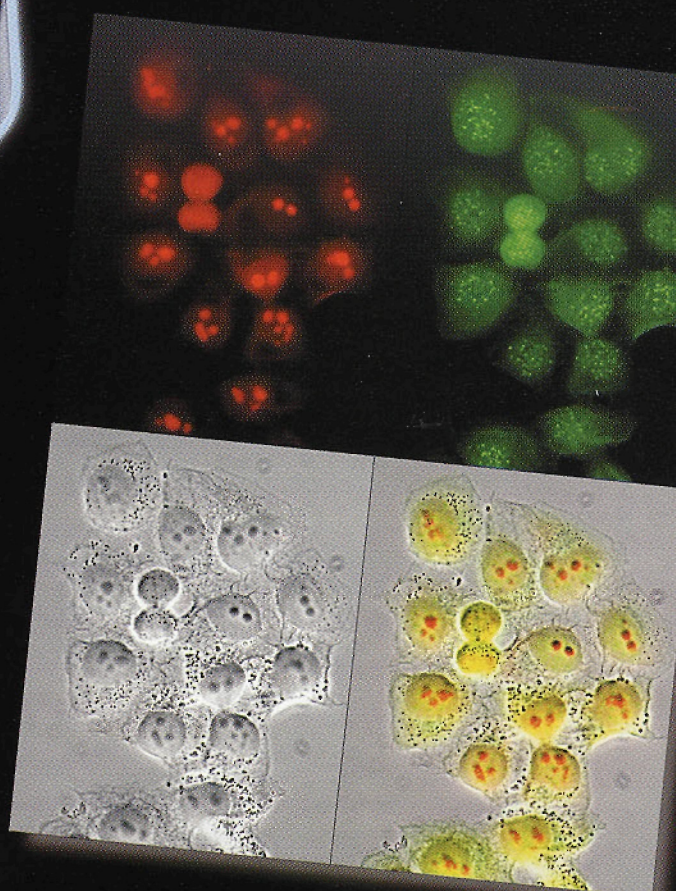
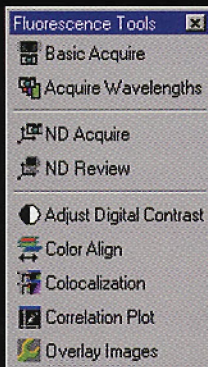
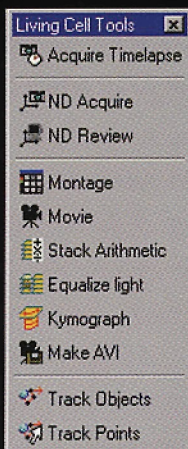


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ing brand microscope epi-fluorescence illuminator or incident light attachment. This technology delivers the full capabilities of confocal microscopy without the use of specimen-damaging lasers, light-restricting pinholes, or deconvolution software. Optem: (716)223-2370, info@optemintl.com, www.optemintl.

★ **Optronics** offered the following product demonstrations: First was the Macintosh version of the popular MagnaFire digital imaging microscope camera. The Mac MagnaFire uses the firewire capabilities of the G3 and G4 generation computers from Apple for image data acquisition at 400mb/sec. Firewire permits "live", full resolution image display through a Quick-Time-based interface. Also demonstrated was the Lucis image detail extraction program that is now a standard feature of the Windows based MagnaFire. Lucis provides image detail resolution in poor contrast images, and is particularly effective with live cell microscopy, and fluorescence images. Optronics:(800) 796-8909, www.optronics.com

★ **Oxford Instruments** showed their newly launched INCA Energy + system, a powerful combination of the very best of ED and WD X-ray spectroscopy. Energy + allows the high resolution and sensitivity of WD within a selected area of the ED spectrum. Also on display was the latest version of the Inca platform software suite. Included in this latest release was a template editor which allows for creation of customized output formats at the click of a mouse. Oxford Instruments: (978)369 9933, info@ma.oxinst.com, www.oxford-instruments.com.

★ **Princeton Gamma-Tech** introduced Spirit, an exciting new microanalysis system for data collection in any lab environment. Controlled by the familiar Microsoft Office user interface, Spirit is intuitive for most laboratory personnel. Spirit provides sophisticated and practical data collection and calibrations. PTX (Position-Tagged Spectrometry) collects all the X-ray data at once. Element maps, line profiles or spectra from any region of the image can be displayed dynamically during a rapid scan or long after the data has been acquired. Spirit collected data using PGT's latest advancement in EDS detectors, the PRISM 50. This quantum leap in detector technology means you no longer need to compromise between X-ray count rate and resolution. PRISM 50 is a 50 mm² detector with 129 eV resolution, 5 times the count rate under the same SEM conditions as that of competitors detectors. The perfect solution for low count rate situations; collect the same data in one fifth the time. Princeton Gamma-Tech: (609)924-7310, sales@pgt.com, www.pgt.com

★ **Reindeer Games, Inc.**, demonstrated Photoshop-compatible plug-ins (also functional in NIH-Image, Image Pro Plus, and many other programs) that provide comprehensive image processing and analysis functions, including color analysis, feature and stereological measurements, morphological processing, automated thresholding, surface measurements, etc. The Image Processing Tool Kit originated as a teaching companion to John Russ' Image Processing Handbook, implementing all of the algorithms described in that popular reference text. The new Fovea Pro package is a superset of the Tool Kit that works with up to 16 bit/channel images (48 bit RGB) and adds stereo fusion and other new functions, a total of more than 170 routines, with a 400 page hands-on tutorial. The package is particularly suitable for images from high performance digital cameras, scanners, transmission EM, atomic force microscopes, and other devices with a large dynamic range. Automation and scripting are fully supported for batch image processing. Reindeer Games: <http://members.AOL.com/FoveaPro/>

★ **RÖNTEC USA** demonstrated its new MultiMax element imaging system. The system ran on a JEOL 5900LV microscope, courtesy of JEOL USA. Many demonstrations were given, producing detailed X-ray maps for up to eight elements in a matter of seconds. The MultiMax system is based on RÖNTEC's Xflash® X-ray detector which uses silicon drift diode technology capable of handling input pulse rates of up to 1 million counts per second. The room temperature detector (no liquid cooling required) combined with RÖNTEC's advanced signal processing electronics produces throughputs of up to 400,000 cps for incredibly fast element imaging. MultiMax was first introduced in the U.S. at the Lehigh University Microscopy School in June 2000, where it was met with much enthusiasm by professors and students alike. RÖNTEC USA: (978)226-2900, sales@rontecusa.com, www.rontecusa.com

★ The **Sagitta** "Straight-to-the-Point" cross-sectioning system provides automated sample preparation for microstructure analysis with an accuracy up to 0.1 micron. This system is based on Sagitta's proprietary Sub-Micron Polishing Technology (SMPT™). This technology uses advanced image processing techniques and precise motion control. The system produces high quality samples automatically and eliminates over-polishing. Average SEM cross-sectioning time is between 10 and 30 minutes depending on the desired accuracy and surface quality. The concept of operation is based on two feedback mechanisms for precise control of the polishing arm: The first feedback mechanism incorporates a highly sensitive position sensor for monitoring the position of the polishing arm with respect to variation of the polishing pad. The second mechanism includes an on-line inspection microscope and image processing algorithms. This results in precise localization of the intermediate edge with respect to the desired target. The combination of the two feedback mechanisms yields an overall accuracy of 0.1 microns and overcomes problems such as a change in target appearance from the top view. The latest improvements support additional polishing from the opposite side to thin the sample for other analysis techniques, such as STEM, TEM and Scanning Capacitance. Sagitta: (408)390-3066, tony.ruffini@sagitta.co.il, www.sagitta-usa.com

★ **SAMx** presented a poster demonstrating the EPMA autofocus optical system: a new way of dealing with the autofocus of the sample with the EPMA. Using the optical signal coming from the camera, it is now possible to focus the sample (Z) automatically. This new method can be applied to any automated microprobe. This new product called OptiX is an optional system of the well-known SAMx EPMA automation package XMAS. SAMx: +33 1 3057 9025 (France), www.samx.com.

★ **South Bay Technology, Inc.** introduced the IBS/e Ion Beam Sputter Deposition and Etching System which was developed especially to produce conductive films of metals and carbon that do not create artifacts or visible grain structure for FE-SEM high resolution analysis. There are several interesting aspects of ion beam sputtered films:

1. Target material evolves from metal or carbon targets with <30eV energy.
2. Ultra thin films are conductive, amorphous and continuous
3. Very little metal or carbon is needed to make a specimen conductive, usually <25 Angstroms
4. Signal to noise ratio is increased
5. <25 Angstrom metal films yield x-rays that are in the noise so metals can be used as well as carbon for x-ray analysis
6. Grain structure cannot be observed at magnification up to 500,000X

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7. Since target material energy is <30eV and deposition rates slow a QCTM will precisely record material thickness deposited on specimens

The IBS/e is also capable of etching a sample surface, without breaking vacuum, prior to film deposition which further improves the ability to image detailed grain structure. South Bay Technology, Inc.: (949)492-2600, henriks@southbaytech.com, www.southbaytech.com

★ **SPI Supplies** presented for the first time the next generation osmium coater developed especially for FESEM applications: The OPC-60 Osmium Plasma Coater. This newest unit replaces the original OPC-40 unit, sports a much larger chamber and can coat up to four samples simultaneously, instead of just one. Using osmium tetroxide as the source for the osmium, and using a redundantly interlocked system for safety, once vacuum is attained, the tetroxide enters the chamber where it dissociates and the Os is reduced to the metal, forming a completely amorphous layer of the metal on the sample's surface. Since it is totally amorphous, there is zero grain size, making this metal far superior to any metal applied by sputter-

ing (e.g. Pt, Au, Cr). And since osmium is a precious metal, and has the inertness of gold and platinum, it absolutely will not oxidize or otherwise change, hence any SEM sample coated in the OPC-60 essentially will "last forever". SPI Supplies will be very happy to do demonstration coating if samples are submitted. SPI Supplies: (610)438-5400, spi2spi@2spi.com, www.2spi.com

★ **Ted Pella, Inc.** introduced the Pelco BioWave™ Microwave Tissue Processor with integration into one convenient packaged system of true variable wattage control, load cooling and temperature restriction. Additional engineering components are vacuum, bubbling (pressure), real-time sample temperature control, special venting and programmability. A tutorial overflow audience of over 32 heard Dr. Mark Sanders give detailed descriptions of various types of samples processed by the microwave technology using features present in the Pelco BioWave. Also emphasized were the largest collection of quality gold colloids currently available, from sizes 2 nm to 250 nm, packaged in volumes of 20 ml, 100 ml and 1 liter. Choice of labeling size does matter along with reproducibility of results. New Vibratomes® 1000+ and 1500 were shown. The new models are improved with deeper specimen vertical adjustment, adjustable sectioning window and thickness increment control down to 5 µm. More technical improvements are low sectioning speed, faster return stroke, drain, stroke pause switch and separately adjustable light and magnifier. Ted Pella, Inc.: (530)243-2200, sales@tedpella.com, www.tedpella.com

★ **TNAS Inc.** introduced the latest version, 3.10, of the popular WINEDS and WinDiss energy dispersive and digital imaging software running on Microsoft Windows 2000. WINEDS was the first to introduce a 32-bit application for Windows 95 and NT in 1997 and has continually added features to make the software the most user friendly in the industry. More than 20 changes and features have been added including support for the mouse-wheel on a Microsoft IntelliMouse to move the cursor and right click label element command will label all significant peaks in a spectrum belonging to the selected element. WinDiss Imaging high lights are 3D imaging and Edison32 option for advanced multi-element x-ray mapping and linescans and automatic point analysis with EDS quantitative results stored at all points. TNAS Inc.: (608)798-2005, tnas1@msn.com, www.tnanalyzerservice.com

★ **Q3DM™** featured XCellera™ its new high performance scanning image cytometer that performs fully automated image acquisition, analysis and storage on large numbers of cells with unparalleled speed (10,000 images per hour), accuracy, and ease of use. Cellular fluorescence intensity, pattern and morphology are immediately accessible on individual cells as well as the entire population via Q3DM's caching software. Q3DM's proprietary high performance Afx-3000 autofocus system, cell edge-finding, fluorescence lamp stabilization and extensible software architecture have created a new paradigm for high precision automated image cytometry. Q3DM: (858)623-0352, moliva@q3dm.com, www.q3dm.com

★ **XEI Scientific** announced that U.S. Patent 6,105,589 had been awarded for the unique air-fed plasma cleaning system for electron microscopes used in the Evactron SEM-CLEAN™ system. Ronald Vane of XEI gave a macro demonstration of the cleaning power of the Evactron system, cleaning skin oil off a silicon wafer. The gentle cleaning action of the Evactron is microscope safe and has been shown by XPS to oxidize hydrocarbons without oxidizing silicon. XEI Scientific: (650)369-0133, rvaneXEI@concentrix.net, www.msa.microscopy.com/sm/xei/

Specimen Preparation Engineer Northwestern University

The Electron Probe Instrumentation Center (EPIC) at Northwestern University has an **immediate** opening for a specimen preparation expert. EPIC is a part of the world renowned Materials Research Center (MRC) and the Department of Materials Science & Engineering at Northwestern.

The EPIC facility serves over 120 users in all aspects of Scanning and Transmission Electron Microscopy. The role of the specimen preparation engineer is to assist users with their specimen preparation needs, including instruction in TEM and SEM sample preparation using IBT, FIB, PIPS, electropolishing, ultramicrotomy, cutting/grinding/polishing, vacuum evaporation etc.

All microscopes in EPIC are under full service contract. Thus, the duties include training students/users, development of specialized techniques and applications, minor maintenance, record keeping and billing.

A BS or technical degree in physical/biological sciences is required. The candidate must have hands-on experience in all aspects of specimen preparation as well as considerable familiarity with digital acquisition, processing and computer assisted techniques. All levels of experience will be considered. Compensation will be commensurate with experience and qualifications.

Send cover letter, resume and three references to:

Prof. Vinayak P. Dravid, Director EPIC
Materials Science & Engineering
Northwestern University, 3013A MLSB
Evanston, IL 60208

E-mail: v-dravid@northwestern.edu
Fax: (847) 491-7820

<http://epic.ms.nwu.edu/epic/index.htm>

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