

New And/Or Interesting at Microscopy & Microanalysis '99

In the following, for the hopeful benefit of readers who could not attend M&M '99 recently in Portland, OR, we have attempted to summarize the products which were presented as "new and/or interesting".

© **4pi Analysis** introduced Revolution, its new multi-featured spectra and image acquisition program for both Windows (98 and NT) and Macintosh. The software is designed to operate with 4pi's Spectral Engine II for mixed acquisition of electron images, absorbed current images, EBIC images/linescans, CL images, WDS maps, x-ray maps/linescans, and color x-ray maps. Other features include real-time image and spectrum updates during an acquisition, real- or live-time dwells, video signal averaging, video signal scaling, micron and magnification markers superimposed on images, and auto-calibration of x-ray spectral energy. Additional features, such as qualitative spectrum analysis and fast x-ray mapping, are planned for future releases. Revolution was demonstrated on an IBM 390E Thinkpad and a Macintosh G3 PowerBook. 4pi's EDS and digital imaging systems can be configured for direct spectrum and image acquisition into laptop computers as well as traditional desktop computers.

4pi Analysis: (919)489-1757, sales@4pi.com, www.4pi.com

© **Advanced MicroBeam, Inc.** demonstrated its WD automation system designed to control existing Microspec WDX-2A spectrometers. An ultra-quiet servomotor replaces the old lambda stepper motor to permit vibration-free, simultaneous, and asynchronous EDS/WDS operation. The slit-size, slit position, and crystal change motors were driven with three small nano-computers. Each nano-computer was programmed to generate stepper motor pulses for its respective motor. The nano-computers permit simpler hardware designs and require less board space.

AMB, Inc. also demonstrated Probe for Windows-32. This WDS automation software package is designed for Windows NT and interfaces to JEOL (733, 8600, 6400, 8800, 8900), CAMECA (MBA, SX50), ARL (SEM) and Microspec (WDX-2A).

Advanced MicroBeam, Inc.: (330)394-1255, dlesher@advancedmicrobeam.com, www.advancedmicrobeam.com

© **Advanced Microscopy Techniques (AMT)** introduced the MAXSEM, a new, revolutionary environmental secondary electron detector for variable pressure SEMs. This rapid scan, high resolution detector is available for new instruments and is easily retrofittable to all existing VPSEMs.

The company announced a new version of the ADVANTAGE PLUS, 2000 line CCD camera system for TEMs. This ultra high resolution, fast frame camera is designed to eliminate the darkroom from the TEM laboratory and to provide image archiving within the facility as well as data transferal between facilities. The ADVANTAGE PLUS complements AMT's extensive array of camera systems. Anti-blooming chip characteristics and high sensitivity make it ideal for diffraction and beam sensitive samples, complimenting both materials and life science applications.

Advanced Microscopy Techniques: (978)774-5550, amtcorp@delphi.com
www.msa.microscopy.com/~amt/

© **Allied High Tech Products, Inc.** displayed their state-of-the-art MultiPrep™ Polishing System, and TechCut™ Sectioning Saw. Demonstrations were provided showing the capabilities of the MultiPrep™ System for precision cross-sectioning, TEM wedge/plan-view polishing, parallel delayering, backside polishing and pre-FIB thinning applications. An in-depth, 12-page brochure detailing the above procedures on the MultiPrep™ was also distributed and is available by calling Allied at the numbers below. Allied's full range of consumable products were also displayed and included Diamond Suspensions/Compounds, Diamond Lapping Film, Polishing Cloths, Diamond Blades, and Mounting Materials. In addition, Allied's New Millennium Catalog was available for viewing.

Allied High Tech Products, Inc. (800) 675-1118, info@alliedhightech.com, www.alliedhightech.com

© **Applied Scientific Instrumentation** presented their new MS2000 XY Z Stage, specifically designed to provide a high resolution, and highly repeatable, means of controlling the x, y, and z position of the microscope stage. All axes derive their precise control through the use of closed-loop DC servomo-

tors employing high-resolution rotary encoders for positioning feedback. By using closed-loop control of the stage position, there is no chance that the stage will become lost, as can occur with open loop micro-stepped stages after a number of moves and direction changes. The MS2000 XY stage utilizes crossed-roller slides, a high-precision Teflon-coated lead screw, and zero-backlash miniature geared DC servomotors for smooth and accurate motion. The z-axis drive is accomplished with ASI's proven line of closed-loop motor drives, each custom fitted to the microscope. The microprocessor controlled MS2000 control unit provides for RS-232 communication with a host computer. High-speed serial communication using USB is also possible.

Applied Scientific Instrumentation: (541)461-8181, info@ASImaging.com, www.ASImaging.com

© **Carl Zeiss Inc.** showed the latest in its line of Laser Scanning Confocal Microscopes, the LSM 510 NLO. This is the leading edge technology in the expanding field of 2 photon microscopy. The LSM 510 NLO (Non-Linear Optics) features fiber-coupling of a short-pulse laser in the IR range for multiphoton excitation. Control of the laser intensity via an acousto-optical element ensures protection of living specimens and optimum implementation of the inherent 3D selectivity of multiphoton excitation. Fiber coupling provides easy switch ability between upright and inverted microscopes.

In addition to the time-tested possibilities of the LSM 510, simultaneous confocal and multiphoton operation is possible without restriction for various fluorescent markers. Therefore, conventional counter stains can still be used, and UV dyes are now simply excited via multiphoton absorption.

Carl Zeiss Inc.: (800)233-2343, micro@zeiss.com, www.zeiss.com

© **Cressington Scientific Instruments, Inc.** Displayed its newest version of the 308 coater, the 308EM. A dedicated benchtop electron microscope sample preparation system designed with flexibility and convenience as key characteristics. With its 13 inch diameter baseplate, this system can be arranged for multi-user or custom use applications. Sample chamber configuration can be by simple 12 inch diameter bell jar or customized chamber. One of the most unique features of this system is the vacuum feedthrough method. Instead of inserting devices up through small holes in a baseplate, a 4 inch high stainless steel collar with 8 QF40 flanges serves as a feedthrough platform. 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 include sputter heads, thermal evaporation—by both boat and wire basket carbon rod evaporation and electron beam.

Cressington Scientific Instruments: (724)772-0220, sales@cressington.com, www.cressington.com

© Munich based **CSP Cryogenic Spectrometers GmbH** is developing and marketing microcalorimeters based on superconducting tunnel junctions (STJs) and superconducting transition edge sensors (TESs) with energy resolutions as good as 12 eV (FWHM) for 6 keV X-rays. For microanalysis applications a mechanical cryostat system was developed allowing vibration free and completely automated operation of microcalorimeters type EDX systems on SEMs, FEGs and TEMs.

CSP Cryogenic Spectrometers GmbH: 49 89 962524 0, uwe.hess@csp-munich.com, www.csp-munich.com

© **Delaware Diamond Knives (DDK)** places sharp, fine edges on hard materials. While continuing to manufacture highly durable and sharp diamond knives for ultramicrotomy and histology applications, the company has diversified to include sapphire knives for vibrating microtomes and a full line of tungsten carbide knives for plastic sectioning. The new triangular tungsten carbide knife is a highly productive replacement for glass in GMA/JB4 applications. In addition, the company sponsored a seminar on cryo-fixation techniques, which included the use of the portable and affordable PS1000 metal mirror cryo-fixation tool.

Delaware Diamond Knives: (302)999-7476, services@ddk.com, www:ddk.com

© **Denton Vacuum** exhibited three of its bench top sample preparation tools. Hands-on demonstrations were performed on their Desk II sputter coater, DV-401 carbon coater, and Bench Top Turbo III for high vacuum depositions. Carbon and gold processes were demonstrated, with both deposition and etch capabilities. DVI floor standing systems, including the DV-502A, were discussed both in terms of their capabilities for microscopy and their high degree of versatility as deposition tools for R&D and lab environments. Denton Vacuum: (609)439-9100, info@dentonvacuum.com, www.dentonvacuum.com

© **Diagnostic Instruments, Inc.** introduced the SPOT RT (Real Time) series of cameras. Focusing, framing and viewing in real time brings "video" like features to digital camera users. Monochrome viewing occurs at 19 f/s in 760 x 540 resolution and at 8.5 f/s in 1520 x 1080 resolution. Color viewing occurs at 12 f/s in 380 x 270 resolution and at 6 f/s in 506 x 360 resolution. Image capture is made with a separate, low noise, 12-bit, 6 MHz circuit and uses three exposures (red, green & blue) to provide noninterpolated images. Other improvements include reduced size and weight (127 mm x 127 mm x 132 mm @ 1400g). Cooling of -37°C from ambient and comprehensive easy-to-use software remain standard features. New models include the RT Monochrome-High sensitivity monochrome only camera, RT Color-fixed color filter camera (lower sensitivity), and RT Slider-slide mounted filter that allows both high sensitivity monochrome and vivid color imaging in one camera. Diagnostic Instruments: (810)731-6000, info@diaginc.com, www.diaginc.com

© **Diatome U.S.** had on display their complete diamond knife family including their room temperature as well as cryo temperature knives at 35°-55° angles. The unique updated static eliminator for room and cryo temperatures was found at the booth as well as their Diamond Trimming Tool. However, the most exciting enhancement to the Diatome line was the announcement of their unique oscillating diamond blade for ultramicrotomy which produces thinner and higher quality sections than ever seen. Diatome U.S.: (215)646-1478, sgkcck@aol.com, www.emsdiasum.com

© **EDAX Inc.** displayed in their booth the integrated TSL/Phoenix system on both the JEOL 5900 and the Philips XL30 ESEM microscopes, and displayed their new 6335F with NT platform in the FEI and JEOL booths. The detecting units were showing <129 eV on the show floor. Also demonstrated was a Microspec WDS, with a plastic cover, to show the spectrometer moving via an automated routine. The system monitor then displayed a macro illustrating the qualitative and quantitative routines associated with their EDS/WDS package. TSL had a stand-alone demo station for their new TEM product (ACT). EDAX Inc.: (201)529-4880, daberle@edax.com, www.edax.com

© **Electron Microscopy Sciences** had on display for the first time their "Lynx" Automated Tissue Processor as well as their complete Digital Imaging Family (cameras, scanners, printers). Oscillating tissue slicers, laboratory precision pulsed microwave ovens, complete immunogold labeling line, and of course, all of their supplies, chemicals, and accessories for microscopy and general biological research. Introduced at the meeting was their unique silver enhancement kit and ultra small reagents (0.8 mm) specifically for EM. Electron Microscopy Sciences: (215)646-1477, sgkcck@aol.com, www.emsdiasum.com

© **Emispec Systems** introduced Version 3.1 of its ES Vision data acquisition and analysis system. ES Vision provides digital imaging and spectroscopy for new and existing SEM and STEM instruments. Most commercially available detectors are now supported, such as slow-scan CCD cameras, video cameras, EDX and EELS spectrometers, and SE/BSE/BF/DF/HAADF scanning detectors. This version also provides major new functionality through an new external programming interface based on the Component Object Model (COM) standard. Through ES Vision's object model, any programming language has access to more than 50 objects offering over 400 properties, methods and events tailored to electron microscopy. This object model allows implementation of complete custom experiments and data analysis in languages such as Java, JavaScript, Visual BASIC, VB Script and C/C++. Examples of recent additions to ES Vision are JavaScript components implementing drift-corrected EDX/EELS spectrum imaging and automated lattice-parameter analysis. Emispec Systems: (480)894-6443, weiss@emispec.com, www.emispec.com

© **EMITECH USA, Inc.** displayed the K-975 turbo evaporator, a desktop,

multiple application system which allows preparation techniques with the flexibility, and module expansion capacity, to develop new methods and to prepare new specimens. This unit allows for carbon evaporation, metal evaporation from both baskets and crucibles and has a sputter coating option. A range of techniques can be practiced including carbon support films and replicas for TEM, carbon/metal evaporation, low angle shadowing and sequential layer coatings using dual source evaporation. The sputter option can be used for a range of targets. EMITECH: (800)444-3137, emitech@ix.netcom.com, www.emitechusa.com

© **Ernest F. Fullam, Inc.** showed their new Tensile Stage Data Acquisition System with motor control capability. The included software is designed for the parameters of material testing. Tensile substages are available for SEM, SPM or LM use. Other options include: Peltier Heater/Coolers, Three and Four Point Bend Fixtures, and 1200°C Sample Heaters. Custom features are available.

A polymer film tensile tester for Digital MultiMode AFMs was also exhibited. Measuring only 15 mm diameter and 10 mm high, it provides equal strain on each end of the sample.

Another new item was the Rotary tweezer Holder, intended for use under a stereo microscope. It holds a pair of clamping or self-closing tweezers and provides 360 degree rotation on the tweezer's axis.

Other new items included Uniband™ Scissors which can be used easily with either hand and Preventx Hand Sanitizer, a non-alcohol antiseptic skin protectant with aloe vera. Information on these and other items are available in their new Catalog Supplement. Ernest F. Fullam, Inc.: (800)833-4024, sales@fullam.com, www.fullam.com

© **ETP USA** displayed the series 6 Robinson detector, which features the highest signal to noise backscattered electron detector available. The detector is capable of short working distance, less than 6 mm, and can image at beam voltages below 800 volts. Signal to noise is so high that it often exceeds that of the SE detector at accelerating voltages as low as 5 kV. In addition to supplying detectors, most existing Robinson detectors can be upgraded to this capability by replacing the scintillator. With the great interest in imaging under vacuum conditions of 0.1 to 1 torr, ETP now offers a variation of this detector which can be used for both high resolution BSE imaging and SE imaging within these higher pressure ranges. The detector features SE imaging at less than 1 pA at 1 kV, TV scan speeds and any combination of SE + BSE imaging, from 100% BSE to similar SE performance as is achieved with the Everhart-Thornley SE detector. ETP USA: (916)797-6199, ruscica@etp-usa.com, www.etp-usa.com

© The VIDX EDS, the latest of **Evex Analytical**, fully integrated x-ray microanalysis system had many admirers. The "min" LN-Free detector, interfaced to the "Digital Pulse Processor" showed microscopists how leading edge technology could be easy to use and be maintenance free. Attendees experienced live demonstrations of the VIDX Microanalysis Software. Features of the VIDX Microanalysis system include Easy EDS Report Generation, Macros, TV rate digital imaging, and Fast Mapping. The powerful VIDX Microanalysis Software can be installed on new electron microscopes or it can replace existing x-ray microanalysis and imaging systems. Evex Analytical: (800)211-8421, sales@evex.com, www.evex.com

© **FEI Beam Technology Division**, a business unit of FEI Company, is the world's best source for: LaB6 Electron Emitters, Liquid Metal Ion Sources (LMIS), Schotky Emitters (TFE), and Focused Electron and Ion Beam Products. FEI Beam Technology Div.: (503)844-2520, beamtech@feico.com, www.feibeamtech.com

© Among the four systems featured at the **FEI/Philips** booth was FEI's Tecnai™ TEM. Just prior to the conference, the Tecnai received Japan's Machine Design Award from the Japan Industrial Design Promotion Organization. It is the first time that this award was presented to a non-Japanese product.

The program judges noted that the Tecnai electron microscope overcomes one of the major problems reported by users: that TEMs tend to

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be very complicated and difficult to operate. Instead of a multitude of user interfaces and methods of operation, Tecnai uniquely embeds and integrates all systems under Windows NT®, resulting in just one monitor, a mouse and a keyboard. The judges also pointed to Tecnai's simple and consistent operation, combined with several different possible user levels, and its network connection that allow remote and secure operation, as a roadmap for the whole next generation of TEMs.

FEI Company: (503)640-7500, macom@eo.ie.philips.nl, www.feic.com

Displayed at the **Gatan Inc.** booth were novel designs of specimen holders including the 925 analytical double-tilt rotation holder, the 915 analytical double-tilt cryotransfer holder and the 910 multiple-specimen cryotransfer holder. The specimen preparation product line demonstrated a new zoom camera option for Gatan's precision ion milling system (PIPS) and a RIBE system for their precision etching/coating system (PECS). The zoom camera option enables high magnification sample viewing during the ion milling process. The reactive ion beam etching (RIBE) system enhances the PECS ability to decorate semiconductor cross-sections with particular contrast enhancement between Si and SiO. Gatan's new 780 DualView CCD camera was a hot item at the show. This unique camera is capable of two-signal output: digital and analog (standard video). The Internet-readiness, MPEG movies, good image quality, excellent diffraction capabilities and the unique camera package were all well received by the participants and the OEMs. Also introduced by Gatan was the 795 MegaScan, 2k x 2k CCD camera with superior image resolution performance.

Gatan, Inc.: (925)463-0200, info@gatan.com, www.gatan.com

Geller MicroAnalytical Laboratory introduced several new products including the MRS-4, their third generation magnification reference standard, traceable to the National Physical Laboratory in the U.K. It can be used for all types of microscopy, including FE-SEM and atomic imaging. Newly added patterns include multiple pitches in the shape of square boxes having ½ µm and 1 µm spacings and a 6 mm ruler (in both X and Y axes) with 1 µm increments. The accuracy of the traceable ½, 1 and 2 µm patterns is ±0.045 µm and ±0.1 µm for the ruler and larger patterns. With the MRS-4, magnification can be calibrated from 10X all the way to 200,000X.

dSpec is a computer control system for manual or previously automated electron probe micro analyzers. dSpec has micro stepper motor drivers for ultra smooth spectrometer and stage motion and controllers for crystal flipping and beam current measurement. For the first time gas flow and sealed counter digital pulse processing (PPS) techniques are used in EPMA's. The PPS has hardware dead time correction and pulse pile-up rejection. This effectively eliminates pulse shrinkage which was thought to be a counter ion effect.

dQant32 and dPict32 are Windows 98/NT compatible program upgrades. dQant controls either the Noran PAC 5600 or dSpec, dPict32 is an active scan generator digital imaging system for analog SEMs and EPMA's. Geller MicroAnalytical Lab: (978)887-7000, jg@gellermicro.com www.gellermicro.com

High resolution measurements and production techniques have created the demand for highly efficient vibration isolation, **Halcyonics GmbH** offers active vibration damping which eliminates the low frequency resonance seen in commonly used pneumatic systems. They offer three active vibration isolation solutions to cover the different sizes and loads viz. the MOD-1 compactly designed for the AFM and other small experiments can handle a load up to 90 kgs, MOD-2 systems for medium sized setups and MOD-4 systems with heavier loads up to 4500 kgs and automatic leveling. Halcyonics GmbH: jb@halcyonics.de, www.halcyonics.de

HKL Technology ApS develops, builds and sells complete electron backscatter diffraction (EBSD) systems. EBSD offers simultaneous microstructural characterisation and complete texture analysis for crystalline materials at submicron resolution. The latest version of the software, CHANNEL4, runs under Windows 95, 98 and NT.

Our state of the art detector is designed to fit all microscopes. and generates high quality electron backscatter patterns. The highly optimised

indexing software works with all crystal systems.

Orientation maps, grain size data, pole figures and orientation distribution functions are easily produced. The open design of CHANNEL4 allows users to integrate their own software. Advanced Subset Tools give maximum flexibility for data filtering and manipulation.

HKL Technology ApS (Denmark): +45 96 57 26 00, sales@hksoftware.com, www.hklsoftware.com.

Illumea Corporation introduced ILLUMEA FiberPix™, their Internet Telemicroscopy System. Designed for microscopy images and the internet, the system uses off the shelf equipment and standard internet connections to deliver high resolution, full color depth images over existing connections, even with POTS. Consisting of FiberPix Server software, installed at microscope site, and FiberPix Viewer software, installable on any PC, the system allows remote access to microscopy resources, consultation and collaboration, even rapid image transfer all over simple Internet, Intranet, LAN, or WAN connections. Illumea Corporation: (800)832-2303, bmiller@illumea.com, www.illumea.com

IXRF Systems, Inc. introduced the "EDS2000" EDS/Imaging system. Software additions from previous packages include "Position Tagged Spectroscopy" and "Particle Databasing" with size and chemical composition characterization. Automated image analysis package complete with macro recorder was also presented. A new 32-bit PCI DSP card was also introduced with the IXRF "Digital Pulse Processor" to enhance the complete IXRF line. IXRF Systems, Inc.: (281)286-6485, wendis@ixrfsystems.com, www.ixrfsystems.com

JEOL USA, Inc. introduced their FasTEM line of Remote Computer Controlled TEM's and their new Multienvironmental SPM instrument. The FasTEM system allows a user to operate the TEM from a computer connected to the internet from virtually anywhere in the world. JEOL's assertion at the meeting that "Someday All TEM's will be in Nebraska" and "All Microscopists Will be in Aruba" humorously exemplified the fact that the FasTEM system allows the operator to operate the instrument from anywhere including a desk beside the instrument, an office down the hall, a living room at a residence, a University classroom across the country or, in fact, a beach in Aruba. The JEOL JSPM-4200 is a new multienvironmental SPM which is capable of imaging under either ambient or high vacuum as well as at both high and low temperatures. It is also capable of wet or dry imaging and has variable gas pressure/temperature. JEOL USA, Inc.: 978-535-5900, eod@jeol.com, www.jeol.com

Ladd Research Industries, Inc. displayed its various colored Mercox kits in conjunction with the corrosion casting symposium, and its expanded electron microscope disc and strip aperture line which provides special sized holes for all existing EMs. Also announced were new particle beam and x-ray collimator apertures.

Ladd Research Industries, Inc.: (802)878-6711, sales@ladd-cc, www.ladd-cc

LEO Electron Microscopes launched its new affordable field emission SEM the LEO 1525 with much success. Based on the well-proven and high performance of the Gemini column, the 1525 generates superb imaging resolution - 1.5 nm at 20 kV and 3.5 nm at 1 kV. Combined with the easy-to-use and richly featured LEO-32 software, this SEM will find its way into many companies and universities where budgets are tight but performance cannot be compromised.

Also on display were the LEO 1450VP SEM with Variable Pressure Secondary Detector and the LEO 922 200 kV Omega EFTEM, both of which received many visitors. In fact, the booth was so busy at times that two or three demonstrations had to be performed simultaneously. LEO also announced two additions to their 1400 series, the 1455 and 1455VP. These SEM's feature extra-large chambers for the non-destructive examination of large samples ranging from mechanical parts to priceless works of art.

LEO Electron Microscopy Inc.: (914)747-7700, 70142.504@compuserve.com, www.leo-em.co.uk

Leica Microsystems provides the tools required for specimen preparation and microscopic evaluation of biological and materials samples. Leica presented its full line of specimen preparation products for TEM and SEM. Leica featured the market leading UCT ultramicrotome and the FCS low temperature sectioning system. Leica's new RES 100 ion beam milling system was demonstrated as well as the newest technology in high pressure freezing, the EM

PACT. The latest in microscopes and image analysis instrumentation was also shown.

Leica Microsystems: (800)248-0123, info@leica-microsystems.com, www.leica-microsystems.com

© **McCrone Microscopes and Accessories** introduced the new Linkam LTS 350 Large Area Heating and Freezing Stage. With a temperature range of -196° C to 350° C, and a temperature stability and accuracy of < 0.1° C, the LTS 350 is ideal for documenting melting points, polymorphic states, and freezing points on a variety of materials. To achieve the maximum heating and cooling rate of 30°C/min, with < 1 second response time at 5° C/min at 50° C, the stage uses a platinum resistor sensor embedded close to the stage surface. A swing out lid has been incorporated to promote easy sample loading, and provides an air-tight seal for atmospheric and moisture control, as well as for introducing and venting gases. The sample holder can accommodate either a standard 75 x 25 mm microscope slide or up to a 22 mm round cover glass. The Linkam LTS 350 can be controlled manually or via Windows software, which also incorporates Real Time Video Software for image capture.

McCrone Microscopes: (800)622-8122, mma@mccrone.com, www.mccrone.com

© **Media Cybernetics, L.P.** presented Scope-Pro, a plug-in module for Image-Pro Plus version 4.0, as designed for anyone who wants to control and program the movement of microscopes, filter wheels, and/or automated stages. The addition of Wizards helps to quickly create desired scanning patterns when using an automated stage. The new multiwell plate image capture facility feature allows you to quickly and easily capture images from individual wells in a multiwell plate. The new Feature Map tool allows you to turn a high-resolution tiled image into a feature map. Another new feature is the generation of Z-stacks of images, both as a stack and/or as an image sequence. Other new features in Scope-Pro 4.0 include: new Z-Distance measurement feature in the Z-Axis (with appropriate hardware) plus support for the Nikon E1000 and Leica DMRXA automated stages, the Olympus AX70 8-position filter turret, and the Märzhäuser L-Step controller and stage.

Media Cybernetics, L.P.: (312)842-7100, info@mcri.org, www.mediacy.com

© **Meiji Techno**, one of Japan's largest microscope manufacturers, introduced their new RZ Series of common-main-objective stereo microscopes. The RZ features a 10:1 zoom ratio and an extended magnification range from 3.75X to 300X. The zoom controls have magnification indicators as well as positive detente click-stops at 12 positions to make measurements and photo framing easily repeatable. Particularly notable is the optional ergonomic viewing head, which has adjustable eyetubes that incline from 10° to 50° for comfortable, fatigue-free viewing. Built-in variable dual-iris diaphragms allow control over resolution, contrast, and depth of field. All RZ Series components are also coated with an anti-static finish, which is especially useful when working with sensitive electronic components. The RZ parallel optical system allows the introduction of various accessories into the optical path, such as photo/video attachments, drawing attachments, and coaxial illuminators. Other options include polarizing accessories, a selection of stands with built-in brightfield and brightfield/darkfield illumination, and mechanical stages.

Meiji Techno America: (408)428-9654, micro@meijitechno.com, www.meijitechno.com

© **M.E. Taylor Engineering, Inc.** has expanded their line of SEM compatible adhesives and tapes. They are available in a variety of materials including carbon, silver, and copper. The "Lift-N-Press" double stick tabs eliminate the cellulose or polymer strip common to many double stick adhesive tapes. Free samples are available. This company is a leader in the production of scintillators for electron beam instruments.

M.E. Taylor Engineering: (301)774-6246, metengr@aol.com, www.semsupplies.com

© **Microcosm, Inc.** introduces a powerful new Windows NT 10-Bit upgrade for Zeiss Confocal Laser Scanning Microscopes, including the LSM - 210, 310, and 410 instruments. The package, called Z-NT, includes: a dual monitor Pentium computer system; a proprietary, high-speed digitizer; Matrox image capture boards; improved optical filters and mirrors; low-noise photomultiplier upgrades; and an intuitive, new user interface. For the LSM-210, the old electronics are replaced with new control electronics. This includes new digital scanning galvanometer drivers giving users control of the scanning operation. In addition to the

standard LSM 2-D and 3-D imaging abilities, arbitrary line tracing scans and user definable regions of interest are now supported. Z-NT features full network support providing users remote access to electronically controllable functions and diagnostics. In addition to being the only independent company trained and stocked to service Zeiss LSM instruments, Microcosm, Inc., of Columbia, Maryland is the world's only total solution provider to researchers using the latest techniques of time-resolved and multiphoton microscopy. Z-NT is the first in a planned series of upgrades that will both expand the imaging features available and give users the ability to integrate virtually any experiment or process around the Zeiss LSM instruments.

Microcosm Inc.: (301)725-2775, info@microcosm.com, www.microcosm.com

© **Micro Star Technologies** introduced a new Cryo Ultramicrotome for Electron, Optical or Scanning Probe Microscopy. This 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 modes, and it readily converts for right or left hand use. In the automatic mode, it sections from 25 nm to 5 µm at speeds from 0.2 to 4 mm/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

© **Nanonics Imaging Ltd.** presented the NSOM-100 microscope, which provides a unique combination of integrated near-field, conventional far-field, confocal and atomic force microscopy. The NSOM-100 fits on any optical microscope, including upright microscopes for which no AFM options exist. The NSOM-100 can image, with overlapping fields of view, from eyeball to Angstrom. Applications include: profiling near and far field optical intensity distributions and simultaneous topography of waveguide, electro-optical and optical devices, micro-electronic circuits produced with CMP technology and < 0.25 design rules, super resolution fluorescence imaging of chromosomes and other biological structures, super resolution chemical sensing, etc. Nanonics also produces the singular 3D Flat Scanner stage that can be placed on any optical microscope and can provide 3D motions from the millimeter to nanometer scale, with improvements for 3D optical sectioning, non-linear microscopy and laser tweezers.

Nanonics Imaging (Israel): 972-2-678-9573, www.nanonics.co.il

© **National Graphic Supply** is stocking the Fuji HC-300z Camera System. The HC-300z is a compact, direct C-mount digital camera for microscopy and copy stand applications. A 1.4 million pixel sensor provides 1280 x 1000 resolution. SCSI interface to Windows or Mac computers. Optional Control Box enables direct connection to Zip Drives for non-tethered operation. Live S-video and NTSC video preview. Standard C-mount for easy mounting to microscopes or accessory lenses.

Also available is the Kodak MDS120 Microscopy Documentation System. Based on the megapixel DC120 camera, the MDS120 is for brightfield, darkfield, and some fluorescence imaging. 1280 x 960 resolution, universal C-mount adapter mounts to standard 1x C-mount. Software enables image capture, adjustment and annotation. DC120 Camera may be used stand-alone for high quality digital photography.

National Graphic Supply: (800)223-7130, scisales@ngscorp.com, www.ngscorp.com

© **NORAN Instruments** continuing its aggressive ultra-high resolution detector development program, made two new product announcements. NORAN announced the signing of a license agreement with the National Institute of Standards and Technology (NIST) giving the company co-exclusive rights to commercialize a revolutionary style of Energy Dispersive X-ray Detector. The microcalorimeter X-ray detector resolves energy peaks at or below 10 electron volts FWHM, combining the excellent energy resolution

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of a wavelength dispersive spectrometer (WDS) with the parallel energy detection currently found only in EDS. NORAN plans to deliver production units of this detector in the second half of the year 2000. The company also announced its new MAXray Extended Range WDS detector. Using a combination of WDS principles with X-ray focusing optics technology, NORAN is the first to produce a spectrometer with WDS resolutions (6 eV to 80 eV) at FESEM or SEM currents of 50-100 pA.

NORAN Instruments: (608)831-6511, micro_info@noran.com, www.noran.com

© **NSA/Hitachi Scientific Instruments** provided demonstrations on three instruments—the H-7500 TEM, S-4700 Field Emission SEM, and the new S-3000N Variable Pressure SEM with an integrated Oxford Particle Analysis system. The S-4700 and S-3000N are both Windows based SEMs, offering the versatility of both computer and traditional knob controls. The H-7500 TEM was equipped with a digital camera, and all three microscopes were networked within the booth. Commanding the network was the sophisticated PCI Image Management system, allowing customers to view, process, and print their images off-line after the individual demonstrations. There were four PCI computers in the booth, one of which showcased the new "Global Eye" project, in which databases managed from around the world could be accessed using the PCI internet capability. Introduced for the first time at an M&M Conference was the new HD-2000 STEM.

NSA/Hitachi Scientific Instruments: (800)227-8877, sidsales@nissei.com, www.nissei.com

© **Oxford Instruments Microanalysis Ltd** launched new products on its INCA platform to provide advanced productivity to EDX and WDX and give full compatibility between the techniques. Both new products provide "out-of-the-box" performance allowing novices or experts to operate them easily.

INCA ENERGY offers new and unique functions to EDX including spectrum synthesis (for accurate prediction of results, optimizing analytical configurations and predicting peak shapes where complex peak overlaps are involved).

INCA WAVE offers improved power and speeds for WDX, with ultimate sensitivity orders of magnitude better than EDX. WAVE has the same accuracy as its predecessors, increased functionality, but is much easier to use than any other WDX offering.

Oxford Instruments also announced a free software upgrade to OPAL 4.3 allowing more user-friendly EBSD materials analysis - running at a higher speed than currently available with improved capabilities for dealing with difficult non-cubic materials.

Oxford Instruments Microanalysis: (978)369-9933, Fax: (978)369-8287 www.oxford-instruments.com/mag

© **Princeton Gamma-Tech** introduced the latest analytical capability of the IMIX PTS system, Radial Profile Analysis. Designed for rapid collection of x-ray data where each photon tagged with image location, PTS provides image correlated data during, or long after data collection has taken place. Radial profiles provide a radial concentration profile of features within an image by repeated feature erosion and subsequent retrieval of the stored X-ray data. Application of the Radial Profile technique has proven extremely valuable in the analysis of fiber-reinforced composites, catalyst materials and other cross-sectioned particles. PGT also highlighted the latest release of eXcalibur software for the Avalon X-ray analysis system. This basic workhorse system gives reliable, easy to acquire, X-ray microanalysis results with a minimum of user interaction and interpretation. The user interface, with its familiar Microsoft style look and feel, is perfect for a basic, multi-user analysis system.

Princeton Gamma-Tech: (609)924-7310, sales@pgt.com, www.pgt.com

© **PixelVision, Inc.** of Beaverton, Oregon displayed the VisionXXL™ Image Analysis System with XRay3D™ plug-in and the VisCOMET™ package for Single Cell Gel Electrophoresis, often called Comet Assay. Each package fully supports the PixelVision, Inc. line of CCD cameras. XRay3D extends VisionXXL to allow full visualization and analysis of 3-dimensional surfaces and volumes, without the limitations of traditional polygon-based

rendering techniques. Volume data is fully preserved in every view, and advanced macros support fly-by or fly-through animation. "VisCOMET allows the study of live SCGE images from a microscope or from stored digital images. Functionality includes simultaneous processing of multiple comets, prompting for slide or dose change, comet segmentation, automatic or manual definition of head and tail thresholds, and filtering for noise reduction and smoothing. Export capability is included for further statistical analysis."

PixelVision, Inc.: (503)629-3210, info@pv-inc.com, www.pv-inc.com

© **Quartz X-Ray**, the new x-ray microanalysis division of Quartz Imaging Corporation, introduced the Quartz XOne EDS system. XOne is available for retrofit to most existing detectors or with a new detector. It features Quartz's fully-digital, DSP-based, high performance TrueSpectrum pulse processor. In retrofit applications, TrueSpectrum results in both resolution and throughput improvements over the original analog pulse processor. The pulse processing electronics and power supplies fit entirely inside the analysis computer, minimizing the system's footprint. Developed from the ground up to operate under Windows NT, the analysis software offers comprehensive functionality while still being easy to use.

As it comes from Quartz Imaging, XOne is completely compatible with the Quartz PCI Image Management System. The availability of offline viewer software means that users can work with spectra without tying up the instrument. Quartz X-Ray: (604)488-3911, info@quartzimaging.com, www.quartzimaging.com.

© **Raith USA** presented their ASEM (Application Specific Electron Microscope) as the next generation of Raith "Turnkey" systems. By utilizing years of experience in several fields, Raith will design and build a complete system to perfectly fit your application, when no other "standard product" will suffice. Listed below is a sample of the "Technological building blocks" that form the ASEM. Each item compliments or relates to the other in a way that allows Raith to create leading edge systems for very specific applications. Use this example for designing your own ASEM by selecting from our menu of proven products.

- Ultra precise, Laser interferometer Stages (any size)
- Ultra High vacuum components and systems
- CAD Navigation and defect review software
- Oversized SEM chambers
- e-beam Lithography systems
- Digital scan control and image capture with in-image navigation
- Metrology attachments and options
- GDS-II editor and post processor
- Reverse engineering systems

Although Raith is recognized as a manufacturer of SEM stages and SEM lithography systems, the new ASEM may soon change our whole image.

Raith USA: (516)222-1764, raith_usa@compuserve.com, www.raith.de

© At M&M '99, scientists of the Max Planck Institute, **KETEK GmbH** and **RÖNTEC GmbH**, the German X-ray microanalysis systems manufacturer, jointly received the prestigious "MACRES" award for the most significant technological achievement of 1998. The award was based on a paper presented at M&M '98 by the above covering the Silicon Drift Chamber X-ray Detector (SDCD) technology. Having developed the associated hardware, software and electronics, RÖNTEC has made available a reliable, high performance SDCD. Introduced in 1997, the RÖNTEC "XFlash®" is a small, low cost; LN2 free, room temperature X-ray detector for SEM's which can process up to 1 million cps with excellent energy resolution. This achievement represents a more than ten-fold improvement over present Si(Li) detector technology. RÖNTEC offers complete Windows based EDS systems, premium quality analyzer upgrades to most existing EDX detectors, and it's own advanced design, low consumption, LN2 cooled UHV detectors.

RÖNTEC USA: (978)266-2900, sales@rontecusa.com, www.rontecusa.com.

© **Sagitta Ltd.** unveiled the latest model of NEXT-1, its automatic polisher, offering sample preparation for SEM and TEM inspection in one tool. The NEXT-1 polisher is constantly being acknowledged as the quality method to cross-section semiconductor samples "straight to the point", with accuracy of 0.1 µm. Automatically polishing any predefined target, NEXT-1 enables the fast preparation of samples with an unprecedented success rate. Highlights of the TEM application include: 1-4 µm sample thickness, full control of the sample shape

(wedge shaped), repeatability in reaching the same target, and samples prepared in 45-50 minutes.

Sagitta Ltd.: 972-3-7514601, guy.schechter@sagitta.co.il, www.sagitta.co.il

© **Small World** demonstrated Electron Flight Simulator version E, the world's only visualization software that shows the beam scatter in environmental and low vacuum SEMs. The user can vary the gas type, chamber pressure, working distance, and accelerating voltage, and get a picture of how these parameters affect the beam scatter. Also introduced was the Wafer X-Checker calibration aid for semiconductor defect review SEMs. Wafer X-Checker makes it easy to monitor and test the calibration, resolution, and overall performance of EDS X-ray system on your DRT.

Small World: (703)849-1492, DChernoff@aol.colm, www.small-world.net

© **South Bay Technology, Inc.** introduced the new CE certified PC2000 Plasma Cleaning System. The PC2000 is capable of traditional TEM plasma cleaning as well as highly controlled Plasma Trimming and Plasma Etching applications. The high power options on the PC2000 coupled with multiple process gas capabilities have led to some exciting new applications. As the user has complete control over every cleaning/etching parameter, the system can be adjusted for doing simple cleaning of hydrocarbons or more complex selective etching of materials. This product is built under license from Argonne National Laboratory.

Also, South Bay Technology has integrated a new low energy ion gun into the IV3 Ion Milling System. This new low energy ion gun allows the user to bombard a TEM sample with extremely low energy ions reducing surface damage and producing samples suitable for High Resolution Electron Microscopy. This new low energy ion gun technology allows ion energies of 100 v - 2 kV to be used and has been proven to reduce or eliminate amorphous damage in GaAs, silicon and other materials. This new technology ion gun is also available in an ultra high vacuum version for depth profiling in analytical systems such as SIMS, AES, ESCA (XPS and UPS).

South Bay Technology, Inc.: (800)728-2233, sbt@southbaytech.com, www.southbaytech.com

© **SPI Supplies** introduced the Osmium Plasma Coater OPC-40, designed for FESEM users as a far superior solution for conductive coating problems than chromium. The deposited coating is completely amorphous, therefore conductivity of a given level can be established with thinner coatings, making possible the resolving of fine features that would otherwise be covered up. And since osmium is a precious group metal and has the inertness of platinum and gold, the metal layer essentially lasts "forever" and it will not oxidize, as would chromium, in a matter of hours (some would say "minutes"). For any FESEM examination of nonconductive samples, there can be a world of difference in results between osmium vs. chromium coated samples. And unlike a chromium coater, the OPC-40 uses only an ordinary rotary vane mechanical pump, and the throughput of samples is more like a conventional gold coater, not the hour or more per run needed for chromium coating.

SPI Supplies: (800)2424-SPI, spi2spi@2spi.com, www.2spi.com

© **Ted Pella, Inc.** exhibited the new PELCO™ 2100 Stedi Bench™ Anti-Vibration unit. It is an inexpensive solution for frequency vibrations over 12 Hz. Stedi Bench uses a passive dampening system designed for light microscopes, digital or video cameras, AFM and other small precision instruments, not greater than 45 US-pounds and is quite affordable. A new Multi-Grid Strainer for convenient TEM processing was introduced. 1-25 grids can be stained at one time in a matrix which will save time and provide uniform results. The PELCO 3451 Microwave Processor was demonstrated with the new unique Variable Wattage Controller. Six power setting from 250-750 watts can be selected for precision temperature control of all laboratory applications.

Ted Pella, Inc.: (530)243-2200, sales@tpella.com, www.tedpella.com

© **ThermoMicroscopes** presented its complete line of scanning probe microscopes:

- **Explorer™** - Designed for versatility, the Explorer functions in air or liquid environments, accommodating samples of any size. It offers a broad range of operating modes, including Micro-Thermal Analysis and Pulsed Force Mode (Explorer PolymerSystem™), and interfaces readily with an inverted light microscope (Explorer LifeSciences™).

AutoProbe™ CP Research™ - Designed for research applications, the AutoProbe CP Research offers atomic scale resolution, a broad range of oper-

ating modes - including magnetic and electrical modes - all accessible without changing the scanning head, and high resolution optics.

AutoProbe™ M5 - Designed for industrial and analytical laboratories, the M5 handles samples up to 300 mm in diameter with automated stage movement. It offers a full range of operating modes, including the newly introduced capacitance and thermal imaging.

Aurora™ and **Lumina™** - NSOM (Near Field Scanning Optical Microscopes) systems provide a platform for high-resolution spectroscopic imaging with chemical information on a sub-wavelength scale.

ThermoMicroscopes: (408)747-1600, info@thermomicro.com, www.thermomicro.com

© **TN Analyzer Service Inc.** introduced the new WINEDS PCADC3 PCI bus acquisition card for PC with software adjustable calibration. Many new features in the WinDiss integrated imaging include TV rate scan, SEM setup mode and automatic quantitative point analysis modes.

TN Analyzer Service Inc.: (608)798-2005, doug_tnas@msn.com, www.tranalyzer.com

© **The Universal Imaging Corporation®** provides a variety of software and integrated imaging systems to scientists and engineers worldwide.

Universal Imaging's flagship MetaMorph® system powers digital and video microscopy with versatile camera support, advanced device control and sophisticated automation features. MetaMorph supports monochrome and color cooled CCD digital and video cameras. It provides control for automated microscopes, filter wheels and shutters, monochromators, focus motors and Piezo electric focus devices, motorized stages, digital and serial input/output, and robotic devices. The system offers many tools for image processing and analysis, time-lapse and multi-dimensional acquisition, 3D reconstruction, and measurements of morphometry, colocalization and other parameters.

Universal Imaging Corporation: (610)344-9410, sales@image1.com, www.image1.com

© **VAYTEC** demonstrated their Stable Table: a low profile, tabletop or countertop vibration isolation platform which performs superbly with microscopes and other sensitive inspection and analytical equipment. It is comprised of a solid platform and three isolation bearings.

- Platform is clear anodized aluminum, high strength plastics and composites. Vibration isolation bearings are six degree of freedom, passive, mechanical isolation bearings.

- Bearings employ a broad band vibration filter for horizontal vibrations and a zero-stiffness, white vibration filter for vertical vibrations.

- Bearings are comprised of hardened, galvanized steel, 304 stainless steel, Teflon®, anodized aluminum, and/or Teflon® coated alloy steel. Cleanroom requirements may dictate material selection.

- Performance and reliability surpasses that of semi-active pneumatic and fully active piezo electric systems.

- Durable metal design does not depend on elastomers that can deteriorate and contaminate a clean room.

- It does not require pneumatics and electronic supporting hardware.

VAYTEC: (515)472-2227, vaytek@vaytek.com, www.vaytek.com

© **XEI Scientific** demonstrated their new FLASH SEM-Clean anti-contamination system with a live demo featuring skin oil removal from a silicon wafer. This demonstration on a macro scale showed that in minutes oil deposits could be oxidized out of the vacuum chamber by FLASH SEM-CLEAN system operation. The system can be used to clean SEM chambers and specimens in-situ before, during and after analysis. A small RF plasma device mounted on a chamber port was used to create oxygen radicals from air that quickly oxidized oils to CO and H₂O gases to be pumped away. A compact controller contained a RF generator, vacuum gauge, and system controls for both automatic and manual operation.

XEI Scientific: (650)369-0133, RVaneXEI@concentric.net

