

New and/or Interesting at Microscopy & Microanalysis '97

As is our custom, and for the interest of readers who were not able to attend the recent MSA Conference in Cleveland, in the following we have attempted to summarize what was "new and/or interesting".

- ➔ **4pi Analysis, Inc.** offered its product packages for EDS acquisition, SEM/STEM digital imaging, and x-ray spectral image mapping. These provide the end-user with Macintosh/PowerMac-compatible systems and upgrades for EDS and/or S(T)EM imaging systems that are both full-featured and affordable. The capabilities of faster acquisition speeds and multiple input/output channels were highlighted. The 4pi Spectral Engine II PCI-based circuit card (also available in a NuBus version), including its specifications and capabilities, was shown. The powerful PCI-version is now available to OEMs for resale as part of (PC-based) EDS and/or imaging systems - and Windows-based drivers/DLLs with full documentation are available. 4pi Analysis, Inc.: (919)489-1757, Fax: (919)489-1487, www.4pi.com
- ➔ **Amerinex Applied Imaging (AAI)** announced the release of additional extensions for APHELION™ 2.2 for the microscopy market. APHELION 2.2 is an image analysis and image understanding toolkit for software developers and end-users, available for Windows 95 and NT systems. The new extensions provide many important and new features; such as interface to a microscope stage - with full control of X, Y and Z, Comet or Single Cell gel Electrophoresis Comet Assay Application, and Immuno Marker detection. AAI also added new features to APHELION 2.2 such as: classification incorporating fuzzy logic-based recognition, interface to AAI's VisionTutor™ computer vision course, and multimedia documentation. Amerinex Applied Imaging: (413)256-8341, Fax: (413)253-4203, www.aai.com
- ➔ **AMRAY, Inc.** displayed its popular line of 3000 Series Scanning Electron Microscopes. AMRAY ran customer demonstrations on the Model 3200 ECO Environment Controlled SEM, that allows for uncompromised (uncoated) examination of unfriendly samples, and the Model 3300FE, an analytical research quality (EDS/WDS) Field Emission SEM. AMRAY's 3000 Series also includes the Low Energy Advanced Performance Model 3600 LEAP SEM. The Model 3600 LEAP boasts of a high resolution specification of 4 nm at 1 kV, and 1.5 nm at 15 kV. Other AMRAY 3000 Series features include a 2 K x 2 K frame buffer, embedded computer control of all SEM functions, and patented Schottky Field Emission Gun Technology. AMRAY, Inc.: (800)225-1161, Fax: (617)275-0740, www.amray.com
- ➔ **American Nuclear Systems, Inc.** introduced a complete line of EDS systems, both upgrade packages and complete systems are available. Upgrade packages are priced from \$4500 to \$13900 and may be as simple as a new multi-channel analyzer and Windows based semi-q software or as complete as total replacement of the electronics package (keeping only the detector) with quantitative software. The System 4000 features total computer control, an eight order triangular filter amplifier for optimum noise performance, and a 4000 channel, 2.7 μsec ADC with premium specifications for the best possible spectroscopy results. One may download demo software from the following [www](http://www.ansxray.com) site. American Nuclear Systems, Inc.: (800)980-9284, Fax: (423)482-6253, www.ansxray.com
- ➔ **AutoDeblur™ is Autoquant Imaging, Inc.'s 3D deconvolution software product**, which automatically removes haze and noise in 3D micrographs. It works with fluorescent, transmitted light and confocal microscopes and runs on a Pentium or SGI computer. It has a variety of fast and robust deconvolution algorithms, basic visualization tools, color/multichannel capabilities, and includes blind deconvolution which eliminates esoteric point-spread measurements. AutoVisualize is a 3D rendering and visualization software package for the PC platform especially tailored for biomedical imaging such as optically sectioned widefield micrographs and magnetic resonance imaging. AcuView-3D is a 3D picture processing software package for inspecting samples that are alive and moving during optical sectioning or during a time series collection. AutoQuant Imaging, Inc.: ((518)276-2140, Fax: (518)276-6380
- ➔ **Scanning Probe Microscopes (SPMs)** offer the capability of providing three-dimensional surface imaging with extremely high magnification (up to 100 times better than SEM). In addition, these microscopes quantify the height, depth, and width of fine surface features or surface roughness with sub-nanometer resolution non-destructively and with virtually no sample preparation. 25 years of engineering and manufacturing experience has allowed **Burleigh Instruments** to develop a new generation of cost-effective, user-friendly instruments such as the new VISTA Large Sample SPM. The integrated computer/controller and the unique mechanical design makes the VISTA as much at home on a manufacturing floor as it is in a research laboratory, classifying it as the first truly Industrial-Strength SPM. Burleigh Instruments, Inc.: (716)924-9355, Fax: (716)924-9072
- ➔ **Clemex Technologies, Inc.** exhibited Clemex R'Kive - an arching software application oriented toward scientific users. Clemex R'Kive software enables labs to increase their productivity by automating their archiving process. Integrated within Microsoft Explorer, users are able to store their files in project folders, which are then archived automatically to a chosen media including tapes, high-capacity drives, CD-ROM, or CD re-writable discs. Additional features include; image acquisition, printing, search by key word, properties, and image pattern. Clemex Technology, Inc.: (514)651-6573, Fax: (514)651-9304, www.clemex.com
- ➔ **Cressington Scientific Instruments, Inc.** unveiled its new 308TC bench top coating system. It is designed as a versatile pump station with a 13" base plate to accommodate many different applications. Options include a liquid nitrogen trap, chamber isolation valve and sample airlock. Standard ISO mounting flanges allow for different types of molecular drag or turbo pumps to be utilized. It can hold large substrates such as 8" semiconductor wafers for sputter coating or irregular shaped objects to be coated using metal evaporation, carbon coating, or electron beam evaporation techniques under a standard 12" bell jar. The 308 is a natural progression of the ever popular 108 and 208 coating systems. Cressington Scientific Instruments, Inc.: (800)755-1781, Fax: (412)772-0219, www.cressington.com
- ➔ **Delaware Diamond Knives, Inc.** displayed its full line of diamond knife products including knives for cryosectioning, thick sectioning and material science. DDK's products for ultramicrotomy are available in high, regular and low included angles designed for specific applications. The company continues to introduce programs in support of customer needs, including free training, sample evaluation and knife upgrades. Delaware Diamond Knives, Inc.: (800)222-5143, Fax: (302)999-8320, www.ddk.com
- ➔ **Diagnostic Instruments** introduced their new cooled CCD color digital camera SPOT for light microscopes. This camera produces high resolution 1315 x 1035 pixel resolution color images. The SPOT digital camera uses 3-shot digital technology (separate shot for red, green, and blue) so that each pixel gets a true measurement of color. The camera features an easy to use software interface for image acquisition, post picture editing, and a database archival system. The software also works with other Twain compliant programs such as Photoshop. Diagnostic Instruments: (810)731-6000, Fax: (810)731-6489.
- ➔ **Diatome** had on display their complete line of room temperature and cryo temperature diamond knives for the cutting of all types of biological and material samples - including: Polymers, Metals, Wafers, and many other composite materials. Diatome U.S.: (215)646-1478, Fax: (215)646-8931, www.emsdiasum.com
- ➔ The Dimension™ 3000 from **Digital Instruments** has been enhanced to provide even easier operation, improved functionality and CE certification. The new Dimension 3100 SPM now includes an X-Y stage that provides substantially better bidirectional repeatability and speed, as well as improved trackball response. In addition, the illuminator is now computer-controlled for easier focusing and zooming for optical location of features for high-resolution scanning. Video image capture capability is also included as well as more efficient packaging for easier installation and reduced overall footprint. The Dimension 3100 retains all of the existing features of its predecessor, including its versatile scanning capabilities and sample handling, ease of operation, and the lowest noise floor and highest resolution of any large sample SPM. Digital Instruments: (805)967-1400, Fax: (805)967-7717, www.di.com
- ➔ The complete line of **E. A. Fischione Instruments Inc.** TEM specimen preparation products was on display, with most interest generated by two products: the Model 1400 Plasma Cleaner and their new line of TEM specimen holders. The Model 1400 readily accepts all commercial TEM specimen holders for direct cleaning of TEM specimen and holder, and also is capable of cleaning bulk specimens. This instrument contains an oil-free vacuum system, eliminating any possibility of contamination during the cleaning process. The EAF line of TEM specimen holders includes the Model 1100 Cryotransfer system, a fully integrated cryo workstation and cryo TEM holder, and the Model 1300 Tilt-360° Rotate Holder. Both types of holders are made for all commercial TEMs. E. A. Fischione Instruments Inc.: (412)325-5444, Fax: (412)325-5443.
- ➔ **EDAX International, Inc.** featured the EAGLE. This EDXRF spectrometer which focuses a 100 micron X-ray beam onto a sample allows for improved detection limits compared to electron excitation. A digital camera for imaging, and a motorized stage for analysis of both solids and liquids. Integrated EBSP/EDS.TSL and EDAX now offer EBSP (or OIM) and EDS in an integrated Windows based EDAX analyzer. Integration allows for

combined crystallographic and chemical characterization while maintaining high performance and cost benefits. Spectral Imaging: This software package stores a complete EDX spectrum for each pixel of a map on disk. Users can select the element of interest after the map is collected, instead of beforehand. EDAX Interational, Inc.: (800)535-EDAX, Fax: (201)529-3156, www.edax.com

➔ **The E. Fjeld Co., Inc.** introduced a reconditioned Scanning Electron Microscope equipped with Digital Imaging and Energy Dispersive X-ray analysis. Offering significant costs savings, the package is a PC based system designed for storage, archival and processing of digital images. Complete installation and service warranty provided. Introduced was a series of high resolution FE specimen stages. The stages are motorized and computer controllable for increased flexibility. In addition, a microstepping electronic drive package, a 4 inch Airlock Transfer System and a LCD Beam Current Monitor were displayed. E. Fjeld Company: (508)667-1416, Fax: (508)667-9059

➔ **Electron Microscopy Sciences** launched their Temscan, a high resolution digital scanning system for capturing transmission electron microscope images from film. The Temscan captures files for image analysis, prepares images for publication and archival storage, allows you to scan film from 1" x 15", in 36-bit color / 12-bit grayscale with 3380 x 2700 resolution. The Temscan connects to a PC or Mac and converts old negatives to digital files. Electron Microscopy Sciences: (215)646-1566, Fax: (215)646-8931, www.emsdiasum.com

➔ **Energy Beam Sciences** introduced its new AP2000S Autoprocessor for TEM film. This unique instrument automatically processes up to 56 3-1/4" x 4" negatives in less than an hour. It features state-of-the art programmable microprocessor control and optical switches. Featured in their booth were laboratory Microwave Process for TEM specimen preparation, the JB-4 rotary microtome for semi-thin sectioning, LaB₆ and TFE cathodes for almost all TEMs and SEMs. Also on display were the Polaron range of sputter coaters, critical point dryers and plasma etchers. Energy Beam Sciences: (413)786-9322, Fax: (413)789-2786, www.ebsciences.com

➔ **Evex Analytical** demonstrated their complete VIDX Microanalysis System - including Mini-Max Light Element Detectors, Universal Pulse Processors, VIDX X-ray Microanalysis and Digital Imaging Systems. The VIDX Microanalysis and Digital Imaging System features Windows 95 & NT, local & remote networking capabilities, "Quick Click" keys for identification and Quantitative analysis, and macros to automate your routines. High quality, affordability, ease of use and customer satisfaction are standard with all Evex products. Evex Analytical: (609)252-91192, Fax: (609)252-9091

➔ **Geller MicroAnalytical Laboratory** announced that all company activities are now certified to ISO-9001, the most comprehensive ISO standard attainable. Two new products were introduced:

The dPict (digital photo image and collection tool) for scanning electron microscopes employs an active scan generator. dPict is capable of simultaneously recording up to 9 images, including secondary, backscattered, and 7 x-ray maps. This affordable addition provides easy customer installation - especially for JEOL SEMs. Runs under Windows 95 and stores images in TIFF format. Many image processing features included.

The dStep (digital stage automation package) control for JEOL SEMs provides for joystick controlled X, Y, and Z stage motion (external stage limit switches are provided). Runs under Windows 95. Extensive database integrated for storing coordinates. Switches provided for rotating joystick orientation when using raster rotation.

Geller MicroAnalytical Laboratory: (508)887-7000, Fax: (508)887-6671, www.gellermicro.com

➔ **Hitachi Scientific Instruments** demonstrated their new SEMs with the convenience of PC-controlled electronics in the comfortable GUI environment of the Windows™ 95 operating system.

- The S-4700 FE SEM's new objective lens contributes to superior resolution (25Å at 1 kV) which is maintained at longer working distances as well as at high tilt angles on large samples. In the analytical mode, the instrument permits EDX operation concurrent with high-resolution microscopy.

- The S-3500N Variable Pressure SEM can be counted on for high-resolution imaging whether operated in its conventional high-vacuum or its variable pressure mode - allowing microscopy of wet, oily and non-conductive samples in their natural state without the need for conventional sample preparation. Hitachi Scientific Instruments: (415)969-1100, Fax: (415)961-0368, www.nissei.com

➔ **JEOL USA** profiled a complete digital, computer controlled lineup of SEM's, TEM's and microprobes. The new JSM-6340F High Resolution Semi-In-Lens Digital Field Emission SEM was shown along with JEOL's US made X-Vision Unix based SEM control system and the JEM-1220 Computer Controlled TEM which maximizes the use of floppy disks for customized operation and utilizes a high contrast objective lens for excellent image quality. The JXA-8900 Electron Microprobe with an HP workstation based data system and graphical user interface was also shown. JEOL USA Inc.: (508)535-5900, Fax: (508)536-2205, www.jeol.com

➔ **Kodak Scientific Imaging Systems** introduced the Microscopy Documentation

System 40 and the SP 700 Color Printer. The MDS 40 is a 24-bit color digital camera and software solution featuring plug-and-play simplicity and more pixels than video. The system captures images of 756 x 504 pixel resolution rendering quality images. The Kodak Digital Scientific SP700 Color Printer produces 4" x 6" dye sublimation color prints from Windows PC or Macintosh in 90 seconds. With U.S. list under \$600 for the printer and 49 cents per print, the SP700 Color Printer is an affordable everyday printing solution; perfect to document your work, share your results with colleagues or enter in you lab notebook. Kodak Scientific Imaging Systems: (800)225-5352, Fax: (716)588-8368, www.kodak.com/go/scientific

➔ **Ladd Research Industries** announced an expansion of its Aperture line. The microholes range in size from 5 to 2000 microns and are available in a variety of materials including platinum, molybdenum, and stainless steel. They can vary in shape and number of holes per part. Their uses vary from electron microscopy to flow control systems for satellites, light limiting and even the production of precise sized solder droplets for the semi-conductor industry. Ladd Research Industries: (800)451-3406, Fax: (802)878-8074.

➔ **LEO Electron Microscopy, Inc.:** had had three new products on display:

- The new 1530 FESEM with unique Gemini column and latest 32-bit Windows™ interface.

- The 912AB Advanced Bio TEM with Omega filter - for superior contrast and ease of use..

- NetSEM, a remote SEM interface for imaging and control over the Internet and other networks. Unlike other designs, NetSEM requires only a common browser. The SEM is set up as a web server and images and controls are displayed in the browser.

LEO Electron Microscopy, Inc.: (914)747-7796, Fax: (914)681-7443, www.leo-em.co.uk

➔ **McCrone Accessories & Components** displayed the Sony Catseye Digital camera attached to an Olympus BMAX60C polarized light microscope. The Catseye camera is a still image capture system that digitizes images at high resolution. This camera system provides real time viewing of the specimen and high resolution digital image capture in a cost effective package. The images captured from the Catseye were archived using the Pax-it electronic filing system. Each image can be displayed simultaneously and compared side-by-side to live video images on a single VGA computer monitor. Text, arrows, boxes, and circles can be added to images as non-destructive overlays. McCrone Accessories & Components: (630)887-7100, Fax: (630)887-7764, www.mccrone.com

➔ **MCNC Analytical Lab** introduced new reference and calibration materials for SEM and SPM, including SEM magnification standards with 4 different NIST-traceable spacings and AFM step-height references with z-dimensions from 10 nm to 40 nm. The MCNC Analytical Lab also offers services in microscopy and surface analysis, including SEM, TEM, EDS, WDS, SIMS, Auger, XPS, AFM, and STEM. MCNC offers custom fabrication services for all types of reference materials, and welcomes partners for additional product development ideas. MCNC Analytical Lab: (800)727-1605, Fax: 919)248-1455, www.mcnc.org

➔ New image solution products on PCI bus and Windows 95, 32 bits were introduced by **MPK Technology, Inc.** New products DV-71 and DV-51 offer the latest technologies for SEM, Auger, FIB, TEM and Optical Microscope users. The superb quality of true color 24 bits, 30 frames/sec images captured from a CCD camera and real time frame averaging of TV rate images from SEM were acknowledged by most attendees. MPK Technology, Inc.: (650)855-9686, Fax: (650)855-9645.

➔ **M.E. Taylor Engineering, Inc.** debuted two new 3D stereo systems for optical and electron beam instruments. One system has measurement capabilities in all axis. The other system is an optical 3D real time imaging system which is excellent for teaching applications. Both can be viewed in full color. Also displayed was a new improved Low Magnification Device (LMD) for an ElectroScan/Philips ESEM. The LMD replaces the bullet and can obtain magnifications as low as 15X - 25X with full screen field of view. M.E. Taylor Engineering, Inc.: (301)774-6246, Fax: (301)774-6711

➔ **Mohr Enterprise** had on display a time saving darkroom tool, the MohrPro 8 EM Processor. The Pro 8 can process EM films like 4489 or SO-163 as well as black and white RC prints. 4489 films are processed dry to dry in 4 minutes and black and white RC prints are processed dry to dry in 2 minutes. The processor has variable speed and temperature controls. Mohr Enterprise: (847)465-0048, Fax: (847)465-0044

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➤ **Newport Corporation** exhibited a broad line of vibration isolation systems. Their new Elite 3 Active Isolation Workstation provides a digitally controlled ultra-stable work surface. Piezoelectric actuators support a steel honey comb work surface and actively cancel low frequency floor vibrations. Also new was an AcE Acoustic Enclosure designed to protect high resolution microscopes from air-borne noise. Acoustic isolation panels are constructed from special honey comb core panels and can be custom built to enclose a variety of microscopy systems. Newport also exhibited a VH vibration workstation on a new Class 10 clean room compatible electropolished frame with a static free work surface. Newport Corporation: (714)863-3144, Fax: (714)253-1800

➤ In addition to exhibiting the popular Quartz PCI Digital Image Acquisition Tools for SEMs, TEMs, CD-SEMs and light microscopes, **Nissei Sangyo Canada, Inc.** introduced the two newest members of the growing Quartz PCI family of image management products. The Quartz PCI Intranet Image Server lets anyone connected to your organization's intranet search for and retrieve images using a standard web browser. The second introduction, the Quartz PCI Enterprise Database, is a powerful client/server image database system, based on either Oracle® or Microsoft® SQL Server™. It is intended for implementing very large, company-wide image management solutions. Nissei Sangyo Canada Inc.: (416)675-5860, Fax: (416)675-0061, www.nscoronto.com/nissei-sangyo

➤ The MAXray Parallel Beam Spectrometer from **NORAN Instruments** incorporates new technology for superior resolution and intensity at low beam voltage and current. A Noran-exclusive reflective optic close to the sample converts a divergent beam of x-rays to a parallel beam. MAXray provides significantly better intensity gain than conventional wavelength-dispersive spectrometers. NORAN demonstrated EasyEDS for fast and easy EDS spot acquisitions, analyses, and reports on VOYAGER. EasyEDS has a dual display for a reference image with indexed points and associated spectra. With the new Phase ID option, VOYAGER can positively identify crystalline compounds. VOYAGER acquires an electron backscattered Kikuchi pattern image, measures d-spacings and angles between planes, combines the resulting crystallographic information with EDS chemistry, and searches the ICDD crystallographic database. NORAN Instruments: (608)831-6511, Fax: (608)836-7224, www.noran.com

➤ For over 20 years, **Omega Optical Inc.** has supplied exceptional filters to fluorescence microscopists. With the 1997 *Fluorescence Filter Selection Guide for Microscopy*, added are several exceptional sets: multi-band sets for Amersham's CyDye™ products, VIVID™ sets for high signal-to-noise applications, and new sets for GFP variants. Omega Optical Inc.: (802)254-2690, Fax: (802)254-3937, www.omegafilters.com

➤ **Philips Electron Optics** showed the power of its merger with FEI by demonstrating the combination of the Focused Ion Beam workstation (FIB 200TEM) with the CM200 Ultra High Resolution Analytical TEM. The FIB 200TEM is one of many new products which will provide the electron microscopist with complete turnkey solution - specimen preparation to detailed results. Philips also exhibited their new XL30 ESEM environmental SEM and their XL30FEG high resolution analytical SEM as well as an EM208 biological TEM and two XL30CP SEM's in other vendor's booths. Philips Electron Optics: (201)529-3800, Fax: (201)529-2252, www.peo.philips.com

➤ **Polaroid Corporation** features a new digital microscope camera. Polaroid's DMC, the first digital camera designed specifically for the microscope is the star of Polaroid's exhibit this year. At a suggested list price under \$6,000, DMC boasts several major advantages: a 12.15 mm "mega"pixel CCD sensor captures a 24-bit color digital image at a resolution of 1600X1200 pixels; an intelligent color recovery system extracts more luminance information to render photographic quality images. Built in standard C-mount interface connects directly to virtually any microscope at minimal cost. Fast SCSI-2 file transport brings the image directly to your computer application in seconds. Compatible with Macintosh Power PC or IBM compatibles with Pentium processor and Windows 95 or NT operating systems. Polaroid DMC is available through DMC dealers that serve the microscopy market. Polaroid Corporation (800)662 8337 ext. 938, Fax (617)386-8048, www.polaroid.com

➤ **Princeton Gamma-Tech** announced their latest advancement in X-ray Micro-analysis Systems - IMIX-PC. This Pentium® based system is offered with all of the award winning analytical tools available on PGT's SUN® based IMIX-PTS. Using the latest dual processor technology, PGT has merged their extensive X-ray and computer-aided microscopy capabilities with the user friendly and familiar environment of Windows 95. Using the Windows NT operating system, one easily moves between PGT

X-ray Analysis, Image Analysis, and all the most popular word processing, spreadsheet and data base software available. Princeton Gamma-Tech, Inc.: (609)924-7310, Fax: (609)924-1729, www.pgt.com

➤ **Raith USA, Inc.** introduced their new "turnkey" Metrology / Lithography SEM. The unique new system incorporates all the best of Raith's expertise - and a 210 mm, ultra high accuracy, laser/piezo stage is the heart of a high resolution, field emission SEM. Elphy Plus and Escosy Plus allow the ability to measure submicron structures in a variety of modes including fixed beam, moving stage. The system not only measures standards but generates them by "direct write" lithography. This turnkey system is one of several different types of Application Specific Electron Microscopes (ASEM) recently introduced. Raith USA, Inc.: (516)224-1764, Fax: (516)224-2620

➤ **RJ Lee Instruments Ltd.** introduced its new PERSONAL EDS X-Ray Analysis System. An easy and affordable solution to X-ray analysis requirements, it is based on the combined expertise of a team of industry leaders in microanalysis instrumentation. The package offers a detector with lowest background counts available, enhanced spectral performance, and light element detection with 133 eV resolution for Mn peak. Its FLAME software uses "artificial intelligence" to emulate the decision processes of a skilled operator and actually "learns" analytical parameters and makes intelligent procedural decisions. High-quality reports are produced in user-defined word processing format. RJ Lee Instruments Ltd.: (412)744-0100, Fax: (412)744-0506, www.personalsem.com

➤ **RMC** gave away bottles of Champagne every day at closing to help thirsty electron microscopists start their evening activities. Judging by the response, champagne is a favorite among scientists from all over the globe. Featured were the new Model MT-XL Ultramicrotome, which is available with a \$7,500 trade-in allowance for ones' old ultramicrotome. Also featured were the new Model FS7500 Freeze Substitution, new Model FD7700 Freeze Dryer, and EMP5160 Tissue Processor. RMC: (520)903-9366, FAX: (520)903-0132, www.RMCSscientific.com/microtomes/

➤ **SAMx** displayed its new 32 bit versions of the popular WDS x-ray microanalysis applications, XMAS Plus, and the real time digital imaging application, HiMax Plus. Both products are completely compatible with both Windows 95 and Windows NT. In addition, SAMx products are compatible with the KeveX SIGMA system for combined EDS/WDS analysis. SAMx announced that it will soon be completing the 100th installation of XMAS which makes it the most popular WDS retrofit system on the market. All XMAS products are now compatible with CAMECA, JEOL and Microspec WDS systems. SAMx is represented in the U.S. by Hessler Technical Services: Tel./Fax: (203)358-0266.

➤ **Small World** introduced Electron Flight Simulator E, the worlds first software to model beam scatter in the environmental SEM. Electrons from the beam scatter when they collide with gas molecules in the chamber. This scatter will affect the x-ray data from ones sample. Electron Flight Simulator E lets one model chamber pressure, gas type, and working distance to see how they change the effective spot size. By knowing how the beam is scattered, one can adjust the operating conditions to minimize the amount of scatter and get the best results. The software includes all standard features of Electron Flight Simulator 3.1 and runs under all versions of Windows. Small World: Tel./Fax: (703)849-1492, members.aol.com/smworld100/index.htm

➤ **South Bay Technology** introduced the new MicroCleave Kit which is a relatively simple and inexpensive method of producing superior cross section cross sectional TEM samples. The MicroCleave Kit provides all of the necessary tools to produce precisely cleaved samples of semiconductors, glass, SiC, quartz, sapphire and other hard materials that will cleave or fracture. It is particularly well suited for rapidly examining coatings and thin film very soon after they are deposited. Also featured was the MAG*CAL TEM Calibration Standard, which consists of a single TEM calibration sample that performs all of the three major instrument calibrations for a TEM: image magnification, camera constant for indexing refraction patterns, and image/diffraction pattern rotation for relating crystal directions to features in the image. South Bay Technology: (800)728-2233, Fax: (714)492-1499, www.southbaytech.com

➤ **SPI Supplies** has pushed the smallest dot size available in the Tacky Dot Slide® product range one step smaller. Tacky Dot Slides are used for the mounting of powders for SEM or LM analysis, with all of the individual particles lined up on orthogonal centers, making for much easier and faster counting and analysis of fine powders. The newest dot size is 15 µm and it is added to the family of dot sizes spanning the range of dots sizes up to 300 µm. With model number SPI #02384, product is available in packs of 10, 100 and 500. SPI Supplies: (800)2424-SPI, Fax: (610)436-5755, www.2spi.com

➤ The PELCO™ Digital Darkroom from **Ted Pella, Inc.** is a full integrated system for digital acquisition and printing of images. The system is ready to use out of the box and is supported by on-site installation and rigorous pre-testing to ensure color balance and component compatibility. An advance in microwave technology, a true variable wattage power controller, is now available as an upgrade to existing Model 3440 or

3450 Microwave Processors or can be ordered as an accessory. Precise temperature increase and power control during microwave protocols is now available for the first time. Ted Pella, Inc.: (916)243-2200, Fax: (916)243-3761, www.tedpella.com

➔ **Orientation Imaging Microscopy (OIM)** from **TexSEM Laboratories (TSL)**, previously available only on Silicon Graphics and Sun Workstations, is now available on IBM compatible PCs equipped with Windows 95 or Windows NT. Efforts have been focused on making the user interface as easy-to-use as possible, while retaining the power and flexibility of our Unix-based OIM software. EBSF software is now de-coupled from post-processing analytical functions, so that users don't tie up their SEM computer while analyzing data from a previous OIM run. TexSEM Laboratories: (801)344-8990, Fax: (801)344-8997, www.itsnet.com/~tsl

➔ **Topcon Technologies Inc.** exhibited its new affordable integrated SEM/EDS package featuring the Opti-SEM 300LV and the Symphonix EDS system. Topcon's Opti-SEM 300LV model is equipped with a unique built-in optical targeting microscope. Intuitive Windows software for SEM operation and imaging and a fully automated low vacuum system. The Symphonix EDS system includes light element detection, qualitative and quantitative elemental analysis, and analog mapping. This integrated SEM/EDS package offers full analytical capability at an affordable price by merging the SEM and EDS hardware and software into a single stand-alone computer. Topcon Technologies, Inc.: (800)538-6850, Fax: (210)262-1504, www.topcon.com

➔ **TopoMetrix** brought three SPM systems to the conference: the new Accurex II™ for industrial applications, the Observer™ SPM for SEM, and the versatile Explorer™. Accurex II is intended for industrial metrology applications, in which measurement accuracy in all three dimensions is important. It is an integrated system, which can handle a wide range of sample sizes and types, as well as many imaging modes. It utilizes the TrueMetrix™ scanner, which has a patented real-time, closed-loop linearized design. Observer is an SPM designed to work inside an SEM vacuum chamber. The SEM/SPM system combines the strengths of both techniques, allowing roughness and depth mea-

surements to be made without cross sectioning. Explorer is an extremely versatile system, which can provide images using any SPM mode on samples of any size. TopoMetrix: (408)982-9700, Fax: (408)982-9751, www.topometrix.com

➔ **Vision Engineering, Inc.** introduced the new COBRA® stereo microscope with proprietary Expanded Pupil (EP®) technology. EP viewing substantially increases the viewing distance between the eye and eyepiece, allowing freedom of head movement in all three planes of motion. Coupled with superior optics, EP viewing enables the user to comfortably view a high resolution image without the eye, neck, and back fatigue associated with conventional eyepiece microscopes. The COBRA features zoom magnification up to 160X with attractive working distances and a wide range of mounting, lighting, and photomicrography options. Vision Engineering, Inc.: (860)355-3776, Fax: (860)355-0712

➔ **Vital Image Technology** introduced the DKC-5000 Catseye digital camera designed to meet a broad range of requirements in microscopy. This camera can capture images as large as 1520 x 1144 with 10-bit A/D conversion for increased tonal expression and in ISO equivalents of 100, 200, 400 and 800. For low light applications, the Catseye shutter can remain open for 4 seconds. With 30 fps RGB output, users can display in real-time for focus and lighting requirements. The camera has a SCSI-2 interface for image transfer and can store up to 10 images in memory before downloading to a computer. The Catseye is easily connected to all commonly used optical and stereo microscopes. In addition, this camera is instantly compatible with the most powerful and preferred image processing software packages available for PC and Macintosh computers. Vital Image Technology: (330)940-3200, Fax: (330)940-3222

➔ **XEI Scientific** displayed its line of Automatic SEM-CLEAN Nitrogen purge systems for Hitachi, JEOL, and other SEMs. These programmable timer controlled auticontamination systems are particularly useful with high-resolution, field emission SEMs or where oil condensation interferes with low energy X-ray detection. XEI Scientific: (650)369-0133, Fax: (650)363-1659/

Apple Launches Educational Object Economy

Jim Spohrer, Advanced Technology Group, Apple Computer

Whether they need Chinese language flash cards, steps and music to a Scottish country dance, physics simulations, or any one of hundreds of other teaching tools, educators and researchers can find them at Apple's Educational Object Economy (EOE) project (<http://trp.research.apple.com>).

The EOE is a complementary online community based around the creation, sharing, and use of teaching resources that incorporate Java applets for web-based learning. Java applets are small, easy-to-use programs written in Sun Microsystem's Java programming language. Using virtually any computer equipped with a standard web browser, educators can access hundreds of teaching and curriculum development tools for use in the classroom, for research, or in other educational endeavors.

The goal of the project is to build an on-line community who can share a rich pool of information, teaching plans and other related resources. The community will be made up of educators and researchers, as well as users and producers of learning materials (including developers and learners) and distributors of learning materials (businesses).

The project also promotes participation in a "Learning Community", which encourages education in settings and situations beyond the walls of the traditional classroom. The EOE is a learning community which is both concerned with new pedagogies as well as new means of developing and distributing learning materials.

"Apple is taking the lead in creating an open Educational Object Economy and will work with others to build a successful on-line community that shares and adds value to the latest technological advances in web-based teaching and learning tools," said Mike Lorion, Vice President of Apple's Education Division. "This research project will help us understand the way technological and social innovations interact to give rise to thriving on-line learning communities".

The EOE project seeks to make building educational software easier and faster and to establish self-sustaining and self-regulating communities among educators, software developers and businesses.

"The Educational Object Economy encourages educators to share and

reuse objects and to build communities that foster collaboration and cooperation in the development and distribution of teaching tools," said Jim Spohrer, co-principal investigator and distinguished scientist in Apple's Learning Communities Group. "We want to help eliminate duplication of effort among educators - a developer working with a math teacher on an Algebra 101 program shouldn't have to build a graphing tool from scratch, especially if an off-the-shelf component from the EOE can be plugged in with little or no modification."

Though still in its early launch stage, the EOE has already attracted the attention of a significant group of educators, developers, researchers, and businesses nationwide.

"The development of an 'object economy' could revolutionize the way software is developed" said Thomas Kalil, White House National Economic Council. "We think that it is particularly important to create components that will allow faster, cheaper, and easier development of exciting educational software for children. Using technology to change the way teachers teach and students learn is one of President Clinton's top priorities.

Bob Johansen, president of the California-based Institute for the Future, commented, "Web users tell us they need information, telecommunications, and knowledge creation resources. The Educational Object Economy touches on all three and is an important experiment to watch. This is a telecommunity of teachers, developers, and businesses, all in search of ways to appreciate their own intellectual capital."

Educators, software developers, businesses, and other interested parties are encouraged to visit the EOE site to join in the discussions, to contribute work to the directory, and to become a member of the community.

The Apple-led EOE is a project of Apple's Advanced Technology Group and several universities, including Stanford University, the University of Massachusetts at Amherst, the University of Colorado at Boulder, and Carnegie Mellon University, and publishers Houghton Mifflin and PWS, a Thompson Communication company. The project is funded by a National Science Foundation Grant and the Defense Advanced Project Research Agency.

Additional information on the Educational Object Economy project is available at: <http://trp.research.apple.com>. ■