

JEOL's SEM and TEM product lines are expanding for scientific and industrial R&D. New products showcased at M&M 2003 include: The **JSM-7700F**, a unique aberration (Cs and Cc) corrected SEM, with unprecedented resolution of 0.6nm at 5kV. The **JSM-7000F** thermal FE SEM featuring high-powered optics (3nm resolution at 1kV), multi-purpose chamber, one-action specimen exchange, and ideal geometry with large probe current at small probe diameter for EDS, WDS, EBSP, and CL. A new **SEM-Raman** extending analytical capabilities by pinpointing the exact chemical identities of molecular compositions. A new partnership with Seiko Industries combining the **JEOL JEM-2500SE** easy-to-use, remote-operation, nanoanalysis STEM with the **SEII FIB** to meet the needs of all levels of operators requiring high-resolution nanometer-level structural analysis. The **JEM-2100F** for advanced EM techniques including high resolution TEM, electron diffraction, cryo- and in-situ microscopy, holography and tomography. Features superior stability, improved and integrated computer architecture, and remote control. The **JEM-9310** single-column, multi-purpose FIB, an effective and economical choice for many environments. The **JSPM-5200** scanning probe microscope, enabling researchers to observe physical properties of specimens in native environments. For more information about JEOL instruments, visit www.jeol.com

FEI Company commemorated 10 years of DualBeam(tm) leadership with three new **DualBeam SEM/FIB systems** for any lab, every application - all available for demonstration at M&M. **Quanta(tm) 3D DualBeam** delivers Any Sample, All Data, Any Dimension performance, combining high-vac, low-vac, and ESEM(tm) operating versatility with FIB for access to sub-surface features and sample modification. Quanta 3D is the ideal choice for advanced sub-surface materials characterization, diagnostics, and process control. New **Nova(tm) NanoLab DualBeam** delivers a complete nanotechnology lab in a single tool. Nova is ideal for characterization and analysis of complex structures below 100 nm, as well as nanoscale machining and prototyping. New **Strata(tm) DB-STEM DualBeam** delivers integrated sample preparation, ultra-high resolution STEM imaging and microanalysis below 1 nm. Strata DB-STEM is ideal for high throughput semiconductor and data storage labs. In addition to the three DualBeam microscopes, FEI also offered demonstrations of the Tecnai(tm) **F20 TEM**, with additional presentations and workshops covering new software for Tecnai: **Xplore3D(tm) for 3D TEM tomography**, and **Truelmage(tm)** for improved atomic scale materials characterization. If you missed your opportunity to demonstrate any of these microscopes at M&M or participate in our workshops, please contact your local FEI sales representative.

In keeping with its tradition of providing the latest imaging technologies, **ElectroImage** introduced several new products at the show. The **Ditabis Imaging plate** system for direct digital TEM images expanded the line to include the new **VARIO**, with up to 15um pixel resolution, 6k x 5k full field of view images and 20 bit data, and the **micron35**, an entry level system with 35um pixels, 2570 x 2285 full field, 16 bit images for less than the price of many 1k CCD systems. The new **Pathscan Enabler III** is designed to allow scanning of whole histological samples on standard 1x 3slides. Up to three slides at a time can be scanned automatically at 5876 x 3624, uninterpolated. The affordable new **Infinity-X** c-mount camera has a USB 2 interface and provides a live preview and true color images up to 20 MegaPixels utilizing the breakthrough **DeltVU pixel shifting technology**. Contact Matt Irwin, ElectroImage, 9 Round Hill Road, Great Neck, NY 11020, 516-773-4305, sales@electroimage.com

Nanotech-America, the newest daughter company in the growing world-wide family of NT-MDT (Moscow, Russia), introduced the **Solver line of Scanning Probe Microscopes**. These leading edge instruments combine the highest quality construction (titanium frames, sapphire bearings) with easy scanner interchangeability and innovative technology (Closed-Loop Equivalent) to provide extremely powerful yet flexible systems. The new **Solver LS** accepts samples up to 250mm in diameter and can be automated for applications like combinatorial investigations. In addition to the standard probe imaging modalities NT instruments also offers **Atomic Force Acoustic Microscopy (AFAM)** to image amorphous v. structured domains in polymer and provide direct measurement of local Young's modulus as well as **Magnetic Force Microscopy (MFM)** to map magnetic domains. The company

sells calibration gratings, HOPG, and probe tips for most AFM/SPMs. Contact Bill Miller, NT-America, 125 Paridon Street, Suite 103, Springfield, MA 01118, tel: 860-672-0068, sales@nt-america.com, or visit our new website: www.nt-america.com.

Hirox has completely revamped their entire **HiScope Video Microscope** line, adding a new digital camera, both new and upgraded lenses and new stages. The new **KH-3000** has a digital camera with 1600 x 1200 at 30 fps, with a low voltage, short arc metal halide light source (5730°K), integrated measurement and capture capabilities. It has S-video out as well as USB2 and Ethernet connections and is, of course, compatible with all the older Hirox lenses. The trademark Rotary 3-D lenses have a new slimmer profiles and a broader, 8:1, zoom range that can cover magnifications from 6x to 800x. A new coaxial zoom lens, the 10C, has interchangeable objective to cover 35x to 7000x and has a patented variable angle illumination feature to enhance the contrast of fine surface details. A new gantry and XY table stage is now available for use with the updated **Ball Grid Array (BGA) inspection lens** which has improved lighting and focus features. Contact Steve Buck, Hirox - USA, Inc. 1060 Main Street, River Edge, NJ 07661, tel: 201-342-2600, inquiry@hirox-usa.com

Spectral Dimensions, Inc. is the world leader in chemical imaging technology. We have state-of-the-art hardware and software solutions to allow you to make the most of every sample, every data set, and to communicate your results with effective, compelling presentations. Near infrared (NIR) chemical imaging provides distinct advantages over classical microscopy. NIR chemical imaging utilizes molecular contrast mechanisms - no more labeling! It is reagent free and non destructive - so samples are preserved in their natural state for later studies. The technology permits a flexible field-of-view for both macro and micro studies, the spatial resolution is comparable to visible light microscopes, and it can be operated in high throughput mode as a rapid screening tool prior to other more time-consuming techniques. NIR chemical imaging is massively parallel molecular spectroscopy that provides spatial, chemical, structural and functional information simultaneously. It is a revolutionary new way to assess sample heterogeneity, identify contaminants, quantify chemical gradients, and obtain chemical distribution information for every component. Let us show you how NIR chemical imaging can offer solutions to a variety of standard instrumental analysis limitations. Call us today for a free demonstration. Paul Entrop, (301)260.0290, pentrop@spectraldimensions.com

Evex Analytical the premier manufacturer of X-ray microanalysis and digital imaging equipment for electron microscopy once again impressed the industry by introducing its new line of Nanoanalysis™ equipment for electron microscopy (EDX). **QDD** - Evex's solid state, high throughput, light element (B) LN free detector **Accupoint Detector** - The world's first x-ray detector for electron microscopy with flexible head assembly. The flexible head assembly will improve detector solid angle, reduce trajectory from the detector front end to the sample, thus improving detector overall efficiency. **Non-Sequential Mapping** - A novel mapping approach that rasters the electron beam in a non-sequential pattern to reduce charging and burn in volatile samples. **ALEC** - the Atmospheric Light Element Collimator to improve light element detection in a ESEM (Environmental Scanning Electron Microscope) These tools are available in addition to Evex's cost effective, powerful, and easy to use X-ray Nanoanalysis system. For more information about Evex products, please contact Evex at 609.252.9192 or visit them on the web at www.evex.com

Nanoptek's Photon Tunneling Microscope (PTM) acquires and displays 200 micron fields in quantitative 3-D and in high-contrast grayscale imaging, all in real-time. Vertical resolution is 0.1 nm over a range of up to 700 nm, with 100 nm lateral resolution. Such resolution in a whole-field optical microscope is achieved by full utilization of the evanescent field that tunneling photons give rise to, thanks to Nanoptek's proprietary near-field soft-polymer transducer and calibration method. There is no sample preparation, other than applying the disposable transducer. PTM operation does not require vibration isolation or a clean-room, and is fast and intuitive to learn. Elimination of scanning probes, fringe acquisition, vacuum, and high energy electrons is not only gentler to your sample, but also increases speed and resolution performance while allowing a purchase and operating cost that is a

fraction of competing techniques. The software functionality is comprehensive and extensive, and open-architecture facilitates user modifications. Samples need not be flat, and include homogenous dielectrics, polymers, biological materials, and many metals. Applications include optical and magnetic data storage QC, pre-fab wafer inspection, QC of industrial polymer substrates, cell adhesion and chemotaxis, optical fabrication metrology, and optical thin film roughness inspection. PTM can be purchased complete with an optical microscope of your choice; alternatively, purchase an upgrade kit to convert your reflected light microscope into a photon tunneling microscope. Nanoptek Corporation (www.nanoptek.com, Concord, MA) develops nano and near-field optical technology and instrumentation. For more information contact John M. Guerra at jguerra@nanoptek.com or (978)-371-7339.

Hacker Instruments introduced the **Milestone REM Rapid Electron Microscopy Tissue Processing System**, the first dedicated laboratory microwave processing system for transmission electron microscopy specimen preparation. The new system features non-contact, infrared temperature control, built-in magnetic stirring, closed modules for safe containment of toxic vapors, and a touch-screen color terminal. With this system, up to 24 specimens can be fixed and processed from fresh tissue to polymerized resin in capsules in about 3 hours. Steven E. Slap, hackerlab@aol.com

Radiant Detector Technologies, LLC features an excellent, 50mm², resolution **Silicon Multi-Cathode X-Ray Detector, (SMCD)** typically achieving ~130 eV FWHM at 12 μ s. At >1 Mcps, at an energy resolution of < 200 eV, FWHM the output count rates are greater than 600 Kcps at 0.25 μ s. Adapted for SEM and TEM, microanalysis applications, this unprecedented detector operates at near room temperature and is cooled thermoelectri-

cally (NO LN2). It can thus be cycled without degradation in the detector's performance with cool down times < 3 minutes. A unique feature is the ability to process high-count rates with virtually zero loss in resolution and no peak shift with count rate. Contact: Gordon Myers, 818-709-2468, www.radiantdetectors.com.

XEI Scientific showed 3 new models of the **Evactron® Anti-Contamination systems** for removing Organics from SEMs and FIBs. The **Evactron 10A-C** has a user set timer and automatically adjusts to the correct pressure and RF power for optimum plasma cleaning of any instrument. The **Evactron B A-C** is a low-cost, manually operated and adjusted model with analog vacuum meter. The **Evactron C A-C** has a digital vacuum meter and is CE compliant for European sales. All Evactron systems models use the Evactron RF Plasma Anti-Contaminator to make oxygen radicals from air to ash Hydrocarbons out of the vacuum chambers and off specimens. The Evactron is available internationally from distributors overseas. See www.Evactron.com for details.

Minitool, Inc. introduced a new line of **Special Stainless Steel Microtools** at the Microscopy and Microanalysis 2003 Exhibition in San Antonio, TX in August. These innovative precision instruments are available in sizes from .120mm/.005" to .400mm/.016" in diameter. A wide range of applications include: specimen placement and manipulation in medical research, microscopy, micro-biology, and cell biology. Minitool, founded in 1965, continues to provide the finest in precision, under-microscopy micro-investigatory instruments which are available in high speed steel, stainless steel, micro-grain carbide and tungsten. These tools provide the microscopist with the ultimate in precise and realistically proportioned tools. Contact: Renate Schaller, Minitool, Inc., 408 395 1585, www.minitoolinc.com

INDUSTRY NEWS

Media Cybernetics Inc., the leading analytical image analysis software provider announces an upgrade release of **SharpStack**. This **plug-in module for Image-Pro Plus** allows microscopists to obtain clear images from a stack of hazy images. Unlike other deconvolution solutions, SharpStack integrates seamlessly with image capture, 2D processing, analysis, and reporting within Image-Pro Plus. SharpStack's algorithm options include Nearest Neighbor, No Neighbor, Inverse Filter, and Spherical Aberration Correction. For more information about Media Cybernetics, visit www.mediacy.com.

Surface coatings protect materials from corrosion and wear. **Soft Imaging System** offers a series of solutions for determining the various thickness parameters. The **analySIS** software has a **new add-in. Itm (layer thickness measurement)** is a tool for determining layer thickness when analyzing porous or compact coatings. It also provides extremely precise measurement of crack width. Itm measures layer thickness of single and multiple coatings for a cut specimen using the concept of neutral fibers. Neutral fibers predefine the direction of the measurement. Each measurement is executed perpendicular to the user-definable neutral fibers. Straight lines, curves or circles can be neutral fibers. This means that complex coating structures and any modelled surfaces can be evaluated. Itm's full integration into the **analySIS®** software provides many needed capabilities and advantages for facing various image processing and analysis challenges. New software packages specifically for materials science metallographic applications have been introduced. The **analySIS LabFlow** package provide image acquisition, archiving and documentation, in compliance with common inspection and lab routines. The software controls motorized microscopes and/or stages, and acquires high quality images with a mere click of the mouse. The **analySIS CastIron Solver** package analyzes cast iron automatically or manually with regard to shape and size and determines the ferrite/pearlite ratio in accordance with international and national standards such as EN ISO, JIS or ASTM. Contact: Dr. Mike Bode, Soft Imaging System Corp. (303) 234-92 70 www.soft-imaging.com

LW Scientific, Inc. has two solutions to end your RPM guessing – the **Ultra Select and Ultra Tach Centrifuges**. The Ultra Select features a 4-position speed dial to select the correct speed for various fluids including: urine, semen, fecals, blood and other fluids. The Ultra

Tach features a variable speed dial and built-in digital tachometer to view rotor speed. The 4-position speed dial will ensure fluids will spin at the correct CLIA-recommended speed for complete separations and that cell structures will not be damaged due to excessive g-forces. For more information, log on to: www.lwscientific.com or 1-800-726-7345.

Technical Manufacturing Corporation (TMC) has introduced the **TableTop™ A-P**, a lightweight, modular vibration isolation system that combines exceptional low-frequency passive isolation with an optional **Q-Damp™** active damping module. Its compact design (less than 50 pounds) is portable, and its passive vibration isolation is comparable to TMC's full-size industry standard 63-500 Series high-performance lab table. The patented TableTop A-P Active-Passive High-Performance Isolation System is compatible with TMC's BenchTop Faraday Cage. The newly designed, 40-inch-tall cage includes a baseplate of reinforced stainless steel that supports the compact A-P. The cage also features a "window-shade" type retracting panel and 2-inch diameter holes for cable passage. Contact: Steve Ryan, 978-532-6330 sryan@techmfg.com

Ambios Technology, Inc. announced the introduction of a 400 micron vertical scan range capability to its low cost, high performance stylus profilometers. The **XP Series Profilers** are designed for precision step height, thin film stress, film thickness, and surface roughness measurements. The extended vertical scan range allows measurements of large steps on a variety of samples including MEMS devices, thick film hybrid semiconductor circuits, glass substrates, microlenses and other optical waveguides, precision machined surfaces, and polymers. The total Z range of 400 microns makes the XP Series Profilers ideal for surface measurements from nanometers to microns. Additional information on Ambios Technology can be found at <http://www.ambiositech.com>.

Thermo Electron Corporation and HKL Technology have entered a cooperative agreement to combine HKL's **CHANNEL 5 Electron Backscatter Diffraction (EBSD)** System and Thermo Electron's **NORAN System SIX X-ray Microanalysis System**, providing an ideal tool for materials characterization. This combined instrument easily determines elemental compositions, microstructures and crystal structures in scanning electron microscopes. Developed by HKL, CHANNEL 5 offers the latest EBSD system, providing a sophisticated combination