

Diatome Diamond Knives and Trimming Tools A revolutionary advance in the field of microtomy is upon us with the help and persistence of Diatome. Up until now there was always one major obstacle in microtomy which prevented us from achieving perfect ultra thin sections: Compression (This is defined as the shortening of the section compared to the sample height). Compression in room temperature sections can be as much as 20% and this really limits the quality of the section. Due to these limitations and compromises on quality Diatome has done it again. We are proud to announce and introduce commercially the **Diatome ultra sonic Oscillating Diamond Knife** for room temperature sectioning. This new patented knife, the first ever, produces ultra thin sections free from compression. Noticeably thinner sections are obtained at the same section thickness since the volume of the section remains the same, and the increased length leads to a decrease in thickness. So thinner sections—no compression—better ultrastructural preservation—no compromising on quality.

Introduced this year a diamond knife that may be used at room temperature as well as cryo temperatures for surface sectioning of all kinds of biological and industrial specimens for AFM Investigation. These special knives offer extremely smooth sample surfaces with the best possible structural preservation. Instead of a section as for TEM, the specimen surface is investigated using AFM. In order to achieve the best results for AFM Investigation only the highest quality diamond knives shall be used. Diatome **ultra AFM and cryo AFM** have been specifically tested to ensure that they meet the increased quality requirements of AFM Investigation.

Diatome offers a complete line of **Diamond Trimming Tools** for Room and Cryo Temperatures. For successful ultramicrotomy in biology and materials science precise trimming is mandatory. Due to the extreme sharpness of our diamond blades, less mechanical damage is applied to the sample during trimming giving you very shiny sample faces and the preciseness you require. For more information on any Diatome sectioning or trimming tools or any of our other products or a copy of our complete catalog please call, E-mail, or visit our web site today. Tel: 215-412-8400 Fax: 215-412-8450 E-Mail: sgkcck@aol.com Web Site: www.emsdiasum.com

Electron Microscopy Sciences is now exclusively distributing **Quantomix QX Capsules**, which completely isolate wet samples from the vacuum in the microscope chamber. These unique capsules offer the following Advantages & Features: Direct imaging of wet samples (foods, cosmetics, inks, cells, tissue); Compositional analysis of wet samples by X-ray microanalysis; Wide spectrum of staining and labeling capabilities for cells and tissues; Ability to image unstained or unfixed cells and tissues; Imaging of both adherent and non-adherent cells; High resolution Histopathology; Intracellular imaging in a scanning EM; Imaging the entire cell surface; Excellent preservation and imaging of lipid structures; Easy to automate sample processing and imaging; Rapid and simplified sample preparation. The applications are endless. For instance Lipid imaging and analysis, Imaging lipid bodies in fully wet cells and tissues, EDS of wet samples, Imaging particles in their fully wet environment, Experimental biology, Sub cellular organelles, cytoskeleton and motility, cell contacts, receptor distribution, extra cellular matrix, tissue analysis, Industrial applications: food, oils, dyes, pharmaceuticals, Clinical diagnosis, Life sciences and medicine and much much more. For more information or a complete catalog please call, E-Mail, or visit our Web Site today. Electron Microscopy Sciences. Tel: 215-412-8400 Fax: 215-412-8450 E-Mail: sgkcck@aol.com Website: www.emsdiasum.com.

Ted Pella, Inc., Redding, CA, a major supplier of consumables and preparation tools for microscopy applications, announces that they have been **appointed as a distributor for the next generation FEI Vitrobot Mark IV system**. Specifically, Ted Pella, Inc. will market the Vitrobot Mark IV system in the US domestic market. FEI will continue to sell the product on both stand alone and bundled basis to its current installed base.

The FEI Vitrobot Mark IV is an automated vitrification device for plunge freezing of aqueous samples. The advanced system includes controlled environment technology to prevent cooling and concentration artifacts often found with other "open-space" vitrification methods. With the FEI Vitrobot all essential vitrification parameters can be fully controlled and stored for unrivalled reproducibility. Ted Pella, Inc. offers a wide range of consumables and specimen preparation tools for electron microscopy, including TEM support films, sample manipulating and storage devices, calibration standards, TEM stainers, BioWave Pro tissue processing systems and a range of sputter and carbon coating systems. Contact www.tedpella.com For more information.

CoolLED Ltd. is pleased to announce a licensing agreement with Carl Zeiss MicroImaging GmbH for the sale of the precisExcite LED fluorescence excitation system in the USA. The granting of the license by Carl Zeiss now allows all microscope users in the USA access to the LED excitation technology developed by CoolLED. Excitation by LEDs offers better control, integration under imaging software, and the benefits of long lifetime LEDs. With LEDs, there is no need to replace, align and dispose of mercury-based bulbs. precisExcite is a flexible and modular system using interchangeable LAMs (LED Array Modules) to provide excitation across the visible spectrum. precisExcite is integrated with many of the imaging software packages from leading microscope and imaging companies. CoolLED is a UK specialist manufacturer based in Andover, Hants. It provides products and solutions using opto-mechanical assemblies based on LED technology.

Bruker AXS GmbH today announced that it has **signed an agreement to acquire all of the equity of S.I.S. Surface Imaging Systems GmbH**. The transaction is expected to close in the third quarter of 2008, and no further financial details were provided. S.I.S. Surface Imaging Systems GmbH is located in Herzogenrath, near Aachen, Germany. S.I.S. develops, manufactures and distributes advanced atomic force/scanning probe microscopy systems (AFM/SPM). S.I.S. offers a product range from bench-top high-performance AFM-only microscopes to integrated high-end AFM/optical microscopy (OM) combinations, all the way to large floor-standing AFM/OM combination instruments for the characterization of 300mm wafers in a clean room environment. See www.bruker-axs.com for more details.

Imago Scientific Instruments in conjunction with the Noah Corporation, its representatives in Japan, **announced the shipment and acceptance of Imago's industry-leading LEAP 3000 HR™ Atom-Probe Microscope by the Central Research Institute of Electric Power Industry (C.R.I.E.P.I.) located in Tokyo, Japan.** This instrument, which was shipped in early 2008, is the second Imago atom-probe microscope purchased for the CRIEPI facility. The first Imago atom-probe microscope was delivered and installed at CRIEPI in 2005. CRIEPI conducts fundamental, pioneering research for the electric power industry and offers the results of its research to the public for the benefit of all. Imago's LEAP is a powerful instrument for exploring the structure and function of materials at the atomic scale. It combines a proprietary atom-probe microscope with 3-dimensional analytical/visualization software. This unique nano-metrology tool has proven valuable in providing solutions to challenges facing researchers in the advanced materials field such as the study of point defects related to the embrittlement process, irradiation-induced precipitation, matrix damage and grain boundary segregation.

Leica Microsystems introduces the Leica M205 FA, the world's first automated fluorescence stereomicroscope with a fully apochromatically-corrected 20.5:1 zoom. The Leica M205 FA overcomes the previous limits of optical resolution with Leica Microsystems' latest innovation: FusionOptics. The design principle of the Leica M205 FA is based on the fascinating flexibility of the human eyes and brain. Just as the brain quickly calculates a 3-D image using data provided by both eyes, the Leica M205 FA's right beam path captures a very high-resolution image

while the left beam path provides an image with very high depth of field. The brain then naturally gathers the best information from both channels and composes a single image of very high resolution and very high depth of field. With FusionOptics, the Leica M205 FA stereomicroscope can clearly resolve specimen details down to 476nm. The Leica M205 FA's fully apochromatically-corrected 20.5:1 zoom, the largest zoom range on the market today, enables fluorescence results that are not marred by color seams or distortions. Fluorescence microscopy gives researchers insight into a world normally hidden from sight. Capturing every aspect of an organism over a wide magnification range, down to the finest detail. See www.leica-microsystems.com

FEI Company announced the release of the Titan™ 80-300 environmental transmission electron microscope (ETEM). The Titan ETEM is the premier solution for chemical research at the atomic scale, and is a significant advance for studying materials and processes of importance in the fields of energy and environment. The ETEM is the newest member of FEI's Titan TEM family, the world's most powerful commercially-available microscopes for direct observation with sub-Ångstrom resolution. With its announcement today of the Magellan™ Family, FEI Company introduced a new class of instruments called *extreme high-resolution scanning electron microscopes* (XHR SEMs). The Magellan XHR SEM allows scientists and engineers to quickly see things they could not see before, such as 3D surface

images at many different angles and at resolutions below one nanometer (about the size of ten hydrogen atoms, side-by-side). Most importantly, the Magellan XHR SEM images samples at very low beam energies, avoiding distortions otherwise caused by the beam penetrating into the material below. FEI Company announced the Ultimate Throughput™ and Ultimate Imaging™ Connectivity Solutions. By accelerating and improving the quality of preparation, imaging and analysis of the ultra-thin samples required for transmission electron microscopy (TEM), the FEI Connectivity Solutions can reduce a lab's "wafers-to-atoms" time from days to hours. That, in turn, offers the opportunity to dramatically improve lab efficiency to better support the development of new processes and enhance yields.

Andor Technology plc announces that the 'Cropped Sensor' Mode as a standard, user-selectable feature with its **iXon+, Newton and iKon range of high-performance EMCCD and CCD cameras**. This highly flexible and specialized readout mode is capable of achieving extremely fast continuous frame rates (typically sub-millisecond exposures) of either images or spectra. Also, Andor Technology plc also announced the launch of their new **iKon-M X-ray camera**. This extension to the established 'iKon' family of low light imaging cameras is designed to deliver high-performance solutions to direct detection X-ray needs, and is available in two variants: DO and DY. The DO variant interfaces with vacuum chambers, and the DY is a 'stand-alone' camera with a beryllium input window.

NEW AND INTERESTING AT M&M 2008

At the Microscopy and Microanalysis Meeting and Exhibition held in Albuquerque, New Mexico, **Carl Zeiss SMT introduced a major upgrade of its LIBRA® 120 Energy Filter Transmission Electron Microscope (EFTEM).** The primary focus of the upgrade was a complete redesign of the microscope's vacuum system – addressing frequent requests from customers and users. Thus, the constantly increasing demands of revealing structural and 3-D information of beam sensitive or frozen hydrated samples at a nano scale can be achieved. At the same time, the range of magnification has been extended and an additional illumination mode, called "wide field illumination" has been developed. Carl Zeiss SMT, also **introduced a new, improved Helium Ion Microscope called the ORION® PLUS.** The ORION® PLUS incorporates several design enhancements that deliver improved imaging: The tip geometry has been modified to increase the accelerating voltage of the helium ions, resulting in improved resolution; A new "Clear View" sample cleaning system combines plasma cleaning, heating elements and an in-situ vapor cleaning technique to remove hydrocarbons from the sample. Carl Zeiss SMT is **introducing a new class of SEM: SIGMA.** The SIGMA provides outstanding imaging and analytical results from a field emission microscope with the capability to handle all material types. Material analysis at high resolution is provided by the class leading X-ray geometry for both energy and wavelength dispersive spectroscopy (EDS and WDS). For further information, see: www.smt.zeiss.com.

Integrated Dynamics Engineering (IDE) has upgraded both their long-proven MK4 controller and their sturdy, widely used TLC workstation. The MK 4 now has cutting-edge enhancements to its active, analog and digital controls, protecting highly sensitive microscopy, lithography, and medical instruments with unprecedented DC and AC. The MK 4 EMI Cancellation System is designed around an IDE custom-configured Helmholtz Cage and IDE's unique feedback control engineering. Compensation fields create a minimized effective field at the sensor site, virtually neutralizing the original disturbance, and optimizing the overall operation of the sensitive equipment. On the upgraded TLC workstation, IDE's highly responsive pneumatic isolators shield the conveniently large work surface from structural vibration, creating an ideal platform for highly sensitive equipment. The low frequency pneumatic isolators integrated into the chassis have a horizontal and vertical natural frequency of about 2 Hz. Visit www.ideworld.com

Novelx recently introduced the mySEM at the M&M 2008 show in Albuquerque and is now shipping what is the only compact field emission scanning electron microscope (SEM) available for imaging and characterizing nanoscale objects and materials. In a compact design that installs easily, the mySEM is optimized for low-voltage operation and delivers sub-10nm imaging capabilities only available in high-end field emission SEMs, at a fraction of the cost. With no need to coat non-conductive samples and providing up to 65,000x magnification, the mySEM is an ideal choice for the non-destructive imaging of energy sensitive samples, biomaterials and thin films. Find out more by visiting www.novelx.com.

The McCrone Group Inc. announced that its College of Microscopy and learning center in Westmont, Illinois will offer two new introductory level forensic courses for newly hired forensic scientists and criminalists with responsibilities for trace analysis. The **first new course, "Hair Comparisons"** is a week-long introduction to forensic hair comparisons for newly hired forensic scientists. The Hair Comparisons course is scheduled to run October 20 – 24, 2008. The second new course, **"Hair Identification for DNA Analysts"** provides an introduction to forensic hair identification for DNA analysts and others responsible for identification of hairs. The course is scheduled for December 9 – 11, 2008. The College of Microscopy will continue to offer "Microscopical Examination of Forensic Trace Evidence Particles." The week-long course offers an initial introduction to microscopical trace evidence examination.

More new courses include: "Chemistry for Conservators" is a week-long intensive chemistry review to refresh a student's knowledge of chemical concepts and applications. Scheduled for September 22 – 26, 2008. **"Laboratory Safety"** serves as condensed introduction and hands-on application to laboratory safety for the non-scientist. Scheduled for two dates, September 12 and 29, 2008. To enroll or learn more about these new courses visit: www.collegeofmicroscopy.com/courses/ and complete the registration form.

IXRF demonstrated 4 different SDD detector configurations. 126eV, 10mm², 30mm², and 50mm² covering a wide gamut of applications making IXRF the largest distributor of SDD's for the microanalysis industry. New X-ray Mapping features were introduced to further enhance it's vast line of SDD's showing improved speed and graphic capabilities. IXRF

also demonstrated more advancement in the world's only commercially available Micro-XRF tube adapted to the Scanning Electron Microscope. A new tube "Super Flux", was introduced with a 10 micron excitation area along with a 8 position filter wheel to lower detection limits even more. By the addition of XRF to the microanalysis industry, customers can now take advantage of their existing EDS detector and use their SEM as a micro XRF analyzer.

Buehler, Ltd. introduces the new EcoMet® 250 Grinder-Polisher and AutoMet® 250 Power Head! These new products are Buehler's newest family of metallographic grinder-polishers. The EcoMet® 250 Grinder-Polisher and AutoMet® 250 Power Head is designed to meet the needs of the materials analyst who requires the versatility of manual or semi-automatic sample preparation for consistent and repeatable results. The EcoMet® 250 Grinder-Polisher can be used alone for manual grinding applications, or it can be combined with the AutoMet® 250 Power Head for semi-automatic applications. Features include variable speed heavy-duty motors, sealed membrane keypad controls, durable cast aluminum base construction, unique LED lighting, retractable water hose, quick release chuck, replaceable bowl liner, 360° bowl rinse system, and a stain, chip and corrosion resistant finish. For more information, contact Buehler, Ltd., (ph) 847-295-6500.

JEOL demonstrated a variety of new software packages for its 120kV to 300kV series of Transmission Electron Microscopes at the M&M 2008 Microscopy and Microanalysis exhibit in Albuquerque.

For advanced techniques requiring dual axis tomography and tiling, SerialEM (freely available for non-commercial use from the University of Colorado, Boulder) features an integrated GUI for image acquisition, and display and storage of tomographic datasets.

The JEOL TEMography Suite is a software package that automates data acquisition, 3-D reconstruction and visualization on JEOL TEMs.

The new JEOL Automated Data Acquisition System (JADAS) software, developed in collaboration with the NCMI, Baylor College of Medicine, automates data acquisition for cryoelectron microscopy.

The JAMS image and data management system offers a convenient way to archive, locate and share images and data, meaning no more lost images, lost time or lost research.

A new **Field Emission MultiBeam, the model JIB-4600F**, was shown at M&M 2008 in the JEOL booth. Customers will be able to see samples run on both models as well as on the argon ion beam Cross Section Polisher.

The JIB-4600F MultiBeam from JEOL is a powerful milling/imaging system with an in-lens thermal field emission gun for high resolution and highly stable probe current. Data mapping is rapidly achieved with a maximum current of 200nA. A field proven ion optics column features a large current mode of 30nA providing high FIB throughput. The ability to simultaneously view the FIB milling process with SEM imaging in real time is ideal for inner structure analysis and TEM thin film sample preparation.

JEOL's proven in-lens thermal electron gun, combined with a patented aperture angle optimizing lens, achieves a probe current of 200 nA or higher at an accelerating voltage of 15 kV, efficiently acquiring high quality data in elemental analysis. The **JSM-7600F** is capable of high resolution high sensitivity analysis under any combination of operating conditions for various samples and research requirements, with guaranteed resolution at high accelerating voltage of 1.0 nm (30 kV; WD 4.5 mm), guaranteed resolution at low accelerating voltage of 1.5 nm (1 kV; WD 1.5 mm), and guaranteed resolution at high probe current of 3.0 nm (probe current 5 nA, accelerating voltage 15 kV, WD 8 mm). Visit www.jeolusa.com

Bruker AXS Microanalysis announced plans to introduce its new **QUANTAX CrystAlign™ system for SEM-based crystallographic analysis** via electron backscatter diffraction (EBSD) at the Microscopy and Microanalysis (M&M) 2008 Annual Meeting. The CrystAlign system consists of an ultra-fast EBSD detector and powerful, yet easy-to-use EBSD analysis software that is seamlessly integrated with Bruker's EDS software ESPRIT™. The combination of EBSD with Energy Dispersive X-ray Spectroscopy (EDS) offers more comprehensive materials characterization capabilities in Scanning Electron Microscopes (SEM) Contact: stefan.langner@bruker-axs.de



Mark Your Calendars!

M&M 2009 JULY 26-30

A world-class, can't-miss scientific program awaits you in historic and charming Richmond, Virginia!

Whatever your specialty, join the largest gathering of microscopy and microanalysis professionals, academics, technicians, students and vendors in the world to get the knowledge and tools you need to be successful in today's fast-moving environment.

Bring the family and experience all that Richmond has to offer— Civil War history, water sports on the James river, antebellum architecture, amusement parks, AAA Braves baseball! Richmond is centrally located between Colonial Williamsburg and Virginia Beach, and all the history and attractions of Washington, DC!