

NEW AND INTERESTING AT MRS 2007

The following exhibitors at the recent MRS 2007 meeting provided these short summaries of what they considered new and/or interesting at their booths on this year's equipment floor.

Ladd Research announces the release of its new economical **Digital High Vacuum Evaporator System**. This is a floor model with a 12" x 12" or 12" x 18" bell jar which provides a vacuum of up to 10⁻⁷ torr. It has a built in diffusion and mechanical pump with a turbo option. It is water cooled and eliminates the need for liquid nitrogen. Among its applications are carbon, SiO and noble metal deposition. It can be used for molybdenum aperture cleaning and support grid production. The digital gauges are easy to read. The system is shipped complete, ready to plug in and use. For further information visit our web-site at www.laddresearch.com or call us at 1-800-451-3406.

Liebmann Optical Company, Inc. a subsidiary of JENOPTIK Laser, Optik, Systeme GmbH, Germany is distribution Partner for ProgRes Microscopy Cameras and new for Imagic AG. The **Image and Document Management System ImageAccess easyLab** has specially been designed to meet the requirements of a typical microscopy lab, combining rich functionality with ease-of-use. Optional modules such as image acquisition from a wide range of digital cameras, microscope control, image processing, analysis, export&mail, documentation and presentation in MS Word and PowerPoint turn your microscope workplace into an efficient Image Management station. Contact: Ludwig Eckl, (413) 527-0079 Ext. 300, E-Mail: LEckl@liebmann.com ProgRes-camera@liebmann.com

Researchers at the **University of Virginia School of Medicine** have created a new online search engine- www.relemed.com -that provides medical professionals, researchers and the general public with a more efficient and targeted way to search **PubMed** for the latest, most relevant medical literature to answer medical queries. ReleMed-short for Relevant Medicine-is not a general health site. It doesn't provide answers or suggest guidelines for specific medical problems. Rather, based on your search terms, ReleMed retrieves the most relevant recent references published about a problem or a combination of conditions, versus any article in which the search terms appear.

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Navitar's high magnification zoom lens systems can achieve infinite working distances with the simple addition of the **Zoom Xtender**. The Xtender dramatically increases the versatility of Navitar's Zoom 6000 and 12X Zoom systems by extending the system's reach yet still maintaining internal focus and parfocal zooming. It also allows you to keep computer controlled motorization and detents intact. "The Xtender is designed to offer working distances beyond that achievable with standard Navitar attachments," comments William Bridson, Director of Product Development with Navitar. "Customers can easily configure a zoom system with an extended reach and larger field of view by utilizing Navitar's interactive Xtender Field of View Calculator or the Optical Wizard, our online optics selection tool." Contact Navitar at 800-828-6778, or via their patented automated lens selector at www.opticalwizard.com, or via the website at www.navitar.com

FEI Company (Nasdaq: FEIC) and Australian-based **JKTech** have teamed to combine their innovative scanning electron microscope (SEM) technologies and software, delivering innovative applications that greatly enhance minerals processing and improve evaluation of exploration targets for mining operations. The combined solution features FEI's Quanta™ SEM and JKTech's Mineral Liberation Analyzer software and is available now with liquid-nitrogen-free, high throughput silicon drift EDS technology.

The Mineral Liberation Analyzer (MLA), capable of analyzing up to 16 different samples overnight without the need of an operator, is a high-throughput and highly-automated mineral analysis system. It rapidly

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identifies minerals in polished sections of drill core, particulate or lump materials and quantifies a wide range of mineral characteristics such as abundance, grain size and liberation distributions. The automated stage control and image acquisition of the Quanta SEM enable imaging and subsequent x-ray analysis of at least 5,000 individual particles for concentrated samples and 50,000 or more particles for tailings or low-grade materials. The geometallurgical and ore characterization data enables users to optimize plant feed quality by avoiding metallurgically poor ore stocks or facilitating effective ore blending. More information can be found online at: www.fei.com, and More information about JKTech can be found at www.jktech.com.au.

Bruker AXS, in cooperation with the The Microbeam Analysis Society, is proud to announce the creation of a new award, the **Duncumb Award for Excellence in Microanalysis**. The award will be presented to a person that has made significant contributions over their career to the field of microanalysis, in the advancement of the science and practice as well as in education and service to the microanalysis community. The award, sponsored by Bruker AXS Microanalysis, includes a plaque and \$2000, and will be presented annually at the MAS Presidential Happenings at the Microscopy and Microanalysis meeting. It honors the seminal contributions to the field of microanalysis made by Peter Duncumb. Peter developed x-ray mapping more than 50 years ago and was also instrumental in the development of analytical electron microscopy. This year we are proud to announce that the inaugural Duncumb Award for Excellence in Microanalysis will go to Professor David Williams of Lehigh University. David has been a leader in microanalysis for many years, in particular in the area of analytical electron microanalysis and microscopy. He has also been instrumental in the training of almost 5000 students, technologists, engineers and scientists at the Lehigh Microscopy School. The worldwide microanalysis community is a richer place today due to David's contributions.

With the latest release of Bruker AXS **ESPRIT software** we've introduced some new features and modules that can help you find elusive trace elements and make routine analysis easier: Maximum Pixel Spectrum is an analysis routine developed at NIST¹ which is useful when searching for trace constituents (0.1%) in an unknown specimen. Such small concentrations may not be detected in the standard sum spectrum as the number of counts is usually too small. Utilizing a HyperMap spectral image, the Maximum Pixel Spectrum tool generates a spectrum that prominently shows the peaks of low concentration elements. Because this type of analysis requires large amounts of data, it could take hours with a Si(Li) detector, but the XFlash SDD can gather this data in minutes. *Contact:* Bruker AXS Inc. Don Becker, 609.771.4473, email: don.becker@bruker-axs.com

Thermo Fisher Scientific Inc. continues to strengthen the core functionality of its purpose-built laboratory information management system (**LIMS**) for pharmaceutical manufacturing R&D and QA/QC applications. Thermo Scientific Darwin LIMS provides pharmaceutical users with environmental monitoring and other important features out-of-the-box, lowering the total cost of ownership and significantly reducing deployment risk. The reporting engine in Darwin has also been dramatically enhanced. Retriever, a web-based data enterprise reporting solution, features dashboard management that enables Darwin users to measure and even forecast key performance indicators in real time. Retriever allows data from any informatics systems, current or legacy, to be directly and securely accessed by the appropriate people within the organization. Also new in Darwin 2.0: support for the creation and management of inspection lots via a tight integration with SAP; enhanced instrument management; a new, advanced formula builder to define complex components limits; support for test allocations; and improvements to the review and approval process that make it easier and faster for users.

Thermo Fisher Scientific Inc. announced it has chosen the BMC Ap-



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pSight Application Problem Resolution System to provide the highest level of support for customers using its Thermo Scientific LIMS and CDS, as well as to optimize the development of those laboratory software solutions. For more information about Darwin and other Thermo Scientific informatics solutions please call +866-463-6522, e-mail marketing.informatics@thermofisher.com or visit www.thermo.com/informatics.

BudgetSensors®, a Bulgarian manufacturer of silicon and silicon nitride probes, as well as AFM accessories for Atomic Force Microscopes (AFM), announces the launch of a new product type - the **magnetic AFM probe Multi75M**. The Multi75M is a silicon AFM probe for Magnetic Force Microscopy (MFM), based on the well established Multi75 AFM probe. It features a magnetic coating on the tip side and an Aluminium reflex coating on the detector side of the cantilever. The new Multi75M AFM probe of BudgetSensors is an all-purpose MFM probe with excellent magnetic properties and homogeneity. More information on BudgetSensors' Multi75M is available at: <http://www.budgetsensors.com/magnetic-afm-probes.html>

We are proud to introduce the Quanta 3D FEG, **FEI's** latest addition to the Quanta family. The **Quanta 3D FEG** is the first high resolution Low Vacuum SEM/FIB (DualBeam™) ever created for 3D Material Characterization, Failure Analysis and Process Control. It is also the first high resolution Dual Beam featuring three operating modes in a single, integrated system: high vacuum, low vacuum and ESEM™. The ESEM mode makes it possible to collect data on any sample, regardless of heat, moisture or dirt levels, as well as to characterize *in-situ* dynamic experiments with live recording. With its unmatched 65nA high current ion beam capability, the Quanta 3D FEG allows very fast milling and precise cross-sectioning to reveal sub-surface structures and features. With its 200nA electron beam current capability, the Quanta 3D FEG also provides improved, *i.e.* faster, 3D analytical capabilities which will increase your understanding of the specimen. Come visit us on www.fei.com/Quanta3dfeg for more details.

Nikon introduces The **BioStation CT** a fully integrated, self contained cell culture observation device and monitoring system that allows users with minimal microscopy experience to conduct live cell imaging locally or by remote operation over a secure public or private network. The BioStation CT provides a system for managing, observing and recording cell growth, morphology, and protein expression in culture by providing consistent environmental control of temperature, humidity and gas concentration. The system allows numerous researchers to perform multiple experiments with the same instrument within pre-described imaging sessions. Google Nikon BioStation CT for more information.

TOFRA, Inc. has released a **Focus Drive with Integrated Controller for optical microscopes**. This innovative cost-saving design requires less desk space and reduces cable clutter. The focus drive provides computer-controlled movement of the fine focus and retains manual movement of the coarse focus. No modification of the microscope is required and easy installation can be performed by the end user. Mounting adapters are available for all major microscope brands. The focus drive operates in the entire vertical range of the microscope with a resolution of up to 1 nanometer. The Focus Drive with Integrated Controller does not need any additional control units, which saves valuable desk space; it connects directly to the computer serial port (or to USB port through USB-to-serial converter) via a custom cable. The focus drive can be used with desktop or laptop computers. The focus drive can be daisy-chained with stage and filter wheels, creating an automated microscope system. The cables carry only direct current and communications signals minimizing electromagnetic interference. For more information check the company web site www.tofrainc.com or contact Ilya Ravkin at iravkin@tofrainc.com, by phone 650-494-7772, or write to TOFRA, Inc., 945 Colorado Ave., Palo Alto, CA 94303.

Linkam is pleased to announce the latest addition to their range of material characterization systems – the **TST350 tensile stress stage**

for the visualisation and measurement of physical properties of samples. The TST350 is built with two precision ground stainless steel lead screws to maintain perfect uniform vertical and horizontal sample alignment. Sample jaws move in opposite directions to maintain the sample in both reflected and transmitted microscope fields of view. This also means other transmitted techniques such as x-ray, needed for internal observation of sample structure can be used. As is expected of Linkam equipment, temperature control and accuracy is second to none, with a range from -196 to 350°C with 0.1°C control and rates up to 30°C/ min. Most importantly, there is virtually no temperature feedback to the measurement of force. The sample chamber is gas sealed and can be controlled with various gases via the gas valves built onto sides of the stage. The intuitive Linksys 32 DV software enables full control of temperature, motor for jaw position, data and high resolution image capture. For high resolution copies of this and other images, please contact Jez Leckenby at IMS. www.ims-europe.net or www.ims-chi.com

Carl Zeiss SMT has received an order to develop a unique high-performance transmission electron microscope. Together with researchers from the Max Planck Institute for Biophysics in Frankfurt, the Nano Technology Systems Division of Carl Zeiss SMT has developed a unique transmission electron microscope for the **high-resolution phase contrast imaging of biologic materials**. The PACEM system (Phase Contrast Aberration Corrected Electron Microscope) will enable artifact-free imaging of biologic specimens through the use of a unique phase plate and an aberration corrector, thus proving scientists unparalleled insights into the molecular and atomic structure of biologic processes and mechanisms of action. The development project is part of the Macromolecular Complexes cluster of excellence initiative and the introduction of elite universities in Germany. Carl Zeiss MicroImaging has acquired the equipment business of the US Company Clariant and is therefore strengthening its commitment in the promising field of clinical cancer diagnostics and cancer research. With growing life expectation in the population, the subject of cancer, its diagnosis and treatment is now playing an increasingly important role. The joint use of microscopic techniques and molecular-biological methods is increasing. In every diagnosis of breast cancer, for example, it is now possible to determine the aggressiveness of the tumor and the most suitable therapy.

Agilent Technologies announces a **special trade-in promotion** on its state-of-the-art 5500 and 5400 atomic force microscope (AFM) systems. From now until September 15, 2007, Agilent will take 25% off the price of a new AFM system for customers in the United States, United Kingdom, Germany and Japan who trade-in an older AFM system. The trade-in system must include a microscope, scanner, and controller/software, but does *not* need to be in working condition. The 25% discount can be applied towards the purchase of either an Agilent 5500 or 5400 AFM system. For any additional questions about Agilent's high-precision, modular AFM solutions for research, industry, and education, contact Joan Horwitz, 480-756-5905 or Joan_Horwitz@Agilent.com

Leica Microsystems offers a new, full color, 16-page **brochure that describes Leica's consumable products for the histology laboratory**. In the catalog Leica provides a wide variety of cassettes, either pre-stacked specifically for use on the Leica IP C Cassette Printer, or loose for general laboratory requirements. All Leica routine and biopsy cassettes are molded from a high-density polymer that is fully resistant to typical laboratory chemicals, and suitable for routine or specialized (*i.e.*, microwave) processing techniques. Users can choose from cassettes that accept metal lids or those with molded polymer lids that are attached in either the open or closed position. The catalog also features Leica Histowax™, a highly purified paraffin that is formulated to give outstanding tissue infiltration and superior quality sections. Also featured are Leica EasyDip Staining Jars and Racks, and a variety of storage and shipping containers. Leica's Pre-loaded Coverglass Magazine, which provides extraordinary convenience

when loading coverglass into the Leica CV5030 glass coverslipper, is also described in the catalog. To order a free catalog or to place an order for any of Leica's range of consumable histology products, please call 800-248-0123.

A new thermal field emission analytical SEM from JEOL, the JSM-7001F, acquires high resolution micrographs at up to 1,000,000X for applications ranging from semiconductor, metals, minerals, materials, and ceramics, to non-conductive biological samples. The JSM-7001F features a unique in lens field emission gun that delivers more than 200 nA of beam current to the sample. An extremely small probe diameter at low kV and high current is optimal for characterization of nanostructures with a resolution of 1.2nm at 30kV. The JSM-7001F is ideal for low accelerating voltage X-ray spectroscopy and crystallography at and below the 100nm scale. The large specimen chamber – designed for samples up to 200mm in diameter – accommodates a wide variety of detectors simultaneously. These include multiple EDS, WDS, EBSD, STEM, BSE, CL, EBIC, and IR camera. The SEM can also be equipped as a dual column FIB or an e-beam lithography tool. The SEM comes with a choice of three stage sizes and exchange chambers, and a new 5-axis automated stage. The JSM-7001F can be configured for both high vacuum and low vacuum operation. A new Windows XP based computer interface allows for unprecedented ease of operation and image analysis. Users can choose to display up to four live images on the screen, as well as live signal mixing. As with all electron optics products sold at JEOL USA, four days of training at the JEOL Institute in Peabody, Mass. are included in the purchase of the JSM-7001F, allowing the new user to optimize performance of this instrument for their applications.



The acquisition of a new **300 kV field emission Transmission Electron Microscope (TEM) from JEOL distinguishes Indiana University,** Bloomington, Indiana as a major United States research facility where scientists can examine both biological and materials science structures at nanoscale resolution. Acquisition of the new JEOL TEM was completed in February 2007 with an NSF Major Research Instrumentation Grant awarded in parallel with a \$1M investment made by the University's College of Arts and Sciences. The state-of-the-art TEM will be housed in the University's newly-constructed multidisciplinary science building, Simon Hall. The JEOL TEM, a model JEM-3200FS, will be used for multiple disciplines by students and researchers in the fields of biology, chemistry, materials science, biochemistry, environmental and evolutionary sciences, geology, microbiology, and behavioral science, reflecting the University's stated philosophy of achieving new vistas of understanding through interdisciplinary research. For more information about JEOL USA, Inc. or any JEOL products, visit www.jeolusa.com, or call 978-535-5900.

CRAIC Technologies introduces its new **UV-visible-NIR range microscope and micro-imaging system, the UVM-2™.** Operating with a spectral range from 250 to 2000 nm, the UVM-2™ microscope is capable of transmittance and reflectance micro-imaging. Designed to be flexible, the UVM-2™ can image either narrow bands or over a wide spectral range depending upon the users requirements. Capable of imaging with sub-micron resolutions, the UVM-2™ is non-destructive and requires little sample preparation. The microscope is equipped with UV-visible-NIR range optics and has many magnifications due to the large number of UV-visible-NIR range objectives offered. Also available are UV-visible-NIR light sources and high resolution UV, visible and NIR imaging systems, making the UVM-2™ a versatile microscope with many different applications. In the DUV region, the UVM-2™ is used for direct imaging of proteins, mapping of biological structures without stains, sub-surface inspection of semiconductors, and inspection of flat panel displays. The varied applications are

due to the fact that the UVM-2™ can image in the DUV via transmittance and reflectance. Additionally, the same instrument can also image in the near-IR. In this region, the applications range from inspecting bonded silicon wafers for defects within their interiors, detection of counterfeit documents and artworks, mapping structures *in vivo* and much more. If you should have any questions, please contact Paul Martin, paul.martin@microspectra.com

Ted Pella, Inc has introduced the new **ProScope HR handheld digital USB microscope** which represents a new revolutionary method of digital light microscopy. With a series of interchangeable lenses, ranging from 1x to 400x magnification, built-in bright LED illumination and a 1.3 mega pixel imaging chip the ProScope HR produces crisp, high resolution still images or videos. The ProScope HR is connected to a Windows or Mac desktop or laptop computer via the USB 2.0 connector for digital imaging and documentation.

The adjustable lens cone with touch-view brings the image automatically into focus and will steady the ProScope HR for clear imaging. When touch view is not allowed, the precision stand can be used to image the object. Connected to a laptop the ProScope HR can be used virtually everywhere



in the field and brings the microscope to the object. Application fields are: science and education, forensics, archeology, geology, quality control and inspection. With the optional C-mount adapter the ProScope HR can be used as a digital camera for existing analog light microscopes, stereo microscopes and telescopes. Ted Pella, Inc., www.tedpella.com, contact: +1 530 243 2200 or sales@tedpella.com

Omega Optical has just upgraded its web-based **Curv-o-matic™**, an interactive database containing spectral curves of filters, filter sets, and fluorophores. At the core of the web application is an extensive product offering of excitation, dichroic, and emission filters and filter sets for fluorescence detection that are correlated with fluorophores in order to visualize optimal performance. Upgrades to Curvomatic include the addition of light source data for arc lamps, lasers, and LEDs, and the addition of new fluorophores, especially fluorescent proteins and quantum dots. Functionality has also been improved with enhanced search features and the ability to choose up to three fluorophores at one time. Curvomatic currently contains information on more than 500 filter components, 200 filter sets, and approximately 300 fluorophores, fluorescent proteins, and quantum dots. Filter data is available to download as an ASCII file. In addition, all filters in the database are tied into an e-commerce store. If you have any questions, please contact Ella Gray, Webmaster, at egray@omegafilters.com

Omega Optical announces the addition of **Dual Magnetron Reactive Sputtering (DMR Sputtering)** to its existing coating capabilities in response to market requirements for high-performance surface coatings. DMR Sputtering leapfrogs other energetic process coating technologies because of its speed, uniformity, and automation. Omega Optical is the first filter manufacturer in the world to offer the production-line precision of DMR Sputtering technology within the flexibility of a job-shop environment, and is inviting customers to contact us to discuss projects, pricing, and delivery. DMR Sputtering coatings are available for many applications, and are extraordinary in applications where every photon is critical.

DMR Sputtering utilizes a proprietary plasma/ion, reactive, dual-magnetron process, controlled by a multi-dimensional CAD and real-time monitoring system. The result: exceptionally precise layers, which are extremely dense and shift-free. Sputtering rates are significantly faster than with typical sputtering processes – which may have coating runs as long as 24-48 hours – keeping cost down. If you have any questions, please contact Ruth Gorham Houle, at rgorham@omegafilters.com, or (802)254-7327