

NEW AND INTERESTING AT CELL BIOLOGY 2005

The Kurt J. Lesker introduces its new line of TRUE Digital™ gauges, offering a compact and modular alternative to the error-prone world of analog pressure measurement. Just four gauges™ Piezo, Piezo/Pirani, Pirani and Pirani/Bayard-Alpert™ cover the entire pressure range from 1500 Torr to 7.5x10⁻⁹ Torr. The TRUE Digital™ nature of the gauges permits data to be read directly into a PLC or PC with no signal conversions being required. With a choice of two serial interfaces, RS232 or RS485, the digital data signals guarantee reliable data transmission using industry standard low cost cables. TRUE Digital™ gauges may be daisy-changed using RS485 cables for cost savings and cleaner looking installations. Profibus, DeviceNet, LON Works and CC converters are also available. Contact us at: 800-245-1656, www.lesker.com.

M.E. Taylor Engineering Inc. announces new production capabilities to manufacturer custom made carbon tape products. These include double sided adhesive circles, tabs, tapes, or any shape that can be die cut or slit. Newer carbon loaded materials available are almost 100% transparent to EDS for elements other than carbon. In addition, the ability to layer different material densities can produce multiple surface finishes. One side can be very smooth while the other side is a bit coarser on the surface leading to a cost effective product. Materials other than carbon are available. Our production facilities are local, so fast order turn around and quality control are assured. Call: 301-774-6246 or genetaylor@mac.com

Veeco Instruments Inc. has introduced the BioScope™ II, an innovative, high-performance atomic force microscope (AFM) designed to facilitate advanced bioscience research. Veeco's new BioScope II has the highest AFM resolution and lowest noise available on an inverted microscope on the market today and enables AFM imaging under a wide range of dynamic and biologically relevant conditions. The ergonomic, "open" physical design of the BioScope II affords safe, simple, top-down access to materials (i.e., samples and liquids) or probes without interfering with the optics. Low-noise, closed-loop probe positioning enables point-and-shoot, molecular pulling and force curves, and nanomanipulation. The BioScope II delivers greater than 15µm Z range for imaging large structures (e.g., cells), as well as greater than 150µm X-Y range for matching cell or sample size to scan area and correlating AFM data with optical/fluorescence images. True top-down optical access permits uncompromised use of phase contrast, DIC (Differential Interference Contrast) and brightfield optical microscopy. Setup is fast and easy, even for complex perfusion experiments. A soft-sealed environmental/perfusion chamber and sample heater allows sensitive biological samples to be maintained and imaged under physiological conditions by controlling the chemistry of the fluid and gaseous environment.

Laser Microdissection is a technique for isolating specific tissue samples, even down to single cells. This technology is currently active in the fields of cell biology, plant research, pathological diagnosis, and forensics analysis. Once a desired tissue region is identified by the user, with either brightfield or fluorescence illumination, the LMD isolates it from the original sample. The dissected sample is typically reserved for downstream analysis for the expression of molecules of interest, i.e. DNA, RNA, or proteins. Isolating only the cells of interest from the heterogeneous milieu of the original sample facilitates the characterization of the cells' unique complement of molecular signals. The Leica LMD6000, successor to the AS LMD, was released in October 2005. The system utilizes a 355 nm diode laser incorporated into a Leica DM6000 B research microscope to microdissect the cells of interest directly into a centrifuge tube cap containing a reaction buffer. Enhancements to the system include a faster and more powerful cutting laser, holder for three slides, and an optional fast high precision scanning stage. The availability of optional automated cell recognition software (AutoVision Control, AVC) extends the level of system throughput. The versatility of the LMD6000 allows the system to be used for other methods. The optional Living Cell Cutting module allows for

the isolation of individual cultured cells for either molecular analysis or the generation of sub-clonal populations. Alternatively, the laser can be used for cellular and intracellular ablation. Molly Lundberg, Leica Microsystems Inc. 847/405-0123 ews@leica-microsystems.com

INDUSTRY NEWS

CIS Corporation, a leading supplier of industrial-grade cameras, announced that for the first time in their history, the company exhibited at the 18th International Trade Fair for Machine Vision and Identification Technologies, VISION 2005, held at Messe Stuttgart, November 8-10, which gives us an opportunity for us to show the advantages of our new F and G camera product families. The G and F families are the first products which use the recently adopted AIA Camera LinkR "Mini-CL connector" packaged in a 29mm cube miniature camera. The G products are monochrome, while the F designates color. Both product families offer single-tap cameras with up to 6X scanning speed. This allows CIS to offer compact, high-performance Camera Link(R) products at prices traditionally associated with standard analog cameras. More information can be found on the website at www.ciscorp-us.com.

Three fully equipped state-of-the-art electron microscopes worth approximately \$2.5 million are being delivered to the Calit2 Building at UC Irvine as part of a strategic alliance between Carl Zeiss SMT, a global semiconductor and nanotechnology instrument manufacturer, and the California Institute for Telecommunications and Information Technology (Calit2) at the University of California, Irvine. <http://www.calit2.net/newsroom/release.php?id=753>

Thermo Electron Corporation introduced Retriever version 3.0, a web-based data extraction and presentation solution that enables secure access to laboratory data, no matter the originating data system. Retriever extracts aggregates and transforms data into "laboratory information with a business context," so that the data can be used to make rapid, informed business decisions. In version 3.0, reports, which can include textual, graphical and tabular data, are configured using the new Thermo Report Designer. Thermo Electron Corporation has developed a new datasheet on the Atlas CDS, available free in pdf or printed format. Entitled "Atlas CDS - A scalable, compliant and integrated chromatography data system", this new document is available free of charge to chromatographers working in both regulated and non-regulated industries to address the benefits of standardizing on a single solution. Thermo's new datasheet provides information designed for multi-channel, multi-user client server implementations. To obtain a free-of-charge copy of the new datasheet simply download it in pdf format from www.thermo.com/cds or order a copy via marketing.informatics@thermo.com

Thermo Electron Corporation announces the introduction of its new Carousel Autosampler accessory, designed for use with the Nicolet Almega XR dispersive Raman microscope and NXR FT-Raman spectrometers. This versatile accessory automates the collection of Raman spectra from multiple samples and is designed principally for routine analysis environments such as QA/QC laboratories. The motorized carousel rotates up to 16 industry-standard sampling tubes into position in the excitation laser beam for unattended sampling. The Carousel Autosampler accommodates 5, 10 and 13 mm diameter tubes.



Thermo Electron Corporation announces the commercial availability of Darwin LIMS, the latest evolution in commercial-off-the-shelf (COTS) laboratory information management systems for pharmaceutical manufacturing R&D and QA/QC. Darwin fulfills many customer requirements "out-of-the-box" by providing deeper, more targeted pharmaceutical

INDUSTRY NEWS

functionality compared to traditional LIMS. Users will find dissolution, content uniformity, stability management, product management, batch management and system interfacing as dedicated capabilities within Darwin - fully supported by Thermo's helpdesk and covered in depth in the user manual. The inclusion of such functionality as standard in the base system significantly reduces on-site customization, resulting in reduced costs, risks and time associated with implementation, training, validation, maintenance and upgrades. For more information concerning any of these announcements, please call Thermo Electron on 866-463-6522 or e-mail marketing.informatics@thermo.com

The Cooke Corporation announces that the **sensicam qe** now offers Double Shutter Mode. This high performance cooled digital 12bit CCD camera system comprises advanced CCD and electronics technology. The system features thermoelectrical cooling of the image sensor (down to -12°C), extremely low noise ($4e^{-}$ rms) and an outstanding quantum efficiency, which achieves a high spectral sensitivity in general and especially in the NIR. Exposure time modes (software selectable) range from 500ns (fast shutter) to 3600s (long exposure). In double shutter mode, two images with the very short interframing time of 500ns can be recorded. A high speed serial data link connects the system to the PC (fiber optic link available). This PIV camera system is perfectly suited for many sensitive and low noise imaging applications like flow visualization, spray imaging, combustion imaging, fluorescence imaging and confocal and light microscopy. Contact: Murad Karmali, The Cooke Corporation, tel 248 276 8820 info@cookecorp.com

Infinitema, Ltd., announced today that it has **formed a partnership with KLA-Tencor's** Growth and Emerging Markets (GEM) division to distribute its products to selected markets. Infinitema's core technology is the VideoAFM™, the world's first high-speed, video-rate atomic force microscope (AFM). Under the terms of the agreement, KLA-Tencor will distribute the VideoAFM in North America and Europe with the full backing of its best-in-class sales and applications channel — enabling broader access to this innovative surface metrology solution. The VideoAFM is the first commercially available atomic force microscope capable of delivering real-time images at video frame rates. With imaging rates 1000 times faster than that of conventional AFMs, the VideoAFM allows users to visualize changes in chemical or biological processes at the molecular level in real time. The VideoAFM also allows exploration of large fields of view before selecting features of interest for more detailed investigation. The VideoAFM works in conjunction with existing AFMs, enhancing their core functionality without detracting from their basic operation. Additional information about the company is available on the Internet at <http://www.infinitema.com>

The new **Chameleon Ultra™ laser** from **Coherent, Inc.** extends the capabilities of multiphoton excitation (MPE) microscopy by delivering an unmatched combination of wavelength tuning range, fast scanning and high peak power. Specifically, this new ultrafast laser tunes from 690 nm to 1040 nm, enabling calcium uncaging, autofluorescence techniques, and the use of green, blue and cyan fluorescent proteins, as well as deeper imaging within samples. A fast scanning speed of 25 nm/sec further supports calcium uncaging and facilitates multicolor imaging. The Chameleon Ultra also offers high peak power (>2W at 800 nm) throughout its tuning range for a stronger MPE signal. Please direct any questions to Chris Dorman, product line manager, at +44 141 945 8211, or visit our Web site at <http://www.Coherent.com>.

Nikon Instruments, announced the debut of a new flagship microscope re-developed from the ground up in collaboration with electrophysiologists for neuroscience and electrophysiology applications. **The FN1 is a special purpose upright microscope** featuring stable fixed stage construction and Nikon's unique focusing nosepiece design. The microscope is designed to combine exceptional observation ability with outstanding

expansion capabilities, has virtually no electrical noise and exhibits vibration free operation. The new microscope provides maximum open space for working around a specimen or whole animal with easy access to manipulators, stimulators and flow chambers for electrophysiology studies. A new set of physiological water dipping objectives have been developed for the FN1 featuring longer working distances of up to 3.5mm, with slimmer profiles, 45 degree approach angle for easy access of manipulator patch needle placements, special coated top lenses to prevent bubbles and new axial chromatic aberration correction for visible to near infra-red imaging. To enable deep penetration optical contrast techniques, a new IR wavelength selection turret is adopted providing the highest contrast selection of visible, near IR and IR DIC image modes. A new condenser with 8.2 mm of working distance, usable for DIC and new Oblique Illumination techniques offers vibration free operation and both the filter turret and condenser as well as the main body of the FN1 are completely sealed against water leaks. The FN1 makes specimen observation easy with the addition of two special new water immersion physiology objectives. The world's first 100X 1.1 N.A. objective with a working distance of 2.5mm incorporates a correction collar to control spherical aberration and provides compensation for physiological temperature and specimen thickness variation, having excellent IR transmission, it is ideal for multi-photon studies of deep brain slice imaging. Another addition is the new CFI75 LWD 16X 0.80 N.A. objective with an industry unique working distance of 3.0mm and a 45 degree manipulator approach angle.

The new **NIS-Elements suite** is composed of four distinct packages scaled to address specific application requirements. 1. NIS-Elements AR – is Advanced Research software for fully automated acquisition and device control through full six-dimensional image acquisition and analysis. 2. NIS-Elements BR – is Basic Research software for acquisition and device control through four-dimensional acquisition. 3. NIS-Elements D – is Documentation software for supporting color documentation requirements in bioresearch, clinical and industrial applications, with basic measuring and reporting capabilities. (Release scheduled for Spring 2006) and 4. NIS-Elements F – is Freeware, basic image capture software bundled with every Nikon Instruments digital camera.

Nikon Instruments Inc., unveiled the **Digital Eclipse DXM1200C**, an ultra high-quality digital camera for advanced imaging featuring a new Peltier cooling mechanism that significantly reduces heat induced noise, improved image resolution, and adds new software to enhance camera control, digital viewing and capture of images in standard and ultra low-light applications. This model continues the DXM tradition of capturing images with user selectable high pixel count image files for documentation and high resolution image printing capabilities. The DXM1200C can capture images files with up to 12.6 million pixels, using Nikon's exclusive pixel stepping technology.

Nikon Instruments, Inc., introduced a new solution designed to eliminate focus drift in live cell time lapse observation. The **Nikon TE2000 Perfect Focus Inverted Research Microscope (PFS)** delivers automatic focus correction for the TE2000E2 series of inverted research microscopes. The TE2000-PFS eliminates the need to adjust the image focus every time stage movement occurs. Also, eliminating focus adjustment for time lapse recordings substantially reduces photobleaching and keeps specimens alive for longer periods of fluorescence observation. The Nikon TE2000-PFS works by optically detecting the surface of the coverslip and transmitting focusing data through Nikon's Continuous Optical Feedback (COF) technology to the microscope's focusing mechanism. The mechanism automatically adjusts focus to compensate for even the tiniest drift in image focus.

Nikon Instruments, Inc., introduced **COOLSCOPE LOW-MAG** today, a new COOLSCOPE digital microscope featuring low magnification for a wide field of view. The COOLSCOPE LOW-MAG continues to round out the COOLSCOPE product family by offering an integrated

INDUSTRY NEWS

digital microscope and camera system that does not require a computer, equipment setup, optical adjustment or software installation. The COOLSCOPE LOW-MAG offers simultaneous viewing of a macro image and a micro image at a magnification of 2x, 4x, 20x, and 40x using a monitor or projector. The 2x and 4x enhanced fields of view provide for quicker navigation over the specimen slide combined with the easy-to-use mouse driven control. Actual specimen field size of up to 4.2 mm per displayed or captured image is possible allowing unprecedented low power imaging capability. High resolution images up to 5-megapixels are captured with COOLSCOPE LOW MAG's integrated digital CCD

For more information on any of these announcements, visit the Nikon website at www.nikonusa.com. Product related inquiries can be directed to Nikon Instruments at 800-52-NIKON

NANOSENSORS™ today announced the **Q30K-Plus**, a novel scanning proximity probe with an outstanding Q-factor and an enhanced signal to noise ratio for UHV applications. Based on the well-known PointProbe® Plus AFM probe NANOSENSORS™ has developed the Q30K-Plus SPM-probe series especially for UHV applications. For high sensitivity and a good signal to noise ratio the new probes are featuring a Q-factor of over 30,000 (up to 50,000) under UHV conditions and a high reflectivity (even at wavelength of over 800nm). In addition to the enhanced Q-factor and the optimized signal to noise ratio the Q30K-Plus series offers all features of the PointProbe® plus series like a minimized variation in tip shape and a typical tip radius of less than 7nm. For further information please refer to the NANOSENSORS™ Website at www.nanosensors.com or contact info@nanosensors.com.

Ohio State University's Center for Accelerated Maturation of Materials (CAMM) has become the first North American site to install and begin using the world's highest-resolution, commercially-available scanning/transmission electron (S/TEM) microscope, the FEI (Nasdaq: FEIC) Titan(TM) 80-300. This new system yields powerful sub-Angstrom (atomic scale) imaging and analysis capabilities. With the sub-Angstrom imaging of the Titan, researchers at Ohio State's CAMM labs will have a greatly enhanced ability to make new discoveries on the structure-property relationships of a wide spectrum of materials. Close coupling of computational methods with the now more detailed experimental validation at the atomic level will make new materials development cycles much shorter at significantly reduced costs. The Titan's dedicated platform for corrector and monochromator technologies is highly automated and provides leading-edge stability, performance and flexibility.

FEI Company has completed the first Japanese installation of its advanced **DA 300HP DualBeam™** system for automated in-fab defect analysis extendable to the 45nm design node. The in-line system, installed in the customer's 300mm line, provides rapid in-fab defect analysis. It also extracts wafer samples that can be sent to the lab when rapid ultra-high resolution scanning/transmission electron microscopy (STEM) and transmission electron microscopy (TEM) analysis is required.

FEI Company has introduced the next-generation **Vitrobot™**, a fully-automated vitrification device for plunge-freezing of aqueous samples. The advanced system maintains the cryo-fixation process at constant and user-definable physical and mechanical conditions, delivering reproducible sample freezing and high throughput, thus setting a new standard for preparation of cryo samples and 3D observations of proteins and molecular machines in their natural state.

More information on these products can be found on the FEI website at: <http://www.feicompany.com>.

JMAR Technologies, Inc. introduced **VersaCAM**, an all digital, scanning microscope that offers an unprecedented wide-field mosaic capability obtained from a 90mm x 120mm scan area. VersaCAM provides on-screen magnification of up to 13,500X. The innovative architecture of the VersaCAM microscope breaks new ground for microscopy applica-

tions by eliminating the sample size restrictions of slide-bound scanning, as well as providing the diverse functionality of several different specialty microscopes. Based on JMAR's proprietary scanning boom technology, VersaCAM combines the performance of a fast scanning, Computer-aided Microscope (CAM) with the ability to auto-focus from a starting distance of over fourteen inches down to an optimal viewing position controlled in nanometer increments. Larger samples can be accommodated off stage with the use of the swinging boom arm, allowing the system to view and perform analysis of scanned samples that can not fit on the stage of a typical microscope. Its compact size means it can easily be set up in an industrial or remote field setting, unencumbered by the large, heavy stage typically required for scanning. For additional information please contact: Mike Graff, (212) 825-3210

Leica Microsystems introduces the only two-scanner confocal system capable of imaging at a broad range of speeds for all imaging needs. The **Leica TCS SP5** was developed in close cooperation with scientists from leading institutions. The system unites the two worlds of live cell functional imaging and highest resolution structural imaging in a single, easy-to-use confocal system. Confocal microscope users benefit from the broadest range of imaging speeds and resolutions ever available in one confocal microscope (from 1.0 to 16,000 lines/second and up to 64 Megapixels per image). As a true single point confocal, the Leica TCS SP5 is the only system to combine fast frame rates, best resolution, and depth imaging with full multi-channel capabilities. Leica's high-efficiency spectral detection system minimizes damage to living cells. Since there is less photobleaching, there is less cytotoxicity, and the extended imaging time is ideal for long-term studies. Also, Leica's AOBs dynamic beam splitter provides 30% higher sensitivity versus conventional dichroic beam splitter systems and offers the flexibility to add additional laser lines. For more information contact: Molly Lundberg, Leica Microsystems Inc. 847/405-0123 ews@leica-microsystems.com

The USA subsidiary of **JEOL Ltd.**, an international supplier of electron microscopes and analytical instruments, **has entered into a partnership agreement with Massachusetts Institute of Technology's Institute for Soldier Nanotechnologies (ISN).** The mission of the ISN, a research collaboration between the United States Army and MIT, is to develop innovations in outfitting soldiers with equipment and apparel to dramatically improve their survivability and mobility. The use of nanotechnology will transform heavy equipment and bulky clothing by miniaturizing devices and fibers, resulting in lightweight protection and the potential for unprecedented means of monitoring vital signs, maintaining communications, and integrating a vast array of new functions into the soldier's battlesuit. The ISN is located on the MIT campus in Cambridge, Massachusetts, and comprises 44,000 square feet of space at Technology Square. The ISN is under the direction of Professor Ned Thomas, a well-known polymer scientist. For more information about JEOL USA, Inc. or any JEOL products, visit www.jeolusa.com, or call 978-535-5900.

ULTRA TEC announce a major new polishing machine for microscopy applications – **ULTRAPOL** advance, which has been designed to be an all-in-one lapping & polishing workstation for the production of flat surfaces for microscopy and related disciplines. Advance's unbeatable combination of advanced control and process features allow for the accurate processing of modern generations of IC's and important samples for related materials analyses. Key applications of the technology include: Topside electronic de-processing - enabled by the advanced angular control and optical enhancements such as ULTRACOLLIMATOR; Backside preparation of packages and wafers, particularly for flip-chips - and rapid global thinning of large surfaces; Cross-sectioning of die package and component-level devices; SIMS, SEM, TEM and pre-FIB preparations. Tim Hazeldine, 877 542 0609, www.ultratecusa.com