

new products

Focus on analytical equipment and diagnostics

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Andreas Mandelis

Secondary ion mass spectrometer

Secondary ion mass spectrometry (SIMS) is a versatile, sensitive technique for surface analysis and surface depth profiling of diverse materials. Hidden Analytical



now offers three SIMS equipment levels with full UHV operation and expandability to the top-level specification. The dual-mode Maxim mass spectrometer features operation in the secondary ion mode and in the secondary neutral quantification mode. The Foundation SIMS system includes the IG20 fine-focus (50- μm) oxygen and argon ion gun, a multiple sample holder, and a primary ion-beam monitor. The SIMS Workstation is configured for higher throughput rates and has a sample load lock, a sample manipulator, a charge-neutralizing electron flood gun, and a system bake-out facility. The SIMS Workstation Plus has the most comprehensive specification and the IG5C cesium ion gun with a 20- μm spot size for electronegative species. The MASsoft Professional SIMS PC data system provides automated measurement of positive and negative ions and of neutral species. Hidden Analytical Inc, 37699 Schoolcraft Road, Livonia, MI 48150, <http://www.hiddenanalytical.com>

Mass spectrometer for biological applications

Bruker has introduced new high-definition capabilities in proteomics and

biomarker research. According to the company, patented low-noise Cap-itivespray nanoBooster ionization and high-speed digitization Qq-time-of-flight technology controlled by acquisition software improve complex sample definition. Impact HD, Bruker's novel accurate mass spectrometer, features enhanced analytical performance levels for applications in which trace analysis from complex, high-background matrices is a challenge, such as for biomarker research, identification of impurities, and residue screening. The broad mass-transfer ion optics and fast, 50-Gbit/s sampling technology allow the spectrometer to achieve a dynamic range of five orders of magnitude in one second of inductance-capacitance time (LC time constant). Wide dynamic range at high speed is a prerequisite for high-resolution detection of low-abundance compounds



in sharp ultrahigh-performance liquid chromatography peaks and permits direct quantitation without repetition. Bruker Corporation, 3500 West Warren Avenue, Fremont, CA 94538, <http://www.bruker.com>

Real-time binding analysis

Horiba Scientific has launched OpenPlex, a flexible research platform for the real-time analysis of label-free molecular interactions in a multiplex format. OpenPlex uses surface plasmon resonance imaging (SPRi) to monitor the binding of



molecules to an array of receptors immobilized on a sensor chip. It can give qualitative (yes/no binding) and quantitative information of interactions such as concentration, affinity (K_D), and association and dissociation rates (k_{on} , k_{off}). Molecular interactions that involve proteins, DNA, RNA, oligosaccharides, living cells, polymers, and nanoparticles can be characterized and quantified. The research platform represents the evolution of SPRi-Lab+, Horiba's flexible label-free benchtop instrument. Designed for simple operation, OpenPlex is suitable for multidisciplinary applications including physical chemistry, biochemistry, biology, and nanotechnology. Horiba Instruments Incorporated, 58 Clifton Country Road, Clifton Park, NY 12065, <http://www.horiba.com>

Spectroscopy software

The Ortec Products Group of Ametek has upgraded its AlphaVision alpha spectrometry application software. Validated for 64-bit Windows 7 compatibility, it features productivity, analysis, reporting, and other enhancements. An optional formal verification and validation package with comprehensive test results is available with the update. AlphaVision includes the Alpha-Aria, Alpha-Duo, and Alpha-Ensemble counting systems. The analysis methodology includes peak search and fit methods: second derivative; top-hat correlation; peak interference correction; regions of interest, including automatic shift of ROIs based on the tracer peak, best peak, or all peak positions; and interactive ROI adjustment to optimize peak fit during reanalysis. It also includes nuclide activity calculations. Ortec Products Group, 801 South Illinois Avenue, Oak Ridge, TN 37831-0895, <http://www.ortec-online.com>

Ion mobility spectrometer

Photonis USA has designed the DART—direct analysis in real time—ion mobility spectrometer (IMS) to perform simplified, fast analysis of solids and liquids for contaminant detection and material quality control. It provides sample analysis in a two-stage configuration. Photonis has combined its resistive glass technology, currently used in other IMS applications, and a new photo-etched ion gate to provide the rapid pulsing necessary to produce spectra with high



resolving power (64–150). The sample inlet uses IonSense's patented DART technology to ionize solid-, liquid-, and gas-phase analytes with no special sample preparation. The spectrometer is suitable for applications in which simplicity, accuracy, and speed are required; they include product and food safety, composition analysis, and environmental control. *Photonis USA, 660 Main Street, Sturbridge Business Park, P. O. Box 1159, Sturbridge, MA 01518, <http://www.photonis.com>*

Detector for XRD analysis

According to Rigaku, its new x-ray diffraction (XRD) D/teX Ultra 250 silicon strip detector reduces data acquisition time by almost 50% compared with other available detectors. The company has increased the active area of the aperture, which saves acquisition time by increasing the overall count rate and the detector's angular coverage. It achieves high-energy resolution, or x-ray fluorescence (XRF) suppression, through a combination of low-energy discrimination and a secondary monochromator. The detector may be used with Rigaku's Smartlab diffractometer, a system with automated alignment and cross-beam optics. Compared with previous models, the D/teX Ultra 250 has several enhanced features, including a smaller

pixel pitch of 0.075 mm (versus 0.10 mm) for improved resolution. *Rigaku Americas, 9009 New Trails Drive, The Woodlands, TX 77381-5209, <http://www.rigaku.com>*

Raman spectrometer accessory

The RayShield coupler from WITec is now available for the alpha300 and alpha500 microscope series. It allows for the acquisition of Raman spectra at wavenumbers down to below 10 cm^{-1} . The high-transmission coupler system includes a specialized narrowband filter set optimally aligned to detect Raman lines extremely close to the Rayleigh line while maintaining adequate Rayleigh shielding. Additional spectral information from Stokes and anti-Stokes Raman signals can thus be obtained. The RayShield coupler is available for various laser wavelengths from 488 nm to 785 nm. Currently installed alpha300 and alpha500 microscopes can be upgraded with the coupler. Applications in semiconductor research, the pharmaceutical industry, life sciences, nanocarbon research, and materials science in particular may benefit from the RayShield coupler. *WITec Instruments Corp, 130G Market Place Boulevard, Knoxville, TN 37922, <http://www.WITec-Instruments.com>*

Compact UV spectrometer

Ibsen Photonics has announced the Freedom UV spectrometer platform for OEM supply to manufacturers of analytical instruments. According to the company, the platform combines compact size and cost-efficiency with high performance and flexibility in the choice of detector system. Due to its robustness and thermally stable operation, the Freedom UV spectrometer is suitable for integration

into high-performance industrial instruments. At $25 \times 48 \times 16\text{ mm}$, the Freedom is one of the smallest spectrometers on the market. Ibsen Photonics claims the spectrometer provides a low stray light level and high efficiency because of the in-house-produced transmission gratings. Optical resolution can be as high as 0.5 nm, and the company says the f-number, $f/3.1$, is among the best for currently available ultracompact spectrometers. Freedom UV covers 190–435 nm and supports several commonly used CCD, BT-CCD, and MOS detectors. *Ibsen Photonics A/S, Ryttermarken 15-21, DK-3520, Farum, Denmark, <http://www.ibsenphotonics.com>*

Cameras for low-light imaging

Leica Microsystems has launched two cameras, one for bright-field applications and one for fluorescence applications. The Leica DFC3000 G is a grayscale microscope camera that has a passive cooling architecture and correlated pixel double sampling for clear fluorescence signals and low background noise. With its highly sensitive CCD sensor, it is particularly suitable for low-light situations. With a live image rate up to 30 frames per second, microscope users



can inspect samples rapidly and protect specimens from the photo damage that occurs when samples are exposed to light too long. Data are transferred quickly via USB 3.0. The Leica DMC2900 is a USB 3.0 microscope camera with a 3.1-megapixel CMOS sensor for standard bright-field applications in research, industry, and life sciences. Its processing power is appropriate for such tasks as capturing multiple images in mosaics or z-stacks, and its CIE-Lab color engine processes images in real time with stable live image speed. *Leica Microsystems Inc, 1700 Leider Lane, Buffalo Grove, IL 60089, <http://www.leica-microsystems.com>*

