New Products

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers. PHYSICS TODAY can assume no responsibility for their accuracy. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

Lawrence G. Rubin

Focus on Analytical Equipment

Ion Source for Mass Spectrometry

JEOL-USA has introduced the DART (direct analysis in real time) ion source for noncontact analysis of materials in open air under ambient conditions at ground potential. The new ion source is based on the reactions of excited-state species with reagent molecules and polar or nonpolar analytes. When installed on the company's AccuTOF time-of-flight mass spectrometer, the ion source helps provide improved selectivity and accurate elemental composition through exact mass measurements. The DART system makes it possible to directly detect chemicals in liquids and gases, and on surfaces such as glass, concrete, human skin, currency, fruits and vegetables, and clothing. The detection can be made without the need for sample preparation and without the use of radioactive components, solvent sprays, or high voltage. *JEOL-USA Inc, 11 Dearborn Road, Peabody, MA 01960, http://www.jeolusa.com*

www.pt.ims.ca/6084-131 or Circle #131

Atomic Force Probe

Multiprobe's new X-series Nanoprober combines a solid platform with the company's Multiscan Atomic Force Probe. The Nanoprober allows highly efficient and reliable transistor probing. It consists of a precision, low-noise probing platform, up to four Multiscan AFP heads, and an environmental enclosure and workstation. Multiprobe has elevated the AFP heads well above the base to increase user access and thus simplify sample exchange and alignment procedures. The design allows samples up to 10 cm in size to be easily loaded onto an *xyz*-micrometer stage; each AFP head can be positioned anywhere on the sample, even to within 100 nm of the other probe tips. The sharp probes and nanopositioning that uses piezoelectrics and force-feedback enable a nanometer-resolution map of surface structures. *Multiprobe, 819 Reddick Street, Santa Barbara, CA 93103, http://www.multiprobe.com*

www.pt.ims.ca/6084-132 or Circle #132

Raman Spectrometer

Headwall Photonics has announced the Raman Explorer, a multichannel, multispectrum spectrometer for OEM applications, which is based on the company's retro-reflective concentric design. The new instrument uses Headwall's holographic diffraction gratings to reduce stray light; the grating design eliminates focal-plane distortions. High throughput f/2.4 optics ensure fine spectral resolution over multiple input slits across extended wavelength ranges and achieve high signal-to-noise ratios. The innovative design allows the broad wavelength ranges to be placed onto a 2D array, essentially creating an instrument composed of multiple spectrometers that use one detector. With a 785-nm Raman excitation laser, the Explorer covers the 779- to 1144-nm spectrum in two ranges. *Headwall Photonics Inc, 601 River Street, Fitchburg, MA 01420, http://www.headwallphotonics.com*

www.pt.ims.ca/6084-133 or Circle #133

Compound Management and Logistics

Mettler Toledo has developed the new FlexiWeigh product family for compound management and logistics applications. The FlexiWeigh 1000 is a powder-dispensing workstation that offers the ability to handle difficult powders, such as static powders, and is suited for the 1–20 mg range (dispense targets can extend up to 200 mg). The individual dispensing heads eliminate potential cross-contamination between samples. The FlexiWeigh 2000, a compound dissolution workstation, is based on the company's WISC module (weighing, inerting, solvent dispensing, capping). This module can combine multiple operations at a single vial position, thus offering increased throughput. Optional capabilities include a cap feeder bowl and labeling modules. *Mettler Toledo Autochem Inc, 7075 Samuel Morse Drive, Columbia, MD 21046, http://www.mt.com/autochem*

www.pt.ims.ca/6084-134 or Circle #134

Microstructure Motion Analyzer

Polytec has introduced the MSA-400, a microsystem analyzer for precise 3D dynamic characterization of MEMS and MOEMS (micro-optoelectromechanical systems). The new analyzer finds and measures resonances of MEMS structures moving in all three dimensions. In one measurement head, it integrates Laser-Doppler vibrometry (maximum 20-MHz sub-ppm resolution) for the fast broadband out-of-plane vibrational characterization and stroboscopic video microscopy (maximum 2-MHz nanometer resolution) for the in-plane examination of MEMS devices. In addition to steady-state motions, the MSA-400 can measure transient processes using pulsed excitation. An optional second laser is available for measuring differential out-of-plane vibrations between scanned and fixed locations. *Polytec Inc, 1342 Bell Avenue, Suite 3-A, Tustin, CA 92780, http://www.polytec.com*

www.pt.ims.ca/6084-135 or Circle #135

X-Ray Fluorescence Spectrometer

The ZSXmini II analytical system from Rigaku is a bench-top wavelength-dispersive, x-ray fluorescence spectrometer. It was designed for on-site analysis, useful in the characterization and remediation of contaminated soil sites. WDXRF spectrometers have always had higher resolving power and

better sensitivity than the alternate technology of energy-dispersive XRF systems and do not require a liquid nitrogen cooling source. The ZSXmini II can analyze elements from fluorine to uranium, uses a 50-W, 40-kV air-cooled end-window x-ray tube, and offers a single sample stage and an optional 12-position sample changer. It comes with Rigaku's FP software, the same that is used with the company's standalone ZSX series spectrometers. *Rigaku/MSC Inc, 9009 New Trails Drive, The Woodlands, TX 77381, http://www.rigakumsc.com*

www.pt.ims.ca/6084-136 or Circle #136

SPM Platform

Micro Photonics presents its MultiView 3000T, a scanning probe microscope platform that allows two specialized and independently controlled probes to simultaneously scan the same sample, with one probe scanning relative to the other. Examples of such probes include a thermal SPM probe that can be used as a nanoheater and a near-field optical microscopy probe that can be used to illuminate a precise point on the sample. Also, with two probes, each one a double-wired nanoelectrode, one can place four electrodes in contact with the sample to produce SPM Hall probes or a nanometric Wheatstone bridge. In the MultiView 3000T, a nanoindentation configuration enables indentation with one probe while a second measures expansion dynamics. *Micro Photonics Inc, 4972 Medical Center Circle, P.O. Box 3129, Allentown, PA 18106-0129, http://www.microphotonics.com*

www.pt.ims.ca/6084-137 or Circle #137

Scanning Electron Microscope

FEI Company has released the Nova NanoSEM, a low-vacuum, field emission, scanning electron microscope for ultrahigh-resolution characterization of charging or contaminating samples such as organic materials, substrates, porous materials, plastics, and polymers. The instrument features in-lens and low-vacuum secondary and backscatter electron imaging modes and beam gas chemistries for e-beam writing of nanostructures. The company's Helix detector technology reportedly combines magnetic immersion lens and low-vacuum SEM technologies for the first time in the history of field-emission scanning electron microscopy. The combined effect enables characterization capabilities in an environment that suppresses charge buildup on nonconductive materials. *FEI Co, 5350 NE Dawson Creek Drive, Hillsboro, OR 97124, http://www.feicompany.com*

www.pt.ims.ca/6084-138 or Circle #138

Spectrometer for Microspectroscopy

Princeton Instruments and Acton Research have created the MicroSpec Discovery CCD spectrometer for microspectroscopy. The instrument in-

cludes a spectrometer with a 150-mm focal length; its optical design is based on the unique optical throughput of modern, wide-field microscopes, and is capable of less than 0.4-nm spectral resolution. The camera uses a 512 × 512 pixel, back-illuminated, electron-multiplying CCD to deliver better than 90% quantum efficiency and negligible read noise. The MicroSpec Discovery accepts a wide range of interchangeable, pre-aligned wavelength dispersion modules. The standard entrance aperture has two manually selectable imaging positions: direct and spectral. An automated, variable entrance aperture is optional. *Princeton Instruments/Acton Research, 15 Discovery Way, Acton, MA 01720-4482, http://www.piacton.com*

www.pt.ims.ca/6084-139 or Circle #139

Raman Analyzer

The Raman Systems R-3000 Raman analyzer is available from Ocean Optics. The instrument is designed for real-time qualitative and quantitative spectral analysis of aqueous solutions, powders, tablets, gels, and surface media. It comes with a choice of a 500-mW, 785-nm diode laser (wavelength range ~200 to 2700 cm^{-1}) or 25- or 50-mW versions of a 532-nm diode laser (~200 to 4000 cm^{-1}), and a CCD-array spectrometer with optional thermoelectric cooling. The analyzer also has a fiberoptic probe with accessory caps for calibration and focusing, and operating software that includes fingerprinting and quantification capabilities. A multiple-spectrum display function allows overlays of up to 20 spectra. The R-3000 offers a wavenumber resolution of better than 10 cm^{-1} and a stability of better than 1 cm^{-1}. *Ocean Optics Inc, 830 Douglas Avenue, Dunedin, FL 34698, http://www.oceanoptics.com*

www.pt.ims.ca/6084-140 or Circle #140

Atomic Force Microscope

Veeco Instruments has announced the NanoMan II, an atomic force microscope system for high-resolution imaging and nanoscale pulling capability. It uses the company's Hybrid XYZ scanner with closed-loop feedback that provides precise *xy* control for micromanipulation and with scans that are accurate and independent of *xy* offset, scan size, and angle. The scanner is said to offer up to 6 times lower *z*-sensor noise and 4 times faster scanning than other available closed-loop systems. The integral flexure design ensures that the *z*-axis remains orthogonal to the *xy* plane. NanoMan II is able to perform accurate force curves and nanoindenting, and allows researchers to modify surface structure or reshape surface morphology with nanoscale precision. *Veeco Metrology Group, 223 Wilmington-West Chester Pike, Chadds Ford, PA 19317, http://www.veeco.com*

www.pt.ims.ca/6084-141 or Circle #141

On the Web

Pacific Nanotechnology offers its Web Image Management System for retrieving, organizing, searching, and distributing microscope images. All of the information relating to the images is stored in a relational database on a website. Users may access the images with a download transfer utility. *Pacific Nanotechnology Inc, 3350 Scott Boulevard, Suite 29, Santa Clara, CA 95054, http://www.pacificnano.com* ■

www.pt.ims.ca/6084-142 or Circle #142