

new products

Focus on spectroscopy and spectrometry

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. For more information about a particular product, visit the website at the end of the product description.

Andreas Mandelis

Clinical screening with NMR spectroscopy

Bruker's Avance-IVDr *in vitro* diagnostics by nuclear magnetic resonance (IVD-by-NMR) system is a standardized NMR spectroscopy platform for research use. It is designed to enable NMR clinical screening and research and IVD-by-NMR discovery, development, and validation of novel NMR assays. The Avance-IVDr system features high sensitivity and information-rich



output at 600-MHz proton-NMR frequency. The platform incorporates advanced hardware, software, automation, spectral libraries, and standard operating procedures for high-performance biofluid screening and assay validation. It is optimized for ease of use and high data quality and reliability. *Bruker BioSpin Corporation, 3500 West Warren Avenue, Fremont, CA 94538, <http://www.bruker.com>*

Cryogen-free NMR

Oxford Instruments has introduced Pulsar, a benchtop, cryogen-free nuclear magnetic resonance (NMR) spectrometer without superconducting

magnets. Pulsar requires a standard electrical supply. It incorporates a 1.4-T (60-MHz proton resonance) rare-earth permanent magnet with superior homogeneity. According to the company, the magnet provides high spectral resolution and generates routine spectra in seconds. Data are processed and manipulated with Mnova NMR software from Mestrelab. With a small footprint, Pulsar is suitable for many laboratories, from the applied research environment to near the industrial production line. The SpinFlow software's graphical user interface enables users to quickly and easily create experiments for simple spectra collection, relaxation measurements, or advanced data collection. *Oxford Instruments plc, Tubney Woods, Abingdon, Oxfordshire, OX13 5QX, UK, <http://www.oxford-instruments.com>*

Handheld Raman spectrometer

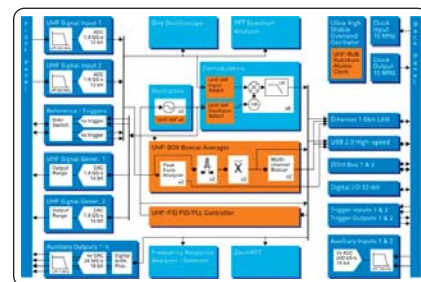
The NanoRam handheld Raman spectrometer from B&W Tek has been enhanced with new features to make sampling and detection easier. An analyzer for material identification and verification, the NanoRam features a high-brightness organic LED touchscreen display and intuitive software. The latest generation of the spectrometer has an embedded 2D barcode scanner, batch scanning capabilities, and an IP-64-rated dust-tight and splash-proof housing. Ethernet connectivity and other software enhancements facilitate tracking and reporting. For fast, convenient measurements in almost any environment, B&W Tek has also introduced two new sampling accessories, a 12-inch immersion shaft for sampling



out of large drums and a tablet holder for measuring finished products with uniformity. *B&W Tek Inc, 19 Shea Way, Newark, DE 19713, <http://bwtek.com>*

Boxcar averager for UHF use

With the UHF-BOX, the latest option for its ultrahigh frequency lock-in amplifier, Zurich Instruments extends its signal processing capabilities to boxcar techniques and offers users what it claims is the fastest commercially available boxcar averager. Until now, scientists who use pulsed laser sources for time-resolved measurements have been limited by the performance of conventional analog boxcar averagers or have made compromises using modulation techniques, lock-in amplifiers, or application-specific instrumentation. The UHF-BOX provides a fully digital boxcar averager with wide bandwidth and dead-time specifications. Users can now measure at repetition rates up to 450 MHz directly with a 600-MHz



input bandwidth without the need for additional modulation. The amplifier makes possible baseline-suppressed measurements, multichannel operation, and fully differential laser path measurements. *Zurich Instruments AG, Technoparkstrasse 1, 8005, Zurich, Switzerland, <http://www.zhinst.com>*

Universal measurement spectrophotometer

According to Agilent Technologies, its new Cary 7000 universal measurement spectrophotometer (UMS) offers high performance, including complete sample characterization and high data quality for thin-film, solar, glass, optics, and other advanced materials applications. It provides researchers with a tool for discovery and development and manufacturers with the ability to reduce costs through faster time to market and

rigorous quality control. The fully automated Cary 7000 UMS delivers measurements of transmission, absolute reflection, and scattering without moving the sample; provides automated, unattended operation; and has 10 absorbance units to measure challenging samples. *Agilent Technologies Inc, 5301 Stevens Creek Boulevard, Santa Clara, CA 95051, <http://www.agilent.com>*

Low-dark-current CCD

Andor Technology has launched the new iDus 416 back-illuminated, deep-depletion CCD technology on the iDus



platform. Combining sensitivity in the near-IR and resolution, the technology may potentially open new possibilities for faster, higher-resolution Raman, photoluminescence, plasmonics, and broadband absorption without the need for liquid nitrogen. According to Andor, the low-dark-current technology features up to 95% quantum efficiency, making the iDus 416 the most sensitive near-IR CCD available. The iDus 416 also combines 15- μm pixels for high-resolution spectroscopy and a 30-mm-wide sensor for simultaneous spectral bandpass collection. Very low optical etaloning is ensured by the fringe-suppression process that comes as standard. *Andor Technology USA, 425 Sullivan Avenue, Suite 3, South Windsor, CT 06074, <http://www.andor.com>*

Spectrophotometer for microanalysis

Craic Technologies has designed the 20/30 Perfect Vision (PV) microspectrophotometer to non-destructively analyze many types of microscopic samples from the deep UV to the near-IR.

It can quickly and accurately analyze samples using several techniques: absorbance, reflectance, Raman, luminescence, and fluorescence. The system can be configured to image microscopic samples in the UV and near-IR regions and for color imaging.



Combined with Craic Technologies' Traceable Standards, designed for use with microspectrophotometers and calibrated using standard reference materials from NIST, the 20/30 PV can be used as a microanalysis tool. Applications include materials science research, forensic analysis of trace evidence and documents, and thin-film measurement on patterned semiconductors. *Craic Technologies Inc, 948 North Amelia Avenue, San Dimas, CA 91773, <http://www.microspectra.com>*

Compact NMR spectrometer

Magritek has introduced the Spinsolve compact nuclear magnetic resonance spectrometer to bring fast, high-resolution NMR spectroscopy to the chemistry bench and classroom. For chemistry education, the ability to make a meaningful measurement and



get on and off the instrument quickly can redefine how NMR can be incorporated into the teaching laboratory. With a single instrument, each student can make a series of NMR measurements as they progress through their assigned sample preparation. Spinsolve uses standard 5-mm NMR tubes to enable quick sample loading and unloading. With speed, resolution, and ease of use, it makes spectra available in seconds. The spectrometer does not require cryo-cooling, an advantage in an educational context given that most high-field NMR spectrometers require liquid helium and nitrogen cooling. *Magritek, 32 Salamanca Road, P. O. Box 25252, Wellington, 6012, New Zealand, <http://www.magritek.com>*

High-power xenon source for spectroscopy

The Ocean Optics model HPX-2000-HP-DUV xenon light source is a 75-W short-arc lamp suitable for UV-visible absorbance spectroscopy and other applications that require a high-intensity



lamp. It provides continuous spectral output from 185 nm to 2000 nm and up to 2000 hours of bulb life. An integrated shutter controlled by a switch on the front panel or a TTL signal over the rear panel allows dark measurements to be taken and other adjustments to be made without affecting lamp stability or compromising experiment integrity. The output intensity of the HPX-2000-HP-DUV over the entire 185- to 2000-nm range is up to four times higher than that of standard xenon sources. Optimum warm-up time is 40–60 minutes, and drift is less than 0.06% per hour (after one hour stabilization). Adding an external filtering option, such as Ocean Optics' CUV-FL-DA direct-attach cuvette holder, makes the HPX-2000-HP-DUV a convenient broadband excitation source for fluorescence. *Ocean Optics Inc, 830 Douglas Avenue, Dunedin, FL 34698, <http://www.OceanOptics.com>*

New literature

Mass spectrometer catalog

Hidden Analytical has issued a new catalog describing its mass spectrometer systems and microreactors for control and monitoring of diverse gas-related thermal processes. Application areas covered in *Mass Spectrometers for Catalysis and Thermal Analysis* include catalyst quantification; thermo-gravimetric analysis; thermal programmed desorption, reduction, and oxidation; and general thermal reaction studies. A range of interfaces is available to accommodate process pressures from subatmospheric to 30 bar. Recent introductions include the fully integrated TPD workstation for surface desorption studies at UHV and the HPR-20 QIC TMS system for analysis of fast gas adsorption and desorption events at pressures near atmosphere. *Hidden Analytical Inc, 37699 Schoolcraft Road, Livonia, MI 48150, <http://www.hiddenanalytical.com>* ■