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

Andreas Mandelis

Focus on spectroscopy

High-purity silicon FT-IR quality control

The cryogenic silicon analysis system (CryoSAS) from Bruker Optics is a dedicated Fourier-transform IR (FT-IR) analytical spectroscopic solution for the quality control of silicon materials in semiconductor R&D. It uses FT-IR spectroscopy of silicon at very low temperatures to quantitatively analyze impurities down to the parts-per-trillion level. Optimized for "at-line" operation in industrial environments, the all-in-one system combines Bruker's FT-IR technology with low-temperature, closed-cycle refrigerating devices that do not require cryogenic liquids. The CryoSAS incorporates a high level of automation, including the reporting of analysis results based on Semiconductor Equipment and Materials International and ASTM International standards. *Bruker Optics Inc, 19 Fortune Drive, Manning Park, Billerica, MA 01821-3991, http://www.brukeroptics.com*

Alpha spectrometers

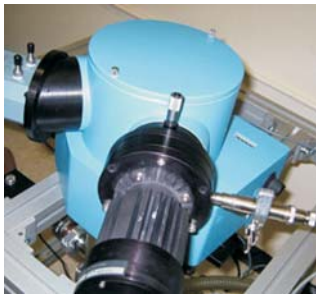
The Ortec Products Group of Ametek Advanced Measurement Technology has introduced the Alpha Suite family of spectrometers for use in mobile environmental laboratory and counting room applications. Employing integrated digital signal processing multichannel analyzers, Alpha Suite spectrometers achieve a high level of stability that is an advantage for long counting times with low-level samples. Among the Alpha Suite products are the Alpha Aria, a network interface module-based, single-channel instrument; the Alpha Duo, a two-channel, benchtop system; and the Alpha Ensemble, a single instrument that is expandable from two to eight channels. Each spectrometer in the Alpha Suite family requires only a power source, a vacuum pump, and a USB connection to a PC. Each has one or more spectroscopy channels consisting of a vacuum chamber, digital signal processing electronics, and a multichannel analyzer. *Ortec Products Group, Advanced Measurement Technology Inc, 801 South Illinois Avenue, Oak Ridge, TN 37831-0895, http://www.ametek.com*

Liquid chromatography mass spectrometer

Shimadzu's Nexera system is suitable for ultra-high-performance liquid chromatography and mass spectrometry (LC/MS) applications. To achieve sensitivity analysis of complex samples, the front-end component for LC/MS must decrease its carryover to zero. With a newly designed injection port, fine-tipped needle, and features such as multiple-rinse solvent selection and injection port and internal needle rinse, the Nexera SIL-30AC autosampler reduces carryover to an absolute minimum. The system's high (10 s) injection speed and an overlapping injection function allow for a maximum reduction in cycle time. In addition, the Nexera LC-30AD pump's automatic pulsation-correction mechanism and high-speed parallel microplunger design provide pulse-free solvent delivery and excellent retention time reproducibility even in ultra-high-speed gradient conditions. *Shimadzu Scientific Instruments, 7102 Riverwood Drive, Columbia, MD 21046, http://www.ssi.shimadzu.com*

UV radiation spectrometer

A new version of McPherson's vacuum UV spectrometer, model 234/302, includes sensitive CCD detectors. The 200-mm spectrometer has adjustable slits, operates at f/4.5, and provides fast, sensitive data collection from UV radiation and emission spectra in the 100- to 190-nm wavelength range simultaneously with subnanometer spectral resolution. Tuning the grating allows for the collection of different wavelength swaths. Various models of sensors fit the focal plane for direct detection of vacuum UV spectra. Supplied with a spectral calibration certificate, model 234/302 is available with standard sources, reflective condensers, and vacuum differential sections. Applications include quick and easy measurements of vacuum UV spectra in experiments such as plasma processing of semiconductors, fluorescence of doped crystals, and luminescence of phosphors. *McPherson Inc, 7A Stuart Road, Chelmsford, MA 01824, http://www.mcphersoninc.com*



Fluorescence spectroscopy

Horiba Jobin Yvon has introduced the MF^2, a fluorescence spectroscopy instrument designed to increase the rate of data collection by 10 000 times and dynamic range by 1000 times over the conventional rates, thus reducing the time it takes to measure a fluorescence lifetime from minutes to milliseconds. Fluorescence spectroscopy can measure the duration of molecular events with wide time resolution. The company uses a frequency domain phase and modulation measurements that are repeated at several modulation frequencies to give the fluorescence lifetime. The sequential nature of the method, however, requires many minutes to complete an experiment. By grouping multiple frequencies into one high-frequency waveform and greatly expanding the available frequency range, the MF^2 significantly decreases the time it takes to measure a fluorescence lifetime. *Horiba Jobin Yvon Inc, 3880 Park Avenue, Edison, NJ 08820-3012, http://www.horiba.com*

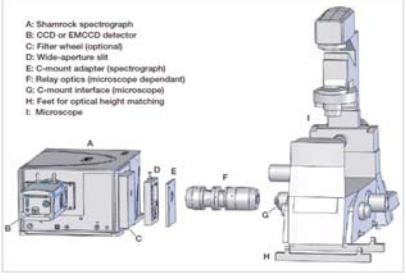
Mass spectrometry system

AB Sciex has launched the TripleTOF 5600 system, a fast and sensitive high-resolution time-of-flight (TOF) mass spectrometer for high-performance qualitative and quantitative analysis. It combines the quantitative capabilities typically associated with triple quadrupoles and the qualitative capabilities of a high-resolution, accurate-mass system. It was designed to enable new and better ways for scientists to conduct mass spectrometry experiments for a broad range of life sciences

applications, such as discovering new drugs, detecting biomarkers, and aiding in food safety and environmental analysis. Innovations include AB Sciex's SmartSpeed technology for 100-Hz acquisition, the company's software capable of delivering up to 100 spectra/s or 50 spectra/s while maintaining intelligent real-time data filtering; an accelerator TOF analyzer to gather high-resolution data at high speed and with high sensitivity; and EasyMass Accuracy, another AB Sciex software that can achieve stable ~1-ppm mass accuracy without the need for continuous recalibration. *AB Sciex, 110 Marsh Road, Foster City, CA 94404, http://www.absciex.com*

Microspectroscopy accessories

New microspectroscopy accessories from Andor Technology complement the company's range of indium gallium arsenide (InGaAs), high-end, intensified, and electron-multiplying CCD cameras and Czerny-Turner and echelle spectrographs. Microspectroscopy involves structural or chemical spectral analysis of microscopy images of biosamples such as living cells and proteins and materials such as polymers and semiconductors. The Andor Shamrock spectrograph wide-aperture slit accessory makes possible a flexible and modular approach to microspectroscopy. For example, a particular



spectroscopy setup with a single camera images a sample and simultaneously allows spectral information containing structural and chemical analysis to be collected from the microscope through the same optical path. The flexibility of the setup can be maximized through interfaces to modular cage systems. *Andor Technology plc, 425 Sullivan Avenue, Suite 3, South Windsor, CT 06074, http://www.andor.com*

UV-Vis spectrophotometers

Biochrom offers double-beam and variable bandwidth UV-Vis spectrophotometers as part of its Libra range. With their color touch screens and USB data ports, Libra instruments can be tailored to meet the specific requirements of a wide range of academic, research, and industrial applications. The USB port enables users to upload data as well as their own measurement programs. The Libra S50 is a split-beam spectrometer; the Libra S60, a multiuser, double-beam spectrophotometer; the Libra S70, a 1-nm bandwidth double-beam system suitable for routine pharmaceutical applications; and the Libra S80, a variable bandwidth double-beam instrument. Biochrom Libra includes application-based software for all standalone and PC-controlled instruments. Standalone devices feature a full suite of standard applications, including single wavelength, wavelength scanning, standard curves, kinetics, and life sciences protocols. *Biochrom Ltd, 22 Cambridge Science Park, Milton Road, Cambridge CB4 0FJ, UK, http://www.biochrom.co.uk*

Laser desorption or ionization mass spectrometer

The JMS-S3000, JEOL's new spiral matrix-assisted laser desorption/ionization time-of-flight (TOF) mass spectrometer, is an analytical instrument suitable for changing research needs in areas of synthetic and biological polymers and materials science. Its high mass resolution and sensitivity over a wide mass range are useful for analysis of many synthetic polymers that have varied molecular weight distributions in a wide molecular weight range. The JMS-S3000 also features an optional linear TOF measurement of high-molecular-weight ions and analysis of samples subject to self-fragmentation. The optional TOF/TOF configuration enables two-channel mass spectrometry analysis by high-energy collision-induced dissociation. With its high precursor ion selection capability, the system allows users to select and monitor only monoisotopic ions in product ion spectral data. *JEOL Ltd, 1-2 Musashino 3-chome, Akishima, Tokyo 196-8558, Japan, http://www.jeol.com*

Near-IR spectrometer

Ocean Optics now offers the NIRQuest512-2.2, a small-footprint

near-IR spectrometer with response from 900 to 2200 nm. It is suitable for applications ranging from moisture detection and chemical analysis to high-resolution laser and optical fiber characterization. The spectrometer uses a highly stable, 512-element Hamamatsu indium gallium arsenide–array detector in a compact optical bench with a two-stage thermoelectric cooler and low-noise electronics. Optical resolution of ~0.5–5.0 nm (full width at half maximum) is possible. External hardware triggering functions allow users to capture data when an external event occurs or to trigger an event after data has been gathered. Multiple grating, an optical bench, and accessory options make it possible to configure a NIRQuest system for various applications in medical diagnostics, environmental monitoring, pharmaceuticals analysis, and other areas. *Ocean Optics Inc, 830 Douglas Avenue, Dunedin, FL 34698, http://www.oceanoptics.com*

Microspectrophotometer

The 20/20 FPD microspectrophotometer from Craic Technologies has been designed for colorimetry and light intensity comparison of microdisplays. The smallest pixels are now on the order of 10 mm across; the 20/20 FPD can measure spectra on the millimeter scale, can compare pixel to pixel, and can map the color and intensity variations within a single pixel. Combining advanced microscopy and spectroscopy with complementary software, the instrument enables users to measure spectra, colorimetry, light intensity, and film thickness by either transmission or reflectance. The 20/20 FPD can incorporate automated measurement capabilities, touch-screen controls, easily modified processing recipes, and sophisticated data analysis tools. It can also include the ability to directly image and analyze components for contaminants with UV and near-IR microscopy. *Craic Technologies Inc, 948 North Amelia Avenue, San Dimas, CA 91773, http://www.microspectra.com* ■