

new products

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Lawrence G. Rubin

Focus on spectroscopy

Fiberoptic spectrometers

StellarNet offers 15 models of its GREEN-Wave spectrometers; these fiberoptic-coupled instruments cover the UV-visible-NIR wavelength ranges from 190 nm to 1150 nm. Each unit contains a USB interface and a snapshot memory to provide instantaneous spectral images from the sensitive CCD or photo-diode array detectors with options for 2048 or 3648 elements. Various models offer a choice of grating range and slit resolution. A single-strand fiberoptic cable or probe assembly delivers input via a standard SMA 905 connector. Several units may be daisy chained to allow simple configurations for dual- and multiple-beam applications. The SpectraWiz software suite enables light measurements that include absolute intensity, sample color reflectance, transmission, and chemical absorption and concentration. *StellarNet Inc*, 14390 Carlson Circle, Tampa, FL 33626, <http://www.stellarnet-inc.com>

See www.pt.ims.ca/16297-131

Spectroradiometer

Konica Minolta Sensing Americas has introduced the CS-2000 spectroradiometer, a high-speed instrument for determining the luminance and chromaticity of various display devices, such as plasma displays, LCDs, and LEDs. It is capable of measuring luminance as low as 0.003 cd/m² without compromising high-accuracy spectral analysis; that measurement represents 100 times greater sensitivity than the company's earlier CS-1000 series. The CS-2000 enables contrast measurements of 100 000:1 and maintains a half-bandwidth of less than 5 nm throughout the

entire wavelength range for precise color measurements with true 1-nm data. Its memory capacity allows storage of 100 determinations. Measurement angles of 0.1°, 0.2°, and 1° can be selected, making possible a standard measuring diameter of 0.5 mm (optionally, 0.1 mm). *Konica Minolta Sensing Americas Inc*, 101 Williams Drive, Ramsey, NJ 07446, <http://se.konicaminolta.us>
See www.pt.ims.ca/16297-132

Spectroscopic ellipsometry

J. A. Woollam Co has developed the RC2, a spectroscopic ellipsometer that provides measurement of thin films, including dielectrics, organics, semiconductors, and metals. The instrument optimizes measurements for low-reflection coatings such as index-matched films on glass or rough surfaces. The RC2 features dual rotating



compensators that provide complete Mueller-matrix measurements and ensure characterization of complex samples that are both anisotropic and depolarizing, a dual light source with computer control of beam intensity that allows an optimized signal on low- and high-reflection samples, and a new achromatic compensator design with optimized performance over a wide spectral range in which more than 1000 wavelengths can be collected in less than a second. *J. A. Woollam Co Inc*, 645 M Street, Suite 102, Lincoln, NE 68508-2243, <http://www.jawoollam.com>
See www.pt.ims.ca/16297-133

Time-to-digital converter

Agilent Technologies has announced the TC890, a time-to-digital converter for time measurement applications, including fluorescence lifetime spectrometry, ion counting in time-of-flight mass spectrometry, and laser detection and ranging (Lidar). The converter is also useful for pulse-timing measurement such as period, frequency, and time in-

terval analyses. The TC890 features six independent stopwatches for high-resolution timing from a common start event to multiple stop events. It records multiple events or hits on each of its six input channels, with a timing resolution of 50 ps and a mean dead time between sequential pulses of less than 15 ns. Running at full speed, the instrument offers a 25 million events per second throughput rate to enable event counting or histogram creation for data and spectra comparison. *Agilent Technologies Inc*, 5301 Stevens Creek Boulevard, Santa Clara, CA 95051, <http://www.agilent.com>

See www.pt.ims.ca/16297-134

UV imaging for microspectrophotometer

CRAIC Technologies has released the new QDI ImageUV imaging system for its QDI 2010 microspectrophotometer. The system allows users of the 2010 to acquire both images and spectra in transmittance, reflectance, polarization, and fluorescence of micrometer-scale samples in UV, visible, and NIR wavelengths. It makes imaging possible deeper into the UV region and further into the NIR region in fields ranging from contamination analysis to pharmaceutical research. The QDI ImageUV system combines hardware, optics, and advanced software to enable users to control a number of digital imaging sources from a single software package. That package also provides various sophisticated image analysis routines for processing and enhancement in more advanced studies. *CRAIC Technologies Inc*, 948 North Amelia Avenue, San Dimas, CA 91773, <http://www.microspectra.com>

See www.pt.ims.ca/16297-135

Spectral calibration and test station

A new spectral test station (STS) from McPherson provides a 100-mm-diameter collimated and variable wavelength monochromatic light beam to illuminate, spectrally calibrate, and document radiometric sensitivity and response characteristics of spectral and hyperspectral sensors. The STS is equipped with an f/4 reflective optical system and up to four turret-mounted gratings to ensure efficient coverage of a spectral range from below 200 nm in the deep UV to above 14 μ m in the long-wave IR. The gratings' snap-in feature



allows users to easily replace gratings or to add broad- or narrowband reflecting mirrors. The system is especially useful for pixel responsiveness and for quality-control testing of multiple detector chips, CCDs, and focal-plane arrays in a given wavelength range. *McPherson Inc., 7A Stuart Road, Chelmsford, MA 01824, <http://www.mcphersoninc.com>*
See www.pt.ims.ca/16297-136

Benchtop mass spectrometer

The latest update of Hiden Analytical's HPR-20 TGA benchtop mass spectrometer is specifically optimized for monitoring fast evolved-gas events and features an advanced integrated interface and analysis system. It is suited for use in diverse thermo/thermogravimetric applications and incorporates data analysis programs for combined presentations of multiple gas species and abundances to 500 atomic mass units, process temperature status, and evolution rates. The internal surfaces of the quartz inlet capillary process interface ensure optimum sample integrity through the transfer stage to the close-coupled MS ionization region. Minimized internal volumes enable response times as low as 100 ms. *Hiden Analytical Inc., 37699 Schoolcraft Road, Livonia, MI 48150, <http://www.hidenanalytical.com>*
See www.pt.ims.ca/16297-137

Monochromators/spectrographs

Intevac Corp is offering the DeltaNu DNS series of four precision, direct-drive scanning monochromators/spectrographs that operate over the UV-visible-NIR wavelength ranges. The DNS-300 features a 300-mm focal length and triple-grating turret. The DNS-500 has a 500-mm focal length and a high-speed f/6.5 aperture for excellent light-gathering capacity. Its interchangeable triple-grating turret on a precision kinematic mount offers superior

reproducibility in spectral position; up to three turrets can be supplied per system. For more demanding applications, the DNS-750 is a 750-mm-focal-length instrument that provides a dispersion of 1.1 nm/mm using a 1200 grooves/mm grating system across the large flat-field exit port. The shorter focal length of the DNS-150 is useful when high spectral resolution is not needed. *Intevac Corporation, 3560 Bassett Street, Santa Clara, CA 95054, <http://www.mosir950.com>*
See www.pt.ims.ca/16297-138

NMR spectrometer

JEOL USA has introduced the ECS 400, a 400-MHz nuclear magnetic resonance spectrometer that features the new Jastec 400-MHz super self-shielded superconducting magnet with low cryogen consumption. The instrument incorporates a two-channel digital NMR console, a pulsed-field gradient amplifier, and a variable temperature controller. To complement the console,



a new automatic-tuning 5-mm broadband gradient probe is being offered, optimized to achieve the highest room-temperature NMR probe sensitivity for protons and carbon-13 observations; the improved sensitivity can lead to reduced measurement time. The ECS 400 is equipped with a Delta software package that is used for both data acquisition and data processing. Optional accessories include a 24-position sample changer and a range of 5-mm and 10-mm probes. *JEOL USA Inc., 11 Dearborn Road, Peabody, MA 01960, <http://www.jeolusa.com>*
See www.pt.ims.ca/16297-139

Quadrupole mass spectrometer

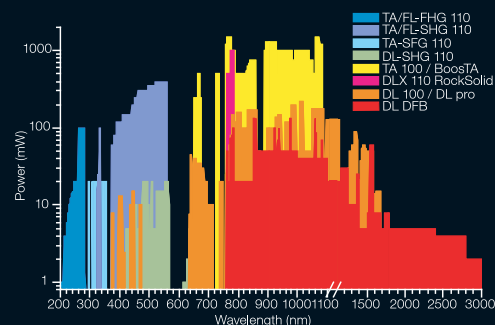
Pfeiffer Vacuum has developed the HiQuad quadrupole mass spectrometer. It achieves high measurement speeds up to 125 μ s/amu (atomic mass unit), which is four times faster than the



CW Diode Lasers

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- See www.pt.ims.ca/16297-25

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company's previous models. It also offers a wide dynamic range of 10 orders of magnitude. The HiQuad benefits from several advanced technologies, such as a DC-biased ionization chamber (100–150 V relative to ground) that results in an extremely low-background signal, a field-axis design in which ions are able to cross the peripheral fields of the separating system with minimum interaction, and a 90° off-axis secondary electron multiplier that is designed to lead to a low-background noise level. The HiQuad's Quadera software package allows users to automate repetitive measurement tasks through macro-programming routines and by setting recipes. *Pfeiffer Vacuum, 24 Trafalgar Square, Nashua, NH 03063, <http://www.pfeiffer-vacuum.com>*

See www.pt.ims.ca/16297-140

Intensifiers for CCD cameras

Princeton Instruments has announced the UNIGEN II intensifiers for use in the extended UV-NIR range with the company's PI-MAX intensified CCD cameras. The new intensifiers provide a significant upgrade to time-resolved applications such as laser-induced fluorescence imaging and laser-induced breakdown spectroscopy. The units are available in 18- and 25-mm sizes and feature both P43 and P46 phosphors. They offer high sensitivity over the 200–900 nm wavelength range, minimum gating speed of less than 2 ns, repetition rates of 50 kHz sustained and 500 kHz burst, and excellent spatial resolution. The company claims that the combination of gate speed, repetition rate, and quantum efficiency over a broad wavelength range is the best available on the market. *Princeton Instruments Inc, 3660 Quakerbridge Road, Trenton, NJ 08619, <http://www.piacton.com>*

See www.pt.ims.ca/16297-141

EDXRF microscopes

HORIBA Jobin Yvon's XGT-7000 is an energy dispersive x-ray fluorescence microscope that offers fast, high-sensitivity, qualitative and quantitative transmission x-ray imaging and elemental analysis and imaging. A choice of two x-ray beam diameters is available, ranging from 1.2 mm down to 10 μm ; beams can be switched in seconds. The instrument includes dual vacuum modes: full vacuum for light elements such as sodium, magnesium, and aluminum, and localized vacuum that allows the full elemental range



from sodium to uranium to be analyzed when the sample chamber is maintained at normal atmospheric pressure. The XGT-7000's SmartMap software enables features such as auto peak labeling, spectral searching, and calibrated quantification and report generation. *HORIBA Jobin Yvon Inc, 3880 Park Avenue, Edison, NJ 08820-3012, <http://www.jobinyvon.com>*

See www.pt.ims.ca/16297-142

Phase-shifting interferometer

The PhaseCam 5030 from 4D Technology is a Twyman-Green interferometer specifically developed to measure meter-class optics for terrestrial and space-based telescopes. Unlike traditional, phase-shifting interferometers, the PhaseCam uses dynamic interferometry to acquire all measurement information in a single exposure, thus enabling measurements despite vibration and turbulence. The new instrument includes a high-speed optical phase sensor so that the system can measure more than 10 000 times faster than an interferometer that uses a slow, bulky phase shifter. The PhaseCam 5030 includes 4Sight analysis software, which provides 2D and 3D options, and comprehensive data filtering, masking, data basing, and import/export functions. *4D Technology Corporation, 3280 East Hemisphere Loop, Suite 146, Tucson, AZ 85706, <http://www.4dtechnology.com>*

See www.pt.ims.ca/16297-143

Polarimeter

General Photonics Corp has released the POD-101D, a digital-signal-processor-powered in-line polarimeter designed for high-speed polarization analysis and monitoring. The instrument uses four channels and a sampling rate of 625 kilosamples/s to simultaneously obtain the four Stokes parameters and measure the state and degree of polarization of an input light beam.

PolaView software enables a graphical display of polarization state either on a Poincaré sphere window or on an oscilloscope window, which has three operational modes: continuous scan for instantaneous display of various polarization parameters, external trigger for capturing transient events, and long-term monitoring for recording only the changes above a predetermined threshold. *General Photonics Corporation, 5228 Edison Avenue, Chino, CA 91710, <http://www.generalphotonics.com>*

See www.pt.ims.ca/16297-144

New literature

The 2008–09 *Catalog of Research Chemicals, Metals and Materials* has been published by Alfa Aesar and features more than 3000 new products. Those include novel fine organics, nanomaterials, pure metals, alloys, analytical standards, and precious metal compounds. The catalog also has seven appendices, each of which focuses on a separate area of chemistry. *Alfa Aesar, 26 Parkridge Road, Ward Hill, MA 01835, <http://www.alfa.com>*

See www.pt.ims.ca/16297-145

The Cole-Parmer 2007–08 general catalog has 2600 pages filled with more than 60 000 products, including 11 000 new items, for electrochemistry, fluid handling, personal safety, laboratory research, industrial process, and more. All products are backed by free applications assistance. *Cole-Parmer Instrument Company, 625 East Bunker Court, Vernon Hills, IL 60061-1844, <http://www.coleparmer.com>*

See www.pt.ims.ca/16297-146

The new Edmund Optics main product catalog features 356 pages of products, technical information, drawings, and application notes. Included are 2261 new products such as fused silica spheres and beam expanders. *Edmund Optics Inc, 101 East Gloucester Pike, Barrington, NJ 08007-1380, <http://www.edmundoptics.com>*

See www.pt.ims.ca/16297-147

Letters and opinions are encouraged and should be sent to Letters, PHYSICS TODAY, American Center for Physics, One Physics Ellipse, College Park, MD 20740-3842 or by e-mail to ptletters@aip.org (using your surname as "Subject"). Please include your affiliation, mailing address, and daytime phone number. We reserve the right to edit submissions.