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 Spectroscopy

Automated 0.75-mm Spectrometer

Jobin Yvon has introduced the 750S scanning spectrometer and the 750I imaging spectrograph. Both instruments feature a 0.75-mm focal length, a dispersion of 1.1 nm/mm, an accuracy of ±0.05 nm, and a repeatability of ±0.03 nm. Both are equipped with motorized slits adjustable from 0 to 0.2 mm in 2 μm steps, an auto-calibrating precision wavelength drive system, and an auto-calibrating grating system. The kinematically mounted 110 × 110 mm gratings are designed for easy interchange. The user can select the optimum resolution or spectral coverage by choosing from among more than 50 individually mounted gratings. The 750S is compatible with the company's photomultiplier tubes and IR detectors; the 750I can be integrated with Jobin Yvon's CCDs and indium gallium arsenide arrays. *Jobin Yvon Inc, Optical Spectroscopy Division, 3880 Park Avenue, Edison, New Jersey 08820, http://www.jyhoriba.com*

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Mini Spectrometers

BaySpec has released the IntelliSpectro mini parallel spectrometer, an integrated optical module that uses the company's volume phase grating technology. The model 101 module offers a 200–2000-nm wavelength range with a wavelength accuracy of ±0.40 nm. It incorporates a thermoelectrically cooled indium gallium arsenide linear photodiode array with 256 or 512 elements and high-speed electronics. With a fiberoptic input and parallel data acquisition and processing computer interfaces, the 101 can be applied to analytical instrumentation, biochemical spectrum analysis, Raman and fluorescence measurements, and many other tasks. Also available in the IntelliSpectro series are the models 102 and 103, designed as spectrograph/spectrometer engines for portable wavelength-division-multiplexing optical spectrum analyzers. *BaySpec Inc, 101 Hammond Avenue, Fremont, California 94539, http://www.bayspec.com*

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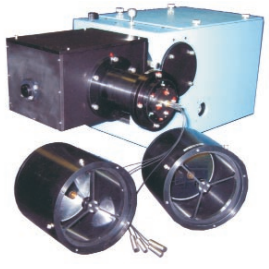
Multifiber Imaging Spectrometer

McPherson has developed the model 2035, a UV-visible-NIR spectrometer system optimized for monitoring fiber-coupled reflecting telescopes in spectroscopy and imaging experiments. The 350-mm focal length spectrometer delivers 0.1-mm scale images near axis with better than 0.1-nm spectral resolution over the 200–800-nm wavelength range. Data



capture and spectral diagnostics of high-energy transient phenomena can be performed on multiple targets on the nanosecond time scale. The receiving telescopes—available in 5.5- and 2-inch clear aperture—are equipped with parabolic optics for optimal light gathering and signal delivery to fibers; doped and UV-capable fibers are available. The spectrometer includes an accessory to aperture match fast fibers to spectrometer fibers. *McPherson Inc, 7A Stuart Road, Chelmsford, Massachusetts 01824-4107, http://www.mcphersoninc.com*

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Thermoelectrically-Cooled Detector

Roper Scientific has announced a thermoelectrically cooled version of the Princeton Instruments OMA V

detection system for NIR spectroscopy applications. The new design enables efficient cooling of a 512 × 1 indium gallium arsenide photodiode array detector between 20 and –50°C. This system's smaller, lighter camera head provides a convenient alternative to its liquid-nitrogen–cooled counterpart. The OMA V:InGaAs detector offers high sensitivity from 0.8–1.7 μm, 1-MHz digitization, 1800 spectra/s, and low read noise for both low- and high-gain modes of operation, and is regulated by an electromagnetically shielded detector controller. The system is well suited for numerous spectroscopy methods, including Raman, absorbance, and photoluminescence. *Roper Scientific, 3440 East Britannia Drive, Tucson, Arizona 85706-5006, http:// www.roperscientific.com*

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Fiberoptic Spectrometers

Two new options are available from StellarNet to enhance the performance of the company's EPP2000 miniature fiberoptic spectrometers. The LT14 Little Turbo digitizer is a 14-bit, 2.5 megasamples per second, A/D converter, that controls the optical detector integration frame from less than 1 ms to 65 s for 2048 pixels. It improves the spectral speeds and dynamic range of the EPP2000 by four times. Another option is the USB2EPP interface that enables the spectrometer to provide much higher spectral data transfers because the USB2 interface transports spectral data 40 times faster than older USB1 peripherals. The EPP2000-NIR spectrometer incorporates a 512-element thermoelectrically cooled indium gallium arsenide array detector in numerous models with various operational ranges for UV, visible, and NIR (up to 1700 nm) wavelengths. *StellarNet Inc, 13801 McCormick Drive, Tampa, Florida 33626, http://www.stellarnet-inc.com*

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Portable Spectroradiometer

International Light's RPS 380 is a handheld instrument for performing NIST-traceable spectroradiometric measurements in the visible spectrum between 380 and 780 nm. The design provides for a reduction in stray light to 10^{-4}; that reduction is essential for measurements of the weaker short wavelengths in most broadband continua. The RPS 380 uses a multichannel detector for rapid data acquisition (typically only several seconds) and assures that there is no variance in the intensities due to source fluctuations. The NIST-traceable measurements include those for luminance, illuminance, radiance, irradiance, color temperature, dominant wavelength purity, and chromaticity. The spectroradiometer includes a USB interface and a laser targeting device for viewing the exact coverage of the instrument. *International Light Inc, 17 Graf Road, Newburyport, Massachusetts 01950, http://www.intl-light.com*

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Time-of-Flight Detector

Burle Electro-Optics has introduced a time-of-flight (TOF) detector with a 25-mm collection diameter for a variety of TOF mass spectrometers. The detector uses the company's 5μm small-pore microchannel-plate (MCP) technology and a new low profile matched impedance conical sensor to improve mass resolution and sensitivity. The high channel density provides dynamic range improvements said to be 10 times greater, and subnanosecond pulse widths 10 times faster than conventional MCPs. The detector's flat input surface provides uniform ion conversion and the higher aspect ration of the MCP produces gains in excess of 10^7. Burle's Quick-Fit detector replacement cartridge includes a Chevron set of two MCPs and a high-transmission grid mounted in a rugged module. *Burle Electro-Optics Inc, P.O. Box 1159, Sturbridge, Massachusettts 01566-1159, http:// www.burle.com*

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Low-Noise Silicon Photodiodes

Hamamatsu Corp has released the S8745 and S8746 Si photodiodes. The large-area photodiodes are integrated with low-power dissipation FET operational amplifiers and are well suited for UV to NIR precision photometry designs such as spectrophotometry. The S8745 is designed with a TO-5 package and has an active area of 2.4 × 2.4 mm; the S8746 uses a TO-8 housing and an active area of 5.8 × 5.8 mm. The photodiodes cover the 190–1100 nm wavelength range and have a feedback resistance of 1 GΩ and a feedback capacitance of 5 pF. That combination provides a sensitivity of 0.12 to 0.54 V/nW over the spectral range with peak sensitivity at 960 nm. At 10 Hz, the S8745 has an output noise voltage of 6 mV per root Hz and an NEP of 11 fW per root Hz; for the S8746, the numbers are 7 mV per root Hz and 15 fW per root Hz, respectively. *Hamamatsu Corp, 360 Foothill Road, P.O. Box 6910, Bridgewater, New Jersey 08807, http://www.hamamatsu.com*

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Raman Microscope

Renishaw's inVia Raman microscopes are high-sensitivity systems that enable high-resolution confocal measurements. They incorporate the company's RenCam CCD detector that offers ultralow signal detection, making it well suited for Raman spectroscopy applications, including the analysis of polymer coatings, semiconductors, pharmaceuticals, diamond films, composites, and ceramics. The inVia Reflex model microscope configuration provides full automation, including automatic instrument reconfiguration and validation when excitation wavelengths are switched, conversion to confocal operation, and switching between white light sample viewing and Raman acquisition modes. All other inVia configurations can be upgraded stepwise through to the Reflex model at any time. *Renishaw plc, New Mills, Wotton-under-Edge, Gloucestershire GL12 8JR, United Kingdom, http://www.renishaw.com*

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Goniometric Measurement Assembly

The OL 700-30 goniometer from Optronic Laboratories is designed to operate with the company's OL 770-LED high-speed multichannel LED test and measurement system, whose application software provides control of the goniometer. The combined system offers spatial radiation distribution measurements such as view angle, and maximum intensity, chromaticity, tristimulus, relative power, peak wavelength, and color temperature, all as a function of angle. The OL700-30 has an automated horizontal range of –90° to +90°, a minimum resolution of 0.01°, and a maximum horizontal rotation rate of 15°/s at 1° measurement intervals. It features the company's Activex controls and Software Developers' Kit, which enables custom applications, including the ones independent of the OL 770-LED. *Optronic Laboratories Inc, 4632 36th Street, Orlando, Florida 32811, http://olinet.com*

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Standard Platinum Resistance Thermometer

The Model 5698 Working Standard SPRT from Hart Scientific features a strainfree, 25-ohm, pure platinum sensor. It meets the ITS-90 ratio requirements for SPRTs and covers temperatures from –200°C to 661°C. Long-term drift, which the company defines as the change in output resistance at the triple-point of water after 100 hours at 661°C is—after converting to temperature—less than 6 mK and typically less than 3 mK. The 5698 is enclosed in a 485-mm quartz sheath and requires 1 mA of excitation current. Calibration options include both fixed-point and comparison calibrations. Also available from the company are SPRT readout devices such as the model

1590, which reads the 5698 within an uncertainty of 1 mk at 0°C. *Hart Scientific Inc, 799 East Utah Valley Drive, American Fork, Utah 84003-9775, http://www.hartscientific.com*

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Dual Ratemeter/Photon Counter

Advanced Research Instruments has introduced the PRM-400, a precision dual ratemeter/photon counter. Capable of operating at speeds of more than 500 MHz with zero dead-time operation, the PRM-400 features what is sometimes referred to as back-to-back counting: One of the dual counters is counting while the other is unloading its data. The switching from one to the other is automatic and instantaneous so that no counts are lost. The two counters can also be configured for a background subtraction. The instrument includes gated inputs, a 1024-point first-in-first-out data storage, and a time base that provides ranges from 10 μs to 10 s. Each channel has an analog output and a user-specified value for a threshold control of the preamplifier/discriminator. *Advanced Research Instruments Corp, 5151 Ward Road, Wheat Ridge, Colorado 80033, http://www.aricorp.com*

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X-ray Tube System

Amptek has announced the LASER-X, a laser-activated x-ray tube system for portable x-ray fluorescence (XRF). It is designed to simplify the XRF process by providing a grounded anode, variable voltage and current, and ease of operation. It features a 35-kV/100-μA power supply (adjustable over the range 10–35 kV) with a solid silver target, a collimated, beryllium oxide end window, and control electronics. The x-ray beam spot size is 1 mm in diameter and is directed 45° from the axis of the tube. The internal miniature x-ray tube may be separated from its enclosure where space is limited. The LASER-X is designed to replace radioisotopes in XRF-analysis applications. The laser-activated cathode allows instantaneous on–off, thus prolonging battery life (a regulated +12-V supply may be used instead). *Amptek Inc, 6 De Angelo Drive, Bedford, Massachusetts 01730, http://www.amptek.com*

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Water Jet Nozzles

Dynaflow has released its DynaJets high-efficiency water jet nozzles that produce an extremely erosive environment said to enable significant increases in cleaning, cutting, and drilling rates as compared to conventional jet nozzles. DynaJets use cavitation, acoustic excitation, and turbulent jet interruption and structuring through passive manipulation of the flow to create large high-frequency stresses on the target surface. The result is high-efficiency jets for both submerged and in-air applications such as surface cleaning, stripping, and rock cutting. *Dynaflow Inc, 10621-J Iron Bridge Road, Jessup, Maryland 20791, http://www.dynaflow-inc.com*

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On the Web

Magnetic Shield Update is a quarterly newsletter that contains engineering notes, case studies, and general articles about this field. Published by Magnetic Shield, the newsletter also appears on the company's Web site. *Magnetic Shield Corp, 740 North Thomas Drive, Bensenville, Illinois 60106, http://www.magnetic-shield. com*

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New Literature

A new power supply catalog and handbook is available from Kepco. Included in its 164 pages are revised and updated applications information, a glossary, and full specifications on current products and several new products, such as a group of bipolar, four-quadrant, 1-kW power supplies. *Kepco Inc, 131-38 Sanford Avenue, Flushing, New York 11352, http://www.kepcopower.com*

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Thermo Vacuum Generators has released a 365-page color catalog with complete specifications for thousands of high-vacuum and ultra-high-vacuum components. Also included are tables of vacuum data and guidelines for vacuum design. *Thermo Vacuum Generators, 355 River Oaks Parkway, San Jose, California 95134, http://www.thermovacgen.com* ■

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