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 Photonics and Imaging

Wavelength Meters

High Finesse/Angstrom has introduced the WS-series of sensitive, compact wavelength meters for narrowband laser sources with a large spectral range. These optical units comprise temperature-controlled interferometers that are read out by an array of photodiodes onto a computer. The display can be easily switched between wavelength, frequency, or wavenumber and between pulsed or CW operation. The standard wavelength range is 350–1100 nm; a UV version provides 248–1100 nm and an IR model, 800–1800 nm. The wavelength meters are available as the WS/5, WS/6, and WS/7. These offer relative accuracies of 10^{-5}, 10^{-6}, and 10^{-7}, respectively. All operate with exposure times ranging from 1 ms to 10 s. In the visible range, a power of 30 nW at a 1-s exposure time is sufficient for measurement. *High Finesse GmbH/Angstrom Ltd, Auf der Morgenstelle 14, D-72076 Tübingen, Germany, http://www.highfinesse.com*

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Progressive-Scan CCD Camera

The TM-1325 from JAI PULNIX is a miniature, high-resolution (1.4 megapixels), progressive-scan CCD camera, the newest in the company's line of AccuPIXEL series cameras. It has a selectable frame rate of 15 or 30 frames per second, and its interline transfer CCD permits full vertical and horizontal resolution (1392 × 1040 pixels) of high-speed shuttered images. The TM-1325 has a substrate drain-type shutter mechanism that provides shutter speeds of up to 1/16 000 s and can be reset asynchronously by external pulse control. The camera has both analog output—multiplexed to single-channel output—and digital output for interfacing with frame grabbers. All camera-control functions are externally controlled through a graphical user interface The TM-1325 series is available in both monochrome and color formats. *JAI-PULNIX Inc, 1330 Orleans Drive, Sunnyvale, CA 94089, http://www.pulnix.com*

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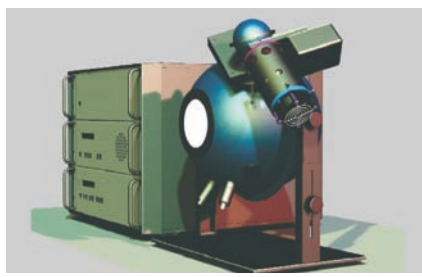
Uniform Source System

Labsphere has announced the USS-1200V-LL uniform source system for calibrating extremely low-level imaging devices and systems. The new source is designed to provide spectral irradiance levels comparable to those of a zero-magnitude star shining on



Earth's surface. Covering the spectral range in the UV, visible, and IR, the "Starlight" source system offers an irradiance that is variable over eight decades with a uniformity of 98%. The USS-1200V-LL includes a satellite sphere illuminator with an external halogen light source, a motorized variable attenuator, a bandpass filter wheel that permits selection of a specific spectral channel, and a neutral-density filter. The company's SC-5500 system controller includes a radiometer, which can process signals from either of the source's two detectors. *Labsphere Inc, P.O. Box 70, 231 Shaker Street, North Sutton, NH, 03260, http://www.labsphere.com*

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Image Intensifier Modules

Hamamatsu Corporation has released the C9016 series of image intensifier models designed for time-resolved imaging applications that use visible fluorescence dye. The modules incorporate gallium arsenide phosphide photocathodes to provide very high sensitivity. Quantum efficiency is 50%

at 530 nm (wavelength of peak sensitivity) for the C9016 series, which covers the 275–775 nm spectral response range. The model 9016-21 has a luminous gain of 2.2×10^4 in units of lumens/mm^2/lux; the C9016-22's gain is 5.0×10^6. Both models can be operated at 20-ns gating and 2-kHz repetition rates, and have effective areas of 12.8 mm × 9.9 mm. The C-9016 module comprises an image intensifier, a high-voltage power supply, and a gate drive circuit, and can be used with various CCD cameras by coupling a relay lens. *Hamamatsu Corp, 360 Foothill Road, P.O. Box 6910, Bridgewater, NJ 08807, http://www.usa.hamamatsu.com*

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Low-Light-Level Camera

PCO has developed the Sensicam em camera system for use in low-light applications such as with weakly luminescent bio-markers and weak chemo- or bioluminescence. The camera incorporates CCD sensors with on-chip electron multiplication (em) of the light signal (up to 800 ×), which allows the operator to neglect the camera's readout noise. Reportedly, the camera's high spatial resolution of 1004 × 1002 pixels can be used without crosstalk, in contrast to image intensifier cameras. The em-CCD image sensor has a superior quantum efficiency of up to 65% in the visible range of the spectrum. The Sensicam em is thermoelectrically cooled to –16°C, has a dynamic resolution of 12 bits, and offers software-selectable exposure-time modes ranging from 50 μs to 1 h. *The Cooke Corp, 1091 Centre Road, Suite 100, Auburn Hills, MI 48326-2670, http://www.cookecorp.com*

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Beam Profilers

Photon's NanoScan scanning slit profilers provide major performance enhancements of the company's BeamScan instrument. The NanoScan has a new digital controller based on a PCI architecture that offers 12-bit digitization of the signal for an increased dynamic range up to 35 dB optical (70 dB electronic). Coupled with the incremental scan speed (1.25–20 Hz), the dynamic range allows for a much greater operating space for a single scan head. The new controller allows measurement of beam size and beam pointing with a 3-sigma accuracy of several hundred nanometers. The NanoScan

is available with silicon, germanium, and pyroelectric detectors to cover the spectral range from the UV to the far-IR beyond 20 μm, and it can measure CW and pulsed beams. It has three available aperture configurations and several slit-size options. *Photon Inc, 6878 Santa Teresa Boulevard, San Jose, CA 95119-1205, http://www.photon-inc.com*

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Quadrant-Cell Photoreceivers

New Focus, a division of Bookham Technology, has introduced models 2901 and 2903 quadrant-cell photoreceivers. The silicon-based 2901 is sensitive from 300–1050 nm and the indium gallium arsenide 2903 is for use in the 900–1700 nm range. Quadrant-cell devices consist of four individual yet identical photocells positioned very close to each other (10-μm gaps). The photocell signals are processed to generate top-minus bottom and left-minus right differences so that a symmetrical optical beam centered on the photoreceiver generates four identical photocurrents and null difference signals. Both models have large 3 mm × 3 mm active areas and adjustable gain settings that allow their use with a wide variation in optical powers from 1 μW to 100 mW. *New Focus Inc, a Division of Bookham Technology, 2584 Junction Avenue, San Jose, CA 95134, http://www.newfocus.com*

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White-Light Continuum Generator

Mesophotonics has released its next generation of planar waveguides optimized for white-light continuum generation. They offer a convenient way of generating a low-noise, low-ripple, fully polarization-preserving spectrum

of hundreds-of-nanometers bandwidth for frequency metrology, spectroscopy, and optical coherence applications. The continuum-generation, 1-cm-long chips feature 2D planar waveguides with tapers on the input and output ends to simplify pump launching. With this design, more than 40 mW of continuum has been produced in a high-quality single-mode output with only 200 mW of incident power. Each silicon-based chip contains more than 40 waveguides of differing sizes, and thus effectively provides 40 devices in one. *Mesophotonics Ltd, 2 Venture Road, Chilworth Science Park, Southampton, Hampshire SO16 7NP, UK, http://www.mesophotonics.com*

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Fiberoptic Switch

Electro Standards Laboratories has announced its model 4196 QuickSwitch fiberoptic data switch with four positions. It is an all-optical switch in which the signal is received by the unit as an optical signal over the fiber strand, is redirected by mirror mechanisms, and leaves the unit as an optical signal over a fiber strand. The 4196 has four ports, A, B, C, D, to which the signal can be switched. In addition, an offline position isolates each port from every other port—that is, common is not connected to A, B, C, or D, and neither is A, B, C, or D connected to any other port. The 4196 is controlled with front-panel pushbuttons or by voltage excitation applied to pins on a remote port connector. Front-panel LEDs display switch position and power status. *Electro Standards Laboratories, 36 Western Industrial Drive, Cranston, RI 02921, http://www.electrostandards.com*

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Laser-Pulse Measurement Systems

Newport Corporation's new UPM series of ultrafast laser-pulse measurement systems provide simultaneous measurement of the temporal, spectral, and spatial characteristics of ultrafast, mode-locked laser pulses. The product line includes models designed to study pulses ranging from 10 fs to 5 ps and can study a single pulse or provide statistical analysis of a stream or burst of pulses. The UPM series uses the Grenouille variant of frequency-resolved optical gating, a technique that relies on a novel optical arrangement and an internal array detector to provide information on both pulse intensity and phase as a function of time, wavelength, and location within the beam. The Grenouille method can discern spatial and temporal distortions in addition to the overall shape and duration of ultrafast laser pulses. *Newport Corp, 1791 Deere Avenue, Irvine, CA 92606, http://www.newport.com*

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Compact SWIR Camera

Sensors Unlimited's new SU40SDV-1.7RT camera is one of the SDV series of compact, short-wave infrared (SWIR) cameras operating in the 0.9–1.7 μm wavelength range. The 2D camera features a 640- by 512-pixel focal plane array on a 25-μm pitch and incorporates the company's indium gallium arsenide technology. The camera is solid state (no mechanical shutters or other moving parts) and operates with the focal plane array at room temperature. It uses glass lenses, rather than silicon or germanium, which gives it an advantage over longwave thermographic imagers for monitoring hot processes. The SDV line offers 14-bit digitization, customizable gain and integration times, multiple outputs for high-speed imaging, and in-camera digitization for compatibility with mainstream frame-grabber software. *Sensors Unlimited Inc, 3490 Route 1, Building12, Princeton, NJ 08540-5914, http://www.sensorsinc*

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Spectrum Illumination Source

Ocean Optics has introduced the DH-2000-BAL light source, which combines the continuous spectrum of deuterium and tungsten- halogen sources to produce a stable output from 215 to 2000 nm. The new source uses a system of proprietary internal mirrors and filters to eliminate the D-alpha, D-beta and Fulcher lines in the deuterium source, without the need to manipulate software or adjust electronics. Correcting for the D-alpha line—a sharp spectral peak near 655 nm—can be difficult. Ocean Optics offers several combined-spectrum deuterium tungsten-halogen sources for spectroscopy, each available with an integrated shutter (operable with switch or TTL signal) and filter holder. The intensity of the source output is adjustable from 20% to 100%. *Ocean Optics Inc, 830 Douglas Avenue, Dunedin, FL 34698, http://www.oceanoptics.com*

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Microscopy Camera

Photron USA has announced the FocusScope FV-100C, a real-time, full-color all-in-focus digital microscopy camera system that combines high-speed image processing with piezoelectric technology. The light-sensitive CMOS imager operates at 1000 frames per second to provide a focal range of more than 100 μm that is output at normal 30-fps NTSC video. The objective lens on the microscope moves up and down at 15 Hz while the imager captures 1000 frames. Each picture is then scanned in real time by the image analysis hardware to identify the sharply focused pixels contained in each frame. The selected in-focus pixels are overlaid and reconstructed to form 30 all-in-focus images per second. Topographical data for each image can also be displayed and recorded in the form of a gray scale depth map. *Photron USA Inc, 9520 Padgett Street, Suite 110, San Diego, CA 92126-4446, http://www.photron.com*

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Laser Spectral Analysis

New FPS-250 NuView software from EXFO Burleigh Products Group makes laser spectral analysis completely automatic. Used with a Fabry-Perot interferometer-based laser spectrum analyzer such as the company's SAPlus, the FPS-250 NuView software measures such spectral characteristics as laser linewidth, longitudinal mode separation, and frequency stability and jitter. The system takes the signal from the spectrum analyzer and converts it for display on a PC. The display looks like an oscilloscope with the added benefit of automatic quantitative measurements of spectral characteristics: A cursor is placed on selected peaks and the results are read. Data can be reported in units of gigahertz, megahertz, inverse centimeters, or nano- or picometers. *EXFO Burleigh Products Group Inc, 7647 Main Street Fishers, Victor, NY 14564-8909, http://www.exfo.com*

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Atomic Emission Analysis

Intetics has released Spectra Heap software, a new atomic emission analysis program with a comprehensive database that contains about 100 000 spectral lines of the majority of chemical elements (emission lines of 98 elements from hydrogen to einsteinium are included). The lines are carefully selected to provide those most important in practical applications. Spectra Heap replaces numerous reference books as a primary source for spectral identification. It enables a fast search of the necessary spectral lines by certain characteristics, an overlapping-lines search, a graphic display of results, and user-adjustable reports. The program is also an electronic guide on physical and chemical properties of elements. *Intetics Co / Web Space Station, 1187 Wilmette Avenue #330, Wilmette, IL 60091, http://www.intetics.com*

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New Literature

Kinetic Systems has published a 52-page user guide that provides a selection process for choosing standard or custom-designed vibration-isolation mounts and workstations, optical tables, and vibration-free platforms and islands. *Kinetic Systems Inc, 20 Arboretum Road, Boston, MA 02131, http://www.kineticsystems.com* ■

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