

new products

The descriptions of the new products

listed in this section are based on information supplied to us by the manufacturers.

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Lawrence G. Rubin

Focus on photonics and imaging

Gated image-intensifier systems

Specialised Imaging has introduced the SIL-2 family of high-performance, gated image-intensifier systems to improve the sensitivity, gating time, spectral response, and scope of operation of both high-speed video and ultrahigh-speed framing cameras. The new systems feature extensive triggering facilities and a comprehensive programmable timing range and are constructed around high-gain microchannel plate intensifiers. The SIL-2 line allows the fast framing rates and short exposure times necessary to investigate rapidly evolving low-light processes, including high-voltage breakdown studies and fluorescence and chemiluminescence recording of biological events. The systems incorporate a quartz window to enable them to capture events that emit radiation at the shorter wavelengths of the UV region through to the near-IR. *Specialised Imaging Ltd, Unit 32, Silk Mill Industrial Estate, Brook Street, Tring HP23 5EF, UK, <http://www.specialised-imaging.com>*

Focal spot analyzer

Ophir-Spiricon has announced the YAG focal spot analyzer, a real-time system for measuring focal spot characteristics of high-power lasers. The analyzer is a laser-beam sampler and attenuator for camera-based laser-beam profiling systems, designed for material-processing applications such as drilling, ablation, and marking. It attenuates high-power, 1064-nm YAG lasers that have short, compact path lengths from 50 to 200 mm and supports power levels from less than 1 W to 400 W and focal

spot sizes as small as 25 μm . Adjustable attenuation of up to 1×10^{-10} maximizes the system's dynamic range. The analyzer also measures how focal distance shifts with power. The company's patented process offers higher beam-width measurement accuracy by determining the true background and preserving both positive and negative signals. *Ophir-Spiricon Inc, 60 West 1000 North, Logan, UT 84321, <http://www.ophir-spiricon.com>*

IR panoramic camera

The IR Revolution 360 from HGH Infrared Systems is a 20° vertical, 360° horizontal field-of-view panoramic IR vision system for security and surveillance; it can be mounted on a security vehicle, a building, or the ground. The camera's revolutionary sensor contains approximately 3 million pixels ($10\,000 \times 280$), and its advanced thermal imager delivers clear, high-resolution imagery via the rotating head that provides a 360° scan/s.



The detector is based on mercury cadmium telluride imaging technology and operates in the 8- to 12- μm wavelength region. The high-sensitivity camera has a detection range of up to 1 km for a human figure, 1.5 km for an automobile, and 6 km for a boat or ship. Other features of the IR Revolution 360 include auto detection and tracking, a motion alarm, and an area-of-interest zoom. The image control and display software is PC-compatible. *HGH Infrared Systems, One Broadway, 11th Floor, Cambridge, MA 02142, <http://www.hghinfrared.com>*

Tunable laser system

OPOTEK's new Opolette HR series have optical parametric oscillator integrated tunable laser systems that incorporate a diode-pumped solid-state laser as the pump source. The OPO converts the laser-beam output to a wide range of wavelengths from the UV to the IR. The Opolette HR 355 II operates at 410–2400 nm with a spectral line-

width of less than 7 cm^{-1} at a peak energy of 2.5 mJ; the IR Opolette HR has a wavelength range of either 2600–3100 nm or 3100–3450 nm and a peak energy of 2.0 mJ. Both systems provide high repetition pulse rates up to 100 Hz. The Opolette components are mounted on a single optical bench that is hermetically sealed to protect the optics. System functions, from laser operation to wavelength tuning and scanning, are computer controlled via USB connection. Optional accessories include wavelength measurement, fiber delivery, and automatic attenuation. *OPOTEK Inc, 2233 Faraday Avenue, Suite E, Carlsbad, CA 92008, <http://www.opotek.com>*

Five-megapixel cameras

Basler Vision Technologies has developed the pilot piA2400-17 cameras, which feature an image capture rate of up to 17 frames/s and deliver five-megapixel resolution (2448×2050 pixels). The new models are based on Sony Corp's ICX625 CCD sensor; Basler enhances the operation of the sensors by balancing their output with two taps, thus providing a more homogeneous image. A 17-frame rate is the usual standard for one-megapixel cameras, such as the company's A102f or scout scA1400-17. Users can now capture images from a one-megapixel camera and a five-megapixel camera at the same time in a single application without the synchronization tasks needed previously. All of the pilot model cameras offer a GigE Vision-compliant Gigabit Ethernet interface and are available in monochrome or color. *Basler Inc, 855 Springdale Drive, Suite 160, Exton, PA 19341, <http://www.baslerweb.com>*

Digital joulemeter

Spectrum Detector is offering the mach 5 digital joulemeter, which measures laser pulse energy at greater than 100 000 pulses/s with 12-bit accuracy and can capture and store up to 4 million pulses. Collected data include pulse energy and probe temperature. The instrument is designed for users of high-repetition-rate sources, including diode-pumped, Q-switched YAG/YLF lasers and ultrashort pulse fiber lasers. The joulemeter interfaces with two fast probes. The M5-SJ is a sensitive silicon probe that features a UV-enhanced detector with ranges from 200 nJ to 200 μJ . The M5-PJ, a pyroelectric probe, incorporates a broadband lithium tantalate detector that covers ranges from 20 μJ



to 20 mJ. Both probes include a small integrating sphere with a 6-mm input aperture. The system has a calibration uncertainty of $\pm 4\%$ and is NIST traceable. *Spectrum Detector Inc, 5825 Jean Road Center, Lake Oswego, OR 97035, <http://www.spectrumdetector.com>*

Machine-vision cameras

Edmund Optics has expanded its USB 2.0 intelligent machine-vision camera line to include harsh environment (HE) and lite edition (LE) versions. The USB cameras offer compact housing, progressive scanning, adjustable frame rate, and an easy-to-use software interface that allows users to set a specified area of interest, gain, exposure time, trigger delay, and digital output delay and duration. They are available in four resolution and speed combinations. The HE models feature a sealed, rugged housing that makes the cameras suitable for brutal conditions and also provides extra protection from electromagnetic interference. They are ideal for use outside typical laboratory and factory-floor applications. The LE versions of the USB 2.0 cameras have a more compact design and durable plastic housing; they weigh only 32 g. *Edmund Optics Inc, 101 East Gloucester Pike, Barrington, NJ 08007-1380, <http://www.edmundoptics.com>*

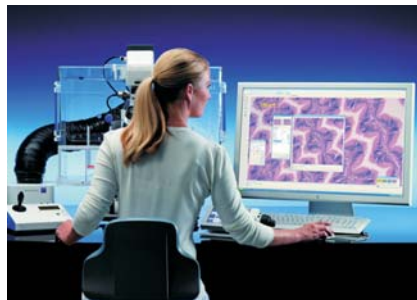
Far-IR and THz bandpass filters

Lake Shore Cryotronics has released an enhanced line of far-IR and THz bandpass filters that use frequency-selective surface technology based on thin-film, metal-mesh structures and are designed with patterned, cross-shaped, and other resonant-opening geometries that allow the transmission of light at specific wavelengths. The filters have superior thermal and mechanical properties, even at cryogenic and elevated temperatures, and are radiation hardened. They are available with 12.5-,

19.0-, and 25.0-mm diameters, center-wavelength transmissions up to 85%, CWL tolerance of $\pm 0.1 \mu\text{m}$, and out-of-band transmission down to 0.5%. With a thickness of 1 mm, they can be placed into existing filter wheels, cryostats, and compact optical instruments. The bandpass filters complement the company's established line of long-wave pass filters. *Lake Shore Cryotronics Inc, 575 McCorkle Boulevard, Westerville, OH 43082, <http://www.lakeshore.com>*

Image analysis software for microscopy

Carl Zeiss has introduced version 4.7 of the AxioVision image analysis software, which can be used for capturing, archiving, processing, analyzing, reconstructing, and evaluating images in digital microscopy. The new Fast MosaiX module can scan a large surface up to 10 times faster than the current solution. The dual camera tool allows simultaneous image capture by two cameras, thus doubling the speed of capture. The HDR image acquisition



module expands the available dynamic range of digital cameras. The ASSAY-builder performs high-content analysis in images captured with AxioVision 4.7, which supports the Axio Examiner microscope and the definite focus function for the Axio Observer. The physiology module in combination with the dual camera feature can perform emission ratio and fast fluorescence resonance energy transfer. The autofocus module is available for SteREO microscopes. *Carl Zeiss Microimaging Inc, One Zeiss Drive, Thornwood, NY 10594, <http://www.zeiss.com>*

High-power RGB white light source

Photonic Products is the authorized distributor for the Opnext HL6385DG, a 642-nm, 150-mW, semiconductor laser diode with TE-mode oscillation. The



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device is ideal for use as a brilliant RGB white light source for next-generation miniature displays. Opnext aluminum gallium indium phosphide laser diodes have multi-quantum well structures in the 635- to 705-nm wavelength range. With a new development process and waveguide structure, they are able to offer powers from 3 mW up to 250 mW. The HL6385DG is a single longitudinal mode diode with a low aspect ratio (less than 2:1); when coupled with an emitting chip size of $3 \times 1 \mu\text{m}$, it allows efficient combination of multiple diodes to provide high-power white light sources. The device is becoming the industry standard red laser diode for use in laser light show systems. *Photonic Products USA, 16152 Beach Boulevard, Suite 117, Huntington Beach, CA 92647, <http://www.photonic-products.com>*

High-resolution, high-speed camera

The Cooke Corp has announced the pco.dimax camera system, which comprises advanced CMOS and electronics technology. With its sensitive 12-bit dynamic, it enables fast image rates of 1100 frames/s at a full resolution of 2016×2016 pixels and 4000 fps at 1032×1024 pixels; user-selectable resolutions and speeds allow up to 56 300 fps at 144×128 pixels. Exposure times range from $2 \mu\text{s}$ to 1 s. The 31.4-mm diagonal CMOS image sensor features $11\text{-}\mu\text{m}$ pixels, has quantum efficiency in excess of 44%, and is available in both color and monochrome formats. The pco.dimax includes various trigger options to cover the offboard applications that have been required by the automotive industry. The image data are transferred via GigE Vision, USB 2.0, or Camera Link interfaces; for preview purposes, a DVI interface is offered. *The Cooke Corporation, 6930 Metroplex Drive, Romulus, MI 48174, <http://www.cookecorp.com>*

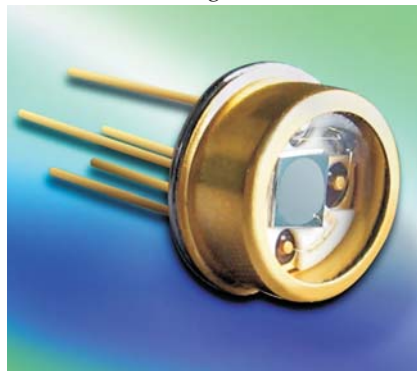
HDTV camera

The IK-HR1D from Toshiba Imaging Systems Division is a CMOS-based, high-definition color camera that delivers a full 1080 progressive scan resolution. The company's progressive scan technology makes the camera ideal for applications in which the objects or subjects are in motion, such as specialty broadcast, machine vision, and scientific imaging. The IK-HR1D has a 60 frames/s rate and features a sensor that

provides $1920 \text{ horizontal} \times 1080 \text{ vertical}$ pixels. For added flexibility, it has automatic or manual white balance controls, an on-screen menu, and a digital DVI and analog RGB interface. The electrical shutter can be operated automatically or manually from 1/60 s to 1/32 000 s. A synchronized scan is set by the horizontal scanning time. The camera is supplied in an ultracompact, one-piece system. *Toshiba America Information Systems Inc, Imaging Systems Division, 9740 Irvine Boulevard, Irvine, CA 92618-1697, <http://www.cameras.toshiba.com>*

Silicon photodiode-preamplifier

Opto Diode Corp has developed the ODA-6WB-500M, a combination device in the family of blue/green enhanced photodiode-preamplifiers. It is ideal for fluorescence detection and low-light-level medical diagnostic applications. The detector operates between 400 and 1100 nm, with peak spectral response at 940 nm. Its sensitivity response at 450 nm is typically $140 \text{ V}/\mu\text{W}$, with a minimum of 100, and it features extremely low noise and a large active area of 6 mm^2 . The ODA-6WB-500M provides a transimpedance gain of 500 M Ω , with custom gains available. The



photodiode-preamplifier is hermetically sealed in a standard TO-39 housing (see photo) and is easy to integrate into users' current systems or adapt to a custom configuration. Storage and operating temperatures range from -25 to 100°C . *Opto Diode Corporation, 750 Mitchell Road, Newbury Park, CA 91320, <http://www.optodiode.com>*

Five-megapixel cameras

JAI Inc is adding the BM-500CL (monochrome) and BB-500CL (raw Bayer color) cameras to the company's C3

camera suite. They are equipped with a Camera Link interface and are built around the Sony ICX625 CCD sensor with 2448×2050 pixels. The cameras' analog front-end design enables them to operate at 15 frames/s with 5-megapixel resolution. Partial scanning and binning modes are also provided for increased flexibility and performance. In-camera preprocessing functions include automatic white balance to eliminate the need for performing that balance in the host-based Bayer-to-RGB algorithm and a blemish-compensation feature, which eliminates pixels with very low- or high-output characteristics by interpolating the neighboring pixels. The BM-500CL and BB-500CL include auto-iris lens control. *JAI Inc, 625 River Oaks Parkway, San Jose, CA 95134, <http://www.jai.com>*

Cameras for laser-beam profiling

Coherent has extended its family of LaserCam-HR beam-diagnostic cameras with the LaserCam-HR-InGaAs and LaserCam-HR-UV models. The BeamView-USB software package has been updated to support the entire line and includes flattop-beam analysis and report generation. The HR-UV profiling system covers the 190- to 355-nm spectral range with a $9.6 \text{ mm} \times 7.7 \text{ mm}$ CMOS sensor and offers user-variable integration and an optical dynamic range of greater than 650:1. The HR-InGaAs system incorporates an indium gallium arsenide 14-bit, large-area, uncooled sensor to cover the range from 900 to 1700 nm with a dynamic range of greater than 1000:1. A single interface cable with both signal and power on the same wire enables fast camera placement. USB 2.0 connectivity ensures compatibility with virtually all new PCs. *Coherent Inc, 5100 Patrick Henry Drive, Santa Clara, CA 95054, <http://www.coherent.com>*

New literature

Physik Instrumente has released a new catalog, *Tools for Microscopy and Imaging*. It focuses on high-resolution, high-speed specimen positioning devices, such as microscope slides and well plates, and microscope lenses, and it also includes tip/tilt mirror scanners and ultralow-profile planar scanners. *Physik Instrumente LP, 16 Albert Street, Auburn, MA 01501, <http://www.pi-usa.us>* ■