

new products

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Lawrence G. Rubin

Focus on photonics and imaging

Laser energy sensors

Coherent has introduced two new EnergyMax laser pulse energy sensors, designed for use with very high-energy/peak-power lasers that operate at low repetition rates, such as those based on ruby, neodymium:YAG, and holmium:YAG. The units enable pulse energy measurements from 1.5 mJ to 3 J, are intended for repetition rates of less than 50 Hz, and incorporate electronics to automatically correct for ambient temperature and to provide wavelength compensation factors. One sensor is a 50-mm-diameter YAG/harmonics detector that can operate at 1064, 532, and 266 nm without the need to change diffusers or any other accessories. The second is an IR sensor with a 25-mm diameter that can work throughout the 694-nm to 2.1- μ m wavelength range without reconfiguration. Maximum energy or average power range can be extended with an optional heat sink. *Coherent Inc, 5100 Patrick Henry Drive, Santa Clara, CA 95054, <http://www.coherent.com>*

See www.pt.ims.ca/16296-131

HDTV camera system

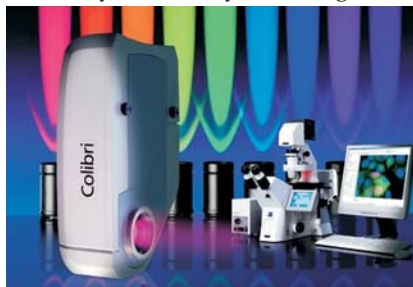
The Toshiba Imaging Systems Division is offering the IK-HD1, a 3CCD high-definition TV camera system. Claimed to be the world's smallest HD camera head and control unit, the system is ideal for applications for which size and weight are critical; for example, the head can be mounted on a performer's helmet or hat. The system delivers 30 frames/s for applications such as re-

ality TV, specialty broadcast, scientific imaging and diagnostics, homeland security, and industrial video inspection. The camera uses the company's 3CCD prism block imaging technology to provide true color with sharp detail and bright contrast. The IK-HD1 features a 1920 (H) $\times$ 1080 (V) resolution and multiple outputs, including RS-232C serial interface, analog red/green/blue, and HD-SDI (SMPTE 292M). *Toshiba America Information Systems Inc, Imaging Systems Division, 9740 Irvine Boulevard, Irvine, CA 92618-1697, <http://www.toshiba.com/taisisd/indmed>*

See www.pt.ims.ca/16296-132

LED light source

Carl Zeiss MicroImaging has announced the Colibri, a high-performance LED light source for fluorescence microscopy. The narrow-band LEDs replace conventional white light sources to produce high-contrast images with an excellent signal-to-noise ratio. The intensity of the LEDs can be quickly and accurately set for any wavelength and



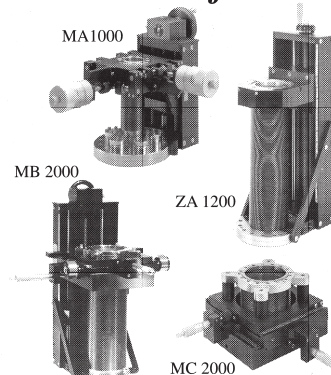
exactly adapted to the specimen. The switching procedure is purely optoelectronic, minimizing motion and vibration; excitation wavelengths can be switched in microseconds. The Colibri is ideal for working with sensitive living cells but also offers many enhancements for fluorescence microscopy with fixed specimens. A selection of four LEDs can be used individually, sequentially, or simultaneously with any intensity setting; presently, 10 different wavelengths are available, from UV to dark red. *Carl Zeiss MicroImaging Inc, One Zeiss Drive, Thornwood, NY 10594, <http://www.zeiss.com>*

See www.pt.ims.ca/16296-133

Photomultiplier tubes

Hamamatsu Corp has developed three new photomultiplier tubes with head-on designs for time-of-flight counting applications. The R9800, R9420, and R9779 each features a very short transit time spread that is uniform across the

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entire effective area of the photocathode, which is bialkali material with a spectral response range of 300–650 nm. Peak sensitivity is in the blue region of 420 nm, ideal for scintillation counting. The R9800 has a 25-mm diameter, a gain of 1.0×10^6 , a rise time of 1.6 ns, a transit time spread of 270 ps, and a supply voltage of 1300 V. The corresponding specifications for the R9420 are 38 mm o.d., 5.0×10^5 gain, 1.6 ns rise time, 550 ps spread, and 1300 V. The R9779 has an o.d. of 51 mm, gain of 5.0×10^5 , 1.8 ns rise time, 250 ps spread, and a supply voltage of 1500 V. *Hamamatsu Corporation, 360 Foothill Road, Bridgewater, NJ 08807, <http://www.hamamatsu.com>*

See www.pt.ims.ca/16296-134

Fiber fault detector

The FFD100 from Photonic Products is a fiber fault detector that is an ideal tool for rapidly locating breaks, bends, and other discontinuities that can affect fiber performance and result in signal loss. It also aids end-to-end fiber identification within a fiber bundle and looks for cracked fiber in splice cases. The pen-size FFD100 uses a CW high-visibility, 635-nm red laser diode to locate the faults in cable up to a distance of 5 km; pulsed operation is available on request. It pinpoints problem areas in the fiber by generating a bright red glow at the fault site. It weighs only 70 g, fits in a pocket, and uses standard AAA batteries. The detector incorporates the company's universal adaptor, so thus can accept all standard 2.5-mm optical connector types for single and multimode operation. *Photonic Products USA, 16152 Beach Boulevard, Suite 117, Huntington Beach, CA 92647, <http://www.photonic-products.com>*

See www.pt.ims.ca/16296-135

High-speed framing camera

Specialised Imaging has introduced the SIM-02 high-speed framing camera that incorporates ultrahigh-resolution image intensifiers with double pulsing techniques. The optical design offers up to 16 channels that give 32 separate images while preserving image quality. Effects such as parallax and shading, often present in other designs, are eliminated, and the high spatial resolution is the same in both axes and frame to frame. The 402, 602, and 802 versions provide a secondary optical view port,



which allows other analytical instruments, such as high-speed video, streak camera, and time-resolved spectrometer, to share the camera's optical input. Comprehensive triggering facilities, accurate timing control, a wide range of output signals, and a powerful software package simplify quality image capture. *Specialised Imaging Ltd, Unit 1, Silk Mill Industrial Estate, Brook Street, Tring, Hertfordshire HP23 5EF, UK, <http://www.specialised-imaging.com>*

See www.pt.ims.ca/16296-136

Multiwatt light sources

Enfis is offering multiwatt light engines in which various wavelengths can be packaged into the array, with each wavelength individually controlled. The UNO50 RGBA provides users with a single, compact module capable of producing a full range of white color temperatures and more than 4 billion addressable colors to enable full-color changeable light sources. The unit is available as a plug-and-play solution with complete thermal and electronic management, active feedback, flexible interface, and user-friendly software. The UNO50 RGBA incorporates a 1-cm² array that provides lighting for indoor and outdoor, theater, TV, film, and fiber-optic illumination applications and is suitable for specialist industrial and medical uses. Another light engine is the company's QUATTRO200 RGBA that delivers 3500 lumens from a 4 × 4 cm array. *Enfis Ltd, Technium 2, King's Road, Swansea Waterfront, Swansea SA1 8PJ, UK, <http://www.enfis.com>*

See www.pt.ims.ca/16296-137

IR camera system

FLIR Systems' ThermoVision A320 research IR camera system features a highly sensitive uncooled microbolometer detector to deliver crisp thermal images. The new system, when integrated with the company's ThermoCAM Researcher software, provides a

flexible and powerful solution for real-time thermal analysis and precision temperature measurements from –20 to +120 °C or from 0 to 350 °C up to an optional maximum of 1200 °C. Each thermal image is built from more than 76 000 pixels (a resolution of 320 × 240) sampled by the camera's onboard electronics and software. The IR camera system is available in two models: the A320, equipped with a 100-megabit, RJ45 Ethernet connection with a data rate of 5 Hz; and the A320G, with a Gigabit RJ45 Ethernet connection and a data rate of 60 Hz. *FLIR Systems Inc, 25 Esquire Road, North Billerica, MA 01862, <http://www.infraredresearchcameras.com>*

See www.pt.ims.ca/16296-138

MOCVD system

Veeco Instruments has announced the TurboDisc E475 As/P metal organic chemical vapor deposition system. It is used for the mass production of red, orange, and yellow high-brightness LEDs, multijunction III-V concentrator solar cells, laser diodes, pseudomorphic high-electron mobility transistors, and heterojunction bipolar transistors. The new technically advanced MOCVD system features the company's inte-



grated RealTempR 200 technology that enables superior material quality and process efficiency from direct wafer temperature control, fast gas switching for strict control of interface abruptness, and vacuum load-lock automation. The E475 delivers 15% more capacity than Veeco's earlier TurboDisc E450 system, which can be upgraded to the E475 for its improved specifications. *Veeco Instruments Inc, 100 Sunnyside Boulevard, Suite B, Woodbury, NY 11797, <http://www.veeco.com>*

See www.pt.ims.ca/16296-139

Camera with Gige interface

SVS-Vistek has developed the sv625, a monochrome 5-megapixel camera now

available with a Gigabit Ethernet interface. This enables the camera to transfer image data over distances up to 100 m. The sv5625 is a progressive scan camera with a resolution of 2448×2048 pixels and a frame rate of 15 full images per second. In partial scan mode, images with fewer numbers of lines can be read out at a much higher speed; binning with 1×2 , 2×1 , and 2×2 is also possible. The company's camera configuration software allows adjustment of parameters such as gain, offset, and exposure time. Other features include an intelligent opto-isolated trigger control and synchronization with a free-running trigger or an external trigger with exposure control. *SVS-Vistek Cameras Inc*, 9007 East Brittle Bush Road, Gold Canyon, AZ 85218, <http://www.svs-vistek.com>

See www.pt.ims.ca/16296-140

Pyroelectric joulemeters

A series of analog and digital, spectrally flat pyroelectric TRAP joulemeters from Spectrum Detector are used for low-uncertainty energy measurements of pulsed lasers and calibration of energy meters in a broad spectral region. The design of the meters is based on concepts pioneered at the NIST Boulder Laboratories. The TRAP consists of a large-area black pyroelectric detector opposite a broadband mirror in a 15° wedge configuration, which is designed so that 99% of the light passing through a 5-mm aperture is absorbed and measured. The spectral response from 0.25 to $14 \mu\text{m}$ is flat to 1% or better; the useful range is from 0.2 to $1000 \mu\text{m}$. Three models are available: The SPT-J-TRAP can measure from 50 μJ to 5 mJ, the SPT-AJ-TRAP from 5 μJ to 5 mJ, and the SPT-DJ-TRAP from 2 μJ to 2 mJ. *Spectrum Detector Inc*, 5825 Jean Road Center, Lake Oswego, OR 97035, <http://www.spectrumdetector.com>

See www.pt.ims.ca/16296-141

Thermal surveillance system

Cedip Infrared Systems has introduced the Adamant IR camera, a thermal surveillance system designed for fixed-position surveillance, passive observation, and detection and recognition of targets by day and night, even in bad weather conditions. It can be used for long-range reconnaissance and home-

land security monitoring of large-area public infrastructures. The instrument features a 640×512 mercury cadmium telluride $15\text{-}\mu\text{m}$ pitch focal plane array and a triple field-of-view lens that covers a wide $21.7^\circ \times 17.5^\circ$ FOV, a medium range, and a narrow $1.7^\circ \times 1.4^\circ$ FOV that enables detection of a tank-sized target at 16 km. Adamant can be delivered with Ethernet or optical fiber output to allow remote control and video display over long distances. *Cedip Infrared Systems*, 19 bd Bidault, F-77183 Croissy Beaubourg, France, <http://www.cedip-infrared.com>

See www.pt.ims.ca/16296-142

Compact vision system

Festo Corp is offering the SBOC-M/SBOI-M compact vision system as an innovative alternative to high-speed cameras. The design uses integrated electronics for detection and storage of fast-motion sequences, which enable the camera to be used for diagnostics and commissioning and for the monitoring of those sequences. Its features include commissioning using PC software, IP65 and IP67 protection-class ratings, a



185–2000 images/s sampling rate, and a sensor resolution of 640×480 pixels. Several cameras can be networked and synchronized using Ethernet connectivity; I/O characteristics can be recorded via the integrated I/Os. The SBOC model incorporates a C-mount with a user-selected lens; the SBOI has an integrated lens with a working distance from 22 to 1000 mm. *Festo Corporation*, 395 Moreland Road, Hauppauge, NY 11788, <http://www.festo.com/usa>

See www.pt.ims.ca/16296-143

Molecular-scale surface measurements

Farfield Scientific has developed, in collaboration with YKI Stockholm, the Cellulose AnaChip, an addition to the company's line of AnaChip products

that provide a range of surfaces for molecular immobilization. They are used to study structure-function and structure-behavior relationships in a molecular system in which one of the molecules is immobilized. The cellulose surface is designed to be used for paper technology and manufacture and to offer a platform for fabric-care studies of pretreatment, washing, and conditioning formulations. It can be used in any application in which users need to measure and differentiate between molecular levels of adsorption, absorption, or desorption at a surface. *Farfield Scientific Ltd*, distributed in the US by *Malvern Instruments Inc*, 117 Flanders Road, Westborough, MA 01581-1042, <http://www.malverninstruments.com>

See www.pt.ims.ca/16296-144

Ceramic linear motor actuator

Physik Instrumente has announced the N-310 NEXACT miniature ceramic linear motor actuator designed to bridge the gap between micro- and nanopositioning devices. The actuator provides piezo-class resolution—in the picometer range—and millisecond responsiveness. The new technology, which takes advantage of the company's NEXLINE high-force motor, combines in a very small package virtually unlimited travel ranges with high stiffness. In contrast to servo or stepper motor actuators, the piezo stepping elements affect linear motion directly without the need to transform rotation with gears and lead-screws. The N-310 is nonmagnetic and vacuum compatible and is self-locking when powered down, with nanometer position stability and zero dissipation or servo dither at rest. *Physik Instrumente LP*, 16 Albert Street, Auburn, MA 01501, <http://www.pi-usa.us>

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New literature

Included in Edmund Optics' e-newsletter of 18 September 2007 are three tips for machine-vision success. The first Tech Tip describes the relationship between resolution and contrast, the second looks at the effects of different illumination profiles, and the third discusses how to find the right lens. *Edmund Optics Inc*, 101 East Gloucester Pike, Barrington, NJ 08007-1380, <http://www.edmundoptics.com>

See www.pt.ims.ca/16296-146