

Focus on lasers, imaging, and microscopy **FREE**

Andreas Mandelis



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NEW PRODUCTS

Focus on lasers, imaging, and microscopy

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. For more information about a particular product, visit the website at the end of the product description. For all new products submissions, please send to ptpub@aip.org.

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Confocal imaging platform

Andor, an Oxford Instruments company, has launched the Dragonfly 200, the latest version of its high-speed confocal imaging platform. The compact new model integrates Andor's cameras with its patented illumination technologies to produce high-quality imaging with low noise, wide dynamic range, and high resolution and sensitivity. The Borealis illumination delivery system used for confocal and widefield imaging provides high stability, uniformity, and spectral range. It enables imaging in the near-IR region, where natural autofluorescence of the sample is greatly reduced. Andor claims that Dragonfly is up to 20 times faster than conventional confocal microscopes and can reveal previously undetected information in microscopic specimens. It can be used on upright and inverted microscopes. **Andor USA**, 425 Sullivan Ave, Ste 3, South Windsor, CT 06074, www.andor.com

300 milliwatt CW UV laser

The latest member of Toptica's TopWave line of CW UV lasers, model 266, features 300 mW output power at 266 nm and narrow linewidth less than 1 MHz. It provides

ultralow-noise performance—typically less than 0.1% rms—and high beam quality ($M^2 < 1.3$). In combination with an automated optics shifter, the 266 can achieve lifetimes of more than 10000 h. The laser offers high wall-plug efficiency and does not need a chiller. Its complete UV beam path, including the company's proprietary SUV doubling cavity, is enclosed in a sealed compartment to ensure high power stability. Applications include Raman spectroscopy, laser mastering, optical lithography, fiber Bragg grating fabrication, and semiconductor inspection. **Toptica Photonics Inc**, 5847 County Rd 41, Farmington, NY 14425, www.toptica.com



Spectroscopy cameras



According to Princeton Instruments, its high-performance Blaze spectroscopy cameras provide the highest near-IR quantum efficiency (QE), fastest spectral rates, and deepest thermoelectric cooling capabilities available. They feature two novel sensors: The Blaze LD-sensors, specialty deep-depletion devices designed for high sensitivity and extremely low dark current, are suitable for low-light applications. The proprietary Blaze HR-sensors yield high, near-IR QE. Blaze LD and HR cameras are both offered in 1340 × 100 or 1340 × 400 formats with 20 μm pixels. Applications include Raman spectroscopy, photoluminescence, nanoparticle and carbon nanotube research, pump-probe experiments, fluorescence, and microspectroscopy. **Princeton Instruments**, 3660 Quakerbridge Rd, Trenton, NJ 08619, www.princetoninstruments.com

Frequency-comb quantum-cascade lasers

Alpes Lasers has released a line of frequency-comb quantum-cascade lasers (QCLs). A frequency comb—a laser source whose spectrum consists of a series of discrete, equally spaced frequency lines—can be used for fast, high-sensitivity, high-resolution spectroscopy. With up to 200 mW of power spread over more than 100 comb teeth, the QCLs cover the mid-IR fingerprint region useful for identifying a wide range of complex molecules, such as organic molecules, pollutants, and explosives. According to the company, the QCLs' commercial availability may contribute to advancements in broadband mid-IR spectroscopy. **Alpes Lasers SA**, Ave des Pâquiers 1, CH-2072 St-Blaise, Switzerland, www.alpeslasers.ch

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Imaging spectrometer for the vacuum UV

McPherson's 1- and 3-meter normal-incidence spectrometers are now capable of imaging. With the addition of a carefully adjusted horizontal aperture in the optical path, they can measure both vertical



spatial profiles and dispersed wavelengths. That ability is important in many applications; one example is impurity-profile diagnostics in the edge plasma of large magnetically confined tokamak devices used in fusion research. The spectrometers operate in the vacuum UV and view plasma impurity emission lines in the range of 300 Å to 3200 Å. A convex mirror allows the vertical observation range to be tailored to different heights. The spectrometers can be built for high and ultrahigh vacuum and can be equipped with microchannel plate intensifiers and sensitive CCD detectors. *McPherson, 7-A Stuart Rd, Chelmsford, MA 01824-4107, <http://mcphersoninc.com>*

Portable laser power and energy meter



MKS Instruments, which includes Ophir, has announced the Ophir Centauri portable laser power/energy meter for precise measurements of laser performance over time. Although compact in size, the Centauri features a large, full-color, 7-inch touch screen for visual review of data. It offers a wide range of graphical display formats, including digital with bar graph, pulse chart, and real-time statistics displays. The dual-channel option supports split and merged graphical displays. Advanced math functions include density, scale factor, and baseline normalization. Available in single- and dual-channel versions, the Centauri is compatible with all standard Ophir thermal, photodiode, and pyroelectric sensors, including the BeamTrack power, position, and size sensors. *Ophir-Spiricon LLC, 3050 N 300 W, North Logan, UT 84341, www.ophiropt.com*

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Superresolution mode for laser scanning microscope

The Zeiss laser scanning microscope LSM 8 family with Airyscan now features a 2D imaging mode. Zeiss claims



that its 32-channel gallium arsenide phosphide array detector captures more spatial information than traditional confocal microscopes. The 2D superresolution mode uses that additional information to create an optical section of 0.2 Airy units (AU) and resolves structures down to 120 nm laterally in a single image. Formerly, users had to acquire a stack of z-slices and deconvolve to obtain optical sections thinner than one AU and enhance lateral resolution. The 2D superresolution mode lets users perform gentle live-cell imaging experiments with no need to acquire a z-stack. According to Zeiss, users benefit from very low light exposure, highly resolved structural information, and excellent signal-to-noise ratio. *Carl Zeiss Microscopy GmbH, Carl-Zeiss-Promenade 10, 07745 Jena, Germany, www.zeiss.com*

Intelligent Vacuum Measurement



- **VD8** - Compact vacuum meters with data logger and USB interface e. g. for pump service
- **Smartline** - Digital vacuum transducers with 0-10 V output, EtherCAT, Profinet or Profibus
- **Analogline** - Analog vacuum transducers with small dimensions, 0-10 V or 4-20 mA
- **Vacuum controllers** with up to four channels
- Robust **vacuum switches**
- Available **measurement principles**: Piezo, Capacitance, Pirani, Cold Cathode, Hot Cathode
- Vacuum metrology
"Made in Germany"

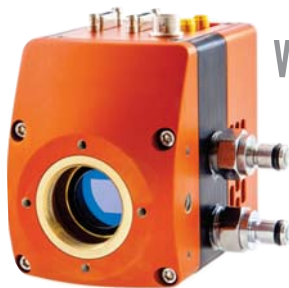


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NEW PRODUCTS

Visible-SWIR camera



Raptor Photonics has added the Ninox 1280 to its family of visible-SWIR cameras to offer high-definition resolution for high-end scientific and astronomy applications. The Ninox 1280 uses a 1280×1024 indium gallium arsenide sensor cooled to -15°C . It offers visible extension from $0.4\ \mu\text{m}$ to $1.7\ \mu\text{m}$ to enable high-sensitivity imaging. The camera features $10\ \mu\text{m} \times 10\ \mu\text{m}$ pixel pitch, less than $40\ e^-$ readout noise, and a low dark-current reading. An ultrahigh intrascene dynamic range of 69 dB allows for simultaneous capture of bright and dark portions of a scene, and on-board automated gain control enables optimal contrast. Available with a 12-bit CameraLink output, the compact, rugged Ninox 1280 runs up to 60 Hz. **Raptor Photonics**, Willowbank Business Park, Larne, Co Antrim BT40 2SE, Northern Ireland, www.raptorphotonics.com

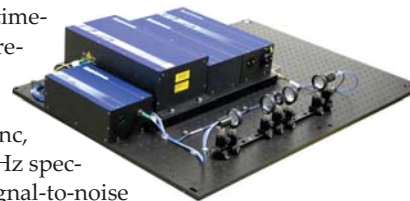
Multi-line laser



Cobolt, a part of Hübner Photonics, has introduced its Skyra multi-line laser platform. It features up to four wavelengths permanently aligned in a single package that measures $70\ \text{mm} \times 134\ \text{mm} \times 38\ \text{mm}$. External electronics are not needed. The laser is built using Cobolt's HTCure manufacturing technology, which the company claims produces a robust, hermetically sealed package and ultrastable, permanent alignment of optical elements with very precise overlap of the combined output beams. The lasers deliver high reliability and performance in laboratory and industrial environments with demonstrated lifetime capability greater than 60,000 h. According to Cobolt, the Skyra could enable the next generation of compact, easy-to-use analytical instrumentation for the life sciences. **Cobolt Inc**, 2635 North First St, Ste 228, San Jose, CA 95134, www.coboltlasers.com

Terahertz time-domain spectrometer

Menlo Systems has enhanced its terahertz time-domain spectroscopy systems for THz research and applications. The company's THz-TDS systems with an optomechanical scanning unit, such as the Tera K15, Tera Sync, and TeraSmart, now provide more than 5 THz spectral bandwidth and more than 90 dB signal-to-noise ratio. With the latest fiber-coupled photoconductive THz antenna technology, new "ScanControl" software and hardware, and modular design, the systems offer flexibility and versatility in system configuration for a wide range of THz spectroscopy and imaging applications. Options include multichannel outputs, add-ons such as the imaging unit Tera Image, an additional scanning unit for THz spectroscopy of optically excited samples, and advanced THz evaluation software. **Menlo Systems Inc**, 56 Sparta Ave, Newton, NJ 07860, www.menlosystems.com



Intensifier adapter for scientific cameras

The Cricket electro-optic coupler from Photonis adds intensified imaging capability to scientific cameras. It is suitable for use in fluorescence lifetime imaging microscopy, plasma and physics research, and corona discharge diagnostics. Multiple options allow Cricket to support 1 microlux sensitivity, high-speed imaging, and single photon counting. The self-contained unit's C-mount connections let users connect to most scientific cameras—for example, electron-multiplying CCD and scientific CMOS units—and attach to any lens or microscope with little or no additional hardware. Cricket supports detection ranges from 200 nm to 900 nm and can convert UV and near-IR photons into green photons with emission characteristics that match the spectral response of a solid-state camera. **Photonis Netherlands BV**, Dwazziejewegen 2, 9301 ZR Roden, Netherlands, www.photonis.com

Modular diagnostic imaging platform

Jenoptik has made available a miniaturized modular diagnostic imaging platform for digital image capture, processing, and analysis. The Syions system lets users quickly and efficiently generate image data from *in vitro* diagnostics devices in scientific and clinical settings. It can be used for applications in the areas of live-cell imaging, flow cytometry, and molecular diagnostics. The system combines Jenoptik modules such as LED illumination, optical elements, digital cameras, and auto-focus with X/Y scanners, electronics, and software to enable efficient imaging solutions that deliver high-quality images and easily integrate into the software system environment of laboratory or medical devices. **Jenoptik Optical Systems LLC**, 16490 Innovation Dr, Jupiter, FL 33478-6428, www.jenoptik.com

Superresolution optical microscope

LIG Nanowise has launched a superresolution optical microscope that uses its patented superresolution microsphere amplifying lens (SMAL) to surpass the optical diffraction limit and make possible rapid optical inspection on the nanoscale. SMAL uses the optical properties of a microsphere to amplify the signal of a white-light microscope, increasing both its resolving power and magnification by 4–6 times. That amplification allows the company's Nanopsis M microscope to resolve lateral features of 50 nm in full color. The microscope introduces a new imaging technique that can complement scanning and transmission electron and atomic force microscopes and expand the desktop imaging capability of users performing advanced materials and semiconductor research. **LIG Nanowise**, Unit 11 Williams House, Manchester Science Park, Manchester M15 6SE, UK, www.nanopsis.com