

NEW PRODUCTS

Focus on lasers, imaging, microscopy, and nanoscience

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 its description. Please send all new product submissions to ptpub@aip.org.

Andreas Mandelis



AFM and SEM imaging microscopy platform

The FusionScope correlative microscope from Quantum Design integrates atomic force microscopy (AFM) with scanning electron microscopy (SEM) imaging. It features a novel shared coordinate system that automatically aligns AFM and SEM operations for measurements and sample positioning. The FusionScope software lets researchers interactively overlay AFM imaging data onto

SEM images in real time and create 2D and 3D visualizations with nanoscale resolution. With that integrated shared mapping, they can easily identify areas of interest, measure samples, and combine imaging data. The FusionScope offers the ability to scan and image across differing magnification scales. Smooth image transitions between millimeter, micron, and subnanometer scales let users see new correspondences in data from specific sample areas. **Quantum Design Inc**, 10307 Pacific Center Ct, San Diego, CA 92121, www.qdusa.com

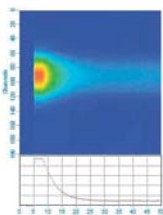
Fast high-definition IR camera

A new addition to Telops's FAST line of IR cameras, the M200HD, combines high-speed measurements with high image resolution. Capable of reaching 3 megapixels and an acquisition rate of 180 Hz, the FAST M200HD is suitable for applications such as experimental mechanics, nondestructive testing, and image signature processing. It has a spectral range of 1.5–5.4 μm and an optional range of 3.0–5.0 μm . The FAST cameras provide radiometrically calibrated measurements for all operating conditions; to ensure optimal imaging, they automatically adjust exposure time. A convenient four-position filter wheel makes it easier to change measurement scenarios; a certified IP67 sealed enclosure makes the cameras suitable for field measurements. **Telops**, 100-2600 Ave St-Jean-Baptiste, Quebec City, QC G2E 6J5, Canada, www.telops.com



Wavelength selector

The novel Flexible Wavelength Selector Poly (FWS-Poly) family of products from Spectrolight can perform both excitation and emission wavelength selection and can convert a basic light microscope into a cost-effective fluorescence microscope with minimal modifications. A commercial fluorescence microscope uses a tungsten or mercury lamp or an LED as a light source; in the case of a confocal microscope, lasers in the visible range are usually included. The FWS-Poly products widen the pool of the available fluorophores and impart flexibility in adjusting bandwidth as well as wavelength. For example, if the FWS-Poly, having a spectral range of 385 ~ 1015 nm, or the FWS-Poly-SWIR, used for short-wave IR and having a spectral range of 1015 ~ 1650 nm, is connected, any wavelength can be selected and used as excitation light. FWS-Poly products have a minimum bandwidth of 3 nm and can be widened to a maximum of 15 nm. The conversion is automatic, and the software provided can quickly adjust wavelength and bandwidth in real time. **Spectrolight Inc**, 19800 MacArthur Blvd, Ste 300, Irvine, CA 92612, www.spectrolightinc.com



Solid-state streak camera

Optronis has unveiled what it says is the world's first commercially available solid-state streak camera. Designed to enable detailed scientific investigations in the field of ultrafast processes, the semiconductor-based S3C-1 may open up new application possibilities in fields of significant growth such as plasma research, detonics, microfluidics, and the analysis of fast micrometer-level movements in MEMS. Compared with vacuum-tube-based streak cameras, the S3C-1 is more compact, more robust,

and less costly. Also, measurements are now possible where no suitable trigger signal was previously available. A time window of 100 ns to 10 ms can be selected for acquisition, and the time resolution is close to 1 ns. The camera can perform continuous recording. With its compact size of 12 cm × 12 cm × 10 cm and light weight of 2 kg, the S3C-1 is suitable for studying fast physical phenomena in areas not feasible for tube-based cameras. **Optronis GmbH**, Ludwigstraße 2, 77694 Kehl, Germany, <https://optronis.com>



Beam sampler for high-power lasers

The BA32-1KW beam sampler from Gentec-EO provides camera-based beam profiling for kilowatt-level lasers. The water-cooled beam splitter inside the sampler is suitable for in-line beam profiling in various high-power applications, including R&D, industrial materials processing, and military uses. It uniformly attenuates all beam shapes, including Gaussian, flattop, and doughnut, and measures laser beam profiles with power levels from milliwatts to 1 kW and at power densities of up to 10 MW/cm². The device attenuates extremely high-power-density beams with an attenuation ratio of 1:1900, thereby enabling the use of very sensitive laser beam profilers to measure beam shape, focal spot, and beam waist. A power meter at the

second residual beam window can monitor the laser's power simultaneously with the beam profiling. *Gentec Electro-Optics Inc, 445 Ave St-Jean-Baptiste, Ste 160, Quebec City, QC G2E 5N7, Canada, www.gentec-eo.com*

Compact UV-imaging cameras

Allied Vision's Alvium camera series now includes models that incorporate the novel 8.1-megapixel Sony Pregius S IMX487 CMOS sensor. The backside-illuminated, global-shutter sensor is especially designed for the waveband between 200 nm and 400 nm. It is therefore suitable for scientific and industrial imaging applications in the near- and mid-UV range that require high-quality UV images with low noise at high resolution and frame rates. With a 2.74 μm pixel size, the cameras can detect tiny details at high UV sensitivity. According to the company, the Alvium UV cameras are the smallest industrial-grade UV-imaging devices on the market. They can be used to build extremely compact OEM systems for embedded and machine-vision applications such as UV microscopy and battery and forensic inspection. *Allied Vision, Taschenweg 2a, 07646 Stadtra, Germany, www.alliedvision.com*



Scientific CMOS camera

The pco.edge 4.2 bi XU camera from PCO, an Excelitas company, is based

on a back-illuminated scientific CMOS sensor with a very specific coating that allows for applications in the visible-light range down to extreme-UV and soft-x-ray radiation. It is adapted for ultrahigh-vacuum operation down to 1×10^{-7} mbar and offers high quantum efficiency in the energy range from 30 eV to 1000 eV. The image sensor features 2048×2048 pixels and a pixel size of $6.5 \mu\text{m} \times 6.5 \mu\text{m}$. It delivers full-frame acquisitions at 40 Hz with a dynamic range of 88 dB at a median noise level of 1.9 e⁻. The compact pco.edge 4.2 bi XU camera offers various software-integration options. *PCO-Tech Inc, 1000 N West St, Ste 1200, Wilmington, DE 19801, www.pco-tech.com*



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NEW PRODUCTS

Single-photon fluorescence microscope

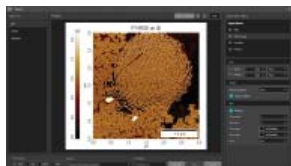
PicoQuant developed its Luminosa confocal microscope to make single-molecule and quantitative time-resolved fluorescence microscopy accessible to a broad range of researchers in molecular biophysics and structural biology. According to the company, with one-click auto-alignment and context-based intuitive workflows, Luminosa is easier to use than previous systems, and it's just as sensitive. For example, the system automatically recognizes individual molecules and determines correction factors for single-molecule Förster resonance energy transfer (smFRET). It offers advanced flexibility: All optomechanical components are accessible, data are stored in open formats, and the workflow and the graphical user interface can be customized. Methodologies include fluorescence lifetime imaging microscopy (FLIM), rapidFLIM^{HiRes} for fast processes, FLIM-FRET, single-molecule FRET through burst and time-trace analysis, fluorescence correlation spectroscopy, and anisotropy and differential interference contrast imaging. *PicoQuant, Rudower Chaussee 29, 12489 Berlin, Germany, www.picoquant.com*



Nanoscale-AFM data-analysis software

Park Systems designed its atomic force microscope (AFM) data-analysis platform, Park SmartAnalysis, to simplify nanoscale measurements. The software interface offers novice users automated analysis functions for fast, accurate data

processing; users who do not want to rely on standard solutions can assume complete control of functions and parameter settings. To reduce time and effort in processing AFM data, SmartAnalysis supports capabilities such as the EZ Flatten machine-learning-based function. Flattening is required to level the slope of a sample surface and reveal the correct surface topography. If done incorrectly, minor experimental misalignments and external noise sources can affect the final image quality and distort the data. EZ Flatten automatically distinguishes the topography features from the substrate and applies an appropriate flattening algorithm. The operator simply loads the raw data and executes the function; users can select among six recommended output images. *Park Systems Inc, 3040 Olcott St, Santa Clara, CA 95054, <https://parksystems.com>*



AFM for nanoscience research

Oxford Instruments Asylum Research has launched its Cypher L atomic force microscope (AFM). The Cypher L is suitable for nanoscience research in such fields as polymer science, 2D materials, quantum technology, and energy storage. According to the company, the Cypher L is cost-effective, provides higher resolution than other AFMs in its price range, and approaches the ultrahigh performance of its Cypher S and Cypher ES family members. Operating on the new Asylum Research Ergo software platform, the Cypher L provides a simplified user experience through a streamlined workflow and intuitive image acquisition. AutoPilot algorithms automatically optimize scan parameters for high-quality images. Operating modes included are acoustic tapping with phase, contact with lateral force, and amplitude modulated Kelvin probe force microscopy (KPFM). Conductive atomic force microscopy, tapping mode in liquid droplet, and frequency modulated KPFM are optional. The Cypher L can be upgraded to the Cypher S, ES, or VRS1250 models as requirements evolve. *Oxford Instruments Asylum Research, 7416 Hollister Ave, Santa Barbara, CA 93117, <https://afm.oxinst.com>* **PT**



Non-Tenure-Track Teaching Position in Physics and Astronomy

The Department of Physics and Astronomy at Rice University located in Houston, TX invites applications for a non-tenure track, university-level teaching position in physics and astronomy. Experience in physics education research, undergraduate teaching at the introductory level, and the development of pedagogical techniques is preferred. This is a full-time, 9-month academic calendar, non-tenure-track position. The initial appointment is for two or three years, depending on rank, and may be extended. In addition to teaching responsibilities in the undergraduate introductory course sequence, the new hire will play a leadership role in a learning community dedicated to student success and promoting equity in STEM fields.

A Ph.D. in physics or a related field by July 1, 2023, is required for the position.

Applications for this position must be submitted electronically at <https://apply.interfolio.com/116879> and include the following: a curriculum vitae; a statement of teaching interests; a statement on diversity and outreach; and the names, affiliations, and email addresses of three professional references. Applicants must be eligible to work in the U.S. We particularly welcome applications from all genders and members of historically underrepresented groups who exemplify diverse cultural experiences and who are specially qualified to mentor and advise all members of our diverse student population. We will begin reviewing applications as they are received. To receive full consideration, all application materials must be received by February 1, 2023. The expected appointment date is July 1, 2023.

Rice University is an equal opportunity employer. We celebrate diversity and are committed to creating an inclusive environment for all employees. We encourage applicants from diverse backgrounds to apply.