

NEW PRODUCTS

Focus on photonics, spectrometry, and spectroscopy

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.

Andreas Mandelis



Versatile ultrafast fiber laser

Originally developed for ophthalmic applications, Toptica's FemtoFiber vario 1030 microjoule fiber laser—with a center wavelength of 1030 nm—can be used in many other areas, ranging from micromachining and materials processing to the life sciences. The robust, compact, passively cooled design and detachable laser head make it suitable for OEM integration and industrial use.

The FemtoFiber vario 1030 provides 2 W of output power at an adjustable repetition rate of up to 1 MHz and down to pulse on demand. It features a variable pulse duration that is less than 300 fs and is controlled by group-delay dispersion. According to the company, the FemtoFiber vario 1030 offers superior temporal and spatial beam quality. **Toptica Photonics Inc**, 5847 County Rd 41, Farmington, NY 14425, www.toptica.com

Spectroelectrochemistry instruments

Following its acquisition of DropSens, Metrohm has announced the first fully integrated range of instruments for research in spectroelectrochemistry. The system combines electrochemistry and spectroscopy in the study of spectral changes as a function of applied potential or current. Optical monitoring complements the limited structural information available from the electrochemical response. Metrohm's SPELEC platform combines a light source, spectrometer, and potentiostat/galvanostat. It uses one software with dedicated functions to synchronize and easily treat and analyze data. The SPELEC instrument is available in several wavelength ranges: UV-visible (200–900 nm), visible-near-IR (350–1050 nm), Raman (785–1010 nm), Raman shift (0–2850 cm^{-1}), and near-IR (900–2200 nm). **Metrohm AG**, 9250 Camden Field Pkwy, Riverview, FL 33578, www.metrohm.com



Ultrafast laser for multiphoton imaging

Coherent's Chameleon Discovery NX laser delivers deep multiphoton microscope images suitable for live-tissue imaging in neuroscience and other intravital applications. It can also be used for ultrafast spectroscopy and other time-resolved studies. The laser offers power levels up to 3 W. A group-dispersion-delay precompensator with enhanced dynamic range enables the short-pulse durations that are essential for high-brightness and high-contrast imaging. The Chameleon Discovery NX provides tuning from 660 nm to 1320 nm while simultaneously producing a high-power fixed wavelength output at 1040 nm. Optional total power control can help optimize laser power for each image plane's depth. The technology provides fast rise time and analog and digital control of laser power, which may be synchronized with the microscope scanning optics. **Coherent Inc**, 5100 Patrick Henry Dr, Santa Clara, CA 95054, www.coherent.com

Deep-UV spectroscopy workstations

McPherson now offers two deep-UV spectroscopy workstations—one is diagnostic, the other is analytical—to facilitate teaching and experimentation in vacuum and UV physics. The diagnostic system, which equips the spectrometer with a sensitive CCD detector, can be used to study spectral emission of laser interaction, high harmonic generation, plasma formation, luminescence, and other processes. The analytical system has a tunable deep-UV light source instead of the CCD detector. Its users can measure transmission, photocathode response, and reflection; explore photoelectric effects; and perform basic physics experiments to study quantum behaviors useful for technologies such as quantum cryptography. Complex systems can be constructed by blending diagnostic and analytical system components or by adding user-designed parts. **McPherson Inc**, 7A Stuart Rd, Chelmsford, MA 01824-4107, <https://mcphersoninc.com>



Broadband multinuclear benchtop NMR spectrometer

According to Oxford Instruments, its X-Pulse is the first benchtop NMR system with true multinuclear capability. The high-resolution 60 MHz system can be tuned to any nucleus from silicon-29 to phosphorus-31 without having to change NMR probes, so users can select whichever nucleus they want on a single instrument. A unique flow cell and a variable temperature probe allow dynamic chemical reactions to be continuously monitored, with variable temperature capability from 20 °C to 70 °C. New shimming technology delivers narrow line shapes of less than (0.35 Hz)/(10 Hz) as standard and makes it easier to separate overlapping peaks and identify smaller concentrations of compounds. A traditional magnet design with high thermal mass makes X-Pulse insensitive to sample temperature variations, whether static or flowing, and eliminates sample temperature artifacts. **Oxford Instruments plc**, Tubney Woods, Abingdon OX13 5QX, UK, <https://nmr.oxinst.com>



Peak-picking software

In collaboration with Fujitsu, Shimadzu has developed Peakintelligence software for triple quadrupole liquid chromatography-mass spectrometry (LC-MS/MS). It is designed to reduce analysis time and dependency on operator expertise and to increase research efficiency. Equipped with algorithms developed with artificial intelligence, the software automatically detects peaks that appear frequently. The product works with LC-MS/MS systems that use method packages for primary metabolites and cell-culture profiling. According to the company, even when processing chromatograms that previous algorithms couldn't handle, Peakintelligence can reliably detect peaks without parameter adjustment. **Shimadzu Scientific Instruments Inc**, 7102 Riverwood Dr, Columbia, MD 21046, www.ssi.shimadzu.com



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Max Planck Institute for the Physics of Complex Systems



The Max Planck Institute for the Physics of Complex Systems in Dresden announces the opening of one or several

Postdoctoral Positions

in the area of condensed matter theory, to work with Roderich Moessner, Markus Heyl, David Luitz, Anne Nielsen, Takashi Oka and Inti Sodemann. The areas of research range from strongly correlated Fermions and Bosons in and out of equilibrium, gauge theories, frustrated systems and topological/fractonized phases of matter, via computational many-body physics, to quantum computation and machine learning.

The Institute provides a stimulating environment due to an active in-house workshop program and a broad range of other research activities. Strong experimental groups are nearby, in particular in the neighbouring Max Planck Institute for Chemical Physics of Solids.

To apply for a position, please fill the online application form (<http://www.pks.mpg.de/CMpd20>) and upload your application package (cover letter, curriculum vitae, list of publications, statement of research interests and research proposal as well as the three most relevant publications) in one pdf file. Please arrange for at least two letters of reference to be sent by **January 20, 2020** preferably to be submitted in pdf format online (<http://www.pks.mpg.de/reference/>); or by email to visitors@pks.mpg.de with subject line **CMpd20**; or by regular mail:

Max Planck Institute for the Physics of Complex Systems, Visitors Program, Nöthnitzer Str. 38, 01187 Dresden, Germany.

The Max Planck Institute aims to increase the number of women in scientific positions. Female candidates are therefore particularly encouraged to apply.

In case of equal qualifications, candidates with disabilities will take precedence.



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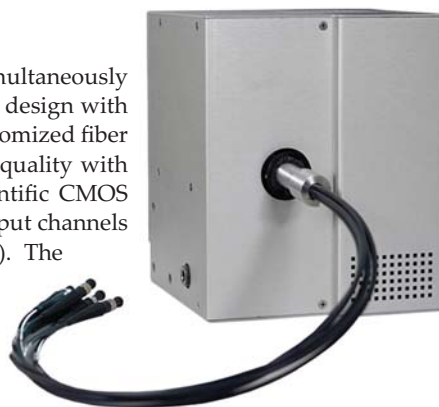
Tunable femtosecond laser

KMLabs claims that its Y-Fi VUV is the first tunable femtosecond source to deliver vacuum UV light. That capability lets users probe material and molecular properties on ultrafast time scales. The Y-Fi VUV offers discrete wavelength tunability from 6.0 eV to 10.8 eV, which was previously only available at a synchrotron. In angle-resolved photoemission experiments, that tunability allows surface effects to be distinguished from bulk effects. For time-of-flight studies of molecules, the Y-Fi VUV can differentiate among otherwise identical isomers. It can be focused down to below 10 μm , which allows examination of new types of samples, including polycrystalline, spatially inhomogeneous,

and faceted materials. The source produces pulses with durations below 250 fs, so users can probe ultrafast dynamics of molecules and materials. It has a 1 MHz repetition rate for rapid data collection. **KMLabs Inc**, 4775 Walnut St, Ste 102, Boulder, CO 80301, www.kmlabs.com

System for UV to near-IR spectroscopy

The PoliSpectra M116 MultiTrack spectrometer from Horiba Scientific can simultaneously measure up to 32 channels. The multiwavelength system has a concentric optical design with a UV-extended spectral range—below 185 nm with optional N₂ purge—and a customized fiber bundle that, according to the company, provides high throughput and imaging quality with minimal cross talk. When the high-speed, low-noise, 2D back-illuminated scientific CMOS sensor is running at 94–188 frames/s, it can be configured with 8, 16, or 32 fiber input channels for simultaneous acquisition of UV to near-IR spectra (2048 pixels/spectrum). The PoliSpectra M116 provides 1 nm spectral resolution and high sensitivity. It is suitable for such applications as reflectometry, plasma- and light-source calibration monitoring, and blood and DNA analyses. **Horiba Scientific Division of Horiba Instruments Inc**, 20 Knightsbridge Rd, Piscataway, NJ 08854, www.horiba.com/scientific



Tandem quadrupole mass spectrometers

Waters Corp has upgraded its Xevo TQ-S micro mass spectrometer to better quantify highly polar, ionic compounds in food. It also introduced its Xevo TQ-S cronos tandem quadrupole mass spectrometer for routine quantification of large numbers of small-molecule organic compounds over a wide concentration range. Xevo products include the StepWave ion guide for long-lasting sensitivity and performance; tool-free probe maintenance and ionization source cleaning; and a choice of ionization sources, including UniSpray, for analyzing a broad range of compounds. To simplify method development and transfer, the Xevo TQ-S uses the Quanpedia extensible and searchable database for quantitative liquid chromatography–mass spectrometry (LC–MS) and LC with tandem

MS. TargetLynx XS software streamlines data review and processing. **Waters Corporation**, 34 Maple Street, Milford, MA 01757, www.waters.com

Enhanced triple quadrupole tandem mass spectrometry

Sciex's Triple Quad 5500+ System–QTRAP Ready couples triple quadrupole liquid chromatography–tandem mass spectrometry and the company's QTRAP functionality in a single system. According to Sciex, the QTRAP functionality, which can be implemented by activating a field-upgradable license, has a linear ion trap that adds depth to data quality. A switching time of 5 ms in multiple reaction monitoring and Scheduled MRM mode makes the system more efficient because it can perform positive and negative ion analysis in the same acquisition, without compromising sensitivity. With a dynamic range of up to six orders of magnitude, the Triple Quad 5500+ System–QTRAP Ready delivers a scan speed of 12000 Da/s. It is suitable for applications in such fields as food science, the environment, forensics, pharmaceuticals, and the life sciences. **AB Sciex LLC**, 500 Old Connecticut Path, Framingham, MA 01701, <https://sciex.com>



Spectrometers integrated with lasers

Wasatch Photonics' new Raman spectrometer series features a multimode laser with 350 mW of power mounted in a slightly raised lid above the spectrometer. The instruments have direct powering and software control of the laser via the spectrometer's USB and power supply. The streamlined design economizes on space and hardware cost. Users can connect both legs of a Raman probe or sampling accessory directly to a single unit. The upper FC/PC connector provides laser light for excitation, while an SMA connector acts as spectrometer input to detect the Raman signal. The WP Raman spectrometer series is available in multiple wavelengths with configuration options for resolution, range, optical coupling, and detector cooling. **Wasatch Photonics**, 808 Aviation Pkwy, Ste 1400, Morrisville, NC 27560, <https://wasatchphotonics.com>



Laser wavelength and power meter

The LambdaMeter wavelength and power meter from Gamma Scientific performs wavelength and power measurements of traditional laser sources, vertical-cavity surface-emitting laser devices, and light-emitting diodes. According to the company, it does so at lower cost than traditional spectrometers. The meter also allows for real-time monochromator wavelength monitoring. The LambdaMeter is compatible with CW and pulsed sources from 365 nm to 1100 nm, and short-wave IR options are available. Using proprietary optical filtering techniques and onboard calibration data, the LambdaMeter can resolve wavelength with accuracies to ± 0.25 nm and ± 0.01 nm repeatability. Irradiance absolute accuracy is $\pm 1\%$. A transimpedance amplifier with five gain ranges achieves high dynamic range, and temperature-stabilized detectors and optical filters deliver high stability. **Gamma Scientific**, 9925 Carroll Canyon Rd, San Diego, CA 92131, www.gamma-sci.com

Spectrometer electronics for CMOS sensors

Ibsen Photonics has upgraded the OEM electronics for its spectrometers and unveiled a fast, compact digital image sensor board (DISB) with a USB bridge board. The DISB-101T electronics comes with a serial peripheral interface that makes it easy to integrate into instruments. It offers fast readout—up to 4800 Hz for 256 pixels—and a configurable external trigger input with ± 10 ns jitter delay. A new lamp control function has also been added. The DISB-101T supports various CMOS detector arrays from Hamamatsu and works with Ibsen's Freedom 101/109 spectrometers and ultracompact Pebble VIS 105. The DISB-USB bridge has a form factor similar to that of the DISB-101T and can be stacked on top of the DISB. That enables a fast USB interface with a frame rate of up to 2000 Hz for 256 pixels. **Ibsen Photonics A/S**, Ryttermarken 17, DK-3520 Farum, Denmark, <https://ibsen.com>



Ultimate MIR Spectroscopy Laser

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- Quantum Optics
- Materials Testing

The DLC TOPO delivers wide tunability, narrow linewidth, and convenient hands-free digital control. Ease of use and high power make this **CW OPO** the right choice for challenging applications in **MIR spectroscopy** and **quantum optics**.



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