

# NEW PRODUCTS

## Focus on test, measurement, quantum metrology, spectroscopy, and spectrometry

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](mailto:ptpub@aip.org).

**Andreas Mandelis**



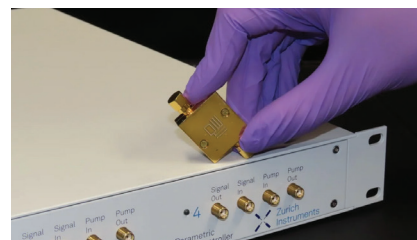
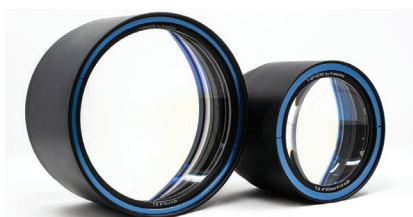
### Diode-pumped 785 nm laser

Hübner Photonics has extended its Cobolt 05-01 series platform to offer the performance needed for high-resolution Raman spectroscopy measurements. The new Cobolt Disco 785 nm single-frequency laser delivers up to 500 mW of power in a perfect TEM<sub>00</sub> beam. Its innovative design features

excellent wavelength stability, a linewidth of less than 100 kHz, spectral purity better than 70 dB, and low noise less than 0.1% rms. The laser is housed in a robust, hermetically sealed package to ensure a high level of reliability. **Hübner Photonics Inc.**, 2635 N First St, Ste 202, San Jose, CA 95134, <https://hubner-photonics.com>

### Optical transmission spheres

Knight Optical has unveiled a collection of Kreischer transmission spheres crafted for optimal performance in interferometry. Uncoated and housed in metal casings, the transmission spheres are available in 4- and 6-inch apertures with a bayonet mount compatible with most interferometers. The standard transmission spheres are polished to a precision of  $\lambda/20$  for 633 nm Fizeau interferometers. The innovative design of the product allows for the measurement of an extended range. Compared with other transmission spheres on the market, they accommodate a larger radii of curvature on convex surfaces, according to the company. The 4-inch series is available in F-numbers from 0.75 to 3.3 and the 6-inch series from 1.1 to 2.4. Additional F-numbers can be provided on request. Knight Optical also offers custom transmission spheres, which can be tailored with precision levels from  $\lambda/10$  to  $\lambda/40$  and various focal lengths. **Knight Optical USA LLC**, 1130 Ten Rod Rd, Ste D-103, North Kingstown, RI 02852, [www.knightoptical.com](http://www.knightoptical.com)



### High-fidelity qubit readout

Zurich Instruments and QuantWare are collaborating to address the challenges of high-fidelity qubit readout in order to make quantum computing technology more accessible. To provide an out-of-the-box solution for tuning the full qubit readout chain, the companies are integrating QuantWare's traveling-wave parametric amplifier Crescendo-S, made for readout at scale, with controller and readout electronics from Zurich Instruments. The Crescendo-S offers multiqubit readout capability, low noise, and a scaling-ready form factor. Its control signal requirements are optimally served by Zurich Instruments' SHFPPC Parametric Pump Controller, which covers all signal generation and processing for parametric amplification. The integrated instrument is controlled by LabOne Q software, which features a platform for amplifier and readout calibration procedures. The companies are also investigating ways to further improve the off-the-shelf compatibility of QuantWare's quantum processing units with Zurich Instruments' quantum computing control systems. **Zurich Instruments AG**, Technoparkstrasse 1, 8005 Zurich, Switzerland, [www.zhinst.com](http://www.zhinst.com)



### Correlated microscopy platform

Quantum Design has added a new measurement technique to its innovative FusionScope correlated microscopy platform. It is now possible within the same instrument and user interface to obtain data from energy-dispersive x-ray spectroscopy (EDS) and from scanning electron microscopy (SEM) and atomic force microscopy (AFM). Based on silicon drift detector technology, FusionScope's x-ray spectrometer detects characteristic x rays and precisely measures their energy. With its advanced algo-

gorithms and an established spectral library, the platform's software uses those x rays to identify and determine the quality of the element type. The EDS in FusionScope is completely integrated with SEM and AFM and uses the same shared coordinate system for locating specific regions of interest. FusionScope enables comprehensive material characterization in fields such as life, Earth, and material sciences; semiconductor, battery, automotive, and aerospace industries; pharmaceuticals; forensics; mining; and geology. **Quantum Design**, 10307 Pacific Center Ct, San Diego, CA 92121, [www.qdusa.com](http://www.qdusa.com)



## Time-correlated single-photon counter

PicoQuant is now equipping its PicoHarp 330 time-correlated, single-photon-counting, and time-tagging unit with up to four detection channels and a dedicated sync channel with advanced channel configuration. According to the company, the enhancement broadens the scope of potential experiments and optimizes the efficiency of data collection in complex setups. Those improvements are especially beneficial in quantum optics

experiments, such as quantum key distribution (QKD), quantum entanglement, and Bell test experiments. The unit offers down to 2 ps rms jitter, essential for accurate timing in QKD and photon correlation techniques. Each channel operates independently but can synchronize with the others through a common sync channel, providing flexibility in experimental setups. If synchronization is not required, the sync input can serve as an additional detection channel, suitable for coincidence correlation or counting experiments with up to five channels. **PicoQuant**, Rudower Chaussee 29, 12489 Berlin, Germany, [www.picoquant.com](http://www.picoquant.com)

## Isolated probing system

Rohde & Schwarz has released its R&S RT-ZISO isolated probing system for measurements of fast switching signals, especially in environments with high common-mode voltages and currents. The R&S RT-ZISO provides precise differential measurements of up to  $\pm 3$  kV on reference voltages of  $\pm 60$  kV, with a rise time of less than 450 ps. It suppresses fast common-mode signals that can distort and interfere with accurate measurements. Its power-over-fiber architecture galvanically isolates the device under test from the measurement setup, providing a much higher common-mode rejection ratio (CMRR) than conventional differential probes. Its key features include bandwidth options of 100 MHz to 1 GHz, a CMRR of greater than 90 dB (greater than 30 000:1) at 1 GHz, and an input and offset range of  $\pm 3$  kV. According to the company, the isolated probe, when used with the instruments of its MXO oscilloscope series, enables measurements with the world's fastest acquisition in the time and spectrum domain. The R&S RT-ZISO is suitable for a wide range of applications, including switching analysis of power converters with wide-bandgap materials, double-pulse testing, and floating and shunt measurements. **Rohde & Schwarz GmbH & Co KG**, Muehlhofstrasse 15, 81671 Munich, Germany, [www.rohde-schwarz.com](http://www.rohde-schwarz.com)



## Biomolecule characterization

RedShiftBio has introduced Aurora, the latest system using the company's novel microfluidic modulation spectroscopy (MMS) technology to provide, in a single automated analysis, ultra-sensitive and ultraprecise measurements of the structure of biomolecules. The MMS modality combines a quantum cascade laser, a microfluidic flow cell, and the powerful delta analysis software package to produce high-resolution secondary-structure information. In a significant reduction from first-generation MMS instruments, the compact, benchtop-friendly Aurora requires only a 50  $\mu$ l sample volume. It delivers accurate, reproducible measurements across a broad concentration range from 0.1 mg/mL to greater than 200 mg/mL in therapeutically relevant conditions; there is

no need to buffer exchange or dilute samples before measuring. According to the company, Aurora is 20 times as fast and 30 times as sensitive to changes in structure than circular dichroism or Fourier-transform IR spectroscopy. Aurora can be used to study a wide range of biomolecules, including monoclonal antibodies-based biotherapeutics, proteins, enzymes, peptides, antibody-drug conjugates, and mRNA. **RedShift BioAnalytics Inc**, 80 Central St, Boxborough, MA 01719, [www.redshiftbio.com](http://www.redshiftbio.com)

## Compact Raman spectrometers

Wasatch Photonics has announced its WP Raman X series of compact Raman spectrometers and systems for research and original equipment manufacturer (OEM) instrument development. Replacing the company's previous line, the X series of products can be used at 532, 638, 785, 830, and 1064 nm excitation, covering the fingerprint and functional range of Raman peaks with 10  $\text{cm}^{-1}$  resolution or better. The company's Raman products use a high numerical aperture optical design combined with high-efficiency volume-phase holographic transmission gratings. Those features ensure superior signal collection and high throughput, and they deliver sensitivity approaching that of high-end Raman systems at a fraction of the size and cost, according to the company. Configuration options include a choice of f/1.3 or f/1.8 input aperture, detector cooling level, slit size, and sample coupling. Available models include stand-alone spectrometers for modular Raman spectroscopy, spectrometers with an integrated excitation laser to reduce size and cost, fully integrated Raman systems for maximum signal in the smallest footprint, and OEM versions of each type. **Wasatch Photonics**, 808 Aviation Pkwy, Ste 1400, Morrisville, NC 27560, <https://wasatchphotonics.com>



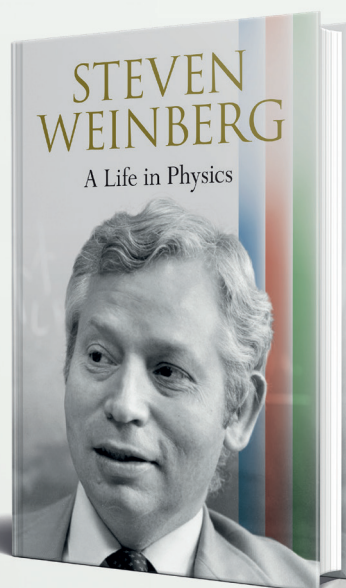
## Gas-analysis mass spectrometry system

Hidden Analytical has launched its HPR-20 OEMS (online electrochemical mass spectrometry) system for continuous analysis of evolved gases and vapors in electrochemistry. An ultralow-flow, real-time sampling capillary allows for seamless connection for headspace sampling and connection to electrochemical cells. The Hidden QIC-ULF quartz-lined, ultralow-flow sampling interface, operating at up to 200 °C, provides fast response times of less than 3 s for most common gases and vapors, including water vapor. The standard system with a 200 amu mass range can detect to less than 100 ppb. For even more precise measurements, the optional 3F series 300 amu system with a triple-stage mass filter extends detection levels to 5 ppb, with enhanced contamination resistance. Features include a 3D data plot for viewing mass versus electron energy and intensity and an automated spectral analysis that provides peak identification and composition analysis. It is equipped with the latest Microsoft Windows MASsoft Professional software for seamless data acquisition, display, and control of quadrupole parameters. **Hidden Analytical**, 37699 Schoolcraft Rd, Livonia, MI 48150, [www.hiddenanalytical.com](http://www.hiddenanalytical.com)



## STEVEN WEINBERG

### A Life in Physics



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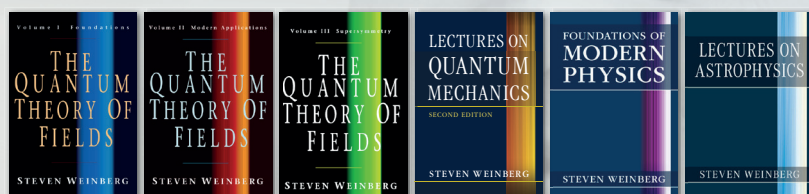
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## Thin-film characterization

Craic Technologies now offers its Film Thickness Mapping Solution to enable researchers to visualize morphology and defects in thin films. The solution incorporates state-of-the-art microscopy and imaging systems capable of capturing clear, detailed high-resolution images of thin-film samples. Advanced spectroscopic techniques, including UV-visible-near-IR microspectroscopy and Raman microspectroscopy, provide spectral data for characterizing thin-film composition and properties, such as refractive index and chemical composition. The intuitive software interface and automated mapping algorithms enable users to generate precise film-thickness maps across large sample areas rapidly, thus facilitating efficient data acquisition and analysis workflows. The Film Thickness Mapping Solution is compatible with a wide range of sample types, including semiconductors, optical coatings, polymers, and biological materials, and is suitable for diverse research and industrial applications in materials science, nanotechnology, and surface engineering. **Craic Technologies Inc**, 948 N Amelia Ave, San Dimas, CA 91773, [www.microspectra.com](http://www.microspectra.com)

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