

## Focus on test, measurement, analytical equipment, and instrumentation **FREE**

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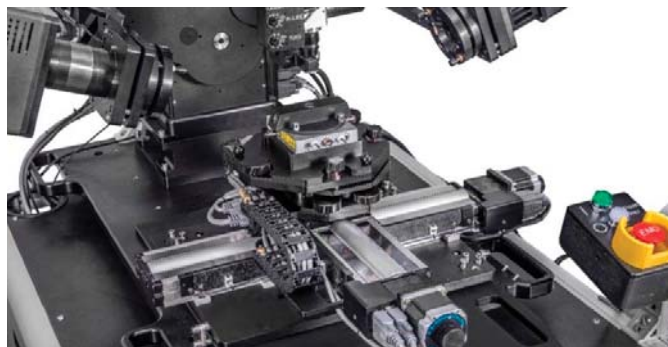
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# NEW PRODUCTS

## Focus on test, measurement, analytical equipment, and instrumentation

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**



### Temperature-controlled ellipsometers

J. A. Woollam has collaborated with Linkam Scientific to bring precise temperature control to its custom ellipsometry instruments.

Ellipsometry and thermal analysis are fundamental tools in the study of thin-film materials. Temperature-controlled ellipsometry can be used to characterize a range of properties, such as thermal expansion coefficients, which can be determined by monitoring changes in thickness versus temperature. Linkam has modified its HFS600 heating stage with a special optical adapter so it can be used as an ellipsometer. The adapted temperature controller, known as the HFSEL600, allows temperature-dependent ellipsometry measurements with all J. A. Woollam systems over a wide temperature range. Samples can be quickly characterized by heating them—at a rate of up to 150 °C/min—to within a few degrees of the required temperature and then examining the changes when the heating is slowed to a few tenths of a degree per minute. **J. A. Woollam Co Inc**, 645 M St, Ste 102, Lincoln, NE 68508, [www.jawoollam.com](http://www.jawoollam.com)



### Micropumps for small liquid and gas volumes

Innovative Sensor Technology IST AG has unveiled a series of peristaltic micropumps for liquids and gases. The CPP1 pumps provide small flow rates, reliable flow-rate control, and biocompatibility. They enable bidirectional pumping of small amounts of liquids and gases in a controlled stream at flow rates from 150 nl to 800 µl and are therefore suitable for supplying analytes to sensors, among other applications. The CPP1 pumps are designed to be connected to the tubes and pipes of existing fluidic systems, and they can act as valves even when the systems are not rotating. They can withstand a pressure difference of up to 2 bar, which ensures that the media at a pump's inlet and outlet remain separated. The pumps' small size of 9.5 × 11.2 × 31.4 mm is optimal for integration into microfluidic analyzer systems and single-pump desktop and handheld devices. **Innovative Sensor Technology IST AG**, Stegrütistrasse 14, 9642 Ebnat-Kappel, Switzerland, [www.ist-ag.com](http://www.ist-ag.com)

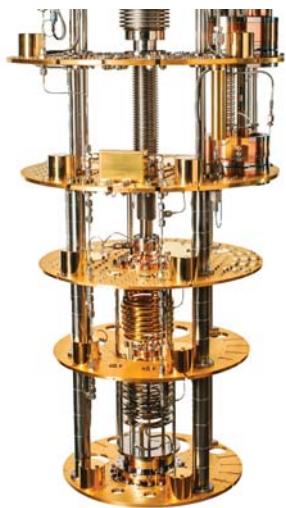
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### High-bandwidth midrange signal and spectrum analyzer

Rohde & Schwarz now offers a 1 GHz analysis bandwidth option for its midrange FSVA3000 signal and spectrum analyzer. According to the company, the FSV3-B1000 hardware option makes the FSVA3000 the first such analyzer to cost-effectively feature an internal analysis bandwidth of 1 GHz (previously available only in high-end instruments). Comparable solutions offer just 160 MHz analysis bandwidth. With the new option, available for all models from 7.5 GHz to 44 GHz, the FSVA3000 is suitable for analyzing wideband signals for 5G NR (new radio) and other future wireless standards. It can support the development and production of 5G NR base stations, mobile phones, and components, especially in the 28 GHz and 39 GHz bands; characterize wideband amplifiers; be used for troubleshooting, capturing even very short events; and address automotive, aerospace, and defense applications. **Rohde & Schwarz GmbH & Co KG**, Muehldorfstrasse 15, 81671 Munich, Germany, [www.rohde-schwarz.com](http://www.rohde-schwarz.com)



## NEW PRODUCTS



### Cryogen-free dilution refrigerator

The Proteox5mK cryogen-free dilution refrigerator from Oxford Instruments Nanoscience is designed to help researchers explore material states at low temperatures and thereby foster the development of next-generation quantum technologies, from early-stage single-qubit research to quantum computer scale-up. The system's high cooling power of 25  $\mu$ W at 20 mK and low base temperature also make it suitable for such research areas as spectroscopy and quantum annealing. The Proteox5mK uses Oxford Instruments' most powerful dilution unit and active gas gap heat switches to achieve base temperatures below 5 mK. According to the company, that is the lowest continuous base temperature available in any dilution refrigerator. Actively cancelled magnets ensure low eddy current heating to maintain the ultralow base temperatures at high fields. Multiple passive vibration reduction features eliminate the need for costly active vibration solutions. *Oxford Instruments plc, Tubney Woods, Abingdon OX13 5QX, UK, <https://nanoscience.oxinst.com>*

### Integrated platform oscilloscope

Keysight's new Infiniium EXR series of mixed signal oscilloscopes extends the technology of its Infiniium MXR oscilloscope family to users purchasing through the company's global distributor network. Featuring multiple instruments integrated into a single platform, the Infiniium MXR and EXR oscilloscopes reduce test-bench and workflow complexity. A state-of-the-art, application-specific integrated circuit powers seven applications: oscilloscope, digital voltmeter, waveform generator, Bode plotter, counters, and protocol and logic analyzers. The EXR series offers up to eight analog channels that operate simultaneously at 2.5 GHz with 16 independent digital channels. A built-in "fault hunter" feature automatically analyzes the normal signal for 30 s and initiates advanced triggers to find rare or random signal faults. *Keysight Technologies, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, [www.keysight.com](http://www.keysight.com)*



### Time-domain terahertz platform

Toptica Photonics has announced the TeraFlash pro, a tabletop time-domain terahertz platform. It achieves a peak dynamic range of 100 dB and a bandwidth of more than 6 THz, and it acquires 60 traces/s at a 50 ps scan range and 95 traces/s at 20 ps. The new "dual" version enables simultaneous measurements in transmission and reflection or in terahertz spectroscopy with orthogonal polarizations. A wide-scan option boosts the scan range from 200 ps to 1000 ps, which translates into a frequency resolution of 1.0 GHz. The TeraFlash pro is suitable for scientific applications, including wide-band spectroscopy, metamaterial analysis, near-field studies, and imaging of cultural-heritage objects. It can also be used in complex configurations that include a cryostat in the beam path and for industrial terahertz applications such as layer thickness gauging and quality control of semiconductors. *Toptica Photonics Inc, 5847 County Rd 41, Farmington, NY 14425, [www.toptica.com](http://www.toptica.com)*

### Compact high-performance turbopumps

According to Pfeiffer Vacuum, its HiPace 350 and 450 turbopumps are highly efficient, compact, and quiet. They are designed for applications such as mass spectrometry, electron microscopy, metrology, particle accelerators, and plasma physics, but they can also be used for R&D, in coating processes, and in industry. To ensure reliability, the turbopumps have a robust hybrid bearing design that combines ceramic ball bearings on the fore-vacuum side and permanently magnetic radial bearings on the high-vacuum side. An innovative rotor design delivers high-speed pumping for light gases and makes possible high backing pump compatibility, high gas throughput, and excellent compression for light gases. The pumps operate at a speed ranging from 300 l/s to 700 l/s and can be installed in any orientation. *Pfeiffer Vacuum Inc, 24 Trafalgar Sq, Nashua, NH 03063, [www.pfeiffer-vacuum.com](http://www.pfeiffer-vacuum.com)*



## Plastic-analysis system

Shimadzu has presented a Fourier-transform IR (FTIR) spectrophotometer for plastic degradation analysis. The system includes proprietary UV- and thermal-damaged plastics libraries to facilitate highly accurate qualification and determine the state of deterioration when analyzing foreign substances, contaminants, and microplastics. It features the company's IRSpirit FTIR spectrophotometer, QATR-S single-reflection attenuated total reflectance attachment, and plastic analyzer method package. The method package includes FTIR spectral libraries for plastics degraded by UV rays and heat. The UV-damaged-plastics library includes more than 200 spectra from the UV degradation of 14 types of plastic, unirradiated and UV irradiated for 1–550 hours. The thermal-damaged-plastics library includes more than 100 spectra from the degradation of 13 types of plastic heated to between 200 °C and 400 °C. *Shimadzu Scientific Instruments Inc, 7102 Riverwood Dr, Columbia, MD 21046, [www.shimadzu.com](http://www.shimadzu.com)*



## Smart, remote data logging

Omega, a Spectris company, has developed a smart, flexible way for users to remotely monitor a wide range of applications. Its Layer N products can keep applications running safely in times of social distancing. Temperature, humidity, light, and barometric pressure readings are captured, stored, processed, and transported in real time to the cloud via wireless smart sensors and gateways. Reports can be accessed from anywhere at any time. Layer N sensors, built with edge-control technology, use subgigahertz technology called frequency-hopping spread spectrum, which facilitates long-range communications with a transmission range of up to 3.2 km. The AES-256 encrypted wireless link ensures data security. With the Message Queuing Telemetry Transport protocol for Internet of Things data transport, Layer N products can simply and cost-effectively retrofit and integrate legacy devices and bring them into the digital world. *Omega Engineering Inc, 800 Connecticut Ave, Ste 5N01, Norwalk, CT 06854, [www.omega.com](http://www.omega.com)*



## Real-time wideband recording platform

The MUNIN 1005-IF (intermediate-frequency) wideband recording platform from Novator Solutions provides gapless recording of narrowband and wideband IF signals from 2 MHz to 600 MHz bandwidth. The high-speed, configurable platform is suitable for capturing one or more IF channels in real time for device-under-test characterization, spectrum analysis, and setup of repeatable laboratory tests. To ensure correct postprocessing or replay of recorded data, MUNIN records all channels continuously without gaps. A circular pretrigger buffer captures events that happened from a few seconds to multiple minutes before the trigger. With industrial-grade, solid-state drive disks, MUNIN offers a standard redundant array of independent disk configurations from 4 TB to 96 TB. The storage capacity can be expanded beyond 96 TB. Depending on the channel configuration, data can be continuously recorded over time periods ranging from minutes to days. MUNIN 1005-IF comes in several standard configurations with inputs of 70 MHz, 600 MHz, or a combination of both. *Novator Solutions AB, Hammarbacken 6A, 191 49 Sollentuna, Sweden, <https://novatorsolutions.com>*

**JANIS**  
A LAKE SHORE COMPANY

## Recirculating cryocooler eliminates the use of LHe for 'wet' systems



Existing LHe-cooled cryostats and probe stations can be converted to cryogen-free operation with the addition of an external cryocooler, the Janis recirculating gas cryocooler (RGC4). Instead of using LHe from a storage vessel, the RGC4 delivers a stream of 4 K helium to the cryostat or probe station.

Contact Janis today for more information.

Contact us today:  
[sales@lakeshore.com](mailto:sales@lakeshore.com)  
[www.lakeshore.com/RGC](http://www.lakeshore.com/RGC)

## Software for unlimited-range calibration

Renishaw has released the latest version of its CARTO software suite for calibration products. Because of CARTO 4.2's long-range measurement functionality, users of the company's XM-60 multi-axis calibrator can quickly capture and analyze data from linear axes of any length. The XM-60 allows for direct measurement of all six degrees of freedom—linear, vertical, and horizontal straightness and pitch, yaw, and roll—on any form of linear axis. The CARTO Capture application lets users measure straightness via its dynamic data fit functionality and recalculate the test data to reduce outlying data-points. The improved method offers greater resilience to environmental interference and a better representation of straightness errors for longer axes. Laser users can quickly and easily apply pitch error compensation to Heidenhain machine tool controls. *Renishaw plc, 1001 Wesemann Dr, West Dundee, IL 60118, [www.renishaw.com](http://www.renishaw.com)*



## Digitizer with flexible analog front end

Teledyne SP Devices has announced its ADQ8-4X 10-bit digitizer with software-configurable sampling on two or four channels. It supports sampling at 4 GSPS in the two-channel mode and 2 GSPS in the four-channel mode. Since the ADQ8-4X is available in the PXI Express form factor, different digitizer models can be used in the same system. The digitizer's flexible analog front end features a 1 GHz analog input bandwidth, a programmable DC offset, and a variable input voltage range. A software development kit is included, and the open onboard field-programmable gate array allows for custom digital signal processing. The ADQ8-4X can be used in Thomson scattering (plasma diagnostics), scientific instrumentation design, quantum technology, ultrasound, particle physics, and nondestructive and semiconductor testing. *Teledyne SP Devices, 700 Chestnut Ridge Rd, Chestnut Ridge, NY 10977, <https://spdevices.com>*

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