

Focus on test, measurement, quantum metrology, and analytical equipment **FREE**

Andreas Mandelis



Physics Today 77 (2), 59–60 (2024);
<https://doi.org/10.1063/pt.ckig.lhxq>



CrossMark



INSACO INC. has the ability to grind and polish almost any geometric feature in glass, ceramic, and sapphire!

NEW PRODUCTS

Focus on test, measurement, quantum metrology, and analytical equipment

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

Photon-counting pixel detector

Dectris has renewed its Pilatus photon-counting pixel detector for synchrotrons; the instruments can also approach synchrotron-like performance in scientific instruments in the laboratory. The Pilatus4 detectors combine speed and a large active area. They feature a maximum count rate of 10^7 photons/s/pixel. For highly efficient detection over a wide energy range, they are available with silicon or cadmium telluride sensors. With up to four independent energy thresholds that can be recorded simultaneously, the detectors enable suppression of disturbing fluorescence and higher harmonic radiation. Because of their 150 μm pixel size and sharp, single-pixel point-spread function, they deliver ultrahigh spatial resolution, ensuring independent counting of neighboring pixels. The Pilatus4 detectors offer high resolution from the lowest flux valleys to the highest data peaks. For high data quality, they are noise free and stable. Thanks to the Simplon application programming interface, integration is fast and reliable.

Dectris USA Inc, 1500 Walnut St, Ste 1630, Philadelphia, PA 19102, www.dectris.com



Hardware-accelerated oscilloscope

Keysight has expanded its Infiniium oscilloscope portfolio by adding the MXR B-Series. It offers built-in automated debugging tools, including zone triggering, fault detection, real-time spectrum analysis, and a 50 MHz waveform generator. The hardware-accelerated analysis reduces test time by automating fault detection, design-compliance testing, power-integrity analysis, decoding of more than 50 serial protocols, and mask testing on all channels simultaneously. According to the company, with a low noise floor, high effective number of bits, and very low system jitter, the Infiniium MXR B-Series delivers high performance on all eight channels, preserving signal integrity and providing the maximum resolution possible. It captures important events in the signal with an update rate of greater than 200 000 waveforms/s, a fast sample rate of 16 gigasamples/s, and a bandwidth up to 6 GHz that does not decrease with channel usage. *Keysight Technologies, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, www.keysight.com*

Mixed-signal oscilloscope

The 4 Series B mixed-signal oscilloscope (MSO) now available from Tektronix offers increased processing power for quicker analysis and data transfer speed. It features the same signal fidelity as the earlier 4 Series, with bandwidths from 200 MHz to 1.5 GHz, real-time sampling at 6.25 gigasamples/s, and up to 16-bit vertical resolution. It also includes the same touch user interface, but with an upgraded processor system that is twice as responsive and speeds up remote operation. The 4 Series B MSO is available with up to six input channels, making it suitable for three-phase power analysis. The company's Spectrum View capability provides multichannel spectrum analysis in sync with time-domain waveforms. The 4 Series B MSO enhances time to answer on more than 25 serial decode packages for interchip, automotive, power, and aerospace bus applications, among others. It also speeds up the algorithms and plotting used in existing analysis packages for power-supply measurements, motor-drive analysis, and double-pulse testing. *Tektronix Inc, 14150 SW Karl Braun Dr, PO Box 500, Beaverton, OR 97077, www.tek.com*



Ultracompact transducers

According to Thyracont, its new miniaturized vacuum transducers unite digital and analog and offer an optimal price-performance ratio. The PTL and PTR models are suitable for use in turbomolecular pumps and spectrometers and in analytical applications, particularly when space is limited. With their piezo/Pirani combination sensor, the transducers measure in a wide range in rough and fine vacuum with high resolution and accuracy. Both models measure absolute pressure in a range from 2000 mbar to 5×10^{-5} mbar. The PTR model also measures relative pressure in a range from -1060 mbar to +1200 mbar. A fast response time of 5 ms and excellent resolution enable stable, short-cycled, efficient production processes. The optimized individual temperature compensation provides excellent accuracy and steady measuring values. The devices also allow precise digital readjustment to atmospheric or zero pressure, programming of the gas-type correction factor, and retrieval of various parameters for preventive maintenance. *Thyracont Vacuum Instruments GmbH, Max-Emanuel-Str 10, 94036 Passau, Germany, <https://thyracont-vacuum.com>*



18 April 2024 14:05:34

NEW PRODUCTS

Fast eight-channel oscilloscope

Rohde & Schwarz has introduced an eight-channel oscilloscope, which the company says shows more of a signal's activity in the time and the frequency domains than other oscilloscopes: The R&S MXO 5 is the first eight-channel oscilloscope with 4.5×10^6 acquisitions/s and 18×10^6 waveforms/s across multiple channels. Users performing power- and signal-integrity measurements and logic and bus-protocol debugging can capture intricate signal details and infrequent events with high precision. Digital triggering on all eight channels enables accurate isolation of small signal anomalies. The R&S MXO 5 series's capability of 45 000 FFTs/s provides optimal spectrum-signal viewing, particularly for EMI and harmonic testing. Standard simultaneous acquisition memory of 500 Mpoints (megasamples) across all eight channels allows for extensive data capture. The R&S MXO 5 oscilloscopes are also available with four channels; models with 100, 200, 350, and 500 MHz and 1 and 2 GHz bandwidths are offered. *Rohde & Schwarz GmbH & Co KG, Mühldorfstraße 15, 81671 Munich, Germany, www.rohde-schwarz.com*



Environmentally friendly gas analyzer

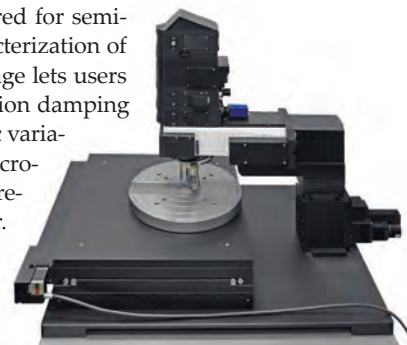
Hidden Analytical now offers an enhanced and more environmentally friendly version of its quantitative gas analysis system for academic and industrial research. The QGA 2.0 is constructed with sustainable materials that can easily be recycled and offers energy-efficient operation. It weighs less than 30 kg and has a footprint 42% smaller than the original QGA's. Optimized for continuous analysis of gases and vapors in near-atmospheric pressures, the QGA 2.0 can perform 1000 measurements/s and detection from 100 ppb to 100%. Its response time is less than 300 ms with less than 0.5% error at 1 ppm. The QGA 2.0 has a seven-decade dynamic range. It can discriminate isobaric mass interferences, such as NH_3^+ and OH^+ , at $m/z17$. Various inlet accessories and configurations are available for sampling from ambient pressures to ones as high as 30 bar. Applications of the QGA 2.0 include carbon capture, analysis of hydrogen and high-purity gas,

environmental monitoring, fuel-cell studies, and thermal analysis–mass spectrometry. *Hidden Analytical Inc, 37699 Schoolcraft Rd, Livonia, MI 48150, www.hiddenanalytical.com*



Raman imaging for wafer characterization

Oxford Instruments WITec has unveiled a confocal Raman-imaging microscope configured for semiconductor R&D. The alpha300 Semiconductor Edition is designed to accelerate the characterization of chemical composition, crystal quality, strain, and doping. Its extended-range scanning stage lets users inspect wafers up to 300 mm in size and acquire large-area Raman images. Active vibration damping and optical profilometer-driven active focus stabilization help compensate for topographic variation during measurements over large areas or long acquisition times. Fully automated microscope components permit the implementation of standard measurement procedures and remote operation. The system includes a highly sensitive, on-axis, lens-based spectrometer. The excitation-wavelength-optimized spectrometer features a thermoelectrically cooled scientific-grade spectroscopic CCD camera and delivers ultrahigh throughput. The latest WITec software, Suite Six, facilitates data acquisition and advanced postprocessing. *WITec Instruments Corp, 300 Baker Ave, Ste 150, Concord, MA 01742, <https://raman.oxinst.com>*



FTIR metrology for semiconductor applications



Semilab has announced a new generation of its rapid, noncontact, and nondestructive Fourier-transform IR spectroscopy (FTIR) metrology system, EIR. The enhanced EIR system delivers high accuracy, efficiency, and uptime to a wide variety of applications in the semiconductor industry, including epitaxial layer thickness determination for silicon and silicon carbide, chemometric analysis of thin films, and interstitial oxygen and carbon measurements in bulk silicon. The EIR optics now provide higher throughput without sacrificing long-term stability. Semilab can retrofit existing systems with an improved detector and longer service life. In addition to the hardware improvements, new software features include improved analysis methods for silicon carbide, a wafer-sorting capability, and a new system-health-check module. The EIR product line can support different levels of factory automation and can be integrated into existing facilities and new facilities that maintain the latest standards. *Semilab USA LLC, 12415 Telecom Dr, Tampa, FL 33637, <https://semilab.com>* **PT**