Focus on test, measurement, 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 the product description. For all new products submissions, please send to Rnanna@aip.org.

Andreas Mandelis

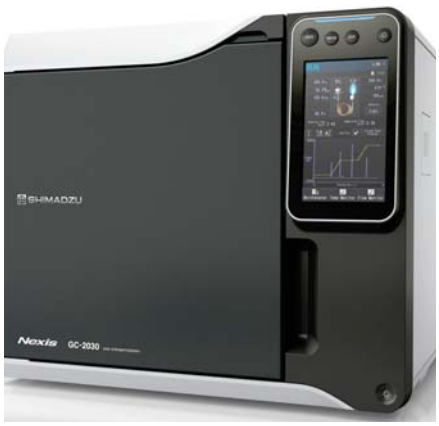
Gas chromatography system

The 7250 gas chromatography/quadrupole-time-of-flight (GC/Q-TOF) system from Agilent Technologies is suitable for laboratories that need to combine fast scanning, high resolution, and accurate mass information from a single analysis. The system integrates GC and Q-TOF spectrometry with a low-energy electron ionization source. According to Agilent, the 7250 represents the only such combination commercially available. Because of the system's enhanced analytical performance and unique capabilities, users can perform GC/mass spectrometry experiments that are difficult to execute accurately with other GC/MS technologies. Users can quickly and easily identify volatile and semivolatile compounds. With the low-energy electron ionization, they can better elucidate chemical structures and thus explore unknown chemical samples. Applications include life-sciences research, food and environmental testing, forensics, and chemical analysis. ***Agilent Technologies**, 5301 Stevens Creek Blvd, Santa Clara, CA 95051, www.agilent.com*

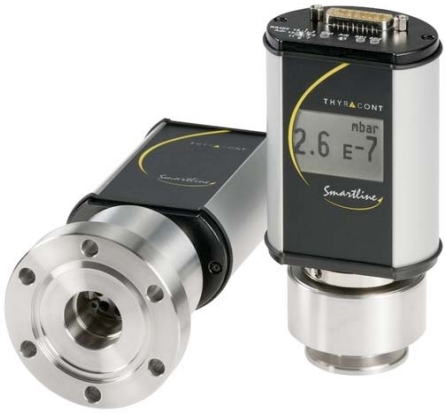
Multichannel signal acquisition and analysis

Spectrum has extended its digitizerNetbox family by releasing the DN6.22x series of LXI digitizers for multichannel signal acquisition and analysis. With a fast sampling rate, wide bandwidth, and long acquisition memory, the digitizers can capture high-frequency signals and characterize fast events that go down into the nano- and subnanosecond timing ranges. The entry-level DN6.221 models have from 12 to 24 channels, each of which can sample electronic signals at rates up to 1.25 GS/s. The higher-performance DN6.225 series allows up to 12 channels to sample at 2.5 GS/s or 6 channels at 5 GS/s. Each channel has its own analog-to-digital converter, 1 GSample/channel of acquisition memory, and signal-conditioning circuitry. Acquisition modes include single shot to capture transient events, multiple recording to store numerous signals that arrive in bursts or packets, and gated sampling to synchronize the acquisition with another event. ***Spectrum Instrumentation GmbH**, Ahrensfelder Weg 13–17, 22927 Grosshansdorf, Germany, www.spectrum-instrumentation.com*

Gas chromatograph



The versatile, expandable Nexis GC-2030 gas chromatograph from Shimadzu Scientific Instruments allows for up to three analytical lines. Four inlets, six detectors, and specialized valve accessories enable configurations suitable for laboratories in diverse areas such as petrochemicals, the environment, and pharmaceuticals. The chromatograph includes day and time programming, a system self-check feature, and tool-free column installation and inlet maintenance. An Eco mode optimizes the use of a carrier gas such as helium and reduces electricity consumption when the instrument is idle. If hydrogen is used as a carrier gas, an optional built-in sensor can monitor real-time levels. System information is provided through a touch-panel interface that has clear graphics and intuitive icons. Ethernet-based communications let users remotely connect to the Nexis GC-2030 via a PC or mobile device. ***Shimadzu Scientific Instruments Inc**, 7102 Riverwood Dr, Columbia, MD 21046, www.ssi.shimadzu.com*



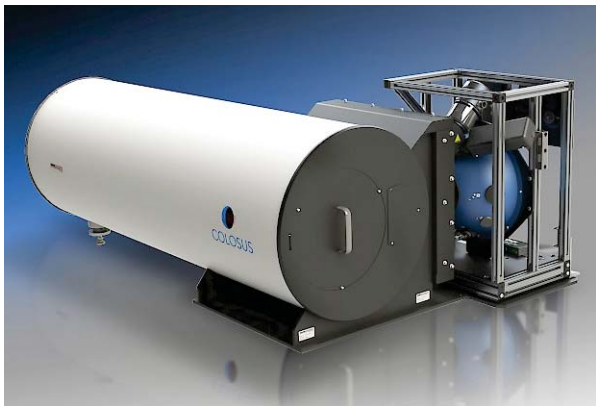
Cold-cathode vacuum transducer

Thyracont Vacuum Instruments has added the VSI, a pure cold cathode as an inverted magnetron, to its Smartline product family. The VSI measures in the range of 2×10^{-3} mbar down to 5×10^{-9} mbar. Several operating modes give users flexibility in their processes. In the automatic mode, the cold cathode switches on at a pressure of 2×10^{-3} mbar and off at a pressure of 3×10^{-3} mbar. It is possible to turn the cold cathode on and off in manual mode by a voltage signal or software command, but if the pressure is too high, an automatic shutdown ensures safe operation. Both the design of the VSI ignition aid and the sensor provide for fast, reliable cold-cathode ignition and guarantee immediate availability of the measuring value in the high-vacuum range. The typical fields of application for the VSI transducer are coating, analytics, medical engineering, and vacuum furnaces. ***Thyracont Vacuum Instruments GmbH**, Max-Emanuel-Str 10, 94036 Passau, Germany, www.thyracont-vacuum.com*

Nanomechanical property measurement

To expand the utility of its Nano Indenter G200 instrument, Keysight Technologies has introduced a high-accuracy tip and sample heater. Users can measure nanomechanical properties at precisely controlled temperatures and test a wide range of samples under dynamic temperature conditions. Those include materials that have poor thermal conductivity and mechanical properties that are strongly affected by temperature. A high-power diode laser heats the sample and the indenter tip. The heater supports a wide temperature range of up to 500 °C and is accurate to within 0.1 °C. To ensure reliable data, function-optimized materials and an adjustable laser spot size minimize drift associated with heating. The substrate holder is designed for high mechanical and temperature stability, and the transparent plate underneath the sample contains a built-in thermocouple. ***Keysight Technologies Inc**, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, www.keysight.com*

Integrated electro-optic test systems

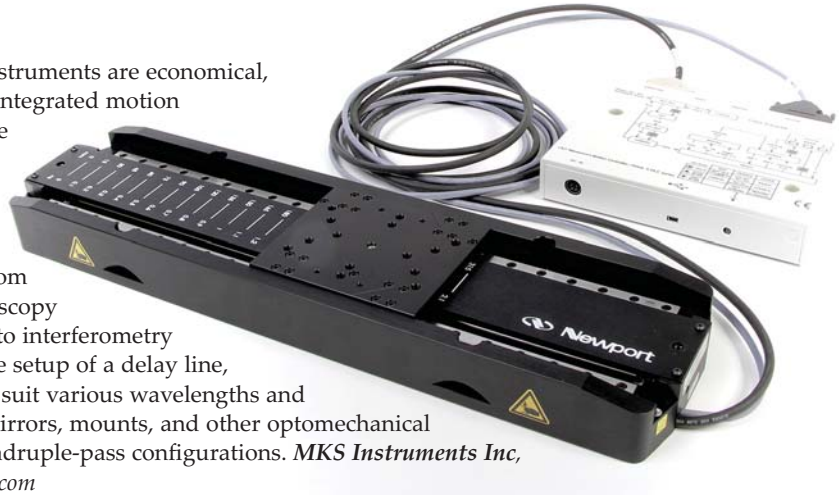


Labsphere and Santa Barbara Infrared have partnered to develop the Colosus family of systems for the optical characterization of sensors and cameras. The integrated, fully calibrated test solutions include collimated optics, software, and uniform sources. They can be used over the range from the UV to the long-wave IR in applications such as space science and astronomy, Earth sciences, and security. Both collimated and flood-mode test configurations are offered. Integrating spheres to suit the 0.3–14 μm range, blackbodies, collimators, target wheels, system peripherals, and traceable calibration data are combined and controlled by the IRWindows4 automated test software, which supports more than 100 standardized radiometric, laser, and thermal tests. In addition to the standard Colosus product configurations, custom test solutions can be designed for specific program requirements. ***Labsphere Inc**, 231 Shaker St, PO Box 70, North Sutton, NH 03260, www.labsphere.com*

Dynamic gas analyzer

The ExQ quantitative gas analyzer from Hiden Analytical is a compact, multi-featured mass spectrometer system that provides continuous online analysis of dynamic gas streams at pressures from subatmospheric to 30 bar. The system can be configured for both benchtop and rack-mounted operation. It connects to the process via a flexible, heated inert capillary line with a sample consumption rate of less than 10 ml/min and a response time of less than 300 ms at near-atmospheric pressures. With several interface options, the system can analyze up to 16 individual process streams. Adapters are available to connect the ExQ directly to most standard thermogravimetric and thermal analysis instruments. External process data, such as sample temperature and mass, can be imported, so users can integrate and present them with the mass spectral data. Minor species composition is measurable down to 100 ppb, with a mass range between 200 and 300 amu. ***Hiden Analytical Inc**, 37699 Schoolcraft Rd, Livonia, MI 48150, www.hidenanalytical.com*

Delay-line stages for spectroscopy



Newport DLS series delay-line stages from MKS Instruments are economical, high-performance linear motor-driven stages with integrated motion controllers. Optimized for retroreflectors, repeatable femtosecond positioning, and fast traverse speeds, the compact stages are suitable for spectroscopy applications that require single or multiple delay lines. With travel ranges of 125, 225, and 325 mm, the DLS series can cover almost all requirements from femtosecond to nanosecond delays. Typical spectroscopy applications range from pump–probe experiments to interferometry and multidimensional spectroscopy. To facilitate the setup of a delay line, MKS offers a range of complementary beam kits to suit various wavelengths and configurations. The kits consist of retroreflectors, mirrors, mounts, and other optomechanical parts and are available for single-, double-, and quadruple-pass configurations. ***MKS Instruments Inc**, 2 Tech Dr, Ste 201, Andover, MA 01810, www.mksinst.com*

Laser power measurement

Coherent has extended its series of large-area, high-speed PowerMax-Pro laser detectors to enable power measurements of 3 kW CW laser beams and 5 kW peak power modulated laser beams. The new PowerMax-Pro kW models are designed for materials-processing applications based on high-power fiber, carbon dioxide, and solid-state lasers; those applications include welding, cutting, drilling, and engraving. Traditional thermopile detectors typically take at least 60 s to deliver a stable kilowatt power reading; the PowerMax-Pro performs that measurement within microseconds with no overshoot. Traditional thermopiles can reflect 10–15% of the incident laser light back toward the source, with the possibility of laser damage to the system. The PowerMax-Pro kW sensor's innovative optical design traps more than 99% of the incident light inside the enclosure. With a direct QBH (quartz block) fiber adapter option, 100% of the incident light is captured. ***Coherent Inc**, 5100 Patrick Henry Dr, Santa Clara, CA 95054, www.coherent.com*

Automated measuring system

The first release of the next generation of National Instruments' engineering system design software, LabVIEW NXG 1.0, has a streamlined workflow to help users automate measurements quickly and easily. For common applications, users can apply a simple configuration-based approach; for more complex ones, they can use the full, open-ended graphical programming capability of the LabVIEW language, G. New nonprogramming workflows can help users perform benchtop measurements to acquire and iteratively analyze measurement data. The workflows simplify automation by building the necessary code behind the scenes. For example, users can drag and drop a section of code equivalent to 50 lines of text-based code. A reengineered editor allows LabVIEW to integrate with a broader set of languages, and it improves programming productivity by streamlining the editor micro-interactions—user interface objects based on vector graphics and zooming capabilities. ***National Instruments**, 11500 N Mopac Expy, Austin, TX 78759-3504, www.ni.com*

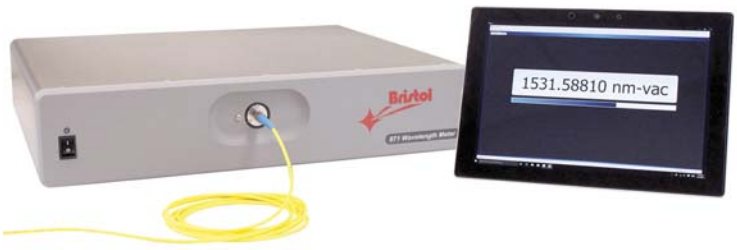
Electron diffraction detector

According to Oxford Instruments, its new Symmetry is the first CMOS-based electron backscatter diffraction detector. EBSD is a microanalysis technique that enables rigorous characterization of the microstructural properties of crystalline materials. Suitable for all types of EBSD work, Symmetry features high sensitivity and pattern resolution, provides fast frame rates, and yields high-quality data. It is capable of a top acquisition speed in excess of 3000 indexed patterns per second (pps). Even on challenging materials that previously required sensitive and relatively slow CCD cameras (below 100 pps), Symmetry achieves speeds in excess of 1000 pps. The detector's ability to collect and index low-noise, high-resolution diffraction patterns in submillisecond time frames may open up new application fields such as *in situ* experiments and the study of bio- and nanocrystalline materials. ***Oxford Instruments plc**, 300 Baker Ave, Ste 150, Concord, MA 01742, www.oxford-instruments.com*

Arbitrary waveform generator

The AWG5200 series of arbitrary waveform generators from Tektronix features high signal fidelity and scalability for signal generation in advanced research applications. Among those applications are quantum computing, nano and micro technology development, biomedical research, electronic testing, and radar and electronic warfare (EW) system design and testing. According to the company, the series offers capabilities not previously available in one instrument. Those include a 10 GS/s sample rate, 16-bit resolution, up to eight channels per unit, support for multiple-unit synchronization, and a flexible waveform generation plug-in suite with coverage for various standards and digital modulation techniques. Digital-to-analog converters at the core of the AWG5200 instruments allow for the generation of highly detailed RF/EW signals or complex pulse trains. Each of the channels has an independent path out, individual amplification, separate sequencing, upconversion, and dedicated memory. ***Tektronix Inc**, 14150 SW Karl Braun Dr, PO Box 500, Beaverton, OR 97077, www.tek.com*

Laser wavelength meter



A new version of the 871 series pulsed laser wavelength meter from Bristol Instruments can measure wavelength to an accuracy as high as ±0.2 ppm (±60 MHz at 1000 nm). The instrument has a fast sustained measurement rate of 1 kHz and operates from 375 to 1700 nm. It features a Fizeau etalon design to measure the wavelength of both pulsed and CW lasers and calibrates automatically with a built-in wavelength standard; prealigned fiber-optic input ensures optimum alignment. The 871 operates with a PC running Windows, via standard USB and Ethernet interfaces. A Web-based application lets users display measurement data on a tablet or smartphone. The meter has an integrated proportional-integral-derivative controller for researchers who need to regulate a laser's frequency. ***Bristol Instruments Inc**, 50 Victor Heights Pkwy, Victor, NY 14564, www.bristol-inst.com* PT