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

Automated silicon-photonics test system

Keysight's NX5402A Silicon Photonics Test System, integrated with its PathWave Semiconductor Test software technology, combines the company's multichannel optical and electrical test architecture and its optimized fiber alignment and positioning system. According to Keysight, the fully automated, high-throughput testing system maintains high accuracy, repeatability, and reproducibility and delivers advanced wafer-level photonic calibration and reliable performance monitoring with built-in system diagnostics. Its stable, repeatable test capabilities can enable semiconductor manufacturers to speed delivery of silicon-photonics wafer production. Silicon photonics' primary applications are in the data-center market, but they may in the future be used in areas such as optical and quantum computing, automotive lidar, and health care. ***Keysight Technologies Inc**, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, www.keysight.com*

Phase noise analysis

Rohde & Schwarz has launched its R&S FSPN for dedicated phase noise analysis and voltage-controlled-oscillator testing. According to the company, the R&S FSPN delivers high sensitivity, accuracy, and reliability for high-speed, real-time phase noise measurements. It is suitable for characterizing sources that require high stability in demanding applications, such as synthesizers, voltage-controlled oscillators, and oven-controlled crystal and dielectric resonant oscillators in R&D and production. The R&S FSPN comes in two models: One covers the frequency range from 1 MHz to 8 GHz and the other from 1 MHz to 26.5 GHz. They address radar and satellite applications in the C band, the X band, the K_u band, and the complete K band. Both models feature low-noise internal local oscillators coupled with real-time cross-correlation engines for increased measurement sensitivity. ***Rohde & Schwarz GmbH & Co KG**, Muehldorfstrasse 15, 81671 Munich, Germany, www.rohde-schwarz.com*

Volatile chemical-species sampler

To provide analysts with an advanced yet easy-to-use instrument, Shimadzu has replaced its HS-20 headspace sampler with the HS-20 NX series. The new series uses the isolation gas flow to reduce carryover to 1/10 that of conventional models. It supports a wide range of volatile chemical species, including compounds with a high boiling point and high polarity. The proprietary isolation gas flow prevents sample diffusion from the vent channel, which reduces carryover of highly adsorptive compounds and eliminates the need for repeating blank runs. The HS-20 NX series provides high temperature capability: The vial oven and sample line can be set to 300 °C and the transfer line to 350 °C. The sample path is designed to be inert and at the shortest distance, which suppresses peak broadening and adsorption of analytes, including high-boiling compounds. ***Shimadzu Scientific Instruments Inc**, 7102 Riverwood Dr, Columbia, MD 21046, www.shimadzu.com*

Qubit controller for quantum computing

The Zurich Instruments SHFQC Qubit Controller offers a full room-temperature control system for up to six superconducting qubits in a single instrument. Integrated into the company's Quantum Computing Control System (QCCS), it adds fast local feedback to existing error-correction capabilities. The SHFQC supports control and readout frequencies of up to 8.5 GHz with no need for mixer calibration and provides a 1 GHz bandwidth. The six signal-generator control channels and single quantum-analyzer readout channel can be controlled and triggered individually. Using efficient pulse-level waveforms in their arbitrary waveform generators, the control channels can be programmed to generate complex gate sequences. The readout channel analyzes in real time up to 16 qubits, 8 qutrits, or 5 ququads—either serially or in parallel. Matched complex filters and tight integration with the SHFQC's control channels optimize the signal-to-noise ratio and readout latency. A single SHFQC can help simplify small qubit setups; for systems of 100 or more qubits, multiple SHFQCs can be combined with other elements of the QCCS. ***Zurich Instruments AG**, Technoparkstrasse 1, 8005 Zürich, Switzerland, www.zhinst.com*

Humidity and temperature sensors

Two ultrahigh-accuracy versions of Sensirion's fourth-generation humidity sensors, the SHT41 and SHT45, offer improved relative-humidity (RH) and temperature (T) specifications: Typical accuracies have been honed down to $\Delta RH = \pm 1\%$ RH and $\Delta T = \pm 0.1$ °C. The sensors are built on Sensirion's new, optimized CMOSens chip that features ultralow power consumption. The CMOSens Technology provides a complete sensor system with a fully calibrated digital I^2C (inter-integrated-circuit) fast-mode-plus interface on a single chip. The sensors cover operating ranges from 0% to 100% RH and −40 °C to 125 °C. With the extended supply voltage range from 1.08 V to 3.6 V and an average current of 400 nA, the SHT41 and SHT45 are suitable for mobile and battery-driven applications. The very small size and robust housing enable integration into challenging designs and ensure high reliability. ***Sensirion Holding AG**, Laubisrütistrasse 50, 8712 Stäfa, Switzerland, www.sensirion.com*

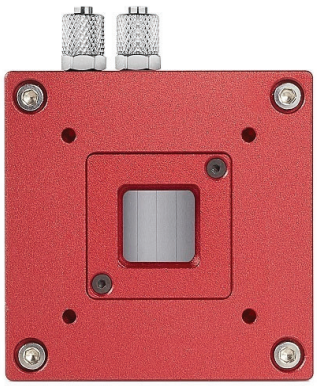
RF arbitrary waveform generator and transceiver

Tabor Electronics has recently added the RF Arbitrary Waveform Generator/Transceiver to its Proteus series platform. According to the company, the RF AWG/AWT delivers excellent phase noise and spurious performance for applications of RF- and microwave-signal generation and acquisition. It has a built-in in-phase and quadrature modulator with advanced capabilities for multichannel RF-signal generation, transmission, and analysis and the ability to scale up to hundreds of synchronized channels. Integrated digital up-converters allow for the generation of multiple signals simultaneously in up to four channels in a single unit; the channels feature independent phase and frequency control, over 2 GHz of modulation bandwidth, and excellent spectral performance. The compact, cost-effective RF AWG/AWT is offered in configurations of 2, 4, 8, or 12 channels with a sample rate of 9 GS/s and a resolution of 16 bits. ***Tabor Electronics**, 2327 Larkin St, San Francisco, CA 94109, www.taborelec.com*

Fiber-optic temperature monitoring

A new line of fiber-optic temperature sensors and monitors from Omega, a Spectris company, are suitable for surface or immersion applications where metallic probes cannot be used. Unlike traditional resistance temperature detectors and thermocouples, fiber-optic sensors use light for fast and reliable temperature analysis that is immune to RF interference, electromagnetic interference, and nuclear magnetic resonance. The fiber-optic temperature sensor allows measurements in small or precise locations. It has a temperature range from −200 °C to 250 °C and an accuracy of ±0.8 °C and requires no recalibration. The fiber-optic monitor operates in a temperature range from −80 °C to 300 °C. It can monitor up to eight channels and offers micro-SD and USB data-logging capabilities and RS-485 and USB output with Modbus. ***Omega Engineering Inc**, 800 Connecticut Ave, Ste 5N01, Norwalk, CT 06854, www.omega.com*

High-speed laser sensors



The Blink HS laser power and energy sensor from Laserpoint can provide accurate energy measurements for ultrafast lasers, detect fast instabilities in them, and monitor fast manufacturing processes in production lines. According to the company, Blink HS's patent-pending technology, which combines the high response speed of a photodiode with the broadband and high-power operation of a thermopile, makes it the fastest laser power and energy sensor currently available. The submicrosecond response time allows for the measurement of the energy of each pulse emitted by laser sources with repetition rates up to 1 MHz, pulse durations down to femtoseconds, and average power up to 20 W. An available high-speed meter with a sampling rate up to 500 MS/s can provide a precise energy measurement of each single ultrashort pulse. With a high damage threshold and efficient water cooling, the Blink HS can withstand energies up to 10 mJ. ***Laserpoint SRL**, Via Burona 51, 20055 Vimodrone, Milan, Italy, www.laserpoint.eu*

Three-in-one field probes

AR RF/Microwave Instrumentation has announced its FL8000 Series of electric field probes covering the 5 kHz–60 GHz frequency range. For automotive, aviation, military, and commercial applications, electromagnetic compatibility testing in a laboratory often requires measuring different types of electric fields. The FL8000 Series probes offer a three-in-one solution capable of measuring CW, pulsed, and modulated electric fields. According to the company, the probes' excellent linearity and dynamic-range performance enable the accuracy required for even the most demanding testing, and their versatility can help simplify the test laboratory. The probes use a laser to deliver power over fiber, which allows for continuous operation without recharging or replacing batteries. They are supplied in kits with all items needed for field-probe operation. ***AR RF/Microwave Instrumentation**, 160 Schoolhouse Rd, Souderton, PA 18964, www.arworld.us*

Asphere metrology

Zygo Corporation, a business unit of AMETEK, has expanded its Verifire series of laser Fizeau interferometers used to perform noncontact 3D metrology of aspheric surfaces. The new Verifire Asphere+ (VFA+) is designed to reduce the number of generation and measurement steps needed to achieve a highly precise and accurate final surface. Leveraging the benefits of Fizeau interferometry through precise, high-resolution, fast, and full-aperture metrology for axisymmetric aspheres, the VFA+ can enable optics manufacturers to produce a wide range of aspheric designs. An optional secondary stage integrated in the VFA+ accommodates a computer-generated hologram to further enlarge aspheric shape coverage, which includes free-form, cylinder, and off-axis conic surfaces. The flexible system can measure a range of aspheres with only the change of the reference optic and is adaptable to multipart automated measurement of trays of optics. ***Zygo Corporation**, Laurel Brook Rd, Middlefield, CT 06455-1291, www.zygo.com*

Semiconductor metrology

The new NX-Hybrid WLI semiconductor metrology tool from Park Systems fully integrates atomic force microscopy (AFM) with white-light-interferometer (WLI) profilometry for the first time, according to the company. Widely used for quality assurance in semiconductor production, white-light interferometry is a nondestructive, noncontact optical technique that can generate 2D and 3D models of surfaces.

The Park NX-Hybrid WLI was developed for use in applications that require resolution and accuracy beyond the capability of a WLI alone. The combination of the WLI module and the atomic force microscope provides high-throughput imaging over a very large area and performs nanoscale metrology with sub-angstrom-height resolution. The atomic force microscope is based on the automated Park NX-Wafer AFM system for R&D, semiconductor and related devices, and quality assurance. ***Park Systems Inc**, 3040 Olcott St, Santa Clara, CA 95054, https://parksystems.com* PT