

NEW PRODUCTS

Focus on software, data acquisition, 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.

Andreas Mandelis

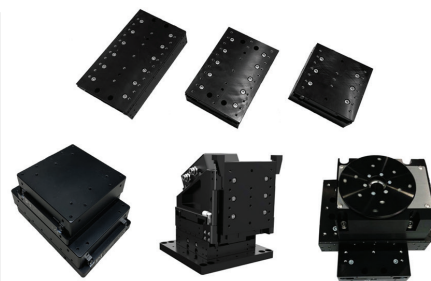
Superconducting magnet system

Oxford Instruments NanoScience has launched TeslatronPT Plus, a low-temperature, superconducting magnet measurement system. It integrates Lake Shore's measurement instrumentation onto an upgraded TeslatronPT cryomagnetic system with new automated operation and environmental control. The updated system uses an open architecture, which provides more flexibility than closed black-box systems, according to the company. It does not use proprietary measurement software or locked-in hardware and is designed to scale and adapt to evolving research needs. A browser interface allows for remote control. The TeslatronPT Plus enables critical characterization and investigation of fundamental materials physics, with measurement capabilities such as low and high resistance, Hall effect in both Hall bar and van der Pauw geometries, and I-V, or current-voltage, characterization. **Oxford Instruments plc**, Tubney Woods, Abingdon, Oxfordshire OX13 5QX, UK, <https://nanoscience.oxinst.com>



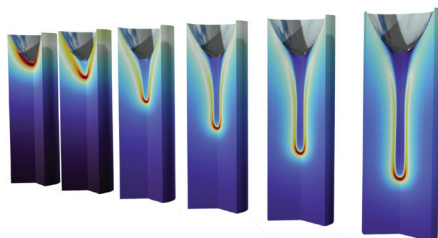
Time-correlated single-photon counter

The HydraHarp 500 time-correlated single-photon counting unit from PicoQuant is suitable for advanced research in such areas as quantum communication, entanglement, and information; the characterization of single-photon sources; and time-resolved spectroscopy. Various trigger options support a wide range of detectors, including single-photon avalanche diodes and superconducting nanowire single-photon detectors. Versatile interfaces such as a USB 3.0 and an external field-programmable gate array ensure seamless integration and efficient data transfer; White Rabbit technology allows precise cross-device synchronization for distributed setups. With 16 independent channels, each with low dead time, and a common sync channel, the HydraHarp 500 enables true simultaneous multichannel data recording with no dead time between them. **PicoQuant**, Rudower Chaussee 29, 12489 Berlin, Germany, www.picoquant.com



Compact linear translation stages

The V-141 linear motor stage family is the most compact, cost-effective addition to the PI (Physik Instrumente) line of high-performance direct-drive linear stages. With a footprint of just 80 × 80 mm for the 40 mm version, the V-141 is suitable for integration in applications where space is limited but high precision is required—for example, in OEM systems, laboratory automation, and microscopy, metrology, semiconductor, and photonics applications. The V-141 stages offer advanced capabilities for high-speed and high-precision positioning, scanning, and alignment applications. Available in three travel ranges—40, 60, and 100 mm—the stages feature bidirectional repeatability of 0.12 μm, straightness to 2 μm, and a maximum velocity of 1.1 m/s. The direct-drive linear motor technology eliminates the need for mechanical transmissions such as gears and screw drives, reducing maintenance and enabling smooth, wear-free motion with zero backlash. The V-141 supports *xy* and *xyz* configurations, with an optional integrated counterbalance on the *z*-axis, allowing for complex multiaxis motion systems. **PI (Physik Instrumente) LP**, 16 Albert St, Auburn, MA 01501, www.pi-usa.us



Modeling and simulation software

Version 6.3 of Comsol's Multiphysics software delivers improved performance, updates to the user interface, and new simulation capabilities for efficient physics modeling and simulation app development. Automated geometry preparation tools now yield higher-quality meshes for faster and more robust simulations. A new module enables detailed electric discharge and breakdown simulations in gases, liquids, and solids; that capability can aid in the design of consumer electronics, high-voltage systems, and more. GPU acceleration offers simulations and

surrogate-model training 25 times as fast as previously possible. Version 6.3 brings new modeling capabilities for poroacoustics and fluid flow. It also delivers multiphysics capabilities for structural mechanics, including features for modeling the electromechanics of thin structures and moisture-induced swelling. An interactive Java environment supports model edits using the Comsol application programming interface. **Comsol Inc**, 100 District Ave, Burlington, MA 01803, www.comsol.com



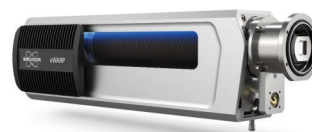
Gas pump for high pressure and flow-rate applications

KNF's N 680.15 gas pump offers a maximum pressure of 12 bar relative and a strong flow rate of up to 140 L/min. Suitable for compression and hydrogen and gas recovery applications, the N 680.15 can tolerate high media and ambient temperatures of up to 40 °C and can handle hydrogen, biogas, natural gas, noble gases, and other challenging media. A cast-aluminum compressor housing, stainless steel heads, and cast-iron connecting rod impart maximum durability. A PTFE-coated dia-

phragm and stainless steel valves are available as standard options. Its durable construction and specialized head configuration allow for the pump's use in high-temperature applications. Excellent chemical resistance and leak tightness of up to 6×10^{-6} mbar L/s make the pump appropriate for helium-compression and gas-purification systems and for applications that involve dangerous or aggressive gases or high-value media. The gas pump has a powerful 230/400 V AC3 motor, with other voltages available as options for customization. **KNF Neuberger Inc**, 2 Black Forest Rd, Trenton, NJ 08691, <https://knf.com>

EBS detector for materials characterization

Bruker's eWARP (Wide Area Pixelated) detector for electron backscatter diffraction (EBSD) features an innovative camera that combines direct electron detection and CMOS technologies. According to Bruker, eWarp's hybrid pixel sensor and high-speed signal-processing electronics designed to meet EBSD requirements increase signal efficiency and acquisition speed and significantly advance materials characterization in scanning electron microscopes. The sensor also enables the acquisition of EBSD maps with up to 14 400 patterns per second at electron-beam settings as low as 10 kV accelerating voltage and 12 nA probe current. At the core of eWARP is the patented CMOS device with on-sensor binning capability. When operated in binning mode, the sensor performs forescatter electron and backscatter electron imaging with up to 350 000 patterns per second. That capability is especially suitable for challenging applications that require high spatial resolution, low electron energy, or short exposure time. **Bruker Nano GmbH**, Am Studio 2D, 12489 Berlin, Germany, www.bruker.com



Electrical system testing technology

Keysight Technologies has developed an optically isolated differential probing technology to enhance performance testing for high-voltage applications such as electric vehicles, solar energy, and battery management systems. Validation of floating half-bridge and full-bridge architectures commonly used in power conversion, motor drives, and inverters requires measuring small differential signals riding on high common-mode voltages. Voltage source fluctuations relative to ground, noise interference, and safety concerns can make this challenging, but galvanically isolated differential probes let users measure floating circuits accurately and safely in high-voltage, noisy environments. According to Keysight, since

its isolated differential probes provide common-mode rejection up to 10^{10} times greater than standard differential probes, they are suitable for high-voltage and high-side current measurements. With up to 1 GHz bandwidth and a ± 2500 V differential voltage range, the probes enable accurate analysis of fast-switching devices such as wide-bandgap gallium nitride and silicon carbide semiconductors. **Keysight Technologies Inc**, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, www.keysight.com

Three-channel bidirectional power supplies

Delivering higher-power density and test capacity in one compact unit, the EA-PSB 20000 Triple series power supplies from Tektronix have potential uses for programmable power control in applications that require greater power capacity and efficiency. According to the company, the new series is the first triple-channel, bidirectional DC power supply capable of delivering high-density, parallel testing for components in complex systems. Each of the three independent, fully isolated channels can supply up to 10 kW of power, supporting a range of voltages from 0 to 60 V to 0 to 920 V and currents from 0 to 40 A to 0 to 340 A per channel. Featuring up to 96% energy recovery, the EA-PSB 20000 acts as a DC electronic load for energy recycling. The series lets users consolidate multiple testing setups into one, which reduces cost, space and equipment needs, and test time. It also features autoranging, which automatically adjusts the voltage or current to deliver full power across a wide operation range and allows a single unit to handle various voltage and current combinations. **Tektronix Inc**, 13725 SW Karl Braun Dr, PO Box 500, Beaverton, OR 97077, www.tek.com

