NEW PRODUCTS

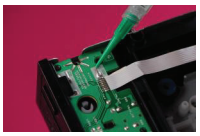
Focus on cryogenics, vacuum equipment, materials, and semiconductors

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

Dry claw vacuum pump

Leybold's Clawvac CP B rough vacuum pump, a new addition to the company's Clawvac B dry claw vacuum pump series, offers precise, trouble-free operation under harsh conditions. It is suitable for use in robust procedures such as food processing, materials handling, and environmental industries, especially in processes involving particles, vapors, and contaminated gases. Due to its functional design, the powerful, energy-efficient pump is easy to handle and clean. It features a pair of stainless-steel claws that rotate in the cylinder without coming into contact or causing wear. The housing and claws can be disassembled without the need to readjust the gear control afterward. The coated, corrosion-resistant vacuum chamber is easy to clean, and a separate gearbox prevents oil from contaminating processes. A silencer reduces the noise level and allows the condensate to drain off through the opening. The Clawvac B ensures short downtimes and long service intervals: 20 000 h between oil changes and up to 48 000 h between general overhauls. ***Leybold GmbH**, Bonner Str 498, 50968 Cologne, Germany, www.leybold.com*



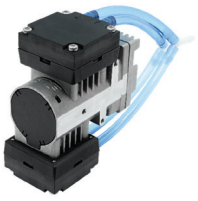
Silver-filled silicone adhesive

Master Bond MasterSil 323S-LO is an addition-cured silicone that is electrically and thermally conductive and meets NASA's low outgassing specifications. Designed for bonding applications in which low stress is critical, MasterSil 323S-LO is suitable for use in vacuum environments and the aerospace, electronic, optoelectronic, and specialty OEM industries. MasterSil 323S-LO offers flexibility and toughness, with a Shore A hardness of 35–55, a low tensile modulus of less than 800 psi, and an elongation of 50–100%, measured at 24 °C. Those features allow the product to withstand aggressive thermal cycling and mechanical shock, while offering a wide service temperature range from −62 °C to 204 °C. The two-part, silver-filled compound with a volume resistivity of less than 0.003 Ω-cm has a thermal conductivity of 1.30–1.59 W/mK at room temperature. It bonds well to many substrates, including metals, composites, glass, ceramics, rubbers, and many types of plastics. MasterSil 323S-LO has an easy-to-use 1:1 mix ratio by weight and features a paste consistency with minimal flow. ***Master Bond Inc**, 154 Hobart St, Hackensack, NJ 07601, www.masterbond.com*

Compact hybrid-bearing high-power turbopump

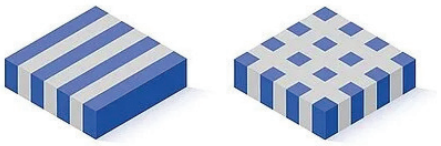
Pfeiffer has launched the HiPace 30 Neo turbopump, a vacuum pump for compact analysis systems and portable applications. According to the company, the HiPace 30 Neo is the smallest hybrid-bearing high-power turbopump on the market and has the lowest vibration level. Because of its high gas throughput and compression, the HiPace 30 Neo is suitable for light gases and has excellent critical backing pressure. The patented laser balancing technology and the good balancing quality of the rotor, which runs at up to 1500 rps, make the pump suitable for vibration-sensitive applications. It is environmentally friendly: Its compact design allows for the reduction of CO_2, and its intelligent sensor technology ensures the pump operates with the best possible energy input. The intelligent control system facilitates the easy interconnection of pumps: Upstream pumps and turbopumps can interact and thereby realize a complex, internet-of-things-capable vacuum system. To ensure safety and improve aging resistance, the HiPace 30 Neo also incorporates a new high-performance lubricant. ***Pfeiffer Vacuum Inc**, 24 Trafalgar Sq, Nashua, NH 03063, www.pfeiffer-vacuum.com*

Diaphragm gas pumps

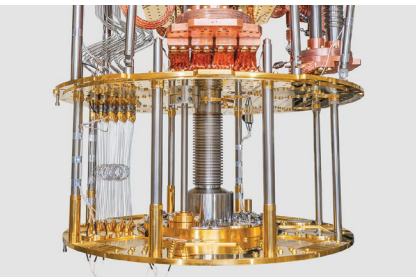


The NMP 830.1.2 and NMP 850.1.2 configurations of KNF's NMP series of diaphragm pumps feature new direct current brushless integrated (DC-BI) pump drive technology. The DC-BI motors, manufactured in-house by KNF, allow for a compact and lightweight pump design and, according to the company, a long lifetime. KNF pumps feature extensive customization and parameterization options that, combined with the DC-BI motors, enable energy-saving features that meet the needs of various operations. Depending on the specific configuration, the state-of-the-art diaphragm gas pumps deliver flow rates up to 8.5 L/min, pressure up to 3 bar (relative), and ultimate vacuum down to 55 mbar (absolute). The NMP 830 and NMP 850 series pumps provide the fast, reliable, and accurate measurement results essential for portable gas measurement systems. Since their unique technical characteristics make them suitable for transferring hydrogen and conveying ambient air for complete energy conversion, they can be used for hydrogen fuel cell technology. ***KNF Neuberger Inc**, 2 Black Forest Rd, Trenton, NJ 08691, https://knf.com*

Piezoelectric ceramic composites



PI Ceramic has introduced a new product category, piezoceramic composites. In this technology, piezoelectric ceramics are embedded in filling polymers. The basic functionalities of piezoceramics—ultrasonic conversion and actuator technology—can thus be combined with the properties of the filling polymers. That allows for better adaptation to application-specific conditions and requirements, such as complex shapes and adjustable acoustic, mechanical, and electrical properties. To enable the best adaptation to the application, PI Ceramic offers two types of filling polymers: epoxy resins for rigid composites and softer, silicone-free polymers for highly flexible composite structures. By suppressing cross contraction and the associated vibration modes, the composites improve focusability, sensitivity, and resolution. The new composites are suitable for applications in medical technology—for example, high-intensity-focused ultrasound applications and diagnostic imaging—and in industrial applications such as flow-rate metering and nondestructive measurement. ***PI Ceramic GmbH**, Lindenstrasse, 07589 Lederhose, Germany, www.piceramic.com*



High-power system for 1 K experiments

Bluefors has announced its XLDHe high power (XLDHehp) system, a cryogen-free measurement system that is powered by helium-4 and delivers high cooling power for experiments in the 1 K temperature range. The XLDHehp is suitable for demanding applications such as spin-qubit quantum computing devices and single photon detectors for photonic quantum computers. The system generates high cooling power between 200 and 700 mW at 1–1.2 K and features side-loading ports for the fast exchange of experimental wiring. A large, 540 mm experimental flange and height options of 175 mm or 776 mm support a wide range of experiments. Fast turnaround options make it possible to scale up the number of experiments carried out. Powered by either two or three pulse tube cryocoolers, XLDHehp systems reach a base temperature of less than 900 mK in 12–16 h. Additional options can reduce the time to 9 h and can decrease the system warm-up time between experiments. ***Bluefors Oy**, Arinatie 10, 00370 Helsinki, Finland, https://bluefors.com*

RIT | Rochester Institute of Technology

School Head of Physics and Astronomy

The School of Physics and Astronomy (SoPA) at the Rochester Institute of Technology (RIT) invites applications for the position of Professor and School Head. We seek a dynamic, visionary leader who will collaborate with faculty to implement a shared vision for the School. The successful candidate will be responsible for overseeing undergraduate and graduate programs while promoting scholarship, professional development, and teaching excellence. This role requires a strong commitment to RIT's core values, honor code, and diversity statement.

Applicants must possess an earned doctorate in physics or a related discipline and have a proven track record of leadership, administrative experience, and scholarship. Demonstrated success in securing funding, supporting diversity, and a commitment to teaching excellence at both the undergraduate and graduate levels are essential.SoPA offers BS, MS, and PhD programs in Physics, along with PhD/MS programs in Astrophysical Sciences and Technology.

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For details on how to apply, visit https://apptrkr.com/5707551

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Confocal Raman microscope

Craic Technologies designed its Apollo M confocal Raman microscope to characterize the composition, structure, and properties of materials with high precision at the microscale. Offering high spatial resolution and depth profiling capabilities, the Apollo M's confocal imaging system captures high-resolution 3D images of materials. Its advanced Raman spectroscopy capabilities deliver high sensitivity and signal-to-noise ratio. The microscope supports multimodal imaging techniques, including confocal Raman spectroscopy, fluorescence imaging, and color microscopy, and its intuitive software interface and automated analysis workflows streamline data acquisition, processing, and interpretation. The Apollo M confocal Raman microscope is suitable for materials research across a wide range of disciplines, including semiconductor technology, pharmaceuticals, nanomaterials, and biomaterials. ***Craic Technologies Inc**, 948 N Amelia Ave, San Dimas, CA 91773, www.microspectra.com* PT