

NEW PRODUCTS

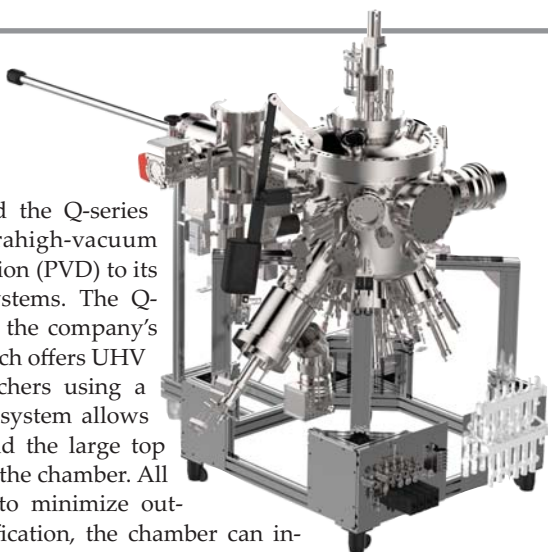
Focus on materials, semiconductors, vacuum, and cryogenics

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 ptpub@aip.org.

Andreas Mandelis

ConFlat chamber deposition system

Mantis Deposition has added the Q-series system for advanced ultrahigh-vacuum (UHV) physical vapor deposition (PVD) to its line of sputter deposition systems. The Q-series platforms are based on the company's QPrep system technology, which offers UHV performance for PVD researchers using a ConFlat flange chamber. The system allows true UHV to be achieved, and the large top flange provides easy access to the chamber. All joints are internally welded to minimize outgassing. Depending on specification, the chamber can include various *in situ* analysis ports, which are useful for performing ellipsometry, residual gas analysis, and differentially pumped reflection high-energy electron diffraction. Because the standard base ports are confocal, a greater number and variety of deposition sources can be used than with nonconfocal arrangements. **Mantis Deposition Inc**, 10200 E Girard Ave, Denver, CO 80231, www.mantisdeposition.com



Digital vacuum gauge

Thyracont Vacuum Instruments has added a digital vacuum transducer to its Smartline product family. Designed for load-lock applications, the VSL vacuum gauge offers a reaction time of 40 ms, accuracy of 0.3% from scale end, and measurement independent of gas type at atmospheric pressure. It measures absolute pressure in the range of 0.0001 mbar to 1200 mbar and relative pressure in relation to the environment in the range of -1260 mbar to +940 mbar. The calculation of the differential pressure signal guarantees the helium tightness of the sensor's metal-sealed setup. The gauge head uses multisensor technology that combines two piezo sensors with a Pirani. The piezo-resistive diaphragm sensors monitor the chamber during the pump-down and vent-up processes. To ensure the purity of the pump-down process, the Pirani sensor controls the low-pressure transfer between the load lock and process chamber. **Thyracont Vacuum Instruments GmbH**, Max-Emanuel-Str 10, 94036 Passau, Germany, <https://thyracont-vacuum.com>

made for
LOADLOCKS



Throttle valves for actuators

According to Nor-Cal Products, new-generation J-Lock actuation on its Intellisys IQ+ throttling butterfly valves allows for optimal pressure control and wide dynamic range. The tapered bore and dynamically energized, spring-loaded seal offer reliability and robust performance. Due to its lead-free circuit board, the on-valve integral control and drive unit complies with both the Registration, Evaluation, Authorisation, and Restriction of Chemicals directive and the Restriction of Hazardous Substances directive. User interfaces include a DeviceNet protocol and physical layer and standard RS-232, RS-485, and Ethernet communications. To achieve superior pressure control from 1 mtorr to 760 torr, patent-pending Intellisys throttling butterfly valves can operate singly or in multivalve installations. **Nor-Cal Products Inc**, 1967 S Oregon St, Yreka, CA 96097, www.n-c.com



Hybrid thermal interface material



Indium Corp has released m2TIM, a novel solid-liquid hybrid thermal interface material that provides reliable thermal conductivity for heat dissipation. A solid metal solder preform absorbs and contains the liquid metal alloys while improving thermal conductivity. The m2TIM is available in various alloys, including indium gallium and indium gallium tin. It exhibits a high wetting ability to metallic and nonmetallic surfaces and extremely low interfacial resistance. **Indium Corporation**, 34 Robinson Rd, Clinton, NY 13323, www.indium.com



Optical coating system

Intlvac Thin Film has announced its latest precision optical coating platform. The Nanochrome IV UV/Vis optical filter production system is designed to produce antireflective coatings, complex optical filters, and dielectric and UV-visible filters via e-beam evaporation with ion assist. Its *in situ* broadband optical monitoring system provides real-time reoptimization of film layers and automated process control in reflection or transmission mode. Because of its Smart technology, the Nanochrome IV can adapt quickly to different heat and gas loads. According to Intlvac, the new system is the world's first production platform with the latest-generation variable-speed cryopump from CTI, the largest cryopump currently available. **Intlvac Thin Film Corporation**, 1401 Duff Dr, Unit 600, Fort Collins, CO 80524, www.intlvac.com



High-compression turbopumps

Pfeiffer Vacuum has launched its very high compression HiPace 700 H turbopumps, which generate high and ultrahigh vacuum for research, analysis, and industrial applications. They feature a compression ratio of greater than or equal to 2×10^7 for light gases such as hydrogen. Due to the high compression ratio, a low residual gas spectrum—desirable for certain mass spectrometry applications—is created in the chamber. Advanced rotor designs enable an exceptionally high critical backing pressure capability of 22 hPa. That lets the pumps reach ultrahigh vacuum even when operating with high backing pressures that occur in combination with diaphragm pumps. If the backing pressure is insufficient, the HiPace H's intermittent-mode function turns on a connected backing pump, which reduces the system's energy consumption by up to 90% without loss of performance. **Pfeiffer Vacuum Inc**, 24 Trafalgar Sq, Nashua, NH 03063-1988, www.pfeiffer-vacuum.com

Cryogenic temperature controller

The model 26C cryogenic temperature controller from Cryogenic Control Systems combines the



wide-temperature-measurement range of model 24C with the high-output-power control loops of the original model 26. With an appropriate sensor, model 26C operates from 100 mK to over 1500 K. Four inputs and four independent control loops provide a total output power of 150 W. Each of the four multipurpose input channels is enhanced with the negative-temperature-coefficient resistance sensors commonly used at ultralow temperature. The controller also supports general-purpose devices such as diodes and platinum resistance-temperature detectors. Applications include use in helium-3 refrigerators, probe stations, large cryocoolers, and superconducting magnets. **Cryogenic Control Systems Inc**, 17279 La Brisa, Rancho Santa Fe, CA 92067, www.cryocon.com



Stony Brook University

Senior Endowed Professorship Cellular Principles and Evolution

LAUFER CENTER FOR PHYSICAL AND QUANTITATIVE BIOLOGY at STONY BROOK UNIVERSITY invites applications for a Senior Endowed Professorship in cellular principles and evolution.

We seek an outstanding senior scientist for a tenured endowed full professor position. We want a bold innovator working at the interface between the life sciences and physical sciences. We seek expertise in the physical biology of cell actions -- principles, mechanisms, adaptation/evolution. Examples include -- but are not limited to -- cellular networks, single-cell experiments, fitness landscapes and stochastic dynamics. We focus on basic research, but are cognizant of the impacts on challenges such as aging, amyloid diseases, cancer, or drug resistance. We prefer an experimentalist, but we welcome applications from theorists.

This is a basic-research position, with minimal teaching. It has attractive resources, including a Laufer Endowed chair that provides some annual research support. The successful individual will have considerable freedom to choose his or her departmental affiliation. Preference will be given to a candidate with leadership skills who can help guide the Center's future.

The Laufer Center is an exciting collaborative cross-disciplinary place for physical and quantitative biology at Stony Brook University, just minutes from Stony Brook Medicine, comprising the Renaissance School of Medicine and the Stony Brook Cancer Center. We have researchers from Biomedical Engineering, Chemistry, Physics, Applied Mathematics and Statistics, Computer Science, Pharmacology, Molecular Genetics and Microbiology, and Ecology and Evolution, and close ties to our neighbors at Cold Spring Harbor Laboratory and Brookhaven National Laboratory. Stony Brook is in a beautiful mid-Long Island location on the LI Sound with outstanding local schools, 70 miles from New York City.

Candidates must have a PhD and a strong record of research productivity in relevant field.

Interested applicants should apply online at <https://academicjobsonline.org/ajob/jobs/13401>. Include a cover letter, curriculum vitae, a two- to three-page description of research plans, state employment application and arrange to have at least three letters of reference uploaded to the site. **Application deadline is 06/10/2019**. For more information or to obtain a State employment application, visit www.stonybrook.edu/jobs (Ref. # F-10003-19-03)

Stony Brook University is an affirmative action/equal opportunity employer and educator.



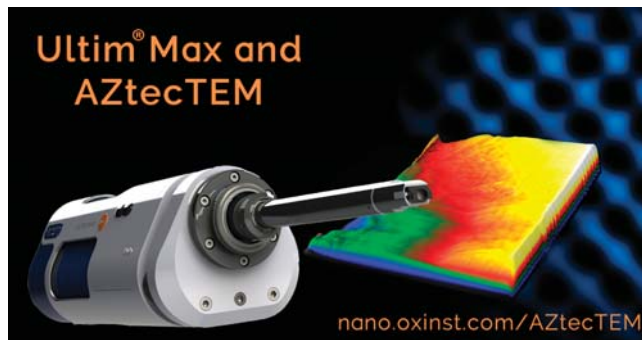
Thermally conductive underfill epoxy

Master Bond's EP3UF-1 is a single-component epoxy that is not premixed and frozen. Due to its low viscosity of 5000–15 000 cps, the heat-curable thixotropic compound is suitable for underfill and many bonding applications. EP3UF-1 delivers high bond strength and dimensional stability with a compressive strength of 18 000–20 000 psi and a tensile modulus of 450 000–500 000 psi. Its thermal conductivity of 1.30–1.44 W/(m•K) makes it an effective thermal interface material. The epoxy contains a special filler with a small particle size. That allows it to be

applied in bond lines as thin as 10–15 μm , which imparts a low thermal resistance of $5\text{--}7 \times 10^{-6} \text{ K}\cdot\text{m}^2/\text{W}$. EP3UF-1 offers superior electrical insulation with a low dielectric constant of 4.5 at 60 Hz and a high dielectric strength of $1.77 \times 10^5 \text{ V/cm}$ (for a 1/8-inch-thick test specimen), both measured at 75 °F. **Master Bond Inc**, 154 Hobart St, Hackensack, NJ 07601-3922, www.masterbond.com

Microscope for elemental analysis

Oxford Instruments developed its AZtecTEM with Ultim Max technology to offer new capability and increased productivity for elemental analysis in areas such as biology, advanced materials, and *in situ* chemistry. Its high performance is achieved through the use of energy-dispersive x-ray spectroscopy (EDS) on the transmission electron microscope (TEM). According to the company, the Ultim Max detectors deliver a threefold increase in sensitivity compared with previous-generation silicon drift detectors and a fourfold increase in speed. With that high sensitivity and speed, AZtecLive EDS analysis software can be used in a TEM. AZtecLive combines live x-ray maps, electron images, and x-ray spectra and allows real-time feedback of chemistry changes in specimens exposed to heat, liquids, gases, and electrical fields. It quantifies elemental composition by mass thickness and delivers accurate quantification across the entire range of specimens analyzed in a TEM. **Oxford Instruments Nanoanalysis**, Halifax Rd, High Wycombe HP12 3SE, UK, <https://nano.oxinst.com>



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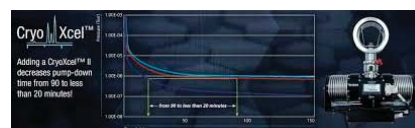
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Cryogenic water-vapor vacuum pumps

MDC Vacuum Products has released its self-contained and compact CryoXcel cryogenic water-vapor pumps. Its Stirling cryocooler design enables fast, simple pump-to-tool integration and reduces power and footprint space. The CryoXcel devices provide up to 50% faster pump-down times to high- and ultrahigh vacuum levels when they are paired in-line with more compact turbo and mechanical pumps whose pumping speeds are in the 70–12 000 L/s range. Single- and dual-stage water-vapor cryopump models are available in various Del-Seal flange configurations from DN40 to DN320, with cooling power and temperature range dependent on the model. In addition to water vapor, the units can pump sulfur dioxide, anhydrous ammonia, carbon dioxide, and other gases and vapors. **MDC Vacuum Products LLC**, 30962 Santana St, Hayward, CA 94544, <https://mdcvacuum.com> **PT**