

new products

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Lawrence G. Rubin

Focus on vacuum and cryogenics

Turbomolecular pumps

Oerlikon Leybold Vacuum has developed the MAG W series of turbomolecular vacuum pumps, which feature a new five-axis magnetic bearing and drive system that includes an integrated converter. The design provides low vibration and noise levels, making the pumps suitable for vibration-sensitive applications such as analytical, electron microscopy, thin-film deposition, and research and development. The Maglev devices can be installed in any orientation, offer optional water or air cooling, and have two slots for industrial communication modules that meet current standards for easy integration into other equipment. The MAG W 300 has pumping speeds of 300 L/s for nitrogen, 190 L/s for hydrogen, and 260 L/s for helium. The figures for the MAG W 600 are 600 L/s, 380 L/s, and 540 L/s, respectively. *Oerlikon Leybold Vacuum USA Inc, 5700 Mellon Road, Export, PA 15632, <http://www.oerlikon.com>*
See www.pt.ims.ca/16305-131

Revamped cryogenic probe stations

Lake Shore Cryotronics has redesigned its line of cryogenic micromanipulated probe stations to provide greater flexibility and expandability. The tabletop series is available with up to six probe arms operable from 4.2 K to 475 K along with optical access through the sample stage. Standard features of the field-upgradable series include multiple radiation shields, $\pm 5^\circ$ sample stage rotation, and the ability to reduce con-

densation on the sample while the system cools. The field-upgradable options are temperatures down to 1.5 K, high vacuum to 10^{-7} torr, and load lock. The superconducting magnet series provides either a 2.5-T vertical or 1-T horizontal field and can operate from 4.2 K to 400 K. The electromagnet series offers a 0.55-T horizontal field and is available with optional 360° sample stage rotation. *Lake Shore Cryotronics Inc, 575 McCorkle Boulevard, Westerville, OH 43082, <http://www.lakeshore.com>*
See www.pt.ims.ca/16305-132

Fast leak-detection system

Vacuum Instrument Corp has released the MS-50 UFT, an automated, high-production, console leak detector for testing the hermeticity of sealed products, such as semiconductors and microelectronics packaged devices. The system incorporates the company's dual magnetic sector helium mass spectrometer, has a resolution of 14 at



mass 4 and a sniffing sensitivity of 1.0×10^{-8} atm-cc/s, and offers a full-screen interactive display. Three flow modes provide flexibility and maximum productivity for application-specific leak testing, and unique UFT recipes allow various configurations of the test parameters. The MS-50 UFT features a built-in calibrated leak and an integrated flush-mount test cup, which initiates an automatic test-cycle sequence when closed by the operator. *Vacuum Instrument Corporation, 2099 Ninth Avenue, Ronkonkoma, NY 11779, <http://www.vicleakdetection.com>*
See www.pt.ims.ca/16305-133

Thermal modulator

Zoex Corp has introduced the ZX2, which achieves two-stage thermal modulation by using a continuous cold jet

flow and a regularly pulsed hot jet to deflect the cold jet and remobilize trapped effluent. It incorporates a closed-cycle refrigerator/heat exchanger to produce a -90°C cold jet without the need for liquid nitrogen. The modulation cycle can range from 1 s to 32 s. The ZX2 is designed for a dual gas chromatography system. If the optional secondary oven is installed, both GC columns can be operated with the same temperature program, or the secondary column can be used independent of the main oven. GC image analysis software includes automatic baseline correction and peak detection, configurable thresholds and other peak detection settings, and a variety of visualization and colorization schemes. *Zoex Corporation, 11665 Fuqua, Suite B 202, Houston, TX 77034, <http://www.zoex.com>*

See www.pt.ims.ca/16305-134

Vacuum pump for solar applications

Edwards Vacuum has announced a new version of its next-generation iXH series of harsh process vacuum pumps targeted for solar applications in both silicon and thin-film solar cell manufacturing, for which it is necessary to pump large volumes of hydrogen. Because of its small molecular size and low viscosity, hydrogen is a difficult gas to pump. The iXH system uses a series of large capacity pumps and boosters to attain the optimum compression ratio to efficiently pump that gas. The new range of pumps is 40% more energy efficient and has a 60% smaller footprint than the company's previous generation of harsh process dry pumps. Multiple iXH modules can be configured to meet application-specific requirements and can be managed by a single controller, thus appearing to users as a single integrated system. *Edwards Ltd, 301 Ballardvale Street, Wilmington, MA 01887, <http://www.edwardsvacuum.com>*

See www.pt.ims.ca/16305-135

Superconducting vector magnet systems

Janis Research Co is offering a new series of vector magnet systems, which include several magnets with variable temperature cryostats that operate down to 10 mK and up to 800 K. The sample environment can be in helium vapor or liquid, depending on the particular system. The direction of the magnetic field rela-



tive to the sample can be achieved either by rotating the sample or by manipulating the magnetic field direction using a vector addition of the fields. Typical standard designs include an 8-T/2-T two-axis magnet for optical studies between 1.5 K and 300 K, a 9-T/1-T two-axis magnet for atomic force spectroscopy in a UHV environment at 0.3 K, a 9-T/4-T two-axis magnet for experiments between 1.5 K and 300 K in a rotatable vector field, and a 2-T/1-T three-axis magnet for neutron scattering experiments between 1.5 K and 300 K. *Janis Research Company Inc, 2 Jewel Drive, P. O. Box 696, Wilmington, MA 01887-0696, <http://www.janis.com>*

See www.pt.ims.ca/16305-136

Portable turbo pumping system

Varian's TPS-compact system provides plug-and-play, hydrocarbon-free, UHV pumping in both benchtop and mobile models. They are powered by either the company's Turbo-V 81 MacroTorr pump or Turbo-V 301 Navigator pump, which both include control and communications software, and backed by the IDP-3 dry scroll primary pump. The scroll pump extends the life of the turbomolecular pump, reducing its power consumption by 30%. The TPS-compact can operate and read its inverted magnetron and full-range gauges in order to manage and monitor the operating vacuum conditions. The large display, in addition to reading pressure, indicates when tip-seal replacement is needed and thus prevents damage to the turbo pump. The dry combination of a scroll pump and a turbo pump avoids any contamination of the evacuated space during operation or maintenance. *Varian Inc, 3120 Hansen Way, Palo Alto, CA 94304-1030, <http://www.varianinc.com>*

See www.pt.ims.ca/16305-137

NANOPOSITIONING SYSTEMS

Closed Loop
High Speed
True Parallel Motion
Picometer Precision
Piezo Motion
Custom Solutions

MCL

MAD CITY LABS INC.

sales@madcitylabs.com www.madcitylabs.com

See www.pt.ims.ca/16305-37

Sofja Kovalevskaja Award

Support for Outstanding Junior
Scholars to Conduct Innovative
Research in Germany

The Sofja Kovalevskaja Award is open to highly acclaimed scholars and scientists from all countries and disciplines. Applicants must have completed a doctoral degree with distinction within the past six years and have published in prestigious international journals or academic presses. The **Alexander von Humboldt Foundation** particularly welcomes applications from qualified, female junior researchers.

Funding enables winners to conduct independent research, to finance a research team at a German university or research institution of their choice, and to cover living expenses in Germany. Application deadline: January 4, 2008.

Application materials and details are available at:

www.humboldt-foundation.de

kovalevskaja.select@avh.de

Up to 1.65
million EUR
for Research

Alexander von Humboldt
Stiftung/Foundation

See www.pt.ims.ca/16305-38

APS CONGRESSIONAL SCIENCE FELLOWSHIP 2009-2010

THE AMERICAN PHYSICAL SOCIETY is currently accepting applications for the Congressional Science Fellowship Program. Fellows serve one year on the staff of a senator, representative or congressional committee. They are afforded an opportunity to learn the legislative process and explore science policy issues from the lawmakers' perspective. In turn, Fellows have the opportunity to lend scientific and technical expertise to public policy issues.

QUALIFICATIONS include a PhD or equivalent in physics or a closely related field, a strong interest in science and technology policy and, ideally, some experience in applying scientific knowledge toward the solution of societal problems. Fellows are required to be U.S. citizens and members of the APS.

TERM OF APPOINTMENT is one year, beginning in September of 2008 with participation in a two week orientation sponsored by AAAS. Fellows have considerable choice in congressional assignments.

A STIPEND is offered in addition to an allowances for relocation, in-service travel, and health insurance premiums.

APPLICATION should consist of a letter of intent of no more than 2-pages, a 2-page resume: with one additional page for publications, and three letters of reference. Please see the APS website (<http://www.aps.org/policy/fellowships/congressional.cfm>) for detailed information on materials required for applying and other information on the program.

**ALL APPLICATION
MATERIALS MUST BE
SUBMITTED ONLINE
BY JANUARY 15, 2009.**

See www.pt.ims.ca/16305-39

High-field superconducting magnet

Oxford Instruments has achieved the first 22 tesla at 4.2 K fully superconducting magnet, which was built by integrating two high-temperature superconductor (HTS) coils into a 20-T, 78-mm wide-bore magnet constructed of low-temperature superconductor materials. Until recently, wide-bore magnets above 18 T could be produced only by supercooling the magnet to 2.2 K, a process that significantly increased the consumption of liquid helium. The new system uses a recondensing cooling solution with a mechanical cryocooler, such as a pulse-tube refrigerator. A major benefit of the magnet is that it can accommodate HTS insert coils, a step toward developing an integrated modeling package to design advanced HTS magnet applications, such as achieving a superconducting 25-T to 30-T magnet. *Oxford Instruments plc, Tubney Woods, Abingdon, Oxon OX13 5QX, UK, <http://www.oxinst.com>*
See www.pt.ims.ca/16305-138

Differential capacitance manometer

The 226A from MKS Instruments is a differential version of the company's Baratron capacitance manometer. It can measure differential pressures and vacuum with a standard accuracy of 0.5% of full scale, unidirectional or bidirectional. The 226A offers nine full-scale ranges from 1000 torr to 0.2 torr, with equivalents in four other units; the instrument's resolution is 0.01% of full scale. The gauge's sensitivity allows repeatable characterization of very small pressure drops and flow rates. The 226A, as with all the Baratron manometers, measures pressures without a sensitivity to gas composition. It provides four analog output signals that are linear with pressure: 0–10 V, 0–5 V, 0–1 V, and 4–20 mA in unidirectional or bidirectional calibrations. The



228A adds to the 226A relay outputs for pressure trip points. *MKS Instruments Inc, 2 Tech Drive, Suite 201, Andover, MA 01810, <http://www.mksinst.com>*
See www.pt.ims.ca/16305-139

High-speed turbopumps

Pfeiffer Vacuum has introduced the expanded HiPace line of fast, powerful turbomolecular pumps. Available in pumping speeds that range from 1000 L/s to 2000 L/s, the products feature a new rotor design that reduces run-up time by 50% and high gas throughput for light (hydrogen, helium) and heavy (argon, carbon tetrafluoride) gases. Constructed with aluminum housings and innovative materials, the HiPace line has been made lighter in weight. The integrated drive electronics reduces the need for bulky cabling and has various communications protocols, such as Profibus and DeviceNet. The pumps are available in standard and corrosion-protected models that make them ideal for applications in which particulate contamination, high gas loads, and corrosive gases are present. *Pfeiffer Vacuum Inc, 24 Trafalgar Square, Nashua, NH 03063, <http://www.pfeiffer-vacuum.com>*
See www.pt.ims.ca/16305-140

Vacuum gauge instrumentation

MDC Vacuum Products has released the DV-series of thermocouple instrumentation products to provide power to and make accurate readings from the company's line of TGT vacuum gauge tubes. The digital vacuum meter (DVM) model includes two convenient front-panel controls. The first is an adjustment potentiometer to set the zero of the gauge. The second is used at atmospheric pressure to set span. The adjustments are rarely necessary on new units since the instrument comes calibrated from the factory. The digital vacuum controller features the same controls as the DVM but also has dual set point adjustments with LED indicators for each and an override button that allows set point pressure to be displayed. Both instruments are offered as either the 4000 series (0–20 torr) or the 6000 series (0–1000 mtorr) models. *MDC Vacuum Products LLC, 23842 Cabot Boulevard, Hayward, CA 94545-1661, <http://www.mdcvacuum.com>*
See www.pt.ims.ca/16305-141