

# New Products

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. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

Lawrence G. Rubin

## Focus on Laboratory Equipment

### Cross-Section Polisher

JEOL USA has introduced a cross-section polisher (CSP), the model SM-09010, designed to prepare large-area cross sections of specimens for imaging with the company's scanning electron microscopes (SEMs). The CSP uses a high-current density argon-ion beam to prepare up to 11 mm  $\times$  10 mm  $\times$  2 mm samples of soft or hard materials while preserving internal structures, voids between interfaces, adhesions between layers, and precipitates. Due to the glancing incidence of the ion beam, argon is not implanted into the sample surface. The new polisher minimizes deformation of the polished surface, which enables clear observation of crystalline structures. The CSP is a benchtop device that features a vacuum chamber evacuated by a turbomolecular pump, and a specimen stage that supports precision  $x$ - $y$  movement and angle control. *JEOL USA, Inc., 11 Dearborn Road, Peabody, MA 01960, <http://www.jeol.com>*

Circle number 131 on Reader Service Card

### Class III Gloveboxes

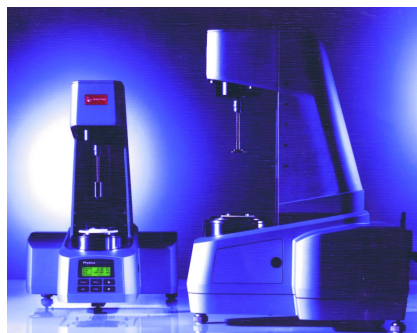
The Baker Co IsoGard series Class III glovebox is designed for research involving agents assigned to Biosafety Level-3 and -4 facilities, or where the protocol requires a very high level of containment. The construction and leak-testing requirements of Class III biological safety cabinetry are defined in the US *Federal Register*. The IsoGard glovebox assures a mass displacement of the entire volume of air within the cabinet by bathing the interior with HEPA-filtered air, thereby increasing entrainment of generated particles and keeping the external work area free of contaminants. The IsoGard is available in three standard models that offer two-, three-, and four-glove primary working chambers and incorporate stainless-steel gloveports with single-piece sleeve-and-glove assemblies. *The Baker Company P.O. Drawer E, Sanford, ME 04073, <http://www.bakerco.com>*

Circle number 132 on Reader Service Card

<http://www.physicstoday.org>

### Rheometers

Anton Paar USA has announced its latest series of Physica MCR rheometers that offer a wide selection of measurement geometries, interchangeable environmental systems, and special accessories. The modular design of the MCR series features the company's Tool-master system that automatically recognizes and configures both environmental systems and test geometries, and the TruGap, a system for an exact measurement and control of the real gap size. The new rheometer provides an extended torque range, a new normal force sensor with high stability and



accuracy, and a high thermal stability of the normal force signal. The MCR 101/301/501 series reportedly sets new standards in drift stability and low torque capabilities. Accessories enable small angle light scattering, magnetorheology, UV curing, high-pressure rheometry, and x-ray scattering applications. *Anton Paar USA, 10215 Timber Ridge Drive, Ashland, VA 23005, <http://www.anton-paar.com>*

Circle number 133 on Reader Service Card

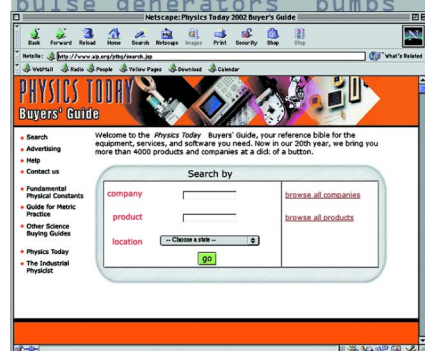
### Dispensing and Metering Pumps

The Ratio:Matic series of dual-head dispensers and metering pumps from Fluid Metering (FMI) provides precise dual-channel fluid control. The pumps consist of two FMI pump heads direct-coupled to a single variable-speed drive. Each pump head is independently adjustable; a variety of sizes can be used in combinations to achieve dispensing ratios from 1:1 to 1000:1. The

December 2004 Physics Today 73

To access 4,000 products  
and suppliers specific to  
physical scientists and  
engineers,

CLICK  
HERE



[www.physicstoday.com/guide](http://www.physicstoday.com/guide)

THE #1 BUYERS' GUIDE  
FOR THE PHYSICAL SCIENCES

Physics Today Buyers' Guide

Ratio:Matic pumps are ideal for dual-channel dispensing as low as 2  $\mu\text{L}$  per dispense and proportional metering of two fluids into a single fluid stream up to 4 L/min of continuous flow. The pumps are available in AC, DC, and stepper motor-drive configurations. Controllers range from simple process and quick-start stepper control to programmable, intelligent stepper drivers. *Fluid Metering Inc, 5 Aerial Way, Suite 500, Syosset, NY 11791, <http://www.fmipump.com>*

Circle number 134 on Reader Service Card

## Micro Compression Tester

Shimadzu Scientific Instruments has released the MCT-W series of micro compression testing machines, which evaluate the compression strength of microsubstances, including ceramic and resin particles, fine powders and fibers, pharmaceuticals, and pigments. The MCT-W features an overhead specimen dimension measurement function and a sliding stage with a click-stop mechanism for accurate positioning. Test forces range from 9.8 to 1960 or 4900 mN, depending on the model, with a precision of better than  $\pm 1\%$ . Measurement ranges up to 100  $\mu\text{m}$  with a resolution of  $\pm 0.01 \mu\text{m}$  or  $\pm 10 \mu\text{m}$  with a resolution of  $\pm 0.001 \mu\text{m}$  are available, depending on the model. Data processing functions enable the display of test force, displacement, and compression strength. *Shimadzu Scientific Instruments, 7102 Riverwood Drive, Columbia, MD 21046, <http://www.ssi.shimadzu.com>*

Circle number 135 on Reader Service Card

## Nanoscale Imaging Applications

Pacific Technology (PNI) has launched the Nano-R Crystal Scanner, a new type of nanonewton-force sensor that does not require the

complex alignment procedure often associated with atomic force microscopes. Instead, it uses a small crystal oscillator that has a sharp probe mounted at the end of the crystal to scan the surface of the sample. With no laser involved, operator interaction is minimal. The Crystal Scanner option is compatible with the company's family of scanning probe microscopes (see photo) and enables nanostructure visualization and metrology applications. The Crystal Scanner can help reduce microscope operation to the simple method of PNI's Point and Scan technology, which is made possible by advances in three fields: the crystal sensor, stage automation, and PNI's Crystal Scan software. *Pacific Technology Inc, 3350 Scott Boulevard, #29, Santa Clara, CA 95054, <http://www.pacificnano.com>*

Circle number 136 on Reader Service Card

## Software for Film Thickness Measurements

CRAIC Technologies has introduced the QDI FilmPro software package for its QDI series microspectrophotometers. The software enables those instruments to measure the thickness of transparent, color, and opaque films. Traditional film thickness microspectrophotometers are normally used to simply monitor film thicknesses on silicon wafers using only reflectometry. By comparison, the QDI instruments can calculate the thicknesses by both reflectance and transmission microspectroscopy. As a result, they can be used not only for the semiconductor industry, but also for development and quality control of the next generations of flat panel displays, photomasks, and optical devices. With the addition of the company's fluorescence package, these tools can be used for microcontainment analysis. *CRAIC Technologies, 2400 North Lincoln Avenue, Altadena, CA 91001, <http://www.microspectra.com>*

Circle number 137 on Reader Service Card

## Macromolecular Crystallography

Rigaku/MSK has announced the Rigaku AGENT, a new high-throughput robotic system that is an extension of the company's ACTOR system. A versatile platform configurable for a number of macromolecular crystallography requirements, the AGENT system comprises a large radiation cabinet with a center-mounted rotating anode x-ray gen-

erator, a gantry-mounted ACTOR robot, and an external workstation running Rigaku's JDirector software. Both left and right generator ports can be fitted with various confocal multi-layer optics and a goniometer and detector for each side. The six-axis ACTOR robot allows for automatic crystal transport, orientation, and retrieval from a magazine in the dewar to either goniometer. AGENT is compatible with a variety of low-temperature systems, including the company's Xstream 2000. *Rigaku/MSK Inc, 9009 New Trails Drive, The Woodlands, TX 77381-5209, <http://www.rigakumsc.com>*

Circle number 138 on Reader Service Card

## Time and Temperature Scanning Rheometer

Celsum Technologies is marketing the Fluid Dynamics T2SR time and temperature scanning rheometer, an instrument for measuring the viscoelastic properties of a wide range of



materials, from thermosetting or curing compounds to thermoplastics, gels, pastes, and doughs. The T2SR detects changes in the elastic and viscous properties of a sample and operates at frequencies from 0.5 to 5 Hz, at temperatures to 400°C, and with specimen volumes starting at approximately 4 mL. Viscosities measured with the standard configuration range from 100 to 100 000 poise (10 to 10 000 Pa s), although the range may be modified by altering geometries. The modular design allows users to customize their instruments with a choice of specimen geometries and temperature control options. *Celsum Technologies Ltd, Willow House, 17 Braemar Close, Mountsorrel, Leicester, UK LE12 7ES, <http://www.celsum.com>*

Circle number 139 on Reader Service Card



## XRD Analysis

PANalytical has extended the transmission capabilities of its X'Pert PRO MPD multipurpose x-ray diffraction system for easy and flexible analysis of x-ray-transparent samples, which include many pharmaceutical materials. The new system incorporates a focusing transmission geometry that uses a novel x-ray-mirror configuration enabling high angular resolution independent of glass capillary diameter and allowing the use of thicker capillaries. Sample preparation is simplified, and the use of relatively large sample volumes can result in higher peak intensities. In addition, measurements are not restricted to powders in glass capillaries; a new sample spinner and specially designed sample holders provide for the measurement of materials held between foils. *PANalytical Inc., 12 Michigan Drive, Natick, MA 01760, <http://www.panalytical.com>*  
Circle number 140 on Reader Service Card

## Digital Hot Plates

Barnstead/Thermolyne has released the Super Nuova hot plates and stirring hot plates. Digital displays indicate temperature settings, adjustable in 1°C increments for heating models, and revolutions per minute, adjustable in 1-rpm increments for stirring models. The units feature a remote probe that allows for accurate solution temperature readings to 0.1°C for temperatures below 100°C. The temperature range of the hot plates is from ambient +1°C to 370°C. Stirring models feature the company's Stir Trac technology, which improves stir bar coupling and ensures consistent stirring speed. User-programmable preset buttons provide for up to four often-used temperatures or stirring speeds. The Super Nuova plates are available in 7 in. × 7 in. or 10 in. × 10 in. sizes. *Barnstead International, 2555 Kerper Boulevard, P.O. Box 797, Dubuque, IA 52004-0797, <http://www.barnsteadthermolyne.com>*  
Circle number 141 on Reader Service Card

## Vibration Isolation System

The new 8001 series of active electronic isolation platforms from Kinetic Systems provides a means for isolating instruments such as interferometers, scanning probe microscopes, and photo imaging microscopes. An active feedback control system delivers vibration isola-



tion for all six translational and rotational modes of vibration over a frequency range of 1.0 to 1000 Hz. Whether the source of vibration is the building or a piece of equipment on the table, isolation begins at 0.7 Hz and increases rapidly to 40 dB at 10 Hz, where its isolation efficiency is typically 99%. For vibrations above 1000 Hz, the unit provides passive vibration control. Platform size varies from 16 in. × 18 in. × 3.25 in. to 24 in. × 31 in. × 5.25 in. The load capacity ranges from 330 to 600 pounds. *Kinetic Systems Inc., 20 Arboretum Road, Boston, MA 02131, <http://www.kineticsystems.com>*  
Circle number 142 on Reader Service Card

## Microinspection Station

Moritex USA has introduced the digital CCD microscope MS-804 Scopeman. It uses the latest advances in digital imaging analysis to provide an inspection system for checking dimensions, including linear and angular measurements, area measurement, counting, and functions based on color extraction. Based on the company's honeycomb CCD camera technology, the MS-804 combines multi-exposure, high-intensity LED lighting and powerful software to deliver sharp, high-resolution images (1280 × 960 pixels) that feature outstanding depth of field. By changing the camera's shutter speed and combining bright and dark images, the instrument offers a greatly enlarged dynamic range. A new digital zoom function enables rapid magnification of a feature of interest. *Moritex USA Inc., 6862 Santa Teresa Boulevard, San Jose, CA 95119, <http://www.moritexusa.com>*  
Circle number 143 on Reader Service Card

## Electron Energy-Loss Spectrometer

Stillwater Scientific Instruments has announced TOF-HREELS v1.0, a time-of-flight high-resolution electron energy-loss spectrometer. The new instrument measures the speed or energy of individual electrons at high resolution. Traditional electron energy analyzers scan through an energy range counting electrons, one energy at a time. Stillwater has developed a new statistical analysis method for use with a time-of-flight technology that measures multiple pulses of ions simultaneously. TOF-HREELS v1.0 provides a 2- to 3-meV resolution at 2-eV primary beam energy with a minimum dynamic range of 10 000 at an acquisition rate up to 1000 times faster than conventional HREELS instruments. *Stillwater Scientific Instruments, 20 Godfrey Road, Orono, ME 04473, <http://www.stillwaterscientific.com>*  
Circle number 144 on Reader Service Card

## New Literature

Thorlabs has published the 2005 version of *Tools of the Trade* (volume 17). Product lines include lab supplies, tables and breadboards, optomechanical hardware, motion control products, fiber optics, laser lab instruments, laser diodes, optics, and polarization tools. *Thorlabs Inc., 435 Route 206 North, Newton, NJ 07860, <http://www.thorlabs.com>*  
Circle number 145 on Reader Service Card

The 10th edition of *Precision Optical Filters for Fluorescence Microscopy* is available from Omega Optical. Information on an assortment of new filter sets that complement a selection of dye-specific sets for all single and multilabel microscopy applications has been added to the catalog. *Omega Optical Inc., 210 Main Street, Brattleboro, VT 05301, <http://www.omegafilters.com>*  
Circle number 146 on Reader Service Card

Polysciences is offering a new catalog of lab products that contains details on high-purity monomers and polymers, polymer and particle size standards, microspheres and magnetic particles, specialty chemicals, embedding kits, media and molds, and fluorescent/visible dyes and stains. *Polysciences Inc., 400 Valley Road, Warrington, PA 18976-9914, <http://www.polysciences.com>* ■  
Circle number 147 on Reader Service Card