

Focus on analytical equipment **FREE**

Lawrence G. Rubin



Physics Today **61** (8), 61–63 (2008);
<https://doi.org/10.1063/1.2970219>



CrossMark



INSACO INC. has the ability to grind and polish almost any geometric feature in glass, ceramic, and sapphire!

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. For more information about a particular product, visit the website at the end of the product description.

Lawrence G. Rubin

Focus on analytical equipment

Coated AFM probes

NANOSENSORS has announced gold- and platinum-iridium-coated variations of its AdvancedTEC AFM probe for atomic force spectroscopy. The new probes will be available in different force constants and resonant frequencies for contact mode, noncontact/tapping mode, and force modulation measurements. The general advantage of the AdvancedTEC is that this highly doped monolithic silicon probe is designed for precise positioning and high-resolution imaging and is ideal for applications where the tip has to be visible, such as for nanomanipulation. The new variations extend the range of usage to electrostatic force mode, scanning electrochemical microscopy, scanning capacitance mode, and scanning Kelvin probe microscopy. The gold-coated device has applications in force, binding force, and chemical spectroscopies. NANOSENSORS, Rue Jaquet-Droz 1, C. P. 216, CH-2002 Neuchatel, Switzerland, <http://www.nanosensors.com>
See www.pt.ims.ca/16303-131

TEM with cryogenic capability

FEI Co has introduced the Titan Krios transmission electron microscope, a cryo-TEM that combines high-throughput sample handling with state-of-the-art electron optics to provide fast, fully automated 3D data about biological molecules and macromolecular complexes. The new instrument is ideal for high-resolution, dual-axis cryo-electron tomography of frozen hydrated cells

and cell organelles, single particle analysis, and 2D electron crystallography. The Titan Krios delivers superb stability and imaging using operating acceleration voltages between 80 kV and 300 kV. It features robotic, contamination-free loading of up to 12 frozen samples and continuous operation, made possible with automatic liquid nitrogen fill systems; its environmental instrument enclosure provides optimal thermal and acoustic shielding. FEI Company, 5350 NE Dawson Creek Drive, Hillsboro, OR 97124, <http://www.fei.com>
See www.pt.ims.ca/16303-132

Benchtop spectrometer system

Rigaku Americas Corp has developed a high-power benchtop wavelength dispersive x-ray fluorescence (WDXRF) system, the Supermini. It delivers rapid, high-sensitivity, nondestructive analysis of elements from fluorine to uranium at low concentration levels in solids, liquids, powders, and thin films. The new compact instrument uses three analyzing crystals, two detectors, a 12-position sample changer, and a choice of analysis in an air, helium, or vacuum atmosphere. An air-cooled 50-kV, 200-W x-ray tube provides exceptional light-element performance.



The Supermini fits between the company's Primini 50-W sequential WDXRF spectrometer and the high-power ZSX mainframe spectrometer. The instrument's software enables multiple sample handling, fundamental parameters, and an EZ scan measurement user interface. Rigaku Americas Corporation, 9009 New Trails Drive, The Woodlands, TX 77381-5209, <http://www.rigaku.com>
See www.pt.ims.ca/16303-133

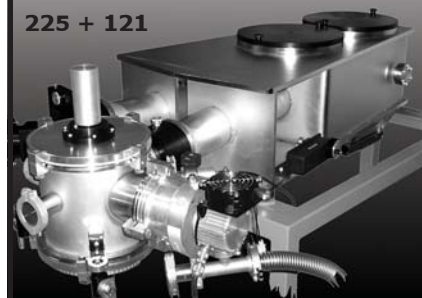
FTIR spectrophotometer

The IRAffinity-1 Fourier-transform IR spectrophotometer from Shimadzu

Vacuum & Deep UV Spectrophotometer 120 to 380nm

Optical characterization measurements in your lab!

225 + 121



VUVaS Spectrophotometers work from 120 to 380nm with solid, gas, or liquid samples. Accessorize for transmission, reflection, spectral-emission, lifetime, mapping, cryo and hi-temp samples.

Soft X-ray ~ XUV Spectrographs



Fast, easy spectral acquisition from 1 to 20nm! Flat-field focal plane with beam apertures, dual grating indexer and entrance slit, all adjustable in vacuum.

McPHERSON

7A Stuart Road, Chelmsford MA 01824 USA

Call 1-978-256-4512

or visit

McPhersonInc.com

See www.pt.ims.ca/16303-23

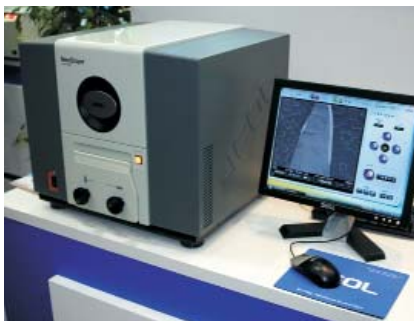
Scientific Instruments was designed with high-throughput optics and a dynamic alignment mechanism to increase sensitivity, stability, and usability over its wavenumber range of 7800–350 cm^{-1} . The company claims the instrument has the highest signal-to-noise ratio in its class at 30 000:1, with a maximum resolution of 0.5 cm^{-1} and a one-minute accumulation neighborhood of 2100 cm^{-1} . It achieves them by using a high-energy ceramic light source, a temperature-controlled high-sensitivity DLATGS detector, and optimized electrical and optical systems to minimize noise level. The spectrophotometer's optical elements are protected from humidity and stabilized by a sealed interferometer; moisture is continuously removed by a reactive polymeric desiccator. *Shimadzu Scientific Instruments, 7102 Riverwood Drive, Columbia, MD 21046, <http://ssi.shimadzu.com>*
See www.pt.ims.ca/16303-134

Catalyst characterization unit

Quantachrome Instruments is offering the ChemBET Pulsar TPR/TPD analyzer, a compact, benchtop catalyst characterization unit that uses automated flow methods of analysis, including pulse titration; analysis sequences are programmed with the new TPRWin PC software. Titrations for metal-area and dispersion determination use automatic loop injector and gas switching systems. Furnace temperature ramping provides for temperature-programmed reduction, desorption and oxidation methods, and sample preparation; all those include rapid furnace cooling. The Pulsar retains the company's ChemBET proven TCD detector with stable current control and is ideal for applications involving a wide range of gases. High-temperature quartz sample cells and an in-cell thermocouple are standard. *Quantachrome Instruments, 1900 Corporate Drive, Boynton Beach, FL 33426, <http://www.quantachrome.com>*
See www.pt.ims.ca/16303-135

Benchtop SEM

JEOL and Nikon Instruments have joined forces to bring to the market the NeoScope, a new benchtop scanning electron microscope with a 10 × to 20 000 × magnification range without



the need to change a lens. The SEM fills the optical microscopist's need for advanced imaging capability to provide higher magnification without loss of depth of focus. Targeted at the bioscience research and industrial inspection communities, the NeoScope images both conductive and non-conductive samples without special preparation, operates in low- and high-vacuum modes, and has three settings for accelerating voltages—5, 10, and 15 kV—suitable for various applications. The instrument enables both secondary and backscattered electron imaging measurements and offers users a transition from sample loading to imaging in less than three minutes and operation with a few simple controls. *JEOL USA Inc, 11 Dearborn Road, Peabody, MA 01960, <http://www.jeolusa.com>*
See www.pt.ims.ca/16303-136

FTIR spectrometers

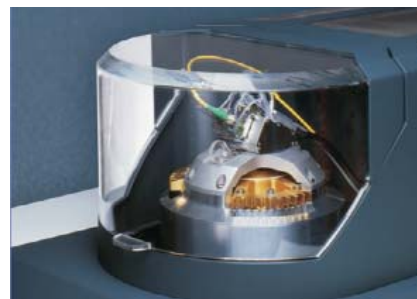
Bruker Optics's VERTEX 80/80v Fourier-transform IR spectrometers are based on the company's UltraScan interferometer, which incorporates a precise linear air bearing scanner and the company's PEAK quality optics to provide PEAK spectral resolution. The 80v model is an evacuated optics bench that can eliminate atmospheric moisture absorptions for ultimate sensitivity and stability. The company's DigiTect5 technology prevents external signal disturbance, guarantees PEAK signal-to-noise ratio, and allows easy and reproducible detector exchange. Two optional external detector ports accommodate the liquid helium Dewars of bolometer and hot electron detectors. The spectrometers' standard configuration provides an apodized spectral resolution of better than 0.2 cm^{-1} , but as an option, it can be improved to better than 0.07 cm^{-1} . *Bruker Optics Inc, 19 Fortune Drive, Manning Park, Billerica, MA 01821-3991, <http://www.brukeroptics.com>*
See www.pt.ims.ca/16303-137

Laser-beam analyzer

Ophir-Spiricon has announced the BA150 industrial laser-beam analyzer, a compact, self-contained instrument. The unit monitors all key laser-beam parameters for 1064-nm pulsed and CW industrial Nd:YAG, diode, and fiber lasers up to 150 W. It measures beam profile, average laser power, energy per pulse, pulse rate, and temporal pulse width. All measurements are made independently of laser power supply and can be output to a PC to be recorded in digital form for storage and analysis. For process control, the system can be set to flag deviations from normal beam parameters. The BA150 is based on the company's SP620 USB 2.0 silicon CCD camera, which features a high dynamic range (up to 64 dB), a photodiode to synchronously capture scattered laser light even at nanosecond pulse widths, and a programmable, high-speed shutter. *Ophir-Spiricon Inc, 60 West 1000 North, Logan, UT 84321, <http://www.ophir-spiricon.com>*
See www.pt.ims.ca/16303-138

Force spectroscopy automation

JPK Instruments has introduced the ForceRobot system to provide automation for force spectroscopy, a single-molecule technique that allows the real-time study of molecular interactions on the nanoscale. The device, which features a rigid-head design with excellent low-noise and drift specifications, is mounted on an integrated vibration isolation platform. The ForceRobot offers unattended operation capability for 80 000 force curve measurements in 24 hours and can customize individual experiments with varying parameters such as temperature or loading rate. Manual operation has prevented such a large measurement capacity and necessitated averaging, labeling, and reaching indirect conclusions. The new sys-



tem delivers clear-cut results with forces and distances presented in absolute numbers. *JPK Instruments AG, Bouchéstrasse 12, Haus 2, Aufgang C, 12435 Berlin, Germany, <http://www.jpk.com>*
See www.pt.ims.ca/16303-139

Roundness measurement

Taylor Hobson has developed the Talyron 395 that measures roundness and linear and circumferential roughness. The instrument, which is spindle based, measures rotationally symmetric components that are produced on a spindle-based machine tool; the manufacturing process is duplicated with a higher degree of accuracy. Because errors of roundness and surface finish occur simultaneously at the manufacturing stage, it seems logical that an inspection instrument should measure roughness and roundness at the same time. The Talyron 395 can measure roughness characteristics circumferentially using a diamond stylus and 72 000 radial data points or, alternatively, in the axial direction of a component with 200 000 data points, a resolution similar to that of laboratory equipment. *Taylor Hobson Inc, 1725 Western Drive, West Chicago, IL 60185, <http://www.taylor-hobson.com>*
See www.pt.ims.ca/16303-140

Optical aggregation system

Zarlink Semiconductor's growing portfolio of optical aggregation technologies for video surveillance systems include video IP surveillance (VIPS) camera and control-room optical modules and a plug-and-play multigigabit optical cable for network interconnect. New offerings include the ZL60239 and ZL60240 camera-side products, the ZL60214 control-room rack, and the ZL60615 ZLynx optical cable assembly. The new products provide an extended point-to-point connection of up to 2000 m over single-stranded multimode optical fiber between cameras, video servers, and control-room equipment. The fiber eliminates the need for multiple switches, connection points, and long runs of copper wire, while protecting against security and weather-related concerns. *Zarlink Semiconductor Inc, 400 March Road, Ottawa, Canada K2K 3H4, <http://www.zarlink.com>*
See www.pt.ims.ca/16303-141

Calibrations for XRF analysis

PANalytical is offering a series of new petrochemical standard sets for x-ray fluorescence (XRF) spectroscopy to help make reliable and accurate calibration a simple and cost-effective procedure. The sets are made to PANalytical specifications by VHG Labs, a supplier of certified standards and reference materials, and are available for wear metals, lubrication oils, and sulfur in oil. Each set provides everything required for calibration setup through instant performance testing for quality assurance and contains standards in 50-ml bottles, consumables, a calibration template, and a performance testing sample. The standards can be used with most XRF instruments but were specifically designed for use with PANalytical's dedicated XRF systems such as the MiniPal 4 Sulfur and the Axios-Petro. *PANalytical Inc, 117 Flanders Road, Westborough, MA 01581, <http://www.panalytical.com>*
See www.pt.ims.ca/16303-142

Lens test bench

The OS210B tabletop lens test bench from Wells Research and Development is a modular system that can validate performance of custom lens prototypes, track performance of batches of lenses as they come in, diagnose imaging problems, and evaluate performance of commercial lenses for use in larger systems. The OS210B, created to replace the company's earlier OS210A, combines a classical lens test bench with live video and modulation-transfer-function image analysis software and can test positive and negative lenses and afocal modules; tests can be done at infinity or, optionally, at finite conju-



gates. The system can work with lenses with focal lengths from 0.5 mm to 500 mm. Optional motorized stages for one, two, or three axes can be added to the base model. *Wells Research and Development, 15 A Lewis Street, Lincoln, MA 01773, <http://www.wellsresearch.com>*
See www.pt.ims.ca/16303-143

Stirring system for viscous mixtures

Asynt has released the Vortex system based on the company's DrySyn product range. The new system provides more powerful stirring for viscous reaction mixtures than can be achieved with magnetic stirrers; it converts a single overhead stirrer into a three-position parallel stirrer combined with a multiple heating block. The Vortex system retains all the DrySyn benefits, such as improved safety, rapid heat transfer, and space preservation. An additional benefit of overhead stirring is that it largely eliminates grinding effects that can occur with magnetic stirrers on solids, especially crystals. The system gives simultaneous, directly driven stirring for standard 100-, 250-, and 500-ml round-bottomed flasks—no special flasks are needed. *Asynt, Unit 29 Hall Barn Road Industrial Estate, Isleham, Cambridgeshire CB7 5RJ, UK, <http://www.asynt.com>*
See www.pt.ims.ca/16303-144

New literature

Hidden Analytical has published the first of a new series of catalogs that describes the company's mass spectrometer systems. The new publication details systems specifically designed for catalysis and thermal analysis applications, including the CATLAB microreactor/mass spectrometer series. *Hidden Analytical Inc, 37699 Schoolcraft Road, Livonia, MI 48150, <http://www.hiddeninc.com>*
See www.pt.ims.ca/16303-145

Alfa Aesar is issuing a CD version of the 2008–09 *Catalog of Research Chemicals, Metals and Materials*. In addition to covering more than 3000 new products, the CD offers comprehensive reference data, application and technical notes, and environmental health and safety information. *Alfa Aesar, 26 Parkridge Road, Ward Hill, MA 01835, <http://www.alfa.com>*
See www.pt.ims.ca/16303-146

On the Web

Carver Inc has redesigned its website, which offers updated product information and the latest news on Carver hydraulic presses and accessories. Information is also available about the company's lines of laboratory press accessories, special application presses, and custom presses. *Carver Inc, 1569 Morris Street, P. O. Box 544, Wabash, IN 46992-0554, <http://www.carverpress.com>* ■
See www.pt.ims.ca/16303-147