

NEW PRODUCTS

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LAWRENCE G. RUBIN

FOCUS ON SPECTROSCOPY

Direct-Drive Double-Monochromator

Instruments SA has introduced the Gemini 180, an 0.18 m single-box double-monochromator featuring a direct-drive coupled on-axis scanning system, interchangeable gratings, and full automation. The single-box design is said to provide better spectroscopy by greatly reducing stray light, and the coupled tandem grating movement is said to offer superior accuracy and repeatability. Gemini 180's optical layout eliminates the need for relay mirrors which can reduce optical throughput in "double" systems consisting of two separate spectrometers joined only by software. The unit also has a more compact footprint compared to double systems.

The new monochromator features interchangeable accessories, optical fibers, and light sources, and comes with the company's Spectramax spectroscopic and detector software which operates under Windows 95/98 and NT. *Instruments SA Inc, 3880 Park Avenue, Edison, New Jersey 08820*

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MEMS-Based Grating

InterScience has developed a MEMS (microelectromechanical system) diffraction grating that can simultaneously increase the resolution and expand the spectral range of optical and IR spectrometers. The new grating eliminates the wavelength-order uncertainty (free spectral range problem) typical of conventional gratings because the MEMS device works as a conventional diffraction grating and a voltage-controlled two-beam interferometer; the latter can be used for a coarse measurement of wavelength, thus identifying the higher diffraction orders.

The silicon structural elements of MEMS devices are typically micrometer size, so a grating can be integrated with electronic circuitry on a single chip. A spectrometer, for example, could employ one voltage-adjustable, electronically reconfigurable MEMS grating in place of several conventional

gratings. *InterScience Inc, 105 Jordan Road, Troy, New York 12180*

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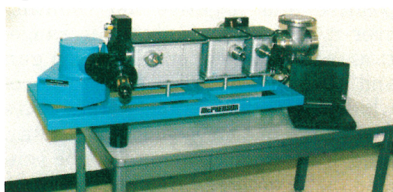
Modular Spectrophotometer

Optometrics' RS series of single-beam recording spectrophotometers are made up of modular units and are designed around the company's Mini-Chrom monochromator, a compact, in-line f/3.9 Fastie-Ebert instrument with a 74 mm focal length and an integral stepping motor. The RS-325 has a wavelength range of 325–800 nm; the RS-750 has a range of 750–1700 nm. The sample compartment contains quartz focusing optics, three filter holders, two detector ports, and a versatile sample holder. The operating software is menu driven and allows for easy manipulation of the sample data. *Optometrics USA Inc, Nemco Way, Stony Brook Industrial Park, Ayer, Massachusetts 01432*

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Vacuum UV Double-Beam Spectrophotometer

The McPherson VUVaS test station features a scanning vacuum UV double-beam system that simultaneously collects sample and reference spectra, with real-time display of spectra or ratio results. The station can measure lithography optics and other materials, testing absorbance, transmittance, and reflectance (at variable angles) over the wavelength range from above 380 nm down to 115 nm. The instrument's beam collimation can deliver a wavelength-independent spot size to five samples of 25 mm in diameter or three samples 50 mm square; 150 mm diameter wafers can



be accommodated in a custom mount. The variable and selectable sample/detector position permits analysis of irregular or diffractive samples. Detector angles can be set from 10 to 180°, and sample angles from 0 to 89°. A polarization accessory is available. *McPherson Inc, 7A Stuart Road, Chelmsford, Massachusetts 01824-4107*

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Monolithic Miniature Spectrometer

A new line of monolithic miniature spectrometers (MMS) from Zeiss (distributed by Hellma) have a titanium body with an aberration-corrected grating; a fiber cable cross-section converter or a slit as an optical entrance; and a diode array detector. The MMS UV-VIS model covers the 190–730 nm wavelength range, and the MMS1 from 300–1150 nm; each uses a silicon detector array. There are several MMSNIR versions for 900–1700 nm, 1400–2200 nm, and 900–2200 nm, each featuring an indium gallium arsenide array; for operation above 1700 nm, a detector cooling set is needed. Pixel dispersion of 2 nm provides a resolution of better than 7 nm. The wavelength accuracy is within 0.2 nm for LED and other laser sources. The modules are extremely robust; we are told they have successfully survived a 40 G drop test. *Hellma, 118-21 Queens Boulevard, Forest Hills, New York 11375*

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Portable Spectroradiometer

Analytical Spectral Devices has introduced the FieldSpec Pro, a portable UV/visible/near IR spectroradiometer suitable for remote sensing, precision agriculture, oceanography, and environmental assessment. The instrument weighs less than 8 kg for easy transport. The FieldSpec Pro measures radiance, irradiance, reflectance, and transmittance, and offers a spectral resolution of 3 nm at 700 nm and 10 nm at 1400 and 2100 nm, with a



sampling interval of 1.4 nm at 350–1000 nm and 2 nm at 1000–2500 nm. The spectrometer runs on the company's RS² software, which allows real-time display of spectral data over the entire wavelength range. *Analytical Spectral Devices Inc., 5335 Sterling Drive, Suite A, Boulder, Colorado 80301*

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Gated Detection CCD Cameras

Roper Scientific has announced the Princeton Instruments PI•MAX, a family of intensified CCD cameras designed for gated spectroscopy and imaging experiments. The cameras have a built-in programmable timing generator to set all necessary gate pulsewidths and delays under software control. They offer high temporal resolution (gate widths of less than 2 ns); a superior background discrimination for on/off ratios greater than 10^7 to 1 (even in the UV); and a quantum efficiency exceeding 35%. The PI•MAX cameras incorporate low-noise readout electronics, precision timing circuits, and high-voltage pulsers. Applications range from vacuum UV and near IR spectroscopy to gated imaging experiments such as combustion analysis. *Roper Scientific Inc., 3440 East Britannia Drive, Tucson, Arizona 85706*

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Inorganic Raman Database

The Renishaw inorganic database, used by gemologists as an identification tool, has been extensively revised and enhanced. The spectrum descriptors for more than 1100 spectra have been expanded to include the sample name and group family, plus a chemical/crystal structure description of the group or family, or a brief chemical identification. The main peak positions are listed, along with pointers to areas for further study. A keyword search facility will return the names

of minerals commonly associated with a given specimen, and other terms used to describe the specimen or the kinds of rocks or geological settings in which this type of mineral occurs. The search facility is especially useful in cases where solid solution mechanisms have shifted the positions of the characteristic Raman peaks. *Renishaw Inc., 623 Cooper Court, Schaumburg, Illinois 60173*

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Software for Spectroscopy and Chromatography Data

Galactic Industries has announced Spectral DB, a spectroscopy and chromatography database management tool. The databases can include sample number, compound name, spectrum type, and physical properties; binary data such as bitmaps, metafiles, and chemical structures can also be stored. Spectral DB includes the company's Smart Convert technology, which enables users to store data files from many analytical instruments in the same database. The program's Browse, Design, and Query work modes allow quick data entry, form layout, and data searching and retrieval. Data-enabled forms support zooming and scaling of spectral data and rotating of chemical structures.

Spectral DB can be used with small personal data organizers and large enterprise-wide databases; files can be loaded onto a shared file server to give multiple users access to the data. *Galactic Industries Corp., 395 Main Street, Salem, New Hampshire 03079-2464*

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Secondary Ion Mass Spectroscopy Workstation

The SIMS Workstation from Hiden Analytical is a secondary ion mass spectroscopy system for surface analysis of alloys, polymers, semiconductors, pharmaceuticals, and multilayer devices. The system features the company's EQS mass and energy analyzer, which combines a high-sensitivity triple-filter quadrupole mass spectrometer with an analyzer for positive and negative ion counting over a seven-decade dynamic range. It also includes Hiden's IG20 ion gun and IFG 200 FAB/ion gun, both of which are electron impact ion sources with inert and oxygen gas capability. Samples of up to 1000 amu can be handled, with options for samples of up to



2500 amu. The multiport UHV analysis chamber offers a fast-entry loadlock; additional mounting ports enable system expansion for multiple surface analysis techniques and configurations for cluster tool adaptation. *Hiden Analytical Ltd., 420 Europa Boulevard, Warrington, WA5 5UN, England*

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Near IR Fiberoptic Spectrometer

The S2000-1550 miniature fiberoptic spectrometer from Ocean Optics is a near IR-sensitive, high-resolution system. The unit's silicon linear CCD array has a special coating to extend the array's responsivity into the near IR, (from 1450–1650 nm), thereby enabling the spectrometer to analyze the real-time spectral output of various lasers and laser diodes, including both pulsed and CW lasers. The instrument can also be configured for quality control testing of fiberoptic components. The optical resolution of the S2000-1550 is ~0.6 nm with a pixel resolution of 0.15 nm. The unit's Windows-based 32-bit software enables integration times to be set from 5 ms to 60 s, and it can calculate the relative irradiance across a given wavelength range and the logarithmic values of any vertical scale; a triggering function allows synchronization. *Ocean Optics Inc., 380 Main Street, Dunedin, Florida 34698*

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New Literature

Acton Research Corp has released a new CD-ROM containing information on the company's optics and coatings, commercial optics solutions, monochromator systems, imaging spectrographs, CCD detection systems, and data acquisition and analysis software. Also included are data sheets and technical notes. *Acton Research Corp, P.O. Box 2215, 525 Main Street, Acton, Massachusetts 01720-6215*

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