

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 SPECTROSCOPY

Multichannel Echelle Spectral Analyzer

A new company, Multichannel Instruments, has released a product called the multichannel echelle spectral analyzer. The spectrograph, marketed under the model name Mechelle 4.5, is described as an advanced, user-friendly, portable "spectral camera." Its optical design utilizes a so-called echelle grating, which is combined with cross dispersion to separate the spectral orders of the grating. This combination results in several spectral segments, each covering a subrange of the whole spectrum. All segments are focused underneath each other on an array of charge-coupled devices (CCDs) that record all segments simultaneously in 4500 channels, over the wavelength range 200–1100 nm.

The input to the instrument is provided by an optical fiber, making the coupling to light sources and external accessories very simple. The spectrograph can also be provided with a detection system that has the facility of rapid gating through which the needs of time-resolved spectroscopy can be met, such as those in laser-induced plasmas, sparks and so on. *Multichannel Instruments, Pilotgatan 2 S-128 32, Skarpnäck, Sweden*
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Imaging Spectrograph

PixelVision announces the availability to North American markets of the ImSpector imaging spectrograph. Manufactured by the Finnish company SPE-CIM, the instrument captures a line image and disperses it to a spectrum in a direction orthogonal to the image. Thus, when coupled to a black-and-white matrix camera, the ImSpector acts as an imaging system in which each frame contains the line pixels in one (spatial) dimension and the spectral pixels in the other dimension. The instrument is said to be the first commercial direct sight imaging spectrograph in which light goes through a straight optical axis. Thus, it can be

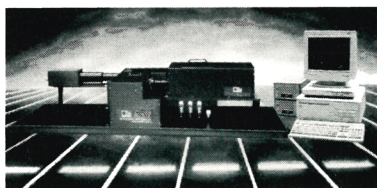
directly fitted between the lens and the camera of existing camera/vision systems without reconfiguring the optomechanical setup.

The ImSpector has a spectral range that covers 0.4–1.7 μm and has a throughput independent of polarization. It can be used for on-line machine vision and inspection, as well as imaging and multitrack spectrometry and spectral microscopy. *PixelVision, 15250 Northwest Greenbrier Parkway, Beaverton, Oregon 97006*
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Circular Dichroism Spectrometer

The Olis RSM dual-beam, phase-coherent circular dichroism (CD) spectrometer directly measures the difference between a sample's absorbance of right circularly polarized light (RCPL) and left circularly polarized light (LCPL). The spectrometer uses two beams of circularly polarized light and a photomultiplier detector for each beam. The two beams are phase-coherent; that is, they are precisely opposite: When one beam is LCPL, the other beam is RCPL. This scheme allows simultaneous detection of the sample's absorption of RCPL and LCPL, which eliminates the signal variations that can occur when the measurements of LCPL and RCPL are separated in time.

Three modes of data collection are supported. Fixed-wavelength readings are collected at 1000 per second. In the conventional slow-scanning mode, the RSM CD collects data quickly at shorter wavelengths and slows down as necessary at longer wavelengths, to provide a user-specified signal-to-noise



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Since its inception in 1974, the ICMCTF has been the premier international conference focusing on surface modification and thin film coatings.

The 25th anniversary of this conference will feature a special program highlighted by a lecture of the ICMCTF founder, Prof. R. Bunshah.

Special ICMCTF features include: eight symposia, an equipment exhibition, short courses and workshops.

The symposia will emphasize the latest developments in coatings, including: tribological, hard, diamond, high-temperature, microelectronic thin films, and optical layers.

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For more information, contact:

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ratio. The rapid-scanning mode allows subsecond scanning of multiple wavelengths. *On-Line Instrument Systems, (Olis), 130 Conway Drive, Suites A&B, Bogart, Georgia 30622-1724*

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Spectroradiometer for Oceanography Applications

Analytical Spectral Devices introduces the SeaSpec spectroradiometer, a submersible, dual-CCD instrument designed for oceanography applications. SeaSpec's two spectrometers provide a spectral range of 380 to 900 nm. This instrument is currently being used to measure radiance and irradiance for NASA's Sea-viewing Wide Field-of-view Sensor (SeaWiFS) program. In this application, SeaSpec produces in-water measurements for sensor validation and algorithm development. The SeaWiFS sensor provides quantitative data on global ocean bio-optical properties.

SeaSpec's two CCD spectrometers provide continuous spectra. This allows the user to model information received from the SeaWiFS sensor, as well as all existing satellite sensors and those planned for launch in the next few years. The instrument's autonomous operation and power management allow it to be deployed from a float or buoy. *Analytical Spectral Devices, 5335 Sterling Drive, Suite A, Boulder, Colorado 80301*

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Compact Array Spectrometer

Instrument Systems of Germany has launched a new family of array spectrometers destined for applications in spectroradiometry and photometry. Array spectrometers are used for applications where fast measurements and high sensitivity are prerequisites. The CAS140B is a flat-field spectrograph with 140 mm focal length and a spectral resolution of 2–12 nm, depending on the entry slit width. It is offered with an InGaAs detector with 256 pixels for the spectral range 800–1650 nm and an option of a diode array or a CCD with 1024 pixels operating in the spectral range 190–1100 nm. The system includes a 15-bit analog-digital converter and standard cooling for the detectors to 0 °C.

With fiberoptic cables, users can connect a range of measuring adapters to the instruments for spectral analysis and for measuring transmission and

reflection. The company's IS-Specwin Windows software is available for operating the instrument and evaluating the test results. *Instrument Systems GmbH, Neumarkter Strasse 83, D-81673 Munich, Germany*

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UV/VIS/NIR Spectrometer

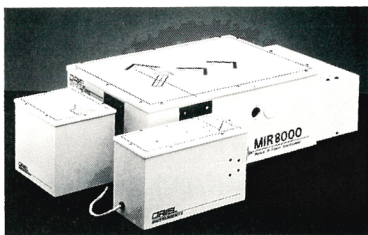
The Lambda 900 from Perkin-Elmer is a double-beam, double-monochromator, ratio recording spectrometer operating in the ultraviolet, visible and near-infrared spectral ranges (185–3000 nm). Large collimating mirrors and gratings are said to guarantee maximum energy throughput over that entire range. It is claimed that the spectrometer has the largest sample compartment in the industry. There are four basic configurations of the spectrometer: for transmission measurement in liquid or solid samples; for analysis and characterization of any type of sample in reflectance and transmission; and two reflectometry systems with integrating spheres for diffuse reflectance analysis and color measurement. To meet the requirements of each type of sample, a variety of accessories are available. Some are motor driven, such as the reference beam attenuators, polarizers and depolarizers and the common beam masks. The company's UV WinLab software allows method definition, parameter selection, system validation, spectrum manipulation and report generation. *The Perkin-Elmer Corp, 761 Main Avenue, Norwalk, Connecticut 06859-0010*

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Modular Fourier Transform Infrared Spectrometer

The MIR 8000 modular Fourier transform infrared spectrometer from Oriel Instruments is based on the company's scanning Michelson interferometer. The MIR 8000's optical layout includes corner cubes and a retro prism, and it is said to be immune to tilt and shift. Modular subsystems such as a source, detector and scanning unit let the user optimally configure the spectrometer. Both the input and output are compatible with fiber-optics.

The MIR 8000 has selectable resolutions starting at 0.5 cm⁻¹, which corresponds to about 0.02 nm at 700 nm and 0.04 μm at 28 μm, and optical scan speeds with ranges from 0.3 to 25 mm/s. At the fastest speed, 15 double-



sided bidirectional interferograms can be acquired in a second. The scanner control system is based on two in-quadrature helium-neon laser interferograms.

The spectrometer features interchangeable, prealigned beam splitters and a full-range data acquisition system employing a 100 kHz throughput analog-digital converter. The MIR 8000 software package is Windows-based, but other optional packages are offered. *Oriel Instruments, 250 Long Beach Boulevard, P.O. Box 872, Stratford, Connecticut 06497*

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300 mm Focal Length Monochromator and Spectrograph

Acton Research's SpectraPro-300i is a direct digital scanning monochromator and flat-field imaging spectrograph. Direct digital scanning systems are said to have all but replaced conventional sine drive systems in instruments of 500 mm focal length and less; they are rugged and reliable and lend themselves to easy computer control. This "quarter-meter" instrument features triple indexable gratings and dual exit ports. It also offers an imaging optical system for multichannel CCD spectroscopy that incorporates internal image correction for elimination of astigmatism. A user can bring light from several sources simultaneously, and when the CCD is used, detect each as a separate spectrum.

The instrument utilizes a Czerny-Turner optical design with an f/4 aperture ratio. Its focal plane is 27 mm wide × 14 mm high. The spectral range is 185 nm to the far infrared with available gratings and accessories. The resolution is 0.1 nm at 435 nm, using 10 μ m slits. *Acton Research Corporation, P.O. Box 2215, 525 Main Street, Acton, Massachusetts 01720*

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LED Spectral Analyzer

Labsphere's light emitting diode (LED) spectral analyzer is designed for complete optical analysis of LED performance. The instrument's optical system

combines a diode array spectrometer and a calibrated large area silicon photodiode radiometer. The spectrometer allows for measurements over a wide spectral range, extending from 350 to 1050 nm, and provides one-touch sample analysis in less than 20 seconds. The fiberoptic coupling from the sensor head is hard-mounted to the spectrometer to maintain wavelength accuracy. The instrument's radiometer simultaneously measures the LED light intensity, thus ensuring measurement repeatability as it avoids alignment sensitivity problems.

The analyzer's spectral aperture accommodates photometric, radiometric and colorimetric parameters. Calibration is traceable to national laboratories. *Labsphere, P.O. Box 70, Shaker Street, North Sutton, New Hampshire 03260*

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Benchtop Mass Spectrometer

Flexibility, high throughput, ease of use and high performance are all prominent features of IsoPrime, a new benchtop mass spectrometer for continuous-flow isotope ratio mass spectrometry (CF-IRMS). This system, from Micromass of the UK, can be used with a selection of sample introduction and separation systems, such as gas chromatographs (GC), elemental analyzers (EA) and microgas (μ G) sampling systems for analysis of breath and other gases. The system is fitted with the company's IRMS permanent magnet analyzer, with the option of a higher sensitivity, extended mass range electromagnet. Other features include high-performance, extended lifetime Faraday buckets, a GC interface for better chromatographic resolution and the IsoPrime-EA system for identification of carbon and nitrogen compositions. Intended for inorganic gas analysis, the IsoPrime- μ G provides the on-line separation and purification necessary for isotopic analysis for a wide range of applications.

The Micromass Optima is said to provide the optimum solution for dual-inlet and continuous-flow IRMS applications. It includes an automatic cold finger and is said to have the lowest-volume, commercially available automatic inlet system, which enhances small sample performance. *Micromass Limited, Floats Road, Wythenshawe, Manchester M23 9LZ, UK*

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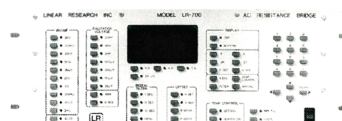
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