

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 MICROSCOPY

Scanning Probe Microscope for the Life Sciences

Park Scientific Instruments has introduced the BioProbe, a scanning probe microscope (SPM) intended for use in the life sciences. BioProbe mounts easily onto the stage of all popular inverted and upright microscopes and integrates scanning probe and optical microscopy techniques into one system. Users can view their samples with optical contrast methods—such as fluorescence, scanning confocal, bright-field and dark-field microscopy—while simultaneously acquiring high-resolution SPM images. BioProbe features a full complement of SPM modes for operation in air or liquid, including contact, intermittent contact and non-contact atomic force microscopy, lateral force microscopy, force modulation microscopy, phase detection microscopy and magnetic force microscopy. *Park Scientific Instruments, 1171 Borregas Avenue, Sunnyvale, California 94089*

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AFM for Optical Storage Applications

TopoMetrix introduces the first atomic force microscope (AFM) designed for optical storage applications. The Accurex II MS makes three-dimensional, high-resolution surface measurements (of pit shape, depth, spacing, roughness and substrate roughness) of digital video discs and compact discs and related stampers and other discs. It can scan areas from $100 \times 100 \mu\text{m}$ down to areas of less than $1 \mu\text{m}$ on a side, and features up to $10 \mu\text{m}$ high (or deep). Scan resolution (in all dimensions) is 0.1 nm .

The Accurex II MS comes in two configurations. The Inspection configuration is designed for operation by technicians. Instrument setup is procedure driven, and standard measure-

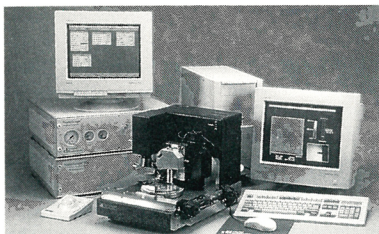
ments, such as pit lengths and depths, are automated. The Research configuration provides the process development scientist with all AFM operating modes, as well as the company's SPMLab software, which allows data acquisition, image display and analysis and screen editing. *TopoMetrix Corp, 5403 Betsy Ross Drive, Santa Clara, California 95054-1162*

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Scanning Probe Microscope

The Dimension 3100 SPM from Digital Instruments brings together all major scanning probe microscope techniques in a single platform that handles a wide range of sample sizes and types. It supports all atomic force microscopy (AFM) and scanning tunneling microscopy (STM) scanning modes and techniques, including the company's TappingMode technique, which protects samples from damage. Samples up to 20 cm in diameter can be scanned in ambient air or fluids with automated stepping to scan multiple areas. A new laser tracking system accurately tracks the probe tip without moving the laser itself, thus helping to maintain constant forces on the sample. No tools are required to change scanning techniques—for example, from lateral force to force modulation, or from AFM to STM.

The Dimension 3100 SPM includes an XY stage with improved bidirectional repeatability and speed and trackball response. The illuminator is computer controlled for easier optical

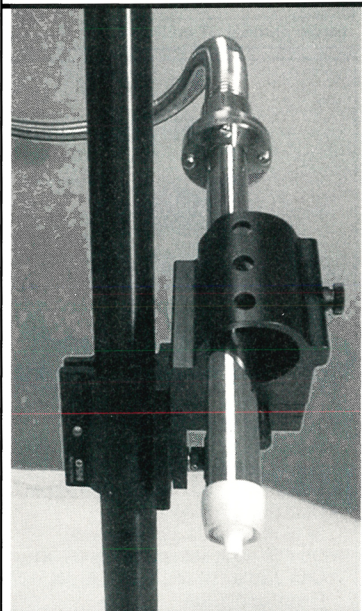


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- Complete system including LN2 dewar, level indicator, auto fill, flow control, PID temperature controller, shield flow, transfer line ...
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CRYO Industries of America, Inc.

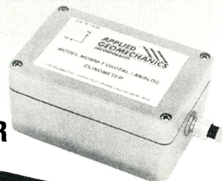
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NEW!

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- Dual-axis tilt measurement
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ZAGI™ software records and graphs movement. Select baud rates, formats and autozero with push button graphics.

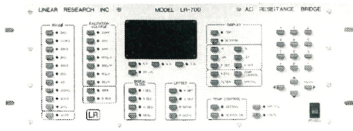
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LR-700



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- 2x16 characters alphanumeric
- Dual 5½ digit set resistance (R, X)
- Can display R, ΔR, 10ΔR, X, ΔX, 10ΔX, R-set, and X-set
- 10 nano-ohms display resolution
- Mutual inductance (X) option available
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- Internal temperature controller available
- Drives our LR-130 Temperature Controller
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focusing and zooming. Video image capture is now a standard feature. *Digital Instruments, 112 Robin Hill Road, Santa Barbara, California 93117*
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System for Transmission Electron Microscope Sample Preparation

FEI Company announces the new FIB 200TEM focused ion beam system, said to be optimized for the efficient preparation of ultrathin sections of specimens for materials science and semiconductor transmission electron microscopy applications. The system's Magnum ion optical column features a higher beam current, said to reduce sample preparation time by an order of magnitude. For unattended preparation of multiple samples, the FIB 200TEM includes AutoMill software, which has user-programmable macros that control the stage, protective layer deposition, beam current, milling pattern and final cut. A pattern recognition system monitors sample position and automatically corrects for sample drift.

The unit's 5-axis motorized stage allows the user to visually position the area of interest in the optimal orientation for ion milling and subsequent verification of final thickness. The FIB 200TEM, as a general-purpose laboratory FIB system, allows device edit, failure analysis and defect characterization, including micromachining, microdeposition, cross-sectioning and a full array of gas chemistry sample preparations and measurements. *FEI Company, 7451 Northwest Evergreen Parkway, Hillsboro, Oregon 97124-5830*

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Image Analyzer for Scanning Electron Microscope

AutoSEM 1 from Advanced Research Instruments, designed for the scanning electron microscope, automatically analyzes features and field data such as size distribution, number of features per field and percent area coverage, and performs x-ray analysis on each feature. In analyzing images, AutoSEM 1 automatically takes the signal and starts searching at a resolution fine enough to find a feature, but coarse enough to allow rapid searching. When a feature is found, the resolution is increased to measure it to a precision specified by the user. The beam stops in the centroid of each feature and x-ray

analysis is performed automatically. Search resolution may be as low as 8 × 8 pixels while the measurement resolutions can be as high as 16 000 × 16 000 pixels.

AutoSEM 1 provides complete image/x-ray analysis reports, including statistics in standard spreadsheet format, digital color-coded maps based on composition rather than single elements, digital high-resolution imaging, image enhancement and image archiving. *Advanced Research Instruments, 2434 30th Street, Boulder, Colorado 80301*

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Video Microscopy Image Analysis Workstation

I-CUBE has announced the first of the company's six new image analysis systems. Designed to meet the needs of most microscopy applications, the Video Microscopy Image Analysis Workstation performs video image capture, processing, analysis, storage and data extraction. It is said to be optimized for use in a turnkey system configuration. The workstation performs image analysis functions such as densitometry, particle counting, feature identification and spatial and intensity calibrations. It also provides image enhancement functions, including convolution filtering, fast Fourier transform processing, image scaling and rotation and image integration for low-light subjects.

The claim is made that the unit can be easily interfaced to existing video microscopy setups and used in a wide range of life sciences, industrial, law enforcement and other research and laboratory applications. *I-CUBE, 2411 Crofton Lane, Suite 14A, Crofton, Maryland 21114*

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X-Ray Spectrometer with SEM Applications

Oxford Instruments has launched the Microspec WDX-400 and WDX-600 fully scanning x-ray spectrometers, able to be mounted on many types of scanning electron microscopes so that analysis is performed with the specimen horizontal, eliminating the need for an optical microscope to position the sample precisely. The WDX-400 includes four diffracting crystals for analyzing elements down to and including boron. For more demanding applications, the WDX-600 accommodates up to six crystals, extending the analysis range to include beryllium;

special crystals can be added for specific applications.

A curved segment and linear guidance system maintains the correct geometrical relationship between crystals, detectors and x-ray source and a single motor controls both crystal and detector, ensuring the unit's precision. Diffracting crystals are mounted to a motorized rotating turret, allowing crystals to be changed anywhere in the spectrometer's wavelength range. Two proportional counters mounted in tandem provide coverage over that range. *Oxford Instruments America, Microanalysis Group, 130A Baker Avenue, Concord, Massachusetts 01742*

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Ultraviolet Raman Microscope

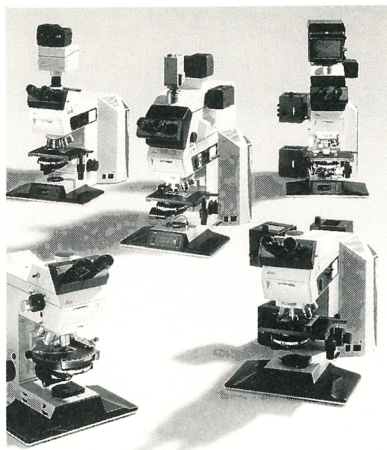
Renishaw has expanded its range of Raman spectrographs with the introduction of its ultraviolet Raman microscope. A variant of the company's visible-excitation Raman microscope, the new instrument uses UV laser excitation to produce Raman scattering, with optics optimized for the UV, and a UV-enhanced charge-coupled device camera as a detector. It also includes many of the features of the widely used visible-excitation instrument, such as a high optical efficiency to give short exposure times, computer control for ease of use and a high spatial resolution.

UV excitation has many benefits. For example, the resultant Raman scattering occurs at a shorter wavelength than most types of fluorescence, and therefore is not masked by it. This allows highly fluorescent samples (such as biological systems) to be studied. A wide range of excitation wavelengths is possible (229, 244 and 352 nm, and so on), as are dual wavelength systems that allow the use of both UV and visible excitation. *Renishaw, Transducer System Division, Old Town, Wotton-under-Edge, Gloucestershire GL12 7DH, United Kingdom*

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Research Microscopes

Leica presents new innovations with the Leica DM R research microscopes, featuring brilliant image quality and high precision. The microscopes can be configured for nearly any application and integrated with electronic systems. For example, they can be used for observation only, for television applications or as automatic photomicroscopes. Components, such as objectives, tube lenses, tubes, eyepieces and TV/camera adapters, are matched to the overall optical system for improved



performance. When combined with microscopy, electronic technologies, especially computer and video technologies, allow for new applications, such as telemicroscopy and documentation networks. *Leica Inc., 111 Deer Lake Road, Deerfield, Illinois, 60015*

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Research Stereo Microscope

The precision instrument division of Olympus America announces the SZX12, a new research stereo microscope said to have superb optical performance and the largest available zoom ratio, 12.83:1. Objective magnifications from $0.3\times$ to $2\times$, including peak-performance plan-apochromats, distortion-free plan-fluorites and standard achromats, enable the system to be matched to each imaging task. The dual-objective carrier, together with parfocal objectives, makes possible the widest magnification range ($3.5\times$ to $144\times$), to move seamlessly from survey to detail observation. A special auxiliary objective ($2.5\times$) is said to set new stereo resolution standards of 800 lines per mm.

Viewing comfort is provided by an observation tube, that adjusts from 5 to 45 degrees. The binocular observation tube and an additional beam splitter that make it easy to integrate the unit with multiple photographic, video or digital recording devices. A choice of highly stable transmitted-light bases and well-routed light guides provide optimized illumination, while the raised glass-plate stage gives shadow-free backgrounds for publication-ready documentation. *Olympus America, Precision Instrument Division, Two Corporate Center Drive, Melville, New York 11747-3157*

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500 MS/s on PCI Bus

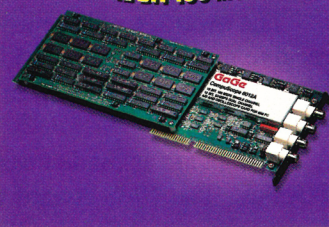
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- 500 MS/s Sampling
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- 100 MB/s Transfer Rate to PC Memory
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100 MS/s, 12 Bit

12 BIT 100 MS/s A/D



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