

## RESOURCES

*A summary of new products and services  
for materials research...*

**Diode Laser Reimagers:** Opto Power's optical reimaging units focus light from fiber-coupled diode lasers and OEM modules into smaller or larger spot sizes, reducing or enlarging spot sizes by up to threefold. The units focus the laser light into free space and are available with working distances of 20–68 mm. The A/R-coated lenses transmit up to 97% of the laser light to the target. The units, which protect the diode lasers' fiber bundles from harsh environments, are designed for industrial users involved in laser marking, soldering, heat treating, and materials processing.

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### **Noncontact Wafer Test System:**

The Quantox™ from Keithley shortens process monitoring time by reducing front-end-of-line monitor wafer process steps and provides charge characterization of a wafer within minutes. The system uses a technique that eliminates the need for conductive dots which are applied to wafers for capacitance-voltage testing. Possible charge-related measurements include electrical oxide thickness, intrinsic oxide leakage, wafer surface voltage map, surface photovoltage, flat-band voltage, and interface trap density.

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### **Nondestructive Testing Technique:**

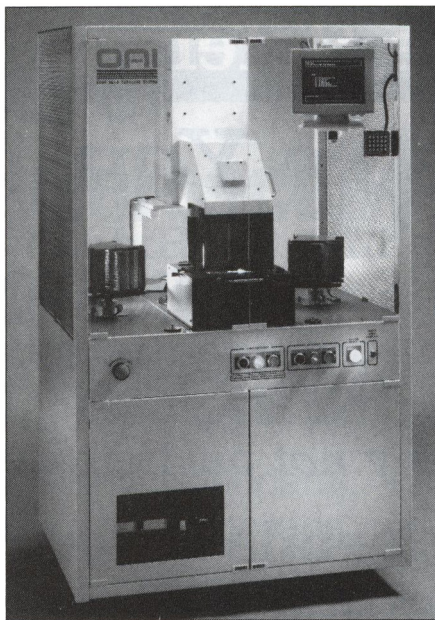
Impedance Analysis from Solartron Instruments is based on the phenomenon that materials exhibit different electrical responses to alternating signals of differing frequencies. By measuring the impedance at various frequencies and plotting the results on suitable axes, a graphic is produced which is characteristic of the material under examination. Users then can deduce information about the structure and properties of the material, and make comparisons over time or with other samples. Results are available within minutes.

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### **Flow Sensing Technology:**

MKS Instruments' Type 1179 Mass-Flo® Controller uses a thermal mass flow sensor design that combines a proportioning valve and control circuit for improved performance and reliability. The system is stable to within <1.0% F.S. per year, and flow curve repeatability is better than +0.5% F.S. over 12 weeks. Overall accuracy is +1.0% F.S. including nonlinearity, hysteresis, and nonrepeatability. The controllers are available with full-scale ranges from 10 sccm to 30 slm, providing repeatable flow control to 0.2 sccm.

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### **Optical Edge Bead Exposure System:**

Stand-alone Model 2000 from Optical Associates is designed to handle semiconductor wafers up to 8 in. (20.3 cm) in diameter. The system uses a shadow mask alignment module to facilitate setup of a mask to expose the edge and other areas requiring exposure during wafer processing. The system can use up to a 2000 W exposure tool, and throughput can be matched to user requirements.

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### **LabVIEW® and LabWindows® Third-Party Guide:**

National Instruments offers a 342-page directory of third-party companies and engineers that provide consulting services, turnkey systems, and add-on products that can be used to build instrumentation systems in conjunction with National Instruments products. The book is divided into two sections: products and consultants. Indexes are organized alphabetically, as well as by product applications, consulting expertise, and geographic area.

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### **LED Spectral Analyzer:**

The LED-1000 from Labsphere is a light measurement instrument for light-emitting and IR-emitting diodes. The instrument provides spectrum acquisition for radiometric, photometric, and spectral measurements over the wavelength region from 350–1050 nm. The analyzer can be used as a benchtop inspection instrument or adapted for automatic test and sorting applications. A diode array spectrometer provides spectrum acquisition and data display. A built-in power supply operates the diode emitter.

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### **Scanning Position Sensitive Detector:**

Philips Analytical X-Ray's PSD, developed in conjunction with RAYTECH, offers two operating modes: static and scanning. The static mode provides coverage from 16.5° at a goniometer radius of 230 mm, and up to 22° with a goniometer radius of 173 mm. The scanning mode provides data collection covering the 15–140° 2θ range. The linear operation of the PSD provides an active length up to 50 mm. Windows-based software enables users to customize the detector's active length, linear resolution, and scanning speed.

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### **Position-Tagged Spectrometry:**

With the Princeton Gamma-Tech IMIX-PTS method for microanalysis data acquisition, x-rays are detected and their energy determined in the digital pulse processor. Each photon is tagged with its energy and with the *x,y* coordinates of the position from which the x-ray was generated. As the system scans a sample at frame rate image acquisition speeds, packets of digital information are fed to the microanalysis workstation for live display and storage as spectra, maps, and line profiles. Data are sorted into full EDS spectrum from the scanned area, full EDS spectrum at each pixel location, multiple spectra from regions selected within the image, and x-ray maps for all elements of the periodic table.

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### **High-Pressure Cell for Dynamic Stress Rheometers:**

Rheometrics offers a high-pressure cell that transforms the SR-200 or SR-500 Dynamic Stress Rheometer into a high-pressure rheometer within minutes. The cell's pressure range is 0–750 psi (50 bar or 5 MPa). The temperature range is that of the recirculating unit, -40 to 150°C. A product brief discusses applications, which include viscosity under steady shear at several pressures for a lubricating oil and modulus versus time and temperature for a biopolymer tested under high pressure.

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### **Rotating Anode X-Ray Generator:**

Rigaku's ultraX 18 is an 18 kW x-ray generator with a redesigned rotating anode assembly. The anode assembly is mounted and movable on a breadboard, which also acts as the generator housing cover. The turbomolecular pump and anode housing are combined in a desktop unit which can be moved or oriented to fit user requirements. Beam height and angle are adjustable to accommodate accessories and user customization.

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