

RESOURCES

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

Crystal Orientation Mapping for the SEM: Link™ OpalMap™ from Oxford Instruments drives the microscope electron beam over the sample to collect an electron backscattering pattern at each grid of points. This pattern is solved using advanced image processing techniques to calculate the crystal orientation at each point, allowing maps of the crystal orientation to be displayed and the microstructure of the sample to be regenerated. Software is supplied for grain boundary characterization and for studying the relationship between microtexture and grain orientations.

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Diode-Pumped Solid-State Laser:

The Millennia II™ from Spectra-Physics Lasers is a 2W, visible-wavelength DPSS laser that is suitable for semiconductor wafer inspection, disk texturing, particle scattering, rephotography, and spectroscopy. The air-cooled system delivers power stability and beam-pointing performance comparable to water-cooled argon-ion lasers without high operating costs. Operating in the green region at 532 nm, the system provides an output beam with excellent spatial mode and low peak-to-peak amplitude noise.

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Compact Grinding Mill:

The MiniMill from Philips Analytical X-Ray uses a planetary system to drive two powder containers that accept sample quantities up to 20 ml and several grinding balls to produce powders with a fineness of <math><20\ \mu\text{m}</math>. Powder containers and grinding balls are available in stainless steel, zirconia, and Syalon. The mill features a rotating speed control and timer and is suited to sample preparation for trace analysis of materials such as cement, ores, ceramics, oxides, and drugs.

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Optical Parametric Oscillator:

The Sunlite OPO from Continuum is a solid-state alternative to dye lasers and offers an output energy of 35 mJ at the peak of the tuning curve, when pumped with the Powerlite 8000 or 9020. The device delivers a linewidth of <math><0.1\ \text{cm}^{-1}</math> because of the oscillator configuration, which uses the narrow acceptance angle of BBO in conjunction with the grating to form a narrow spectral filter. Users have direct access to the visible spectrum, wavelength on command, and high gain with a single optic set. Coverage from 225 to 450 nm can be achieved when used with the FX-1 frequency extension module.

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▲ **Double-Sided Disk Measurements:**

WYKO's IR6™ disk and blank substrate flatness inspection system improves substrate process characterization by making two-sided flatness and parallelism measurements on disks (sizes to 130 mm) in one pass. The laser optics measure global flatness of rough substrates (e.g., unpolished aluminum) with runout to 53.0 μm across one radius. A long-wavelength 10.6 μm laser allows measurement of rough surfaces; dual-beam technology enables surface parallelism measurement and two-sided flatness measurements on disks without repositioning.

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Alumina Fiber for High-Temperature Insulation Products:

Saffil® from ICI Americas is suitable for applications such as vacuum-formed boards, custom shapes, and papers operating at temperatures up to 1750°C. Available in bulk and milled forms, the fibers have a chemical composition of 96% alumina and 4% silica, with total impurities <math><0.5\%</math>. Fiber diameter is controlled around a median of 3.0 μm . The fibers resist chemical attack from metal oxides at high temperatures and offer low thermal shrinkage when used as the main component of high-performance vacuum-formed boards.

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Vacuum Catalog on CD-ROM:

Pfeiffer Vacuum Technology's free CD-ROM presents a catalog of more than 3,000 products, accessories, and components. Also included is a glossary of technical terms and data to assist users in determining their requirements for vacuum products and performance. Application areas, technical data, characteristic curve, scale drawing, accessories, and options can be called up and printed.

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High-Resolution Profiler: Tencor's HRP-100 offers in one system the combined monitoring capability of an in-line profilometer and an off-line AFM tool. Users can obtain high-resolution surface analysis and characterization for MR head and laser texture disk development in in-line process monitoring. The system can provide macro-to-micro imaging (features from 50 mm to 0.25 μm) with scan lengths to 200 mm and lateral resolution to 1 nm. The sensor can scan surfaces with a constant force of 0.05 mg without damage to the disk or head surface.

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Isotope Ratio Mass Spectrometer:

The Plasma 54 Multicollector ICP-MS from VG Elemental combines an ICP ion source with a double focusing magnetic sector mass analyzer and a multicollector ion detection system. The ICP ion source permits analysis of most elements in the periodic table, including refractory and high-ionization-potential elements. The multicollector ion detection system facilitates simultaneous measurement of isotopic components, normalizing signal intensity fluctuations. Isotope ratio measurements are possible to precisions of <math><0.003\% \text{ RSD}</math>.

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Vertical Axis Design Batch Metallizer:

Darly Custom Technology's batch metallizer features a vertical axis design and is suitable for metallization of electronics, computers, lighting, and decorative coatings. The vacuum chamber consists of a vertical axis and two half cylinders, with half the chamber being fixed and the other half rotating open. The workloader and evaporating source assembly rotate out with the mobile half cylinder. The metallizer will evacuate a clean, dry, empty chamber from atmosphere to 5×10^{-4} Torr in less than five minutes, with ultimate vacuum of better than 1×10^{-5} Torr.

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Gas Chromatography Training Program:

SAVANT Audiovisuals offers a computer-based interactive training program on gas chromatography. The program overview includes chromatographic separation process, types of chromatography, equipment and components, mobile and stationary phases, columns, inlets, temperature programming, detection systems, and data handling. Users can customize quizzes and subject screens to incorporate an organization's in-house lab procedures.

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