

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

UHV Window: Bomco's re-entrant UHV window provides optical access to MBE chambers. The 1.5-in. (3.8 cm) window is positioned on the inside of the 4.5-in. (7.0 cm) mounting flange and extends inside the vacuum chamber to save space and to protect the window during UHV operations. Also available is a protective stainless steel shield that slips over the flange of Bomco's traditional window. The UHV window facilitates the use of optical pyrometry, ellipsometry, light scattering, and reflectance/difference spectroscopy to obtain real-time data.

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Batch Implant System: The Precision Implant xR80 from Applied Materials® addresses the need for high beam currents in the 1–80 keV energy range, which is critical in the production of source-drain shallow junction implants. The device is two meters wide but delivers 5 mA of B⁺ at 5 keV and 9 mA at 10 keV. The design reduces floorspace and decreases the number of systems needed to meet wafer output targets. Control electronics, vacuum systems, power supplies, and wafer processing technology are the same as the 9500xR.

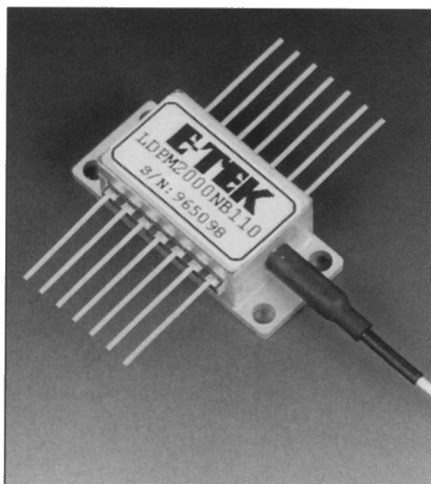
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Universal Mechanical Strength Tester: The Romulus III from Quad Group executes nine coating adherence tests, tensile and flexural strain tests for material analysis, and more than 30 QC tests. Interchangeable load platforms offer a range of 1 g to 1 ton. The standard range is 0.05–100 kg force, but the instrument can be configured to apply test forces of 1 g to 0.75 ton. Applications include paints, adhesives, and medical and microelectronic technologies.

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Ion Beam Source: Ion Tech's 6 cm RF ion beam source is suitable for oxygen, nitrogen, and inert gas applications. The device provides repeatable operation with beam currents to 200 mA over a beam energy range of 100–2000 eV. Operating on radio frequency 13.56 MHz to provide long run times, the source shortens process cycle times because it does not require the long cool-down periods of hollow cathode sources. Grids for the source are composed of molybdenum using a domed configuration mounted in a convex or concave orientation. Pyrolytic graphite grids can be fitted to the source for inert gas operation.

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Laser Diode Power Module: The 1550 nm LDPM from E-TEK Dynamics delivers more than 20 mW of power and is designed for high-power continuous-wave optical sources for analog applications using an external modulator. The device includes a distributed feedback laser diode, thermoelectric cooler, monitor photodiode, isolator, and pigtailed single-mode or polarization-maintaining fiber in a hermetically sealed 14-pin dual-in-line or butterfly style package.

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Compression Porometer: With Porous Materials' Compression Porometer, users can characterize the pore structure of a material, such as a battery separator, under compression. The instrument can measure the largest and smallest pore diameters, mean pore diameter, pore distribution, mean flow pressure, and gas and liquid permeability of a compressed material. Separators can be characterized under conditions of their actual use within a battery and tested under operator-designated compression levels.

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Benchtop Reactive Ion Etcher: Plasma Sciences' RIE-600 is designed for R&D anisotropic etching applications. Up to 600 W RF power at 13.56 MHz is possible. A four-channel mass flow controller system with integral gas halo shower ring sustains a uniform plasma discharge and uniform anisotropic etch. The 12-in. (0.3 m)-diameter sample stage is water cooled for protecting heat-sensitive devices. Recipe storage for automatic repeat processing is standard, along with datalogging and interlocked manual control access from the keyboard.

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Crystallography Software: Crystallographica from Oxford Cryosystems is an extended Pascal interpreter with a library of crystallographic routines, as well as a crystal structure drawing package. The software is suitable for nonstandard research problems and teaching involving crystallography. Features include powder diffraction pattern simulation; (x,y) graphing; and databases holding relevant properties of elements, ionic species, and nuclear isotopes. A downloadable demonstration version is available.

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Micromechanical Properties Testing System: The Nano Indenter® XP from Nano® Instruments measures hardness, Young's modulus, fracture toughness, and creep properties by indentation. With a standard load capability of up to 50 g or higher, the instrument can be used for microhardness applications and those requiring sensitivity to measure the mechanical properties of submicron thin films. Applications include optical coatings, microelectronics, magnetic storage media, and medical devices.

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Imaging and Resolving Monochromators: McPherson™ offers convertible mirror systems to control astigmatism in some monochromator models. The mirror unit acts similarly to a cylindrical lens but avoids uv absorption, losses on lens interfaces, and light scattering. With two exit ports, one port is dedicated to imaging applications and the other to spectral resolution. The system reduces sagittal astigmatism that typically causes the focused spectrum to blur in the vertical direction.

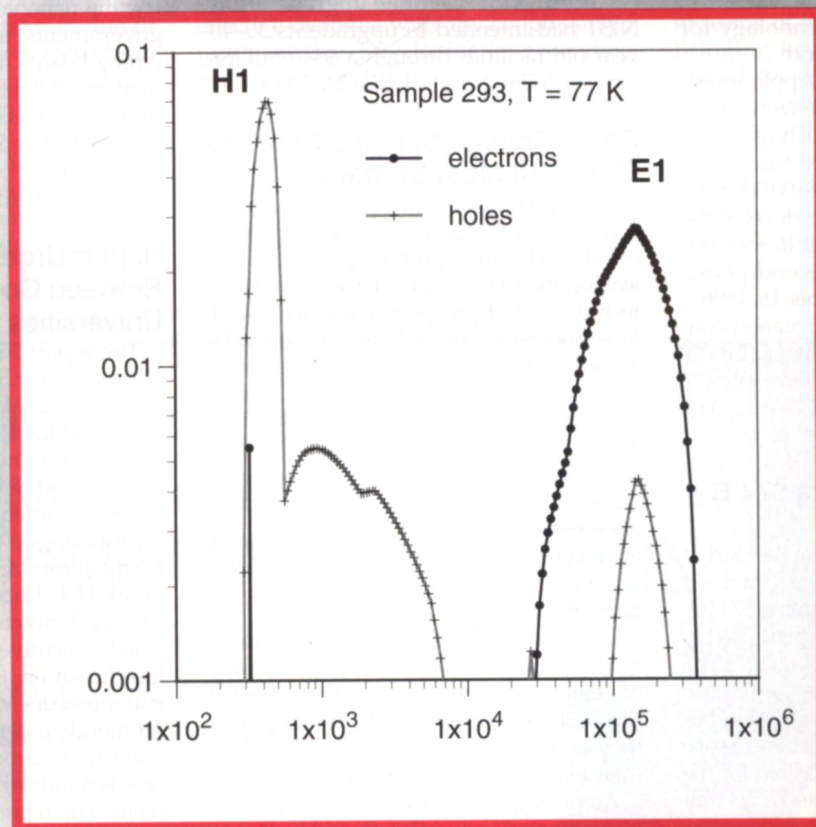
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Wafer Process Evaluation SEM: Hitachi's S-7800 DRT offers 50 Å resolution at 1000 V accelerating voltage, with a high accelerating voltage of 500 V to 15 kV for elemental energy dispersive x-ray spectroscopy analysis and auto-identification of heavy elements. The high-resolution capability, designed to meet the imaging requirements of 0.25-μm design rule semiconductor devices, results from the electron optical lens and through-the-lens secondary electron detector design. Features include autofocusing and automatic wafer loading. Users can image in-process wafers up to 8 in. (0.2 m) in diameter. The sample stage can be tilted at angles up to 60°, moved along the XYZ axes, and rotated.

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