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

Inverted Microscopes: Nikon's Epiphot 300 and 200 video-ready metallographs feature a CF® infinity corrected optical system and can be used with Nikon objectives ranging from 1.5× to 200×. Illumination choices range from a 100-W halogen system to xenon, mercury, and 150-W metal halide light sources. The Epiphot 300 on-board system provides 35-mm and large-format capabilities, along with ports for video and image analysis and a built-in zoom magnification. The Epiphot 200, designed for users who do not require on-board photo capability, can be upgraded with binocular and trinocular tubes to handle still photography or video recording.
Circle No. 70 on Reader Service Card.

Fiber-Coupled Diode Laser Module: An integrated 30-W, fiber-coupled diode laser module from Opto Power is designed for direct thermal applications. The unit, which has a nominal wavelength of 830 nm and an adjustable drive current, can deliver near-IR CW laser energy via a 1.5-mm optical fiber bundle. It can be equipped with an optical converter to reduce the beam diameter and to allow the output power from the fiber bundle to be injected into multimode 400-μm fibers. An optional visible diode laser that emits an aiming beam collinear to the IR output is available.
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Monte Carlo Modeling Software: The Electron Flight Simulator from Small World runs on Windows and produces visual models of electron beam interactions with a specimen in an SEM or TEM. Any sample chemistry can be modeled, and multilayer structures up to five layers in thickness can be analyzed simultaneously, either stand-alone or on a substrate. The program generates electron interaction volume and x-ray interaction volume models. An on-line periodic table has x-ray line data and physical properties data.
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Thin Film Deposition Controller: The IC/5 from Leybold Inficon can store up to 50 processes and 250 layers, with unlimited storage using the floppy disk option. The data logging capability stores layer and process data in ASCII format. The controller features multiple sources, crucibles, materials, crystal sensors, and processes in a user-selectable matrix. It also controls the multiple CrystalSix crystal sensor head. Users can dedicate crystals to specific materials for rate and thickness control.
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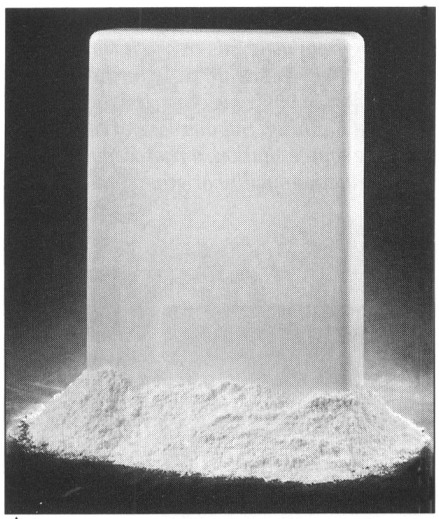

Advanced Fluoropolymer: HyQ™ from MACE is a fluorinated material that can surpass PFA and other melt-processable resins in reliability, structural integrity, and stability. Tests have shown that ultrapure water extraction analysis demonstrated lower levels of contamination in HyQ than in PFA. Water absorption in PTFE was <0.0001%, confirming that HyQ is virtually free of microporosity. HyQ was also found to have 44% higher ultimate tensile strength and 30% lower deformation under load than PFA.
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Plastics Catalog: Free 32-page catalog from Plastics Design Library lists more than 200 books and software products on research, testing, marketing, and packaging for the plastics and rubber industries. Catalog sections cover environmental issues, manufacturing and processing, materials, products and applications, and properties and testing, as well as a section on 12 software products. A roster of Rapra Technology products is featured.
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Maskless Wet Processing System: The RotoEtch™ from Materials and Technologies Corporation facilitates wet processing of localized areas ranging from one-tenth of an inch to a few inches in diameter, without use of lithographic steps, masking, or immersion. Accessories enable application of electrical potential across the confined fluid during elecrolytic processes such as electroplating. The system is compatible with most organic solvents, etchants, and developers, including strong acid mixes and alkali. Applictions include thinning of TEM samples, Si removal from the back of thin film coatings, or in CMOS and MEMS technologies.
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Radiometer Microprobe: The RAMP Micro Probe from International Light is a right-angle dipstick-style probe that features a ground quartz optical element with a 400-μm sensing aperture. The 5-mm square chrome-plated probe is designed to perform measurements from 200 to 3,000 nm inside hostile UV exposure systems at 204°C and has an acceptance angle of ±20° at 550 nm. Available in 1.5-ft. and 3-ft. lengths, the probe operates with the field-portable IL1400A radiometer which features microprocessor-controlled autoranging and provides direct readouts.
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Coating Thickness Measuring System: The Fischerscope® MMS from Fischer Technology enables users to combine and configure different test methods. With a base unit and multiple Fischer Smart Probes, users can perform coating thickness measurements using the magnetic induction, eddy current, or beta backscatter test method. The unit also can measure the electrical conductivity of nonferrous metals. Customer-specific documentation of results with customizable report formats and content can be generated and printed, or downloaded to a PC.
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Gate Valve Throttles and Seals: The Series 64 gate valve from VAT features a direct gear Harmonic® drive and is suitable for reactive and high-pressure processes such as etching, sputtering, and LPCVD. The valve can operate in conditions from atmosphere to 10^{-9} torr and is bakeable to 150°C. An alternative to butterfly and vane-type throttle valves, the valve is accurate to 0.1% fs of the sensor signal, with short settling times and controlled conductances of 0.6 s^{-1}. It is available in 2.5-in. to 16-in. I.D. flange sizes.
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Wafer Dry-Cleaning Process: Radiance Services has developed a process of using laser light and inert gas to dry-clean wafers. The process involves scanning a wafer with a low-power deep-UV excimer laser while an inert gas flows over the surface. At low power and at certain wavelengths, photons break the atomic bonds that attach surface particles to a wafer, without damaging the wafer. When used to clean fused silica blanks, gold-coated reflectors, coated BK-7, indium-tin-oxide on quartz, quartz wafer boats, furnace tubes, crucibles, and chrome on quartz photomasks, the process removed particles, metallic ions, fingerprints, recondensed silicon, and ink.
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https://doi.org/10.1557/S0883769400045838 Published online by Cambridge University Press