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

Rapid Cycle Coater: The Swift-Kote from Darly Custom Technology mounts and metallizes a small number of 3-D plastic substrates in 40 s or less. The metallizer pumps from atmosphere to 10^{-5} torr in less than 20 s, completing metallization in 35–40 s. The cryogenic pumping system reduces oil backstreaming that occurs with diffusion pumps. The system also eliminates humidity, resulting in higher-quality metallization with less water vapor. The double-source design enables users to prepare the next load of sources during metallization of another source.
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Self-Contained Stroke Amplifier: ETREMA Products offers a prototype hydraulic stroke amplifier that provides 500 μm of displacement from an ETREMA TERFENOL-D® actuator. Rise time is less than 10 ms under load, and less than 2 in. (5.08 cm) are added to the length of the actuator. The design includes an entirely contained hydraulic fluid and preload application through the stroke amplifier directly to the TERFENOL-D rod. The device mounts on the end of ETREMA's standard actuators and can be used for valve actuation, latches, and pump chambers.
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Archiving Software: R'Kive 1.0 software from Clemex enables users to automate the archiving process for scientific images and files. Integrated with Microsoft Explorer, the software can be used to store files in project folders which are then archived automatically to media such as tapes, high-capacity drives, CD-ROM, and CD rewritable disks. Users also can print by project or image according to customized layout settings and can search by file name, full text, field property, and image pattern. Multiple-user and annotation capabilities are possible, as well as image capture.
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Electrometer/High-Resistance Meter: Keithley Instruments' Model 6517A overcomes background currents in high-resistivity materials, which inhibit repeatability and accuracy of resistance measurements. A voltage (polarity) reversal method allows the instrument to calculate the weighted average of four polarity reversal readings to eliminate the effects of background current and drift. Other features include high-resistance measurements up to 10^{17} ohms, a +1 kV voltage source with sweep capabilities, and built-in "bias-measure" test sequence for ASTMD-257 measurements.
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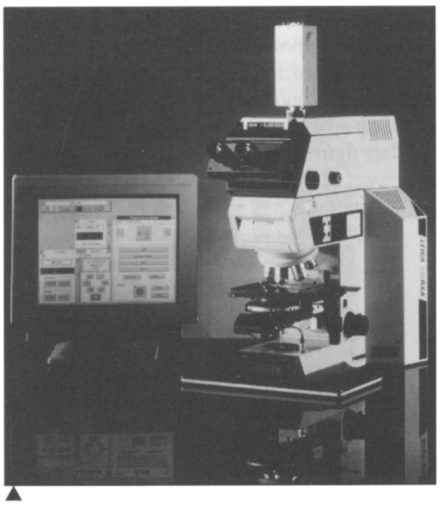

Microscope with Motorized Eight-Filter Turret: The computer-controlled, modular DM RXA from Leica features a motorized reflected light illuminator holding up to eight separate fluorescence filter combinations. Functions include motor focus with four levels of focus ranging from 0.05–1.5 μm and Z-axis repositioning, motorized universal condenser, and motorized transmitted light field and aperture adjustment for automatic adjustment of illumination diaphragms when the objective is changed. The instrument is suitable for all fluorescence applications in biomedical research.
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Combined Oxygen Fuel—Combustion Gas Sensor: Ceramic Oxide Fabricators offers a COF sensor in which a zirconia-based oxygen sensor is located concentrically inside another zirconia-based oxygen sensor. The outer sensor has a hole drilled through its side wall, enabling combustion gas to enter and diffuse down a catalyzed anulus. Equilibrated gas is present on the inside, and nonequilibrium gas is present on the outside of the outside sensor. A linear output of 0–100 millivolts is produced within 1–1100 ppm of carbon monoxide.
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Cleaning Solutions Newsletter: Free newsletter from Alconox covers aqueous cleaning techniques in laboratory, manufacturing, and processing industries. Tips and advice are presented on topics such as aqueous cleaners in pharmaceutical processing and electronic manufacturing; procedures for determining the cleanliness of metal, glass, and plastic substrates; pH as a detergent-selection factor; and corrosion inhibition. A question-and-answer section is included.
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Polymer Analyzer: Rheometric Scientific's ARES dynamic strain rheometer is configured to characterize rheological properties of molten and solid polymers. The modular system is equipped with an air convection oven, cone and parallel plates, a torsion rectangular fixture, and Windows95-based Orchestrator software. The oven allows testing up to 600°C, and an optional cryogenic system enables users to test down to -150°C. Features include autozero, autogap, and autotension. The system can be configured to test most materials, including polymers, polymer blends, coatings, and suspensions.
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Scanning Electron Microscope: The XL30ESEM from Philips Electron Optics provides secondary electron imaging at water vapor pressures of 10 torr or higher. The instrument comes with tungsten/LaB_6 guns to complement the existing field-emission gun. The ESEM mode eliminates high vacuum in the microscope chamber of conventional SEMs, using a high-pressure gaseous atmosphere for study of wet or oily samples. A controlled pressure mode with a small beam skirt uses a backscatter detector for imaging at chamber pressures below 2 mBar. The instrument also works in high-vacuum SEM mode, with optional SE detector.
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Four-Stage Pump: The UniDry™ from Pfeiffer Vacuum Technology has a high-volume flow rate of 34 cfm with an ultimate vacuum of 3×10^{-2} torr. The temperature remains constant throughout the pump, reducing condensation and improving uptime performance. The pump can operate at pressures less than 75 torr with air cooling only, and an optical microprocessor allows for local or remote control of process parameters. When combined with a Pfeiffer Vacuum Roots pump, the UniDry can achieve pumping speeds of up to 650 cfm.
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UV Laser Ablation Station: Free brochure from Merchantek Electro-Optics highlights the features of the LUV266-3, which is designed for direct sampling of solids. Included are charts, graphs, and diagrams detailing detection limits, sensitivity, particle size, and reproducibility, as well as technical specifications and design features. Reconfiguration information allows the system to be adapted to applications such as ICP-OES, ICP-MS, IRMS, and noble gas mass spectrometry.
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