

## RESOURCES

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

**Ultrasonic Deposition System:** The Accu-Mist™ from Sono-Tek is designed for deposition of liquid coatings. The system combines a MicroSpray™ ultrasonic atomizing nozzle with low-pressure air to produce a soft, focused beam of spray. The ultrasonic spray nozzle does not contact work surfaces, and the low-velocity delivery will not harm components. Spray patterns are adjustable from widths of 0.07–0.25 in. (0.17–0.64 cm), and liquid delivery rates can vary from 1 to 250  $\mu\text{l/s}$ .

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**UHV Scanning Probe Microscope:** Park Scientific's AutoProbe® VP2 is designed for atomic-scale surface analysis in UHV. The instrument offers high-temperature imaging in both STM and AFM. The device has demonstrated AFM images to 300°C and STM images to 600°C, with direct and indirect heating capabilities to 1200°C. Custom sample holders can be added for compatibility with MBE systems, and features include a  $y$ -translation probe positioning range of 5 mm.

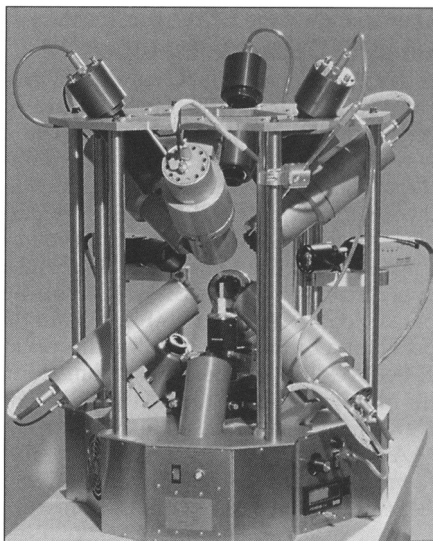
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**Photomicrographic Camera:** The MPS30 from Leica is compatible with all Leica compound microscopes, stereomicroscopes, and macroscopes. Most functions are automatic. The device determines exposure by measuring light with integrated metering, processes the parameters, and sets the optimum exposure. The camera controls the shutter, auto film loading, film advance after exposure, and film rewind at the end of the roll. An optional data back allows superimposition of up to 36 characters.

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**Sapphire Detecting Units:** Sapphire detecting units from EDAX are designed for x-ray microanalysis. Detector window materials range from beryllium to super ultrathin polymers. Windowless ECÓN detectors are also available. The detectors offer improved resolution of low-energy spectra, high peak-to-background ratio; and a mean time between failure of more than eight years. They are available as a standard dewar 10-liter unit, a compact unit, the CryoX (which provides the performance of LN<sub>2</sub> detectors without the LN<sub>2</sub>), and a series of retractable TEM detectors.

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**Noncontact Materials Processing Levitator:** The Aero-Acoustic Levitator from Containerless Research uses aerodynamic and acoustic forces in combination with laser beam heating for containerless processing of ceramic, glass, and superconductor materials. The instrument uses a three-axis positioning system. Location of the acoustic well is controlled by adjusting the relative phase of opposed acoustic transducers in response to sample position measurements by three-axis optical position sensing. Materials can be levitated at ambient or high (3000 K) temperatures.

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**Low-Density Closed-Cell Silicone:** The Groendyk Lite™ silicone sponge from Groendyk Manufacturing provides the multiple performance benefits of silicone with reduced weight. The material enhances performance over lower-grade materials used for cushioning, gasketing, sealing, and insulating. The sponge meets or exceeds BMS1-68 requirements for fire resistance, compression deflection, temperature range, compression set, elongation, water absorption, and aging.

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**Semi-Insulating Silicon Carbide:** Cree Research has produced 4H-SiC substrates suitable for development of high-frequency power devices, radiation detectors, and application requiring electrical insulation between the substrate and active layers. The substrates have a diameter of 30.2 mm, thickness of 0.33 mm, and resistivity of  $\geq 1 \times 10^5 \Omega \text{ cm}$ . Bandgap is 3.26 eV, and thermal conductivity is 4.9 W/cm K.

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**Reactive Silicones:** Gelest offers a 48-page booklet describing reactive silicones that can be formulated into coatings, membranes, cured rubbers, and adhesives for mechanical, optical, electronic, and ceramic applications. The text provides starting-point formulations and references. Data on vinyl, hydride, silanol, and alkoxy functional silicones are provided for conventional silicone cure systems. Data on amine, epoxy, methacrylate, hydroxy, and mercapto silicones are provided for hybrid organic-silicone cure systems.

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**Optical Instruments Catalog:** Edmund Scientific's 266-page catalog provides data on lasers, optics, positioning equipment, fiber optics, video systems, and instruments and components. Featured is information on the Tech Spec™ line of precision optics and filters. Application primers are included for laser diodes, laser beam expanders, mirrors, and integrated mounting components.

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**RF Plasma Nitrogen Source:** The UNI-Bulb™ from EPI can increase GaN growth rates. Growth rates of 6000 Å/h have been reported when using the UNI-Bulb to grow GaN at 900°C. An optical emission spectrum is produced, which is rich in nitrogen atoms and first positive series nitrogen molecules that together form reactive nitrogen for MBE growth of GaN and other III-V nitrides. *P*-type GaN:Mg films indicate a free hole concentration of  $\pm 10^{18} \text{ cm}^{-3}$  at 300 K.

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**Ultrathin Diamond Knives:** Diatome's 5- and 6-mm diamond knives are suitable for cutting large block faces and are guaranteed for an unlimited number of resharpenings. Users can cut as thin as 30 nm or as thick as 150 nm. Applications include electron and light microscopy.

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**Fluorescence System:** The Fluorolog-3 from Instruments S.A. improves on SPEX spectrofluorometers by enabling users to scan 10 times faster and to increase signal-to-noise by 50%, all with computer-controlled automated calibration and bandpass. Adding the Tau-2 lifetime unit enables users to probe molecular dynamics on the picosecond scale. The system offers accessories for any temperature, solid or liquid, microwell or cuvette, and polarization or anisotropy.

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