

## RESOURCES

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

**Inverted Microscope:** Leica's computer-controlled DMIRB/E is equipped with a motorized revolving nosepiece, motorized focus, and optional motorized reflected light illuminator that holds up to four separate fluorescence filter combinations. Features include four-level electronic focusing with focus step sizes ranging from 0.5–1.5  $\mu\text{m}$  and Z-axis repositioning. The modular instrument is suitable for all multiple wavelength fluorescence applications, particularly biomedical live cell research.

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**UHV Double Monochromator:** McPherson's 180° rotatable UHV double monochromator system addresses the demand for accurate calibration and standards for the 35–250 nm region. The system can determine stray light components in laser, absorption, and other spectrometry. Detectors are calibrated by comparing their spectral response to monochromatic radiation with the response of the primary detector standard. Previously, rare ionization chambers served as primary detector standards in the vacuum UHV spectral range, and thermopiles extended calibration capability to wavelengths above 100 nm.

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**High and Ultrahigh Vacuum Electron Beam Technology:** MDC Vacuum Products' 32-page brochure details e-VAP® thin film deposition equipment. Electron beam evaporation systems are available for thin film deposition of metallic, insulating, conductive, and dielectric materials. Miniature and resistive evaporation units are offered with horizontal or vertical flanged-mounted components. Modular evaporation sources include a selection of frame sizes and geometries for special applications. Electronic components include power supplies, source and deposition controls, and programmable sweep controllers.

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**Rapid Thermal Processing System:** The JetStar from JIPELEC features a cold wall chamber design for repeatable thermal behavior, low contamination, and accurate temperature measurement. The system offers an extended temperature range up to 1300°C, vacuum performance, and gas mixing capability, making it suitable for RTP and RTCVD processes. Equipped with an industrial programmable controller, the system can be upgraded with the JIPELEC Process Image Management Station for full recipe management and data analysis.

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**Spin Coater:** Chemat Technology's KW-4A features dual speed controls with continuous speed adjustment and individual timers. Initially, the spin coater rotates at the low-speed range of 500–2500 rpm for a pre-set cycle time. Spinner automatically switches to a high-speed range of 1000–8000 rpm for a pre-set cycle time. The process distributes the coating solution uniformly. The spin coater is suitable for thin-film deposition research.

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**Microscopy Imaging and Analysis Software:** General Nanotechnology's LightProbe™ and ScanProbe™ software modules are suitable for analysis of sub-micron images and sequences of images generated by optical microscopes, SPMs, SEMs, and other image-generating systems that provide digital output in graphical format. The modules include 2-D and 3-D rendered image acquisition functions and visualization, analysis, annotation, and reformatting capabilities. The software runs on Windows 3.00 and higher and Windows 95 and NT without auxiliary hardware accelerators.

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**Polyurethane-Based Encapsulating Compounds:** Key Polymer offers two potting compounds for transformers, capacitors, coils, and power supplies. Key PC3430 is used to pot into contained spaces; Key PC3434 acts as a conformal coating for encapsulating flat circuit boards. Compared to epoxy compounds, the products reduce material costs, speed curing time, and improve impact resistance and thermal cycling performance. Properties can be custom-formulated for applications such as gel time, thermal and electrical conductivity, flame retardancy, color, and viscosity/rheology.

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**Benchtop Grinding/Lapping Polishing Machines:** Struers offers three LaboPol™ machines: a 250-rpm version, a two-disc 300-rpm machine, and a variable-speed (50–500 rpm) machine controlled by an electronic servo system that keeps speed constant regardless of load. For automated grinding and polishing, the machines can be mounted to either of two LaboForce™ specimen movers for one to three specimens: an 8-rpm version with adjustable force of 2–20 N, and a 250-rpm version with adjustable force of 5–40 N.

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**Cluster Thin Film Process System:** DCA Instruments' E600 can perform a computer-controlled multistage UHV thin film process in different process stations with various process parameters. The system consists of a UHV sputtering chamber designed for on- and off-axis magnetron sputtering; an ion beam milling chamber using a 16-cm RF source for ion-beam etching; a plasma chamber that provides substrate cleaning or oxygen plasma ashing of the photoresist; a flange-mounted magnetron with a tilt stage; an oxygen-resistant heater assembly; a substrate manipulator; and a substrate stage with motorized continuous rotation.

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**Variable-Temperature UHV SPM:** Omicron's VT UHV SPM features STM and AFM detection at variable temperatures. AFM is in the temperature range of 25–900 K. The needle-sensor AFM detection offers a compromise between resolution and thermal stability, overcoming drift problems of conventional cantilever designs due to thermally induced bending, analogous to a bi-metal effect. The instrument is suitable for examining thermally induced processes such as growth, diffusion, and reactive coating/etching on insulating surfaces.

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**Negative Ion Beam Source:** Skion offers the CS02 negative ion beam source for direct metal ion beam deposition. Users can control the incident ion beam energy and fabricate controlled structures and controlled film properties. Features include various beam species such as C, Si, Au, W, Mo, Ni, Al, ITO, SiC; rapid change of targets; and UHV compatibility maintaining less than  $10^{-9}$  torr while operating the ion source with no differential pumping. No inert gases are consumed during deposition.

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