

## RESOURCES

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

**Compact Magnetometer:** Compact, low-cost magnetometer from EG&G Princeton Applied Research has most of the features found in larger, more expensive models. Model 4500-30 offers some significant advantages of its own, as well, such as reduced power requirements, air cooling, a more rugged rack system and a smaller footprint. The new model was designed for use in laboratories and industrial facilities where space is at a premium. With a small 300-pound magnet, the unit is comparatively light in weight, and its modular configuration allows unusual design flexibility. Air cooled, the 4500-30 eliminates the need for water lines and alleviates related environmental concerns. It also requires relatively little power for efficient operation: the smallest version, for example, uses only 115 V/20 A.

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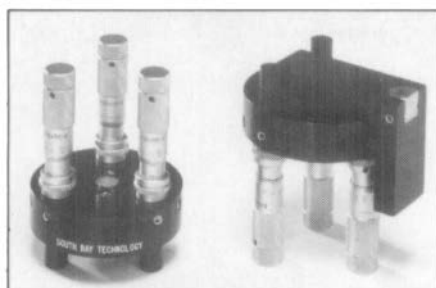
**Calibration of Cryogenic Temperature Sensing Elements:** Lake Shore's low-temperature calibration facility can perform calibrations from 0.05 K to 473 K for virtually all types of cryogenic temperature sensing elements. Calibrations are based on the new International Temperature Scale (ITS-90). Two-lead or four-lead sensors are calibrated in a four-wire configuration. A comparison calibration is performed by measuring the resistance or forward voltage of first the standard, then the sensor and the standard again. The process provides corrections for drift occurring during calibration.

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### **Advice From/For Women Scientists:**

College women interested in science careers can get practical, how-to advice from women scientists through a new booklet from the U.S. Department of Energy's Argonne National Laboratory. The booklet, *Graduate School and Beyond*, is based on a panel discussion from "Science Careers in Search of Women," a conference held annually at the laboratory. Panelists offered personal experiences and guidance on: selecting a graduate school; supporting oneself through graduate school; choosing a thesis adviser; combining a career with family life; planning for the future; and fulfilling unspoken requirements such as attendance at seminars and conferences, or preparing and giving seminar talks.

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### **SEM and TEM Preparation Without Ion Milling**

**Laboratory High Voltage Power Supplies:** Bertan Series 230 family of compact precision high-voltage power supplies features outputs ranging from 0 to  $\pm 100$  V at 15 mA up to 0 to  $\pm 30,000$  V at 0.4 mA. The Series 230 includes continuous front panel precision control of the high voltage output from 0 to maximum voltage, reversible polarity, and a  $3\frac{1}{2}$  digit LCD meter for reading output voltage and current. High-stability, low-noise design makes the series especially suitable for use with photomultipliers and other particle detectors, high-performance capillary electrophoresis systems, electron and ion beam systems, imaging systems, and other laboratory and OEM applications. Standard units can be economically modified.

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**YBCO Thin Films:** Conductus offers an affordable source of this high-quality material to research and development groups. The films are produced by the single-target off-axis sputtering process on one-square-centimeter substrates of  $\text{LaAlO}_3$ , typically 2000-4000 Å thick, and become superconducting at or above 88 K. Films shipped will include performance data taken during the same production run. Cost per film is \$350.

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**TEM Specimen Thinner:** Focused ion beam milling system for high spatial resolution thinning for TEM samples is available. Model FIB200 from Oxford Applied Research features a zero gas load, high brightness, focused ion beam with 0.2 to 2 micron spatial resolution. An integral aperture changer enables single switching from the coarse focus, rapid milling mode to high magnification imaging. The FIB200 accepts all standard TEM specimen holders. Sample entry is achieved in less than 20 seconds via a loadlock. Milling and imaging are Macintosh mouse controlled, and the software provides multiple image capture and display.

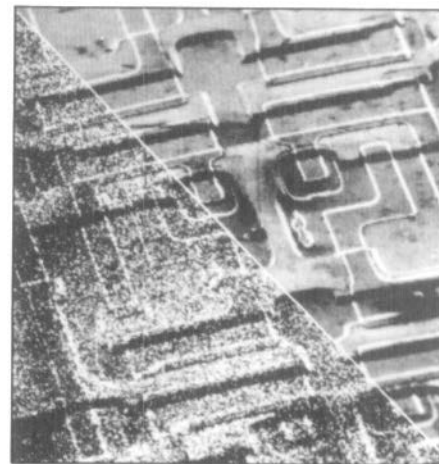
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**SEM and TEM Preparation Without Ion Milling:** Model 590 Tripod Polisher from South Bay Technology is designed to accurately prepare SEM and TEM samples of pre-specified micron-sized regions. For TEM samples, this technique reduces ion milling times to less than 15 minutes and often eliminates it. The technique was designed for semiconductor cross-sections, but has been used to prepare both plan view and cross-section samples. Model 590 simplifies sample preparation previously requiring hours of dimpling and ion milling.

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**Video Noise Reducer:** A simple, low-cost device from Synoptics can remove noise from live video images. Synter, a small, self-contained image processing unit connected between a video input source and output source, does not require a computer, programming, or software. By means of a real-time feedback processor, it provides a choice of three recursive filters selected by push buttons to remove progressively greater degrees of noise. Applications include surveillance, NDT, industrial inspection, infrared imaging, scientific research, and electron microscopy. For printing video images, Synter contains a built-in "freeze-frame" function.

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### **Video Noise Reducer**

**Sputtering and Evaporation Materials:** Pure Tech's 12-page, full-color guide describes the company's metals and alloys, manufacturing techniques, services, and ordering process. The brochure also has an extensive listing of materials, including metallic PVD, alloy and cermet PVD, and nonmetallic PVD materials. Materials are made to customer specifications.

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