

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

Electron Energy Analyzer: Topac Scientific's Model EA 125 hemispherical analyzer, from the Electron Analyzer Company, uses digital electronics to control the analyzer's pass energy and lens voltages. The pass energy can be varied continuously rather than in discrete steps. Two lenses are available: a variable magnification lens for imaging down to small spot sizes in XPS, and a wide-angle lens for applications such as Auger spectroscopy. Both lenses provide electronically variable input angle and magnification and can be interchanged by exchanging elements and reprogramming the controller.

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Push-Out Scanning Electron Microscope:

Touchstone's Fiber Push-Out SEM can push out fibers in metal, ceramic, or polymer matrix composites, allowing measurement of bond strength and sliding stress of fibers. The apparatus can test bond strength of fibers 1–200 μm in diameter at temperatures up to 1200°C. The device can be used to measure bond strength of fiber optics. An array of nanotechnology mechanical and thermal tests also can be performed. The SEM is available as a finished product, retrofitted onto an existing scanning electron microscope, or as a service.

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Polishing Dispersions:

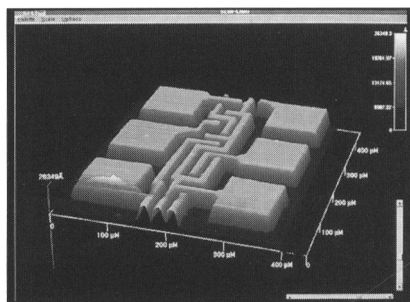
Free 12-page catalog from Solution Technology describes a line of alumina, silica, ceria, zirconia, diamond, and other polishing raw materials in dispersion for use on precision substrates. The polishing dispersions are agglomerate-free and formulated using a process that keeps particles in suspension indefinitely. Included are colloidal alumina and silica for polishing metallic and oxide layers of ICs by CMP planarization; formulas for computer disks; fiberoptic connectors; and optical substrates such as sapphire.

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Miniature Scanning Tunneling Microscope:

Topac's MiniCryoSTM, the result of collaboration between Cambridge University in the UK and WA Technology, is designed for low-temperature operation down to 1.5 K. The microscope is composed of a miniature STM fitted to the end of a rod inside a tube which is inserted into the cryostat. The 25-mm-diameter STM design allows the STM to be fitted into most cryostats and variable temperature inserts. The instrument can be used in the range of 1.5 to 300 K and will scan an area up to 8 μm , depending on the piezo inertial drive motor used.

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3D Rendering for Surface Profilers:

The Dek-Map from Veeco/Sloan Technology enables DEKTAK[®] stylus-based surface profilers to produce color images of surface topography. Surface profile data can be displayed as a 3D rendering for examination of microroughness, surface texture, defects, patterned lines, and trenches. The program enables users to examine features measured in angstroms or to produce a map of the substrate surface. The 3D images can be rotated, and renderings are color coded with an adjustable color palette. Users can cross section images at any angle to obtain surface profile and step height measurements.

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Multicathode RF/DC Load Lock Sputter Deposition System:

The Discovery 18[™] from Denton Vacuum features an 18-in. (47.5 cm)-diameter \times 13-in. (33 cm)-deep deposition chamber with an optional load lock for manual transfer of substrates up to 4-in. (10.2 cm)-diameter \times 1.0-in. (2.54 cm)-thick onto the substrate stage. The system includes two DC/RF 2.0-in. (5.08 cm) magnetron sputter cathodes, a 1-kW DC switching power supply, a 600-W RF generator with autotune automatch network, and system controls. Source cathodes can be configured parallel to the substrate table or in a confocal arrangement.

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Metal Location Service:

AlloyTech's AlloyQuote[™] can help metals buyers locate hard-to-find metals. A quotation can be broadcast faxed overnight to up to 1,750 U.S. and Canadian metals suppliers. Responses can be directed to AlloyTech or to the buyer's fax. The field of suppliers also can be reduced by selecting the most likely candidates for a given metal.

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Miniature Diode-Pumped Nd:YAG Laser:

The Model DPY 315M from ADLAS is a 100-mW, 532-nm, CW, single-frequency, solid-state laser for OEM applications. The integratable laser module is 3 \times 1.6 \times 1.3 in. (7.62 \times 4.06 \times 3.3 cm). Features include low optical noise of typi-

cally 0.1% rms, transversal mode greater than 95% TEM₀₀, and inherent linewidth less than 10 kHz.

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Ceramic-Coated Graphite Components:

Lanxide Coated Products offers composites based on titanium carbide-coated graphite. Titanium carbide can achieve many times the life of conventional ceramics, metals, or polymers and shines like polished platinum. Prototype hard-drive substrates can be made that are three times stiffer than aluminum ones. The components are suitable for use in industries such as chemical, electronics, fibers, glass, metallurgical, and paper.

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Stainless Steel Upgrade to Type 316:

Gall-Tough[®] PLUS from Carpenter Technology was designed as an upgrade to Type 316 stainless steel for applications requiring self-mated galling and metal-to-metal wear resistance. The alloy offers almost twice the yield strength of Type 316, has chloride corrosion resistance equal to or better than that of Type 316, and has an equivalent high-temperature oxidation resistance. The high-silicon, high-manganese, nitrogen-strengthened austenitic stainless steel is nonmagnetic in the annealed condition and remains nonmagnetic up to 20% cold work.

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Data Recorder/Analyzer:

Hewlett-Packard offers a three-in-one VXI-based vibration system that records, analyzes, and graphically displays noise- and vibration-test data. The system can continuously record eight to 64 channels of data and can provide sampling rates for the HP E1431A eight-channel input modules at 65,536 samples/s/channel down to 1 sample/s/channel. Cross-channel phase performance is $\pm 1.0^\circ$ at 25.6 kHz. After data storage, analysis functions can be set up, computed, and displayed for all channels.

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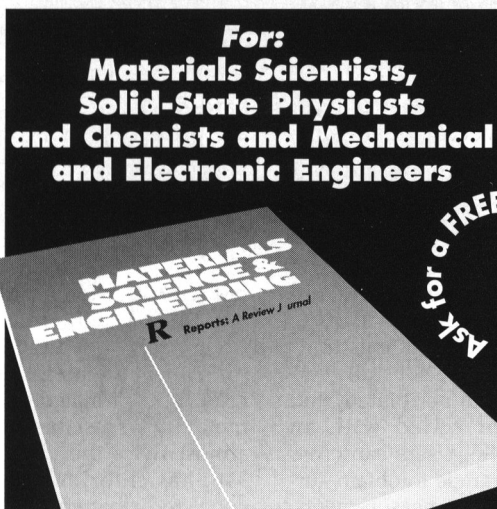
Dry Vacuum Pumping System:

Leybold's DRYVAC[®] 501SN mobile system is designed for use in etch, TEOS, LTO, PECVD, and other CVD applications. The dry pump can be removed for maintenance without disturbing the system. The unit features electrical controls, a frame-mounted Roots blower, and a microprocessor that monitors dry pump water temperature, oil and gas purge pressure, blower oil pressure, and motor temperature. The system operates in 50 or 60 Hz with pumping speeds of 235 and 280 CFM.

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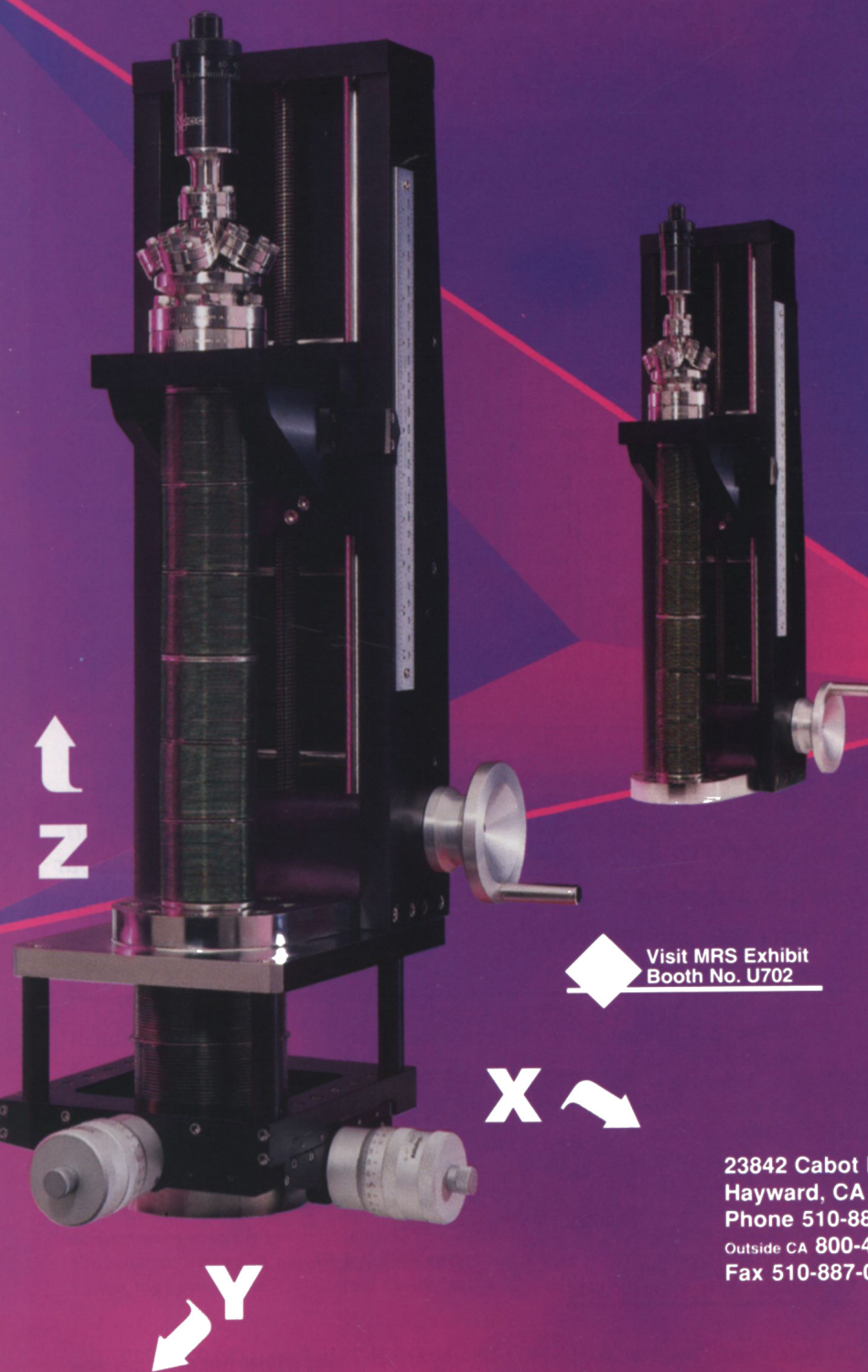
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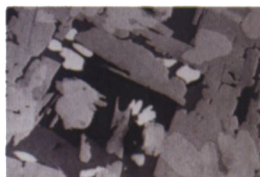
No need to re-collect spectra from regions of interest.

No need to decide what elements to map.

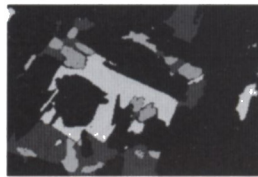
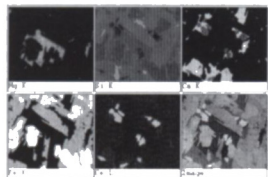
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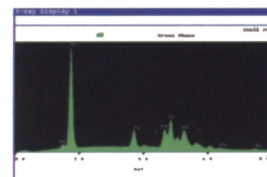
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