

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

### Weathering and Lightfastness

**Tester:** Atlas Electric Devices' Ci3000 Xenon Weather-Ometer® simulates natural light, heat, and moisture within a controlled chamber. The controlled irradiance xenon arc light system delivers constant levels of light energy to test specimens. Microprocessors continuously measure and maintain specified exposure conditions. A keypad entry system provides direct setting and control of temperature, relative humidity, and irradiance. Applications include testing of plastics, coatings, and elastomers.

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**High-Purity Materials Catalog:** Free 64-page catalog lists products manufactured by ATRAMET and RAMET Ltd., a Russian-American joint venture. Items include III-V and II-VI semiconductor materials, silicon and germanium, thermoelectric materials and modules, optoelectronic and laser crystals, pyroelectric and photo detectors, sputtering targets, and analytical services.

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### Powder Metallurgy Equipment Directory:

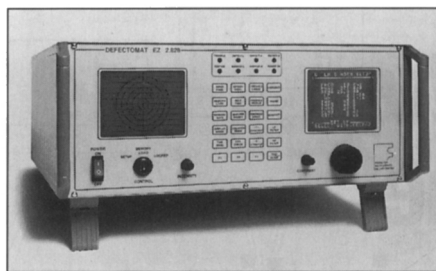
Free 154-page 1995 directory from the Powder Metallurgy Equipment Association contains catalogs of suppliers of equipment used to manufacture powder metallurgy parts and products, as well as products made from particulate materials. Among other products, technical details are given on powder metallurgy compacting presses, tools and dies, and sintering furnaces. A 16-page product listing of association members is included.

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### Organic Nonlinear Optical Material:

Molecular OptoElectronics' DAST (4-dimethylamino-N-methyl stilbazolium tosylate) is a high-temperature organic nonlinear optical crystal available for R&D purposes. The material has a design figure of merit for electro-optic modulation 20 times that of  $\text{LiNbO}_3$  because of a high Pockels coefficient ( $r_{11} = 160 \text{ pm/V}$ ) and low dielectric constant. DAST is transparent in the application-rich region of the near-IR between 170 and 2000 nm. It is thermally and environmentally stable to its melting point of 259°C and has a laser damage threshold above 30  $\text{GW/cm}^2$  at 800 nm.

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### Eddy-Current Testing Instrument:

Foerster Instruments' DEFECTOMAT® EZ can be used with test coil systems to detect surface defects in ferrous and nonferrous bar, wire, and tubing in diameters from 0.010 to 7.000 in. (0.025–17.780 cm); mass-produced parts with simple or complex geometries; and in-service structures and equipment. The unit features a membrane switch keypad and LED display, and can be installed in a production line or in an off-line R&D application to determine product surface quality. An option provides output to a remote PC and printer.

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**Optical Spectrometer:** The Spectra-Line process monitoring system from Instruments SA is available in NEMA 4 or 12 enclosures. The optical design allows non-invasive fiber optic monitoring of critical process aspects. Spectroscopic techniques include Raman, fluorescence, absorption, and reflection. Chemometrics software can be integrated for quantitation. Methods development and custom configurations can be provided.

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### Digital Image Acquisition and Management System:

The Quartz PCI from Nissei Sangyo America is a Windows-based modular system that permits acquisition, processing, analysis, annotation, and storage of images from SEM, TEM, and optical microscopy. Using the SEM/TEM module, the system requires no digital beam control, matches the resolution of the microscope's scan generator up to 4,000 lines, and offers continuously variable image size. Using the TEM/optical module, the system uses a high-resolution slow-scan CCD camera to acquire non-interlaced, square-pixel 1024 × 768 images and provides real-time flat fielding and frame averaging along with automatic magnification calibration.

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**Automated Filling System:** The Perimatic™ from JENCONS Scientific offers programmability of up to 99 fill patterns and combines the features of Perimatic Premier or Perimatic GP Peristaltic Pump Dispensers with the Perimatic Robotic XY module. Containers up to 20 cm high with a minimum neck size of 6.5 mm can be arranged in rows or a honeycomb pattern. The microprocessor-controlled robotic module offers a maximum speed of 120 mm/s with typical accuracy of 0.1 mm.

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**Charge Sensing Technique:** Lawrence Berkeley Laboratory researchers' charge sensing technique uses coplanar electrode structures in place of suspended grid electrode structures to produce room-temperature semiconductor detectors with high resolution and high position sensitivity. The enhancement of energy resolution is suited for compound semiconductors such as CdTe, CdZnTe,  $\text{HgI}_2$ , and GaAs. The technique makes cryogenic Ge detectors more radiation resistant and simplifies fabrication of gas and liquid ionization detectors.

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**Compact Gas Analyzer:** Extrel's MS250™ mass spectrometer can monitor up to 40 components per stream in 12 s. The Windows-based system uses SMARTware™ software that facilitates instrument setup and provides automatic operation as well as tabular and graphical displays which can be customized. The system has a specified precision of <0.3% relative standard deviation based on 1% argon, a lower detection limit capability of 10 ppb, and an analysis rate of 0.3 s per component.

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**Sonication Application Notes:** Misonix offers 12 SONICATOR® ultrasonic application notes that discuss sonication topics such as breaking difficult cells and organisms, troubleshooting, shearing DNA/RNA, cup horn sonication, and beneficiation of slurries and fine particle suspensions. SONICATORS are suitable for manufacturing pharmaceuticals, fuel/oil emulsions, sonochemistry, biotechnology; for preparing lipids; and for breaking polymers.

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