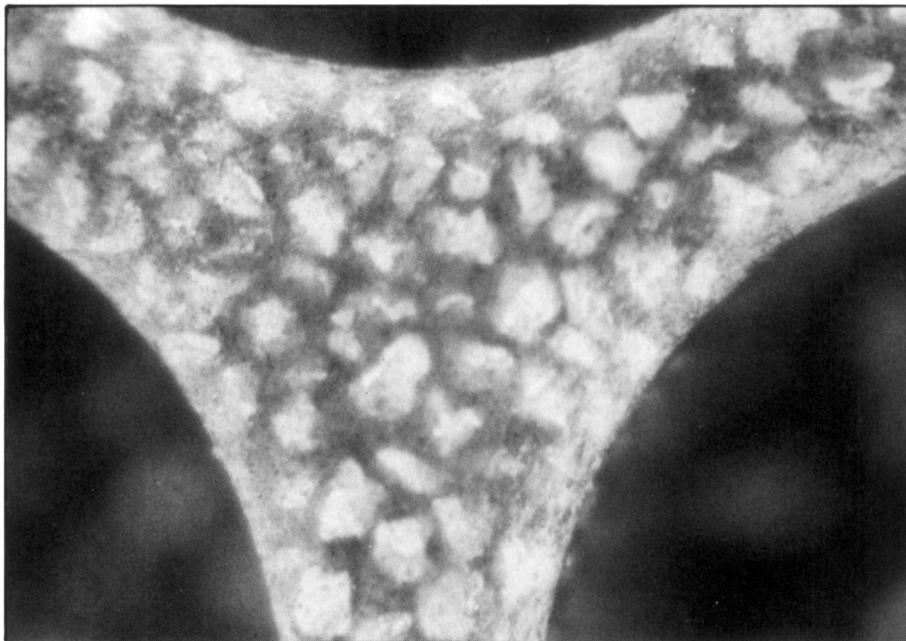


**Abrasive System for Sample Preparation:** Patented abrasive system cuts sample preparation steps in half. Consolidation of diamond into a close-packed network yields a much finer scratch pattern than conventional abrasives and keeps the sample cooler with less thermal damage. Because the system is a fixed abrasive it cuts quicker and flatter than conventional methods. The close-packed abrasive also has a longer life. The system is available in a wide variety of grit sizes from a coarse grind to a medium polish. The medium polish disk gives a surface finish similar to a 3 micron paste and ready for a final polish with 1/8 micron diamond paste or levigated alumina. The system is available in disk diameters up to 16 inches. TBW Industries, Forest Grove Rd., Furlong, PA 18925; (219) 794-8070.

**XTC Thin Film Deposition Controller:** Controller with enhanced display provides closed-loop monitoring and control in single layer deposition processes, and can achieve accuracies of  $\pm 1\%$ . For co-deposition applications, the half-rack XTC is placed side by side in a standard 19" rack with another XTC. All source control data, from presoak to rate and thickness control and source cool-down, are quickly and easily entered into memory. A patented RateWatcher™ feature extends crystal life by automatically adjusting the sensor shutter to hold the deposition rate precisely at a preset level. Leybold Inficon Inc., 6500 Fly Road, East Syracuse, NY 13057; (315) 434-1100.

**Mass and Volume Calculator with a Materials Database:** Designed for making rapid weight estimates or detailed mass calculations, Mass2 software calculates the volume of an object, then displays the weight of that object in any of the material in its database. Auxiliary functions include calculations when mass or volume is known, combined shapes, and a center of gravity calculator function. The database includes  $g/cm^3$ ,  $lb/in^3$ , specific gravity,  $lb/ft^3$  and identifying text for over 700 materials such as the elements, metal alloys, composites, plastics, rocks and minerals, construction materials, woods, common liquids, gases, cryogenics, and ceramics. The calculator, which can perform Metric to English conversions using some unique conversion factors, accepts input in standard decimal, fractional and scientific notation, and also fractions and non-integer exponents. Dempsey's Forge, Software Division, Rt. 2, Box 407, Gladys, VA 24554; (804) 283-4602.



**Abrasive System for Sample Preparation**

**Automated Low Resistance Measurements on Superconducting Materials:** Three new test systems reduce the effects of error sources by incorporating: (1) a dc technique to measure the sample under the condition in which it will be used, minimizing the effects of cable inductance and capacitance, and also susceptibility to noise in the environment; (2) a four-wire measurement technique to minimize the effects of lead resistance; and (3) a bipolar dc current source to minimize the effects of thermal EMFs. The Full Function/ Variable Current Test System uses a nanovoltmeter and programmable current source to provide a maximum resolution of 100 nΩ. The Multiple Sample Test System, which adds a scanner and scanner cards to test up to 40 samples, can also be configured to perform Hall/Van der Pauw measurements. The Pulsed Current System, a cost effective configuration, substitutes a micro-ohmmeter for a current source/nanovoltmeter. Free demonstration software, application note, and article reprints are available. Keithley Instruments, 28775 Aurora Rd., Cleveland, Ohio 44139; (800) 552-1115 or (216) 248-0400.

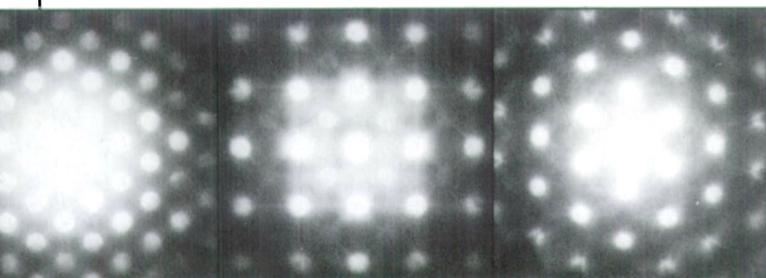
**Journal of Aerospace Composites:** New bimonthly technical trade magazine will serve engineers, scientists and managers involved in the design and manufacture of products utilizing composite materials by presenting technical articles written by top composites engineers, and information

prepared by experienced engineering and technology editors. Cardiff Publishing Company, 6300 S. Syracuse Way, Suite 650, Englewood, CO 80111; (303) 220-0600.

**ASTM Publications:** Free 1990 ASTM publications catalog describes 68 volumes of the *Annual Book of ASTM Standards* and several hundred ASTM special technical publications, compilations, data series, manuals, and standard adjuncts. ASTM Customer Service, 1916 Race Street, Philadelphia, PA 19103; (215) 299-5585.

**High-Precision Balances and Scales:** 48-page brochure details the company's micro- and semi-microbalances, analytical and toploading balances, and portable, high-capacity, heavy-duty, explosion-proof and specialty balances, along with attachments and related equipment. Also described is the PLUS Performance Package, a microprocessor-based keypad with a menu of 16 useful programs that expedite common weighing applications. Included are an ID number storage function, weight totals, checkweighing and classification, mass unit conversion, calculations by a factor, weight of residue in percent, percent change, basic statistics, formulation and compounding, fill toward zero, live animal weighing, and textile weight per unit area. Sartorius Instruments, P.O. Box 770, 1430 Waukegan Road, McGaw Park, IL 60085-6787; Telephone (312) 578-4292. □

# THE BEST WAY TO GET AN ANGLE ON CRYSTALS.



High resolution, electron microdiffraction analysis may require several tilt angles.

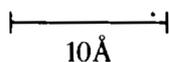
Please visit Booth No. 501 at the MRS Show in San Francisco, April 16-21, 1990.

If you need to determine elemental composition and molecular or atomic structure of crystals in minerals, metals, ceramics or polymers, our JEM-2010 is the best high resolution, analytical microscope for the job.

The JEM-2010 is a 200 kV TEM with superior optics and high probe current. It is optimized for analytical performance

not only in the analytical configuration, but also in the ultra-high resolution configuration as well.

With the EDS accessory, elemental analyses may be performed using probes as small as 10Å.

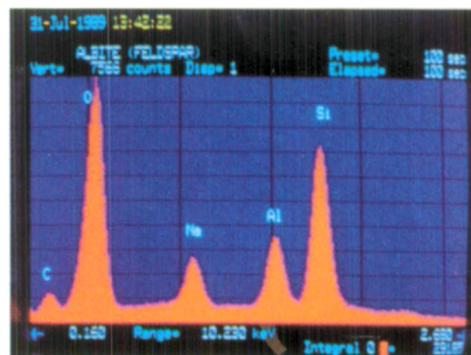


Equipped with the interchangeable, high resolution pole piece, the JEM-2010 is also an ultra-high resolution microscope with 1.9Å resolution over 10° of tilt and an x-ray collection angle of 0.07 steradians.

Equipped with EDS, the JEM-2010 is capable of high sensitivity elemental analyses using probes as small as 10Å in diameter.

With its analytical pole piece, it offers 2.3Å resolution over 30° of tilt and an x-ray collection angle of 0.13 steradians. That is the best combination of analytical features of any instrument in the 200 kV class.

But the JEM-2010 is more than an analytical microscope.



High sensitivity elemental analysis is possible with the addition of an EDS system.

For purposes of analyzing obliquely oriented crystalline material in metal, mineral, ceramic or polymer matrices, the JEM-2010 offers 2.3Å resolution with a tilt angle of ± 30 degrees.



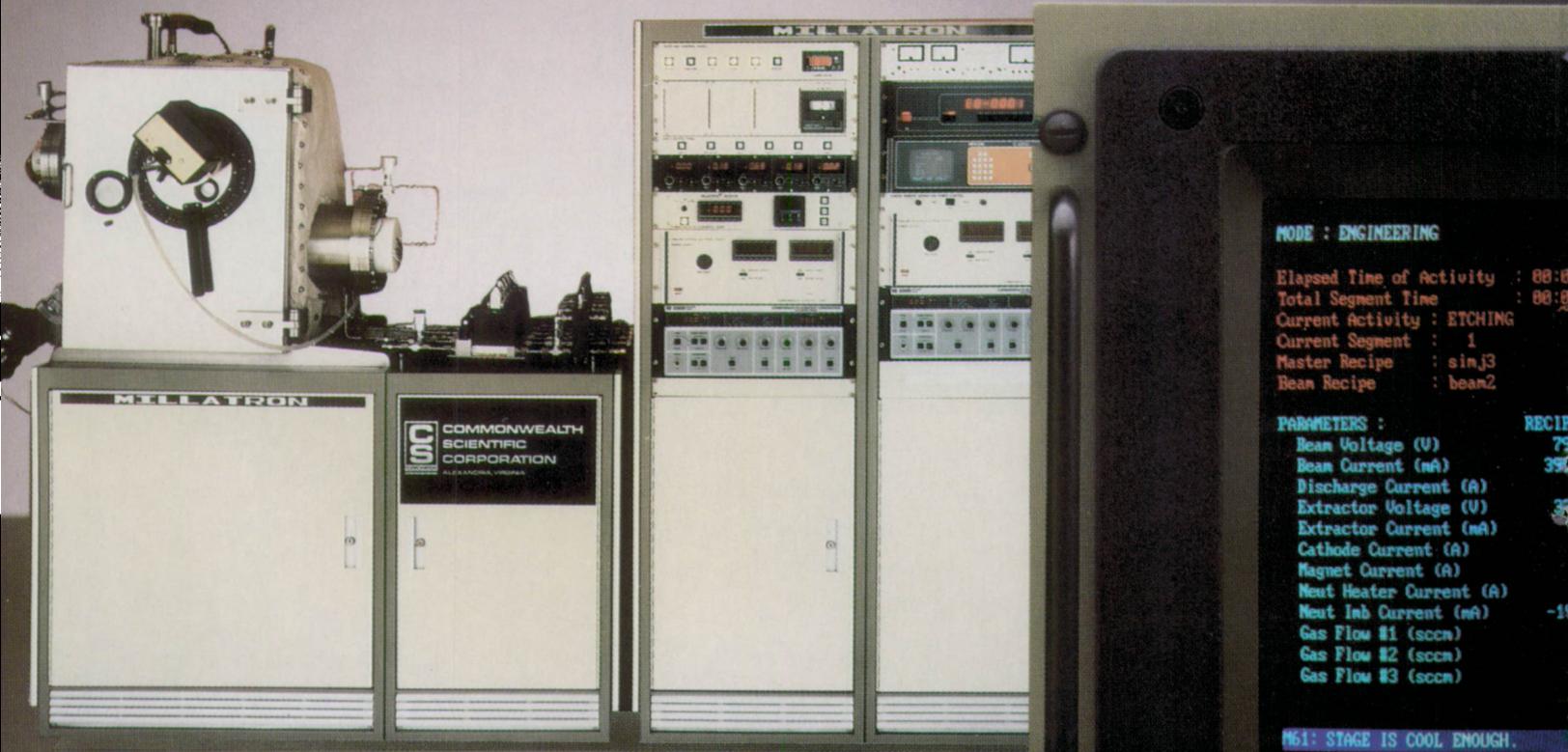
JEM-2010 Transmission Electron Microscope

Let us tell you more. Call (508) 535-5900. Or write JEOL USA, Inc., 11 Dearborn Road, Peabody, MA 01960.



# DUAL ION BEAM COATER/ETCHER

with Computer Control



## APPLICATIONS

- Superconductor Thin Films
- Multilayer Optical Coatings
- Protective Diamond-Like Carbon Coatings
- Magnetically Oriented Films
- Reactive Sputter Deposition

## ION BEAM DEPOSITION

- High Arrival Energy of Sputtered Material
- Excellent Control of all Deposition Parameters
- Independent Ion Energy, Current and Angle Control
- Orientation of Thin Film Materials

## ION BEAM ETCHING

- High Definition Geometries
- Anisotropic Etching
- High Aspect Ratios
- Selectivity: 5 to 1 Inert: 10 to 1 Reactive Gases

## ION ASSISTED DEPOSITION

- Increase Surface Mobility
- Preferred Crystalline Orientation
- Stoichiometry Control
- Increase Density
- Control Stress

Please visit Booth No. 404 at the MRS Show  
in San Francisco, April 16-21, 1990.

## SAMPLE PRECLEANING

- Improve Adhesion
- Increase Nucleation Sites
- Improve Step Coverage

## SYSTEM DESIGN

- Two Kaufman-type Ion Sources
- Precision Ion Optics
- Multiple-Target Holder
- Water-Cooled Substrate Holder
- Full Computer Control
- Cryo, Turbo or Diffusion Pump



Commonwealth Scientific Corporation

500 Pendleton Street, Alexandria, Virginia 22314 Fax: 703-548-7405 Tel: 703-548-0800

MODE : ENGINEERING

Elapsed Time of Activity : 00:00  
Total Segment Time : 00:00  
Current Activity : ETCHING  
Current Segment : 1  
Master Recipe : sim\_j3  
Beam Recipe : beam2

PARAMETERS :

Beam Voltage (V) : 750  
Beam Current (mA) : 350  
Discharge Current (A) : 3.5  
Extractor Voltage (V) : 350  
Extractor Current (mA) : 350  
Cathode Current (A) : 3.5  
Magnet Current (A) : 3.5  
Neut Heater Current (A) : 3.5  
Neut Inb Current (mA) : 350  
Gas Flow #1 (sccm) : 350  
Gas Flow #2 (sccm) : 350  
Gas Flow #3 (sccm) : 350

M61: STAGE IS COOL ENOUGH.