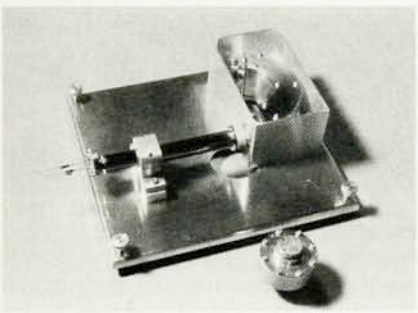
The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers, and in some cases by independent sources. PHYSICS TODAY can assume no responsibility for their accuracy. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

Photoionization Spectrometers for Electrons and Ions

Comstock's new photoionization spectrometers—Models PA-100 and PA-101—are described as "state-of-the-art research tools for the photoionization spectroscopist." Both models contain a mounted 160° double-focusing electrostatic energy analyzer and an opposing time-of-flight analyzer. The energy analyzer and the time-of-flight analyzer are both equipped



with dual-channel-plate electron multipliers. Model PA-101 is also equipped with a mounted pulsed-nozzle beam source.

The spectrometers are designed to measure photoionization products produced by lasers, synchrotron light sources, resonance lamps or discharge lamps. The typical energy resolution is 20 milli-electron volts for electrons or ions. The spectrometers' ion mass resolution is 2 amu at 100 amu. One can measure ion mass and electron energy simultaneously, and one can perform electron–ion coincidence measurements. *Comstock, P. O. Box 199, Oak Ridge, Tennessee 37831*

Circle number 140 on Reader Service Card

Fast Switch for High-Power Modulator

Hughes Aircraft offers a new type of fast closing and opening switch for high-power modulators, combining features of thyratron and hard-vacuum thermionic devices. The Crossatron modulator switch is a gridded, crossed-field switch employing a gas discharge to provide high closing currents as in a thyratron. It also provides the precise current-interruption capability one gets with a hard-tube switch, but without a large forward drop. One would employ this device for applications requiring repetitive opening or closing of large dc currents.

The Crossatron switch is offered with an anode standoff voltage of 50 kV and a peak anode current of up to 2.5 kA. Because the switch employs a cold cathode to generate a high-density plasma, no cathode heater power is required. The price of the Crossatron switch is on the order of $10 000. *Hughes Electron Dynamics Division, P. O. Box 2999, Torrance, California 90509*

Circle number 141 on Reader Service Card

Scanning Auger Microprobe and Thin-Film Analyzer

Perkin–Elmer has introduced its new PHI 4300 scanning Auger microprobe and thin-film analyzer for surface chemical analysis. The PHI 4300 is claimed to set "a new standard of Auger performance." It lets one do surface and thin-film analysis by means of Auger electron spectroscopy and Auger depth profiling, as well as secondary-electron imaging, scanning Auger microscopy and backscattered-electron imaging.

The PHI 4300 avails itself of Perkin–Elmer's new electrostatic electron optics, based on the firm's cylindrical mirror analyzer. The optics are ultrahigh-vacuum compatible and fully bakeable. The system also employs a flexible sample-handling system. A software package provides complete instrument control and data handling. Perkin–Elmer's 1988 com-

plete catalog of surface-analysis components, 218 pages long, is also now available. *Perkin–Elmer, Physical Electronics Division, 6509 Flying Cloud Drive, Eden Prairie, Minnesota 55344*

Circle number 142 on Reader Service Card

Adjustable Grazing-Incidence Toroidal Mirror

Grating Measurements Ltd, a firm resident at Imperial College, London, is offering an adjustable toroidal mirror designed for collecting, relaying and focusing soft x-ray and vacuum-ultraviolet radiation. This Model GML AT300, we are told, "costs as little as a tenth of conventional toroidal optics."

The mirror is available with minor radius from 5 mm to 150 mm, and major radius tunable from infinity down to 2 meters. The major radius needed to form the desired toroidal reflecting surface is actually formed by the user: As one turns adjustment screws, the GML AT300 bends thin sections of precision bore glass tube of the required minor radius to the desired major radius. An integral reduction lever allows precise control of the final bend. Available in unanodized aluminum (or stainless steel for ultrahigh-vacuum environments), the unit is 65 mm wide, 25 mm high and 60 mm longer than the required usable mirror length.

The GML AT300 is suitable as a collecting pre-mirror for grazing incidence spectrographs and monochromators, as a relay mirror to transfer radiation from a plasma to a region away from the debris associated with many laboratory soft x-ray sources, and as a conditioning mirror for synchrotron radiation. *Grating Measurements Ltd, 305, The Blackett Laboratory, Imperial College of Science and Technology, London, England SW7 2BZ*

Circle number 143 on Reader Service Card

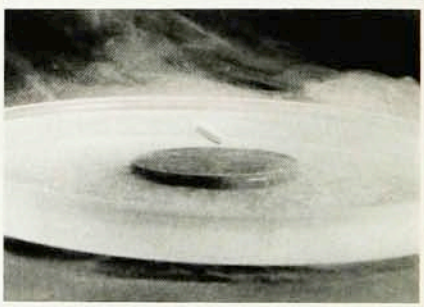
Vacuum Station for High-Temperature Superconductors

Microscience describes its new Model EIKO EL-10 as "a complete, affordable research system for the development of high-temperature superconductors." The EL-10 is a load-lock ultrahigh-vacuum station designed to accommodate up to three electron-beam sources and two effusion cells. A gas-dosing module allows controlled gas application to the substrate surface during deposition. This gas introduction system is intended to obviate substrate-limited high-temperature annealing. The system can also be fitted with RHEED, phase-locked epitaxy control, thickness monitors, a substrate manipulator and an ion source for simultaneous bombardment. The EL-10 is well suited, we are told, for developing artificial superlattices. *Microscience, 41 Accord Park Drive, Norwell, Massachusetts 02061*

Circle number 144 on Reader Service Card

School Demonstration of High-Temperature Superconductivity

Edmund Scientific is offering a school demonstration kit of the new high-temperature superconductors for $45. The kit includes a 1-inch-diameter



ceramic disc of the yttrium barium copper oxide superconductor, a rare earth cobalt magnet and instructions for demonstrating magnetic levitation and the Meissner effect. *Edmund Scientific, 5554 Edscorp Building, Barrington, New Jersey 08007*

Circle number 145 on Reader Service Card

Ultrahigh-Resolution Monochromators

Aries, a supplier of spectroscopic instrumentation and accessories, is introducing three new ultrahigh-resolution monochromators from Sopra, the French manufacturer. Available in focal lengths of 1.15, 1.5 and 2.0 meters, these monochromators can be operated in either single- or double-pass modes. They offer resolution down to 0.0008 nm. A variety of gratings are available to provide spectral wavelength coverage from 175 nm to 50 μm.

These monchromators incorporate a high-sensitivity drive that gives a full grating rotation of almost 90°, allowing the user to work in any

region from short wavelengths to high angle of incidence for maximum dispersion. All models use coaxial Super Invar rods and double-wall insulation for mechanical and thermal stability. Aries offers a full range of accessories for these monochromators, including a controller and stepper motor, a data acquisition, processing and control system, various light sources and detectors. *Aries, 5A1 Damonmill Square, Concord, Massachusetts 01742*

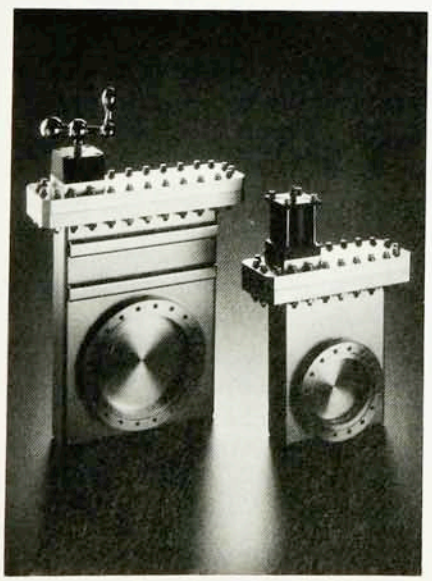
Circle number 146 on Reader Service Card

Metal-Bonnet-Seal Valves for Ultrahigh Vacuum

Varian has introduced a new family of metal-bonnet-seal valves intended to combine ultrahigh-vacuum performance with simplified operation. These high-conductance, stainless steel valves incorporate short-stroke, welded, stainless steel bellows and "no scuff" main sealing. The metal-bonnet-seal valves are designed for use where one needs metal seals to atmosphere. They are suitable for baking to 200° C. Applications include molecular-beam epitaxy, high-energy physics, fusion research, sputtering, surface analysis and coating.

Standard port sizes are 4, 6, and 8 inches, in both manual and electropneumatic versions. All are supplied with Conflat flanges. Varian guarantees leak-free performance for 20 000 cycles. The swing actuator prevents scuffing or dragging of the main seal O-ring. The swing mechanism permits a short stroke, contributing to bellows longevity. Sealing with minimal mechanical force and minimum strain on valve parts is claimed to reduce wear. Varian metal-bonnet-seal valves are priced from $2300 to $4200. *Varian Vacuum Products Division, 121 Hartwell Avenue, Lexington, Massachusetts 02173*

Circle number 147 on Reader Service Card



Oil-Free Vacuum Pumping System

Alcatel's new Drytel 30 vacuum pump employs the firm's molecular-drag scheme in an oil-free, clean-room-compatible system intended for use from atmospheric pressure down to 10^{-6} mbar. The Drytel 30 system is compact, portable and field-serviceable.

An oil-free membrane-pump interstage provides smooth, continuous evacuation down to 10 mbar. Then a molecular-drag-pump booster provides a pumping speed of 16 ft^3/min in the pressure range where mechanical and Roots pumps have reduced efficiency.

The Drytel 30 is designed to withstand high inlet pressures. Because no pump fluids are required, there is no danger of contamination. Applications include cryogenics, oil-free roughing of ultra high-vacuum installations, mass spectrometry, oil-free pumping of load locks, backing for turbomolecular pumps and leak detection. *Alcatel Vacuum Products, 40 Pond Park Road, South Shore Park, Hingham, Massachusetts 02043*

Circle number 148 on Reader Service Card

New Literature

Vacuum equipment—Perkin-Elmer has published its 1988 catalog of vacuum equipment, 187 pages long, describing its complete line of standard vacuum equipment: vacuum systems and chambers, ion pumps and controls, ion gauge controls, automatic cryopump regeneration control, and vacuum hardware. Domestic and international catalogs are available. *Perkin-Elmer, Physical Electronics Division, 6509 Flying Cloud Drive, Eden Prairie, Minnesota 55344*

High-T_c superconductivity—A nine-page applications note from Keithley describes a group of instruments suitable for making resistance-vs-temperature measurements on high-temperature superconductors. The note addresses such issues as lead resistances, stray capacitances and thermal voltages. Free demonstration software is also offered. *Keithley Instruments, 28775 Aurora Road, Cleveland, Ohio 44139* ■