

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.

Microprocessor-Controlled Torque Rheometer

Haake Buchler Instruments offers the new System 90 microprocessor-controlled torque rheometer. The system is controlled by and acquires data through an IBM-compatible computer with a variety of new control features that are claimed to enhance



accuracy with "unequaled speed of acquisition and control."

The new torque rheometer is designed to evaluate the flow properties of polymer, rubber, ceramics and other materials that flow under stress. It is available in single- and three-phase versions, with a variety of sensors for both mixing and extrusion simulation. *Haake Buchler Instruments, 224 Saddle River Road, Saddle Brook, New Jersey 07662*

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Diffraction Grating and Monochromator

The Optometrics Group offers a diffraction grating-mirror set that enables one to tune dye lasers with enhanced resolution. In the grazing incidence configuration, the laser beam is spread over a large area of the grating without the need for a beam expander.

For grazing incidence applications the holographic grating has proved more efficient than ruled gratings, we are told. With the optimized grating and mirror size (0.5" x 2.0") and the elimination of a beam expander, one

has a low-cost solution to high-resolution dye laser tuning. The unblazed holographic grating is available with line spacings of 1200, 1800, 2400 and 3600 lines/mm. Grazing incidence grating-mirror sets are priced at \$199; the grating alone is \$149.

Another new product from the Optometrics Group is a scanning version of the firm's Mini-Chrom monochromator. The scanning model is designed for applications requiring remote wavelength selection or controlled scanning over a preselected wavelength interval. The unit incorporates a precision lead screw-sine bar drive, and it is calibrated in nanometers or microns per revolution of the wavelength drive. One controls wavelength selection with a calibrated drive unit such as a stepping motor. A stepping motor assembly and controller is available that lets the Mini-Chrom scan at rates from 800 nm/sec down to 0.4 nm/minute.

The Scanning Mini-Chrom is an ultracompact, in-line, Fastie-Ebert monochromator for use in research or as a subassembly in a spectrophotometric system. The grating, collimating mirror and folding mirrors that make up the optical system are replicated on highly toleranced aluminum substrates that serve as optical mounts as well as integral components of the assembly. Three sets of interchangeable slits are included. Resolution for the ultraviolet model is less than 1 nm. The Mini-Chrom costs \$765. *Optometrics, 145 Newton Street, Waltham, Massachusetts 02154*

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Capacitor-Charging Pulsed Power Supply

A. L. E. Systems has introduced a new high-voltage power supply for lasers and other pulsed power research applications. The new 152L capacitor-charging power supply is available in eight output voltage ranges from 1 to

SQUID INSTRUMENTATION from BTi

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Model DBS DYNABIAS dc SQUID system

- 3×10^{-30} Joules/Hz Energy Sensitivity
- dc -50kHz Bandwidth
- $10^6 \phi_0$ /second Slew Rate
- Thin Film HYBRID SQUID™ dc Sensor
- 2 μ Henry input impedance
- Computer Controllable

The new model 40F filter option for the dc SQUID control electronics includes a sophisticated line frequency comb filter plus high and low pass filters.

THE LABORATORY STANDARD FOR ULTRA-SENSITIVE MEASUREMENTS



Model MPS measurement system

- 10^{-13} Volts
- 10^{-11} Amps/ $\sqrt{\text{Hz}}$
- $10^{-8} \Omega$
- 10^{-11} Henries
- 10^{-10} Gauss/ $\sqrt{\text{Hz}}$
- Multiple Samples
- Operation in Fields up to 9 Tesla
- ac and dc Measurements
- Real and Complex Impedances
- 0.001% Resolution in RLM mode
- Thin Film HYBRID SQUID™ rf Sensor
- Ideal for CMN Thermometry

SHE Instrumentation from Biomagnetic Technologies, inc.

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San Diego, CA 92121
Telephone: (619) 453-6300
Telex 697903

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Grüner Weg 83
D-5100 Aachen
West Germany
Phone: (0241) 15 50 37
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40 kilovolts, with output power up to 2000 joules per second. The power supply is packaged for a 7" rack space.

Capacitor-charging power supplies are designed to charge a pulse-forming network or capacitor bank with large amounts of high-voltage energy to pulse various sorts of lasers. These supplies differ from standard dc power supplies in that they must charge a capacitor bank up to 100 or even 1000 times each second, and must supply energy to recharge the discharged capacitor at the beginning of each charge cycle.

The 152L is designed to charge at rates up to and beyond 200 Hz, with excellent regulation, we are told, even at high repetition rates. The supply is air cooled and prewired for both single-phase and three-phase input power, at 50 or 60 Hz. The price is \$5000. *A. L. E. Systems, 150 Homer Avenue, Ashland, Massachusetts 01721*

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Large-Aperture Quarter-Wave Retarder Film

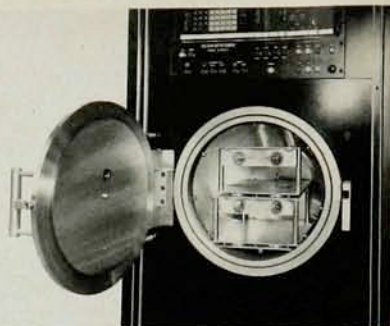
International Polarizer now offers quarter- and half-wave retarders with a uniformity of better than $\pm 5\%$ over a 12" x 12" sheet. Transmittance is quoted as 92%. Standard wavelengths for quarter-wave retardation are 400, 460, 550, 1040, 1160 and 1600 nanometers. Half-wave retarder wavelengths are 520, 580 and 800 nm. These retarder films are intended for large optical systems or for converting linear polarization to circular or elliptical polarization. *International Polarizer, Optical Technology Center, 300 Elm Street, Marlborough, Massachusetts 01752*

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Ultraclean Vacuum Oven with Infrared Heaters

Elnik Systems has introduced a new ultraclean vacuum oven that uses specially designed infrared heaters whose electrical elements and connectors are sealed within quartz tubes to prevent outgassing within the chamber. Because the sealed elements are not exposed to the chamber environment, ionization of residual gases has also been eliminated. We are told that the infrared heaters heat up considerably faster than do conventional heaters.

This new vacuum oven obviates



phase-angle power control, current limiting and expensive step-down transformers—equipment required when systems are heated by conventional tungsten-molybdenum heating elements. The oven can attain temperatures up to 750 °C at a rate of 50 °C per minute. The vacuum capability is 10^{-7} torr. Standard chamber sizes are 12", 18" and 24" diameter by 24" deep. Special models up to 36" in diameter can be ordered.

The furnace can be supplied in either a vertical or a horizontal configuration, and the user can specify turbo, cryo, diffusion or mechanical pumps. The oven can also be supplied with Fomblinized pumps to prevent back-streaming of hydrocarbon gases. The ovens are fully instrumented, and they include a microprocessor for automatic control of one-step processing. One can also operate the system manually for research applications. *Elnik Systems, 3 Edison Place, Fairfield, New Jersey 07006*

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CCD Module for Imaging Systems

The CCD Imaging Division of Fairchild Weston has introduced the CCD181M module. The company describes the new module as "easy to use, simplifying the use of solid-state sensors in imaging and inspection systems."

The CCD181M provides an interface to the CCD181 line scan sensor. It contains all the necessary timing and synchronization logic, and it provides optimum clock-drive pulses and dc voltages to the sensor. It has two analog video channel outputs, referenced to 0 volts true black. Sample pulses, at optimum sampling points, are also provided as outputs for interfacing to a correlated double sampler or analog-to-digital converter. The only required inputs are a ttl-level data-rate clock and line-rate clock, and power. A ttl-level exposure control clock may also be provided.

The CCD181 sensor offers high speed, anti-blooming, enhanced blue

response, exposure and integration control, high responsivity and low dark current. The firm stresses its excellent low-light performance and 7500:1 dynamic range, all at data rates up to 20 MHz. The module comes in four configurations, with array lengths of 1024, 1728, 2048 or 2592 pixels. The sensor has 10-micron photosites on a 10-micron pitch. *Fairchild Weston Systems, CCD Imaging Division, 810 West Maude Avenue, Sunnyvale, California 94086*

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Germanium Spectrometers

Tennelec has recently introduced new extended-range, high-purity gamma ray spectrometers. Whereas conventional germanium detectors have a useful energy range from 50 keV to 10 MeV, Tennelec's new ER series extends the lower end of the useful energy range down to 10 keV.

The firm's germanium detectors are manufactured from high-purity



germanium crystals grown in-house. A new applications brochure is available upon request. *Tennelec, P. O. Box 2560, Oak Ridge, Tennessee 37831*

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18-Tesla Superconducting Magnet

Oxford Instruments has produced what it describes as "the highest-field superconducting magnet commercially available." The magnet, which produces 18 tesla at 2.2 K and 16.5 tesla at 4.2 K, is the latest in Oxford's

Magnabond line of Nb_3Sn compact solenoids. These new magnets, manufactured from optimized multifilamentary superconductor, are said to offer economical cooldown, low operating currents and fast energizing.

Other features include persistent mode operation, decay rates on the order of 10^{-4} per hour, and field inhomogeneities of 10^{-3} or less over a 1-cm-diameter region. The extremely stable multifilamentary conductor makes possible the low-field-noise, hysteresis and remanence characteristics one expects from modern filamentary superconducting magnets.

The Magnabond line now includes 13 Nb_3Sn magnets providing fields from 10 to 18 tesla with a wide range of bore sizes and field homogeneities. All are available in low-loss helium devices that accept standard helium-4 variable-temperature inserts. Alternatively, they can be adapted for inclusion in the helium-3 systems of dilution refrigerators. *Oxford Instruments North America, 3A Alfred Circle, Bedford, Massachusetts 01730*

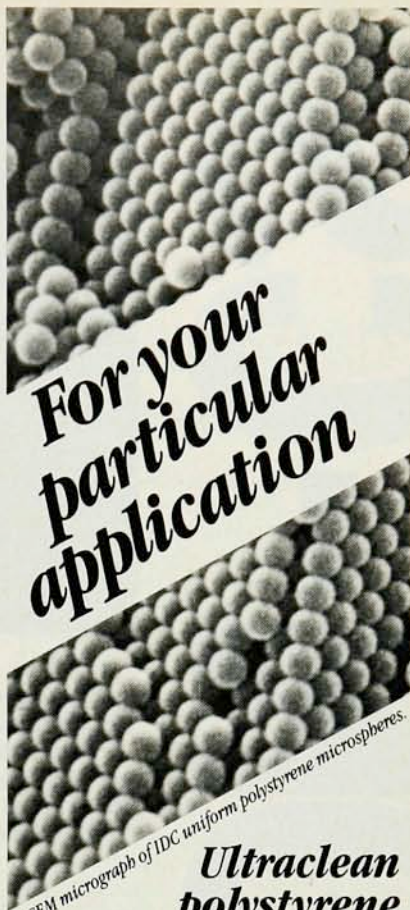
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High-Stability Plane-Mirror Interferometer

Hewlett-Packard has introduced a new optical accessory, the HP 10706B high-stability plane-mirror interferometer, designed to improve the performance of the firm's laser-transducer systems. The HP 10706B will, we are told, help metrology equipment users gain greater accuracy and repeatability. This increased performance is achieved by improving measurement stability during temperature changes. The HP 10706B is claimed to reduce the measurement drift caused by temperature changes to about 8% of the drift typically suffered by conventional plane-mirror interferometers.

The HP 10706B is more stable than the conventional plane-mirror interferometer it replaces (HP 10706A), and it is almost as stable as the larger and more expensive HP 10715A differential interferometer. A retrofitting accessory, the HP 10723A high-stability adapter, is available for those who wish to upgrade the HP 10706A plane-mirror interferometer to the HP 10706B. The adapter converts the HP 10706A in a few minutes, at 23% of the \$3060 price of a new HP 10706B. *Hewlett-Packard, 1820 Embarcadero Road, Palo Alto, California 94303*

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