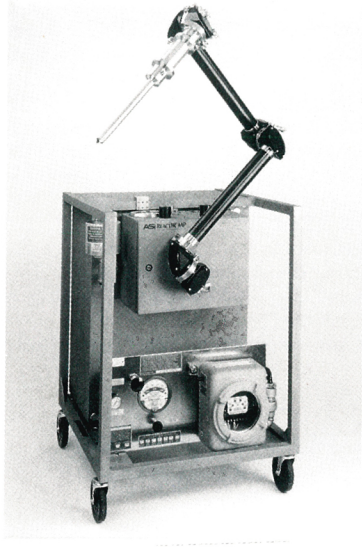
New Products

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.

Focus on Detectors

In Situ Monitoring System for Corrosive Reactions

ASI Applied Systems has made available a version of its ReactIR Fourier-transform infrared spectroscopy reaction analysis system for monitoring highly corrosive chemical reactions. The unit's insertion probe is made of diamond, which is chemically inert and has excellent infrared internal reflectance properties. The system provides



real-time data on reaction kinetics, reactant and product concentrations, percent conversion and the reaction pathway. The diamond probe makes it possible to monitor reactions involving strong acids and bases, as well as chlorinations, brominations, nitrations and sulfonations. *ASI Applied Systems, 8223 Cloverleaf Drive, Suite 120, Millersville, Maryland 21108*

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Large-Area, Avalanche Photodiode

Radiation Monitoring Devices has made available a high-gain avalanche photodiode with an active area of 13 millimeters × 13 millimeters, which is said to be 2.5 times the active area of previously available devices. Other features include a room-temperature maximum gain of 3000, a noise-equivalent power on the order of 10^{-14} watts per hertz$^{1/2}$ and a response time of a few nanoseconds. The amplification and noise can be improved by cooling the detector. Because the photodiode is insensitive to vibrations and magnetic fields, it can be used unshielded in applications where photomultiplier tubes would require shielding. *Radiation Monitoring Devices, 44 Hunt Street, Watertown, Massachusetts 02172*

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Hydrocarbon-Free, Dry Helium Leak Detector

The HLT 160 dry leak detector from Balzers is designed to provide oil-free leak detection for "clean" applications in semiconductor manufacturing, medicine and the packaging industry. The unit incorporates two independent ports: The twin-flow port is intended for contamination-free leak detection for sensitive components and the reverse flow port is for checking clean test objects at higher pressures. The HLT 160 includes an internal calibrated leak, a hand-held control unit and an ion source filament that is protected against accidental venting. The detector's RS-232 port makes possible computer control and integration

into larger leak detection systems. *Balzers, 8 Sagamore Park Road, Hudson, New Hampshire 03051*

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Micropositioner with Six Degrees of Freedom

Polytec PI has made available the M-800 Hexapod, a compact micropositioning device with six degrees of freedom. The device, which is manufactured by the German firm Physik Instrumente, consists of upper and lower

platforms separated by six linear actuators. The user can place the platform at a point (with 1-micron resolution) by specifying its Cartesian coordinates. Similarly, a desired rotation can be specified by supplying the pivot-point coordinates for the axes of rotation and the rotation angles; the rotary resolution is less than 1 arcsecond. The device software eliminates unwanted motion by ensuring that changes in one coordinate do not affect other coordinates. The M-800 has a linear range of motion of 100 millimeters and a rotary range of 50°. Its load-carrying capacity is 200 kilograms and the device is said to operate in any position; its resonant frequency under a 10-kg load is 500 hertz. Recommended applications include semiconductor handling, optics and crystallography. *Polytec PI, 3152 Redhill Avenue, Suite 110, Costa Mesa, California 92626*

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High-Speed Digital Storage Oscilloscopes

The TDS 700A series and TDS 500B series of digital storage oscilloscopes from Tektronix combine high sampling and capture rates with advanced triggering capabilities and digital signal processing. The high-speed acquisition memory and display rasterization are said to make the oscilloscopes suitable for capturing unpredictable, rapidly changing signals, such as infrequent glitches, metastable behavior and time jitter.

The TDS 700A series includes the TDS 784A, the TDS 744A and the TDS 724A, all of which feature floppy disk drives, RS-232 interfaces, Centronics input–output ports, color displays and advanced fast-Fourier transform capabilities. The four-channel TDS 784A has a 1-gigahertz bandwidth, 4-gigasamples-per-second sample rate, a maximum record length of 500 kilobytes and a waveform acquisition rate of 400 000 waveforms per second. The four-channel TDS 744A has a bandwidth of 500 MHz, a sample rate of 2 gigasamples per second, a maximum record length of 500 kbytes and a waveform acquisition rate of 400 000 per second. The two-channel TDS 724A has a bandwidth of 500 MHz, a sample rate of 1 gigasample per second, a maximum record length of 250 kbytes and a waveform acquisition rate of 180 000 per second.

The TDS 500B series includes the four-channel TDS 540B and the two-channel TDS 520B, both of which have monochrome displays, 500-MHz bandwidths, 250-kbyte maximum record lengths and waveform acquisition rates of 100 000 per second. The TDS 540B has a maximum sample rate of 2 gigasamples per second, while the TDS 520B samples at up to 1 gigasample per second. Accessories include a 1300-volt differential probe that protects the oscilloscope from discharges and a 50-MHz, 15-ampere current probe. *Tektronix, P. O. Box 500, Beaverton, Oregon 97077-0001*

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Low-Energy X-Ray and Gamma-Ray Detectors

EG&G Ortec's Iglet and Iglet-X detectors are germanium detectors designed for gamma-ray (from 3 to 30 keV) and low-energy x-ray spectroscopy (as low as 0.5 keV), respectively. Both detectors have a pulsed optical feedback system, which is said to improve energy resolution in high count-rate applications. The detectors provide low-noise measurements of photon energies with resolutions down to 135 eV for 5.9-keV x rays, we are told.

A complete detector system includes a detector element with a pulsed optical feedback amplifier and a cryostat with a 25-micrometer beryllium window. For applications using very low-energy x rays, an optional 1.7-μm thick polymer window is available. Suggested applications include x-ray fluorescence, particle-induced x-ray (or gamma-ray) emission spectroscopy and fusion studies. *EG&G Ortec, 100 Midland Road, Oak Ridge, Tennessee 37831*

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Liquid Nitrogen Controller for Cryogenic Detectors

Using a capacitive probe, Teragon's LC3 measures the liquid nitrogen level with 0.1% accuracy for cryogenic detectors, cold traps and cryopumps. It also displays the current level and maintains it between user-defined set points by controlling a cryogenic solenoid valve. All set points are stored in nonvolatile, electrically erasable, programmable read-only memory. The unit has a backlit display, an audible alarm, analog output, manual override and an RS-232 interface for remote monitoring and control. *Teragon Research, 2518 26th Avenue, San Francisco, California 94116*

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Portable Radiometer for Low-Flux Measurements

The ES 360 from the French company Equipements Scientifiques is a portable radiometer for measuring the optical flux in optical fibers. The device, which weighs one pound, has a 3-millimeter diameter InGaAs sensor and can be used for single-mode and multimode fibers; it detects fluxes ranging from 100 picowatts to 5 milliwatts within the spectral range 820–1600 nanometers. Measurements can be displayed in a variety of units, and the user can store working wavelengths in memory. To facilitate testing, the ES 360 performs its measurements using seven preset calibration points. The four-digit display indicates the last wavelength used, the units of the measurement and the state of the device's battery, which can operate up to 60 hours without recharging. To conserve power, the unit automatically turns off 15 minutes after the last measurement. A portable power supply is also included. Options include an integrating sphere, adapters for various fibers and an RS-232 interface. *Equipementes Scientifique, 127 rue de Buzenval, B. P. 26, 92380 Garches, France*

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Ultrahigh-Vacuum Scanning Probe Microscope

Omicron has made available a "beetle" ultrahigh-vacuum scanning probe microscope developed by the German firm Zeiss. The microscope has a quartz needle sensor that allows the user to image a sample using noncontact atomic force microscopy, scanning tunneling microscopy and simultaneous AFM–STM. The device can image conducting, semiconducting and insulating samples. It is mounted on a standard UHV-compatible flange and comes with a personal computer-compatible control system. The device should find applications in condensed matter physics, materials science and biophysics. *Omicron Associates, 1738 North Highland Road, Suite G101, Pittsburgh, Pennsylvania 15241*

Circle number 188 on Reader Service Card

New Literature

Physics and computer catalogs—PASCO Scientific's 1996 physics catalog and computer products catalog are now available. The catalogs describe the company's educational products and its interface consultant program, which employs specially trained teachers to train others in the use of PASCO computer interfaces. *PASCO Scientific, 10101 Foothills Boulevard, P. O. Box 619011, Roseville, California 95678-9011*

Metals and Materials catalog—Goodfellow's 560-page 1995–96 catalog of metals and materials for research and industry lists the metals, alloys, polymers, ceramics, composite materials and honeycombs available from the company. *K. I. Lipton, Suite 101, 350 South Main Street, Doylestown, Pennsylvania 18901*

Spectrophotometers—Buck Scientific now has a World Wide Web homepage that gives information about the company's spectrophotometers, gas chromatographers and microwave digestion equipment. The address is http://ourworld.compuserve.com/homepages/Buck_Scientific. *Buck Scientific, 58 Fort Point Street, East Norwalk, Connecticut 06855* ■