new products

The items listed have been selected from among those appearing concurrently in "New Instruments" or "New Materials and Components" in *Review of Scientific Instruments*. We gratefully acknowledge the cooperation of the editor of *RSI*, J. B. Horner Kuper, the associate editor for New Instruments, Joshua Stern, and the associate editor for New Materials and Components, R. K. Eby.

These descriptions are based on information supplied by the manufacturer and in some cases from independent sources. Neither *Review of Scientific Instruments* nor PHYSICS TODAY assume responsibility for their correctness.

Alpha spectrometer

The model 576 dual-port alpha spectrometer combines in a single dual-width NIM module two complete alpha counting or spectroscopy channels containing everything from the vacuum chambers, with readily accessible sample holders, to the amplifier outputs. Each spectrometer contains two vacuum chambers with adjustable sample holders that snap into the front panel, two 450-mm² silicon charged-particle detectors, and two detector bias sources,

preamplifiers, shaping amplifiers, biased amplifiers, test pulsers, and discriminators. Each channel can be adjusted to the energy range 4–6, 5–7, or 6–8 MeV, with a 0.1–10-V energy output and a logic output for counting or routing to an external multichannel analyzer. Spectroscopy operation with multiple inputs is accomplished through the use of a model 577S mixer-router placed between the 576 modules and the analyzers. For each 577S used, up to eight spectrometry channels can be stored in the analyzer. For alpha counting applications, each 576 module feeds directly into a model 778 dual counter and model 719 timer.—*Ortec Incorporated, 203 Midland Rd., Oak Ridge, Tennessee 37830.*

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Multimeter

The model 174, 4½-digit multimeter features dc sensitivity 100 nV/digit and a 30 000-count resolution display. Automatic zeroing and standardization occur during each analog-to-digital conversion. The basic instrument is capable of dc voltage measurement from 100 nV/digit to 1200-V full scale. Choice of automatic or manual ranging is available on most ranges. A rear panel analog output for the 3- and 30-mV ranges provides for monitoring of low level signals. Other measurement functions include ac volts, dc current, ac resistance, and current, are offered as options that are field installable. Alternating-current voltage measurement, 10 μV/digit to 1000 V, from 50 Hz to 20 kHz, are possible with the model 1740 ac autoranging voltage option. The model 1745 ammeter option extends capability to dc current measurement with sensitivity 100 pA/digit, with ranges up to 3 A_p or higher with accessories. In combination with the ac voltage option, ac current measurements may be made. Ranging for current measurements is manual. The model 1744 ohms option adds capability to measure resistance from 10 mΩ to 300 MΩ. A low mode of operation enables in-circuit measurements of resistance to

new products

be made without turning on silicon junctions; a high mode provides sufficient voltage to test the junctions themselves. Accessories include a 40-kV probe, clamp-on 200-A ac current probe, 100-MHz rf probe, and various test leads. For systems use, the model 1722 digital interface provides digital presentation of data, range, and other information. The model 1723 IEEE standard bus interface allows use in any system using the bus for communication.—*Keithley Instruments, Inc., 28775 Aurora Rd., Cleveland, OH 44139.*

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Readout unit

A direct electronic readout, called a resistive anode encoder (RAE), for high-gain microchannel plate configurations, allows a pulse height analyzer or minicomputer to record the output from a microchannel plate as one-dimensional spatial information with a FWHM intrinsic resolution better than 100 μm. The RAE is a uniform diffusive R–C line with metal electrodes deposited along opposite edges. As the microchannel plate detects electrons, the RAE measures the difference in pulse rise times at each electrode. Charge division encoding methods may also be used. The device is fully bakeable, and is optimized for use with voltage or charge sensitive preamplifiers. Characteristics include count rate capabilities to 40 kHz and an RMS integral nonlinearity less than 0.30%.—*Galileo Electro-optics Corporation, Galileo Park, Sturbridge, MA 01518.*

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Differential pressure gage

Built for system pressures up to 500 psig the Capsuhelic gage provides indication of low differential pressure of air, other gases, or liquids over a full scale range as low as 0–0.5 in. water column. At 70°F, accuracy is ±2% of full scale. Seventeen other ranges up to 0–20 psig are available. The pressure-sensing diaphragm and frictionless movement are contained within a pressurized cast aluminum capsule or case. A protective coating applied to internal aluminum surfaces increases resistance to corrosion. Other standard wetted parts are stainless steel; diaphragm is Buna-N. Zero and range adjustments are made from the outside. The gage may be flush or surface mounted in any plane. Ambient operating temperature range is 30°–200°F.—*Dwyer Instruments, Inc., Dept. 0-155, Box 373, Michigan City, IN 46360.*

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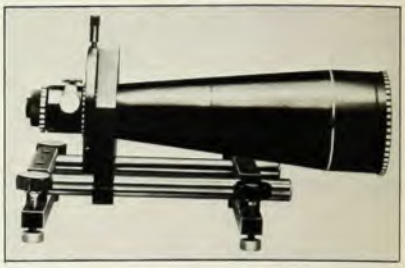
Laser beam expanders

Expander systems offered for a variety of coherent light applications provide expansion ratios of 4, 7, 15, 16, 25, and 50 over a wide wavelength range. Available with or without spatial filtering, the systems have entrance apertures of 3 or 4 mm and exit



apertures from 16 to 78 mm. All of the expander systems employ broadband coatings for the 450–650-nm wavelength range.—*Klinger Scientific Corp., 83-45 Parsons Boulevard, Jamaica, NY 11432.*

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Ion pump controls

Three ion pump control units include a dual-voltage unit that powers large ion pumps in the 220–600 l/s range, a constant-voltage unit for 60–

300 l/s ion pumps, and a dual-power model for the 1–80 l/s ion pump range. Voltage output of 5.5 or 7 kV is available with the dual-voltage unit. 5.5 kV is used with differential ion and hydrogen ion pumps; 7 kV is compatible with conventional pumps. Continuous pressure recording, current sensing connection, and remote or computer controlled operation are offered as options. The constant-voltage unit provides ±5500-V dc with differential ion and high-pressure

diode or triode pumps. Voltage will not decrease with high-pressure loads. It is said to provide up to 20% higher pumping speed at 10^{-5} Torr. Continuous pressure recording, current sensing connection, and remote or computer operation are available. The dual-power control unit operates diode and triode pumps with a constant voltage ±5500-V dc in high-power mode and ±5000-V dc in low-power mode. Multiswitching capability provides power to as many as 10 small pumps, five 11-l/s pumps, two 20-l/s pumps, or two 25-l/s pumps simultaneously.—*Perkin-Elmer Ultek Inc., Box 10920, Palo Alto, CA 94303.*

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Spectrometer

The TN-1710-21 diode array rapid scan spectrometer system provides capabilities for simultaneous, parallel, high-resolution spectral measurements scanning the range 200–1100 nm. The system consists of a lag-free and bloom-

free silicon photodiode array detector, a holographic grating spectrograph, and the modular microcomputer based TN-1710 data analysis system with display. Real time dynamic range of 4096 to 1 is achieved by thermoelectric cooling of the array detector, which is placed at the focal plane of the flat field spectrograph. A 512-element detector is scanned in 5.12 ms, with exposure times per scan adjustable from 5.16 ms to 8192 s. Total spectral range is 200–1100 nm, with coverage of 1.25 nm/element. Spectral data processing is carried out with full computer capability, and a wide range of accessories is available.—*Tracor Northern, Inc., 2551 West Beltline Highway, Middleton, Wisconsin 53562.*

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Photon counter

A gas flow photon counter may be used in the region 1 to 304 A for absolute measurement of photon flux. The unit functions as either a proportional or G–M counter. A demountable window isolated counter gas from the system vacuum. A charge sensitive preamp and linear amplifier for use with G–M counters and channel electron multipliers, and soft x-ray proportional counters, is also offered. This amplifier is on a 5 × 6 cm PC board and uses 150 mW at 15 V.—*Minuteman Labs., 916 Main St., Acton, MA 01720.*

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New Literature

Valve catalog—A new catalog, 4 pp., describes a wide selection of vacuum valves. In addition to the standard high and ultrahigh vacuum valves, the catalog includes some unusual items such as diaphragm valves, metallurgical valves with protected seals and with cooled flanges and gates, as well as a complete valve line suitable for use with UF_6 and in high radiation environments. The catalog also contains a useful set of dimensional tables of common vacuum flanges—*HPS Corp., 1898 S. Flatiron Court, Boulder, CO 80301.*

Radiation detectors—A 6-pp. bulletin describes a line of CdTe gamma radiation detectors featuring high sensitivity, good energy discrimination, and small size.—*Radiation Monitoring Devices, Inc., 44 Hunt St., Watertown, MA 02172.*

Oscilloscope—Two general purpose digital oscilloscopes for low-frequency, high-precision waveform measurement are described in separate brochures. Explorer II is a general purpose instrument that is used like an analog instrument for visual waveform observation, but that provides greater resolution and accuracy. It has storage capability and superposition of stored and live waveforms. Numerical voltage and time values are shown for any selected point. Explorer III is identical but adds internal high-capacity memory for permanent records. It includes a digital I/O port for interfacing of calculators and computers.—*Nicolet Instrument Corp., 5225 Verona Rd., Madison, WI 53711.*

Optics and optical filters—A 26-pp. brochure contains an expanded line of surplus items which includes: optical interference filters for the ultraviolet, visible and infrared, neutral density filters, mirrors, color glass filters, prisms, lenses, lamps, precision pinholes, filter storage boxes, fiber optics, and camera lenses.—*Corion Corp., 73 Jeffrey Ave., Holliston, MA 01746.* □

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