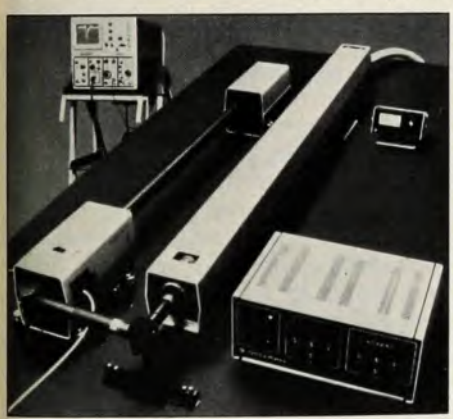
new products

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.

Dye lasers

Two pulsed dye laser systems are said to be capable of producing a continuous train of tunable picosecond pulses for sustained periods. Both are synchronously pumped. One is mode locked; the other is mode locked and cavity dumped. The mode locked system produces a continuous train of pulses separated by the cavity round trip time of 12 ns. Typical pulse



width is 3 ps with 80 mW average power. The cavity dumpled version permits larger interpulse separation and higher energy per pulse, typically pulsing at less than 20 ps pulse width at a peak power approximately 1.5 kW. Pulse selection rate may be any integral multiple of the cavity round trip time of 12 ns.—*Spectra-Physics, 1250 W. Middlefield Rd., Mountain View, CA 94042.*

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Signal generator

The model 9081 5-520 MHz AM–FM phase modulated rf synthesized signal generator is designed to test He–VHF–UHF communication receivers. Output frequency is continuously updated by an 8-digit frequency counter, and is locked to an internal frequency standard stable to 3 parts in 10^9 per day. A channelized mode has 10 ranges that allow channel spacing to be set from 5 to 60 kHz. The main tuning control is a single spinwheel that adjusts the output frequency in discrete, channel related steps. In addition, a step switch steps the frequency up or down one channel space at a time. Output level, indicated by a panel meter, can be adjusted from −130 to +3 dBm with accuracy ±0.7 dB over the entire frequency range.—*Racal-Dana Instruments Inc., 18912 Von Karman Avenue, Irvine, CA 92715.*

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Electron microscope

Addition of a twin-lens objective and a scanning transmission control unit to the model EM-400 electron microscope is said to allow optimum imaging and probe conditions necessary for several high resolution modes of operation, including transmission electron microscopy (TEM), scanning electron

new products

microscopy (SEM), scanning transmission electron microscopy (STEM), micro–micro diffraction, and microanalysis. The auxiliary lens is used for operation in TEM mode. It is contained within the normal dimensions of the objective lens module and permits maintenance of full specimen tilt range and improved geometry for x-ray collection. TEM lattice resolution to 0.14 nm is possible with ±60° of tilt; top magnification is 500 000; illumination can be adjusted from normal large area illumination down to 40-nm focused probes. A single switch selects STEM, SEM, or micro–micro diffraction modes with probe size to 2 nm with a standard tungsten gun or 0.28 nm with a field emission gun. The STEM unit allows simple switching to all main modes of operation, and selects any two from six signals: STEM bright, dark field, ratio BF/DF, SEM secondary or primary electrons, and x ray. The display on a split screen dual display unit can give side-by-side views of the same signal at dual magnification, or display any two signals or the resultants of the addition or subtraction of any two signals.—*Philips Electronic Instruments, 85 McKee Dr., Mahwah, NJ 07430.*

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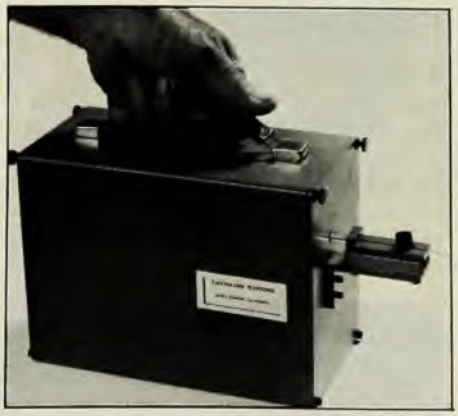
Optical fiber analyzer

The model FA-4 optical fiber analyzer employs the polarization properties of light and sensitive pulse reflection techniques (time domain reflectometry) to provide in one instrument the capability to analyze several fiber characteristics. A fast optical probe pulse and



high gain photodetector enable length and fault location resolution in long lossy fibers, show quality of connectors and splices, provide an indication of pulse broadening at large bandwidth, and permit attenuation measurements in most fibers by the non-destructive backscatter technique. The analyzer requires a good quality oscilloscope for data display—100 MHz bandwidth and delayed sweep capability. Overall dimensions of the instrument are 4 × 6 × 11 in.—*Landmark Systems, Box 5516, Santa Barbara, CA 93108.*

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Surface analyzer

The Tandetron is a multipurpose surface analyzer that generates up to 3 MeV alpha particles with beam currents up to 100 nA and permits rapid quantitative surface studies and nondestructive depth profiling. Standard options can provide various ion beams for applications such as helium backscattering analysis, ion induced x-ray excitation, hydrogen profiling, and carbon-14 dating. The analyzer is said to fit into most single room research laboratories and to need no radiation shielding or special support facilities. —*General Ionex Corporation, 19 Graf Rd., Newburyport, MA 01950.*

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Elemental analyzer

The model 700 portable x-ray fluorescence analyzer is designed for on-line monitoring or on-site sampling and analysis of nearly all elements with atomic number 19 or greater, analyzing one or two elements at a time. An integral radioisotope source is used to excite x-ray emission. The probe head, which contains the source, filters, shutter, and detector, may be applied directly to the surface of the sample; liquid or powdered samples may be placed directly on the probe face in a sample holder. In operation, a standardized time interval and proper filters, window width, window position, and detector potential are selected. Spurious counts are suppressed by intervening foil or plastic filters and by discriminating electronically against counts lying outside a narrow energy band. Timing is derived from a tuning fork oscillator, with four intervals selectable from 15 to 120 s. Readout is on demand to conserve battery power. A calibration curve relates x-ray count–intensity to percent concentration or thickness. A rechargeable battery pack affords 20 to 30 h continuous operation and the analyzer also operates on 12 V dc and 115 V ac, recharging the battery at the same time.—*Columbia Scientific Industries Corp., Box 9908, Austin, TX 78766.*

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Waveform digitizer

The model 2264 multichannel waveform digitizer, packaged according to CAMAC standard, digitizes from 1 to 8

analog signals at rates to 4 MHz with 8-bit accuracy, and transfers the numbers of a companion memory module, the model 8800/8. The 1 MHz analog bandwidth and the 150 ps sample time uncertainty allow reconstruction of frequencies up to 2 MHz. Readout is nondestructive, and a digital–analog output is provided for presentation on an oscilloscope. Features include internal and external clocks, pretrigger sampling, individual channel display, and individual channel input offsets.—*LeCroy/California, 1806 Embarcadero Road, Palo Alto, CA 94303.*

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Monochromator

The Mini Chrom I is a compact monochromator with an in-line Ebert optical configuration and totally replicated optics that do not need realignment. Providing stray light characteristics said to be better than 8×10^{-5}, the instrument is supplied with either of two holographic gratings: 180 to 650 nm or 200 to 800 nm. Effective aperture is *f*/3.9. The standard model reads out on a micrometer head calibrated in

nanometers and mounted on the turn shaft used to control wavelength. Another model features LED direct readout. The instrument measures 4 × 2½ × 2 in.—*PTR Optics Corporation, 145 Newton St., Waltham, MA 02154.*

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Coaxial thermistor mount

Precise measurement of microwave power levels in the frequency range of 0.01 to 18.0 GHz can be obtained with the Model 1108 Temperature Stabilized Coaxial Thermistor Mount. A precision broadband terminating mount with high reliability, high stability and low aging, is said to permit its use as a reference standard. The Model 1108 Series operates with either a self-balancing audio bridge, or for greater accuracy, a dc substitution bridge. Absolute power is readily measured over the range from approximately 10 μW to 25 mW. Nominal rf impedance is 50 Ω. Individual VSWR calibration is supplied at 0.1, 0.2, 0.4, and 0.8 GHz fixed frequencies, and 1.0–18.0 GHz continuously swept frequency. Individual calibration factor and effective efficiency traceable to NBS is supplied at 0.1, 1.0, 2.0, 4.0, 8.0, 12.4, 15, and 18 GHz. Other calibration data for fixed frequencies are available upon request. Connector options include WPC7, 7-mm GPC7, and Type N precision male or female.—*Weinschel Engineering, Gaithersburg, MD 20760.*

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New Literature

Digital pyrometer—A 6-pp. brochure describes the Digicon II hand held, rechargeable digital temperature indicator featuring 1840°F range with ±1° accuracy, subzero capability, and Fahrenheit–Celsius conversion.—*Alnor Instrument Company, 7301 N. Caldwell Ave., Niles, IL 60648.*

Synchronous motors—A manufacturer's data bulletin No. GM 783 gives data on the GM Series of synchronous gear motors designed for high torque, multispeed applications. Material covered includes all mechanical and electrical specifications plus dimensional schematic drawings and photographs of the motors.—*Portescap US, 730 Fifth Ave., New York, NY 10019.*

Trimming potentiometer—A new technical bulletin describes the Model 93P 12.7-mm-diam cermet trimmer. The single-turn trimmer features an arrow and dial to indicate slider position. The bulletin provides a photo, outline drawing, and dimensions. Specifications include electrical, mechanical, environmental, resistance values, as well as a list of basic parameters.—*Beckman Instruments, Inc., Technical Information Section, 2500 Harbor Blvd., P.O. Box 3100, Fullerton, CA 92634.*

Surface analysis—Techniques for pinpointing causes of corrosion, catalyst poisoning, and other surface anomalies with the aid of ion beam surface analysis are described in an 8-pp. brochure that also presents features of the model 525-BX Iss/SIMS surface analysis system.—*3M Company, Box 33600, St. Paul, MI 55133.*

Thermometers—A data sheet describes liquid crystal display thermometers that measure temperature in the range −60° to 300°F with 1°F resolution and accuracy and in the range −50° to 150°C with 1°C resolution and 0.5°C accuracy.—*Extech International Corporation, 114 State St., Boston, MA 02109.* □