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.

Fiber pigtailed laser diodes and photodiodes

Ortel is now providing its high-speed GaAlAs lasers and GaAs photodetectors with optical fiber pigtails. The lasers have threshold currents typically less than 10 mA. They are available in either single- or multi-longitudinal-mode versions. Devices with bandwidths of either 3 or 6 GHz are packaged in a high-speed mount, impedance matched to 50 ohms, with an integral monitor photodiode. Optical output power from the fiber is rated at 1 mW continuous.

The fiber pigtailed photodiode is GaAlAs/GaAs. It is claimed to be the only such device commercially available. It features responsivity of 0.35 A/W, a dark current of 200 pA and a detection bandwidth in excess of 7 GHz. It is packaged in a high-speed mount and has a rise time of only 50 psec. All Ortel lasers and detectors are fabricated with semi-insulating substrate technology for high-speed operation. The pigtailed elements make possible a complete fiber-optic link capable of wide-bandwidth microwave signal transmission. *Ortel Corporation, 2015 W. Chestnut St., Alhambra, California 91803*

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Wide-aperture Cassegrain light collector

A new Cassegrain light collector from Applied Photophysics is designed for high-efficiency collection and re-imaging of scattered or transmitted radiation from on-axis sources of ultraviolet, visible and near-infrared radiation. It has a higher transmission and wider aperture, we are told, than most single- or multielement lenses, making it particularly useful for broadband spectral studies.

The device uses precision Cassegrain collection optics. It will operate at high aperture for all applications requiring imaging from short object distances. Applications of the Cassegrain light collector include studies at low light levels, photoirradiation, fluorescence

and Raman spectroscopy, and bio- and chemiluminescence. *Applied Photophysics, 910 Boston Post Road, Marlborough, Massachusetts 01752*

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Imaging photomultiplier with 400 by 400 pixel resolution

ITT has developed two versions of an imaging, photon-counting photomultiplier tube, each capable of resolving a large number of picture points, in contrast to the single-pixel capability of a standard photomultiplier. The F4146 has 200×200 pixel resolution and the F4146M has a minimum of 400×400 pixel resolution. They are said to be well suited for "photon-starved" applications such as astronomy, low-level spectroscopy and short exposure times. The tubes are compact, 65 mm diameter×25 mm (F4146), making them particularly useful in cramped environments.

The device in both versions is a proximity-focused photomultiplier tube with the end-on photocathode coupled to stacks of microchannel plates and a two-dimensional resistive anode encoder. Four outputs from the anode replace the multiple outputs necessary

in an equivalent array of conventional tubes. The device is coupled to a companion computer for signal processing. With its capacity for imagery and single-photoelectron detection, the device can provide spectral line information, intensity comparison, positron detection and image-motion tracking.

The tube is effective at the low light levels needed for cell measurement in medical laboratories. The response spectrum may be custom designed to meet individual requirements. *ITT Electro-Optical Products Division, PO Box 3700, Fort Wayne, Indiana 46801*

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Low-cost system for ultra-high vacuum

Vacuum Generators Ltd. stresses the low cost of its new, 12-inch ultra-high-vacuum system for applications such as thin-film evaporation and surface studies. It can also serve as an ancillary pumping station for synchrotron beam lines. The model ITS-200 system is provided with five triode, argon-stable pocket pumps (total 200 liters/sec for air) fitted in its base.

A long-life titanium sublimation pump assembly, cooled with liquid nitrogen, is available as an option. The design of this accessory is unique, we are told, having a double-walled annulus mounted together with a 3-filament titanium pump cartridge from an 8-inch (outer diameter) Conflat flange. This design allows the titanium pump to be attached to the system or stripped for maintenance without disturbing the work chamber or integral poppett-valve assembly.

The main flange design can be either of gold wire or copper gasket design to ensure compatibility with the user's existing equipment. A twin molecular-sieve sorption-pump roughing system is provided on a dedicated service port, leaving ten accessory ports available for mounting ancillary components. Contact US distributor *Kurt J. Lesker Company, 5635 Horning Road, Pittsburgh, Pennsylvania 15236*

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Tiny ultraviolet sensor not sensitive in visible

The new Hamamatsu R1755 ultraviolet sensor is very small (2.8 mm diameter × 28 mm high), and it is completely insensitive to visible and infrared light. The specialized response curve cuts off very sharply outside the 185- to 350-nm wavelength range, and it peaks at 230 nm with 100% relative sensitivity. Prices start at $17.50 for large quantities. *Hamamatsu Corporation, 420 South Avenue, Middlesex, New Jersey 08846*

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Recorder and generator for transient waveforms

The new Hewlett–Packard HP 5182A waveform recorder/generator is a test instrument that combines high-speed waveform capture with arbitrary waveform generation. It is designed to facilitate the solutions of design problems requiring characterization of circuit response to transient or irreproducible input events.

The HP 5182A captures input waveforms with its 20-MHz, 10-bit analog-to-digital converter and stores them in high-speed memory. Entire waveforms or selected waveform portions can then be generated by the instrument's 20-MHz, 10-bit digital-to-analog converter, replicating the original signal. Waveforms may be regenerated one at a time in single-shot mode, or they may be electronically pieced together end-to-end to form a continuous waveform that replays without gaps. This is said to give design engineers new tools for working with infrequent or irreproducible waveforms. By adding a computer, graphics table and the appropriate software package, the user can modify stored waveforms with equations, noise or freehand drawings. This provides an easy way to generate arbitrary waveforms or to capture, modify and replay existing waveforms.

Typical applications involve the design of devices to recover information from analog waveforms, for example the design of read-recovery circuits in

computer magnetic-storage devices, modems and medical devices. The instrument contains an adjustable 50-Ω output amplifier that offers up to +5 V maximum output. It also provides an output that supplies a single pulse during every playback cycle for synchronizing other test equipment with the HP 5182A in a systems test environment. Sample rates for waveform capture and replay are separately adjustable, making it possible to generate waveforms whose frequencies differ from those captured. The HP 5182A incorporates 16 384 words of memory, which can be segmented into as many as 32 separate records. The instrument is priced at $23 000. *Hewlett–Packard (Inquiries Manager), 1820 Embarcadero Road, Palo Alto, California 94303*

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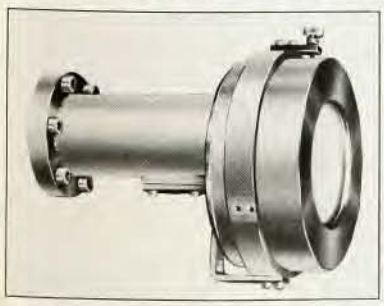
High-power magnetron sputter source for thin films

Ion Tech has introduced a new low-pressure, high-power, 2.5-inch-diameter, planar magnetron sputter source. It accepts standard disc-shaped sputtering targets, usually without requiring bonding to a backing plate; they are clamped for easy replacement. The source operates at a typical work-chamber pressure of 2×10^{-3} torr. It can deposit thin films at a rate equivalent to 10 000 angstroms per minute for copper. Dielectric materials and simple metals and alloys can be deposited and matched.

The source can be supplied separately or together with the appropriate power supply (dc or rf) to present a package that is easily installed in most laboratory or batch-coating deposition systems. Only a one-inch baseplate feedthrough hole is needed to accommodate the source, and all demountable water-cooling pipe seals are on the atmospheric side of the vacuum chamber. The low operating pressure of this source is compatible with the effective working pressure of the firm's Fast Atom Cleaning sources. These saddle-field devices operate independently of the magnetron source, providing good adhesion and film growth characteristics, we are told. *Ion Tech Ltd., 2 Park Street, Teddington, Middlesex, TW11 OLT, England*



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High-speed waveform analyzer

With very high throughput signal averaging for fast signal-to-noise enhancement, 10-nsec time resolution, 8-bit amplitude resolution and multi-waveform processing capabilities, the new LeCroy model 3500SA/100 high-speed signal analyzer acquires, digitizes, averages and archives fast analog signals. Bit-slice processor technology gives the analyzer an averaging speed of over 700 waveforms per second for a 1024-point waveform and the ability to improve the signal-to-noise ratio in noisy signals by over 100:1 in only 14 seconds. Averaged waveforms can contain up to 8096 points.

A 1024-point fast Fourier transform can be performed on recorded waveforms. On-screen manipulations include curve normalization and subtraction, overlay of waveforms, peak-search routines, horizontal axis calibration and display of selected regions of interest for detailed observation. Data archiving is on floppy disk; an RS-232C serial port is standard. The system is a full-feature CP/M-based computer, permitting further data manipulation or use of other CP/M programs; FORTRAN or BASIC is provided at no charge. The speed and versatility of the 3500SA/100 system, we are told, will be of particular use for applications involving fast pulsed measurements, such as kinetic chemistry, biochemical reaction studies and materials research. The entire system, including a single-channel waveform digitizer (100 Msample/sec, 10-nsec time resolution), display and processor console, and dual 8-inch floppy disk system, costs less than $20 000. *LeCroy Research Systems, 700 South Main Street, Spring Valley, New York 10977*

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New literature

Optical hardware—Melles Griot's new range of mechanical components for optical research is described in a new 52-page catalog. Among the new mechanical products are an optical breadboard system with better damping, stiffer construction, deeper hold-down threads and a super-hard, dull black finish; mirror mounts with superior stability and sensitivity; translation and rotation stages; lab jacks; a post mounting system for components. *Melles Griot, 1770 Kettering St., Irvine, California 92714* □