

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.

Software for Designing Optical Systems

Wolfram Research's Optica is a software package for designing optical systems used in spectroscopy, remote sensing, illumination, laser physics and other applications. Optica, which draws on the company's Mathematica problem-solving software, offers three-dimensional ray tracing, the ability to set parameters symbolically and publication-quality graphics. The software includes representations of standard components, such as lenses, mirrors, prisms, gratings, pinholes and optical fibers, whose surfaces can be defined in a variety of geometries. Users can also define custom optical components. The source code for ray-tracing functions is included and can be modified and extended by users. *Wolfram Research, 100 Trade Center Drive, Champaign, Illinois 61820-7237*

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High-Accuracy Wavemeter for Lasers

Burleigh Instruments's Model WA-1500 wavemeter is a Michelson-interferometer-based device that is designed to measure the wavelengths of most continuous-wave lasers with an accuracy of one part in 10^7 , which, according to the manufacturer, is an order of magnitude better than those of competing wavemeters. The WA-1500 can be inte-



grated easily into most experiments, we are told, and it provides continuous wavelength measurement to help ensure the reproducibility of experimental results. Applications include laser physics, communications and optoelectronics. *Burleigh Instruments, PO Box E, Burleigh Park, Fishers, New York 14453-0755*

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Quartz 'Light Pipes' for Ultrahigh-Vacuum Applications

Ceramaseal has introduced a group of quartz rod "light pipes," designed to carry information from fragile fiber-optic bundles through ultrahigh-vacuum environments. The light pipes can withstand high temperatures as well as low pressures and are available with diameters as small as 4 millimeters and lengths as long as 36 inches. Ceramaseal soon expects to produce 1-mm diameter rods with lengths of over 50 inches. The light pipes have been used to measure substrate temperatures during molecular beam epitaxy, and they should be useful in any application that requires transmitting optical information through ultrahigh

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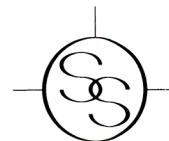
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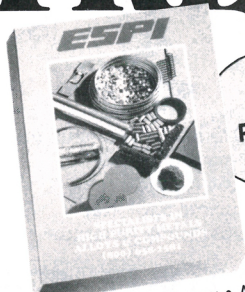


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High-Stability, 1-Milliwatt Tunable Laser Source

Santec's Mini TSL-200 laser source can be tuned over an 80-nanometer range around its nominal operating wavelength of 1550 nm with a specified accuracy of 0.2 nm. The laser operates from 10–40° C, and it has an optical power of 1 milliwatt, wavelength stability of 8 picometers per 30 minutes and power stability of 0.05 dB per 30 minutes. It includes a wavelength calibration function and a coherence control function for stabilizing the power output and wavelength. The system measures 210 mm × 350 mm × 100

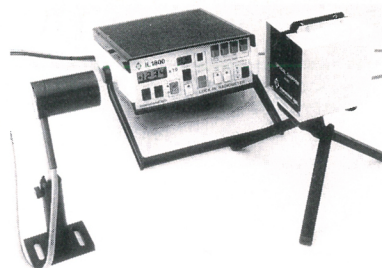


mm, and it has been used in optical components characterization, optical sensing, optical materials testing and fiber optics communication. *Santec, Micom Valley, Tokadai Kamisue, Komaki, Aichi, Japan 485*

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Radiometer and Phase-Lock Amplifier

International Light's IL1800 lock-in radiometer consists of a radiometer, a computer-controlled light chopper and a high-gain detector. The radiometer provides automatic phasing and has a permanent phase memory. The light chopper interrupts incoming light twice per second to calibrate the system to the ambient light; this provides for drift-free readings, we are told. The detector is sensitive within the spectral range of 200–1050 nanometers and at power levels from 5 femtowatts to 5 microwatts. The system can be configured with the source either in front of or inside the chopper. Alternatively, the detector can be placed inside the chopper as a



chopped receiver. The IL1800 can run on either batteries or ac power. *International Light, 17 Graf Road, Newburyport, Massachusetts 01950*

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Iodine-Stabilized HeNe-Laser Length Standard

Winters Electro-Optics has made available an iodine-stabilized helium-neon laser that operates at 633 nm and can serve as a primary length standard based on the 1992 Comité Internationale des Poids et Mesures's *Mise en Pratique*. The Model 100 includes an iodine cell manufactured and calibrated by the Bureau Internationale des Poids et Mesures, and it is capable of automatic peak identification and acquisition on 7 of 14 accessible iodine peaks, which enables it to operate unattended over long periods. Active temperature control allows operation within the temperature range of 15–25°C. Two different iodine cells are available. The S-type saturated vapor iodine cell provides a frequency accuracy of 2.5 parts in 10¹¹, while the more rugged N-type nonsaturated vapor iodine cell provides an absolute frequency accuracy of 1 part in 10¹⁰. The electronics for the system measure 42.5 cm × 9 cm × 28 cm and weigh 4.5 kilograms, while the laser head measures 10 cm × 10 cm × 39 cm and weighs 6.4 kg. The system is said to be suitable for laboratory and field applications in precision measurement, laser spectroscopy and standards measurement. *Winters Electro-Optics, 7227 Mount Sherman Road, Longmont, Colorado 80503*

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Microprocessor-Controlled, High-Power Diode Laser

The OPC-C005-FCTS diode laser from Opto Power can provide up to 5



watts of continuous-wave near-infrared (830 nm) power via a 0.4–1.1-mm optical fiber. It is designed for applications such as micro-heating, micro-welding and soldering. The user can adjust the power, width (from 200 microseconds to CW) and repetition frequency of the pulse, all of which are displayed on the system's front panel. Power is controlled by means of a closed-loop measurement system. The power supply is protected against ac transients and is cooled by an active thermoelectric system. The laser measures 12" × 12" × 5", and it can be operated with a foot pedal. An RS-232 interface allows the user to control the system from an external computer. *Opto Power, 15251 E. Don Julian Road, City of Industry, California 91745*

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Noninvasive, In-Line CO₂ Laser Beam Monitor

Precision-Optical Engineering's BM 10.6 beam monitor uses a diamond-machined copper mirror to sample 0.05% of a 10.6-micron CO₂ laser beam to establish the power and stability of the beam. The beam is monitored by a thermopile detector, which is water-cooled to allow beam powers up to 10 kilowatts. The system measures 140 mm × 140 mm × 88 mm, weighs 2.5 kilograms and accommodates beams up to 45 mm in diameter. The system can be used for beam alignment. A safety interlock shuts down the beam if the power deviates from a preset limit. *Precision-Optical Engineering, Wilbury Way, Hitchin, Hertfordshire, SG4 OTP, United Kingdom*

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High-Current, Fast-Pulse Laser Diode Driver

Directed Energy's DLD-55 provides fast, high-current pulses to laser diodes used in applications such as

range finding and LIDAR. The driver delivers current pulses from 1 to 100 amperes at repetition frequencies up to 500 kilohertz and with rise times of 20 nanoseconds. The pulse width can be continuously varied from 25 ns to 15 μ s. The DLD-55 measures 8.5" × 3" × 1.6" and weighs less than two pounds. It can be operated from 10–45° C. *Directed Energy, 2301 Research Boulevard, Suite 105, Fort Collins, Colorado 80526*

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Solid-State, 200-Picosecond Nd:YVO₄ Laser

Energy Compression Research has introduced a Q-switched, diode-pumped Nd:YVO₄ laser, the PML200-02, which lases at 1063.9 nanometers and has a 200-picosecond pulse and a maximum pulse-repetition rate of 5 kilohertz. Each pulse has an energy of 2 microjoules and a peak power of 10 kilowatts. The laser is stable from pulse to pulse to better than 2%.

The laser can be triggered with either internal or external transistor-to-transistor logic signals, and, we are told, it does not require external cooling or alignment. The system consists of a laser head measuring 2" × 2" × 3.25" and weighing 8 ounces, and a controller—power supply, measuring 5.25" × 8.5" × 17" and weighing 10 pounds. *Energy Compression Research, 6355 Nancy Ridge Drive, San Diego, California 92121*

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New Literature

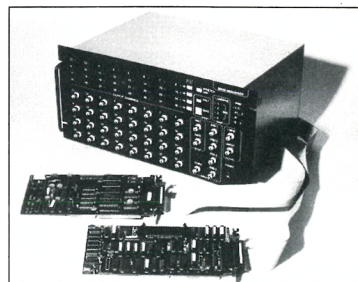
Sapphire laser rods—Crystal Systems offers literature on its titanium sapphire crystals for high-performance laser rods; the crystals are grown using the company's heat exchanger method. *Crystal Systems, 27 Congress Street, Salem, Massachusetts 01970*

Electro-optical product guide—Aerotech's electro-optical product guide provides technical and design data for the company's linear and rotary manual positioners, gimbal optical mounts, red and green helium-neon lasers and laser supplies. *Aerotech, 101 Zeta Drive, Pittsburgh, Pennsylvania 15238*

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