

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.

Pulsed-Laser, High-Speed Imaging System

Oxford Lasers's Laserstrobe high-speed imaging system is based around a 10-watt copper laser with a maximum repetition rate of 10 kilohertz. The laser's firing rate, we are told, can be synchronized with a trigger pulse from any high-speed film or video camera to provide high-resolution images of subjects ranging from transient phenomena to shock-wave propagation.

Additional optical systems can be used to adapt the Laserstrobe's beam to other applications. For example, fiber optics, lens systems or frequency doublers can be used for microcinematography, visualization of flow in fluids or fluorescence studies, respectively. Particle image velocimetry software can be used to follow the time evolution of a system. Oxford also sells a high-speed camera for the Laserstrobe. *Oxford Lasers, 33 Nagog Park, PO Box 2620, Acton, Massachusetts 01720-6620*

Circle number 180 on Reader Service Card

High-Temperature, NonContact Infrared Thermocouples

Exergen has developed seven new infrared thermocouples for noncontact temperature measurement. The four high-emissivity thermocouples can measure the temperatures of unreflective or coated metals from -45 to 2200 °C. The three low-emissivity models can measure temperatures of uncoated metal targets between 430 and 2500 °C. All are available with 10:1, 20:1 and 100:1 fields of view. *Exergen, One Bridge Street, Newton, Massachusetts 02158*

Circle number 181 on Reader Service Card

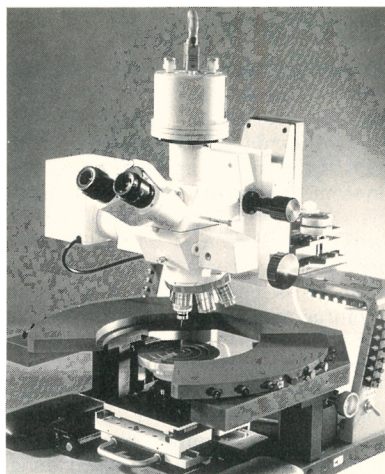
Photovoltaic Cells for Laser Power Conversion

Spire has made available photovoltaic cells that can convert up to one watt of input laser power into electrical power with up to 30% efficiency (using indium-gallium-arsenide) at 1550 nanometers and 55% efficiency at 800 nanometers (using gallium-arsenide). Depending on the wavelength and intensity of the input light, voltages from 0.5 to 1.1 volts and currents from a few to 500 milliamperes are possible. Possible applications include powering nearby or distant instrumentation using light from lasers or optical fibers. *Spire, One Patriots Park, Bedford, Massachusetts 01730-2396*

Circle number 182 on Reader Service Card

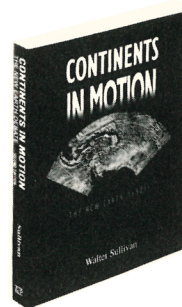
Microscope for Advanced Failure Analysis

Because of its high optical efficiency and wide spectral range (from the infrared to the near ultraviolet), Carl



"AS ENTERTAINING as a good detective story."

—TIME



CONTINENTS IN MOTION

Second Edition

Walter Sullivan, former science editor for *The New York Times*

An absorbing and highly readable history of the idea of continental drift—a concept that revolutionized our understanding of geology. Sullivan traces its tentative beginnings in the 19th century and its promulgation by Wegener in the 1920s to the accumulation of overwhelming evidence in the '60s. This second edition is extensively updated to reflect our current understanding of the basic geophysics underlying continental drift. Written at a slightly more technical level than an average *Times* science story, *Continents in Motion* will appeal to all general science readers.

An AIP Book

1991, 456 pages, illustrated

0-88318-703-5, cloth

\$50.00 **Members \$40.00**

0-88318-704-5, paper

\$25.00 **Members \$20.00**

To order, call toll-free:

1-800-488-BOOK

(In Vermont, 802-878-0315)

**AMERICAN
INSTITUTE
OF PHYSICS**

Member prices are for members of AIP Member Societies (APS/OSA/ASA/SOR/AAPT/ACA/AAS/AAPM/AVS/AGU/SPS). To order at member rates, please use the toll-free number.

Zeiss's Probe Station Microscope is said to be suitable for many of the most recent techniques for failure analysis. For example, infrared images of backside emission and ultraviolet fluorescence can be used to locate defects that might otherwise be obscured. The microscope can also be configured in bright field, dark field, fluorescence, polarized light and interference contrast modes. The microscope should be useful in fields such as materials science, biophysics and condensed matter physics. *Carl Zeiss, One Zeiss Drive, Thornwood, New York 10594*

Circle number 183 on Reader Service Card

High-Precision Spectrometer Power Supplies

A. P. Systems new Series 300 high-precision power supplies for ultra-high-resolution electron energy loss spectroscopy can drive more than 50 electron lenses, deflection plates and analyzer elements, as well as control the filament, channeltron and scanning functions. Lens elements can be driven over a range of 300 volts.

The standard-precision supply controls drift to better than 1 millivolt per °C at 100 volts, while the high-precision supply controls drift to 0.1 millivolts per °C at 100 volts. Both supplies provide 16-bit resolution and 10-microvolt noise. Scanning ranges are from 3 to 100 volts, and a built-in multiplexer allows monitoring of any element's voltage or beam current. The supplies are computer controlled by means of an RS-232 interface, and an optional Labview-based software package with spectrum acquisition is available. *A. P. Systems, 846 Forest Avenue, Palo Alto, California 94301*

Circle number 184 on Reader Service Card

High-Resolution, Fixed-Focus, Flexible Fiberscopes

Olympus America's IFC5 series of flexible fiberscopes are designed for easier examination of difficult-to-reach areas. The scopes' many small-diameter optical fiber and fixed-focus optics are said to make high resolution observation easy and they are well suited to use with a video camera. The tubes are more flexible near the ends to make it possible for the tube to snake around multiple bends. The IFC5 series includes tube diameters of 6, 8 and 11 millimeters and

working lengths ranging from 800 to 3000 millimeters. A wide range of optical tip adapters makes it possible to brighten images and to change the scope's direction, field of view, depth of field or focus. *Olympus America, Industrial Fiberoptics Division, 4 Nevada Drive, Lake Success, N. Y. 11042*

Circle number 185 on Reader Service Card

Magnetic Shielding Lab Kit for Interference Problems

Magnetic Shield has released its LK-120 magnetic shielding lab kit, which includes a selection of 10 inch × 15 inch NETIC and CONETIC high-permeability



magnetic shielding foils, a magnetic field probe and design and technical literature. The kit is designed to shield experiments and electrical devices from low-frequency magnetic interference. *Magnetic Shield Corporation, 740 North Thomas Drive, Bensenville, Illinois 60106*

Circle number 186 on Reader Service Card

Thermal Imaging System for Designing and Testing Semiconductors

For designing, testing and measuring semiconductors and integrated circuits, FLIR Systems has introduced a microthermal configuration of its IQ812 thermal imaging system. The system can resolve features as small as 13 micrometers and display them with a resolution of 640 × 480 lines. An electronic zoom feature and multiple cross points make it easier to monitor specific points and focus on problem areas. We are told that multiple color isotherms accurately highlight temperature differences as small as 0.06 °C. The imager is controlled by means of a graphical user interface and can export data in tagged image

file format. *FLIR Systems, 16505 Southwest 72nd Avenue, Portland, Oregon 97224*

Circle number 187 on Reader Service Card

Computer-Based Arbitrary Waveform Generator

The PCI-311 single-channel and PCI-312 dual-channel arbitrary-waveform-generator cards from PC Instruments are designed to occupy one expansion slot on a personal computer, thereby enabling it to function as an arbitrary waveform generator. Both the PCI-311 and PCI-312 have 12-bit vertical resolution, a maximum sampling rate of 50 megasamples per second, 0.01% frequency accuracy, five output filters, nine built-in waveforms and 32 kilosamples of memory per channel.

Waveforms can be created using PC Instruments's Benchcom (standard) or Benchtop (optional) software packages, imported from spreadsheets or math programs, or captured and transferred from one of PC Instruments's oscilloscope cards. The waveform memory can be divided into 99 segments, each containing a different waveform. The user can repeat each segment up to 32 678 times and link segments in random order or any specified order. Using the software packages, one can then modify the waveforms with a mouse. *PC Instruments, 9261 Ravenna Road, Building B11, Twinsburg, Ohio 44087*

Circle number 188 on Reader Service Card

1000-Watt RF Plasma Generator

The ACG-10B plasma generator from ENI produces 1000 watts of 13.56-megahertz power for plasma etching, chemical vapor deposition and sputtering applications. The generators are calculated to have a mean time between failures of 85 000 hours. The system has a microprocessor that controls power output to within 3 watts of the set point, and it also includes load-mismatch protection, forced-air cooling and suppression of power output at harmonics of the main rf frequency. Digital and analog remote control interface connectors are provided for remote monitoring, control and diagnostics. *ENI, 100 Highpower Road, Rochester, New York 14623-3498*

Circle number 189 on Reader Service Card

NEW PRODUCTS

Nanocrystalline and Nanophase Ceramics and Metals

Ultram International has announced the availability of many ceramics and metals as nanocrystalline powders—powders with crystal sizes from 5 to 100 nanometers—and nanophase materials—synthetic three-dimensional solids made of nanocrystalline materials. The small crystal sizes give these materials a high surface energy and a surface area per unit mass between 100 and 10 000 times greater than normal materials. These features in turn give the materials unique mechanical, electrical, magnetic, optical, thermal and catalytic properties. For example, nanophase ceramics may be more ductile than ordinary ceramics, while nanophase metals show much lower electrical and thermal conductivities than do normal metals.

We are told that the nanocrystalline sizes of the materials from Ultram International are carefully controlled and that they are available in sizes less than 30 nanometers, from 30 to 50 nanometers and from 51 to 100 nanometers. Also, if only one solid phase is desired of a material that normally comes in several different solid phases (such as TiO_2), the manufacturer can supply samples of up to 90% purity of the single phase. Ultram International can supply nanocrystalline samples of standard ceramic materials (such as TiO_2 and ZrO_2), special ceramic materials (such as Al_2O_3 , SnO_2 , and B_2O_3), standard metals (Al, Cu, Fe, Ni and Ti), standard refractory metals (W and Mo) and special metals (Au, Ag, Pt, Pd and others). These materials should find application in materials science, condensed matter physics, chemical physics and energy science. *Ultram International, Three Park Central, Suite 1000, 1515 Arapahoe Street, Denver, Colorado 80202*

Circle number 190 on Reader Service Card

New Literature

Instrumentation catalog—LeCroy has published its 416-page 1994 *Research Instrumentation Catalog*, including technical data sheets and specifications, application notes and an introductory tutorial (with glossary) for using modern research instrumentation. *LeCroy, 700 Chestnut Ridge Road, Chestnut Ridge, New York 10977-6499*

PLACEMENT CENTER

to be held in connection with the
American Vacuum Society

24-26 October 1994

COLORADO CONVENTION CENTER

DENVER, COLORADO

- The primary purpose of the Center is to arrange **personal interviews** between physicists seeking employment and prospective employers registered with the Placement Service.
- Universities, colleges, research institutions, industrial organizations, and government laboratories are invited to participate in the Placement Center and conduct interviews with physicists attending the meeting. A **complete register of physicists** seeking employment will be available upon request at the meeting and after the meeting.
- A **Career Workshop** on job seeking skills will be offered for all participants.
- Information regarding the Placement Center and Career Workshop may be obtained by writing to the Institute's office. The deadline for preregistration is 27 September 1994. On-site registration will be held at the Center.

Career Planning and Placement
American Institute of Physics
One Physics Ellipse, College Park, MD 20740

Circle 3 on Reader Service Card

CHAOS

An
Interdisciplinary
Journal of
Nonlinear Science

Chaos brings you the most recent developments, speculations, and debates in nonlinear science from the international research community. Contributions to this peer-reviewed journal are gathered from diverse disciplines, including physics, mathematics, chemistry, biology, engineering, and the social sciences.

Published quarterly, **Chaos** offers you a broad spectrum of information in the form of original research articles, technical reviews, and pedagogical surveys. You'll also discover translations of key papers by Russian scientists and special "focus" issues containing collections of related articles highlighting topics of current interest.

Subscribe now and see why **Chaos** is forcing a fundamental reassessment of the way in which we view the physical world.
For rates and ordering information call Toll-free: 1-800-344-6902.

AMERICAN
INSTITUTE
OF PHYSICS

Member and Subscriber Services
500 Sunnyside Boulevard
Woodbury, NY 11797