

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.

Magnetically Levitated Transducer

Abbess Instruments and Systems has developed a magnetic levitation transducer that can serve as a balance, accelerometer or dynamometer. The transducer has an aluminum-alloy rod that is permeated with high-field magnets and supports samples with masses up to 100 g. The position of the rod is maintained by means of an optical feedback system that regulates the current flowing in the device's single coil. By observing the rod's position and measuring the current flowing through the coil, the system determines the force needed to maintain the rod's position with 10 micronewton sensitivity.

Because the rod is supported by a magnetic field and can be isolated from the rest of the apparatus, the transducer can function even in ultra-high vacuum or in viscous and corrosive fluids. Among the applications suggested for this device are thermogravimetric analysis of materials, analysis of variations in the Earth's gravitational field and absorption of shock and vibration. *Abbess Instruments and Systems, 40 Main Street, Ashland, Massachusetts 01721*

Circle number 180 on Reader Service Card

Crystals for Nonlinear Optical Applications

Inrad has made available two materials for nonlinear optical studies. The first, beta barium borate, has a large effective nonlinear coefficient and a high damage threshold. It can generate harmonics down to a wavelength of 197 nm.

The second material is zinc germanium phosphide, which generates tunable infrared light when pumped at a suitable near-infrared frequency.

The crystal transmits light from 0.67 to 13 microns and has a nonlinear coefficient of 75 picometers/volt and a thermal conductivity of 0.18 watts/cm/K. Inrad expects this material to be used in remote sensing applications. *Inrad, 181 Legrand Avenue, Northvale, New Jersey 07647-2498*

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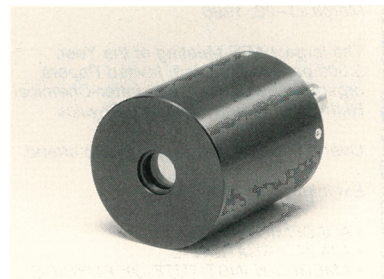
Probe Tips for Analyzing High-Aspect-Ratio Features

Digital Instruments's focused-ion-beam probe tip for atomic force microscopy is designed to measure features with high-aspect ratios, such as those found in microfabricated structures. The tip can measure features with sidewall angles up to 85° and depths of over 1 micron. The standard probes measure 1.5–2 microns and should be suitable for probing steps up to 1 micron. *Digital Instruments, 520 East Montecito Street, Santa Barbara, California 93103*

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Photomultiplier Tubes with Fast Response Times

Hamamatsu's R3809U series of compact, microchannel-plate photomultiplier tubes are intended for applications requiring fast rise times and low noise levels, such as molecular structure analysis, optical computer tomography, semiconductor analysis and crystal research. Seven photomultiplier tubes cover the various wavelength bands from 115 to 1200 nm. Each tube has a 150-picosecond rise time and a 25-picosecond transit-time spread. The tubes run on –3400 volts dc, with an average anode current of 100 nanoamperes and a pulsed peak current of

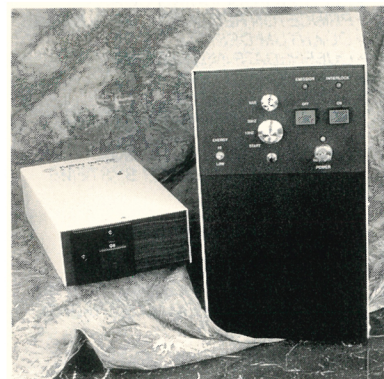


350 milliamperes. Among the accessories available from Hamamatsu are thermoelectric cooling units, tube holders, amplifiers and high-voltage power supplies. *Hamamatsu, 360 Foothill Road, Box 6910, Bridgewater, New Jersey 08807-0910*

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Lasers with Second-, Third- and Fourth-Harmonic Capability

New Wave Research has introduced two compact, pulsed, Q-switched Nd:YAG laser systems, the Mini/Lase-10 and Mini/Lase-20, with repetition rates of 10 and 20 Hertz, respectively. Each laser head measures 8.5" × 3" × 2" and weighs less than four pounds. At 1064 nanometers, the systems put out 28 milli-



APS Show

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The largest APS Meeting of the Year.
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joules with peak-to-peak energy stability of better than 6%. To extend their useful wavelength range, both systems can be configured to use second-, third- and fourth-harmonic-generating crystals. The lasers are intended for industrial and laboratory applications such as laser-induced breakdown, ultraviolet fluorescence and mass spectroscopy. *New Wave Research, 1283 Old Mountain View-Alviso Road, #E, Sunnyvale, California 94089*

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Holographic Light Diffusers for Imaging Applications

The new light-shaping diffusers from Physical Optics are intended to provide even lighting by eliminating variations in brightness due to the light source's structure and by smoothing the spatial distribution of light energy incident on the diffuser. Each diffuser consists of a thin, flexible piece of embossed plastic on which is imprinted a surface-relief hologram. The hologram diffuses light of any visible wavelength as though the surface of the diffuser consisted of many randomly distributed microlenses of various sizes. Because the holographic surface is highly antireflective, the diffuser transmits up to 92% of the light that strikes it. The manufacturer recommends the diffuser for applications such as machine vision, liquid-crystal-display backlighting, laser-beam shaping, microscopy and inspection lighting. *Physical Optics, 20600 Gramercy Place, Building 100, Torrance, California 90501-1821*

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Digital Storage Oscilloscope with Chart Recorder

The Datasys 760 is a direct-recording oscilloscope from Gould Instrument Systems that combines the functions of a digital-storage oscilloscope and a chart recorder. The scope has 50 000 words of memory on each of its four input channels, a 100-megasample/sec sampling rate and a 150 megahertz bandwidth. When operated as a chart recorder, the system records the waveform from the screen for up to eight days of continuous operation at chart speeds from 200 msec/division to 200 sec/division. The scope also has a glitch-capture feature so that the user can locate intermittent

signals down to 10 nanoseconds duration, regardless of the timebase range selected. To look for random or intermittent phenomena, capture and recording of data can be initiated by trigger events.

Waveforms can be stored on disk or memory cards or transferred to a computer for subsequent analysis. IEEE-488.2 and RS423 interfaces are included. The Datasys 760 also has full-color display capabilities and a 1000:1 zoom feature for examining fine details of the trace. Suggested applications range from relatively low-speed industrial applications to high-speed electronic testing. *Gould Instrument Systems, 8333 Rockside Road, Valley View, Ohio 44125-6100*

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'Cold'-Plasma Magnetic Filtering Device

Electro-Graph's Coolplaz is a magnetic filtering device designed to improve plasma uniformity and separate it into regions of high- and low-electron temperature. The device allows only the low-electron-temperature plasma to reach the sample's surface, thereby reducing implant times and minimizing the charging damage that can occur during ion implantation. We are told that the magnetic filter is infinitely scalable, and so the device should be useful for the smaller geometries of next-generation microelectronics. *Electro-Graph, 3158 Redhill Avenue, Suite 200, Costa Mesa, California 92626*

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Research-Grade Single-Phase Lock-In Amplifier

The model 5109 lock-in amplifier from EG&G Instruments is designed to measure the in-phase component and noise level of a current or voltage signal. The user may choose from several filter modes and output time constants to examine different features of the input signal. The unit



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includes two analog-to-digital converter inputs, four digital-to-analog converter outputs and a connector with eight transistor-to-transistor logic lines, each of which may be set independently to control external equipment.

The unit can be controlled from its front panel or from a computer connected by means of an RS232 or IEEE interface. Among the applications suggested for the amplifier are radiometric optical spectroscopy, vibration analysis and noise measurement. *EG&G Instruments, Sorbus House, Mulberry Business Park, Wokingham, Berkshire RG11 2GY, England*

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Carbon Wire That Is Nonmagnetic and X-Ray-Transparent

World Precision Instruments's 1-millimeter carbon wire is composed of 3000 individual carbon strands encased in a PVC jacket. Because the wire is made of carbon, it is transparent to x rays and it adds no artifacts to x-ray images. It is also nonmagnetic, so it is well suited to magnetic resonance imaging and nuclear magnetic resonance studies. *World Precision Instruments, 175 Sarasota Center Boulevard, Sarasota, Florida 34240-9258*

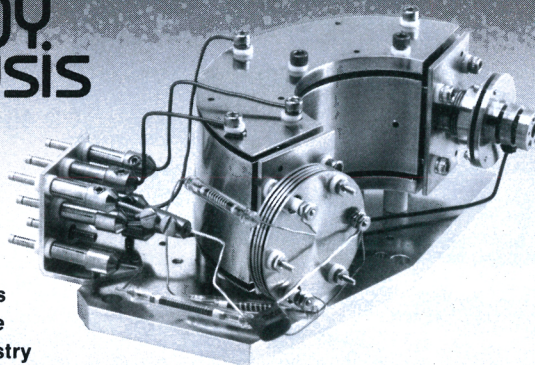
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New Literature

Citation and newsletter databases—STN International now offers Scisearch—an online version of *Science Citation Index*, which contains abstracts from more than 4500 science and technical journals dating from 1974 to the present—and NLDB—an on-line data base containing full texts of more than 600 business and industry newsletters published in the United States, Europe, Latin America, Asia and the Middle East. *STN International, c/o Fachinformationszentrum Karlsruhe, R. Mack, Postfach 2465, D-76012 Karlsruhe, Germany*

Astronomy catalog—The Astronomical Society of the Pacific's 1995 mail-order catalog offers many aids for teaching astronomy, including video and audio tapes, books, computer software, CD-ROMs, slides, videodiscs, telescopes and posters. The catalog is free. *Catalog Requests Department, Astronomical Society of the Pacific, 390 Ashton Avenue, San Francisco, California 94112*

electrostatic energy analysis



Applications in:

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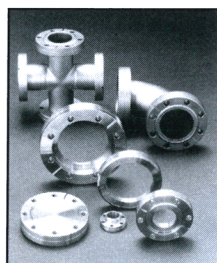
Comstock's Electrostatic Energy Analyzers are convenient, compact, and versatile instruments for obtaining the energy distributions of charged particles. A variety of sizes is offered to suit space, energy range, and resolution requirements.

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Optimize your Vacuum System



High Vacuum Components

HPS CF components are designed for use in ultrahigh vacuum systems, with all metal seals that can be baked to 500° C. Special attention is paid to workmanship, quality and consistency, so that HPS CF components may be used in the most demanding applications with confidence.

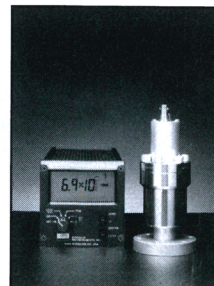
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