

NEW PRODUCTS

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers. 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.

FOCUS ON TEST AND MEASUREMENT

Source Meters for High-Voltage and High-Current Testing

Keithley's new models 2410 and 2420 are, respectively, high-voltage and high-current source meters. They extend Keithley's 2400 source meter series, which the firm describes as "a new class of instruments" that combine precision sources with a high-resolution digital multimeter and measurement firmware. Their dynamical range, we are told, is unusually wide for single source instruments.

Model 2410, with a source-power rating of 22 W, can generate and measure voltages from microvolts to kilovolts. Model 2420, with a source-power rating of 66 W, generates and measures currents from a fraction of a microamp to 3 A. They can measure resistances from $1\ \mu\Omega$ to 200 M Ω . Over a year, we are told, a source may vary from 0.02% to 0.9%, depending on the measurement range.

The new models can make more than a thousand nonbuffered readings per second over an IEEE-488 bus, or read into memory at twice that rate. The memory buffer can hold five thousand $5\frac{1}{2}$ -digit readings. The units' half-rack package saves space. *Keithley Instruments, 28775 Aurora Road, Cleveland, Ohio 44139*

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Film Measurement System for Advanced Process Applications

Tencor Instruments has introduced the Prometrix UV-1280SE, a thin-film measurement system suitable for pro-

duction applications. The instrument does both spectroscopic ellipsometry and spectrophotometry. Therefore, it can support etching and lithographic applications. It can also provide advanced characterization of new materials such as SiON antireflective layers, silicon-rich oxides, silicon carbide and SiGe.

The UV-1280SE directly measures film thickness, refractive index and extinction coefficients in single- or multilayer thin-film stacks simultaneously, without having to reference or extrapolate. The instrument uses Summit 2.0 software in Windows NT for multitasking. This computing capability, combined with a dual-finger handler, permits a throughput of up to 120 wafers per hour. *Tencor Instruments, One Technology Drive, Milpitas, California 95035*

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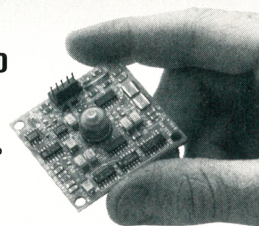
Flexible, Hydrogen-Free Neutron Shielding Material

PNPI USA has developed a flexible plastic neutron shielding material made of ^6LiF polymer. This sheeting is intended to protect persons and instruments against neutron radiation. It can, we are told, efficiently eliminate the radiation background in experiments with high neutron fluxes.

The matrix material is claimed to contain much less hydrogen than the typical epoxies used to stabilize lithium fluoride. Hydrogen is, of course, the principal source of neutron-induced secondary gammas. The ^6Li isotope is enriched to constitute fully 97% of the material's lithium. ^6Li is desired because of its large cross section for absorbing thermal neutrons. That

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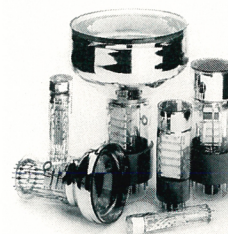
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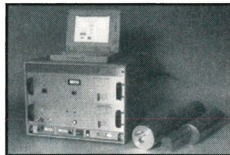
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makes this new shielding material, which can easily be cut with scissors, particularly suitable for nuclear spectroscopes, line analyzers, monochromators and the like.

The material is available in 50×50 cm sheets, 2.3 mm thick. Even 1.5 mm thicknesses, we are told, are completely opaque to neutrons at various wavelengths from 1.5 to 7 angstroms. *PNPI USA Corp, 7457 Harwin, Suite 223, Houston, Texas 77035*
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Test Tool for Comparing X-Ray Images and Computed Radiography

The new Boston computed-radiography test tool from Nuclear Associates responds to the need for a way of selecting optimal processing parameters for computed radiography (CR) exposure, in order to produce clinical CR images comparable to conventional film-screen images. The test tool facilitates the comparing of x-ray film and CR images of the same object. Thus it facilitates the setting up and maintaining of effective computed radiography.

The Boston CR test tool (model 07-602) is an accurate "phantom" that helps the analyst avoid overlooking subtle shadows or fine details. It lets the user standardize films simply by adjusting settings for different anatomical views. It also calibrates the CR system to match the density, contrast and sharpness of conventional imaging. Furthermore, it keeps images constant.

Test-tool images can be transmitted over a teleradiography network and printed on a remote printer. Their 14×17 -inch size is adequate for users who expose full-size imaging plates, as well as those who use smaller cassettes. *Nuclear Associates, 100 Voice Road, P.O. Box 349, Carle Place, New York 11514-0349*

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Large-Diameter Sapphire Crystals for Gravitational-Wave Detectors and Lasers

Crystal Systems has developed a heat-exchanger method for growing large, high-quality sapphire crystals. Crystals 34 cm and 15 cm high, produced

by the firm, are currently under investigation, we are told, for use by VIRGO, LIGO and GEO, three large-scale gravitational-wave detector projects under way in the physics community. For these experiments, the crystals are being considered as possible beam-splitter and test-mass materials. The Gravity Probe B project is considering their use as window and pressure-barrier materials. Sapphire is attractive for gravitational test masses because it has a high mechanical Q , high thermal conductivity, low acoustic loss and high Young's modulus. This combination of qualities conduces to low thermal noise and internal resonant frequencies too high to get in the way of the gravitational-wave signals being sought.

In the firm's heat-exchanger method, the crystals are grown under low temperature gradients and annealed *in situ* at temperatures near the melt point in order to minimize residual stress and defect density. Boules up to 34 cm diameter, weighing 65 kg, are produced routinely. The ability to grow such large sapphire crystals is also interesting for infrared reconnaissance and semiconductor processing. The firm's titanium-doped sapphire crystals are particularly interesting for the development of high-power, ultrashort-pulse tabletop lasers. *Crystal Systems, 27 Congress Street, Salem, Massachusetts 01970*

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Portable Megahertz Data Acquisition and Signal Processing

IOtech is offering four new signal-conditioning options for its WaveBook/512 data-acquisition system. The 512 is a portable, PC-based, 1-MHz multichannel digitizer. The new options include the field-installable WBK12 low-pass filter card; the WBK13 card, which also incorporates simultaneous sample-and-hold; the WBK14 dynamic-signal module for accelerometers, microphones and other transducers; and the WBK15 eight-channel, multipurpose isolated signal-conditioning module.

These new signal-conditioning options make the WaveBook/512 useful for acoustic, vibrational and electromechanical testing and capturing transients, as well as a broad range of field-service applications that have hitherto required larger instruments. *IOtech, 25971 Cannon Road, Cleveland, Ohio 44146*

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Time-of-Flight Mass Spectrometer

Comstock's new Reflectron time-of-flight mass spectrometer, model RTOF-210, provides mass resolution ($m/\Delta m$) of better than 9000 for atomic gases at mass 131, when one uses the firm's standard electron-impact ionization source, and the total path length is 2 meters. Measured ion transmission, we are told, exceeds 90%.

The mass spectrometer employs a many-order spatial- and energy-corrected ion source and a gridless ion mirror. It is supplied with two impedance-matched dual-microchannel plate detectors for its linear and reflectron sections.

The instrument can be equipped for electron-impact ionization, laser ionization and laser desorption ionization, with or without matrix assistance. The laser desorption and ionization spectrometers have delayed-pulse extraction for enhanced resolution.

Comstock offers complete systems with all the electronics, power supplies and a Windows 95 data system. *Comstock, 1005 Alvin Weinberg Drive, Oak Ridge, Tennessee 37830*

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Precision Electrostatic Voltmeter for Noncontact Surface Measurement

Trek's new model 347 is a precision electrostatic voltmeter for making noncontact surface voltage measurements up to 3 kilovolts, DC or peak AC. The voltmeter employs a field-nulling technique to make noncontact measurements that achieve DC stability and high accu-



racy, we are told, even when the spacing between probe and surface changes. So the instrument can measure either stationary or moving surfaces without having to maintain fixed spacing.

The voltmeter's proprietary probe design obviates close-tolerance compo-

nents. That is claimed to reduce noise and drift in the presence of contaminating particles and under conditions of high humidity or widely varying temperature.

A precision voltage monitor provides a low-voltage replica of the measured potential, for monitoring or for use as a feedback signal in a closed-loop system. A variety of probes is available for different user requirements. *Trek, 3932 Salt Works Road, P.O. Box 728, Medina, New York 14103*

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Color Oscilloscope for Diagnosing Circuit Problems

LeCroy's new model LC374A color oscilloscope is intended to help design engineers solve circuit problems. It has four input channels, each with 500-MHz bandwidth and 1GS/s sampling rate. When two channels are used, one can sample at 2 GS/s. The oscilloscope's record length is also quite long: 100 kilopoints per channel, or 250 kilopoints for two channels. That lets the user capture fast, complex signals with precision, and it improves the oscilloscope's ability to zoom in on important details of long signals.

All oscilloscopes in LeCroy's LC series, which was introduced last year, let the user look at multiple signals by toggling between opaque and transparent use of trace colors. They all have bright-color, 9-inch viewing areas and fast handling of data acquisition by a 96-MHz PC with up to 64 Mbytes of random-access memory. The oscilloscopes have a wide range of triggering features for capturing signal aberrations. *LeCroy, 700 Chestnut Ridge Road, Chestnut Ridge, New York 10977*

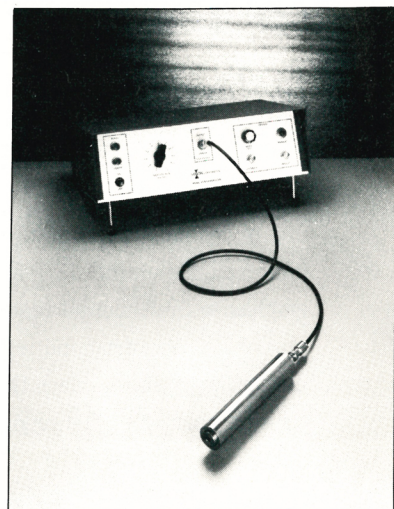
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New Literature

Vacuum valves and controls—VAT's new *Vacuum Valves 2000* is a hardcover catalog with 192 pages of vacuum valves, control systems, accessories, integrated valves for OEM applications, and retrofit valves for existing systems. It is intended as a source book that provides complete specifications of components for applications ranging from rough to ultrahigh vacuum. New products include miniature gate valves, heated valves and inexpensive all-metal angle valves. *VAT, 500 West Cummings Park, Woburn, Massachusetts 01801*

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