

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.

Ultrasensitive Leak Detector and Residual Gas Analyzer

Quantum Mechanics, a California firm, describes its new Model Ultra-15 as "by far the most sensitive and most versatile leak detector in the world." This fully automated leak detector and residual gas analyzer is claimed to be a hundred thousand times more sensitive than other high-quality helium leak detectors. The dynamic sensitivity under normal operation ranges from 10^{-6} to 10^{-15} STP cm^3 He/sec. As a residual gas analyzer, the Ultra-15 covers the mass range from hydrogen up to 100 amu.

The entire leak-check operation is carried out from the keyboard, either in an automated sequence or in a manual keystroke-per-command mode. All readouts may be displayed on the system's CRT. Each leak test is automatically calibrated against a reference leak standard. The system's basic principle of operation was developed and patented by Martin Marietta and licensed exclusively to Quantum Mechanics. *Quantum Mechanics, P. O. Box 1885, Sonoma, California 95476*

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Photomultiplier Tubes for High-Energy Physics Applications

Thorn EMI is introducing its 9124/7 series of 30-mm photomultiplier tubes, which are based on a new electro-optical dynode system that is claimed to "associate the qualities of a large input dynode with the advantages of a fast linear-focus multiplying section." This results, we are told, in a combination of high gain, fast rise time, good resolution and linearity that will be of particular interest in gamma spectroscopy, precision photometry and high-energy physics.



The firm also stresses its capability for developing special-purpose photomultipliers for specific applications. Recent examples include a 38-mm tube with a domed, thin hexagonal window for cosmic ray research, a 203-mm-diameter hemispherical tube for maximum light collection in high-energy physics and a 75-mm tube for high-resolution gamma spectroscopy. *Thorn EMI Electron Tubes, Bury Street, Ruislip, Middlesex, England HA4 7TA*

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Laboratory Gas Flowmeter

McMillan's new precision Model 110 flowmeter is claimed to offer precision measurement of extremely low gas flow rates—down to 10 ml/min. The meter produces a linear dc voltage output proportional to the gas flow rate. Measurements are displayed on a digital LED readout. The instrument's compact design and modest price are claimed to make the Model 110 an attractive alternative to conventional glass tube-and-ball flowmeters for a wide range of applications. The instrument can handle flow rates up to 20 liters/min.

The flowmeter employs an electro-optical measuring system. A rotating Pelton-type turbine wheel determines the gas flow rate. Infrared light from a diode, directed at the wheel, is alternately reflected and absorbed as the wheel rotates, producing peaks that are detected by a photodiode. The

Rapid Thermal Processing

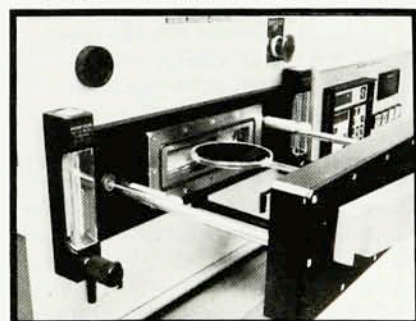
Meeting the needs of SUPERCONDUCTORS

Process Products Corporation is sensitive to the evolving needs of superconductives. Superconductives are setting the course of technology. They bring with them a new generation of electronics and supercomputers capable of functions unconceivable just a short time ago. But, before this can happen they need to be developed. Through benchmark testing of ceramics, metals and thin films, researchers can better understand which parameters are more critical than others. That is why we designed the 2016 M2F, a rapid thermal processor that is an affordable and important tool for the research and development of this emerging technology.

The 2016 M2F is capable of processing various substrates. It has a quartz chamber and tungsten halogen lamp or low thermal mass resistive heating. Its full microprocessor controls include temperature ramping rates up to $300^\circ\text{C}/\text{min}$, heat up and cool down. Capabilities include; chamber overpressure for rapid oxidation, high pressure oxidation, low pressure metal annealing, LP CVD and doping of thin films. It is cost effective for multi-layer processing and is quicker than larger systems.

Features include:

- Ambient to 1500°C
- Reduced pressure (1×10^{-6})
- Overpressure to 10 ATMS
- In-situ monitoring
- High pressure oxidation/annealing
- Variable and multiple ramps/dwells
- Single and multiple substrate capacity



For more information regarding the 2016 M2F features and capabilities and how it can meet your process requirements contact:
Process Products Corp. 617-689-3828
FAX Number 617-686-5847.

PROCESS PRODUCTS CORPORATION

37 Flagship Drive, N. Andover, MA 01845

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NEW PRODUCT

CHARGE SENSITIVE LOW NOISE PREAMPLIFIER

MODEL CS 507



FEATURES

- Ultra Low Noise
- Very Small Size
- Easy Handling

CS507 is a hybrid IC Charge Sensitive Low Noise Preamplifier utilizing FET at its input stage developed especially for instrumentation employing solid state detectors.

Its circuit is designed versatile thus can improve the characteristics of resolution and noise slope by a joint use with exterior parts.

It is featured in proper usage for a proportional counter and a photomultiplier tube also.

Increase the current of an input stage FET up to 10mA then you will get the performance more advanced.

SPECIFICATION

Transformation efficiency of charge-voltage:
1V/ Pico-coulomb Typical

Noise characteristics: 2.2keV (Si) FWHM Typical (at 0pF, shaping constant of 2 μ s)

Noise slope: 20eV/pF (Si) Typical (at FET current of 10mA)
60eV/pF (Si) max.

Capacity slope: 15eV/pF (Si) max. (at FET current of 1mA)

Negative feedback constant: 1000M Ω , 1pF

Output impedance: about 0 Ω and 50 Ω

Test pulse input: 50 Ω , 1pF

Power supply: $\pm$ 12V each 3mA (Typical)

Outer dimension:

33.0 $\times$ 17.5 $\times$ 5.0mm max.

12pins SIP type epoxy molded

Weight: 2.5g

MANUFACTURER:

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TELEX: J25473 (KATSURA J25473)

photodiode in turn generates electrical impulses in response to the reflected light. Processing circuitry then produces a dc voltage proportional to the gas flow rate. *McMillan Company, 1301 Sparrow Trail, Copperas Cove, Texas 76522*

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High-Bandwidth Pyroelectric Detector Hybrids

Moletron Detector offers a new series of high-bandwidth pyroelectric detector hybrids. These devices are capable of operating in a flat bandwidth up to 70 MHz. The LiTaO₃ detector element is mounted with a field-effect transistor in a T05 transistor can. Detector elements come in four sizes, ranging from 1 to 5 millimeters. The package is offered windowless, but at the buyer's request, it can be fitted with a window or a spectral bandpass filter. Pyroelectric infrared and millimeter-wave detectors exploit the fact that the LiTaO₃ crystal, like other crystals with a nonvanishing electric dipole moment per unit cell, exhibits a proportional polarization change in response to a change of temperature. *Moletron Detector, 1520B Dell Avenue, Campbell, California 95008*

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Simultaneous Fiberoptic Testing at Two Wavelengths

Photodyne has introduced a new "and smarter" fiberoptic test set, the Model 2260XF, designed to measure wavelength division multiplex links simultaneously at 1300 and 1550 nm. Conventional test sets, which make consecutive measurements at each of the two wavelengths, lose time in switching from one laser to another. Furthermore, measurement inaccuracies can be introduced by the need to change the connector interface.

The Model 2260XF is a dual-laser test set with its transmitter and receiver sections in a single portable case. The transmitter section contains two cooled, single-mode lasers. The lasers are coupled through a multiplex coupler and terminate into a single output port. The lasers have optical feedback control to provide stable operation over the temperature range from 0 to 40°C. The receiver section consists of two low-noise InGaAs photodiodes, two current-to-



voltage amplifiers, and two high-resolution analog-digital converters. An optical discriminator unscrambles the two incoming signals, so that measurements are made at both wavelengths simultaneously, without crosstalk. The optical design, we are told, provides wavelength isolation of better than 42 dB. The distance range of the test set is approximately 65 dB. *Photodyne, 3760 Calle Tecate, Camarillo, California 93010*

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Input-Output Board for IBM PS/2

Quatech has introduced its Model PXB-7200 advanced digital input-output board, which can provide the IBM PS/2 Models 50, 60 and 80 with 72 input-output TTL signals. The PXB-7200 is compatible with the IBM microchannel found in the PS/2 series.

The new board utilizes three independent 8255 programmable peripheral-interface chips. Each 8255 chip provides 24 digital signals, divided among three individually programmable 8-bit ports. The third 8-bit port of each 8255 chip can be further split between two individual 4-bit ports. The base address of the PBX-7200 can be selected at the keyboard. Interrupts are available for background operation. The price of the PXB-7200 is \$295. Software examples and setup programs are included. Additional cables are also available. *Quatech, 478 East Exchange Street, Akron, Ohio 44304*

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Secondary-Ion Mass Spectrometers

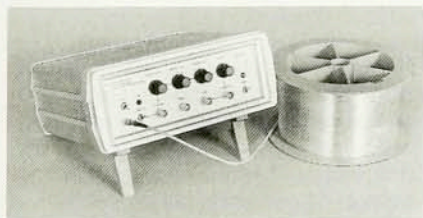
Hidden Analytical is offering a new line of secondary-ion mass spectrometry probes for surface analysis and depth profiling. They offer a choice of energy-filter design and ion acceptance angle together with mass-range options up to 600 amu.

Hidden's standard SIMS probes, with ion counting and positive or negative ion detection, include software for data acquisition and presentation on the system's video display. Mass intensity can be displayed over six decades, with scanning of a user-defined mass range or discrete selected mass channels. The integral raster gating system lets the user control the ion beam to select the required scan and acquisition area for surface mapping. All the Hidden SIMS probes include a triple mass filter designed for optimum sensitivity to abundances and high masses. The user chooses between SIMS and RGA modes of operation by means of a function-key command. *Hidden Analytical, 231 Europa Boulevard, Gemini Business Park, Warrington WA5 5TN, England*

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Time-Domain Reflectometer for Fiberoptics Education

ESE Instruments, a new firm, offers a \$3000 optical time-domain reflectometer intended primarily for instructional fiberoptics labs, but useful also for research and testing where extensive signal processing is not required. Such reflectometers characterize attenuation and connection losses in optical fibers by measuring the reflections of a short diode laser pulse. Designed for 50- and 62.5-micron-diameter multimode optical fiber, the ESE reflectometer operates in the wavelength range 800-900 nm.



The probe pulse from the diode laser is controlled by front-panel adjustments of the amplitude and width of the laser-current pulse. The signals generated by the reflectometer are displayed and analyzed on an oscilloscope. They allow measurements of fiber length and attenuation, and give the locations and losses of faults or connectors. The laser-current pulse can also be monitored. Typical specifications include an 8-dB backscatter range at 850 nm and a pulse width of 100 nsec. *ESE, 516 Westbridge Street, Bozeman, Montana 59715*

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Compounds Labeled with Stable Isotopes

Isotec has established a stable-isotope compound-synthesis operation to complement its stable-isotope separation and enrichment capabilities. The firm offers carbon-13-labeled compounds (99% C^{13}), including the three sodium acetates, potassium cyanide and a variety of amino acids and fatty acids. Deuterium oxide, deuterium gas and deuterated acids and bases are also available; deuterated nmr solvents will soon be available. Stable isotopes of noble gases in stock range from helium-3 to xenon-136, including laser-gas mixes of He^3 with the neon isotopes. Low-enrichment nitrogen-15- and oxygen-18-labeled compounds are available for biological studies. Isotec can also provide custom syntheses of compounds not listed. *Isotec, 3858 Benner Road, Miamisburg, Ohio 45342*

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Half-Meter Spectrometer with f/4 Aperture

Spex has introduced the new Model 500M, an f/4 half-meter spectrometer, which is claimed to combine the resolving performance of a large spectrometer with the light-gathering power of a smaller instrument. Available with numerous options and accessories, the 500M can be automated by computer.

The 500M offers high resolution for photomultiplier tubes, or a flat field for multichannel detectors. An optional motorized grating turret can double the spectrometer's spectral range or increase its resolution. Motorized swing-away mirrors can automatically switch between sources or detectors. The vibrating-mirror accessory accommodates applications such as scanning diode laser output in real time. *Spex Industries, 3880 Park Avenue, Edison, New Jersey 08820*

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New Literature

Viscosity—Cannon Instrument Company, a manufacturer of viscosity calibration standards and testing equipment, has announced the introduction of its newsletter, *The Cannon Standard*. The newsletter offers case histories, "how to" articles, and new-product announcements. *Cannon Instrument Company, P. O. Box 16, State College, Pennsylvania 16804*

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