

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.

High- T_c Superconductor Monitor for Liquid Nitrogen

Lake Shore Cryotronics demonstrated its new Model 245 superconducting liquid-nitrogen level and temperature monitor at the March APS meeting in Cincinnati. The instrumented level sensor, incorporating high-temperature superconducting material, offers novel features for the management of liquid-nitrogen levels in both pressurized and open dewar systems. This application of high-temperature superconductivity was developed by H. J. Günterodt and his colleagues at the University of Basel.

Unaffected by ice formation and related mechanical problems, the superconducting level sensor can be kept in the dewar for long periods. Level monitoring, fill and alarm-control points are managed entirely from the remote instrumentation. Because the response of the sensor is linear with immersion depth, the instrument can calculate the rate of liquid consumption.

The Model 245 accepts inputs from a silicon-diode temperature sensor, which can be positioned at the user's discretion to monitor vapor-phase temperature. Both level and temperature are displayed simultaneously. Either can trigger the alarm system. *Lake Shore Cryotronics, 64 East Walnut Street, Westerville, Ohio 43081.*

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New Version of Mathematica

Wolfram Research has introduced *Mathematica 2.0*, an enhanced version of its software system for doing mathematics by computer. *Mathematica* does numeric, symbolic and graphical computation on a variety of computer platforms. The new version offers additional functions, increased

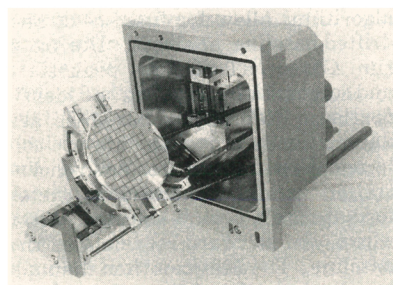
performance and an enhanced programming language. Some of the new features are only available on certain computers; for example, sound capability is available on Apple Macintosh, NeXT, Sony and Sun computer platforms.

In all, the number of functions in *Mathematica* has increased from 560 to 843. It is now possible to solve numerical differential equations; create enhanced graphics; do international character sets; and use linear programming, which allows users to solve optimization problems in operations research and related fields. Performance has been boosted with a compiler that allows complex numerical expressions to be executed up to 20 times faster than with the previous version. Current users of *Mathematica 1.2* can have their software upgraded, and a revised computer manual is available. *Wolfram Research, 100 Trade Center Drive, Champaign, Illinois 61820.*

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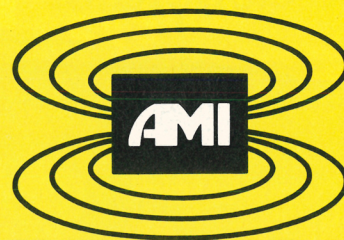
Tilt Eucentric Macro Stage

Raith USA has announced its Tilt Eucentric Macro Stage SEM accessory, which permits movement along both X and Y axes without affecting the working distance. The device can be retrofitted to any large-chamber SEM, and it is equipped with mechanical drives and counters. It also has a touch alarm to prevent damage



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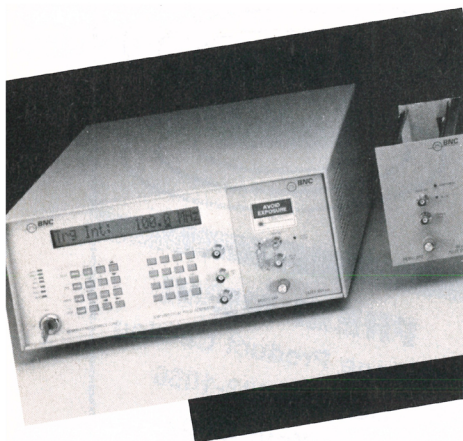
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300 V, 5 ns

New Modular Pulse Generator



BNC's budget stretching system of unprecedented versatility provides you with:

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- 100 MHz rep rate, 1 ns resolution
- 150 ps rise time, 5 V pulses
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Ask for free application notes.

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Berkeley Nucleonics Corp.

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to the sample, pole piece and detectors. Either the X or Y axis or both can be connected to tachometers (with or without optical encoders), permitting them to be driven by a joystick or Raith's eucentric stage-control system.

The device can be used with Raith's electron lithography system, which permits experimental work in electron-beam lithography while using conventional scanning-electron microscopes. Pattern dimensions from less than 0.1 micron to several millimeters can be obtained by adjusting the SEM magnification. The electron-lithography system software, which runs on an IBM PC or compatible, offers pattern design and writing, mark recognition and a control system for a motorized stage. The accessory is easy to exchange compared with standard stages. *Raith USA, 70C Carolyn Boulevard, Farmingdale, New York 11735.*

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Multi-Platform Chromatography Software

Laboratory Technologies has introduced Chrom/RT, a software package for GC, HPLC, and ion-chromatography applications. The software combines real-time data collection, peak integration, report generation and LIMS support, and features a graphic, mouse-driven interface and real-time graphics that run on all industry-standard computer platforms, including UNIX, DOS/Windows 3 and OS/2. The system can be set up on one platform and then transferred and run on another.

Chrom/RT includes real-time display and peak integration capabilities. Integration techniques include tangent skim, ion chromatography, baseline penetration and attachment of baselines to valleys. Raw data can be reprocessed to fine-tune analysis methods. Calibration options include internal standard, external standard, normalization and normalization with scale factor. Baseline drawing algorithms allow for fused-peak and drifted-baseline analyses. During a run, Chrom/RT displays peak start and stop markers, labeling and identification. Preliminary baselines are automatically drawn as data are collected. Preliminary area and concentration can be displayed in meter format once a peak is selected. After a run, the software recalculates the baseline. The user can then manually adjust the baseline and markers,

and insert or delete peaks. Chrom/RT also includes a journal. Presentation or detailed reports can include the whole chromatogram or a zoomed section, using the software's standard files, which include printer file, data file, graphic file, detailed report and report to Analytical Instruments Association specifications. Chrom/RT data can be exported to Lotus 1-2-3, Symphony or BBN's RS/1 packages. *Laboratory Technologies, 400 Research Drive, Wilmington, Massachusetts 01887.*

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Combined Spectroscopy-Notebook System

EG&G Ortec has introduced Nomad, a quantitative gamma-spectroscopy system for germanium or sodium iodide detectors. The compact system has been combined with a notebook-type computer in an aluminum suitcase for applications such as nuclear



safeguarding and waste management. Nomad provides computer control of ADC settings, data acquisition, detector bias, digital spectrum stabilizer, amplifier gain and PZ adjust. The six-hour internal batteries can be recharged during data collection using a vehicle's cigarette lighter. *EG&G Ortec, 100 Midland Road, Oak Ridge, Tennessee 37831-0895.*

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Electrorheological Fluids-Analysis Package

Rheometrics has introduced a high-voltage testing package for characterizing electrorheological fluids. (ER fluids change flow characteristics when subjected to an electric field.) The package provides for measurements over a wide dynamic range, allowing control of applied voltage, frequency, amplitude and current. It

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comes with all needed hardware and software. Voltages up to 10 kV and currents up to 2 mA are computer controlled for dc or ac operation; ac operation can command frequencies to 10 kHz, with up to eight different voltage and current levels per test. Voltage- and current-measurement accuracy is within $\pm 5\%$. The package is available for the RMS-800 and the RDS II, firmware version 11.0 or higher. *Rheometrics, One Possumtown Road, Piscataway, New Jersey 08854.*

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Personal Computer Molten Salts Database

The National Institute of Standards and Technology is offering a new database of thermodynamic and transport properties of molten salts. Designed for personal computers, the database provides rapid access to compilations of the properties of 320 inorganic salts in the molten state, including density, surface tension, electrical conductance and viscosity. This information should help in the development of high-temperature advanced materials and for high-temperature and high-pressure measurements of material properties.

The database is designed to provide information by chemical formula; the user can also browse the collection. The database can be used on any IBM compatible AT or XT with a color monitor. The information occupies 250 kilobytes. (When ordering, refer to the NIST Standard Reference Database 27, Thermodynamic and Transport Properties of Molten Salts.) *Standard Reference Data Program, A320 Physics Building, National Institute of Standards and Technology, Gaithersburg, Maryland. 20899.*

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1-GHz-Bandwidth Digitizing Signal-Analyzer Upgrades

Tektronix has upgraded its series of digitizing signal analyzers, which acquire, analyze and store ultra-fast transient and repetitive signals. The



enhanced models, identified by an "A" suffix number, include a built-in 1.44 megabyte $3\frac{1}{2}$ -inch floppy-disk drive and additional signal processing functions, such as inverse FFT, convolution, correlation and histogram display.

Model DSA 602A provides single-shot capture rates up to 2 GS/sec using four 8-bit A/D converters with a 1-GHz bandwidth. The DSA 601A acquires signals at 1 GS/sec at 500-MHz bandwidth. In multichannel applications the DSA 602A can simultaneously acquire four signals at 500 MS/sec each or two signals at 1 GS/sec each. The DSA 601A can acquire one signal at 1 GS/sec or two signals at 500 MS/sec. Both products offer random equivalent-time sampling at rates equivalent to 1 terasample/sec (1 psec/point) for acquisition of repetitive signals.

The DSA 600A series can also generate vertical or horizontal histogram displays based on a portion of the waveform selected by the user. The histogram display includes such statistical information as the number of data points and waveforms; the minimum, maximum and rms deviation of the histogram; and the percentage of points that fall within 1-, 2- and 3-sigma bounds. Waveform record length can be selected from 512 to 32 768 points, showing users long, single-shot or repetitive events in detail. As an option, more than 450 000 waveform points can be stored in nonvolatile RAM. The DSA series can detect glitches, too-slow logic transition, runt, missing or extra pulses and timing violations. The series also features plug-in modularity, a broad selection of probes and hard-copy devices and utility software packages. *Tektronix, P.O. Box 500, Beaverton, Oregon 97077.*

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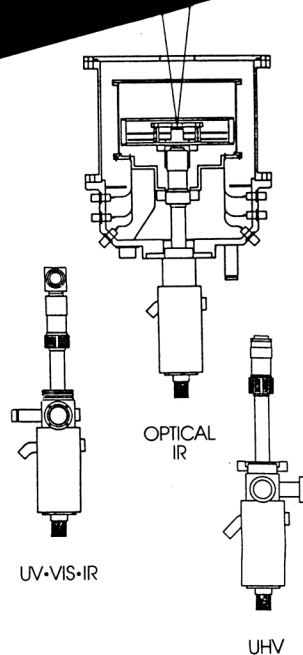
Compact Laser-Power Meter

Spectra-Physics has introduced its new Model 407 laser-power meter. The 407 is designed for any cw laser above 10 milliwatts. Its thermopile detector head, we are told, is the most compact in its class.

The 407 detector measures 2.5 inches in diameter by 1.3 inches deep, but it can handle 20 W of cw power. It reads ac or dc power. The meter's 30-mW to 30-W scales are illuminated. It also provides an analog output signal. *Spectra-Physics Lasers, 1250 West Middlefield Road, Mountain View, California 94039.*

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