

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.

Regulated High-Voltage Power Supplies

Spellman High Voltage Electronics has developed a series of eight high-voltage power supplies for use with photomultiplier tubes, solid-state detectors, flow sensors, spectral lamps and other devices. The supplies measure 2 square inches and supply 2 watts of power in the voltage ranges 0–500 volts, 0–1000 volts, 0–1500 volts and 0–2000 volts. The modules are resistant to vibration and shock and shielded against electromagnetic and radio-frequency interference. All voltages are regulated to within 0.03%. *Spellman High Voltage Electronics, 7 Fairchild Avenue, Plainview, New York 11803-1793*
Circle number 180 on Reader Service Card

Materials Analysis System Using Spin-Polarization Relaxation

Solomat has developed an automated system for analyzing materials by measuring their thermally stimulated depolarization currents. The TSC/RMA spectrometer—so-called because of its use of thermally stimulated currents and relaxation map analysis—first orients polar molecules or polar subgroups of macromolecules in the sample by applying a high voltage at high temperature and then quenching the material to lock in the polarization. Next the spectrometer heats the material at a constant rate while measuring the depolarization current with a sensitiv-

ity of 10^{-17} amperes. By performing many such measurements over a large temperature range, the TSC/RMA spectrometer gives the researcher information on molecular mobility within the sample. Using this information one can determine how factors such as molecular weight, chemical structure, internal stress, orientation, curing, crystallization and thermodynamic history affect a material's physical properties.

The fully automated TSC/RMA spectrometer performs up to 100 pre-programmed experiments sequentially without need of supervision. The standard software package contains routines for fast Fourier analysis, data fitting and analysis of polarization relaxation data. Solomat can supply the vacuum, gas and cooling systems for installation of the device. Graphic plotters and slide generators are available as well. The system is said to be suitable for analyzing solid, liquid, powder, film, fiber or rubber samples. *Solomat TA Instrumentation, 652 Glenbrook Road, Stamford, Connecticut 06906*
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Two-Lens Electron Column for Electron Microscopy and Spectroscopy

FEI has made available a two-lens electron column for generating 0.5–25-kilovolt electron beams with small spot sizes (on the order of 20 nanometers) and high beam currents (0.05–200 nanoamps). The broad current range allows the column to be used in many different applications, and because the beam current can be controlled with an electronically variable

!!! NEW !!!

from

Cryomagnetics

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Actual size

- * Temperature 1.5-350K
- * Fields 0-33 tesla
- * High linearity
- * High sensitivity

The HSU series hall effect sensors offer unprecedented ease of mounting in space restricted areas. Highly sensitive active areas on these sensors measure as small as 50 X 50 microns. These sensors easily interface with the Cryomagnetics' model 40A digital hall effect gaussmeter for field resolution down to 100 gauss.

COMPUTER INTERFACE MODULE

- * 16-bit analog input channel
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- + diagnostic ray plots
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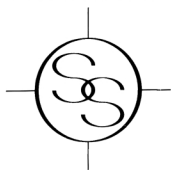
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- + glass tables

BEAM FOUR \$889

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- + point spread function
- + modulation transfer function
- + wavefront display too

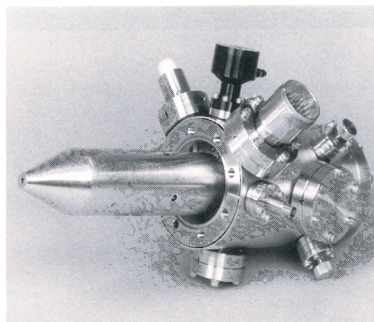
Every package includes
versions for coprocessor
and noncoprocessor machines
also manual and sample files.

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aperture, the user can switch applications without changing the column setup. Other features of the column include a high-brightness Schottky emitter, two low-aberration, three-element electrostatic lenses and stacked-disk construction for mechanical stability.

Among the possible applications are transmission electron microscopy, Auger electron spectroscopy, low-energy electron diffraction and micro-reflective high-energy electron diffraction. The column comes with a digital power supply and an analog deflection controller and amplifier. Options include a video controller, a channeltron and a raster generator-video display system. *FEI, 7451 Northeast Evergreen Parkway, Hillsboro, Oregon 97124-5830*

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Compact Electrolytic Hydrogen-Gas Generators

Balston has released new versions of its Whatman hydrogen-gas generators that have several new features. Like previous models, the new systems electrolytically generate a continuous stream of 99.99999% pure hydrogen from deionized water, have a small footprint and comply with OSHA regulations concerning hydrogen. The hydrogen pressure can be adjusted between 0 and 60 pounds per square inch. The new generators also include a larger water reservoir, a fail-safe shut-down mechanism that turns off the unit if the reservoir runs dry, a low-water alarm, a digital pressure display, overpressure and overtemperature indicators, an O₂ vent and a closed-loop drain system that shuts down the system in the event that the electrolyte content of the reservoir changes. The generator should be suitable for any application requiring ultrapure hydrogen. *Balston, 260 Neck Road, Box 8223, Haverhill, Massachusetts 01835-0723*

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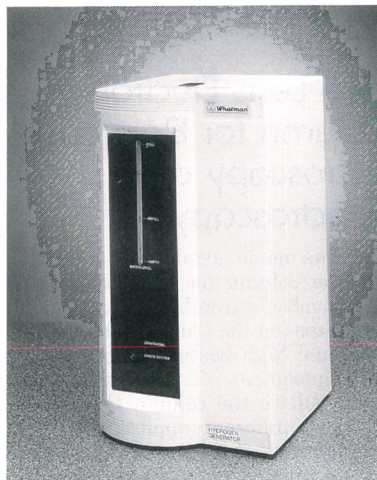
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Portable Multichannel Analyzer for Nuclear Spectroscopy

Quantrad Sensor has made available its Scout battery-operated multichannel analyzer for real-time measurement and characterization of radionuclides. The Scout uses a 256-channel pulse-height analyzer in conjunction with a Hewlett-Packard 100LX pocket-size or 200LX palm-size computer. Including the computer, the system measures 4.5" x 2" x 7.5". The probe can be configured to detect γ rays, x rays, β particles or α particles. The internal battery is sufficient for 8–10 hours of operation before recharging and can be supplemented with an external 12-volt battery or a standard 12-volt charger.

The Scout comes with a DOS-based software package that can do background subtraction, calculate dead time and store and graph individual spectra. The analyzer should be useful for professionals in nuclear medicine, nuclear regulation and emergency response. *Quantrad Sensor, 2360 Owen Street, Santa Clara, California 95054*

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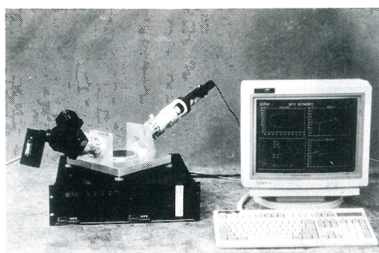


In Situ Laser Ellipsometer for Thin Film Measurements

Micro Photonics is marketing the Digisel laser ellipsometer, which is manufactured by the French firm Sofie Instruments. The device, which consists of a laser and a polarization-sensitive detector, is mounted on the

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user's process vacuum chamber. Light from the laser reflects off the thin film surface under study, and the detector measures the polarization shift. The built-in computer calculates and plots the film's thickness and refractive index. The Digisel can detect layers as thin as a few angstroms, and it is said to be very sensitive to changes in the film thickness. Among the applications suggested are end-point detection, film thickness control and monitoring native oxide growth. *Micro Photonics, PO Box 3129, 4949 Liberty Lane, Suite 170, Allentown, Pennsylvania 18106-0129*

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Electromagnetic Predictive Software for Electronics Design

MacNeal-Schwendler has released version 3.0 of its MSC/EMAS software, which solves Maxwell's equations in the static, frequency and time domains for a given charge distribution and set of boundary conditions. As with previous versions of the program, the user can construct the system he or she wishes to model through Boolean combinations ($\cup$, $\cap$ and $-$) of standard primitive shapes (cube, cone, sphere, rectangular prism, and so on) or via translators to various drawing packages. The 3D-automeshing feature automatically determines the mesh size for the calculation given the level of accuracy desired in the solution. The visualization capabilities of the package allow the user to see the electromagnetic field of a system, highlight problem areas and vary parameters until an optimal solution is found. In addition to these features, version 3.0 has the ability to model coupled electromagnetic and structural motion and several refinements intended to save computer memory and time. While the MSC/EMAS package was designed to help designers of electromagnetic devices, it has been used in a variety of other applications, including oil exploration. *MacNeal-*

Schwendler, 815 Colorado Boulevard, Los Angeles, California 90041
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Low-Power 486DX Single Board Computer

Microbus's MAT-752 is a 486DX single-board computer measuring 8.66" $\times$ 4.8" and designed to consume a fraction of the power consumed by most other computers. For example, a 25-megahertz 486DX MAT-752 with 8 megabytes of memory would consume less than 6 watts when operating at full operating speed and less than 0.75 watts when operations are suspended. Machines can be configured with either 486DX or 486SX CPUs with clock speeds of 25 or 33 megahertz and up to 32 megabytes of RAM. Standard features include a Flash basic input-output system, an IDE hard-disk controller, a floppy-disk controller, two serial ports, a parallel port and ports for a keyboard and mouse. Options include a flat-panel-CRT interface, a PCMCIA controller and solid-state memory disks. The computer should be useful in remote applications where power and space are at a premium. Pentium designs are expected to be available in the near future. *Microbus, 10849 Kinghurst, Suite 105, Houston, Texas 77099*

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New Literature

SPM applications newsletter—Topometrix publishes its quarterly *Applications Newsletter* to acquaint readers with new products available from the company and with applications of scanning probe microscopy. *Topometrix, 5403 Betsy Ross Drive, Santa Clara, California 95054-1162*

Integrating-sphere technical guide—Labsphere has made available a 25 page technical guide describing issues pertaining to the use of an integrating sphere in radiometry (the measurement of total energy radiated from a light source) and photometry (the measurement of light energy as perceived by the human eye). *A Guide to Integrating Sphere Photometry and Radiometry* discusses units and terminology, calibration, general aspects of using integrating spheres, geometric and spectral considerations, and products available from Labsphere for carrying out such measurements. *Labsphere, PO Box 70, North Sutton, New Hampshire 03260*

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