

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.

Multitasking Thermal Ionization Mass Spectrometer

VG Isotopes has introduced a new version of its VG Sector 54 thermal ionization mass spectrometer. One major change is the incorporation of revised software that facilitates multitasking. Other changes to the structured software package are intended to improve instrument control and ease of use, and new computer diagnostics have been designed to simplify troubleshooting.

The Sector 54 is said to offer the highest throughput available today from a TIMS instrument; up to 20 samples may be held at any one time in its automatic sample turret.

The new instrument incorporates electrostatic energy filters, a single sample insertion probe, automatic gas bleed and input to the source. For ablation analysis of solid samples, it also offers bombardment ionization and laser capability. In combination with instruments available from VG Isotopes, the Sector 54's optimized ion optics enable it to collect up to nine ion beams simultaneously. *VG Isotopes, Ion Path, Road Three, Winsford, Cheshire CW7 3BX, England*
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UHV-Compatible Medium-Current Electron Gun

Kimball Physics is offering the Model EGG-3D, a new uhv-compatible utility electron gun designed to deliver beam currents up to 20 mA and electron energies from 100 eV up to 10 keV. Spot size is variable approximately from 2 mm up to 2 cm, depending on working distance and the focus voltage applied. Intended applications include specimen heating, ionization, neutral-beam excitation, surface excitation, space physics experiments, vacuum physics experi-



ments and fluorescence experiments.

The Model EGG-3D is 94 mm long and 34 mm in diameter, and it is mounted on a 70-mm conflat flange. A user-replaceable firing unit contains a refractory-metal cathode; the cathode is said not to be harmed by repeated exposure to atmospheric gases while cold. The maker claims the gun will not be harmed by temperatures as high as 350 °C. Beam alignment can be achieved using an external port aligner, and beam uniformity is approximately Gaussian.

A power supply package, available as an option, connects to the gun via a totally shielded, four-wire high-voltage cable. *Kimball Physics, Kimball Hill Road, Wilton, New Hampshire 03086-9742*

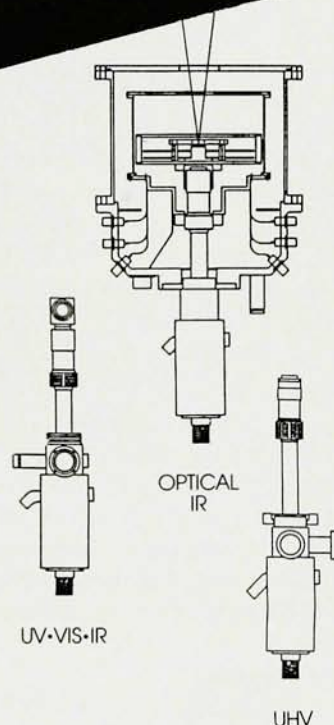
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Low-Light-Level CCD Imaging System

Microscience has introduced the Astromed CCD 2200, an ultralow-light-level CCD imaging system. The complete system includes a CCD detector head, electronics module, host computer and image processing software. The Astromed imaging systems were developed for applications in ground and space astronomy but can also be used for low-contrast or low signal applications in microscopy, spectroscopy, and x-ray and electron-beam imaging.

The CCD 2200 is built to detect light levels as low as 1 photon per pixel per minute, and can accept levels as high as 10^9 photons per pixel per second; this range corresponds to illuminations from 10^{-11} to 1 lux. The system

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incorporates a cooled CCD, which is designed to eliminate dark current in the detector and to improve dynamic range. The detector contains approximately 220 000 pixels. The dynamic range in a single exposure is said to exceed 100 000:1. Spectral response covers the range from 400 nm to 1000 nm, with a claimed peak detective quantum efficiency of approximately 50% near 800 nm. *Microscience, 41 Accord Park Drive, Norwell, Massachusetts 02061*

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Highly Lambertian Color Reflectance Standards

Labsphere is introducing a new set of color reflectance standards as part of the company's Spectralon line. These color standards have the same chemical, physical and optical properties as Labsphere's Spectralon white and gray standards. They are designed to exhibit lower thermochromaticity than any other standards currently available. The materials are highly lambertian, durable, and washable,



and are said to be stable against harsh environments.

Each set consists of red, green, blue and yellow standards; achromatic high-reflectance white, achromatic black and two neutral grays are also available. All are calibrated spectrophotometrically, and colorimetric values for various illuminants and observers are provided. Labsphere's standards come with data on their tristimulus values, chromaticity coordinates, UCS coordinates, and CIE-LAB and CIELUV values. *Labsphere, P.O. Box 70, North Sutton, New Hampshire 03260*

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Earthquake Strong- motion Data Sets

The National Geophysical Data Center is releasing two new sets of strong-

motion earthquake data. They are digital data records for the 1985 Nahanni, Canada, earthquakes, and SMCAT, an earthquake strong-motion data catalog for use in personal computers.

The Nahanni earthquakes are of particular interest because they were some of the strongest ever recorded, with documented peak vertical acceleration greater than 2g. Uncorrected, corrected and response spectral data for the Nahanni earthquakes of 9 November, 23 December (two events) and 25 December 1985 are included. These data were collected from an accelerograph network installed in the epicentral region in the aftermath of the 5 October Nahanni quake, and were processed by the US Geological Survey. Data can be ordered on 9-track magnetic tape or 5 1/4" high-density IBM PC-compatible floppy diskettes.

The SMCAT software package is an IBM PC-compatible catalog designed to assist earthquake engineers and researchers in locating specific strong-motion earthquake records from the 12 000 on file at the National Geophysical Data Center. Users may specify search parameters and select data using the 29 catalog fields. The software is formatted in dBaseIII+, with ASCII and Lotus output options. It is menu driven and operates in DOS, so it does not require additional software. Unless a special request is made, it will be provided on 5 1/4" diskettes.

The Nahanni data are priced at \$192 on tape or \$120 on four diskettes. The price for the SMCAT package is \$30. *National Geophysical Data Center, NOAA, Code E/GC1, 325 Broadway, Boulder, Colorado 80303*

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Sampling Heads for Digital Oscilloscopes

In keeping with its modular approach to oscilloscope design, Tektronix has introduced two new sampling heads for its 11800 series of digital sampling oscilloscopes: the SD20 loop-through head and the SD22 low-noise head. These new sampling heads have been designed to meet specific application needs. The SD20 is a single-channel, 20-GHz loop-through sampling head designed for low-loss testing of microwave systems, characterizing digital devices and designing high-speed data communications circuits. It provides an acquisition rise time of 17.5 picoseconds with typical rms noise level of

1.3 mV. The SD20 allows in-line signal verification, floating source-termination signal characterization and general purpose time-domain reflectometry—without requiring a power divider.

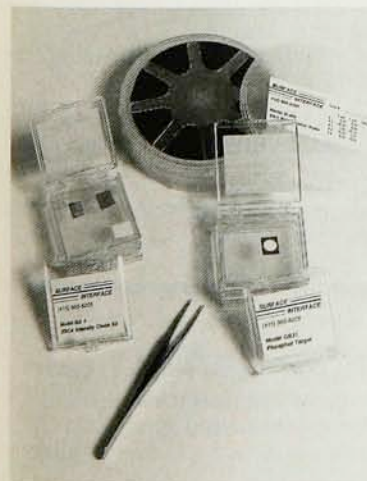
Measuring the input or output of sensitive devices traditionally requires a power divider to split the signal between the device under test and the acquisition instrument. The impedance of the power divider, however, decreases the amplitude of the signal. This can be a problem when one is sampling small-amplitude signals. Furthermore, a power divider must be properly terminated, adding still more impedance to the signal path. The SD20 keeps losses to a minimum by routing the signal of interest directly through the sampling head. Test-circuit impedance introduced by the probe and the power divider is eliminated, and the user need not terminate the signal input.

The SD22 is a dual-channel, 12.5-GHz sampling head designed for low-noise testing and measurement in telecommunications, digital design and debugging, and high-throughput automatic-testing applications. It provides an acquisition rise time of 28 picoseconds, and it limits displayed noise to a maximum of 800 μ V rms. Typical rms noise levels for most applications are half this maximum. Whenever the input signal amplitude is on the order of tens of millivolts, the noise introduced by the test system becomes critical. Tektronix, P. O. Box 1700, Beaverton, Oregon 97077

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Reference Materials for Surface Analysis Systems

Surface/Interface is offering a line of reference materials characterized for



use in surface analysis and depth profiling systems. They are intended to be used to verify and standardize instrument performance.

The Model GB31 high-brightness phosphor target is designed for aligning x-ray, electron or ion beams in a uhv environment. Irradiation with soft x rays or charged particles with energies from a few hundred to a few thousand eV causes the phosphor to fluoresce bright green at the irradiation sites.

The Model SI400 etch-rate monitor wafer provides a measure of the etch rate for an ion gun used in an ESCA, AES or SIMS system. This 4-inch silicon wafer has a nominal 400-Å SiO_2 thermal oxide film that is said to yield 50 1-cm $\times$ 1-cm sections. Each wafer comes with a five-point ellipsometer measurement of the oxide thickness.

The Model MA4 ESCA intensity check kit consists of four characterized materials: polytetrafluoroethylene, polyethyleneterephthalate, dimethylsilicone and polyethylene. The Teflon, silicone and PET provide intensity ratios among four well-spaced elements (C, O, Si, F) for calibration. In addition, each has a peak ratio that serves as a quality check. The polyethylene can be used for resolution verification. The MA4 kit includes copies of the relevant ESCA spectra for reference.

Prices are \$65 for the Model GB31, \$387 for the Model SI400 and \$400 for the Model MA4. Surface/Interface, 476 Ellis Street, Mountain View, California 94043

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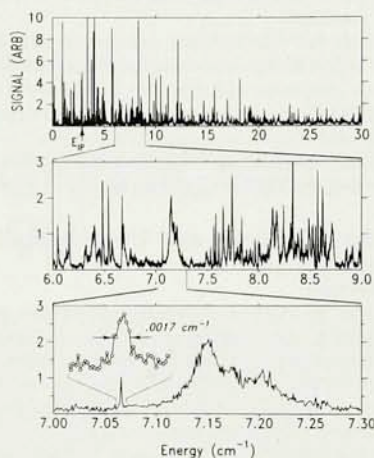
New Literature

Vacuum reference catalog—Leybold Vacuum Products has released a new catalog called the *Product and Vacuum Technology Reference Book*.

The 575-page catalog contains a vacuum reference manual with tables and formulas; product information on vacuum pumps, pumping systems, gauges, fittings, valves and leak detectors complete with product photos, descriptions, applications, technical data, dimensions, specifications and ordering information; a list of technical articles available on request; and a schedule of technical vacuum seminars.

Requests for the catalog should be written on company letterhead to Leybold's marketing services manager. Leybold Vacuum Products, 5700 Mellon Road, Export, Pennsylvania 15632

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