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.

Fast Waveform Recorder with Deep Acquisition Memory

The new Tektronix RTD 720A is a fully programmable transient waveform recorder for research applications requiring high-speed signal capture. With transient acquisition rates as high as 2 gigasamples/sec and memory options up to 4 megabytes, the RTD 720A offers what the firm describes as "the deepest acquisition memory available at high sample rates."

By adding slower sample rates and deeper memory to its predecessor, the RTD 720, the new waveform recorder provides very high time resolution over long time windows. It can capture more than 2 milliseconds of data at the GS/sec acquisition rate. As the acquisition rate is decreased, the time window expands: Thus at 10 MS/sec, the total acquisition time window exceeds 400 milliseconds. Therefore the user can now look at events occurring over a long time with greater detail than was previously possible, we are told.

Researchers in high-energy physics, spectroscopy and laser-induced phenomena need high-speed signal capture. With its high sample rate, high bandwidth and capability for fast acquisition of multiple events, the RTD 720A is optimized for speed.

The new transient waveform recorder provides flexible memory use. Memory can be partitioned for high-speed capture of a sequence of events. The auto-advanced mode captures a sequence of up to 1024 events on each channel, with only 5 microseconds of rearm time required between events. This translates into capturing nearly 200 000 events per second. The arrival time of each event is simultaneously captured with a resolution as fine as 500 picoseconds. The standard instrument features 128 K of memory that can be filled from one channel or shared equally among two or four channels. Options are available for 512 K of nonvolatile memory or 1 to 4 megabytes of extreme-length memory. The base price of the RTD 720A transient waveform recorder is $23 000. *Tektronix, Howard Vollum Industrial Park, P. O. Box 500, Beaverton, Oregon 97077*

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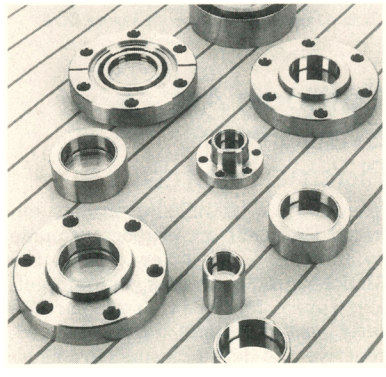
Window Assemblies for Ultrahigh-Vacuum Optics

Meller Optics has introduced a new line of window assemblies that are usable from the ultraviolet through the far infrared in ultrahigh-vacuum environments. They are offered in weldable and flange-mounted designs. The window assemblies are fabricated from a wide range of optical materials for use in different parts of the spectrum. Utilizing a proprietary technique, Meller can mount crystal materials typically considered too soft, as well as glasses and harder materials such as sapphire and quartz.

The window assemblies are leak-tested with helium at 2×10^{-10} atm cm^3/sec. The weldable assemblies incorporate a Kevlar sleeve, and they are offered in 1″, 1.5″ and 2″ sizes. The flange-mounted designs have a 304 SST flange, and they come



in 1.33″, 2.73″, 4.47″ or customer-specified sizes. *Meller Optics, 120 Corliss Street, PO Box 6001, Providence, Rhode Island 02940*
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Liquid Nitrogen CCD Spectroscopy System

The new Spectra 9000 CCD spectroscopy system from Photometrics is based upon a new liquid nitrogen CCD detector designed specifically for spectroscopy. The Spectra 9000 CCD is configured as an array of 1024×256 detectors. It produces virtually no

dark current, we are told. The CCD readout register is innovatively positioned on the long axis of the chip, so that the user can do high-speed "parallel on-chip binning" to improve spectral signal-to-noise ratio. Photometrics has designed a new, low-cost cryogenically cooled detector head for the Spectra 9000. *Photometrics, 3440 East Britannia Drive, Tucson, Arizona 85706*
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Faraday Rotator Mirrors for Fiber Optic Interferometers

Optics for Research is offering a new line of Faraday rotator mirrors designed to eliminate polarization-induced signal fading in various fiber optic sensors. Until recently, we are told, only dedicated polarization controllers have been the viable option against polarization-induced fading. But these are expensive and complicated systems. Fiber optic Michelson-interferometer sensors commonly use dielectric coated mirrors at the distal ends of their sensing and reference arms. By replacing these elements with Faraday rotator mirrors, one can compensate for any environmental birefringence perturbations with the fiber, regardless of the initial state of polarization.

The firm's Faraday rotator mirrors combine a dielectric mirror with a bismuth–iron garnet Faraday rotator element. The device provides a nonreciprocal 45° rotation of the signal's polarization state each time the light passes through it. Upon recombination with the reference signal, the polarization states become perfectly aligned and therefore stable in time, regardless of the birefringence within the fiber. Standard models are available for use at wavelengths of 1310 and 1550 nm. *Optics for Research, PO Box 82, Caldwell, New Jersey 07006*
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Variable Temperature Pourfill Cryostat for Spectroscopy

The new Janis variable-temperature pourfill cryostat is an inexpensive pourfill system for cooling samples down to 65 K. The VPF-100 system uses liquid nitrogen in conjunction with a thermal impedance insert and built-in heater to operate at any desired temperature between 77 and 325 K. The standard unit includes a silicon-diode thermometer that can be used for measuring and controlling the temperature of the sample mount. Available options include fully automated temperature control with ±0.05-K stability and a pumping manifold for obtaining temperatures as low as 65 K.

The vacuum jacket is compatible with the Janis Supertran continuous-flow croystat. It provides access to the sample through a single quick-disconnect flange. The cryostat can also be supplied in a "high-temperature" version, offering temperatures up to 475 K or higher. Applications for the VPF-100 cryostat include detector cooling for Raman and Mössbauer spectroscopy, resistivity measurements and low-temperature material characterization. *Janis Research, 2 Jewel Drive, PO Box 696, Wilmington, Massachusetts 01887*
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Cathodic Arc Evaporator Plasma Source

Vacuum Inc. is offering a new enhanced cathodic-arc evaporator made by Multi-Arc. This new source, the Model MA-500e, creates very energetic plasma conditions that are particularly useful where highly ionized, reactive and dense plasmas are needed. Applications include the deposition of titanium nitride, oxides, carbides and other compounds. The new source is also useful for high-rate deposition of a wide range of metals and alloys.

This new arc source, we are told, creates significantly fewer and smaller macroparticles than do other commercial arc sources. It also provides for the adjustments of plasma energy and reactivity. The MA-500e is available as a complete package with source and power supplies, or as a package including technology assistance from the Multi-Arc firm. *Vacuum Inc., 5541 Central Avenue, Boulder, Colorado 80301*
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Three-Axis Magnetic Field Sensor

The Model MAG03MC from the British firm Bartington is a compact three-axis magnetic field sensor for mapping magnetic fields. It is now available in four measurement ranges: 70 μT, 100 μT, 250 μT and 500 μT. The 70-μT version is suitable for geomagnetic observatories and geotechnical studies. The 100-μT and 500-μT versions are used in engineering applications and bioelectromagnetics. The 250-μT version is intended for magnetic signature analysis in military applications.

The MAG03MC has very good temperature stability. Its performance is claimed to be comparable to that of much more expensive observatory magnetometers. The MAG03MC is used in a wide range of environments from Antarctica to the stratosphere. We are told that its users, aside from academic laboratories, include British Rail, the British National Grid, the US Geological Survey and the Royal Australian Navy. The Model MAG03MS, submersible to depths of 100 meters, is available for underwater applications. *Bartington Instruments, Spendlove Centre, Enstone Road, Charlbury, Oxford, England.* US distributors include *ASC Scientific, 2075 Corte Del Nogal, Suite 1, Carlsbad, California 92009*
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Rhodium–Iron Resistance Thermometers

Lakeshore's new RF-100 series of thin film rhodium–iron resistance thermometers are claimed to offer significant advantages over comparable

wire-wound resistance sensors. The new thin film sensors are also conveniently small. Furthermore they are said to be very stable over repeated thermal cycling and under extended exposure to ionizing radiation.

Rhodium–iron temperature sensors have a positive temperature coefficent and monotonic response over a wide temperature range. They are widely used as secondary temperature standards in standards laboratories. The RF-100 series sensors are fabricated from a rhodium–iron film deposited on a sapphire substrate. Standard mounting is in a sealed copper canister 0.12 inches in diameter and 0.33 inches long. The chip is suspended in a strain-free manner within the canister. The unpackaged chip (0.05 × 0.150 × 0.020 inches) is available for users interested in having small sensor size, fast thermal response or maximum heat transfer.

The resistance of Lakeshore's new sensors is 100 ± 1 ohms at the ice point and 10 ± 2 ohms at 4.2 K. Stability after 200 thermal cycles is ± 0.015 K over the temperature range from 1.4 K to 325 K. Exposure to a full-spectrum neutron fluence of 10^{12} cm^{-2} and an associated gamma dose of 30 grays produces a shift of less than 0.020 K. *Lake Shore Cryotronics, 64 East Walnut Street, Westerville, Ohio 43081-2399*

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New Literature

Reflectance spectroscopy quide—Labsphere is offering *A Guide to Reflectance Spectroscopy*, a 34-page survey of applications and measurement techniques from the ultraviolet to the near infrared. It covers typical applications using single-beam, dual-beam and diode array instruments, as well as a variety of sample preparation and measurement techniques. *Labsphere, PO Box 70, North Sutton, New Hampshire 03260*

Pure chemicals—Electronic Space Products International is offering its 483-page catalog providing detailed information on its extensive inventory of high-purity metals, alloys, chemicals, single crystals, rare earths, and exotic and precious metals. The catalog is broken into nine categories: high-purity metals and compounds; alloys; sputtering targets; materials for vacuum deposition and evaporation; phosphors; fasteners; single crystals; ceramics; and ESPI's biodegradable, noncorrosive, nonfoaming cleansing agent. *ESPI, 5310 Derry Avenue, Agoura Hills, California 91301* ■