

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-Precision Miniature Tilt Sensors for Telescopes

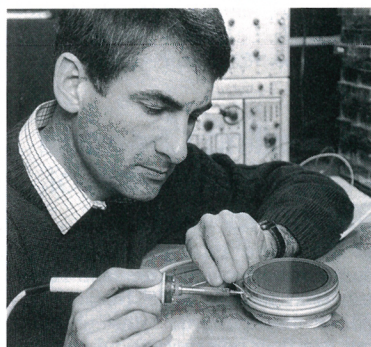
Applied Geomechanics is offering a new line of precision miniature tilt sensors designed to provide precise positioning information for telescope control, machine leveling, robotics and accelerator components. The new 755, 756 and 757 sensors are, respectively, high-gain, mid-range and wide-angle sensors. Their electrolytic transducers are contained in dual-axis or single-axis solid aluminum or stainless steel housings. A variety of shapes and dimensions are available. Mounting holes permit easy attachment to vertical or horizontal surfaces.

Signal conditioning is provided by these new sensors or by the rack-mount Model 786 electronics unit. The tilt sensors provide sensitivity as high as a part in 10^7 . The transducers employ a bubble suspended in a liquid-filled case. As the transducer tilts, the case moves around the bubble, linearly changing the electrical resistance measured through the electrolyte. *Applied Geomechanics, 1336 Brommer Street, Santa Cruz, California 95062*

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Channel-Plate Image Intensifiers for Telescopes

Photek, a new British firm, has recently delivered its first 75-mm channel-plate image intensifier. This is the largest image intensifier of its type in the world, we are told. It can respond to submicrosecond exposures, and it can provide a gain of 10^4 . The 75-mm system is primarily intended as a detector for the planned new generation of large ground-based telescopes, but it could also be used on the echelle spectrographs of existing tele-



scopes. The 1-10-msec time resolution of the cameras makes it suitable for interferometry.

In common with other Photek image intensifiers, the 75-mm intensifier is built to order. It is available with a wide range of input windows, photocathodes and phosphor screens. It is also likely to find applications in high-speed photography, x-ray crystallography and neutron imaging. Photek is also working with Imperial College in London to develop an ultra high-gain photon counting version of this new tube. *Photek Ltd, 26 Castelham Road, St. Leonards-on-Sea, East Sussex TN38 9NS, England*

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Niobium Chips for SQUIDS

Conductus is offering a new line of inexpensive niobium dc squid chips. The chips, which operate in liquid helium at 4.2 K, are designed to be incorporated into systems for a broad range of uses, from laboratory instrumentation to medical equipment and tools for geophysical exploration.

Niobium SQUIDS are extraordinarily sensitive magnetic field sensors. Properly configured, they can detect magnetic fields as small as 10^{-11} gauss. Conductus produces these SQUID chips in quantity at its fabrication facility for 4-inch superconduct-

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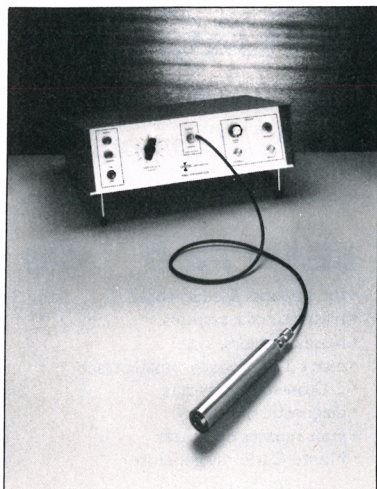


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ing integrated circuits. The firm sells these superconducting integrated circuits for \$500.

The Conductus SQUID chip-making process uses an all-refractory Nb/ AlO_x /Nb trilayer to fabricate the Josephson junctions that are the active devices in the SQUIDS. Several standard designs are available, and custom designs can be produced upon request. Flux noise is less than $10 \mu\phi_0/\sqrt{\text{Hz}}$, and all designs are compatible with standard SQUID electronics. Designs include an on-chip modulation coil, integral washer damping resistor and noble-metal contact. *Conductus, 969 West Maude Avenue, Sunnyvale, California 94086*
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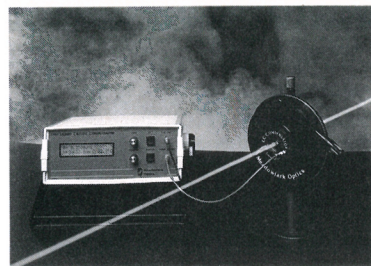
Controlling Chemical Vapor Deposition of Diamond Films

At the Third International Symposium on Diamond Materials in Honolulu next month, MKS Instruments will be displaying its latest pressure and gas flow measuring and controlling instruments for applications of chemical vapor deposition of diamond. MKS Baratron pressure transducers offer an accuracy better than 0.5% of reading, we are told. Unlike vacuum gauges, their measurements are independent of gas species. The new companion throttle valves, proportioning control valves and self-tuning controllers are available for vacuum control.

MKS Mass-Flo electronic controllers of gas mass flow are used in place of rotameters to monitor and control gas flow electronically. Because they measure mass flow rather than volumetric flow, one does not have to make temperature and pressure corrections to get repeatable coatings. MKS Mass-Flo controllers, as well as Baratron pressure transducers, provide high-level electronic output for indicating, recording and control. *MKS, 6 Shattuck Road, Andover, Massachusetts 01810*
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Liquid Crystal Waveplate Compensator

Meadowlark Optics is offering the new LC1090 liquid crystal compensator, a programmable liquid crystal waveplate for precision retardation control. The microprocessor-based controller adjusts the applied voltage



for varying wavelength and temperature to achieve a retardance accuracy of better than 3 nanometers.

The LC1090 system has no moving parts. Its digital readout is designed to make retardance measurements simpler than measurements done with traditional Soleil-Babinet compensators. *Meadowlark Optics, 7460 Weld County Road 1, Longmont, Colorado 80504*
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Long-Lived Liquid-Metal Ion Source

FEI has introduced a new liquid-metal ion source designed to have twice the lifetime of previous sources. At normal operating currents, FEI guarantees that the new source's lifetime will exceed 1500 hours.

Liquid-metal ion sources are components of the firm's FIB 600 Series workstations, Dualbeam workstations and single- and double-lens ion focusing columns. Applications include micromachining and secondary-ion mass spectrometry.

The new emitter is based on the same coil structure employed in the firm's present gallium sources. Like the previous sources, the new source is available as a standard Ga source or as a single-isotope ^{69}Ga source. The new longer-life sources are completely interchangeable with the previous sources. *FEI, 19500 NW Gibbs Drive, Suite 100, Beaverton, Oregon 97006-6907*

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Continuous Pure Nitrogen Supply from Compressed Air

A new nitrogen generator from Balston obviates the purchase and storage of nitrogen cylinders and dewars for many laboratory applications. The Balston Model 75-72 nitrogen generator produces up to 42 liters per minute of compressed nitrogen on-site

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from any compressed air supply, regardless of its quality. One can define the purity level of the nitrogen stream in accordance with one's needs. It can range from 95% to 99.5%.

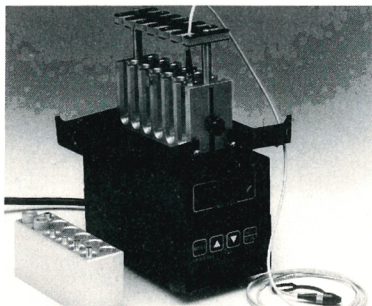
The nitrogen generator is a complete system designed to transform standard compressed air continuously into nitrogen at safe, regulated pressures without the need for operator attention. The constant gas supply helps to ensure consistent analytical results. No electricity is required.

The nitrogen is produced by a combination of filtration and membrane separation. A high-efficiency prefiltration system pretreats the compressed air to remove all particulate contaminants down to sizes of 0.1 micron. Hollow fiber membranes separate the air into a concentrated nitrogen output stream and an enriched permeate stream (primarily oxygen) that is vented from the system. This produces a continuous output flow of pure nitrogen. Applications include chemical and solvent blanketing, glove-box purging, chemical and solvent evaporation, instrument purging and supply, sparging and evaporative light-scattering detection. *Balston, 260 Neck Road, Box 8223, Haverhill, Massachusetts 01835-0723*

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Programmable Curing Ovens

The Light Brigade has introduced a programmable curing oven for curing and providing controlled environments in the laboratory, in the field or on production lines. Initially designed for the aerospace industry, the



T-S50V-BRC is a microprocessor-based, ramping-control curing oven designed to optimize the curing potential of thermal epoxy. The oven features 24-step program capability, ramp-rate or time-based programming, soak deviation, program looping and status selection after power outages. It is also easily operated in a

ramping set-point mode.

The four-digit, seven-segment display monitors time and temperature, and it displays the step being performed at any given moment. Frequently used programs can be stored and locked into memory, allowing for convenient use in the field.

The oven will cure up to 12 connectors at one time. Available connector types include ST, SMA, FC, D4, bi-conic, FDDI ferrules and MIL-C-38999 pin-and-socket contacts. *The Light Brigade, 7639 South 180th Street, Kent, Washington 98032*

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Potentiostat with Impedance Measurement

EG&G Princeton Applied Research has added impedance measurement capabilities to its Model 263 potentiostat. This instrument is suitable for research, corrosion measurement and teaching applications. It performs all major electrochemical measurements, from cyclic and square-wave voltammetry to chrono-amperometry, and it is programmable.

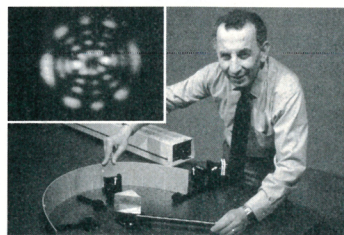
The Model 263 can be used in combination with the firm's Model 5210 lock-in amplifier to measure impedance at frequencies from 50 μ Hz to 10 kHz. Impedance measurement techniques have gained increasing popularity, we are told, in the study of corrosion and protective coatings, batteries, electroplating phenomena and electro-organic synthesis. The Model 5210 lock-in amplifier uses analog electronics to measure the amplitude of an ac signal, given a particular phase characteristic and frequency. This type of phase-sensitive detection is well suited to experiments at frequencies greater than 10 Hz.

A computer-controlled lock-in feature permits automatic data acquisition and reduction, and it automatically optimizes measurement parameters. The Model 263 can operate under computer control or as a stand-alone instrument. Under computer control, the instrument allows users to send commands and acquire data and to program all major electrochemical measurement techniques. The instrument's capabilities can be further enhanced with the firm's electrochemistry software packages. *EG&G Princeton Applied Research, Electrochemical Instruments Division, PO Box 2565, Princeton, New Jersey 08543*

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