

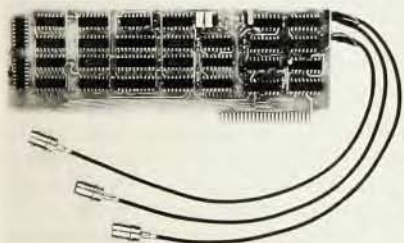
new products

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.

Multichannel scaling and time-of-flight controller

The new Comstock MCS Controller, model MCS-701, provides the Apple II user with complete hardware and menu-driven software for multichannel scaling and time-of-flight applications such as energy analysis, mass spectrometry, photoelectron spectroscopy, fluorescence studies and other uses involving a scanned dispersive element.

The hardware consists of one board, which occupies a single Apple II slot. Three BNC-equipped leads are provided for connection to the user's apparatus. The 24-bit scaler counts to a



maximum rate of 20 megahertz, using standard TTL pulses. It is accurately gated by a digital clock. A 12-bit-precision digital voltage ramp is provided for simultaneous control output. A time-of-flight mode using separate start and stop TTL pulses is also included.

The price of the controller with complete software for multichannel scaling and time-of-flight applications is \$1650. No programming is necessary. *Comstock, PO Box 199, Oak Ridge, Tennessee 37831*

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Ultralinear, microsecond spectroscopy-grade ADC

LeCroy's new model 3514 is a 1-microsec, 12-bit (4000 channel) ultra-linear

analog-to-digital converter for gamma and x-ray spectroscopy. It is claimed to be particularly well suited for applications requiring ultra-high counting rates with low deadtime. The model 3514 offers 250 to 4000-channel conversion. Integral and differential nonlinearities are better than $\pm 0.0375\%$ and $\pm 1.0\%$, respectively. Typical applications include activation analysis, time-resolved spectroscopy, spin spectrometry and scintillation-camera quality testing.

The unit operates in a peak detection mode with coincidence or anticoincidence gating, or in a strobed-sample mode for sampling dc or slowly varying ac signals. Self-strobing lets one sample the input from 100 nsec to 35 microsec after threshold crossing. Bipolar or monopolar dc coupled inputs in the range of 0 to 8 volts can be accepted with risetimes from 250 nsec to 100 microsec. Precise setting and LED display of discriminators and zero adjust are provided. An ADC busy output to a deadtimer measures conversion deadtime. With several model 3514s cascaded, deadtime of the system is effectively eliminated.

The instrument's CAMAC format is an IEEE STD (583), making it directly compatible for bidirectional communication with any computer interfaced to the user's CAMAC system. No additional hardware or software is required. The price of the model 3514 is \$2495. *LeCroy Research Systems, 700 South Main Street, Spring Valley, New York 10977*

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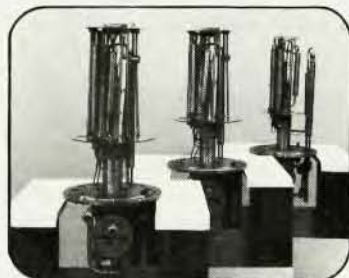
Photon counter for low light levels

McPherson's new model 7701 photon counting system is designed to help photomultiplier tube users cope with the low light levels of luminescence, photoemission and the like. The system consists of a remote amplifier/

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MRS

MATERIALS RESEARCH SOCIETY

The 1984 Fall Meeting of the Materials Research Society, to be held in Boston Nov. 26-30, will offer over 800 technical papers on the development, characterization, and processing of materials for application in emerging high-technology areas. Among the topics to be covered in the 17 symposia that constitute the technical program are electronic and optical materials, laser processing of metals and semiconductors, plasma synthesis, catalysis, advanced photon and particle characterization of materials, solid-waste disposal from coal combustion and nuclear applications, molecular beam epitaxy, electronic packaging, and characterization of such nonmetallic materials as ceramics and intercalated graphite.

Technical program:

John B. Ballance,
Executive Director
Materials Research Society
9800 McKnight Road,
Suite 327
Pittsburgh, PA 15237

Over 50 companies will be displaying analytical and processing equipment closely matching meeting content at the Equipment Exhibit, November 27-29 and thus of compelling interest to the over 2000 top level scientists and engineers who are expected to attend.

For information, contact:

Ed Tober,
MRS Show Manager
American Institute of Physics
335 East 45th Street
New York, NY 10017
Telephone (212) 661-9404

MRS symposia are interdisciplinary and span the range from basic research to application, with the goal of assuring that all possible physical, chemical, and engineering insights are considered for the topic being examined.

new products

discriminator, digital display unit and a ten-foot interconnecting cable. The 7701 display unit has an eight-digit LED display, TTL and analog outputs. It can be interfaced to an external host for automated control and data reduction by way of an external parallel port. Compatible with available side-on and end-on photomultiplier tubes, the system can be used with the optional McPherson stepper scan controller for monochromators and spectrometers. *McPherson, 530 Main Street, Acton, Massachusetts 01720*

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Ion etching system can do spectroscopy

Balzers has introduced a new ion etching system with a double-cross-port vacuum chamber that is said to permit a wide range of analyses. The vacuum chamber of the model IEU100 system



can be equipped with accessories for secondary-ion-mass or -photon spectroscopy (SIMS or SIPS analysis). Utilizing a Penning-principle, ion-beam gun and titanium extraction lenses, the system is claimed to provide a minimum service life of a thousand hours with no aperture changes.

The IEU100 system's adjustable beam density ranges up to $600 \mu\text{A}/\text{cm}^2$, with typical temperature rises of less than 40°C . The system is capable of expansion for surface-element and concentration-profile analysis. Its $30\times$ binocular microscope is said to provide excellent visibility and continuous endpoint detection by means of a Faraday cup. The IEU 100 ion etching system is priced from \$26 000. *Balzers 8 Sagamore Park Road, Hudson, New Hampshire 03051*

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Liquid light guide for better transmission

Dyonics has introduced the Liquid Light Guide. The guide is made of a

light-conducting, non-toxic liquid, transmitting in the wavelength range from 250 to 750 nanometers. The ends consist of highly polished, solid quartz glass. The liquid is sealed by flexible metal spiral tubing cladded by a plastic sheathing that serves as an optical barrier and a mechanical protectant.

Compared with glass-fiber light guides, the liquid light guide is claimed to offer considerably improved transmission in the visible, and "much better" transmission in the blue and uv range. Used in conjunction with the Dyonics ultraviolet (UV 2000) light source, the guide can transmit uv and visible light for applications such as uv fluorescent penetrant and borescope nondestructive testing, uv microscopy and uv microphotography. Typical spectral transmission in a light guide one meter long with a six-millimeter diameter core is 60% at 250 nm and 80% at 365 nm. The greatest transmission, 95%, occurs at 539 nm. Liquid light guides are available in lengths up to 4 meters, with core diameters from 2 to 20 millimeters. *Dyonics, 160 Dascumb Road, Andover, Massachusetts 01810*

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Fast pulsed valve for molecular beams

R. M. Jordan is offering a fast pulsed valve for high-quality molecular beams. This device is capable of providing a 55-microsec pulse for He carrier gas when the backpressure is 1 atmosphere. Under these conditions, choked flow is obtained, as evidence by a flat-topped pulse measured with a fast, nude ionization gauge. Choked flow means that the maximum flow is occurring under the given conditions, and that the full theoretical cooling has been obtained.

The pulse length can be further shortened if maximum flow is not required. A back pressure up to 10 atm is obtainable. The valve is bakeable up to 150°C , and it is constructed of corrosion-resistant material. It has a $3\frac{1}{2}$ " diameter body, easily mountable in a vacuum system. Translational mounts for three orthogonal directions are available upon request. Various interchangeable nozzle sizes are also available. The electronics have been constructed to provide low electrical noise, and the power supply is mountable in a standard 19" rack. The pulsed valve and the power supply (including delay generator and triggering inputs) each cost \$1500. *R. M. Jordan Company, 2541 Leghorn Street, Mountain View, California 94043*

Circle number 145 on Reader Service Card

Stable cryogenic temperature controllers

Two new cryogenic temperature controllers from Lake Shore (models DRC-81C and DRC-82C) provide stable control over the temperature range from 1.4 to 800 kelvin, with a stability of better than a millikelvin below 30 K. The units are designed to perform with



cryostats, open- and closed-cycle cryogenic refrigerators and a variety of other systems. Both models feature dual sensor input and interchangeable temperature sensors.

The model DRC-82C offers continuous and concurrent display of all temperature data, in either kelvins or volts, as well as all control parameters and indication of heater output power. An integral front-panel keypad facilitates input and modification of set-point and control values. Both models accommodate a wide variety of temperature sensors. Most applications can use the firm's DRC-series silicon diode sensors. These sensors are matched to a standard response curve programmed into the instruments. DRC-curve sensors are routinely interchangeable; they provide an absolute accuracy of 0.5 K. When greater precision is required, an individually calibrated sensor can be utilized, and the specific calibration can be programmed into the instrument. An option allows the units to accommodate platinum RTD sensors as well as silicon diode sensors.

The controllers offer full three-term (PID) control, and they can limit heater output power in incremental decade steps. The output power of the more expensive DRC-82C can have a manually-selected, fixed component, yielding improved control in applications involving large, stable heat loads. The prices of the 81-C and 82-C are, respectively, \$1995 and \$2995. *Lake Shore Cryogenics, 64 E. Walnut St., Westerville, Ohio 43081*

Circle number 146 on Reader Service Card

Gimbal mounts for large optics

Newport's new 620 series gimbal mounts are designed to provide stable, precise orientation of large (4- and 6-inch) optical components. Shake-free

gimballing is said to be assured by precision, preloaded ball-bearing pivot assemblies. Optical elements are front-loaded onto three compressive points and held securely in place by three locking stops positioned directly opposite them to minimize surface distortion. Once in place, the front surface of the optical element is automatically aligned with the rotational axes for translation-free gimballing.

Both rotational drives are anchored to a unitized frame to minimize cross-talk, and they are edge-mounted out of the optical path for safety and convenience. The micrometers are graduated in 30-arcsecond divisions; each may be adjusted through 10° with sub-arcsec resolution. In addition to tapped mounting holes along the edges, one gets novel thumbscrew anchors that allow the mount to be rigidly attached to a table or base. These new mounts have a slender profile and a large, clear aperture; they are compatible with Newport's motorized drives. *Newport Corporation, PO Box 8020, Fountain Valley, California 92728-8020*

Circle number 147 on Reader Service Card

High pressure device for metastable semiconductors

The Press Quencher from Press-Quench Enterprises is a self-contained, Bridgman-anvil-type, ultra-high-pressure device capable of pressures to about 50 kilobars on a disk-shaped sample 2.5 mm in diameter by 0.4 mm thick, with partially supported pyrophyllite gaskets. It can be unloaded at rates exceeding one million bars per second. The instrument is specifically designed to study metastable phases of semiconductors obtained by pressure quenching.

The basic unit can be used in its normal, self-contained, manually operated mode, or it may be used with any standard universal mechanical-property testing machine, either hydraulic, mechanical or servo-hydraulic. A conversion kit is available, permitting the basic unit to be used at cryogenic temperatures. This also requires a readily available Dewar of the type used for mechanical property testing.

The Press Quencher is not designed to replace or compete with diamond anvil pressure cells. It can be used to complement these systems in the lower portion of their pressure range and when larger size samples are desirable. It is claimed to be particularly useful in studying metastable phases of certain semiconducting materials that have been shown to demonstrate unique electrical and magnetic properties. *Press-Quench Enterprises, RDI, Box 198K, Troy, New York 12180*

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3021.5 Å
3023.5 Å
3025.6 Å
3027.5 Å

(Left to Right)

3650.1 Å
3654.8 Å
3663.3 Å

(Left to Right)

Hg 3021 -
3027
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Hg 3650 -
3663
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