

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.

Hybrid photomultiplier claims record linearity

The new Hamamatsu R1911-01 photomultiplier tube uses a dynode structure of hybrid design, combining a box-and-grid front end for good energy resolution with a mesh-type series of final stages for good pulse linearity. Pulse linearity of less than 2% deviation at 50 mA and 1500 V is significantly better, we are told, than one gets from photomultiplier tubes with standard dynodes. Good energy resolution and high quantum efficiency suit this tube to a wide range of applications in high-energy physics and medical diagnostics because of its reduced overall length. This 3-inch-diameter detector has a bialkali photocathode with spectral response from 300 to 650 nm and quantum efficiency of 28% at 390 nm. *Hamamatsu Corporation, 420 South Avenue, Middlesex, New Jersey 08846*
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Fluorescence spectrometer for time-domain studies

A fluorescence time-domain spectrometer from Edinburgh Instruments Ltd. is claimed to simplify measurement of fluorescence lifetimes, decay functions and time-resolved spectra, and to offer the best available combination of time resolution, stability and sensitivity characteristics. Edinburgh's model 199 system counts single photons, measuring the time delay between the excitation flash and the fluorescence photon; successive flashes are used to build up a statistical decay curve.

The basic instrument has four subsystems: the 199F flashlamp, the 199S time-domain spectrometer, the 199D data-acquisition system and the 199M data analyzer and program library. The equipment is designed to fit a wide range of accessories and options. The flashlamp is said to be "the fastest,

brightest and most stable available" because of the combination of coaxial transmission-line discharge geometry and computer-designed optics. It is, we are told, the first commercial flashlamp "to break through the nanosecond barrier."

The Spectrometer is a table-mounted, purpose-designed instrument consisting of excitation and analysis monochromators, sample chamber, high-sensitivity photomultiplier and precision coupling optics. Each component is optimized for high throughput and low time dispersion, which, when combined with single-photon detection, fully exploits the sensitivity of fluorescence spectroscopy to give highly accurate lifetimes. Contact the North American distributor: *Aries Inc., PO Box 726, Acton, Massachusetts 01720*
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Charge neutralization for SIMS on insulators

Atomika has introduced a new electron-beam gun, model 3-302, for charge neutralization in secondary-ion mass spectroscopy. It extends the electron energy range up to 5 keV and allows the use of spot sizes down to 10 microns. Charge buildup is a problem during surface analysis and depth profiling of insulators by SIMS. Charge buildup deflects the primary analysis beam and adversely affects the trajectories of the emitted secondary ions. The traditional means of alleviating this problem



Solve

The ND680 Series Multichannel Analyzer/Computer Systems help to solve problems—problems requiring programs for specific data acquisition, processing and display functions.

Each system combines the best features of the ND66/76 Multichannel Analyzer with the full capabilities of a DEC computing system.

ND680 Series Systems are available with either the DEC RT-11 or RSX-11M operating system, user programming via FORTRAN or BASIC and sophisticated application programs including automatic peak search, nuclide identification, neutron activation analysis, etc.

Send for complete details.



ND680 Series



Nuclear Data Inc

Instrumentation Division
Golf and Meacham Roads
Schaumburg, Illinois 60196
Tel: 312-884-3621

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NEW NESLAB WATER-TO- WATER HEAT EXCHANGERS



NESLAB's series of liquid-to-liquid heat exchangers can save you nearly 50% on cooling equipment costs if you have an in-house recirculating cold water system. These compact, quiet, non-refrigerated units can provide a steady flow of clean, cooling water at constant temperature and pressure over a $+5^{\circ}\text{C}$ to $+35^{\circ}\text{C}$ temperature range with a stability of $\pm 1^{\circ}\text{C}$ or better. Heat load-sensitive valves automatically adjust to use the minimum amount of cooling water required. Typical applications include cooling of GC/MSs, NMRs, TEMs, SEMs, Lasers, X-Ray Diffraction. If you have an in-house water system (or an ample tap water supply) you can lower heat removal costs with NESLAB's liquid-to-liquid heat exchangers. Write or call today for details and a catalog. NESLAB Instruments, Inc., P.O. Box 1178, Portsmouth, N.H. 03801 USA.

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new products

has been charge neutralization via simultaneous bombardment with an unfocused electron beam at low energies (500 eV).

The use of higher energies and smaller beam sizes for charge neutralization has several advantages: Very thin insulating layers can be treated like conductors; the cross section for undesirable electron emission via electron stimulated desorption decreases with increasing energy; and the use of a well-focused electron beam lets one direct sufficient current density precisely at the point of interest during small-area analysis.

This new electron gun can also be used to create electron-induced absorbed current images of the sample or to generate Auger electrons for additional analysis. The model 3-302 consists of the complete electron-gun assembly, with focusing lenses and deflection plates mounted on a $2\frac{3}{4}$ " CFF, and the electron-gun supply, containing all controls. An optional scan generator, model 3-303, is available. This new charge neutralization system is said to provide improved local charge compensation, yielding SIMS spectra from insulators with intensity and mass resolution comparable to that routinely achieved with conducting samples. Atomika, 614 West Manchester Boulevard, Inglewood, California 90301

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Calibrated light pulse generator and modulator

Berkeley Nucleonics describes its model 6020 as "a new kind of instrument"—a calibrated light-pulse generator and modulator with built-in power meter, "whose combination and range of controllability, stability and speed have not been available heretofore." It operates up to 150 MHz with 500-picosecond risetimes, and it generates 500-psec impulses. The generator's operating features let the user vary pulse rates, delays and widths; generate single or double pulses; externally trigger or modulate the light output; and control baseline level and peak power. The power meter measures and displays



peak and baseline levels with durations as narrow as 5 nsec.

Serving as a basic electro-optics tool, the model 6020 is suitable for the characterization of detector response, shorthaul optical-time-domain reflectometry, local area network testing, fiber-optics data communications and fiber dispersion testing. Berkeley Nucleonics, 1198 Tenth Street, Berkeley, California 94710

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High-sensitivity differential screw adjusters

Extremely high sensitivity—on the order of a tenth of a micron—is said to be a principal feature of Klinger Scientific's line of differential screw adjusters and micrometers, designed primarily for micropositioning applications. This product line includes the "highly accurate" BD-17.04 differential screw adjuster, which offers coarse and fine adjustments to within 0.1 micron and is compatible with Klinger's short-travel translation stages and mirror mounts. Travel range for the fine adjustment is 0.3 mm, with 0.1-micron sensitivity. The coarse adjustment range is 4 mm, with 2-micron sensitivity. It also has a built-in coarse adjustment lock. Load capacity is rated at 20 lbs. The price of the BD-17.04 is \$150.

A companion model, the BD-30.01 differential micrometer, offers graduated readings in one-micron increments. It has a relatively larger control-screw diameter for higher sensitivity. The load capacity for the BD-30.01 is rated at 40 kg, and the unit is fully compatible with the firm's short-travel linear positioners. The all-steel BD-30.01 sells for \$120. Klinger Scientific, 110-20 Jamaica Avenue, Richmond Hill, New York, 11418

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Picosecond diode laser pulser

Newport's new model LD10 diode laser pulser emits a train of optical pulses at near-infrared wavelengths, with peak power greater than 1 watt and a pulse width of less than 100 picoseconds. These ultrashort optical pulses are generally useful for characterizing photodetector response, measuring pulse broadening in multimode fibers and providing a light source for high-resolution optical time-domain reflectometers and compact laser ranging systems. The instrument can be modulated by an external trigger.

The LD10 picosecond diode laser system consists of an electronic driver and a diode laser head, available with no-

minimal output wavelengths of 850 nm and 904 nm. Other output wavelengths are also available on request. The price is \$3000. *Newport Corporation, PO Box 8020, Fountain Valley, California 92728-8020*

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High-radiance monochromator and stepping-motor drive

The new model 7300 grating monochromator from Applied Photophysics seeks to meet the need for a robust and reliable instrument with high light throughput ($f/3.4$ aperture) and minimum stray light. Variable, bilateral slits allow exit and entrance band-passes to be adjusted from 0.1 to 32 nm (with a 1200-rules/mm grating). The slit height of 21 mm offers high light throughput from extended sources.

Applications of this $f/3.4$ grating monochromator include Raman spec-



troscopy, laser-induced fluorescence, absorption and fluorescence spectroscopy, flash photolysis and other fast reaction techniques. Wavelength scanning is provided by a control unit and stepping motor. The instrument provides eighteen wavelength-scan speeds, adjustable from 0.3 to 960 nm/min; they can be synchronized to the scan speeds of most chart recorders. The control unit includes an increment facility that allows wavelength scanning in fixed steps adjustable from 0.1 to 20 nm. *Applied Photophysics, 910 Boston Post Road, Marlborough, Massachusetts 01752*

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Automated secondary-ion mass-spectrometer systems

Perkin-Elmer has introduced a new series of secondary-ion mass-spectrometer systems. The 6000 series secondary ion profilers perform a compositional analysis of surfaces and thin films utilizing SIMS depth-profiling techniques. These systems are said to combine state-of-the-art performance with a high level of automation to provide high-quality data quickly on a wide range of samples. They are especially useful, we are told, in many semiconductor applications, as well as in metallurgy, catalysis, optical coatings and other applications.

The performance of the 6000 Series is attributed to its ion-detection system. The secondary-ion analyzer incorpo-

rates a retractable, high-efficiency ion extraction lens, a 90° spherical-sector electrostatic ion-energy analyzer, and a refocusing lens, all in series with a quadrupole mass spectrometer and channel electron-multiplier detector. This combination is said to offer sensitivity and mass resolving power "unequaled in a quadrupole-based system."

A choice of primary ion sources allows these systems to be tailored to specific applications. A new "Duoplasmatron" microbeam ion gun provides an exceptionally clean, high-current-density, small-diameter ion beam for high-performance SIMS analysis. It is compact, self-contained, and constructed entirely of uhv-compatible materials. Electron-impact ion sources able to generate high-current beams of inert-gas ions for rapid depth-profiling are also available. The 6000 series systems are highly automated. A 16-bit, 7000 series Perkin-Elmer computer controls many system parameters, as well as data collection and processing. PHI software serves as a user-friendly interface, rapid command and parameter entry. LEARN sequences permit unattended operation for routine analyses.

The secondary-ion profilers will detect all elements in the periodic table as well as isotopes and molecular fragments. In semiconductor applications they can be used for dopant profiling in base materials, for impurity detection in grown or deposited insulator films or in heavy-metal silicides or for identification of thin-surface-layer contaminants. In catalyst research, the presence and identity of minor elements that may lead to catalyst poisoning can be identified; and in multi-layer optical coatings, the identity of minor interfacial impurities can be determined. *Perkin-Elmer, Physical Electronics Division, 6509 Flying Cloud Drive, Eden Prairie, Minnesota 55344*

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Ultrathin foil filters for extreme ultraviolet

Ultrathin foil filters for the extreme-ultraviolet and soft-x-ray wavelength regions are now available from Acton. These filters cover the spectral region from 1 to 100 nm. They are free of pinholes and gas leaks, suitable for rocket and satellite use. Standard filters are constructed from a variety of materials, including aluminum, tin, indium, titanium, carbon and polypropylene. These ultrathin foil filters complement Acton's line of vacuum monochromators and optical coatings for the uv, vuv, xuv and soft-x-ray regions. *Acton Research Corporation, PO Box 215, Acton, Massachusetts 01720*

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Achieve

Achieve a level of sophistication and capability in data acquisition, processing and management attainable only with the ND6700—a multiple user fully integrated distributed processing system that offers up to eight completely independent video display terminals and simultaneous acquisition from up to 60 independent ADC's.

The ND6700 offers up to one megabyte program-mable memory and a choice of mass storage—512 kilobytes to 320 megabytes on-line. User programming is achieved via FORTRAN and BASIC. Powerful MIDAS/M disk operating software is designed for optimum system flexibility. Exclusive multi-processor capability multiplies system throughput.

Ask for complete information on the ND6700, the system that will help you to achieve new levels of data acquisition, analysis and management capability.



ND6700



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Instrumentation Division
Golf and Meacham Roads
Schaumburg, Illinois 60196
Tel: 312-884-3621

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