

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.

Programmable High Voltage Pulse Generator

Princeton Instruments has introduced a new programmable high-voltage pulse generator for gating image-intensified diode-array and CCD detectors. This new pulser, the model PG-200, can provide gate widths from 5 ns to 80 ms. A digital readout displays all systems parameters, such as gate width, gate delay and repetition rate.

The instrument can be operated in a stand-alone mode from a keypad on the front panel, or it can be controlled remotely from a computer. The PG-200 can be programmed for complex gating and triggering modes, such as a "boxcar" mode, where the gate delay is automatically scanned with each trigger. The PG-200 can gate two detectors simultaneously. It is also self-calibrating so that its accuracy is maintained in the presence of temperature fluctuations. *Princeton Instruments, 360 Quakerbridge Road, Trenton, New Jersey 08619*

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Crystal Substrates for High-Temperature Superconductors

Superconix is offering a new class of crystal substrates for high- T_c superconducting thin films for microwave and far-infrared applications. These alkaline rare-earth aluminates have K_2TiF_4 type perovskite structure with tetragonal unit cell. $SrLaAlO_4$ and $CaNdAlO_4$ substrates have yielded high-quality films of the $YBzCuO$ and $BiSrCaCuO$ high- T_c superconductors. These substrates have no twins or structural phase transitions of the kind that hinder other substrates such as twinned $LaAlO_3$.

The crystals in stock have (001) orientation. Superconix also has re-

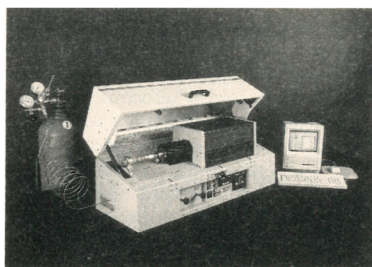
lated $SrLaGaO_4$ and $SrLaGa_3O_7$ crystal substrates. *Superconix, 261 East 5th Street, Saint Paul, Minnesota 55101*

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High Pressure Oxygenation Furnace for Superconductors

Morris Research, a firm specializing in research on superconducting materials, is offering its newest high-pressure/high-temperature furnace. The HPS-3210P4 is designed for synthesis and oxygenation of new materials in high pressure gases.

The self-contained tabletop unit has a maximum pressure rating of 400 bar between 775°C and 925°C, decreasing to 200 bar at 1000°C. Originally designed for oxygenation procedures, the unit now takes nitrogen, argon, hydrogen and mixed gases. A 16-mm Lexan housing, with rein-



forced housing ends, and interlocking mechanisms are designed to insure safe operation, as is the furnace's independent, fully-redundant over-temperature protection circuit.

A standard oxygen tank cylinder provides the pressure and a standard electrical wall outlet supplies the power. The sample space is 10 mm by 40 mm, with a single seal plug. The resistivity probe *in situ* allows full monitoring of synthesis and phase transformations as they occur. Other available accessories include quench-

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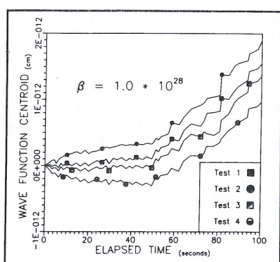
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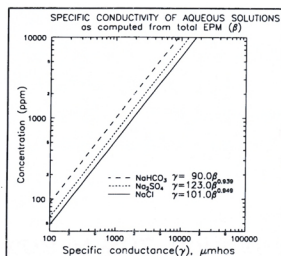
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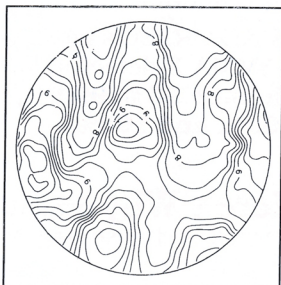
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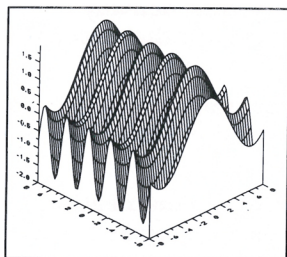
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ing and continuous-flow hardware, real-time data logging and graphing software, sample boats and a boat tool. *Morris Research, 1918 University Avenue, Berkeley, California 94704*
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Radiometric Power Supply for Deuterium Lamps

Oriel announces a new radiometric power supply to run most types of 30-watt deuterium lamps (2.5 to 12.5 V cathode). The new Model 68840 is a highly regulated, constant-current source with very low noise, we are told. A front panel meter displays lamp current and voltage. The lamp current is adjustable from 200 to 850 mA, with an output voltage range of 60 to 100 V. This supply interfaces with Oriel's temperature-stabilized photofeedback unit.

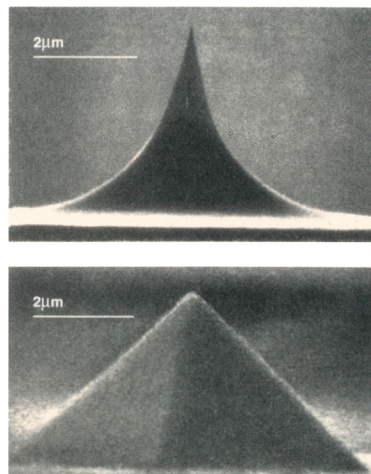
Users can purchase the 68840 power supply for their own deuterium system or they can order a complete system from Oriel. The system includes a four-port lamp housing, a lamp and lamp adapter, and the new 68840 power supply. *Oriel, 250 Long Beach Boulevard, Stratford, Connecticut 06497*

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Sharper Probe Tips for Scanning Force Microscopes

Park Scientific announces the availability of their new Ultralevers—silicon cantilevers and integral probe tips for the firm's scanning force microscopes systems. With these new tips, we are told, the scanning force microscopes have significantly better resolution than instruments using only the traditional pyramidal tips and low-force-constant cantilevers. The sharper tips, with a nominal radius of 100 angstroms, provide four-fold improvement in lateral resolution. The higher aspect ratio of the tip allows truer imaging of steep sidewall and deep-trench surface features. Increased cantilever thickness offers higher force constants, making new scanning-force-microscope techniques feasible, for example, attractive-mode operation and nano-indentation.

Park has developed a proprietary microfabrication process to produce these new, highly doped silicon cantilevers and tips. The tips are conical in shape. Conventional tips are pyramidal, with nominal radii of about 400 angstroms. This manufacturing

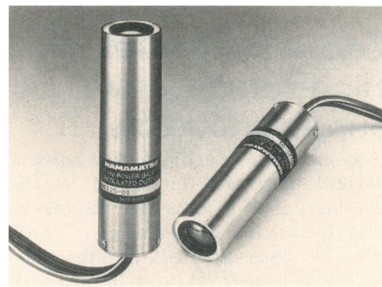


process allows the aspect ratio and cantilever thickness to be controlled to meet a wide range of performance requirements. The illustration shows a new Ultralever tip (top), and a conventional pyramidal tip for comparison. *Park Scientific Instruments, 1171 Borregas Avenue, Sunnyvale, California 94089*

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Compact Detector Assembly for Photomultiplier Tubes

Hamamatsu has introduced a compact, integrated detector assembly for use in weak light-signal applications. The new HC125 Series is a complete detector assembly that includes a one-inch head-on photomultiplier tube, a high-voltage power supply, a voltage divider and signal processing circuitry. All this is enclosed in a 4 7/8-inch stainless steel housing.



The HC125 is easy to design into instrumentation, we are told. There is no exposed high-voltage wiring. One need only supply low voltage to the detector assembly. The tube is powered by a Cockcroft-Walton voltage multiplier with one stage per dynode. This technique reduces power consumption, and it yields higher signal output current with improved

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linearity.

The detector assembly is potted to guard against moisture and contamination, and to protect the photomultiplier tube from shock and vibration hazards. The HC125 detector assembly comes in 3 different models. One is particularly suitable for photon counting. Its spectral response ranges from 300 to 650 nm. At a 1 MHz random rate its dark count is 250. The other two models are suited to scanning or high-speed light-pulse applications. *Hammamatsu, 350 Foothill Road, PO Box 6910, Bridgewater, New Jersey 08807*

Circle number 185 on Reader Service Card

Nitrogen Laser with Sub-Nanosecond Pulses

The Model NN100 nitrogen laser from ILEE is a pulsed ultraviolet laser. The NN100 uses a proprietary tube design to develop very short, high-intensity optical pulses. The manufacturer stresses its complete absence of tube afterglow. This allows the user to gate out the initial optical pulse completely. The sub-0.5-nsec pulses at a wavelength of 337.1 nm have applications in time-resolved fluorescence spectroscopy, micro-marking, trace hydrocarbon analysis, fluorescence microscopy and many other laboratory processes.

The laser typically delivers 360-psec, 150- μ J optical pulses with less than 5% pulse-to-pulse intensity variation. The beam profile is rectangular (2 mm $\times$ 5 mm at the aperture) with divergence of 3 mrad $\times$ 7 mrad. The laser has three operating modes: single-shot, internal-pulse-generator and external ttl-triggered. The maximum repetition rate is 30 Hz. *ILEE, PO Box 6549, Bozeman, Montana 59771*

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Reflectance Accessory for Spectrophotometers

Labsphere is offering its new reflectance spectroscopy accessory for the Perkin-Elmer Lambda 9/19 spectrophotometers. The RSA-PE-19KO accessory has an advanced kinematic optics system designed to improve accuracy in reflectance and transmittance measurements.

The accessory includes an optical bench with kinematic optics that adjust for optimal beam size in either the reflectance or transmittance

mode. Detectors are symmetrical with respect to the sample and reference beams. Removable light traps allow for specular subtraction and haze measurements.

The RSA-PE-19KO is equipped with a 200-mm Spectralon integrating sphere. Spectralon, a highly diffuse reflectance material, provides very stable, reproducible spectral reflectance over the wavelength range of the instrument. The RSA-PE-19KO is compatible with Perkin-Elmer PECSS and UVM data handling software. *Labsphere, PO Box 70, North Sutton, New Hampshire 03260*

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Online Database for Nuclear Physics

The National Data Center at Brookhaven is funded by the Department of Energy to develop and maintain nuclear data bases and distribution services. Online services have been provided for several years. During 1991 photon-interaction cross sections and attenuation coefficients, and cross sections for polarized-photon scattering were added to the system. Experimental and calculated cross section, nuclear-structure and decay data, and indexes to low-energy nuclear-physics bibliography are also available online. *National Nuclear Data Center, Building 197D, Brookhaven National Laboratory, Upton, New York 11973*

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New Literature

Optics—Edmund Scientific's new 196-page reference catalog lists more than 8000 optical and industrial products, including an expanded line of optics for other equipment manufacturers. Among these are PCX and DCX lenses, achromats, prisms, beam splitters and corner cube reflectors. The catalog offers a complete line of microscopes, telescopes and magnifiers. *Edmund Scientific, 100 East Gloucester Pike, Barrington, New Jersey 08007*

Portable oscilloscopes—Tektronix offers the new issue of its *Tek Direct* catalog, which allows buyers to order relatively inexpensive test and measurement equipment directly from the company. *Tek Direct* includes meters, handheld and low-end portable oscilloscopes, probes, plotters, accessories and training aids. Products listed in the catalog are priced from \$150 to \$6500, with oscilloscopes starting at \$695. *Tektronix, PO Box 500, Beaverton, Oregon 97077* ■

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