

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.

Microwave Plasma Ion Source

The Model MPDR 610 microwave plasma electron-cyclotron-resonance source, designed specifically for molecular-beam-epitaxy applications, is available from Wavemat. The source features a 3-cm-diameter plasma discharge, permanent ecr magnets and an internally tuned cavity, which reportedly provides precise control over a wide range of operating conditions.

The MPDR 610 is an electrodeless, low-pressure, high-density source of low-energy ions and free radicals for use in thin-film deposition processes. Applications include highly insulating films such as gallium nitride, defect reduction using hydrogen and providing oxygen for superconducting films.

The unit's small-volume ecr plasma discharge region is located at the end of the source tubulation, which minimizes the potential recombination of active species on the internal walls of the tube. The location of the microwave antenna on the atmospheric side of the quartz window provides an electrodeless plasma discharge area. Ambient gas cooling eliminates the cost and risk of water-cooled designs. The rare-earth magnet assembly provides 875 gauss for ecr and is easily removed for bakeout.

The MPDR 610 is sold as a package including a 3-cm discharge-plasma disk reactor with adjustable internal tuning assembly, quartz plasma disk microwave window, ecr magnet assembly and gas-distribution ring; a high-resolution, continuously variable, 300-watt, 2.45-GHz power supply; an interconnecting coaxial waveguide and an operations manual. The unit's total length is 21.0 inches, and its weight is 15 pounds.

Typical performance characteristics of the unit with an argon gas flow of 10 standard cubic centimeters per minute and pressure of 4.0×10^{-4} torr are a plasma ion density of $7 \times$

$10^{10}/\text{cm}^3$ at the discharge, with ion energy of 5 eV and ion current density of 5 milliamp/cm². *Wavemat, 44780 Helm Street, Plymouth, Michigan 48170*

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Tungsten-Halogen Calibrated Lamps

Oriel has introduced calibrated lamps that are useful for calibrating detector response or for irradiating samples with known power density and spectral distribution. The lamps are rated at 45, 200, or 1000 W and calibrated from 250 to 900 nm or from 250 to 2500 nm. Radiometric and



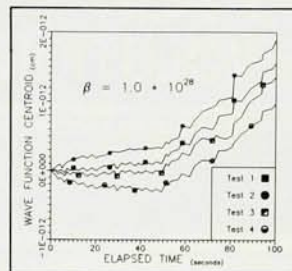
photometric calibration data and illuminance at 50 cm are provided with each lamp. Bench rod holders are available for the lamps. A stable, radiometric power supply runs the 45 and 200 W lamps, and a variable-voltage lamp controller operates the largest model. *Oriel, 250 Long Beach Boulevard, Stratford, Connecticut 06497; (203) 377-8282*

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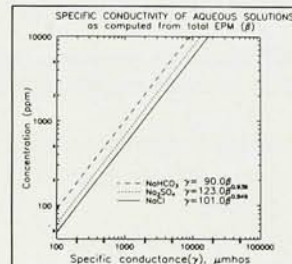
Noncontact Current Transformer for Beam Measurements

Wideband 3½-inch-ID current transformers that measure current in E beams and particle beams have been introduced by Ion Physics. The Series CM-XX-L-3.5 transformers come in three models. According to the com-

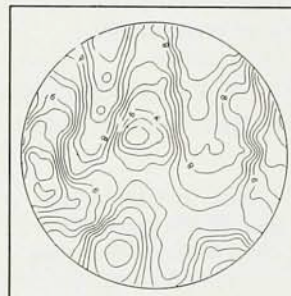
SCIENTIFIC GRAPHICS



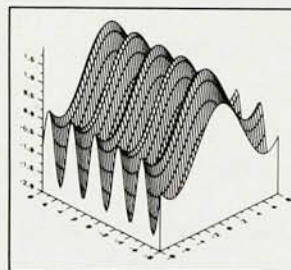
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pany, each can measure high ac and pulsed currents. As a group they provide high current-time product measurements covering 0.1Hz-18 MHz. The transformers' noncontact testing feature is said to eliminate ground loops and electrical interference. Available sensitivities are 1, 0.1, 0.01 and 0.001 V/amp; droop is less than 10%/sec; usable rise times (with less than 10% overshoot) are 15-100 nsec. The output voltage is a product of the device's current and the monitor's sensitivity. *Ion Physics, 11 Industrial Way, P.O. Box 1029, Atkinson, New Hampshire 03811; (508) 658-6030*

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All-Solid-State High-Power Pulse Generators

Directed Energy has released its SV-M series of high-power pulse generators. The generators feature an all-solid-state design and high-performance MOSFET arrays. They are available in 2-kV, 4-kV, and 6-kV models, which output 40 amps and offer rise times of 40 ns - 120 nsec, cw operation to 100 Hz (1-MHz burst), and variable pulse widths of 100 -



5000 nsec. Jitter is less than 100 psec.

Full protection against voltage or current transients and on-board fault diagnostics are provided. The SV-M generators are designed for driving magnetrons and other high-power tubes, magnets and large acoustic transducers. *Directed Energy, 2301 Research Boulevard, Suite 101, Fort Collins, Colorado 80526; (303) 493-1901*

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Scanning Auger Microscopy System

Perkin-Elmer's physical electronics division has introduced the Model 650 surface-scanning Auger microscope system. The system is designed to be used in characterizing the elemental and chemical composition of

surfaces and interfaces. The Model 650 is claimed to have high spatial and energy resolutions, an excellent signal-to-noise ratio and quantitative analysis capability.

The system combines an HP-Apollo 32-bit workstation and new-generation P-E software with windows. Windowing allows the user to have several software applications open on the screen simultaneously. Software for repetitive analysis without operator assistance is included; advanced data reduction and numerical analysis software is optional. *Perkin-Elmer, Physical Electronics Division, 6509 Flying Cloud Drive, Eden Prairie, Minnesota 55344; (612) 828-6100*

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High-Field-Strength Subcompact Magnets Are Superconducting

New superconducting solenoids from Cryogenic Consultants use tertiary metal-doped Nd₃Sn conductors to achieve high magnetic fields with minimal size, mass and stored-energy parameters. The compact solenoids can be accommodated by small (inside diameter of 200 mm or less) helium cryostats, with an accompanying reduction in helium costs. The winding process used to make the solenoids is said to ensure high stability in the persistent mode and fast ramping, which allows fields to be swept at 3 teslas/min. Magnets are available with a 53-mm bore, producing 15 or 16 teslas, and one with a 40-mm bore, producing 17 teslas. *Cryogenic Consultants, Metrostore Building, 231 The Vale, London W3 7QS, England*

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Dewar System for Testing up to Four Focal-Plane Arrays

The MTD-144 is a new dewar system from Lake Shore Cryotronics. The system features leadless chip-carrier configurations that enable simultaneous testing of up to four 68-pin focal-plane arrays. It can be loaded and unloaded in a clean-room environment. Only one cool-down cycle is required for the simultaneous testing of four devices, which reduces cryogen consumption.

The MTD-144 requires no transfer lines. Its 4-liter liquid-nitrogen reservoir can be filled in a central staging area and carried to a test station. An integrated pour-fill dewar reportedly cools the test chamber to liquid-

nitrogen temperature rapidly, with a hold time of 4-6 hours. Optical windows are positioned over each of the four interior leadless chip-carrier test locations. The test dewar can be rotated in 90° increments over a blackbody source for conducting flood illumination screening tests at each position.

The MTD-144 has 200 semirigid, 50-ohm micro-coaxial signal lines (50 lines per device) terminating in eight high-density, vacuum-feed-through connectors located on the base plate of the vacuum test chamber. *Lake Shore Cryotronics, 64 East Walnut Street, Westerville, Ohio 43081; (614) 891-2243*

Circle number 146 on Reader Service Card

Gas Valve for Control, Mixing and Calibrating

Vacua's new series MV-25 line of precision gas-metering valves is said to offer precise metering of He and other gases at rates as low as 1×10^{-9} std cm³/sec. The components of



the valves are made from low-vapor-pressure materials that permit baking to 225°C. In the closed position the MV-25 valves are guaranteed leak tight to a He leak detector sensitive to 5×10^{-11} std cm³/sec. *Vacua, P. O. Box 160, Bohemia, New York 11716; (516) 589-6464*

Circle number 147 on Reader Service Card

Card for High-Speed High-Density Wave Digitizing

LeCroy is offering the Model 6840 IEEE-583 card that performs high-speed, high-density waveform digitization. An analog-to-digital converter, trigger, time base, waveform memory and input-output interface are

built in. The card provides two channels of 8-bit digitizing at a 40 mega-sample/sec digitizing rate and 128K of waveform memory per channel. The Model 6840 is the first card in the company's Instrument-on-a-Card series. The series is said to provide the following features:

▷ High density: One standard rack-mount card crate will house up to 23 cards (46 channels).

▷ Flexibility: Mixing and matching, building-block style, is possible with any research-grade instruments available in IEEE-583 format.

▷ Multitrigger, multi-time-base operation: Independent and synchronized operations with a common trigger or a common clock are possible.

▷ Large waveform memories: The cards' 128K memories permit long signal sampling times.

LeCroy, 700 Chestnut Ridge Road, Chestnut Ridge, New York 10977-6499
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Multispectral Imaging for Auger Analysis

Krig Research is offering an interactive, multispectral imaging system for analyzing data from Perkin-Elmer's PHI 4300 and 660 multispectral Auger microprobes. The imaging capabilities come bundled with Krig's Picture Station-1000 image-processing system. According to the company, Picture Station-1000 processes gray scale and pseudocolor images having as many as 8192 × 8192 pixels. *Krig Research, 17919 Southwest Rigert Road, Beaverton, Oregon 97007*

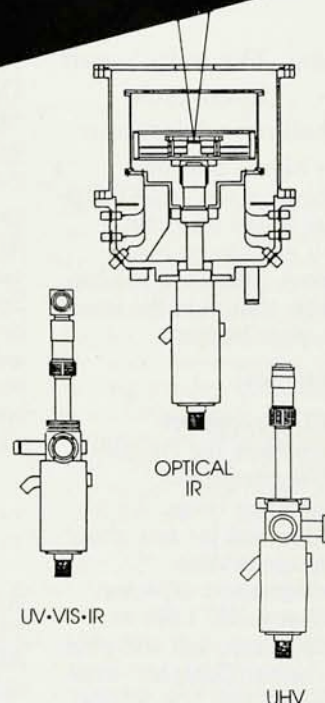
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Introductory Text on Cryogenics

A new 73-page booklet for scientists, students and laboratory personnel with little or no experience in cryogenics now is available from Janis Research. Its emphasis is on commercially available systems that operate between 1.5 K and 300 K. Topics include vacuum requirements, liquid-helium and -nitrogen dewars and variable-temperature cryostats, superconducting magnet systems, closed-cycle refrigerators, thermometry and temperature control and experimental cryogenic techniques. The text's 21 figures show several dewar and cryostat designs that are said to be a typical cross section of laboratory units for a wide variety of experiments. *Janis Research, Two Jewel Drive, P.O. Box 696, Wilmington, Massachusetts 01887-0696*

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CRYOGENIC RESEARCH SYSTEMS



Multiple Pin Cryotesting Systems (68, 100, etc.)

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