

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.

Video of Large-Scale Cosmological Structure

The Astronomical Society of the Pacific is offering a new videotape showing and explaining the surprising new maps of the large-scale structure of the universe emerging from extensive redshift surveys. The 8-minute video is narrated by one of the project's directors, Margaret Geller of the Harvard-Smithsonian Center for Astrophysics. After explaining the project, the video focuses on a dramatic computer-animated tour of the deep "slices" through the universe astronomers have mapped, and on the remarkable soap-bubble-like structures they have found.

The video (in VHS format) is accompanied by a nontechnical article about the CFA mapping project by Margaret Geller and an introductory bibliography on the origin and structure of the universe. The package costs \$32.95. California residents must add sales tax, and foreign orders must include \$3 for postage. *Astronomical Society of the Pacific, Galaxies Tape Order Department, 390 Ashton Avenue, San Francisco, California 94112*

Circle number 140 on Reader Service Card

Diamond-Like Carbon Film Deposition System

Samco's new plasma-enhanced chemical-vapor-deposition system, model PD-2D, is designed for the deposition of diamond-like carbon films ranging in thickness from 0.02 to 25 μm . The films are deposited using the rf self-bias method at 13.56 MHz. One can get a high substrate dc bias, exceeding 1.8 kV dc, with this reactor design.

The system is versatile: It can be used for deposition and anisotropic etching of diamond-like films, and also for substrate cleaning *in situ*.



Diamond-like carbon films can be deposited at high rates, up to 30 $\mu\text{m/hr}$, with good uniformity ($\pm 5\%$). The deposited films are hard, chemically inert, and they have a low coefficient of friction. Thus they are suitable for magnetic recording and other applications requiring resistance to wear and corrosion. *Samco International, 532 Weddell Drive, Suite 5, Sunnyvale, California 94089*
Circle number 141 on Reader Service Card

Polymer X-Ray Diffraction Software

The new GADDS (General Area Detector Diffraction System) package from Siemens Analytical X-Ray Instruments integrates the Siemens X-1000 area detector with new software that makes it a powerful polymer x-ray diffraction system.

The two-dimensional X-1000 area detector provides excellent intensity-distribution information covering up to 65 degrees of the 2θ solid angle in one setting. The sensitivity of the detector, coupled with the real-time color display of the GADDS software facilitates experimental setup and reduced data collection times.

The GADDS software can integrate any section of any diffraction pattern in 2θ or ψ . Pop-up menus let the user perform percent crystallinity calculations interactively on any section of the diffraction pattern. The GADDS files can be used by the Siemens

Cryo

QUALITY

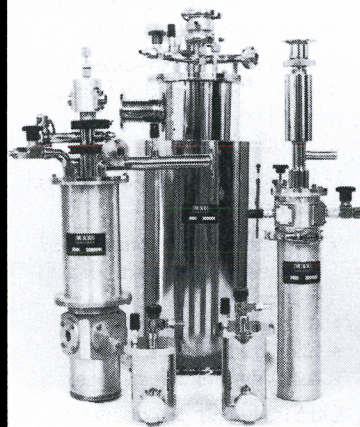
STEP

BY

STEP

BY

STEP



CUSTOM MANUFACTURE, DESIGN,
AND THEORETICAL ANALYSIS -
PERFORMANCE BY DESIGN.

FLOW CRYOSTATS AND CRYO
WORKSTATIONS

STORAGE DEWAR MOUNT
WORKSTATIONS

RESEARCH DEWARs AND
CRYOSTATS

LIQUID HELIUM TRANSFER LINES
HIGH VACUUM CHAMBERS
TEMPERATURE SENSORS
ELECTRONIC DIP STICK
CRYO CONTROLLER
DETECTOR DEWARs
PLUS MORE !!!!!

CRYO INDUSTRIES

of America, Inc.
11 Industrial Way
Atkinson, NH 03811
TEL: (603) 893-2060
FAX: (603) 893-5278

QUALITY CONSTRUCTION WITH
LOWER PRICES THROUGH
EFFICIENT MANUFACTURING.

Circle number 63 on Reader Service Card

Zoom In On Physics Online On STN!

In the PHYS database on STN International, more than 1.3 million records cover everything from the planets and computers to atomic energy research.

Produced by the American Institute of Physics and FIZ Karlsruhe, PHYS is the online version of *Physics Briefs*.

In PHYS, you'll find many special features:

- 30% of journal citations available within one month of publication date
- An online thesaurus
- Titles in English
- Astronomical objects indexed

On STN, qualifying academic institutions receive an 80% discount when searching PHYS. And, if you haven't searched PHYS before, you'll enjoy practicing in LPHYS, a learning file also available at a significant discount.

Zoom in on physics on STN!



**Marketing Dept. 34191
P.O. Box 3012
Columbus, OH
43210-0012
We'll rush your FREE
information packet.**



MRS Show—Booth #306

Circle number 64 on Reader Service Card

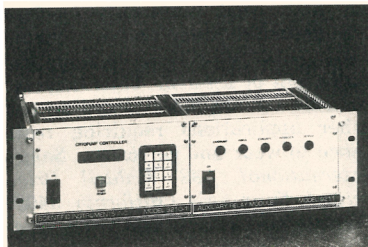
DIFFRAC AT and DIFFRAC 5000 powder diffraction packages. ASCII format is also available to facilitate file transfer to other systems. Off-line analysis can be run with the VGADDS software for VAXstation VMS operating systems.

GADDS or VGADDS can be configured to suit applications using a 3- or 4-circle goniometer, a sealed tube or rotating anode generator, a monochromator or mirrors. Other attachments are also available, including a helium-beam pathway and a low-temperature system. *Siemens Analytical X-Ray Instruments, 6300 Enterprise Lane, Madison, Wisconsin 53719*

Circle number 142 on Reader Service Card

Cryopump Regeneration Controller and Relay

Scientific Instruments has introduced its Model 9210/9211 cryopump regeneration controller with auxiliary relay module. The firm's Model 9210 has been mated with the Model 9211 auxiliary relay module, which com-



pletes the control loop by means of optically isolated solid-state relays. The solenoid output from the Model 9211 is provided in the form of a standard ac three-prong plug. Both the 9210 and 9211 are installed in a 19" rack mount, and they are suitable for retrofitting to existing cryopumps. *Scientific Instruments, 4400 West Tiffany Drive, Mangonia Park, West Palm Beach, Florida 33407*

Circle number 143 on Reader Service Card

Inexpensive Board for Cellular Automata

Automatrix describes its new CAM-PC as "the first single-board cellular automata machine for under \$2000." The CAM-PC is claimed to be the first mass-produced machine of its kind that can be installed on a standard platform. Designed as an add-in board for IBM and compatible personal computers, CAM-PC performs sim-

ulations, we are told, at speeds that previously could be achieved only with expensive workstations or supercomputers.

CAM-PC comes with an operating and development environment and an instructional textbook. In addition to dozens of debugged experiments that can be used for demonstrations or programming examples, the board is provided with software that simplifies the task of writing custom programs. CAM-PC and its graphics are designed to bring animated cellular automata to users of ordinary personal computers.

CAM-PC displays 256×256 cells on an ordinary tti color monitor. Cell states are indicated by color. Programs are stored in eight 64-kilobit lookup tables. The whole array is scanned, displayed and updated 60 times per second. The result is a smooth animation.

Cellular automata can simulate many physical phenomena. They are used to study lattice-gas models of fluids, materials science, statistical mechanics, diffusion and dispersion, granular flow and phase transitions. *Automatrix, PO Box 196, Rexford, New York 12148*

Circle number 144 on Reader Service Card

Fast Laser-Beam Diagnostic System

Photon Inc. has introduced its Beamgrabber laser-beam diagnostic system. It is designed for fast, accurate tuning of the laser cavity and assessment of the energy distribution of the optical beam.

Tuning has often required the use of power and energy meters and beam-image probes consisting of film, thermal paper, ir cards, phosphorescent plates or burn blocks. These approaches relegate assessment of beam distribution to subjective visual evaluation, and they are time-consuming.

Beamgrabber is claimed to provide a fast and consistent means of adjusting a wide variety of lasers. The system uses conventional camera technology for detection of pulsed and continuous beams. To insure consistent sampling, the camera heads have been re-engineered to linearize read-out across the entire detector. Digital signal processing permits nearly instantaneous capture and display of beams in gray scale or color-coded contour plots on the unit's built-in monitor, thus offering real-time visual feedback. Automated beam-tracking functions and measurement algorithms provide continuously updated,

NEW PRODUCTS

numeric beam values. *Photon Inc., 1115 Space Park Drive, Santa Clara, California 95054*
Circle number 145 on Reader Service Card

Fusing Zero-Expansion Glass Ceramics

Schott Glass Technologies can now fuse Zerodur, the firm's proprietary, transparent, zero-expansion glass ceramic. Zerodur has been used for 20 years in astronomical telescopes, ring laser gyroscopes and other precision instruments. The new fusion process makes it possible to fabricate lightweight mirrors and specialty components out of Zerodur that cannot be made using traditional machining techniques. Schott has fused parts of various shapes and sizes up to 400 mm. The company is equipped to fuse components with dimensions as large as 1.5 meters.

The fusion process proceeds in the same temperature-time cycle by which crystal growth is controlled, thus generating a glassy material with the zero-expansion characteristics of glass ceramic. All surfaces to be fused must possess a commercial polish, and they must match within tight tolerances. All precision finishing work should be conducted after the fusion process, because the material undergoes a 1% linear shrinkage and may show some slight plastic deformations. *Schott Glass Technologies, 400 York Avenue, Duryea, Pennsylvania 18642*

Circle number 146 on Reader Service Card

Low Frequency RF Amplifier

ENI's new Model 1140LA rf power amplifier produces up to 1100 watts of linear, Class B output over the frequency range 9 to 250 kHz. It is a suitable power source for ultrasonics, induction heating, laser modulation, plasma physics and many other applications.

Up to 1600 watts is available from 11 to 75 kHz. Extended range performance is possible with somewhat reduced output power and linearity. Along with a gain of 55 dB the new power amplifier offers advanced thermal- and mismatch-protection circuitry. A front panel meter displays output rf voltage levels as well as power output into the load.

The amplifier's solid-state design is claimed to provide a high degree of operational reliability. The integral power supply and its forced-air cooling system permit operation over a

wide range of temperatures and ac-line conditions. Proprietary fail-soft circuitry couples the output of a number of transistors, to prevent a total loss of power. The cost of the Model 1140LA is \$5445. *ENI, 100 Highpower Road, Rochester, New York 14623*

Circle number 147 on Reader Service Card

Ultrahigh-Vacuum Scanning Tunneling Microscope

Burleigh Instruments has introduced its new ARIS-6100 ultrahigh-vacuum scanning tunneling microscope system. The new system combines the features of ARIS-5100 with new improvements and features. The ARIS-6100 atomic-resolution imaging system includes Burleigh's open, modular uhv head, designed around the firm's Inchworm motor.

The systems digital feedback loop, controlled by a dedicated RISC processor, provides fast, intelligent control of the tunneling tip. The new model has an Intel 80486-based system controller. It incorporates Burleigh's spectroscopy software package. The new magnetic tip exchange system is an added feature on both systems. It allows the user to store up to five extra tunneling tip assemblies. *Burleigh Instruments, Burleigh Park, Fishers, New York 14453*

Circle number 148 on Reader Service Card

New Literature

Vacuum pumps—Leybold is offering an eight-page catalog of its Dryvac dry-compression vacuum pumps. It discusses oil-free pumps designed specifically for basic vacuum process, etching, semiconductor process systems and combination roots/dry-compression designs. All these pumps are available in three pumping capacities. The catalog include pump and system schematics, technical data, pumping-speed curves, sizes and ordering information. *Leybold Vacuum Products, 5700 Mellon Road, Export Pennsylvania 15632-8900*

Transformers—The new 88-page catalog (#2020) from Pico Electronics details over 3000 standard transformers and inductors. The dc-dc converter section describes 860 different standard and military models. These include ultraminiature high-voltage units up to 1000 V dc. Pico's new ultrathin AT Series requires no external components. *PICO Electronics, 453 North MacQuesten Parkway, Mount Vernon, New York 10552* ■

Physics and Nuclear Arms Today

Readings from *Physics Today*

Edited by David Hafemeister,
*U.S. Senate Foreign Relations
Committee and California
Polytechnic University*

The Physics Today Series

1991. 400 pages.

Hardcover. ISBN 0-88318-626-8.

\$95.00 list price/\$76.00 member price.*

Paperback. ISBN 0-88318-640-3.

\$45.00 list price/\$36.00 member price.*

Featuring the best articles on the nuclear arms race published in *Physics Today* over the past decade, **Physics and Nuclear Arms Today** presents a wide spectrum of opinion from the physicists and policymakers who have played key roles in the nuclear weapons policy debates. Eminent contributors (including Henry Barschall, Sidney Drell, Freeman Dyson, Wolfgang Panofsky, Andrei Sakharov, Edward Teller, Frank von Hippel, Spencer Weart, Victor Weisskopf, and Eugene Wigner) offer expert insights on nuclear testing, delivery systems, and environmental impact, and the agreements that are intended to limit weapon proliferation. Timely and comprehensive, this book is essential reading for both physicists and non-scientists alike who share a deep concern about escalating numbers of nuclear weapons.

Available at Select Bookstores!
Or Call Toll-Free 1-800-445-6638
(In Vermont 802-878-0315).

AIP American Institute of Physics
Marketing and Sales Division
335 East 45th Street • New York, NY 10017-3483

* Member rates are for members of AIP's Member Societies and are only available directly from AIP. To order books at member rates, please use the Toll-Free number.

Prices are subject to change without notice. 5/91

MRS Show—Booth #306

Circle number 65 on Reader Service Card