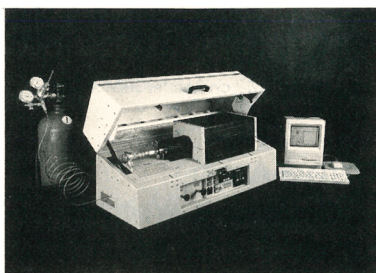


NEW PRODUCTS

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.

High-Pressure Oxygen Furnace for High- T_c Superconductors

Morris Research has introduced a new line of high-pressure furnace systems intended primarily for research in high-temperature superconductivity. The HPS-5015 system, the highest-performance unit of the new series, operates at pressures up to 1000 bar with temperatures up to 925 °C, and up to 1100 °C at lower pressures. The unit is designed for use with pure oxygen, but one can also use other gases such as nitrogen, hydrogen or argon. These are the only commercially available benchtop systems capable of attaining such pressures and temperatures with pure oxygen, we are told. An optional *in situ* resistivity probe is available. The probe options include a micro-ohmmeter, Macintosh-compatible interfaces, a computer, a printer and software.



These new furnace systems provide a convenient tool for exploring the pressure variable in the search for better superconducting cuprates. But other oxide materials, such as nonlinear optical materials, also can benefit from high-pressure O_2 , particularly to fill oxygen vacancies or to stabilize highly oxidized phases containing, for example, Pb^{4+} , Cu^{3+} or Pd^{2+} .

The Model HPS-5015 offers a large sample space (15 × 50 mm). It is a self-contained benchtop unit, requiring only a standard gas cylinder and

conventional electrical power. Features include rapid cooling capability and a continuous purge gas flow at high temperature. Temperature programming and data logging software, which is compatible with a standard Macintosh computer, are included. Optional accessories include alumina combustion boats and special insertion and removal tools.

The furnace is built of steel with a 16-mm impact-resistant Lexan interlayer and nonflammable copper liners. Redundant over-temperature and over-pressure safety systems are provided. *Morris Research, 1918 University Avenue, Berkeley, California 94704*

Circle number 180 on Reader Service Card

Wideband Power Amplifier for Magnetic Levitation

The new Model 264 from Copley Controls is a wideband, high-power pulse-width-modulation dc amplifier suitable for magnetic-levitation applications. It is particularly efficient (94%) for closed-loop excitation of inductive loads. The Model 264's low heat dissipation—characteristic of pulse-width-modulation technology when driving inductive coils—makes the amplifier suitable for magnetic lifting, positioning and motion control. The amplifier also functions as a high-stability, programmable bipolar dc power supply, a variable-frequency ac source up to 4 kHz, and a fast-rise function generator capable of delivering ± 250 amps at ± 330 V pulses. As many as 20 Model 264 amplifiers can be linked in parallel to provide almost a megawatt of wideband programmable power.

The Model 264 develops ± 330 V at ± 120 A continuous output and ± 330 V at ± 250 A peak. Its MOSFET output bridge develops bipolar power from a single-polarity 100–330-V dc supply. The amplifier's built-in dc-to-

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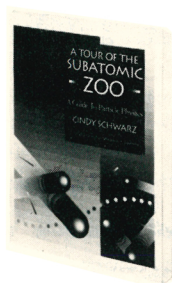
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dc converter develops the low internal operating voltages from this single-polarity dc supply. A separate 28-V dc supply is needed for fan-motor power.

Levitation applications of the Model 264 include adaptive magnetic bearings, vibration-neutralizing supports, active magnetic shock absorbers and the electromagnets used to support aerodynamic wind-tunnel models. *Copley Controls, 410 University Avenue, Westwood, Massachusetts 02090*

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Digital Signal Coprocessor Boards for PCs

Symmetric Research has announced the introduction of three new digital signal coprocessor boards that pack large amounts of memory for processing with personal computers. All three boards provide 32-bit floating-point performance. Symmetric Research includes an extensive software package with each system, so that users have everything they need to begin developing digital signal coprocessor applications.

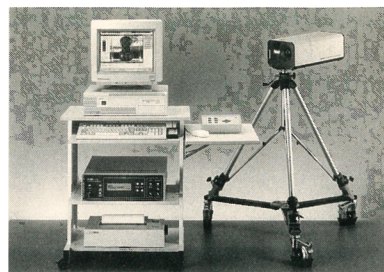
The new Model DSP-400 and DSP-MOD coprocessor boards incorporate 25-Mflop AT&T DSP32C central processors and large memory arrays. Their speed and their capacity for 8 Mbytes of zero-wait-state on-board memory suit them for applications, like image processing, that require large amounts of high-speed memory.

The two models are identical, except that the DSP-400 uses individual memory chips, while the DSP-MOD board employs memory modules. Both models are equipped with identical, high-speed 12.5-Mhz, 32-bit parallel ports that allow direct data transfers to the on-board memory without having to tie up the PC/AT bus. All application software will run on either system. Both boards sell for \$950. *Symmetric Research, 15 Central Way, Suite 9, Kirkland, Washington 98033*

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Scanning Laser Vibrometer for Acoustics and Solids

The PSV-100 scanning laser vibrometer from Polytec Optonics is a noncontact, full-field system for vibration measurement. Its applications include hearing research, acous-



tics, micromotors, the study of dynamical properties of solids and measurements requiring remote transducers. The PSV-100 offers a fast, convenient and high-resolution alternative to traditional methods without the need for added mass. The instrument includes a submilliwatt laser vibrometer, a built-in two-channel fast Fourier transform analyzer, a video system and proprietary software running under Microsoft Windows on a 486/50-MHz personal computer.

All operations of the PSV-100 can be remotely controlled from the personal computer. A video image of the test object is displayed on the computer's monitor to aid setup and interrogation of the results. The FFT analyzer computes the frequency spectrum at each measurement point. During scanning, magnitude and phase are recorded in as many as eight frequency bands. Operating deflection shapes are displayed in color for a variety of excitation conditions. Extensive postprocessing software is provided for data analysis and manipulation. The PSV-100 can do vibration pattern imaging, unidimensional modal analysis and nondestructive inspection. *Polytec Optonics, 23 Midstate Drive, Suite 104, Auburn, Massachusetts 01501*

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Large-Area Photomask Writing System

Terapixel, a Finnish firm, is using a novel HeCd laser beam exposure system to write photomasks with features as small as 3 microns over areas of 52×58 cm. Terapixel installed its second laser beam pattern generator system last October after a year of joint development with the Swedish firm Micronic Laser Systems. The system accepts mask design data in all major CAD formats.

Terapixel has two laser-beam mask writers, Models LRS-18 and LRS-55. The older-laser beam reticle writer, Model LRS-18, does integrated-circuit

NEW PRODUCTS

mask fabrication, and now Terapixel has installed the new LRS-55 large-area writer, which employs the same technology for large-area masks. A HeCd laser operating at 442 nm is used to expose a well-characterized optical photoresist. The etching of chrome masks is performed in an ammonium cerium nitrate solution originally developed for etching integrated reticles.

Large-area, high-precision masks are used to make displays, fine-line PC boards, hybrid circuits, tape-automated bonding and in various sensors and detectors. Submicron positional and overlay accuracies are available on Terapixel's chrome-on-glass mask plates (3 mm and 5 mm standard thickness). The minimum linewidth is 3 microns with a 1-micron design grid. *Terapixel, Olarinluoma 9, SF-02200 Espoo, Finland.* In North America, Terapixel is represented by *Microphase Laboratories, 2820-H Broadbent Parkway NE, Albuquerque, New Mexico 87107*

Circle number 184 on Reader Service Card

Software for Auger and ESCA Spectroscopy

R&D International has introduced a software package called Spectrum-Imagum for scanning Auger and ESCA spectroscopy. This PC-based system is capable of controlling most commercial analyzers. It includes an interface for Auger and ESCA spectroscopy, with a 16-bit digital-to-analog converter for energy ramp control, a 14-bit converter for analog signal input, a 32-bit TTL pulse counter and six logic inputs and outputs. The imaging interface has two 16-bit analog outputs (± 150 volts) for electron beam deflection and a programmable 8-bit analog input for secondary or ground-current measurement.

The integrated software can acquire up to 24 windows with 2048 channels each. It can also perform profile measurements of up to 24 peaks at 24 positions on the sample. All the usual data processing is available: Fourier transforms, smoothing, baseline subtraction, integration, differentiation, automatic peak fitting, linear combination of spectra and semiquantitative analysis.

The imaging software permits the acquisition of up to eight images in either the Auger, the secondary-electron or the ground-current mode. Images can be acquired in 256×256 , 128×128 or 64×64 pixels with 167 gray levels. Image acquisition is auto-

matic. The program calculates the appropriate gain and offset on the preamplifiers to obtain the best possible image contrast. *R&D International, 20 Camino Sobrante, Orinda, California 94563*

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Turbomolecular High-Vacuum Pump

Balzars has introduced its compact new TPH 1600 turbomolecular pump. With a rated pumping speed of 1500 liters per second and a compression ratio of 10^9 for nitrogen, the TPH 1600 is suited for industrial and large-scale research applications. A flushing-purge-gas connection with an integrated labyrinth sealing system lets the TPH 1600 be used in corrosive gas applications such as reactive sputtering, semiconductor production or plasma surface physics.

The new turbopump is the only pump of its size to have a magnetic bearing design, we are told. This removes the risk of harmful oil backstreaming. The maintenance-free magnetic upper bearing, as well as an easily serviced lower bearing, provide the user with virtually oil-free high-vacuum pumping.

The TPH 1600 is available with the standard TCP-380 power supply or with the new computer-controlled TCP-600, which provides faster pumping cycles and variable speed without throttle valves. This low-vibration turbopump can be flanged directly to the vacuum chamber in any position from vertical to horizontal, and it is protected from sudden air inrushes on the high-vacuum side. *Balzars High Vacuum, 8 Sagamore Park Road, Hudson, New Hampshire 03051*

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New Literature

Catalog—Canberra's new *Edition Nine Instrument Catalog* is now available. It features sections on applications and technical reference, detectors and accessories, modular electronics, multichannel analyzers, advanced spectroscopy systems and specialty instruments and counters. It also includes new products such as Genie-ESP, Genie-PC, the Alpha Sentry Continuous Air Monitor, the HT-1000 High-Throughput Alpha Beta Counter, a new series of ADCs, two new analog multiplexers, a new digital stabilizer and a new spectroscopy amplifier. *Canberra Industries, Sales Department, 800 Research Parkway, Meriden, Connecticut 06450-9983* ■

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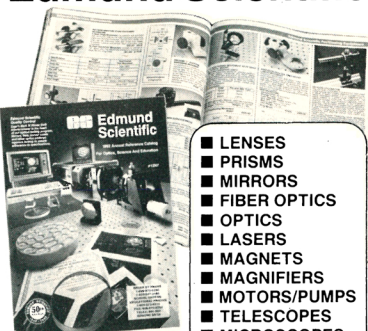
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