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.

Second-generation hypercube computer

Intel Scientific Computers has introduced its second-generation hypercube—the iPSC/2 family of concurrent supercomputers. New hardware and software developments make them much simpler to program and up to ten times faster than the firm's first-generation hypercubes. These high-speed parallel computer systems are intended for large-scale scientific and engineering applications.

Standard iPSC/2 systems are available in configurations with 16 to 128 processing nodes, with up to a gigabyte of memory. Vector concurrent iPSC/2 VX systems, with a vector arithmetic accelerator at each node, are also available in configurations of up to 64 nodes, with peak performance of more than 400 megaflops. The iPSC/2 system features "direct connect" routing, an innovation in message passing that overcomes a fundamental constraint of hypercube-based computers: mapping the problem to the architecture. Direct-connect routing lets programmers ignore the hypercube interconnections and use all nodes as if each were connected to all others. This routing scheme is based on Intel and DARPA cosponsored research at Caltech.

VLSI technology is the basis of the new iPSC/2 nodes—each features a 4-MIP 80386 and 80387. Surface-mounted 1-Mbit dynamic RAM modules provide from 1 to 16 megabytes of memory per node. A static RAM cache and a router built with CMOS gate-array logic complement the node's high-speed processing technology. Direct-connect routing reduces message delays by a factor of three and increases message speeds by a factor of ten. A 32-node iPSC/2 VX system executes fast Fourier transforms at 154 megaflops. *Intel Scientific Computers, 15201 NW Greenbrier Parkway, Beaverton, Oregon 97006*

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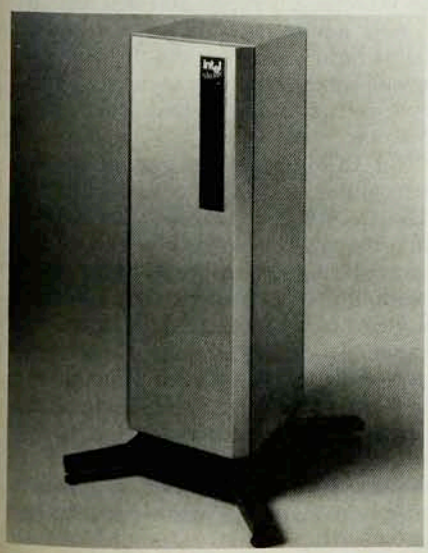

Sputtering systems for deposition from powders

CVC Products is offering sputtering systems and accessories that can conveniently sputter from powders and granules. One simply places the material on the target electrode in a shallow dish. Power is ramped up slowly in a curing cycle to fuse the material, and sputtering can begin.

Sputtering from powders permits easy composition adjustment for process optimization in materials research. Among the powders that can be used in the system are zinc sulfide, yttrium oxide, indium oxide, tin oxide and indium–tin oxide mixtures. Thus, for example, one may be able to use the system in studies involving deposition of the new high-T_c superconductors.

The CVC 810 sputtering accessory can be mounted on the base plate of an existing evaporator to provide "sputter up" deposition. The CVC 601 and 601

new products

Lid Lok sputtering systems offer equipment capable of deposition from powders. *CVC Products, 525 Lee Road, P. O. Box 1886, Rochester, NY 14603*

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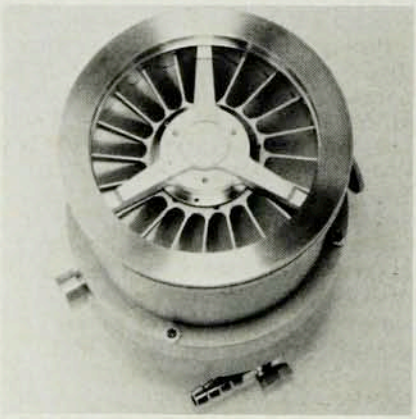
Turbomolecular pump with low vibration

Balzers has introduced a compact turbomolecular pump well suited for vibration-sensitive ultrahigh-vacuum applications such as electron microscopy and mass spectrometry. To minimize friction, vibration and wear, this new Model 240 turbopump has a permanent magnetic bearing for upper rotor support and a precision ball bearing for lower rotor support. The pump reaches full operating speed in about a minute. Its maximum vibration amplitude is less than 0.01 microns. The theoretical pressure limit is less than 10^{-10} torr.



The Model 240 provides pumping speeds of 230 liters/sec for air and 240 liters/sec for helium, with a 30 000:1 compression ratio for helium. The turbopump weighs only 17.6 lbs. The bearings can be lubricated without removing the pump from a system, and the pump can be cooled with air or water; it is available with either ISO or CF flanges. The price of the Balzers Model 240 turbopump is $5000. *Balzers, 8 Sagamore Park Road, Hudson, New Hampshire 03051*

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Test system for high-T_c superconductors

Quantum Technology tells us it has developed a system optimized for rapid testing of samples of high-temperature superconductors. It takes only 3 minutes to measure the resistivity-versus-temperature curve of a sample from 300 K to 2.8 K. Resistivity may be measured electrically with dc or ac, or magnetically by the Meissner effect. One can also measure the magnetic field dependence of the critical temperature.

The test system is based on the firm's Quantumcooler closed-cycle cryocoolers. A dip-tube sample access well filled with helium gas allows samples to be inserted or removed in a few seconds without vacuum pumping. The closed-cycle system consumes no liquid nitrogen or liquid helium. The firm offers systems with calibrated temperature sensors, temperature controllers, and sample holders complete with electrical connections. The voltage and temperature outputs can be connected to an x–y recorder. Computer interfaces and optical access options are also available. *Quantum Technology, 6237 148th Street, Surrey, British Columbia, Canada V3S 3C3*

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High-peak-power pulsed dye laser

Laser Science has introduced a compact, high-peak-power pulsed dye laser with twice the pulse energy of its previous models. The new Model DCM-4 dye laser has a stirred cuvette. It is designed to be used with the company's VSL-337ND nitrogen laser and other higher-power pulsed laser sources. The stirred configuration, we are told, provides excellent beam quality at higher pulse energy. When paired with the VSL-337ND, the DCM-4 gives the option of either visible or ultraviolet output. It is tunable by means of a grating, and has a direct wavelength readout. Used with the VSL-337ND as the nitrogen pump source, the dye laser covers the wavelength range 360–900 nm. It is well suited for use as a tunable visible-light source for chemical or biological analysis, fluorescence microscopy, cell stimulation and other spectroscopic applications.

The DCM-4 can put out up to 50 microjoules when pumped with the VSL-337ND. Over 20 dyes are available to cover the visible and near-infrared range. The dye is contained in a standard 1-cm cuvette, with a holder designed to keep the cuvette in precise alignment. The absence of flowing dyes in the DCM-4 makes it attractive for instrumentation, research and teaching. The grating drive is a fine micrometer. The unit comes with a 2400-groove/mm holographic grating for operation in the first-order Littrow configuration, but an alternative 1200-

groove/mm grating is available. *Laser Science, 80 Prospect Street, Cambridge, Massachusetts 02139*

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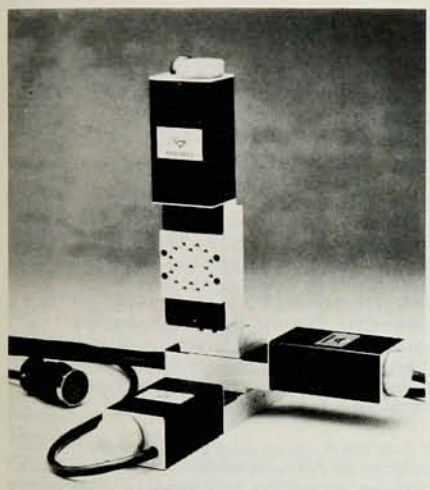
Motorized linear positioning stages

Aerotech's ATS50 series of linear stages are claimed to offer superior positioning performance in compact units priced substantially lower than comparable models. The stages have an 8″×2″ footprint (including motor) and a 1.06″ tabletop height. They feature noncontact limit switches, 0.1-micron home reference and 0.1-micron resolution. Unidirectional repeatability is better than 0.6 micron, we are told, and end-to-end accuracy is within 2.5 and 5 microns, respectively, for Models ATS50-25 and ATS50-50. The prices, including integral stepping motor and output cord, are $1645 for the ATS50-25 (25-mm travel) and $1735 for the ATS50-50 (50-mm travel). *Aerotech, 101 Zeta Drive, Pittsburgh, Pennsylvania 15238*



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Single-wafer ion beam etching system

Commonwealth Scientific offers a new ion beam etching system. This versatile single-wafer, load lock system permits rapid sequential processing of substrates with diameters up to 3 inches and is capable of producing submicron etch features. Direct water cooling is used on the load lock stage. A multichannel mass-flow controller allows one to use combinations of process gases to achieve inert beam etching with aspect ratios of up to 5:1, and enhanced etch rates, selectivity and aspect ratios with reactive and chemically assisted ion beam etching, all the while maintaining good directionality, we are told.

The system includes a substrate shroud and gas injection ring to optimize gas density and uniformity, and a Meissner trap to maintain optimum pressure and minimize exposure of the ion source to reactive gases and etch products. This system is said to be well suited for optoelectronics, infrared sensors, optical gratings, hybrid microwave devices, and materials such as gallium arsenide, dielectrics, magnetic thin films and crystal oscillators. *Commonwealth Scientific, 500 Pendleton Street, Alexandria, Virginia 22314*

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High-energy ion implantation systems

High-energy ion implantation systems are now available from High Voltage Engineering Europa. Two models cover energy ranges of 100–1000 keV (1 MV model) and 200–2000 keV (2 MV model), using singly charged ions.

The heart of each system is a single-ended accelerator with an ion-source exchange system, a pre-analyzing Wien filter and an accelerator tube with magnetic suppression. Three types of ion sources provide a multitude of ion species.

An ability to handle multiply charged ions makes the system suitable for ion-beam analysis techniques. The firm offers a comprehensive range of beam lines and end stations. *High Voltage Engineering Europa BV, P. O. Box 99, 3800 AB Amersfoort, The Netherlands*

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High-field, stabilized superconducting magnet

Cryogenics Consultants Ltd has developed a new high-field superconducting magnet, the Model 12T53H3, for research into the new high-temperature superconductors. The magnet is a stabilized persistent-mode solenoid, using advanced niobium–tin technology with epoxy resin impregnation. It is available either separately or incorporated into a complete system, Model 12T53H3-S, consisting of the solenoid, cryostat, power supply and instrumentation. *CCL Systems, Box 416, Warwick, NY 10990*

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