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.

Optically Pumped Titanium–Sapphire Infrared Laser

LSDI has introduced an inexpensive, compact titanium–sapphire laser. The Model TS-101 is an optically pumped solid-state laser incorporating features generally found only on more expensive titanium–sapphire lasers, we are told.

This new laser has a very broad tuning range, from 700 to 1000 nm in the infrared. Its applications are correspondingly diverse. The TS-101 employs a composite graphite stabilized resonator, a Neoc prism dispersing element and a direct optical pump interface. Mechanical tuning is standard, but a microprocessor-controlled tuner is offered as an option, as is a line-narrowing element. *Laser Systems Devices, 5645-E General Washington Drive, Alexandria, Virginia 22312*

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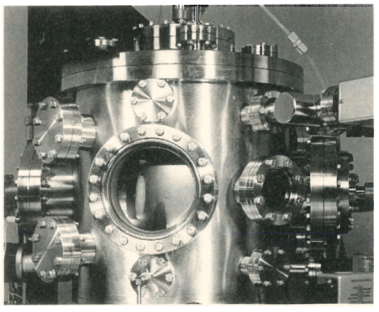

Deposition Chamber for High-Temperature Superconducting Films

Conductus is now offering to sell duplicates of the deposition chambers that the firm uses in research and development to make both high-T_c superconductor single-layer films and multilayer devices. One can have either an off-axis sputter deposition chamber or a laser ablation chamber.

These chambers include internal fixturing, feedthroughs, top plate and two substrate heaters that can go up to 950 °C in oxygen. These chambers can also be used to deposit many other materials, including epitaxial oxides and metals.

The sputtering chamber includes one or two 3″-diameter magnetron sputter guns that have been accurately positioned for the chamber's off-axis geometry. The laser ablation chamber includes a rotating multitarget holder that can be positioned to accommodate a variety of laser and optics setups. The rotating target assembly, which is also offered separately, holds six 1″-diameter targets, allowing for *in situ* multilayer growth.

A pumping station with gas handling capability is needed to complete the system. *Conductus, 969 West Maude Avenue, Sunnyvale, California 94086*

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Digital Pulse Processing for Spectroscopy

Target Inc, in conjunction with the German firm Target Systemelectronic and the Forschungszentrum Jülich, have introduced what they describe as "the first truly digital pulse-processing system for spectrometry." The TMCA pulse processing analog–digital converter was developed to evaluate the use of digital signal processing techniques in modern high-resolution spectrometers using large germanium detectors. Calculations indicated that the performance of a pulse-processing system based on a newly developed moving-window deconvolution method would be far superior to that of the gated integrator with respect to count rate, ballistic deficit suppression and toler-

ance of low-frequency interference. First experimental results obtained from a prototype TMCA pulse-processing ADC show agreement with these predictions.

The TMCA pulse-processing ADC is produced in a single-width NIM module. It requires no more power than conventional NIM ADCs. It accepts positive or negative inputs from charge-sensitive preamplifiers and interfaces to AT-compatible computers via one port of the firm's TMCA2 card. The TMCA pulse-processing ADC is compatible with the firm's other multichannel analyzer systems and products for the PC. *Target, PO Box 4505, Oak Ridge, Tennessee 37831-4505*

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Optical Software for Stray Light and Radiometry

The new Guerap V software from Lambda Research is a versatile modeling package for stray light analysis, for radiometry and for predicting radiation transfer in optical systems. It traces real rays and includes the effects of scattering, diffraction and absorption as well as reflection and refraction to predict irradiance patterns. It is suitable for analyzing stray light in telescopes and other optical systems, for examining radiometry in systems containing scattering elements, and for doing nonsequential ray-tracing.

The Guerap V software can also be used for modeling integrating spheres, light concentrators and other nonimaging devices. The system is completely menu-driven, and it includes graphical display of propagation paths and irradiance distributions. *Lambda Research, PO Box 550, 274 Main Street, Groton, Massachusetts 01450-0550*

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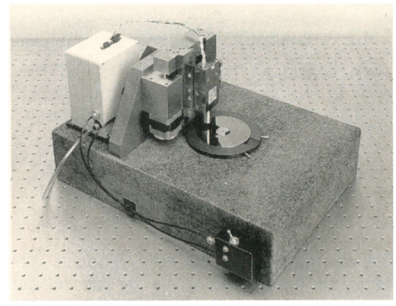
Manual Scanning Probe Microscope with Large Stage

Digital Instruments is offering its new manual large-sample-stage scanning probe microscope. This microscope provides high resolution for the examination of large samples. It is compatible with the firm's tunneling microscopes. This new instrument can inspect the entire surface of an 8-inch sample with 1-angstrom vertical resolution.



Samples are mounted on a vacuum chuck that is manually positioned under the scanning probe microscope. The engagement of the tip to the sample is done automatically. The new manual large-sample-stage instrument is priced in the range of Digital's small-sample atomic force microscopes. *Digital Instruments, 520 East Montecito Street, Building B, Santa Barbara, California 93103*

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Corrosion Studies with Scanning Reference Electrode

EG&G PARC has added a new system, the SRET, to its extensive line of equipment for corrosion studies. Modular and compact, the SRET uses a scanning reference-electrode technique to measure microgalvanic potentials on the surface of materials. The probe performs its high-resolution surface scans under microprocessor controls.

This new technique makes possible *in situ* examination of corrosion processes on a microscopic scale as they occur. In the past, we are told, the use of a reference electrode required that the specimen be removed from the electrolyte for examination. This prevented ongoing observation of the corrosion process.

Specific applications include the study of pit initiation and development, de-alloying, surface coating characteristics, and corrosion under hydrodynamic conditions. One can also study passivated finishes, stress corrosion and the effects of surface finishes on corrosion initiation.

In operation, the surface scan is synchronized with a video display. Data are shown in the form of line-scans, area maps and three-dimensional or color models. One can also make direct measurements of surface potential at discrete positions on the sample. Functions of the system's DOS-compatible software include precise probe positioning and rotation control, default settings and recall of

experimental parameters for repeat operation, and a sampling function for zoom capability. *EG&G Princeton Applied Research Corporation, Electrochemical Instruments Division, PO Box 2565, Princeton, New Jersey 08543*
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Digital Signal Processing Expansion Board

Tucker–Davis Technologies has introduced its new AP2 array processor card, an expansion board for digital signal processing on AT bus machines. The AP2 provides a flexible signal processing system that reduces software development and laboratory setup time. The card features a high-speed, noiseless fiber optic line to 30 modular signal processing components. With many choices in analog input/output and front-end instrumentation, the firm can configure individual systems to meet specific user needs. Tucker–Davis stresses its applications in acoustic and auditory research.

Employing AT&T's DSP32C floating-point processor, the AP2 runs at 50 MHz, providing a peak performance of 25 megaflops. The DSP32C is surrounded by 512 kilobytes of fast SRAM memory for program and data processing storage and an additional 8 megabytes of DRAM memory for general purpose data and input/output signal storage. This unsegmented 8.5-megabyte memory bank can store 4 million samples.

A 12.5-megabit/sec noiseless fiber optic interface links the AP2 to a system of external signal processing modules. A variety of analog–digital conversion options is available, including a 200-kHz, 20-bit DAC with two channels and a 500-kHz, 16-bit ADC with 128 input channels. The AP2's array-processor operating system provides a high-level language interface between the AP2 and the popular PC compilers. It has over 100 functions for the development and execution of signal processing applications, including double buffering and data handling procedures for real-time signal processing and simultaneous analog–digital conversions.

AP2 prices start at $1600 for a board with 256 kilobytes of SRAM with zero wait state, optical interface and software. The full 8.5-megabyte configuration costs $2550. The AP2 is also available with AT&T's DSP32C support software library and C language compiler. *Tucker–Davis Technologies, 4639 NW 6th Street, Suite A, Gainesville, Florida 32609*
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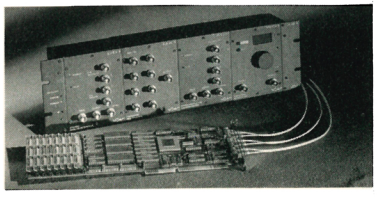

Fast Multichannel Scaling with a Personal Computer

The new Turbo-MCS multichannel scaling hardware from EG&G Ortec is designed to turn a personal computer into a very fast multichannel scaler. It lets the user acquire data at input rates up to 150 MHz, with dwell times as short as 5 ns. Turbo-MCS is intended for demanding multichannel scaling applications and multiple-stop time-of-flight measurements. Applications include time-of-flight ion mass spectrometry, time-correlated single-photon counting, laser-induced chemical reactions, fluorescence lifetime measurements, Mössbauer experiments, neutron time-of-flight measurements and scanning x-ray diffractometry. All instrument controls and spectra are displayed for quick, point-and-click manipulation by mouse.

The Turbo-MCS hardware offers a wide range of channel dwell times, with no deadtime between channels. Scan lengths range from 4 to 16 384 channels. A single-channel analyzer input permits selection of a narrow band of pulse amplitudes for counting. A separate input discriminator accepts signals of either polarity for counting, with a threshold adjustable from -2.5 V to $+2.5$ V. Turbo-MCS also offers an optional ramp output with adjustable modes and voltages. *EG&G Ortec, 100 Midland Road, Oak Ridge, Tennessee 37831-0895*
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New Literature

Photonics—New Focus is offering its new 1993 catalog. The 53-page color catalog includes lasers, detectors, modulators, positioners and supporting instruments for researchers and optical equipment manufacturers. There are technical notes on using ultra-high-speed photodetectors, choosing the right detector, making fiber optic connections, using modulators electro-optic and improving mechanical stability. *New Focus, 340 Pioneer Way, Mountain View, California 94041* ■