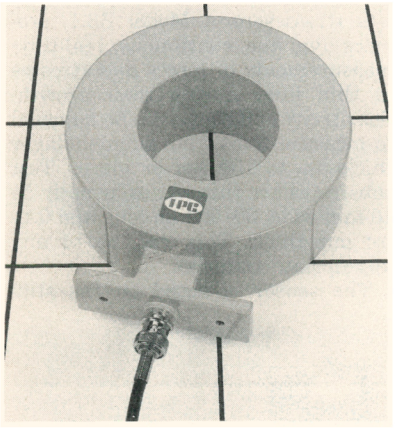
NEW PRODUCTS

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.

Wideband Current Monitor for High-Current Conductors

A new, low-cost, wideband current monitor from Ion Physics can measure 1 MA at 50 Hz with 0.5 mV/A sensitivity. The Model CM-005-P-2 provides a 2-inch opening for non-contact, high-current conductor measurements. It has an rms current



rating of 100 kA, a low-frequency cutoff of 5 Hz and a high-frequency cutoff of 5 kHz. The electrostatically shielded current monitor provides an output voltage that is proportional to the current and the monitor sensitivity. The compact device has an outer diameter of $5\frac{1}{2}$ inches and an inner diameter of 2 inches. It is $2\frac{1}{4}$ inches thick. *Ion Physics, 11 Industrial Way, P.O. Box 1029, Atkinson, New Hampshire 03811.*

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Scopes for Viewing Within Vacuum Chambers

Olympus has introduced a new line of rigid and flexible scopes that provide magnified video images inside vacuum chambers. The rigid scopes work in a vacuum as low as 10^{-6} torr and are available off-the-shelf. The flexible scopes handle vacuums as low as 10^{-9} and are custom-made. Scope images can be viewed directly or displayed on a TV monitor; Olympus provides a video analyzer, Model VA-2, with menu-driven software for extensive image enhancement, analysis and storage. The Olympus SC35 camera, which is specially designed for borescopic use, is available for photographic documentation.

The rigid scopes have a lens relay system to bring images from the objective lens to the eyepiece. The working lengths of the rigid scopes are from 240 mm to 960 mm. The scopes provide their own illumination through a fiberoptic light guide. Light sources available are white or ultraviolet or light strobe illumination. Viewing directions are 0, 45, 90 or 100 degrees; viewing fields are 10, 30 or 55 degrees. A gimbaled access port allows the operator to move the probe in a 20 degree arc to either side of the centerline and also in and out within the chamber.

The flexible scopes are equipped with a 25-mm-diameter special sleeve and allow four-way articulation at the tip. Images are relayed by a fiberoptic image bundle or generated by a color CCD chip on the distal tip. Illumination is transmitted by a fiberoptic light guide. Working lengths are from 700 mm to 6 m. Viewing direction is 0 degrees; the fields of view, available through optical tip adapters, are 10, 20, 40, 60 or 80 degrees. *Olympus Industrial Fiberoptics, 4 Nevada Drive, Lake Success, New York 11042.*

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10-kV Pulse Generator With Multirange Driver

Instrument Research is offering its Model 994A, a new 10-kV pulse generator with a multirange driver that

develops smoothly variable pulses with peak power up to 10 kW, duty cycles as high as 1% and pulse widths from 1 μsec to 1 msec. The driver operates in single-shot, triggered, delayed and gated modes.

The 994A incorporates such safety features as a "dead-front" automatic discharge on shutdown; an external, high-voltage lock-out circuit; zero interlock on the amplitude control; automatic shutdown for output overload; and integral monitoring terminals for pulse current and attenuated pulse voltage. According to the company, the pulses exhibit no ringing or overshoot. *Instrument Research, P.O. Box 2729, Columbia, Maryland 21045.*

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Low-Cost Scanners for Extended-Range Air Microscopy

Park Scientific Instruments has announced three new interchangeable scanners. The units use air scanning-tunneling microscopy or scanning force microscopy to provide three-dimensional ultrahigh-resolution surface microscopy of features measuring only tens of microns. Definition capability of the three units is 75 μm lateral, with a 7-μm vertical range; 35 μm lateral, with a 4.5-μm vertical range; and 2.5-μm lateral, with a 1.1-μm vertical range. Only one scanner is required for air scanning-tunneling or scanning force microscopy because the instruments share a common base, which houses the scanner. *Park Scientific Instruments, 476 Ellis Street, Mountain View, California 94043.*

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Fourier Transform Spectral Radiometer

Bomem has introduced new models of spectral radiometers to complement its line of field Fourier transform spectrometers for emission measurements. The models are based on the Michelson MB series of FT-IRs, which are rugged, permanently aligned modules. They are offered in the spectral ranges covering 0.75–3 μm, 0.75–22 μm, 2–28 μm or 2–50 μm. Their resolution is constant in wave numbers and is selectable from 1–128 cm^{-1}. The manufacturer claims they offer higher accuracy, spectral resolution and sensitivity compared with variable filter systems.

The MB series interferometer is based on a four-port design, which permits optical subtraction of two input beams at one output port or use of two detectors that receive complementary signals, permitting intensity-variation correction during measurement.

A wide selection of accessories is available, including telescopes for various field-of-view definitions, detector optics for radiometric accuracy or speed, prealigned detector modules and calibration tools. Typical applications include emissivity and atmospheric transmission measurements (pollution monitoring, greenhouse-gas tracking). The systems can be operated from aircraft and other moving platforms. *Bomem, 450 Avenue Saint-Jean-Baptiste, Québec, Canada G2E5S5.*

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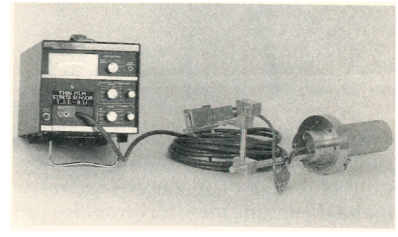
In Situ Thin-Film Dynamic-Stress-Measuring Instrument

T. Jayne's new UHV-compatible *in situ* stress sensor, Model R3.1, provides dynamic, continuous, real-time measurements of forces and stresses in thin films during their growth. Sensitivity and range can be adjusted to measure films from submonolayer thickness to 100 nm or more. Test substrates are thin plates, usually 5–10 mm wide, 30–50 mm long and 0.1–0.4 mm thick. They can be of any appropriate material.

The sensor is based on the stiff-



cantilever design. It is intended for investigating mechanisms of aging, service-induced changes, environmental interactions, corrosion, overloading and damage modes. Noncontact optical sensing of plate deformations is used with low-interference fiber-optic transmission of signals through the process chamber wall.

The R3.1 has a standard feed through on a 4.5-in CF flange; options for other feed throughs are offered. Film-thickness and thermocouple instrumentation is available, and single-port operation can be supplied. *T. Jayne Instruments, 10234 Johnnycake, Painesville, Ohio 44077-2055.*

Circle number 145 on Reader Service Card

Large Solid-Angle-Capture Photomultiplier

Thorn EMI Electron Tubes has developed a new photomultiplier for detecting light over a large solid angle. The 9351, with its 200-mm (8-inch)-diameter-hemispherical bulb shape, offers an effective photocathode area of 540 cm^2 with a typical quantum efficiency of 30% at 400 nm. The unit has high anode-counting efficiency, low transit-time jitter and good linearity. The use of CsSb-coated dynodes ensures high-gain stability and gives well-defined single-electron resolution.

The 9351 is intended for such applications as large-volume water Cerenkov detectors. The bulb is designed to withstand the pressure associated with such applications, yet has relatively low mass. A special low-background glass reduces dark counts and unwanted signals. *Thorn EMI Electron Tubes, Bury Street, Ruislip, Middlesex, England HA47TA.*

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Statistical Analysis Data Management Software

Systat has released Version 5.0, a comprehensive statistical-analysis, data-management and graphics software package that runs on IBM-compatible PC/ATs with 640K RAM and a hard disk. The software integrates graphics and analysis procedures through its heirarchical menu-driven interface. A command window can be accessed at any time for editing commands, and help messages are available throughout the menus. All graphics procedures support color output, with default settings by the user.

In addition to standard graphs, plots, bar charts, histograms and scatter plots, the software features spherical mapping; dot plots that display densities; arrow or vector plots for fluid flow and other problems; and weathervane plots. Systat offers a spinning procedure for depicting data in 3-D space. The software handles scientific equations, and other specialized typesetting. It has its own device drivers for standard printers and output devices.

Statistical improvements include enhanced model estimation and hypothesis testing. Stepwise regression output now has options for forward, backward and interactive stepping. Additional hypothesis tests include an intuitive method for arbitrary contrasts of effects or means and new post-hoc methods, which are now automatic with one-way or factorial designs. Systat 5.0 can analyze 125 to 250 variables, depending on procedure. Four revised manuals—*Getting Started, Data, Graphics,* and *Statistics*—are included. *Systat, 1800 Sherman Avenue, Suite 801, Evanston, Illinois 60201.*

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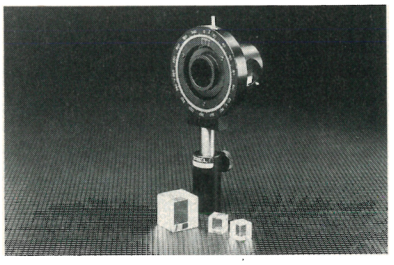
Polarizing Beam-Splitter Cubes

Oriel has announced a line of polarizing beam-splitter cubes, including single wavelength and broadband models, for the most commonly used visible to near-infrared laser wavelengths. The cubes' extinction ratio is



less than 10^{-4}; cube throughput of the p-polarized beam is greater than 95%. The cubes are available in 0.25, 0.5 and 2.0-inch sizes and can be unmounted or mounted in cylindrical holders for ease of handling. *Oriel, 250 Long Beach Boulevard, Stratford, Connecticut 06497.*

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New Literature

Vacuum components—HPS has a new catalog covering its VacuComp Series 31 ISO-KF vacuum components. The catalog includes part number cross references, technical data, dimensions and prices. The revised and expanded catalog contains more than 400 ISO standard vacuum components ranging in size from 0.5 inch to 2.0 inch. The components provide a modular building-block system for rapid assembly, disassembly and interchangeability. All components are made to international standards and include flanges, elbows, crosses, tees, flexible metal and PVC hoses, bellows, feedthroughs and adapters to other sizes and flanging systems. Fittings are available in stainless steel, aluminum and brass. *HPS, 5330 Sterling Drive, Boulder, Colorado 80301.* ■