

New Product! 1.7K Closed Cycle Cryostat

www.arscryo.com

1.7K

Applications:

Low Heat load

X-ray diffraction

Neutron Scattering

Non-optical



- Closed Cycle Displex System with Open cycle Joule Thompson circuit.
- Continuous operation at 1.7K (no hold time cycling)
- No orientation limitations
- Designed to fit on a Huber Cryostat Carrier. Minimal blind segment.

System Components:

- Displex DE-202 with compressor and helium flex lines
- Vacuum Shroud, Radiation Shield per user requirements.
- Temperature control sensors and heater.
- Sample environment is static helium exchange gas.

**Advanced Research
Systems, Inc.**

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www.arscryo.com

new products

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers. PHYSICS TODAY can assume no responsibility for their accuracy. For more information about a particular product, visit the website at the end of the product description.

Lawrence G. Rubin

Focus on magnetics and electromagnetism

Thermal design of electric motors

Magsoft Corp has announced Motor-CAD version 3, a software package for exploring the thermal design of electric motors and generators. The new release, co-developed with Motor Design Ltd of Shropshire, UK, offers a range of improved interface, simulation, and post-processing technologies. Motor-CAD v3 includes the following machine types: brushless permanent magnet motors with and without an outside rotor, brush pm motors, single- and three-phase induction motors, switched reluctance motors, synchronous generators, and claw-pole generators. Enhancements in the new version include a water-jacket capability in both the slot and rotor regions, strategic fixed-temperature injection points, and multiple layout options for the housing fins. Users also can customize the format of their transient solution data. *Magsoft Corporation, 20 Prospect Street, Ballston Spa, NY 12020, <http://www.magsoft-flux.com>*
See www.pt.ims.ca/9468-131

RF booster amplifier

AR Worldwide Modular RF has added the KMW1032HP, a dual-purpose, high-power version of the basic single channel ground and airborne radio system-only model, which was introduced as part of a line of KMW1030 booster amplifiers for military tactical radios. The new model is a portable, waterproof, automatic band-switching RF booster amplifier that covers the 30- to 108-MHz frequency band. It can be used

as a 20-W manpack unit or vehicle-mounted with an RF vehicle cable that boosts its output power to 40 W. The unit can be operated from two BA5590 batteries or vehicle power. The KMW1032HP includes voltage spike suppression, RF sensing, transmit/receive switching, automatically switched harmonic filters that ensure acceptable harmonic distortion levels, and protection against antenna mismatch and over-temperature. *AR Worldwide Modular RF, 11807 North Creek Parkway South, Suite 109, Bothell, WA 98011, <http://www.ar-worldwide.com>*
See www.pt.ims.ca/9468-132

Polarizer for NMR

Oxford Instruments Molecular Biotoools has introduced HyperSense, a dynamic nuclear-polarization polarizer capable of amplifying the signal-to-noise ratio of NMR systems by a factor up to 10 000 for 1D NMR spectral analysis. The new modular instrument attaches to any current conventional NMR system to deliver polarization-enhanced samples for liquid-state NMR. It is compatible with many standard NMR solvents, probes, and spectrometers. Because of its ability to reduce experimental run times for carbon-13 and nitrogen-15 and to substantially lower the limit of signal detection, HyperSense can trans-



form ^{13}C - and ^{15}N -based research and has increased the applicability of NMR. *Oxford Instruments Molecular Biotoools, Tubney Woods, Abingdon, OX13 5QX, UK, <http://www.oxford-instruments.com>*
See www.pt.ims.ca/9468-133

Software for electromagnetics modeling

COMSOL's Electromagnetics module 3.2a uses 64-bit multiphysics simulations that can increase the size of models by or-

ders of magnitude. The module specializes in component design in areas of electromagnetic field simulations—from statics and quasistatics to microwaves and photonics. The static, transient, and frequency domain analyses allow for material properties that are complex-valued, anisotropic, and frequency- or time-dependent. New features for modeling electromagnetic fields and AC/DC components using high-order vector elements include second- and third-order vector/edge elements for faster convergence of 3D magnetics models. The module's interfaces for electrostatics and magnetostatics are ideal for studying capacitors and permanent magnets. COMSOL Inc, 1 New England Executive Park, Suite 350, Burlington, MA 01803, <http://www.comsol.com>

See www.pt.ims.ca/9468-134

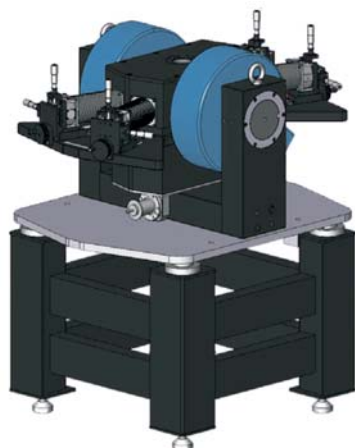
Microwave synthesizers

The Panther 2500A series signal generator from Giga-tronics delivers offset-phase-noise performance—which the company claims to be the best in the industry—high output power, and fast frequency-switching speeds in a single unit. The instrument is offered in two configurations designed for benchtop and ATE (automatic test equipment) applications that cover 100 kHz to 8 GHz, 20 GHz, 26.5 GHz, and 40 GHz with frequency resolution of 0.0001 Hz over the entire band. The 2500A series features leveled output power exceeding 20 dBm to 20 GHz, high time-base stability, frequency modulation, amplitude modulation, and high-speed pulse and square-wave modulation. The generator's Automation Xpress user interface is a PC-based software package that enhances user interaction and ATE programming productivity. Giga-tronics Incorporated, 4650 Norris Canyon Road, San Ramon, CA 94583, <http://www.gigatronics.com>

See www.pt.ims.ca/9468-135

Electromagnet-based probe station

Lake Shore Cryotronics has developed the model EMTTP4 horizontal (in-plane) field electromagnet-based probe station. The magnet provides a maximum field of 0.55 T with a field uniformity of 0.6% for a 1-cm o.d. wafer to 2.6% for a maximum 2.54-cm o.d. wafer. The magnet is equipped with the company's model 642 (or equivalent) four-quadrant DC cur-



rent source. The EMTTP4 is a platform for measuring magneto-transport, electrical, electro-optical, DC, RF, and microwave (up to 67 GHz) properties of materials and test devices. The probe station is configured with up to four ultrastable micromanipulated stages, each of which provides three-axis control of the probe position. The 360° sample rotation stage option enables measurements of angular-dependent and anisotropic properties. Lake Shore Cryotronics Inc, 575 McCorkle Boulevard, Westerville, OH 43082, <http://www.lakeshore.com>

See www.pt.ims.ca/9468-136

Microwave spectrum analyzers

Aeroflex has announced the 3280 series of spectrum analyzers, which span the 3 Hz–26.5 GHz frequency range. The three models are the 3281 (3 Hz–3 GHz), the 3282 (3 Hz–13.2 GHz), and the 3283 (3 Hz–26.5 GHz). The instruments offer a high level of accuracy, ± 0.15 dB up to 3 GHz, and a choice of resolution bandwidths from 30 Hz to 5 MHz. Other features include a local oscillator phase noise of less than -115 dBm/Hz at 10 kHz offset for an input frequency of 1 GHz, a $+18$ dBm third-order intermodulation performance, and a digital intermediate frequency that provides a 1-Hz resolution. The 10.4-inch display gives users an ample viewing area, even in split-screen mode or with multiple windows open. Three traces can be displayed per window, and as many as nine markers can be selected with a marker table viewable in an alternate window. Aeroflex Incorporated, 35 South Service Road, P.O. Box 6022, Plainview, NY 11803-0622, <http://www.aeroflex.com>

See www.pt.ims.ca/9468-137

WORLD'S SMALLEST MCA



Size: 6.5" x 2.8" x 0.8"
(165mm x 71mm x 20mm)
Weight: <300 grams (including batteries)

RUNS FOR 24 HOURS ON 2 AA BATTERIES

The **MCA8000A** is a full featured, low power **Multichannel Analyzer** intended to be used with a wide variety of detector systems.

POWERFUL

- 16k data channels
- Conversion time $\leq 5 \mu\text{s}$ ($\geq 200\text{k cps}$)
- 2 stage input analog pipeline
- Differential nonlinearity $< \pm 0.6\%$
Integral nonlinearity $< \pm 0.02\%$
Sliding-scale linearization
- 2 TTL compatible gates for coincidence and anticoincidence
- Stand alone data acquisition

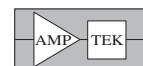
VERSATILE

- Stores up to 128 different spectra
- Two peak detection modes:
First peak after threshold
(nuclear spectroscopy)
Absolute peak after threshold
(Particle counter calibration in clean rooms)
- 115.2 kbps serial interface
- Serial ID number via software

INGENIOUS

- Of course - it's from Amptek

Free Software supports ROI, energy calibration, peak information, MCA configuration, and file management.



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See www.pt.ims.ca/9468-33



AIP State Department Science Fellowship 2007 - 2008

The American Institute of Physics and the U.S. Department of State are now accepting applications for the 2007-2008 Fellowship term, commencing in the fall of 2007. If you are a scientist with an interest in foreign policy, this program offers an opportunity to spend a year using your technical expertise to directly support the foreign policy work of the U.S. Department of State.

QUALIFICATIONS include PhD or equivalent in physics or related field, interest or experience in S&T aspects of foreign policy, membership in one or more AIP Member Societies, and U.S. citizenship. The Fellowship is contingent upon receipt of a security clearance.

A **STIPEND** of \$55,000 and other benefits are provided by AIP.

APPLICATIONS should consist of a letter of intent, a 2-page resume, and three letters of reference. Your letter should discuss your interest in and suitability for the position. Letters of Reference should be mailed directly to the address below.

FOR FURTHER INFORMATION on the program and detailed instructions on applying, please see our website at: <http://www.aip.org/gov/sdf.html>.

ALL APPLICATION MATERIALS MUST BE POSTMARKED BY NOVEMBER 1, 2006 and sent to:

AIP State Department Science Fellowship
American Institute of Physics
One Physics Ellipse
College Park, MD 20740-3843
ATTN: Audrey T. Leath

AMERICAN
INSTITUTE
OF PHYSICS



See www.pt.ims.ca/9468-34

Magnetic and vibration survey system

The Bartington Instruments Spectramag-6, distributed by GMW Associates, is a 6-channel, 24-bit data acquisition system designed for the simultaneous collection and analysis of magnetic and vibration data in three axes. The software enables the recording of time- and frequency-domain information to give spectral analysis from very low frequencies to 3.5 kHz. The unit is compatible with Bartington's range of triaxial fluxgate magnetometers with full scale ranges from ± 70 to $\pm 1000 \mu\text{T}$ and piezoelectric accelerometers that have a constant-current IPC interface. It is particularly aimed at pre- and post-installation surveys for equipment sensitive to environmental field fluctuations and/or vibration, including electron microscopes, lithography equipment, time standards, magnetic spectrometers, and MRI. GMW Associates, 955 Industrial Road, San Carlos, CA 94070, <http://www.gmw.com>
See www.pt.ims.ca/9468-138

Actively shielded NMR magnet

Bruker BioSpin Corp has introduced the 950 US², an actively shielded 950-MHz superconducting magnet that combines the company's UltraShield active shielding and UltraStabilized sub-cooling techniques. The 950 US² maintains a central magnetic field of 22.3 T and, similar to its predecessor 900 US², a room-temperature bore of 54 mm and a stray field of 5 G. The active shielding enables the new NMR system to occupy a footprint of less than



600 square feet compared with the 3600 square feet required for an unshielded 950-MHz magnet. It also features enhanced suppression of external field disturbances, which improves NMR performance in challenging environments. The new system delivers higher sensitivity and spectral dispersion than the 900 US², yet it has the same size cryostat and same cryogenic performance as its predecessor. Bruker BioSpin Corporation, 15 Fortune Drive, Manning Park, Billerica, MA 01821-3991, <http://www.bruker-biospin.com>
See www.pt.ims.ca/9468-139

Software for RF spectrum analysis

Berkeley Varitronics Systems has released Nectar, a software and calibrated hardware package for RF spectrum analysis that scans and monitors various wireless networks from both laptop and desktop PCs. Nectar uses the company's BumbleBee Receiver module and Pollenator PC interface (included with the software) to continuously scan the BumbleBee frequency bands 902-928 MHz, 2400-2500 MHz, 4940-4990 MHz, 5150-5500 MHz, and 5500-5900 MHz; the desired RF frequency models must be specified when ordering. Nectar software features up to five distinct waveform traces (one live and four peak), screen averaging, adjacent channel measurements, video smoothing, packet/interference triggering, user-selectable channels, and preset and log settings. Berkeley Varitronics Systems Inc, Liberty Corporate Park, 255 Liberty Street, Metuchen, NJ 08840, <http://www.bvsystems.com>
See www.pt.ims.ca/9468-140

New literature

UltraVolt has issued a standard-product catalog that contains information, specifications, and diagrams of more than 400 models of high-voltage DC-to-DC converters, including the HV Rack series of rack-mount power supplies. A printed version of the UltraVolt online product matrix is also available. UltraVolt Inc, 1800 Ocean Avenue Front, Ronkonkoma, NY 11779, <http://www.ultravolt.com>
See www.pt.ims.ca/9468-141

Scott Specialty Gases has published the fourth edition of the *Design and Safety Handbook for Specialty Gas Delivery Systems*. Following principles outlined in the handbook will help ensure a reliable delivery system that will safely provide specialty gas to any application at the specified purity level, pressure, and flow rate. Scott Specialty Gases, 6141 Easton Road, Box 310, Plumsteadville, PA 18949, <http://www.scottgas.com>
See www.pt.ims.ca/9468-142

The new *Directory of Metals and Materials* is now available from the Goodfellow Corp. Approximately 50 000 items are listed, along with physical, electrical, thermal, and mechanical properties as appropriate. Comparative data tables are also included. Goodfellow Corporation, 237 Lancaster Avenue, Suite 252, Devon, PA 19333-1594, <http://www.goodfellow.com> ■
See www.pt.ims.ca/9468-143