

# calendar

## JULY 1983

- 6-22 **NATO Adv Study Inst on Particles and Fields** Cargèse, Corsica, France 3/83
- 9-13 **3rd Int Symp on Small Particles and Inorganic Clusters** Berlin 3/83
- 10-23 **NATO Adv Study Inst on Phys of Submicron Semiconductor Devices** San Miniato, Italy 1/83
- 11-13 **1983 Summer Computer Simulation Conf** Vancouver, BC 9/82
- 11-14 **7th Int Symp on Nuclear Quadrupole Resonance** Queen's Univ., Kingston, Ont. 11/82
- 11-15 **Phys of Latent Image Formation in Silver Halides** Trieste, Italy 11/82
- 11-15 **Short Course on Fiber Optic Communication Systems** Santa Barbara, CA 3/83
- 11-15 **Summer Course in Optical System Design** Rochester, NY 3/83
- 11-15 **Gordon Res Conf on Point & Line Defects in Semiconductors** Plymouth, NH 5/83
- 11-15 **Short Course on Corrosion: Environmental Degradation of Materials** Cambridge, MA 5/83
- 11-15 → **Laser Beam Propagation and Interaction Effects** Edgewood, MD (Course Dir., Eng. Tech., P O Box 9000, Waco, TX 76714; (817)772-0082)
- 11-15 → **Workshop on Laser Nondestructive Testing** Lake Forest, IL (T. H. Jeong, Phys. Dept., Lake Forest College, Lake Forest, IL 60045)
- 11-16 **Short Course in Design and Analysis of Scientific Experiments** Cambridge, MA 3/83
- 11-22 **Santa Cruz Summer Workshop in Astronomy & Astrophys (High Energy Transients)** Santa Cruz, CA 3/83
- 11-22 **Short Course on Lasers and Optics for Applications** Cambridge, MA 3/83
- 11-22 **Summer Course in Contemporary Optics** Rochester, NY 3/83
- 12-15 **Short Course on Designing VLSI** Washington, DC 5/83
- 13-15 **Internoise '83** Univ. of Edinburgh, Scotland 9/82
- 13-15 **Int Workshop in X- and  $\gamma$ -ray Imaging Techniques** Southampton, UK 3/83
- 13-19 **95th Ann Scientific & Membership Mtg on the Astronomical Soc of the Pacific/Ann Mtg of the Western Amateur Astronomers** Hawaii 5/83

- 17-22 **1983 Summer Mtg IEEE Power Eng Soc** Los Angeles 1/83
- 18-20 **20th Ann Conf on Nuclear and Space Radiation Effects** Gatlinburg, TN 5/83
- 18-21 **Shock Waves in Condensed Matter** Santa Fe, NM 5/83
- 18-22 **10th Int Conf in Atomic Collisions in Solids** Bad Iburg, FRG 3/83
- 18-22 **Principles of Microcomputers and Microprocessors** Ann Arbor, MI 3/83
- 18-22 **Course in Digital and Optical Image Processing** Rochester, NY 3/83
- 18-22 **Short Course on Computer Image Analysis** Ann Arbor, MI 3/83
- 18-22 **Short Course in Guided Wave Optics** Rochester, NY 3/83
- 18-22 **Short Course in Applied Molecular Spectroscopy: Infrared** Tempe, AZ 3/83
- 18-22 **Summer Program on Plasma Processing for Microelectronic Fabrication** Cambridge, MA 3/83
- 18-22 **Gordon Res Conf on Spectroscopy of Matrix Isolated Species** New London, NH 5/83
- 18-22 **Gordon Res Conf on Formation & Properties of Metal Hydrides** Tilton, NH 5/83
- 18-22 **Gordon Res Conf on Ion Exchange** Plymouth, NH 5/83

- 18-22 **Gordon Res Conf on Laser Diagnostic Combustion** Plymouth, NH 5/83
- 18-22 **Ann Mtg of the National Conf on Weights and Measures** Sacramento, CA 5/83
- 18-22 → **Short Course on Large Scale Applications of Superconductivity** MIT (G. Fitzgerald, Office for Special Events, Rm 7-111, MIT, Cambridge, MA 02139)
- 18-29 **1983 SLAC Summer Inst on Particle Phys** Stanford, CA 1/83
- 18-29 → **3rd LAMF II Workshop** Los Alamos, NM (A. Horpedahl, MS H831, Los Alamos Nat. Lab., Los Alamos, NM 87545; (505)667-5760)
- 19-21 **Inter/Micro-83** Cambridge, UK 3/83
- 19-23 → **NATO Adv Res Workshop on Positron Scattering in Gases** London, UK (M. R. C. McDowell, Dept. of Math., Egham Hill, Egham, Surrey TW20 OEX UK)
- 20-30 **School on Direct Methods and Macromolecular Crystallography** Buffalo, NY 3/83
- 24-25 **1983 Int Symp on Collisions in Strong Fields** Bielefeld, FRG 5/83
- 24-29 **Conf on the Undergraduate Engineering Lab** Henniker, NH 3/83
- 24-29 → **AAPM Summer School—Update on Physics of Nuclear Medicine** Fairleigh-Dickinson Univ. (D. Steidley, 50 Baltusrol Way, Short Hills, NJ 07078)

**Please note:** Complete information is only given in new (→) or revised (●) listings. All other entries end with the date of the PHYSICS TODAY issue containing the following information: date title [sponsor] location (contact) [abstract deadline]

This calendar appears in alternate (odd-numbered) months. Notices should be sent to: Calendar, PHYSICS TODAY, 335 East 45th Street, New York, NY 10017 at least three months before the listing is to appear.

|             |                                                     |               |                                                   |
|-------------|-----------------------------------------------------|---------------|---------------------------------------------------|
| <b>AAAS</b> | American Association for the Advancement of Science | <b>IEEE</b>   | Institute of Electrical and Electronics Engineers |
| <b>AAPM</b> | American Association of Physicists in Medicine      | <b>IOP</b>    | The Institute of Physics (London)                 |
| <b>AAPT</b> | American Association of Physics Teachers            | <b>IUPAC</b>  | International Union of Pure and Applied Chemistry |
| <b>AAS</b>  | American Astronomical Society                       | <b>IUPAP</b>  | International Union of Pure and Applied Physics   |
| <b>ACA</b>  | American Crystallographic Association               | <b>LBL</b>    | Lawrence Berkeley Laboratory                      |
| <b>AGU</b>  | American Geophysical Union                          | <b>LLL</b>    | Lawrence Livermore Laboratory                     |
| <b>ANS</b>  | American Nuclear Society                            | <b>NAS</b>    | National Academy of Sciences                      |
| <b>APS</b>  | American Physical Society                           | <b>NBS</b>    | National Bureau of Standards                      |
| <b>ASA</b>  | Acoustical Society of America                       | <b>NRC</b>    | Nuclear Regulatory Commission                     |
| <b>AVS</b>  | American Vacuum Society                             | <b>NRL</b>    | Naval Research Laboratory                         |
| <b>BNL</b>  | Brookhaven National Laboratory                      | <b>NSF</b>    | National Science Foundation                       |
| <b>CNRS</b> | Centre National de la Recherche Scientifique        | <b>ONR</b>    | Office of Naval Research                          |
| <b>DOE</b>  | Department of Energy                                | <b>ORNL</b>   | Oak Ridge National Laboratory                     |
| <b>DPG</b>  | Deutsche Physikalische Gesellschaft                 | <b>OSA</b>    | Optical Society of America                        |
| <b>IAEA</b> | International Atomic Energy Agency                  | <b>S of R</b> | Society of Rheology                               |
|             |                                                     | <b>SPS</b>    | Society of Physics Students                       |



- 25-27 → **Short Course on Calculation of Magnetic Fields and Forces** Cambridge, MA (G. Fitzgerald, Office for Special Events, Rm 7-111, MIT, Cambridge, MA 02139)
- 25-28 **9th Int High-Pressure Conf** Albany, NY 9/82
- 25-29 **Computer Simulation of Quantum Systems** Trieste, Italy 11/82
- 25-29 **15th IUPAP Int Conf on Thermodynamics and Statistical Mechanics** Edinburgh, Scotland 1/83
- 25-29 **Short Course on Written Communications for Engineers, Scientists and Technical Writers** Ann Arbor, MI 3/83
- 25-29 **Short Course on the Detection of Infrared Radiation** Santa Barbara, CA 3/83
- 25-29 **Gordon Res Conf on Fluids in Permeable Media: Physics & Chemistry** Tilton, NH 5/83
- 25-29 **Gordon Res Conf on Quantitative Structure Activity Relationships** Plymouth, NH 5/83
- 25-29 **Gordon Res Conf on Solid State Studies in Ceramics** Plymouth, NH 5/83
- 25-29 → **Course on Laser Optics** Anaheim, CA (Course Dir., Eng. Tech., P O Box 9000, Waco, TX 76714; (817)772-0082)
- 26-7 **NATO Adv Study Inst on NMR of Liquid Crystals** San Miniato, Italy 1/83
- 27-2 → **8th Int Conf on the Phys of Electronic and Atomic Collisions** Berlin, Germany (I. V. Hertel, Inst. für Molekülphysik, Freie Univ. Berlin, Arnimallee 14, D-1000 Berlin 33, Germany)
- 31-4 **AAPM Ann Mtg** New York 9/82
- 31-20 **Summer Program in Statistical and Particle Physics: Common Problems and Techniques** 5/83

## AUGUST 1983

- 1-3 → **Course on Applied Regression Analysis** [School of Industrial & Systems Engineering] (Dept. of Cont. Ed., Georgia Inst. of Tech., Atlanta, GA 30332 [(404)894-2547])
- 1-4 **2nd Top Mtg on Coherent Laser Radar: Technology and Applications** Aspen, CO 5/83
- 1-5 **ACA Snowmass Colorado Mtg** Snowmass, CO 9/82
- 1-5 **75th Jubilee Conf on Helium-4** St. Andrews, Scotland 9/82
- 1-5 **Summer Program on Optical Propagation, Detection and Communication** Cambridge, MA 5/83
- 1-5 **Short Course on Industrial Rheology** Cambridge, MA 5/83
- 1-5 **Gordon Res Conf on Dynamics of Gas Surface Interaction** Plymouth, NH 5/83
- 1-5 **Gordon Res Conf on Nonlinear Optics** Wolfeboro, NH 5/83
- 1-5 **30th Int Field Emission Symp** Philadelphia 5/83
- 1-5 **Path Integrals from meV to MeV** Albany, NY 5/83
- 1-10 **7th Int Cong on Mathematical Phys** Boulder, CO 1/83

# CRYOGENIC CURRENT SOURCES to meet your needs.



Lake Shore's new general-purpose Current Sources are the easy-to-use, economical answer to sensor excitation needs. The 110 and 120 provide the accuracy, regulation, stability, and noise-free output required by cryogenic temperature sensors. And that also makes them ideal for most RTDs, Hall sensors, pressure sensors, and other transducers.

|                    | Model 110                       | Model 120                                                               |
|--------------------|---------------------------------|-------------------------------------------------------------------------|
| Output Current     | 1 $\mu$ A to 10mA               | 1 $\mu$ A to 100mA                                                      |
| Output Selection   | External Programming Resistance | Front-panel Switch (1X and 3X steps) or External Programming Resistance |
| Compliance Voltage | 12 volts                        |                                                                         |
| Stability          | 0.01%/day                       |                                                                         |
| Price              | \$225                           | \$345                                                                   |

Prices are U.S., domestic. Export prices slightly higher.

Cryogenic researchers have long depended on the quality, reliability and value of Lake Shore products... because we know cryogenics cold. That same reputation is behind all our instruments, in whatever discipline they're used.

Cryogenic Thermometry • Instrumentation • Calibrations

 **Lake Shore  
Cryotronics, Inc.**

64 E. Walnut St., Westerville, OH 43081 • (614) 891-2243

In Europe: Cryophysics: Witney, England • Jouy en Josas, France  
Darmstadt, W. Germany • Geneva, Switzerland

In Japan: Niki Glass Co., Shiba Tokyo

Circle number 40 on Reader Service Card



If your signal averager  
must be: • Simple • Versatile  
• Economical • Portable



You should find out more about the EG&G PARC Model 4203. Call or write today for your copy of the 24-page brochure describing how the Model 4203 can do your job.

EG&G PRINCETON APPLIED RESEARCH,  
P. O. Box 2565, Princeton, NJ 08540;  
609/452-2111.

 **EG&G PRINCETON APPLIED RESEARCH**

585

Circle number 41 on Reader Service Card

## VACUUM FURNACE

### RESEARCH & INDUSTRY

#### TABLE TOP DESIGN

- Vacuum to  $<10^{-6}$  torr and temperature range to  $1100^{\circ}\text{C}$
- Power requirements 240 Volt — 25 amp
- Ceramic retort with all metal seal to vacuum flange
- High speed baffled S.S. diffusion pump and manifold
- Digital display of the furnace charge temperature
- Applications: brazing, sintering, heat treating, degassing, crystal annealing, semiconductor prototype work



#### SEND FOR DATA SHEET

**Ceramaseal, Inc.**

A SUBSIDIARY OF  **INTERPACE**  
CORPORATION

NEW LEBANON CENTER, NEW YORK 12126 (516) 794-7800 • TELEX 14-5442

Circle number 42 on Reader Service Card

- 1-10 Int School on Teaching Crystallography for Materials Science Brasilia, Brazil 5/83
- 1-11 NATO Adv Study Inst on Non-equilibrium Cooperative Phenomena in Physics El Eseorial, Spain 5/83
- 2-5 Short Course on Designing VLSI San Francisco 5/83
- 4-9 Int Symp on Lepton and Photon Interactions at High Energies Ithaca, NY 1/83
- 6-12 41st Ann Mtg of the Electron Microscopy Soc of Am Phoenix, AZ 1/83
- 7-10 Applications of X-ray Topographic Methods of Materials Science Snowmass, CO 5/83
- 7-12 8th Canadian Theoretical Chem Symp Halifax, NS 9/81
- 7-12 Illuminating Eng Soc 1983 Ann Conf Los Angeles 1/83
- 7-12 Ann Rev of Progress in Quantitative Non-destructive Evaluation Santa Cruz, CA 5/83
- 7-27 NATO Adv Study Inst in Quantitative Electron Microscopy Glasgow, Scotland 5/83
- 8-11 → Short Course on Acousto-Optic, Electro-Optic and Guided Wave Devices Huntsville, AL (Ed. Dir., Laser Institute of America, 5151 Monroe St., Ste. 118W, Toledo, OH 43623; (419)882-8706)
- 8-12 7th Int Conf on Vacuum Ultraviolet Radiation Phys Jerusalem 9/82
- 8-12 8th Eur Crystallographic Mtg Liège, Belgium 5/83
- 8-12 Gordon Res Conf on Elementary Particle Interaction Andover, NH 5/83
- 8-12 → Course on Laser Fundamentals and Systems Toronto, Canada (Course Dir. Eng. Tech., P O Box 9000, Waco, TX 76714; (817)772-0082)
- 8-12 → Short Course on Laser Design and Beam Control New Orleans, LA (Ed. Dir., Laser Institute of America, 5151 Monroe St., Ste. 118W, Toledo, OH 43623; (419)882-8706)
- 8-12 → Non-Ionizing Radiations: Biophysical and Biological Basis, Applications, and Hazards in Medicine and Industry Cambridge, MA (Dir. of Summer Sessions, Rm. E19-356, MIT, Cambridge, MA 02139)
- 8-2 Short Course on the Birth and Infancy of Stars Les Houches, France 11/82
- 11-16 12th Int Conf on High-Energy Accelerators Batavia, IL 9/82
- 11-24 9th Hawaii Topical Conf in Particle Phys Honolulu 5/83
- 13-28 2nd Workshop on Nonlinear Evolution Equations and Dynamical Systems Chania, Crete, Greece 9/82
- 14-19 6th Int EPR Sym and NMR Symp Denver, CO 1/83
- 15-17 4th Int Conf on Mathematical Modelling Zurich, Switz. 9/82
- 15-19 5th Int Conf on Liquid and Amorphous Metal Los Angeles 1/83
- 15-19 • Cryogenic Eng Conf and Int Cryogenic Materials Conf Colora-



do Springs, CO (L. L. Wise, Centennial Conf., 1215 Mapleton, Boulder, CO 80302; (303)449-8320)

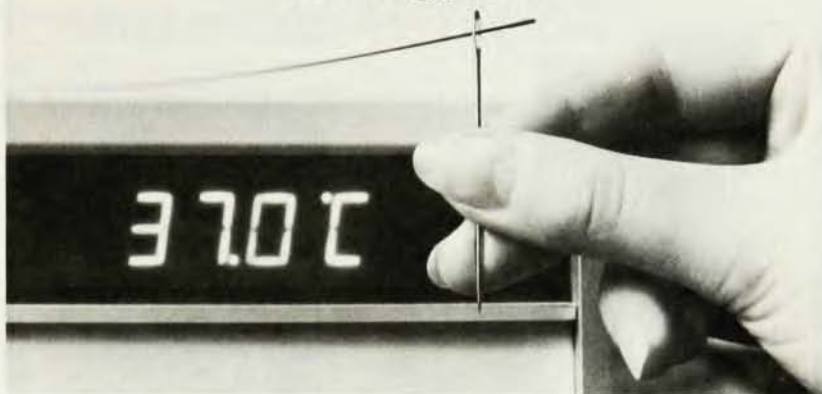
- 15-19 **Gordon Res Conf on Energy Coupling Mechanisms** Andover, NH 5/83
- 15-19 **Gordon Res Conf on Nuclear Structure Physics** Tilton, NH 5/83
- 15-19 **Gordon Res Conf on Quantum Solids & Fluids** Wolfeboro, NH 5/83
- 16-19 **Short Course on Landsat Sensor Design & Operation** Santa Barbara, CA 5/83
- 17-19 **Techniques for Extracting Information from Remotely Sensed Images** Rochester, NY 5/83
- 21-26 **Course on Implementing Resource and Energy Recovery Systems** Henniker, NH (S. Cole, Eng. Foundation, 345 E. 47 St., New York, NY 10017; (212)705-7835)
- 21-2 **Moment Formation in Solids** Vancouver Island, BC 11/82
- 21-26 **27th Ann Int Technical Symp and Instrument Display** San Diego, CA 5/83
- 21-27 **10th Int Conf on Few Body Problems in Phys** Karlsruhe, FRG 9/82
- 22-26 **4th Int Conf on Phonon Scattering in Condensed Matter** Stuttgart, FRG 5/83
- 22-26 **6th Int Summer Inst in Surface Sci** Milwaukee, WI 5/83
- 29-3 **16th Int Conf on Phenomena in Ionized Gases** Dusseldorf, FRG 9/81
- 29-3 **3rd Int Conf on Recent Progress in Many-Body Theories** Altenberg, FRG 5/83
- 30-2 **Electron Microscopy and Analysis Group** Surrey, UK 9/82
- 30-2 **14th Mtg of the Society of Crystallographers in Australia** Paterson, New South Wales 5/83
- 31-2 **1983 Int Geoscience and Remote Sensing Symp** San Francisco 11/82
- 31-8 **20th CIE Congress** Amsterdam 9/82

## SEPTEMBER 1983

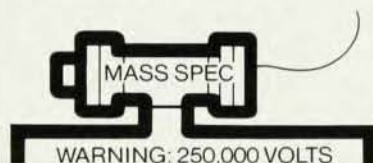
- 1-15 **NATO Adv Study Inst on Progress in Gauge Field Theory** Cargèse, Corsica, France 5/83
- 4-8 **6th Int Conf Erosion by Liquid and Solid Impact** Cambridge, UK 9/82
- 4-16 **NATO Adv Study Inst on Density Functional Methods in Physics** Sinta, Estoril, Portugal 5/83
- 5-9 **Int Conf on Fourier Transform Spectroscopy** Durham, UK 9/82
- 5-9 **11th Eur Conf on Controlled Fusion and Plasma Phys** Aachen, FRG 9/82
- 5-9 **5th Int Conf on the Electronic Properties of Two-Dimensional Systems** Oxford, UK 1/83
- 5-9 **1st Int Conf on Ethnoastronomy** Washington, DC 5/83
- 5-10 **8th Iberoamericano Cong of Crystallography** Buenos Aires and La Plata, Argentina 5/83

# SCIENTISTS:

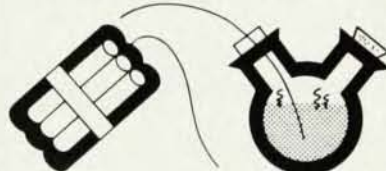
This inert  
optical fiber probe  
measures temperatures in  
amazing places



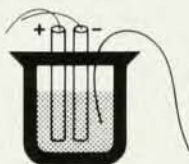
## Electrical & RF Fields



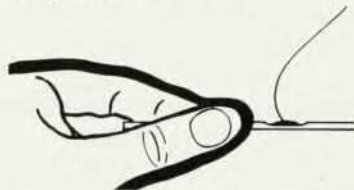
## Explosive Environments



## Corrosive Liquids



## Very Small Volumes



## Thermal Gradients



## Hostile Environments



Beyond the capabilities of thermometers, thermocouples and thermistors are environments where you have never been able to measure temperature. But now our slender optical fiber probe allows you to reach into hostile, corrosive environments where conventional sensors cannot go. Let us provide you with previously unobtainable temperature data in the range of  $-65^{\circ}\text{C}$  to  $+240^{\circ}\text{C}$  ...using our unique, patented Fluoroptic™ Thermometry technique. Call us for more information...or just to find out why we won two "Product of the Year" awards in our very first year!

## LUXTRON

Fluoroptic™ Temperature Sensing  
1060 Terra Bella Avenue, Mountain View, California 94043  
Phone (415) 962-8110, Telex 348-399 KARMIGA

Circle number 43 on Reader Service Card





# 1983 ANNUAL MEETING

OF THE  
OPTICAL SOCIETY  
OF AMERICA



PIRETTES ALLEY NEW ORLEANS, LOUISIANA

Hyatt Regency  
New Orleans, Louisiana  
October 17-20, 1983

A comprehensive program  
of short courses,  
symposia and technical  
sessions is planned.

## TECHNICAL EXHIBIT

An informal exhibit of table-top displays of equipment and materials will be held in conjunction with the meeting. Ample time will be allowed for the attendees to visit the exhibits and exchange information with representatives of companies from all areas of the optical community. Information on the exhibit can be obtained from

Mary Dean VanLandingham  
Exhibits Manager

**Optical Society of America**  
P.O. Drawer 650  
Bowie, Maryland 20715  
301-262-6921

For further information contact  
Meetings Department

**Optical Society of America**  
1816 Jefferson Place, N.W.  
Washington, D.C. 20036  
202-223-8130

- 5-16 NATO Adv Study Inst on Quarks, Leptons and Beyond Munich, FRG 5/83
- 5-17 15th Int Summer School in Nuclear Phys Mikolajki, Poland 5/83
- 5-17 → NATO Adv Study Inst on Phys and Chem of Electrons in Condensed Matter Cambridge, UK (J. V. Acrivos, Dept. of Chem., San Jose State Univ., San Jose, CA 95192)
- 6-9 2nd Int Conf on Lasers Peking 9/82
- 6-9 3rd Int Symp on Flow Visualization Ann Arbor, MI 9/82
- 7-17 Short Course on Mirror-Based and Field-Reversed Approaches to Magnetic Fusion Varenna, Italy 9/82
- 12-14 5th Int Conf on High-Power Particle Beams San Francisco 7/82
- 12-14 3rd Nat Conf on Synchrotron Radiation Instrumentation Brookhaven Nat. Lab 1/83
- 12-14 Int Conf on Computer-Aided Design Santa Clara, CA 5/83
- 12-14 → Conf and Exhibition on Modern Metallography in Metallurgy University of Oxford, UK (Conf. Dept., Metals Soc., 1 Carlton House Ter., London SW1Y 5DB, UK)
- 12-16 7th Int Conf on Crystal Growth Stuttgart, FRG 9/81
- 12-16 7th Symp on Ion Sources and Ion Assisted Tech and 4th Int Conf on Ion and Plasma Assisted Techniques Kyoto, Japan 9/82
- 12-16 Int Conf on the Dynamics of Interfaces Lille, France 5/83
- 12-16 Symp on Atomic Spectroscopy Berkeley, CA 5/83
- 12-16 → Statistical Methods in Astronomy Strasbourg, France (C. Jaschek, Observatoire de Strasbourg, 11, rue de l'Université, F-67000 Strasbourg, France)
- 12-16 → Course on Measurement of Laser Output Characteristics Albuquerque, NM (Course Dir. Eng. Tech., P O Box 9000, Waco, TX 76714; (817)772-0082)
- 13-16 13th Eur Solid State Device Res Conf University of Kent, UK 5/83
- 13-16 Short Course on Designing VLSI Baltimore, MD 5/83
- 15-17 Particles and Fields Div of APS Blacksburg, VA 5/83
- 16-20 Phys of Plasma Close to Thermonuclear Conditions Varenna, Italy 9/81
- 18-24 2nd Int Summer School on Processes of Thin Film Formation Fonyod/by Lake Balaton, Hungary 5/83
- 19-20 Interfacial Phenomena in Partial Insulating Systems Gaithersburg, MD 5/83
- 19-22 3rd Top Mtg on Fusion Reactor Materials Albuquerque, NM 11/82
- 19-22 6th Nat Quantum Electronics Conf Sussex Univ., UK 5/83
- 19-23 Top Mtg on Free Electron Generation of Extreme Ultraviolet Coherent Radiation Brookhaven Nat. Lab. 5/83
- 19-23 Physical Chem of the Solid State: Applications to Metals and their Compounds Paris 1/83
- 19-23 → Course on Introduction to Transmission Computed Tomography Univ. of TX Health Sci. Ctr., San Antonio (M. Rennels, Medical School Cont. Ed. Ser., Univ. of TX Health Sci. Ctr., 7703 Floyd Curl Dr., San Antonio, TX 78284; (512)691-6295)
- 20-22 Eur Conf and Exhibition on Sensors and Their Applications Manchester, UK 5/83
- 20-22 → Conf on Designing with High Temperature Materials University of Sheffield, UK (Conf. Dept., Metals Soc., 1 Carlton House Ter., London, SW1Y 5DB, UK)
- 20-22 → Conf on Impact of Computer Based Techniques on Plant Engineering Practice Birmingham, UK (Conf. Dept., Metals Soc., 1 Carlton House Ter., London SW1Y 5DB, UK)
- 20-23 Short Course on Designing VLSI Los Angeles 5/83
- 21-23 → Course on High Energy Lasers—Fundamentals Huntsville, AL (Course Dir., Eng. Tech., P O Box 9000, Waco, TX 76714; (817)772-0082)
- 25-29 12th Ann North Am Thermal Analysis Soc Mtg Williamsburg, VA 1/83
- 25-29 Symp on Thermal Behavior of Intercalate Materials Pittsburgh, PA 5/83
- 25-30 5th Eur Mtg on Ferroelectricity Torremolinos, Spain 11/82
- 26-28 → Course on High Energy Lasers—Systems Huntsville, AL (Course Dir., Eng. Tech., P O Box 9000, Waco, TX 76714; (817)772-0082)
- 26-28 → 8th Biennial Symp on Turbulence University of MO—Rolla (G. K. Patterson, Chem. Eng. Dept., Univ. of MO—Rolla, Rolla, MO 65401)
- 26-29 3rd Int Conf on Ultra-Relativistic Nucleus-Nucleus Collisions Brookhaven Nat. Lab. 5/83
- 26-29 Conf on Anticipated and Abnormal Plant Transients in Light Water Reactors Jackson, NY 5/83
- 26-30 9th Int Vacuum Cong—5th Int Conf on Solid Surfaces Madrid, Spain 11/82
- 26-30 1983 IEEE Int Symp on Information Theory St. Jovite, Quebec, Canada 1/83
- 26-30 → Conf on Recent Developments in Nonequilibrium Thermodynamics Bellaterra, Spain (J. Casas-Vázquez, Dept. de Termologia de la Facultad de Ciencias, Universidad Autonoma de Barcelona, Bellaterra, Barcelona, Spain)
- 26-1 → 9th Int Vacuum Cong—5th Int Conf of Solid Surfaces Madrid, Spain (N. Hammond, AVS, 335 E. 45 St., New York, NY 10017)
- 27-30 7th Int Conf on Solid State Dosimetry Ottawa, Canada 11/82
- 27-30 Physical Chem of Colloid and Interfaces: Biotechnologies and Drug Res Paris 5/83
- 27-29 Workshop on Hadron and Jet Structure DESY, Hamburg, FRG 5/83
- 29-30 First CAD/CAM and Simulation Conf Boston 5/83
- 30-1 New York Sec of APS Schenectady, NY 5/83



- 2-5 → **Ann Int Conf on Thermal Infrared Sensing for Diagnostics and Control [SPIE]** Oak Brook, IL (SPIE, P O Box 10, Bellington, WA 98227-0010)
- 3-7 → **Chapman Conf on Magnetic Reconnection** Los Alamos, NM (Magnetic Reconnection Mtg., AGU, 2000 Florida Ave., NW, Washington, DC 20009; (800)424-2488)
- 6-9 **Monopole '83** Ann Arbor, MI 5/83
- 7-9 **5th Int Congress of Laser Medicine and Surgery** Detroit, MI 5/83
- 11-14 **36th Gaseous Electronics Conf** Albany, NY 5/83
- 13-15 **APS Div of Nuclear Phys** Notre Dame, IN 11/82
- 16-20 **S of R Ann Mtg** Knoxville, TN 1/83
- 17-18 **2nd Eur Conf on Integrated Optics** Firenze, Italy 5/83
- 17-19 **Int Symp on Use and Development of Low and Medium Flux Research Reactors** Cambridge, MA 5/83
- 17-20 **15th Ann Mtg AAS Div for Planetary Sci** Ithaca, NY 5/83
- 17-21 **OSA Ann Mtg** New Orleans, LA 11/82
- 17-21 **Scanning Electron Microscopy and X-ray Microanalysis: Theory and Practice—Materials Science** New Paltz, NY 5/83
- 18-20 **4th Int Advanced Plasma Technology Conf and Seminar** Colorado Springs, CO 5/83
- 20-22 **APS Div of Particles and Fields Mtg** Blacksburg, VA 11/82
- 21-22 **Eastern Theoretical Phys Conf** Brookhaven Nat. Lab. 11/82
- 23-26 **9th Eur Conf on Optical Communication** Geneva 11/82
- 23-26 **7th Ann Symp on Computer Applications in Medical Care** Baltimore, MD 5/83
- 24-25 **16th Ann Synchrotron Radiation Users Group Mtg** Madison, WI 5/83
- 24-26 **AIP Corporate Associates Mtg** Palo Alto, CA 5/83
- 24-26 **Int Symp on Electromagnetic Compatibility** Washington, DC 11/82
- 24-26 **Advanced Scanning Electron Microscopy and X-ray Microanalysis: Theory and Practice—Materials Science** New Paltz, NY 5/83
- 24-27 → **Specialists' Mtg on Yields and Decay Data of Fission Product Nuclides** [NEA Nuclear Data Comm.] Brookhaven Nat. Lab. (T. W. Burrows, Brookhaven Nat. Lab., Upton, NY 11973; (516)282-3903)
- 24-28 **Scanning Electron Microscopy and X-ray Microanalysis: Theory and Practice—Biology and Medicine** New Paltz, NY 5/83
- 27-28 **10th Ann Stanford Synchrotron Radiation Lab Users Group Mtg** SLAC 5/83
- 31-2 **1983 IEEE Ultrasonics Symp** Atlanta, GA 5/83
- 31-3 **Int Conf on VLSI in Computers** Port Chester, NY 5/83



## MODEL 5500 MICROPROCESSOR BASED CRYOGENIC TEMPERATURE CONTROLLER

### Standard Features

- Optimum controllability using PID mathematical equations
- Alpha/numeric display with keypad selection
- Power output 30 volts at 3 amps - 90 watts standard
- Microprocessor computes and controls all input and output parameters

### Specifications

- Range: 1.5K to 450K
- Resolution: 0.1K
- Accuracy:  $\pm 0.2K$  (1.5K - 35K)  $\pm 0.5K$  (35 - 450K)
- Controllability:  $\pm 0.1K$  (1.5 - 35K)  $\pm 0.2K$  (35 - 450K)
- Repeatability:  $\pm 0.1K$

### Options

- Dual sensor input
- IEEE488 GPIB
- RS232C interface
- BCD output of temperature
- Analog output of temperature
- Programmability of 30 temperature points vs. time and 6 distinct profiles
- Automatic printout port



**SCIENTIFIC INSTRUMENTS, INC.**  
1101 25th Street, West Palm Beach, FL 33407  
Telephone (305) 659-5885 Telex 51-3474

Circle number 44 on Reader Service Card

## Janis Quality!

**Janis makes available  
a new line of quality, low cost, lightweight  
liquid helium storage dewars.**

These high-efficiency, light-alloy containers are the first of a new generation of storage dewars available from Janis.

A patented thermal insulator and new design offers users a broad range of convenient characteristics.



- Wide 50mm dia. neck
- Low Evaporation rate
- Light-alloy construction
- Sturdy and easy to handle.

And for uses other than cryogen storage a series of accessories will greatly increase the dewars versatility.

So call or write us today for details.

**JANIS  
RESEARCH  
COMPANY,  
INC.**

22 Spencer Street  
Stoneham, MA 02180  
617-438-3220 Telex 951907

Circle number 45 on Reader Service Card



- 1-3 → **Copper '83 Conf** London (Conf. Dept., Metals Soc., 1 Carlton House Ter., London SW1Y 5DB, UK)
- 1-4 **AVS Ann Mtg** Boston 11/82
- 3-5 **APS Southeastern Sec Mtg** Columbia, SC 11/82
- 7-11 **APS Plasma Physics Div** Los Angeles 11/82
- 7-11 **ASA 106th Mtg** San Diego 11/82
- 7-11 → **3rd Int Conf on Heat Treatment of Materials** Shanghai, China (Conf. Dept., Metals Soc., 1 Carlton House Ter., London SW1Y 5DB, UK)
- 7-11 → **Workshop on Problems of Collapse and Numerical Relativity** [CNRS] Toulouse, France (M. Signore, Demirm, Observatoire de Meudon, 92190 Meudon, France)
- 8-11 **29th Ann Conf on Magnetism and Magnetic Materials** Pittsburgh, PA 5/83
- 13-18 **AAPM Gen Mtg** Chicago 3/83
- 14-16 **15th Ann Symp on Optical Materials for High Power Lasers** Boulder, CO 5/83
- 14-17 **Ann Mtg of the Materials Research Soc** Boston 5/83
- 14-17 **23rd Fall Symp of SPSE: Microimaging Tech** Crystal City, VA 5/83
- 14-17 → **ICALEO Laser Conf '83** Los Angeles (H. A. Lee, Laser Inst. of Amer., 5151 Monroe St., Toledo, OH 43623; (419)882-8706)
- 14-18 **3rd Int Symp on the Production and Neutralization of Negative Ions** Brookhaven Nat. Lab. 5/83
- 14-18 → **Fossil Based Synfuels Symp** Atlanta, GA (M. Carter, School of Nuclear Eng. & Health Phys., Georgia Inst. of Tech., Atlanta, GA 30332) [8/15/83]
- 15-25 → **Course on Biol Effects and Dosimetry of Non-Ionizing Radiation: Static and ELF Electromagnetic Fields** [Ettore Majorana Centre] Erice, Italy (M. Grandolfo, Inst. Superiore Sanità, Vale Regina Elena 299, 00161 Rome, Italy)
- 20-22 **APS Fluid Dynamics Div** Houston 11/82
- 20-23 **APS Gen Mtg** San Francisco 11/82
- 21-23 → **3rd Conf on Fractals: Fractals in the Physical Sciences** [ORN, IBM, Univ. of MD, LJI, NBS (M. Shlesinger, IPST, Univ. of MD, College Park, MD 20742; (301)454-4393)]
- 22-24 **3rd Int Conf on Quantitative Surface Analysis** Middlesex, UK 5/83
- 27-2 → **6th Int Conf on Non-Destructive Evaluation** Zurich, Switzerland (Amer. Soc. of Metals, Metals Park, Ohio 44073)

DECEMBER 1983

- 5-9 **10th Symp on Fusion Eng** Philadelphia 11/82
- 5-10 → **2nd Int Workshop on the Phys of Semiconductor Devices** [UNESCO] Delhi, India (V. K. Jain,

Solid State Phys. Lab., Lucknow Rd., Delhi-110007, India)

- 12-16 → **6th Int Conf on Lasers & Applications** San Francisco (LASERS '83, PO Box 245, McLean, VA 22101)
- 12-17 **8th Int Conf on Infrared and Millimeter Waves** Miami Beach, FL 1/83

JANUARY 1984

- 2-6 **1984 Winter Conf on Plasma Spectrochemistry** San Diego 5/83
- 8-11 **163rd Ann Mtg of AAS** Las Vegas, NV 5/83
- 23-25 **Top Mtg on Optical Fiber Communication** New Orleans, LA 5/83
- 24-26 **1984 Ann Reliability and Maintainability Symp** San Francisco 5/83
- 28-29 → **Aspects of Medical Phys for Phys Teachers** [AAPT, Univ. of TX Health Sci. Ctr.] San Antonio, TX (R. K. Hobbie, Univ. of MN, Shepherd Lab., 100 Union St. SE, Minneapolis, MN 55455; (612)373-5479)
- 30-2 **Joint APS/AAPT Mtg** San Antonio, TX 5/83
- 31-2 → **11th Ann Conf on Phys and Chem of Semiconductor Interfaces** Pinehurst, NC (G. Lucovsky, Dept. of Phys., NC State Univ., Raleigh, NC 27650; (919)737-2512)

MARCH 1984

- 5-7 **Top Mtg on Laser Techniques in the Extreme Ultraviolet** Boulder, CO 5/83
- 21-28 **4th Int Symp on Heating in Toroidal Plasmas** Rome 5/83
- 22-24 **Conf on Defects in Amorphous Materials** Detroit, MI 5/83
- 26-30 **APS Gen Mtg** Detroit, MI 5/83

APRIL 1984

- 1-4 **Vacuum '84: Technological Aspects of Surface Treatment and Analysis** University of York, UK 5/83
- 2-6 **5th Int Conf on Nuclear Methods in Environmental and Energy Res** Mayaguez, Puerto Rico 5/83
- 6-8 → **AVS Thin Film Div Top Symp on Sputtering** San Diego, Cal. (W. D. Westwood, Bell-Northern Research, Box 3511, Station C, Ottawa, Ont., Canada, K1Y 4H7; (613)596-3248)
- 9-12 **3rd Int Conf on Mechanical Properties of Materials at High Rates of Strain** Oxford, UK 5/83
- 10-12 **Conf on Lasers and Electro-optics** Anaheim, CA 5/83
- 18-24 → **OSA Spring Conf-Top Mtg on Optical Data Storage** Monterey, Cal. (OSA, 1816 Jefferson Pl., NW, Washington, DC 20036)
- 26-28 **APS Spring Mtg** Washington, DC 5/83

29-2 **86th Ann Mtg and Expos Amer Ceramic Soc** Pittsburgh, PA 5/83

- 29-3 → **4th Int Symp on Gaseous Dielectrics** [Knoxville, TN] (D. W. Bouldin, Oak Ridge Nat. Lab., 4500S, H-158, P O Box X, Oak Ridge, TN 37830; (615)574-6199)

MAY 1984

- 6-20 **Int School on Direct Methods of Solving Crystal Structures** Erice, Italy 5/83
- 7-11 **107th ASA Mtg** Norfolk, VA 5/83
- 14-16 **IEEE Int Conf on Plasma Sci** St. Louis, MO 3/83
- 21-25 **ACA Ann Spring Mtg** Lexington, KY 5/83
- 24-29 **AAAS Ann Mtg** New York 5/83
- 28-30 **APS Electron and Atomic Div** Storrs, CT 5/83

JUNE 1984

- 10-13 **164th AAS Mtg** Baltimore, MD 5/83
- 11-15 **7th Int Conf on Spectral Line Shapes** Meudon, France 5/83
- 12-15 → **Top Mtg on Picosecond Phenomena** Monterey, CA (D. H. Auston, Bell Labs., 600 Mountain Ave., Murray Hill, NJ 07974)
- 18-20 **1984 Physical Electronics Conf** Princeton, NJ 5/83
- 18-22 **OSA/IEEE Conf on Lasers and Electro-Optics and 13th Int Quantum Electronics Conf** Anaheim, CA 5/83

JULY 1984

- 2-4 → **2nd Int Symp on Applications of Laser Anemometry to Fluid Mechanics** Lisbon, Portugal (D. F. G. Durão, Dept. of Mech. Eng., Inst. Superior Técnico, Ave. Rovisco Pais, 1096 Lisbon, Portugal)
- 15-19 **Ann Mtg of AAPM** Chicago 5/83
- 15-19 **5th World Hydrogen Energy Conf** Toronto 5/83
- 22-28 → **AAPM Summer School** South Bend, IN (E. Osterman, 335 E. 45 St., New York, NY 10017)
- 23-27 **4th Int Conf on Clustering Aspects of Nuclear Structure and Nuclear Reactions** Chester, UK 5/83
- 24-27 → **8th IEEE Int Conf on Conduction and Breakdown in Dielectric Liquids** Pavia, Italy (B. ICDL, c/o Electrical Eng. Dept., Univ. of Genoa, Via all'Opera Pia 11, 1-16145 Genoa, GE Italy) [11/30/83]

AUGUST 1984

- 1-4 → **Top Conf on Optical Effects in Amorphous Semiconductors** Salt Lake City, UT (W. W. Havens Jr, 335 E. 45th St., New York, NY 10017 (212)661-9404)



- 6-10 → **Int Conf on the Phys of Semiconductors** San Francisco (R. Z. Bachrach, Xerox Palo Alto Res. Ctr., 3333 Coyote Hill Rd., Palo Alto, CA 94304; (415)494-4157)
- 9-18 → **Int Union of Crystallographers 13th Cong** Hamburg, FRG (Gesellschaft Deutscher Chemiker, Abteilung Tagungen Postfach 90 04 90, D-6000 Frankfurt 6 Main 90, FRG)
- 13-17 → **6th Int Conf on Thin Films** [Swedish Vacuum Soc] Stockholm (S. Berg, ICTF-6, Inst. of Tech., Uppsala Univ., Box 534, 751 21 Uppsala, Sweden)
- 13-18 → **Int Conf on Luminescence** Madison, WI (W. H. Yen, Dept. of Phys., 1150 University Ave., Madison, WI 53706)
- 20-24 → **Conf on Precision Electromagnetic Measurements** Delft, The Netherlands (I. J. Smits, Dept. of Electrical Eng., Delft Univ. of Tech., Box 5031, 2600 GA Delft, The Netherlands) [2/1/84]
- 20-24 → **5th Int Symp on Gas Flow and Chem Lasers** St. Catherine's College, Oxford, UK (A. S. Kaye, Culham Lab., Abingdon, Oxon, UK OX14 3DB)
- 20-25 → **Conf on Phys Education** Utrecht, The Netherlands (J. Andriese, Phys. Dept., Rijksuniversiteit Utrecht, Postbus 80.008, 3508 Ta Utrecht, The Netherlands)
- 27-31 → **5th Int Conf on Rapidly Quenched Metals** Würzburg, FRG (H. Warlimont, Gruner Weg 37, D-6450 Hanau 1, FRG)
- 28-7 → **Int School of Plasma Phys—Plasma Astrophysics** Varenna, Italy (C. Paizis, Inst. di Fisica, Via Celoria, 16 20133 Milano, Italy)

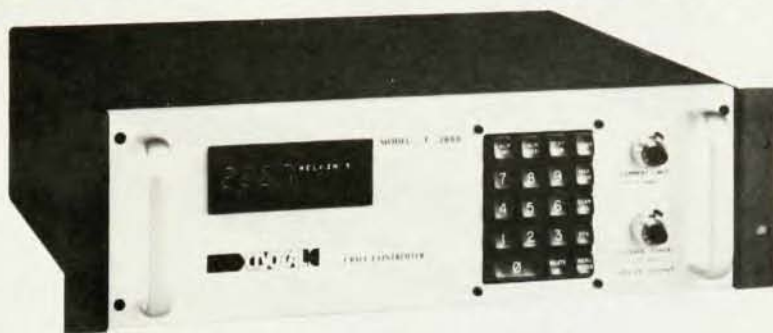
#### SEPTEMBER 1984

- 17-21 → **9th Eur Conf on Thermophysical Properties** Manchester, UK (Mtg. Officer, IOP, 47 Belgrave Sq, London SW1X 8QX UK)

#### OCTOBER 1984

- 8-12 → **108th ASA Mtg** Minneapolis, MN (B. Goodfriend, 335 E. 45 St., New York, NY 10017)
- 8-13 → **9th Int Congress on Rheology** Acapulco, Mex. (D. Binding, Apdo. Postal 70-353, Ciudad Universitaria, Coyoacan, 04510, Mexico, Mexico)
- 9-12 → **37th Gaseous Electronics Conf** Boulder, CO (W. W. Havens Jr, 335 E. 45 St., New York, NY 10017 (212)661-9404)
- 18-20 → **APS Nuclear Phys Div** Nashville, TN (W. W. Havens Jr, 335 E. 45 St., New York, NY 10017)
- 27-3 → **APS Plasma Phys Div** Boston (W. W. Havens Jr, 335 E. 45 St., New York, NY 10017)
- 29-2 → **OSA Ann Mtg** San Diego, CA (OSA, 1816 Jefferson Pl., Washington, DC 20036)

## CRYOCAL T-2000:



### CONTROL IS JUST THE BEGINNING...

- TRUE 3-TERM DIGITAL PID CONTROL
- FULL GPIB COMPATIBILITY
- SIMPLIFIED OPERATOR CONTROLS
- USE WITH Si DIODE PLATINUM Cryo Carbon SENSORS
- AUTOMATIC SCANNING OF FOUR SENSORS
- UPPER AND LOWER ALARM OUTPUTS
- READOUT ONLY VERSION AVAILABLE

1.5 TO 850 K RANGE  
 ACCURACY:  $\pm 0.25$  K, 1.5 TO 25 K  
 $\pm 0.25$  K, 25 TO 850 K  
 STABILITY BETTER THAN 0.07 K  
 50 WATT HEATER OUTPUT

The T-2000 fills the need for high performance temperature control in laboratory and automated test applications. A proven performer, the T-2000 sets new standards for accuracy, stability and versatility.

Digital process control provides the superior performance required in difficult applications. Every aspect of the T-2000's operation can be programmed over a computer interface, enabling total automation and enhanced throughput.

For information on Cryogenic measurement and control products, write or call collect:  
**CRYOCAL, INC**  
 2457 University Avenue  
 St. Paul, MN 55114 USA  
 (612) 645-0072  
 Telex: 955329, TLX SRVC; Attn: CRYO

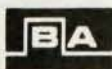
Circle number 46 on Reader Service Card

## Precision PMT HIGH VOLTAGE Power Supply Modules

- 0.001% regulation
- Remote programming and monitoring
- Short circuit and arc protected

| MODEL   | OUTPUT            | RIPPLE pk-pk |
|---------|-------------------|--------------|
| PMT-05A | 0 to 500V @ 8mA   | 5mV          |
| PMT-10A | 0 to 1000V @ 4mA  | 4mV          |
| PMT-20A | 0 to 2000V @ 2mA  | 2mV          |
| PMT-50A | 0 to 5000V @ 15mA | 10mV         |

The PMT models are high performance, compact modular power supplies, applicable for OEM and laboratory applications. Positive and negative output polarity units are available that can be operated from a variety of dc input voltages. Send for our catalog describing the most complete line of precision high voltage supplies to 50 kV.



**BERTAN ASSOCIATES, Inc.**

3 Aerial Way, Syosset, New York 11791 • (516) 433-3110

Circle No. 47 for Immediate Application  
 Circle No. 48 for Literature Only