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CRYOGENIC TEMPERATURE CONTROL

When you look to Lake Shore you'll find a choice of controllers to match your application needs.

Choice of features. The DRC-82C displays dual temperatures, set-point, control parameters, and output power to open a real window on system operation. Its keypad is the simplest, most direct way to set parameters. Companions DRC-81C and DRC-80C feature traditional thumb-wheel set-point control and potentiometer-style tuning.



Model DRC-80C

Choice of performance. Choose three-term (PID) temperature control for outstanding controllability or two-term economy and simplicity for less demanding applications. Choose up to 50 watts of heater power—or choose to limit power to less than 5 milliwatts!

Choice of inputs. Silicon diodes, gallium-arsenide diodes, platinum RTDs, interchangeable sensors, individually calibrated sensors, the choice is yours.



Model DRC-81C

Choice of interfaces. IEEE-488, BCD, Interface Loop, RS232C... take your pick.

No choice on quality. Lake Shore's high quality standards apply across our entire product line. Our 24-month instrument warranty is just one indication of that. Our satisfied customers are many more.

Lake Shore's Cryogenic Temperature Controller brochure can help you choose the instrumentation best for your application. At Lake Shore Cryotronics we know cryogenics cold—and our Controllers are designed to keep it that way.

Many suppliers of cryogenic refrigeration systems already design Lake Shore Controllers into their products. Others will usually substitute a Lake Shore unit on request. Next system you purchase, be sure to specify Lake Shore instruments.

Cryogenic Thermometry • Instrumentation • Calibrations

 **Lake Shore Cryotronics, Inc.**

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

In Japan: Niki Glass Co., Shiba Tokyo

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nique to study an analogous protein—in a physical chemistry sense—called bacteriorhodopsin, which acts as a light-driven proton pump.

Mathies received his BS degree in chemistry from the University of Washington (1968) and his MS and PhD degrees in physical chemistry from Cornell University (1974). From 1969 to 1973, he was a research and teaching assistant at Cornell, after which he went to Yale University for three years as a Helen Hay Whitney Postdoctoral Fellow in the Department of Molecular Biophysics and Biochemistry. Mathies was appointed assistant professor at Berkeley at 1976 and became associate professor of chemistry in 1982.

Binnig and Rohrer share 1984 King Faisal award

Gerd Binnig and Heinrich Rohrer, researchers at IBM's Zurich research laboratory, have been awarded the 1984 King Faisal International Prize in Science for their development of scanning tunneling microscopy, a new technique that allows individual atoms on the surface of materials to be seen and studied in greater detail than ever before. (See PHYSICS TODAY, April 1982, page 21.)

The scanning tunneling microscope, which can now resolve features 0.1 Å high and 2 to 5 Å wide, was demonstrated experimentally in 1981. The fundamental principle of the microscope is the quantum mechanical tunneling of electrons through the potential barrier represented by a narrow vacuum gap between two conductors. By scanning an extremely fine needle just above a surface and noting variations in the tunnel current, the experimenters can observe the variations in height of the surface as a function of position. The two scientists were assisted in the research by Christoph Gerber and Edmund Weibel.

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from many sources—including lunar laser ranging and very-long-baseline interferometry—to determine and predict the Earth's orientation in space. The high spatial and temporal resolution of the new sources of data have contributed greatly to our knowledge of the peculiar motions and short-term variations of the Earth's spin.

Kaplan receives the Gillis Award for his computer work at the observatory. For example, he has worked on the programs for producing planetary ephemerides, for plotting sky diagrams, and for certifying astronomical computations.

C. A. Barth receives NASA distinguished service award

Charles A. Barth, director of the Laboratory for Atmospheric and Space Physics at the University of Colorado, Boulder, was awarded the NASA medal for Distinguished Public Service.

Barth was cited for his outstanding work on the Solar Mesosphere Explorer, proposing and establishing the project and helping to make it a highly successful scientific mission.

The project, which completed its second year of successful operations in October, was designed to observe and measure the natural processes which form ozone in the upper reaches of the Earth's atmosphere and determine the impact of solar activity on those processes. The satellite—the only NASA-launched satellite currently operated by university students—surprised researchers last year when its on-board instruments detected and observed the eruption of the El Chichon volcano in Mexico. The sulfuric acid and debris from one of the largest volcanic eruptions of the century were tracked as they spread a veil across the northern hemisphere. This information on the volcanic eruption has provided an unprecedented chance to observe a large-scale natural disruption of the chemistry of the atmosphere.

AAS presents Chretien awards to Chalabaev and Madore

The second annual Henri Chretien Awards of the American Astronomical Society have been given to Almas Chalabaev of the Observatory of Paris, Meudon, and to Barry F. Madore of the University of Toronto's David Dunlap Observatory to support further astronomical research.

Chalabaev was awarded \$10 000 for an investigation of the infrared spectra of radiating dust and other relatively cool bodies in H II regions—hot, ionized hydrogen clouds that contain young,

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The \$73 000 Faisal award—one of five presented this year—was presented to Binnig and Rohrer by King Fahd of Saudi Arabia in a ceremony in Riyadh. The awards recognize outstanding scientific achievements that benefit mankind. Both scientists were nominated by the Research Council of the Swiss National Science Foundation.

Binnig received his doctoral degree from the Johann Wolfgang von Goethe University in Frankfurt am Main, Federal Republic of Germany. He joined IBM in 1978.

Rohrer was awarded his PhD degree by the Eidgenössische Technische Hochschule in Zurich and came to IBM in 1963.

Naval Observatory awards for research achievement

The US Naval Observatory has presented the Simon Newcomb Award for research achievement to Don Pascu and Dennis D. McCarthy. The observatory also presented the first Captain James M. Gilliss Award for outstanding service to George H. Kaplan.

Pascu receives the Newcomb Award for his innovative work with natural satellite observations. Early in his career, he invented the "Pascu mask" to reduce the brightness of a planetary image on a photographic plate; the mask allows one to obtain clear images of faint satellites. Pascu's data on the satellites of Jupiter and Saturn contributed to the great successes of the Voyager missions. Recently he has worked with charge-coupled devices, assisting in the discovery of a new satellite of Saturn and in observations of Nereid, one of the satellites of Neptune.

McCarthy receives his Newcomb Award for his work on the Naval Observatory's geodetic information system. This system coordinates data