

Bonner prize for nuclear physics to Harald A. Enge

The American Physical Society has awarded the 1984 Tom W. Bonner Prize in Nuclear Physics to Harald A. Enge of MIT for "his outstanding contributions to the design of magnetic spectrometers and beam optics."

Throughout his career, Enge has been designing magnetic spectrometers and spectrographs of ever-increasing data-collection capability and resolution. These devices have been used by physicists to do low-energy nuclear-structure studies by measuring the energies of particles emitted from nuclear reactions.

Born in Norway in 1920, Enge attended the Technical University of Norway at Trondheim to study electrical engineering. After graduating in 1947, Enge went to the University of Bergen for several years, working as a research associate and a lecturer. In 1954, he received his PhD in physics from Bergen.

In the midst of that period, he spent a year and a half at MIT doing nuclear

research with a magnetic spectrograph in the Van de Graaff group. During this time he also designed his first broad-range spectrograph, which was built on his return to Bergen.

Enge came back to MIT from Norway in 1955, as an instructor. He rose to full professor of physics in 1963.

Enge designed a new multigap spectrograph at MIT that sampled many angles at once, thus avoiding a separate accelerator run for each angle in the angular distribution. He also developed the Enge split-pole spectrograph, a device providing higher resolution and larger solid angle. The split pole became a standard instrument of nuclear-physics research.

In the mid-1960s, Enge designed the Q3D spectrograph (one quadrupole, three dipoles), an instrument made to match the resolution of multiwire electronic detectors. He has been involved in the design of several spectrometers for Los Alamos Scientific Laboratory.

Enge has worked during the last ten



ENGE

years in the field of heavy-ion physics and has designed recoil mass selectors for experiments on heavy-ion fusion reactions at Brookhaven and Oak Ridge National Laboratories, among other projects.

New York Academy of Sciences honors Flynn, Danby, Mathies

At its annual meeting, the New York Academy of Sciences presented the A. Cressy Morrison Award in Natural Sciences to George William Flynn of Columbia University for his work in laser chemistry and vibrational energy transfer. Also honored at the meeting were Gordon Danby of Brookhaven National Laboratory, who received the Boris Pregel Award for Applied Science for his contributions to accelerator physics and superconducting-magnet technology, and Richard A. Mathies of the University of California at Berkeley, who was chosen to receive the Harold Lampert Award for Young Investigators in Biophysics in recognition of his use of resonance Raman spectroscopy to study important photoactive pigments in the retina.

Flynn, a professor of chemistry at Columbia, is an experimental physical chemist concerned with molecular relaxation phenomena. The Academy cited his early application of laser techniques to the study of excitation

and collisional energy transfer in simple polyatomic molecules—work that has led to a better understanding of chemical reactions. Flynn's recent research has focused on the physical and chemical processes underlying high-energy atom-molecule collisions.

Flynn received his BS degree in chemistry from Yale University (1960) and his MA and PhD degrees from Harvard University (1964). Flynn has been affiliated with Columbia since 1967; he was appointed full professor in 1976. Since 1979 Flynn has served as director of the Columbia Radiation Laboratory. During this period he also collaborated in a research program at Brookhaven National Laboratory.

Gordon Danby, senior physicist at Brookhaven, had made significant contributions to the design of the magnets that make possible new high-energy synchrotron machines in the US, Europe and Japan, according to the Academy's Pregel award citation. This work has included designs for beam-

transport magnets, design innovations in quadrupole structures and the construction of sector magnets. Together with James Powell, Danby has also invented a magnetic levitation technique that is the basis for a Japanese-designed high-speed rail transport.

Born in Canada, Danby attended Carleton College for his undergraduate degree (1952) and McGill University for his doctorate (1956). He joined the Brookhaven staff in 1957 and was named a senior physicist in 1980.

The Lampert Award winner, Richard A. Mathies, is an associate professor of chemistry at Berkeley. Mathies has developed a 77-K cold stage for a laser-resonance Raman microscope, which makes it possible to freeze retinas for structural studies of the vitamin A chromophore in photoreceptor cells, which are difficult to isolate. The Raman spectral data may shed some light on why cone cells, for example, have different color absorption maxima. Mathies also employed this tech-

Your Choice!



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.

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 43 on Reader Service Card

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.

BINNIG

