

FREEMAN RECEIVES FIRST IUPAP MAGNETISM AWARD

Arthur Freeman, Morrison Professor of Physics at Northwestern University, is the first recipient of the International Union of Pure and Applied Physics Award in Magnetism. Sergei Vonsovsky of the Institute of Metal Physics in Sverdlovsk, Russia, presented Freeman with the award during a ceremony at the International Conference on Magnetism held in Edinburgh, Scotland, in September 1991.

The new award is given triennially for contributions to fundamental or applied magnetism, and the winner is chosen by an award committee of the IUPAP Commission on Magnetism. The award consists of a small cash prize and a model of a hysteresis loop set in magnetite.

Freeman's award recognizes his research on magnetism of surfaces, interfaces, monolayers, ultrathin films, sandwiches and modulated structures. Using Freeman's full-potential linearized augmented plane-wave method in the context of density functional theory, Freeman and his coworkers came up with descriptions of the properties of electrons in low-dimensional systems. They pre-

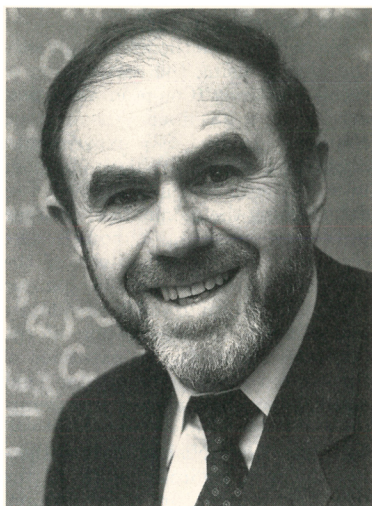
dicted in the early 1980s that magnetism at transition metal surfaces would be strongly enhanced over that in the bulk: 40% greater than in bulk for Fe(001) and 300% greater for Cr(001). Experiments done by a group at the University of California, Berkeley, confirmed Freeman's predictions.

Freeman was also a pioneer in the field of monolayer magnetism. He found that a monolayer of chromium on Au(001) should have a 500% larger moment than in the bulk and that vanadium, which is not magnetic in the bulk or at its surface, becomes antiferromagnetic with a large mo-

ment when in a monolayer. These predictions stimulated experimenters to search for evidence of such unexpected phenomena.

Freeman earned his PhD in physics at MIT with John C. Slater in 1956. From then until 1962 he worked at the US Army Materials Research Agency in Watertown, Massachusetts. For the five years after that he was head of the theoretical physics group and associate director of the Francis Bitter National Magnet Lab at MIT. Since 1967 he has been a professor in Northwestern's physics department; he was chairman of the department from 1967 to 1972.

Arthur Freeman



OBITUARIES

Robert Hofstadter

Robert Hofstadter, professor of physics at Stanford University, died at his home on 17 November 1990 at the age of 75. His death was due to a heart attack and followed a lengthy battle with heart disease.

Hofstadter was born in New York City in 1915. He graduated from the City College of New York in 1935 with a BS degree. From 1935 to 1938 he was a graduate student in physics at Princeton University, where he received both his MA and PhD degrees. In his graduate work he concentrated on the infrared spectra of simple organic molecules and, in particular, on the elucidation of the structure in formic acid now known as the hydrogen bond. He stayed at Princeton in 1939 as a postdoctoral fellow, beginning in this period what would be a lifelong interest in solid-state studies in luminescence and in photoconductivity. The following year, at the University of Pennsylvania, Hofstadter helped construct a large Van de Graaff generator. He also began studying nuclear physics and thought about the particle detectors that would be necessary for any experimentation in nuclear physics.



Robert Hofstadter

The advent of World War II interrupted these studies. During the war Hofstadter worked at the National Bureau of Standards on proximity fuses. Later he worked at the Norden Laboratory Corporation on servo systems, automatic pilots for aircraft and radio altimeter devices.

In 1946 Hofstadter returned to Princeton as an assistant professor of physics, and he began serious studies of nuclear processes and particle detectors. These studies included work