

Jacques Friedel

Jacques Friedel, head of the Physics Department at the University of Paris in Orsay, will receive the 1988 Von Hippel Award from the Materials Research Society during a ceremony at the 1988 MRS Fall Meeting in Boston. The award, the Society's highest honor, will be given in recognition of his many major contributions to a wide range of fields within the domain of condensed matter sciences which have profoundly influenced—both theoretically and experimentally—advances ranging from the quantum theory of solids, materials science, and metallurgy to chemistry.

Professor Friedel's research has been primarily directed toward basic and fundamental questions rather than specialized areas. As a result, his solutions have influenced virtually every line of condensed matter research over the past 30 years, including dislocations, creep, internal friction and work-hardening of metals, ferromagnetism, superconductivity, the electronic structure of metals and alloys, liquid crystals, and cluster physics.

The hallmark of his work encompasses pioneering contributions to the understanding of behavior of dislocations and strength of materials, electron theory of metals, and the properties of alloys. By 1954, he had formulated the ideas that have become known as the Friedel sum rule and Friedel oscillations, as well as others, which laid the foundations for subsequent developments in the field.

## Jacques Friedel Named 1988 Von Hippel Award Recipient

***Friedel has made major contributions to a wide range of fields within the domain of condensed matter sciences which have profoundly influenced...theoretically and experimentally...advances ranging from the quantum theory of solids, materials science, and metallurgy to chemistry.***

Around this time, he developed the concepts of virtual bound state and magnetic moments. His early papers on these topics, many co-authored with A. Blandin, form a classic body of work in solid state physics.

The list of his other notable achievements includes the development of the concept of spin glass; a real-space approach to calculating the electronic structure of materials that lack translational symmetry; the Friedel model for oriented cross-slip of dislocations; the dissociation of dislocations into disclinations; and the description of work-hardening in metals through the interaction of dislocations with a random array of obstacles. His 1956 text, *Les Dislocations*, is also a widely read classic that has been translated into several languages.

### **Friedel was instrumental in reestablishing the European physics community following World War II.**


Professor Friedel was instrumental in reestablishing the European physics community following World War II. He ensured that the applied side of materials science would not follow the pre-1939 metallurgical tradition, but instead fully incorporated the developments of dislocations and electronic structure. That he introduced these concepts in the 1950s in France—but that they were not fully adopted in other parts of Europe until the 1970s—attests to his vision.

The Laboratory of Solid State Physics, which Friedel established and which he is still associated with at the University of

Paris, quickly gained a high international reputation, largely as a result of the top-level scientists attracted to the institution by Friedel. He brought together researchers from different laboratories and ideas from different disciplines, and fostered the linkage of theoreticians and experimentalists. The majority of France's solid state physicists completed their theses with Friedel or his students, and many have gone on to establish themselves as noted authorities in their own specialties.

A strong proponent of the importance of the fundamental sciences, Friedel has been actively involved in the development of science policy in France, and has served as president of the European Physical Society.

Professor Friedel is a member of the French Academy of Sciences, Officer of the Légion d'Honneur, Commandeur of the Ordre du Mérite, and an honorary member of numerous foreign scientific societies. He has been awarded an Honorary Doctorate from the Ecole Polytechnique Fédérale of Lausanne (Switzerland), the Prix Ancelet, Robin et Holweck of the French Physical Society, the Gold Medal of the C.N.R.S., the Prix d'Aumale and the Prix Cognac Jay of the French Academy of Sciences, the Rosenhain Medal of the Institute of Metals in London, the Hume-Rothery Award of the American Institute of Mining, Metallurgical, and Petroleum Engineers, the Dannie Heineman Preis of the Göttingen Academy of Sciences, and the Acta Metallurgica Gold Medal.

Following presentation of the 1988 Von Hippel Award to Professor Friedel by MRS President John Baglin, Professor Friedel will provide a lecture highlighting aspects of his research work. The ceremony and lecture will be held Wednesday, November 30 at 6:00 p.m. in the America Ballroom, Westin Hotel, Boston. 

## The Von Hippel Award

The Von Hippel Award is the Materials Research Society's most prestigious award. It is presented annually to the living scientist who, in the Society's estimation, best exemplifies throughout a career the originality, brilliance of intellect, and diligence of purpose that are the hallmark of science at its best; who adheres to the strictest ethical standards and highest code of professional integrity; and whose vision transcends conventional disciplines, as does the science of materials itself.

The award consists of a synthetic ruby crystal suitably mounted, a cash honorarium, and a lifetime membership in the Society. It is named for Arthur Robert von Hippel, emeritus professor of the Massachusetts Institute of Technology, who was also its first recipient.

The MRS Awards Committee solicits nominations annually from among the membership and elsewhere in the community of materials scientists. The nominees are evaluated against the Society's criteria, rather than against each other. From among the candidates it has reviewed, the Awards Committee puts forward the names of the principal contenders for the honor. The nominees are considered in confidence by the Council of the Society. The Council, representative of the many disciplines and institutions within MRS, makes the final decision by a majority vote.

### Previous Von Hippel Award Recipients

1977

**Arthur R. von Hippel**  
Emeritus Professor, Massachusetts  
Institute of Technology

1978

**William O. Baker**  
Emeritus Chairman of the Board, Bell  
Laboratories

1979

**David Turnbull**  
Gordon McKay Professor of Applied  
Physics, Harvard University

1980

**W. Conyers Herring**  
Professor of Applied Physics, Stanford  
University

1981

**James W. Mayer**  
Francis Norwood Bard Professor of  
Materials Science and Engineering,  
Cornell University

1982

**Clarence M. Zener**  
Emeritus University Professor,  
Carnegie Mellon University

1983

**Sir Peter B. Hirsch**  
Isaac Wolfson Professor of Metallurgy,  
University of Oxford

1984

**Walter L. Brown**  
Head of the Radiation Physics  
Department, AT&T Bell Laboratories

1985

**John W. Cahn**  
Senior Fellow, Center of Materials  
Science, National Bureau of Standards

1986

**Minko Balkanski**  
Professor of Physics and Director of the  
Solid State Physics Laboratory,  
Universite Pierre et Marie Curie

1987

**Sir Charles Frank**  
Professor Emeritus, University of  
Bristol

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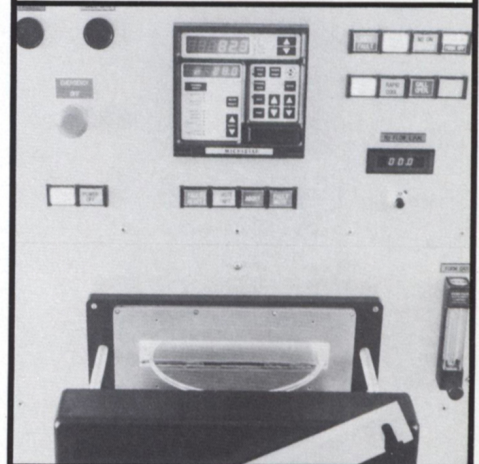
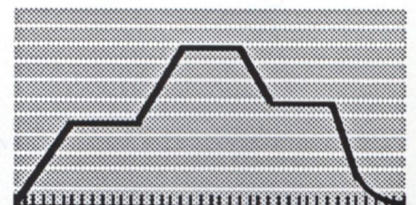
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