

2007 Acta Materialia, Inc. Gold Medal



The 2007 Acta Materialia Gold Medal has been awarded to Professor Herbert Gleiter, Director *emeritus* of the Institute of Nanotechnology of the Research Center Karlsruhe, Germany. Prof. Gleiter also holds the appointment as K.P. Chao Professor of Zhejiang University Hangzhou, P.R. China.

Professor Gleiter received his Diploma and

Ph. D. in Physics in 1965 and 1966, respectively from the University and the Max Planck Institute at Stuttgart. In 1970 he was awarded the Sc. D. (Habilitation) in Materials Science by the University of Bochum, Germany. Following post-doctoral fellowships at the University of Goettingen, Harvard University and MIT, he joined the University of Bochum in 1972 as Associate Professor. One year later he accepted the Chair-Professorship and the position of the Director of the Institute of Materials Science of the Saarland University at Saarbruecken, Germany. In 1980 he received a call to the University of Hamburg and in 1982 to the ETH at Zuerich, Switzerland. The Research Center Karlsruhe, one of Germany's largest National Laboratories, appointed him to the Center's Executive Board in 1994. In this position he was in charge of re-orienting the Basic and Applied Science activities of the Center. As a part of this mission he founded in 1998 the Institute of Nanotechnology within the Research Center Karlsruhe and became its first Director. This Institute is a multi-disciplinary structure in which twelve Institutes of various Universities (Darmstadt, Karlsruhe, Strassbourg and Ulm) co-operate in different areas of Nanoscience and Nanotechnology.

During the 1960's his research focused on precipitation hardening. The discovery of dislocation pairs by means of transmission electron microscopy opened the way to understand the strength and deformation behavior of superalloys, the most important class of metallic high temperature materials today. His corporation with Profs. Ashby, Chalmers and Turnbull at Harvard University introduced him to the field of inter-crystalline interfaces. During this period he pioneered the application of molecular dynamics and transmission electron microscopy to study the atomic structure of inter-crysta-

line interfaces. The proposal of the structural unit model of grain boundaries as well the discovery of the existence of dislocations in inter-crystalline interfaces turned out to be instrumental for the subsequent development of this field and for our present understanding of grain boundaries. In the late 1970's his research group opened the way to new area of Material Science by proposing the idea to synthesize a new class of crystalline materials in which the volume fraction of the crystallites forming these interfaces. Materials of this kind were first produced by the consolidation of nanometers-sized crystallites and were thus called nano-crystalline or nano-structured materials. In the subsequent years this field expanded at a remarkable rate: today more than 500 papers are published every year and about 5 international conferences are organized annually.

In recognition of his achievements, Prof. Gleiter has been elected to membership in three science and/or engineering academies including: the American Academy of Arts and Sciences (2004), the German Academy, Leopoldina (1999) and the US National Academy of Engineering (2004). He is also —among others— and Honorary Member of the Materials Research Society of India, a Fellow of the Japanese Society for the Promotion of Science, an Honorary Member of the President's Council of the University of Illinois and a Member of the Order of Merit of the Saarland, Germany.

Professor Gleiter's awards and honors include among others: the prestigious Leibniz Award, the Max-Planck-Prize, the Heyn Medal and the Gold Medal of the German and the Federation of the European Materials Societies (DGM and FEMS), the Heisenberg and the Humboldt Medal of the Humboldt Foundation as well as Honorary Doctor and Honorary Professor Degrees of the Universities of Darmstadt, Lanzhou and Hangzhou.

The Acta Materialia, Inc. Gold Medal is awarded annually by Acta Materialia, Inc., with partial support from Elsevier, Ltd. It consists of a gold medal, a monetary award, and an inscribed certificate. The criteria for nomination and selection are demonstrated ability and leadership in materials research. Prof. Gleiter was nominated for the award by a representative of the German Steel Institute (VDEh), who is also a Board Member, and was selected for the award by a distinguished international panel of judges.

The 2007 Acta Materialia Gold Medal will be presented to Professor Gleiter at the European Materials Research Society (EMRS) meeting in Warsaw, Poland, in September 2007, at which time he will also deliver the Acta Materialia, Inc. plenary lecture.