

KARL WEISSENBERG (1893-1976)

Karl Weissenberg was born in Vienna, Austria, in 1893. He studied at the Universities of Vienna, Berlin and Jena, majoring in mathematics, but also attending lectures in physics and chemistry as well as law and medicine. At the age of 23, he obtained a PhD in Mathematics from the University of Jena. His teaching and research activities covered an unusually wide range of disciplines. Weissenberg published over 70 original papers on the most varied of subjects, including, in Mathematics, the analysis of symmetry groups as well as tensor and matrix algebra, and, in Medicine, on new methods for the measurement of blood-circulation and the application of X-rays in cancer treatment. His main contributions, however, were in X-ray Crystallography and in Rheology. In 1922, he joined the Kaiser-Wilhelm Institut für Faserstoffchemie in Berlin and developed methods for the determination of the constitution and crystallographic structure of solids of all kinds. His work culminated in the design of the "Weissenberg X-ray Goniometer", an instrument which allowed for the first time a unique determination of the crystallographic structure in three-dimensional space. Weissenberg became Scientific Adviser, Kaiser Wilhelm Gesellschaft, in 1925, and Professor of Physics, Berlin University, in 1932. Parallel to his interests in crystallography, Weissenberg developed an interest in the new field of Rheology. He predicted various effects, which were at the time paradoxical, on the flow of fluids and he verified them experimentally. Best known is the so-called "Weissenberg Effect": Visco-elastic materials subjected to torsional movements

by a rotating rod develop normal forces which make them climb up on the rod. Using dimensional analysis, he introduced a dimensionless number representing the ratio of elastic to viscous effects, which later became known as the "Weissenberg number". In 1933, Weissenberg became a refugee and took up residence in the UK, where he concentrated on his rheological interests. He designed a new type of measuring instrument, known as the "Weissenberg Rheogoniometer", which allowed for the first time the measurement of the development of material stresses during shear flow in all three directions of space. He worked for government and industrial research institutions in Britain, and held a number of consultancies to industry in Britain and the United States. As Weissenberg liked to explain in his later years, his dedicated interest in combining theory and experiment goes back to advice from Albert Einstein: When Weissenberg came to Berlin in 1922, he went to see Einstein to ask for guidance on his scientific career. Einstein, who, as Weissenberg reported, was preoccupied at the time of their meeting with other business, replied briefly "Bauen Sie Instrumente! (You should built instruments!)", an advise taken up well by Weissenberg! Karl Weissenberg had the reputation of "being an entirely engaging and unselfish person", of "being a delightful companion, and ever helpful friend and also an excellent tennis player". He retired in The Netherlands. An obituary, written at the time of his death in 1976, concluded that "he was notable in his scientific achievements and noble in his personal qualities".



award



Weissenberg



K. Weissenberg

THE ESR WEISSENBERG AWARD

In commemoration of the scientific achievements of Karl Weissenberg, performed in several European countries, the European Society of Rheology (ESR) decided in 1997 to create a "Weissenberg Award" for outstanding, long-term achievements in the field of rheology. Eligible are rheologists whose centre of scientific activities lies in Europe.

The award is bestowed biannually, and past recipients of the Award have been:

Giuseppe (Pino) Marrucci (1998)
Hans Martin Laun (2000)
Ken Walters FRS (2002)
Roland Keunings (2005)
Thomas CB McLeish (2007)



Pino Marrucci



Martin Laun



Ken Walters



Roland Keunings



Tom McLeish



OLE HASSAGER

OLE HASSAGER, WEISSENBERG AWARDEE 2009

Ole Hassager, born in 1947, studied Chemical Engineering in his home country, Denmark. He then moved to the University of Wisconsin-Madison, USA, where he completed his PhD under the guidance of Professor R. B. Bird in 1973, and then stayed for another 3 years as a Research Fellow at the Rheology Research Center. He returned to Denmark and to the Technical University of Denmark (DTU), where he is now Professor of Chemical Engineering. Currently he is Director of the Graduate School of Polymer Science, a member of the Editorial Boards of JNNFM and Rheol. Acta and a member of the Danish National Research Council. For more than 30 years, Ole Hassager has been one of the prominent figures in rheology and non-Newtonian fluid mechanics. His research has always been characterized by a thorough approach, a careful analysis which seeks a fundamental understanding of phenomena, and a tackling of challenging problems. His early work with R. B. Bird in Wisconsin on kinetic theory and constitutive modeling of dilute polymer solutions led eventually to the co-authorship of the two classic volumes on the dynamics of polymeric liquids [1977, second edition 1987] and established him in the community. Ole has played a key role in viscoelastic flow calculations with many pioneering contributions (Lagrangian finite element methods [1983, 1995], moving FEM [1989] corner flows [1989], transient flows [1993, 1994], instabilities [1991], bubbles and drops [1989]). He and his co-workers contributed significantly to the development and application of numerical method-

ologies for other transport problems [1993, 1998]). The rheological problems he has addressed cover the whole range of polymeric fluids, from polymer solutions to viscoelastic melts to viscoplastic fluids. The tools he used and developed are also wide-ranging, from theory and simulations to experiments. Of particular note is the work of the last decade on extensional rheology of polymer melts. He and his group developed a transient filament stretching rheometer that represents the state-of-the-art in the field. In a series of landmark papers [2003-2008], they presented unique data on model polymers which revolutionized the field. These data [2003] energized the "entanglement" community and motivated the development of elegant concepts such as the interchain tube pressure in entangled linear chains [Marrucci and Ianniruberto, 2004]. The field is now one of the most active ones of polymer rheology with many interesting debates, and Ole is again leading with new experiments on stress relaxation after uniaxial extension [2008]. Ole Hassager's work has had and continues to have significant technological implications. His creativity has no limits. He has made tremendous advances in a vast range of rheological problems. His work is deep and sound and highlights the connection between macroscopic properties and fundamental material parameters. It reflects rheology at its best. Ole Hassager is a very approachable, very modest and friendly person, and a dedicated teacher and mentor. He is a true scholar, and a rheology pioneer.

JANEZ PIRNAT

WEISSENBERG AWARD SCULPTOR



Sculptor Janez Pirnat was born in Ljubljana, Slovenia, on September 25, 1932. His father, Nikolaj Pirnat, was a renowned author, illustrator, graphic artist, painter and sculptor who taught at the Ljubljana Academy of Art. His mother, Nada Kraigher, was a writer. It was his father who, until his death, gave Janez his first lessons in drawing and modelling, which were then continued in the workshop of sculptor Jakob Savinšek. After grammar school, he took up the study of architecture and later on the study of sculpture at the Ljubljana Academy, from which he graduated in 1959. He continued his studies at the special school of sculpture and later at the Institute of Sociology and Philosophy in Ljubljana. He finished his studies with

a thesis on the »Slovene Impressionism in the Work of Ivan Grohar« (1964). He then took part in the launching of »Problemi«, a cultural and sociological magazine, and was its chief editor for two years. He travelled widely in Italy, France, Switzerland, Germany, Belgium, the Netherlands and the former Soviet Union. In 1967 he received a grant from the Ford Foundation and spent a year working in the United States. In 1959, he set up an open-air studio at Sipar, near Umag, Croatia. Since then he has been a regular visitor to the Istrian quarries spending the major part of the year in Istria. Between autumn 1963 and spring 1964 he helped organize the artists' colony in a picturesque town of Grožnjan, and in autumn 1964 he sculpted his »Noše« (a series of National Costumes) in this beautiful medieval setting. Pirnat had his first public exhibition in Idrinja in 1951. Since then, he has had several solo exhibitions in Ljubljana and in nearly all principal cities of the former Yugoslavia. He also held one-man exhibitions abroad: Paris (1970), Udine (1872), Brussels (1970, 1973 and 1977), Bayreuth (1980), Zürich (1982), Gorizia (1983) and Trieste (1984). He has taken part in collective exhibitions at home and abroad. Every year since 1985, he opens the door of his studio in Ljubljana for a whole week in December, where he organizes an exhibition for a selected guest and also exhibits his own latest works. His larger sculptures and monuments have been erected in Ljubljana, Celje, Kanal by Soča, Nova Gorica, Idrinja, Prevoje near Domžale, Portorož, Umag and Lipica. His work can also be found in public and private collections at home and abroad. In 1966, he was awarded second prize at the Belgrade Book Fair for illustrations of the poems by Li Tai Po. In 1979, he received the Award of the Insurrection of the Slovene People for Sculpture and in 1984 the Župančič Award of the City of Ljubljana, also for his sculptural work. He lives and works in Ljubljana and at Sipar in Istria (Savudrija).



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SCULPTURE: Janez Pirnat; e-mail: janez.pirnat@siol.net
PHOTO: J. Vlachy; www.vlachy.com