

2004 Koiter Medal

Presented To

ZENON MRÓZ

In Recognition

For significant contributions to elastic/plastic
material behavior modeling, to tribology,
and to optimization

Presented At

**The 2004 International Mechanical
Engineering Congress & RD & D Expo
Anaheim, CA**



ZENON MRÓZ

Conferral at the Koiter Lecture
2004 International Mechanical Engineering
Congress and RD & D Expo

ZENON MRÓZ, D.Sc., professor, Institute of Fundamental Technological Research (Warsaw, Poland), *for significant contributions to elastic/plastic material behavior modeling, to tribology and to optimization.*

Dr. Mróz joined the Institute of Fundamental Technological Research of the Polish Academy of Sciences in Warsaw in 1956, after working as a designer of ship engines (1952-55). He obtained his doctor's degree of technical sciences (Ph.D.) there in 1959 for his thesis on limit analysis and optimal design of plate and shell structures. He spent one year (1959-60) as a post-doctoral research fellow at Brown University (Providence, R.I.), guided by professors W. Prager and D.C. Drucker. In 1964, he earned his habilitation degree (D.Sc.) for research on constitutive models of plastic deformation. In 1971, Mróz was nominated professor of engineering sciences at the Institute and head of the research division on inelastic analysis of materials and structures, a position he held until 2000. In 2000, he became the chairman of the Excellence Center on Advanced Materials and Structures at the Institute, with its activity supported by the European Commission.

An internationally acknowledged leader in applied mechanics of solids and structures, Mróz has been a visiting professor at universities in Canada, the U.S., Japan, the U.K. and France. His research activity has been concentrated in four areas: non-linear and inelastic analysis of structures, in particular limit states under monotonic and cyclic loading, optimal design methodology and sensitivity analysis with respect to material and design parameters; constitutive modeling of inelastic deformation of metals for variable or cyclic loading conditions; inelastic response of geomaterials (soils, rocks, concretes) to monotonic and

cyclic loading, including analysis of critical states such as static or cyclic liquefaction, rock burst effects, etc.; and mechanical response of contacting material interfaces with account for asperity interaction, frictional slip, wear and damage.

Mróz is renown for his elastic-plastic models, in particular those with anisotropic hardening. Several decades later, extended versions of such models are frequently used in ultimate load analysis of structures and in other areas of engineering design. The popularity of his concepts is not restricted to his field of academic education, mechanical engineering; his work is appreciated by civil engineers engaged in elasto-plastic analysis of reinforced concrete structures and geotechnical engineering. He has made recent achievements in friction and wear in metal forming processes.

His research results have been published in 290 papers, including 187 scientific journal articles, 90 conference proceedings and book articles. He is co-author of seven books, editor of seven conference volumes and member of editorial boards of 16 international and three national scientific journals. He supervised 24 doctoral theses, and delivered invited lectures at numerous universities and conferences.

Mróz was elected a corresponding member (1986) of the Polish Academy of Sciences and an honorary member (2001) of the Hungarian Academy of Sciences. He is a member of the International Society of Structural and Multidisciplinary Optimization and the Euromech Society.

He holds honorary doctorates from the University of Miskolc, Hungary; Faculte Polytechnique de Mons, Belgium; the Technological University of Cracow, Poland; the University of Waterloo, Canada; and the University of Minnesota, Minneapolis.

Warner T. Koiter Medal Committee

2003 - 2004

Pol D. Spanos, Chair

Lalit Anand	Dusan Krajcinovic
Stanley A. Berger	Wing K. Liu
Mary C. Boyce	Giulio Maier
Carl. T. Herakovich	Alan Needleman
Thomas J. R. Hughes	Charles R. Steele
Stelios Kyriakides	Viggo Tvergaard

Koiter Medal

Past Honorees

1997	Warner T. Koiter
1998	Viggo Tvergaard
1999	Charles R. Steele
2000	Giulio Maier
2001	Wolfgang G. Knauss
2002	James K. Knowles
2003	David R. J. Owen

THE WARNER T. KOITER MEDAL was established in 1996 to recognize distinguished contributions to the field of solid mechanics with emphasis on the effective blending of theoretical and applied elements, and on a high degree of leadership in the international solid mechanics community.

The medal honors the late Dr. Warner T. Koiter (1914-1997), world-renowned authority in the field of solid mechanics, and it commemorates his vast contributions as a research engineer and teacher.