



2004 Timoshenko Medal

Presented To

Professor Morton E. Gurtin

In Recognition Of

Seminal contributions to nonlinear continuum mechanics and thermodynamics, with applications to problems in materials science.

Presented At

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





Morton E. Gurtin
Professor of Mathematical Sciences
Carnegie Mellon University, Pittsburgh, PA

Dr. Gurtin joined Carnegie Mellon University, Pittsburgh, in 1966 and is currently alumni professor of mathematical sciences. His prior experience includes work as a structural engineer at Douglas Aircraft, Los Angeles; and at General Electric (Utica, N.Y.), in their Advanced Engineering Program.

Over the past 40 years, Gurtin has conducted research in the broad field of nonlinear continuum mechanics and thermodynamics, and has made outstanding, sustained contributions to theoretical and applied mechanics. During his early years in the field, he concentrated on understanding and developing the field of continuum thermodynamics. In the 1970s, he wrote a graduate textbook, *An Introduction to Continuum Mechanics* (Academic Press, 1982). During the 1980s, Gurtin turned to developing theories for the description of dynamical phase transitions. Building on the works of material scientists, he developed a complete mathematical theory of configurational forces, which culminated in two books, *Thermomechanics of Evolving Phase Boundaries in the Plane* (Oxford University Press, 1993) and *Configurational Force as a Basic Concept of*

Continuum Physics (Springer-Verlag, 2000). His most recent and current focus addresses the formulation of the underlying continuum mechanics and thermodynamic theories for formally modeling micro length-scale effects in crystal plasticity. He has also successfully advised over 20 doctoral students.

His extensive list of honors includes National Defense Fellow (1959-61), Brown University; Guggenheim Fellow and Senior Fulbright-Hays Research Fellow (1974), University of Pisa, Italy; Honorary Fellow (1981-1982) at the University of Wisconsin's Mathematics Research Center, Madison; Ordway Professor (1990), University of Minnesota, Minneapolis; Various journal dedications; Carnegie-Mellon's Richard Moore Education Award (1999); and the Agostinelli Prize (2001) from the Accademia Nazionale dei Lincei, Italy, a prestigious institution founded by Galileo Galilei.

Gurtin received his bachelor's degree in mechanical engineering at Rensselaer Polytechnic Institute (Troy, NY) in 1955. He earned his doctoral degree in applied mathematics at Brown University in 1961. He holds an honorary degree, laurea honoris causa in civil engineering (1994), from the University of Rome.





Timoshenko Medal

Past Honorees

1957	Stephen P. Timoshenko	1979	Jerald L. Ericksen
1958	Arpad L. Nadai	1980	Paul M. Naghdi
1958	Sir Geoffrey Taylor	1981	John H. Argyris
1958	Theodore von Kármán	1982	John W. Miles
1959	Sir Richard Southwell	1983	Daniel C. Drucker
1960	Cornelius B. Biezano	1984	Joseph B. Keller
1960	Richard Grammel	1985	Eli Steinberg
1961	James N. Goodier	1986	George R. Irwin
1962	Maurice A. Biot	1987	Ronald S. Rivlin
1963	Michael James Lighthill	1988	George K. Batchelor
1964	Raymond D. Mindlin	1989	Bernard Budiansky
1965	Sydney Goldstein	1990	Stephen H. Crandall
1966	William Prager	1991	Yuan-Cheng B. Fung
1967	Hillel Poritsky	1992	Jan D. Achenbach
1968	Warner T. Koiter	1993	John L. Lumley
1969	Jakob Ackeret	1994	James R. Rice
1970	James J. Stoker	1995	Daniel D. Joseph
1971	Howard W. Emmons	1996	J. Tinsley Oden
1972	Jacob P. Den Hartog	1997	John R. Willis
1973	Eric Reissner	1998	Olgierd C. Zienkiewicz
1974	Albert E. Green	1999	Anatol Roshko
1975	Chia-Chiao Lin	2000	Rodney Clifton
1976	Erastus H. Lee	2001	Ted Belytschko
1977	John D. Eshelby	2002	John W. Hutchinson
1978	George F. Carrier	2003	Lambert B. Freund

THE TIMOSHENKO MEDAL was established in 1957 and is conferred annually in recognition of distinguished contributions to the field of applied mechanics. Instituted by the Applied Mechanics Division, it honors Stephen P. Timoshenko, world-renowned authority in the field, and it commemorates his contributions as author and teacher.