Professor Sol. R. Bodner (1929-2019)

Obituary by Miles Rubin and Daniel Rittel (Technion):
It is with great sadness that we announce the passing of Professor Sol R Bodner. Sol had a long and distinguished career as an academic and an engineer who significantly contributed to numerous important research and engineering projects in the United States and in Israel. He is perhaps best known for the development of the Bodner-Partom model of viscoplasticity. Sol received a Bachelors degree in Civil Engineering from the Polytechnic Institute of Brooklyn in 1950, a Masters degree in Mathematics from the Courant Institute of Mathematics in 1953, and a Doctorate of Philosophy in Applied Mechanics from the Polytechnic Institute of Brooklyn in 1955. He joined the academic staff of the Division of Engineering at Brown University in 1956 and left at the rank of Associate Professor in 1964 to become a Full Professor at Technion-Israel Institute of Technology. At Technion he was a member of the: Department of Mechanics (1964-1965); Faculty of Mechanical Engineering (1965-1968; 1975-2019); and Department of Materials Engineering (1968-1975); retiring as a Professor Emeritus in 1997. Sol was President of the Israel Society for Theoretical and Applied Mechanics (ISTAM; 1993-2003); a member of the General Assembly of the International Union of Theoretical and Applied Mechanics (IUTAM; 1993-2003); and was one of the organizers of the 18th International Congress on Theoretical and Applied Mechanics (ICTAM) in Haifa, Israel in August 1992. Sol received numerous honors including the: Rothschild Prize for Engineering (Israel, 1982); Certificate of Outstanding Engineering Achievement from the Society of Mechanical Engineers (Israel, 1996); Markus Reiner Chair in Mechanics and Rheology (Technion, 1982-1997); and the Engineering Science Medal from the Society of Engineering Science (1998). He will be deeply missed by his family, friends and colleagues in mechanics.

Education:

1950 - B.C.E., Civil Engineering, Polytechnic Institute of Brooklyn.

1953 - M.S., Mathematics, New York University, Courant Institute of Mathematics.
1955 - Ph.D., Applied Mechanics, Polytechnic Institute of Brooklyn

Research Interests

Constitutive modelling of elastic-viscoplastic behavior of materials;
Material behavior at high strain rates;
Analysis of ballistic penetration and perforation;
Representation of creep and damage development in rock salt;
Viscoelasticity.

Academic Appointments

On professorial staff of Brown University, Providence, RI, USA (1956-1964)

Guest Appointments

Visiting Professor, U. California, Berkeley (1970)
Visiting Professor, U. Illinois, Urbana (1975, 1979)
Visiting Professor, ETH-Zurich, Switzerland (1983, 1990, 1994)
Visiting Professor, Kyoto U., Japan (1988)

Public Professional Activities

Head, Material Mechanics Laboratory

Honors and Awards

Rothschild Prize for Engineering (1982)
Markus Reiner Chair in Mechanics and Rheology

Selected Publications

S.R. Bodner, "A lower bound on bifurcation buckling of viscoplastic structures", Acta Mechanica [Suppl] 3, Springer-Verlag, Pub. 1992, pp 181-190, (1992).

K.S. Chan, S.R. Bodner, A.F. Fossum and D.E. Munson, "A constitutive model for inelastic flow and damage evolution in solids under triaxial compression", Mechanics of Materials, Vol. 14, pp 1-14, (1992).

M. Ravid, S.R. Bodner and I. Holcman, "Penetration into thick targets - refinement of a 2D dynamic plasticity approach", International Journal of Impact Engineering, Vol. 15, pp 491-499, (1994).

S.R. Bodner and M.B. Rubin, "Modeling of hardening at very high strain rates", Journal of Applied Physics, Vol. 76, pp 2742-2747, (1994).

M. Ravid, S.R. Bodner, and I. Holcman, "A two-dimensional analysis of penetration by an eroding projectile", International Journal of Impact Engineering, Vol. 15, pp 587-603, (1994).

K.S. Chan, N.S. Brodsky, A.F. Fossum S.R. Bodner and D.E.Munson, "Damage induced nonassociated inelastic flow in rock salt", International Journal of Plasticity, Vol. 10, pp 623-642, (1994).

S.R. Bodner and A. Lindenfeld, "Constitutive modelling of the stored energy of cold work under cyclic loading", European Journal of Mechanics/A Solids (in press).