

Preface

A BRIEF SUMMARY OF PROFESSIONAL CAREER OF PROFESSOR PIOTR PERZYNA

Professor Piotr Perzyna was born on August 1, 1931 in the village of Niedźwiada near Łowicz in Poland. He received the M.S. degree in 1956 from the Department of Mechanical Engineering of Warsaw Technical University. He subsequently completed a Ph.D. in Mechanics of Solids at the Institute of Fundamental Technological Research, Polish Academy of Sciences in 1959 under the supervision of Professor Waclaw Olszak. The academic year of 1961–1962 he spent abroad working as a Post Doc at Brown University with Professor William Prager. In 1963, he defended his D. Sc (habilitation) thesis.

Since the beginning of his scientific carrier he has been associated with the Institute of Fundamental Technological Research, Polish Academy of Sciences (IPPT PAN). He also held important administrative positions. In 1964 he was promoted to the rank of Associate Professor and the Head of Theory of Viscoplasticity Group, then from 1970 as a Professor, and from 1978 as a Full Professor. In the period 1980–1982 he was a Scientific Director of the Institute; in 1982 he became Head of Department of Theory of Inelastic Materials, Centre of Mechanics. During 1978–1980 he was also the Director of Doctoral Studies at the Institute. In recognition of his achievement he was invited as a Visiting Professor by a number of foreign universities, including University of Kentucky, USA (1969–1970); Université Poitiers, France (1982 and 1985), Brown University, Providence, R.I. (1982), MIT, Cambridge, Mass, U.S.A (1985), Tokyo University, Japan (1986), University of Hannover, Germany (1988–1991).

Professor Perzyna made significant scientific contribution mostly in the field of theory of plasticity, and viscoplasticity, adiabatic shear band, localization and fracture phenomena in solids. He has been particularly interested in high rate effects, thermomechanical couplings, microdamage effects and fracture under dynamic loadings.

Professor Perzyna is the father of a new discipline that is known under the name of “theory of viscoplasticity”. His pioneering work in this area has led to the formulation of many interesting projects, both at home and abroad. Of particular interest are the results of the constitutive modeling of inelastic materials with views of the describing the effects of localization and fracture. Professor Perzyna proposed an original concept of describing the above effects through the ther-

modynamic structure with internal parameters (state variables). He chose those parameters very carefully, considering both the physical foundations and the experimental observations. His concepts found wide spread applications to describe analytically phenomena of localization and damage in mono and polycrystals. He succeeded in deriving closed form solutions for the process of localization of plastic and viscoplastic deformations in solids.

More recently Professor Perzyna has been working in the area of instability of the processes of plastic flow and fracture in collaboration, among others, with the Technical University in Poznań and the University of Hannover. He made substantial contributions in the area of computer simulation of the process of plastic flow. The numerical procedures developed by him are stable and therefore are capable of predicting local effects leading to fracture. His work in this area is widely cited and further developed in a number of leading research centers in the USA, England, France, Spain, Denmark, Italy, Holland, Japan, Germany, Argentina, Bulgaria, Romania, and Russia.

Finally, one has to mention two other areas to which Professor Perzyna contributed over the years, that is the thermodynamics of continuous media as well as dynamic and wave effects. One of the first papers in this field was published back in 1963 in the well-established European journal *ZAMP*. "On the propagation of stress waves in a rate sensitive plastic medium", Vol. 14, pp. 241–261, 1963.

The above paper along with another ground breaking publication "The constitutive equations for rate sensitive plastic materials", *Quarterly of Applied Mathematics*, Vol. 15, pp. 321–332, 1963 laid the foundation for the new discipline of viscoplasticity and set up his brilliant international career which lasts until today. Professor Perzyna is the author of three monographs and about 260 original papers. Most of this work has been published in leading international journals.

Since 1964 he has participated and contributed to all IUTAM Congresses and in many international conferences and particularly the ICTAM Symposia and the EUROMECH Colloquia. In 1978, 1980, 1997 and 1998 he organized international courses in CISM, Udine, Italy and between 1981 and 1986 he was a member of the EUROMECH Advisory Committee. He received many distinctions and awards, including the Maximilian Tytus Huber Award in 1960; the award of the Scientific Secretary of the Polish Academy of Sciences in 1974 and 1978. In 1993 he received the Max Planck Research Award in recognition of his contribution to a long-range project conducted with Professor E. Stein at the University of Hannover. In the period 1966–1994 he was a member of the Editorial Committee of the *Archives of Mechanics* and *Engineering Transactions*. At various times he was also a member of the Advisory Board of the *International Journal of Plasticity*, *International Journal of Impact Engineering*, *JSME International Journal of Mechanics and Material Engineering*, and the *European Journal of Mechanics*.

Professor Perzyna's contributions to the education of almost two generations of professional colleagues are enormous. He promoted a dozen doctoral theses spanning a period of almost 40 years. The names of his Ph.D. students (in alphabetical order) are:

Angel Baltov, Józef Bejda, Paweł Dłużewski, Aldona Drabik, Kurt Frischmuth, Tadeusz Jeske, Witold Kosiński, Sumio Murakami, Zdzisław Nowak, Anna Pabjanek, Ryszard Pęcherski, Amalia Pielorz, Jacek Rońda, Katarzyna Szmit-Saxton, Tomasz Wierzbicki, Włodzimierz Wojno.

Piotr was a very demanding advisor but also an excellent and highly respected professional colleague and friend. His enthusiasm, high ethical standards, and scientific rigor in his approach to research shaped the minds of generations of his co-workers. Many of his former students and collaborators have become well-established professionals at home and abroad. For example, Dr. Wierzbicki holds the position of Professor at the Massachusetts Institute of Technology; Dr. Baltov is the Scientific Director of the Bulgarian Academy of Sciences; Dr. Murakami is a Professor at Nagoya University; Dr. Kosiński is a Professor and the vice-President for Scientific Affairs of the Polish-Japanese Institute of Information Technology and Dr. Drabik is the vice-President for Students Affairs of the same Institute; Dr. Rońda is a Professor at the Cape Town University, Dr. Saxton is a Professor at the Loyola University, Dr. Pęcherski is a Professor at the Technical University of Kraków, and Dr. Frischmuth is an Associate Professor at Rostock University.

Many colleagues and friends around the world would like to join the above group of Piotr's close collaborators and wish him many happy years in his professional and private life.

Witold Kosiński *Warsaw, Poland*

Tomasz Wierzbicki *Cambridge, MA*