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## Preface

THE MAIN subject of the Euromech Colloquium 210 on "Postcritical Behaviour and Fracture of Dissipative Solids", Jabłonna 16–19 June, 1986 was the constitutive and numerical modelling for postcritical behaviour and fracture phenomena of inelastic solids and the discussion of criteria of deformation instabilities (localization of plastic deformations) of inelastic flow processes.

The discussion focused on different approaches to constitutive modelling of instability and fracture as well as on physical and experimental foundations of the subject. Of particular interest were contributions of the instability phenomena of inelastic flow processes. The different modes of localization of plastic deformations were discussed. This subject is of a great importance because fracture is usually preceded by different kinds of localization processes such as necking or shear bands.

It is a very well known fact that in a proper treatment of fracture mechanisms, an important role is played by the microdamage processes. To understand these processes deeper, consideration of nucleation growth and coalescence of microvoids or microcracks is necessary. That is why the microdamage processes constituted one of the main problems in the meeting.

Nowadays it would be very difficult to imagine a discussion on practical applications of fracture mechanics without solutions of initial-boundary-value problems. It seems that it is possible to achieve this aim by applying computational methods only. The computational and numerical procedures in fracture mechanics were frequently discussed during the Colloquium.

It is not necessary to point out the importance of experimental observations for the analysis of instability and fracture phenomena. In solid mechanics, like in any branch of physics, experiment plays an important role.

It is noteworthy to stress that instability and fracture phenomena are very complex. Both of these phenomena are time- and temperature-dependent. So, we can expect different results, i.e. different instability modes and different fracture mechanisms for the same solid subject to different deformation-temperature processes. For instance, we observe very important differences between the quasi-static and dynamic processes. These differences were extensively discussed during the meeting.

There is also no need to stress the importance of instability and fracture phenomena for practical, technological purposes. We study and investigate the fracture phenomenon to understand it and to avoid it in technological processes.

The papers presented at the Colloquium were original and contained valuable contributions to the problem discussed.

The Editorial Board of the Archives of Mechanics kindly agreed to publish a special colloquium issue of the journal in order to assemble the papers presented at the meeting which have not appeared previously in other scientific journals. This action is gratefully acknowledged by the Organizing Committee of the Colloquium.

*Piotr Perzyna*  
*Chairman of the Colloquium*