INTRODUCTORY ADDRESS

On behalf of the University of Miskolc let me first of all welcome the respected participants of the international scientific conference. It is always a particular occasion special chance and a pleasant excitement, when the advanced scientists of a certain special field come together to discuss and summarize the actual questions of the given topic as well as to indicate the future routes. Conferences with limited number of participants seem to be especially suitable for this purpose, because here the sharp specialized experts of a narrow scientific field are potentially able for an efficient exchange of views. I am convinced, that it will just happen this way in Miskolc too.

The University of Miskolc is the host and the co-organizer of the Conference on Solidification and Microgravity. It is especially a great pleasure, that the invitation of organizes has got through to the far America, China, Soviet Union, and the 22 oral papers, the poster exhibition as well as the round table discussion promise a high level and intensive workshop conversations. Many people have worked on preparing this conference. Hereby let me express my thanks to the Scientific Council and Operative Organizing Committee for their thorough work.

Nowadays the material science is developing extremely quickly. Besides the improvement of traditional methods of material production, today the most attractive challenge is the production of materials under extreme conditions, which is full of surprises and includes the promise of new discoveries. Among them an especially great attention is devoted to the space-material technology, and I am glad to learn, that the University of Miskolc has also made con-
siderable steps towards this theme, and is ready for the international evaluation and cooperation.

University of Miskolc is a legal successor of the ancient Academy, called Bergscole, founded in 1735 in Selmecbanya and moved to Sopron in 1919, then to Miskolc in 1949. Besides the ancient mining and metallurgical sciences, the sciences of mechanical engineering, law and economy are also studied and taught here on a high level, the scope of education has extended, owing to this it has already became a real university in its european sense. Besides the fast progress of sciences, our recent situation is characterized also by the spectacular change of internal political life as well as of our foreign relations. We are looking for new connections, new partners, new scientific perspectives, considering, that the laws of nature know neither any state border nor any political restrictions.

Dear guests, ladies and gentlemen! Walking through our University and through the town of Miskolc - I hope - you will feel the friendliness and hospitality of the country, which feeling will be enhanced by the enthusiastic work of the organizers. I wish the conference a good work a useful exchanges of view, the intensification of professional connections and a pleasant pastime.

F. Kovács
Rector
University of Miskolc
You, Dear Reader find in this volume the text of papers presented on the Conference on Solidification and Microgravity. The publication of this book is an illustrious event both for the organizers and for those, who are interested in this fashionable topic.

The organizers - in compliance with the purposefulness of the Hungarian science and the dashing Hungarian character - invited first time the best scientists of this special field to Miskolc. The program indicates, that the University of Miskolc founded in 1735 wants to play a role in answering the exciting questions of solidification and microgravity. The contribution of microgravity scientists having an international reputation, can obviously stimulate the Hungarian transformation from mute roles to roles of higher professional level.

One of the most important topics of the Conference was, whether we have sufficiently understood the dendritic and eutectic solidification, the monotectic process and the solidification of suspensions. The other question is thoroughly connected to the above one: whether the microgravity experiments have promoted and can promote the more exact understanding of the phenomena. Talks have continued it in the pauses of Conference and the participants declared their conviction on the evening round table discussions: a number of details of solidification cannot at all be explained or modelled without microgravity experiments. Therefore one of the most important preconditions of theoretical advancement is to ensure a priority to the well considered, perfect prepared space experiments in the future.
One of the greatest observable results of space experiments is, that the significance of melt convection and sedimentation has been recognized. As a result, the effects of surface tension and melt geometry, as well as of viscosity and gravity can be better predicted nowadays in solidification processes proceeding on the Earth. Unfortunately, despite this progress complete solidification theory considering also the convection flow is not worked out yet; the urgent necessity of such model is quite obvious today.

The brightening up of East-West dialogue, the opening of exclusive workshops, have infused new hopes into every participant on the Conference. This hope sustaines also the Hungarian microgravity researches. The living ambitions - getting recently to the attraction of ESA and NASA - have received new scales and standards since the East-European political changes. Perhaps this volume can also promote further cooperations, it helps to find new succesful collaborating partners.

Finally, it is my very kind duty to thank the members of the Scientific Committee for their valuable collaboration and participation. I'm also thankful to my cooperating partners in the Organizing Committee for their continuous conscientious activity.

P. Bárczy
Chairman of the Organizing Committee