

# FOREWORD

The Physical Metallurgy and Materials Science Conference is held every three years in selected great academic centres in Poland under the auspices of the Committees of Metallurgy and Materials Science of the Polish Academy of Sciences. This time it has been organized as an event of the Federation of European Materials Societies FEMS and under the Honorary Patronage of Professor Jan Kryszewski, Rector Magnificus of the Technical University of Lodz.

The seventeenth International Conference took place in Lodz in June 2004 under the title 'Advanced Materials and Technologies' and addressed current research efforts and achievements in design and improving the performance of structural and functional materials. In particular, the relationship between the material production route, its chemical and phase composition and microstructure on one hand and its numerous properties on the other hand as well as various factors affecting the efficiency of applied advanced technologies was dealt with. The emphasis was paid to nanostructures and to properties determined in nano- and/or micro-scale dimension.

This volume contains the selected papers which discuss the most interesting and up-to-date topics presented during the Conference. Their authors were asked to prepare extended contributions in order to allow for possibly comprehensive descriptions of the issues. The editors would like to thank the authors for their efforts. As a result of them a wide range of advanced materials and technologies is described in terms of most relevant problems which affect their application.

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