

PREFACE

We are pleased to present the proceedings of The XXI Conference on Technologies and Properties of Modern Utility Materials (TPMUM 2013) held on May 17, 2013 and hosted by The Faculty of Materials Engineering and Metallurgy of Silesian University of Technology in Katowice, Poland (www.wimim.polsl.pl).

The Faculty of Materials Engineering and Metallurgy is one of fourteen Faculties of Silesian University of Technology. The Faculty structure consist of four departments: Institute of Metals Technology, Institute of Materials Science, Department of Production Engineering and Department of Industrial Informatics.

The TPMUM Conference is organised annually in conjunction with the celebration of National Metallurgist's Day in Poland. It is the occasion for faculty members, students and guests to share and discuss the results of their research and plans for the future development of the Faculty. The scope includes topics related to materials engineering, in particular, advanced analytical methods in materials science, development and application of metal alloys, ceramics, composites, their processing techniques and related environmental issues.

Very important event of this year's Conference was the ceremony of granting Honorary Professorship on Silesian University of Technology to Professor Marek Hetmańczyk.

During the Conference two plenary lectures were held by our special guests. Lecture presented by Professor Jan Sieniawski from Rzeszow University of Technology was titled *Material Science for Aircraft Industry* and lecture by Doctor Romuald Talarek, chairman of Polish Steel Association, was titled *Perspectives for the Development of the Polish Steel Industry*. In addition to plenary and seminar sessions a poster session open to participants and faculty students was also organised.

This year's proceedings include 54 papers peer reviewed by international specialists from Poland, Czech Republic, Slovakia, Germany, Russia and Romania. Papers are categorised in five chapters: I. Microstructural Characterisation, II. Advanced Thermal, Mechanical and Chemical Processing, III. Surface Engineering and Corrosion Resistance, IV. Materials and Environment and V. Advanced Materials for Transport Industry. *Chapter I* concerns with microstructure studies using advanced electron microscopy techniques. *Chapter II* contains papers related to development of materials processing techniques and evaluation of materials properties during processing. *Chapter III* deals with the development of protective coatings and other methods that increase corrosion resistance of metal alloys. *Chapter IV* includes papers that deal with waste management, environmental impact of materials processing industry and optimization of processing technologies. *Chapter V* concerns with the development of modern alloys used for manufacturing engine parts and structural components in aircraft and automotive industries.

The Conference should be considered a success. As an Editors of this proceedings we would like to thank all participants for their attendance and the effort of preparing the papers. Special thanks for reviewers and everyone who was helpful in preparation of this proceedings.

Editors