



POLISH ACADEMY OF SCIENCES - MATERIALS SCIENCE COMMITTEE
SILESIAN UNIVERSITY OF TECHNOLOGY OF GLIWICE
INSTITUTE OF ENGINEERING MATERIALS AND BIOMATERIALS
ASSOCIATION OF ALUMNI OF SILESIAN UNIVERSITY OF TECHNOLOGY

Conference
Proceedings

11th INTERNATIONAL SCIENTIFIC CONFERENCE
ACHIEVEMENTS IN MECHANICAL & MATERIALS ENGINEERING

Preface

This year, the International Scientific Conference of the „Achievements in Mechanical and Materials Engineering” series, successful since its beginning, is organised for the eleventh time now. This conference, symbolised by an owl as a symbol of wisdom experiences a continuous interest of the scientific community. About 900 papers have been published in Conference Proceedings up to date, and more than 300 out of them in the extended form have been published in the Journal of Materials Processing Technology. For many years about 150-200 participants have been taking part yearly in the conference; this year about 150 guests will participate, too. Representatives from all continents have participated in the conference throughout the years, including representatives from nearly all European countries, and also from China, Japan, Malaysia, Hong Kong, Taiwan, South Korea, Iran, Israel, Bangladesh, Australia, Egypt, Canada, Mexico, the USA, Brazil, Argentina. Representatives from ca. 30 countries used to participate yearly in every conference. This is a source of satisfaction as it yielded an opportunity for many people to establish personal contacts for the scientific collaboration with scientists from other countries, and also it enabled young scientific workers to meet the world renowned scientific authorities in person.

The conference has gained since its beginning Patrons in persons of the consecutive Chairmen of the Materials Science Committee of the Polish Academy of Sciences – prof. Zbigniew Bojarski, prof. Tadeusz Bold, and currently prof. Adolf Maciejny, as well as editors of the Journal of Materials Processing Technology – prof. Frank W. Travis from Scotland a distinguished editor and prof. Saleem M.S.J. Hashmi from Ireland on editor-in-chief. I would like to thank them sincerely in the name of all Conference participants, whose contributions have been included into the worldwide information circulation in this way. The conference has been the converging point for the large group of the eminent scientists of the worldwide reputation, participating in person in the conference since many years, and also participating in refereeing papers submitted for the presentation at the conference and the publication in conference proceedings, therefore guaranteeing its high scientific level, oftentimes raising questions for very interesting scientific discussions during the conferences.

About 80 scientists from many countries participate in the activities of the International Programme Committee of the AMME'2002 Conference, the majority of whom participate yearly in this conference. Either they or the other members of the Programme Committee take part actively in refereeing of invited papers submitted to the Conference, and above all those intended to be published as the full versions. Shortened versions of these invited papers are published in the conference proceedings. The Organising Committee has qualified for printing about 140 papers, in the form sent by their Authors. The remaining papers that did not meet the merit or formal requirements, and also submitted after November 20, 2002, were not qualified for printing. I would like to thank sincerely all Authors for their efforts exerted to prepare those papers and presenting them during the conference, what has added splendor, and virtually made the conference possible. I would like also to thank members of the Organising and Programme Committees for their effort exerted for the merit preparation of the Conference, reviewing process of the submitted invited papers, and also for promoting the Conference and its achievements in their national societies.

The broad scope of topics of the conference ranging from machine design and operation problems, as well as mechanics and design theory to materials engineering and technology of materials processing, ensured the unrestricted exchange of ideas between scientists representing these, seemingly distant, areas of the engineering knowledge, and gave the opportunity for the significant enrichment of the methodological skills both in engineering design and also in scientific research. Issues of computer assistance in engineering and scientific tasks, as well as its implications in teaching featured the valuable enrichment of the conference scope of topics. In addition, the conference scope of topics was extended by workshops accompanying the conference, organised yearly within the framework of the research and didactic programmes carried out by teams consisting of conference participants, and meetings of Polish bodies within the framework of the Polish Academy of Sciences.

The close cooperation links were established among the conference participants, either within the frameworks of CEEPUS program, and also within the frameworks of the bilateral international agreements or agreements between universities from various countries and numerous agreements that were made possible because of the personal friendships, currently carried out within the SOCRATES ERASMUS programmes, in which mostly students coming from professors participating in the conference participate. The fruits of these links are multiple mutual publications co-authored by the international teams of authors, appearing more and more often, among others, in the conference proceedings, and medium and long term scientific stages of both

foreign guests in Poland and also in many countries, to which young Polish scientific workers go, as well as visits of scientists from other countries participating in the conference. This brought, among others, many PhD and MSc dissertations that were worked out thanks to this collaboration, and also many awards and honorary titles for the scientific collaboration whose beginning was made possible by contacts established within the framework of this conference. In this sense, the community of the conference participants creates the international association promoting young scientific workers and scientific disciplines in which they work. This role is hard to overestimate and also it is impossible not to mention it at the conference anniversary.

The award in the name of prof. Fryderyk Staub symbolized by a golden owl – symbol of wisdom is conferred since several years to outstanding worldwide known scientists at the consecutive conferences from the “Achievements in Mechanical and Materials Engineering AMME” series in recognition for their achievements in promoting of the Polish science and higher education on the international arena and for achievements in collaboration with the Polish scientific community.

During the consecutive conferences these honorary awards have been conferred to the eminent scientists widely known in the world, that is:

- Prof. Marcel Hubert Van de Voorde from Belgium,
- Prof. Frank William Travis from Scotland,
- Prof. José Manuel Torralba Castillo from Spain,
- Prof. Maria Helena Robert from Brazil,
- Prof. Saleem Mahammed Sarwar Jang Hashmi from Ireland,
- Prof. Boris Ivanov Tomov from Bulgaria.

The award is connected with the statuette of a golden owl and a magnificent diploma.

The decision has been taken to distinguish simultaneously three eminent scientists this year, originating from three different countries: Israel, Slovenia and Slovak Republic, albeit due to the global format of their activity they are known throughout the world - they work also in many continents, sometimes far from their places of birth. I have the honour to declare in the name of the Award Chapter that:

- **Professor Yoseph Katz from Israel,**
- **Professor Janez Kopač from Slovenia,**
- **Professor Marcel Žitňanský from Slovak Republic**

have become the laureates of the honorary award in the name of Professor Fryderyk Staub for year 2001, for achievements in promoting the Polish science and higher education in the area of materials

engineering on the international arena and for achievements in co-operation with the Polish scientific community in this area.

To the numerous congratulations that the distinguished Laureates receive on this occasion I add my personal wishes of the best luck in their personal life and further great successes in their scientific and didactic, and organisational activities, with the benefit for the world science.

Particular thanks go to my closest associates from the Department of Materials Processing Technology and Computer Techniques in Materials Science, of the Silesian University of Technology, and mostly to my daughter Marzena Kraszewska, MA, and to Dr Klaudiusz Gołombek, Mr Mirosław Bonek, MSc, Mr Daniel Pakuła, MSc, Mr Mariusz Krupiński, MSc, Mr Tomasz Tański, MSc and Mr Rafał Maniara, MSc, and also to Dr Eugeniusz Hajduczek, Dr Janusz Madejski, Dr Janusz Mazurkiewicz, Dr Wojciech Sitek, Dr Adam Zarychta, Mr Jarosław Konieczny, MSc, Mr Jarosław Mikuła, MSc, and Ms Magdalena Polok, MSc, for their great commitment in the activities connected with preparation of this Conference.

I would like to thank - to the effective - Printing House of the Silesian University of Technology in Gliwice, that in a short time printed and bound the conference proceedings, and mostly to its Director, Mr Marek Warecki, BSc, Eng.

I wish all the Conference participants wholeheartedly the fruitful debates and successful presentations, and a nice stay in Gliwice and Zakopane, and already today I invite you to participate in conferences from this series in the next year.

Dr h.c. Prof. Leszek A. Dobrzański
Chairman
of the Organising and Programme Committees
of the International Scientific Conferences on
“Achievements in Mechanical and Materials Engineering”
Dean
of the Mechanical Engineering Faculty
of the Silesian University of Technology

Gliwice, December 2002