Preface

The 12th National Scientific Conference Ti2015 was held in Zawiercie – Poland by the Faculty of Civil Engineering of Czestochowa University of Technology from October 11 to 14, 2015. This was the third occasion on which the conference was organised by Czestochowa University of Technology (1993, 2002 and 2015).

The Conference was an occasion to bring together scientists and practitioners, exchange knowledge and experiences in the scope of manufacturing, handling, microstructure, properties and applications of titanium and its alloys, as well as to promote innovative solutions in this field.

The unique properties of titanium, especially its alloys, such as high specific strength (strength-to-weight ratio) and excellent corrosion resistance in many corrosive atmospheres justify their use, despite the relatively high price. The aerospace, automobile as well as military industries like titanium for the reduced weight of vehicles, while the chemical and petrochemical industries take great advantage of titanium's corrosion resistance. Over the past decades, biological compatibility increased the use of titanium and its alloys in medicine and jewellery manufacturing. Titanium materials are also used in several everyday products such as watches and eyeglass frames, bicycles, golf clubs and laptop computers. Commercially pure titanium is increasingly being used for exterior architectural applications as it will never require any maintenance. Most titanium production is used to make titanium dioxide. This intensely white pigment, with a high refractive index and strong UV light absorption, is used in white paints, food coloring, toothpaste, plastics and sunscreen. Recently, the photocatalytic properties of titanium dioxide have been used in the innovative cement TioCem, which guarantees reduction of pollutants in the air and self-cleaning concrete surfaces.

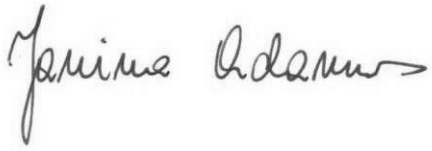
Although titanium is attractive for numerous industries, its applications are limited due to the fact that it is very difficult in production and processing. There are some limitations in metallurgical processes due to the high melting and casting temperature. Metal forming processes such as sheet forming or forging as well as joining processes also require high technological experience. Research on determining both the mechanical and technological properties of titanium alloys, as well as selection of the optimal parameters of titanium processing have been conducted in Poland for many years, as evidenced by the fact that the Conference on Titanium and its alloys has been organized since 1990 and still enjoys great popularity. The increased number of works on the surface treatment of titanium alloys deserves particular emphasis. The large number of papers presented during the Conference suggests that the exchange of experiences between representatives of scientific centres and industries will contribute to development and progress in the use of titanium in technology and medicine.

We would like to express our gratitude to all the participants, especially the speakers and the session chairpersons as well as the organizing committee and all other persons without whose help the Conference would not have been such a success. We are also very grateful to the Scientific Committee members for reviewing the papers. There are 35 peer reviewed contributions from 16 Polish scientific centres as well as 11 companies using titanium and its alloys in the industry. The presented research covers a diverse field from the fundamental testing and characterisation of titanium to the development of new and innovative titanium technologies.

The XII National Scientific Conference “Titanium and its alloys - 2015” had a unique character as the 55-year career of Prof. Monika Gierzynska-Dolna was celebrated. Professor Gierzynska-Dolna is an outstanding tribologist and person who sees titanium primarily as a material for biocomponents that restore health and mobility. We would like to wish Prof. Monika Gierzynska-Dolna good health and further scientific successes.

During the Conference, Lublin University of Technology was elected and selected as the host university to hold the 13th Conference on Titanium and its alloys. We would like to congratulate Prof. Barbara Surowska and her colleagues and hope that the conference is a success.

On behalf of the Ti-2015 Organising Committee



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