

Journal

of Achievements in Materials
and Manufacturing Engineering



Published monthly as the organ of the World Academy of Materials and Manufacturing Engineering

Editor-in-Chief Prof. Leszek A. Dobrzański

Volume 39 • Issue 2 • April 2010





Journal

of Achievements in Materials
and Manufacturing Engineering

PUBLISHED SINCE 1992

formerly as **Proceedings on
Achievements in Mechanical
and Materials Engineering**

Published monthly as the organ of the World Academy of Materials and Manufacturing Engineering

Editor-in-Chief

Prof. Leszek A. Dobrzański - Gliwice, Poland

Deputies Editor-in-Chief

South America

Prof. Maria Helena Robert - Campinas, Brazil

North America

Prof. George Totten - Portland, USA

Europe

Prof. Jose Manuel Torralba - Madrid, Spain

Asia

Prof. Yong Taek Im - Daejeon, South Korea

Australia

Prof. Kanaka Durga Vara Prasad Yarlagadda
- Brisbane, Australia

Africa

Prof. Abdalla Wifi - Cairo, Egypt

Associate Editors

Dr Mirosław Bonek

Dr Małgorzata Drak

Dr Klaudiusz Gołombek

Ms Marzena Kraszewska, MA

Dr Janusz Madejski

Dr Daniel Pakuła

Editorial Assistance

Dr Magdalena Polok-Rubinić

Dr Anna Włodarczyk-Fligier

Dr Bogusław Ziębowicz

Ms Anna Achtełik, MSc

Ms Justyna Hajduczek, MSc

Mr Paweł Jarka, MSc

Reading Direct

Mr Adam Jagiełło, MSc

Mr Piotr Zarychta, MSc

Editorial Board

Prof. Gilmar Batalha - Sao Paulo, Brazil

Prof. Emin Bayraktar - St-Ouen, France

Prof. Milan Brandt - Swinburne, Australia

Prof. Tara Chandra - Wollongong, Australia

Prof. Antonio Cuhna - Guimaraes, Portugal

Prof. Marek Dollar - Oxford, Ohio, USA

Prof. J. Paulo Davim - Aveiro, Portugal

Prof. Sabahudin Ekinović - Zenica, Bosnia and Herzegovina

Prof. Renato Esposito - Naples, Italy

Prof. Spilios Fassois - Patras, Greece

Prof. Swadhin Ghosh - Rösraath, Germany

Prof. Janez Grum - Ljubljana, Slovenia

Prof. Toshio Haga - Osaka, Japan

Prof. Abdel Magid Hamouda - Doha, Qatar

Prof. Stuart Hampshire - Limerick, Ireland

Prof. Lauri Holappa - Espoo, Finland

Prof. John Barry Hull - Nottingham, United Kingdom

Prof. Mark James Jackson - West Lafayette, Indiana, USA

Prof. Krzysztof Jemielniak - Warsaw, Poland

Prof. Jerzy Jędrzejewski - Wrocław, Poland

Prof. Yosef Katz - Beer Sheva, Israel

Prof. Andrzej Klimpel - Gliwice, Poland

Prof. Ivars Knets - Riga, Latvia

Prof. Janez Kopac - Ljubljana, Slovenia

Prof. Karl Kuzman - Ljubljana, Slovenia

Prof. Anatolij Kuzmenko - Khmielnitsky, Ukraine

Prof. Petr Louda - Liberec, Czech Republic

Prof. Stanisław Mitura - Łódź, Poland

Prof. Andrew Nee - Singapore, Singapore

Prof. Jerzy Nowacki - Szczecin, Poland

Prof. Abraham Ogwu - Paisley, United Kingdom

Prof. Fusheng Pan - Chongqing, China

Prof. Mario Rosso - Turin, Italy

Prof. Antonio Sousa - Fredericton, NB, Canada

Prof. Božo Smoljan - Rijeka, Croatia

Prof. Jerry Sokolowski - Windsor, Ontario, Canada

Prof. Zinovij Stotsko - Lviv, Ukraine

Prof. Jerzy Świder - Gliwice, Poland

Prof. Ming-Jen Tan - Singapore, Singapore

Prof. Boris Tomov - Rousse, Bulgaria

Prof. Marcel Van De Voorde - Brussels, Belgium

Prof. Senay Yalcin - Istanbul, Turkey

Prof. Bekir Sam Yilbas - Dhahran, Saudi Arabia



Reading Direct

This journal is a part of Reading Direct, the free of charge alerting service which sends tables of contents by e-mail for this journal and in the promotion period also the full texts of papers. You can register to Reading Direct at

<http://www.journalamme.org>

Patronage



World Academy of Materials
and Manufacturing Engineering



Polish Academy of Sciences,
Committee of Materials Science,
Section of Metallic Materials



International Federation of Heat Treatment and Surface
Engineering



Association of Computational Materials Science and
Surface Engineering



Institute of Engineering Materials
and Biomaterials of Silesian University
of Technology, Gliwice, Poland

Financial support

The efforts to achieve the financial support of the Journal in 2010 from the Ministry of Science and Higher Education in Poland have begun.

Abstracting services

This Journal is sent to individual receivers from ca. 50 countries of the world and is delivered to the National Libraries and Universities and also to other scientific institutions in ca. 50 countries of the world. The electronic system of Reading Direct allows to access to the electronic version of that journal on-line, in the promotional period free of charge. This Journal is included in the reference list of the Polish Ministry of Science and Higher Education (6 points). The Journal is cited by Abstracting Services such as:



The procedure of its registration in the databases of Compendex, CiteSeer, GetCited and Web of science has begun.

Journal Registration

The Journal is registered by the Civil Department of the District Court in Gliwice, Poland at number 279.

Publisher



Gliwice 44-100, Poland
ul. S. Konarskiego 18a/366
e-mail: info@journalamme.org

Bank account:
Stowarzyszenie Komputerowej Nauki o Materiałach i Inżynierii Powierzchni
Bank name: ING Bank Śląski
Bank address: ul. Zwycięstwa 28, 44-100 Gliwice, Poland
Account number/ IBAN CODE: PL7610501298100002300809767
Swift code: INGBPLPW

Gliwice – Campinas – Portland – Madrid – Daejeon – Brisbane – Cairo

© 2010 International OCSCO World Press. All rights reserved
The paper used for this Journal meets the requirements of acid-free paper
Printed in Poland

Cover story

Istanbul in Turkey is a peculiar symbol of the international cooperation, as the only city in the World situated in two continents. The cooperation between two continents is symbolised by two suspension bridges in Istanbul. The Bosphorus Bridge, also called the First Bosphorus Bridge with a view for the Asian side, which can be seen in the big picture on the cover, is one of the two bridges in Istanbul, Turkey, spanning the Bosphorus

strait and thus connecting Europe and Asia. The bridge is located between Ortaköy (on the European side) and Beylerbeyi (on the Asian side). It is 1,510 m long; the distance between the towers is 1,074 m. The Fatih Sultan Mehmet Bridge, seen in the first small picture, named after the 15th century Ottoman Sultan Mehmed the Conqueror also known as the Second Bosphorus Bridge, is a second bridge in Istanbul, situated between Hisarüstü (European side) and Kavacak (Asian side). It is 1,510 m long; the distance between the towers is 1,090 m. In the next small pictures the objects of the rich architecture of that City which has acquired a reputation for being a cultural and ethnic melting pot are presented as examples. As a result, there are many historical mosques, churches, synagogues, palaces, castles and towers to visit in the city, among those in the central picture originally a church, later a mosque, and now a museum, the 6th century Hagia Sophia built by Justinian, the latter being the largest structure on Sultanahmet Square in the Eminönü district, and the most important surviving example of Byzantine architecture in the world for a thousand years, until the completion of the Seville Cathedral in Spain. In the last small picture one of many other imperial mosques, built in the following centuries, that is the famous Sultan Ahmet Mosque (built in 1616) which is also known as the Blue Mosque for the blue tiles that adorn its interior, is presented. The historic areas of Istanbul were added to the UNESCO World Heritage List in 1985. Istanbul was chosen as joint European Capital of Culture for 2010. Every year the city is a venue of many international scientific conferences. It will be surely visited by all participants of the 13th International Materials Symposium organized in October 2010 by the Pamukkale University under the patronage of the World Academy of Materials and Manufacturing Engineering on their way to Denizli about which the information are given at the last page of the cover. We invite the PT Readers of the Journal of Achievements in Materials and Manufacturing Engineering to participation in great numbers in that very promising scientific event.

