

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 51 • Issue 1 • March 2012





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

Editorial Council

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 Team

Production Editor

Ms Marzena Kraszewska, MA

Team Secretary

Dr Małgorzata Dziekońska

Thematic Area Editors

Dr Mirosław Bonek

Dr Klaudiusz Gołombek

Dr Magdalena Polok-Rubiniec

Dr Anna Włodarczyk-Fligier

Dr Bogusław Ziębowicz

Statistical Editor

Dr Daniel Pakuła

Language Editor

Dr Janusz Madejski

Editorial Assistance

Ms Justyna Hajduczek, MSc

Mr Paweł Jarka, MSc

Ms Magdalena Kałużna, MSc

Ms Małgorzata Ondrula, MSc

Reading Direct

Mr Adam Jagiełło, MSc

Mr Piotr Zarychta, MSc

Editorial Key Reviewers Committee

Prof. Sadek Absi Alfaro - Brasilia, Brazil

Prof. Gilmar Batalha - Sao Paulo, Brazil

Prof. Emin Bayraktar - St-Ouen, France

Prof. Andrzej Buchacz - Gliwice, Poland

Prof. Tara Chandra - Wollongong, Australia

Prof. Antonio Cuhna - Guimaraes, Portugal

Prof. Marek Dollar - Oxford, Ohio, USA

Prof. Georgiy Drapak - Khmelnytsky, Ukraine

Prof. Sabahudin Ekinović - Zenica, Bosnia and Herzegovina

Prof. Renato Esposito - Naples, Italy

Prof. Spilios Fassois - Patras, Greece

Prof. Janez Grum - Ljubljana, Slovenia

Prof. Toshio Haga - Osaka, Japan

Prof. Abdel Magid Hamouda - Doha, Qatar

Prof. Stuart Hampshire - Limerick, Ireland

Prof. Marek Hetmańczyk - Katowice, Poland

Prof. Hong Hocheng - Hsinchu, Taiwan

Prof. Werner Hufenbach - Dresden, Germany

Prof. Mark James Jackson - Worcester, USA

Prof. Jerzy Jędrzejewski - Wrocław, Poland

Prof. Rudolf Kawalla - Freiberg, Germany

Prof. Andrzej Klimpel - Gliwice, Poland

Prof. Ivars Knets - Riga, Latvia

Prof. Janez Kopač - Ljubljana, Slovenia

Prof. Piotr Kula - Lodz, Poland

Prof. Karl Kuzman - Ljubljana, Slovenia

Prof. Bogusław Major - Cracow, Poland

Prof. Cemal Meran - Denizli, Turkey

Prof. Stanisław Mitura - Lodz, Poland

Prof. Andrew Nee - Singapore, Singapore

Prof. Jerzy Nowacki - Szczecin, Poland

Prof. Abraham Ogwu - Paisley, United Kingdom

Prof. Jerzy Pacyna - Cracow, Poland

Prof. Peter Palček - Zilina, Slovak Republic

Prof. Fusheng Pan - Chongqing, China

Prof. Zbigniew Rdzawski - Gliwice, Poland

Prof. Mario Rosso - Turin, Italy

Prof. Stanislav Ruz - Ostrava, Czech Republic

Prof. Yuriy Shalapko - Khmelnytsky, Ukraine

Prof. Božo Smoljan - Rijeka, Croatia

Prof. Jerry Sokolowski - Windsor, Ontario, Canada

Prof. Mirko Soković - Ljubljana, Slovenia

Prof. Zinoviy Stotsko - Lviv, Ukraine

Prof. Jerzy Świder - Gliwice, Poland

Prof. Ming-Jen Tan - Singapore, Singapore

Prof. Miklos Tisza - Miskolc, Hungary

Prof. Boris Tomov - Rousse, Bulgaria

Prof. Gabriel Wróbel - Gliwice, Poland

Prof. Bekir Sam Yilbas - Dhahran, Saudi Arabia

Prof. Marian Żenkiewicz - Bydgoszcz, Poland



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 2012 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 online, in the promotional period free of charge. This Journal is included in the reference list of the Polish Ministry of Science and Higher Education (9 points). The Journal is cited by Abstracting Services such as:



Directory of Open
Access Journals



Google Scholar



Scirus



Ulrich's
Periodical Directory



BazTech



Journalseeker



Libsearch



WorldCat



Dragon
Libraries
Catalogue

The procedure of its registration in the databases of Scopus, Compandex, CiteSeer, GetCited, Web of science, Engineering Village, Public Knowledge Project, Edith Cowan University's Institutional Repository, Journals Online and Inspec has begun.

Journal Registration

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

Publisher

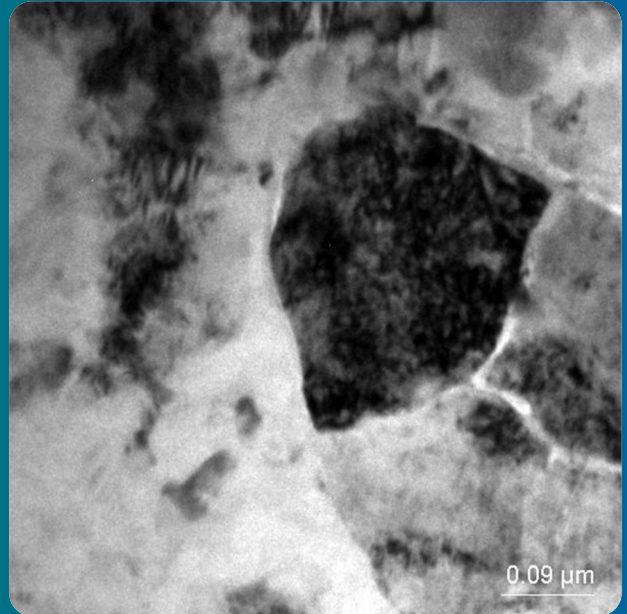


Gliwice 44-100, Poland
ul. S. Konarskiego 18a/366
e-mail: info@journalamme.org

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: PL76105012981000002300809767
Swift code: INGBPLPW

Gliwice – Campinas – Portland – Madrid – Daejeon – Brisbane – Cairo
© 2012 International OCSCO World Press. All rights reserved
∞ The paper used for this Journal meets the requirements of acid-free paper
Printed in Poland

Selected materialographical photo



22

The paper written by A. Włodarczyk-Fligier, L.A. Dobrzański and J. Konieczny on "Structure of EN AW-Al Cu4Mg1(A) composite materials reinforced with the Ti(C,N) ceramic particles" on a **page 22** compares modern method composite materials with aluminium alloy matrix reinforced by Ti(C,N) particles manufacturing. Basing on the structural examinations carried out of the composite materials with the EN AW-AlCu4Mg1(A) aluminium alloy matrix reinforced with the Ti(C,N) particles the homogeneity of their distribution in the matrix was revealed, as well as the fact that during their extrusion the directed structure oriented according to the extrusion direction develops. The directed structure oriented corresponding to the extrusion direction developed during the extrusion process. Density for all produced materials is near to the theoretical one but existing differences indicate presence of porosity. Based on observations made on the transmission microscope, it was found out that the reinforcement particles Ti (C, N) are usually placed on the border of the matrix grains. Dominated by particles with similar spherical shape it is also observed in the shape of elongated particles. The received results show the possibility of obtaining the new composite materials with required structure joining positive properties composite materials components. Tested composite materials can be applied among the others in automotive industry but it requires additional researches.