Reviews on Advanced Materials Science

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Editorial Policy:

Reviews on Advanced Materials Science provides an international medium for the publication of reviews, topical issues and international conference proceedings in the area of theoretical and experimental study of advanced materials. Focuses are placed on, but not limited to nanostructured materials, semiconductors and materials for hydrogen economy. We encourage prospective authors to correspond with the Editor-in-Chief before submitting a review article. Proposals should include an outline with key citations. All papers submitted will be rigorously peer-reviewed prior to publication. **Reviews on Advanced Materials Science** is published in both paper and electronic versions.

Abstracting and Indexing:

Reviews on Advanced Materials Science is covered in *ISI Science Citation Index Expanded (SCIE); ISI Current Contents/Physical, Chemical & Earth Sciences (CC/PC&ES); ISI Materials Science Index; Cambridge Scientific Abstracts; Chemical Abstracts; Elsevier Bibliographic Databases;* and *Institut de l'Information Scientifique et Technique – Centre National de la Recherche Scientifique (INIST-CNRS)*.

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PREFACE

From 27th till 31st August 2006, the International Symposium on Metastable and Nano Materials, previously named the International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials, was held in Warsaw, Poland. The 13th edition of ISMANAM was hosted by the Faculty of Materials Science and Engineering, Warsaw University of Technology. The event is the continuation of the tradition of meeting in spots all over the world – the first ISMANAM was organised in Grenoble in 1994, then followed by the meetings in Quebec, Rome, Sitges, Wollongong, Dresden, Oxford, Ann Arbor, Seoul, Foz do Iguaçu, Sendai and Paris. In 2006, it was the first time when the participants of the event gathered in the country of the former Eastern Europe. During 13th ISMANAM, 223 participants from 33 countries from all the inhabited continents, presented the work of 707 authors, in the form of 3 plenary talks, 25 invited talks, 74 oral contributions and 134 posters. For these Proceedings, nearly 150 papers prepared by almost 480 authors were accepted and submitted for publication.

During over ten years of ISMANAM history, the scope has been significantly widened, the modification of the title of the Symposium to the present one being the evidence of these changes. The materials covered in the Symposium included, but were not limited to, amorphous, nanocrystalline, quasicrystalline and metastable crystalline ones. The scope of the Symposium encompassed metals, ceramics, intermetallics, polymers and composites. Also the form of the investigated items spanned from nanosized paricles, through thin films, powders to bulk elements, including composites and nanocomposites. Various aspects of the materials science were discussed: modelling, manufacturing, characterisation of structure and properties, performance and applications. The participants presented the phenomena, relationships and observations, and shared their ideas and doubts, opening space to fruitful discussions. Theoretical and empirical approaches to the raised issues were presented, as well as the practical applications of the metastable and nanostructured materials.

The subjects of the reported works were divided into separate groups, presented in sessions covering: metallic glasses, bulk metallic glasses, crystallisation, mechanical alloying, powders consolidation, magnetic materials, hydrogen storage, electrochemical properties, structure characterisation and others.

Traditionally, the ISMANAM Steering Committee acknowledged the outstanding achievements of a senior and a junior scientist by granting the awards. The Senior Researcher Award was handed to Prof. Takeshi Egami of the University of Tennessee, and the Junior Researcher Award went to Dr. Howard W. Sheng of the Johns Hopkins University.

The ISMANAM Steering Committee accepted the proposal of Prof. Georgios A. Evangelakis to organise the next Symposium in Corfu, Greece. For the Symposium in 2008, the Committee provisionally accepted the proposals of Prof. Fernando Audebert (Argentina) and Prof. Jiangzhong Jiang (China).

We wish to express our sincere thanks to all these who contributed to the success of 13th ISMANAM: the members of the Scientific Committee, the members of the National Advisory Committee, the session chairpersons, invited speakers and all the contributing participants. The efforts of the colleagues of the Local Organising Committee are gratefully acknowledged. The Organisers would like to thank Polish Ministry of Science and Higher Education and the Rector of Warsaw University of Technology for their financial support of the Symposium.

Warsaw, October 2007

Tadeusz Kulik, Chairman
Dariusz Oleszak
Jarosław Ferenc

Participants of the 13th International Symposium on Metastable and Nano Materials, August 2006, Warsaw, Poland.

Henryk Matyja Memorial Session

On Tuesday, 29th August, one of the plenary sessions was devoted to commemorate Professor Henryk Matyja, the pioneer of the research in the field of rapidly quenched and mechanically alloyed materials in Poland. The Symposium, held five years after He passed away, was a good opportunity to remember Him and His contribution to our present knowledge.

Henryk Matyja, born in 1923, graduated from the Mechanical Faculty of Warsaw University of Technology, and for all his professional life was with the Department of Physical Metallurgy, then with the Institute of Materials Science and Engineering, transformed into the Faculty of Materials Science and Engineering, WUT. As the academic teacher, He spent over a half of century at the university, focusing on teaching undergraduates and postgraduate students, and supervised 26 Ph. D. theses. His successors remain not only in Poland – they may be found as far as in the USA, Canada or Australia. Henryk Matyja was a Full Professor in Materials Science at Warsaw University of Technology since 1974.

Scientific activities of Professor Matyja were very extensive. He broke ground in Poland and the whole Eastern Europe in the area of metallic glasses, starting this research in early 1970's. Professor was the founder of the Amorphous and Nanocrystalline Materials Group, and its head for about 30 years. He published 4 monographs and about 200 papers. Abroad, Professor Matyja was a visiting scientist at the Department of Metallurgy of the Massachusetts Institute of Technology in 1961-1962 and 1965-1967. He was also a Visiting Professor at the Department of Metallurgical Engineering and Materials Science at the University of Notre Dame in 1982-1984 and 1986. Despite his age He remained remarkably active as a scientist.

Professor Matyja was known as the one who enjoyed travelling, trying good food, meeting people, touching various cultures. It was our pleasure to meet him every day to discuss not only the scientific issues, but also to share opinions and dispute on all aspects of life.

Professor Henryk Matyja died on 15th March 2001 at the age of 78, mourned by the international scientific community. As a friend and a professional, He will live in the memory of all of us forever.

During the Memorial Session, which was attended by Professor's wife, children, grandchildren, relatives and co-workers, Professor Matyja was reminisced by Andrzej Całka, Brian Cantor, Clara F. Conde, Wojciech Dmowski, Viktoria I. Fadeeva, Akihisa Inoue, Tadeusz Kulik, Peter Švec and Alain R. Yavari.

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Mechanical Alloying and Consolidation,

Part 1

ADVANCED STUDY CENTER.

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