

YUCOMAT 2008
Selected Papers presented
at the Tenth Annual Conference
of the Materials Research Society of Serbia
Herceg Novi, Montenegro, September 8–12, 2008

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MRS-Serbia and YUCOMAT Conferences

Materials science and engineering incorporate acquiring of knowledge on synthesis and processing of materials, their composition and structure, properties and behaviour, functions and potentialities as well as application of that knowledge to various final products. Economic prosperity, life quality, and healthy environment are tightly connected with the improvements in the existing and the development of new materials and processing technologies. These improvements and development can contribute greatly to the national priorities: energy saving, environment and health protection, information and communication, infrastructure, transportation, etc.

The first conference on materials science and engineering, including physics, physical chemistry, condensed matter chemistry, and technology in general, was held in September 1995, in Herceg Novi. An initiative to establish Yugoslav Materials Research Society (Yu-MRS) was born at the conference and, similar to other MR societies in the world, the programme was made and objectives determined. The Yu-MRS, a non-government and non-profit scientific association, was founded in 1997 to promote multidisciplinary goal-oriented research in materials science and engineering. Main task and objective of the Society is to encourage creativity in materials research and engineering to reach a harmonic coordination between achievements in this field in our country and analogous activities in the world with an aim to include our country into the global international projects. Until 2003, conferences were held every second year and then they grew into annual conferences that were traditionally held in Herceg Novi in September of every year. Following the political separation between Serbia and Montenegro, in 2007 Yu-MRS formed two new MRS: MRS-Serbia (official successor of Yu-MRS) and MRS-Montenegro (in founding). In May of 2008 Materials Research Society of Serbia became a 27th member of the Federation of European Materials Societies (FEMS).

Preface

The Tenth Annual YUCOMAT 2008 Conference was attended by approximately 200 participants, representing authors from 35 countries, who presented 180 papers, 18 out of which were presented as invited lectures, 41 as oral presentations and 121 as posters, within three plenary sessions and five one-day symposia (including 4 oral and 3 poster sessions) dedicated to advanced methods in materials synthesis and processing, advanced materials for high-technology application, nanostructured materials, composites and biomaterials.

The invited speakers included:

- Uli Dahmen (University of California at Berkeley, CA, USA) *Electron Microscopy of Nanoscale Materials as a Driving Force for the TEAM Project*
- Velimir Radmilović (University of California at Berkeley, CA, USA) *Monodispersed $Al_3(LiScZr)$ Core/Shell Nanostructures Embedded in Al-Rich Matrix*
- Robert Hull (Rensselaer Polytechnic Institute, Troy, NY, USA) *New Methods in Materials Research Using Focused Ion Beams*
- Ivo Rangelow (Technische Universität Ilmenau, Kirchhoffbau, Ilmenau, Germany) *Scanning Proximity Probes for Nanoscience*
- Wolfgang Jäger (Christian-Albrechts-University Kiel, Kiel, Germany) *High-Resolution TEM of Layered Crystals and Incommensurate Misfit Layer Compounds and Their Interfaces*
- Doug Perovic (University of Toronto, Toronto, ON, Canada) *Intrinsic and Extrinsic Defects in Colloidal Photonic Crystal Films*
- Wim Bras (European Synchrotron Radiation Facility, Grenoble, France) *Cordierite Glass Ceramics Studied by X-Ray Scattering and Electron Microscopy*
- Danilo Suvorov (Jožef Štefan Institute, Ljubljana, Slovenia) *Recent Advances in Tunable Materials Development*
- Mamoru Senna (Keio University, Yokohama, Japan) *Interfacial Solid-State Process Control for Micro- and Nanocomposites*
- José M. Kenny (University of Perugia, Terni, Italy) *Processing of Polymer Matrix Nanocomposites*
- Jan Kusiński (University of Mining and Metallurgy, Kraków, Poland) *Synthesis and Ionic Conductivity of Nanocrystalline Y-Doped Bi_2O_3 Thin Films*
- Gregory W. Auner (Wayne State University, Detroit, MI, USA) *The Meeting of MEMS and Nanotechnology*
- Richard Portier (UMR-CNRS 7045, ENSCP, Paris, France) *Structural and Functional (Superficial) Biocompatibility of New Amorphous/Quasicrystalline Ti-Based Composites*
- Robert Sinclair (Stanford University, Stanford, USA) *Magnetic and Other Metallic Nanoparticles for Possible Medical Applications*
- Nicolás Pérez (University of Barcelona, Barcelona, Catalonia, Spain) *Magnetic and Electronic Properties of Iron Oxide Nanoparticles of Controlled Size and Shape*
- Serena Best (University of Cambridge, Cambridge, UK) *Nanostructured Apatites: the Next Generation of Bioactive Materials?*
- Rostislav A. Andrievskiy (Institute of Problems of Chemical Physics, RAS, Chernogolovka, Russia) *Size-Dependent and Interface Effects in Properties of Nanostructured Materials*

- Dušan Petranović (Mentor Graphics Corp., San Jose, California, USA) *Can Carbon Nanotubes Be Competitive in Chip Interconnect Applications?*
- Ferdinand Hofer (University of Technology, Graz, Austria) *Nanoanalysis of Materials by Means of EELS Spectrum Imaging in a Transmission Electron Microscope*

The Conference also included INCOMAT workshop entitled “Creating international cooperation teams of excellence in the emerging biomaterial surface research”, funded by the European Commission, as well as a round table on “How to write a successful proposal” and the exhibition of innovative scientific equipment. We were fortunate at this meeting to have had excellent representation from the leading governmental and academic laboratories all over the world (report on the Conference available on <http://www.mrs-serbia.org.rs/ConferenceReport2008.html> and http://www.mrs.org/s_mrs/bin.asp?CID=18294&DID=234124&DOC=FILE.PDF). Many participants expressed their appreciation of the quality and breadth of the invited, oral and poster presentations. All of the submitted papers were reviewed by the members of the Scientific Committee and the corresponding accessory review team. The 20 papers accepted for the special issue of *Acta Physica Polonica A* journal were judged as sufficiently original and representative to find their place in the record of the conference, discussing topics in the scope of this journal. Besides these, another 31 papers presented at YUCOMAT 2008 Conference were published in the journal *Materials and Manufacturing Processes*.

The guest Editors wish to thank heartily all MRS-Serbia officers and members of the International Advisory Board for their efforts to organize the conference successfully, and to perform their duties as the session chairmen and reviewers. We also acknowledge our profound gratitude to international and domestic reviewers whose expert comments helped the editors to select the most original and contemporary papers.

Unfailing help and enthusiasm of Ms. Aleksandra Stojičić, secretary of the conference, is gratefully acknowledged. The Editors wish to thank Aleksandra for her technical editing of the materials before, during and after the conference.

Dragan P. Uskoković
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Guest Editors



Some of the participants of the Tenth Annual YUCOMAT 2008 Conference, Herceg Novi, Montenegro, September 8–12, 2008