



*Twelfth Annual Conference*

# YUCOMAT 2010

Herceg Novi, Montenegro, September 6–10, 2010

*First Announcement and Call for Abstracts*

*Organised by*

INSTITUTE OF TECHNICAL SCIENCES OF THE  
SERBIAN ACADEMY OF SCIENCES AND ARTS  
MATERIALS RESEARCH SOCIETY OF SERBIA

*under the auspices of*

FEDERATION OF EUROPEAN MATERIALS SOCIETIES (FEMS)  
MATERIALS RESEARCH SOCIETY (MRS)

**DEADLINE FOR ABSTRACT SUBMISSION: MAY 1, 2010**

## INTRODUCTION

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, food, 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 was born at the conference and, similar to other MR societies in the world, the programme was made and objectives determined. The Yugoslav Materials Research Society (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. The 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 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. In 2007 Yu-MRS formed two new MRS: MRS-Serbia (official successor of Yu-MRS) and MRS-Montenegro (in founding). In 2008, MRS – Serbia became a member of FEMS (Federation of European Materials Societies).

## MRS-SERBIA

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## CONFERENCE PROGRAMME

<b>SYMPOSIUM A</b>	Advanced Methods in Synthesis and Processing of Materials
<b>SYMPOSIUM B</b>	Advanced Materials for High-Technology Application
<b>SYMPOSIUM C</b>	Nanostructured Materials
<b>SYMPOSIUM D</b>	Composites
<b>SYMPOSIUM E</b>	Biomaterials

Final programme will be time-tabled on the basis of submitted abstracts. The complete scientific programme will be available through Internet:

<http://www.mrs-serbia.org.rs> on July 1<sup>st</sup>, 2010

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### **SYMPOSIUM A ADVANCED METHODS IN SYNTHESIS AND PROCESSING OF MATERIALS**

Significant results have been achieved recently using different non-conventional methods for synthesis and processing of materials which provided designing, at a molecular level, of new or considerable improvement of the existing materials.

The aim of the symposium is to provide a state-of-the-art overview of the subject. Latest methods for preparation of powder and compact materials, thin films, and various complex structures will be discussed.

The symposium will focus on the following topics:

- Chemical methods in synthesis;
- Synthesis via reactions in solid, liquid and gaseous phase;
- Sol-gel method;
- Self-propagating high-temperature synthesis;
- Electrochemical processing;
- Plasma and laser processing and ion implantation;
- Mechanochemistry;
- Different processes for powder consolidation;
- Synthesis and processing of materials under extreme conditions;
- Different methods in synthesis of thin films;
- Radiation processing;
- Ecotechnology.

### **SYMPOSIUM B ADVANCED MATERIALS FOR HIGH-TECHNOLOGY APPLICATIONS**

The aim of the symposium is to discuss the key areas in materials science and engineering in general starting from physics, physical chemistry and condensed matter chemistry to the application of fundamental research from every aspect. The emphasis will be put on new materials, which are of crucial interest of modern sciences and technologies.

The symposium will focus on the following topics:

- High-purity materials;
- Diamond and related materials, fullerenes and novel forms of carbons;
- Superconductors;
- Electronic materials;
- Electrode materials, including superionic conductors;
- Catalysts;
- Intermetallics, superalloys, and special steels;
- Smart materials;
- New polymer materials;
- Applications of advanced materials in high technologies;
- Characterization of materials (analytical, microstructural, optical, spectroscopic, physicochemical, etc.).

### **SYMPOSIUM C NANOSTRUCTURED MATERIALS**

Nanostructured materials and development of nanotechnologies is now a major international research initiative. Advances in materials, used for various applications, will depend considerably on our ability to control the size, distribution and morphology of their constituents (particles and phases smaller than 100 nm). Their significant role in some applications has been recognized even today.

The principal aim of the symposium is to determine the key problems in science and technology of these materials and to promote their commercialization.

Particular emphasis, therefore, is placed on the following topics:

- Synthesis and processing of inorganic, organic and composite nanosized materials by physical, chemical and biological methods;
- Low-dimensional semiconductor structures;
- Modeling and simulation of synthetic, assembly and interaction processes;
- Powders, coatings, and compact nanostructured materials;
- Characterization of nanostructured materials (mechanical, magnetic, chemical, catalytic, electrical, optical, tribological, etc.);
- Application of nanostructured materials.

### **SYMPOSIUM D COMPOSITES**

Excellent mechanical properties, stability, advantageous production conditions, low price, and great opportunities for designing make composite materials an attractive group of engineering materials with a variety of applications in various fields. Further expansion into new areas of applications depends on the development of new and improvement of the existing materials and processing techniques, production cost decrease as well as on the study of the nature and composition of the materials. One of the main research aims is investigation of the interactions of the constituent phases at interfaces. It represents a prerequisite condition for understanding of the behaviour of composites in the field of mechanical forces, and for improvement of their production process and properties.

The emphasis of the symposium will be put on the following topics:

- Polymer, metal, and ceramic based composites;
- Nanocomposites;
- New methods in synthesis and fabrication of composite materials;
- Interaction between constituent phases of composites and interface phenomena;
- Properties and characterization of composites;
- Application of composites.

### **SYMPOSIUM E BIOMATERIALS**

Biomaterials play a significant role in medicine as permanent artificial substitutes for affected or damaged organ or part of the body (endoprostheses) and for immobilization of injured parts. Depending on the functions performed in human organism, biomaterials must meet special requirements concerning biocompatibility, stability, resistance to corrosion, strength, and fatigue. Substitution of human tissue has been performed more or less successfully for some time. Emphasis of the symposium is placed on the main aspects of science, technology and application of advanced biomaterials.

The symposium will focus on the following topics:

- New methods for processing of advanced metal, ceramic, polymer and composite-based biomaterials;
- Molecular design biomaterials;
- Biomimetics;
- Correlation between synthetic parameters and structure and properties of biomaterials (powders, compacts, fibres, composites, coatings, cements, surface modifications, etc.);
- Characterization of biomaterials;
- Biological response to implants (experiments in vivo and in vitro);
- Clinical experiences in implantation of biomaterials.

## GENERAL INFORMATION

### DATE AND VENUE

The conference will be held on September 6–10, 2010, at the PLAZA Hotel, Herceg Novi, Montenegro ([www.hercegnovi.cc](http://www.hercegnovi.cc)).

### PAPER PRESENTATION AND ABSTRACT PREPARATION AND PUBLICATION

The conference will feature 5 symposia, which will comprise invited keynote lectures (30 min) by the leaders in the field, oral (15 min) and poster presentations. An abstract in English, no longer than 10 lines, and the registration form, should be submitted by May 1<sup>st</sup>, 2010. The recommended abstract format is given below.

The Scientific Committee will evaluate the submitted abstracts and, on the basis of their contents, assign the papers, taking into account author's wishes as much as possible, to the oral or poster presentation in relevant Symposium. Abstracts will be included in a Book of Abstracts and distributed to each participant at the conference registration.

Conference programme and further information about the Conference will be sent to registered participants, who paid registration fees, by July 1<sup>st</sup>, 2010.

Selected papers presented at previous YUCOMAT conferences were published in Materials Science Forum Vol. 214 (1996) 1-272, Vols. 282-283 (1998) 1-354, Vol. 352 (2000) 1-282, Vol. 413 (2003) 1-274, Vols. 453-454 (2004) 1-571, Vol. 494 (2005) 1-566, Vol. 518 (2006) 1-562 and Vol. 555 (2007) 1-576; Materials and Manufacturing Processes Vol. 23, 6 (2008) 547-623 and Vol. 24, 10&11 (2009) 1051-1228; Surface Engineering Vol. 24, 4 (2008) 247-275; Acta Physica Polonica A Vol. 115, 4 (2009) 759-846. YUCOMAT 2009 papers will be published in journals Acta Physica Polonica A and the International Journal of Modern Physics B. Selected papers, presented at YUCOMAT 2010 and positively peer-reviewed, will be published in journals which will be announced later.

### CONFERENCE AWARDS

The Presidency of the MRS-Serbia, at the proposal of the Awards Committee, will award the authors (preferably young members under 35) of the best oral and poster presentation at the conference, and also the authors of highly rated PhD and MSc Theses defended between two conferences. Awarded researchers are granted free registration at the next YUCOMAT Conference.

### ADDITIONAL ACTIVITIES

Workshop and Tutorial for young researchers and an Exhibition of synthesis and characterization equipment will be held during the Conference. Traditional Cocktail Party on Monday evening and excursions on Wednesday and Thursday afternoon will be organized again.

### CONFERENCE INFORMATION

YUCOMAT Conference information is available on its official Internet presentation: [www.mrs-serbia.org.rs](http://www.mrs-serbia.org.rs) or from: Aleksandra Stojicic, Conference Secretary, Institute of Technical Sciences of the SASA, Knez Mihailova 35/IV, P.O. Box 377, 11000 Belgrade, Serbia, Phone: +381 (11) 2185-437; 2636-994, Fax: +381 (11) 2185-263, E-mail: [its@itn.sanu.ac.rs](mailto:its@itn.sanu.ac.rs).

### INSTRUCTIONS FOR PREPARING ABSTRACTS

Abstracts should be prepared using the following instructions for preparing abstracts:

**Abstract size:** A4, top and bottom margins 6 cm, left and right 4 cm; **Line spacing:** Single; **Font:** Times New Roman (10 pts). **Title of the paper:** center, capitals, bold, 10 pts, (1 line spacing). **Name(s) of Author(s):** (underline the author who will present the paper); Institution or Company, City, Country, (1 line spacing). Text should be printed single spaced in one paragraph, only plain text, no figures, no formulae, no references.

**ELECTRONIC SUBMISSION:** Abstracts should be sent as attached document by e-mail to: [its@itn.sanu.ac.rs](mailto:its@itn.sanu.ac.rs)

Subject of your mail: yucomat 2010

Title of the attached document: Name of the first author.

Send one e-mail per abstract.

**Only e-mail submissions will be acknowledged.**

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