

Programme & The Book of Abstracts

Seventeenth Annual Conference

YUCOMAT 2015

Herceg Novi, Montenegro, August 31 – September 4, 2015

organised by

MATERIALS RESEARCH SOCIETY OF SERBIA

endorsed by



20th Anniversary YUCOMAT Conference

SEVENTEENTH ANNUAL CONFERENCE

YUCOMAT 2015

Hunguest Hotel Sun Resort Herceg Novi, Montenegro,
August 31-September 4, 2015
<http://www.mrs-serbia.org.rs>

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Organised by:
Materials Research Society of Serbia

Endorsed by:
**Materials Research Society,
European Materials Research Society
and
Federation of European Material Societies**

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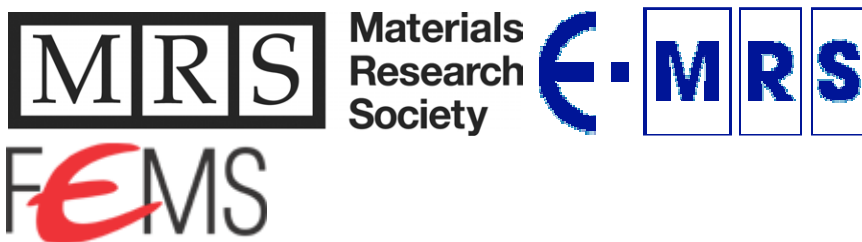
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WELCOME SPEECH BY THE PRESIDENT OF MRS-SERBIA:

IN STEP WITH THE GOLIATHS

My Esteemed Colleagues,



Learning timely from the developed world is a vital requirement for the continued progress of the developing countries. The story behind the founding of the Materials Research Society – Serbia (MRS – Serbia) nicely illustrates this. Namely, not too long after the American and the European Materials Research Societies were founded in mid-1970s and mid-1980s, respectively, did we decide to follow up on these extraordinary efforts. YUCOMAT conferences, organized by MRS – Serbia and having taken place first biannually and then annually on the first weeks of September in this scenic Adriatic town of Herceg-Novı, have served as the best illustration of our success in this endeavor. Moreover, this particular conference, marking twenty years since the founding of MRS – Serbia and the first YUCOMAT conference, is supposed to present the culmination of our effort to create a Society that will not lag behind its developed world counterparts in absolutely anything, from the quality and contemporariness of science that it promotes to its involvement in regional educational efforts in materials science and beyond.

However, to properly understand the history of our MRS, a step back in time needs to be made. In the early nineties of the 20th Century, Yugoslavia was a relatively developed country, with its GDP being higher than that of many European Union (EU) countries. The country practically stood at the doorstep of EU, ready to join it in no time. A fruitful scientific and technological collaboration was in place with entire Europe as well as with Americas and countries from the eastern hemisphere. Our scientists, at the same time, earned the epithet of reputable partners, embodying an ideal middle ground between the eastern excellence in theoretical studies and the western interest in practicality. As was the case a few decades earlier, during the Cold War era, our country was practically a paradise for cooperation, having enabled the scientists from both East and West to meet, present their findings, engage in unrestrained debates about their ideas and establish vital contacts as nodes on today's network of a connected and globalized world.

Countless stories are shared to this very day about the first encounters between the renowned Soviet scientists with their western colleagues. As ever, science and art have acted as territories freed from political divisions and animosities that tore their real-life counterparts apart. Many of us still remember the gatherings of distinguished names from materials science and engineering in this very venue between 1969 and 1989 at conferences known as the Round Table Meetings on Sintering, later renamed to World Conference on Sintering. Unfortunately, this role as a bridge between the East and the West was erased in a heartbeat owing to a string of irrational strategic decisions of our political leaders in the early 1990s. It resulted in the breakup of a beautiful country that Yugoslavia was, a decade of civil wars, staggering social strife and horrible crimes before whose victims every intellectual should have kept his head bowed. Following the economic sanctions installed by the United Nations in June 1992 the country was plunged into a deep isolation; the Serbian scientists were left to themselves only, with only a few sporadic contacts here and there with their foreign colleagues and former collaborators being maintained. Even publications in international journals were prohibited in the years that followed. At the same time, while our country was shattered by real bombs and ammunition, materials science worldwide experienced an explosion of new knowledge and its technological potentials. Biomaterials, energy materials and nanomaterials are only some of the types of materials which underwent a small renaissance in this period of time. Yet, like a prisoner watching carnival outside the rusty prison bars, so were we pushed into ever deeper scientific, cultural and

socioeconomic isolation while the outside world was getting ever more connected and prospective, the devastating consequences of which are reaped in every domain of our society to this very day.

What is important to notice is that this phenomenal moment in the evolution of materials science and engineering partially came forth as a result of the impetus given by the American scientists through their forming the first MRS in 1973. Ten years later, in 1983, the European MRS was founded, which was followed by the founding of other materials research societies all over the world – Japanese and Indian in 1989, Mexican and Singaporean in 1990, and eventually Serbian in 1997, a few years before the Brazilian in 2001 and the Ukrainian in 2003. The American MRS conferences with the unprecedentedly large numbers of symposia



demonstrated the then unthinkable scale at which materials science congregations could be organized. Seeing this, a group of our scientists, who had worked in diverse fields of materials science and engineering - from physics to physical chemistry to chemistry to ceramics to metals to polymers to fine powders to thin films to monocrystals and beyond - felt inspired and came to an idea to organize the first conference on new materials, in September 1995, at which mainly reviews of their own and global research in the field would be presented and shared among the participants. The idea was unequivocally embraced and resulted in the formation of the embryo for a professional society that MRS – Serbia was to become two years later. This very seaside town, Herceg-Novı, was chosen as the conference site because of its long tradition in hosting the aforementioned conferences on sintering and other domestic and international events of scientific and cultural significance.

The agreement reached during this inaugural conference on materials in September 1995 was respected and, as a result, months before the second such conference was to be held, in July 1997 our MRS was registered as the Yugoslav Materials Research Society (Yu-MRS) and our conferences became known as YUCOMAT, being the acronym for YUgoslav CONference on MATerials. The organization scheme was established so that 19 of the individual founders of the Society became the members of the Presidential Board. The President, the Vice President and the General Secretary who were elected then have remained acting in those roles to this very day. Although a few members of the



Presidential Board voluntarily stepped down, they were replaced and its membership count remained the same: 19. It must be added that a significant moral support was received from the Serbian Ministry of Science and the Serbian Academy of Sciences and Arts (SASA), as well as from a few other institutions. The then President of SASA, late Aleksandar Despić, welcomed the participants at the first four YUCOMAT conferences (1995-2001) and was actively involved in the workings of the Society. Logically, the most prominent sponsor was the Institute of Technical Sciences of the

SASA, given that from the very first day a complete organizational logistics has been executed by its staff members and using its financial resources. The Institute for Chemistry, Inorganic Technologies and New Materials in Padua, Italy must be acknowledged here for offering us a helping hand when it was the hardest; the Proceedings for conferences held in 1999 and 2001 were published with their financial aid.

Initially we were driven by the idea that memories of even the most memorable presentations fade away with time and that, therefore, it would be useful to capture them in the form of Conference Proceedings. Starting with the first YUCOMAT, we published the Conference proceedings in English and with relatively large publishers, which distributed them globally. The first eight proceedings were published in the Materials Science Forum edition of the Swiss publisher, Trans Tech Publications. Each of the first four proceedings was a single volume, containing about 40 papers per volume, whereas the following four proceedings were published as two combined volumes with about 20 papers per volume. By that time, the global trend of diminished interest in releasing scientific results in low-impact conference proceedings had already taken over the entire scientific community and we were not spared by it by any means. Therefore, the first YUCOMAT that went on without being accompanied by published proceedings was the one held in 2007. Instead, the small number of papers chosen, as ever, through rigorous peer review, went on to be published in special issues of *Materials and Manufacturing Processes* published by Taylor and Francis, and of *Surface Engineering* published by Maney. Journals that published the selected works from subsequent YUCOMAT conferences were also *Materials and Manufacturing Processes*, *Acta Physica Polonica A* and *International Journal on Modern Physics B*. Despite the diminishing interest in the submission of papers, we continue to encourage the Conference participants to share their work in a written format and contribute to the impression of a memory of this event in a lasting form.



To complement the efforts to create a world-class scientific event for our community through YUCOMAT conferences, MRS – Serbia began to hold the complementary annual conferences for young researchers in the field of materials science and engineering. The success of the first such meeting held in Belgrade in 2002 prompted us to continue to organize them annually. Participants include undergraduate and graduate students as well as

PhD graduates younger than 35; they are being given a valuable opportunity to orally present their works to peers, professors and professional researchers who could guide them in their further research. This was meant to be a part of their training for presentations at larger international meetings which are to be an integral part of their scientific careers. The interest in participating at these meetings has been continually increasing over the years: the first conference numbered 27 participants, whereas the few previous ones had about 80 of them. The conference is now being held in Belgrade each December and, in view of the interest of many younger international participants of YUCOMAT for it, as of 2010 the official language of it was switched from Serbian to English.

Were we to look back at where we started from and where we find ourselves now, I believe that we could be satisfied. We succeeded in uniting the majority of human potential in the field of materials science and engineering in this country around a common core and associating it with the work of peers

from abroad. Working with very limited and modest resources we have succeeded in conforming the outlook of MRS - Serbia to the major European and worldwide trends. None speaks better in favor of this than the programs of all the previously held YUCOMAT conferences. Since the times of the first YUCOMAT conference in 1995, almost purely local in character, with no foreign participants, it has transformed into a truly international meeting, whereat two-thirds of all participants are affiliated with foreign scientific institutions. From the first YUCOMAT conference, whose focus was on review presentations of our most renowned materials scientists, to this one, twenty years later, the selection of invited, plenary lecturers was made meticulously. Their total number at this point exceeds 300, which is one-tenth of the overall number of participants at all YUCOMAT conferences up to now – over 3000. They have come from around 60 different countries and all five continents of the world. After the biannually held conferences in the first 8 years, after the fifth one, held in 2003, we transitioned to the annually held ones. This transition invoked a plenty of insecurities and disbelief at first, but they were swiftly overcome by our faith in the immense latent potentials in our scientific milieu. The interest in the participation did not diminish and we have maintained a steady number of 200 - 250 presentations per conference. In 2006, as a result of the breakup of the state union between Serbia and Montenegro, the Yugoslav MRS changed its name to MRS – Serbia, the sole successor of the Yu-MRS. Countless prolific contacts have been established at these conferences, even during the times of our deepest international isolation, and have resulted in many official and unofficial research collaborations wherefrom equally many joint research projects were born. The broader recognition of our activities came in 2008 when MRS – Serbia became one of the 27 members of the Federation of the European Societies for Materials, which gathers around 20,000 researchers working in the field of materials science and engineering under its umbrella. Numerous renowned colleagues originally from Serbia and the neighboring countries have also been attracted and they have widely accepted this conference as a forum for the presentation of their freshest research findings and for learning about the research accomplishments in their countries of origin too. Such is, we believe, the best way for the arrival at intimate interfaces between their research programs and the locally performed research, hoping that a fruitful cross-fertilization between the two will be initiated. We have given a substantial support for young researchers through the promotion of the best doctoral and masters theses and the best oral and poster presentations at YUCOMAT conferences, as well as through holding the Conference for Young Researchers in the winter period. As of this year we will be also giving the annual award for the exceptional and lasting contribution to the field of materials science and engineering. There is a plenty of locally and internationally based scientists who deserve this award. The endowment committee has decided that the first of these awards will go to Dr. Ivan Božović for his vast contribution to science and engineering of superconductive materials and atomically thin films. Ivan began his career in Belgrade, but its fruition came in the United States, specifically in the Brookhaven National Laboratory and at Yale University. His 18 articles published in Science and Nature magazines, along with a myriad of other accomplishments, speak well enough about his great contribution to this field.



The essential task for MRS – Serbia in the future should be continued maintenance of the ascending path of progress and furthering of the internationalization of its YUCOMAT conference. With an increasing number of new conferences on materials science taking place all over the globe, many of which are as predatory in nature as the largest percentage of open-source journals in existence today,

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the retention of the status and the “brand”, so to speak, that YUCOMAT has secured over the years will be challenging. Still, we must secure its permanent place on the calendar of world events in this field, while not straying from its main purpose, which is to gather materials science researchers from Serbia, from the Balkans and from the rest of the world, and provide a fruitful forum for the exchange of ideas, know-how and the initiation of collaborations from which everyone would benefit. More than anything, the continued emission of positive energy in the promotion of this wondrous field of science locally and globally must remain our central aim.

Still, MRS – Serbia is relatively young, maybe not so much when compared to other materials research societies in the world, but certainly when compared to many other prestigious scientific societies, both within the country and abroad, the most renowned of which have been in existence for over a century. Regardless of that, a series of successes from 1995 to this date, twenty years later, gives us a hope that bright future stands before our MRS. We wish to see both our local community and the planet as a whole benefit from our growth and the efforts to elevate the quality of materials science and engineering to ever higher levels. Countless individuals and institutions contributed to this two decades long walk along a long and winding road made by MRS – Serbia and its repeated arrival at this idyllic coast. They deserve unreserved credit and respect for their persistence, for their hard work and for their faith that in a small and materially impoverished country such as ours materials science could still flourish and bring fruit oftentimes sweeter and more refreshing for the body and spirit than that produced in the already developed parts of the world. What we celebrate today is the immense spiritual strength and the unfathomable intellectual potential of all of you who have been a part of this journey. We have proven that we could make it – we could build a research society following the model set by the bigger and more influential materials research societies, while at the same time enrich it with the flavor that is authentic to this region of the world and its culture.

I wish you yet another happy YUCOMAT!

Cordially Yours,

Dragan Uskoković,

President of MRS-Serbia

MRS-SERBIA AWARD FOR A LASTING AND OUTSTANDING CONTRIBUTION TO MATERIALS SCIENCE AND ENGINEERING

We are pleased to announce that the recipient of the first MRS-Serbia Award for a Lasting and Outstanding Contribution to Materials Science and Engineering is Dr. Ivan Božović of Brookhaven National Laboratory (Condensed Matter and Materials Science, Upton, New York, USA). He is awarded for his achievements in the field of new quantum materials with a special emphasis on his seminal work in cuprates physics, artificial heteroepitaxial materials and interface superconductivity.



This is the decision of the MRS-Serbia Executive Board:

“The Executive Board of the MRS-Serbia Presidency, on their meeting on February 19, 2015, considered submitted candidates for the MRS-Serbia’s Award for a Lasting and Outstanding Contribution to Materials Science and Engineering and concluded that the procedure was conducted in accordance with the Awarding Rulebook, that the Call was announced on the MRS-Serbia’s website on January 1, 2015, and that in the stipulated period of 45 days only one candidacy was submitted, that for Dr. Ivan Bozovic, submitted by Prof. Dr. Davor Pavuna. This submission was supported by Prof. Dr. Laszlo Forro, Prof. Dr. Zoran Radović, Prof. Dr. Zoran Petrović, Prof. Dr. Velimir Radmilović and Prof. Dr. Dejan Raković. Having received

the opinion from the Expert Committee Members, Prof. Dr. Robert Sinclair and Prof. Dr. Danilo Suvorov, the Executive Board of the MRS-Serbia Presidency took the decision that Dr. Ivan Božovic be granted the MRS-Serbia Award for a Lasting and Outstanding Contribution to Materials Science and Engineering.

President of MRS-Serbia, Prof. Dr. Dragan Uskokovic
Vice-President of MRS-Serbia, Dr. Slobodan Milonjić
Vice-President of MRS-Serbia, Prof. Dr. Velimir Radmilović
Vice-President of MRS-Serbia, Prof. Dr. Dejan Raković”

Dr. Božović’s invited plenary lecture will be a part of the Opening Ceremony of the Seventeenth Materials Research Society of Serbia Annual Conference YUCOMAT 2015, which will be held in a beautiful little place at the Adriatic coast, Herceg Novi, Montenegro, August 31 - September 4, 2015.

MRS-Serbia

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Vice-presidents: Slobodan Milonjić, Velimir Radmilović, Dejan Raković

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HISTORY:

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 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. 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 2008 MRS-Serbia became a member of FEMS (Federation of European Materials Societies).

GENERAL INFORMATION

DATE AND VENUE: The conference will be held on August 31-September 4, 2015, at the Hunguest Hotel Sun Resort, in Herceg Novi, Montenegro. Participants will also be accommodated there. The conference will begin on Monday, August 31st, at 09.00 and end on Friday, September 4th, 2015, at 12.30.

REGISTRATION: Registration, registration fee payment, conference materials distribution, etc, will take place at the conference desk (Conference Secretariat) open on Sunday, August 30, Monday, August 31, and Tuesday, September 1, from 8.00 to 19.00, on Wednesday and Thursday 8.00-13.00 and 19.00-20.00, and on Friday from 8.00 to 12.00. At registration, the participants are requested to submit a proof of their advance registration fee payment and their registration form.

INSTRUCTION FOR AUTHORS: The conference will feature plenary sessions, oral sessions, poster sessions, and an Exhibition of synthesis and characterization equipment.

Time of papers' presentations to be given in ORAL SESSIONS is limited. Time available for delivery is 30 min for plenary and 15 min for other papers including discussion (5-10 min). Video-beam is available. PowerPoint presentations, recorded on CD or USB flash-memory, should be given at registration, specifying the name of the speaker and the day and session number.

In POSTER SESSIONS, the authors are requested to display their papers minimum one hour before the session and to be present beside their posters during the session. Poster sessions venue will be open from Tuesday to Thursday, from 18.00-22.00.

CONFERENCE AWARDS: Materials Research Society of Serbia will award the authors (preferable young members under 35) of the best oral and poster presentation at the conference, and also the authors of highly rated PhD theses defended between two conferences. Awarded researchers are granted free registration at the next YUCOMAT Conference.

ADDITIONAL ACTIVITIES: An Exhibition of synthesis and characterization equipment will be held during the Conference. Traditional Cocktail Party on Monday evening and excursions on Wednesday afternoon to Dubrovnik (Croatia) and Thursday afternoon (boat trip around Boka Kotorska Bay) will be organized again.

GENERAL CONFERENCE PROGRAMME

Sunday, August 30, 2015

08⁰⁰-19⁰⁰ **Registration**

Monday, August 31, 2015

08⁰⁰-09⁰⁰ **Registration**

09⁰⁰-10⁰⁰ **OPENING CEREMONY**
- Introduction and Welcome

10¹⁵-13¹⁵ **First Plenary Session**

13¹⁵ **Photo Session**

15⁰⁰-18⁴⁵ **Symposium A, Conference Hall**

15⁰⁰-18³⁰ **Symposium B, Small Hall**

19³⁰-21⁰⁰ **Cocktail Party**

SYMPOSIUM A: Advanced Methods in Synthesis
and Processing of Materials

SYMPOSIUM B: Advanced Materials for High-
Technology Application

SYMPOSIUM C: Nanostructured Materials

SYMPOSIUM D: Eco-materials and Eco-
technologies

SYMPOSIUM E: Biomaterials

Tuesday, September 1, 2015

09⁰⁰-13⁰⁰ **Second Plenary Session**

15⁰⁰-16⁴⁵ **Symposium C, Conference Hall**

15⁰⁰-16⁴⁵ **Symposium E, Small Hall**

15⁰⁰-16⁴⁵ **Symposium B, Small Hall**

20⁰⁰-22⁰⁰ **Poster Session I (Symposium A)**

Wednesday, September 2, 2015

09⁰⁰-12⁴⁵ **Third Plenary Session**

14⁰⁰-19⁰⁰ **Excursion to Dubrovnik, Croatia**

20⁰⁰-22⁰⁰ **Poster Session II (Symposium B)**

Thursday, September 3, 2015

09⁰⁰-12³⁰ **Fourth Plenary Session**

14⁰⁰-19⁰⁰ **Boat-trip around Boka Kotorska Bay**

20⁰⁰-22⁰⁰ **Poster Session III (Symposiums C, D and E)**

Friday, September 4, 2015

09⁰⁰-12³⁰ **Fifth Plenary Session**

12³⁰-13⁰⁰ **Awards and Closing of the Conference**

OPENING CEREMONY

Monday, August 31, 2015

09⁰⁰-10⁰⁰

20 Years of YUCOMAT Conferences

Dragan Uskoković
President of MRS-Serbia, Belgrade, Serbia

MRS-Serbia 2015 Award for a Lasting and Outstanding Contribution to Materials Science and Engineering

Atomic-Layer Engineering and High-Tc Superconductivity in Cuprates

Ivan Božović
Brookhaven National Laboratory, Yale University, Upton, New York, USA

Break: 10⁰⁰-10¹⁵

FIRST PLENARY SESSION

Monday, August 31, 2015

Session I: 10¹⁵-11⁴⁵

Chairmen: Robert Sinclair and Velimir Radmilović

10¹⁵-10⁴⁵ **Quantum Dot Formation on Nanowires**

Q. Zhang¹, S.H. Davis¹, J.-N. Aqua², Peter W. Voorhees³

¹Engineering Sciences and Applied Mathematics, Northwestern University, USA,

²Institut des Nanosciences de Paris, Université Pierre et Marie Curie Paris 6, France,

³Materials Science and Engineering, Northwestern University, USA

10⁴⁵-11¹⁵ **Electromagnetic Field Mapping at the Nanoscale in the Transmission Electron
Microscope**

Rafal E. Dunin-Borkowski, Jan Caron, Andras Kovacs, Patrick Diehle, Vadim
Migunov

Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons and Peter
Grünberg Institute, Forschungszentrum Jülich, Germany

11¹⁵-11⁴⁵ **Electron Holography for Structures and Fields in Nanomaterials**

Hannes Lichte, Felix Börrnert, Bernd Eienkel, Andreas Lenk, Axel Lubk, Falk Röder,
Jan Sickmann, Sebastian Sturm, Karin Vogel, Daniel Wolf

Triebenberg Laboratory, Institute of Structure Physics, Technische Universität
Dresden, Germany

Break: 11⁴⁵-12¹⁵

Session II: 12¹⁵-13¹⁵

Chairmen: Peter W. Voorhees and Rafal E. Dunin-Borkowski

12¹⁵-12⁴⁵ **An Up-date on In Situ and Environmental High Resolution Electron Microscopy of Material Reactions**

Robert Sinclair¹, Sang Chul Lee¹, Ai Leen Koh²

¹Department of Materials Science and Engineering, Stanford University, Stanford, USA, ²Stanford Nano Shared Facilities, Stanford University, Stanford, USA

12⁴⁵-13¹⁵ **Zigzag Inversion Domain Boundaries in Functional Oxide Nanowires**

Velimir Radmilović

Nanotechnology and Functional Materials Center, Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, Belgrade, Serbia; Serbian Academy of Sciences and Arts, Knez Mihailova 35, 11000 Belgrade, Serbia

Break: 13¹⁵-15⁰⁰

SYMPOSIUM A: ADVANCED METHODS IN SYNTHESIS AND PROCESSING OF MATERIALS

Conference Hall

Session I: 15⁰⁰-17⁰⁰

Chairmen: Jan Dutkiewicz and Smilja Markovic

15⁰⁰-15¹⁵ **High Resolution Materials Characterisation using Aberration Corrected Scanning Transmission Electron Microscopy**

David R.G. Mitchell, Gilberto Casillas, Elena Pereloma

UOW Electron Microscopy Centre, University of Wollongong, Australia

15¹⁵-15³⁰ **Lead Free Piezoelectric Materials for Transducer Applications**

Mai Pham Thi

Thales Research Technology France, 1 Avenue A. Fresnel, 91676 Palaiseau Cedex, France

15³⁰-15⁴⁵ **Silver Matrix Graphene Strengthened Composites with High Electrical Conductivity**

Jan Dutkiewicz, Piotr Ozga, Janusz Pstruś, Justyna Stolarska, Wojciech Maziarz, Institute of Metallurgy and Materials Science of the Polish Academy of Sciences, 25, Reymonta Str., 30-059 Kraków, Poland

- 15⁴⁵-16⁰⁰ **Tailoring Microstructure of Thermoelectric Oxides**
Boštjan Jančar¹, Damjan Vengust¹, Tilen Sever¹, Goran Dražič², Ioannis Petousis³
¹Advanced Materials Department, Jozef Stefan Institute, Ljubljana, Slovenia,
²Laboratory for Materials Chemistry, National Institute of Chemistry, Ljubljana,
Slovenia, ³Department of Mechanical Engineering, Stanford University, Stanford CA,
USA
- 16⁰⁰-16¹⁵ **Acrobatics of N'-2-propylidene-4-hydroxybenzohydrazide Crystals**
Igor Djerđ¹, Jasminka Popović¹, Željko Skoko²
¹Ruder Bošković Institute, Bijenička c. 54, HR-10000 Zagreb, Croatia, ²Department of
Physics, Faculty of Science, University of Zagreb, Bijenička c. 32, HR-10000 Zagreb,
Croatia
- 16¹⁵-16³⁰ **Towards Rotational Molding of Ultra Low Density Cellular Polymeric
Composites**
Remon Pop-Iliev
UOIT-University of Ontario Institute of Technology, Canada
- 16³⁰-16⁴⁵ **On PolyHIPE Based Separators for Thin Film Lithium-Ion Batteries**
Werner Paschinger, Alexander Bismarck
Institute for Materials Chemistry & Research, University of Vienna, Waehringer
Straße 42, A-1090 Wien, Austria
- 16⁴⁵-17⁰⁰ **Fluorine Doping of Layered Na_xCoO₂ Structure**
Dragana Jugović¹, Miloš Milović¹, Miodrag Mitrić², Nikola Cvjetičanin³, Max
Avdeev⁴, Bojan Jokić⁵, Dragan Uskoković¹
¹Institute of Technical Sciences of SASA, Belgrade, Serbia, ²Vinča Institute of
Nuclear Sciences, University of Belgrade, Belgrade, Serbia, ³Faculty of Physical
Chemistry, University of Belgrade, Belgrade, Serbia, ⁴Bragg Institute, Australian
Nuclear Science and Technology Organisation, Locked Bag 2001, Kirrawee DC, NSW
2232, Australia, ⁵Faculty of Technology and Metallurgy, University of Belgrade,
Belgrade, Serbia

Break: 17⁰⁰-17³⁰

Session II: 17³⁰-18⁴⁵

Chairmen: Mai Pham Thi and Boštjan Jančar

- 17³⁰-17⁴⁵ **Advances in Improvement of Pb-based Thin Layers Deposited on Nb Substrate**
Anna Kosinska¹, Marek Barlak¹, Jerzy Lorkiewicz¹, Jacek Sekutowicz², Robert Nietubyć¹, Lukasz Kurpaska¹, Katarzyna Nowakowska – Langier¹
¹National Center for Nuclear Research, st. A. Soltana 7, 05-400 Swierk, Poland,
²Deutsches Elektronen Synchrotron (DESY), 85 Notkestrasse, D-22-607 Hamburg, Germany
- 17⁴⁵-18⁰⁰ **Photoluminescence Properties of YAG:Dy and YAG:Dy:Er Thermographic Phosphors Synthesized by Solid State, Co-precipitation and Solvothermal Methods**
Liudmyla M. Chepyga¹, Gordana Jovicic^{1,2}, Andreas Vetter^{1,2}, Miroslaw Batentschuk², Christoph J. Brabec²
¹Energie Campus Nürnberg, Fürther Str. 250, 90429 Nürnberg, ²Lehrstuhl für Materialien der Elektronik und Energietechnologie, Friedrich-Alexander-Universität, Erlangen-Nürnberg, Martensstrasse 7, 91058 Erlangen
- 18⁰⁰-18¹⁵ **Influence of Sintering Atmosphere on the Crystal Structure, Microstructure, Dielectric and Optical Properties of BaTi_{1-x}Sn_xO₃ (x = 0, 0.05 and 0.1) Ceramics**
Smilja Marković¹, Ljiljana Veselinović¹, Andrej Garaj², Nikola Cvjetičanin², Srečo D. Škapin³, Dragan Uskoković¹
¹Institute of Technical Sciences of SASA, Belgrade, Serbia, ²Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia, ³Jožef Stefan Institute, Ljubljana, Slovenia
- 18¹⁵-18³⁰ **The Effect of D,L-lactide-based Linker on the Hydrolytic Stability of Polyurethane Films**
Milena Špírková, Magdalena Serkis, Rafal Poreba, Jana Kredatusová, Lud'ka Machová, Jiří Hodan
Institute of Macromolecular Chemistry AS CR, Prague, Czech Republic
- 18³⁰-18⁴⁵ **Temperature Dependencies of Thermo-Physical Properties of Selected Foundry Sands**
Paweł K. Krajewski
AGH University of Science and Technology, Faculty of Foundry Engineering, 23 Reymonta Street, 30-059 Krakow, Poland

SYMPOSIUM B: ADVANCED MATERIALS FOR HIGH-TECHNOLOGY APPLICATIONS

Small Hall

Session I: 15⁰⁰-18³⁰

Chairpersons: Dragana Jugović and Irena Nikolić

- 15⁰⁰-15¹⁵ **Silver Nanowire Based Networks for Transparent Electrode Applications**
Vuk Radmilović¹, Manuela Göbel², Silke Christiansen^{2,3}, Erdmann Spiecker⁴, Velimir Radmilović^{5,6}
¹Innovation Center, University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia, ²Max Planck Institute for the Science of Light, Günther-Scharowsky-Str. 1, 91058 Erlangen, Germany, ³Helmholtz Centre Berlin for Materials and Energy, Hahn-Meitner Platz 1, 14109 Berlin, Germany, ⁴Center for Nanoanalysis and Electron Microscopy (CENEM), Friedrich-Alexander University Erlangen-Nürnberg, Cauerstrasse 6, 91058 Erlangen, Germany, ⁵University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia, ⁶Serbian Academy of Sciences and Arts, Knez Mihailova 35, 11000 Belgrade, Serbia
- 15¹⁵-15³⁰ **Direct Observation of the Magneto Crystal Anisotropy Axis in Fe_{3-x}O₄ Nanoparticles by MFM**
Carlos Moya¹, Óscar Iglesias-Freire^{2,3}, Nicolás Pérez¹, Xavier Batlle¹, Amílcar Labarta¹, Agustina Asenjo²
¹Departament de Física Fonamental, Institut de Nanociència i Nanotecnologia, Universitat de Barcelona, Barcelona, Spain, ²Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC), Cantoblanco, Madrid, 28049 Spain, ³Department of Physics, McGill University, Montreal, Canada
- 15³⁰-15⁴⁵ **Smart Hydrogels of Thermoresponsive Interpenetrating Networks of Poly(N-isopropylacrylamide) and Polyacrylamide**
Jiri Spevacek, Marek Radecki, Lenka Hanykova, Alexander Zhigunov, Zdenka Sedlakova
Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Prague, Czech Republic; Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic
- 15⁴⁵-16⁰⁰ **Methodology of Formation of New Generation Multilayer Coatings for Cutting Tools**
Alexey Vereschaka¹, Anatoly Vereschaka¹, Boris Mokritskii², Andre Batako³
¹Moscow State Technological University STANKIN, ²Komsomolsk-na-Amure State Technical University, ³Liverpool John Moores University
- 16⁰⁰-16¹⁵ **Design of Phase Percolated Composites for Military Application**
Paulina Chabera, Anna Boczkowska
Warsaw University of Technology, Faculty of Materials Science and Engineering, Woloska St 141, 02-507 Warsaw

- 16¹⁵-16³⁰ **Green's Functions Analysis of Microcracking in a Brittle Material**
Hillal Ayas, Mohamed Chabaat
Buyilt Environmental research Lab., Civil Engineering Faculty, University of Sciences and Technology Houari Boumediene, B.P. 32 El Alia Bab Ezzouar, 16111 Algiers, Algeria.
- 16³⁰-16⁴⁵ **The Influence of Thermal Treatment on Microstructural and Magnetic Properties of Electrical Steel**
Branko Koprivica¹, Ioan Dumitru², Alenka Milovanović¹, Ovidiu Caltun²
¹Faculty of Technical Sciences, University of Kragujevac, Čačak, Serbia
²Faculty of Physics, Alexandru Ioan Cuza University of Iasi, Romania
- 16⁴⁵-17⁰⁰ **Spin Hall Effect in (111)-Oriented Thin Films of SnSe and SnTe Topological Crystalline Insulators**
Shiva Safaei, Marta Galicka, Perla Kacman, Ryszard Buczko
Institute of Physics Polish Academy of Science, Warsaw, Poland
- Break: 17⁰⁰-17³⁰**
- 17³⁰-17⁴⁵ **Influence of Degradation Process on Composite Performance with Eembedded Fibre Optical Sensors**
Rafal Kozera, Stefan F. Awietjan, Przemyslaw D. Gacia, Anna Boczkowska
Warsaw University of Technology, Faculty of Materials Science and Engineering, ul. Woloska 141, 02-507 Warszawa, Poland
- 17⁴⁵-18⁰⁰ **Femtosecond Laser Interaction with Nickel Based Superalloy M-252**
Predrag Drobniak¹, Andjelka Milosavljević², Sanja Petronić³, Suzana Polić⁴, Strain Posavljak⁵
¹TEHNIKUM-TAURUNUM, Belgrade, ²Faculty of Mechanical Engineering, University of Belgrade, ³Innovation Centre, Faculty of Mechanical Engineering, ⁴Central Institute for Conservation in Belgrade, ⁵Faculty of Mechanical Engineering, University of Banja Luka, BiH

18⁰⁰-18¹⁵ **Thermal Resistance of Alkali Activated Binders Synthesized Using the Fly Ash and Steel Slag**

Irena Nikolić¹, Smilja Marković², Ljiljana Karanović³, Vuk Radmilović⁴, Velimir Radmilović⁴

¹University of Montenegro, Faculty of Metallurgy and Technology, Džordža Vašingtona bb, 81 000 Podgorica, Montenegro, ²Institute of Technical Sciences of SASA, Belgrade, Serbia, ³University of Belgrade, Faculty of Mining and Geology, Laboratory of Crystallography, Đušina 7, 11000 Belgrade, Serbia, ⁴University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia

18¹⁵-18³⁰ **Determination of the Temperature Transfer Function of Building Constructions Based on Measurement Data**

Zorana Petojević¹, Milica Mirković¹, Željko Jovanović², Radovan Gospavić¹, Goran Todorović¹

¹Civil Engineering Faculty of University of Belgrade, ²Orion Telecom Company Belgrade

SECOND PLENARY SESSION

Tuesday, September 1, 2015

Session I: 09⁰⁰-11⁰⁰

Chairmen: Hannes Lichte and Wolfgang Jäger

09⁰⁰-09³⁰ **20 Years of Nanostructured Materials: Enabling Nanotechnology to Benefit Society**

Richard W. Siegel

Materials Science and Engineering Department, Rensselaer Polytechnic Institute, Troy, New York 12180, USA

09³⁰-10⁰⁰ **Solving Problems in Nanodimensions by Aberration-corrected Transmission Electron Microscopy with Picometer Precision**

Knut W. Urban

Research Center Juelich, PGI-5, D52425 Juelich, Germany

10⁰⁰-10³⁰ **Holographic Imaging and Optical Sectioning in the Aberration-corrected STEM**

Harald Rose

University of Ulm, Albert-Einstein-Allee 11, 89069 Ulm, Germany

10³⁰-11⁰⁰ **Instrumentation for High Resolution EM and Its Limitations**

Max. Haider, Peter Hartel, Stephan Uhlemann, Heiko Müller, Joachim Zach
CEOS GmbH, Englerstr. 28, D-69126 Heidelberg, Germany

Break: 11⁰⁰-11³⁰

Session II: 11³⁰-13⁰⁰

Chairmen: Knut Urban and Richard Siegel

11³⁰-12⁰⁰ **Advanced and In Situ Transmission Electron Microscopy of Growth and Interface Phenomena of Oxide Semiconductor Nanowires**

Yanicet Ortega^{1,2}, David Maestre^{1,2}, Christel Dieker¹, Dietrich Häußler¹, Ana Cremades², Paloma Fernández², Javier Piqueras², Wolfgang Jaeger¹

¹Institute of Materials Science, Christian-Albrechts-University of Kiel, 24143 Kiel, Germany EU, ²Dept. Materials Physics, University Complutense of Madrid, 28040 Madrid, Spain EU

12⁰⁰-12³⁰ **Technology Transfer, Especially in Materials Science**

Kyung-Ho Shin

Korea Institute of Science and Technology, Seoul, Korea

12³⁰-13⁰⁰ **Alumina-dispersed Cu Alloy of High Mechanical Strength and Electric Conductivity beyond Conventional Limit by Interfacial Design between Alumina Particle/Cu Matrix**

Kwang Ho Kim¹, Seung Zeon Han²

¹School of Materials Science and Engineering, Pusan National University, Busan 609-735, Korea, ²Structural Materials Division, Korea Institute of Materials Science, Changwon 642-831, Korea

Break: 13⁰⁰-15⁰⁰

SYMPOSIUM C: NANOSTRUCTURED MATERIALS

Conference Hall

Session I: 15⁰⁰-16⁴⁵

Chairpersons: Gerda Rogl and Natalia Kamanina

15⁰⁰-15¹⁵ **The Origin of Exceptional Activity of Pt₃Ni(111) Catalyst in CO Oxidation Reaction**

Dušan Tripković^{1,2}, Vladimir Tripković³, Amalija Tripković², Vladislava Jovanović², Vojislav Stamenković¹, Nenad Marković¹

¹Materials Science Division, Argonne National Laboratory, Argonne, Illinois 60439, USA, ²ICTM, Center of Electrochemistry, University of Belgrade, 11000 Belgrade, Serbia, ³Center for Atomic-scale Materials Design, Department of Physics, Technical University of Denmark, DK-2800 Kgs. Lyngby, Denmark.

15¹⁵-15³⁰ **Monocarboxylic Acid-modified CeO₂ Nanoparticles Synthesized under Hydrothermal Conditions Using Supercritical Water**

Minori Taguchi, Takashi Naka, Toshitaka Funazukuri

Department of Applied Chemistry, Faculty of Science and Engineering, Chuo University, 1-13-27 Kasuga, Japan; National Institute for Materials Science

15³⁰-15⁴⁵ **Role of the Nano- and Bio-structuration Process in Change of the Laser-induced Refractive Index and Other Related Optical Effects**

Natalia V. Kamanina

Vavilov State Optical Institute, Kadetskaya Liniya V.O., dom.5, korpus 2, St.-Petersburg, 199053, Russia; Saint-Petersburg Electrotechnical University ("LETI"), St. Petersburg, Russia,

- 15⁴⁵-16⁰⁰ **New High ZT p- and n-type Skutterudites**
Gerda Rogl, Andriy Grytsiv, Ernst Bauer, Peter Rogl
¹Christian Doppler Laboratory for Thermoelectrics, Austria
²Institute of Physical Chemistry, University of Vienna, Austria
³Institute of Solid State Physics, Vienna University of Technology, Austria
- 16⁰⁰-16¹⁵ **Universal One-pot and Scalable Synthesis of SERS Encoded Nanoparticles**
Bernat Mir-Simon^{1,4}, Irene Reche-Perez^{1,2}, Luca Guerrini^{1,2}, Nicolas Pazos-Perez^{1,2,#},
Ramon Alvarez-Puebla^{2,3}
¹Medcom Advance, Spain, ²Department of Physical Chemistry and Inorganic,
Universitat Rovira i Virgili, Spain, ³Institució Catalana de Recerca i Estudis Avançats,
Spain, ⁴Department of Surgery, UD-Vall d'Hebron School of Medicine, Universitat
Autònoma de Barcelona, 08035 Barcelona, Spain
- 16¹⁵-16³⁰ **Photocatalytic Properties of 1D Nanostructured Vanadium Pentoxide
Compounds**
Nemanja Aničić, Marija Vukomanović, Danilo Suvorov
Institute Jožef Štefan, Ljubljana, Slovenia
- 16³⁰-16⁴⁵ **A Novel Method to Measure Dynamic Contact Angle Hysteresis on
Nanostructured Surfaces**
Daniel Pawlak¹, Maciej Psarski¹, Grzegorz Sobieraj², Michał Remer², Krzysztof
Gumowski², Jacek Rokicki², Grzegorz Celichowski¹
¹Department of Materials Technology and Chemistry, University of Lodz, Pomorska
163, 90-236 Lodz, Poland, ²Institute of Aeronautics and Applied Mechanics, Warsaw
University of Technology, Nowowiejska 24, 00-665 Warsaw, Poland

SYMPOSIUM E: BIOMATERIALS

SYMPOSIUM B: ADVANCED MATERIALS FOR HIGH-TECHNOLOGY APPLICATIONS

Small Hall

Session I: 15⁰⁰-16⁴⁵

Chairmen: Nenad Ignjatović and Wiesław A. Swiatnicki

- 15⁰⁰-15¹⁵ **A Facile Determination Method for an Androstane-based Lung Cancer Inhibitor Loaded in Nano/micro Particles Based on Hydroxyapatite by Means of DTA/TGA Coupled with On-line Mass Spectrometry**
Nenad Ignjatović¹, Maja Kuzmanović¹, Katarina Penov-Gaši², Jovana Ajduković², Vesna Kojić³, Dragan Uskoković¹
¹Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, P.O. Box 377, 11000 Belgrade, Serbia, ²Department of Chemistry, Biochemistry and Environmental Protection, Faculty of Sciences, University of Novi Sad, Trg Dositeja Obradovića 3, 21000 Novi Sad, Serbia, ³Oncology Institute of Vojvodina, Institutski put 4, 21204 Sremska Kamenica, Serbia
- 15¹⁵-15³⁰ **Polymer/ceramic Composite Scaffold for the Regeneration of Bone Defect after Cancer Treatment in Dog Distal Radius**
Barbara Ostrowska¹, Igor Bissenik², Wojciech Swieszkowski¹
¹Division of Materials Design, Faculty of Materials Science and Engineering, Warsaw University of Technology, 02-507, Warsaw, Poland, ²Veterinary Clinic "Pulawska" 02-844, Warsaw, Poland
- 15³⁰-15⁴⁵ **Magnetic Chitosan-g-acrylate/styrene Composites for Hybrid Coatings with Nanostructured Morphology**
Doina Hritcu, Gianina Dodi, Mirabela L. Iordache, Dan Draganescu, Marcel I. Popa "Gheorghe Asachi" Technical University of Iasi, Romania
- 15⁴⁵-16⁰⁰ **Transition Metal Trichalcogenides Dispersed as Precursors for Preparation of Film Materials**
Sofya Artemkina, Pavel Poltarak, Tatyana Podlipskaya, Alexander Bulavchenko, Vladimir Fedorov
Nikolaev Institute of Inorganic Chemistry SB RAS, Novosibirsk, Russia, Novosibirsk State University, Novosibirsk, Russia
- 16⁰⁰-16¹⁵ **Composite Materials Based on Highly-dispersed Inorganic 1D and 2D Materials and Metal Nanoparticles**
Mariia N. Kozlova¹, Ekaterina D. Grayfer¹, Lidiya S. Kibis², Andrei I. Boronin², Vladimir E. Fedorov¹
¹Nikolaev Institute of Inorganic Chemistry SB RAS, 3, Acad. Lavrentiev Ave., Novosibirsk, Russia, ²Boreskov Institute of Catalysis SB RAS
- 16¹⁵-16³⁰ **Electroactive Nanocomposites Based on Thermoplastic Elastomers**
Paulina Latko¹, Mateusz Bielecki¹, Wojciech Konior², Rafał Kozera¹, Anna Boczkowska¹, Jerzy Grygorczuk²
¹Department of Materials Science and Engineering, Warsaw University of Technology Wołoska 141, 02-507 Warsaw, Poland, ²Space Research Centre Polish Academy of Sciences, Bartycka 18, 00-716 Warsaw, Poland

16³⁰-16⁴⁵

Formation of Nanocrystalline Structure in Steels and Iron Alloys through the Heat Treatment Process

Wieslaw A. Swiatnicki

Faculty of Materials Science and Engineering, Warsaw, University of Technology, ul. Wołoska 141, 02507 Warszawa, Poland

THIRD PLENARY SESSION

Wednesday, September 2, 2015

Session I: 09⁰⁰-11⁰⁰

Chairmen: Maximilian Haider and Davor Pavuna

09⁰⁰-09³⁰ **Scanning Transmission Electron Microscopy at Atomic Resolution**
Ferdinand Hofer, Gerald Kothleitner
Institute for Electron Microscopy and Nanoanalysis, Graz University of Technology,
A-8010 Graz, Austria

09³⁰-10⁰⁰ **Defects in the TEM**
C. Barry Carter
Dept of Chem. & Biomolec. Engng, U. of Connecticut, 191 Auditorium Rd, Storrs,
CT USA; Dept of Mats Sci & Engng, U. of Connecticut, 97 North Eagleville Road,
Storrs, CT USA; Institute of Materials Science, U. of Connecticut, 97 North Eagleville
Road, Storrs, CT USA

10⁰⁰-10³⁰ **Structure and Properties of Dislocations in Bilayer Graphene**
Erdmann Spiecker
Institute of Micro- and Nanostructure Research & Center for Nanoanalysis and
Electron Microscopy (CENEM), University of Erlangen-Nürnberg, Cauerstrasse 6, D-
91058 Erlangen, Germany

10³⁰-11⁰⁰ **Advances in Focused Ion Beam Imaging, Spectroscopy and Fabrication**
Robert Hull
Rensselaer Polytechnic Institute, Troy NY, USA

Break: 11⁰⁰-11³⁰

Session II: 11³⁰-12⁴⁵

Chairmen: Ivan Božović and C. Barry Carter

11³⁰-12⁰⁰ **Electric Field Effect Studies in High-Tc Cuprates and Related Materials**
Guy Dubuis^{1,2}, A. T. Bollinger¹, Davor Pavuna², Ivan Božović^{1,3}
¹Brookhaven National Laboratory, Upton, NY 11973, USA
²Physics of Complex Matter, EPFL, CH-1015 Lausanne, Switzerland
³Applied Physics Department, Yale University, New Haven CT 06250, USA

12⁰⁰-12³⁰ **Revised Phase Diagram of the Cuprates**

Neven Barišić

Institute of Solid State Physics, Vienna University of Technology, 1040 Vienna,
Austria

12³⁰-12⁴⁵ **In Situ TEM**

Dominique Delille

FEI Company, Eindhoven, Netherlands

FOURTH PLENARY SESSION

Thursday, September 3, 2015

Session I: 09⁰⁰-11⁰⁰

Chairmen: Peter Franz Rogl and Mamoru Senna

09⁰⁰-09³⁰ **Application of Experimental and Computational Approaches to Explore Non-conventional Transformation Pathways Resulting in Refined Microstructures in Beta-stabilized Titanium Alloys**

Hamish L Fraser

The Ohio State University, Columbus, Ohio, USA

09³⁰-10⁰⁰ **Deformation Mechanisms in Superalloys: New Insights from STEM-based Imaging and Spectroscopy**

Tim Smith, Connor Slone, G. Babu Viswanathan, Michael J. Mills

The Ohio State University, Center for Electron Microscopy and Analysis (CEMAS), Columbus, OH, USA

10⁰⁰-10³⁰ **Characterization of the Deformation Mechanisms in High-Mn Austenitic Steels**

James E. Wittig

Materials Science and Engineering, Vanderbilt University, Nashville, Tennessee, USA

10³⁰-11⁰⁰ **Nanotwinned Structures in Nanomaterials: Preparation, Properties and Application**

Rostislav A, Andrievski

Institute of Problems of Chemical Physics, Russian Academy of Sciences, Chernogolovka, Moscow Region, Russia

Break: 11⁰⁰-11³⁰

Session II: 11³⁰-12³⁰

Chairmen: Hamish L. Fraser and Michael Mills

11³⁰-12⁰⁰ **Thermoelectric Materials for Automotive Applications**

Peter Rogl^{1,2}, Gerda Rogl^{1,2,3}, Andriy Grytsiv^{1,2,3}, Ernst Bauer^{1,3}

¹Christian Doppler Laboratory for Thermoelectricity, Wien, Austria, ²Institute of Physical Chemistry, University of Vienna, Währingerstrasse 42, A-1090 Wien, Austria, ³Institute of Solid State Physics, Vienna University of Technology, Wiedner Hauptstrasse 8-10, A-1060 Wien, Austria

12⁰⁰-12³⁰ **Alkali Metal-containing Complex Oxide Nanoparticles for Advanced Materials**
Mamoru Senna
Faculty of Science and Technology, Keio University, Yokohama, Japan

FIFTH PLENARY SESSION

Friday, September 4, 2015

Session I: 09⁰⁰-10³⁰

Chairmen: Ai Leen Koh and Gyula Eres

09⁰⁰-09³⁰ **The On-site Analysis of Cultural Heritage Materials and Artefacts**

Philippe Colomban

¹Sorbonne Universités, UPMC Univ Paris 06, UMR 8233, MONARIS, c49, 4 Place Jussieu, F-75005, Paris, France, ²CNRS, IP2CT, UMR 8233, MONARIS, 4 Place Jussieu, F-75005, Paris, France

09³⁰-10⁰⁰ **Plasmonic Diagnostic in Biological Fluids**

Ramon A. Alvarez-Puebla

Institució Catalana de Recerca i Estudis Avançats (ICREA), Passeig Lluís Companys 23, 08010, Barcelona, Spain; Universitat Rovira i Virgili and Centro de Tecnologia Química de Catalunya, Carrer de Marcel·lí Domingo s/n 43007, Tarragona, Spain; Medcom Advance SA, Viladecans Business Park - Edificio Brasil, Bertran i Musitu 83-85 08840, Viladecans – Barcelona, Spain

10⁰⁰-10³⁰ **Identifying Active Nanostructures by In Situ Electron Microscopy for Design of Tailored Materials**

Eva Olsson

Department of Applied Physics, Chalmers University of Technology, Gothenburg, Sweden

Break: 10³⁰-11⁰⁰

Session II: 11⁰⁰-12³⁰

Chairpersons: Eva Olsson and Philippe Colomban

11⁰⁰-11³⁰ **The Role of Cooperativity in Two-dimensional Crystal Growth**

Gyula Eres

Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA

11³⁰-12⁰⁰ **Applications of Environmental (Scanning) Transmission Electron Microscopy to Study Oxidation and Hydrogenation Phenomena in Nanomaterials**

Ai Leen Koh

Stanford Nanocharacterization Laboratory, Stanford University, CA, USA

12⁰⁰-12³⁰ **The Half of Millennium Since Publishing of the First Exact Contribution to the Elastomer Concept – Some Lessons of Epistemology and Some Prospect for the Future**

Milenko B. Plavšić, Milanka M. Plavšić

Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4,
Belgrade, Serbia

12³⁰-13⁰⁰ **CLOSING CEREMONY**

POSTER SESSION I

Tuesday, September 1, 2015, 20⁰⁰-22⁰⁰

SYMPOSIUM A: ADVANCED METHODS IN SYNTHESIS AND PROCESSING OF MATERIALS

- P.S.A.1. **Production of Nanomaterials for Physical/Chemical Methods of Fluid Filtering**
Suzana Gotovac Atlagić¹, Marko Čado¹, Siniša M. Vučenić², Igor J. Šetrajić³,
Jovan P. Šetrajić³
¹University of Banja Luka, Faculty of Technology, Banja Luka, Republic of Srpska, BiH, ²University of Banja Luka, Faculty of Natural Sciences, Banja Luka, Republic of Srpska, BiH, ³University of Novi Sad, Faculty of Sciences, Department of Physics, Novi Sad, Vojvodina, Serbia
- P.S.A.2. **Doped Calcium Cobaltites: The Synthesis Approach**
Eva Bartonickova, Alzbeta Jebava, Jiri Masilko, Lukas Kalina, Jakub Tkacz, Jaromir Havlica
Materials Research Centre, Faculty of Chemistry, Brno University of Technology, Brno Czech Republic
- P.S.A.3. **Alternative Synthesis of Certain Compounds of Perovskite-type for Piezoelectric Transducers**
Piotr Dulian¹, Wojciech Bąk², Krystyna Wieczorek-Ciurowa¹, Czesław Kajtoch²
¹Faculty of Chemical Engineering and Technology, Cracow University of Technology, 24, Warszawska Str., 31-155 Cracow, Poland, ²Institute of Physics, Pedagogical University, 2, Podchorążych Str., 30-084 Cracow, Poland
- P.S.A.4. **Evaluation of Inhibition Efficiency of Talloil Diethylenetriamine Imidazoline as Corrosion Inhibitor for Top of the Line Corrosion of Mild Steel in Multiphase Flow Environment**
Ivana Jevremović¹, Marc Singer², Srdjan Nešić², Vesna Mišković-Stanković¹
¹Faculty of Technology and Metallurgy, Belgrade, Serbia, ²Institute for Corrosion and Multiphase Technology, Ohio University, Athens, USA
- P.S.A.5. **Effect of Thermal Aging of Ethylene-Vinyl Acetate Copolymer (EVA) on Adhesive Properties for Optical Fibers Fixation**
Nataša Z. Tomić¹, Bojan I. Medo², Kata Trifković¹, Dušica B. Stojanović², Vesna J. Radojević², Marko P. Rakin², Radmila M. Jančić-Heinemann², Radoslav R. Aleksić^{2†}
¹University of Belgrade, Innovation Center of Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia, ²University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia

- P.S.A.6. **Synthesis and Structure of Cobalt(III) Complex with Pyridoxylideneaminoguanidine**
Marko V. Rodić, Mirjana M. Radanović, Ljiljana S. Vojinović-Ješić, Vukadin M. Leovac
Faculty of Sciences, University of Novi Sad, Serbia
- P.S.A.7. **The Kinetic Energy Dependence of Association Reactions for Alkali Metal Ions with Dimethoxyethane**
Milica Petrović, Martina Gilić, Vladimir Stojanović, Željka Nikitović, Zoran Raspopović, Nebojša Romčević
Institute of Physics, University of Belgrade, Serbia
- P.S.A.8. **Electroless Deposition of Ni-P Coating on Wrought Mg-3Al-1Zn Magnesium Alloys**
Jaromir Wasserbauer¹, P. Kosár¹, M. Buchtík¹, Pavel Doležal^{1,2}
¹Brno University of Technology, Faculty of Chemistry, Materials Research Centre, Purkynova 118, 612 00 Brno, Czech Republic, ²Brno University of Technology, Faculty of Mechanical Engineering, Institute of Material Science and Engineering, Technicka 2, 616 69 Brno, Czech Republic
- P.S.A.9. **Preparation of Cordierite Ceramic Materials Starting from Natural Raw Materials**
Khaled Boumchedda, Said Debbakh, Bahia Rebahi, Tahar Aouroun
UR-MPE, FSI, University of Boumerdes, 35000 Boumerdes, Algeria
- P.S.A.10. **Complexes of Ru(II) with N-alkylphenothiazines – biological Assay**
Milena P. Krstić¹, Sunčica M. Borozan¹, Sofija P. Sovilj², Sanja Grgurić-Šipka²
¹Faculty of Veterinary Medicine, University of Belgrade, Belgrade, Serbia, ²Faculty of Chemistry, University of Belgrade, P.O. Box 158, 11001 Belgrade, Serbia
- P.S.A.11. **Transport Parameters of Ne⁺ in CF₄ for Technological Applications**
Željka Nikitović, Zoran Raspopović, Vladimir Stojanović
Institute of Physics, University of Belgrade, Belgrade, Serbia
- P.S.A.12. **Influence of Point Defects Concentration on Densification Process and Optical Properties of Sintered ZnO Ceramics**
Smilja Marković¹, Ana Stanković¹, Ljiljana Veselinović¹, J. Belošević-Čvor², Srečo Škapin³, S. Stojadinović⁴, V. Rac⁵, S. Lević⁵, I. Janković-Častvan⁶, Dragan Uskoković¹
¹Institute of Technical Sciences of SASA, Belgrade, Serbia, ²The Vinča Institute of Nuclear Sciences, University of Belgrade, 11001 Belgrade, Serbia, ³Jožef Stefan Institute, Jamova 39, 1000 Ljubljana, Slovenia, ⁴Faculty of Physics, University of Belgrade, Belgrade, Serbia, ⁵Faculty of Agriculture, University of Belgrade, Zemun, Serbia, ⁶Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia

- P.S.A.13. **Synthesis and Characterisation of Powder Metallurgy Bulk Magnesium**
Matěj Březina¹, Pavel Doležal^{1,2}, Josef Zapletal², Jaromír Wasserbauer¹, Veronika Ruttkayová¹
¹Brno University of Technology, Faculty of Chemistry, Materials Research Centre, Purkynova 118, 612 00 Brno, Czech Republic, ²Brno University of Technology, Faculty of Mechanical Engineering, Institute of Material Science and Engineering, Technická 2, 616 69 Brno, Czech Republic
- P.S.A.14. **The Gamma-irradiation Effect on Sintering and Properties of Zirconia Ceramics**
Olga S. Antonova¹, Valeriy V. Smirnov¹, German P. Kochanov¹, Ludmila I. Shvorneva¹, Alexey A. Zanin², Sergey M. Barinov¹
¹Baikov' Institute of Metallurgy and Material Science RAS, Moscow, Russia
²D. Mendeleev University of Chemical Technology of Russia, Moscow, Russia
- P.S.A.15. **Modeling the Influence of Synthesis Parameters and Thermal Effects on Magnetic Properties of Pressed Powder System Fe_xO_yBaTiO₃**
Dejan Vujičić¹, Dušan Marković², Danijela Milošević¹, Slobodan Djukić¹, Siniša Randjić¹
¹Faculty of Technical Sciences Čačak, ²Faculty of Agronomy Čačak, Serbia
- P.S.A.16. **Analysis of Stress Distribution in the Case of Scarf Joint of Two Composite Materials**
Abdurrahman O. Houssein¹, Mohamed Mokhter Omar Abukhres²
¹Aljabel Algharbi University, Al Zentan engineering Faculty, Lybia
²Aljabel Algharbi University, Lybia
- P.S.A.17. **Application of New Composites for Fused Deposition Modeling (FDM) Technology in Wood Industry**
Nenad Grujović¹, Milan Šljivić², Miroslav Živković¹, Fatima Živić¹, Andreja Radovanović¹, Miloš Mladenović¹
¹Faculty of Engineering, University of Kragujevac, Serbia
²Faculty of Mechanical Engineering, University of Banja Luka, RS-BIH
- P.S.A.18. **Tuning Electronic Properties of Transition Metal Dichalcogenides by a Heterovalent Doping in Metal Sublattice**
Alexandra Yu. Ledneva, Sofya B. Artemkina, Mariia N. Kozlova, Anatoly I. Romanenko, Vladimir E. Fedorov
¹Nikolaev Institute of Inorganic Chemistry SB RAS, Novosibirsk, Russia,
²Novosibirsk State University, Novosibirsk, Russia

POSTER SESSION II

Wednesday, September 2, 2015, 20⁰⁰-22⁰⁰

SYMPOSIUM B: ADVANCED MATERIALS FOR HIGH-TECHNOLOGY APPLICATIONS

P.S.B.1. **Valence State Ce(Yb), Electron Structure and Physical Properties of New Ternary Intermetallic Compounds**

Ivan D. Shcherba^{1,3}, Dragan Uskoković², M. V. Kovalska³

¹Institute of Technology, the Pedagogical University of Cracow, Podchorozych st. 2 Cracow 30-084 Poland, ²Institute of Technical Sciences of SASA, Belgrade, Serbia, ³Ivan Franko National University of Lviv, Ukraine

P.S.B.2. **Preparation of NdFeB Magnetic Nanoparticles by Surfactant-assisted High Energy Ball Milling**

Jelena Lamovec, Vesna Jović, Filip Radovanović, Danijela Randjelović, Katarina Radulović, Zoran Jakšić, Dana Vasiljević-Radović

Centre of Microelectronic Technologies, Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Njegoseva 12, 11000 Belgrade, Serbia

P.S.B.3. **Thermodynamic Characteristics of Graphene**

Stevan Jačimovski¹, Dejan Raković²

¹Academy of Criminalistic and Police Studies, Belgrade, Serbia

²University of Belgrade, Faculty of Electrical Engineering, Belgrade, Serbia

P.S.B.4. **Investigation of Optoelectronic and Heat Transport Properties of Graphene Modified with Boron Atoms**

Stevan Armaković¹, Sanja J. Armaković²

¹University of Novi Sad, Faculty of Sciences, Department of Physics, Trg Dositeja

Obradovića 4, 21000, Novi Sad, Serbia, ²University of Novi Sad, Faculty of Sciences, Department of Chemistry, Biochemistry and Environmental Protection, Trg Dositeja Obradovića 3, 21000, Novi Sad, Serbia,

P.S.B.5. **Self-Healing Fiber-Reinforced Composite**

Ivana Radović, Vesna Radojević, Petar S. Uskoković, Dušica B. Stojanović, Miloš Petrović and Radoslav Aleksić

University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia

- P.S.B.6. **Synthesis and Consolidation of Ni₃B by Spark Plasma Sintering**
Dina V. Dudina^{1,2}, Arina V. Ukhina¹, Yuliya G. Mateyshina¹, Vyacheslav I. Mali²,
Alexander G. Anisimov², Michail A. Korchagin^{1,3}
¹Institute of Solid State Chemistry and Mechanochemistry SB RAS, Novosibirsk,
Russian Federation
²Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk, Russian Federation
³Tomsk State University, Tomsk, Russian Federation
- P.S.B.7. **Magnetoimpedance Effect of Metastable Fe₇₂Cu₁V₄Si₁₅B₈ Alloy Ribbons**
Nebojša Mitrović¹, Radoslav Surla¹, Aleksandra Kalezić - Glišović¹, Maja Kićanović¹,
Dragica Minić²
¹Joint Laboratory for Advanced Materials of SASA, Section for Amorphous Systems,
Faculty of Technical Sciences Čačak, University of Kragujevac, Serbia, ²Faculty of
Physical Chemistry, University of Belgrade, Serbia
- P.S.B.8. **Voltammetric Determination of an Antipsychotic Agent Trifluoperazine at Boron-Doped Diamond Electrode**
Dalibor Stanković¹, Teodora Dimitrijević², Darko Kuzmanović², Milena P. Krstić³,
Branka B. Petković⁴
¹ICTM, Department of Electrochemistry, University of Belgrade, Belgrade, Serbia,
²Faculty of Chemistry, University of Belgrade, Belgrade, Serbia, ³Faculty of Veterinary
Medicine, University of Belgrade, Belgrade, Serbia, ⁴Faculty of Natural Science and
Mathematics, University of Priština, Kosovska Mitrovica, Serbia
- P.S.B.9. **Mechanism of Increasing the Capacitance of Li-Ion Battery with Nano-Coated Electrodes**
Igor J. Šetrajić¹, Ana J. Šetrajić – Tomić², Jovan P. Šetrajić¹
¹University of Novi Sad, Faculty of Sciences, Department of Physics, Novi Sad,
Vojvodina – Serbia; ²University of Novi Sad, Faculty of Medicine, Department of
Pharmacy, Novi Sad, Vojvodina – Serbia
- P.S.B.10. **Modern Technologies to Be Applied into Ballistic Vests**
Elżbieta Maklewska, Grażyna Grabowska, Joanna Blaszczyk, Agata Pawłowska
Institute of Security Technologies "MORATEX", M.Skłodowskiej-Curie 3, Polska
- P.S.B.11. **Protection of Personal and Biometric Data of Individuals from the Measurements with a 3D Scanner**
Grażyna Grabowska, Elżbieta Maklewska, Joanna Blaszczyk, Agata Pawłowska
Institute of Security Technologies "MORATEX", M.Skłodowskiej-Curie 3, Polska

- P.S.B.12. **Optical and Mechanical Properties of PMMA Film Doped with QD**
Hana Ibrahim Elswie¹, Ivana Radović¹, Dragutin Sević², Dušica B. Stojanović¹, Petar Uskoković¹, Vesna Radojević¹, Radoslav Aleksić¹
¹Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11120 Belgrade, Serbia, ²Institute of Physics, University of Belgrade, Belgrade, Serbia
- P.S.B.13. **Investigation on Fracture Mechanics for Steel, Cast Iron and Bronze Materials**
Miranda Vidhaj¹, Mariqlen Kurti¹, Fatjon Boçi²
¹“Ismail Qemali” University of Vlora, Vlora, Albania, ²Private sector, Industrial production and management Vlora, Albania
- P.S.B.14. **Low-cycle Fatigue Behaviour of 6061 Aluminium Alloy Plated with Multi-layered Coatings**
Ya. B. Unigovski, Emmanuel M. Gutman, A. Grinberg
Ben-Gurion University of the Negev, Department of Materials Engineering, Beer-Sheva 84105, Israel
- P.S.B.15. **Spectroscopical Analyses of Laboratory Produced ODS Steels.**
Jarmila Degmova, Julius Dekan, Jana Simeg Veternikova, Veronika Sabelova, Vladimir Slugen
Institute of Nuclear and Physical Engineering, Slovak University of Technology, Ilkovičova 3, 812 19 Bratislava, Slovakia
- P.S.B.16. **The Pore Structure of Hydrated Portland Cement Paste**
Irida Markja¹, Thomas Bier², Ylli Shehu¹
¹Polytechnic University Tirana, Department of Production Management, Sq. Nene Teresa nr. 4, Tirana, Albania, ²TU Bergakademie, Institute für Keramik, Glas und Baustofftechnik, Leipziger Str.28, 09599 Freiberg, Germany
- P.S.B.17. **The Influence of Nano-Silica and Barite Aggregate on Properties of Ultra High Performance Concrete**
Ksenija Janković¹, Srboľjub Stanković^{2,3}, Dragan Bojović¹, Marko Stojanović¹, Ljiljana Miličić¹
¹Institute for Materials Testing - IMS, Belgrade, Serbia
²Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia
³School of Electrical Engineering, University of Belgrade, Belgrade, Serbia

POSTER SESSION III

Thursday, September 3, 2015, 20⁰⁰-22⁰⁰

SYMPOSIUM C: NANOSTRUCTURED MATERIALS

- P.S.C.1. **Tailoring Surface Plasmon Resonance (SPR) of Bimetallic Ag/Au Nanoparticles through their Composition and Assembly**
Manca Logar¹, Tilen Sever², Boštjan Jančar²
¹Laboratory for chemistry of materials, National Institute of Chemistry, Slovenia, ²Advanced Materials Department, Jozef Stefan Institute, Slovenia
- P.S.C.2. **Alignment of MoS₂ Nanotubes in a Photopolymerizable Liquid-crystalline Material**
Aleš Mrzel¹, Blaž Tasič¹, Miro Huskič², Irena Drevenšek-Olenik^{1,3}
¹Jozef. Stefan Institute, Jamova 39, SI 1000 Ljubljana, Slovenia, ²National Institute for Chemistry, Hajdrihova 19, SI 1001, Ljubljana, Slovenia, ³Faculty of Mathematics and Physics, University of Ljubljana, Jadranska 19, SI 1000 Ljubljana, Slovenia
- P.S.C.3. **Platinum Nanocatalysts at Titanium Oxide Based Supports for Low Temperature Fuel Cell Applications**
Ljiljana M. Gajić Krstajić¹, Nevenka R. Elezović², Biljana M. Babić³, Velimir R. Radmilović⁴, Nedeljko V. Krstajić⁴
¹Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Knez Mihailova 35, Belgrade, Serbia, ²Institute for Multidisciplinary Research, University of Belgrade, Belgrade, Serbia, ³Vinča Institute of Nuclear Sciences, University of Belgrade, Serbia, ⁴Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia
- P.S.C.4. **Shape Evolution of Carbon Supported Pt Catalyst for PEMFC**
Mila N. Krstajić¹, Sanja I. Stevanović¹, Vuk V. Radmilović², Aleksandra Gavrilović-Wohlmuther³, Velimir R. Radmilović^{4,5}, Snežana Lj. Gojković⁴, Vladislava M. Jovanović¹
¹ICTM, Department of Electrochemistry, University of Belgrade, Njegoševa 12, 11000 Belgrade, Serbia, ²Innovation Center, Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11000 Belgrade, Serbia, ³CEST Centre of Electrochemical Surface Technology, Viktor-Kaplan Strasse 2, 2700 Wiener Neustadt, Vienna, Austria, ⁴Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11000 Belgrade, Serbia, ⁵Serbian Academy of Sciences and Arts, Knez Mihailova 35, 11000 Belgrade, Serbia

- P.S.C.5. **Photocatalytic Degradation of the Propranolol Hydrochloride in Natural Water Using Titania-based Nanoparticles**
Sanja J. Armaković¹, Daniela V. Šojić¹, Marija Radoičić², Mirjana I. Čomor², Biljana F. Abramović¹
¹University of Novi Sad, Department of Chemistry, Biochemistry and Environmental Protection, Faculty of Sciences, Trg Dositeja Obradovića 3, 21000 Novi Sad, Serbia;
²Institute for Nuclear Sciences Vinča, 11001 Belgrade, PO Box 522, Serbia
- P.S.C.6. **Synthesis, Characterisation and Photocatalytic Properties of Two Novel Nanocomposites: TiO₂ Hombikat with Fullerene nC₆₀ and with Fullerenol C₆₀(OH)₂₄ Nanoparticles**
Ivana Borišev¹, Igor Medić¹, Daniela Šojić¹, Biljana Abramović¹, Marina Lazarević¹, Marina Delić¹, Danica Jović¹, Vladimir Srđić², Aleksandar Djordjević¹
¹University of Novi Sad, Faculty of Sciences, Department for Chemistry, Biochemistry and Environmental Protection, Trg Dositeja Obradovića 3, Novi Sad, Serbia,
²University of Novi Sad, Faculty of Technology, Bulevar Cara Lazara 1, Novi Sad, Serbia
- P.S.C.7. **Synthesis of Sulphur Nanoparticles by Mechanochemical Route in the System Na₂S₂O₃-H₂(C₄H₄O₄)-Na₂SO₃**
Dinar Zharlyrkasimova¹, Mukhambetkali Burkitbayev¹, Bolat Uralbekov¹, Farit Urakaev²
¹al-Farabi Kazakh National University, Almaty, Kazakhstan, ²V.S. Sobolev Institute of Geology and Mineralogy SB RAS, Novosibirsk, Russia
- P.S.C.8. **Hydrolytic Stability of Nanosilica-based Urea-formaldehyde Composite with Different Coumarine Derivates as Scavengers of the Formaldehyde**
Vojislav Jovanović¹, Branka Petković¹, Suzana Samaržija-Jovanović¹, Biljana Dekić¹, Vidoslav Dekić¹, Gordana Marković², Milena Marinović-Cincović³
¹Faculty of Natural Science and Mathematics, University of Priština, Kosovska Mitrovica, Serbia, ²Tigar, Pirot, Serbia; ³Institute of Nuclear Science Vinča, University of Belgrade, Belgrade, Serbia

SYMPOSIUM D: ECO-MATERIALS AND ECO-TECHNOLOGIES

- P.S.D.1. **Investigation of Adsorption of Copper Ions by Poplar Wood Sawdust and Lignin**
Marina Šćiban, Dragana Kukić, Jelena Prodanović, Vesna Vasić
University of Novi Sad, Faculty of Technology Novi Sad, Bul. Cara Lazara 1, 21000
Novi Sad, Serbia
- P.S.D.2. **Friction and Aerodynamic Offset of Cup Anemometer**
Miodrag Zlatanović¹, Ivan Popović²
¹Wind Electricity doo, Belgrade, Serbia, ²School of Electrical Engineering, Belgrade,
Serbia
- P.S.D.3. **Newer Methods of Waste Disposal from Thermal Power Plants**
Jelena Mitić¹, Oliver Dimitrijević², Miodrag Smelcerović¹, Dragan Djordjević³
¹Higher School of Textile Studies, Leskovac, Serbia
²Higher School of Medical Studies 'Hipokrat', Bujanovac, Serbia
³Faculty of Technology, Leskovac, Serbia

SYMPOSIUM E: BIOMATERIALS

- P.S.E.1. **Bone Cements Based on Calcium Phosphate-Magnesium Phosphate System with (Ca+Mg)/P = 2**
M.A. Goldberg, Sergey V. Smirnov, V.V. Smirnov, O.S. Antonova, L.I. Shvorneva, S.V. Kutsev, S.M. Barinov
Baikov' Institute of Metallurgy and Materials Science RAS, Moscow, Russia
- P.S.E.2. **Synthesis, Characterization and Antimicrobial Activity of Ni(II) Complexes with Condensation Product of 2-(Diphenylphosphino)Benzaldehyde and Girard's T Reagent**
Božidar Čobeljić¹, Milica Milenković¹, Gabrijela Bradjan¹, Dušan Sladić¹, Marina Milenković², Katarina Andjelković¹
¹Faculty of Chemistry, University of Belgrade, Studentski trg 12–16, 11000 Belgrade, Serbia, ²Department of Microbiology and Immunology, Faculty of Pharmacy, University of Belgrade, Vojvode Stepe 450, Serbia
- P.S.E.3. **Crosslinked Electrospun Chitosan/PEO Nanofibers for Wound Healing Application**
Mirjana Grković¹, Andjela Radisavljević¹, Dušica B. Stojanović², Aleksandar Kojović², Mirjana Rajilić-Stojanović², Igor Balać³, Vladimir Pavlović⁵, Miloš Bjelović⁴, Petar S. Uskoković²
¹University of Belgrade, Innovation Centre Faculty of Technology and Metallurgy, Belgrade, Serbia, ²University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia, ³University of Belgrade, Faculty of Mechanical Engineering, Belgrade, Serbia, ⁴University of Belgrade, Faculty of Medicine, Belgrade, Serbia, ⁵University of Belgrade, Faculty of Agriculture, Belgrade, Serbia
- P.S.E.4. **Development of Multifunctional Oxaprozin/poly(2-hydroxypropyl acrylate/itaconic Acid) Delivery System**
Marija M. Babić, Bojan Dj. Božić, Katarina M. Antić, Jovana S. Vuković, Marija D. Perišić, Jovanka M. Filipović, Simonida Lj. Tomić
Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, Belgrade, Serbia
- P.S.E.5. **The Influence of Gradient Copolymerisation Poly(oligo(propylene glycol) methacrylate) Hydrogels with 2-hydroxyethyl methacrylate on Thermoresponsive Properties**
Maja Mičić, Zorana Rogić Miladinović, Dejan Miličević, Edin Suljovrujić
Vinča Institute of Nuclear Sciences, University of Belgrade, PO Box 522, 11001 Belgrade, Serbia

- P.S.E.6. **Evaluation of Nano-particulate Bioactive-glass Reinforced Gellan-gum Hydrogel Regarding the Formation of Hydroxyapatite under Shear Stress**
Jovana Zvicer¹, Ana Gantar^{2,3}, Djordje Veljović¹, Saša Novak^{2,3}, Bojana Obradović¹
¹Faculty of Technology and Metallurgy, University of Belgrade, Serbia
²Department for Nanostructured Materials, Jožef Stefan Institute, Ljubljana, Slovenia
³Jožef Stefan International Postgraduate School, Ljubljana, Slovenia
- P.S.E.7. **Formation Mechanism of Biocompatible Fluoride Conversion Coating on AZ31 Magnesium Alloy**
Juliána Drábiková, Jaromír Wasserbauer, Martin Zmrzlý
Brno University of Technology, Faculty of Chemistry, Materials Research Centre,
Purkynova 118, 612 00 Brno, Czech Republic
- P.S.E.8. **Squeeze Cast AZ31 Magnesium Alloy Long Term Degradation Analysis in Hanks' Solutions**
Pavel Doležal^{1,2}, Helena Doležalová Weissmannová¹, Jaromír Wasserbauer¹, Sylvia Dundeková³, Branislav Hadzima³, Ivana Modráčková¹
¹Brno University of Technology, Faculty of Chemistry, Materials Research Centre,
Purkynova 118, 612 00 Brno, Czech Republic, ²Brno University of Technology,
Faculty of Mechanical Engineering, Institute of Material Science and Engineering,
Technická 2, 616 69 Brno, Czech Republic, ³Research Centre of the University of
Zilina, Univerzitná 1, 010 26 Zilina, Slovak Republic
- P.S.E.9. **Influence of Coefficient of Friction and Contact Area on Prostheses-implant Retention Force**
Igor Balać¹, V. Buljak¹, S. Pandey¹, V. Lojpur²
¹The Faculty of Mechanical Engineering, University of Belgrade, Belgrade, Serbia,
²Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia

P.S.E.5.

The Influence of Gradient Copolymerisation Poly(oligo(propylene glycol) Methacrylate) Hydrogels with 2-hydroxyethyl Methacrylate on Thermoresponsive Properties

Maja Mičić, Zorana Rogić Miladinović, Dejan Miličević, Edin Suljovrujić
Vinča Institute of Nuclear Sciences, University of Belgrade, PO Box 522, 11001 Belgrade, Serbia

Gamma radiation was used to prepare copolymer libraries based on oligo(propylene glycol) methacrylate (OPGMA) and 2-hydroxyethyl methacrylate (HEMA); a complete screening in composition of P(OPGMA/HEMA) copolymers was elaborated from 0 to 100% of OPGMA. Determination of gel fraction was performed as a first step after radiation induced synthesis. Tuning of the volume phase transition temperature (VPTT) of P(OPGMA/HEMA) copolymeric hydrogels was investigated by swelling study; the swelling properties were preliminarily investigated over the wide pH (2.2-9.0) and temperature (4-80°C) ranges. It has been observed that P(OPGMA/HEMA) hydrogels followed a simple rule in their thermoresponsive behaviour showing a linear increase in VPTT with a decreasing wt% of OPGMA in the copolymer composition. Additional characterisation of the structure and properties was conducted by FTIR, DSC and UV-Vis spectroscopy. All results indicate that new P(OPGMA/HEMA) copolymeric hydrogels have wide diversity in thermoresponsive properties which strongly depend on their composition.

P.S.E.6.

Evaluation of Nano-Particulate Bioactive-Glass Reinforced Gellan-Gum Hydrogel Regarding the Formation of Hydroxyapatite under Shear Stress

Jovana Zvicer¹, Ana Gantar^{2,3}, Djordje Veljović¹, Saša Novak^{2,3}, Bojana Obradović¹
¹*Faculty of Technology and Metallurgy, University of Belgrade, Serbia,* ²*Department for Nanostructured Materials, Jožef Stefan Institute, Ljubljana, Slovenia,* ³*Jožef Stefan International Postgraduate School, Ljubljana, Slovenia*

In this study we have investigated properties of gellan gum spongy-like scaffolds reinforced with nano-particulate bioactive-glass, with composition of 70 n/n % SiO₂ and 30 n/n % CaO; under biomimetic conditions in perfusion bioreactors, imitating physiological conditions in bone. The samples were 2 % w/w gellan gum discs (10 mm diameter, 5 mm thick) with 2 % w/w bioactive-glass while 2 % w/w gellan gum samples served as a control. Each sample was placed in a separate bioreactor cartridge and perfused with simulated body fluid (pH 7.4) at flow rate of 1.13 ml/min. Over 14 days of perfusion, degradation rates were monitored by measurements of sample weights, while hydroxyapatite formation was examined at the end of experiments by FEG-SEM, EDS and XRD analyses. In addition, flow patterns in the bioreactors were examined by tracer experiments and residence time distribution analysis. Based on the obtained results, an attempt was made to relate hydroxyapatite formation and distribution within gellan gum samples to the surrounding hydrodynamic conditions.

A long bridge with green lights and streetlights over a river at dusk. The bridge is illuminated with green lights along its top edge and white streetlights along its length. The lights are reflected in the water below. The sky is a clear, deep blue.

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