

Programme & The Book of Abstracts

Eighteenth Annual Conference

YUCOMAT 2016

Herceg Novi, Montenegro, September 5–10, 2016

Organised by

MATERIALS RESEARCH SOCIETY OF SERBIA

endorsed by



EIGHTEENTH ANNUAL CONFERENCE

YUCOMAT 2016

Hunguest Hotel Sun Resort Herceg Novi, Montenegro,
September 5-10, 2016
<http://www.mrs-serbia.org.rs>

Programme and The Book of Abstracts

Organised by:
Materials Research Society of Serbia

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

Title: THE EIGHTEENTH ANNUAL CONFERENCE
YUCOMAT 2016
Programme and The Book of Abstracts

Publisher: Materials Research Society of Serbia
Knez Mihailova 35/IV, P.O.Box 433, 11000 Belgrade, Serbia
Phone: +381 11 2185-437; Fax: + 381 11 2185-263
<http://www.mrs-serbia.org.rs>

Editors: Prof. Dr. Dragan P. Uskoković and Prof. Dr. Velimir Radmilović

Technical editor: Aleksandra Stojičić

Cover page: Aleksandra Stojičić and Milica Ševkušić
Front cover: Modified photo by Boby Graham; Flickr
(<https://www.flickr.com/photos/libertylittlebasi/7642177774/>); [CC BY-NC-SA 2.0](#)
Back cover: Modified photo by Magelan Travel; Flickr
(<https://www.flickr.com/photos/whltravel/4275855745/>); [CC BY-NC-SA 2.0](#)

Copyright © 2016 Materials Research Society of Serbia

Acknowledgments: This conference is held in honour of Prof. Dejan Raković's 65th birthday.



Printed in: Biro Konto
Sutorina bb, Igalo – Herceg Novi, Montenegro
Phones: +382-31-670123, 670025, E-mail: bkonto@t-com.me
Circulation: 220 copies. The end of printing: August 2016

TABLE OF CONTENTS

WELCOME SPEECH BY THE PRESIDENT OF MRS-SERBIA		i
MRS-SERBIA AWARD FOR A LASTING AND OUTSTANDING CONTRIBUTION TO MATERIALS SCIENCE AND ENGINEERING		iv
GENERAL INFORMATION		v
CONFERENCE PROGRAMME		vii-xxxvi
ORAL PRESENTATIONS:		
Opening Ceremony	(MRS-Serbia 2016 Award)	1
Plenary Session I	(PL.S.I.1.-5.)	2
Symposium F: ADVANCED HYBRID AND COMPOSITE MATERIALS	(O.S.F.1.- 11.)	5
Plenary Session II	(PL.S.II.1.-7.)	12
Symposium C: NANOSTRUCTURED MATERIALS	(O.S.C.1.-6.)	19
Symposium E: BIOMATERIALS	(O.S.E.1.-8.)	25
Symposium B: ADVANCED MATERIALS FOR HIGH TECHNOLOGY APPLICATIONS	(O.S.E.B.1.-5.)	32
Symposium D: NANOSTRUCTURED MATERIALS	(O.S.D.1.-3.)	36
Plenary Session III	(PL.S.III.1.-7.)	39
Plenary Session IV	(PL.S.IV.1.-7.)	43
Plenary Session V	(PL.S.V.1.-6.)	48
POSTER PRESENTATIONS:		
Session I (Symposium A)	(P.S.A.1.-18.)	53
Session II (Symposium B)	(P.S.B.1.-21.)	67
Session III (Symposiums C and E)	(P.S.C.1.-14.)	82
	(P.S.E.1.-6.)	92
AUTHORS INDEX		97
ACKNOWLEDGEMENTS		108

**EIGHTEENTH ANNUAL CONFERENCE
YUCOMAT 2016
Herceg Novi, September 5-10, 2016**

WELCOME SPEECH BY THE PRESIDENT OF MRS-SERBIA:

Dear Participants of Eighteenth YUCOMAT,



We have entered the third decade of our activities at YUCOMAT conferences, with no loss of enthusiasm, pace or quality. Quite contrary – if you were to ask me, I would tell you that we find ourselves on an upward slope; the quality of you, the participants of this year’s meeting is in many respects higher than ever before. In spite of a plethora of small and big scientific conferences on materials science and engineering sprouting like mushrooms all across the globe, often in more prolific hubs for collaboration and connection with the advanced high-tech centers, we are disobeying the oft-foretold grim expectations and continue to deliver the best that the world has to offer in this field of science to the local scientific populace. YUCOMAT is now a well-recognized brand, so to speak, epitomizing a small meeting that is like wine produced in small batches, enjoyed only by the truest aficionados of conferences in the field of materials science and engineering and beyond.

This year, the number of invited lecturers, all tremendous experts in their respective fields of materials science, is higher than ever before. Moreover, this year we have a large number of invited speakers who are joining us for the first time. It is difficult to assess which is the better indicator of our success at YUCOMAT: the fact that we traditionally have many recurrent speakers, who join us year after year, or the fact that there is a continuous interest among the newcomers, who hear positive things about the conference and express their interest to participate. You will find around 130 abstracts in the Book of Abstracts, describing the topics of talks and posters that will be presented this year by participants who have flown here from 34 different countries and practically all the continents of the world. Most of the participants are from Serbia (40), than from USA (13), Korea and Russia (11), Poland (10), Japan (7) and Germany (6). Contravening our intentions, however, the number of oral presentations and posters has not been on the increase throughout the past couple of years. Paradoxically, the least number of oral and poster presenters comes from the countries that the majority of the members of our International Advisory Board and of invited lecturers are affiliated with. Therefore, we expect that the faithful YUCOMAT “fans” will do more on its promotion and the attraction of younger participants from their institutions and the nearby centers in the years to come.

As of last year, we have introduced the annual award for the lasting and exceptional contribution to materials science and engineering. This year’s recipient

of the award is Gordana Vunjak-Novakovic for her work in the field of Materials for Tissue Engineering and Regenerative Medicine (<http://www.mrs-serbia.org.rs/index.php/award/2016-mrs-serbia-award-for-a-lasting-and-outstanding-contribution-to-materials-science-and-engineering>). We are extraordinarily glad and honored to have her with us today. As a part of the Opening Ceremony, she will introduce you to some of her most significant research accomplishments.

Ever since the inception of YUCOMAT, we have made it an imperative to inspire and motivate young researchers through rewarding the best oral and poster presenters and the best doctoral theses defended in the timespan between two successive conferences. The same practice was adopted at our complementary conferences for young researchers, traditionally held at the Serbian Academy of Sciences and Arts in Belgrade in December. As of this year, we have introduced the subsidization of these prospective young scientists' participation at EUROMAT Junior conferences as a reward and as a response to the cordial promotion of YUCOMAT at the recently held EUROMAT Junior 2016 conference in Lausanne.

In every segment of life, sustenance is possible only when coupled to ceaseless innovation. Therefore, we tirelessly seek for new contents at YUCOMAT. This year, for example, we have a seminal presentation of a distant, but in many respects very close country to us: Korea. When I say "close", I mean that there is a plenty of instructive things that a small country can learn from the fantastic progress that the Korean economy has made in the past half a century or so by basing itself on the research-application-innovation triangle and its connection with high-tech industry. To this very day, Korean example stands as an unassailable one when it comes to the benefits that the economy of a small country can reap through smart and copious investments in basic research. Many of the participants of this symposium on Korean research in the field of science and technology of hybrid materials have been regular participants of YUCOMAT. All of the Korean experts this year participate through the invitation by the director of the National Core Research Center for Hybrid Materials Solutions of Busan University, Prof. Kwang Ho Kim, the director of KIST Institute for the Transfer of Technologies, Prof. Kyung Ho Shin, and myself, the president of MRS-Serbia. We intend to continue with this model and extend it as of the next year to Korea's neighbors, e.g., Singapore, Taiwan, China, Australia and Japan, so as to instigate the exchange of ideas and constructive collaborations.

Another element of our mission for the future is the expansion of the network of scientists originating from the region of former Yugoslavia through these meetings. To that end, we strive to revert the devastating effect of "brain drain" - which was recently estimated to have the highest rate in the world in exactly this region - into the beneficial one of "brain gain". Indeed, a very large number of researchers who

earned their basic or highest degrees locally are now working at prestigious research centers worldwide. If each one of them was a node and they were all somehow interconnected, it would result in a fantastic network spanning the entire globe, yielding a structure of an enormous potential in revitalizing a country in which science is treated by governments more as a recreation and an expense with no expected returns than as an investment with unforeseeably high returns for present and future generations. One example of how well this could be done comes from our colleagues Davor Pavuna and Laszlo Forro and the conferences titled From Solid State to Biophysics held in the nearby Croatian town of Cavtat in June, which they have successfully organized for almost two decades now. Our plan is to organize a special symposium in which our scientists from abroad could present their research in the context of highlighting the benefits that emigration brought to their science and also promoting the ways in which it could benefit the country of their origins. We are currently on a good way to set up a team which would undertake this effort.

For many years now, YUCOMAT conferences have been endorsed by the MRS, E-MRS and FEMS. Perhaps the strongest ties exist between MRS-Serbia and FEMS, which is logical given that MRS-Serbia has been a member of this Federation for almost ten years now. We wish to further strengthen these ties and our mutual work on organizing conferences such as EUROMAT, YUCOMAT, EUROMAT Junior and the MRS-Serbia's Young Researchers conference offers room for this to become a reality.

Regarding the sponsors, we have had many of them at previous YUCOMAT conferences, but for the first time this year we have a Diamond Sponsor: FEI. It is our great pleasure that one such company with a tradition in the design and the manufacturing of microscope technologies has graciously decided to sponsor our conference, having recognized its regional importance and the quality of participants that they could reach. It is our hope that other companies presented at YUCOMAT, be they focused on materials synthesis, powder processing, the design of processed parts of various equipment or equipment *per se*, will follow this example.

In closing, it is a part of the well-established tradition to symbolically dedicate every conference to anniversaries of one of our eminent members. This one will be dedicated to the Vice-President of MRS-Serbia, Prof. Dejan Rakovic, who turns 65 this year. Dejan is a cofounder of MRS-Serbia and he participated in practically all YUCOMAT conferences, significantly contributing to their becoming what they are today, for which we are immensely grateful to him.

Sincerely Yours,

Dragan Uskoković,

President of MRS-Serbia

2016 MRS-SERBIA AWARD FOR A LASTING AND OUTSTANDING CONTRIBUTION TO MATERIALS SCIENCE AND ENGINEERING

We are pleased to announce that the recipient of the 2016 MRS-Serbia Award for a Lasting and Outstanding Contribution to Materials Science and Engineering is **Dr. Gordana Vunjak-Novaković** of Columbia University, New York, USA. She is awarded for her achievements in the field of Tissue Engineering and Regenerative Medicine.



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

“The Executive Board of the MRS-Serbia Presidency, on their meeting on March 15, 2016, considered submitted candidates for the MRS-Serbia’s 2016 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, 2016, and that in the stipulated period of 45 days only one candidacy was submitted, that for Dr. Gordana Vunjak-Novaković, submitted by Prof. Dr. Milenko Plavšić. This submission was supported by: Prof. Dr Velimir Radmilović (Materials Science and Engineering) Belgrade University, Lawrence-Berkeley National Laboratory USA, corr. member of Serbian Academy of Sciences and Arts (SASA), Vice President of MRS-Serbia; Prof. Dr. Dejan Raković (Biophysics)

Belgrade University, Vice President of MRS-Serbia; Prof. Dr. Nenad Ignjatović (Biomaterials) Institute of Technical Sciences of SASA, Academy of Engineering Sciences - Serbia; Prof. Dr. Stevo Najman (Cell Biology and Genetics) Medical School, University of Niš; Prof. Dr. Đorđije Šaranović (Medical Sciences) Medical School, Belgrade University, CCS; Prof. Dr. Gordana Ćirić Marjanović (Physical Chemistry of Polymers) Dean of The Faculty of Physical Chemistry, Belgrade University; Dr. Vukoman Jokanović (Biophysical Chemistry) Institute “Vinča” of Belgrade University, Engineering Academy of Serbia.

Having received the opinion from the Expert Committee Members, Prof. Dr. Robert Sinclair, Prof. Dr. Danilo Suvorov and Dr. Ivan Božović, the Executive Board of the MRS-Serbia Presidency took the decision that Dr. Gordana Vunjak-Novaković be granted the MRS-Serbia’s 2016 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. Vunjak-Novaković’s invited plenary lecture will be a part of the Opening Ceremony of the Eighteenth Materials Research Society of Serbia Annual Conference YUCOMAT 2016, which will be held in a beautiful little place at the Adriatic coast, Herceg Novi, Montenegro, September 5-10, 2016.

MRS-Serbia

President: Dragan Uskoković

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

Members: Snežana Bošković, Milorad Davidović, Vera Dondur, Nenad Ignjatović, Djuro Koruga, Nedeljko Krstajić, Slavko Mentus, Zoran Petrović, Milenko Plavšić, Zoran Popović, Vladimir Srdić, Momčilo Stevanović, Jovan Šetrajić, Miodrag Zlatanović

International Advisory Board

Chair: Robert Sinclair (USA)

Members: Fritz Aldinger (Germany), Rostislav A. Andrievski (Russia), Aline Auroux (France), Xavier Batlle (Spain), Serena Best (UK), Ivan Božović (USA), Philippe Colombari (France), Uli Dahmen (USA), Miha Drofenik (Slovenia), Rafal Dunin-Borkowski (Germany), Mauro Ferrari (USA), László Forró (Switzerland), Yury Gogotsi (USA), Horst Hahn (Germany), Paul Harrison (UK), Felix T. Hong (USA), Robert Hull (USA), Wolfgang Jaeger (Germany), Josè M. Kenny (Italy), Alexander H. King (USA), Feng-Huei Lin (Taiwan), Toshiaki Makabe (Japan), Egon Matijević (USA), Amelia Montone (Italy), Eva Olsson (Sweden), Eiji Osawa (Japan), Davor Pavuna (Switzerland), Doug Perovic (Canada), Zoran S. Petrović (USA), Robert Ritchie (USA), Peter Franz Rogl (Austria), Frances Ross (USA), Richard W. Siegel (USA), Mamoru Senna (Japan), Valeriy V. Skorohod (Ukraine), Danilo Suvorov (Slovenia), Enrico Traversa (Italy), Vuk Uskoković (USA), Jose A. Varela[†] (Brazil), Gordana Vunjak Novaković (USA), Jackie Ying (Singapore)

Conference Organising Committee

Chairperson: Nenad Ignjatović

Members: Nikola Cvjetičanin, Ivana Jevremović, Dragana Jugović, Smilja Marković, Branko Matović, Jovan Mirković, Nebojša Mitrović, Željka Nikitović, Irena Nikolić, Bojana Obradović, Nebojša Romčević, Edin Suljovrujić, Milan Tadić, Đorđe Veljović, Mira Vukčević

Conference Secretary: Aleksandra Stojičić

Conference Technical Committee

Ivana Jevremović, Vuk Radmilović, Vladimir Rajić, Zoran Stojanović, Milica Ševkušić

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 September 5-10, 2016, at the Hunguest Hotel Sun Resort, in Herceg Novi, Montenegro. Participants will also be accommodated there. The conference will begin on Monday, September 5th, at 09.00 and end on Friday, September 9th, 2016, at 13.00.

REGISTRATION: Registration, registration fee payment, conference materials distribution, etc, will take place at the conference desk (Conference Secretariat) open on Sunday, September 4, Monday, September 5, and Tuesday, September 6, 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.

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. 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 posters 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), Thursday afternoon (boat trip around Boka Kotorska Bay) will be organized again. Full day excursion will be organized on Saturday, also.

Programme

GENERAL CONFERENCE PROGRAMME

Sunday, September 4 2016

08⁰⁰-19⁰⁰ **Registration**

Monday, September 5, 2016

08⁰⁰-09⁰⁰ **Registration**
09⁰⁰-10⁰⁰ **OPENING CEREMONY**
- Introduction and Welcome
Main Conference Hall

10¹⁵-13¹⁵ **First Plenary Session, Main Conference Hall**

13¹⁵ **Photo Session**

15⁰⁰-19⁰⁰ **Symposium F, Main Conference Hall**

19³⁰-21⁰⁰ **Cocktail Party**

Tuesday, September 6, 2016

08³⁰-12³⁰ **Second Plenary Session, Main Conference Hall**

15⁰⁰-16³⁰ **Symposium C, Main Conference Hall**

17⁰⁰-19⁰⁰ **Symposium E, Main Conference Hall**

15⁰⁰-16¹⁵ **Symposium B, Small Conference Hall**

16⁴⁵-17³⁰ **Symposium D, Small Conference Hall**

20⁰⁰-22⁰⁰ **Poster Session I (Symposium A), Villa MIMOZA**

Wednesday, September 7, 2016

08³⁰-12³⁰ **Third Plenary Session, Main Conference Hall**

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

20⁰⁰-22⁰⁰ **Poster Session II (Symposium B), Villa MIMOZA**

Thursday, September 8, 2016

08³⁰-12³⁰ **Fourth Plenary Session, Main Conference Hall**

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

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

Friday, September 9, 2016

09⁰⁰-12³⁰ **Fifth Plenary Session, Main Conference Hall**

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

Saturday, September 10, 2016

Full day **Excursion to Skadar, Albania "The last Secret of Europe"**

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

SYMPOSIUM F: Advanced hybrid and composite materials

OPENING CEREMONY

Monday, September 5, 2016

Main Conference Hall

09⁰⁰-10⁰⁰

Welcome Speech

Dragan Uskoković, President of MRS-Serbia, Belgrade, Serbia

Presentation of YUCOMAT 2015 Awards

Slobodan Milonjić, Vice President of MRS-Serbia

MRS-Serbia 2016 Award for a Lasting and Outstanding Contribution to Materials Science and Engineering

Cell-instructive biomaterials for tissue engineering: Applications in regenerative medicine and study of disease

Gordana Vunjak-Novaković

Columbia University, Department of Biomedical Engineering, Laboratory for Stem
Cells and Tissue Engineering, New York, NY, USA

Break: 10⁰⁰-10¹⁵

FIRST PLENARY SESSION

Main Conference Hall

Session I: 10¹⁵-11⁴⁵

Chairmen: Gordana Vunjak-Novakovic and Robert Sinclair

10¹⁵-10⁴⁵ Stimuli-responsive smart soft materials

Takuzo Aida

The University of Tokyo and RIKEN Center for Emergent Matter Science, Tokyo,
Japan

**10⁴⁵-11¹⁵ Therapeutic biomaterial devices for controlled drug release in ocular and
cardiac disease treatment**

Freddy Boey, Subbu Venkatraman

Nanyang Technological University, School of Materials Science and Engineering,
Singapore

11¹⁵-11⁴⁵ Iron oxide nanoparticles for medical application: still a challenging task

Heinrich Hofmann

Powder Technology Laboratory, Institute of Materials, Ecole Polytechnique Federale
de Lausanne, Switzerland

Break: 11⁴⁵-12¹⁵

Session II: 12¹⁵-13¹⁵

Chairmen: Takuzo Aida and Velimir R. Radmilović

12¹⁵-12⁴⁵ **In situ electron microscopy of energy-related thin film reactions**

Robert Sinclair, Sang Chul Lee and Ai Leen Koh

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

12⁴⁵-13¹⁵ **Lithium and scandium trialuminides embedded in solid matrix**

Velimir R. Radmilović

Serbian Academy of Sciences and Arts, Knez Mihailova 35, 11000, Beograd, Serbia

13¹⁵-13⁴⁵ **Photo session**

Break: 13⁴⁵-15⁰⁰

SYMPOSIUM F: ADVANCED HYBRID AND COMPOSITE MATERIALS

Main Conference Hall

Session I: 15⁰⁰-17⁰⁰

Chairpersons: Kwang-Ho Kim, Robert Sinclair, Danilo Suvorov and Margarethe Hofmann

15⁰⁰-15³⁰ **Materials research in Europe – a new concept needed?**

Margarethe Hofmann-Antenbrink¹, Alessandra Hool²

¹Past President of FEMS, CEO MatSearch and Foundation of Rare Metals, ESM, Pully, Swiss, ²MatSearch and Foundation of Rare Metals, ESM, Pully, Swiss

15³⁰-16⁰⁰ **Hybrid-interface materials**

Kwang Ho Kim^{1,2}

¹Global Frontier R&D Center for Hybrid Interface Materials, Busan, Republic of Korea, ²School of Materials Science and Engineering, Pusan National University, Busan, Republic of Korea

16⁰⁰-16¹⁵ **Advanced nanotechnology based on the directed self-assembly of block copolymers for device applications**

Woon Ik Park, Jung-Ho Cho, Young Hun Jeong, and Jong Hee Whang

Electronic Materials & Component R&D Center, Korea Institute of Ceramic Engineering & Technology (KICET) 101 Soho-ro, Jinju 52851, Republic of Korea

- 16¹⁵-16³⁰ **Virus based novel colorimetric sensor for cancer cell detection**
Suck Won Hong¹, Jin-Woo Oh²
¹Department of Cogno-Mechatronics Engineering, Pusan National University, Busan 46241, Republic of Korea, ²Department of Nanoenergy Engineering, Pusan National University, Busan 46241, Republic of Korea
- 16³⁰-16⁴⁵ **Organic-inorganic hybride thin films using atomic/molecular layer deposition for flexible electronic applications**
Jin-Seong Park
Division of Materials Science and Engineering, Hanyang University, Seoul, Republic of Korea
- 16⁴⁵-17⁰⁰ **Ultrathin ALD interfacial layer for improved materials properties**
Zhixin Wan, Woo-Jae Lee, Kwang-Ho Kim, and Se-Hun Kwon
School of Materials Science and Engineering, Pusan National University, Republic of Korea

Break: 17⁰⁰-17³⁰

Session II: 17³⁰-19⁰⁰

Chairpersons: Kwang-Ho Kim, Robert Sinclair, Danilo Suvorov and Margarethe Hofmann

- 17³⁰-18⁰⁰ **3-Dimensional hybrid nanostructures: Novel fabrication strategies and applications**
Yeon Sik Jung
KAIST- Korean Institute for Science and Technology, Seoul, Republic of Korea
- 18⁰⁰-18¹⁵ **Hybrid materials/device enabling high energy and power densities along with robust cycle life**
Jeung Ku Kang, Hyung Mo Jeong, Il-Woo Ock, Jong Ho Weon
Department of Materials Science & Engineering and Graduate School of EEWS, Daejeon, Republic of Korea
- 18¹⁵-18³⁰ **Multi-scale computational design of active and durable materials for renewable energy systems**
Byungchan Han, Joonhee Kang, Jeemin Hwang, Seunghyo Noh, Choa Kwon
Department of Chemical and Biomolecular Engineering, Yonsei University, Seoul, 03722, Republic of Korea

- 18³⁰-18⁴⁵ **Ni₂Si silicide wire fabrication by conventional metal alloy processing**
Seung Zeon Han¹, Sung Hwan Lim², Byungchan Han³ and Kwang Ho Kim⁴
¹Commercialization Research Division, Korea Institute of Materials Science, Changwon, Republic of Korea, ²Department of Advanced Materials Science & Engineering, Kangwon National University, Chuncheon, Republic of Korea, ³Department of Chemical and Biomolecular Engineering, Yonsei University, Seoul, Republic of Korea, ⁴School of Materials Science and Engineering, Pusan National University, Busan, Republic of Korea
- 18⁴⁵-19⁰⁰ **Developing multi-component coatings for structural applications by a hybrid HIPIMS technique**
Qimin Wang¹, Kwang Ho Kim²
¹School of Electromechanical Engineering, Guangdong University of Technology, Guangzhou, P.R. China, ²Global Frontier R&D Center for Hybrid Interface Materials, Pusan National University, Busan, Republic of Korea

SECOND PLENARY SESSION

Tuesday, September 6, 2016
Main Conference Hall

Session I: 08³⁰-10³⁰

Chairpersons: Eva Olsson and Hamish Fraser

- 08³⁰-09⁰⁰ **In situ off-axis electron holography of two-dimensional transition metal dichalcogenides**
Rafal E. Dunin-Borkowski¹, Florian Winkler¹, Amir H. Tavabi¹, Juri Barthel², Martial Duchamp¹, Emrah Yucelen³, Sven Borghardt⁴, Beata E. Kardynal⁴
¹Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons and Peter Grünberg Institute 5, Forschungszentrum Jülich, D-52425 Jülich, Germany, ²Gemeinschaftslabor für Elektronenmikroskopie (GFE), RWTH Aachen University, D-52074 Aachen, Germany, ³Faculty of Physics and Center for Nanointegration (CENIDE), University of Duisburg-Essen, D-48047 Duisburg, Germany, ⁴Peter Grünberg Institute 9, Forschungszentrum Jülich, D-52425 Jülich, Germany
- 09⁰⁰-09³⁰ **Real-time viewing of III-V semiconductor nanowire growth by In Situ TEM**
L. Reine Wallenberg¹, F. Lenrick¹, M. Ek¹, D. Jacobsson¹, L. Samuelson² and K. Dick Thelander¹
¹nCHREM, Inst. for Chemistry; ²Solid State Physics, Lund University, Sweden
- 09³⁰-10⁰⁰ **Oxidation of carbon nanotubes using environmental TEM and the influence of the imaging electron beam**
Ai Leen Koh¹, Emily Gidcumb², Otto Zhou^{2,3} and Robert Sinclair⁴
¹Stanford Nano Shared Facilities, Stanford University, Stanford, CA 94305, USA, ²Department of Applied Physical Sciences, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA, ³Department of Physics and Astronomy, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA, ⁴Department of Materials Science and Engineering, Stanford University, Stanford, CA 94305, USA
- 10⁰⁰-10³⁰ **Electric field and thermal induced effects in nanostructured materials revealed by advanced in situ electron microscopy**
Ludvig de Knoop, Hanna Nilsson, Andrew Yankovich, Norvik Voskanian, Lunjie Zeng and Eva Olsson
Department of Physics, Chalmers University of Technology, 412 96 Gothenburg, Sweden

Break: 10³⁰-11⁰⁰

Session II: 11⁰⁰-12³⁰

Chairmen: Rafal E. Dunin-Borkowski and Gianluigi A. Botton

11⁰⁰-11³⁰ Energy loss spectroscopy at high resolution: Applications to functional oxides and nanostructures

Gianluigi A. Botton

McMaster University, Department of Materials Science and Engineering, 1280 Main Street West, Hamilton, Ontario, Canada

11³⁰-12⁰⁰ Non-planar nanostructures at atomic scale

Jordi Arbiol^{1,2}

¹Institució Catalana de Recerca i Estudis Avançats (ICREA), 08010 Barcelona, CAT, Spain, ²Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and The Barcelona Institute of Science and Technology, Campus UAB, Bellaterra, 08193 Barcelona, CAT, Spain

12⁰⁰-12³⁰ The art and science of spatially-resolved determinations of local composition in an aberration-corrected electron microscope

Brian Welk, Jacob Jensen, John Sosa, Dan Huber, Robert Williams, Babu Viswanathan, and Hamish L Fraser

Center for the Accelerated Maturation of Materials, Department of Materials Science and Engineering, The Ohio State University, Columbus, OH, USA

Break: 12³⁰-15⁰⁰

SYMPOSIUM C: NANOSTRUCTURED MATERIALS

Main Conference Hall

Session I: 15⁰⁰-16¹⁵

Chairpersons: Satoshi Ohara and Natalia Kamanina

15⁰⁰-15¹⁵ Structural characterization of organic bulk heterojunction solar cells

Vuk V. Radmilović¹, Fei Guo², Christoph J. Brabec^{2,3}, Erdmann Speicker⁴, Velimir R. Radmilović⁵

¹Innovation Center, Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia, ²Institute of Materials for Electronics and Energy Technology (i-MEET), Friedrich-Alexander-University Erlangen- Nuremberg, Erlangen, Germany,

³Bavarian Center for Applied Energy Research (ZAE Bayern), Erlangen, Germany,

⁴Center for Nanoanalysis and Electron Microscopy (CENEM), Friedrich – Alexander - University of Erlangen- Nuremberg, Erlangen, Germany, ⁵Serbian Academy of Sciences and Arts, Belgrade, Serbia

- 15¹⁵-15³⁰ **High-performance Ni-GDC nanocomposite anode fabricated from GDC nanocubes for low-temperature solid-oxide fuel cells**
Satoshi Ohara and Kazuhiro Yamamoto
Joining and Welding Research Institute, Osaka University, Japan
- 15³⁰-15⁴⁵ **The chemical recycling of polycarbonate using CeO₂ nanocatalysts**
Minori Taguchi, Takashi Naka, Toshitaka Funazukuri
Chuo University, National Institute for Materials Science, Tokyo, Japan
- 15⁴⁵-16⁰⁰ **Modification of the materials properties via surface structuring**
Natalia V. Kamanina
¹Vavilov State Optical Institute, Kadetskaya Liniya V.O., dom.5, korpus 2, St.-Petersburg, 199053, Russia, ²Saint-Petersburg Electrotechnical University ("LETI"), St. Petersburg, Russia
- 16⁰⁰-16¹⁵ **Half Heusler thermoelectrics Ti_(1-x)Fe_(1.33+x)Sb - TiCoSb**
Ali Tavassoli^{1,2,3}, A. Grytsiv^{1,3,4}, G. Rogl^{1,3,4}, V. Romaka⁵, P. Broz^{6,7}, E. Bauer^{3,4}, G. Giester⁸, M. Zehetbauer², P. Rogl^{1,4}
¹Institute of Materials Chemistry and Research, University of Vienna, Waehringenstr. 42, A-1090 Wien, Austria, ²Faculty of Physics, University of Vienna, Boltzmannngasse 5, A-1090 Wien, Austria, ³Institute of Solid State Physics, Vienna University of Technology, Wiedner Hauptstr., 8-10, A-1040 Wien, Austria, ⁴Christian Doppler Laboratory for Thermoelectricity, Wien, Austria, ⁵Department of Materials Science and Engineering, Lviv Polytechnic National University, Ukraine, ⁶Masaryk University, Faculty of Science, Department of Chemistry, Kotlarska 2, 611 37, Brno, Czech Republic, ⁷Masaryk University, Central European Institute of Technology, CEITEC, Kamenice 753/5, Brno 62500, Czech Republic, ⁸Institute of Mineralogy and Crystallography, University of Vienna, Althanstraße 14, A-1090 Vienna, Austria
- 16¹⁵-16³⁰ **Shape directing agents for controlling the morphology of anisotropic iron oxide nanoparticles**
Ana Mraković¹, Gurvinder Singh², Frøde Seland², Erzsébet Illés¹, Nikola Knežević¹, Vladan Kusigerski¹, Sanja Vranješ-Đurić¹, Vojislav Spasojević¹ and Davide Peddis^{1,3}
¹The Vinča Institute of Nuclear Sciences, Belgrade, 11001, Serbia, ²Department of Materials Science and Engineering, Norwegian University of Science and Technology, Trondheim-7491, Norway, ³Istituto di Struttura della Materia – CNR, 00016 Monterotondo Stazione (Roma), Italy

Break: 16³⁰-17⁰⁰

SYMPOSIUM E: BIOMATERIALS

Main Conference Hall

Session I: 17⁰⁰-19⁰⁰

Chairpersons: Nenad Ignjatović and Bojana Obradović

17⁰⁰-17¹⁵ **Multifunctional opto-magnetic NaYF₄:Er₃₊,Yb₃₊,Gd₃₊&Fe₃O₄@SiO₂ nanoconstructs – towards biomedical applications**

Božena Sikora¹, Przemysław Kowalik¹, Krzysztof Fronc¹, Jakub Mikulski¹, Izabela Kamińska¹, Anna Borodziuk², Magdalena Duda², Katarzyna Łysiak³, Maciej Szewczyk^{4,5}, Karolina Zajdel⁶, Grzegorz Gruzel⁷, Leandro C. Figueiredo⁸, Paulo C. Morais^{8,9}, Laise Andrade¹⁰, João P. Longo¹⁰, Ricardo B. de Azevedo¹⁰, Zulmira G. M. Lacava¹⁰, Ewa Mosiniewicz-Szablewska¹, Magdalena Parlińska-Wojtan⁷, Roman Minikayev¹, Tomasz Wojciechowski¹, Anita Gardias³, Jarosław Rybusiński³, Andrzej Sienkiewicz^{1,12}, Mariusz Łapiński¹³, Piotr Stepien^{4,5,14}, Wojciech Paszkowicz¹, Jacek Szczytko³, Andrzej Twardowski³, Małgorzata Frontczak-Baniewicz⁶, Danek Elbaum¹
¹Institute of Physics, Polish Academy of Sciences, Warsaw, ²Division of Biophysics, Institute of Experimental Physics UW, Warsaw, ³Institute of Experimental Physics, Faculty of Physics UW, Warsaw, ⁴Institute of Genetics and Biotechnology, Faculty of Biology UW, Warsaw, ⁵Institute of Biochemistry and Biophysics PAS, Warsaw, ⁶Mossakowski Medical Research Centre PAS, Warsaw, ⁷Institute of Nuclear Physics PAS, Krakow, ⁸Instituto de Fisica, Universidade de Brasilia, Brasilia DF, Brazil, ⁹College of Chemistry and Chemical Engineering, Anhui University, Hefei, China, ¹⁰Instituto de Ciências Biológicas, Departamento de Genética e Morfologia, Universidade de Brasilia, Brasilia DF, Brazil, ¹¹Laboratory of Physics of Complex Matter, EPFL, Station 3, Lausanne, Switzerland, ¹²ADSresonances, Préverenges, Switzerland, ¹³Institute of Optoelectronics, Military University of Technology, Warsaw, ¹⁴Centre of New Technologies, Ochota UW, Warsaw, Poland

17¹⁵-17³⁰ **Tumor-selective hybrid system based on hydroxyapatite nanocarrier, chitosane, poly(lactic-co-glycolic acid) and androstan derivate**

Nenad L. Ignjatović¹, Katarina M. Penov-Gaši², Victoria M. Wu³, Jovana J. Ajduković⁴, Vesna V. Kojić⁴, Dana Vasiljević-Radović⁵, Vuk D. Uskoković^{3,6}, Dragan P. Uskoković¹
¹Institute of Technical Sciences of SASA, Belgrade, Serbia, ²University of Novi Sad, Faculty of Sciences, Department of Chemistry, Biochemistry and Environmental Protection, Novi Sad, Serbia, ³Advanced Materials and Nanobiotechnology Laboratory, Department of Bioengineering, University of Illinois, Chicago, IL, USA, ⁴Oncology Institute of Vojvodina, Sremska Kamenica, Serbia, ⁵University of Belgrade, Institute for Chemistry, Technology and Metallurgy, Belgrade, Serbia, ⁶Department of Biomedical and Pharmaceutical Sciences, School of Pharmacy, Chapman University, Irvine, CA, USA

- 17³⁰-17⁴⁵ **One pot and two step synthesis of 1D and 2D calcium phosphates and their biomedical characteristics**
Zoran S. Stojanović¹, Nenad Ignjatović¹, Victoria Wu², Vojka Žunić³, Ljiljana Veselinović¹, Srečo Škapin³, Miroslav Miljković⁴, Vuk Uskoković^{2,5}, Dragan Uskoković¹
¹Institute of Technical Sciences of SASA, Knez Mihailova 35/4, 11000 Belgrade, Serbia, ²Advanced Materials and Nanobiotechnology Laboratory, Department of Bioengineering, University of Illinois, 851 South Morgan Street, Chicago, IL 60607-7052, USA, ³Advanced Materials Department, Jožef Stefan Institute, Jamova cesta 39, 1000 Ljubljana, Slovenia, ⁴Laboratory for Electron Microscopy, Faculty of Medicine University of Niš, Dr. Zoran Đinđić Boulevard 81, 18 000 Niš, Serbia, ⁵Department of Biomedical and Pharmaceutical Sciences, School of Pharmacy, Chapman University, 9401 Jeronimo Road, Irvine, CA 92618-1908, USA
- 17⁴⁵-18⁰⁰ **Alginate hydrogels with silver nanoparticles and honey as potential wound dressings**
Bojana Obradović¹, Jasmina Stojkowska¹, Vesna Mišković-Stanković¹, Milica Labudović Borović², Ljiljana Ščepanović²
¹Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia
²School of Medicine, University of Belgrade, Belgrade, Serbia
- 18⁰⁰-18¹⁵ **Novel platforms for designing antimicrobial biomaterials**
Marija Vukomanović, Vojka Žunić, Mario Kurtjak, Nemanja Aničić, Danilo Suvorov
Advanced Materials Department, Jozef Stefan Institute, Ljubljana, Slovenia
- 18¹⁵-18³⁰ **Coupling vanadate elution control with catalytic properties of V₂O₅ in V₂O₅/PLGA composite coating**
Nemanja Aničić^{1,2}, Marija Vukomanović¹, Danilo Suvorov¹
¹Advanced Materials Department, Jožef Stefan Institute, Ljubljana, Slovenia
²Jožef Stefan International Postgraduate School, Ljubljana, Slovenia
- 18³⁰-18⁴⁵ **Quantifying the fractal dimension and the effective permeability of membrane fouling**
Miguel Herrera-Robledo and Volodymyr V. Tarabara
Department of Civil and Environmental Engineering, Michigan State University, USA
- 18⁴⁵-19⁰⁰ **Effect of cooling rate from $\alpha+\beta$ range on stereological parameters of microstructure in the Ti₆Al₇Nb alloy**
Krzysztof Wiczerzak, Robert Dąbrowski, Edyta Rożniata, Rafał Dziurka
AGH University of Science and Technology, Faculty of Metals Engineering and Industrial Computer Science, Al. A. Mickiewicza 30, 30-059 Kraków, Poland

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

Small Conference Hall

Session I: 15⁰⁰ -16¹⁵

Chairmen: Zoran S. Petrović and Smilja Marković

- 15⁰⁰-15¹⁵ **Boson peak and glass forming ability in CuHfTi metallic glasses**
Amra Salčinović Fetić^{1,2}, G. Remenyi^{3,4}, D. Starešinić², E. Babić⁵, I. A. Figueroa⁶, H. A. Davies⁷, and K. Biljaković^{2,3}
¹Department of Physics, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina, ²Institute of Physics, Zagreb, Croatia, ³CNRS, Institut Néel, Grenoble, France, ⁴Institut Néel, Université Grenoble Alpes, Grenoble, France, ⁵Department of Physics, Faculty of Science, Zagreb, Croatia, ⁶Institute for Materials Research-UNAM, Ciudad Universitaria Coyoacan, Mexico D.F., Mexico, ⁷Department of Engineering Materials, University of Sheffield, Sheffield, UK
- 15¹⁵-15³⁰ **The influence of thermal treatment on physicochemical properties of graphene oxide/phosphotungstic acid nanocomposite**
Zoran Jovanović¹, Danica Bajuk-Bogdanović², Milica Vujković², Željko Mravik², Ivanka Holclajtner-Antunović²
¹Laboratory of Physics, Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia, ²Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia
- 15³⁰-15⁴⁵ **Influence of point defects concentration on optical and photocatalytic properties of ZnO ceramics**
Smilja Marković¹, Vladimir Rajić², Ljiljana Veselinović¹, Jelena Belošević-Čavor³, Srečo Davor Škapin⁴, Stevan Stojadinović⁵, Vladislav Rac⁶, Steva Lević⁶, Miloš Mojović², Dragan Uskoković¹
¹Institute of Technical Sciences of SASA, Belgrade, Serbia, ²Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia, ³The Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia, ⁴Jožef Stefan Institute, Ljubljana, Slovenia, ⁵Faculty of Physics, University of Belgrade, Belgrade, Serbia, ⁶Faculty of Agriculture, University of Belgrade, Zemun, Serbia
- 15⁴⁵-16⁰⁰ **Activated track etched carbon for supercapacitor electrodes**
Petar Laušević, Predrag Pejović, Dragana Žugić, Yuri Kochnev, Pavel Apel and Zoran Laušević
¹Laboratory of physical chemistry, Vinča institute of nuclear sciences, University of Belgrade, Serbia, ²School of Electrical Engineering, University of Belgrade, Serbia, ³Flerov laboratory of nuclear reactions, Joint institute for nuclear research, Dubna, Russia

16⁰⁰-16¹⁵ **The influence of fluorine doping on the structural and the electrical properties of LiFePO₄ powder**

Dragana Jugović¹, Miodrag Mitrić², Miloš Milović¹, Nikola Cvjetičanin³, Bojan Jokić⁴, Ana Umičević², Dragan Uskoković¹

¹Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, 11 000 Belgrade, Serbia, ²Vinča Institute of Nuclear Sciences, University of Belgrade, P.O. Box 522, 11 001 Belgrade, Serbia, ³Faculty of Physical Chemistry, University of Belgrade, Studentski Trg 12-16, P.O. Box 137, Belgrade, Serbia, ⁴Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11 000 Belgrade, Serbia

Break: 16¹⁵-16⁴⁵

SYMPOSIUM D: ECO-MATERIALS AND ECO-TECHNOLOGIES

Small Conference Hall

Session I: 16⁴⁵-17³⁰

Chairmen: Smilja Marković and Irena Nikolić

16⁴⁵-17⁰⁰ **Designing materials from biological oils**

Zoran S. Petrović

Pittsburg State University, Kansas Polymer Research Center, USA

17⁰⁰-17¹⁵ **Recovery of rare earth elements of bastnasite ores by advanced hydrometallurgical methods**

Carsten Dittrich¹, Srećko Stopić², Bernd Friedrich²

¹MEAB Chemie Technik GmbH, Aachen, Germany

²IME Process Metallurgy and Metal Recycling, Germany

17¹⁵-17³⁰ **Strength and durability of alkali activated slag in a sea water: influence of alkali ion**

Irena Nikolić¹, Smilja Marković², Ljiljana Karanović³, Vuk Radmilović⁴, Velimir Radmilović⁵

¹University of Montenegro, Faculty of Metallurgy and Technology, Džordža Vašingtona bb, 81 000 Podgorica, Montenegro, ²Institute of Technical Sciences of SASA, Knez Mihailova 35, Belgrade, Serbia, ³University of Belgrade, Faculty of Mining and Geology, Laboratory of Crystallography, Dušina 7, 11000 Belgrade, Serbia, ⁴Innovation center, University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia, ⁵Serbian Academy of Sciences and Arts, Knez Mihailova 35, Belgrade, Serbia

THIRD PLENARY SESSION

Wednesday, September 7, 2016
Main Conference Hall

Session I: 08³⁰-10³⁰

Chairmen: Eiji Osawa and Francois M. Peeters

08³⁰-09⁰⁰ **Grain boundary geometry, structural units and segregation in oxides**

Yuichi Ikuhara^{1,2,3}

¹Institute of Engineering Innovation, The University of Tokyo, Tokyo, 113-8656, Japan, ²Nanostructures Research Laboratory, Japan Fine Ceramics Center, Nagoya, 456-8587, Japan, ³WPI-AIMR Research Center, Tohoku University, Sendai, 980-8577, Japan

09⁰⁰-09³⁰ **Interfacial step alignment as a mechanism of hetero-epitaxy/orientation relationships: the case of Ag on Ni**

Dominique Chatain¹, Paul Wynblatt², Anthony D. Rollett², Gregory S. Rohrer²

¹Aix-Marseille University, CNRS, CINaM, UMR 7325, 13288 Marseille, France, ²Department of Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA 15213, USA

09³⁰-10⁰⁰ **Controlling Microstructural Evolution via Adsorption**

Wayne D. Kaplan

Department of Materials Science and Engineering, Technion - Israel Institute of Technology, Israel

Break: 10⁰⁰-10³⁰

Session II: 10³⁰-12³⁰

Chairpersons: Dominique Chatain and Yuichi Ikuhara

10³⁰-11⁰⁰ **TEM observation of atomic structures and their evolutions in 2D and 1D materials**

Kazu Suenaga

Advanced Industrial Science and Technology, Ibaraki, Japan

11⁰⁰-11³⁰ **Atomic Structure of defects, dopants and edge terminations in monolayer 2D materials**

Jamie H. Warner

Department of Materials, University of Oxford, UK

11³⁰-12⁰⁰ **Atomic collapse in graphene**

Francois Peeters¹, Dean Moldovan¹, Massoud R. Masir^{1,2}, Eva Andrei³

¹Department Physics, University of Antwerp, Groenenborgerlaan 171, B-2020 Antwerpen, ²Department of Physics, University of Texas at Austin, Austin TX 78712, USA, ³Rutgers University, Department of Physics and Astronomy, Piscataway, NJ 08855, USA

12⁰⁰-12³⁰ **Aberration corrected views of of chemical ordering and segregation in complex oxides**

Maria Varela

Facultad de CC. Físicas & Instituto Pluridisciplinar, Universidad Complutense de Madrid, 28040 Madrid, Spain

FOURTH PLENARY SESSION

Thursday, September 8, 2016
Main Conference Hall

Session I: 08³⁰-10³⁰

Chairmen: Danilo Suvorov and Philippe Colomban

08³⁰-09⁰⁰ **Towards device physics of the CH₃NH₃PbI₃ photovoltaic perovskite**
László Forró
Laboratory of Physics of Complex Matter, Ecole Polytechnique Fédérale de
Lausanne, CH-1015 Lausannes, Switzerland

09⁰⁰-09³⁰ **Tailoring defined-shape ferroelectric particles for various ferro- and piezoelectric applications**
Danilo Suvorov¹, M. Macek-Krzmanec¹ and H. Ursic Nemevsek²
¹Advanced Materials Department, Jožef Stefan Institute, Jamova 39, Ljubljana, Slovenia, 1000, ²Electronic ceramics Department, Jožef Stefan Institute, Jamova 39, Ljubljana, Slovenia, 1000

09³⁰-10⁰⁰ **How could electrolytes and electrodes be friendlier for Li-ion traffic?**
Mamoru Senna
Faculty of Science and Technology, Keio University, Japan

Break: 10⁰⁰-10³⁰

Session II: 10³⁰-12³⁰

Chairmen: Mamoru Senna and László Forró

10³⁰-11⁰⁰ **Recent progress in R&D of the primary particles of detonation nanodiamond**
Eiji Osawa, Shuichi Sasaki, Ryoko Yamanoi
NanoCarbon Research Institute Limited, Ueda, Japan

11⁰⁰-11³⁰ **Nanodiamond and its derivatives for catalysis**
Dangsheng Su
Dalian Institute of Chemical Physics, Chinese Academy of Science, Dalian, China

11³⁰-12⁰⁰ **Scaffolds for tissue repair and regeneration**
Serena Best
University of Cambridge, UK

12⁰⁰-12³⁰ **Advanced and in situ transmission electron microscopy of semiconductor nanowire materials**
Wolfgang Jäger
Institute of Materials Science, Christian-Albrechts-University of Kiel, 24143 Kiel, Germany, EU

FIFTH PLENARY SESSION

Friday, September 9, 2016
Main Conference Hall

Session I: 09⁰⁰-11⁰⁰

Chairmen: Jamie H. Warner and Wolfgang Jäger

- 09⁰⁰-09³⁰ **Neutron scattering and atomistic modeling for materials science**
Max Avdeev
Australian Nuclear Science and Technology Organisation, Lucas Heights, Australia
- 09³⁰-10⁰⁰ **Understanding failure and fatigue mechanisms of advanced and natural polymer fibres by Raman/IR microspectrometry**
Philippe Colomban
Sorbonne Universités, UPMC Paris 06, MONARIS umr8233 CNRS, France
- 10⁰⁰-10³⁰ **High-melting point compounds: new approaches and results**
Rostislav A. Andrievski
Institute of Problems of Chemical Physics, Semenov Prospect, 1, Chernogolovka, Moscow Region, 142432, Russia
- 10³⁰-11⁰⁰ **Deformation Mechanisms, Microstructure, and Mechanical Properties of High-Mn Austenitic Steels**
James Wittig
Interdisciplinary Materials Science, Vanderbilt University, Nashville, TN, USA

Break: 11⁰⁰-11³⁰

Session II: 11³⁰-12³⁰

Chairmen: Feng-Huei Lin and Vuk Uskoković

- 11³⁰-12⁰⁰ **Hyaluronate-based thermo-sensitive hydrogel as cell carrier for nucleus pulposus regeneration and vitreous body substitute**
Feng-Huei Lin
National Health Research Institutes (NHRI), Taipei, Taiwan
- 12⁰⁰-12³⁰ **From controlled drug delivery to gene therapies to bone regeneration: calcium phosphate nanoparticles as essential components of advanced biomaterials**
Vuk Uskoković
Department of Biomedical and Pharmaceutical Sciences, Chapman University, Irvine, CA 92618-1908, USA

12³⁰-13⁰⁰ CLOSING CEREMONY

POSTER SESSION I

Tuesday, September 6, 2016, 20⁰⁰-22⁰⁰

SYMPOSIUM A: ADVANCED METHODS IN SYNTHESIS AND PROCESSING OF MATERIALS

- P.S.A.1. **Novel pathway towards the synthesis of complex double perovskites**
Jasminka Popović, Marijana Jurić, Lidija Andros Dubraja, Krešimir Molcanov
Ruder Bošković Institute, Bijenička 54, HR-10000 Zagreb, Croatia
- P.S.A.2. **High-temperature treatment for new properties of LuPO₄:Eu, Lu₂O₃:Tb,Ti/Hf and BaHfO₃:Pr**
Justyna Zeler, Dagmara Kulesza, Ioannis Seferis, Eugeniusz Zych
Faculty of Chemistry, University of Wrocław, 14 F. Joliot-Curie Street, 50-383
Wrocław, Poland
- P.S.A.3. **Processing and characterization of dental acrylate improved with zirconia**
Abdulsalam Ahmed Emadani, Nataša Tomić, Miloš Petrović, Dusica B. Stojanović,
Petar S. Uskoković, Radmila Jančić Heinemann, Vesna Radojević
University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4,
Belgrade, Serbia
- P.S.A.4. **Biocompatible poly(methyl methacrylate)/di-methyl itaconate – (iron oxide doped alumina) composite with improved mechanical properties**
Gamal Ali Lazouzi, Nataša Tomić, Miloš Petrović, Milorad Zrilić, Vesna Radojević,
Radmila Jančić Heinemann
University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4,
Belgrade, Serbia
- P.S.A.5. **Rapid fabrication of antimicrobial poly(vinyl butyral)/ titania nanofibers using multi-needle electrospinning**
Faisal Ali Alzarrug, Dušica B. Stojanović, Vera M. Obradović, Anđela N.
Radisavljević, Aleksandar M. Kojović, Petar S. Uskoković, Radoslav R. Aleksić
University of Belgrade, Faculty of Technology and Metallurgy, Serbia
- P.S.A.6. **Thin films of MoS₂ on Cu₂O as biosensors**
Alexandra Yu. Ledneva¹, Sofya B. Artemkina¹, Hsiang-Chen Wang², Vladimir E.
Fedorov¹
¹Nikolaev Institute of Inorganic Chemistry, Siberian Branch of Russian Academy of
Sciences, Novosibirsk, Russia
²Graduate Institute of Opto-Mechatronics, National Chung Cheng University, Taiwan

- P.S.A.7. **PVA membranes doped with Ti and Zr oxide for alkaline electrolysis with ionic activators**
Sladana Maslovara¹, Dragana Zugić¹, Milica Marceta Kaninski¹, Vladimir Nikolić¹, Gvozden Tasić¹, Yuri Kochnev²
¹Vinča Institute of Nuclear Sciences, Department of Physical Chemistry, University of Belgrade, Serbia, ²Flerov laboratory of nuclear reactions, Joint institute for nuclear research, Dubna, Russia
- P.S.A.8. **Influence of the nickel loading and the calcination temperature on the activity of NiO-Al₂O₃ catalyst prepared by mixing powders of metal oxides in the partial oxidation of methane**
Matilda Lazić
Technical College of Applied Sciences in Zrenjanin, Zrenjanin, Serbia
- P.S.A.9. **Structural and magnetic properties of mechanochemically synthesized LaFe_{1-x}Cr_xO₃ (x = 0.5 and 0.75)**
Dragana Jugović¹, Ivica Bradarić², Čedomir Jovalekić³, Tanja Barudžija², Vladan Kusigerski², Miodrag Mitrić²
¹Institute of Technical Sciences of SASA, Belgrade, Serbia, ²Institute of Nuclear Sciences "Vinča", University of Belgrade, Belgrade, Serbia, ³Centre for Multidisciplinary Studies, University of Belgrade, Belgrade, Serbia
- P.S.A.10. **Surfactant-assisted high energy ball milling technique as a method for preparation of magnetic submicrometer particles**
Vesna Jović, Jelena Lamovec, Katarina Radulović, Danijela Randelović, 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.A.11. **Characterization of NdFeB magnetic submicron particles obtained by surfactant-assisted high energy ball milling (SA-HEBM)**
Jelena Lamovec¹, Vesna Jović¹, Davor Lončarević², Katarina Radulović¹, Zoran Jakšić¹, Danijela Randelović¹, Dana Vasiljević – Radović¹
¹Centre of Microelectronic Technologies, Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Belgrade, Serbia, ²Department of Catalysis and Chemical Engineering, Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Njegoseva 12, 11000 Belgrade, Serbia
- P.S.A.12. **Experimental and theoretical analysis of fullerene nanoparticles/water system**
Milan Vraneš, Ivana Borišev, Stevan Armaković, Sanja J. Armaković, Aleksandar Tot, Danica Jović, Slobodan Gadžurić, Aleksandar Đorđević
¹Department for Chemistry, Biochemistry and Environmental Protection, University of Novi Sad, Novi Sad, Serbia, ²Department of Physics, Faculty of Sciences, University of Novi Sad, Novi Sad, Serbia

- P.S.A.13. **Highly efficient graphene supports for fuel cells**
Veera Sadhu¹, Esaam Jamil², Selmiye Alkan Gürsel^{1,2}
¹Nanotechnology Research and Application Center, Sabanci University, 34956 Istanbul, Turkey, ²Faculty of Natural Science and Engineering, Sabanci University, 34956 Istanbul, Turkey
- P.S.A.14. **Modeling of optimal parameters of synthesis and sintering of nanostructured NiFeCuW powder**
Sladana Đurašević¹, Dejan Vujičić¹, Marija Nikolić², Siniša Randić¹
¹Faculty of Technical Sciences in Čačak, University of Kragujevac, Serbia
²Technical College Čačak, Serbia
- P.S.A.15. **The study of the products of off-line pyrolysis of poly(ethyleneimine)**
Vesna Balanac¹, Tatjana Šolević Knudsen², Branimir Jovančićević³, Jan Schwarzbauer⁴, Vesna Antić⁵
¹Cooper Standard Srbija doo, Sremska Mitrovica ²Center of Chemistry, Institute of Chemistry, Technology and Metallurgy, Belgrade, Serbia ³Faculty of Chemistry, Belgrade, Serbia ⁴Institute of Geology and Geochemistry of Petroleum and Coal, RWTH Aachen University, Aachen, Germany ⁵Faculty of Agriculture, Zemun, Serbia
- P.S.A.16. **Parameters and sinterability of mullite-ZrO₂(Y₂O₃) nanoparticles prepared by plasma and chemical methods**
Jānis Grabis, Dzidra Jankoviča, Inta Sīpola
Riga Technical University, Faculty of Material Science and Applied Chemistry, Institute of Inorganic Chemistry, Riga, Latvia
- P.S.A.17. **Sample preparation method influence on SOP modes in ZnO(Mn)**
Branka Hadžić, Nebojsa Romčević, Maja Romčević, Witold Dobrowolski, Martina Gilić, Milica Petrović, Dusanka Stojanović, Željka Nikitović and Zorica Lazarević
¹Institute of Physics, Belgrade, Serbia, ²Institute of Physics Polish Academy of Science, Warszawa, Poland
- P.S.A.18. **Crystal structure, optical and magnetic properties of ZnO:Fe nanoparticles**
Vladimir Rajić¹, Smilja Marković², Ljiljana Veselinović², Miodrag Mitrić³, Jelena Belošević-Čavor³, Valentin Ivanovski³, Vladan Kusigerski³, Miloš Mojović¹, Srečo Davor Škapin⁴, Stevan Stojadinović⁵, Steva Lević⁶, Vladislav Rac⁶, Dragan Uskoković²
¹Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia, ²Institute of Technical Sciences of SASA, Belgrade, Serbia, ³The Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia, ⁴Jožef Stefan Institute, Ljubljana, Slovenia, ⁵Faculty of Physics, University of Belgrade, Belgrade, Serbia, ⁶Faculty of Agriculture, University of Belgrade, Zemun, Serbia

POSTER SESSION II

Wednesday, September 7, 2016, 20⁰⁰-22⁰⁰

SYMPOSIUM B: ADVANCED MATERIALS FOR HIGH-TECHNOLOGY APPLICATIONS

- P.S.B.1. **Electrone structure, valence state Ce(Yb) and magnetic properties of new ternary intermetallic compounds**
Ivan Shcherba^{1,2}, Dragan Uskokovic³, Viktor Antonov⁴, Maria Kovalska², Ljubov Romaka², Sergij Senkiv²
¹Institute of Technology, the Pedagogical University of Cracow, Podchorozych st. 2 Cracow 30-084 Poland, ²Ivan Franko National University of Lviv, Ukraine, ³Institute of Technical Sciences of SASA, Belgrade, Serbia, ⁴Institute of Physics of Metals, NASU, Kyiv, Ukraine
- P.S.B.2. **Influence of different precursor solutions on final characteristics of barium titanate based thin films**
Jovana Stanojev¹, Jelena Vukmirović¹, Branimir Bajac¹, Elvira Đurđić², Srđan Rakić², Vladimir V. Srdić¹
¹Faculty of Technology, Department of Materials Engineering, University of Novi Sad, Bul. Cara Lazara 1, 21000 Novi Sad, Serbia, ²Faculty of Sciences, Department of Physics, University of Novi Sad, Trg D. Obradovića 4, 21000 Novi Sad, Serbia
- P.S.B.3. **YBCO bulk superconductor exposed to air moisture**
Pavel Diko¹, Mária Kaňuchová², Samuel Piovarči¹, Vitaliy Antal¹, Daniela Volochová¹
¹Institute of Experimental Physics, Slovak Academy of Sciences, Watsonova 47 04001 Košice, Slovakia, ²Faculty of Mining, Ecology, Process Control and Geotechnology, Technical University of Košice, Park Komenského 17, 042 00 Košice, Slovakia
- P.S.B.4. **Computational study of loratadine reactivity in order to understand its degradation properties from the aspect of DFT and MD simulations**
Sanja J. Armaković¹, Stevan Armaković² and Biljana Abramović¹
¹University of Novi Sad, Faculty of Sciences, Department of Chemistry, Biochemistry and Environmental Protection, Trg D. Obradovića 3, 21000 Novi Sad, Serbia, ²University of Novi Sad, Faculty of Sciences, Department of Physics, Trg D. Obradovića 4, 21000 Novi Sad, Serbia

- P.S.B.5. **Synthesis and characterization of Pd nanocatalyst at tungsten carbide based support for fuel cells application**
Ljiljana M. Gajić-Krstajić¹, P. Zabinski², V.R. Radmilović³, P. Ercius⁴, M. Krstajić-Pajić⁵, U.Č. Lačnjevac⁶, N.V. Krstajić³, N.R. Elezović⁶
¹Institute of Technical Sciences of SASA, Knez Mihailova 35, Belgrade, Serbia, ²AGH University of Science and Technology, Faculty of Non-Ferrous Metals, Al. Mickiewicza 30,30-059 Krakow, Poland, ³Faculty of Technology and Metallurgy University of Belgrade, Karnegijeva 4, 11000 Belgrade, Serbia, ⁴National Center for Electron Microscopy, LBNL University of California, Berkeley, CA, USA, ⁵Institute for Chemistry Technology and Metallurgy University of Belgrade, Njegoseva 12, Belgrade, ⁶Institute for Multidisciplinary Research, University of Belgrade, Kneza Visislava 1, 11030 Belgrade, Serbia
- P.S.B.6. **Corrosion stability of graphene coatings on metallic substrates**
Ivana Jevremović¹, Samira Naghdī², Kyong Yop Rhee², Vesna Mišković-Stanković¹
¹Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia, ²Department of Mechanical Engineering, College of Engineering, Kyung Hee University, 446-701 Yongin, Republic of Korea
- P.S.B.7. **Solid-state reactions in nanomaterials based on monolayered chalcogenides of transition metals**
Svetlana Kozlova, Maxsim Ryzhikov, Vladimir Fedorov
Nikolaev Institute of Inorganic Chemistry SB RAS, 630090, Ave. Akad. Lavrentiev 3, Novosibirsk, Russia
- P.S.B.8. **SiC and Si-C-N ceramics derived from new siliconorganic polymers**
Aleksei Utkin, Natalya Baklanova
Institute of Solid State Chemistry and Mechanochemistry SB RAS, Novosibirsk, Russia
- P.S.B.9. **Macroporous conducting cryogels based on polyaniline**
Jaroslav Stejskal, Miroslava Trchová, Patrycja Bober
Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, 162 06 Prague 6, Czech Republic
- P.S.B.10. **Temperature responsive hydrogels with ethylene glycol propylene glycol pendant chains**
Edin Suljovrujić, Zorana Rogić Miladinović, Dejan Miličević, Maja Mičić
Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia

- P.S.B.11. **Nanocomposites of polypyrrole nanotubes and noble-metal nanoparticles**
Miroslava Trchová¹, Irina Šapurina^{1,2}, Jaroslav Stejskal¹
¹Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, 162 06 Prague 6, Czech Republic, ²Institute of Macromolecular Compounds, Russian Academy of Sciences, St. Petersburg 199004, Russian Federation
- P.S.B.12. **Electrical properties of mechanically activated magnesium-titanate ceramics**
Nebojša Mitrović¹, Suzana Filipović², Jelena Orelj¹, Aleksandra Kalezić-Glišović¹, Slobodan Đukić¹
¹Faculty of Technical Sciences Čačak, University of Kragujevac, Serbia
²Institute of Technical Sciences of SASA, Belgrade, Serbia
- P.S.B.13. **Influence of mechanical activation on the MgO-Al₂O₃-SiO₂ system with TeO₂**
Nataša Đorđević¹, Nina Obradović², Suzana Filipović², Darko Kosanović², Smilja Marković², Miodrag Mitrić³, Vladimir B. Pavlović²
¹Institute for Technology of Nuclear and Other Mineral Raw Materials, Bulevar Franse d'Eperea 86, 11000 Belgrade, Serbia, ²Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, 11000 Belgrade, Serbia, ³Vinča Institute of Nuclear Sciences, University of Belgrade, Mike Alasa 12-14, 11000 Belgrade, Serbia
- P.S.B.14. **Temperature dependence of thermal conductivity of two-layered graphene**
Stevo Jačimovski¹, Dejan Raković²
¹Academy of Criminalistic and Police Studies, Belgrade, Serbia
²University of Belgrade, Faculty of Electrical Engineering, Serbia
- P.S.B.15. **The electrical resistance decay of a metallic granular packing**
Zorica M. Jakšić¹, Milica Cvetković¹, Julija. R. Šćepanović¹, Ivana Lončarević², Ljupka Budinski-Petković² and Slobodan B. Vrhovac¹
¹Institute of Physics Belgrade, University of Belgrade, Pregrevica 118, Zemun 11080, Belgrade, Serbia, ²Faculty of Engineering, Trg D. Obradović a 6, Novi Sad 21000, Serbia
- P.S.B.16. **Analyses of commercially and laboratory produced ODS steels**
Jarmila Degmová, Jana Šimeg Veterniková, Veronika Sabelová, Július Dekan, Milan Pavúk, Stanislav Sojak, Martin Petriska, Vladimír Slugeň
Institute of Nuclear and Physical Engineering, Slovak University of Technology, Ilkovičova 3, 812 19 Bratislava, Slovakia

- P.S.B.17. **Ni-based alloys coatings for high temperature applications**
Monika Solecka, Agnieszka Kopia, Agnieszka Radziszewska, Jan Kusiński, Łukasz Cieniek
Department of Surface Engineering and Materials Characterisation, Faculty of Metals Engineering and Industrial Computer Science, AGH University of Science and Technology in Krakow, Poland
- P.S.B.18. **Effects of retrogression and reaging treatments on the mechanical characteristics of alloy EN AW 7049A-T6**
Jelena Marinković, Ljubica Radović, Milutin Nikačević
Military Technical Institute, Belgrade, Serbia
- P.S.B.19. **Characteristics of stress distribution in the case of singl LAP joint of two composite plates**
Abdurrahman Houssein
Alabel Algharbi University, Dean of Engineering Faculty, Zintan, Libya
- P.S.B.20. **OLE of tribology effects on cup anemometer classification**
Miodrag Zlatanović¹, Ivan Popović²
¹Wind Electricity doo, ²School of Electrical Engineering, Beograd, Serbia
- P.S.B.21. **Monte Carlo simulations of He+ in CF4**
Željka D. Nikitović, Zoran M. Raspopović, Vladimir D. Stojanović
Institute of Physics, Univerzity of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia

POSTER SESSION III

Thursday, September 8, 2016, 20⁰⁰-22⁰⁰

SYMPOSIUM C: NANOSTRUCTURED MATERIALS

P.S.C.1. **Characterization of graphite-encapsulated iron nanoparticles synthesized by milling-assisted low-pressure chemical vapor deposition**

Duygu Ağaoğulları¹, Steven Madsen², Ai Leen Koh³, Robert Sinclair²

¹Department of Metallurgical and Materials Engineering, Istanbul Technical University, Maslak, Istanbul 34469, Turkey, ²Department of Materials Science and Engineering, Stanford University, Stanford, CA 94305-4034, USA, ³Stanford Nano Shared Facilities, Stanford University, Stanford, CA 94305-4045, USA

P.S.C.2. **Structures and properties of quasi-one-dimensional vanadium and niobium sulfides with Peierls distortion**

Vladimir E. Fedorov¹, Andrey N. Enyashin², Svetlana G. Kozlova¹, Mariia N. Kozlova¹, Maxim R. Ryzhikov¹

¹Nikolaev Institute of Inorganic Chemistry, Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russia, ²Institute of Solid State Chemistry, Ural Branch of Russian Academy of Sciences, Ekaterinburg, Russia

P.S.C.3. **Aqueous sol-gel route toward selected quaternary metal oxides with single and double perovskite-type structure containing tellurium**

Igor Đerd¹, Berislav Marković¹, Jasminka Popović², Tobias Weller³, Zvonko Jagličić^{4,5}, Željko Skoko⁶, Damir Pajić⁶, Christian Suchomski³, Pascal Voepel³, Roland Marschall³, and Bernd M. Smarsly³

¹Department of Chemistry, J. J. Strossmayer University of Osijek, Osijek, Croatia, ²Ruder Bošković Institute, Zagreb, Croatia, ³Institute of Physical Chemistry, Justus-Liebig-University Giessen, Giessen, Germany, ⁴Institute of Mathematics, Physics and Mechanics, Ljubljana, Slovenia, ⁵Faculty of Civil and Geodetic Engineering, University of Ljubljana, Ljubljana, Slovenia, ⁶Department of Physics, Faculty of Science, University of Zagreb, Zagreb, Croatia

P.S.C.4. **Thiol click chemistry on gold-decorated MoS₂: elastomer composites and structural phase transitions**

Peter Topolovsek¹, Luka Cmok¹, Christoph Gadermaier¹, Miloš Borovsak¹, J. Kováč², Aleš Mrzel¹

¹Department of Complex Matter, Jozef Stefan Institute, Jamova 39, 1000 Ljubljana, Slovenia, ²Department of Surface Engineering and Optoelectronics, Jozef Stefan Institute, Jamova 39, 1000 Ljubljana, Slovenia

- P.S.C.5. **Positronics of sub-nanometer-structured functional materials**
Oleh Shpotyuk^{1,2}, Adam Ingram³, Yaroslav Shpotyuk⁴, Jacek Filipecki¹
¹Jan Dlugosz University in Czestochowa, 13/15, Armii Krajowej str., 42200, Czestochowa, Poland, ²Vlokh Institute of Physical Optics, 23, Dragomanov str., 79005 Lviv, Ukraine, ³Opole University of Technology, 75, Ozimska str., 45370 Opole, Poland, ⁴Centre for Innovation and Transfer of Natural Sciences and Engineering Knowledge, University of Rzeszow, 1, Pigionia str., 35-959 Rzeszow, Poland
- P.S.C.6. **Colloidal dispersions of zirconium and titanium trisulfides**
Pavel A. Poltarak¹, Anastasiia A. Poltarak², Mariia N. Kozlova¹, Sofia B. Artemkina¹, Vladimir E. Fedorov¹
¹Nikolaev Institute of Inorganic Chemistry, Russia
²Novosibirsk State University, Russia
- P.S. C.7. **Investigation of rheological properties of barium titanate inks and adaptation to requirements of inkjet printing**
Jelena Vukmirović¹, Jovana Stanojev¹, Branimir Bajac¹, Elvira Đurđić², Sanja Kojić³, Goran Stojanović³, Srđan Rakić², Vladimir V. Srdić¹
¹Faculty of Technology, Department of Materials Engineering, University of Novi Sad, Serbia, ²Faculty of Sciences, Department of Physics, University of Novi Sad, Serbia, ³Faculty of Technical Sciences, Department of Microelectronics, University of Novi Sad, Serbia
- P.S.C.8. **Sputter-deposited Fe/Al thin superlattices: scanning of non-magnetic layer thickness**
Ali Karpuz¹, Hakan Kockar², Salih Colmekci², Mehmet Uckun²
¹Department of Physics, Karamanoglu Mehmetbey University, Karaman, Turkey, ²Department of Physics, Balikesir University, Balikesir, Turkey
- P.S.C.9. **Effect of IF-WS₂ nanoparticles addition on physical-mechanical and rheological properties and on chemical resistance of water-based paints**
Dragana Lazić, Danica Simić, Aleksandra Samolov
Military Technical Institute, Ratka Resanovića 1, 11000 Belgrade, Serbia
- P.S.C.10. **Nanocrystalline boehmite obtained at low temperature**
Ivan Stijepović¹, Marija Milanović¹, Ljubica Nikolić¹, Zoran Obrenović²
¹University of Novi Sad, Faculty of Technology, Department of Materials Engineering, Bulevar cara Lazara 1, 21000 Novi Sad, Serbia, ²Faculty of Technology, University of East Sarajevo, Zvornik, Republic of Srpska, B&H

P.S.C.11. **Chromatic discretization and selectivity in optical properties of whole crystalline nanofilm-structures in IR region**

Jovan P. Šetrajčić¹, Ana J. Šetrajčić–Tomić², Igor J. Šetrajčić¹, Siniša M. Vučenović³

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, ³University of Banja Luka, Faculty of Sciences – Physics, Banja Luka, Republic of Srpska – B&H

P.S.C.12. **Effect of IF-WS₂ nanoparticles addition on thermo-rheological and mechanical behavior of aramid/phenolic resin/PVB composite material**

Danica M. Simić¹, Dušica B. Stojanović², Ana D. Tasić¹, Petar S. Uskoković², Radoslav R. Aleksić²

¹Military Technical Institute, Ratka Resanovića 1, 11000 Belgrade, Serbia, ²University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11000 Belgrade, Serbia

P.S.C.13. **Microstructure characterization of friction stir welded joints made from ultrafine grained aluminium**

Marta Lipinska¹, Lech Olejnik², Adam Pietras³, Andrzej Rosochowski⁴, Malgorzata Lewandowska¹

¹Faculty of Materials Science and Engineering, Warsaw University of Technology, Woloska 141, 02-507 Warsaw, Poland, ²Institute of Manufacturing Processes, Warsaw University of Technology, Narbutta 85, 02-524 Warsaw, Poland, ³Department of Friction and Resistance Welding and Environmental Engineering, Institute of Welding, Czesława 16/18, 44-100 Gliwice, Poland, ⁴Design, Manufacture and Engineering Management, University of Strathclyde, 75 Montrose Street, Glasgow G1 1XJ, United Kingdom

P.S.C.14. **Synthesis of colloidal NIR-luminescent nanoparticles of rare-earth fluorides using microwave-hydrothermal treatment**

Alexander Vanetsev^{1,2}, Ilmo Sildos¹, Yurii Orlovskii^{1,2}

¹Institute of Physics, University of Tartu, Tartu, Estonia, ²General Physics Institute, Russian Academy of Sciences, Moscow, Russia

SYMPOSIUM E: BIOMATERIALS

P.S.E.1. **Synthesis, characterization and biological application of opto-magnetic nanocomposites with up-converting properties based on NaYF₄&Fe₃O₄@SiO₂ nanoparticles**

Przemysław Kowalik¹, Bożena Sikora¹, Krzysztof Fronc¹, Jakub Mikulski¹, Izabela Kamińska¹, Anna Borodziuk², Magdalena Duda², Katarzyna Łysiak³, Maciej Szewczyk^{4,5}, Karolina Zajdel⁶, Grzegorz Gruzel⁷, Leandro C. Figueiredo⁸, Paulo C. Morais^{8,9}, Laise Andrade¹⁰, João P. Longo¹⁰, Ricardo B. de Azevedo¹⁰, Zulmira G. M. Lacava¹⁰, Ewa Mosiniewicz-Szablewska¹, Magdalena Parlińska-Wojtan⁷, Roman Minikayev¹, Tomasz Wojciechowski¹, Anita Gardias³, Jarosław Rybusiński³, Andrzej Sienkiewicz^{1,12}, Mariusz Łapiński¹³, Piotr Stępień^{4,5,14}, Wojciech Paszkowicz¹, Jacek Szczytko³, Andrzej Twardowski³, Małgorzata Frontczak-Baniewicz⁶, Danek Elbaum¹

¹Institute of Physics, Polish Academy of Sciences, Warsaw, ²Division of Biophysics, Institute of Experimental Physics UW, Warsaw, ³Institute of Experimental Physics, Faculty of Physics UW, Warsaw, ⁴Institute of Genetics and Biotechnology, Faculty of Biology UW, Warsaw, ⁵Institute of Biochemistry and Biophysics PAS, Warsaw, ⁶Mossakowski Medical Research Centre PAS, Warsaw, ⁷Institute of Nuclear Physics PAS, Krakow, ⁸Instituto de Física, Universidade de Brasília, Brasília DF, Brazil, ⁹College of Chemistry and Chemical Engineering, Anhui University, Hefei, China, ¹⁰Instituto de Ciências Biológicas, Departamento de Genética e Morfologia, Universidade de Brasília, Brasília DF, Brazil, ¹¹Laboratory of Physics of Complex Matter, EPFL, Station 3, Lausanne, Switzerland, ¹²ADSresonaces, Prêverenges, Switzerland, ¹³Institute of Optoelectronics, Military University of Technology, Warsaw, ¹⁴Centre of New Technologies, Ochota UW, Warsaw

P.S.E.2. **Development and characterization of Mg-containing hydroxyapatite, β -tricalcium phosphate and biphasic calcium phosphate bioceramics**

Liga Stipniece, Inga Narkevica, Kristine Salma-Ancane, Liga Berzina-Cimdina Rudolfs Cimdins Riga Biomaterials Innovations and Development Centre of RTU, Institute of General Chemical Engineering, Faculty of Materials Science and Applied Chemistry, Riga Technical University, Latvia

P.S.E.3. **Design and characterization of hydroxyapatite/poly(vinyl alcohol) nanocomposite coated titania scaffolds for bone repair**

Inga Narkevica, Liga Stipniece, Jurijs Ozolins Rudolfs Cimdins Riga Biomaterials Innovations and Development Centre of RTU, Institute of General Chemical Engineering, Faculty of Materials Science and Applied Chemistry, Riga Technical University, Pulka St. 3, Riga, LV-1007, Latvia

- P.S.E.4. **Color of dental composite restorations related to dentin substituents**
Jovana Marjanović¹, Đorđe Veljović², Tatjana Savić-Stanković¹, Branka Trifković³,
Đorđe Janačković², Vesna Miletić¹
¹University of Belgrade, School of Dental Medicine, DentalNet Research Group,
Rankeova 4, Belgrade, Serbia, ²University of Belgrade, Faculty of Technology and
Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia, ³University of Belgrade, School
of Dental Medicine, Department of Prosthodontics, Rankeova 4, Belgrade, Serbia
- P.S.E.5. **Synthesis, characterization and antimicrobial activity of pentagonal
bipyramidal Fe(III) complexes with 2,6-diacetyl- pyridine
bis(trimethylammoniumacetohydrazone)**
Božidar R. Čobeljić¹, M.T. Milenković², M.R. Milenković¹, G.V. Brađan¹, D.D.
Radanović³ and K.K. Anđelković¹
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, ³Institute of
Chemistry, Technology and Metallurgy, University of Belgrade, Njegoševa 12, P.O.
Box 815, 11000 Belgrade, Serbia
- P.S.E.6. **Synthesis and development of polymeric scaffolds based on (meth)acrylates for
tissue regeneration applications**
Jovana S. Vuković, Marija M. Babić, Bojan Đ. Božić, Katarina M. Antić, Vuk V.
Filipović, Jovanka M. Filipović, Simonida Lj. Tomić
Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4,
Belgrade, Serbia

P.S.B.10.

Temperature responsive hydrogels with ethylene glycol propylene glycol pendant chains

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

New hydrogels based on different oligo(alkylene glycol) methacrylate (OAGMA) with inverse thermoresponse and volume phase transition temperature (VPTT) were obtained and characterised. Synthesis was performed from monomer-solvent (OAGMA-water/ethanol) mixture using gamma radiation. Characterisation of the hydrogels was performed by swelling, UV-Vis, FTIR, SEM, DSC and in vitro biocompatibility (cytocompatibility and haemolytic activity) investigations. Due to the possibility to combine VPTT close to human body temperature with good biocompatibility, new homopolymeric hydrogel based on EGPG “block” pendant chains showed promising potential for different biomedical applications.

Acknowledgement: This work has been supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia (grant No. 172026).

P.S.B.11.

Nanocomposites of polypyrrole nanotubes and noble-metal nanoparticles

Miroslava Trchová¹, Irina Sapurina^{1,2}, Jaroslav Stejskal¹

¹Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, 162 06 Prague 6, Czech Republic, ²Institute of Macromolecular Compounds, Russian Academy of Sciences, St. Petersburg 199004, Russian Federation

Polypyrrole nanotubes were prepared by the oxidation of pyrrole with iron(III) chloride in the presence of methyl orange. They were subsequently used as a substrate for the reductive deposition of noble metal particles. Polypyrrole nanotubes with deposited palladium, platinum, rhodium, or ruthenium nanoparticles were characterized by electron microscopy, conductivity, energy dispersive X-ray analysis, and FTIR and Raman spectroscopies. A typical metal content varied between 15–20 wt.%, the particle sizes were of tens nanometers. The catalytic activity of composites was illustrated on the reduction of 4-nitrophenol to 4 aminophenol. The nanotubular morphology of polypyrrole was retained after carbonization at 830 °C. The size of platinum nanoparticles was preserved in samples exposed to 400–500 °C in inert atmosphere. Such temperatures are found to be sufficient for the conversion of polypyrrole to nitrogen-containing carbon.

The financial support of the Ministry of Education of the Czech Republic (LH14199) is gratefully acknowledged.