

Programme & The Book of Abstracts

Twenty-first Annual Conference

YUCOMAT 2019

&

Eleventh World Round Table Conference

on Sintering –

Science of Sintering & Its Future: Fifty Years Later

WRTCS 2019

Herceg Novi, Montenegro September 2 - 6, 2019

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MRS



Twenty-first Annual Conference
YUCOMAT 2019
&
Eleventh World Round Table Conference
on Sintering
WRTCS 2019

**Programme
and
The Book of Abstracts**

Organised by:
Materials Research Society of Serbia
&
International Institute for the Science of Sintering

Hunguest Hotel Sun Resort Herceg Novi, Montenegro,
September 2-6, 2019, <http://www.mrs-serbia.org.rs>

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Eleventh World Round Table Conference on Sintering
WRTCS 2019
Programme and The Book of Abstracts

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WELCOME SPEECH BY THE PRESIDENT OF IISS AND MRS – SERBIA:

Dear Attendees,



It is my great pleasure to welcome you on behalf of the International Institute for the Science of Sintering (IISS) and the Materials Research Society of Serbia (MRS-Serbia) to the 11th World Round Table Conference on Sintering (WRTCS) and the 21st YUCOMAT. This year marks the 50th anniversary since the first International Conference on Sintering was held in this very same hall, in 1969. As for YUCOMAT, the first one in this series of conferences was organized 24 years ago, in 1995, also in Herceg-Novti. The more seasoned amongst you may remember that YUCOMAT was initially a “spinoff” of the WRTCS. The last WRTCS held in Herceg-Novti took place here in 1989, not long before the onset of the Yugoslav Civil War. Here, for the first time, they are being held together.

While developing the concept of the conference, we had some concerns about the fit of the two topics within a single conference. Eventually, we concluded that these are two very similar, complementary disciplines and that all the participants should be able to benefit from the simultaneous exposure to both topics. Unfortunately, we did not have a significant number of papers submitted for the WRTCS this year. Nonetheless, it is very encouraging that all the members of the International Institute on the Science of Sintering (IISS), including both the ones present here and those who were unable to attend, have accepted the idea of the renewal of the IISS activities. Considering the recent expansion of the activities within the IISS, I am certain that we will have more participants next time around and that we will exceed the record numbers set in the previous years.

As in the previous years, this year’s conference will be well-attended. A total of 170 abstracts were accepted for presentation: 140 for YUCOMAT and 30 for WRTCS. Specifically, we have 32 lectures by invited plenary speakers (23 for YUCOMAT, 9 for WRTCS), 70 oral lectures (58 for YUCOMAT and 12 for WRTCS), and 70 poster papers (63 for YUCOMAT, 7 for WRTCS). I will let these numbers alone speak about the continuous rising track that YUCOMAT has been on since its inception. As for the international participants, this year they come from more than 30 countries, with the most numerous delegations being from Russia, Japan, Slovenia, USA, Ukraine and Romania. Serbian researchers are very well represented too, with a total 36 presentations, as well as the researchers from the region of the former Yugoslavia. As it has been the case in the past, 5 plenary speakers who will speak at the First Plenary Session participate at YUCOMAT for the first time. More than half of all YUCOMAT plenary speakers are here for the first time too.

I am pleased to announce that the laureate of the 2019 MRS-Serbia Award for a Lasting and Outstanding Contribution to Materials Science and Engineering is Prof. Danilo Suvorov of Jožef Stefan Institute in Ljubljana, Slovenia. He is awarded for his achievements in the

investigation of microwave ceramic materials for wireless applications. It is also a great pleasure to be granting this award at this moment, when both conferences are held at the same time, along with the 50th anniversary since the first WRTSC. Prof. Suvorov has been a true follower and admirer of the work of Prof. Drago Kolar, one of the founders of the IISS and a scientist who had done enormously much for Slovenian ceramics and the science of sintering. This is also the last award which will have been limited to scientists from the former Yugoslavia or scientists who originated from this region, but who may have worked in foreign laboratories. The Society decided that from the following year the Grand Prize of the Society would be fully "open" and internationalized and all of its members will be eligible for it, provided that they have contributed significantly to the goals and the interests of the MRS-Serbia. Moreover, there will be the possibility of choosing the Honorary President of the Society and a Honorary Member of the Society, who will be announced for the first time at the next YUCOMAT, in 2020, also here in Herceg-Novi.

As in the last few years, the Diamond Sponsors of the Conference are Thermo Fisher Scientific, their subsidiary FEI and Dove Press (International Journal of Nanomedicine). We are incredibly grateful to them for their continuous help in overcoming our financial difficulties. Long-standing members of the International Advisory Board must be acknowledged for their assistance in helping us secure these sponsorships. We also highly appreciate the financial support by the gold, silver and other sponsors, the names of which could be found on the list of sponsors in the Book of Abstracts. This has helped us to fulfill our main goal of promoting the areas of competence to which our MRS is dedicated and also to support young researchers through the awards given at the Young Researchers' Conference in December and YUCOMAT in September. This year, the list of awardees has expanded because of a large number of young participants with financial problems, not only from Serbia, but from other countries too. We are already thinking about the best candidate(s) who would be representing us at the EUROMAT Junior Conference, which will be held in Granada, Spain, July 5-9, 2020.

All in all, I wish you a pleasant stay and a lot of unforgettable moments from this year's YUCOMAT and WRTCS joint events.

Sincerely Yours,

Dragan Uskoković

President of IISS and MRS-Serbia

2019 MRS-SERBIA AWARD FOR A LASTING AND OUTSTANDING CONTRIBUTION TO MATERIALS SCIENCE AND ENGINEERING

We are pleased to announce that the laureate of the 2019 MRS-Serbia Award for a Lasting and Outstanding Contribution to Materials Science and Engineering is Prof. Danilo Suvorov of the "Jožef Stefan" Institute from Ljubljana, Slovenia. He is awarded for his achievements in investigation of microwave ceramic materials for wireless application.



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

The Executive Board of the MRS-Serbia Presidency, at their meeting on April 2, 2019, considered the submitted nominations for the MRS-Serbia's 2019 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, 2019, and that in the stipulated period of 45 days two nominations were submitted. Prof. Suvorov was nominated by Prof. Dragan Uskoković, strongly supported by Prof. Mamoru Senna, Prof. Enrico Traversa,

Prof. Stane Pejovnik, Dr. Slobodan Milonjić, Prof. Biljana Stojanović, Prof. Vuk Uskoković, Asst. Prof. Srečo Škapin and Dr. Smilja Marković.

Having received the opinion from the Expert Committee members, Prof. Dr. Robert Sinclair (Chair of YUCOMAT Conferences International Advisory Board), Prof. Dr. Ivan Božović (2015 Laureate), Prof. Dr. Gordana Vunjak-Novaković (2016 Laureate), Prof. Dr. Velimir Radmilović (2017 Laureate), and Prof. Dr. László Forró (2018 Laureate), the Executive Board of the MRS-Serbia Presidency took the decision that Prof. Danilo Suvorov should be granted MRS-Serbia's 2019 Award for a Lasting and Outstanding Contribution to Materials Science and Engineering.

Prof. Danilo Suvorov's invited plenary lecture "Epitaxial integration of oxides with silicon" will be presented during the Opening Ceremony of the 21st MRS-Serbia Annual Conference YUCOMAT 2019 and the 11th IISS World Round Table Conference on Sintering, starting at 9.00 h on Monday, September 2, 2019.

President of IISS and MRS-Serbia, Prof. Dr. Dragan Uskoković

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

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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)

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History:

The International Institute for the Science of Sintering (IISS) was established in 1968 in Belgrade, Yugoslavia, today the Republic of Serbia. It began as the International Team for Studying Sintering after the great initiative of late academician, Momcilo M. Ristic, who was its long-term General Secretary and President. Since 1973, the Team has changed its name to IISS and become an umbrella of the Serbian Academy of Sciences and Arts as well as other eminent institutions from membership countries. The IISS has thus far organized ten international conferences on sintering (World Round Table Conferences on Sintering, WRTCS): Herceg Novi, Yugoslavia, 1969, 1971, and 1973; Dubrovnik, Yugoslavia, 1977; Portoroz, Yugoslavia, 1981; Herceg Novi, Yugoslavia, 1985 and 1989; and Belgrade, Yugoslavia, 1998 and 2002. Since 1975, the IISS has organized seven International Topical Symposia on Sintering: Herceg Novi, Yugoslavia, 1975; Warsaw, Poland, 1979; New Delhi, India 1983; Tokyo, Japan, 1987; Vancouver, Canada, 1991; Haikou, P.R. China, 1995; and New Delhi, India, in 2000. After the final WRTCS was held in Belgrade in 2002, IISS activity has drastically decreased.

With this Conference, we wish to re-establish the activity of the Institute, which had the important role in bringing scientists together from this field worldwide, having in mind that at the time, our country was the rare meeting place for the scientists from the East and scientists from the West.

GENERAL INFORMATION

DATE AND VENUE: The conference will be held on September 2-6, 2019, at the Hunguest Hotel Sun Resort, in Herceg Novi, Montenegro. Participants will also be accommodated there. The conference will begin on Monday, September 2, at 09.00 and end on Friday, September 6, 2019, at 12.00.

REGISTRATION: Registration, registration fee payment, conference materials distribution, etc, will take place at the conference desk (Conference Secretariat) open on Sunday, September 1, and Monday, September 2, from 8.00 to 19.00, on Tuesday, Wednesday and Thursday from 8.00 to 13.00 and from 19.00 to 20.00, and on Friday from 8.00 to 12.00. At registration, the participants are requested to submit a proof of their 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 Tuesday to Thursday, from 20.00 to 22.00.

Conference awards: Materials Research Society of Serbia will award the authors (preferably young members under 35) of the best oral and poster presentation at the conference, and also the authors of highly rated PhD 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 excursion on Thursday afternoon (boat trip around Boka Kotorska Bay) will be organized again.

GENERAL CONFERENCE PROGRAMME

Sunday, September 1, 2019

08⁰⁰-19⁰⁰ **Registration**

Monday, September 2, 2019

08⁰⁰-19⁰⁰ **Registration**

09⁰⁰-10⁰⁰ **OPENING CEREMONY**

- Introduction and Welcome

Main Conference Hall

10³⁰-13⁰⁰ **First YUCOMAT Plenary Session**, Main Conference Hall

13⁰⁰ **Photo Session**

15⁰⁰-18³⁰ **First WRTCS Plenary Session**, Main Conference 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

SYMPOSIUM F: WRTCS

Tuesday, September 3, 2019

09⁰⁰-13⁰⁰ **Second YUCOMAT Plenary Session**, Main Conference Hall

15⁰⁰-16³⁰ **Third YUCOMAT Plenary Session**, Main Conference Hall

17⁰⁰-18⁴⁵ **Second WRTCS Plenary Session**, Main Conference Hall

20⁰⁰-22⁰⁰ **Poster Session I** (Symposium A and B1), Villa Mimoza

Wednesday, September 4, 2019

09⁰⁰-13⁰⁰ **Fourth YUCOMAT Plenary Session**, Main Conference Hall

15⁰⁰-17⁰⁰ **First WRTCS Oral Session**, Main Conference Hall

17³⁰-19³⁰ **Second WRTCS and First YUCOMAT Oral Session**, Main Conference Hall

20⁰⁰-22⁰⁰ **Poster Session II** (Symposium B2 and C1), Villa Mimoza

Thursday, September 5, 2019

09⁰⁰-12⁴⁵ **Second YUCOMAT Oral Session**, Main Conference Hall

09⁰⁰-12³⁰ **Third YUCOMAT Oral Session**, Small Conference Hall

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

20⁰⁰-22⁰⁰ **Poster Session III** (Symposiums C2, D, E and F), Villa Mimoza

Friday, September 6, 2019

09⁰⁰-11¹⁵ **Fourth YUCOMAT Oral Session**, Main Conference Hall

09⁰⁰-11³⁰ **Fifth YUCOMAT Oral Session**, Small Conference Hall

11³⁰-12⁰⁰ **Awards and Closing Ceremony**

OPENING CEREMONY

Monday, September 2, 2019

Main Conference Hall

09⁰⁰-10⁰⁰

Welcome Speech

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

Welcome Address

Robert Sinclair, Chair of International Advisory Board

Presentation of YUCOMAT 2018 Awards

Slobodan Milonjić, Vice President of MRS-Serbia

MRS-Serbia 2019 Award for a Lasting and Outstanding Contribution to Materials Science and Engineering

Epitaxial integration of oxides with silicon

Danilo Suvorov

Advanced Materials Department, Jožef Stefan Institute, Ljubljana, Slovenia

Break: 10⁰⁰-10³⁰

FIRST YUCOMAT PLENARY SESSION

Main Conference Hall

Session I: 10³⁰-13⁰⁰

Chairpersons: Yoshio Bando, Elvira Fortunato and Andrea C. Ferrari

10³⁰-11⁰⁰

Stable perovskite solar cells by compositional and interface engineering

Sanghyun Paek, Hiroyuki Kanda, Yi Zhang, Hobeom Kim, Yonghui Lee, Kyung Taek Cho, Mousa Abuhelaiqa, Aron Joel Huckaba, Roldan Carmona Cristina and Mohammad Khaja Nazeeruddin

The Group for Molecular Engineering of Functional Materials, Ecole Polytechnique Fédérale de Lausanne, CH-1951 Sion, Switzerland

11⁰⁰-11³⁰

Graphene and related materials, from production to applications

Andrea C. Ferrari

Cambridge Graphene Centre, University of Cambridge, Cambridge, CB3 0FA, United Kingdom

- 11³⁰-12⁰⁰ **Next-generation large-area graphene for electronic devices**
Simon Thomas¹, Ivor Guiney¹ and Colin Humphreys²
¹Paragraf Ltd, Somersham, Cambridge, United Kingdom; ²School of Engineering and Materials Science, Queen Mary University of London, London E1 4NS, United Kingdom
- 12⁰⁰-12³⁰ **Functionality and versatility of metal oxides**
Elvira Fortunato
i3N/CENIMAT, Department of Materials Science from Faculty of Science and Technology, Universidade NOVA de Lisboa and CEMOP/UNINOVA, Campus de Caparica, 2829-516 Caparica, Portugal
- 12³⁰-13⁰⁰ **Boron nitride nanotube/nanosheet for energy applications**
Yoshio Bando^{1,2,3}
¹Institute of Molecular Plus, Tianjin University, Tianjin, China; ²International Center for Materials Nanoarchitectonics (WPI-MANA), National Institute for Materials Science (NIMS), Ibaraki 305-044, Japan, ³Australian Institute for Innovative Materials (AIIM), University of Wollongong (UOW), NSW, 2522, Australia

13⁰⁰-13¹⁵ Photo session

Break: 13¹⁵-15⁰⁰

FIRST WRTCS PLENARY SESSION

Main Conference Hall

Session I: 15⁰⁰-16³⁰

Chairpersons: Suk-Joong L. Kang and Bernd Kieback

- 15⁰⁰-15³⁰ **Challenges and further developments in modeling of sintering**
Eugene A. Olevsky
College of Engineering, San Diego State University, San Diego, CA 92182, United States
- 15³⁰-16⁰⁰ **Micromechanics of sintering in particle scale**
Fumihiko Wakai
Laboratory for Materials and Structures, Institute of Innovative Research, Tokyo Institute of Technology, Yokohama, Japan

16⁰⁰-16³⁰ **Coupled experimental and numerical investigation of evolution of anisotropic microstructures during stress-assisted and constrained sintering**

Rajendra K. Bordia¹, Eugene A. Olevsky², Christophe Martin³

¹Clemson University, Clemson, SC 29634, United States; ²San Diego State University, San Diego, CA 92182, United States; ³Univ. Grenoble Alpes, CNRS, SIMaP, Grenoble F-38000, France

Break: 16³⁰-17⁰⁰

Session II: 17⁰⁰-18³⁰

Chairpersons: Eugene A. Olevsky and Fumihiko Wakai

17⁰⁰-17³⁰ **Fundamentals of solid state sintering in multicomponent high entropy alloys**

Bernd Kieback¹ and Nadine Eißmann²

¹Technische Universität Dresden, Institute for Materials Science, Dresden, Germany;

²Fraunhofer Institute for Manufacturing and Advanced Materials (IFAM), Dresden, Germany

17³⁰-18⁰⁰ **What we should consider for full densification when sintering**

Suk-Joong L. Kang

Korea Advanced Institute of Science and Technology (KAIST), Department of Materials Science and Engineering, Daejeon 34141, Republic of Korea

18⁰⁰-18³⁰ **Increase of fracture toughness of transparent ceramics by functional, low thermal-expansion coatings**

Marc Rubat du Merac², Martin Bram¹, Jürgen Malzbender¹, Mirko Ziegner¹, Marcin Rasinski¹, Olivier Guillon³

¹Forschungszentrum Jülich GmbH, Jülich, Germany; ²CeramTec GmbH, Plochingen, Germany; ³JARA-Energy, Aachen, Jülich, Germany

SECOND YUCOMAT PLENARY SESSION

Tuesday, September 3, 2019

Main Conference Hall

Session I: 09⁰⁰-11⁰⁰

Chairpersons: Robert Sinclair and Vladimir Torchilin

09⁰⁰-09³⁰ **Model based characterisation of magnetic moments and charge densities in the transmission electron microscope**

Rafal E. Dunin-Borkowski, Jan Caron, Patrick Diehle, Fengshan Zheng, Vadim Migunov and András Kovács
Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons and Peter Grünberg Institute, Forschungszentrum Jülich, 52425 Jülich, Germany

09³⁰-10⁰⁰ **Using STEM-EELS to optimize gold nanoparticles for early cancer detection**

Robert Sinclair, Yitian Zeng and Steven Madsen
Department of Materials Science and Engineering, Stanford University, Stanford, CA 94305, United States

10⁰⁰-10³⁰ **Engineering of novel pharmaceutical drug delivery systems for combination therapy of multidrug resistant cancer**

Vladimir Torchilin
Center for Pharmaceutical Biotechnology and Nanomedicine, Northeastern University, Boston, MA 02115, United States

10³⁰-11⁰⁰ **Synthesis and applications of megamolecules**

Milan Mrksich
Department of Biomedical Engineering and Chemistry, Northwestern University, Evanston, IL 60208, United States

Break: 11⁰⁰-11³⁰

Session II: 11³⁰-13⁰⁰

Chairpersons: Sotiris E. Pratsinis and Milan Mrksich

11³⁰-12⁰⁰ **Combustion spray synthesis of nanostructured materials: from carbon black to breath sensors**

Sotiris E. Pratsinis
Particle Technology Laboratory, Institute of Process Engineering, Swiss Federal Institute of Technology (ETH Zurich), CH-8092 Zurich, Switzerland

12⁰⁰-12³⁰ **Making the hospital a safer place by the sonochemical coating of all its textiles and medical devices with antibacterial nanoparticles**
Aharon Gedanken
Bar-Ilan University Department of Chemistry, and the BINA center, Ramat-Gan
5290002, Israel

12³⁰-13⁰⁰ **Earthlike and its discontents**
Vuk Uskoković
Department of Mechanical and Aerospace Engineering, University of California,
Irvine, CA, United States

Break: 13⁰⁰-15⁰⁰

THIRD YUCOMAT PLENARY SESSION

Main Conference Hall

Session I: 15⁰⁰-16³⁰

Chairpersons: Yuntian Zhu and Mamoru Senna

15⁰⁰-15³⁰ **Heterostructured materials: a new paradigm for superior mechanical properties**
Yuntian Zhu
Nano & Heterogeneous Materials Center, Nanjing University of Science and
Technology, Nanjing, China; Department of Materials Science and Engineering, North
Carolina State University, Raleigh, NC 27695, United States

15³⁰-16⁰⁰ **Optimizing the properties of titanium alloys processed using additive manufacturing**
Brian Welk, Nevin Taylor, Samuel Kuhr, G.B Viswanathan, Hamish L. Fraser
Center for the Accelerated Maturation of Materials, Department of Materials Science
and Engineering, The Ohio State University, Columbus, OH, United States

16⁰⁰-16³⁰ **Hybridization of solid carbohydrates or hydrocarbon with metal oxides under mechanical stressing toward sustainable materials**
Mamoru Senna¹, Chika Takai², Masayoshi Fuji³
¹Faculty of Science and Technology, Keio University, Hiyoshi, Yokohama, 223-8522,
Japan; ²Faculty of Engineering, Gifu University, Yanagido, Gifu, 501-1193, Japan;
³Advanced Ceramics Research Center, Nagoya Institute of Technology, Honmachi,
Tajimi, 507-0033, Japan

Break: 16³⁰-17⁰⁰

SECOND WRTCS PLENARY SESSION

Main Conference Hall

Session II: 17⁰⁰-18⁴⁵

Chairpersons: Heli Jantunen and Andrey V. Ragulya

17⁰⁰-17³⁰ **Electroceramics without sintering**

Heli Jantunen

Microelectronics Research Unit, Faculty of Information Technology and
Electrical Engineering, P. O. BOX 4500, University of Oulu, FI-90014 Oulu,
Finland

17³⁰-18⁰⁰ **The mechanisms behind solute-drag and solute-acceleration during
microstructural evolution of alumina**

Ruth Moshe, Rachel Marder, Leon Rudnik, Wayne D. Kaplan

Department of Materials Science and Engineering, Technion – Israel Institute of
Technology, Haifa, Israel

18⁰⁰-18³⁰ **Understanding of sintering in Ukraine: overview of results**

Andrey V. Ragulya, Mikhail Borisovich Shtern

Frantsevich Institute for Problems in Materials Science NAS of Ukraine, 3
Krzhizhanovsky str., 03142 Kiev, Ukraine

18³⁰-18⁴⁵ **Field assisted reaction sintering of ceramic materials**

Andrey V. Ragulya

Frantsevich Institute for Problems in Materials Science NAS of Ukraine, 3
Krzhizhanovsky str., 03142 Kiev, Ukraine

FOURTH YUCOMAT PLENARY SESSION

Wednesday, September 4, 2019

Main Conference Hall

Session I: 09⁰⁰-10³⁰

Chairpersons: Shizhang Qiao and Richard Catlow

09⁰⁰-09³⁰ **Nanostructured materials for energy-relevant electrocatalytic processes**

Shizhang Qiao

School of Materials Science and Engineering, Tianjin University, Tianjin 300072, China; School of Chemical Engineering, The University of Adelaide, SA 5005, Australia

09³⁰-10⁰⁰ **Computer modelling as a predictive tool in materials and catalytic science**

Richard Catlow^{1,2,3}

¹Department of Chemistry, University College London, London WC1E 6BT, United Kingdom; ²School of Chemistry, Cardiff University, Cardiff CF10 3AT, United Kingdom; ³UK Catalysis Hub, Research Complex at Harwell, R92 Harwell Oxford Oxfordshire OX11 0FA, United Kingdom

10⁰⁰-10³⁰ **Crystal chemistry and properties of G-phases**

Peter Franz Rogl and Andrij Grytsiv

Institute of Materials Chemistry, University of Vienna, A-1090 Wien, Austria

Break: 10³⁰-11⁰⁰

Session II: 11⁰⁰-13⁰⁰

Chairpersons: Hamish L. Fraser and Nobuo Tanaka

11⁰⁰-11³⁰ **Goodbye hospitals and hello implantable nanosensors**

Thomas J. Webster

Chemical Engineering, Northeastern University, Boston, MA, United States

11³⁰-12⁰⁰ **Strain-engineering in advanced CMOS structures**

Dae-Hong Ko

Department of Materials Science and Engineering, Yonsei University, Seoul, Republic of Korea

- 12⁰⁰-12³⁰ **Environmental & dynamic electron microscopy of advanced materials in HV-(S)TEM**
Nobuo Tanaka and Shigeo Arai
Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University,
Nagoya, 464-8603, Japan
- 12³⁰-13⁰⁰ **Integrated Differential Phase Contrast (iDPC) STEM for low Z detection and for high contrast low dose imaging applications**
Maarten Wirix
Thermo Fisher Scientific, Eindhoven, Netherlands

Break: 13⁰⁰-15⁰⁰

FIRST WRTCS ORAL SESSION

Main Conference Hall

Session I: 15⁰⁰-17⁰⁰

Chairpersons: Biljana Stojanović and Đorđe Janačković

- 15⁰⁰-15¹⁵ **Thermal stress directions and stress mechanism in Ag sintered bonding layer under thermal cycling test for Si power device structures having sintering chip-attachment**
Masaaki Aoki^{1,2}, Koki Chinone¹, Akihiro Mochizuki², Yoshio Murakami², Mutsuharu Tsunoda², Goro Yoshinari², Nobuhiko Nakano¹ ¹Department of Electronics and Electrical Engineering, Faculty of Science and Technology, Keio University, Yokohama, Kanagawa 223-8521, Japan; ²MacDermid Alpha Electronics Solutions / MacDermid Performance Solutions Japan, Hiratsuka, Kanagawa 254-0082, Japan
- 15¹⁵-15³⁰ **Thermal stress profiles and stress directions in Si chip under thermal cycling test for power device structures having Ag sintering chip-attachment**
Koki Chinone¹, Masaaki Aoki^{1,2}, Akihiro Mochizuki², Yoshio Murakami², Mutsuharu Tsunoda², Goro Yoshinari², and Nobuhiko Nakano¹
¹Department of Electronics and Electrical Engineering, Faculty of Science and Technology, Keio University, Yokohama, Kanagawa 223-8521, Japan; ²MacDermid Alpha Electronics Solutions / MacDermid Performance Solutions Japan, Hiratsuka, Kanagawa 254-0082, Japan

- 15³⁰-15⁴⁵ **Influence of milling, annealing and sintering parameters on the formation of LLZO compound**
Dariusz Oleszak¹, Tomasz Pikula², Mirosława Pawlyta³
¹Warsaw University of Technology, Warsaw, Poland, ²Lublin University of Technology, Lublin, Poland, ³Silesian University of Technology, Gliwice, Poland
- 15⁴⁵-16⁰⁰ **Synthesis and densification of electride Mayenite - Ca₁₂Al₁₄O₃₃**
Branko Matović
Vinca Institute of Nuclear Sciences, University of Belgrade, Mike Petrovića Alasa 12-14, 11 351 Vinča, Belgrade, Serbia
- 16⁰⁰-16¹⁵ **Ultra-rapid microwave sintering based on controlled thermal instability and resonant absorption**
Sergei V. Egorov, Anatoly G. Eremeev, Vladislav V. Kholoptsev, Ivan V. Plotnikov, Kirill I. Rybakov, Andrei A. Sorokin, Yury V. Bykov
Institute of Applied Physics, Russian Academy of Sciences 46 Ulyanov St., Nizhny Novgorod 603950 Russia
- 16¹⁵-16³⁰ **Effect of scanning strategy on mechanical properties of selective laser melted Inconel 718**
Guang-Ping Zhang¹, Hong-Yuan Wan¹, Guo-Feng Chen²
¹Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, 72 Wenhua Road, Shenyang 110016, P. R. China; ²Materials & Manufacturing Qualification Group, Corporate Technology, Siemens Ltd., China, Beijing, 100102, China
- 16³⁰-16⁴⁵ **Laser-powder bed fusion of bronze: microstructural, mechanical and electrochemical properties**
Mustafa Naci Top¹ and H. Ozkan Gulsoy²
¹Marmara University, Inst. Graduate Studies Pure and Applied Sci., 34722, Istanbul, Turkey; ²Marmara University, Technology Faculty, Metall. And Mater. Eng., 34722, Istanbul, Turkey
- 16⁴⁵-17⁰⁰ **Scaffolding via surface-selective laser sintering of biocompatible polymer particles using water as heating sensitizer**
Nikita V. Minaev¹, Svetlana A. Minaeva¹, Semyon N. Churbanov^{1,2}, Tatiana A. Akopova³, Tatiana S. Demina^{2,3}, Peter S. Timashev^{1,2}
¹Institute of Photon Technologies FSRC “Crystallography and Photonics” RAS, Moscow, Troitsk, Russia; ²Institute of Regenerative Medicine, I. M. Sechenov First Moscow State Medical University, 119991 Moscow, Russia; ³Enikolopov Institute of Synthetic Polymeric Materials, Russian Academy of Sciences, ul. Profsoyuznaya 70, Moscow, 117393 Russia

Break: 17⁰⁰-17³⁰

SECOND WRTCS AND FIRST YUCOMAT ORAL SESSION**Main Conference Hall****Session II: 17³⁰-19³⁰****Chairpersons: Gerda Rogl and Guang-Ping Zhang**

17³⁰-17⁴⁵ **Investigation of the effect of GDC (Gd-doped ceria) powder morphology on the properties of the ceramics sintered using SPS**

Daniel Vladimirovich Maslennikov^{1,2}, Aleksandr Anatol'evich Matvienko^{1,2}, Dina Vladimirovna Dudina^{1,2,3,4}, Maxim Alexandrovich Esikov^{3,4}, Hidemi Kato⁵

¹Institute of Solid State Chemistry and Mechanochemistry SB RAS, Novosibirsk, Russia; ²Novosibirsk State University, Novosibirsk, Russia; ³Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia; ⁴Novosibirsk State Technical University, Novosibirsk, Russia; ⁵Institute for Materials Research, Tohoku University, Japan

17⁴⁵-18⁰⁰ **The BaTiO₃ nano-scale coated morphology influence on electronic properties and ceramics fractal nature frontiers**

Vojislav V. Mitić^{1,2}, Goran Lazović³, Chun-An Lu⁴, Vesna Paunović¹, Sandra Veljković¹, Hans Fecht⁵, Branislav Vlahović⁶

¹University of Nis, Faculty of Electronic Engineering, Nis, Serbia; ²Institute of Technical Sciences of SASA, Belgrade, Serbia; ³University of Belgrade, Faculty of Mechanical Engineering, Belgrade, Serbia; ⁴Industrial Technology Research Institute, Taiwan; ⁵Institute of Functional Nanosystems, University of Ulm, 89081 Ulm, Germany; ⁶North Carolina Central University, Durham, NC 27707 United States

18⁰⁰-18¹⁵ **Sintering process optimization for Cu-Al₂O₃ powders synthesized by novel method**

Marija Korać¹, Zoran Anđić², Željko Kamberović¹, Nataša Gajić³

¹Faculty of Technology and Metallurgy, University of Belgrade, Serbia; ²Innovation center of Faculty of Chemistry in Belgrade Ltd., University of Belgrade, Serbia; ³Innovation center of Faculty of Technology and Metallurgy in Belgrade Ltd., University of Belgrade, Serbia

18¹⁵-18³⁰ **The effect of severe plastic deformation (SPD) via high pressure torsion (HPT) on physical and mechanical properties of thermoelectric materials**

Gerda Rogl^{1,2,3}, Ernst Bauer^{2,3}, Michael J. Zehetbauer⁴, Peter Franz Rogl^{1,3}

¹Inst. of Materials Chemistry, University of Vienna, A-1090 Wien, Austria; ²Inst. of Solid State Physics, TU Wien, A-1040 Wien, Austria; ³Christian Doppler Laboratory for Thermoelectricity, Wien, Austria; ⁴ Faculty of Physics, University of Vienna, A-1090 Wien, Austria

- 18³⁰-18⁴⁵ **G-quadruplex DNA oligomer for electrochemical sensing of insulin**
Izumi Kubo
Graduate School of Engineering, Soka University, Tokyo, Japan
- 18⁴⁵-19⁰⁰ **Smart composites with combined caloric and magnetoelectric effects**
Abdulkarim A. Amirov^{1,2}, Vladimir V. Rodionov¹, Viacheslav S. Nikulin¹, Evgeny Klippert¹ and Akhmed M. Aliev²
¹Laboratory of Novel Magnetic Materials & Institute of Physics Mathematics and Informational Technologies, Immanuel Kant Baltic Federal University, 236029 Kaliningrad, Russia; ²Amirkhanov Institute of Physics, Daghestan Scientific Center, Russian Academy of Sciences, 367003 Makhachkala, Russia; ³Kotelnikov Institute of Radio Engineering and Electronics, Russian Academy of Sciences, 125009 Moscow, Russia
- 19⁰⁰-19¹⁵ **Temperature dependence of graphene transport coefficients**
Stevo Jaćimovski¹, Dejan Raković²
¹ University of Criminalistic and Police Studies, Belgrade, Serbia; ² University of Belgrade, Faculty of Electrical Engineering, Belgrade, Serbia
- 19¹⁵-19³⁰ **Control of structure and thermo-reversible gelation of networks with reversible covalent Diels-Adler crosslinks**
Beata Strachota, Jiří Dybal, Libor Matějka
Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Heyrovsky Sq. 2, 162 06 Prague 6, Czech Republic

SECOND YUCOMAT ORAL SESSION

Thursday, September 5, 2019

Main Conference Hall

Session I: 09⁰⁰-10³⁰

Chairpersons: Dragana Jugović and Zoran Jovanović

- 09⁰⁰-09¹⁵ **The structure and electrochemical properties of fayalite Fe₂SiO₄**
Dragana Jugović¹, Miodrag Mitrić², Miloš Milović¹, Valentin N. Ivanovski², Srečo D. Škapin³, Dragan P. Uskoković¹
¹Institute of Technical Sciences of SASA, Belgrade, Serbia; ²Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia; ³Jožef Štefan Institute, Jamova 39, SI-1000 Ljubljana, Slovenia
- 09¹⁵-09³⁰ **Fabrication of graphene/Cu flexible electrode with excellent mechanical reliability and electrical performance**
Bin Zhang, Yu-Jia Yang
Key Laboratory for Anisotropy and Texture of Materials, Ministry of Education, School of Materials Science and Engineering, Northeastern University, 3-11 Wenhua Road, Shenyang 110819, PR China
- 09³⁰-09⁴⁵ **PLD growth of STO/PZT thin films on graphene oxide-buffered Si (001) surface**
Zoran Jovanović^{1,2}, Urška Gabor¹, Elena Tchernychova³, Danilo Suvorov¹, Matjaž Spreitzer¹
¹Advanced Materials Department, Jožef Stefan Institute, Ljubljana, Slovenia; ²Laboratory of Physics, Vinča Institute of Nuclear Sciences, Belgrade, Serbia; ³National Institute of Chemistry, Ljubljana, Slovenia
- 09⁴⁵-10⁰⁰ **Deposition of nanocomposite organosilicon thin films under dusty plasma conditions**
Vilma Bursikova¹, Vojtěch Homola¹, Štěpánka Bittnerová¹, Roman Přibyl¹, Petr Tomšej¹, Monika Stupavská¹, Anna Charvatova Campbell², Petr Klapetek², Romana Mikšová³, Vratislav Perina³
¹Institute of Physical Electronics, Faculty of Science, Masaryk University, Kotlarska 2, 611 37 Brno, Czech Republic; ²Czech Metrology Institute, Okružní 31, 63800 Brno, Czech Republic; ³Institute of Nuclear Physics, Academy of Sciences of the Czech Republic, 25068 Rez near Prague, Czech Republic
- 10⁰⁰-10¹⁵ **Photovoltaic perovskites for high sensitive X-ray detection**
Veljko Đokić, Anastasiia Glushkova, Pavao Andričević, Alla Arakcheeva, Márton Kollár, Endre Horváth, and László Forró
Laboratory of Physics of Complex Matter, Ecole Polytechnique Fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

10¹⁵-10³⁰ **Effect of graphite reinforcements on the tribological properties of Al₂O₃ coatings deposited by plasma spraying**

Liutauras Marcinauskas¹, Mindaugas Milieška², Jacob Shiby Mathew¹, Romualdas Kėželis², Vilius Dovydaitis¹, Brigita Abakevičienė¹, Aleksandras Iljinas¹, Mitjan Kalin³

¹Kaunas University of Technology, Studentų 50 Kaunas, Lithuania; ²Lithuanian Energy Institute, Breslaujos 3 Kaunas, Lithuania; ³University of Ljubljana, Bogiščičeva 8, 1000 Ljubljana, Slovenia

Break: 10³⁰-11⁰⁰

Session II: 11⁰⁰-12⁴⁵

Chairpersons: Anatole N. Khodan and Jan Kusinski

11⁰⁰-11¹⁵ **Optical and structural properties of tin oxide thin films doped with fluorine obtained by USP technique**

Nora Castillo Tepox, José A. Luna López, Alvaro D. Hernández de la Luz

Centro de Investigación en Dispositivos Semiconductores, CIDS, ICUAP, Benemérita Universidad Autónoma de Puebla, 14 sur y Av. San Claudio, Cd. Universitaria, Edificios IC-5, IC-6, Puebla, Pue., 72570, México

11¹⁵-11³⁰ **Photoluminescence enhancement of Dy³⁺-doped tellurite glasses through nanoparticle doping for solid-state lighting applications**

Ali Erçin Ersundu, Orhan Kibrisli, Miray Çelikkbilek Ersundu

Yildiz Technical University, Department of Metallurgical and Materials Engineering, Faculty of Chemical and Metallurgical Engineering, Istanbul, 34220, Turkey

11³⁰-11⁴⁵ **Point defect-enhanced optical and photoelectrochemical water splitting activity of nanostructured Zn_{1-x}Fe_yO_(1-x+1.5y)**

Smilja Marković¹, Vladimir Rajić², Ivana Stojković Simatović³, Ljiljana Veselinović¹, Jelena Belošević Čvor², Valentin N. Ivanovski², Mirjana Novaković², Srečo D. Škapin⁴, Stevan Stojadinović⁵, Vladislav Rac⁶, Dragan P. Uskoković¹

¹Institute of Technical Sciences of SASA, Belgrade, Serbia; ²The Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia; ³Faculty of Physical Chemistry, 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

- 11⁴⁵-12⁰⁰ **Development of new functional materials and 3D nanocomposites for applications in THz optics**
Anatole N. Khodan¹, Kirill I. Zaytsev², Vladimir N. Kurlov³, Gennady P. Kopitsa⁴
¹Frumkin Institute of Physical Chemistry and Electrochemistry RAS, Moscow, Russia, ²Prokhorov General Physics Institute RAS, Moscow, Russia, ³Institute of Solid State Physics RAS, Chernogolovka, Russia, ⁴Konstantinov Petersburg Nuclear Physics Institute, NRC “Kurchatov Institute”, Gatchina, Russia
- 12⁰⁰-12¹⁵ **Electron holography examination of FeSiB ribbons crystallized by using interference pulsed laser heating**
Jan Kusinski¹, Olaf Czyz¹, Agnieszka Radziszewska¹, Roman Ostrowski², Krzysztof Morawiec³, Piotr Dłużewski³, Małgorzata Kac⁴
¹AGH University of Science and Technology, Al. Mickiewicza 30, 30-059 Krakow, Poland; ²Military University of Technology, Institute of Optoelectronics, Warsaw, 2 Gen. S. Kaliskiego, 00-908 Warsaw, Poland; ³Institute of Physics Polish Academy of Sciences, Al. Lotnikow 32/46, 02-668 Warsaw, Poland; ⁴Institute of Nuclear Physics Polish Academy of Sciences, ul. Radzikowskiego 152, 31-342 Krakow, Poland
- 12¹⁵-12³⁰ **Acoustically tuned quantum light emission from atom-like defects in hexagonal boron nitride**
Snežana Lazić¹, Sergio Pinilla Yanguas¹, Carlos Gibaja², Félix Zamora² and Herko P. Van der Meulen¹
¹Departamento de Física de Materiales, Instituto “Nicolás Cabrera” and Instituto de Física de Materia Condensada (IFIMAC), Universidad Autónoma de Madrid (UAM), 28049 Madrid, Spain; ²Departamento de Química Inorgánica, UAM, 28049 Madrid, Spain
- 12³⁰-12⁴⁵ **Mechanical properties of 1T-TaS₂**
Luka Ćirić, Raphael Foschia, Anastasia Glushkova, Narjes Noma, Ayat Karimi, Iva Tkalcec, Samy Adjam, Daniele Marie, Helmut Berger and Laszlo Forró
Ecole Polytechnique Federal de Lausanne, Laboratory of Physics of Complex Matter, Lausanne, Vaud, Switzerland

THIRD YUCOMAT ORAL SESSION

Small Conference Hall

Session I: 09⁰⁰-10³⁰

Chairpersons: Đorđe Veljović and Sonja Jovanović

- 09⁰⁰-09¹⁵ **Effects of annealing on the physical properties of various metallic oxides**
Sorina Iftimie¹, Claudiu Locovei^{1,2}, Adrian Radu¹, Vlad-Andrei Antohe^{1,3}, Marcela Socol², Anca Dumitru¹, Ana-Maria Raduta¹, Lucian Ion¹, Stefan Antohe^{1,4}
¹University of Bucharest, Faculty of Physics, Magurele, 077125, Romania; ²National Institute of Materials Physics, Magurele, 077125, Romania; ³Université Catholique de Louvain (UC Louvain), Institute of Condensed Matter and Nanosciences (IMCN), Louvain-la-Neuve, B-1348, Belgium; ⁴Academy of Romanian Scientists, 030167, Bucharest, Romania
- 09¹⁵-09³⁰ **Cryo-deformation by upsetting-extrusion: effect on microstructure and mechanical properties of CoCrFeMnNi high-entropy alloy**
Anastasia Levenets, Alexander S. Kalchenko, Mikhail A. Tikhonovsky, Pavel A. Khaimovich
 National Science Center “Kharkiv Institute of Physics and Technology”, Kharkiv, Ukraine
- 09³⁰-09⁴⁵ **Microstructure and mechanical property of solid–phase joints formed by EP975 superalloy and VKNA-25 type intermetallic alloys**
Elvina Galieva¹, Andrey Drozdov², Vener Valitov¹, Elvira Arginbaeva³, Ramil Lutfullin¹
¹Institute for Metals Superplasticity Problems of Russian Academy of Sciences, 450001, Ufa, Russia; ²Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences, 119334, Moscow, Russia; ³All-Russia Research Institute of Aviation Materials (VIAM), 105005, Moscow, Russia
- 09⁴⁵-10⁰⁰ **Synthesis and catalytic properties of Co-Pt, Cu-Pd, Ni-Pt nanoalloys**
Anton Popov¹, Yury Shubin¹, Pavel Plusnin¹, Danila Kal'nyi¹, Ilya Mishakov², Yury Bauman²
¹Nikolaev Institute of Inorganic Chemistry of SB RAS, Novosibirsk, Russia; ²Boriskov Institute of Catalysis of SB RAS, Novosibirsk, Russia
- 10⁰⁰-10¹⁵ **Peculiarities of impurity effect on the oxygen adsorption on the Ti₃Al(0001) and TiAl(100) surfaces**
Svetlana E. Kulkova^{1,2}, Alexander V. Bakulin^{1,2}, Sergey S. Kulkov^{1,2}
¹Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia; ²Tomsk State University, Tomsk, Russia

10¹⁵-10³⁰ **Screen-printed thin smooth nanostructured BaTiO₃ films for printed electronics**
Saide Umerova, Serhii Ivanchenko, Dmitro Baranovskiy, Olha Kovalenko, Andrey Ragulya
 Frantsevich Institute for Problems of Materials Science of NASU, Kiev, Ukraine

Break: 10³⁰-11⁰⁰

Session II: 11⁰⁰-12³⁰

Chairpersons: Branko Matović and Vuk Radmilović

11⁰⁰-11¹⁵ **Mechanism of topochemical conversion of Bi₄Ti₃O₁₂ in SrTiO₃ nanoplates under hydrothermal conditions**

Alja Čontala^{1,2}, Nina Danu¹, Matjaž Spreitzer¹ and Marjeta Maček Kržmanc¹

¹Jožef Stefan Institute, Advanced Materials Department, Jamova cesta 39, Ljubljana, Slovenia; ²Jožef Stefan International Postgraduate School, Jamova cesta 39, 1000 Ljubljana, Slovenia

11¹⁵-11³⁰ **Synthesis of anodic alumina membrane with defined pore diameters**

Iwona Dobosz, Wanda Gumowska

AGH, University of Science and Technology, Faculty of Non - Ferrous Metals, al. Mickiewicza 30, 30-059 Krakow, Poland

11³⁰-11⁴⁵ **Mechanical behavior of nanocrystalline Ni-Mo layers processed by electrodeposition**

Garima Kapoor¹, László Péter², Éva Fekete², Dávid Ugi¹, György Radnóczy³, Jenő Gubicza¹

¹Department of Materials Physics, Eötvös Loránd University, Budapest, Hungary; ²Wigner Research Centre for Physics, Hungarian Academy of Sciences, Budapest, Hungary; ³Institute for Technical Physics and Mater. Sci., Centre for Energy Research HAS, Budapest, Hungary

11⁴⁵-12⁰⁰ **Prediction of the temper of hardening in the free and bounded bending of long-length, low-alloyed copper billets under high-cycle processing conditions**

Georgy I. Raab, Rashid N. Asfandiyarov, Arseniy G. Raab, Denis A. Aksenov
 Research Institute of Physics of Advanced Materials at USATU, Ufa, Russia

12⁰⁰-12¹⁵ **Development and characterization of carbon nanotube reinforced natural rubber composite for prosthetic foot application**

Rasaq O. Medupin^{1,2}, Oladiran K. Abubakre^{1,2}, Ambali S. Abdulkareem^{1,3}, Rasheed A. Muriana^{1,2} and James A. Adeniran⁴

¹Nanotechnology Research Group, Federal University of Technology, Minna, Nigeria; ²Mechanical Engineering Department, Federal University of Technology, Minna, Nigeria; ³Chemical Engineering Department, Federal University of Technology, Minna, Nigeria; ⁴Federal Medical Centre, Bida, Nigeria

12¹⁵-12³⁰ **Effects of cooling rate during casting on the corrosion resistance of 6xxx aluminium alloy**

Joseph B. Agboola¹, Anyoku S. Emmanuel² and Atinuke M. Oladoye²

¹Department of Materials and Metallurgical Engineering, Federal University of Technology, Minna, Nigeria; ²Department of Metallurgical and Materials Engineering, University of Lagos, Lagos, Nigeria

FOURTH YUCOMAT ORAL SESSION

Friday, September 6, 2019

Main Conference Hall

Session I: 09⁰⁰-11¹⁵

Chairpersons: Natalia Kamanina and Bojana Obradović

- 09⁰⁰-09¹⁵ **Hemodialysis composite membranes with functionalized graphene**
Iulian Antoniac¹, Aurora Antoniac¹, Andrada Serafim², Andreea Iordache^{2,3}, Andreea Madalina Pandele^{2,3}, Stefan Ioan Voicu^{2,3}
¹University Politehnica of Bucharest, Faculty of Materials Science and Engineering, Bucharest, Romania; ² University Politehnica of Bucharest, Advanced Polymer Materials Group, Gheorghe Polizu 1-7, 011061 Bucharest, Romania; ³University Politehnica of Bucharest, Faculty of Applied Chemistry and Materials Science, Department of Analytical Chemistry and Environmental Engineering, Str. Gheorghe Polizu 1-7, Bucharest, Romania
- 09¹⁵-09³⁰ **Supercritical CO₂ utilization in preparation of poorly soluble drugs solid dispersions**
Jelena Đuriš¹, Stoja Milovanović², Đorđe Medarević¹, Vladimir Dobričić¹, Svetlana Ibrić¹
¹University of Belgrade, Faculty of Pharmacy, Vojvode Stepe 450, 11221, Belgrade, Serbia; ²University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120, Belgrade, Serbia
- 09³⁰-09⁴⁵ **New agents for nitric oxide (NO) chemotherapy of bacterial infections**
Nataliya A. Sanina
Institute of Problems of Chemical Physics Russian Academy of Sciences, Chernogolovka, Russia
- 09⁴⁵-10⁰⁰ **Controllable release of oxaprozin from hydroxyapatite nano-particles**
Vukašin Ugrinović¹, Bojan Božić², Đorđe Janačković³, Đorđe Veljović³
¹Innovation Center of Faculty of Technology and Metallurgy, Belgrade, Serbia; ²Institute of Physiology and Biochemistry, Faculty of Biology, Belgrade, Serbia; ³Faculty of Technology and Metallurgy, Belgrade, Serbia

10⁰⁰-10¹⁵ Polysaccharide-coated polylactide microparticles with controlled surface structure

Tatiana S. Demina^{1,2}, Liubov A. Kilyashova³, Tatiana N. Popyrina^{1,3}, Christian Grandfils⁴, Peter S. Timashev², Tatiana A. Akopova¹

¹Enikolopov Institute of Synthetic Polymer Materials RAS, Moscow, Russia; ²Institute for Regenerative Medicine, Sechenov University, Moscow, Russia; ³Moscow Aviation Institute, Moscow, Russia; ⁴CEIB, University of Liège, Liège, Belgium

10¹⁵-10³⁰ Hydroxyapatite/ β -tricalcium phosphate granules enriched with strontium induce improved bone regeneration in osteoporotic bone: comparison between 11 different bone conditions

Janis Zarins^{1,2}, Mara Pilmane², Elga Sidhoma², Ilze Salma³, Janis Locs⁴

¹Department of Hand and Plastic Surgery, Microsurgery Centre of Latvia, Brivibas Street 410, LV-1024, Riga, Latvia; ²Institute of Anatomy and Anthropology, Riga Stradins University, Kronvalda boulevard 9, LV-1010, Riga, Latvia; ³Department of Oral and Maxillofacial Surgery, Riga Stradins University, Dzirciema Street 20, LV-1007, Riga, Latvia; ⁴Rudolfs Cimdins Riga Biomaterials Innovations and Development Centre of Riga Technical University, Pulka Street 3, LV-1007, Riga, Latvia

10³⁰-10⁴⁵ Hydroxyapatite nano particles doped with Gd³⁺, Yb³⁺/Tm³⁺ and Eu³⁺ as lumino-magnetic multimodal contrast agents

Nenad L. Ignjatović¹, Lidija Mančić¹, Marina Vuković², Zoran Stojanović¹, Marko G. Nikolić³, Srečo D. Škapin⁴, Sonja Jovanović^{4,5}, Ljiljana Veselinović¹, Snežana Lazić⁶, Smilja Marković¹, Dragan P. Uskoković¹

¹Institute of Technical Sciences of the Serbian Academy of Science and Arts, Knez Mihailova 35/IV, P.O. Box 377, 11000 Belgrade, Serbia; ² University of Belgrade, Innovation center, Department of General and Inorganic Chemistry, Studentski trg 12-16, Beograd, Serbia; ³University of Belgrade, Institute of Physics, Photonic Center, Zemun, Serbia; ⁴Jožef Stefan Institute, Jamova 39, 1000 Ljubljana, Slovenia; ⁵University of Belgrade, Vinča Institute of Nuclear Sciences, PO Box 522, 11001 Belgrade, Serbia; ⁶ Universidad Autónoma de Madrid (UAM), Instituto Universitario de Ciencia de Materiales “Nicolás Cabrera” (INC) and Condensed Matter Physics Center (IFIMAC), Departamento de Física de Materiales, 28049 Madrid, Spain

10⁴⁵-11⁰⁰ **The effect of Ga-substitution on magneto-structural properties of cobalt ferrite nanoparticles**

Sonja Jovanović^{1,2}, Davide Peddis^{3,4}, Nader Yaacoub⁵, Matjaž Spreitzer¹, Marija Vukomanović¹

¹Advanced Materials Department, Jožef Stefan Institute, Jamova cesta 39, Ljubljana, Slovenia; ²Laboratory of Physics, Vinča Institute of Nuclear Sciences, University of Belgrade, Mike Petrovića Alasa 12-14, Belgrade, Serbia; ³nM2-Lab, Istituto di Struttura della Materia, CNR, Monterotondo Scalo (Roma) 00015, Italy; ⁴Department of Chemistry and Industrial Chemistry, University of Genova, Genova, Italy; ⁵LUNAM, Université du Maine, Institut des Molécules et Matériaux du Mans CNRS UMR-6283, F-72085 Le Mans, France

11⁰⁰-11¹⁵ **Materials properties modification via nanotechnology approach**

Natalia Kamanina

Vavilov State Optical Institute, St.- Petersburg, Russia; St.-Petersburg Electrotechnical University ("LETI"), St.- Petersburg, Russia

FIFTH YUCOMAT ORAL SESSION

Small Conference Hall

Session I: 09⁰⁰-11³⁰

Chairpersons: Smilja Marković and Veljko Đokić

09⁰⁰-09¹⁵ **Solvent-free mechanochemical reactions of chitosan: a green chemistry approach**

Tatiana A. Akopova

Enikolopov Institute of Synthetic Polymeric Materials RAS, Profsoyuznaya 70, Moscow, Russia

09¹⁵-09³⁰ **Characterization and application of molybdenum-oxides in liquid-phase hydrodeoxygenation of furfural**

Aleksa Kojčinović, Miha Grilc, Blaž Likozar

Department of Catalysis and Chemical Reaction Engineering, National Institute of Chemistry, Hajdrihova 19, 1000 Ljubljana, Slovenia

09³⁰-09⁴⁵ **Zero waste recovery of mining and industrial waste**

Mateja Košir, Ana Mladenović, Alenka Mauko Pranjčić, Petra Vrhovnik, Kim Mezga
Slovenian National Building and Civil Engineering Institute, Ljubljana, Slovenia

- 09⁴⁵-10⁰⁰ **Influence of the sintering temperature on the microstructure of belite-sulfoaluminate cement clinkers**
Martina Cvetković¹, Lea Žibret¹, Andrej Ipavec², Sabina Kramar¹
¹Slovenian National Building and Civil Engineering Institute, Dimičeva ulica 12, SI-1000 Ljubljana, Slovenia; ²Salonit Anhovo d.d., Anhovo 1, SI-5210 Deskle, Slovenia
- 10⁰⁰-10¹⁵ **Dielectric loss factor of jute woven fabrics: effect of alkali treatment conditions**
Aleksandra Ivanovska¹, Dragana Cerović², Koviljka Asanović¹, Mirjana Kostić¹
¹Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, Belgrade 11000, Serbia; ²Faculty of Physics, University of Belgrade, Studentski Trg 12, Belgrade 11000, Serbia
- 10¹⁵-10³⁰ **A novel type of building material derived from the by-products of steel making industry**
Irena Nikolić^{1,2}, Ivana Milašević², Nevena Cupara², Ljubica Ivanović², Dijana Đurović², Smilja Marković³, Ljiljana Veselinović³, Vuk Radmilović⁴, Velimir Radmilović⁵
¹University of Montenegro, Faculty of Metallurgy and Technology, Podgorica, Montenegro; ²Institut of Public Health of Montenegro, Podgorica, Montenegro; ³Institute of Technical Sciences of SASA, Belgrade, Serbia; ⁴Faculty of Technology and Metallurgy, Belgrade, Serbia; ⁵Serbian Academy of Sciences and Arts, Belgrade, Serbia
- 10³⁰-10⁴⁵ **Comparative studies on electrodeposition of metals from gluconate solutions**
Ewa Rudnik
AGH University of Science and Technology, Faculty of Non-Ferrous Metals, al. Mickiewicza 30, 30-059 Cracow, Poland
- 10⁴⁵-11⁰⁰ **Conditions of non-cryogenic brittle fracture of different starch grains under their mechanical treatment**
Anatoly Politov^{1,2}, Valeria Vasikhovskaya², Margarita Pravdina³, Chengmin Wang⁴
¹Institute of Solid State Chemistry and Mechanochemistry SB RAS, Novosibirsk, Russia, ²Novosibirsk State University, Novosibirsk, Russia, ³Kutateladze Institute of Thermophysics SB RAS, Novosibirsk, Russia, ⁴Dongguan Vladimir Biotechnology Co. Ltd, Dongguan, Guangdong, China
- 11⁰⁰-11¹⁵ **Heterogeneous enzymatic hydrolysis of non-cryogenic brittle fractured starch**
Valeria Vasikhovskaya¹, Anatoly Politov^{1,2}
¹Novosibirsk State University, Novosibirsk, Russia, ²Institute of Solid State Chemistry and Mechanochemistry SB RAS, Novosibirsk, Russia

11¹⁵-11³⁰ **Making a curved part with LATP technology using two synchronized robots, without using a physical mandrel**

Samoil Samak¹, Vele Samak¹, Dimitar Bogdanoski¹, Zlatko Sokoloski¹, Blagoja Samakoski², Svetlana Risteska²

¹Mikrosam D.O.O, Prilep, North Macedonia; ²Institute for Advanced Composites and Robotics (IACR), Prilep, North Macedonia

POSTER SESSION I

Tuesday, September 3, 2019, 20⁰⁰-22⁰⁰

Chairpersons: Vuk V. Radmilović, Željko Radovanović

YUCOMAT SYMPOSIUM A: ADVANCED METHODS IN SYNTHESIS AND PROCESSING OF MATERIALS

P.S.A.1. Physicochemical properties of cobalt ferrite nanoparticles synthesized by using linear surfactants and non-planar stereogenic-at-metal complexes

Ivan Kozenkov¹, Sonja Jovanović^{2,3}, Rafiali Rafializade¹, Alexander Bulychev¹, Valeria Rodionova¹

¹Laboratory of novel magnetic materials, Immanuel Kant Baltic Federal University, Kaliningrad, Russia; ²Advanced materials department, Jožef Stefan Institute, Ljubljana, Slovenia; ³Laboratory of Physics, Vinca Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia

P.S.A.2. Hall-Petch relation in harmonic structure designed Ni compacts

Hiroki Hino¹, Bhupndra Sharma², Mie Kawabata², Kei Ameyama²

¹Graduate School of Science and Engineering, Ritsumeikan University; ²Faculty of Science and Engineering, Ritsumeikan University, Shiga, Japan

P.S.A.3. Preferential recrystallization by thermo-mechanical processing in pure titanium with harmonic structure

Kyohei Hayashi¹, Akito Shimamura¹, Bhupendra Sharma², Mie Kawabata², Kei Ameyama²

¹Graduate School of Science and Engineering Ritsumeikan University, Kusatsu/Shiga, Japan; ²Department of Mechanical Engineering Ritsumeikan University, Kusatsu/Shiga, Japan

P.S.A.4. Microstructure and mechanical properties of harmonic structure designed Cu-9 at% Ge alloy

Kenta Hori¹, Bhupndra Sharma², Mie Kawabata², Kei Ameyama²

¹Graduate School of Science and Engineering, Ritsumeikan University, Kusatsu/Shiga, Japan; ²Faculty of Science and Engineering, Ritsumeikan University, Shiga, Japan

- P.S.A.5. **Effect of UFG structure on mechanical properties in harmonic structure designed pure-Ni**
Taiki Kambara¹, Masaya Nagata², Bhupendra Sharma³, Mie Kawabata³, Kei Ameyama³
¹Graduate School of Science and Engineering Ritsumeikan University, Kusatsu/Shiga, Japan; ²Japan Patent Office, Tokyo, Japan; ³Department of Mechanical Engineering Ritsumeikan University, Kusatsu/Shiga, Japan
- P.S.A.6. **Harmonic structure design of Co-Cr-Mo alloy and its mechanical properties**
Sho Matsumura, Bhupendra Sharma, Mie Kawabata, Kei Ameyama
Department of Mechanical Engineering, Ritsumeikan University, Kusatsu/Shiga, Japan
- P.S.A.7. **Improvement of mechanical properties of harmonic structure SUS304L by thermo-mechanical process**
Taishu Tsujino¹, Masashi Nakatani¹, Bhupendra Sharma², Mie Kawabata², Kei Ameyama²
¹Graduate School of Science and Engineering Ritsumeikan University, Kusatsu/Shiga, Japan; ²Department of Mechanical Engineering Ritsumeikan University, Kusatsu/Shiga, Japan
- P.S.A.8. **Plasma electrolysis oxidation using a pulsed unipolar power supply to improve electrochemical behavior of 316L austenitic steel**
Victor Aurel Andrei¹, Viorel Malinovski², Cristiana Rădulescu¹, Elisabeta Coaca³, Ioana Daniela Dulama¹
¹Valahia University of Targoviste, Institute of Multidisciplinary Research for Science and Technology, 130004 Targoviste, Romania; ²University of Pitesti, 110040 Pitesti, Romania; ³Institute for Nuclear Research, str. Campului, 1, Mioveni, Arges, Romania
- P.S.A.9. **Synthesis of titanium nitride via hybrid polymeric composites**
Anca Dumitru¹, Sorina Iftimie¹, Anita Radu², Andreea Miron², Andrei Sarbu², Cristian Panaiotu¹, Claudiu Locovei^{1,3}, Carmen Lazau⁴
¹Faculty of Physics, University of Bucharest, Bucharest-Magurele, 077125, Romania; ²National Research and Development Institute for Chemistry and Petrochemistry INCDCP-ICECHIM, Advanced Polymer Materials and Polymer Recycling, 060021 Bucharest, Romania; ³National Institute of Materials Physics, Bucharest-Magurele, 077125, Romania; ⁴National Institute for Research and Development in Electrochemistry and Condensed Matter, 300224 Timisoara, Romania

- P.S.A.10. **Synthesis, structural modelling and functional properties of amorphous transition metal polysulfides**
Ekaterina D. Grayfer¹, Sofya B. Artemkina¹, Andrey N. Enyashin², Anastassiia A. Poltarak¹, Anastasiia D. Fedorenko¹, Pavel A. Poltarak¹, Mariia N. Ivanova¹, Sung-Jin Kim³, Vladimir E. Fedorov^{1,4}
¹Nikolaev Institute of Inorganic Chemistry, Siberian Branch of Russian Academy of Sciences, 3, Acad. Lavrentiev Ave., Novosibirsk, 630090, Russia; ²Institute of Solid State Chemistry, Ural Branch of Russian Academy of Sciences, 91, Pervomayskaya st., Ekaterinburg, 620990, Russia; ³Ewha Womans University, Division of Nano Sciences/Department of Chemistry, Daehyun-dong, Seodaemun-gu, 11-1, Seoul 120-750, Republic of Korea; ⁴Novosibirsk State University, 2, Pirogova street, Novosibirsk, 630090, Russia
- P.S.A.11. **Application of high intensity ultrasound for obtaining magnesium hydroxide from seawater**
Jelena Jakić, Miroslav Labor, Vanja Martinac, Ana Marija Šunjić
Faculty of Chemistry and Technology, Ruđera Boškovića 35, 21000 Split, Croatia
- P.S.A.12. **Thin films for multilayer devices by tape casting method**
Serhii Ivanchenko, Saide Umerova, Dmytro Baranovskyi, Andrey V. Ragulya
Frantsevich Institute for Problems of Materials Science of National Academy of Sciences of Ukraine, Kiev, Ukraine; Nanotechcenter LLC, Kiev, Ukraine
- P.S.A.13. **Investigation of ZrN-ZrB₂ composition synthesis by spark plasma sintering method**
Olexander Petukhov, Hanna Borodianska, Andrey V. Ragulya
Frantsevich Institute for Problems of Materials Science of National Academy of Sciences of Ukraine, Kiev, Ukraine
- P.S.A.14. **Synthesis, crystal structures and magnetic properties of mono and dinuclear Cu(II) complexes with the condensation product of 2-acetylpyridine and Girard's T reagent**
Nevena Stevanović¹, Dušanka Radanović², Milica R. Milenković¹, Božidar Čobeljić¹ and Katarina Anđelković¹
¹Faculty of Chemistry, University of Belgrade, Studentski trg 12-16, 11000 Belgrade, Serbia; ²Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Njegoševa 12, P.O. Box 815, 11000 Belgrade, Serbia
- P.S.A.15. **Development of sugarcane bagasse reinforced onibode clay composite for high voltage insulation**
Joseph B. Agboola¹, Suleiman B. Hassan², Afeez A. Lukman³
¹Department of Materials and Metallurgical Engineering, Federal University of Technology, Minna, Nigeria; ²National Institute of Mining and Geosciences, Jos, Nigeria; ³Department of Metallurgical and Materials Engineering, University of Lagos, Lagos, Nigeria

YUCOMAT SYMPOSIUM B: ADVANCED MATERIALS FOR HIGH-TECHNOLOGY APPLICATION

- P.S.B.1. **Cost effective alloys based catalysts for alkaline fuel cells application**
Ljiljana Gajić-Krstajić¹, Borka Jović², Vladimir Jović², Piotr Zabinski³, Nevenka Elezović²
¹Institute of Technical Sciences of Serbian Academy of Science and Arts, Knez Mihajlova 45, 11000 Belgrade, Serbia; ²Institute for Multidisciplinary Research University of Belgrade, P.O. Box 33, 11030 Belgrade, Serbia; ³AGH University of Science and Technology, Faculty of Non-Ferrous Metals, Al. Mickiewicza 30, Krakow, Poland
- P.S.B.2. **Polyanionic cathode material Na₄Fe₃(PO₄)₂P₂O₇/C for aqueous sodium-ion batteries**
Aleksandra Gezović¹, Veselinka Grudić¹, Miloš Milović², Danica Bajuk-Bogdanović³, Milica Vujković³
¹University of Montenegro, Faculty of Metallurgy and Technology, Podgorica, Montenegro; ²Institute for Nuclear Sciences Vinča, Belgrade, Serbia; ³University of Belgrade, Faculty of Physical Chemistry, Belgrade, Serbia
- P.S.B.3. **Thermolysis prepared Co₃O₄ carbon paste electrode decorated with single wall nanotubes as voltammetric sensor for determination of antioxidant α -lipoic acid**
Branka B. Petković¹, Dalibor M. Stanković², Miloš Ognjanović², Vyacheslav Viktorovich Avdin³, Magdalena Radović², Dragan D. Manojlović⁴, Sanja Vranješ Đurić²
¹University of Priština-Kosovska Mitrovica, Faculty of Sciences, Lole Ribara 29, 38220 Kosovska Mitrovica, Serbia; ²The Vinča Institute of Nuclear Sciences, Mike Petrovića Alasa 12-14, 11000, Belgrade, Serbia; ³South Ural State University, 76, Lenin prospekt, Chelyabinsk, Russia, 454080; ⁴University of Beograd, Faculty of Chemistry, Studentski trg 12-16, Beograd, Serbia
- P.S.B.4. **Special application possibilities of metakaolin based geopolymer foams**
Adrienn Boros, Tamás Korim
Institute of Materials Engineering, University of Pannonia, Veszprém, Hungary
- P.S.B.5. **Ultra-fast volume-responsive temperature- and pH-sensitive poly(N-isopropylacrylamide) hydrogels**
Sabina Horodecka, Khrystyna Hishchak, Beata Strachota, Adam Strachota, Miroslav Šlouf
Institute of Macromolecular Chemistry, Czech Academy of Sciences, Heyrovského nám. 2, CZ-162 06 Praha 6, Czech Republic

P.S.B.6. X-ray spectra, electron structure and physical properties of the Ce₂ScSi₂ and CeScSi compounds

Ivan Shcherba¹, Victor Antonov², Henryk Noga³, Dragan Uskoković⁴, Zinovija M. Shpyrka¹, Bohdan M. Yatcyk⁵

¹Ivan Franko National University, Kyryla & Mefodiya Str. 8, 79-005 Lviv, Ukraine;

²Institute of Metal Physics, NASU, Vernadskyj Str. 36, 03-142 Kiev, Ukraine;

³Institute of Technology, Pedagogical University, Podchoranzych Str. 2, Cracow, Poland;

⁴Institute of Technical Sciences of SASA Knez Mihailova 35/IV, Belgrade, Serbia;

⁵Lviv National University of Veterinary Medicine and Biotechnologies, Lviv, Ukraine

P.S.B.7. Theory and experiment - Slowing probe and conjugate pulses in potassium vapor using Four Wave Mixing

Željka Nikitović, Marija Ćurčić, Bojan Zlatković, Ivan Radojčić, Dušan Arsenović and Branislav Jelenković

Institute of Physics University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia

P.S.B.8. Cup anemometer friction torque and classification according IEC standard

Miodrag Zlatanović^{1,2}, Ivan Popović²

¹Wind Electricity doo, Belgrade, Serbia; ²School of Electrical Engineering, Belgrade, Serbia

POSTER SESSION II

Wednesday, September 4, 2019, 20⁰⁰-22⁰⁰

Chairpersons: Zoran Jovanović, Đorđe Veljović

YUCOMAT SYMPOSIUM B: ADVANCED MATERIALS FOR HIGH-TECHNOLOGY APPLICATIONS

P.S.B.9. Laser welding of similar materials

Agnieszka Radziszewska¹, Sławomir Kąc¹, Włodzimierz Zowczak², Olaf Czyż¹, Damian Kocłęga¹, Bogdan Antoszewski²

¹Faculty of Metals Engineering and Industrial Computer Science, AGH University of Science and Technology in Krakow, al. Mickiewicza 30, 30-059 Krakow, Poland;

²Kielce University of Technology, Faculty of Mechatronics and Machine Desing, 1000-lecia Państwa Polskiego 7, 25-314 Kielce, Poland

P.S.B.10. Corrosion resistance of high Al and MgSi Zinc alloys for batch hot dip galvanizing

Mariola Saternus, Henryk Kania

Silesian University of Technology, Gliwice, Poland

P.S.B.11. The properties of ZnAlMgSi alloys for batch hot dip galvanizing

Henryk Kania, Mariola Saternus

Silesian University of Technology, Gliwice, Poland

P.S.B.12. The effect of a single shock processing on mechanical properties Al-Li 2099 (T-83) alloy

Oleksandr Filatov¹, Sergii Bogdanov¹, Vladimir Mazanko¹, Sergii Vorona¹, Ievgen Bogdanov¹, Sergii Kotrechko¹, Oleksandra Zatsarna¹, Łukasz Kaczmarek², Marek Klich²

¹G. V. Kurdyumov Institute for Metal Physics of the N.A.S. of Ukraine, Kiev, Ukraine; ²Lodz University of Technology, Faculty of Mechanical Engineering, Lodz, Poland

P.S.B.13. Influence of the impurity segregation on the adhesion properties of Al₂O₃/Ti₃Al interface

Alexander V. Bakulin^{1,2}, Artem A. Fuks², Svetlana E. Kulkova^{1,2}

¹Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia; ²Tomsk State University, Tomsk, Russia

- P.S.B.14. **Localized plastic deformation autowaves under tension of nitinol specimens**
Lidiya V. Danilova, Vadim V. Gorbatenko, Vladimir I. Danilov
Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia
- P.S.B.15. **DMA and TMA study of glass transition in Cu-Zr based bulk metallic glasses**
Viktor Soprunyuk¹, Florian Spieckermann², Baran Sarac¹, Amir Rezvan¹, Wilfried Schranz³ and Jürgen Eckert^{1,2};
¹Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben 8700, Austria; ²Chair of Materials Physics, University of Leoben, Leoben 8700, Austria; ³University of Vienna, Faculty of Physics, Physics of Functional Materials, Boltzmannngasse 5, A-1090 Wien, Austria
- P.S.B.16. **High-temperature phase relations in the Bi₂O₃-Mn₂O₃-M₂O₃ (M=Fe, Ga, Al) pseudo-ternary systems**
Srečo Davor Škapin¹, Amalija Golobič², Danilo Suvorov¹, Matjaž Spreitzer¹
¹Advanced Materials department, Jožef Stefan Institute, Jamova 39, 1000 Ljubljana, Slovenia; ²Faculty of Chemistry and Chemical Technology, Večna pot 113, 1000 Ljubljana, Slovenia
- P.S.B.17. **Low-temperature superplasticity of Ek61 and Ep975 superalloys with ultrafine-grained structure**
Vener Valitov, Elvina Galieva, Aerika Bikmukhametova
Institute for Metals Superplasticity Problems of Russian Academy of Sciences, Ufa, Russia
- P.S.B.18. **Mechanical and microstructural properties of TRIP-matrix composites studied by neutron scattering methods**
Gizo Bokuchava¹, Yulia Gorshkova¹, Igor Papushkin¹, Sergey Guk²
¹Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia; ²Institute for Metal Forming, TU Bergakademie Freiberg, Freiberg, Germany

YUCOMAT SYMPOSIUM C: NANOSTRUCTURED MATERIALS**P.S.C.1. Microstructure of Half-Heusler thermoelectric alloys after severe plastic deformation**Jiří Buršík¹, Gerda Rogl², Peter Franz Rogl²¹Institute of Physics of Materials of the Czech Academy of Sciences, Žitkova 22, CZ-61662 Brno, Czech Republic; ²Institute of Materials Chemistry, University of Vienna, Währingerstrasse 42, A-1090 Wien, Austria**P.S.C.2. Multiple twinning and stacking faults in silver dendrites**Vuk V. Radmilović¹, Josh Kacher², Evica R. Ivanović³, Andrew M. Minor⁴ and Velimir R. Radmilović^{1,5}¹Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, P.O.B. 3503, 11120 Belgrade, Serbia; ²Department of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA 30332, United States; ³Faculty of Agriculture, University of Belgrade, Nemanjina 6, Zemun, 11000 Belgrade, Serbia; ⁴Department of Materials Science and Engineering, University of California, Berkeley, and National Center for Electron Microscopy, Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, CA 94720, United States; ⁵Serbian Academy of Sciences and Arts, Knez Mihailova 35, 11000, Belgrade, Serbia**P.S.C.3. HPHT synthesis of nano-sized diamonds doped with Si or ¹³C for biological and medical applications**Viatcheslav Agafonov¹, Valery Davydov², Ludmila Kulikova², Rustem Uzbekov³, Taras Plakhotnik⁴¹GREMAN, University of Tours, Tours, France; ²L.F. Vereshchagin Institute for High Pressure Physics, RAN, Troitsk, Moscow, Russia; ³Laboratory of Cell biology and Electron microscopy, University of Tours, Tours, France; ⁴School of Mathematics and Physics, the University of Queensland, Queensland, Australia**P.S.C.4. Oxygen storage capacity versus catalytic activity of ceria–zirconia solid solutions in CO and HCl oxidation**Igor Đerd¹, Yu Sun^{2,3}, Chenwei Li^{2,3}, Omeir Khalid², Pascal Cop², Joachim Sann², Tim Weber², Sebastian Werner², Kevin Turke², Yanglong Guo³, Bernd M. Smarsly² and Herbert Over²¹Department of Chemistry, Josip Juraj Strossmayer University of Osijek, Cara Hadrijana 8/A, 31000 Osijek, Croatia; ²Physikalisch-Chemisches Institut, Justus-Liebig-Universität, Heinrich-Buff-Ring 17, 35392 Gießen, Germany; ³Key Laboratory for Advanced Materials, Research Institute of Industrial Catalysis, School of Chemistry and Molecular Engineering, East China University of Science and Technology, Shanghai 200237, PR China

- P.S.C.5. **Structure, morphology and photocatalytic properties of $\text{Co}_x\text{Mg}_{1-x}\text{Fe}_2\text{O}_4$ ($0 < x < 1$) spinel ferrites obtained by sol-gel synthesis**
Zorka Z. Vasiljević¹, Milena P. Dojčinović², Vera P. Pavlović³, Jelena Vujančević¹, Nenad B. Tadić³, Maria Vesna Nikolić²
¹Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, Serbia, ²Institute for Multidisciplinary Research, University of Belgrade, Serbia, ³Faculty of Mechanical Engineering, University of Belgrade, Serbia, ⁴Faculty of Physics, University of Belgrade, Serbia
- P.S.C.6. **High-performance supercapacitors based on core-shell structured carbon fibers@spinel oxide composites**
Daniel M. Mijailović¹, Vuk V. Radmilović², Uroš Č. Lačnjevac³, Dušica B. Stojanović², Vladimir D. Jović¹, Velimir R. Radmilović^{2,3}, Petar S. Uskoković²
¹University of Belgrade, Innovation Center, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120, Belgrade, Serbia; ²University of Belgrade, Institute for Multidisciplinary Research, Kneza Višeslava 1, 11030 Belgrade, Serbia; ³University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120, Belgrade, Serbia; ⁴Serbian Academy of Sciences and Arts, Knez Mihailova 35, 11000 Belgrade, Serbia
- P.S.C.7. **Citrate assisted solvothermal synthesis of $\beta\text{-NaYF}_4$: Yb, Er up-converting nanoparticles**
Ivana Dinić¹, Marina Vuković¹, Predrag Vulić², Marko Nikolić³, Olivera Milošević⁴ and Lidija Mančić⁴
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- P.S.C.8. **Effect of rare earth elements (Eu^{3+} , Sm^{3+} , $\text{Yb}^{3+}/\text{Er}^{3+}$) doping on luminescence properties of Y_2MoO_6**
Nadežda Stanković¹, Nina Daneu², Marko Nikolić³, Branko Matović¹
¹Vinča Institute of Nuclear Science, Belgrade, Serbia; ²Jožef Stefan Institute, Ljubljana, Slovenia; ³Institute of Physics Belgrade, Belgrade, Serbia
- P.S.C.9. **The effect of pH on visible-light photocatalytic properties of pseudobrookite nanoparticles**
Zorka Z. Vasiljević¹, Milena P. Dojčinović², Jelena Vujančević¹, Nenad B. Tadić³, Maria Vesna Nikolić²
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- P.S.C.10. **Ion-irradiation of ZrNb nanoscale multilayers**
Miroslav Karlík^{1,2}, Nabil Daghbouj³, Jan Lörinčík⁴, Tomáš Polcar³, Mauro Callisti⁵, Vladimír Havránek⁶
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- P.S.C.11. **Orientation dependence of microstructure formation in Cu-8% at. Al single crystals**
Dorota Moszczyńska¹, Bogusława Adamczyk-Cieślak¹, Milena Koralnik¹, Tomasz Tokarski², Jarosław Mizera¹
¹Warsaw University of Technology, Materials Science and Engineering Faculty, Warsaw, Poland; ²Academic Centre for Materials and Nanotechnology, AGH-University of Science and Technology, Cracow, Poland
- P.S.C.12. **Utilizing ion beam irradiation for structural modification of 12-tungstophosphoric acid**
Željko Mravik^{1,2}, Danica Bajuk-Bogdanović³, Ana Mraković⁴, Ivan Trajčić¹, Ljubiša Vukosavljević¹, Davor Peruško⁵, Zoran Jovanović^{1,2}
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- P.S.C.13. **Rapid reaction of Mo₂N nanowires with Pb²⁺ ions in water and its use for production of PbMoO₄ nanoparticles**
Aleš Mrzel¹, Damjan Vengust¹, Matejka Podlogar^{1,2}, Mojca Vilfan¹
¹J. Stefan Institute, Jamova 39, 1000, Ljubljana, Slovenia; ²National Institute of Chemistry, Hajdrihova 19, 1000, Ljubljana, Slovenia

P.S.C.14. **Consequences of confinement conditions on absorption in molecular nanofilms**

Ana J. Šetrajić–Tomić¹, Matilda Vojnović¹, Igor J. Šetrajić², Siniša M. Vučenović³,
Jovan P. Šetrajić^{4,5}

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POSTER SESSION III

Thursday, September 5, 2019, 20⁰⁰-22⁰⁰

Chairpersons: Ivana Dinić and Veljko Đokić

YUCOMAT SYMPOSIUM C: NANOSTRUCTURED MATERIALS

P.S.C.15. Structural investigations of alloyed Al with TiCN nanopowder under load and tensile

Stefan Valkov¹, Rumiana Lazarova², Julia Goschkova³, Gizo Bokuchava³, Peter Petrov¹

¹E. Djakov Institute of electronics, Bulgarian Academy of Sciences, 72 Tzarigradsko chaussee, 1784 Sofia, Bulgaria; ²Institute of Metal Science, Equipment and Technologies with Hydro and Aerodynamics center, Bulgarian Academy of Sciences, 67 Shipchenski Prohod blvd., 1574 Sofia, Bulgaria; ³Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, 6 Joliot-Curie Str., 141980 Dubna, Russia

P.S.C.16. Cubic silver nanoparticles fixed on TiO₂ nanotubes as a simple and efficient substrates for surface enhanced Raman scattering

Robert Ambroziak¹, Marcin Hołdyński², Tomasz Płociński³, Marcin Pisarek², Andrzej Kudelski¹

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P.S.C.17. Formation of borides, silicides and boride-silicide powder composite materials by mechanical alloying

Marina Vasylykivska, Izabella Timofeeva

Frantsevich Institute for Problems of Materials Science of National Academy of Sciences of Ukraine, Kiev, Ukraine

P.S.C.18. Preparation of polylactide-kaolinite nanocomposite

András Kovács¹, Éva Makó¹, Norbert Miskolczi²

¹Institute of Materials Engineering, University of Pannonia, Veszprém, Hungary; ²Institute of Chemical and Process Engineering, University of Pannonia, Veszprém, Hungary

YUCOMAT SYMPOSIUM D: ECO-MATERIALS AND ECO-TECHNOLOGIES**P.S.D.1. Identification and evaluation of changes and migration mechanisms of petroleum pollutant in the environment using the alkane fraction biological markers (river Vrbas, Bosnia and Herzegovina)**

Ivan Samelak¹, Milica Balaban¹, Mališa Antić², Tatjana Šolević-Knudsen³ and Branimir Jovančičević⁴

¹Faculty of Natural Sciences and Mathematics, University of Banja Luka, Mladena Stojanovića 2, 78000 Banja Luka, Bosnia and Herzegovina; ²University in Belgrade, Faculty of Agriculture, Nemanjina 6, 11080, Belgrade, Serbia; ³Center of Chemistry, Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Njegoševa 12, 11001 Belgrade, Serbia; ⁴University of Belgrade, Faculty of Chemistry, Studentski trg 12-16. 11001 Belgrade, Serbia

P.S.D.2. Potential application of activated carbonaceous materials for removing residual contaminants from complex biochemical and pharmacological mixtures

Branka Kaluđerović, Đuro Čokeša, Jelena Hranisavljević, Vesna Mandušić
INN Vinča, University of Belgrade, INN Vinča, P.O.Box 522, 11001 Belgrade, Serbia

P.S.D.3. The influence of modification and the particle size of the montmorillonite on the hydrolytic stability of urea-formaldehyde composite

Suzana Samaržija-Jovanović¹, Branka Petković¹, Tijana Jovanović², Vojislav Jovanović¹, Gordana Marković³, Milena Marinović-Cincović⁴, Jaroslava Budinski-Simendić⁵

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P.S.D.4. Group chase and escape in the presence of obstacles

Julija R. Šćepanović, Aleksandar Karač, Zorica M. Jakšić, Ljuba Budinski-Petković, Slobodan B. Vrhovac

Scientific Computing Laboratory, Center for the Study of Complex Systems, Institute of Physics Belgrade, University of Belgrade, Belgrade, Serbia

P.S.D.5. Regulation of lipid production of *Torulasporea globosa* yeast, cultivated in the medium with ethanol as a carbon source

Nadezda N. Stepanova¹, Grigorii I. Morgunov², and Svetlana V. Kamzolova¹

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YUCOMAT SYMPOSIUM E: BIOMATERIALS

P.S.E.1. **Development of a 3D system for cancer cell studies**

Jasmina Stojkovska^{1,2}, Milena Milivojević³, Milena Stevanović^{3,4,5}, Bojana Obradović¹
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P.S.E.2. **From wood to bone: how to convert wood structures into biomimetic hydroxyapatite scaffolds**

Miklós Jakab, Margit Enisz-Bódogh
University of Pannonia, Institute of Materials Engineering, Veszprém, Hungary

P.S.E.3. **Functionalization and biomimetics of insect photonic structures**

Danica Pavlović¹, Dejan Pantelić¹, Branislav Salatić¹, Dušan Grujić¹, Svetlana Savić Šević¹, Ljubiša Tomić², Goran Dikić³, Branislav Jelenković¹
¹Institute of Physics Belgrade, University of Belgrade Pregrevica 118, 11080 Zemun, Belgrade, Serbia; ²Military Technical Institute, Ratka Resanovića 1, 11000 Belgrade, Serbia; ³The School of Electrical and Computer Engineering of Applied Studies, Vojvode Stepe 283, 11010 Belgrade, Serbia

P.S.E.4. **Evaluation of colour modifications and surface morphology of dental composites**

Marioara Moldovan¹, Doina Prodan¹, Codruta Sarosi¹, George Popescu², Amalia-Ionela Mazilu (Moldovan)^{2*}, Violeta Popescu²
¹Babes Bolyai University, “Raluca Ripan” Chemistry Research Institute, Department of Polymer Composites, Cluj-Napoca, Romania; ²Physics and Chemistry Department, Technical University of Cluj-Napoca, Cluj-Napoca, Romania

P.S.E.5. **The morphology studies of different nanohybrid dental composites**

Codruta Sarosi¹, Ioan Petean², Doina Prodan¹, Cristina Prejmorean¹, Marioara Moldovan¹
¹Babes Bolyai University, Institute of Chemistry Raluca Ripan, Cluj-Napoca, Romania; ²Babes Bolyai University, Faculty of Chemistry and Chemical Engineering, Cluj-Napoca, Romania

P.S.E.6. **The identification of branched-chain amino acids and the testing of the antibacterial effect of whey and soy protein powders**

Violeta Popescu¹, Marioara Moldovan², Codruța Sarosi², Mihaela Vlassa², George Liviu Popescu¹, Diana Elena David¹, Ileana Cojocaru³, Doina Prodan²

¹Physics and Chemistry Department, Technical University of Cluj-Napoca, Cluj-Napoca, Romania; ²Babeș Bolyai University, “Raluca Ripan“ Chemistry Research Institute, Department of Polymer Composites, Cluj-Napoca, Romania; ³University of Craiova, Craiova, Romania

P.S.E.7. **Comparison of the carbon content in various biomasses based on calorimetric tests**

Hadi Waisi^{1,2}, Vladimir Dodevski³, Bojan Janković¹, Marija Janković⁴, Nikola Živković⁵, Blažo Lalević⁶, Miloš Marinković⁷

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P.S.E.8. **Hybrid bio-nanoentities with potential applications in biomedical field**

Yulia Gorshkova¹, Marcela Elisabeta Barbinta-Patrascu², Gizo Bokuchava¹, Nicoleta Badea³, Camelia Ungureanu³, Andrada Lazea-Stoyanova⁴, Angela Vlad⁴, Vitaly Turchenko¹, Alexander Zhigunov⁵, Ewa Juszynska-Galazka⁶

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SYMPOSIUM F: WRTCS**P.S.F.1. Sintering heating and cooling rates as a method of modifying electrical properties of BiFeO₃ ceramics**

Nikola Ilić¹, Jelena Bobić¹, Mirjana Vijatović Petrović¹, Adis Džunuzović¹, Biljana Stojanović²

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²Academy of Engineering Sciences of Serbia, Belgrade, Serbia

P.S.F.2. Nickel ferrite/zinc ferrite nanopowder with core/shell structure: magnetic properties and sinterability

Ivan Stijepović, Marija Milanović, Andrea Nesterović, Jelena Vukmirović, Vladimir Srdić

University of Novi Sad, Faculty of Technology, Department of Materials Engineering, Novi Sad, Serbia

P.S.F.3. Sintering of scaffolds based on doped hydroxyapatite powders

Željko Radovanović¹, Đorđe Veljović², Rada Petrović², Đorđe Janačković²

¹University of Belgrade, Innovation Center of the Faculty of Technology and Metallurgy, Belgrade, Serbia; ²University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia

P.S.F.4. Two-step sintered monophasic HAp dental inserts as materials for dentin replacement

Giuma Ayoub¹, Maja Ležaja Zebić², Vesna Miletić², Rada Petrović¹, Đorđe Veljović¹, Đorđe Janačković¹

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P.S.F.5. Surface-selective laser sintering of ultrafine polymer powders. A new approach to high resolution three-dimensional printing

Svetlana A. Minaeva¹, Maria A. Syachina¹, Anton V. Mironov¹, Nikita V. Minaev¹, Eduards Krumins², Steven M. Howdle², Vladimir K. Popov¹

¹FSRC “Crystallography and Photonics” RAS, Troitsk, Moscow, Russia; ²School of Chemistry, University of Nottingham University Park, Nottingham, United Kingdom

P.S.F.6. Influence of 3D-printing additive to freeze casting structure

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P.S.F.1.

Sintering heating and cooling rates as a method of modifying electrical properties of BiFeO₃ ceramics

Nikola Ilić¹, Jelena Bobić¹, Mirjana Vijatović Petrović¹, Adis Džunuzović¹, Biljana Stojanović²
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Bismut ferrite powder was prepared by sol-gel method. It was calcined at 600 °C and then milled in order to break agglomerates and eventually obtain ceramic samples of high density. Such way treated powders were pressed uniaxially under 196 MPa and sintered at 800 °C. Conventionally sintered samples were heated by the rate of 10 °C/min and furnace cooled. Other samples were inserted into preheated oven and/or taken out from the hot oven directly to air or water at room temperature. Influence of heating and cooling rates on structure, microstructure and electrical properties were studied. Reducing the processing time in temperature interval between 447 °C and 767 °C prevents formation of secondary phases, but the effect on phase composition is not large. It is significantly easier to notice the effect on electrical properties.

P.S.F.2.

Nickel ferrite/zinc ferrite nanopowder with core/shell structure: magnetic properties and sinterability

Ivan Stijepović, Marija Milanović, Andrea Nesterović, Jelena Vukmirović, Vladimir Srdić
University of Novi Sad, Faculty of Technology, Department of Materials Engineering, Novi Sad, Serbia

Nickel ferrite/zinc ferrite nanocomposite powder with core/shell structure was synthesised using co-precipitation and hydrothermal synthesis in a two-step procedure. Core particles of NiFe₂O₄ have size about 100 nm while shell ZnFe₂O₄ particles are in the range of few nanometres. As-obtained powders were well crystalline with crystallites at the nanometre scale. XRD and Raman showed single spinel phases. However, they could not confirm phase separation due to the structural similarity between nickel and zinc ferrite. On the other hand, core/shell structure was confirmed by TEM/EDS. There was a clear distinction between different ferrite phases at the core/shell boundary. Magnetic properties were significantly influenced by the synthesis procedure. Separate ferrite particles were paramagnetic. However, after mixing and assembling of the core/shell structure powders became superparamagnetic with very thin hysteresis loop. Sinterability of the nanopowder was examined at different temperatures to obtain high density ceramics. Densities were measured both geometrically and by Archimedes' method and showed values above 95% TD.