TWENTY-THIRD YOUNG RESEARCHERS' CONFERENCE

MATERIALS SCIENCE AND ENGINEERING

December 3 – 5, 2025, Belgrade, Serbia

Program and the Book of Abstracts

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&
Institute of Technical Sciences of SASA

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Aim of the Conference

Main aim of the conference is to enable young researchers (post-graduate, master or doctoral student, or a PhD holder younger than 35) working in the field of materials science and engineering, to meet their colleagues and exchange experiences about their research.

Topics

Biomaterials
Environmental science
Materials for high-technology applications
Materials for new generation solar cells
Nanostructured materials
New synthesis and processing methods
Theoretical modelling of materials

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Results of the Conference

Beside printed «Program and the Book of Abstracts», which is disseminated to all conference participants, selected and awarded peer-reviewed papers will be published in journal "Tehnika – Novi Materijali". The best presented papers, suggested by Session Chairpersons and selected by Awards Committee, will be proclaimed at the Closing Ceremony. Part of the award is free-of-charge conference fee at YUCOMAT 2026.

Sponsors

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Programme
Twenty-Third Young Researchers Conference
Materials Science and Engineering

Wednesday, December 3rd, 2025

09.15 – 09.30 Opening Ceremony
Dr. Ivana Dinić, Dr. Sonja Jovanović, Prof. Dr. Đorđe Veljović, Vice-presidents of 23YRC Sientific committee

09.30 – 11.00 1st Session – Biomaterials I
Chairpersons: Dr. Ivana Drvenica and Teodora Jakovljević

09.30 – 09.45 Hybrid 3D-printed scaffolds containing multi-doped mesoporous bioactive glass as drug-releasing components for bone regeneration
Teodora Jakovljević[1], Tamara Matić[2], Vukašin Ugrinović[1], Miloš Papić[3], Biljana Ljujić[3], Sanja Petrović[4], Tamara Vlajić Tovilović[4], Milena Radunović[4], Đorđe Veljović[2]
[1]Innovation Center of the Faculty of Technology and Metallurgy Ltd., Karnegijeva 4, 11000 Belgrade, Serbia, [2]Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11000 Belgrade, Serbia, [3]Faculty of Medical Sciences, University of Kragujevac, Svetozara Markovića 69, 34000 Kragujevac, Serbia, [4]Faculty of Dental Medicine, University of Belgrade, Rankeova 4, 11000 Belgrade, Serbia

09.45 – 10.00 Optimization of the microemulsion sol-gel method for controlling the composition of mesoporous bioactive glass
Katarina Vreta[1], Tamara Matić[1], Teodora Jakovljević[2], Đorđe Janaćković[1], Đorđe Veljović[1], Rada Petrović[1]
[1]Faculty of Technology and Metallurgy, University of Belgrade, [2]Innovation Center of the Faculty of Technology and Metallurgy, Ltd, Belgrade, Serbia

10.00 – 10.15 A 3D osteosarcoma model as a valuable tool for anticancer drug testing

Marija Pavlović[1], Ivana Banićević[1], Milena Milivojević[2], Radmila Janković[3], Jasmina Stojkovska[1], Bojana Obradović[1]

[1]University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia, [2]University of Belgrade, Institute of Molecular Genetics and Genetic Engineering, Belgrade, Serbia, [3]University of Belgrade, Faculty of Medicine, Belgrade, Serbia

10.15 – 10.30 Development of osteosarcoma 3D *in vitro* model based on alginate and bioactive glasses

Mia Milošević[1,2], Marta Miola[3], Francesco Baino[3], Enrica Verné[3], Radmila Janković[4], Jasmina Stojkovska[1], Bojana Obradović[1]

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10.30 – 10.45 Foam-replicated 1d bioactive glass scaffolds with interconnected porosity for bone repair

Elnaz Khorasani[1], Maria Erato Pianou[2], Bojana Obradović[1], Enrica Verné[2], Francesco Baino[2]

[1]University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia, [2]Department of Applied Science and Technology (DISAT), Institute of Materials Physics and Engineering, Politecnico di Torino, Italy

10.45 – 11.00 Vat photopolymerization of polylactic acid/hydroxyapatite scaffolds with a unique combination of structural and compositional gradient for multiple-tissue regeneration

Zahid Abbas[1], Jeevankumar Pallagani[1], Annalisa La Gatta[2], Chiara Schiraldi[2], Paola Palmero[1] and Bartolomeo Coppola[1]

[1]Politecnico di Torino, Department of Applied Science and Technology, INSTM R.U. Lince Laboratory, Corso Duca Degli Abruzzi, 24, Italy, [2]Department of Experimental Medicine, Section of Biotechnology, University of Campania "Luigi Vanvitelli", 80138 Naples, Italy

11.00 – 11.15 Break

11.15 – 13.15 2nd Session – Biomaterials II
Chairpersons: Prof. Dr. Bojana Obradović and Katarzyna Pastuszak

11.15 – 11.30 Biocompatible gold–titanium oxide nanomotors promote ROS-driven cell death in A375 human melanoma cells
Radoš Stefanović[1], Radovan Dojčilović[2], Danijela Danilović[2], Jelena Pajović[3], Vladimir Đoković[2], Tamara Đukić[4], Vesna Ilić[1], Biljana Ristić[1]
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11.30 – 11.45 Non-specific cell labeling using $NaY_{1-x}Gd_xF_4$:Yb/Er up-converting nanoparticles obtained through solvothermal synthesis
Miljana Piljević[1], Ivana Dinić[2], Lidija Mancic[2], Marina Vuković[2], Miloš Tomić[2], Maria Eugenia Rabanal[3], Miloš Lazarević[4], Mihailo D. Rabasović[1]
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11.45 – 12.00 Influence of hydrothermal aging on biological properties of the light-cured, CAD-CAM milled and 3D printed dental composites - In vitro study
Nikola Živković[1], Miloš Lazarević[2], Ljiljana Djukić[3,] Aleksandar Jakovljević[4], Ivana Dinić[5], Mina Perić[6], Aleksandra Milić Lemić[7]
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12.00 – 12.15 The LL-37 peptide influence on *Legionella longbeachae* model membranes

Katarzyna Pastuszak[1], Małgorzata Jurak[1], Marta Palusińska-Szysz[2]
[1]Department of Interfacial Phenomena, Institute of Chemical Sciences, Faculty of Chemistry, Maria Curie-Skłodowska University, Maria Curie-Skłodowska Sq. 3, 20-031 Lublin, Poland, [2]Department of Genetics and Microbiology, Institute of Biological Sciences, Faculty of Biology and Biotechnology, Maria Curie-Skłodowska University, Akademicka 19, 20-033 Lublin, Poland

12.15 – 12.30 Antimicrobial activity of composite materials from the calcium-phosphate group with chitosan

Jelisaveta Todorov[1], Milena Pantić[1], Miljana Mirković[2]
[1]University of Belgrade, Institute for Food Technology and Biochemistry – Faculty of Agriculture, 11080 Belgrade, Serbia, [2]Department of Materials, "VINČA" Institute of Nuclear Sciences—National Institute of the Republic of Serbia, University of Belgrade, Mike Petrovica Alasa 12-14, 11000 Belgrade, Serbia

12.30 – 12.45 Surface-modified metallic biomaterials as systems for localized anticancer effects

Evelina Herendija[1], Milica Jakšić Karišik[2], Marijana R. Pantović Pavlović[3], Miroslav M. Pavlović[3], Olivera Mitrović-Ajtić[4], Nenad L. Ignjatović[5], Miloš Lazarević[2]
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12.45 – 13.00 The influence of siloxane adsorption layers on the hydrophilicity of the Ti-6Al-4V (ELI) surface

Katarzyna Wojdat[1], Joanna Krawczyk[1], Joanna Karasiewicz[2]
[1]Department of Interfacial Phenomena, Institute of Chemical Sciences, Faculty of Chemistry, Maria Curie-Skłodowska University, Maria Curie-Skłodowska Sq. 3, 20-031 Lublin, Poland, [2]Department of Chemistry and Technology of Silicon Compounds, Faculty of Chemistry, Adam Mickiewicz University, Uniwersytetu Poznańskiego 8, 61-614 Poznań, Poland

13.00 – 13.15 Green chemistry unveiled: chitin and chitosan from organic mushroom waste for biomedical applications
Issam Thamer[1], Magdalena Mazurek-Budzyńska[2], Vignesh Kumaravel[1].
[1]International Centre for Research on Innovative Biobased Materials (ICRI-BioM) – International Research Agenda, Lodz University of Technology, Żeromskiego 116, Lodz 90-924, Poland, [2]Chair of Polymer Chemistry and Technology, Faculty of Chemistry, Warsaw University of Technology, Noakowskiego 3, 00-664 Warsaw, Poland

13.15 – 14.15 Lunch break

14.15 – 16.00 3rd Session – Environmental Materials I
Chairpersons: Prof. Dr. Ljiljana Damjanović Vasilić and Maša Vračević

14.15 – 14.30 Effect of catalyst loading on visible-light degradation of Acid Orange 7 by microwave-synthesized $BiVO_4$ nanoparticles
Nataša Tot[1], Bojana Vasiljević[1], Dušan Mijin[2], Vesna Despotović[3], Jovana Prekodravac Filipović[1], Dragana Marinković[1]
[1]Vinča Institute of Nuclear Sciences, National Institute of the Republic of Serbia, University of Belgrade, P. O. Box 522, 11001 Belgrade, Serbia, [2]Faculty of Technology and Metallurgy, University of Belgrade, Department of Organic Chemistry, Karnegijeva 4, 11000, Belgrade, Serbia, [3]University of Novi Sad Faculty of Sciences, Department of Chemistry, Biochemistry and Environmental Protection, Trg Dositeja Obradovića 3, 21000 Novi Sad, Serbia

14.30 – 14.45 Functional properties of novel self-cleaning materials: multi-analytical in situ and laboratory approach
Marija Kovač[1], Vesna Miljić[1], Rajko Travica[2], Bojan Miljević[1], Snežana Vučetić[1]
[1]University of Novi Sad - Faculty of Technology, Bul. cara Lazara 1, 21000 Novi Sad, Serbia, [2]Building company, GP HGP, Put Šajkaškog odreda 8a, 21 000 Novi Sad

14.45 – 15.00 Ion exchange membranes for selective separation of metal ions from waste battery solutions
Maša Vračevič[1,2], Robert Dominko[1,2]
[1]National institute of Chemistry, Department of Materials Chemistry, D10, Hajdrihova 19, SI-1000, [2]University of Ljubljana, Faculty of Chemistry and Chemical Technology, Večna pot 113, SI-1000

15.00 – 15.15 Evaluation of silicone sheets and silicone foam as biomimetic materials for passive sampling of hydrophobic organic compounds in water
Ivona Sofronievska[1], Marina Stefova[1], Elisa Rojo-Nieto[2]
[1]Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril & Methodius University, Skopje, Macedonia, [2]Department of Exposure Science, Helmholtz Centre for Environmental Research – UFZ, Leipzig, Germany

15.15 – 15.30 A green and rapid dispersive liquid–liquid microextraction of ^{137}Cs using deep eutectic solvents
Iva Belovezhdova[1,4], Boyan Todorov [1,4], Alina Kalyniukova[2], Vasil Andruch[3], Tanya Yordanova[1]
[1]Department of Analytical Chemistry, Faculty of Chemistry and Pharmacy, Sofia University "St. Kliment Ohridski", 1164 Sofia, Bulgaria, [2]Faculty of Forestry and Wood Sciences, Czech University of Life Sciences Prague, 165 00 Prague, Suchdol, Czech Republic, [3]Department of Analytical Chemistry, Institute of Chemistry, Faculty of Science, P. J. Šafárik University, 041 80 Košice, Slovakia, [4]Clean & Circle Center of Competence, Sofia University "St. Kliment Ohridski", 1164 Sofia, Bulgaria

15.30 – 15.45 Synthesis and characterization of bioplastics based on corn starch as a sustainable material
Siniša Mladenović, Snežana Ilić-Stojanović, Milena Nikodijević, Suzana Cakić
University of Niš, Faculty of Tehnology in Leskovac, Bulevar oslobođenja 124, 16000 Leskovac, Serbia

15.45 – 16.00 Investigation on the ferroelectric and photocatalytic properties of lead-free high entropy oxide
Kevin Varghese Alex[1], Andraž Bradeško[2], Marjeta Maček Kržmanc[3], Slavko Bernik[1], Belisa Alcantara Marinho[1], Miran Čeh[1]
[1]*Department for Nanostructured Materials, Jožef Stefan Institute, Jamova 39, 1000, Ljubljana, Slovenia,* [2]*Electronic Ceramics Department, Jožef Stefan Institute, Jamova 39, 1000, Ljubljana, Slovenia,* [3]*Advanced Materials Department, Jožef Stefan Institute, Jamova 39, 1000, Ljubljana, Slovenia*

16.00 – 16.15 Break

16.15 – 17.45 4th Session – Environmental Materials II
Chairpersons: Dr. Konrad Terpiłowski and Sara Lukovac

16.15 – 16.30 Zn-ZSM5 zeolite oxide coatings with adsorption properties on aluminum
Marko Dević, Nenad Tadić, Rastko Vasilić
University of Belgrade, Faculty of Physics, Studentski trg 12-16, 11000 Belgrade, Serbia

16.30 – 16.45 Assessment of mechanical and lechability properties of fly ash-based geopolymers loaded with flotation tailing, aluminum slag and spent grit
Sara Lukovac[1], Nebojša Tadić[2], Dijana Đurović[3], Irena Nikolić[2]
[1]Institute for interdisciplinary and multidisciplinary studies, University of Montenegro, Cetinjska br. 2, Podgorica, Montenegro, [2]Faculty of Metallurgy and Technology, University of Montenegro, Džordža Vašingtona bb, Podgorica, Montenegro, [3]Centre for Ecotoxicological Research, Bulevar Šarla De Gola 2, Podgorica, Montenegro

16.45 – 17.00 Gold(III) recovery from aqueous chloride solutions
Karolina Zinkowska, Grzegorz Wójcik
Department of Inorganic Chemistry, Institute of Chemical Sciences, Faculty of Chemistry, Maria Curie-Skłodowska University, Maria Curie-Skłodowska Sq. 2, 20-031 Lublin, Poland

17.00 – 17.15 Characterization and potential reuse of dust generated during PP and ABS plastic recycling
Benita Malinowska[1,2], Konrad Terpiłowski[2]
[1]Polska Korporacja Recyklingu sp. z o.o., Lublin, Poland, [2]Maria Curie-Sklodowska University, Department of Interfacial Phenomena, Lublin, Poland

17.15 – 17.30 Flotation-based separation and recycling of materials from cooling
Benita Malinowska[1], Konrad Terpiłowski[2], Michał Chodkowski[3]
[1]Polish Recycling Corporation Ltd., Lublin, Poland, [2]Maria Curie-Skłodowska University, Department of Interfacial Phenomena, Lublin, Poland, [3]Lublin University of Technology, Department of Technology and Processing of Polymers, Lublin, Poland

17.30 – 17.45 Smoke emission studies on glass/polyester laminates modified with bio-based flame retardant

Adriana Dowbysz[1], Mariola Samsonowicz[1], Bożena Kukfisz[2]
[1]Department of Chemistry, Biology and Biotechnology, Bialystok University of Technology, Wiejska 45E Street, 15-351 Bialystok, Poland, [2]Institute of Safety Engineering, Fire University, 01-629 Warsaw, Poland

Thursday, December 4h, 2025

09.30 – 11.15 5th Session – Materials for High Technology Application I
Chairpersons: Prof. Dr. Vuk Radmilović and Nemanja Latas

09.30 – 09.45 Investigation of quantitative damage and impurity depth profiles in the case of MgO crystals using the EBS/C technique

Marko Gloginjić[1], Marko Erich[1], Nikola Starčević[1], Stanko Aleksić[1], Michael Kokkoris[2], Stjepko Fazinić[3], Marko Karlušić[3], Nikita Kirilkin[4], Vladimir Skuratov[4], Srdjan Petrović[1]
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09.45 – 10.00 Interface-engineered STO thin films on silicon photocathodes for photoelectrochemical hydrogen evolution reaction

Darija Petković[1], Hsin-Chia Ho[2], Janez Kovač[3], Matjaž Spreitzer[2], Lucija Bučar[2], Sonja Jovanović[1], Damjan Vengust[2], Zoran Jovanović[1]
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10.00 – 10.15 Reference electrode design and understanding magnesium surface passivation in magnesium-sulfur batteries

Nemanja Latas[1,2], Olivera Lužanin[1], Sara Drvarič Talian[1], Robert Dominko[1,2,3], Alen Vizintin[1]

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10.15 – 10.30 Probing failure mechanisms in solid-state lithium batteries using an integrated micro-reference electrode

Jan Jerovšek[1,2], Sara Drvarič Talian[1], Robert Dominko[1,2]

[1]Department of Materials Chemistry, National Institute of Chemistry, Hajdrihova 19, 1000 Ljubljana, Slovenia, [2]Faculty of Chemistry and Chemical Technology, University of Ljubljana, Večna pot 113, 1000 Ljubljana, Slovenia

10.30 – 10.45 Insights into the operation of microporous carbon hosts in lithium-sulfur batteries

Ivan Dacrema[1,2], Sara Drvarič Talian[1], Robert Dominko[1,2]

[1]Department of Material Chemistry, National Institute of Chemistry, Hajdrihova 19, SI-1000 Ljubljana, Slovenia, [2]University of Ljubljana, Faculty of Chemistry and Chemical Technology, Večna pot 113, SI-1001 Ljubljana, Slovenia

10.45 – 11.00 Activity and stability analysis of pt-co nanoalloy fuel cell electrocatalyst supported on a hybrid $TiON_x$/GO substrate

Ante Matošin,[1,2] Primož Jovanovič,[1] Léonard Jean Moriau,[1] Francisco Ruiz Zepeda,[1,3] Marjan Bele,[1] Nejc Hodnik[1,3,4]

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11.00 – 11.15 Search for a storage phosphor based on YAP for emerging applcations

Yaroslav Zhydachevskyy[1], Vasyl Stasiv[1], Sergii Ubizskii[2], Oleksandr Poshyvak[2]

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11.15 – 11.30 Break

11.30 – 13.00 6th Session – Materials for High-technology Application II
Chairpersons: Prof. Dr. Rastko Vasilić and Jelena Gojgić

11.30 – 11.45 Electrodeposited Co-Sn alloys on Ni mesh as efficient cathodes for alkaline water electrolysis
Jelena D. Gojgić[1], Milena Šetka[2], Lazar Bijelić[2], Thomas Rauscher[3], Christian I. Bernäcker[3], Rastko Vasilić[4], Marjan Bele[2], Milutin Smiljanić[2], Nejc Hodnik[2], Vladimir D. Jović[1], Uroš Lačnjevac[1]
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11.45 – 12.00 Infrared thermography as a tool for assessment of thermal effects of RDX-based cast-cured thermobaric composite explosives
Katarina Nestorović[1,2], Danica Bajić[1,2], Mirjana Krstović[1,2], Mladen Timotijević[1], Radoslav Sirovatka[1], Dragan Knežević[1]
[1]Military Technical Institute, Belgrade, Serbia, [2]University of Defense, Military Academy, Belgrade, Serbia

12.00 – 12.15 Impact of accelerated aging under variable conditions on thermobaric PBX: a vacuum stability test study
Teodora Stančić[1], Mirjana Krstović[1,2], Danica Bajić[1,2]
[1]Military Technical Institute, Belgrade, Serbia, [2]University of Defense, Military Academy, Belgrade, Serbia

12.15 – 12.30 Monitoring stabilizer consumption in nitrocellulose-based propellants under accelerated aging conditions
Mirjana Krstović[1,2], Teodora Stančić[1]
[1]Military Technical Institute, Belgrade, Serbia, [2]University of Defense, Military Academy, Belgrade, Serbia

12.30 – 12.45 Sandwich composites reinforced with IF-WS_2 nanoparticles and graphene for EMS shielding
Sara Pepić, Olga Maraš, Jelena Gržetić, Jelena Marinković, Vesna Pejović, Radoslav Surla, Danica Bajić
Military Technical Institute, Ratka Resanovića 1, 11030 Belgrade, Serbia

12.45 – 13.00 Oxidation resistance and mechanical properties of hafnium carbonitride ceramics
Egor Kuzmenko
Tomsk Polytechnic University, Tomsk, Russia

13.00 – 14.00 Lunch break

14.00 – 15.30 7th Session – Materials for High-technology Application III and Materials for New Generation Solar Cells
Chairpersons: Dr. Marko Opačić and Tea Belojica

14.00 – 14.15 Raman signatures of CDW induced phonon folding in $TaTe_4$
Tea Belojica[1], Jovan Blagojević[1], Marko Opačić[1], Vladimir Damljanović[1], Jelena Pešić[1], Andrijana Šolajić[1], Cedomir Petrovic[2,3,4,5], Ana Milosavljević[1], Nenad Lazarević[1]
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14.15 – 14.30 Strain-tuned electron–phonon coupling in FeSe
Jovan Blagojević[1], Ana Milosavljević[1], Tea Belojica[1], Bojana Višić[1,2], Sanja Djurdjić Mijin[1,3], Marko Opačić[1], Andrijana Šolajić[1], Jelena Pešić[1], Novica Paunović[1], Milorad V. Milošević[4], Emil Božin[1,5], Aifeng Wang[5], Cedomir Petrovic[5,6,7,8], Rudi Hackl[9,10], Nenad Lazarević[1]
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Technische Universität München, 85748 Garching, Germany, [10]IFW Dresden, Helmholtzstrasse 20, 01069 Dresden, Germany

14.30 – 14.45 Evidence of temperature-induced lifshitz transition in topological material $ZrTe_5$

Ana Kanjevac[1], Ana Milosavljević[1], Jasmina Lazarević[1], Jovan Blagojević[1], Qiang Li [2,3], Emil S Božin[1,2], Nenad Lazarević[1]
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14.45 – 15.00 Raman study of magnetic transitions in Mn_3Sn_2

Gorana Madžarević[1], Ana Kanjevac[2], Jovan Blagojević[2], Jelena Pešić[2], Ana Milosavljević[2] , Nenad Lazarević[2]
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15.00 – 15.15 Crystal engineering and humidity response of metal halide perovskite $[Ph_3MeP]_2[CuBr_4]$ single crystals: A combined experimental and theoretical approach

Dinesh Kulhary, Arun Sharma
Department of Chemistry, Career Point University, Kota, India-325003

15.15 – 15.30 Comprehensive investigation of environmental degradation pathways and stability enhancement in $FAPbI_3$ perovskite films incorporating polyionic liquid (PIL) additives

Barbara Ramadani[1], Vladimir Rajić[1], Miloš Milović[1], Daniele Mantione[2], Milutin Ivanović[1]
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15.30 – 15.45 Break

15.45– 17.30 8th Session – New Synthesis and Processing Methods
Chairpersons: Dr. Sonja Jovanović and Aleksandar Petričević

15.45 – 16.00 Thin film heterostructures by reactive sputtering: from interface engineering to defect control
Jelena P. Georgijević[1], Nemanja Latas[2], Nikola Cvjetićanin[3], Dejan Pjević[1]
[1]Department of Atomic Physics, INS Vinča—National Institute of the Republic of Serbia, University of Belgrade, Mike Petrovića Alasa 12-14, 11351 Belgrade, Serbia, [2]Department of Materials Chemistry, National Institute of Chemistry, Ljubljana, Slovenia, [3]Faculty of Physical Chemistry, University of Belgrade, Serbia

16.00 – 16.15 Optimization of electrochemical deposition parameters for $nimoo_x$ electrocatalysts for the hydrogen evolution reaction
Aleksandar Petričević[1], Mila Krstajić Pajić [2], Piotr Zabinski[3], Dawid Kutyla[3], Mateus Marzec[4], Marta Gajewska[4], Nevenka Elezović[1], Vladimir Jović[1]
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16.15 – 16.30 Enhancing solubility of ellagic acid from raspberry biomass using ionic liquids
Jelena Jovanović[1], Dajana Lazarević[1], Nada Ćujić Nikolić[2], Petar Ristivojević[3], Tatjana Trtić-Petrović[1]
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16.30 – 16.45 Chemical characterization and cytotoxic profile of cocoa bean shell (*Theobroma cacao L.)* extract as a potential cosmetic ingredient
Sandra Rakin[1], Aleksandra Jovanović[1], Milica Jovanović Krivokuća[1], Maja Bulatović[2], Danica Zarić[3], Marica Rakin[2]
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8-3

Enhancing solubility of ellagic acid from raspberry biomass using ionic liquids

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Ellagic acid (EA) is a naturally occurring polyphenolic compound widely present in fruits and berries, recognized for its strong antioxidant, anticarcinogenic, and anti-inflammatory properties. It has been associated with potential protective effects against cancer, cardiovascular diseases, and neurodegenerative disorders. However, its broader therapeutic and commercial applications remain limited due to its poor water solubility and low bioavailability, which also make its extraction from plant materials and incorporation into functional formulations challenging. Traditional extraction methods employing organic solvents such as methanol, ethanol, or acetone are often inefficient, environmentally unsustainable, and inadequate for dissolving hydrophobic compounds like EA. In recent years, ionic liquids (ILs) and natural deep eutectic solvents (NADES) have emerged as promising green alternatives for the extraction of phenolic compounds. Composed of renewable and non-toxic components, these solvents offer tunable solvation capacity, enhanced extraction efficiency, and a low environmental impact, aligning closely with the principles of sustainable chemistry. In this study, whole raspberries and raspberry pomace were investigated as raw materials for ellagic acid extraction. Samples were lyophilized and extracted using 20% aqueous cholinium-based ionic liquids. Six cholinium chloride–based ionic liquids were applied as extraction media, while water and ethanol served as reference solvents for comparison. The obtained extracts were analyzed using HPLC-DAD. All tested ILs significantly enhanced the EA yield compared to water and ethanol, with cholinium acetate proving to be the most efficient, particularly in extractions from raspberry pomace. Furthermore, freeze-dried raspberry pomace yielded higher EA concentrations than whole raspberries, confirming that both solvent composition and biomass pretreatment are key factors of extraction efficiency. Overall, these results demonstrate that cholinium-based ionic liquids are highly effective green solvents for the sustainable extraction of ellagic acid and other phenolic compounds from raspberry-processing residues, thereby supporting the valorization of agro-industrial by-products and the advancement of environmentally responsible extraction technologies.

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