



ACADEMY OF SCIENCES AND ARTS OF THE REPUBLIC OF SRPSKA



**XV МЕЂУНАРОДНИ НАУЧНИ СКУП  
САВРЕМЕНИ МАТЕРИЈАЛИ 2022**

**ПРОГРАМ РАДА**

**XV INTERNATIONAL SCIENTIFIC CONFERENCE  
CONTEMPORARY MATERIALS 2022**

**PROGRAMME**

Бања Лука, 8 – 9. септембар 2022. године  
Banja Luka, September 8<sup>th</sup> to 9<sup>th</sup>, 2022





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## ОРГАНИЗАТОР НАУЧНОГ СКУПА

*Академија наука и умјетности Републике Српске*

## СУОРГАНИЗАТОРИ

*Alma Mater Europaea*

*Технички универзитет Габрово*

## ПОКРОВИТЕЉ НАУЧНОГ СКУПА

*Министарство за научнотехнолошки развој,  
високо образовање и информационо друштво*

## ОДРЖАВАЊЕ СКУПА СУ ПОМОГЛИ

*МХ Електропривреда Републике Српске  
Универзитетски Клинички центар Републике Српске  
Комора доктора медицине РС*

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Академик Рајко Кузмановић  
мр Срђан Рајчевић  
Академик Бранко Шкундрић  
Академик Неђо Ђурић  
Академик Есад Јакуповић  
Проф. др Илија Железаров  
Проф. др Лудвик Топлак  
Проф. др Зоран Рајилић  
Проф. др Владо Ђајић  
Проф. др Саша Вујновић

ORGANIZER OF THE CONFERENCE

*Academy of Sciences and Arts of the Republic of Srpska*

COORGANIZERS

*Alma Mater Europaea*

*Technical University of Gabrovo*

UNDER THE PATRONAGE OF

*Ministry for Scientific and Technological Development,  
Higher Education and Information Society*

THE SCIENTIFIC CONFERENCE HAS BEEN SUPPORTED BY

*Mixed Holding Power Utility of Republic of Srpska  
University Clinical Center of Republic of Srpska  
The Republic of Srpska Medical Association*

ORGANIZING COMMITTEE

Academician Dragoljub Mirjanić, president  
Academician Rajko Kuzmanović  
Srđan Rajčević, MSc  
Academician Branko Škundrić  
Academician Neđo Đurić  
Academician Esad Jakupović  
Prof. Iliya Zhelezarov, Ph.D.  
Prof. Ludvik Toplak, Ph.D.  
Prof. Zoran Rajilić, Ph.D.  
Prof. Vlado Đajić, Ph.D.  
Prof. Saša Vujnović, Ph.D.

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Академик Бранко Шкундрић (АНУРС)  
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Академик Есад Јакуповић (АНУРС)  
Академик Ростислав Андриевски (Русија)  
Академик Милан Дамњановић, САНУ (Србија)  
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Академик Стане Пејовник (Словенија)  
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Проф. др Јукио Косуги (Јапан)  
Проф. др Мартин Чаплин (Велика Британија)  
Проф. др Ђуро Коруга (Србија)  
Проф. др Лидија Матија (Србија)  
Проф. др Миомир Павловић (Источно Сарајево)  
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Проф. др Дубравка Марковић (Србија)



## SCIENTIFIC COMMITTEE

Academician Dragoljub Mirjanić (ASARS)  
Academician Branko Škundrić (ASARS)  
Academician Jovan Šetrajčić (ASARS)  
Academician Tomislav Pavlović (Serbia)  
Academician Neđo Đurić (ASARS)  
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Prof. Martin Chaplin, Ph.D. (Great Britain)  
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Prof. Miomir Pavlović, Ph.D. (East Sarajevo)  
Prof. Pero Dugić, Ph.D. (Banja Luka)  
Prof. Dubravka Marković, Ph.D. (Serbia)



*ЧЕТВРТАК, 8. СЕПТЕМБАР 2022. ГОДИНЕ*

- Долазак и смјештај пленарних предавача у хотелу „Босна” у Бањој Луци
- Долазак и смјештај учесника научног скупа који живе изван Бање Луке у хотелима по избору

*ПЕТАК, 9. СЕПТЕМБАР 2022. ГОДИНЕ*

- 08.30 Регистрација учесника научног скупа (АНУРС)  
09.00 Отварање конференције  
09.20 Пленарна предавања  
13.30 Постер презентације  
14.30 Дискусија  
Затварање конференције



*THURSDAY, SEPTEMBER 8, 2022*

- Arrival of the plenary speakers and accommodation in the hotel „Bosna” in Banja Luka
- Arrival of the participants and accommodation in the hotels optionally

*FRIDAY, SEPTEMBER 9, 2022*

- 08.30 Registration of the participants in the ASARS  
09.00 Opening of the Conference  
09.20 Plenary session  
13.30 Poster presentations  
14.30 Discussion  
Closing ceremony

*ПЕТАК, 9. СЕПТЕМБАР 2022. ГОДИНЕ*

*FRIDAY, SEPTEMBER 9, 2022*

СВЕЧАНО ОТВАРАЊЕ СКУПА

OPENING CEREMONY

(09.00 – 09.20)

- Скуп ће отворити и учеснике поздравити академик Рајко Кузмановић, председник АНУРС-а  
Academician Rajko Kuzmanović, president of ASARS will give an opening speech
- Поздравни говор министра за научнотехнолошки развој, високо образовање и информационо друштво  
мр Срђана Рајчевића

Welcome speeches – Minister of Scientific and Technological Development, Higher Education and Information Society, Srđan Rajčević, MA

Поздравно обраћање гостију  
Welcome speeches of the guests

РАДНИ ДИО СКУПА  
WORKING SESSION  
(09.20 – 15.00)

**ПЛЕНАРНА ПРЕДАВАЊА**  
**PLENARY SESSION**  
(09.20 – 13.20)

- 9.20 – 9.40 Tomislav Pavlović  
*Contemporary Achievements in Solar Energy*
- 9.40 – 10.00 Nenad Filipović  
*Coupled Agent Based and Finite Element Method for  
Plaque Development in the Carotid Artery*
- 10.00 – 10.20 Đendi Vaštag  
*Corrosion Protection of Metals Using Inhibitors*
- 10.20 – 10.40 Stevo Najman  
*Application of Biomaterials in Regenerative Medicine –  
Concepts and Perspectives*
- 10.40 – 11.00 Branko Dragović  
*A Modern View of the State of Matter and Energy in the  
Universe*
- 11.00 – 11.20 Coffee Break
- 11.20 – 11.40 Miroslava Živković  
*Bioethics and the Challenges of the Present Age*
- 11.40 – 12.00 Saša Zeljković  
*A Review of Recent Development of the Solvent-Deficient  
Method*

- 12.00 – 12.20 Duško Dudić  
*Photodielectric Characterization of Light-Driven Micro/Nano Motors in Liquid Medium*
- 12.20 – 12.40 Svetlana Stevović  
*Contaminating Substances as the Main Concept for Defining Quality and Water Management in Modern Systems*
- 12.40 – 13.00 Jovan Vojinović  
*Remineralization of Tooth Enamel, Yesterday, Today, Tomorrow*
- 13.00 – 13.20 Predrag Dašić  
*Analysis of Digital Development Indicators as a Condition for the Effective Application of Industry 4.0 Concept*

# ПОСТЕР ПРЕЗЕНТАЦИЈЕ

## POSTER SESSION

1. Tijana Šušteršič, Jelena Marković, Aleksandar Atanasijević, Andreja Živić, Nenad Filipović  
*SGABU Platform – Integrated Platform for Biomedical Datasets and Multiscale Models*
2. Elisaveta Doncheva, Martin Petreski  
*A Review of Nanoparticle Effects on Aluminum Alloys and Weldability*
3. Igor Hut, Branislava Jeftić, Lidija Matija, Đuro Koruga  
*Computer Aided Diagnostic System for Whole Slide Image of Liquid Based Cervical Cytology Sample Classification Using Convolutional Neural Network*
4. Ivana Stanković (Mileusnić), Branislava Jeftić, Jovana Šakota-Rosić, Lidija Matija, Đuro Koruga  
*Spectroscopic Analysis of Polymer Nanocomposite Materials for Optical Aids*
5. Teodora Tomović, Dijana Jelić, Aleksandra Šmitran  
*Distinction Surfactant-coating Influences Antimicrobial Activity of Inorganic Nanoparticles: A Case Study of Selenium Nanoparticles*
6. Gorana Mrđan, Dušan Mijin, Jelena Lađarević, Đendi Vaštag, Suzana Apostolov, Borko Matijević  
*Study of Solvatochromic Properties of Selected Aryl Azo Pyridone Dyes*

7. Suzana Apostolov, Ivana Stojiljković, Đendi Vaštag  
*QSRR Descriptors as a Tool in the Atudy of the Barbituric Acid Derivatives' Biological Profile*
8. Mileša Srećković, Aco Janićijević, Milovan Janićijević, Slađana Pantelić, Zoran Nedić, Zoran Fidanovski, Suzana Polić  
*Materials, New Technological Trends, Interactions Modeling and the Quantum Generators-Laser Role Today*
9. Elisaveta Doncheva, Aleksandra Krstevska  
*Nano-Engineered steels: Properties and Application*
10. Raul Turmanidze, Predrag Dašić, Giorgi Popkhadze  
*Review of the Development of Micro-Drilling of Modern Composite and Nano-Materials*
11. Zoran Petrović, Ana Đokić, Pero Dugić, Dragana Kešelj, Nebojša Vasiljević, Marija Jevtić  
*Bleaching of Rapeseed Oil with Bentonite Powder Activated with Hydrochloric Acid*
12. Zoran Petrović, Jelena Mihajlović, Tatjana Botić, Pero Dugić, Dragica Lazić, Aleksandar Čebić  
*Investigation of the Bleaching Effects of Sunflower Oil with Synthetic Zeolite*
13. Jovan Šetrajčić, Stevo Jaćimovski, Siniša Vučenović, Jelena Lamovec, Goran Jovanov  
*Phonon Specific Heat Capacity of Monolayer Graphene*
14. Jovan Šetrajčić, Siniša Vučenović, Igor Šetrajčić, Snježana Dupljanin  
*Energy States of Electrons in Ultrathin Crystalline Films*
15. Jovan Šetrajčić, Siniša Vučenović, Dušan Ilić, Stevo Jaćimovski  
*Applications of Green's Function Methods for Research of Crystal Structures*

16. Dušan Ješić, Borislav Savković, Pavel Kovač,  
Živko Aleksić, Dražen Sarjanović  
*The Application of the Technological Process of Applying  
Composite Coatings on Grinding Tools*
17. Dušan Ješić, Borislav Savković, Pavel Kovač,  
Branko Štrbac, Dražen Sarjanović  
*The Investigation of Structural Characteristics of Ferritic  
Ductile Iron*
18. Pavel P. Kovač, Branko Dudić, Borislav Savković,  
Dušan D. Ješić  
*They Gave Electric Cars a Scam*
19. Pavel P. Kovač, Mirfad Tarić, Borislav Savković, Dušan D. Ješić  
*Modeling of Cutting Forces of Hard Machining Material  
with Neural Networks*
20. Radoslav Grujić  
*Artificial Meat – Experiment or Need*
21. Marija Mitrović, Milorad Tomić, Danijela Matović,  
Dragan Tošković, Miomir Pavlović  
*Application of Alkyd Resin Based Coatings for Enchancing  
the Steel Corrosion Resitance*
22. Srđan Vuković, Danijela Rajić, Aleksandar Vuković,  
Svetlana Pelemiš  
*Radioactivity in Red Mud*
23. Danijela Rajić, Srđan Vuković, Aleksandar Vuković,  
Vesna Gojković Cvjetković, Svetlana Pelemiš  
*Nanocapsules Based on Plant Proteins*
24. Bogdan Milićević, Miloš Ivanović, Boban Stojanović,  
Nenad Filipović  
*Neural Networks for Solving Huxley's Equation*

25. Danijela Vuković, Duško Dudić, Blanka Škipina, Petar Matavulj  
*Electron trapping in polymer materials*
26. Dragana Blagojević, Dragica Lazić, Dragana Kešelj,  
Zoran Petrović, Nebojša Vasiljević  
*Determination of Iron Content in Natural Mineral Water:  
Comparison of ICP-OES and Spectrophotometric Method*
27. Marko Đurić, Milan Perišić, Dijana Đurić  
*Correlation of Test Results with Static and Dynamic Circular  
Plate Experiments*
28. Branka Ružičić, Dragana Grujić, Blanka Škipina, Ana Velimir,  
Mladen Stančić  
*Improved Dielectric Properties of Printed Linen Fabrics Filled  
with Copper(I) Oxide Particles and Pinus Sylvestris L. Extract*
29. Jelena Vuković, Milomirka Obrenović, Slavko Smiljanić  
*Effect of the Contact Time on the Efficiency of Phosphate  
Removal from Aqueous Solutions Using Fly Ash*
30. Dragoljub Mirjanić, Tomislav Pavlović, Ivana Radonjić,  
Darko Divnić  
*Comparison of PV Solar Power Plants Potential in the Republic  
of Srpska According to Solar Atlas Data*
31. Gordana Broćeta, Aleksandar Savić, Elefterija Zlatanović,  
Anđelko Cumbo, Marina Latinović, Žarko Lazić  
*Modelling the Erosion Resistance of Self-Compacting Concrete*
32. Darko Divnić, Dragoljub Mirjanić, Esad Jakupović,  
Zoran Ž. Avramović, Tomislav Pavlović, Ivana Radonjić  
*Characterization of Solar Modules on Standard Conditions*
33. Dijana Đeordić, Aleksandra Cvetinović, Matej Lipoglavšek,  
Sabina Markelj, Mitja Keleman  
*Characterization of Hydrogen Storage Materials*



34. Zoran Ćurguz, Dragoljub Mirjanić, Ljubiša Preradović,  
Zora S. Žunić, Zdenka Stojanovska, Predrag Kolarž  
*The Map of Radon Risk for the City of Banja Luka*
35. Veljko Ilić, Dragan Ilić, Đorđe Antonijević,  
Vesna Danilović, Vladimir Biočanin, Sanja Milutinović-  
Smiljanić  
*Radiopacity Assessment of Portland Cement with the  
Addition of Strontium Compounds*
36. Ljiljana Tankosić, Svjetlana Sređić  
*Influence of Mechanical Activation on Improvement of  
Dispersion Behavior of Goethite, Quartz and Clay Minerals in  
the Presence of Different Dispersants*
37. Miloš Adamović, Milan Pantić  
*Transition Temperature Dependence on Anisotropy in the  
 $J_1$ - $J_2$ - $J_c$ - $J_p$  Heisenberg Model with Application to 122-type  
of Iron Pnictides*
38. Jovana V. Zorić, Vojkan M. Zorić  
*Contribution of Medical Research to Trasology  
Forensic Practice - Case Study Example*
39. Andrijana Vukojević, Maria M. Savanović, Nataša Tomić,  
Stevan Armaković, Svetlana Pelemiš, Sanja J. Armaković  
*Removal of Nadolol Using Coupled Nanomaterials Based on  
Titanium and Carbon*
40. Maria M. Savanović, Andrijana Vukojević, Dragana Marković,  
Stevan Armaković, Svetlana Pelemiš, Sanja J. Armaković  
*Photocatalytic Activity of ZnO and TiO<sub>2</sub> Towards Effective  
Degradation of Cefoperazone*
41. Nikola Cekić  
*Recyclable Materials in Contemporary Building Facades*

42. Milanka Điporović-Momčilović, Mladen Popović,  
Milica Rančić, Jasmina Popović  
*Characteristics and Application of Nanocellulose  
in Modern Materials*
43. Zoran Govedar  
*The Importance of Silviculture for the Production  
of Wood as a Modern Material*
44. Vladan Rikić, Vladan Mičić, Ivan Ristić,  
Duško Kostić, Mirko Radić  
*Improving the Energy Efficiency of Insulation Materials by Adding  
Polymer Waste Recycling Products*
45. Igor Grujić, Branko Latinović  
*Application of Information Technologies in Food Processing*
46. Đorđe Mirjanić, Mileša Srećković, Vladan Mirjanić, Aleksandar  
Bugarinović, Svetlana Pelemiš, Dragan Družijanić  
*Laser, Modulation of Materials of Interest for Dentistry and  
other Modern or Potential Problems*
47. Bojan Pavičar, Jasna Davidović, Biljana Petrović, Goran Vuleta,  
Saša Trivić, Vlatko Šajinović, Nataša Egeljić-Mihailović, Nataša  
Todorović, Branko Predojević  
*Nuclear Medicine Staff Exposure to Ionising Radiation in  
18F-FDG PET/CT Practice: A Preliminary Retrospective Study*
48. Nikola Kotorčević, Nina Busarac, Saša Nježić, Dragan Džunić,  
Nenad Grujović, Fatima Živić  
*Tribological Investigation of the Automotive Grade Aluminium  
Alloy with Epoxy Primer Coating*
49. Vladimir Biočanin, Nemanja Vuković, Marija Ćirić, Veljko Ilić,  
Đorđe Antonijević, Vukoman Jokanović  
*Microporosity of Different Calcium Silicate and Calcium  
Aluminate Dental Cements*

50. Vladimir Biočanin, Nemanja Vuković, Đorđe Pejanović, Mihajlo Ostojić, Veljko Kolak, Đorđe Antonijević  
*Calcium Aluminate Cement with Strontium Fluoride as Effective Material for Tridimensional Root-End Obturation*
51. Đorđe Pejanović, Igor Pušić, Mihailo Ostojić, Andrea Kuč, Vladimir Biočanin, Marko Pejović, Nikola Marković, Maja Pavlović  
*Extraction Socket Preservation Using an Autologous Dentin Graft*
52. Josipa Karilj, Vladan Mirjanić  
*The Influence of Hereditary Factors on the Development of Orthodontic Anomalies and Mobile Orthodontic Appliances*
53. Radmila Arbutina, Nataša Trtić, Ognjenka Janković, Valentina Veselinović, Irena Radman Kuzmanović  
*Laboratory Testing of Buffering Capacity of Unstimulated and Stimulated Saliva in Experimental and Control Groups after Titration with HCL and NaOH*
54. Dražan Jaroš, Goran Kolarević, Milovan Savanović, Dragoljub Mirjanić  
*A Failure Mode and Effect Analysis of Volumetric Modulated Arc Therapy of Prostate Cancer*
55. Goran Kolarević, Dražan Jaroš, Bojan Pavičar, Tatjana Ignjić, Dragoljub Mirjanić  
*The Impact of Covid-19 on External Radiotherapy in the Republic of Srpska*
56. Branislava Jeftić, Igor Hut, Ivana Stanković (Mileusnić), Jovana Šakota-Rosić, Lidija Matija, Đuro Koruga  
*Deep Learning Algorithm for Cervical Cancer Detection Based on Images of Optomagnetic Spectra*

57. Jovana Šakota-Rosić, Branislava Jeftić, Ivana Stanković (Mileusnić), Lidija Matija, Đuro Koruga  
*RGB Color Histogram Analysis of Images Obtained Through Nanophotonic Filters*
58. Nebojša Zdravković, Marko N. Živanović, Nikolina Kastratović, Jelena Grujić, Katarina Virijević, Dalibor Nikolić, Nenad Filipović  
*Use of 3D-bioprinting in tissue engineering scaffold production*
59. Tamara Tadić, Bojana Marković, Aleksandra Nastasović, Jelena Lukić, Ljiljana Suručić, Zvezdana Sandić, Antonije Onjia  
*Synthesis of Molecularly Imprinted Polymer as a Selective Sorbent of Aniline*
60. Valentina Veselinović, Nataša Trtić, Tijana Adamović, Olivera Dolić, Radmila Arbutina, Aleksandra Đeri, Saša Marin, Nataša Knežević  
*The Influence of Different Beverages on the Color and Translucence Parameters Stability of Highly Translucent Zirconium Ceramics, Composite Nanoceramics and Hybrid Cad/Cam Ceramics*
61. Zorana Stamenković, Nenad Nedeljković, Vladan Mirjanić, Vanja Stojić, Jovan Marković, Zoran Jezdić  
*Combined Orthodontic and Surgical Treatment in Patient with Class III and Facial Asymmetry – Case Report*
62. Zorana Stamenković, Nenad Nedeljković, Vladan Mirjanić, Vanja Stojić, Nemanja Marinković, Ivan Arsić  
*Early Treatment of Skeletal Class II by Fränkel Functional Regulator – Case Report*
63. Tatjana Ignjić, Goran Kolarević, Bojan Pavičar  
*Dosimetry Verification of Bolus Density in Radiotherapy*

64. Sanja Stojanović, Jelena Najdanović, Žarko Mitić, Perica Vasiljević, Nenad Ignjatović, Stevo Najman  
*Interaction of Cells with Different Biomaterials in Vitro and Methods of Characterization*
65. Jelena Živković, Milena Radenković, Sanja Stojanović, Jelena Najdanović, Vladimir Cvetković, Marija Vukelić-Nikolić, Ivica Vučković, Nenad Ignjatović, Stevo Najman  
*Tissue Response to Different Implanted Biomaterials in Models in Vivo*
66. Jovan Dašić, Violeta Đorđević, Predrag Dašić  
*Application of 3D Printing for the Processing of Polymer Materials*
67. Predrag Dašić, Snežana Topalović, Olivera Živković  
*The Role of Digital Technologies in the Development and Application of the Circular Economy*
68. Milutin M. Živković, Predrag V. Dašić, Marina Jovanović, Milan M. Milosavljević  
*Analysis of the Influence of Thermochemical Processes on the Improvement of the Tribological Properties of Materials During the Production of the Distribution Piston of the Hand Pump*
69. Radmila Lišanin, Čedo Lalović  
*Quantitative Analysis of Commercial „Voda Voda” and Evaluation of its Biological Value*
70. Jelena Čeperković, Snežana Topalović  
*Statistical Analysis of the Quality of Food Materials Based on the HACCP Standard*
71. Marina Karić  
*Application of Composite Materials in the Automotive Industry*