

# Book of Abstracts

5<sup>th</sup> International Congress of Chemists and  
Chemical Engineers  
of Bosnia and Herzegovina



Special Issue of Bulletin of the Chemists and  
Technologists of Bosnia and Herzegovina

June, 27<sup>th</sup>-June, 30<sup>th</sup> 2024, Sarajevo  
[www.iccebih.dktk.ba/](http://www.iccebih.dktk.ba/)

**ORGANISED BY**  
Society of Chemists and  
Technologists of Canton Sarajevo  
&  
Faculty of Science, University of  
Sarajevo







Glasnik hemičara i  
tehnologa  
Bosne i Hercegovine

Print ISSN: 0367-4444  
Online ISSN: 2232-7266

## Bulletin of the Chemists and Technologists of Bosnia and Herzegovina

Zmaja od Bosne 33-35, BA-Sarajevo  
Bosnia and Herzegovina  
Phone: +387-33-279-918  
Fax: +387-33-649-359  
E-mail: [glasnik@pmf.unsa.ba](mailto:glasnik@pmf.unsa.ba)  
[glasnikhtbh@gmail.com](mailto:glasnikhtbh@gmail.com)

### EDITORIAL BOARD

Faculty of Science Sarajevo  
Zmaja od Bosne 33-35, BA-Sarajevo  
Bosnia and Herzegovina  
Phone: +387-33-279-904 (Administration)  
+387-33-279-911 (Executive Editors)  
Fax: +387-33-649-359

E-mail: [glasnik@pmf.unsa.ba](mailto:glasnik@pmf.unsa.ba)  
[glasnikhtbh@gmail.com](mailto:glasnikhtbh@gmail.com)

#### **Editor-In-Chief**

##### **Fehim Korac**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina  
E-mail: [fkorac@pmf.unsa.ba](mailto:fkorac@pmf.unsa.ba)

#### **Editors**

##### **Milka Maksimović**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina  
E-mail: [mmaksimo@pmf.unsa.ba](mailto:mmaksimo@pmf.unsa.ba)

##### **Emin Sofić**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina;  
Department of Pharmacoinformatics and Pharmacoeconomics, Faculty of Pharmacy, University of Sarajevo, Sarajevo,  
Bosnia and Herzegovina  
E-mail: [esofic@pmf.unsa.ba](mailto:esofic@pmf.unsa.ba)

##### **Semira Galijašević**

Department of Medical Chemistry and Biochemistry, Sarajevo Medical School and Sarajevo School of Science and  
Technology, Sarajevo, Bosnia and Herzegovina  
E-mail: [semira.galijasevic@gmail.com](mailto:semira.galijasevic@gmail.com)

##### **Nurudin Avdić**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina  
E-mail: [technoprocur@yahoo.com](mailto:technoprocur@yahoo.com)

##### **Emira Kahrović**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina  
E-mail: [emira\\_kahrovic@yahoo.com](mailto:emira_kahrovic@yahoo.com)

##### **Jasna Huremović**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina  
E-mail: [jasnahuremovic@yahoo.com](mailto:jasnahuremovic@yahoo.com)

##### **Amira Čopra-Janićijević**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina  
E-mail: [chopraamira@yahoo.com](mailto:chopraamira@yahoo.com)

## **Editorial Board**

### **Ivan Gutman**

Faculty of Science, University of Kragujevac, Kragujevac, Serbia

### **Dejan Milošević**

Department of Physics, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

### **Željko Jaćimović**

Department of Chemical Technology, Faculty of Metallurgy and Technology, University of Montenegro, Podgorica, Montenegro

### **Ljudmila Benedik**

Department of Environmental Sciences, "Jožef Stefan" Institute, Ljubljana, Slovenia

### **Meliha Zejnilagić-Hajrić**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

### **Tidža Muhić-Šarac**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

### **Sabina Gojak-Salimović**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

### **Ismet Tahirović**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

### **Danijela Vidic**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

### **Andrea Gambaro**

Department of Environmental Sciences, Informatics and Statistics, University Ca' Foscari of Venice, Venice, Italy  
Institute for the Dynamics of Environmental Processes - National Research Council (CNR-IDPA), Venice, Italy

### **Dragana Đorđević**

Centre of Chemistry - IChTM, University of Belgrade, Belgrade, Serbia

### **Aida Šapčanin**

Department of Natural Sciences in Pharmacy, Faculty of Pharmacy, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

### **Jože Kotnik**

Department of Environmental Sciences, "Jožef Stefan" Institute, Ljubljana, Slovenia

### **Lucyna Samek**

AGH University of Science and Technology, Faculty of Physics and Applied Computer Science, Krakow, Poland

### **Angela Maria Stortini**

Department of Molecular Sciences and Nanosystems, University Ca' Foscari of Venice, Venice, Italy

### **Ivan Spanik**

Institute of Analytical Chemistry, Slovak University of Technology, Bratislava, Slovakia

### **Mirjana Vojinović Miloradov**

Department of Environmental Engineering, Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia

### **Heike Bradl**

Department of Environmental Engineering, University of Applied Sciences Trier, Birkenfeld, Germany

### **Lea Kukoč-Modun**

Department of Analytical Chemistry, Faculty of Chemistry and Technology, University of Split, Split, Croatia

### **Sanja Ćavar Zeljković**

Centre of the Region Haná for Biotechnological and Agricultural Research, Department of Genetic Resources for Vegetables, Medicinal and Special Plants, Crop Research Institute, Šlechtitelů 29, Olomouc, Czech Republic  
Centre of Region Haná for Biotechnological and Agricultural Research, Czech Advanced Technology and Research Institute, Palacky University, Šlechtitelů 27, Olomouc, Czech Republic

### **Igor Jerković**

Department of Organic Chemistry, Faculty of Chemistry and Technology, University of Split, Split, Croatia

### **Roderick W. Bates**

Division of Chemistry and Biological Chemistry, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore

### **Safija Herenda**

Department of Chemistry, Faculty of Science, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

### **Muna Abu-Dalo**

Department of Chemistry, Jordan University of Science and Technology, Irbid, Jordan

### **Advisory Editorial Board**

#### **Margareta Vrtačnik**

Faculty of Natural Sciences and Engineering, University of Ljubljana, Ljubljana, Slovenia

#### **Alen Hadžović**

Department of Physical & Environmental Sciences, University of Toronto Scarborough, Toronto, Canada

#### **Franci Kovač**

Faculty of Chemistry and Chemical Technology, University of Ljubljana, Ljubljana, Slovenia

#### **Franc Požgan**

Department of Organic Chemistry, Faculty of Chemistry and Chemical Technology, University of Ljubljana, Ljubljana, Slovenia

#### **Mladen Miloš**

Department of Biochemistry, Faculty of Chemistry and Technology, University of Split, Split, Croatia

#### **Mirjana Metikoš**

Department of Electrochemistry, Faculty of Chemical Engineering and Technology, University of Zagreb, Zagreb, Croatia

### **Lectors**

Semira Galijašević (Eng/B/H/S)

Milka Maksimović (Eng/B/H/S)

### **Administrative Assistants**

Sabina Žero

Alisa Selović

Narcisa Smječanin

### **Electronic Edition and Executive Editors**

Anela Topčagić

Jelena Ostojić

Biljana Stojanović (UDK number)

The journal is published semiannual, and full text version of the papers published are available free of cost at <http://www.pmf.unsa.ba/hemija/glasnik>.

Bulletin of the Chemists and Technologists has been licensed for indexing in:

*Emerging Sources Citation Index* (Web of Science, Clarivate Analytics)



*CAPlus* (Chemical Abstracts Plus):



*Academic Search Complete* (EBSCO)



Organized by



Society of Chemists and Technologists of  
Canton Sarajevo

Faculty of Science, University of Sarajevo



Congress Chair  
**Begić Sabina**

Faculty of Science, University of Sarajevo  
Adress: Sarajevo, B&H  
Phone: +387/33 279 950  
E-mail: sabina@pmf.unsa.ba



Congress Deputy Chair  
**Adnan Zahirović**

Faculty of Science, University of Sarajevo  
Adress: Sarajevo, B&H  
Phone: +387/33 279 917  
E-mail: adnan.zahirovic@pmf.unsa.ba

### **Organization Office**

Congress Secretary – Anes Krečo  
Faculty of Science, University of Sarajevo  
Adress: Zmaja od Bosne 33-35, Sarajevo, B&H  
Phone: +387/33 279 950  
E-mail: info@iccebih.dtkts.ba  
Web: <https://iccebih.dtkts.ba/>

Book of Abstracts prepared by: Anela Topčagić & Jelena Ostojić

## ORGANISING COMMITTEE

**Sabina Begić**, Congress Chair

**Adnan Zahirović**, Congress Deputy Chair

**Anes Krečo**, Congress Secretary

**Jelena Ostojić**, President of The Society of Chemists and Technologists of Canton Sarajevo and Electronic Edition Executive Editor of the Special Edition of the Bulletin of the Chemists and Technologists of Bosnia and Herzegovina

**Nusret Drešković**, Dean of the University of Sarajevo-Faculty of Science

**Nevzeta Ljubijankić**, Head of Department of Chemistry

**Fehim Korać**, Editor-In-Chief of the Bulletin of the Chemists and Technologists of Bosnia and Herzegovina

**Anela Topčagić**, Electronic Edition and Executive Editor of the Special Edition of the Bulletin of the Chemists and Technologists of Bosnia and Herzegovina

**Amila Dervišević** (student), University of Sarajevo, Bosnia and Herzegovina

**Amra Alispahić**, University of Sarajevo, Bosnia and Herzegovina

**Ajdin Mujezin**, University of Sarajevo, Bosnia and Herzegovina

**Alema Dedić**, University of Sarajevo, Bosnia and Herzegovina

**Alisa Selović**, University of Sarajevo, Bosnia and Herzegovina

**Alma Ikanović** (student), University of Sarajevo, Bosnia and Herzegovina

**Emina Očuz** (student), University of Sarajevo, Bosnia and Herzegovina

**Emina Ramić**, University of Sarajevo, Bosnia and Herzegovina

**Elma Šehović**, University of Sarajevo, Bosnia and Herzegovina

**Hurija Džudžević-Čančar**, University of Sarajevo, Bosnia and Herzegovina

**Igor Marković**, University of Sarajevo, Bosnia and Herzegovina

**Jasmina Sulejmanović**, University of Sarajevo, Bosnia and Herzegovina

**Lejla Klepo**, University of Sarajevo, Bosnia and Herzegovina

**Mejra Bektašević**, University of Bihać, Bosnia and Herzegovina

**Meliha Zejnilagić-Hajrić**, University of Sarajevo, Bosnia and Herzegovina

**Mirha Pazalja**, University of Sarajevo, Bosnia and Herzegovina

**Mirza Nuhanović**, University of Sarajevo, Bosnia and Herzegovina

**Namir Halilović**, University of Tuzla, Bosnia and Herzegovina

**Nevenka Jelić-Knezović**, University of Mostar, Bosnia and Herzegovina

**Rasim Omanović**, University of Sarajevo, Bosnia and Herzegovina

**Saida Ibragić**, University of Sarajevo, Bosnia and Herzegovina

**Sabina Žero**, University of Sarajevo, Bosnia and Herzegovina

**Selma Burović**, Sarajevo School of Science and Technology, Bosnia and Herzegovina

**Selma Fetahović**, University of Sarajevo, Bosnia and Herzegovina

**Šaćira Mandal**, University of Sarajevo, Bosnia and Herzegovina

## SCIENTIFIC COMMITTEE

**Adnan Zahirović**, University of Sarajevo, Bosnia and Herzegovina  
**Aida Šapčanin**, University of Sarajevo, Bosnia and Herzegovina  
**Alisa Selović**, University of Sarajevo, Bosnia and Herzegovina  
**Amira Cipurković**, University of Tuzla, Bosnia and Herzegovina  
**Amira Čopra Janićijević**, University of Sarajevo, Bosnia and Herzegovina  
**Anela Topčagić**, University of Sarajevo, Bosnia and Herzegovina  
**Anita Martinović Bevanda**, University of Mostar, Bosnia and Herzegovina  
**Borislav Malinović**, University of Banja Luka, Bosnia and Herzegovina  
**Danijela Vidic**, University of Sarajevo, Bosnia and Herzegovina  
**Edhem Hasković**, University of Sarajevo, Bosnia and Herzegovina  
**Ekrem Pehlić**, University of Bihać, Bosnia and Herzegovina  
**Emina Ramić**, University of Sarajevo, Bosnia and Herzegovina  
**Erna Karalija**, University of Sarajevo, Bosnia and Herzegovina  
**Fehim Korać**, University of Sarajevo, Bosnia and Herzegovina  
**Hurija Džudžević-Čančar**, University of Sarajevo, Bosnia and Herzegovina  
**Ismet Tahirović**, University of Sarajevo, Bosnia and Herzegovina  
**Jasmina Sulejmanović**, University of Sarajevo, Bosnia and Herzegovina  
**Jasna Huremović**, University of Sarajevo, Bosnia and Herzegovina  
**Jelena Ostojić**, University of Sarajevo, Bosnia and Herzegovina  
**Lejla Klepo**, University of Sarajevo, Bosnia and Herzegovina  
**Meliha Zejnilagić-Hajrić**, University of Sarajevo, Bosnia and Herzegovina  
**Milka Maksimović**, University of Sarajevo, Bosnia and Herzegovina  
**Mirha Pazalja**, University of Sarajevo, Bosnia and Herzegovina  
**Mirsada Salihović**, University of Sarajevo, Bosnia and Herzegovina  
**Mirza Nuhanović**, University of Sarajevo, Bosnia and Herzegovina  
**Nevzeta Ljubijankić**, University of Sarajevo, Bosnia and Herzegovina  
**Sabina Begić**, University of Sarajevo, Bosnia and Herzegovina  
**Sabina Gojak-Salimović**, University of Sarajevo, Bosnia and Herzegovina  
**Sabina Žero**, University of Sarajevo, Bosnia and Herzegovina  
**Šaćira Mandal**, University of Sarajevo, Bosnia and Herzegovina  
**Sadbera Trožić-Borovac**, University of Sarajevo, Bosnia and Herzegovina  
**Safija Herenda**, University of Sarajevo, Bosnia and Herzegovina  
**Saida Ibragić**, University of Sarajevo, Bosnia and Herzegovina  
**Sanjin Gutić**, University of Sarajevo, Bosnia and Herzegovina  
**Selma Špirtović Halilović**, University of Sarajevo, Bosnia and Herzegovina  
**Semira Galijašević**, Sarajevo School of Science and Technology, Bosnia and Herzegovina  
**Stanislava Talić**, University of Mostar, Bosnia and Herzegovina  
**Zahida Ademović**, University of Sarajevo, Bosnia and Herzegovina  
**Zora Pilić**, University of Mostar, Bosnia and Herzegovina



## INTERNATIONAL SCIENTIFIC AND ADVISORY COMMITTEE:

**Berislav Marković**, University of Osijek, Croatia  
**Burcu Uner**, University of Health Science and Pharmacy in St. Louis, US  
**Darko Vuksanović**, University of Podgorica, Montenegro  
**Dragana Černih**, University of Skopje, North Macedonia  
**Emir Ceren**, Ege University, Turkey  
**Entela Haloci**, University of Medicine, Albania  
**Esra Tatar**, Marmara University, Turkey  
**Đendi Vaštag**, University of Novi Sad, Serbia  
**Farooq Sher**, Nottingham Trent University, United Kingdom  
**Ivana Carev**, Sveučilište u Splitu, Croatia  
**Jovan Antović**, Karolinska Institute, Sweden  
**Lea Kukoč-Modun**, University of Split, Croatia  
**Khademvatan Shahram**, Urmia University of Medical Sciences, Urmia, Iran  
**Matic Lozinsek**, Jožef Štefan Institute, Slovenia  
**Maša Islamčević Razboršek**, University of Maribor, Slovenia  
**Milena Rašeta**, University of Novi Sad, Serbia  
**Milutin Smiljanić**, National Institute of Chemistry, Slovenia  
**Nikola Sakač**, University of Zagreb, Croatia  
**Olga Govedarica**, University of Novi Sad, Serbia  
**Olivera Politeo**, University of Split, Croatia  
**Patricia Rijó**, Lusofona University, Portugal  
**Renato Tomaš**, University of Split, Croatia  
**Roderick Bates**, Nanyang Technical University, Singapore  
**Sanja Čavar Zeljković**, Palacký University Olomouc, Czech Republic  
**Shkreli Rezarta**, ALDENT University, Albania  
**Simone Carradori**, G. d'Annunzio University of Chieti-Pescara, Italy  
**Sofija Bekić**, University of Novi Sad, Serbia  
**Sunčica Roca**, Ruđer Bošković Institute, Croatia  
**Tamara Lazarević-Pašti**, University of Belgrade, VINČA Institute of Nuclear Science, Serbia  
**Željko Jačimović**, University of Montenegro, Montenegro

## GENERAL INFORMATION

### **Congress dates**

27 June-30 June 2024 / Sarajevo, B&H

Web: <https://iccebih.dktns.ba/>

### **Language**

The official language of the ICCCEB&H 2024 is English

### **Venue and Registration**

Hotel Radon Plaza, Džemala Bijedića 185, Sarajevo 71000

Registration desk will be open on Thursday (27 June 2024) from 18:30 to 20:00; Friday (28 June 2024) from 8:00 to 09:00

### **KEY TO ABSTRACT IDENTIFICATION**

PL	Plenary Lectures
KL	Keynote Lectures
OP	Oral Presentations
PP-AC	Poster presentations- Analytical Chemistry
PP-BB	Poster presentations- Biochemistry and Biotechnology
PP-CAM	Poster presentations- Chemistry of Advanced Materials
PP-CE	Poster presentations- Chemical Engineering
PP-CNP	Poster presentations- Chemistry of Natural Products
PP-EDC	Poster presentations- Education in Chemistry
PP-ENC	Poster presentations- Environmental Chemistry
PP-FC	Poster presentations- Food Chemistry
PP-IC	Poster presentations- Inorganic Chemistry
PP-MC	Poster presentations- Medicinal Chemistry
PP-OC	Poster presentations- Organic Chemistry
PP-PTC	Poster presentations- Physical and Theoretical Chemistry
PP-RC	Poster presentations- Radiochemistry
PP-TRC	Poster presentations- Topics Related to Chemistry

## **OPENING CEREMONY LECTURER**

We are honored to announce that Dr. Emira Kahrović, a distinguished scientist, professor emeritus and the only member of our department who is also a member of the Academy of Science and Arts of Bosnia and Herzegovina, will deliver a lecture at the grand opening of the Congress. Dr. Kahrović is recognized as one of the leading experts in the field of chemistry in general, and particularly inorganic chemistry, with a long-standing career and numerous significant contributions to science.

Throughout her illustrious career, Dr. Kahrović has published a series of studies that have greatly advanced our understanding of chemical processes in the field of Inorganic Chemistry. Her passion for science and dedication to research have inspired many young scientists to follow in her footsteps.

Dr. Kahrović's lecture at this congress represents a unique opportunity for all participants to hear firsthand about the latest advancements in chemistry, as well as her own experiences and challenges in scientific work. Her presentation will be rich with valuable insights and motivation, which will undoubtedly enhance the congress program.



**Dr. Emira Kahrović**

*Faculty of Science, University of Sarajevo, Bosnia and Herzegovina*

*Academy of Sciences and Arts of Bosnia and Herzegovina*

## PLENARY LECTURERS



**Dr. Stefan  
Wuttke**

**Basque Center for Materials,  
Applications & Nanostructures  
*Spain***



**Dr. Walter  
Gössler**

**University of Graz  
*Austria***



**Dr. Sanja  
Grgurić-  
Šipka**

**University of Belgrade  
*Serbia***

## KEYNOTE LECTURERS



**Dr. Anita  
Đonlić**

**University of Princeton  
*United States of America***



**Dr. Milutin  
Smiljanić**

**National Institute of  
Chemistry, Ljubljana  
*Slovenia***



**Dr.  
Demetrio M.  
Milea**

**Dipartimento di Scienze Chimiche,  
Biologiche, Farmaceutiche ed  
Ambientali  
*Italy***



**Dr. Sunčica  
Roca**

**Ruđer Bošković Institute  
*Croatia***



**Dr. Maitham  
Abbas Ali  
Khajah**

**Kuwait University  
*Kuwait***







## WELCOME NOTE

On behalf of the Organizing and Scientific Committee, the Society of Chemists and Technologists of Canton Sarajevo, and the University of Sarajevo - Faculty of Science, it is my great pleasure to welcome you to the 5<sup>th</sup> International Congress of Chemists and Chemical Engineers of Bosnia and Herzegovina (5<sup>th</sup> ICCCEB&H 2024) in Sarajevo.

I am thrilled to host this gathering of brilliant minds and passionate professionals from around the world, all united by a common goal: to advance the field of chemistry and harness its potential for the betterment of society. This congress marks a significant milestone in our ongoing journey of discovery and innovation. Over the next few days, we will have the opportunity to share groundbreaking research, exchange ideas, and foster collaborations that will shape the future of chemistry. Our diverse program includes plenary lectures, keynote lectures, oral and poster sessions, all designed to stimulate intellectual curiosity and inspire new avenues of thought.

All submitted abstracts will be published in a special issue of the Bulletin of Chemists and Technologists of Bosnia and Herzegovina, and selected papers will be published in an issue of the Bulletin of Chemists and Technologists of Bosnia and Herzegovina after the peer-review process.

Thank you for being here and contributing to the 5<sup>th</sup> International Congress of Chemists and Chemical Engineers of Bosnia and Herzegovina. We look forward to engaging with you and witnessing the remarkable progress that will emerge from our collective efforts. We thank the members of the Organizing Committee, International Scientific and Advisory Committee, Scientific Committee, and last but not least, all the participants for organizing, supporting, and contributing to the quality of this Congress. We are grateful for their hard work and commitment to making this congress a success. This event would also not be possible without the generous support of our sponsors.

We welcome all of you once again to the 5<sup>th</sup> ICCCEB&H 2024 and wish you an interactive, inspiring, and joyful scientific gathering and a pleasant stay in Sarajevo, Bosnia and Herzegovina.

A handwritten signature in black ink that reads "Sabina Begić". The signature is written in a cursive style and is positioned above a yellow rectangular highlight.

Congress Chair

**Dr. Sabina Begić**



# CONTENT

Code	TITLE Author(s)	Page number
<b>OPENING CEREMONY LECTURE</b>		1
OCL	<b>Tumor Selective Ru(III) Schiff Bases Complexes, Discrimination of Ru(III)/Ru(II) Complexes in Solution: A DFT Study</b> Emira Kahrović	3
<b>PLENARY LECTURES</b>		5
PL-01	<b>Reticular Nanoscience: Bottom-Up Assembly Nanotechnology</b> Stefan Wuttke	7
PL-02	<b>Element Accumulation in Mushrooms</b> Walter Goessler	8
PL-03	<b>Ruthenium Complexes as Antitumor Agents – Current Status and Perspective</b> Sanja Grgurić-Šipka	9
<b>KEYNOTE LECTURES</b>		11
KL-01	<b>A Chemical Biology Toolkit to Understand and Target Biomolecular Condensates</b> Anita Donlić	12
KL-02	<b>Understanding the Activity and Stability of Electrocatalytic Materials</b> Milutin Smiljanić	13
KL-03	<b>The “Pure Water” Model, a New/Old Approach for the Medium and Ionic Strength Dependence of Formation Constants</b> Demetrio Milea	14
KL-04	<b>Characterization of Silver(I) Complexes with Halo-Substituted Pyridine Derivatives in Solution and in the Solid State</b> Sunčica Roca	15
KL-05	<b>Anti-inflammatory Effects of Onion Bulb Extract in the Murine DSS-Colitis Model</b> Maitham Abbas Ali Khajah	16
<b>ORAL PRESENTATIONS</b>		19
OP-01	<b>Influence of TNT Melting Methods from Waste Munition on the Quality of Pink Wastewater</b> Namir Halilović	20
OP-02	<b>Hofmeister Effects on the Phase Stability of Aqueous BSA Solutions with Added PEG</b> Miha Lukšič	21
OP-03	<b>Plant's Secret Life: Biochemistry behind the Stress Memory</b> Erna Karalija	22
OP-04	<b>Experimental and Computational Studies of Liquid-Liquid Phase Separation of Some Globular Proteins</b> Sandi Brudar	23
OP-05	<b>Comparison of the Extraction Methods for Iron Content Assay in St. John's Wort</b> Emil Dino Fideršek	24

OP-06	<b>Antioxidant Power of Tomato Seeds Measured by ESR Spectroscopy</b> Laura Manin	25
OP-07	<b>Electron Spin Resonance Study of Pumpkin Seeds, Oil and Cake Antioxidant Power</b> Ana-Maria Blečić	26
OP-08	<b>Interplay between alloying and tramp element effects on temper embrittlement in bcc iron: DFT and thermodynamic insights</b> Amin Sakic	27
OP-09	<b>Hydrogen Storage in Metal Hydrides: Experimental Approach</b> Jasmina Grbović Novaković	28
OP-10	<b>Onion Bulb Extract Inhibits Airway Inflammation in a Mouse Model of Allergic Asthma</b> Ahmed Z. El-Hashim	29
OP-11	<b>Atomistic Simulations of Hydrogen Storage in Carbon-based Materials</b> David Holec	30
<b>POSTER PRESENTATIONS</b>		33
<b>ANAYTICAL CHEMISTRY</b>		33
PP-AC-01	<b>Selection of Method for Determination of Enantiomeric Purity (Impurity D) for Active Pharmaceutical Ingredient Levetiracetam</b> Podumljak, E., Dacić, M., Avdić, N., Pašić-Kulenović, M.	34
PP-AC-02	<b>Physicochemical and Thermal Properties of Hydrophobic Eutectic Mixtures Based on Tetrabutylphosphonium Bromide (TBPB) and Terpenoids</b> Bjelić, E., Suljkanović, M., Suljagić, J.	35
PP-AC-03	<b>Estimation of the Heavy Metal Content in the Leaf and Prepared Tea Infusion of <i>Achillea millefolium</i> L.</b> Melić, N., Žero, S., Ramić, E.	36
PP-AC-04	<b>Determination of Co, Fe, Ni and Zn Content in Leaf and Root of the <i>Taraxacum officinale</i></b> Omanović, A., Žero, S., Ramić, E.	37
PP-AC-05	<b>Optimization and Transfer of Method for Particle Size Determination on the Malvern Mastersizer 3000 using the example of Tramadol Hydrochloride</b> Salihović, E., Bajrović, A., Podumljak, E., Nalo, A., Avdić, N., Pašić-Kulenović, M.	38
PP-AC-06	<b>Electrochemical Behavior of Co(II) Polymer Modified Glassy Carbon Electrode for the Determination of Dopamine</b> Vladislavić, N., Škugor Rončević, I., Buzuk, M., Dugeč, J.	39
PP-AC-07	<b>New Potentiometric Surfactant Sensor with a Pt@MWCNT-Based Ionophore</b> Glumac, N., Momčilović, M., Kramberger, I., Štraus, D., Sakač, N., Kovač-Andrić, E., Đurin, B., Kraševac Sakač, M., Đambić, K., Jozanović, M.	40

PP-AC-08	<b>Degradation of Active Pharmaceutical Ingredients Perindopril <i>tert</i>-Butylamine and Amlodipine Besylate in Tablets During Stability Testing</b> Koštroman, A., Fako, Š., Pašić-Kulenović, M.	41
PP-AC-09	<b>The Influence of Temperature and Relative Humidity on Degradation of Active Substance Clotrimazole in Pharmaceutical Product for Topical Treatment</b> Koštroman, A., Mulalić, A., Fako, Š., Pašić-Kulenović, M.	42
PP-AC-10	<b>The Determination of Fatty Acid Composition in Selected Olive Oil Samples</b> Mandal, Š., Šapčanin, A.	43
PP-AC-11	<b>The Analysis of Magnesium Concentration in Plasma Samples</b> Mandal, Š., Šapčanin, A.	44
PP-AC-12	<b>A Comparative Study of Different Preparation Methods for Heavy Metal Analysis in Wood Biomass (Pellets and Briquettes)</b> Sulejmanović, J., Alispahić, N., Pazalja, M., Trapo, A.	45
PP-AC-13	<b>Titrateable Acidity and pH of Diluting Drinks and Their Potential Effect on Dental Erosion</b> Baltić, A., Pehlić E., Aldžić, A., Šapčanin A.	46
PP-AC-14	<b>Novel ISE Enriched with Magnetite Nanoparticles for Sulfates Determination</b> Zanki Kulazo, K., Hajdin, I., Nakić, K., Prkić, A., Kolar, M., Mitar, I.	47
PP-AC-15	<b>Deep Eutectic Solvents for the Eco-Friendly Extraction of Bioactive Compounds from the Peels of the Slovenian Onion Variety "Ptujski luk"</b> Islamčević Razboršek, M., Simonič, M., Fuchs-Godec, R., Omanović, R., Sulejmanović, J., Begić, S.	48
PP-AC-16	<b>Removal of Metal Ions from Aqueous Solutions by Green Tea Waste Biomass</b> Sivro, A., Sulejmanović, J., Huremović, J., Ramić, E., Žero, S.	49
PP-AC-17	<b>TLC descriptors in Examination of Chloroacetamides' Lipophilicity</b> Apostolov, S., Mekić, D., Matijević, B., Mrđan, G., Vaštag, Đ.	50
<b>BIOCHEMISTRY AND BIOTECHNOLOGY</b>		53
PP-BB-01	<b>Binding Determination and Interaction Study of Human Serum Albumin with 6- and 7-substituted 4-methylcoumarins</b> Kovač, K., Delibašić, M., Dizdar, M., Čavar Zeljković, S., Topcagic, A.	54
PP-BB-02	<b>Biochemical Status of Patients Suffered from Diabetic Nephropathy</b> Hasković, E., Porić, A., Unčanin, S., Herenda, S., Kulovac, B.	55
PP-BB-03	<b>Determination of the Vitamin C Content in Various Natural Samples by Direct UV Spectrophotometric Method</b> Čolaković, A., Toromanović, J., Toromanović, E., Tahirović, I.	56

<b>CHEMISTRY OF ADVANCED MATERIALS</b>		59
PP-CAM-01	<b>Protection against Microwave Radiation Penetration by the Addition of Nanomaterials in Clay Composites</b> Brdarić Kosanović, J., Marković, B.	60
PP-CAM-02	<b>Natural Clay Pyrophyllite Activation with Silver and Composite Characterization</b> Mijaković, S., Mitrović Rajić, A., Tošić, K., Grbović Novaković, J., Milošević Govedarović, S., Pantić, T., Vujačić Nikezić, A.	61
PP-CAM-03	<b>Eco-Friendly Quaternization of 2-Hydroxyethyl Cellulose: Structural Characterization and Multifunctional Applications</b> Jurko, L., Makuc, D., Štern, A., Žegura, B., Plavec, J., Radić, J., Bošković, P., Kargl, R.	62
PP-CAM-04	<b>Inhibition of Copper Corrosion in Acidic Solution by selected Thiazole derivatives</b> Vaštag, Đ., Apostolov, S., Mekić, D., Matijević, B., Mrđan, G.	63
<b>CHEMISTRY OF NATURAL PRODUCTS</b>		65
PP-CNP-01	<b>Chemical Composition of <i>Helichrysum italicum</i> Essential Oil from Bosnia and Herzegovina</b> Košarac, G., Čulum, D., Vidic, D., Maksimović, M., Čopra-Janićijević, A.	66
PP-CNP-02	<b>Chemical Composition and Biological Activity of Volatile Extracts from Plants Ground Ivy and Mediterranean Buckthorn</b> Politeo, O., Alerić, A., Ruščić, M., Bektašević, M.	67
PP-CNP-03	<b>Anti-inflammatory Properties of <i>Calendula officinalis</i> L. Extracts</b> Mujezin, A., Klepo, L.	68
PP-CNP-04	<b>Phytochemical Characterization and Biological Activity of <i>Geranium robertianum</i> L. and <i>Geranium molle</i> L.</b> Tešanović, S., Vidic, D., Muratović, E., Čulum, D.	69
PP-CNP-05	<b>Chemical Composition, Antioxidant and Enzyme Inhibitory Activity of <i>Achillea collina</i> (Wirtg.) Heimerl</b> Grbo, A., Vidic, D., Čopra-Janićijević, A., Nuić, A., Čulum, D.	70
PP-CNP-06	<b>Analysis of Phenolic Compounds and Biological Activity of <i>Achillea abrotanoides</i> Vis.</b> Čulum, D., Vidic, D., Čopra-Janićijević, A., Muratović, E., Siljak-Yakovlev, S., Maksimović, M.	71
PP-CNP-07	<b>Total Phenolic and Flavonoid Content and Antioxidant Activity of Some Raspberry Varieties</b> Topčagić, A., Muftić-Brdar, D., Klepo, L., Mujezin, A., Toromanović, J., Tahirović, I.	72
PP-CNP-08	<b>Determination of Vitamin C Content in Amaranthaceae Plants by UV/Vis Spectrophotometry</b> Alihodžić-Dilberović, B., Kajtaz, E., Suljić, A., Salihović, M.	73
PP-CNP-09	<b>Determination of Total Phenols and Flavonoids in Fruit and Leaves of White Mulberry (<i>Morus alba</i> L)</b> Alihodžić-Dilberović, B., Alibegić, Dž.a, Mahmutović-Dizdarević, I., Šutković, H., Salihović, M.	74

PP-CNP-10	<b>Characterisation of Volatile Compounds in Kumquat</b> Zekić, M., Radonić, A., Stanić, T., Radonić, B.	75
PP-CNP-11	<b>Headspace SPME-GC/MS Analysis of <i>Hyssopus officinalis</i> L. Volatile Constituents</b> Džudžević-Čančar, H., Alispahić, A., Dedić-Mahmutović, A., Jerković, I., Boškailo, E.	76
PP-CNP-12	<b>GC/MS Volatile Constituents of <i>Taxus baccata</i> L. Fruit and Seed Essential Oil</b> Dedić-Mahmutović, A., Džudžević-Čančar, H., Špánik, I., Alispahić, A., Boškailo, E.	77
PP-CNP-13	<b>Phytochemical Profile of <i>Taxus baccata</i> L. Needles Essential Oils from Sarajevo Gardens</b> Alispahić, A., Džudžević-Čančar, H., Dedić-Mahmutović, A., Špánik, I., Boškailo, E.	78
PP-CNP-14	<b>In Silico DFT and Docking Studies on <math>\beta</math>-sitosterol Compared to In vitro Studies on the Antiproliferative Properties of Sloe Plant Extracts Against Prostate Cancer Cells (DU 145 and PC3)</b> Džudžević-Čančar, H., Dedić-Mahmutović, A., Podlipnik Č., Alispahić, A., Lukšić M.	79
PP-CNP-15	<b>Antimicrobial Evaluation of European Pharmacopoeia Quality Essential Oil Combinations for Mouthwash Application</b> Karadağ, A.E., Kahya, S.E., Kirci, D., Demirci, F.	80
PP-CNP-16	<b>Antioxidant Properties of Alien Plant Species: Assessing Phenolic and Flavonoid Content, Antioxidant, Oxidant Capacities, and Antimicrobial Activity</b> Burović, S., Pašić, L., Čamo, S., Galijašević, S	81
PP-CNP-17	<b>Effect of Temperature on the Content of Bioactive Compounds in Commercial Teas</b> Klepo, L, Aščerija, A., Bajrović, A., Ostojić, J.	82
<b>EDUCATION IN CHEMISTRY</b>		85
PP-EDC-01	<b>Spatial Visual Abilities as a Predictor of Successfully Understanding the Content of Organic Chemistry</b> Zaninović, M., Zejnilagić-Hajrić, M.	86
<b>ENVIRONMENTAL CHEMISTRY</b>		89
PP-ENC-01	<b>Assessment of Physicochemical Properties and Microbial Quality of Water in Poultry Farms in Bosnia and Herzegovina</b> Bašić-Halilović A., Bačić A., Hukić M., Topoljak L., Skrobo L.	90
PP-ENC-02	<b>Application of a Pyrophyllite Modified Carbon Paste Electrode for the Detection of Carbendazim Fungicide in Water</b> Mitrović Rajić, A., Tošić, K., Mijaković, S., Milošević Govedarović, S., Vujačić Nikezić, A., Paskaš Mamula, B., Grbović Novaković, J.	91

PP-ENC-03	<b>Physico-Chemical, Histological, Microbiological Analyses and Organic Pollutants Determination of Water and Fish Samples from Miljacka River</b> Ibragic, S., Culum, D., Dizdar, M., Topcagic, A., Pilic, S., Besta-Gajevic, R., Nuic, A., Gajevic, M., Vesnic, A., Sljuka, S., Musovic, A., Djug, S.	92
PP-ENC-04	<b>Assessment of Mosses as Bioindicators of Indoor Air Pollution: A Study on Metal Accumulation in Working Areas</b> Karadža, A., Ramić, E., Macanović, A., Huremović, J., Žero, S.	93
PP-ENC-05	<b>Determination of Heavy Metals in the Soil After Disposal of Wood Pellet Ash</b> Pazalja, M., Adilović, D., Salihović, M. Sulejmanović, J.	94
PP-ENC-06	<b>Foeniculum Vulgare: An Overall Study from Seeds to Simultaneous Cd/Cr/Cu/Pb Biosorption Application</b> Sulejmanović, J., Kovač, N., Šehović, E., Zahirović, A.	95
PP-ENC-07	<b>Heavy Metal Content in Wood Briquettes</b> Pazalja, M., Hasković, Dž., Sulejmanović, J., Salihović, M.	96
PP-ENC-08	<b>Grapefruit Peel as a Promising Sorbent for Biosorption Removal of Eriochrome Black T Dye from Aqueous Solution</b> Ajanović, T., Sulejmanović, J., Šehović, E., Zahirović, A.	97
PP-ENC-09	<b>Lignocelulosic Waste Lemon Peel Enrolled as a Biosorbent for the Emerging Contaminant (Aspirin) Removal</b> Kudumović, E., Sulejmanović, J., Begić, S., Šehović, E., Ibragić, S.	98
PP-ENC-10	<b>Enhancing Pyrophyllite Adsorption Capabilities Via Sonic Treatment</b> Tošić K, Mijaković S, Vujačić Nikezić A, Mitrović Rajić A, Milošević Govedarović S, Grbović Novaković J, Paskaš Mamula B.	99
PP-ENC-11	<b>Forced Degradation Study of Sofosbuvir</b> Miloloža, M., Tomić, F., Martinjak, V., Bule Možar, K., Furač, L., Markić, M., Kučić Grgić, D., Cvetnić, M., Bolanča, T., Ukić Š.	100
PP-ENC-12	<b>Glyphosate Adsorption onto Pyrophyllite: Effects of Aluminum and Zinc Ion Addition</b> Rahić, N., Žero, S., Korać, F., Klepo, L.	101
PP-ENC-13	<b>The Influence of the Addition of Copper and Iron Ions on the Adsorption of Glyphosate on Pyrophyllite</b> Klepo, L., Žero, S., Đukić, A., Crnkić, E., Subašić, M., Korać, F.	102
PP-ENC-14	<b>Pyrophyllite as a Sustainable Material for Purification of Mine-Waste Water</b> Trtić-Petrović, T., Lazarević, D., Jovanović, J., Šaraba, V., Kurtanović, E., Marković, I., Harbinja, M.	103
PP-ENC-15	<b>Microplastic Pollution in Skadar Lake, National Park of Montenegro</b> Bošković, N., Jaćimović, Ž., Bajt, O.	104



	<b>INORGANIC CHEMISTRY</b>	107
PP-IC-01	<b>Crystallographic Evidence of Oxidative Dehydrogenation in Copper(II) Complexes of Schiff Bases Derived from Salicylaldehyde and 8-Aminoquinoline: Synthesis, Characterization, and Antimicrobial Activity</b> Zahirović, A., Fetahović, S., Višnjevac, A., Žilić, D., Bešta-Gajević, R., Dahija, S. Roca, S.	108
PP-IC-02	<b>The Two-Dimensional Heterometallic Sodium-Palladium(II) Coordination Networks with Differently Substituted Nicotinate Ligands</b> Politeo, N., Kodrin, I., Rodríguez, M., Soldin, Ž., Rončević, T., Čikeš Čulić, V., Sokol, V., Doctorovich, F., Kukovec, B.-M.	109
PP-IC-03	<b>Functional Iron-Sulfur Clusters: Model Studies Using Synthetic Analogues</b> Velić, A., Hu, L., Dechert, S., Meyer, F.	110
PP-IC-04	<b>Heterometallic bridged Pt(II)-Zn(II) complexes: Influence of the substituent in 4'-position in inert terpy ligand on mechanism of interactions of the complexes with biomolecules</b> Kolenović Serezlić, M., Soldatović, T., Grgurić Šipka, S.	111
PP-IC-05	<b>A New Polymeric Adduct of Copper(II) Formate with Pyridine</b> Šuta, E., Zahirović, A., Žilić, D., Vujević, L., Višnjevac, A., Ljubijankić, N.	112
PP-IC-06	<b>Glassy Black/Brown Crystals from Various Cu(I) Complexes with Azopyridine Ligand</b> Almotawa, Ruaa, Vladimir Nesterova, Rawashdeh - Omary, Manal Mohammad Omarya	113
PP-IC-07	<b>Molecular and Crystal Structure of the Tetrakis(4-Methyl-1H-Pyrazole)-bis(acetato)Nickel(II)</b> Kočović, D., Giester, G., Tomić, Z.D., Bigović, M., Jaćimović, Ž.	114
PP-IC-08	<b>Interaction of Vanadium(IV) Thiosemicarbazonato Complexes with BSA and CT DNA</b> Očuz, E., Fetahović, S., Zahirović, A.	115
PP-IC-09	<b>Catecholase-like Activity of Heteroleptic Copper(II) Complexes with Schiff Base and Flavonol/Chalcone Coligands</b> Ličina, Z., Sijamhodžić, M., Fetahović, S., Zahirović, A.	116
PP-IC-10	<b>Unveiling Iodo Analogs: Novel Tricarbonylrhenium(I) Complexes with Diimine Ligands</b> Ljubijankić, N., Tešević, V., Balaban, M., Ljubijankić, S., Fetahović, S., Šuta, E.	117
PP-IC-11	<b>Rhenium Complexes with Benzodioxole-Containing Bipyridine Ligand: Synthesis and Analysis</b> Ljubijankić, N., Balaban, M., Ljubijankić, S., Šuta, E.	118
PP-IC-12	<b>Synthesis and Characterization of Zinc (II) Complexes with Selected Amino Acids</b> Čamo, S., Burović, S., Galijašević, S.	119

PP-IC-13	<b>Synthesis and Structure–Antihyperglycemic Activity Relationship in Vanadium(IV) Complexes of Acetophenone Isoniazid Hydrazones</b> Fetahović, S., Fočak, M., Višnjevac, Roca, S., Zahirović, A.	120
<b>MEDICINAL CHEMISTRY</b>		123
PP-MC-01	<b>Antibiotic Sensitivity of <i>Acinetobacter baumannii</i> to H<sub>2</sub>S</b> Aldžić, A., Baltić, A., Kardašević, M., Kardašević, A., Dubinović-Rekić, A.	124
PP-MC-02	<b>DNA and HSA Binding Of Copper(II)-Complexes With Imine-Based Ferrocene Derivatives</b> Gigić, A., Caković A., Stevanović, D., Kesić, A., Bugarinović, J., Bogojeski, J.	125
PP-MC-03	<b>Analysis of Kidney Stones</b> Živković, K., Hamzić, A., Dorić, J., Šerić, V., Stanković, A.	126
PP-MC-04	<b>Comparison of the Diagnostic Significance of Lipid Parameters and Lipid Ratios in Subjects with T2 DM</b> Jelic-Knezovic, N., Galijasevic, S., Senderovic, A.	127
PP-MC-05	<b>Heterobinuclearity vs. Homobinuclearity in Ruthenium(II) and Gold(I) Organometallics with Diphosphine Ligands: Synthesis, Characterization, BSA Binding, and <i>In Vivo</i> Toxicity</b> Zahirović, A., Roca, S., Fočak, M., Fetahović, S., Višnjevac, A., Topčagić, A., Suljević, D., Mitrašinović-Brulić, M., Ostojić, J., Muzika, V.	128
PP-MC-06	<b>Docking Study of Antitumor Activity for Some Compounds with Thiazole Ring</b> Osmanović, A., Veljović, E., Zorlak, Z., Alagić, A., Bečić, E., Špirtović-Halilović, S.	129
PP-MC-07	<b><i>In Silico</i> Screening of Antibacterial Activity for Some Compounds with Thiazole Ring</b> Osmanović, A., Veljović, E., Zorlak, Z., Bečić, E., Alagić, A., Špirtović-Halilović, S.	130
PP-MC-08	<b>Penicixanthene D – a Potent Inhibitor of SARS-CoV-2 Papain-like Protease</b> Osmanović, A., Imamović, M., Salihović, M., Hindija, L., Špirtović-Halilović, S.	131
PP-MC-09	<b>Radiopharmaceuticals in Prostate Cancer Diagnosis</b> Opanković, E., Herenda, S., Sočo, A., Horozčić-Peršić, A., Kelić-Papić, I.	132
PP-MC-10	<b>Antimicrobial Assessment of Ethanol Fruit Extracts from <i>Prunus spinosa</i> L.</b> Dedić-Mahmutović, A., Džudžević-Čančar, H., Alispahić, A., Jerković-Mujkić, A.	133
PP-MC-11	<b>Chemical Composition and Cytotoxic Activity of <i>Hyssopus officinalis</i> L. Essential Oil from Bosnia and Herzegovina</b> Alispahić, A., Džudžević-Čančar, H., Dedić-Mahmutović, A., Jerković, I., Matić, I., Petrović, N., Stanojković, T., Boškailo, E.	134
PP-MC-12	<b>Permeability Characteristics of Metformin Across Biological Barriers</b> Marić, A., Elezović, A., Škrbo, S., Hadžiabdić, J., Rahić, O.	135

<b>ORGANIC CHEMISTRY</b>		137
PP-OC-01	<b>Synthesis, Characterization of Metal Complexes of Mg(II) and Cu(II) Ions with N-(4-hydroxyphenyl) Acetamide</b> Smajlagić, A., Srabović, M., Huremović, M., Ademović, Z., Pehlić, E.	138
PP-OC-02	<b>Synthesis and Biological Evaluation of Mannosylated Desmuramyl Peptide with Lipophilic Cholesterol Subunits</b> Beneš, D., Car, Ž., Ribić, R., Petrović Peroković, V.	139
PP-OC-03	<b>Synthesis, Structural Characterization and In Vitro Biological Evaluation of Novel B-Ring Trifluoromethylthio-Substituted Flavonoids</b> Bosno, M., Deumić, S., Crnčević, N., Tuka, P., Topčagić, A., Avdić, M., Dizdar, M.	140
PP-OC-04	<b>Antioxidative Profiling of Novel Schiff Bases: A Comprehensive EPR and DPPH Analysis</b> Bigović, M., Kaluđerović, M., Nikolic, A., Mojović, M., Nakarada, Đ.	141
PP-OC-05	<b>Optimization Of Schiff Bases Synthesis Reaction between Carbonyl Compounds and Thiocarbohydrazide (dHS) using Ultrasound</b> Bigović, M., Kaluđerović, M., Jovanović, J., Prlainović, N., Jaćimović, Ž.	142
PP-OC-06	<b>Synthesis and Characterization of a Copper(II) Complex With N'-[(1E)-1-(2-Hydroxyphenyl)ethylidene]hydrazinecarbothioamide Ligand</b> Jovanović, J., Bigović, M., Kaluđerović, M., Majstorović, H., Rakočević, A.	143
PP-OC-07	<b>Antioxidant Activity of Schiff Bases Derived from Acetophenones and Benzaldehyde</b> Kaluđerović, M., Bigović, M., Jovanović, J., Majstorović, H., Rakočević, A.	144
<b>PHYSICAL AND THEORETICAL CHEMISTRY</b>		147
PP-PTC-01	<b>Modification of Briggs-Rauscher Reaction</b> Huko, A., Ostojić, J., Gojak-Salimović, S.	148
PP-PTC-02	<b>Electrochemical Behaviour of Aluminium in Artificial Seawater in Presence of <i>Artemisia annua</i> L.</b> Zlatic G., Pilić Z., Martinović I., Čelan S.	149
PP-PTC-03	<b>Experimental Characterization, In Silico Study and Antimicrobial Activity of Newly Synthesized Ionic Liquids with Carboxylate Anions</b> Cakó Bagány, N., Belić, S., Kovačević, S., Bošković, E., Gadžurić, S.	150
PP-PTC-04	<b>Adsorption Mechanism of Polyphenols Extracted from <i>Artemisia annua</i> L. on the Al 5083 Alloy Surface during Microbial Activity</b> Zlatic, G., Martinović, I., Pilić, Z.	151
PP-PTC-05	<b>Anomalous Properties of the Central Force Water Model</b> Lukšič, M.	152

PP-PTC-06	<b>Application of Briggs-Rauscher Reaction for Measurement of Antioxidant Capacity of Atorvastatin</b> Memić, M., Huko, A., Ostojić, J., Klepo, L., Čamo, S., Herić, A., Čatić, T., Omerović, S., Alagić- Džambić, L.	153
PP-PTC-07	<b>Volumetric Properties of Solutions of the Ionic Liquid 1-Ethyl-3-Methylimidazolium Chloride in <i>N,N</i>-Dimethylacetamide and Dimethyl Sulfoxide</b> Tomaš, R.	154
PP-PTC-08	<b>Spectrophotometric Determination of the Influence of Metformin on Enzyme Activity</b> Herenda, S., Hasković, D., Selimović, A., Hasković, E., Prevljak, S.	155
PP-PTC-08	<b>Electrochemical Characterization of Nickel-Based Cathodes for Hydrogen Evolution Reaction in Alkaline Water Electrolysis</b> Korać, S., Durak, M., Vilašević, L., Hrnjić, A., Gutić, S.	156
<b>RADIOCHEMISTRY</b>		159
PP-RC-01	<b>Gamma-spectrometric Analysis of <math>^{226}\text{Ra}</math>, <math>^{40}\text{K}</math>, <math>^{232}\text{Th}</math> and <math>^{137}\text{Cs}</math> through Soil Profiles (0-30 cm) in Fojnica Area, B&amp;H</b> Jahić, L., Smječanin, N., Nuhanović, M.	160
PP-RC-02	<b>Determination of <math>^{238}\text{U}</math>, <math>^{234}\text{U}</math> and <math>^{226}\text{Ra}</math> Concentrations in Bottled Waters Commercially Available in Bosnia and Herzegovina</b> Ilić, Z., Vidic, A., Avdispahić, D.	161
<b>TOPICS RELATED TO CHEMISTRY</b>		163
PP-TRC-01	<b>RP-HPLC Method for Determination of Perindopril Related Compounds</b> Dacić, M., Behlulović, B., Avdić, N., Pašić-Kulenović, M.	164
PP-TRC-02	<b>Development of RP-HPLC Method for Determination of Carbocysteine Related Compounds</b> Dacić, M., Kaljun, S, Avdić, N., Pašić-Kulenović, M.	165
PP-TRC-03	<b>Orodispersible Films with Ascorbic Acid: Formulation and Characterization</b> Rahić, O., Hamidović, A., Hadžiabdić, J., Tucak-Smajić, A., Hindija, L., Šahinović, M., Špirtović-Halilović, S., Vranić, E.	166
PP-TRC-04	<b>Optimization of Biogas Production with Emphasis on Waste Recovery</b> Čosić, A., Halilović, N., Džambić, M., Hurić, N., Stuhli, V., Zohorović, M., Bojanović, Lj., Smajlović, M., Tursunović, M.	167

## Pyrophyllite as a Sustainable Material for Purification of Mine-Waste Water

Trtić-Petrović, T.<sup>a</sup>, Lazarević, D.<sup>a</sup>, Jovanović, J.<sup>a</sup>, Šaraba, V.<sup>a</sup>,  
Kurtanović, E.<sup>b</sup>, Marković, I.<sup>b</sup>, Harbinja, M.<sup>b</sup>

<sup>a</sup>*Vinča Institute of Nuclear Sciences, National Institute of the Republic of Serbia, University of Belgrade  
Mike Petrovića Alasa 12-14, Belgrade, Serbia*

<sup>b</sup>*Innovative Scientific Development Center (INRC), AD HARBI Ltd. Sarajevo,  
Tvornička 3, Sarajevo, Bosnia and Herzegovina*

### Article info

Received: 03/04/2024

Accepted: 15/04/2024

### Keywords:

Adsorption  
Mechanochemical  
Activation  
Metal Removal  
Pyrophyllite

**Abstract:** Wastewater from mines poses a significant problem as it often contains high concentrations of metals, which are discharged into river systems, thereby contributing to environmental pollution. Pyrophyllite is a natural hydrous aluminum silicate clay mineral ( $\text{Al}_2\text{Si}_4(\text{OH})_{10}(\text{OH})_2$ ) with a high melting point, stable chemical properties, and low cost. The elementary sheet of pyrophyllite is composed of an aluminum-oxygen/hydroxyl octahedral layer between two tetrahedral layers of silicon-oxygen. The layered silicate structure of pyrophyllite crystals has natural adsorption activity. Mechanochemical activation (MCA) is a simple method for modification of solid materials that causes structural disorder, amorphization and increased chemical reactivity. MCA, usually performed by grinding, is an environmentally friendly process because of low energy consumption, processing temperatures and cost. This study investigates the adsorption kinetics of the divalent metal ions (Cd, Ni, Cu, Zn, and Pb) from aqueous solutions using pyrophyllite as an adsorbent. It was found that the removal depends on the mechanochemical treatment of pyrophyllite, contact time with the aqueous solution, and the mutual competition of ions. The conditions were optimized for maximum removal of metal ions from synthesized aqueous solutions. Subsequently, pyrophyllite was applied under optimal conditions for removing Zn (II) from the wastewater of the closed Red Hill mine on mountain Avala. Based on the obtained results, it can be concluded that pyrophyllite completely removes zinc from mine water in a very short time (10 minutes) and thus has great potential for application.

### \*Corresponding author:

Tatjana Trtić-Petrović  
ttrtic@vin.bg.ac.rs

### Acknowledgment

This research was supported by AD HARBI Ltd Sarajevo, and funding through grant number [451-03-66/2024-03/200017] provided by [Ministry of Science, Technological Development and Innovation of the Republic of Serbia].