

# Book of Abstracts

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Chemical Engineers  
of Bosnia and Herzegovina



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Technologists of Bosnia and Herzegovina

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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)  
[glasniktbh@gmail.com](mailto:glasniktbh@gmail.com)

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Faculty of Science, University of Sarajevo  
Adress: Sarajevo, B&H  
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Adress: Zmaja od Bosne 33-35, Sarajevo, B&H  
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### 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

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## Enhancing Pyrophyllite Adsorption Capabilities Via Sonic Treatment

**Tošić, K., Mijaković, S., Vujačić Nikezić, A., Mitrović Rajić, A., Milošević Govedarović, S.,  
Grbović Novaković, J., Paskaš Mamula, B.**

*Centre of Excellence for Hydrogen and Renewable Energy, Vinča Institute of Nuclear Sciences - National Institute of the  
Republic of Serbia, University of Belgrade, POB 522, Belgrade, Serbia*

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**Abstract:** Adsorption, a highly efficient water purification method and tool for pollution control, utilizes materials like clay. Compared to other commercial adsorbents, clay offers notable advantages including affordability, large specific surface area, accessibility, high ion exchange capacity, excellent adsorption properties, and non-toxicity. Pyrophyllite, among abundant natural clays, stands out due to its layered structure without interlayer cations or water molecules, offering favorable physical and chemical attributes.

This study specifically examines the characterization of natural pyrophyllite ore treated with ultrasonic waves for 30 minutes and 6h. Analysis of samples using X-ray diffraction (XRD) technique indicates the removal of hard phases such as quartz and calcite from both treated samples in comparison to the raw ore. Energy dispersive X-ray spectroscopy (EDS) analysis, conducted as part of SEM-EDS analysis, revealed a significant reduction in the weight % of silicon. Specifically, the Si content decreased from 35.1 weight % in the raw ore to 28.7 after half an hour of treatment. Subsequently, after 6 hours, the most effective purification was achieved, with the Si content reaching only 18.6 weight %.

Furthermore, UV-VIS analysis testing the sorption of a methylene blue solution in water reveals that ultrasonically treated pyrophyllite for 30 minutes achieves 97% efficiency after 24 hours, surpassing the 89% efficiency of the raw ore. Notably, after 6 hours of ultrasonic treatment, efficiency reaches nearly 98% after just 1 hour, confirming high efficacy of ultrasonic treatment on adsorption ability of pyrophyllite.

### \*Corresponding author:

Katarina Tošić

katarina.tosic@vin.bg.ac.rs

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