

# Book of Abstracts

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Chemical Engineers  
of Bosnia and Herzegovina



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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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## **Natural Clay Pyrophyllite Activation with Silver and Composite Characterization**

**Mijaković, S., Mitrović Rajić, A., Tošić, K., Grbović Novaković, J., Milošević Govedarović, S., Pantić, T., Vujačić Nikezić, A.**

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**Abstract:** In this work, a hybrid pyrophyllite/AgNPs system was designed by mechanochemical activation of pyrophyllite,  $\text{Al}_2\text{Si}_4\text{O}_{10}(\text{OH})_2$ . Tuning this system's properties is especially important in terms of possible biomedical applications. The reaction was triggered by adding 2, 5, and 10wt% of silver in the form of  $\text{AgNO}_3$ , indicating green synthesis of AgNPs. Thereby, the grinding time was adjusted from 20 to 320 minutes. The collected samples were analyzed by FTIR, XRD, SEM with EDX, TGA, DTA and PSD. The FTIR spectra of the pyrophyllite/AgNPs system showed the disappearance of some bands characteristic of pyrophyllite itself due to breaking of some bonds during the grinding, and the appearance of some new bands. SEM-EDS analysis confirmed that pyrophyllite structure changed during the mechanochemical treatment, indicating a homogeneous distribution of silver along the analyzed surface. PSD analysis showed that the average particle size distribution is approximately the same for all samples, despite the different wt% of silver. While XRD patterns of samples with 2 and 5 wt% of  $\text{AgNO}_3$  did not show reflections originating from silver, the peak at  $38.16^\circ$  of the pyrophyllite sample milled for 20 minutes with 10 wt% of silver could be assigned to silver in the metal form. DTA curves of pyrophyllite/ $\text{AgNO}_3$  samples milled for 20, 80 or 320 min had similar shapes for different silver content added. TGA curves of pyrophyllite/ $\text{AgNO}_3$  samples milled for 20 min with 2, 5, and 10 wt% of silver showed a total weight loss of about 10% while for samples milled for 320 min reduced weight loss was observed due to the agglomeration of particles.

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