

# 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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### 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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## Application of a Pyrophyllite Modified Carbon Paste Electrode for the Detection of Carbendazim Fungicide in Water

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

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**Abstract:** This work aims to design an electrochemical sensor for pesticide detection in food and water based on modified pyrophyllite. Pyrophyllite is a phyllosilicate mineral of the chemical formula  $\text{Al}_2\text{Si}_4\text{O}_{10}(\text{OH})_2$ . Modification of the carbon paste electrode was made by the addition of mechanochemically modified pyrophyllite. This type of modification is an environmentally friendly green chemistry method because it avoids using solvents. It was found that the best physicochemical characteristics for constructing the electrochemical sensor were shown by the sample that was milled for 15 minutes. Due to the delamination and bending of the layers, the size of the particles and crystallites decreases, and the electrocatalytic activity of the modified electrode is improved. Electrochemical measurements were performed by cyclic voltammetry in 0.5 mol/L  $\text{H}_2\text{SO}_4$  and 1 mmol/L  $\text{K}_4\text{Fe}(\text{CN})_6$  in 0.1 mol/L KCl. The results showed that the electrode made of 50 % carbon paste and 50 % mechanochemically ground pyrophyllite for 15 minutes had the best properties. Quantitative detection of carbendazim was done by differential pulse stripping voltammetry at different pH in the Britton Robinson buffer. The developed method shows the linearity at pH 4 in the range of (1–10) mg/kg, with  $r = 0.999$  and a detection limit of 0.3 mg/kg. In contrast to earlier works, in which carbendazim was determined electrochemically with different types of electrodes, the detection limits obtained with the carbon paste electrode modified with pyrophyllite, which was ground for 15 minutes in this work, are significantly lower.

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