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**XIV МЕЂУНАРОДНИ НАУЧНИ СКУП
САВРЕМЕНИ МАТЕРИЈАЛИ 2021**

**ПРОГРАМ РАДА И
КЊИГА АПСТРАКАТА**

**XIV INTERNATIONAL SCIENTIFIC CONFERENCE
CONTEMPORARY MATERIALS 2021**

**PROGRAMME AND
THE BOOK OF ABSTRACTS**

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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*

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Optimization of synthesis of nanocomposite with functionalized magnetic nanoparticles



ABSTRACTS

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Abstract: Pyrophyllite clay, modified with PVP coated silver nanoparticles (PYRO-PVP/AgNPs), with recently proved antibacterial activity was prepared. Silver nanoparticles were synthesized by the chemical reduction method of AgNO₃ using NaBH₄ and poly(vinyl pyrrolidone) (PVP) as a stabilizer and excellent dispersant. This research aimed to elucidate the mechanisms and kinetics of AgNPs, along with PVP protective mechanism that are responsible for antibacterial activity towards the microorganisms. Pioneering steps were made toward coagulation studies due to potential of aluminosilicate layered clays to serve as an alternatives to hemostatic agents currently in use. Isoelectric point of pyrophyllite samples with 5, 20, 45 μm diameter particles and PYRO-PVP/AgNPs sample (Ag25mg/L) was evaluated to understand how the anticoagulant or procoagulant properties of the pyrophyllite varied according to the pH of the isoelectric point. Characterization of the PYRO-PVP/AgNPs samples was performed using FTIR spectroscopy, UV/VIS spectroscopy and optical microscope. Release mechanism and kinetics of silver ions were monitored by atomic absorption spectroscopy (AAS). Additionally, AAS was used for evaluation of heavy metals content in pyrophyllite clay and a simple and cost-effective procedure was proposed for the purification of pyrophyllite. Authors are thankful to the Ministry for Scientific and Technological Development, Higher Education and Information Society of Republic of Srpska for supporting the study through the project No. 19.032/961-78/19.

Key words: pyrophyllite, nanocomposite, colloidal silver, mechanism of release, kinetics.

OPTIMIZATION OF SYNTHESIS OF NANOCOMPOSITE WITH FUNCTIONALIZED MAGNETIC NANOPARTICLES

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Abstract: This study is focused on the optimization of the synthesis of nanocomposite by suspension copolymerization in the presence of functionalized magnetic nanoparticles. The effect of parameters such as type and amount of stabilizing agent as well as the stirring rate of the reaction mixture on the shape and particle size obtained nanocomposite are studied. The magnetic nanocomposite with the best morphology properties was characterized using optical microscopy, FTIR, and mercury porosimetry.

Key words: magnetic nanocomposite, optimization, morphology properties.

SYNTHESIS AND CHARACTERISATION OF SBA-15 WITH SPHERICAL PARTICLES

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Abstract: The template method's synthesis of SBA-15 material with spherical particles is performed using a surfactant Pluronic P123 (non-ionic triblock copolymer, EO20PO70O20 under acidic conditions. Instead of a commercial cosurfactant, a spent HCl solution obtained after chemical treatment of clay purification was provided with synthesis conditions to form spherical SBA-15. Obtained spherical particles have had diameters ranging up to 2 μm . The spherical shape of the particles and their silicate origin was confirmed by SEM and EDS methods, respectively. In addition to the methods mentioned above, XRD, FTIR and the particle size distributed method was also used to characterize the surface characteristic of spherical SBA-15.

Key words: spherical SBA-15, surfactant Pluronic P123, SEM, EDS.