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# XI INTERNATIONAL CONFERENCE ON SOCIAL AND TECHNOLOGICAL DEVELOPMENT – STED 2022

# THE BOOK OF ABSTRACTS

# XI MEĐUNARODNA KONFERENCIJA O DRUŠTVENOM I TEHNOLOŠKOM RAZVOJU – STED 2022

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# APPLICATION OF FeAl-LDH@$SiO_2$ FOR PHOSPHATE REMOVAL FROM WATER

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## ABSTRACT

In present study FEAL-LDH@$SIO_2$ were Used for removing phosphate from aqueous solutions. FeAl-LDH with molar ratio Fe/Al = 3/1 was synthesized by co-precipitation from aqueous solutions in the present of $SIO_2$ PARTICLES. Silica obtained from rice husks were used as a substrate for the deposition of LDH particles. The prepared material was characterized by scanning electron microscope (FE-SEM), X-ray diffraction (XRD), $N_2$ adsorption/desorption isotherms (BET method) and Fourier transform infrared spectroscopy (FTIR). XRD analysis showed that Fe-Al had formed LDH structure. SEM analysis revealed deposition of LDH particles on $SIO_2$ SUBSTRATE. The adsorption characteristics for phosphate uptake of the obtained material were performed. Adsorption experiments were carried out as a function of LDHs dosage with three different mass ratios of LDH/silica = 1/1, 2/1, and 3/1 and different phosphate concentration AT INITIAL PH 4. Phosphate concentrations were determined using spectrophotometer. The results showed that the maximum sorption capacities of phosphates calculated based on Langmuir equation was 52.68 mg $g^{-1}$.

**Keywords:** FeAl-LDH, silica, adsorpcion, phosphate.