



Influence of ultrasound irradiation on cadmium cations adsorption by montmorillonite

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ABSTRACT

The objective of this work is study of the influence of ultrasound irradiation on adsorption properties of montmorillonite, contained in bentonite, mined in the Slovak deposit. First, structural properties of the adsorbent were characterized by Mössbauer spectroscopy, Fourier transform infrared spectroscopy and scanning electron microscopy. For the adsorption experiments, cadmium, as a heavy metal ion, was selected. The adsorption has been studied by a batch method using an ultrasound device and a rotary shaker. The montmorillonite adsorption properties have been tested under different conditions such as pH of the solution, initial metal ions concentration and temperature. It was observed that sonication markedly influenced the adsorption capacity of montmorillonite and its value increased by approximately 40% in comparison with the corresponding capacity of the non-sonicated material. No evident effect of temperature on the adsorption capacity of montmorillonite was proved.

Keywords: Montmorillonite; Adsorption; Ultrasound; Cadmium

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