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Uranium Adsorption Using a Composite Material Based on Platelet SBA-15 Supported Tin Salt Tungstomolybdophosphoric Acid

Authors : H. Aghayan, F. A. Hashemi, R. Yavari, S. Zolghadri

Abstract : In this work, a new composite adsorbent based on a mesoporous silica SBA-15 with platelet morphology and tin salt of tungstomolybdophosphoric (TWMP) acid was synthesized and applied for uranium adsorption from aqueous solution. The sample was characterized by X-ray diffraction, Fourier transfer infra-red, and N₂ adsorption-desorption analysis, and then, effect of various parameters such as concentration of metal ions and contact time on adsorption behavior was examined. The experimental result showed that the adsorption process was explained by the Langmuir isotherm model very well, and predominant reaction mechanism is physisorption. Kinetic data of adsorption suggest that the adsorption process can be described by the pseudo second-order reaction rate model.

Keywords : platelet SBA-15, tungstomolybdophosphoric acid, adsorption, uranium ion
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