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Studies on thorium ions adsorption characteristics upon activated titanium hydroxide prepared from Rosetta ilmenite concentrate

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The titanium hydroxide prepared from Rosetta ilmenite concentrate was first characterized by both Fourier transform infrared (FT-IR) spectrum and thermogravimetric analysis. The activated hydroxide was then applied for Th(IV) adsorption from its acid aqueous solutions and the relevant factors thereupon have been studied; namely the pH, the adsorbent dose, the Th(IV) concentration as well as the contact time. The obtained equilibrium data were found to be better fitting with the Langmuir isotherm than with that of Freundlich. While the adsorption kinetic data were found to follow the pseudo-second order model. The different thermodynamic parameters have also been calculated and it was indicated that the adsorption process is spontaneous.

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