

Effect of phosphate on uranium sorption on albite

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Adsorption experiment of uranium on albite in presence of phosphate showed that adsorption percentages can be affected by pH, total phosphate, ionic strength and solid solution ratio. The adsorption can reach maximum when pH at 4.0, while minimum when pH at 2.0. Adsorption can increase with pH in the range from 2 to 4, but decrease with pH in the range from 7 to 11. If solution was acidic, uranium adsorption on albite was stronger in the presence of phosphate than situation in the absence of phosphate. If solution was alkaline, uranium adsorption on albite was stronger in presence of low concentration of phosphate, but weaker in presence of high concentration of phosphate, than situation in the absence of phosphate. Whatever in acidic or alkaline condition, adsorption can decrease with the concentration of phosphate. Uranium adsorption on albite in the presence of phosphate was discussed at different value of solid solution ratio (5 g/l, 10 g/l, 20 g/l). Adsorption percentage can increase with solid solution ratio and reach maximum at the solid solution ratio of 20 g/l within the pH range from 2 to 4. Nevertheless, adsorption percentage can reach maximum at the solid solution ratio of 10 g/l within the pH range from 7 to 11. Increasing of solid solution ratio did not always promote the adsorption when pH varied from 7 to 11, which was consistent with result in previous literature. Ionic strength had little impact on uranium adsorption on albite when $2 < \text{pH} < 4$. However, ionic strength can significantly improve uranium adsorption when $4 < \text{pH} < 11$.