

The adsorption behavior of iodine on bentonite

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Bentonite is an important pre-selected mineral soil as buffer/backfill material for high level radioactive waste repository in China, it is of great importance to study the sorption and diffusion behavior of key radionuclides in bentonite for the safety assessment of the potential repository. In this work, the sorption behavior of iodine on bentonite was investigated, and the influence of pH, temperature, solid - liquid ratio were studied. The sorption results of iodine on bentonite at different pH and background electrolyte concentration was shown in Figure 1.

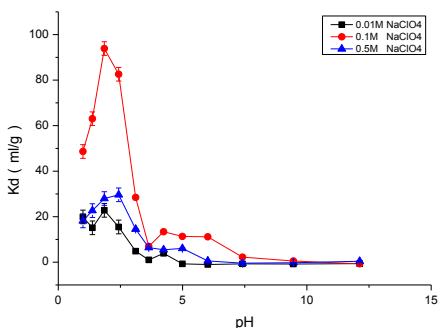


Figure 1: Sorption of iodine on bentonite as a function of pH and background electrolyte concentration.

(Solid-liquid rate: 50g/L; temperature: $T=25\pm 1^{\circ}\text{C}$.)

Results and discussion

Iodine showed strong adsorption on bentonite under high acidic conditions at pH 1~4, maybe due to the sandwich structure of protonated bentonite. While with the decrease of H^+ concentration, the sorption was weakened at pH 4~12. It was speculated that the different adsorption behavior of iodine on bentonite at different electrolyte concentrations, may be related to the formation of bentonite colloid under different electrolyte concentration conditions.