

Radionuclide Sorption in the Geosphere: Role of Single Minerals

지하매질에서의 방사성핵종흡착: 단일광물의 역할

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ABSTRACT

The sorption behavior of Cs(I), Sr(II), and U(VI) on representative single minerals(oxide and clay) and rocks were comparatively studied by using batch type sorption experiment.

The effects of pH, ionic strength and the sorption mechanism were also discussed.

It was found that mineral structure played as a main factor governing the sorption characteristics of Cs(I), Sr(II). The sorption of Cs(I) and Sr(II) on minerals showed ionic strength-dependency, which is a indirect sign of weak binding between metal cation and mineral surfaces. However, the sorption behavior of U(VI) was quite different compared with that of Cs(I), and Sr(II). Fe-oxide minerals showed strong tendency for U(VI) sorption, dominating the sorption in the composite/mixture systems.

The surface characteristics which arise from mineral structure, and the affinity of metal ions to the sorption sites of minerals are the key to understand the role of minerals in the radionuclide sorption.