

Original

Study of the Influence of Alkali Metal Cations on Cesium Immobilization by Hydrothermal Method Part 1: Synthesis of Pollucite from Suspended Solution

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● **Summary** ● The effect of calcium cation, potassium cation and sodium cation on hydrothermal synthesis of pollucite using clay minerals was studied. XRD pattern showed that pollucite was synthesized under a wider range of conditions. Synthesis condition of pollucite was clarified by triangular diagram and its “low-dimensionalization”. SEM images of some samples supported the results from XRD pattern. It was showed that pollucite and the others were distinguishable according to EXAFS oscillation derived from XAFS. It was turned out that calcium cation interfered with the synthesis of pollucite, however, sodium and potassium cations didn't. Synthesis of pollucite was promoted under low concentration of calcium cations, higher temperature or longer time.

Key Words: pollucite, final storage of radioactive cesium, hydrothermal synthesis, XRD, XAFS

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