

Kinetics of Dissolution of Stoichiometric Uraninite

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Abstract—The kinetics of dissolution of stoichiometric uraninite (UO_2) synthesized by electroreduction (electrolysis) of uranyl chloride in a melt of an eutectic mixture of alkali metal salts was studied. It follows from the results obtained that, in the initial step of uraninite dissolution under both dynamic and static conditions, schoepite is not an intermediate phase. It is formed, apparently, in the further steps by oxidation of uranium dioxide. The diffusion coefficients of uranium in solutions over uraninite and schoepite were determined. It was found that, at least in the initial step of the dissolution, the forming uranyl hydroxide occurs in the solution either in the dissociated state or in the form of mononuclear hydroxo complexes.

Keywords: uranium dioxide, dissolution, oxidation

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