

Study of phase formation regularities in supersaturated systems of calcium oxalate in the presence of additives on the model unit

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Keywords: crystallization, calcium oxalate, thermodynamic modeling, phase stability field, model unit.

Abstract

In this paper features of calcium oxalate crystallization are defined by the thermodynamic modeling. Regularities of phase formation in system “Ca²⁺-C₂O₄²⁻-H₂O” are theoretically studied in wide range of component concentrations and pH of the solution. The effect of pH on the thermodynamic stability of the compounds crystallize. According to the results of XRD and IR spectroscopy effect of inorganic additives (oxalate and phosphate ions) and solution pH on the crystallization of calcium oxalate monohydrate. It is shown that calcium oxalate content decrease in the solid phase with an increasing of phosphate-ion concentration, and with the increase of pH significantly changes the phase composition of precipitation. Solid phases of calcium oxalate were synthesized in the model unit which approximates physiological conditions of crystallization.