## Prediction of the Solubility of Barite in Pure Water and Concentrated Aqueous Solution of Sodium Chloride to High Temperatures and High Pressures

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Thermodynamic data for chemical reactions in high temperature and high pressure aqueous solutions are important in several scientific and industrial processes [1]. There is considerable economic and scientific interest in the mineralogy and geochemistry of sulfate minerals in high temperature aqueous solutions [2]. In the present study, solubility is predicted for solid BaSO<sub>4</sub> (barite) in pure water and aqueous solution of sodium chloride over a wide range of temperatures (up to 623 K), pressures (up to 200 MPa) and compositions (up to 6 mol/kg NaCl(aq)) from a unified theory of electrolytes [3, 4] together with a simple empirical model for estimating the stoichiometric activity coefficient of the solid saturated solutions of barium sulfate in aqueous sodium chloride solutions as functions of T, p, and I. Comparison of the predicted values for the solubility of barite in dilute and concentrated aqueous solution of sodium chloride with the corresponding literature data indicates good agreement in all cases to well within the uncertainties of the experimental data.

**References:** 

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