



In-situ measurements of the dissolution of strontianite in salted fluids at high pressure and high temperature

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The composition of the fluids involved in subduction contexts, that trigger arc volcanism, is highly influenced by the mineralogical assemblage at their original source. CO_2 is one of the main volatile components of these fluids and is mainly controlled by the dissolution of carbonates. However, very few are known about the dissolution of carbonaceous minerals at conditions that prevail at such depth. Preliminary results were obtained on the strontium phase of calcite (SrCO_3) at High Pressure and High Temperature (HP-HT) and show that the dissolution of strontianite is mainly correlated with the increase of pressure, whereas the temperature as a minor opposite effect.

To enlarge the knowledge of the behavior of carbonaceous minerals, further experiments were carried out on strontianite in interaction with salted aqueous solutions. Here we present in-situ experiments conducted at HP-HT (6 GPa and 700 K) on strontianite in water with different NaCl compositions (molality of 0.5 and 1 respectively). Using an externally heated Diamond Anvil Cell and X-Ray fluorescence, the dissolution of strontianite has been tracked using the evolution of Sr^{2+} fluorescence peak intensity. The results obtained here are confronted with those obtained in pure water and clearly show the reduction of dissolution of carbonates in salted media. Moreover, chemical simulations have been carried out using our data, and the evolution of the solubility product of SrCO_3 at different P-T conditions is also presented.