

Hydrothermal experiments and phase relations of rare earth carbonate minerals

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Behavior of rare earth elements in geosphere is a good indicator of the geochemical conditions and processes. Phase relations of rare earth carbonate minerals with calcite is fundamental background to understand migration and fixation conditions of rare earth elements. Hydrothermal synthesis experiments are carried out on starting materials with parisite composition by cold-seal pressure vessels. Bastnaesite and calcite are produced in run products between 400 degree C and 600 degree C at 100MPa. At 650 degree C, 100MPa and 600 degree C, 30MPa, bastnaesite is unstable. Parisite is not detected in any run products. Phase relations of rare earth fluorocarbonate minerals are discussed.