

Hydrothermal alteration products and fluid flow properties in supercritical circulation systems

Hiroshi Isobe[1]

[1] Dept. Earth. Sci., Fac. Sci., Kumamoto Univ

Hydrothermal fluid circulation apparatus is developed to reproduce reactions in migration paths of super-critical magmatic fluid. Maximum temperature and pressure are 600 degree C and 80 MPa, respectively. Permeability of the sample will be monitored by pressure difference between upper and lower part of fluid tubing across the sample. Alteration experiments of powdered obsidian and Sakurajima tuff are carried out at 50MPa 450-400C at inlet and approximately 300C at outlet with 0.1 - 0.05 ml / minute fluid flow. Alteration products of the volcanic glass including cristobalite, plagioclase with minor kaolinite and illite occur in grain boundaries of the obsidian powder and cemented grains within a few days at the outlet of the sample basket. Permeability will be affected by lower temperature alteration products including clay mienarals.