

Near-solidus element partitioning among constituent minerals of Katsuragi Qz-Diorite Complex, Kinki district, Japan

Hiroaki Sato[1], Kozaburo Morioka[2], Yoshiaki Tainosho[3]

[1] Earth and Planetary Sci, Kobe Univ, [2] Graduate School of Sci.and Tec.,Kobe Univ, [3] Natural Environment,Human Develop., Kobe Univ.

<http://shida.planet.sci.kobe-u.ac.jp/~kazan/hsato.html>

We examined the mineral chemistry of representative 5 samples of the Katsuragi qz diorite complex, Japan. Plagioclase has Ca/(Ca+Na) ratio of 0.60-0.20, and shows sharp zoning within a few microns. Contact two feldspar gives less than 400 C, suggesting subsolidus element redistribution in alkali feldspar. Hornblende/plagioclase pairs give 695-722 C for the core pairs and 585-610 C for the contact rim pairs. Application of hornblende barometer to the rim composition of hornblende gives 0.5-1.5 kb of equilibration pressure.

We examined the mineral chemistry of representative 5 samples of the Katsuragi qz diorite complex, Japan to examine the element re-distribution during slow cooling near solidus temperatures. Such a view point is relevant to elucidate the equilibrium pairs for thermo-barometry of the rocks, and also gives information on the rate of cooling of the pluton. Electron-probe microanalyses were made for each minerals taking into consideration of the compositional zoning of the minerals. Plagioclase has Ca/(Ca+Na) ratio of 0.60-0.20, and shows sharp zoning within a few microns. K-feldspar is potassic (or>95). Contact two feldspar gives less than 400 C of equilibration temperature, suggesting subsolidus element redistribution in alkali feldspar. K₂O distribution in plagioclase seems to retain most of the initial magmatic concentration except for sodic (ab>70%) rim, whereas FeO* content of plagioclase is mostly less than 0.10wt%, suggesting re-distribution from the original compositions. Hornblende/plagioclase pairs give 695-722 C for the core pairs and 585-610 C for the contact rim pairs. The Katsuragi qz-diorite contains titanite, epidote, ilmenite, orthoclase, quartz, plagioclase, biotite, hornblende, and fulfil the conditions to apply the Al-in hornblend barometer near solidus temperatures. Application of the hornblende barometer(Anderson andSmith, 1995) to the rim composition of hornblende gives 0.5-1.5 kb of equilibration pressure.