

K-feldspar and plagioclase of the Kashio mylonites in the Hase-Ichinose area of the Ina city, central Japan

Akira Ono[1]

[1] none

Granitoids with various textures are exposed in Kashio, Ichinose and Takato areas along the Median Tectonic Line (MTL) of central Japan. SHRIMP U-Pb ages of zircon from two granitoids are 71Ma and 86Ma. Schistose granitoids with folding structures occur in certain localities. They are metamorphic rocks totally or partially metamorphosed at high temperatures. The meta-granitoids are called as Gatsuzozan metamorphic rocks. All the granitoids near the MTL were partially recrystallized at low temperatures which are called as Kashio mylonites. The Gatsuzozan metamorphic rocks and Kashio mylonites were formed during the cooling stages of solidified late-Cretaceous granitoids.

Petrologic studies of the Kashio mylonites were performed in the Hase-Ichinose area of the Ina city, Nagano Prefecture. However, feldspar minerals were not described in detail. Hence, properties of feldspar minerals are described in this letter.

K-feldspar porphyroclast

K-feldspar porphyroclasts which are common in porphyroclastic pelitic mylonites have zoning structures with Or-poor rim and Ab-rich core. The compositional change is gradual and Or-rich rim is usually 200 micro m in width. The Ab content of a central part of K-feldspar crystal tends to increase with an increasing size of K-feldspar. However, K-feldspar crystals larger than 300 micro m have cores with similar Ab contents. The marked zoning is evidence for considerable diffusion of alkali elements in K-feldspar.

Two-feldspar geothermometer

The Ab contents of K-feldspar and plagioclase were analyzed by an EPMA for myrmekite-poor mylonites. As matrix minerals of granitic rocks show considerable variations in composition, minerals within small domains were analyzed where chemical equilibrium between matrix minerals was assumed to be attained. Results for many rock specimens are plotted on the isotherm of 400 C, 0.2GPa (Fig.1, A) which is based on the practical two-feldspar geothermometer of Stormer (1975).

Several samples which were collected from the Yamabuki valley were also examined. Temperatures obtained by using the two-feldspar geothermometer are found to be similar for all the samples (Fig.1, B), although grain sizes of recrystallized quartz and plagioclase gradually increase from east to west.

Compositional variation of plagioclase within a hand specimen

Pelitic mylonites in the north of Hase-Ichinose village are very fine-grained schistose or massive rocks. Porphyroclast-free rocks are not uncommon. The mylonites were metamorphosed under amphibolite facies judging from the occurrence of albite-free biotite- plagioclase schist. Chemical variations among plagioclase grains were studied for albite-poor specimens. The results for two specimens are shown in Figure1, C. The compositional variation of plagioclase grains is slight for each specimen although abrupt changes in composition occur across boundaries where modal amounts of minerals change significantly. A few plagioclase grains are considerably rich in An content. They may be relic plagioclases crystallized under high temperatures.

