Proceedings of the Annual Joint Conference,
Mineralogical Society of Korea and
Petrological Society of Korea,
May 27, 2005, Daegu, Korea

Recrystallization and Reaction Textures of Monazite in the Shear Zone, Hwacheon Granulite Complex, Korea

Keewook Yi*, Moonsup Cho
School of Earth and Environment Sciences, Seoul National University, Seoul 151-747, South Korea
(keewook@snu.ac.kr)

The Hwacheon granulite complex (HGC) consists primarily of garnetiferous leucocratic gneisses and the boundary shear zone between HGC and lower grade marginal zone gneiss complex (MZGC) includes highly deformed mylonitic gneiss and schist. Ion microprobe dating of zircon from a shear zone sample gives a U-Pb age identical to that of granulite-facies peak metamorphism at ca. 1.87 Ga, confirming the protolith of mylonites and the inertness of zircon during mylonite recrystallization. In contrast, monazite, which is ubiquitous in both garnetiferous leucocratic gneisses of the HGC and mylonitic gneisses of the shear zone, is far more reactive than zircon. Monazite in the former coexists with Grt + Sil + Bt + Pl + Kfs + Qtz + Ilm + Zrn, and gives a chemical age of ca. 1.83 Ga, suggesting its growth during the cooling stage shortly after Paleoproterozoic granulite-facies metamorphism. On the other hand, monazite grains in mylonitic gneiss coexist with the retrograde assemblage: Bt + Ms + Pl + Qtz + Zrn + FeS ± $ThSiO_4$ ± YPO_4. Symplectic texture of apatite and allanite between monazite and plagioclase which is also common in the shear zone suggests metasomatic reaction responsible for the dissolution of monazite. Some monazite grains preserve the resorbed boundaries in their interiors and develop thin overgrowth rims with higher Y/Si ratio, suggesting partial dissolution subsequent to their growth. Chemical ages estimated from cores and rims of one monazite grain cluster around 225 Ma and 205 Ma, respectively. Thus, Triassic chemical ages are likely to represent at least two episodes producing monazite in the shear zone.