

富山県和田川地域における飛騨片麻岩の SHRIMP 年代 SHRIMP geochronology of the Hida gneiss in the Wada-gawa area, Toyama Prefecture

竹原 真美^{1*}, 堀江 憲路³, 外田 智千³, 清川 昌一²
Mami Takehara^{1*}, Kenji Horie³, Tomokazu Hokada³, Shoichi Kiyokawa²

¹九州大学 大学院理学府 地球惑星科学専攻, ²国立極地研究所, ³九州大学 大学院理学研究院 地球惑星科学部門
¹Department of Earth and Planetary Sciences, Graduate School of Sciences, Kyushu University, ²National Institute of Polar Research, ³Department of Earth and Planetary Sciences, Faculty of Sciences, Kyushu University

The Hida belt, situated at the northern part of southwestern Japan, consists of low P/T metamorphic rocks such as paragneisses, orthogneisses, amphibolite and marble with multiple episodes of metamorphism evident, and Permo-Triassic granitoids. Previous works suggested that an earlier metamorphism occurred at ca. 350Ma under the granulite-facies conditions, and was overprinted by the amphibolite-facies metamorphism at 240-220 Ma (e. g., Arakawa et al., 2000) but these data were probably distributed by the Funatsu-type granites intrusion at about 180 Ma.

In regard to protolith, Sano et al. (2000) reported U-Pb zircon ages peaked at about 3420 Ma, 2560 Ma, 1840 Ma, 1130 Ma, 580 Ma, 400 Ma, 360 Ma, 285 Ma, and 250 Ma from the Hida gneiss at Amo area. Asano et al. (1990) also reported protolith ages of 415 +/- 189 Ma (Sm-Nd whole rock isochron) and 413 +/- 60 Ma (Sm-Nd mineral isochron) from basic metamorphic rocks and amphibolite at the Wada-gawa area, respectively. However, there is no precise geochronological data for protolith and the timing of the metamorphism. In this study, the Hida gneisses collected from the Wada-gawa area were analyzed by SHRIMP (Sensitive High-Resolution Ion Microprobe) to discuss about the protolith and the timing of the metamorphism of the Hida belt.

The Hida gneiss sample, WD090810-3, is composed of biotite, orthopyroxene, plagioclase, quartz and other minor mineral, such as prehnite, titanite, zircon, apatite and opaque minerals. Some biotite is chloritized. Most of plagioclase is also altered and fresh ones were partly observed. Zircon grains of the sample are rounded to well-rounded morphologies. Cathodoluminescence images reveal existence of overgrowth rim.

U-Pb dating of the zircon core yielded five age peaks centered at about 2526 Ma, 1864 Ma, 760 Ma, 553 Ma and 316 Ma, which indicates that the protolith is probably a sedimentary rock. Some age peaks are consistent with those reported by Sano et al. (2000). The youngest age peak suggests that the protolith was formed after 316 Ma. The overgrowth rim yielded weighted mean of ²⁰⁶Pb-²³⁸U ages of 247.7 +/- 0.5 Ma (MSWD = 1.18), which indicates the timing of metamorphism in the Hida belt. This age is first report of precise age of the Hida metamorphism and we will discuss about thermal history of the Hida belt with U-Pb titanite ages of the Hida gneiss.