

40Ar-39Ar and Rb-Sr ages of metamorphic muscovite from the Yellow Band, Mt. Qomolangma

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Rock samples were collected from the Yellow Band at 8360m, Mt.Qomolangma. In order to clarify the metamorphic age of Yellow Band, 40Ar-39Ar and Rb-Sr ages were obtained for muscovite from marble. Two 40Ar-39Ar ages of 33-34 Ma and 23-25 Ma might have meanings. The former age seems to correspond to the peak metamorphic age of Barrovian-type metamorphism and the latter one seems to be high-temperature metamorphism that is a precursor of granite emplacement. A Rb-Sr isochron age obtained from 3 points of mica rich, mica poor and whole rock is 40.06±0.32 Ma, Initial ratio 0.712409±15. An exposure of the Qomolangma Detachment was discovered at about 8520m in north slope of Mt. Qomolangma. The existence another detachment near the base of the North Col Formation is suggested.

Rock samples were collected from the Yellow Band at 8360m, Mt.Qomolangma, by the Japanese- China Collaborative Scientific Expedition team to Mt.Qomolangma at 1998. In order to clarify the metamorphic age of Yellow Band, 40Ar-39Ar and Rb-Sr ages were obtained for muscovite from marble.

Age spectrum of 40Ar-39Ar dating is disturbed one representing a stair-type pattern. However, two ages of 33-34 Ma (1000,1100C; 39Ar;63.0%) and 23-25 Ma (600,700,900C; 39Ar;22.6%) might have meanings. The former age seems to correspond to the peak metamorphic age of Barrovian-type metamorphism and the latter one seems to be high-temperature metamorphism that is a precursor of granite emplacement. The similar two-phase episodes of monazite crystallization are reported from the Everest region in Nepal by Simpson et al. (2000).

A Rb-Sr isochron age obtained from 3 points of mica rich, mica poor and whole rock is 40.06±0.32 Ma (Initial ratio; 0.712409±15). This age may represent the re-crystallization age. Though ages of around 40 Ma are obtained for two fractions of 1200C and 1300C in the age spectrum of 40Ar-39Ar dating, it may be difficult to connect with the Rb-Sr result due to the low degassing rate of 39Ar.

An exposure of the Qomolangma Detachment was discovered at about 8520m in north slope of Mt. Qomolangma. Occurrence of conjugate shear faults and extensional shear bands in the Qomolangma limestone, Yellow Band and North Col Formation indicate existence of another detachment near the base of the North Col Formation. This detachment must be the northern extension of the Lhotse Detachment named by Searle (1999).

These studies for age dating and the feature of detachment must be useful for the tectonic study on the rapid exhumation of Himalayas at 16-22Ma.