

History of Hakusan volcano studied by multi-chronology

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The Hakusan volcano locates at the border between Ishikawa, Fukui and Gifu Prefectures. Existence of a magma reservoir is recognized by the seismicity (Takahashi et al., 2004), so that possibility of future eruption has been worried in recent years. Therefore, detailed analysis on the magmatic and volcanic history of the Hakusan volcano is necessary. The Hakusan volcano consists of Kagamuro (300~400ka), Ko-hakusan (100~140ka), Shin-hakusan (volcanic activity is further divided into two stages: the first (30~40ka) and the second (~10ka) activities), and Uguisudaira (~20ka) volcanoes. The eruption age of each volcano has been estimated mainly by the K-Ar method (Higashino et al., 1984, Sakayori et al., 1999, etc.). However, except for Kagamuro volcano, their ages are relatively young for the age range applicable by the K-Ar method. Therefore, cross-check by other dating methods is important to confirm their eruption ages.

The purpose of this research is to date Hakusan volcano by the thermoluminescence (TL), fission track (FT), U-Th, and U-Pb methods to argue the volcanic activity. Obtained ages for the time of eruption are concordant with reported K-Ar ages.

It seems that eruption activities had occurred over a period of 60~100 ka in the Ko-hakusan volcano, ~50 ka in Shin-hakusan I volcano, and younger than ~10 ka in Shin-hakusan II volcano. Crystallization ages within magma chamber is 50~100 kyrs younger than the eruption ages.

Keywords: Luminescence dating, U-Th dating, Fission track dating, U-Pb dating