

富士火山, 太郎坊に露出する新期スコリア層の全岩化学組成

—富士黒土層形成期付近を境とするマグマ供給系の変化—

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Whole-rock Chemical Composition of Scoria Layers of the Younger Stage Exposing at Taro-bo, Mt Fuji
—A Change in the Magma Plumbing System Occurred around Formation Period
of the Fuji-black Soil Layer (FB)Takayuki KANEKO*, Atsushi YASUDA*, Taketo SHIMANO**,
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Mt Fuji had preferentially effused basaltic magma since its initiate of activity at about one hundred thousand years ago. In the Younger stage (5,600 yrsBP~), however, it became to spout occasionally andesitic or dacitic materials to be involved in air-fall deposits or pyroclastic flows, such as, Hoei scoria or Osawa pyroclastic flows. Andesitic magma is solely found as melt-inclusions in phenocrystic minerals in the Older stage (100,000~10,000 yrsBP). This suggests that some kind of changes might have occurred in the magma plumbing system of Mt Fuji. To investigate such possibility, we measured whole-rock chemical compositions of the representative scoria layers of the Younger stage erupted in and around the summit and Hoei craters, and interpreted the results based on our recent model of magma plumbing system of Mt Fuji, consisting of the deep basaltic and the shallow andesitic chambers. The compositions of the scoria layers of the younger stage showed high FeO*/MgO ratio with high and varied TiO₂ and K₂O contents, which are the same as the general characteristics of Mt Fuji as pointed by previous studies. Detailed comparison with the scoria layers showed that compositions of the Younger stage had slightly but systematically higher SiO₂ content - occasionally basaltic andesite - than those of the Older stage. These chemical differences can be explained by existence of more differentiated magma having higher SiO₂ content in the shallow chambers in the Younger stage, compared to those in the Older stage, rather than by increase of the mixing ratio of the similar differentiated magma of the Older stage. Mixing such a differentiated magma with a basaltic magma newly raised from the deep chamber can generate basalts having slightly high SiO₂ content as erupted in the Younger stage. Although cause of generating SiO₂-rich magma in the Younger stage is unclear, it might have occurred associated with the inactive period suggested by the Fuji-black soil layer lying between the two stages. The shallow dacitic magma chamber assumed in the model of the Hoei eruption might be an extreme case where the magma in the shallow chamber evolved to be highly SiO₂-rich composition.

Key words: Fuji, magma plumbing system, andesite, magma chamber, melt-inclusion

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