

Chemical composition of minerals and melt inclusions in Kusasenrigahama pumices from Aso volcano, Kyushu, Japan -Comparison with Aso-4-

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In this study, we analyzed Kusasenrigahama pumice to compare with Aso-4 volcanic product about whole rock chemical composition, chemical composition of minerals and melt inclusion, and water concentration in melt inclusion. Kusasenrigahama pumice was erupted from Kusasenrigahama pumice cone about thirty thousand years ago, which is in the west of Aso central cones. We collected pumices from four volcanic sand layers in the outcrops at the west –southwest of Kusasenrigahama pumice cone. The four layers were distinguished by pumice size and volcanic sand' s color: A, B, C, and D, in ascending order. Kusasenrigahama pumice contains plagioclase, orthopyroxene, clinopyroxene, and opaque as minerals.

Results of analysis show that mineral composition of Kusasenrigahama pumice is homogeneous, scale of volcanic activity depends on water concentration, and magma chamber under the Kusasenrigahama pumice cone is lower water concentration and higher temperature, compared with Aso-4.

(a) Uppermost and lowermost layer of Kusasenrigahama pumice shows nearly the same chemical composition of constituent minerals (plagioclase; An# = 64 ~ 68, clinopyroxene; Mg# = 75 ~ 77, orthopyroxene; Mg# = 72 ~ 74). Clinopyroxene and orthopyroxene is almost the same composition between Kusasenrigahama pumice and Aso-4. On the other hand, plagioclase composition of Kusasenrigahama pumice is different with that of Aso-4.

(b) Water concentration in MI of lowermost layer (A) is higher than that of uppermost layer (D). Compared with Aso-4, MI of Kusasenrigahama pumice contains less water.

(c) Clinopyroxene and liquid thermobarometers shows temperature and pressure, 897 ± 45 °C, 1.8 kbar respectively. When this pressure is applied, plagioclase and liquid thermometer shows temperature, 888 ± 37 °C. These temperature is higher than temperature of Aso-4 (810 ~ 850 °C).

Keywords: Aso volcano, Melt inclusion, Kusasenrigahama pumice