# Spatiotemporal variations of geochemical characteristics of volcanic rocks from Aso volcano, SW Japan

Taro Shinmura[1], Yoji Arakawa[2], Isoji Miyagi[3], Masaya Miyoshi[4]

[1]Kumamoto Gakuen University, Japan, [2]University of Tsukuba, Japan, [3]Geological Survey of Japan, AIST, Japan, [4]University of Fukui, Japan

E-mail: shinmura@econ.kumagaku.ac.jp

Chemical compositions and isotopic ratios ($^{87/86}$Sr and $^{143/144}$ Nd) for late-Pliocene to Quaternary volcanic rocks in and around Aso area in SW Japan, were determined to reveal spatiotemporal variations of the magma characteristics and a mechanism of magmatic system including large caldera volcano related to super colossal eruption.

In this study, volcanic activities in Aso area are divided to 5 stages depending on ages and characteristics of forms of eruptions. 1) Early pre-caldera stage: HMA (High Mg andesite) (3.9Ma) and High Mg picritic basalt (2.9Ma) are distributed on southwestern somma of Aso caldera. 2) Late pre-caldera stage: Pre-Aso volcanic rocks (Watanabe et al., 1989) exposed on caldera wall and somma (0.9-0.4Ma). 3) Caldera forming stage 1st to 4th: 4 colossal to super colossal eruptions (ca. 270, 140, 120 and 90 ka (Watanabe, 2001)) with voluminous pyroclastic flows including scoria and pumice. 4) Inter-caldera stage: Volcanic activities between colossal to super-colossal eruptions, mainly consisted of andesite lava flows (distributed on somma and outside of caldera). 5) Post-caldera stage: Volcanic activities after Aso-4th (the final caldera forming eruption) within caldera, forming Aso central volcanic cones with basaltic to rhyolitic volcanic products. Although Nekodake volcano is one of the Aso central volcanic cones and some volcanic products were dated as in post-caldera stage, geochemical characteristics are strongly related to volcanic rocks of late pre-caldera stage and basement rocks (granodiorite).

Volcanic products of both inter-caldera and caldera forming stage were characterized by high K2O contents and same REE patterns and isotopic ratios. On the $^{87/86}$Sr-$^{143/144}$ Nd diagram, isotopic data of volcanic rocks in early pre-caldera stage separately distributed in two areas (component A: around (0.7040, 0.51285); component B: around (0.7044, 0.51270) and of both late pre-caldera and post-caldera stage distributed between component A and B along mantle array. Sr isotopic ratios of volcanic products of both caldera forming and inter-caldera stages were distributed in very narrow range (0.7040 - 0.7042). Source materials of volcanic products of each stage are inferred from these results.

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