Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

SVC53-P17 Room:Convention Hall Time:May 21 18:15-19:30

K-Ar ages of volcanic rocks from Nekodake volcano in Aso, Kyushu, Japan -different magma systems within a caldera-

Taro Shinmura[1*], Hirochika Sumino[2], Yasuhiro Ueda[3], Yasushi Mori[4], Masaya Miyoshi[5], Keisuke Nagao[2], Hasenaka Toshiaki[6], Yoji Arakawa[7]

[1]Fac. Econ., Kumamoto Gakuen Univ., [2]GCRC, The Univ. Tokyo, [3]Mitsubishi Corporation Exploration Co., Ltd., [4]Kitakyushu Mus. Nat. Hist. & Hum. Hist., [5]Fac. Edu. & Regional Studies, Univ. Fukui, [6]Grad. Sch. Sci. & Tech., Kumamoto Univ., [7]Grad. Sch. Life & Environmen. Sci., Univ. of Tsukuba

Aso volcano, situated in central Kyushu, produced four gigantic caldera-forming pyroclastic eruptions between 270 and 90 ka. Volcanos within the Aso caldera (central volcanic cones) consists of multiple volcanic vents and products at the post-caldera stage (after 90 ka), and Nekodake volcano situated at the most eastern part of the volcanic cones. Detailed K-Ar age dating of ACVC (Aso central volcanic cones) except for Nekodake was reported by Miyoshi *et al*. (2012). Although Nekodake situated within the Aso caldera, Ono et al. (1982) reported that Nekodake was not a part of ACVC, but pre-Aso volcanic products produced before caldera forming stage (mainly distributed at somma), because 1) characteristics of chemical components were not similar to volcanic products of ACVC but to of pre-Aso volcanic rocks, 2) lower than Aso-3 pyroclastic flows, 3) obtained K-Ar age was 590+-220 ka (older than Aso-1 pyroclastic flows). Itaya and Nagao (1988) reported that K-Ar ages, 150+-60 and 140+-40 ka of pyroxene andesite from Nekodake were reported (Itaya and Nagao, 1988) and these ages were consistent with volcanic successions but younger than pre-Aso volcanic products. Matsumoto (1992) determined K-Ar age with correction of mass-dependent fraction and obtained age of 110-80 ka, and pointed that this range is not consistent with volcanic succession (lower than Aso-3) because the data depend on volcanic succession was determined by geographical features and not correct, and they implied obtained age were correct. Shinmura *et al*. (2012) determined Sr and Nd isotopic ratios and bulk rock chemical component of volcanic rocks from Nekodake and pointed that these geochemical characteristics were different from those of ACVC but there were relations with those of pre-Aso volcanic rocks and granodiorite of basement rocks. Ueda *et al*. (2012) reported features of chemical components and variation of rock type at Nekodake volcano.

In this study, several volcanic rocks were collected with rock type and spatial variety from Nekodake volcano, and K-Ar ages were determined of those samples. The argon isotopic ratio was measured using a noble-gas mass spectrometer MS-IV (modified VG-5400) in the Geochemical Research Center, Graduate School of Science, The University of Tokyo. The radiogenic ^{40}Ar contents of samples were determined by using the sensitivity method. In this method, the unknown concentration of ^{40}Ar contained in a samples is determined with correction of mass-dependent fraction based on measured ^{38}Ar/^{36}Ar ratio (Takaoka *et al*., 1989). Two samples for Ar isotopic analysys were prepared in each rock sample for reproducibility decision.

K-Ar age of nine samples were obtained as follows.

61+-27, 62+-39, 64+-6, 69+-6, 72+-65, 81+-39, 82+-7, 87+-70, 117+-94 ka (weighted mean in each data)

Three of these were very precise and errors were within 10 ka. Eight of these were 9-6 ka, and these ages were younger than the ages reported before. These ages show that volcanic activity of Nekodake volcano was also in post-caldera stage, and this implies that different magma systems were just under the same caldera in post-caldera stage of Aso.

Keywords: Nekodake, K-Ar age dating, unspiked method, Aso, post-caldera volcanism, central cones