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Rare earth element compositions of the Kitahata body in the Fukae granite, northern part of Kyushu

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Cretaceous granitic rocks are widely distributed in northern part of Kyushu (Karakida, 1985), and Fukae granite is located in Kitahata district, Karatsu city, Saga Prefecture. The Fukae granite in this area (hereinafter, Kitahata body) consists of granite, aplite and felsic inclusion. The felsic inclusion is an oval figure about 50 cm in diameter, and is gradually changing from the surrounding granite. Main constituent minerals of the Kitahata body are quartz, k-feldspar, plagioclase and biotite, with apatite, zircon, opaque minerals as accessories. K-Ar biotite age of the body is 95.8+/-2.4 Ma (Kitahata village history compilation committee, 2008). Rare earth element compositions are analyzed about ten samples, for comparison with estimated result of Kawano (2013).

In chondrite normalized REE patterns, values of LREE of the Kitahata body are the highest, and, aplite and felsic inclusion are lower than them. Normalized La/Lu ratios of the Kitahata body are also higher than those of the aplite and the felsic inclusion. Although the negative abnormalities of Eu are not observed in the Kitahata body and the felsic inclusion, it is clearly observed in the aplite. That is, Eu/Eu∗ratio of the aplite is low and the Kitahata body and the felsic inclusion show a similar value. SiO_2 contents increase from the Kitahata body to the felsic inclusion and the aplite. The values of LREE and La/Lu ratio of the felsic inclusion and the aplite which are rich in SiO_2 are lower than those of the Kitahata body, and it is suggested that they have the different origin from the Kitahata body. Although aluminum saturation index of the Kitahata body is larger than 1.0, it of the felsic inclusion is less than 0.9 and shows the character of meta-aluminous. The origin of the felsic inclusion not be considered to be a sedimentary rock, but it may originate in different felsic magma.

Keywords: Kyushu, Fukae granite, Kitahata, rare earth element