Zircon U-Pb dating of plutonic rocks from Yamizo Area, northeast Japan

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To investigate the timing of the tectonothermal events of Yamizo plutonic suite, U-Pb dating of zircon was carried out using laser ablation inductively coupled plasma mass spectrometry combined with cathodoluminescence imaging on zircon grains separated from the Yamizo plutons.

In the Yamizo mountain areas, K-Ar ages of Ozasa (67.5Ma), Fukuroda (101 Ma), Iwafune (64.5 Ma), Kamehis (64.9 Ma) and Ooyamada plutons (71.8 Ma and 108 Ma) have been reported by Shibata et al. (1973). Basically, the K-Ar ages are sometimes younger than actual intrusive ages because the closure temperature of K-Ar ages are lower than that of the solidus of granitic rocks. The closure temperature of the U-Pb age of zircon was higher than that of K-Ar age and more suitable for investigating intrusive age of magma.

Nagasaka, Hatajyuku, Yamagiwa, Nomisawa, Ozasayama, Kizami, Kamehisa and Hanatatetouge plutons are distributed in the northern part of the Yamizo area. Zircon U-Pb ages of these plutons were 69–63 Ma. In the southern part of the Yamizo area, Ooyamada, Fukuroda and Korofuji plutons are distributed. The zircon U-Pb ages of these plutons were 104–102 Ma.

According to the results in this study, U-Pb ages correspond to the K-Ar ages previously reported. This result indicated that cooling rates after intrusion of the plutons in the Yamizo area were relatively fast. Moreover, U-Pb ages of plutons in the southern part of the Yamizo area were same as those of the Bato pluton (109–106 Ma: Ejima et al., 2017) and of Abukuma plutons (121–97 Ma: Kon and Takagi, 2012; Ishihara and Orihashi, 2015; Kon et al., 2015; Takahashi et al., 2016). On the other hand, U-Pb ages of plutons in the northern part of the Yamizo area were same as those of plutons around Tsukuba mountain (80 Ma, 63–58 Ma: Koike and Tsutsumi, 2018).

Keywords: Yamizo area, U-Pb age of zircon, plutons

