

The Jecheon Granite-A western extension of the Hida Granites?

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In the Korean peninsula, Jurassic granitoids of the Daebo cycle are most widespread, while equivalent age of the granitoids are limited to the Hida plutono-metamorphic terrain in Japan, and called Hida Granites (Kano, 1990). The Daebo granitoids are generally reduced type (Ishihara et al., 1981), composed of ilmenite series in most parts of the terrains, except a few areas, such as north of Seoul and Jecheon pluton (Jin et al., 1999). On the contrary, the Hida Granites

belong generally to the magnetite series (Kano, 1990; Ishihara, 2005).

In comparison of the oxidized granitoids of the two regions, we found adakitic signatures on the Jecheon granitoids, which seem to be intruded into non-island-arc setting of the Ogcheon Belt. This new discovery is indicative of a hypothesis that the Hida Granites were located to the northeast of the Jecheon granitoids in the early Jurassic time, because similar

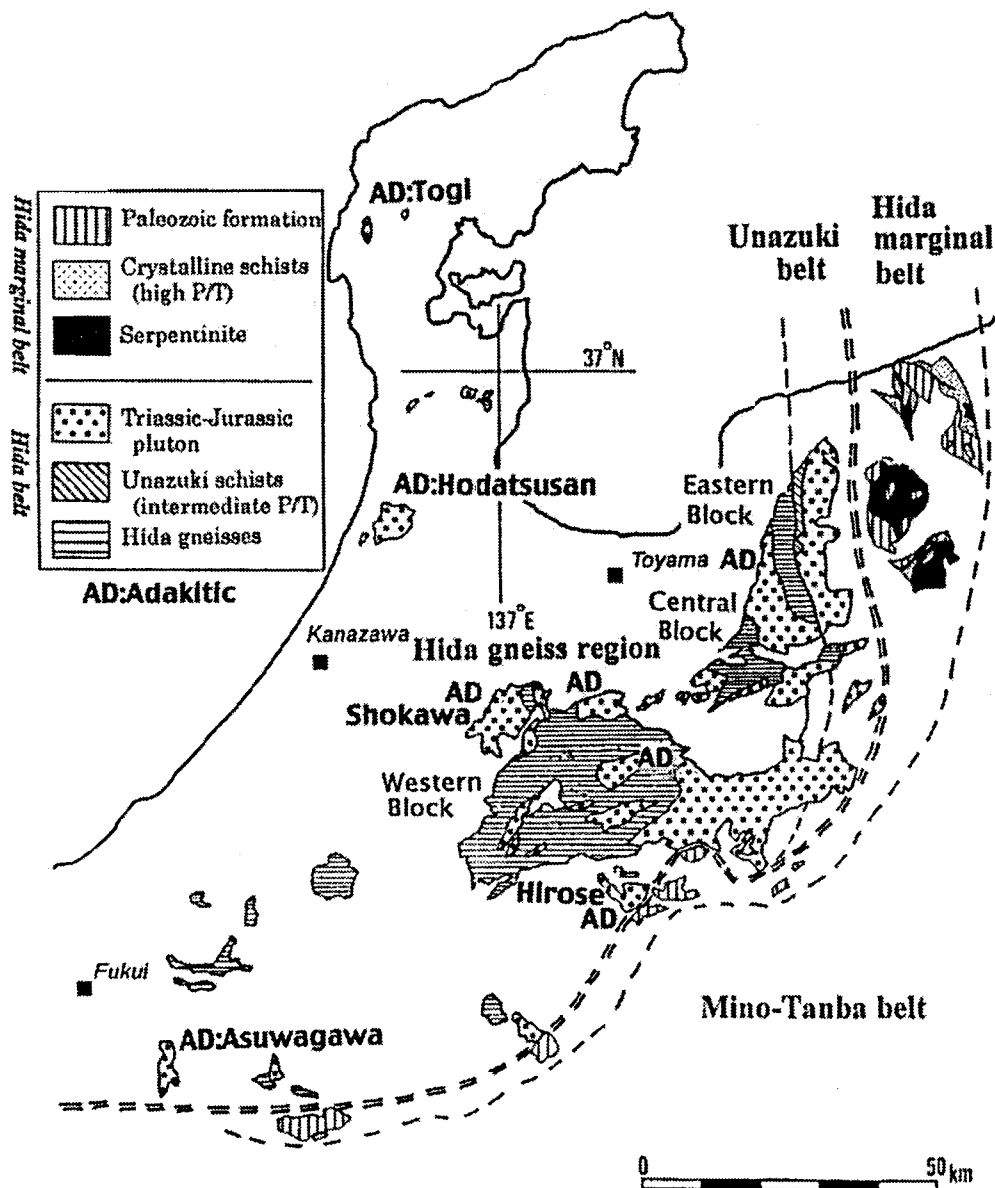


Fig. 1 Triassic-Jurassic adakitic rocks in the Hida Massif. Modified from Fig. 2 of Arakawa et al. (2000).

adakitic rocks were distributed in the western and northern parts in the Hida massif (Fig. 1), closer to the Korean Peninsula. The two granitoids may have formed under the same tectonic setting, but separated after the Jurassic time.

An intermediate composition of igneous rocks with $\text{SiO}_2 > 56\%$, $\text{Al}_2\text{O}_3 > 15\%$, $\text{MgO} < 3\%$ from arc environments with Sr/Y ratios > 40 and Y < 18 ppm may be classified as “adakite”, with the implication that they are derived by direct melting of the subducting slab and related rocks (Defant and Kepezhinskis, 2001). HREEs are depleted showing obvious the right-side down REE pattern. Our recent studies on 16 granitic specimens indicate that the Jecheon granitoids have SiO_2 ranging from 63.9 to 74.2 %, Al_2O_3 varying from 17.3 to 12.8 %, MgO from 1.6 to 0.8 %, Sr/Y ratio

from 30 to 76, and Y contents 6 to 15 ppm. These parameters are suggestive for the Jecheon granitoids of adakitic composition. REEs are rich in LREE and LREE/HREE ratios are 7 to 9. Sr/Y ratio of the Jecheon and Hida Granites is shown in Fig. 2.

The Jecheon Granites are composed of mostly strict-sense of granite and some granodiorite in composition and has a high initial Sr ratio as 0.7140, thus considered originated in a partial melting of the Precambrian basement (Jin et al., 1992). With this crustal model, the adakitic signatures can be explained by remelting of older adakitic granites and/or metamorphic rocks. Another possible mechanism to have adakitic character may be to remove garnet and amphibole from the original felsic magma by an early crystallization of these refractory minerals before the emplacement of the Jecheon magma.

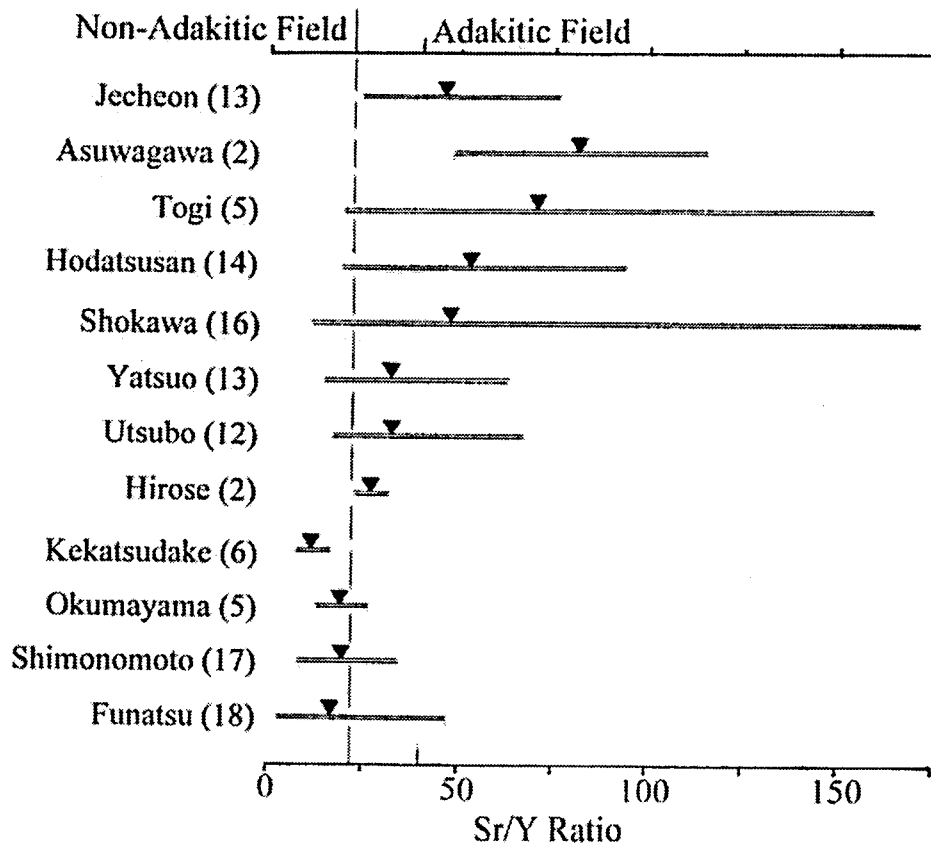


Fig. 2 Sr/Y ratio of the Jecheon and Hida Granites