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Occurrence of detrital grandite from psammitic schist in the Sanbagawa belt and its significance

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Geology and chemical composition of detrital garnets from two different areas in Shikoku, Southwest Japan, have been investigated. This study was focused on psammitic schists in the Oboke area, Sanbagawa belt in central Shikoku and sandstones from the Kainan area, Northern Shimanto belt in eastern Shikoku, in order to understand the source rocks of clastics and the similarity of the two area's geological setting.

Analyzed samples were collected from the Kawaguchi and Koboke Formations in the Sanbagawa belt and the Northern Shimanto belt where includes the Furuya, Hinotani, Taniyama and Hiwasa Formations. Detrital garnets from each area are mainly pyralspite. Pyralspite of the Oboke area consists mainly of almandine with spessartine and/or grandite components. Particularly, the Oboke area is characterized by the occurrence of grandite (rich in grossular component). On the other hand, almost garnets of the Kainan area are almandine with pyrope component. The Hinotani Formation contains grandite (grossular-rich).

The results show differences of garnet's chemical composition between the Oboke and Kainan areas; psammitic schist of the Oboke area is richer in almandine with spessartine and grandite components, and grandite than sandstone of the Kainan area. The detrital garnet of the Hinotani Formation (late Albian-Cenomanian; Kiminami et al., 1998) of the Northern Shimanto belt, however, especially shows similarity to it of the Oboke area. Occurrence of grandite from the Koboke and Kawaguchi Formations in the Oboke area and the Hinotani Formation in the Kainan area is probably comparable to the occurrence of grandite (grossular-rich) from sandstone around the middle Cretaceous in Southwest Japan.