Chemical composition of detrital spinel from Eastern Chugoku and Northern kinki of Sangun zone, Southwest Japan.

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Geochemical characteristics of chromian spinel from ultramafic rocks and chromitites in Sangun zone of Central chugoku district have become clear gradually by recent many studies [1,2]. Especially, petrogenesis of chromitite formation [3] and explolation for chromitite [4] came to be advanced from these works. However, ultramafic complexes in Sangun zone distribute not only central chugoku district but also from eastern chugoku to northern kinki districts, which are called Wakasa, Sekinomiya, Izushi, Oeyama complexes respectively. Chromitite pods and chromite mines (now closed) also existed in these district. Detailed research of chromian spinel from ultramafic rocks and chromitite in this district is not done sufficiently, and there is the required for a geochemical description for understand origin and petrogenesis of ultramafic rocks and chromitite. However ultramafic rocks in the Sangun zone of these district are also strongly altered and serpentinized. Then we use detrital chromian spinel from the stream sediment, in this study. This is the first report of chemical composition of detrital chromian spinel from ultramafic rocks and chromitite in Sangun zone of from eastern chugoku to northern kinki district.

Cr#(=Cr/Cr+Al) of detrital chromian spinel from Sekinomiya complex varies from 0.43 to 0.56. Cr# of those from Izushi complex varies from 0.36 to 0.56 (mainly 0.43 to 0.50). Cr# of those from Oeyama complex varies from 0.43 to 0.69. That is, Cr# of those from eastern chugoku to northern kinki district overlap with the Cr# (0.4 to 0.6) of detrital spinel from central chugoku district. In addition, We found chromitite boulder in Oeyama complex, and show that Cr# of chromian spinel varies from 0.38 to 0.43, that is the most High-Al podiform chromitite in Japan. This is significant petrological description, indicating involvement of both Al-rich melt and of fertile harzburgite.

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Petrological Implications of Temporal and Spatial Variations in Magma Chemistry of the Quaternary Tendurek Shield Volcano, Eastern Anatolian Collision Zone, Turkey

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The Quaternary Tendürek Volcano is one of the largest eruption centers of the Eastern Anatolia with a summit elevation of 3538 m and a footprint area of 650 km^2. It is a shield volcano consisting of lavas ranging in composition from tephrites through benmoreites/phonolites to trachytes. The young volcanism of the region is thought to be related to the continent-continent collision taken place after the closure of the Neo-Tethys Ocean. The Tendürek volcano is of special importance, because it is one of the rare places in Eastern Anatolia where calc-alkaline and potassic alkaline volcanism coexisted.

Lavas of the Tendürek volcano are classified on the SiO_2 versus K_2O diagram as medium K / high K and shoshonitic series. Results of our FC, AFC and EC-AFC modelings indicate that the Tendürek lavas were influenced by crustal contamination and fractional crystallization. Medium to high potassic basalts, trachy-basalts, tephrites and basaltic-trachyandesites basically follow a partial melting trend on La vs. La/Yb diagram in contrast to the trachy-andesites, phonotephrites, tephriphonolites, phonolites, and trachytes of the shoshonitic series aligning along a fractional crystallization trend. The high-SiO_2 phonolitic lavas have a more pronounced enrichment in incompatible elements, such as Rb, Th, La and Nb, in comparison to those in the other shoshonitic rocks. The aforementioned differences in the chemical compositions of these two groups of shoshonitic rocks may reflect variations in the fractional crystallization process which involved clinopyroxene and plagioclase during the petrogenesis of the potassic rocks.

According to our melting model, primitive magma of the Tendürek lavas were derived from mixing of the spinel and garnet peridotite melts with different melting degrees ranging between 1 - 3%.

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