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Discernment technique of the granitoids by a chemical feature, Ryoke and Sanyo granites at Chubu district, central Japan

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1. Introduction

With the start of a fault movement, the surface environment of the hinterland also changes, and record of that change may be left behind to a downstream site. If the deposition age can be presumed at the depositing area of a downstream site, it will become possible to presume the time when the mountain land in a hinterland upheaved, and the starting time of the fault activity. In order to discuss change of a groundwater flow from the past to the present, it is necessary to restore the old geographical feature in consideration of time and spatial distribution of an analytic area or mountain land upheaval of the circumference of it.

In the hinterland analysis in old geographical feature restoration of the Kiso River and the Toki River area including the Kiso mountain land, and the Mino - Mikawa plateau, it is necessary to conduct hinterland analysis, also taking into consideration the petrographic feature and geochemical characteristics of a basement rock which constitute the mountain land of a hinterland, since the lithofacies to which the base geology which constitutes such mountain land was similar. In this research, in order to develop the hinterland analysis technique in the lithofacies which was similar in base geology, collection and analysis of the data about the geology and rock which is information required for hinterland analysis were conducted, paying attention to the Toki River valley over which several kinds of granites are distributed.

2. Examination by literature data

In order to specify the hinterland of the gravels of downstream site, it is necessary to identify gravels by the difference in the petrologic feature for each granitoids, quantity ratio of minerals, or chemical compositions. Although there are no restrictions in discernment of the granitoids of a hinterland, when being aimed at the gravels of downstream site, etc., there are restrictions by the quantity of a sample, change of the chemical constitution by weathering and deterioration. The techniques by small amount of samples, and considering the influence of weathering and deterioration are needed.

Petrological characteristics of these granitoids, Inagawa Granite usually contains basic inclusions and Naegi - Agematsu Granite dose not contains them (Suzuki and Ishihara, 1967), but it seems to be difficult the identification of these granitoids from the gravel ?size samples.

For geochemical characteristics, such as ratio of minerals and chemical composition of minerals, REE patterns of Ryoke and San-yo granitoids show that REE patterns of San-yo granitoids are accompanied by clear Eu anomalies, and those of Ryoke granitoids are usually accompanied by HREE depletion (Ishihara, 2003). Literature data of granitoids from these area (Ishihara and Murakami, 2006) show that REE patterns of Inagawa Granites contains the pattern with clear Eu anomalies, and are not clearly accompanied by HREE depletion compared with the case of Ishihara (2003). Hiraoka (1997) suggests the granitoids on hinterland using the chemical characteristics of biotite, considering depletion of several elements by weathering.

3. Examination by analytical data of granite samples

Petrological and geochemical approaches were adopted by samples of Inagawa Granite and Naegi ? Agematsu Granite, distributed along upper river basin of Toki River. And gravels from downstream site of Toki River were investigated for identification of granitic rock bodies.

Major element analysis of biotites by EPMA showed the samples from Naegi ? Agematsu Granite were rich in Fe and F relative to those from Inagawa Granite. We will report the result of identification of granitic rock bodies by using gravels from downstream site of the Toki River.

References

Suzuki and Ishihara (1969): Rep. Geol. Surv. Japan, 232, 155-168 (in Japanese).
Ishihara (2003): Bull. Geol. Surv. Japan, 54, 95-116.
Ishihara and Murakami (2006): Resource Geol., 56, 245-256.
Hiraoka (1997): J. Geol. Soc. Japan, 103, 770-780.