5.5.P07

Highly evolved leucogranites with REE tetrad effect: The Muamsa and Weolaksan granites in the Ogcheon Fold Belt, South Korea

K.-H. KIM, S.-G. LEE AND S.C. SHIN

KIGAM, Daejeon 305-350, Korea (khk@kigam.re.kr; sgl@kigam.re.kr; scshin@kigam.re.kr)

Introduction

Rare earth elements(REEs) have been used as a very useful geochemical tool for understanding the petrogenesis of igneous rocks. Recently, the REE tetrad effect, a specific phenomenon of chondrite-normalized REE patterns, has spawned considerable interest in their chemical behavior in geological systems. In this paper, we report and discuss REE tetrad effects from Mesozoic granite bodies: The Muamsa granite and Weolaksan granite, which are located in the northeastern Ogcheon fold belt, South Korea.

Results and Discussions

The Muamsa granite is a coarse-medium grained biotite granite, while the Weolaksan granite is a granite complex which is composed of fine to medium grained hornblende granite and coarse to medium granied biotite granite. The Rb-Sr whole ages of the Muamsa and Weolaksan granites are 84±6Ma and 91.2±3.1Ma, repectively, which suggest their emplacement ages. Their $\varepsilon_{Nd}(T)$ values show ranges from -13.3 to -18.0, which suggest their crustal origin. Geochemically, the two granite bodies are peraluminous and show M-type(convex) tetrad effect in the chondrite-normalized pattern (Fig. 1), which is considered as a by-product of intense interaction of the residual melts with aqueous hydrothermal fluids [1]. Our data suggest that these two granites originated from geochemically similar source materials, and the REEs tetrad effect of the Phanerozoic granitoids in Korea are different from those in NE China in original source material.

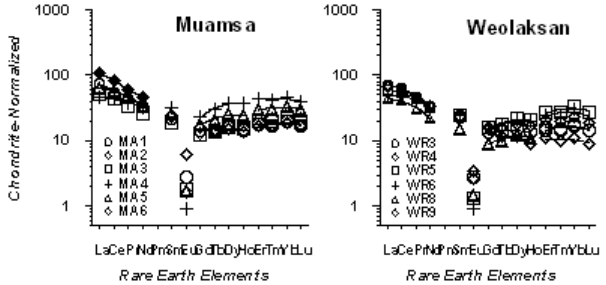

Fig. 1. Chondrite-normalized REE pattern showing M-type tetrad effect in Muamsa and Weolaksan granites

References

[1] Wu et al. (2004) *JAES*, in printing.

5.5.P08

Formation of rare-metal pegmatites related to deep-seated geodynamic processes in the Eastern Sayan, Siberia, Russian Federation

V.M. CHOKAN AND V.M. MAKAGON

Institute of Geochemistry after A.P.Vinogradov SB RAS, Irkutsk, Russia (chokan@igc.irk.ru; vmak@igc.irk.ru)

The formation of granitic pegmatites and associated mineralizations are important problems of petrology. Rare-metal pegmatites in the East Sayan pegmatite belt were studied to get knowledge of large granite-pegmatite systems. This belt is confined to the southern mobile marginal part of the Siberian platform. The rare-metal pegmatites can be divided into spodumene and petalite subformations. The initial pressure of the mineral formation was 300-500 MPa, and 200-350 MPa, respectively [1]. Pegmatites of the spodumene subformation occur in the Urik-Iya graben, and pegmatites of the petalite subformation in the Elashsky graben, which are rift structures at the southern mobile margin of the Siberian platform [2]. The ages of the Sayan granitoid complex, and the spodumene and petalite pegmatites have been determined by the Rb-Sr method to 1.82 Ga ,1.69 Ga and 1.49 Ga, respectively.

Available geochemical data, and the presence of large volumes of rare-metal pegmatites without any clear spatial connection to granitoid massifs do not agree with the hypothesis of rare-metal pegmatite formation during differentiation of the magma which formed the granitoid massifs. The relationship between granitoids and pegmatites is paragenetic. According to data of A.D.Shcheglov and V.N.Moskaleva [2], granite magmatism in the Urik-Iya rift structure is caused by the presence of a deep (mantle) diapir, which was the source of both thermal energy and fluids. Fluids were transported along deep faults. Large rare-metal pegmatite fields formed due to a long process of pegmatite melt formation in deep magma chambers under the influence of mantle fluids containing significant amounts of SiO_2, alkalies, which were enriched in Rb, Li, Ta, Nb and other lithophile elements. Small, granodiorite and tonalite intrusions in Urik-Iya graben are characterized by high Ba, Sr, Li, Cs and Sn contents. These data indicate the possibility of enrichment of portions of undifferentiated granodiorite magma in rare lithophile elements within the rift structures, and then formation of rare-pegmatite melt due to the influence of mantle fluids.

This work is supported by RFBR (grant 02-05-65293).

References

[1] Zagorsky V.Ye., Makagon V.M. and Shmakin B.M. (2003) *Russian Geology and Geophysics* **44,** 403-416.

[2] Shcheglov A.D. and Moskaleva V.N. (1998) *Doklady Earth Sciences* **358,** 814-816 (Russia).