THE ORIGIN OF THE MAIN RANGE BATHOLITH: SUPPORTING EVIDENCE FROM THE REE CONTENTS

(Asalmula Batolitos Banjaran Besar: Bukit Tambahan Daripada Kandungan Unsur Nadir Bumi)

HAMZAH MOHAMAD,
Jabatan Geologi
Universiti Kebangsaan Malaysia
43600 Bangi

The compositions of major elements and the REEs La, Ce, Nd, Sm, Eu, Tb, Dy, Yb and Lu of 24 coarse to medium grained porphyritic biotite-muscovite granite and 20 medium grained cataclastic biotite granite exposed at km 27 and 36 along the Lebuhraya Kuala Lumpur-Karak were studied. The medium grained biotite granites contain higher amounts of REEs, owing to their higher contents of LREEs. The HREEs and the size of the negative Eu anomaly, however, are smaller than the porphyritic granite. The contrast in the REE contents between the two stocks is thought to be related to the different formation level in the magma chamber. The porphyritic granites, being relatively poorer in plagioclase, is believed to have formed at a higher level, compared to the more granodioritic, lower level medium grained biotite granites. The REEs, (La/Lu)cn, and the Eu/Sm values suggest that the magma fractions have been derived by partial melting of materials such as graywackes, metapelites, quartz metadiorites, tonalites, and silica-rich granulites, which characterise continental crust in general. The similar REE study on the acidic volanics at Lanchang (40 km to the east, on the eastern side of the Bentong Suture) also suggests a continental crust origin. In view of the tectonic setting of the Malay Peninsula, the present study supports the idea of subducting (Sinoburmalaya) beneath the continental crust unit on the east (Eastmal) during the Late Triassic-Early Jurassic Orogeny.

Kandungan unsur major serta unsur nadir bumi (REE) La, Ce, Nd, Sm, Eu, Tb, Dy, Yb dan Lu bagi 24 sampel granit biotit-muskovit porfirit berbutir kasar dan sederhana serta 20 sampel granit biotit kataklas berbutir sederhana di km 27 dan 36 Lebuhraya Kuala Lumpur-Karak telah dikaji. REE lebih tinggi di dalam granit biotit berbutir sederhana, berikutan kandungan LREE yang lebih tinggi. Walau bagaimanapun HREE nya relatif rendah dan anomali Eu negatifnya juga lebih kecil berbanding granit porfirit. Perbezaan kandungan REE ini dikaitkan dengan perbezaan aras pada ruang magma. Granit porfirit, yang secara relatif miskin plagioklas, dipercayai terletak di aras lebih tinggi, berbanding granit biotit berbutir sederhana yang ternyata lebih kegranodioritan dan dipercayai terletak di bahagian lebih bawah ruang magma. Nilai-nilai REE, (La/Lu)cn, dan Eu/Sm mencadangkan magma pembentuk granit-granit ini terlebur separa daripada bahan-bahan seperti metagreiwak, metapelit, metadiorit kuarza, tonalit dan granulit kaya silika, yang umumnya mencirikan kerak kebenuaan. Kajian REE yang hampir sama terhadap batuan volkano asid di Lanchang (40 km ke timur, di sebelah timur Sutur Bentong) juga mencadangkan batuan volkano ini berasalkan kerak kebenuaan. Dari sudut tektonik Semenanjung, kajian ini memperkuatkan gagasan adanya penyusupan kerak benbua (Sinoburmalaya) ke bawah kerak benua di timur (Eastmal) di masa orogeni Trias Lewat - Jura Awal.

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