

Petrology and geochemical features of Semporna volcanic rocks, South-east Sabah, Malaysia

ABSTRACT

The volcanic rocks in Semporna Peninsula, Sabah, Malaysia forms parts of the Miocene subjected slab during the Miocene-Pliocene orogeny. This study presents new petrographic and geochemical data of volcanic rocks in Semporna area. The volcanic rocks range in composition from basaltic andesite, andesite, dacite to rhyolite, with most of the volcanic shows calc-alkaline affinity with a minor tholeiitic feature. The trace elements shows enrichment in large-ion lithophile elements (LILE) and light rare earth elements (LREE) suggesting that the volcanic rocks have similar geochemical patterns and might come from similar magma source. The petrochemical data suggests that volcanic rocks of Semporna shows characteristic of subduction zone (negative Nb, Ta, and Ti). Decreasing magnitude of Europium anomalies from intermediate to acid lavas suggests an important role of plagioclase in the fractional crystallization. Negative Ce anomaly in part of Semporna volcanic rocks suggest that those volcanic rocks may related with emergence of oxygenated deep-sea environment. Tectonic diagrams showed that the Semporna volcanic rocks were formed in an island arc setting.