

## **Field relation, petrochemistry and classification of the volcanic rocks from the eastern part of Tioman Island, Pahang**

**ANUAR ISMAIL<sup>1</sup>, AZMAN A GHANI<sup>1</sup>, MOHD ROZI UMOR<sup>2</sup> AND NORAN ALWAKHIR SHAARANI<sup>3</sup>**

<sup>1</sup>Department of Geology, University of Malaya  
50603 Kuala Lumpur

<sup>2</sup>Geology programme, School of Environmental and Natural Resources Sciences  
Faculty of Science and Technology, University Kebangsaan Malaysia, 43600 Bangi, Selangor

<sup>3</sup>Mineral and Geosciences Department, Ipoh

The volcanic rocks from eastern part of the Tioman Island can be divided into volcanic lava and pyroclastic types. Geochemically volcanic lavas can be classified as andesite, dacite and rhyolite. The proportion of quartz, K-feldspar and plagioclase of the three rock types are: rhyolite (Quartz: 60–65%, K-feldspar: 10–15%, Plagioclase: 10–15%), dacite (Quartz: 40–50%, K-feldspar: 25–30%, Plagioclase: 15–25%) and andesite (Quartz + K-feldspar: 15–25%, Plagioclase: 55–65%). Both rhyolite and dacite may have a common origin. On the other hand, the andesite samples show a slight concave upward REE pattern which may be the result of minerals such as garnet, clinopyroxene and amphibole having remained residual in their source. The presence of garnet constraints the mafic source to be within the lower crust (deeper than 25 km) or upper mantle.

*Batuan volkanik dari bahagian timur Pulau Tioman boleh dibahagikan kepada jenis lava dan piroklastik. Secara geokimia lava volkanik boleh dibahagikan kepada andesit, dacit dan riolit. Nisbah kuarza, K-feldspar dan plagioklas untuk tiga jenis batuan ialah: riolit (Kuarza: 60–65%, K-feldspar: 10–15%, Plagioklas: 10–15%), dacit (Kuarza: 40–50%, K-feldspar: 25–30%, Plagioklas: 15–25%) dan andesit (Kuarza + K-feldspar: 15–25%, Plagioklas: 55–65%). Kedua-dua riolit dan dacit mungkin berasal dari magma yang sama. Tetapi andesit menunjukkan corak plotan unsur nadir bumi yang mencadangkan mineral-mineral seperti garnet, klinopiroksin dan amfibol tertinggal dalam batuan puncanya. Kehadiran garnet mencadangkan punca mafik terletak di dalam kerak bawah (kedalaman lebih dari 25 km) atau mantel atas.*