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**GEOKIMIA UNSUR MAJOR DAN NADIR BUMI BAGI
BATUAN VOLKANO LANCHANG, PAHANG DAN
KEPENTINGAN TEKTONIKNYA**

**Major and Trace Element Geochemistry of Lanchang Volcanics, Pahang
and their Tectonic Significance**

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Batuan afanit kelabu pucat kehijauan-hijauan yang tersingkap pada sebuah kuari batu jalan tinggal, 2 km ke arah timurlaut pekan Lanchang, Pahang telah diselidiki. Kepekatan Si, Al, Ti, Fe, Mn, Mg, Ca, Na, K dan P serta unsur nadir bumi La, Ce, Nd, Sm, Eu, Tb, Dy, Yb dan Lu bagi 21 sampel batuan yang dipercayai berusia Trias Tengah Lewat ini dibentangkan. Kandungan unsur major, dibantu oleh petrografi, telah dapat memastikan asalan volkano batuan ini. Nama dasit (keandesitan) didapati lebih sesuai digunakan berbanding riolit, memandangkan nisbah Na_2O terhadap K_2O yang amat tinggi, SiO_2 yang agak rendah daripada riolit biasa, serta tingginya nilai CaO. Gambarajah Masuda-Coryell bagi keseluruhan batuan memperlihatkan anomali Eu negatif yang mencadangkan kemungkinan batuan ini mengablur daripada fraksi magma dasit yang terevolusi daripada magma lebih bes, mungkin andesit. Penghabluran berperingkat melibatkan penyingkiran plagioklas, piroksen dan mungkin olivin dijangka merupakan mekanismenya. Kemungkinan adanya evolusi ini disokong oleh kewujudan perkaitan positif antara SiO_2 dan (La+Sm+Lu). Kandungan unsur nadir bumi batuan amat volkano Lanchang ini terletak 20 km sahaja ke timur zon Garis Bentong, pola kandungan unsur nadir bumi ini dijangka penting dan dapat menyokong (atau meragui) model-model tektonik Garis Bentong yang pernah dicadangkan sebelum ini.

The greenish, pale grey aphanitic rocks exposed in an abandoned road metal quarry, 2 km to the northeast of Lanchang, Pahang were investigated. The concentrations of Si, Al, Ti, Fe, Mn, Mg, Ca, Na, K and P and of rare earth elements La, Ce, Nd, Sm, Eu, Tb, Dy, Yb and Lu for 21 samples under study are presented. Major element content, complimented by petrography, has ascertained the volcanic origin of the rocks, which is believed to be Late Middle Triassic in age. The name (andesitic) dacite was found more appropriate, compared to rhyolite owing to the very high Na₂O to K₂O ratio, a relatively low SiO₂ then normal rhyolite, as well as the high content of CaO. Masuda-Coryell diagram for the whole analysis shows a negative Eu anomaly, which suggests the possibility that the rocks have crystallized from a dacitic magma fraction, evolved from a more basic magma, probably andesite. It is thought that fractional crystallization involving separation of plagioclase, pyroxene and perhaps olivine being the mechanism. The possible existence of such evolution is supported by the positive correlation between SiO₂ and (La+Sm+Lu). The rare earth content closely resembles those for andesite, particularly continental andesite. Being located only 20 km to the east of the proposed Bentong Line zone, the Lanchang volcanics rare earth element content is expected to be of significance in supporting (or disfavouring) the previously proposed tectonic models for the area.