

Studi Karakteristik dan Petrogenesa Batuan Granitik di Kabupaten Lampung Tengah, Provinsi Lampung = Study of the Characteristics and Petrogenesis of Granitic Rocks in Central Lampung Regency, Lampung Province

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Abstrak

Salah satu sumber paling ekonomis dari unsur tanah jarang (UTJ) adalah batuan beku felsik. Di Kabupaten Lampung Tengah, terdapat bukit intrusi batuan granitik yang berpotensi menghasilkan sumber daya geologi. Penelitian ini bertujuan mengkaji karakteristik mineral, oksida utama dan unsur jejak, dan petrogenesa batuan granitik pada Satuan Granit Padean. Analisis dilakukan dengan menggunakan data petrografi dan geokimia batuan beku untuk menentukan petrogenesa dari batuan. Hasil penelitian menunjukkan batuan granitik di daerah penelitian terdiri atas Granodiorite, Quartz-Syenite, Syenogranite, dan Monzogranite, yang memiliki variasi feldspar berbeda. Mineral lain yang terdapat pada batuan utamanya adalah biotit dan amfibol. Mineral aksesoris meliputi apatit dan monazit, dengan garnet ditemukan pada salah satu Monzogranite. Secara geokimia, Granodiorite dan Quartz-Syenite memiliki SiO lebih rendah dibanding Syenogranite dan Monzogranite. Teramati tren negatif antara SiO dengan NaO, MgO, FeO, PO, AlO, dan CaO; serta tren positif dengan KO. Semua sampel termasuk seri kalk-alkalin dan umumnya metaluminous, kecuali GNS 01B yang peraluminous. Terdapat pengayaan LREE dan rasio LILE/HFSE tinggi, kecuali pada GNS 01B. Secara petrogenesa, batuan granitik di daerah penelitian terbagi menjadi batuan granitik tipe I dan tipe S, dengan indikasi keberadaan tipe transisi di antara keduanya. Batuan terbentuk pada Episode D tektonik Kapur (120–75 juta tahun lalu), yaitu batuan granitik tipe I terbentuk lebih dulu pada peristiwa subduksi. Selanjutnya, proses kolisi menghasilkan penebalan kerak dan memicu anatexis, menghasilkan magma granitik tipe S. Pencampuran magma tipe S pada sisa magma hasil subduksi menghasilkan batuan granit transisi antara tipe I dan S.

.....Felsic igneous rocks are among the most economically viable sources of rare earth elements (REE). In Central Lampung Regency, a granitic intrusion known as the Padean Granite Unit has potential as a geological resource. This study aims to examine the mineralogical characteristics, major and trace element geochemistry, and petrogenesis of the granitic rocks. Analysis was conducted using petrographic and geochemical data from igneous rock samples to determine their origin. The results show that the granitic rocks in the study area consist of Granodiorite, Quartz-Syenite, Syenogranite, and Monzogranite, distinguished primarily by feldspar composition. Mafic minerals commonly found include biotite and amphibole, while accessory minerals include apatite and monazite; garnet was observed in one Monzogranite sample. Geochemically, Granodiorite and Quartz-Syenite exhibit lower SiO content compared to Syenogranite and Monzogranite. Negative correlations were observed between SiO and NaO, MgO, FeO, PO, AlO, and CaO, while a positive correlation was found with KO. All samples fall within the calc-alkaline series and are mostly metaluminous, except for sample GNS 01B, which is peraluminous. Most samples show enrichment in LREE and high LILE/HFSE ratios, except for GNS 01B. Petrogenetically, the granitic rocks are classified into type I and type S, with indications of transitional types between them. These rocks formed during the Cretaceous tectonic Episode D (120–75 Ma). Type I granite formed earlier

during subduction events, followed by continental collision that caused crustal thickening and anatexis, resulting in type S magma. Mixing of type S magma with residual subduction-derived magma produced transitional granitic rocks between type I and type S.