

Karakteristik mineralisasi kromitit di Pulau Sebuku berdasarkan data sayatan tipis, sayatan poles, dan geokimia = Characteristic of chromitite mineralization in Sebuku Island based on thin section, polished section and geochemical data / Safira Nurul Imani

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Abstrak

ABSTRAK

Pulau Sebuku terletak di Kabupaten Kotabaru, Kalimantan Selatan dan diketahui sebagai salah satu sumber utama besi laterit di Indonesia. Berdasarkan tatanan tektoniknya, Pulau Sebuku terletak di zona sutur yang menghubungkan Southwest Borneo Block (SWB) and East Java West Sulawesi Block (EJWB). Pulau Sebuku terdiri dari variasi batuan yang berasosiasi dengan zona sutur, seperti batuan ofiolit. Tujuan dari penelitian ini adalah untuk menentukan karakteristik dan komposisi mineral penyusun batuan, mineralisasi kromitit serta kaitannya dengan tatanan tektonik di daerah penelitian. Penelitian ini dilakukan melalui analisis petrologi, petrografi, mineragrafi dan geokimia (x-ray fluorescence). Sampel batuan dari Pulau Sebuku telah diperoleh dan hasil dari penelitian ini menunjukkan bahwa sampel batuan terdiri dari dunit terserpentinisasi, harzburgit terserpentinisasi, serpentinit, kromitit, dan basalt yang termasuk batuan penyusun ofiolit dengan afinitas magma toleitik, mikrodiorit mewakili intrusi kalk-alkalin, andesit, tuf mewakili batuan piroklastik yang terbentuk akibat peristiwa vulkanisme pada Kapur Akhir bagian awal, batulempung, konglomerat, breksi basalt dan breksi karbonat. Batuan induk mineral kromit terdiri dari dunit terserpentinisasi dan serpentinit. Mineral kromit (FeCr_2O_4) ditemukan dalam bentuk masif dengan tekstur kataklastik dan brecciated serta terdiseminasi dengan tekstur pull-apart. Data kimia kromitit menunjukkan komposisi kromitit Pulau Sebuku adalah Al-rich karena memiliki nilai $\text{Cr}\# = \text{Cr}/(\text{Cr} + \text{Al})$ sebesar 0.6 dan diklasifikasikan sebagai endapan kromitit podiform. Endapan kromitit di Pulau Sebuku terbentuk di Supra Subduction Zone yang diduga berasal dari magma berkomposisi boninit (high-Cr) lalu mengalami kristalisasi fraksinasi serta magma mixing membentuk kromitit dengan komposisi high-Al di dekat atau di atas zona supra-Moho.

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ABSTRACT

Sebuku Island is located in Kotabaru Regency, South Kalimantan and is known as one of the main sources of laterite iron in Indonesia. Based on its tectonic setting, Sebuku Island is located within the suture zone that connects Southwest Borneo Block (SWB) and East Java West Sulawesi Block (EJWB). Sebuku Island is composed of various rocks associated with suture zone, such as ophiolite rocks. The aim of this study was to determine the characteristics and composition of rock samples, characteristics of chromite mineralization and its relation to the tectonic setting in Sebuku Island. This study was carried out through petrological, petrographic, ore microscopy analysis, and geochemical analysis (x-ray fluorescence). Rock samples from Sebuku Island were collected and the results of this study indicate that the rock samples consist of serpentinitized dunite, serpentinitized harzburgite, serpentinite, chromitite, and basalt which are part of an ophiolite sequence with tholeiitic magma affinity, microdiorite represents calc-alkaline intrusion, andesite, tuff represents pyroclastic rock formed by the volcanism events in Late Cretaceous, claystone,

conglomerate, basalt breccia and carbonate breccia. Chromite minerals (FeCr_2O_4) were found in massive forms with cataclastic, brecciated texture and disseminated with pull-apart texture. Chromitite chemical data shows the chromite composition is Al-rich because it has $\text{Cr\#} = \text{Cr}/(\text{Cr} + \text{Al})$ value of 0.6 and classified as podiform chromitite formed by fractional crystallization. Chromitite deposits in Sebuk Island are formed in the Supra Subduction Zone which is interpreted to originate from magma with boninite composition (high-Cr) then undergoes fractionation crystallization and magma mixing process formed chromitite with a high-Al composition near or above the supra-Moho zone.