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GEOLOGI, ALTERASI, DAN MINERALISASI PROSPEK EPITERMAL SULFIDASI TINGGI DI DAERAH WONOTIRTO DAN SEKITARNYA, KABUPATEN BLITAR, PROVINSI JAWA TIMUR

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Secara fisiografi daerah penelitian termasuk ke dalam zona Pegunungan Selatan di Pulau Jawa. Batuan vulkanik Tersier penyusun zona tersebut telah mengalami alterasi hidrotermal sehingga perlu dilakukan penelitian mengenai potensi endapan mineral. Penelitian ini bertujuan untuk menentukan aspek geologi dan karakteristik endapan mineral di daerah penelitian yang difokuskan pada aspek tipe alterasi dan mineralisasi serta mengetahui kontrol geologi terhadap alterasi dan mineralisasi. Metode penelitian yang digunakan adalah pemetaan geologi yang meliputi data litologi dan struktur geologi, tipe alterasi, dan keterdapatan mineral logam. Analisis petrografi, XRD, mikroskopi bijih, dan FA-AAS dilakukan untuk mengidentifikasi mineralogi alterasi, mineral bijih, dan kadar bijih. Daerah penelitian disusun oleh litologi berupa andesit porfiri, tuf, breksi sesar, breksi vulkanik, dan batugamping (*grainstone*). Andesit porfiri, tuf, breksi sesar, dan breksi vulkanik merupakan satuan batuan bagian dari Formasi Mandalika (Oligosen Akhir - Miosen Awal). Intrusi yang berumur Miosen Awal (tidak tersingkap) menyebabkan batuan sampling (Formasi Mandalika) mengalami alterasi hidrotermal. Tipe alterasi hidrotermal yang berkembang meliputi alterasi kuarsa-diaspor, alterasi kuarsa-paragonit-ilit, alterasi smektit±kuarsa-kalsedon, alterasi epidot-klorit, alterasi klorit-kalsedon dan alterasi klorit-kalsit. Alterasi kuarsa-diaspor terbentuk pada satuan andesit porfiri dan tuf. Alterasi kuarsa-paragonit-ilit terbentuk pada satuan andesit porfiri, tuf, dan breksi sesar, alterasi smektit-kuarsa dan alterasi epidot-klorit terbentuk pada satuan andesit porfiri. Alterasi klorit-kalsit terbentuk pada satuan andesit porfiri dan tuf serta alterasi klorit-kalsedon terbentuk pada satuan breksi vulkanik. Struktur geologi yang mengontrol mineralisasi berupa sesar geser dekstral turun berarah tenggara – barat laut dan alterasi kuarsa-diaspor yang berarah timur laut – barat daya. Mineralisasi dominan terjadi secara disseminasi pada tipe alterasi kuarsa-diaspor (mengisi *vug*), dan pada breksi sesar dan vulkanik. Mineral logam yang dijumpai adalah pirit dan pada sampel terpilih mengandung emas (Au) sebesar 0.01 ppm. Umumnya mineral logam yang hadir telah mengalami oksidasi menjadi mineral oksida besi seperti hematit bertekstur *drussy* dan *powdery* serta limonit. Berdasarkan tipe alterasi yang hadir, disimpulkan bahwa tipe endapan daerah penelitian merupakan endapan epitermal sulfidasi tinggi yang bersifat dangkal. Penelitian ini diharapkan dapat menjadi referensi mengenai prospek epitermal di Jawa Timur.

Kata kunci: epitermal sulfidasi tinggi, Pegunungan Selatan, Jawa Timur

ABSTRACT

GEOLOGY, ALTERATION, AND MINERALISATION OF HIGH SULFIDATION EPITHERMAL PROSPECT IN WONOTIRTO AREA, BLITAR REGENCY, EAST JAVA PROVINCE

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On its physiography, the study area is located within the Southern Mountain zone in Java island. The altered Tertiary volcanic rocks of the Southern Mountain zone is interested for research. This study is aimed to determine the geological aspect and mineral deposit characteristic which is focused on alteration type and mineralisation, and its geological control as well. The research method which is carried out are geological mapping to confirm lithology and geologic structure data, alteration type, and ore mineral occurrence. Petrography, X-Ray Diffraction, ore microscopy, and FA-AAS analysis are used to characterise alteration mineralogy, ore mineral, and ore grade. The study area consists of porphyry andesite, tuff, fault breccia, volcanic breccia, and limestone (grainstone). Porphyry andesite, tuff, fault breccia, and volcanic breccia belong to Mandalika formation (late Oligocene – early Miocene). The early Miocene intrusion (not exposed) caused the host rock (Mandalika formation) to alteration and mineralisation. The hydrothermal alteration types of study area are quartz-diaspore alteration, quartz-paragonite-illite alteration, smectite±quartz/chalcedony alteration, epidote-chlorite alteration, chlorite-chalcedony alteration, and chlorite-calcite alteration. The quartz-diaspore alteration was formed in porphyry andesite and tuff. The quartz-paragonite-illite was formed in porphyry andesite, tuff, and fault breccia. The smectite±quartz/chalcedony alteration and epidote-chlorite alteration were formed in porphyry andesite. The chlorite-calcite/chalcedony alteration was formed in volcanic breccia, tuff, and porphyry andesite. The geologic structure which controlled the alteration and mineralisation is normal right slip fault trends from southeast to northwest and quartz-diaspore alteration trends from northeast to southwest. The mineralisation dominantly occurred within vug of quartz-diaspore alteration, fault breccia, and volcanic breccia. The ore mineral which is found is pyrite (FeS₂) and the selected rock samples have 0.01 ppm of gold. In general, the ore minerals were already oxidized into iron oxide minerals such as drussy hematite, powdery hematite, and powdery limonite. Based on the alteration types and ore mineral, we conclude that the study area is shallow high sulfidation epithermal deposit. This study hopefully could be a reference of epithermal prospect in East Java.

Keywords: high sulfidation epithermal, Southern Mountain, East Java

