Studi Batuan Travertin di Wilayah Panas Bumi Cisolok, Sukabumi, Jawa Barat = Study of Travertine Deposit in the Cisolok Geothermal Area, Sukabumi, West Java

Muhammad Algi Fari, author

Abstrak

Batuan travertin merupakan endapan di lingkungan darat yang terbentuk akibat pelepasan gas ð¶ð2 pada fluida hidrotermal jenuh karbonat. Di wilayah Panas Bumi Cisolok batuan travertin muncul sebagai manifestasi di sepanjang Sungai Cisolok. Penelitian ini bertujuan untuk menentukan jenis morfologi, karakteristik makroskopis dan mikroskopis, komposisi mineral, serta keterbentukan batuan travertin di Cisolok. Metode yang digunakan dalam penelitian ini yaitu pemetaan geologi lapangan dan analisis geokimia. Metode geologi lapangan meliputi meliputi analisis petrologi, petrografi, dan struktur geologi yang ditemukan di lapangan. Metode analisis geokimia meliputi analisis fluida hidrotermal, X-ray diffraction (XRD), dan X-ray fluorescence (XRF) dari sampel batuan travertin. Hasil penelitian menunjukan batuan travertin memiliki morfologi yang berbeda beda tergantung topografi dan proses keterbentukannya. Jenis morfologi yang ditemukan berupa cemented rudit clast, fluvial crust, mound, smooth slope, waterfall, lapisan travertin di dinding kolam air panas, dan travertin berlapis. Karakteristik mikroskopis dan makroskopis travertin juga berbeda-beda berkaitan dengan morfologi, proses pengendapannya, kondisi lingkungan, dan laju pelepasan ð¶ð2. Secara makroskopis laminasi pada travertin Cisolok didominasi tipe alternate homopachaous dan heteropachaous. Sementara tekstur kalsit yang terlihat secara mikroskopis yaitu kalsit equant, mikrit dan dendritik. Hasil dari analisis fluida hidrotermal, X-ray diffraction (XRD), dan X-ray fluorescence (XRF) menunjukan dominasi mineral kalsit dengan komposisi Ca yang tinggi (>90%wt) dan tidak ditemukan aragonit. Dari analisis tersebut travertin Cisolok termasuk dalam jenis travertin termogen yang terbentuk akibat pelepasan ð¶ð2 pada fluida hidrotermal yang jenuh komposisi karbonat akibat pelarutan batugamping, kemudian mengendapkan travertin di sepanjang Sungai Cisolok. <hr /> Travertine are terrestrial environmental deposits precipitated by the release of ð¶ð2 in carbonate saturated hydrothermal fluids. In the Cisolok Geothermal area, travertine rocks appear as a manifestation along the Cisolok River. This study aims to determine the type of morphology, macroscopic and microscopic characteristics, mineral composition, and the formation of travertine rocks in Cisolok. The methods used in this research are field geological mapping and geochemical analysis. Field geological methods include the analysis of petrology, petrography, and geological structures in the field. Geochemical analysis methods include hydrothermal fluid analysis, X-ray diffraction (XRD), and X-ray fluorescence (XRF) from travertine rock samples. The results showed that travertine rocks have different morphologies depending on the topography and the process of formation. The types of morphology found were cemented rudite clast, fluvial crust, mound, smooth slope, waterfall, travertine layer on the walls of hot pool, and layered travertine. Microscopic and macroscopic characteristics of travertine also differ related to morphology, deposition process, environmental conditions, and the rate of ð¶ð2 release. Macroscopically, the laminate on travertin is dominated by alternate homopachaous and heteropachaous types. Meanwhile, microscopically visible calcite textures are equant, micrite and dendritic calcite. The results of hydrothermal fluid analysis, X-ray diffraction (XRD), and X-ray fluorescence (XRF)

showed the dominance of calcite minerals with high Ca composition (>90%wt) and no aragonite was found. From this analysis, Cisolok travertine is included in the type of thermogenic travertine which is formed due to the release of ð¶ð2 in hydrothermal fluids saturated with carbonate composition due to the dissolution of limestone, then depositing travertine along the Cisolok River.</p>