

ABSTRACT

The research area is located in the Geumpang area and its surroundings in the Pidie district, Aceh province. The purpose of this study was to determine the geological conditions, mineralogical content, and texture of quartz veins in the Geumpang area and its surroundings. This study integrates fieldwork, laboratory testing, and analysis in the form of petrographic, mineragraphic, XRD, and AAS tests. All data and various analyzes lead to the conclusion that the study area is composed of andesitic lava lithology, andesite breccia, and micro-diorite which are tertiary in age.

Alteration in the study area can be divided into three, namely the propylitic (chlorite-sericite-epidote-hematite), argillic (illite-smectite-kaolin), and silicic (quartz-kaolin-illite) zones. Quartz veins in the study area are formed by filling in the cracks in the wall rock (infilling texture). The quartz vein textures found in the study area are primary textures (Massive Chalcedonic, comb, saccharoidal), replacement lattice bladed, duzzy and stockwork textures. The stages of mineralization formation were initiated by the formation of the mineral pyrite, then chalcopyrite which was dispersed randomly, and in several places, a granular texture was found which reflected the mineral relationship between chalcopyrite and pyrite grains which did not intersect with each other. Furthermore, it can be seen that there is a replacement texture, namely pyrite mineral which is replaced by arsenopyrite, and chalcopyrite mineral which is replaced by covellite mineral. So it can be estimated that the minerals arsenopyrite and covellite are present after the minerals pyrite and chalcopyrite. In the final stage, the minerals hematite and gothite are present to replace the covellite and arsenopyrite minerals. In the study area based on the Crystalline Quartz (X) to Crustiform-Colloform (CC) or base metal zones, epithermal deposit intervals are formed at a depth of $\pm 350 - 500$ m.

Based on geological data in the field, as well as the results of alteration analysis, mineralization can be seen that the type of deposit in the study area is a low sulfidation epithermal sediment system.

Keywords: Geumpang, mineralization, epithermal, quartz vein