# ABSTRACT

Initially, the problems of this research are to understand what is the primary, alteration and ore mineralization as well as determination of the forming condition of the Tujuh Bukit porphyry Cu-Au deposit, one of a potential prospect area located in Sumberagung Village, Pesanggaran, Banyuwangi, East Java, Indonesia. This research aimed to understand mineralogy and mineral chemistry of igneous rock, implication for ore forming condition. Based on the problems formulation this study aims to identify mineralogy of primary minerals and classify the alteration zone by using petrography. In other, to characterize the crystalizing temperature, oxygens and sulfur fugacity from an implication of chemical composition under observation from Electron Probe Micro-analysis (EPMA). Regarding to the petrography and back scatter electron (BSE) image identification demonstrates that primary minerals are plagioclase (occurred as phenocryst), and apatite. The alteration mineral assemblages were identified. The present of quartz, sericite, and pyrite represent the phyllic alteration zone. On the other hand, chlorite, epidote, and calcite represent the propylitic alteration zone. The ore minerals identified are pyrite, which is associated with chalcopyrite and magnetite. These mineral associations were observed using petrography and back-scatter electron (BSE) images. Moreover, mineral chemistry of plagioclase and apatite indicate that plagioclase phenocryst is classified into andesine which is also infertile. Apatite is in high-K calc-alkaline series. Propylitic related mineral Mg-rich (I-type) chlorite classified into ripidolite. Although, another mineral considered as truly epidote and hydrothermal calcite. In conclusion, there are two main ideas that support the benefit of this study in porphyry Cu-Au deposit. First, the porphyry alteration zones are phyllic and propylitic alteration. The formation temperature ranges between (288.3 - 332.82 oC). However, oxygen and sulfur fugacity is low, ranges between (–70.4 to –51.85) and (–32.55 to –20.65), respectively. This result represents the hydrothermal reductive, considered as porphyry Cu-Au deposit favoring gold-rich mineralization.

Keyword: Mineral Chemistry, Oxygen fugacity, Sulfur fugacity