

Type of mineralization and studies of fluid inclusions of the Bolboli2 copper ore deposit, northeast of Sirjan, SE Iran

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Abstract: The Bolboli2 copper ore deposit is located about 110 km southwest of Kerman and lies in the Dehaj-Sarduieh metallogenic belt (Kerman Cenozoic Mamatic Arc, KCMA). This ore deposit is hosted by the Eocene extrusive igneous rocks (tuff, agglomerate, andesite, and dacite) and the Oligo-Miocene intrusive igneous body (granodiorite). These rocks are host the propylitic, phyllic, and silicic alteration zones (product of the mineralization fluids). Hypogene mineralization was dominant and occurs mainly as stockwork vein-veinlets and disseminate (chalcopryrite, pyrite, and magnetite). This mineralization is overprinted by supergene assemblages such as hematite, goethite, malachite, and azurite at superficial part of ore deposit. The hypogene minerals show generally vein-veinlet, stockwork, brecciated, granular, and crustiform textures. Microthermometric studies in quartz crystals cogenetic with the ore minerals reveal 4 types (1) L-V, (2) L-V-S, (3) V-L, and (4) V fluid inclusion. Study of fluid inclusions display a Th range of 190-427°C. The L-V-S fluid inclusions were homogenized with halite disappearance with the $T_{S(NaCl)}$ ranging from 213°C to 425°C which corresponds with salinities within the range of 32-50 wt% NaCl equivalent. The liquid-rich 2-phase inclusions (L-V) show salinities within the range of 0.6-10 wt% NaCl equivalent. Based on microthermometric data, boiling, mixing, and simple cooling of the ore-bearing fluids were the essential mechanisms in deposition and evolution of this ore deposit. The ore-forming fluids were probably of magmatic and mixed magmatic-meteoric sources. The geological setting, structural and textural aspects, alteration and mineralization of mineral assemblages, as well as microthermometric data show that the Bolboli2 ores can be categorized as porphyry copper-type ore deposit.

Keywords: *Dehaj-Sarduei; mineralization; texture; alteration; fluid inclusions; porphyry copper.*

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