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Investigation of the source of Jarou deposit using data from host rock geochemistry, mineral chemistry and fluid inclusion study in quartz: An economic potential for Au and Ag

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Abstract: Jarou deposit, with age of Middle Eocene –Oligocene, is located in 60 km to the southwest of Karaj and lies within magmatic rocks with felsic to basic composition. Host rock geochemical results have implied a calc-alkaline nature, magmatism related to an extensional back arc regime and lack of economic potential for igneous rocks. Petrographic and geochemical evidences of Cu minerals have shown that mineralization occurred in forms of native copper, sulfide, carbonate and oxide-hydroxide dominantly in vein texture. In addition to copper, ore geochemical results have demonstrated that Jarou deposit possesses a relatively good potential of having silver and gold content. The results of the geochemical elements distribution have indicated that Au and Ag elements are concentrated in minerals such as chalcopyrite. Based on fluid inclusion study, the origin of mineral-bearing fluids is epithermal, and magmatic and atmospheric liquids blended near earth surface. However, considering a pure magmatic source is not conceivable. Mineralogical evidences and fluid inclusions study indicate to the role of sulfide complexes and HS^- and SO_4^{-2} anions in transformation of metals. The type of alteration and presence of minerals such as malachite and azurite confirm the reduction condition during the mineralization process.

Keywords: *Jarou deposit, mineral chemistry, Cu, Au, Ag, Fluid inclusions*.

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