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Physico-chemical conditions and controlling factors of mineralization, using mineralogy, paragenetic relations and fluid inclusions in the Shurchah Stibnite-Gold Deposit, southeast of Zahedan

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Abstact: Shurchah antimony deposit is located in flysch zone of eastern Iran. The antimony mineralization was formed in silicic veins that hosted by highly silicified and brecciated granitoids and low-grade metamorphic rocks which are rich in phyllosilicate minerals. Stibnite is the most aboundant Sb-bearing ore mineral in the veins and is associated with pyrite, chalcopyrite, arsenopyrite and gold. Senarmontite and cervantite are antimony oxides present in the deposit. The host rocks were potentially able to cause the acidification needed to induce stibnite-gold mineral precipitation. Based on paragenetic relations and thermodynamic data, stibnite is the stable antimony phase in the study deposit and its deposition is controlled by temperature decrease and reduction, except under alkaline conditions where acidification is the principal cause of mineralization. Both stibnite and gold can be transported in appreciable concentrations in the form of bisulfide complexes and their deposition occurred by pH decreases. Homogenization temperature and salinity of fluid inclusions in quartz crystals associated with mineralized veins, are 146.5 to 327.9˚C and 0.21 to 5.71 wt.% NaCl eq. respectively suggesting a meteoric origin for ore-bearing fluid and these values confirm the epithermal to mesothermal type of mineralization.

Keywords: *stibnite-gold; physico-chemical condition; fluid inclusions; ore mineralization; Shurchah; Zahedan.*

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