Mineralogy and thermometry studies of Sirzar antimony prospect area, north of Torbat-e-Jam, Khorasan Razavi Province

A. Malekzadeh Shafaroudi*, M.H. Karimpour

Research Center for Ore Deposit of Eastern Iran, Ferdowsi University of Mashhad

(Received: 7/4/2011, in revised form: 20/9/2011)

Abstract: The Sirzar Sb prospecting area is located in northeast of Torbat -e- Jam in Khorasan Razavi Province. Mineralization is found both as vein and replacement within carbonate rock (Permian). Two primary stages of mineralization are: 1) galena ± pyrite ± chalcopyrite ± sphalerite ± sulfosalte ± Cu-Sb sulfides, quartz and barite. 2) Stibnite ± pyrite ± sphalerite ± fulloppite, quartz, barite, dolomite and calcite. Minerals which are formed due to weathering and oxidation include valentinite, bindheimite, covellite, malachite, azurite, anglesite, cerrusite, geothite, hematite and Sb-oxides. Main alteration is: silicification, baritization and dolomitization. SEM analyses of galena revealed high content of Ag, As and Sb and low Bi. This indicates that galena was formed at low temperature. Sulfosalte within galena also contain higher Sb which prove this case. Stibnite also contains some Ag. Fluid inclusion microthermometry on quartz, calcite and barite revealed that the first stage of mineralization were formed between 371-317°C and the second stage associated with quartz, barite, and dolomite were formed between 275-188 °C and associated with calcite is between 197-132°C. Sirzar Sb mineralized area is similar to Xikuangshan mine in China with respect to host rock, mineral paragenesis and type of mineralization. Based on mineral chemistry and fluid inclusion microthermometry, Sirzar is a low temperature epithermal deposit.

Keywords: Stibnite; paragenesis sequence; fluid inclusion; thermometry; Torbat-e-Jam.

*Corresponding author, Telefax: (0511) 8797275, E-mail: aza_malek@yahoo.com