Sb-As vein mineralization of Kuh-e-Shuru area, southern Ferdows: Evidence of alteration, mineralogy, geochemistry and fluid inclusion study

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Abstract: Kuh-e-Shuru prospect area is located in the southern Ferdows, South Khorasan Province, and is one of the vein-type mineralization, related to the Tertiary magmatic activities of Lut block. Mineralization, as epigenetic, is formed in host rocks of shale-siltstone (Jurassic), dacite, and diorite porphyry (Tertiary). Mineralization with open space filling, breccia, and replacement textures is formed in fault zones and can be divided into two main stage including: 1. Quartz-galena-pyrite-realgar with argillie-sericitic alteration and 2. Quartz-stibnite-pyrite-realgar with silicified alteration. Maximum geochemical anomalies in veins are for antimony with 14%, lead 293 ppm, arsenic 98 ppm, and zinc 168 ppm. Microthermometric measurements show quartz-sulfide veins are formed from a fluid with temperature of 160 to 224°C and salinity of 13.7 to 22.8 NaCl wt. % equivalent. The mixing of hot and brine magmatic ore fluid with cold and low salinity meteoric fluid and boiling can be casual metal deposition. Based on geological studies, mineralogy, texture and structure, geochemistry, and fluid inclusion data, Kuh-e-Shuru prospect area can be classified as epithermal deposits.

Keywords: Mineralization; geochemistry; fluid inclusion; Kuh-e-Shuru; Lut Block.

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