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Mineralogy, Alteration, geochemistry, and fluid inclusion studies of Fe oxide-copper mineralization of Namegh area, NE Kashmar

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Abstract: Namegh area is located northeast Kashmar, Khorasan Razavi Province, and contral parts of the Khaf-Kashmar-Bardaskan magmatic belt. Geology of the area consists of trachyandesite and pyroclastic rocks including trachyandesitic to rhyolitic tuff, which are intruded by monzodioritic dykes. Mineralization is occurred as vein type with NW-SE trending and 75°NE inclination hosted by trachyandesite and trachyandesitic tuff. Primary minerals are specularite, chalcopyrite, and magnetite and secondary minerals are goethite, hematite, and malachite. Silicification is the most important alteration. High anomaly of Cu (up to 2%) and low values of Au (maximum 20 ppb) are present in the vein. Based on fluid inclusion studies, formation temperature of mineralization is between 300 to 496 ºC and it is occurred from NaCl- and $CaCl_2$-bearing fluid with 11 to 22 wt. % NaCl equivalent salinity. Temperature and salinity is decreased and dilution occurs due to mixing of two high temperature-salinity and low temperature-salinity fluids resulting Fe oxide and copper is deposited from chloride ligands. Mixing of magmatic and meteoric waters model is the best model for generation of Namegh iron-copper vein. This mineralization is occurred at 10 to 60 Mpa pressure and 0.5 to 2 Km depth (assuming lithostatic pressure). Mineral paragenesis, host rock, alteration, structural control, and nature of ore fluid indicate mineralization is Iron oxide-copper hydrothermal type.

Keywords: *Mineralization; alteration; geochemistry; fluid inclusion; Fe oxide- copper; Namegh; NE Iran.*

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