Evidence of low-sulfidation epithermal-type mineralization in the Nikuyeh area, Qazvin-Iran

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The Nikuyeh volcanic-hosted ore bearing veins is located in southern of Alborz structural zone. The age of mineralization host rock is middle Eocene and composed of dacitic to andesitic volcanics rocks. The major minerals include hematite, chalcopyrite, galena, bornite, pyrite, and sphalerite with minor minerals such as covellite, cerussite, chalcocite, malachite, azurite, and goethite. The main alteration associated with mineralization consists of argillic, silicic, chloritic, and sericitic, and mostly are restricted to around veins. X-ray diffraction studies were carried on samples taken from veins indicated that adularia is found in some regions that is the evidence of low-sulfide environment. Albite and montmorillonite also there are abundant.

Microthermometric measurement were made on quartz and calcite gangue minerals in Nikuyeh ore veins and show a range of variety homogenization temperatures of fluid inclusion range from 185°C to 312°C in quartz and range from 133°C to 251°C in calcite. The salinities ranges from 0.5 to 5.56 wt% NaCl equiv. in quartz and 0.35 to 5.41 wt% NaCl equiv. in calcite. The presence of coexisting vapor-rich and liquid-rich inclusions, adularia with colloform quartz and hydrothermal breccia, indicate of boiling conditions occurred; it is possible to estimate a maximum depth of 1260m and 97 bar hydrostatic pressure for the formation of ore veins.

Field evidence accompanied with mineralogically, alteration, and fluid inclusions studies show that the mineralization similar to low-sulfidation epithermal type.