



Geochemical and Isotopic Constrains on the Origin of Kaymaz Gold Deposit, Eskisehir, NW Turkey

Ozlem Toygar (1), Huseyin Sendir (1), Halim Mutlu (2), and Mehmet Demirbilek (3)

(1) Eskisehir Osmangazi University, Eskisehir, Turkey (ozlemtoygar6@gmail.com, hsendir@ogu.edu.tr), (2) Ankara University, Ankara, Turkey (halimmutlu@ankara.edu.tr), (3) Dumlupinar University, Kutahya, Turkey (mehmet.demirbilek@dpu.edu.tr)

The Alpine-Himalayan orogenic system produced several gold deposits in Turkey related to subduction, collision, post-collision and rifting processes. The Kaymaz gold deposit in mid-west Anatolia, 65 km southeast of Eskisehir city, is an orogenic gold deposit which formed in association with listwaenites. The gold occurrence is closely related to listwaenitization process and intense silicification. SiO₂ content is up to 96% due to pervasive hydrothermal alteration. Listwaenites are enriched in Au, Ag and several metals in varying levels which are also variably correlated with other trace elements. Regarding rare earth element concentrations in the mineralized zone, light rare earth elements are found to display different variations with respect to gold content. It is proposed that these differences are due to the presence of more than one fluid type in the system and/or different phases which transported ore minerals at varying extent.

According to microthermometric data on quartz samples, the temperature of the mineralization between 200°C-420°C and 3.9%-9.6% NaCl eq., the deposit is an epithermal-mesothermal type mineralization. $\delta^{18}\text{O}$ compositions of quartz samples and calculated $\delta^{18}\text{OH}_2\text{O}$ values at homogenization temperatures indicate that boiling process and/or hydrothermal fluids affected the system at more than one stage. $\delta^{34}\text{S}$ compositions of pyrite samples show a magmatic source for sulfur in the system probably originating from local granite intrusion in the area.

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