The geology and Geochemistry of the Darreh-Zar Copper Deposit (Pariz Region, Kerman, Iran)

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Darreh-Zar copper deposit is located in Band-e-Mamzar mountain region, 8 kilometers south of Sarcheshmeh Mine (south east of Iran). A granodiorite porphyry named Darreh-Zar porphyry intruded in the eocene volcano-sedimentary rocks at oligomiocene times. Cu-Mo mineralization formed from this itrution. Darreh-Zar porphyry consists of feldspar, biotite and quartz phenochrysts in the microgranular groundmass of quartz and feldspar. Darreh-Zar's rocks settled in calc-alkaline series and seems to be in a margin of subduction zone.

Ore reserve is 90 milion tons of 0.7% copper . The mineral deposit is devided into western and eastern parts by dextral faulting which goes through Darreh-Zar River and displaces these two parts. Hydrothermal solutions severely affected in the region and caused intensive alteration. Propylitic, argillic, phyllic and potassic alteration are recognized. Potassic alteration was not observed at the surface and can only be seen in drill holes.

Three hypogene and one supergene mineralization stages were recognized. The most important minerals are chalcocite, covellite and chalcpyrite. The upper part of the supergene zone is at depth of 35 meters with 34 meters thickness in average.

Geochemical dispersion of elements and their relations with alteration haloes stated that Cu, Mo, Se, Au, Fe, Y, Zn and B have anomalies and their zoning are as the same as that of other porphyry copper deposits. Studies on other elements such as Ba, Ni, Cr, Pb, V, Ga, Sc, Sr, Na and Co do not show geochemical zoning.