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Mineralization, fluid inclusion and geochemical studies and interpretation of IP/RS data in Freezi prospect area, northeast Iran

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Abstract: Freezi Lead- Zinc- Copper prospect area is located in north east Mashhad in Khorassan Razavi Province. Mineralization was formed in the area as vein type in the host rocks of slate with interlayer of phyllite and meta sandstone of Upper Triassic to Early Jurassic age (equivalent to Shemshak Formation). The only alteration in the host rock is silicification. Primary minerals are quartz, galena, chalcopyrite and pyrite, while secondary minerals are hematite, goethite, limonite, malachite and azurite. The amount of Pb is up to %3.7, Zn is up to %1.6, Cu is up to %4 and Ag 183 ppm. Micro thermometry measurements of two Phases (liquid and vapour) showed that quartz and ores originated from a fluids with mid to high temperature (200 to 347°c) and high salinity (20.2 to 22.35 wt%) which was probably metamorphic liquid. Reduction of temperature of the liquid had greatest importance in Pb, Zn, and Cu mineralization. IP/RS data on the location of Gossan zones, veins, previous digging, and geochemical anomalies showed increasing in chargeability. Mineralization occurred in three part (A, B, C) in the area. In view of mineralization, geochemical anomalies and chargeability in the part B is more important than A and C. Studies of drill cores over the psedousection IP/RS anomaly in part B showed the presence of graphitic coal in the country rocks which is the causative source of anomaly. Based on geology, mineralization and fluid inclusion characteristics, the type of mineralization in the Freezi area is orogenic. Possibly metallic elements originated from the graphitic layers and during the Middle Jurassic orogenic phase, middle Cemmerian, transported by metamorphic water and deposited in places of suitable structure.

Keywords: *Mineralization; geochemical; fluid inclusion; IP/RS; Orogenic.*

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