Effects of carbonate host rock on Pb-Zn mineralization in NW of Shahmirzad, Central Alborz, Iran

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Abstract: The Mississippi Valley Type Pb-Zn ore deposits of northern Semnan could be classified as 1) Eram Series in north-west of Shahmirzad and 2) Shahmirzad Series in south and east of Shahmirzad. The host rocks of these mineralizations are Cretaceous carbonates and fawltS have a major role in controlling hypogene ore formation. Age, mineralogy and structural evidences of both series show a resilience similarity in hypogene ore but there are a lot of differences in carbonate host rock of two series. Petrographic investigations indicate that the host rock of Eram mineralizations precipitated in deep-sea impermeable facies without any dolomitization. While the host rock of Shahmirzad ore deposits exhibit shallow permeable facies and widespread dolomitization. In the Cretaceous carbonate sequence of north-west Shahmirzad, impermeable facies and lack of dolomitization had prevented fluid circulations imply from insignificant lead (<5ppm) and zinc (<20ppm) concentration in the sequence. On the other hand, the impermeability may be had prevented supergene processes in north-western deposits. In addition, oxygen and carbon isotope data show low effects of ore fluids with no any effects of diageneric fluids on host rock of Eram deposits. Existence of shallow facies, permeability and dolomitization in south and east of Shahmirzad facilitate circulation of fluids in host rock causing Pb-Zn mineralization, consequent supergene mineralizations and raised mean concentration of lead (132 ppm) and zinc (98 ppm) in host rock. This study indicates the significance of epigenetic process and insignificance of carbonate rocks in Pb-Zn mineralization in Eram series. It seems that structure has a major role in all mineralization series.

Keywords: Pb-Zn deposits, sedimentary facieses, permeability, fluid circulation, dolomitization.