

## Petrography and chemical composition of dolomites in the Khan Sormeh Pb-Zn deposit (western Isfahan) and relationship with sulfide mineralization

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### Abstract

The Khan Sormeh deposit is located at western Isfahan, within the Lower Cretaceous carbonate rocks (K3 unit) which belongs to Malayer-Esfahan Metallogenic Province (MEMP). Galena, sphalerite and pyrite occurs as the main sulfide minerals in the study area and mostly were distinguished with dolomitization, sulfidation and silicic alterations. Based on petrographic evidence, at least four types of dolomite are recognized at carbonate host rocks, including: grey fine-grain dolomite (Rd1), brown-red medium-grain dolomite (Rd2), coarse-grain saddle dolomite (Sd) and vein and veinlet late dolomite (Vd). The  $\text{CaCO}_3$  and  $\text{MgCO}_3$  content of dolomites are varies between 58.5 to 61.3 wt% and 37.6 to 40.2 wt%, respectively. The highest and lowest molar ratio of Ca/Mg are distinguished in fine-grain dolomite (AV. 1.65) and vein-type dolomite (AV. 1.1), respectively. Also, total REE content ( $\Sigma\text{REE}$ ) of dolomite are varies between 5.8 to 13.9 ppm, which this variation have high content in fine-grain and saddle dolomites relative to medium-grain and vein-type dolomites. REE distribution in various dolomites is shown the fine-grain dolomite is very similar pattern to Lower Cretaceous host rock. Moreover, LREE enrichment (especially La) of the saddle and vein-type dolomites shows this dolomites occurs in high water rock ratio and its belong to sulfide mineralization in the Khan Sormeh deposit.

**Keywords:** geochemistry of dolomite, sulfide mineralization, Pb-Zn, hydrothermal fluid, Khan Sormeh