

## Mineralogy and mineral chemistry of silicate mineral of Dardvay Fe skarn ore deposit (Sangan mining area, NE Iran)

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**Abstract:** The Dardvey iron deposit, central part of the Sangan mining area, is located in 300 Km southeast of Mashhad and structural zone of eastern Iran. The Dardvey ore deposit is a typical magnetite-rich skarn developed along the contact of Sarnowsar granite with high magnesium carbonate. Skarn zones of Dardvey deposit comprises of exoskarn, endoskarn and ore zones. The exoskarn zone includes, sub-zones of pyroxene skarn, garnet skarn and epidote-phlogopite skarn. According to Electron Micro Prob Analysis (EPMA), the composition of clinopyroxene is diopside-hedenbergite (from  $Di_{46}$ - $Hd_{52}$  to  $Di_{96}$   $Hd_3$ ), and composition of garnet is andradite-grossular (from  $Ad_{35}$ - $Gr_{63}$  to  $Ad_{60}$   $Gr_{39}$ ). In the skarns zones, there is a compositional variation with increase in Mg and decrease in Fe from the endoskarn to the retrograde skarn. Due to the change of oxidation state towards reduced conditions during paragenetic sequences, sulfide saturation was occur. Sulfide saturation produces pyrrhotite, chalcopyrite, and pyrite that simultaneously and post-dates magnetite and early calc-silicate formation, are other evidences of reducing conditions. Based on content of V, Cr, Ni, Ti, Ca, Al and Mn on magnetite, Darvay magnetite is located in skarn ore deposit. Also, due to existence of endoskarn zone, scapolite and Mg-rich minerals, Darvay skarn is classified as magnesian -calcic skarn.

**Keywords:** *Sangan mining area; Dardvay ore deposit; Sarnowsar granite; Mineralogy; Mineralc.*

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