



## **Petrogenesis and Fluid inclusions of the Band-e Narges skarn iron ore, Central Iran**

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The Band Narges iron deposit is located approximately 205km NE of Isfhan and is a small area in the NE of Urumieh– Dokhtar Magmatic Arc, Iran. The skarn hosted in a Cretaceous limestone, intruded by granite and granodiorite. The calcic skarn has experienced two stages of metamorphism: 1) prograde stage, which include endoskarn and exoskarnfacies with clinopyroxene, garnet, scapolite and albite mineralization, and 2) retrograde stage which produced actinolite, epidote, chlorite and apatite assemblage through retrograde alteration. The ore minerals in Band-e Nargesskarn are magnetite, with minor chalcopyrite, pyrrhotite and pyrite. Gangue minerals are predominantly diopside, andradite, epidote, chlorite, quartz and calcite. Micro-thermometric measurements yield a homogenization temperature range for skarn alteration of 414 to 448°C, with a salinity of 11 to 13.186 wt.%NaCl equivalent. Fluid inclusions in calcite associated with mineralization generally consist of a vapor bubble and a liquid phase with a rare occurrence of three-phase inclusions. Homogenization temperatures for two phase inclusions vary from 168 °C to 203 °C with a salinity of 0.5 to 2 wt% NaCl equivalent. Homogenization of three phase inclusions was observed between 162 °C to 278 °C with salinity of 4 to 23 wt.%NaCl equivalent. The high-temperature and high-salinity of fluids indicate magmatic nature of the trapped fluids within progradeskarn mineral assemblages in contrast the fluids with lower temperature and lower salinity displaying a possible meteoric source within the retrograde skarn assemblages. Therefore moderate temperature and high-salinity fluids could infer to possible isothermal mixing between the fluids.

Key word:Skarn,Band-e Narges,fluid inclusion