

Application of Cr-spinel mineral chemistry in petrogenetic evolution and tectonic setting of NE Kamyaran ophiolitic complex

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Abstract: Northeast Kamyaran ophiolitic complex is mainly composed of harzburgite along with small outcrops of lherzolite. Harzburgites are extensively altered to serpentinite. Small lenses of chromite mineralization are observed in harzburgites. The mineral assemblage present in the study harzburgite and lherzolite are olivine, orthopyroxene and clinopyroxene along with minor amount of spinel. Microprobe studies on the spinel indicate that it is Cr and Al bearing spinel (Cr-spinel) with very high Mg# (55.2-71.9) and Cr# (34.3-45.5) values and low values of TiO₂ (with average value of 0.6 wt%). Fe³⁺ content of the Cr-spinel in the study rocks is high (with average value of 0.8 wt %) indicating that the crystallization occurred at high oxygen fugacity. According to the microprobe data, MgO content of olivine varies between 50.04 and 52.99 wt% and its composition is forsterite (Fo_{90.68-91.42}). Based on the mineral chemistry of spinel, peridotites of Northeast Kamyaran ophiolitic complex belong to residual depleted peridotites which have formed in mid ocean ridge tectonic setting.

Keywords: Mineral chemistry; Cr-spinel; mantle peridotite; ophiolite; Kamyaran.

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