

## High-NiO olivine in the dunite enveloping the concordant chromitite from the Wadi Hilti, northern Oman ophiolite

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Two types of podiform chromitite, concordant and discordant, are exposed on the same cliff in the mantle section of Wadi Hilti, northern Oman ophiolite. Chromian spinel grains only from the concordant chromitite contain thin lamellae of diopside and enstatite. This indicates that the concordant chromitite has experienced cooling, and probably decompression, for a longer prolonged period than the discordant one. Olivines in the dunite enveloping the concordant chromitite is sometimes extraordinarily high in NiO (up to >0.5wt%), suggesting subsolidus Ni diffusion from the chromitite. This is not the case for the dunite envelope around the discordant chromitite. Ni has moved over about 10cm from the boundary between the concordant chromitite and dunite, which is consistent with the appearance of pyroxenes lamellae in spinel of the concordant chromitite. According to the well-known Ni diffusion coefficient in olivine, the high-NiO olivine in the dunite envelope can constrain the cooling duration of the concordant chromitite. Podiform chromitites are enigmatic in origin, and their origins should be systematically classified to understand concerning mantle processes. Their temporal relationship is a clue to solve this problem.

Keywords: Olivine, Ni diffusion, Podiform chromitite, Oman ophiolite