

Dunites as fossil melt conduits replacing orthopyroxenites in the upper mantle: an example from the Oman ophiolite

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In the mantle section of the northern Oman ophiolite, dunites were formed by selective replacement of orthopyroxenites. The dunites are often enriched with chromian spinel, which is occasionally concentrated to form chromitite pods. The concordant orthopyroxenite, which is older than the discordant one, is relatively enriched with spinel (up to 2). The dunites have sometimes preserved relic orthopyroxene. Substantial part of the dunites observed in the Oman ophiolite are possibly of such an origin. The spinel-rich orthopyroxenite can not be low-pressure cumulate, but is possibly high-pressure cumulate or restite after garnet-rich protoliths. The behavior of melt in the upper mantle will be discussed in the context of selective reaction with orthopyroxenite to leave dunite.

In the mantle section of the northern Oman ophiolite, dunites were formed by selective replacement of both concordant and discordant orthopyroxenites. The dunites are often enriched with chromian spinel, which is occasionally concentrated to form chromitite pods. The concordant orthopyroxenite, which is older than the discordant one, is relatively enriched with spinel (up to 2). The dunites have sometimes preserved relic orthopyroxene. Substantial part of the dunites observed in the Oman ophiolite are possibly of such an origin. The spinel-rich orthopyroxenite can not be low-pressure cumulate, but is possibly high-pressure cumulate or restite after garnet-rich protoliths. The behavior of melt in the upper mantle will be discussed in the context of selective reaction with orthopyroxenite to leave dunite.