# VARIETY IN CHEMICAL ZONATION OF GARNET IN ECLOGITE FROM NOVÉ DVORY, CZECH REPUBLIC

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Garnet-peridotite body associated with eclogite in Nové Dvory, Czech Republic, belongs to the Gföhl Unit of the Bohemian Massif, and compositional zoning of garnet in eclogite from this body was analyzed. Previous works suggested that most grains of garnet in eclogite of the Gföhl Unit are retrograde type in which Mg# [= Mg/(Fe+Mg)] decreases from core to rim, but the present study revealed that chemical zonation of garnet in some eclogites of Nové Dvory has complex characters.

A kyanite-bearing eclogite (ND6b) contains a large garnet grain (≈5 mm in diameter) which has a chemical zonation of increasing Ca content and slightly decreasing Mg# from core ($Prp_{58}Alm_{21}Grs_{21}$, Mg# = 0.73) to rim ($Prp_{41}Alm_{17}Grs_{42}$; Mg# = 0.71). On the other hand, another part (ND6c) of this eclogite sample contains a large oval-shaped garnet grain of ≈10 mm length which shows a kind of prograde-type zonation: Ca content and Mg# increase from core ($Prp_{51}Alm_{23}Grs_{26}$; Mg# = 0.69) to rim ($Prp_{48}Alm_{16}Grs_{36}$; Mg# = 0.75). These two samples ND6b and ND6c were taken from one specimen, but they contain garnets with different zoning patterns.

Other two types of garnet were found from one thin section of a kyanite-free eclogite sample (ND120). One is prograde-type garnet increasing Mg# from core ($Prp_{29}Alm_{47}Grs_{24}$; Mg# = 0.38) to rim ($Prp_{40}Alm_{38}Grs_{22}$; Mg# = 0.51), and the other is retrograde type decreasing Mg# from core ($Prp_{56}Alm_{25}Grs_{19}$; Mg# = 0.69) to rim ($Prp_{39}Alm_{36}Grs_{25}$; Mg# = 0.52). The compositions of these two types of garnet coincide with each other at rim parts. Retrograde-type zoning is predominant in a large garnet grain (> about 5 mm), and pyrope content of the core reaches about 60 mole%, which is similar content to that of garnet in peridotite. The retrograde-type garnet may have grown in a small peridotite xenolith enclosed within the host basaltic rock. The prograde-type garnet may have grown in the "basaltic" matrix upon increrase in temperature.

Thus, garnet showing prograde-type zonation was newly found from eclogite in Nové Dvory peridotite body that experienced UHP conditions of about 1100 °C, 5 GPa (MEDARIS et al., 1990; NAKAMURA et al., 2004), but different zonation patterns are observed in the same sample. Therefore, it is still questionable whether the Nové Dvory peridotite body has experienced subduction or not before the UHP metamorphism, but a simple decompression and cooling history cannot account for the above complex zonal structures of garnet.

**References**

MEDARIS, L.G. Jr., WANG, H.F., MISAR, Z. & JELINEK, E. (1990): Lithos, 25, 189–202.

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