



Contrasting peridotites in Albanian Ophiolites: Evidence from Spinels

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So far, the Albanian Ophiolites are divided into an eastern SSZ and a western MORB belt, respectively. Consequently, this genetic view should be reflected in the mantle section, by the occurrence of predominantly harzburgites in the eastern and lherzolites in the western belt. However, recent investigations in the western belt revealed a different picture. The peridotitic massifs show a wide compositional variation. Gomsig and Tropoja in the north, Voskopoja, Rehove and Morava in the south are indeed dominated by lherzolite and contain, if any, only minor harzburgite occurrences. By contrast, the Devolli and Vallamara massifs are almost exclusively composed of harzburgites. The remaining massifs, Sphati and Skenderbeu are made up of comparable proportions of harzburgite and lherzolite, with the former dipping beneath the latter. Plagioclase-bearing peridotites occur in all massifs, in the highest levels of the mantle tectonites.

The composition of spinels from the ultramafics reflects the lithological variability. They vary in their Cr#, Mg# and Fe³⁺# (defined as Fe³⁺/(Cr+Al+Fe³⁺)). In general, lherzolites have low Cr# and Fe³⁺# but high Mg#, while spinels from harzburgites show contrary, high Cr# and Fe³⁺# associated with low Mg#. The latter are also characterized by a wide variety of the Cr#, Fe³⁺# and Mg# values. Spinels from Skenderbeu and Sphati harzburgites have an intermediate composition between the most Cr and Fe³⁺-rich spinels of Devolli and Vallamara and the Cr-poor spinels from lherzolites of the other massifs. The Mg# range of spinel in plagioclase-peridotites is similar to that of the Devolli spinels, but the Cr# is lower at a given Mg#.

TiO₂ content of spinels in lherzolites and harzburgites does not vary significantly and ranges from 0.05 to 0.1 wt%. Plagioclase peridotites show more Ti-rich spinels, with up to 1 wt% TiO₂. The high Ti content combined with a relatively high Fe³⁺ is consistent with a magmatic origin of spinels from plagioclase-peridotites. The according melt could have been derived from a MOR-type magma.

The spinel composition reflects very well the heterogeneity of the mantle tectonites along the western belt of the Albanian ophiolites