Geochemical signatures of spinel peridotite xenoliths from the northernmost locations of the Pannonian Basin

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Peridotite xenoliths in Plio-Pleistocene alkali basalts can provide information on the nature of the mantle beneath the Carpathian-Pannonian region. The northernmost xenolith occurrence is the Nógrád-Gömör Volcanic Field (NGVF), where recent studies used samples only from the central and southern parts of the area [1]. This study focuses on the northern part, comparing the petrography and geochemistry of xenoliths collected there, including localities that have not been previously described, with existing and new data from the central and southern part of the NGVF.

Major differences include the presence of abundant amphibole in the xenoliths from the northern vents, whereas it is usually absent from samples from the central part. In addition to modal metasomatism indicated by the amphibole, some samples show cryptic metasomatism in the form of Fe-enrichment, leading to lower Mg# of olivine and pyroxenes. This is strongest in the locality closest to the central part, where similar cryptic metasomatism has been described [2]. Equilibration temperatures calculated from major-element mineral compositions are between 845 and 1025 °C, which gives an estimate of 40-50 km for depth of origin by reference to a typical basaltic province geotherm. These P-T conditions are similar to those in the central part, suggesting that similar processes could have led to cryptic metasomatism in both areas. The lack of correlation between amphibole content and Fe-enrichment suggests that at least two distinct metasomatic processes affected the upper mantle beneath the northern part of the NGVF.

[1] Liptai *et al*. (2013) *Bull. Hung. Geol. Soc*. **143**, 371-382.
[2] Patkó *et al*. (2013) *Mineral. Mag*. **77**, 1934.