

**Metasomatic wehrlite formation
beneath the Nógrád-Gömör Volcanic
Field (Carpathian-Pannonian
region) – a silicate melt inclusion
study in upper mantle xenoliths**

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The Nógrád-Gömör Volcanic Field (NGVF) is located in the northern part of the Pannonian Basin, and is one of the five known xenolith bearing alkaline basalt occurrences in the region.

In addition to the dominant lherzolites, great number of wehrlite xenoliths with unique textural and geochemical features have also been recognized. According to our results, the wehrlites were formed by extensive mafic melt metasomatism, which significantly modified geochemically the lherzolite wall rock during the interaction.

In order to get a better view on the metasomatic process including the element behavior, primary silicate melt inclusions, hosted both in clinopyroxenes and olivines were studied. Twelve representative wehrlite xenoliths have been selected for a detailed trace element analysis on the silicate melt inclusions using LA-ICP-MS. The results revealed enrichment in incompatible elements, especially in LIL (e.g. Ba, Sr, Pb) and HFS elements (e.g. Nb, Ta, Zr) compared to the host mineral.

All silicate melt inclusions contain bubbles, and to identify their compositions as precisely as possible, Raman spectroscopy coupled with cooling and heating stage was applied on the silicate inclusions. All silicate melt inclusions contain CO₂ dominated fluid phase.

With the combined use of these techniques we were able to constrain the composition of the metasomatizing melt responsible for forming the wehrlites in the upper mantle of the NGVF, contributing to a better understanding on trace element and volatile behavior during mafic melt – peridotite wall rock interactions.