



## **Melt metasomatism and igneous cumulates in litospheric mantle beneath Lower Silesia (SW Poland)**

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Litospheric mantle beneath the Bohemian massif was shaped by late- to post-Variscan delamination, including probably lower crustal sequences, followed by thermal stabilisation and renewed Cenozoic activity related to Alpine orogeny. Thus, multiple effects are possibly recorded in rocks forming the present litospheric mantle of Bohemian Massif as well as other parts of Variscan Orogen of Europe.

The study of peridotite and pyroxenite xenolith population occurring in the Miocene Księginki nephelinites (Lower Silesia, SW Poland, NE margin of the Bohemian Massif) demonstrates the occurrence of websterites and clinopyroxenites of identical REE patterns, some with well preserved cumulate textures, within the mantle peridotites. The contact between clinopyroxenite and peridotite, visible in one of the xenoliths, shows the melt metasomatism of peridotite (crystallization of clinopyroxene identical to that of clinopyroxenite vein, lowering the  $Mg/(Mg+Fe)$  ratio of orthopyroxene, slight lowering of forsterite content in olivine) preserving however spinel of  $Cr/(Cr+Al)$  ratio of 0.41, typical for “depleted” peridotites occurring in Księginki.

The peridotites occurring in the Księginki xenoliths are highly variable. Part of them records the interaction with nephelinite melt at mantle depth (e.g. crystallization of olivine containing down to 86 % of forsterite and enriched in Ca) and during eruption (e.g. changes in spinel composition). Large part of the peridotite xenoliths is affected by melt metasomatism. The relationship of the melt metasomatism induced by parental melts of cumulate rocks and that induced by nephelinite magma is not clear, but their mineral-chemical effects are similar.

The geochemical similarity of mantle peridotites and host Cenozoic volcanic rocks, reported e.g. by Downes and co-workers in Central and Western Europe, indicates that peridotites were commonly affected by melt metasomatism similar to that described above. Moreover, the data from Księginki suggests occurrences of igneous cumulates, of possibly Cenozoic age, within the (upper part of?) lithospheric mantle in NE Bohemian Massif.