THE BLOCKY ACCUMULATION OF OPHICALCITES IN THE FRONT OF THE MAGURA UNIT (MORAVIA): THEIR FABRICS AND POSSIBLE ORIGIN FROM SEA-FLOOR OCEANIZATION.

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Abstract: Blocky accummulations of ophicalcites have been described from the Magura Unit for the first time. They seam to be the Alpine ophiolites, related to the Magura basement.

Key words: Magura Unit, ophicalcites, neptunian dykes, Jurassic rifting

Crustal-type of original substratum of the Magura Zone is one of the crucial question of the Western Carpathian geology. The Magura Unit came from the trench-type basin, which developed in the sutural part of the accretionary prism. Therefore, it is assumed suboceanic or oceanic crust in the substratum of this unit. Nevertheless, direct evidences of this assumption have not been shown yet. There is no ophiolite detritus and residual spinels in the flysch sediments, which mainly consist of granitic and crystalline rocks. The first occurrences of ultrabasic-type rocks in the Magura Unit have been recorded near Kvasice in the Moravian Carpathians. They occur in block accummulations of ophicalcites, which are penetrated by neptunian dykes of the Jurassic limestones. Interface between ophicalcites and limestone dykes indicates a genetic connection. Therefore, the ophicalcites are inferred to be the Alpine ophiolites, related to the Magura basement.

The Alpine ophicalcites represent a hybrid rocks, comprising relics of the ultrabasic and basic rocks, which undergone a strong carbonatization due to sedimentary fluids. Most frequently, the ophicalcites occur as a polygenic breccias, infiltrated by red limestones. This is also a case of ophicalcites from the Magura Unit. They are greenish rocks, veined by red limestones and white calcite. Ophicalcites exhibit a highly sheared (phyllonitic) fabric and fragmentation to "jigsaw puzzle" breccias. Dykes are filled up by biomicritic limestones with rich ostracods, filaments, foraminifera (incl. organic linings), etc. Vein network of ophicalcites consists of several phases of calcite infillings (e.g. radiaxial calcite, dog-teeth calcite, blocky calcite and slickenfibers), showing a different cathodoluminiscence and C- and O-isotope composition. Ophicalcite matrix consists of completely altered mafic rocks.

Alteration assemblage includes mainly chloritic minerals (chlorite and R1 chlorite/vermiculite mixed-layers with Mg/Mg + Fe = 0.68 - 0.71), albite, quartz, calcite, hematite and subordinate phengitic mica. Original character of these rocks is indicated by frequent pseudomorphs after mafic minerals, and by the presence of spinels (chromium magnetite with high Mn content) and Cr-rich micas (chromium spinels are frequent also in flysch sandstones). Similarly, whole-rock Cr and Ni contents are high reaching up to 323 and 115 ppm, respectively.

The ophicalcite fabric corresponds to ultramylonites, produced by shearing and hydrofracturing of mafic rocks along an extensional low-angle normal faults (detachments). These rocks provide a constraints for extensional unroofing of lower crust or mantle ultrabasites, which is associated with rifting process (e.g. Florineth & Froitzheim 1994, Treves & Harper, 1994). Rift-related extension led to the opening of fissures and dykes and to infiltration of marine sediments to oceanic crust. From this point of view, the ophicalcites from the Magura Unit could originated from rifting and sea-floor oceanization of this zone.

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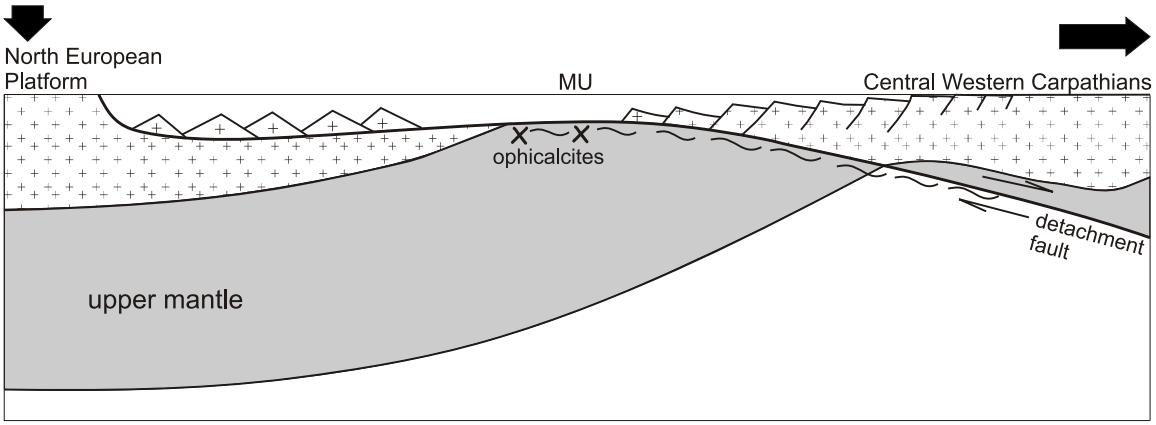
Fig. 1 Delamination model for the genesis of the Alpine ophicalcites after Lemoine et al. (1987) and Treves & Harper (1994), proposed for the geotectonic origin of the ophicalcite rocks in the Magura Unit (MU).



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