

# GEOCHEMISTRY AND TECTONO-MAGMATIC AFFINITY OF MAFIC EXTRUSIVE AND DYKE ROCKS FROM THE OPHIOLITE MELANGE OF THE SW ZAGORJE-MID-TRANSDANUBIAN ZONE (MT. MEDVEDNICA, CROATIA)

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## ABSTRACT

Mafic extrusive rocks occasionally intersected by dolerite dykes are the most abundant fragments of oceanic crust in the lower Callovian to upper Valanginian ophiolite mélangé exposed on the Mt. Medvednica, at the SW tip of the Zagorje-Mid-Transdanubian Shear Zone. The mélangé includes a chaotic mixture of various extrusive rocks which may be analogues of the oceanic rocks derived from (at least) two different tectonic settings. The extrusive and dyke rocks of this mélangé are geochemically classified into three magmatic groups: high-Ti group of N-MORB-like with arc signatures ( $Ti/V = 26.3-38.5$ ), medium-Ti group ( $Ti/V = 20.2-23.0$ ) and low-Ti group showing untypical LREE depleted [ $(La/Sm)_{cn} = 0.49-0.62$ ] IAT-like signatures ( $Ti/V = 13.2-18.0$ ). All three geochemical groups of magmas were successfully monitored by clinopyroxene geochemistry. The magmas have consistent initial Nd-isotopic values ( $\epsilon_{Nd(T=163\text{ Ma})} +5.9$  to  $+6.3$ ) and initial  $^{87}Sr/^{86}Sr$  ratios (0.703748-0.704286) suggesting a similar parental source related to the initial stage of intraoceanic subduction of a back-arc basin ridge. It represents the new crust formed from melts derived from LREE extremely depleted MORB-type mantle which was affected by concomitant metasomatism and partial melting in a suprasubduction forearc setting. K-Ar ages on plagioclase separates indicate uppermost Bathonian - lower Oxfordian magmatic activity between  $165 \pm 3.3$  Ma and  $160 \pm 3.3$ .

A geodynamic model for the Mt. Medvednica ophiolites, part of the Repno oceanic domain of the Meliata-Maliak oceanic system, is here proposed. There are many common geochemical and geological correlation features between the Mt. Medvednica and Szarvaskő ophiolites, located in NE Hungary that allow to integrate them in the same oceanic domain, whereas this is not obvious in the case of the Dinaric ophiolites.