

Paleomagnetism of the Cherni Vrah Massif, Balkan-Carpathian Ophiolite: Preliminary Results

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Abstract

Balkan-Carpathia Ophiolite is the dismembered pieces of ancient oceanic crust cropping out in Romania, Serbia and Bulgaria. Although a pioneering work dated the Bulgarian Cherni Vrah massif as Late Neoproterozoic (von Quadt *et al.* 1998), more recent studies reported Early Devonian ages for multiple massifs in the ophiolite (Zakariadze *et al.* 2012, Balica *et al.* 2014, Plissart *et al.* 2017, Kiselinov *et al.* 2017). Consequently, little is established for the tectonic history of the ophiolite. We investigated the paleomagnetism of the gabbroic rocks and sheeted dykes in the Cherni Vrah massif sampled near the village of Gorni Lom. Both types of rocks exhibit similar characteristic remanence direction with West declination and moderate negative inclination (geographic coordinate). Natural remanent magnetization (NRM) are completely demagnetized by 150 mT of alternating field (AF), indicating that titanomagnetite is the primary remanence carrier. Gabbros are stable against AF demagnetization with median destructive field often exceed 50 mT. Microscopic observations revealed that rare, unaltered plagioclase in gabbros contain fine rods of exsolved magnetite. It is yet to be investigated if these exsolved magnetite are the voluminously important carrier of the stable NRM in gabbros. Anisotropy of magnetic susceptibility of gabbros revealed consistent pattern of magnetic foliation with c. 50° strike and c. 50° dip to the South. Assuming that this AMS fabric approximate the paleohorizontal, the characteristic remanence direction after tilt correction shows inclination of c. -38°.

Keywords: ophiolite, gabbro, Balkan, AMS, exsolved magnetite.

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