CORRENSITE IN METABASALTS AND METAGABBROS FROM MT. MEDVEDNICA, CROATIA

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Field work coupled with collection of representative samples was carried out in North Croatia on the Middle Jurassic–Early Cretaceous ophiolitic mélange characterized mainly by sheared shaly-silty matrix, containing fragments of ophiolites, graywackes, radiolarites and limestones. Complex mineral paragenetic and microstructural studies were performed on metagabbro and metabasalt samples using optical microscopy, X-ray powder diffraction (XRD), transmission electron microscopy (TEM), electron microprobe (EMP) and X-ray fluorescence spectroscopy (XRF).

According to the optical microscopic studies metagabbro fragments contain strongly chloritized clinopyroxene relicts rimmed by actinolite needles, sericitized plagioclase pseudomorphs, albite and quartz, as well as 3-4 mm thick veins containing prehnite and calcite. Dominantly chloritic pseudomorphs, presumably after clinopyroxene are very abundant in the metabasalts. Veins built up by chlorite, calcite, quartz and subordinate albite are recognized in the samples. Fibrous or rosette-like arrays of "chloritic minerals" occur in amygdules, veins and between clinopyroxene and plagioclase pseudomorphs, showing clear difference in the texture between their core and their rim. On the basis of XRD studies of the <2 μm size fraction of metagabbro and metabasalt samples, the predominant phyllosilicate components are chlorite and regularly interstratified triocdahedral chlorite/smectite (corrensite); additionally a small amount of K-white mica can also be found in the samples. Corrensite was identified by 29 Å peak which shifted to 31 Å after ethylene-glycol solvation. Genetic relations of chlorite and corrensite are discussed in terms of structural order-disorder and chemical differences of theses phases.

The presence of corrensite and chlorite in amygdules and veins of the metabasic rocks suggest direct crystallization from solution, whereas alteration of chlorite and/or smectite in these basic rocks may also be responsible for the formation of corrensite. The appearance of corrensite and expanding layers in chlorite indicate alteration temperatures in the range of ca. 60-260°C.