CRYSTAL CHEMISTRY OF V-, Cr- AND Mn-BEARING SILICATE MINERALS IN ČIERNA LEHOTA, STRÁŽOVSKÉ VRCHY MTS., SLOVAK REPUBLIC

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Assemblage of silicate minerals enriched in V, Cr and Mn including amphiboles, garnets, minerals of the epidote group, titanite and chamosite accompanied by feldspars (plagioclase and hyalophane) occur in Lower Paleozoic metamorphosed deep-marine volcanics with the sedimentary admixture near Čierna Lehota village, Strážovské vrchy Mountains, Slovak Republic.

Amphiboles are highly magnesian, X_{Mg} (Mg/(Mg+Fe)) is higher than 0.95 in tremolite and between 0.82 and 0.97 in magnesiohornblende but it decreases with an increase of tetrahedral Al in younger magnesiohornblende. Amphiboles are generally enriched in Cr and V which increase from tremolite to magnesiohornblende, up to 3.8 wt% Cr_2O_3 (0.43 *apfu*) and 1.8 wt% V_2O_3 (0.21 *apfu*), respectively.

Grossular garnet verges to goldmanite with an increased V content (up to 12.0 wt%, 0.79 *apfu*). The content of Mn (spessartine component) and Cr (uvarovite component) is also relatively high, up to 19.4 wt% MnO (1.30 *apfu*) and 9.0 wt% Cr_2O_3 (0.58 *apfu*), respectively. Dominant substitutions include $MnCa_{-1}$ in the *A* site and VAl_{-1} and $CrAl_{-1}$ in the *B* site.

Minerals of epidote group also have an increased content of V (up to 5.3 wt% V_2O_3, 0.34 *apfu*) and REE (up to 0.74 *apfu*); they are represented mostly by clinozoisite. Vanadium-rich clinozoisite attains the composition of mukhinite owing to the VAl_{-1} substitution. The enrichment in REE is due to the $REEFe^{2+}(CaAl)_{-1}$ substitution which results in allanite-(La) composition since La is the most abundant REE. Negative Ce and slightly positive Eu anomalies are displayed in chondrite-normalized pattern.

Chamosite has X_{Mg} between 0.54 and 0.61, and locally it is also enriched in V (1.8 wt% V_2O_3, 0.16 *apfu*), Cr (1.4 wt% Cr_2O_3, 0.12 *apfu*), and Mn (1.5 wt% MnO, 0.14 *apfu*). Four types of feldspars include albite with $An_{<0.01}$, plagioclase with $An_{0.30–0.52}$, and hyalophane with between 0.45 and 0.54 *apfu* Ba, which is overgrown by hyalophane with up to 0.32 *apfu* Ba.

In the Western Carpathians, similar V- and Cr-rich silicate mineralization was described from Pezinok–Rybníček in Malé Karpaty Mts. where rare V- and Cr-bearing goldmanite, mukhinite and dissakisite-(La) occurs in pre-Hercynian basic metavolcanics with the sedimentary admixture (UHER *et al.,* 2008; BAČÍK & UHER, 2010) and also in Chvojnica with V-enriched dravite to magnesiofoitite (BAČÍK *et al.,* 2011) and V-rich muscovite to roscoelite (MÉRES & IVAN, 2007). All occurrences shares the common features including V- and Cr- enrichment, high X_{Mg} in majority of silicate minerals and accompanying sulphide mineralization with dominant pyrite and pyrrhotite. Moreover, the same negative Ce and slightly positive Eu anomalies as in allanite-(La) from Čierna Lehota also occur in dissakisite-(La) from Pezinok–Rybníček. Negative Ce anomaly is also pronounced in bulk-rock composition of metachert in Chvojnica. However, there are some differences to Pezinok–Rybníček (mineral assemblage with tourmaline and white mica in Chvojnica is significantly different, thus it is not taken into account now): Fe-dominant allanite-(La) in Čierna Lehota but Mg-dominant dissakisite-(La) in Pezinok–Rybníček; chamosite in Čierna Lehota but clinochlore in Pezinok–Rybníček; significant spessartine component in garnets from Čierna Lehota, whereas Mn attains only up to 0.29 *apfu* in goldmanite to grossular from Pezinok–Rybníček. It suggests slight differences in protolith (Mn-enrichment) and also metamorphic or hydrothermal evolution (Fe-enriched phases in later stages) of silicate mineralization in Čierna Lehota compared to that from Pezinok–Rybníček.

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