

NIOBIUM-TANTALUM MINERALS OF THE WEST CARPATHIAN GRANITIC PEGMATITES, SLOVAKIA

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A detailed mineralogical, mainly EPMA study during the 1990's revealed a broad variety of disseminated Nb-Ta minerals in West Carpathian granitic pegmatites. The pegmatites form veins to lenses, up to several m thick, in parental Hercynian granites or neighbouring metamorphic rocks. The pegmatite bodies are azonal or zonal with graphic, coarse grained quartz-feldspar-muscovite(-biotite), blocky K-feldspar and core quartz (\pm beryl) zones, locally late saccharoidal albite and cleavelandite zones occur. The West Carpathian granitic pegmatites with Be and Nb-Ta mineralization belong to the beryl-columbite subtype of rare-element class and LCT-family.

Two groups of Nb-Ta mineralization can be distinguished (UHER & BROSKA, 1995):

(1) Ti poor Nb-Ta assemblage occurs in albite rich or muscovite bearing units of the pegmatites in the Malé Karpaty (the Bratislava region), Považský Inovec and Žiar Mts. Concentric, oscillatorily or mosaic zonal ferrocolumbite-ferrotantalite, rarely manganocolumbite and manganotantalite are the most widespread minerals, generally with increasing Ta/(Ta+Nb) and Mn/(Mn+Fe) atomic ratio from center to rim of crystals and from primitive to more fractionated units and pegmatites; both ratios vary between 0.1 to 0.7 for all studied bodies. Ferrotapiolite + ferro- to manganotantalite pairs show the widest compositional variability within a single pegmatite body known up to now (Moravany pegmatite, NOVÁK *et al.*, in press). Microlite, pyrochlore, uranmicrolite and fersmite are alteration products of columbite-tantalite along the fractures and rims.

(2) Ti rich Nb-Ta assemblage occurs in azonal quartz-feldspar-muscovite or biotite pegmatites in the Nízke Tatry Mts. (Sopotnica Valley, Dúbrava mine). Nb-Ta rich rutile with armalcolite exsolutions, titanian ixiolite and ferro- to manganocolumbite (Ta/(Ta+Nb) < 0.4), belong to primary phases (UHER *et al.*, 1998a). Locally, they are extensively replaced by pyrochlore, microlite, betafite, uranpyrochlore, uranmicrolite, plumbomicrolite, stibiomicrolite, stibiobetafite, stibiotantalite, fersmite, Nb-Ta rich titanite and Nb-Ta-U rich roméite. The secondary Sb-Pb-U rich association is probably a product of hydrothermal overprint from an external source (UHER *et al.*, 1998b).

References

- NOVÁK, M., UHER, P. & SIMAN, P. (in press). Mineral. Petrol.
UHER, P. & BROSKA, I. (1995). Mineral. Petrol., 55: 27–36.
UHER, P., ČERNÝ, P., CHAPMAN, R., HATÁR, J. & MIKO, O. (1998a). Can. Mineral., 36: 535–545.
UHER, P., ČERNÝ, P., CHAPMAN, R., HATÁR, J. & MIKO, O. (1998b). Can. Mineral., 36: 547–561.