

CORUNDUM BEARING ROCKS FROM THE NÍZKE TATRY MTS. CRYSTALLINE COMPLEX, WESTERN CARPATHIANS, SLOVAKIA

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Corundum bearing rocks were found in the banded amphibolite rocks at Jasenie, Nízke Tatry Mts. They occur as small irregular lenticular bodies on the contact of ultrabasic rocks with host gneisses. They have an inhomogeneous structure made up of phlogopite matrix containing large corundum grains. Corundum content in the rocks varies, locally it gives up to 40% of the rock volume. There are also other minerals present in accessory amounts there: white mica, two types of amphiboles (tschermakite and magnesiohornblende), plagioclase (An₄₀), zircon, apatite, chlorite, allanite and Cr-spinel.

Corundum is not regularly distributed in the rock, its usual size is 8–10 mm (rarely as big as 15 mm). It forms irregular shapes, often cataclased and on the rims altered to a fine schistose aggregate of white micas. Its chemical composition is homogenous with no considerable amounts of admixtures.

Chemical composition of corundum bearing rocks is variable and depends on modal composition. The analysis of a typical rock (phlogopite 60%, corundum 30%, white mica 6%, hornblende 2%, accessory minerals 3%) gives the following (main elements in wt%, trace elements in ppm): SiO₂ – 42.75, TiO₂ – 0.39, Al₂₃ – 22.90, Fe₂O₃ total – 5.94, MnO – 0.07, MgO – 14.07, CaO – 3.12, Na₂O – 1.74, K₂O – 5.39, LOI – 3.45, Ba – 550, Sr – 112, Zr – 690, Cr – 720, Co – 28.8, Ni – 129, Y – 46, V – 26.3, La – 30. The analysis shows that the rock is rich in Al₂O₃, MgO, K₂O, Ni, Cr, Zr, La and Y, and/or poor in SiO₂ and CaO. High content of MgO, Cr and Ni document a close geochemical affinity to ultrabasic rocks, high Al₂O₃ and K₂O contents reflect the specific mineral composition (corundum, phlogopite and white mica) and high contents of Zr, La and Y show high zircon and allanite quantities. Corundum bearing rocks are very rare and generally they may have originated in two possible ways:

- they represent metamorphosed rocks with equivalent specific composition (Al rich sediments, laterites and o., cf. BOL *et al.*, 1989);
- corundum bearing rocks represent metasomatites with specific composition having originated as a result of the reaction of ultrabasic rocks with host rocks.

With the corundum bearing rocks of Jasenie the second possibility seems probable. It is suggested by: 1 – inhomogenous mineral composition, 2 – occurrence of these rock only close to ultrabasic rocks, 3 – chemical composition of the rocks (high contents of elements typical of ultrabasic rocks – Cr, Ni), 4 – presence of Cr-spinel (aluminum-chromite according to STEVENS, 1944); spinel is a typical mineral of Al rich rocks and frequently associated with corundum, however, it is always Al-spinel, not Cr-spinel.