

PRECURSOR ROCK AND ORIGIN OF CORDIERITIC XENOLITHS FROM THE VECHEC ANDESITE QUARRY, EASTERN SLOVAKIA

MARIÁN KOŠUTH¹, ZDENKA MARCINČÁKOVÁ¹

¹ Technical University of Košice, Institute of Geosciences, Faculty of Mining, Ecology,
Process Control and Geotechnologies, 15 Park Komenskeho, 04384 Košice, Slovak
Republic

Abstract

The composition of dark coloured enclosures from andesitic rocks, found in the Vechec quarry, was investigated, using the combination of microscopic, XRD and EPMA methods. The xenoliths are formed mainly of cordierite ($X_{\text{Fe}} = 0.23-0.47$), associated with plagioclase, Fe-spinel (up to hercynite) and minor anorthoclase, biotite and ilmenite. The Na_2O and K_2O amounts (up to 1.28 %), the plagioclase of $\text{Ab}_{82.5-74.99}$ composition and the very low contents of Ni and Cr even in Fe-spinels emphasize an alkalis contamination of the precursor magma; therefore, the precursor rock is assumed to be derived from an upper crustal material. Among the numerous basement xenoliths, including argillaceous ones, the dark-gray, slightly laminated xenolith is the only highly aluminous one, with contents close to that of the cordieritic type. The plagioclase-rich protoliths, with common purple spinel octahedrons and Ti-minerals, show some magma imprint. The cordierite-rich rock is assumed to be formed from the dark Al-Fe-Mg(Ti)-rich melt, in the inner aureole of the magma chamber.

Keywords: andesite, xenoliths, precursor rock, X-ray diffraction, phase composition.

¹ e-mail: marian.kosuth@tuke.sk