AXINITE FROM METABASALT AT LÉTRÁS-TETŐ, MISKOLC, BÜKK MOUNTAINS, NE HUNGARY

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Axinite-(Fe), a Ca-Al-borosilicate mineral was described from Lillafüred before (SZAKÁLL & FÖLDVÁRI, 1995; OZDÍN & SZAKÁLL, 2014). Here the axinite occurs in hydrothermal quartz-albite-calcite veins penetrating Triassic metabasalts. We introduce a new axinite-(Fe) occurrence discovered at Létrás-tető, near Miskolc, where this mineral occurs as a minor constituent of metabasalt.

The site is characterized by the outcrops of several fragmented metavolcanic bodies originated from various formations of the Bükk parautochthonous successions at a major tectonic boundary zone. The axinite-bearing body is of some 10 metres scale only, embedded in shale matrix. We studied samples from the axinite-bearing rock body, the shale country rock and two neighbouring metavolcanic bodies. The applied methods are electron-microprobe analyses, optical microscopy and X-ray powder diffraction. According to the XRD evaluation, the axinite content of the sample reaches 6 wt%. The major rock forming minerals are potassic feldspars (mainly microcline), albite, and chlorite; minor constituents are titanite, clinopyroxene, actinolite and biotite. The axinite consists of whitish, tabular, some 100 μm or even mm-sized crystals, partly replaced by potassic feldspars (sometimes also with albite; Fig. 1). Around the axinite grains, actinolite laths (not oriented) are very characteristic in the fine-grained, chlorite and potassic feldspar dominated matrix. The albite often forms nests in the matrix. Other accessory minerals are P-Pb-bearing Fe-silicate mixture and in smaller quantities allanitised epidote, a Ce-rich mineral phase and a Pb-V mineral (probably mottramite).

Based on standardless EDX results the axinites are Fe-dominant, but not as close as to the end-member as those analysed by OZDÍN & SZAKÁLL (2014). The average Fe:Mn:Mg ratio is 1:0.35:0.55, but there are some measurement points, where the axinite contains Mn or Mg in equal (or even a little bit higher) quantity than Fe.

In contrast with the already known occurrence, the axinite crystals analysed by us are not formed in hydrothermal veins but were developed as euhedral phenocrysts in supposedly fine-grained matrix, as no pseudomorphs of porphyritic clasts or minerals are observed. The trace element composition indicates basaltic protolith, affected by K-metasomatism. Based on the microprobe data, axinite precedes and is affected by the K-metasomatism as well. Subhedral albite crystals together with actinolite, titanite and chlorite are products of low-grade regional metamorphism. These observations place axinite crystallization to an early, premetamorphic stage, possibly autometasomatism of the volcanic rock

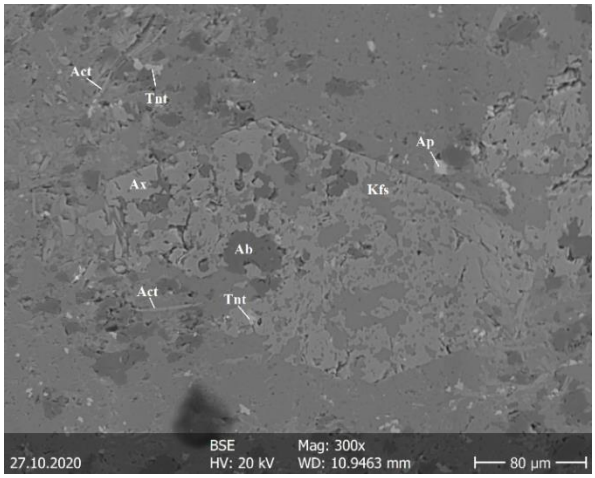

Fig. 1. Axinite (Ax) crystal partly replaced by potassic feldspar (Kfs) and albite (Ab), with characteristic actinolite (Act) laths. The matrix consists mainly of potassic feldspar. BSE image.

References

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