

KRUPKAITE FROM AVRAM IANCU MINE, BĂIȚA (BIHOR) METALLOGENIC DISTRICT, ROMANIA

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Ore samples were collected on the dumps of the Avram Iancu mine, Bihor Mts., Romania, before the recultivation. It is a five-element mineralization with uranium, sulphide and arsenide mineral paragenesis. Krupkaite ($\text{PbCuBi}_3\text{S}_6$) occurs abundantly as disseminated 20–100 μm sized inclusions in cobaltite (Fig. 1). It is always associated with the Co-Ni-Fe-Bi-U assemblage, which is characteristic host for this sulphosalt (MOËLO *et al.*, 2008, MUMME, 1975).

In reflected light microscope, krupkaite is greyish white, has moderate reflectance 43% and strong bireflectance (39.1–47.0% at 560 nm). Under crossed polars anisotropy is strong but uncoloured, grey to dark grey. It is softer (4) than enclosing cobaltite (5.5) therefore grains have lower relief and observable Kalb line.

Only krupkaite was found among sulphosalts. Its WDX composition is the same from grain to grain (wt%): S 17.19, Cu 5.67, Pb 19.26, Bi 57.51, Se 0.61 (EDX), sum. 100.24. The calculated empirical formula is $\text{Pb}_{1.03}\text{Cu}_{0.98}\text{Bi}_{3.04}\text{S}_{5.91}\text{Se}_{0.09}$. It is very homogenous, zonation is not visible, and no other sulphosalts are associated. Gandolfi X-ray diffraction from the same area (Fig. 1) also supports identifying the sulphosalt as krupkaite. The reflections of the krupkaite on the X-ray film are: 4.013 Å, 3.643 Å, 3.540 Å, 3.139 Å, 2.652 Å, 2.562 Å and 2.79 Å and 1.976 Å overlap with cobaltite (all the strong reflections are identified). The mineral is rarely associated with minute (5–10 μm in size) native bismuth blebs in cobaltite.

Krupkaite is reported from a number of epithermal deposits in the Carpathians: Baia Borșa (Maramureș, E-

Carpathians) (COOK, 1997) and Larga hydrothermal system, Metaliferi Mts. (COOK & CIOBANU, 2004) as well as from other intrusive-related deposits in Europe: Karkonosze granite (GOLEBIEWSKA *et al.*, 2006) and Loch Shin monzogranite (LOWRY *et al.*, 1994). Based on the above mentioned mineral deposits, krupkaite usually forms at high to moderate temperature, i.e. 400–270°C range.

References

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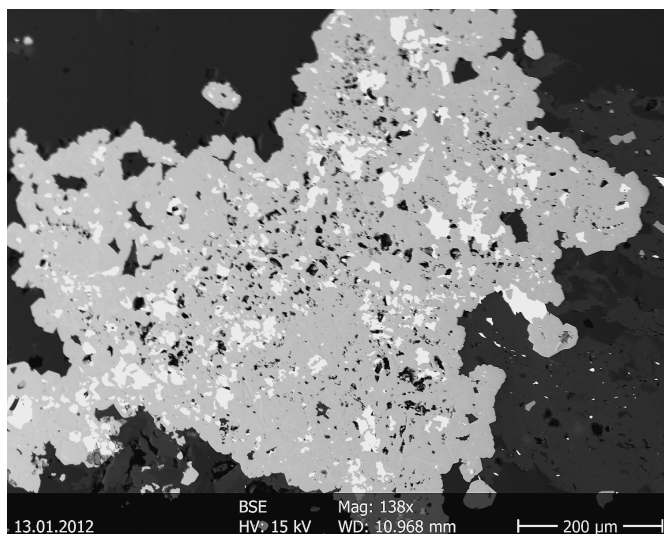


Fig. 1. Krupkaite (white) in cobaltite (light grey), with silicate and carbonate minerals (BSE image).