

BISMUTH SULPHOSALTS IN THE NEOGENE HYDROTHERMAL VEIN ORES FROM THE BAIJA MARE ORE DISTRICT

DAMIAN, F., DAMIAN, Gh. (North University of Baia Mare, Department of Geology, Baia Mare, Romania) & COSTIN, D. (Babeş-Bolyai University, Department of Mineralogy-Petrometallogeny, Cluj-Napoca, Romania)
E-mail: damgeo@univer.ubm.ro

Bismuth minerals are mainly represented by Bi-Cu-Pb phases. Bi-Pb with Ag and Bi-Ag have been identified only in two vein ore deposits, i.e. at Nistru and Băiuț, in the western and eastern part of the area, respectively.

The presence of bismuth sulphosalts in several occurrences of the Baia Mare area has recently been documented by COOK & DAMIAN (1997) and DAMIAN (1999).

The Bi sulphosalts from Nistru and Băiuț are present within the cupriferous sequences with gold and silver content which are connected with the Pannonian calc-alkaline igneous rocks of subvolcanic character (porphyry quartz–monzodiorites, porphyry microdiorites).

The Bi sulphosalts from Nistru and some of the Bi minerals from Baiut represent the first chemically documented occurrences. In both occurrences the Bi sulphosalts are mainly represented by the members of the lillianite homologous series. The compositional homogeneity is emphasized by microprobe analyses yielding the general formula $Pb_{1.47-1.97}Ag_{0.39-0.66}Fe_{0.03-0.19}Cu_{0.07-0.032}Bi_{2.40-2.53}Se_{0.02}S_{5.48-5.79}$, as well as by a small deviation from the theoretical line $N = 4$ of the members of the lillianite–gustavite series. Some mineral phases reminiscent of vikingite ($N = 5.08$) and heyrovskite are present mainly at Băiuț.

The Bi minerals of the lillianite–gustavite series occur as inclusions in chalcopyrite or quartz and contain minute gold grains. In the Nistru ores the Cu-Pb-Bi sulphosalts are represented by compositions varying from pekoite ($Cu_{0.55-0.70}Fe_{0.06-0.33}Pb_{0.20-0.90}Bi_{7.14-7.48}Se_{0.03-0.35}S_{11.50-12.26}$) to krupkaite ($Cu_{1.88-2.17}Fe_{0.08-0.27}Pb_{1.85-1.97}Bi_{5.78-6.04}S_{11.98-12.19}$), with subordinate participation of gladite ($Cu_{1.30}Fe_{0.13}Pb_{1.21}Bi_{6.66}S_{11.58}$). They are subordinately associated with matildite ($Ag_{0.87-0.94}Cu_{0.08}Bi_{0.94-1}S_{1.87}$). Cosalite has been identified in a few cases as a result of Bi enrichment and Pb depletion ($Pb_{1.53-1.57}Ag_{0.013-0.014}Fe_{0.07-0.1}Cu_{0.26-0.33}Bi_{1.85-1.93}S_{4.58-4.76}$).

References

- COOK, N.J. & DAMIAN, Gh. (1997). Romanian Journal of Mineralogy. Abstracts Volume, 78(1): 15–16.
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