

Výskyt Cu mineralizácie v permských bazaltoch hronika pri Banskej Bystrici (Slovenská republika)

Occurrence of Cu sulphidic mineralization in the Permian basalts of Hronicum Unit at Banská Bystrica (Slovak republic)

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Abstract

The aim of this paper is to clarify the mineralogical and genetic aspects of the copper ore occurrence hosted in the paleobasalts of the Hronicum unit at the Banská Bystrica-Lazina locality, and its comparison with similar occurrences in the same geological environments in Slovakia (Kozie Chrbty Mts., Malé Karpaty Mts.). The two main mineral associations were distinguished at the Lazina occurrence. The first one is chalcopyrite-pyrite association which occurs with quartz-calcite mineralization in the tectonic breccia of paleobasalts. It is represented mainly by pyrite I and II and chalcopyrite. Average crystallochemical formula of pyrite I is corresponding to the $Fe_{0.99}S_{2.00}$. Remarkable is pyrite II, which forms colloform aggregates which are replaced by chalcopyrite to form Cu-rich pyrite (up to 0.48 *apfu*). Beside copper pyrite II contains elevated amount of Co (up to 0.02 *apfu*), Pb (up to 0.01 *apfu*) and As (up to 0.01 *apfu*). Second is the younger bornite-chalcopyrite mineral association, which forms thin veins up to 5 cm on the border of quartz-calcite veins with host rock. This association consists mainly of chalcopyrite and bornite with increased amount of Cu-S supergene minerals (djurleite, anilite, spionkopite and yarrowite). Chemical composition of chalcopyrite can be expressed with empirical formula $Cu_{1.01}Fe_{1.00}S_{2.00}$, bornite formula is: $Cu_{5.01}Fe_{1.01}S_{3.98}$. Often, but in small quantities, galena with average empirical formula $Pb_{0.95}Fe_{0.07}S_{0.98}$ is also present in this association. In the one case, greenockite-like mineral phase with formula $(Cd_{0.89}Fe_{0.07})_{\Sigma 0.96}S_{1.04}$ was identified. Its origin is probably related to the evolution of primary mineralization. Chalcopyrite and bornite are often replaced by minerals of Cu-S system. Very common is djurleite with average empirical formula $(Cu_{30.76}Ag_{0.05}Bi_{0.03}Fe_{0.03}Cd_{0.01}Pb_{0.01})_{\Sigma 30.88}(S_{16.10}Se_{0.02})_{\Sigma 16.12}$. Chemical composition of anilite can be expressed by the empirical formula $(Cu_{6.64}Fe_{0.31}Ag_{0.01}Bi_{0.01})_{\Sigma 6.97}S_{4.03}$. Intermediary phase between spionkopite and yarrowite with empirical formula $(Cu_{8.93}Fe_{0.31}Ag_{0.03}Bi_{0.01})_{\Sigma 9.29}S_{7.71}$ was also identified. Separated epidote-quartz-carbonate mineralization also occurs at the Lazina locality.

Key words: copper mineralization, sulphides, basalts, Permian, Malužiná Formation, Hronicum Unit, Slovak republic

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