

## MINERALOGICAL STUDY OF HYDROTHERMAL VEIN Pb-Zn DEPOSIT POD BABOU (MALÉ KARPATY MTS., SLOVAKIA)

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The deposit Pod Babou is situated 2.5 km SE of Pernek in the Malé Karpaty Mts. Hydrothermal ore veins are hosted by metamorphic rocks – gneisses, less phyllites of Palaeozoic age, that belong to Limbach formation (PUTIŠ *et al.*, 2004) and make up the envelope of the Bratislava granitoid massif.

Deposit comprises two main veins – the upper and the lower one, which were exploited at the end of 19<sup>th</sup> century (CAMBEL, 1959). Nowadays adits are inaccessible and only dump material is available. This small-scale deposit is interesting only from mineralogical and metallogenetical point of view and has no economic importance.

Mineralization originated during four mineralizing events. The first, **quartz-arsenopyrite (Q-Asp) stage** consists of black quartz, arsenopyrite and pyrite. Arsenopyrite has increased Sb (up to 1.6 wt%) and rarely also Bi (up to 0.5 wt%) contents. Arsenopyrite grains show zonality under the BSE caused by variable contents of As and S. Contents of As in pyrite vary between 0.1 and 0.9 wt%. Minerals of the first stage are cataclased and enclosed in minerals of younger **Pb-Zn stage**. The most abundant ore mineral of this stage is sphalerite. It is also the oldest mineral of this stage, together with quartz and pyrite. Sphalerite is brown coloured, with Fe and Cd contents of 3.4 wt% and 0.2 wt%, respectively. Later minerals of Pb-Zn stage fill the space between grains of sphalerite and quartz. This association is comprised of galena, boulangerite, bournonite, tetrahedrite, stephanite, chalcopyrite, marcasite and also pyrite, sphalerite and quartz. The most abundant features observed under reflected polarized light are intergrowths of galena with tetrahedrite, bournonite, and sphalerite or with boulangerite and bournonite. Other minerals are quite scarce. Tetrahedrite is rich in Ag. Its composition gradually proceeds from argentian tetrahedrite (9.6 wt% Ag) to freibergite (30.7 wt% Ag). It is also enriched in

Fe (up to 5.7 wt%). Another Ag mineral is stephanite, which is present only in small amount. However, Ag contents in galena associating with Ag-bearing minerals do not exceed 0.04 wt%. Contents of microelements in boulangerite and bournonite are only about 0.0X wt% except for Bi content, which reaches 0.3 wt%.

Q-Asp and Pb-Zn stages are common for both main veins. The latest stage is different. In the case of lower vein it is the carbonate stage, and in the case of upper vein it is the barite stage. There is no evidence about the relative age of these two stages. No relationship was observed during the field-work.

**Carbonate stage** is comprised of little amount of quartz, older fine-grained dolomite occurring in the vein boundaries and younger coarse-grained calcite filling vein centre.

**Barite stage** consists of white fine-grained barite that encloses fragments of older mineral associations. Content of SrO in barite varies from 0.1 to 1.6 wt%. Content of other elements is negligible.

This study provides new compositional data on Pod Babou Pb-Zn deposit. Moreover, previously unreported mineral species – boulangerite, tetrahedrite–freibergite, stephanite and dolomite – are described.

### Acknowledgments

This work was supported by Slovak Scientific Agency VEGA grant Nr: 1/1027/04.

### References

- CAMBEL, B. (1959): Acta Geologica et Geographica Universitatis Comenianae, 3: 338.  
PUTIŠ, M., HRDLIČKA, M. & UHER, P. (2004): Mineralia Slovaca, 36: 183–194.