

THE HYDROTHERMAL MINERAL PARAGENESIS OF THE FERENC-HEGY CAVE (BUDA HILLS, HUNGARY)

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During a detailed mapping of the Ferenc-hegy Cave a hydrothermal mineral assemblage was found. The host rock of the cave is the Upper Eocene Szépvölgy Limestone Formation, but the upper parts of the cave reach the Lower Oligocene Buda Marl Formation. At one place the basal conglomerate of Eocene age can be seen under the Szépvölgy Limestone.

Mapping of the hydrothermal precipitations revealed that the veins characterized by different mineral associations are bound to different fault systems therefore they might have been formed in different times. The overall strike of calcite–barite and calcite–barite–hematite veins is N–S, barite–hematite veins have a NW–SE strike, barite–hematite–cinnabar veins have a prevailing E–W strike. In some veins a kaolinite–smectite mineral association can be found. Vein fillings are generally banded, symmetrical, or rarely brecciated; geopetal features were observed in some cavities near barite veins occurring along a siliceous zone.

Euhedral barite can be divided into two morphological groups. One of them is characterized by the main forms of {001}, {010}, {100}, {110}, and corresponds to the “Wolnyn” type of MAKLÁRI (1940). The second group is characterized by the main forms of {001}, {110}, {010}, and corresponds to that reported as “Antimonit-B” by MAKLÁRI

(1940). In veins, calcite occurs with scalenohedral habit and as massive–granular precipitations. Fine-grained hematite is usually found as impregnations and disseminations along veins. Cinnabar occurs as earthy dissemination in massive barite.

Fluid inclusion studies were carried out in calcite crystals from the calcite–barite veins. Microthermometric data of fluid inclusions suggest that hydrothermal processes took place under various temperature circumstances, and during these processes, warming of fluids from 70–85 °C to 90–130 °C temperature had been taken place. While precipitation of carbonates happened at some places, the raising of the temperature supposedly caused forming of dissolution cavities in the carbonate rocks at other places, thus supported opening up of thermokarstic caves. Fluid inclusions have low salinities of 0.1–0.5 NaCl equiv. wt% suggesting to a mixed meteoric/karstic origin for the water. In conclusion, in the early period of formation of the Ferenc-hegy Cave, hydrothermal events played an important role in the development of cavities in the carbonate host rocks along fault/fracture systems.

Reference

MAKLÁRI, L. (1940): *Mathematikai és Természettudományi Értesítő*, 59: 643–672.

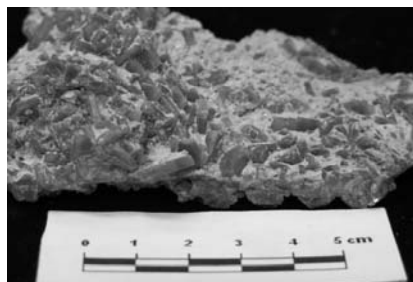


Fig. 1: Barite crystals with “wolnyn” habit from a calcite–barite–hematite vein.



Fig. 2: Calcite crystals in calcite–barite veins.

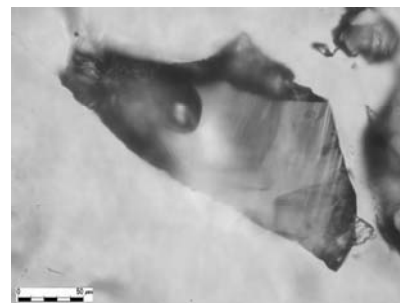


Fig. 3: Primary fluid inclusions in scalenohedral calcite.