

MINERALOGICAL STUDY OF THE FRUMOASĂ CAVE, HĂLDĂHAIA AREA, ROMANIA

PUSCAȘ, M.

Department of Mineralogy, Babeș-Bolyai University, 1 Kogălniceanu Str., RO-400084 Cluj-Napoca, Romania

E-mail: montana.puscas@gmail.com

The Frumoasa Cave is located on the south-western part of the Trascăului Mountains (within the Apuseni Mountains), in a small karst area known as Hăldăhaia, approximately 25km from the city of Alba Iulia, Alba County, Romania (Fig. 1).

From a geological point of view, this area belongs to the Southern Apuseni Mountains, and more specifically to the Bedeleu Nappe. The 700-m thick sparitic Tithonian limestone in which the cave has been carved probably represents a 'back-reef' type formation.

Although it has been long known to the locals and visited by cavers ever since 1983, this is the first paper concerning the mineralogy of the 1,168 m long cave, developed on three levels and having a single, extremely narrow entrance (VADEANU *et al.*, 1985). Due to the periodic existence of a bat colony in the second level a very thin layer of bat guano covers its floor, representing an important source for phosphates in caves (HILL & FORTI, 1997).

We have collected 15 samples from two locations on the intermediary level, in the vicinity of bat colonies. The samples are fragments of speleothems and earthy masses. The X-ray diffraction analyses show that the minerals belong to five chemical groups: carbonates (calcite and aragonite), sulfates (gypsum), phosphates (fluorapatite), silicates (illite and muscovite), and oxides (quartz and minium). We consider min-

ium (Pb_2PbO_4) to occur as a result of human activity in the cave. The source for gypsum may be represented either by the sedimentary deposits above the cave, or by the guano layers from the inside (ONAC, 2000). In the Frumoasă Cave gypsum occurs in association with quartz and calcite, along cracks in the walls. Silicates and quartz are present in the cave as allogenic minerals, their source being the sedimentary alluvia transported by the percolation waters that infiltrate from the surface and the subterranean water courses.

As far as the phosphates are concerned, this is the first fluorapatite occurrence in the caves of the Trascăului Mountains (ONAC, 2003). In the Frumoasă Cave the phosphate forms either crusts on the floor or powdery earth masses along the cracks in the walls.

References

- HILL, C. A. & FORTI, P. (1997): Cave Minerals of the World, 2nd ed., Huntsville: National Speleological Society
ONAC, B. P. (2000): Geology of carstic areas. București: Editura Didactică și Pedagogică. (in Romanian)
ONAC, B. P. (2003): Theoretical and Applied Karstology, 13–14: 33–38.
VADEANU, T., GYÖRFI, S. & ARDELEAN, D. (1985): Buletin Speologic Informativ, 8 (1): 27–34.

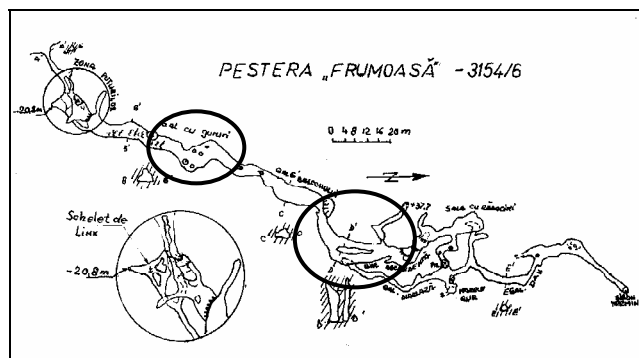


Fig. 1. Schematic map of the Frumoasă Cave.