



Vermiculation patterns in Coiba Mare cave, Bihor Mountains, Romania

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Vermiculation patterns developing on cave surfaces are certainly a spectacular feature. Sometimes vermiculation cover hundreds of square meters, like for example in Coiba Mare cave, which is situated in the Bihor Mountains, Romania. The Coiba Mare Cave is located at 1020 m altitude, on the Gardisoara Valley, not far from the Casa de Piatra Hamlet, in the Apuseni Natural Park (Bihor Mountains) situated in the western part of Romania. The first written document concerning the cave dates back to 1929, when R. Jeannel and E. Racovitza presented a brief description. Speleological investigations, which were started by I. Viehmann, D. Coman and M. Bleahu in 1953, were continued by several speleological clubs during 1975-1976.

In this study, we are investigating the mineralogy, stable isotope distribution and patterns of vermiculations in the Coiba Mare cave. Material from the vermiculations developed on cave wall was analysed using Powder X-ray diffraction (PXRD), Fourier transformed infrared (FTIR) and energy dispersive analyses (EDS). The material consists mainly of calcite with traces of quartz, muscovite, chlinochlore, kaolinite, potassium feldspar and organic material.

In Coiba Mare, the general look of the vermiculation pattern is that of a “pelli de leopardo” (Leopard’s spots), a term used by Bini et al. (1978) for large vermiculations composed of clay.

In the light of previous literature and according, to the own field and laboratory data a mechanism responsible for the formation of vermiculations is proposed. Evaporation and water film rupture cause the concentration of the loose particles. Evaporation is also associated with the formation of calcite microcrystals at the water-air interface. Concentration of the particle in vermiculations patterns and crystallisation is the result of evaporation and shrinking water spots.