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ABSTRACT BOOK

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GEOSCIENCES FOR
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Secondary minerals in minothems at Fragnè Mine (Turin, Italy)

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The Fragnè mine, Chialamberto (TO), is located in the Lanzo valley. The study area is part of the structural complex historically indicated as “area of calcschists and greenstones” or “Piedmont area” formed by mesozoic ophiolitic units of the Piedmontese Ligurian Basin by the tectonic-metamorphic evolution related to the alpine orogenesis (Falletti et al., 2009). The mineralizations are characterized by massive pyrite and Cu-rich pyrite that occurs in greenschist (prasinite) and amphibolite schist. The underground works development is around 5 km, tunnels that branch off into different levels.

In this work, we describe secondary minerals of minothems (Carbone et al., 2016) not yet described in the Fragnè mine and found usually inside natural caves characterized by different mineralogical associations. The results show that all samples are characterized by secondary Fe-rich minerals typical of acid mine drainage areas.

Blisters are composed only by schwertmannite, *war-clubs* by schwertmannite and goethite with low crystallinity, and *hair* by epsomite and hexahydrate minerals. Jelly stalactites and jelly stalagmites are characterized by schwertmannite in association with bacterial masses, instead stalactites and stalagmites by jarosite and goethite.

The results shows that a mineralogical transformation occurs from soft to hard minothems: schwertmannite tends to transform into goethite, probably due to ageing processes of schwertmannite or local pH variations, related to bacterial activity, since schwertmannite is a metastable phase which over time tends to turn into goethite (Jönsson et al., 2005).

Carbone C., Dinelli E. & De Waele J. (2016) - Characterization of minothems at Libiola (NW Italy): morphological, mineralogical, and geochemical study. *Int. J. Spel.*, 45, 171-183.

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Jönsson J., Persson P., Sjöberg S. & Lövgren L. (2005) - Schwertmannite precipitated from acid mine drainage: phase transformation, sulphate release and surface properties. *Appl. Geochem.*, 20, 179-191.