
Revisiting the Polymetallic Mineralizations of the Lodève Basin

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Résumé

The Carboniferous–Permian Lodève Basin is well known for its historical exploitation of Ba, Cu, and U. Similar to other French and European basins of the same age, Lodève has recently attracted renewed interest in the context of local (France/Europe) demand for critical resources and the ongoing national mining inventory (BRGM).

This work focuses on the development of hyperspectral remote sensing methods applied to polymetallic mineral resources. In this framework, historical occurrences of metallic mineralizations from both basement and sedimentary infill of the Lodève Basin were sampled and analyzed to establish their detailed mineralogical characterization. Classical analytical techniques (XRF, XRD, SEM) were employed prior to hyperspectral investigations.

Here, we present the results of this mineralogical approach, which allowed to distinguish four main types of polymetallic mineralizations: a) Barite, Quartz, Litharge, Bournonite, Arsenopyrite, Tetrahedrite, Galena, Bindheimite, Malachite, Azurite, Dialoetite, Fluorocronite, Dickite, Zinkenite; b) Quartz, Tetrahedrite, Malachite, Azurite, Chrysocolla, Chalcopyrite, Pyrite, Goethite, Calcite, Zn-Tetrahedrite; c) Barite, Quartz, Ankerite, Pyrite, Chalcopyrite, Hematite, Calcite, Hydrocarbons, Arsenopyrite, Dickite, Tetrahedrite, Malachite, Azurite, Dolomite, Galena; d) Covellite, Chalcocite, Calcite, Malachite, Azurite, Hydrocarbons, Cuprosklodowskite, Quartz, Muscovite, Hematite, Ankerite, Pyroxene, Clinocllore.

In addition, SEM imaging provides new insights into the micro-scale processes involved in the formation of these mineralizations, as well as their relative chronology. Finally, the studied polymetallic occurrences are integrated within the recently revised and consolidated structural evolution framework of the Lodève Basin (see also Coutable et al., this session).

Mots-Clés: polymetallic mineralization, sulfides, copper

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