

Geology and metallogenesis of the sediment-hosted Cu-Ag deposit of Tizert (Igherm inlier, Anti-Atlas Copper Belt, Morocco)

Abderrahim Essaifi¹, Abdellah Oummouch^{1,2}, Rachid Zayane¹,
Othmane Maddi², Mohamed Zouhair², Lhou Maacha²

¹*Geology Department, Cadi Ayyad University, BP 2390, Marrakech 40000, Morocco,*

²*Managem Group, BP 5199, Casablanca 20100, Morocco*

*E-mail: essaifi@uca.ac.ma

The Tizert copper deposit is the largest copper deposit in the western Anti-Atlas. It is located at the northern border of the Igherm inlier. The Tizert Cu-Ag deposit is the largest of a series of sediment-hosted copper deposits of the Anti-Atlas copper province in Morocco. Mineralized rocks in the deposit contain disseminated sulphides within a Late Ediacaran, dominantly siliciclastic sedimentary formation named the Basal Series. Isopach map of the Basal Series shows that during the Late Ediacaran the area was composed of large subsiding zones separated by paleohighs. The ore grade zones are well developed along basin margins adjacent to the basement paleohighs. These mineralized zones display a lateral sulphide zoning with central bornite-chalcocite zones grading outward to intermediate chalcopyrite and external pyrite zones. There is also a vertical sulphide zoning with evolution from bornite and chalcocite dominant mineralized rocks at the bottom to chalcopyrite and pyrite dominant mineralized rocks at the top of the lithostratigraphic succession. A late diagenetic age for this mineralization is indicated by the geometry of the mineralized zones that transgress bedding at a low angle, the sequential replacement of sulphides by other sulphide minerals, and the possible involvement of mobile hydrocarbons as reductants.

A second style of mineralization is represented by sulphide filled fractures and veins present in the Basal Series, as well as in the basement and the overlying dolomites. The location of better-mineralized zones of this style of mineralization near fractures and faults indicates it was epigenetic; it may have occurred during Late Hercynian shortening.

The similarity of the paragenetic sequences between the disseminated and the vein-hosted mineralization suggest that they may be related to the same mineralizing event, the disseminated style of mineralization being rapidly followed by the onset of the vein-style mineralization.