

## Geology and Mineralogy of Pb-Ag-Cu Veins of the Central Plateau Deposit of the Jbel Addana District, (Western Anti-Atlas, Morocco)

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Jbel Addana is a branch-parallel anticline of the Ordovician belt of Jbel Bani. It is located about 35 km south-east of the Precambrian inlier of Tagragra d'Akka in the western Anti-Atlas of Morocco, where it dominates the Drâa plain for some 40 km following a NE-SW trend. Geologically, this anticline consists of alternating poorly metamorphosed layers of sandstone and clay, which represent the Ktaoua, Roud-Aissa, and Second Bani Formations of Upper Ordovician ages (Caradoc and Ashgill). In metallogenic terms, this anticline corresponds to a Pb-Ag-Cu ore district comprising several deposits, where the orebodies are represented by a system of en échelon veins with a vertical dip. The Central Plateau deposit is located southwest of the anticline and is considered the widest in the district. Mineralized bodies consist of parallel veins extending in a WNW-ESE-trending direction. Macroscopic paragenesis is mainly composed by massive galena associated with a quartz-iron gangue, with an altered assemblage including malachite, iron oxides-hydroxides. Mineralogical analysis under microscope has revealed a paragenetic succession comprising three stages: i) an early hydrothermal stage with quartz, siderite, calcite, galena, pyrite, and chalcopyrite; ii) a late hydrothermal stage composed of quartz II, calcite II, and galena II; and iii) a typical lead-copper to iron supergene alteration stage characterized by concentric-textured cerussite and anglesite replacement around galena, with collomorphic-textured malachite, fibrous coronadite, and an iron assemblage with goethite and iron oxides.