

## Distribution, Settings, and Genesis of Burj-Dolomite Shale-Hosted Copper Mineralization in the Central Wadi Araba, Jordan

**Authors :** Mohammad Salem Abdullah Al-Hwaiti

**Abstract :** The stratiform copper mineralization of the Burj-Dolomite shale (BDS) formations of deposits shows that the copper mineralization within the BDS occurs as hydrated copper chlorides and carbonates (mainly paratacamite and malachite, respectively), while copper silicates (mainly chrysocolla and planchette) are the major ore minerals in the BDS. Thus, on the basis of the petrographic and field occurrence, three main stages operated during the development of the copper ore in the sandy and shaly lithofacies. During the first stage, amorphous chrysocolla replaced clays, feldspars, and quartz. This stage was followed by the transition from an amorphous phase to a better-crystallized phase, i.e., the formation of planchette and veins from chrysocolla. The third stage was the formation of chrysocolla along fracture planes. Other secondary minerals are pseudomalachite, diopside, neotocite together with authigenic fluorapatite. Paratacamite and malachite, which are common in the dolomitic lithofacies, are relatively rare in the sandy and silty lithofacies. The Rare Earth Elements (REEs) patterns for the BDS showed three stages in the evolution of the Precambrian–Cambrian copper mineralization system, involving the following: (A) Epigenetic mobilization of Cu-bearing solution with formation Cu-carbonate in dolomite and limestone mineralization and Cu-silicate mineralization in sandstone; (B) Transgression of Cambrian Sea and SSC deposition of Cu-sulphides during dolomite diagenesis in the BDS Formation; continued diagenesis and oxidation leads to the formation of Cu(II) minerals; (C) Erosion and supergene enrichment of Cu in basement rocks. Detrital copper-bearing sediments accumulate in the lower Cambrian clastic sequence.

**Keywords :** dolomite shale, copper mineralization, REE, Jordan

**Conference Title :** ICGMM 2022 : International Conference on Geosciences, Mining and Metallurgy

**Conference Location :** Bangkok, Thailand

**Conference Dates :** November 29-30, 2022