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Stratigraphy and Cu mineralization at Diyenge occurrence (Tenke Fungurume Mining – D.R. of Congo.

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The Diyenge Cu occurrence is located around 8 km NW to the Tenke city in the Tenke Fungurume Mining district. It is discovered by the illegal miners who extracted the malachite and azurite from an uncemented breccia. Since 2012 this region has been investigated by structural, sedimentology and petrography. Lithostratigraphically, the Cu mineralization is hosted in the Kundelungu Group, mainly in the Kyandamu (Ku 1.1) and Lusele (Ku 1.2). They are overlying the Nguba Group characterized by the massive and pyrite sandstone and siltstone from Monwezi Formation (Ng. 2.2).

The Kyandamu Formation (Ku 1.1) called “Petit Conglomérat” consist by the diamictite (~ 50 m of thick) made of up of clast (up to 30 cm of diameter) of quartzite, granitoid, shale, sandstone, quartz, micaschist. They are supporting by the argillaceous matrix. At top, ~ 2 m of the diamictite is characterized by the millimeter clast of quartzite and quartz which indicated the transition with the Lusele Formation (Ku 1.2). From bottom to the top, the Lusele Formation consist by the grey to brown pinkish argillaceous stratified shale (~30m of thick), the grey dark stratified dolomite altering with the light grey stratified dololimestone called “Calcaire Rose” (~30m of thick) and the stratified sandy argillaceous shale with laminated argillaceous shale.

The supergene ore such as the malachite, chrysocolla, azurite are precipitated in the fracture affecting both the matrix and clast of the diamictite. The pyrite, chalcopyrite and bornite associated to the malachite, chrysocolla and azurite are occurring in fracture and constituting the matrix of the tectonic breccia made of up the elliptic clast of the argillaceous shale and dolomite from the argillaceous stratified shale from Lusele Formation. The quartz veins bearing the pyrite and chalcopyrite occur in the latest unity are showing the profound striae.

In the Calcaire Rose, the dissemination of chalcopyrite, pyrite, bornite and chalcocite is usually observed while the malachite replace the chalcocite in the bedding, fracture, vertical and horizontal stylolite. Wall rock alteration is characterized by the carbonization. It is represented by the ankerite –siderite- calcite or dolomite veins and interpreted to be precipitate before the ore mineral. The folding and faulting are transformed the texture of the Calcaire Rose in the open and cemented pack breccia within Cu stockwork. The deposition of the uncemented breccia, the nature of fluid and the time of mineralization need to be investigated because of the Cu mineralization in the Kundelungu Group is poorly known along the Lufilian arc.

Reference

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