

Mambwe M.P., Muchez, Ph., Kipata, M.L, Chabu, M, Delvaux, D., 2016. Stratigraphy and Cu mineralization at Diyenge occurrence (Tenke Fungurume Mining – D.R. of Congo. 5th International Geologica Belgica Meeting, 26-29 January, 2016, Mons, Belgium.

Applied the crystals habits cavities forms of Cu-Co sulfide in green field exploration along the Lufilian arc: An example of Tenke Fungurume Mining District (D.R. of Congo)

Mambwe M.P.^(1,2,3); Kipata, M.L⁽¹⁾, Chabu, M⁽¹⁾; D. Delvaux⁽⁴⁾; Lubala, R.T⁽¹⁾; Muchez, Ph.⁽³⁾.

- (1) Department of Geology, University of Lubumbashi, B.P.1825, Lubumbashi, Democratic Republic of Congo.
- (2) Department of Geology Exploration, Tenke Fungurume Mining S.A, Route de l'Aéroport, Bâtiment TFM, Commune annexe, Lubumbashi, Democratic Republic of Congo.
- (3) (3) Geodynamics and Geofluids Research Group, Department of Earth and Environmental Sciences, KU Leuven, Celestijnenlaan 200E, B-3001 Leuven, Belgium.
- (4) (5) Department of Geology and Mineralogy, Royal Museum of Central Africa (RMCA), Leuvensesteenweg 13, 3080 Tervuren, Belgium.

Cu-Co mineralization is mainly occurring in the Roan Group along the Lufilian arc in the Democratic Republic of Congo (DRC). The multiphase is the newly metallogenic model which explained the origin of these mineralization although several model have previously defined. Tenke Fungurume Mining District (TFMD) is one of the Cu-Co giant deposit along the Lufilian arc and its the world. It is located in the southeast part of the DRC and around 185 Km at NW to the Lubumbashi town. The Cu-Co deposit discovered in the past time was easy because the supergene ore are occurring on the outcrop. However, all megabreccia of Mine Subgroup within barren outcrop was abandoned. In this work, we focus on the petrography and mineralogy features of the quartz veins and the Roche Siliceuse Cellulaire (RSC) unities for updating the green field exploration methodology.

As known, the Cu-Co sulfide are precipitated during the diagenetic, low grade metamorphism and orogenic event in the Neoproterozoic Katanga Supergroup. In the weathering zone, the cellular dolomite rock are altered by silicification and transforming in the siliceous cellular rock (RSC). Also the sulfide ore are altered in the supergene ore such us chrysocolla, heterogenite, malachite. The newly texture of host rock and quartz veins is allowing to distinguish several crystals habits cavities form left by these sulfide ore during the alteration. It is the rectangular and parallelogram cavities of the face of chalcocite , the octahedral, cubic and tetrahedral cavities the face of bornite, carrolite and pyrite and the dodecahedral cavity the face of bornite. Hematite or Fe-Mn oxide are precipitated in these cavities within or without supergene ore minerals.

The green field exploration methodology allowed using the crystals habits cavities left by the sulfide and described above like the evidence of hypogene minerals in the Mine Subgroup. They have been protected by the high silicification. Others crystals habits such us framboidal ,globular and radial are confusing with the dissolution cavities. These results applied during the field work at TFMD, could be extended along the Lufilian arc.

Reference

- Haest, M., Muchez, Ph., 2011.** Stratiform and vein-type deposits in the Pan-African Orogen in Central and Southern Africa: Evidence for multiphase mineralization. *Geologica Belgica* 14, 23-44.
- Mambwe, M.P; Chabu, M; Lubala, R.T; Kipata, M.L., 2013.** Altération de la dolomie siliceuse cellulaire (RSC) et développement de la minéralisation cupro -cobaltifère du Sous- groupe de Mines (District Minier de Tenke Fungurume, Katanga –R.D.Congo):Implication sur la mise au point des méthodes spécifiques d' exploration en "Green Field". 24rd Colloquium of African Geology, Addis Abeba, 8th – 14th, p156.