SULPHIDES AND SELENIDES FROM THRUST-SLICE 2400, MUSONOI MINE, KATANGA, D.R.CONGO

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Mineralogical studies on the Cu-U-Se mineralization of the '*écaille 2400*' (thrust-slice 2400) of Musonoï Extension mine has permitted to better characterize sulphides and selenides minerals from this Cu-Co kolwezian deposit.

Copper-bearing phases such as chalcocite Cu_2S, digenite Cu_9S_5, covellite CuS, or berzelianite $Cu_{2-x}Se$, and cobaltiferous species as carrollite $Cu(Co,Ni)_2S_4$, and trogtalite $CoSe_2$, have been identified in the Roan.2 dolomitic sandstones. The identification of the minerals are confirmed by optical studies, X-ray powder diffraction data and electron-microprobe analyses. The sulphides and selenides occur as a cement between of quartz grains or sometimes as carbonate-sulphides veins going through host rocks. The samples are frequently deeply altered in malachite but some mineralogical and petrographical features can still be investigated.

Sulphides generally show a sulphur-selenium replacement giving interesting mineralogical and crystallographical properties. Se-digenite seems to show optical properties between those of digenite and berzelianite, with a blue-shift of its hue, as well as a noticeable increasing of the unit-cell parameter with the selenium content, according to Vegard's law. Se-blaubleibender covellite, $Cu_{1+x}(S,Se)$,has also characteristic features under ore microscope with a typical yellowish colour.

Paragenetic relations between those minerals show three different stages for the crystallization of these metallic phases. An early precipitation of sulphides without selenium would occur with chalcocite, digenite and carrollite probably related to a complete replacement of pyrite as it has been observed at Kamoto Principal. Then, a metasomatic stage has enriched the deposit in numerous elements (U, Se, V, Mo, Pb, Cr) creating notably the selenium-bearing phases Se-digenite, berzelianite, trogtalite and PGE-selenides. This association seems to crystallize at temperature around 200°C. Later on, hydrothermal and meteoric alteration deeply oxidized the deposit due to its intense fracturation and karstic features. Fluids running through these conducts have leached the copper out of the sulphides forming Se-covellites lamellae along the cleavages of digenite as well as some released gold which precipitates as minute grains in malachite.