

PETROGENESIS OF THE OMITIOMIRE Cu-DEPOSIT, NAMIBIA

Contact persons: Prof. Torsten Vennemann, Lukas Baumgartner and Karl Hartmann (Craton Mining, Namibia)

Context

Recent field, structural, and petrographic observations of the Omitiomire copper deposits in east-central Namibia have led to a new, refined interpretation of the ore mineralisation (e.g., Kitt et al., 2017). The Omitiomire Cu deposit (resource of 137 Mt at 0.54 % Cu) of the Damara Belt in Namibia is hosted by an anastomosing, low-angle Pan-African (ca. 520 Ma) shear zone system developed around an older (ca. 1100–1060 Ma), late Mesoproterozoic intrusive breccia within and related to a suite of mafic rocks, presumably metavolcanic rocks, and later tonalitic gneisses. High-grade ore shoots preferentially formed along contacts between biotite epidote-quartz-chalcocite schists and felsic gneisses, and are directly related to an increase in the number and cumulative thickness of thin, contact-parallel mineralized shear zones. Alteration and mineralization are associated with elevated concentrations of K_2O , Cr, Rb, S, and Cu and a loss of Na_2O , CaO, and MgO. Grades of Cu appear to be the highest in association with high epidote content and where the epidote is extremely rich in Cr.

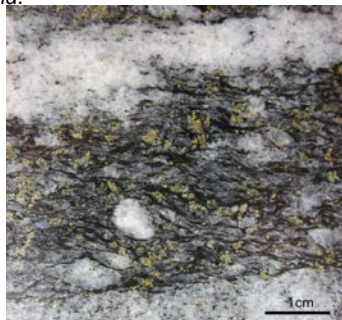
Objectives and Methods

The copper deposits are essentially high-grade metamorphic deposits with chalcocite as the main Cu ore but the ores occur in “retrograde” amphibolite with the above mentioned secondary mineralogy. To help constrain the origin of the presumably retrograde fluids and hence the likely origin and source of the Cu, detailed field and mineralogical/petrological work, including electron microprobe and stable isotope analyses of the primary and secondary minerals is planned to better characterize fluid-rock interactions, the temperatures of mineralization, and trace the origin of the fluids by comparison to a wide range of country rocks present.

Literature

Shawn Kitt, Alexander Kisters, Torsten Vennemann, and Nick Steven, 2017. Orebody geometry, fluid and metal sources of the Omitiomire Cu deposit in the Ekuja Dome of the Damara Belt in Namibia. Mineralium Deposita, DOI 10.1007/s00126-017-0731-y.

Chalcocite in quartz-amphibole-epidote shear zone of the Omitiomire Cu-Deposit of Namibia.



Sites WEB

Choice of orientation : 1) Geochemistry, Metamorphism, Ore Deposits