

SUMMARY

The presented bachelor thesis deals with iron oxide copper gold deposits (IOCG) and contains a description of the Kombat deposit in Namibia, as well as a comparison of the deposit with the IOCG deposit type. In the first part of the bachelor thesis, IOCG deposits are described with respects to their geological, mineralogical, geochemical and structural aspects. The results of fluid inclusions and stable isotope (sulfur and oxygen) are described for all IOCG deposit types, together with genetic models. The second part of the bachelor thesis concerns the Kombat deposit in Namibia. The last part of the thesis is the comparison of the Kombat deposit and IOCG deposits.

IOCG deposits form a broad group of world-class deposits characterized by economic grades of copper and gold, their main feature is occurrence of both oxidic (magnetite, hematite) and sulfidic (iron and copper sulfides). IOCG deposits form mainly in extensive settings, on cratonic margins, active continental margins and in intracontinental rifts (Groves et al., 2010). Ore bodies are associated with zones of brittle and ductile deformation, various breccia types are common. Zones of sodic-calcic hydrothermal alteration are typical for IOCG deposits and usually have an area of several square kilometers.

The Kombat deposit is situated in northern Namibia, in the Otavi Mountainland metallogenic province. Kombat is Cu-Pb-Ag deposit, the ore bodies are located in the proximity of the lithological contact between dolostones of the Hüttenberg Formation and phyllites of the Tschudi Formation (Innes & Chaplin, 1986). The Mulden Group sandstones on the lithological contact represent an infill of the carstified Hüttenberg Formation paleosurface (Innes & Chaplin, 1986). The ore bodies are structurally controlled (tectonic breccias and shear zones related to deformation phases of the late Proterozoic Damaran Orogeny; Deane, 1995). There are two types of hypogene mineralization at the Kombat deposit: (i) sulfide mineralization with dominant chalcopyrite, bornite and galena; and (ii) oxidic mineralization, associated exclusively with the sandstone bodies. The later one is represented by bands of magnetite, hematite and manganese oxides and silicate minerals (Innes & Chaplin, 1986). Frimmel et. al. (1996) proposes a two-stage genetic model: during the first stage, the oxidic mineralization was deposited in shallow, oxidic waters during the extension of the basin. During the second stage, sulfidic mineralization was deposited by metal bearing fluids expelled during a continental collision.

Even though the Kombat deposit lacks some features typical for IOCG deposits (hydrothermal alteration zones, tectonic position, association with magmatism), some of its features (mineralogy, fluid properties, structural control of ore bodies) are convincing enough for us to consider Kombat as an IOCG deposit.