# English abstract

The volcanic-hosted massive sulfide deposits (VHMS) represent one of the key deposit types in the modern world. Due to their polymetallic composition (Zn, Pb, Cu, Ag, Au and Sn in some cases) they are important source of the base metals as well as the precious metals. They have been forming through the Earth's history and are actively forming even now on a modern sea-floor through emanations of hot metal-bearing fluids. Extensive study of the volcanic-hosted massive sulfide deposit began in 1960s after discovery of active seafloor vents on the bottom of the Red Sea (e.g. Miller et al., 1966) in form of black smokers. They represent channels and are results of emanation of the hydrothermal fluids into the water column and actual evidence of the hydrothermal processes. Hydrothermal fluids were enriched in various elements, including base and precious metals. Certain elements (specifically metals) were leached from the host rock (volcanic and sedimentary) by the percolating seawater. This seawater was heated and modified into hydrothermal fluid by a heat from a magmatic intrusion, which represents the driving force of the whole hydrothermal system. This intrusion can be of variable composition – from basic to felsic. Sometimes fluids that are produced by this intrusion are also enriched in metals and produce a metal enrichment in the hydrothermal system. But this phoneme is rare and documented only from a few deposits (Kid Creek, Neves-Corvo). Active hydrothermal activity leads to precipitation of sulfide minerals and creation of a massive sulfide body. Precipitation can occur directly in the seafloor or bellow in the unconsolidated sediments (resulted from a mechanical collapse of the black smoker). Favorable environments for creation such accumulations are depressions on the seafloor – rifts, grabens or calderas. Massive sulfides can there be easily covered with sediments and thus preserved in the geological record. Hydrothermal fluids not only produce mineralization, which is spatially limited, but also large alteration zones. They are divided into *(i)* regional and *(ii)* local alteration zones directly linked to the mineralization processes. The stockwork zone is situated in the center of the local alteration zone (pipe-like alteration zonation). It represent the feeder zone for the whole VHMS system.

The Iberian Pyrite Belt is located on the Iberian Peninsula both in the Spain and Portugal. Its total tonnage and density of massive sulfide accumulations is extraordinary and unique compared to the other districts around the world. Two world-class massive sulfide deposits, the Aljustrel and the Neves-Corvo from the Iberian Pyrite Belt were studied in this thesis and both show many similarities. They are hosted by the volcano-sedimentary sequence and its felsic

units and both were formed before approximately 350Ma. They are interpreted to be result of a long-lived hydrothermal system with particularly efficient deposition mechanisms. Source of the metals for the whole belt was the Phyllite-Quartzite group and its unknown basement. But at the Neves-Corvo deposit there is a strong evidence for the magmatic fluid contribution into the system. This produced the bornite zone and cassiterite ores. But this phenomena (at the Iberian Pyrite Belt) is present only at the Neves-Corvo deposit.