

Fe-Ni-Co-Pb-Zn BEARING COPPER ORES IN THE MAUKEN AREA (RADFELD-BRIXLEGG, NORTH TYROL, AUSTRIA): IMPLICATIONS FOR THE PROVENANCE OF BRONZE AGE “FAHLORE-COPPER” METAL ARTEFACTS IN THE EASTERN ALPS

Krismer, M. & Tropper, P

Institut für Mineralogie und Petrographie, Universität Innsbruck, Innrain 52f, A-6020 Innsbruck (Österreich)
e-mail: Matthias.Krismer@uibk.ac.at

This contribution focuses on copper ores occurring in the Schwazer Trias in the Mauken Area (mining areas: Maukenötz, Silberberg and Geyer) near Radfeld-Brixlegg. The ores are a possible source of fahlore used for Chalcolithic and (Early) Bronze Age copper production. Instead of the galena + sphalerite rich ore occurrences more to the west of the ore belt (Mieminger Kette, Innsbruck Hötting). Ores of the Schwazer Trias are basically dominated by tennantite-rich fahlore group minerals and therefore can be classified as substantial copper ores.

The Mauken Area is located in the eastern most part of the prehistoric and historic silver and copper mining area of Schwaz-Brixlegg. Mining districts in the Mauken Area are characterized by two ore types, which occur in different geological units: 1.) the more common ores consists of more or less monomineralic Fe-Zn-(Hg) tetrahedrite-tennantite and are situated in the Devonian Schwaz Dolomite which is part of the Greywacke Zone. Mining activities of these ores are dated back to the Late Bronze Age. 2.) The second ore type is hosted basically in Anisian carbonates of the Schwazer Trias. The ores show a complex mineralogy with tennantite-rich fahlore-group minerals (in part Ag-rich) as primary copper phase in association with pyrite/bravoite + enargite/luzonite-famatinite ± chalcocopyrite ± thiospinel ± cobaltite-gersdorffite-arsenopyrite ± chalcocopyrite ± galena ± sphalerite ± pearceite ± barite which occur as major and minor phases. The mineralogical/chemical composition of these ores is highly variable and changes locally.

The mineralogical and chemical composition of the ores of the Schwazer Trias points to the use for Chalcolithic to Early Bronze Age “fahlore copper” artefacts found at the Kiechlberg hilltop settlement and metallurgical workshop near Thaur (Innsbruck). Few slag, copper and bronze samples contain Sb and/or As and mostly <1wt.% Ag as minor components with additional impurities of Fe, Co, Ni and Pb.