



Characterization of mineralization in old nonsulfide Zn-Pb mining district in Czerna and Galman (southern Poland)

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In recent years there has been a tendency to re-examine mineralization occurring in closed mines. The purpose of this work is to determine primary and secondary minerals and hosted rocks in old adits in Czerna and Galman, previously not described in detail. In the research area traces of the Zn-Pb mining initiated in the sixteenth century were preserved. Deposits are classified as Mississippi Valley Type (MVT), which are developed as a result of epigenetic dolomitization of Middle Triassic limestones while circulating meteoric water is responsible for the oxidation of primary sulfides and formation iron ore (limonite) with oxidized Zn-Pb ores (galman).

Characteristic paragenesis of galena with cerussite and anglesite, as well as different generations of these minerals, were described. Identification of the mineral composition was carried out using the X-ray diffraction method and scanning electron microscopy imaging. The characteristics of the chemical composition of galena and weathering minerals were determined by electron microprobe. The conclusions about the generations of dolomites and other carbonate minerals was achieved with the use of cathodoluminescence (CL).

As a result of the applying different research methods, the presence of unspecified phases was confirmed in the mentioned places. Mixtures of hemimorphite and smithsonite, typical minerals for red galman, were found. Galena is characterized by low silver content, while small amounts of antimony and bismuth admixtures were detected. Moreover, the primary mineralization and ferruginous red galman show similarities to the others deposits in NE – part of Silesian - Cracow district. On a final note, the authors were able to precisely identify associated minerals in the research area, which allowed to determine primary and secondary mineralization of minerals in the research area.