

## **Sb-Mineralizations of the Eastern Alps and of the Western Carpathians – a comparison**

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Dill (1985, 1993) postulates two categories of antimony mineralizations in the area of Central Europe: 1) Sb-mineralisations bound to acidic to intermediate volcanic rocks, 2) Sb-mineralisations bound to sedimentary or metasedimentary sequences. Both types we can find in the investigated area of the Eastern Alps and Western Carpathians.

Stibnite mineralization in the Eastern Alps is mainly concentrated to the Penninic Rechnitz window, the Crystalline complexes (Kreuzeck-Goldeck Mts., S of the Tauern Window), the Innsbruck quartzphyllite complex, the base of the westernmost Drau-Range while the Gurktal thrust system (Middle Carinthia, Brückl) is only of minor importance. The important stibnite mineralizations are restricted to two metallogenic districts: Schlaining Sb-ore district and Kreuzeck-Goldeck Sb- and Au-As ore district (Weber et al. 1997).

According to Chovan et al. (1994) the most important Sb-mineralizations in the Western Carpathians are located in four structural and metallogenic zones: Tatric Unit (Pezinok, Dúbrava, Magurka, Medzibrod, Lom), Veporic Unit (Ozdín), Gemeric Unit (Betliar, Čučma, Poproč) and in neovolcanic complexes (Kremnica, Zlatá Baňa).

They form both vein-type (e.g Radlbergalm, Leßnig, Dúbrava) and strata-bound (e.g. Pezinok) mineralization. The Sb-mineralization is represented predominantly by stibnite, but gudmundite, berthierite and native antimony are relatively common in some deposits, too.

The model ages calculated from Pb isotopes of stibnite and Pb-sulfosalts correspond with the young Alpidic age of the vein deposits of Schlaining and Zlatá Baňa. The

model ages of the deposits from the Kreuzeck-Goldeck-Gruppe, base of the Drau-Range, Tatric, Veporic and Gemeric Units are influenced by younger Mesozoic events (metamorphism, rejuvenation of mineralization etc.) and can be interpreted as pre-Alpine.

The sulfur isotope distribution in stibnite from deposits of both areas lies around zero indicating sulfur origin from homogenous deep situated source in the metamorphic basement. Only the samples of Zlatá Baňa are characterised by a wider spread, probably caused by several successions of this ore mineral (Schroll 1996, Kantor et al. 1994).

The carbon and oxygen isotope values of carbonates from Zlatá Baňa show the largest spread in agreement with the sulphide isotopes indicating the water mixing in a subvolcanic environment. The isotope distribution from the carbonates of Schlaining is more homogenous. The carbonates from the Drau Valley occurrences may be formed by metamorphic water.

The fluid inclusion investigation give homogenization temperatures ranging from 100 up to 200 °C, the salinities reach maximum values of 24 NaCl equiv. wt. % in Dúbrava and 30 % in Radlbergalm and Leßnig. The values from Schlaining, Zlatá Baňa or Pezinok are lower with an upper limite of 12 %. The formation age of Schlaining is approximately dated between 17 and 19 Ma. Mica Ar/Ar ages from alteration zones of the Gurskerkammer and Obertilliach mineralizations indicate that excess Ar was incorporated due to the Early Tertiary tectonomagmatic activities along the Periadriatic lineament zone.