

## RHENIUM SULPHIDES AND PLATINUM-GROUP MINERALS AT HAIDBACH/PINZGAU – RECENT RESULTS

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The copper-nickel-cobalt sulphide mineralization at Haidbachgraben/Felbertal (Salzburg) is hosted by amphibolite and chlorite schist of the Habach Group in the Subpenninic nappe system of the central Tauern Window (MELCHER et al., 2017). Orebodies occur as highly deformed lenses and stringers within a hornblendite unit chemically resembling ultramafic pyroxenite. Mineralization consists of major pyrrhotite, chalcopyrite, pyrite, pentlandite, and minor sphalerite and Ni-Co-Fe sulpharsenides (gersdorffite-cobaltite series) associated with a large number of accessory minerals. According to quantitative analysis of grain mounts, Fe sulphides (pyrrhotite > pyrite) make up about 75 to 92 % of the sulphide assemblage. Chalcopyrite accounts for 1.4 to 19.2 %, and pentlandite for 6.3 to 6.8 %. Pyrite is the major carrier of Co (median 0.37% by LA-ICP-MS) and As (0.29%), while Ni is hosted by pentlandite and pyrrhotite (0.57%). Copper and Fe sulphides all have elevated Se concentrations (maximum of 287 ppm, median 88 ppm). Chalcopyrite hosts significant Zn (median 568 ppm) and some Ag (34 ppm), but low In and Sn.

Accessory minerals include discrete phases of the noble metals Au, Ag, Re, Ir, Pt and Pd. Gold is present as electrum (13-39 % Ag) and rare petzite [Ag<sub>3</sub>AuTe<sub>2</sub>]. Hessite is the most common Ag phase, accompanied by argentopentlandite, empressite and acanthite/argentite. Iridium is present as very rare irarsite, whereas abundant sperrylite and Pt(-Fe) alloy phases are hosts to Pt. Palladium minerals include Pd-melonite as the most common Pd phase, merenskyite [PdTe<sub>2</sub>], michenerite [PdTeBi], and the rare mineral testibiopalladite [PdTe(Sb,Te)]. Keithconite [Pd<sub>20</sub>Te<sub>7</sub>], kotulskite [PdTe] and sudburyite [PdSb] are rare and either associated with petzite and Pd-melonite, or occur as late-stage crack-fillings in Fe and Cu sulphides.

Rhenium minerals comprise abundant tarkianite [(Cu,Fe)(Re,Mo)<sub>4</sub>S<sub>8</sub>] and as yet unidentified Re-Pb sulphides of approximate [RePbS<sub>3</sub>] and [(Re,Pb,Mo)<sub>2</sub>(Fe,Cu)<sub>3</sub>S<sub>6</sub>] composition. Tarkianite is a cubic phase crystallizing in the linneite group and characterized by high hardness (KOJONEN et al., 2004); it invariably occurs as minute (max. 8 µm) euhedral, singular inclusions in pyrite. The Re-Pb phases are either new minerals, or varieties of dzhezkazganite [ReMoCu<sub>2</sub>PbS<sub>6</sub>], a trigonal phase having a structure similar to molybdenite-3R (GENKIN et al., 1994).

The polymetallic mineral assemblage at Haidbach is interpreted as an orthomagmatic sulphide deposit overprinted by metamorphic processes.

GENKIN, A. et al. (1994): *Geol. Ore Deposits*, 36(6), 481-489.

KOJONEN, K.K. et al. (2004): *Canad. Mineral.*, 42, 539-544.

MELCHER, F., SCHWABL, S., AIGLSPERGER, T., PROENZA, J.A. (2017): In *Mineral Resources to Discover - 14th SGA Biennial Meeting 2017, Volume 2, 487-490, Quebec*.