Rare Ag ores (Danielsite, Balkanite) from the Fahlore Deposit of the Röhrerbühel (N-Tyrol, Austria)

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In the course of SFB HIMAT (historical mining activities in Tyrol and adjacent regions) the Cu-deposits from the mining district Röhrerbühel in the Kitzbühler Alps is currently under investigation. These deposits are located in palaeozoic metasediments **(**Wildschönau Schists) of the western Greywacke Zone, N-Tyrol, in the lowermost tectonic unit namely the Alpbach Unit. The fahlores of the Röhrerbühel deposit were investigated with EMPA and show a high concentration of Sb and Fe and can be identified as tetrahedrite.
In addition to the fahlores, extremely rare Ag minerals were also detected. Most prominent, Ag-bearing amalgame with high Hg concentrations (Ag 80 wt.%, Hg 15 wt.% and Cu 4 wt.%) occurs. In addition, an Ag mineral, most likely danielsite (Cu, Ag)$_{14}$HgS$_8$, occurs as a secondary alteration product with the actual formula (Cu, Ag)$_{14.31}$Hg$_{0.7}$S$_8$. A similar Ag mineral, which is not considered to be an alteration product, was also found and characterized optically and is balkanite, which has the formula Cu$_9$Ag$_5$HgS$_8$ and has only been described from one locality from Bulgaria so far. The chemical formula of the balkanite from our samples is Cu$_{8.78}$Ag$_{4.8}$Hg$_{0.9}$S$_8$. In a further step, it is planned to characterize these rare Ag minerals with micro-Raman spectroscopy.

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