

Hyrslite (Manganoquadratite) from Uchucchacua

Note that this report was anticipating the submission to IMA of a new mineral that was to be named hyrslite. However, someone beat us to it. What follows is some of our notes.

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Hyrslite was found in our material on one specimen, collected by J.Hyrsl in the Socorro section of the Uchucchacua deposit. Several other specimens from the same place were studied together. The most common mineral from this area is alabandite - it represents the main mineral of several ore bodies, which can be several tens of meters long. It forms large black grains to several cm with a typical cubic cleavage. Very rarely it forms also octahedral crystals up to 2 cm, extremely rarely to 4.5 cm. The alabandite crystals on the type specimen of hyrslite are twinned according to the spinel-law.

The following minerals were found by microprobe in the same association :
Sulphides: galena, arsenopyrite, pyrite, sphalerite, bournonite, alabandite, stibnite, As-rich tetrahedrite, geocronite, benavidesite, As-containing boulangerite-like mineral
Ag-sulphides: uchucchacuaite, Ag-Mn-As rich member of andorite group

Hyrslite is one of the youngest minerals in studied association. It has a variable As/Sb ratio, similarly as other associated minerals (uchucchacuaite, andorite).

Very interesting is also a specimen with grains to 5 mm in diameter with a triangular cross-section, embedded in calcite. They represent a mixture of prevailing uchucchacuaite with minor benavidesite – very unusual for minerals, which were found in Uchucchacua until now only as microscopic grains. According to the shape, they can be a pseudomorph after a mineral from the tetraedrite group.

Studied polished sections (all sulfides are grown in white granular calcite) :

section JH259: galena, arsenopyrite, pyrite, hyrslite (grain ca 50 x 60 μm)

section TA780: large alabandite, only small grains of uchucchacuaite

section TA781: alabandite, arsenopyrite, uchucchacuaite, hyrslite (with variable As/Sb ratio)

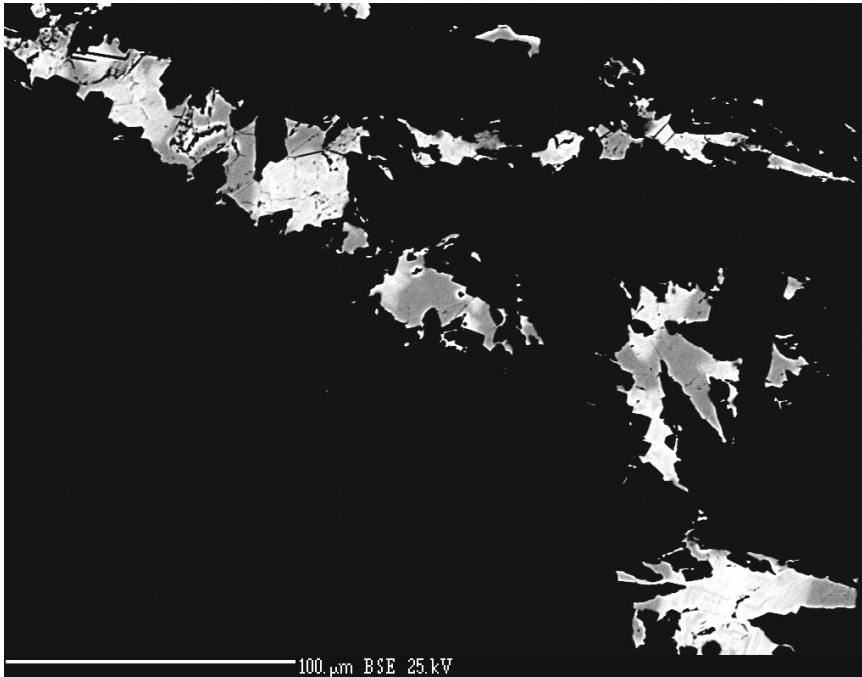


Fig. TA781 F1: aggregates of hyrslite with variable As/Sb ratio

section TA782: large alabandite, galena, sphalerite, arsenopyrite, hyrslite (with variable As/Sb ratio), uchucchacuaite, geocronite

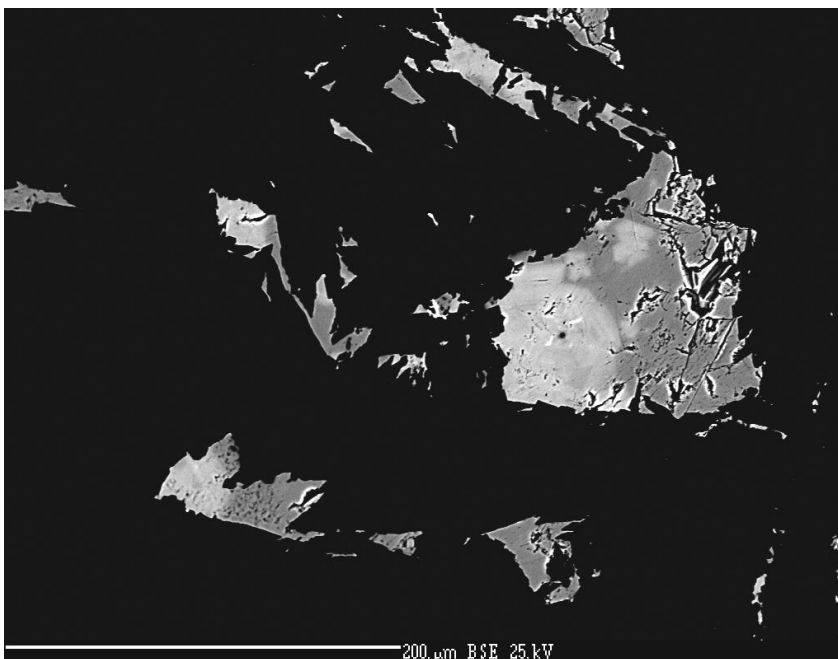
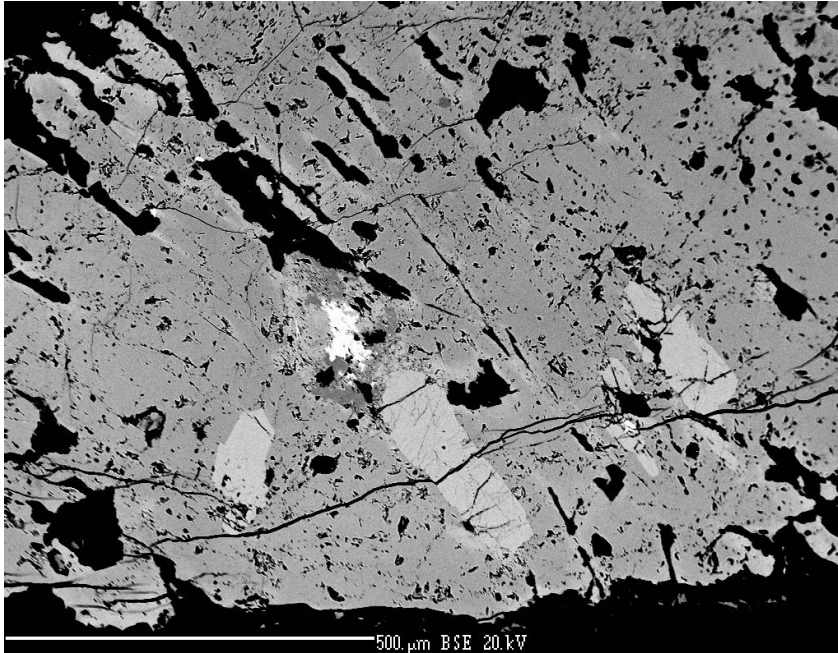


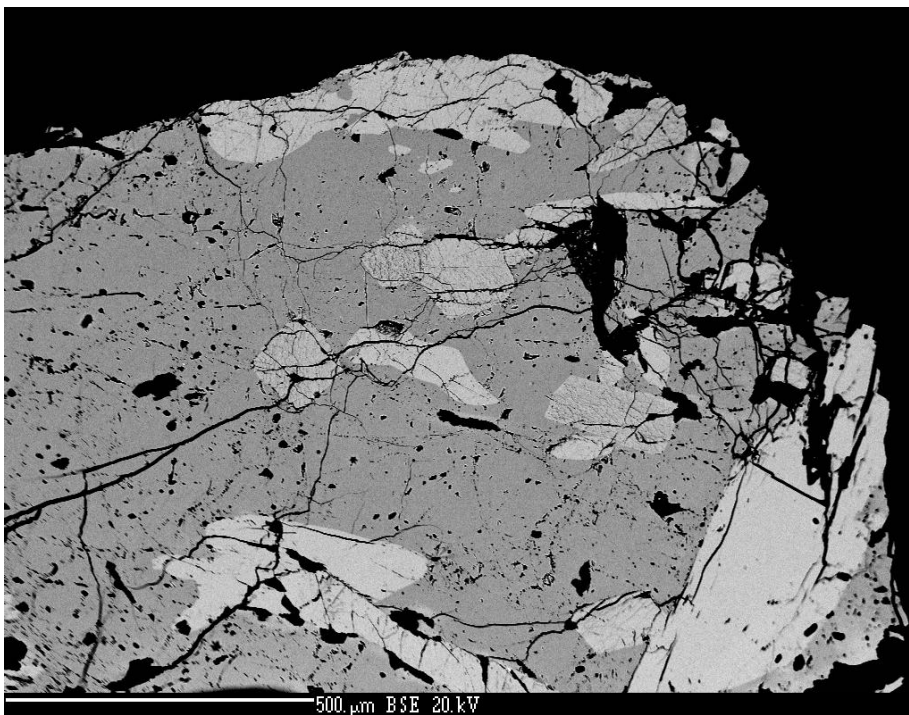
Fig. TA782 F1: aggregates of hyrslite with variable As/Sb ratio

section TA783: alabandite, arsenopyrite, galena, geocronite, bournonite, Mn-sphalerite (with variable Zn/Mn ratio), uchucchacuaite (with variable As/Sb ratio), benavidesite and very small hyrslite

section JH238: uchucchacuaite, benavidesite, As-containing boulangerite-like, As-rich bournonite

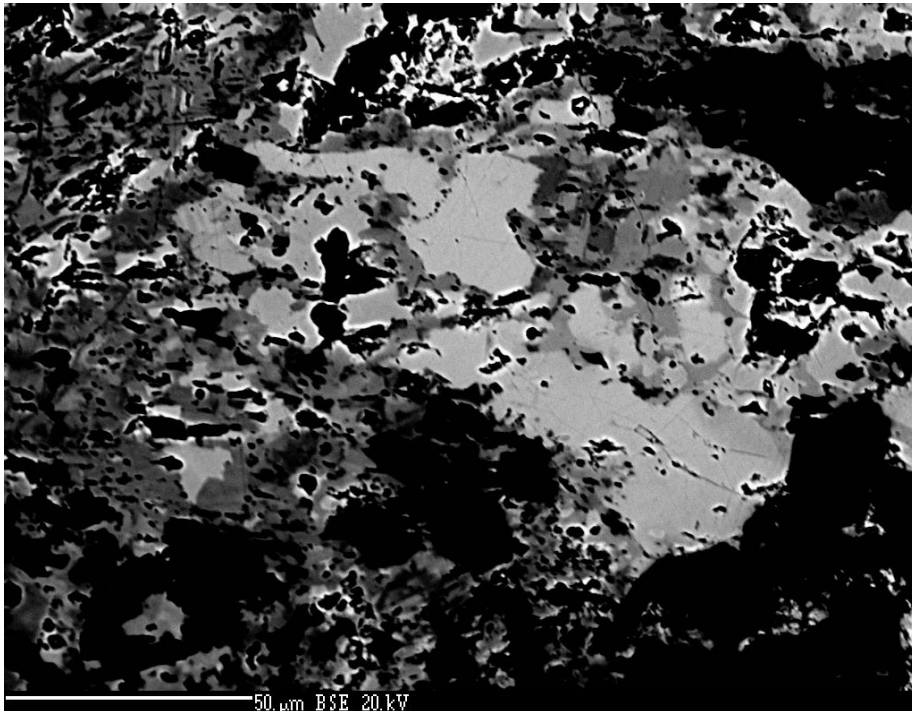


JH238 F1 - main gray mineral: uchucchacuaite (some lighter margins are As-rich); lighter "tabular" aggregates: benavidesite; small white aggregates: As-containing boulangerite-like; dark gray around white: As-rich bournonite

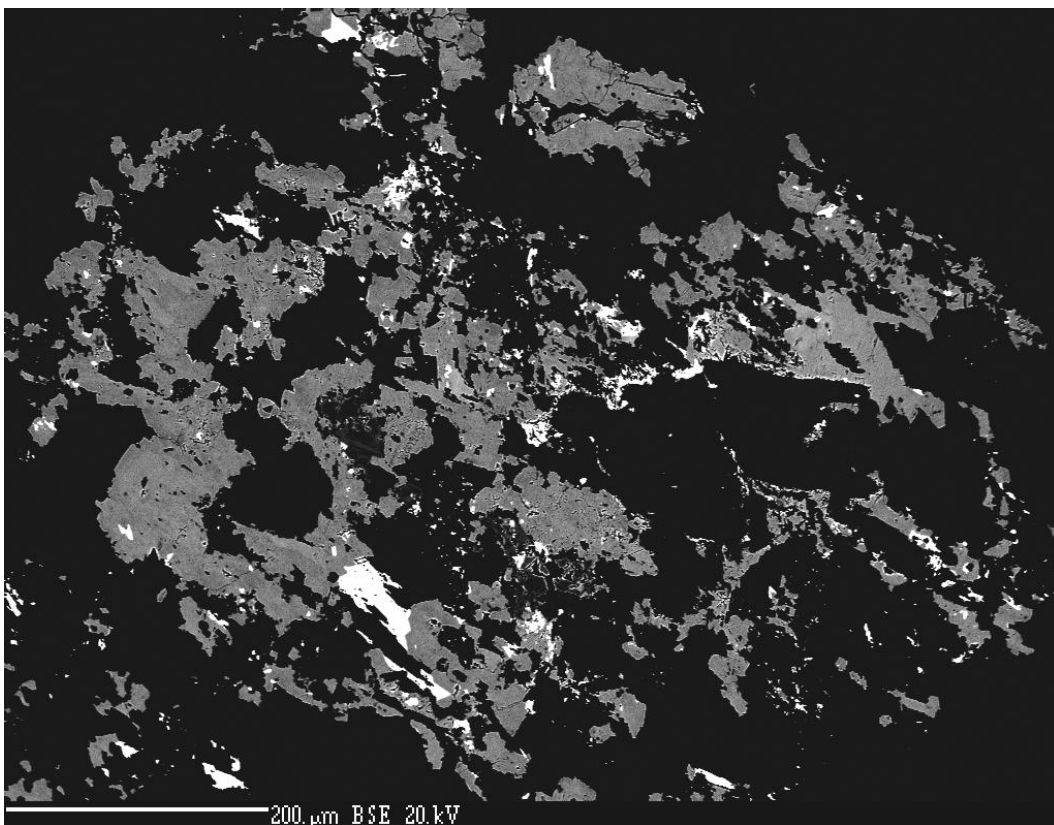


JH238 F2 - main gray mineral: uchucchacuaite; lighter "tabular" aggregates: benavidesite

section JH239: stibnite, tetraedrite, arsenopyrite, uchucchacuaite, some Ag-Mn-As rich member of andorite group, hyrslite (partly zoned - As/Sb)



JH239 F3 - strongly zoned (As/Sb, Ag/Pb) some Ag-Mn-As rich member of andorite group



JH239 F6 - main dark (partly zoned - As/Sb) hyrslite

Hyrslite - chemical composition

electron microprobe Cameca SX100, WD mode, 25 kV, 20 nA
chemical composition close to ideal formula $\text{AgMn}(\text{As,Sb})\text{S}_3$
spot analyses at attached excel file

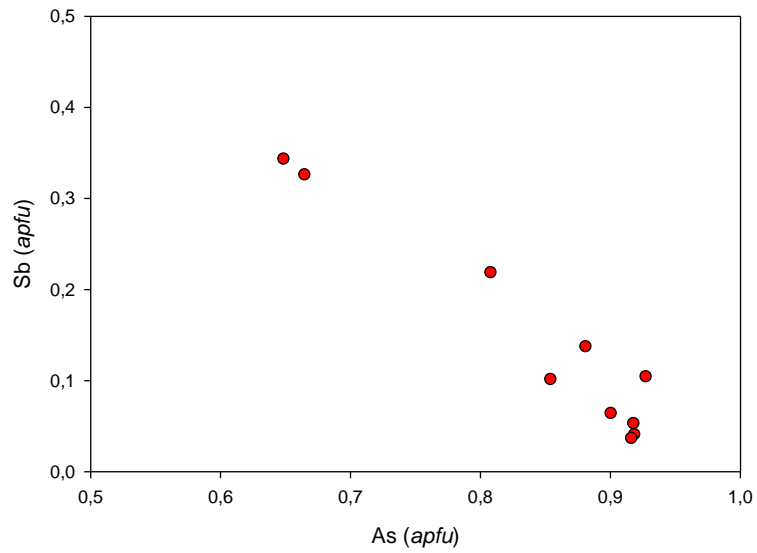


Fig. Range of As - Sb substitution in hyrslite