Greenwood
Tellurides

600099

PROBLEM #2.

MINERALOGRAPHY 409

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The samples of this problem included four hand specimens, one large and three small, and three polished sections. The samples came from Greenwood, B.C.

Megascopic:

The hand specimens were examined and were observed to be serpentinized rock with some disseminated metallic minerals. The rock was cryptocrystalline and had vugs, thus hinting that the sample was low temperature. The vugs were lined with rhombs of a colorless mineral and investigation with oils showed that this was quartz. The rock was probably all serpentinized quartz. It was colorless to dark green in color.

The only metallic minerals that could be determined in the hand specimen was gold. The rest could not be identified.

The serpentinized quartz contained approximately two to three percent metallic minerals.

Microscopic:

Minerals and Properties (in decreasing order of abundance)

Sylvanite - $AuAgTe_4$

Color, creamy white; Hardness C; Anisotropic, light gray to dark gray; $HgCl_2$, KOH, KCN, HCl negative; $FeCl_3$, weak yellow stain; HNO_3, effervesces with strong staining. Often seen as lathe-like crystals as in Fig. 7. Faintly twinned in reflected light but is strongly twinned under Xed Nicols as in Fig. 8.

what is its color against sylvanite.

Petzite - $(Ag,Au)_2Te$

Color, silver-white; Hardness ~B; Isotropic; KOH, HCl, negative; $HgCl_2$, brown stain; KCN, brown stain; $FeCl_3$, strong irridescent stain; HNO_3, weak brown and irridescent stain.

Pyrite - FeS_2

Color, brassy yellow; Hardness >E; Isotropic; $HgCl_2$, KOH, KCN, $FeCl_3$, HCl, HNO_3, negative; Aqua Regia weak tarnish. Often exhibited good cubic crystal form as in Fig. 5.

Hessite - Ag_2Te

Color, gray-cream; Hardness ~B; Anisotropic, white to gray-blue; KOH, KCN, HCl negative; $HgCl_2$, weak brown stain; $FeCl_3$, stains irridescent; HNO_3, dark brown stain. Often showed multiple twinning under Xed Nicols. Surface streaking resulted even after careful polishing.

typical

Gold - Au

Color, golden yellow; Hardness B; Isotropic; very Sectile; Negative to all reagents. Should be + to KCN. 1-2 minutes.

Melonite - $NiTe_2$

Color, pale yellow-pink; Hardness B; Anisotropic, strong white to yellow-brown; $HgCl_2$, KOH, KCN, negative; $FeCl_3$, stains brown; HCl, weak brown stain; HNO_3, effervesces and stains black. Was only observed twice.

Coloradite is also present in small amount.
HgTe

Magnetite - Fe_3O_4

Color, gray; Hardness D+; Isotropic; Negative to all reagents, including aqua regia. Showed some semblance to cubic crystal form as in Fig. 5. Was found to be magnetic and was only observed once.

Paragenesis and Significant Textures

Pyrite was probably the earliest mineral as it is commonly a high temperature mineral and also exhibited good crystal form. Magnetite, also a high temperature mineral, came next. Hessite was probably the first of the tellurides. The evidence for this statement is not conclusive as it often occured as in Figs. 2 and 3, but sometimes exhibited a crude rim texture as in Fig. 4. It definitely came earlier than the Sylvanite as shown in Fig. 3. Next came either Petzite or Melonite. Again the evidence is inconclusive. An Island-in-the-Sea texture was noted showing that the Melonite was older but in the other instance in which Melonite was noted, a crude rim texture indicated maybe Petzite was earlier as in Fig. 6. This actually may be an Island-in-the-Sea texture also, and then one could say that the Melonite did come earlier. Sylvanite came next in the sequence. In most cases it exhibited rim textures as in Figs. 1 and 7. Gold was the last mineral in the paragenetic sequence. It sometimes replaced Petzite as veins as in Fig. 4 or was not associated with the ore minerals at all. It often occured as free gold.

A mutual boundary relationship was also noted between the different minerals as in Fig. 2.

A filiform texture is commonly associated with this assemblage of minerals but I did not observe it in the polished sections. Should mention it.

According to ?

The ore has good gold and silver values in the form of free gold and tellurides. The samples came from an epithermal ore deposit. probably

RMT
Jan. 14/59

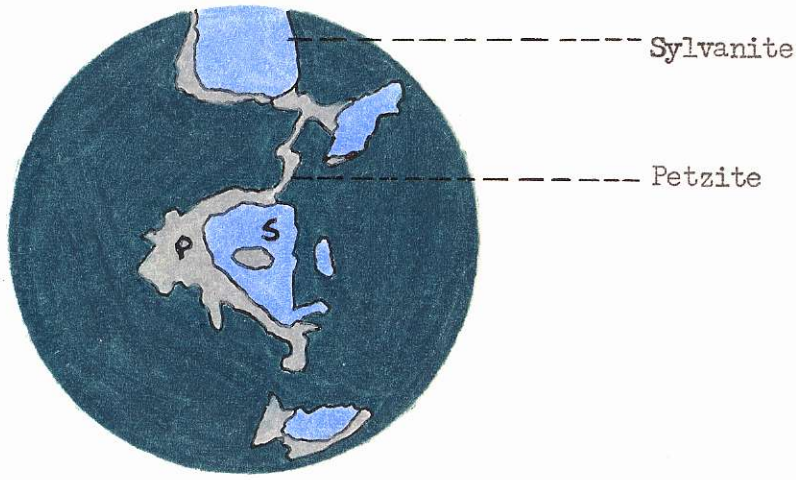

Fig. 1 X500

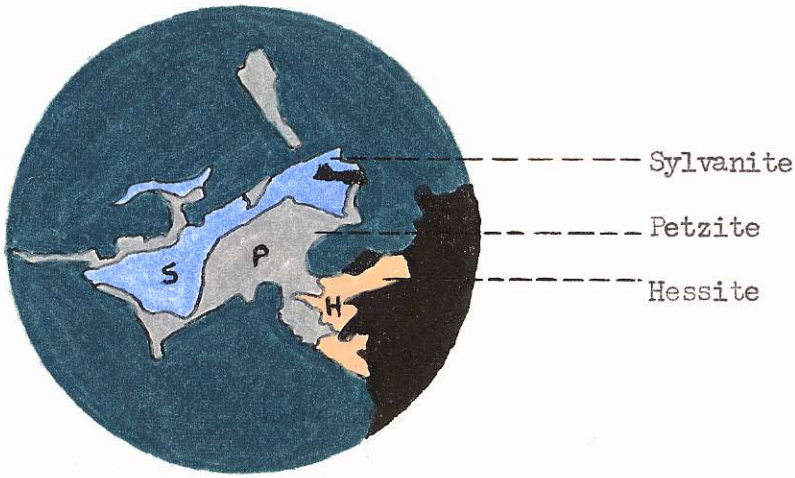

Fig. 2 X500

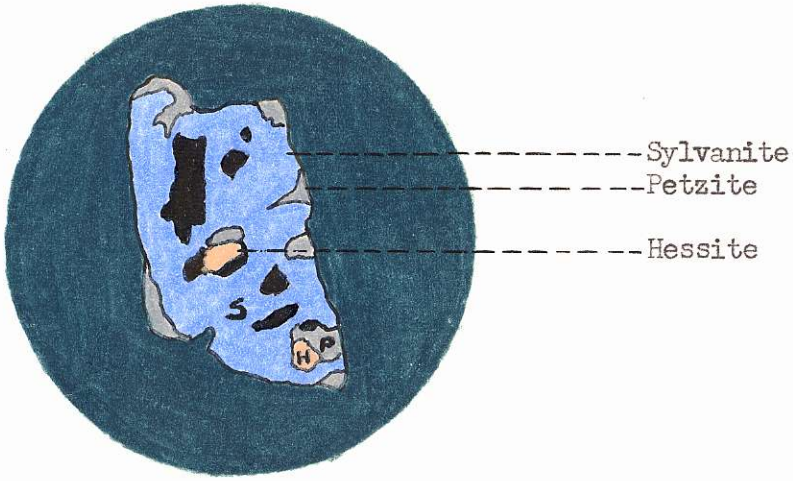

Fig. 3 X180

Nice illustrations.

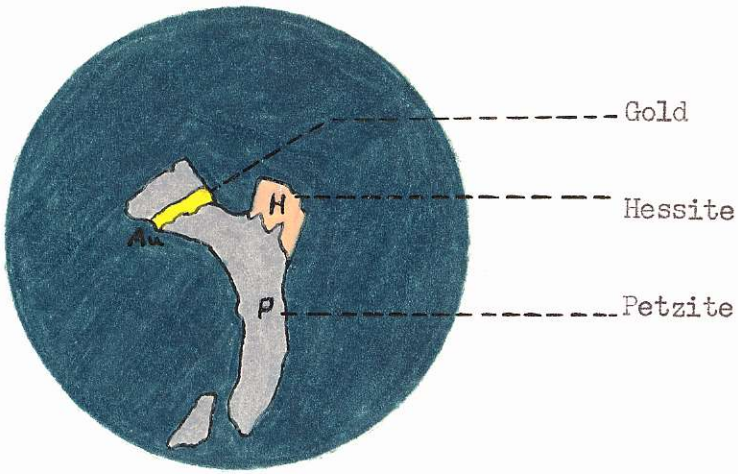

Fig. 4 X500

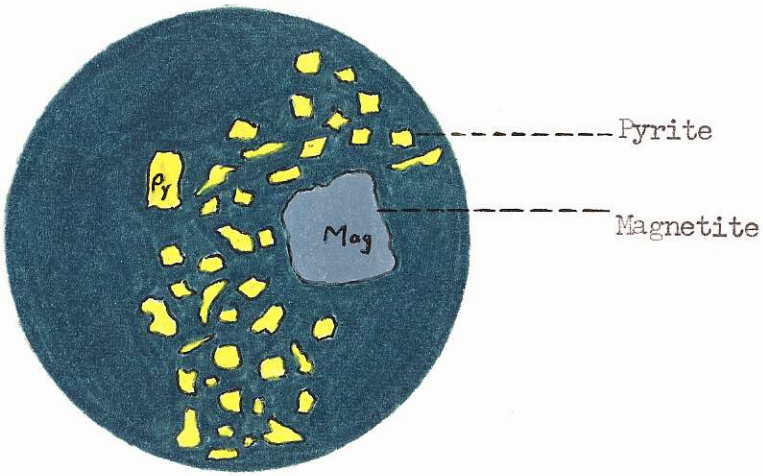

Fig. 5 X1375

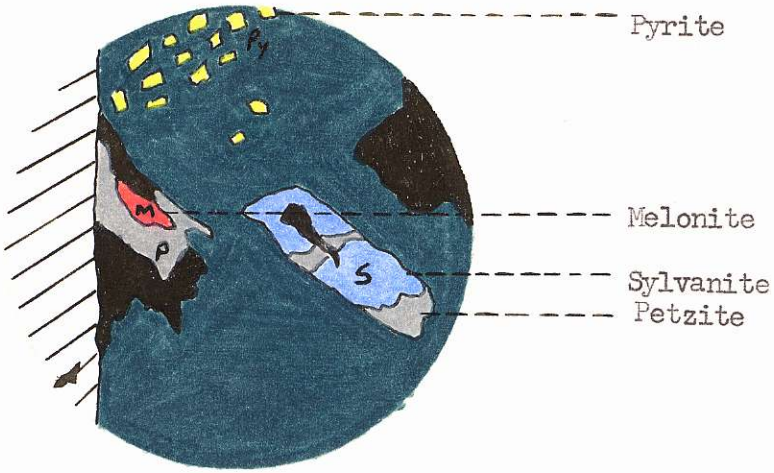

Fig. 6 X500