

2.2 Mineragraphy

M2/194/1; (PS24002)

The polished briquette of this sample contains about 20-30% magnetite, less than 5% pyrite and trace amounts of chalcopyrite, cassiterite, marcasite and (?)hematite. Fluorite can be recognised in the polished briquette by its extremely low reflectivity and this mineral comprises of the order of 20-30% of the briquette also.

Magnetite occurs as irregular patches which are up to about 1 mm in size but more commonly occurs as small equant crystals which range in size down to only a few microns. Macroscopic examination of the surface of the briquette shows that the magnetite tends to form swirling irregular patches which have a banded appearance. Pyrite forms both small crystals and diffuse and porous patches up to about 0.5 mm in size. The pyrite is commonly associated with magnetite and in one or two places both these minerals occur in thin fractures which cut across the main swirling banding referred to above. Chalcopyrite occurs both as fine-grained material with pyrite and also, in one part of the briquette, is present as a group of crystals 0.7 mm in size.

Poorly polished pale yellow anisotropic marcasite is associated with this relatively coarse-grained chalcopyrite as aggregates up to 0.8 mm in size, the lamellar texture of which suggests formation from pre-existing pyrrhotite.

Cassiterite is present only in very small amounts and forms equant crystals approximately 0.03 mm in size. The cassiterite is associated with the non-opaque minerals and shows no special association with either pyrite or magnetite. If the cassiterite crystals intersected in the polished briquette are typical of cassiterite in the sample as a whole, then crushing to a particle size of less than 0.03 mm would be required to liberate the tin from the adjacent silicates and fluorite.

Fluorite is a notably abundant mineral in this sample and it occurs in a wide range of associations and grain sizes. In some places in the rock fluorite is clearly present as a vein mineral and occurs in thin stringers which are generally less than 0.1 mm in size. Elsewhere in the rock the fluorite is present as numerous equant crystals within silicates where it ranges in size from a few microns to about 0.2 mm. If it were required to obtain a high-grade fluorite concentrate from the sample (of the order of 90-100% fluorite), then grinding to an extremely small grain size would be required if reasonable recoveries were to be obtained; probably grinding to a grain size of 0.1 mm would effect the liberation of only approximately 20-40% of the fluorite in the sample.