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M2/200/4; (PS24003)

Apart from the trace amounts of hematite, pyrite, and cassiterite, magnetite is the only opaque mineral in this sample. Magnetite comprises approximately 10-20% of the rock and fluorite about 20%. The remainder of the sample consists of a non-opaque silicate which, from the X-ray diffraction results, is probably amphibole. Magnetite is notably fine-grained in this rock and generally occurs as equant crystals which are commonly 0.02 to 0.05 mm in size. Much of the polished briquette is densely speckled with this magnetite and, as in the preceding sample, the magnetite tends to occupy curved swirling areas which define an extremely irregular banding. In some places in the polished briquette the small magnetite crystals form almost continuous patches and monomineralic areas up to about 0.7 mm in size.

Fluorite is widely dispersed among the magnetite and amphibole and occurs as equant crystals or groups of crystals which range in size from approximately 0.05 mm to 1.5 mm. Fluorite is particularly coarse-grained where magnetite is least abundant and in some parts of the polished section patches of fluorite more than 0.2 mm in size occupy about 40% of the rock. Elsewhere the fluorite is considerably finer-grained and commonly closely associated with fine-grained magnetite. Fluorite also occurs in the polished briquette in very thin veinlets, but only a small proportion of the fluorite occurs in this fashion.

A small proportion of the fluorite in this rock could be liberated by relatively coarse grinding to particle sizes of the order of 0.2 mm but moderate to large recoveries of high-grade fluorite concentrates would require grinding to much smaller sizes than this (probably about 0.02 to 0.04 mm).

Cassiterite is a little more abundant in the polished briquette of this sample than in the briquette of M2/194/1 but, even so, may be described as being present in trace amounts only. The cassiterite forms equant and anhedral grains which range in size from 0.03 to 0.06 mm. The cassiterite is generally associated with fluorite and amphibole rather than magnetite and most crystals are free from inclusions. As a result of these observations it is clear that liberation of the cassiterite from the rock would require grinding to particle sizes of the order of 0.02 to 0.03 mm.

2.3 Emission Spectrography Results

Emission spectrography analyses were carried out on portions of each sample and the results are as follows: