

**Petrography of Two Thin Sections
ML2014-1, ML2014-2
Submitted by
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Summary

Two polished thin sections (ML2014-1; ML2014-2) accompanied by hand specimens of the rock were received for petrographic examination.

The mineralogy of the two specimens, dominantly actinolitic amphibole and carbonate with minor epidote suggests that the rock is presently best classified as a calc-silicate rock. However, the inclusion-rich nature of the rock, together with the major and trace element composition both tend to suggest an origin from a mafic intrusive protolith. This is supported by the relatively high amounts of copper (80-140 ppm), nickel (312-369 ppm) and chromium (530-620 ppm) that were reported in assay reports that were supplied with the specimens.

Sample ML2014-1

Physical Description

This sample is a medium-grained, generally dark green rock, spotted with numerous angular white patches of a soft, white, mineral. The hand specimen contains several 1-2 cm diameter inclusions or xenoliths – these are not represented in the thin section. A photograph of an outcrop shows numerous angular white inclusions up to perhaps 5-7 cm in size (Figure 1). The rock is non-magnetic. There are no megascopically visible sulfides. Both the hand specimen and the outcrop photograph exhibit a pitted surface typical of a mineral being dissolved during weathering.



Figure 1. Outcrop showing angular inclusions and pitted weathered surface.

Approximate Modal Composition

- | | |
|-------------------------------|-------|
| • Green actinolitic amphibole | 75% |
| • Crystalline carbonate | 25% |
| • Epidote | Minor |
| • Sulfide (Py and Cp) | Trace |

Petrographic Comments

The sample is mineralogically simple, consisting dominantly of a green, weakly pleochroic actinolitic amphibole occurring as elongate needles and lesser amounts

of a crystalline carbonate mineral (most likely the small white patches visible in the hand specimen). A very small amount of epidote is also present (Figure 2).

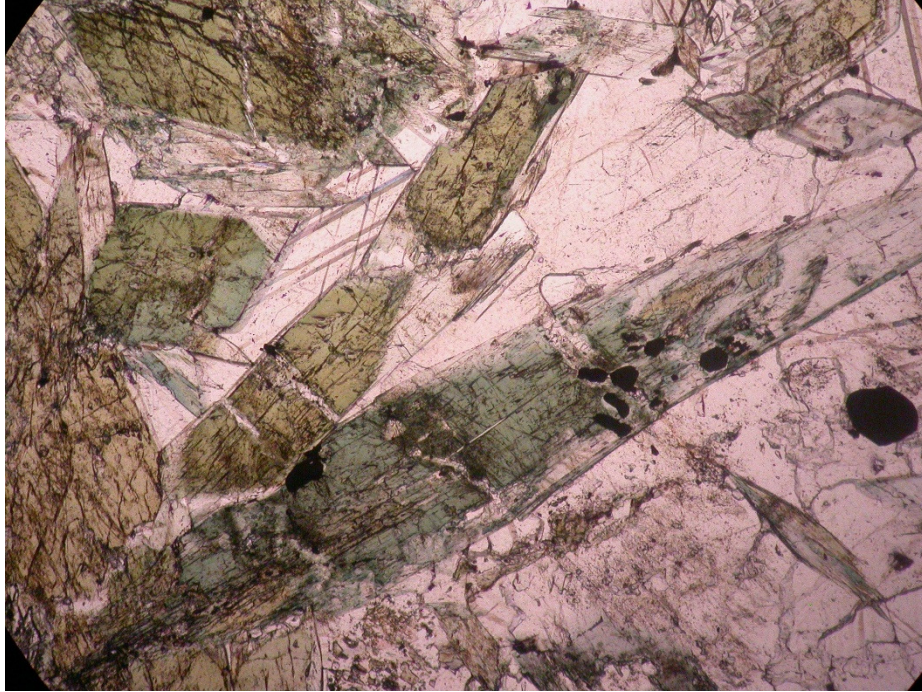


Figure 2. Photomicrograph showing elongate prismatic crystals of actinolitic amphibole associated with crystalline carbonate. The opaque patches are sulfide grains. The photograph is approximately 3 mm wide.

The polished thin section reveals the presence of perhaps 0.5 modal percent of sulfide which occurs as disseminated grains ranging from minute micron-sized grains to 2mm in size. Pyrite is the dominant sulfide with subordinate amounts of chalcopyrite occurring as discrete grains, as partial rims on pyrite and as inclusions in pyrite (Figures 3-4). Thin rims of a limonitic iron oxide on some of the sulfide grains is probably due to near-surface weathering.

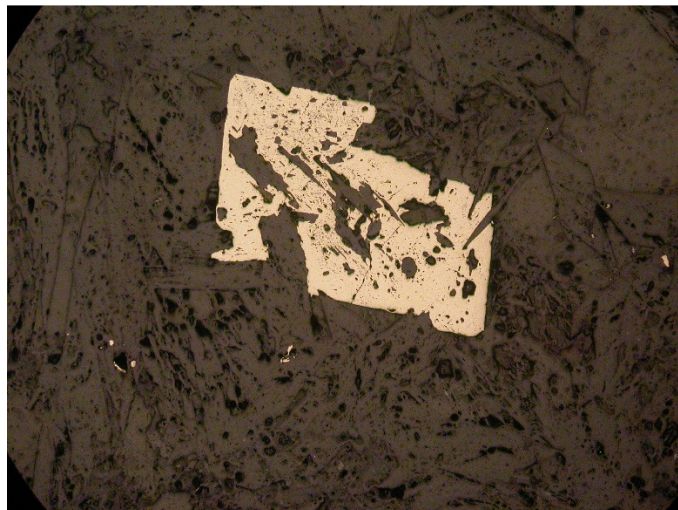


Figure 3. Photomicrograph of the largest sulfide grain in the section. It is entirely pyrite and is approximately 1.5 mm in size.



Figure 4. Composite grain of pyrite with partial rim of chalcopyrite and small inclusions of chalcopyrite. A few micron-sized grains of chalcopyrite outside of the pyrite grain are also visible.

Classification

The calcium- and magnesium-rich mineralogy and bulk chemistry of the specimen suggest that the rock is best classified as a calc-silicate hornfels, despite its physical appearance which otherwise suggests an origin as an inclusion-rich igneous rock from which it might have been derived.

Sample ML2014-2

Physical Description

This sample is virtually identical to ML2014-1 but lacks the cm-scale inclusions that are present in ML2014-1. As for the preceding sample it is non-magnetic and contains no megascopically visible sulfide.

Approximate Modal Composition

- | | |
|-------------------------------|--------|
| • Green actinolitic amphibole | 75% |
| • Crystalline carbonate | 25% |
| • Epidote | Minor |
| • Sulfide (Py and Cp) | Absent |

Petrographic Comments

The sample is mineralogically simple and identical to ML2014-1. It consists dominantly of a green, weakly pleochroic, actinolitic amphibole occurring as elongate needles and lesser amounts of a crystalline carbonate mineral (most likely the small white patches visible in the hand specimen). A very small amount of epidote is also present.

There are no fresh sulfides in this section but a few grains of limonitic iron oxide suggest that some may have been present and have been removed by near-surface weathering.

Classification

The calcium- and magnesium-rich mineralogy and bulk chemistry of the specimen suggest that the rock is best classified as a calc-silicate hornfels, despite its physical appearance which otherwise suggests an origin as an inclusion-rich igneous rock from which it might have been derived.

Reference

SGS Certificate of Analysis LK1400758SGS-0000002921