EARTH 471: Laboratory 2 – Ore Petrography

In groups of 3 or 4, complete exercises 1 and 2. Before the beginning of the next lab session, your team must hand in exercise 1 and 2 (hard copy preferred) to either the instructor or the teaching assistant.

Exercise 1: Add the mineral microscopic properties to your chart of macroscopic properties from Lab 1. Try to find at least one diagnostic microscopic characteristic for each mineral. You will be allowed to use this chart (and no other chart) during the lab exam. Add the microscopic properties for the following ore minerals:

graphite, magnetite, hematite, marcasite, pyrite, pyrrhotite, chalcopyrite, bornite, arsenopyrite, pentlandite, chalcocite, covellite, digenite, cuprite, malachite, azurite, sphalerite, pyrolusite, molybdenite, cassiterite, uraninite, chromite, galena, rutile, ilmenite

Microscopic properties

Colour
Reflection Pleochroism
Reflectance
Bireflectance
Shape or habit
Isotropy/Anisotropy
Internal reflections
Relative hardness

Exercise 2: Using the reflected light microscope and the A series, identify the ore minerals in the list of samples below. Try to look at all of the samples in each sample group (a–h). Draw a sketch (with labels, a scale bar and colour) showing the textures you observe for one example from each sample group below (a-h).

Minerals to be found: pyrite, chalcopyrite, magnetite, pyrrhotite, sphalerite, galena, ilmenite, hematite, bornite, covellite, chalcocite

a) A93, A94: two minerals
b) A357, A358, A359: two minerals
c) A583, A586: two minerals
d) A155 OR A506: one major mineral and three minor
e) A682, A685: one major, two minor
f) A9, A11: one major, one minor
g) A509, A510, A641: two major, one minor
h) A636: one major, two minor