

EARTH 471: Laboratory 1 – Ore Minerals

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

Exercise 1: Create a chart of mineral macroscopic properties of all of the minerals below. During the next lab, you will add the microscopic properties to this chart (so leave space!). Try to find at least one diagnostic characteristic for each mineral (27 minerals total). You will be allowed to use this chart (and no other chart) during the lab exam. Make a chart with the following minerals:

Sylvite, apatite, tourmaline, epidote, chlorite, magnesite, calcite, anhydrite, graphite, magnetite, hematite, marcasite, pyrite, pyrrhotite, chalcopyrite, bornite, arsenopyrite, pentlandite, chalcocite, covellite, malachite, sphalerite, molybdenite, chromite, galena, rutile, and ilmenite.

Macroscopic Properties

Name of the mineral
Formula
Crystalline system
Cleavage
Colour
Metallic/non-metallic
Streak
Specific gravity
Magnetism
Hardness

Microscopic properties (for next lab)

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

Exercise 2: Identify the following hand sample ore minerals:

46, 47, 48, 49, 50, 51, 65, 66, 69, 70, 71, 76, 79, 89, 90, 97, 99, 100, 101, 102, 103, 104, 107, 108, 110

Exercise 3*: Identify the ore minerals in two of the following samples:

CY, CM-1, CM-2, E19-5, E29-5, E44-3, 20

Exercise 4*: Identify the ore minerals in the following core samples:

36 (Kenbridge Deposit), 5 (RL-05A, RL-05B)

*Do not scratch or place acid on these samples.