

12.108 Lab 17: Identifying Minerals in Thin Section
Due at the beginning of lab on December 7th, 2004

November 23, 2004

Your task for this lab is to identify as many minerals as you can in the thin sections SC-2, SC-11, SC-37, MU-34, IU-30, and PAL-15. You should be able to find at least 1 mineral in PAL-15, at least 2 minerals in SC-11, 4-6 minerals in IU-30, 4-6 minerals in SC-2, at least 5 minerals in SC-37, and 4-5 minerals in MU-34. These are all natural rock samples, and thus are similar to those you may expect to see when applying what you have learned in this class to “real” problems. The minerals you should be looking for are all on the list of minerals you were given prior to the hand sample ID quiz, although there may be more minerals present in low quantities. Use the sheets provided to guide your analysis of the thin sections, by filling in the suggested information, and use the books present in the lab to select determine what minerals are present based on the properties you can observe. In some cases, it may be difficult to get a good interference figure for minerals that are present in low quantities. In these cases, use other properties such as birefringence, pleochorism, form, cleavages, and extinction to identify the mineral. Once you have identified one or more minerals in a thin section, you may use these to help constrain what other minerals might be present. The books in the lab will help you in this regard.

One property that we have not discussed in detail yet that might be useful is the relationship between cleavage orientation and extinction orientation. For example, andalusite can be distinguished from kyanite as andalustite has parallel extinction whereas kyanite has inclined extinction. Likewise, clinopyroxene has inclined extinction whereas orthopyroxene has parallel extinction.

You have two lab periods to work on this project, and should hand in completed sheets for each mineral you find in at least **4** of the thin sections. You should at least look at PAL-15, SC-11, IU-30, and **one** of SC-37 **or** MU-34. In lab on December 7th, we will take these thin sections onto the microprobe, where we can determine which elements are present in individual mineral grains, so you can test the conclusions you came up with based on your optical work.

Good Luck!