

Granites Lab

Granites provide a classic example of the effect of water on phase equilibria. At low H₂O contents, a region of complete solid solution exists between albite and orthoclase. As H₂O content is increased, the solidus temperature decreases, but the solvus is not affected (see the attached phase diagram). Eventually the solidus comes in contact with the solvus. In this lab you will use this information to qualitatively determine the H₂O contents of the granitic magma from which your samples crystallized.

1. Pick two slides (Il-014, Il-017, Il-020, Il-022, Il-019, Il-018) and describe their mineralogy. Here is a list of the possible minerals: **Major phases** - quartz, plagioclase, orthoclase, perthite (careful to distinguish this from a granophyric texture), biotite, hornblende, muscovite, microcline **Minor phases** - chlorite, riebeckite, sphene, pyroxene, and some other exotic minerals that only a geochronologist would care about. Also, *briefly* describe their textures.
2. Pick four of the above slides and determine whether they are hypersolvus or subsolvus. What does this say about the water content of the magma from which this rock formed?