

## **12.490 Advanced Igneous Petrology Stillwater Layered Igneous Intrusion**

The purpose of this lab is to introduce you to a “classic” layered intrusion, The Stillwater Complex of Montana. The suite of samples covers the entire stratigraphy of the intrusion.

- 1) Look at each thin section and hand specimen and determine the cumulus and inter-cumulus mineralogy of each. Note: You can use the accompanying diagrams to guide you in your task, but also take a look at the thin sections.
- 2) From the sequence of mineral assemblages outline the sequence of crystallization that is recorded in this stratigraphic section.
- 3) Now, construct a phase diagram and show the liquid line of descent that was followed during the course of solidification.
- 4) What was the pressure of crystallization of the intrusion? What limits does the cumulus mineral assemblage place on pressure of crystallization? Is there other independent evidence on the pressure of crystallization?