GL 211 Mineralogy

INOSILICATES & CYCLOSILICATES

Part I. *Inosilicates* consist of silica tetrahedra linked by sharing two of their four oxygen or by alternate sharing of two or three oxygen to form chains. Single chains are represented mainly by the **pyroxene** group and double chains by the **amphibole** group.

1. Examine inosilicates in hand specimen and thin section noting their diagnostic properties:
   Pyroxene and pyroxenoid groups
   Hand samples: enstatite, hypersthene, diopside, augite/aegerine, spodumene, wollastonite, rhodonite
   Thin sections: enstatite (44-4163), diopside (44-4161, M87), augite (44-4155, M57, 44-1060(3)), spodumene (13), wollastonite (14), rhodonite (12)
   Amphibole group
   Hand samples: tremolite, actinolite, hornblende, anthophyllite, glaucophane
   Thin sections: hornblende (44-4165, M39, M54), tremolite (44-5226, M20)

2. Use thin section 242 to find the composition of orthopyroxene.

3. Find the extinction angle Z^C for the hornblende (amphibole group) in thin section OP-112 or P-1071. Note that Z is the direction of the slow ray and C is the cleavage direction in hornblende. Use the grain with the highest interference colors.

4. Examine thin section HAW 1801-1. Determine the composition of clinopyroxene using the handout.

Part II. *Cyclosilicates* are linked by silica tetrahedra sharing two of their four oxygen to form a ring structure. Often, the minerals in this group have either hexagonal or trigonal external forms. Minerals in this class are not important rock-forming minerals. **Beryl**, **cordierite** and **tourmaline** are the most important minerals.

1. Examine the hand specimens of cyclosilicates. Make sure you can identify all the minerals included in your master list of minerals. List the important properties of each mineral. Read the appropriate parts of your text for information on the crystal chemistry and structure of those minerals.

   Cyclosilicates available in thin section are beryl (M41, M42) and tourmaline (M23, M47).