

GY303 Petrology Lab I: Felsic Igneous Rocks

For this section of the lab you will classify five rock samples and three microscopic thin section sample point counts according to the IUGS classification ternary appropriate for each sample. For each hand sample complete the following tasks:

Step 1: Visually determine the type and percentages of the minerals in the rock. Fill in the table below with the five most common minerals with estimated percentage. Note that some samples may have fewer than five recognizable minerals. List the minerals in order of increasing abundance.

Step 2: With the percentages determined in (1) above, select the correct Felsic IUGS ternary based on the presence of quartz or feldspathoid. Recalculate the appropriate minerals to ternary proportions for plotting on the ternary diagram. Note that it is possible that only two of the minerals on the IUGS ternary may be present in the rock and those samples will plot on the side of the ternary containing the two minerals present.

Step 3: With the IUGS ternary selected in (2), plot the composition with a ink dot and label on the ternary. Based on the position of the sample, determine the root name of the sample. Remember to modify the rock name with accessory minerals $\geq 10\%$. Use the following rule for completely naming the rock:

color, texture, alteration (if any), accessory minerals, and root name
 (Example: pink porphyritic medium-grained biotite granite)

sample	mineral 1 %	mineral 2 %	mineral 3 %	mineral 4 %	mineral 5 %	total

(14 points each)

(1) Sample _____ classification: _____

(2) Sample _____ classification: _____

(3) Sample _____ classification: _____

(4) Sample _____ classification: _____

(5) Sample _____ classification: _____

(6) (10 points) Use the below mineral information to name the sample intrusive rock using the rules discussed above. Plot the position of the sample with a dot on the IUGS ternary and label the dot. Write the full descriptive name in the space provided below:

A 400-point count was conducted on a light-gray intrusive rock that contains Alkali feldspar phenocrysts surrounded by a phaneritic groundmass. The average grain size of the phaneritic ground mass was 3 mm. The point count totals were:

Biotite =	48
Hornblende =	32
Quartz =	96
Alkali Feldspar =	48
Plagioclase Feldspar =	176
Total	400

Name: _____

(7) (10 points) Use the below mineral information to name the sample intrusive rock using the rules discussed above. Plot the position of the sample with a dot on the IUGS ternary and label the dot. Write the full descriptive name in the space provided below:

A 400-point count was conducted on a pink phaneritic intrusive rock containing the following:

Muscovite =	52
Biotite =	44
Quartz =	32
Alkali Feldspar =	136
Plagioclase Feldspar =	136
Total =	400

The average size of the phaneritic groundmass was estimated to be 8 mm. There were no phenocrysts in the sample.

Name: _____

(8) (10 points) Use the below mineral information to name the sample intrusive rock using the rules discussed above. Plot the position of the sample with a dot on the IUGS ternary and label the dot. Write the full descriptive name in the space provided below:

A 400-point count was conducted on a grayish-green phaneritic intrusive rock containing the following:

Hornblende =	72
Diopside (Clinopyroxene) =	48

Nepheline = 84

Alkali Feldspar = 44

Plagioclase Feldspar = 152

The average size of the groundmass was 0.3 mm. All of the Hornblende + Diopside + Plagioclase crystals were phenocrysts. The Plagioclase phenocrysts were mantled by a rim of epidote alteration.

Name: _____