

102 Physical Geology Lab

Chapter 3: Igneous Rocks

Objectives:

1. Learn how to identify igneous rocks using texture and mineralogy.
2. Learn how to identify specific minerals in coarse-grained igneous rocks.
3. Learn how to use *determinative tables* to apply logical tests as a means to identify unknown igneous rock samples.

Part I: Igneous Textures and Cooling Rates

Use samples I-A through I-M to answer the following questions from Chapter 3

- Do problem 1
- Do problem 2
- Do problem 3
- Fill in **ONLY** the “Sample Number” and “Texture” columns for samples A – M on the “Igneous Rock Identification Worksheet” (*pp. 55 – 56 in your lab manual*)

Part II: Mineral and Rock Identification

- 1) On your table there is a small cardboard box containing mineral samples. These are the minerals commonly found in igneous rocks. On a separate piece of paper, please identify these minerals:

Mineral E _____

Mineral K _____

Mineral F _____

Mineral L _____

Mineral I _____

Mineral N _____

Mineral J _____

- 2) Use figure 3.18 (p. 47) to determine which minerals are usually found in Felsic vs. Intermediate vs. Mafic Rocks. (*Note: Pyroxene = augite; Amphibole = hornblende*)

Minerals found in Felsic Rocks: _____

Minerals found in Intermediate Rocks: _____

Minerals found in Mafic Rocks: _____

- 3) Can quartz be found in a Mafic rock?
- 4) In the “Mineral Composition” column of your Igneous Rock Worksheet, identify and list any coarse-grained minerals found in rocks: I-A, I-B, I-D, I-E, I-I, I-J, I-M.
(Note: you do not need to identify fine-grained minerals; Use Table 3.1 on p. 41 to help you ID the minerals).
- 5) In the “Other Properties” column of your worksheet, indicate whether the rock is Felsic, Intermediate, or Mafic.
- 6) Fill in the “Rock Name” column using the classification chart on p. 42 (*Table 3.2*)

Part III: Bowen’s Reaction Series

- Do problem 5 in your book (*Note: Pyroxene = augite; Amphibole = hornblende*)