

102 Physical Geology Lab

Chapter 4: Sedimentary Rocks and Sediments

Materials needed: pencil, eraser, lab notebook, hand magnifying lens, glass plate, streak plate, nail, copper penny, small magnet, dilute hydrochloric acid (HCl) in a dropper bottle, sedimentary rock samples.

Objectives:

1. Be able to classify sedimentary rocks as detrital (clastic), biochemical or chemical
2. Be able to identify common sedimentary rocks based on their textures and composition
3. Infer the origin of sedimentary rock units based on textures, compositions, structures

Part I: Sedimentary Rocks

- 1) Take all rocks out of the bin and separate ***clastic*** rocks into one pile, ***biochemical*** rocks into a second pile and ***chemical*** rocks into a third pile
- 2) **Have your instructors verify that you have subdivided the samples correctly!**
- 3) Using *only* the rocks in your ***clastic*** rock pile: fill out the “Sedimentary rock Identification Worksheet” on p. 75-76
 - a) Texture column: indicate predominant grain size (*gravel or sand or silt/clay*)
 - b) Mineral Composition: identify minerals in samples S-B, S-C, S-M
 - c) Sorting and Roundness column: determine sorting and roundness for each rock
 - d) Rock Name column: use Table 4.4 to ID the clastic rocks
 - e) Inferred Depositional Environment column: indicate whether the rock formed in a low, moderate, or high-energy environment.
- 4) Fill out the “Sedimentary rock Identification Worksheet” using the rocks in your ***biochemical*** and ***chemical*** rock piles
 - a) Texture column: indicate whether rock is crystalline (x), clastic (c) or fine-grained (f)
 - b) Mineral Composition: identify minerals in samples S-F, S-G, S-H, S-J
 - c) Fossils and Conditions of Fossils columns: fill in where applicable
 - d) Rock Name column: use Table 4.5 to ID the biochemical and chemical rocks
 - e) Inferred Depositional Environment column: use table 4.2 to determine the depositional environment

Part II: Modern Sediments

On a separate sheet of paper, answer the questions below for the two modern sediments:

Sed-N-1: River sand collected from Kathmandu, Nepal.

Sed-WLB: Sand from a beach on Bermuda.

Use a magnifying glass to view the samples so that you can see the small features. You can look directly through the glass jar and/or pour a small amount of the sediment into the trays provided, but **BE CAREFUL NOT TO SPILL OR MIX THE SAMPLES!**

1. Classify each as detrital, biochemical, or chemical:

Sed-N-1:

Sed-WLB:

2. Identify the major minerals present (hint: **Sed-WLB** has only 1 or 2).

Sed-N-1:

Sed-WLB:

3. **For sample Sed-N-1:** The mineral content of this sediment can tell you something about the rock that weathered to produce this sediment.

a) The source rock that weathered to produce this sediment was most likely what composition (felsic, intermediate, mafic)? On what do you base your answer?

b) What likely **rock type** might be the source of this sediment?

c) Do you think this sediment has traveled far from the source area? Why?

4. **For sample Sed-WLB:** How were these sediment grains created?

➡ **Please correct your lab using the key provided by your instructor**