

STRAT./SED. LAB #10: GENERAL DIAGENESIS

3/27/06

GOAL:

The purpose of this lab is to give you experience looking at more diagenetic features in hand sample and in thin section. You will see some cements again, but also neomorphism and compaction features. You will also gain some experience in interpreting paragenetic sequences.

ASSIGNMENT:

There are ten questions; nine are samples and one is a cartoon microscopic view of a rock. For sketches, remember to include scales and labels. Please do not put acid on samples.

SAMPLES

- 1) Lower Ordovician Ogdensburg Formation, dolostone from Ontario (1 slabbed hand sample)
 - a. Examine the hand sample.
 - b. What diagenetic features do you see in this hand sample?
(note: although I have told you that this rock is a dolostone, you cannot determine that visually; you'd have to look at a thin section to note replacement dolomite or scratch the rock and then test with HCl; therefore, replacement dolomite is not part of the answer here)
- 2) Limestone of unknown age and locality (1 hand sample)
 - a. What diagenetic features do you see in this rock? Describe it.
- 3) El Abra Formation, a Cretaceous limestone from Mexico (1 hand sample); everything in this sample is calcite
 - a. Examine and sketch this hand sample (yes, sketch the whole rock).
 - b. What diagenetic features do you see?
 - c. What is the paragenetic sequence of this rock?
- 4) 401-Y-7; Lower Ordovician Ogdensburg Formation, a dolostone from Ontario (1 thin section)
 - a. Examine the thin section
 - b. Do you see any relic textures? What are they (ie., types of grains)?
 - c. Have all depositional grains been altered?
 - d. Sketch and describe the type of alteration you see.
 - e. Describe the paragenetic sequence of this rock.
- 5) 82-R78; unknown age and locality (1 thin section)
 - a. Examine the thin section
 - b. Are the fossils altered or unaltered? What has happened to them?
 - c. Draw one sketch.
- 6) AN 1371', Permian Nippewalla Group from subsurface of Kansas (1 thin section)
 - a. Examine thin section, paying special attention to the beds of large, upward-oriented, bladed-shapes (these have the shape of gypsum crystals).
 - b. Sketch and describe what you see inside these bladed shapes.
 - c. Describe the paragenetic sequence of this rock.
- 7) SD-1-C; label says "made by G.S. Rev); unknown age and locality (1 thin section)
 - a. Examine the thin section.
 - b. What type of diagenetic alteration do you see in this rock?

- c. What do you think the precursor rock was?
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- 8) S5000, a carbonate of unknown age or locality (1 thin section; broken into two pieces); the pink color on half of the thin section is a result of staining with Alizarin Red; Alizarin Red stains calcite and aragonite pink, but does not color dolomite, so it is used to distinguish calcite and aragonite from dolomite
 - a. Examine the thin section.
 - b. What kinds of grains do you see?
 - c. Sketch two thin section views.
 - d. Describe all the cement you see.
 - e. Are there any signs of compaction in this thin section? Explain.
 - f. Is there any internal sediment (aka geopetal fill) in this sample? Explain.
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- 9) S5500, a carbonate of unknown age and locality (1 slabbed and polished hand sample)
 - a. Examine the hand sample.
 - b. What diagenetic features do you see clearly in this rock?
 - c. Do you see a good example of a cross-cutting relationship in this rock? If so, sketch it.
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- 10) Look at the last page (attached). This is a cartoon of a view of a rock through a microscope.
 - a. List the entire paragenetic sequence of the rock in chronological order.