Sedimentary Rocks – Geol 113

Goals: To learn how to use sedimentary texture and/or composition to identify sedimentary rocks.

Before Lab: Read pp 111-120 in your laboratory manual and review all diagrams in Laboratory 6.

Materials: 1 box of unidentified rock samples in large green box, 1 box of Wards sedimentary rock samples, glass plate, streak plates, magnifying devices, grain size charts.

Procedure: Your main job today is to use sedimentary texture and/or composition to identify sedimentary rocks. Your lab manual contains extensive information about texture and composition as well as a sedimentary rock identification procedure (pg.119).

Next lab meeting, we will have a sedimentary rock identification quiz for which you will demonstrate your sedimentary rock-identifying prowess. For the quiz, you will be given sedimentary rock specimens to identify. Some types of sedimentary rocks may appear more than once on the quiz (just as they do in real life) and I will not use the same specimens on the quiz that you examined in class. I may also ask you to identify minerals in the sedimentary rock specimens. Sedimentary rock and mineral names *must* be spelled correctly on the quiz for full credit.

You may use one 8.5x11 inch sheet of paper with notes on one side during the quiz. You may not paste things (e.g., layers of post-it notes) to the paper, but are limited to the plane of the surface of the paper itself. The only other restriction is the size of the sheet. You may write, print, draw or whatever else you like on your sheet of paper.

Sedimentary rocks that may appear on the quiz: conglomerate, breccia, sandstone, mudstone, limestone, chert, rock salt, rock gypsum, coal.

Common Minerals in Sedimentary Rocks

Sedimentary Rock	Common Primary Minerals	Common Accessory Minerals
conglomerate & breccia	quartz and clay minerals	feldspar, mica and other minerals depending on source rock of clasts and type of cement (if any)
sandstone	quartz	feldspar (*arkose sandstone*), clay minerals, carbonate fossils, cement minerals
mudstone	clay minerals	quartz, carbonate fossils, cement minerals (if any)
limestone	calcite, aragonite, dolomite	chert, gypsum, carbonate minerals, cement minerals
chert	microcrystalline quartz	none, but chert is usually found either embedded or interbedded with another kind of sedimentary rock (e.g., limestone)
rock salt	halite	gypsum, other evaporites, clay minerals
rock gypsum	gypsum	halite, other evaporites, clay minerals
coal and peat	*NONE*	usually none, but may contain minor amounts of pyrite and native sulfur

Classification of Clastic Sedimentary Rocks

Rock Name	Grain Size	More details	Specific Rock Name
breccia (angular grains) *conglomerate* (rounded grains)	Gravel		
sandstone	Sand	primarily quartz	*quartz sandstone*
		many feldspar clasts	*arkose sandstone*
		mixed with mud	*greywacke*
mudstone	Mud	primarily clay	*claystone*
		primarily silt	*siltstone*
		fissile (splits into layers)	*shale*

Classification of Chemical and Bioclastic Sedimentary Rocks

Rock Name	Composition	More Details	Specific Rock Name
coal	charcoal and maybe plant fossil fragments	dull black-brown, not well compacted	*lignite*
		black, well compacted, may be shiny	*bituminous coal*
rock salt	halite		
rock gypsum	gypsum		
chert	microcrystalline quartz		
iron stone	hematite, limonite and other iron oxides and hydroxides		
limestone	calcite, aragonite or dolomite	gravel-size shell fragments held together with cement	*coquina*
		sand-size grains with fossils of shells	*fossiliferous limestone*
		white, clay-silt size grains, chalky	*chalk*
		mud-size grains (too small to see)	*lime mudstone (micrite)*
		composed of sand-size, layered spheres (ooids)	*oolitic limestone*
		layered microcrystalline to visible crystal calcite	*travertine*
		composed of the mineral dolomite	*dolostone*