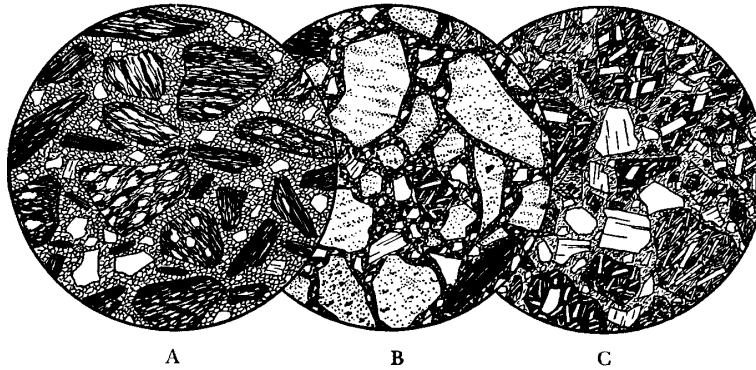


GY 402 Sedimentary Petrology (2016)
Immature Siliciclastic Sedimentary Rock Thin-sections



A B C
Litharenite and greywacke in thin section (field of view for each approximately 2 mm).
From Williams, H., Turner, F.J and Gilbert, C.M., 1954. Petrography. W.H. Freeman & Co., 406pp.

Introduction: Immature siliciclastic sedimentary rocks are those that contain significant amounts of “unstable” particles, particularly feldspars. Overall, these rocks are usually composed of mixed silicate grains (quartz, feldspars, ferromagnesium minerals, lithic grains etc.) that are subangular to subrounded, and less well sorted than their mature counterparts. They are commonly red in color (but not always) and may be enriched in matrix or cemented by a variety of different minerals. The most common immature sandstones include litharenite and feldspathic litharenite (i.e., arkose). This lab will also introduce you to siliciclastic rocks that contain significant amounts of "matrix" (e.g., wackes).

Lab exercise (do in your note books, not re-doable): A list of immature sandstone thin-sections that will be available in the lab is shown at the bottom of this page. All have accompanying hand specimens. I would like you to look at one example from Group 1 and one additional example from either Groups 2, 3 or 4 and produce one thin section report for each of those thin sections. As we did last week, today, **only deal with the grains**. Leave space below your grains section for intergranular materials like cement which you will revisit and add to next week. Also leave a blank page after both of your thin section reports. They will also be filled next week with a separate discussion question. Take your time. Your thin section reports today should each take at least 60-75 minutes to do.

Discussion Question (re-doable): In a separate paragraph at the end of your thin section report, discuss in ½ to one page (handwritten = 100-250 words preferably with a separate diagram/sketch) **the type and provenance(s) of the lithic grains in one of your thin sections**. In other words, what were the sources of the lithic grains in your thin sections? Igneous? Sedimentary? Metamorphic? Be specific! This discussion question is re-doable for revised credit.

Due Date: I expect 2 thin section reports and a separate discussion page in your hard-covered notebook by the deadline specified on the website and the class calendar. _____

Do one of the thin-sections from group 1:

Group 1 (litharenite): Sed I-1 to 12 (12 thin- sections) [use Sed I-1A hand specimen]

plus any one additional thin-section from one of the following

Group 2 (Feldspathic litharenite): Sed I2-1 to 4 (4 thin-sections) [use Sed I-2A hand specimen]

Group 3 ("Greywacke"): Sed I3-1 to 2 (2 thin-sections) [use Sed I-3A hand specimen]

Group 4 (muddy feldspathic litharenite): RI 2582 (4 thin-sections) [use Sed I-4A hand specimen]

Group 5 (Arkose): GY 344 (2 thin-sections) [use GY 344 hand specimen]