

Geology 222b Laboratory

Reactions in Pelites

1. The following three groups of rocks define portions of three metamorphic facies. Show the mineral assemblages of the three groups on three AFM diagrams. (Group (a) has four rocks and each will occupy one triangle on the AFM diagram for that group.) What chemical reaction(s) must occur to convert group (a) to group (b)? What chemical reaction(s) must occur to convert group (b) to group (c)? Use the attached AFM diagrams to help.
 - a) [46-8b] **and** [Ch 8b or 2B] **and** [DR-2a or DR-2b] **and** [DR-3a or DR-3b]
 - b) a rock with the assemblage Staurolite-Chlorite-Chloritoid
 - c) SCW-4 or DR-7
2. Record the mineral assemblage of **either** Dr-4 or GAS (or 47-6b) on an AFM diagram. To which facies of (1) does DR-4 (or GAS) belong? This is a trick question -- or perhaps these are trick rocks. Identify the problem and suggest possible explanations. Interestingly, the reason for the problem with GAS (or 47-6b) is probably different than the reason for Dr-4. Both rocks violate AFM assumptions.
3. Show the mineral assemblages of PE-11 and PE-19 on AFM diagrams. What chemical reaction relates PE-11 (ignore the abundant retrograde chlorite) and PE-19? These diagrams are not on the attached chart.
4. Show the mineral assemblages of PE-19 and Ru-P85t-75 on AFM diagrams. Do PE-19 and Ru-P85t-75 belong to the same facies? These diagrams are not on the attached chart.

REACTION SEQUENCE

(After Downie, 1982)

+Qtz
+Mus
±Plag
±Par

