Instructional Objectives for Topic 4 (Solid Solution Equilibria)

After we conclude Topic 4 in the notes you should be able to do the following:

1. Explain in your own words G, H, and S (thermodynamic properties).

2. Given a standard table of thermodynamic parameters, calculate S, H, and G change for a reaction.

3. Calculate ΔG given ΔH and ΔS and determine whether or not the reaction is spontaneous and if so what thermodynamic parameter is driving the reaction.

4. Calculate K for a reaction given ΔG.

5. Create stability diagrams for common solid phases given solubility equations.

6. Interpret stability diagrams based on pH and activity of a particular element in solution.

7. Calculate the solution speciation of a metal in the presence of an organic or inorganic ligand by hand and by using a common chemical speciation program.