

ADVANCED GEOCHEMISTRY OF NATURAL WATERS

GEOL 578

Problem Set

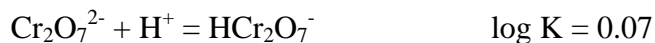
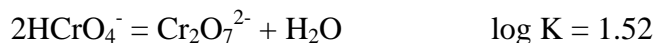
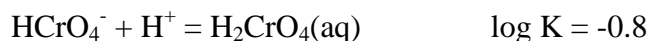
Lesson 5, Module 2

Problem 1:

If pK for the dissociation of $\text{MgCO}_3(\text{aq})$ is 3.4, what is the ratio of activity of CO_3^{2-} to $\text{MgCO}_3(\text{aq})$ in a solution in which the activity of Mg^{2+} is $10^{-2.1}$?

Problem 2:

Construct speciation diagrams for the various Cr(VI) species as a function of pH at $\text{Cr}_T = 1, 10^{-2},$ and 10^{-4} M. Neglect activity corrections. Use the following data:



Problem 3:

Find the pH at which " $\text{Fe}(\text{OH})_3$ " begins to precipitate from a 0.1 M $\text{Fe}(\text{ClO}_4)_3$ solution. Consider the dimerization of FeOH^{2+} . The following data may be required:

