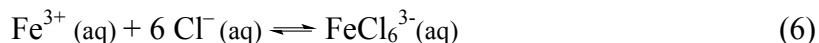


## Prelab Question – Experiment 2: Chemical Equilibrium, Week 1

On page 3/4 of the laboratory handout is the following example:

In a table, summarize your observations for each of the reactions that you perform on the iron-thiocyanate equilibrium. As an example, if you added a drop of concentrated HCl to the standard solution, the blood-red color lightens or perhaps disappears altogether. This change in color indicates that the  $\text{FeNCS}^{2+}$  concentration decreases. To explain this result, it is necessary to know that in the presence of a large excess of  $\text{Cl}^-$ ,  $\text{Fe}^{3+}$  forms complex ions:



The increase in  $\text{Cl}^-$  reduces the  $\text{Fe}^{3+}$  concentration, so in accord with Le Chatelier's Principle, some  $\text{FeNCS}^{2+}$  dissociates to replace some of the  $\text{Fe}^{3+}$  removed by reaction with  $\text{Cl}^-$ . This result is summarized in the table as follows:

Stress	Observation	Reactions of Interest	Explanation
+1 drop HCl	sol'n turned yellow	$\text{Fe}^{3+} + 6 \text{Cl}^- \rightleftharpoons \text{FeCl}_6^{3-}$ <i>and what other reaction?</i> <i>(see Week 1 prelab)</i>	Equilibrium shifted left in response to a decrease in $[\text{Fe}^{3+}]$ caused by reaction with $\text{Cl}^-$ .

**In the space below, write the relevant reaction of interest (italicized words above) that is coupled with the reaction of  $\text{Fe}^{3+}$  with  $\text{Cl}^-$ . Indicate the direction of the shift in equilibrium on the reaction.**