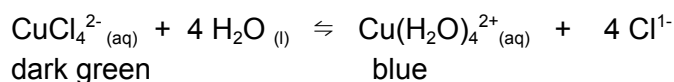


Concentration-Time Graphs - Worksheet

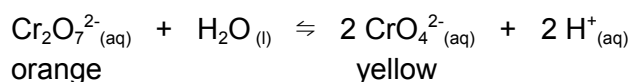
1. In a solution of copper(II) chloride, the following equilibrium exists:



Predict the shift in the equilibrium and draw a graph of concentration versus time for relevant reactants to communicate the shift after the following stresses are applied to the system:

- a. Hydrochloric acid is added
- b. Silver nitrate is added

2. The two oxyanions of chromium(IV) are the orange dichromate ion, $\text{Cr}_2\text{O}_7^{2-}(\text{aq})$, and the yellow chromate ion, $\text{CrO}_4^{2-}(\text{aq})$. Explain why a solution containing the following equilibrium system turns yellow when sodium hydroxide is added.



3. Identify the nature of the change imposed on the equilibrium system, shown below, at each of the times indicated A, B, C, D, and E.

