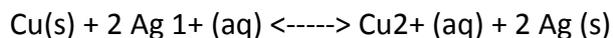


Answer on the Question #43707, Chemistry, Physical Chemistry

Question:



This redox reaction has a $\Delta H = -250 \text{ kJ}$. Which of the following would cause this equilibrium to shift to the left?

- a) an increase in temp
- b) increasing the pressure
- c) a decrease in temp
- d) lowering the pH

Solution:

According to the Le Chatelier's principle, when a system at equilibrium is subjected to change in concentration, temperature, volume, or pressure, then the equilibrium readjusts itself to counteract the effect of the applied change and a new equilibrium is established. As the reaction is exothermic, whether increasing or decreasing the temperature would favor the forward or the reverse reaction can be determined by applying the same principle as with concentration changes.

- a) An increase in temp will cause the equilibrium to shift to the left, because $\Delta H < 0$
- b) Changes in pressure are attributable to changes in volume. Increasing in pressure influences a little on the reactions in condensed phases.
- c) A decrease in temp will cause the equilibrium to shift to the right, because $\Delta H < 0$
- d) Lowering the pH will not affect the equilibrium, because protons do not participate in the reaction.

Answer: a)