



Chemistry 2: 2nd Quarter
LE CHATELIER'S PRINCIPLE

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Section: Photon

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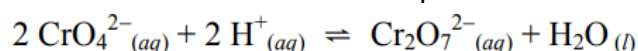
John Kelly Yrogirong

Date Submitted: December 12, 2024

POST-LABORATORY ACTIVITY

Part I. *Acidified Chromate Solution*

1. Write the chemical reaction at equilibrium.



2. Observations upon addition of **HNO₃**.

Upon adding HNO₃ to the chromate solution, the color changes from yellow to orange-red.

3. In which direction (forward/reverse) did this stress cause the equilibrium system to shift?

The addition of HNO₃ causes the equilibrium to shift to the right (forward direction) to reduce the stress of increased H⁺ concentration.

4. Which ion caused the shift? Explain.

The H⁺ ion is responsible for the shift. Based on Le Chatelier's principle, the system adjusts to counteract the increase in H⁺ by shifting the equilibrium to the right, forming more Cr₂O₇²⁻.

5. Observations upon addition of **NaOH**.

Adding sodium hydroxide (NaOH) increases the concentration of OH⁻ ions, which react with H⁺ ions to form water.

6. In which direction (forward/reverse) did this stress cause the equilibrium system to shift?

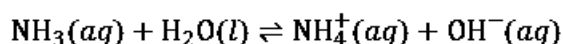
The addition of NaOH causes the equilibrium to shift to the left (reverse direction) to increase the H⁺ concentration by dissociating more Cr₂O₇²⁻ back into CrO₄²⁻ and H⁺ ions.

7. Which ion caused the shift? Explain.

The OH⁻ ion causes the shift. By reacting with H⁺ ions and reducing their concentration, the equilibrium shifts to the left to produce more H⁺ ions and restore balance.

Part II. *Aqueous Ammonia Solution*

1. Write the chemical reaction at equilibrium.



2. Observations upon addition of **NH₄Cl**.

Upon adding NH₄Cl to the aqueous ammonia solution, the initial pink color fades to colorless.

3. In which direction (forward/reverse) did this stress cause the equilibrium system to shift?

The addition of NH₄Cl increased NH₄⁺ ions, shifting the equilibrium in the reverse direction as per Le Chatelier's Principle.

4. Which ion caused the shift? Explain.

The NH₄⁺ ion causes the shift. By increasing the concentration of NH₄⁺, the equilibrium system responds by favoring the reverse reaction, thus decreasing the concentration of OH⁻ and making the solution basic.