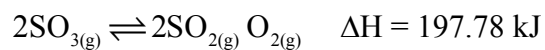


Appendix 8: PRELAB – Equilibrium and Le Chatelier's Principle

1. Define equilibrium.

2. State Le Chatelier's Principle.

3. For the following reaction, indicate how the amount of $\text{SO}_2(g)$ present at equilibrium would be affected by:



a) Adding SO_3 .

b) Raising the temperature.

c) Decreasing the volume.

d) Removing some O_2 .

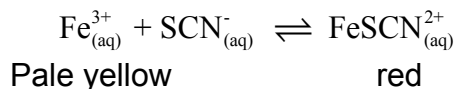
e) Adding some SO_2 .

f) Adding a catalyst.

g) Removing some SO_3 .

Appendix 9: Qualitative Equilibrium Lab

A standard laboratory example for demonstrating the effect of changing concentrations on the equilibrium positions shown below:



The position of equilibrium can be determined from the colour of the solution. When the iron (III) nitrate and potassium thiocyanate solutions are mixed, the colour of the mixture is orange at equilibrium. If the equilibrium lies to the right, the solution is a dark red colour. If the equilibrium lies to the left, the solution is a pale yellow colour.

Materials

Well plate
0.020 mol/L iron (III) nitrate
0.002 mol/L potassium thiocyanate
1.0 mol/L sodium hydroxide
Toothpicks

Procedures

1. In each of four wells, add 5 drops of iron (III) nitrate and 5 drops of potassium thiocyanate. Mix each solution with a toothpick.
2. Do not alter the first well. It will act as your control.
3. To the second well, add 10 drops of sodium hydroxide. Record your observations.
4. To the third well, add 10 drops of iron (III) nitrate and record your observations.
5. Add 10 drops of potassium thiocyanate to the fourth, and final, well. Record your observations.

Questions

Use le Chatelier's Principle to explain the results from steps 3 to 5 of the procedures.