

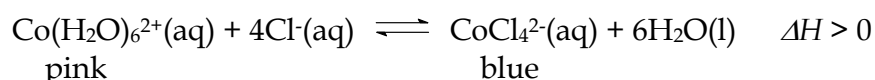
Chemical Thermometer

Student Handout

Purpose: To investigate the effect of temperature change on chemical equilibrium.

Introduction

Cobalt(II) chloride is used as a temperature indicator in industrial grinding processes where it is not feasible to use standard temperature probe. In this activity, you will investigate the effect of temperature change on the following equilibrium:



A 0.5 M solution of cobalt(II) chloride is prepared by dissolving 6.5 g of cobalt(II) chloride in 100 cm³ of water. In a fume cupboard, concentrated hydrochloric acid is added dropwise until the solution just turns purple. The solution is divided equally into two tubes labeled 1 and 2. Tube 1 is kept at room temperature as control. Tube 2 will be used for investigation.

Tasks

1. Predict what would be observed when Tube 2 is immersed firstly in hot water at 60 °C and then in an ice water bath. Are the changes reversible?

2. Observe the experiment  and record all observations.
(http://resources.emb.gov.hk/~science/exemplars_ec.htm)

3. Write an expression for the equilibrium constant. Explain the effect of temperature change on the reaction.
