

Equilibrium of NO₂/N₂O₄

Recommended for Chapter(s): 6

Demo #028

Materials NOT in box

Hot water (use hot plate, in general cabinet, to boil water).

Ice water (ice machine locate in alcove where the chemistry building meets PSBN).

Procedure

1. Fill one dewar $\frac{3}{4}$ full of hot water.
2. Fill the other dewar $\frac{3}{4}$ full of ice and water.
3. In each of the dewars put one of the vials containing NO₂/N₂O₄.
 - a. The plastic bottles of water can be used to secure the vials in the dewars.
4. Show students the room temperature vials.
5. Have students predict the color of each of the other vials.
6. Remove the vials from the dewars and show them to the class.

Clean Up

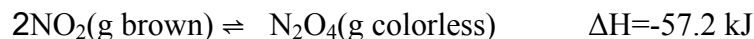
1. Return the materials to the cart in the demonstration library room.

Stockroom Notes

1. Dump out water.
2. Return items to demonstration tub.
3. Return tub to the demonstration library.

Discussion

The following equilibrium is manipulated during the demonstration.



Due to Le Chatlier's principle and the fact that the reaction is exothermic, as heat is added to the mixture (vial in hot water) the equilibrium shifts to the reactants side and the vial becomes dark brown. When heat is removed from the system (vial in cold water) equilibrium shifts to the products side and the vial becomes lighter brown.

Materials for demo 028

1. Three $\text{N}_2\text{O}_2/\text{NO}_2$ gas vials in cardboard box
2. Two Dewars with tops
3. Three Plastic bottles with water