

Supersaturation

Instructions

Materials:

Sodium acetate trihydrate
500-mL Florence flask with rubber stopper
30-ml hot water
Hot Packs (ReHeater hot packs are available online)

Set Up:

1. Dissolve 300 g of sodium acetate trihydrate in the minimum amount of hot in water in the Florence flask. Typically 30-mL of water should work.
2. Avoid leaving any crystals of the solid on the inside neck of the flask.
3. Let the flask stand undisturbed and cool slowly. The solution should look clear in room temperature.
4. Stopper the Florence flask and store in a container to minimize disturbance.

Demo Procedure:

1. Carefully remove the stopper from the Florence flask and add 1 granule of sodium acetate to the supersaturated solution.
2. The excess sodium acetate trihydrate that was dissolved in the supersaturated solution will instantly precipitate from the solution to form a solid white mass.
3. You can turn the flask upside down to show that no free water remains.
4. The flask can be passed around to let the students feel the heat that has been produced.
5. You can explain to the students that this is the same heat energy that was used to get the solids to dissolve into the solution initially.
6. The flask can be reheated in a hot water bath to re-dissolve the solid.

Optional:

You can use al “ReHeater” hot pack to demonstrate a commercial use of this demonstration.