

Solutions

How is the solubility of a compound determined?

In a solution, the substance being dissolved is the solute. The substance that dissolves the solute is the solvent. In general, the substance present in the largest amount is considered to be the solvent.

One way to increase the rate at which most solids dissolve is to increase the temperature of a solvent. This speeds up the movement of its particles and causes more solvent particles to contact the solute. As a result, solute particles are pulled loose from the surface faster.

A saturated solution is a solution that has dissolved all the solute it can hold at a given temperature. If the temperature increases, the amount of solid that can dissolve usually increases. An unsaturated solution is any solution that can dissolve more solute at a given temperature.

In the Virtual Lab, you will test the solubility of a compound. You will choose different amounts of solutes and observe how they dissolve at different temperatures.

Objectives:

- Describe saturated and unsaturated solutions.
- Explain how compound solubility is determined at different temperatures.

Procedure:

1. Select a compound formula. Use your Journal to state a problem about the effect of temperature on the solubility of the compound and record it in your Journal.
2. Make a hypothesis about temperature and saturation for a solute and record it in your Journal.
3. Test your hypothesis by determining the solubility of the selected compound at a given temperature. Select a temperature setting by clicking it. Then, add compound to the water using one of the measuring spoons at the top of the screen.
4. Continue placing compound into the water until saturation is reached. When the solution is saturated, undissolved compound will appear at the bottom of the beaker. Click the Undo button to remove your last spoonful of compound from the beaker.
5. Repeat the process until you find the saturation point within a gram.

6. Use the Table to record the amount of solute it took to reach saturation at each temperature.
7. Continue the process using the same compound and different temperature settings. Analyze the results of your experiment and record them in your Journal.
8. Click the Graph button to see the results of your experiments. Draw conclusions about temperature and saturation of a solute and record them in your Journal.