6.2: Dissolving

Saturation

There is a limit to how much of a solute you can dissolve in a solvent. The amount you can dissolve depends on a number of factors, from the temperature of the solvent to the chemical nature of the solute.

Once you have dissolved so much solute in the solvent (enough so that some solute remains un-dissolved ‘on the bottom’ of the solvent), you have reached a saturated solution.

Solubility

This is the mass of a solute that can dissolve in a measured amount (volume or mass) of solvent.

Example: 35.7 g of salt will dissolve in 100 g of ice-cold water (0 degrees Celsius).

“the solubility of salyt is 35.7 g/100g H2O at 0 degrees Celsius.

Other examples can be found on page 167 in Table 6.1.

The higher the number, the more solute will dissolve.

Solubility is a quantitative property of matter (pure substance).

Rate of Dissolving

Things that affect the rate (speed) that a solute will dissolve in a solvent include;

a) movement/stirring

The more you move the solute through the solvent, the more of the solvent is exposed to the solute, so that it can dissolve.

b) surface area of the solute

Smaller bits of solute = larger surface area that is exposed to the solvent. It is the surface that is dissolved. A great example is chewing your food, or a hard candy – the smaller pieces that you crunch it up into, the faster is disappears!

c) temperature of the solvent

Often, the warmer the solvent, the more solute it will hold, however there are exceptions like gases in water – the warmer the water, the less dissolved gases it will hold!