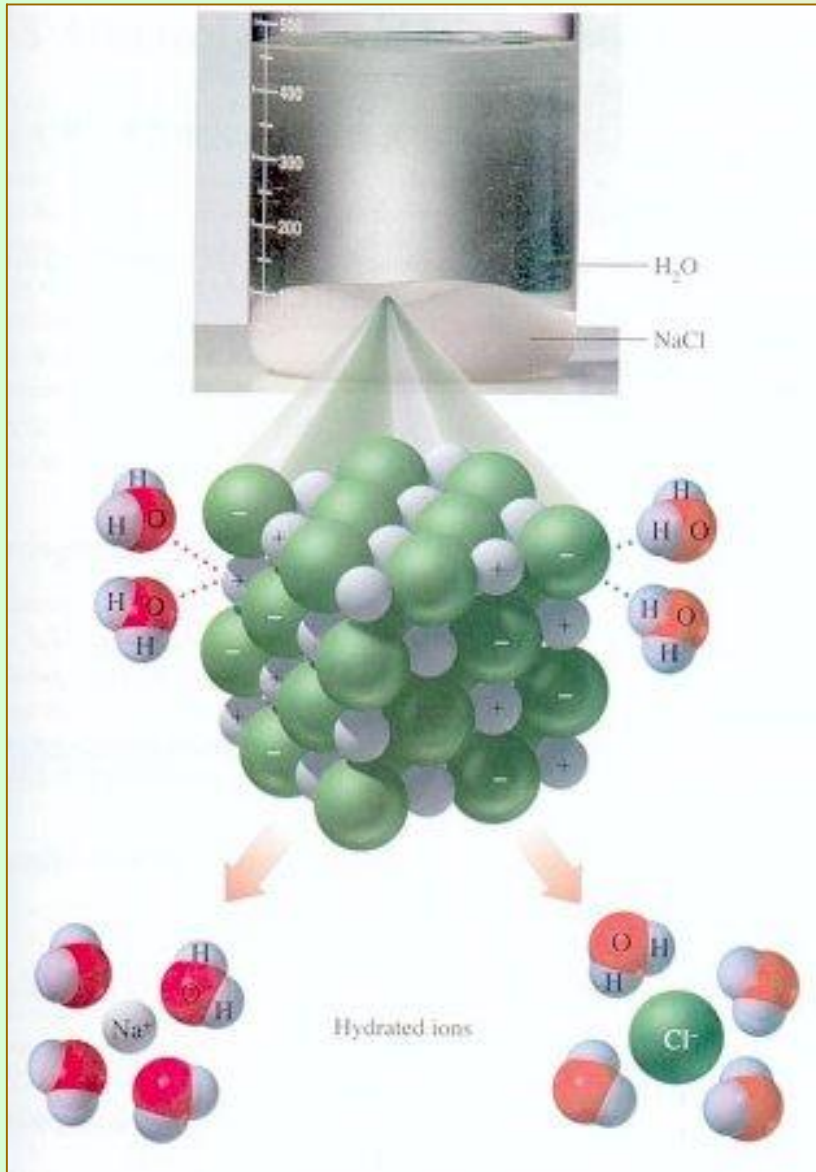


Solubility of Ionic Compounds

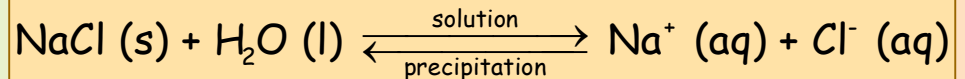


The Solution Process

An aqueous solution is formed when one substance disperses uniformly throughout another (water, in this case).

The dissolved ions of an ionic compound experience intermolecular attractive forces that hold them together.

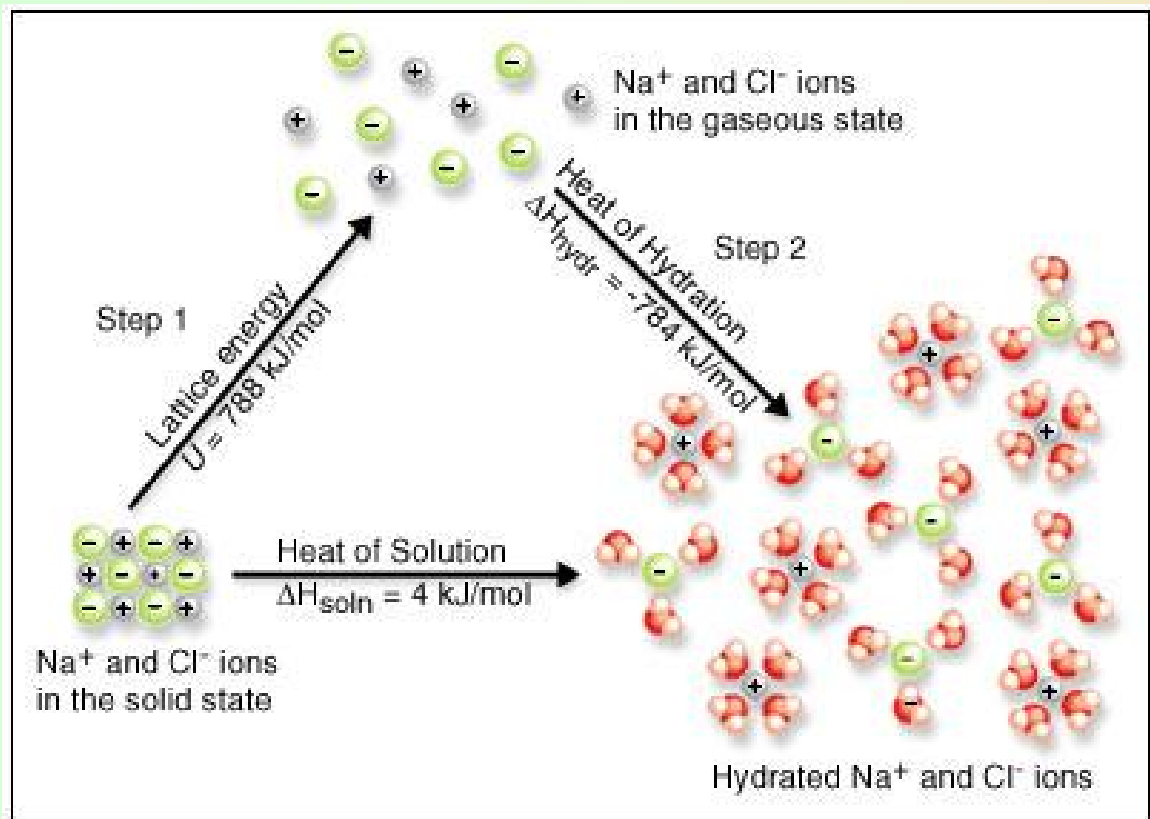
Once separated from the crystal, the Na⁺ and Cl⁻ ions are surrounded by water molecules.



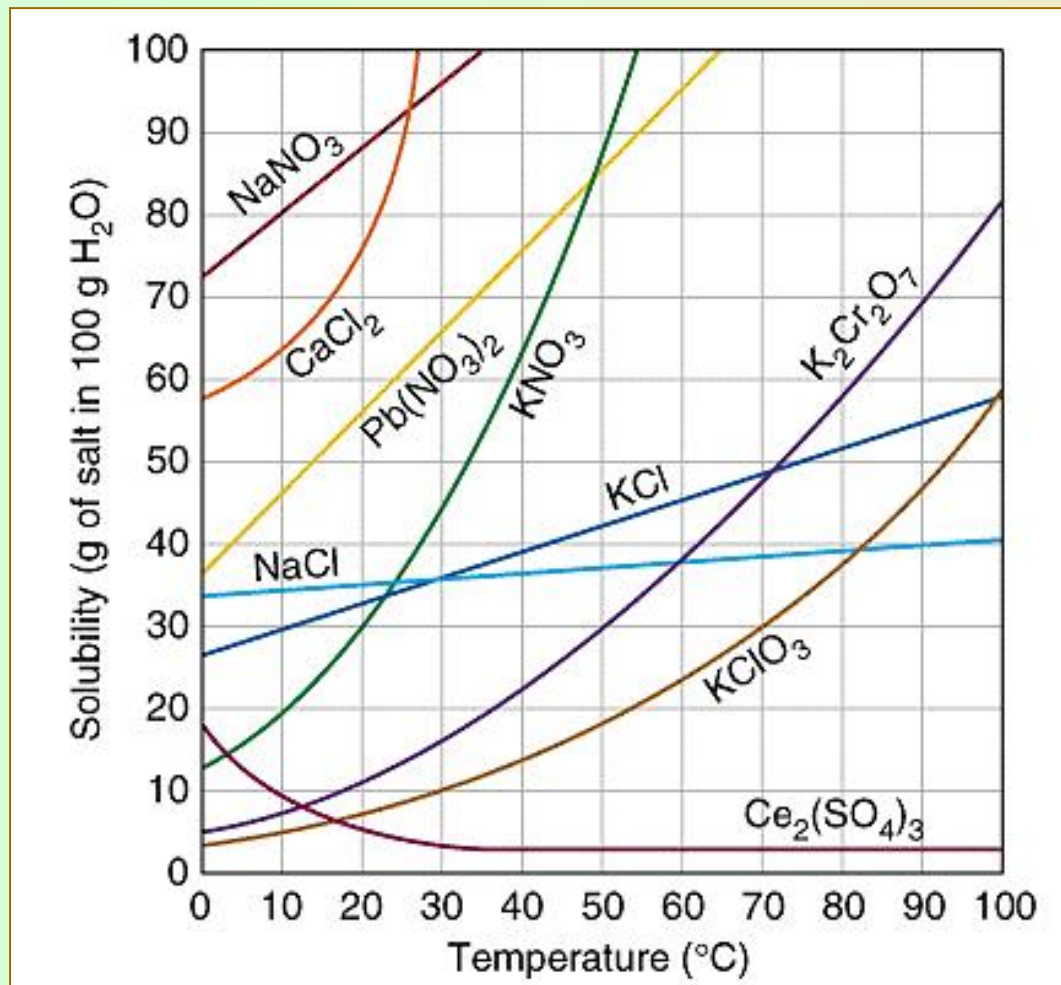
Solubility of Ionic Compounds

Energy Changes and Solution Formation

Sodium chloride dissolves in water because the water molecules have a sufficient attraction for the Na^+ and Cl^- ions to overcome the attraction of these two ions for one another in the crystal.



Solubility of Ionic Compounds

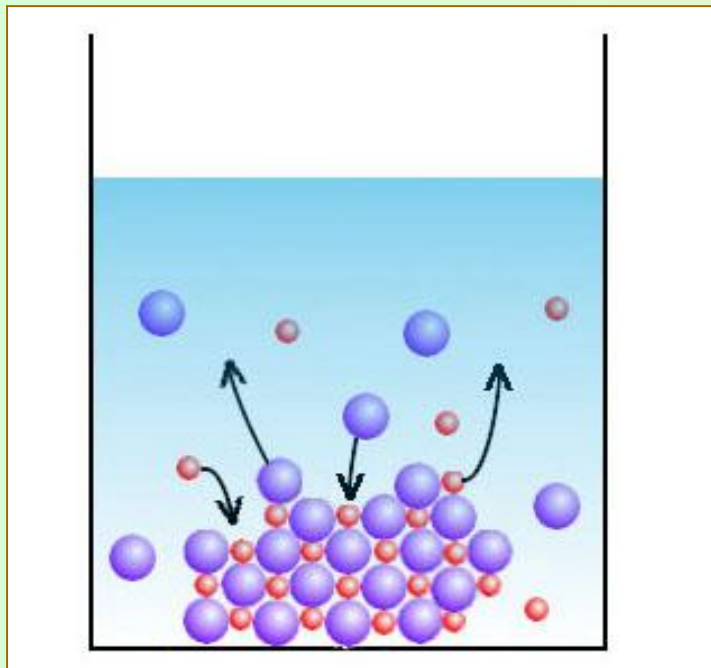


The Solution Process

The solubility (amount of solute dissolved) of substances in water increases as the temperature of the solution.

Solubility of Ionic Compounds

The Solution Process

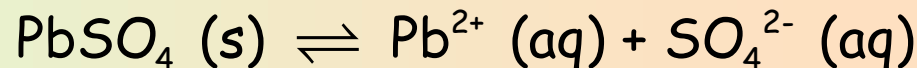


<http://www.chem.ubc.ca/courseware/pH/section17/salt3.jpg>

The solution process (when saturation is reached) and the precipitation process are at equilibrium.

The solubility of a substance can be measured by a constant (K_{sp} ; solubility product constant).

Let's take this solubility equilibrium:



The solubility product constant is this expression (concentrations at saturation):

$$K_{sp} = [\text{Pb}^{2+}] [\text{SO}_4^{2-}] = 1.6 * 10^{-8}$$