

Solution –

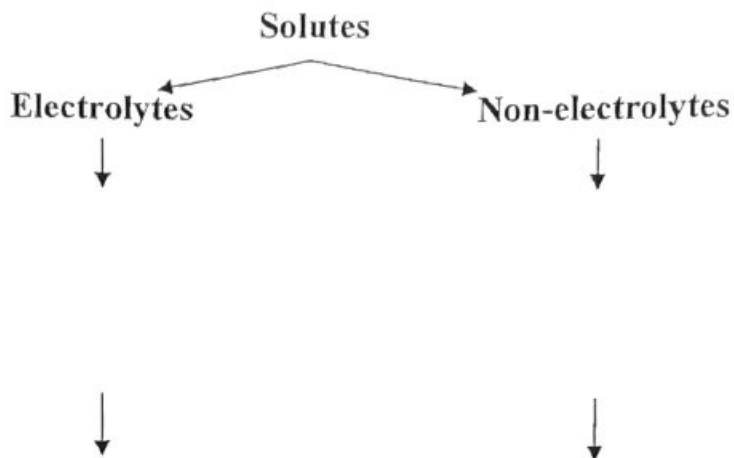
Solvent



Solute



Solutions may exist as solids, liquids or gases. Solute/solvent combinations may be of any type. (FIND EXAMPLES OF EVERY POSSIBLE COMBINATION!!)



Examples:

Solute-Solvent Interactions

Solvation – the surrounding of _____ particles by _____ particles. In order for solvation to occur, the solute and solvent must be **SIMILAR** in nature. In other words, _____ dissolve _____.

Polar solvents will dissolve _____ solutes.

Nonpolar solvents will dissolve _____ solutes.

Polar solvents **WILL NOT** dissolve _____ solutes.

Nonpolar solvents **WILL NOT** dissolve _____ solutes.

Immiscible vs. Miscible

When a solute is placed in a solvent, one of the following will occur:

If solute is soluble in solvent: **Ionization** or **Dissociation**

If solute is insoluble in solvent: Solute will **remain undissolved**.

Ionization –

Dissociation -

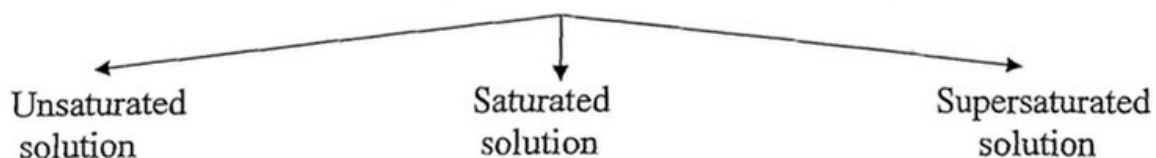
The Solution Process:

Factors that affect the formation of a solution

1. Surface area of the crystal
2. Agitation –
3. The kinetic energy (temperature) of the solvent particles –
4. Pressure –

Solubility –

When a solute is soluble, it is possible to make these three types of solutions



Solubility Curve – A graph that shows the solubility of substances at different temperatures.

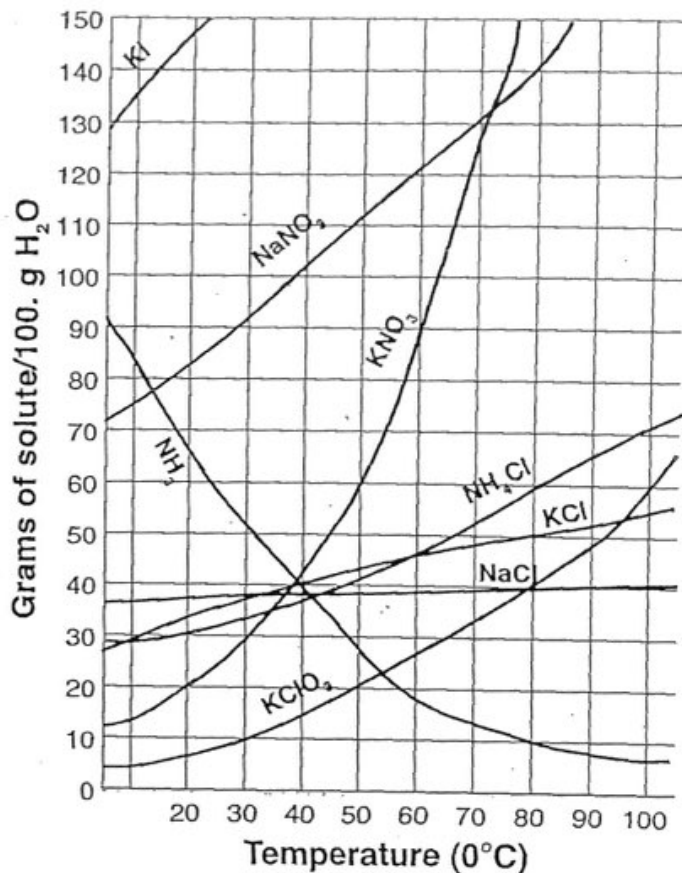
Answer the following questions based on the solubility curve below.

- Which salt is least soluble in water at 20° C? _____
- How many grams of potassium chloride can be dissolved in 200 g of water at 80° C?

- At 40° C, how much potassium nitrate can be dissolved in 300 g of water? _____
- Which salt shows the least change in solubility from 0° – 100° C?

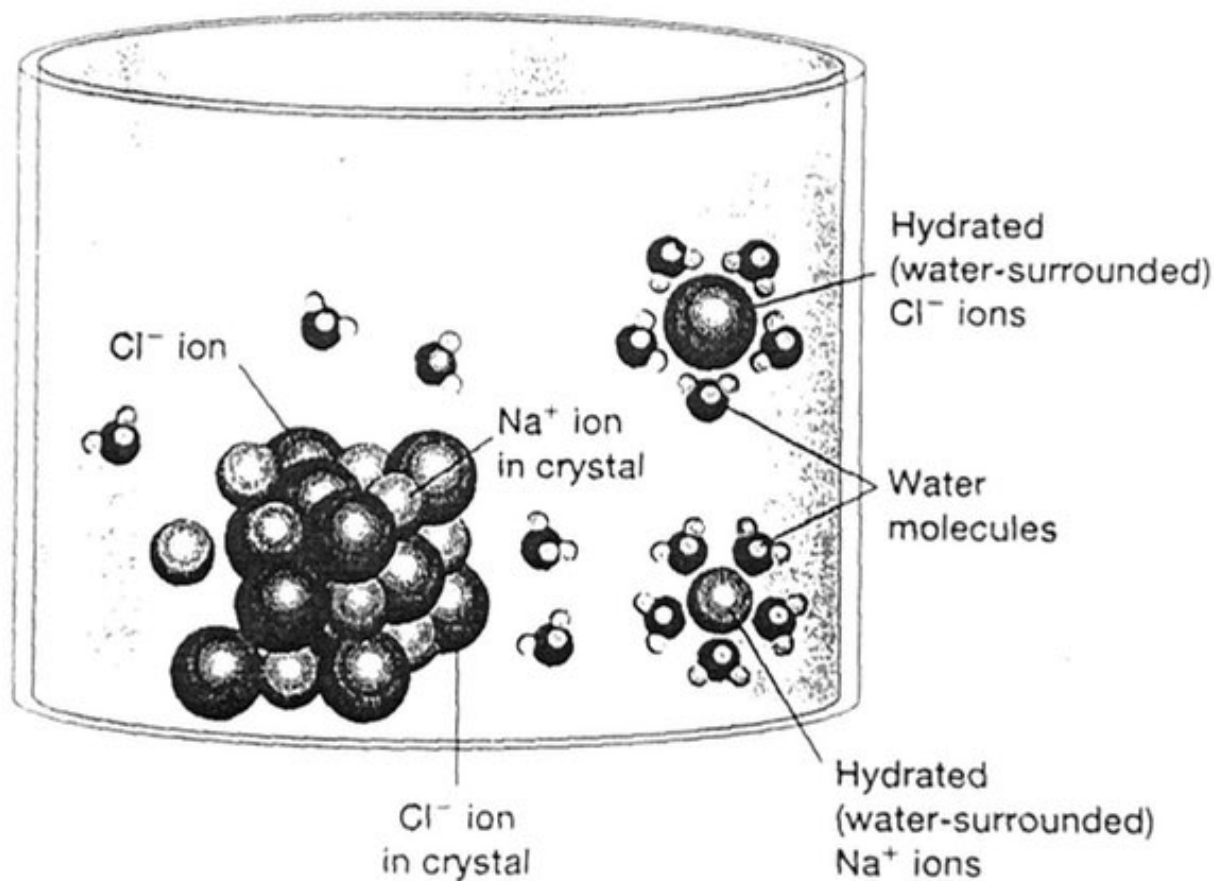
- At 30° C, 90 g of sodium nitrate is dissolved in 100 g of water. Is this solution saturated, unsaturated or supersaturated?

- A saturated solution of potassium chlorate is formed from one hundred grams of water. If the saturated solution is cooled from 80° C to 50° C, how many grams of precipitate are formed? _____
- What compound shows a decrease in solubility from 0° to 100° C? _____
- Which salt is most soluble at 10° C? _____
- Which salt is least soluble at 50° C? _____
- Which salt is least soluble at 90° C? _____



37 Dissociation of Sodium Chloride

Use with Chapter 13, Section 13.2



37 Dissociation of Sodium Chloride

Use with Chapter 13, Section 13.2

1. In terms of polarity, what kind of solvent-solute combination is shown?

2. Which substance is the solvent and which is the solute?

3. Identify the particles that compose a sodium chloride crystal.

4. What happens to a sodium chloride crystal when it is put into water?

5. What happens to the attraction between the dissolved hydrated ions and the remaining solid crystal ions?

6. What is the separation of ions from one another called?

7. What part of the water molecule is oriented toward the sodium ions? Explain why.

8. What part of the water molecule is oriented toward the chloride ions? Explain why.

