**Unit 3: Solutions and Solubility**

1. Components of a Solution

**solution** : a homogeneous mixture of two or more substances

**solvent**: the liquid in which a substance is dissolved

**solute**: the substance being dissolved

**aqueous solutions:** when water is the solvent

1. Types of Solution

|  |  |  |  |
| --- | --- | --- | --- |
| Solvent ->  Solute | Solid | Liquid | Gas |
| Solid | copper in zinc (alloy) | salt in water (brine) | naphthalene in air (moth repellent) |
| Liquid | mercury in gold or silver (amalgam) | ethylene glycol in water (antifreeze) | water in air (humidity) |
| Gas | hydrogen in platinum (alloy) | carbon dioxide in water (soda) | oxygen in nitrogen (air) |

1. Key Terms

**solubility** : the mass of a solute that will dissolve in a given amount of solvent

**saturated solution**: when the maximum amount of a solid or gas solute is dissolved in a solvent at a given temperature

**miscible**: when two liquids dissolve into each other

**immiscible:** liquids that will not dissolve in each other when mixed

1. Effects of Temperature on Solubility

**solid solutes:** solubility can increase or decrease, but generally increases with temperature

\*recrystrallization relies on this property

**gas solutes:** usually solubility decreases as temperature increases

eg. dissolved oxygen in lakes (cold water has more dissolved oxygen – more fish)

**liquid solutes**: no general trend

1. Water

* a.k.a. universal solvent
* many compounds dissolve in water
* water is polar – ionic compounds dissolve easily
* hydration: ions of a solution are attracted by the water molecules around it
* water also contains hydrogen bonding – covalent compounds dissolve easily

**Questions:**

1. **What is dissocation? (p. 383)**
2. **How do soaps and detergents work? (p. 386-387)**

**Read 8.1 and add the summary to your notes.**

**Answer question 2 on page 375.**