**Vocabulary: Colligative Properties**



**Vocabulary**

* Boiling point­ – the temperature at which boiling occurs.
	+ At sea level, the boiling point of water is 100 °C (212 °F).
	+ Water boils at lower temperatures at higher altitudes because air pressure is lower there.
* Colligative property – a property of a *solution* that depends on the number of particles of *solute* in a given volume of *solvent*.
	+ Colligative properties include boiling point, *freezing point*, *vapor pressure*, and *osmotic pressure*.
	+ Colligative properties depend on the *concentration* of solute as well as the number of particles a molecule of solute *dissociates* into.
* Concentration – a measure of how much of a given substance is mixed with another substance.
	+ In the *Colligative Properties* Gizmo, concentration is measured in moles of solute per kilogram of solvent.
* Dissociate – to break up into smaller components.
	+ When sodium chloride (NaCl) dissolves in water, it dissociates into Na+ and Cl– ions.
	+ Different compounds dissociate into different numbers of particles.
		- Sucrose does not dissociate when it is dissolved.
		- Each molecule of sodium chloride dissociates into two ions.
		- Each molecule of calcium chloride (CaCl2) dissociates into three ions.
		- Each molecule of sodium phosphide (Na3P) dissociates into four ions.
* Freezing point – the temperature at which freezing occurs.



**U-tube manometer**

* + At sea level, the freezing pointof water is 0 °C (32 °F).
* Manometer – a device used to measure gas or vapor pressure.
	+ In a manometer, gas or vapor pressure displaces a column of liquid.
	+ In a U-tube manometer such as the one shown in the *Colligative Properties* Gizmo, the pressure of gas on each side of the device can be compared by measuring the height of the water column on each side of the tube.
* Osmosis – the movement of solvent molecules across a semipermeable membrane from an area of high solvent concentration to an area of low solvent concentration.
	+ Osmosis often refers to the flow of water molecules across a cell membrane.
* Osmotic pressure – the pressure that must be applied to a solution to prevent water from moving into the solution through a semipermeable membrane.
	+ The greater the osmotic pressure is, the greater the tendency for a solution to attract water molecules will be.
* Solute – a substance that is dissolved in another substance to form a solution.
	+ In salt water, the solute is salt.
* Solution – a homogeneous mixture of two or more substances.
	+ Solutions generally consist of a solute that is dissolved into a solvent.
		- Solvents are generally liquids.
		- Solutes can be solids, liquids, or gases.
	+ Examples of solutions include salt water, sugar water, and seltzer.
* Solvent – a liquid or gas that dissolves a solute to form a solution.
	+ In salt water, the solvent is water.
* Vapor pressure – the pressure exerted on the walls of a closed container by a gas that has evaporated from a liquid or *sublimated* from a solid.
	+ Vapor pressure is a measure of the tendency of a substance to evaporate or sublimate.
		- Sublimation is the phase change from a solid directly to a gas.
	+ A liquid will boil when its vapor pressure is equal to atmospheric pressure.
	+ A liquid will freeze when its vapor pressure is equal to the vapor pressure of the solid.