**Vocabulary: Reaction Energy**



**Vocabulary**

* Calorimeter – a device that is used to measure the amount of heat energy that transfers from one system to another.
	+ Most calorimeters are well-insulated containers filled with water. The amount of heat produced is measured by finding the temperature change of the water.
* Chemical bond – an attraction between atoms that leads to the formation of a molecule or compound.
	+ Types of chemical bonds include ionic, covalent, and metallic bonds.
		- Ionic bonds form between positively-charged atoms, or ions, and negatively-charged atoms.
		- Covalent bonds form when atoms share electrons.
		- Metallic bonds form when a “sea” of free-flowing electrons forms around positively-charged metal ions.
* Endothermic – a process that absorbs heat energy.
	+ In an endothermic reaction, the temperature of the system decreases.
	+ In an endothermic reaction, the enthalpy of the system increases because energy is absorbed into the system.
* Enthalpy – a measurement of the energy contained in a system.
	+ Enthalpy (*H*) is equal to the internal energy of a system (*U*) plus the product of the pressure and volume of the system: *H* = *U* + *PV*.
	+ In most cases, it is not possible to measure the enthalpy of a system directly. However, changes in enthalpy *(∆H*) can be found by measuring changes in temperature, pressure, and volume.
	+ If a system absorbs heat, its enthalpy increases *(∆H* > 0). If a system emits heat, its enthalpy decreases *(∆H* < 0).
* Exothermic – a process that releases heat energy.
	+ In an exothermic reaction, the temperature of the system increases.
	+ In an exothermic reaction, the enthalpy of the system decreases because energy is emitted from the system.
* Hess’s law – a law that states that the change in enthalpy of a system during a chemical reaction is independent of the order of steps in which the reaction takes place.
	+ If a chemical change could happen in several different ways, the total enthalpy change will be the same no matter which sequence is taken.