**Thermodynamics and**

**Spontaneous Processes.**

 **Thermodynamics: the area of science that deals with the interconversion (energy converting back and forth) of heat and other forms of energy.**

 **Spontaneous Process: is one that proceeds on its own without external influence.**

 **The reverse of a spontaneous process is always nonspontaneous and takes place only in the presence of some external influence.**

**Example:**



 **Once the valve is open, the gas in bulb “A” spontaneously expands into bulb “B” to fill the available volume.**

 **The reverse process would be non – spontaneous because it would require an outside influence (like a piston).**

 **Chemical reactions can also be labeled as spontaneous or non – spontaneous.**

 **Example: Combining hydrogen gas with oxygen gas in the presence of a platinum catalyst. Platinum catalyst**

**2H2 (g) + O2(g) 2 H2O (l)**

 **The forward reaction happens spontaneously, but the reverse reaction (decomposition of water) requires electricity (outside influence) and will not occur no matter you long you wait.**

 **In general, whether the forward or reverse is spontaneous, depends on the temperature, pressure and composition (what it’s made of) of the reaction mixture.**