**Thermodynamics and**

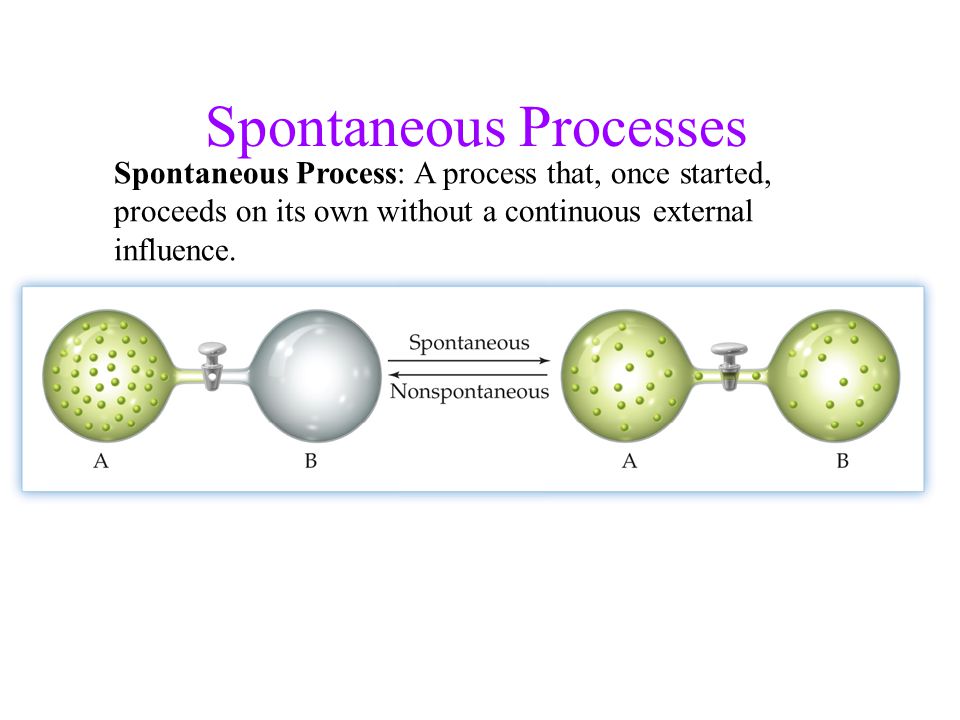
**Spontaneous Processes.**

**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.**