

ATMOSPHERIC CHEMISTRY (L 2, 6, 10)

CHAPTER 6

- **Exergonic reaction** – proceeds with a net release of free energy and is spontaneous
- **Endergonic reaction** – is coupled thereby free energy from its surroundings and is non-spontaneous

FREE ENERGY, ENTHALPY	ENTROPY, ENTHALPY
Exergonic	Exergonic
Endergonic	Endergonic/Exergonic
Exergonic	Endergonic
Exergonic/Exergonic	Exergonic/Exergonic

- **Active energy** – energy in processes that increases, ex. falling particle, an electron
- **Potential energy** – energy stored in the body or system due to its position or a state that is awaiting a trigger to be realized
- **Chemical energy** – potential of a chemical substance to undergo a transformation through a chemical reaction (forming chemical bonds)
- **The direction of thermodynamic**
 - o Energy can be created and transformed
 - o Energy cannot be created or destroyed
- **The second law of thermodynamics**
 - o Spontaneous change that increases overall energy increases the entropy, or disorder, of the system
- **Entropy of a system**
 - o Substances molecules and ions disperse faster
- **Free energy provides energy (also used for calculating cell's energy results)**
 - o ΔG (Gibbs free energy)
 - o ΔH (Enthalpy)
 - o ΔS (Entropy)
- **Enthalpy of reaction**
 - o A measurement of reaction for substances, as it leads to measure change (change in system) in "enthalpic change"
- **Properties of reaction**
 - o Reaction kinetics – rate measure to determine spontaneity
 - o Kinetics – rate measurement reaction
- **Factors affecting reaction**
 - o Reaction concentration – positive contribution
 - o Surface concentration – positive contribution
 - o Temperature – increase forward reaction if decrease follow reaction if
 - o Volume – pressure change volume change
 - o pH – pressure change pH change
 - o Activation
 - o Catalysts
- **Enthalpy of formation** – heat of change (enthalpic change)
- **Enthalpy of reaction** – net positive, negative molecules, total temperature or pressure change or reaction rate