

Seymour

Thermodynamics - 4 - Free Energy (ΔG)

$$\Delta G = \Delta H - T \Delta S$$

ΔG predicts spontaneity.

$$\Delta G < 0 \quad \text{spont.} \quad (-\Delta G)$$

$$\Delta G > 0 \quad \text{non spont.} \quad (+\Delta G)$$

$$\Delta G = 0 \quad \text{eq.}$$

In general - if ΔH is -ve & ΔS is +ve.
(exo) (higher entropy)

ΔG will be spont. (- ΔG)

$$\Delta G = \underbrace{\Delta H}_{-ve} - \underbrace{T \Delta S}_{+ve}$$

temp. plays a big role.

Similarly if ΔH +ve with ΔS is -ve.
(endo) (lower entropy)

$$\Delta G = \underbrace{\Delta H}_{+ve} - \underbrace{T \Delta S}_{-ve} \quad \Delta G = \underline{+ve} \quad \text{non spont.}$$

$$\underline{\Delta G^\circ} = \sum \Delta G^\circ_{\text{react.}} - \sum \Delta G^\circ_{\text{prod.}}$$