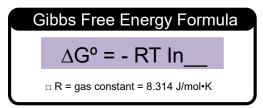
CONCEPT: GIBBS FREE ENERGY AND EQUILIBRIUM

Gibbs Free Energy and Equilibrium Constant

- Relationship between ____ and ___ can also be observed in the following formula
 - □ Use this formula when Keq is given or can be calculated

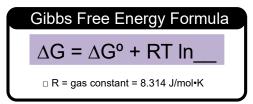


EXAMPLE: A certain reaction takes place at 25°C and has an equilibrium constant of 2.8 x 10⁴. Determine the Gibbs free energy of the reaction.

PRACTICE: For reaction, Ag_2CO_3 (s) \Longrightarrow Ag_2O (s) + CO_2 (g), the $\triangle H^\circ$ = 79.14 kJ/mol, $\triangle S^\circ$ = 167.2 J/mol*K. Determine the equilibrium constant at which the temperature is 365.1 K.

Gibbs Free Energy and Reaction Quotient (Q)

- \bullet The following equation relates ΔG^{o} (_____ conditions) with ΔG (____ standard conditions).
 - □ Use this formula when given ____ or dealing with Reaction Quotient (____)



EXAMPLE: The given reaction has a ΔG° of -374 kJ, and partial pressures of SF₄, F₂, SF₆ are 0.63 atm, 0.95 atm, 1.7 atm respectively. Calculate the ΔG_{rxn} for this reaction. SF₄ (g) + F₂ (g) \longrightarrow SF₆ (g)

PRACTICE: Consider a hypothetical reaction at 38°C, X_2 (aq) + 2 Y (s) \longrightarrow 3 Z (g), with a \triangle G of -75.8 kJ. Concentrations of reactants and products: $[X_2] = 1.4$ M, [Y] = 0.34 M, [Z] = 2.6 M. Calculate Keq of this given reaction.