

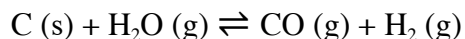
LECTURE 19

1. At $T = 100^{\circ}\text{C}$, the reaction shown below has an equilibrium constant $K = 2.75$.



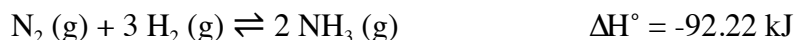
Suppose the partial pressure of $\text{SO}_2\text{Cl}_2(\text{g})$ is 2.15 bar, $\text{SO}_2(\text{g})$ is 0 bar, and $\text{Cl}_2(\text{g})$ is 0 bar.

- Calculate the reaction quotient Q and state whether the reaction proceeds to the right or the left as equilibrium is approached.
 - Calculate the partial pressures of each species at equilibrium.
 - If the volume of the system is increased, will there be net formation or net dissociation of SO_2Cl_2 ?
2. The formation of carbon monoxide from coal is shown by the equation:



What happens to:

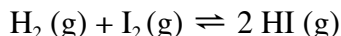
- $[\text{H}_2]$ if H_2O is added?
 - $[\text{CO}]$ if H_2 is removed?
 - $[\text{H}_2]$ if CO is added?
 - $[\text{CO}]$ if C is added?
3. The formation of ammonia from nitrogen and hydrogen occurs by the following equation:



Does the amount of ammonia produced increase, decrease, or remain the same when a mixture of reactants and products at equilibrium undergoes the following changes?

- The temperature decreases
 - The volume is increased
 - Argon is added
 - N_2 is added
4. A mixture of 0.22 mol H_2 and 0.55 mol I_2 in a 100.0-mL container was heated to 700.0K and allowed to reach equilibrium. Will more HI be formed if that equilibrium mixture is cooled to 298.0K?

For the reaction



$K = 54$ at 700.0K and 794 at 298.0K.

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