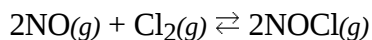


PS8.2. In a container, the partial pressure of NOCl is initially 0.340 atm at a given temperature. The chemical equation which describes the reaction is:



At equilibrium analysis shows the partial pressure of NO is 0.0916 atm.

- a) Which direction did the reaction proceed to establish (reach) equilibrium?

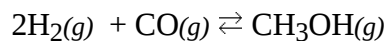
- b) What is the partial pressure of NOCl which reacted in order for the partial pressure of NO to be 0.0916 atm?

- c) What is the partial pressure of Cl₂ at equilibrium?

- d) What is the partial pressure of NOCl at equilibrium?

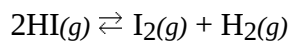
- b) What is the magnitude of K_p for the equation above?

PS8.3. A 1.00 liter container holds 1.06 moles of H_2 and 1.57 moles of CO at a temperature of 162°C . At this temperature, the following reaction occurs,



After equilibrium is established, analysis shows 0.200 moles of CH_3OH in the container. Calculate the $[\text{CO}]_{\text{eq}}$, $[\text{H}_2]_{\text{eq}}$ and K_c .

PS8.4. The following reaction,



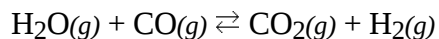
occurs at 298K. If 2.00 mol of HI are placed into a 1.00 liter container and permitted to react, at equilibrium it is found that 20.0 % of the HI has decomposed. Calculate K_c and K_p .

PS8.5. A 0.622 gram quantity of COBr_2 is sealed in a glass bulb of 0.100 L volume and heated to a temperature of 73°C . At 73°C the COBr_2 partially decomposes according to the equation



for which $K_c = 0.190$. Calculate the concentration of each species at 73°C .

PS8.6. The equilibrium constant, K_p , for the reaction



is 7.31. Calculate the partial pressure of all species at equilibrium for each of the following original mixtures:

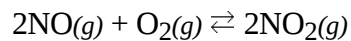
- a) 1.0 atm of CO and 1.0 atm of H_2O .

PS8.6. (CONTINUED)

b) 1.0 atm of CO, 1.0 atm of H₂O and 1.00 atm of H₂.

c) 1.0 atm of H₂ and 1.0 atm of CO₂.

PS8.7. At 1000 K the equilibrium constant, K_c , for the reaction



is 0.833. Calculate the concentrations of all species at equilibrium when 0.200 moles of NO_2 are placed in a 2.00 L container at 1000 K.

PS8.8. The equilibrium constant, K_p , for the reaction



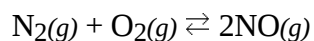
is 6.25 at 25 °C and $\Delta H^\circ = 34.4 \text{ kJ}$. Calculate the magnitude of the equilibrium constant at 50 °C.

PS8.9. Given the reaction



A 10.0 liter vessel at 298 K initially contains a sample of XeF_4 at 0.750 atm. After the reaction achieves equilibrium, the total pressure in the vessel is 1.95 atm. Calculate K_p from this data.

PS8.10. The equilibrium constant, K_c , for the reaction



is 2.50×10^{-6} at a particular temperature. If the $[\text{N}_2]_0 = 2.00 \text{ M}$, the $[\text{O}_2]_0 = 1.00 \text{ M}$ and the $[\text{NO}]_0 = 0 \text{ M}$, calculate the equilibrium concentration of all species.