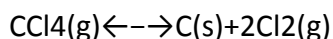


Answer on Question #63428, Chemistry / General Chemistry

Chapter 15 (15.87)

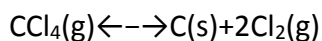
At 700 K the equilibrium constant for the reaction



is $K_p = 0.76$. A flask is charged with 2.00 atm of CCl_4 , which then reaches equilibrium at 700 K.

- 1) What fraction of the CCl_4 is converted into C and Cl_2 ?
- 2) What is the partial pressure of CCl_4 at equilibrium?
- 3) What is the partial pressure of Cl_2 at equilibrium?

Solution:



..... p_{CCl_4} p_{Cl_2}

initial.....2.00.....0

change.....-x.....+2x

equil.....2.00-x.....2x

$$K_p = \frac{(p_{\text{Cl}_2})^2}{p_{\text{CCl}_4}}$$

$$0.76 = \frac{(2x)^2}{2.00-x}$$

$$1.52 - 0.76x = 4x^2$$

$$x = 0.529$$

Change in pressure of $\text{CCl}_4 = 0.529$ atm

- 1) $0.529 \text{ atm} / 2.00 \text{ atm} = 0.265$
- 2) $p_{\text{CCl}_4} = 2.00 - 0.529 = 1.471 \text{ atm}$
- 3) $p_{\text{Cl}_2} = 2(0.529) = 1.058 \text{ atm}$

Answer: 1) 0.265; 2) 1.471 atm; 3) 1.058 atm