



$\left\{ \begin{array}{l} K_c \\ \downarrow \\ \text{concentrations} \end{array} \right.$

$$[N_2O_4]_{eq} = \frac{n_0(1-\alpha)}{V}$$

$$[NO_2]_{eq} = \frac{2n_0\alpha}{V}$$

$$K_c = \frac{[NO_2]_{eq}^2}{[N_2O_4]_{eq}} = \frac{4\alpha^2}{1-\alpha} \frac{n_0}{V}$$

$\left\{ \begin{array}{l} K_p \\ \downarrow \\ \text{partial pressures} \end{array} \right.$

$$x_{NO_2} = \frac{2n_0\alpha}{n_0(1+\alpha)} = \frac{2\alpha}{1+\alpha}$$

$$x_{N_2O_4} = \frac{n_0(1-\alpha)}{n_0(1+\alpha)} = \frac{1-\alpha}{1+\alpha}$$

$$\downarrow$$

$$P_{NO_2} = \frac{2\alpha}{1+\alpha} \cdot P_T$$

$$P_{N_2O_4} = \frac{1-\alpha}{1+\alpha} \cdot P_T$$

$$\downarrow$$

$$K_p = \frac{P_{NO_2}^2}{P_{N_2O_4}} = \frac{4\alpha^2}{1-\alpha^2} \cdot P_T$$