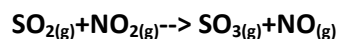


#68498 Chemistry, Other

A student placed the same chemical amount of $\text{SO}_{2(g)}$ and $\text{NO}_{2(g)}$ into a 1.0 L container. At equilibrium, the concentration of both $\text{SO}_{3(g)}$ and $\text{NO}_{(g)}$ was 0.30 mol/L. What was the equilibrium concentration of $\text{SO}_{2(g)}$ and $\text{NO}_{2(g)}$? $K_c = 9.5$



Answer:

	SO_2	NO_2	NO	SO_3
Initial	0.3	0.3	0	0
Change	-x	-x	+x	+x
Equilibrium	0.3-x	0.3-x	0+x	0+x

$$K_{eq} = \frac{[\text{NO}][\text{SO}_3]}{[\text{SO}_2][\text{NO}_2]}$$

$$9.5 = \frac{x^2}{[0.3 - x][0.3 - x]}$$

$$9.5 = \frac{x^2}{[0.3 - x][0.3 - x]}$$

$$x = 0.23$$

Therefore, equilibrium concentrations will be:

	SO_2	NO_2	NO	SO_3
Equilibrium	0.07	0.07	0.23	0.23