

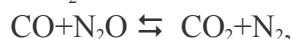


SAPIENZA
UNIVERSITÀ DI ROMA

International Medical School
Course of Chemistry and Introduction to Biochemistry
Academic Year 2014-2015

Homeworks: Reactions at equilibrium (see lecture 6)

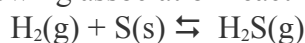
1. Some N_2 is filling in a box of 4.12 L at 500K and 1 atm. Later on 0.5 mol of CO and 0.5 mol of N_2O are inserted. At this temperature the following reaction is taking place:



with $K_c = 1.5 \cdot 10^{-2}$. Calculate the composition of the gaseous mixture at equilibrium.

2. A box of 5L is filled in with 103g of a mixture made by equal volumes of SO_2Cl_2 and Cl_2 . At equilibrium the following values are measured: $T = 300K$ and $P = 5.33atm$. Calculate K_c for the following dissociation reaction: $SO_2Cl_2 \rightleftharpoons SO_2 + Cl_2$
3. Calculate the dissociation coefficient α of the reaction $2HI \rightleftharpoons H_2 + I_2$, when 2 mol of HI are placed in a cylinder of 1L at $450^\circ C$. It is known that K_c for the equilibrium of association at the same T is 50.

4. At $100^\circ C$ the following association reaction occurs with $K_c = 0.068$:



Should 0.2 mol of H_2 and 1 mol of S be heated at $100^\circ C$ in a sealed flask of 1L, which value of P_{H_2S} will be measured at equilibrium?