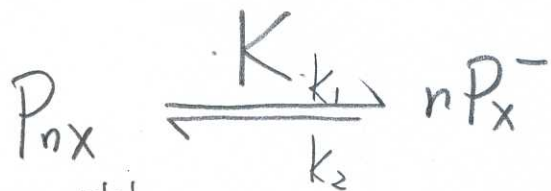


H.W. 5.



at equilibrium

$$k_1 [P_{nx}] = k_2 [P_x^-]^n$$

$$\Rightarrow \frac{k_1}{k_2} = K = \frac{[P_x^-]^n}{[P_{nx}]}$$

$$\Rightarrow [P_x^-] = (K [P_{nx}])^{1/n}$$

n initiator molecules make 1 inactive P_{nx}

$$[P_x^-] + n [P_{nx}] = [I]_0$$

Since P_{nx} dissociate slightly. $\Rightarrow [P_x^-] \ll [P_{nx}]$
($K \ll 1$)

$$\Rightarrow n [P_{nx}] = [I]_0 \Rightarrow [P_{nx}] = \frac{I_0}{n}$$

$$\begin{aligned} r_p &= -\frac{1}{V} \frac{dM}{dt} = k_p [M] [P_x^-]^n \\ &= k_p [M] (K [P_{nx}])^{1/n} \\ &= k_p [M] \left(K \left(\frac{I_0}{n} \right) \right)^{1/n} \end{aligned}$$

✱