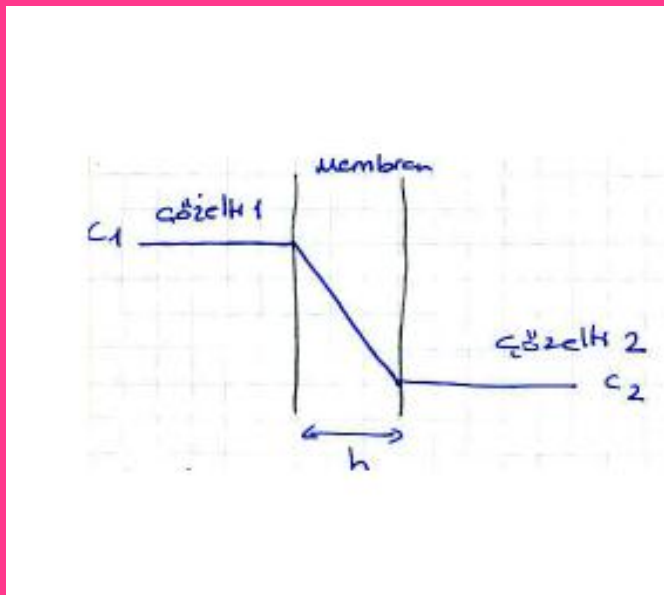


7) Bir Membrandan Pasif Difüzyon Yatışkın koşul



Akı:

$$J = -D \frac{dC}{dx} = -D \left[\frac{C_2 - C_1}{h} \right] = \frac{D}{h} (C_1 - C_2)$$

h/D difüzyon direncini (R') verir.

$$J = \frac{(C_1 - C_2)}{R'}$$

R' arttıkça akı azalır.

- Örnek 3) Özellikleri aşağıda verilen membrandan 1 saatte geçen madde miktarını bulunuz. $D=1 \cdot 10^{-10} \text{ cm}^2/\text{s}$, $h=2 \cdot 10^{-3} \text{ cm}$, $C_1=0.5 \text{ mol/L}$, $C_2=0$, $A=10 \text{ cm}^2$

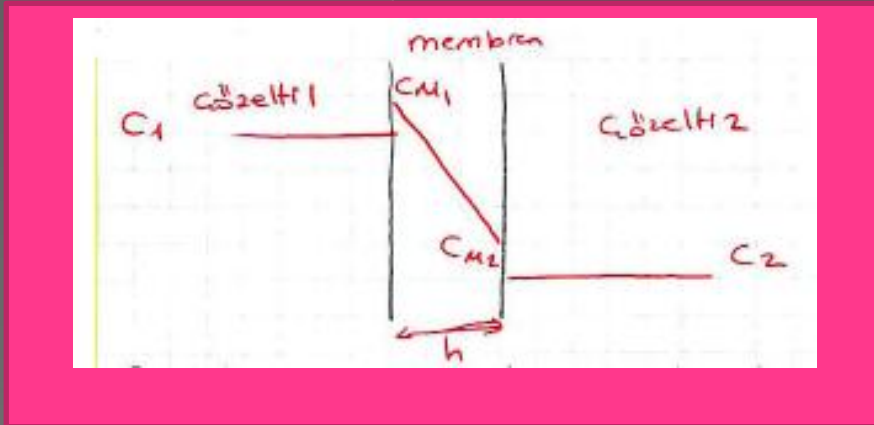
- Çözüm

$$\bar{J} = \frac{D}{h} (C_2 - C_1) = \frac{1 \times 10^{-10} \text{ cm}^2/\text{s}}{2 \times 10^{-3} \text{ cm}} \left(0.5 \frac{\text{mol}}{\text{L}} \times \frac{1 \text{ L}}{10^3 \text{ cm}^3} \right)$$
$$\bar{J} = 2.5 \times 10^{-14} \frac{\text{mol}}{\text{s cm}^2}$$

Aktarılan akım:

$$J = 2.5 \times 10^{-14} \frac{\text{mol}}{\text{s cm}^2} \times \frac{3600 \text{ s}}{1 \text{ h}} \times 10 \text{ cm}^2$$
$$J = 9 \times 10^{-7} \frac{\text{mol}}{\text{h}}$$

Çözünen molekül çözeltilerde ve membranda eşit olarak çözünmezse



Aki

$$J = -D \left(\frac{C_{M2} - C_{M1}}{h} \right)$$

$$\frac{C_{M1}}{C_1} = K_{M1}$$

$$K_{M2} = \frac{C_{M2}}{C_2}$$

$$J = -D \left[\frac{C_{M2} - C_{M1}}{h} \right] = -D \left[\frac{K_{M2} C_2 - K_{M1} C_1}{h} \right]$$

$$K_{M1} \approx K_{M2} \approx K_p$$

$$J = - \left(\frac{D K_p}{h} \right) (C_2 - C_1)$$