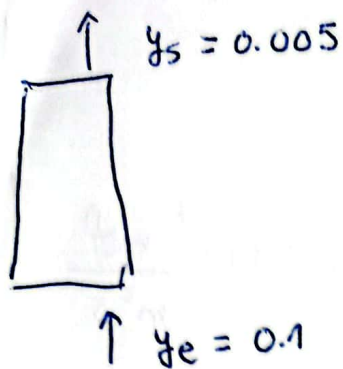


1.



$$K_y = 5 \times 10^{-5} \frac{\text{kmol}}{\text{s m}^2}$$

20% resistⁿ f. gas side

$$P_A^* = H x_A \rightarrow y_A^* = m x_A$$

$$m = 1.5$$

$$a) \quad \frac{1}{K_y} = \frac{1}{k_y} + \frac{m}{k_x}$$

$$\frac{\frac{1}{k_y}}{\frac{1}{K_y}} = 0.2$$

$$\frac{K_y}{k_y} = 0.2$$

$$k_y = \frac{5 \times 10^{-5}}{0.2} = 2.5 \times 10^{-4} \frac{\text{kmol}}{\text{s m}^2}$$

$$\frac{\frac{m}{k_x}}{\frac{1}{K_y}} = 0.8$$

$$\frac{K_y \cdot m}{k_x} = 0.8$$

$$k_x = \frac{5 \times 10^{-5} \cdot 1.5}{0.8} = 9.38 \times 10^{-5} \frac{\text{kmol}}{\text{s m}^2}$$

$$b) \quad k_y (y_A - y_{Ai}) = k_x (x_{Ai} - x_{Ao})$$

top & below

$$k_y (0.005 - m x_{Ai}) = k_x x_{Ai}$$

$$0.005 k_y = x_{Ai} (k_x + m k_y)$$

$$x_{Ai} = \frac{0.005 k_y}{k_x + m k_y} = 2.67 \times 10^{-3}$$

$$y_{Ai} = m x_{Ai} = 4 \times 10^{-3}$$

$$c) N_A = K_y (y - y^*) = 5 \times 10^{-5} \times 0.005 = 2.5 \times 10^{-7} \frac{\text{kmol}}{\text{m}^2 \text{s}}$$

d) Sim, porque 80% de resistência está na fase líquida.

$$e) \frac{k_{21}}{k_{20}} = 6 = \frac{Ha}{\tanh Ha} \approx Ha$$

$$36 = \frac{\delta^2 k_1}{D_A}$$

$$k_L^0 = \frac{D_A}{\delta}$$

$$k_L^0 = k_x^0 / c_L$$

$$k_L^0 = 9.38 \times 10^{-5} \frac{\text{kmol}}{\text{m}^2 \text{s}} \times \frac{18}{1000} \frac{\text{m}^3}{\text{kg}} \frac{\text{kg}}{\text{kmol}}$$

$$k_L^0 = 1.7 \times 10^{-6} \text{ m/s}$$

$$k_1 = 0.034 \text{ s}^{-1}$$

$$\delta = 1.78 \times 10^{-3} \text{ m}$$

2. $y_A = 0.75 \quad x_A$ $L \rightarrow G$

$x_A = 0.9 \quad y_A = 0.45$

$k_y = 2 \text{ mol/h m}^2$ 70% resist f. gasosa

a) $K_y = ?$ $\frac{1}{k_y} = 0.7$ $K_y = 1.4 \frac{\text{mol}}{\text{h m}^2}$

b) $N_A = ?$ $N_A = K_y (y_A - y_A^*)$

$N_A = 1.4 (0.45 - 0.75 \times 0.9) = -0.315 \frac{\text{mol}}{\text{h m}^2}$
 transf. $L \rightarrow G$

c) y_{Ai} e $x_{Ai} = ?$

$N_A = K_y (y_A - y_{Ai}) \Rightarrow -0.315 = 2 (0.45 - y_{Ai})$
 $y_{Ai} = 0.61$

$x_{Ai} = \frac{y_{Ai}}{0.75} = \frac{0.61}{0.75} = 0.81$

3. $K_{Ga} \left(\frac{\text{kmol}}{\text{m}^3 \text{s bar}} \right)$ zero elevada
 0.066 0.085

$H = 0.745 \text{ bar}$

$\frac{1}{K_{Ga}} = \frac{1}{K_{Ga}} + \frac{H}{C_L k_{La}} \quad (1)$

k_{Ga} e $k_{La} = ?$

se conc. ácido elevada

Abs + Reac. química - Resist f. líquido nula

Então $k_{Ga} = K_{Ga} = 0.085 \frac{\text{kmol}}{\text{m}^3 \text{s bar}}$

Substituindo na eq.(1) e com $C_L = 1000/18 \frac{\text{kmol}}{\text{m}^3}$

$k_{La} = 3.96 \times 10^{-3} \text{ s}^{-1}$