

Home work

February 5, 2018

- Q1

For the system 2-propanol (1)/water(2), the following parameter values for the Wilson equation:

$$a_{12} = 437.98 ; a_{21} = 1,238.00 \text{ cal mol}^{-1}$$

$$V_1 = 76.92 ; V_2 = 18.07 \text{ cm}^3 \text{ mol}^{-1}$$

Plot:

1. P-xy and y-x for $T = 353.15 \text{ K}$
2. T-xy and y-x for $P = 101.33 \text{ kPa}$

Calculate:

1. P and y_k , for $T = 353.15 \text{ K}$ and $x_1 = 0.25$
2. P and y_k , for $T = 353.15 \text{ K}$ and $y_1 = 0.6$
3. T and y_k , for $P = 101.33 \text{ kPa}$ and $x_1 = 0.85$
4. T and x_k , for $P = 101.33 \text{ kPa}$ and $y_1 = 0.4$
5. P^{az} , the azeotropic pressure, and $x_1^{az} = y_1^{az}$, the azeotropic composition for $T = 353.15 \text{ K}$

- Q2

1. Flash calculation for the system n-hexane/ethanol/methylcyclopentane (MCP)/benzene at 334.15 K and 1 atm :

Feed composition is as follows:

n-hexane (1): 0.250; Ethanol (2): 0.4; MCP (3): 0.2; Benzene (4): 0.15

Use UNIFAC method with ChemSep for calculation