

Chap II : Programme 2-naire L-V

I - Généralités

Miscibilité des composés lipaols

Polarité

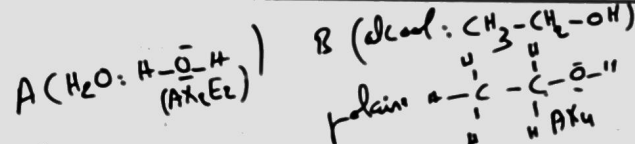
* Composés polaires : $\vec{\mu}_R = \sum \vec{\mu}_i \neq 0$

* Composés apolaires : $\vec{\mu}_R = \sum \vec{\mu}_i = 0$
(symétriques)

Praticité

Composés protiques : donneurs de H^+ : peut établir des L. y. hydrogène

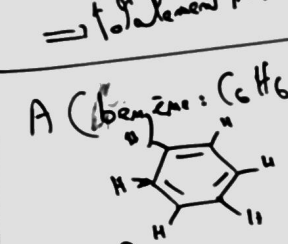
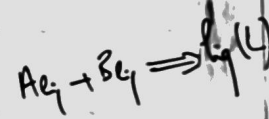
Composés aprotiques : ne donneurs de H^+ : ne peut pas établir des L. y. hydrogène



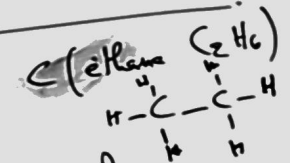
polaires protiques

aprotiques

semblables
 $\Rightarrow$ totalement miscibles

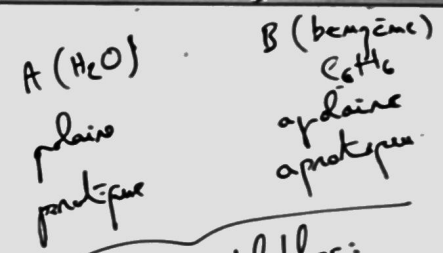


apolaires aprotiques

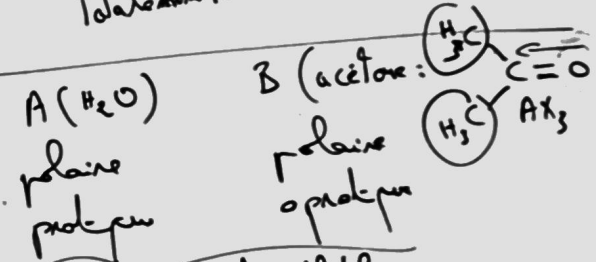


polaires aprotiques

semblables donc totalement miscibles



non semblables :
totalement non miscibles : $Al_2 + Be_2$



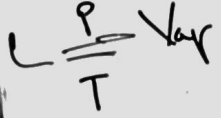
partiellement semblables
donc partiellement miscibles
 $(Al_2 + Be_2) \begin{cases} L_1 : liq riche en A \\ L_2 : liq riche en B \end{cases}$

Chap II : Diagramme binaire L-V

I - Généralités

Composition du mélange

Vap (V)
liq (L)



Fraction molaire X_i
 phase liquide

$$X_A = \frac{n_A^L}{n_A^L + n_B^L} = \frac{m_A^L}{m}$$

$$X_B = \frac{n_B^L}{n_A^L + n_B^L} = \frac{m_B^L}{m}$$

$$X_A + X_B = 1$$

phase vapeur

$$m^L = m_A^L + m_B^L$$

$$X_A^V = \frac{n_A^V}{n_A^V + n_B^V} = \frac{m_A^L}{m_A^L + m_B^L}$$

$$X_B^V = \frac{n_B^V}{n_A^V + n_B^V} = \frac{m_B^L}{m_A^L + m_B^L}$$

$$\text{avec } T_A + T_B = 1$$

Fraction massique W_i

phase liquide

$$W_A = \frac{m_A^L}{m_A^L + m_B^L} = \frac{m_A^L}{m^L}$$

$$W_B = \frac{m_B^L}{m_A^L + m_B^L} = \frac{m_B^L}{m^L}$$

phase vapeur

$$m^V = m_A^V + m_B^V$$

$$W_A^V = \frac{m_A^V}{m_A^V + m_B^V} = \frac{m_A^L}{m_A^L + m_B^L}$$

$$W_B^V = \frac{m_B^V}{m_A^V + m_B^V} = \frac{m_B^L}{m_A^L + m_B^L}$$

avec $W_A^V + W_B^V = 1$

$$W_B = f(X_B)$$

$$W_B = \frac{X_B}{X_B + (1 - X_B) \frac{n_B}{n_A}}$$

formule de conversion

$$X_B = f(W_B)$$

$$X_B = \frac{m_B^L}{m_B^L + m_A^L}$$

$$X_B = \frac{\frac{m_B^L}{n_B}}{\frac{m_B^L}{n_B} + \frac{m_A^L}{n_A}}$$

$$X_B = \frac{m_B^L}{m_B^L + m_A^L \cdot \frac{n_B}{n_A}}$$

$$X_B = \frac{W_B}{W_B + (1 - W_B) \frac{n_B}{n_A}}$$

$$X_B = \frac{W_B}{W_B + (1 - W_B) \frac{n_B}{n_A}}$$

$$T_B = \frac{W_B^V}{W_B^V + (1 - W_B^V) \frac{n_B}{n_A}}$$

$$= \frac{\frac{m_B^L}{m^L}}{\frac{m_B^L}{m^L} + \frac{m_A^L}{m^L} \cdot \frac{n_B}{n_A}}$$