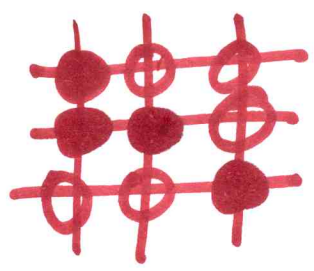


N_0 - Avogadro No.

$$X_A = \frac{N_A}{N_0}; \quad X_B = \frac{N_B}{N_0}; \quad X_A + X_B = 1.$$

$$\Rightarrow N_A + N_B = N_0$$



E_{AA}, E_{BB}, E_{AB}

$$E = P_{AB} E_{AB} + P_{AA} E_{AA} + P_{BB} E_{BB}$$

ζ - Coordination number

$$N_A \zeta = P_{AB} + 2 P_{AA} \Rightarrow P_{AA} = \frac{N_A \zeta - P_{AB}}{2}$$

$$N_B \zeta = P_{AB} + 2 P_{BB} \Rightarrow P_{BB} = \frac{N_B \zeta - P_{AB}}{2}$$

$$E = P_{AB} E_{AB} + \left(\frac{N_{AS}}{2} - \frac{P_{AB}}{2} \right) E_{AA} + \left(\frac{N_{BS}}{2} - \frac{P_{AB}}{2} \right) E_{BB}$$

$$= P_{AB} \left(E_{AB} - \frac{E_{AA} + E_{BB}}{2} \right) + \frac{N_{AS}}{2} E_{AA} + \frac{N_{BS}}{2} E_{BB}$$

$$\Delta E = E - \frac{N_{AS}}{2} E_{AA} - \frac{N_{BS}}{2} E_{BB}$$

$$= \underbrace{P_{AB}}_{\cdot B \cdot A} \left(E_{AB} - \frac{E_{AA} + E_{BB}}{2} \right)$$

$$P_{AB} = X_A X_B + X_B X_A = 2 X_A X_B \frac{N_{0S}}{2}$$

$$P_{AA} = X_A^2 \quad P_{BB} = X_B^2$$

$$\Delta E = \chi_A \chi_B N_0 \zeta \left(E_{AB} - \frac{E_{AA} + E_{BB}}{2} \right)$$

$$= \Omega \chi_A \chi_B$$

$$\Rightarrow \boxed{\Omega = N_0 \zeta \left(E_{AB} - \frac{E_{AA} + E_{BB}}{2} \right)}$$