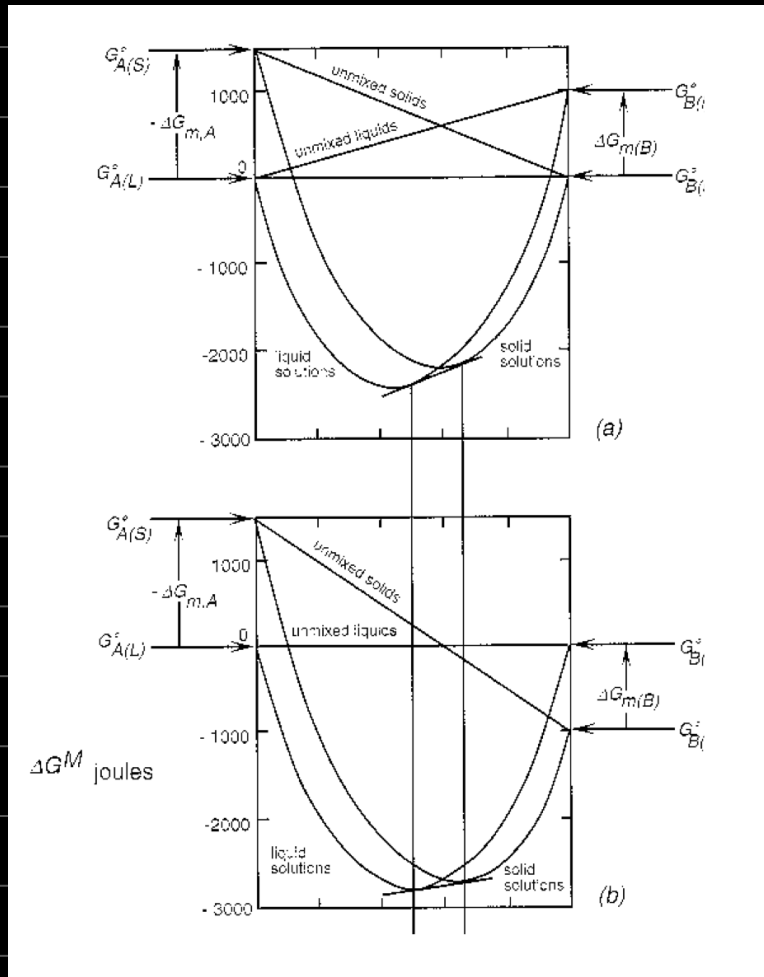


신소재공학과 2020학년도 회람을



정규 용액 모델

$$\Delta G = \Delta H - T \Delta S$$

$$\Delta G^A = x_A^0 G_A^0 + x_B^0 G_B^0 + RT (x_A \ln x_A + x_B \ln x_B) + \int x_A x_B + x_A x_B L_{AB}^A$$

$$\Delta G^B = x_A^0 G_A^0 + x_B^0 G_B^0 + RT (x_A \ln x_A + x_B \ln x_B) + \int x_A x_B + x_A x_B L_{AB}^B$$

$$\frac{d(\Delta G^A)}{dx_B} = \frac{d(\Delta G^B)}{dx_B} \approx \text{한쪽에서만 다함}$$

$$(x_A + x_B = 1)$$

$$\frac{dG_m^\alpha}{d\lambda_B} = -\Delta G_A^\alpha + \Delta G_B^\alpha + RT \left(-\ln(1-\lambda_B) - (1-\ln\lambda_B + 1) \right) + (-\lambda_B + (1-\lambda_B)) L_{AB}^\alpha$$

$$= -\Delta G_A^\alpha + \Delta G_B^\alpha + RT \left(-\ln(1-\lambda_B) + \ln\lambda_B \right) + (1-2\lambda_B) L_{AB}^\alpha$$

$$\frac{dG_m^\beta}{d\lambda_B} = -\Delta G_A^\beta + \Delta G_B^\beta + RT \left(-\ln(1-\lambda_B) + \ln\lambda_B \right) + (1-2\lambda_B) L_{AB}^\beta$$

$$\left. \frac{dG_m^\alpha}{d\lambda_B} \right|_{\lambda=\lambda_B^\alpha} - \left. \frac{dG_m^\beta}{d\lambda_B} \right|_{\lambda=\lambda_B^\beta}$$

$$= -(\Delta G_A^\alpha - \Delta G_A^\beta) + (\Delta G_B^\alpha - \Delta G_B^\beta) + RT \ln \left(\frac{\lambda_B^\alpha}{\lambda_B^\beta} - \frac{(1-\lambda_B^\beta)}{(1-\lambda_B^\alpha)} \right) + \sqrt{2}(1-2\lambda_B^\alpha) - \sqrt{2}(1-2\lambda_B^\beta)$$

$$= 0$$

$\lambda_B^\alpha, \lambda_B^\beta, \lambda_B^\gamma, \lambda_B^\delta$, reference state on independent.