(2)

$$\underbrace{R\left(x_A \ln x_A + x_B \ln x_B\right) T}_{\| \quad \text{Eq. } T}$$

$$\Delta G_{mix,m} + RT\left(x_A \ln p_A^{\alpha} + x_B \ln p_B^{\alpha}\right) = 0 \qquad 5)$$

$$\text{Eq.}\, T + RT\left[x_A\left(\frac{\Delta H_A}{R}\left(\frac{1}{T_A} - \frac{1}{T}\right)\right) + RT\, x_B \frac{\Delta H_b}{R}\left(\frac{1}{T_b} - \frac{1}{T}\right)\right] = 0$$

$$C.T + \frac{x_A . T \Delta H_a}{T_a} - x_A \Delta H_a + \frac{x_B . T \Delta H_b}{T_b} - x_b \Delta H_{sol} = 0$$

(3)

$$C \cdot T + x_a \frac{T \cdot \Delta h_a}{T_a} - x_a \Delta u_a + \frac{T \Delta u_b}{T_b} - x_a \frac{T \Delta u_b}{T_b} - \Delta u_b + x_a \Delta u_{b_0}$$

$$C\frac{T}{T} + x_a T\left(\frac{\Delta h_a}{T_a} - \frac{\Delta u_b}{T_b}\right) - x_a\left(\Delta u_a - \Delta u_b\right) + \frac{T \Delta u_b}{T} - \Delta u_b = 0$$

$$T\left(\cancel{\phi} + x_a\left(\frac{\Delta u_a}{T_a} - \frac{\Delta u_b}{T_b}\right) + \frac{\Delta u_b}{T_b}\right) = \Delta u_b + x_a\left(\Delta u_a - \Delta u_b\right)$$

$$T = \frac{\Delta u_b + x_a\left(\Delta u_a - \Delta u_b\right)}{\cancel{\phi} + x_a\left(\frac{\Delta u_a}{T_a} - \frac{\Delta u_b}{T_b}\right) + \frac{\Delta u_b}{T_b}}$$

$$T = \frac{\Delta u_b + x_a\left(\Delta u_a - \Delta u_b\right)}{\Delta s_b + x_a\left(\Delta s_a - \Delta s_b\right)}$$