$$T(S,V,N)=\left(\frac{\partial U}{\partial S}\right)_{V,N} \qquad p(S,V,N)=-\left(\frac{\partial U}{\partial V}\right)_{S,N} \qquad \left(\frac{\partial \mu}{\partial T}\right)_p=-S_m \qquad \mu_i(S,V,N)=\left(\frac{\partial U}{\partial n_i}\right)_{S,V,n_{j\neq i}}$$

$$\frac{1}{T}(U,V,N)=\left(\frac{\partial S}{\partial U}\right)_{V,N} \qquad \frac{p}{T}(U,V,N)=\left(\frac{\partial S}{\partial V}\right)_{U,N} \qquad \frac{\mu_i}{T}(U,V,N)=-\left(\frac{\partial S}{\partial n_i}\right)_{U,V,n_{j\neq i}}$$

$$c_p=\frac{T}{n}\left(\frac{\partial S}{\partial T}\right)_{p,n}=\frac{1}{n}\left(\frac{\partial H}{\partial T}\right)_{p,n} \qquad \Delta H=Q=c_p n\Delta T \qquad c_V=\frac{T}{n}\left(\frac{\partial S}{\partial T}\right)_{V,n}=\frac{1}{n}\left(\frac{\partial U}{\partial T}\right)_{V,n} \qquad Q=c_V n\Delta T$$

$$\alpha=\frac{1}{V}\left(\frac{\partial V}{\partial T}\right)_{p,n}=\frac{1}{v}\left(\frac{\partial v}{\partial T}\right)_{p,n} \qquad \frac{\Delta V}{V}=\alpha\Delta T \qquad \kappa_T=\frac{-1}{V}\left(\frac{\partial V}{\partial p}\right)_{T,n}=\frac{-1}{v}\left(\frac{\partial v}{\partial p}\right)_{T,n} \qquad \frac{\Delta V}{V}=\kappa_T\Delta p$$

$$G=H-TS \qquad H=U+pV \qquad F=U-TS \qquad \Delta\mu=V_m\Delta p \qquad \frac{dp}{dT}=\frac{\Delta_{trs}S}{\Delta_{trs}V} \qquad \frac{dp}{dT}=\frac{\Delta_{trs}H}{T\Delta_{trs}V}$$

$$\frac{d\ln p}{dT}=\frac{\Delta_{trs}H}{RT^2} \qquad \frac{d\ln p}{d\,1/T}=-\frac{\Delta H}{R} \qquad \ln\frac{p}{p_0}=-\frac{\Delta H}{R}\left(\frac{1}{T}-\frac{1}{T_0}\right) \qquad p=p_A+p_B \qquad p_A=x_A p_A^*$$

$$p_A=x_A K_A \qquad p=x_A\cdot p_A^*+x_B\cdot p_B^*=p_B^*+x_A\left(p_A^*-p_B^*\right) \qquad p=\left(\frac{y_A}{p_A^*}+\frac{y_B}{p_B^*}\right)^{-1}=\frac{p_A^* p_B^*}{p_A^*+y_A\left(p_B^*-p_A^*\right)}$$

$$n_\alpha\cdot l_\alpha=n_\beta\cdot l_\beta \qquad \mu_A^*(g)=\mu_A^*(l)+RT\ln x_A \qquad \ln(1-x_B)=\frac{\Delta_{vap}H}{R}\left(\frac{1}{T}-\frac{1}{T^*}\right) \qquad x_B=\frac{\Delta_{vap}H}{R}\frac{\Delta T}{T^{*2}}$$

$$\Delta T=K_b m_B \qquad K_b=\frac{RT^{*2}}{\Delta_{vap}H}M \qquad \ln(1-x_B)=\frac{\Delta_{fus}H}{R}\left(\frac{1}{T}-\frac{1}{T^*}\right) \qquad \Delta T=K_f m_B \qquad K_f=\frac{RT^{*2}}{\Delta_{fus}H}M$$

$$\ln x_B=-\frac{\Delta_{fus}H}{R}\left(\frac{1}{T}-\frac{1}{T^*}\right) \qquad \Pi=cRT \qquad p_{in}=p_{out}+\frac{2\gamma}{r} \qquad p=p^*\exp\left(\frac{2\gamma V_m}{rRT}\right)$$

$$\rho gh=\frac{2\gamma}{r}\cos\vartheta \qquad X_i=\left(\frac{\partial X}{\partial n_i}\right)_{T,p,n_j} \qquad \Delta G_{mix}=RT\sum_i n_i\ln a_i \qquad \Delta S_{mix}=-T\sum_i n_i\ln a_i$$

$$\Delta_r G^\circ=-RT\ln K \qquad \Delta_r G=\Delta_r G^\circ+RT\ln Q \qquad \frac{d\ln K}{d\,1/T}=-\frac{\Delta_r H^\circ}{R} \qquad \ln\frac{K_1}{K_2}=-\frac{\Delta_r H^\circ}{R}\left(\frac{1}{T_1}-\frac{1}{T_2}\right)$$

$$\frac{1}{A}\frac{\partial n_i}{\partial t}=-D_i\frac{\partial c_i}{\partial z} \qquad \frac{1}{A}\frac{\partial Q}{\partial t}=-\kappa\frac{\partial T}{\partial z} \qquad \left(\frac{\partial c}{\partial t}\right)=D\left(\frac{\partial^2 c}{\partial z^2}\right) \qquad c(t)=\frac{n_0}{A}\frac{1}{\sqrt{\pi Dt}}\exp\left(-\frac{z^2}{4Dt}\right)$$

$$\left\langle x^2\right\rangle^{1/2}=\sqrt{2Dt} \qquad \left(\frac{\partial c}{\partial t}\right)=D\left(\frac{\partial^2 c}{\partial z^2}\right)-v_{közeg}\left(\frac{\partial c}{\partial z}\right) \qquad \left\langle r^2\right\rangle^{1/2}=\sqrt{4Dt} \qquad \left\langle r^2\right\rangle^{1/2}=\sqrt{6Dt}$$

$$\eta=K\left(\rho_g-\rho_f\right)t \qquad \frac{dV}{dt}=\frac{\left(p_1^2-p_2^2\right)\pi r^4}{16\cdot l\cdot\eta\cdot p_0} \qquad c(t)=\frac{n_0}{A}\frac{1}{2\sqrt{\pi Dt}}\exp\left(-\frac{z^2}{4Dt}\right) \qquad D=\frac{kT}{6\pi\eta r}$$

$$\frac{dV}{dt}=\frac{(p_1-p_2)\pi r^4}{8\cdot l\cdot\eta} \qquad dU=TdS-pdV+\sum_i\mu_i dn_i \qquad dS=\frac{1}{T}dU+pdV-\sum_i\mu_i dn_i$$

$$0=SdT-VdP+\sum_{i=1}^{k}\mu_i\mathrm{d}n_i \qquad \mathrm{d}n_A=-\nu_A\mathrm{d}\xi \qquad \sum_{i=1}^{r}\nu_i A_i=0 \qquad \left(\frac{\partial\mu}{\partial p}\right)_T=V_m \qquad c_V\equiv\frac{T}{n}\left(\frac{\partial S}{\partial T}\right)_V$$

$$\Delta U=Q+W \qquad H=U+PV \qquad G=U-TS+PV \qquad dQ=TdS \qquad dW=-PdV \qquad F=U-TS$$