

Simple Phase Diagrams

Condition for Equilibrium



$$\mu_{\alpha}(T,P) = \mu_{\beta}(T,P)$$

Phase Boundary

$$\frac{dP}{dT} = \frac{\Delta S}{\Delta V} \quad (\text{Clapeyron Equation})$$

Solid-Liquid Equilibrium

$$\frac{dP}{dT} = \frac{\Delta H_{fus}}{T\Delta V_{fus}}$$

Solid-Gas or Liquid-Gas Equilibrium

$$\ln \frac{P_2}{P_1} = - \frac{\Delta H_{sub/vap}}{R} \left(\frac{1}{T_2} - \frac{1}{T_1} \right) \quad (\text{Clausius-Clapeyron Equation})$$