$$\ln\left(\frac{P_2}{P_1}\right) = \frac{\Delta H_{vap}}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$e^{\ln\left(\frac{P_2}{P_1}\right)} = e^{\frac{\Delta H_{vap}}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)}$$

$$\frac{P_2}{P_1} = e^{\frac{\Delta H_{vap}}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)}$$

$$P_2 = P_1 \cdot e^{\frac{\Delta H_{vap}}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)}$$

$$P_2 = 760\ \text{torr} \cdot e^{\frac{40700\ \text{J/mol}}{8.314\ \text{J/mol·K}}\left(\frac{1}{373\text{K}} - \frac{1}{323\text{K}}\right)}$$

$$= 99.8\ \text{torr}$$

$$\ln\left(\frac{P_2}{P_1}\right) = \frac{\Delta H_{vap}}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$\left(\frac{R}{\Delta H_{vap}}\right)\cdot\ln\left(\frac{P_2}{P_1}\right) = \left(\frac{R}{\Delta H_{vap}}\right)\left(\frac{\Delta H_{vap}}{R}\right)\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$\frac{1}{T_1} - \frac{1}{T_2} = \left(\frac{R}{\Delta H_{vap}}\right)\cdot\ln\left(\frac{P_2}{P_1}\right)$$

$$\frac{1}{T_1} - \frac{1}{T_2} + \frac{1}{T_2} = \left(\frac{R}{\Delta H_{vap}}\right)\cdot\ln\left(\frac{P_2}{P_1}\right) + \frac{1}{T_2}$$

$$\boxed{\frac{1}{T_1} = \left(\frac{R}{\Delta H_{vap}}\right)\cdot\ln\left(\frac{P_2}{P_1}\right) + \frac{1}{T_2}}$$

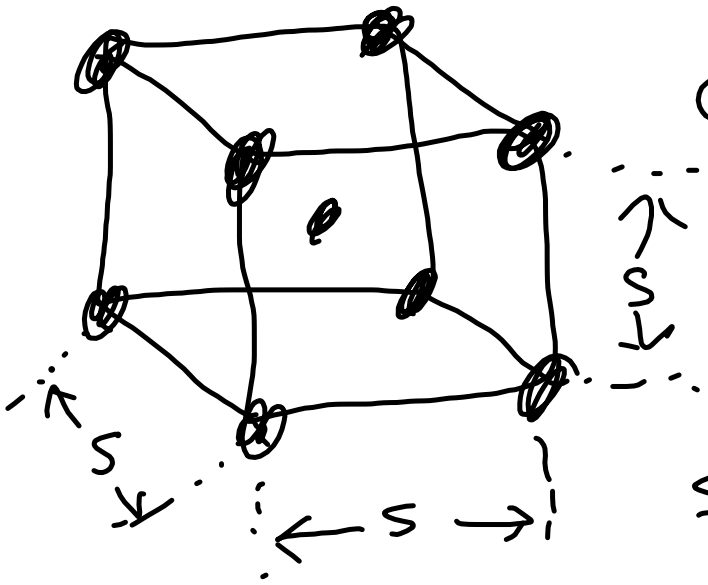
$$T_1 = \frac{1}{\left(\frac{R}{\Delta H_{vap}}\right)\cdot\ln\left(\frac{P_2}{P_1}\right) + \frac{1}{T_2}}$$

$$\ln\left(\frac{P_2}{P_1}\right) = \frac{\Delta H_{vap}}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$R \cdot \ln\left(\frac{P_2}{P_1}\right) = R \cdot \frac{\Delta H_{vap}}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$\frac{\Delta H_{vap}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)}{\left(\frac{1}{T_1} - \frac{1}{T_2}\right)} = \frac{R \cdot \ln\left(\frac{P_2}{P_1}\right)}{\left(\frac{1}{T_1} - \frac{1}{T_2}\right)}$$

$$\Delta H_{vap} = \frac{R \cdot \ln\left(\frac{P_2}{P_1}\right)}{\left(\frac{1}{T_1} - \frac{1}{T_2}\right)}$$



$$d = \frac{M}{V}$$

$$s = 2.866\ \text{Å} = 2.866 \times 10^{-8}\ \text{cm}$$

$$V = s^3$$

$$V = (2.866 \times 10^{-8}\ \text{cm})^3 = 2.354 \times 10^{-23}\ \text{cm}^3$$

$$M = \frac{55.85\ \text{g}}{1\ \text{mol}} \left(\frac{1\ \text{mol}}{6.022 \times 10^{23}\ \text{atoms}} \right) \left(\frac{2\ \text{atoms}}{1\ \text{unit cell}} \right)$$

$$= 1.855 \times 10^{-22}\ \frac{\text{g}}{\text{unit cell}}$$

$$d = \frac{M}{V} = \frac{1.855 \times 10^{-22}\ \text{g}}{2.354 \times 10^{-23}\ \text{cm}^3} = 7.880\ \frac{\text{g}}{\text{cm}^3}$$