

III - Construction du diagramme.

1) Courbe de sub: $A_{sd} \xrightleftharpoons[T]{P_{sd}^*} A_g$

$$\log \frac{P_{sd}^*}{P_0} = a - \frac{b}{T} = \frac{\Delta_{sub} H_m^*}{2.3 R T_{sub}^0} - \frac{\Delta_{sub} H_m^*}{2.3 R \cdot T}$$

2) Courbe de vaporisation: $A_{eq} \xrightleftharpoons[T]{P_{eq}^*} A_g$

$$\log \frac{P_{eq}^*}{P_0} = c - \frac{d}{T} = \frac{\Delta_{vap} H_m^*}{2.3 R T_{vap}^0} - \frac{\Delta_{vap} H_m^*}{2.3 R T}$$

3) Courbe de fusion: $A_{sd} \rightleftharpoons A_{liq}$

$$\frac{dP}{dT} = \frac{\Delta_{fus} H_m^*}{T \Delta_{fus} V_m}$$

N_m^* et V_m^* sont des volumes très proches

Car: fusion avec dilatation du volume: $\Delta_{fus} V_m > 0$ $\left(V_m^{*liq} > V_m^{*sd} \right)$ $\left(P_{sd}^* > P_{eq}^* \right)$

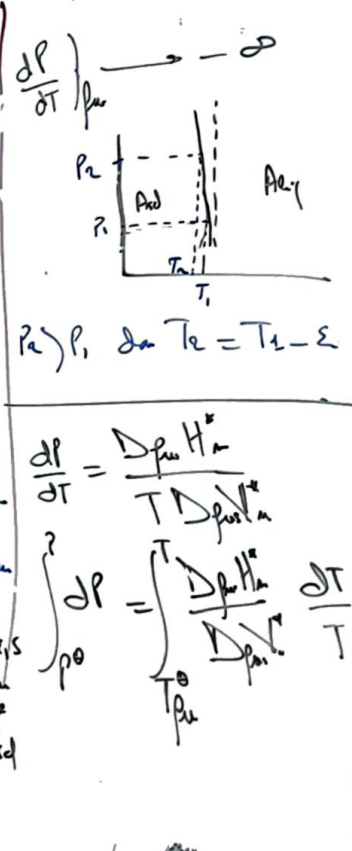
Ci cd $\Delta_{fus} V_m \rightarrow 0^+$

$\frac{dP}{dT} \Big|_{fus} \rightarrow +\infty$

$T_0 = T_1 + \varepsilon$

Car: fusion avec contraction du volume (H_2O) $\Delta_{fus} V_m < 0$ $\left(V_m^{*liq} < V_m^{*sd} \right)$ $\left(P_{eq}^* > P_{sd}^* \right)$

Ci cd $\Delta_{fus} V_m \rightarrow 0^-$



$$(P - P_0) = \frac{\Delta_{fus} H_m^*}{\Delta_{fus} V_m} \cdot \ln \frac{T}{T_0}$$

$$T = T_0 \exp \left[\frac{\Delta_{fus} V_m^*}{\Delta_{fus} H_m^*} (P - P_0) \right]$$

$1 m^3 = 10^3 L = 10^6 cm^3 = 10^6 ml$

$T (K)$

$\Delta_{fus} V_m^* : m^3 mol^{-1}$

$\Delta_{fus} H_m^* : J mol^{-1}$

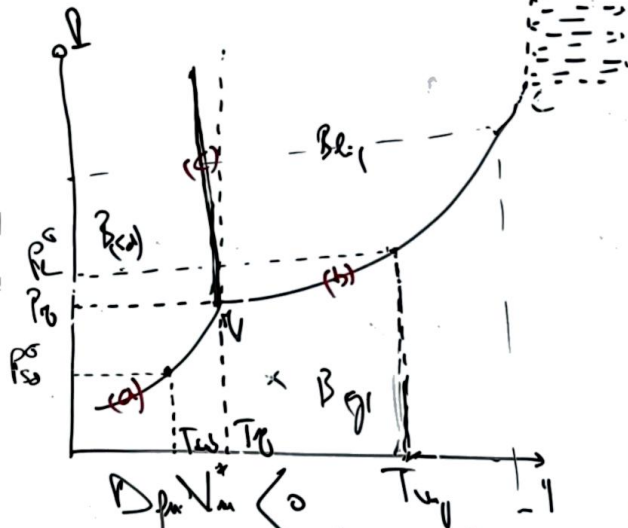
$(P - P_0) : Pa$

$P^0 = 1 bar = 10^5 Pa = 760 mmHg$

$P_{atm} = 1 atm = 1.013 bar = 760 mmHg$

$= 760 mmHg = 760 c. H$

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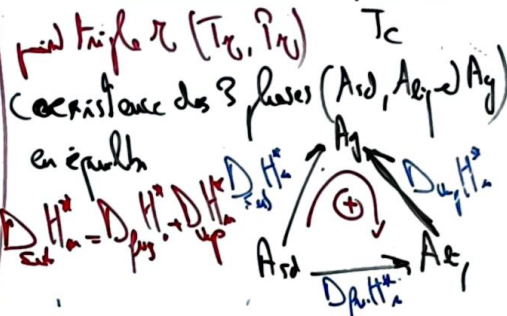
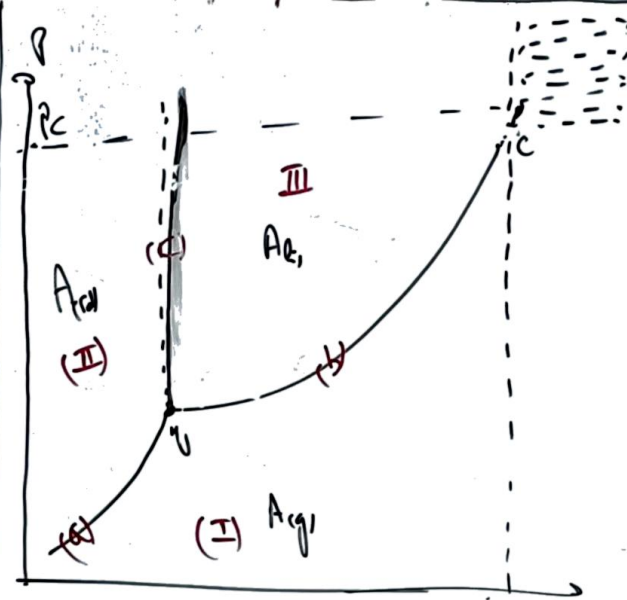


$$\Delta_{\text{fus}} V_m^* < 0$$

$$\left(\frac{\partial P}{\partial T}\right)_{\text{fus}} < 0$$

point critique (C)

pour $T > T_c$ ou ne peut pas
 $P > P_c$ distinguer entre
 le liquide et la phase vapeur
 → état hypercritique



$$T_c(T_c, P_c) : P_{\text{ss}} = P_c = P_t$$

$P \in$ à la courbe de sub :

$$\log \frac{P_{\text{ss}}}{P_0} = \log \frac{P_t}{P_0} = a - \frac{b}{T_t}$$

$T_c \in$ à la courbe de vap :

$$\log \frac{P_c}{P_0} = \log \frac{P_t}{P_0} = c - \frac{d}{T_c}$$

$$a - \frac{b}{T_t} = c - \frac{d}{T_c} \text{ donc } T_c = \frac{d - b}{c - a}$$

$$P_t = P_0 10^{a - \frac{b}{T_t}}$$

$$= P_0 10^{c - \frac{d}{T_c}}$$

III - Construction du diagramme.

Variance du C/S : F:

$$F = x - k - r + p - \gamma$$

ϵ : nb de courbes liant ($\epsilon = 2$)

k: mb d'equilibre chimique ($\mu_k = 0$)

π .. mds relation, mds the mds supplement

entre os pontos intensos de equilíbrio

Exception au point C ($r=2$)

Excepción de p.m. (1-2)

I : m.b. de p.m. de p.m. $I = I(T, I)$

φ : nb de pote da. $F = 3 - \varphi$

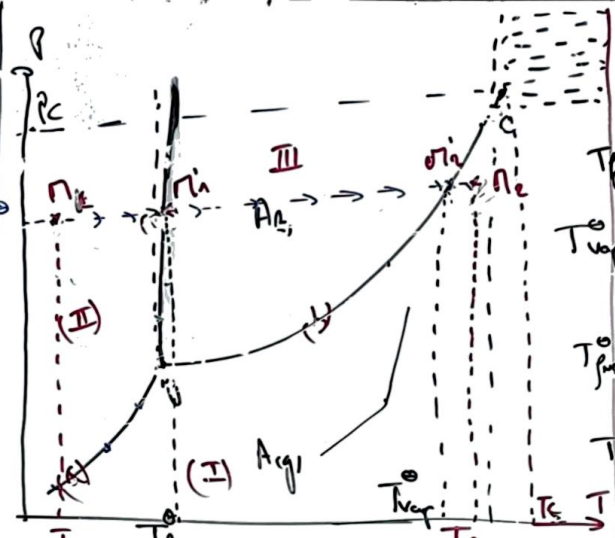
Sur la courbe (a); (b) et (c)

$$r = q = f = 1$$

1 Regne de liberté

$$L = F \cdot b$$

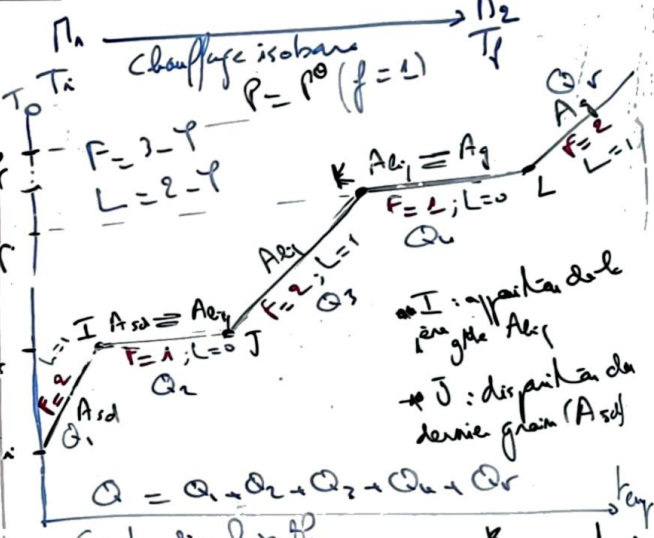
f: ab (a, b in G)



Augment Info: $(A_1; A_2, \text{ and } A_3)$
 on 01-17-2023

Au point critique ($r=0$)

$$F = 1 - \gamma = 0 \text{ as } \gamma = 1$$



$$Q = Q_1 + Q_2 + Q_3 + Q_4 + Q_5$$

Can be developed for

$$Q_1 = \int_{T_1}^{T_2} n C_p(A_{12}) dT$$

$$Q_2 = n L_{f_w} = n D_{f_w} H_m$$

$$Q_3 = \int_{T_0}^{T_2} m \cdot c_p(Ae_1) dT$$

$$Q_u: \mu L u_y$$

$$Q_r = \int_{T_v}^{T_h} n C_p(A) g dT$$

R: appeared
le 1^{er} bulb
Vaper

dt L. dir puka
dol lemmien
g H. Alij