Discussion on Exam paper

7th March 2022

Instability Lect 22

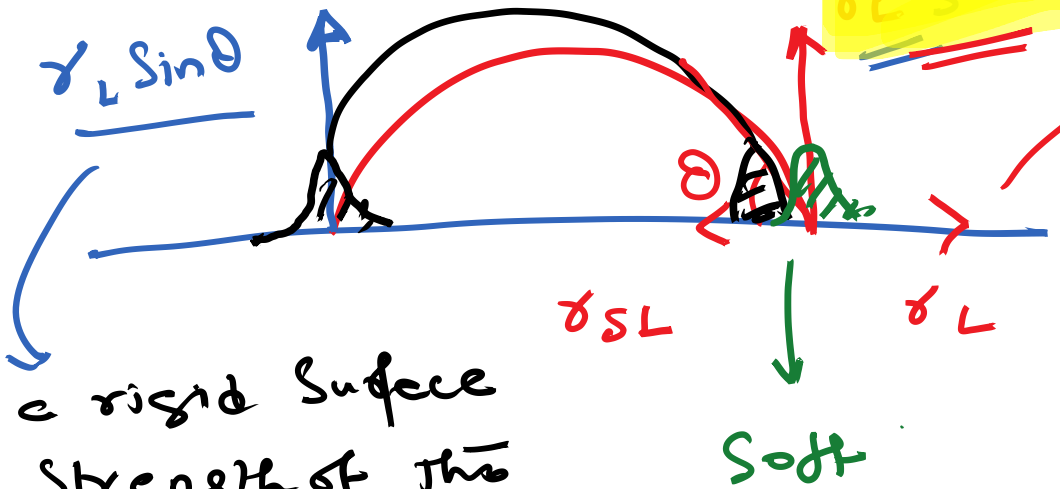
(3) Wenzel state $\cos\theta^* = r_f \cdot \cos\theta_E$

$\theta_E < 90°$, $\theta^* < \theta_E$ → As $r_f > 1$

Always

(7) $\gamma_{12}^{LW} = \left(\sqrt{\gamma_1^{LW}} - \sqrt{\gamma_2^{LW}}\right)^2$

(11)



Young's Eqn: Horizontal Component

$\gamma_L = \gamma_{SL} + \gamma_L \cos\theta_E$

Horizontal Component

On a rigid Suface
The Strength of the force is very weak → so no deformation.

Q13: Stronger intermolecular interaction → Reduced Evapora

↓

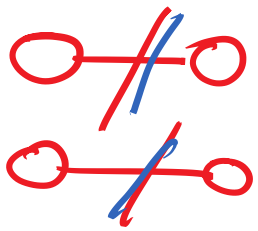
Lower Vapor Pressure

↓

Seperate molecules and Create new surface NEED more energy.

(γ_s ↑)

Higher Critical Temp also

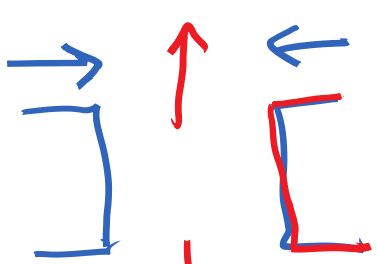


You need to Supply more Energy to overcome all interacting

→ T_B is also higher

(Stronger interaction → Lower Vap Pr → Higher γ → Higher T_B)

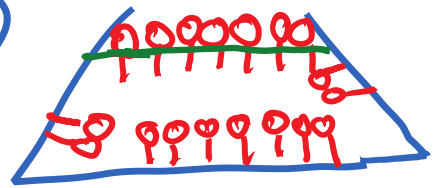
(14)



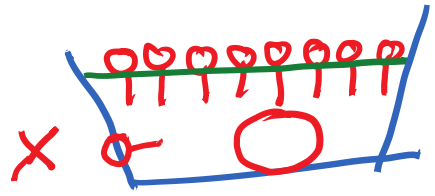
Flow (Hydrophobic repulsion)

(15)

Delayed micelle formation



Perspex (Polymer - Hydrophobic)



Glass

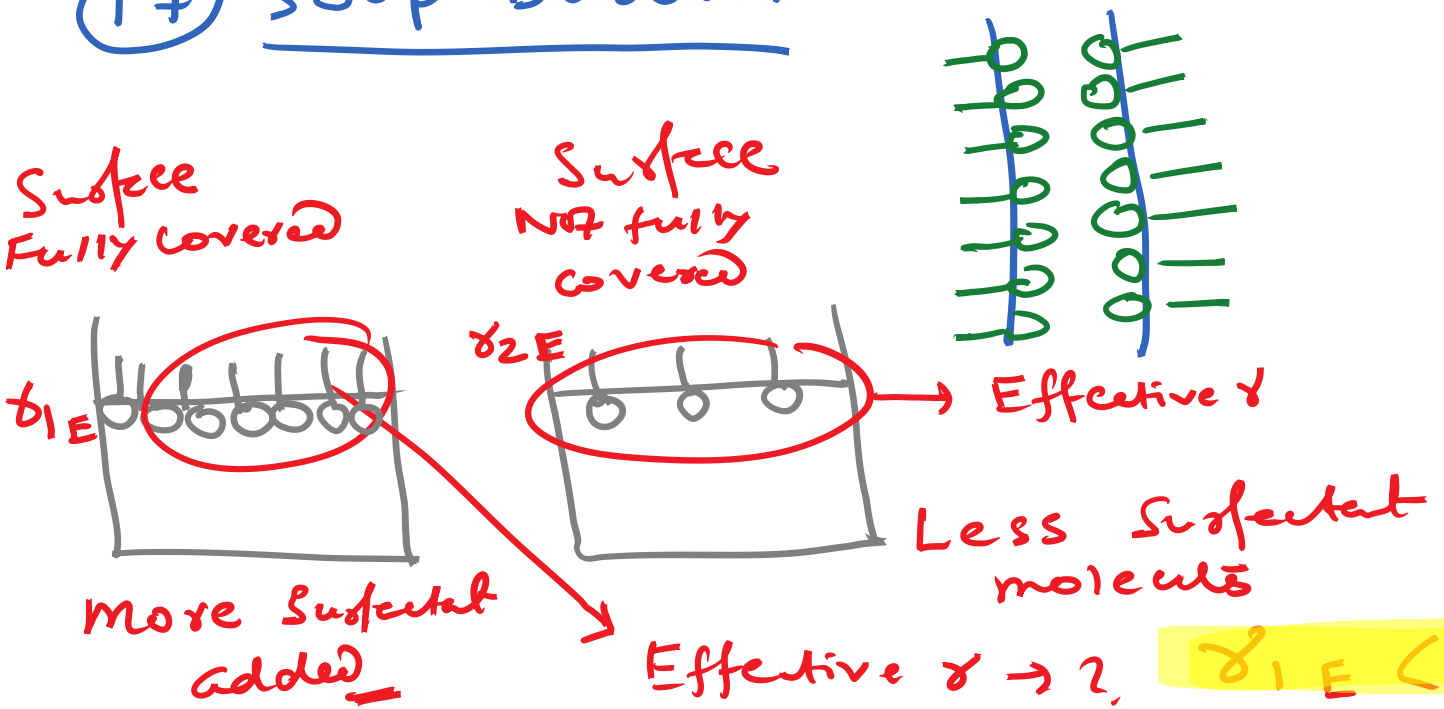
(16) Internal potential Energy of an a polar material

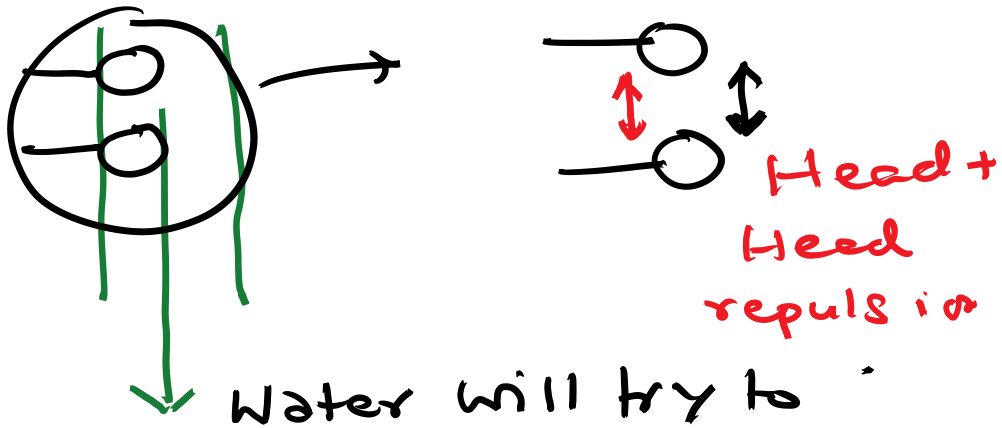
→ 1.D – 1.D vdW interaction $= -\frac{A}{r^6}$

$\neq f(T)$

Not depend on Temp.

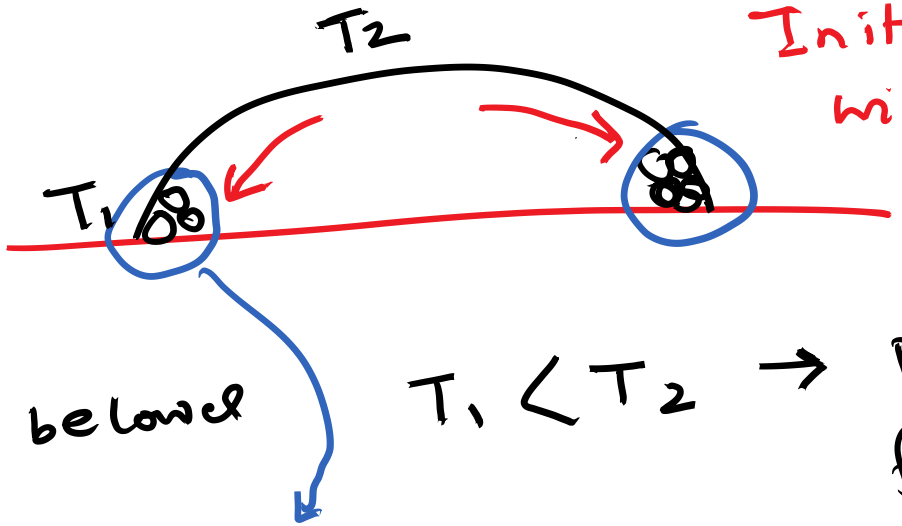
(17) Soap Bubble:-





18. Colloided Drop.

Rate of Evap is Hisher at the periphery → Temp at periphery will be lower



Initially some colloid will accumulate.

$T_1 < T_2$ → Driving force for convection

More colloid here (Lower γ region)

$\Delta\gamma$ → (Lower at the periphery) — (Higher at Centre)

↳ How to justify why marangoni flow is from Lower γ to higher γ.