

- VP liquid \uparrow , $T \uparrow$

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

\uparrow VP \uparrow gas constant \uparrow temp (K)

c1) Which of the following has the highest vapor pressure?

A) CH3OH Lowest IMF, Highest VP

c2) What is the temp at triple point?

C) -56.4

c3) At triple point, solid, liquid, gas all have same

B) free energy

- Solution: solvent + solute

\uparrow majority \uparrow dissolved

- Solubility: how much can be dissolved

- Dissolution: process of dissolving

4 types of solid

- ionic (salt)

- covalent

- molecular (sugar)

- metallic

c4) +10 points (poll)

A nice micro view of the dissolution of a

- ionic solid

- $\Delta H_{\text{solution}} > 0$

- solute-solvent weaker than solute-solute

- gas dissolving in liquid is exothermic

- solvation = interaction of solvent and solute

(5) + 10 points (poll)

What is going on w/ entropy of dissolution for our example solutions? ($\Delta S_{\text{solution}}$)

- The entropy increases

- $\Delta S_{\text{solution}}$ usually > 0

- what is free energy change for gases mixing?

$$\Delta G < 0$$

(6) Why does free energy decrease? ($\Delta G = \Delta H - T\Delta S$)

- ΔH is zero, ΔS is positive

+ 10 points (poll)

(7) + 10 points (poll)

How can you explain the spontaneous dissolution of the endothermic solution?

- It must be entropically driven

$$\Delta H > 0$$

(8) + 10 points (poll)

What is sign of free energy in polystyrene peanuts w/ water?

- positive

c9) +10 points (poll)

What is sign in entropy for polystyrene peanuts in acetone?

- positive

c10) +10 points (poll)

What is sign in enthalpy for biodegradable peanuts in acetone?

- positive

- ΔH is near 0 b/c IMFs are the same similar to gases