Molarity = $\frac{M}{1}$ = $\frac{\text{Moles solute}}{\text{l of solution}}$

Solute + Solvent !

Molality = $\frac{m}{1}$ = $\frac{\text{Moles of solute}}{\text{Kg of Solvent}}$

mass

Jan 13-7:41 AM

Mole fraction

X = $\frac{\text{Moles part}}{\text{Moles Whole}}$

Jan 13-8:16 AM

Factors Affecting Solubility / Dissolving

① Surface area solute.
- Sugar → Cube, granulated, powdered*

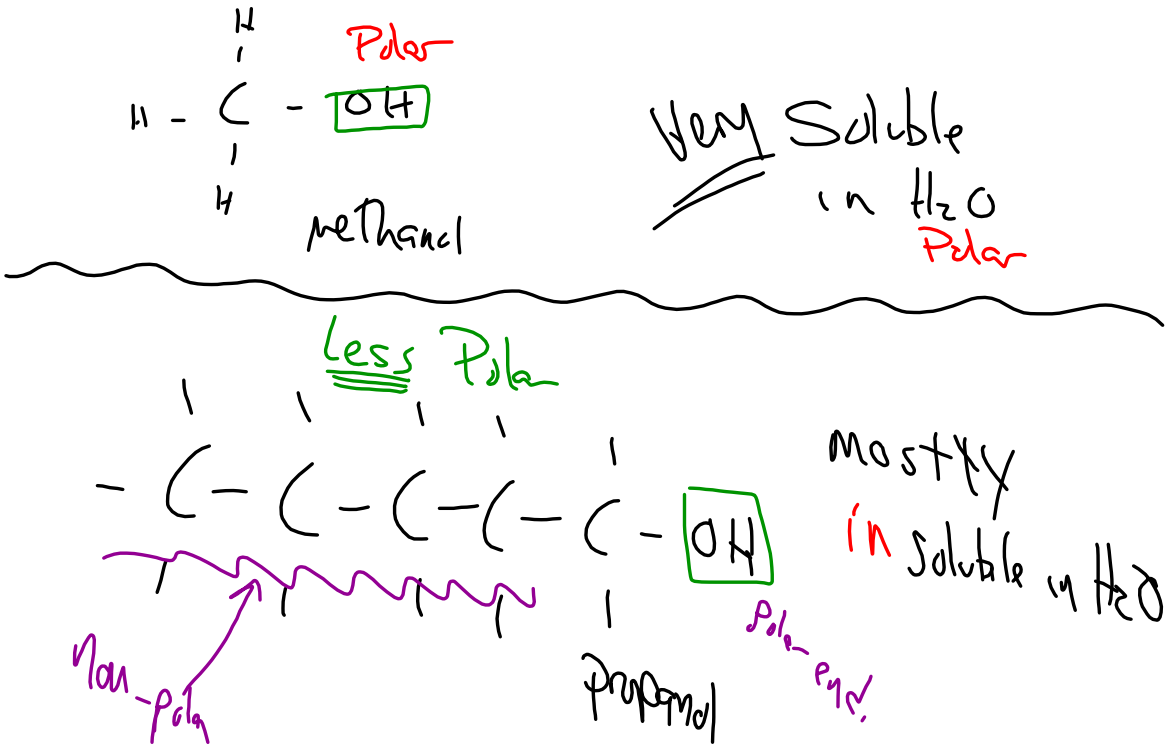
② Temperature Solvent (mareial)
- → Solvent mols faster → hits / breaks up solute quicker

③ Mix it (Stir)

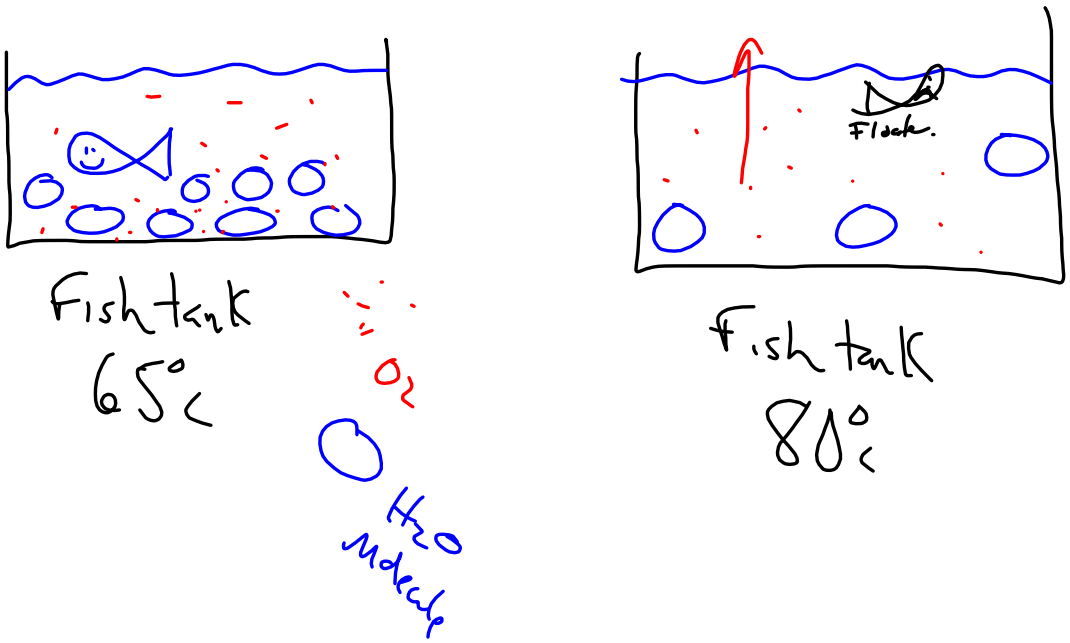
④ Bond types → Polar → Polar / ionic
- → Non Polar → Non-Polar

⑤ How concentrated to solvent is
"Finding 4 seats together in a movie theater"
Pre-COVID

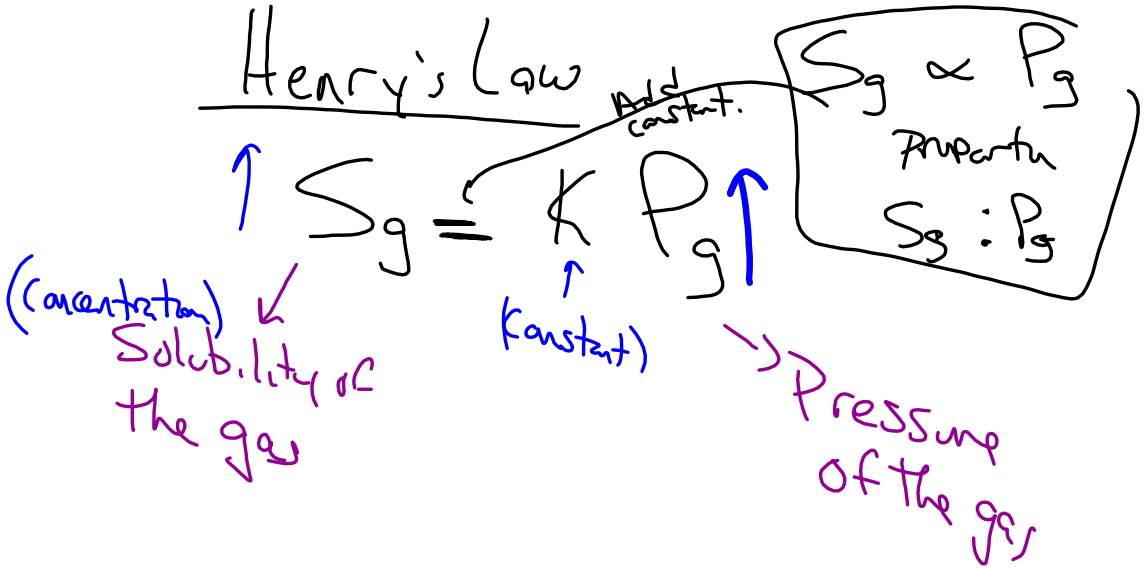
Jan 13-8:18 AM



Jan 13-8:38 AM



Jan 13-8:45 AM



Jan 13-8:58 AM

Solute: 4.35 g $C_6H_{12}O_6$ in 25 ml H_2O Solvent. at 25°C

Calc. Molality.

Density $\frac{1\text{ g}}{1\text{ ml}}$

$$m = \frac{\text{Moles of Solute}}{\text{Kg of Solvent.}} = \frac{0.024\text{ mole } C_6H_{12}O_6}{0.025\text{ Kg } H_2O} = 0.97\text{ m}$$

$$\frac{4.35\text{ g } C_6H_{12}O_6}{} \left|\frac{1\text{ mole } C_6H_{12}O_6}{180\text{ g } C_6H_{12}O_6}\right. = 0.024\text{ Mole } C_6H_{12}O_6$$

$$\frac{25\text{ ml}}{} \left|\frac{1\text{ g}}{1\text{ ml}}\right| \frac{1\text{ Kg}}{1000\text{ g}} = 0.025\text{ Kg}$$

Jan 13-9:09 AM

4.35 g $C_6H_{12}O_6$ 25 ml H_2O

D = 1 g/ml

M

Molarity.

$$M = \frac{\text{Moles Solute}}{\text{l soln}} = \frac{0.024}{25 \times 10^{-3}\text{ l}} = 0.96\text{ M}$$

Jan 13-9:19 AM

What is the molality of a soln made by mixing 36.5g Naphthalene ($C_{10}H_8$) + 425g Toluene (C_7H_8)

Solvent MORE MASS

$m = \frac{\text{Moles solute}}{\text{Kg Solvent}} = \frac{\frac{36.5\text{g}}{128\text{g/mole}}}{0.425\text{g Toluene}}$

0.67m

Jan 13-9:22 AM

5g Toluene C_7H_8 + 225g Benzene C_6H_6 M = ? Molarity

$M = \frac{\text{Moles Toluene}}{\ell \text{ solution}} = \frac{0.054\text{mole}}{0.263\ell}$

0.21M

$D = \frac{0.876\text{g}}{\text{ml}}$ soln

$\frac{5\text{g } C_7H_8}{} \left| \frac{1\text{mole } C_7H_8}{92\text{ } C_7H_8} \right. = 0.054$ mole

5+225

$\frac{1\text{ml}}{0.876\text{g}} \left| \frac{230\text{g soln}}{} \right. = 262.56\text{ml}$

Jan 13-9:26 AM

13/ 24, 28, 32, 50

Jan 13-9:32 AM