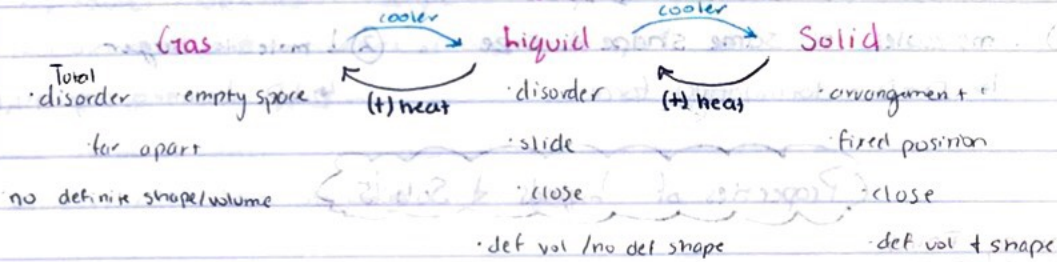


Ch.11 Intermolecular Forces, Liquids, & Solids

3 states of matter



Intramolecular V. Intermolecular

Intramolecular

- b/t bonds
- within
- stronger
- chemical

Intermolecular

- inside
- Van der Waals Forces
- stronger in physical prop.

Preview from Notesale.co.uk Page 1 of 3

(1) Ion-Dipole Interactions

- b/t ion + partial charge of compound
- help dissociation
- imp. in sol'n making
- strength $\uparrow$ = ion charge $\uparrow$
- strength $\uparrow$ = dipole size stronger

(2) Hydrogen Bonding

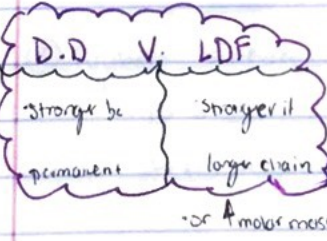
- NOT Bonding
- attraction b/w H + electroneg. atom (F, O, N)
- Out of all 4
- Big 3: NH_3 / HF / H_2O
- alcohols show hydrogen bonding
- Dimer = molecule w/ 2 H-bonds
- permanent dipoles
- don't assume all "H" are hydrogen bonding sites
- not the "H" apart of a nonpolar bond

(3) London Dispersion Forces

- temporary
- instant dipole
- $\rightarrow$ e⁻ go to one side
- attraction b/w induced
- instantaneous dipole
- polarizability
- slow = easier to induce change
- fast = impossible
- LDF $\uparrow$ = mass $\uparrow$ / more polarizable
- / bigger temp. / hold together $\checkmark$
- All molecules have LDF
- nonpolar = LDF is ONLY force
- $\rightarrow$ other molec = stronger IMF
- the other force is the one that contributes the most
- LD $\uparrow$ = boiling point $\uparrow$

(4) Dipole-Dipole

- 2 dipole
- 2 compounds
- permanent
- $\rightarrow$ $\text{H}-\text{O}-\text{H}$
- polar $\uparrow$ dipole max
- Dipole = diff elements
- attracting



Strengths $\uparrow$

- ① LD weakest
- ② D-D
- ③ Hydrogen bond
- ④ Ion-Dipole $\rightarrow$ strongest