

atomic bonding ↓ intermolecular bonding

Polarity

non-polar

Symmetrical structure
 $\text{H}=\text{O}$
 - partial charges cancel
 C-C & C-H are non-polar

solubility
 like dissolves like

condensation

Condenses faster if intermolecular forces are stronger h bonding will pull molecules closer, resulting in the formation of liquid (insert name) eg liquid ammonia

density

Stronger bonds stronger density
 Density increases from propan-1-ol to butan-1-ol to pentan-1-ol to hexan-1-ol as the strength of instantaneous dipole-induced dipole interactions present allows more alcohol molecules to be packed within a unit volume of space

polar

dipole ($\delta+$ and $\delta-$)
 slightly + $\text{H}(\text{H}_2)$ slightly -
 which has largest net dipole moment?
 $\text{O}=\text{C} \text{ <} \text{CH}_3$ $\text{O}=\text{C} \text{ <} \text{Cl}$
 identity most electronegative

polarisation
 separation of charge
 has net dipole moment

non-polar **polar**

③ Instantaneous dipole-induced dipole

① hydrogen bonding

Criteria:

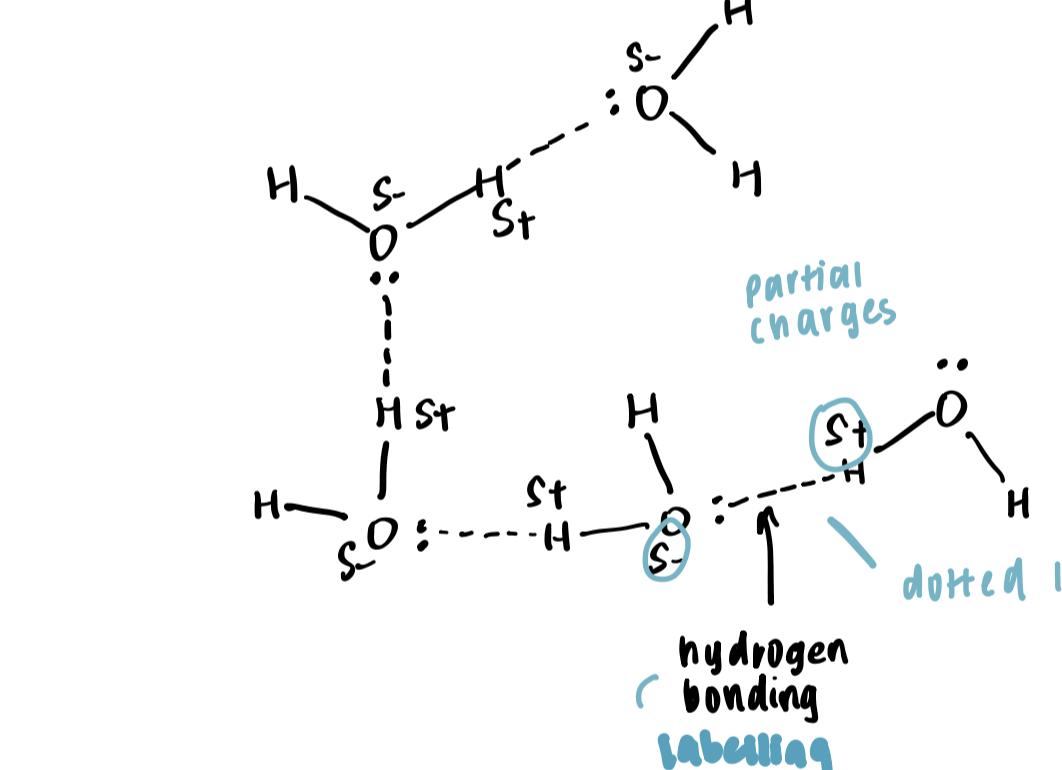
- ① H has to bond with F, O, N
- ② There must be a lone pair of electrons in F, O, N when bonded with H

when H bonds with HIGHLY ELECTRONEGATIVE F, O, N atom attracts bonding electrons towards its side

→ H atom has a tiny share of the electron pair

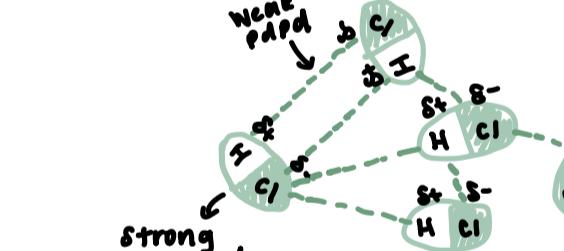
→ it almost behaves like a bare proton

③ Protonic hydrogen exerts a strong attraction on the electrons in a neighbouring molecule



② Permanent dipole-permanent dipole

present between the partially positive ends of polar molecules
 (weak partial charges)



Bond strength

- ① ionic compound
 metallic compound \uparrow boiling
- ② giant covalent compounds
- ③ simple molecular structure
 - n-bonding
 - para
 - 1id1 — ① Diff MR
 - 1id1 — ① Diff surface area