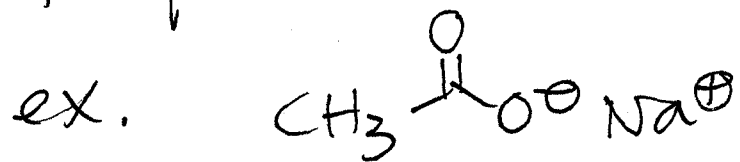


Functional groups affect physical properties + molecular structure.

physical properties such as mp + bp are affected by intermolecular forces - functional groups have a lot to do with these.

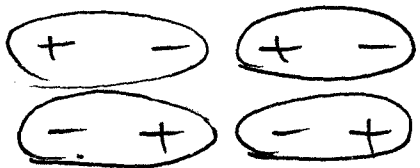
1. Ion-ion forces - e'static attraction between oppositely charged ions. V. strong - v. high mp + bp.



mp 324°C

bp. unknown -
decomposes 1st!

2. Dipole-dipole forces. molecules w/ permanent dipoles (polar molecules) align w/ each other.



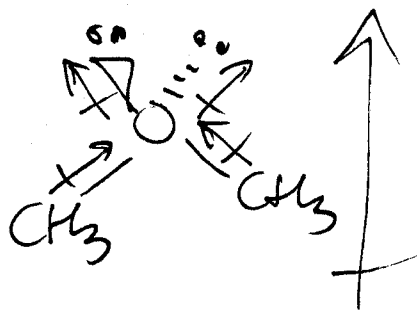
fairly strong.

* Hydrogen bonding - a specific instance of dipole-dipole forces - attractions between:

- ① an e⁻neg atom (O, N)
- ② a H attached to an e⁻neg atom (O, N)

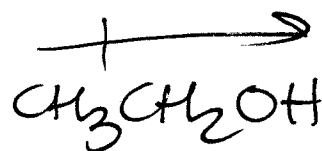
STRONG

CH₃-O-CH₃
dimethyl ether



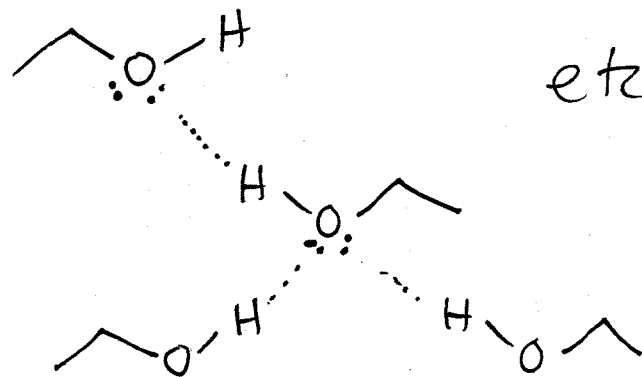
dipole-dipole

b.p. - 24.9°C



ethanol

* can H-bond.



b.p. + 78.5°C

both
are
polar

3. Van der Waals forces (London forces;
dispersion forces)

induced dipoles

* very weak -

this is all that holds
nonpolar molecules
together.

solubilities - Like Dissolves Like.

polar compounds	dissolve	in polar solvents
nonpolar	"	" nonpolar "

* large molecules are less soluble because
the hydrophobic R groups get big +
overwhelm any hydrophilic funct. gps.

Infrared (IR) Spectroscopy - used to identify ~~per~~ presence / absence of functional groups.