

AP CHEM

INTERMOLECULAR FORCES

REVIEW



Intermolecular forces : attraction **BETWEEN** molecules

→ determines physical properties
(eg. boiling & melting points)

→ generally, stronger IMFs = ↑ melting
& boiling points

LONDON DISPERSION FORCES (LDFs) → weakest IMF

Present in **ALL** molecules

→ caused by temporary shifts in electron distribution

eg.



→ strength increases w/ more electrons

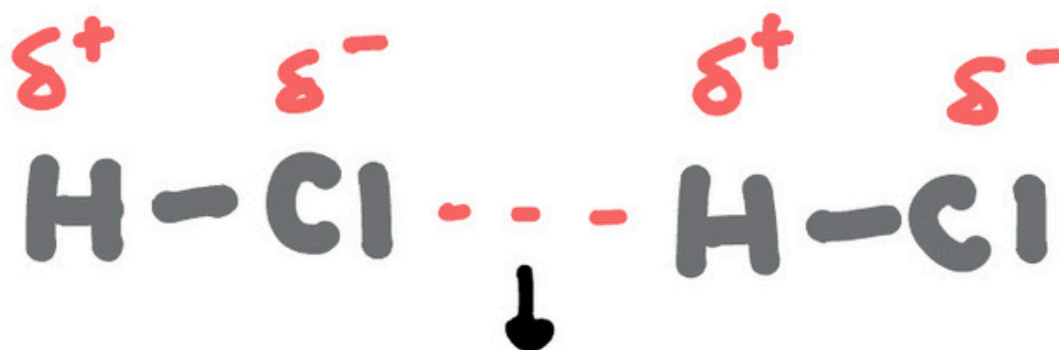
→ **ONLY** IMF in nonpolar molecules

DIPOLE DIPOLE FORCES

Present in **POLAR** molecules

→ partial positive end of molecule attracts partial negative end of another

eg.



attraction, dipole dipole

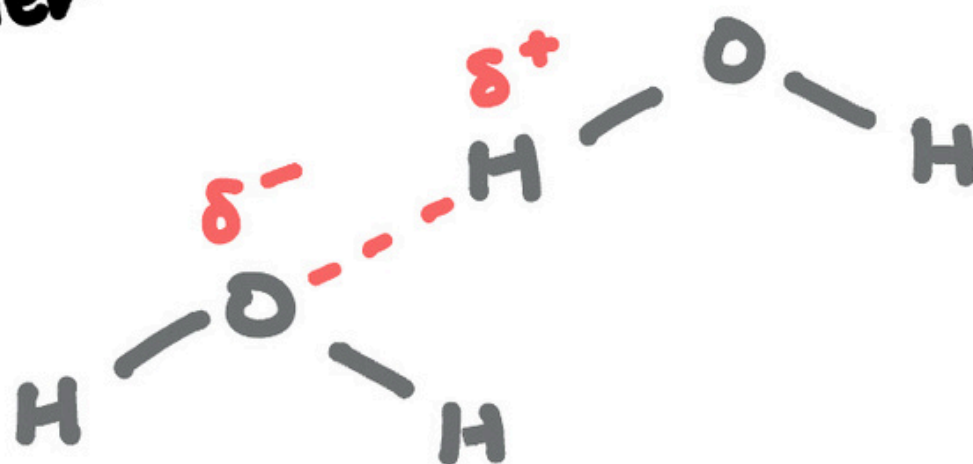
→ stronger than LDFs

HYDROGEN BONDING

Requires **H** directly bonded to **N, O, or F**

→ specific type of dipole-dipole force

eg. water



→ very strong, hydrogen bonding > dipole
- dipole > LDFs

AP CHEM

KINETIC MOLECULAR THEORY (KMT)

REVIEW



ASSUMPTIONS

1. gas particles are in **constant, random** motion, moving in lines until collision
2. volume of indiv gas particles are **negligible**
3. collisions are **perfectly elastic** (no kinetic energy lost)
4. no attraction or repulsion btwn particles
5. average kinetic energy of particles is proportional to temp

PRESSURE

→ pressure = from gas particles colliding w/ container walls

- ↑ collisions , ↑ pressure

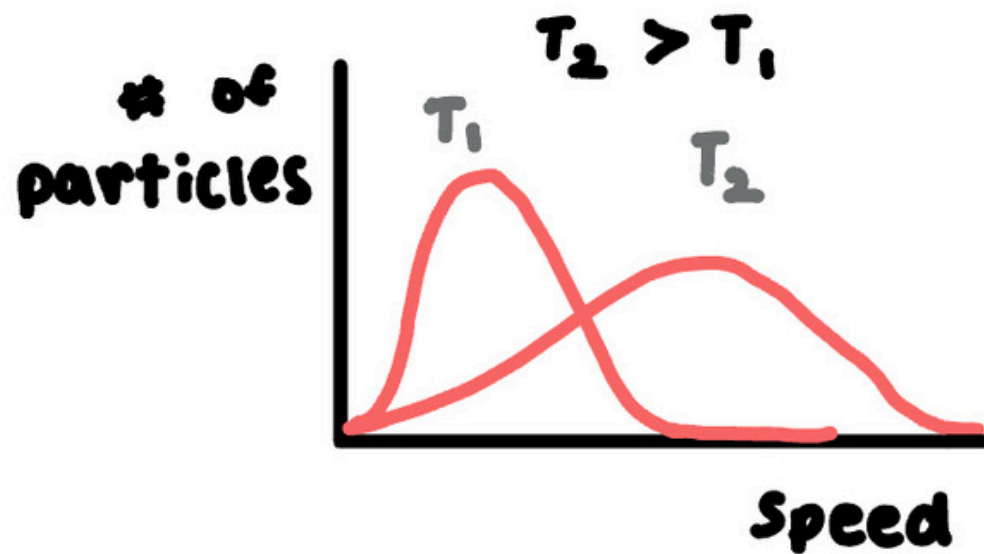


→ **compression:** particles hit wall more frequently, pressure ↑

TEMP & KINETIC ENERGY

→ average kinetic energy is proportional to temp

→ maxwell-boltzmann distribution:



DEVIATIONS

→ Real gases: may be polar, allowing for strong IMFs, & particle volume is not negligible

- real gases deviate at HIGH & LOW pressures

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