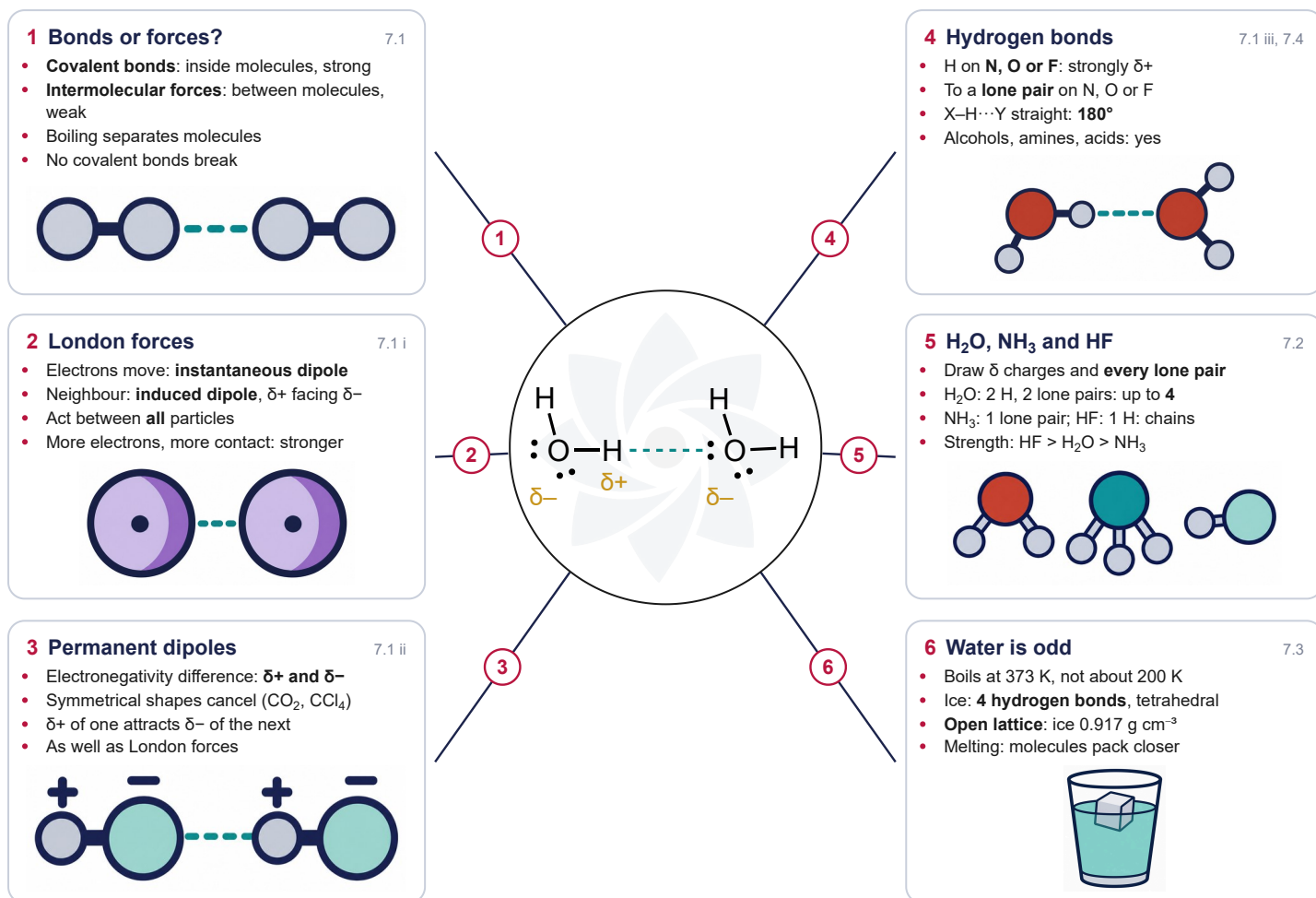


Intermolecular Forces Map

Edexcel International A Level Chemistry · Unit 2 · Topic 7A Intermolecular Forces



Which forces? Same electrons, different forces boiling temperatures from the data book; compare like with like

Substance	Electrons	Forces between molecules	Boiling temperature
F_2	18	London only	85 K
HCl	18	London + permanent dipole–dipole	188 K
Ar	18	London only (single atoms)	87 K
H_2S	18	London + permanent dipole–dipole	213 K
CH_4	10	London only	112 K
H_2O	10	London + hydrogen bonds	373 K

Worked examples

Polar or not?

- CHCl_3 : one C–H
- dipoles do not cancel
- **polar:** dipole–dipole forces

London wins

- CCl_4 74 e^- , non-polar: 350 K
- CHCl_3 58 e^- , polar: 334 K
- **more electrons** outweigh

Why ice floats

- 4 hydrogen bonds each
- open hexagonal lattice
- **less dense** than water

Intermolecular forces explain boiling temperatures and solubility (Topic 7B) and return in organic chemistry.



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