

**Target: I can describe how
intermolecular forces affect properties**

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Properties due to Intermolecular Forces

Vocabulary

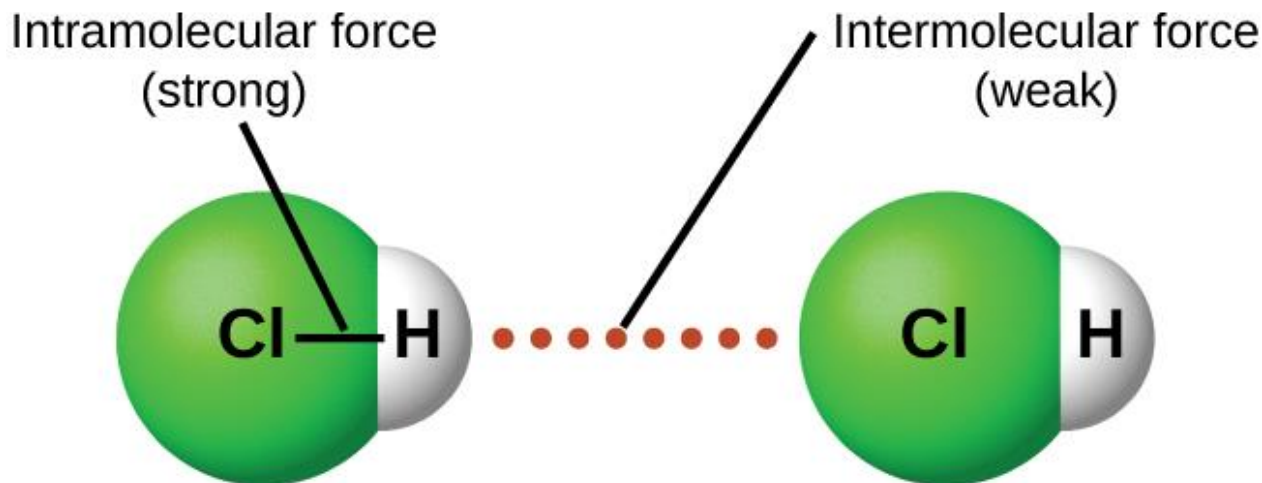
INTRAmolecular Forces

Forces holding together the atoms **INSIDE** a molecule or compound. What we usually think of as “bonds.” Relatively strong.

Types: Ionic forces, covalent forces

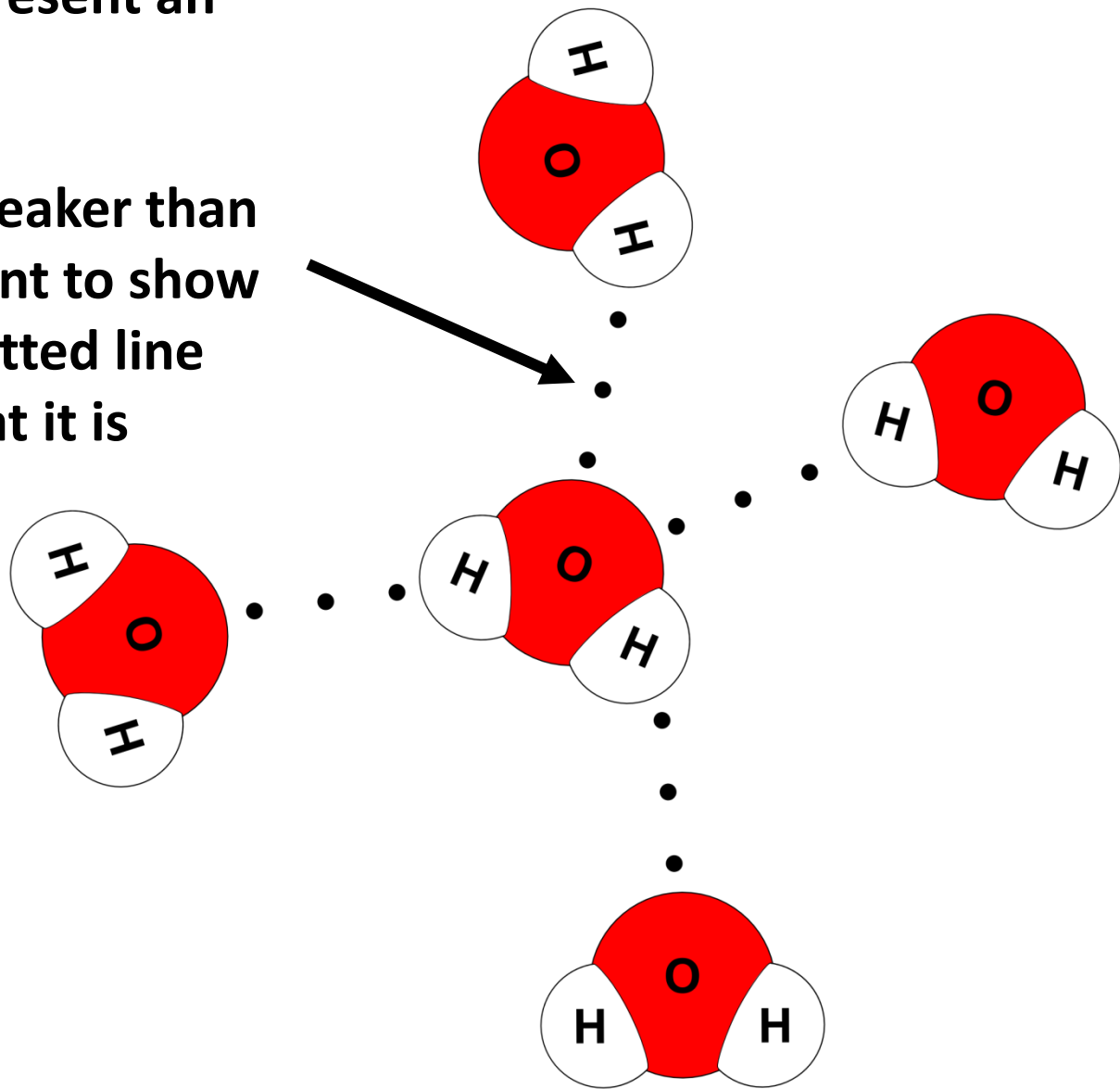
INTERmolecular Forces

Attractions or repulsions which act **between neighboring molecules.** Holds different molecules next to each other. Very weak. Not strong enough to be called real “bonds.”



Use dotted lines to represent an intermolecular force.

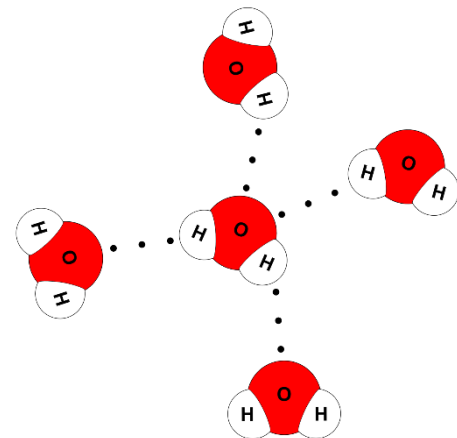
They are much much weaker than a real “bond” so we want to show that somehow – the dotted line emphasizes the fact that it is weaker.



If there are lots of intermolecular forces

(or IMF to abbreviate)

- Then the molecules will be held near each other like a bunch of magnets.
- The more IMFs, the stronger they are being held near each other.
- The harder it is to separate the molecules from each other.



Some properties that relate to intermolecular forces

- Boiling point
- Melting point
- Viscosity
- Surface tension

- **When you increase IMFs the properties increase too!**
- The more forces present, the higher the properties will be.
 - Will boil at a higher temp
 - Will melt at a higher temp
 - Will be thicker (more viscous)
 - Higher surface tension.

All because it will be harder to separate the molecules!

Some properties that relate to intermolecular forces

Not all substances will mix with all other substances

Think oil and water. They don't mix!

- Polar substances like to mix with other polar substances.
- Non-polar substances like to mix w/ non-polar substances.
- Polar and non-polar don't mix.

• Miscibility (Mixing)	“Like dissolves like” “Like mixes with like”	
	Polar mixes with polar	Non-polar mixes with non-polar

Examples

HBr - Polar

Br₂ - Nonpolar

**HBr – higher boiling point,
melting point, viscosity,
surface tension**

Examples

HBr - Polar

Br₂ - Nonpolar

HBr and Br₂ – will not mix!

Examples

F₂ - Nonpolar

Br₂ - Nonpolar

F₂ and Br₂ – will mix!

Examples

H₂O - Polar

CO - Polar

H₂O and CO – will mix!

WATCH THIS VIDEO – TAKE NOTES

<https://youtu.be/PVL24HAesnc>

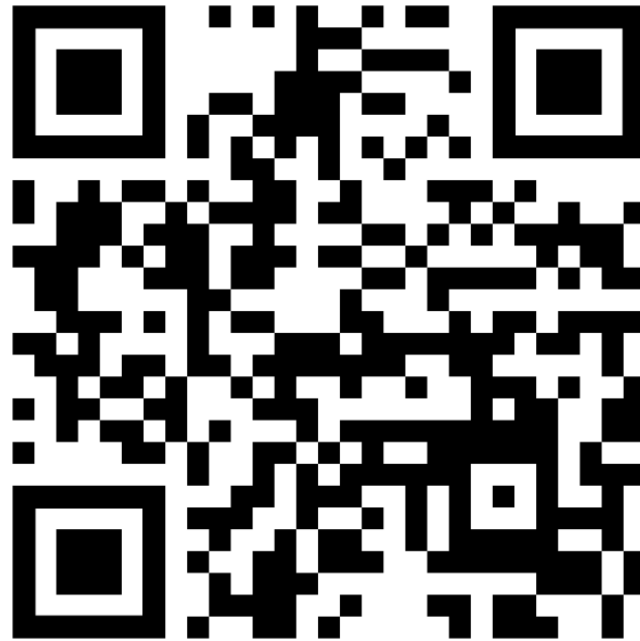
Crash Course – Polar & Non-Polar Molecules



WATCH THIS VIDEO – TAKE NOTES

<https://youtu.be/ohaI9yMZ8Ic>

KClassScienceChannel - Polar and Non Polar Substances



YouTube Link to Presentation

<https://youtu.be/6aoRchysAzc>