

DAY THREE

Jumpstart 3-A

- 1) Which should have a higher boiling point – O_2 or NH_3
- 2) Why?

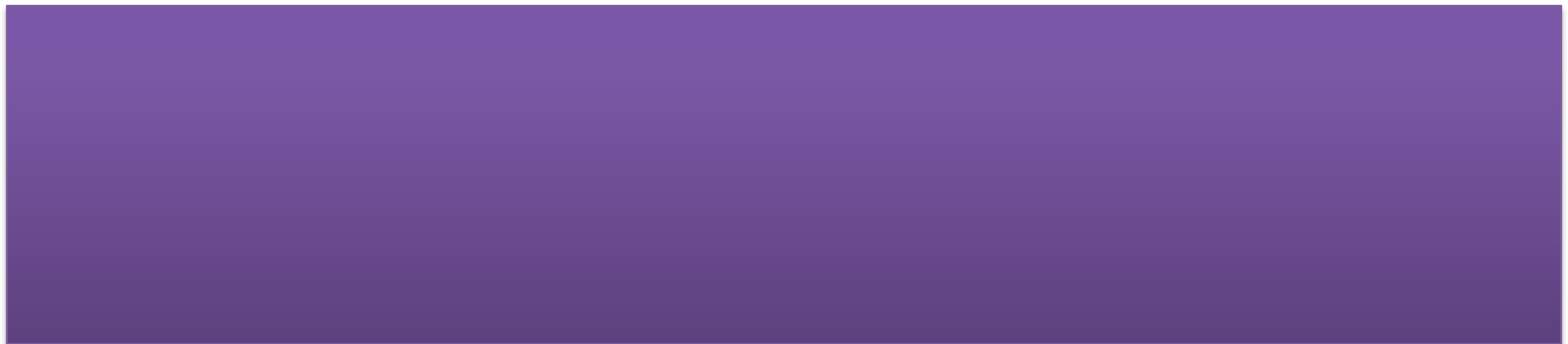
Jumpstart #6A

- 1) Which substance has the highest IMFs?
- 2) Which substance has the lowest IMFs?
- 3) Which is the most polar?

Substance	Boiling Point
A	73 °C
B	154 °C
C	120 °C
D	32 °C
E	15 °C

Types of IMFs

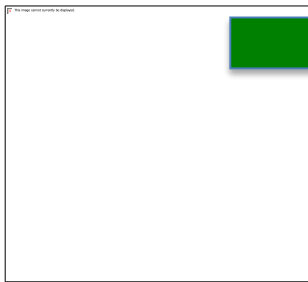
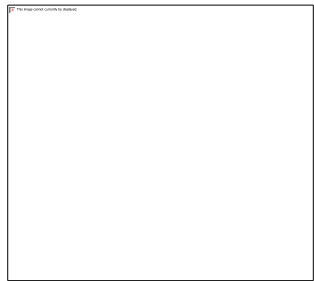
INTER molecular forces (forces between neighboring molecules)



London Dispersion Forces

VERY WEAK and TEMPORARY!!!!

Caused by temporary unequal electron distribution that makes weak and temporary dipoles. Also called “instantaneous dipole”



Example I₂

London Dispersion Forces Continued...

EVERYTHING HAS
LONDON
DISPERSION
FORCES BECAUSE
EVERYTHING HAS
ELECTRONS!

Bigger molecules will
have more LDFs – more
places to get temporary
unequal electrons

Which has more LDFs?



Dipole - Dipole

ONLY OCCURS IN POLAR MOLECULES

Partially negative portion of one polar molecule
attracted to

Partially positive portion of the second polar molecule



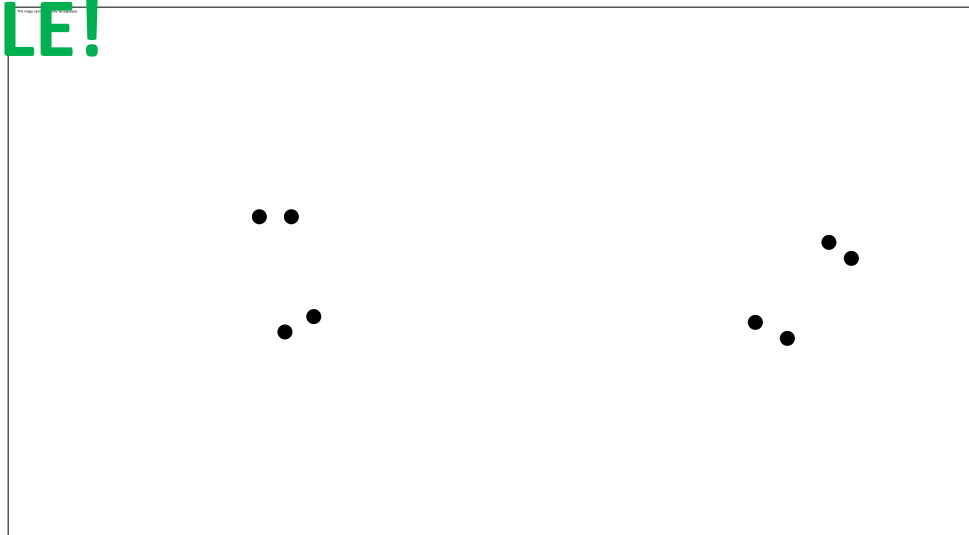
Example:
2 molecules of HI

Hydrogen Bonding

A TYPE OF DIPOLE-DIPOLE!
(Strongest Kind of IMF!)

Must have:

H-NOF:



ATTRACTION BETWEEN:

the partially negative part of a *lone pair* on an N, O, or F, atom

Hydrogen end of an O-H, N-H, or F-H bond

- +

NO

Is the molecule polar?

YES

London
Dispersion Forces
(ONLY)

Does the molecule
have any of the
following bonds:

H-N: H-O:
H-F:

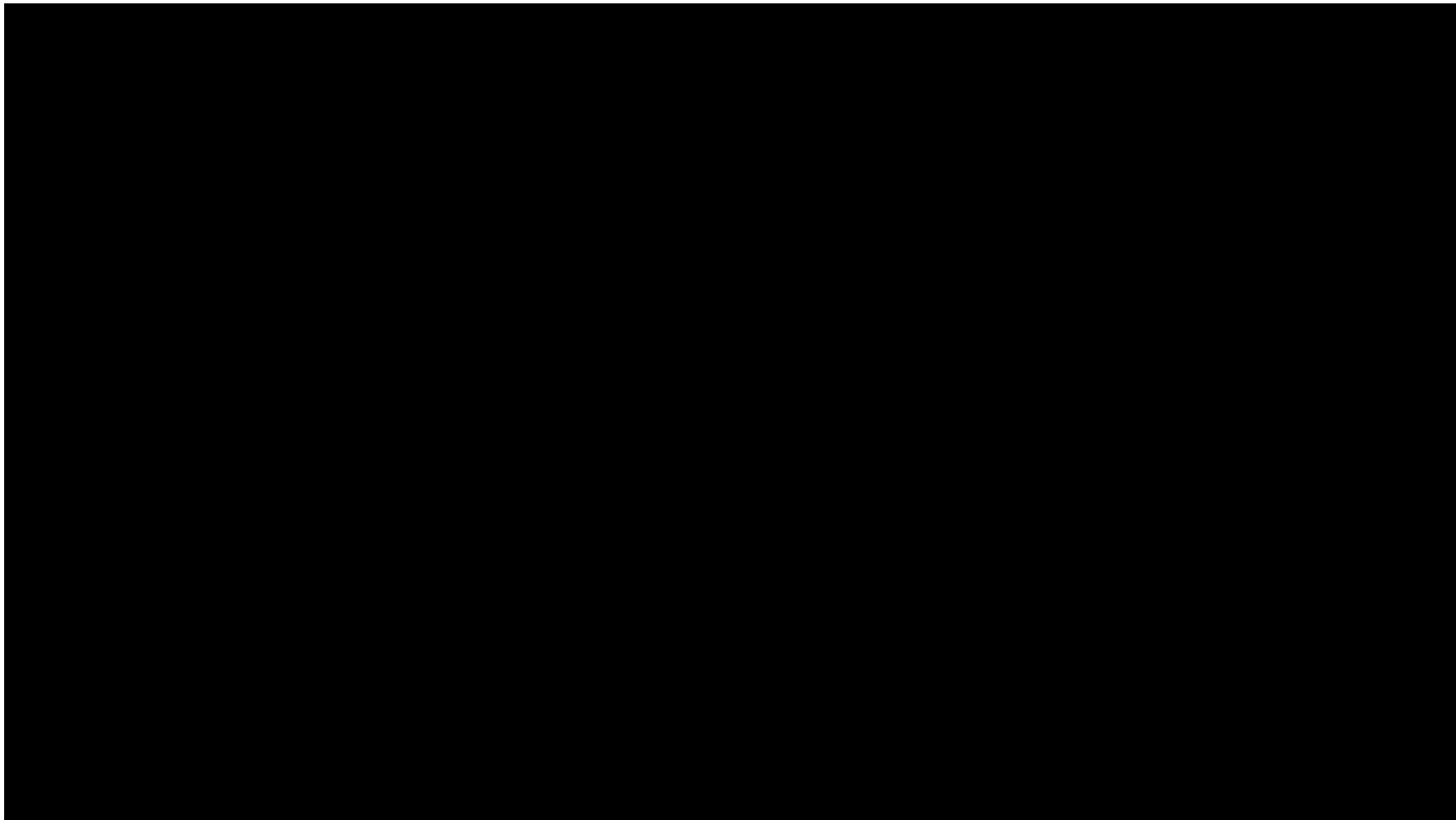
**WITH
LONE
PAIR(S)!**

NO

Dipole-Dipole
(and London dispersion)

YES

Hydrogen Bonds
(and Dipole-Dipole
and London dispersion)



Molecule	Dominant IMF	Written Justification
C_2H_6		
CH_3OH		
PF_3		
NH_3		
H_2CO		
CH_3F		

Target:

**IMF Flow
Chart
Handout**