[TP] The correct order of boiling point of HBr, HCl and HI is (lowest to highest) ...

17% 1. HBr < HCl < HI
17% 2. HBr < HI < HCl
17% 3. HCl < HBr < HI
17% 4. HCl < HI < HBr
17% 5. HI < HCl < HBr
17% 6. HI < HBr < HCl

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Response Counter 10 1

Lecture 15 CH101 A1 (MWF 9 am)

Wednesday, October 12, 2016

- Dispersion interaction
- Relative boiling points

Next lecture: Practice: Intermolecular forces; dissolving ionic solids; solubility rules (memorize solubility guidelines fig 6.28 p 181); precipitation reactions; concentrations after precipitation; ionization of molecular solutes; self-ionization of water

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Dipole-dipole versus dispersion

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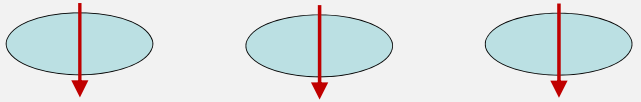
Permanent dipoles

Sketch a second molecule arranged so that it ...

attracts maximally | repels maximally | neither attracts nor repels



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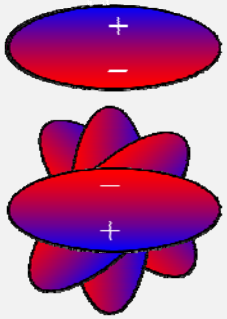
Dipole can be attractive or repulsive



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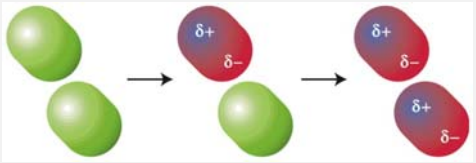
Dispersion forces are due to induced dipoles



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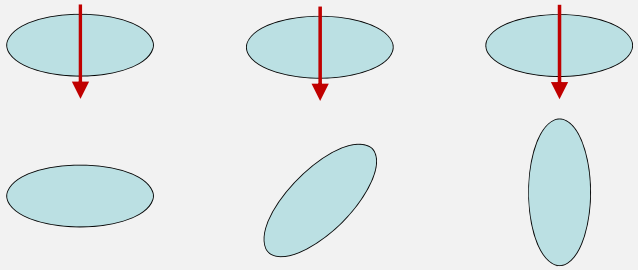
Induced dipoles

Sketch the induced dipole in each case:



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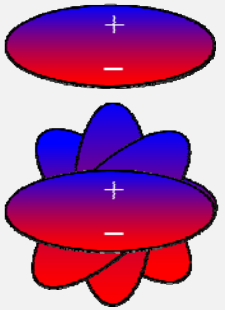
Dispersion always attractive



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Putting it all together: Relative boiling points

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Relative boiling points

Boiling means particles overcome attraction to their neighbors and depart the liquid.

Relative boiling points reflect relative strength of intermolecular forces ...

- Dispersion
- Dipole-dipole interaction
- Hydrogen bonding

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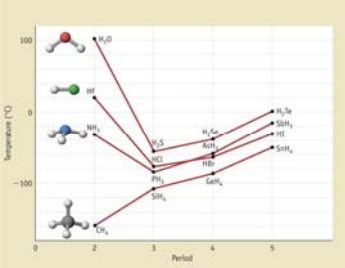
Relative boiling points (fig 6.20, p 172)



Why is $SnH_4 < SbH_3 < TeH_2$?

Why is $CH_4 < SiH_4 < GeH_4 < SnH_4$?

Why is $HCl < HBr < HI$?

Why is $NH_3 > PH_3 < AsH_3 < SbH_3$?

Why is $OH_2 > FH > NH_3$?

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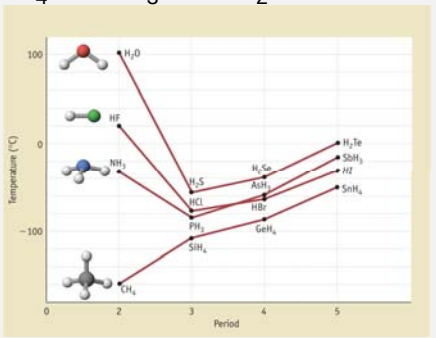
Why is $SnH_4 < SbH_3 < TeH_2$?



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