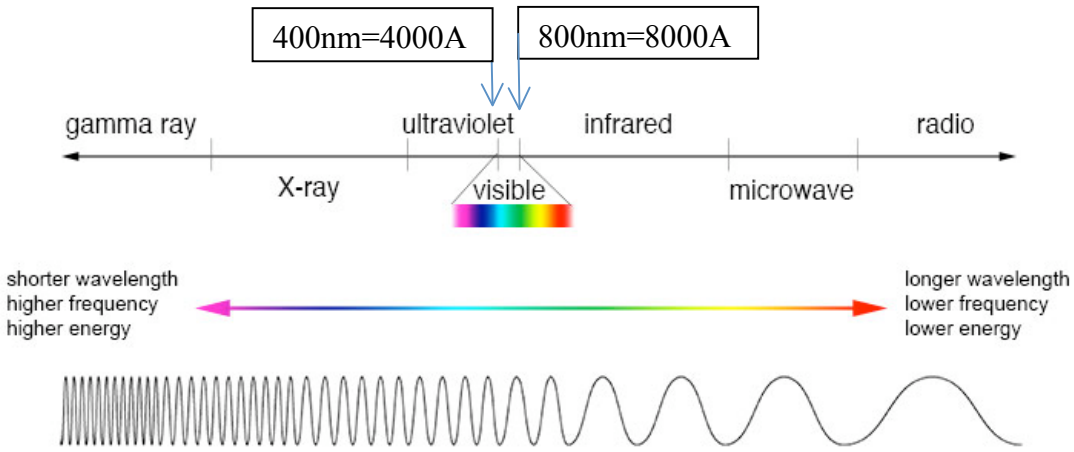
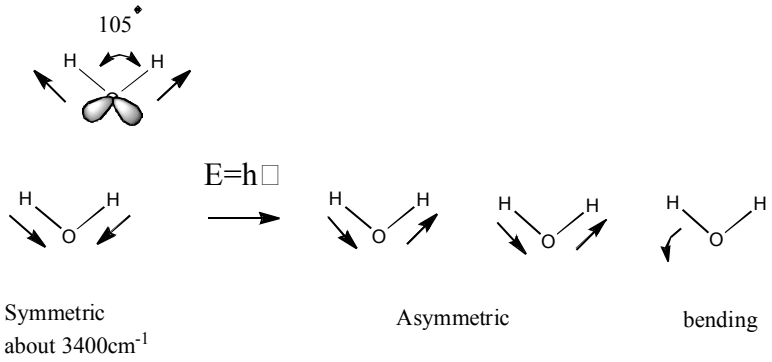
Electromagnetic spectrum:



Some types of bond movement active in IR region of Electromagnetic spectrum:



NEXT SECTION: ALKANES

Nomenclature

Learn Names of First 20 Straight Chain Alkanes

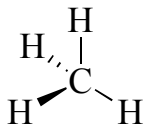
Hydrocarbons – Contain C and H

- Alkanes contain only single bonds (C-H, C-C)
- Alkenes = Olefins C=C
- Alkynes =Acetylenes C≡C

Alkanes

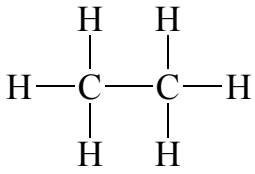
- All carbons are sp^3 hybridized (bond angle of 109^o)
- Held together by London (dispersion) forces

Ex #1) CH_4, methane



Bp = -161°C

Ex #2) C_2H_6, ethane

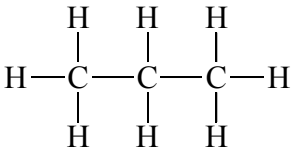


Bp = -88°C

CH_4 H_4C CH_3-H

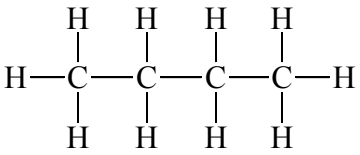
C_2H_6 CH_3-CH_3 H_3C-CH_3

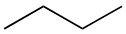
Ex #3) C_3H_8, propane

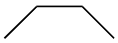


Bp = -42°C

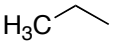
Ex #4) C_4H_{10}, butane







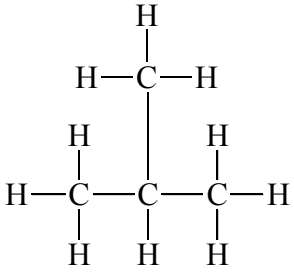
C_3H_8 $CH_3CH_2CH_3$



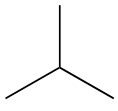
C_4H_{10}, $CH_3CH_2CH_2CH_3$

n-Butane: normal straight chain butane

Ex #5) C_4H_{10} , isobutane



- Isomers (structural or constitutional) are different compounds that have same molecular formula and different structure. They have different physical properties (e.g. mp, bp, odour, biological effects)
- Iso - meros
  same - parts

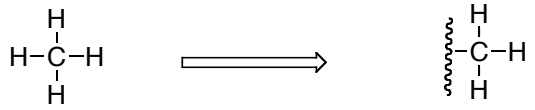


structural isomer = constitutional isomer

Groups (part of an alkane structure)

- in naming the particular group, drop the "ane" part and add "yl" to the name
- for example, methane → methyl

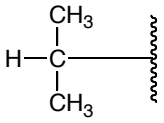
(i) Methane – CH_4



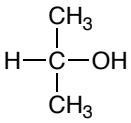
methane methyl group

(ii) Ethyl group $-CH_2CH_3$

(iii)

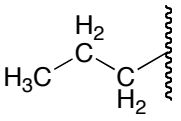


iso-propyl group

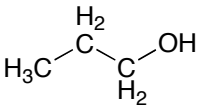


iso-propyl alcohol

(iv)



n-propyl chain



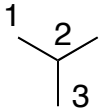
n-propyl alcohol

Systematic Nomenclature

RULES:

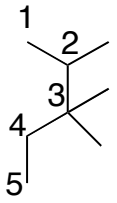
1. find the longest chain with maximum number of branches
2. number from end of the chain, so 1st branch point has lowest number
3. name the chain, then add prefixes (for the groups attached) with number and name the groups attached

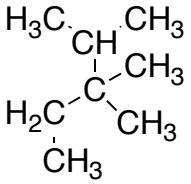
Ex#1)



isobutane (common name)
2-methylpropane (systematic name)

Ex #2)

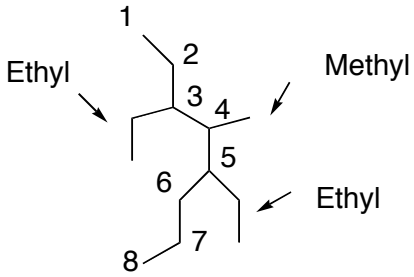




5 Carbon = pentane

2, 3, 3, -trimethylpentane

Ex#3)



3,5-diethyl-4-methyloctane