Department of biology
Organic Chemistry
Lecture 1
1 stage

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Introduction:-

- Organic chemistry is the branch of chemistry that deals with carbon and its compounds. It is fundamental to biology and medicine.
- Organic chemistry is the chemistry of carbon, an element that forms strong chemical bonds to other carbon atoms as well as to many other elements like hydrogen, oxygen, nitrogen, and the halogens.
- Organic chemicals were used in ancient times by Romans and Egyptians as dyes, medicines and poisons from natural sources, but the chemical composition of the substances was unknown .

Nomenclature

1- Find the longest carbon chain in the molecule. This will give you the base of the name:

No of C atoms	Name
1	meth-*ane*
2	eth-*ane*
3	prop-*ane*
4	but-*ane*
5	pent-*ane*
6	hex-*ane*
7	hept-*ane*
8	oct-*ane*
9	non-*ane*
10	dec-*ane*

2- Determine the principle functional group and its position.

principal functional group	formula	ending becomes
alkane	C-C	-ane
alkene	C=C	-ene
alkyne	C≡C	-yne
alcohol	-OH	-anol
aldehyde	-CH=O	-anal
ketone	>C=O	-anone
carboxylic acid	-COOH	-anoic acid

- Position is indicated, where necessary, by numbering the carbons in the main chain.
- Position need not be indicated for alkanes, as they have no functional group, and aldehydes and acids, as they are terminal functional groups.
- Positioning numbers are flanked by dash signs. Multiple positions for a given functional group are separated by commas and indicated by the prefixes di, tri, tetra, penta, hexa, hepta, octa , nona and deca.

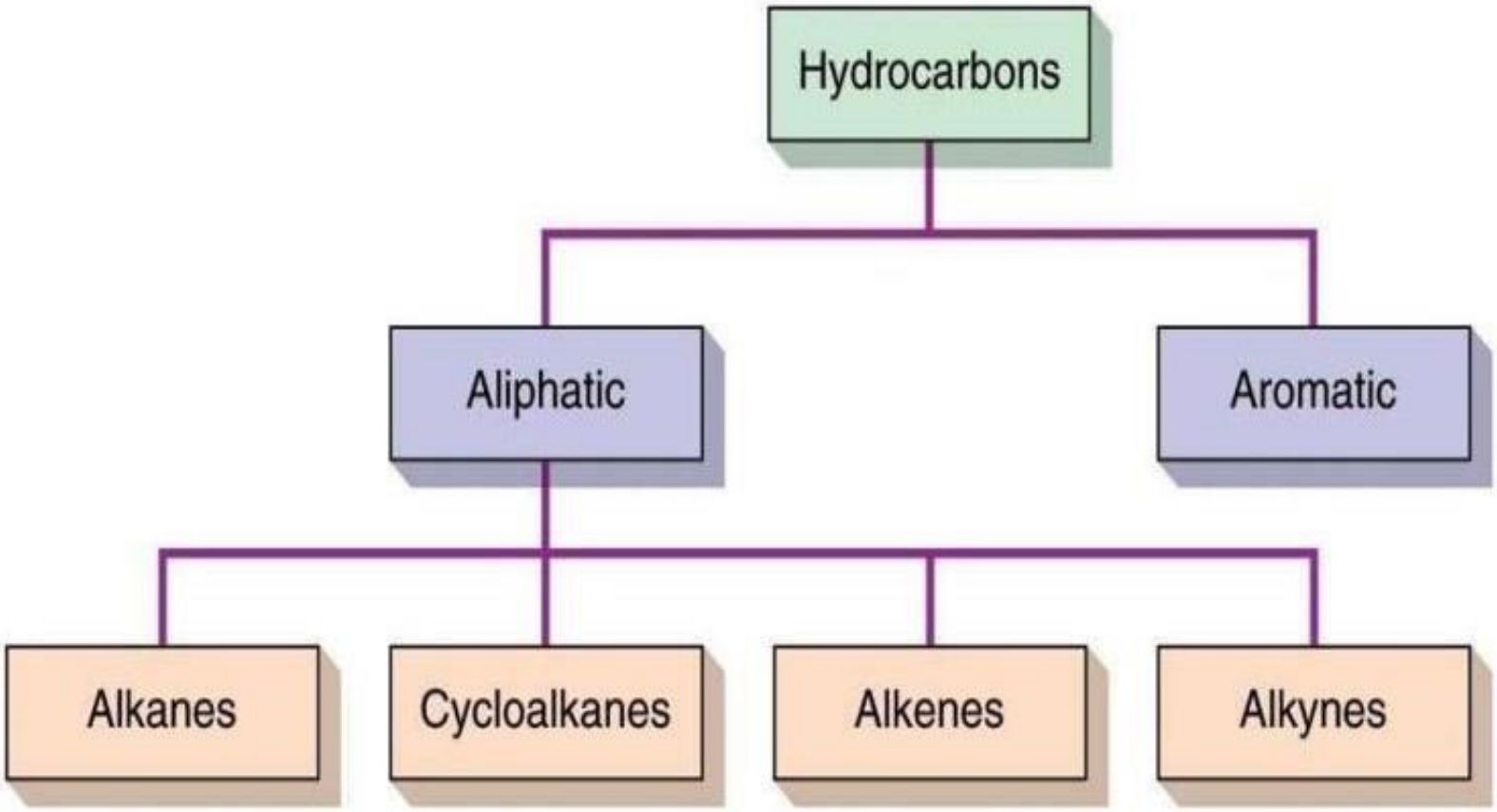
Anciliary functional groups are given in alphabetical order, with their position at the beginning of the name.

ancilliary functional group	formula	prefix
methyl	$-CH_3$	methyl
ethyl	$-C_2H_5$	ethyl
propyl	$-C_3H_7$	propyl
butyl	$-C_4H_9$	butyl
pentyl	$-C_5H_{11}$	pentyl
hexyl	$-C_6H_{13}$	hexyl
heptyl	$-C_7H_{15}$	heptyl
octyl	$-C_8H_{17}$	octyl
nonyl	$-C_9H_{19}$	nonyl
decyl	$-C_{10}H_{21}$	decyl
fluorine	-F	fluoro
chlorine	-Cl	chloro
bromine	-Br	bromo
iodine	-I	iodo
amine	$-NH_2$	amino
hydroxyl	-OH	hydroxy
cyanide	-CN	cyano
benzyl	$-CH_2C_6H_5$	benzyl
phenyl	$-C_6H_5$	phenyl

Hydrocarbons

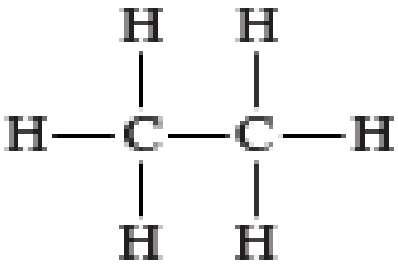
- Hydrocarbons are the most simple organic compounds.
- Hydrocarbons contain only carbon (C) and hydrogen (H.)
- Hydrocarbons can undergo reactions that release a large amount of energy.
- Hydrocarbons can be divided into aromatic and aliphatic hydrocarbons.
- The carbon atoms join together to form the framework of the compound, and the hydrogen atoms attach to them in many different configurations. chemical compound.

Classification of Hydrocarbon

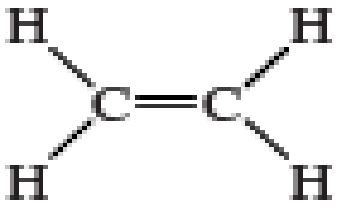


Structures of Representative Hydrocarbons

aliphatic hydrocarbons



alkane



alkene

alkyne

aromatic hydrocarbons