

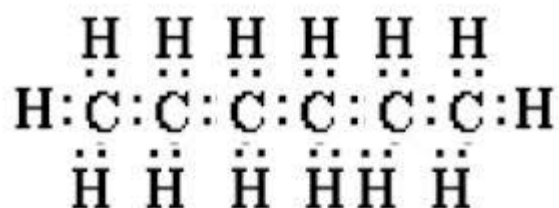
ALKANES

A. Introduction

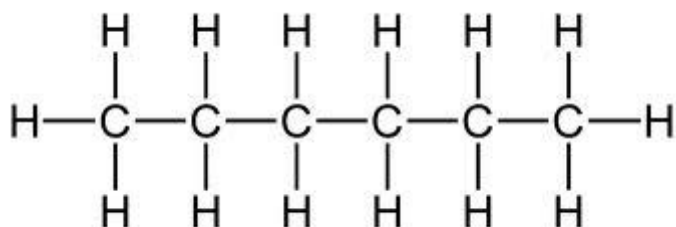
- **Hydrocarbons** – molecules that contain both hydrogen and carbon
- **Alkanes** – molecules that contain only carbon and hydrogen, and **only single bonds**
- **Carbon** – special element that can make 4 bonds per atom
- **Backbone** – carbon main chain

B. Formulae

- **Structural** – Lewis structure
1. Eg: hexane

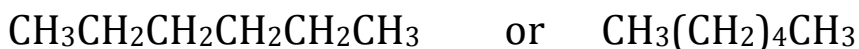


- **Expanded Structural** – shows the carbon and hydrogen with bonds sticking out
1. Eg: hexane



- **Condensed Structural** – shows the carbon backbone without bonds sticking out

1. Eg: hexane



- **Molecular** – chemical formula of the molecule

1. Eg: hexane



- **Line Diagram** – each corner or end of line represents one carbon



C. Alkanes

- **General formula** – $\text{C}_n\text{H}_{2n+2}$
 - n = number of carbon atoms
- **Naming**
 - find the longest chain *it may not be the straight line
 - use the prefix from the table below
 - use the suffix 'ane'

ORGANIC NAMING PREFIXES

# of Carbons	Prefix
1	Meth-
2	Eth-
3	Prop-
4	But-
5	Pent-
6	Hex-
7	Hept-
8	Oct-
9	Non-
10	Dec-

Exercises:

1. Draw the expanded structural formulae for each of the following alkanes.
 - a. methane
 - b. octane
 - c. propane
2. Give the condensed structural formulae for each of the following alkanes.
 - a. hexane
 - b. nonane
 - c. ethane

