



Origin of organic compounds

- Naturally occurring organic compounds are found in plants, animals, and fossil fuels
- All of these have a plant origin
- All of these rely on the "fixing" of C from CO₂
- Synthetic organic compounds are derived from fossil fuels or plant material

Introduction

- Most current research focuses on Organic
- Originally from "organic" meaning life
- Not just chemistry of life, chemistry of carbon
- Exceptions:
 - oxides of carbon (CO₂, CO)
 - carbonates, bicarbonates (NaHCO₃, CaCO₃)
 - cyanides (NaCN, etc)

One C with no H, or with metal

- Carbon can form four bonds...

Carbon forms four bonds

- Carbon can form four bonds, and forms strong covalent bonds with other elements
- This can be represented in many ways ...

Functional groups

- Functional groups are parts of molecules that result in characteristic features
- About 100 functional groups exist, we will focus on about 10
- Useful to group the infinite number of possible organic compounds
- E.g. the simplest group is hydrocarbons
- Made up of only C and H
- Not really a functional "group"
- Further divided into:
 - Alkanes, Alkenes, Alkynes, Aromatics

Hydrocarbons

Alkanes C—C 	Alkenes C=C
Alkynes C≡C 	Aromatics

Functional groups

- Read 1012 - 1014
- You will need to memorize family name and associated general structure (use study notes: includes ether group)
- Handout Molecular model kits
- Build this structure:
- Assignment: in groups build each of the "Examples" in table 24.1
- Each member must have the exact same molecule (thus you must agree on structure)
- Show me the structure(s) after building each

Hydroxyl, carbonyl, carboxyl

- There are other names that describe patterns of atoms that are parts of functional groups.
- "Hydroxyl" refers to -OH
- "Carbonyl" refers to C=O
- "Carboxyl" refers to COOH

Q: which functional groups contain a hydroxyl group? A carbonyl group? A carboxyl group?

Note that properties such as boiling and melting point change due to functional groups