

A/L Chemistry

Organic
Chemistry

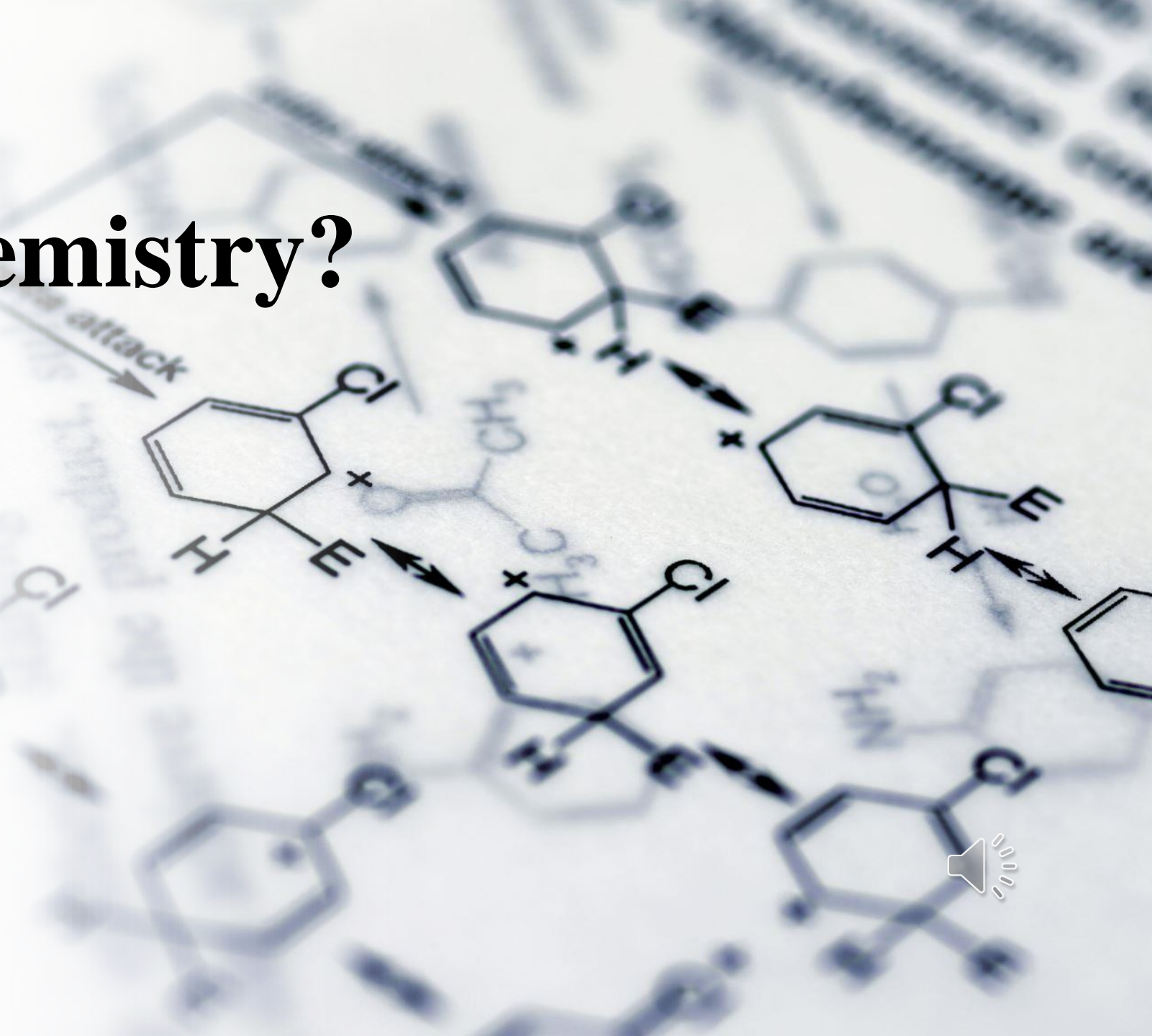


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What is Organic Chemistry?

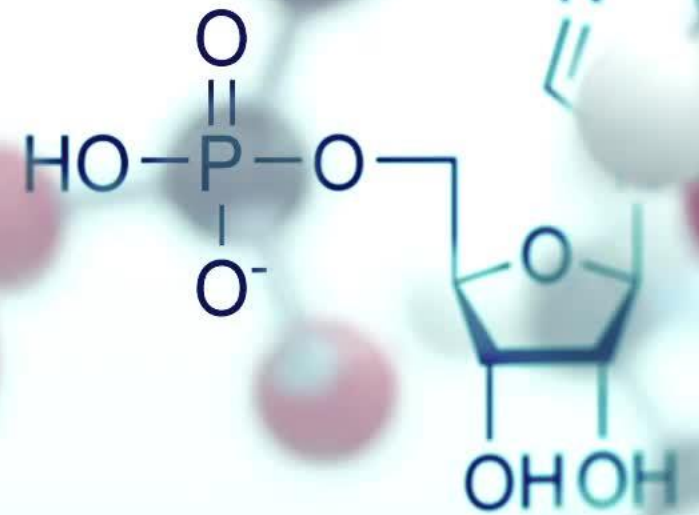
Organic Chemistry is the branch of chemistry that focuses on the study of carbon-containing compounds, which are essential to life and form the basis of numerous substances, including pharmaceuticals, plastics, and fuels.



Carbon Compounds

*Organic compounds are primarily composed of **carbon** and **hydrogen**, often with other elements like **oxygen**, **nitrogen**, **sulfur**, and **halogens**.*

Carbon has unique bonding properties, allowing for the formation of diverse and complex molecules.





Hydrocarbons

Hydrocarbons are organic compounds consisting only of carbon and hydrogen.

There are two main types:

- 1. Aliphatic hydrocarbons***
(linear or branched chains)
- 2. Aromatic hydrocarbons***
(containing benzene rings)





Organic Reactions

- Organic reactions involve the breaking and forming of chemical bonds.
- Key reaction types include
 - Addition
 - Elimination
 - Substitution
 - Oxidation-reduction reactions



Applications of the Organic Chemistry

- **Bioorganic Chemistry**

Bioorganic chemistry explores the interactions between organic molecules and biological systems.

It is crucial for understanding processes such as ***enzyme catalysis, DNA structure, and drug interactions in living organisms.***





Polymers

Polymers are large molecules composed of repeating structural units called monomers.

Many polymers, such as *plastics* and *proteins*, have vital applications in daily life.



A row of small, empty, amber-colored glass vials is shown in a laboratory setting. The vials are arranged in a line, receding into the background, creating a sense of depth. They are placed on a light-colored surface, possibly a tray or a counter. The background is blurred, showing other laboratory equipment and a bright, out-of-focus light source.

Organic Synthesis

Organic synthesis involves creating new organic compounds from simpler ones.

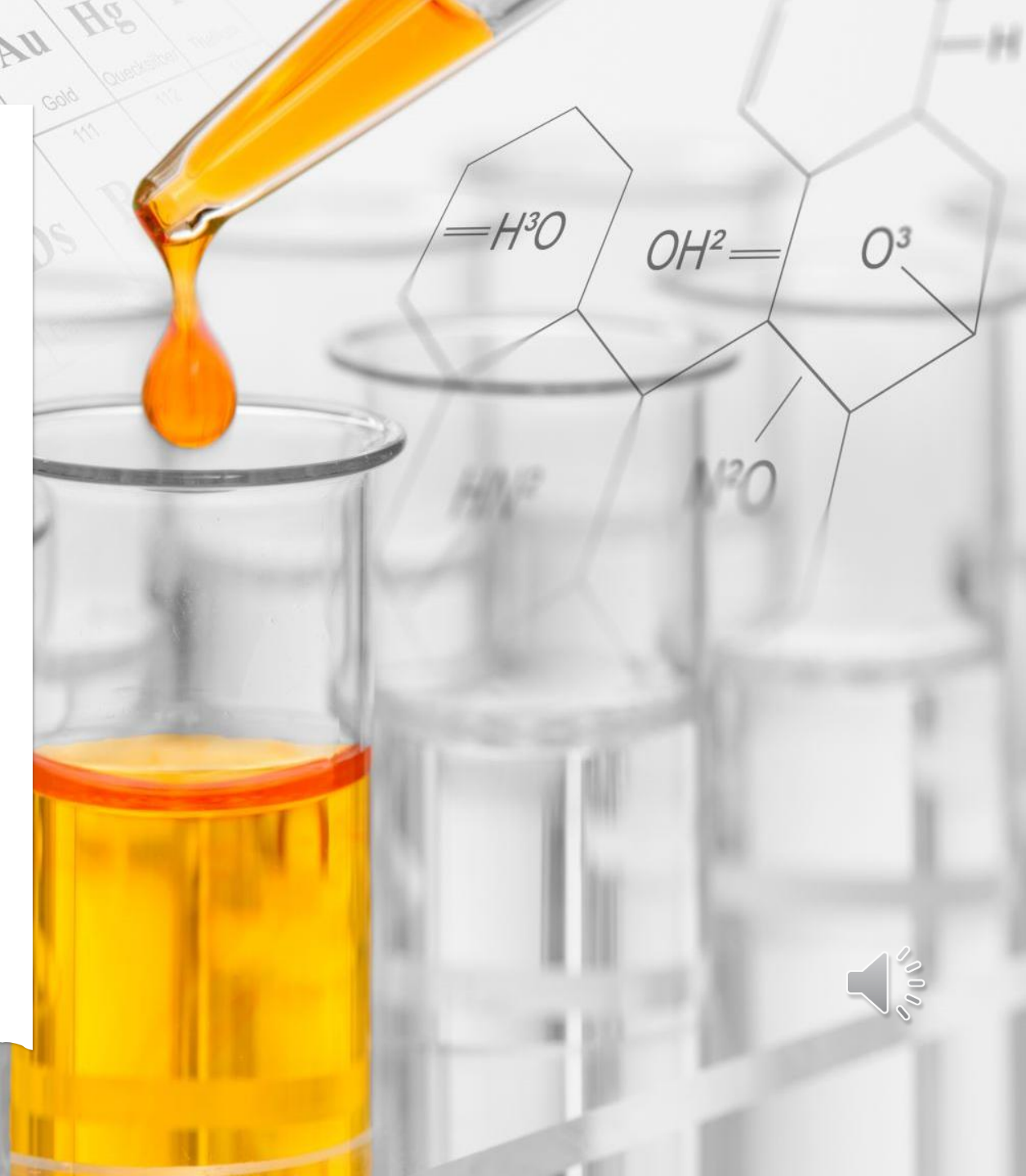
It plays a central role in the development of *drugs, materials, and various industrial products.*



Natural Products

Many important compounds in nature, including **vitamins**, **hormones**, and **essential oils**, fall within the kingdom of organic chemistry.

Understanding their structures and functions is crucial for various scientific and medical applications.



Environmental Impact

Organic chemistry also addresses environmental concerns, such as the *design of eco-friendly processes* and *the study of pollutants and their remediation*.



Covered Point

- Definition of Organic Chemistry
- Carbon Compounds
- Hydrocarbons
- Reactions
- Bioorganic Chemistry
- Polymers
- Organic Synthesis
- Natural Products
- Environmental Impact



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