Interdisciplinary Studies on Applied Science, 2(1):55–57, 2025. DOI: 10.58613/isas218

Interdisciplinary Studies on Applied Science

Journal homepage: https://www.gpub.org/journal-details.php?journal-id=42

ISSN (E): 3048-877X

Review

Organic Compounds: A Comprehensive Review

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Article Info

Keywords: *Review, Organic, Central Atom, Molecule Organic*

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Received: *05.07.2025*
Accepted: *19.08.2025*
Published: *29.08.2025*

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Abstract

Organic Building Blocks and the Fundamental Functions of Organic Molecules: 'Most Hotly Debated' Ingredient in Life The chemistry of life – or organic chemistry – is based on what are called organic molecules. But because they are all made of only carbon and hydrogen (and a smattering of other elements), the architecture can vary incredibly in shape and complexity. These will extend by way of side-attachments, or through long-chains, thanks to carbon's unique ability to bond with itself. Natural and creative events both develop from this natural restraint that gives the scale of molecular structure.
The Objective of This Review: In this paper we look in the different organic compounds. After summarizing their systematics, structures and physical properties, it attempts to describe how all these can be understood in the light of a structural framework. Finally organic species are new to all types of biological systems -some of them very recently so- and their view in what is terms of industrial use. Further considering such recently developed topics as "designer" polymers, biomimetics mechanisms and elements molecular recognition alignment and infiltrated dendritic structures III-V semiconductors for nano electronics astrochemical systematics leading to PAHs in space environmentally friendly green chemistry with porous gallium phosphates process intensification in chemical engineering carbonic gels These land-based breakthroughs are discussed not simply based on background theory but, also with reference to topic-specific applications.

1. Introduction

Organic chemicals Organic chemicals, made up of carbon and hydrogen, frequently contain elements; for example, oxygen or nitrogen Technology 2 and sulfur or other halogens. Carbon has four valences. Second, no other covalently -bonded products can be made that force the two carbon-carbon bonds to be distanced at 180° to one another. This characteristic sets organic substances apart from inorganic ones, and it also occurs that these molecules are the foundation of both technology and life itself [1]. According to a different perspective, organic chemistry continues to aim to understand natural products and the molecular activity that connects all living things. Proteins, lipids, carbohydrates, and nucleic acids are all part of the same complex network of organic molecules. These include metabolism, the transmission of genetic information, the storage of available energy, and similar processes. Research on these natural relationships primarily emphasizes the crucial role that organic molecules play In sustainability and survival [2].

Conversely, industrial chemistry focuses around organic materials. They include sophisticated materials, including those at the Nanoscale, agrochemicals, fuels, and polymers. Their versatility provides a window of opportunity in a number of markets, not just one. Organic chemistry provides for the world's energy, medical, agricultural, and technological requirements. In a way, it encompasses every aspect of modern civilization [3].

Carbon's Bonding and Hybridization

The final thing that should be noted about carbon is its most amazing characteristic, which sets it apart from the other elements: its unmatched capacity to build stable networks, rings, and chains of almost any length or shape [4]. That idea is never broken since a carbon has four valence electrons that it shares in some way with its neighbors. The various states of hybridization for carbon (sp^3, sp^2, sp), also provide carbon with all different geometries and coordination numbers: linear, trigonal bi pyramidal, tetrahedral. From here originates its high diversity to create various molecular architectures [5].

General Molecular Frameworks

The organic compounds afford the possibility of still other modes of arrangement. Hydrocarbons. The hydrocarbons form the simplest group of organic compounds.

Chemical Characteristics

Reactivity is due to functional groups, moderated by resonance and inductive and the stereo electronic effect. Yet these principles allow chemists to predict which reactions will happen, and hence how to carry out the necessary joins [6]. Organic compounds in the biological system 5.1 Carbohydrates: These are sugar and polysaccharide that serve not only as reserve of energy but also a structural component in living organisms. Lipids: It is composed of fat, oil and phospholipid and steroid. The lipids function as long term energy storage and essential components of cell membranes [7].

Proteins are polymers of amino acids in peptide bound strings that assume complex three dimensional structures. It's those arrangements that make proteins good enzymes, or structural components and biological signalers.

DNA and RNA are information carriers for the nucleic acid. Their monomeric information on how to be assembled protein is the dictator of inheritance and protein synthesis [8].

Industrial Uses of Organic Compounds

Fuels Petroleum and natural gas based hydro-carbons are the foundation of the world's energy resource.
Polymers This means synthetic polymers: plastics, elastomers, fibers-and shows what can be done to organic material to make them useful in technology or our daily lives.
Pharmaceutical Chemistry Chemical synthesis Among new drugs, chemical synthesis is used to discover and develop therapeutic agents with specific desired biological activity [9].
Agrochemicals Herbicides and pesticides are applied for the maintenance of agriculture production and world food stocks. Fertilizers are the difference between how crops grow now and how they grew when their use was limited.
Dyes & Pigments Organic chromophores give color to the textiles, paints and imaging media.

Reactivity and Mechanisms

Substitution Reactions A familiar type of substitution occurs in alkanes, aromatics and haloalkanes. Substitution often can be described as the exchange of one atom or group with another [10].

Addition Reactions

Common examples are found within alkenes and alkynes in which across the multiple bond atoms act as additions. We also get double or triple bonds by stripping off atoms or groups of it and our compound becomes unsaturated to form ketone alkanes [11].

Aside from electronic effects, a number of synthetic transformations occur with changes to oxidation state and functionalization. Prior to 1950, such slaves fell largely into two categories: chain-growth polymerization and step-growth polymerization [12, 13].

2. Conclusion

Organic molecules are the basis for natural and artificial life. Perhaps we can find the answer in structurally complex and "tunable" synthetic materials that have life-like properties Molecular Biochemistry in their jobs. Besides generating novel drugs and materials, research in organic chemistry has started to address the global challenges of our age. Organic has a positive impact on human life; good food leads to better health and housing, clothes mean living an infinitely higher than an animal. It also drives energy-saving technology and benefits the global environment.

Article Information

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Competing Interests: Authors have declared that no competing interests exist.

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