

CHAPTER > 12

Organic Chemistry : Some Basic Principles and Techniques

KEY NOTES

- Carbon forms covalent bonds with other carbon atoms. It also forms covalent bonds with other elements like H, O, N, S, P and X. The resulting compounds are studied under separate branch of chemistry called **organic chemistry**.
- Organic chemistry deals with study of hydrocarbons and their derivatives.
- Catenation is responsible for large number of carbon compounds.

Bonding in Organic Compounds

- Tetravalency of carbon** It can be explained in terms of its electronic configuration and the hybridisation of *s* and *p*-orbitals. Hybridisation influences both length and enthalpy in bonds.
- Characteristic feature of π -bond** In π -bond formation, parallel orientation of two *p*-orbitals on adjacent atoms is necessary for a proper sideways overlap. The electron charge cloud of the π -bond is located above and below the plane of bonding atoms.

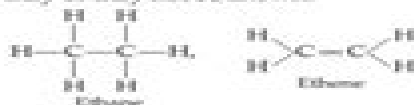
Structural Representation of Organic Compounds

These are represented in several ways. Some are as follows :

- Lewis structure** Electrons are represented as dots.



- Dash structure** The two electron covalent bond is represented by a dash (—). Lone pair of electrons on hetero atoms may or may not be shown.



- Condensed structure** The formula is written by omitting some or all of the dashes representing covalent bonds and by representing the number of identical groups attached to an atom by a subscript.



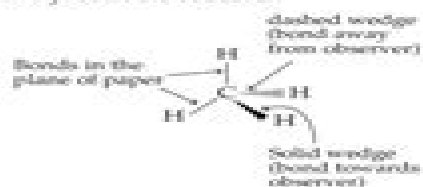
- Bond line structure** Carbon and hydrogen are not shown and the lines representing C—C bonds are drawn in a zig-zag fashion.



Three Dimensional Representation of Organic Molecule

It can be represented on paper by using solid (\longrightarrow) and dashed (\dashrightarrow) wedge formula.

In these formulas, the solid wedge is used to indicate a bond projecting out of the plane of paper, towards observer. The dashed wedge is used to depict the bond projecting away from the observer.



Basic Principles Of Organic Chemistry

J.D. Roberts



Basic Principles Of Organic Chemistry:

Basic principles of organic chemistry John D. Roberts, Marjorie C. Caserio, 1979 **Basic Principles of Organic Chemistry** John D. Roberts, 1965 **Basic Principles of Organic Chemistry** Sanjeev Jena, 2014-12-25 This book is especially written for graduate and undergraduate student to make their concepts in basic parts of organic chemistry

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an important part of Pharmaceutical Research and Development unit since it involves preparation of novel or modification of already existing molecules to extract the therapeutic application of these molecules This book deals with different types of experiments where the major emphasis is given on various basic techniques of Organic chemistry like melting point boiling point crystallization distillation and calibration of thermometer It also includes identification of organic compound of various functional groups from carboxylic acid Phenols ketons aldehyde etc with specific reaction procedure and its chemical reaction It also covers experimental methods consisting of the derivatives preparations of functional groups The book also covers some Organic preparation Synthesis of compounds with reaction principle and mechanism These experiments are selected in such a manner that the reader should get a in depth knowledge about the medicinal chemistry practicals All comments and suggestions will be received with gratitude I am very much grateful to KLE Academy of Higher Education and Research all my beloved teachers parents wife for their constant support and encouragement Thanks to my daughters Ananya and Adhya who are my stress relievers I would like to express my heartfelt thanks to each and everyone who directly or indirectly helped me in compilation of this book

Basic Organic Chemistry for the Life Sciences Hrvoj Vančik, 2022-01-18 This textbook is designed for students of biology molecular biology ecology medicine agriculture forestry and other professions where the knowledge of organic chemistry plays an important role The work may also be of interest to non professionals as well as to teachers in high schools The book consists of 13 chapters that cover the essentials of organic chemistry including basic principles of structure and constitution of organic compounds the elements of the nomenclature the concepts of the nature of chemical bond introductions in NMR and IR spectroscopy the concepts and main classes of the organic reaction mechanisms reactions and properties of common classes or organic compounds and the introduction to the chemistry of the natural organic products followed by basic principles of the reactions in living cells This second edition includes revisions and suggestions made by the readers of the first edition and the author s colleagues In addition it includes substantial changes compared to the first edition The chapter on Cycloaddition has been completed by including the other pericyclic reactions sigmatropic rearrangements electrocyclic reactions The chapter on Organic Natural Products has been extended to include new section covering the principles of organic synthesis New chapter Organic Supramolecular and Supermolecular Structures is added This chapter covers the basic knowledge about the molecular recognition supramolecular structures and the mechanisms of the enzyme catalyzed reactions

Student Supplement For: Basic Principles of Organic Chemistry
 John D. Roberts, Narjorie C. Caserio, 1979 **Principles of Organic Synthesis** Richard O.C. Norman, 2017-10-19 This book is designed for those who have had no more than a brief introduction to organic chemistry and who require a broad understanding of the subject The book is in two parts In Part I reaction mechanism is set in its wider context of the basic principles and concepts that underlie chemical reactions chemical thermodynamics structural theory theories of reaction

kinetics mechanism itself and stereochemistry In Part II these principles and concepts are applied to the formation of particular types of bonds groupings and compounds The final chapter in Part II describes the planning and detailed execution of the multi step syntheses of several complex naturally occurring compounds

Worked Solutions in Organic Chemistry James M. Coxon, 2018-10-08 This book illustrates and teaches the finer details of the tactics and strategies employed in the synthesis of organic molecules As well as providing model answers to the problems the book discusses in detail the reasons why particular strategies are chosen and why in given circumstances alternative methods or routes may or may not be appropriate As such it could be used as a stand alone volume for the teaching of organic chemistry with a modern and appropriate emphasis on synthesis Extensive cross referencing to Principles of Organic Synthesis allows the two books to be used as companion volumes

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Basic Principles for Introductory Organic Chemistry Imre Gyula Csizmadia, 1997

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