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ISSN: 2329-6798
Modern Chemistry & Applications

Opinion Article

The Effect of Stereochemistry in Catalysis

Jason Feil*

Department of Chemistry, University of Bath, Bath, UK

ABOUT THE STUDY

The study of stereochemistry focuses on stereoisomers, which have the same molecular formula and sequence of bonded atoms, but differ in the 3-dimensional orientations of their atoms in space. For this reason, it is called as a 3D chemistry. The stereo means "Three Dimensionality". Stereochemistry is the study of the three-dimensional structure of molecules. Stereochemistry is the branch of chemistry which deals with three dimensional structure of molecule and their effect on physical and chemical properties it is called as a stereochemistry. It is a sub discipline of chemistry, includes the study of the relative spatial arrangement of atoms that form the structure of molecules.

A reaction that involves only achiral reactants and reagents can produce only racemic products that are achiral. Thus, the monobromination of butane produces a combination of 1, 2-bromobutane. To represent molecule as 3-Dimensional objects we need at least one carbon hybridized and various types of Stereochemistry are chirality, enantiomers and diastereomers with Videos. An important department of stereochemistry is the study of chiral molecules. Stereochemistry spans the entire spectrum of organic, inorganic, and physical especially supra molecular chemistry. It includes the techniques for determining and describing these relationships effect on the biological properties and impart upon the molecules and these relationships influence the reactivity of the molecules. The cis and trans isomers are types of stereoisomers, differing structurally only in the location of the atoms of the molecule in three-dimensional space. Such stereoisomers can have different types of physical and chemical properties and it is a simple reaction involved in stereochemistry.

The three dimensional study of the relative spatial arrangement of atoms within molecules. Different compounds that have the equal molecular formula. A chiral molecule exists in stereoisomers that are reflecting images of each other, it is known as enantiomers. They are frequently distinguished as either right-handed or left-handed through their absolute configuration criterion. The amino acids are chiral, with the exception of glycine. Chirality and assigning stereochemistry to molecules Identify the stereo center as four unique substituents attached to the chiral center. Assign priority based on atom atomic number, highest to lowest weight. If atoms are same, move to next bond to find first point of difference. In stereochemistry, stereoisomerism is a form of isomerism in which molecules have the same molecular formula and sequence of bonded atoms, but differ in the three-dimensional orientations of their atoms in space.

They are two types of Stereoisomerism. One is Geometrical Isomerism, and another one is Optical isomerism. Geometrical isomerism which arises commonly in heterolysis complexes. This type of isomerism arises due to the possible geometric arrangements for the ligands. Optical isomerism, which arises in chiral molecules are reflect images of each other. The use of single enantiomer drugs can potentially cause simpler and more selective pharmacologic profiles improved therapeutic indices, simpler pharmacokinetics due to different rates of metabolism of the different enantiomers, and reduced drug interactions.

Stereoisomers are isomers that differ in spatial arrangement of atoms, rather than order of atomic connectivity. One of the most interesting types of isomer is the reflect-image stereoisomers, a non-superimposable set of molecules which are reflecting image of another one. Another example of the importance of stereochemistry is pharmaceutical manufacturing and the breakdown of drugs in the body. Drugs are frequently composed of a single stereoisomer of a compound, and while one stereoisomer may have positive effects on the body the other may have negative effects.

Correspondence to: Jason Feil, Department of Chemistry, University of Bath, Bath, UK, Email: Jason@feil.gmail.com

Received: 02-Mar-2022, Manuscript No. MCA-22-16247; **Editor assigned:** 07-Mar-2022, Pre QC No. MCA-22-16247 (PQ); **Reviewed:** 21-Mar-2022, QC No. MCA-22-16247; **Revised:** 28-Mar-2022, Manuscript No. MCA-22-16247 (R); **Published:** 07-Apr-2022, DOI: 10.35248/2329-6798.22.10.346.

Citation: Feil J (2022) The Effect of Stereochemistry in Catalysis. Modern Chem Appl. 10:346.