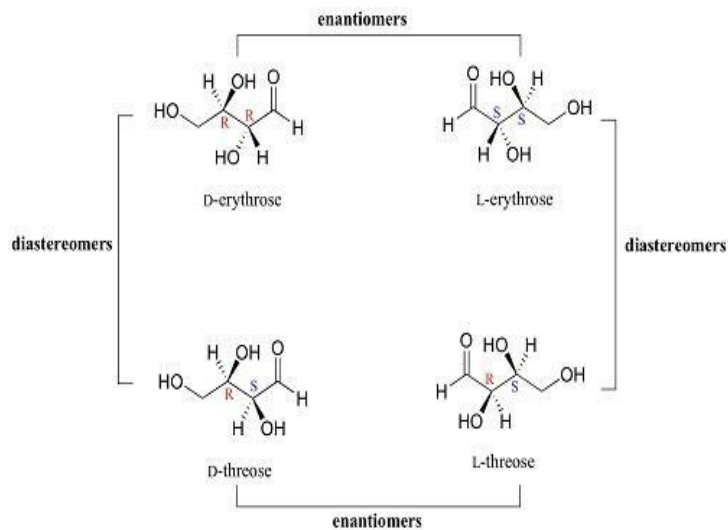
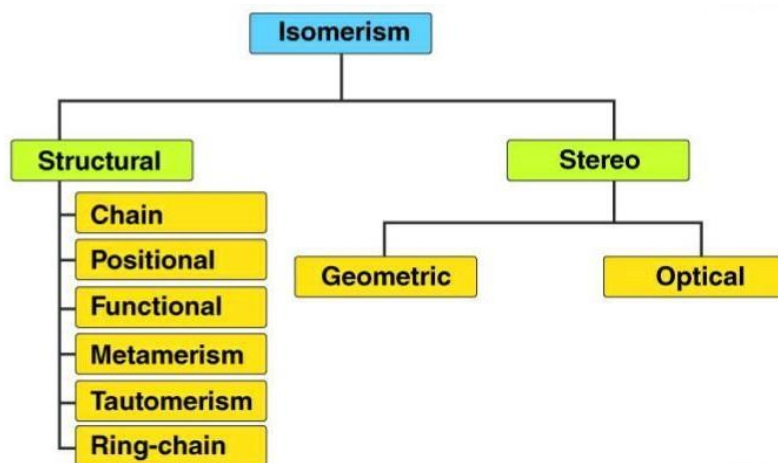


STERIOCHEMISTRY

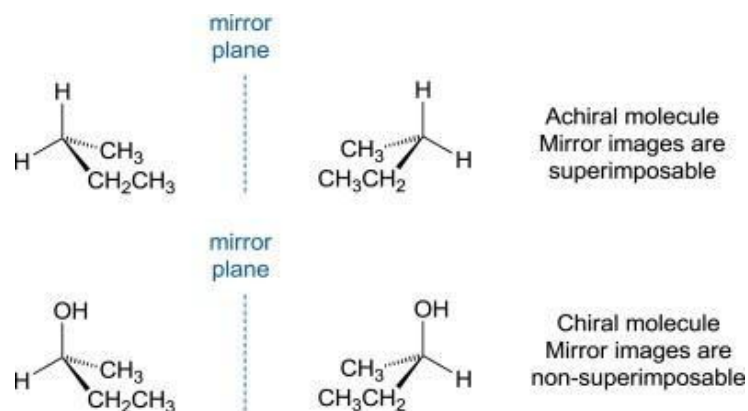
Stereochemistry is the branch of chemistry that involves “the study of the different spatial arrangements of atoms in molecules.

ISOMERISM

Isomerism is the phenomenon in which more than one compounds have the same chemical formula but different chemical structures. Chemical compounds that have identical chemical formulae but differ in properties and the arrangement of atoms in the molecule are called isomers. Therefore, the compounds that exhibit isomerism are known as isomer



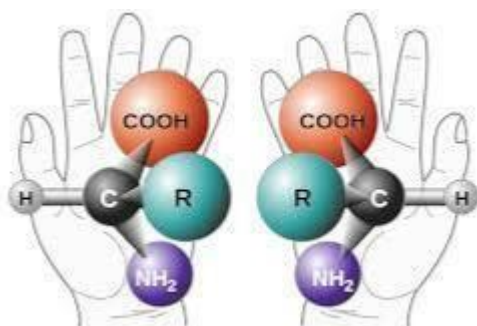
chiral and achiral carbon



ENANTIOMER AND DIASTEREOMER

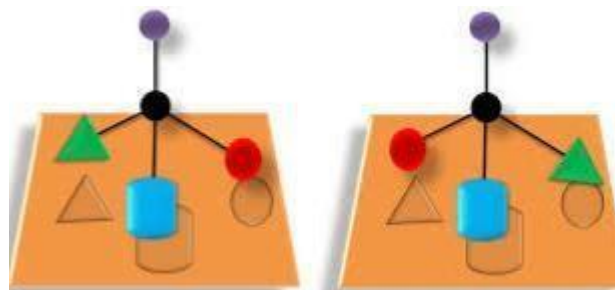
GEOMETRIC ISOMERISM

Geometric isomers are two or more coordination compounds



which contain the same number and types of atoms, and

bonds (i.e., the connectivity between atoms is the same), but which have different spatial arrangements of the atoms.



Geometric isomerism in cyclic compounds

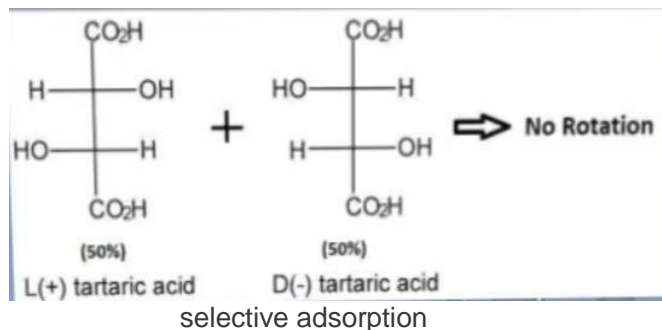
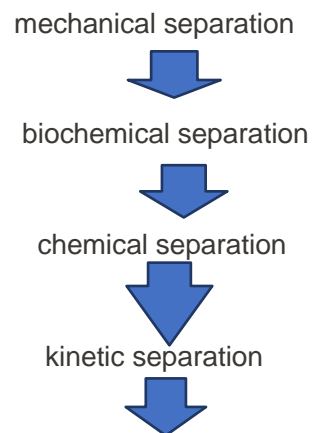
Cis and trans isomers are also called "geometric isomers". For the cis isomer, both substituents are above or below the carbon ring If more than two ring carbons have different substituents (not counting other ring atoms) the stereochemical notation distinguishing the various isomers becomes more complex.

ASYMMETRIC SYNTHESIS

Asymmetric synthesis may be defined as the chemical reaction in which stereoisomeric product is formed in unequal amount under the influence of suitable optically active reagent.

OPTICAL RESOLUTION METHOD

Optical resolution method Optical resolution method is the method of enantiomer separation. Generally there are five types of optical resolution methods-



RACEMIC MIXTURE

An equal amount of two enantiomers is called a racemic mixture

MESO COMPOUND

Meso compounds are the achiral compounds that have a plane of symmetry

(R) AND (S) CONFIGURATION

Both enantiomers of alanine receive the same name in the IUPAC system: 2-aminopropanoic acid. Only one enantiomer is biologically active. In alanine only the enantiomer on the left can be metabolized by the enzyme. A way to distinguish between them is to use stereochemical modifiers (r) and (s).

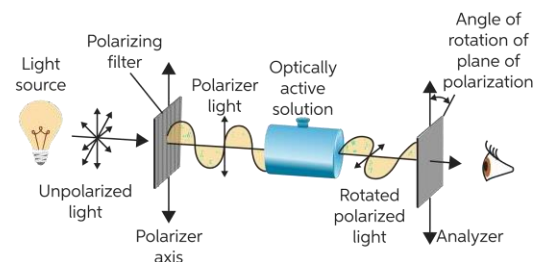
D- AND L- CONFIGURATION

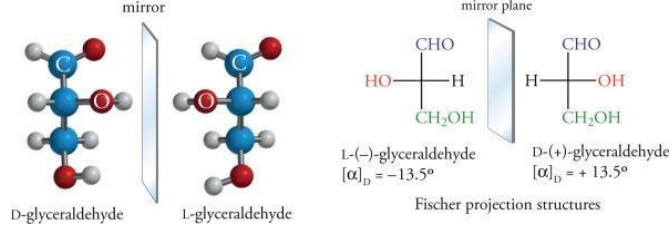
The descriptor D and L



represent a system for distinguishing enantiomers, relating the sense of chirality of any molecule to that of D- and L-Glyceraldehyde.

OPTICAL ACTIVITY optical activity, the ability of a substance to rotate the plane of polarization of a beam of





light that is passed through it

SEQUENCE RULE FOR SPECIFIC

A general method applies to the configuration each chirality center (instead of to the whole molecules) The configuration is specified by the relative position of all the groups with respect to each other at the chirality center.

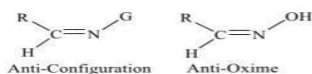
Syn-Configuration

If G and H of aldehyde are present on the same side then such configuration is called Syn.



Anti-Configuration

If G and H of aldehyde are present on the opposite side then such configuration is called Anti



syn and anti system

METHODS OF DETERMINATION OF CONFIGURATION OF GEOMETRICAL ISOMERS

- Method of cyclization.
- By converting into the compound of known configuration.
- Optical activity.
- Method based on physical property.

REFERENCE:

1. Arun Bahl, B.s Bahl (textbook of organic chemistry) page no-[106-126]
2. Morrison and Boyd organic chemistry 6th edition/page no-[125-161]
3. S k gosh book of organic chemistry central publication page no. [243 to 367]
4. <https://bvius.com/chemistry/stereochemistry/>

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