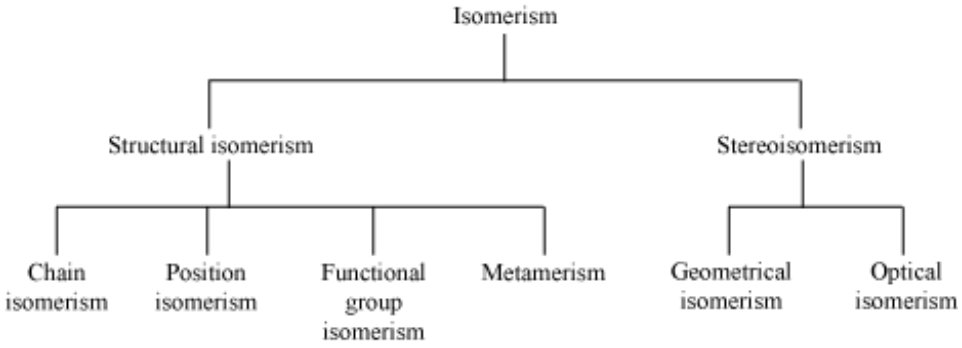
Organic Chemistry : Some Basic Principles and Techniques

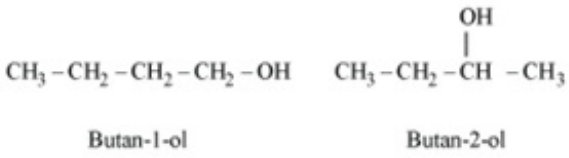
- **Isomerism:**



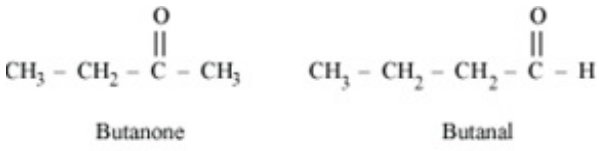
Structural isomerism

1. Chain isomerism: Two or more compounds having the same molecular formula, but different carbon skeletons

2. Position isomerism: Two or more compounds differing in the position of functional group on the carbon skeleton



3. Functional group isomerism: Two or more compounds having the same molecular formula, but different functional groups



4. Metamerism: Two or more compounds arising due to different alkyl chains on either side of the functional group in a molecule

$CH_3OC_3H_7$	$C_2H_5OC_2H_5$
Methoxypropane	Ethoxyethane

Stereoisomerism:

Compounds having the same constitution and sequence of covalent bonds, but different relative positions of their atoms or groups in space

Fundamental concepts in organic reaction mechanism:

Fission of a covalent bond

Heterolytic cleavage: Formation of cations and anions takes place.

The increasing order of stability of carbocations is

$$\overset{+}{C}H_3 < CH_3\overset{+}{C}H_2 < (CH_3)_2\overset{+}{C}H < (CH_3)_3\overset{+}{C}$$

Homolytic cleavage: Formation of free radicals takes place.

The increasing order of stability of alkyl radicals is

$$\overset{\square}{C}H_3 < \overset{\square}{C}H_2CH_3 < \overset{\square}{C}H(CH_3)_2 < \overset{\square}{C}(CH_3)_3$$

Nucleophiles and electrophiles

Nucleophile (Nu:) : Nucleus seeking. For example: hydroxide (HO^-), cyanide (CN^-),

Electrophile (E^+) : Electron seeking. For example: carbonyl group (>C=O) or alkyl halides