

Isomers Isomers are compounds with the same molecular formula but different structures and properties. Prepared by Prof. Dr. Hilal Zaid 10/24/2024 22 Prepared by Prof. Dr. Hilal Zaid 10/24/2024

Structural Isomers: Structural isomers differ in the connectivity of their atoms. Example: Ethanol ( $C_2H_5OH$ ) and dimethyl ether ( $C_2H_6O$ ) have the same molecular formula but different functional groups (alcohol vs. ether). Example: In but-2-ene, the cis isomer has the two methyl groups on the same side of the double bond, while the trans isomer has them on opposite sides. Types: Chain Isomers: Variations in the carbon chain (e.g., straight-chain vs. branched). Stereoisomers Stereoisomers have the same connectivity but differ in the spatial arrangement of atoms.