

Outline of Part I

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I. Stereochemistry

A. Isomers

1. Constitutional Isomers
2. Stereoisomers
3. Enantiomers
4. Diastereomers

B. Chirality

1. Chiral
2. Achiral
3. Meso
4. Stereocenters (examples of C, N, P, and S).
5. Optical Activity

C. Nomenclature

1. Cahn-Ingold-Prelog convention
2. R/S; E/Z
3. Topological Relationships Within a Molecule
4. Homotopic
5. Heterotopic
6. Enantiotopic

D. Relative Reactivity

1. Enantiomeric Transition State Structures
2. Diastereomeric Transition State Structures
3. Energy/Reaction Coordinate Diagrams
4. Felkin-Ahn Model for Cram's Rule

E. Asymmetric Synthesis

1. Chiral Auxiliaries
2. Chiral Catalysts

F. Measurement of Stereoselectivity

1. Diastereomeric Excess, d_e
2. Enantiomeric Excess, ee
3. Direct Determination
4. Derivatization (i.e., Mosher's Ester)
5. GC, HPLC, NMR

G. Determination of Configuration