

Stereochemistry

Lecture-Nr.: 53753

Type: seminar

Duration: 1 hour per week (winter semester), The seminar takes place on five days (5 x 3 hours in November/December) and is supplemented by optional exercises.

Method of Assessment: written examination

ECTS Credit Points: 1

Topics:

Definition of terms, constitutional isomers, stereoisomers, conformation, configuration, diastereomers, enantiomers, chirality, racemates, racemic mixtures; optical activity; symmetry; non-C chirality; central, planar, axial, helical chirality; atropisomers; nomenclature of stereoisomers; absolute and relative configuration; Cahn-Ingold-Prelog priority rules (CIP convention); cis/trans, E/Z, R/S, endo/exo, syn/anti nomenclature; homotopy, heterotopy; enantiotopic and diastereotopic groups, prochirality.

Principles of chiral separation; resolution of enantiomers; crystallization; diastereomeric salts and derivatives, kinetic resolution, biochemical methods, chiral separation by chromatography and capillary electrophoresis, diastereomeric interactions and transition states; diastereomeric derivatives; kinetic resolution; biochemical methods; clathrates, inclusion compounds; optical purity, enantiomeric excess; enantioselective and diastereoselective synthesis; principles of dynamic stereochemistry (examples of chemical reactions).

Literature:

1. IUPAC recommendations 2006: Graphical representation of stereochemical configuration, Pure Appl. Chem. 78 (10), 1897–1970 (2006).
2. Eliel; Wilen: Stereochemistry of Organic Compounds. Wiley, New York.
3. Hellwich: Stereochemie, Grundbegriffe. Springer, Heidelberg.
4. Hellwich; Siebert: Übungen zur Stereochemie. Springer, Heidelberg.

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