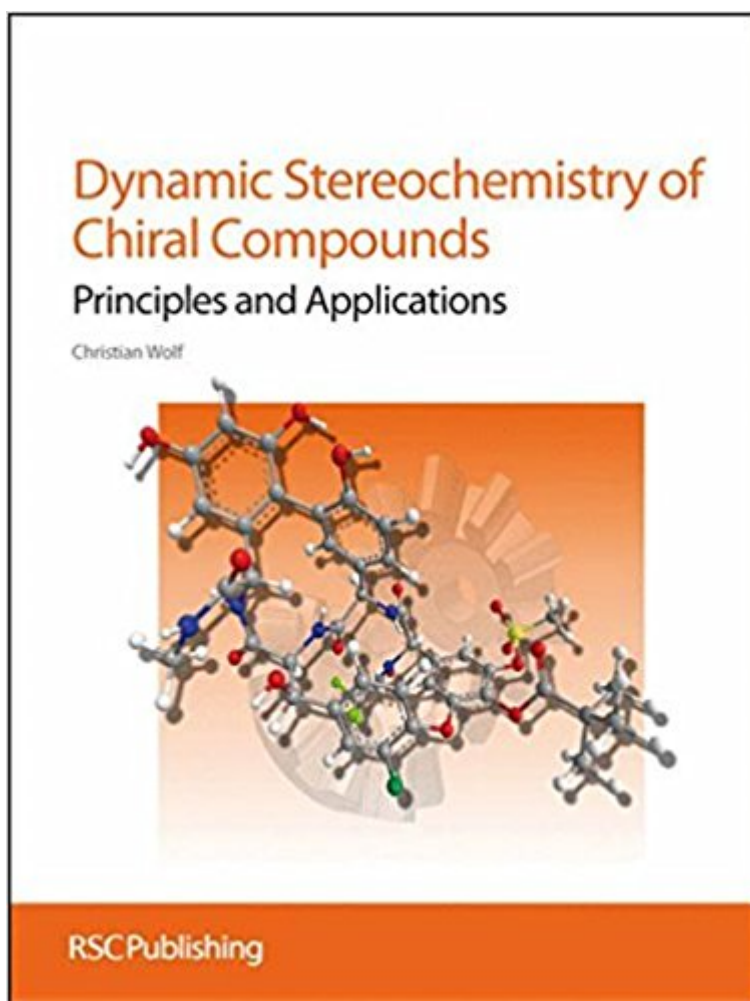




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Dynamic Stereochemistry Of Chiral Compounds: Principles And Applications



Synopsis

This book provides an overview of fundamental concepts of asymmetric synthesis highlighting the significance of stereochemical and stereodynamic reaction control. Topics include kinetic resolution (KR), dynamic kinetic resolution (DKR), dynamic kinetic asymmetric transformation (DYKAT), and dynamic thermodynamic resolution (DTR). In-depth discussions of asymmetric synthesis with chiral organolithium compounds, atropisomeric biaryl synthesis, self-regeneration of stereogenicity (SRS), chiral amplification with chiral relays and other commonly used strategies are also provided.

Particular emphasis is given to selective introduction, interconversion and translocation of central, axial, planar, and helical chirality. A systematic coverage of stereochemical principles and stereodynamic properties of chiral compounds guides the reader through the book and establishes a conceptual linkage to asymmetric synthesis, molecular devices that resemble the structure and stereomutations of propellers, bevel gears, switches and motors, and topologically chiral assemblies such as catenanes and rotaxanes. Racemization and diastereomerization reactions of numerous chiral compounds are discussed as well as the principles, scope and compatibility of commonly used analytical techniques. Details of analytical methods are provided and discussed as well as topics relating to the design of fascinating topologically chiral assemblies and molecular technomimetic devices in the context of dynamic stereochemistry. Strategies and recent developments that address important synthetic challenges are presented and highlighted with hundreds of examples, applications and detailed mechanisms. This exceptional book includes: - More than 550 figures, schemes and tables illustrating mechanisms of numerous asymmetric reactions and stereomutations of chiral compounds - Technical drawings illustrating the conceptual linkage between macroscopic devices such as turnstiles, ratchets, brakes, bevel gears or knots and molecular analogs - More than 3000 references to encourage further reading and facilitate additional literature research - A comprehensive glossary with stereochemical definitions and terms which facilitate understanding and reinforce learning This book will be of particular interest to undergraduates, graduates and professionals working and researching in the fields of organic synthetic chemistry and analytical chemistry.

Book Information

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Customer Reviews

It is presented in a way which gives a uniquely bright outlook and lays down a contemporary, concise, coherent and entertaining romp through dynamic stereochemistry.....is well produced, very clear and readable, with a particularly comfortable format.I would recommend the work for advanced students - masters and doctoral stage researchers - as well as the broad-minded professional.

(Chemistry World, April 2008, 75-76 (David Amabilino))"This is a fresh approach which will be of some interest to process chemists and engineers who are not only interested in synthesis but also in kinetics and rates of processes." (Organic Process Research and Development, 2010, 14, 298)"This book provides a feast of fascinating chemistry involving wide-ranging stereochemical studies.""This is a book that people will love to read. The topics are well chosen and interesting and the writing is succinct and accurate. It could be used as a textbook for an advanced undergraduate or graduate special topics course and will serve as a valuable source of stimulating supplementary material for many courses." (Journal of the American Chemical Society)

This book provides a comprehensive overview of fundamental concepts of asymmetric synthesis along with in-depth discussions of strategies for selective introduction, interconversion and translocation of central, axial, planar, and helical chirality. A systematic coverage of stereochemical principles and stereodynamic properties of chiral compounds guides the reader through the book and establishes a conceptual linkage to asymmetric synthesis, molecular devices that resemble the structure and stereomutations of propellers, bevel gears, switches and motors, and topologically chiral assemblies such as catenanes and rotaxanes. Racemization and diastereomerization reactions of numerous chiral compounds are discussed as well as the principles, scope and compatibility of commonly used analytical techniques. Included in this book: more than 550 figures, schemes and tables illustrating mechanisms of reactions; technical drawings illustrating the conceptual linkage between macroscopic devices and molecular analogs; more than 3000

references to encourage further reading and facilitate additional literature research; and a comprehensive glossary with stereochemical definitions and terms.

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