

Review of Classics in Stereoselective Synthesis

Classics in Stereoselective Synthesis. Edited by E. M. Carreira and L. Kvaerno (ETH Zürich and H Lundbeck A/S, respectively). Wiley-VCH, Weinheim, Germany. 2009. xix + 632 pp. 19 × 25 cm. €69.00 (softcover). ISBN 978-3-527-29966-9.

The stereoselective synthesis of molecules was first completed by Mother Nature and then continued by several generations of chemists. Consequently, stereoselective synthesis is not only the center of modern organic chemistry but also an indispensable part of the synthesis of natural products and their derivatives.

This 18-chapter book, describing approaches and reactions used in stereoselective synthesis, is well organized with good illustrations, starting with a preface that provides the context, objective, and features of this book. Eighteen approaches to stereocontrolled synthesis, including macrocyclic stereocontrol, reactions of double bonds (C=O, C=C, and C=N), conjugate additions, chiral carbanions, sigmatropic rearrangements, and cycloaddition reactions, are selected as highlights in this field. The historical evolutions and new frontiers of the different asymmetric syntheses are well interplayed throughout the book. The introductory section of each chapter provides definitions and background for the described reaction in a way that is clear and self-explanatory. The background information provided gives the reader the basic knowledge for subsequent sections, which provide insightful summation, discussion, and analysis of the stereoselective reactions, accompanied by plenty of examples. The vivid examples in the book not only demonstrate the evolution of the described asymmetric synthetic methods but also represent their applications in the stereoselective total syntheses of natural products, the most sophisticated and challenging applications of stereocontrolled syntheses. These examples are helpful to synthetic chemists in applying what is outlined in the book to their own specific applications. The inspirational quotes from influential scientists in various fields make the book insightful and thought-provoking.

This book succeeds admirably in presenting a comprehensive account of the art of stereoselective syntheses, which are scattered throughout the scientific literature, and thus serves as a good starting place for a comprehensive and rapid reference on the topic.

Overall, this is a book that can be read from cover to cover for both benefit and pleasure. It is very useful to anyone interested in stereoselective synthesis, as it provides both a comprehensive overview of its subject and a wealth of specific applications. It is a handy reference for anyone who desires to seek synthetic strategies to asymmetric molecules, especially to structurally complex and biologically intriguing natural products. It is also an invaluable resource for those wishing to have a thorough understanding of the fundamentals, mechanisms, and applications of stereocontrolled reactions.

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