



ELSEVIER

Book Review

***Stereoselectivity in Synthesis*, Tse-Lok Ho, Wiley, Chichester, 1999, pp. xv + 333, ISBN 0-471-32922-3, GB£ 61.50, hardback.**

This, the author's twelfth book on aspects of organic synthesis, tackles the subject of stereoselectivity in synthesis. This field has been the subject of numerous texts and reviews in recent years, most of which approach the subject from the point of view of reaction types and methods. This monograph looks at the subject from the point of view of how the structural features of a given substrate give rise to a specific stereochemical outcome in a given reaction and examples are chosen from syntheses of complex natural products. This substrate-based approach means that topics such as reagents and synthetic methods are dispersed among the chapters and so, although the use of organometallic reagents is far from neglected, the approach will be more familiar to the synthetic organic chemist than to the organometallic chemist.

There are nine chapters in the book. The first is an introductory chapter explaining briefly such aspects of stereochemistry as configuration, conformation, Cahn–Ingold–Prelog nomenclature, Cram's rule and its successors, and double and triple stereodifferentiation. This is followed by three chapters dealing with stereoinduction. One of these deals with 1,2-stereoinduction, one with 1,3-stereoinduction and one with stereoinduction at longer distances. Although there are numerous examples of organometallic reactions, including use of tricarbonyliron complexes, Grignard reagents, cuprates, rhodium(I)-catalysed formyl additions, nickel-catalysed cycloadditions, tin hydride-initiated cyclisations, the Hiyama reaction, palladium-catalysed cycloisomerisation, use of hexylborane, the Pauson–Khand reaction, Sharpless epoxidation, the palladium-catalysed zin-

coene reaction, palladium-catalysed allylic substitution, zirconium-mediated ring contraction, the Heck reaction etc., these are incorporated as examples of the appropriate stereospecific reaction type.

Chapter 5 deals with group directed reactions and chelation effects and includes sections on epoxidations catalysed by $[\text{VO}(\text{acac})_2]$ and $[\text{Mo}(\text{CO})_6]$; OsO_4 and ReO_7 hydroxylations; hydroboration; catalytic hydrogenation and metal hydride-catalysed reductions; and use of various metals in the Simmons Smith reaction. The section on chelates has examples of a variety of metal chelate-induced reactions and should be of interest to the organometallic chemist.

Chapter 6 discusses conformational effects, including those of transition states in organometallic reactions and Chapter 7 describes topographical and template effects including a section on the use of ligated metallic components for diastereofacial selection. Chapter 8 deals with steric, electrostatic and stereoelectronic effects and Chapter 9 thermodynamic control and kinetic trapping.

The book is well produced with clear reaction schemes and typography. There are a number of small errors but it is otherwise well written and, as to be expected of a modern synthetic text, has many examples of organometallic reactions. However, the substrate-based approach is more suited to the synthetic organic chemist than to the organometallic specialist.

D.W. Young
School of Chemistry,
Physics and Environmental Science,
University of Sussex,
Brighton BN1 9QJ,
UK