

## Science of Synthesis Workbench Edition: Stereoselective Synthesis

**Science of Synthesis Workbench Edition: Stereoselective Synthesis.** Edited by Johannes G. de Vries, Gary A. Molander, P. Andrew Evans. Georg Thieme: New York, Stuttgart, and Delhi. 2011. Vols. 1–3. pp 3278. Price \$899 for set; \$299 per individual volume.

The *Science of Synthesis* series of books from the Thieme publishing house is an invaluable aid to any synthetic organic chemist and the series should be in every library. The series is an update of the old Houben-Weyl, which many older chemists (like me) will remember with affection.

This three-volume set on stereoselective synthesis represents incredible value for the money in the paperback version: over 3000 pages packed with useful reviews and references, with excellent indices, all for a few hundred euros. Anyone doing synthesis needs to have access to these volumes, which will help everyone to design synthetic routes and to decide on reagents and reaction conditions.

A key feature of the reviews is the practical element—each review has brief experimental details of key reactions, tables of results showing the scope and substrate compatibility of the reaction, and a vast amount of additional data (with references). If the reader is unfamiliar with a certain piece of chemistry, this is a great place to quickly familiarise himself/herself within an hour.

The opening volume features *Stereoselective Reactions of Carbon–Carbon Double Bonds*, and the volume editor is Johannes de Vries (DSM). The volume initially covers dihydroxylation, aminohydroxylation, diamination, halogenation, epoxidation, and aziridination in the early chapters. Several chapters on hydrogenation are followed by chapters on hydroformylation, hydroacylation, hydrovinylation as well as those on hydroamination and hydrophosphinylation. If it can be added to a double bond, it will be described in this volume.

Cyclopropanation and metathesis are also covered in chapters by the groups of Charette and Collins. Respectively, in all these chapters the focus is on work after 1995, with key references to earlier review articles given to guide the reader to the earlier literature.

The second volume, *Stereoselective Reactions of Carbonyl and Imino Groups*, edited by Gary Molander has some fantastic chapters and is a must-read for organic chemists. In addition to chapters on reduction of carbonyl groups (which includes hydrogenation, enzymatic, hydride reductions, etc.) and of imino groups, there are many which relate to carbon–carbon bond formation such as epoxide formation (using ylides for example), alkylation reactions (including separate chapters on allylation and arylation), aldol reactions (both direct and via silyl-enol ethers, e.g. Mukaiyama), Morita–Baylis–Hillman reactions and aza analogues, Mannich, benzoin, and Stetter reactions.

Well-qualified experts have been chosen to write these authoritative reviews. Thus, the chapter on Asymmetric Benzoin and Stetter Reactions is by D. A. DiRocco and T. Rovis, leading players in the field.

The third volume, edited by Andrew Evans, covers the vast subject of *Stereoselective Pericyclic Reactions, Cross Coupling and C–H and C–X Activation*. I particularly enjoyed the chapters on ene reactions, sigmatropic rearrangements, and electrocyclic reactions, topics I had lost touch with for a few years.

This volume covers more diverse themes than the previous two, so that a chapter on stereoselective polymerisation falls between one on asymmetric fluorination and another on oxidation of sulfides. No matter—they are all excellent with well-drawn schemes, comprehensive tables, and key references.

In summary, these three outstanding volumes should be on the bookshelf of every synthesis laboratory but chained, as in ancient libraries, because someone is bound to want to take them away.

My only criticism is that the affiliations and contact details of the authors should be listed at the start of the book.

So, if you need assistance with a difficult synthetic problem, an SOS (*Science of Synthesis*) will help!

Trevor Laird, Editor

### ■ AUTHOR INFORMATION

#### Notes

The authors declare no competing financial interest.

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