

Book Reviews *

Tartaric and Malic Acids in Synthesis: A Source Book of Building Blocks, Ligands, Auxiliaries, and Resolving Agents By Jacek Gawronski and Krystyna Gawronska. Wiley Interscience: New York, 1999. 591 pp. ISBN 0471244511. £96.50.

There can be no chiral building blocks more versatile than the tartaric and malic acids. With their ready availability and great scope for synthetic modification, chemists have found a vast range of uses for these compounds as resolving agents, ligands, auxiliaries, and 4-carbon starting materials for synthesis. Many of the most important general methods of asymmetric synthesis developed over the past two decades make use of tartaric acid derivatives, taking advantage of this readily available source of C_2 -symmetric chirality.

In this comprehensive reference work, the Gawronskis discuss the chemistry of each main class of tartrate or malate derivatives sequentially in an order based on the oxidation level at each carbon atom in the 4-carbon unit. Both the syntheses and uses of each class of compounds are considered. For example, tartrate esters, TADDOLs, and threitol are covered in three of the twenty chapters. The book does not limit itself to syntheses starting with the parent tartaric and malic acids; where they exist, independent synthetic routes from other starting materials are included. A helpful system of indicators in the left-hand margin is used for examples of each type of application; R for resolution, L for ligands, A for auxiliaries, and B for building blocks. Extensive tables of physical data for compounds are provided.

This book will be of great value to industrial or academic research chemists involved in chiral synthetic chemistry. This volume is the place to look for that chiral reagent, method of resolution or elegant synthetic manipulation that has just eluded your memory or filing system. The logical organisation of the material means that the section of interest can be found efficiently. Little seems to have been omitted; certainly, every application of tartaric and malic acids I have ever come across and many more besides are here. The extensive table of references for each chapter will soon direct the chemist to the primary research literature. After the original item of interest has been found, the temptation to browse through the neighbouring material is high. In reading this book, I came across many unfamiliar, intriguing, and potentially useful applications of tartaric and malic acids in synthetic chemistry.

Condensing all of the information in this volume in a

rational and easily used way is a major achievement for which chemists should be grateful to the Gawronskis.

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OP990034V

10.1021/op990034v

Phosphorus Ylides; Chemistry and Application in Organic Synthesis by Oleg I Kolodiazhnyi. Wiley-VCH: Weinheim, 1999. 555 pp. ISBN 3-527-29531-3. DM 248.

I was looking forward to reading this work since there has not been a book on ylide chemistry since A. W. Johnson's book in the 1960s. The book covers carbon-substituted phosphorus ylides, cumulene ylides, hetero-substituted phosphorus ylides (the author's own speciality) and the final chapter (about 150 pp) is on the Wittig reaction. The style, however, is more of a catalogue of reactions without enough analysis. I kept wanting to ask Why! Why! Why! as I read the chapters—there was not enough effort made to explain the rationale. Admittedly, the coverage of the book is comprehensive, with excellent references to the Russian literature—as would be expected from a Ukrainian author—which Westerners may have neglected. But the style, coupled with the very large number of typographical errors and mistakes, makes the work difficult to read. The publishers should have corrected many of the errors, since they stem from the author's use of English (boiled instead of boiling THF; despite of; 250 mL of waters; and, my favourite, crystallisation from indifferent solvents, etc., etc.). There are hundreds of errors—incorrect structures, incorrect or omitted references, spelling mistakes (particularly of authors' names)—which a good proof reader should have spotted.

The layout of the schemes, figures, and equations is not particularly attractive and would have been easier to read if more use had been made of numbers in the structural formulae. Industrial chemists will be interested in the chapter on the Wittig reaction—widely used in industry as a manufacturing method (e.g., vitamin A synthesis). This chapter adds little to earlier reviews on the subject, particularly in terms of mechanistic understanding, but is very comprehensive in its coverage of the scope of this most versatile reaction.

In conclusion, the author has produced a comprehensive reference text on phosphorus ylides with up-to-date coverage of the literature (to 1998) which is valuable in itself. If interested in this area, readers should borrow a library copy rather than purchase it themselves!

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10.1021/op990057+

*Unsigned book reviews are by the Editor.