

Book Reviews

Enzyme Catalysis in Organic Chemistry, Volume 1 and 2. Edited by K. Drauz and H. Waldmann. VCH: Weinheim, 1995, 1050 pp., hardback. DM 498. ISBN 3-527-28479-6.

This text is comprised of two volumes, each volume containing roughly five-hundred pages and forms the most comprehensive book to be published in the area of biotransformations. The introductory sections deal with enzyme structure and kinetics. The various strategies behind the production and isolation of enzymes are then dealt with at some length. C. Wandrey is the senior author of an excellent section which follows, reviewing reaction engineering and the issues to be considered in the scale-up of biotransformations.

The book continues detailed accounts of enzyme activities, compiled in terms of the biotransformation involved (*e.g.* hydrolysis, reduction, oxidation *etc.*). Descriptions of the hydrolysis of C—O and C—N bonds (and the reverse reactions) occupy roughly one-third of the whole book and this reflects the activity in these two areas by laboratories throughout the world. In these chapters there is a very impressive array of information, often collected together in Tables which makes the data easy to assimilate. All the data (including yields, enantiomeric excesses) are well-referenced and, indeed, the amount of referencing (*e.g.* over 700 references on C—O bond cleavage and formation) is a noteworthy feature of the book.

The section on reduction is occupied mainly by the transformation of compounds containing a carbonyl group, and includes comprehensive coverage of the action of amino acid dehydrogenases. The chapter featuring oxidation reactions is generally to the same high standard though it must be said that the section covering the formation and the chemistry of cyclohexadienediols is not well-referenced: indeed judging from the non-sequential referencing this

important topic seems to have been added almost as an afterthought. The section describing enzyme-catalysed carbon-carbon bond formation gives a thorough review of the subject and the book is particularly useful for elaborating lesser-known enzyme-catalysed transformations, for example, halogenation and racemization. Turning the focus of attention on these low-profile transformations may give food for thought concerning other useful reactions that may be possible and may deserve researching in the future.

The final chapters describe the potential of catalytic antibodies and the use of modified enzymes. The last pages survey the whereabouts of commercially available enzymes and this part will be particularly useful for less-experienced researchers in this particular field.

In summary the breadth and depth of the science described in this book are both impressive. However, there are some aspects of the presentation which are not so good. First there are lots of spelling mistakes and some grammatical errors reflecting the fact, perhaps, that the majority of authors and the editors do not have English as their first language. Secondly there are some errors in the references but these are not too serious: random checks show that Journal names, volume numbers, page numbers *etc.* are correct. Thirdly the publishers have interposed advertisements for other books in the series amongst the chapters, an unnecessary and annoying feature, at least for this reader.

Overall I believe this book is an essential addition to the library of laboratories working in the area of biotransformations and is an excellent starting point for scientists wishing to gain a comprehensive overview of this burgeoning area of bioorganic chemistry.

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