Catalysts for Fine Chemical Synthesis; Volume 1: Hydrolysis, Oxidation and Reduction, Edited by S. M. Roberts, G. Poignant, Series Edited by S. M. Roberts, I. V. Kozhevnikov, E. Derouane, Wiley & Sons: Chichester, England, **2002**, hardback, 225 pp, € 124, ISBN 0-471-49054-7

This first volume in a series of three summarizing methodologies for the synthesis of fine chemicals focuses on hydrolysis reactions and asymmetric redox processes. The volume is divided into two parts, where in part I a short review describes the range of applications of biocatalysts in organic synthesis. The methods described for enzymatic hydrolysis, reduction, oxidation and carbon-carbon bond formation processes are compared in an objective way with competing non-biochemical methods and advantages as well as disadvantages of the methods are clearly outlined. This part of the volume is well written and gives a very good evaluation of the field of enzymatic versus non-enzymatic methods.

In the following section of part II (in total 12 chapters) methods are described for the asymmetric oxidation of carbon-carbon double bonds with transition metal catalysts (chapters 2-7). Emphasis is placed on effective broadly applicable methods with high reproducibility and simplicity. These chapters consist mainly of preparative procedures, which have been checked by the author research team, with relatively short comments on the value of the method described. The same aspects are realized in the chapters (9-13) dealing with asymmetric hydrogenations of C=O and C=C double bonds, where transition metal catalyzed, non-metal catalysed, and biochemical methods are covered. In contrast, the section (chapter 8) describing an asymmetric method for the oxidation of sulfides and the kinetic resolution of sulfoxides is too short and a more critical evaluation of the method would be desirable. The procedures, however, are written in a very detailed and informative fashion, with explicit information concerning problematic steps in the synthesis and several helpful hints. Very useful will be the reliable syntheses of most of the catalysts used, of some non commercially available chiral ligands and some interesting polymer supported ligands and catalysts. This is followed by procedures for synthetic applications of these compounds in asymmetric catalysis. In these chapters the reader can easily access important information regarding simplicity and synthetic broadness of the methods, which will allow both advanced students and scientific newcomers to the field of asymmetric synthesis to perform and reproduce the asymmetric catalysis chemistry or to evaluate their own developed methodology. Although the volume is far from being comprehensive, the most commonly used catalyst systems are mentioned and some recent (up to 1999) methods and improvements of existing methods are also covered. However, the selection of some catalysts or reagents seems to be questionable at certain points and some methods and catalysts have more academic value than utility in large-scale processes.

Objective evaluation and critical comments were given for most methods and are highly welcome in a field of science where new methods evolve every day.

Positive are the rather few mistakes and typing errors in the volume. While some mistakes are self explaining, such as the magnesium stirrer (p. 204) and CiO_4 as a counter ion instead of ClO_4 or the loss of a carbon atom in Scheme 44 (p. 33) during the reaction, other mistakes could be misunderstood or lead to experimental errors, such as the use of $NaClO_4$ instead of NaClO as oxidant (p. 88); the proposed use of $HSiR_3$ reagents as oxidant (p. 169), or the demand for anhydrous methanol in the combination with aqueous hydrogen peroxide.

The index is of moderate length for such a volume and the most important keywords will lead the user of the book to the desired section.

From an aesthetic point of view, the inconsistent drawing settings and size changes of the drawings might be troublesome for some chemists, but with few exceptions (pages 44, 66, 84, 128, 190, 214, 217) the drawing are neat and most important chemically correct.

In summary, this volume will be very useful to those interested in asymmetric catalysis, whether in industry or in academia.

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