

Review of Recent Developments in Asymmetric Organocatalysis

Recent Developments in Asymmetric Organocatalysis.

By H el ene Pellissier (CNRS and Paul C ezanne University, Aix-Marseille III, France). Royal Society of Chemistry: Cambridge. 2010. xvi + 242 pp. \$189.00. ISBN 978-1-84973-054-9.

This third book in the RSC Catalysis Series is a compilation of the reports of chiral organocatalysts and their reactions. It is largely a snapshot of activity in this field, limited to reports appearing in 2008 and those in the opening weeks of 2009, but published in 2010. The chapters are organized by general reaction type, beginning with nucleophilic additions to electron deficient alkenes, carbonyl, and azomethine (Chapters 1–3, respectively), and proceeding through Chapters 4–8 on additions to $X=Y$, nucleophilic substitutions at carbon, cycloaddition reactions, oxidations, and reductions. The concluding chapters cover kinetic resolutions and desymmetrizations as well as “miscellaneous reactions”. This order parallels the amount of work in the field on a roughly decreasing scale, and examples of tandem/domino reactions abound in the first chapter. Introductions to each chapter are token representations, rather than authoritative reminders of work prior to the year of coverage that may have established important precedents.

As a listing of contributions from scores of investigators, the book is written well and highly readable. It would be straightforward to pull it from a shelf and find a reference from 2008, with the caveat that the index could have been better prepared. For example, reactions that are often described in the literature by two names, e.g., aza-Henry or nitro-Mannich, might only be indexed by one. In another case, nitromethane is referenced for the Henry reaction, but not the aza-Henry reaction, and cyclopropanes are not indexed at all. This might not be a problem for the reader who prefers the guidance of a table of contents, or a leisurely browse through the book, but it might lead the inexperienced (or impatient) to draw an inaccurate conclusion.

A strength of the book lies in the extensive use of graphics. Virtually every entry in the book is provided a graphic summary of the best cases for a particular report. The graphics are visually large, with most requiring more space than the associated text that summarizes the work. The graphical treatment of each work does allow one to page through easily and rapidly, readily fostering an appreciation for the design and efficacy of catalysts, as well as the breadth of reactions. Importantly, the nonexpert can easily begin to appreciate the challenges that remain unsolved for each type of reaction while developing a sense of reactivity that is otherwise difficult to ascertain for catalysts that are employed over a wide range of conditions. This is exactly what one would expect from this type of contribution to the secondary literature. The graphical depictions are straightforward to decipher, but the heavy use of variables, e.g., R^1 , R^2 , etc., often slows comprehension and is exacerbated in instances where $R^2=R^3$ and $R^4=R^5$ in all cases. An overall effort to simplify graphical complexity would have made this good book great. The discussions also often referred to graphics that require the reader

to turn a page (or more). Overall, these shortcomings suggest that the publisher may not have been overly concerned with the readability of the final work.

That a single year of activity, each report requiring essentially a half page or less, easily fills over 200 pages reinforces the challenge in writing such a review. This compilation, therefore, can be regarded as a snapshot of progress for a field that requires treatment in any modern graduate program in organic chemistry. Importantly, 2008 was neither the onset nor the apex of work in organocatalysis but is certainly representative of what is now broadly regarded as a highly active research frontier that continues to advance the science and practice of chemistry. In this respect, the author has produced a work that is commendable by the measures of the topics selected and their organization.

Jeffrey N. Johnston

Vanderbilt University

10.1021/ja200074x

Published: January 14, 2011