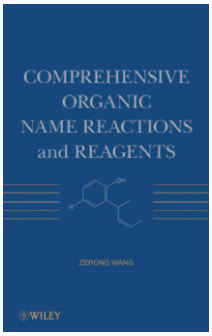
Comprehensive Organic Name Reactions and Reagents

Someone who is the sole author of a three-volume work of 3661 numbered pages must be a dedicated person. Zerong Wang presents a book entitled *Comprehensive Organic Name Reactions and Reagents*, which is not without some idiosyncrasies. The book discusses 701 reaction or reagent entries on 3196 pages, which are followed by 465 pages of appendices, including an index of formula schemes (125 pages), a table with scientific journal abbreviations (spanning 215 pages!), and other bibliographic data.

On average, each named reaction and reagent is presented on $4^1/_2$ pages, of which about one page is blank space in the title area and the last page. Each entry is divided into eight sections A–H. Section A describes the named reaction or reagent, and mentions its first appearance in the literature and the name of the discoverer. A reaction scheme is presented in Section B. This scheme is extended in Section C, "Proposed Mechanism", by including reaction intermediates and electron-pushing arrows to form a complete mechanistic scheme. Most schemes appear sensible, but I also found some debatable or wrong depictions (e.g., Julia–Colonna epoxidation, Kutscheroff hydration). Overall, the mechanistic section adds to the understanding of the chemistry, but is not a reliable guide to the latest knowledge about mechanisms. Section D lists modifications of the reaction, and Section E describes its applications in one or two rather obvious sentences (e.g., for Cope elimination: "The reaction has general application in the synthesis of olefins"), while Section F gives cross-references to reactions with a similar spectrum of products. The important Section G, curiously named "Cited Experimental Examples", presents on average two experimental procedures together with a reaction scheme and information about workup and purification. Most preparative examples are adequate, but I also noticed some less convincing choices for the Finkelstein and the Hunsdiecker reactions, both citing atypical examples with non-classical mechanisms. In the case of the Tishchenko reaction, the second reaction example is in fact a simple aldol dimerization. The final Section H, "References", gives on average 51 citations from the scientific literature. The entry "Birch reduction" alone features 250 citations, which is too much of a good thing. The reader's needs would have been better served if the author had selected a small number of key references.

The three volumes cover a wide spectrum of organic reactivity, using named reactions as a means of organizing the contents in an easily accessible form. This strategy risks omitting some reactions that are synthetically important but unnamed, while over-representing others that are synthetically less important but are named. That problem is avoided to some extent by Wang's use of a broad definition of the term "named reaction": besides reactions named after chemists, we also find reactions named after common transformations ("Acyloin condensation", "Di-π-methane rearrangement", "Malonic ester synthesis", etc.). Some entries, such as the "Victor Meyer reaction", stand for important transformations that are hardly ever referred to by that name in the literature. The ozonolytic cleavage of alkenes is included as "Criegee ozonolysis", although it should instead be named, if at all, after Harries. In any case, the naming of reactions is a subjective matter and may vary from one laboratory to another. Thus, inevitably, readers will find that even some (for them) important named reactions are missing. In my case, examples of such omissions were the Corey–Seebach dithiane methodology, and the Arduengo imidazolium salt synthesis. Nevertheless, the coverage of the more common named reactions is fairly complete. The same cannot be said about named reagents, the coverage of which is patchy. Neither Stryker's nor Lucas's reagents, or Bunte's salts or Eschenmoser's salt, are mentioned. Still, there are many reactions to be explored in these books, including some obscure transformations that may serve as an inspiration for future use. However, I find that the contents of the book could easily have been condensed into fewer pages by a more critical selection of the references and the contents of the appendices.

In conclusion, the book by Wang is a curious mixture of a monograph on named reactions and a laboratory handbook with experimental procedures. How does it compare with other books on named reactions? For students or chemists who want to learn about named reactions and their mechanisms, Wang's book will be unhelpful and overly expensive; instead, they may prefer one of the existing books on named reactions that do not include experimental procedures but cover many reactions and their mechanisms. Wang's book can be recommended as a laboratory manual for synthetic chemists who need a quick reference to experimental procedures, who do not wish to lose time on literature searches, or who have only limited access to the journal literature. Overall, I doubt that Wang's volumes will become a standard resource on named reactions. The concept of presenting named reactions in a comprehensive manner with detailed experimental procedures is not convincing. Instead, experimental laboratory handbooks should organize their contents on the basis of transformations and synthetic utility. Finally, I have to mention that there is a multi-



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volume book series entitled *Comprehensive Name Reactions* (edited by Jie Jack Li, Wiley, starting 2005), in which the reaction entries, prepared by a team of authors, have review-type quality but also include experimental examples. For libraries who want to cover the field of named reactions in particular, the latter series might be a superior alternative.

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