

Name Reactions in Heterocyclic Chemistry; edited by Jie Jack Li; John Wiley & Sons: Hoboken, 2005, hardcover, 584 pp, € 105, ISBN 0-471-30215-5

Useful and passionate book on heterocyclic chemistry

In organic synthesis, named reactions constitute a very useful tool of communication among chemists. Named reactions refer to specific reagents or reaction conditions for a particular conversion and help to memorize such transformations. They also play a significant role in heterocyclic chemistry, a field which – despite its vast importance for industrial applications – is often treated sparsely in teaching. Consequently, there is a need for a high-quality book that deals with that particular topic, covering the basics as well as examples from modern medicinal chemistry and pharmaceutical research. The book is designed for advanced students and professional research chemists. The passionate style in which the book is written and the covered part of heterocyclic chemistry create a premium source of information.

The monograph is edited by Jie Jack Lie, who is well-known from other books in the area of named reactions or heterocyclic chemistry. The editor and a distinguished group of scientists from academia and industry contributed to this book. The number of 72 named transformations listed in the monograph is almost doubled if the described variants are included. The individual name reactions are treated systematically: first, a general description of the transformation is provided, followed by historical and mechanistic aspects. Particular attention was given to the variants and improvements. The synthetic utility covers many up-to-date examples from industrial research and represents an extensive collection for teaching purposes. Experimental procedures will provide a taste of the efforts that are required for that particular transformation. Finally, a list of references is given, wherein the reviews are specially labeled.

The book is arranged in ten chapters. Typically for textbooks in heterocyclic chemistry, the first section starts with small ring systems, dealing with epoxides and aziridines. Unfortunately, the Staudinger β -lactam synthesis is not covered. The next two chapters are devoted to five-membered heterocycles with one nitrogen atom. Within about 100 pages, the authors discuss most of the important transformations in this area. Surprisingly, the Larock indole synthesis, which accesses highly substituted indoles

or isindolo[2,1-a]indoles by palladium catalysis, is not mentioned. In the subsequent two sections about the oxygen and sulfur analogues, short but comprehensive contributions were made. In the chapter dealing with oxazoles, isoxazoles, and their hydro derivatives, the Heine reaction is missing. In the next section, a collection for the construction of miscellaneous five-membered heterocycles is presented, covering Auwers flavone synthesis that would better fit into a later part of the monograph. Despite their significance, the synthesis of triazoles and the Hantzsch method for thiazoles are not treated, whereas a splendid survey for the construction of 1,2,3-thiadiazoles by the Hurd–Mori transformation is provided. The remaining part of the book focuses on six-membered heterocycles, wherein the major section (150 pages) is devoted to pyridines and the benzo-annulated derivatives. The last chapter presents a collection of various named reactions. When dealing with pyrimidines, the Traube synthesis for pyrimidine-2,4-diones or the Dimroth rearrangement is expected, but not considered in this book.

The book was carefully made and the mistakes are on a tolerable level and consist in missing atom symbols (e.g. pages 40, 113), missing stereochemistry (e.g. pages 38, 39), wrongly applied nomenclature (e.g. pages 263, 264). In relationship to size and content of the book, the index is too small. Looking for specific subjects involves some efforts, e.g. the Baker–Venkataraman reaction is mentioned (page 522) but listed neither in the index nor in the table of contents. Therefore, the reader has to discover the book on his own, but will be rewarded by a fascinating textbook.

In summary, this monograph represents a very valuable and concise source of information about heterocyclic chemistry. In the covered topics, the book fills in the gaps of previous surveys. Despite some weaknesses, this book is highly recommended and will be a compulsory reading for medicinal and synthetically oriented chemists working in the area of heterocyclic chemistry. Therefore, this indispensable book will have its place in every good library collection.

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