A Radical Read

Radicals in Organic Synthesis. Vol. 1+2. Edited by *Philippe Renaud* and *Mukund P. Sibi.* Wiley-VCH, Weinheim 2001. 1110 pp., hardcover € 399.00.—ISBN 3-527-30160-7

The discovery of radicals happened more than 100 years ago. In the meantime, research resulted in the development of powerful reagents and synthetic intermediates, without which modern synthetic chemistry would be less diverse.

This monograph provides, within two volumes, a very good overview of the well-established areas in radical chemistry. The book deals with aspects of synthetic organic chemistry. P. Renaud and M. P. Sibi organized numerous well-known scientists to write contributions of their respective fields, and essentially review the advances made in the past three decades. If older reviews exist they are mentioned. Most parts of this monograph are of textbook quality!

Volume I focuses on the principles of radical chemistry and is divided into six chapters. Firstly, initiators and sources for radicals are systematically treated in several contributions. Two contributions are devoted to the importance of Barton-analogue reactions. Even modern developments, such as solid phase or fluorous phase based initiators are considered. In the second part of this volume, single-electron transfers are discussed. The individual contributions are arranged according to the transition-metal reagents used, but also include electrochemical and light-induced generation of radicals. In this particular chapter iodine(III)-reagents should have a definite place, but they are not even mentioned! In the following chapter the synthesis of radicals with relevant properties are discussed in detail. Therefore, radical clocks, calculations, and stabilizing effects of radical systems are described. A subsequent chapter on the stereoselectivity of radical transformations follows, wherein all contributions are well-coordinated and provide a consistent picture. The review about enantioselective radical reactions is appropriately placed, but major parts are repeated in the second volume of this monograph. The first volume is completed by two contributions about radicals in polymer science.

The second volume is devoted to the practical aspects of radicals in organic synthesis. The book is again divided into six chapters. The first part deals with carbon–carbon bond formation. The different multiple bonds which might serve as radical acceptors are treated systematically. Isonitriles and carbonylation reactions are discussed in individual contributions because of their synthetic significance. The most important section of the volume is the next chapter, devoted to the formation of carbon–heteroatom bonds. Basically, C-H-activation and heteroatom multiple bonds in radical reactions are discussed. This part also provides significant and comprehensive discourses on cyclization reactions and rearrangements. After having outlined the concepts and methodologies, the following chapter deals with recent applications in the total synthesis of natural products. The well-chosen examples and didactic outline demonstrate in 120 pages the potential of these new synthetic methods. A subsequent chapter is devoted to nitrogen, oxygen, and sulfur radicals, and provides a good overview of these topics. The book ends with a discourse on biomaterials, wherein radical transformations on amino acids, peptides, and carbohydrates are described.

Compared to the size and content of the book, the index is too small and restricted to each volume. Looking for a specific subject involves some effort for the reader. A listing of abbreviations would be useful. The monograph has been carefully prepared and well done. The schemes are clearly arranged and the numbering is systematic. Typos in the written part and the schemes are rare.

In summary, this monograph provides an excellent overview of the recent developments in radical chemistry. In the topics covered, the book fills the gaps left by previous reviews in the literature. Based on its completeness and cutting-edge nature, this monograph will become a leading piece of literature and a compulsory reading for chemists working in these areas.

Therefore, this valuable monograph should have a definite place in every good library.

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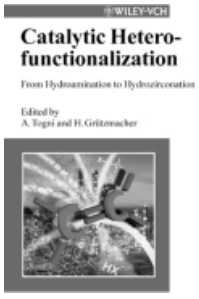
Catalytic Heterofunctionalization. Edited by *Antonio Togni* and *Hansjörg Grützmacher.* Wiley-VCH, Weinheim 2001. xiv + 289 pp., hardcover € 129.00.—ISBN 3-527-30234-4

Olefins and acetylenes are usually considered to be suitable starting materials for selective introduction of heteroatoms into organic molecules. Within this context, one of the most important reaction principles relies on the addition of H–X molecules to unsaturated bonds. A book that reviews the progress made on the development of catalytic variants should therefore be of major interest to synthetic chemists. The present book, edited by A. Togni and H. Grützmacher, offers such a concise summary.



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