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Book review

Free-radical Chemistry; by D.C. Nonhebel and J.C. Walton, Cambridge, Cambridge University Press, 1974, 572 pages, £15.

The authors have set out to produce a general textbook of free-radical chemistry, covering most aspects of the subject at a relatively advanced level, but with the deliberate exclusion of polymer chemistry. The early chapter headings follow a conventional pattern; introduction, methods of production, physical methods, shapes of radicals, stabilities, and comparison of free-radical reactions in the gas phase and in solution. The remaining three quarters of the book is organized mainly on the basis of reactions of particular types of radicals: this has some disadvantages, but the advantage to the organometallic chemist is that the reactions of organometallic free radicals are concentrated mainly in a few chapters, particularly chapter 9 on hetero radicals, and there is also a chapter on S_H2 reactions at metal centres. Oxidation/reduction is given the prominence (112 pages) it deserves, including a substantial section on autoxidation. There are shorter chapters on homolytic aromatic substitution, fragmentation, rearrangement, and cyclization reactions.

A strength of this book is the way in which the growing chemistry of organometallic free radicals is integrated into the general pattern of free radical chemistry, for example in addition to the chapters devoted to organometallic free radicals, such topics as the structure of silyl and phosphoranyl radicals, the use of organotin hydrides as reducing agents for halides, the autoxidation of boron compounds, and the propensity to rearrangement of silicon-substituted radicals are discussed at appropriate places in the text.

The result is an informative, well-balanced and readable book, intermediate in length and depth of coverage between "Pryor" and "Walling" on the one hand and the two volume work edited by Kochi on the other. It is attractively laid out. I would recommend it to advanced undergraduates working on selected topics; to lecturers preparing courses on free-radical chemistry at any level, and as a good introduction for those proposing to do research work on free radical reactions, either in the organic or the organometallic area.

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