

Book review

Complex hydrides and related reducing agents in Organic Synthesis;

by A. Hajós, Elsevier Scientific Publishing Co., Amsterdam and New York, 1979, 398 pages; U.S. \$ 76.00, Dfl. 156.00.

As the author says in his preface, "in the past 30 years, versatile methods for selective reductions with complex hydrides have been developed, but the large number of hydrides that are commercially available makes selection of the most suitable reagent difficult". Thus, as the publishers state in their announcement, "the need has arisen for a comprehensive volume covering every group of complex hydrides and reducing agents". Unfortunately this book falls short of meeting that need.

The scope of the book is best indicated by the chapter headings and sizes: Introduction (5 pages); Alkali metals and alkaline-earth hydrides (4 pages); Borane and its derivatives (19 pages); Aluminium hydride and its derivatives (7 pages); Metal borohydrides (40 pages); Metal aluminium hydrides (94 pages); Silanes (38 pages), Organotin hydrides (33 pages); Transition metal hydrides (33 pages); Analytical procedures for the determination of complex hydrides and related reducing agents (6 pages); Techniques of selective reductions with complex hydrides (12 pages); Mechanistic aspects of reductions with complex hydrides (31 pages); Addenda (17 pages). With inclusion of the Addenda the coverage is stated to be complete to the end of 1977, but my impression is that in most chapters the literature after about 1972 is rather poorly represented.

The chapter on which I am most qualified to comment, that on reduction by silicon hydrides is most disappointing. Thus hydrosilylation of olefins is dealt with in $1\frac{1}{2}$ pages, with only 7 references, only one of which is later than 1962, and the impression is given that only Cl_3SiH is effective! This is such a vast subject that it would have been reasonable to omit it altogether and simply refer the readers to the major monograph and several very extensive reviews (none of which are, in fact, cited), but no hint is given that the $1\frac{1}{2}$ pages of coverage are in any way an incomplete indication of the scope of this reaction. The chapter concentrates largely on the reduction of carbonyl compounds by silicon hydrides in acid media, and the small number of post-1974 references almost all relate to this topic. In the section on reductions of acyl halides by silicon hydrides no mention is made of the interesting reactions which take place in the presence of homogeneous transition metal catalysts, first described in 1970, and the very useful hydrosilylations of carbonyl compounds catalysed by rhodium and ruthenium complexes, which have been much studied since they were first reported in 1972, are ignored. It is possible that most of the other chapters are better, and that on reductions by organotin hydrides certainly is; in this case 12 out of the 127 references are to papers after 1970, though they appear to be rather randomly chosen. There is, unfortunately, no reference in this

chapter to the 1970 English language edition of the book by Neumann (there is a reference in the introductory chapter to the 1967 German edition) or to the 1970 book by Poller.

There is little in the way of comparison of the various reducing agents, to bring out the advantages and disadvantages of each, and thus little direct help in the selection of the appropriate hydride for a particular purpose. Nevertheless, a lot of information is presented, and the reader will find the book of value provided he regards it as an introduction to the subject rather than the comprehensive reference work and guide he is rather led to expect.

The book is published jointly with Akadémiai Kiadó, Publishing House of the Hungarian Academy of Sciences, Budapest (Hungary), and is distributed by that agency in Eastern Europe, China, Cuba, the Korean People's Republic, Vietnam and Mongolia.

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