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Book reviews

Free Radical Chain Reactions in Organic Synthesis, by W.B. Motherwell and D. Crich, Academic Press, London, 1992, xix + 268 pages. £50.00. ISBN 0-12-508760-8

This is an excellent addition to the very useful series on Best Synthetic Methods. It is reviewed here because of the very important role of organometallic reagents in the field covered.

The book begins with a first class 26 page general introduction on basic concepts of free radical chain reactions, a very informative and highly readable account that provides a solid base from which to consider specific procedures; even in this chapter the importance of R_3SnH reagents becomes apparent, and there is a helpful outline of the ways of removing the organotin residues after completion of the reactions. This chapter is followed by a useful list of relevant books and reviews in the field.

The subsequent chapters are as follows (i) substitution reactions (which includes accounts of use of organotin hydrides in dehalogenation and in reductive decarboxylation of organo-boron and -mercury compounds for the preparation of alcohols, and use of organo-mercury and -cobalt compounds in preparation of chalcogenides); (ii) olefin-forming β -elimination reactions (in which organotin hydrides again have a role); (iii) preparative free radical rearrangement reactions (in which many of the examples again involve R_3SnH species but the advantages of the more recently introduced $(Me_3Si)_3SiH$ are also indicated); (iv) intermolecular carbon-carbon bond forming free radical chain reactions (in which organomercury acetates or halides, organotin hydrides, and trialkylboranes appear largely; use of $RHgH$ species, formed in situ from $RHgX$ and $NaBH_4$, as a source of both alkyl radicals and hydrogen atoms is especially interesting); (v) intramolecular carbon-carbon bond forming free radical chain reactions (in which the great majority of examples involve organotin hydrides).

This book could be of much value to students preparing for examinations in advanced organic chemistry, but it is directed, of course, towards those contemplating laboratory use of the procedures described, and no-one in that position should be without it.

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Inorganic Reactions and Methods. Volume 4. Formations of Bonds to Halogens (Part 2), A.P. Hagen (Ed.), VCH, New York, 1991, xxx + 491 pages. ISBN 0-89573-267-X

This volume of a now familiar series deals with (i) methods of forming bonds between the halogens and the elements (a) B, Al, Ga, In, Tl; (b) Li, Na, K, Rb, Cs, Fr, Be, Mg, Ca, Sr, Ba, Ra; (c) Cu, Ag, Au, Zn, Cd, Hg; (d) transition and inner