Journal of Organometallic Chemistry, 426 (1992) C21–C23
Elsevier Sequoia S.A., Lausanne

Book reviews

Gmelin handbook of inorganic and organometallic chemistry, 8th edition, Sn—organotin compounds, part 18, organotin-nitrogen compounds R_3Sn–nitrogen compounds with R = methyl, ethyl, propyl and butyl, Springer Verlag, Berlin, 1990, xiv + 297 pages. DM1488. ISBN 3-540-93617-3.

This volume in the valuable series on organotin compounds is concerned with compounds containing R_3Sn–N bonds where R = Me, Et, Pr (n- or iso-) or Bu (n-, iso-, sec-, or tert-). The nitrogen-containing groups include (among other) the types NH_2, NHR, NRR′, NX_2, NRX, N=X, NR–NR′R″, NR–N=NR′, N–N=N–NR′R″. Some 117 pages are devoted to Me_3Sn, 73 to Et_3Sn, 3 to $^nPr_3Sn$, 1 to $^iPr_3Sn$, 72 to $^nBu_3Sn$, and 3 to $^iBu_3Sn$, $^sBu_3Sn$ and $^tBu_3Sn$ combined. Information about each compound is concisely summarized, much of it presented in tables. X-ray structural data are presented diagramatically where available. The literature has been searched systematically up to the end of 1988, but there are some later references. The volume opens with the usual helpful listing of recent (1988 and 1989) reviews or general articles on organotin compounds, including their analysis, physical properties, toxicology, and biological and other uses. There is an empirical formula index.

The authors, H. and I. Schumann, are to be congratulated on their good work. Anyone engaged on research on or involving organotin compounds who does not have this series readily available will be working under a considerable handicap.

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Advances in free radical chemistry, Vol. 1, D.D. Tanner (Ed.), JAI Press, Greenwich (CT), 1990, xiii + 295 pages. £54.00. ISBN 0-89232-862-2.

This is the first in what is apparently meant to be an annual series of volumes. It is of very high quality, and if this standard can be maintained the series will enjoy a high reputation and the articles be much cited.

The volume opens with an exceptionally fine chapter by G.A. Russell on 'Free radical reactions involving saturated and unsaturated alkylmercurials', a field in which the author has made the outstanding contributions. Just a glance through it reveals how much out of date are all the previous accounts of pyrolysis or photolysis of organomercurials, and the implications for free radical reactions of some other alkylmetal species are also briefly considered. Such a chapter represents a creative contribution to the subject rather than simply being a retrospective survey.

The second chapter, namely 'Radical cations as reactive intermediates in aromatic activation', by J.K. Kochi, is also of direct interest to organometallic chemists, since activation by Hg^{II} and Th^{II} electrophiles and oxidative substitution of methylarenes by Fe^{III} oxidants are surveyed, along with electrophilic aromatic nitration and other important reactions that can involve radical-cation intermediates. The account has the stamp of authority that one would expect from the leading authority in the field.

The remaining chapters are all good; they are tandem radical cyclizations, a general strategy for the synthesis of triquinane sesquiterpenes, by D.P. Curran; free radical thermochemistry, by D.D.M. Wayner and D. Griller; nucleophilic substitution by the $S_{RN}1$ mechanism on alkyl halides, by R.A. Rossi, A.B. Pierini, and S.M. Palacios; two decades of spin trapping, by E.G. Janzen and D.L. Haire. (The chapter on the $S_{RN}1$ mechanisms includes *ca.* 5 pages on the reactions of Me_3SnM (M = Li or Na) with alkyl halides.)

This volume is strongly recommended. It represents good value at today's prices.

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Reductions by the alumino- and borohydrides in organic synthesis, J. Seyden-Penne, VCH Publishers Inc., Lavoisier Tec. & Doc., New York and Paris, 1991, pp. 206. £42.00. ISBN 1-56081-099-8.

In the last fifty years there have been many variations on, and applications of, hydride reagents derived from the simple sodium borohydride and lithium aluminium hydride. A number of useful reagents of varying selectivity and stereochemistry have been developed for use in organic synthesis. This book is an attempt to bring together a lot of information which is scattered throughout the literature to enable the organic chemist to select the appropriate hydride reagent for a specific task. The book is a translation of one which originally appeared in French. Nevertheless it is quite up-to-date and there are a number of references to work which appeared in 1990.

The book is in three parts. The first part describes the more useful reagents based on aluminium and boron hydrides including variants with different alkoxy groups and those to which transition metal salts have been added. The second, and larger, part of the book is devoted to a description of the reduction of the main functional groups. These chapters describe not only the outcome of reductions but also the way in which selectivity between the reduction of competing sites on the same molecule has been developed. The chapters deal respectively with the cleavage of carbon–heteroatom single bonds, double bonds, triple bonds and miscellaneous systems. There are a wealth of examples illustrating the range of selectivity that is available so that the reader can select the most appropriate reagent for the desired reduction. The final part of the book is a set of synoptic tables which summarize the products obtained from reductions and guide the reader to the relevant part of the text. The book contains adequate references to