

Book reviews

The Chemistry of the Metal—carbon Bond. Volume 3: Carbon—carbon Bond Formation Using Organometallic Compounds; edited by F.R. Hartley and S. Patai, Wiley Interscience, Chichester, 1985, ISBN 0-471 90557 7, xiv + 489 pages, £98.00.

Volume 3 of this series begins to clarify the scope and aims of the whole series somewhat more than hitherto. The series should run to 5 volumes, and comparison with *Comprehensive Organometallic Chemistry* can be now fairly attempted. The two publications are quite different and will be used in different ways. *Comprehensive Organometallic Chemistry* covered the subject for the most part by considering individual metals. These volumes, which are part of the series *The Chemistry of Functional Groups*, deal with various aspects of the metal—carbon bond, and they discuss topics, rather than compounds of elements. Volume 1 covered structure, preparation and characterisation, Volume 2 the cleavage of metal—carbon bonds, and this with carbon—carbon bond formation. The topic will also be dealt with in the as yet unpublished Volume 4.

The contents of the ten chapters are defined by their authors; each is intended to be reasonably complete in itself, with minimum cross-reference to other chapters. Consequently, the chapters do not necessarily reflect the balance of interests of contemporary organometallic chemists. For example, the long chapters on carbon—carbon bond formation using tin and lead organometallics (V.G. Kumar Das and C.-K. Chu) (98 pages) and zinc, cadmium and mercury organometallics. (L. Miginiac) (64 pages) will doubtless suggest new applications of these compounds to the diligent reader. The Fischer—Tropsch synthesis (G. Henrici-Olivé and S. Olivé) is a wide-ranging and comprehensive account, covering 44 pages, and olefin hydroformylation (J.A. Davies) is dealt with in 29 pages. Academics are likely to find the last two chapters cited useful as reviews, though there are reviews on these subjects available elsewhere, whereas the first will provide information of direct value for solving synthetic problems in organic chemistry.

The remaining chapters exhibit the same dichotomy. The discussions of olefin oligomerisation (O.-T. Onsager and J.E. Johansen, 52 pages) and alkyne oligomerisation (M.J. Winter, 36 pages) are competent, useful reviews, but the synthetic chemist may find transition metal carbonyls in organic synthesis (J.A. Davies and R.J. Shaver, 39 pages) more directly of value. The last also demonstrates a weakness of the approach used in this series. Since the authors are discussing, for example, the use of carbonyls in alkane activation, the fascinating problem of alkane activation in general is only lightly touched upon. Chapters on carbon—carbon bond formation using η^3 -allyl complexes (G.P. Chiusoli, G. Salerno, J. Tsuji, and F. Sato, 55 pages), olefin and alcohol

carbonylation (G.K. Anderson and J.A. Davies, 25 pages) and olefin carbonylation (D.M. Fenton and E.L. Moorehead, 11 pages) complete the book. The last two chapters might be expected to overlap with the hydroformylation chapter. In fact, they do not, but it is not clear to this reviewer what the authors' terms of reference were. The former chapter deals with non-redox olefin carbonylations as well as alcohol carbonylations. The latter very short chapter has some 69 references and deals with redox olefin carbonylations as well as non-redox carbonylations. It is not obvious that two independent contributions were necessary.

This is a useful compendium, well presented though not without error. It will be of considerable value to synthetic organic chemists and of some general interest to organometallic chemists. It will be an asset to a library, but probably not worth the expenditure to the individual organometallic chemist.

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Gmelin Handbook of Inorganic Chemistry, 8th Edition. Sn — Organotin Compounds, Part 12. Tripropyltin- and Tributyltin-Oxygen Compounds; by H. Schumann and I. Schumann. Springer-Verlag, Berlin etc., 1985, x + 266 pages, DM 997, ISBN 3-540-93521-5.

This book represents the twelfth in a series on organotin compounds which began to appear in 1975. It deals only with tripropyl- and tributyl-tin oxygen compounds, the literature coverage extending to the end of 1982. For each compound methods of preparation, physical properties, reactions, and, where appropriate, biological activity are clearly summarized, and occasionally reports are critically evaluated. Much of the information is in the form of well organized tables; for example, Table 26 consists of 12 pages of information (with some 85 references) on $n\text{-Bu}_3\text{SnO}_2\text{CR}$ compounds in which R = alkyl or cycloalkyl. Much of the book is, as would be expected, taken up with accounts of organoxyoxides and carboxylates, $\text{R}_3\text{SnOR}'$ and $\text{R}_3\text{SnO}_2\text{CR}'$, but nitrites, nitrates, sulphinates, sulphonates, etc. are included, as are species such as R_3SnX with X = OSiR'_3 , OGeR'_3 , OHgR' , $\text{OTi}(\text{OR}')_3$, $\text{OZr}(\text{OR}')_3$, OSeR .

The account is authoritatively presented and gives the impression of completeness and accuracy. The important information is provided, and little if any trivial information is included.

The English is exceptionally good ("Drs. Clark and Grant" are thanked for reading the English text), and it is pleasing to see the form "converted into" used rather than the more common but incorrect 'converted to'. (It would have been better, though, for the form "IR pictured" to have been replaced throughout by "IR depicted", which does often appear.) The general presentation is of the usual very high quality expected for Gmelin volumes, and thus it is surprising to find that occasionally some two to four lines are (randomly, not for emphasis) printed in exceptionally dark type, a puzzling feature which