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Book review

Organomercury Compounds in Organic Synthesis, by R.C. Larock (Reactivity and Structure: Concepts in Organic Chemistry, Vol. 22), Springer Verlag, 1985, xi + 423 pages, DM 268, ISBN 3-540-13749-1.

Organomercury compounds are among the oldest known organometallics, and their uses in organic synthesis have been many and varied. The present monograph, in the Concepts in Organic Chemistry Series, reviews the literature thoroughly up to 1980, with extensive coverage of the years 1981 to 1983. The topics covered are restricted to reactions involving the formation of carbon to mercury bonds, and oxidations using mercury compounds are largely omitted. Discussion of the important solvomercuration and demercuration reactions used in functionalisation of alkenes and alkynes is deferred to a future volume.

After a brief introduction, a lengthy second chapter describes the preparations of organomercury compounds. This is supported by extremely detailed tables and over 1500 references. Protolysis and halogenation are covered in Chapter 3, whilst the next section deals with the formation of heteroatom (O, S, Se, Te, N and P) containing compounds. Dimerisation of organomercurials occurs by thermolysis, photolysis or transition metal catalysed processes, and the efficient reactions, producing biaryls and dienes, are reviewed in Chapter 5. Such symmetrical couplings are relatively rare, and reactions involving alkylation are also not without their problems. Chapter 7 describes alkene and alkyne addition reactions, usually catalysed by palladium complexes or promoted photolytically. Substitution of the vinylic hydrogens of alkenes is also catalysed by palladium complexes and this reaction greatly extends the scope of C—C bond forming reactions. Transition metal species also promote the carbonylation of organomercury compounds detailed in Chapter 8. Whilst alkyl halides react with organomercury compounds with some difficulty, acylation, dealt with next, is rather easier, occurring readily in the presence of aluminium halides. The final lengthy chapter reviews one of the most recently developed processes employing organomercury compounds, the transfer of divalent carbon. Cyclopropanation is discussed in detail, as are the related ring expansion reactions. Insertion into C—H and Si—H bonds is considered more briefly.

The style of this volume varies from the informal to something more closely resembling a catalogue. Parts are very readable and all will be extremely useful. I found a little too much emphasis on preparations, but this is a minor criticism. Though the focus of the book is on synthetic utility, and the properties of the organomercurials used are not discussed, mechanisms are given in sufficient detail to enable useful predictions to be made with regard to the likely success of an unknown reaction. The standard of production is very high and the index is excellent. The price is rather too high for individual purchase, but

either as an introduction or a reference volume it will be invaluable for any research worker in this field.

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Announcement

Thirteenth International Conference on Organometallic Chemistry Advance Announcement
This Conference will be held in Turin, Italy on September 4—9, 1988.

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