

Handbook of Organopalladium Chemistry for Organic Synthesis; Edited by E. Negishi; Wiley: New York, 2002; Hardback, 2 volume set, 3424 pp, € 661.20; ISBN 0-471-31506-0.

Organopalladium chemistry has had a profound impact on the way that organic chemists tackle synthetic problems. In recent years thousands of research articles have been published dealing with various aspects of palladium mediated reactions in organic synthesis. This 'handbook' does an outstanding service to our community by summarising these in a logical and accessible form. Moreover, both experienced users and novices alike should find the work informative as many of the leading practitioners from around the globe have contributed to this monumental undertaking.

Literature coverage is to 2000 and there are some 130 contributors to the two-volume tome. The book is divided into 10 Parts, which are further sub-divided into more manageable sections. Part I places palladium chemistry in perspective with a historical overview and a review of the fundamental properties and reactions of the metal and its complexes. The stoichiometric preparation and in situ generation of palladium compounds follows in Part II. Physical and chemical properties of commonly employed catalysts are discussed alongside some of the more exotic palladium complexes, providing a concise and useful summary of this vast and often turgid literature. Asymmetric ligands are also highlighted, though at this juncture the discussion does not extend to the many catalyst systems generated in situ.

Part III is entitled '*palladium catalysed reactions involving reductive elimination*' and focuses on cross-coupling reactions between organometallic reagents and organic electrophiles (Negishi, Stille, Suzuki, Kumada–Corriu, Sonogashira etc.). Palladium catalysed hydrogenolysis, amination, etherification and metallation reactions are also overviewed. Part IV deals with reactions involving carbopalladation and, as would be expected, much space is given over to the Heck reaction. Tandem and cascade sequences feature prominently and there are sections devoted to reactions wherein carbopalladation is followed by trapping of a nucleophile or an electrophile.

Volume II begins with an extensive review of the Tsuji–Trost reaction and includes other carbon to carbon bond forming processes involving π -allyl- and related palladium complexes (Part V). Recent advances in oxypalladation, aminopalladation and halopalladation are then presented. Part VI draws together a host of transformations involving the carbonylation of an organopalladium intermediate. Related migratory insertion reactions are summarised alongside the reactions and uses of acylpalladium derivatives in synthesis. Part VII brings together many of the functional group inter-conversion reactions mediated by palladium that are not covered in previous sections. Hydrogenation, isomerisation and metallation reactions feature prominently, along with other *syn*-addition reactions involving heteroatoms. Oxidation reactions are collected in Part VIII while rearrangement reactions are covered in Part IX. The discussion concludes with 'technological developments' (Part X), in which new avenues for palladium chemistry such as reactions in aqueous media, immobilised catalysts and applications in combinatorial chemistry are highlighted.

As with all multiple author works, the style of each review varies from chapter to chapter. This was never a distraction as a forward to each Part by the editor helped to knit the work together and place each review into a wider context. Likewise, the inclusion of many sections devoted to target oriented synthesis helped with continuity. In the forward, the editor commented that 'the book is outdated by at least a few years at the time of publication.' To experts in the field this may be apparent. However, for the vast majority of chemists the handbook will become their first port of call when considering a palladium mediated transformation. The book succeeds in showing how palladium chemistry has developed and matured over the years and, should the planned updates materialise, I expect that it will soon establish itself as the bible of Organopalladium Chemistry. If you have not already done so, I would urge you to flick through its pages. I am sure you will return again and again.

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