

Book reviews

Stereodirected Synthesis with Organoboranes
D.S. Matteson, Springer, Berlin, 1995, xi + 405 pages,
DM 198.
ISBN 3-540-59182-6

This volume gives a detailed description of the methods currently available to chemists for the preparation of stereochemically defined organic compounds with the assistance of boron reagents. The work highlights many of the exciting opportunities which exist for utilising this versatile class of compound in complex molecule synthesis. Chapter One sensibly starts with an overview of the general properties of organoboranes, including tabulated data (bond strengths, etc.) along with some useful information on bonding, ligand exchange, practical handling and safety aspects. Chapter Two concentrates on sources of boron and methods for the introduction of boron into organic molecules, the two main strategies highlighted here being the use of organometallic reagents and hydroboration. The incorporation of metal-assisted hydroborations is well-deserved, particularly in view of the developments in asymmetric hydroboration which are treated in a later chapter. Chapter Three is entitled "General reactions of organoboranes" and is interesting to delve into at random; however the subject matter covered does not lend itself to continuous reading. Sections include: oxidative replacement of boron; boron substituted carbanions; replacement of boron by carbon; allylborane chemistry; and reactions at sites other than the B–C bond. Although a little disjointed this chapter is very interesting and a range of useful transformations are covered, including the increasingly popular use of radical displacement reactions and addition of allylboranes to heteroaromatic systems. Chapter Four, covers routes to unsaturated compounds using alkenyl boranes, and includes a nice section on the Suzuki coupling reaction. Chapter Five examines "Asymmetric synthesis via (α -haloalkyl)boronic esters" and there is significant coverage of diastereocontrol using the ubiquitous chiral, non-racemic C_2 symmetric diols; the section on func-

tional group compatibility in this chapter is a thoughtful inclusion. Chapter Six on "Asymmetric hydroboration" incorporates methods for achieving asymmetric hydroboration via substrate or reagent control and methods of utilising these versatile intermediates once prepared. Allylboron reagents and boron enolates are discussed in Chapter Seven although, for some readers perhaps the latter section may be disappointingly brief. Diels-Alder reactions are the subject of Chapter Eight and the volume concludes with a "Miscellaneous" chapter which contains, once again, some fascinating transformations and recent developments in asymmetric catalysis and desymmetrization strategies.

I would question some of the organisation of the chapters, but overall I liked the book. I suspect that most readers will enjoy it more by dipping into it at random as opposed to reading the entire volume, particularly in view of the mountain of useful information it includes. The author has illustrated a number of points by giving plenty of examples of natural product synthesis, I found this a very pleasing aspect of the book. There is a good contents list, and the author and subject indexes are also useful. The volume is well produced and the author is to be congratulated on the work, which would be a useful addition to any personal collection or library.

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The Chemistry of Metal CVD

T.T. Kodas and M.J. Hampden-Smith (eds.), VCH,
Weinheim, 1994, xxiv + 530 pages, DM 228, £91.
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Chemical vapour deposition (CVD) has become a key technique for the manufacture of thin films in the