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Book Review

***Ligand Coupling Reactions with Heteroatomic Compounds*, *Tetrahedron Organic Chemistry Series vol. 18* Edited by Jean-Pierre Finet, Pergamon-Elsevier, Oxford, 1998, pp. xv + 291, ISBN 0-08-042793-6; US$ 49.50, DFl 86**

Ligand coupling reactions have attracted interest over the last 15 years as potential synthetic transformations. The aim of this book is to provide a broad general coverage of these reactions in a comprehensive review, particularly of coupling reactions that are difficult to achieve by other means. The term 'ligand coupling' in hypervalent compounds is used to describe a reaction involving two ligands that are coupled together after extrusion from a central, generally main group, atom. The hypervalent central atom is commonly sulfur, phosphorus, iodine, bismuth or lead. The hypervalent central atom simultaneously returns to its more stable valence state. This is thus the converse of oxidative addition.

The first chapter of the book is an introduction to the topic. In the second chapter the historical, theoretical and experimental evidence for the mechanism of ligand coupling reactions is reviewed. Particular emphasis is given to the stereochemical aspects of ligand coupling and to those features that distinguish ligand coupling from free radical coupling.

The following chapters review the ligand coupling reactions that have been reported for a number of main group heteroatoms. The coupling reactions that involve hypervalent sulfur, particularly in sulfonium salts and sulfoxides, phosphorus, iodine, such as in iodonium salts, and pentavalent bismuth as the central atom, are described in chapters three to six. The ligand coupling reactions of lead tetraacetate are covered in chapter seven. In the final chapter aspects of the chemistry of tellurium, selenium, antimony and thallium that impinge on this area are also described.

The book is well written and thoroughly illustrated with many references to the 1996 literature. There is a helpful index. The book provides a useful and timely survey of a developing area of organic chemistry and will be of value to those interested in utilizing this area of synthetic methodolgy.

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