

## Book review

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*Organometallics in Organic Synthesis. Vol. 1. General Discussions and Organometallics of Main Group Metals in Organic Synthesis*; by E. Negishi, John Wiley & Sons, New York, 1980, xiv + 532 pages, \$25.00.

The task this book has undertaken is to introduce, initially in general terms, and later with detailed specific facts, the enormous area of organometallic chemistry as applied to organic synthesis. Is the volume successful? Overwhelmingly yes. This text fulfils its ambitions of being suitable for Ph.D., M.S. or B.S. candidates. But, perhaps more importantly, those chemists now practicing the profession, who are not so familiar with the powerful methods of synthesis provided by organometallic chemistry, will find this book a complete education.

Chapter 1 describes fundamental properties of metal atoms, bonds to metals, carbon groups, and organometallic compounds. While this section is predominantly inorganic chemistry, it, of course, forms the underlying basis of organometallic chemistry, and is written to appeal to organic chemists.

Chapter 2 describes the preparation of organometallic compounds. This is a very comprehensive account that not only outlines all the main preparative routes, and critically points out where neglected methods deserve a more thorough evaluation.

Chapter 3 describes the general patterns of organometallic reactions in a systematic and mechanistic way, and completes the first part of the book.

Part II. Chapter 4 begins a detailed description of the organometallic chemistry of specific elements, starting with Group IA, Group IIA and Group IIB (Li, Na, K, Mg, Zn, Cd). This involves largely straightforward organic chemistry that the reader more than likely will be familiar with, except the view-point is more from the side of the reagent (organometallic component) rather than of the organic substrate.

Chapter 5 describes organoborons and organoaluminums in a very lucid and interesting way, frequently using examples of applications in the total synthesis of complex organic molecules to illustrate the immense synthetic value that this chemistry offers.

Chapter 6 describes organosilicon and organotin chemistry. I found this chapter particularly interesting and valuable. It focusses on the main, and at present, most useful procedures that utilize organosilicon and organotin compounds in organic synthesis. Furthermore, perceptive comments are made where the author considers important gaps in knowledge are evident. A case in point is the lack of any general method for converting a ketone or aldehyde into a vinylsilane via a carbon—carbon bond forming reaction (as by a type process). Also, the fact the allyltins have yet to be effectively developed as reagents in organic synthesis is pointed out, although this deficiency is being addressed in recent work.

All of the chapters are well referenced, particularly with leading review arti-

cles. There are remarkably few errors, either of a chemical nature or typographical kind.

This book fills a very important gap in a very competent and professional manner. Professor Negishi has collected a formidable amount of information and produced a very readable and valuable text. Doubtless this book will find widespread use in teaching, especially graduate courses, and as a general text for research workers.

While this is supposed to be a critical review, I found virtually nothing to be critical about. Volume II is eagerly awaited.

*Department of Chemistry,  
Ohio State University,  
Columbus, Ohio 43210 (U.S.A.)*

PHILIP MAGNUS