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Book review

Carbon-Carbon Bond Formation Vol. 1, Robert L. Augustine Ed., Marcel Dekker, Inc., New York, New York, 1979, IV + 461 pp.

This book is the first in a projected series of monographs dealing with important carbon-carbon bond forming reactions used in modern synthetic organic chemistry. As in previous monographs edited by R.L. Augustine, the style emphasizes the description of experimental procedures and the evaluation of the various experimental variables. A significant number of actual experimental procedures are incorporated in the three chapters and provide a handy reference for the practicing organic chemist. The three reactions covered in this first volume are the aldol reaction, alkylation of metal enolates of aldehydes and ketones, and alkylation and acylation of phosphonium ylides.

The chapter on alkylation of metal enolates is an extremely valuable compilation of results which would not be readily accessible from the basic literature and sufficient mechanistic or stereochemical background and discussion is provided to enable the reader to predict reactivity and stereoselectivity in related systems. The chapter is extremely well referenced, with many examples chosen from the very recent (1977-78) literature.

The chapters on the aldol reaction and acylation and alkylation of phosphonium ylides are much more narrowly focused. The latter generally covering older literature (pre-1976). The aldol chapter generally emphasizes the choice of experimental variables and critical analysis of the limitations of the individual processes discussed. It appears to complement the other treatments of the aldol reaction already available.

The book as a whole is well laid out and generally readable. The subject index is adequate but not extensive, and some difficulty is encountered in locating specific information in the chapters using the index. I would recommend this book as a complement to existing monographs such as Organic Reactions. In particular, it certainly presents the most detailed and up to date treatment of alkylation of metal enolates of ketones and aldehydes currently available. It would be of value as a working reference for the practicing synthetic chemist and should be included in a library collection, however its price may put it out of reach for all but specialists in the field in terms of inclusion in a personal library.

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