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BOOK REVIEWS

Handbook of Synthetic Photochemistry. Edited by Angelo Albini and Maurizio Fagnoni (University of Pavia, Italy). WILEY-VCH Verlag GmbH & Co. KGaA: Weinheim. 2010. xx + 464 pp. $129.95. ISBN 978-3-527-32391-3.

The role of photochemical processes in synthetic organic chemistry has a long and distinguished history. Photochemical reactions offer access to unique types of reactivity via high-energy intermediates that often are not accessible by other approaches. Not surprisingly, a wide array of creative applications of organic photochemistry in the synthetic arena has resulted. Comprehensive overviews of synthetically relevant photochemical processes have appeared previously, most recently in *Synthetic Organic Photochemistry*, edited by Griesbeck and Mattay (2005), and in the *CRC Handbook of Organic Photochemistry and Photobiology*, edited by Horspool and Lenci (2004). In this book, editors Albini and Fagnoni have assembled a timely review of the most widely applied examples of synthetic photochemistry, adopting a user-friendly approach aimed more at the synthetic chemist than at the practicing photochemist.

The book opens with a nice Foreword from Patrick Mariano—a long-time practitioner of synthetically relevant photoreactions—offering a thoughtful overview of where the field has come from and where it is likely to go. The first chapter is a handy and concise "how-to" guide describing the common preparative photochemical methods, including light sources and important procedural issues such as concentration and impurities. This is followed by two chapters concerning specific processes: carbon−carbon bond formation by small-molecule photoelimination and intermolecular photoaddition to carbon−carbon multiple bonds.

A large portion of the book is divided into chapters based upon classes of products, including various ring sizes of cyclic products. This includes many of the most widely studied photochemical reactions, such as the di-π-methane rearrangement and its heterovariants, [2 + 2]-photocycloadditions, the Paternò−Büchi reaction, various radical cyclizations initiated by hydrogen abstraction, and higher-order cycloadditions. One disappointing omission is the near total lack of any discussion of the photorearrangement chemistry of cross-conjugated dienones, a topic that has spawned a number of synthetically relevant transformations.

The book concludes with chapters on aromatic substitution processes, reactions utilizing photogenerated singlet oxygen, heteroaromatic phototranspositions and other rearrangements, and photolabile protecting groups. This last chapter is likely to be of particular interest to synthetic chemists in search of "orthogonal reactivity" in their strategies for using protecting groups and includes a convenient appendix with a tabular presentation of conditions for installation and removal of such groups.

The coverage of the literature is not comprehensive, nor is it intended to be. The authors of the individual chapters have selected a range of examples with an emphasis on preparative utility. Most chapters include citations to quite recent work (2007 or 2008). The index is thorough and well organized.

Given its organization and practical emphasis, I believe that this book would make an outstanding addition to the library of any synthetic organic chemist. It should certainly be on the acquisition lists of all institutional libraries.

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JA1089815

10.1021/ja1089815

10.1021/ja1089815