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Journal of Photochemistry and Photobiology A: Chemistry 112 (1998) 95–95

Journal of Photochemistry and Photobiology A:Chemistry

Book Review

Organic Photochemistry

(ed. V. Ramamurthy and K.S. Schanze; Marcel Dekker; ISBN 0-8247-0012-0; 1997; $195)

Editors can be so frustrating! This collection of reviews is said to be the first in a new series on 'Molecular and Supramolecular Photochemistry', but nothing is said about the structure of the series, the proposed content of future volumes, nor the rationale behind the choice of review topics for this first volume. Because I can see no such rationale myself, I take the book as a collection of largely disconnected reviews, whose overall value is much the same as if each had been published separately in an accessible review journal or a relevant primary journal that publishes reviews.

This is a pity, because the authors of the articles have done their job well, and the reviews are of generally high quality. In many instances the authors are closely involved in the field about which they write, which helps to achieve (though it doesn't guarantee) a good overview. In one article, by Ganesh Pandey on photoinduced redox reactions in organic synthesis, there are a fair number of his own unpublished results included.

Some of the earlier articles in the volume cover a narrow field in depth — the photochemistry of sulfoxides (particularly useful for covering the eight years or so since the last major review), of pyrazoles and isothiazoles (but why not other two–heteroatom, five-membered heterocycles that undergo related phototranspositions?), of (S-hetero)cyclic unsaturated carbonyl compounds (forming an interesting link between reaction categories that would normally be dealt with separately), of conjugated polyalkynes, and of carbocations (not normally considered as substrates for photochemical processes).

There follow three articles that, for me, are the most useful in the book. One is on the regioselective and stereoselective aspects of [2+2] photocycloadditions, complementing a number of other reviews that deal with this important group of processes more generally. There is a good article, referred to earlier, about photoinduced redox reactions in organic synthesis, principally involving radical cations generated by a photoredox process, but also some reactions that proceed through radical anions. Finally in this group, there is an article on photochemical reactions on semiconductor particles for organic synthesis, which provides a short introduction and a good set of examples.

The final four articles are strongly biassed towards photophysical processes and parameters, rather than processes involving light-induced chemical change. A long article on fullerenes is largely an account of their photophysics as independent species and in agglomerates; although fullerenes are said to have a 'very rich photochemistry', only a few pages are devoted to it, mainly to the photoaddition of amines. There is a very nice chapter on the use of photophysical probes to study dynamic processes in supramolecular structures, which may prove very helpful to those entering this arena, since much of the abundant literature in recent years tends to make assumptions that are either open to question or are not obvious to the uninitiated. The final puzzle of the volume is why there are two separate articles on the same topic, namely the photophysics of squaraines — the articles have many references in common, and although the coverage is not identical, it is difficult to justify the double approach.

If you are active in any of the specific fields covered in the volume, you will probably want access to the material. The book is unlikely to be of sufficient general value to other photochemists to warrant purchase. I reiterate my plea to the series editors for a more transparent explanation of this work, if future volumes are to have wider appeal.

John Coyle
(Oxford, August 1997)