
Organic Photochemistry, edited by Albert Padwa, *Volumes 8 and 9*, Marcel Dekker, 1987, Volume 8: xi + 373 pages, \$99.75 (US and Canada), \$119.50 (all other countries), ISBN 0-8247-7702-6; Volume 9: xi + 353 pages, \$99.75 (US and Canada), \$119.50 (all other countries), ISBN 0-8247-7775-1.

These volumes of a well-known and well-regarded series continue with the tradition of reviews of topical areas of organic photochemistry by experts in the field. In Volume 8 the first chapter, by James Ferris, deals with photochemical transformations on the primitive earth and on other planets. This is a fascinating article, written in a manner to make the subject accessible not only to the expert in the area, but to a wider chemical audience. It discusses the atmospheres of the gas giants, Jupiter and Saturn, with particular reference to hydrocarbon, ammonia and phosphine photochemistry. The atmospheres of Titan, Mars and Venus are also treated, before the author moves to consideration of the primitive earth. This is particularly interesting, since an understanding of the primitive atmosphere is crucial to theories of the origins of biological molecules.

The second chapter is somewhat more specialised, reviewing photochemistry, mostly of hydrocarbons, using short wavelength UV light. This is a thorough and scholarly review, which will be of considerable interest to workers in this area. Chapter 3 considers matrix isolation photochemistry, which has in recent years been of very great value in the study of extremely unstable molecules. Among the species discussed are antiaromatic molecules such as cyclobutadiene, nitrene and carbene related intermediates, and strained alkynes. The organometallic chemist will find of particular interest the section on silenes and silylenes. Radicals and biradicals are also discussed. The final chapter in this volume reviews the influence of the molecular crystalline environment on organic photorearrangements. In many cases the reactions in the solid state show substantial and useful differences from those in solution.

Volume 9 opens with a chapter detailing the photochemistry of molecules containing carbon–nitrogen double bonds, with an emphasis on electron transfer processes. The chemistry of compounds bearing tin or silicon functionality is briefly discussed. Chapter 2 discusses photocyclisations and intramolecular cycloadditions of conjugated alkenes. This is an organised and systematic account, which may serve to remind organometallic chemists of some of the fundamental chemistry of their polyene ligands. The final chapter details methods for the photolytic deprotection and activation of functional groups, focussing mainly on carboxylates, amines, alcohols and thiols. Such processes have found increasing use in synthetic organic chemistry in recent years.

These books have been well produced, like the earlier volumes in the series, and are well referenced into 1986. The diagrams are clear and attractive and I found few typographic errors. The index was only moderately useful and I found a number of irritating omissions. These are excellent additions to this series. Although they have only marginal direct interest for the organometallic chemist, they provide some useful material in the area of synthesis. They will be invaluable to photochemists and to organic chemists generally.

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