

Book Review

Technologie Photochimique

by A. M. Braun, M.-T. Maurette and E. Oliveros; published by Presses Polytechniques Romandes, Lausanne, 1986; 540 pp.; price, Sfr. 170

The stated purpose of this book is to introduce chemists and chemical engineers to the problems of preparative (organic) photochemistry on a large scale and to share the authors' experience in the design of photochemical reactors and the scaling-up of photochemical reactions. The authors set out to do this in four general chapters (an introduction to the basic physical principles of organic photochemistry, radiometry and actinometry, light sources and filter materials, and photochemical reactors), followed by eight chapters describing particular reaction types related to industrial-scale processes (photonitrosation, photochlorination, photobromination, sulphochlorination and sulphoxidation, desulphonation and desulphonylation, photohydrodimerization, photo-oxidation, and vitamins).

The book is generally well planned and written, and the highlights of the first four chapters are the especially helpful section on chemical actinometry and the whole chapter on photochemical reactors, which is of considerable interest because much of the material is not readily available elsewhere. The reactions covered in Chapters 5 - 12 are closely similar to those described in various reviews of the industrial applications of preparative organic photochemistry which have appeared over the past 20 years or so. This is a comment on the fairly static position of chemical manufacturing companies in their appropriation of synthetic photochemical reactions. What has changed is the level of detail in which particular reactions can be described, and, in some cases, the range of examples to which a reaction type has been applied. The authors have done a service to the photochemical community by gathering together details that were previously, at least in part, scattered throughout the literature. The weakest chapter, in my view, is that on photohydrodimerization; two patents covering the photochemical conversion of ketones to pinacols are used to introduce a chapter on the mechanistic principles of ketone photochemistry, but there is no mention of any further industrial applications.

The book is produced to a very high standard by the publishers, with a clear typeface and excellent diagrams. I see no value to the reader, however, in having the index in a fold-out section from the inside back cover of the book. This volume provides a useful counterbalance to the (few) books at this level of detail (more than 500 pages) which use an "academic" framework of organic photochemical reactions on which larger-scale applications

are hung as they arise. The authors certainly succeed in sharing their experience in reactor design and scale-up, although I feel there is less success in highlighting the problems of scale-up and in orienting the approach to suit chemical engineers. Overall, I would recommend that the book take its place on the bookshelves of practising organic photochemists. An English translation would be welcome, to obviate the need for an accompanying technical French dictionary on the part of those like myself who are less than fluent in French. I look forward also to the suggested second volume, covering no-preparative technological applications of photochemistry, an area where much has happened in recent years and whose material should make some university teachers of organic photochemistry reconsider the content of their courses.

JOHN COYLE