Book Review

Principles of Molecular Photochemistry – An Introduction
Nicholas J. Turro, V. Ramamurthy and J. C. Scaiano
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When I started my research career in photochemistry some 4 decades ago, there were only two up to date books dedicated to the area, Turro's "Molecular Photochemistry", and "Photochemistry" by J. G. Calvert and J. N. Pitts. Both continue to be excellent sources of information, but Nick Turro's relatively small (just under 300 pages) book had the advantage of quickly introducing a novice like me to the delights of photochemistry. It was very well written and easy to grasp the main concepts. Over the following 25 years this book became increasingly difficult to find, and also missed some of the recent developments in this rapidly expanding area. In 1978, Turro published a greatly expanded and more comprehensive, book "Modern Molecular Photochemistry", which became the standard reference work in the area for a large number of chemists and physicists, myself included. Some three decades later, the long awaited book "Principles of Molecular Photochemistry – An Introduction" has been published. This follows many of the ideas of its predecessors, but benefits both from a more comprehensive treatment of the photophysical and spectroscopic basis of photochemistry, and from the inclusion of many of the advances in the area, particularly on the theoretical side. This has been greatly assisted by the addition of two co-authors, V. Ramamurthy and J. C. (Tito) Scaiano, both highly respected inside and outside the photochemical community.

The book relies on pictorial representations rather than detailed mathematical descriptions of the main spectroscopic and photophysical concepts, and in seven chapters sets out to introduce students to the most important ideas. This descriptive philosophy forms the basis for its use as a primer in photochemistry. Although the book is relatively long (500 pages), it is easy to study each section separately.

The book starts with an overview of photochemistry, followed by consideration of electronic and vibrational states, and the relevance of electron spin coupling. Basic topics, such as Franck-Condon principle and spin-orbit coupling, are treated elegantly, and lead naturally to the following chapters on the radiative and nonradiative transitions between electronic states. The conceptual presentation of these makes them excellent

for advanced undergraduate and graduate courses in photochemistry, while also making it accessible for students in related areas, such as photobiology or materials science. In addition, the detailed references provide ready access to more quantitative treatment of spectroscopic and photophysical processes. This is followed by a chapter on theory of organic photochemistry. Given the interests of the three authors, it is not surprising that the emphasis is on organic systems. However, it is also a useful starting point for people more interested in inorganic or organometallic systems, and if used as a textbook could easily be accompanied by appropriate texts or review articles from these areas. The final section discusses various aspects of energy and electron transfer processes of excited states, including many recent and relevant examples.

The coverage of organic photochemistry is comprehensive, the presentation is excellent, the price is reasonable, and I strongly recommend this book to students, teachers and research workers of photochemistry, and related areas.

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