

Bioinorganic Photochemistry

In this relatively small book, the authors attempt to provide a comprehensive overview of all important aspects of inorganic compounds at the interfaces of photochemical, biological, medical, and environmental sciences. The subject described by the title is indeed a rapidly growing branch of current research into the photochemistry of coordination compounds and inorganic materials, which will certainly have a bright and influential future.

The first part of the book starts with a short introduction to the foundations of this emerging research area, defining the authors' subjective view of the scope of topics to be covered in the cross-disciplinary mix called *Bioinorganic Photochemistry*.

That is followed in Part II by some basic chapters covering the fundamental concepts of interaction between light and matter, which are a necessary prerequisite for gaining a deeper insight into all the possible implications from the material collected in the main text. The very brief treatment covers the generation and detection of excited states, and gives a condensed overview of photokinetics and the most important photophysical and photochemical properties of inorganic compounds. A reasonably balanced selection of several key references is provided, which allows easy access to the relevant original literature.

The only rather disappointing section of Part II is Chapter 7 on "Photochemistry and Photophysics of Supramolecular Systems and Nanoassemblies". Although this provides a well-written and informative treatment of semiconductors, it is not what one might have expected to find in such a chapter; in particular, supramolecular photochemistry is hardly covered at all. This is really a pity, since interactions of the second coordination sphere, pre-organized aggregates of functional subunits, and many other related aspects are of prime importance for the deeper understanding of most bioinorganic systems.

Part III deals with "Natural Photoprocesses Involving Inorganic Compounds". In addition to a rather condensed treatment of photosynthesis, it contains a very successful set of three chapters in which the role of photocatalysis in the chemistry of life is discussed. Here, in what is probably the strongest part of the monograph, the authors manage to integrate complementary fields such as astrobiology, atmospheric chemistry, environmental sciences, and chemical evolution to provide a unified picture. This trans-disciplinary look at the fundamental role of photochemistry offers the right spirit to provoke new ideas and to stimulate unorthodox ways of thinking. In particular, these chapters can help to promote the creativity of young researchers

entering the field, who would probably not yet have sufficient confidence to consult the literature in quite remote fields when trying to solve their most difficult scientific problems.

The important subject of bio-inspired and biomimetic model systems is covered in Part IV of the book. Here, the authors also include some interesting pioneering work that is still in its infancy, such as the development of artificial photoenzymes. Another topic discussed in this section is photocleavage and charge transport in nucleic acids. However, in relation to the vast amount of information that is available, the chapter on photoinduced electron transfer in proteins is rather weak and limited to some specialized examples. To get a more complete overview of this topic, the reader should also consult other reviews and monographs.

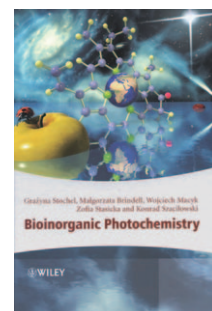
The book concludes with more than 100 pages on known applications of bioinorganic photochemistry and photocatalysis, including a collection of material in the well-established field of biochemical sensing and labeling. Most of the remaining examples are also related to life sciences and photo-medicine, including therapeutic strategies such as PDT (photodynamic therapy), photodynamic inactivation of microorganisms, and the light-induced release of biologically active compounds. This selection may arise from the authors' own interests and expertise, and therefore might be significantly broadened in a future edition of the book. Finally, the authors offer a future outlook, highlighting the huge potential of interdisciplinary research in bioinorganic photochemistry, which should be able to provide new answers in the search for cheap and renewable sources of energy, green production technologies, environmental protection, and pollution abatement.

In summary, although the relative coverage of topics is not always well-balanced, *Bioinorganic Photochemistry* is an outstanding and very timely publication. It contains a considerable amount of valuable information and provides a rapid shortcut to the relevant original literature. The main value of the book is to provide the nonspecialist with a broad overview of the biological, medical, and environmental aspects of modern inorganic photochemistry, which have now for the first time been collected in a single volume. This book should not be missing from any scientific library, and hopefully will help to promote the currently emerging field of bioinorganic and biomimetic photochemistry to the level of attention that it deserves.

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