respectively. The detailed chemical composition and geometry of the norbornene building blocks are discussed in the end of this section.

To open the third section, Martin Green presents a review of the current state of the silicon photovoltaics industry and discusses his third-generation, high-efficiency silicon photovoltaic devices. The another chapter of this section describes how artificial molecular systems that mimic bacterial photosynthetic energy conversion can be designed and synthesized.

The first chapter of third section focuses on addressing the hydrogenase oxygen-sensitivity problem. The end of this chapter summarizes the state of the art in getting better irradiation of cells deeper in high-density microalgal culture.

The opening chapter of last section focuses on the manipulating ribulose bisphosphate carboxylase/oxygenase in the chloroplasts of higher plants. The next chapter of this chapter presents how to define the inefficiencies in the chemical mechanism of the photosynthetic enzyme rubisco by computational. Carbon-based end products of artificial photosynthesis are discussed in the chapter 15. The next chapter introduce the artificial photosynthesis system. The end chapter of this book describe the greenhouse gas technologies.

Numerous tables, charts and figures throughout this volume provide excellent illustrative material to support the detailed information presented in text. In conclusion, this book outlines the first steps of research in service to energy transformation. This book can be used as a textbook in teaching course as well as in research jobs of this field.

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Kurt Faber, Biotransformations in Organic Chemistry, 5th ed., Springer, Heidelberg, Germany, 2005 (xi + 454 pp., £27.00, ISBN 3-540-20097-5)

The methodology of biotransformation has been developed and used in recent decades. The utilization of natural catalysts (enzymes) for the transformation of non-natural man-made organic compounds is totally different from the early researches. This method has become an indispensable tool for asymmetric, not only in the academic field, but also on an industrial scale.

There are five parts in this textbook. In the first part, it gives a basic introduction in the principles of biocatalytic methods. It mainly describes the enzyme properties as well as the classification and nomenclature. In the second part, it discusses the biocatalytic applications, which is the main chapter in this book. It gives the principles of different reactions—hydrolysis, reduction, oxidation, addition and elimination, glycosyl-transfer, C–C bone formation. It also describes the principles of stereoselective transformations, and kinetics of enzymes. The following part indicates the special techniques in this field. It focuses on the organic solvents, immobilization, modification and artificial enzymes. The operation and principle of each technique are described in detail. Charts and figures are cited in the text, which help the readers to understand the points more easily. The following part deals with the state of art and outlook. It is a brief summary on the state of the art of biotransformation. The outlook focuses on future developments. The final part is the appendix, which deals with the basic rules for the safe and practical handling of biocatalysts. The abbreviations, suppliers of enzymes and the commonly preparations of enzymes are included in this part.

Biotransformations in Organic Chemistry as a textbook provides an extensive and basic background in this field and it is a foundation book for students of undergraduate and postgraduate in the course of modern organic chemistry.

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E. Klipp, R. Herwig, A. Kowald, C. Wierling and H. Lehrach, editors, Systems Biology in Practice (2005, Wiley/VCH, Weinheim, Germany) (xix + 465 pp., € 99.00, ISBN 3-527-31078-9)

A desire to understand a system of living organisms has existed for agelong time. Systems biology is the coordinated study of biological system by the researches in the component of cellular network and interaction, genome technique and computer work with experimental efforts. Therefore, the enterprise of systems biology research requires both breadth and depth of understanding for various aspects of biological, computational, mathematical engineer issues.

Systems Biology in Practice is a textbook based on the concept, implementation and application. It covers extensive aspects of biology and computation, which are important in

getting started in systems biology research. The book is formatted into three parts. These are general introduction, standard model and approaches in systems biology and computer-based information retrieval and examination. The authors also demonstrate how mathematical concepts can illuminate the principles underlying biology at a genetic, molecular, cellular and organism level, and how to use mathematical tools for analysis and prediction.

In the first part, an introduction is given to indicate the three main foundations of systems biology, which are cell biology, mathematics and experimental techniques. They are very basic principles for readers. The second part mainly presents current strategies of computational modeling and mining. So different concepts of modeling and how this model can be used are introduced here. Metabolism, signaling, cell cycle and gene expression and interaction between these processes are detailed in this part. The third part gives a brief introduction on available help and resources from the recent Internet information. An overview is also given on databases here, which are indispensable for information exchange and constitute an important support for system biology. *Systems Biology in Practice* is a useful book, which combines in comprehensible form, the basic principles with advanced studies of the subject material.

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L. K. Tamm (Ed.), Protein-Lipid Interactions: From Membrane Domains to Cellular Networks, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, 2005 (xxvi + 444 pp., £105.00, ISBN 3-527-31151-3)

Cell membranes are arguably the most important components that perform number of essential functions such as transport of nutrients, ion conduction, photosynthesis, respiration and ATP synthesis, signal transduction, vision, hearing, cell migration, fertilization and development, etc. Biological membrane has been considered as a two-dimensional liquid consisting of lipid bilayer and embedded in the fluid lipid bilayer are proteins of various shapes and traits. Even though the basic structure of membranes has been discovered many years ago, more recent research has considerably refined the early "fluid mosaic" model of the structure of biomembranes.

Protein–Lipid Interactions describes the interactions between proteins and lipids that make the fabric of biological membranes from every angle. It examines the relevant thermodynamic and structural issues from a basic science perspective to biochemical and cell biological processes. The major building blocks of membrane proteins are α-helices and β-sheets and the generation and insertion of these elements of secondary structure are given in the chapter 1–3 of Part1. Chapter 4 summarizes the post-integration misassembly of membrane proteins and disease. In Part 2, chapter 5 describes the census of ordered lipids and detergents in X-ray crystal structures of integral membranes proteins. Nuclear magnetic resonance (NMR) offers unique opportunities to study the interactions of membrane proteins with disordered lipids and detergents in fluid states. Chapter 6 reviews the measurements of these interactions that have been or potentially could be achieved using solution NMR techniques.

Many bacteria secrete polypeptides with intrinsic properties that generate a remarkably wide range of stable structural states designed to form a hole in cellular membrane. Many diseases are caused due to these protein toxins that cross the cell membranes to reach their point of action. Part 3 is focussed on the membrane penetration by toxins, which include lipid interaction of α-helical protein toxins, membrane recognition and pore formation by bacterial toxins, and mechanism of membrane permeation and pore formation by antimicrobial peptides.

Cell fusion is a key stage of many fundamental developmental processes such as fertilization, placentation, myogenesis and osteogenesis. Part 4 discusses the mechanisms involved in membrane fusion including cell fusion in development and disease, molecular mechanisms of intracellular membrane fusion, and interplay of proteins and lipids in virus entry. Protein-lipid interactions in the formation of raft microdomains in biological membranes, and protein-lipid partitioning in locally heterogeneous model structures have been discussed in Part 5. The chapters in final part of the book describe how different protein modules are recruited and bind to membrane surfaces.

Numerous figures throughout this volume provide excellent illustrative material to support the detailed information presented in the text. In conclusion, this comprehensive volume is highly recommended to all the persons working in this exciting area.

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