

modified starches in the food industry is also included in this volume. This chapter discusses a wide variety of treated starches, including bleached and oxidised starches, and starch hydrolysates. The commercial production and utilisation of various starch derivatives, e.g. cross-linked starches, starch ethers and esters, is also presented. Information on permitted levels, digestion and metabolism, and toxicological data is provided where available.

The volume is extremely informative and well presented, with over 200 tables, drawings and equations, and is also extensively referenced, with more than 1750 literature citations. It is therefore highly recommended as an invaluable resource for food scientists, technologists and toxicologists, and is thus a welcome addition to any scientific library.

Charles J. Knill
John F. Kennedy

Bioorganic Chemistry: A Chemical Approach to Enzyme Action, 3rd Edition. Edited by H. Dugas, Springer-Verlag, New York, USA, 1996. xxii + 700 pp. Price £29.50. ISBN 0-387-94494-X.

Bioorganic chemistry is the application of the fundamental principles and the tools of organic chemistry to the understanding of biological processes. Such an understanding is often accomplished by the aid of molecular models which imitate the living processes in nature. The concept of the model construction is a study of the different parameters of a complex biological process. The success of many models indicates the progress that has been made in understanding the chemistry operation in biological systems.

All living processes require energy which is used for a variety of essential functions. The energy is obtained by performing chemical reactions inside cells. Many of the reactions involve combustion of food. When the food, such as carbohydrates, are eaten and digested, a large number of enzymes are released to cleave the sugars molecules to smaller fragments that will eventually be further oxidised by mitochondrial enzymes. Due to the exothermic nature of these processes, a good fraction of energy liberated will be stored as energy-rich phosphodiester bonds in the form of ATP molecules. At the end of the chain, molecular oxygen is finally reduced to water molecules. This is the essence of respiration, which is basically the result of a series of oxidations of carbon molecules which produces water. These transformations are also related to biochemical processes.

The third edition of *Bioorganic Chemistry* has been updated with examples and references. However, the

main change in this edition is a new chapter on molecular devices describing the aspect of supramolecular chemistry and illustrating some points for future development.

The book is divided into four major areas. The first section introduces bioorganic chemistry in order to understand the processes of enzyme action and biological transformations in the cells via models. Next, descriptions of the chemistry of amino acids, and the synthesis and properties of peptides are presented. Cellular metabolism is under enzymatic control and often the enzymes involved need a substance or cofactor, which is called coenzyme, in order to express their catalytic activities. Therefore, a subsequent section deals with enzyme chemistry, enzyme models and coenzyme chemistry. Finally, the molecular devices are offered.

Bioorganic chemistry provides a link between organic chemistry, biochemistry, and protein and medicinal chemistry or pharmacology. With outstanding figures and over one hundred reference articles, this book is a comprehensive and informative reference for everyone in the fields mentioned above and academia.

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Medicinal Chemistry: Principles and Practice. Edited by F.D. King, The Royal Society of Chemistry, Cambridge, 1994. xxiv + 314 pp. Price £39.50. ISBN 0-85186-494-5.

The main aim of the medicinal chemist is to identify a potential drug candidate from an initial lead compound which possesses all of the desired qualities, e.g. sufficient biological activity, low toxicity, reasonable stability, water solubility (if required), good bioavailability, and suitable pharmacokinetics and dynamics, for successful development into a high quality, efficient, marketable product. In many instances drugs are associated with carbohydrates, glycoproteins and carbohydrate-directed enzymes in their activities.

This volume essentially encompasses the course of lectures presented at the 7th Royal Society of Chemistry Medicinal Chemistry School, at the University of Kent, and is intended to provide a reasonably sound and in-depth introduction to medicinal chemistry, for the benefit mainly of synthetic chemists who are new to the field. Chapters have been written by authors with a diverse range of scientific backgrounds thereby providing as broad a perspective as possible.

The principles and practices of modern medicinal chemistry are introduced and all aspects of drug discovery, from the initial lead to the final development, are covered. Topics discussed include drug-receptor interactions, enzyme inhibitors, pharmacokinetics, drug

metabolism, structure-activity relationships and molecular biology. The book clearly demonstrates how to convert a lead compound into a potential drug and provides recent case histories as examples of successes, e.g. the development of bioisosteres, protein kinase C inhibitors, dipeptoid antagonists, and migraine therapy.

Overall this is a well presented and extremely informative volume that provides an interesting background into the development of drugs from a medicinal chemistry viewpoint. It should prove to be an invaluable tool for those within the pharmaceutical industry and complement any scientific library.

Charles J. Knill
John F. Kennedy

Developments in the Analysis of Lipids. Edited by J.H.P. Tyman and M.H. Gordon, The Royal Society of Chemistry, Cambridge, 1994. x + 206 pp. £45.00 (hardback). ISBN 0-85186-971-8.

As well as carbohydrates and proteins, lipids are biopolymers which are available naturally in large quantities and renewable. Lipids are long established, well-known materials for food applications, and are also currently being exploited as sources of various types of their components, particularly fatty acids, glycerol, mono- and diglycerides, for downstream processings such as oleochemical, non-food and detergent industries.

This book, *Developments in the Analysis of Lipids*, is derived from presentations at a Royal Society of Chemistry meeting by the leading practitioners and researchers in chromatographic and spectroscopic techniques for the analysis of lipids. The contents are divided into two main areas, namely *Extractive and Chromatographic Methods* and *Spectroscopic and Physical Methods*. The current popular method of extraction by using supercritical fluid extraction is presented by K.D. Bartle and A.A. Clifford. This presentation highlights the extraction aspects of this technique and the factors which influence the selectivity and quantitative recovery. Another paper covered by L.G. Blomberg and M. Demibuker on the analysis of triacylglycerols by argentation supercritical fluid chromatography. The industrial community would most probably appreciate the paper by K. Grob and C. Mariani on "LC-GC methods for the determination of adulterated edible oils and fats". Improvement of the method and better sensitivity for the detection of minute amounts of minor components in triglycerides would help the industry to combat the negative practice of harvesting high profit margins by producing lower quality products than specified.

The second chapter on spectroscopy and physical methods does provide a good account on the applica-

tion of modern techniques and the equipment used for the analysis of lipids, particularly using ^{13}C NMR, mass spectrometric techniques and neutron diffraction methods. There is an excellent section on purity criteria in edible oils and fats, by J.B. Rossell, which discusses the edible oil purity problems encountered in the world. By incorporating a carbon isotope ratio measurement, the authentication of the oil improved, particularly in the case of maize oil.

From a viewpoint of a researcher in oils and fats, this book is really valuable and does contain the information and references needed in my research work. This superb, analytical book on lipids is a pleasure to read, as the simplicity of the presentation throughout the book is illuminating. This book claims to provide an overview of the latest developments in the analysis of lipids, which will encourage the reader to exploit further the various aspects of these methodologies. Therefore the book is highly relevant to both academic and industrial analyses, especially in the area of oils and fats, and has both educative and industrial value.

John F. Kennedy
W. Hasamudin

SigmaPlot, Scientific graphing software, Jandel scientific software, version 3 for windows 95, NT, and 3.1. Jandel Scientific Software GmbH, Schimmelbuschstr. 25, D-40699, Erkrath, Germany.

Data analysis and data presentation are necessary for research. Presentation using graphs is very effective since it makes data convenient and easy to understand, often at a glance. Computer software is also a tool to enhance and improve the quality of work presentation. Currently, there is a lot of software being improved for this purpose. SigmaPlot is one of the software packages which is extremely useful for data analysis and graph creation. It can produce a wide variety of graphs, for example, 2D Cartesian graphs, Pie charts and 3D Cartesian graphs. Moreover, it can create multi-axes per graph, multi-curves per graph, multi-graphs per page and multi-pages per worksheet.

In addition, users can use Excel as a worksheet and create SigmaPlot graphs immediately, since Excel is contained in this software. It also provides statistical analyses; *t*-test, linear regression and non-linear regression. These facilities make it superior to other software. With complete instructions on how to use the step-by-step interactive graph wizard, and graph creation using a toolbar, it is easy, powerful and quick to use. Users can also import data from other software programs such as Lotus 1-2-3 and dBase to SigmaPlot. Similarly, data from SigmaPlot can be exported to SigmaPlot 200, SigmaStat 1.0, Excel and Lotus 1-2-3.