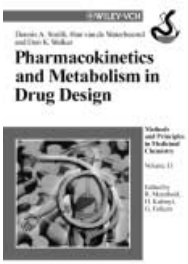
The Readers Digest?

Pharmacokinetics and Metabolism in Drug Design. Vol. 13. By *Dennis A. Smith, Han van de Waterbeemd* and *Don K. Walker*. Wiley-VCH, Weinheim 2001. 149 pp., hardcover € 85.00.—ISBN 3-527-30197-6



This textbook deals with an application of pharmacokinetics in a new area, that of drug design. Whereas pharmacokinetics has, since the 1950s, become increasingly important in its clinical applications, it previously had little influence on the very early stages in the development of new drugs. However, with the recognition that pharmacokinetic problems are the reason in over 40% of all cases where the development of a drug is stopped, the attitude towards this aspect has changed radically. All pharmaceutical companies now use their knowledge of pharmacokinetics to help choose suitable candidates at a very early stage of research, and even to modify them so as to improve their pharmacokinetic properties without sacrificing their pharmacological effectiveness (part of the drug design process).

To discuss these modern applications in detail, the authors must first establish some basic principles. They meet that need very successfully, by carefully selecting the most important fundamental publications from the vast literature on pharmacokinetics and presenting the information in a didactically instructive form. Occasionally, however, the quality and clarity of the figures leaves something to be desired. The book gives a well-balanced presentation of all the important fundamentals of pharmacokinetics, supported by examples (although some of these are not very up-to-date). Some of the chapters also contain useful rules of thumb which the reader can easily memorize for later use. Each chapter begins with a glossary of abbreviations to help the reader, and ends with a bibliography listing at least all the most important publications for more in-depth study.

Another notable feature of the book is the authors' critical evaluation of new technologies, which probably results from their considerable experience in the field. They examine the usefulness of each new approach and sometimes call it into question, a skeptical attitude which many other textbooks could do well to copy. In each chapter one finds that in addition to the essential facts the authors also describe their personal experiences, which can be very helpful for readers who are just beginning work in pharmacokinetics.

A minor criticism of the book is that although it fully meets one's expectations with regard to the first part of the title ("Pharmacokinetics and Metabolism"), the treatment of the second aspect ("Drug Design") is much briefer and in some sections not so well written. Sometimes one feels that it would be useful to have a separate chapter devoted to listing, under keyword headings, possible approaches to drug design to address specific types of problems, thus avoiding the need to search laboriously through the other chapters for the required information.

To summarize, this book, which is suitably concise but nevertheless reasonably comprehensive, can be recommended for scientists and students who wish to learn more about pharmacokinetics. There is certainly a need for such a book, especially as this subject has for many years been rather neglected in university departments. The book should contribute to a recognition of the advantages of applying pharmacokinetics studies at a very early stage in research and development on new drugs.

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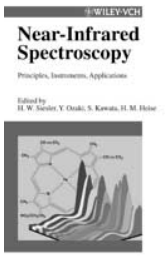
Near-Infrared Spectroscopy. Principles, Instruments, Applications. Edited by *H. W. Siesler, Y. Ozaki, S. Kawata* and *H. M. Heise*. Wiley-VCH, Weinheim 2002. 348 pp., hardcover € 119.00.—ISBN 3-527-30149-6

During the past few years the applications of near-infrared spectroscopy (NIR) have extended over an ever wider variety of topics, from industrial process analysis to quality control, and even including investigations related to the flavor of foodstuffs. The editors of *Near-Infrared Spectroscopy* have set out to address this growing circle of users. The book consists essentially of two parts, the first devoted to basic principles and the second to applications.



The first part begins with a concise account of the principles of molecular physics that are important for the subject, then introduces the optical principles of the components of an NIR spectrometer and explains the essential steps of sample preparation. The method of 2D correlation spectroscopy is intro-

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duced, and the experimental arrangement is described, as well as the complex chemometric procedures for processing and interpreting the data.

The second part contains detailed descriptions of applications spanning a wide range. It begins with a chapter explaining the arrangement of the topics according to chemical structural units, thus giving the reader easier access to this very broad field. This is followed by chapters dealing with the most important areas of application: polymers and textiles, agricultural products and foodstuffs, industrial process control, and medical diagnostics. The special value of the book arises from the wide variety of applications that are described, including the theoretical fundamentals on which they are based, as well as practical advice about measuring and evaluating NIR spectra.

The continuing growth and variety of industrial applications of NIR spectroscopy has led to instrument manufacturers developing equipment that has become progressively easier to use. However, this trend can mislead users into treating the system as a "black box", with all the well-known dangers of that approach, and the undesirable results that can often be seen. It should be emphasized that the editors of this book have made a special effort towards avoiding those dangers, since they comment: "…it is hoped that this book contributes to a more critical evaluation of near-infrared data, thereby extending its implementation…". In my view the authors of the chapters have achieved that aim.

The well-structured list of contents makes it easy for users to find topics of special interest in the book. I consider that to be a very important strength of the book in view of the varied nature of the contents. The same also applies to the carefully prepared subject index.

The clear structure of the book makes it easy for the reader to form an individual view about the "true" relative importance of different aspects of the subject. Many readers will be surprised to find a long and detailed chapter on NIR-FT-Raman spectroscopy. It appears that the editors have included this chapter for completeness in covering the variety of effects that can be produced by NIR radiation. This impression is reinforced when one looks at the chapter in detail. All the other chapters deal with the overtone bands that are a characteristic feature of NIR spectroscopy: their origin, measurement, and interpretation. To me the chapter on NIR-FT-Raman spectroscopy seems out of place in the book, although that does not diminish the value of the book in any way. After all, NIR-FT-Raman spectroscopy can occasionally be a good alternative to what is generally understood by NIR spectroscopy (and which forms the rest of this book).

Altogether eight authors have collaborated in writing the book. In that way it was possible to ensure that each chapter was written by a specialist and that it is up-to-date in both the science and the applications. That advantage outweighs the small annoyance of inconsistency between different authors in the symbols used (e.g., for dipole moment). Another minor fault is the instances of repetition: for example, the principle of Fourier transformation is first explained in Chapter 3 and then in more detail in Chapter 5 (with no cross-references). However, that has the advantage that the reader can choose between the shorter and the more thorough treatment.

The strength of the book is clearly in its focus on applications. The reader is provided with the necessary theory for the correct use of an NIR spectrometer. The emphasis on applications is given additional support by the inclusion of the basic principles of chemometry. The book is recommended for every laboratory in which NIR spectroscopy is used.

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Chemical Properties of Material Surfaces. By *Marek Kosmulski*. (Series: Surfactant Science, Vol. 102.) Marcel Dekker, New York 2001. 776 pp., hardcover $ 225.00.—ISBN 0-8347-0560-2

The title of this book, *Chemical Properties of Material Surfaces*, is very general, and one is curious to discover what the topic actually is. The author defines it immediately at the beginning of the introduction: adsorption phenomena at the interface between electrolyte solutions and solid surfaces at room temperature and atmospheric pressure, with a special focus on the correlation between adsorption effects and surface charge. This may seem to be a very narrow specialized topic, but actually it has great importance for many questions in basic research, and numerous applications in mineral processing, soil science, production of ceramics, corrosion protection, and catalysis.

Many studies regarding this topic have been reported in recent decades, and many model descriptions and theories have been developed. To get an overview of this topic or to find suitable data is a big problem for everyone who is interested in this field of research. The author of the present book has set out to summarize the current status of research activities and to give a comprehensive collection of data for different systems. The book is structured in six chapters. A short introduction is followed by a chapter describing the properties and physical parameters of various adsorbents. These crystallographic and thermochemical data are not the main topic of the book, but are an important basis for the contents of the following chapters. Chapters 3 and 4 cover surface charge effects in the absence and presence of strongly adsorbing components. The main topic is a systematic approach to the point of zero charge of surfaces, which is defined in many different ways in the literature. The author provides a comparative discussion of this parameter and of isoelectric points. Over 100 pages of tables with characteristic parameters for different solids provide much useful information for the reader who is interested in details. The adsorbed substances for which data are given are mostly inorganic ions. Only a comparatively short chapter deals with the adsorption of surfactants and polymers. Experimental techniques for determining the quantities adsorbed are also described. Adsorption models and theories are the topic of Chapter 5. A considerable number of recent theories and adsorption equations derived from these theories are presented and applied to the adsorption of ions. The concluding short

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