Lecture courses on these subjects have given rise to a number of textbooks for students to use alongside them, a recent example of which is *Moderne Anorganische Chemie*, a multiauthor book edited by E. Riedel. Students seeking an up-to-date survey of the molecular chemistry of the Main Group elements can now choose between the nonmetals chapter of *Moderne Anorganische Chemie*, written by T. M. Klapötke, the related book *Nichtmetallchemie*, by T. M. Klapötke and I. C. Tornieporth-Oetting, and the two books reviewed here, which have recently appeared in their revised second editions: R. Steudel's *Chemie der Nichtmetalle* and A. G. Massey's *Main Group Chemistry*.

The textbook by Steudel, like that by Klapötke and Tornieporth-Oetting, is based on the lecture series on the nonmetallic elements that has been offered at the Technical University of Berlin since the early 1970s. It consists of two parts: Part I (176 pp.) on atomic structure and chemical bonding and Part II (386 pp.) on the chemistry of the nonmetallic elements. Compared with the original 1974 version, this second edition has been greatly improved by being brought up to date, especially in the description of bonding concepts. The chapter on chemical bonding, now freed from the burden of the VB method, impresses one especially by the clear way in which, starting from the Bohr model of the atom, it explains the use of qualitative MO arguments based on symmetry considerations to describe small molecules, weak intermolecular interactions, and "bonding properties". It is not until Part II (the chemistry of the nonmetallic elements) that we come to the treatment of important molecules and ions with more than five atoms, such as SF_6 and $[SeCl_6]^{2-}$, in the chapter on sulfur, selenium, tellurium, and polonium, under the heading "hypervalent compounds". Regrettably, the question of 3c–4e bonding (HF_2^-, I_3^-, XeF_2, PF_5) and its relevance to intermolecular $n-\sigma^*$ interactions (mentioned, for example, on p. 322 concerning layer structures and iodine, and on p. 337 under charge transfer complexes) is not treated comprehensively here, nor is the topic of $\pi^*-\pi^*$ interactions, which have been suggested as relevant to molecules such as dimeric ClO_2.

This already well-proven work by R. Steudel has been very effectively updated in the chapters dealing with specific elements, so that it now reflects the most important modern developments in the chemistry of the nonmetallic elements in an exemplary way.

A. G. Massey's book *Main Group Chemistry* covers a much wider range of subject matter, including all the elements of the s and p blocks together with Group 12 (Zn, Cd, Hg). General aspects of bonding (e.g., π bonding in the heavier elements, planar nitrogen, 3c–4e orbital overlapping) are presented concisely and in a very readable style in the chapter entitled "The Periodic Table" (40 pp.). The treatment assumes that the reader already has a basic knowledge of general chemistry. This is followed by chapters dealing with individual elements or groups. Thus, for example, metallic bonding and topics such as the bonding in tetrameric methyllithium are treated in the chapter "The Alkali Metals", and another chapter discusses band models for semiconductors such as silicon/germanium and selenium. The book also covers many aspects of coordination chemistry, such as therapy using chelates, cone angles, crown ethers, cryptands, and a survey of metal carbonyl complexes. The book has many features that whet the reader's appetite to go on, such as the many examples from real situations to illustrate the use of instrumental methods of analysis, the additional comments scattered throughout the text, for example comparing pairs of elements such as Cu/K, Li/Mg, and Mg/Mn, and a chapter on steric effects. The appendix contains data on AX and AX_2 crystal lattice structures, a comparison between main group metals and transition metals, a short summary of key points, and over a hundred exercise problems.

Thus, Massey's book is a very reader-friendly aid to gaining a comprehensive understanding of the chemistry of the s- and p-block elements, without having to work through a formidable amount of detailed material. Unfortunately, however, limiting the subject matter in that way has meant that some important advances achieved during the 1990s are not mentioned in this second edition. Thus, it does not include new results on the biological importance of nitrogen monoxide, on the structure of monomeric P_2Se_5, on the dimeric structure of solid ClO_2, and on "nonclassical" polytellurides and polyselenides (which can be found in the 1995 edition of the "Hollemann–Wiberg" textbook). A few errors have crept into this edition: for example, all the organo-dihalogen compounds R_3MX_2 (M = P, As, Sb, Bi) are shown as having a trigonal-bipyramidal structure.

To summarize, *Main Group Chemistry* and *Chemie der Nichtmetalle* are both excellent modern student texts with the main emphasis on molecular inorganic chemistry, and can be recommended as valuable additional resources to be used alongside the more comprehensive textbooks, but not as alternatives to them.

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Principles of Analytical Chemistry. A Textbook. By *Miguel Valcárcel.* Springer Verlag, Heidelberg 2000. xi + 371 pp., 132 figs., hardcover DM 76.00.—ISBN 3-540-64007-X

With his book *Principles of Analytical Chemistry—A Textbook*, Miguel Valcárcel presents a new concept for introducing analytical chemistry. This concept has already been applied successfully for several years at the University of Córdoba, Spain. In contrast to the common textbooks of analytical chemistry, instead of a systematic description of a large number of analytical methods, the book presents a discussion of the general basic principles of analytical chemistry as an independent scientific discipline.

The book is divided into eight chapters. An introduction to general aspects of modern analytical chemistry (Chapter 1) is followed by chapters on important definitions in analytical chemistry

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(Chapter 2), traceability and reference materials (Chapter 3), and the analytical process (Chapter 4). Chapters 5 and 6 then discuss qualitative and quantitative aspects respectively. "The Analytical Problem" (Chapter 7) and "Analytical Chemistry and Quality" (Chapter 8) are the subjects of the last two chapters. A very comprehensive 23-page glossary of the most important analytical terms is an important feature at the end of the book. Links are provided to those chapters in which particular terms are introduced or discussed in detail. A list of symbols and abbreviations used in the text completes the book.

My personal opinion on the general conception of the book is mixed. On the one hand, the book is valuable for introducing to students those characteristics of analytical chemistry that are not generally understood by chemists from other fields who rely on results from analytical methods. On the other hand, despite the technical quality, the concept is very theoretical and therefore difficult to understand for students in their first years. Unfortunately, the book does not sufficiently illustrate the importance of the subject in supporting experimental chemistry. The newcomer to analytical chemistry would gain a better understanding of the author's discussions if they were illustrated by examples of analytical applications. The appeal of analytical chemistry for students is based to a large extent on the relevance of this discipline to practical problems. Therefore, I do not share the author's opinion that this book is particularly valuable for persons who come into contact with analytical chemistry for the first time.

However, this does not mean that I would not recommend this book at all. On the contrary, it complements the large number of textbooks on analytical chemistry in an excellent way. Those aspects which are strongly emphasized by Valcárcel tend to be neglected in many textbooks. As a university teacher of analytical chemistry, I will certainly incorporate into my lectures the important and well-structured general aspects of analytical chemistry as presented by the author. A table at the beginning of Valcárcel's book is a very helpful tool in this matter: the author recommends which contents of his book should be considered, depending on the available time. This is particularly valuable in view of the wide variations in the position accorded to analytical chemistry in the curricula of different countries. For advanced students who are majoring in analytical chemistry, much of the material suggested by Valcárcel can be taught in parallel with analytical applications.

Therefore the book is a valuable tool for all university teachers in analytical chemistry, and it can also be recommended to advanced students or graduate students in this field.

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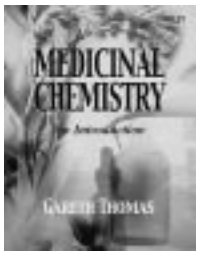
Medicinal Chemistry. An introduction. By *Gareth Thomas*. John Wiley & Sons, Inc., New York 2000. xxvii + 539 pp., paperback $ 45.00.—ISBN 0-471-48935-2

This textbook on medicinal chemistry is intended for students of chemistry, biology, medicine, pharmacy, and pharmacology. It provides an introduction to the principles of pharmaceutical agents, their modes of action, and their development. To understand the contents requires a basic knowledge of chemistry, and of other sciences to some extent, even though many elementary principles of biochemistry are explained within it.



The 12 chapters cover many different aspects of pharmaceutical research and development. Chapter 1 gives a brief overview of some of the topics treated, and provides introductions to a few aspects that are covered in detail in the following chapters. It also gives a little information about some topics that are not treated in detail in the rest of the book, such as the clinical development of drugs. Chapter 2 describes the many different strategies that are used in modern pharmaceutical research and development, such as SAR, QSAR, CAD, and combinatorial chemistry. Chapter 3 discusses in detail the problems associated with the solubility of drugs in water and lipids. That provides the background for Chapter 4, which is concerned with the structure of biological membranes and their importance in relation to the effectiveness of drugs. The molecular mechanisms of some antibiotics are also considered in this context. Chapter 5 then presents the fundamentals of pharmacokinetics. Chapters 6, 8, and 10 are involved in the fundamental mechanisms of particular classes of drugs: enzyme inhibitors (Chapter 6), drugs for the blocking or activation of receptors (Chapter 8), and drugs that interact with DNA and RNA (Chapter 10). These chapters also explain the biochemical principles needed to understand the discussions, including the mechanisms and kinetics of enzyme-catalyzed reactions, the structures and distribution of receptors, the structures and functions of nucleic acids, the flow of genetic information, and the structures of viruses. Chapter 7 is devoted to metal complexes and their importance in the interaction of drugs with target structures in organisms. Chapter 9 deals with some important aspects of the metabolization of drugs, including also the prodrug principle. Lastly, Chapter 12 discusses synthetic aspects, with particular emphasis on the stereoselective synthesis of organic compounds. Whereas all the above chapters explain general principles and illustrate them with examples, the penultimate chapter, Chapter 11, is a special one devoted to nitrogen monoxide, a small molecule with far-reaching effects. The chemical reactions and properties of NO are described, followed by its importance in organisms, as well as its therapeutic possibilities.

The book presents the organic principles and reactions that are important in the development of drugs and in their effectiveness. The reader learns which structural elements of an organic compound can make it a useful active agent. Pharmacodynamic and pharmacokinetic aspects are considered from the standpoint of chemical structure. This new textbook offers a concise, but nevertheless easily understandable, presentation of many aspects of drug mechanisms and drug development. It first gives the reader a basic knowledge of the fundamentals, then illustrates the principles by focussing on specific drugs. The book also gives insights into many widely

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