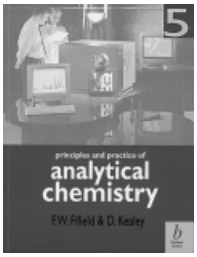
Principles and Practice of Analytical Chemistry. 5th Edition. By *F. W. Fifield* and *D. Kealey.* Blackwell Science, Oxford 2000. 562 pp., paperback £ 26.50.—ISBN 0-632-05384-4

In view of the many recently published books and monographs about general or more specialized aspects of analytical chemistry, the potential readers (i.e., scientists, lecturers, and advanced students) may ask whether supply and demand are still well balanced. However, analytical chemistry and its subdisciplines are fast-growing areas and this justifies (or even necessitates) further publications at comparatively frequent intervals to outline the current status and emphasize newly developing directions. Therefore the true question is whether a newly published book—and this also holds for the 5th edition of Fifield and Kealey's book *Principles and Practice of Analytical Chemistry*—can fill an existing gap, add some new aspects, deliver a different view, or present the material in a better or more advanced way. I will partially anticipate the answers to those four points in turn, before reviewing the present book in more detail.



1) In view of the many recently published books with the same subject and aim, there is no gap at present. However, that in itself does not mean that the present book is superfluous, since the same could also be said about the other ones. 2) A book with such a general theme can hardly add new aspects, because the relative importance of different areas of existing knowledge is already evident to all authors. Therefore, it is not the selection of topics but the proper balancing of the various analytical methods and associated aspects that is important. 3) The description of the principles of analytical chemistry (the primary goal of the present book) follows the conventional way of presenting instrumental and operational details of the individual analytical methods. There is little attempt here to view the many existing methods and techniques as what they are, tools for problem solving (only Chapter 12 contains a few examples). A critical evaluation of the merits of the various methods is not given, nor is there a comparative judgement of suitability for particular analytical tasks. 4) The way the subject matter is presented to the reader here can be termed conventional. This applies to the style, the organization and presentation of the material, and the layout of the book. Of course conventional does not inherently mean bad, but at least the young generation (which could make up a large part of the readership) is used to multimedia presentations and has—at least in my experience—an inner resistance against wordy explanations. In this respect the attractiveness could be significantly enhanced by using less descriptive (hence dry) language and by more comprehensible illustrations. If the use of color is taboo because of costs, the repertoire of improved layout includes gray tones, shadows, frames, etc.

So, what does the book offer, what is missing, what can lead somebody to buy and read it? Like the previous editions, it provides a broad coverage of the classical and instrumental methods of this important scientific discipline, which has applications in almost every part of an industrialized society. Retaining a structure like that of earlier editions, a general introduction (Chapter 1) is followed by "Assessment of Analytical Data" (Chapter 2), "pH, Complexation and Solubility Equilibria" (Chapter 3), "Separation Techniques" (Chapter 4), "Titrimetry and Gravimetry" (Chapter 5), "Electrochemical Techniques" (Chapter 6), "An Introduction to Analytical Spectrometry" (Chapter 7), "Atomic Spectrometry" and "Molecular Spectrometry" (Chapters 8 and 9), "Radiochemical Methods of Analysis" (Chapter 10), "Thermal Techniques" (Chapter 11), "Overall Analytical Procedures and their Automation" (Chapter 12), and "The Role of Computers and Microprocessors in Analytical Chemistry" (Chapter 13). Individual sections are generally opened by a brief summary describing principles, instrumentation, applications, and disadvantages. Then an outline of the theoretical background is given, instrumental aspects (including details of commercially available equipment) are dealt with in more detail, and some typical applications are described. At the end of each chapter there are exercise problems which provide a kind of test of understanding. The answers to all problems are collected in an appendix.

The major part of the text and the figures has been carried over from the 4th edition, with a few changes involving editorial reviewing and some updating. The chapters on atomic and molecular spectrometry and on chromatography have been revised rather more extensively. For instance, they include two-dimensional presentation of spectral data (particularly the use of echelle optics in combination with plasma emission spectroscopy), and some more details on interferences associated with the use of elemental mass spectrometric detection. Instrumental aspects of the combination of gas with liquid chromatography are also dealt with in more detail. Also the treatment of data evaluation and the discussion of the use of computers in analytical chemistry has been updated. The most significant change is the extension of sections on solid-phase extraction and near infrared spectrometry, and the inclusion of capillary electrochromatography.

The purpose of the book—as stated by the authors—is to provide a sound understanding of the principles, a knowledge of the instrumental aspects, and an overview of modern applications of chemical analysis. The challenges associated with this ambitious aim are enormous, and success can not be expected in every respect. The main problems are, without any doubt, to condense the vast amount of information without omitting important aspects, and to restrict descriptions of methods and the theoretical background without loss of clarity and understanding. With regard to the latter, the authors have managed reasonably well to present in an informative way a surprisingly comprehensive outline of the subject. However, the organization of the material in some chapters is not always good, and is sometimes even confusing. Some of the information is even outdated or trivial. A few examples will illustrate this. The treatment of adsorption and partition systems would be more suitably placed under HPLC rather than in the introductory part of the chapter on chromatography. The

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separation of the two sections on ion chromatography and ion-exchange chromatography is not meaningful, from either a theoretical or an instrumental point of view. Ion chromatography has developed significantly and the suppressor systems described here are only a few of the many configurations currently used. The instrumental aspects, particularly those of the detector and the atomization units, are very similar to those in atomic spectroscopy (and to some extent even in molecular spectroscopic methods). They should be more appropriately discussed in a unified way, that is, in a separate section. The instrumental (mainly electrochemical) methods for end-point detection in titrations are discussed separately instead of treating them together within the context of volumetric analysis. It is very questionable whether pyrolysis gas chromatography is appropriately presented under thermal methods. The detailed description of solvent extraction and special techniques such as Craig counter-current extractions (with figure) is inappropriate. Figures showing linear calibration plots of arbitrarily selected examples (e.g., Figs. 8.6, 8.7, 8.15) are simply superfluous.

In my opinion the authors have not been sufficiently bold in rejecting material of less importance in favor of more up-to-date and relevant aspects. The progress in sensor technology and the important field of biochemical (enzymatic) methods of analysis has not been taken into account at all. Subjects such as process control and continuous monitoring, structural analysis, and surface analysis are not treated adequately. Also the book does not emphasize the importance of the quality of analytical data, nor does it contain a critical discussion of interferences and limitations to which all analytical methods are susceptible to varying degrees. The overall analytical procedure, consisting of sampling, sample preparation, detection by the relevent instrument, and data evaluation is not adequately treated in Chapter 12. General strategies for analyzing liquids, solids, and gases, and for different types of analyses (e.g., for elements, ions, metals, organics, polymers, or biopolymers) are not given. Such information (concentrating not solely on the method itself but on suitability for actual analytical problems) would surely improve the motivation of readers for getting a sound understanding of the various methodologies.

In conclusion I must state that the new edition, despite the revision and updating, is not convincing in view of recent developments in analytical chemistry and its changing role in our industrialized world. For students it fails to convey the connection to real-life problems and links to related fields, and several better books are available. For the practising analyst requiring a concise overview of the principles and instrumentation, the book places too much emphasis on fundamentals, while failing to provide a qualified and critical judgement of the suitability of the different methods for specific analytical problems. At best it can only be recommended for university teachers and researchers to complete their collection of available books and possibly extract some valuable information.

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Medicinal Chemistry into the Millennium. Edited by *Malcolm M. Campbell* and *Ian S. Blagbrough*. Royal Society of Chemistry, Cambridge 2001. X + 398 pp., hardcover £ 69.50.—ISBN 0-85404-769-7

It is justifiable to ask why it has taken three years following a conference for the conference proceedings volume to appear. That question is not answered by the editors of the book *Medicinal Chemistry into the Millennium*. Their book is nothing else than a collection of papers presented at the European Federation of Medicinal Chemistry's symposium held in Edinburgh in September 1998.

The contributions have certainly been extensively edited before going to print, but does that justify the long delay? Hardly, especially in view of the fact that medicinal chemistry has moved on in three years, and the contents of the book no longer reflect the state of the art in many respects. Nevertheless, the reader who is seeking good reviews of a particular area of medicinal chemistry, and would also enjoy reading again an introduction to that area, should take a look at this volume edited by Malcolm Campbell and Ian Blagbrough of the University of Bath, UK, under the auspices of the Royal Society of Chemistry.

The scope of the contributions begins with new techniques for drug discovery, then ranges over all the most important classes of target molecules in pharmacological research, and ends with a chapter on the prediction of DMPK properties (drug metabolism and pharmacokinetics). The articles are of excellent quality, illustrated by figures that are in general effective and informative.

However, it is unlikely that anyone will read the book from beginning to end, as the papers, although certainly good, are very specialized. Readers who wish to know in detail about, for example, "Potent and Selective 5-HT6 Receptor Antagonists", or "Structure-based Design of Irreversible, Peptidomimetic Human Rhinovirus 3C Protease Inhibitors", will only be those who already have a special interest in these topics from a professional and/or scientific standpoint. Thus it is unfortunate that the volume does not have a subject index that would make it easier to find information on special topics.

To summarize, *Medicinal Chemistry into the Millennium* is a valuable book, but is unfortunately no longer quite up-to-date, and individuals will probably not find it worthwhile to buy it. On the other hand, it seems likely to be an essential addition to libraries devoted to pharmaceutical science.

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