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Publisher *Taylor & Francis*

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Journal of Liquid Chromatography & Related Technologies

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713597273>

The Book Corner

To cite this Article (2006) 'The Book Corner', Journal of Liquid Chromatography & Related Technologies, 29: 3, 451 — 463

To link to this Article: DOI: 10.1080/10826070500452309

URL: <http://dx.doi.org/10.1080/10826070500452309>

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The Book Corner

Ewing's Analytical Instrumentation Handbook, Third Edition, Edited by Jack Cazes, Marcel Dekker, Inc., New York, 2005, 1037 pp. Price: US\$279.95

The third edition of *Ewing's Analytical Instrumentation Handbook*, edited by Jack Cazes, is a welcome edition to all involved in instrumental analysis. This massive volume (1037 pages, 31 chapters) starts with the Laboratory Use of Computers, and ends with Validation of Chromatographic Methods. In between, there is a wealth of information and comprehensive discussions of current instrumental techniques, including theory and applications.

This expanded and revised edition of *Ewing's Analytical Instrumentation Handbook* is a guide for analytical chemists who need a starting place for information about a specific instrumental technique, either as a basic introduction to it or as a means of finding leading references dealing with theory and methodology for an instrumental technique.

The chapters which appeared in the second edition have been thoroughly expanded and updated, with concepts, applications, and key references to the recent literature. Only one chapter (Laboratory Balances) has been eliminated; eight new chapters have been added to the Handbook, dealing with:

- Microchip Technology
- Biosensor Technology
- Validation of Chromatographic Methods
- Gel Permeation and Size Exclusion Chromatography
- Field-Flow Fractionation
- Countercurrent Chromatography
- Hyphenated Techniques in Chromatography, Including LC-MS, LC-NMR, etc.
- Thin-Layer Chromatography

The chapters have been written from the standpoint of the instrumentation as it is in use today, with an introductory description of the technique(s), and a theoretical treatment of the science and technology, wherever it is applicable or where it will facilitate an understanding of the instrument. However, the major emphasis is on the instrumentation. The chapters are not, simply, a “catalog” of commercially available instruments. Nevertheless, in some

cases, commercially available instruments have been used as examples to illustrate design features discussed in the text.

The book is well organized, edited, and is a “must” reference for all those using analytical instrumentation. The editor should be congratulated on a job well done.

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Haleem J. Issaq, Ph.D.
Book Corner Editor

HPLC of Acyl Lipids, edited by Jiann-Tsyh (Ken) Lin and Thomas A. McKeon, HNB Publishing, New York, 2005, 576 pp. Price: US\$90.00

HPLC of Acyl Lipids, as the title indicates, is devoted to acyl lipids; other types of lipids are not included in this volume. The book contains 18 chapters, 576 pages, covers practical and theoretical aspects of HPLC separation of acyl lipids using different modes of separation and detection methods. Chapter 18 deals with the separation of lipids using supercritical fluid chromatography (SFC).

This book is an update of a book with a similar title that was published in 1987. The editors state, "Since that time, a great number of papers related to the HPLC of acyl lipids have been published, making an updated book devoted exclusively to the HPLC of acyl lipids long overdue. Since lipids, in general, are too broad to cover in one book, we have limited this book to fatty acids and fatty acid-containing lipids as acyl lipids, and have excluded other lipids such as steroids, terpenoids, carotenoids, and vitamin E (prenyl lipids)."

This book's 18 chapters are aimed at the practical aspects of lipid separation. Since practical and theoretical aspects of lipid separation are inter-related, one chapter (Chapter 3) is devoted exclusively to the HPLC theory of acyl lipid separation. HPLC of lipid derivatives is not emphasized in this book, except in Chapter 1, covering fatty acid methyl esters; Chapter 2, devoted exclusively to fatty acid derivatives; and Chapter 7, covering chiral-phase HPLC. LC-MS is a powerful tool for lipid analysis and has become more affordable and popular. Therefore, two chapters focus on LC-MS using atmospheric pressure chemical ionization (Chapter 10) and electrospray ionization (Chapter 11) for separation and identification. In addition, one chapter is devoted to the LC-MS-MS of bioactive lipids (Chapter 15), and many chapters also include some LC-MS.

HPLC is a powerful method for identifying radiolabeled metabolites as molecular species of various lipid classes. Chapters 1, 8, and 12 describe such identification for metabolic studies in detail. Special techniques such as chiral (Chapter 7) and silver-ion HPLC (Chapter 9), as well as separation of medically important acyl lipids such as bioactive lipids (Chapters 6 and 15) and oxidized lipids (Chapter 13), are included in this book. Two chapters that are outside the realm of acyl lipids are the HPLC of acyl CoA (Chapter 16) and size-exclusion chromatography of lipoproteins (Chapter 17). Supercritical-fluid chromatography of lipids is also included as Chapter 18, because the technology is similar to HPLC.

Many internationally known lipid HPLC experts from six countries have contributed excellent chapters. The book will be useful to lipid scientists and other technologists involved in academic, government, and industrial research requiring lipid analysis, metabolic studies, and enzyme assays. Moreover, the book should serve as a valuable resource in continuing HPLC method development.

I would have liked to see the book chapters organized differently. Chapters 3 and 4 should have been Chapters 1 and 2. By doing so, the reader would have been introduced into the theory of lipid separation and their different classes, followed by the applications. Although the material in the book is of good quality, the organization of the book topics are not.

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Haleem J. Issaq, Ph.D.
Book Corner Editor

Integrated Strategies for Drug Discovery Using Mass Spectrometry, Mike S. Lee, John Wiley & Sons, Inc., New York, 2005, 550 pp. Price: US\$115.00

Integrated Strategies for Drug Discovery Using Mass Spectrometry is an interesting and timely book that contains 550 pages of useful information, divided into eighteen chapters and a preface. In the Preface, Dr. Mike S. Lee states that: It could be argued that drug discovery strategies of the past were analogous to fishing with a line and hook. A systematic series of trial and error experiments, such as quantitative structure-activity relationship (QSAR) methodologies, for example, were commonplace. The process was iterative and labor intensive.

Today's preference for drug discovery is on high throughput approaches to accelerate the generation, identification, and optimization of molecules with desirable drug properties. Certainly, the need for a faster pace of research is warranted. However, the current strategies that emphasize fast cycle times make it appear that new drug candidates are discovered, not with a line and hook approach, but harvested with nets. The craft still remains, but it is often difficult to see in the midst of production-scale events.

Fueled by the prospects of a highly efficient drug discovery process and the need for an expanded drug development pipeline, the pharmaceutical industry has aggressively embraced technology over the past decade. New drug discovery paradigms were subsequently born and high throughput medicinal chemistry approaches helped to serve as the gateway for novel biomolecular screening and proteomics techniques. New formats for automated synthesis combined with a faster pace of drug discovery led to a shift in sample analysis requirements from a relatively pure sample type to a trace-mixture. Traditional methods of analysis became antiquated. New analytical strategies and techniques were necessary to meet sample throughput requirements and manpower constraints. Technologies with appropriate sensitivity, selectivity, and speed were quickly integrated into mainstream drug discovery paradigms to effectively handle the predominant sample type, a trace-mixture. Drug discovery was forced to become more dependent on technology and become more agile.

This book is based on a special issue of *Curr. Top. Med. Chem.* published in January 2002. The focus is primarily on mass spectrometry-based applications in drug discovery that require trace-mixture analysis. The selection of topics is not intended to be comprehensive, but rather highlight the creativity of analytical scientists and their collaborators that have led to current standards for analysis in drug discovery. Innovators in the field describe their unique perspectives on integrated strategies for analysis and share future prospects. The topics represent current industry benchmarks in specific drug discovery activities that deal with proteomics, biomarker discovery, metabonomic approaches for toxicity screening, lead identification, compound libraries, quantitative bioanalytical support, biotransformation, reactive metabolite characterization, lead optimization, pharmaceutical property profiling, sample preparation strategies, and automation.

Analytical technologies now provide an integral component for modern drug discovery practices. The fundamental merits of sensitivity are a requisite for high throughput analytical measurements in drug discovery. Due to limited sample quantities and the need to interrogate compounds of interest at low concentration, “sensitivity, sensitivity, sensitivity” will most likely remain as the analytical mantra in drug discovery. However, highly sensitive analytical platforms such as mass spectrometers will continue to benefit from orthogonal techniques such as chromatography, sample preparation, and informatics.

The book is a useful reference for all those interested in analytical approaches to drug discovery. The editor should be commended for bringing together a talented and knowledgeable group of scientists. The organization of the book left me with an impression that it could have been better and that the chapter topics do not follow a set format. I would have started the book with chapter 14 (New approaches for method development...) followed by chapter 13 (An integrated LC-MS strategy) followed by the rest of the chapters in a topical format. Saying that does not mean that the

material in the book is not good, on the contrary it is an excellent book with a lot of figures, tables, illustrations and references.

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