

This article was downloaded by:

On: 16 January 2011

Access details: *Access Details: Free Access*

Publisher *Taylor & Francis*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Journal of Immunoassay and Immunochemistry

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713597271>

The Book Corner

To cite this Article (2006) 'The Book Corner', *Journal of Immunoassay and Immunochemistry*, 27: 4, 379 – 386

To link to this Article: DOI: 10.1080/15321810600862389

URL: <http://dx.doi.org/10.1080/15321810600862389>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.



The Book Corner

Separation Methods in Microanalytical Systems, Edited by Jörg P. Kutter and Yolanda Fintschenko, CRC Taylor & Francis Group, New York, NY, 2006, 575 pages. Price: \$159.95.

Separation Methods in Microanalytical Systems is a well designed, organized, and written book which deals with a timely topic.

In the last couple of decades scientists started talking about miniaturization of analytical instrumentation and lab-on-a-chip. This book concerns itself with certain aspects of microfluidics – the behavior of fluids in confined spaces and the manipulation of these fluids – namely, the possibility to perform chemical analyses, biochemical assays, and similar processes. The products of this kind of research are often dubbed micro-Total Analysis Systems (μ -TAS) or, more generally, lab-on-a-chip (LOC) devices. As it is intended for a wide audience, it was also written by contributors from many of the disciplines that constitute the backbone of the LOC community.

Of course, this book cannot attempt to cover the entire field of LOC. Instead it focuses on what has been one of the main driving forces behind the development of LOC for the last 15 years: miniaturized separation systems. Separation units are still at the heart of many micro-TAS and LOC devices, and modern separation techniques are indispensable tools for analytical chemists. This book gives an overview of separation techniques on micro-fabricated devices: theoretical background information, design and understanding, fabrication and material issues, implementations, and separation systems in relation to other parts of LOC applications (sample preparation, detection, etc.). It is intended as a one-stop shopping guide for questions concerning separation techniques in microanalytical devices. It is, however, not so much meant only as a quick reference guide, but rather as a place to linger and browse. It is very likely that the information is provided in several locations within the book. A multi-author volume gives the reader different styles, different approaches, and different opinions. Many topics are so common that they reappear in different chapters, showing different angles to approach a given problem, reflecting the different backgrounds from which researchers attach the same issues.

This excellent volume makes a good reference for all those interested in microfluidics and can be a text for a graduate course.

Table of Contents

- Chapter 1. Analytical Microsystems: A Bird's Eye View, C.S. Effenhauser, (1).
- Chapter 2. Microfluidics: Some Basics, S.C. Jacobson and C.T. Culbertson, (19).
- Chapter 3. Microfabrication and Integration, H.J.G.E. Gardeniers and A. van den Berg, (55).
- Chapter 4. New Tools: Scalar Imaging, Velocimetry, and Simulation, E.F. Hasselbrink, Jr. and S. Madhavan-Reese, (107).
- Chapter 5. Transport Modes: Realizations and Practical Considerations, S.R. Wallenborg, P. Andersson, and G. Thorsén, (141).
- Chapter 6. Pressure-Driven Separation Methods on a Chip, G. Desmet, E. Chmela, and R. Tijssen, (165).
- Chapter 7. Transverse Transport in Microsystems: Theory and Applications, P. Yager, C. Cabrera, and A. Kamholz, (209).
- Chapter 8. Electro-Driven Separation Methods on Chips, R.P.H. Nikolajsen, G.S. Chirica, Y. Fintschenko, and J.P. Kutter, (261).
- Chapter 9. Gas Chromatography on Microchips, R.J. Kottenstette, C-N.C. Wong, and C.D. Mowry, (319).
- Chapter 10. Sample Preparation on Microchips, J. Lichtenberg, S. Koster, L. Ceriotti, N.F. de Rooij, and E. Verpoorte, (359).
- Chapter 11. Detection on Microchips: Principles, Challenges, Hyphenation, and Integration, S. Pasas, B. Fogarty, B. Huynh, N. Lacher, B. Carlson, S. Martin, W. Vandaveer IV, and S. Lunte, (433).
- Chapter 12. Analytical Applications on Microchips, S. Liu and V. Dolnik, (499).

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

Using Mass Spectrometry for Drug Metabolism Studies, Edited by Walter A. Korfmacher, CRC Press, New York, NY, 2005, 370 pages. Price: \$159.95.

Mass spectrometry (MS) is, without a doubt, the most important and developed analytical technique for the analysis not only of small organic compounds but large biomolecules ranging from amino acids to peptides to proteins. The introduction of time-of-flight and electrospray ionization revived mass spectrometry and elevated it to a very high level where MS is a must technique for the analytical laboratory.

The current book is a welcome addition to books dealing with MS. According to the editor the book was designed to be a resource book for professionals in both mass spectrometry and drug metabolism areas, but will also be helpful to medicinal chemists interested in learning more about drug

metabolism issues in new drug discovery. The text features current knowledge in stand-alone chapters that address specific topics thoroughly enough to be read independently, with notes and references to other chapters for further reading. The first eight chapters discuss current topics regarding the use of MS for analyzing various types of *in vitro* and *in vivo* drug metabolism samples, and the final four chapters describe the latest MS technology and its uses. Throughout, expert authors demonstrate how to apply MS to determine drug metabolism parameters. They also detail the different drug metabolism concepts and their significance.

The book's twelve chapters deal with different topics that at times seem to be remotely connected. The mass spectrometer topics are scattered toward the end of the book; chapter 7 deals with MS while chapter 8 deals with special requirements for metabolite characterization, and chapter 9 is a return to MS-APPI, chapter 12 deals with electrospray ionization. Although the topics of the chapters are not well organized, each chapter is well written, illustrated and referenced.

Table of Contents

- Chapter 1. Bioanalytical Assays in a Drug Discovery Environment, W.A. Korfmacher, (1).
- Chapter 2. Drug Metabolism *In Vitro* and *In Vivo* Results: How do these Data Support Drug Discovery? T.N. Thompson, (35).
- Chapter 3. High Throughput Strategies for *In Vitro* ADME Assays: How Fast Can We Go? D.B. Kassel, (83).
- Chapter 4. Matrix Effects: Causes and Solutions, H. Mei, (103).
- Chapter 5. Direct Plasma Analysis Systems, Y. Hsieh, (151).
- Chapter 6. Acyl Glucuronides: Assays and Issues, S. Wainhaus, (175).
- Chapter 7. Utilizing Higher Mass Resolution in Quantitative Assays, X. Xu, (203).
- Chapter 8. Special Requirements for Metabolite Characterization, K. Cox, (229).
- Chapter 9. APPI: A New Ionization Source for LC and MS/MS Assays, Y. Hsieh, (253).
- Chapter 10. Q Trap MS: A New Tool for Metabolite Identification, G. Hopfgartner and M. Zell, (277).
- Chapter 11. MS Imaging: New Technology Provides New Opportunities, M.L. Reyzer and R.M. Caprioli, (305).
- Chapter 12. Understanding the Role and Potential of Infusion Nanoelectrospray Ionization for Pharmaceutical Bioanalysis, B.L. Ackermann and J.-M. Dethy, (329).

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

Knowledge Discovery in Proteomics, by Igor Jurisica and Dennis Wigle, Chapman & Hall/CRC Taylor & Francis Group, New York, NY, 2006, 318 pages. Price: \$89.95.

Knowledge Discovery in Proteomics is another recent addition in books published dealing with proteomics. The book is made up of seven chapters with five specific domains. The authors state, "We felt this book was a timely discussion of some of the key issues in the field. In subsequent chapters we discuss a number of examples from our own experience that represent some of the challenges of knowledge discovery in high-throughput proteomics. This discussion is by no means comprehensive, and does not attempt to highlight all relevant domains. However, we hope to provide the reader with an overview of what we envision as an important and emerging field in its own right by discussing the challenges and potential solutions to the problems presented. We have selected five specific domains to discuss: (1) Mass spectrometry based protein analysis; (2) Protein-protein interaction network analysis; (3) Systematic high-throughput protein crystallization; (4) A systematic and integrated analysis of multiple data repositories using a diverse set of algorithms and tools; and (5) Systems biology. In each of these areas, we describe the challenges created by the type of data produced, and potential solutions to the problem of data mining within the domain. We hope this stimulates even more discussion, and newer and better ways to deal with the problems at hand."

The book is very well written and illustrated. However, the areas of proteome fractionation and separation are rather limited and weak. The references are placed at the end of the book and not at the end of each chapter. This volume of the Mathematical Biology and Medicine series is reasonably priced.

Table of Contents

- Chapter 1. Introduction, (1).
- Chapter 2. Knowledge Management, (11).
- Chapter 3 Current Status and Future Perspectives of Mass Spectrometry, (39).
- Chapter 4. Graph Theory Analysis of Protein-Protein Interactions, (73).
- Chapter 5. HTP Protein Crystallization Approaches, (129).
- Chapter 6. Integration of Diverse Data, Algorithms, and Domains, (199).
- Chapter 7. From High-Throughput to Systems Biology, (237).

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

Volume 44 Advances in Chromatography, Edited by Eli Grushka and Nelu Grinberg, CRC Taylor & Francis Group, New York, NY, 2006, 337 pages. Price: \$94.95.

Advances in Chromatography, a compilation of timely topics, is a very successful series which was first published forty years ago. The recently published Volume 44 is a welcome addition to the chromatographer's library. The current volume introduces Dr. N. Grinberg who replaces Professor Phyllis Brown and joins Professor Eli Grushka as co-editor. We wish Professor Brown the very best and we will miss her insight.

In the Foreword of this volume Professor Grushka tells the reader a short history of this series and the scientists who made it a must reference. He writes: "With Volume 44 of the *Advances in Chromatography* series I say goodbye, reluctantly, to Phyllis R. Brown, who served as one of the editors of the series. *Advances in Chromatography* was started by J. Calvin Giddings and Roy A. Keller in 1965. Very quickly, the series became an important tool for quick dissemination of new developments in the field. In Volume 12 of the series (1975) Jack Cazes and I joined Giddings and Keller as editors. In 1976 (Volume 14) Phyllis replaced Roy Keller. Jack Cazes left the series in the mid 1980s and Cal Giddings stepped down from his position as executive editor in 1993. Over the last 10 years or so Phyllis and I were the sole editors of the *Advances in Chromatography* series. Several years ago Phyllis retired from her position as a chemistry professor at the University of Rhode Island, and now she has decided that the time has come to hand over her editorial responsibilities to the younger generation. Nelu Grinberg was selected to replace Phyllis, and with this volume he makes his debut as an editor. Phyllis served as an editor for almost 30 years. In many respects she was the primary moving force of the series. The fact that *Advances in Chromatography* is still going strong after 40 years is due to her foresight, determination, diligence, and perseverance. Phyllis has a very good eye for recognizing the latest developments in chromatography and related techniques. Her purpose was always to "bring to our readers the latest developments and advances at the forefront of the field." Using her many acquaintances and contacts, we succeeded in staying on top of the field and providing our readers with up-to-date reviews in all areas of chromatography and other elution techniques. Based on her own research, Phyllis recognized very early the usefulness of HPLC in life sciences. She saw to it that the *Advances in Chromatography* series educates its readers about the power of the technique as applied to the biological field."

This volume is made up of twelve chapters dealing with widely different but timely topics. This volume conveys the enormous potential, versatility, and challenges of the multi-channel microchip concept and its applications in cellular biology and genomic sequencing, describes multiple-channel microchip designs, substrates, sample loading, detection methods, and applications, discusses the increasingly popular use of temperature in

chromatographic separation, details the use of different separation techniques for determining the lipophilicity of analytes, covers HPLC, TLC, counter-current chromatography, explains how high-performance liquid chromatography (HPLC) can be used in controlling the quality of the pharmaceutical product, presents polysaccharide CSPs in terms of their mechanisms of action and interaction with enantiomeric analytes, illustrates the effects of chaotropic agents in reversed-phase HPLC, and highlights the challenges presented by the separation of water-insoluble proteins.

Each chapter is written by an expert in his area of research. The chapters, overall, are well written and illustrated.

Table of Contents

Chapter 1. Separations in Multiple-Channel Microchips, T.L. Paxon and A.G. Ewing (1).

- 1.1 Introduction, (2)
- 1.2 Microfabrication of Multi-Channel Microchips, (3)
- 1.3 Multi-Channel Microchip Designs, (4)
- 1.4 Channel Filling and Sample Loading, (8)
- 1.5 Injection Methods, (10)
- 1.6 Detection Methods, (17)
- 1.7 Applications of Multiple-Channel Microchips, (23)
- 1.8 Conclusions and Future Perspectives, (32)

Chapter 2. Temperature Effects in Liquid Chromatography. E. Lundanes and T. Greibrokk, (45).

- 2.1 Introduction, (46)
- 2.2 Temperature Effects on Retention and Selectivity, (46)
- 2.3 Conventional Analytical LC, (49)
- 2.4 Capillary LC, (56)

Chapter 3. Lipophilicity Measurements by Liquid Chromatography, S. Gocan, G. Cimpan and J. Comer, (79).

- 3.1 Introduction, (80)
- 3.2 Lipophilicity: Concept and Definitions, (81)
- 3.3 The Uses of Lipophilicity, (81)
- 3.4 $\log P$, $\log D$, and Other Terms for Expressing Lipophilicity, (82)
- 3.5 The Effect of Chemical Reactions on Partitioning, (83)
- 3.6 Octanol and Other Partition Solvents, (87)
- 3.7 Calculations Involving $\log P$, (90)
- 3.8 $\log P$ Measurement by Shake-Flask, (91)

- 3.9 Lipophilicity Measurement by High Performance Liquid Chromatography (HPLC), (94)
- 3.10 Lipophilicity Estimation by Thin-Layer Chromatography, (127)
- 3.11 Chromatographic Determination of Hydrophilic-Lipophilic Balance, (145)
- 3.12 Other Chromatographic Methods, (154)

Chapter 4. Concepts and Practice of Multidimensional High-Performance Liquid Chromatography, R.A. Shalliker and M.J. Gray, (177).

- 4.1 Introduction, (178)
- 4.2 One-Dimensional Separations, (184)
- 4.3 Multidimensional Separations, (185)
- 4.4 Types of Chromatographic Separation Displacements, (188)
- 4.5 Two-Dimensional Chromatographic Systems, (191)
- 4.6 Sample Dimensionality, (192)
- 4.7 Orthogonality in Two-Dimensional Liquid Chromatography, (193)
- 4.8 Application of Multidimensional Liquid Chromatography, (208)
- 4.9 Anomalies in Multidimensional Separations, (224)
- 4.10 Conclusion, (226)

Chapter 5. High-Performance Liquid Chromatography in the Pharmaceutical Industry: Application, Validation, and Regulatory Issues Under the PAT Framework, M. Dantus, (237).

- 5.1 Introduction, (238)
- 5.2 Process Analytical Initiative, (238)
- 5.3 Method Validation, (243)
- 5.4 Instrument Qualification, (249)
- 5.5 Electronic Records and Signatures, (250)
- 5.6 Concluding Remarks, (252)

Chapter 6. The Use of Polysaccharide Phases in the Separation of Enantiomers, R.W. Stringham, (257).

- 6.1 Introduction, (257)
- 6.2 Mechanisms of Selectivity, (260)
- 6.3 Modes of Separation, (267)
- 6.4 Mobile Phase Additives, (278)
- 6.5 Conclusions, (283)

Chapter 7 Chaotropic Effects in RP-HPLC, R. LoBrutto and Y.V. Kazakevich, (291).

- 7.1 Introduction, (291)
- 7.2 Chaotropic Effect, (292)

- 7.3 Chaotropic Model, (295)
- 7.4 Effect of Different Counteranions, (297)
- 7.5 Retention of the Counteranions, (298)
- 7.6 Effect of the Counterion Type and Concentration on Peak Efficiency and Asymmetry, (301)
- 7.7 Application in the Pharmaceutical Industry, (304)
- 7.8 Concluding Remarks, (312)

Chapter 8. Chromatography of Difficult and Water-Insoluble Proteins with Organic Solvents, A.J. Alpert, (317).

- 8.1 Introduction, (317)
- 8.2 Modest Levels of Organic Solvents with Water-Soluble Proteins, (318)
- 8.3 High Levels of Organic Solvents with Water-Soluble Proteins, (318)
- 8.4 High Levels of Organic Solvents with Water-Insoluble Proteins, (323)
- 8.5 Discussion, (327)

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