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Paul L. C. Horng^a; Haleem J. Issaq^a

^a SAIC Frederick NCVFCRDC, Frederick, MD

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THE BOOK CORNER

CELL ELECTROPHORESIS, Johann Bauer, editor, CRC Press, Inc., Boca Raton, FL., 1994, 328 pages.

The contents of this book are divided into sixteen chapters. The first two chapters deal with mathematical theory contributing to free flow electrophoresis and numerical description of zone electrophoresis in continuous flow electrophoretic devices. As such, the book has many useful equations. Chapters three through six emphasize the improvements of the method. Chapter three describes the crescent distortion which can be avoided by applying an external electric field to control electroosmosis and by moving the chamber wall mechanically to eliminate pressure gradient.

Chapter four compares the quantitative effects of cell loading and unloading procedures on the quality of cell separation by five electrophoresis methods. Chapter five deals with the use of membranes, and their types, in cell electrophoresis. Chapter six elucidates the cell separation by electrophoresis and double antibody tagging, quantitation of antibody tagging by microelectrophoresis and the study of the effect of presence of antigen on the electrophoretic mobility and proliferating response of T-cells in continuous flow electrophoresis.

Chapters seven through nine discuss the buffers and their effects on cells. Chapter seven concludes that organic zwitterionic buffers offer significant advantages over conventional buffers for improvement of resolution of vial cells in zonal electrophoresis. Chapter eight discusses the possible mechanisms of the effect of low ionic strength solution on cells in cell electrophoresis. Chapter nine emphasizes the vital activity of cells during preparation and in the process of electrophoresis which is affected by many factors influencing the electrical state of the cell surfaces. Chapters ten through fourteen cover the importance of the determination of the negative surface charge density of the cells. Chapter ten emphasizes the simultaneous measurement of cell electrophoretic mobility (EPM) and sedimentation velocity (SV) in heterogenous cell systems, which may be helpful for studying the relationship between cell electrokinetic properties and those properties correlating with their sedimentation velocities.

Chapter eleven elucidates the effects of Lewis acid-base equilibria and electrostatic forces on cell interactions and surface hydrophilicity. Chapter twelve deals with the endothelium cell functions and how they are directly or indirectly influenced by electrical charges on the cell surface.

The electrical surface properties of endothelial cells and their measurement with electrophoresis are presented. Chapter thirteen concentrates on the macrophage electrophoretic mobility test used for the immunological detection of cancer cells. Other applications include the study of biocompatibility and body fluid investigation. Chapter fourteen uses the negative surface charge densities and electrophoretic mobility (EPM) values of many kinds of animal and human cells to draw a correlation between the EPM values of a cell and its biochemical parameters which may have correlation with cancer cell line.

Chapter fifteen deals with the use of microgravity electrophoresis for the isolation of live cells that can be used for transplant or the seeding of commercial bioreactors to produce valuable pharmaceuticals in earth-based plants. Other applications include protein and macro-molecular separation using cell electrophoresis.

Chapter sixteen is an interesting one which deals with the determination of resolution and throughput of electrophoresis machines which can be promoted in microgravity, and in the design of a biotechnological laboratory for space conditions to ensure that each of the different tools and methods works well in micro-gravity.

This is an interesting book with many illustrations. The volume is useful for those working in cell electrophoresis, to whom the book is intended.

Table of Contents

1. Contributions to a mathematical theory of free flow electrophoresis. F. G. Boses, (3).
2. Numerical description of zone electrophoresis in the continuous flow electrophoresis device. T. M. Grateful, A. M. Athalye, and E. N. Lightfoot, (33).
3. Theoretical and experimental studies on the stabilization of hydrodynamic flow in free fluid electrophoresis. P. H. Rhodes, and R. S. Synder, (57).
4. The loading and unloading of cell in electrophoretic separation. P. Todd, (75).
5. Electrode compartment-separating membranes for cell electrophoresis. J. Heinrich and H. Wagner, (103).
6. Cell electrophoresis using antibodies and antigens as ligands. H. H. Cohly and S. K. Das, (113).

7. New buffer systems for cell electrophoresis. K. A. Knisley and L. S. Rodkey, (145).
8. Alteration of cellular features after exposure to low ionic strength medium. I. Bernhardt, (163).
9. Electrophoresis of cells and physiological ionic strength. M. V. Golovanov, (181).
10. Simultaneous two-parameter measurements of the electrophoretic features of cell subpopulations and their different sedimentation characteristics. G. G. Slivinsky, (199).
11. Cell interactions and surface hydrophilicity: influence of Lewis acid-base and electrostatic forces. C. J. van Oss, (219).
12. Electrical surface phenomena of endothelial cells. F. F. Vargas, (241).
13. Application of cell electrophoresis for clinical diagnosis. W. Schutt, N. Hashimoto, and M. Shimizu, (255).
14. The negative surface charge density of cell and their actual state of differentiation or activation. J. Bauer, (267).
15. Cell electrophoresis in microgravity: past and future. D. Morrison, (283).
16. Cell Electrophoresis in microgravity. U. Friedrich, G. Ruyters, and J. Bauer, (315).

Reviewed by
Paul, L.C. Horng, Ph.D.
SAIC Frederick
NCI/FCRDC,
Frederick, MD 21702

CAPILLARY ELECTROPHORESIS, Dale R. Baker, Editor, John Wiley & Sons, Inc., New York, NY., 1995, 244 pages.

Capillary Electrophoresis is a volume in the Techniques in Analytical Chemistry Series which promotes the following objectives: (a) to provide the reader with overviews of methods of analysis that include a basic introduction to principles, but emphasize such practical issues as technique selection, sample preparation, measurement procedures, data analysis, quality control, and quality

assurance; (b) to give the reader a sense of the capabilities and limitations of each technique, and a feel for its applicability to specific problems; and (c) to communicate practical information in a readable, comprehensible style.

The author, Dr. Baker, states, in the preface, that he wrote the book so it will be used as: (a) a primary source of information for someone who is just starting to use capillary electrophoresis, and has no experience in high-performance liquid chromatography or slab gel electrophoresis; (b) a reference book for someone with experience in capillary electrophoresis; and (c) a reference for a short course or as a textbook for a longer course on capillary electrophoresis.

The above objectives and goals are met in *Capillary Electrophoresis*. I believe this book will be an excellent text for a short one- to two-day course, or included in a separation course at a university. Dr. Baker should be congratulated for a well organized and written book. It is clear, simple and uncluttered with unnecessary examples and equations. The reader, especially the beginner, will benefit immensely from this book. His simple but practical explanation of electroosmotic flow, citing the flow of a river and rowboats, is a joy to read and one which I use in my teachings. The book is also a good reference to the established practitioner. I recommend it to all those interested in this fast moving and useful microseparation technique.

The book is divided into seven chapters. Chapter one describes the development of capillary electrophoresis, and provides an overview of modern electrophoresis in comparison with other separation techniques. Chapter two involves the principles of separation with electrophoresis and the effect of electroosmotic flow and electrophoretic mobility on the separation, while Chapter three discusses the modes of capillary electrophoresis. In Chapter four, emphasis is on the instrumentation for capillary electrophoresis. Chapter five describes the guidelines used in the development of optimization procedures for capillary electrophoresis. Chapter six emphasizes the qualitative and quantitative aspects of capillary electrophoresis. Chapter seven covers the applications of capillary electrophoresis to contemporary chemical problems.

Table of Contents

1. Introduction. (1).
2. Principles of separation. (19).
3. Modes of capillary electrophoresis. (53).
4. Instrumental consideration. (94).

5. Developing a method. (159).
6. Quantitative and qualitative analysis. (193).
7. Applications. (211).

Reviewed by
Dr. Haleem J. Issaq
SAIC Frederick
NCI/FCRDC
Frederick, MD 21702