

Book reviews

Electronically Controlled Drug Delivery

CRC Press, Boca Raton, Boston, London, New York, Washington, D.C., USA; 1998, 241 pages, hardcover, DM 270; ISBN 0-8493-7681-5

The book 'Electronically Controlled Drug Delivery' presents a survey of different techniques to get an electronically-assisted drug delivery. In 11 chapters experts describe methods such as iontophoresis, electro-poration, electro-osmosis and sonophoresis. A few aspects of drug infusion systems with programmed release are included. Chapter six 'Microelectronics' describes the first attempts to construct small-dimensioned electronically-controlled drug delivery systems such as capsules.

The physiological conditions of the transdermal route are described in chapter three 'Electrical Properties of Skin' and chapter four 'Skin tolerability irritation'. In chapter five 'Pharmacokinetics and Dynamics of Temporal Delivery' some attempts are made to describe the pharmacokinetic background of drug delivery systems with temporal delivery. Subject of chapter eight is 'Glucose Monitoring using Electro-osmotic Transdermal Extraction'.

The book may be recommended for scientists who are especially interested to get a rough overview over the field of electronically assisted drug delivery especially focused on the transdermal route.

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Capillary electrophoresis of proteins

Tim Wehr, Roberto Rodriguez-Diaz, Mingde Zhu, Marcel Dekker, Inc., New York, 1998, p. 286, ISBN 0-8247-0205-0.

The book is part of the 'Chromatographic Science Series' and the first volume dedicated to the analysis of proteins by

capillary electrophoresis. It contains 8 chapters which can essentially be divided into two sections, the first describing more general aspects while the second focuses on special techniques.

The introduction (Chapter 1) outlines the scope of the book and Chapter 2 briefly describes the fundamentals and instrumentation of capillary electrophoresis including a short mention of techniques that are not applicable for the analysis of proteins such as micellar electrokinetic chromatography. Moreover, while the basic equations are presented in this part the reader has to refer to other books or review papers for a more comprehensive treatment of the basic aspects.

Chapter 3 lists detection and derivatization techniques that can be applied to the analysis of proteins. This includes on-line coupling with capillary electrophoresis to a mass spectrometer.

Chapter 4 summarizes strategies to reduce protein-wall interactions, a problem generally encountered on protein capillary electrophoresis. Although the authors acknowledge that they are not covering comprehensively all possible methods for coating the inner surface of the capillary they address the most important techniques including a critical discussion.

Chapter 5 is the first one of a total of three chapters describing a special separation technique in capillary electrophoresis and focuses on capillary zone electrophoresis. After a brief mention of the influence of the type of the buffer, the capillary and voltage parameters on the separation selectivity for developing a method the authors describe in great detail various sample concentration techniques. A large part is dedicated to applications including enzyme assays, affinity capillary electrophoresis or the analysis of protein folding. The chapter also covers examples for the determination of various types of proteins such as metallo-proteins, glycoproteins, serum proteins, etc. It would have been desirable if the authors had given the equations for estimating K_d in affinity capillary electrophoresis. Moreover, the part about the use of proteins as chiral selectors in CE for the enantioresolution of small molecular weight compounds appears to be somewhat out of the scope of the book as it describes an application and not the analysis of proteins.

Chapter 6 is an excellent summary of capillary isoelectric focusing. This chapter comprises about one third of the whole book (102 pages out of 286 pages!) and is a most comprehensive treatment of the subject. The authors not only cover the various aspects of sample preparation, capillary selection, focusing and mobilization techniques but also give strategies for optimizing capillary isoelectric focusing separations as well as numerous application examples. Moreover, guidelines for sample preparation, focusing, mobilization and the use of internal standards are presented in a tabular form.

Chapter 7 briefly describes sieving separations for the analysis of native and SDS-denatured proteins using gel-filled capillaries or polymer solutions. Practical considerations are discussed.

Chapter 8 contains the authors concluding remarks about capillary electrophoresis of proteins related to future devel-

opments regarding reproducibility, sensitivity and sample throughput.

Overall, the book is well written and referenced. It is one of the most comprehensive texts currently available on the application of capillary electrophoresis to protein analysis. It will be a useful source of information for separation scientists and post-graduate students wishing to obtain an overall review of protein capillary electrophoresis separations.

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