Capillary Electrophoresis Guidebook

Methods in Molecular Biology™

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*Principles, Operation,
and Applications*

Edited by

Kevin D. Altria

Glaxo Research and Development, Ware, Hertfordshire, UK

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Preface

This book is intended to be a working guide to the operation of capillary electrophoresis (CE) instrumentation. Since CE is still a rapidly maturing technique, detailed validated protocols are not widely established. Therefore, extensive experimental procedures are not provided for individual analyses. The intention is to provide general guidelines on the principles and practice of CE and to give an overview of the specific technologies and important application areas.

Part I provides operating instructions for standard commercially available instruments. Guidelines are included for activities such as changing capillaries, method development, quantitative procedures, optimization of precision and sensitivity, and the validation of methods, fraction collection, and troubleshooting, as well as a quick guide to running a separation.

The application range of CE is possibly the most diverse of all analytical techniques and ranges from large, complex macromolecules, such as proteins and nucleic acids, to small solutes, such as organic drugs and inorganic anions and cations.

Part II contains review chapters written by acknowledged experts in their particular fields. Specific technology-related chapters include micellar electrokinetic capillary chromatography, capillary gel electrophoresis, advanced sampling techniques, and electrochromatography. Important application areas are covered, such as the analysis of proteins, peptides, amino acids, pharmaceuticals, chiral compounds, and nucleic acids. A further applications chapter covers a variety of additional areas, including the analysis of small ions, the application of experimental designs, the determination of agrochemicals, carbohydrates, vitamins, and dyes, various biomedical applications, and the determination of surfactants.

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First, I would like to acknowledge the efforts and cooperation of my fellow coauthors. Without their endeavors this book would not have been possible. I would like to thank my PhD supervisor, Dr. Colin Simpson of Birkbeck College, University of London, for introducing me to this fascinating subject and guiding me through my early experiences with CE. Similarly, I would like to acknowledge the support and encouragement I have received from my colleagues at Glaxo, most notably Manus Rogan, Dave Rudd, and Gordon Finlay. My thanks are extended once again to Lorraine Horwood for her careful and accurate typing skills.

Anyone crazy enough to undertake preparation of a book will agree that support from family and friends is vital, if only to maintain sanity! This, therefore, gives me the opportunity to thank my family, including my father Leonard, Lou Lou, Fareed, and Aisha, and to jointly dedicate this book to very important ladies, my mother Eleanor and my wife Fatima.

Welcome to the wonderful world of CE.

Kevin D. Altria

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