
Preface

Throughout the more than 20 years that have followed the beginnings of capillary electrophoresis (CE), its application to the analysis of proteins and peptides has continued to be reliable, versatile, and productive. Over time, CE has matured to become a superb complement to HPLC, and in many cases has also evolved as an automated and quantitative replacement for conventional slab gel electrophoresis methods such as SDS-PAGE and isoelectric focusing.

Within *Capillary Electrophoresis of Proteins and Peptides*, we have assembled contributions from researchers who are applying state-of-the-art CE for protein and peptide analysis, including topics that we believe are of great potential both in the present and for the future.

In comparison to traditional separation methods, CE represents a miniaturized analysis technique (especially in its microchip-based format) that is highly dependent upon the basic fundamentals of effective sample recovery and high sensitivity detection. With these issues in mind, Chapters 1–4 describe recently developed approaches for both capillary coatings and analyte detection via laser-induced fluorescence.

Since the discipline of biotechnology has established itself as a primary platform for the application of CE to the analysis of proteins and peptides, Chapters 5–7 demonstrate a variety of examples of the specific techniques that have been applied for the development of biopharmaceuticals and their commercialization. The methods covered here include also the analysis of oligosaccharides from glycoproteins.

Studies of the association of proteins with other molecules can provide insight into the very heart of biological processes. Therefore, a major focus within both the pharmaceutical industry and academia is the utilization of CE for the characterization of protein interactions with ligands, other proteins, and large biopolymers. Chapters 8–11 describe in detail the most recent approaches for performing affinity capillary electrophoresis for the evaluation of protein binding, including the use of protein charge ladders.

CE and capillary isoelectric focusing have been providing rapid, high-resolution separations of proteins. When combined with electrospray mass spectrometry detection they constitute a powerful analysis system capable

of supporting complex studies such as those associated with proteomics. Chapters 12–15 focus on the use of CE within this exciting field. The use of CE in microfluidics format is also presented here.

The objective of *Capillary Electrophoresis of Proteins and Peptides*, by its breadth, topicality, and forward focus, is to serve as a valuable guide for researchers across many disciplines. We look forward with great anticipation to the impact this collection will have, as researchers new to the field are carried forward in their work by the experts' step-by-step guidance and notes provided within these chapters.

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