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Foreword

High-performance capillary electrophoresis (CE) is at present widely considered as the most important milestone in the field of separation science of the last decade. The current developments in modern biology and medicine necessitate high-resolution microtechniques for the analysis of large biological molecules. Due to its high resolving power, high speed of analysis and low cost operation, CE has been extensively used in the analysis of proteins, peptides, oligonucleotides, DNA, DNA sequencing of genomic material, double-stranded DNA fragments in mutational analysis, restriction fragment mapping, etc. Its hybrids with liquid chromatography, such as micellar electrokinetic capillary chromatography and capillary electrochromatography have extended the use to relatively small organic molecules encountered in pharmaceutical, environmental, forensic and clinical analysis, as well as combinatorial chemistry and fundamental research, where its role has been complimentary to that of the well established HPLC techniques. Because of the dramatic decrease in sample volume (nanoliters and picoliters) even the analysis of single cell contents has been made possible.

In order to overcome the problem of low sensitivity, on-line preconcentration techniques (isotachophoretic, sample stacking, electrochromatographic, affinity, microchips, etc.), as well as laser-induced fluorescence and various mass spectrometric techniques have been used.

While the use of CE in the area of biomolecular separations is now well established, its usefulness as an orthogonal technique with respect to HPLC in the analysis of small molecules is yet to be developed. It is hoped that the selected papers of this volume will illustrate further the tremendous potential of CE in the life sciences.

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