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Preface

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Preface

Only ten years ago the biotechnology industry could still be considered as being in its infancy. Now it has a rapidly growing number of "genetically engineered" products on the market or in clinical trial. During this period important inroads have been made in the large-scale production of diagnostic proteins including monoclonal antibodies, therapeutic polypeptides such as hormones, blood clotting factors, the lymphokines, and traditional compounds such as antibiotics and vaccines. This pharmaceutical cornucopia is largely due to the advances in recombinant DNA technology which have made it possible for host cells to express foreign genes at highly amplified levels.

In the earliest days of this industry, bioactive agents were prepared using such well-established technologies as filtration, precipitation, fixed-bed adsorption, and aqueous-organic extraction. However, the rapid development of commercial biotechnology has intensified the need for novel separation techniques capable of purifying labile biomolecules at elevated production levels and with extraordinarily high resolution. Thus, as more fragile biomolecules are brought into full-scale production, the industry is shifting its attention to milder and more specific bioseparation technologies.

This special issue of *Separation Science and Technology* covers several emerging areas within the field of bioseparations. It consists of papers which review advances in bioprocessing using liquid emulsion membranes, size exclusion chromatography, zone electrophoresis, and conventional extraction as well as affinity partitioning in systems composed of two aqueous phases. In addition, two papers describing new techniques have been included: One treats zone formation in continuous counteracting chromatographic electrophoresis (CACE) and the final article details the evolution and application of the SPLITT flow cell in processing biomaterials.

This collection of papers is intended to give readers a broad overview of events in the field as they have shaped its evolution and to present each author's perspective on the direction the field will follow as it unfolds. It is hoped that these articles will help consolidate thinking in these areas and stimulate further research and novel ideas in bioseparations.

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