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Publisher *Taylor & Francis*

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Journal of Liquid Chromatography & Related Technologies

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713597273>

Handbook of Instrumental Techniques for Analytical Chemistry

To cite this Article (1998) 'Handbook of Instrumental Techniques for Analytical Chemistry', *Journal of Liquid Chromatography & Related Technologies*, 21: 19, 3072 — 3076

To link to this Article: DOI: 10.1080/10826079808006889

URL: <http://dx.doi.org/10.1080/10826079808006889>

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Haleem J. Issaq, Ph.D.
Editor
The Book Corner

HANDBOOK OF INSTRUMENTAL TECHNIQUES FOR ANALYTICAL CHEMISTRY, F. A. Settle, ed., Prentice Hall PTR, Upper Saddle River, New Jersey, 1997, 993 pp.

This Handbook is a comprehensive reference of analytical instrumentation. This massive 993 page book is made up of eight main sections comprising 51 chapters. It is well written and edited. It is free of errors and well illustrated. The editor (Dr. Frank A. Settle) should be commended on a job well done. I especially like the organization for each technique. The main part of the Handbook consists of seven sections, each addressing a group of related techniques. Techniques in Sections II through VI are organized according to fundamental phenomenon, chromatography, electromagnetic spectroscopies, mass spectrometry, and electrochemistry. The remaining two sections, on surface analysis and macromolecular analysis, include techniques specific to these major areas. Each section opens with an introduction by the section editor, followed by chapters on specific techniques. The identical format of each chapter facilitates comparison and selection of techniques. An introductory summary page assists the reader in deciding whether the technique is applicable to the problem at hand. The organization for each technique is shown in the following outline.

Summary; General Use; Common Applications; Samples; State, Amount, Preparation; Analysis Time; Limitations; Complementary or Related Techniques; Introduction; Brief History; Current Use; How It Works; Physical and Chemical Principles; Instrumentation (Modular Approach);

Description of Each Major Component and Its Operation; What It Does; Analytical Information; Qualitative; Quantitative; Accuracy and Precision; Detection Limits; Applications; General Discussion; Specific Examples; Nuts and Bolts; Relative Costs; Capital Outlay; Maintenance and Operation; List of Instrument Manufacturers (see also Buyers' Guides, page 16); Required Training; Operation; Interpretation of Data; Service and Maintenance Requirements; Suggested Readings (Appropriate Level for Readers).

This Handbook is recommended for the novice and the experienced analytical chemist.

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Editor

The Book Corner

PHARMACEUTICAL AND BIOMEDICAL APPLICATIONS OF CAPILLARY ELECTROPHORESIS, S. M. Lunte, D. M. Radzik, eds., Pergamon, 1996, 511 pp., \$135.00

Pharmaceutical and Biomedical Applications of Capillary Electrophoresis is volume 2 of Progress in Pharmaceutical and Biomedical Analysis series. Capillary Electrophoresis (CE) in its various formats (CZE, CGE, MECC, IEF, etc) have witnessed a phenomenal growth since its introduction in 1981 by Jorgenson as a working instrumental technique. This growth was fueled by the introduction of MECC in 1984 by Terabe whereby small neutral organic molecules, as well as ionic ones, can be resolved in the same experiment in most cases. Many of the applications are in the pharmaceutical and biomedical industry.

The editors in the Introduction state their objective for writing the book, "Our original goal for this book was to present an evenhanded, comprehensive overview of the technique rather than just a 'snapshot' of current understanding and research. However, this became an almost impossible task because CE was evolving so rapidly. Therefore, we have tried to supply the basic information needed to understand the working aspects of CE as well as examples of applications of CE that would be of interest to pharmaceutical and biomedical scientists. It is our hope that this book will provide the necessary foundation for a better understanding of the current and future developments in CE." The book does that very successfully.

This book is divided into three major sections. The first part offers an overview of CE theory, beginning with a general informational chapter about the instrumentation and a brief discussion of the various separation modes.

More detailed information on capillary modification and micellar electrokinetic chromatography is provided in the next two chapters. Part 2 deals with detection, and includes chapters on optical, mass spectrometric and electrochemical detection methods.