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The Book Corner

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THE BOOK CORNER

RETENTION AND SELECTIVITY IN LIQUID CHROMATOGRAPHY, edited by R. M. Smith, Journal of Chromatography Library, Volume 57, Elsevier, Amsterdam, 1995, 457 pp., Price: \$242.75.

It is not a secret that optimization in liquid chromatography is a function of the stationary phase, the mobile phase and the sample properties. Most published optimization procedures to date concentrate on the mobile phase composition to achieve the separation of a mixture. This is justified because it is easier and cheaper to change the composition of the mobile phase rather than the stationary phase. It is also a fact that the mobile and stationary phases are selected based on the properties of the mixture to be resolved. However, not many studies dealt with that aspect until the publication of this book, which brings together a number of studies which examine the ways in which the retention and selectivity of separations in high performance liquid chromatography are dependent on the chemical structure of the analytes and the properties of the stationary and mobile phases.

It is refreshing to see that the editor (Dr. Smith) has had an active part in this book; in addition to editing he wrote three chapters. I have seen books in the past where the editor did not write any of the chapters. The book is divided into twelve chapters, each written by an authority in the field.

The first chapter deals with prediction of retention, based on solute molecular structure (R. Smith). This is a comprehensive chapter which discusses different groups of compounds, both aliphatic and aromatic. Chapter 2 (K. Valko) is a continuation, in a way, of Chapter 1, and discusses retention prediction of compounds of pharmaceutical interest, based on molecular parameters, hydrophobicity and topological matrix and information theory.

Chapters 3 and 4 (R. Smith) deal with retention indices and their application in HPLC. Chapter 5 (M. Bogusz) and Chapter 6 (P. Kuronen) deal with retention indices in normal and reversed phase and gradient HPLC for the identification of compounds. P. Jandera continues the theme of indices in Chapters 7 and 8 by discussing interaction and polar indices and their effect on retention and selectivity.

S. West discusses solvent selectivity in Chapter 9, with emphasis on steroids and benzene derivatives. Polycyclic aromatic hydrocarbons' selectivity and retention in RP-HPLC are discussed in Chapter 10 (L. Sander and S. Wise), which deals with phase type, pore size, bonding density, bonded phase length, and other topics related to the stationary phase.

Chapter 11 (J. Pesek and E. Williamsen) compare novel stationary phases such as non-C₁₈ alkane phases, chiral phases and non-silica based phases, while Chapter 12 (A. Bolck and A.K. Smilde) deals with the characterization of RP-HPLC stationary phases.

This book, overall, is very well written and discusses topics which have not been discussed in detail previously. The book is also well organized and avoids repetition which can be annoying. The overall discussion is concise and to the point. I found the book to be both interesting and helpful. It is recommended for all those who use HPLC.

ELECTROANALYTICAL CHEMISTRY, A SERIES OF ADVANCES, edited by A. J. Bard and I. Rubinstein, Marcel Dekker, Inc., New York, Volume 57, 1996, 525 pp., Price: \$175.00.

In their introduction to the series the editors stated, "This series is designed to provide authoritative reviews in the field of modern electroanalytical chemistry, defined in its broadest sense. Coverage is comprehensive and critical. Enough space is devoted to each chapter of each volume so that derivations of fundamental equations, detailed descriptions of apparatus and techniques, and complete discussions of important references can be provided, so that the chapters may be useful without repeated reference to the periodical literature. Chapters vary in length and subject area. Some are reviews of recent developments and applications of well-established techniques, whereas others contain discussions of the background and problems in areas still being investigated extensively and in which many statements may still be tentative. Finally, chapters on techniques generally outside the scope of electroanalytical chemistry, but which can be applied fruitfully to electrochemical problems, are included."

This is Volume 57 of the series which is well established. The book is made up of three reviews (see Table of Contents, below). Each chapter deals with a different aspect of electroanalytical chemistry. These reviews are each up-to-date, comprehensive, well written, and thoroughly illustrated. The scope of each, however, is limited to a specific group and not really generalized to all analytical chemists, because the material is specific and highly technical.

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