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## Book review

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*Size Exclusion Chromatography* by S. Mori and H.G. Barth, Springer Verlag, Berlin, Heidelberg, New York, 1999, XIV +234 pp., price DEM 169, USD 106, ISBN 3-540-65635-9

The work by two well-known and established workers consists of 12 chapters and 4 appendices, the first three tabulating Mark-Houwink Parameters and the fourth Specific Refractive Index Increments.

The first, introductory, chapter briefly indicates molecular weight measurement, size exclusion chromatography, some historical perspectives and the scope of the applications described. Chapter 2 entitled *Fundamental Concepts* shows diagrammatically an idealised separation, details the sample geometric and the accepted thermodynamic model and the Hydrodynamic Volume Concept. The chapter concludes with a description of some important SEC Parameters and Concepts.

*Instrumentation* is the title of Chapter 3 which considers SEC systems used at room and elevated temperatures and the individual parts of the SEC system which closely follow those used in HPLC namely pumps, injectors and detectors both concentration based and structure based (UV) are outlined. Molecular weight sensitive detectors are described later in Chapter 8.

Chapter 4, of only 8 pages is entitled *Columns* and adequately describes the 2 types i.e. aqueous and non-aqueous, of SEC phases used, largely in compilations of the available propriety materials with a list of points on the care and maintenance of columns which are necessary to achieve a long and optimal column life.

The crux of SEC application is achieved in Chapter 5 entitled *SEC Method Development* where

the important parameters of polymer solubility, sample concentration calibration curves, aqueous and non-aqueous and the selection of the particular mobile phase precede a discussion of the various operating conditions.

*Molecular Weight Averages and Distribution* forms Chapter 6. As M.W. Averages are commonly encountered, some explanation is given. Calculation procedures and reproducibility of determinations are shown. The interpretation of band broadening and the correction of molecular weight averages conclude the chapter.

SEC is not absolute and molecular weight calibration forms Chapter 7. Monodispersed and polydispersed standards are considered and the use of primary and secondary standards is outlined, the chapter concluding with a treatment of the Universal Calibration Curve.

The newer molecular weight sensitive detectors i.e. light scattering and viscometric are considered in Chapter 8 together with their use in combination with the more commonly used concentration sensitive detectors.

The examination of synthetic polymers where SEC finds extensive use is considered in Chapter 9 where separation of many common polymer types is shown as groups. High temperature SEC, necessary with polyolefins where low temperature solubility is negligible has always presented particular difficulties and separation of these compounds is outlined in Chapter 10.

*Aqueous SEC* forms Chapter 11 and the particular problems of aqueous soluble materials are detailed with the treatment of many individual materials being included.

The final chapter is entitled Special Applications

and considers firstly the analysis of copolymer systems of major importance where both molecular weight and chemical composition distributions exist. Preparative and recycle SEC being also treated in this chapter.

This small work is well written, concise and recommended for inclusion on the bookshelf or library of those concerned with SEC. The work does not suffer from the problem of many works which

the reviewer has indicated in previous reviews of very largely consisting of related theory, better treated in other works or in the original papers with a minority of the work actively devoted to the technique.

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