

## Book Reviews

**Principles and Applications of Stereochemistry**

M. North; Stanley Thornes (Publishers), 1998, xii + 254 pages, ISBN 0-7487-3994-7, £24.99

Stereochemistry is the relationship between the three-dimensional shape of a molecule and its chemistry. The shapes of molecules, their symmetry and the spatial arrangement between the groups they possess control almost all aspects of our lives. Understanding stereochemistry is essential for understanding most aspects of organic chemistry, as well as being crucial in many biochemical and medicinal fields, as the stereoisomers of a compound can have very different biological properties.

*Principles and Applications of Stereochemistry* covers the organic, inorganic and physical chemical aspects of stereochemistry. It explains how different properties arise from different stereochemical arrangements, and discusses implications for the preparation and analysis of complex compounds. The importance of the stereochemistry of inorganic and organometallic compounds is also likely to increase in the future, as these compounds are used as symmetric catalysts in asymmetric synthesis. This area of stereochemistry is covered in detail in this book.

The first eight chapters in this volume cover the stereochemistry of individual molecules, while the last chapters show how stereochemical knowledge can be used to predict the outcome of a variety of chemical reactions. Discussions of the energy differences which determine the shapes and ground state populations of flexible and cyclic molecules, as well as the use of spectroscopic and other quantitative information is covered. This provides invaluable insights to other aspects of molecular behaviour and construction.

This text is ideal for undergraduate students newly introduced to the field, but is also suited for more advanced levels, with topics covering diastereotopicity and catalytic asymmetric synthesis. The book contains plenty of diagrams and cross-referencing, as well as problems at the end of each chapter, to give a better idea of how the contents can be applied. Real-life applications of stereochemistry are included, as well as topics such as the origin of enantiomerically pure compounds in nature.

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**Column Handbook for Size Exclusion Chromatography**

Chi-San Wu (Ed.); Academic Press, New York, 1999, 637 pages, ISBN 0-12-765555-7, US\$140.00

Size exclusion chromatography (SEC) also known as Gel permeation chromatography (GPC) and Gel Filtration chromatography (GFC) are popular methods used for the separation of both natural and synthetic polymers, the techniques provide data on molecular weight and distribution. The column selection in such chromatography is critical to provide optimum separation. The variety of columns available is huge with many more associated applications. Columns are expensive and so before purchasing suitability such as temperature stability, solvent compatibility, separation chemistry must be considered and cost must be made.

The *Column Handbook for Size Exclusion Chromatography* is more than just a compendium of literature on commercially available columns. The usual information such as plate count, exclusion limits, and calibration curves are included. Also more in-depth information on the separation technology, continuing maintenance and quality control of columns. The handbook enables rapid column comparison and selection to be made without the tedious trawl through each separate manufacturer's literature.

Manufacturers have provided hundreds of excellent examples of how natural, synthetic and biopolymers may be separated. Experts have contributed their valuable knowledge and experience with respect to characterisation, evaluation, maintenance, selection and application of columns.

The book provides an up-to-date, clearly written and presented compendium, which is an essential reference tool for columns and associated applications. It is highly

recommended for scientists providing chromatographic analysis.

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### Quality in the Food Analysis Laboratory

R. Wood, H. Wallin, A. Nilsson; The Royal Society of Chemistry, London, 1998, 309 pages, ISBN 0-854-04566-X, £52.50

Quality is a requirement for both customers and contractors; whenever a transaction occurs, be it goods or information, it must be 'fit for the purpose'. Quality is the assurance of this fitness. Historically quality has been rather empirical, but with the advent of mass manufacture and consumption, quality has become a science. This has occurred in part due to product standardisation and increasingly in the food industry, legislation.

The general principles of quality in the food analysis laboratory are considered along with a variety of detailed models of quality systems. The choice of model and implementation lead on to the specific aspects of laboratory practice and validation. The rationale behind validation is described with aspects such as recovery, correction and measurement reliability being considered. Procedures for implementing internal quality control and proficiency testing are outlined, which allows the laboratory to achieve results with respect to a statutory or contractual limit. Specific aspects of laboratory practice and procedures are discussed with the aim of accreditation in mind.

A constant theme throughout the book is the application of statistics to quality, many definitions and statistical formulae are included: precision and accuracy; analysis of collaborative trial data; measurement of uncertainty and repeatability.

The book is clearly written and well cross-referenced. *Quality in the Food Analysis Laboratory* is an essential acquisition for those employed directly within the industry or those allied to the food industry. It would also be a valuable reference work for those associated with quality control or the statistical analysis of quality control in any

capacity, as the concepts and implementation of quality are universal.

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### Comprehensive Cellulose Chemistry

Fundamentals and Analytical Methods, Vol. 1; Functionalization of Cellulose, Vol. 2; D. Klemm, B. Philipp, T. Heinze, U. Heinze, W. Wagenknecht (Eds.); Wiley-VCH, Chichester, 1998, Vol. 1: xxii + 260 pages, ISBN 3-527-29413-9, £170; Vol. 2: xvi + 389 pages, ISBN 3-527-29489-9, £170

Cellulose, a linear 1,4- $\beta$ -glucan, is the most abundant polymer found in nature. Its use as a chemical raw material started over 150 years ago, with the discovery of the first cellulose derivatives. *Comprehensive Cellulose Chemistry*, Vol. 1: Fundamentals and Analytical Methods, and Vol. 2: Functionalization of Cellulose, covers all aspects of modern cellulose chemistry in an illustrative way. Beginning with the structure and properties of cellulose, and continuing with the mechanisms and kinetics of derivatization reactions, also elucidating and describing the supra-molecular architecture.

These volumes are centred on the routes and mechanisms of cellulose functionalization, and also cover inter-relationships between heterogeneous cellulose reactions and the supra-molecular structure of cellulose. Vol. 1 covers the more general aspects of cellulose relevant to chemical reactions. Describing its properties and structure in relation to: reactivity; the processes of swelling and dissolution with their consequences to chemical reactions; and the pathways of cellulose degradation accompanying chemical transformations. Special emphasis is placed on areas of physical and colloidal chemistry. A detailed presentation of cellulose analytics for characterization of the organic polymer and its derivatives at various structural levels are included. Vol. 2 covers the various classes of cellulose derivatives. Emphasis is placed on reaction mechanisms and the distribution of functional groups with associated industrial