

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- β -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

processes. An overview of cellulose products is given with respect to the properties and applications areas.

In “Vol. 1: Fundamentals and Analytical Methods, and Vol. 2: Functionalization of Cellulose”, the recent efforts in cellulose research and development are presented and cited. The important developments in the last centuries are also included to give a comprehensive description of cellulose chemistry. In these texts, internationally renowned experts describe the organic chemistry of cellulose. The volumes contain numerous experimental procedures, both for the analysis and functionalization of cellulose, with the aim of familiarising practical laboratory work in cellulose chemistry for graduate students. In both volumes, the results obtained to illustrate the reactions are well presented with regards to figures and tables.

The two volumes are excellent textbooks for graduate students interested in cellulose chemistry, as well as a comprehensive source of information for chemists, physicists, biologists and engineers involved with this polymer.

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Biomass: a Growth Opportunity in Green Energy and Value-Added Products, Vols. I and II

R.P. Overend, E. Chonet (Eds.); Pergamon, Elsevier, Amsterdam, 1999, 1892 pages, ISBN 0-080-43019-8

Conference proceedings are unique barometers that indicate the current issues and progress of a given scientific field. Breakthroughs in technology, as well as the political, economical, business and social context in which they are developed, are captured in them. *Biomass: a Growth Opportunity in Green Energy and Value-Added Products* contains the Proceedings of the Fourth Biomass Conference of the Americas which was held in Oakland, California. The theme of these proceedings is that biomass is a growth opportunity in green energy and value-added products. The book is a state-of-the-art collection of papers, which provide information on 25 technical fields, grouped as: biomass production and integration with conversion technologies; biomass

transformation into value-added chemicals, liquid fuels, heat, and power; and biomass and bioenergy policy-public issues and private initiatives.

The information presented in *Biomass: a Growth Opportunity in Green Energy and Value-Added Products* is new and not available collectively in other publication. Those with an intimate knowledge of the latest, international research on biomass will be able to benefit most. The book will therefore be invaluable to scientists, policy makers, and industry entrepreneurs wishing to seek and understand the opportunities in the global growth business of biomass.

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Plant Biochemistry and Molecular Biology, 2nd ed.

P.J. Lea, R.C. Leegood (Eds.); Wiley, Chichester, 1999, xx + 364 pages, ISBN 0-471-97682-2, £60.00

The use of transgenic plants together with the powerful techniques of molecular biology to study biochemical pathways and the potential of metabolic engineering have made considerable impacts on plant physiology in the last few years. Many new exciting developments have arisen since the first edition of this book. *Plant Biochemistry and Molecular Biology*, in its second edition, provides details of the advances in research and applications using the modern techniques of molecular biology and gene technology. All of the chapters have been updated and revised and a totally new chapter on secondary metabolism, an area that was missing previously, has been included.

Plant Biochemistry and Molecular Biology, 2nd ed. initially deals with the mechanisms by which energy is generated, describing the major processes of photosynthesis and respiration as they occur in plant cells. Photosynthetic carbon metabolism is considered in two chapters, first the process of CO₂ assimilation in the Calvin cycle, then the photosynthetic adaptations which have occurred in C₄ and CAM plants (and in aquatic organisms) in response to particular environmental constraints. The way in which this carbon is utilised in the synthesis of carbohydrates, lipids and pigments is then considered. Because of the agricultural importance of the symbiotic association between nitrogen-fixing bacteria and higher plants, an overview of the process