

US alone, pharmaceutical products originating from plants still make up some 25% of prescription drugs (Chapter 14). The role of biological metal chelators in wood degradation is reviewed in Chapter 15.

Biological control can be generally described as the introduced use of organisms or their products to keep in check the numbers or activities of a particular species (Chapters 16 and 17). Genetic improvement to trees is a long and slow process owing to the long reproductive cycle of these plants. A discussion of transgenic trees is outlined in Chapter 18. The book concludes with a discussion of the use of molecular methods for the detection and identification of wood decay fungi.

This book would be a valuable reference source for students and researchers in the area of forest products, wood science, timber technology, environmental biotechnology and biomaterials.

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PII: S0144-8617(98)00149-0

***Glycoscience: Synthesis of Oligosaccharides and Glyconjugates*, pp. VIII + 239, Price £129 ISBN 3-540-62033-8**

***Glycoscience: Synthesis of Substrate Analogues and Mimetics*, pp. VIII + 231, Price £129 ISBN 3-540-62032-X**

***Topics in Current Chemistry Volumes 186 and 187 H. Driguez, J. Thiem (Eds.)***

The formulation of complex saccharide structures by classical organic synthetic means are often restrained by complex protection group chemistry, leading to time consuming multistep synthesis with low overall yields. Where enzymes are readily available for such synthesis, their use can often be hampered by the low regioselectivity of such reactions.

*Glycoscience: Synthesis of Oligosaccharides and Glyconjugates*, Volume 186 in the *Topics in Current Chemistry* series places special emphasis on the formulation of complex saccharide structures employing various enzymes found in carbohydrate metabolism.

The book begins with a review of glycosidases, and glucosyltransferases. Next, the formation of special ergiot glycosides is described. Protein conjugates have a key role in the passing of chemical signals across the cell membrane and beyond to the cell nucleus. This biological importance has created considerable demand for these complex macromolecules, the synthesis of which is also discussed. The

remainder of the book is concerned with certain classical synthetic strategies for which novel findings have contributed to or have even improved upon, specifically in the synthesis of sialic acids and pyruvated saccharides.

*Glycoscience: Synthesis of Oligosaccharides and Glyconjugates*, Volume 187 in the *Topics in Current Chemistry* series places particular emphasis on the demanding synthetic approaches to and on the biological implications of carbohydrate derived modulators or inhibitors.

Carbohydrate analogues in which a carbon atom substitutes the glycosidic oxygen are defined as C-glycosides, and the book begins with a review of their synthesis. The book moves on to examine the synthesis of thio-oligosaccharides (oligosaccharides in which at least one intersidic oxygen atom is substituted by a sulphur atom). Carbohydrate lactones have proven to be versatile starting materials which do not require the use of protecting groups (article 4). The book continues with a review of glycosidase and glycan hydrolyses. Heparinoid polysaccharides such as heparan sulphate and heparin are sulfated polysaccharides of the glycosaminoglycan family. Heparinoid mimetics (as discussed in article 5) were prepared to reduce the structural complexity of heparinoids and to obtain selectivities.

Together these books are a useful reference source for researchers in the field of glycoscience especially those which involves in the natural or life sciences.

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PII: S0144-8617(98)00150-7

***Yeast in Natural and Artificial Habitats*, J.F.T. Spencer and D.M. Spencer (Eds.) Springer, Berlin, 1997 pp. Viii + 381, Price £ 81.50 ISBN 3-540-56820-4**

Yeasts are newcomers to the economic life of man, and among his oldest associates. As newcomers, they are used as vehicles for production of heterologous proteins of many types (e.g. hormones and antigens). As old associates, yeasts have been used in the oldest of the yeast industries, baking, brewing and winemaking, from the earliest days of recorded history. They play a role as spoilage agents, if the "wrong" species of yeast invade food, converting it into undesirable products which are inedible or toxic. They also may invade human tissues with serious or fatal results.

"*Yeasts in Natural and Artificial Habitats*" is a guide to the world of yeasts. It is impossible for one book to describe adequately everything about every yeast. However, this book brings together a concise assessment of the yeasts in their natural and more artificial habitats, their use by human

beings, and gives some idea of the wonderfully complex activities within the yeast cell.

The sixteen chapters of this book cover taxonomy, ecology, yeast nutrition, morphology and cytology of yeast cells, its life cycle and metabolism, the “killer” phenomenon, molecular biology of the yeasts, spoilage yeasts and industrial yeasts. It also has special sections on membranes, genetics and molecular biology of methylotrophic yeasts, yeast in food fermentation and therapeutics, and yeast in the production of fuel-grade ethanol.

Each chapter provides a very interesting reference work of direct relevance for researchers in this field. This book is recommended to all libraries concerned with microbiology, biochemistry and molecular biology.

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PII: S0144-8617(98)00151-9

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***NMR of Polymers*, F.A. Bovey, P.A. Mirau, Academic Press, San Diego, 1996, pp. x + 459, Price \$85-00, ISBN 0-12-119765-4**

Nuclear Magnetic Resonance (NMR) spectroscopic techniques are of tremendous interest and importance for the observation of every aspect of the structure and properties of macromolecular substances. The current importance of NMR for the structural characterisation of synthetic and natural polymers can be visualised from the multitude of papers published in areas of polymer science that rely on NMR techniques for the elucidation of structural details. High resolution solution NMR has always played a key role in the determination of polymer microstructure and assisted in the understanding of polymerisation mechanisms, and the development of multidimensional NMR has facilitated more detailed understanding of polymer microstructure and detailed molecular level assignments of polymer dynamics. More recently, the development of solid-state NMR has allowed researchers to investigate the structure, conformation, organisation, and dynamics of polymers in their native state.

This volume aims to provide an overview of the applications of NMR to polymer characterisation, and begins with two excellent introductory chapters which detail the fundamentals of NMR, and the microstructure of polymer chains, respectively. The latter chapter discusses polymer chain structure in terms of regioisomerism, stereochemical configuration, geometrical isomerism, branching and cross-linking. This is of particular interest as peaks from the different microstructures can be resolved in the NMR spectrum,

providing a detailed and quantitative characterisation of chain microstructure.

The third chapter in this volume discusses the high resolution solution-state NMR of polymers, and includes multi-nuclear NMR studies and the two-dimensional NMR techniques employed for examining polymer microstructure, chain conformation, and the structure of associating polymers. NMR spectroscopy has been extensively utilised for the characterisation of polymers in solution, essentially to understand structure–property relationships at the molecular level and to ascertain how changes in the synthetic methodology affect the structure of materials.

The penultimate chapter provides insight into the field of solid-state NMR of polymers, covering the NMR determination of chain conformation in semicrystalline and amorphous polymers, polymer blends, and multiphase polymer systems, as well as the NMR methods used to study chain organisation on longer length scales. The final chapter outlines the dynamics of macromolecules, providing detailed information on the NMR methods used to study polymer dynamics both in solution and in the solid state. The study of the molecular dynamics of polymers is of great importance, as many synthetic polymers are useful because of their physical and mechanical properties in the solid state, properties which are ultimately related to molecular-level dynamics. Studies in solution primarily reveal information about intramolecular forces, while the molecular dynamics in the solid state are determined by the combination of intra- and inter- molecular forces.

In conclusion, this is an extremely informative volume that provides a wealth of background information into the history, development and modern application of NMR techniques to the everyday problems associated with polymer characterisation. It is therefore highly recommended to academic and industrial researchers with interests in such areas of polymer science.

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PII: S0144-8617(98)00152-0

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***Nuclear Magnetic Resonance*, Vol. 25, G.A. Webb (Senior Reporter), The Royal Society of Chemistry, Cambridge, 1996, pp xxi + 541, Price £179-50, ISBN 0-85404-307-1**

This volume is part of the ‘Specialist Periodical Reports’ series on NMR which continues to provide comprehensive coverage of the NMR literature, essentially on an annual basis and represents a review of the literature published