



## Book reviews

**Macromolecular Complexes — Dynamic Interactions and Electronic Processes.** Edited by Eishun Tsuchida, VCH Publishers Inc., Weinheim, 1991. 400 pp.; price £78.00; ISBN 0-89573-784-1

In recent years an increasing emphasis on the potential application of macromolecular complexes has led to a great impact on technological fields, including macromolecular carbohydrates. Macromolecular complexes are combinations of macromolecules, small organic molecules and metal ions at the molecular level. Interactions in macromolecular complexes consist mainly of various secondary binding forces, such as coulombic or electrostatic forces, hydrogen bonds, charge-transfer interactions, hydrophobic interaction, and, as such, govern the physicochemical properties and chemical reactivities of the complex moieties. Electronic functions of macromolecular complexes are caused by electronic processes in the complex moiety. The maintenance of the complex moieties in a specific environment enhances stability and feasibility as functional materials. The potential application of macromolecular complexes is very promising and includes their use as high-performance molecular devices, such as superconductors, organic ferromagnets and non linear optics.

This book is a useful addition to the limited number of texts available on macromolecular complexes. The book places emphasis on dynamic interactions and electronic processes, and is divided into five parts covering an introduction about this field, dynamics of weak coordination systems, soft interaction and multiple interaction, multi electron transfer processes and sequential potential field constructed in macromolecular complexes. Each chapter includes a review and up-to-date results.

This book will provide an important tool to enable polymer chemists, molecular scientists, and organic and inorganic chemists, both newcomer and established scientist, to enter this exciting and challenging field. Although not specifically about polysaccharides, a reading of it could spark ideas on the electronic aspects of polysaccharides such as alginates and hyaluronic acid which are known to be involved in electrical transfer/transport phenomena.

John F. Kennedy  
Zilda M. B. Figueiredo

**Nucleic Acid and Monoclonal Antibody Probes. Applications in Diagnostic Microbiology.** Edited by Bala Swaminathan and Gyan Prakash, Marcel Dekker Inc., New York, 1989. 717 pp.; price US\$180.00, £112.50; ISBN 0-8247-8023-X

Diagnostic microbiology is presently undergoing profound changes as a result of application of biotechnology to detection and identification of microorganisms that cause human or animal disease or cause product spoilage. The two major technologies that have fostered the revolution in diagnostic microbiology are nucleic acid hybridization and monoclonal antibody technology.

Nucleic acid probe-based assays have been shown to be highly specific and sensitive in limited laboratory trials. However a major research effort is underway in commercial and public research laboratories to improve nucleic hybridization technology through such means as non radioactive probe development, increased sensitivity through gene amplification, and rapid reaction time by optimizing the kinetics of hybridization reactions. In practice, the use of monoclonal antibodies has been highly successful in applications such as antigen detection. It should be noted that monoclonal antibodies are becoming more frequently used in developing more specific serological assays as well, generally for antigen capture in antibody ELISA tests or for capture of human IgM.

*Nucleic Acid and Monoclonal Antibody Probes* provides a very good coverage of the application of both technologies. The book is organized in three parts. Part I is concerned with nucleic acid detection and characterization. It includes a comprehensive overview of nucleic acid hybridization and discussions on non radioactive labeling of nucleic acid probes, DNA probes to ribosomal RNA, DNA hybridization for characterization, classification and identification of bacteria, application of plasmid profiling in molecular epidemiology of bacterial diseases, and specific applications of nucleic acid technology. Part II deals with monoclonal-based immunoassays, covering methodology for generating hybridomas and characterization of monoclonal antibodies, application of high-performance liquid chromatography to the purification of monoclonal antibodies and specific applications of monoclonal antibody-based immunoassays. New developments in nucleic acid and monoclonal antibody

probe and the impact in diagnostic microbiology are discussed in Part III.

This book is directed at the end users of the products of biotechnology for the rapid identification of pathogenic microorganisms such as: clinical laboratory and public health laboratory microbiologists, clinicians, personnel and managers of industrial microbiological quality control laboratories. Also, students and researchers involved in this field should find it to be a useful reference.

**Marion Paterson  
John F. Kennedy**

**Fermentation — A Practical Approach.** Edited by B. McNeil and L. M. Harvey, IRL Press, Oxford, 1990. 226 pp.; price £19.00; ISBN 0-19-963045-3.

A great majority of industrial fermentation companies have a research and development section dedicated to laboratory fermentation. These laboratories are used for pure research for new products, screening for new fermentation cultures, developing new raw materials for fermentation, process trouble-shooting, and scale-up. Examples are to be found in the pharmaceutical industry where new antibiotics are developed, in the

brewing industry, or in the food industry where new fermented foods such as protein substitutes are developed.

*Fermentation — A Practical Approach* brings together useful information, for newcomers in the field, on laboratory scale practical applications including relevant theoretical considerations. The set of nine chapters vary in content and style, but have been organised so that each can be read in isolation, depending on the interest of the reader.

The opening chapter, by B. McNeil and L. M. Harvey, provides a general description on the setting up of a laboratory for fermentation. The chapter written by T. Irvine covers a useful discussion on different types of laboratory fermentors. The seven remaining chapters include strain preservation, inoculum preparation and inoculum development; fermentation modelling, fed-batch and continuous culture; pH, dissolved oxygen and related sensors; instrumentation and control; sterilization; and animal cell fermentation.

This book will prove most useful to those new to fermentation and will add to the practical capabilities to those involved in the field of biotechnology.

**Marion Paterson  
John F. Kennedy**