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Book reviews

Enzymes

Paul R. Mathewson (Ed.); 1998, vi + 109 pp., $59, ISBN 0-913250-96-1.

Enzymes, as is well known, are present in and essential to all living things. They all contain protein, and sometimes other chemical units and groups and have numerous functions. Enzymes act as biological catalysts, increasing the rates of chemical reactions, without becoming permanently changed in the process. As nature's catalysts they are responsible for enacting a vast array of chemical reactions with very high degrees of specificity.

"Enzymes" covers the basics of enzyme chemistry and the use of enzymes in food and beverage products. Initial chapters cover some basic concepts, and information on the commercial production, storage and handling of enzymes. Then the basic principles of enzyme activity, specifications (choosing enzymes for specific applications) and types of assay methods are covered, along with several common enzyme reactions, such as enzyme-substrate interactions, and enzymes that hydrolyse protein, fats and oils, and other compounds.

This volume also offers plenty of information on the use of enzymes in baked products, beverages and many other commercial products. A glossary, extensive appendixes and an index are also provided for easy reference. This useful sourcebook has a very user friendly formatting, with definitions of terms provided, as well as plenty of examples, illustrations and trouble shooting tips.

This book is part of the Eagan Press Handbook Series, developed for food industry practitioners. It is designed to reach a broad readership, and the information provided is useful to those involved in product development, production, testing, ingredient purchasing, engineering and marketing aspects of the food industry.

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Modern Polymer Spectroscopy

G. Zerbi (Ed.); Wiley–VCH, Chichester, 1999, xiv + 289 pages, ISBN 3-527-29655-7, £95.00

Modern machines provide good infrared and Raman spectra of polymers full of unique and detailed information, which can be extracted not just merely using group frequency correlation. However, the ratio: (number of information)/(capability of the experimental and theoretical technique) turns out to be very small in spite of the great potential offered by vibrational spectroscopy. The potential barrier of some theoretical technicalities needs to be overcome in order to appreciate the wealth of information inherently contained in the vibrational spectra of ordered or disordered chain molecules.

Modern Polymer Spectroscopy, which is divided into five richly referenced chapters, examines closely new experimental and theoretical techniques of current interest to both university and industrial laboratories. The first chapter is devoted to two-dimensional infrared spectroscopy with a discussion of the mathematical principles, the description of the instrumental technique, and the application of two-dimensional infrared spectroscopy to the studies of representative polymers. In Chapter 2 the success of Fourier-transform infrared polarisation spectroscopy is shown for the study of segmental mobility in a polymer or a liquid-crystalline polymer under the influence of an external directional perturbation such as electric, electromagnetic, or mechanical forces. Static and time-resolved spectroscopic data acquired both, by the conventional rapid-scan and by the novel step-scan technique, are discussed in terms of their individual application. In addition to covering the dynamics and vibrational spectra of long-chain molecules with disordered structure, the book also discusses the current possibilities of calculating the vibrational infrared, Raman and neutron-scattering spectra of these systems (Chapter 3). Actual problems (and proposed solutions) of the chemistry and physics of modern and technologically relevant conjugated polymers in the intact and in the doped states are explored in detail in Chapter 4. The book is completed by an up-to-date review of the spectroscopic and structural problems and solutions reached by a modern approach to the dynamics of polypeptides.

Modern Polymer Spectroscopy offers primary value for all professionals who need to keep abreast with the latest developments in the field. Graduate students in polymer science, material science and the biosciences