

in nine extensive chapters covering alkanes and arenes, alkenes, alkynes, halides, amines, ethers, alcohols and phenols, aldehydes and ketones, and finally, nitriles, carboxylic acids and derivatives. Within each chapter the methodology is subdivided into major processes, for example, the opening chapter on alkanes and arenes is divided into five sections, namely reduction, coupling, alkylation, ring-forming and aromatisation. Stringent criteria have been used with respect to reaction selection in order to ensure real synthetic utility of included reactions, and that the necessary reagents are readily available or easily prepared and handled in the laboratory.

All of the presented transformations are fully referenced allowing the reader to expand their search. Synthetically useful multiple functional group transformations are also covered and are cross-referenced in appropriate sections. The volume culminates with an invaluable 'Transformation Index' that lists all of the reactions covered in the text, sorted according to the IUPAC name of the organic products. The use of protecting groups is not covered, since excellent reviews on this subject are already available. Likewise, heterocyclic chemistry has been omitted, except where heterocycles are employed to effect simple functional group manipulations/transformations.

In summary, this highly recommended encyclopaedic volume contains information on tens of thousands of synthetic methodologies and references, and certainly fulfils its mandate to serve as a concise and comprehensive single volume sourcebook of organic reactions and functional group preparations. It will, therefore, be extremely useful for researchers and students alike, with interests in any areas of synthetic organic chemistry.

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### **Nonradioactive Analysis of Bio-molecules 2nd Edit**

Editor: C. Kessler, Springer-Verlag, London Ltd, 2000, 750 pp., £61.50, ISBN 3-540-64601-9

Since the first edition many of the non-radioactive

methods of labelling bio-molecules and their subsequent detection have progressed and improved. This has occurred mainly in the medical and life sciences, where progress has been related to the increased characterisation of biological material particularly DNA and RNA.

The book extensively reviews the analysis of bio-molecules such as proteins, glycoproteins and nucleic acids. The techniques described such as colorimetric, luminescence and fluorescence can, however, be used for a much wider range of bio-molecules including carbohydrates. The labelling of glycoproteins by their sugar residues for detection is discussed generally. Specific examples of such labelling procedure are given in the individual chapters.

Each of the 65 chapters gives a concise account of the theory allied to a reaction or technique, followed by a variety of detailed protocols depending on the material to be examined. A summary of reagents required is given. Also, various methods appropriate to the detection of labelled compounds are described. The chapters have sections on troubleshooting and detection sensitivity, which would prove extremely useful to both the novice and experienced scientist.

This book is of interest to professionals in the field of bio-analysis, particularly DNA, RNA, proteins and glycoproteins. It also has considerable information of technical and experimental use to the carbohydrate chemist.

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### **Metabolism of Agrochemicals in Plants**

Terry Roberts (Ed.). John Wiley & Sons, Inc., Chichester, 2000, xiv + 300 pp., £95.00, ISBN 0-471-80150-X

Recent years have seen remarkable advances in areas of research directed towards increasing the quality and quantity of food and fibre by chemical and other means. The importance of understanding the metabolism of agrochemicals in plants is immense. As food safety and environmental concerns are increasing, knowledge of the metabolic

processes within plants and the terminal residues of agrochemicals in food crops are invaluable.

'Metabolism of Agrochemicals in Plants' is the first text to give systematic coverage of this topic. This volume is part of the Wiley Series in Agrochemicals and Plant Protection, and encompasses current scientific, regulatory knowledge and perspectives on all aspects of the use of chemicals and biotechnology in agriculture. It also contains contributions from experts in the agrochemical industry worldwide.

The book starts with a brief regulatory introduction and then experimental approaches for plant metabolism studies are critically reviewed. Following this are three chapters on key phases (primary and secondary) of metabolism and bound or non-extracted residues arising from the use of agrochemicals on plants. Subsequent chapters encompass the comparative metabolism of agrochemicals in plants and mammals and herbicide metabolism as a basis for selectivity. Finally, herbicide safeners and synergists are also covered especially as compounds in agrochemicals may interact resulting in increases or decreases in biological activities.

This book is unique and thoroughly up to date, bringing together the current status of the subject. Each chapter is self-contained with an introduction, main contents section, discussion and conclusion. Extensive references are also given. 'Metabolism of Agrochemicals in Plants' is an essential text for chemists and biochemists in the agrochemical and pharmaceutical industries and in academia, as well as for analytical chemists, regulatory chemists and environmental scientists.

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### **Food Analysis by HPLC 2nd ed**

Editor: Leo M. L. Nollet Marcel Dekker Inc., 2000, 1049 pp., \$250, ISBN 0-8247-8460-X

The first edition was a comprehensive volume covering all the major topics of food compounds for the analyst or engineer. The second edition gives the same excellent

coverage but has been extensively revised with new chapters being included.

A considerable theoretical introduction to HPLC analysis is included. Common methods of HPLC are discussed, i.e. ion exchange, size exclusion etc., also some less popular topics such as micellar liquid chromatography (MLC). Practical strategies to achieve separation using the selection of stationary phase, eluent, isocratic or gradient elution are discussed along the latest information on sample preparation. Various detectors and their appropriate use are described.

The chapters on food compounds include: proteins, peptides, amino acids and organic bases; lipids, phospholipids and fat soluble vitamins; carbohydrates; organic acids; water soluble vitamins and hop resin components. Compounds used in manufacture include: preservatives and antioxidants; sweeteners; synthetic colourants. Also included are natural and synthetic contaminants and chemicals used in production: carbamate and urea pesticides; pesticide residues, organophosphate and organochlorine; mycotoxins and related compounds; antimicrobial residues. Completely new chapters to this edition cover: alcohols; phenolic compounds; pigments; and growth promoters.

The individual chapters start with an introduction followed by a plethora of well presented information about the compounds i.e. structure, pH, solubility, protective agents, relative sweetness etc. Particularly well referenced tables are included of specific samples, their separation methods and detection. Examples of separation methods are given along with the chromatograms acquired.

This edition is superb, it would be an aid to any individual, novice or professional in the field of food analysis or allied professions.

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### **New Trends in Synthetic Medicinal Chemistry**

Fulvio Gualtieri (Ed.) WILEY-VCH Verlag GmbH, Weinheim, 2000, 370 pp., £88.00, ISBN 3-527-29799-5