

of a protected functionality in various reagents. The introductory chapter focuses upon the role of protective groups in organic synthesis, whilst subsequent chapters are devoted to the protection of alcohol, phenol and catechol, carbonyl, carboxyl, thiol, amino, alkyne-CH, and phosphate groups. The sections on the protection of phosphates and the alkyne-CH are new for this edition, whilst all other sections have been expanded, some more than others. An effort was made to include more enzymatic methods of protection and deprotection. Most of these are associated with the protection of alcohols as esters and the protection of carboxylic acids. This section does not attempt to be exhaustive, but provides a sufficient number of cases to illustrate the true power of this technology and to refer the reader to several monographs and review articles cited in the references.

This '3rd Edition' updates the literature on protective groups, which was covered in the previous edition and successfully incorporates information on new groups that have been developed since the last publication. The first edition of this book contained approximately 1500 references and 500 protective groups, the second edition introduced an additional 1500 references and about 200 new protective groups, whilst this edition adds around 2500 new citations and 350 new protective groups. Emphasis has been placed upon providing recent references, since the original method may have been improved. New methods added to this edition come from both electronic searches and a manual examination of primary journals.

This comprehensive volume contains a wealth of information that is invaluable to the modern synthetic organic chemist. It is therefore highly recommended as an addition to the libraries of academic and industrial organisations concerned with organic synthesis.

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PII: S0144-8617(00)00305-2

Handbook of Cereal Science and Technology, 2nd Edition, Revised and Expanded

Food Science and Technology Series, Vol. 99; K. Kulp, J.G. Ponte, Jr. (Eds.); Marcel Dekker, Inc., 2000, ix + 790 pages, US\$225.00, ISBN 0-8247-8294-1

It is now nearly 10 years since the publication of the first edition of this multi-authored Handbook on cereal science and technology. Hence, considering significant research

advances in biology, biochemistry, technology, and nutrition during this decade, "Handbook of Cereal Science and Technology, Second Edition, Revised and Expanded" is especially welcome.

This new edition, which has been significantly revised, updated, and expanded, gives a complete view of all the major aspects of cereal grain science, providing new and expanded treatment of food enrichment techniques, nutritional standards, and product quality evaluation. The opening chapters focus on the most important cereal grains (wheat, corn, barley, oats, sorghum, millets, rice, rye, triticale, and wild rice) covering aspects with respect to structure, composition, breeding, economic, production, processing, and utilisation. Because of the use of oilseeds to technologically related applications of various cereals, a new chapter on oilseed grains and oil-bearing materials has been included. Subsequent chapters discuss recent developments in the chemical composition and functionality of cereal components (proteins, carbohydrates, lipids, and minor constituents). These are followed by a discussion on quality evaluation of cereals and cereal products. Besides describing the main utilisation of cereals as food and food ingredients, non-food uses of cereals and microbiological processes are also covered. Nutritional information has been updated. Related to nutrition is the chapter on food enrichment and labelling, demonstrating the continued interest in fortification programs, as illustrated by the recent inclusion of folic acid as an enrichment factor.

The 790-page volume, supported by extensive literature reference, tables, figures, diagrams, high-quality photographs and schematics of instruments, will be invaluable for cereal chemists and biologists, agronomics, technologists, and nutritionists.

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PII: S0144-8617(00)00306-4

Antioxidants in Muscle Foods

E.A. Decker, C. Faustman, C.J. Lopez-Bote (Eds.); John Wiley & Sons Ltd, 2000, 499 pages, £71.50, ISBN 0-471-31454-4

The main aim of the book is to examine dietary approaches for improving the quality of muscle based food products from livestock and fish. This is achieved in the main part by the addition of antioxidants (polyunsaturated fatty acids) to the feedstock consumed by the animals.

The addition of antioxidants to the diet are examined specifically: animal nutrition and muscle biochemistry; the beneficial impact of vitamin E supplementation; economic and safety implications of nutritionally modified meat; oxidative processes in muscle food; dietary strategies for improving the oxidative stability of muscle food; food industry applications involving meat, poultry and seafood and new trends in nutritional strategies with respect to dietary additions.

Aspects of nutrition in more general terms are discussed throughout the book, with many useful reference tables and figures. For example, Table 7-1 — fatty acid composition of selected seeds, forages, protein sources, lipid sources and food products — lists many common cereal crops and oil seeds of interest to the carbohydrate chemist and gives their fatty acids in terms of percentage weight in weight.

The book is clearly written and well illustrated with tables and figures, it would be a useful acquisition to professionals working within the food industry, carbohydrate chemists and allied professions working in the fields of food analysis and nutrition.

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PII: S0144-8617(00)00307-6

Biosensors for Food Analysis

A.O. Scott (Ed.); The Royal Society of Chemistry, London 1998, x + 200 pages, ISBN 0-85404-750-6, £49.50

Food analysis is used to satisfy a broad range of requirements in industry and government. The rationale for this is to assess the quality and safety of food and also to ensure compliance with legislation. Researchers are constantly searching for indices of food, which can be tested to assess food quality and safety. This is achieved by coupling a biological component with a transducer (which transforms the specific recognition to an electronic/optical or similar signal which can be readily quantified) to get an immediate result, and through the reaction of an analyte with particular biological components like enzymes, antibodies, lectins and DNA.

Biosensors are capable of on-the-spot measurements of a wide range of analytes and are able to monitor

complex biochemical parameters during the production or processing of food. The use of biosensors for food analysis allows for rapid and specific quantification without the need for extensive sample preparation. Biosensors reduce the analysis time whilst maintaining accuracy and precision of results.

Biosensors for Food Analysis discusses opportunities for biosensor applications within the food industry supply chain, such as indicators of quality and seasonal variations of natural resources and also as spoilage indicators. This book takes into account the diversity of the food industry and specifications that must be met in real applications. The book consists of 19 chapters, which are divided into three parts: biosensors, the application of biosensors to food industry requirements and sensors being developed. An introductory chapter provides an illustration of the problems and requirements encountered in food analysis. The book also identifies issues, which allow this technology to be used more widely.

The biosensor field is multidisciplinary, encompassing such diverse areas as electrochemistry, optics, biochemistry, electron engineering and a host of other science and engineering disciplines. This book brings food researchers up to date on currently available technology and identifies ‘state-of-the-art’ biosensor applications, and may be of significant interest to analysts, researchers and food technologists.

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PII: S0144-8617(00)0030-X

Handbook of Reagents for Organic Synthesis

Oxidising and Reducing Agents, S.D. Burke, R.L. Danheiser (Eds.); Wiley, Chichester, 1999, xi + 550 pages, ISBN 0-471-97926-0, £55.00

Activating Agents and Protecting Groups, A.J. Pearson, W.J. Roush (Eds.); Wiley, Chichester, 1999, xii + 513 pages, ISBN 0-471-97927-9, £55.00

The ‘*Handbook of Reagents for Organic Synthesis (HROS)*’ is composed of four volumes. This includes the two detailed in this review, plus ‘*Reagents, Auxiliaries and Catalysts for C–C Bond Formation*’ and ‘*Acidic and Basic Reagents*’. These four volumes were condensed out