

Book reviews

***Phase/state transitions in foods – chemical, structural, and rheological changes*, by R.W. Hartel and M.A. Rao, Marcel Dekker Inc., 1998, 416 pp., \$165, ISBN 0-8247-0719-8**

Phase/state transitions in foods are of fundamental importance and significance in everyday food interactions, namely during processing, cooking and storage. Such interactions give rise to structural and textural changes in food, and it is on these factors that the uttermost consistency and presentability, and hence marketability of the foods depend. It is therefore important to understand the composition of foods and the chemical, rheological and structural changes that occur during these transitions, so that useful products can be manufactured and product reproducibility ensured.

This scientifically sound publication gives a comprehensive, up-to-date and authoritative understanding of certain fields relevant to food technologists. The particular areas covered present the basic and fundamental principles of phase/state transitions, and analyses their influence on chemical, physical, and rheological changes occurring in food during processing, preservation, and storage.

Presented with relevant and precise information, each well-balanced chapter, which is appropriate in depth, deals with specific aspects such as the quantitative microstructure of foods, including measurement and analysis, the role of water in freezing and crystallisation in addition to glass transition in baked foods; discussion of homogeneous and phase-separated gels, as well as applications of gel formation; examination of gel formation in globular proteins and reactions in soy proteins and the understanding of the complex changes that transpire during the processing and storing of fats, chocolates, and frozen foods.

Aiding the literature are useful references to key sources, as well as edited tables, equations, drawings, and photographs. Each of these illustrations are clear, relevant as well as scientifically accurate.

This well produced literature serves as a good reading material for food scientists, technologists, as well as upper-level undergraduate and graduate students in these disciplines. Due to its focus being concentrated on such reading bodies, it is priced at the upper end of the literature market.

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***Carbohydrates as Organic Raw Materials IV: Proceedings of the 4th International Workshop on Carbohydrates as Organic Raw Materials*, W. Praznik, A. Huber (Eds.), WUV Universitätsverlag, Vienna, 1998, 292 pp., DM88.00, ISBN 3-85114-312-4**

An increased knowledge of the structural and functional properties of carbohydrates is essential in order to develop novel and improved approaches to modify these materials, either in a purely chemical or enzymatic way. For low-molecular weight materials, controlled derivatisation is still a source of interesting new products. Tailor-made materials can be made by enzymatically-catalysed modification of carbohydrates/polysaccharides. The understanding of structure–function relationships, particularly for the high-molecular weight compounds is still limited: elucidation of

building blocks and branching/substitution patterns via analysis using controlled enzyme applications is of fundamental importance.

Carbohydrates as Organic Raw Materials IV: Proceedings of the 4th International Workshop on Carbohydrates as Organic Raw Materials comprises selected contributions presented at the conference held on March 20/21, 1997 at the Universität für Bodenkultur, Vienna. A number of articles on the high degree of polymerisation of carbohydrates/polysaccharides feature starch as a prominent material; analysis, modifications, and technological processing and applications are all covered. Non-starch, high degree of polymerisation, carbohydrates/polysaccharides such as chitosan and xylan are featured, reflecting the increasing interest in their applications in areas such as biotechnology and medicine.

This book is highly recommended as a comprehensive overview of the state of the art in the research on, and the industrial potential and applications of both low- and high-molecular weight carbohydrates/polysaccharides.

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***Surface Activity*, K. Tsujii. Academic Press, 1998, 245 pp., \$79.00, ISBN 0-12-702280-5**

The fundamental importance of surfaces and interfaces in everyday life as well as in materials science and technology is well known. Household products such as soap, shampoo and detergents are surface active materials. Surfactants are key materials in technological processes involving adhesion, coating and many more phenomena in the chemical, electronic, pharmaceutical and medical industries. Understanding phenomena associated with surfactants, such as micelle and layer formation, is not only a challenge for chemists and physicists, but is also of paramount technological importance.

Surface Activity is a comprehensive, up-to-date contribution to the science and technology of surface activity. Basic concepts of surface and interfacial tension, surface active

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***Polysaccharide Dispersions: Chemistry and Technology in Food*, R.G. Walter. Academic Press, 1997, 236 pp., \$99.95, ISBN 0-12-733865-9**

Polysaccharides are biopolymers which are extremely versatile. In nature they perform a wide variety of different functions; in foods they are vital components which determine texture and changes in texture which occur on storage or cooking. Certain food polysaccharides, such as dietary fibre, are thought to provide protection against heart disease and some forms of cancer. Particular polysaccharides tend to be traditionally associated with particular types of food: this reflects features of their chemical structures which lead to specific properties. Small changes in their structure can have a major influence on functionality: it is this aspect which makes their study so attractive. Polysaccharides are high molecular weight polymers, so that many concepts and techniques for their study are derived from the field of synthetic polymer science.

Polysaccharide Dispersions: Chemistry and Technology in Food recognises that there are few texts which adequately

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materials and their associated phenomena, and practical applications in everyday life and industry are covered in detail. Novel potential future applications of materials such as liposomes, bilayer membranes and lyotropic liquid crystals are discussed.

This book is a thorough, well-presented, and readable text. It is highly recommended, not only as excellent introductory material for students in the field of surface science, but also as a valuable reference work for research scientists and engineers who wish to know more about surfactants.

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describe how the knowledge in the field of synthetic polymer science can be, or has been applied to polysaccharides, while acknowledging that polysaccharides present their own particular problems. This book is an attempt to bridge this gap, while being comprehensible to a wide audience, ranging from researchers to readers with only a modest technical background.

Though this text contains much useful information, coverage is often fragmented and disjointed: there is an overall lack of general structure. Explanations of some well-known concepts are very difficult to understand. A number of topics, including mathematical models for the functional behaviour of polysaccharides, so important for technological applications, are not clearly explained. The book is a valiant attempt to cover an area in need of attention, but unfortunately it fails to achieve its objectives.

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