

**Physical Chemistry of Foods.** Edited by H.G. Schwartzberg and R.W. Hartel, Marcel Dekker, Inc., New York, 1992. xii + 747 pp. Price \$69.75. ISBN 0-8247-8693-9.

Foods are highly structured, multicomponent materials, whose properties are recognised and appreciated by the consumers. Physical chemistry provides not only useful bases for understanding physical and chemical phenomena in foods, but also provides tools for manipulating and controlling the phenomena, and for creating and upgrading food products and processes.

The chapters in this book deal with the major topics covered at the 15th Physical Chemistry of Foods symposium in Dallas. The four main areas covered were phase equilibria, reaction kinetics, the physical chemistry of gels and disperse systems, and physicochemical effects occurring during consumption and use.

Numerous studies on the physical and thermodynamic properties of aqueous carbohydrate solutions have been done. Nevertheless, the behaviour of such carbohydrates is still not well understood. The first two sections involve phase equilibria (e.g. melting, freezing and crystallisation). Crystallisation of various food components play an important role in determining overall textural and rheological behaviour.

In food materials gelling components fulfil many functions, particularly in relation to texture and stability, and significantly influence processing procedures. There are sections in the book covering gels and gelling, and the generation of engineered gel structures. The importance of gels is especially great at the present time when the need to replace fat in foods has given rise to many new applications of water-based gelling systems.

Wheat flour is unique in its ability to form a viscoelastic dough that will retain gas and produce a light loaf of bread. Although appearing very fine, wheat flour is actually made up of discrete particles that are quite large in comparison with starch granules. The physical chemistry of bread dough is discussed.

Other topics covered include glass transitions in food, emulsions, nutrients, the kinetics of nonenzymatic browning and lipid oxidation, and the transduction of taste and olfactory stimuli. Overall this is an excellent volume providing useful mechanistic methods for analysing and understanding physical and chemical behaviour in foods.

John F. Kennedy  
Charles J. Knill

**Electricity from Biomass.** Edited by G. Grassi, G. Trebbi and D. Pike, CPL Scientific Ltd, Newbury, 1992. 80 pp. Price £25.00. ISBN 1-872691-45-5.

Biomass is the term used to refer to materials from biological sources. This is, however, a term used largely to refer to materials of plant origin which are more correctly referred to as 'phytomass'. Biomass was historically a principle source of fuel, but in the developed world the fuel role has been largely superseded by coal, mineral oil, natural gas and nuclear energy. Interest in biomass as a fuel source has recently begun to grow because of an increasing awareness of economic and political factors associated with these other fuels. The Gulf war in particular focussed attention on the insecurity of oil supplies and Chernobyl undermined public confidence in nuclear energy. A large amount of knowledge has been collated and made available regarding the selection, cultivation and harvesting of suitable plant species, as well as their conversion into fuels. Gaps in the knowledge do exist, however, and these prevent the most effective use of these resources.

'Electricity From Biomass' aims to review what is currently known about electricity production from biomass, and points to developments, either in progress or planned, by the European Commission. The majority of the writing is presented from an industrial standpoint, with a great deal of attention being paid to the technological and economic aspects of the subject. Time has been taken both to discuss the environmental implications of waste/exhaust emissions, and to investigate the impact of biomass produced electricity on rural developments and on the E.C. common agricultural policy.

This volume provides a diverting and interesting read, but we feel that the high price for the small amount of information provided (akin to a single edition of a journal) will drastically limit its purchase to libraries and biomass conversion specialists. This is unfortunate because there is valuable and interesting information contained within this volume which is unlikely to reach as wide a scope of readers as would have been desired. Overall we are left with a feeling that this was essentially an opportunity missed.

John F. Kennedy  
David W. Taylor