



## Book reviews

**Gums and Stabilisers for the Food Industry 6.** Edited by G.O. Phillips and P.A. Williams, IRL Press, Oxford, 1992. xv + 572 pp. Price £60.00. ISBN 0-19-963284-7.

The importance of gums and stabilisers within the food industry is illustrated in this volume by giving examples of papers from six broad-based subject areas. The topics included here are structure and rheology, synergism, processing, emulsion stabilisation, low calorie products and novel functionality and techniques. As with the previous volumes produced in this series, the sixth volume is primarily focussed on the practical aspects of the subject. This means that the majority of papers presented herein are of production and industrial origin. There are, however, certain carefully selected academic contributions included within the topics, these papers again having a practical slant.

Each of the subjects considered in the several sections is dealt with in an up-to-date manner, with novel ideas and current trends at the forefront. There is an emphasis on new legislation and application changes as a result of the move to Europe 1992 (a change which is dealt with in a future sense).

'Gums and Stabilisers For the Food Industry 6' is a well written and edited volume with an excellent index and a useful contents section. These factors do seem to dispell the problems of inaccessibility of information which one sometimes faces with symposium volumes. The only major criticism is that some of the sections seem very diverse and papers within these sections sometimes display little continuity.

Overall, this is a well written volume which should be of interest to suppliers, technologists, research scientists and producers within this important area of the food industry. Non-industry readers may find the books strictly industrial approach a little off-putting.

John F. Kennedy  
David W. Taylor

**International Pulp & Paper Directory.** Edited by M.A. Fennessey *et al.*, Miller Freeman Publications Inc., San Francisco, 1991. xxx + 916 pp. Price \$227.00.

The 'International Pulp and Paper Directory' is an authoritative and updated world-wide guide to the pulp

and paper industry, providing current information on the major pulp, paper and paperboard manufacturers throughout the world. The directory is a comprehensive guide, with entries covering six continents, with a considerable number of entries from 'third world' countries, such as Tanzania and Ethiopia. Although there has been a gradual decline in the number of mills in Europe and North America (fewer mills, but with a higher output), the increases in Asia, South America and Africa, due to soaring regional demands, have more than made up for this. The estimated current world-wide production of paper is well in excess of 200 million tons per year.

The directory also provides easy access to information on the pulp and paper mills themselves, as well as paper merchants throughout the world. There are also sections on pulp, paper and paperboard grades, listing all such grades and the mills that produce them. In addition, there is a 'Buyers Guide', which is a directory of equipment, and chemical and technical services, listing all of the major suppliers to the pulp and paper industry.

Overall, this is an extremely useful directory, allowing simple cross-referencing from one part of the world to another, from one grade to another, etc., and is ideal as a reference volume for university libraries, and for commercial and non-commercial organizations within the pulp and paper industry.

John F. Kennedy  
Charles J. Knill

**Viscoelasticity of Biomaterials.** Edited by Wolfgang Glasser and Hyoe Hatakeyama, American Chemical Society, Washington, 1992. X + 406 pp. Price \$84.95. ISBN 0-8412-221-5.

Biomaterials are defined as polymeric structures produced biologically either directly, for example, by fermentation, or as products extracted from biological sources. They provide the structure, form, function, protection and storage products of all organisms. Therefore, they are considered an essential component of the body. A biomaterial can also be a non-drug substance for inclusion in a physiological system that augments or replaces the functions of a tissue or organ of the body.

A biomaterial must be mechanically adaptable for its designated function, and have the required shear, viscoelasticity, stress, strain, tensile strength, and temperature-related properties to fit the application. It must be compatible and inert, being able to interact with the assorted tissues and organs in a non-toxic manner and not destroying the cellular constituents of the body fluids with which it interfaces.

'Viscoelasticity of Biomaterials' is one of the American Chemical Society Symposium Series volumes, which brings together recent advances in the understanding of solid and liquid biomaterials with regard to their viscoelastic properties. It is divided into three sections. The first, 'Structure-Properties Relationships', deals with the arrangement of biopolymers in collagen molecules. This section also describes the relationship between chemical structures of polysaccharide solutions and their physical properties based on the viscoelasticity of the polymer. Chiral and mechanical properties of cellulose derivatives in solution, and viscoelastic properties of wood and wood fibre reinforced thermoplastics

are also covered. Section II 'Biogels and Gelation' describes the molecular arrangement and orientation of highly hydrated biopolymers, such as gum, cellulose, silk fibroin, etc., focusing on their viscoelastic properties. Molecular transformation of hyaluronic acid in connective tissues effected by ionising radiation is also discussed. Conformation and dynamics of biomaterials effected by the transition from a liquid to a solid state, NMR and fourier transform infrared studies on solid wood are described in Section III, based on relaxation phenomena. Solution properties and molecular motions of cellulose derivatives are also discussed in this section, in terms of the intermolecular interactions into polymer chains.

This volume contains the most recent advances in biomaterials science and, therefore, it will be very useful for chemists, biochemists, chemical engineers, biotechnologists and any researcher working with biomaterials.

**Maria da Paz C. Silva**  
**John F. Kennedy**