



Book Reviews

Carbohydrates as Organic Raw Materials. Edited by F.W. Lichtenthaler, VCH Verlagsgesellschaft, Weinheim, 1991. pp. 367. Price DM 148-00, ISBN 3-527-28280-7.

This book is a compilation of all except one of the lectures presented at the workshop conference 'Progress and Prospects in the Use of Carbohydrates as Organic Raw Materials', organised jointly by the Technische Hochschule Darmstadt and the Scientific Committee of Commission International Technique de Sucrerie. The focus of the conference, and hence the focus of this book, is the industrial utilisation of low-molecular-weight carbohydrates through the use both of chemical and enzymatic modifications. Although there have been numerous conferences, and thus books published, on carbohydrate chemistry and renewable resources, the majority focus on medium/high molecular weight materials, with the percentage treating renewable resources compared with raw materials of fossil origin used by the chemical industry being very small. This book explains the potential of glucose, fructose, sucrose, lactose, isomaltose and leucrose mono and disaccharides available in bulk with a view to redressing this balance.

The first seven chapters deal with sucrose chemistry, the first outlining through the use of advanced modelling techniques the geometry of sucrose, its hydrophobic and electrostatic profiles, and contact surface, essential information in assessing parameters such as sweetness. The following six chapters detail the chemical and enzymatic reactions which can be utilised for the production of noval spiro-acetals, mono- and di-carboxylic acid derivatives, and sucrose mono-esters of fatty acids used as surfactants and emulsifiers or polyesters in low-calorie fats and oils. Methods to enhance the sweetness of sugar are also described. Enzymatic conversion of sucrose to isomaltose and subsequent hydrogenation to isomalt to provide alternative chemical feedstocks are detailed. The production and properties of these two derivatives and others of industrial importance, such as 5-hydroxymethyl-furfural (HMF), are described. Fructooligosaccharides are also included with details of their enzymatic production from sucrose. Applications and properties of the higher molecular weight fructans of microbial origin are found in chapter 8. Subsequent chapters provide information on both industrial feedstocks, such as leucrose, and also on specific chemical

technologies such as the use of hydrogen fluoride as both a solvent and reagent for carbohydrate chemistry and selective oxidation, and the production of polyvinyl sugars from monosaccharides of D-glucose to produce chiral intermediates. The final chapter, 'From Carbohydrates to Pigments', is an encouraging example to all those working in the field of industrial utilisation of carbohydrates of how commercially significant compounds with specific properties can be achieved, e.g. the conversion of 5-hydroxymethyl-2-furaldehyde (HMF) into molecular components with electron transfer and light sensitive properties.

Certainly this book should provide a useful source of information for those involved in either chemical or enzymatic modification of carbohydrates. Academics and industrialists alike will find that this book provides new stimuli and challenges for the development of high-value commercial products from our readily available renewable resources. It is a book which should find a place in libraries of both academic and industrial institutions involved in the chemistry of carbohydrates.

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Polymeric Drugs and Drug Delivery Systems. Edited by R.L. Dunn and R.M. Ottenbrite, American Chemical Society, Washington, D.C., 1991. pp. xii + 313. Price US \$74.95, ISBN 0-8412-2105-7.

Polymeric drugs and drug delivery technology are in a state of continuous and fast expansion. Their applications represent a real revolution in the use of pharmaceuticals in medicine. In fact, proper use of the technique of drug delivery design allows the constant release of bioactive substances in very small quantities, with increased efficiency, localised presentation and minimum side-effects.

The present trend is to develop materials with more specific drug delivery properties, using new polymers, and targeting drugs to a specific organ or site. For this reason, a constant update of literature is very important for the researcher, and this book satisfies this requirement in that it includes information on new methods and materials.