

is also provided. The final chapter discusses how the replacement of dangerous and/or toxic chemicals in various industrial processes, such as the demise of acetaldehyde, has led not only to improved safety, but also to greater profit. A summary and study guide problems are provided at the end of each chapter, and a list of specialised books for further study and reference follows the final chapter.

This interesting volume provides a practical perspective and information on the historical development of both industrial and theoretical ideas, permitting an understanding of how industrial problems have been solved and how organic chemistry principles played a role. It is ideal for anyone learning or working in areas of organic chemistry, chemical engineering, particularly the petrochemical and polymer chemistry fields.

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Medical Textiles and Biomaterials for Healthcare, S.C. Anand, J.F. Kennedy, M. Mirafteb, S. Rajendran (Eds.). Woodhead, Cambridge (2006). xi + 508 pp., £150-00, ISBN: 1-85573-683-7

Medical textiles is a major growth area within the technical textiles industry and its range of applications continues to grow and increase in diversity with every new development. Medical textiles are utilised everyday in almost all healthcare environment activities, in the form of plasters, bandages, pressure garments, etc. This detailed volume is divided into eight parts, each of which begins with a comprehensive overview of the subject area, followed by selected papers from the MEDTEX conference, hosted by The University of Bolton.

The initial part of *Medical Textiles and Biomaterials for Healthcare* is composed of seven chapters on biomaterials utilised in medical textiles. The introductory overview provides information on the classification of natural and man-made textile fibres, natural and modified carbohydrate polymers and proteins used in medical textiles, and commercial applications and products using carbohydrate polymers. Specific topics covered in this part of the volume include new resorbable biomaterials, reformed collagen fibres, chitosan-alginate fibres, and biodegradable polylactides. The second part of the volume focuses upon healthcare and hygiene products. This is an important issue for the World Health Organisation because if healthcare units are not hygienic, then patients are at risk of becoming

unwell and getting infections. This part includes chapters on nonwoven applications, advanced textiles, wool and blended fabrics for the elderly, and ultrasonic cotton bleaching. The third part covers infection control and barrier materials, and includes ten chapters on what can be done to control infections if needed and the materials that will help to protect patients from getting infections, providing information on topics such as antimicrobial and antibacterial materials, biocidal textiles, breathable non-wovens, etc.

The fourth and fifth parts each contain seven chapters, which deal with bandaging and pressure garments, and woundcare materials, respectively. The treatment of venous leg ulcers is an important topic, which is covered in several chapters in part four, whilst part five deals with topics such as burns treatment, chitin-based dressings and drug release. The sixth part contains six chapters on implantable devices, providing information on interesting topics such as 3-dimensional tissue engineering textile architectures, and spider-silk supportive matrix. The penultimate part focuses on medical devices, containing ten chapters that include bi-directional surgical sutures, natural silk-based surgical threads, vascular prostheses, and nerve implants. The final part is about intelligent textiles for medical applications. This shorter, but equally important section, is composed of four chapters that discuss cell therapy delivery, textile finishing, and polymer surface gas plasma treatment.

This volume provides a comprehensive overview of the main aspects of the medical textiles area as applied to the healthcare sector, and provides the reader with detailed insight into some of the specific areas of investigation that are currently being developed to improve the quality of life and comfort of patients. It is therefore highly recommended to all individuals with academic, industrial and research interests in medical textiles.

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Carbohydrates: Fundamentals and Applications, S.P. Gimelli. Micelle Press, Weymouth, Dorset (2006). x + 207 pp., £59-00, ISBN: 1-870228-29-4

Carbohydrates are an essential part of human existence, and come as mono- (single), oligo- (several), and poly- (many) saccharides. The disaccharide sucrose (household 'sugar') has been known and utilised for thousands of years, and was produced in Europe in refineries as early

as the 17th century. Carbohydrates are formed in plants early in the photosynthetic conversion of carbon dioxide and water when they are exposed to light to form glucose, which is stored in plants in the polymeric form as starch. Over the years many commercial enterprises have been established for the manufacture and utilisation of carbohydrate products and their derivatives.

Carbohydrates: Fundamentals and Applications is composed of seven chapters, and begins with an introductory chapter that discusses the determination of structure, focusing specifically upon spatial considerations and conformational analysis. The second chapter is concerned with carbohydrate reactions, namely sugar alcohols and acids, sugar ethers, esters and acetals, glycosyls, glycosides and glycosans, modified sugars, and nitrogen sugars. Aldoses are readily reduced to sugar alcohols (alditols) and oxidised to aldonic acids, whereas ketoses are reduced but not oxidised. Natural glycosides covered include arbutin, salicin, indican, amygdalin, and ruberythric acid. Modified sugars discussed include deoxy sugars, unsaturated sugars and the branched-chain sugars apiose, cordycepose, hamamelose, streptose, mycarose, and cladinose, whilst nitrogen sugars include glycosylamines, amino sugars, and phenylosazones.

The third chapter is devoted to the structures of oligosaccharides and polysaccharides. Oligosaccharides are sugars that fall in the range between monosaccharides and polysaccharides and contain from two to ten monosaccharide units. Discussed oligosaccharides include disaccharides (sucrose, cellobiose, maltose, isomaltose, lactose, turanose, melibiose, trehalose, gentiobiose), trisaccharides (gentianose, melezitose, raffinose, panose, manninotriose), tetrasaccharides (stachyose), and cyclodextrins, whilst polysaccharides covered include cellulose, starch, inulin, β -glucans, and gums. The fourth chapter very briefly covers carbohydrate syntheses, whilst the fifth chapter provides an overview of analytical procedures, namely physicochemical methods,

chromatography, and spectrometric determinations. The penultimate chapter focuses upon cosmetic applications, since many carbohydrates and their derivatives are incorporated into cosmetic and toiletry formulations, where they appear in lotions, creams, toothpastes, mouthwashes, skin moisturisers, hair conditioners and shampoos as viscosity enhancers, emulsifiers, sweeteners, stabilisers and moisturisers. The final chapter is devoted to other applications, namely pharmaceuticals, food, mucilages and textiles. Carbohydrates are used for tablet formulation, chewing gums and candies, in adhesives, and as components for the sizing and spinning of textiles.

Most of the structures that are discussed in this volume are done so in terms of their elucidation from analytical observations, and appendices are provided that contain questions, named reaction schemes, D-aldose structures, and suggested reading. These are of value to the reader with respect to gaining a better understanding of the behaviour of carbohydrates based upon their structural features. In summary, this volume is an informative introduction to the world of carbohydrates, specifically their structures, reactions, and applications, providing the carbohydrate novice with a better understanding of the production and reactions of commercially available carbohydrates.

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