

Book reviews

W. Possart (Ed.), *Adhesion: Current Research and Applications*, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, 2005 (xxxii + 575 pp., £120.00, ISBN 3-527-31263-3)

Adhesion is a term, which is basically related to the joint of different materials that can resist mechanical loading. Fundamentally, it summarizes all elementary processes at the interface that make two solid materials stick together. The interface is formed when one of the materials in a liquid state is brought into contact with the other solid one and then solidifies. This close interaction give rise to attractive forces known as Van der Waals forces, as chemical bonds of any form or as the electric double layer which is created by mobile charges. The fundamental adhesion forces not only fix some layers of adhesive molecules on the surface, but they can exert strong influence on the formation of chemical and morphological structure as well as on molecular mobility in the adjacent region of the adhesive during solidification. All the adhesion processes are the subject of intensive research.

Adhesion: Current Research and Applications provides a collection of 34 contributions on the basic and applied aspects of adhesion. As per the editor's note this book is based on the lectures held at the 7th European Conference on Adhesion (EURADH) held at Freiburg (Germany), organized by the German DECHEMA (Society for Chemical Engineering and Biotechnology) in cooperation with French Section and the British Society for Adhesion and Adhesives.

The preliminary chapters provide information on the interfacial chemistry of adhesion, modelling fundamental aspects of surface chemistry of oxides and their interactions, adhesion and fiction properties of elastomers at macroscopic and nanoscale scales etc. The topics on mapping epoxy interphases, mechanical interphases in epoxies, adhesion molecule-modified cardiovascular prostheses, bioadhesion and biocontamination, new resins and nanosystems for high-performance adhesives, novel adhesion promoters, alkene pulsed plasma functionalized surfaces, laser surface treatment of composite materials, ageing mechanisms and durability are also included in the book. Advanced mass transport applications with elastic bonding, The concluding chapters are focussed on elastic bonding in mass transportation applications, adhesive joints for modular components in railway applications, and behaviour of dismantlable adhesives.

In conclusion, this volume explores the current issues and different aspects of adhesion from fundamental research to technical applications, and can be useful resource of information for physicists, chemists, biologists and engineers.

Parmjit S. Panesar

John F. Kennedy

Chembiotech Laboratories,

Institute of Research & Development,

University of Birmingham Research Park,

Birmingham B15 2Q1, UK

Available online 2 February 2006

doi:10.1016/j.carbpol.2005.10.011

G.V. Barbosa-Canovas, M.S. Tapia and M.P. Cano, (Eds.) *Novel Food Processing Technologies* (2005, CRC Press/Taylor and Francis Group, Boca Raton, FL/USA) (xiv + 692 pp., £99.00, ISBN 0-8247-5333-X)

Food processing industry is one of the largest manufacturing industries worldwide and possesses global strategic importance. With the advancement of science and technology, new food processing technologies are capturing the attention of many scientists in academia and industry. Consumers prefer high-quality foods with longer shelf life and, clearly, some of the new technologies can meet these demands. Newer strategies have been devised to modify the existing food processing techniques and the adoption of novel processing technologies.

Novel Food Processing Technologies examines the current trends in alternative food processing and preservation techniques. The book also addresses the new challenges facing the food industry by providing specific examples on how these alternatives could be applied to specific food products. As per the author's note, this book is the outcome of EMERTEC conference held in Madrid, Spain, which was organized and sponsored by *Ibero-Americian Program for Science and Technology*.

Pulsed electric fields (PEF) treatment is one of the most important non-thermal processes available for food preservation because of its potential to inactivate microorganisms without altering the organoleptic and nutritional properties of foods. The opening chapters of the book provide detailed information on the current status, application and future potential of PEF technology. The fundamentals, applications and advances of high-pressure technology in foods are discussed in the subsequent chapters. The topics of food irradiation, ultraviolet light and food preservation, microbial inactivation by ultrasound, use of magnetic fields, sous

vide/freezing technology for ready meals, advances in ohmic heating and moderate electric field processing, radio-frequency heating, supercritical extraction, microwave applications in food processing are discussed in individual chapters.

Mathematical models have become a very useful tool for all branches of science and technology. The issues of modelling systems and impact on food microbiology, predictive microbiology, experimental protocols for modelling the response of microbial populations, and application of artificial intelligence to predictive microbiology are also discussed in the book. The concluding chapter of the book is focussed on the important issue of safety and quality in the food industry.

In conclusion, this volume explores the recent technological innovations and future directions for food processing. This can be excellent source of information to all the persons involved in the development and processing of different food products with increased shelf life. It will not only support research and development but also suitable for teaching.

John F. Kennedy*

Parmjit S. Panesar

Chembiotech Laboratories, Institute of Research & Development, University of Birmingham Research Park, Birmingham B15 2Q2, UK

Available online 2 February 2006

* Corresponding author

doi:10.1016/j.carbpol.2005.10.007

J. Bhatia (Ed.), Perinatal Nutrition: Optimizing Infant Health and Development, Marcel Dekker, New York, USA, 2005 (x + 379 pp., £99.00, ISBN 0-8247-5474-3)

Nutrition which includes carbohydrates plays an important role in the health of every human being and is a globally recognised phenomenon. Its importance is much more during pregnancy as it can prevent certain congenital anomalies. Nutrient intake of the mother profoundly affects her child and this effect extends even to the period before conception.

Endocrine changes affect nutrient need and use for the lactating mother. Likewise, the endocrine system which includes the operation of glycoproteins, affects the growth of the infant. Nutrition also plays a vital role in improving survival of low birth weight and extremely premature infants. The improper nutrition negatively effects the fetal development and increases the health risk of infants.

Perinatal Nutrition addresses the important issue of nutrient needs of pregnancy and the early stages of infant growth. The different aspects of periconceptional nutrition, importance of placenta as an organ in nutrition, aberrations in utero-placental function, the role of macro- and micronutrients in the prevention of congenital anomalies are discussed in the book. The topics of nutritional influences on infant development, feeding the preterm infant, and post-hospital-discharge nutrition for premature infant, are described in individual chapters. The information on breast feeding, introducing solid foods to infants, and growth during the first year of life is also included in the book.

The volume also provides the information on the current understanding of the pathogenesis of type 1 diabetes and the contribution of infant nutrition to the initiation of progression of autoimmunity - here again carbohydrates play a part in the immunological macromolecules. The penultimate chapter of the book is focussed on adolescent nutrition and preconception during pregnancy. The ethical issues of neonatal hydration/nutrition are summarized in the last chapter.

In conclusion, this volume provides detailed scientific information on the role of nutrition in perinatal development. This will be highly useful not only to healthcare professionals, but also to nutritionists and nutritional scientists whose work involves perinatal growth and development.

Parmjit S. Panesar

John F. Kennedy*

Chembiotech Laboratories, Institute of Research & Development, University of Birmingham Research Park, Vincent Drive, Birmingham B15 2Q3, UK

Available online 2 February 2006

* Corresponding author

doi:10.1016/j.carbpol.2005.10.003