DNA shuffling and Staggered Extension Process (StEP). Chapters 5 to 9 present several selection and mass screening techniques: Fluorescence-Activated Cell Sorting (FACS) i.e. screening of proteins displayed on *E. coli* cells (chapter 5); phage-displayed enzymes selection (chapter 6); aptamers selection (chapter 7); generation of catalytic nucleic acids (chapter 8); and high-throughput screening approaches for the production of enantioselective biocatalysts (chapter 9). Chapters 10 to 12 deal with computer-based methods predicting the interesting molecular species among all the ones generated. They also detail how to use the software for library design, selection of mutagenesis positions and predictive algorithms that are featured in the CD-Rom provided with the book. The last chapter discusses patenting issues for academics.

Each chapter gives an introductory background to the method presented, followed by a protocol description and a list of the materials needed. Troubleshooting hints on frequently encountered difficulties are also included. The chapters end with a description of the methods main applications and a list of references.

Benefiting from the contribution of 27 international scientists, this textbook should be of interest to a number of academics and industrials working in the biotechnology area. With an easy-to-read and concise style, it puts the practical issues of evolutionary methods into focus thus constituting a laboratory reference. In this regard, the troubleshooting paragraphs should be particularly appreciated. On the minus side, charts and graphs legibility could probably be enhanced by the use of colors and some scientific terms could be explained a bit further. Nevertheless, this volume can be recommended to novices desirous to get started with evolutionary methods as well as experienced scientists of the field.

Marie-Anne Cambours
John F. Kennedy*
Chembiotech Laboratories,
Institute of Research & Development,
University of Birmingham Research Park,
Birmingham B15 2Q2, UK

Available online 7 November 2005

* Corresponding author
doi:10.1016/j.carbpol.2005.08.019

J.R. Dutcher and A.G. Marangoni, Soft Materials: Structure and Dynamics (2005, Marcel Dekker, Inc., New York, USA) (ix + 409 pp., £99.00, ISBN: 0-8247-5358-5)

Soft Materials, such as polymers, biopolymers, liquid crystals, gels, and foams, have physical properties that can be very different from conventional materials, giving rise to intriguing behaviour. Soft Materials provides a comprehensive overview of current scientific and technological advancements in soft materials analysis and application. *Soft Materials: Structure and Dynamics documents new and emerging challenges* in this burgeoning field is divided into four sections on synthetic polymers, complex fluids, biomaterials, and food materials.

The opening chapter of section one is concerned with the motion of polymer molecules confined to thin films. The next chapter researches the crystallization of thin polymer films: crystallinity, kinetics, and morphology. Some basic theoretical ideas as well as several problems related to deformed polymers in good solutions are also discussed (chapter 3). In the last decade, with the explosive development of different kinds of nanoparticles and nanostructural molecules have been developed and researched. In the last chapter of section one, science and engineering of nanoparticle-polymer composites are researched through insights from computer simulation.

The first chapter of section two explores the techniques that have been employed to control the cystallization of *n*-alkanes form crude oils and fuels. The effects of confinement on complex fluids are of great technological and fundamental interest. The second chapter of section two offers the knowledge of confinement and shear effects on the structure of a smectic liquid-crystal complex fluid. For the purpose of this chapter, confinement effects can occur at many length scales, depending on the intrinsic structure found in the complex fluid. The last chapter of this section reviews the macroscopic rheological behaviour of dilute and concentrated dispersions of soft solid particles in liquids.

The physical properties of proteins can be understood by studying statistical-physics models of polymers that capture the essential characteristics of real system. The first chapter of section three introduces the computer simulations of mechanical micromanipulation of protein. The research undertaken on the use of genetic engineering techniques to refine the structure-function relationship of food-related protein (particularly aspartic proteinases) at a fundamental, molecular level is discussed in the next chapter. And the computer simulation of soft mespscopic systems using dissipative particle dynamics is presented in the last chapter of section three.

Recently a deeper scientific effort has been undertaken to elucidate the principles on the effect of shear which exists in manufacturing facilities where bulk fats are processed. The opening chapter of section four presents the state of the art in scientific findings on the effects of shear on crystallization of fats from the melt. Food freezing has become a well-established food preservation technique. The objective of second chapter of section four is not to provide a comprehensive review of food freezing or frozen food quality but focuses on structure and structural changes of frozen foods. The next chapter offers the knowledge of biogenic cellular solids. The last chapter gives the knowledge of modelling of formation and rheology of protein particle gels.

More than 1000 references, tables, and equations are supplied for an excellent introduction to the study of soft material physics and utilization in this volume. In conclusion, this book provides an interdisciplinary approach to the control and understanding of soft materials and is a unique and outstanding reference for the industrial scientist or materials engineer.

John F. Kennedy*
Miao Jin
Chembiotech Laboratories,
Institute of Research & Development,
University of Birmingham Research Park,
Birmingham B15 2Q3, UK

Available online 8 November 2005

* Corresponding author
doi:10.1016/j.carbpol.2005.08.018

M.E. Tuttle, editor. Structural Analysis of Polymeric Composite Materials (2004, Marcel Dekker, Inc., New York, USA) (xv + 638 pp., £109.00, ISBN 0-8247-4717-8)

Modern polymeric composite material systems are a multidisciplinary subject, involving topics drawn from polymer chemistry, fiber science, surface chemistry and adhesion, materials testing, structural analysis, and manufacturing techniques to name a few. A composite system is a material system consisting of two (or more) materials, which are distinct at a physical scale greater than about 1 μm and which are bonded together at the atomic and/or molecular levels. In the present book, an overview of modern composite materials has been provided with special reference to their structural analysis.

Structural Analysis of Polymeric Composite Materials opens with an introductory chapter on the modern composite materials. The fundamentals of force, stress and strain tensors, and various material properties required to predict the performance of composite structures are discussed in the subsequent chapters. Chapter 4 is focussed on the three-dimensional, anisotropic form of Hook's law. The unidirectional composite laminates subject to plane stress and thermomechanical behaviour of multiangle composite laminates is described in the chapter 5 and 6.

The analytical tools and/or methodologies available to accurately predict the yielding and fracture of multistage composite laminates under general thermomechanical loading conditions are described in the chapter 7. Chapter 8 is devoted to statically determinate and indeterminate composite beams. The equations that govern the behaviour of symmetric and rectangular composite plates are developed in chapter 9. The penultimate chapter presents some solutions for a special class of symmetric laminates called 'specially orthotropic' laminates. The methods of obtaining approximate numerical solutions for symmetric laminates are given in the last chapter.

The most of chapters of the book include numerical example problems that further illustrate the concepts presented. In conclusion, this book can be excellent resource for all the persons working in the area of polymeric composite materials.

John F. Kennedy*
Parmjit S. Panesar
Chembiotech Laboratories,
Institute of Research & Development,
University of Birmingham Research Park,
Birmingham B15 2Q4, UK

Available online 7 November 2005

* Corresponding author
doi:10.1016/j.carbpol.2005.08.014

Seppo Salminen, Atte von Wright and Arthur Ouwehand, editors. Lactic Acid Bacteria: Microbiological and Functional Aspects, Third Edition, Revised and Expanded, Marcel Dekker, Inc., New York, USA, 2004 (xiii + 633pp., ISBN 0-8247-5332-1 (£130.00))

Lactic acid-producing bacteria have been used for centuries in all parts of the world for preservation and nutritional value enhancement of foods (e.g. milk, vegetables, meat). Making up a very diverse group of microorganisms, the bacteria produce lactic acid via a complex and adaptive fermentation mechanism. Because of their essential role for the food industry in general and the dairy industry in particular, their metabolism and the related technological aspects have been extensively investigated. Recently, studies have focused on determining the beneficial health effects of lactic acid bacteria, for the design of functional foods and pharmaceuticals.

Based on accurate and critical studies, *Lactic Acid Bacteria: Microbiological and Functional Aspects* reviews the impressive research developments of the past five years. Due to the rapid technical and scientific progress in the area, new chapters on vegetable fermentation, probiotics for fish, modeling of bacteria-host interactions and methods of analysis of the gut flora have been added. Many chapters have also been rewritten by a total of 37 international collaborators. The book discusses taxonomic and physiological aspects of lactic acid bacteria, their genetics, and the safety issues related to their industrial use. Special emphasis is put on their potential health benefits for humans and animals, while three chapters discuss the probiotics of Bifido- and Propionibacteria. The book also stresses the essential role of the advances in molecular biology and genetics for providing tools to understand the functioning of lactic acid bacteria.