

Book Reviews

Colloid–Polymer Interactions: From Fundamentals to Practice

R.S. Farinato, P.S. Dubin (Eds.); Wiley, New York, 2000, 417 pages, ISBN 0-471-24316-7, £74.50

Colloid–polymer systems encountered in technology are highly complex in nature. Work in this area is generally approached from one of three main directions: theory, fundamental experimentation or technological application. Information transfer among these three domains is often very limited. Active participants are often largely unaware of each other's efforts. Engineers implement technology in large-scale applications using complex, partially characterised materials (e.g. wastewater, wood pulp suspensions, paints), synthetic chemists modify and manipulate the polymer structures, research scientists apply sophisticated methods to model such systems, and theoreticians attempt modelling from basic principles. The disparate approaches, aims and technical jargon of these groups often preclude effective inter-communication. There is clearly a need to bridge gaps between the various approaches by harmonising terminology and jargon at the technological extreme, while relating rigorous theoretical conclusions to physical pictures and qualitative assessments at the other.

Colloid–Polymer Interactions: presents a unified approach to span the gaps between theory, experiment and application. Each chapter presents an overview of the basics and the current state of one particular topic, then covers recent developments, and indicates likely directions for future progress. The first part of the book covers applied technologies that are strongly based on colloid–polymer interactions, notably wastewater treatment, papermaking and nano-engineering of colloidal particle layers. In the second part, the fundamentals of colloid–polymer interactions are considered in detail. The final part of the book concentrates on modern experimental techniques for investigating polymer adsorption, and related recent findings.

This book assembles and presents material that successfully bridges and links theory, simulation, model systems and ultimate applied technology: it is well structured and presented. It is highly recommended, for engineers, applications specialists and basic researchers involved in the field of colloid–polymer interactions.

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PII: S0144-8617(00)00197-1

Pills, Potions and Poisons, How Drugs Work

Trevor Stone, Gail Darlington; Oxford University Press, Oxford, 2000, 476 pages, ISBN 0-19-850403-9, £18.99

The book is a tour-de-force of modern medicine written in an approachable way for the non-scientist or those beginning to pursue a drug-related subject. The book is an enjoyable read with many amusing and informative historical and anecdotal additions. Such examples as: chapter 23—love potions and aphrodisiacs, chocolate was forbidden to young women in the seventeenth century because they would be tempted by “sins of the flesh”; chapter 9—schizophrenia, a very personal view is given of distorted perspective where a woman's feet appeared to be far away and her knees appeared to be huge.

Readers will rightfully ask “What is the relevance of medicines to carbohydrate polymers and Carbohydrate Polymers?” The delivery of medicines to the intended sites in the body is a subject in itself—usually termed ‘drug delivery’, and carbohydrate polymers are being used and developed as carriers of drugs, i.e. as drug delivery agents. Several papers have appeared in Carbohydrate Polymers dealing with the use of chitin in such an area, and as the field develops it is to be expected that carbohydrate polymers, because of their physical, hydrophilic and interactive but non-toxic properties, will find increasing use in directed drug deliveries.

The chapter structure features descriptions of the physiological and biochemical basis of related diseases, for example chapter 2—breathing: allergies, asthma, coughs and colds. The standard treatments for such conditions are described, including specific drugs or drug groups. The drugs' biochemical mode of action and the most commonly associated side effects are outlined. Historical information as to the development of certain drugs is contained within the appropriate chapter, i.e. chapter 3—diabetes: a brief history of insulin.

Pills, potions and poisons examines topical drug related issues. The recreational use of drugs is described for socially accepted drugs such as alcohol and nicotine and for a variety

of illegal drugs such as cocaine, cannabis and LSD. Their biochemical mode of action is described with respect to their addictive nature; the symptoms of abuse and addiction are also described. The biochemical or bacterial resistance to drugs such as antibiotics, anti-cancer agents and pain relief is discussed. The body's vitamin requirements and the use of vitamin supplements and the use of organophosphates in head lice lotion and sheep dip are also discussed.

The book reviews many aspects of modern medicine in an approachable manner for the non-scientific reader. It would also be a good reference source for those beginning to pursue a drug-related subject.

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PII: S0144-8617(00)00198-3

Introduction to Soft Matter: Polymers, Colloids, Amphiphiles and Liquid Crystals

I.W. Hamley; Wiley, Chichester, 2000, 342 pages, ISBN 0-471-89951-8 (£65.00)

Technological exploitation of matter has progressed throughout successive millennia: following iron and steel in the nineteenth century, in the twentieth century engineered materials such as polymers and plastics took over many of the roles of traditional 'hard' (based on macroscopic mechanical properties) materials. Though the properties of hard matter are well understood, the learning curve for soft matter is still being traversed. Opportunities and applications for soft materials are ever expanding. Established uses in detergents, plastics, paints, foods and personal care products are being augmented by new applications involving biopolymers and nanotechnology. The field of soft matter is interdisciplinary: it encompasses aspects of physics, chemistry, materials science, biochemistry and chemical/mechanical engineering. As a consequence of this, the subject is either neglected entirely or not covered in adequate detail in conventional texts. There is a need to fill this gap with an up-to-date overview of the dynamics and thermodynamics of soft matter.

Introduction to Soft Matter presents a unified approach to soft materials. Following an introduction that includes experimental techniques for investigating soft matter, four further successive chapters cover polymers, colloids,

amphiphiles (surfactants and lipids) and liquid crystals. In each chapter basic physical chemistry is dealt with first before an outline of applications is given. Equations are kept to an essential minimum, and derivations are included where they illustrate important thermodynamic or statistical mechanical concepts. References to texts that deal with aspects of the subjects covered in the book as well as general texts are given. Sets of questions and answers are provided at the end of each chapter.

This book is well laid out and presented. It is highly recommended, not only for students from various disciplines taking courses on colloids, polymers or soft condensed matter, but also as an excellent reference for researchers in evolving areas of an intriguing topic.

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PII: S0144-8617(00)00192-2

Your Choice of Food Starches—The National Starch Guide[☆]

National Starch & Chemical, 2000, 23 pages, free of charge from National Starch & Chemical, Prestbury Court, Greencourts Business Park, 333 Styal Road, Manchester, M22 5LW, UK

Starches have been used as thickening agents and adhesives for a variety of purposes for longer than their being regarded as either a carbohydrate or a chemical. Starch presents itself in a number of plants that have been cultivated, and therefore, is available, worldwide.

Speciality starches are produced from the natural polymers found within such plants. They provide viscosity and stability, influence texture and rheology, enhance mouth-feel and visual appeal in a wide variety of foods. Starches can also be used to provide sophisticated functions such as adhesion, flavour encapsulation and replacement or extension of other ingredients such as gelatine, gums, fats or dietary fibre.

The *National Starch Guide* illustrates how a range of speciality starch allows varying degrees of process tolerance, from cold processing to high-shear, high-temperature systems. They contribute acid, freeze/thaw and textural stability. The guide also draws attention to how selecting the right starch for an application is all-important and can