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M. Kotelyanskii, D.N. Theodorou (Eds.), Simulation Methods for Polymers, Marcel Dekker, Inc., New York, USA, 2004 (xv + 602 pp., £111.00, ISBN 0-824-70247-6).

The large variety of chemical constitutions and molecular architectures of polymeric materials is responsible for the diverse range of properties they exhibit. A great number of contemporary technological applications rely on the peculiar mechanical properties of polymers. Furthermore, there is a shift of emphasis from process to product design, which is intimately related to material behaviour. With the current trend toward nanotechnology, the scientist or engineer is often called on to develop new, often hierarchical material structures with key characteristics in the 0.1–10 nm length scale, so as to benefit from the unique mechanical, electronic, magnetic, optical, or other properties that emerge at this scale. Materials that develop such structures through self-assembly processes, or modify their structure in response to environmental conditions, are frequently sought.

This volume begins with an introductory chapter covering the basic elements of polymer physics and providing a brief overview of equilibrium and non-equilibrium statistical mechanics. The remainder of the volume is composed of nine parts. The first part focuses on the calculation of single-chain properties in various environments. The second part addresses lattice-based Monte Carlo simulations. During the third section molecular dynamics simulations are discussed. The fourth chapter presents information about configurational bias techniques for simulation of complex fluids. The next two sections focus on simulations of charged polymer systems and methods for the calculation of free energy and chemical potential, and for the simulation of phase equilibria, respectively. Part seven discusses the modeling and simulation of polymer crystals. The penultimate section discusses the simulation of bulk amorphous polymers and their properties, and finally, the last part is devoted to bridging length-and-time-scales through multistage modeling, whose importance has already been stressed above and brought forth in some of the earlier sections.

This book is intended to help students and research practitioners in academia and industry to become active players in the fascinating and rapidly expanding field of modeling and simulation of polymeric materials.

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

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S. Yannan, Dictionary of Food Compounds with CD-ROM: Additives, Flavors, and Ingredients, Chapman & Hall, CRC, Boca Raton, FL, USA 2004 (xvii + 1763 pp., £239.20, ISBN 1-58488-416-9)

For some years, those involved in food chemistry and technology have felt the need for a comprehensive and well-organised reference source documenting the whole range of substances on which they may need information during their day-to-day work. In that way, the Dictionary of Food Compounds (DFC) includes all compounds or group of compounds of interest or potential interest to the food industry in its widest connotation.

The resulting *Dictionary of Food Compounds* is available both in hard copy and electronically as a CD-ROM product. Each has its own advantages. There is nothing to rival the ease of consulting a book version for quick queries and for browsing to get an overall view of the whole field. On the other hand, the electronic version is searchable by chemical structure as well as text and, for obvious reasons, is more easily updated so that users can get a rapid summary of new development in the science.

The printed DFC contains a number of derivatives that are not of direct food interest, but are included because they have been used for chemical characterisation of the main entry compounds. However, their number is strictly limited. In contrast, the version of an entry on the CD-ROM, where space is not a limitation, is a full version as is present on the Chapman & Hall Chemical Database and may include many more derivatives not thought to be of current food interest.

This volume is specifically composed of an introduction, a Dictionary of Food Compounds from A to Z (which forms the bulk of the volume), a name index, and, finally a type of Compound Index. It is highly recommended to individuals involved in all areas of food science and technology, including food toxicity, and crop/product production.

Rocío Martín Alanís
John F. Kennedy*
Chembiotech Laboratories,
Institute of Research & Development,
University of Birmingham Research Park,
Birmingham B15 2Q4, UK

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