

Book Reviews

Polymer handbook (4th Edition)

J. Brandrup, E.H. Immergut, E.A. Grulke (Eds.); Wiley, New York, 1999, xiii + 2288 pages, ISBN 0-471-16628-6 (£226-00)

The purpose of the 'Polymer Handbook' is to bring together the data and constants needed in theoretical and experimental polymer research. The contributors have taken on the arduous task of searching the literature and compiling the data that polymer chemists, polymer physicists, and polymer engineers are likely to need, and have focused upon data generated in the ten years since publication of the previous edition. This handbook concentrates on synthetic polymers, polysaccharides and derivatives, and oligomers. Only fundamental constants and parameters that refer to the polymer molecule, that describe the solid state of polymer molecules, or that describe polymer solutions, are included. Constants that depend on processing conditions or on sample history are not included.

The 500 + tables in this handbook are divided into eight sections. The first section lists the IUPAC nomenclature rules for polymers and the International System of Units. Although several naming conventions exist in the scientific and technical literature, IUPAC names permit a consistent listing of all polymers. The second section contains data and constants needed for polymer synthesis, kinetic mechanisms, and thermodynamic studies of polymerisation and depolymerisation reactions. The next two sections contain physical constants of monomers and solvents, and oligomers, respectively. The fifth section lists the physical constants of many important commercial polymers (such as PE, PP, PAN, PVC, PVA, PMMA, PS, PET, polyamides, cellulose, etc).

Sections 6 and 7 cover the solid state properties of polymers and the properties of polymer solutions, respectively. Solid state properties covered include crystallographic data, glass transition temperatures, crystallisation rates, miscibility, heat capacities, permeability, refractive indices and radiation resistance. Solution properties covered include viscosity–molecular weight relationships, sedimentation and diffusion coefficients, solvents and non-solvents dipole moments, heats of solution, and gelation properties. The final section lists the commonly used abbreviations or acronyms for polymers (thermoplastics, thermosets, fibres, elastomers and additives) and Chemical Abstract Registry Numbers, and gives suggestions for electronic data searching for polymer information.

This colossal volume is designed to facilitate easy information retrieval and to prevent the reader from having to search through multitudes of literature for information. It is therefore recommended as a valuable source of information on polymer properties for all researchers with interests in polymer science.

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Frying of food

Dimitrios Boskou, Ibrahim Elmadfa; Technomic Publishing Co., Inc., Lancaster, 1999, xii + 276 pages, ISBN 1-56676-786-5

A significant amount of scientific research has been focused on naturally occurring nutritive and non-nutritive antioxidants. This is due to global interest in the relationship of dietary antioxidants to the possible prevention of many diseases, in the etiology of which oxidation mechanisms are involved. A growing awareness that certain ingredients in food may favourably modify diet-related problems has been triggered by changes in lifestyles in the modern industrialised world.

Frying of food deals with some of the chemical, biochemical, physiological and nutritional aspects of frying. The book covers oxidation, nutrient and non-nutrient antioxidants, biologically active compounds and high temperatures. The text concentrates on the nature of the heated fat and the presence of oxidation retardants, especially those naturally occurring in oils or obtained

from natural sources. Some important aspects of the interaction between frying oils and natural components present in food on substances produced during frying are covered. The volume also relates the role of minor constituents and their interaction in a variety of fried food products, as these have important effects on the stability performance and nutritive value of the frying oil and the fried food.

The book has 11 chapters, each of which contain an introduction, summary, conclusion and reference section. Initial chapters cover information on fat and nutrition; oxidation products and metabolic processes; and the formation of free radicals and protection mechanisms in vitro and in vivo. Then changes of nutrients at frying temperatures and enzymatic methods for the study of thermally oxidised oils and fats are investigated. Nutrient antioxidants (tocochromanols, β -carotene, phyloquinone, ubiquinone 50), non-nutrient antioxidants and phytosterols and their stability in frying oils are examined in subsequent chapters. Finally, the use of palm oil in frying and safety and reliability during frying operations (including effects of detrimental components and fryer design features) are covered in the last two chapters.

Frying of food contains contributions from a large number of scientists, who have tried to discuss as many compounds as possible, and copious examples are given of fried foods, which are consumed throughout the globe. This clearly written volume is an essential reference book for anyone interested in the frying of food, and contains current facts as well as information on possible areas for future research.

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Food flavours biology and chemistry

The Royal Society of Chemistry, Milton Road, Cambridge;
Carolyn Fisher, Thomas R. Scott; 1997, 158 pages, ISBN
0-85404-538-4 (£12.25)

Food flavours is an area that is covered widely in its relevant industry as well as been studied as part of many university courses. As a result of the area being so specialised, many of texts available are from individual people who only tend to address the areas in which they are interested in as opposed to a complete over view of the subject area. This is where this text is different. It offers contributions from a biochemist and a neuroscientist, therefore covering a much wider area of the topic.

The book is composed of five main chapters, which cover: The problems in flavour research, Flavour compounds, The chemical senses, Flavour analysis and Teaching flavour concepts. The text, in general, is incredibly user friendly and is very easy to read and comprehend for such a specialised text, and at the same time, the information obtained in the book goes into sufficient depth for most of the applications that many individuals would ever need it for. It gives a clear insight into how flavours work both from a neurological and chemical perspective and at the same time maintains an equal balance between the two areas. The information in the text may not go into as much detail as other more specialised texts available, but this is compensated by the width of the subject area that is written about.

Each chapter in the text gives detailed references at the end, which can be more useful than tediously shifting through pages of reference at the end of the book. The tables and figures shown are clearly presented and show relevance to the text although some of the chemical related figures can appear to be quite daunting upon first glance, which can only be expected with such a detailed text.

Food flavours is a highly recommended text for individuals that are already in related fields but may prove to be a little too in depth for people without a prior knowledge of the subject. It would not however, be out of place on the bookshelf of any postgraduates that were studying the field.

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