
Fundamentals Of Polymer Science

Reactive Polymers Fundamentals and Applications
Polymer Science and Technology
The Physics of Polymers
Principles of Polymer Engineering
Fundamentals of Polymer Science for Engineers
Polymers and Light
Introduction to Polymer Science and Chemistry
Self-Healing Polymer-Based Systems
Science and Principles of Biodegradable and Bioresorbable Medical Polymers
Polymer Synthesis: Theory and Practice
Fundamentals of Polymer Science for Engineers
Fundamentals of Polymer-Clay Nanocomposites
Fundamentals of Polymer Degradation and Stabilization
Polymer Physics
Polymers and Light
Radiation Curing in Polymer Science and Technology
Fundamentals of Polymer Science
Principles of Polymer Science and Technology in Cosmetics and Personal Care
Fundamentals of Polymer Engineering, Revised and Expanded
Polymer Hybrid Materials and Nanocomposites
Fundamentals of Controlled/Living Radical Polymerization
Fundamentals of Polymer Science
Principles of Polymerization
Thermal Analysis
Fundamental Polymer Science
Polymer Gels
Fundamentals of Polymer Science
Polymer Science and Technology
Essentials of Polymer Science and Engineering
Fundamentals of Polymer Engineering, Third Edition
Elements of Polymer Science & Engineering
Absorbent Polymer Technology
Fundamentals of Polymer Engineering
Polymer Science
Polymer Chemistry
Principles of Polymer Science
Fundamentals of Polymerization
Basics of Polymer Chemistry
Polymer Science and Nanotechnology
An Introduction to Polymer Science

WIGGINS CIERRA

Reactive Polymers

Fundamentals and

Applications Alpha

Science Int'l Ltd.

"Principles of Polymer

Science introduces

several basic and

advanced aspects of

polymers for the

undergraduate and

graduate students in

chemistry, chemical

engineering and materials

science. The second and

thoroughly revised edition

includes the technical

aspects of synthesis,

characterization,

behaviour and technology

in a straightforward and

lucid manner. Separate

chapters on natural,

inorganic and specialty

polymers would attract

readers from

interdisciplinary courses."

-BOOK JACKET.

Polymer Science and

Technology River

Publishers

Science and Principles of

Biodegradable and

Bioresorbable Medical

Polymers: Materials and

Properties provides a

practical guide to the use

of biodegradable and

bioresorbable polymers

for study, research, and

applications within

medicine. Fundamentals

of the basic principles and

science behind the use of

biodegradable polymers

in advanced research and

in medical and

pharmaceutical

applications are

presented, as are

important new concepts

and principles covering

materials, properties, and

computer modeling,

providing the reader with

useful tools that will aid

their own research,

product design, and

development. Supported

by practical application

examples, the scope and

contents of the book

provide researchers with

an important reference

and knowledge-based

educational and training

aid on the basics and

fundamentals of these

important medical

polymers. - Provides a

practical guide to the

fundamentals, synthesis,

and processing of

bioresorbable polymers in

medicine - Contains

comprehensive coverage

of material properties,

including unique insights

into modeling degradation

- Written by an eclectic

mix of international

authors with experience in

academia and industry

The Physics of Polymers

Springer Science &

Business Media

Hans-Georg Elias An

Introduction to Polymer

Science Polymer science

at its best! A completely

new approach reflecting

the interdisciplinary

nature of polymer

science! Modern polymer

science is firmly rooted

not only in the chemistry

of macromolecules but

also in their physical

chemistry and physics.

Furthermore, this modern

insight provides the

reader with information

on the three most

important uses of

synthetic polymers:

elastomers, fibers and

plastics. Biopolymers are

also considered. This book

fulfills the need for a

volume which introduces

polymer science in a

straightforward, rigorous,

and practical way. It is

divided into four parts

that cover the chemistry,

physical chemistry,

physics and technology of

polymers. Whenever

possible, physical

equations are not just

presented but are derived

step by step from first

principles enabling the

newcomer to ease

smoothly into the subject.

The reference to industrial

aspects makes this book

an indispensable support

for both students and

professionals.

Principles of Polymer

Engineering John Wiley &

Sons

Polymer Science and

Nanotechnology:

Fundamentals and

Applications brings

together the latest advances in polymer science and nanoscience. Sections explain the fundamentals of polymer science, including key aspects and methods in terms of molecular structure, synthesis, characterization, microstructure, phase structure and processing and properties before discussing the materials of particular interest and utility for novel applications, such as hydrogels, natural polymers, smart polymers and polymeric biomaterials. The second part of the book examines essential techniques in nanotechnology, with an emphasis on the utilization of advanced polymeric materials in the context of nanoscience. Throughout the book, chapters are prepared so that materials and products can be geared towards specific applications. Two chapters cover, in detail, major application areas, including fuel and solar cells, tissue engineering, drug and gene delivery, membranes, water treatment and oil recovery. - Presents the latest applications of polymers and polymeric nanomaterials, across energy, biomedical,

pharmaceutical, and environmental fields - Contains detailed coverage of polymer nanocomposites, polymer nanoparticles, and hybrid polymer-metallic nanoparticles - Supports an interdisciplinary approach, enabling readers from different disciplines to understand polymer science and nanotechnology and the interface between them Fundamentals of Polymer Science for Engineers Springer Science & Business Media Basics of Polymer Chemistry is of great interest to the chemistry audience. The basic properties of polymers, including diverse fundamental and applied aspects, are presented. This book constitutes a basis for understanding polymerization, and it presents a comprehensive overview of the scientific research of polymers. The chapters presented can be used as a reference for those interested in understanding the sustainable development in polymers. Basics of Polymer Chemistry provides a balanced coverage of the key developments in this field, and highlights recent and emerging technical achievements. The topics

covered present a comprehensive overview of the subject area and are therefore of interest to professors and students. The recent developments in polymerization using catalysts, homo and copolymerization are presented, and it contains current efforts in designing new polymer architectures. Improved property performance attributes of the polymers by controlling their molecular-structural characteristics such as molecular weight distribution, comonomer type content distribution, and branching level are also discussed. *Polymers and Light* DEStech Publications, Inc Polymers have an important role in manufacturing and their engineering properties form an important part of any course in engineering. This revised and updated second edition develops the principles of polymer engineering from the underlying materials science, and is aimed at undergraduate and postgraduate students in engineering and materials science. The opening chapters explain why plastics and rubbers have such distinctive properties and how these are

affected by temperature, strain rate, and other factors. The book then explores how these properties can be exploited within these property constraints to produce functional components. Major changes for this second edition include an introductory chapter on the environmental impact of polymers, emphasizing the important issues, and substantially revised sections on fracture testing for toughened polymers, yield, processing, heat transfer, and polymer forming.

Introduction to Polymer Science and Chemistry
Cambridge University Press

This textbook provides newcomers to Thermal Analysis with a comprehensive introduction to the basic principles of the technique, such as instrument operation, sample preparation, optimization of operating conditions and a guide to interpreting results. The principal techniques are covered and their performance evaluated, and throughout the emphasis is on the practicalities, with the mathematics kept to a minimum.

Self-Healing Polymer-

Based Systems CRC Press
Exploring the characterization, thermodynamics and structural, mechanical, thermal and transport behavior of polymers as melts, solutions and solids, this text covers essential concepts and breakthroughs in reactor design and polymer production and processing. It contains modern theories, end-of-chapter problems and real-world examples for a clear understanding of polymer function and development.

Fundamentals of Polymer Engineering, Second Edition provides a thorough grounding in the fundamentals of polymer science for more advanced study in the field of polymers. Topics include reaction engineering of step-growth polymerization, emulsion polymerization, and polymer diffusion.

Science and Principles of Biodegradable and Bioresorbable Medical Polymers Routledge

This book is the result of my teaching efforts during the last ten years at the Royal Institute of Technology. The purpose is to present the subject of polymer physics for undergraduate and graduate students, to

focus the fundamental aspects of the subject and to show the link between experiments and theory. The intention is not to present a compilation of the currently available literature on the subject. Very few reference citations have thus been made. Each chapter has essentially the same structure: starting with an introduction, continuing with the actual subject, summarizing the chapter in 300-500 words, and finally presenting problems and a list of relevant references for the reader. The solutions to the problems presented in Chapters 1-12 are given in Chapter 13. The theme of the book is essentially polymer science, with the exclusion of that part dealing directly with chemical reactions. The fundamentals in polymer science, including some basic polymer chemistry, are presented as an introduction in the first chapter. The next eight chapters deal with different phenomena (processes) and states of polymers. The last three chapters were written with the intention of making the reader think practically about polymer physics. How can a certain type of problem be solved? What kinds of

experiment should be conducted? This book would never have been written without the help of my friend and adviser, Dr Anthony Bristow, who has spent many hours reading through the manuscript, criticizing the content.

Polymer Synthesis: Theory and Practice William

Andrew

WE ALL ARE SURROUNDED

by plastic materials and cannot imagine modern life and utilities without the synthetic polymers.

And yet, how many of us can distinguish between polyethylene and PVC?

After all, most people name any polymer as "Nylon." Is there any distinction between polymers and plastics?

This introductory textbook tries to answer these questions and many others. It endeavors to provide the basic information required in modern life about the best utilization of new materials in the plastics era; the chemical sources of synthetic polymers, and the processes in which small "simple" molecules are converted to giant macromolecules, namely, high polymers; and the understanding of the role of these unique structures, their behavior and performance, their mechanical and thermal

properties, flow and deformation. As we are mainly interested in the final product, the processing of plastics, through shaping and forming, presents a significant challenge to polymer engineering. All this is broadly discussed, ending with modern issues like composites, ecology and future prediction, followed by up-to-date information and data about old as well as novel high performance polymers. The text is particularly targeted towards senior students of science and engineering (chemical, material, mechanical and others) who may use it as the first window to the world of polymers. At the same time many professionals who are involved in the resin or plastics industry may prefer this approach without elaborate math or overloading.

Fundamentals of Polymer Science for Engineers

Elsevier

During the past decade, the field of polymer degradation and stabilization has become a subject of central importance in polymer science and technology. This book provides a fundamental source of information designed for those with only a basic

understanding of the background of the field.

Fundamentals of Polymer-Clay Nanocomposites

Springer Science & Business Media

This book exclusively focuses on the science and fundamentals of polymer gels, as well as the numerous advantages that polymer gel-based materials offer. It presents a comprehensive collection of chapters on the recent advances and developments in the core science and fundamentals of both synthetic and natural polymer-based gels, and pays particular attention to applications in the various research fields of biomedicine and engineering. Key topics addressed include: polysaccharide-based gels and their fundamentals; stimuli-responsive polymer gels; polymer gels applied to enzyme and cell immobilization; chitosan-based gels for cancer therapy; natural polymeric and gelling agents; radiation dosimetry; polymeric gels as vehicles for enhanced drug delivery across the skin; transport in and through gel; and polymer gel nanocomposites and functional gels. The book's extensive and highly topical coverage will appeal to researchers

working in a broad range of fields in industry and academia alike.

Fundamentals of Polymer Degradation and Stabilization John Wiley & Sons

This successor to the popular textbook, "Polymer Physics" (Springer, 1999), is the result of a quarter-century of teaching experience as well as critical comments from specialists in the various sub-fields, resulting in better explanations and more complete coverage of key topics. With a new chapter on polymer synthesis, the perspective has been broadened significantly to encompass polymer science rather than "just" polymer physics. Polysaccharides and proteins are included in essentially all chapters, while polyelectrolytes are new to the second edition. Cheap computing power has greatly expanded the role of simulation and modeling in the past two decades, which is reflected in many of the chapters. Additional problems and carefully prepared graphics aid in understanding. Two principles are key to the textbook's appeal: 1) Students learn that, independent of the origin of the polymer, synthetic

or native, the same general laws apply, and 2) students should benefit from the book without an extensive knowledge of mathematics. Taking the reader from the basics to an advanced level of understanding, the text meets the needs of a wide range of students in chemistry, physics, materials science, biotechnology, and civil engineering, and is suitable for both masters- and doctoral-level students. Praise for the previous edition: ...an excellent book, well written, authoritative, clear and concise, and copiously illustrated with appropriate line drawings, graphs and tables. - Polymer International ...an extremely useful book. It is a pleasure to recommend it to physical chemists and materials scientists, as well as physicists interested in the properties of polymeric materials. - Polymer News This valuable book is ideal for those who wish to get a brief background in polymer science as well as for those who seek a further grounding in the subject. - Colloid Polymer Science The solutions to the exercises are given in the final chapter, making it a well thought-out

teaching text. - Polymer Science
Polymer Physics Elsevier
 This first book to focus on the important and topical effect of light on polymeric materials reflects the multidisciplinary nature of the topic, building a bridge between polymer chemistry and physics, photochemistry and photophysics, and materials science. Written by one experienced author, a consistent approach is maintained throughout, covering such applications as nonlinear optical materials, core materials for optical waveguides, photoresists in the production of computer chips, photoswitches and optical memories. Advanced reading for polymer, physical and organic chemists, manufacturers of optoelectronic devices, chemical engineers, and materials scientists.
Polymers and Light Springer Science & Business Media
 Your search for the perfect polymers textbook ends here - with Polymer Science and Technology. By incorporating an innovative approach and consolidating in one volume the fundamentals currently covered piecemeal in several

books, this efficient text simplifies the learning of polymer science. The book is divided into three main sections: *po Radiation Curing in Polymer Science and Technology* CRC Press

With such a wide diversity of properties and applications, is it any wonder that industry and academia have such a fascination with polymers? A solid introduction to such an enormous and important field is critical to the modern polymer scientist-to-be, but most of the available books do not stress practical problem solving or include recent advances. Serving as the polymer book for the new millennium, *Introduction to Polymer Science and Chemistry: A Problem Solving Approach* unites the fundamentals of polymer science and polymer chemistry in a seamless presentation. Emphasizing polymerization kinetics, the author uses a unique question-and-answer approach when developing theory or introducing new concepts. The first four chapters introduce polymer science, focusing on physical and molecular properties, solution behavior, and molecular

weights. The remainder of the book explores polymer chemistry, devoting individual, self-contained chapters to the main types of polymerization reactions: condensation; free radical; ionic; coordination; and ring-opening. It introduces recent advances such as supramolecular polymerization, hyperbranching, photoemulsion polymerization, the grafting-from polymerization process, polymer brushes, living/controlled radical polymerization, and immobilized metallocene catalysts. With numerical problems accompanying the discussion at every step along with numerous end-of-chapter exercises, *Introduction to Chemical Polymer Science: A Problem Solving Approach* is an ideal introductory text and self-study vehicle for mastering the principles and methodologies of modern polymer science and chemistry.

Fundamentals of Polymer Science

Woodhead Publishing

Now in its second edition, this widely used text provides a unique presentation of today's polymer science. It is both

comprehensive and readable. The authors are leading educators in this field with extensive background in industrial and academic polymer research. The text starts with a description of the types of microstructures found in polymer

[Principles of Polymer Science and Technology in Cosmetics and Personal Care](#) World Scientific

In recent years, there has been a veritable explosion of research and development in consumer-oriented fields that utilize polymeric materials which absorb large amounts of water. These fields encompass the preparation, characterization and commercialization of separation systems, pharmaceutical and personal care products such as infant diapers, feminine products, incontinence products and many other related areas. The polymeric materials utilized in these applications are known as absorbent or superabsorbent materials because of their ability to swell rapidly and to retain large volumes of water, urine and other biological fluids. The aim of this book is to introduce the fundamentals of polymer structure and swelling as

related to polymers used for these superabsorbent materials. In the field of absorbence, particular attention is given to crosslinked structures which swell to more than fifty times their initial weight in water or electrolytic solutions. The book also provides descriptions of novel applications of superabsorbent materials as well as a detailed analysis of water transport in crosslinked polymers. Absorbent Polymer Technology should be of interest to chemists, polymer scientists, chemical engineers, and industrial scientists working with swellable polymeric systems in personal care, pharmaceutical, agricultural waste treatment and separation industries.

Fundamentals of Polymer Engineering, Revised and Expanded Springer Science & Business Media Loaded with practical knowledge, *Reactive Polymers Fundamentals and Applications: A Concise Guide to Industrial Polymers* comprehensively presents the state-of-art of methods and materials for

the formulation of polymeric resins. It is an indispensable tool for chemists, engineers, and manufacturers who use, formulate, and cure raw materials into final products. The text focuses on the chemical modification of properties during the final stage of part fabrication from plastics. Newer applications range from the small scale, such as dental fillings, to industrial processes for batch fabrication. The book covers resin groups in major use in industry and under active research and development.

Polymer Hybrid Materials and Nanocomposites Springer

Exploring the chemistry of synthesis, mechanisms of polymerization, reaction engineering of step-growth and chain-growth polymerization, polymer characterization, thermodynamics and structural, mechanical, thermal and transport behavior of polymers as melts, solutions and solids, *Fundamentals of Polymer Engineering, Third Edition* covers essential concepts and breakthroughs in reactor design and polymer

production and processing. It contains modern theories and real-world examples for a clear understanding of polymer function and development. This fully updated edition addresses new materials, applications, processing techniques, and interpretations of data in the field of polymer science. It discusses the conversion of biomass and coal to plastics and fuels, the use of porous polymers and membranes for water purification, and the use of polymeric membranes in fuel cells. Recent developments are brought to light in detail, and there are new sections on the improvement of barrier properties of polymers, constitutive equations for polymer melts, additive manufacturing and polymer recycling. This textbook is aimed at senior undergraduate students and first year graduate students in polymer engineering and science courses, as well as professional engineers, scientists, and chemists. Examples and problems are included at the end of each chapter for concept reinforcement.