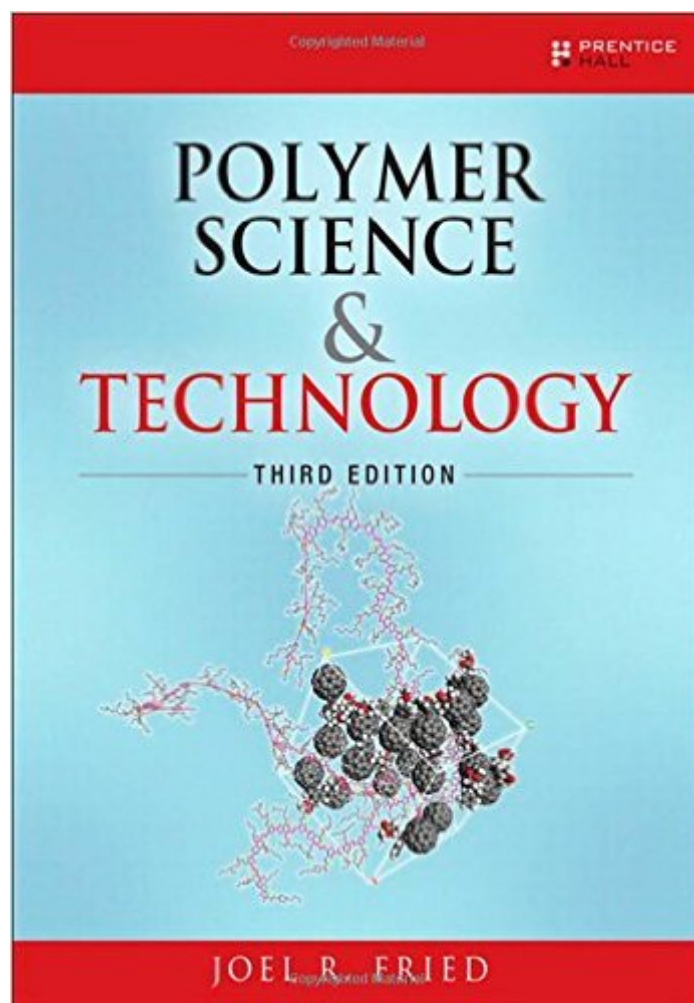


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Polymer Science And Technology (3rd Edition)



Synopsis

The Definitive Guide to Polymer Principles, Properties, Synthesis, Applications, and Simulations

Now fully revised, *Polymer Science and Technology, Third Edition*, systematically reviews the field's current state and emerging advances. Leading polymer specialist Joel R. Fried offers modern coverage of both processing principles and applications in multiple industries, including medicine, biotechnology, chemicals, and electronics.

This edition's new and expanded coverage ranges from advanced synthesis to the latest drug delivery applications. New topics include controlled radical polymerization, click chemistry, green chemistry, block copolymers, nanofillers, electrospinning, and more.

A brand-new chapter offers extensive guidance for predicting polymer properties, including additional coverage of group correlations, and new discussions of the use of topological indices and neural networks. This is also the first introductory polymer text to fully explain computational polymer science, including molecular dynamics and Monte Carlo methods. Simulation concepts are supported with many application examples, ranging from prediction of PVT values to permeability and free volume.

Fried thoroughly covers synthetic polymer chemistry; polymer properties in solution and in melt, rubber, and solid states; and all important categories of plastics. This revised edition also adds many new calculations, end-of-chapter problems, and references.

In-depth coverage includes

- Polymer synthesis: step- and chain-growth; bulk, solution, suspension, emulsion, solid-state, and plasma; ionic liquids, and macromers; and genetic engineering
- Amorphous and crystalline states, transitions, mechanical properties, and solid-state characterization
- Polymers and the environment: degradation, stability, and more
- Additives, blends, block copolymers, and composites "including interpenetrating networks, nanocomposites, buckyballs, carbon nanotubes, graphene, and POSS
- Biopolymers, natural polymers, fibers, thermoplastics, elastomers, and thermosets
- Engineering and specialty polymers, from polycarbonates to ionic polymers and high-performance fibers
- Polymer rheology, processing, and modeling
- Correlations and simulations: group contribution, topological indices, artificial neural networks, molecular dynamics, and Monte Carlo simulations

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Customer Reviews

This textbook provides a good introduction to polymers, their processing, applications, and properties. The book assumes minimal prior knowledge of polymers, and begins with a simple intro to properties such as glass transition temperature, molecular weight, thermoplastic versus thermoset. Electrical, mechanical, and chemical properties of polymers are discussed and related to the structure and composition of the material. The book is organized very well. It includes dedicated chapters on synthesis, processing, degradation, and for the different classes of polymers. Each chapter is short and can stand alone by itself. A short list of references is also provided at the end of each chapter, and these are organized according to the different sections in each chapter. The level of the text is appropriate for juniors or seniors in engineering or chemistry. The math is kept at a simple level; nothing harder than integral calculus, and there are a lot of pictures and diagrams. The amount and scope of information also warrants purchasing this as a general reference for polymers. I recommend this book for those who are learning about, or teaching about polymers.

This is a really nice introduction to polymers, and covers most major topics. It nicely complements the Intro to Polymers book by Young and Lovell (also another nice intro book). This book is geared for science majors and engineers. It has some basic math (algebra and a little calculus), and assumes a basic understanding of chemistry and organic chemistry. I also like that it reads well on a Kindle (Kindle PC App and iPad Kindle app). Chemical structures are graphically clear, and the mathematical equations in the book are readable. Not the best Kindle formatted book I've seen, but not bad.

Excellent Book. I use it for my grad class. Covers most topics that are required to gain a sufficient introductory knowledge in polymer science. I would recommend it to undergrads as well as grad students.

A great text for Materials Chemistry subjects at University. This book displays a great deal of information both calculatory and chemically which complements the text from all levels. Plastics look out!!!!

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