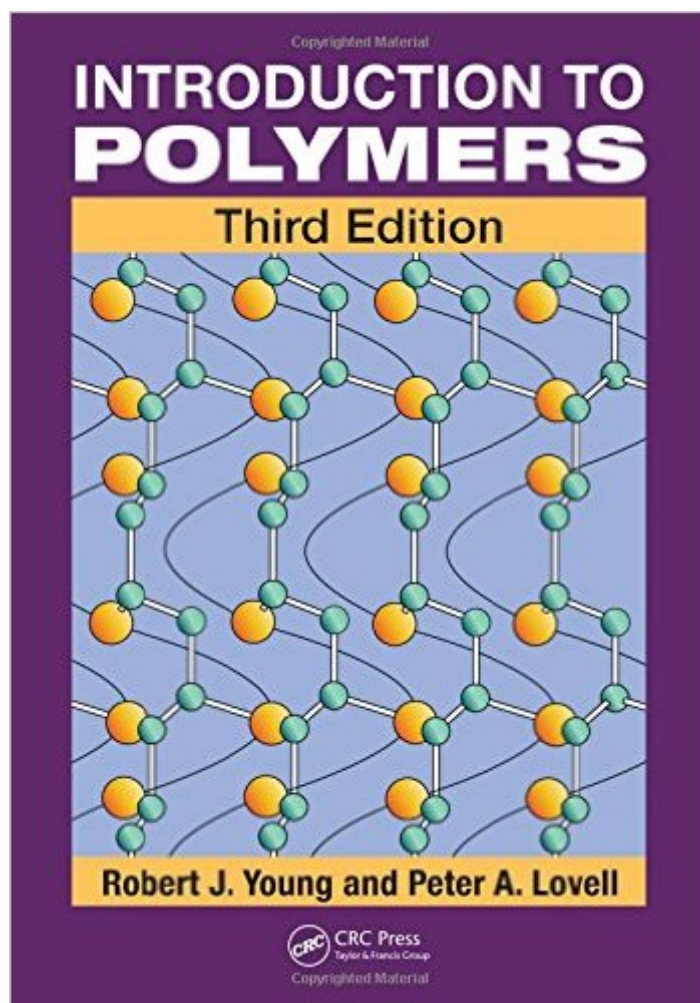


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# Introduction To Polymers, Third Edition



## Synopsis

Thoroughly updated, *Introduction to Polymers, Third Edition* presents the science underpinning the synthesis, characterization and properties of polymers. The material has been completely reorganized and expanded to include important new topics and provide a coherent platform for teaching and learning the fundamental aspects of contemporary polymer science. New to the Third Edition

**Part I** This first part covers newer developments in polymer synthesis, including  $\hat{\text{living}}^{\text{TM}}$  radical polymerization, catalytic chain transfer and free-radical ring-opening polymerization, along with strategies for the synthesis of conducting polymers, dendrimers, hyperbranched polymers and block copolymers. Polymerization mechanisms have been made more explicit by showing electron movements.

**Part II** In this part, the authors have added new topics on diffusion, solution behaviour of polyelectrolytes and field-flow fractionation methods. They also greatly expand coverage of spectroscopy, including UV visible, Raman, infrared, NMR and mass spectroscopy. In addition, the Flory-Huggins theory for polymer solutions and their phase separation is treated more rigorously.

**Part III** A completely new, major topic in this section is multicomponent polymer systems. The book also incorporates new material on macromolecular dynamics and reptation, liquid crystalline polymers and thermal analysis. Many of the diagrams and micrographs have been updated to more clearly highlight features of polymer morphology.

**Part IV** The last part of the book contains major new sections on polymer composites, such as nanocomposites, and electrical properties of polymers. Other new topics include effects of chain entanglements, swelling of elastomers, polymer fibres, impact behaviour and ductile fracture. Coverage of rubber-toughening of brittle plastics has also been revised and expanded. While this edition adds many new concepts, the philosophy of the book remains unchanged. Largely self-contained, the text fully derives most equations and cross-references topics between chapters where appropriate. Each chapter not only includes a list of further reading to help readers expand their knowledge of the subject but also provides problem sets to test understanding, particularly of numerical aspects.

## Book Information

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## Customer Reviews

This is a lovely introductory text for polymer science, hitting on all the major concepts of characterization, structure, mechanical properties, and synthesis. Topics are covered very concisely, but with sufficient detail to be useful in several different graduate level courses on polymers. Great background for understanding Flory-Huggins theory, chain dimensions. And an excellent price as well! Just my opinions as a grad student in some polymers courses...

OK, I'll give my 2 cents on this book. It's entitled "Introduction to Polymers" but it's not really an introductory book. Given its wide and deep topic coverage, along with its formal and rigorous style, it can best be described as a Reference book and not a teaching textbook. It's best suited to people already working in the field of polymers or graduate students or university professors - i.e. not students who need more pages devoted to the basics. Also the font size is smallish making it more of a strain to read. Originally I gave it 3 stars but now that I've used it for a while I've changed my mind to 4 stars based on its sheer comprehensiveness and excellent index. I'll deduct one star because the title is not a good match for its contents and the dry, academic tone. Good competitors to Young/Lovell are "Principles of Polymerization", 4th Edition by George Odian (highly recommended) and "Essentials of Polymer Science and Engineering" by Paul C. Painter and Michael M. Coleman (also strongly recommended). For undergraduate students in one semester polymer courses the better teaching books are: (1) Polymer Chemistry: An Introduction, 2nd or 3rd Edition by Stevens (the best of the 4) (2) Introduction to Polymer Chemistry, 2nd or 3rd Edition by Carraher, Jr. (3) Polymer Science and Technology, 2nd or 3rd Edition by Fried (a more technology oriented book) (4) Fundamentals of Polymer Science: An Introductory Text, 2nd Edition by Painter & Coleman (this book is dated in comparison to the others)

An excellent and a must read for anyone with an interest in polymeric materials. It easily is the best introductory book on the subject and I'd recommend it to all students - believe it - I've been taught

by the authors! I only wish they'd also write on more specialized topics in Polymer Science.

I've got a number of books on polymers, from the basics, to the more technical aspects of their chemistry, processing, and behavior. This is still my first go to reference when I need to look something up. It's an introductory guide, yes, but it provides a good amount of depth on most topics as well. I think what I like most about this book is how it's written. It's extremely easy to read, with concepts explained in clear English without any unnecessary wording. It's very straight forward and easy to understand, even for those not wholly familiar with the science. The book covers the majority of topics you'll need to know, including definitions and nomenclature, all the different synthesis methods, different methods of characterization, the different structures seen, and an excellent chapter on the mechanical properties and behavior, including deformation mechanisms. I'd recommend this to any budding materials science student, whether or not it's required reading. Often times I found myself coming to this book rather than the required text, simply for ease of reading or to better familiarize myself with the concept before trying to work through the (often times) poorly worded required text.

I have used this text successfully in one of my courses. I found that it is up-to-date on current polymer synthesis techniques, and does a good job of developing the key concepts in polymer physical chemistry, polymerization mechanisms and kinetics. The problems at the end of each chapter are good homework exercises to challenge the students to understand the material more fully.

This book covers topics from stereochemistry, synthesis, structure, properties, and more. All explained in enough detail and in easy to understand wording. Highly recommended (from someone who has studied polymers for +5 years)

I must say this is one of the best texts for polymer chemistry and physics. End of chapter problems are challenging but not impossible. My only complaint is about the materials used in making the book. Poor grade of glue and ink results in pages falling out from the book and text smears just from light touching.

Very useful! I would definitely recommend it. Covers all of the basics in an easy to understand format. Does not go into heavy detail, but is all inclusive and is a great overview. It also has practice

problems at the end of each chapter which help solidify the concepts.

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