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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	From the Contents: Introduction -- Physical Structure of Macromolecules -- Experimental Methods to Determine Molecular Quantities -- Structure and States of Polymers -- Linear Viscoelastic Deformation Behavior in Simple Shear -- Time-Temperature Shift of Mechanical Properties -- Linear Viscoelastic Deformation under Three-Dimensional Stresses -- Fundamentals of the Rheology of Large Deformations -- Large Deformations of Polymers -- Rheological Equations of State.-Shear Rheology -- Extensional Rheology -- Rheological Properties and Molecular Structure -- Thermorheological Behavior of Various Polymer Melts -- Rheometry -- Measurements of Flow Fields of Polymer Melts by Laser-Doppler Velocimetry -- Rheological Properties and Processing.

This book describes the properties of single polymer molecules and polymeric materials and the methods how to characterize them. Molar masses, molar mass distributions and branching structure are discussed in detail. These properties are decisive for a deeper understanding of structure/properties relationships of polymeric materials. This book therefore describes and discusses them in detail. The mechanical behavior as a function of time and temperature is a key subject of the book. The authors present it on the basis of many original results they have obtained in their long research careers. They present the temperature dependence of mechanical properties of various polymeric materials in a wide temperature range: from cryogenic temperatures to the melt. Besides an extensive data collection on the transitions of various different polymeric materials, they also carefully present the physical explanations of the observed phenomena. Glass transition and melting temperatures are discussed, particularly, with their relevance for applications. A comprehensive part of the book deals with properties of polymers in the molten state and their decisive influence on the processing of the materials. The book presents and discusses viscous and elastic properties in detail as a function of molar mass, polydispersity, and branching. This book addresses students of polymer and materials science, as well as other natural sciences. Besides this educational value, it will also serve as a valuable monograph for everyone dealing with polymers and polymeric materials, from research, over development, to applications.

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