

1. Record Nr.	UNINA9910788555303321
Autore	Lin Y.-H
Titolo	Polymer viscoelasticity [[electronic resource]] : basics, molecular theories, experiments and simulations // Yn-Hwang Lin
Pubbl/distr/stampa	Singapore ; ; Hackensack, N.J., : World Scientific, c2011
ISBN	1-283-14464-6 9786613144645 981-4313-04-1
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (350 p.)
Disciplina	620.1/9204232
Soggetti	Polymers - Viscosity Viscoelasticity
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Contents; Preface; Preface to the Second Edition; 1. Conformation of Polymer Chains; 2. Rubber Elasticity; 3. Polymer Chain Dynamics; 4. Linear Viscoelasticity; 5. Stress and Strain; 6. Molecular Theory of Polymer Viscoelasticity - Elastic Dumbbell Model; 7. Molecular Theory of Polymer Viscoelasticity-The Rouse Model; 8. Molecular Theory of Polymer Viscoelasticity - Entanglement and the Doi-Edwards (Reptation) Model; 9. Molecular Theory of Polymer Viscoelasticity-The Extended Reptation Model; 10. Comparison of the Extended Reptation Theory (ERT) with Experiments 11. ERT vs. Rouse Theory, Concentration Dependence and Onset of Entanglement, and Tube Dilation 12. Molecular Theory of Polymer Viscoelasticity - Nonlinear Relaxation Modulus of Entangled Polymers; 13. Number of Entanglement Strands per Cubed Entanglement Distance, nt; 14. Glass Transition-Related Thermorheological Complexity in Polystyrene Melts; 15. The Basic Mechanism for the Thermorheological Complexity in Polystyrene Melts; 16. Monte Carlo Simulations of Stress Relaxation of Rouse Chains 17. Monte Carlo Simulations of Stress Relaxation of Fraenkel Chains - Linear Viscoelasticity of Entanglement-Free Polymers 18. Monte Carlo Simulations of Stress Relaxation of Fraenkel Chains - Nonlinear Viscoelasticity of Entanglement-Free Polymers; Index

Sommario/riassunto

This book covers in great detail the Rouse-segment-based molecular theories in polymer viscoelasticity - the Rouse theory and the extended reptation theory (based on the framework of the Doi-Edwards theory) - that have been shown to explain experimental results in a consistently quantitative way. The explanation for the 3.4 power law of viscosity, quantitative line-shape analyses of viscoelastic responses and agreements between different sorts of viscoelastic responses, the consistency between the viscoelasticity and diffusion results, the clarification of the onset of entanglement,
