

1. Record Nr.	UNINA9911020280003321
Autore	Han Charles C
Titolo	Scattering and dynamics of polymers : seeking order in disordered systems // Charles C. Han, A. Ziya Akcasu
Pubbl/distr/stampa	Hoboken, N.J., : Wiley, 2011
ISBN	9786613175038 9780470828250 0470828250 9781283175036 1283175037 9780470824849 0470824840 9780470824832 0470824832
Descrizione fisica	1 online resource (339 p.)
Classificazione	SCI013040
Altri autori (Persone)	AkcasuZiyaeddin A
Disciplina	500 547.7
Soggetti	Light - Scattering Polymers - Spectra Polymers - Rheology
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	Scattering and Dynamics of Polymers: Seeking Order in Disordered Systems; Contents; Foreword By Professor Timothy P. Lodge; Foreword By Professor Hyuk Yu; Preface; 1 Plane Waves, Scattering, and Polymers; 1.1 Single-Particle Scattering/Multi-Particle Scattering; 1.2 Molecular Weight of Particles with Thermodynamic Interactions; 1.3 Scattering Structure Factor of a Polymer/Point Scattering Approximation; Appendix; 1.A: Thermodynamics; References; 2 Fluctuations, Correlation, and Static/Dynamic Scattering; 2.1 Space-Time Correlation Function; 2.2 Density in q and t Space 2.3 Some Properties of S(q,t) and Dynamic Scattering2.4 Examples of Dynamic Light Scattering in Polymer Solutions; 2.4.1 Concentration

Dependence of Diffusion Coefficient at Various Molecular Weights and Temperatures; 2.4.2 Molecular Weight and Temperature Dependence of Polymer Dimensions in Solutions; 2.4.3 Molecular Weight and Temperature Dependence of Intrinsic Viscosity of Polymer Solutions; 2.4.4 Dynamic Light Scattering in Polydisperse Polymer Solutions; 2.4.5 Molecular Weight Measurement by Dynamic Light Scattering 2.4.6 Dynamic Light Scattering of Dilute Polymer Solutions in the Nonasymptotic q-Region 2.4.7 Dynamic Light Scattering of Semidilute Polymer Solutions; 2.5 Light, X-Ray, and Neutron Scattering; 2.5.1 Light Scattering from Dipoles; 2.5.2 Scattering of X-Rays by Electrons; 2.5.3 Scattering of Neutrons by Nucleus; 2.5.4 Comparison of Light, X-Ray, and Neutron as a Probing Scattering Wave; Appendix; 2.A: Gaussian Stochastic Variable Approximation; 2.B: Spin Incoherence; 2.C: The Basic Scattering Laws for Incompressible Systems; References

3 Dynamics and Kinetics of Phase Separation in Polymer Systems 3.1 Thermodynamics of Polymer Blends; 3.1.1 Flory-Huggins Lattice Model and Phase Diagram of Binary Polymer Blend; 3.1.2 Ehrenfest Classification of Phase Transition and Thermodynamic Stability; 3.2 The Theory of Kinetics of Phase Separation; 3.2.1 Free-Energy Functional in a Binary Polymer Mixture; 3.2.2 Kinetics of Binary Polymer Blends, and the Linear Cahn-Hilliard-Cook Theory; 3.2.3 Langevin Equation in Nonlinear Systems; 3.3 Spinodal Decomposition in Normal Binary Homopolymer Systems

3.3.1 More Details on the Cahn-Hilliard Theory 3.3.2 Experiments on Spinodal Decomposition; 3.3.3 Phase Dissolution; 3.3.4 Temperature Step Experiments within the One-Phase Region; 3.3.5 Summary; 3.4 Nucleation Phase Separation; 3.4.1 Fluctuations in the Metastable Region; 3.4.2 Nucleation Process; 3.4.3 Properties of the Nuclei; 3.4.4 Summary; 3.5 Phase Separation and Phase Behavior under Shear Flow; 3.5.1 Shear Effect in the One-Phase Region; 3.5.2 Shear Effect in the Two-Phase Region; 3.5.3 Shear-Induced Demixing 3.5.4 Nucleation Phase Separation under Shear Flow and Other Rheological Methods

Sommario/riassunto

"In this book, we will start from the traditional light scattering for dilute solution, and then bring in the concepts of fluctuations, correlations, and also space-time correlation function"--
