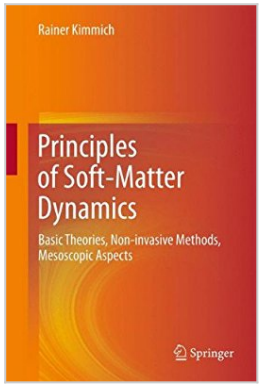

Principles of Soft-Matter Dynamics: Basic Theories, Non-invasive Methods, Mesoscopic Aspects

By Rainer Kimmich

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Practical applications of soft-matter dynamics are of vital importance in material science, chemical engineering, biophysics and biotechnology, food processing, plastic industry, micro- and nano-system technology, and other technologies based on non-crystalline and non-glassy materials.

Principles of Soft-Matter Dynamics. Basic Theories, Non-invasive Methods, Mesoscopic Aspects covers fundamental dynamic phenomena such as diffusion, relaxation, fluid dynamics, normal modes, order fluctuations, adsorption and wetting processes. It also elucidates the applications of the principles and of the methods referring to polymers, liquid crystals and other mesophases, membranes, amphiphilic systems, networks, and porous media including multiphase and multi-component materials, colloids, fine-particles, and emulsions. The book presents all formalisms, examines the basic concepts needed for applications of soft-matter science, and reviews non-invasive experimental techniques such as the multi-faceted realm of NMR methods, neutron and light quasi-elastic scattering, mechanical relaxation and dielectric broadband spectroscopy which are treated and compared on a common and consistent foundation. The standard concepts of dynamics in fluids, polymers, liquid crystals, colloids and adsorbates are comprehensively derived in a step-by-step manner. Principles and analogies common to diverse application fields are elucidated and theoretical and experimental aspects are supplemented by computational-physics considerations.

Principles of Soft-Matter Dynamics. Basic Theories, Non-invasive Methods, Mesoscopic Aspects appeals to graduate and PhD students, post-docs, researchers, and industrial scientists alike.

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Editorial Review

From the Back Cover

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