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Autore	Phan-Thien Nhan
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Collana	Graduate Texts in Physics, , 1868-4513
Disciplina	620.11232
Soggetti	Fluids Polymers Mechanics Mechanics, Applied Amorphous substances Complex fluids Materials science Fluid- and Aerodynamics Polymer Sciences Solid Mechanics Soft and Granular Matter, Complex Fluids and Microfluidics Characterization and Evaluation of Materials
Lingua di pubblicazione	Inglese
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Tensor Notation -- Rheological Properties -- Kinematics and Equations of Balance -- Constitutive Equation -- Inelastic Models and Linear Viscoelasticity -- Steady Viscometric Flows -- Polymer Solutions -- Suspensions -- DPD -- Problems.
Sommario/riassunto	This book presents an introduction to viscoelasticity, in particular, to the theories of dilute polymer solutions and dilute suspensions of rigid particles in viscous and incompressible fluids. These theories are important, not just because they apply to practical problems of industrial interest, but because they form a solid theoretical base upon which mathematical techniques can be built, from which more complex

theories can be constructed, to better mimic material behaviour. The emphasis of this book is not on the voluminous current topical research, but on the necessary tools to understand viscoelasticity. This is a compact book for a first year graduate course in viscoelasticity and modelling of viscoelastic multiphase fluids. The Dissipative Particle Dynamics (DPD) is introduced as a particle-based method, relevant in modelling of complex-structured fluids. All the basic ideas in DPD are reviewed. The third edition has been updated and expanded with new results in the meso-scale modelling, links between the fluid modelling to its physical parameters and new matlab programs illustrating the modelling. Particle-based modelling techniques for complex-structure fluids are added together with some sample programs. A solution manual to the problems is included.