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Titolo	Rheological Modelling: Thermodynamical and Statistical Approaches [[electronic resource]] : Proceedings of the Meeting Held at the Bellaterra School of Thermodynamics Autonomous University of Barcelona Sant Feliu de Guíxols, Catalonia, Spain, 24–28 September 1990 / / edited by Jose Casas-Vazquez, David Jou
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Descrizione fisica	1 online resource (VII, 378 p. 13 illus.)
Collana	Lecture Notes in Physics, , 0075-8450 ; ; 381
Disciplina	536.7
Soggetti	Thermodynamics Mechanics Statistical physics Dynamical systems Physical chemistry Classical Mechanics Complex Systems Physical Chemistry Statistical Physics and Dynamical Systems
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Nota di contenuto	Viscoelastic behavior of polymeric liquids -- Problems associated with the elasticity of liquids -- Rheology and shear induced structure of fluids -- On the dynamics of polymers in solution -- Mesoscopic dynamics and thermodynamics: Applications to polymeric fluids -- Conformation tensor rheological models -- Biofluids as structured media: Rheology and flow properties of blood -- Phase separation of flowing polymer solutions -- Towards a unified formulation of microrheological models -- Adhesion and rheology -- Rheology of hard sphere suspensions -- Extended irreversible thermodynamics versus rheology -- Objectivity and the extended thermodynamic description of rheology -- Convection in viscoelastic fluids --

Fractional relaxation equations for viscoelasticity and related phenomena -- Relaxation functions of rheological constitutive equations with fractional derivatives: Thermodynamical constraints -- A simple one dimensional model showing glass like dynamical behavior -- Statistical conformation of a polymer in a nematic medium under a shear flow using the Rouse model -- On the modelling of stationary heat transfer by the use of dissipative networks -- Thermomechanics of porous media filled with a fluid.

Sommario/riassunto

The pedagogically presented lectures deal with viscoelastic behaviour of fluids, the compatibility of rheological theories with nonequilibrium thermodynamics, fluids under shear, and polymer behaviour in solution and in biological systems. The main aims of the book are to stress the importance of the study of rheological systems for statistical physics and nonequilibrium thermodynamics and to present recent results in rheological modelling. The book will be a valuable source for both students and researchers.
