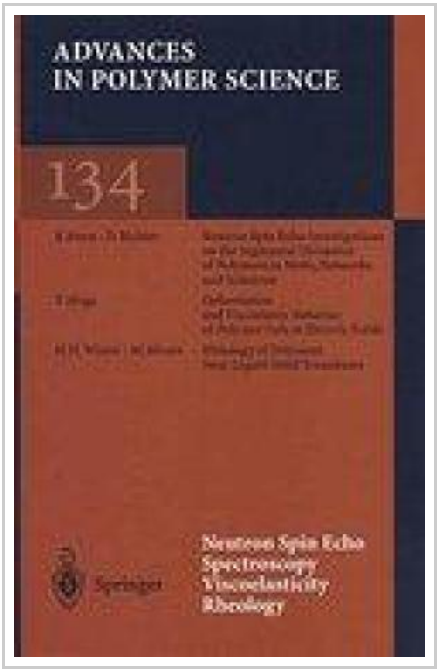

Neutron Spin Echo Spectroscopy Viscoelasticity Rheology

By -

Springer Okt 2013, 2013. Taschenbuch. Book Condition: Neu. 235x155x14 mm. This item is printed on demand - Print on Demand Neuware - Viscoelasticandtransportpropertiesofpolymersintheliquid(solut ion,melt)(liquid-like (rubber) state determine their processing and application to a large extent and are of basic physical interest [1-3]. An understanding of these dynamic properties at a molecular level, therefore, is of great importance. However,thisunderstandingiscomplicatedbythefactsthatdi erentmotional processes may occur on di erent length scales and that th dynamics are governed by universal chain properties as well as by the special chemical structure of the monomer units [4,5]. The earliest and simplest approach in this direction starts from Langevin equations with solutions comprising a spectrum of relaxation modes [1-4]. Special features are the incorporation of entropic forces (Rouse model, [6]) whic relax uctuations of reduced entropy, and of hydrodynamic interactions (Zimm model, [7]) which couple segmental motions via long-range back ow elds in polymer solutions, and the inclusion of topological constraints or entanglements (reptation or tube model, [8-10]) which are mutually imposed within a dense ensemble of chains. Another approach, neglectin the details of the chemical structure and concentratingontheuniversalelementsofchainrelaxation,isbasedondynan scalingconsiderations[4,11].Inparticularinpolymersolutions,thisa pproach ers an elegant tool to specify the general trends of polymer dynamics, although it su...

Reviews

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