Abstract Pacifichem 2000, Honululu, Hawaii, 14.-19. 12. 2000

Investigation of associated Structures in Solution with combined rheo-mechanical and rheo-optical measurements

C. Clasen W.-M. Kulicke

Institute of Technical and Macromolecular Chemistry
University of Hamburg
Bundestr. 45, 20146 Hamburg, Germany

The investigation of the viscoelastic properties of polymer solutions plays an important role in industrial processing, manufacturing and in the final products and applications. The addition of a polymer to a solution to acquire a desired product profile results in a complex solution structure. Especially polymers from renewable sources tend to form aggregates and associated structures that alter the viscoelastic properties and make it difficult to establish structure-property relationships. With combining rheo-mechanical and rheo-optical measurements it is now possible to investigate qualitatively and quantitatively the macroscopic flow behaviour on a molecular level. This method gives in particular information on the orientation of polymersegments, aggregated and associated structures in the shear and extensional flow, their deformability and their shear stability, and on the build up of associated structures near phase separation points and during the formation of gelation. Examples will be given in detail on cellulosic derivatives and β-glucans in aqueous solution.