COMPARISON OF DIFFERENT MOLECULAR MODELS OF KINETIC THEORY IN TRANSIENT SHEAR FLOW

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Rheological behavior of dilute polymer solutions in transient flow is studied, using three different molecular models; that is the Wormlike chain, the Pade approximation and the FENE model. The transient flow was considered in simple shear flow and circular tube which are homogenous and non-homogenous shear flows, respectively. In this respect, both temporal and steady state material functions are evaluated. Furthermore the effect of polymer structural parameter in different flow conditions is investigated and reported. Prediction of shear thinning behavior by three models is compared in terms of the consistency factor and the power-law index.