

STUDY OF START-UP POISEUILLE FLOW OF DILUTE POLYMER SOLUTIONS USING BROWNIAN DYNAMICS: EFFECT OF POLYMER STRUCTURE

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Flow behavior of dilute polymer solutions in a circular tube is investigated using molecular models of kinetics theory (i.e. The Hookean dumbbells, FENE and FEN-P). For this purpose, the CONNFESSIT approach, developed by Laso and Ottinger, is utilized to study pressure-driven, non-homogenous shear flow. The effects of chain extensibility at different flow rates are studied and transient velocity profile, components of polymer stress, and viscosity are reported. The results are compared with findings from simple shear flow studies.