Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

Multi-scale simulations of shear-dominated flows of rigid rod dispersions M. GREGORY FOREST, Univ. of North Carolina at Chapel Hill, RUHAI ZHOU, Old Dominion University, QI WANG, Florida State University, HONG ZHOU, Naval Postgraduate School — The Doi-Hess theory coupled with an anisotropic Marrucci-Greco distortional elasticity potential provides a multi-scale description of the flowing nematic liquid crystalline polymers (LCPs). We have developed numerical simulation methods for the model equations for structure formation of LCPs in confied, planar Couette cells. In this talk we will provide some computational results from our numerical simulations. This includes the steady state structure in weak shear flow, structure transtions in the space determined by the Ericksen number and the Deborah number, the out-of-plane attractors and the chaos phenomena.

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Date submitted: 05 Aug 2005 Electronic form version 1.4