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Hong Zhou* (hzhou@nps.edu), Department of Applied Mathematics, Naval Postgraduate School, 833 Dyer Road, Bldg. 232, SP-250, Monterey, CA 93943, **Hongyun Wang**, Department of Applied Math & Statistics, University of California at Santa Cruz, Santa Cruz, CA 95064, **Qi Wang**, Department of Mathematics, Florida State University, Tallahassee, FL 32306, and **M. Gregory Forest**, Department of Mathematics, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599. *Mathematical characterization of equilibria of the Smoluchowski equation for nematic liquid crystalline polymers.*

Nematic liquid crystalline polymers are technologically important materials with applications in many areas including display, high strength fibers, and sensors. The Doi-Hess kinetic theory has been widely used to study the behavior of nematic polymers. In this theory the dynamics of the orientational probability density function is described by the Smoluchowski equation. We apply mathematical analysis to characterize the equilibria of the Smoluchowski equation. We show that all stable equilibria are axisymmetric. (Received July 19, 2007)