Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Viscoelastic parameters and flexoelectric effect in a bent-core nematic liquid crystal studied by dynamic light scattering MADHABI MAJUMDAR, K. NEUPANE, JAMES T. GLEESON, ANTAL JAKLI, SAMUEL SPRUNT, Kent State University — Recent measurements of the flexure-induced electric polarization in certain bent-core nematics (BCNs) have demonstrated a giant flexoelectric effect [1]. We present a study of nematic elasticities and viscosities in one of these compounds, together with an attempt to characterize the flexoelectricity by its effect on director fluctuations. Our results combined with a reanalysis of earlier data indicate that the flexoelectricity is a phenomenon distinct from the ordinary director modes; additionally we observe unusual, very slow fluctuations in polarized scattering which suggest the BCN has a heterogeneous, "glassy" character. Dilution in a miscible calamitic indicates a dramatic development of the slow dynamics between 30 wt % and 60 wt % BCN. We suggest a model to account for both our present results and the giant flexoelectricity discovered in [1]. Reference: [1] J. Harden *et al.*, *Phys. Rev. Lett., 97,* 157802 (2006). Acknowledgement: NSF DMR-0606160.

Madhabi Majumdar
Kent State University

Date submitted: 15 Dec 2008 Electronic form version 1.4