

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

**Ferromagnetic viscoelastic liquid crystalline materials** CRISTINA SCHLESIER, PETR SHIBAEV, SCOTT MCDONALD, Fordham University, Dept of Physics — Novel ferromagnetic liquid crystalline materials were designed by mixing ferromagnetic nanoparticles with glass forming oligomers and low molar mass liquid crystals. The matrix in which nanoparticles are embedded is highly viscous that reduces aggregation of nanoparticles and stabilizes the whole composition. Mechanical and optical properties of the composite material are studied in the broad range of nanoparticle concentrations. The mechanical properties of the viscoelastic composite material resemble those of chemically crosslinked elastomers (elasticity and reversibility of deformations). The optical properties of ferromagnetic cholesteric materials are discussed in detail. It is shown that application of magnetic field leads to the shift of the selective reflection band of the cholesteric material and dramatically change its color. Theoretical model is suggested to account for the observed effects; physical properties of the novel materials and liquid crystalline elastomers are compared and discussed. [1] P.V. Shibaev, C. Schlesier, R. Uhrlass, S. Woodward, E. Hanelt, *Liquid Crystals*, 37, 1601 (2010) [2] P.V. Shibaev, R. Uhrlass, S. Woodward, C. Schlesier, Md R. Ali, E. Hanelt, *Liquid Crystals*, 37, 587 (2010)

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Date submitted: 14 Nov 2011

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