

Abstract Submitted
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Viscoelastic chiral liquid crystals: Response to heat and light.

DANIEL BATEMAN, None, PETR SHIBAEV, Fordham University — Highly viscous cholesteric liquid crystals with distinctive viscoelastic properties were studied [1,2] as heat and light driven materials able to contract under light irradiation and heating. Materials are comprised of glass-forming oligomers (Wacker oligomers), low molar mass liquid crystals, and azo dyes. The latter provide sensitivity of the whole material to light irradiation. Mixtures with different azo dyes were studied and their effectiveness in terms of mechanical response (sample contraction) was determined. The optimal concentration of oligomers in terms of maximizing the elastic response and retaining high processability was found for different compositions of material. The mechanism of mechanical response is discussed in terms of the contraction of helical pitch and entropic changes in the overall structure of oligomer-liquid crystal mixture. [1] Petr V. Shibaev¹, Benjamin Crooker¹, Michael Manevich², and Eckhard Hanelt³ Appl. Phys. Lett. **99**, 233302 (2011), [2] Peter V. Shibaev, Pierre Rivera, Dashiell Teter, Salvatore Marsico, Martin Sanzari, Veena Ramakrishnan, Eckhard Hanelt, Optics Express **16**, 2965 (2008)

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