

Abstract Submitted
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Deformable viscoelastic cholesteric films with nanoparticles PETR SHIBAEV, CRISTINA SCHLESIER, Department of Physics, Fordham University, New York — Large spectral shifts of the selective reflection band and color changes are achieved in highly viscous mixture of cholesteric polymers and low molar mass liquid crystals filled with nanoparticles and subject to mechanical deformations. The color of the material changes instantaneously during deformation; the time for the color to be completely restored increased with the viscosity of the polymer mixture. The viscosity increases with increasing concentration of polymer or nanoparticles. This composite material was used to build highly sensitive mechanical sensor that was used to visualize both stress and deformation. The model describing the relation between the color and deformation is suggested. This model takes into account non-linear response to deformation and structural rearrangements inside the liquid crystalline matrix.

P.V. Shibaev, R. Uhrlass, S.Woodward, C. Schlesier, and Eckhard Hanelt, *Liquid Crystals*, v.37, pp. 587-592, 2010

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