

The photomechanical response of nematic elastomers doped with non-azo dyes

Tibor Tóth-Katona ¹ and Peter Palfy-Muhoray ²

¹ *Research Institute for Solid State Physics and Optics, Hungarian Academy of Sciences, P.O.B. 49, H-1525 Budapest, Hungary*

² *Liquid Crystal Institute, Kent State University, P.O.B. 5190, Kent, OH 44242, USA*

In an attempt to gain insight into the origins of the extremely fast photomechanical response of nematic elastomers reported by M. Camacho-Lopez et al. [1], and to attempt to assess the relative contributions of photoisomerization of azo dyes and direct thermal response due to linear absorption, we present further experimental data regarding the photomechanical response of nematic elastomers doped with different non-azo dyes. Furthermore, we point out the importance of the molecular shape of the dye dissolved in the elastomer which can drastically influence the mechanical response of the sample. We also show that the direction of the deformation (bending) can be easily changed by a proper choice of the experimental geometry.

References

[1] M. Camacho-Lopez, H. Finkelmann, P. Palfy-Muhoray, and M. Shelley, *Nature Materials* **3**, 307 (2004).