Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

The contribution of intermolecular forces to phototropic actuation of liquid crystalline elastomers

*Tayler S. Hebner,[a] Christopher N. Bowman[a,b] and Timothy J. White **[a,b]*

a. Department of Chemical and Biological Engineering, University of Colorado Boulder.
b. Materials Science and Engineering Program, University of Colorado Boulder.

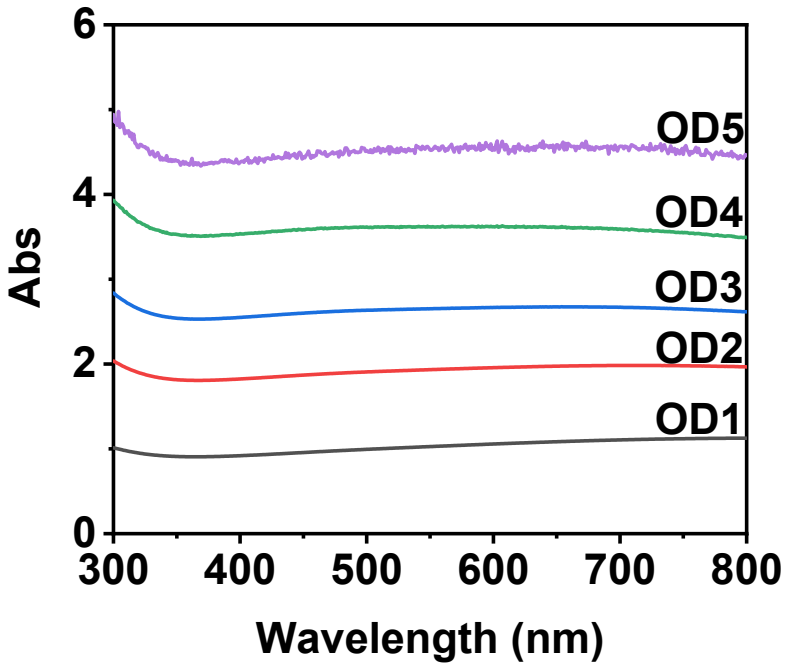

Fig. S1 UV-Vis curves for neutral density metallic filter set.

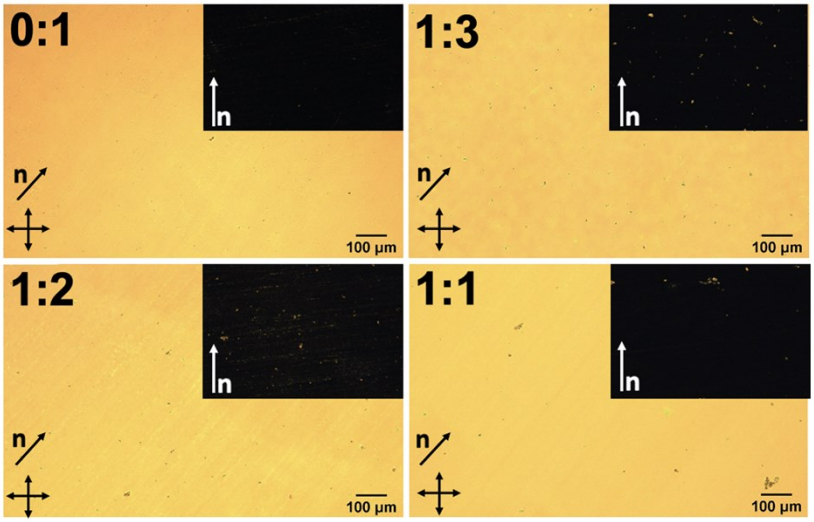

Fig. S2 Images taken under a polarized optical microscope with nematic director 45° and 0° (inset) in relation to crossed polarizers.

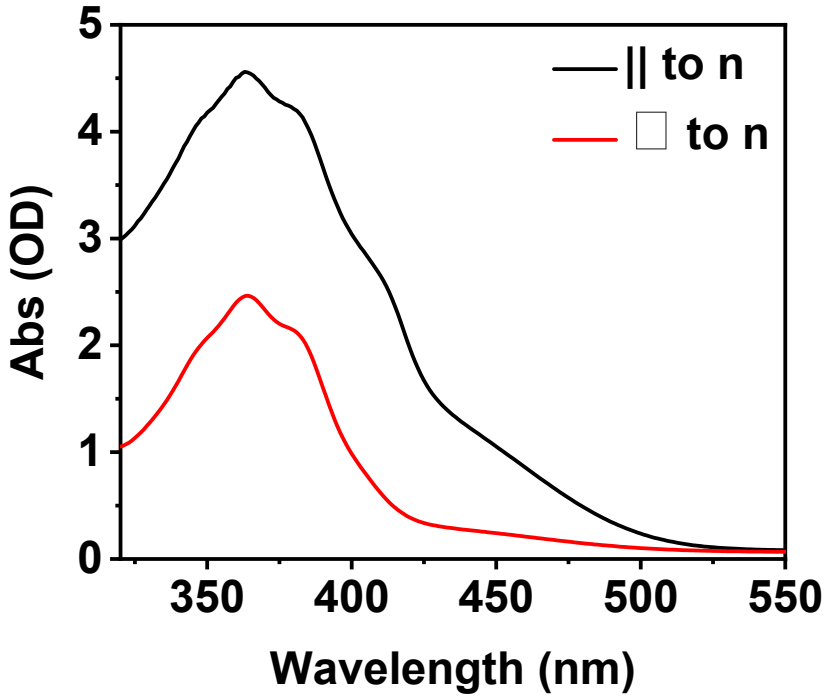

Fig. S3 Polarized UV-Vis curves (0° and 90° to nematic director) of monodomain azobenzene-functionalized LCEs used to calculate dichroic ratios to obtain order parameters.

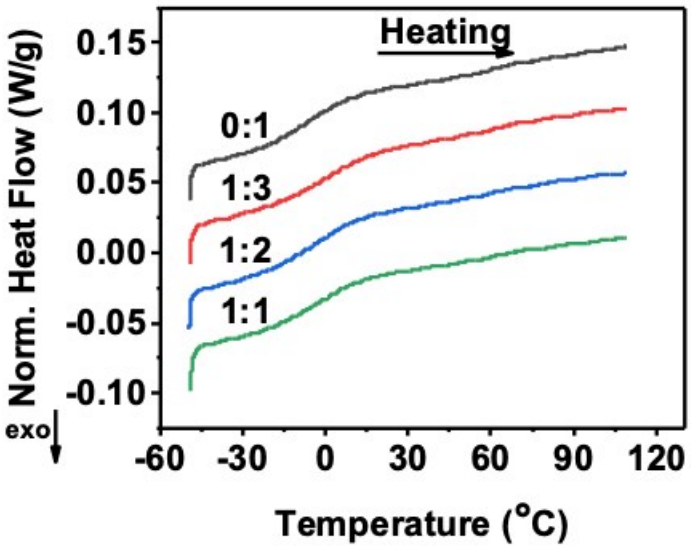

Fig. S4 DSC thermograms for azobenzene-functionalized LCE.

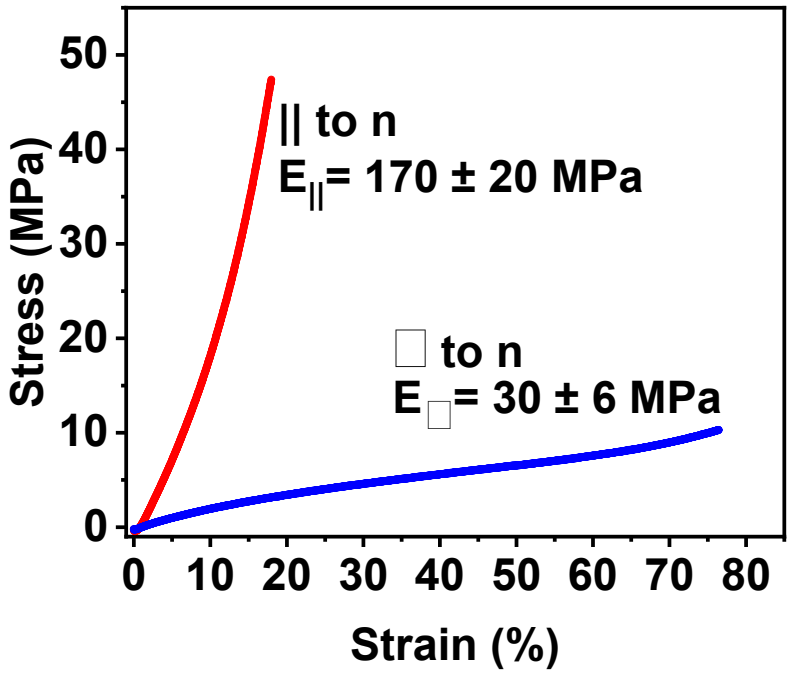

Fig. S5 Representative tensile curves for monodomain azobenzene-functionalized LCE films tested parallel and perpendicular to the nematic director.

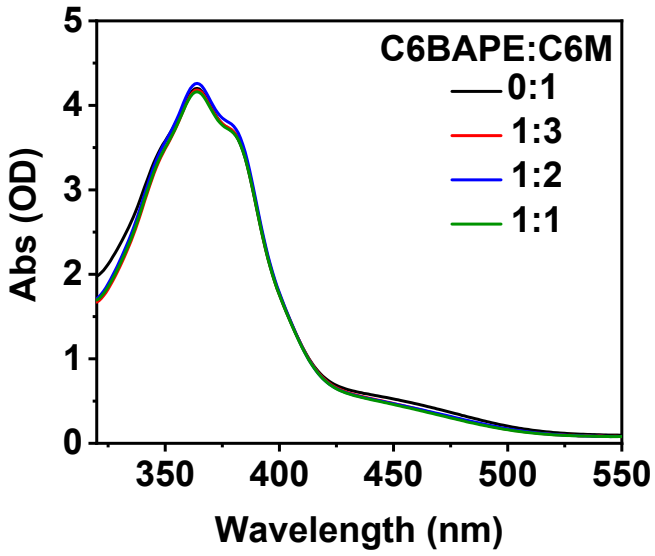

Fig. S6 (a) Unpolarized UV-Vis spectra for azobenzene-functionalized LCE.

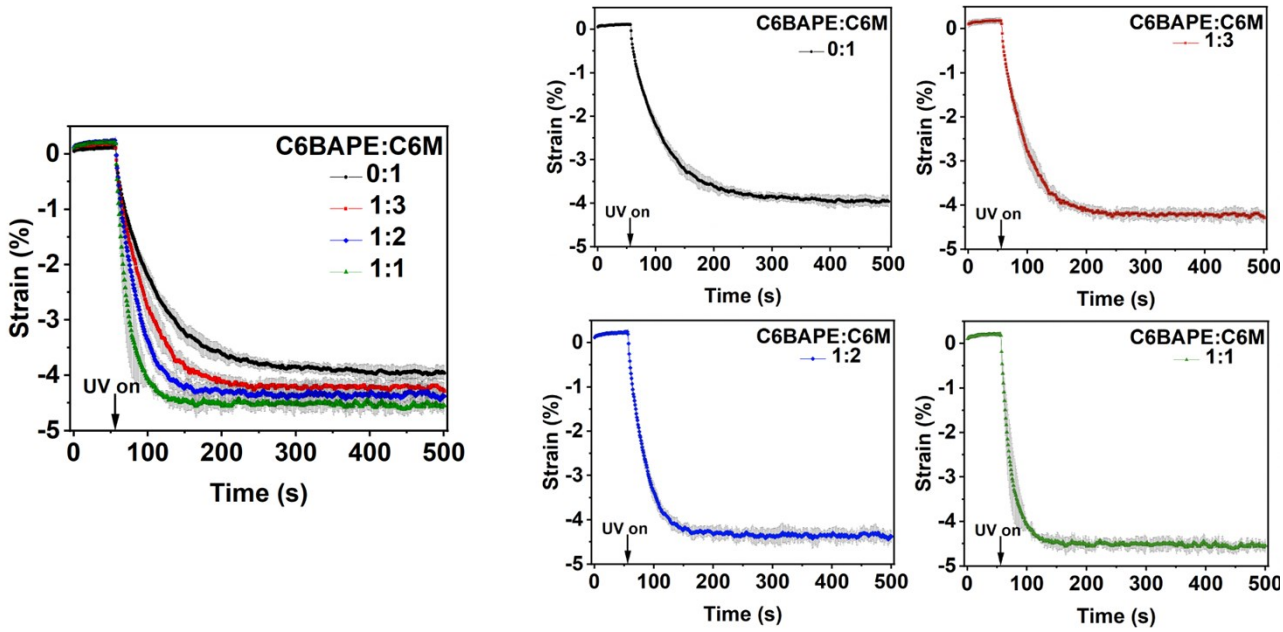

Fig. S7 Photomechanical strain generated by azobenzene-functionalized LCEs with calculated error. (Constant stress 0.001 N , preload force 0.001N, 50 mW/cm^2 365 nm light exposure at 60 s)

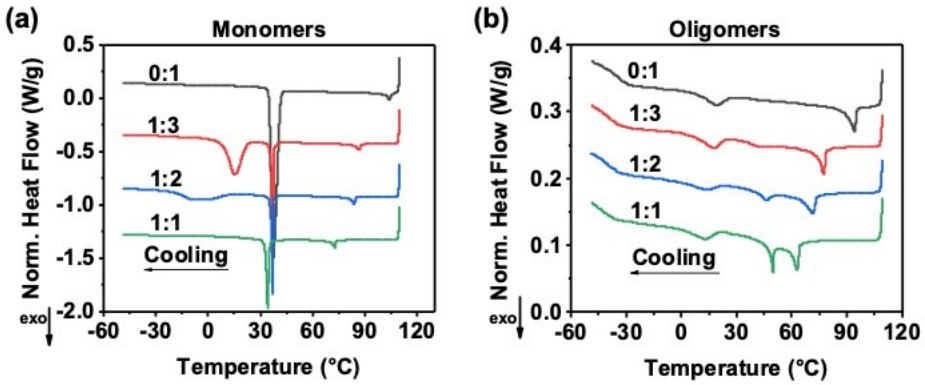

Fig. S8. Full DSC thermograms of (a) monomer mixtures and (b) oligomers used to prepare monodomain azobenzene-functionalized LCEs.

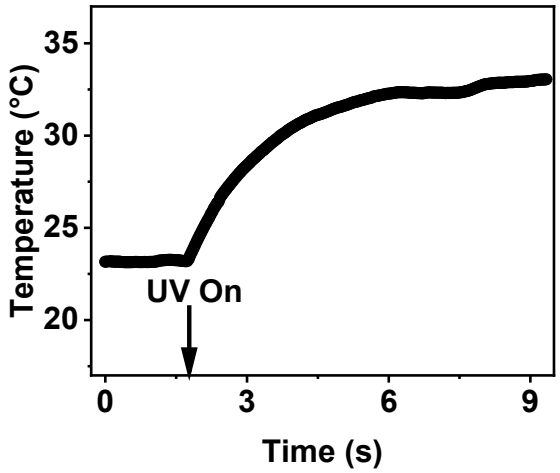

Figure S9. Temperature increase of azo-LCE due to photothermal effects upon initial exposure. Temperature measured using thermal data in Video S1.

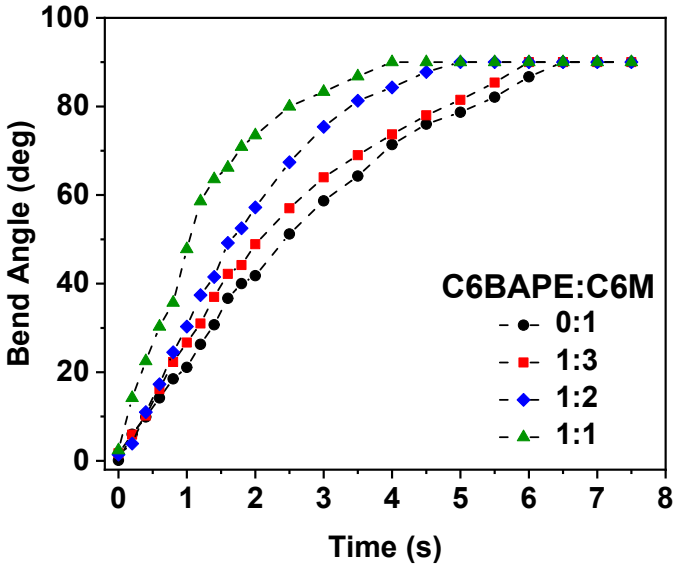

Figure S10. Angle of deformation for azo-LCE as a function of UV light exposure. Angles measured from Video S2 using tip displacement angle between the mounting point of the cantilever and tip of the cantilever