Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Electronic Supplementary Information

Side-chain Polysiloxane Liquid Crystalline Elastomers from Non-mesogenic Components†

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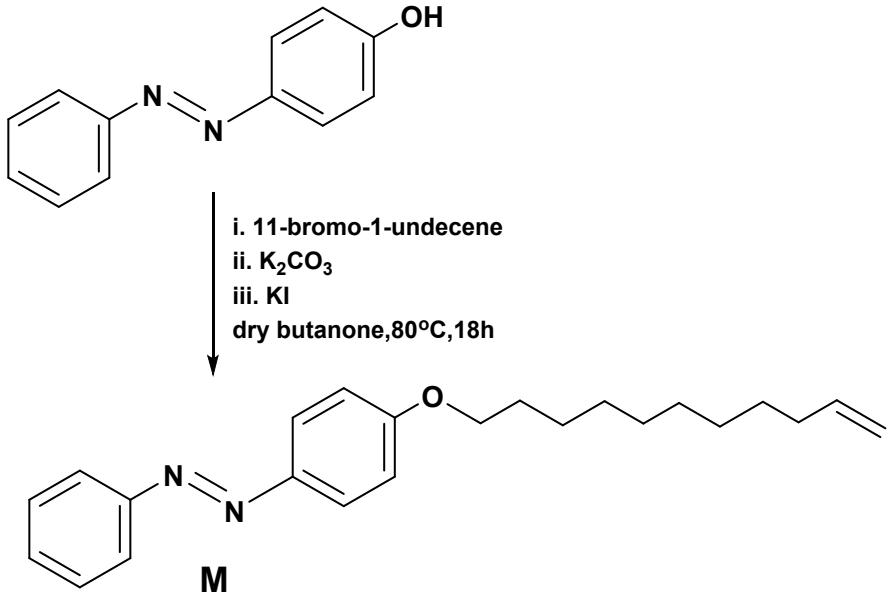
Synthesis of 1-Phenyl-2(4-(undec-10-en-1-yloxy) phenyl)diazene, monomer (M)



SchemeS1 Synthetic pathway followed to prepare olefinic terminated monomer M

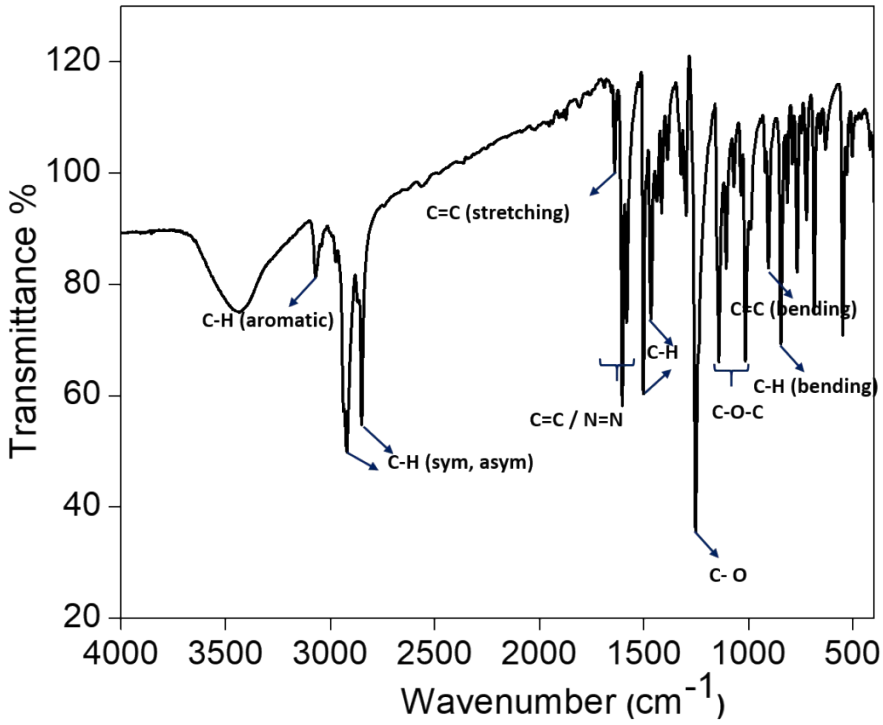


Fig.S1 FT - IR spectrum of azo monomer **M**

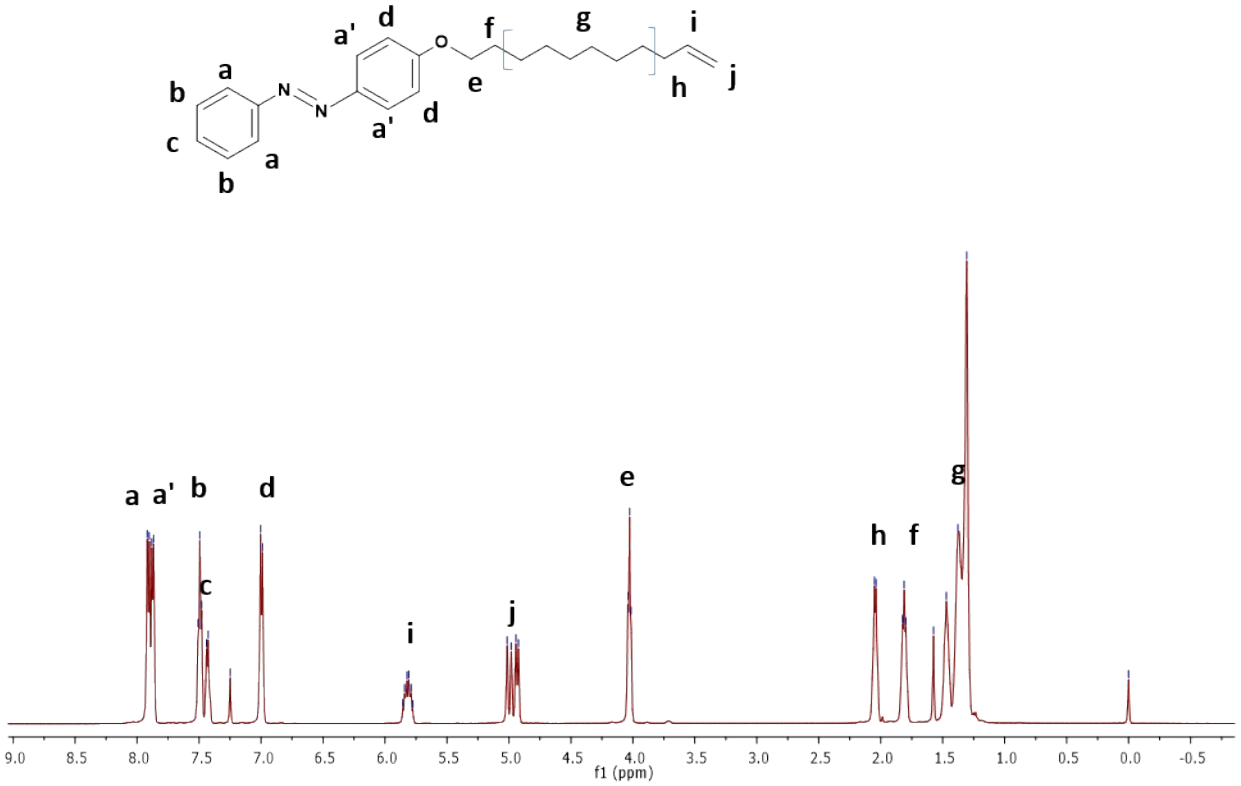


Fig.S2 ^{1}H NMR spectrum of azo monomer **M**

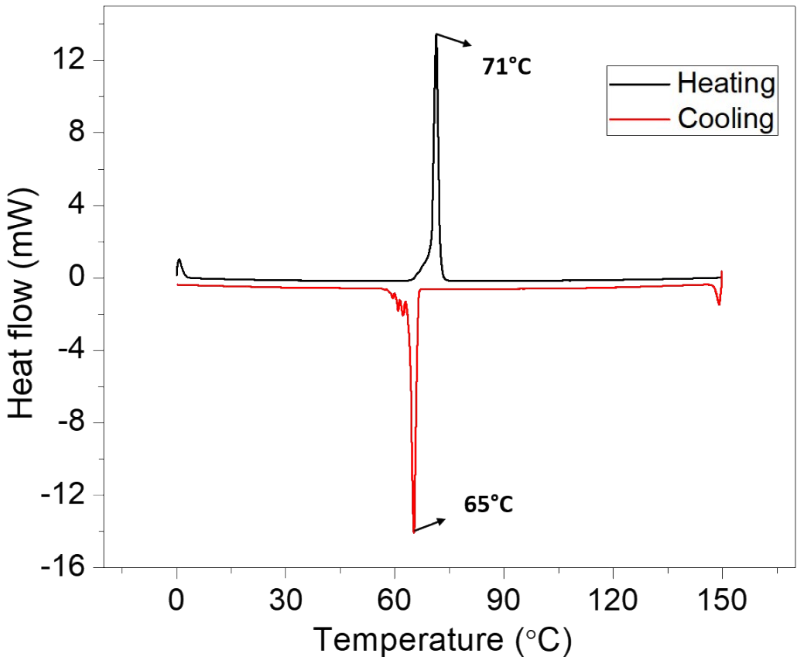
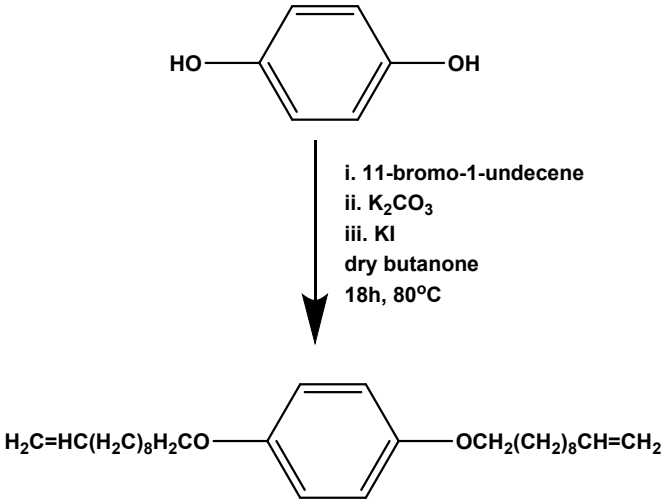


Fig.S3 DSC thermogram of azo monomer (**M**) recorded at a heating and cooling rate of 10°C/min

Synthesis of crosslinker C_1



C_1

Scheme S2 Synthetic route to prepare vinyl terminated 11UB cross-linking agent, C_1

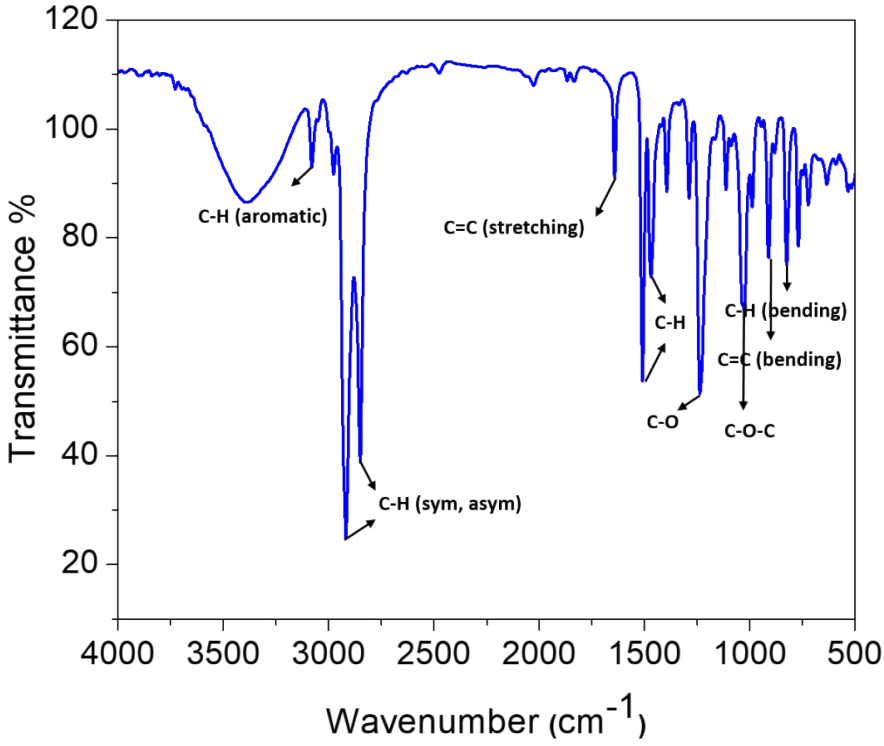


Fig.S4 FT-IR spectrum of cross-linker C_1

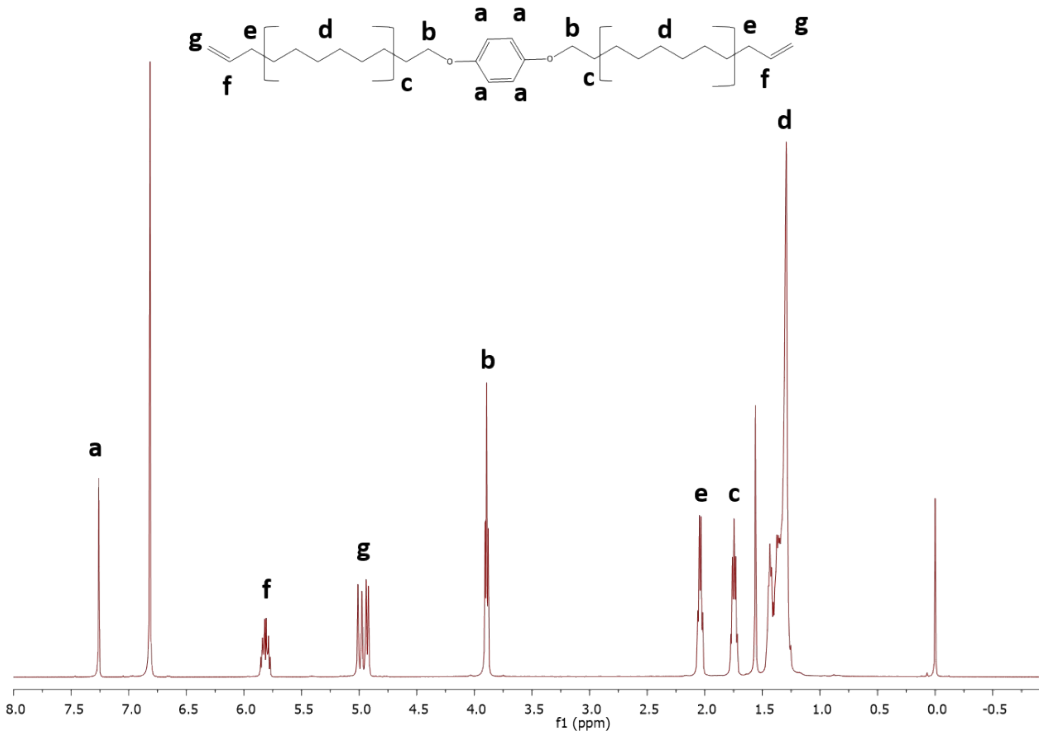


Fig.S5 ^{1}H spectrum of cross-linker C_1

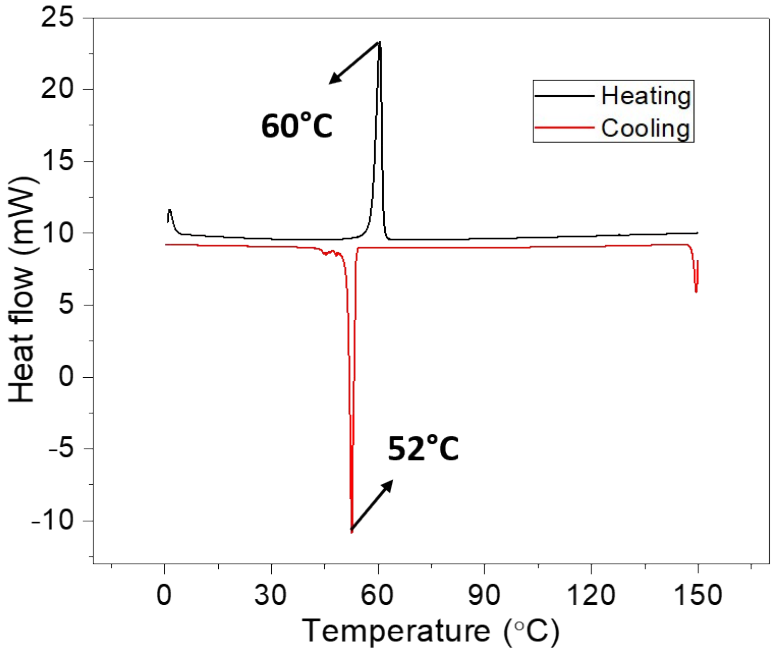
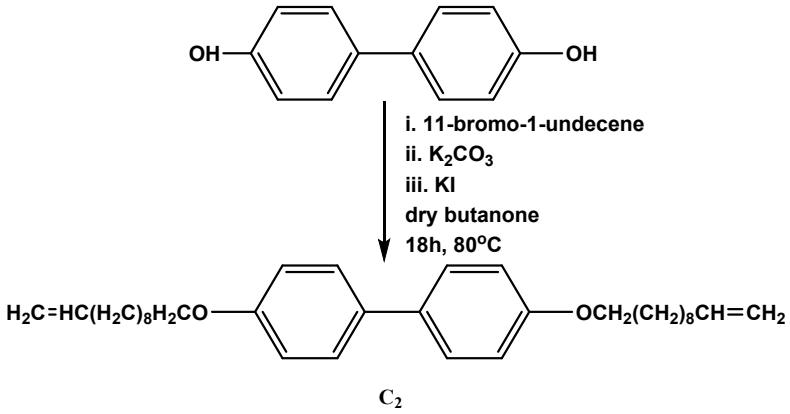


Fig.S6 DSC thermogram of cross-linker (C_1) recorded at a heating and cooling rate of 10°C/min

Synthesis of biphenyl cross-linker C_2



Scheme S3 Synthetic route for cross-linker C_2

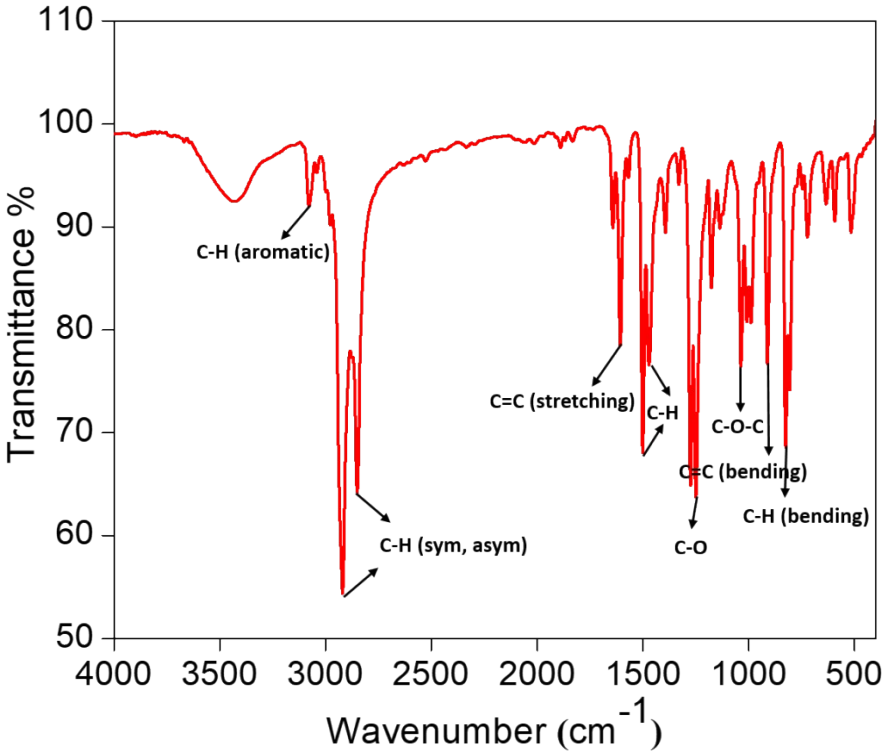


Fig.S7 FT-IR spectrum of biphenyl cross-linker $\mathbf{C_2}$

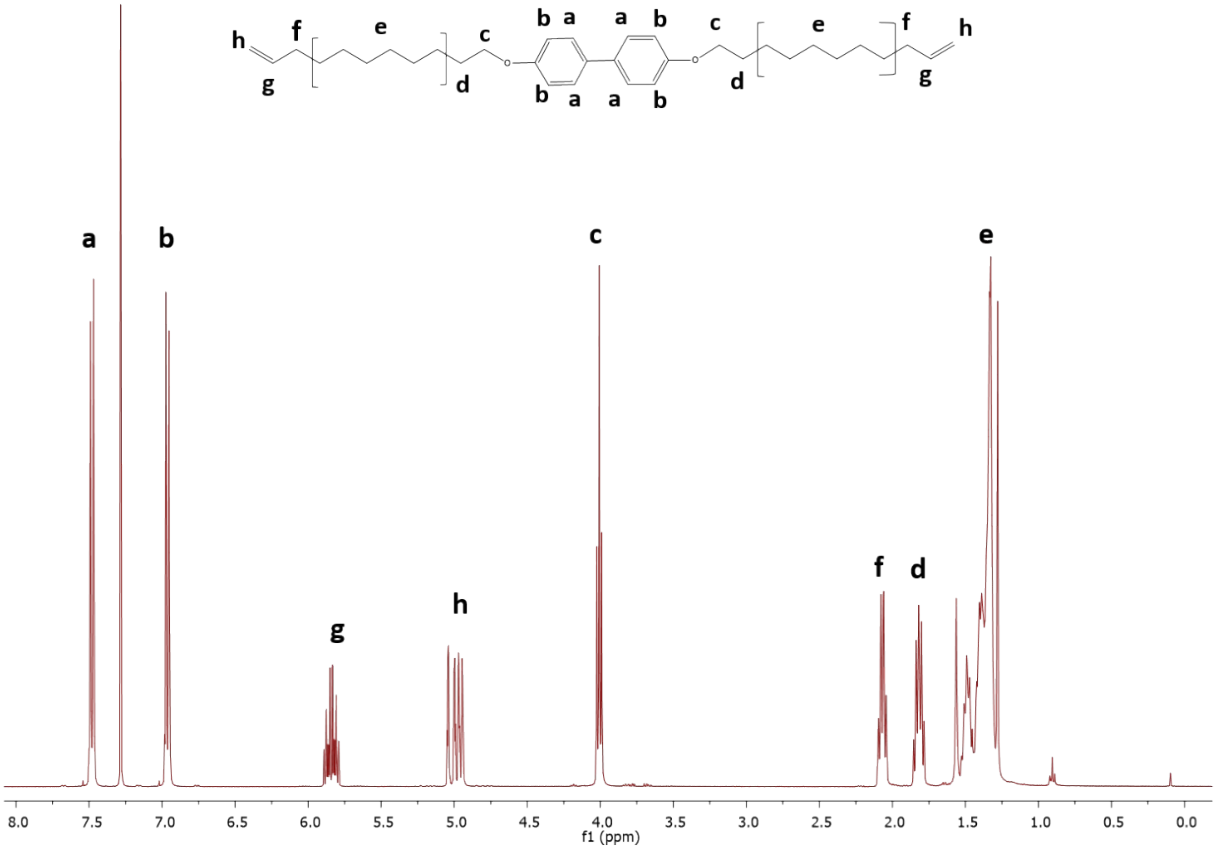


Fig. S8 ^{1}H spectrum of biphenyl containing cross-linker**C$_2$**

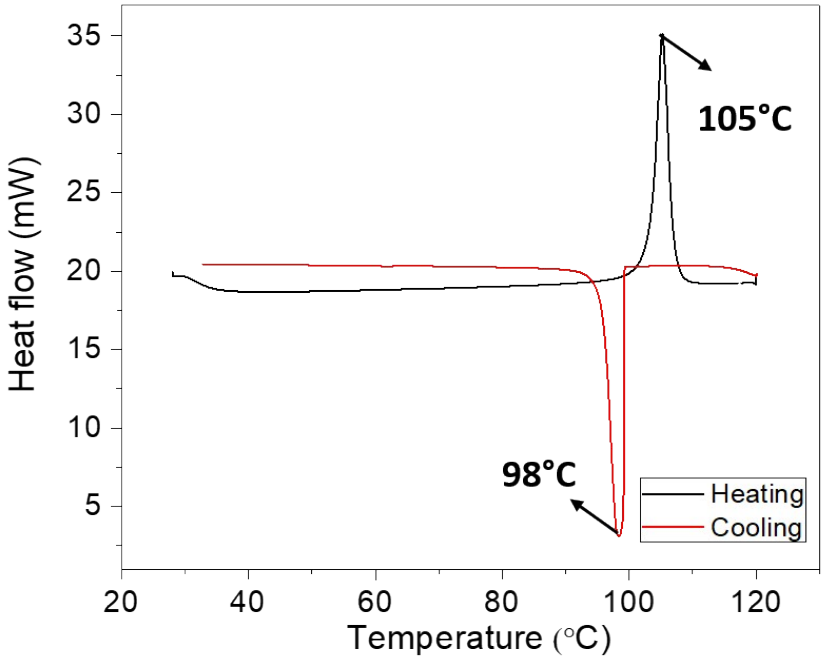


Fig.S9 DSC thermogram of cross-linker (C_2) recorded at a heating and cooling rate of 10°C/min

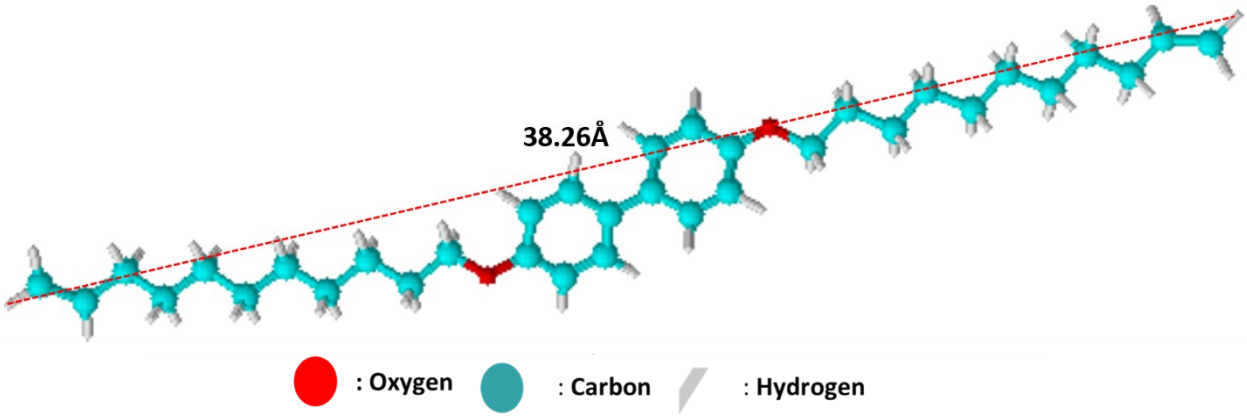


Fig. S10 An optimised molecular model for the cross-linker $\mathbf{C_2}$ in a stretched *all trans* alkyl chain conformation (from ACD chemlab-3D viewer).

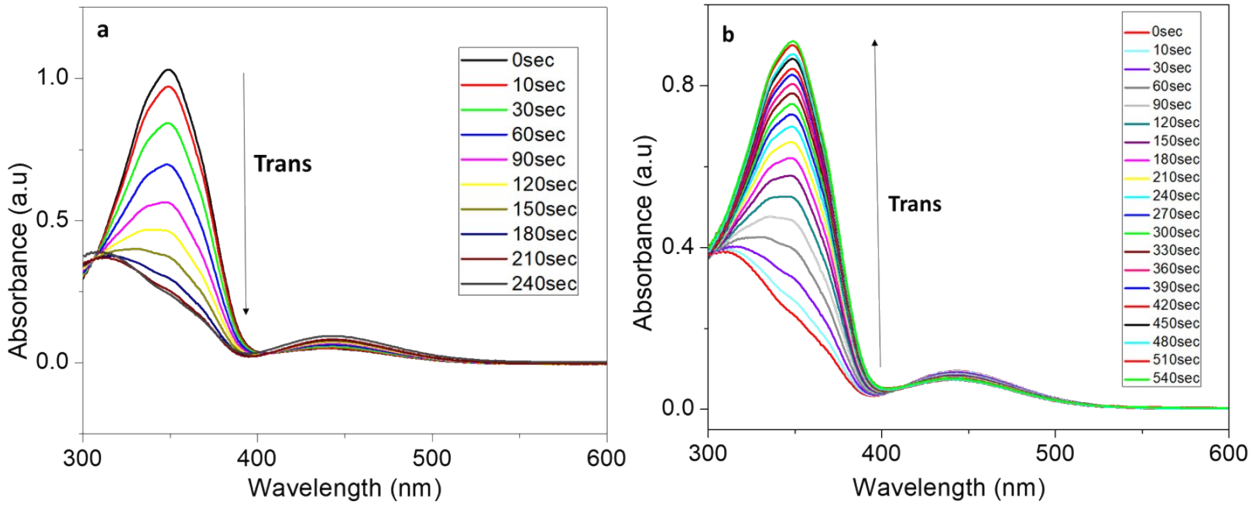


Fig. S11 UV-Visible absorption spectra of azo monomer in toluene (a) by shining UV light at 254 nm; *trans* to *cis* isomerisation, (b) by shining visible light(>540);*cis* to *trans* isomerisation.

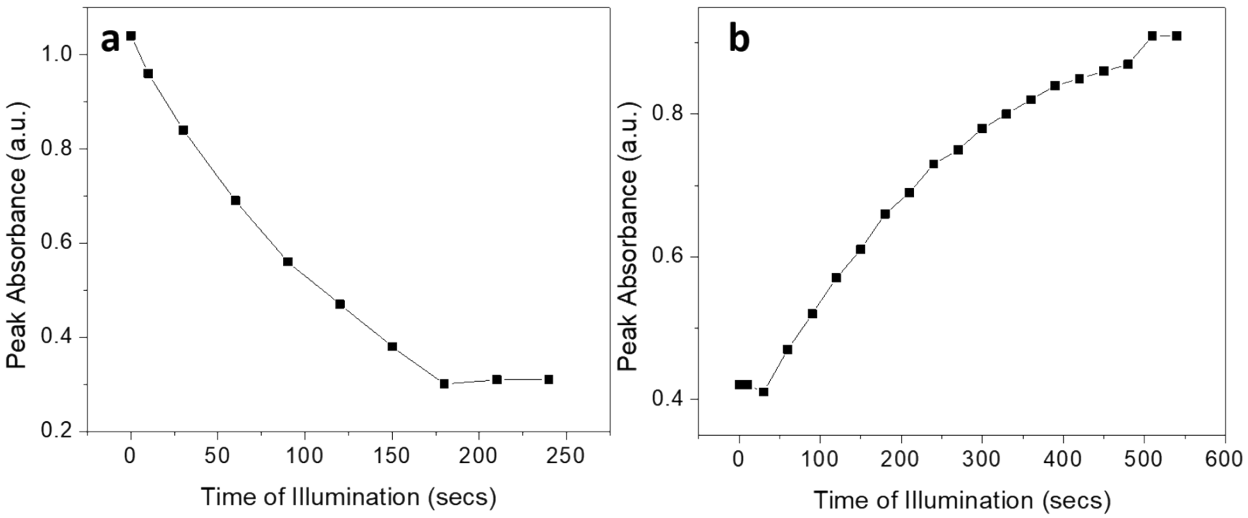


Fig. S12 The peak absorbance of monomer (348nm) with respect to exposure time for (a) *trans* to *cis* isomerisation and (b) *cis* to *trans* isomerisation.

Video S1: Bending of the LCE film upon UV irradiation (254nm)

Video S2: Unbending of the LCE film upon visible irradiation (>540 nm)