

SUPPORTING INFORMATION (SI) FOR

**Facile synthesis of gold nanoparticles capped with an ammonium
based chiral ionic liquid crystal**

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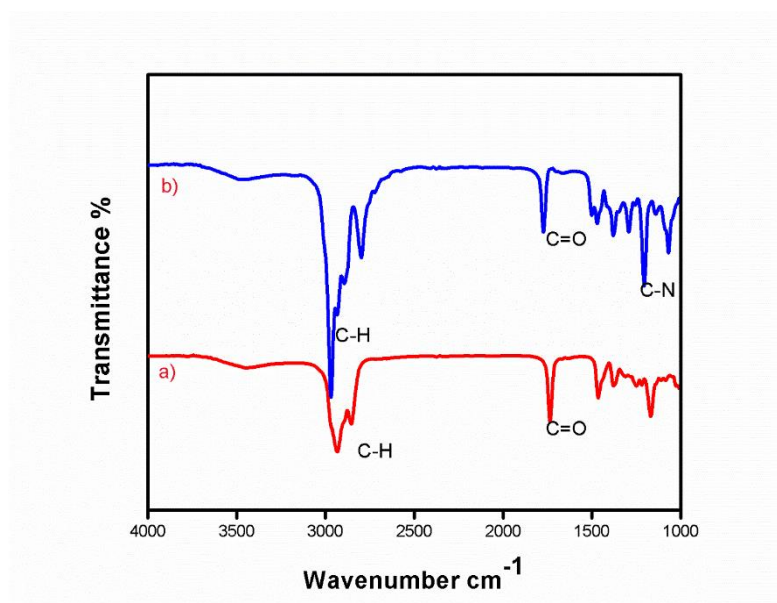


Figure S1. FTIR spectrum for a) compound **2** and b) ILC.

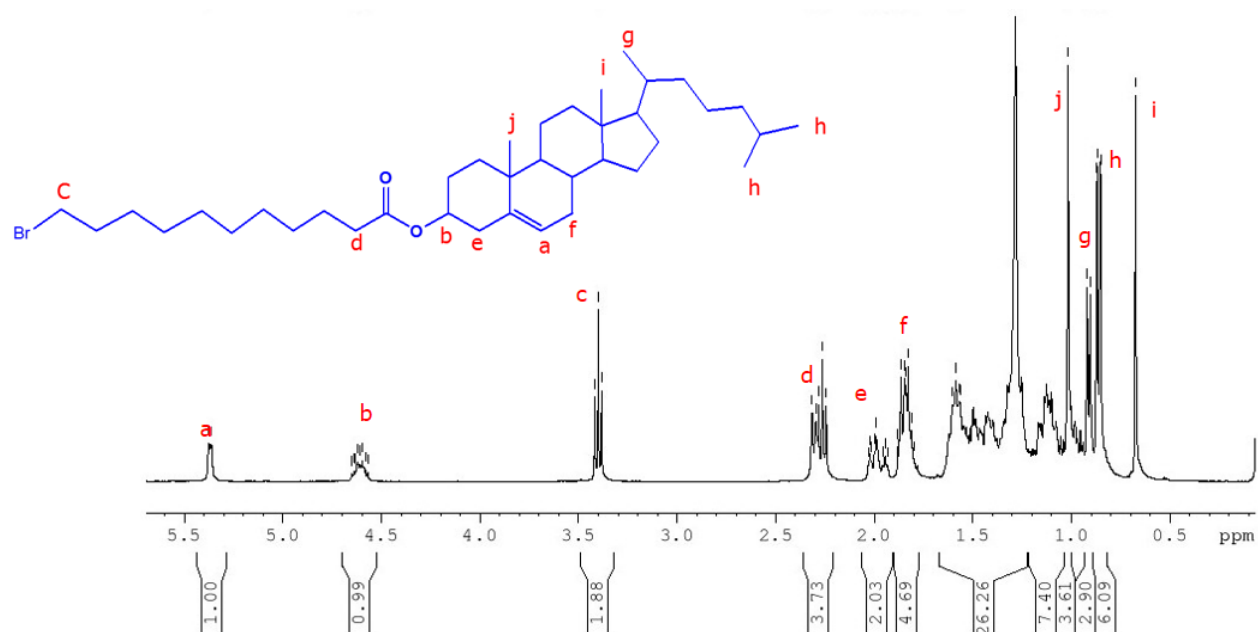


Figure S2. ^1H NMR spectrum recorded for compound 2.

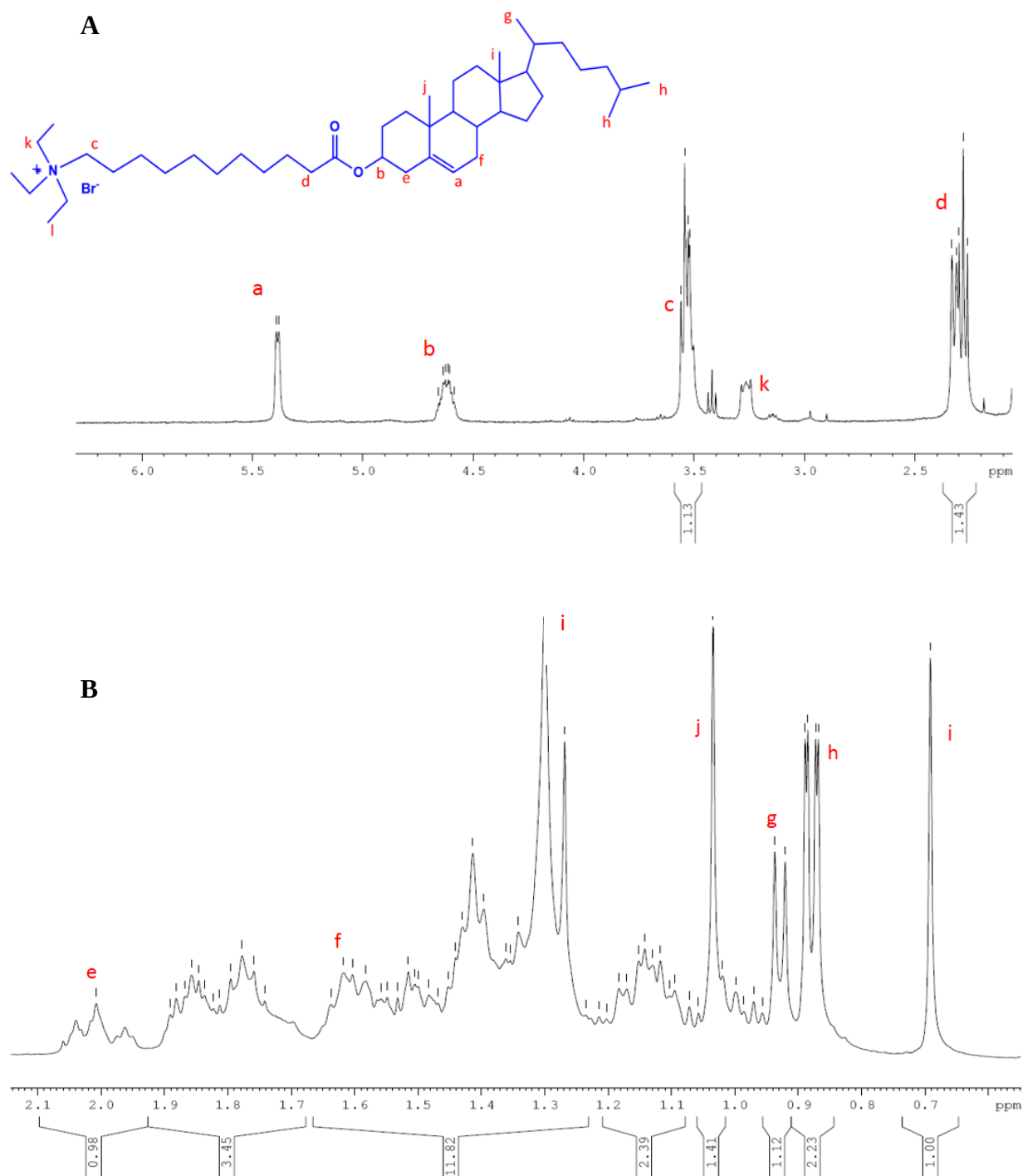


Figure S3. A and B, ^1H NMR spectrum of ILC.

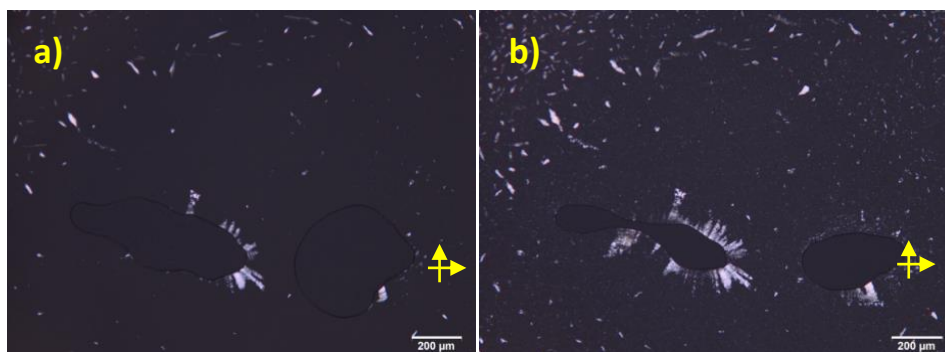


Figure S4. Photomicrographs of ILC at (a) 190°C and (b) 140°C in a normal glass slide and cover slip.

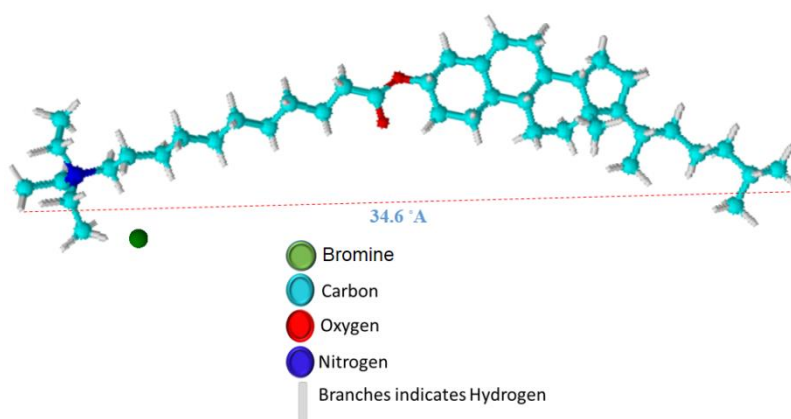


Figure S5. An optimised molecular model for the ILC in a stretched *all-trans* alkyl chain conformation (from ACD chemlab-3D viewer).

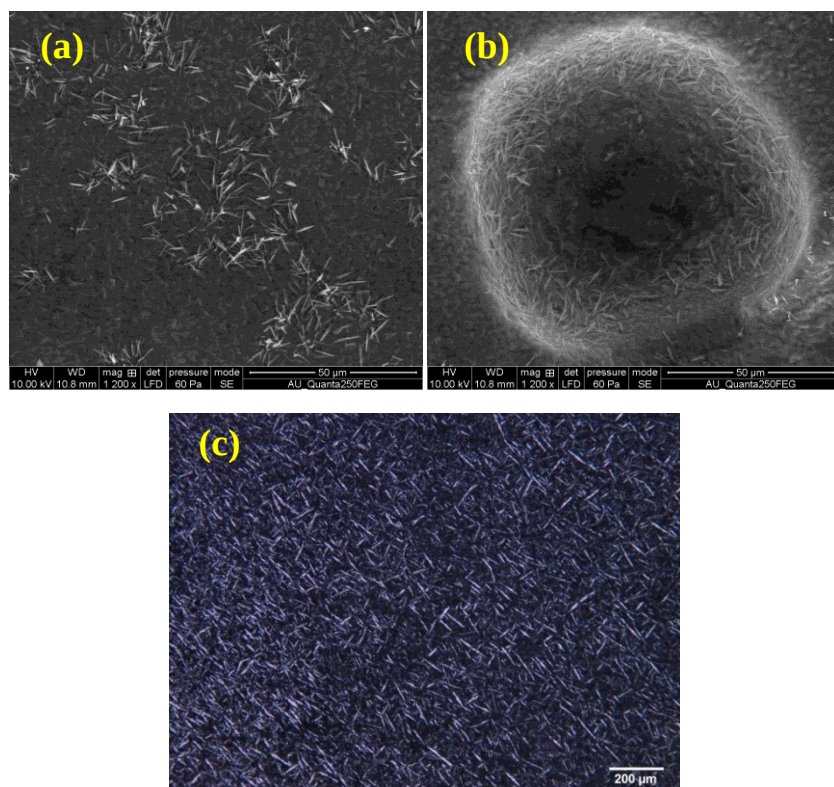


Figure S6. (a) and (b) SEM images of ILC in two different areas at room temperature; (c) POM image of ILC at 120°C.

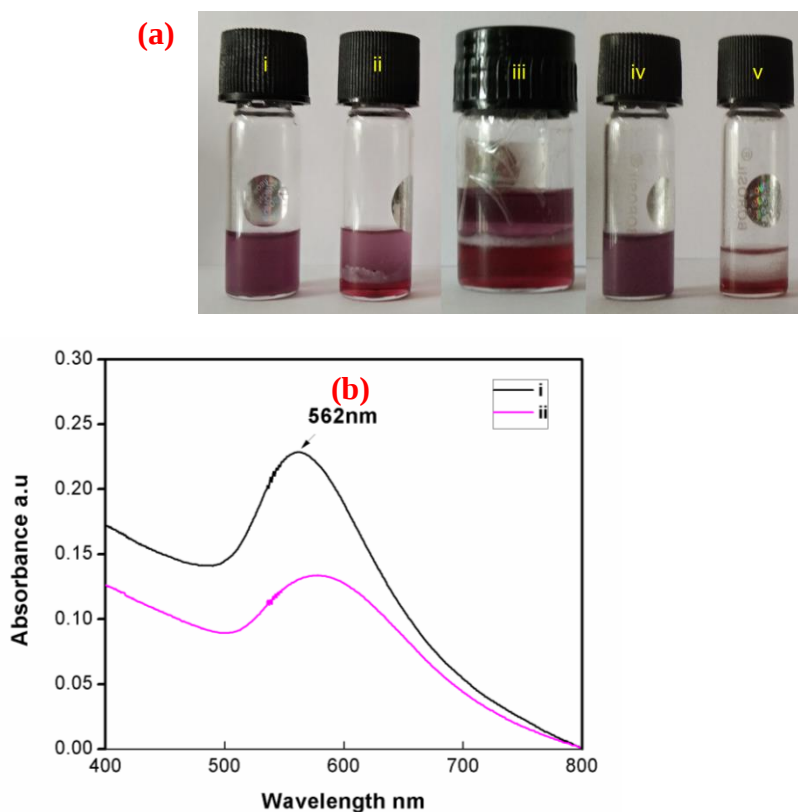


Figure S7. a) Images showing colour of the nanoparticle dispersions; **i** 3ml of gold nanoparticles with 100 μ l of ILC, **ii** 3ml of gold nanoparticles with 300 μ l of ILC and **iii** 3ml of gold nanoparticles with 3ml of ILC, photos taken after half an hour of ligand exchange; **iv** and **v** corresponding photos of **i** and **ii** taken after 2 hours of ligand exchange. b) UV-Vis spectra recorded for the aqueous layer of **i** and **ii**. 0.05M ILC in dichloromethane and goldnanoparticles dispersion (having an absorbance of 1.37 at 541nm in a 1cm path length cuvette) was used for exchange process.

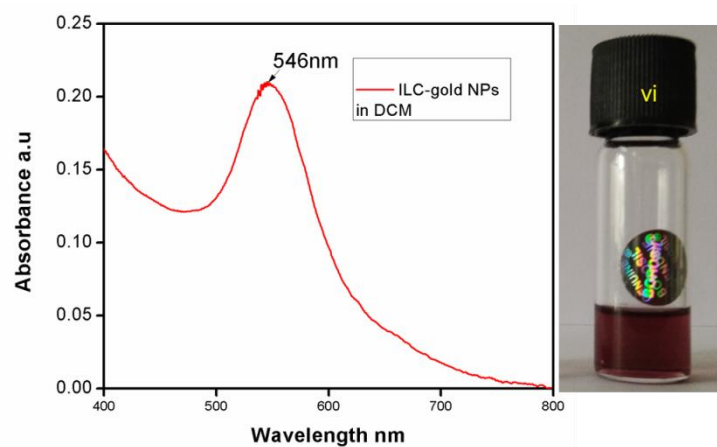


Figure S8. UV-Vis spectrum obtained for the ILC-stabilized gold nanoparticles in dichloromethane (DCM) and image showing the corresponding nanoparticles dispersion.

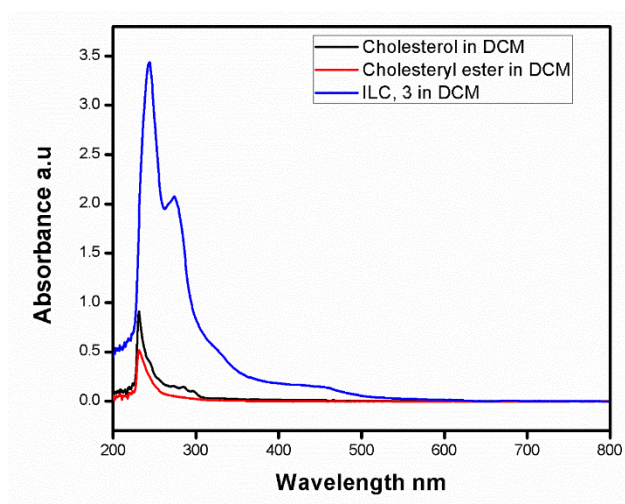


Figure S9. UV-Vis spectra recorded for cholesterol (1), cholesteryl ester (2) and ILC (3) in dichloromethane

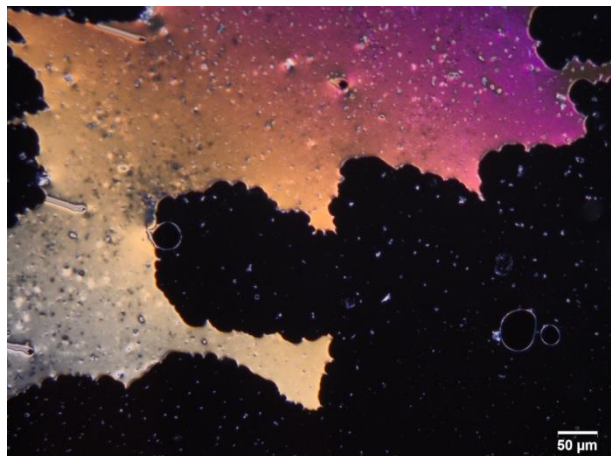


Figure S10. POM image of the nematic phase doped with ILC-capped gold nanoparticles, recorded upon shearing the sample.