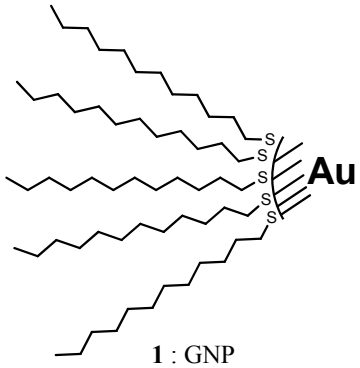
Electronic Supplementary Material (ESI) for RSC Advances

Supporting Information

^{1}H NMR

^{1}H NMR spectrum of the GNP (**1**), prepared by modified Brust protocol, has been recorded using Bruker-AMX 400 instrument and analyzed. As shown in Figure SI-1, the spectral pattern suggests the stabilization of gold colloids by ligand, dodecane-1-thiol (**2**). Most importantly, in ^{1}H NMR spectrum of the GNP (**1**) the signals due to ligands are almost negligible. That is, the quartet arising due to methylene moiety [$–CH_2$-SH] of lignad (see circled area in Figure SI-1 and compare with same region in Figure SI-2) is quite minute implying that the GNP is mostly free from un-bound ligands.



1 : GNP

2: Dodecanethiol

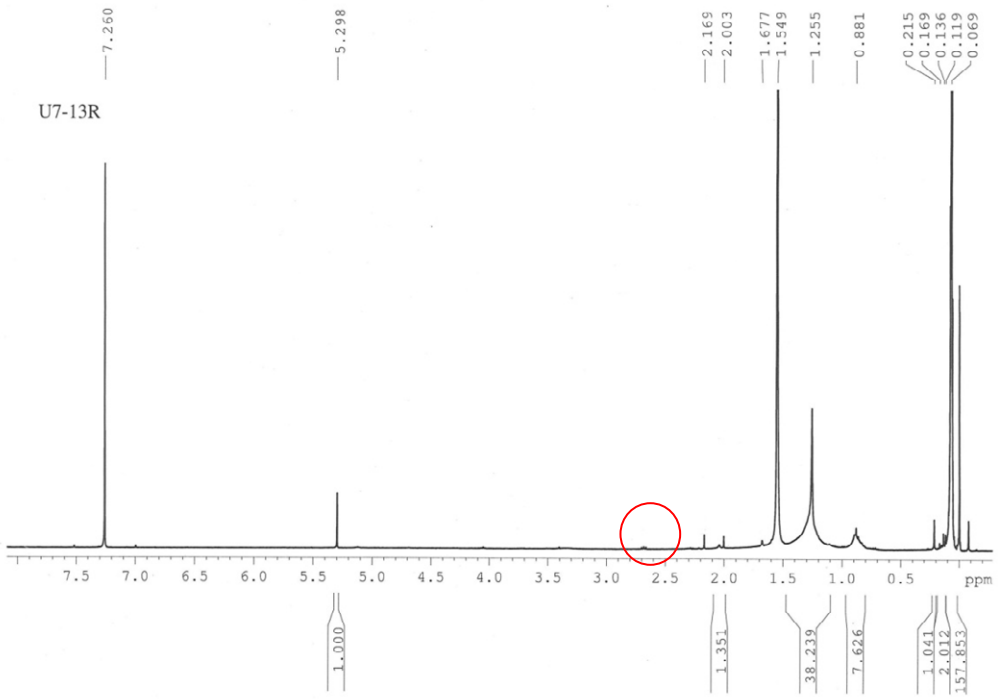


Figure SI-1 : ^{1}H NMR spectrum of GNP ($CDCl_3$, 400 MHz)

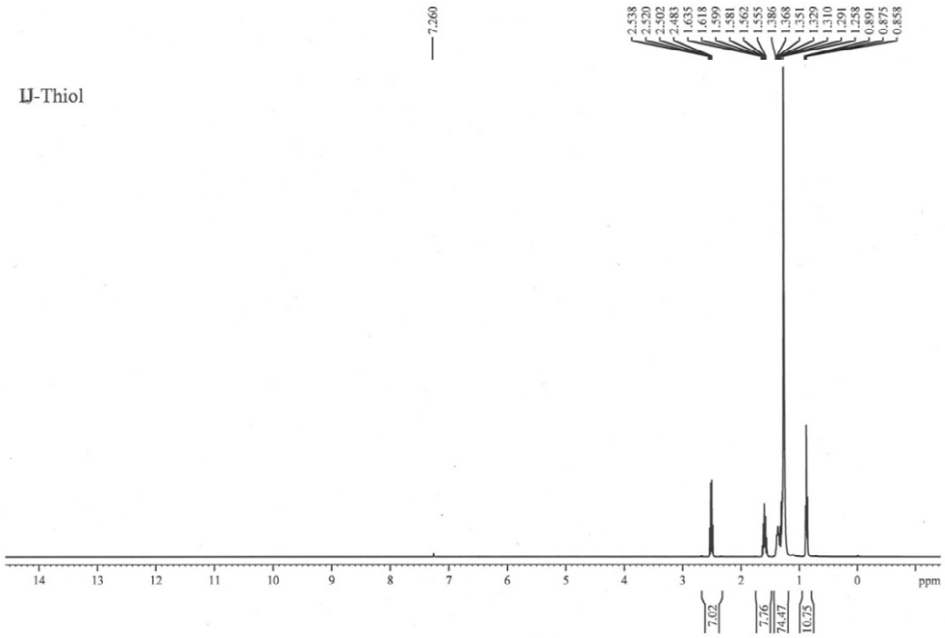


Figure SI-2: ^{1}H NMR spectrum of dodecane-1-thiol ($CDCl_3$, 400 MHz)

Transmission Electron Microscopy

TEM images were obtained on a JEOL 3010 TEM scanning/transmission electron microscope operating at 300 kV. Samples were prepared by casting a droplet of functionalized GNPs in DCM solvent onto carbon-coated copper TEM grids followed by drying for 20 min. A representative image, and the histogram of the particle size distribution are shown below.

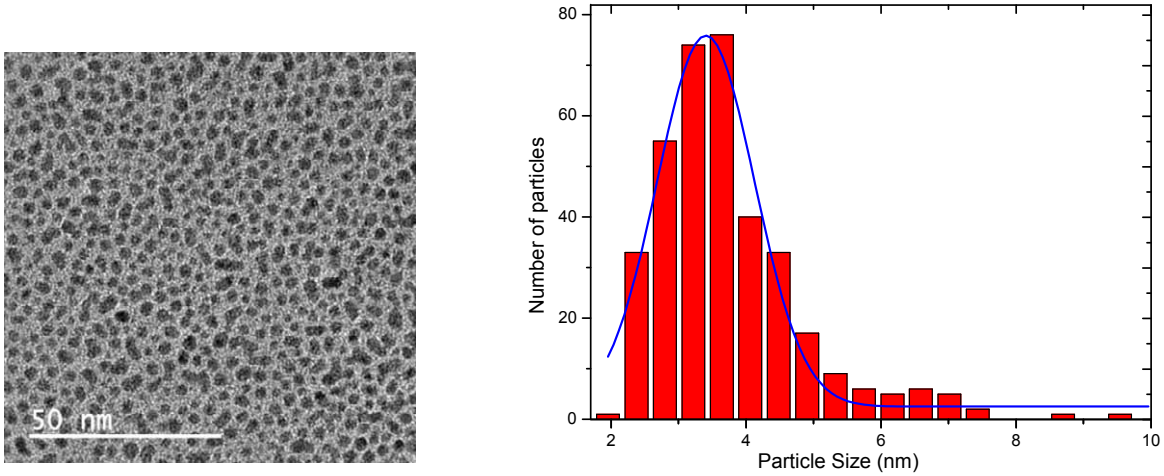


Figure SI-3: TEM image (left) and histogram (right)

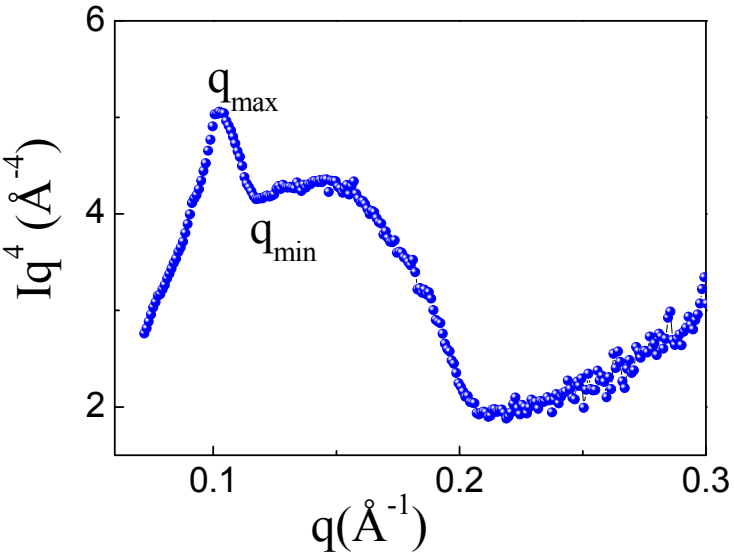


Figure SI-4: Porod plot from low angle Xray scattering of the gold nanoparticles prepared.

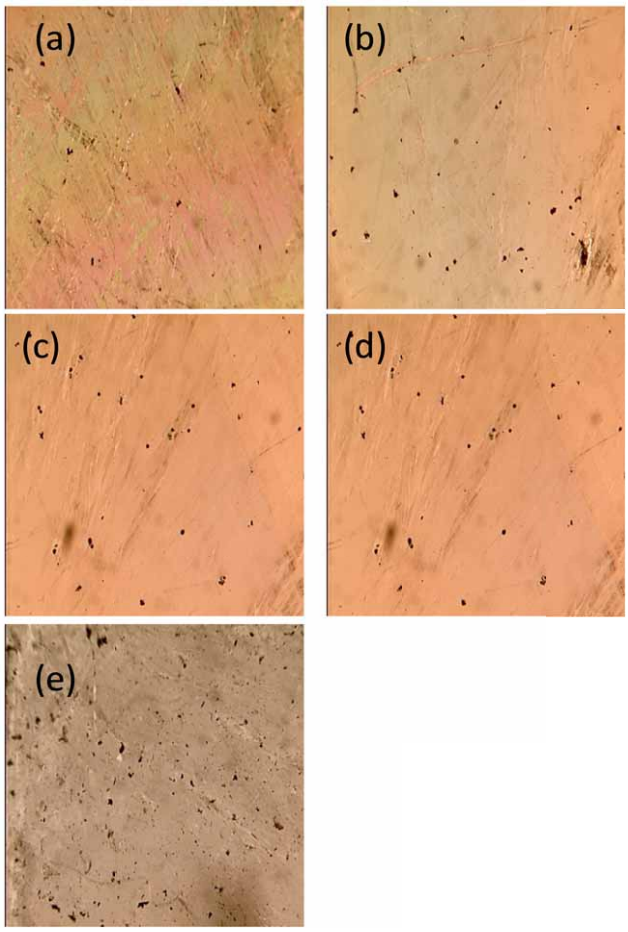


Figure SI-5: Polarizing microscopy photographs in the nematic phase for different concentrations of GNP with X= (a) 0.005, (b) 0.01, (c) 0.02, (d) 0.025 and (e) 0.05. In each case it is observed that the GNPs are quite well dispersed without any aggregation.