

Gold Nanorods Embedded Discotic Nanoribbons

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Supporting information

Gold nanorods are prepared via seed-mediated growth method following the procedure of Mostafa El-Sayed *et al.*¹. First step in this procedure involves preparation of seed solution. 5mL, 0.20M CTAB solution was mixed with 5.0mL of 0.0005 M HAuCl₄. To the stirred solution 0.6 mL of ice cold 0.01M NaBH₄ was added. This resulted in the formation of a brownish yellow solution. Vigorous stirring of the seed solution was continued for 2 min. and then stored at 25 °C, for the growth of nanorods. 5mL, 0.2M CTAB was added to 0.15 mL of 0.004M AgNO₃ solution at 25 °C. To this solution 5mL, of 0.001M HAuCl₄ solution was added and after gentle mixing of the solution 70 µL of 0.0788M ascorbic acid was added. Ascorbic acid acts as a mild reducing agent changes the growth solution from dark yellow to colourless. In the final step 12 µL of the seed solution is added to the growth solution at 27 - 30 °C. The colour of the solution gradually changed within ten minutes. To Prepare organic soluble gold nanorods, the gold nanorods solution was taken in centrifuge tubes and centrifuged at 6500 RPM for 30 minutes. The supernatant solution was discarded and the nanorods are dispersed in pure Millipore water, this is repeated thrice to decrease CTAB content in the solution to minimum. After which the gold nanorods is mixed with THF to which 2ml (in excess) of dodecanethiol was added. The mixture was sonicated in the beginning and stirred for 3 days at room temperature. The dodecanethiol present in the solution displaces part of the CTAB from gold nanorods owing to the strong gold thiol interactions^{2,3}, the resultant particles are dispersed in chloroform (1mg/ml).

Hexapentyloxytriphenylene was synthesized by oxidative trimerization of 1,2-dipentyloxybenzene with VOCl₃ as reported by Kumar *et al.*⁴

Conductivity of the samples are measured in a indium tin oxide coated glass sandwich cells (10mm X 5mm) of 10 micron thickness. Samples were filled into the cells by heating to isotropic phase and sample enters the cell due to capillary action, filled cell was given contacts and placed on heater whose temperature was recorded with resistance temperature detector (RTD). A voltage of 1V was applied from voltage source. Current measurements are carried out with a Keithley pico ammeter (Model 480). Conductivity studies are carried out in ambient conditions.

For SEM studies, HPT (1mg) is dissolved in 10 µL of CHCl₃ and to this 1ml of Methanol is added the resultant fibres are drop casted on Silicon substrate, it is dried and used for imaging.

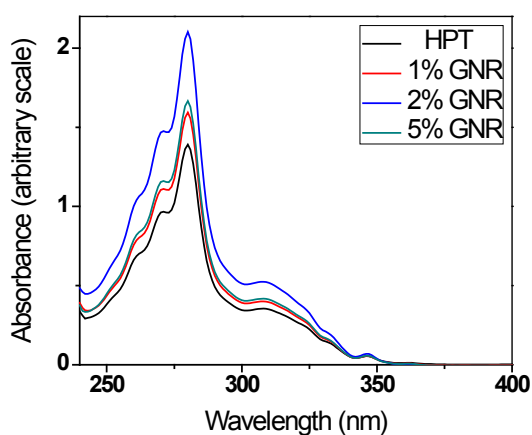


Fig. S1. UV-Vis Spectra of HPT (black), 1GNRTP (red), 2GNRTP (blue), 5GNRTP (green) in chloroform.

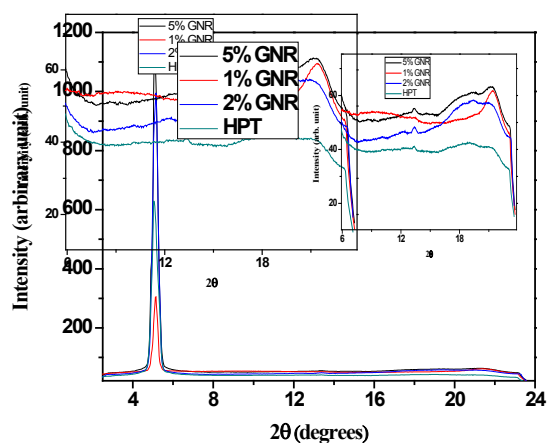


Fig. S2. One dimensional intensity vs. 2θ and diffraction patterns for pure HPT (green), 1GNRTP (RED), 2GNRTP (BLUE), 5GNRTP (BLACK). Inset shows the expanded portion.

References.

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