Gold nanorods embedded discotic nanoribbons

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Hexpentyloxytriphenylene primarily self-assembles into hexagonal structures, which upon proper solution processing can be made to grow into ribbon-like secondary structures. During the growth, these supra-molecular structures can trap the gold nanorods (GNRs) present in the solution. Thus forming supramolecular nanocomposites, which show enhanced conductivity owing to insertion of nanorods in ribbon-like structures.

GNRs can be easily inserted into the supramolecular order of DLCs without disturbing their mesomorphism. GNRs embedded discotic nanoribbons are formed simply by solution processing. These discotic–GNR nano-composites were characterized from UV-Vis spectroscopy, transmission electron microscopy (TEM), polarizing optical microscopy (POM), differential scanning calorimetry (DSC), X-ray diffraction analysis (XRD), scanning electron microscopy (SEM), scanning transmission electronmicroscopy (STEM) and conductivity studies. Results indicate insertion of GNRs into the discotic matrix along the director (the long axis parallel to the length of the ribbon).