Self-assembly of DNA-Dendron (Tetraphenylethylene) Hybrid Amphiphiles into DNA Decorated 2D-Nanosheets: A Template for Catalysis

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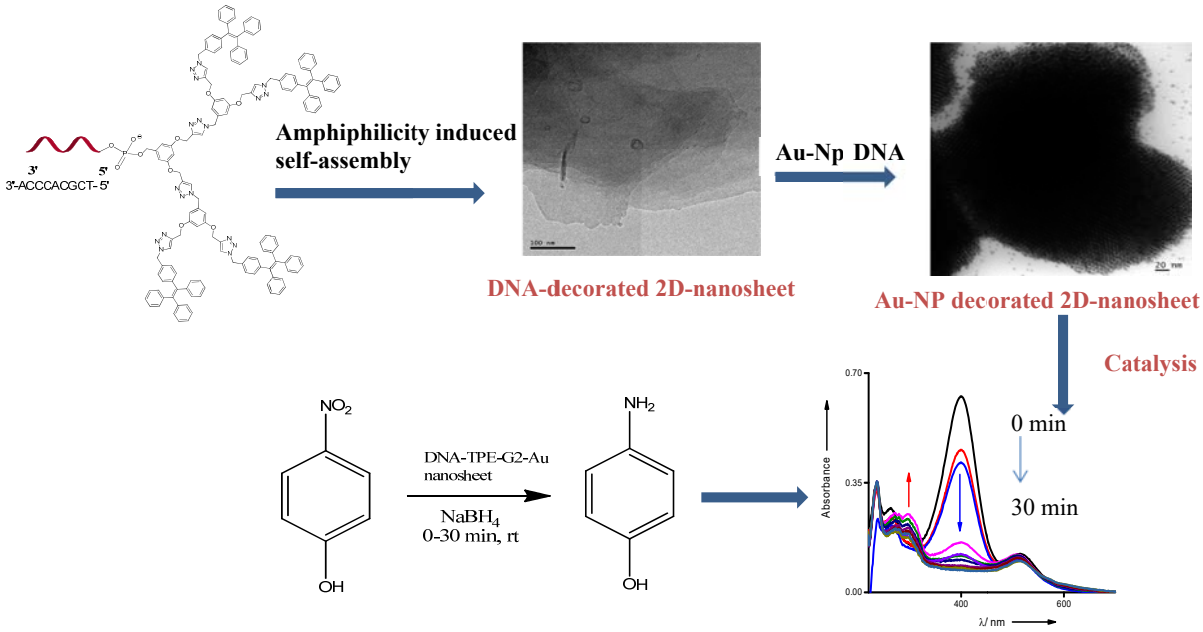
Abstract:

Two-dimensional (2D) nanosheets have gained considerable attention in recent years and shown promising potential in various applications, such as optoelectronics, catalysis, sensing and biomedicine.[1-2] Bottom-up approach is the one of the methods to create nanostructures for various applications. DNA based hybrid materials are the ideal candidates for creating diverse nanostructures with surface addressability.[3-4] Here, we demonstrate the self-assembly of DNA-TPE (Tetraphenylethylene) dendron hybrid amphiphiles into 2D-nanosheets with aggregation induced emission properties. Sequence specific hybridisation of DNA to its complementary sequence allows the reversible placement of Au-nanoparticles (~5 nm) on the surface of the resulted 2D-nanosheets.The Au-nanoparticle decorated 2D-nanosheets have been used as a template for catalysing the reduction of nitroaromatics in aqueous medium.



Schematic representation of DNA-Decorated 2D-Nnanosheets for catalysis

References :

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