

## Graphene-Au nanoparticle hybrid structure by DNA assisted self-assembly

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Au nanoparticles (NPs) of approximately 12nm in diameter capped with single-strand DNA are successfully self-assembled on graphene. Hydrophobicity of graphene surface needs to be modulated to form uniformly self-assembled DNA capped Au NPs, which is dissolved in water. By optimizing UV-ozone treatment time, agglomeration of DNA capped Au NP superlattice on graphene are observed by scanning electron microscopy and transmission electron microscopy. Field effect transistors are formed with graphene-Au NP hybrid structure to characterize its electrical properties. N-doping effect on graphene is observed due to negatively charged DNA. By utilizing surface plasmon enhancement from Au NPs, graphene-Au NP hybrid structure can be applied for optoelectronic device in the future.