

### A simple and facile way to synthesize amino-functionalized graphene oxide and carbon nanotubes

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It is well known that graphene and carbon nanotubes are the rapid growing field of studies since their enormous applications in various fields such as supercapacitor, electrocatalysts in oxygen reduction reactions, bioimaging, polymer nanocomposites, etc. Here, we report amino-functionalization of graphene and carbon nanotubes which maintain the electrical conductivity. Polyaniline was grafted at the edge of the graphene and carbon nanotubes sheet using in-situ “grafting from” technique through oxidative polymerization of aniline with ammonium persulphate oxidant and hydrochloric acid as dopant. Morphology of the resulting nanocomposites investigated with SEM indicates the “fibrillar grafting” of polyaniline fibers at the edges of graphene and carbon nanotubes. Improved thermal properties of resulting nanocomposites can be attributed to enhanced interfacial covalent interactions of polyaniline chains with the edge of graphene sheets and carbon nanotubes, which results in the formation of well-arranged polymer with high aspect ratio.