



## Cu(0) Nanoparticles Anchored on Graphene Oxide Functionalized with (P, N) Donor Ligand: Efficient and Recyclable Catalyst for C–O Coupling and Reduction of Nitroarenes

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### Abstract:

Graphene oxide surface has been functionalized with a (P, N) ligand (PPh<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>-NH<sub>2</sub>) has been done. The graphene oxide, with (P, N) donor sites, was further treated with copper chloride and sodium hydroxide. It resulted in the formation (Scheme 1) of Cu(0) nanoparticles on the surface of functionalized graphene oxide (GO/P/Cu). The powder X-ray diffraction, FTIR, XPS, raman spectroscopy, TGA, SEM, HR/TEM authenticated the formation of GO/P/Cu. The distribution of Cu(0) NP's having size ~ 3–6 nm on GO/P was found nearly uniform. This GO/P/Cu have been explored for reduction of nitroarenes and C–O coupling between phenols and aryl halides. Good to moderate yields were obtained at a catalyst loading of 10–15 mg for C–O coupling. In case of reduction of nitroarenes, maximum conversions of nitroarenes were observed at a very low catalyst loading of 2 mg and that too in aqueous medium. The recyclability of GO/P/Cu has been studied for reduction of nitroarenes and it has been found that it can be efficient upto 5 reaction cycles.

### Biography:

Preeti Oswal is a research scholar and pursuing her Ph.D. in chemistry in Doon University, Dehradun, India, under the mentorship of Dr Arun Kumar. She holds a M.Sc. in chemistry from Shoolini University, Solan. She is a recipient of prestigious DST INSPIRE Fellowship of Government of India. Currently, she is working on the development of new homogenous and heterogeneous catalytic systems. She is also involved in exploring various transition metal nanoparticles and employing them as catalysts in



various chemical transformations like Suzuki coupling, Heck coupling, Transfer hydrogenation of ketones, C–O coupling, reduction of nitroarenes etc.

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