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**One-pot Low-Temperature Green Synthesis of Magnetic Graphene Nanocomposite for  
the Selective Reduction of Nitrobenzene**

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**Abstract**

In the present study, a green one-pot low-temperature method is adopted for the synthesis of a novel magnetic graphene nanocomposite catalyst. Graphene preparation is performed without employing any oxidizing agents or corrosive chemicals, under mild sonication in isopropyl alcohol - water mixture. Monolayered nanoplatelets of graphene are obtained in the green solvent mixture and the composite material is found to be ferromagnetic in nature, obvious from the vibrating sample magnetometric measurements. Fe in the nanocomposite exists in two different forms i.e.,  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> and  $\alpha$ -FeOOH, as evident from the material characterization results. The graphene nanocomposite is found to be highly efficient in the selective reduction of nitrobenzene to aniline under solvent free reaction conditions and magnetic separation of this fine nanomaterial from the reaction mixture is successfully carried out. The catalyst is efficiently reusable till five repeated cycles.

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