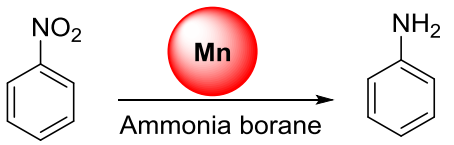
Reusable manganese nanocatalyst for chemo-selective hydrogenation of nitroarenes

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Abstract:
One of the key research objectives of the chemical and pharmaceutical industries is to convert homogeneous catalytic systems into heterogeneous versions with the same efficiency. Heterogeneous catalysts offer many advantages, over the homogeneous ones which include high recyclability, easy recovery from the reaction mixture, and their use in continuous flow processes. Indeed, replacement of precious metal catalysts by cheap metal catalysts[1] through the attachment of catalytic sites on stable supports is very interesting and has attracted much attention. Recently, we have developed iron-based nanocatalyst supported on carbon by a thermal decomposition of a molecular complex and used for dehydrogenation of alcohols and amines.[2-3] Here, we report highly chemo-selective hydrogenation of nitro compounds to anilines using a reusable nitrogen-doped manganese catalyst (Mn–Phen@C) encapsulated with graphene oxide. The reaction operates in tandem manner *via* dehydrogenation of ammonia-borane (AB), and selective hydrogenation of nitroarenes under very mild, benign conditions. The reaction is general and tolerates various reducible functional groups such as methoxy, halides, esters, nitrile, acids, amides, and olefinic motifs. To the best our knowledge there is no report on dehydrogenation of AB as well as chemo-selective reduction of nitroarenes to anilines either under homogeneous and heterogeneous conditions.



- Mn inexpensive and abundant
- Highly chemo-selective
- Mild & Neutral conditions
- Potential for broad substrate scope

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Professional Biography:

Garima Jaiswal obtained her bachelors at Banaras Hindu University in 2011 and completed her masters in chemistry in the year of 2013 from the Indian institute of Technology, Delhi (IIT-Delhi). Presently, she is pursuing her Ph.D at Catalysis Division, CSIR-National Chemical Laboratory(CSIR-NCL), Pune where her research work is focused on "*Transition metal based nanocatalysts for (de)-hydrogenation reactions*". She has published eight research articles in reputed journals along with 7 patents (3 WO, 2 US, and 2 European). She has presented her work in many national and international conferences (7 posters and 1 oral presentation). In short, she has received Paul Ratnasamy and Suneeta Kulkarni award for best published research publication in catalysis with highest impact factor -2017, Senior Research Fellowship (2015) awarded by University Grants Commission (UGC-SRF) India, Junior Research Fellowship (June 2012 and December 2012) awarded by CSIR-UGC NET JRF-India, Qualified IIT JAM 2011 Exam and Got Carrier Turing Point Awards in high school level. Her research interest includes development of novel catalytic materials for energy and environmental catalysis.



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