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Cs@MCM-41 network as a organocatalyst for the reduction of nitro compounds to amines

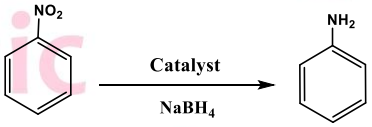
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In recent years, applying nanoparticles as high efficient catalysis has been attracted a great deal of interest. On the other hand, Hydrogels as three dimensional, flexible and polymeric networks, based on natural and synthetic materials with extensive features such as hydrophilic nature, desired functionality, elasticity, reversibility and biocompatibility, are one of themost ideal and multipurpose substances in catalytic system. In this regard, chitosan (Cs) and MCM-41(Mobil Composition of Matter-41), as lexible networks can physically and chemically cross-link by non-covalent or covalent interactions or combinations of both [1]. We report a novel green procedure for immobilization of Ni on MCM-41 grafted to chitosan with EDTA as a cross-linker was accomplished in order to fabricate three dimensional. here is a plenty of both acidic and basic sites on the surface of this bio-based and biodegradable network, as a multifunctional organocatalyst, for the reduction of nitro compounds with sodium borohydride ($NaBH_4$) in green conditions. Easy separation of catalyst by using filtration , excellent catalytic activity, efficiency and proper reaction time, and reuse are some of the advantages of catalyst used [2].

In this work, reduction of various nitro groups to the corresponding amines with $NaBH_4$ as reducing agent in the presence of Cs@EDTA@MCM-41 catalyst investigated. The resulting nanocomposite was studied by EDX, FESEM and FT-IR techniques.



Schem 1. A general procedure for reduction of nitro compounds with $NaBH_4$

Keywords: Catalysis, Chitosan, MCM-41

References

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