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Pumice powder supported bimetallic Fe-Ag nanoparticles: as a new, powerful magnetic nanocomposite for the aqueous reduction of nitro compounds to amines

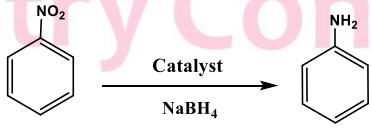
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As time goes on, microscale and nanoscale heterogeneous catalytic systems are gaining increasing attention for a variety of reasons[1]. silver nanoparticles (Ag NPs) are among the best competent candidates in the catalytic processes due to including impressive electronic and optical properties. Also, Pumice is a volcanic stone that includes numerous voids in its structure, and since it is fallen into the category of the light- weight materials, it can be well dispersed/submerged in the reaction mixture. [2].

Herein, for the first time a novel magnetically retrievable nanocomposites of pumice powder and Fe/Ag is prepared, characterized and its catalytic system application for reduction of various nitro groups to the corresponding amines with $NaBH_4$ as reducing agent in H_2O is investigated. The efficiency and proper reaction time, recyclability of the catalyst, reaction conditions (H_2O as green solvent) coupled with activity and stability of the nanocomposite make the described heterogeneous catalyst highly desirable from the green chemistry point of view. The resulting nanocomposite was studied by SEM, XRD, VSM and FT-IR techniques.



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

Keywords: Magnetic nanocatalyst, Pumice, Bimetallic

Refrences:

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