

A facile synthesis of heterogeneous Ruthenium@Silica nanocatalyst and its application to the reduction of 4-nitrophenol

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Ruthenium was deposited over the silica nanoparticles (SNPs) surface to make Ru@SNP nanocatalyst by using the impregnation method. SNPs were used as a support for Ru to avoid the aggregation and thereby to increase surface area of Ru nanoparticles. The SEM, TEM, XRD and XPS techniques were applied to characterize the SNPs and Ru@SNP nanocatalyst. The catalytic activity of Ru@SNP was explored for the reduction 4-nitrophenol (4-NP) which is an important reaction in pharmaceutical industry. The Ru@SNP nanocatalyst demonstrated higher catalytic activity for the reduction of 4-NP than Ru@Silica(bulk). In addition, no product was observed in with the SNPs kept for long time which showed that Ru is acting as an active site in the reaction efficiently.