

Dehydrogenative decarbonylation of primary alcohols using efficient heterogeneous PdO@Silica nanocatalyst

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A solid supported nanocatalyst of palladium oxide and silica nanoparticles (PdO@SNP) was applied successfully for the decarbonylation of variety of primary alcohols. The reaction is believed to proceed by two consecutive organometallic transformations that are catalyzed by the single PdO@SNP nanocatalyst in one pot at relatively lower temperature and absence of the co-catalyst. The dehydrogenation of alcohols was followed by the decarbonylation of aldehydes to produce the products with one less carbon atom. The benzylic, allylic and aliphatic alcohols were selectively catalyzed with PdO@SNP to produce the desired products with high yields. Leaching was not observed and PdO@SNP nanocatalyst can be applied for several times.