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CuI-Nanoparticles-Catalyzed Selective Synthesis of Phenols, Anilines, and Thiophenols from Aryl Halides in Aqueous Solution

J. Org. Chem. 2011, 76, 2296-2300.

Synthesis of Phenols, Anilines, and Thiophenols with Cul Nanoparticles



Significance: Copper iodide nanoparticles catalyzed the hydroxylation and amination of arylhalides with water and ammonia in the presence of tetra-*n*-butylammonium hydroxide to give the corresponding phenols in up to 99% yield (32 examples) and anilines in up to 97% yield (32 examples), respectively. The catalyst also promoted the reaction of arylhalides with sulfur powder to afford the corresponding thiophenols in up to 94% yield (11 examples). **Comment:** The catalyst was readily recovered from the reaction mixture by centrifugation and reused twice with slight loss of its catalytic activity for the formation of aniline from iodobenzene (1st reuse: 87% yield, 2nd reuse: 80% yield). TEM and XRPD analyses showed that shape and size of the Cul nanoparticles were not changed after the amination of iodobenzene. ICP analysis revealed that significant copper leaching from the catalyst was not observed during the reaction.

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 Synfacts 2011, 7, 0795-0795
 Published online: 17.06.2011

 DOI:
 10.1055/s-0030-1260530; Reg-No.: Y05411SF

Category

Polymer-Supported Synthesis

Key words

nanoparticles

phenols

anilines

thiophenols

copper



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