Category

amines

alcohols ureas ruthenium hvdroxide

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Efficient Catalytic Synthesis of Tertiary and Secondary Amines from Alcohols and Urea Angew. Chem. Int. Ed. 2009, 48, 9888-9891.

Synthesis of Amines from Alcohols and Urea with Ru(OH)_x/TiO₂

Significance: TiO₂-supported ruthenium hydroxide (Ru(OH)_x/TiO₂) catalyzed the reaction of alcohols 1 with urea in mesitylene under Ar atmosphere to give the corresponding tertiary amines 2 or secondary amines 3 in 76-98% yield (13 examples). The catalyst was recovered by simple filtration and reused without significant loss of catalytic performance for formation of 3k (reuse: 90% yield). No leaching of ruthenium was observed by ICP-AES analysis after the reaction.

Comment: The authors have previously reported the preparation of Ru(OH)_x/TiO₂ and its application to the hydrogen transfer reactions (Chem. Eur. J. 2008, 14, 11480). The catalytic activity of Ru(OH)_x/TiO₂ was superior to that of the other supported ruthenium catalysts for the formation of 2a [Ru(OH)_x/Al₂O₃: 47% yield, RuCl_x/TiO₂: 0% yield, RuHAP: 0% yield, Ru/C: 18% yield].

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