Synthesis of Tetrazoles from Amines Mediated by New Copper Nanocatalyst

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Abstract—New copper nanocatalyst was prepared by coating Fe_3O_4 magnetic nanoparticles with tetraethyl orthosilicate (TEOS), followed by functionalization with 3-chloropropyl(trimethoxy)silane and 4*H*-1,2,4-triazol-4-amine and complexation with copper(II) chloride. The new catalyst was characterized by various spectroscopic methods and was successfully used in the synthesis of 1-aryl-1*H*-tetrazoles by reaction of aromatic amines with sodium azide and triethyl orthoformate under solvent-free conditions at 100°C.

Keywords: Fe_3O_4 magnetic nanoparticles, 4*H*-1,2,4-triazole-4-amine, copper complex, aromatic amines, sodium azide, 1-aryl-1*H*-tetrazoles.

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