

Highly efficient reduction of 4-nitrophenol by biomass-derived low Cu loaded carbonaceous catalyst

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Nitro substituted compounds such as 4-nitrophenol are highly stable, toxic and not easily biodegradable. For this reason, a quick and effective method is required to neutralize these toxic compounds. In this study, a copper-carbon (Cu/C) catalyst for 4-nitrophenol reduction was synthesized using biomass-derived glucose and characterized by various techniques such as FT-IR, SEM, EDX, XRD, TGA and XPS. Our results show that the catalytic reduction of 4-nitrophenol (0.1 g) requires only 3 mg Cu/C and 10 mmol NaBH₄ to attain 99 % yield (100 % selectivity) in the aqueous condition at room temperature. Furthermore, Cu/C is easily recoverable and reusable.