

Green Protocol for the Synthesis of 2, 4, 5-Trisubstituted Imidazole Derivatives Catalyzed by Copper Oxide Nanoparticles (Copper Oxide NPs)

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Abstract: A facile, efficient and one pot synthesis of 2, 4, 5-trisubstituted imidazole derivatives via the condensation of benzil, substituted benzaldehydes and ammonium acetate using copper oxide NPs in presence of ethanol as a solvent under reflux. Copper oxide NPs is an effective catalyst and easy for separation. Copper oxide NPs also as a green catalyst, low cost, environmental friendly catalyst used for these reaction carried out under reflux. The remarkable advantages of this methodology are simple operation, short reaction time, clean reaction ways and high to excellent yield of product. The synthesized Copper oxides NPs are characterized by UV-Visible spectra, X-ray Diffraction (XRD) and Field Emission-Scanning electron microscopy (FE-SEM) analysis. In UV-visible spectra, a peak was obtained at 427.50 nm due to inter band transmission of core electron. The pattern of XRD analysis showed particle size of 25-85 Nm and it reveals high crystallinity of the Copper oxide NPs. In FE-SEM, the average size of synthesized nanoparticles is about 55 nm according to measurement software.

Keywords: Benzil, Substituted benzaldehyde, Ammonium acetate, Copper oxide NPs.

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