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Tris(hydroxymethyl)methane ammonium hydrogensulphate as a nano ionic liquid and its catalytic activity in the synthesis of bis(indolyl)methanes

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Abstract: In this study, tris(hydroxymethyl)methane ammonium hydrogensulphate [(THA)(HSO₄)] was synthesized as the first nano aliphatic ammonium-based ionic liquid *via* a simple chemical route in water. The [(THA)(HSO₄)] ionic liquid was characterized by various techniques such as XRD, SEM, TEM, AFM, ¹H NMR, ¹³C NMR, FT-IR, MS, TG, DTG and elemental analysis and successfully applied as an eco-friendly and recyclable catalyst for the synthesis of bis(indolyl)methane derivatives at room temperature under solvent-free conditions. Taking the environment and economy into consideration, the work presented here has the merits of environmental friendliness, high yields, simple work-up, easy operation and the avoidance of the organic solvents and inexpensive catalysts. In this work, some bis(indolyl)methane derivatives were synthesized and reported for the first time.

Keywords: Nanocatalyst; Ammonium-based ionic liquid; Bis(indolyl)methanes; Recyclability

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