One-pot synthesis of 3-hydroxy-2-oxindole-pyridine hybrids via Hantzsch ester formation, oxidative aromatization and sp^3 C-H functionalization using $FeWO_4$ nanoparticles as recyclable heterogeneous catalyst

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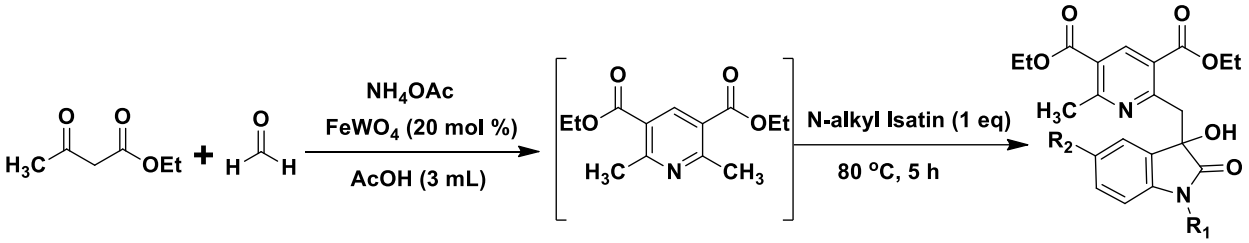

Synthesis of poly-substituted 3-hydroxy-2-oxindole-pyridine hybrids is reported via sp^3 C-H bond functionalization as key steps using $FeWO_4$ nanoparticles as reusable heterogeneous catalyst. Formation of Hantzsch ester (DHP) followed by aromatization, and sp^3 C-H bond functionalization was achieved using $FeWO_4$ nanoparticles (20 mol%) at 80 °C. Temperature dependent reactivity was observed for mono aldol (at 80 °C) products. The catalyst was regenerated and reused up to 6 cycles without losing catalytic activity. The $FeWO_4$ nanoparticles were also used for oxidative aromatization of different DHP derivatives and for the sp^3 C-H functionalization of 2-methyl pyridine.