

MIL-101(Cr)@EDTA-Zn^(II) complex as an Effective Heterogeneous Catalyst for synthesis of polyhydroquinolines

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Multicomponent reactions (MCRs) are of importance in synthetic organic chemistry as they can produce complex molecules with greater efficacy and atom economy from three or more starting materials in a one step without isolation of intermediate [1]. MCRs have been shown to be environmentally friendly as they minimize the number of synthetic steps and workups, and eliminate isolation unstable intermediates. In addition, the synthesis of a broad range of complex products can be achieved by MCRs such as Hantzsch reaction [2]. A simple, efficient method for the one-pot synthesis of polyhydroquinoline derivatives via one-pot four-component reaction of aromatic aldehydes, Ammonium acetate, ethyl acetoacetate and dimedone in the presence of a catalytic amount of EDTA-Zn^(II) complex –supported on the amine-functionalized MIL-101(Cr) MOF in ethanol at reflux conditions is reported (Fig. 1). The process proved to be simple, environmentally friendly, efficient and high to excellent yielding. Accordingly, the process in question can be given the label of "green chemistry".

Keywords: MIL-101(Cr)-NH₂ MOF, EDTA-Zn^(II), Post-Synthetic Modification, Hantzsch reaction, polyhydroquinolines.

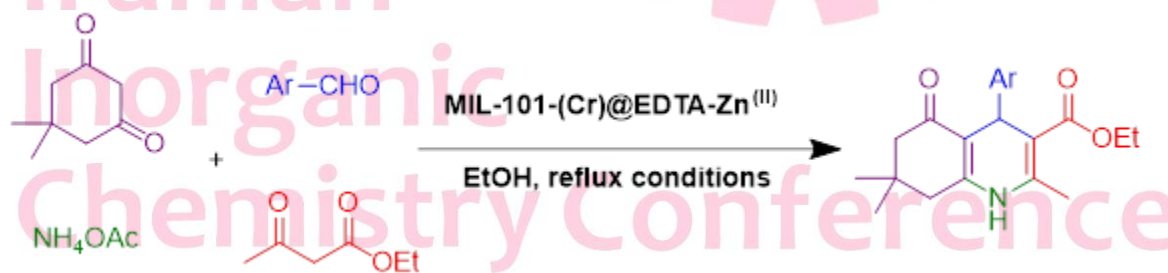


Figure 1. Synthesis of polyhydroquinolines over the catalysis of MIL-101(Cr)@EDTA-Zn^(II) complex.

References

- [1] Moosavi-Zare, R., Zolfigol, M.A., Khakyzadeh, V., Bo"ttcher, C., Beyzavi, M., Beyzavi, H., Zare, A., Hassaninejad, A.R., Luque, R. *J. Mater. Chem. A*, **2014**, 2, 770.
- [2] Haji, M. Beilstein. *J. Org. Chem.* **2016**, 12, 1269.