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Cs@Resorcinarene network as a organocatalyst for the three-component reactions

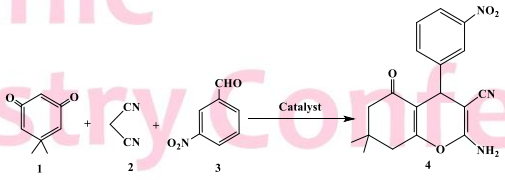
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In recent years, nanoparticles have attracted considerable research interests due to their potential applications in catalysis science and technology in alignment with the principles of green chemistry. One of the green approaches for designing and applying heterogeneous catalytic systems is the use of biopolymers as appropriate biodegradable catalytic systems or supports . In this regard, chitosan and calix , as economic biopolymers, have received considerable attention to be used in catalytic systems, as well as drug delivery and adsorbents [1]. Herein, we report the green synthes is magnetic poly calix[4]resorcinarene of cobalt ferrite by the immobilization of EDTA and free amines of chitosan as the nucleophilic functional groups that are attacking the carbonyl in EDTA to form network polymer layer on the magnetic poly calix[4]resorcinarene surface.The synthesized compound was used as a magnetic catalyst in the three-component condensation reactions of 2-amino-4-(3-nitrophenyl)-7,7-dimethyl-5-oxo-5,6,7,8-tetrahydro-4h-chromene-3-carbonyl. Easy separation of catalyst and products, efficiency and proper reaction time, mild conditions and reuse are some of the advantages of catalyst used [2].

In this work, 2-amino-4-(3-nitrophenyl)-7,7-dimethyl-5-oxo-5,6,7,8-tetrahydro-4h-chromene-3-carbonyl 4 via a three-component condensation of aromatic aldehydes, malononitrile and dimedone were synthesized in the presence of CS@Resorcinarene catalyst under optimal conditions with excellent efficiency. The resulting nanocomposite was studied by EDX, FESEM and FT-IR techniques.



Schem 1. Synthesis of 2-amino-4-(3-nitrophenyl)-7,7-dimethyl-5-oxo-5,6,7,8-tetrahydro-4h-chromene-3-carbonyl in the presence of catalysts

Keywords: Magnetic Nanoparticles, Catalyst, Chitosan

References

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