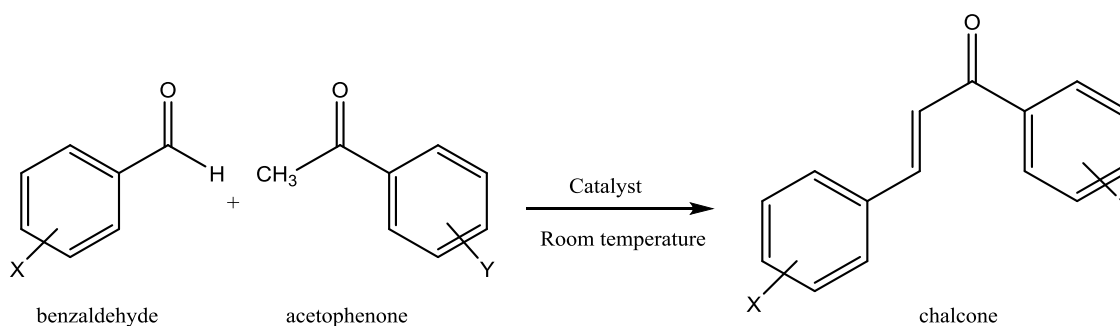


Abstract:

In the present study, for the first time, manganese ferrite nanoparticles with different concentrations of manganese were placed in natural zeolite pores and the Zeolite/MnFe₂O₄ nanocatalysts were synthesized. Then, these nanocatalysts have been applied in the synthesis of chalcone derivatives. First, the natural zeolite is activated under appropriate conditions. Then, manganese ferrite were synthesized by reaction of Fe₂(SO₄)₃·H₂O with MnCl₂ and placed on the surface of activated nano zeolite. These modified zeolite catalysts have been thoroughly characterized by XRD, EDX, SEM, FT-IR, VSM and TEM analysis. The condensations of various aldehydes and acetophenone derivatives in the ratio of 1: 1 mmol in the presence of a Zeolite/MnFe₂O₄ based nanocomposites under various solvents and solvent-free conditions were reported. Under optimized reaction conditions, various chalcone derivatives were synthesized and the products were obtained with good to excellent yields and high purities. Ambient reaction temperature, Short reaction times, easy work-up, reusability of the catalyst and no use of harmful organic solvents are among the most important characteristics of the present methodologies.



The synthesis of Chalcones derivatives in the presence of Zeolite/MnFe₂O₄ nanocatalyst

Keywords: Chalcone, Nanocatalyst, Zeolite, Nanocomposite, Green chemistry, Benzaldehyde, Nano manganese ferrite



University of Zabol

Graduate School

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Department of Chemistry

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(In the field of organic chemistry)

**Design and synthesis of some novel zeolite nanocatalysts modified
with nano manganese ferrite and the investigation of their
application in organic synthesis**

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