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A Sm@Schiff-base@MCM-41 as a reusable and practical nanocatalyst for the synthesis of tetrazoles

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In recent years, nanoparticles have been used as supports for the stabilization of homogeneous catalysts [1,2]. Among them, mesoporous silica materials, such as MCM-41, have high stability in aqueous solution, air atmosphere and high temperature. Large specific surface area of MCM-41 (>1000 m^2/g) including a lot of silanol groups leads to ease modification of its surface [3]. High stability of MCM-41 allows the application of MCM-41 in harsh condition of the organic reactions [4]. Moreover, the large specific pore volume of MCM-41 which is up to 1.3 ml/g allows supporting of huge organic ligands and metal complexes into its channels [5-7]. In this regard, we are reporting a samarium Schiff-base complex on MCM-41 (Sm@Schiff-base@MCM-41) as an efficient and heterogeneous nanocatalyst for the synthesis of tetrazole derivatives. Sm@Schiff-base@MCM-41 was characterized by various techniques such as BET, TGA, XRD, FT-IR, SEM, EDS, WDX, and ICP. Sm@Schiff-base@MCM-41 can be recovered and reused for several runs without significant change in its catalytic activity

Keywords: Mesoporous MCM-41, tetrazoles, samarium, Schiff-base, homoselective catalyst



Scheme 1. Synthesis of tetrazoles in the presence of Sm@Schiff base@MCM-41.

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