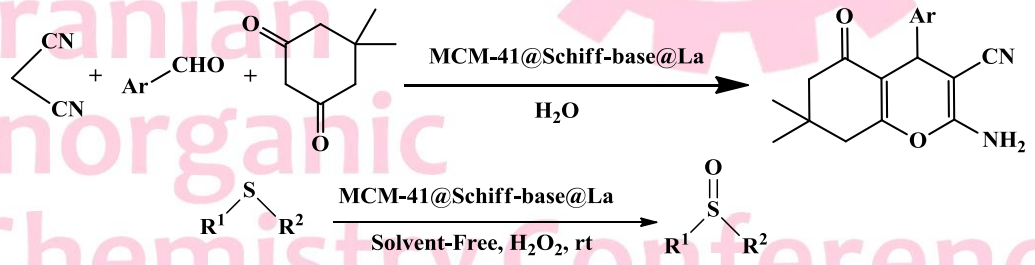
22nd Iranian Chemistry Conference, 23-25 August, 2023
University of Kurdistan

Preparation and characterization of MCM-41@Schiff-base@La as a recyclable heterogeneous nanocatalyst for the synthesis of tetrahydrobenzo[b]pyran derivatives and oxidation of sulfides

Mohsen Nikoorazm*, Mitra Darabi, Bahman Tahmasbi, Yunes Abbasi Tyula
Department of Chemistry, Faculty of Science, Ilam University, P. O. Box69315516, Ilam, Iran,
* *E-mail: e_nikoorazm@yahoo.com*

In this paper, MCM-41@Schiff-base@La as a novel, green, heterogeneous, and extremely efficient nanocatalyst was successfully synthesized by the immobilization of La complex on MCM-41 modified mesoporous silica. The prepared catalyst was characterized by TGA, FT-IR, ICP, BET, SEM and EDX techniques. The synthesized nanoparticle was sused as a recyclability catalyst for synthesis of tetrahydrobenzo[b]pyran and sulfoxide derivatives. Tetrahydrobenzo[b]pyran derivatives are an important class of heterocyclic compounds with many applications. These compounds are synthesized from the condensation of aromatic aldehydes, dimedone and malononitrile in the presence of various catalysts. 4H-pyran derivatives have pharmacological and biological activities, such as anticancer, antifungal, antibacterial, antioxidant, anticoagulant, antianaphylactic, spasmolytic, antiviral, antileishmanial, antiallergenic and diuretic [1, 2]. Beside, sulfoxides play as therapeutic agents such as anti-hypertensive, anti-fungal, anti-ulcer, anti-bacterial, anti-atherosclerotic, and psychoactive. Also, sulfoxides are good intermediates in the synthesis of some vitamins and drugs [3, 4].

Keywords: Mesoporous KIT-6, nanocatalyst, lanthanum, tetrahydrobenzo[b]pyrans, sulfoxides



Scheme 1. Catalytic efficiency of MCM-41@Schiff-base@La in the Synthesis synthesis of tetrahydrobenzo[b]pyran derivatives and oxidation of sulfides

References

[1] T. Tamoradi, B. Karmakar, M. Kamalzare, M. Bayat, A. T. Kal-Koshvandi, A. Maleki, *Journal of Molecular Structure*, **2020**, 1219, 128598.
[2] S. F. Hojati, N. MoeiniEghbali, S. Mohamadi, T. Ghorbani, *Organic Preparations and Procedures International*, **2018**, 50, 408.
[3] M. Darabi, T. Tamoradi, M. Ghadermazi, A. Ghorbani-Choghamarani, *Transition Metal Chemistry*, **2017**, 42, 703-710.
[4] M. Nikoorazm, M. Ghobadi, *Silicon*, **2019**, 11, 983- 993.