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A new Ce-Schiff base complex on modified KIT-6 as a reusable nanocatalyst for the synthesis of tetrahydrobenzo[b]pyrans and sulfoxides

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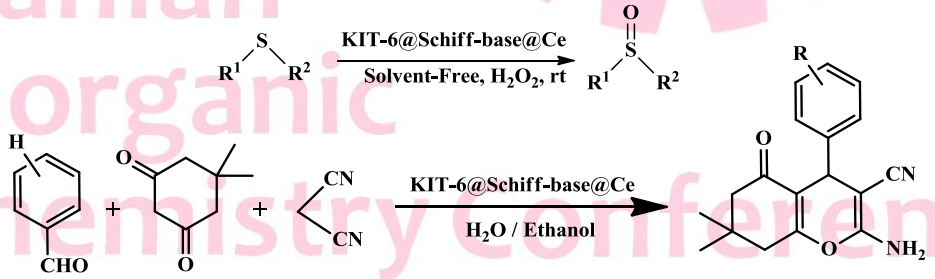
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In this work, KIT-6@Schiff-base@Ce was synthesized and identified using different techniques including BET, FT-IR, WDX, SEM, EDX, and TGA. KIT-6@Schiff-base@Ce was found to be a novel and recyclable catalyst for the synthesis of sulfoxide and tetrahydrobenzo[b]pyran derivatives. Conversion of organosulfur compounds such as sulfides into sulfoxides is a topic of interest in several chemical areas, due to their applications in biological, medical, synthetic and petroleum industry. For example, pantoprazole, omeprazole, lansoprazole and pesticide fipronil are typical examples of the pharmaceutically important sulfoxide derivatives in pharmaceutical and fine chemical industries [1]. Tetrahydrobenzo[b]pyrans have belonged to the class of oxygen-containing heterocycle compounds which can be used in the biological and pharmaceutical fields. They have possessed significant attention in the biological properties such as spasmolytic, diuretic, anticoagulant, anticancer, antianaphylactic, antitumor, antifungal, antiallergic, antibacterial,antileishmanial, hypotensive, antiviral and insulin-sensitizing activity[2, 3]. These compounds are synthesized from the condensation of aldehydes, malononitrile, and dimedone in the presence of various catalysts [4].

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



Scheme 1. Catalytic efficiency of KIT-6@Schiff-base@Ce in oxidation of sulfides and synthesis of tetrahydrobenzo[b]pyrans

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