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SiO_2 nanoparticles catalyzed the synthesis of tetrahydro-2,6-dioxopyrimidin-4-yl)-2,3-dihydrophthalazine-1,4-diones

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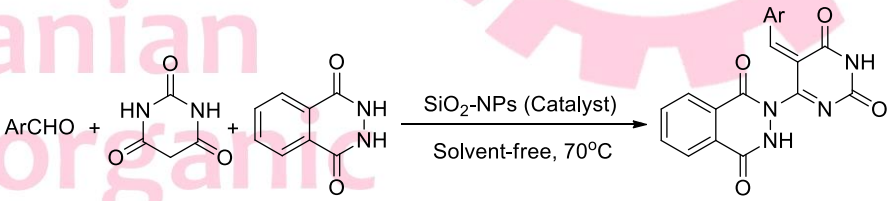
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Multi-component reactions (MCRs) have been considered as a superior synthetic approach for the preparation of libraries of biologically active compounds [1]. MCRs offer environmentally friendly methods by reducing the number of waste production, steps of the reactions, and energy consumption [1].

Silica gel is one of the most widely used solid support for various catalytic applications, due to its non-toxicity, high surface area, excellent thermal stability, and ready availability [2]. Based on silica as an efficient catalyst and support, numerous silica-supported catalysts have been developed in recent years [3]. Also, these catalysts catalyzed the various Multicomponent reactions [3]. In this work, silica nanoparticles (SiO_2-NPs) were applied for the one-pot synthesis of tetrahydro-2,6-dioxopyrimidin-4-yl)-2,3-dihydrophthalazine-1,4-diones scaffolds. These compounds were prepared via the three-component reaction of aromatic aldehydes, phthalhydrazide, and barbituric acid (Scheme 1). After completion of the reaction, the simple and rapid separation and facial recovery of the SiO_2-NPs was accomplished.



Scheme 1. The synthesis of tetrahydro-2,6-dioxopyrimidin-4-yl)-2,3-dihydrophthalazine-1,4-diones

Keywords: Nanoparticles, SiO_2, Solvent-free, Barbituric acid, Synthetic methodology

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