

## عنوان مقاله:

One-pot three-component synthesis of dialkyl 3-(alkylamino)-1-aryl-1Hpyrazole- 4,5-dicarboxylates using  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> nanoparticles and phenylisocyanate in solvent-free conditions

## محل انتشار:

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## خلاصه مقاله:

A simple and efficient synthesis of dialkyl 3-(alkylamino)-1-aryl-1H-pyrazole-4,5-dicarboxylates was described in this work via a three component reaction between arylhydrazine, alkylisocyanide and dialkylacetylenedicarboxylates in the presence of phenylisocyanate and  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> nanoparticles. Eco friendly, solvent-free conditions, excellent yields, and short reaction times, inexpensive and readily available catalysts were the main advantages of this method. In this work, phenylisocyanate and  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> nanoparticles were used as a potent mixed catalyst for promoting the reaction and taking it in a special way to obtain the titled compounds in good to excellent yields. This reaction was not carried out without any of the components of this mixed catalyst. It means that, for performance of this reaction, both of the mixed catalyst components are required.

## کلمات کلیدی:

Pyrazole;  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>; phenylisocyanate; nanocatalyst; solvent-free

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/753212>

