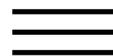


Amine functionalized MCM-41 as a green, efficient, and heterogeneous catalyst for the regioselective synthesis of 5-aryl-2-oxazolidinones, from CO<sub>2</sub> and aziridines.

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Amine functionalized MCM-41 as a green, efficient, and heterogeneous catalyst for the regioselective synthesis of 5-aryl-2-oxazolidinones, from CO<sub>2</sub> and aziridines

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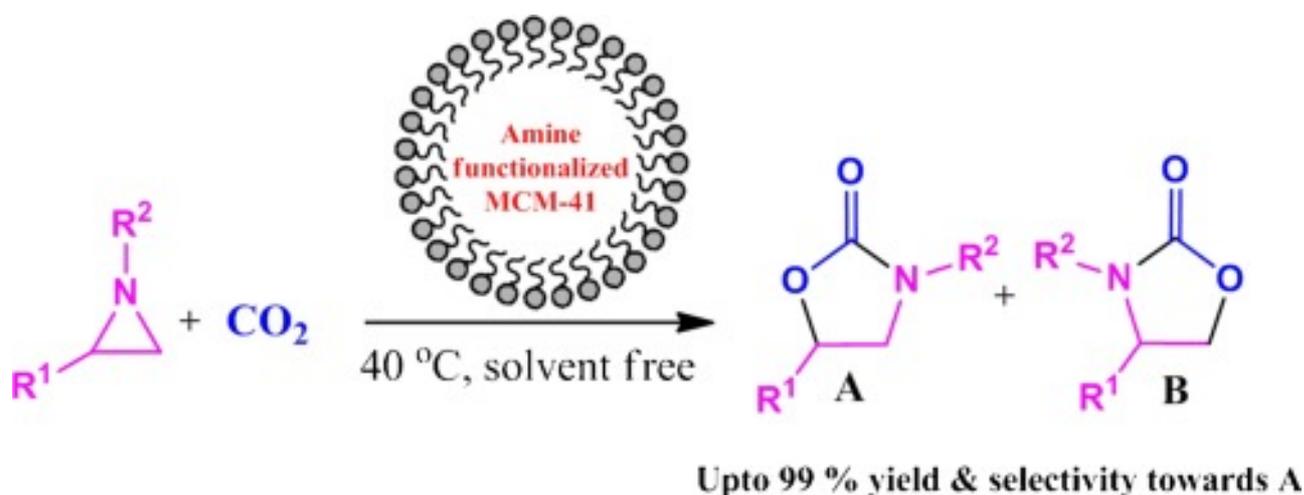
### Highlights

- Amine functionalized MCM-41 as an efficient catalyst for 5-aryl-2-oxazolidinones synthesis.
- Wide varieties of aziridines are synthesized under mild conditions.
- The catalyst is remarkably stable and active up to five consecutive recycles.

## Abstract

Covalently linked amine functionalized MCM-41 catalysts were investigated as an efficient, heterogeneous and recyclable catalyst for the coupling of carbon dioxide ( $\text{CO}_2$ ) and aziridines providing high conversion with excellent regioselectivity towards 5-aryl-2-oxazolidinones under mild and solvent free conditions. The effect of various reaction parameters, such as temperature, time, and  $\text{CO}_2$  pressure for the synthesis of 5-aryl-2-oxazolidinones using amine functionalized MCM-41 catalyst was investigated. The optimized protocol was applied to a wide variety of 1-alkyl-2-arylaziridines producing the corresponding 5-aryl-2-oxazolidinones with good yield and excellent regioselectivity. Amine functionalized MCM-41 catalysts were characterized by FT-IR, TG/DTA, high and low angle XRD, and solid state  $^{29}\text{Si}$  CPMAS NMR analysis. Furthermore, the catalyst was effectively recycled for five consecutive cycles without any significant loss in its catalytic activity and selectivity under the described reaction conditions. Readily available reagents, mild reaction conditions and effective catalyst recyclability make this protocol simple, convenient, practical and environmentally friendly.

## Graphical abstract



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Keywords

Carbon dioxide; 5-Aryl-2-oxazolidinones; Mesoporous material; Heterogeneous catalyst; Amine functionalized MCM-41

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Amine functionalized MCM-41 as a green, efficient, and heterogeneous catalyst for the regioselective synthesis of 5-aryl-2-oxazolidinones, from CO<sub>2</sub> and aziridines, the cumulative absorption is of great importance for the formation of the chemical composition of ground and formation waters.

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