

Converting urea into high value-added 2-oxazolidinones under solvent-free conditions

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Experimental

Catalysts preparation

All chemicals were purchased from local chemical agents and were of reagent grade without further purification.

The Mg-Zn-Al hydrotalcites (HTMg-Zn-Al) were prepared by co-precipitation method. Solution 1 contained $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$, $\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ and $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ were dissolved in distilled water with the molar ratio of $(\text{Zn} + \text{Mg}):\text{Al} = 3:1$. Solution 2 contained 2M NaOH and 0.125M Na_2CO_3 . Then solution 2 was added to solution 1 under vigorous stirring, the pH was maintained at ~ 12 . The resulting slurry was aged at 60 °C overnight, followed by filtration, washing, and drying at 60 °C for 12 h. The composition of the Mg-Zn-Al hydrotalcite can be altered by varying the ratio of Zn/Mg. Then precursors were calcined at temperatures 400 °C for 4 h, respectively. The resulted catalysts are denoted as $\text{Mg}_l\text{Zn}_m\text{Al}_n\text{O}$, l, m, n are molar ratios of Mg, Zn and Al.

GC-MS analysis of the products







