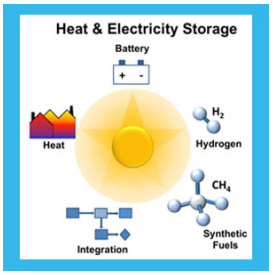

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Metal free catalyst for chemoselective methylation of amines using CO2 as a carbon source

Tuesday 4 November 2014 12:00 (1h 15m)

N-methylation of amines is an important step for pharmaceuticals and has been widely applied as key intermediates and important chemicals.1 Therefore, development of more efficient methylation methods continuously attracted the attention of chemists in the last decades. Still, the most common methylation of amines in industry makes use of toxic formaldehyde, whereas in organic synthesis less benign methylation reagents, for example, methyl iodide, and dimethyl sulfate, prevail. Thus, the application of more sustainable reagents is highly desired. In this respect, carbon dioxide is an attractive C1 building block in organic synthesis because it is an abundant, renewable carbon source and an environmentally friendly chemical reagent.2 Our main aim was to develop a metal free catalytic system which is having clear advantages of lack of sensitivity to moisture and oxygen, ready availability, low cost, and low toxicity, which confers a huge direct benefit in the production of pharmaceutical intermediates when compared with (transition) metal catalysts.
Keeping these in our mind, we developed an active metal free catalytic system which works under mild reaction condition at atmospheric pressure (no need of autoclave) and at 50℃. This improved reaction condition is far better than the previous catalytic system known for this reaction and tolerated a wide variety of functional groups.3-5 This chemoselective nature of the catalyst is highly attractive for the ‘step-economy’in a chemical synthesis of pharmaceuticals and fine chemicals.

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