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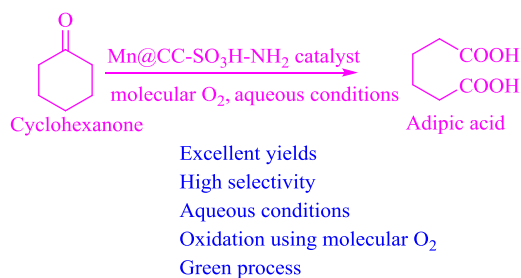
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Manganese incorporated on glucose as an efficient catalyst for the synthesis of adipic acid using molecular O₂ in aqueous medium

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Graphical abstract



Highlights

- A new manganese incorporated on glucose catalyst Mn@CC-SO₃H-NH₂ was synthesized.
- Selective synthesis of adipic acid starting from cyclohexanone using molecular O₂ as a sole oxidant under aqueous condition gave 82% yield with 100% selectivity.
- The Mn@CC-SO₃H-NH₂ catalyst was found to be highly efficient, highly selective, easily separable, reusable and environment friendly.

ABSTRACT

A new manganese incorporated on glucose catalyst Mn@CC-SO₃H-NH₂ was synthesized and well characterized using FT-IR, PXRD, EDAX, SEM, TEM, ¹³C cross-polarization NMR and BET analysis. The catalyst thus synthesized was studied for its utility in the synthesis of industrially important chemical adipic acid starting from readily available cyclohexanone using molecular O₂ as a source. Adipic acid was obtained in maximum yield of 82% using Mn@CC-SO₃H-NH₂ catalyst in water as a solvent. The catalyst was easily recovered and reused for minimum five runs without any significant loss in the yield of products. Using molecular O₂ as an oxidant and water as a solvent, the reaction is very important from green chemistry perspectives and can also be industrially feasible.

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