

Amino-functionalized MIL Type Metal Organic Frameworks as Heterogeneous Catalysts for Asymmetric Electrocarboxylation of (1-chloroethyl)benzene with CO₂

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Due to the high specific surface area and tunable pore size of Metal-Organic Frameworks (MOFs), the use of MOFs to catalyze CO₂ conversion has increased in recent years. The present study is the first to use three MOFs of MIL types with free amino groups, namely, MIL-101-NH₂(Cr), MIL-101-NH₂(Al) and MIL-53-NH₂(Al), for asymmetric electrocarboxylation of (1-chloroethyl)benzene with CO₂. The electrochemical behavior of three MOFs were discussed. The optically active 2-phenylpropionic acid was obtained using t-Bu(R,R)salen(Co[II]) as the chiral mediate under mild conditions. In order to get the optimal results, the reaction conditions such as the influence of temperature, charge and the quantity of catalysts were investigated.

Keywords: MOFs; CO₂; Asymmetry; Electrocarboxylation; (1-chloroethyl)benzene

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