Cycloaddition Reaction of Carbon Dioxide into Epoxides Using Tertiary Diamines

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To realize a true green CO2 utilization process, the development of a catalytic system having no toxic components is essential. In this report, we will present that tertiary amines without any metal or halide additives could be introduced as simple and green organocatalysts to activate CO2 and insert into epoxides, producing synthetically important cyclic carbonates. We will show simple diamine such as N,N,N',N'-tetraethylethylenediamine could act as excellent catalyst for cycloaddition reaction. This new class of organocatalyst which does not have any toxic metals and halides is easy to handle and only requires as low as a 0.1 mol% loading. Additional favorable features include solvent free conditions and broad substrate scopes.
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