

Quaternary Ammonium Salt Grafted Nanoporous Organic Polymer for Atmospheric CO₂
Fixation and Cyclic Carbonate Formation

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With rise in greenhouse gas and CO₂ level in atmosphere, various consequences are affecting global climatic issues, economies and concern for general populations health. In order to contend with potential harms to global impact, carbon capture utilization (CCU) strategies have been widely developed by scientific communities. For CCU strategy to be feasible as a probable strategy, one must consider the carbon footprint, thus conversion must take absolute minimal amount of energy. Conversion of carbon dioxide into cyclic carbonates may be a feasible strategy as it requires comparably low energy and does not require a redox reagent to change states in a suitable catalytic system. We expect its intrinsic nature of nano-porous materials will furnish the availability of active sites per amount of substrate, hence accelerating the overall rate of reaction. Hereby, we report comprehensive synthesis of quaternary ammonium salts grafted nano-porous covalent organic polymers (COPs). We observed that our positive charged catalyst showed excellent conversion and selectivity for substrates under ambient pressure and additive free conditions.