# New Organocatalysts for Synthesis of Cyclic Carbonates Capable of Operating at Ambient Temperature and Atmospheric $CO_2$ Pressure

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The coupling reaction of $CO_2$ and epoxides yielding cyclic carbonates, used as polar aprotic solvents, electrolytes for lithium-ion batteries, monomers for polymerizations, and pharmaceutical intermediates, is one of the most active research areas of $CO_2$ conversion due to its atom economy (no side products) and broad applicability. Even though organocatalysts have many advantages in terms of cost, toxicity, and accessibility, compared to metal-based catalysts, they generally require harsh reaction conditions such as high temperatures (> 100 °C), high $CO_2$ pressures (> 10 bar), and high catalyst loadings (> 5 mol %) for the efficient conversion. To date, several active organocatalysts for this coupling reaction under mild conditions have been reported in the literature; however, the development of efficient organocatalysts capable of operating at ambient temperature and atmospheric $CO_2$ pressure is clearly a difficult task and just a few examples are known. The detailed synthesis, characterization, and catalytic activities of new phenol-based organic compounds will be discussed.