

Porous Metal–Amino Acid Framework Catalyst with Exo–dipyridyl Reinforcement for CO<sub>2</sub>  
Transformation to Cyclic Carbonate

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Metal–Organic Frameworks, formed by the bridging assembly of organic spacers and oxide clusters, are renowned porous materials with versatile applications including gas adsorption and catalysis. Thus, MOFs form a platform for CO<sub>2</sub> adsorption and further for catalyzing the cycloaddition of CO<sub>2</sub> and epoxides to cyclic carbonate. MOFs made using natural/biological units (such as amino acids) are rich in Lewis acid/base sites and remarkably high CO<sub>2</sub> adsorption capacity. Herein we adopt a strategy of reinforcing the metal–amino acid framework (made from Copper and L–Aspartic acid) using exo–dentate pillars of 4,4–bipyridyl in bringing porosity, robustness, and chemical stability. The catalyst, designated as CuAspBpy, was synthesized by solvothermal and microwave methods, characterized and used as in the catalysis of cyclic carbonate synthesis from CO<sub>2</sub> and epoxides. Catalysis at ambient conditions was brought about in conjunction with the co–catalyst tetrabutyl ammonium bromide. Effect of reaction parameters were studied and a plausible mechanism was suggested.