

A New Class of Bifunctional One-Component Group VI Catalysts for the Coupling of Carbon Dioxide and Epoxides

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A new class of halide-free and bifunctional one-component catalysts for the synthesis of cyclic carbonates from CO₂ and epoxides will be presented. Until now, the typical catalysts for the coupling of CO₂ with epoxides can be roughly classified into three categories such as binary systems, bifunctional one-component systems, and halide-free dimeric systems. Apart from the three systems, another promising catalytic system may be halide-free and bifunctional one-component catalysts. These new conceptual catalysts do not need halide-based additives or tethered salts attached to ligand when used for this coupling reaction. As the halide-free and bifunctional one-component catalysts, nonionic and monomeric tetracarbonylchromium(0), tetracarbonylmolybdenum(0), and tetracarbonyltungsten(0) complexes chelated by modified ethylenediamines were chosen. The detailed synthesis, characterization, catalytic activity, and DFT mechanistic studies of new Group VI catalysts will be discussed.

References

- 1) "Halide-Free and Bifunctional One-Component Catalysts for the Coupling of Carbon Dioxide and Epoxides" *Inorg. Chem.* 2019, 58, 5922–5931.