

Cycloaddition between CO₂ and Epoxides Using Novel Titanium Catalysts

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The facile and exclusive synthesis of dimeric titanium (IV) complex with a terminal Ti=O moiety from reaction between novel pyridine-based tridentate ligand(LH2) and Ti(O-i-Pr)₄ under the bubbling of wet air is presented. On the other hand, the same dimeric Ti complex was obtained via wet air bubbling of monomeric LTi(O-i-Pr)₂ or addition of the same equiv of H₂O into LTi(O-i-Pr)₂. All compounds including LH2 and two titanium complexes were characterized by single crystal X-ray analyses. Synthesized terminal oxo-titanium compound is the first example of structurally characterized dimeric terminal oxo-titanium compound with no Ti=O→Ti bonds. We will also report two titanium complexes could be used as effective catalysts for the cycloaddition of CO₂ to propylene oxide in the presence of various kinds of cocatalysts.

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