**Supplemental Information for:**

**Mechanism Studies of Terpolymerization of Phthalic Anhydride, Propylene Epoxide, and Carbon Dioxide Catalyzed by ZnGA**

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**Supplementary figures:**

Figure S1. $^1$H NMR spectra of PA/PO/CO$_2$ terpolymer
Figure S2. $^1$H NMR spectra of PO/PA copolymer

Figure S3. $^1$H NMR spectra of PO/CO$_2$ copolymer
Supplementary equations:

The compositions of PA/PO/CO₂ terpolymers were estimated according to the ¹H NMR spectra by the following equations:

\[
\text{PE (polyester) \%} = \frac{(A_\delta(7.4-7.8)/4)}{(A_\delta(5.2-5.5)+A_\delta(4.8-5.2)+A_\delta(3.2-4.0)/3)} \quad \text{(Eq.S1)}
\]

\[
\text{PPO(polyether)\%} = \frac{(A_\delta(3.2-3.6)/3)}{(A_\delta(5.2-5.5)+A_\delta(4.8-5.2)+A_\delta(3.2-4.0)/3)} \quad \text{(Eq.S2)}
\]

\[
\text{PC (polycarbonate) \%} = 100\% - \text{PE\%-PPO\%} \quad \text{(Eq.S3)}
\]

Where \(A_\delta(7.4-7.8)\) is the total peak area of the two peaks in the range of \(\delta=7.4-7.8\)ppm which is the peaks of the four protons at benzene ring; \(A_\delta(5.2-5.5)\) is the peak area of the peak in the range of \(\delta=5.2-5.5\)ppm which is the peak of CH in ester unit; \(A_\delta(4.8-5.2)\) is the total peak area of the peaks in the range of \(\delta=5.2-5.5\)ppm which is the peak of CH in carbonate unit; \(A_\delta(3.2-4.0)\) is the total peak area of the peaks in the range of \(\delta=3.2-4.0\)ppm which is the peak of -CH-CH₂- in ether unit.