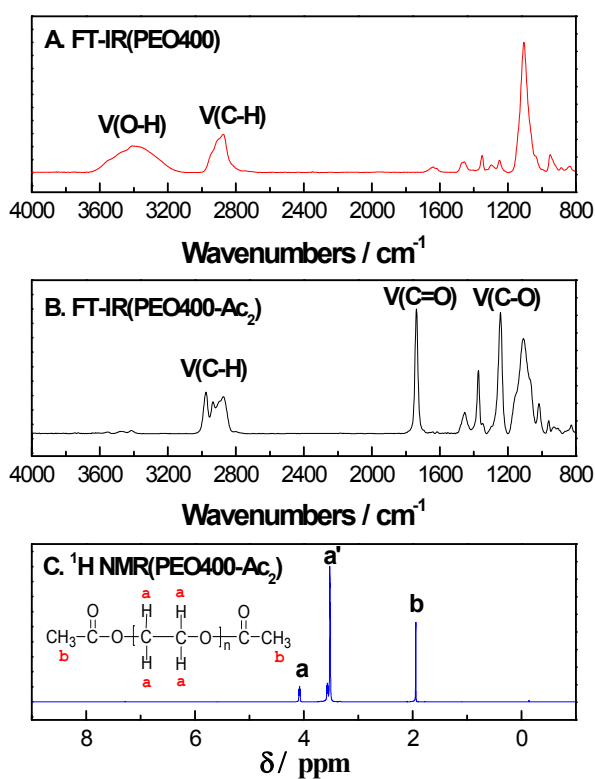
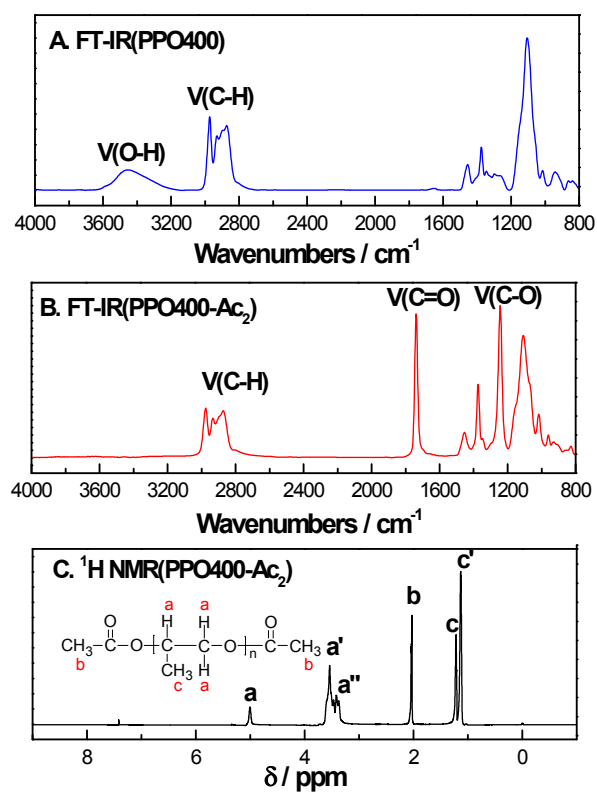


## Electronic Supplementary Information

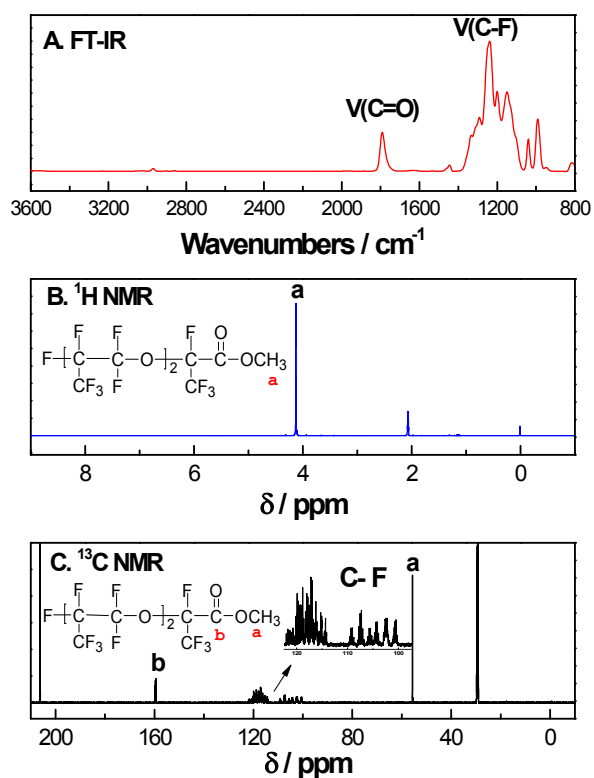
FT-IR spectra of PEO-Ac<sub>2</sub>, PEO400-Ac<sub>2</sub> and <sup>1</sup>H NMR spectra of PEO400-Ac<sub>2</sub>. FT-IR spectra of PPO-Ac<sub>2</sub>, PPO400-Ac<sub>2</sub> and <sup>1</sup>H NMR spectra of PPO400-Ac<sub>2</sub>. FT-IR spectra of FP<sub>2</sub>-COOCH<sub>3</sub>, <sup>1</sup>H NMR spectra and <sup>13</sup>C NMR spectra of FP<sub>2</sub>-COOCH<sub>3</sub>. *P<sub>T</sub>* of the epoxide oligomer + CO<sub>2</sub> systems. The reproducibility of the *P<sub>T</sub>* of the epoxide oligomer + CO<sub>2</sub> systems. See DOI:10.1039/x0xx00000x



**Fig. S1** FT-IR spectra of PEO400 (A), PEO400-Ac<sub>2</sub> (B) and <sup>1</sup>H NMR spectra of PEO400-Ac<sub>2</sub> (C). NMR spectra were recorded in CDCl<sub>3</sub> at 25 °C, TMS and the residual chloroform in CDCl<sub>3</sub> were used as references of chemical shift.



**Fig. S2** FT-IR spectra of PPO (A), PPO400-Ac<sub>2</sub> (B) <sup>1</sup>H NMR spectra of PPO400-Ac<sub>2</sub> (C) NMR spectra were recorded in CDCl<sub>3</sub> at 25 °C, TMS and the residual chloroform in CDCl<sub>3</sub> were used as references of chemical shift.



**Fig. S3** FT-IR spectra of  $\text{FP}_2\text{-COOCH}_3$  (A),  $^1\text{H}$  NMR spectra (B) and  $^{13}\text{C}$  NMR spectra of  $\text{FP}_2\text{-COOCH}_3$  (C). NMR spectra were recorded in acetone- $\text{d}_6$  at 25  $^\circ\text{C}$ , TMS and the residual chloroform in acetone- $\text{d}_6$  were used as references of chemical shift.

**Table S1** The Reproducibility of the  $P_T$  of the Epoxide Oligomer +  $\text{CO}_2$  Systems

Oligomer	$P_T$ / $\text{MPa}^a$		
	1	2	3
PEO100-Ac <sub>2</sub>	14.0	14.0	14.0
PPO100-Ac <sub>2</sub>	18.2	18.2	18.2
$\text{FP}_2\text{-COOH}$	11.4	11.4	11.4

<sup>a</sup>The transition pressure ( $P_T$ ) of the oligomer +  $\text{CO}_2$  system was measured using a high-pressure ATR-FTIR spectroscopy system at 60.0  $^\circ\text{C}$  and with a volume of 10.0 mL. The resolution of the ATR-FTIR was 2.0  $\text{cm}^{-1}$ . The scans number accumulated was 16. The experiment was repeated for three times.