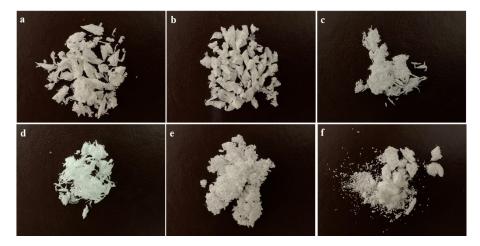
## Supporting Information for

## Preparation and Crystal Transition of Functionalized Poly (1-butene) Containing PFPU and mPEG Side Chain

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**Figure S1.** Photos of samples. (a) PB-0, (b) PB-0.03 mol %, (c) PB-0.16 mol %, (d) PB-0.26 mol %, (e) PB-0.36 mol %, (f) PB-0.59 mol %.

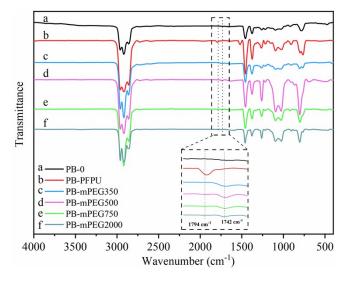
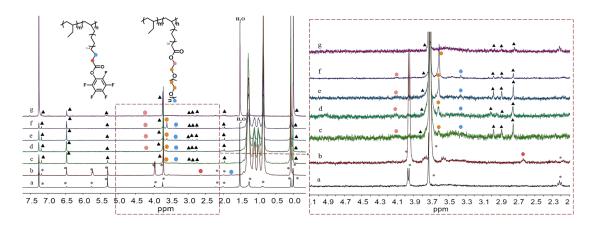
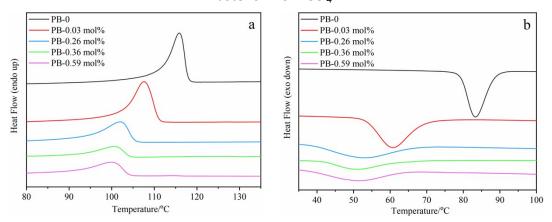


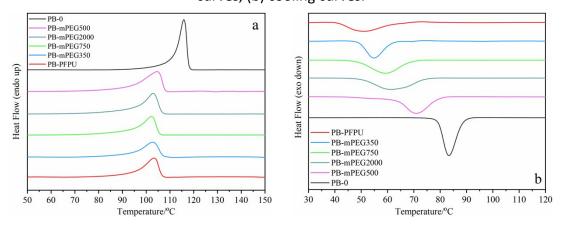
Figure S2. The IR spectra of PB-0, PB-PFP and PB-mPEG.



**Figure S3.** <sup>1</sup>H NMR spectra of CCl<sub>4</sub>, PB-PFP and PB-mPEG. (a) CCl<sub>4</sub>, (b) PB-PFP, (c) PB-mPEG350, (d) PB-mPEG500, (e) PB-mPEG750, (f) PB-mPEG2000, (g) new-CCl<sub>4</sub>, the asterisk from CCl<sub>4</sub>.



**Figure S4.** DSC results of PB with different PFP contents. (a) secondary heating curves, (b) cooling curves.



**Figure S5.** DSC results of PB with different molecular weight mPEGs. (a) secondary heating curves, (b) cooling curves.

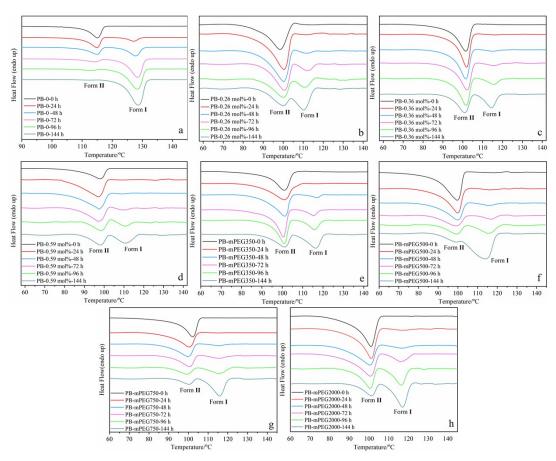
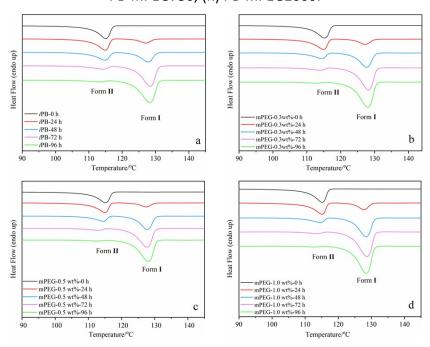
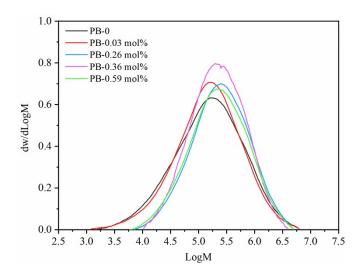


Figure S6. DSC results of phase transition of different samples. (a) PB-0, (b) PB-0.26 mol %, (c) PB-0.36 mol %, (d) PB-0.59 mol %, (e) PB-mPEG350, (f) PB-mPEG500, (g) PB-mPEG750, (h) PB-mPEG2000.



**Figure S7.** DSC curves of phase transition of PB with different mPEG addition amounts. (a) *i*PB; (b) mPEG-0.3 wt %; (c) mPEG-0.5 wt %; (d) mPEG-1.0 wt %.



**Figure S8.** GPC curves of PB with different PFP contents.