## **Supporting Information**

## One-shot Synthesis of Star Gradient Copolymers with Controllable Graft Density

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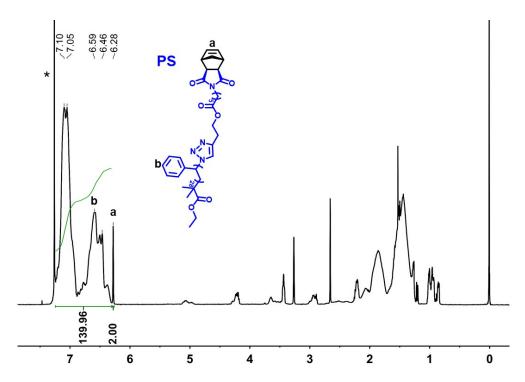


Figure S1.  $^1$ H NMR spectrum (500 MHz) of PS in CDCl $_3$  (\*) at 25  $^\circ$ C.

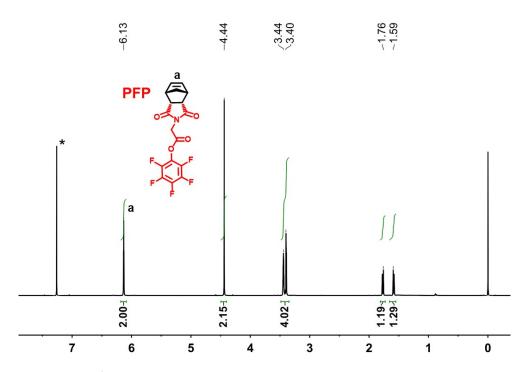


Figure S2.  $^{1}$ H NMR spectrum (500 MHz) of PFP in CDCl<sub>3</sub> (\*) at 25  $^{\circ}$ C.

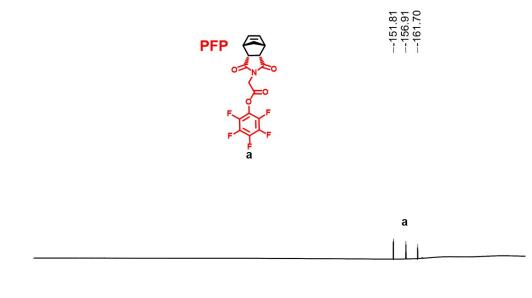


Figure S3.  $^{19}F$   $\{^{1}H\}$  NMR spectrum (471 MHz) of PFP in CDCl<sub>3</sub> at 25 °C.

-120

-140

-160

-180

-200

-100

-80

-60

-20

-40

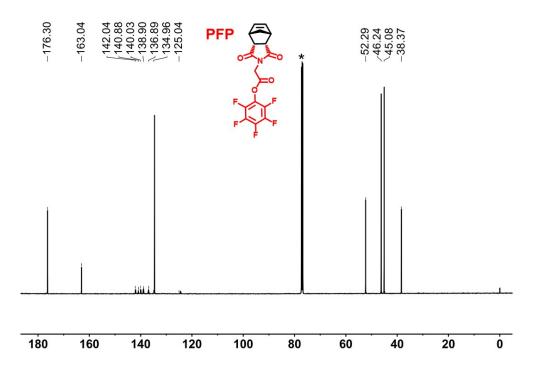
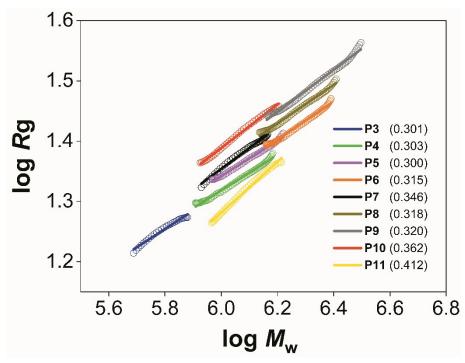


Figure S4.  $^{13}$ C  $\{^{1}$ H $\}$  NMR spectrum (125 MHz) of PFP in CDCl<sub>3</sub> (\*) at 25 °C.



**Figure S5**. Conformation plot of star gradient graft copolymers with different feed ratios by SEC-MALLS analysis.

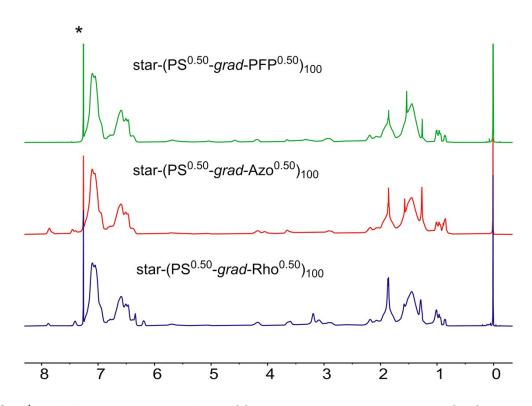


Figure S6. <sup>1</sup>H NMR spectra (500 MHz) of functionalized copolymers in CDCl<sub>3</sub> (\*) at 25 °C.

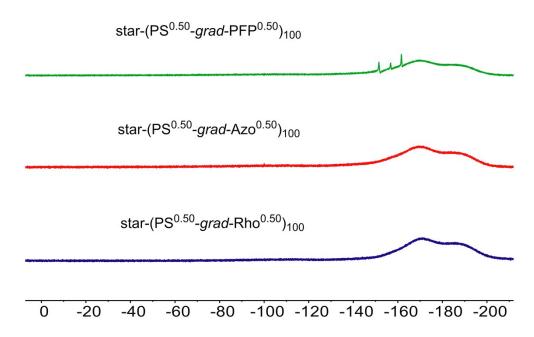


Figure S7. <sup>19</sup>F NMR spectra (471 MHz) of functionalized copolymers in CDCl<sub>3</sub> at 25 °C.

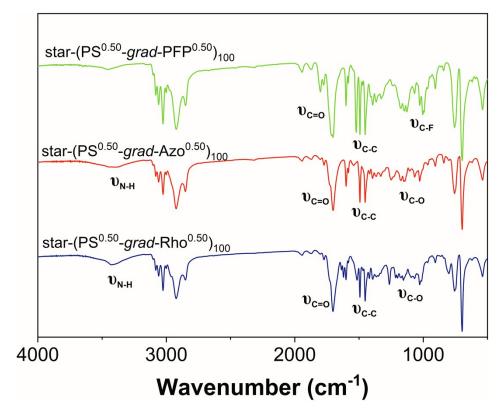


Figure S8. FT-IR of functionalized copolymers.