Preparation and characterization of stereocomplex aggregates based on PLA-P188-PLA

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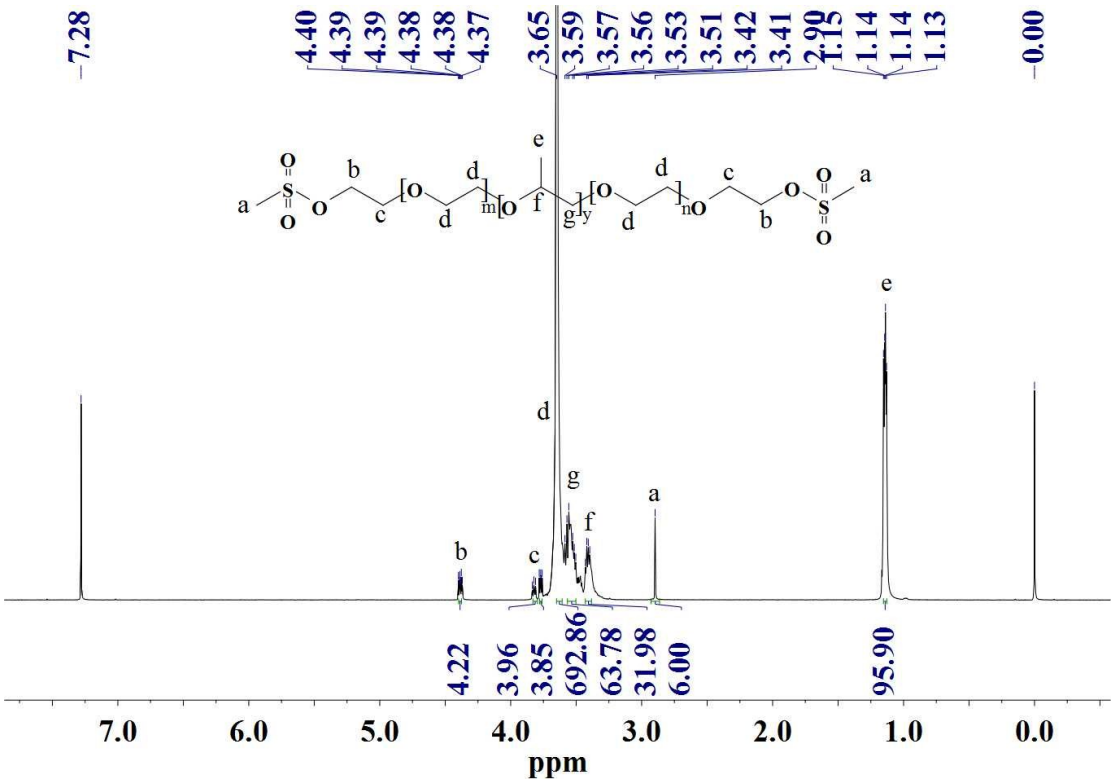
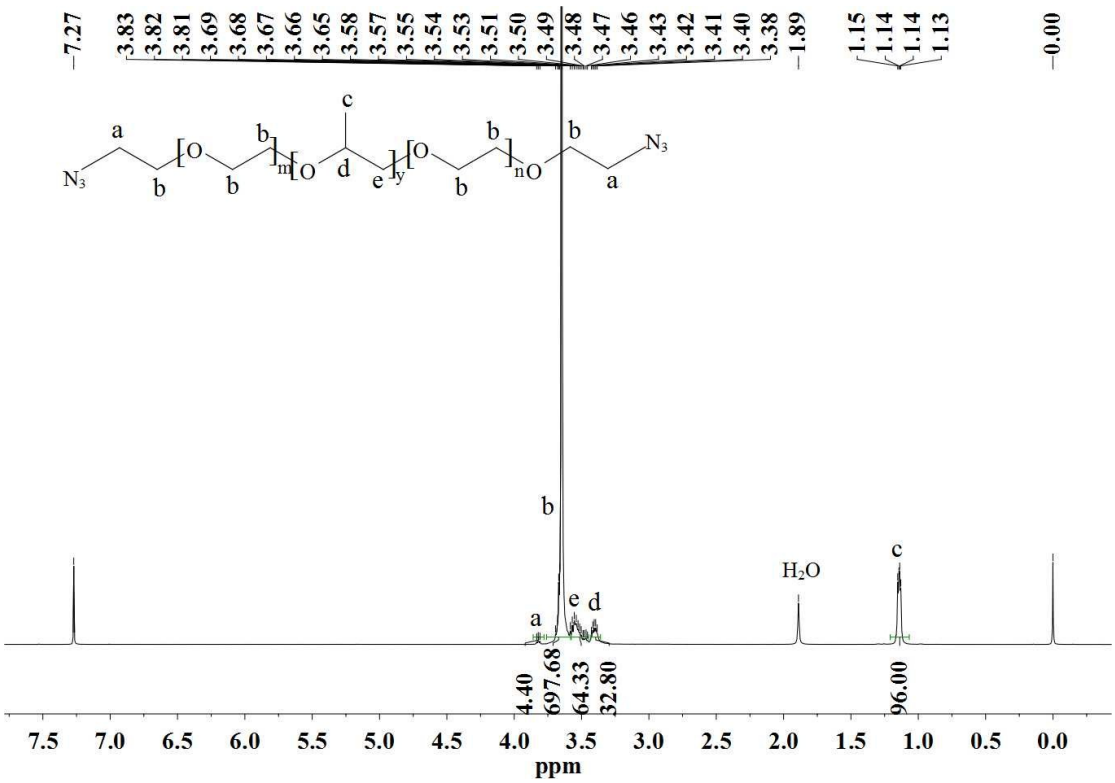
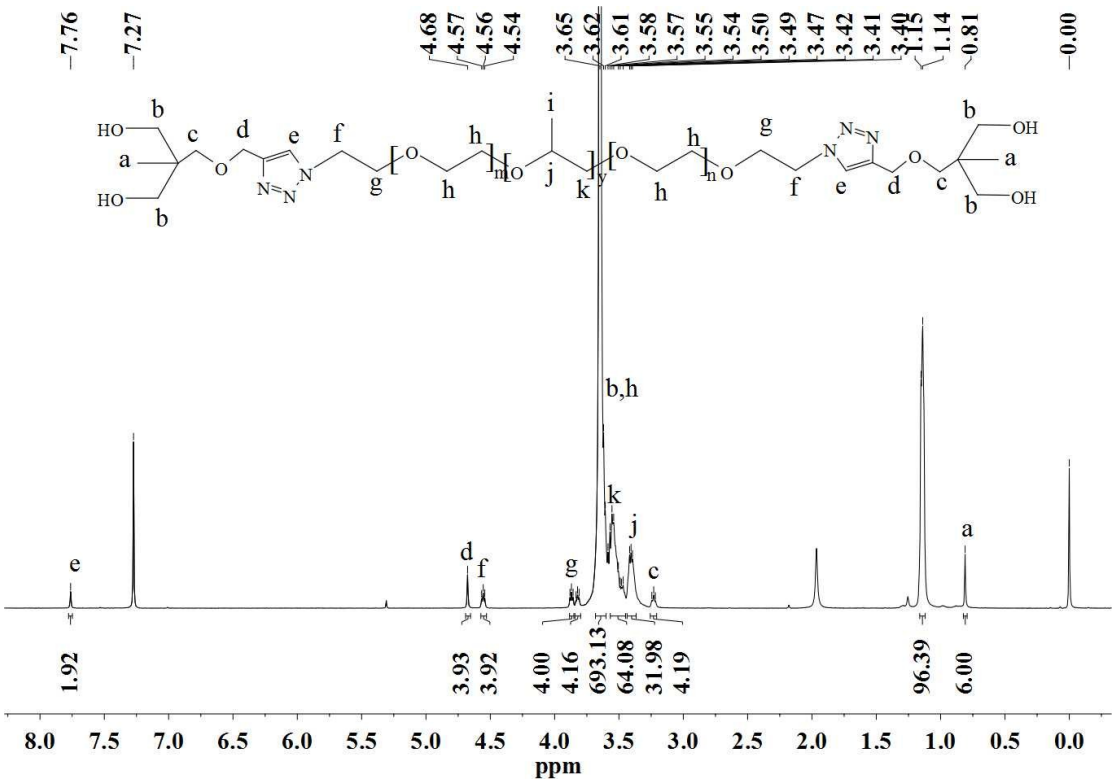


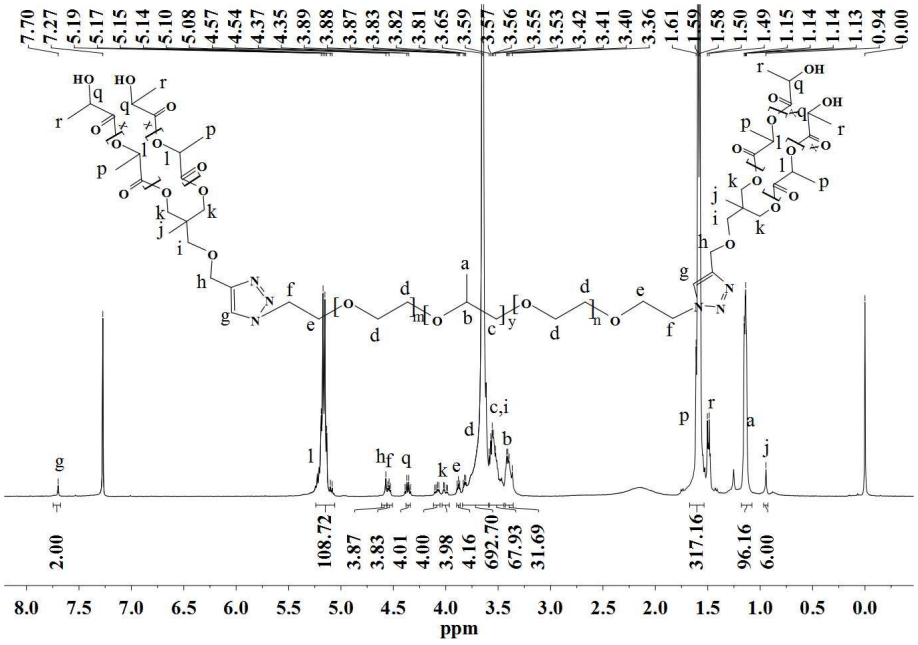
SI Fig. 1. ^{1}H NMR Spectrum of Ms-P188-Ms **2**



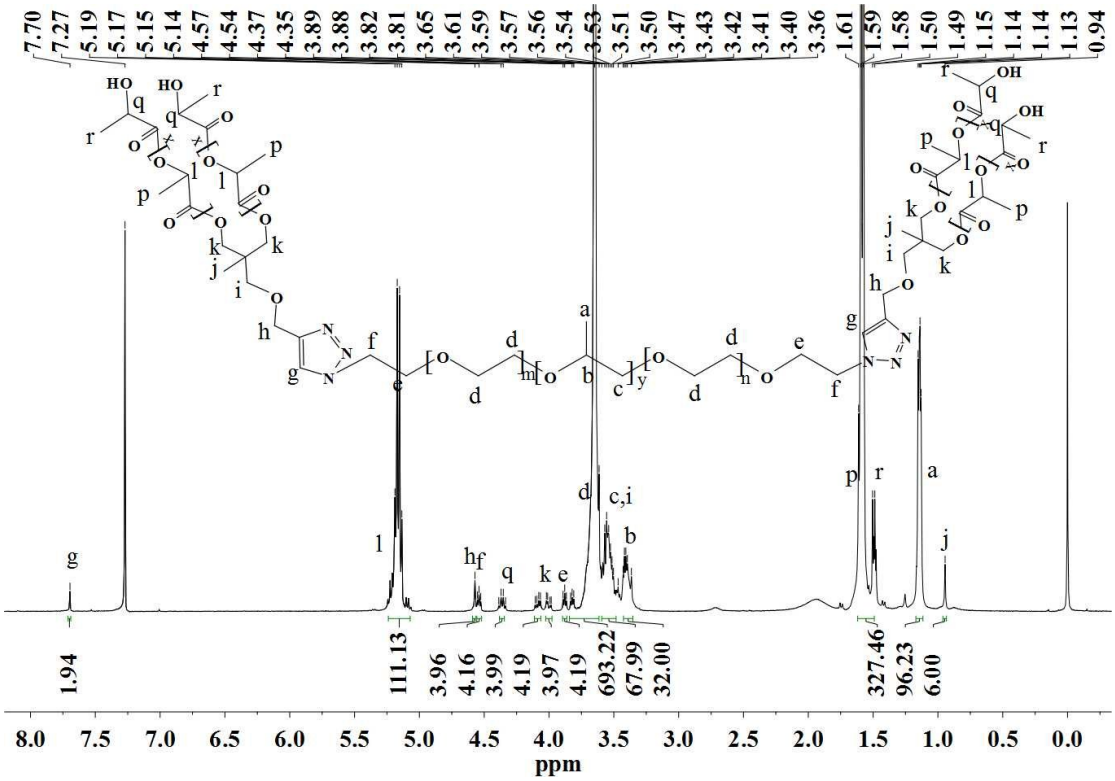
SI Fig. 2. ^{1}H NMR Spectrum of N_3-P188-N_3 **3**



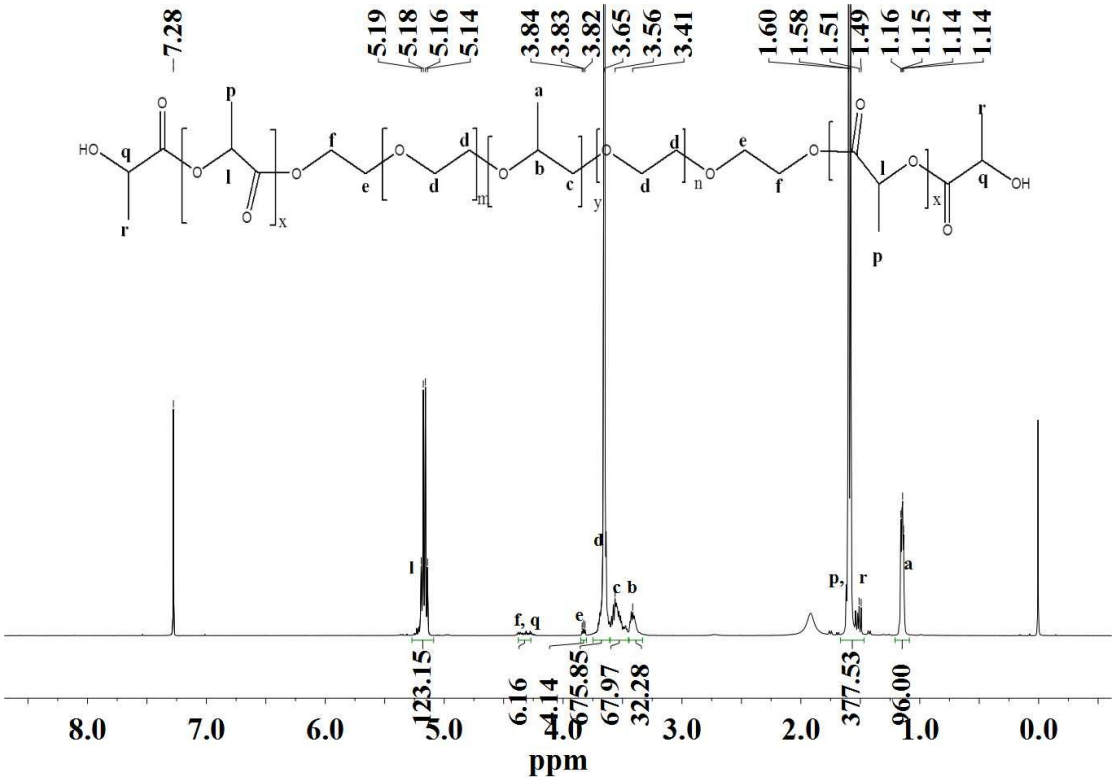
SI Fig. 3. ^{1}H NMR Spectrum of G1-P188-G1 **4**



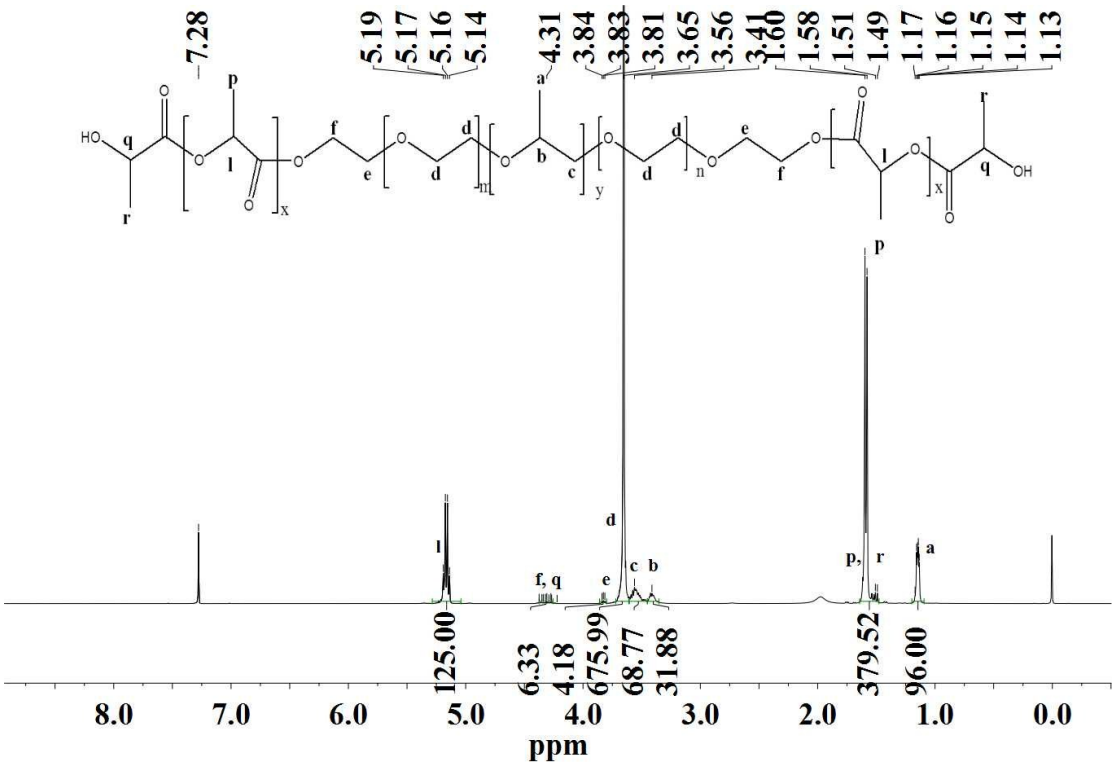
SI Fig. 4. ^{1}H NMR Spectrum of $(PLLA)_2$-G1-P188-G1-$(PLLA)_2$ **5a**



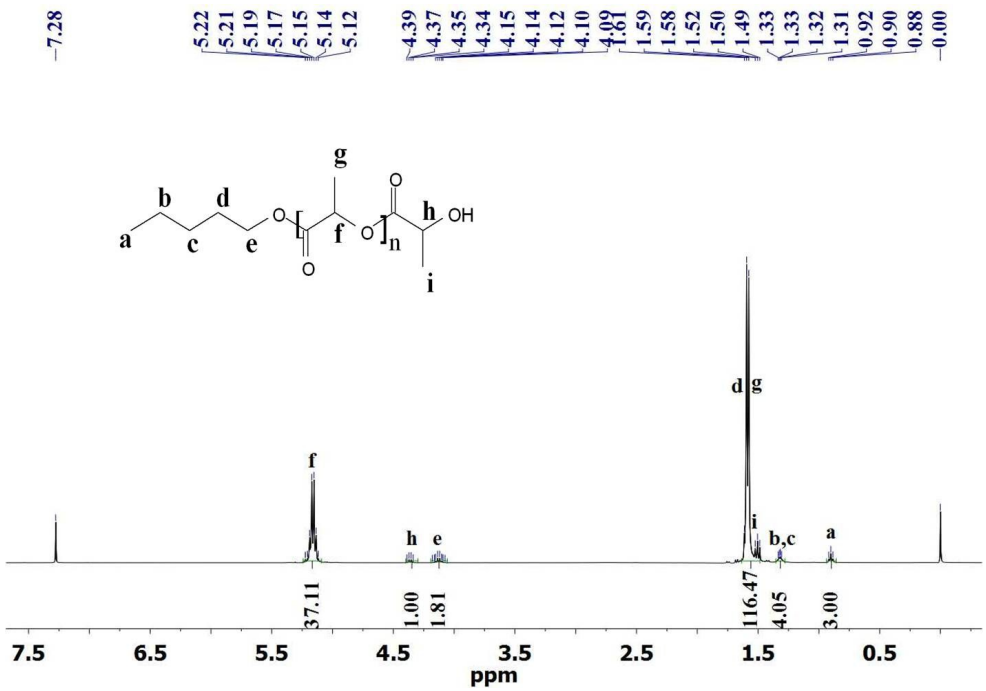
SI Fig. 5. ^{1}H NMR Spectrum of $(PDLA)_2$-G1-P188-G1-$(PDLA)_2$ **5b**



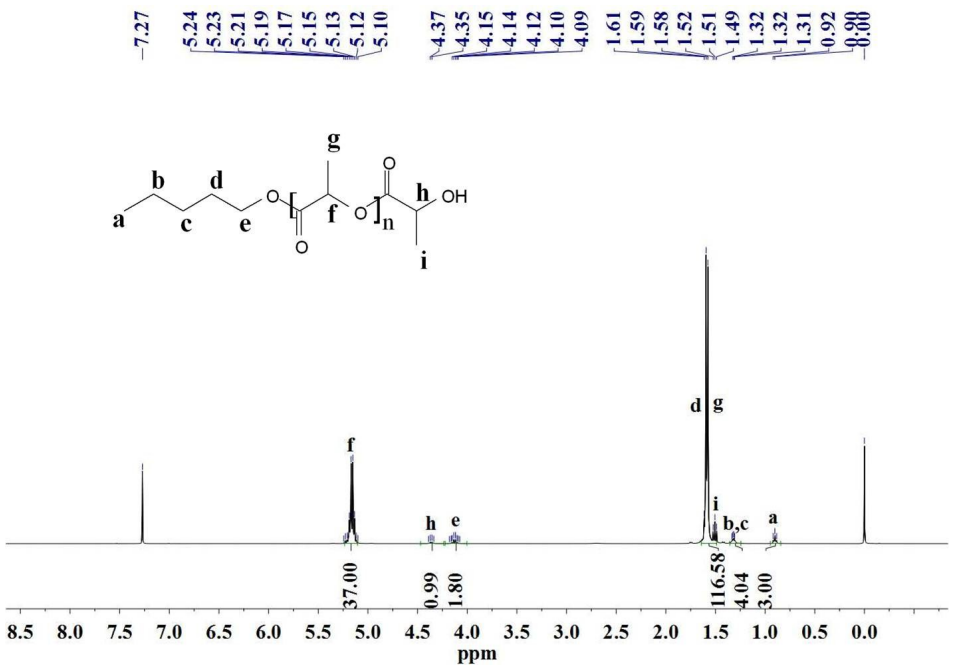
SI Fig. 6. ^{1}H NMR Spectrum of PLLA-P188-PLLA **6a**



SI Fig. 7. ^{1}H NMR Spectrum of PDLA-P188-PDLA **6b**

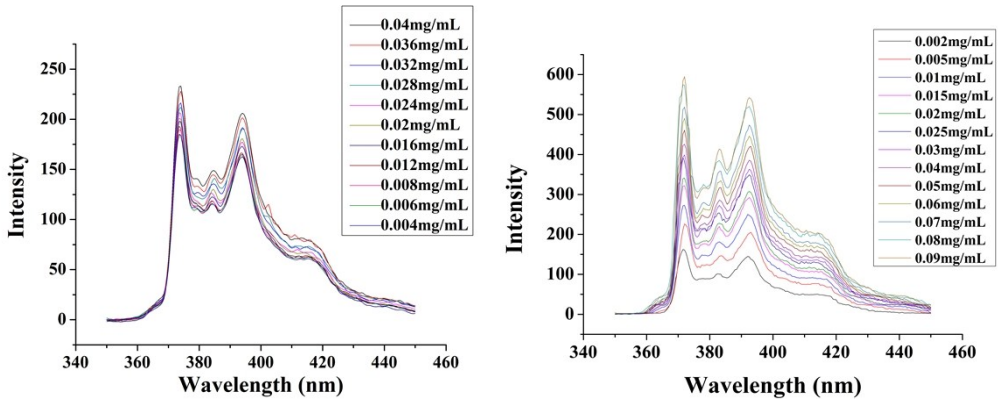


SI Fig. 8. ^{1}H NMR Spectrum of PLLA **7a**



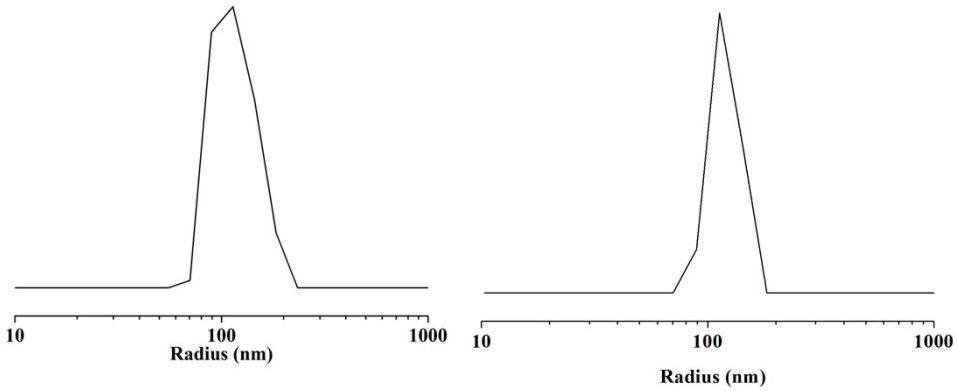
SI Fig. 9. ^{1}H NMR Spectrum of PDLA **7b**

II. Fluorescence spectra for the stereocomplexes



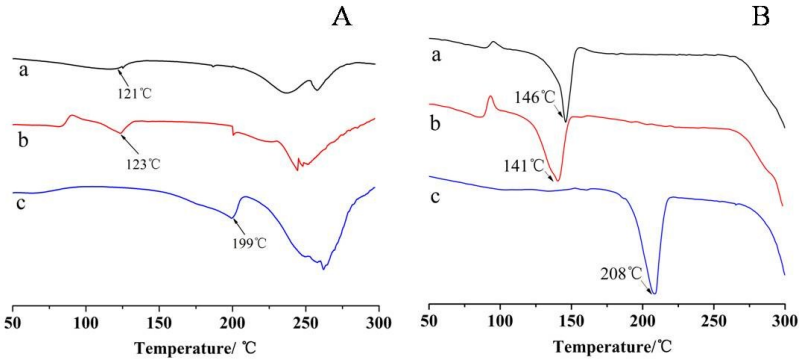
SI Fig. 10. Steady-state fluorescence excitation spectra monitored at for the pyrene probe in an aqueous solution of $(scPLA)_2$-G1-P188-G1-$(scPLA)_2$ (left) and scPLA-P188-scPLA (right) at various concentration at 25 ºC.

III. DLS spectra for the stereocomplexes



SI Fig. 11. Size distribution of the self-assembled aggregates determined by DLS: $(scPLA)_2$-G1-P188-G1-$(scPLA)_2$ (left) and scPLA-P188-scPLA (right).

IV. DSC Heating Curves



SI Fig 12. DSC curves of A: a) $(PLLA)_2$-G1-P188-G1-$(PLLA)_2$, b) $(PDLA)_2$-G1-P188-G1-$(PDLA)_2$, c) $(scPLA)_2$-G1-P188-G1-$(scPLA)_2$; B: a) PLLA-P188-PLLA, b) PDLA-P188-PDLA, c) scPLA-P188-scPLA.

The crystallinity of the stereocomplex (X_{sc}) was calculated as [1, 2]:

$$X_{sc}\,\% = \frac{\Delta H_{sc}}{p \cdot 142 J/g} \times 100\,\% \qquad (1)$$

The X_{sc} is the value of the polylactide stereocomplex crystallites calculated from the above equation (1). The ΔH_{sc} (fusion enthalpy) is determined from DSC measurenment. The p is the polylactide percent (wt %, including PLLA and PDLA) in the stereocomplexes, and the 142 *J*/g is a constant from the reported fusion enthalpy value with 100 % crystallinity for stereoccomplex.

Thus the obtained ΔH_{sc} values from DSC curves are 30.68 *J*/g for $(scPLA)_2$-G1-P188-G1-$(scPLA)_2$ and 50.48 *J*/g for scPLA-P188-scPLA. The p values are 0.44 for $(scPLA)_2$-G1-P188-G1-$(scPLA)_2$ and 0.46 for scPLA-P188-scPLA. Therefore, the calculated crystallinity X_{sc} is 49 % for $(scPLA)_2$-G1-P188-G1-$(scPLA)_2$ and 78 % for scPLA-P188-scPLA.

(1) Liu, Y.; Shao, J.; Sun, J.; Bian, X.; Feng, L.; Xiang, S.; Sun, B.; Chen, Z.; Li, G.; Chen, X. *Polym. Degrad. Stab.* **2014**, *101*, 10-17.

(2) Baimark,Y.; Srihanam, P. *Polym. Test.* **2015**, *45*, 52-57.