

# A strategy for Tuning Achiral Main-chain Polymers into Helical Assemblies and Chiral Memory

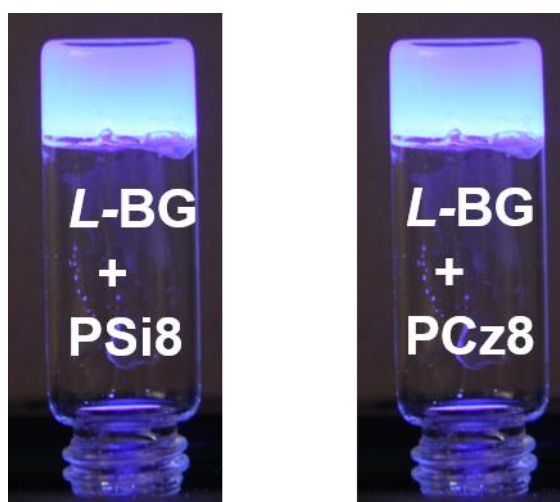
Dong Yang,<sup>a</sup>Yin Zhao,<sup>b</sup> Kai Lv,<sup>a</sup> Xiufeng Wang,<sup>a</sup> Wei Zhang,<sup>\*b</sup> Li Zhang<sup>\*a</sup> and Minghua Liu,<sup>\*a,c</sup>

<sup>a</sup>Beijing National Laboratory for Molecular Science, CAS Key Laboratory of ColloidInterface and ChemicalThermodynamics, Institute of Chemistry, Chinese Academy of Sciences, Beijing, 100190 (P.R. China); E-mail: zhangli@iccas.ac.cn; liumh@iccas.ac.cn

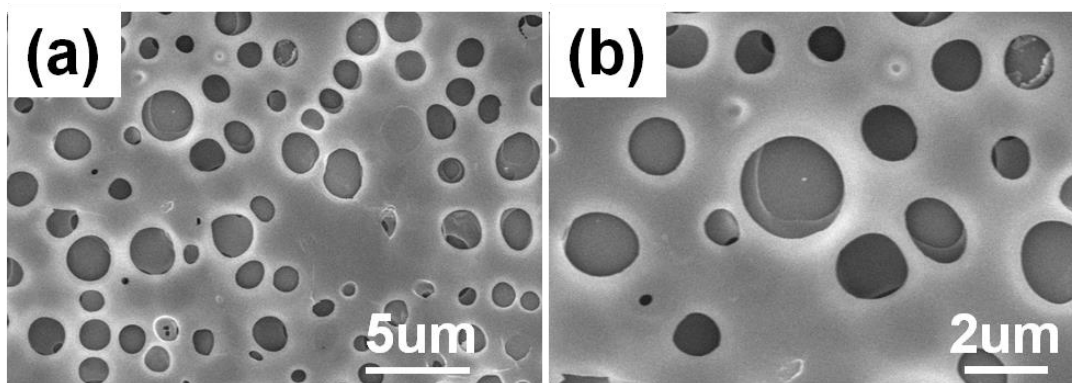
<sup>b</sup> Suzhou Key Laboratory of Macromolecular Design and Precision Synthesis, Jiangsu Key Laboratory of Advanced Functional Polymer Design and Application College of Chemistry, Chemical Engineering and Materials Science, Soochow University, Suzhou Industrial Park, Suzhou 215123; E-mail: weizhang@suda.edu.cn

<sup>c</sup> Collaborative Innovation Center of Chemical Science and Engineering, Tianjin 300072 (China); E-mail: liumh@iccas.ac.cn

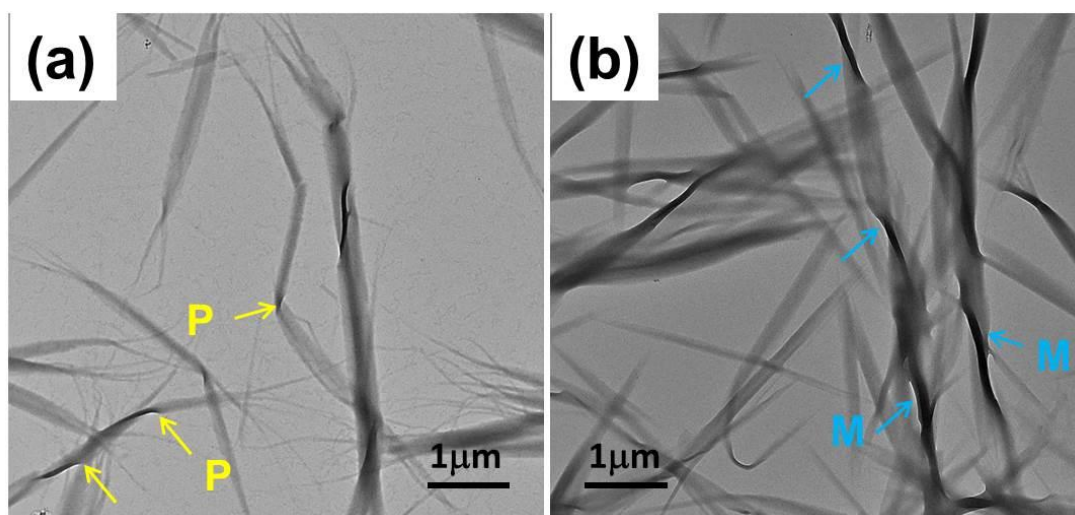
## Supporting Information



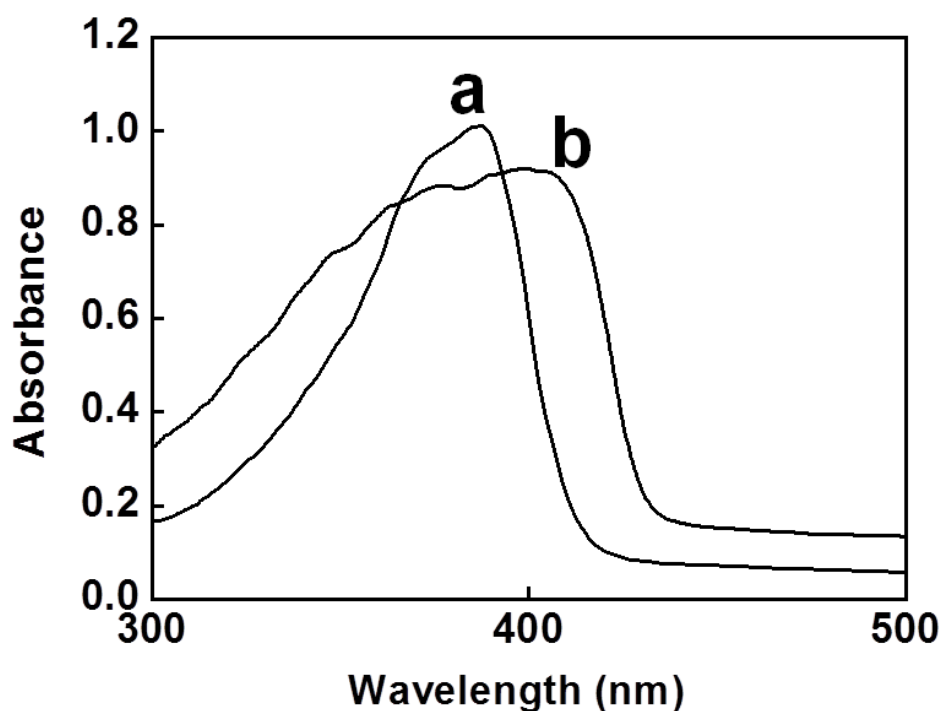
**Fig. S1** The photo images of co-gels of PSi8/ *L*-BG and PCz8/*L*-BG when excited with UV 360nm.



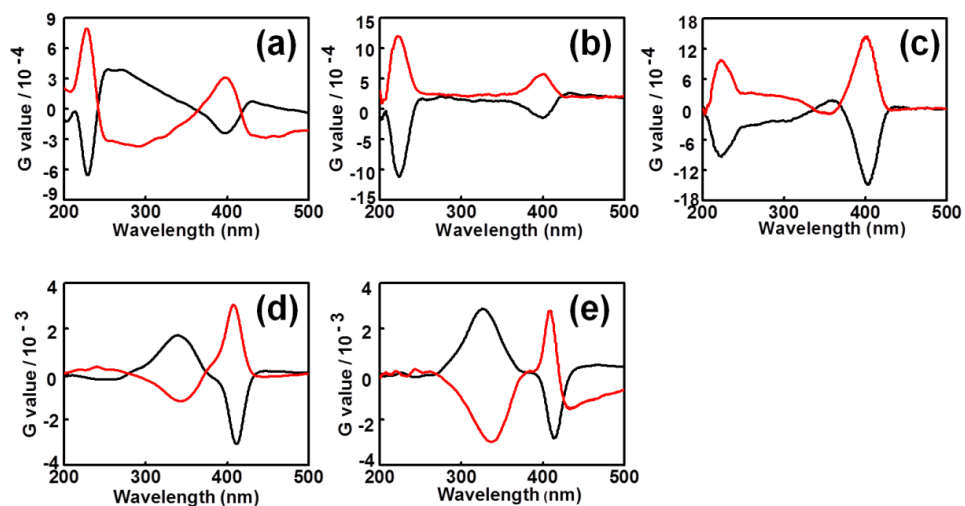
**Fig. S2** SEM images for PSi8 polymer (a) and (b).



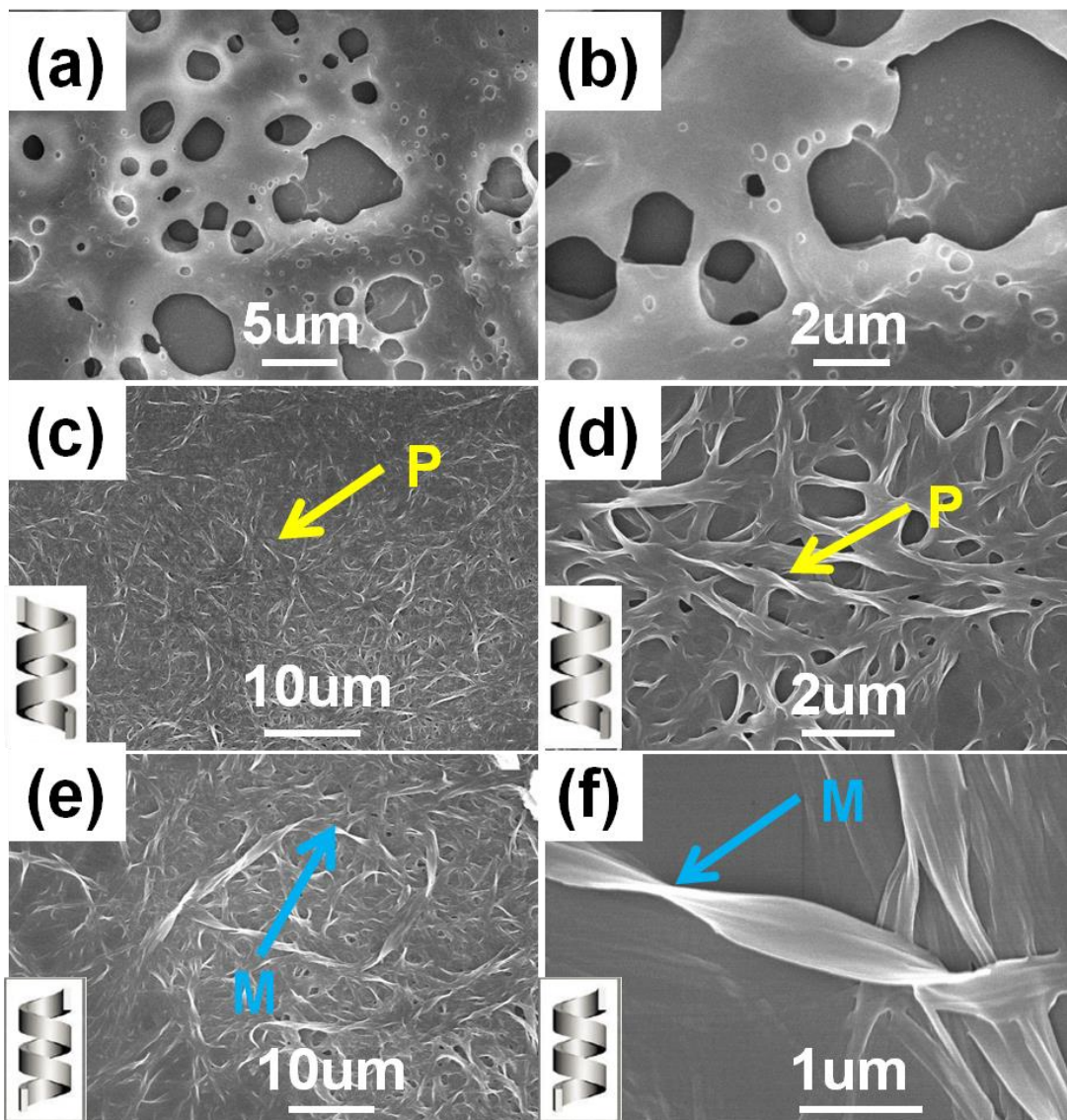
**Fig. S3** TEM images for the co-gels of PSi8/L-BG (a) and PSi8/D-BG (b) at the mass ratio 1/50.



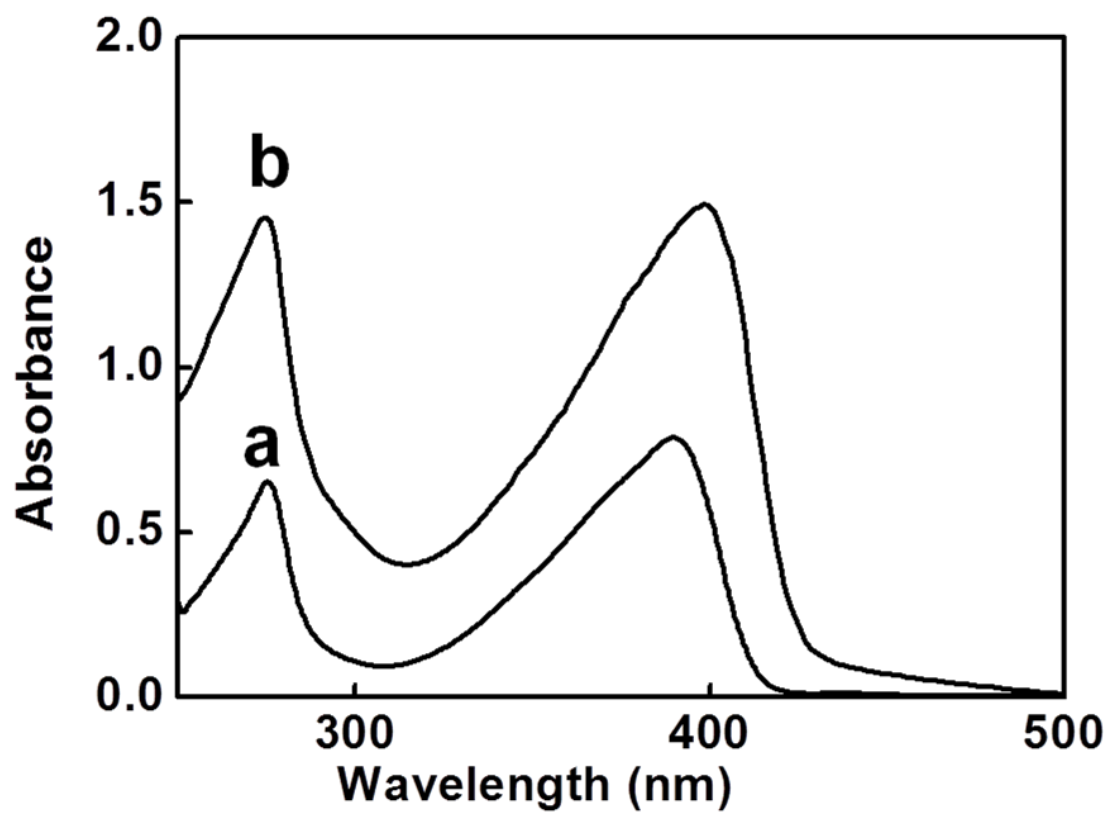
**Fig. S4** The UV-Vis spectra of (a) PSi8 solution ( $0.12 \text{ mg} \cdot \text{mL}^{-1}$  in dichloromethane) and (b) co-gels of PSi8/L-BG=1/50.



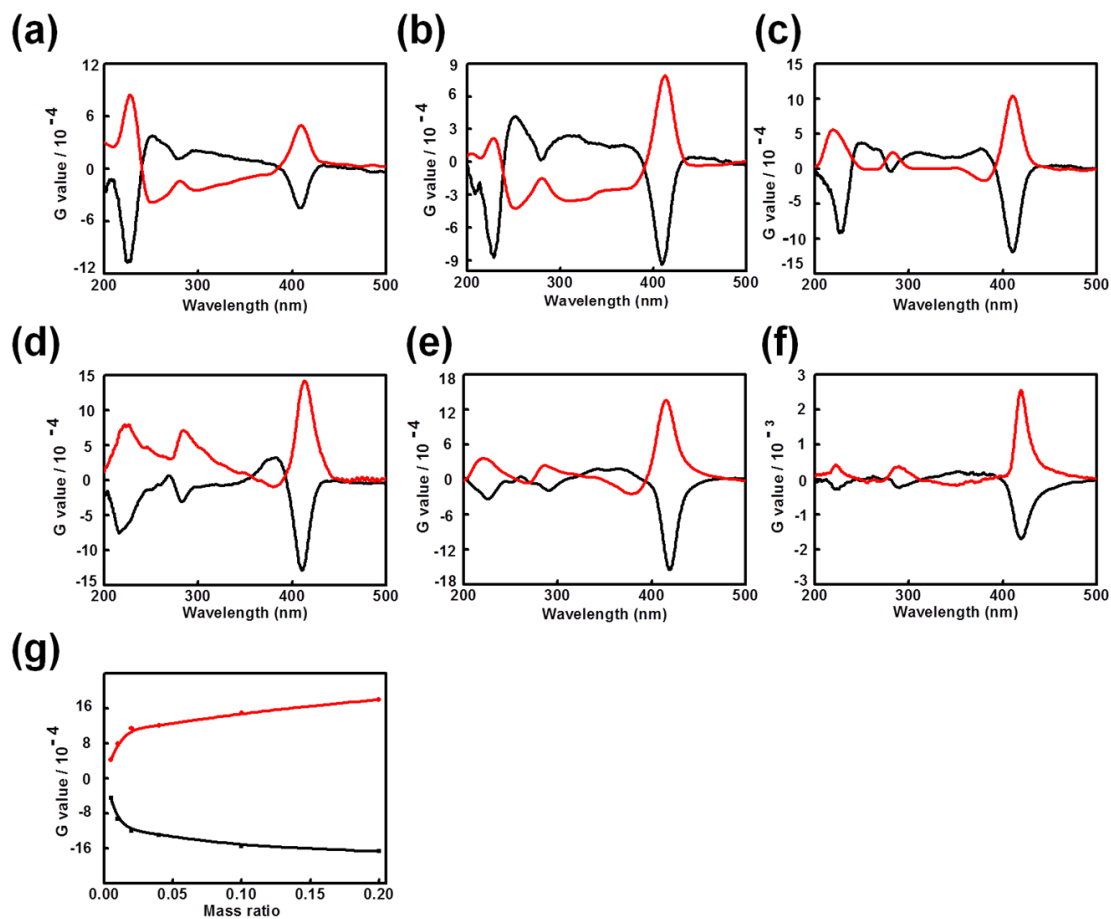
**Fig. S5** G value of the PSi8/BG co-gels at different mass ratio (w/w): (a) 1/200, (b)1/100, (c)1/25, (d)1/10, (e)1/5. The co-gels of PSi8/L-BG were marked with black line and PSi8/D-BG was marked with red line.



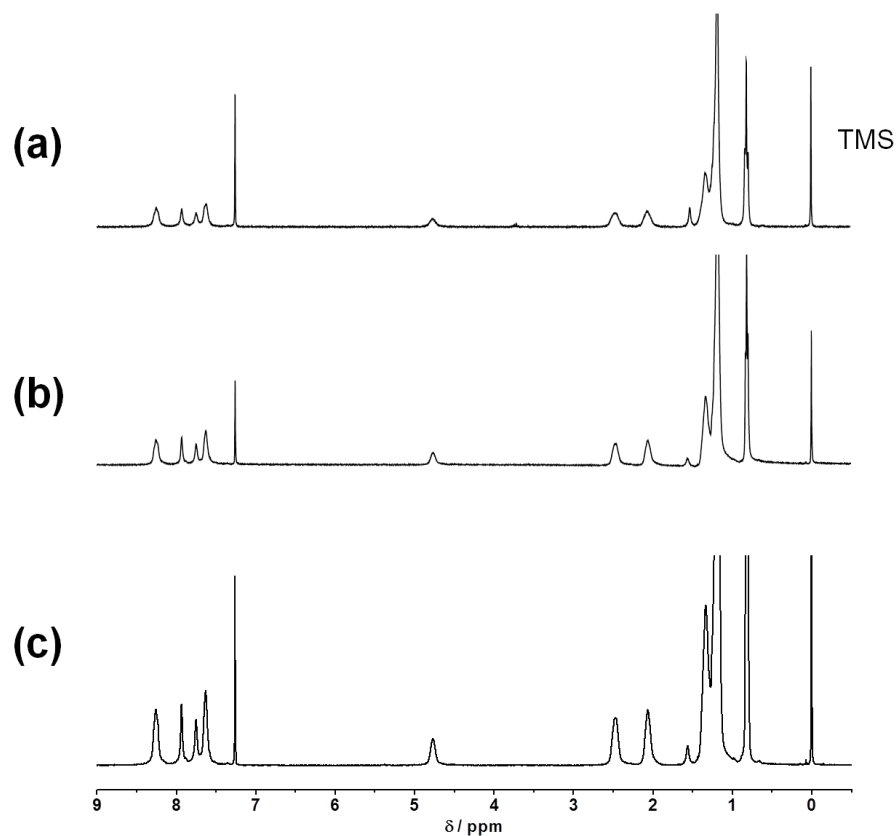
**Fig. S6** SEM images for PCz8 polymer (a) and (b), co-gels of PCz8/L-BG=1/50 (c) and (d), co-gels of PCz8/D-BG=1/50 (e) and (f).



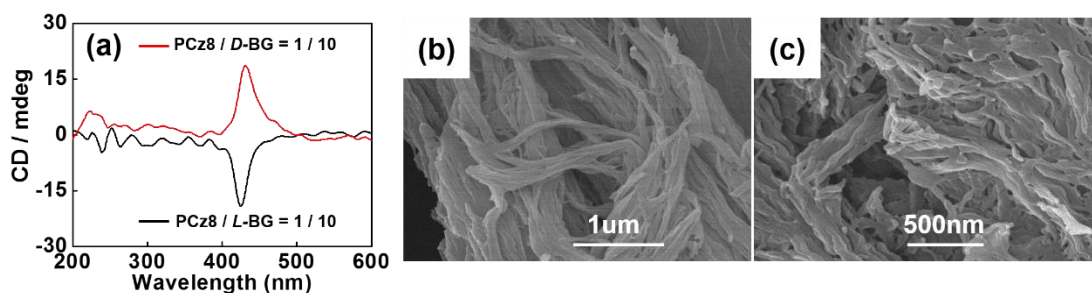
**Fig. S7** The UV-Vis spectra of (a) PCz8 solution ( $0.12 \text{ mg} \cdot \text{mL}^{-1}$  in dichloromethane) and (b) co-gels of PCz8/L-BG=1/50.



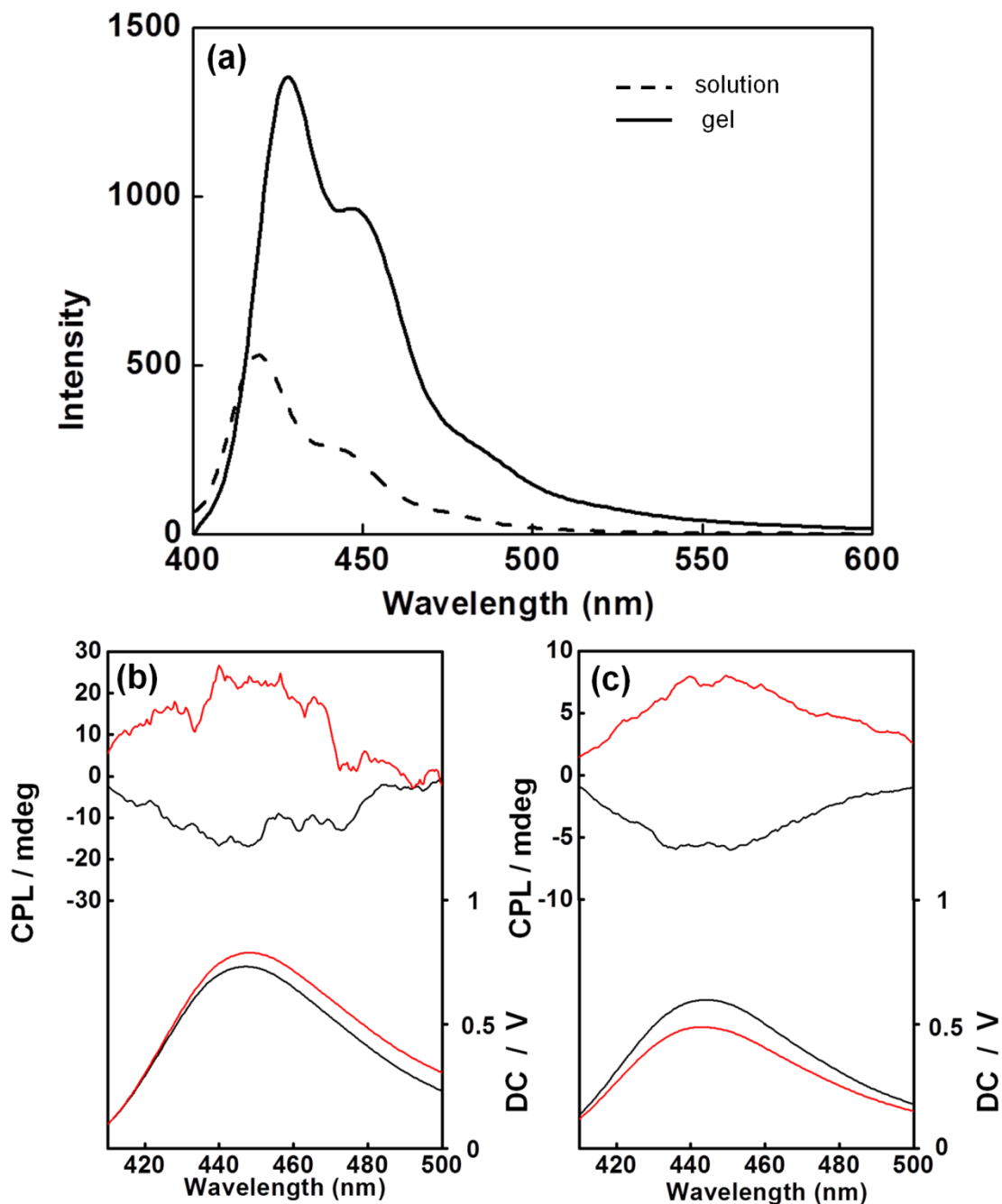
**Fig. S8** G value of the PCz8/BG co-gels at different mass ratio (w/w): (a) 1/200, (b) 1/100, (c) 1/50, (d) 1/25, (e) 1/10, (f) 1/5. (g) G value of co-gels at 400 nm as a function of the mass ratio of PCz8/BG. The co-gels of PCz8/L-BG were marked with black line and PCz8/D-BG marked with red line.



**Fig. S9**  $^1\text{H}$  NMR spectra for (a) pure polymer PCz8, the remaining polymer PCz8 after removing the chiral gelator from the co-gels of (b) PCz8/L-BG=1/10 and (c) PCz8/D-BG=1/10.



**Fig. S10** Chiral memory effect: (a) CD spectra of the remaining polymer PCz8 after removing the chiral gelator from the co-gels of PCz8/L-BG=1/10 (black line) and PCz8/D-BG =1/10 (red line). SEM images for the remaining polymer PCz8 after removing the chiral gelator from the co-gels of (b) PCz8/L-BG=1/10 and (c) PCz8/D-BG=1/10.



**Fig. S11** (a) Fluorescence spectra of  $0.10 \text{ mg mL}^{-1}$  PCz8 solution in dichloromethane and PCz8/BG=1/10 co-gels. (b) CPL spectra of the PCz8/L-BG=1/10 (black line) and PCz8/D-BG=1/10 (red line) co-gels. (c) CPL spectra of the remaining PCz8 polymer after removing the chiral gelator from the co-gels of PCz8/L-BG=1/10 (black line) and PCz8/D-BG=1/10 (red line). Excitation wavelength  $\lambda = 360 \text{ nm}$  for CPL spectra and  $390 \text{ nm}$  for emission spectra.