Electronic Supplementary Information (ESI)

Helical Polydiacetylene Prepared in Liquid Crystal Phase using Circular Polarized Ultraviolet Light

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Experimetal Section

Sample preparation.The HB complex sample was firstly dissolved in $CHCl_3$ with the concentration of 10 mg· mL^{-1}. Then monomers films were prepared by spin-coating method on quartz substrates. Before polymerization, the films were kept in room temperature, or heated to 45°C and 65°C to confirm that the monomer films were in crystal, liquid crystal, and isotropic phase, respectively. Then the films were polymerized upon the irradiation of CPUL (313 nm), generated using Babinet-Soleil prismfrom ultra-high pressure mercury lamp. The light intensity was about 19.4 mW· cm^{-2}.

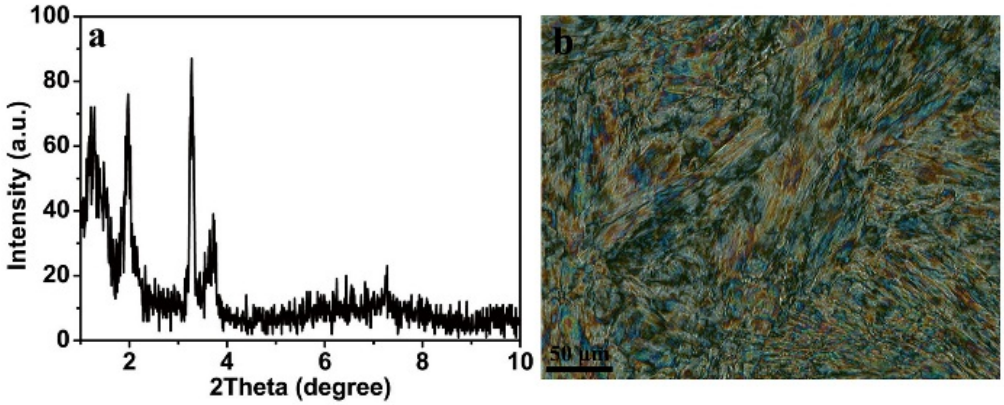

Fig. S1 (a) Small angle X-ray diffraction and (b) POM texture of the HB complex in crystal phase before polymerization.

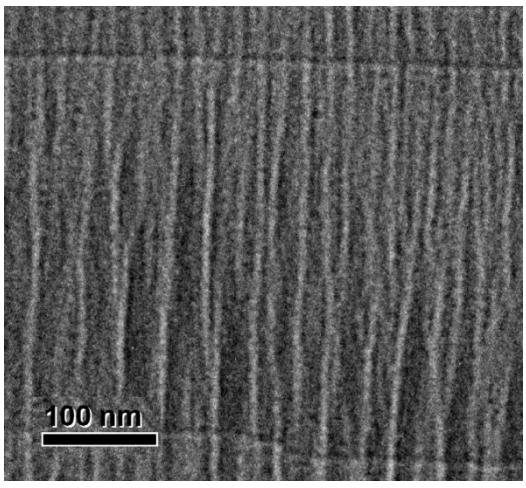

Fig. S2 TEM image of HB complex monolayer.

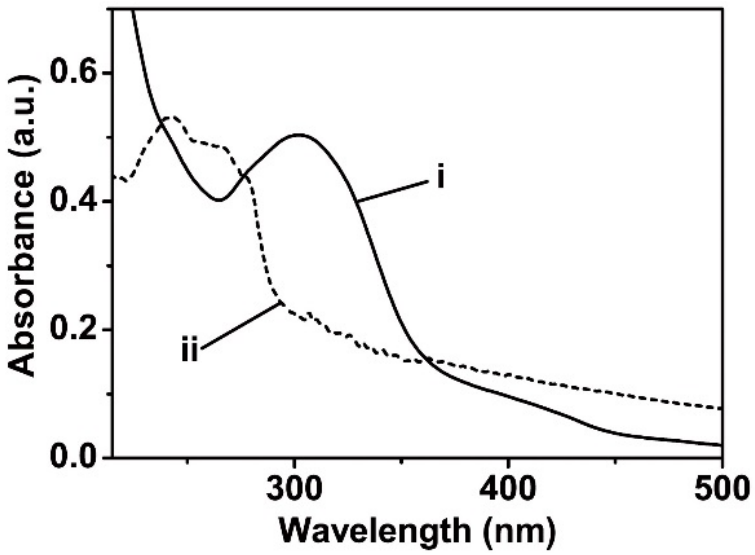

Fig. S3 UV-vis spectra of PCDA/TTB complex: in (i) chloroform solution and (ii) films.

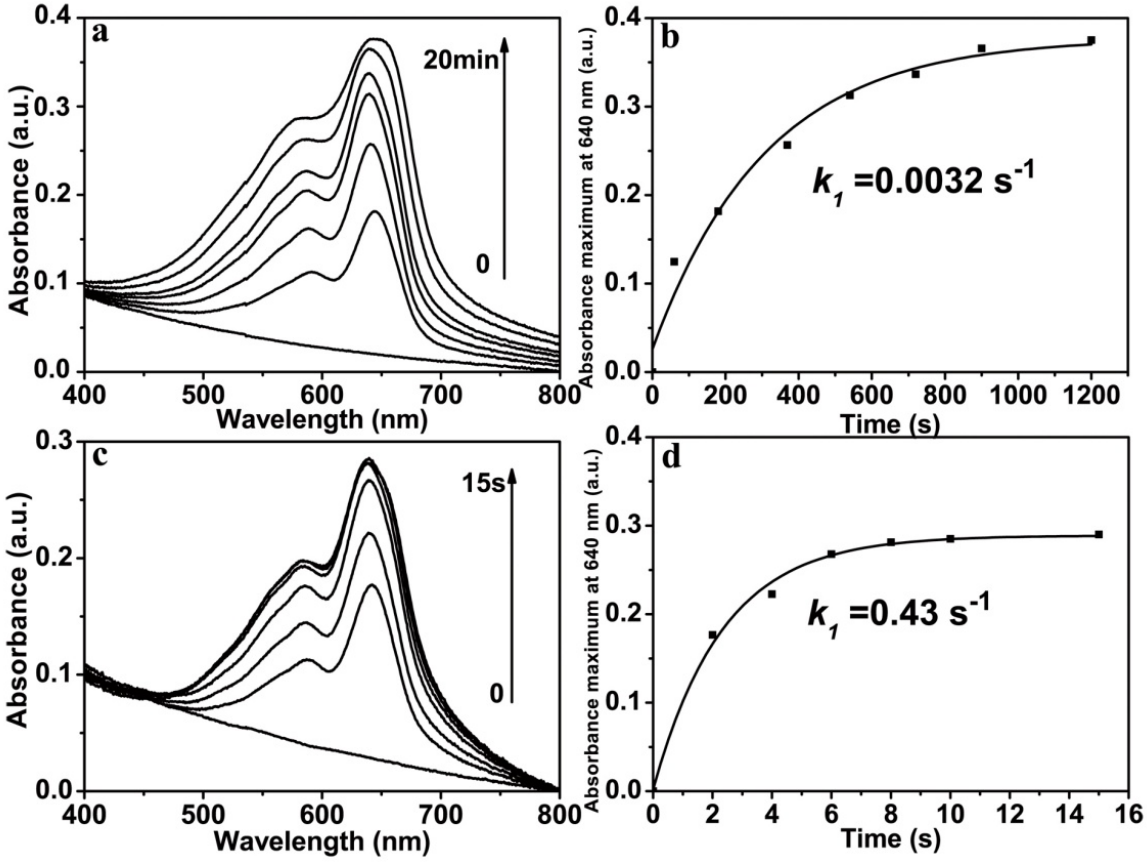

Fig. S4 UV-vis spectra of the HB complex films: (a) in the crystal phase and (c) in the L_{Col} phase; time-resolved development of absorption maxium at about 640 nm for the HB complex films: (b) in the crystal phase and (d) in the L_{Col} phase under CPUL irradiation. The irradiation intensity was about 19.4 mW cm^{-2}.

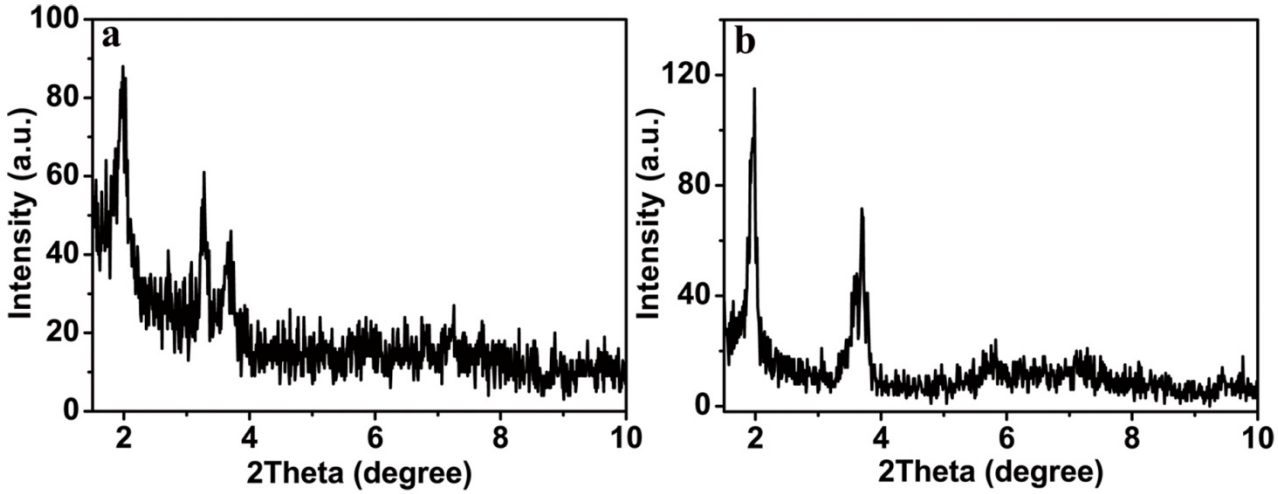

Fig. S5 Small angle X-ray diffraction profile of the HB complex in (a) crystal phase and (b) L_{Col} phase after polymerization with CPUL.

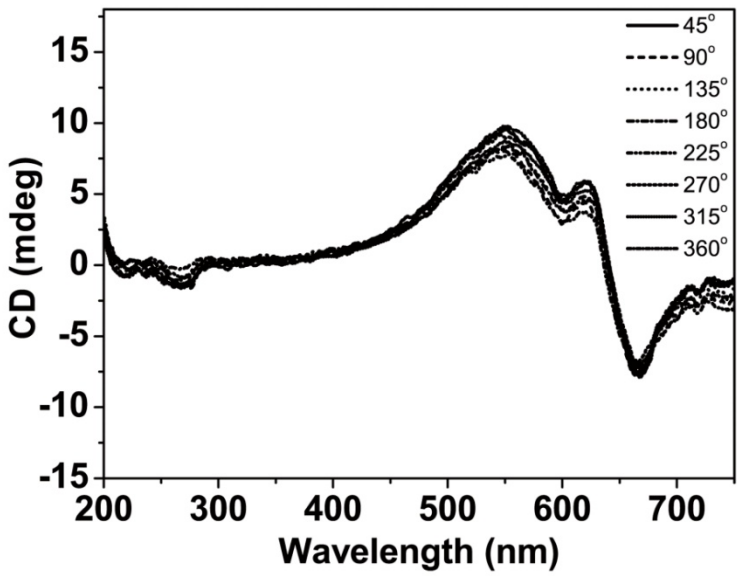

Fig. S6 CD spectra of the sample films rotated as, 45°, 90°, 135°, 180°, 225°, 270°, 315°, and 360°.

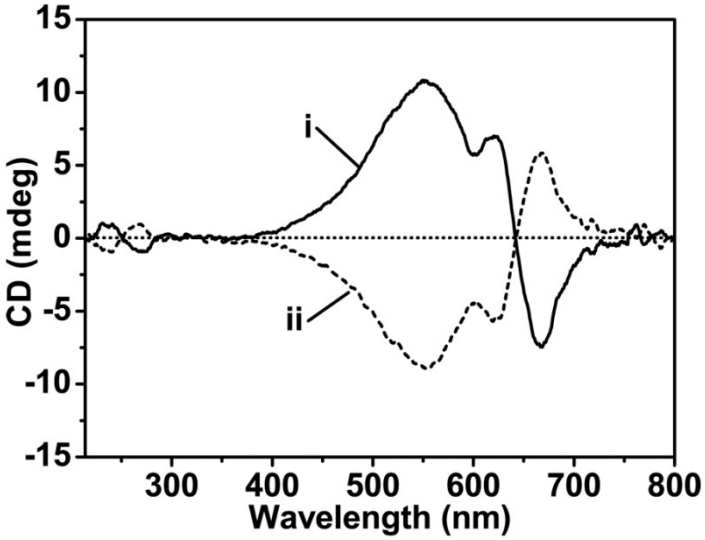

Fig. S7 CD spectra of the HB complex in L_{Col} liquid crystal phase after irradiation with (i) left-handed and (ii) right-handed CPUL.

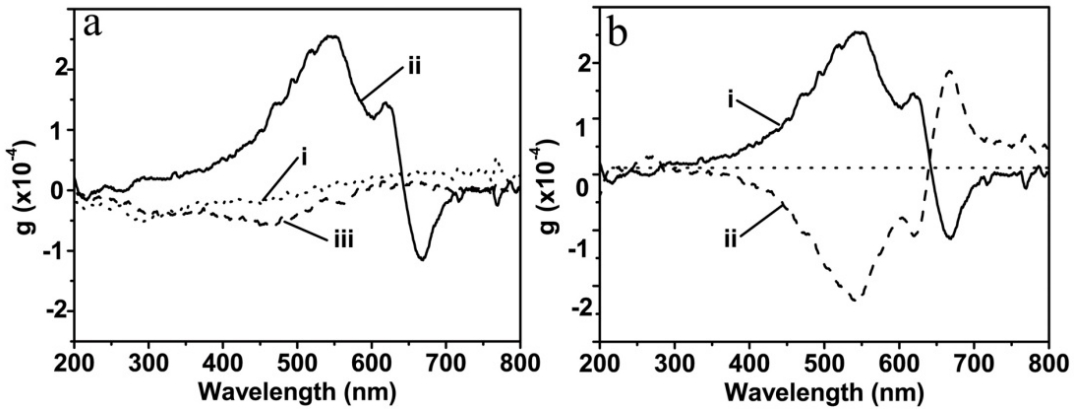

Figure S8. (a) the gabs graph of the HB complex after CPUL irradiation in (i) crystal, (ii) liquid crystal, and (iii) isotropic phase, respectively; (b) the gabs graph of the HB complex after irradiation with (i) left handed CPUL and (ii) right handed CPUL.