Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

Poly(L-lactide)s with Tetraphenylethylene: Role of Polymer Chain Packing on Aggregation-Induced Emission Behavior of Tetraphenylethylene

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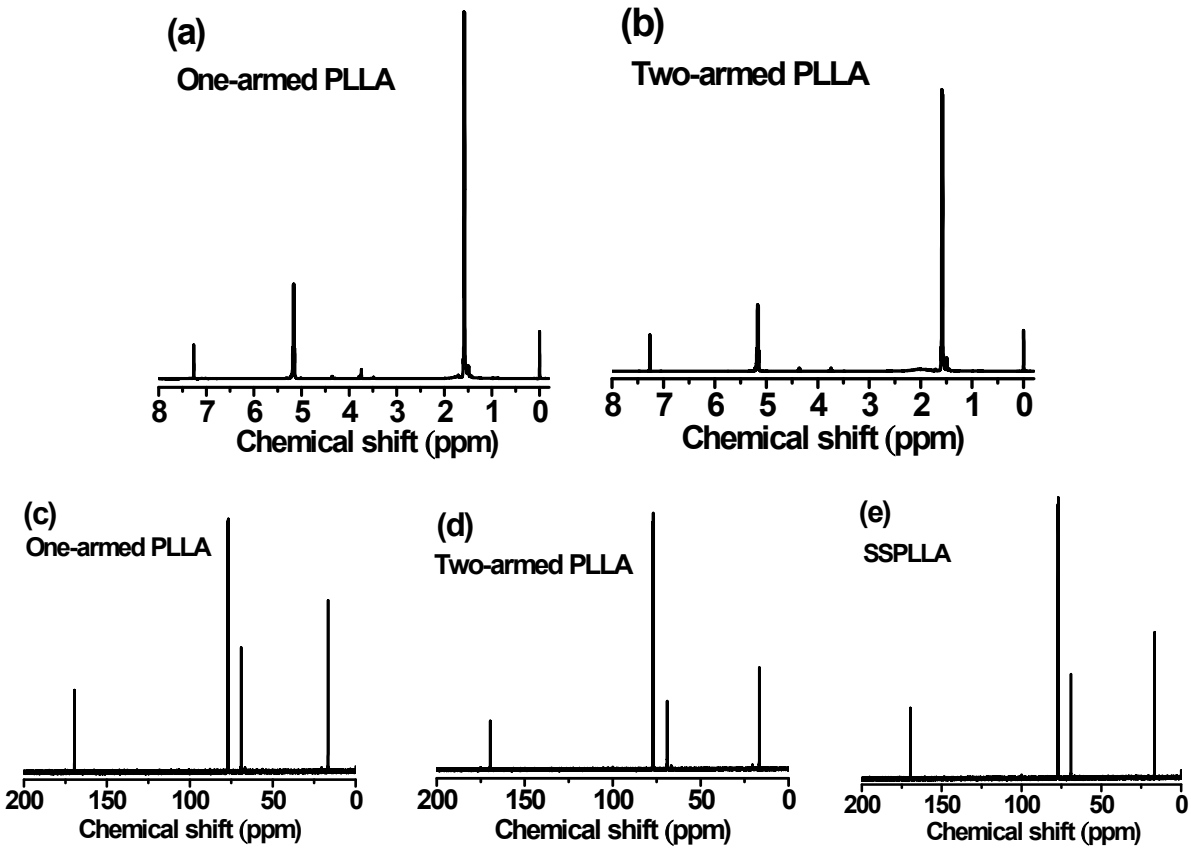

Figure S1. (a & b) ^{1}H NMR spectra of one-armed PLLA (TPE-1-PLLA) and two-armed PLLA (TPE-2-PLLA), (c, d & e) ^{13}C NMR spectra of one-armed PLLA, two-armed PLLA and SSPLLA.

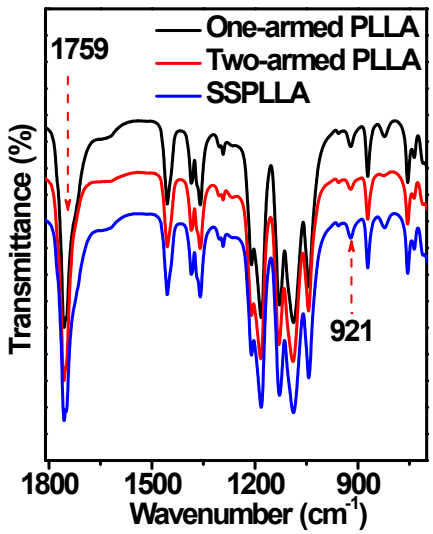

Figure S2. FTIR spectra of one-armed PLLA, two-armed PLLA and SSPLLA.

Table S1. FTIR band and ^{13}C NMR peak assignments of synthesized PLLAs in the crystalline state.

FTIR		^{13}CNMR	
Wavenumber (cm^{-1})	**Assignments**	**Chemical shift (ppm)**	**Assignments**
1759	ν_s(C=O)	16.6	methyl resonance
1214	ν_{as}(C-O-C) + r_{as}(CH_3)		
1133	r_s(CH_3)	69.0	methine resonance
1091	ν_s(C-O-C)		
1043	ν(C-CH_3)	169.6	carbonyl resonance
956	r(CH_3) + ν(C-COO)		

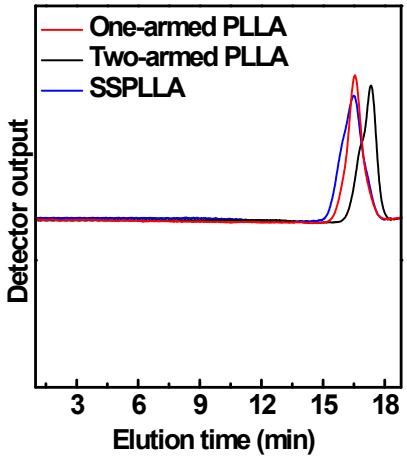

Figure S3. GPC traces of one-armed PLLA, two-armed PLLA and SSPLLA in THF.

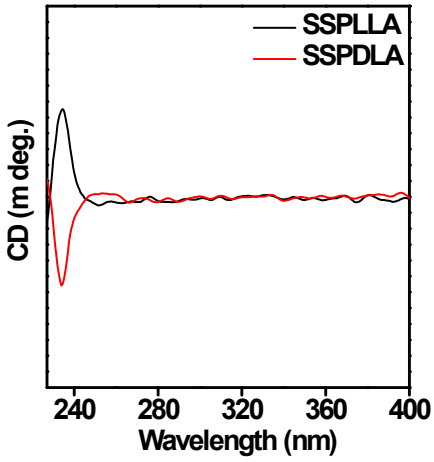

Figure S4. CD spectra of SSPLLA and SSPDLA in the aggregate states.

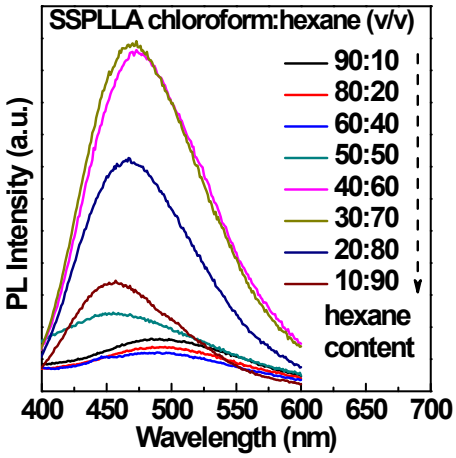

Figure S5. PL spectra of SSPLLA in chloroform/hexane mixtures with different hexane content.

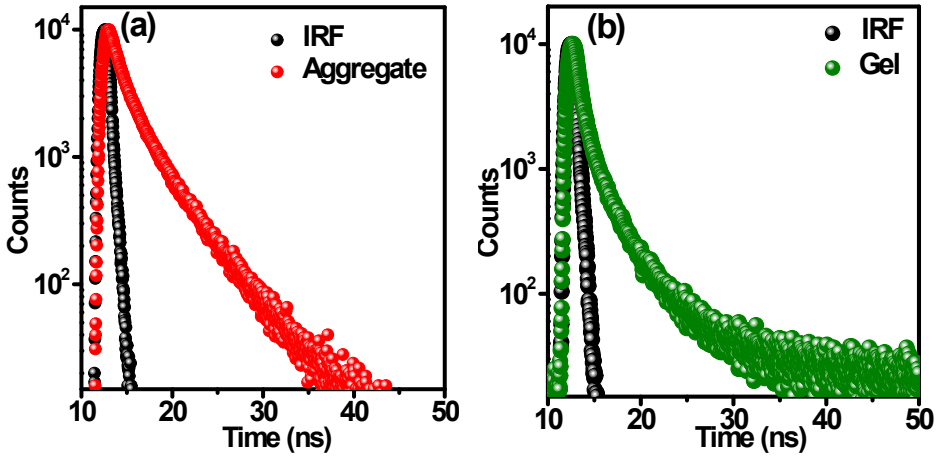

Figure S6. Fluorescence lifetime plot of SSPLLA in the aggregated state (in chloroform/hexane mixture) and (b) gel state (ε form).

The decay of the fluorescence intensity (I) with time (t) was fitted with tri-exponential function.

$$I = A_1e^{-t/\tau_1} + A_2e^{-t/\tau_2} + A_3e^{-t/\tau_3}$$

Where τ_1, τ_2 and τ_3 are the decay lifetimes of the luminescence, and A_1, A_2 and A_3 are the weighing parameters

Table S2: Fluorescence lifetime-decay of SSPLLA in aggregated and gel states.

Sample	τ_1 (ns)	τ_2 (ns)	τ_3 (ns)
Aggregated state	1.88 (42.6%)	4.96 (40.6 %)	0.37 (16.8 %)
Gel state	1.57 (37.3 %)	5.19 (18.1%)	0.29 (44.6 %)

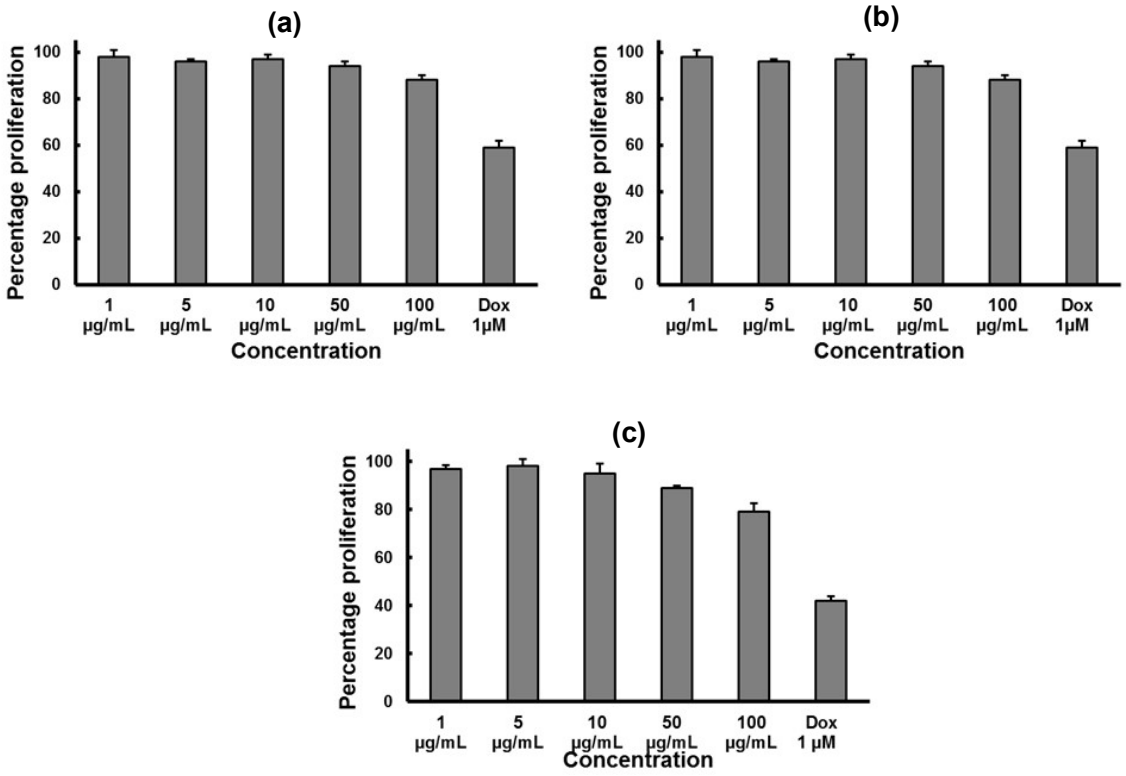

Figure S7. Evaluation of cytotoxicity by SSPLLA after (a) 6 h, (b) 12 h and (c) 24 h incubation with human lung fibroblast cell line (WI-38 cells) by MTT assay. Data represent mean ± SD from three independent experiments.

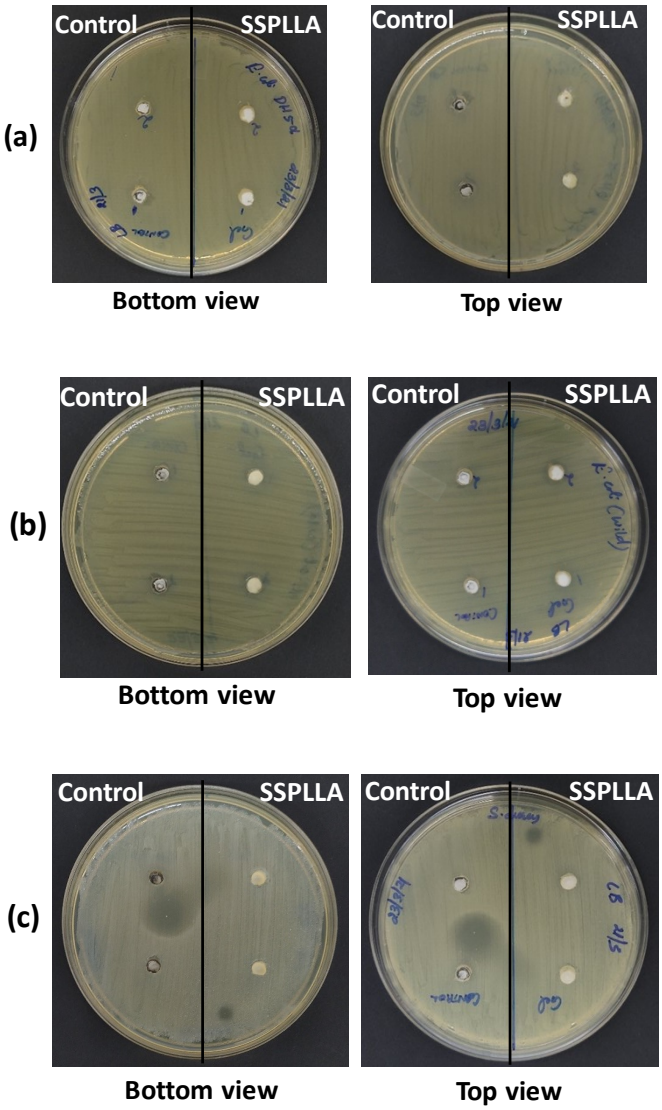

Figure S8. Growth of bacteria (a) *E. Coli* DH5α, (b) *E. Coli* and (c) *S. aureus* on the agar plate at the incubation time of 36 h at 37 °C. 25 μl of the SSPLLA gel in DMF (2 replicates) was loaded onto the agar plate well (right panel) and DMF without SSPLLA (2 replicates) was used as the control (left panel) in the experiment.

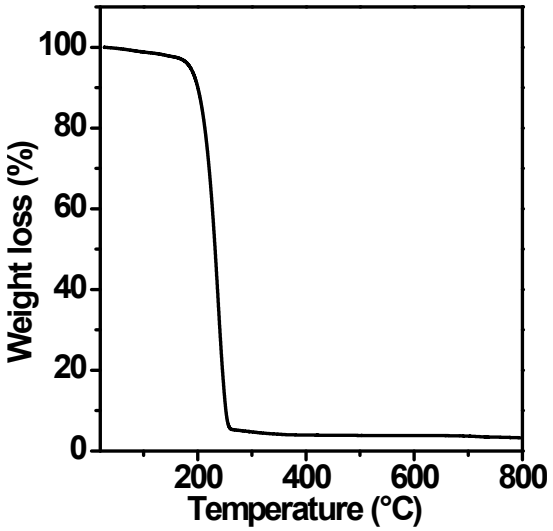

Figure S9. TGA thermogram of SSPLLA measured during the heating process at 10 °C/min.