Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Table S1 Thermal parameters of PDLA-PCVL-PDLA triblock copolymers and the corresponding supramolecular polymers derived from DSC scans

Sample	Cooling				Re-heating						
	$T_{c,\ PCVL}$ (℃)	$\Delta H_{c,\ PCVL}$ (J/g)	$T_{c,PDLA}$ (℃)	$\Delta H_{c,\ PDLA}$ (J/g)	T_g (℃)	$T_{cold,PCVL}$ (℃)	$\Delta H_{cold,\ PCVL}$ (J/g)	$T_{m,\ PCVL}$ (℃)	$\Delta H_{m,\ PCVL}$ (J/g)	$T_{m,PDLA}$ (℃)	$\Delta H_{m,\ PDLA}$ (J/g)
PDLA-PCVL-PDLA0.49	3.8/11.6	47.3	——	——	——	——	——	30.2/35.4	46.7	——	——
PDLA-PCVL-PDLA1.04	7.9	30.1	72.4	8.9	——	——	——	29.2/34.7	30.0	108.9/127.9	8.7
SMP0.49	-16.3	11.6	——	——	-54.1	-12.9	24.6	28.9	38.5	——	——
SMP1.04	——	——	——	——	-45.6	——	——	——	——	117.3	3.3

Notes: $T_{c,PCVL}$ and $T_{c,PDLA}$ denote the crystallization temperatures of PCVL and PDLA blocks in the cooling run, respectively; $\Delta H_{c,PCVL}$ and $\Delta H_{c,PDLA}$ represent the crystallization enthalpy of PCVL and PDLA block in the cooling run; T_g represents the glass transition temperature; $T_{cold,PCVL}$ and $\Delta H_{cold,\ PCVL}$ are cold crystallization temperature and cold crystallization enthalpy of PCVL block in heating run, respectively; $T_{m,PCVL}$ and $T_{m,PDLA}$ are melting temperatures of PCVL and PDLA blocks, respectively; $\Delta H_{m,PCVL}$ and $\Delta H_{m,PDLA}$ are the melting enthalpy of PCVL and PDLA blocks in the heating run.

Table S2 Thermal parameters of PLLA/supramolecular polymer blends derived from DSC scans

Sample	Cooling				Re-heating									$X_{c,PLLA}$ (%)
	$T_{c,hc}$ (℃)	$\Delta H_{c,hc}$ (J/g)	$T_{c,sc}$ (℃)	$\Delta H_{c,sc}$ (J/g)	$T_{m,PCVL}$ (℃)	$\Delta H_{m,PCVL}$ (J/g)	T_g (℃)	$T_{cold,hc}$ (℃)	$\Delta H_{cold,hc}$ (J/g)	$T_{m,hc}$ (℃)	$\Delta H_{m,hc}$ (J/g)	$T_{m,sc}$ (℃)	$\Delta H_{m,sc}$ (J/g)	
PLLA	99.4	7.4	——	——	——	——	60.0	112.2	24.5	161.6/166.9	35.6	——	——	11.9
PLLA/SMP0.49-10%	99.3	0.5	——	——	30.5	3.2	59.8	113.3	29.3	162.5/169.1	29.6	——	——	0.4
PLLA/SMP0.49-30%	——	——	——	——	29.9	5.3	58.9	112.9	21.3	161.0/167.9	21.3	181.2	0.4	0
PLLA/SMP0.49-50%	——	——	——	——	29.8	11.3	58.6	114.5	16.3	161.7/168.7	16.0	183.0	0.7	0
PLLA/SMP1.04-10%	96.5	2.4	137.6	1.1	——	——	58.7	112.2	18.9	161.0/166.9	23.8	182.0	0.3	5.8
PLLA/SMP1.04-30%	98.6	8.5	141.0	1.8	27.9	0.8	58.7	109.8	9.6	160.2/166.0	22.6	182.3	1.3	19.8
PLLA/SMP1.04-50%	110.1	12.9	142.8	4.8	26.5/33.2	9.0	——	——	——	156.0/164.3	13.7	183.3	3.8	29.2

Notes: $T_{c,hc}$ and $T_{c,sc}$ denote the crystallization temperatures of homo-crystallization and stereocomplex crystallization in the cooling run, respectively; $\Delta H_{c,hc}$ and $\Delta H_{c,sc}$ represent the crystallization enthalpy of homo-crystallization and stereocomplex crystallization in the cooling run, respectively; $T_{m,PCVL}$ and $\Delta H_{m,PCVL}$ are melting temperature and melting enthalpy of PCVL block, respectively; T_g represents the glass transition temperature; $T_{cold,hc}$ and $\Delta H_{cold,hc}$ are cold crystallization temperature and cold crystallization enthalpy of homo-crystallization in heating run, respectively; $T_{m,hc}$ and

$T_{m,sc}$ are melting temperatures of homo-crystallized PLLA and stereocomplex in the heating run, respectively; $\Delta H_{m,hc}$ and $\Delta H_{m,sc}$ are the melting enthalpy of homo-crystallized PLLA and stereocomplex; respectively; $X_{c,PLLA}(\%)=(\Delta H_{m,hc}-\Delta H_{cold,hc})/([1-P]\times\Delta H^{0}_{m,PLLA})$, $\Delta H^{0}_{m,PLLA}$=93.6J/g,P denotes the mass fraction of supramolecular polymer in the blends.

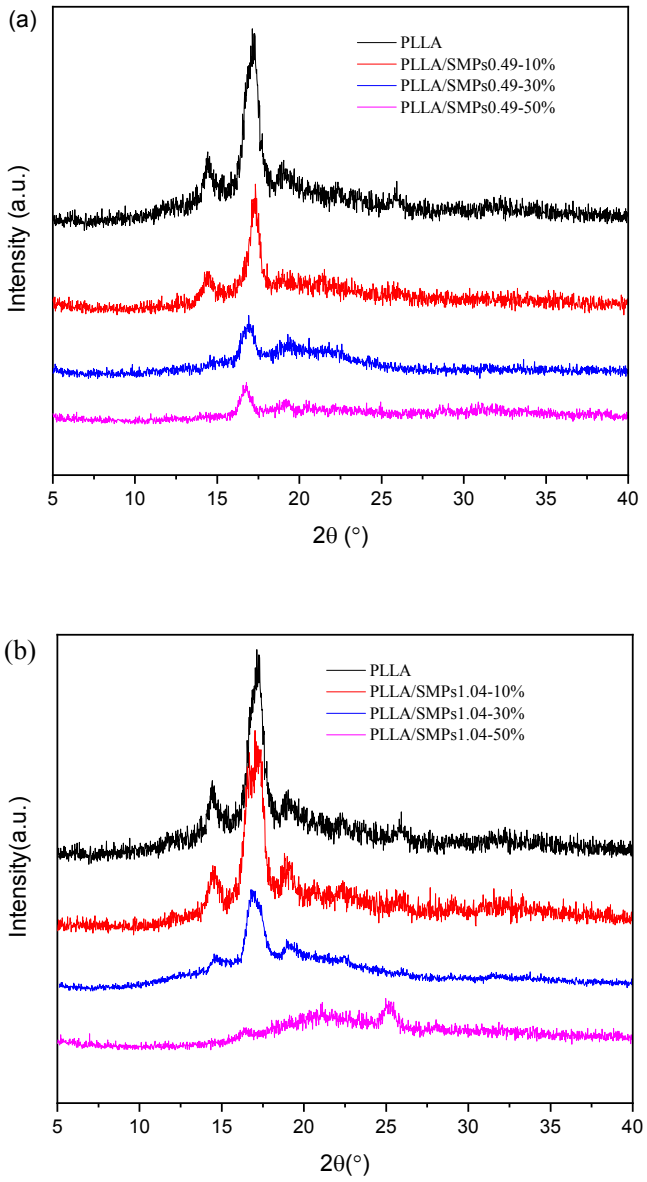

Fig. S1 XRD patterns of PLLA/SMPs blends: (a) PLLA/SMPs0.49; (b) PLLA/SMPs1.04

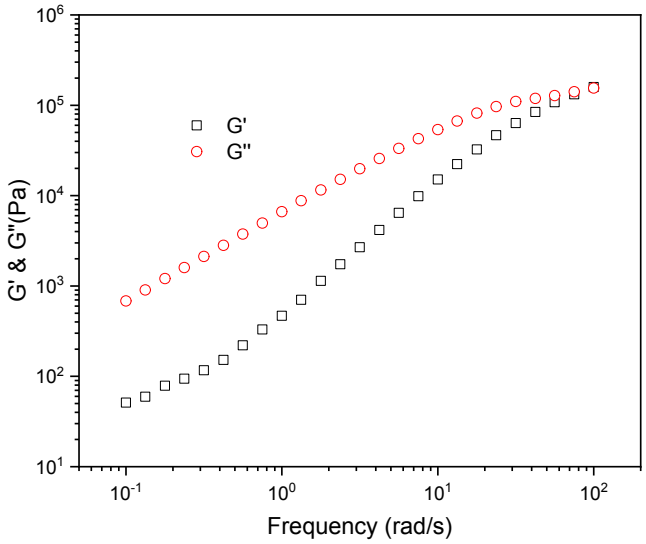

Fig. S2 Variation of storage modulus (G') and loss modulus (G'') as function of frequency for the neat PLLA melted at 175℃

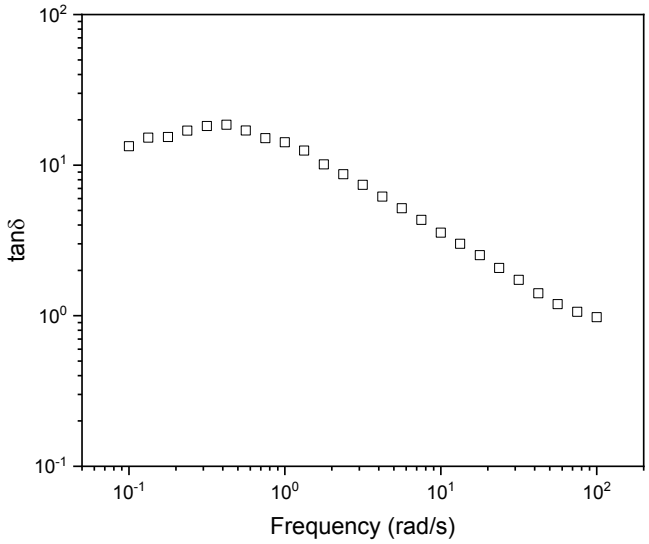

Fig. S3 Variation of loss tangent (tanδ) as function of frequency for the neat PLLA melted at 175℃

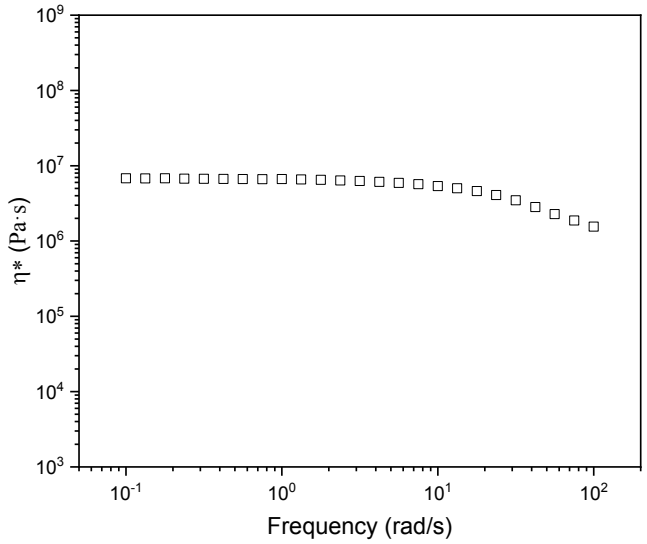

Fig. S4 Variation of complex viscosity (η^*) as function of frequency for the neat PLLA melted at 175℃