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Crystallization, thermal and mechanical properties of stereocomplexed poly(lactide) with the flexible PLLA/PCL multiblock copolymer

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Supporting Information

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Table S1 Thermal parameters of sc-PLA and sc-PLA/MBC blends obtained from DSC

Samples	Cooling		Reheating						
	$T_{c,sc}$	$\Delta H_{c,sc}$	T_g	T_{cc}	ΔH_{cc}	$T_{m,hc}$	$\Delta H_{m,hc}$	$T_{m,sc}$	$\Delta H_{m,sc}$
sc-PLA	125.2	29.0	58.5	113.9	1.4	167.3	1.6	210.4	28.0
sc-PLA/MBC-5%	117.1	36.6	52.8	——	——	——	——	206.2	34.2
sc-PLA/MBC-10%	104.1	22.0	51.7	87.3	4.3	——	——	197.3	28.0
sc-PLA/MBC-15%	95.2	0.42	51.3	97.1	20.3	——	——	185.2	24.9
sc-PLA/MBC-20%	116.2	7.5	52.0	85.0	13.0	——	——	189.0	25.0
sc-PLA/MBC0.9	99.8	16.7	52.1	81.6	2.8	——	——	193.7	25.0
sc-PLA/MBC5.0	118.5	37.2	52.4	——	——	——	——	208.4	31.1

Notes: $T_{c,sc}$ (℃) and $\Delta H_{c,sc}$ (J/g) denote the stereocomplex-crystallization temperature and the corresponding enthalpy in the cooling run; T_g (℃) is the glass transition temperature; T_{cc} (℃) and ΔH_{cc} (J/g) are the cold-crystallization temperature and the corresponding enthalpy in the reheating run; $T_{m,hc}$ (℃) and $T_{m,cc}$ (℃) are melting temperatures of homo-crystallization crystallites and stereocomplex-crystallization crystallites, respectively; $\Delta H_{m,hc}$ (J/g) and $\Delta H_{m,sc}$ (J/g) are melting enthalpies of homo-crystallization crystallites and stereocomplex-crystallization crystallites, respectively.

Table S2 TGA parameters of sc-PLA and sc-PLA/MBC blends

Sample	$T_{5wt\%}$ (℃)	$T_{50wt\%}$ (℃)	T_d (℃)
sc-PLA	261.5	294.8	296.0
sc-PLA/MBC-5%	258.0	293.5	298.1
sc-PLA/MBC-10%	249.7	273.4	275.6
sc-PLA/MBC-15%	248.2	270.6	271.3
sc-PLA/MBC-20%	248.7	271.2	271.0
sc-PLA/MBC0.9	246.7	268.5	267.9
sc-PLA/MBC5.0	253.8	276.8	277.4

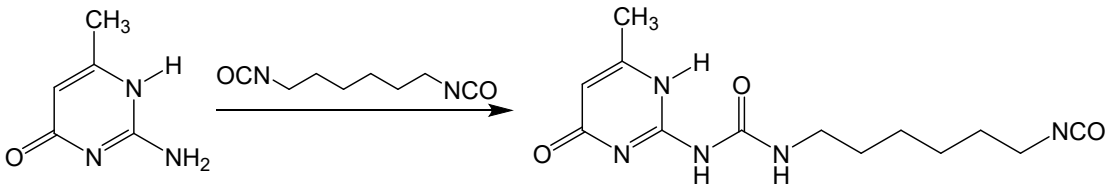

Figure S1 The synthetic route of UPy-NCO

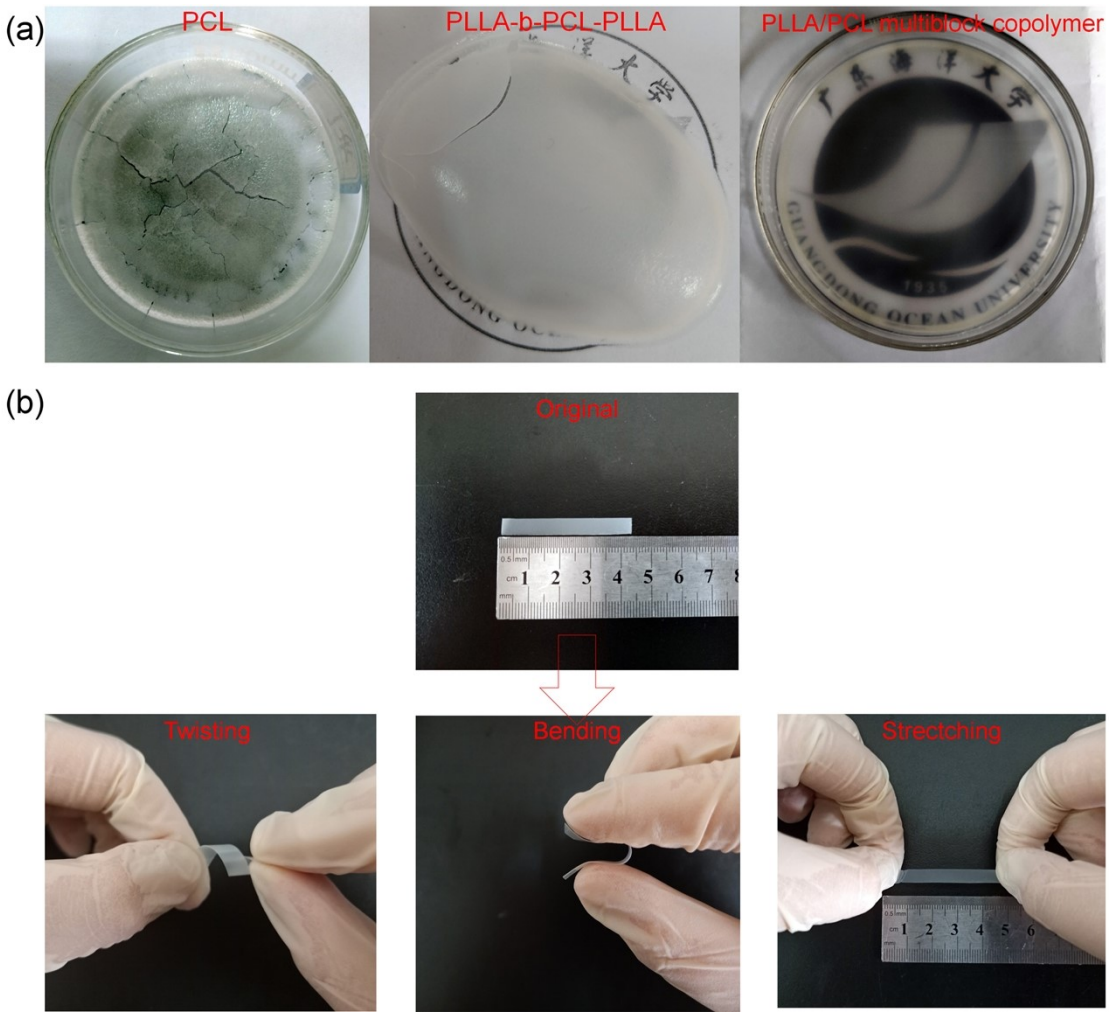

Figure S2 (a) Optical photographs of PCL, PLLA-b-PCL-b-PLLA and PLLA/PCL multiblock copolymer; (b) the twisting, bending and stretching shapes of PLLA/PCL multiblock copolymer

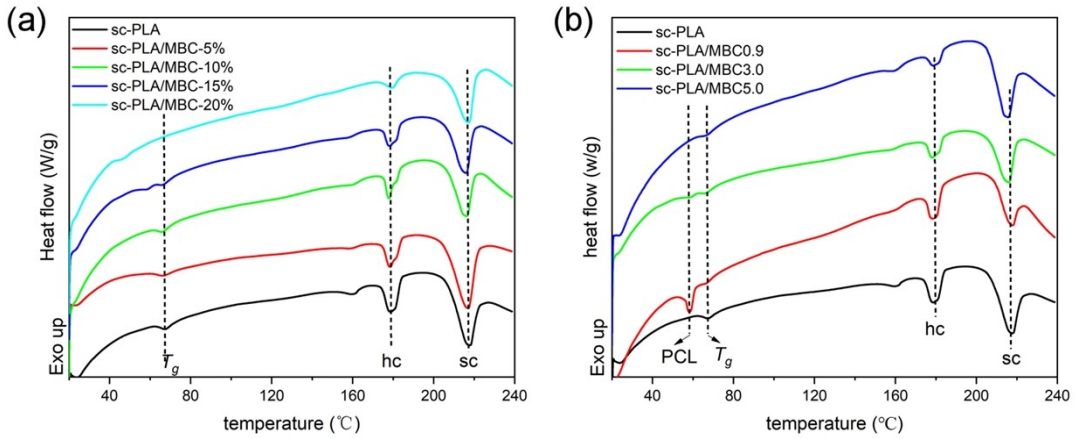

Figure S3 DSC first heating curves of sc-PLA/MBC blends: (a) the blends with various MBC contents; (b) the blends with different MBC

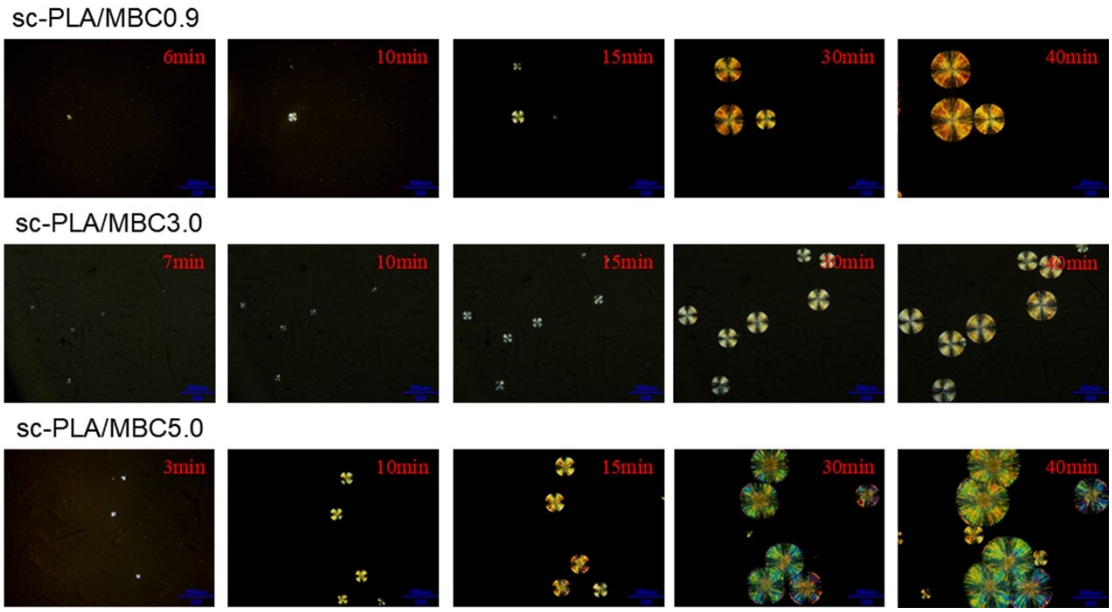

Figure S4 POM photos of sc-PLA/MBC blends with different MBC during isothermal crystallization of 180 ℃