

Supplementary information for “The isothermal crystallization kinetic of poly(ethylene glycol)-*block*-poly(L-lactide) block copolymers (PEG-PLLA): Effect of block lengths of PEG and PLLA”

Yun Chen,^a Liying Wang,^a Weishuo Chen,^a Channa Zhong,^a Shuangcheng Li,^a Jun Shao,^{*a, b} Gao Li^c and Haoqing Hou^{**a, b}

^a College of Chemistry & Chemical Engineering and Nanofiber Engineering Center of Jiangxi Province, Jiangxi Normal University, Nanchang, 330022, China.

^b Key Lab of Fluorine and Silicon for Energy Materials and Chemistry of Ministry of Education, Jiangxi Normal University, Nanchang, 330022, China.

^c Key Laboratory of Polymer Ecomaterials, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun 130022, China.

Table S1. The lnK, $t_{1/2}$ and n values calculated from DSC.

specimen	T_c (°C)	lnK	$t_{1/2}$ (min)	n
PLLA ₂₁	90	-4.50	5.61	2.26
	100	-3.60	2.25	3.38
	110	-1.42	1.17	3.24
	120	-3.90	4.13	2.39
	130	-7.61	10.42	3.01
	140	-8.94	18.47	2.91
PLLA ₄₃	90	-5.08	8.36	2.19
	100	-3.32	3.09	2.45
	110	-1.93	1.53	3.34
	120	-4.19	5.36	2.31
	130	-7.19	8.56	3.11
PLLA ₇₃	90	-5.27	6.87	2.49
	100	-4.01	3.52	2.71
	110	-3.49	3.11	2.45
	120	-4.98	4.87	2.93
	130	-7.34	8.79	3.05
MPEG ₄ -PLLA ₂₂	70	-4.87	1.67	5.32
	80	-1.24	0.77	5.61
	90	0.10	0.61	5.32
	100	0.32	0.63	4.57

	110	-1.8	1.21	3.73
	120	-4.02	2.58	3.42
	130	-6.54	6.10	3.29
	140	-14.40	19.88	4.27
	70	-14.23	5.22	5.95
	80	-5.57	1.88	5.46
	90	-2.26	0.96	5.36
	100	-0.63	0.81	4.25
MPEG ₄ -PLLA ₄₂	110	-2.31	1.37	3.74
	120	-4.81	3.34	3.32
	130	-8.15	9.50	3.30
	140	-9.08	21.54	2.83
	70	-28.63	6.80	9.97
	80	-8.82	2.35	6.48
	90	-3.55	1.44	4.57
	100	-1.63	1.09	3.77
MPEG ₄ -PLLA ₆₂	110	-2.31	1.45	3.56
	120	-4.77	3.68	3.50
	130	-7.27	8.98	3.06
	140	-9.61	32.73	2.60
	70	11.01	0.14	14.21
PEG ₄ -PLLA ₁₉	80	13.67	0.11	13.27

	90	9.37	0.15	10.09
	100	6.51	0.22	7.87
	110	1.15	0.51	5.10
	120	-2.63	1.45	4.08
	130	-6.68	6.96	3.11
	70	-13.99	4.09	6.77
	80	-3.63	1.76	3.99
	90	-0.79	0.83	4.35
	100	1.06	0.51	5.21
PEG ₄ -PLLA ₄₀	110	-1.14	0.96	4.07
	120	-4.25	2.39	3.69
	130	-8.51	8.38	3.57
	140	-6.90	32.40	1.88
	70	-33.77	13.56	9.53
	80	-9.07	6.10	4.24
	90	-4.77	2.46	3.91
	100	-2.457	1.32	4.03
PEG ₄ -PLLA ₆₇	110	-3.397	1.92	3.60
	120	-5.56	4.92	3.09
	130	-9.57	19.66	2.98
	140	-8.97	40.30	2.29
PEG ₁₀ -PLLA ₁₉	70	-0.38	0.44	9.26

	80	1.28	0.42	7.65
	90	-0.80	0.74	4.96
	100	-1.05	0.86	4.33
	110	-2.88	1.69	3.51
	120	-5.47	4.20	3.20
	70	-2.37	0.89	6.00
	80	2.54	0.52	10.78
	90	-1.84	0.92	4.98
	100	-2.11	1.19	4.03
PEG ₁₀ -PLLA ₄₀	110	-2.86	1.69	3.52
	120	-4.52	3.17	3.36
	130	-6.66	6.08	3.35
	140	-9.61	36.11	2.56
	70	-15.91	4.09	7.46
	80	0.01	2.65	6.58
	90	-3.11	2.09	3.93
	100	-3.09	1.81	3.58
PEG ₁₀ -PLLA ₆₉	110	-3.61	2.10	3.59
	120	-5.67	4.39	3.31
	130	-7.26	10.90	2.79
	140	-11.58	33.38	3.06
PEG ₂₀ -PLLA ₂₀	60	10.30	0.13	20.26

	70	8.32	0.18	11.73
	80	6.29	0.22	9.21
	90	3.90	0.30	6.86
	100	-0.80	0.82	4.09
	110	-3.95	2.93	3.05
	60	2.62	0.21	8.67
	70	2.80	0.27	6.89
	80	2.95	0.33	7.67
	90	0.83	0.498	5.10
PEG ₂₀ -PLLA ₄₁	100	0.87	0.56	4.45
	110	-1.76	1.37	3.10
	120	-3.65	2.86	2.93
	130	-7.55	8.19	3.19
	60	-5.52	1.85	5.45
	70	-1.83	0.87	5.44
	80	0.01	0.55	6.58
	90	-1.03	0.80	4.70
PEG ₂₀ -PLLA ₆₂	100	-0.85	0.84	4.26
	110	-2.61	1.42	3.99
	120	-5.05	3.35	3.48
	130	-9.11	14.45	3.12
	140	-6.58	26.47	1.90

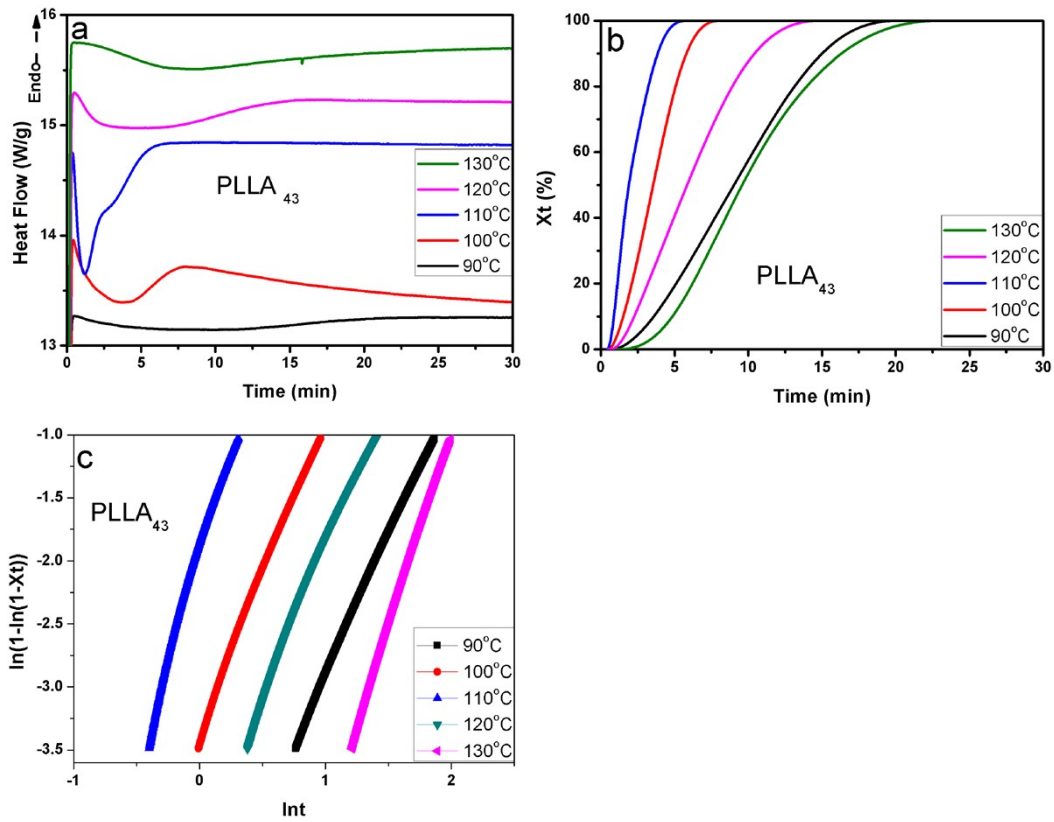
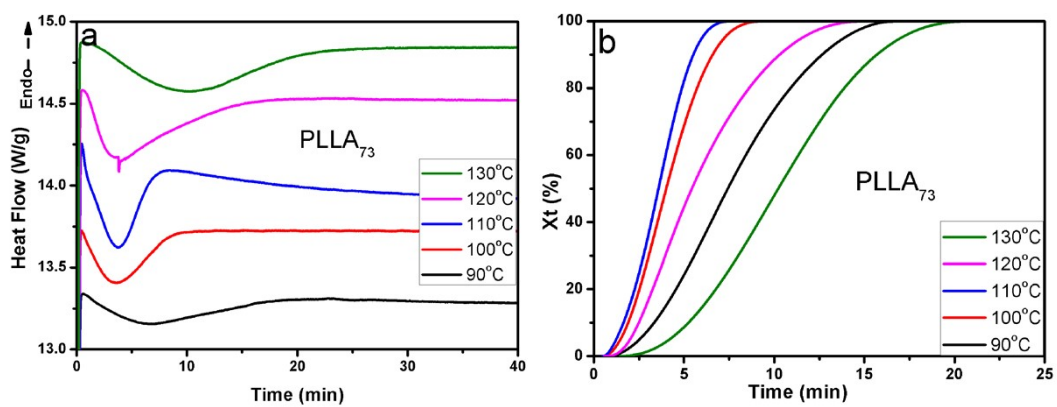


Fig. S1. (a) The isothermal thermograms, (b) the relative crystallinity as a function of crystallization time (t), and (c) the plots of $\ln[-\ln(1-X(t))]$ versus $\ln(t)$ of PLLA₄₃ at various crystallization temperatures.



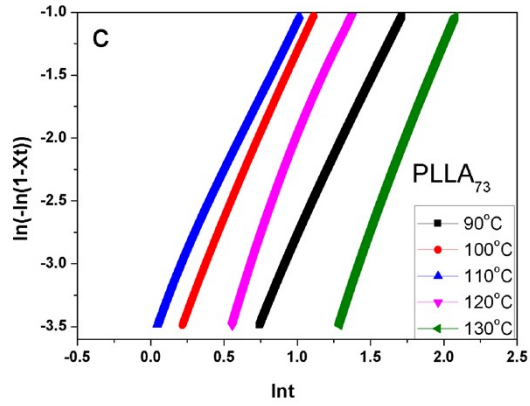


Fig. S2. (a) The isothermal thermograms, (b) the relative crystallinity as a function of crystallization time (t), and (c) the plots of $\ln[-\ln(1-X(t))]$ versus $\ln(t)$ of PLLA_{73} at various T_c s.

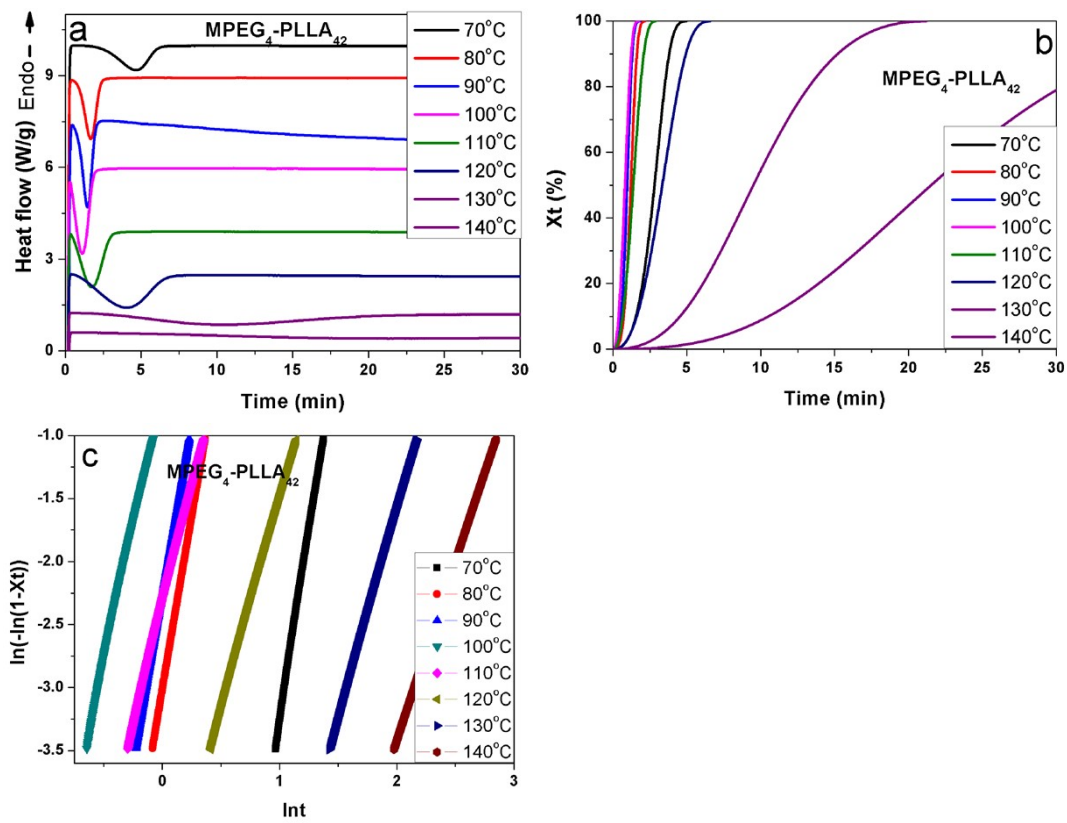


Fig. S3. The isothermal DSC thermograms (a), relative crystallinity curves (b), and the $\ln[-\ln(1-X(t))]$ versus $\ln(t)$ (c) of $\text{MPEG}_4\text{-PLLA}_{42}$.

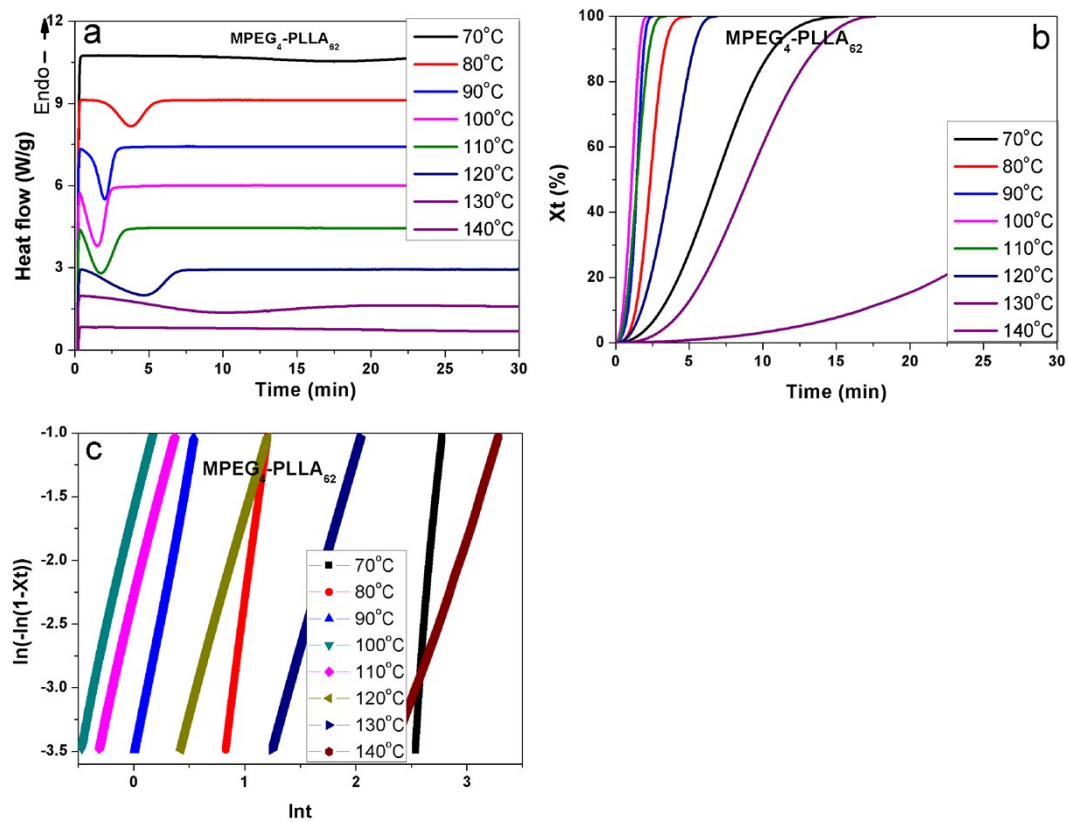
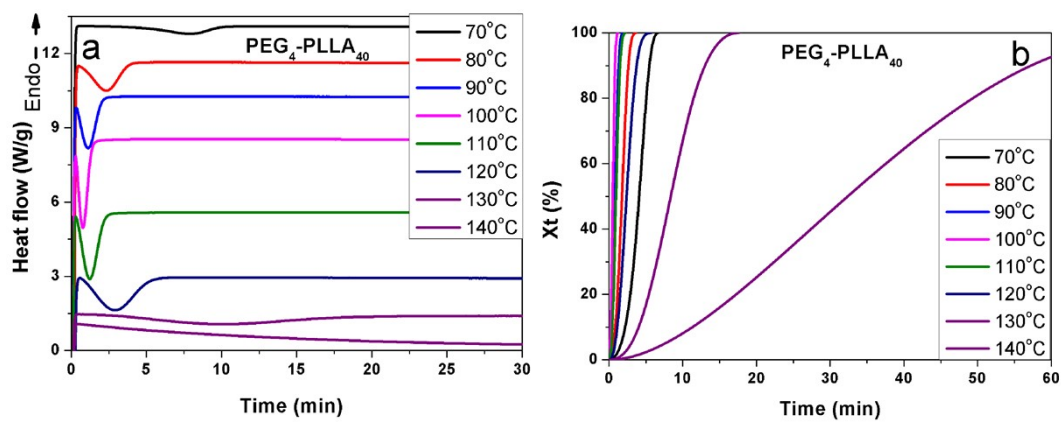


Fig. S4. The isothermal DSC thermograms (a), relative crystallinity curves (b), and the $\ln[-\ln(1-X(t))]$ versus $\ln t$ (c) of MPEG₄-PLLA₆₂.



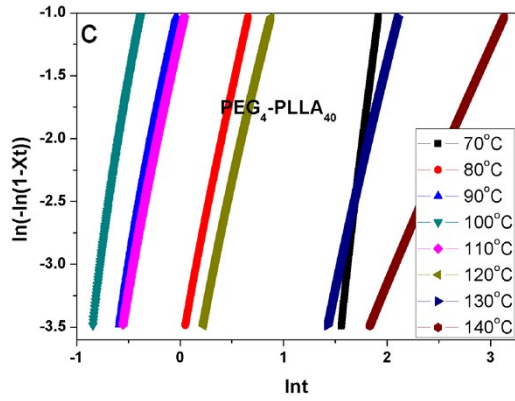


Fig. S5. The isothermal crystallization curves (a), relative crystallinity curves (b), and the $\ln[-\ln(1-X(t))]$ versus $\ln t$ (c) of PEG₄-PLLA₄₀ for different T_c s.

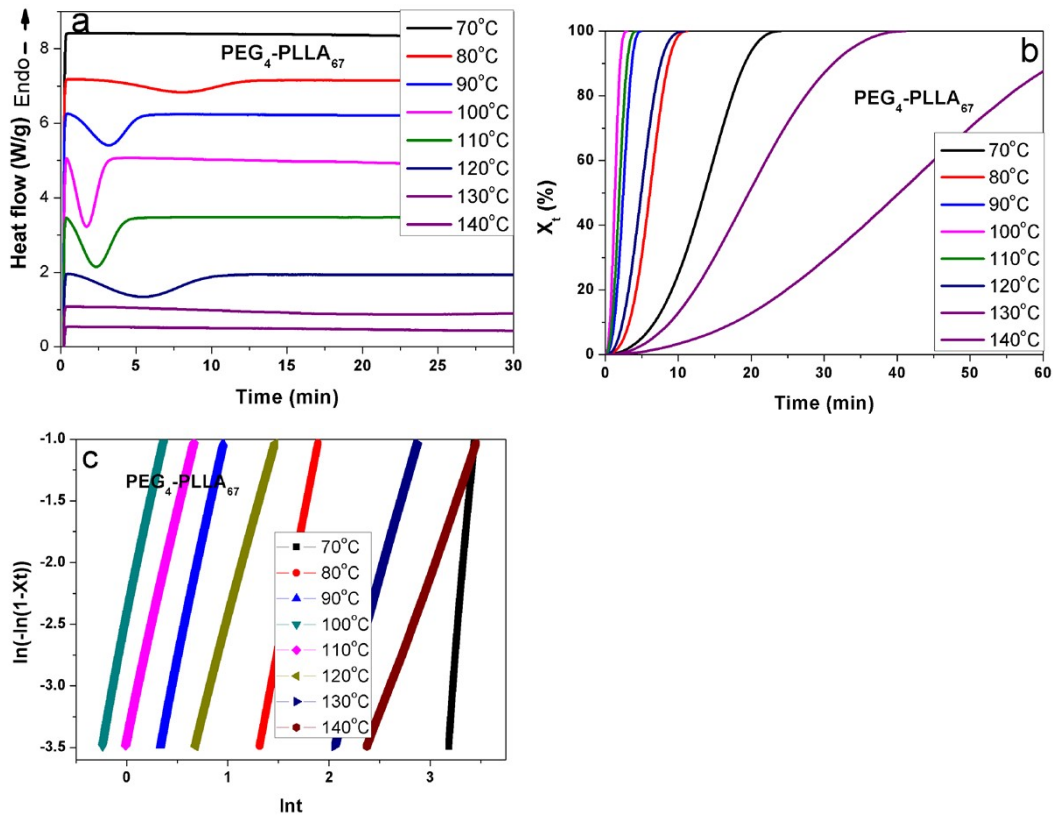


Fig. S6. The isothermal crystallization curves (a), relative crystallinity curves (b), and the $\ln[-\ln(1-X(t))]$ versus $\ln t$ (c) of PEG₄-PLLA₆₇ for different temperatures.

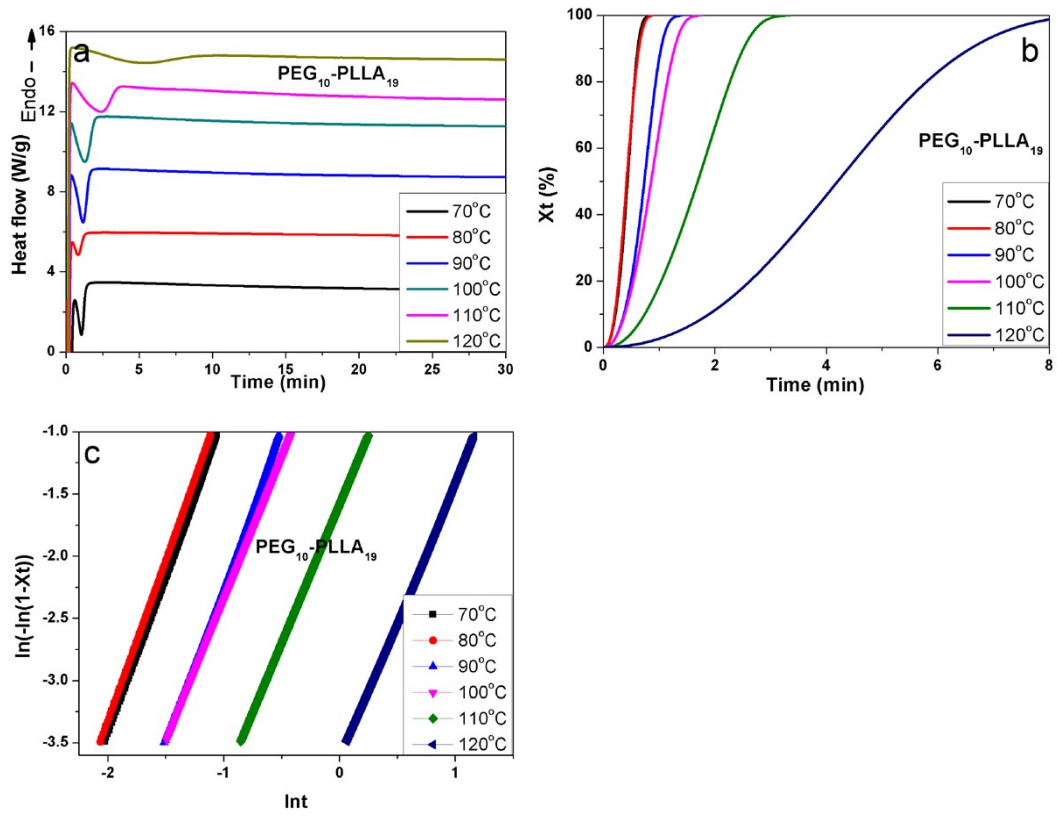
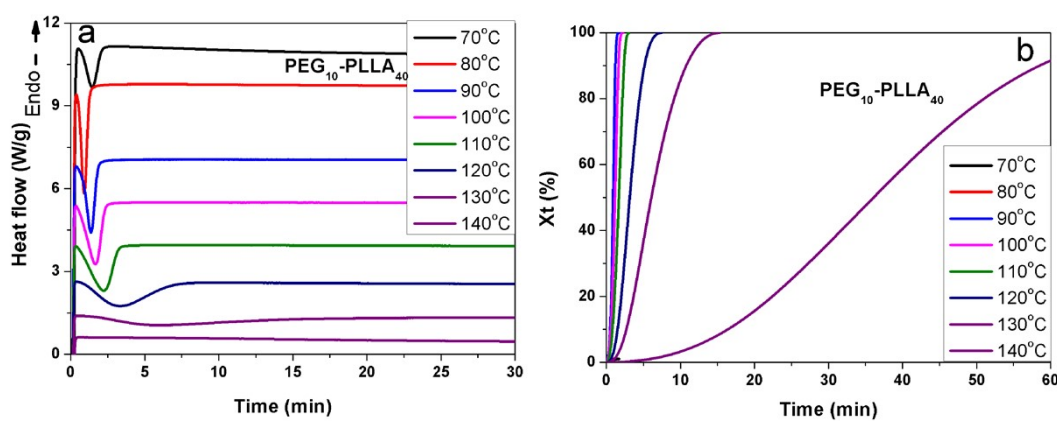


Fig. S7. The isothermal crystallization curves (a), relative crystallinity curves (b), and the $\ln[-\ln(1-X(t))]$ versus $\ln t$ of PEG₁₀-PLLA₁₉ (c) for different T_c s.



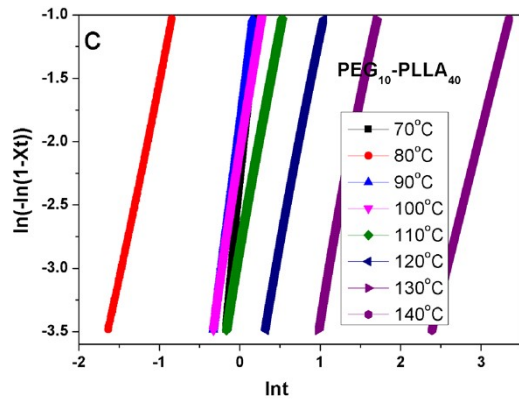


Fig. S8. The isothermal crystallization curves (a), relative crystallinity curves (b), and the $\ln[-\ln(1-X(t))]$ versus $\ln t$ (c) of PEG₁₀-PLLA₄₀ for different temperatures.

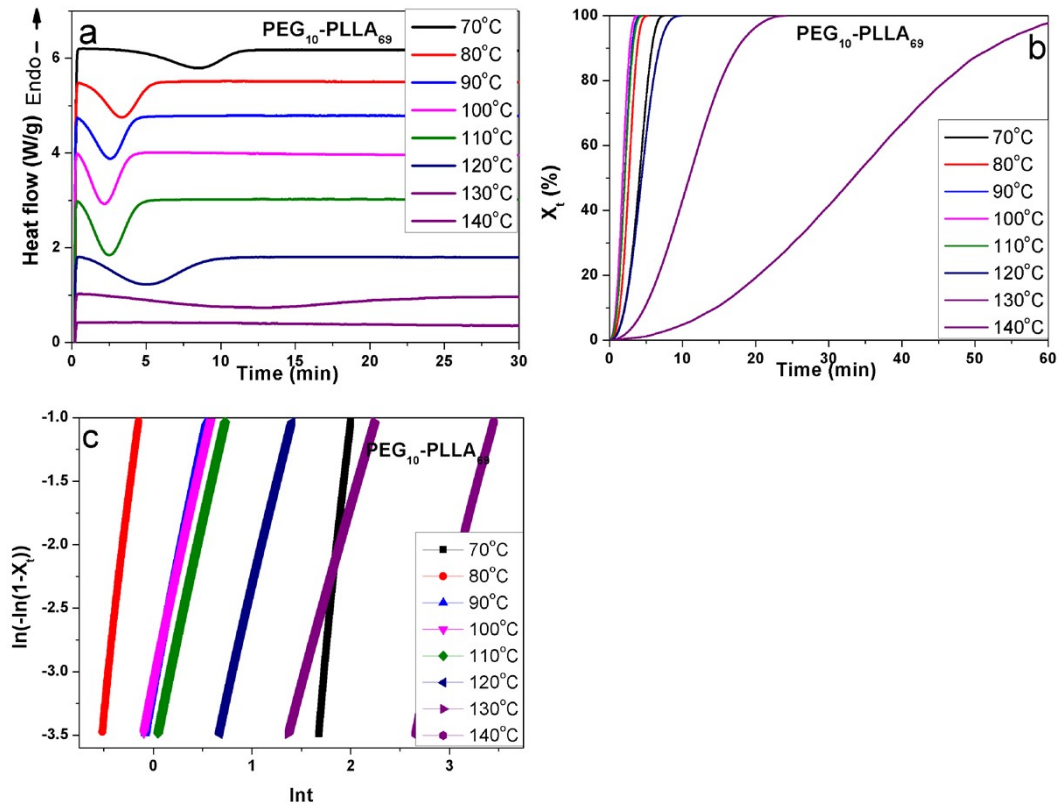


Fig. S9. The isothermal crystallization curves (a), relative crystallinity curves (b), and the $\ln[-\ln(1-X(t))]$ versus $\ln t$ (c) of PEG₁₀-PLLA₆₉ for different temperatures.

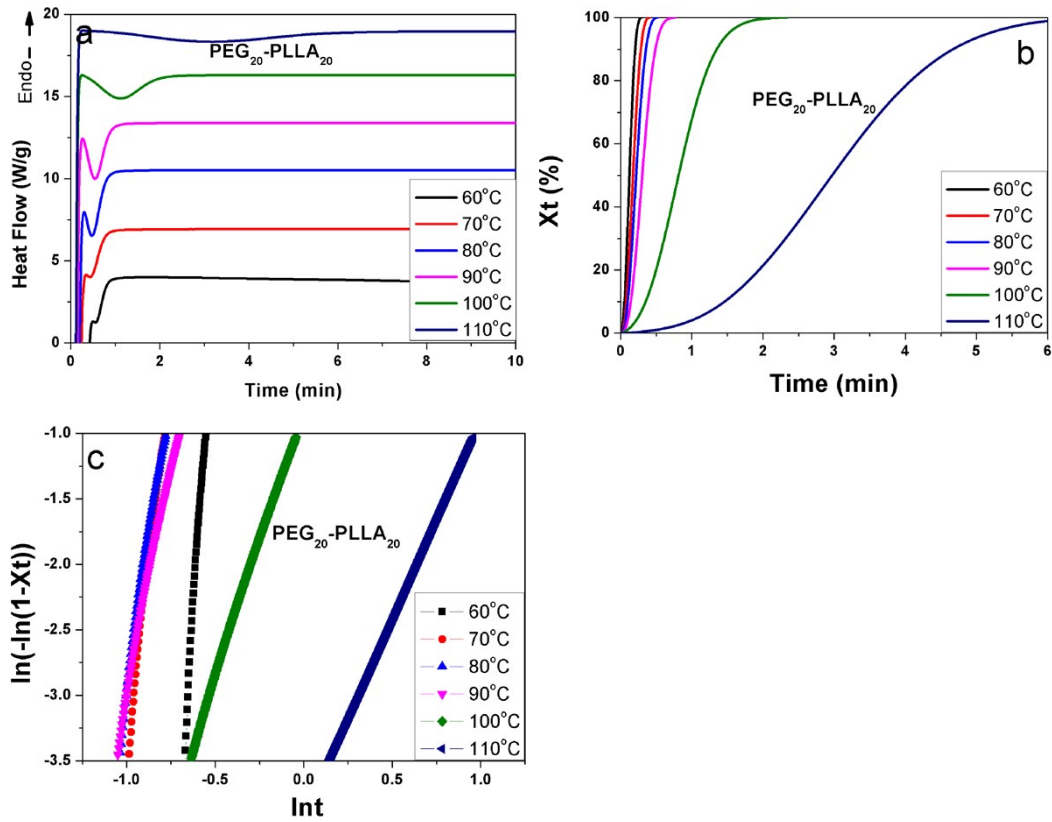


Fig. S10. The isothermal crystallization curves (a), relative crystallinity curves (b), and the $\ln[-\ln(1-X(t))]$ versus $\ln t$ (c) of PEG₂₀-PLLA₂₀ for different temperatures.

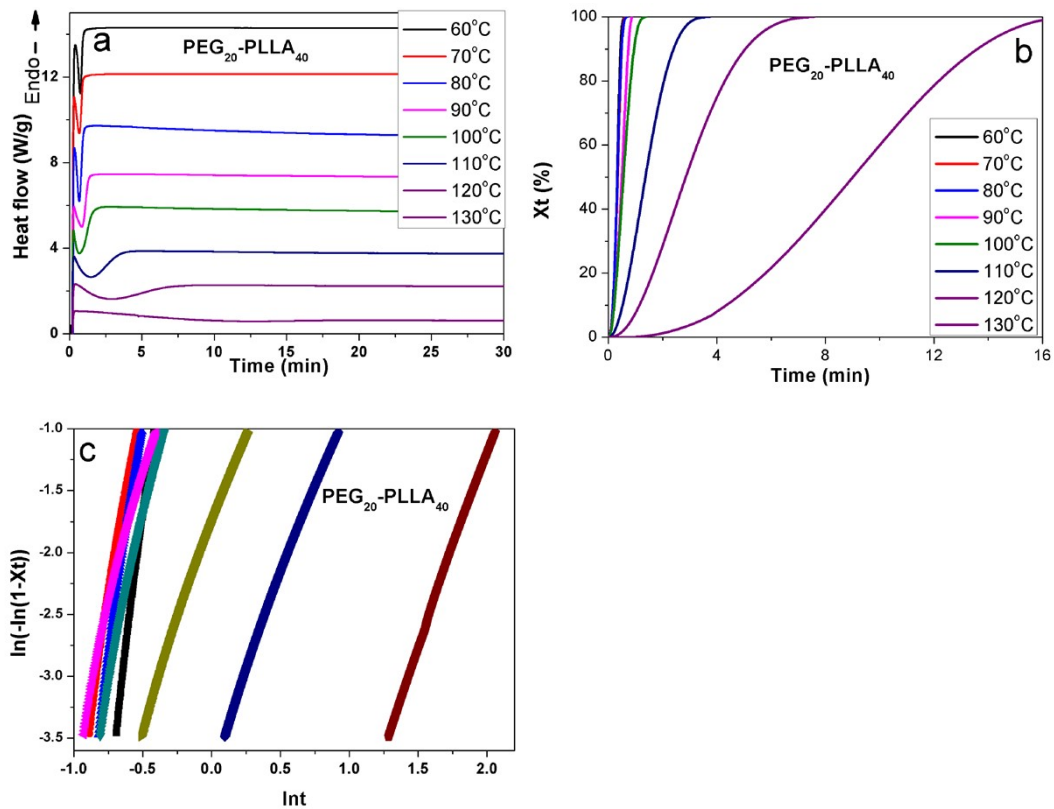


Fig. S11. The isothermal crystallization curves (a), relative crystallinity curves (b), and the $\ln[-\ln(1-X(t))]$ versus $\ln t$ (c) of PEG₂₀-PLLA₄₀ for different temperatures.

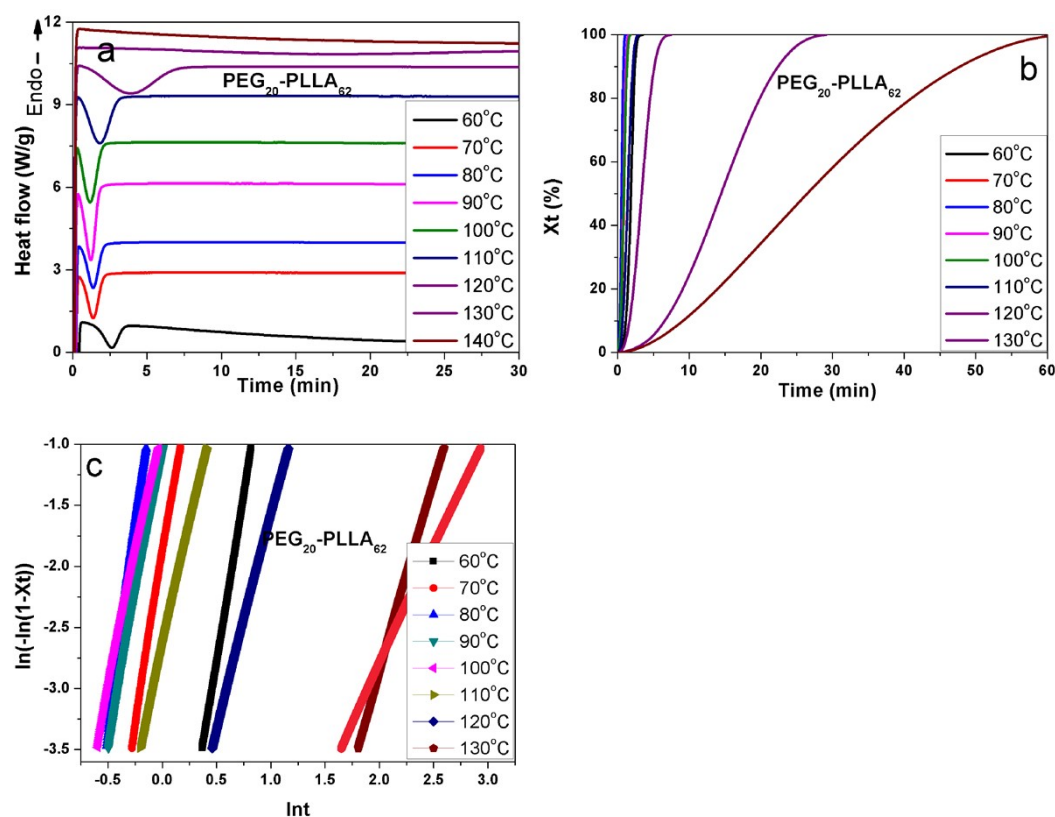


Fig. S12. The isothermal crystallization curves (a), relative crystallinity curves (b), and the $\ln[-\ln(1-X(t))]$ versus $\ln t$ (c) of PEG₂₀-PLLA₆₂ for different temperatures.

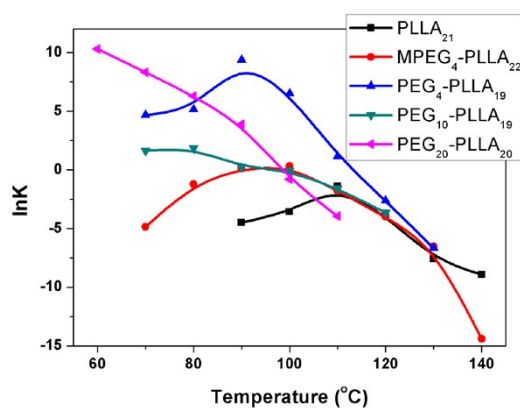


Fig. S13. The $\ln K$ for PLLA₂₁, MPEG₄-PLLA₂₂, PEG₄-PLLA₁₉, PEG₁₀-PLLA₁₉ and PEG₂₀-PLLA₂₀.

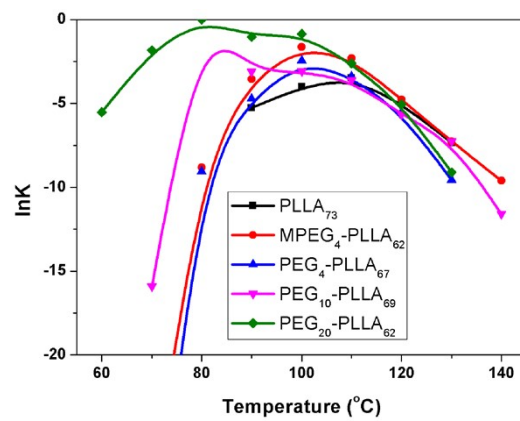


Fig. S14. The $\ln K$ for PLLA₇₃, MPEG₄-PLLA₆₂, PEG₄-PLLA₆₇, PEG₁₀-PLLA₆₉ and PEG₂₀-PLLA₆₂.