Supporting information for

High-melting-point crystals of Poly(l-lactic acid)(PLLA): the Most Efficient Nucleating Agent to Enhance the Crystallization of PLLA

Hai-Yan Yin[a], Xin-Feng Wei[a], Rui-Ying Bao[a*], Quan-Xiao Dong[b], Zheng-Ying Liu[a], Wei Yang[a]*, Bang-Hu Xie[a], Ming-Bo Yang[a]

[a.] College of Polymer Science and Engineering, Sichuan University, State Key Laboratory of Polymer Materials Engineering, Chengdu, 610065 Sichuan, China

[b.] Beijing Engineering Research Center of Architectural Functional Macromolecular Materials, Beijing Building Construction Research Institute, Beijing, People's Republic of China 100039

*Corresponding authors. Tel/Fax: + 86 28 8546 0130. E-mail address: weiyang@scu.edu.cn (W. Yang) and baoruiying2005@126.com (RY Bao).

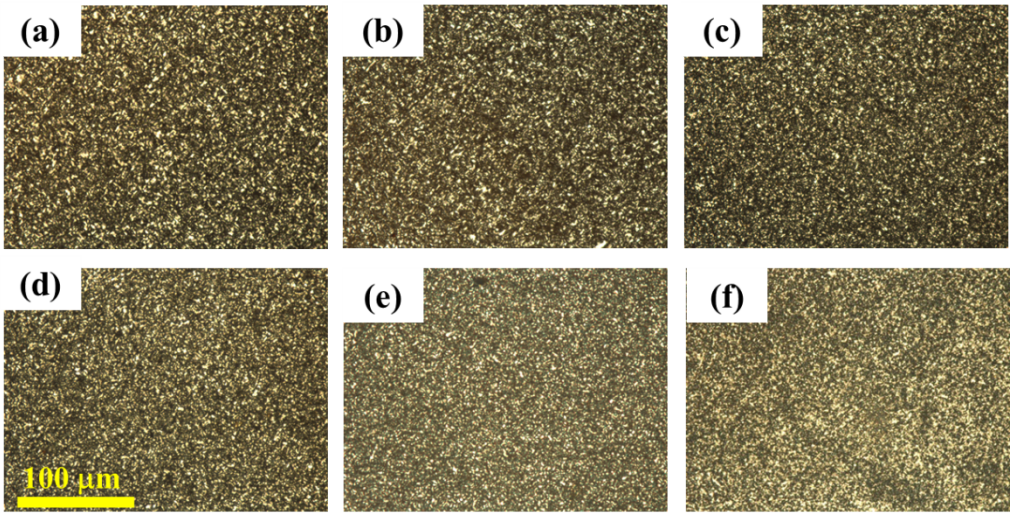

Fig. S1. Selected POM micrographs after completely crystallization at T_c of 140 °C for *h*PLLA-0.1 (a) *h*PLLA-0.2 (b) *h*PLLA-0.5 (c) *h*PLLA-1.0 (d) *h*PLLA-2.0 (e) and *h*PLLA-5.0 (f). The scale bar in the bottom micrograph of panel (d) represents 100 μm and applies to all the micrographs.

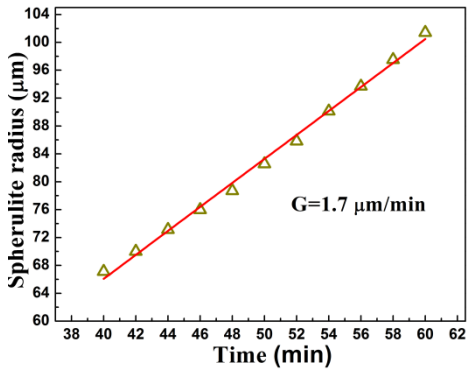

Fig. S2. The spherulite radius as a function of time for neat *l*PLLA at T_c = 140 °C, the sample was first melting at 180 °C for 3 min and then cooled to 140 °C at 100 °C/min

Based on the DSC data, the isothermal crystallization kinetics of PLLA in the blends crystallized at 140 °C were analyzed by the Avrami equation as follows:

$$1 - X_t = exp[-k(T)t^n] \quad (1)$$

where *n* is the Avrami index and *K (T)* is the overall rate constant. The linear form of

eq 1 can be stated as:

$$ln[-ln(1-X_t)] = lnk(T) + nlnt \quad (2)$$

k(T) and *n* can be estimated from the linear fitting of ln [−ln(1 −X_t)] vs ln *t*. To ensure the accuracy of the Avrami analysis, the data in a limited conversion range (3 − 30%) was employed for fitting. The obtained data were shown in Fig.S3 and Table.S1.

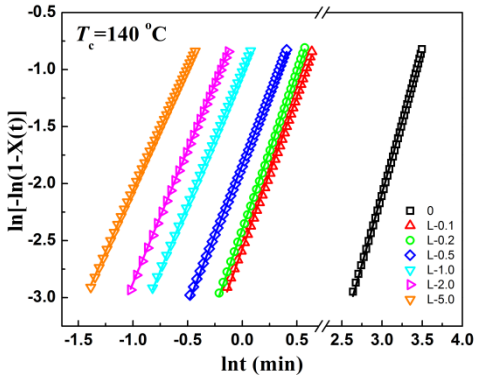

Fig. S3. Avrami plots of ln[−ln(1 − X_t)] versus ln *t* for neat PLLA and the blends at T_c of 140 °C

Table S1 Values of Avrami parameters for neat PLLA and its blends at T_c of 140 °C

Sample Code	*n*	*ln k(T)* (min^{-n})
*l*PLLA	2.8	-9.57
*h*PLLA-0.1	2.7	-2.57
*h*PLLA -0.2	2.8	-2.40
*h*PLLA -0.5	2.4	-1.83
*h*PLLA -1.0	2.3	-1.02
*h*PLLA -2.0	2.3	-0.54
*h*PLLA -5.0	2.2	0.96