

Supporting information

Effects of polyoxymethylene as a polymeric nucleating agent on isothermal crystallization and visible transmittance of poly(lactic acid)

Xiaojie Guo[†], Hongzhi Liu[†], Jinwen Zhang^{†,*}, Jijun Huang^{‡,*}

[†]School of Mechanical and Materials Engineering, Materials Science and Engineering Program, Composite Materials and Engineering Center, Washington State University, P. O. BOX 642920, Pullman, 99164, USA

[‡]College of Materials Science and Opto-Electronic Technology, University of Chinese Academy of Sciences, Beijing, 100049, P. R. China

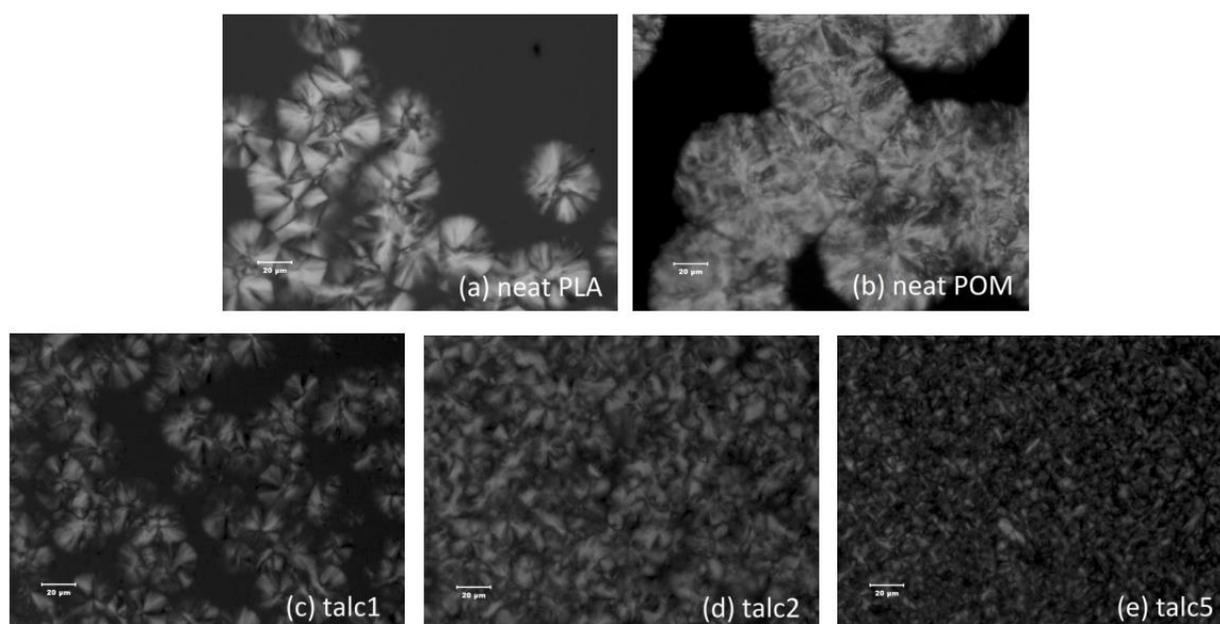


Figure S1 Polarized optical photomicrographs for (a) neat PLA, (b) neat POM, (c) talc1, (d) talc2, and (e) talc5 which crystallized isothermally at 130 °C for 30 min. The scale bar represents 20 μm .

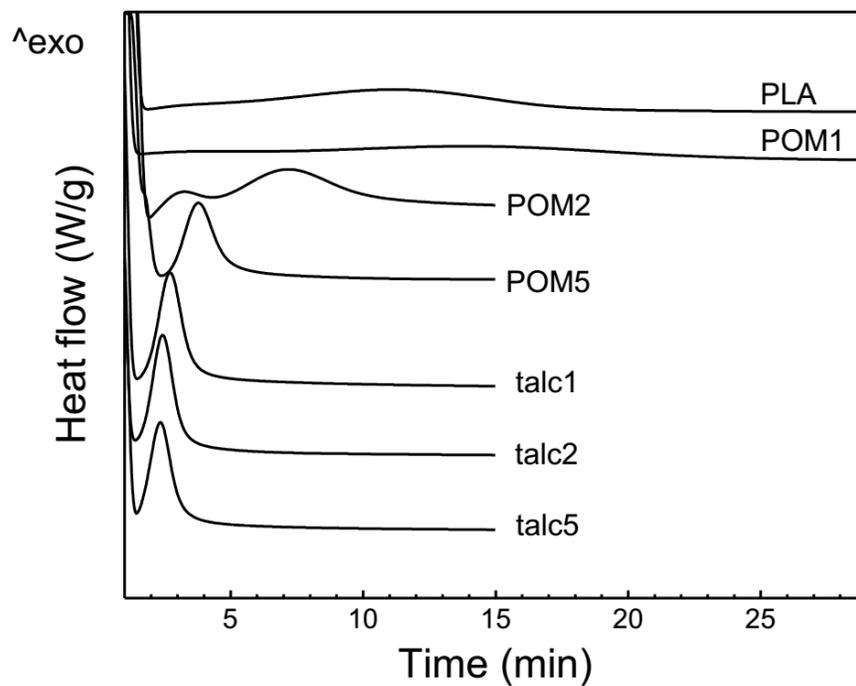


Figure S2 Comparison of crystallization isotherms obtained at 108 °C as a function of time between neat PLA, POM1, POM2, POM5, talc1, talc2, and talc5. The curves were vertically shifted for legibility.

Table S1 Isothermal crystallization kinetics parameters of PLA and its composites at 106-111 °C

	106 °C				107 °C				108 °C				109 °C				111 °C			
	n	K _{x10-3}	t _{1/2}	τ _{1/2}	n	K _{x10-3}	t _{1/2}	τ _{1/2}	n	K _{x10-3}	t _{1/2}	τ _{1/2}	n	K _{x10-3}	t _{1/2}	τ _{1/2}	n	K _{x10-3}	t _{1/2}	τ _{1/2}
	min ⁻ⁿ	min	min ⁻¹		min ⁻ⁿ	min	min ⁻¹		min ⁻ⁿ	min	min ⁻¹		min ⁻ⁿ	min	min ⁻¹		min ⁻ⁿ	min	min ⁻¹	
PLA	2.66	2.50	8.28	0.12	3.15	0.61	9.36	0.11	3.37	0.24	10.63	0.09	3.51	0.11	12.09	0.08	3.57	0.05	14.49	0.07
POM1	3.17	0.52	9.66	0.10	3.13	0.40	10.86	0.09	3.36	0.17	11.87	0.08	3.00	0.16	16.35	0.06	3.88	0.01	17.07	0.06
POM2	3.08	46.81	2.40	0.42	3.56	17.71	2.80	0.36	3.57	4.60	4.07	0.25	3.77	2.14	4.63	0.22	3.71	1.18	5.59	0.18
POM5	3.30	289.07	1.30	0.77	3.44	166.73	1.51	0.66	3.75	74.30	1.81	0.55	3.72	59.43	1.93	0.52	3.75	29.92	2.31	0.43
talcl	2.95	477.64	1.13	0.88	3.87	294.10	1.25	0.80	3.44	299.77	1.38	0.73	3.88	103.28	1.63	0.61	3.92	56.21	1.90	0.92
talcl2	2.53	578.76	1.07	0.93	2.87	549.79	1.08	0.92	3.43	384.77	1.19	0.84	3.63	286.95	1.27	0.78	3.99	74.08	1.75	0.57
talcl5	2.65	1.74	0.72	1.40	2.51	1.57	0.73	1.37	2.72	0.69	1.00	1.00	2.93	0.56	1.07	0.94	2.85	0.42	1.18	0.84