

SUPPORTING INFORMATION

Effect of Annealing on Thermal and Dynamic Mechanical Properties of Poly(lactic acid)

Assia Zennaki^a, Latifa Zair^a, Khadidja Arabeche^a, Lina Benkraled^a, Ulrich Maschke^{b,*},
Abdelkader Berrayah^a

A. Zennaki, Dr. L. Zair, Prof. K. Arabeche, L. Benkraled, Prof. A. Berrayah

Laboratoire de Recherche sur les Macromolécules, Faculté des Sciences, Université Aboubakr
Belkaïd, 13000 Tlemcen, Algeria

Dr. U. Maschke

UMET – Unité Matériaux et Transformations, UMR 8207, Univ. Lille, CNRS, INRAE,
Centrale Lille, F-59000 Lille, France

E-mail: ulrich.maschke@univ-lille.fr

Table S1 Thermal properties of annealed samples at temperatures $T_a=90^\circ\text{C}$ and 100°C for annealing times $t_a = 3\text{-}30\text{h}$.

Sample	t_a (h)	T_g ($^\circ\text{C}$)	T_{cc} ($^\circ\text{C}$)	ΔH_c (Jg^{-1})	T_{exo} ($^\circ\text{C}$)	T_{m1} ($^\circ\text{C}$)	T_{m2} ($^\circ\text{C}$)	ΔH_m (Jg^{-1})	X_c (%)
aPLA(90°C-t)	3	60.7	-	-	-	152	138.5	15.34	16.5
	6	63.9	-	-	-	154.1	141.4	15.93	17.1
	10	62.6	-	-	-	153.5	142.5	17.21	18.5
	18	62.8	-	-	-	152.9	142	17.76	19.1
	24	63.6	-	-	-	152.7	143.3	17.77	19.1
	30	61.6	-	-	-	152.9	143.2	18.24	19.6
aPLA(100°C-t)	3	60.9	-	-	-	153.7	148.3	16.44	17.7
	6	63.4	-	-	-	153.2	147.6	16.68	17.9
	10	59.6	-	-	-	153.1	150.2	17.96	19.3
	18	62.2	-	-	-	152.1	148	18.89	20.3
	24	61.2	-	-	-	152.3	149.5	19.19	20.6
	30	56.9	-	-	-	151.9	149.6	19.98	21.5

Table S2 Thermal properties of annealed samples at $T_a=120,130,140$ °C for times $t_a = 3-30$ h.

Sample	t_a (h)	T_g (°C)	T_{cc} (°C)	ΔH_c (Jg ⁻¹)	T_{exo} (°C)	T_{m1} (°C)	T_{m2} (°C)	ΔH_m (Jg ⁻¹)	X_c (%)
aPLA(120°C-t)	3	58.9	-	-	-	-	174.6	24.94	26.8
	6	59.9	-	-	-	-	177.0	27.45	29.5
	10	59.4	-	-	-	-	176.9	28.72	30.8
	18	62.2	-	-	-	-	178.1	29.21	31.4
	24	60.2	-	-	-	-	178.8	29.37	31.5
	30	59	-	-	-	-	177.5	30.65	32.9
aPLA(130°C-t)	3	61.9	-	-	-	-	159.1	27.59	29.6
	6	59.3	-	-	-	-	156.9	29.48	31.7
	10	55.4	-	-	-	-	157.5	29.55	31.8
	18	61.9	-	-	-	-	157.5	29.93	32.2
	24	60.6	-	-	-	-	159.2	30.23	32.5
	30	62.4	-	-	-	-	158.3	30.24	32.5
aPLA(140°C-t)	3	60.5	-	-	-	-	159.13	26.10	28.0
	6	61.	-	-	-	-	160.86	28.65	30.8
	10	59.1	-	-	-	-	161.75	29.09	31.2
	18	54.2	-	-	-	-	161.35	30.11	32.3
	24	59.5	-	-	-	-	162.03	29.18	31.3
	30	59.2	-	-	-	-	162.39	28.64	30.8

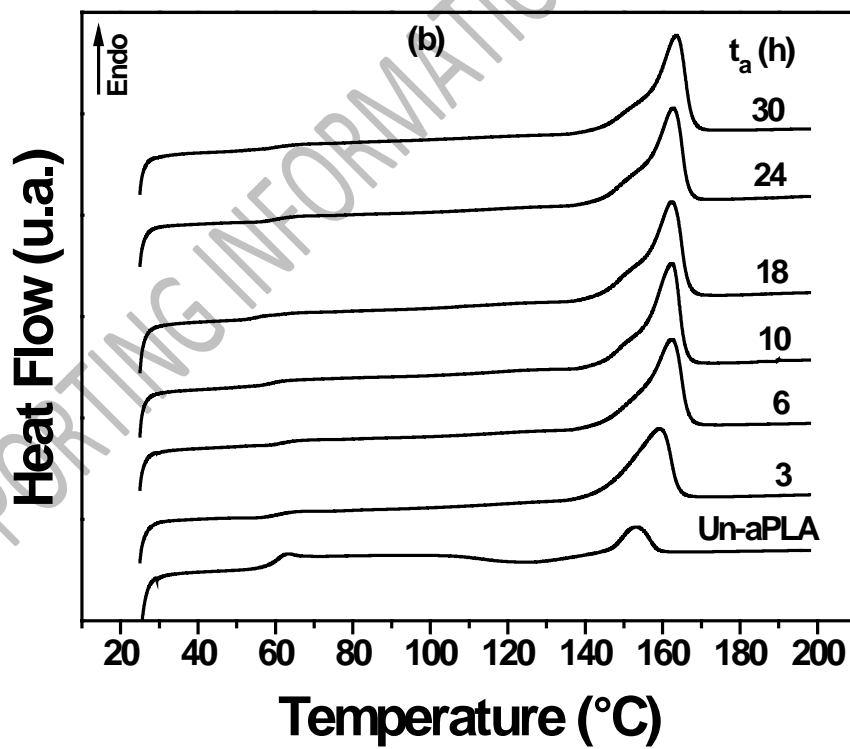
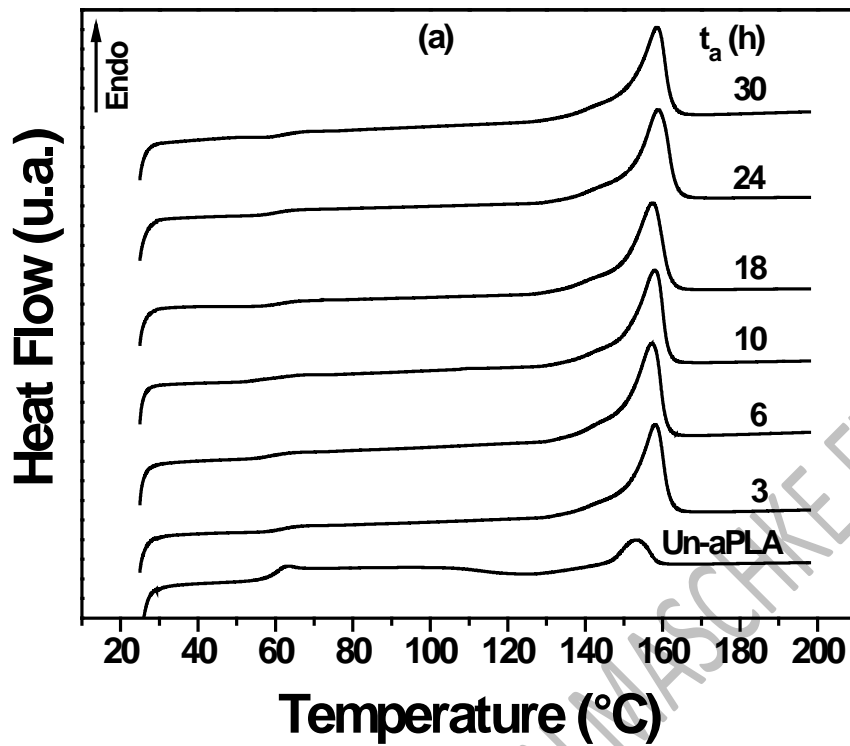


FIGURE S1 DSC curves of aPLA samples at (a) $T_a=130^\circ\text{C}$, (b) 140°C for annealing times

$t_a=3\text{-}30\text{h}$.