

Supporting information

Ionic Liquids as Delaminating Agents of Layered Double Hydroxide during In-Situ Synthesis of Poly (Butylene Adipate-*co*-Terephthalate) Nanocomposites

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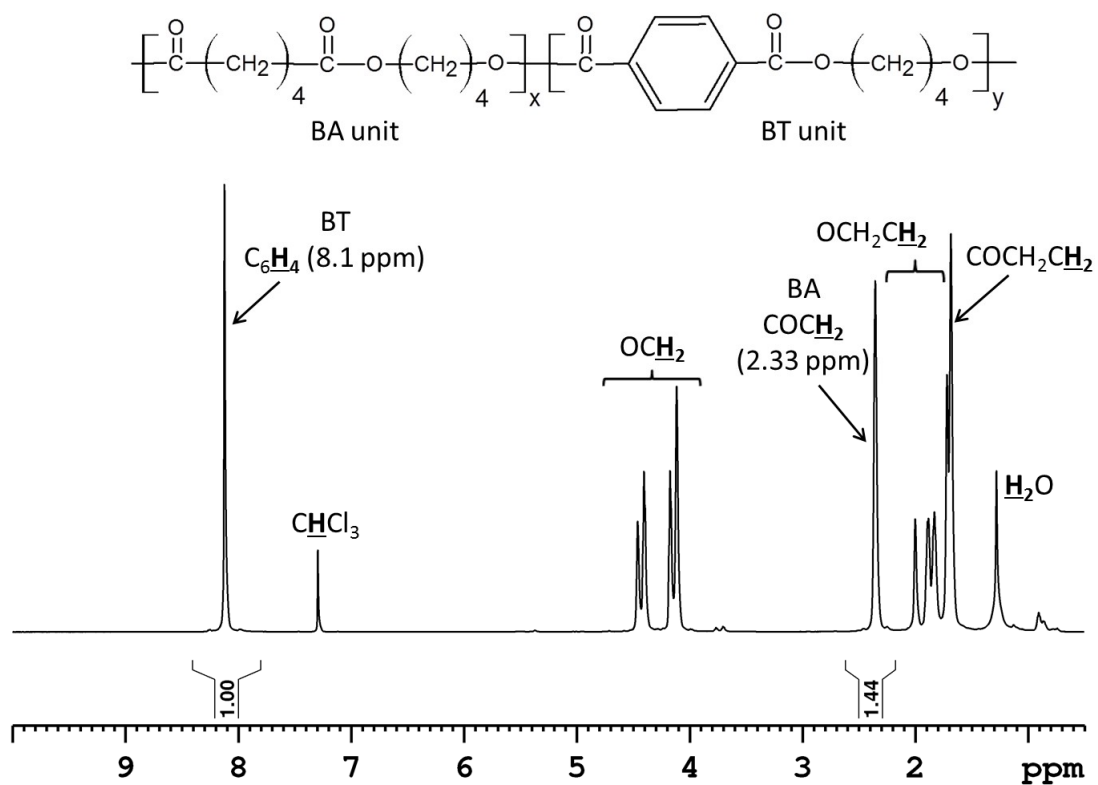


Figure S1: ^1H NMR spectrum of synthesized poly(butylene adipate-co-terephthalate)

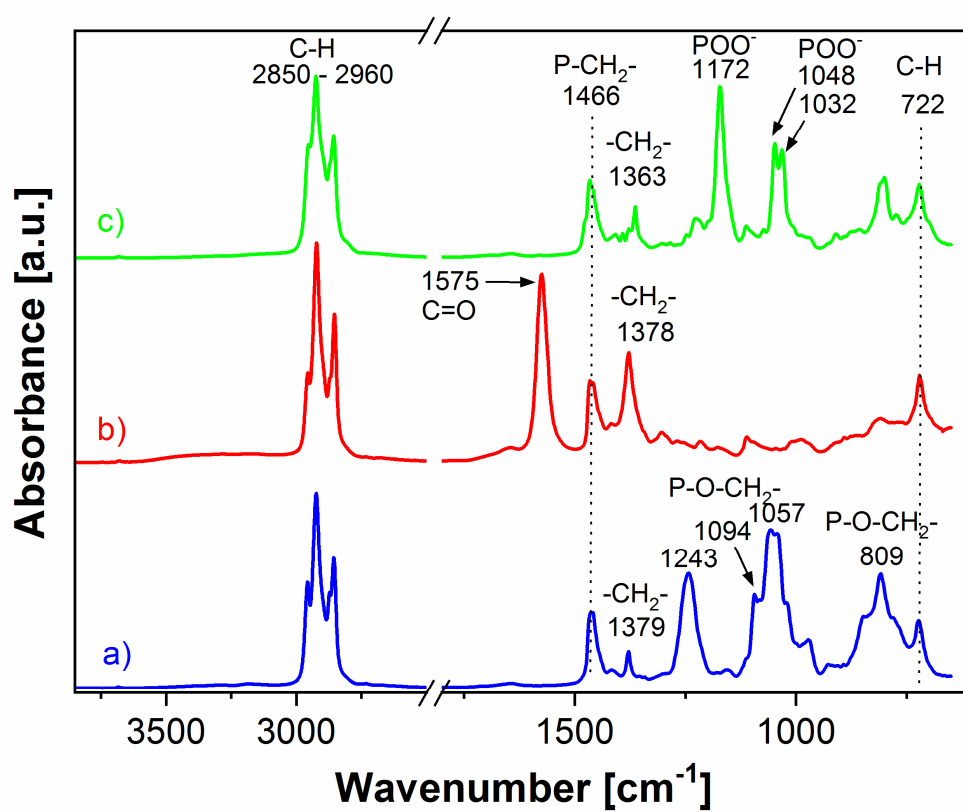


Figure S2: FTIR spectra of a) IL-phosphate, b) IL-decanoate and c) IL-phosphinate

Table S1: Dependence of oxygen, carbon dioxide and water vapor diffusion coefficient and ideal selectivity of neat PBAT and PBAT nanocomposites with 1.5 and 5 wt.% of pristine LDH, LDH-phosphate, LDH-decanoate and LDH-phosphinate

	Diffusion coefficient $\times 10^{12}$ m ² /s			Diffusion selectivity		
	O ₂	CO ₂	H ₂ O	CO ₂ /O ₂	H ₂ O/O ₂	H ₂ O/CO ₂
Neat PBAT	34.2	13.1	15.6	0.38	0.46	1.10
+1.5% LDH	32.8	12.9	14.9	0.39	0.45	1.10
+1.5% LDH-phosphate	29.8	11.8	11.7	0.40	0.39	1.00
+1.5% LDH-decanoate	25.2	14.6	12.2	0.58	0.48	0.83
+1.5% LDH-phosphinate	30.9	15.1	13.8	0.49	0.45	0.91
+5% LDH	31.3	12.7	13.0	0.41	0.41	1.20
+5% LDH-phosphate	26.5	11.0	8.7	0.42	0.33	0.79
+5% LDH-decanoate	27.6	11.0	7.4	0.40	0.27	0.68
+5% LDH-phosphinate	28.5	13.0	9.9	0.46	0.35	0.76

Table S2: Dependence of oxygen, carbon dioxide and water vapor solubility coefficient and ideal selectivity of neat PBAT and PBAT nanocomposites with 1.5 and 5 wt.% of pristine LDH, LDH-phosphate, LDH-decanoate and LDH-phosphinate

	Solubility coefficient $\times 10^7$ mol/(m ³ .Pa)			Solubility selectivity		
	O ₂	CO ₂	H ₂ O	CO ₂ /O ₂	H ₂ O/O ₂	H ₂ O/CO ₂
Neat PBAT	1.52	43.4	5900	28.5	3880	140
+1.5% LDH	1.46	40.4	6000	27.8	4120	150
+1.5% LDH-phosphate	1.52	40.8	4500	26.9	2970	120
+1.5% LDH-decanoate	1.98	36.9	5600	18.7	2840	160
+1.5% LDH-phosphinate	1.61	36.3	4900	22.6	3050	140
+5% LDH	1.42	39.9	6600	28.1	4650	170
+5% LDH-phosphate	1.65	42.9	8900	25.9	5380	210
+5% LDH-decanoate	1.47	38.4	7000	26.1	4770	190
+5% LDH-phosphinate	1.69	36.3	6000	21.5	3550	170