

Supplementary Information

New Alternative to Produce Colored Polymer Nanocomposites: Organophilic Ni/Al and Co/Al Layered Double Hydroxide as Fillers into Low-Density Polyethylene

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Table S1. Absorption bands observed in FTIR spectra and respective attributions

Sample	Band position / cm ⁻¹	Attribution
NiUD	2852-2926	v(C-H) (-CH ₂ and -CH ₃)
	1229	v(S=O)(sym.)
	1051	v(S=O)(asym.)
	825	v(C-S)
	729, 620, 426	O-M-O, M-O-M and M-OH bonds
NiUL, NiUP and NiUS	2852-2926	v(C-H) (-CH ₂)
	1548	v(C-O) (-COO ⁻ sym.)
	1413	v(C-O) (-COO ⁻ asym.)
	729, 620, 426	O-M-O, M-O-M and M-OH bonds
CoUD	2846-2920	v(C-H) (-CH ₂ and -CH ₃)
	1213	v(S=O)(sym.)
	1064	v(S=O)(asym.)
	830	v(C-S)
	586	O-M-O, M-O-M and M-OH bonds
CoUL, CoUP and CoUS	2846-2920	v(C-H) (-CH ₂ and -CH ₃)
	1550	v(C-O) (-COO ⁻ sym.)
	1410	v(C-O) (-COO ⁻ asym.)
	586	O-M-O, M-O-M and M-OH bonds

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Table S2. Mechanical properties to LDPE nanocomposites containing Ni/Al LDHs intercalated with dodecylsulfate, laurate, palmitate and stearate anions

Filler content / %	Young's modulus / MPa	Tensile strength / MPa	Elongation / %
NiUD			
0.0	141.4 ± 3.9	10.8 ± 0.3	71.0 ± 1.6
0.2	136.3 ± 4.6	10.7 ± 0.2	69.9 ± 1.5
0.5	122.5 ± 1.9	10.5 ± 0.3	67.3 ± 1.8
2	126.8 ± 8.7	9.8 ± 0.6	68.2 ± 1.5
5	137.9 ± 6.2	10.2 ± 0.5	66.5 ± 1.3
7	130.8 ± 8.9	10.2 ± 0.5	59.5 ± 2.4
NiUL			
0.0	141.4 ± 3.9	10.8 ± 0.3	71.0 ± 1.6
0.2	142.9 ± 4.1	11.6 ± 0.4	69.2 ± 1.3
0.5	123.4 ± 3.7	10.4 ± 0.2	68.1 ± 1.5
2	143.8 ± 2.7	11.1 ± 0.4	70.5 ± 3.0
5	134.5 ± 3.5	10.8 ± 0.2	68.9 ± 2.1
7	132.2 ± 1.2	11.0 ± 0.3	66.9 ± 2.3
NiUP			
0.0	141.4 ± 3.9	10.8 ± 0.3	71.0 ± 1.6
0.2	128.6 ± 0.6	10.9 ± 0.3	72.4 ± 4.2
0.5	128.1 ± 1.5	11.0 ± 0.4	70.3 ± 2.5
2	127.8 ± 1.3	11.0 ± 0.4	72.6 ± 2.1
5	127.7 ± 1.1	11.1 ± 0.3	70.8 ± 2.0
7	127.5 ± 1.6	11.1 ± 0.2	75.9 ± 3.5
NiUS			
0.0	141.4 ± 3.9	10.8 ± 0.3	71.0 ± 1.6
0.2	133.2 ± 7.4	11.2 ± 0.2	68.6 ± 1.3
0.5	127.9 ± 1.2	11.1 ± 0.2	73.7 ± 1.1
2	127.9 ± 1.2	11.1 ± 0.2	70.0 ± 3.1
5	145.4 ± 12.4	10.9 ± 0.4	76.4 ± 2.0
7	130.8 ± 6.5	11.0 ± 0.5	284.7 ± 9.7

Table S3. Mechanical properties to LDPE nanocomposites containing Co/Al LDHs intercalated with dodecylsulfate, laurate, palmitate and stearate anions

Filler content / %	Young's modulus / Mpa	Tensile strength / MPa	Elongation / %
CoUD			
0.0	141.4 ± 3.9	10.8 ± 0.3	71.0 ± 1.6
0.2	146.7 ± 1.8	11.0 ± 0.1	73.1 ± 2.0
0.5	147.1 ± 2.4	11.2 ± 0.4	72.0 ± 1.1
2	146.2 ± 2.5	11.2 ± 0.4	68.2 ± 1.5
5	144.1 ± 1.7	11.0 ± 0.4	67.6 ± 1.7
7	146.1 ± 1.4	11.1 ± 0.2	61.8 ± 1.4
CoUL			
0.0	141.4 ± 3.9	10.8 ± 0.3	71.0 ± 1.6
0.2	142.6 ± 2.8	10.9 ± 0.2	67.8 ± 2.7
0.5	139.5 ± 3.4	10.9 ± 0.3	63.8 ± 1.7
2	139.3 ± 4.7	10.8 ± 0.3	69.8 ± 5.3
5	140.7 ± 4.4	10.8 ± 0.1	67.1 ± 1.5
7	138.3 ± 4.8	10.9 ± 0.4	67.5 ± 3.2
CoUP			
0.0	141.4 ± 3.9	10.8 ± 0.3	71.0 ± 1.6
0.2	140.5 ± 1.6	10.9 ± 0.3	70.1 ± 1.0
0.5	139.4 ± 3.1	10.8 ± 0.2	66.0 ± 2.2
2	139.7 ± 1.0	11.1 ± 0.3	67.2 ± 2.5
5	141.4 ± 3.0	11.1 ± 0.4	64.4 ± 3.7
7	142.9 ± 8.6	10.9 ± 0.3	60.1 ± 3.1
CoUS			
0.0	141.4 ± 3.9	10.8 ± 0.3	71.0 ± 1.6
0.2	123.6 ± 2.1	10.8 ± 0.1	76.7 ± 2.4
0.5	122.1 ± 2.2	10.7 ± 0.4	77.3 ± 0.8
2	129.7 ± 2.7	10.8 ± 0.1	76.9 ± 1.6
5	139.6 ± 1.4	10.6 ± 0.2	70.0 ± 2.5
7	121.0 ± 1.7	10.5 ± 0.3	75.8 ± 1.5

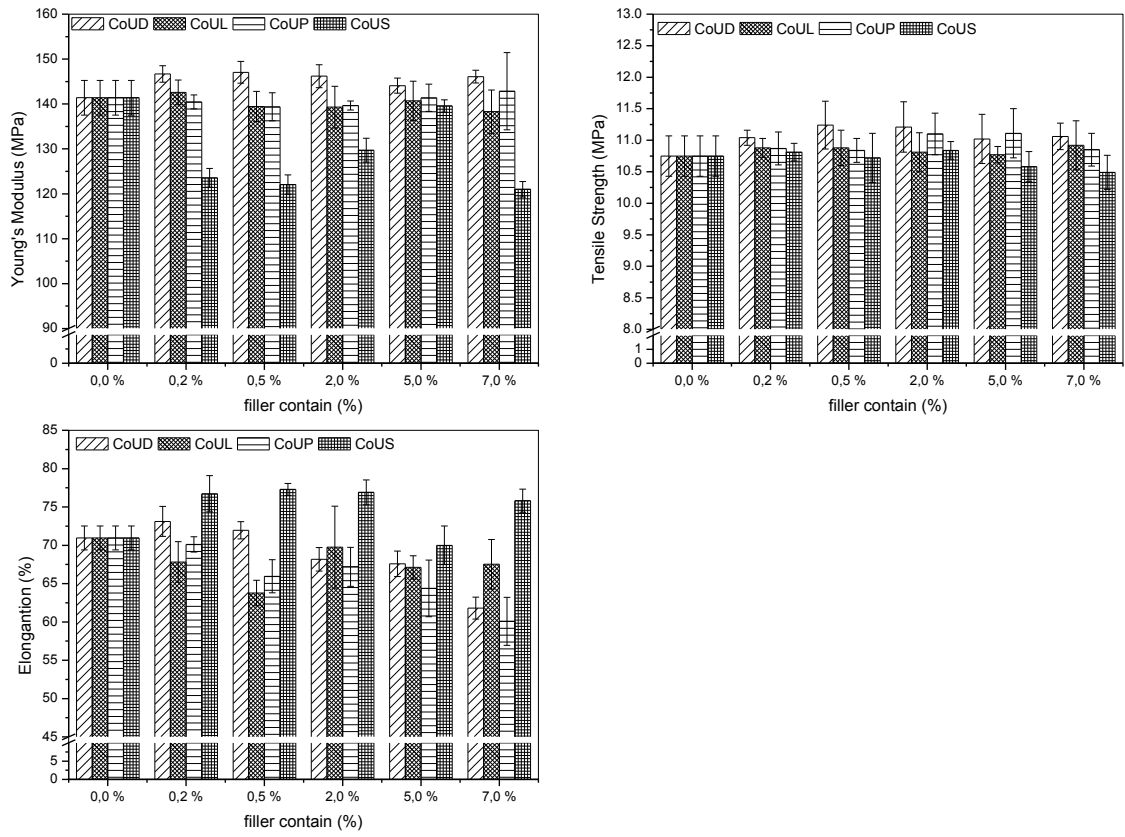


Figure S1. Mechanical properties to LDPE composites containing Co/Al LDHs intercalated with dodecylsulfate, laurate, palmitate and stearate anions.