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Supporting Information

Table S1 Electrical conductivity reported for various CNT/polymer nanocomposites with high CNT loadings(\geq 10 wt.%). This table enables a direct comparison between the conductivity of the nanocompositesreported in the literature with the fabricated CNT/PLA nanocomposites in the current study.

Polymer	CNT concentration (wt.%)	Mixing technique	Conductivity (S.m ⁻¹)	Ref.
UHMWPE	10	Solution mixing gelation/crystallization	11	[1]
Polyetherimide	10	Ball milling	2 x 10 ⁻³	[2]
Natural rubber	10	Roll milling	1	[3]
Ероху	10	Solution mixing	3 x 10 ⁻³	[4]
SBS	12	Solution casting	2 x 10 ²	[5]
PA	13	Solution mixing	1 x 10 ⁻²	[6]
UHMWPE	15	Solution mixing	6	[7]
PC	15	Melt extrusion	10	[8]
PC	15	Melt mixing	10 ³	[9]
PC	15	Melt mixing	10	[10]
PC	15	Melt extrusion	10 ²	[11]
PEDOT	15	In situ polymerization	1.9 x 10 ³	[12]
HDPE	18	Melt mixing	10 ³	[13]
РРҮ	25	In situ polymerization	2.3 x 10 ³	[14]
PU	27	Solution casting	2 x 10 ³	[15]
P3HT	30	Solution mixing	0.5	[15]
РРҮ	30	In situ inverse microemulsion	40	[16]
PmPV	36	Solution mixing	3	[17]
РРҮ	50	In situ polymerization	1.6 x 10 ³	[18]
PLA	10	Ball milling	1.4 x 10 ³	
PLA	20	Ball milling 2.1 x 10 ³		This
PLA	30	Ball milling	5.1 x 10 ³	work
PLA	40	Ball milling	1.7 x 10 ⁴	



Fig. S1 Printing patterns and SEM images of (a) open window, (b) closed window, and (c) zigzag configurations. The third and fourth layers in closed window configuration are placed in between first and second layers in order to close the windows formed from the printing of the first two layers.

Polymer	CNT concentration (wt.%)	Thickness (mm)	EMI SE (dB)	EMI SE/Thickness (dB/mm)	Ref.
PU	10	1.5	29	19.3	[19]
PU	10	2.5	41.6	16.6	[20]
PE	10	1	50	50	[21]
PS	10	2	48	24	[22]
Ероху	15	1.5	49	32.7	[23]
PS	20	2	64	32	[22]
PU	76	0.8	80	100	[24]
PLA	10	0.40 ± 0.05	38.7	96.7	-1
PLA	20	0.40 ± 0.05	47.5	118.7	This
PLA	30	0.40 ± 0.05	55.6	139	WORK

Table S2 EMI SE of various CNT/polymer nanocomposites with high CNT loadings (≥10 wt.%) reported in literature. This table enables a comparison between the EMI SE of the reported nanocomposites with the EMI SE of the fabricated CNT/PLA, considering the thickness of the nanocomposite films.



Fig. S2 EMI SE of the CNT/PLA with CNT concentrations up to 5 wt.%, showing nanocomposites' EMI SE more clearly at low CNT concentrations.



Fig. S3 The EMI SE normalized to the mass of the scaffolds as a function of the IFS of scaffolds. The CNT concentration in the nanocomposite was 10 wt.% and the scaffolds were printed in four layers. The graph shows that increasing the IFS did not have a significant influence on the specific EMI SE, indicating the slight decrease in EMI SE by increasing the IFS (Fig. 2c) was mainly related to the decrease in the mass of scaffolds as EMI shields.

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