Titre: Title:	Three-dimensional printing of highly conductive polymer nanocomposites for EMI shielding applications. Supplément
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Supporting Information

Table S1 Electrical conductivity reported for various CNT/polymer nanocomposites with high CNT loadings (≥10 wt.%). This table enables a direct comparison between the conductivity of the nanocomposites reported 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	2×10^{-3}	[2]
Natural rubber	10	Roll milling	1	[3]
Epoxy	10	Solution mixing	3×10^{-3}	[4]
SBS	12	Solution casting	2×10^{2}	[5]
PA	13	Solution mixing	1×10^{-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	1.9×10^{3}	[12]
HDPE	18	Melt mixing	10^{3}	[13]
PPY	25	In situ polymerization	2.3×10^{3}	[14]
PU	27	Solution casting	2×10^{3}	[15]
P3HT	30	Solution mixing	0.5	[15]
PPY	30	In situ inverse microemulsion	40	[16]
PmPV	36	Solution mixing	3	[17]
PPY	50	In situ polymerization	1.6×10^{3}	[18]
PLA	10	Ball milling	1.4×10^{3}	**This work**
PLA	20	Ball milling	2.1×10^{3}	
PLA	30	Ball milling	5.1×10^{3}	
PLA	40	Ball milling	1.7×10^{4}	

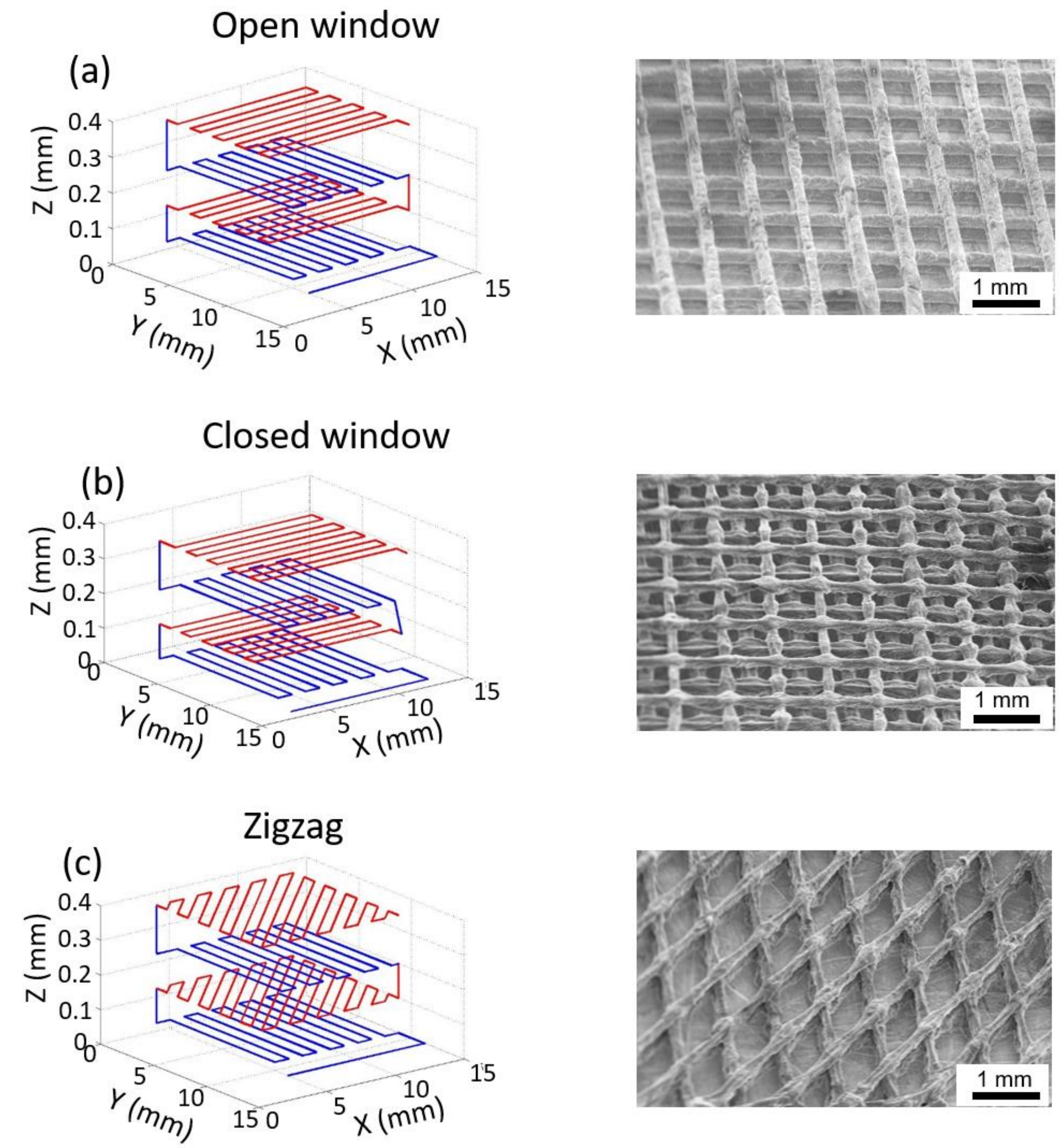

Fig. S1 Printing patterns and SEM images of (a) open window, (b) closed window, and (c) zigzag configurations. The third and fourth layers in closed window configuration are placed in between first and second layers in order to close the windows formed from the printing of the first two layers.

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.

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]
Epoxy	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	**This work**
PLA	20	0.40 ± 0.05	47.5	118.7	
PLA	30	0.40 ± 0.05	55.6	**139**	

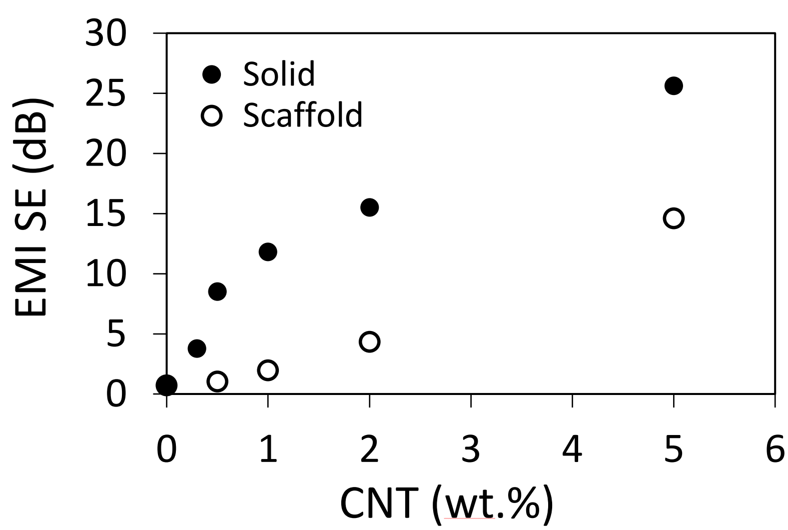

Fig. S2 EMI SE of the CNT/PLA with CNT concentrations up to 5 wt.%, showing nanocomposites' EMI SE more clearly at low CNT concentrations.

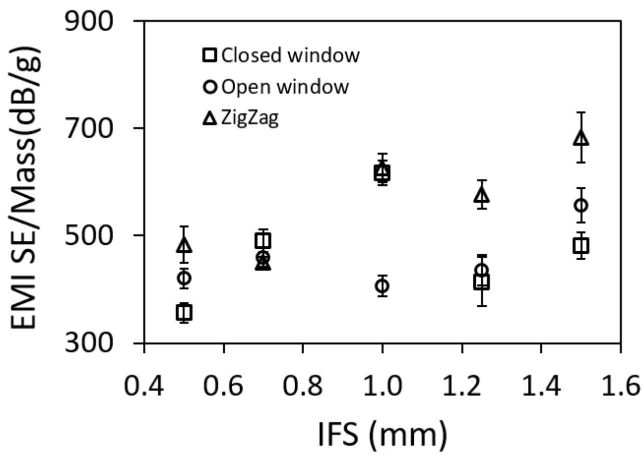

Fig. S3 The EMI SE normalized to the mass of the scaffolds as a function of the IFS of scaffolds. The CNT concentration in the nanocomposite was 10 wt.% and the scaffolds were printed in four layers. The graph shows that increasing the IFS did not have a significant influence on the specific EMI SE, 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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