

Supplementary Information

Mechanical and Electrical Properties of High Performance MWCNT/Polycarbonate Composites Prepared by Industrial Viable Twin Screw Extruder with Back Flow Channel

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Table S1: Tensile parameters of MWCNT/PC composites.

Sample	Elastic modulus	Tensile strength	Elongation
	E_t (MPa)	σ_{tm} (MPa)	(%)
Pristine PC	1376 ± 50	66.6 ± 0.83	75.2 ± 6
PC/0.5CNT	1420 ± 31	69.87 ± 0.97	72.05 ± 9.4
PC/1CNT	1498 ± 50	73.84 ± 1.07	66.72 ± 7.26
PC/2CNT	1574 ± 37	79.6 ± 0.83	47.64 ± 7.82
PC/5CNT	1579 ± 33	72.15 ± 1.6	38.0 ± 6.72
PC/10CNT	1587 ± 52	71.83 ± 1.7	25.55 ± 8

Table S2: Flexural parameters of MWCNT/PC composites.

Sample	Flexural Modulus	Flexural Strength	Flexural Strain
	E_f (MPa)	σ_{fm} (MPa)	ϵ_{fm} (%)
Pristine PC	2143 ± 53	96.0 ± 3	8.3 ± 0.5
PC/0.5CNT	2234 ± 41	99.0 ± 2	8.1 ± 0.4
PC/1CNT	2302 ± 51	103.4 ± 2	7.9 ± 0.5
PC/2CNT	2398 ± 50	110.0 ± 3	7.8 ± 0.2
PC/5CNT	2401 ± 34	107.0 ± 1	7.6 ± 0.2
PC/10CNT	2419 ± 40	106.5 ± 2	6.4 ± 0.3

Table S3: Electrical conductivity parameters for different composite samples.

Wt. % of MWCNT	Electrical Conductivity	Log(σ)
Pure PC	8.6 X10⁻¹⁵	-14.06
0.5 wt.% MWCNT/PC	1.2X10⁻¹⁴	-13.90
1 wt.% MWCNT/PC	1.4X10⁻¹³	-12.85
2 wt.% MWCNT/PC	7.9X10⁻⁶	-5.10
5 wt.% MWCNT/PC	3.5X10⁻³	-2.45
10 wt.% MWCNT/PC	1.3X10⁻²	-1.89

Table S4: Total shielding effectiveness at 17.5 GHz.

Wt. % of MWCNT	Total Shielding Effectiveness
0.5 wt.% MWCNT/PC	-27.17
1 wt.% MWCNT/PC	-14.01
2 wt.% MWCNT/PC	-6.24
5 wt.% MWCNT/PC	-3.49
10 wt.% MWCNT/PC	-2.0