Supplementary Information

Properties of differentiated SH-SY5Y grown on carbon-based materials

Sae-Bom Yoon[‡*], Geonhee Lee[§*], Sung Bum Park[‡], Heeyeong Cho[‡], Jeong-O Lee[§†], Byumseok Koh[‡†]

[‡]*Biotechnology and Therapeutics Division, Korea Research Institute of Chemical Technology, 141 Gajeong-ro, Yuseong-gu, Daejeon 34114, Republic of Korea*

[§]*Advanced Materials Division, Korea Research Institute of Chemical Technology, 141 Gajeong-ro, Yuseong-gu, Daejeon 34114, Republic of Korea*

[*] Co-first authors

[†] Co-corresponding authors

KEYWORDS: CNT, graphene, matrix, neural differentiation, SH-SY5Y, viability, proliferation

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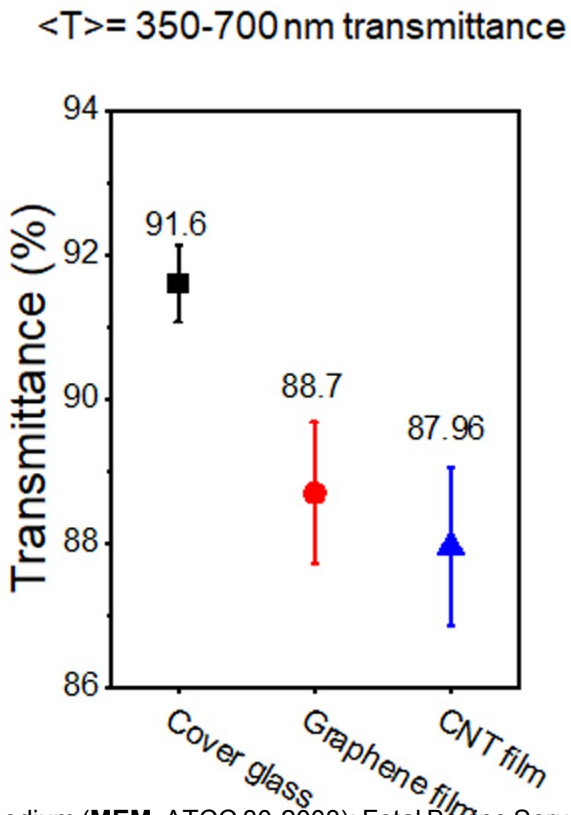
Tables and Figures

Table S1. List of reagents used to differentiate SH-SY5Y to neurons.

Basic Growth Media	Differentiation media #1
MEM	MEM
15% FBS	2.5% FBS
1x Pen/Strep	1x Pen/Strep
2 mM glutamine	2 mM glutamine
	10 μM RA
Differentiation media #2	**Differentiation media #3**
MEM	Neurobasal
1% FBS	1x B-27
1x Pen/Strep	20 m M KCl
2 mM glutamine	1x Pen/Strep
10 μM RA	2 mM Glutamax I
	50 ng/ml BDNF
	2 mM db-cAMP
	10 μM RA

Figure S1. Average transmittance obtained each sample in 350-700 nm wavelength.



Minimum essential medium (**MEM,** ATCC 30-2003); Fetal Bovine Serum (**FBS**, Thermo Fisher Scientific 12484-028); Penicillin Streptomycin (**Pen/Strep**, Thermo Fisher Scientific 15140-122); Retinoic acid (**RA**, Sigma-Aldrich R2625); Neurobasal-A medium (**Neurobasal**, Thermo Fisher Scientific, 10888-022) **B-27** (Thermo Fisher Scientific 17504-044); **KCl** (Sigma-Aldrich P9541); **Glutamax I** (Thermo Fisher Scientific, 35050-061); **BDNF** (Sigma-Aldrich SRP3014); N6,2′-O-Dibutyryladenosine 3′,5′-cyclic monophosphate (**db-cAMP**, Sigma-Aldrich D0627)

Figure S2. Viability and morphological variance of undifferentiated SH-SY5Y on the control, CNT

network and graphene film. (A) Bright field images. (B) Viability. (X) Apoptotic rate. (D) Cell spreading area. No distinguishable axonal growth were observed on undifferentiated SH-SY5Y grown on the control, CNT and graphene film. Error bars represent the standard deviation of three replicates. Scale bar represents 100 μm.