

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21

## Supplementary Information

### **Enhanced dispersibility and cellular transmembrane capability of single-wall carbon nanotubes by polycyclic organic compounds as chaperon**

Lirong Wang<sup>b</sup>, Lihua Zhang<sup>a</sup>, Xue Xue<sup>a</sup>, Guanglu Ge<sup>b</sup> and Xingjie Liang<sup>a\*</sup>

<sup>a</sup>Chinese Academy of Sciences Key Laboratory for Biological Effects of Nanomaterials  
and Nanosafety, National Center for Nanoscience and Technology of China, Beijing,  
100190, China

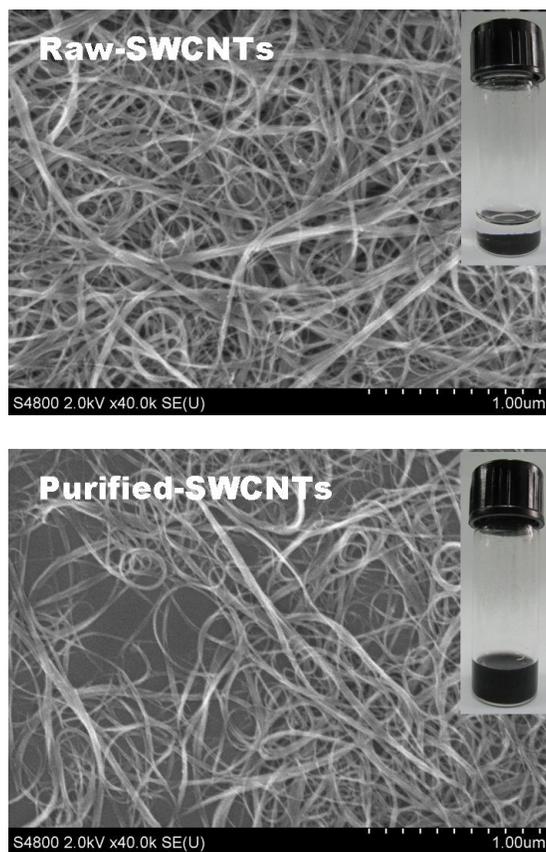
<sup>b</sup>Chinese Academy of Sciences Key Laboratory of Standardization and Measurement for  
Nanotechnology, National Center for Nanoscience and Technology of China, Beijing,  
100190, China

---

\* Corresponding author. Tel: +86-10-82545569; Fax: +86-10-62656765.

E-mail address: liangxj@nanoctr.cn (X. Liang)

1

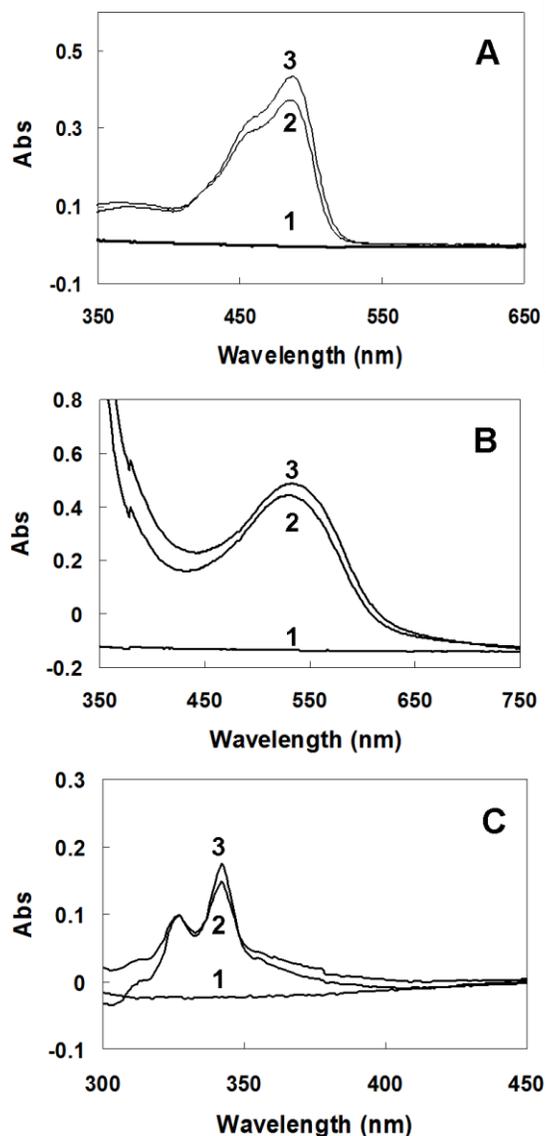


2

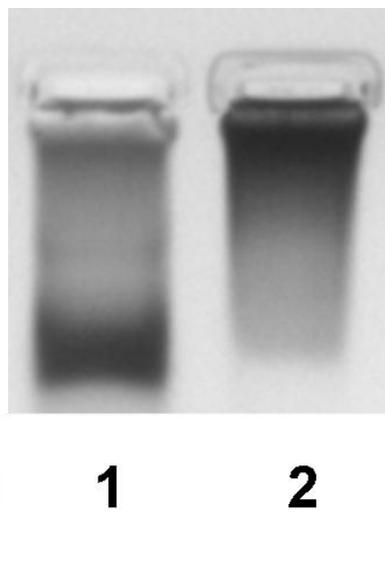
3

4 **Figure S1** SEM of Raw-SWCNTs and Purified-SWCNTs dispersed in ethanol on silicon  
5 substrate. Insert: Photos of Raw-SWCNTs and Purified-SWCNTs solution.

6



1  
2 **Figure S2** UV-visible spectra of (A) 1/5 diluted supernatant solutions of 0.5 mg/mL SWCNTs  
3 (curve 1) and 0.5 mg/mL SWCNTs reacted with 500  $\mu$ M FITC (curve 2), and 500  $\mu$ M free FITC  
4 (curve 3). (B) 1/5 diluted supernatant solutions of 0.5 mg/mL SWCNTs (curve 1) and 0.5 mg/mL  
5 SWCNTs reacted with 500  $\mu$ M EB (curve 2), and 500  $\mu$ M free EB (curve 3). (C) 1/20 diluted  
6 supernatant solutions of 0.5 mg/mL SWCNTs (curve 1) and 0.5 mg/mL SWCNTs reacted with  
7 500  $\mu$ M PBA (curve 2), and 500  $\mu$ M free PBA (curve 3). The data represented three separated  
8 experiments.



1

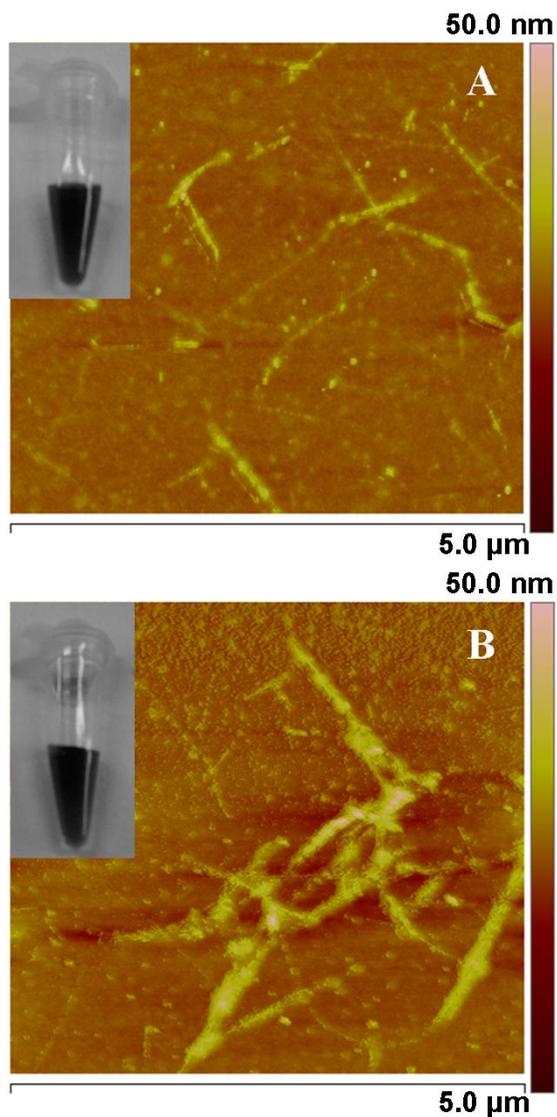
2 **Figure S3** Gel electrophoresis of SWCNT-Rh123 with and without the existence of 100 mM

3 PBS. 1: 0.5 mg/ml SWCNTs reacted with 500  $\mu$ M Rh123, 2: 0.5 mg/ml SWCNTs reacted with

4 500  $\mu$ M Rh123 in existence of 100 mM PBS.

5

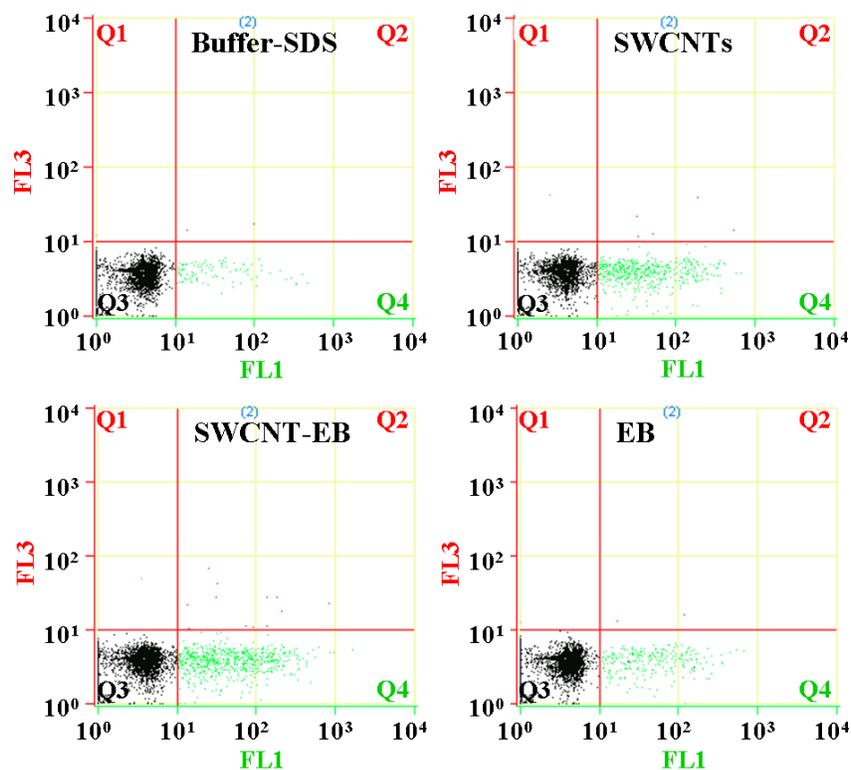
1



2

3 **Figure S4** AFM images of (A) SWCNTs binding with Rh123 (SWCNT-Rh123) conjugate and  
4 (B) pristine SWCNTs coating with SDS (SWCNTs) in PBS-serum solution prepared on mica  
5 modified with PDDA. Inset: Photos of SWCNT-Rh123 and SWCNTs in PBS-serum solution in  
6 several weeks.

7

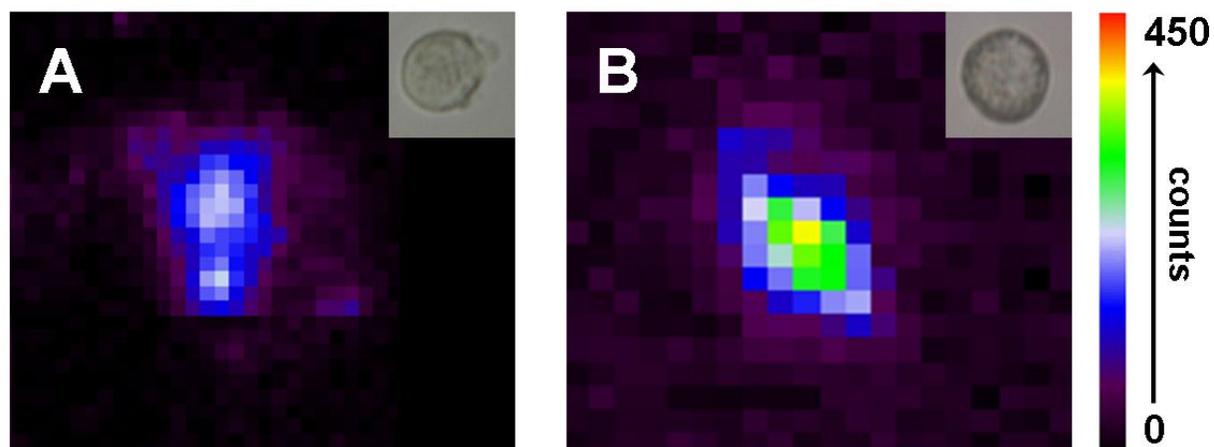


1  
2 **Figure S5** Flow cytometry (FACS) images of RTE cells treated with SDS, SWCNTs,  
3 SWCNT-EB, and free EB, separately. RTE cells were incubated with 0.01 % SDS, 10  $\mu\text{g/ml}$   
4 SWCNTs, SWCNT-EB and 10  $\mu\text{M}$  EB, separately, for 24 hours with Alexa Fluor 488 annexin V / PI  
5 Kit.

6

7

1



2

3 **Figure S6** G-mode Raman intensity maps of single RTE cell after incubation with 10 µg/ml  
4 SWCNT-EB for 24 hours (A) in 4 °C and (B) after pretreatment with NaN<sub>3</sub>, merged with  
5 microscope images of RTE cell. Other conditions are same in Figure 6.

6

7

- 1 **Table S1** Flow cytometry (FACS) data of RTE cells treated with SDS, SWCNTs, SWCNT-EB,  
2 and free EB, separately. RTE cells were incubated with 0.01 % SDS, 10 µg/ml SWCNTs,  
3 SWCNT-EB and 10 µM EB, separately, for 24 hours with Alexa Fluor 488 annexin V / PI Kit.  
4 Q1: fractional cells; Q2: dead cells; Q3: normal cells; Q4: apoptosis cells.

	Buffer-SDS	SWCNTs	SWCNT-EB	EB
Q1	0.01%	0.02%	0.01%	0.01%
Q2	0.02%	0.11%	0.18%	0.02%
Q3	98.78%	90.2%	89.97%	97%
Q4	1.19%	9.67%	9.84%	2.96%

5

6