Hydrophobic Carbon Nanodots with Rapid Cell Penetrability and Tunable Photoluminescence Behavior for in Vitro and in Vivo Imaging

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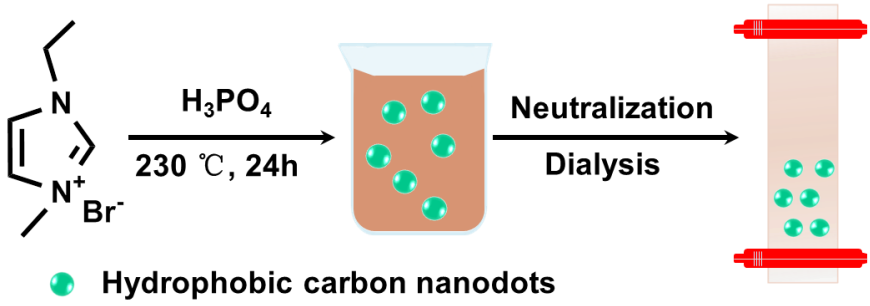

Scheme S1. The preparation process of hydrophobic carbon nandots.

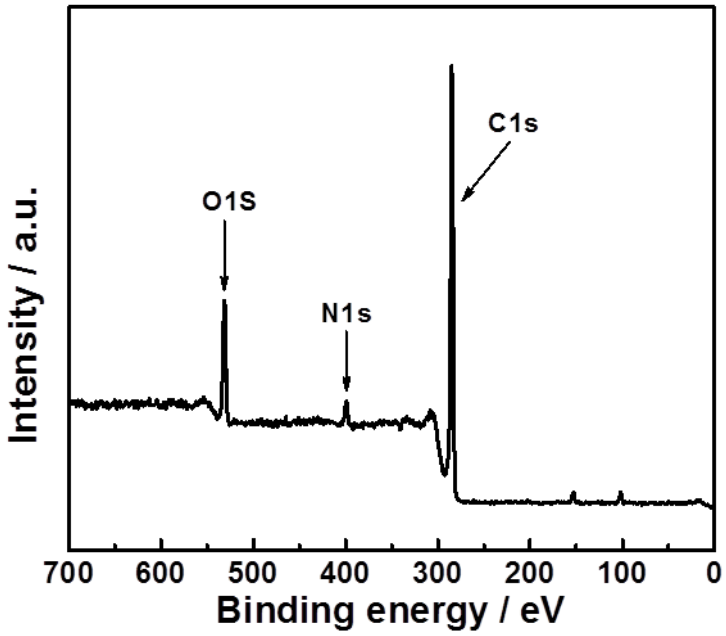

Figure S1. Full scan XPS results of hydrophobic CNDs.

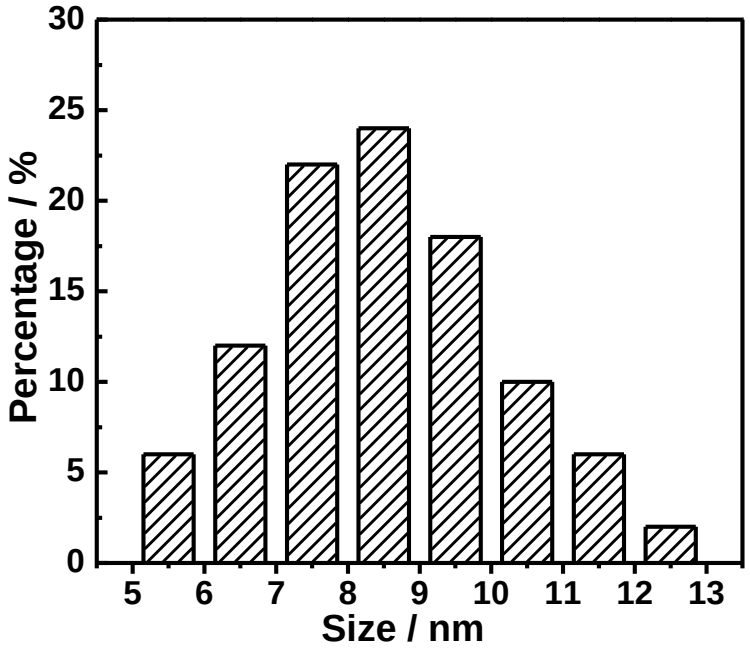

Figure S2. Size distribution histogram of hydrophobic CNDs.

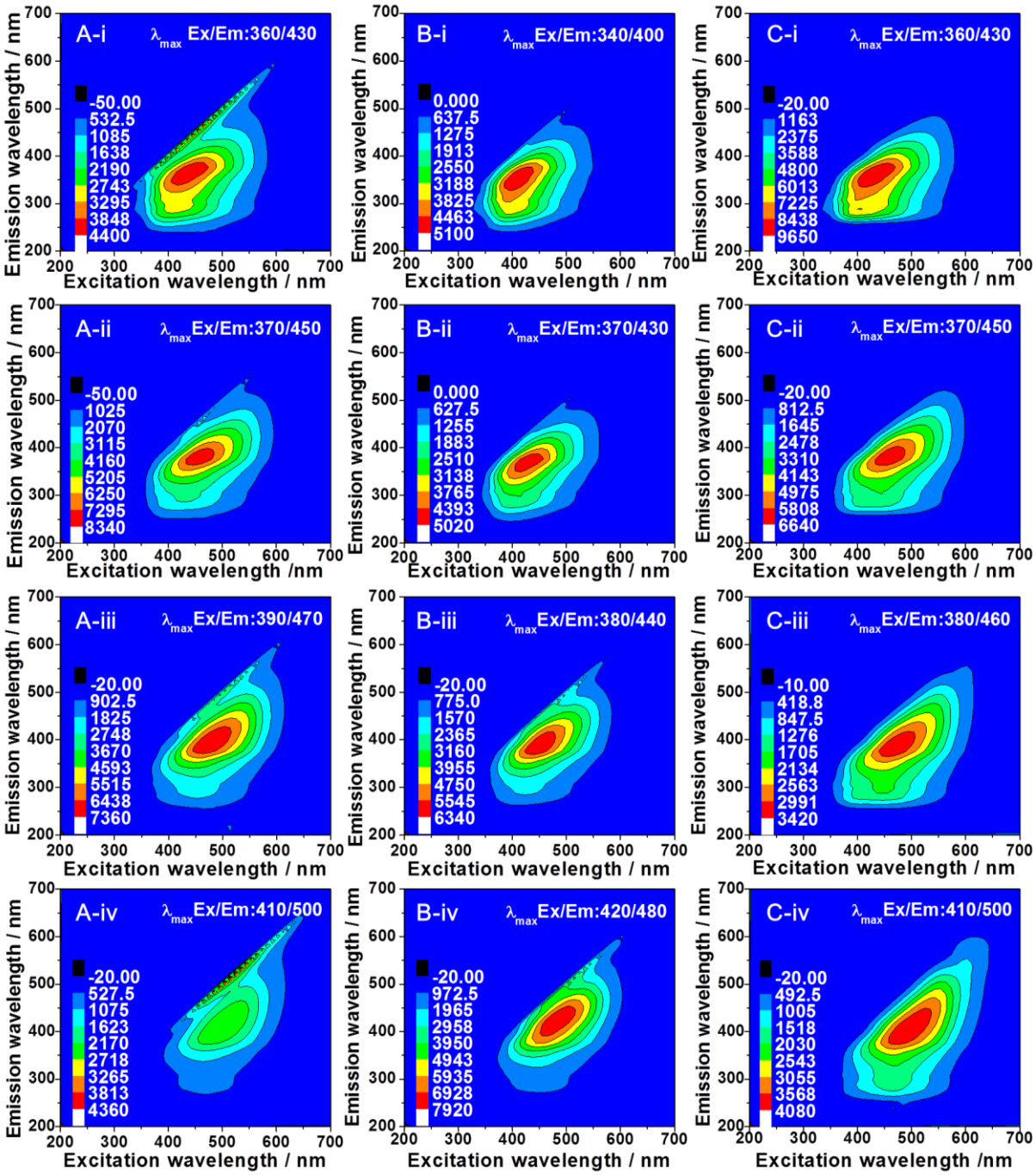

Figure S3. Concentration-dependent photoluminescence property of the hydrophobic CNDs in different organic solvents: (A) acetonitrile, (B) cyclohexane, (C) dimethyl sulfoxide; (i) 0.2 mg mL^{-1}, (ii) 0.5 mg mL^{-1}, (iii) 1.0 mg mL^{-1}, (iv) 2.0 mg mL^{-1}.

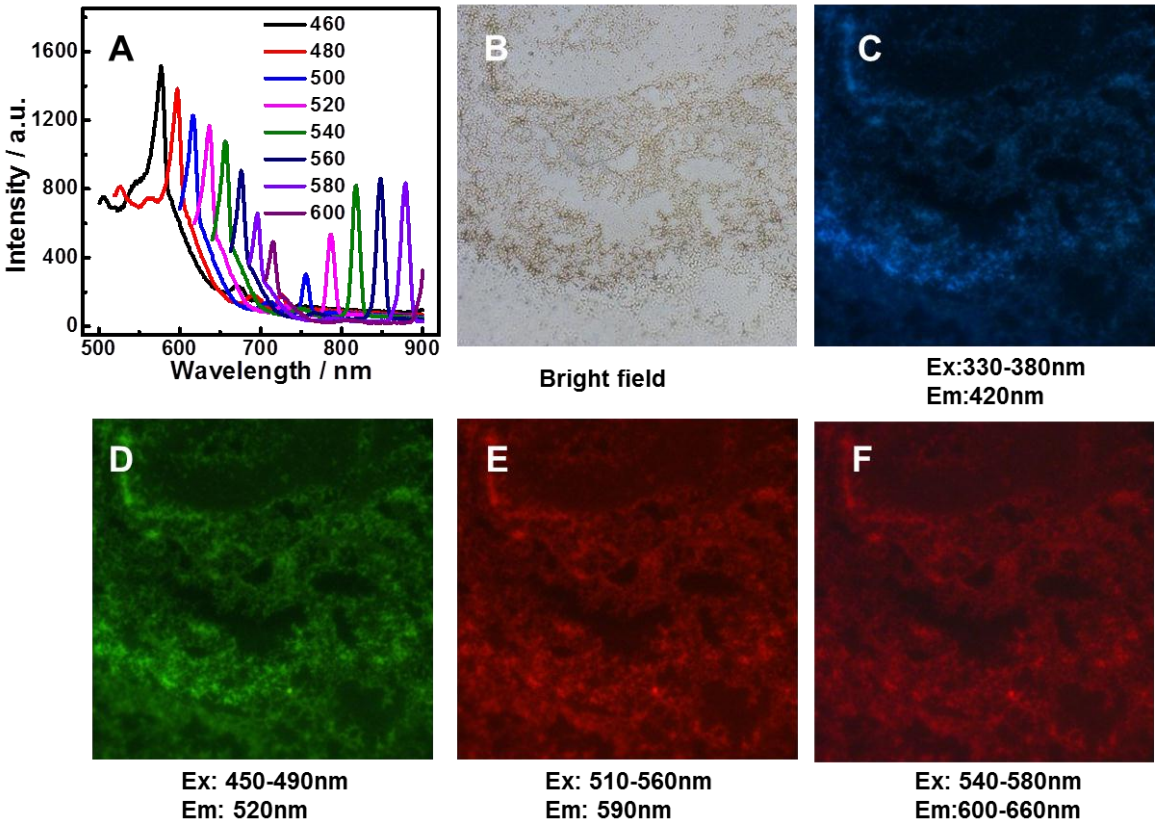

Figure S4. The fluorescence spectra in solid state (A) and fluorescent images of solid hydrophobic carbon nanodots (B-F) irradiated at various excitation/emission wavelengths. The legends in (A) represent different excitation wavelengths.

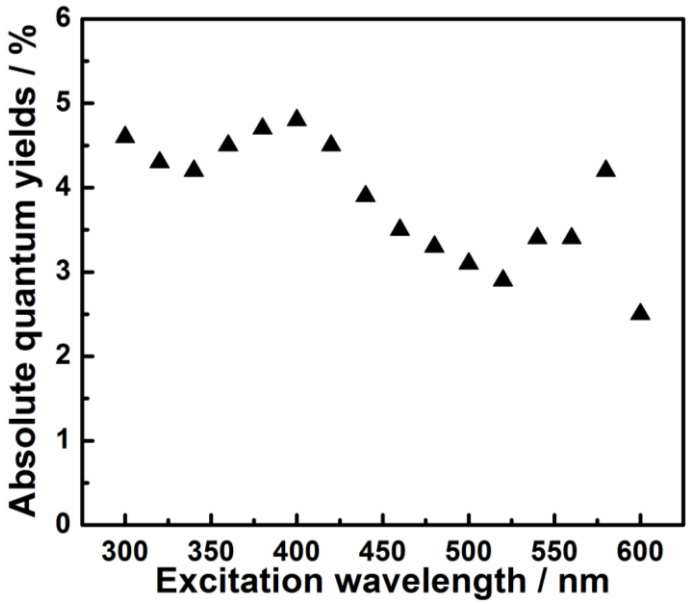

Figure S5. The fluorescence quantum yields of hydrophobic CNDs at various excitation wavelengths in the range of 300-600 nm.

Table S1. Absolute quantum yields of hydrophobic CNDs at various excitation wavelengths.

Excitation wavelength /nm	300	320	340	360	380	400	420	440
Absolute quantum yields	4.6	4.3	4.2	4.5	4.7	4.8	4.5	3.9
Excitation wavelength /nm	460	480	500	520	540	560	580	600
Absolute quantum yields	3.5	3.3	3.1	2.9	3.4	3.4	4.2	2.5

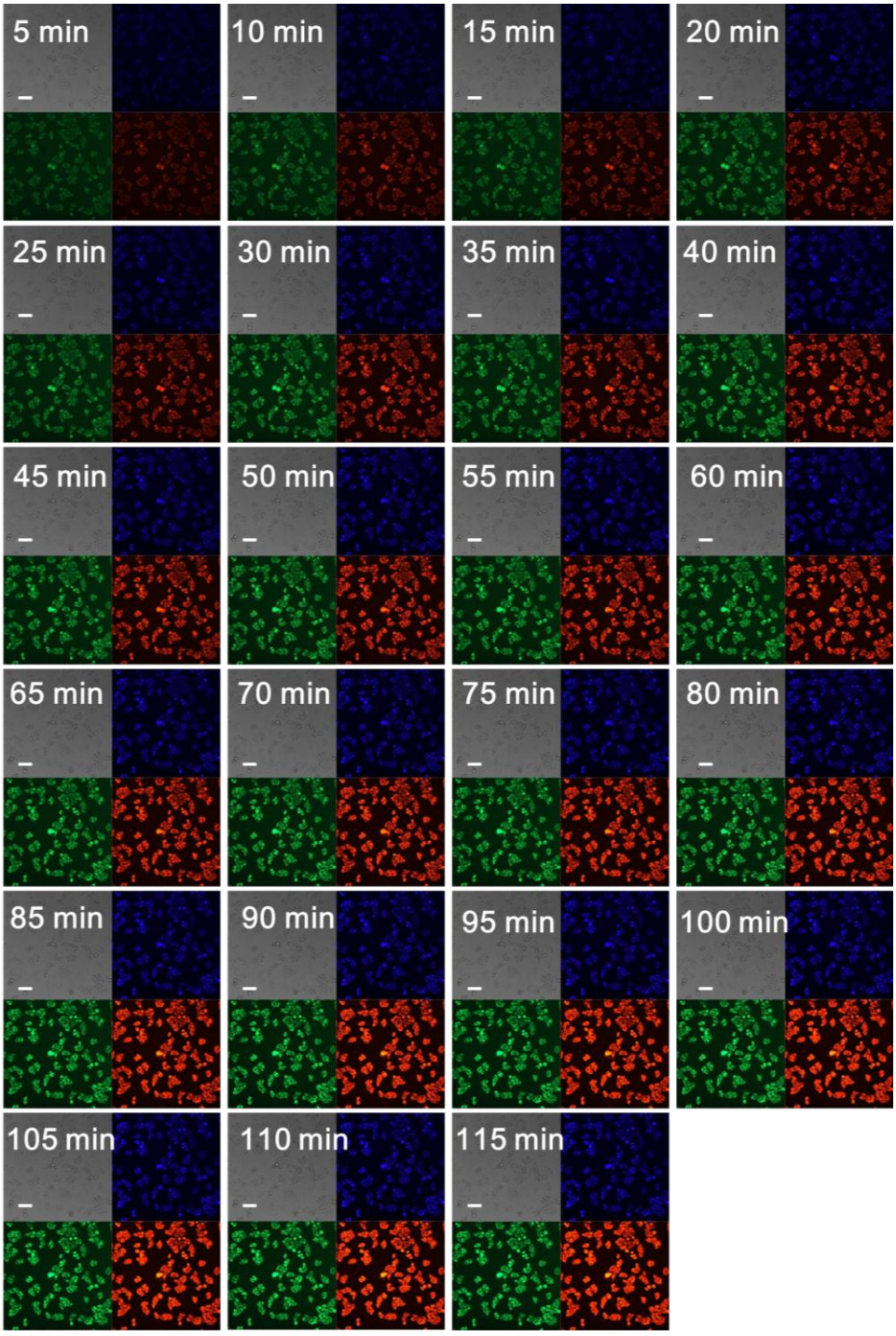

Figure S6. The fluorescent images of HeLa cells recorded every 5minutes after adding hydrophobic CNDs into culture medium. Every picture is taken at bright field (top left), with excitation/emission at 405/415-475 nm (top right), 488/500-550 nm (bottom left), 561/580-650 nm (bottom right).The scale bars represent 100 μm

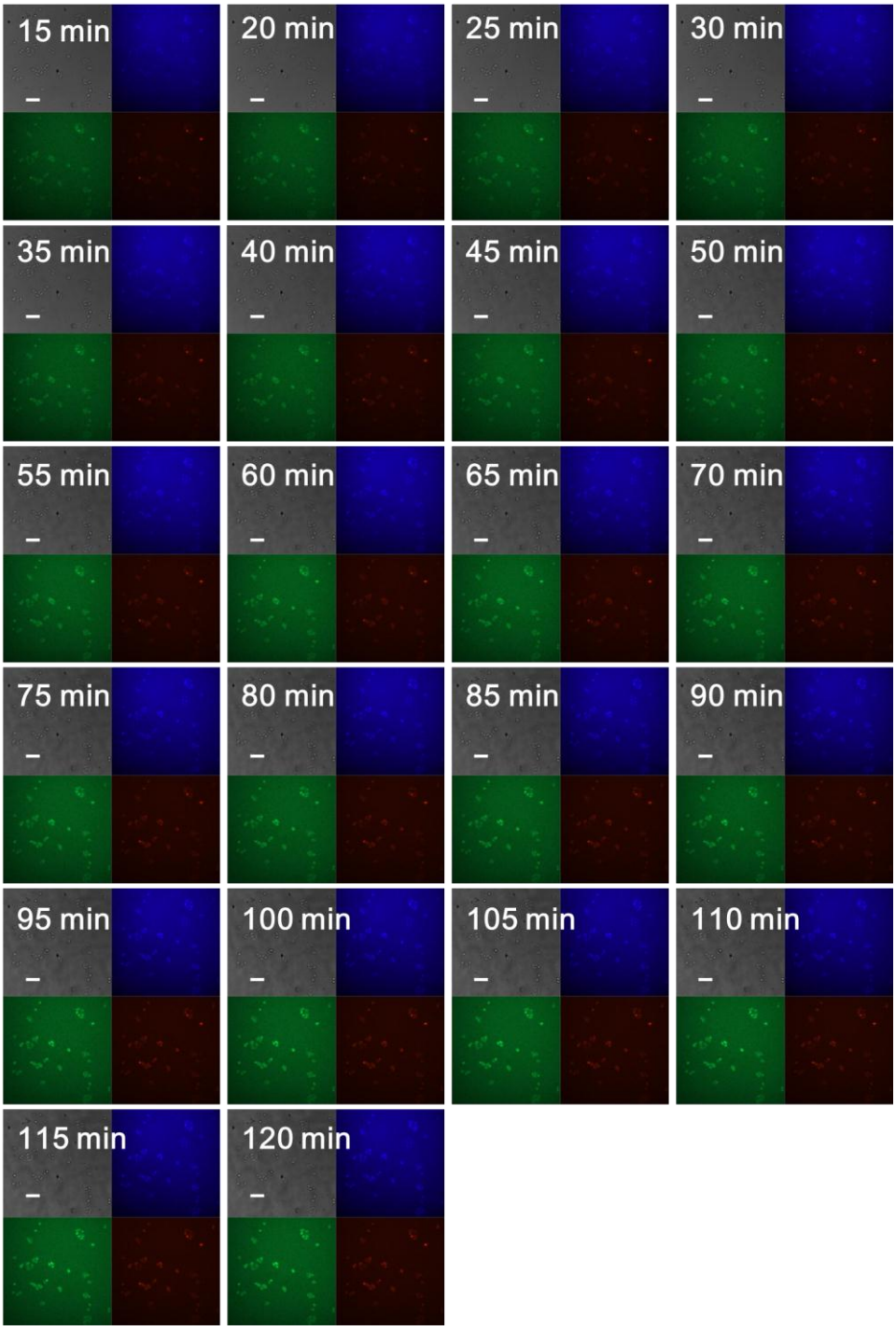

Figure S7. The fluorescent images of HeLa cells recorded every 5minutes after adding hydrophilic CNDs into culture medium. Every picture is taken at bright field (top left), with excitation/emission at 405/415-475 nm (top right), 488/500-550 nm (bottom left), 561/580-650 nm (bottom right). The scale bars represent 100 μm.

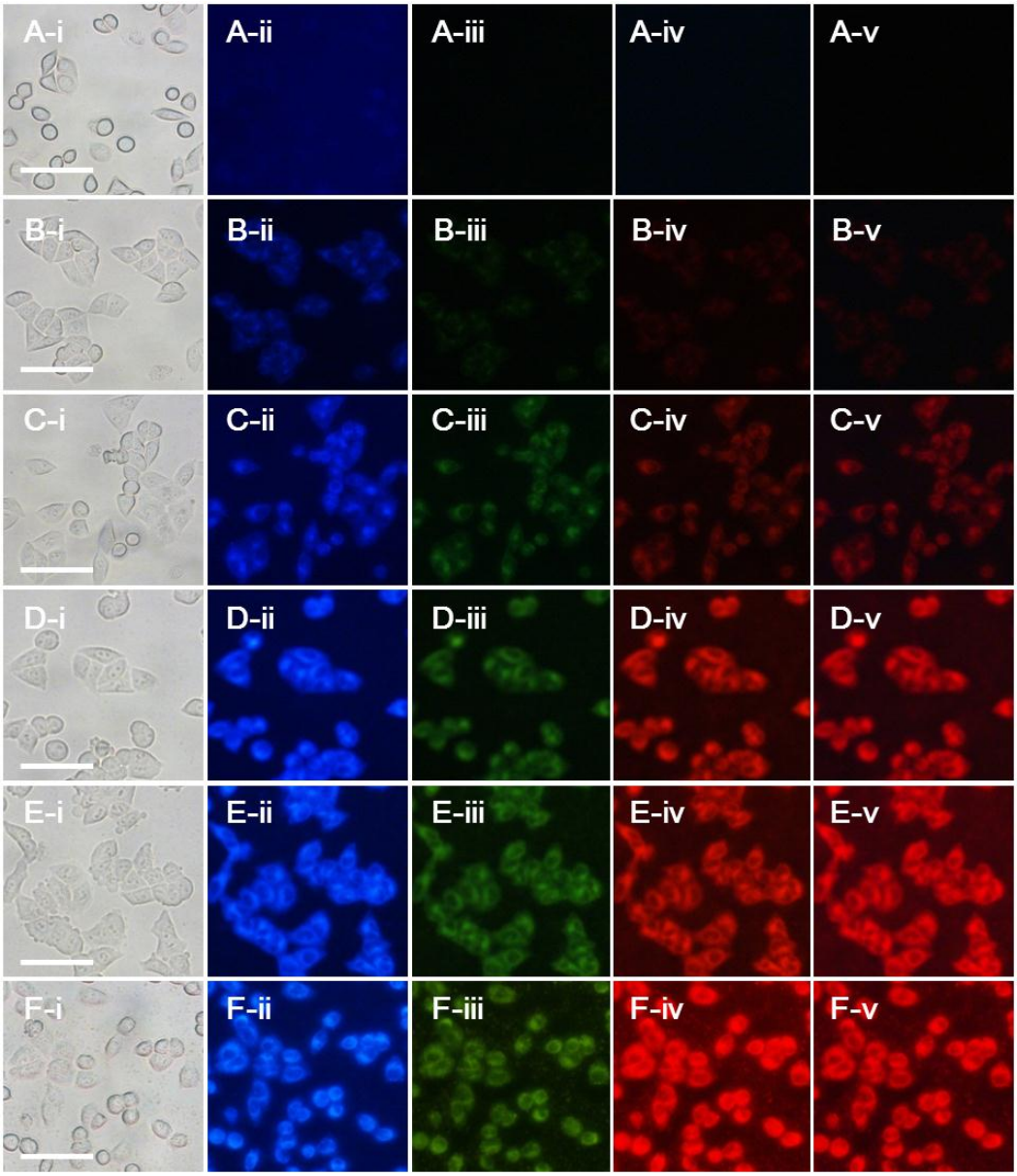

Figure S8. The fluorescence images of HeLa cells incubated with hydrophobic carbon nanodots for 3h at various concentration levels. (A) 0 μg mL^{-1}, (B) 1.5 μg mL^{-1}, (C) 5.0 μg mL^{-1}, (D) 10.0 μg mL^{-1}, (E) 20.0 μg mL^{-1}, (F) 50.0 μg mL^{-1}. The images are recorded at the following excitation/emission wavelengths: (i) bright field, (ii) 330-380/420 nm, (iii) 450-490/520 nm, (iv) 510-560/590 nm, (v) 540-580/600-660 nm. The scale bars represent 100 μm.

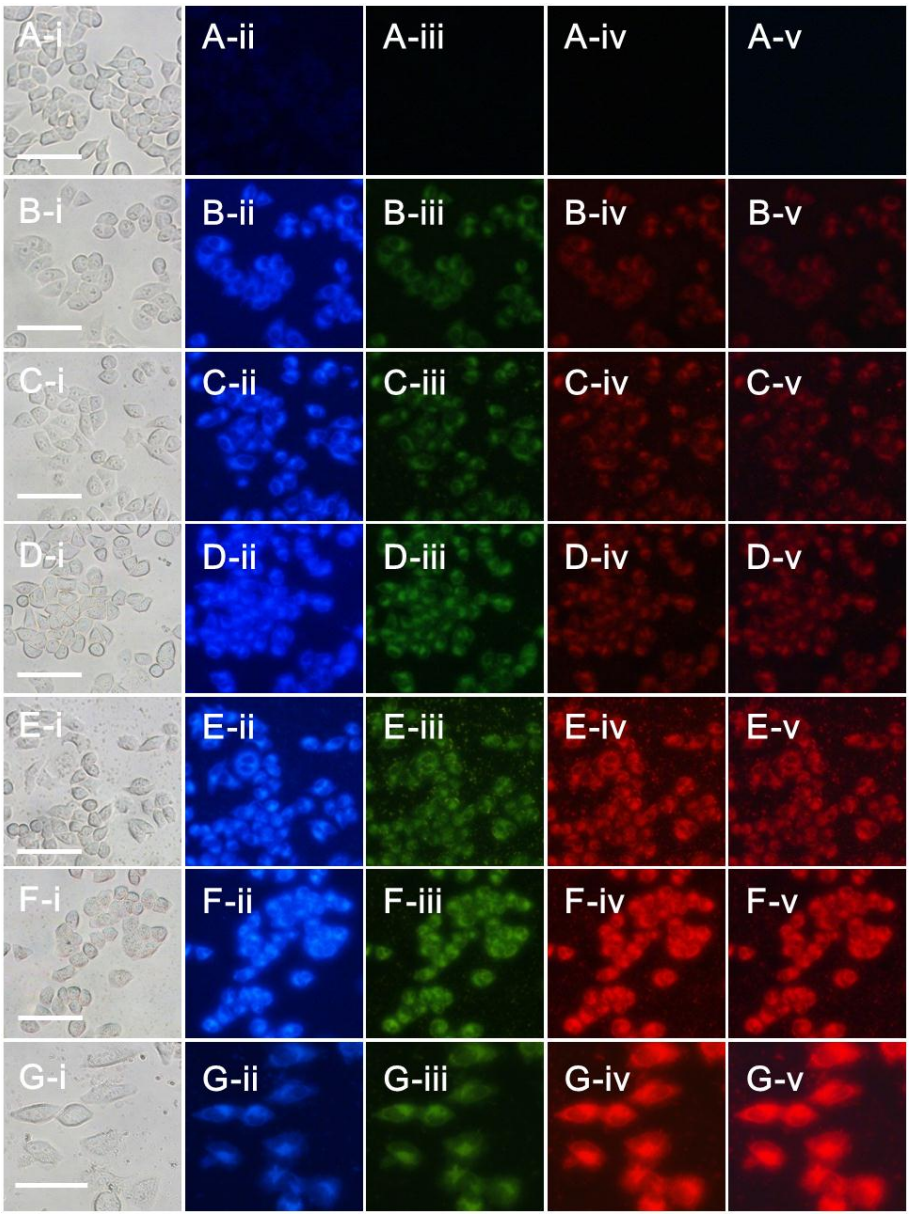

Figure S9. The fluorescence images of HeLa cells incubated with hydrophobic carbon nanodots for different times at (A) 0 h, (B) 0.5 h, (C) 1h, (D) 2 h, (E) 3 h, (F) 5 h, (G) 10 h. The images are recorded at the following excitation/emission wavelengths: (i) bright field, (ii) 330-380/420 nm, (iii) 450-490/520 nm, (iv) 510-560/590 nm, (v) 540-580/600-660 nm. The scale bars represent 100 μm.

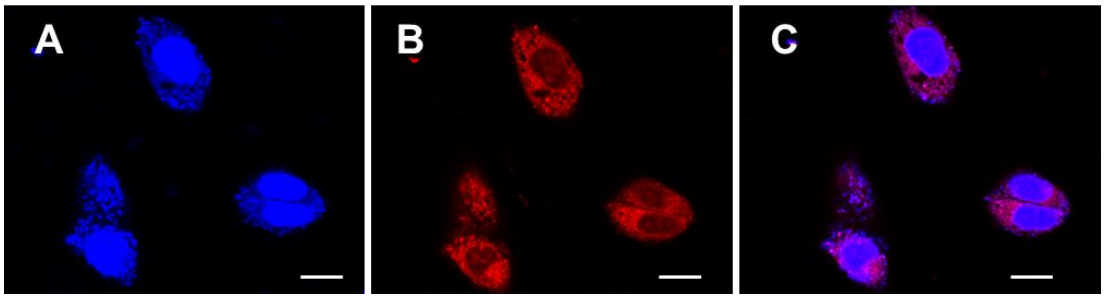

Figure S10. The fluorescence images of HeLa cells incubated with hydrophobic CNDs and stained with DAPI. (A) Excitation/emission at 405/420-480 nm; (B) Excitation/emission at 635/655-755 nm; (C) the merge of A and B. The scale bars represent 20 μm.

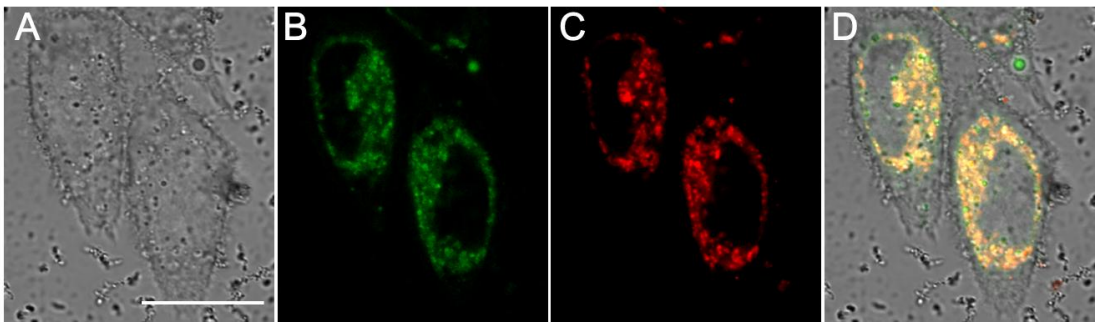

Figure S11. Images of HeLa cells incubated with hydrophobic CNDs and stained with lyso-tracker red, by taking a bright field (A), with excitation/emission wavelength of (B) 488/520-560nm, (C) 561/585-600 nm, (D) the merge of (B) and (C). The scale bar in A represents 20 μm.