Electronic Supplementary Information for

Novel supramolecular assemblies of repulsive DNA-anionic porphyrin complexes based on covalently modified multi-walled carbon nanotubes and cyclodextrins

Jingheng Ning, [a,c] Yufang Wang, [b] Qi Wu, [a] Xuefeng Zhang,[c] Xianfu Lin*[a] and Hongbin Zhao*[b]

*[a]*Department of Chemistry, Zhejiang University, Hangzhou, Zhejiang 310027, P. R. China. Fax: + 86 571 87952618; Tel: + 86 571 87951588; E-mail: llc123@zju.edu.cn*
*[b]*College of Chemistry and Environmental Engineering, Dongguan University of Technology, Dongguan, Guangdong 523808, P. R. China. Fax: + 86 731 85040753; Tel: + 86 135 74806898; E-mail: zhaohbhanlf@163.com*
[c]School of Chemical and Biological Engineering, Changsha University of Science & Technology, Changsha, Hunan 410076, P. R. China.

Contents:

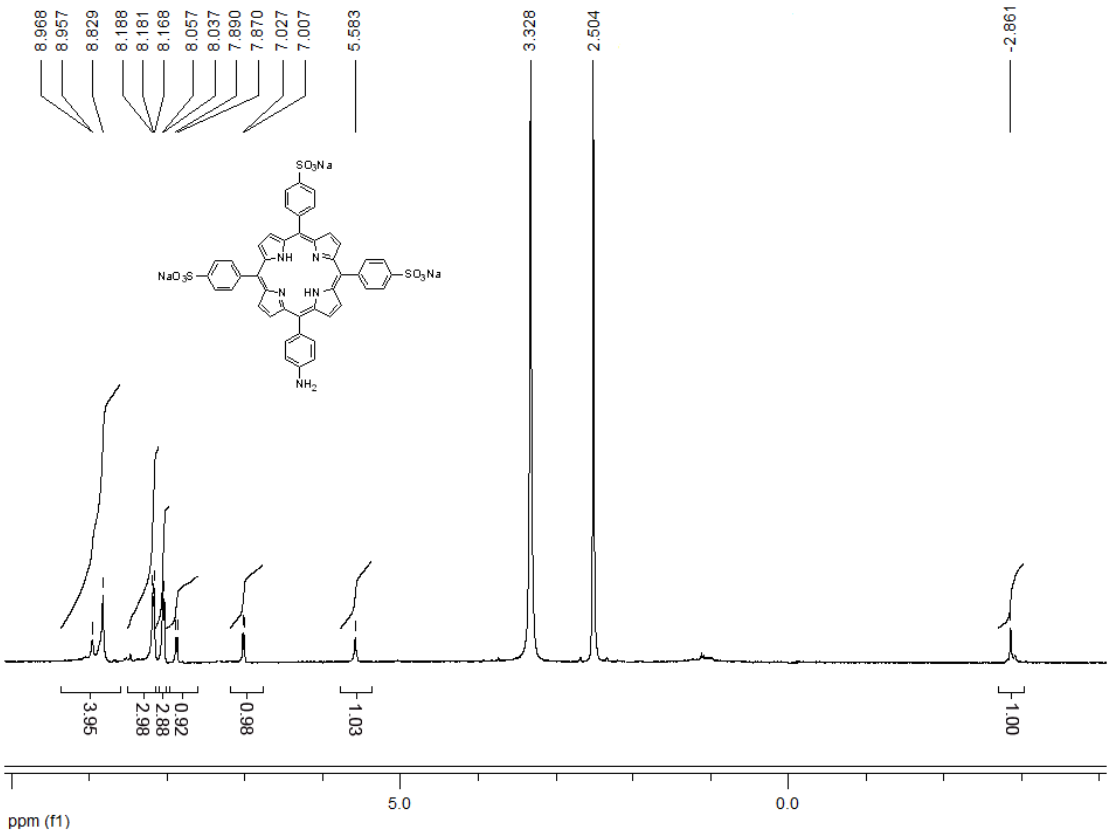

Figure S1. ^{1}H NMR spectrum of **1** in DMSO-d_6 as the trisodium salt

δ 8.97 (broad, 8 H, β-pyrrole), 8.19 (d, 6 H, 4-sulfonatophenyl), 8.06 (d, 6 H, 4-sulfonatophenyl), 7.89 (d, 2 H, 4-aminophenyl), 7.03 (d, 2 H, 4-aminophenyl), 5.58 (s, 2 H, amino NH_2), -2.86 (s, 2 H, pyrrole NH).

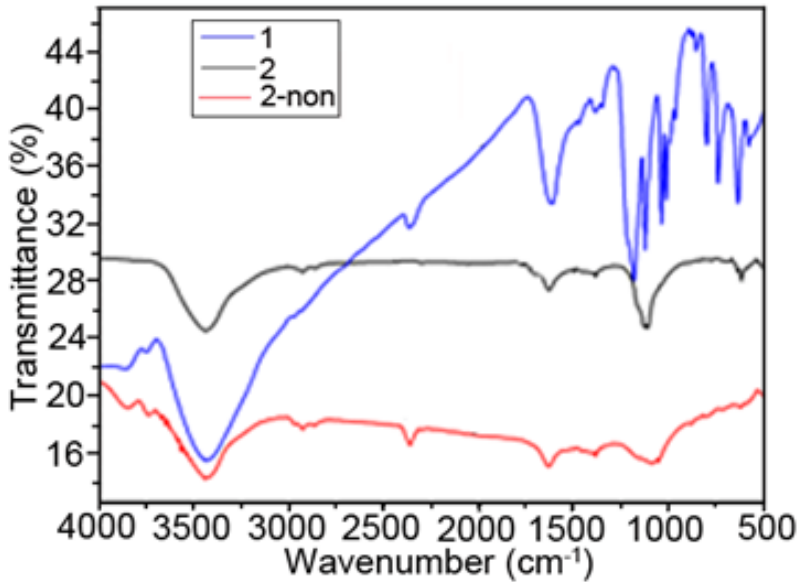

Figure S2. FT-IR spectra of **1**, **2** and **2-non**

The FT-IR spectrum of ATSPP/MWCNTs **2** shows characteristic vibrations centered at 1642 and 1050 cm^{-1}, which should be respectively attributed to the carbonyl group (C=O) and the C-N single bond, supporting the formation of the vital amide bond between ATSPP and MWCNTs.

In the spectrum of **2-non**, the small shoulder peak on the left side of 1642 cm^{-1} (another characteristic absorption for the C=O bond) could not be observed, which indicated that there wasn't a carbonyl group in **2-non** and **1** was absorbed onto MWCNTs surface in a non-covalent way.

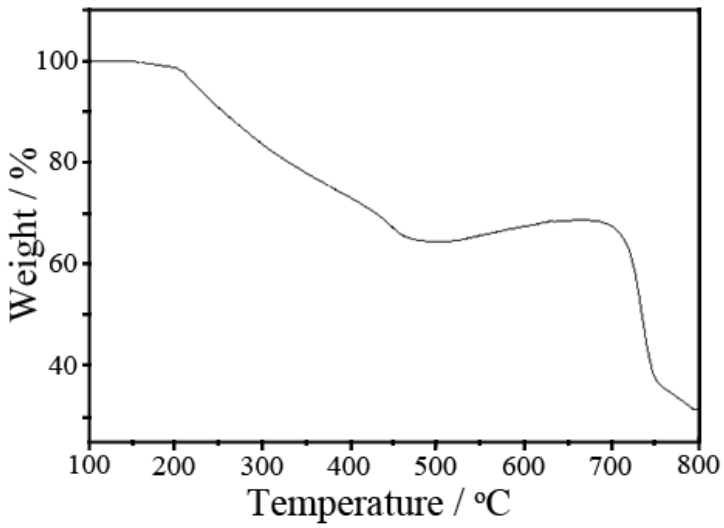

Figure S3. The thermogravimetric curve of **2**

The TGA curve of **2** showed a continuous weight loss starting from 200 to 800 °C, with a major weight loss at 720 °C. The decompositions in the temperature ranges from 200 to 480 °C and 720 to 800 °C were assigned to the attached porphyrin and the MWCNTs, respectively.

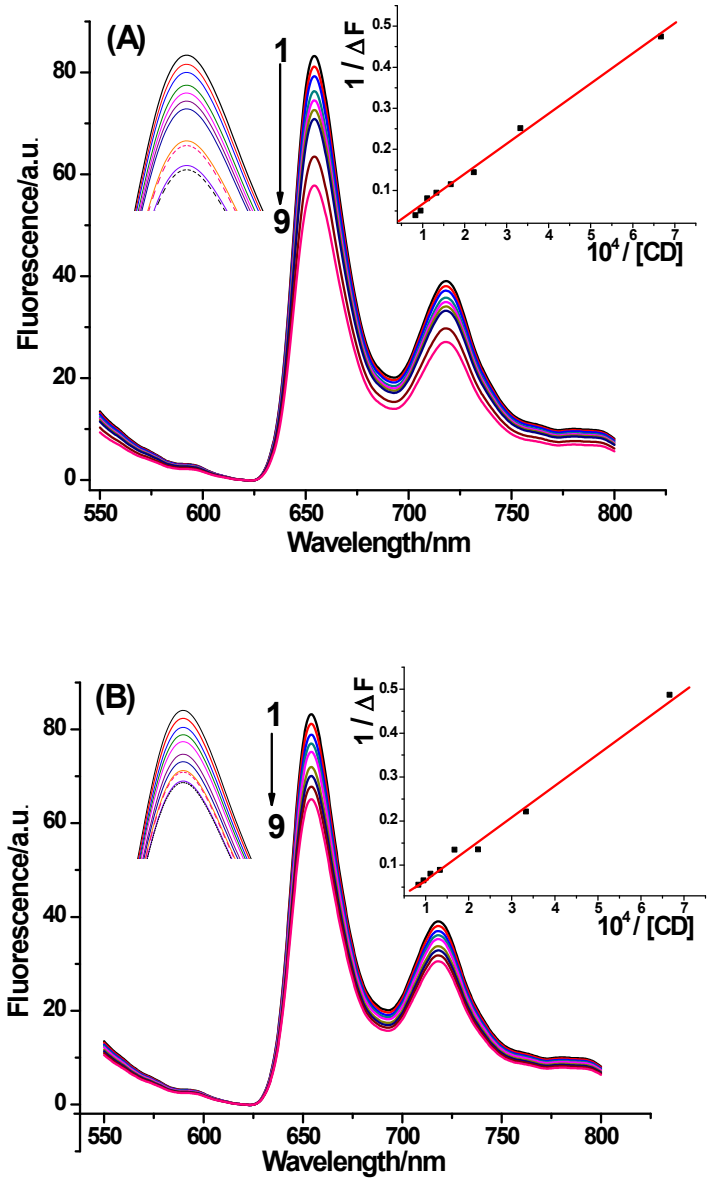

Figure S4. The fluoresence spectra of **2-non** (9×10^{-3} g L^{-1}) in the pH 7.04 phosphate buffer solution containing various concentration of (A) α-CD (B) β-CD at 25 °C (excitation wavelength 423 nm). The concentration of CD is: (1) 0 M; (2) 1.5×10^{-5} M; (3) 3.0×10^{-5} M; (4) 4.5×10^{-5} M; (5) 6.0×10^{-5} M; (6) 7.5×10^{-5} M; (7) 9.0×10^{-5} M; (8) 1.05×10^{-4} M; (9) 1.2×10^{-4} M. Right inset: the linear plot of $1/(F-F_0)$ versus 1/[CD]. Left inset: the contrast fluorescence spectra of the following addition of 72 μL of DNA (1.44×10^{-5} M) in (A) α-CD (B) β-CD with a concentration of (8) 1.05×10^{-4} M; (9) 1.2×10^{-4} M (the dotted lines for DNA).

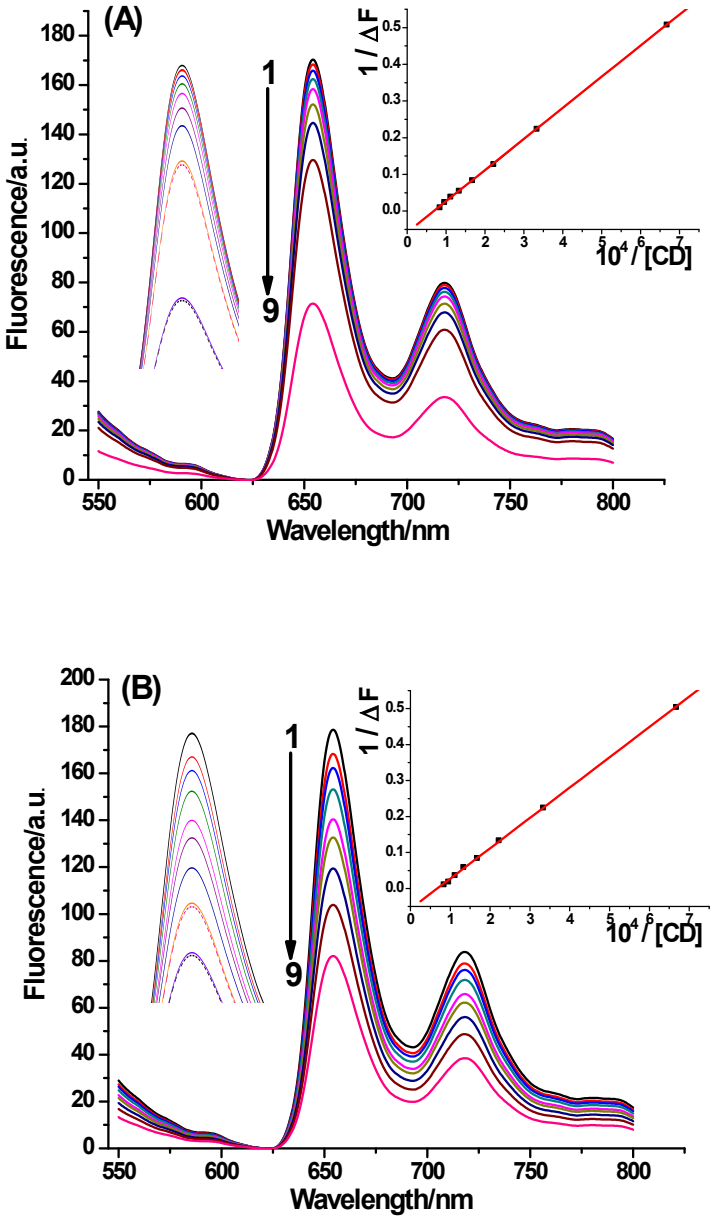

Figure S5. The fluoresence spectra of ATSPP **1** (1.2×10^{-6} M) in the pH 7.04 phosphate buffer solution containing various concentration of (A) α-CD (B) β-CD at 25 °C (excitation wavelength 423 nm). The concentration of CD is: (1) 0 M; (2) 1.5×10^{-5} M; (3) 3.0×10^{-5} M; (4) 4.5×10^{-5} M; (5) 6.0×10^{-5} M; (6) 7.5×10^{-5} M; (7) 9.0×10^{-5} M; (8) 1.05×10^{-4} M; (9) 1.2×10^{-4} M. Right inset: the linear plot of $1/(F-F_0)$ versus 1/[DNA]. Left inset: the contrast fluorescence spectra of the following addition of 72 μL of DNA (1.44×10^{-5} M) in (A) α-CD (B) β-CD with a concentration of (8) 1.05×10^{-4} M; (9) 1.2×10^{-4} M (the dotted lines for DNA).