Electronic Supplementary Information for

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

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Contents:

Figure S1, $^1$H NMR spectrum of 1 in DMSO-$d_6$;

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

Figure S3, thermogravimetric curve of 2.

Figure S4, the fluorescence spectra of 2-non interacting with (A) $\alpha$-CD (B) $\beta$-CD and then with DNA (left inset, dotted lines).

Figure S5, the fluorescence spectra of 1 interacting with (A) $\alpha$-CD (B) $\beta$-CD and then with DNA (left inset, dotted lines).

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

$\delta$ 8.97 (broad, 8 H, $\beta$-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 fluorescence 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−F₀) 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 fluorescence 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).