

SUPPORTING INFORMATION

Conformation control of a conjugated polymer through complexation with bile acids generates its novel spectral and morphological properties

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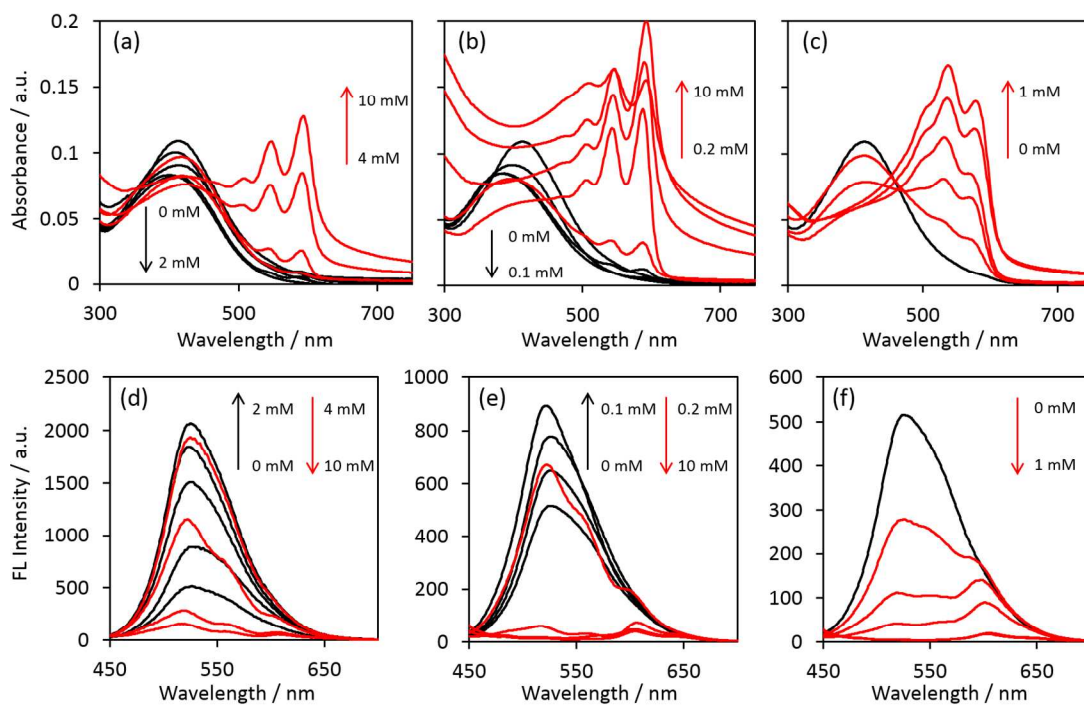


Figure S1. Absorbance (a, b, c) and fluorescence (d, e, f) spectra of PT-1 aqueous solution (0.20 mM) with different bile acid concentrations; (a, d) [cholate] = 0–10 mM, (b, e) [deoxycholate] = 0–10 mM, (c, f) [lithocholate] = 0–1.0 mM; light pass length, 0.1 cm; λ_{ex} , 415 nm.

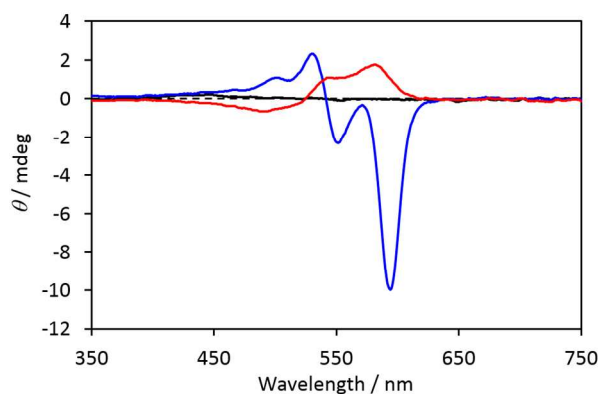


Figure S2. CD spectra of PT-1 aqueous solution (0.20 mM); [cholate] = 1.0 mM (black line), [deoxycholate] = 0.40 mM (blue line), [lithocholate] = 0.10 mM (red line); light pass length, 0.1 cm. All spectra were measured for clear solution samples.

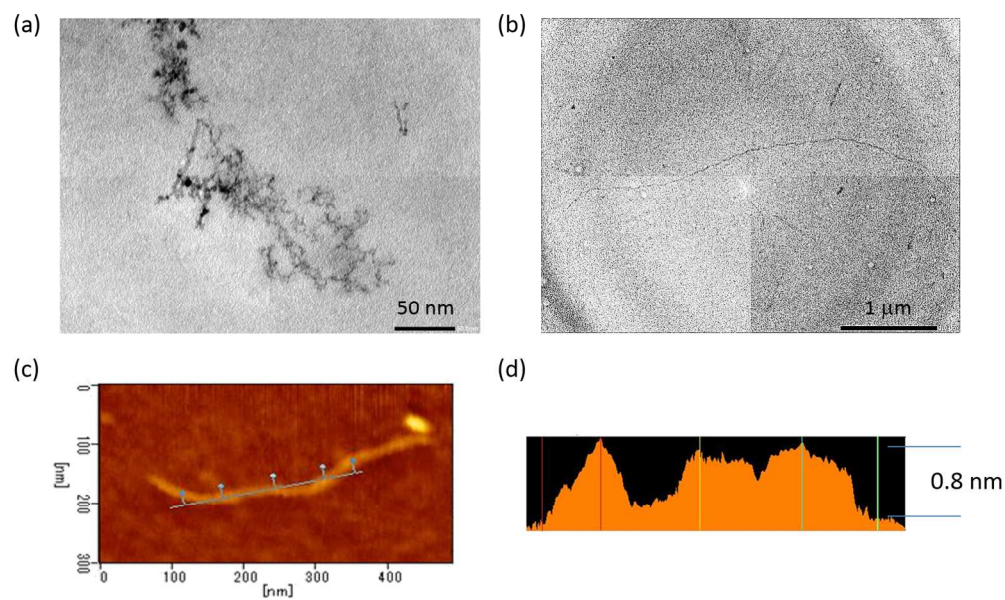


Figure S3. (a) TEM image of PT-1. (b) TEM image of PT-1/lithocholate 2: 1 molar ratio mixture. (c) AFM image of PT-1/lithocholate 2:1 molar ratio mixture on mica. (d) Height profile of (c).

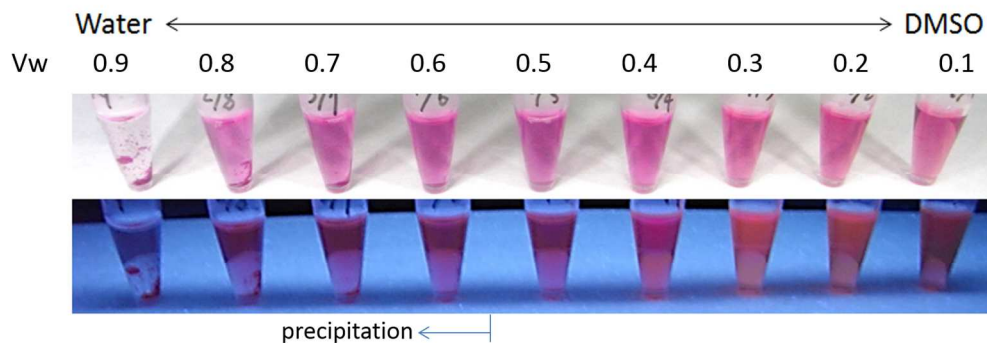


Figure S4. Photo images of PT-1/lithocholate complex in different DMSO-water mixed solvents after the flash centrifugation; [PT-1] = [lithocholate] = 0.20 mM; top, under visible light; bottom, under UV₃₆₅ irradiation.

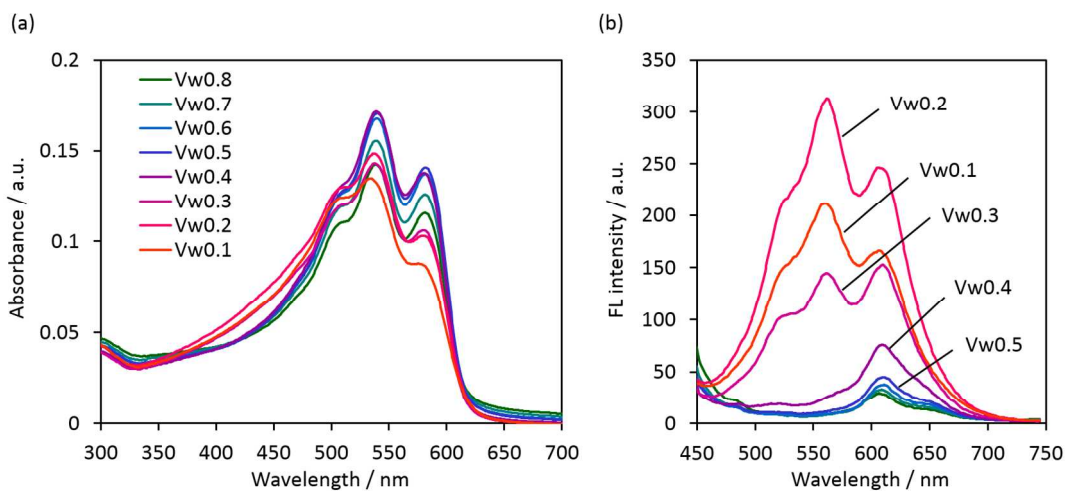


Figure S5. (a) Absorption and (b) fluorescence spectra of PT-1/lithocholate complex in different DMSO-water mixed solvents; [PT-1] = [lithocholate] = 0.20 mM; light pass length, 0.1 cm; λ_{ex} , 415 nm.

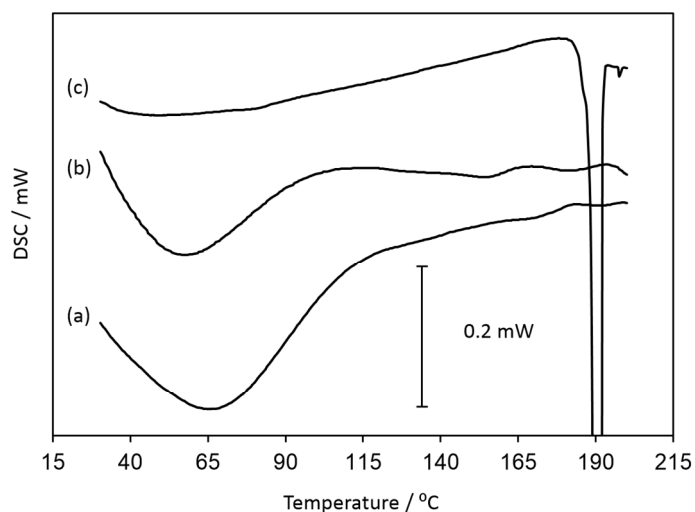


Figure S6. Differential scanning calorimetry (DSC) curves for (a) PT-1/lithocholate complex with heat-and-cool treatment, (b) PT-1/lithocholate complex without heat-and-cool treatment and (c) lithocholic acid.

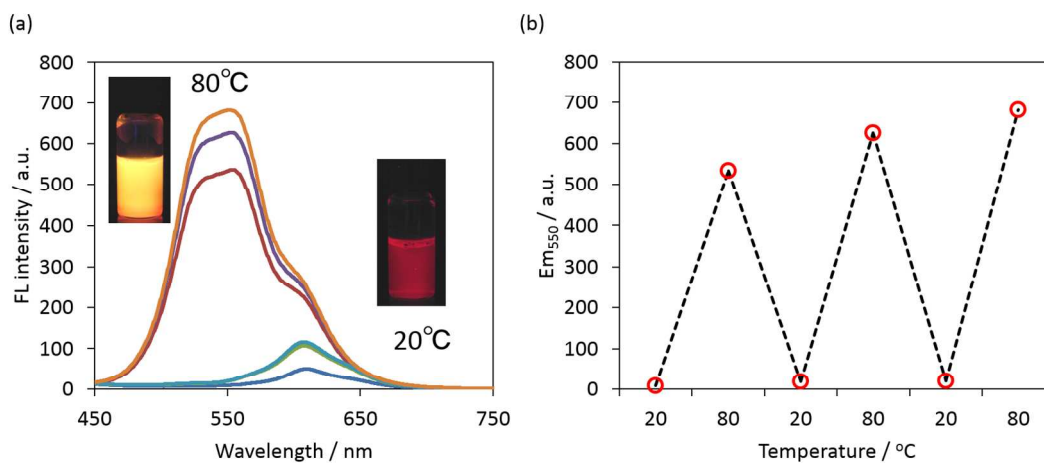


Figure S7. (a) Fluorescence spectra and (b) repeated cycle plots of the fluorescence intensity at 550 nm of PT-1/lithocholate complex in DMSO-water solution (Vw0.4) after 10 min incubation at 20 °C and 80 °C; [PT-1] = [Lithocholate] = 0.20 mM; light pass length, 0.1 cm; λ_{ex} , 415 nm.

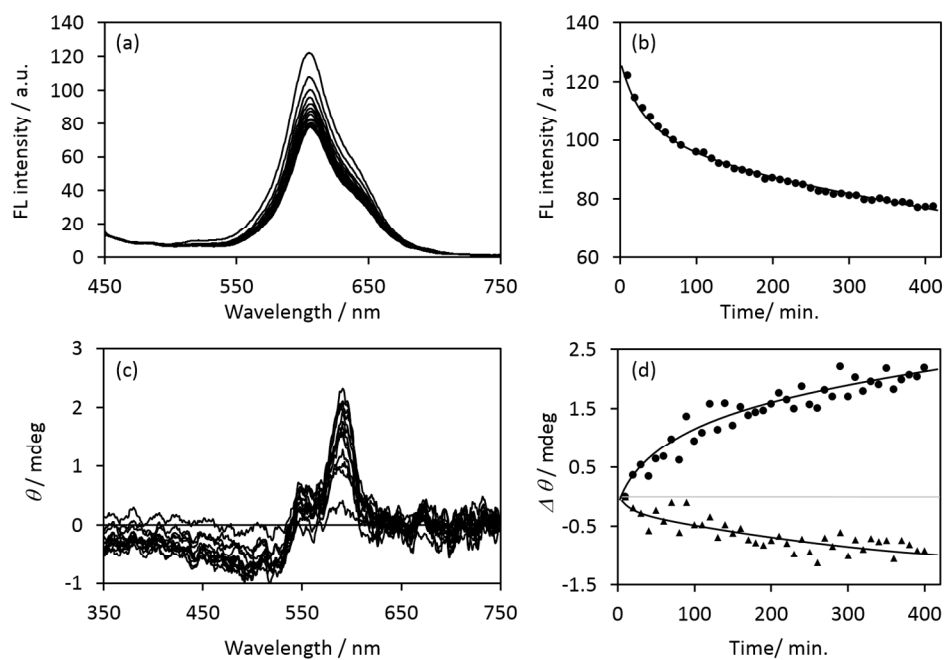


Figure S8. Spectral changes of PT-1/lithocholate complex in DMSO-water solution (Vw0.4) obtained from incubation 20 °C after heat-and-cool treatment; (a) fluorescence spectra; (b) time decay curve of fluorescent intensity at 605 nm; (c) CD spectra; (d) time increase curve of CD signal at 500 and 590 nm; [PT-1] = [lithocholate] = 0.20 mM; $l = 0.1$ cm.

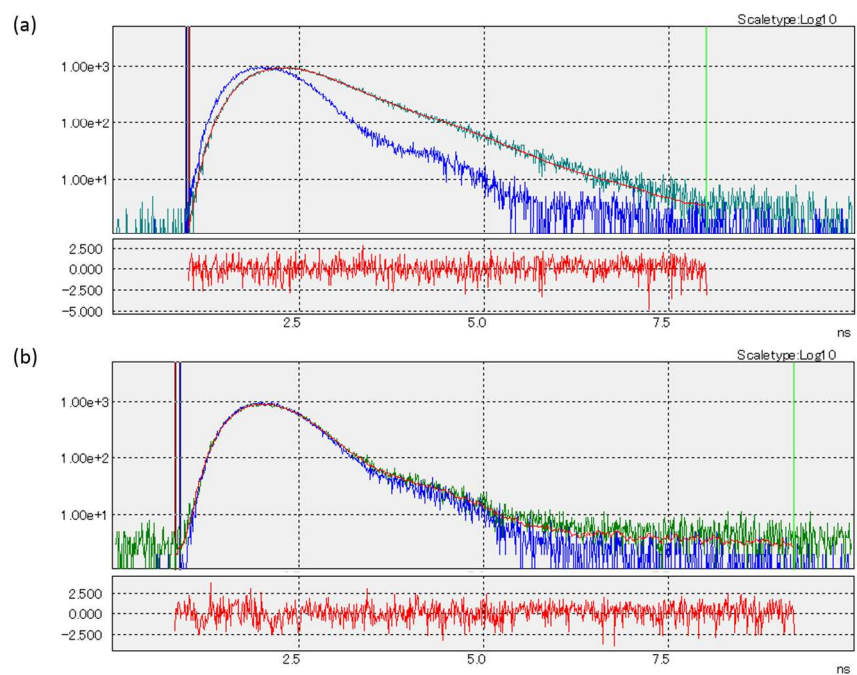


Figure S9. Fluorescent decay curves of PT-1/lithocholate complex in DMSO solution (Vw0.4) after heat-and-cool treatment; (a) incubated for 10 min at 20 °C after heat-and-cool process; (b) incubated for 3 days at 20 °C after heat-and-cool process; λ_{ex} , 470 nm; λ_{em} , (a) 600 nm, (b) 610 nm ; [PT-1] = [lithocholate] = 0.20 mM.

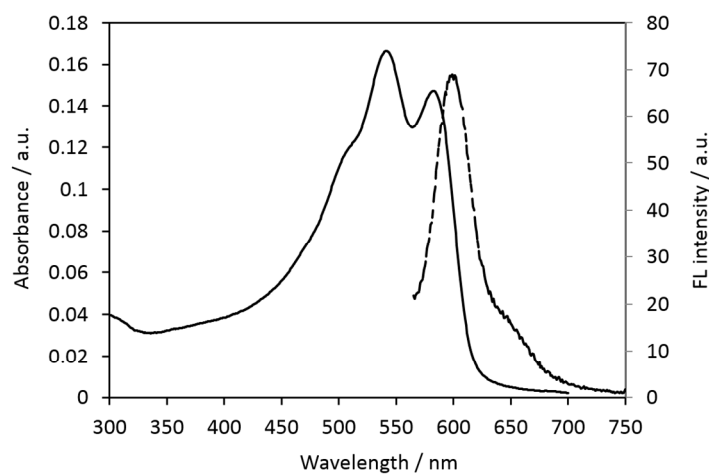


Figure S10. Absorption (solid line) and fluorescence (broken line) spectra of 2.0 mM PT-1/lithocholate complex. Samples were prepared by 200-fold dilution with water from 0.20 mM PT-1/ lithocholate complex solution (Vw0.4, with heat-and-cool treatment); light pass length, 5 cm for absorption spectrum or 1 cm for fluorescence spectrum; λ_{ex} , 540 nm.

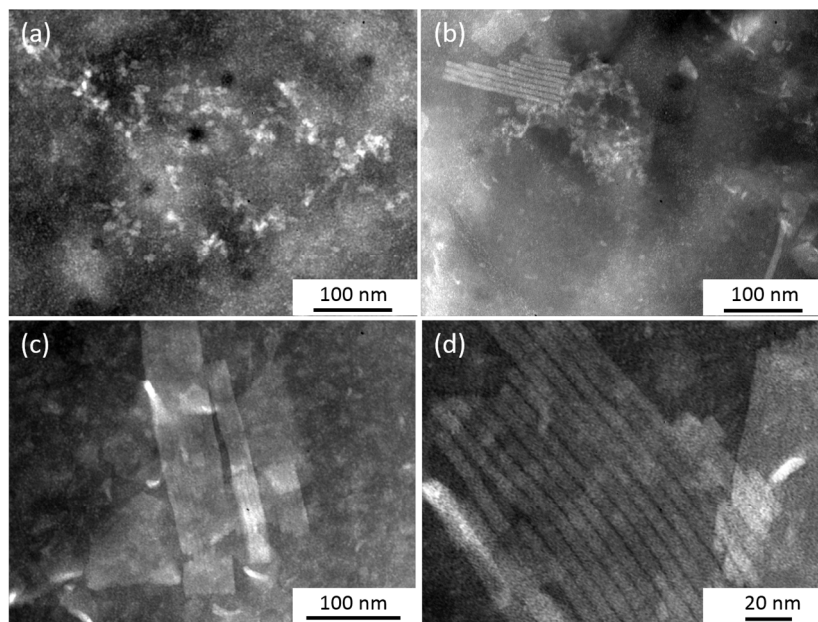


Figure S11. TEM images of PT-1/Lithocholate complex; (a) incubated for 10 min at 20 °C after heat-and-cool treatment, (b) incubated for 1 hour at 20 °C after heat-and-cool treatment, (c, d) incubated for 3 days

at 20 °C after heat-and-cool treatment. Samples were negatively-stained by pH 7.0 sodium phosphotungstate solution.

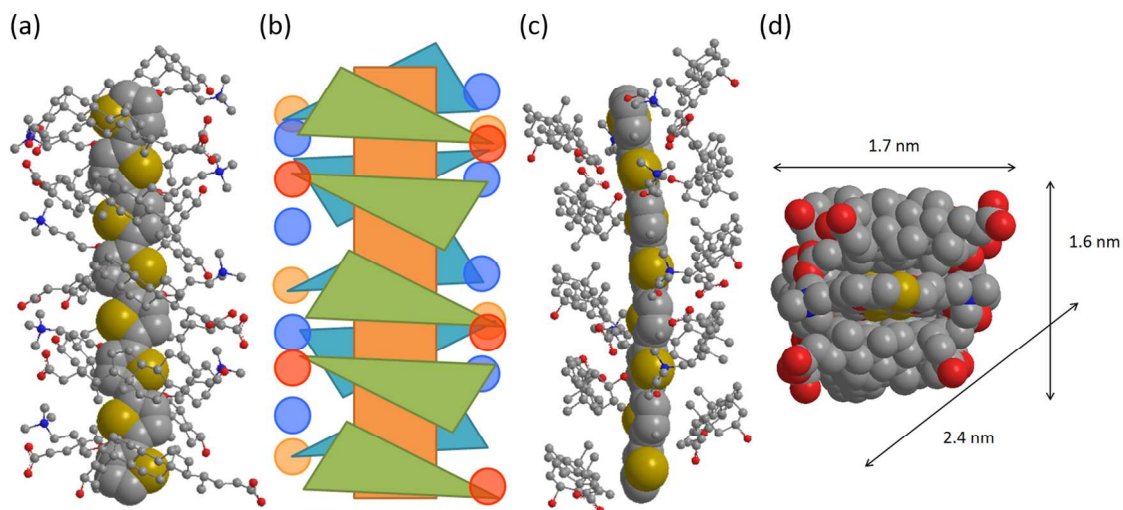


Figure S12. Complex structure of PT-1/lithocholate (8-mer of polythiophene and 10 lithocholate molecules) calculated by MOPAC with COSMO method (EPS = 78.4). (a) Top view, (b) illustrated image of top view; green triangles, front side lithocholates; orange square, insulated polythiophene; blue triangles, back side lithocholates; carboxyl groups (red and orange circle) located to the sharp corner on each triangles; ammonium groups (blue circle) complement carboxyl groups. (c) Side view. (d) Front view.

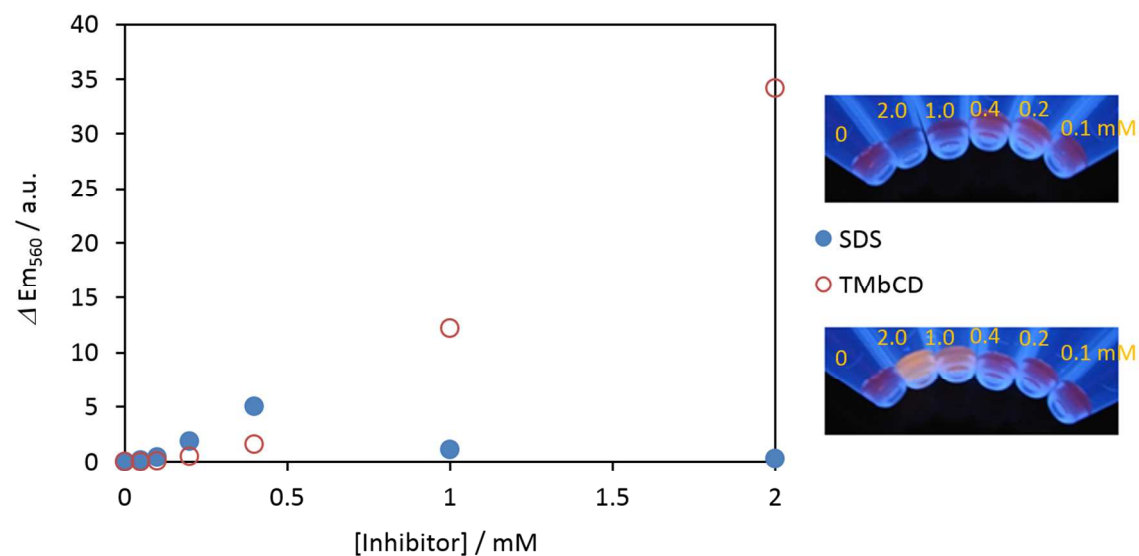


Figure S13. Fluorescence intensity changes of PT-1/lithocholate solution (Vw0.4, with heat-and-cool treatment) when SDS (open circle) or TM β CD (close circle) was added; $[\text{PT-1}] = [\text{lithocholate}] = 0.20 \text{ mM}$; $\lambda_{\text{ex}}, 415 \text{ nm}$; $\lambda_{\text{em}}, 560 \text{ nm}$.