

Smart Stimuli-responsive Fluorescent Vesicular Sensor Based on Inclusion Complexation of Cyclodextrins With Tyloxapol

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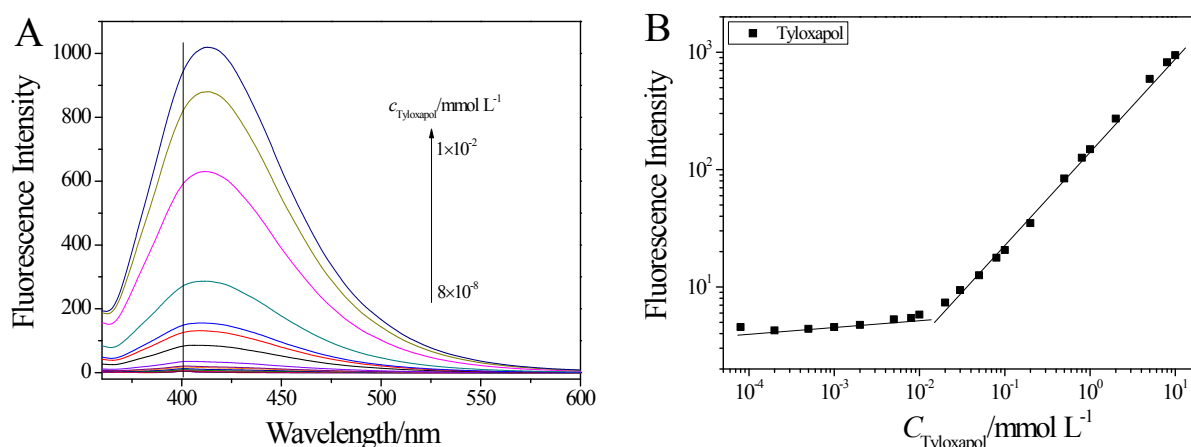


Figure S1 (A) The variation of the fluorescence spectra as a function of the concentration of Tyloxapol. (B) The variation of the fluorescence intensity as a function of the concentration of Tyloxapol.

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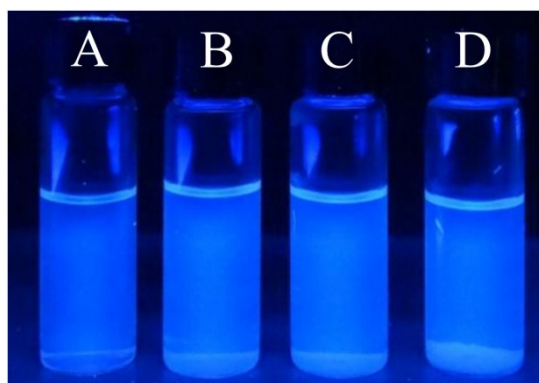


Figure S2. Photos of β -CD/Tyloxapol self-assembly under 365 nm UV irradiation when the concentrations of Tyloxapol was fixed at 2 mmol L⁻¹ and the ratios of Tyloxapol : β -CD are: (A) 1:0; (B) 1:3; (C) 1:7; (D) 1:14.

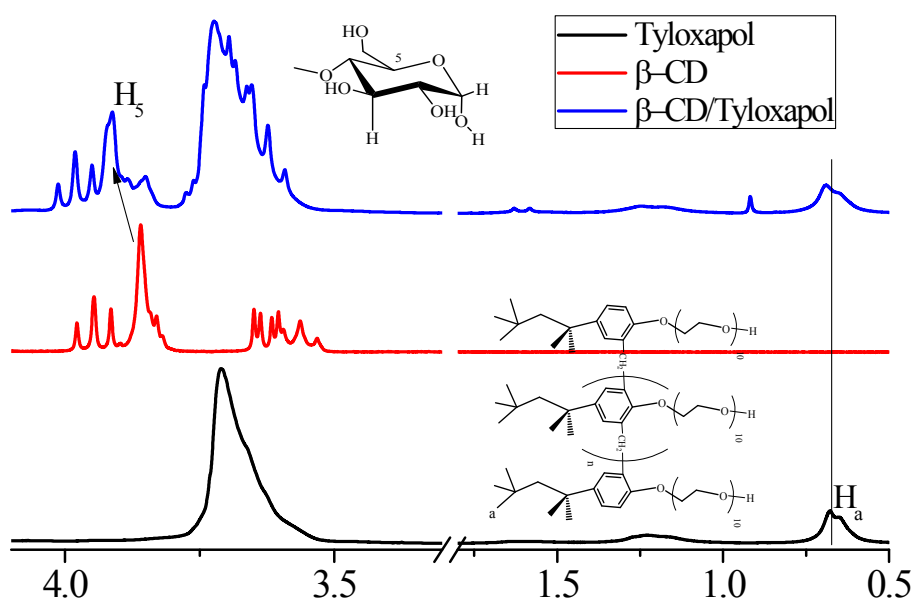


Figure S3. ¹H NMR result of β -CD, Tyloxapol and β -CD/Tyloxapol mixed system in D₂O.

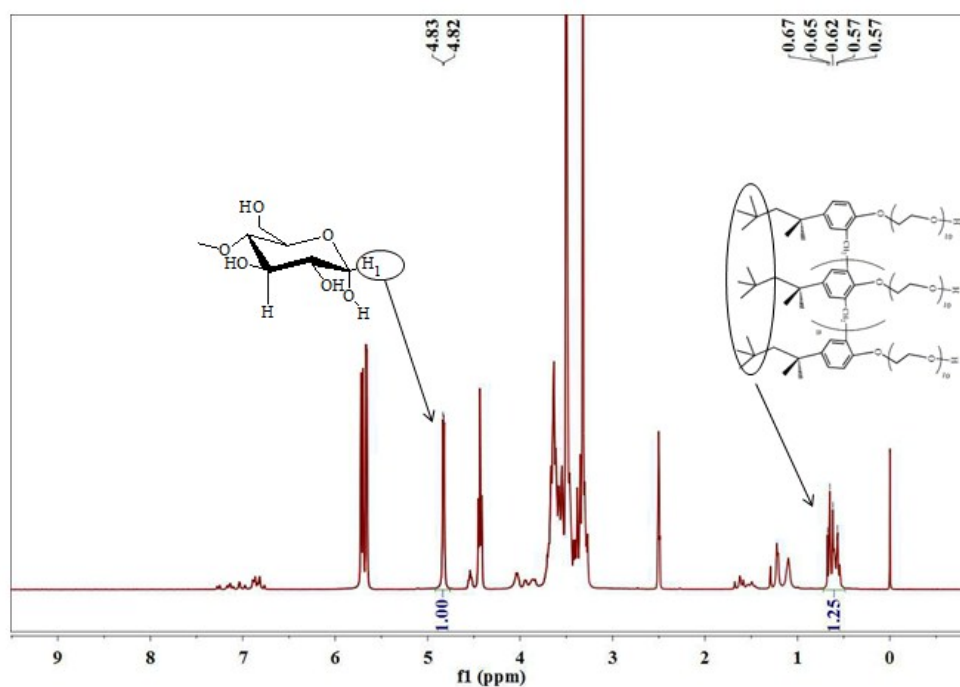


Figure S4. ^1H NMR spectra of 20 mM β -CD/2 mM Tyloxapol precipitates in DMSO-d_6 .

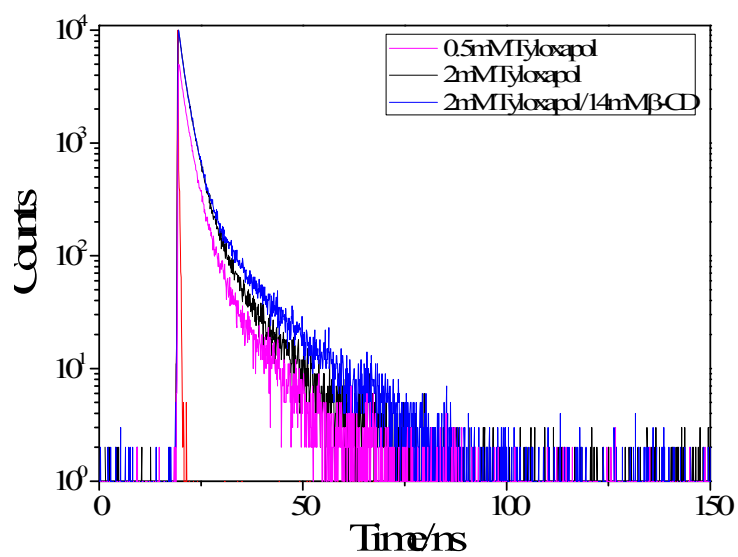


Figure S5. Time-resolved fluorescence decay plots of Tyloxapol (2mM, 0.5mM) and Tyloxapol/ β -CD (2mM/14mM)

Table 1. Lifetime of Tyloxapol (0.5 mM, 2 mM) and Tyloxapol/ β -CD (2 mM/14 mM)

Sample	τ_1 /ns (%)	τ_2 /ns (%)
0.5 mM Tyloxapol	1.707 (84.97)	6.062 (15.03)
2 mM Tyloxapol	1.754 (85.39)	6.993 (14.61)
2 mM Tyloxapol/14mM β -CD	1.802 (84.32)	9.707 (15.68)

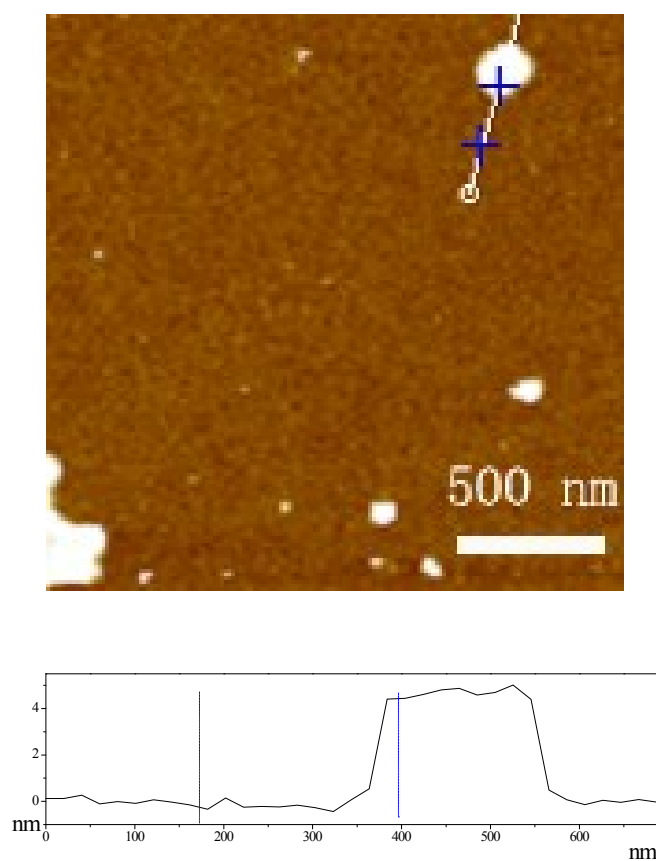


Figure S6. AFM image of images of the upper vesicle phase in 2 mmol L⁻¹ Tyloxapol/28 mmol L⁻¹ β -CD system (1:14).

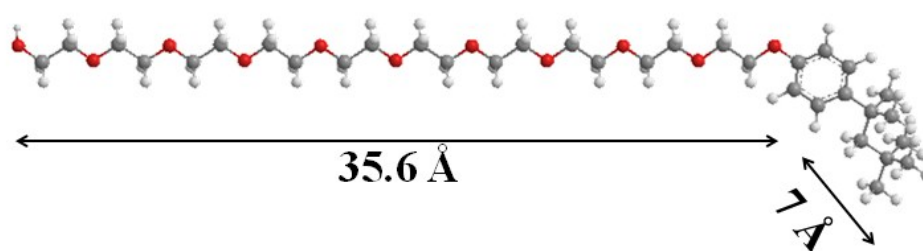


Figure S7. Geometry of one breach of Tyloxapol.

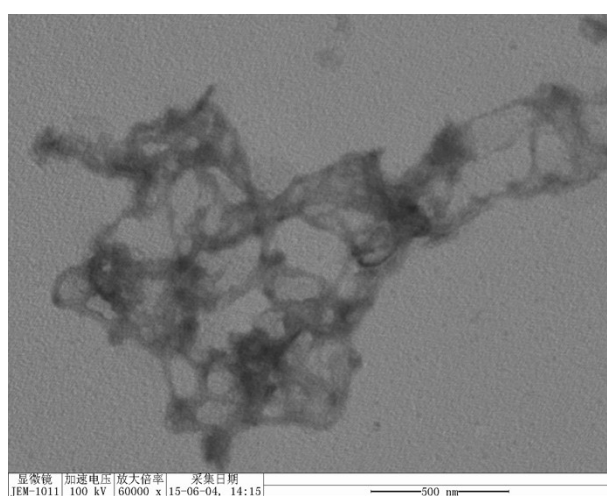
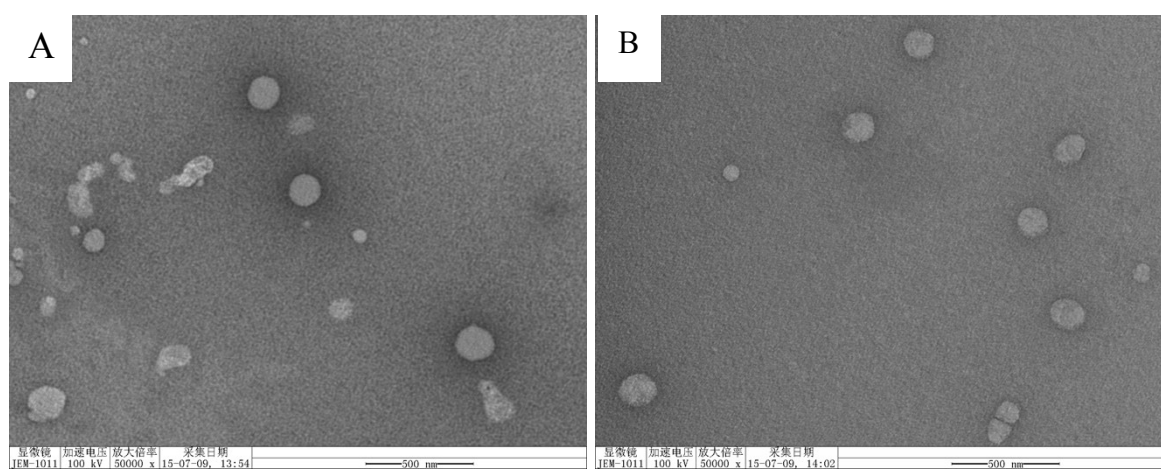


Figure S8 TEM image of the aggregate structure for 2 mM Tyloxapol/28 mM α -CD system (1:14).



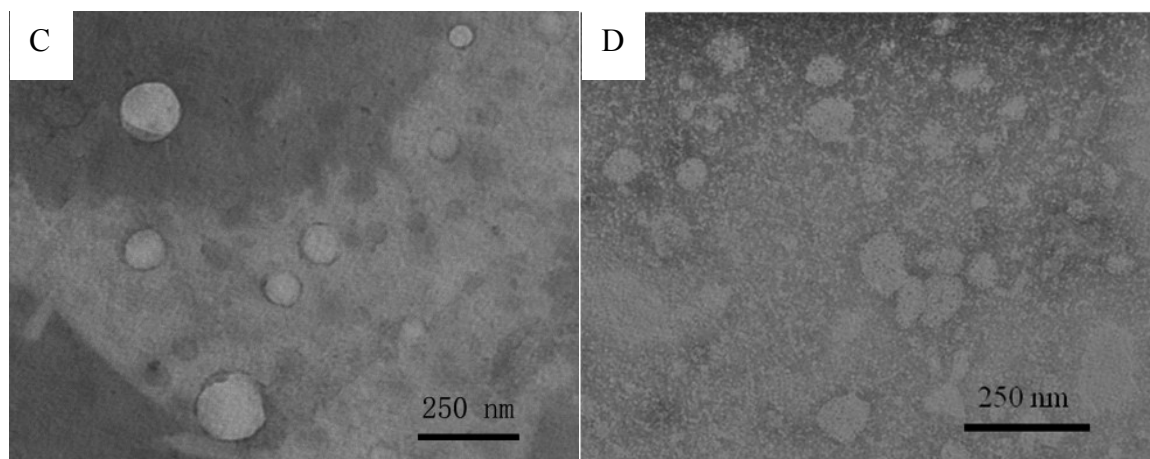


Figure S9. TEM image of the aggregate structure for 5 mM Tyloxapol/35 mM β -CD system (1:7) after ultrasonic treatment for 10 s (A) and then static recovery (B).

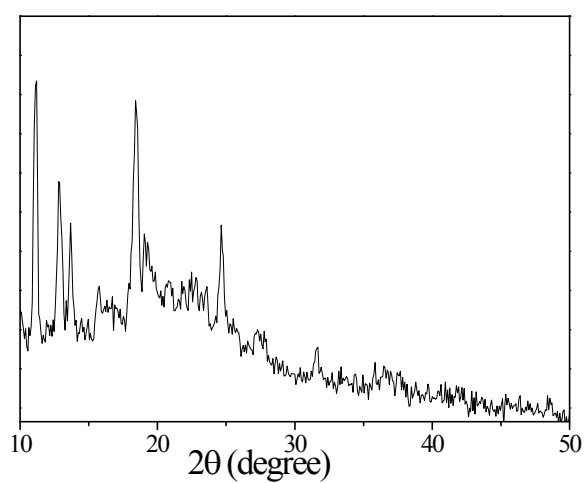
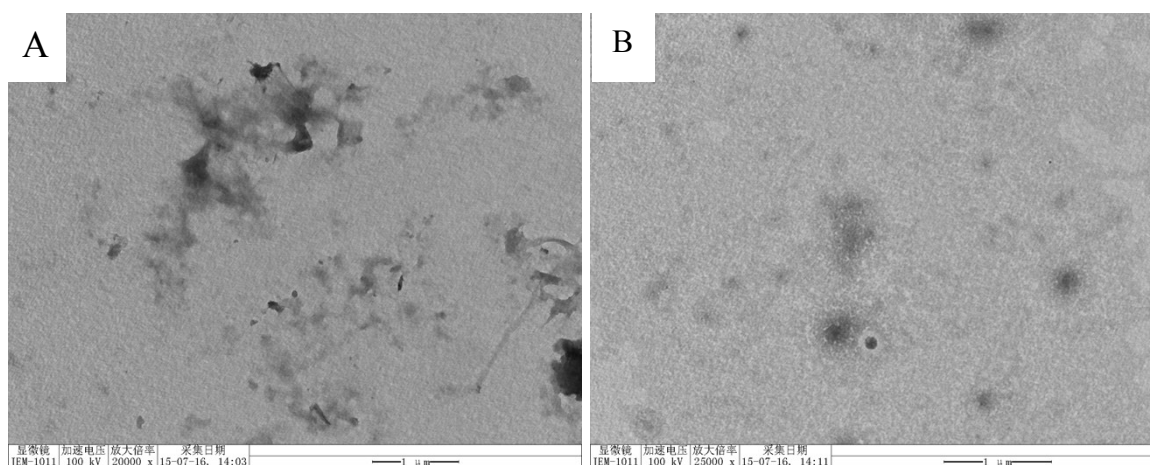


Figure S10. XRD pattern of physical mixture of Tyloxapol and β -CD



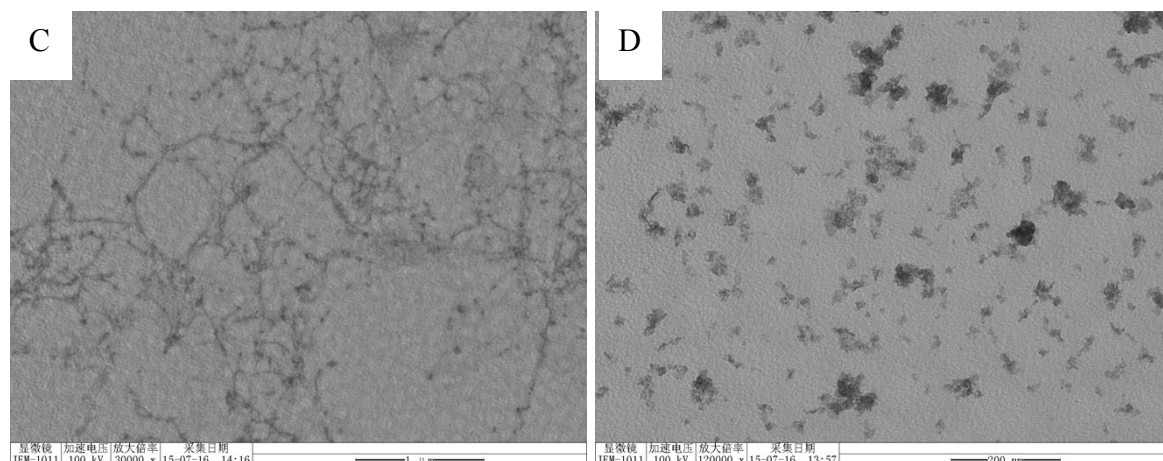


Figure S11. TEM micrographs of 28 mg mL⁻¹ β -CD/2 mg mL⁻¹ Tyloxapol vesicles after the addition of different additives: (A) urea, (B) phenylalanine, (C) α -Amylase and (D) NaOH.