Supporting Information for

Colorimetric and Fluorometric Assays Based on Conjugated Polydiacetylene Supramolecules for Screening Acetylcholinesterase and Its Inhibitors†

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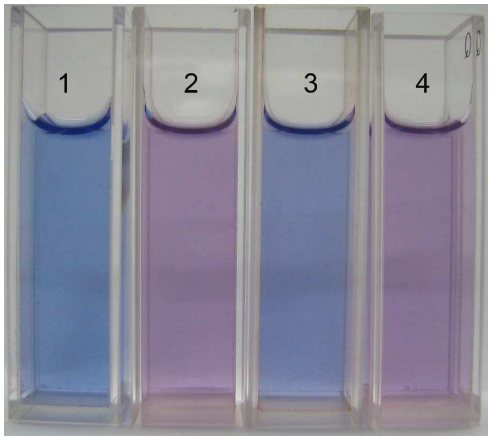
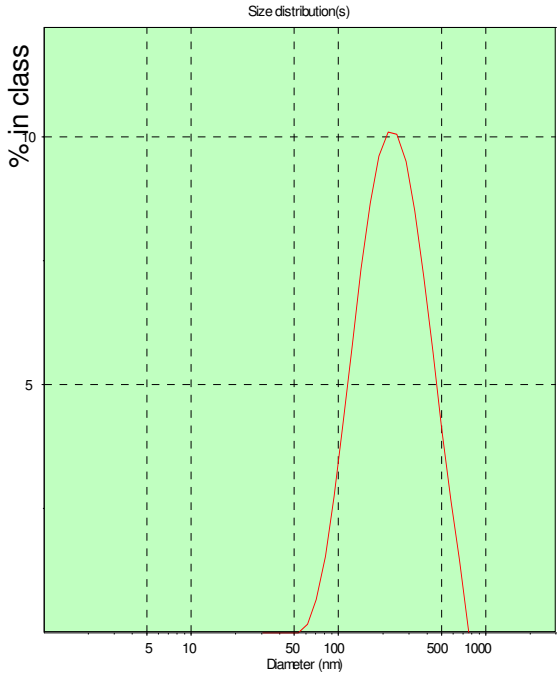


Figure S1. Colorimetric responses of PDAs solution (100 μM). 1: PDAs solution only ; 2: PDAs solution upon incubation 30 μM Myr for 5 min ; 3: the solution containing 30 μM Myr was pre-treated with AChE (2 U/mL) for 10 min and added PDAs liposomes, then recorded after another 5 min incubation. 4 : The solution containing AChE (2 U/mL) and neostigmine (100 nM) was added 30 μM Myr and incubation for 10 min, then added PDAs for another 5 min incubation. All experiments were carried out in HEPES buffer (10 mM, pH=7.4).



Size(nm)	Intensity	Volume	Number
30.5	0.0	0.0	0.0
35.1	0.0	0.0	0.0
40.4	0.0	0.0	0.0
46.5	0.0	0.0	0.0
53.5	0.0	0.2	2.9
61.5	0.2	0.9	10.9
70.7	0.7	1.9	18.1
81.3	1.5	2.9	19.4
93.6	2.8	3.6	16.1
107.6	4.2	3.8	11.6
123.8	5.8	3.7	7.5
142.4	7.3	3.4	4.6
163.7	8.7	3.0	2.7
188.3	9.6	2.6	1.5
216.6	10.1	2.3	0.9
249.1	10.1	2.1	0.5
286.6	9.5	2.2	0.4
329.6	8.5	3.1	0.3
379.1	7.2	15.4	0.8
436.1	5.7	27.9	1.2
501.6	4.1	16.8	0.7
576.9	2.7	3.0	0.1
663.5	1.5	0.8	0.0
763.2	0.0	0.2	0.0

Peak Analysis by intensity

Peak	Area	Mean	Width
1	100.0	258.6	346.1

Peak Analysis by volume

Peak	Area	Mean	Width
1	29.9	135.8	146.1
2	70.1	433.7	143.9

Peak Analysis by number

Peak	Area	Mean	Width
1	97.0	95.1	54.9
2	3.0	430.2	146.3

Figure S2. The size distributions of PDAs polymerized from the mixed liposomes composed of PCDA-HEP and PCDA at a 3:7 ratio in HEPES buffer (10 mM, pH = 7.4). (Particle sizes were measured on Malvern Zetasizer 3000HSA. Prior to testing, not filtered sample. Each sample will be tested ten times to obtain the data automatically. The concentration of sample is 100 μM.)

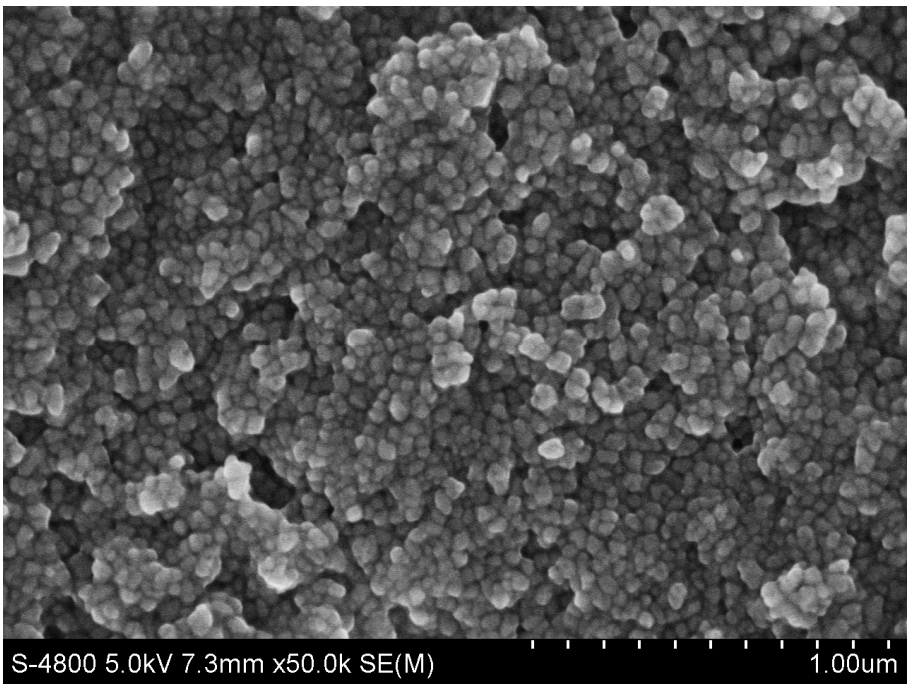


Figure S3. SEM image of PDAs prepared from PCDA-HEP and PCDA at the ratio of 3:7.

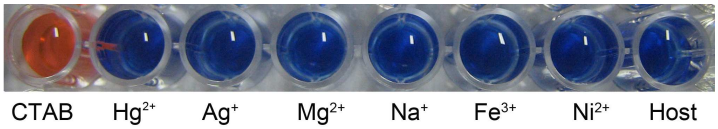


Figure S4. Colorimetric responses of PDAs (500 μM) derived from PCDA-HEP and PCDA at the ratio of 3:7 upon incubation with various cationic analytes (200μM) for 5 min in HEPES buffer (10 mM, pH = 7.4).

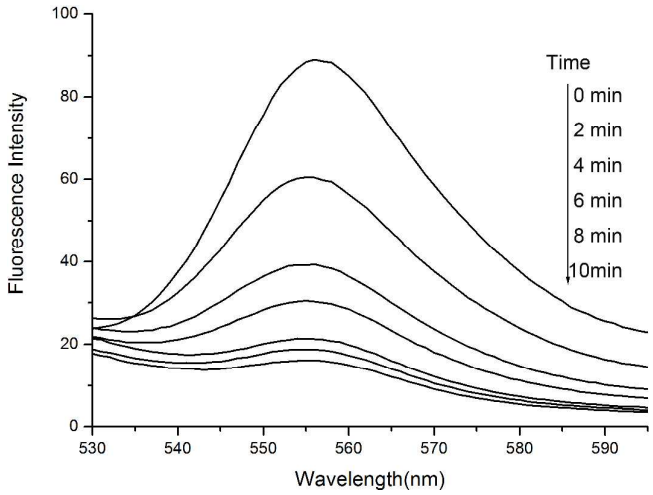


Figure S5. Fluorescence spectra of PDAs liposomes solution (20 μM) containing Myr (12 μM) and AChE (0.4 U/mL); the solution containing Myr was pre-treated with AChE for various time (0, 2, 4, 6, 8 and 10 min) and added PDAs liposomes, then recorded each spectrum after another 5 min incubation. All experiments were carried out in HEPES buffer (10 mM, pH=7.4) (λ_{ex} = 492 nm) at room temperature.

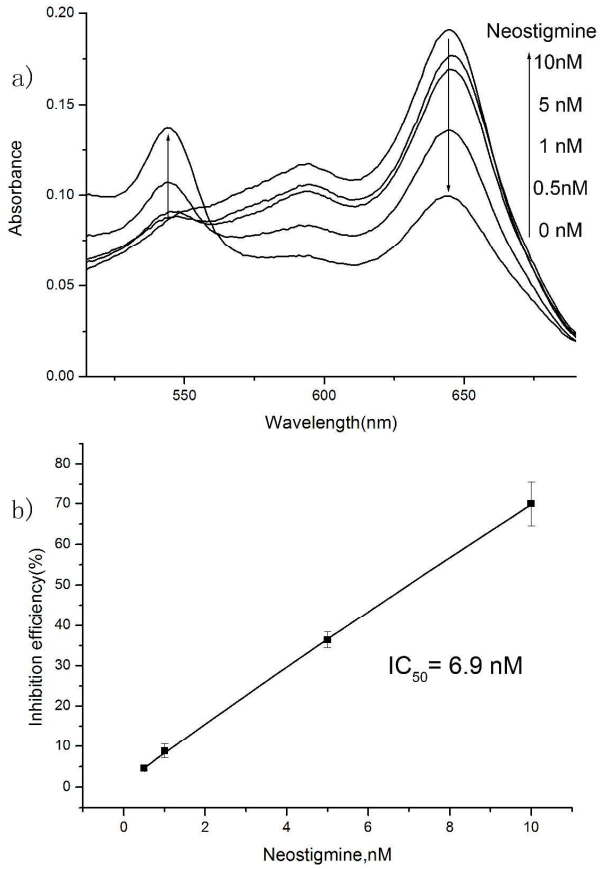


Figure S6. (a) Vis spectra of PDAs (20 μM) added the resulting solutions after the reaction between Myr (12 μM) and AChE (0.4 U/mL) in the presence of different concentrations of neostigmine (0, 0.5, 1, 5 and 10 nM); (b) Inhibition efficiency of neostigmine toward AChE *vs* the concentration of neostigmine. The inhibition efficiency data were obtained according to method 2.

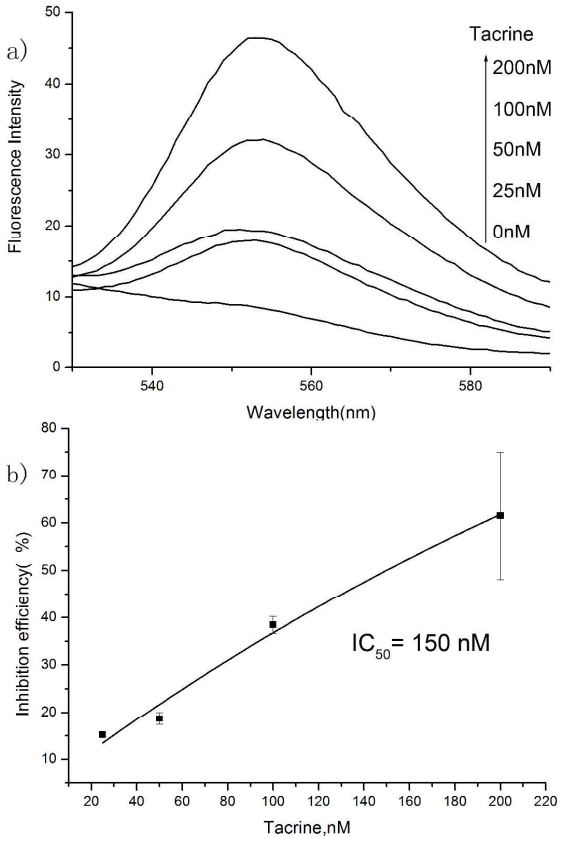


Figure S7. Fluorescence spectra of PDAs (20 μM) added the resulting solutions after the reaction between Myr (12 μM) and AChE (0.4 U/mL) in the presence of different concentrations of tacrine (0, 25, 50, 100 and 200 nM). (b) Inhibition efficiency of tacrine toward AChE *vs* the concentration of tacrine. The inhibition efficiency data were obtained according to method 1.

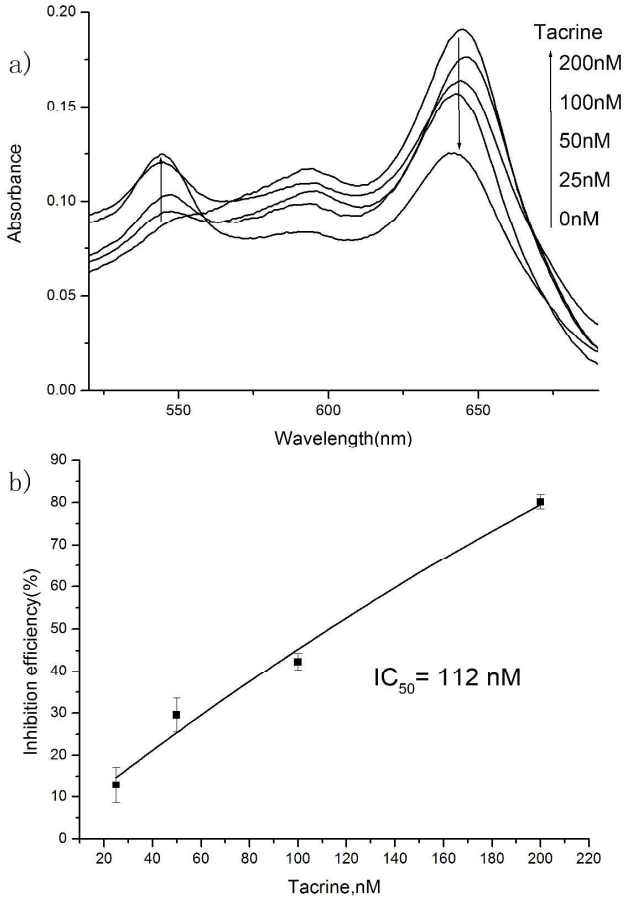


Figure S8. Vis spectra of PDAs (20 μM) added the resulting solutions after the reaction between Myr (12 μM) and AChE (0.4 U/mL) in the presence of different concentrations of tacrine (0, 25, 50, 100 and 200 nM). (b) Inhibition efficiency of neostigmine toward AChE *vs* the concentration of tarcine. The inhibition efficiency data were obtained according to method 2.

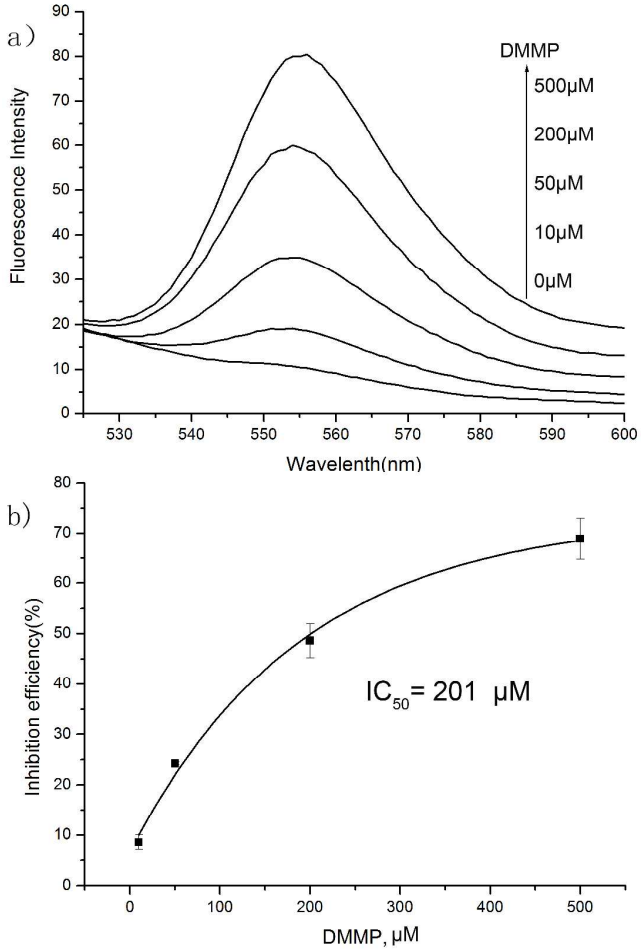


Figure S9. Fluorescence spectra of PDAs (20 μM) added the resulting solutions after the reaction between Myr (12 μM) and AChE (0.4 U/mL) in the presence of different concentrations of DMMP (0, 10, 50, 100 and 200 μM). (b) Inhibition efficiency of DMMP toward AChE *vs* the concentration of DMMP. The inhibition efficiency data were obtained according to method 1.

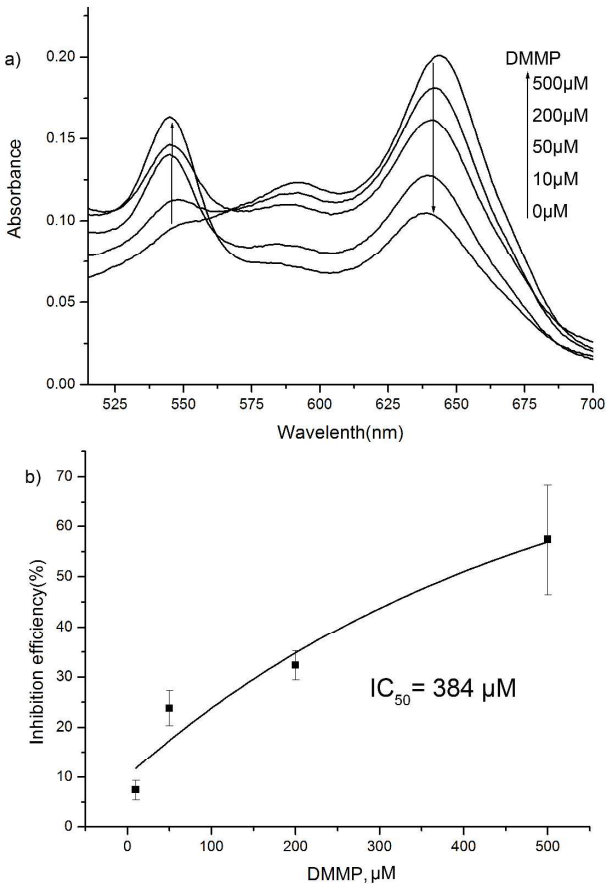


Figure S10. Vis spectra of PDAs (20 μM) added the resulting solutions after the reaction between Myr (12 μM) and AChE (0.4 U/mL) in the presence of different concentrations of DMMP (0, 10, 50, 100 and 200 μM). (b) Inhibition efficiency of DMMP toward AChE *vs* the concentration of DMMP. The inhibition efficiency data were obtained according to method 2.