Electronic Supplementary Material (ESI) for Polymer Chemistry.


## Supplementary Information

# Double Fluorescent Assay via β-Cyclodextrin Containing Conjugated Polymer as Biomimetic Material for Cocaine Sensing

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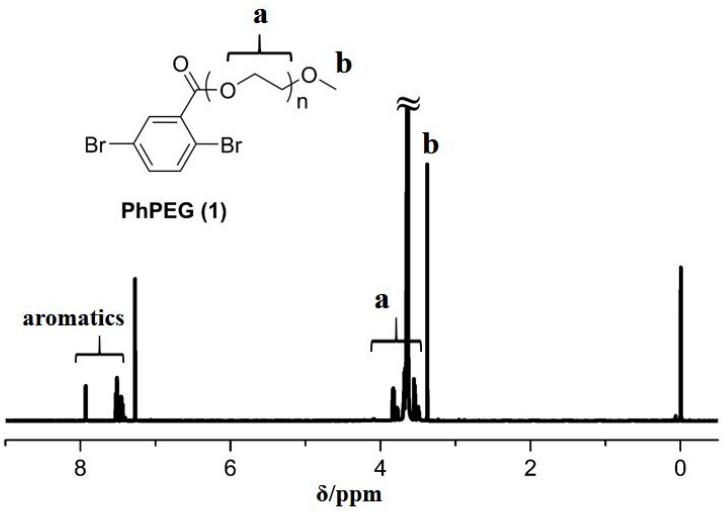


**Figure S1.** $^{1}$H NMR spectrum of DBB-PEG in $CDCl_3$.

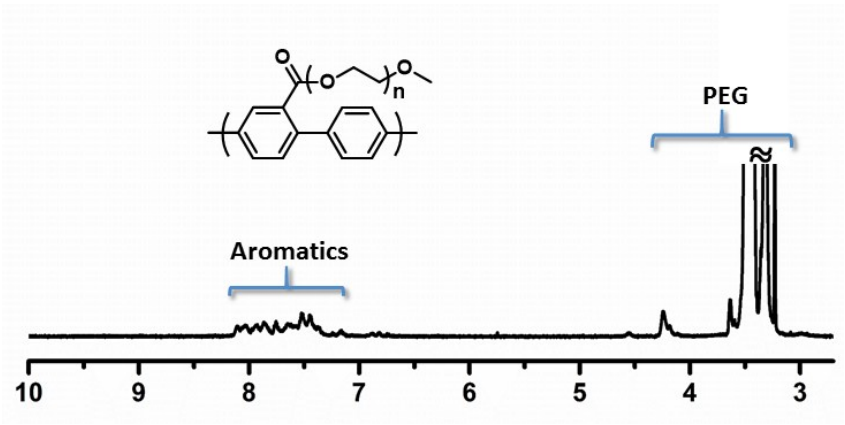


**Figure S2.** $^{1}$H NMR spectrum of PPP-*g*-PEG in DMSO-$d_6$.

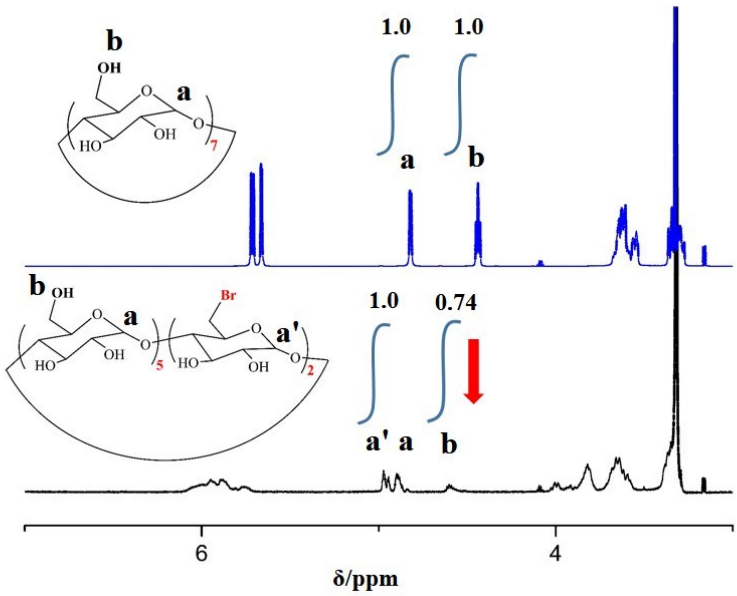


**Figure S3.** $^{1}H$ NMR spectra of CD and CD-$Br_2$ in DMSO-$d_6$.

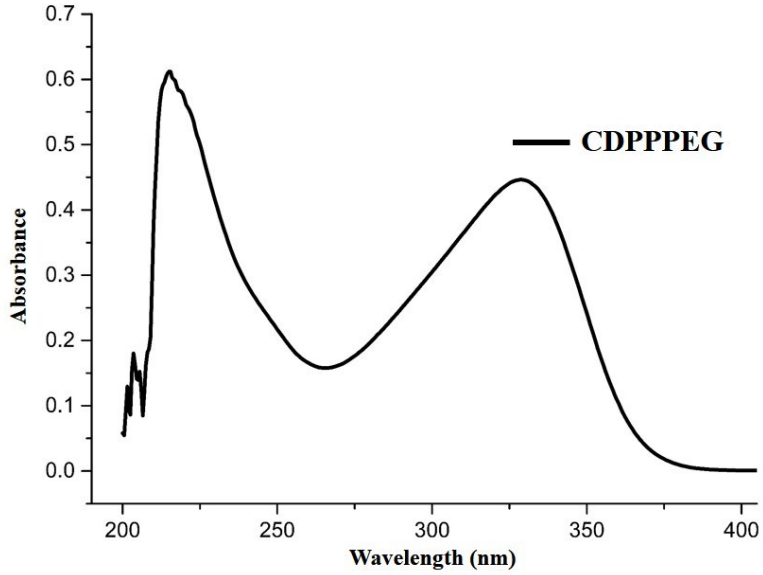


**Figure S4.** UV absorption spectrum of PPP-CD-*g*-PEG in DMF solution (0.1 mg $mL^{-1}$).

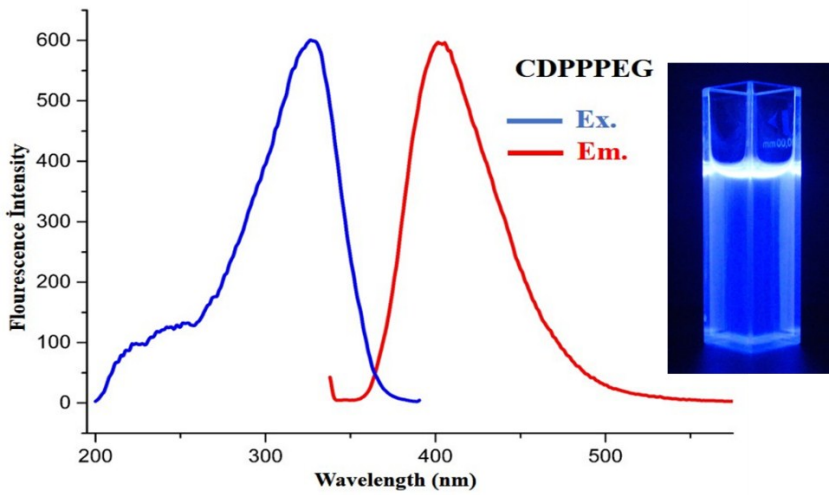


**Figure S5.** Fluorescence excitation, emission spectra of PPP-CD-*g*-PEG ($\lambda_{exc}$ = 330 nm) and picture taken under UV light (365 nm) in DMF (1.43 mg $mL^{-1}$).

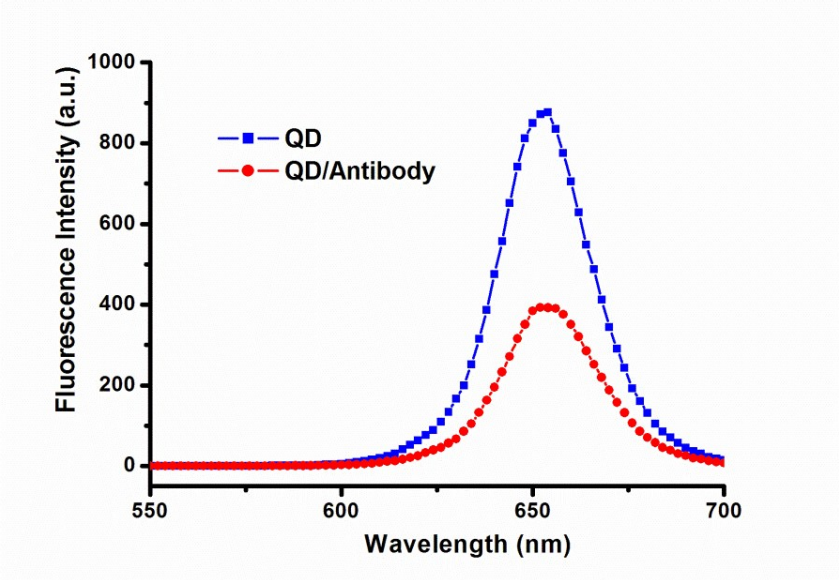


**Figure S6.** Fluorescence spectra of QD and QD/Antibody PPP-CD-*g*-PEG ($\lambda_{exc}$ = 410 nm) .

**Table S1.** The composition of synthetic serum.[S1]

| ***Compound*** | ***Molar Concentration(mM)*** |
|---|---|
| KCl | 4.5 |
| $CaCl_2$ | 5 |
| $MgCl_2$ | 1.6 |
| D(+)-glucose | 4.7 |
| Urea | 2.5 |
| Human Serum Albumin | %0.1 |
| NaCl | 145 |

**Table S2.** Molecular weight characteristics of the final copolymers, precursor and model polymer.

| ***Polymer*** | $M_n$[a] (g mol$^{-1}$) | $M_w/M_n$[a] | ***Composition[b] (CD mol %)*** |
|---|---|---|---|
| PhPEG | 5,500 | 1.23 | - |
| PPP-*g*-PEG | 17,800 | 1.24 | - |
| PPP-CD-*g*-PEG | 243,200 | 2.4 | 15 |

[a]Determined by GPC with light scattering detector according to polystyrene standards.
[b]Determined by $^1$H-NMR

**Table S3.** Some of analytical characteristics for the cocaine analysis.

| ***Parameter*** | ***Values*** |
|---|---|
| Linear range (nM) | 10- 150 |
| Slope | 1500 |
| Intercept | 85226 |
| S.E. of Intercept | 3179.03 |
| S.E. of Slope | 62.564 |
| Correlation coefficient | 0.99 |
| LOD (nM) | 13.35 |
| Repeatability* (±S.D, cv) | ±0.056, 4.65% |

*Cocaine conc:75 nM S.E : Standard Error, [$\lambda_{exc}$= 400 nm; $\lambda_{em}$= 655 nm].

**Table S4.** Sample application.

| ***Matrix (synthetic)*** | ***Spiked cocaine (nM)*** | ***Found cocaine (nM)*** | ***Recovery (%)*** | ***RSD (%, Recovery)*** |
|---|---|---|---|---|
| Serum | 50 | 50.37±0.32 | 100.73±0.64 | 0.64 |
| | 75 | 74.90±1.08 | 99.87±1.46 | 1.46 |
| | 100 | 99.87±1.98 | 99.87±1.98 | 1.98 |

**REFERENCES**

[S1] E.B. Bahadır, M.K. Sezginturk, *Artif. Cells, Nanomedicine, Biotechnol.*, 2016, **44**, 462–470.