Electronic Supplementary Information (ESI)

Superbase catalyzed regioselective polyhydroalkoxylation of alkynes: A facile route towards functional poly(vinyl ether)s

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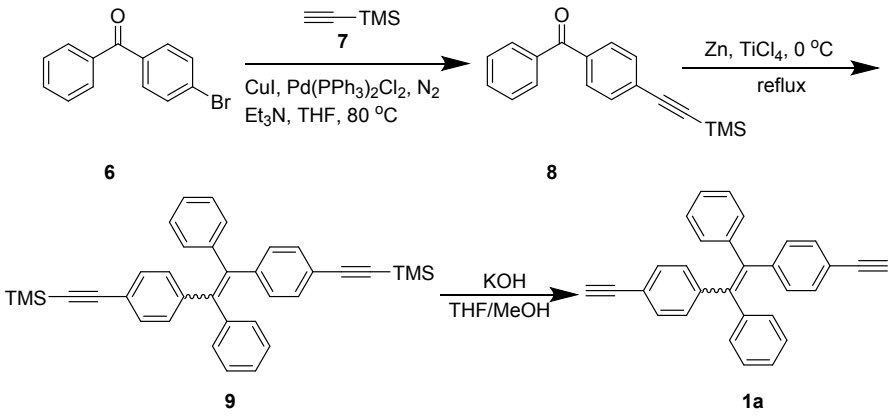
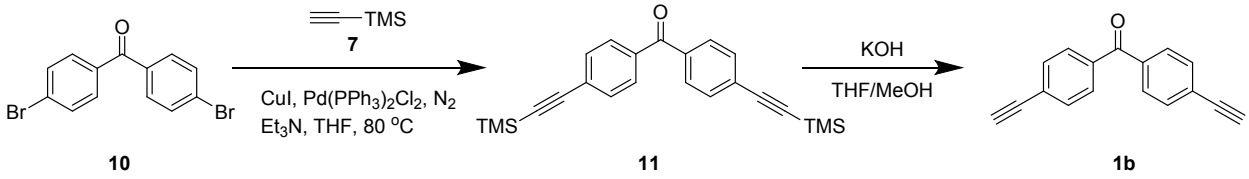
Experimental section

Synthesis of 1,2-bis(4-ethynylphenyl)-1,2-diphenylethene (1a).



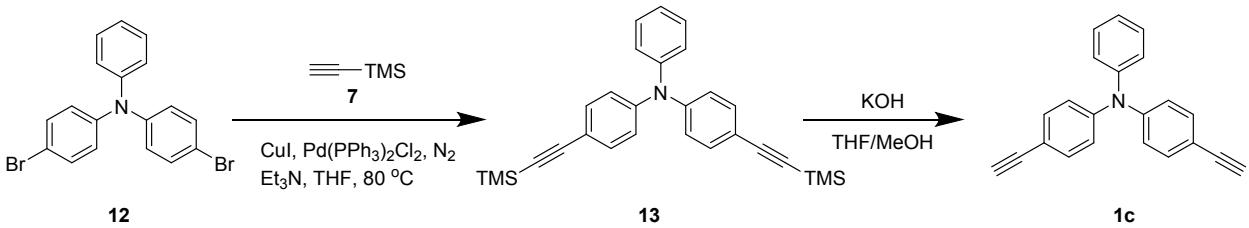
1a was synthesized according to our previously published procedures.[1]

Synthesis of bis(4-ethynylphenyl)methanone (1b).



1b was synthesized according to our previously published procedures.[1] ^{1}H NMR ($CDCl_3$, 500 MHz), δ (TMS, ppm):7.77–7.73 (m, 4H), 7.62–7.58 (m, 4H), 3.26 (s, 2H). ^{13}C NMR ($CDCl_3$, 125 MHz), δ(TMS, ppm): 195.02, 137.32, 132.39, 130.22, 126.81, 83.05, 80.27. FT-IR (KBr disk), v (cm^{-1}): 3304, 3283, 2105, 1938, 1645, 1600, 1551, 1404, 1309, 1289, 1176, 1140, 1116, 1018, 971, 932, 863, 839, 766, 680, 658, 643, 628, 551, 520, 493.

Synthesis of 4-ethynyl-*N*-(4-ethynylphenyl)-*N*-phenylaniline (1c)



1c was synthesized according to our previously published procedures.[2]

Drug loading and release.

50 mg of P**1a2b** and 5 mg of rhodamine B were dissolved in 10 mL of DCM. Then, the solution was added into 200 mL of hexane dropwise under vigorous stirring. After standing for 1 h, the precipitates were filtered and washed with methanol to remove rhodamine B on the precipitates surface. The P**1a2b** loaded rhodamine B was obtained after drying in vacuum at 40 ^{o}C to a constant weight.

5 mg of P**1a2b**/ rhodamine B complex was added into 300 mL of hydrochloric acid buffer solution and water at 37±0.5 ^{o}C, respectively and incubate for 2 h. Afterwards, 3 mL of supernate was analyzed by photoluminescence spectra.

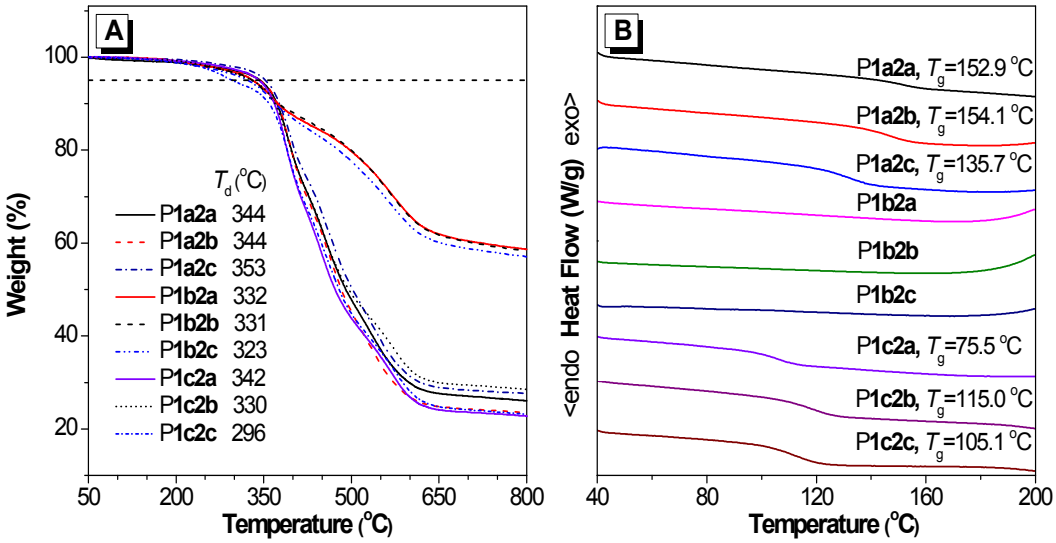


Figure S1. (A) TGA thermograms and (B) DSC thermograms of polymers P**1a2a**−P**1c2c**. T_d and *T*g represent the temperature of 5% weights loss and the glass transition temperature, respectively.

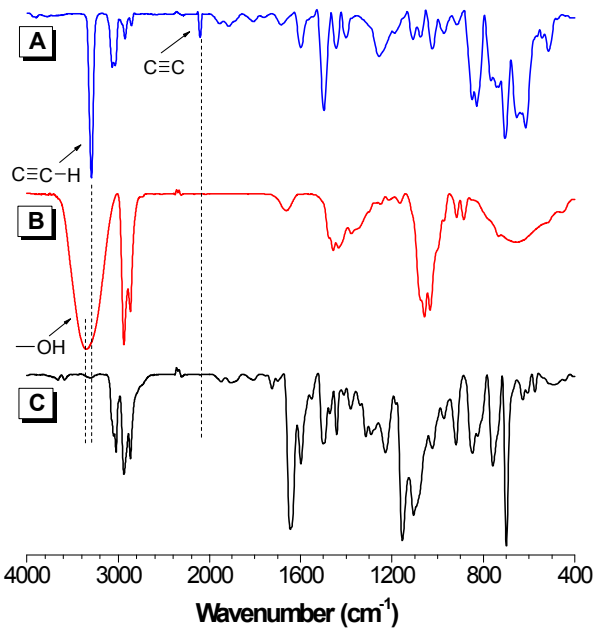


Figure S2. FT-IR spectra of **1a** (A), **2a** (B) and P**1a2a** (C).

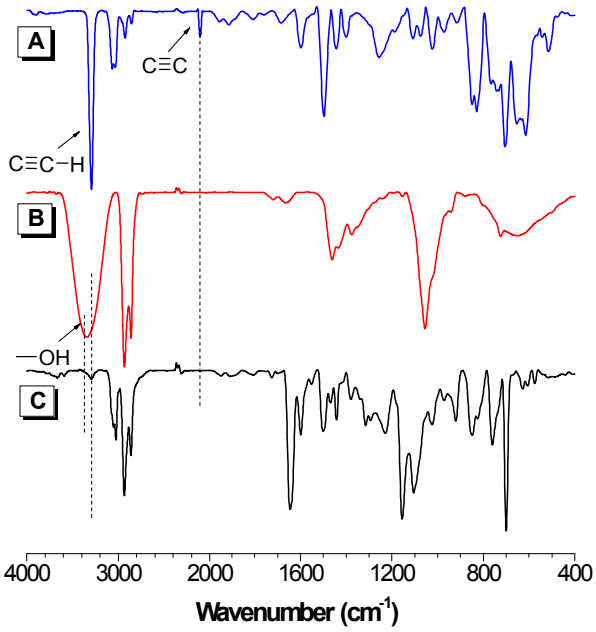


Figure S3. FT-IR spectra of **1a** (A), **2c** (B) and P**1a2c** (C).

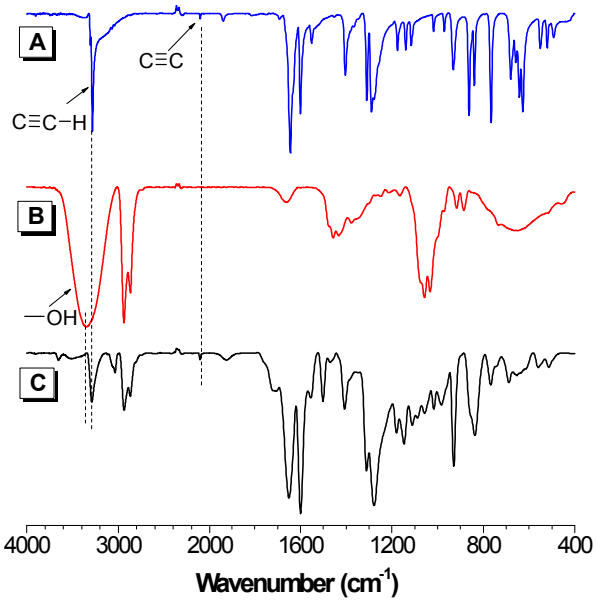


Figure S4. FT-IR spectra of **1b** (A), **2a** (B) and P**1b2a** (C).

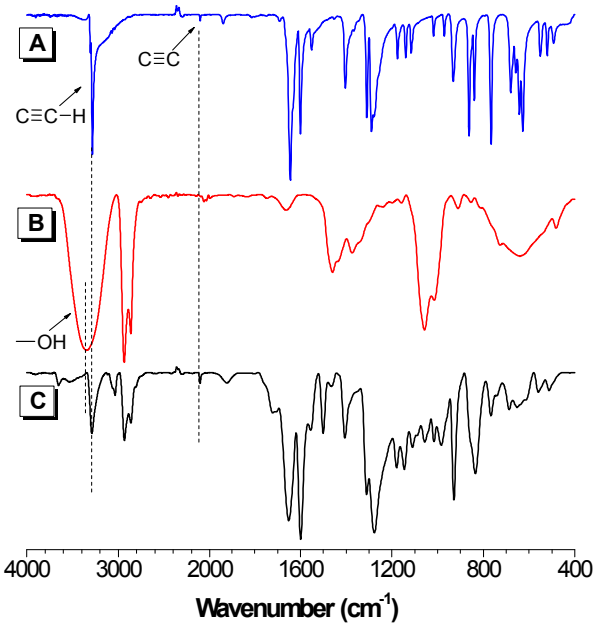


Figure S5. FT-IR spectra of **1b** (A), **2b** (B) and P**1b2b** (C).

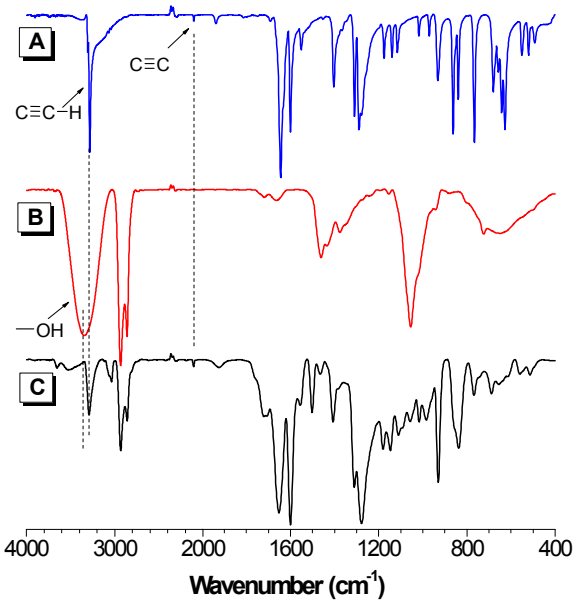


Figure S6. FT-IR spectra of **1b** (A), **2c** (B) and P**1b2c** (C).

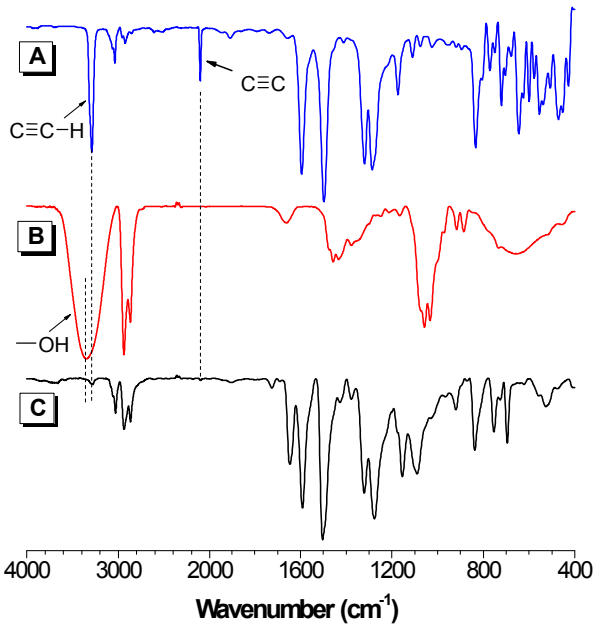


Figure S7. FT-IR spectra of **1c** (A), **2a** (B) and P**1c2a** (C).

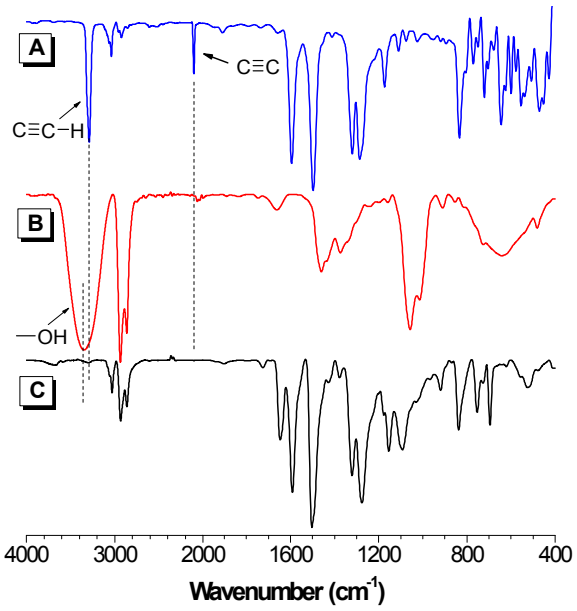


Figure S8. FT-IR spectra of **1c** (A), **2b** (B) and P**1c2b** (C).

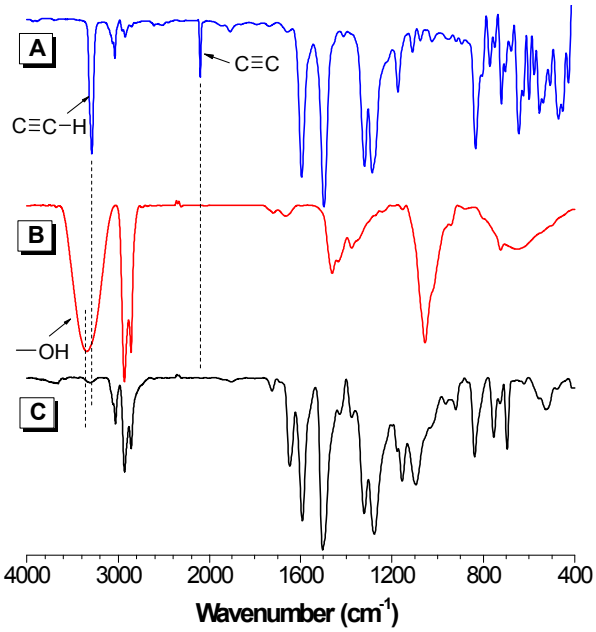


Figure S9. FT-IR spectra of **1c** (A), **2c** (B) and P**1c2c** (C).

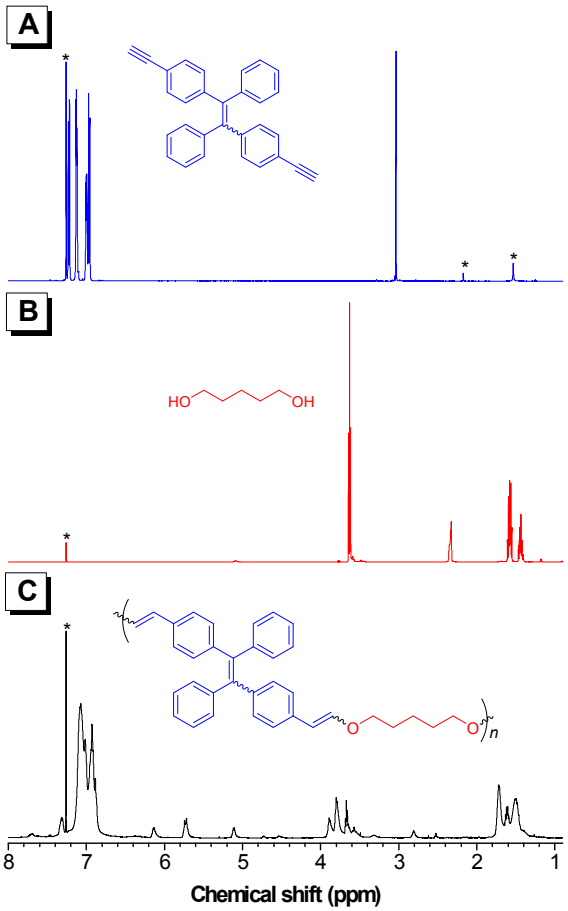


Figure S10. ^{1}H NMR spectra of **1a** (A), **2a** (B), and P**1a2a** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

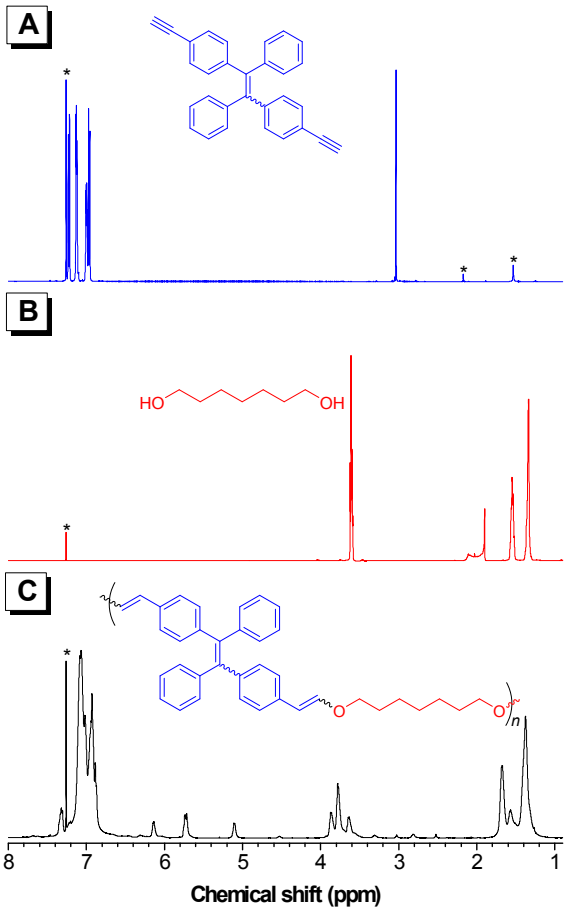


Figure S11. ^{1}H NMR spectra of **1a** (A), **2c** (B), and P**1a2c** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

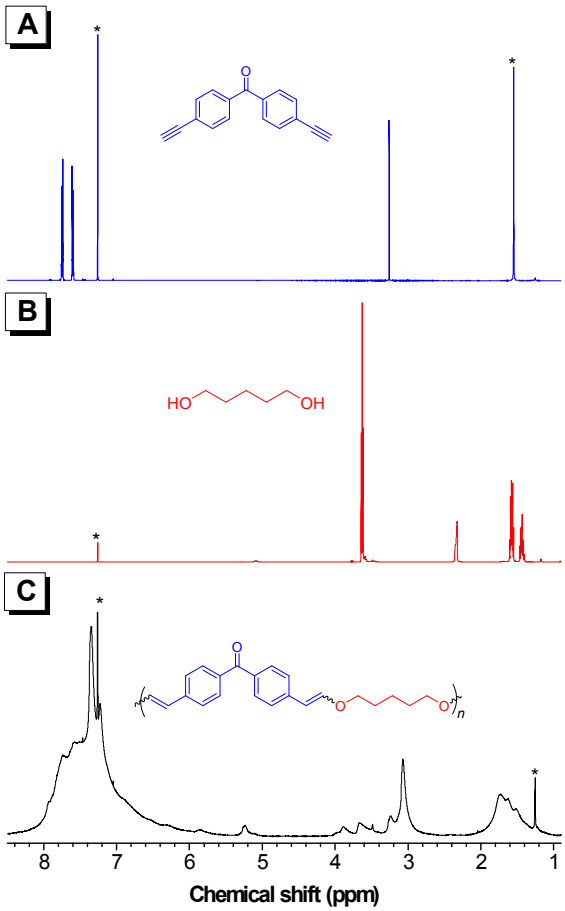


Figure S12. ^{1}H NMR spectra of **1b** (A), **2a** (B), and P**1b2a** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

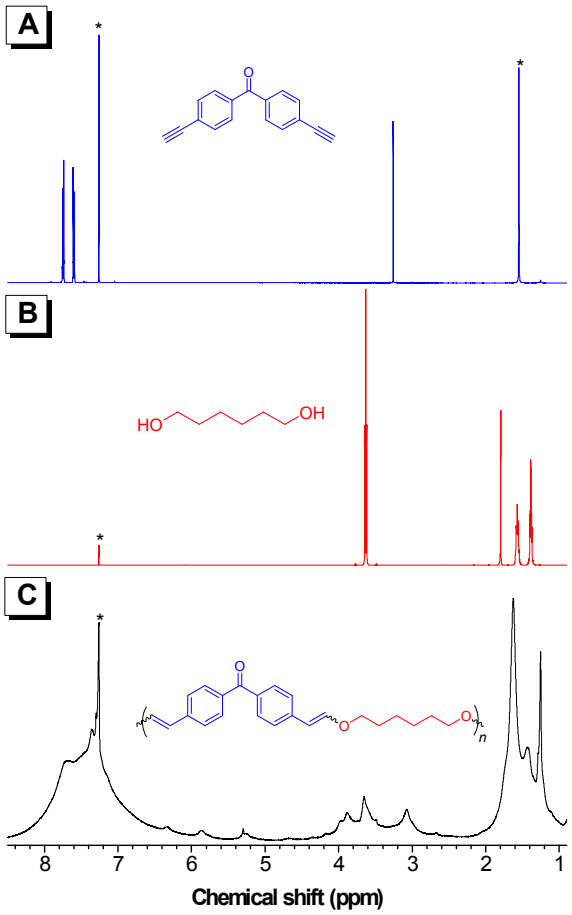


Figure S13. ^{1}H NMR spectra of **1b** (A), **2b** (B), and P**1b2b** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

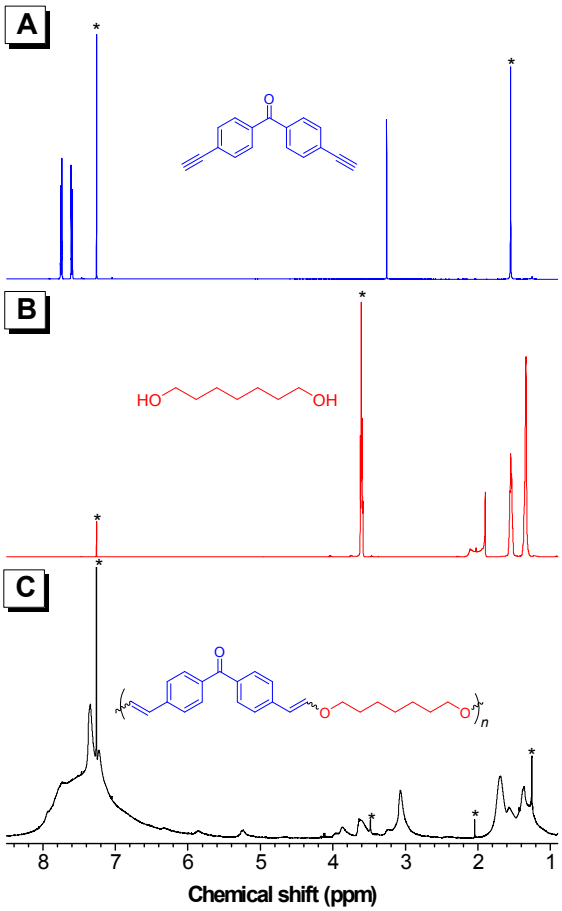


Figure S14. ^{1}H NMR spectra of **1b** (A), **2c** (B), and P**1b2c** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

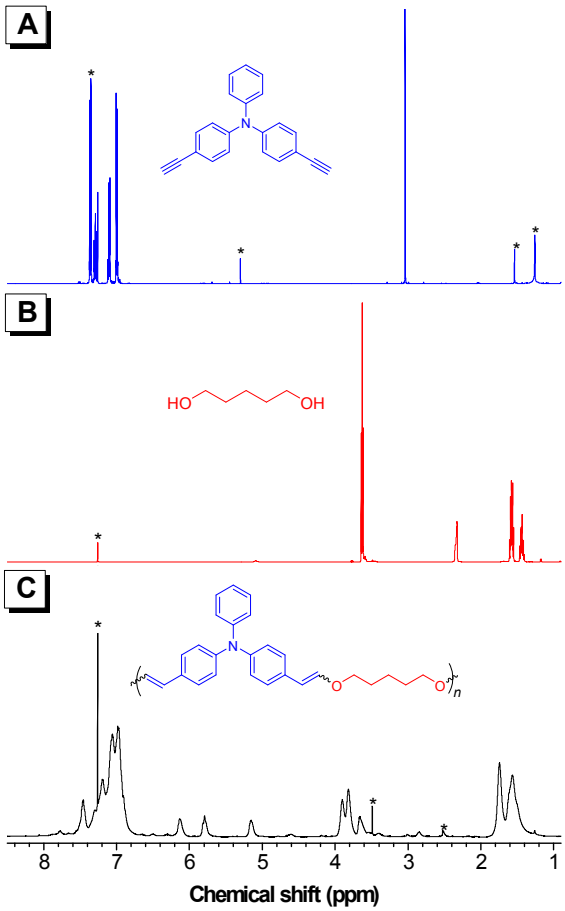


Figure S15. ^{1}H NMR spectra of **1c** (A), **2a** (B), and P**1c2a** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

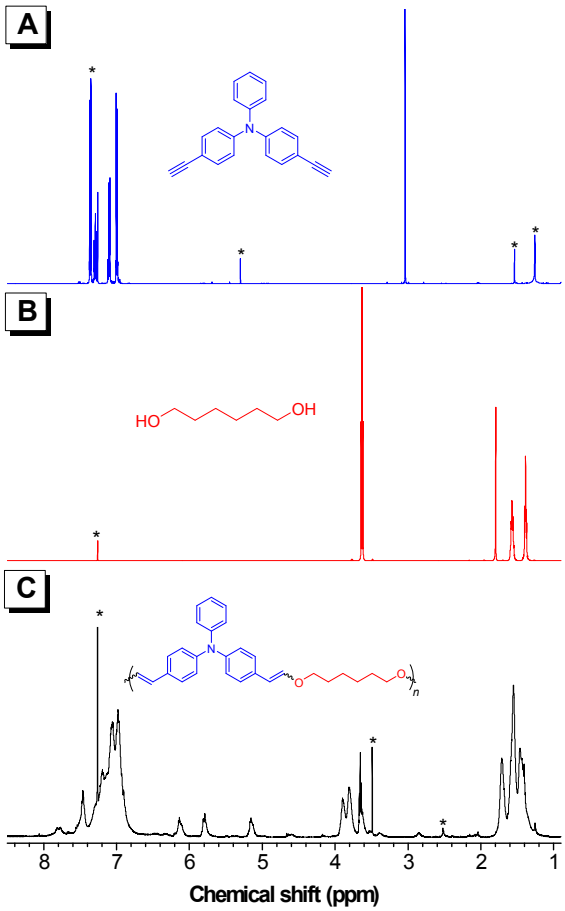


Figure S16. ^{1}H NMR spectra of **1c** (A), **2b** (B), and P**1c2b** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

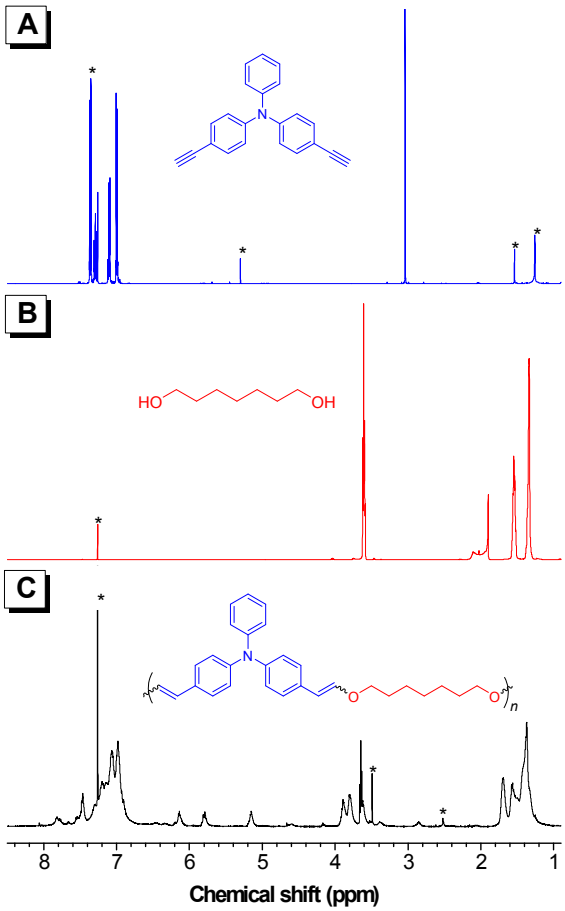


Figure S17. ^{1}H NMR spectra of **1c** (A), **2c** (B), and P**1c2c** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

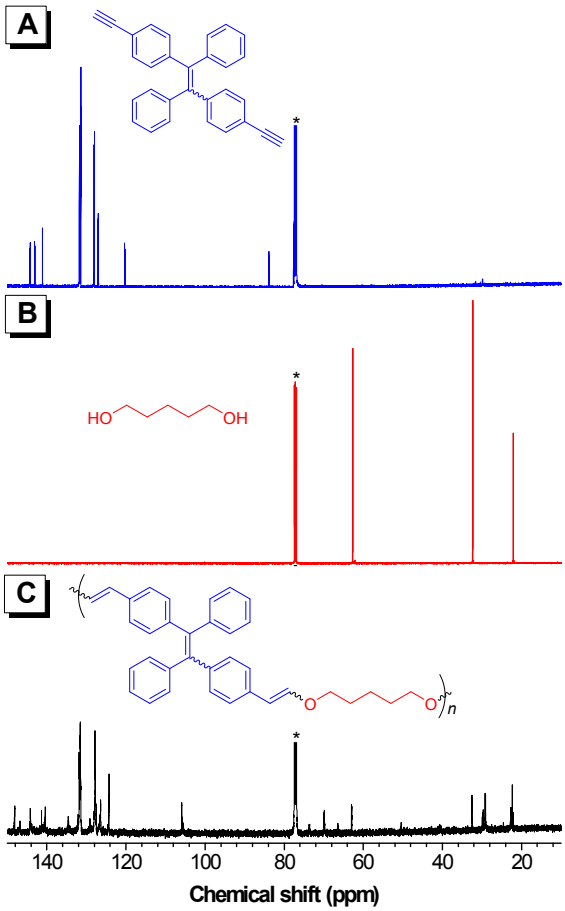


Figure S18. ^{13}C NMR spectra of **1a** (A), **2a** (B), and P**1a2a** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

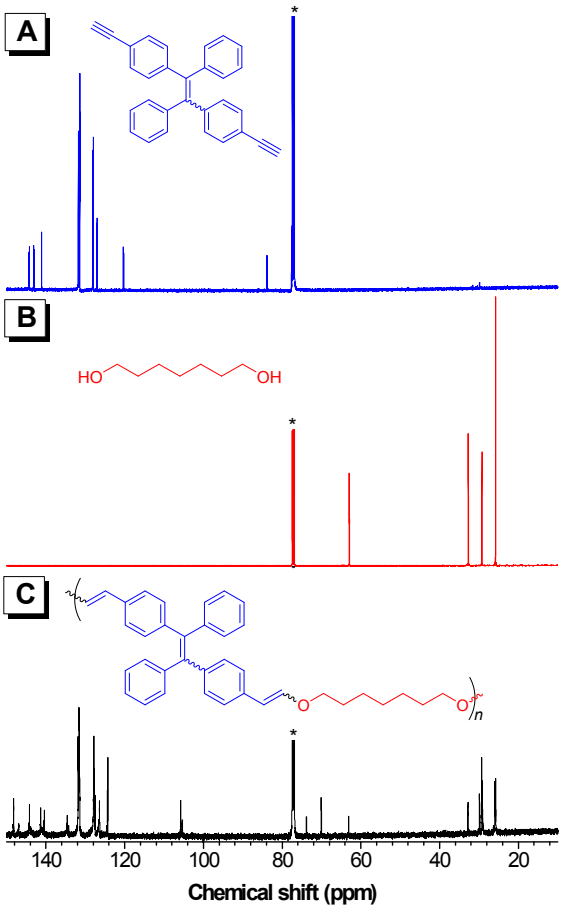


Figure S19. ^{13}C NMR spectra of **1a** (A), **2c** (B), and P**1a2c** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

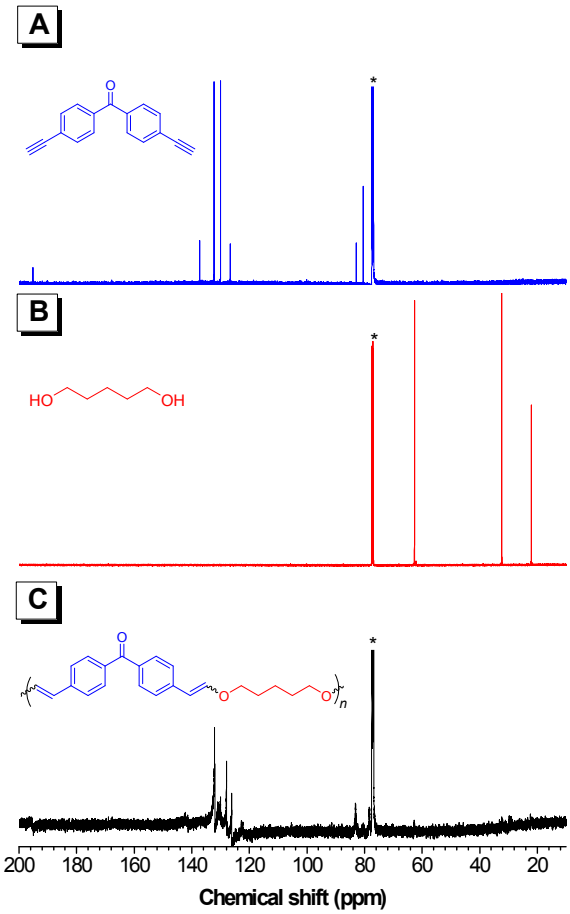


Figure S20. ^{13}C NMR spectra of **1b** (A), **2a** (B), and P**1b2a** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

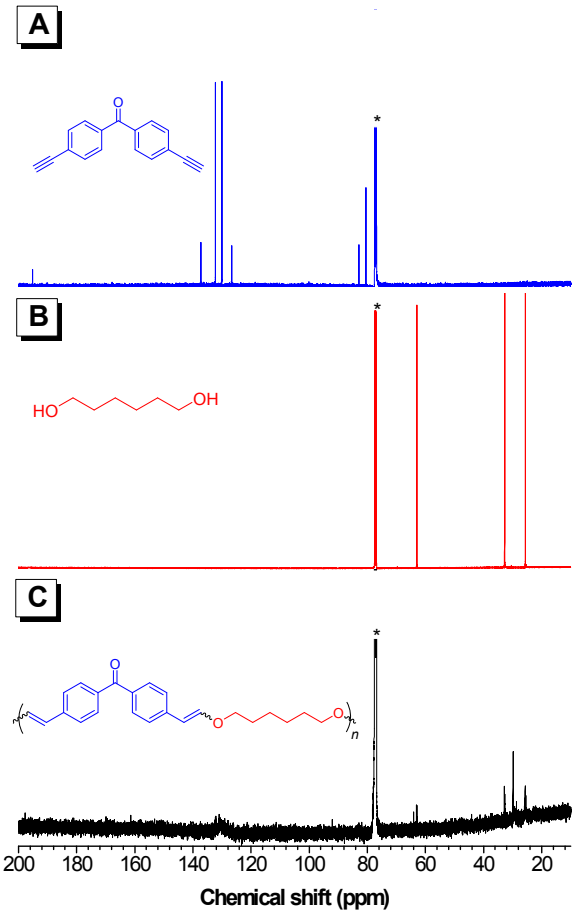


Figure S21. ^{13}C NMR spectra of **1b** (A), **2b** (B), and P**1b2b** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

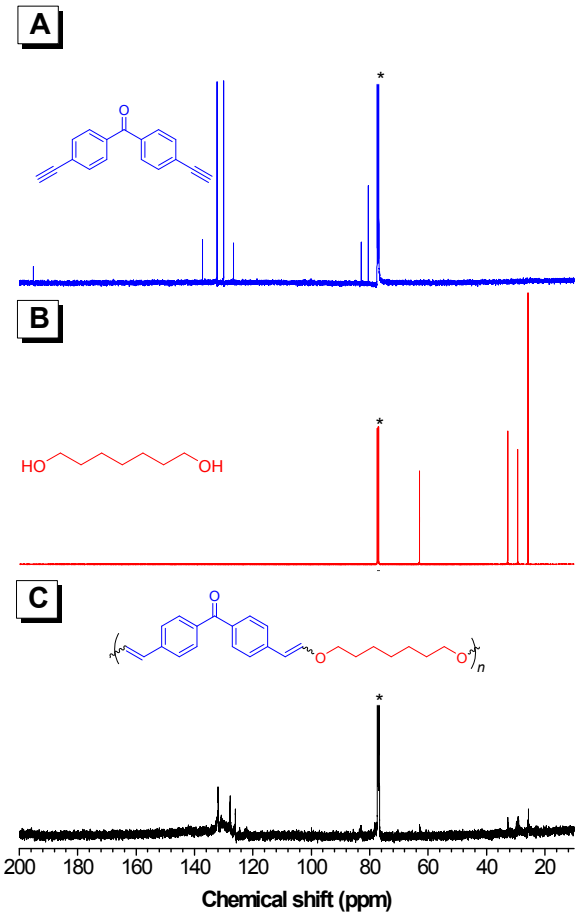


Figure S22. ^{13}C NMR spectra of **1b** (A), **2c** (B), and P**1b2c** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

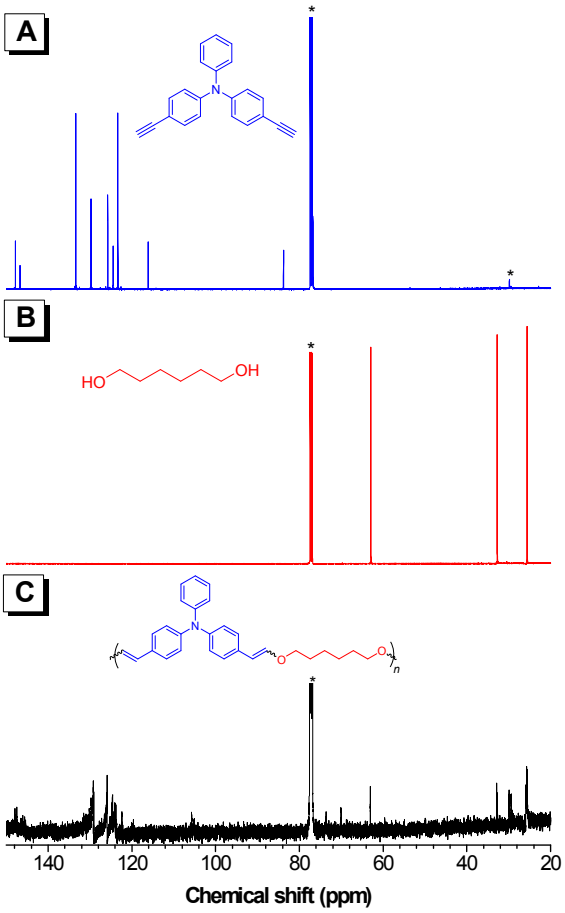


Figure S23. ^{13}C NMR spectra of **1c** (A), **2a** (B), and P**1c2a** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

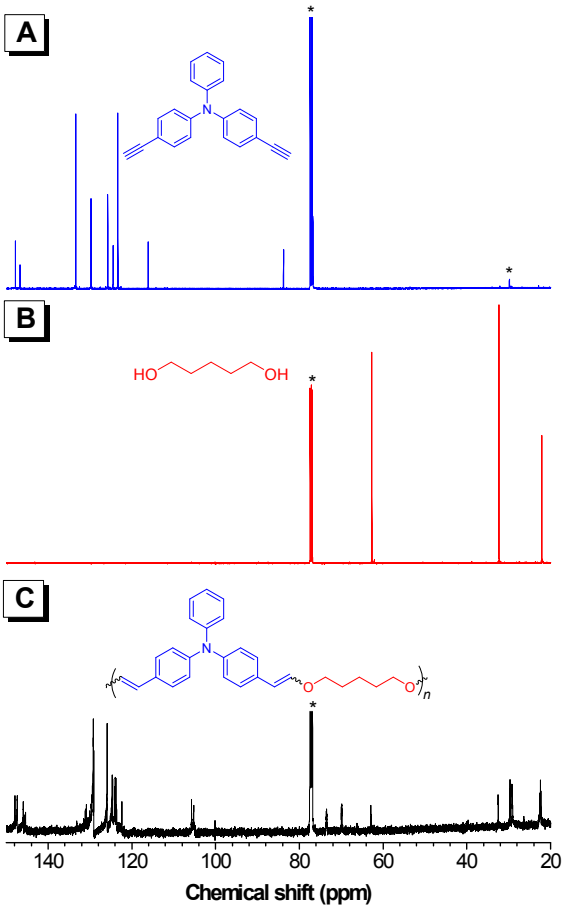


Figure S24. ^{13}C NMR spectra of **1c** (A), **2b** (B), and P**1c2b** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

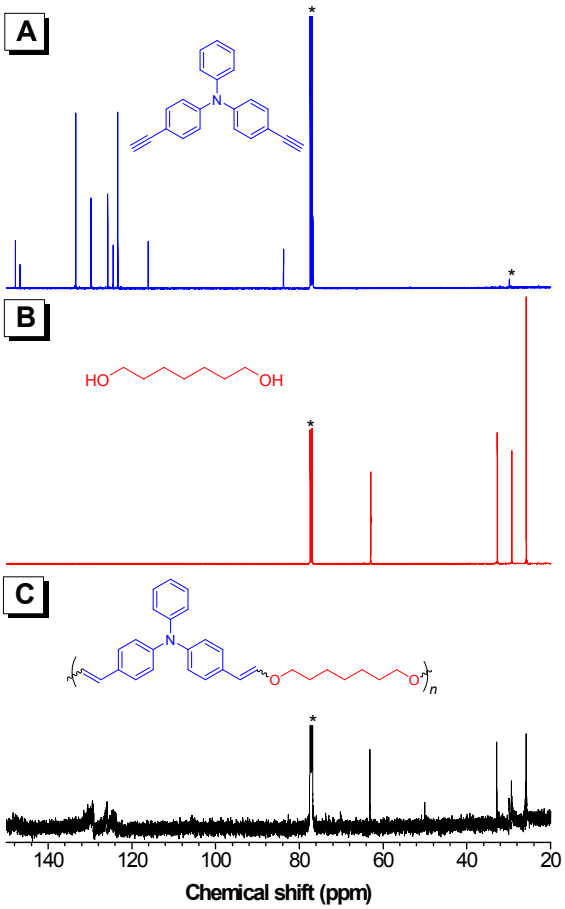


Figure S25. ^{13}C NMR spectra of **1c** (A), **2c** (B), and P**1c2c** (C) in $CDCl_3$. The solvent peaks are marked with asterisks.

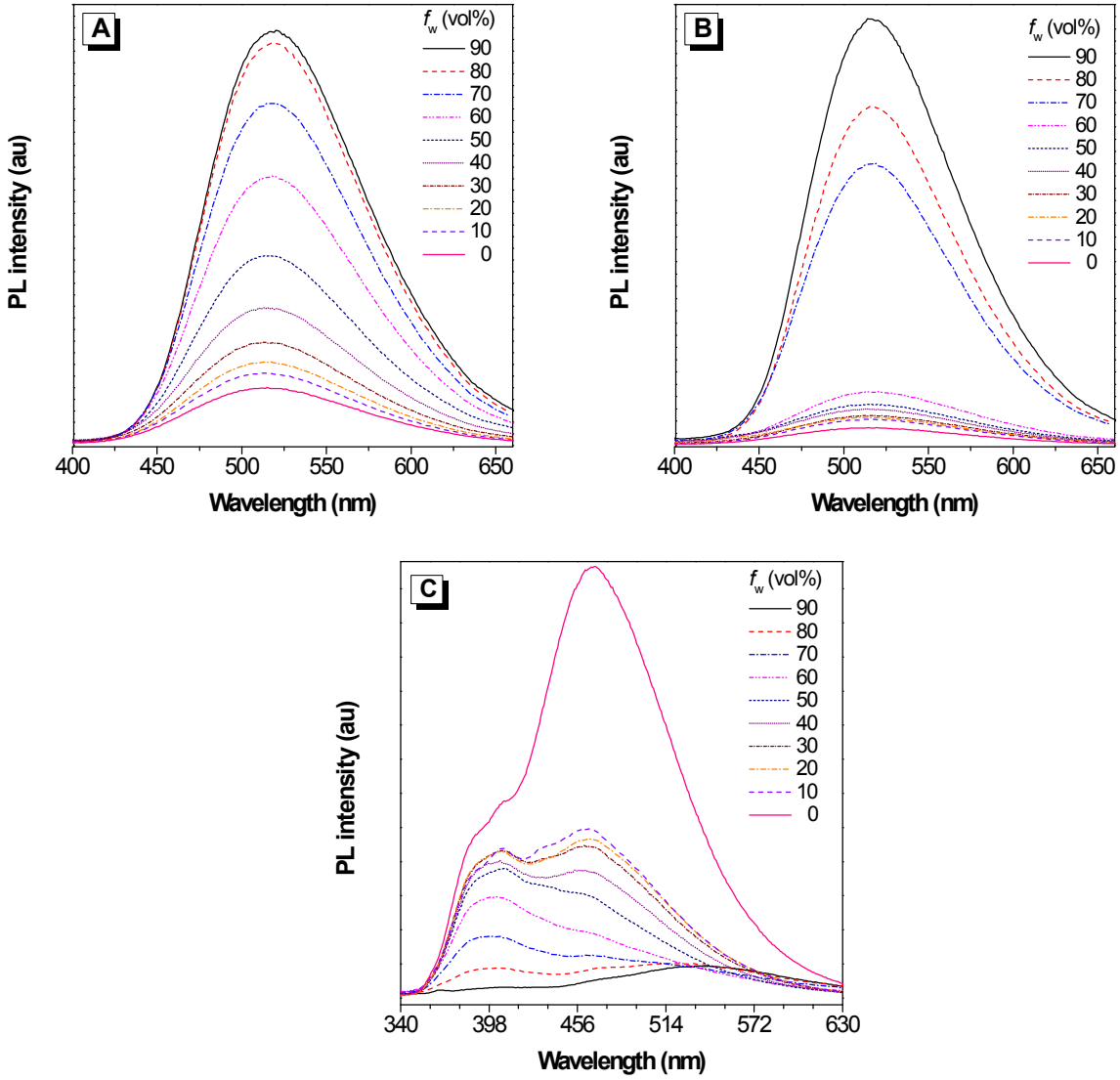


Figure S26. PL spectra of P**1a2a** (A), P**1a2c** (B) and P**1c2a** (C) in THF/water mixture with different water fraction (f_w, in volume percentage, vol%). Excitation concentration: 10 μM; λ_{ex} (P**1a2a**, P**1a2c)**: 345 nm, λ_{ex} (P**1c2a)**: 325 nm.

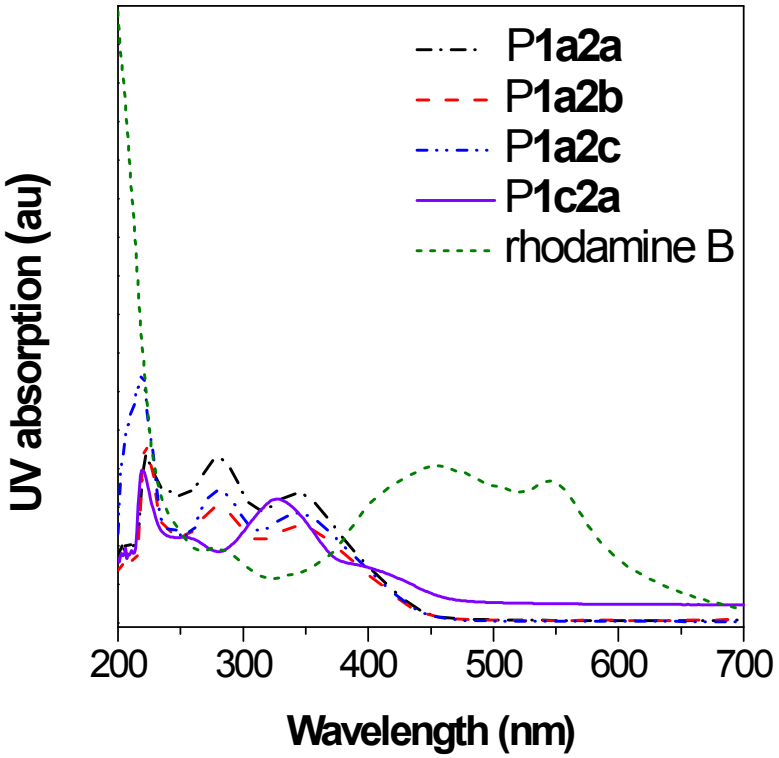


Figure S27. (A) UV absorption spectra of P**1a2a**, P**1a2b**, P**1a2c** and P**1c2a** in THF solution and rhodamine B in water solution. Concentration: 10 μM.

Reference

1. R. Hu, J. W. Y. Lam, J. Liu, H. H. Y. Sung, I. D. Williams, Z. Yue, K. S. Wong, M. M. F. Yuen and B. Z. Tang, *Polym. Chem.*, 2012, **3**, 1481−1489.

2. B. Yao, J. Mei, J. Li, J. Wang, H. Wu, J. Z. Sun, A. Qin and B. Z. Tang, *Macromolecules*, 2014, **47**, 1325−1333.