Supporting Information

H_2O_2-responsive polymeric micelle with a benzil moiety for efficient DOX delivery and AIE Imaging

Yan-Dong Dai,[a] Xue-Yi Sun,[b] Wan Sun,[b] Jing-Bo Yang,[b] Rui Liu,*[b] Yi Luo,[c] Tao Zhang,[c] Yu Tian,[d] Zhong-Lin Lu*[b] and Lan He*[a]

[a] National Institutes for Food and Drug Control, Institute of Chemical Drug Control, TianTanXiLi 2, Beijing, 100050, China. E-mail: helan1961@aliyun.com

[b] Key Laboratory of Radiopharmaceuticals, Ministry of Education, College of Chemistry, Beijing Normal University, Beijing 100875, China. E-mail: rliu@bnu.edu.cn, luzl@bnu.edu.cn

[c] Guangxi Institute for Food and Drug Control, Yunjing Road 32, Nanning, Guangxi Zhuang Autonomous Region, 530029, China.

[d] Solid Waste and Chemicals Management Center, Ministry of Environmental Protection of the People's Republic of China, Beijing 100029, China

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1. AIE Fluorescent Spectra of **TPG2**

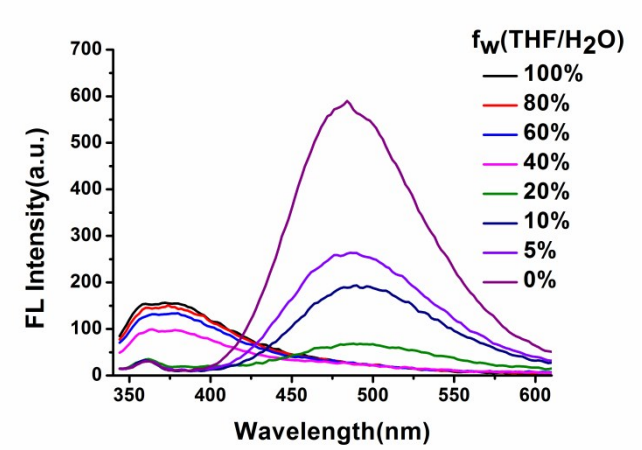

Figure S1. Fluorescent spectra of **TPG2** (20 μM, λ_{ex} = 320 nm) in different THF/H_2O ratios.

2. ^{1}H NMR Spectrum of **TPG1** in water

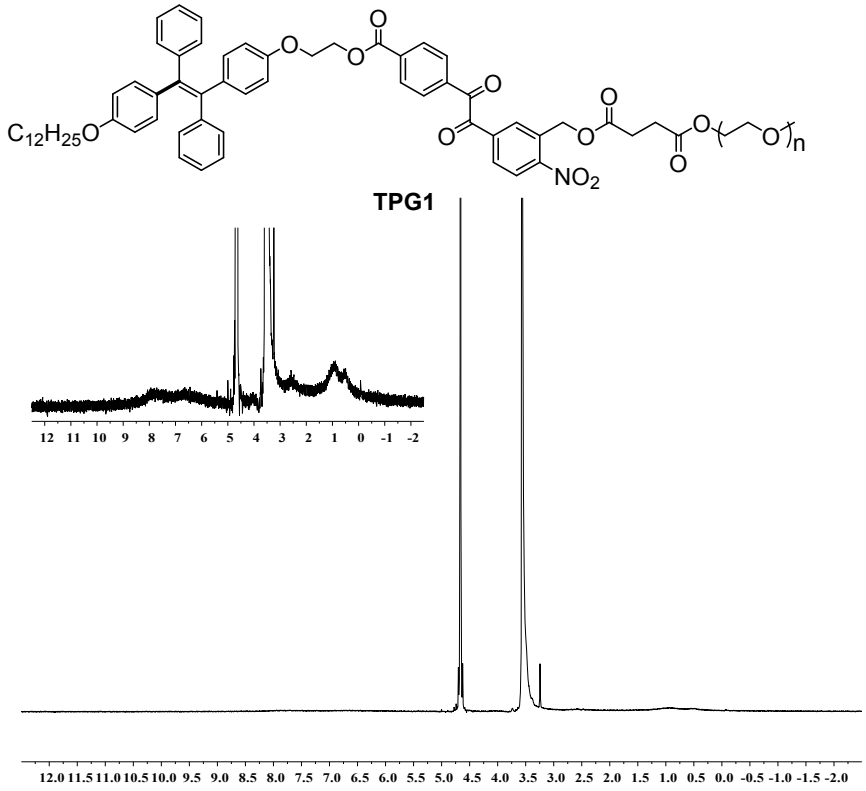

Figure S2. ^{1}H NMR spectrum of **TPG1** in D_2O (600 MHz, 298 K). Inset: the enlarged spectrum of **TPG1** in D_2O.

3. MS spectra of **TPG1** and **TPG2**

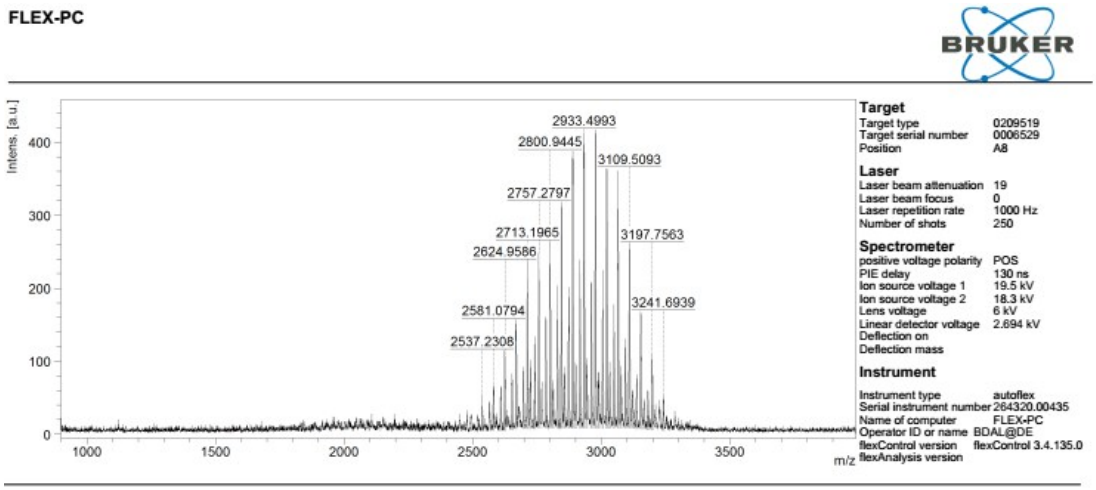

Figure S3. MALDI-TOF spectrum of **TPG1.**

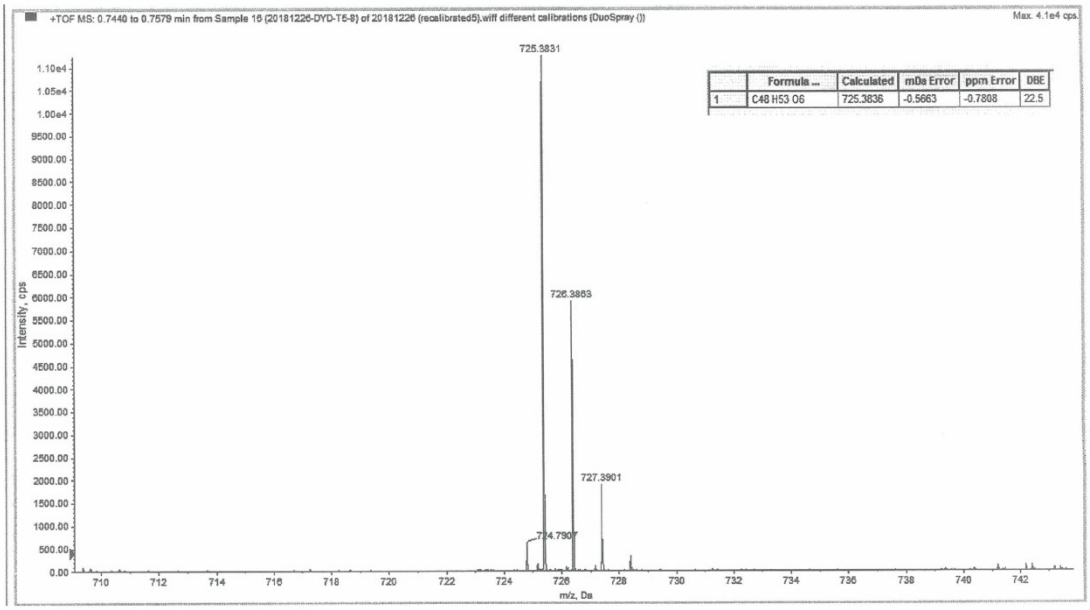

Figure S4. ESI-HRMS spectrum of **TPG2**.

4. NMR Spectra of Synthesized Compounds

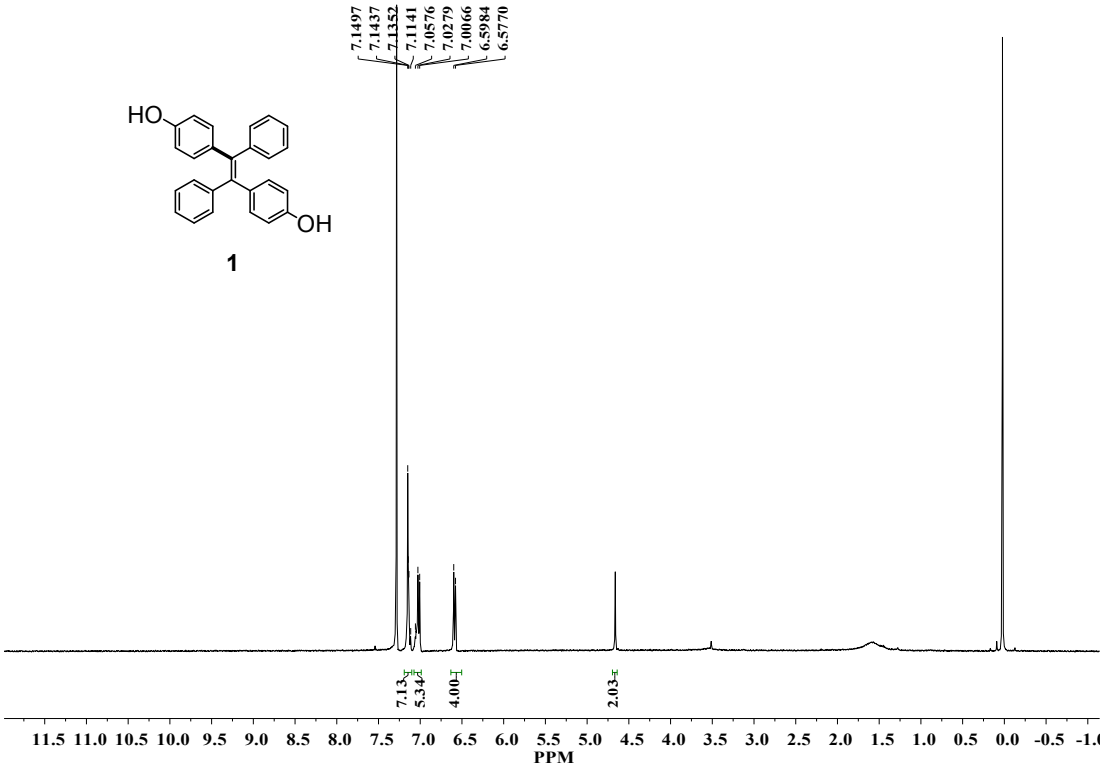

Figure S5. ^{1}H NMR spectrum of compound **1** (400 MHz, $CDCl_3$, 298 K)

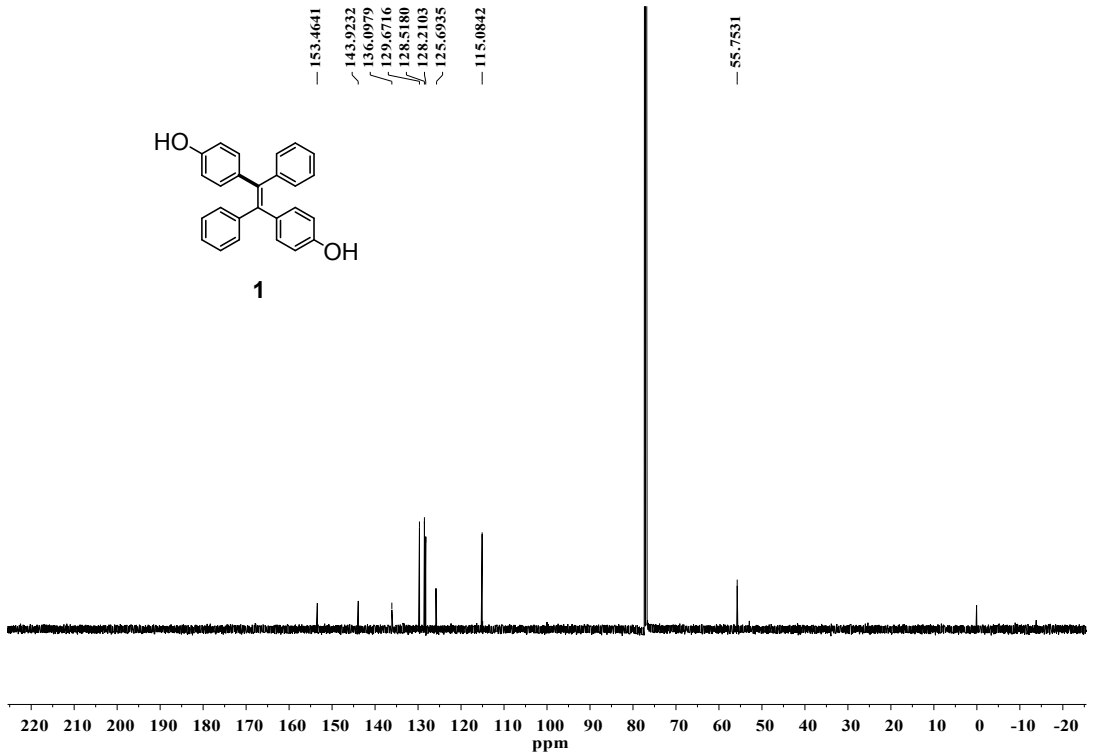

Figure S6. ^{13}C NMR spectrum of compound **1** (151 MHz, $CDCl_3$, 298 K)

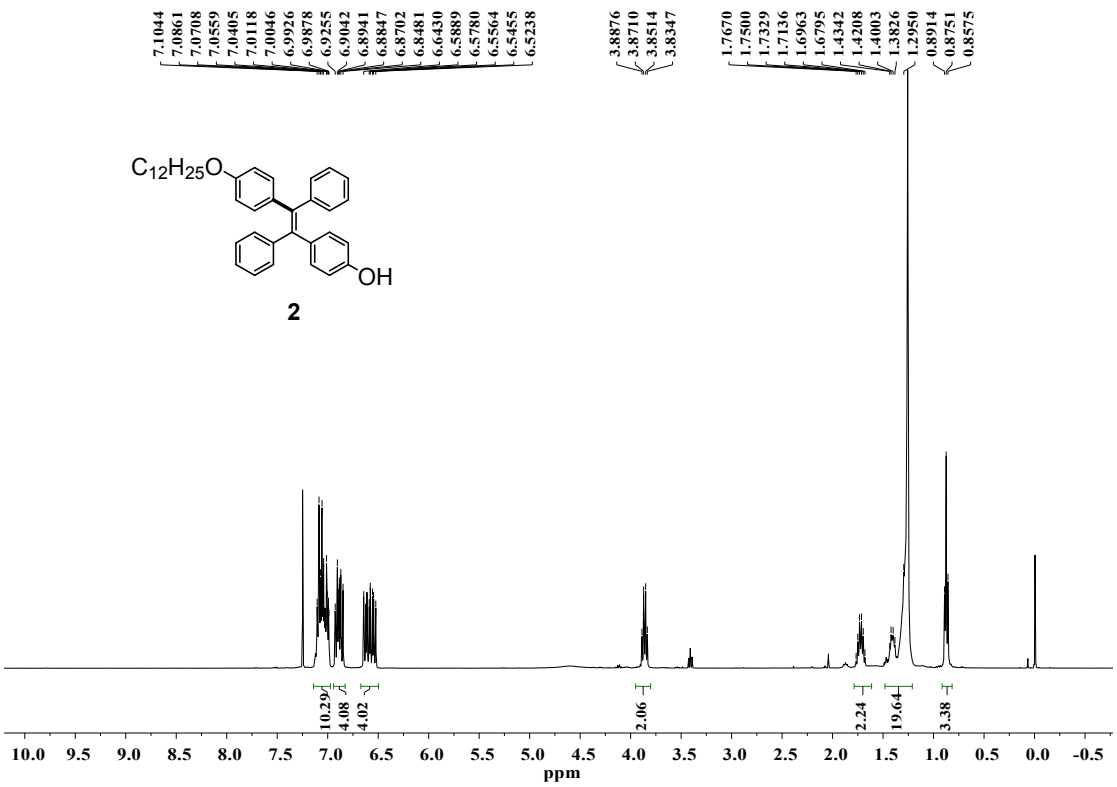

Figure S7. ^{1}H NMR spectrum of compound **2** (400 MHz, $CDCl_3$, 298 K)

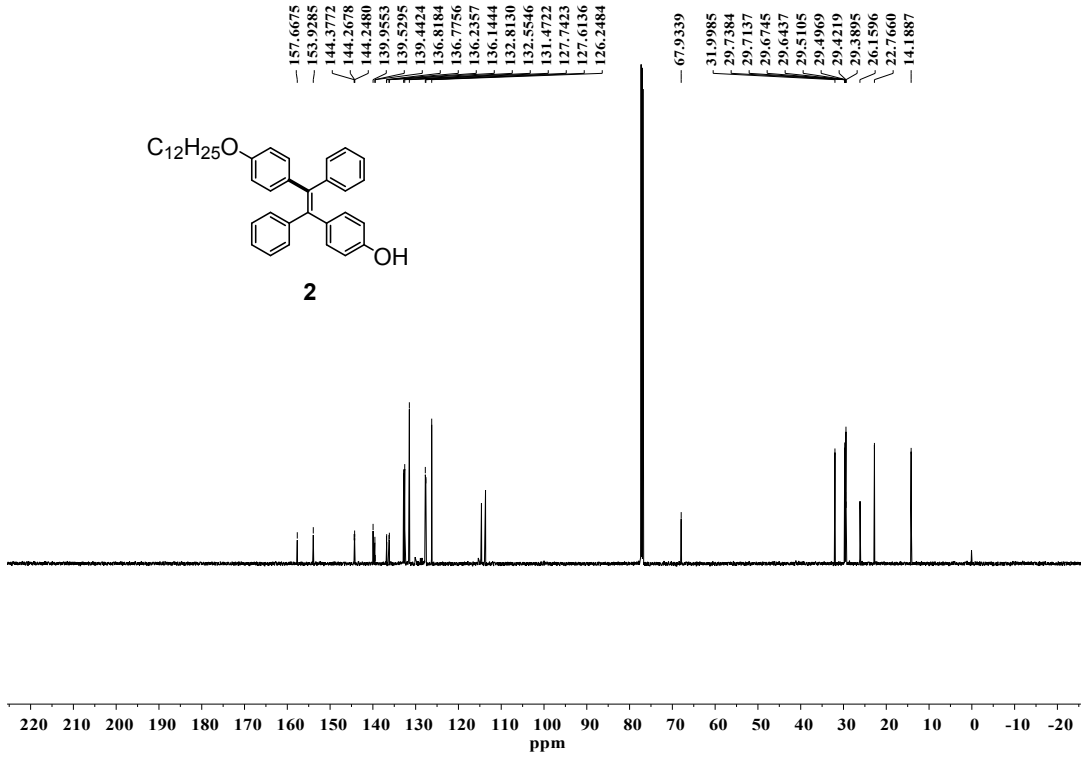

Figure S8. ^{13}C NMR spectrum of compound **2** (151 MHz, $CDCl_3$, 298 K)

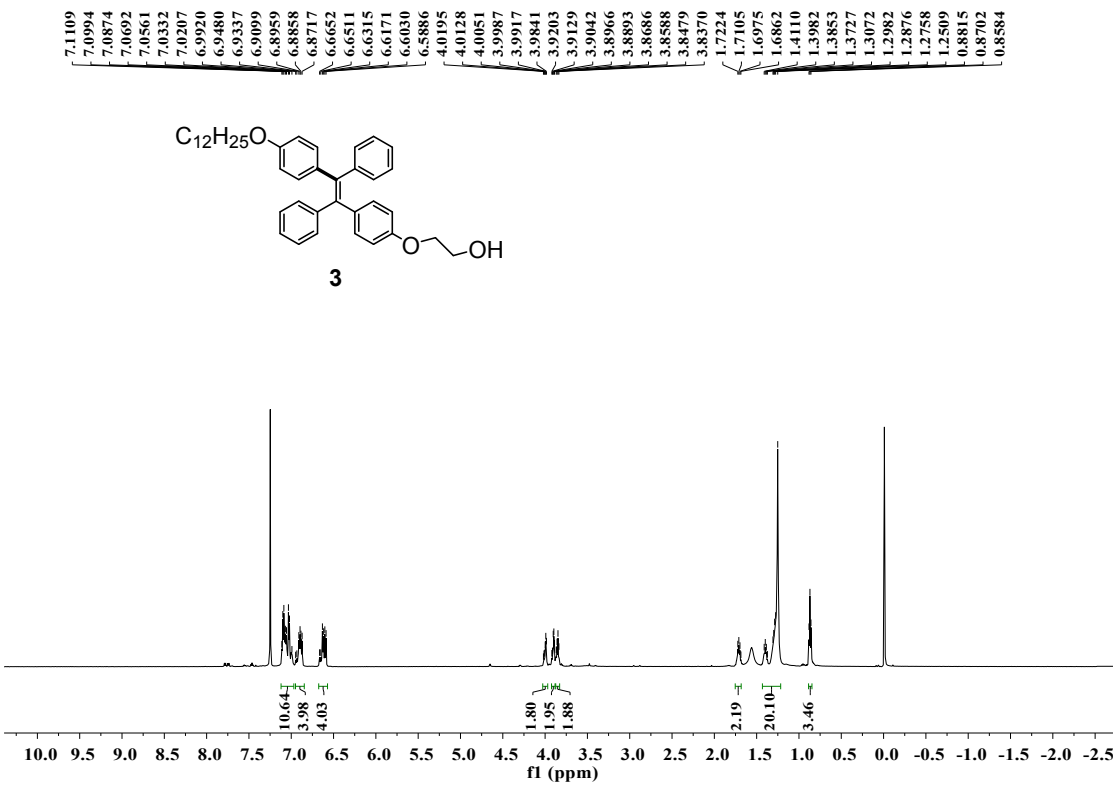

Figure S9. ^{1}H NMR spectrum of compound **3** (400 MHz, $CDCl_3$, 298 K)

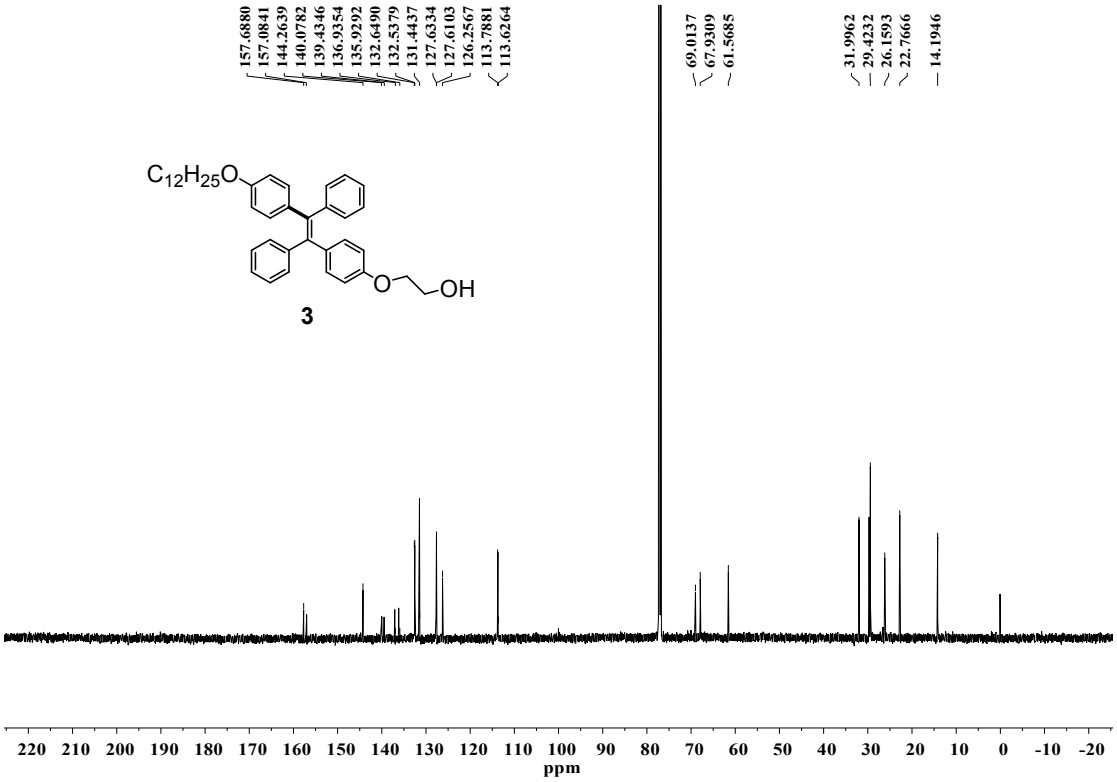

Figure S10. ^{13}C NMR spectrum of compound **3** (101 MHz, $CDCl_3$, 298 K)

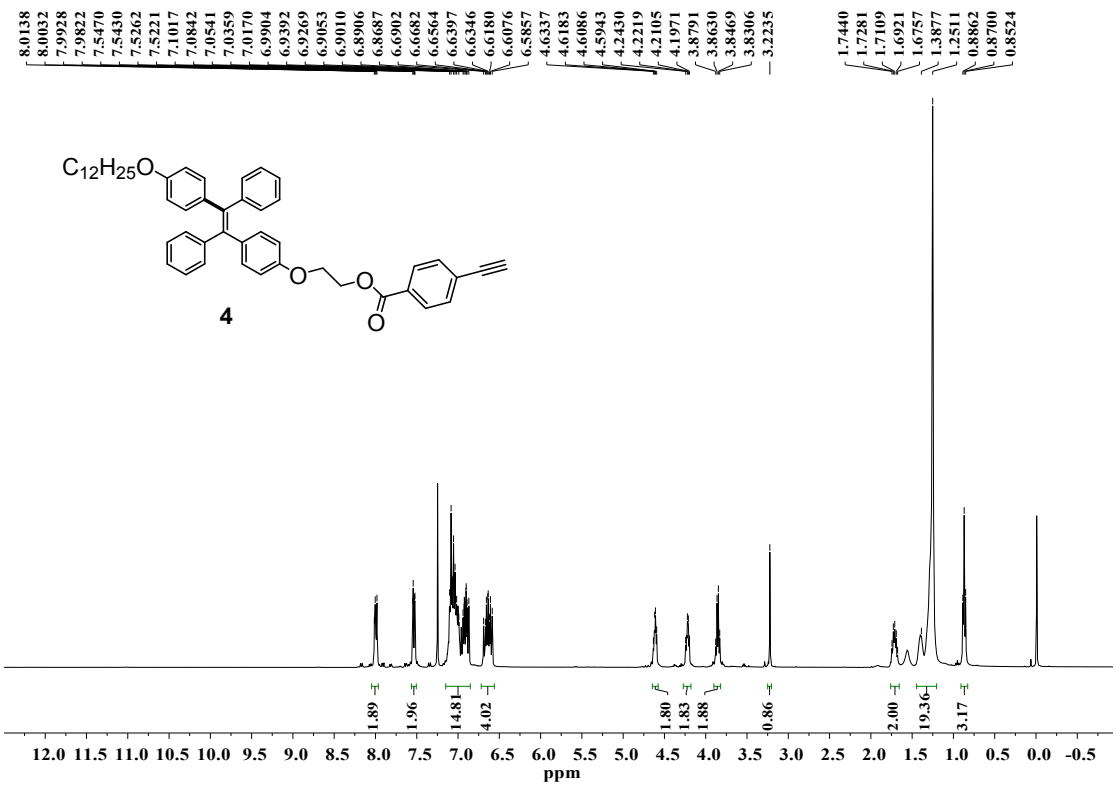

Figure S11. ^{1}H NMR spectrum of compound **4**(400 MHz, $CDCl_3$, 298 K)

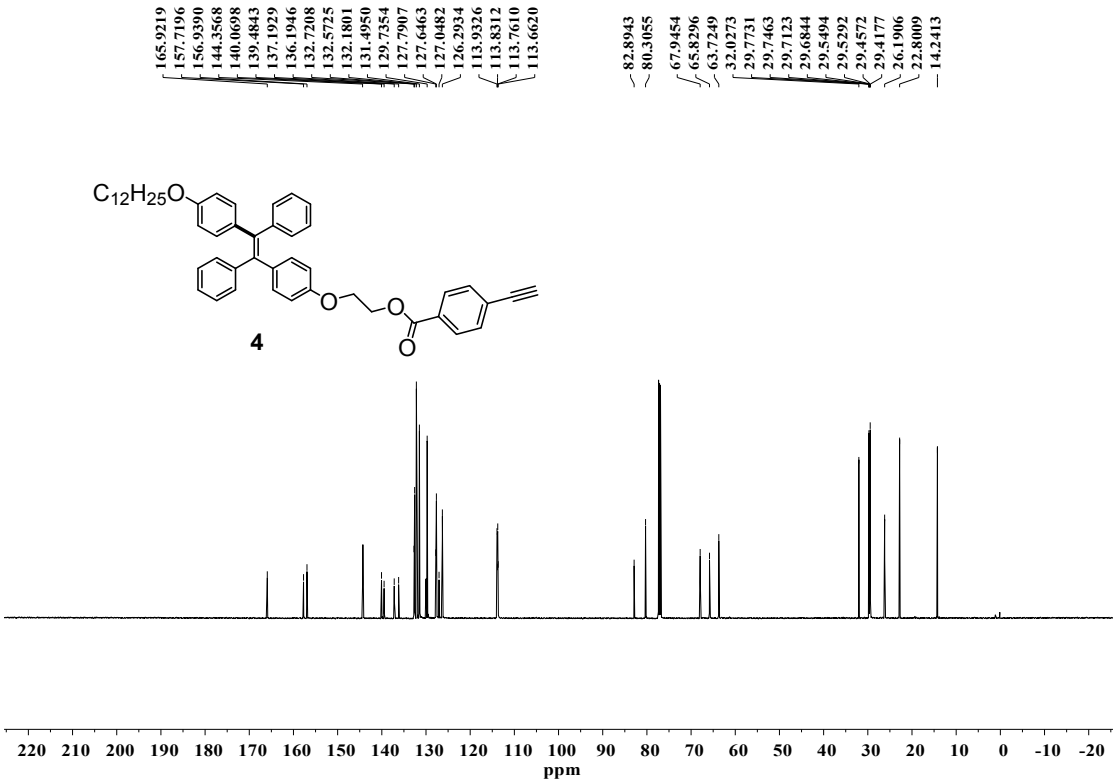

Figure S12. ^{13}C NMR spectrum of compound **4** (101 MHz, $CDCl_3$, 298 K)

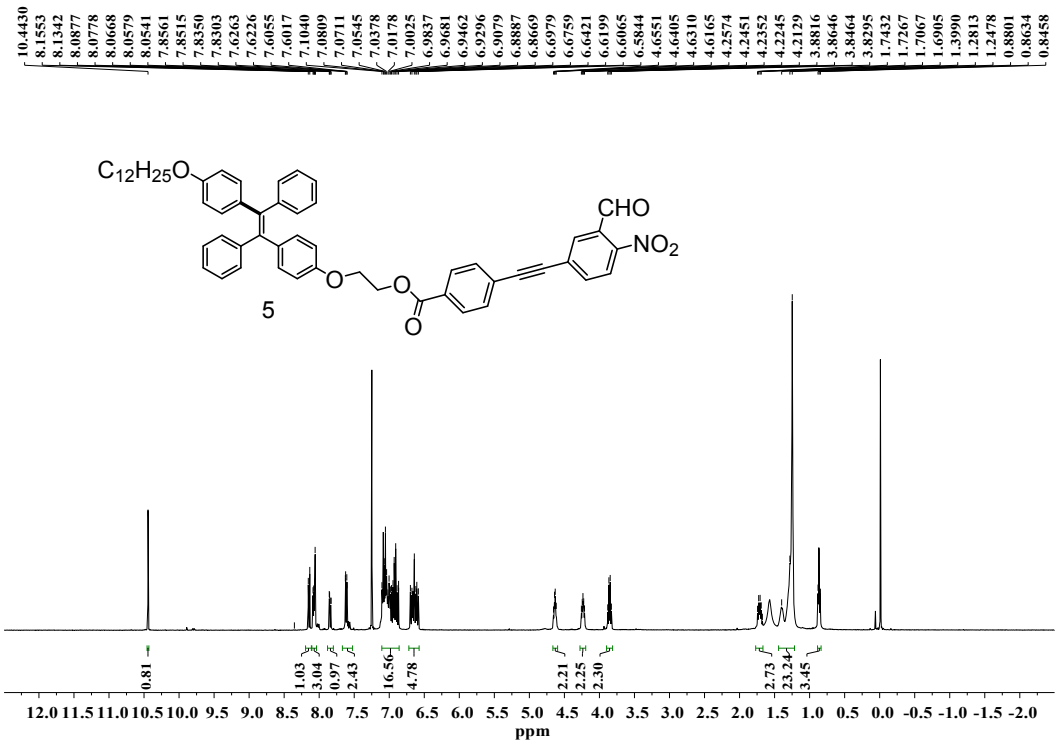

Figure S13. ^{1}H NMR spectrum of compound **5** (400 MHz, $CDCl_3$, 298 K)

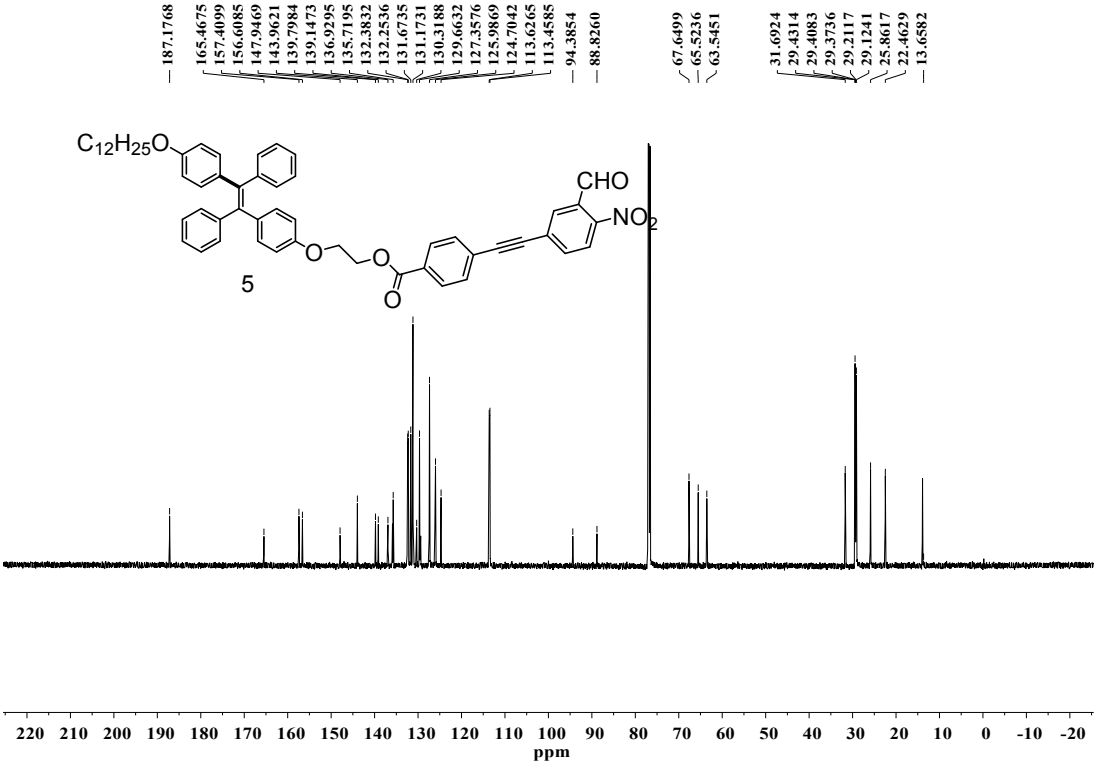

Figure S14. ^{13}C NMR spectrum of compound **5** (151 MHz, $CDCl_3$, 298 K)

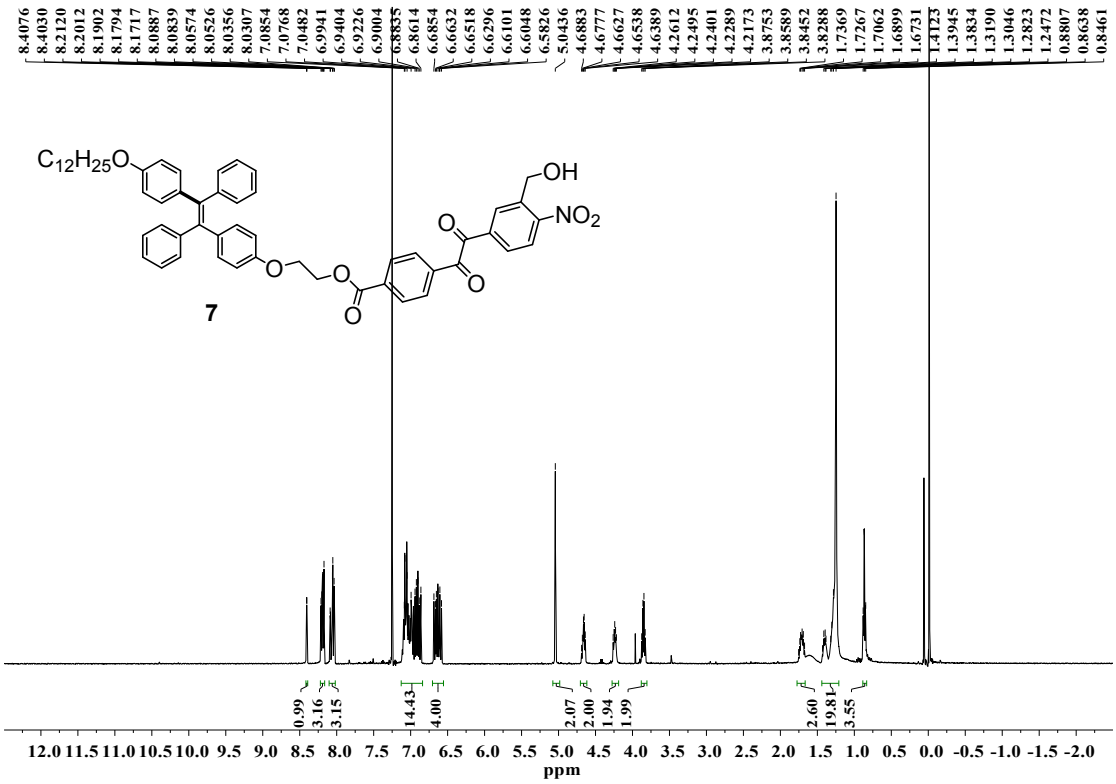

Figure S15. ^{1}H NMR spectrum of compound **7** (400 MHz, $CDCl_3$, 298 K)

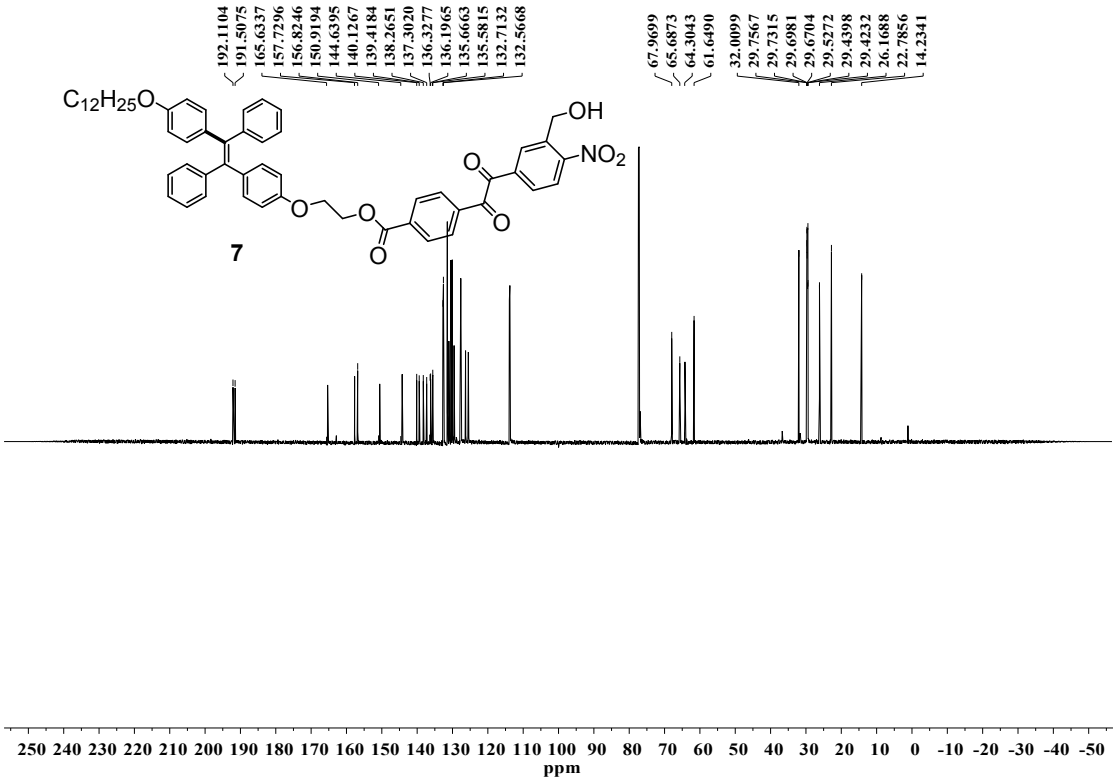

Figure S16..^{13}C NMR spectrum of compound **7** (151 MHz, $CDCl_3$, 298 K)

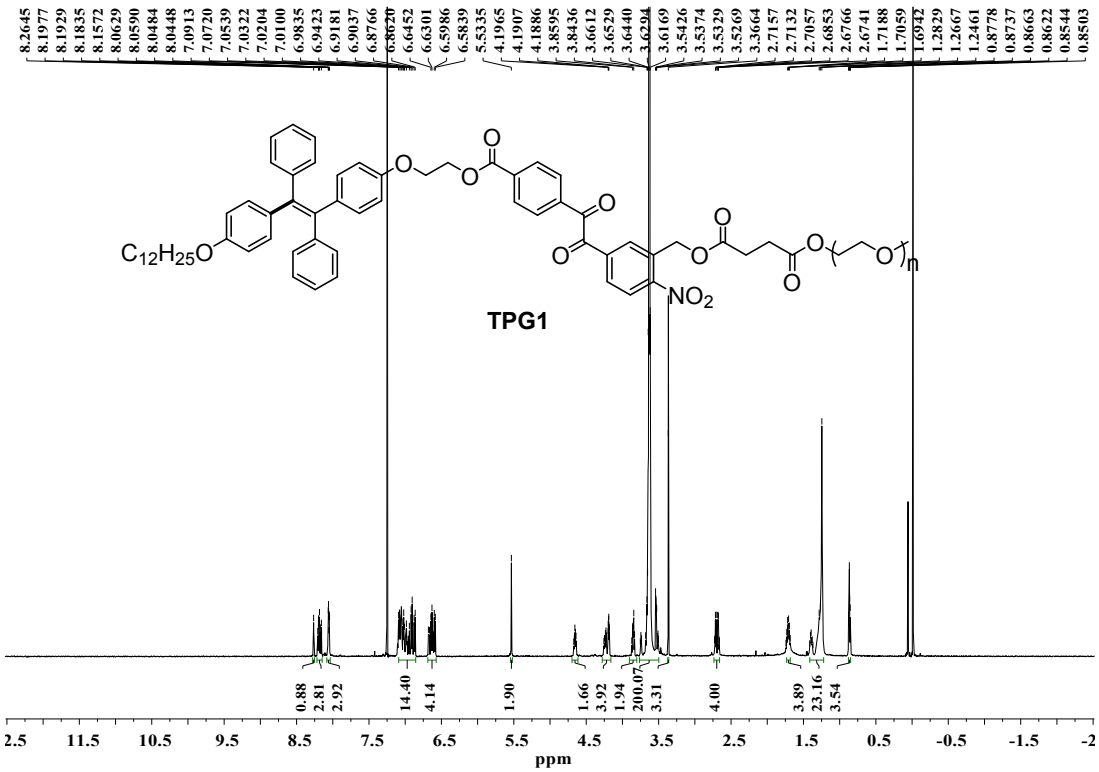

Figure S17.[1]H NMR spectrum of **TPG1** (400 MHz, $CDCl_3$, 298 K)

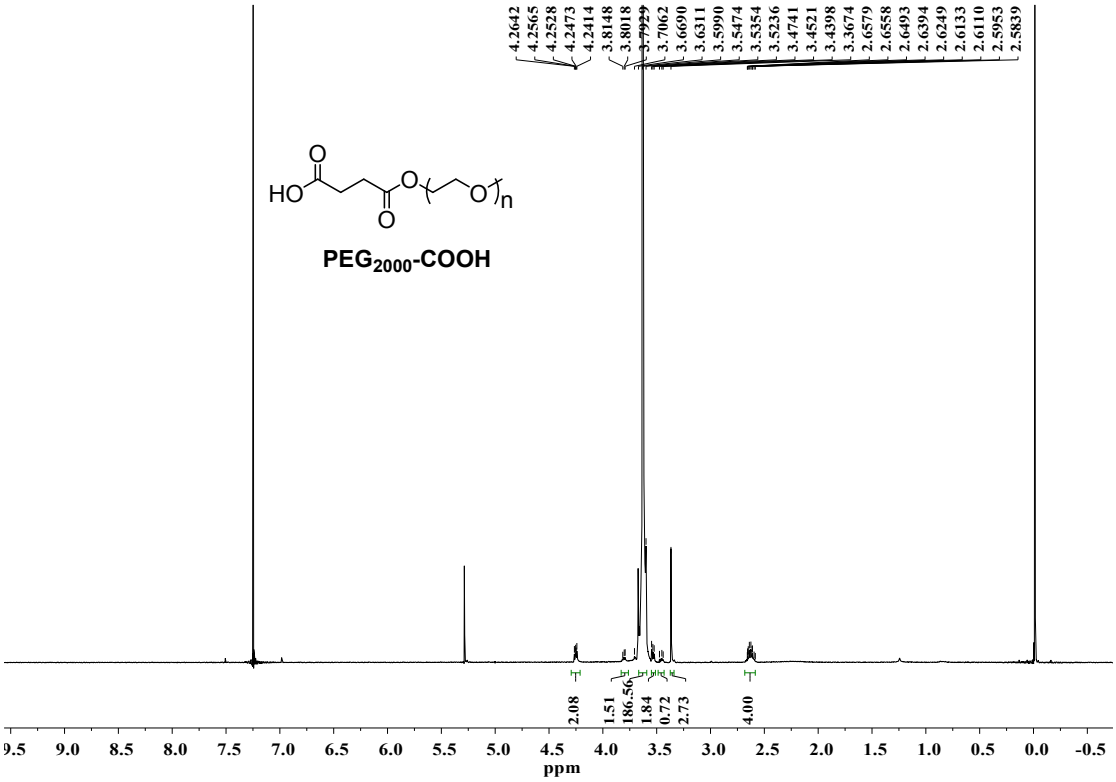

Figure S18. [1]H NMR spectrum of PEG_{2000}-COOH (400 MHz, $CDCl_3$, 298 K)

5. Drug Loading Measurement

5 mg of TPG1 and 2 mg DOX•HCl （the HCl was removed by triethylamine）was taken to prepare the drug loaded micelles named TPG1@DOX, the unloaded DOX was removed via 0.45 μm filter membrane, the total volume of micells was 5mL. To determine the mount of loaded drug, the 50μL prepared TPG1@DOX was dissolved in 5 mL methanol and the structure of micelles was destroyed, the fluorescence spectroscopy of DOX was shown in Figure S19.A, the fluorescence intensity at largest emission wavelength (590 nm) was 90. The concentration of DOX encapsulated could be calculated according to the calibration curve of DOX•HCl in methanol in the presence of triethylamine (Figure S19.B). the diluted concentration of DOX was about 2.35 μg/mL.

DL (drug loading capability) = (2.35 μg/mL×100×5 mL)/2 mg×100%=58.8%

EE (encapsulation efficiency) = (2.35 μg/mL×100×5 mL)/5 mg×100%=23.5%

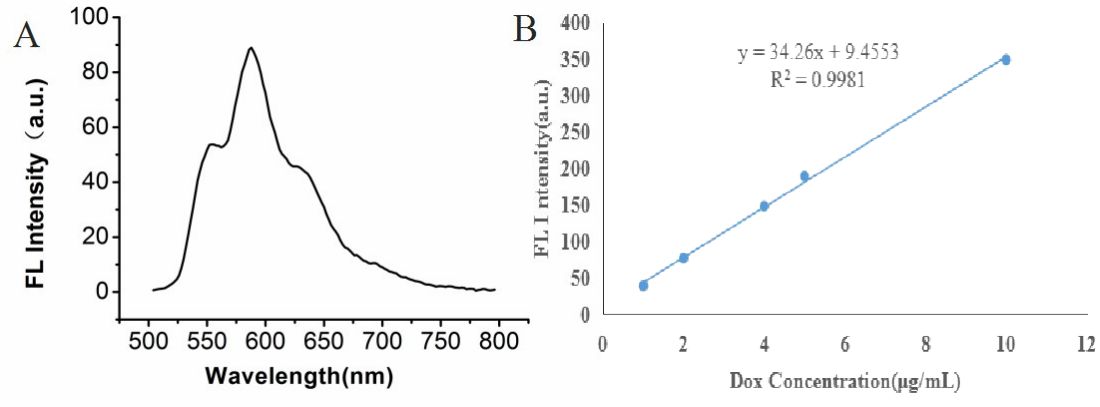

Figure S19. A) the Fluorescent spectra of TPG1@DOX dissolved in methanol. B) the calibration curve of DOX•HCl in methanol. (λ_{ex} = 480 nm, λ_{em} = 590 nm, slit = 5 nm, 5 nm)