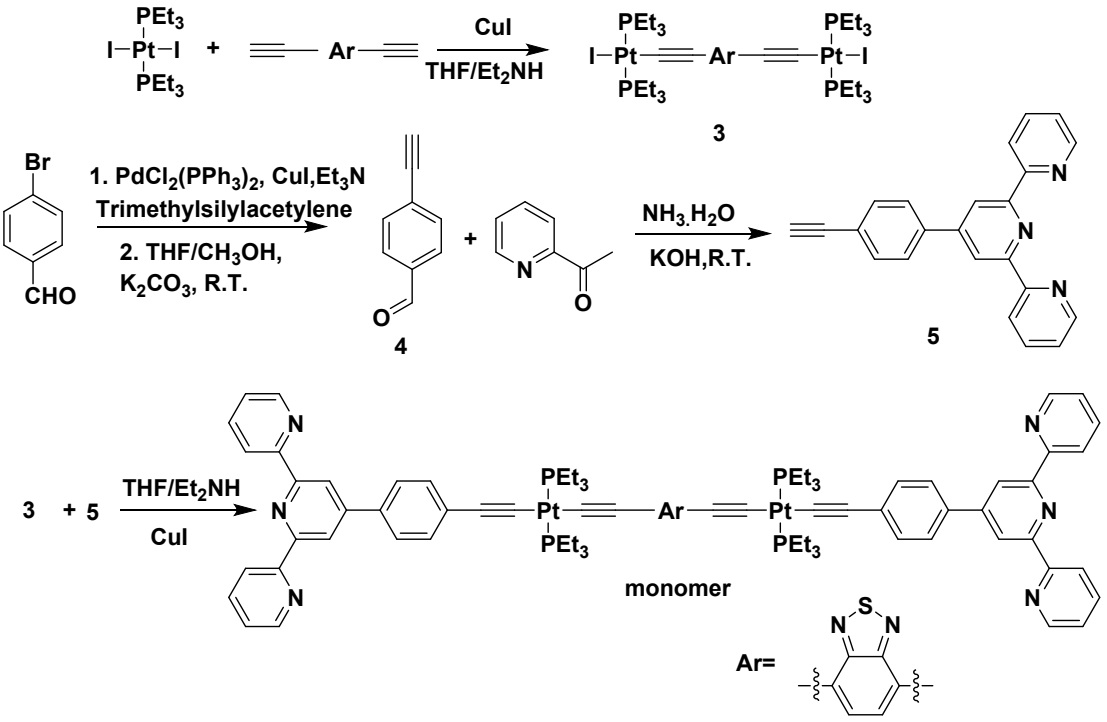
Supporting Information

1. Materials and Methods

4-Bromobenzaldehyde, 2-Acetylpyridine, Triethylphosphine, copper(I) iodide, *Trans*-dichloro bis(triphenyl-phosphine)palladium(II) were reagent grade and used as received. *Trans*-[$Pt(PEt_3)_2I_2$], compound **3** and compound **4** were synthesized according to the previously reported method[S1-S3]. Other reagents and solvents were employed as purchased. ^1H NMR spectra were collected on a Varian Unity INOVA-300 or INOVA-400 spectrometer with TMS as the internal standard.^{13}C NMR spectra were recorded on a Varian Unity INOVA-300 spectrometer at 100 MHz. The two-dimensional DOSY experiment was performed on a Varian Unity INOVA-400 MHz spectrometer. Electrospray ionization mass spectra (ESI-MS) were obtained on a Bruker Esquire 3000 plus mass spectrometer (Bruker-Franzen Analytik GmbH Breman, Germany) equipped with an ESI interface and ion trap analyzer. The UV/Vis spectra were recorded on a Beijing Persee TU-1901 UV-Vis spectrometer. Viscosity measurements were carried out with a Ubbelohde semi-micro dilution viscometer (Shanghai Liangjing Glass Instrument Factory, 0.36 mm inner diameter) at 25 °C in $CHCl_3/CH_3OH$ (2:1, *v*:*v*). ITC experiments were carried out using a Microcal VP-ITC apparatus.

2. *Synthetic routes to the targeted monomer* **1**



Scheme S1. Synthetic route to the monomer.

2.1 Synthesis of compound ***5***

Compound **4** (0.56 g, 4.3 mmol), 2-Acetylpyridine (1.04 g, 8.6 mmol), KOH (0.5 g, 8.9 mmol) were dissolved in 20 mL $NH_3 \cdot H_2O$ for 15 h at room temperature. The reaction mixture was filtrated and the solid was recrystallized by employing C_2H_5OH to provide compound **5** a grayish yellow solid (430 mg, 30%).^{1}H NMR spectrum of compound **5** is shown in Figure S1, ^{1}H NMR (300 MHz, $CDCl_3$, room temperature) δ(ppm): δ 8.73 (s, 4H), 8.68 (d, J = 6 Hz, 2H), 7.85-7.91 (m, 4H), 7.65 (d, J = 9 Hz, 2H), 7.34-7.38 (m, 2H), 3.19 (s, 1H).[S4]

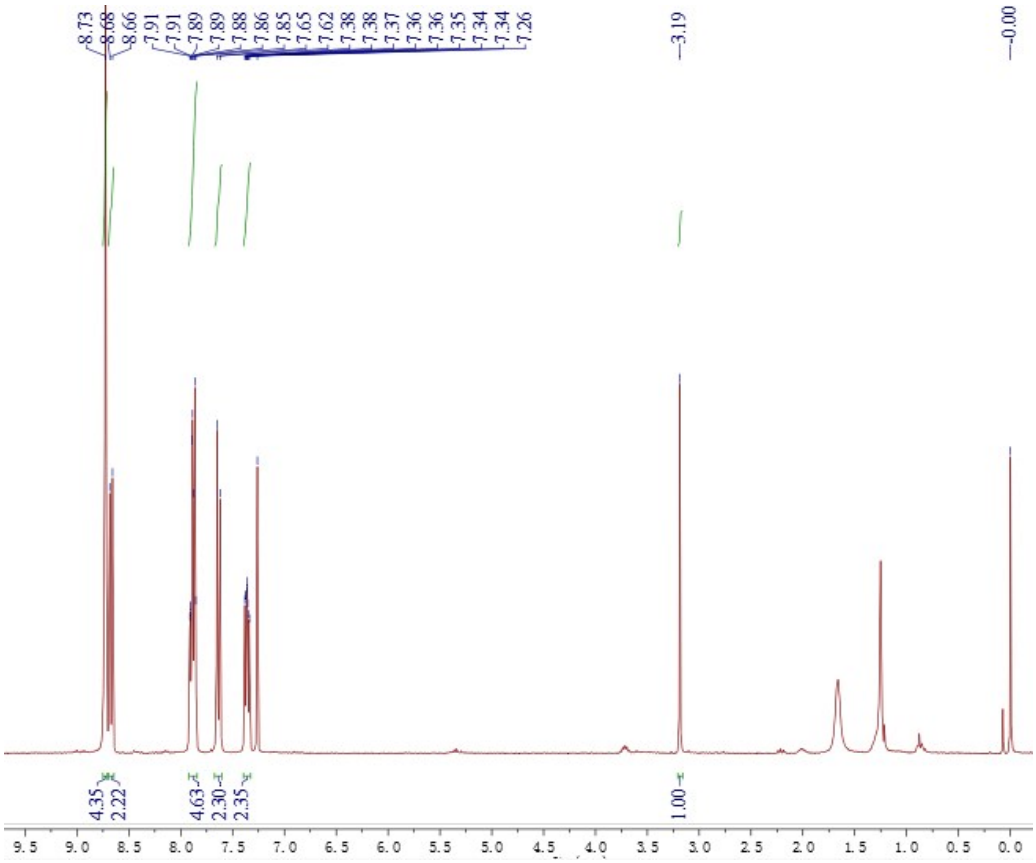


Figure S1. ^{1}H NMR spectrum (300 MHz, $CDCl_3$, room temperature) of compound **5**

2.2 Synthesis of monomer

Compound **5** (186 mg, 0.56 mmol), CuI (15 mg, 0.08 mmol) were stirred in THF/Et_2NH (30 mL, 1:1, *v*/*v*) at room temperature under N_2 atmosphere. Then compound **3** was added slowly to the reaction and continue stirred for 24 h. The reaction mixture was concentrated and the residue was extracted with H_2O/CH_2Cl_2. The organic extracts were combined and concentrated, which was further purified by flash column chromatography (CH_2Cl_2/CH_3OH=60:1, *v*/*v* as the eluent) to provide monomer as a orange solid (187 mg, 49.1%). ^{1}H NMR spectrum of monomer is shown in Figure S2, ^{1}H NMR (300 MHz, $CDCl_3$, room temperature) δ(ppm): 8.73-8.74 (m, 8H), 8.68 (d, *J* = 9.0 Hz, 4H), 7.85-7.91 (m, 4H), 7.82 (d, *J* = 6.0 Hz, 4H), 7.43(d, *J* = 9 Hz, 4H), 7.34-7.37 (m, 6H), 2.26-2.34 (m, 24H), 1.25-1.32 (m, 36H).

The ^{13}C NMR spectrum of monomer is shown in Figure S3. ^{13}C NMR (100 MHz, $CDCl_3$, room temperature) δ (ppm): 155.35, 155.24, 154.80, 148.98, 148.08, 135.81, 133.65, 130.36, 129.53, 128.82, 125.85, 122.73, 120.32, 118.03, 117.37, 116.62, 109.83, 108.97, 105.78, 15.38, 7.43. ESI-MS m/z: $[M + H]^+$, calculated 1709.78; found 1710.44. ^{31}P NMR (162 MHz, $CDCl_3$, room temperature) δ (ppm): 11.35.

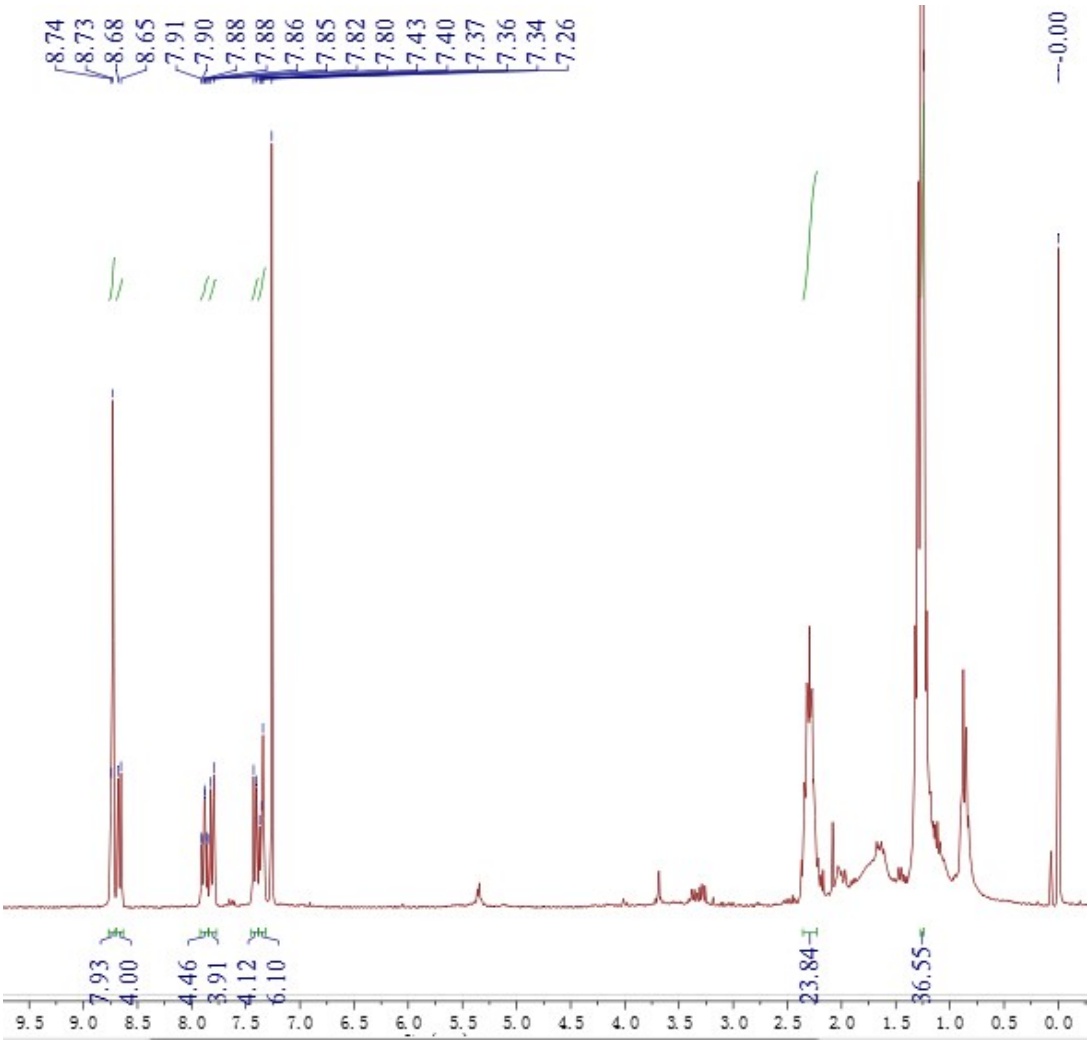


Figure S2. ^{1}H NMR spectrum (300 MHz, $CDCl_3$, room temperature) of monomer

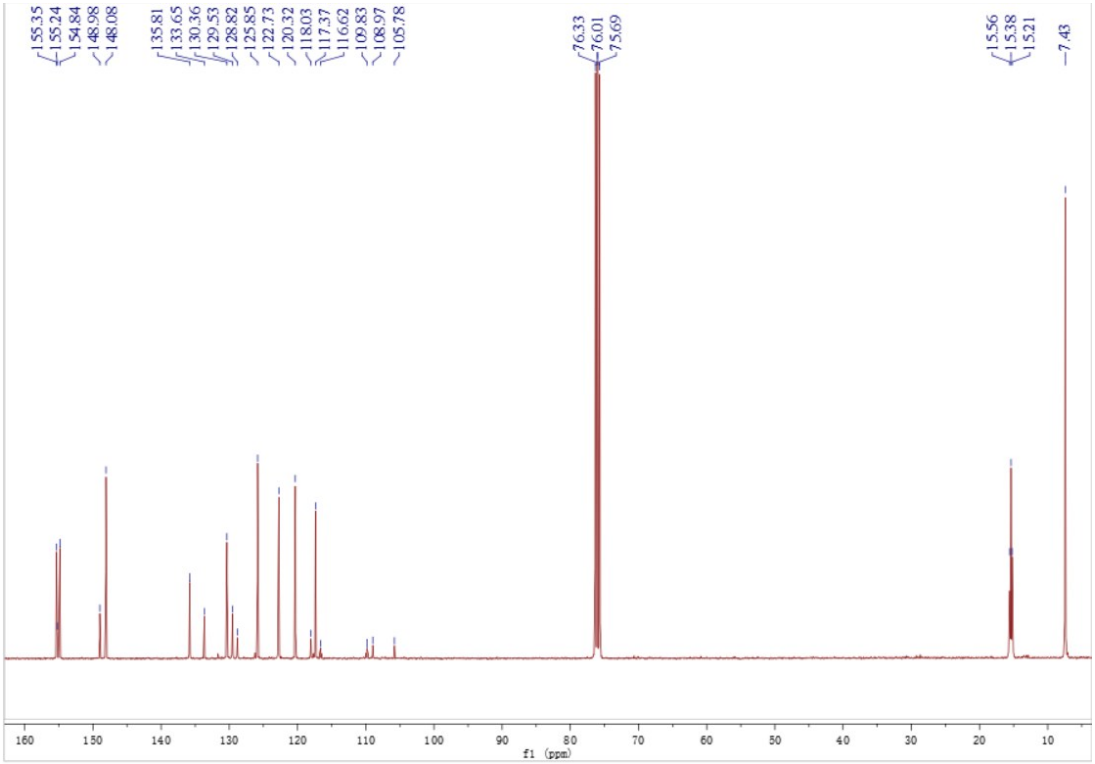


Figure S3. ^{13}C NMR spectrum (100 MHz, $CDCl_3$, room temperature) of monomer

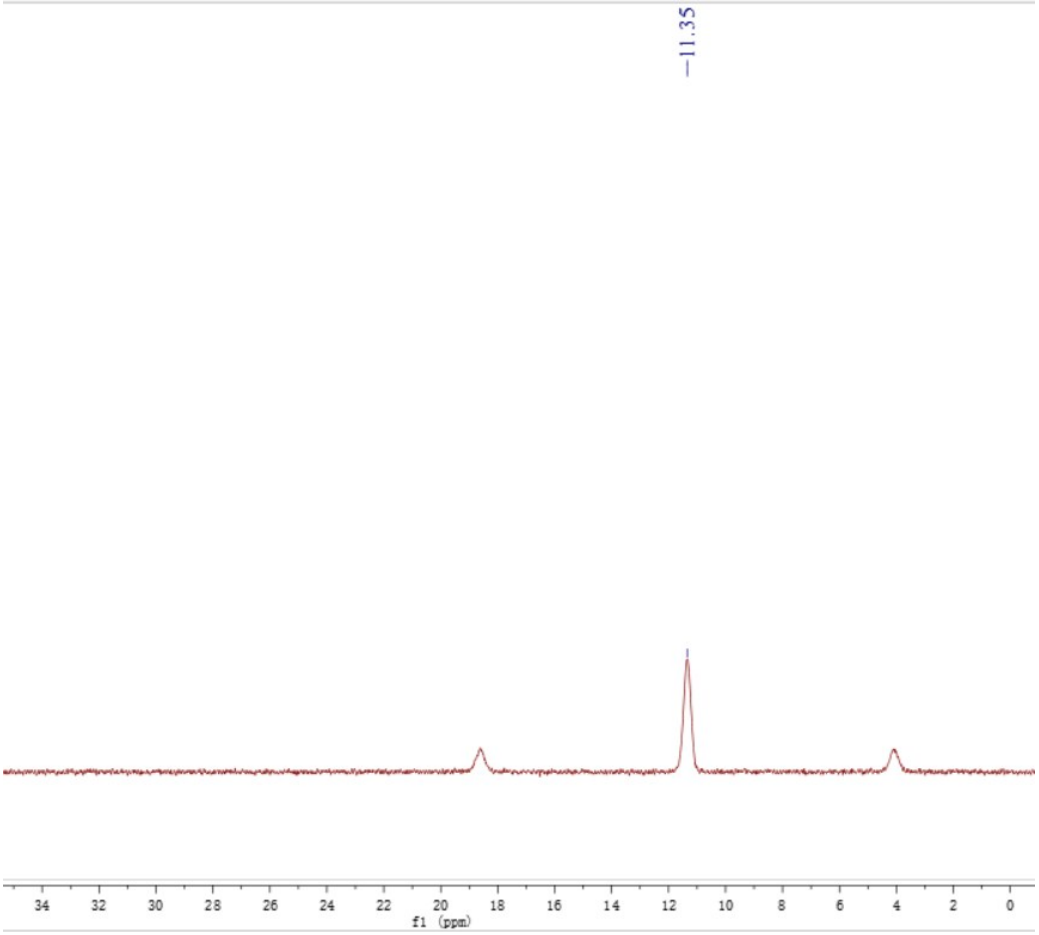


Figure S4. ^{31}P NMR spectrum (162 MHz, $CDCl_3$, room temperature) of monomer

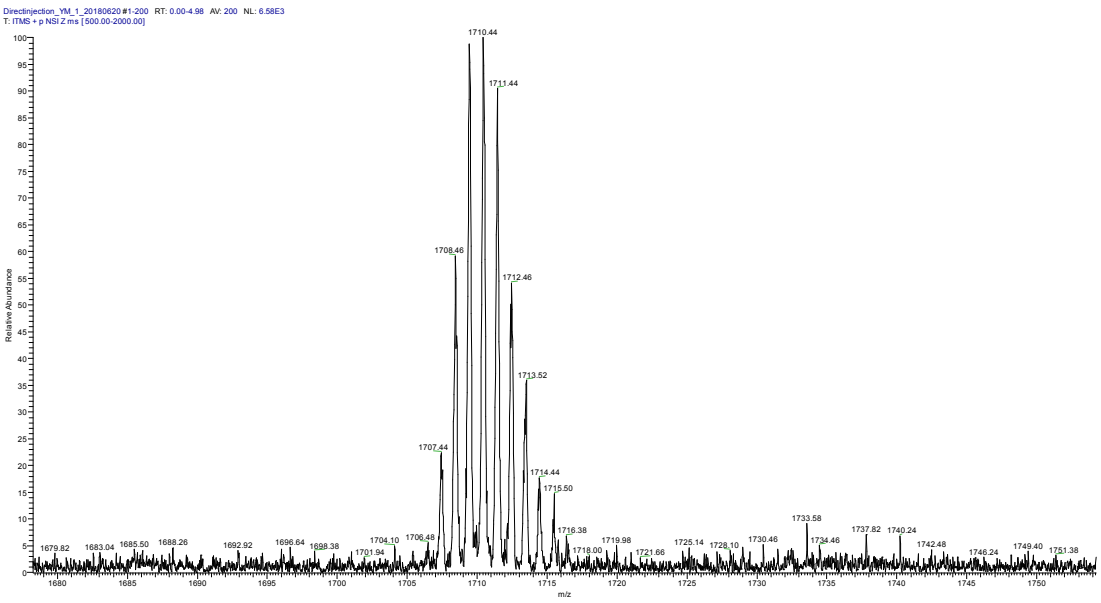


Figure S5. Electrospray ionization spectrum of monomer

3. *ITC data for the consecutive injecting of $Zn(OTf)_2$ into the monomer*

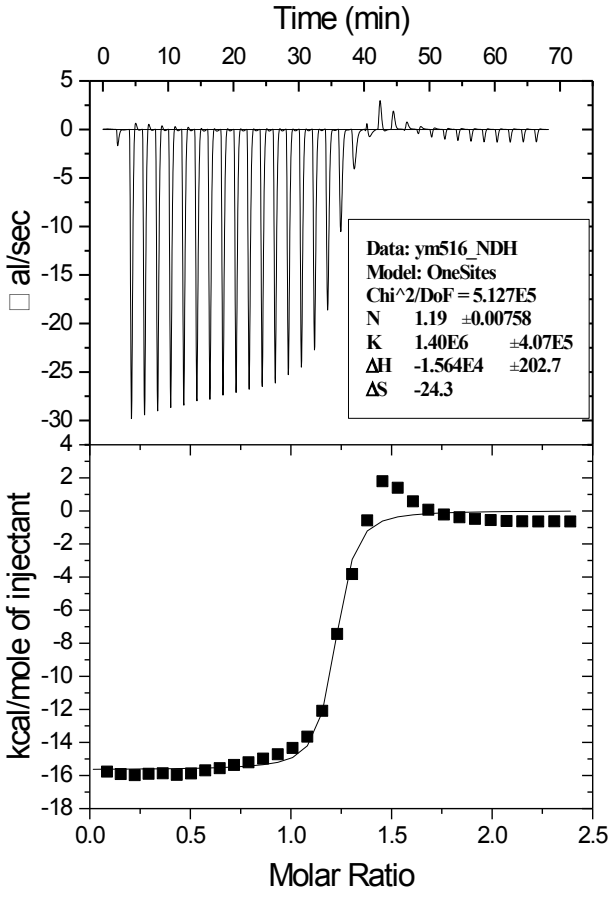


Figure S6. ITC data for the consecutive injecting of $Zn(OTf)_2$ (5 mmol/L)into the $CHCl_3$:CH_3OH=2:1 solution of monomer（0.4 mmol/L）

4. *The emission lifetime of monomer*

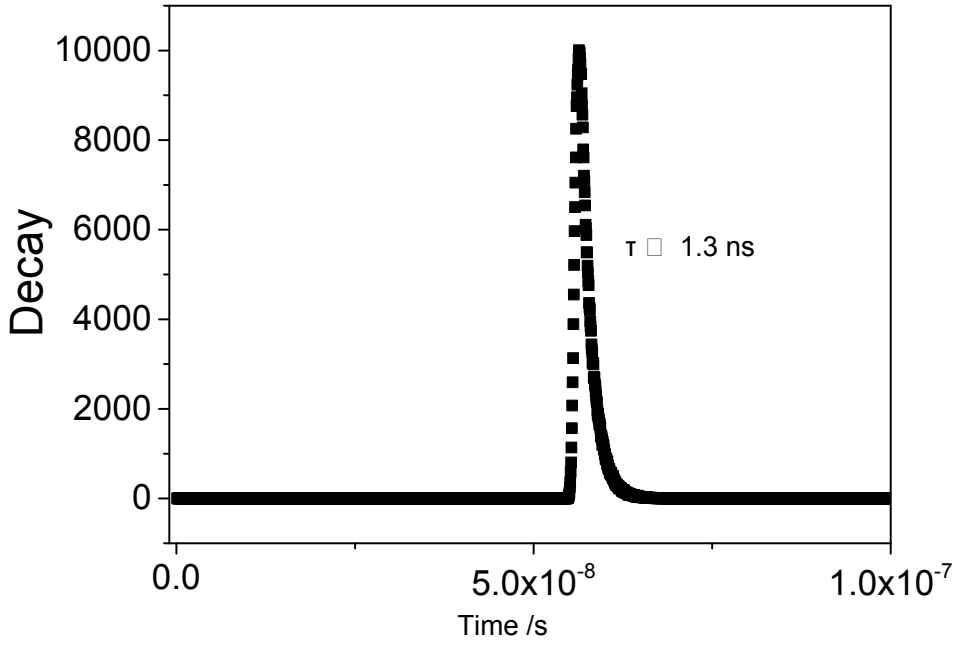


Figure S7. The emission lifetime of monomer

5. *Concentration-dependent [1]H NMR spectra of supramolecular polymer **1***

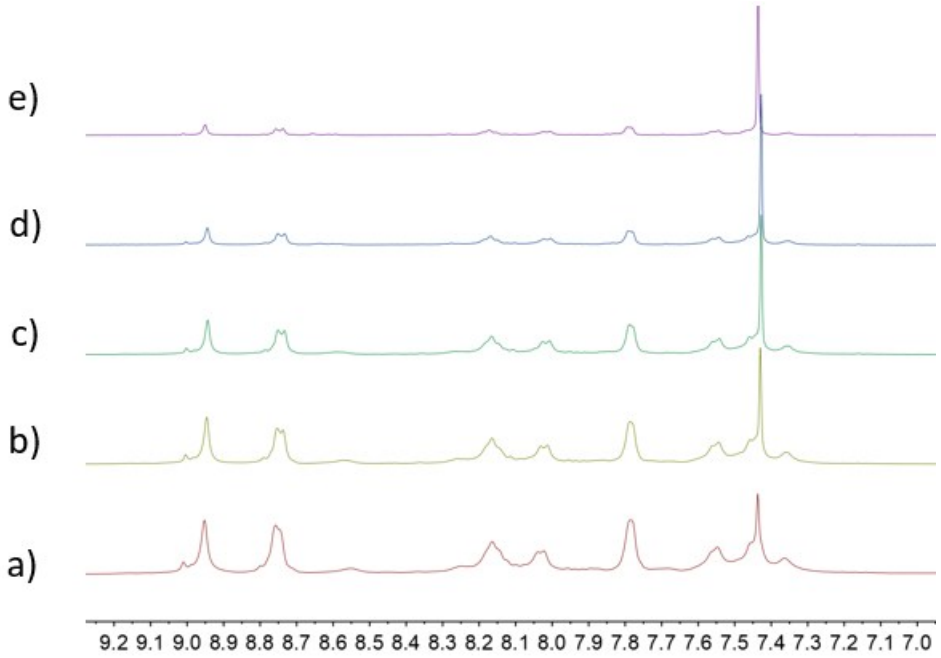


Figure S8. Concentration-dependent ^{1}H NMR (300 MHz, $CDCl_3/CD_3OH$ (2/1, v/v), 25 °C) spectra of supramolecular polymer **1**

6. *DOSY spectra of supramolecular polymer **1***

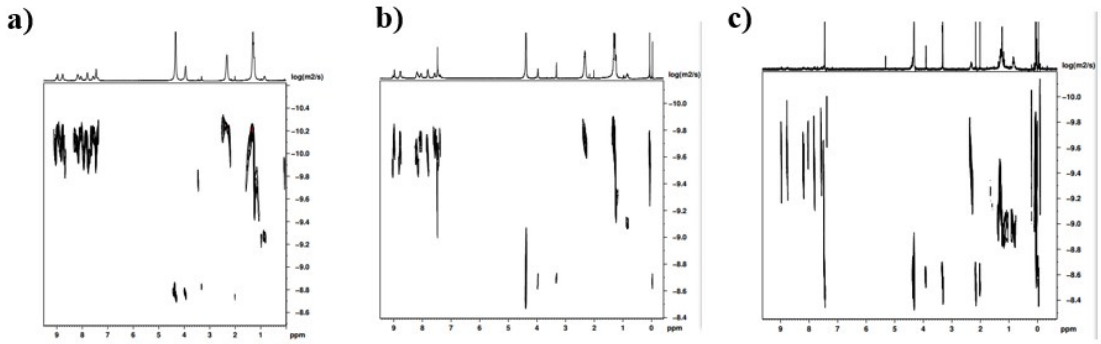


Figure S9. Two-dimensional diffusion-ordered NMR (DOSY) spectra of supramolecular polymer **1** in $CDCl_3/CD_3OD$ (2/1, *v*/*v*) at different concentrations: (a) 35.0 mM; (b) 11.7 mM; (c) 0.5 mM.

7. *Responsiveness of supramolecular polymer **1** upon addition of cyclen, then Zn^{2+}.*

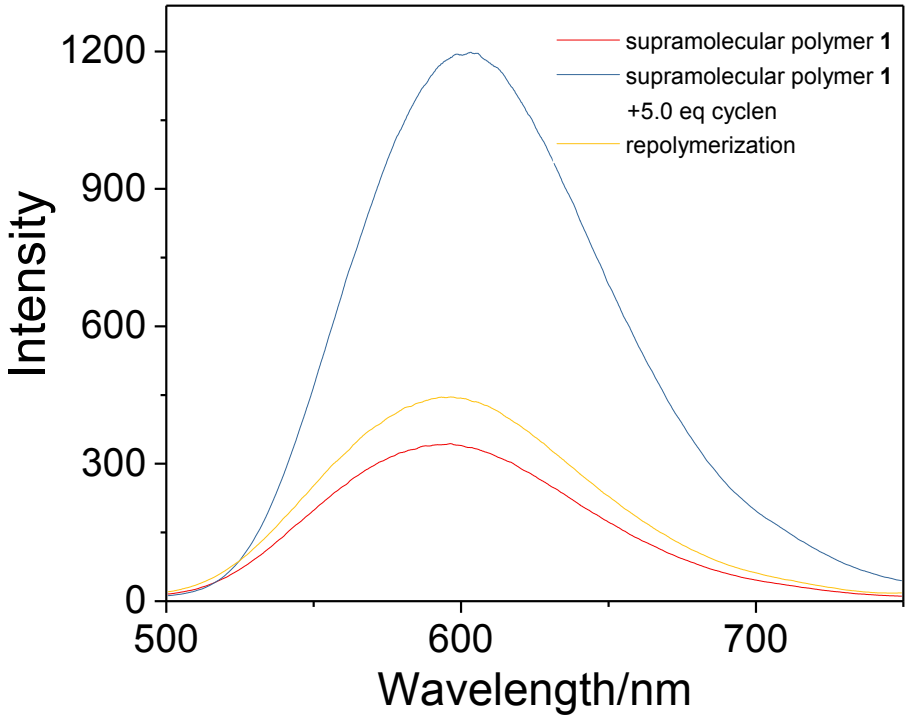


Fig S10 Fluorescence spectral changes of supramolecular polymer **1** upon addition of cyclen and then $Zn(OTf)_2$.

8. *[1]H-NMR responsiveness of supramolecular polymer **1** upon addition of cyclen, Zn^{2+}*

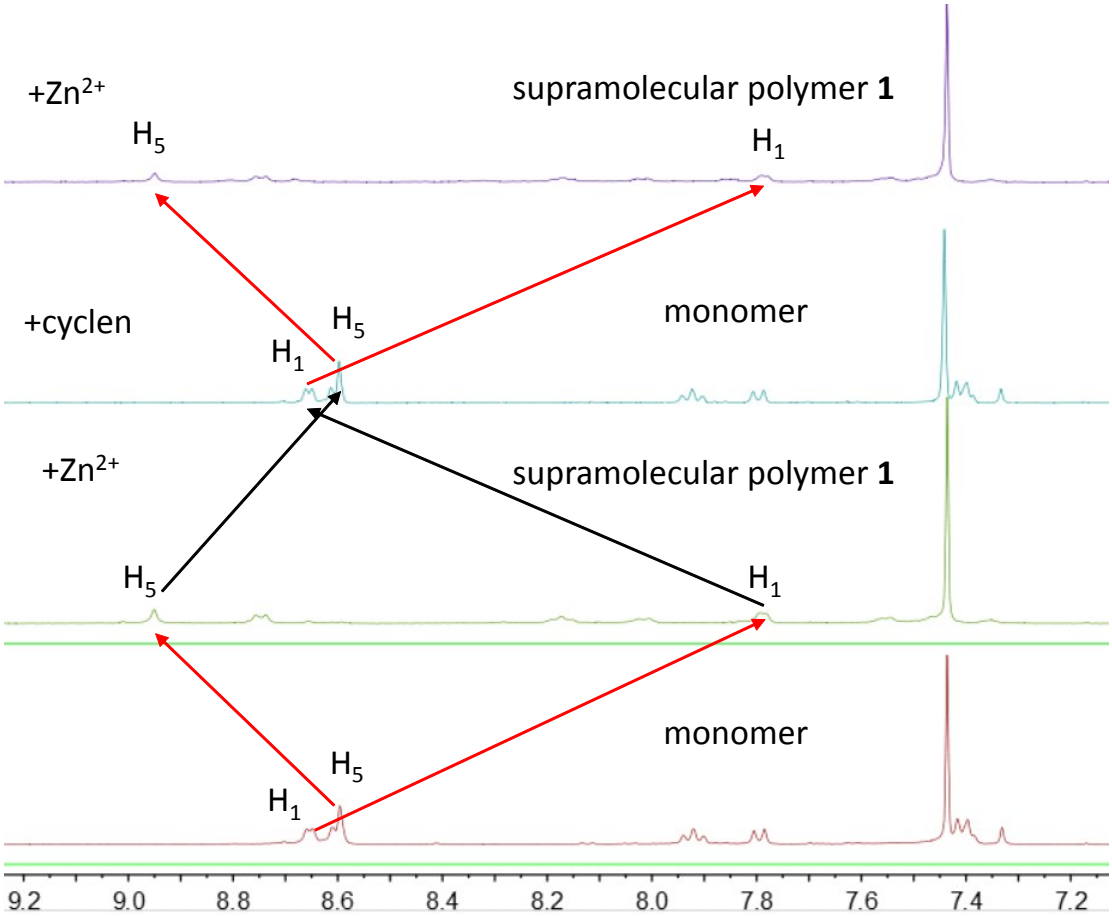


Fig S11. [1]H NMR of monomer , supramolecular polymer **1**, monomer, supramolecular polymer **1** (from bottom to top is monomer, supramolecular polymer **1**, monomer, supramolecular polymer **1**)

References:

S1 E-T. Shi, Z. Gao, M. Yuan, X-Y. Wang, F. Wang. *Polym. Chem.*, **2015**, 6, 5575–5579.

S2 R. Y Huang, Y. H. Chiu, Y. H. Chang, K. Y. Chen, P. T. Huang, T. H. Chiang, Y. J. Chang. *New J. Chem.* **2017**, *41*, 8016.

S3 V. Grosshenny, F. M. Romero, R. Ziessel. *J. Org. Chem.* **1997,** *62,* 1491.

S4 K. Ackermann, A. Giannoulis, D. B. Cordes, A. M. Z. Slawin, B. E. Bode. *Chem. Commun.* **2015**, *51*, 5257.