Electronic Supporting Information

Highly sensitive conjugated polymer fluorescent sensors based on benzochalcogendiazole for nickel ions in real-time detection

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1. UV-vis absorption responsive behaviors of P-1 and P-2 on various metal ions
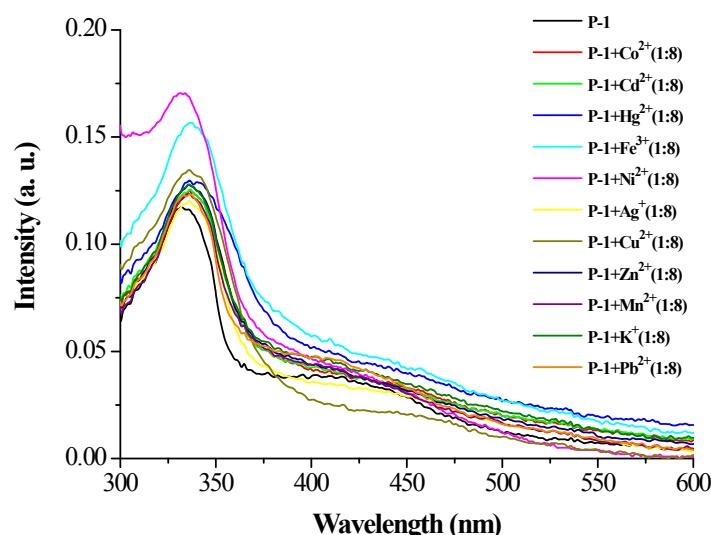
Fig. S1 UV-vis spectra of **P-1** (10 μmol·L^{-1}, CHCl$_3$) in the presence of various metal ions (each 80 μmol·L^{-1}, CH$_3$CN)
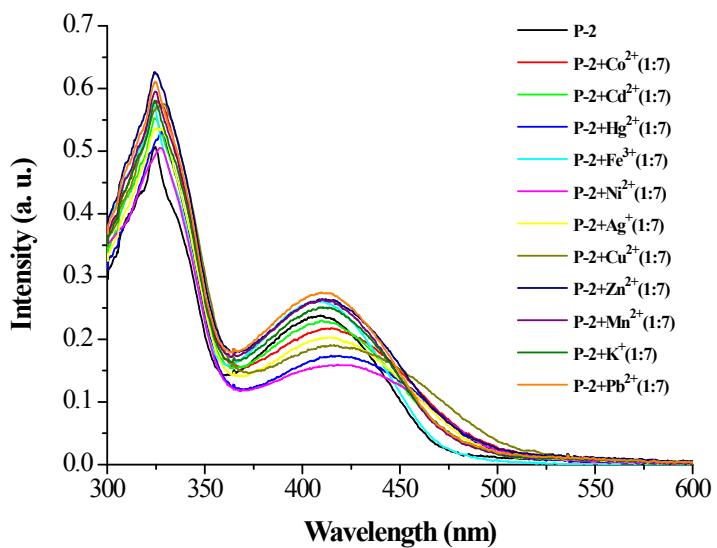
Fig. S2 UV-vis spectra of **P-2** (10 μmol·L^{-1}, CHCl$_3$) in the presence of various metal ions (each 70 μmol·L^{-1}, CH$_3$CN)

2. Fluorescence responsive behaviors of P-1 and P-2 on various metal ions

$Y = A + B*X$
$A = -3.64109E-6$
$B = -3.53601E-12$
$R = 0.9958$
$A/B = 2.03E6$
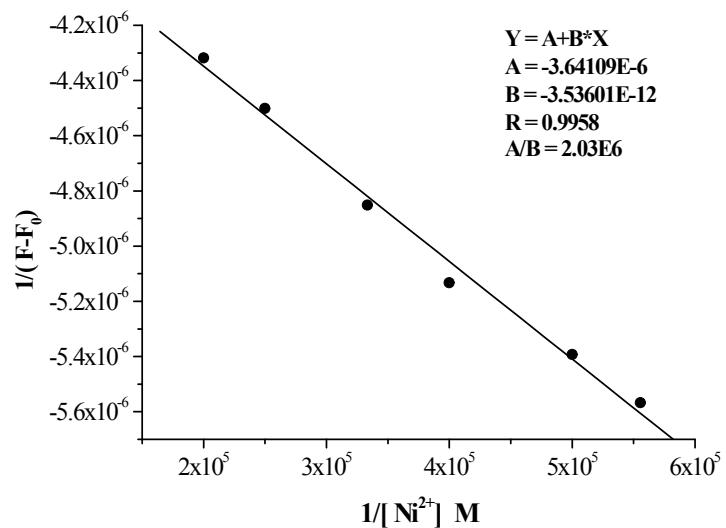
**Fig. S3** Benesi-Hildebrand plot for Ni^{2+}-bound **P-1**.
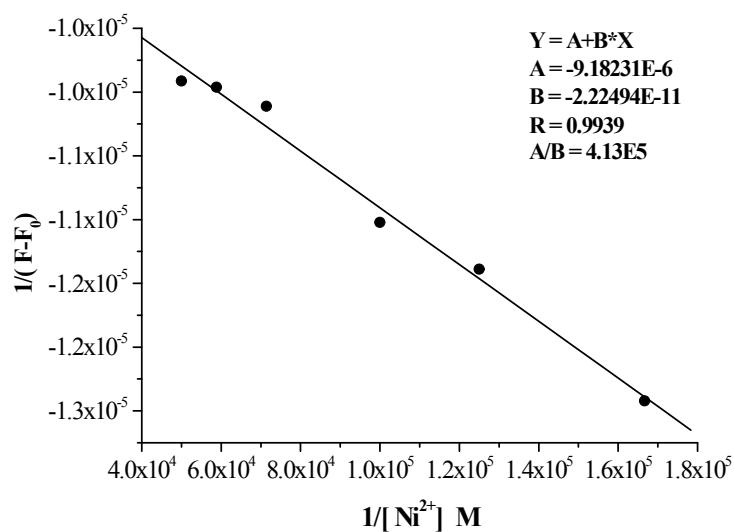
Fig. S4 Benesi-Hildebrand plot for Ni^{2+}-bound **P-2**.
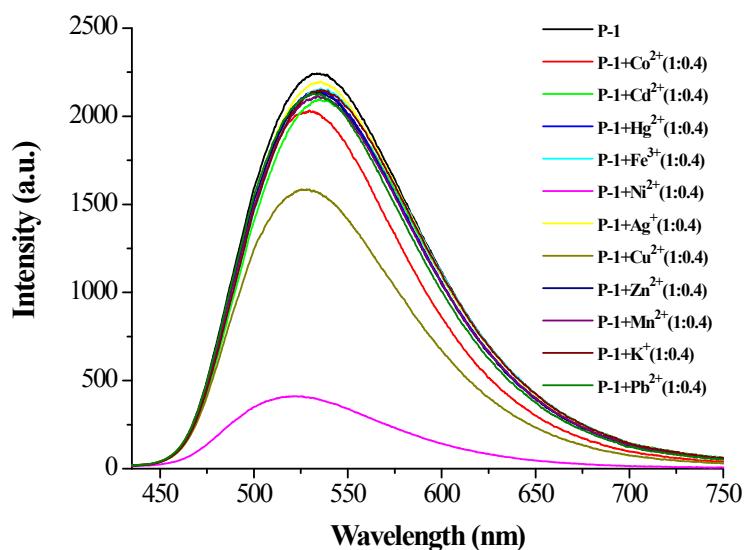
**Fig. S5** Fluorescence spectra of **P-1** (10 μmol·L^{-1}) in CHCl$_3$ in the presence of in the presence of various metal ions in CH$_3$CN (each 4 μmol·L^{-1}).
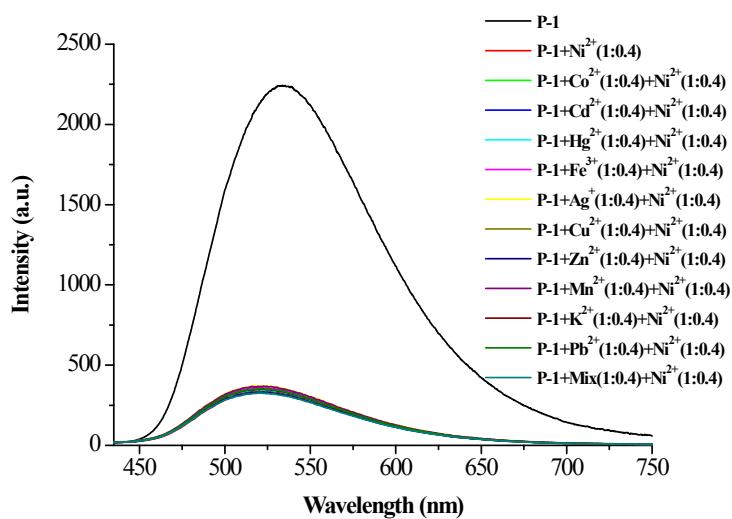
Fig. S6 Metal specificity: the concentration of **P-1** is (10 μmol·L^{-1}), the concentration of Ni^{2+} is 4 μmol·L^{-1} and the other metal ions are used at 4 μmol·L^{-1}. Mix: the mixture of Co^{2+}, Cd^{2+}, Hg^{2+}, Fe^{3+}, Ag^{+}, Cu^{2+}, Zn^{2+}, Mn^{2+}, K^{+} and Pb^{2+}.
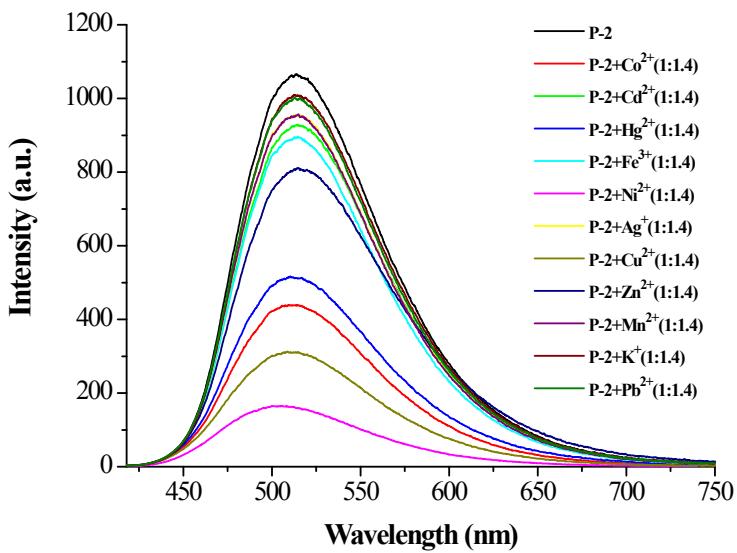
Fig. S7 Fluorescence spectra of **P-2** (10 μmol·L^{-1}) in CHCl$_3$ in the presence of in the presence of various metal ions in CH$_3$CN (each 14 μmol·L^{-1}).

3. NMR spectra of the important compounds and the conjugated polymers P-1 and P-2
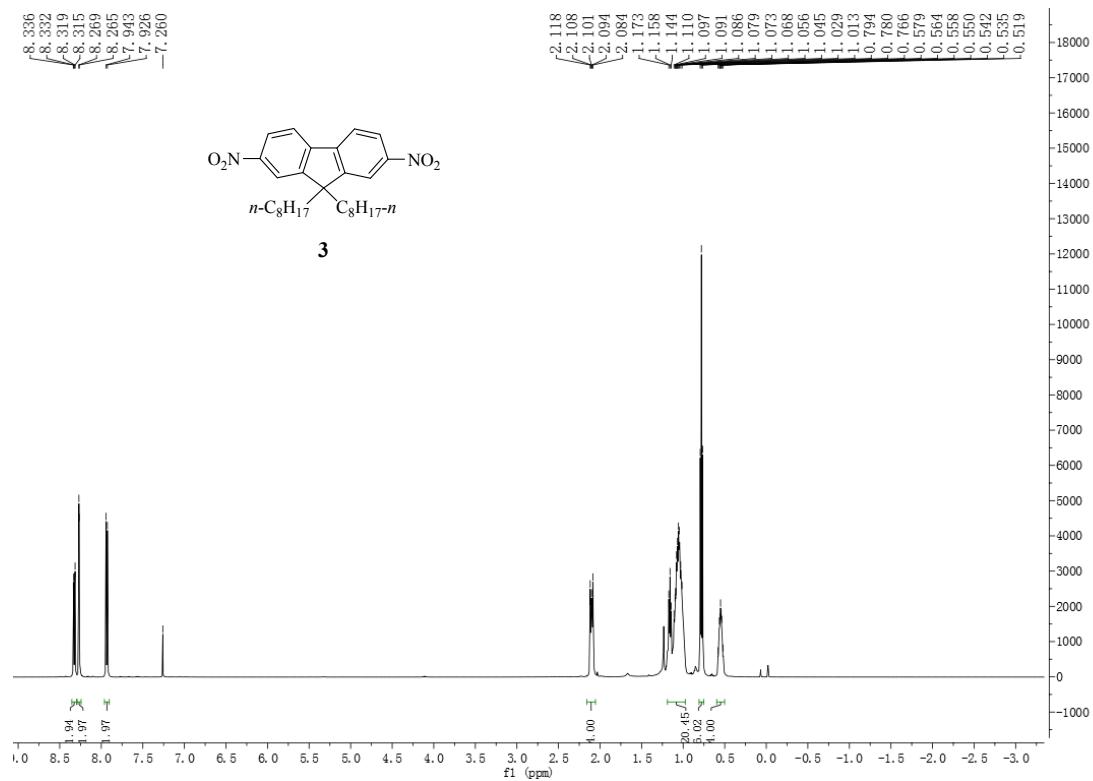
**Fig. S8** ^{1}H NMR of compound **3** (CDCl$_3$, 500 MHz)
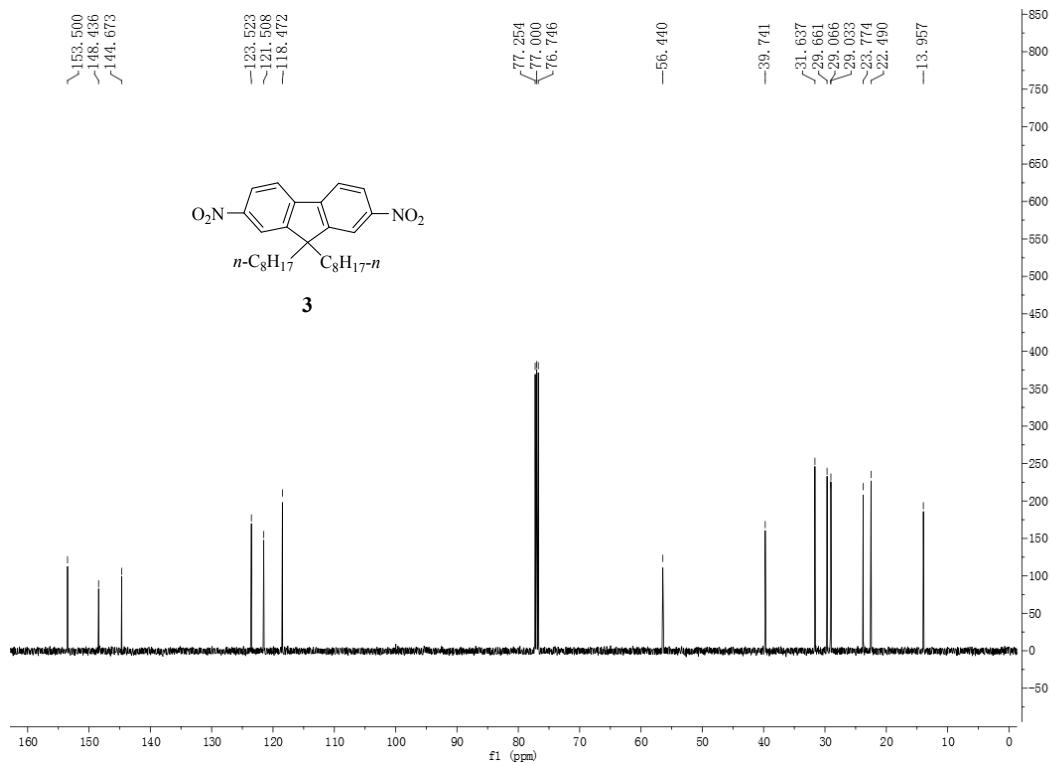
Fig. S9 ^{13}C NMR of compound **3** (CDCl$_3$, 125 MHz)
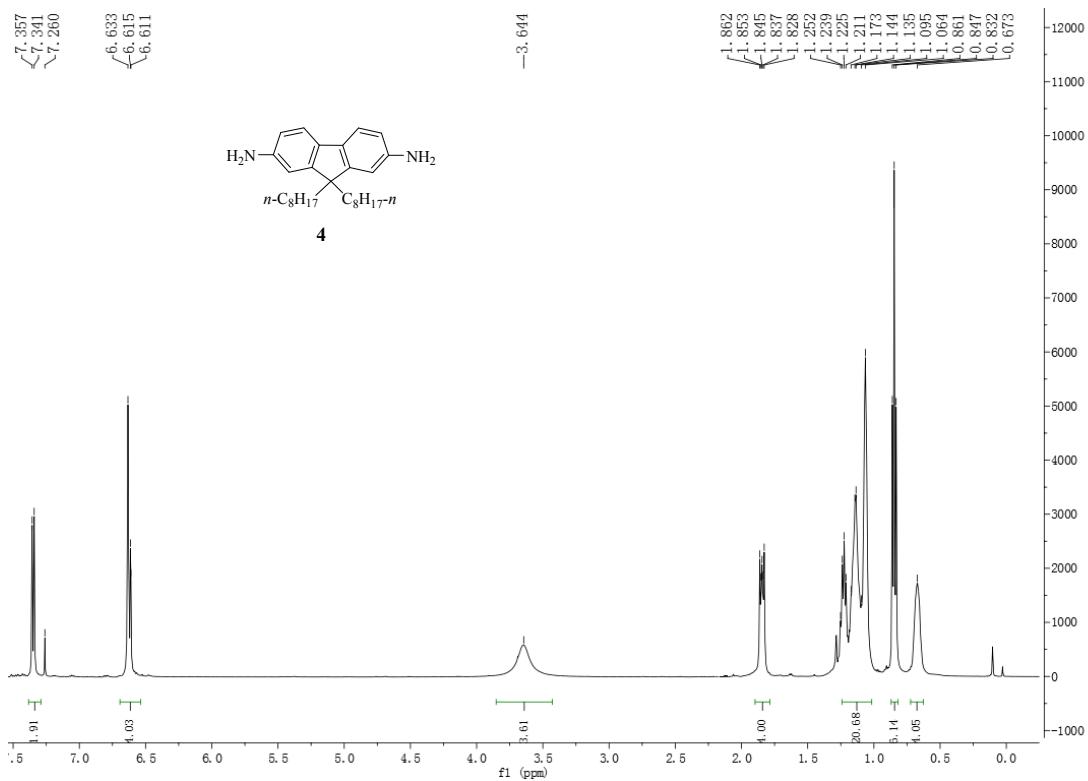
**Fig. S10** ^{1}H NMR of compound **4** (CDCl$_3$, 500 MHz)
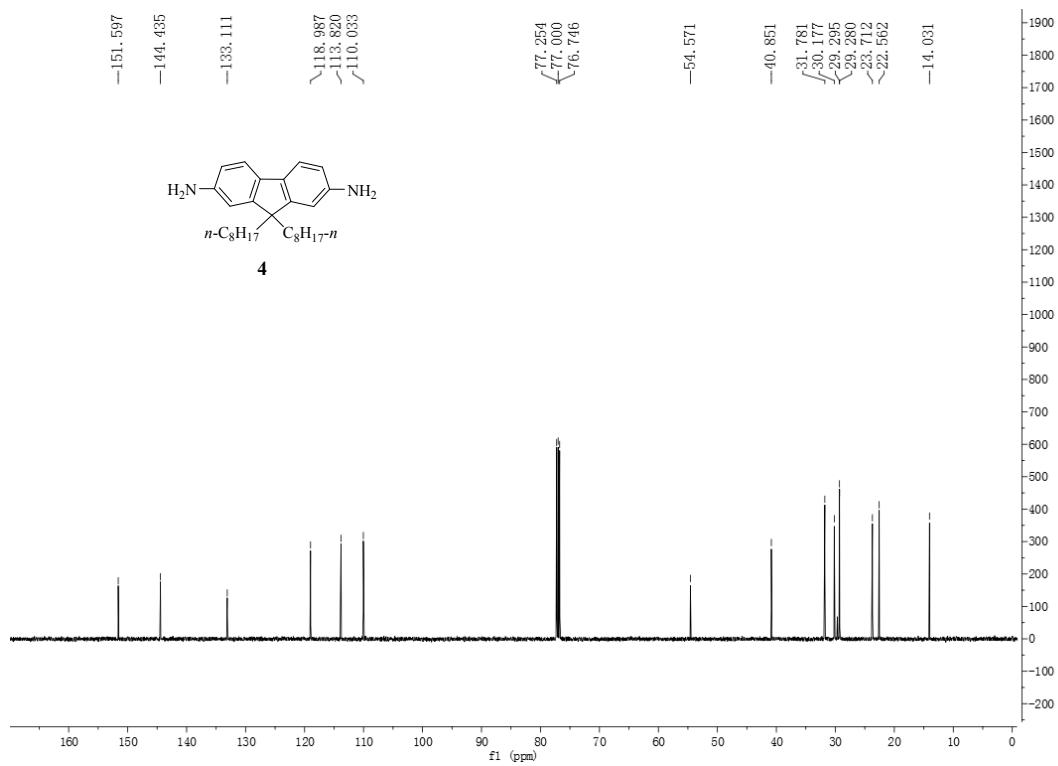
Fig. S11 ^{13}C NMR of compound **4** (CDCl$_3$, 125 MHz)
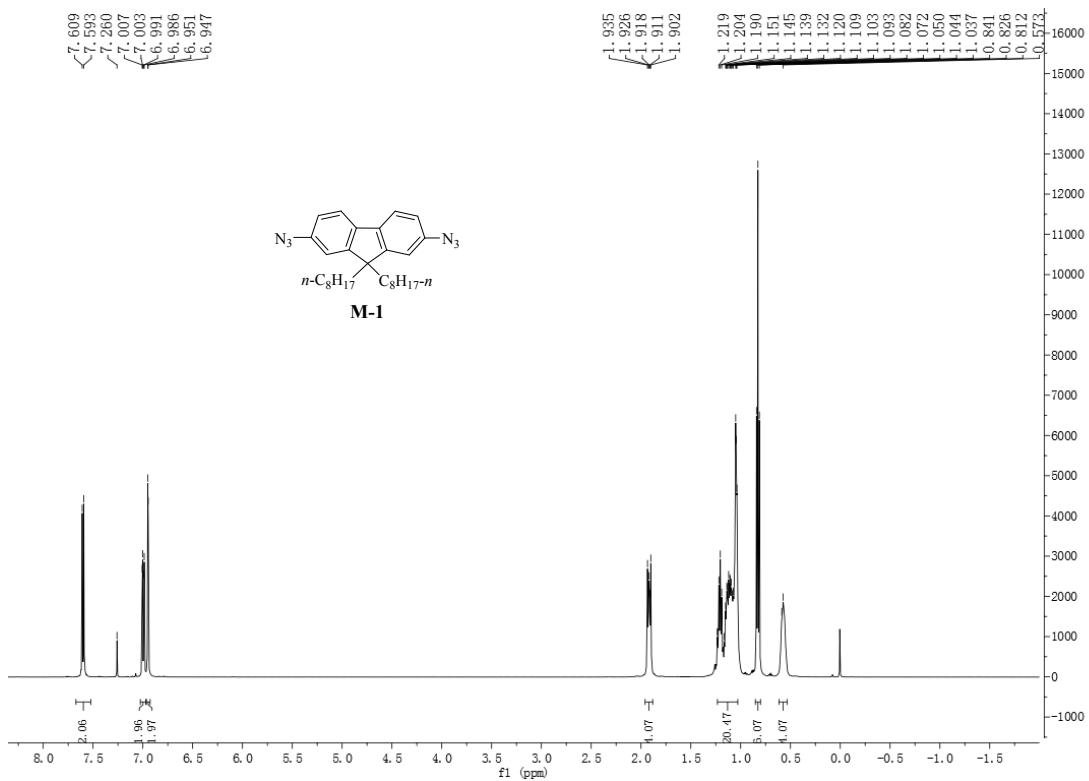
Fig. S12 ^{1}H NMR of compound **M-1** (CDCl$_3$, 500 MHz)
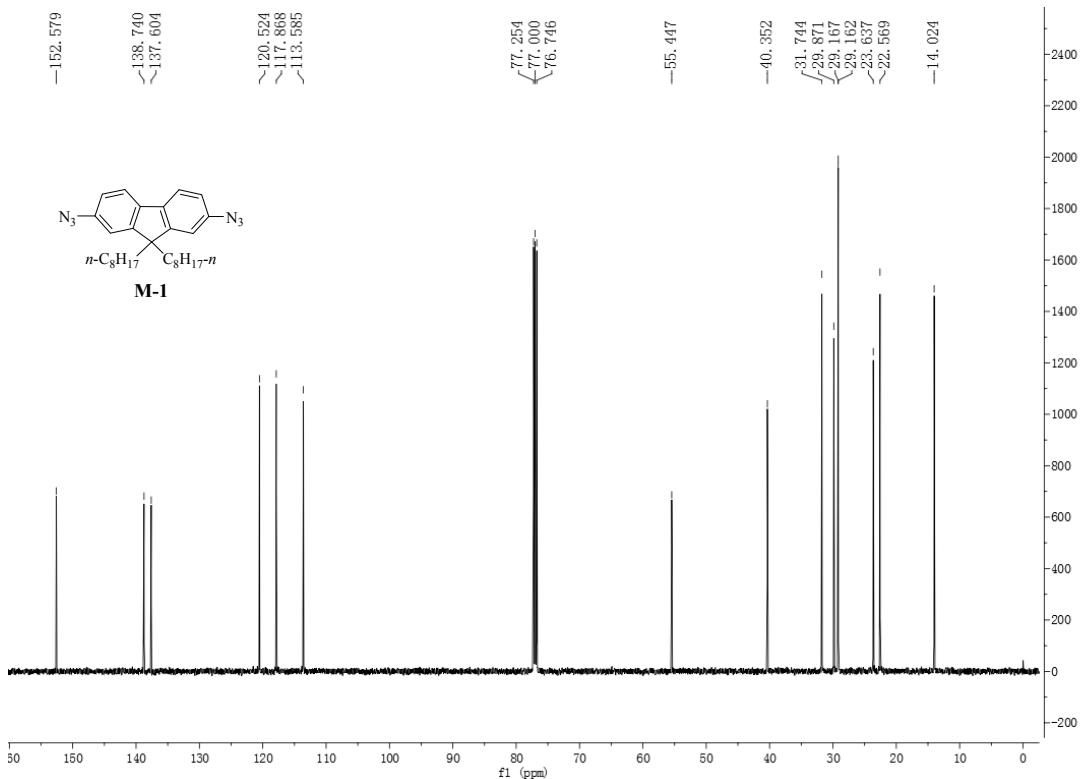

Fig. S13 ^{13}C NMR of **M-1** (CDCl$_3$, 125 MHz)
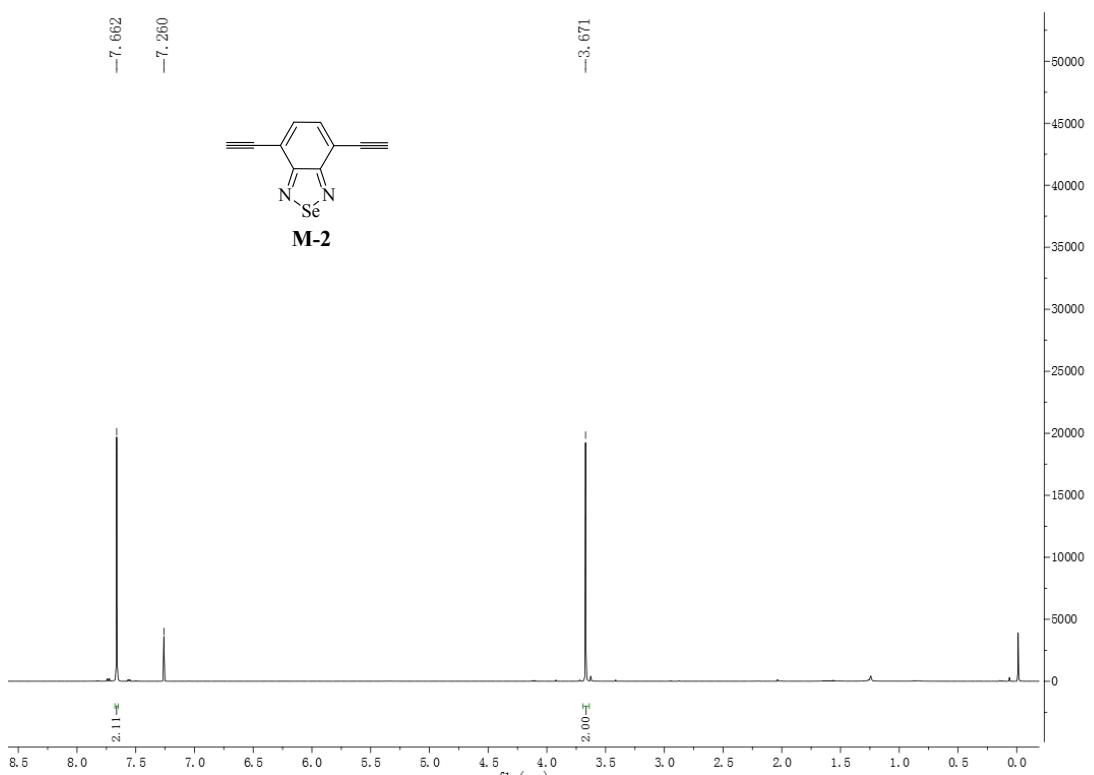
**Fig. S14** ^{1}H NMR of **M-2** (CDCl$_3$, 500 MHz)
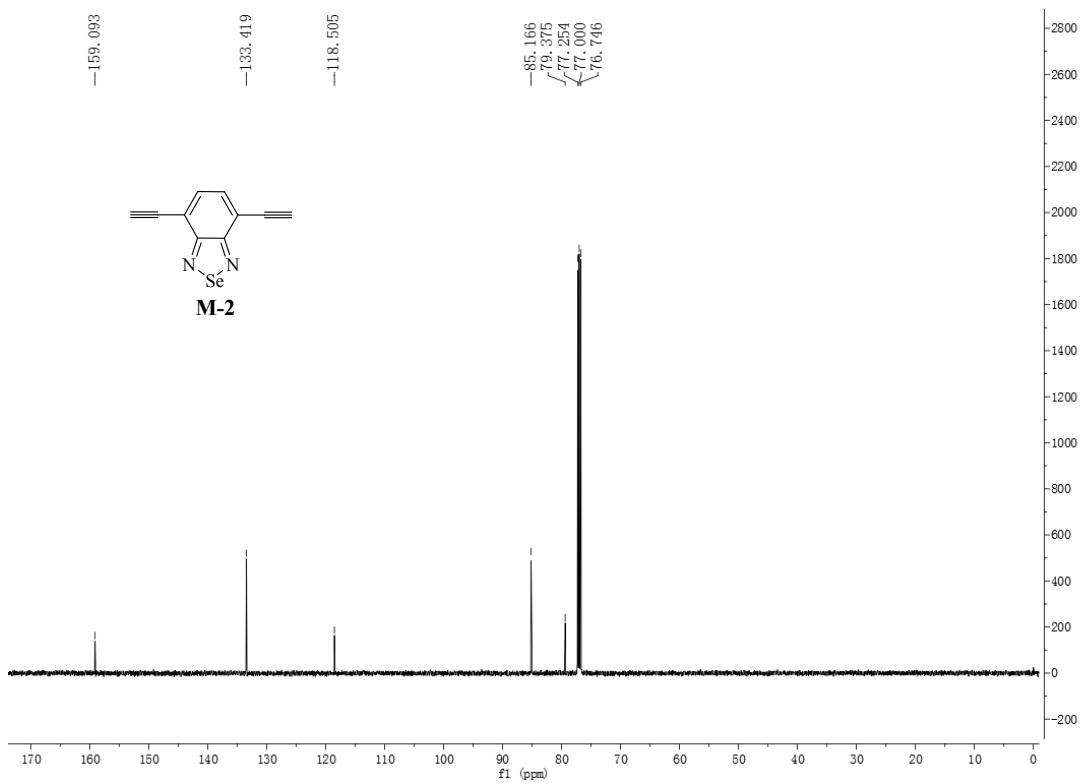
**Fig. S15** ^{13}C NMR of **M-2** (CDCl$_3$, 125 MHz)
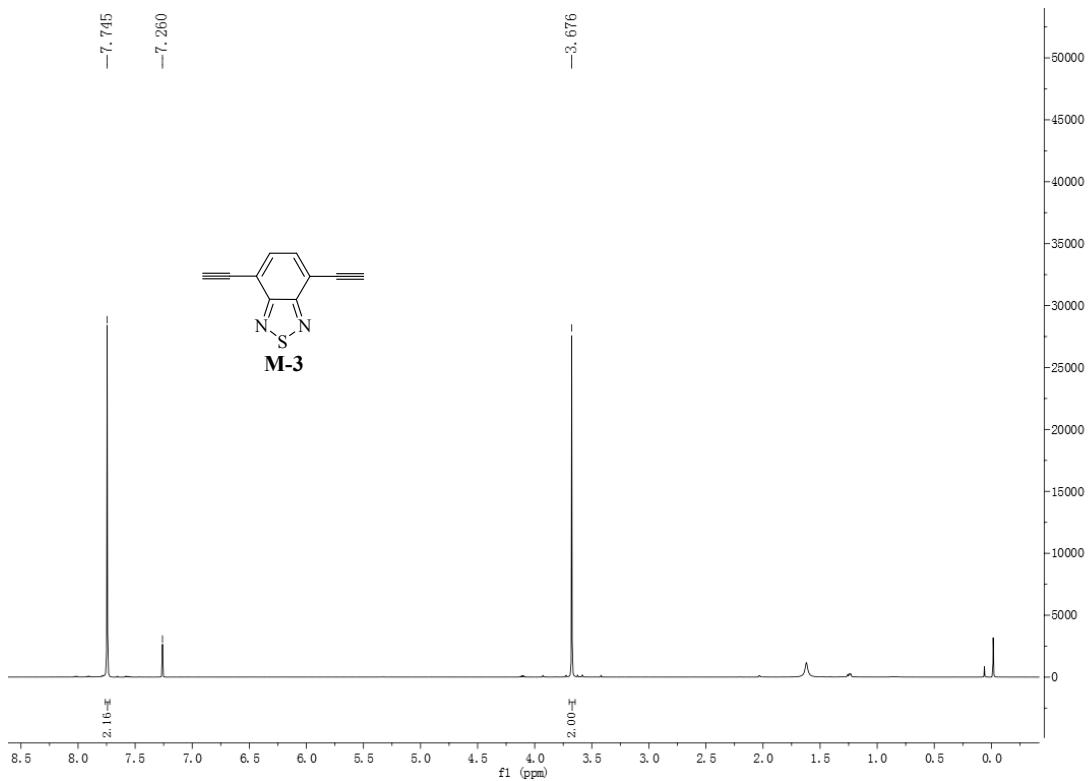
Fig. S16 ^{1}H NMR of **M-3** (CDCl$_3$, 500 MHz)
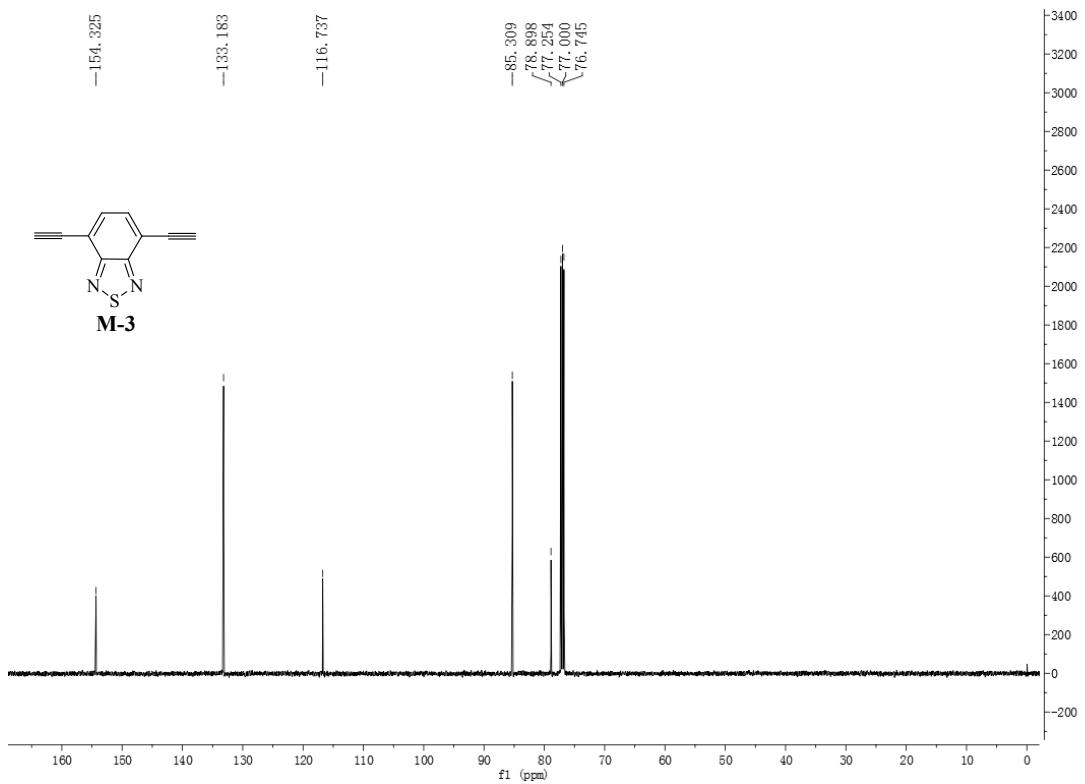
Fig. S17 ^{13}C NMR of **M-3** (CDCl$_3$, 125 MHz)
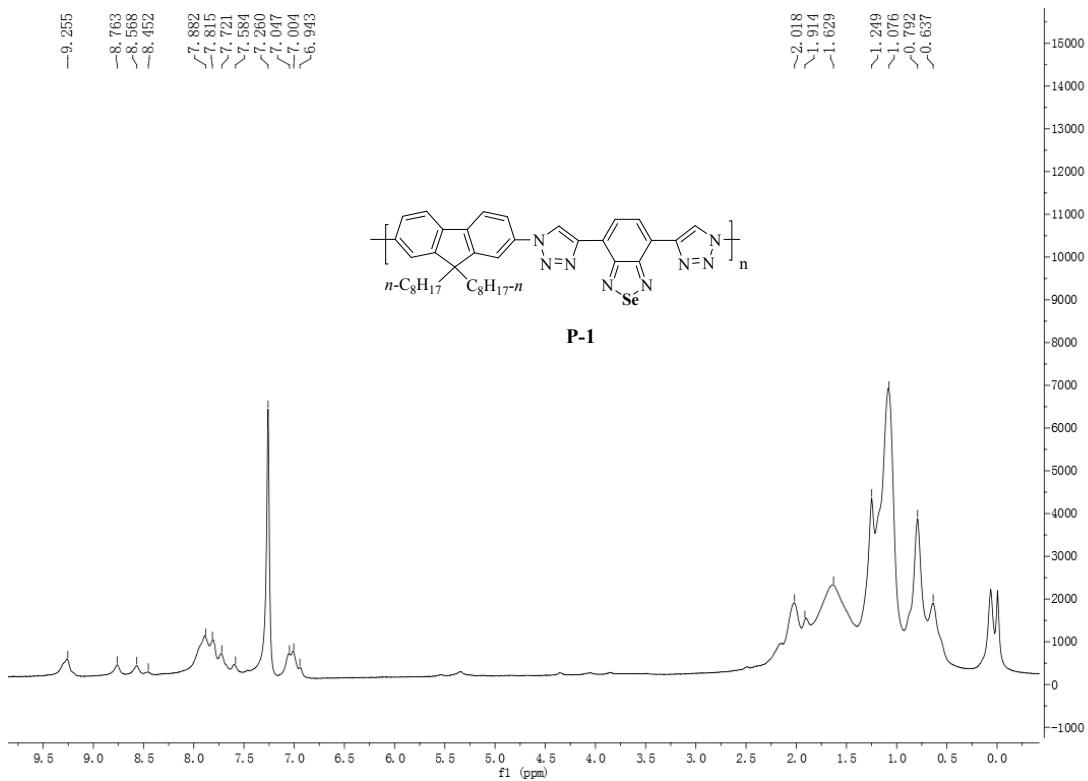
Fig. S18 ^{1}H NMR of **P-1** (CDCl$_3$, 500 MHz)
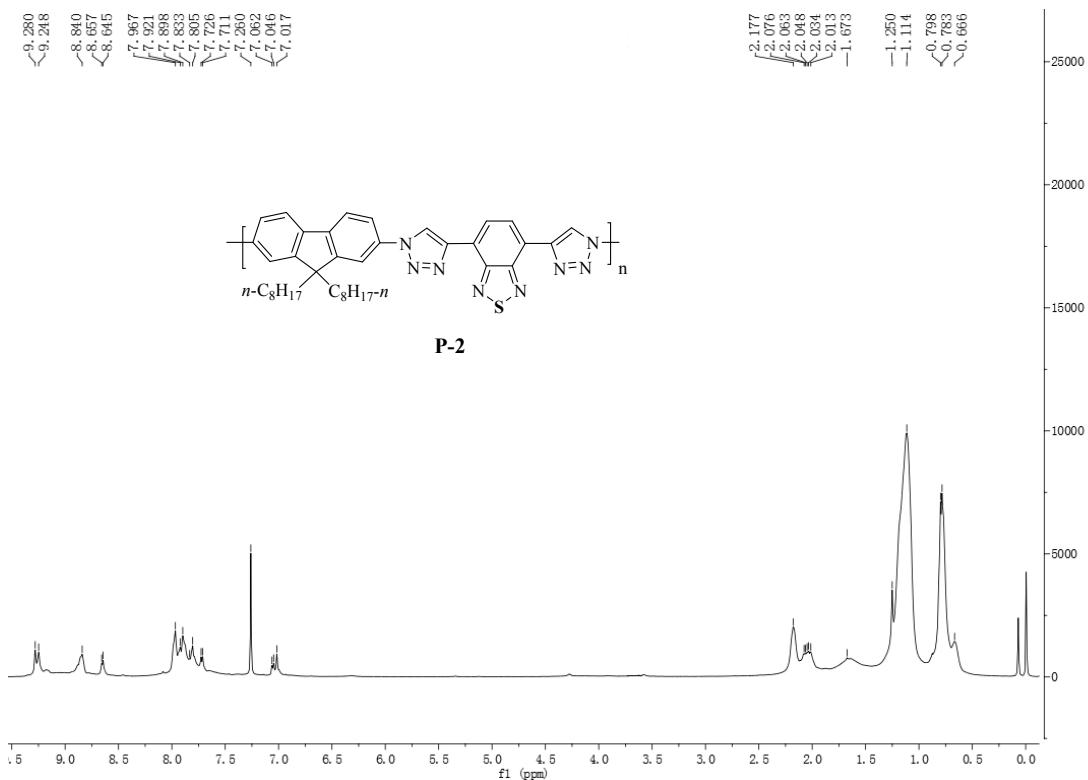
Fig. S19 ^{1}H NMR of **P-2** (CDCl$_3$, 500 MHz)