Supporting Information for

Tunable multicolor emissions in monocomponent gel system by varying solvents, temperature and fluoride anion

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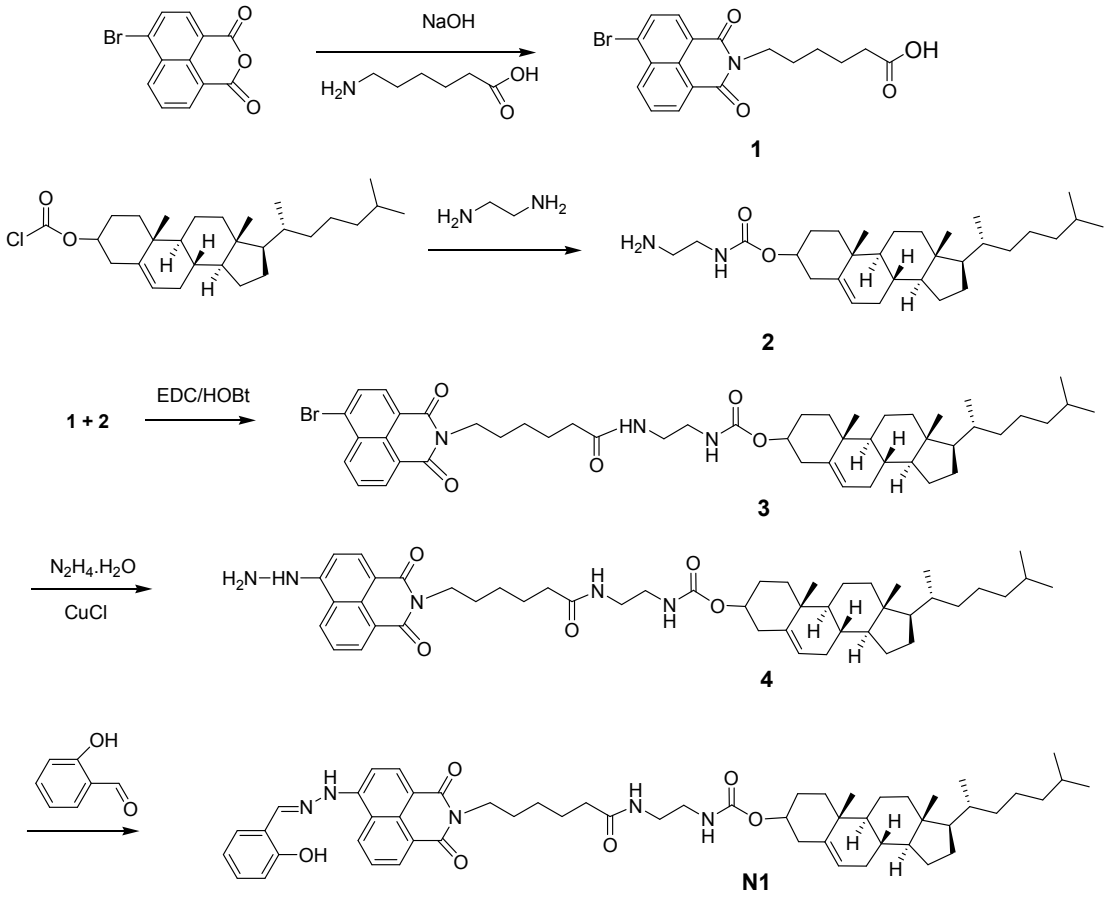

Scheme S1 the synthesis procedure of **N1**

The synthesis of **1-3** could be seen from our previous literature.[13b]

Synthesis of 4-diamine-1, 8-naphthalic anhydride-N-haxanioc acid imide-N-ethyl amine-3-β-cholest-5-en-3-yl-ester-N-Lysine acid ethyl ester (4)

The compound **3** (1mmol, 843 mg), 8 mL hydrazine hydrate were refluxed in ethanol for 3 days, the reaction mixture was then concentrated and purified by chromatography (SiO_2, $CHCl_3$/ CH_3OH=10:1) to give **3** as a yellow solid (mg, yield: 30%). Mp: 186-189 °C. ^{1}HNMR (500M, $CDCl_3$, δ): 0.60 (s, 3H), 0.83-1.59 (m, 39H), 1.76-1.92(m, 5H), 2.03-2.06 (t, 2H, J=6Hz),2.15-2.28(m, 2H), 2.99-3.01(t, 2 H, J=6Hz), 3.04-3.06 (t, 2 H, J=5.5Hz), 3.31(s, 1H), 3.96-3.99 (T, 2H, J=8Hz), 4.29 (m, 1H), 4.63(s, 1H), 5.28(s, 1H), 6.97-6.99 (t, 1H, J=5.0 Hz), 7.22-7.24 (d, 1H, J=8.5Hz), 7.60-7.63 (t, 1H, J=8 Hz), 7.75-7.77 (d, 1H, J=5.5Hz), 8.26-8.28 (d, 1H, J=8.5Hz), 8.39-8.41 (d, 1H, J=7.5Hz),8.59-8.61 (d, 1H, J=8.5Hz), 9.10 (s, 1H); ^{13}CNMR (125M, DMSO-d_6, δ): 11.57, 18.47,18.89, 20.51, 22.40, 22.64, 23.46, 23.71, 25.14, 26.38,

27.38, 27.50, 27.73, 27.89, 31.14, 35.27, 35.59, 35.87, 36.45, 41.68, 49.29, 55.56, 55.83, 72.98, 106.45, 110.80, 116.14, 118.67, 119.51,120.52, 121.70, 122.04, 124.96, 126.45, 128.31, 129.26, 130.82, 133.62, 139.64, 142.10,146.38, 155.88, 156.31, 162.90, 172.32. MS for calc. for. $(C_{48}H_{69}N_5O_5+Na)^+$ 819.5; Found: 819.0.

Synthesis of **N1**

Compound **4** (1 mmol, 823 mg) and salicylaldehyde (1 mmol, 98 mg) were refluxed in ethanol for 24 h. The reaction mixture was concentrated and purified by chromatography (SiO_2, $CHCl_3$/ CH_3OH=100:1 to 20:1) to give **3** as an orange solid (461 mg, yield: 50%). Mp: 203-206 °C; ^{1}HNMR (500M, DMSO-d_6) δ: 0.53 (s, 3H, CH_3), 0.62-0.64 (d, 3H, J=10Hz), 0.82-1.76 (m, 40H), 1.80-1.82 (d, 1H, J=12 Hz), 2.04-2.07 (t, 2H, J=7.5Hz), 2.12-2.24(m, 2H)2.98-3.08(m, 4H), 3.99 (s, 2H), 4.28 (s, 1H), 5.20 (s, 1H), 6.89-6.94 (q, 3H), 7.23-7.26 (t, 1H, J=7.5Hz), 7.63-7.64 (d, 1H, J=8.5Hz), 7.74-7.84 (m, 3H), 8.37-8.38 (d, 1H, J=8.5Hz), 8.47-8.49 (d, 1H, J=7Hz), 8.80-8.84 (t, 2H, J=7.5Hz),10.22 (s, 1H) ,11.48 (s, 1H). ^{13}CNMR (125M, DMSO-d_6, δ): 11.57, 18.47,18.89, 20.51, 22.40, 22.64, 23.46, 23.71, 25.14, 26.38, 27.38, 27.50, 27.73, 27.89, 31.14, 35.27, 35.59, 35.87, 36.45, 41.68, 49.29, 55.56, 55.83, 72.98, 106.45, 110.80, 116.14, 118.67, 119.51,120.52, 121.70, 122.04, 124.96, 126.45, 128.31, 129.26, 130.82, 133.62, 139.64, 142.10,146.38, 155.88, 156.31, 162.90, 163.62, 172.32. HRMS for calc. for. $(C_{55}H_{73}N_5O_6+Na)^+$: 922.5459; Found: 922.5562.

Fig. S1 the photos of the **N1** organogels in different organic solvents. From left to right: dichloromethane, n-propanol, isopropanol, acetone, n-butanol, ethanol, benzene.

Fig. S2 the photos of the transparent gel in benzene.

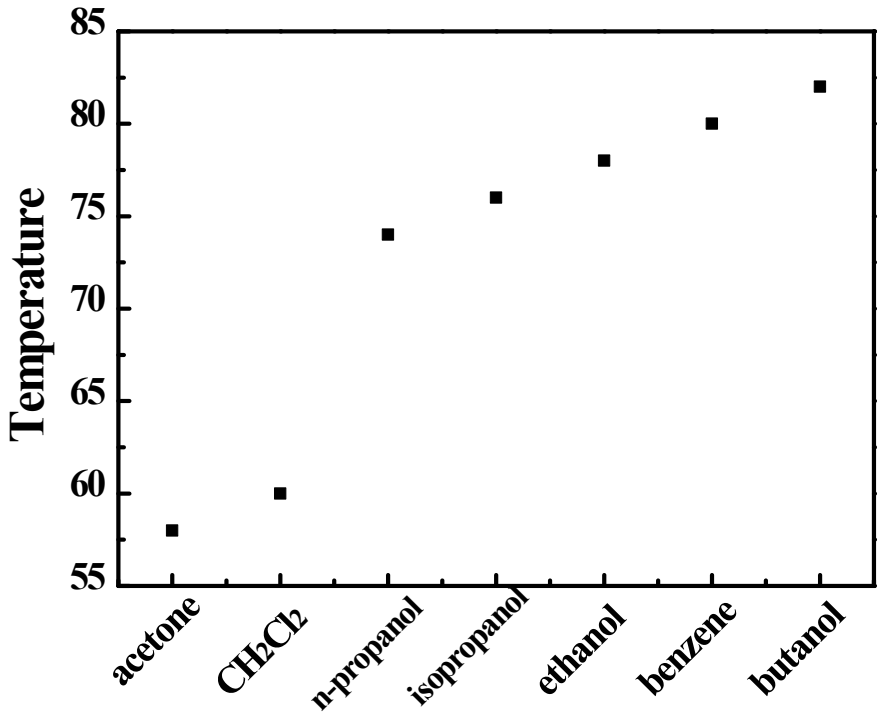

Fig. S3 Plots of T_{gel} (gel collapsing temperature) of **N1** versus solvents, unit: ℃.

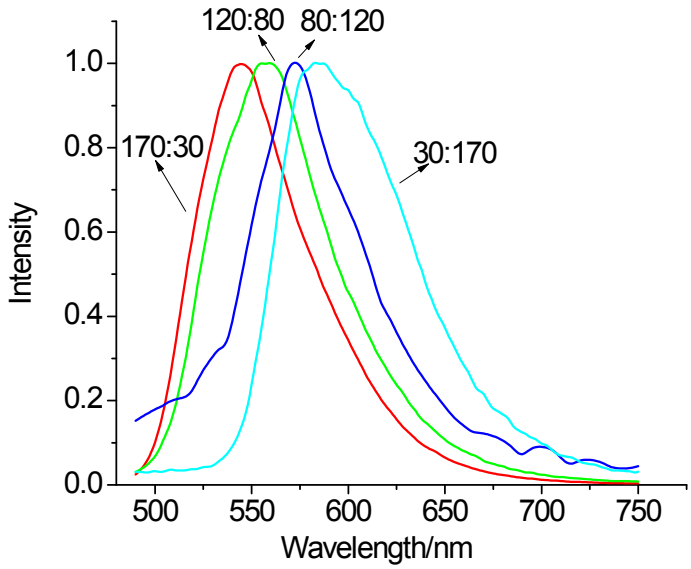

Fig. S4 the fluorescent spectra of **N1** aggregates in solvent mixture of CH_2Cl_2 and benzene with different volume ratios.

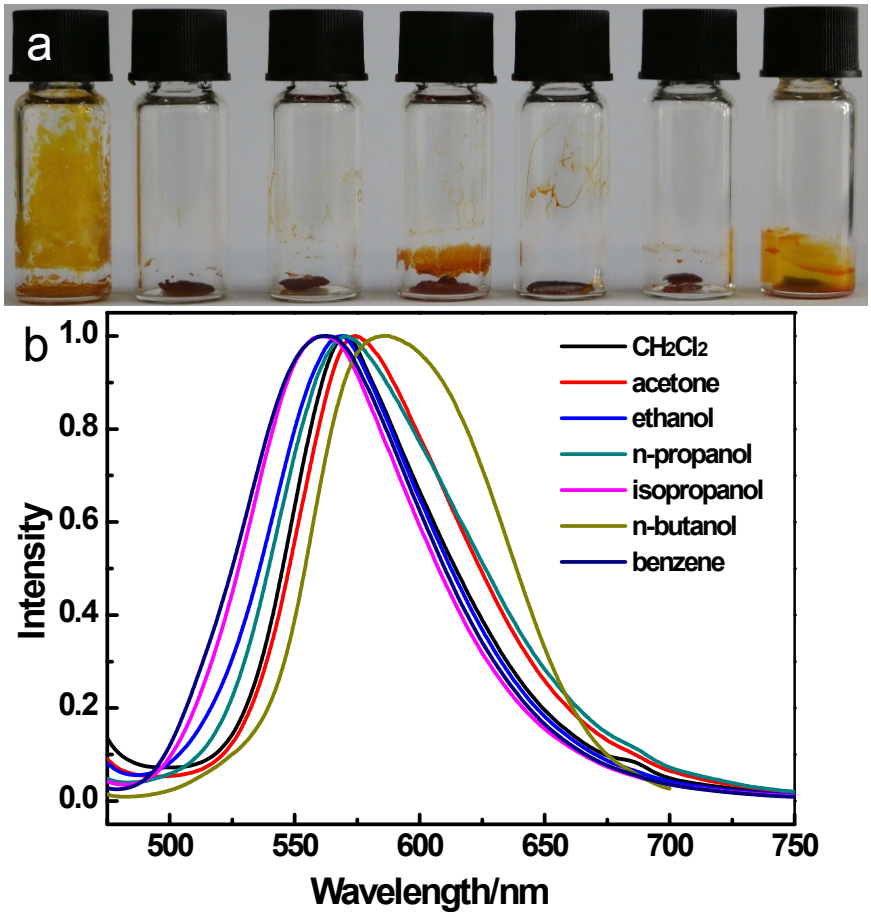

Fig. S5 a) Photos of **N1** xerogels evaporated from different kind of organic solvents.

From left to right: dichloromethane, n-propanol, isopropanol, acetone, n-butanol, ethanol, benzene; b) fluorescent spectra of xerogels.

Table S2 The absorption peaks of **N1** in solution (10^{-5} M) and gel (25 mg/mL).

Solvents	Solution(nm)	Gel(nm)
CH_2Cl_2	435	489
n-propanol	459	442
isopropanol	459	456
acetone	444	436
butanol	458	442
ethanol	457	461
benzene	431	460

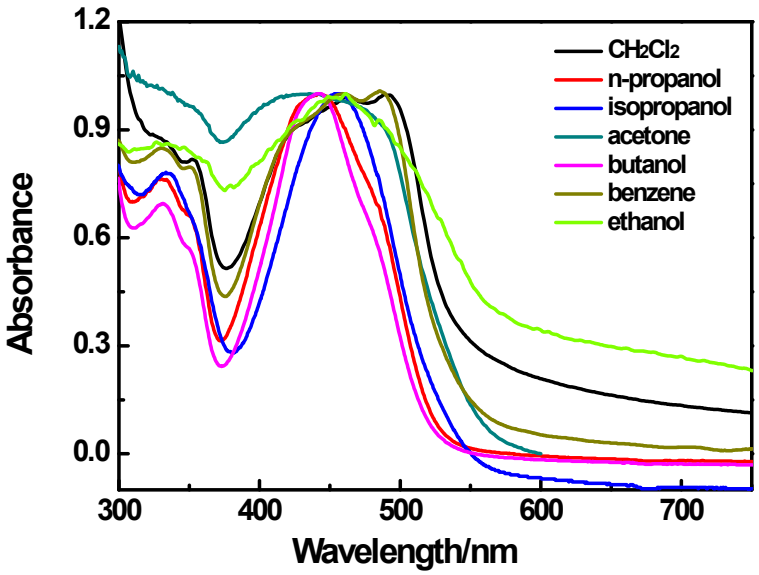

Fig. S6 UV-vis spectra of **N1** gels in different organic solvents.

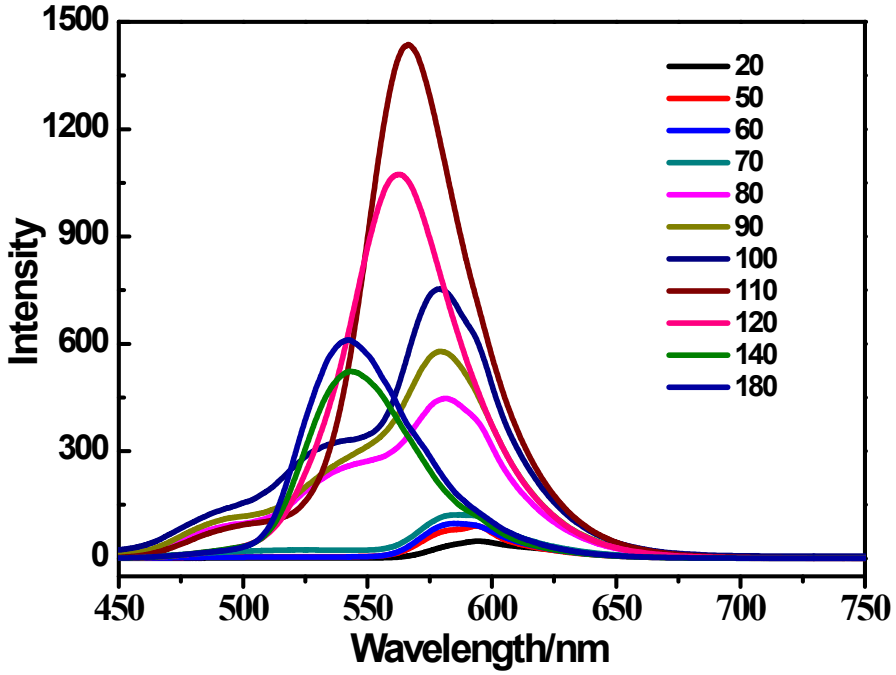

Fig. S7 Temperature dependent fluorescence changes of **N1** organogel in benzene (5 mg/200 μL) from 20 to 180 °C.

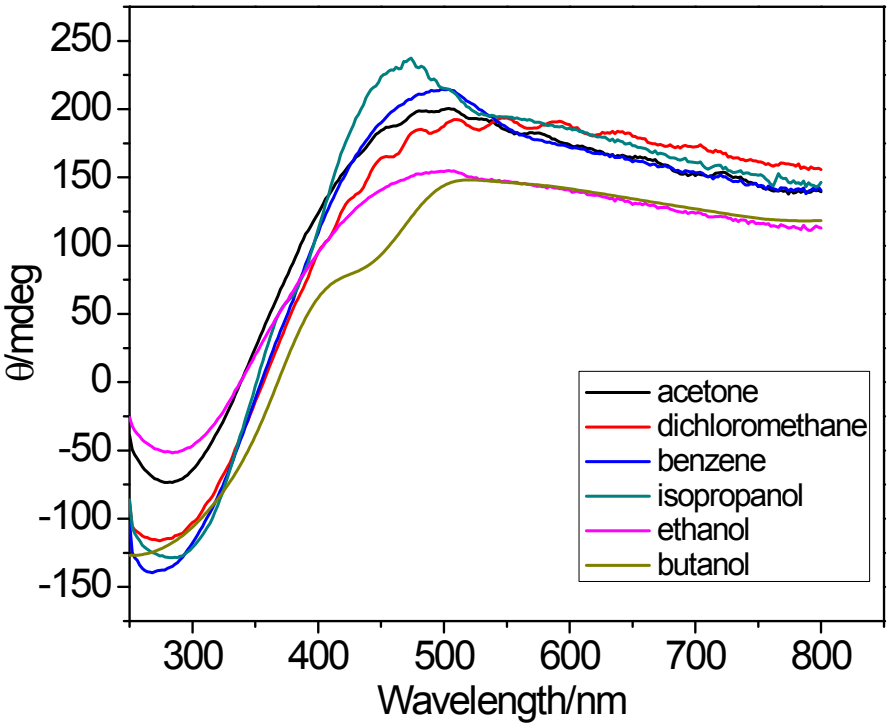

Fig. S8 CD spectra of the gel (25 mg/mL) in different organic solvents.

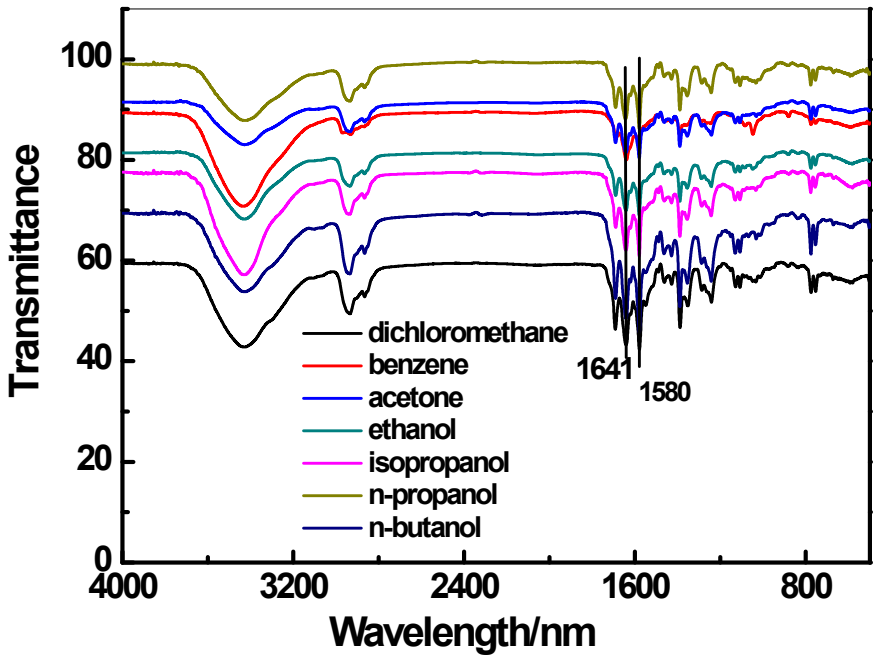

Fig. S9 FT-IR spectra of these **N1** xerogels from different organic solvents.

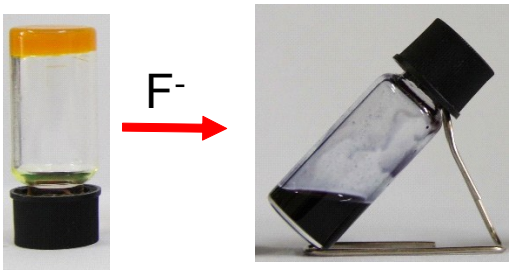

Fig. S10 the gel **N1** in CH_2Cl_2 and sol triggered by fluoride anions.

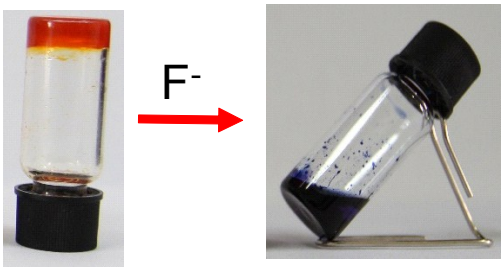

Fig. S11 the gel **N1** in benzene and sol triggered by fluoride anions.

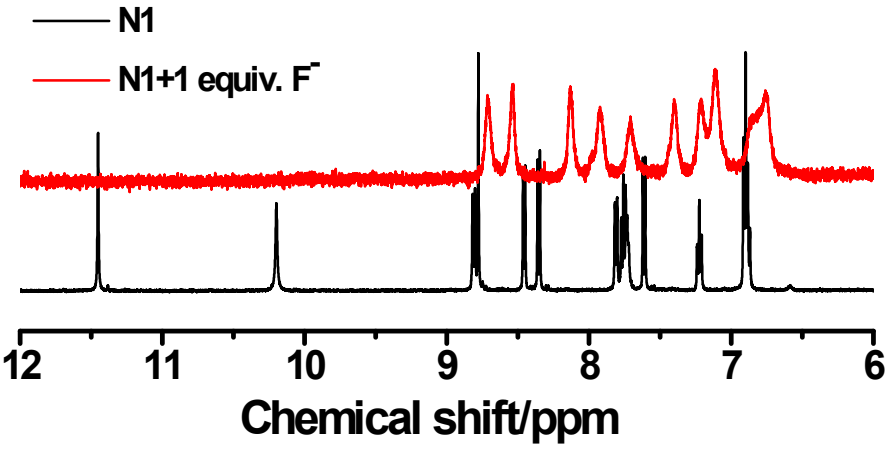

Fig. S12 ^{1}HNMR titration **of N1** upon the addition of F^{-}.

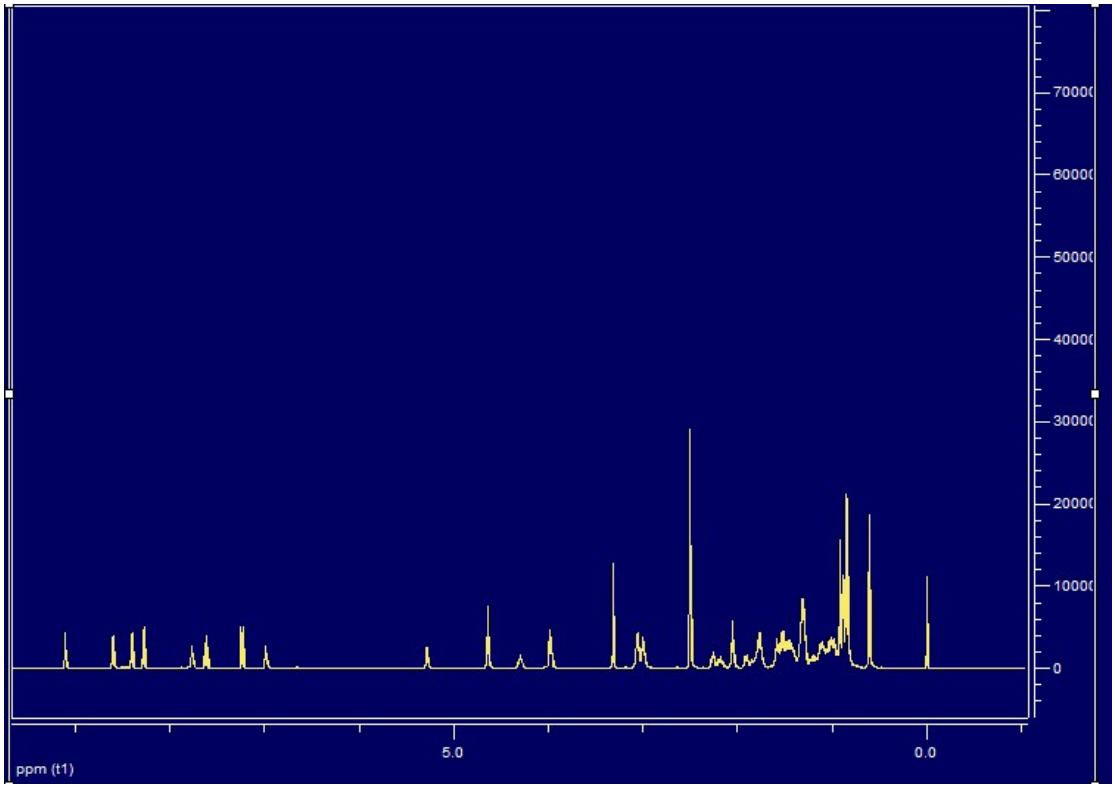

Fig. S13 ^{1}HNMR spectra of **4** in DMSO-d_6.

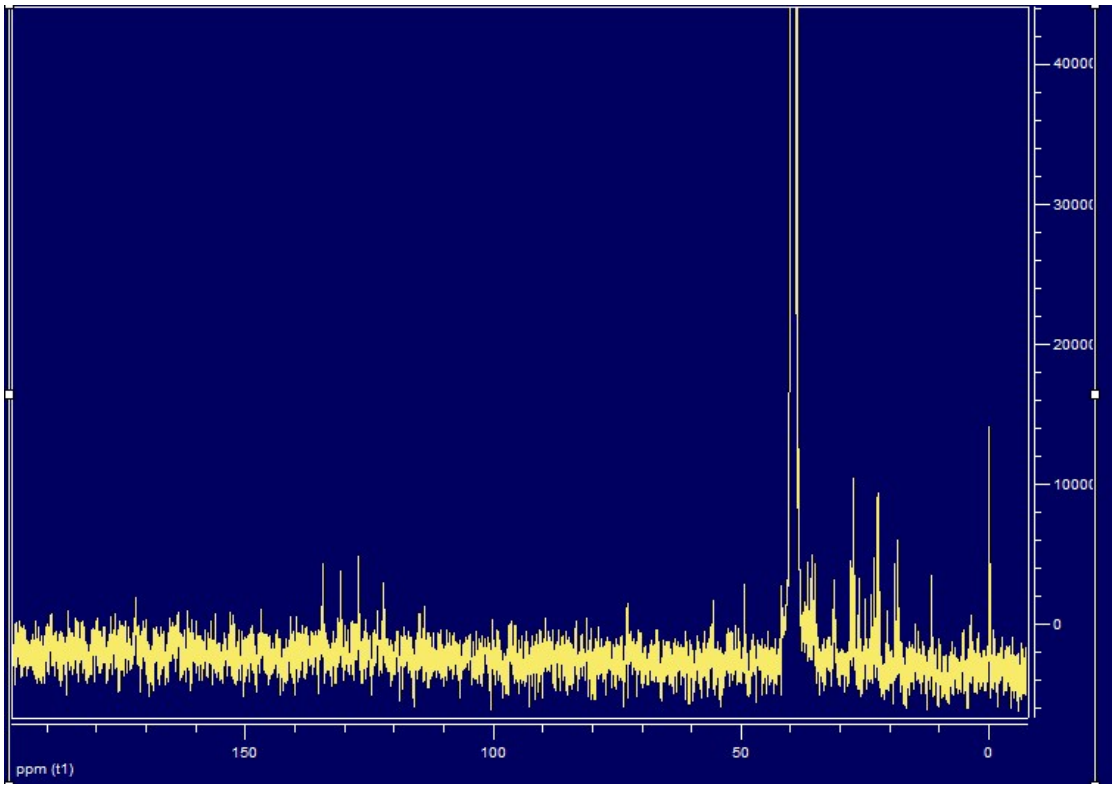

Fig. S14 ^{13}CNMR spectra of **4** in DMSO-d_6.

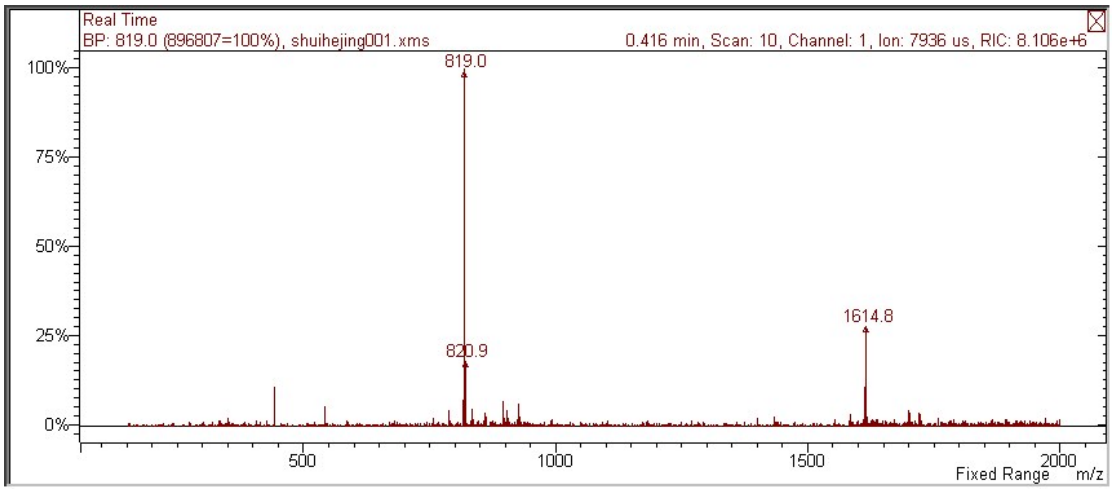

Fig. S15 MS spectrum of compound **4**.

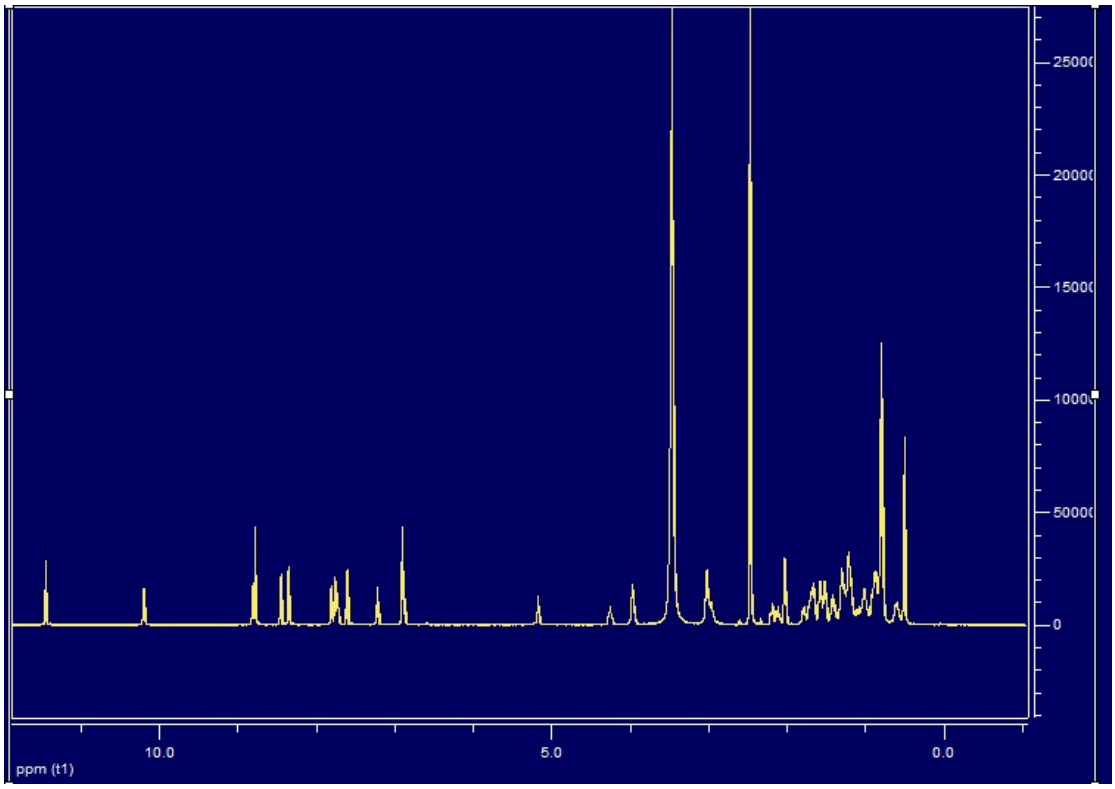

Fig. S16 ^{1}HNMR spectra of **N1** in DMSO-d_6.

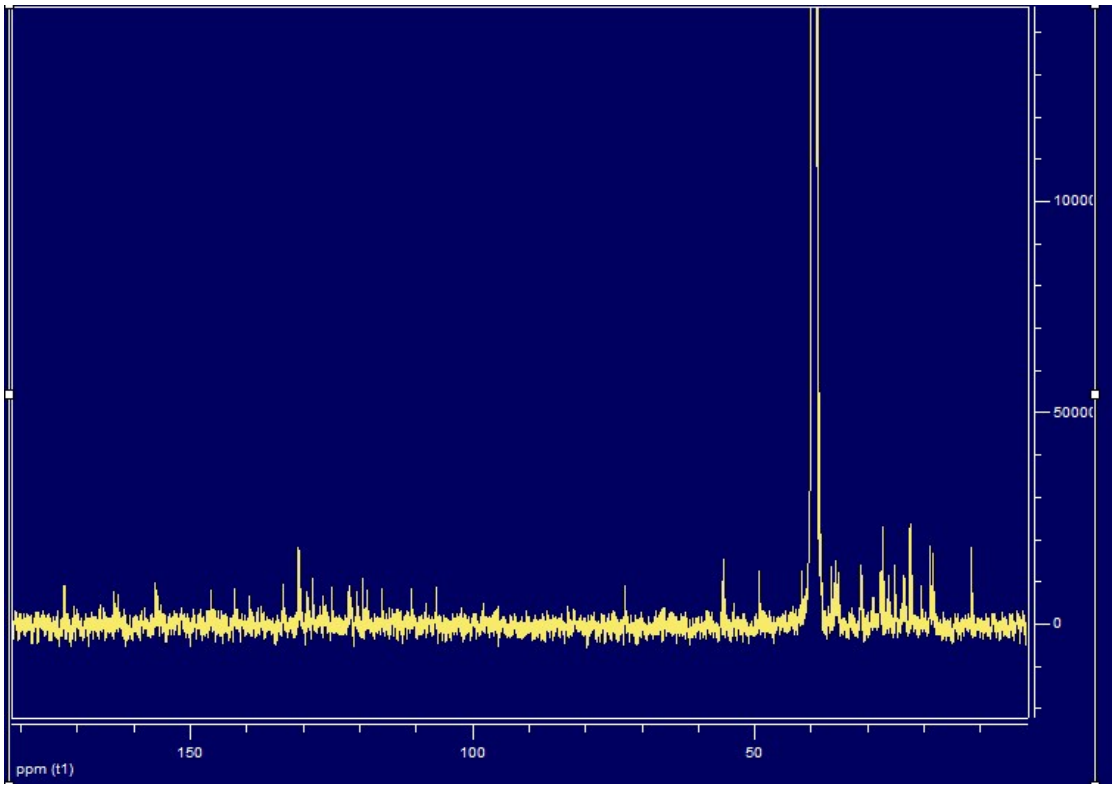

Fig. S17 ^{13}C NMR spectra of **N1** in DMSO-d_6.

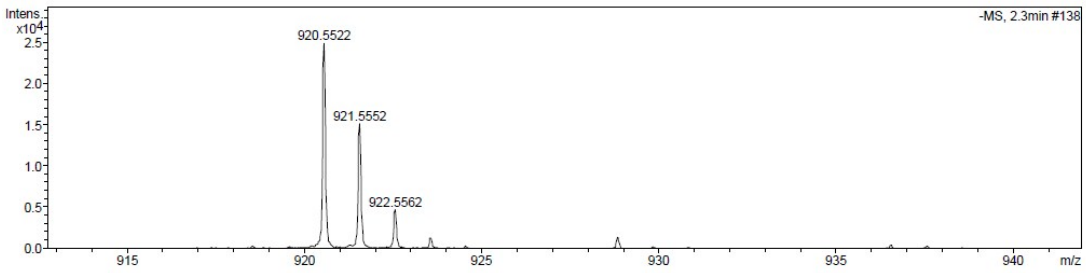

Fig. S18 HR-MS spectra of **N1**.

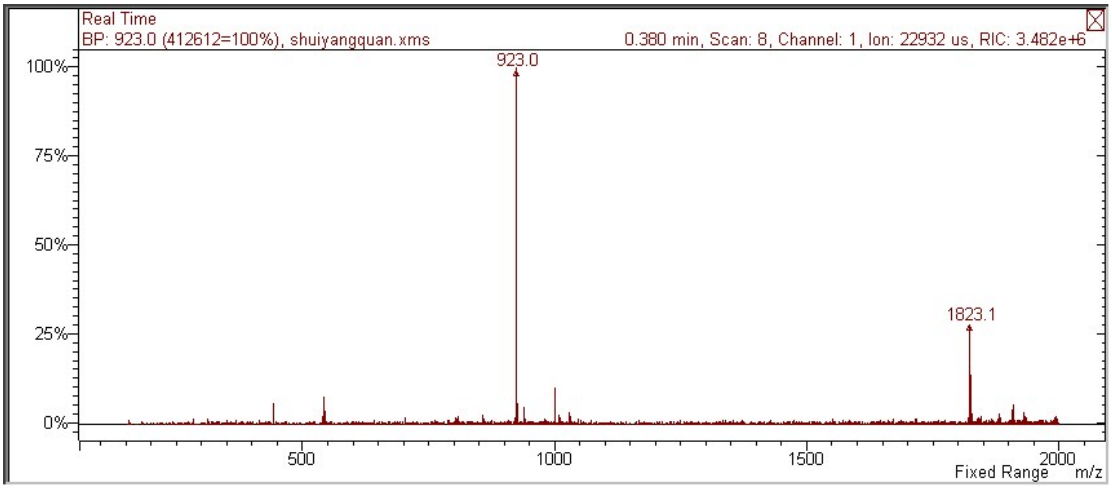

Fig. S19 MS spectra of **N1**.