Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

A highly sensitive fluorescent sensor with aggregation induced emission characteristics for the detection of iodide and mercury ions in aqueous solution

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Table S1 Crystallographic data for TPE-QN.

Compound	TPE-QN
Empirical formula	$C_{38}H_{30}NF_6P$
Formula weight	645.60
Crystal system	triclinic
Space group	P -1
a [Å]	9.4059 (4)
b [Å]	11.4024 (5)
c [Å]	15.4542 (5)
α [^{o}]	94.338 (3)
β [^{o}]	105.333 (3)
γ [^{o}]	92.789 (3)
V [Å^3]	1589.81 (11)
Z	2
T [K]	293
D_{calcd} [g cm^{-3}]	1.349
m [mm^{-1}]	1.318
q range [^{o}]	7.796-144.394
Total no. reflections	24030
R_1	0.1202
wR_2	0.4019
GOOF	1.833

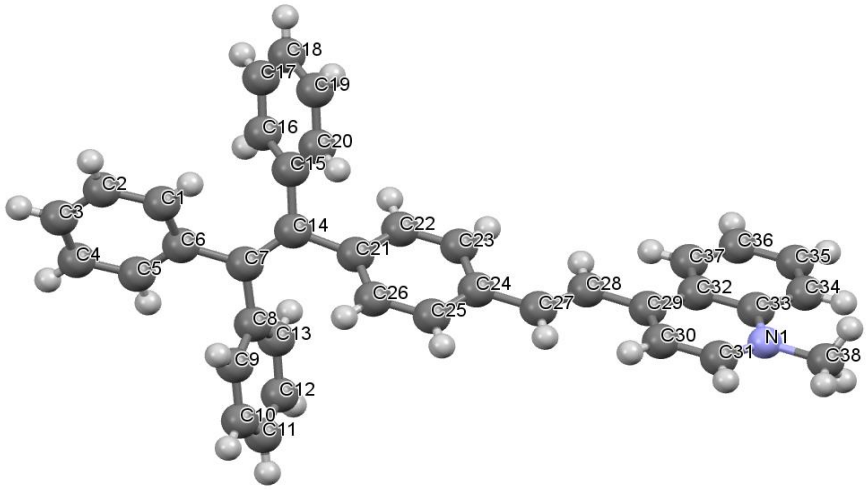


Fig. S1 ORTEP drawing of TPE-QN omitted with counter anion.

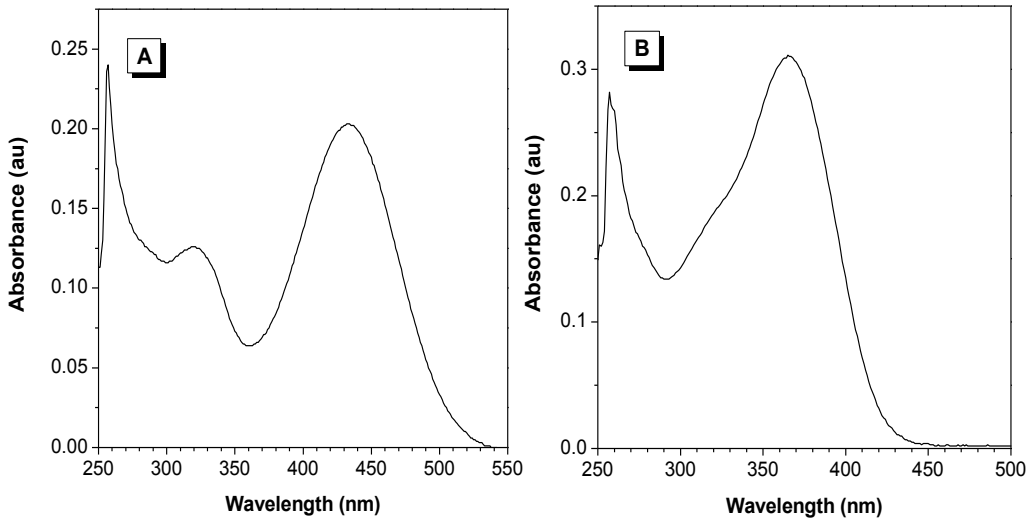


Fig. S2 The UV-vis absorption spectra of (A) TPE-QN (10 μM) and (B) TPE-QI (10 μM) in DMSO.

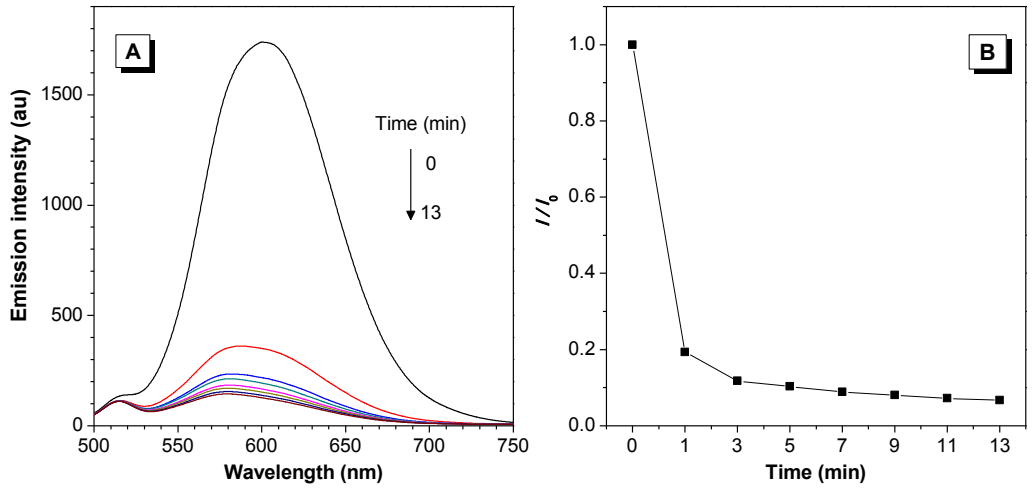


Fig. S3 (A) The emission spectra of TPE-QN (10 μM) in aqueous solution (with 1% DMSO) with time in the presence of I^- (200 μM). (B) Plot of I/I_0 at 610 nm versus the time (0–13 min). Excitation wavelength: 435 nm.

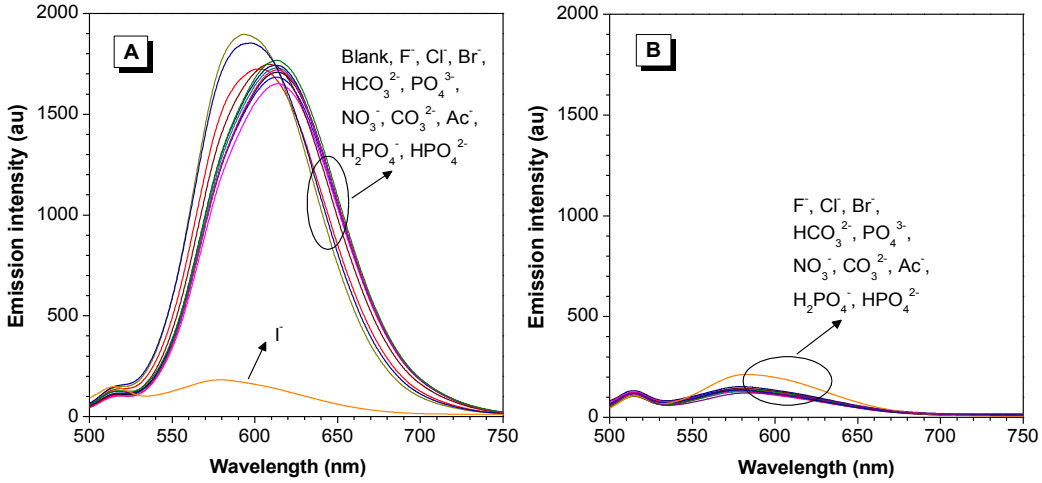


Fig. S4 (A) Emission spectra of TPE-QN (10 μM) in aqueous solution (with 1% DMSO) in the presence of different anions (200 μM). (B) Emission spectra obtained by addition of 200 μM of I^- into the solutions in (A). Excitation wavelength: 435 nm.

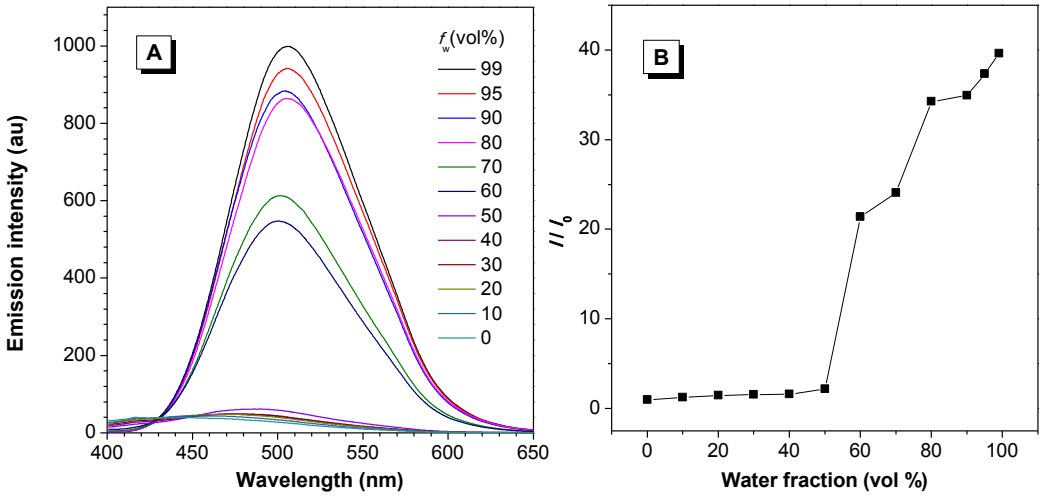


Fig. S5 (A) Emission spectra of TPE-QI (10 μM) in DMSO and DMSO/water mixtures with different water fractions (f_w). (B) Plots of relative emission intensity (I/I_0) at 510 nm versus the composition of water in mixtures. Excitation wavelength: 360 nm.

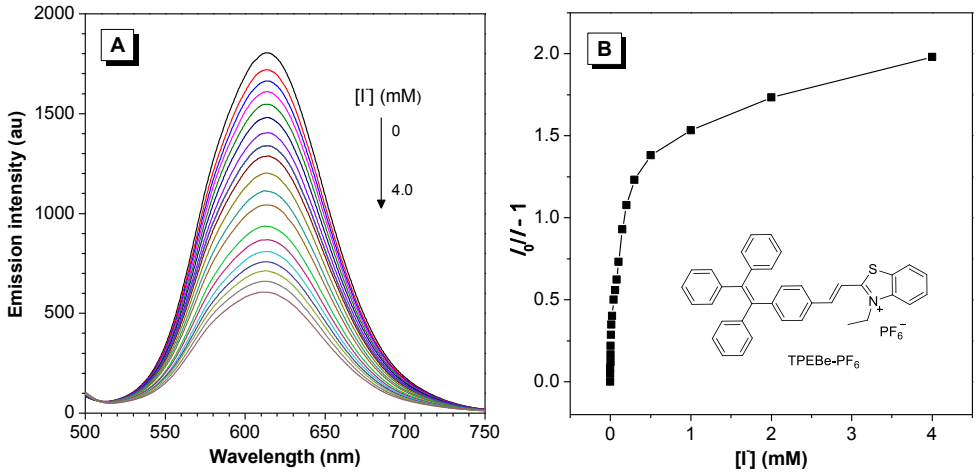


Fig. S6 (A) Emission spectra of TPEBe-PF_6 (10 μM) in aqueous solution (with 1% DMSO) with different concentrations of I^- (0–4.0 mM). (B) Plot of I_0/I-1 at 614 nm versus the concentration of I^- (0–4.0 mM). I_0 = emission intensity of TPE-QN without I^-. Excitation wavelength: 420 nm.

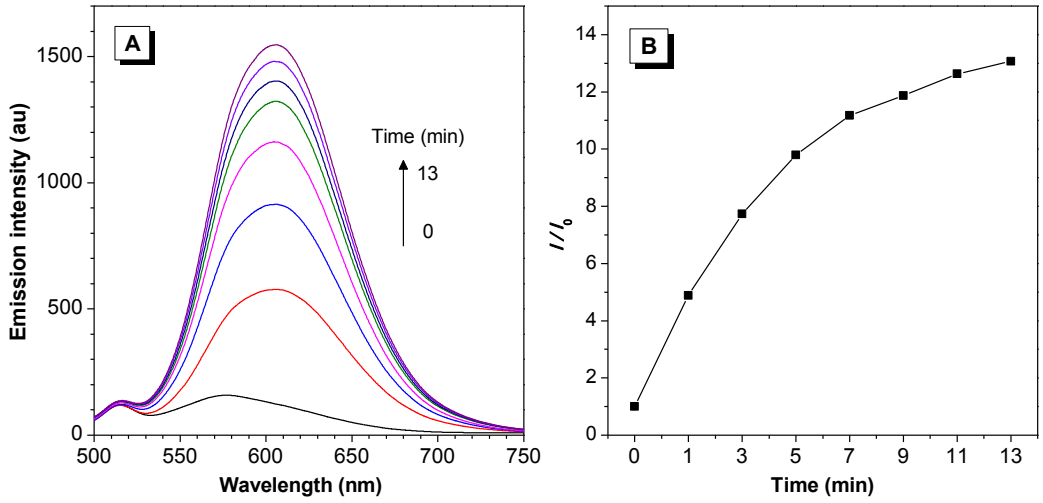


Fig. S7 (A) The emission spectra of TPE-QN-I (10 μM) in aqueous solution (with 1% DMSO) with time in the presence of Hg^{2+} (150 μM). (B) Plot of I/I_0 at 610 nm versus the time (0–13 min). Excitation wavelength: 435 nm.

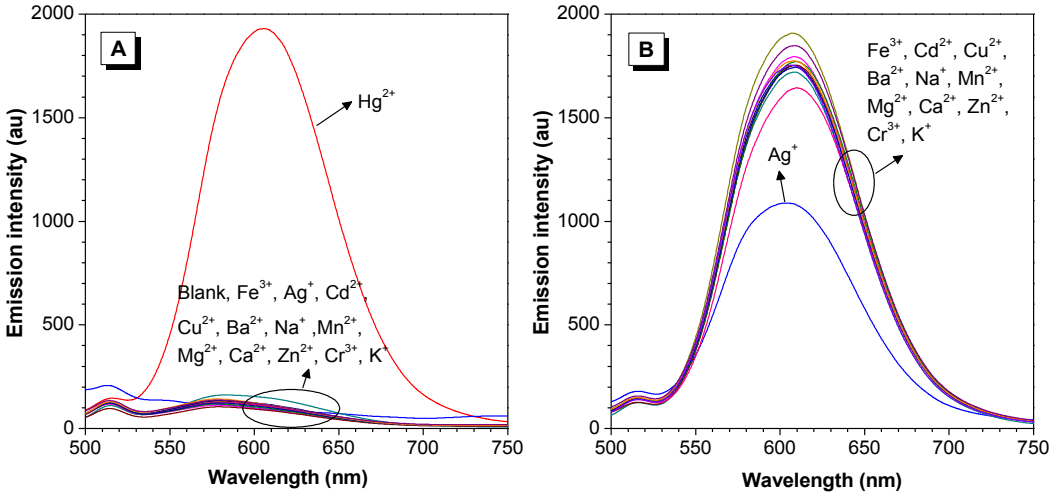


Fig. S8 (A) The emission spectra of TPE-QN-I (10 μM) in aqueous solution (with 1% DMSO) with different metal ions (150 μM). (B) The emission spectra were obtained by addition of 150 μM of Hg^{2+} into the solutions in (A). Excitation wavelength: 435 nm.

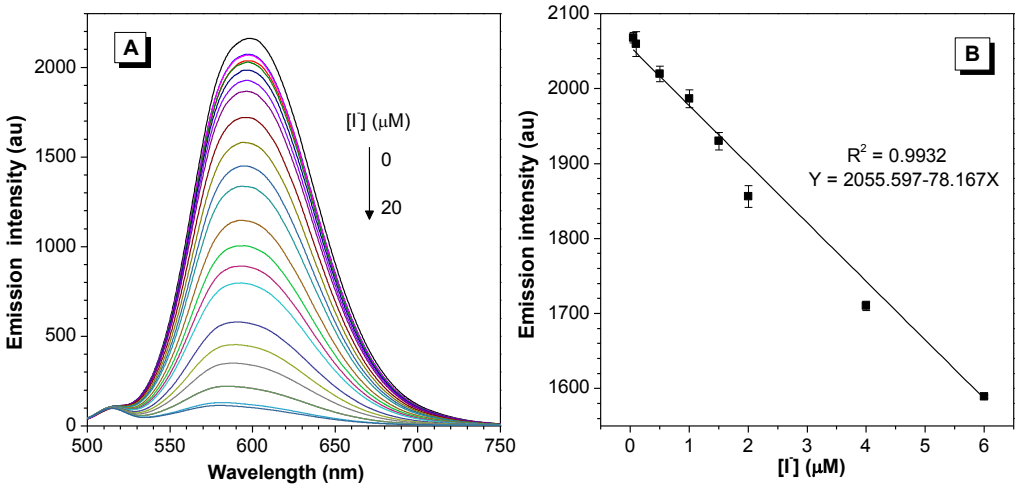


Fig. S9 (A) Emission spectra of TPE-QN (10 μM) in buffer solution (pH 7.2, 20 mm HEPES buffer with 1% DMSO) with different concentrations of I^- (0–20 μM). (B) Plot of emission intensity at 610 nm versus the concentration of Hg^{2+} (0.01–6.0 μM). Excitation wavelength: 435 nm.

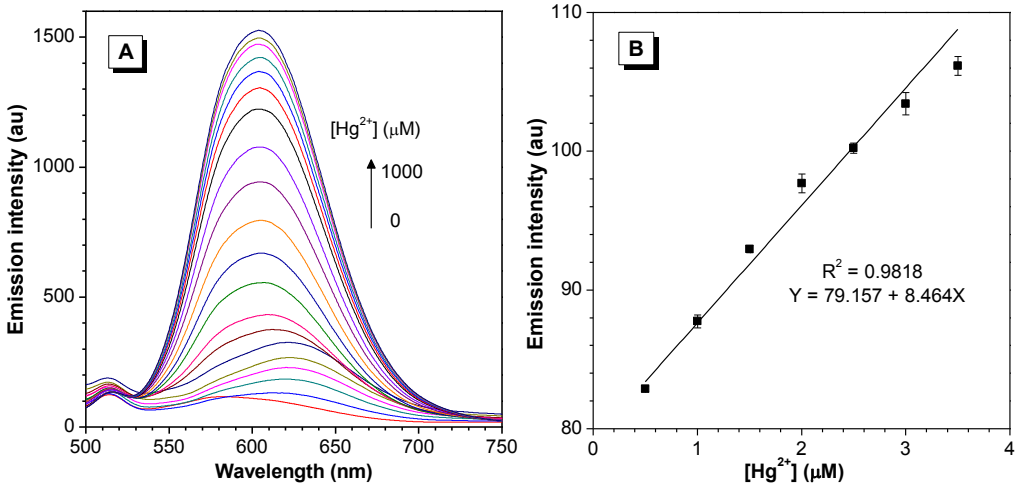


Fig. S10 (A) Emission spectra of TPE-QN-I (10 μM) in buffer solutions (pH 7.2, 20 mM HEPES buffer with 1% DMSO) with different concentrations of Hg^{2+} (0–1000 μM). (B) Plot of emission intensity at 610 nm versus the concentration of Hg^{2+} (0.5–4.0 μM). Excitation wavelength: 435 nm.

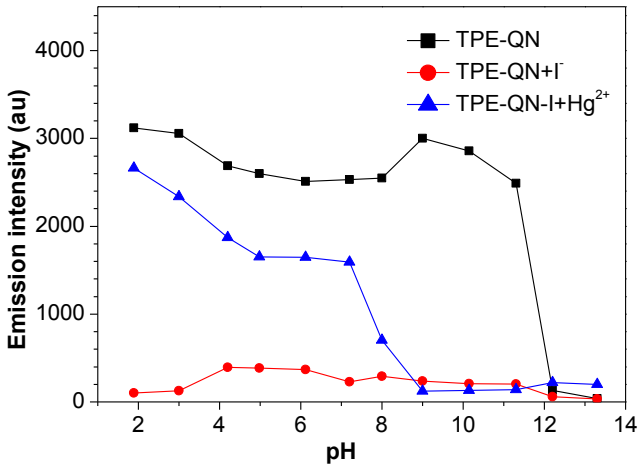
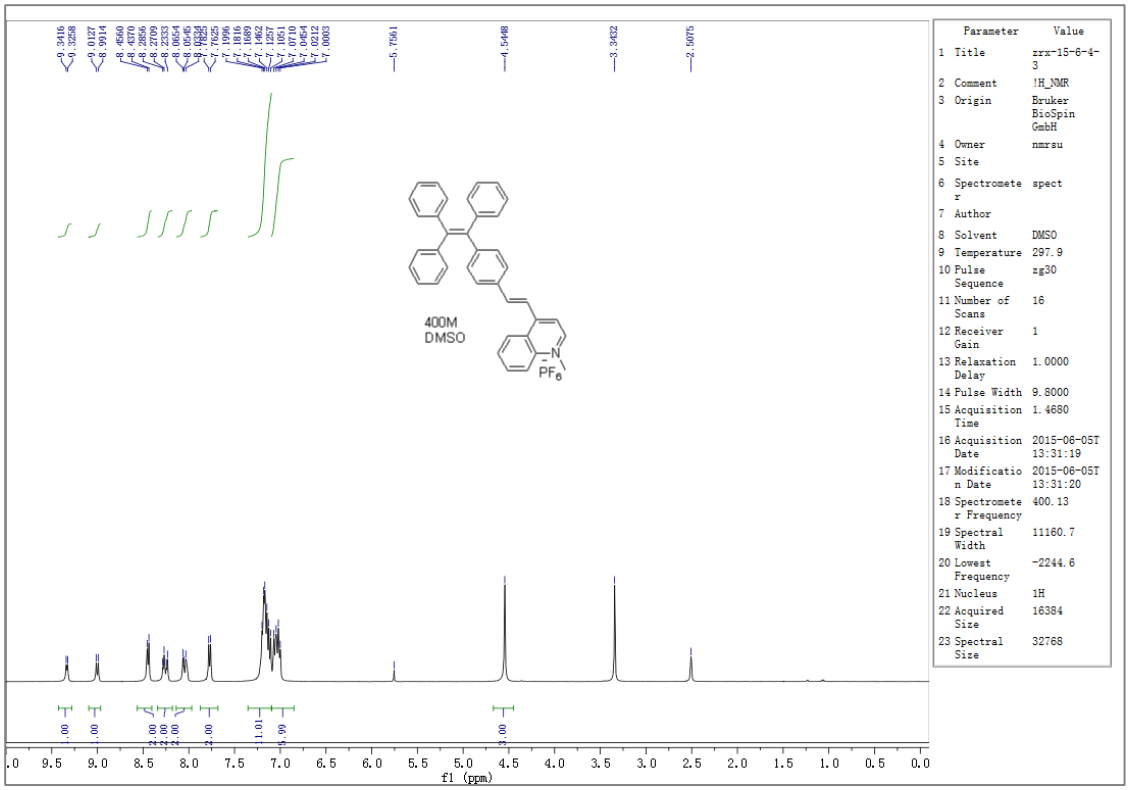


Fig. S11 Change in the emission intensity of TPE-QN at 610 nm in buffer solution (10 μM), following addition of I^- (20 μM) and Hg^{2+} (1000 μM) with different pH. Excitation wavelength: 435 nm.



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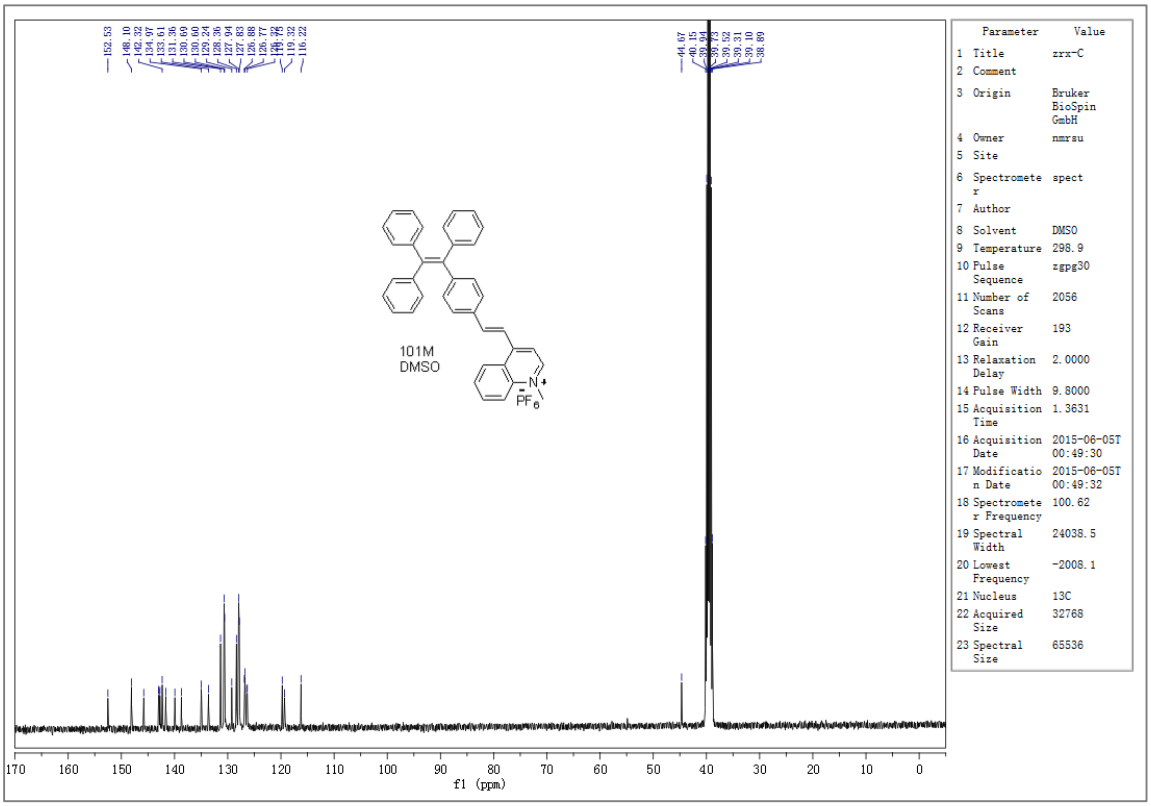

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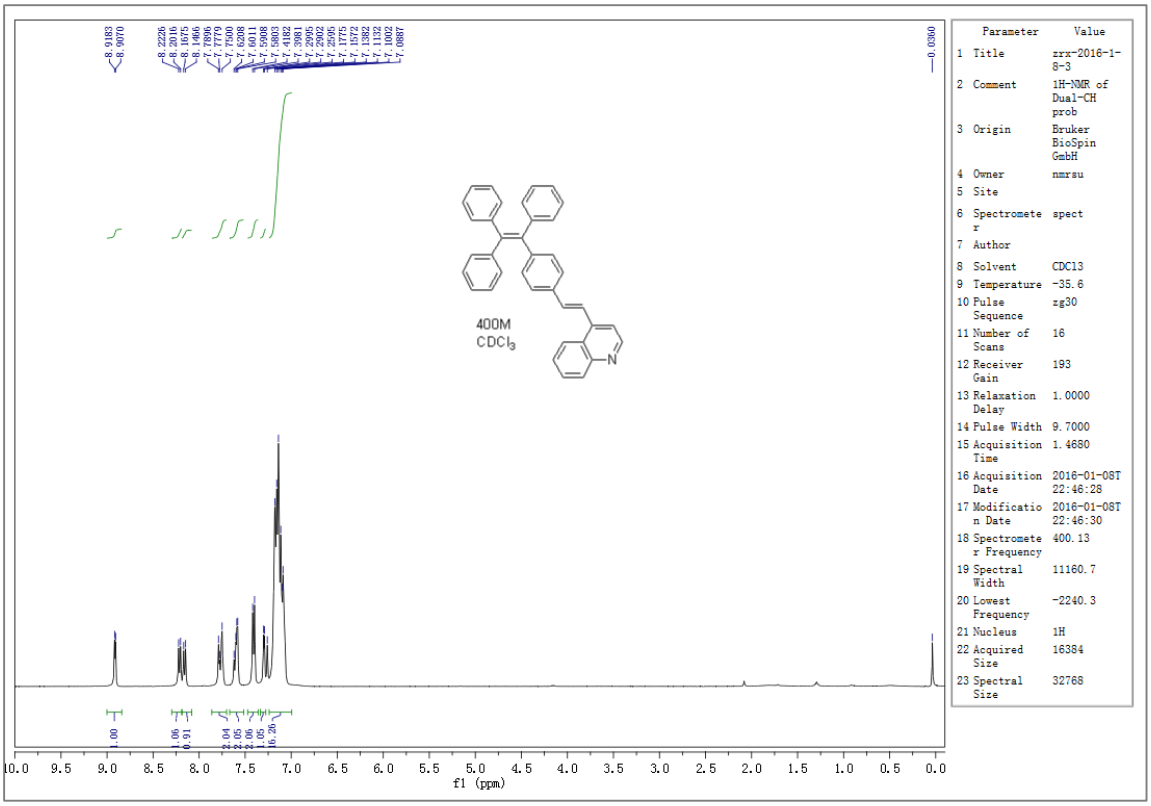

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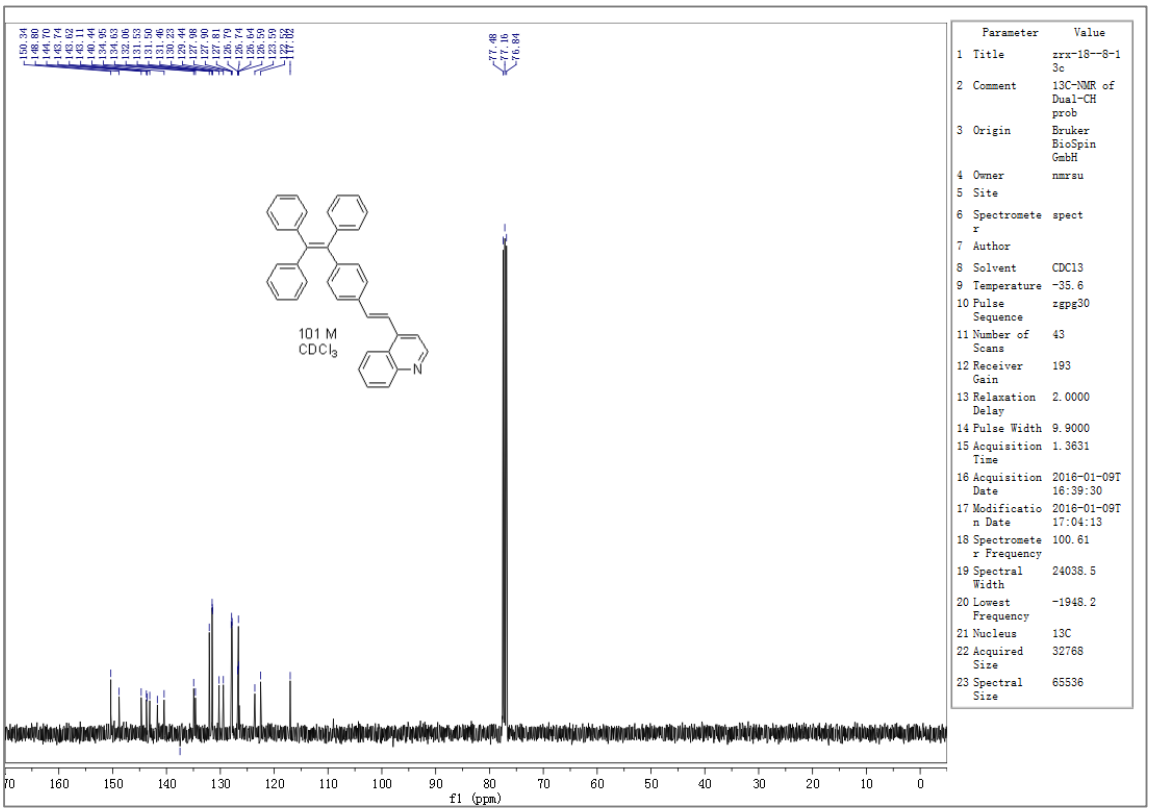

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