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Supplementary Material

A novel ratiometric fluorescent sensor based on terpyridine derivatives for Zn2+ in aqueous solution

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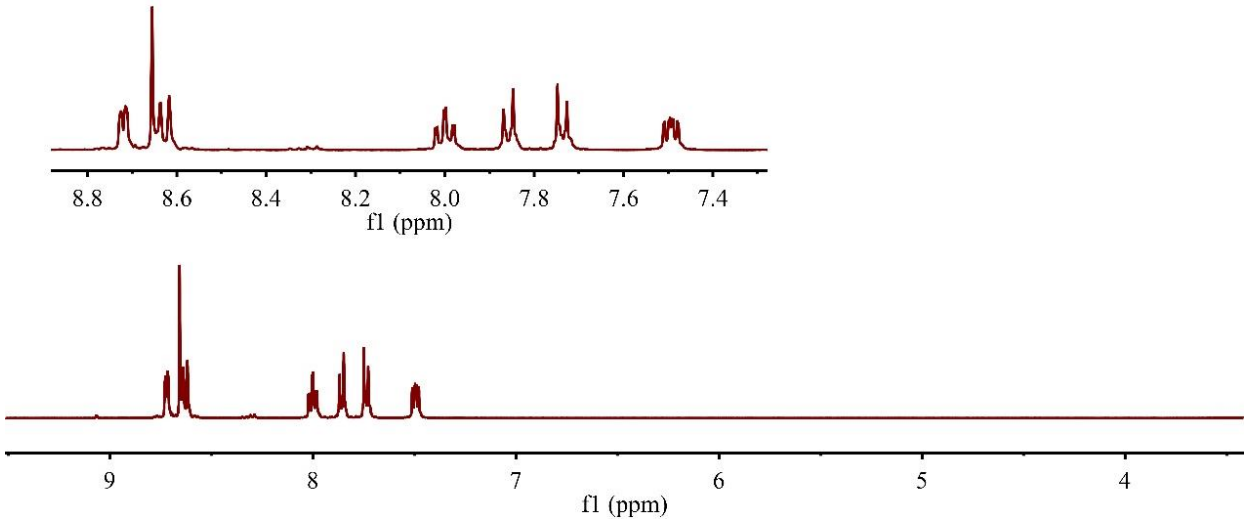

Fig. S1. ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of **Compound G1**.

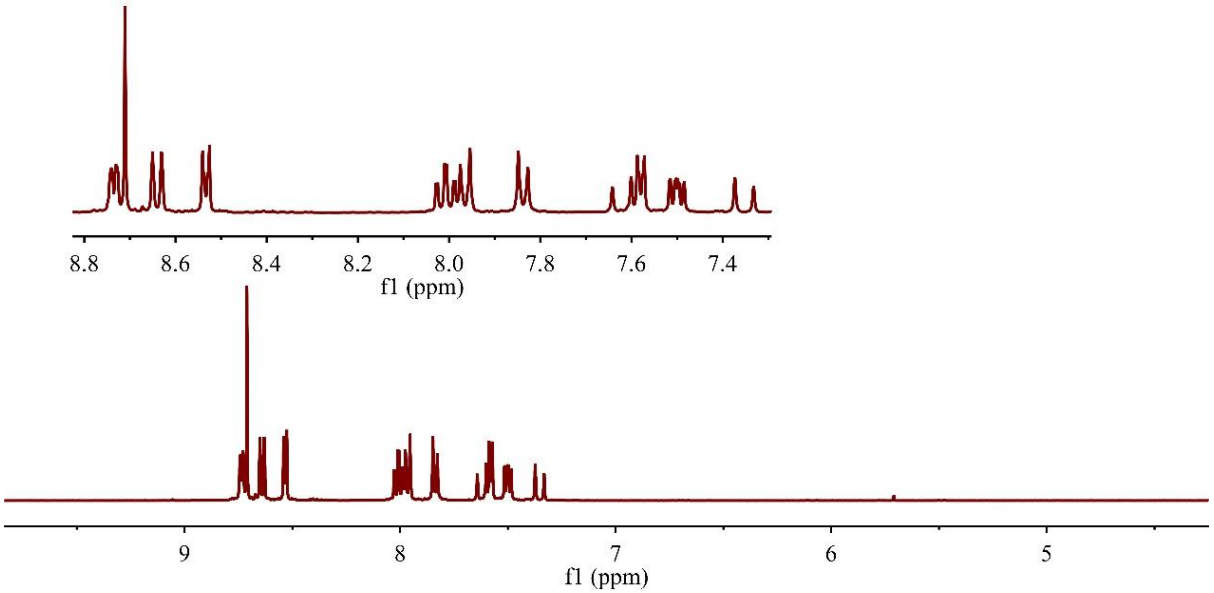

Fig. S2. ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of **Compound G2**.

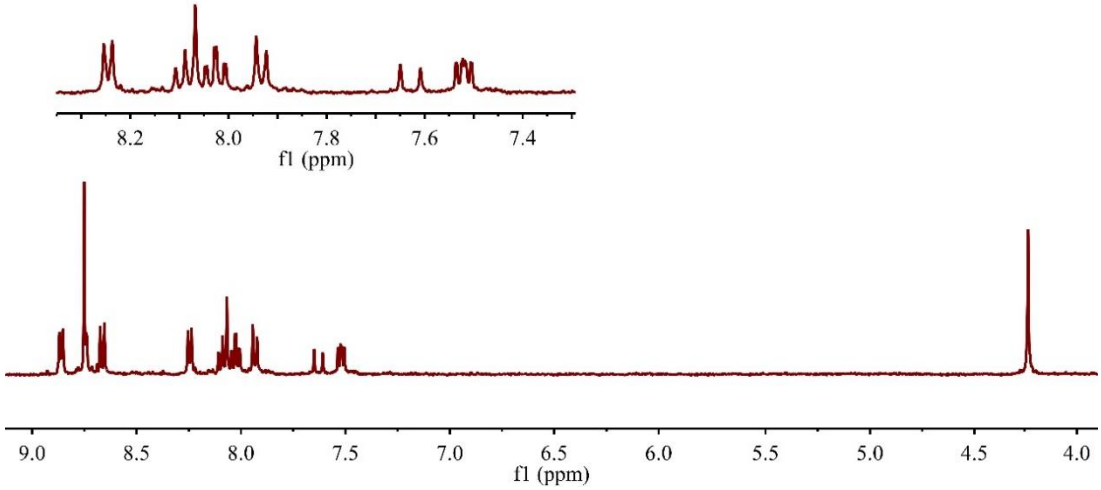

Fig. S3. ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of **Compound G**.

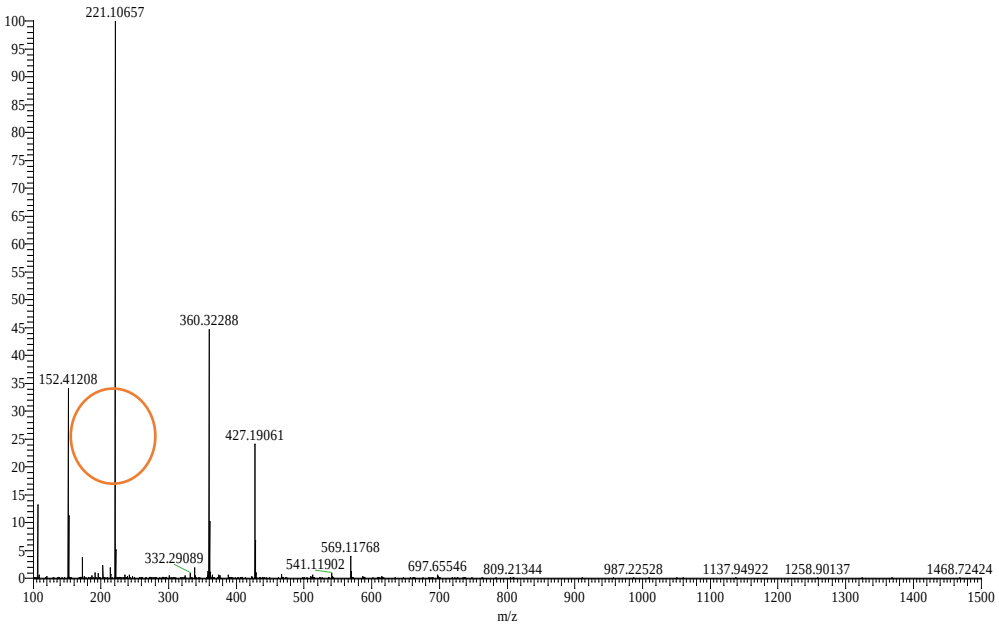

Fig. S4. Mass spectrum of **Compound G**.

The association constant of G with Zn^{2+}

K_a is calculated by Kaleida Graph software. The custom formula is as follows:

0.5*(m1*((1E-5)+M0*(1E-5)+(1/m2))-((((m1*((1E-5)+M0*(1E-5)+(1/m2)))^2)-4*(m1^2)*(1E-5)*M0*(1E-5)))^(0.5)); m1 = 1e+7; m2 = 2e+5;

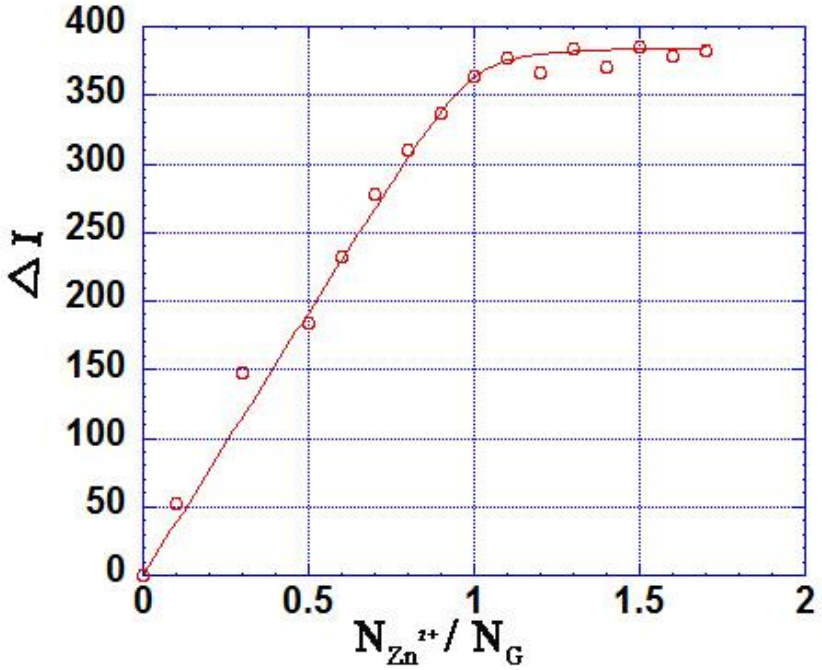

Fig. S5. The intensity changes of **G** upon addition of Zn^{2+} and the red solid line was obtained from the non-linear curve-fitting.

Table S1. The data from the Kaleida Graph.

$K_a(M^{-1})$	R^2
2.4627×10^5	0.993

Table S2. Standard deviation and detection limit calculation for Zn^{2+}.

Fluorescence Intensity	Standard deviation (σ)	Slope(K)	Detection limit (3σ/K)
165.211			
164.490			
165.487			
164.110			
163.890	2.15	$377.01 \times 10^5\ M^{-1}$	1.71×10^{-7} M
160.820			
163.006			
159.341			
162.466			
161.353			
159.895			

Table S3. Comparison of the solvents and detection limits (LOD) with recently reported fluorescent probes for Zn^{2+}.

Solvents	**LOD (M)**	**References**
C_2H_3N	4.82×10^{-7}	1
C_2H_5OH	2.5×10^{-5}	2
H_2O / THF (9:1, v/v)	3.7×10^{-7}	3
DMF / H_2O (2:3, v/v)	2.5×10^{-7}	4
H_2O	1.71×10^{-7}	This work

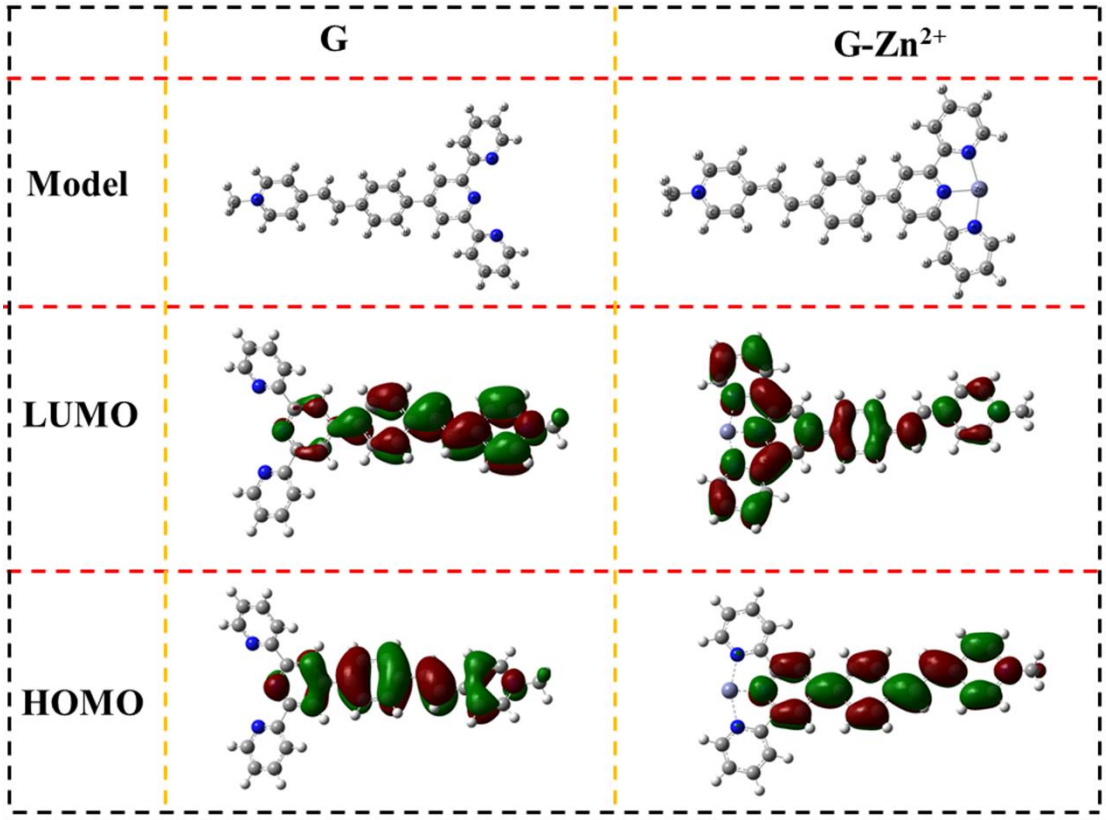

Fig. S6. HOMO and LUMO orbitals of probe G and G-Zn^{2+} complex.

Table S4 Excitation parameters of G and G-Zn^{2}

	D(A)	Sr	H(A)	t(A)	HDI	EDI
G	2.249	0.70027	3.716	-1.254	6.36	6.44
G-Zn^{2+}	3.566	0.73868	4.968	-1.04	5.45	5.13

References

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