Electronic Supplementary Material (ESI) for Dalton Transactions.

Dimethyldihydropyrene-Cyclophanediene Photochromic Couple Functionalized with Terpyridyl Metal Complexes as Multi-Addressable Redox- and Photo-Switches

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1. Additional NMR spectra

Figure ESI 1 : ^{1}H NMR spectrum of $Fe(1_c)_2^{2+}$

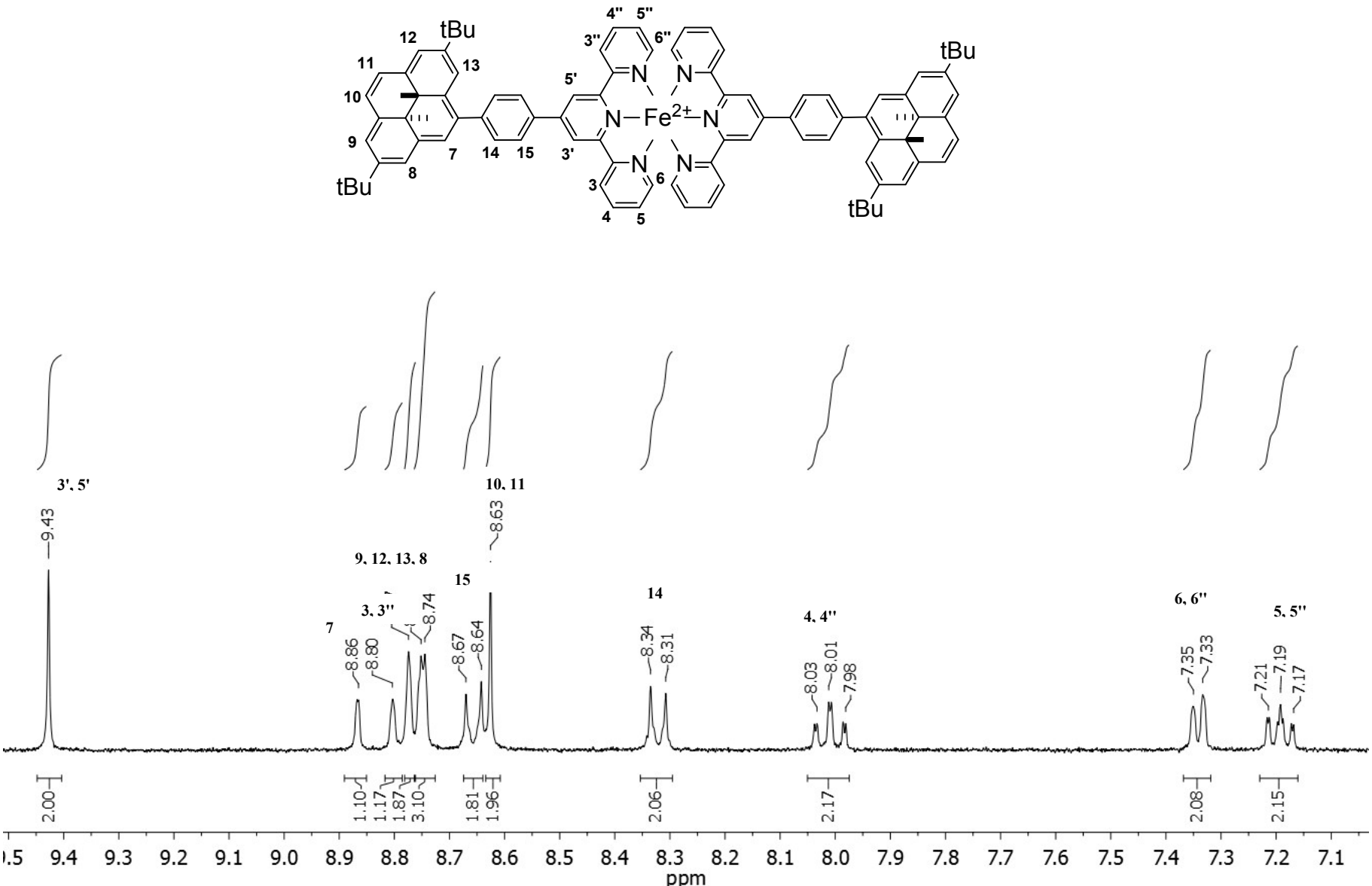


Figure ESI 2 : ^{1}H NMR spectrum of $Zn(1_c)_2^{2+}$

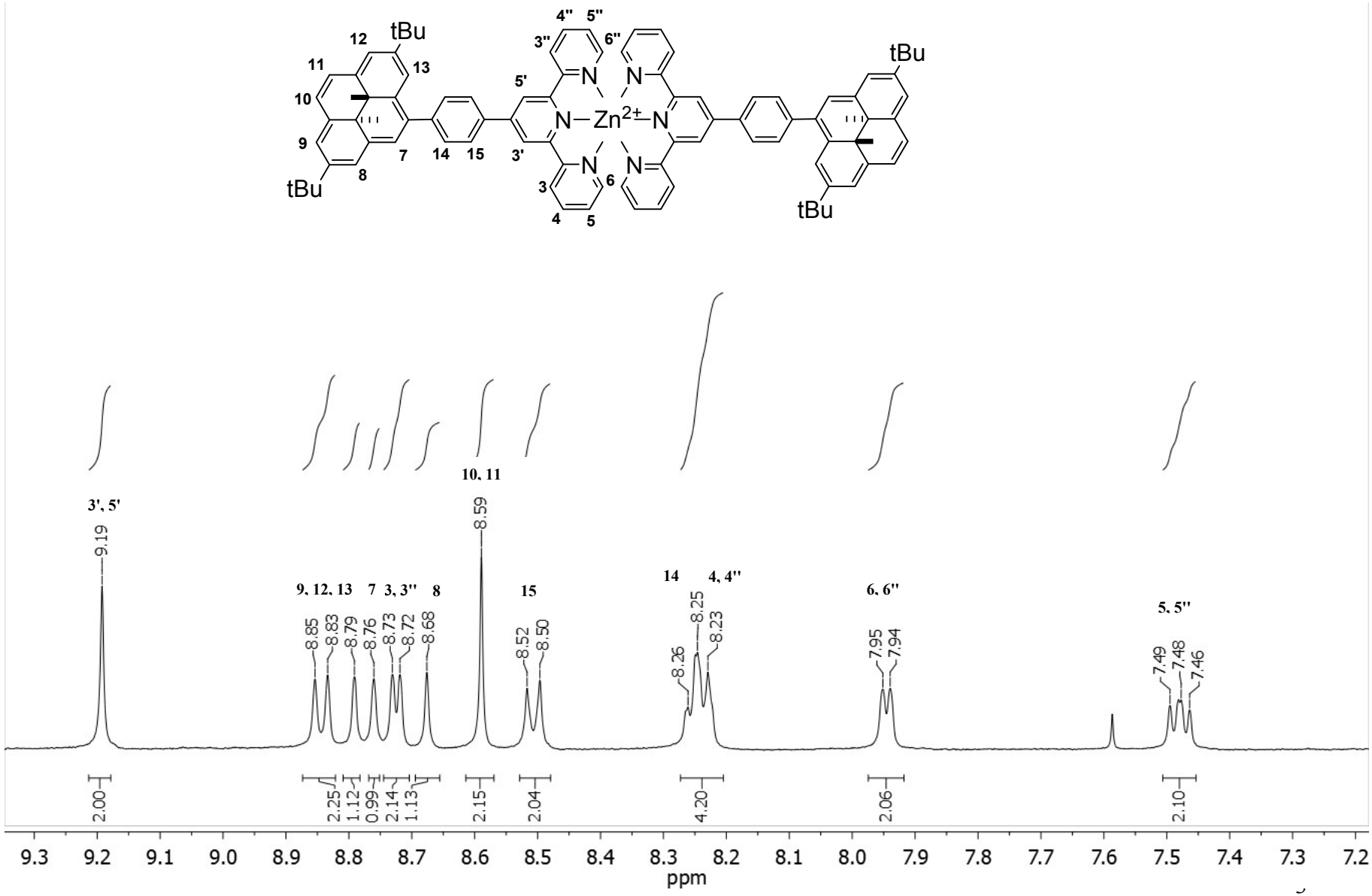


Figure ESI 3 : ^{1}H NMR spectrum of $Fe(2_c)_2^{4+}$

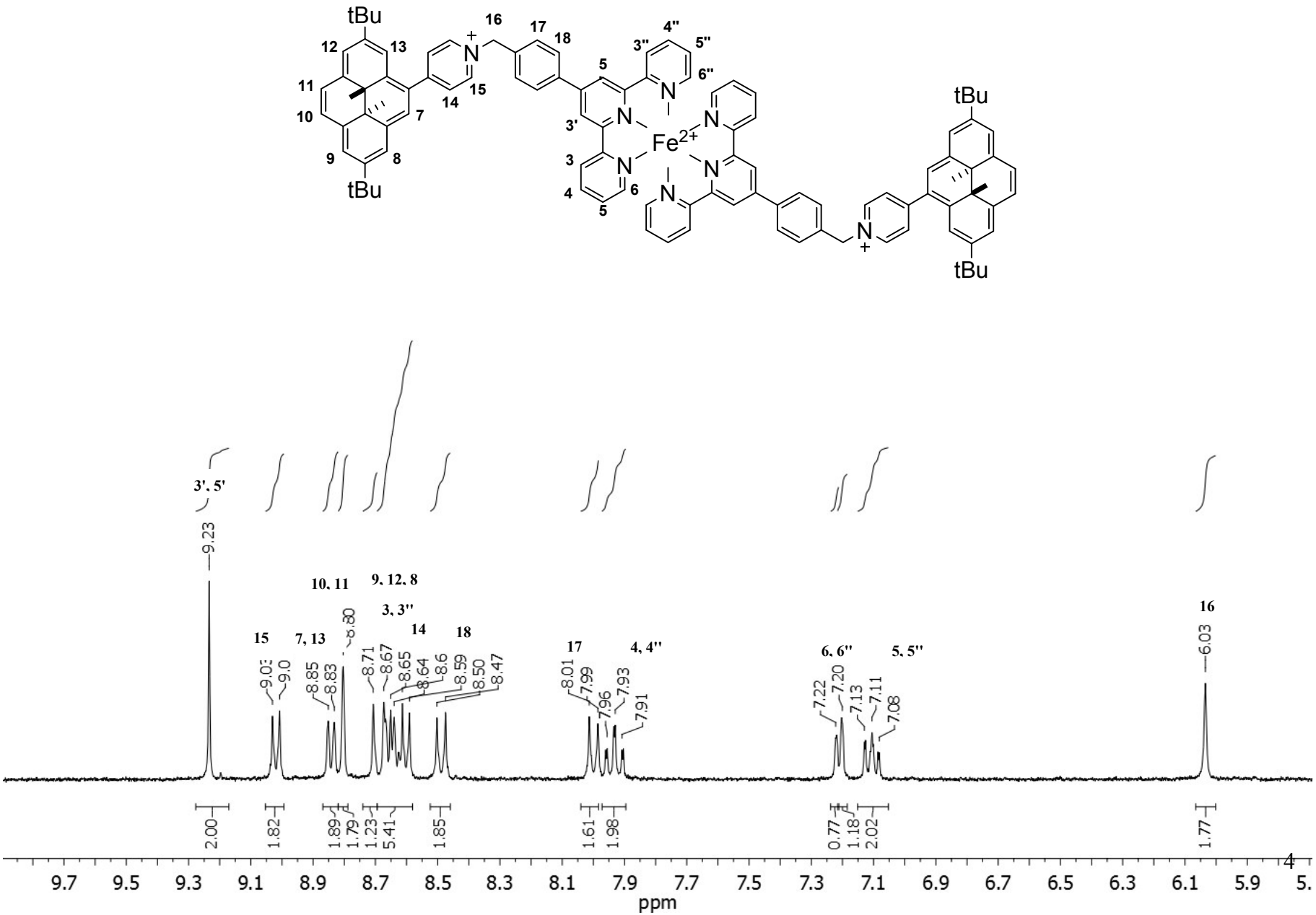


Figure ESI 4 : ^{1}H NMR spectrum of the photoisomerisation of $Fe(2_c)_2^{4+}$

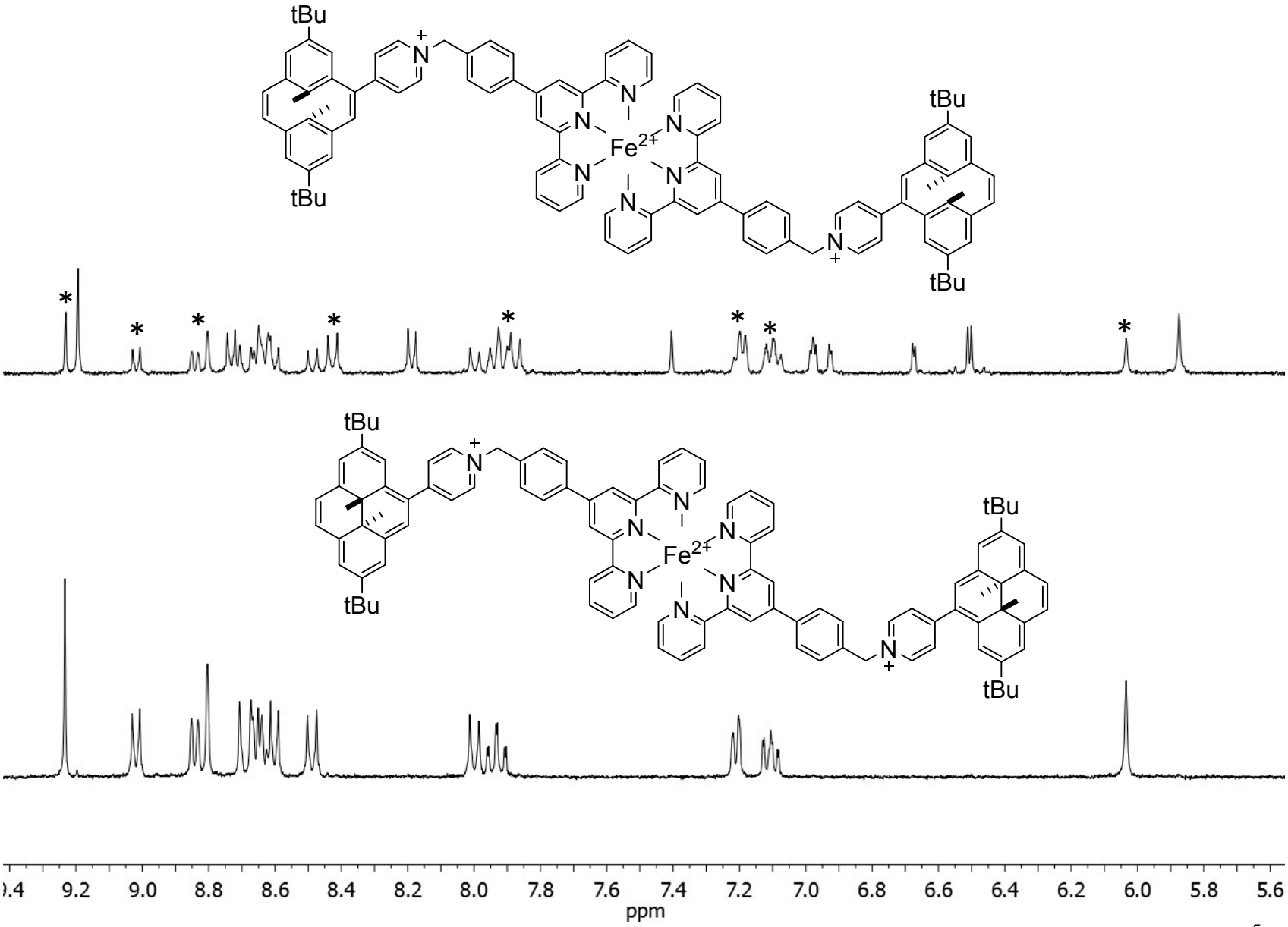
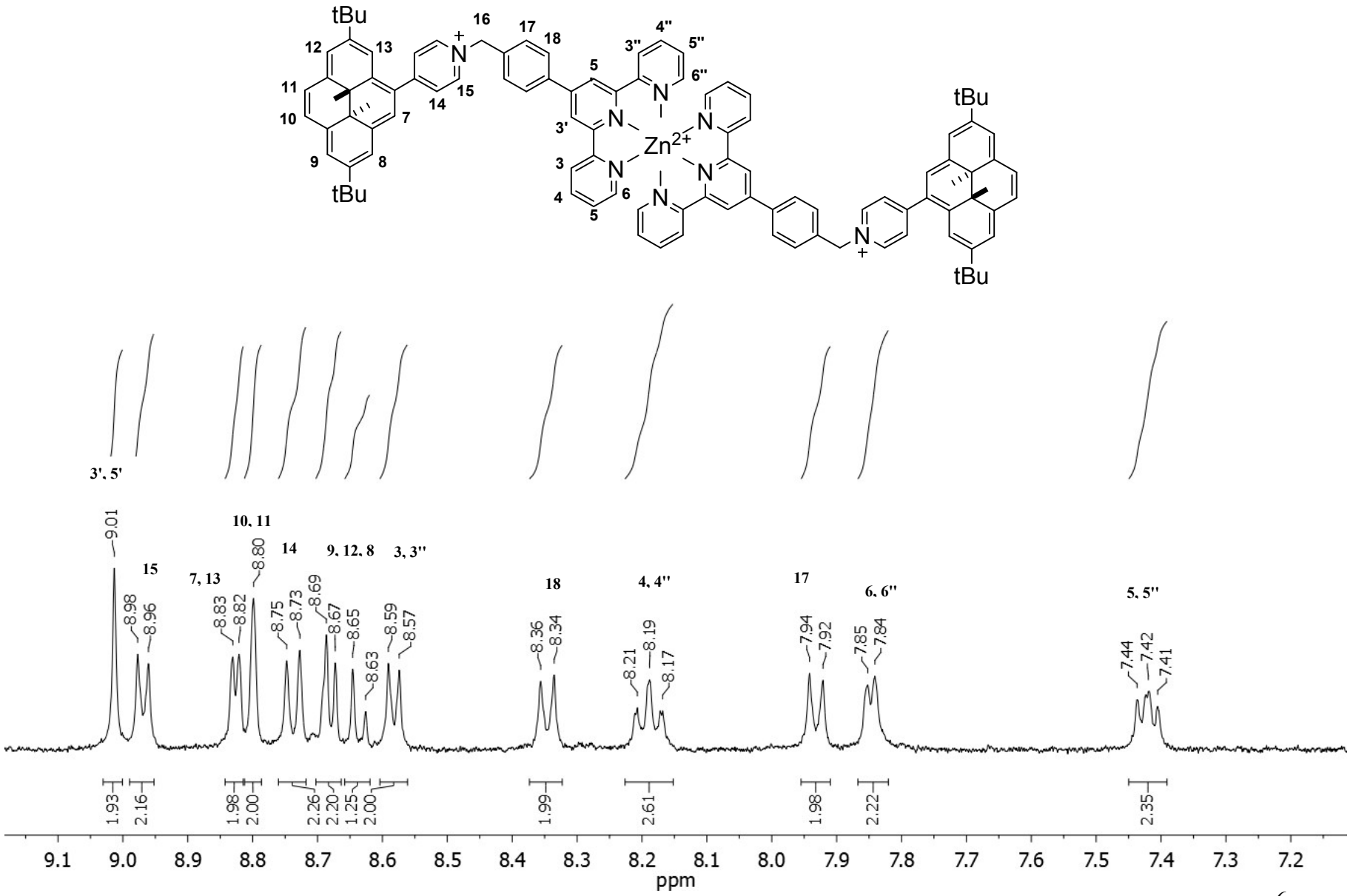


Figure ESI 5 : ^{1}H NMR spectrum of $Zn(2_c)_2^{4+}$



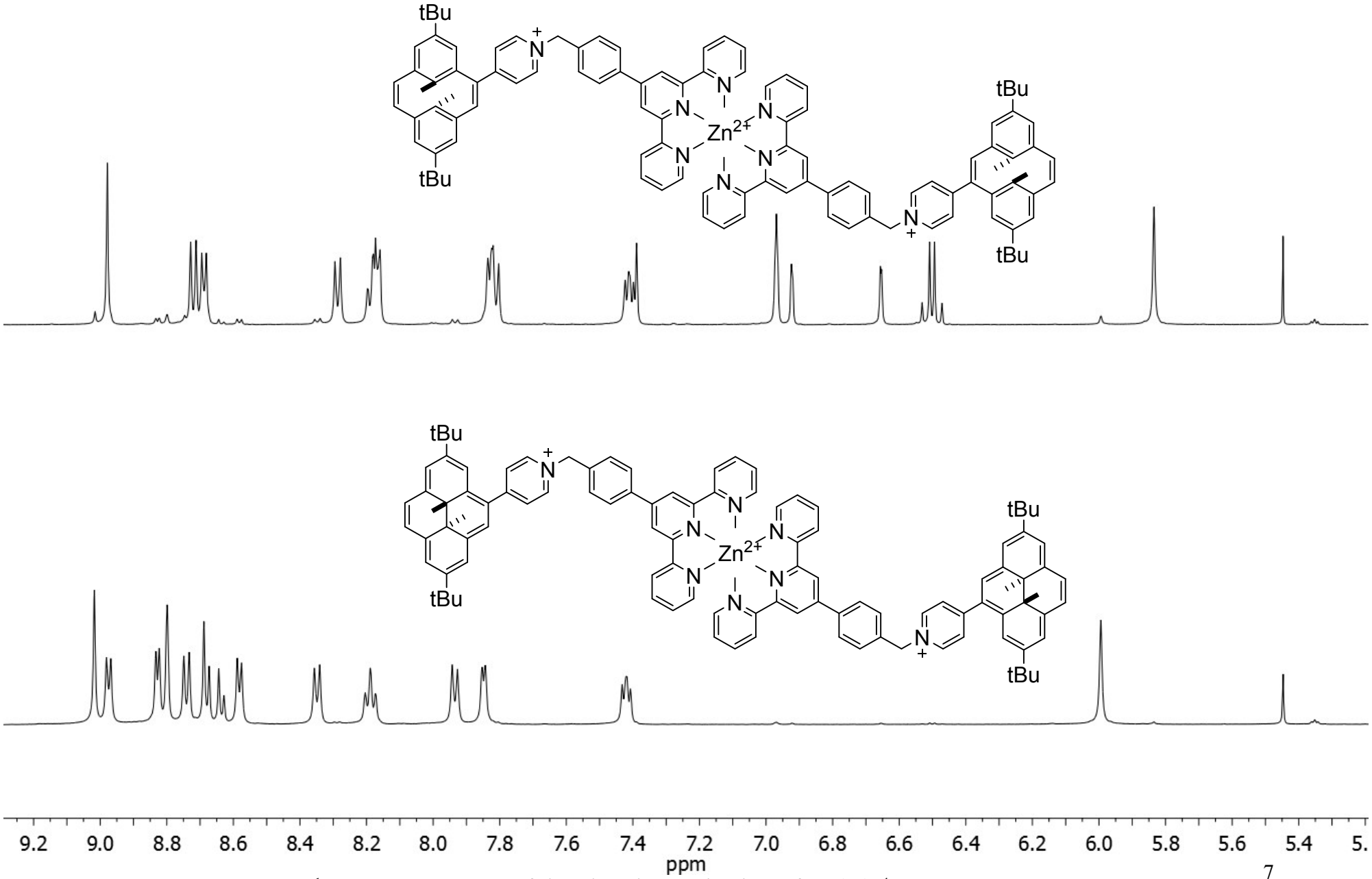
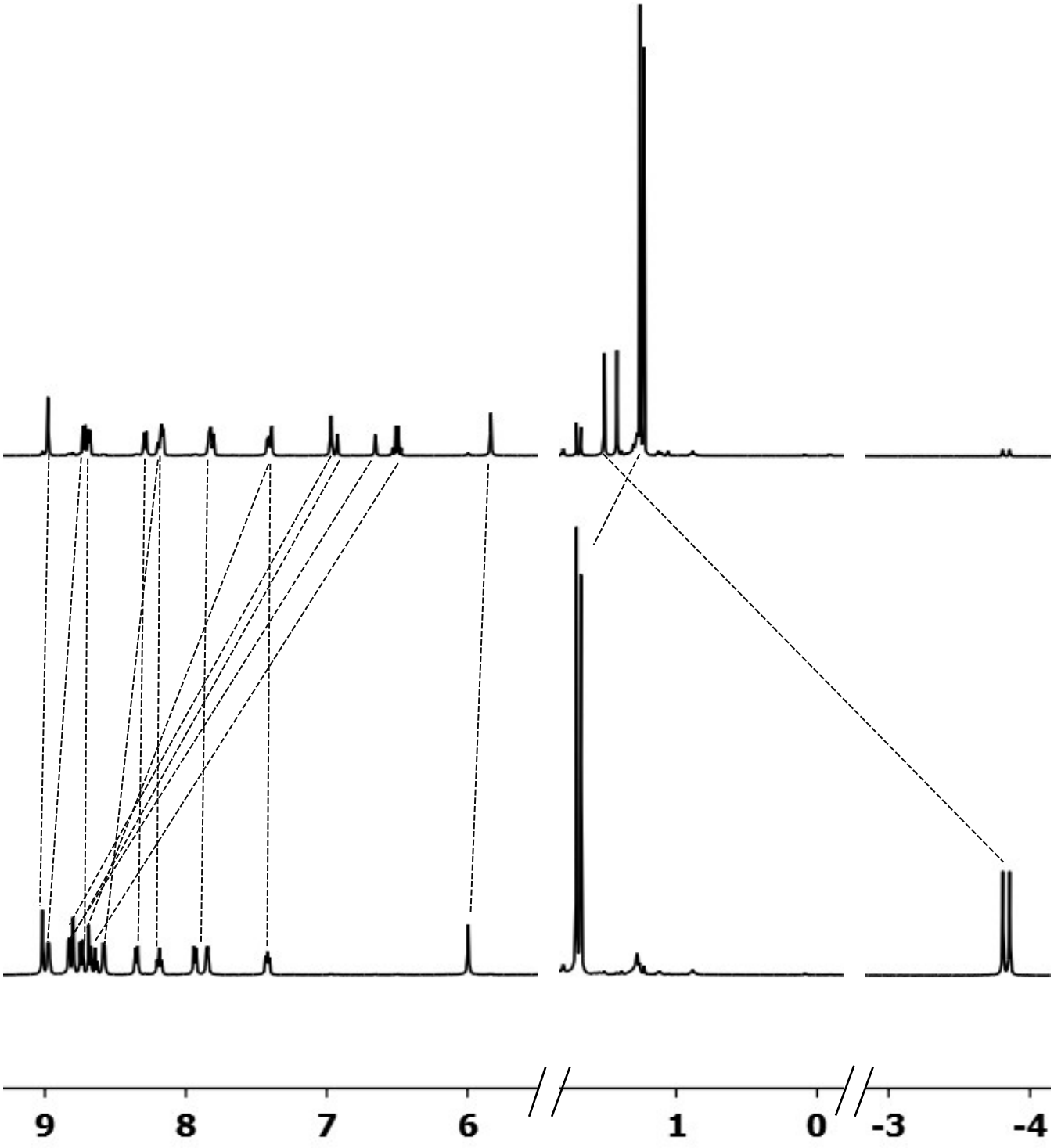


Figure ESI 6 : ^{1}H NMR spectrum of the photoisomerisation of $Zn(2_c)_2^{4+}$

Figure ESI 7 : ^{1}H NMR spectrum correlation of $Zn(2_c)_2^{4+}$ and $Zn(2_o)_2^{4+}$



2. Cyclic voltammetry data of compounds

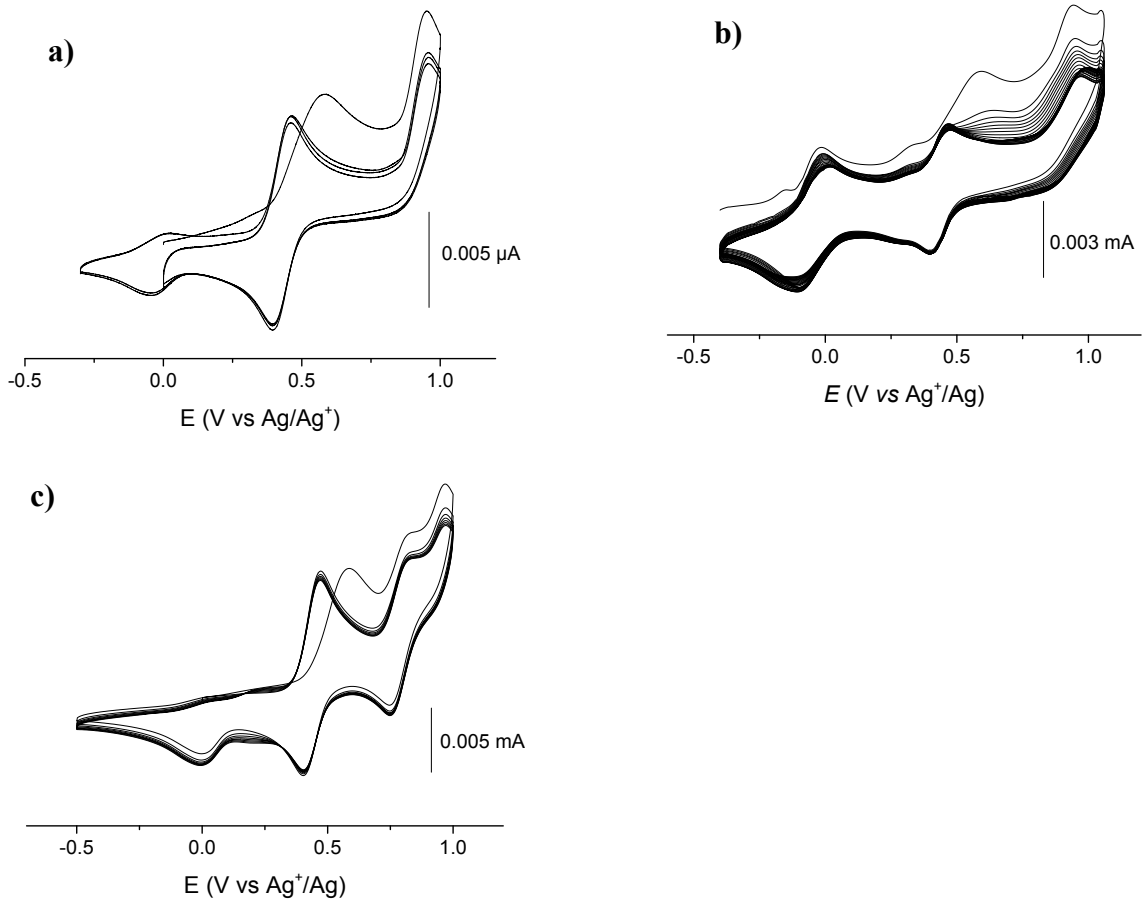


Figure ESI 7: Repeated cyclic voltammogramms of the photogenerated solutions of (a) $Zn(2_o)_2^{4+}$, (b) $Co(2_o)_2^{4+}$ and (c) $Fe(2_o)_2^{4+}$, black line 1st cycle. [C] = 1 mmol in 0.1M TBAP/CH_3CN. Scan rate: 100 mv.s^{-1}. Potentials are referred to the formal potential of the Ag^+/Ag redox couple.

	$tpy^{\cdot+}/tpy^{2-}$	$tpy/ tpy^{\cdot+}$	$E_{1/2}$ ($DHP^{0/-}$)	$E_{1/2}$ ($Py^{+/0}$)	$E_{1/2}$ ($DHP^{+/0}$)	E_{pa} ($DHP^{2+/+}$)[c]	$E_{1/2}$ (M^{III}/M^{II})	$E_{1/2}$ (M^{II}/M^{I})
DHP(py^+tpy)	-2.175(100)	-1.99(170)		-1.40 (210)	0.47 (200)	1.17[b]		
$Co(1_c)_2^{2+}$		-1.85(50)		-	0.31 (70)	0.88[b]	-0.08 (60)	-1.05 (70)
$Fe(1_c)_2^{2+}$	-1.63(60)	-1.51(60)		-	0.29(60)	0.82[b,c]	0.82[c]	
$Zn(1_c)_2^{2+}$	-1.69(abs)	-1.53(60)		-	0.3 (70)	0.84[b]		
$Co(2_c)_2^{4+}$	-1.96[b]	-1.85	-2.28(60)	-1.36(60)	0.43(60)	0.95[b]	-0.05 (40)	-1.03 (60)
$Fe(2_c)_2^{4+}$	-1.60[b]	-1.50	-1.93(60)	-1.35(60)	0.43(60)	0.97[b]	0.79 (70)	
$Zn(2_c)_2^{4+}$	-1.65(60)	-1.5	-2.97(80)	-1.37(60)	0.42(60)	0.95[b]		

[a]All potentials are given in volts referred to the Ag^+/Ag (10^{-2} M in CH_3CN) reference electrode in CH_3CN + TBAP 0.1 M, at a stationary vitreous carbon electrode (∅= 3 mm). $E_{1/2}= (E_{pa} +E_{pc})/2$ at 0.1 V s^{-1}; $\Delta Ep= E_{pa}-E_{pc}$. [b] peak potential (irreversible system).
[c] superimposed waves.

3. Crystal data

Table S1. Crystal Data and Structure Refinement for $Zn(1c)_2^{2+}$

Formula	$C_{99.24}H_{113.02}B_{1.50}Cl_{0.50}F_{6.02}N_6O_{7.47}Zn$
Fw (g mol^{-1})	1722.96
Crystal system	triclinic
Space group	P-1
a (Å)	9.4857(19)
b (Å)	16.519(3)
c (Å)	30.909(6)
α (deg.)	103.94(2)
β (deg.)	91.56(5)
γ(deg.)	91.38(4)
V (Å^3) / Z	4696.4(16)
Dx (g cm^{-3})	1.218
μ (cm^{-1})	0.344
Crystal dim. (mm)	0.28x0.24x0.20
T (K)	200
θ range for coll. (deg.)	1,36 -25,26
nb. of rflns. coll.	28336
Data/restraints/parameters	10944/1930/1514
R (*I*) [a]all/R[I>2σ(I)]	20.38% / 16.36%
Goodness of fit S	1.090
$\Delta\rho_{min}/\Delta\rho_{max}$ (e Å^{-3})	-0.617 / 0.962

[a] $R = \sum||I_o| - |I_c||/\sum|I_o|$.