Electronic supplementary information (ESI)

Pt···Pt interaction triggered tuning of circularly polarized luminescence activity in chiral dinuclear platinum(II) complexes

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Table S1. Structural parameters of complexes (−)-**1**, (+)-**1** and (−)-**2**-ClO_4-Cl determined by X-ray single crystal diffraction.

Bond Length	(−)-**1**	(+)-**1**	(−)-**2**-ClO_4-Cl
Pt1−C1 (C1A)	2.023(12)	2.024(10)	2.024(10)
Pt2−C2 (C1B)	2.027(12)	2.024(11)	1.993(10)
Pt1−N1 (N1A)	2.024(9)	2.017(8)	2.020(8)
Pt1−N2 (N2A)	2.189(9)	2.190(8)	2.147(8)
Pt2−N3 (N1B)	2.027(9)	2.029(8)	2.018(8)
Pt2−N4 (N2B)	2.161(10)	2.171(8)	2.140(8)
Pt1−P1 (P1A)	2.252(3)	2.251(2)	2.250(3)
Pt2−P2 (P1B)	2.257(3)	2.259(2)	2.242(3)
Pt3−C1C			2.028(10)
Pt4−C1D			2.022(10)
Pt3−P1C			2.241(3)
Pt4−P1D			2.238(3)
Pt3−N1C			2.008(9)
Pt3−N2C			2.143(8)
Pt4−N1D			2.013(9)
Pt4−N2D			2.138(9)
Bond Angles	(−)-**1**	(+)-**1**	(−)-**2**-ClO_4-Cl
C1(C1A)−Pt1−N1(N1A)	80.4(4)	80.6(4)	82.2(4)
C1(C1A)−Pt1−N2(N2A)	157.8(4)	157.6(4)	158.9(4)
N1(N1A)−Pt1−N2(N2A)	77.5(4)	76.9(3)	76.9(3)
C1(C1A)−Pt1−P1(P1A)	96.0(3)	95.8(3)	95.3(3)
N1(N1A)−Pt1−P1(P1A)	175.1(3)	174.8(3)	176.2(2)
N2(N2A)−Pt1−P1(P1A)	106.1(2)	106.5(2)	105.7(2)
N3(N1B)−Pt2−C2(C1B)	80.9(5)	81.0(4)	81.6(4)
N3(N1B)−Pt2−N4(N2B)	76.9(4)	77.1(4)	77.8(4)
C2(C1B)−Pt2−N4(N2B)	157.6(4)	157.9(4)	159.0(4)
N3(N1B)−Pt2−P2(P1B)	175.5(3)	175.3(3)	172.2(2)
C2(C1B)−Pt2−P2(P1B)	95.4(4)	95.3(3)	95.8(3)
N4(N2B)−Pt2−P2(P1B)	106.5(3)	106.4(2)	105.1(3)
C1C−Pt3−N1C			81.9(4)
C1C−Pt3−N2C			159.6(4)
N1C−Pt3−N2C			77.9(3)
C1C−Pt3−P1C			96.6(3)
N1C−Pt3−P1C			173.2(2)

N2C−Pt3−P1C	103.9(2)
C1D−Pt4−N1D	81.7(4)
C1D−Pt4−N2D	159.6(4)
N1D−Pt4−N2D	78.1(4)
C1D−Pt4−P1D	96.5(3)
N1D−Pt4−P1D	171.8(2)
N2D−Pt4−P1D	103.9(3)

Table S2. Spectroscopic and photophysical data for (−)-**1** and (−)-**2** (5×10^{-5} mol·L^{-1}).

Complex	UV-vis[a] λ_{max}, nm (ε, 10^4 L·mol^{-1}·cm^{-1})	Emission[a] λ_{max}, nm (τ/ns, Φ) at 298 K	Emission[b] λ_{max}, nm at 77 K
(−)-**1**	256 (46600), 345 (16000), 423 (3300), 479 (1800), 510 (1000)	547, 638 (248, 0.11)	620
(−)-**2**	255 (60700), 273 (50800), 339 (23900), 354 (23500), 420 (1800), 475 (220), 500 (70)	530 (814, 0.15), 563	519, 559

[a] Measured in CH_2Cl_2 solution. [b] Measured in MeOH/EtOH (1/4, v/v) glassy solution.

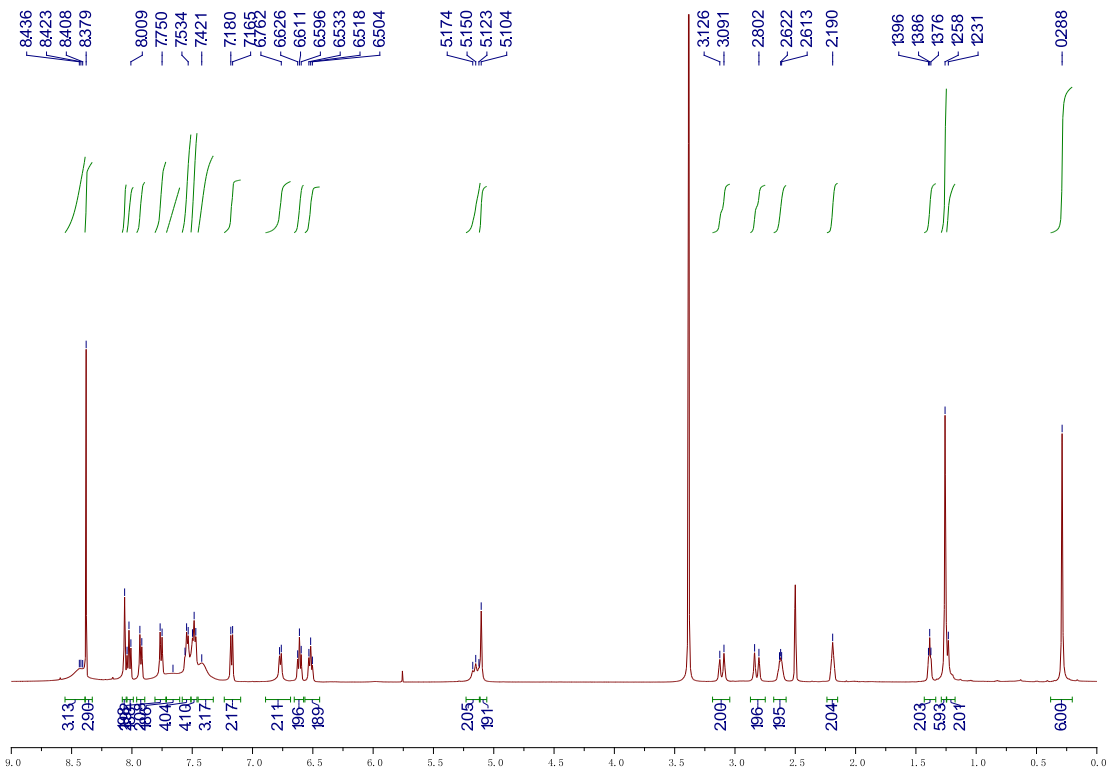

Fig. S1 The ^{1}H NMR spectrum of (−)-**1**.

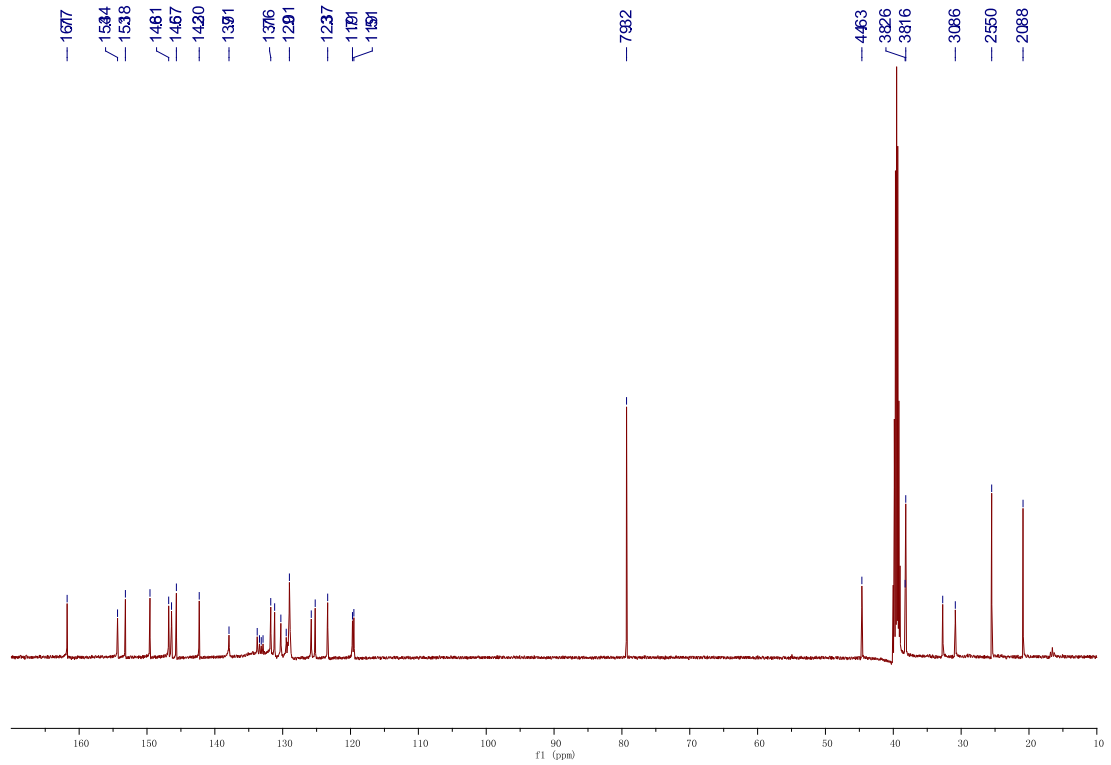

Fig. S2 The ^{13}C NMR spectrum of (−)-**1**.

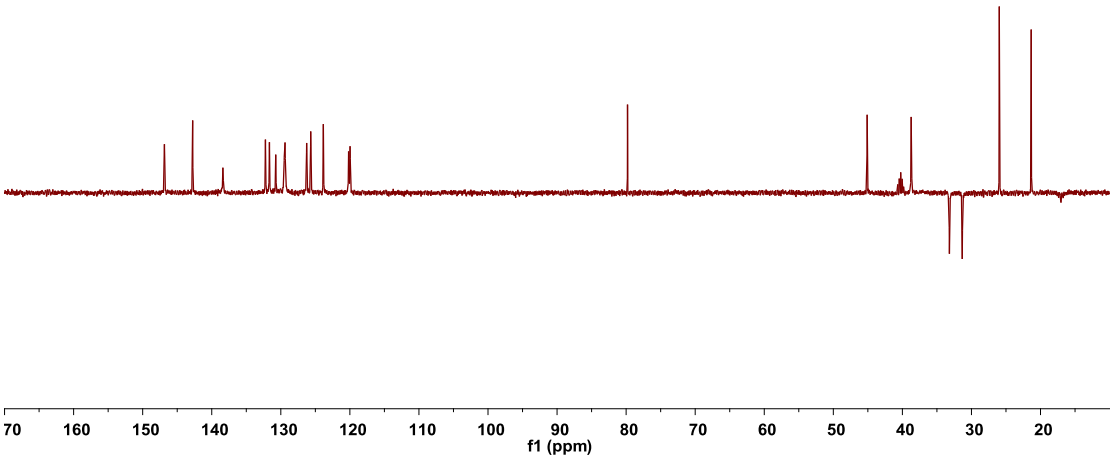

Fig. S3 The ^{13}C/DEPT 135º NMR spectrum of (−)-**1**.

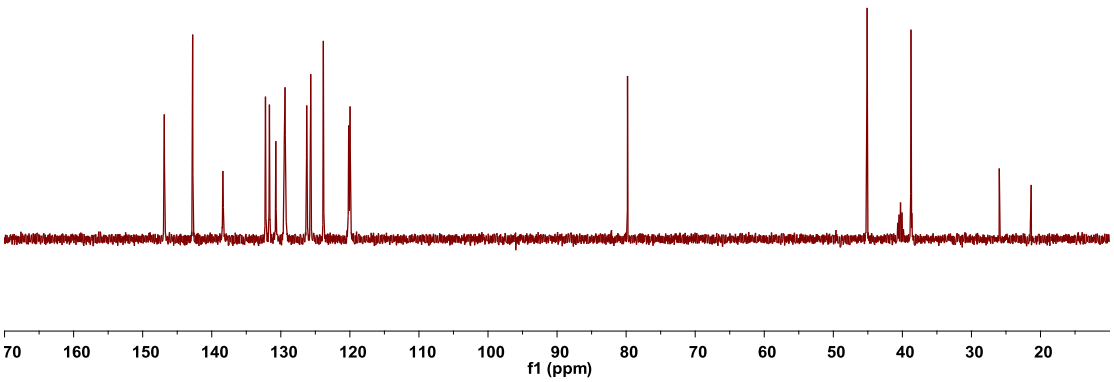

Fig. S4 The ^{13}C/DEPT 90º NMR spectrum of (−)-**1**.

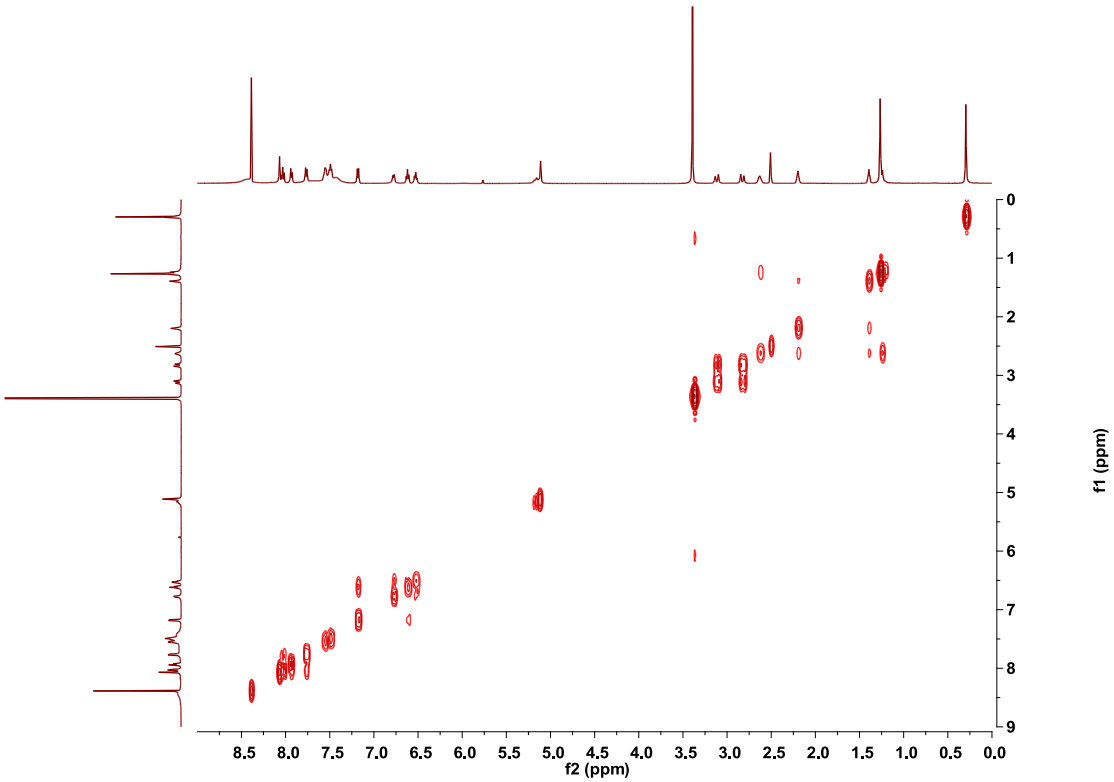

Fig. S5 The $^{1}H - {}^{1}H$ COSY NMR spectrum of (−)-**1**.

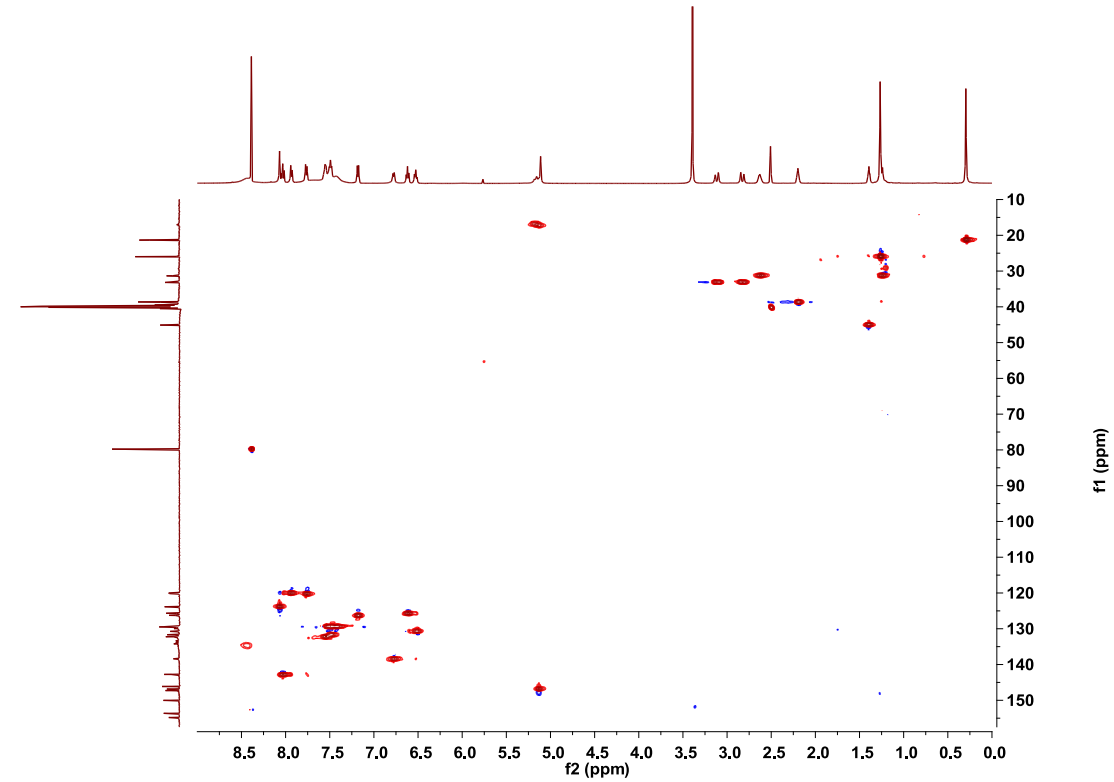

Fig. S6 The HSQC NMR spectrum of (−)-**1**.

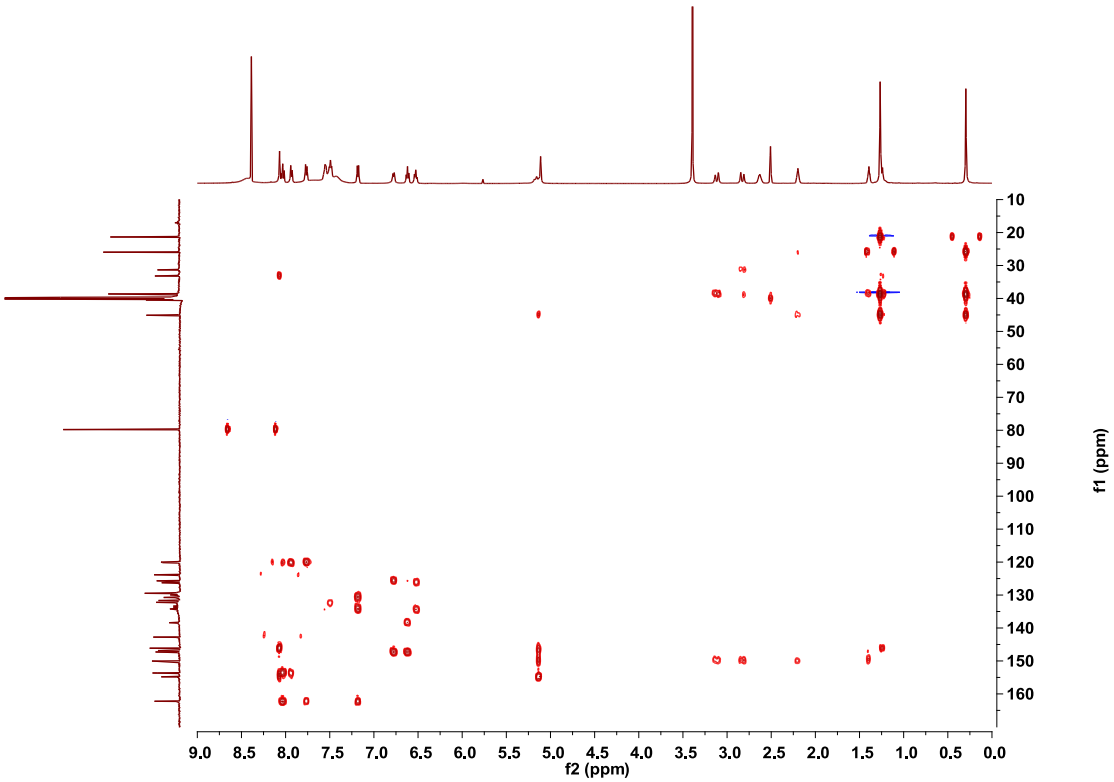

Fig. S7 The HMBC NMR spectrum of (−)-**1**.

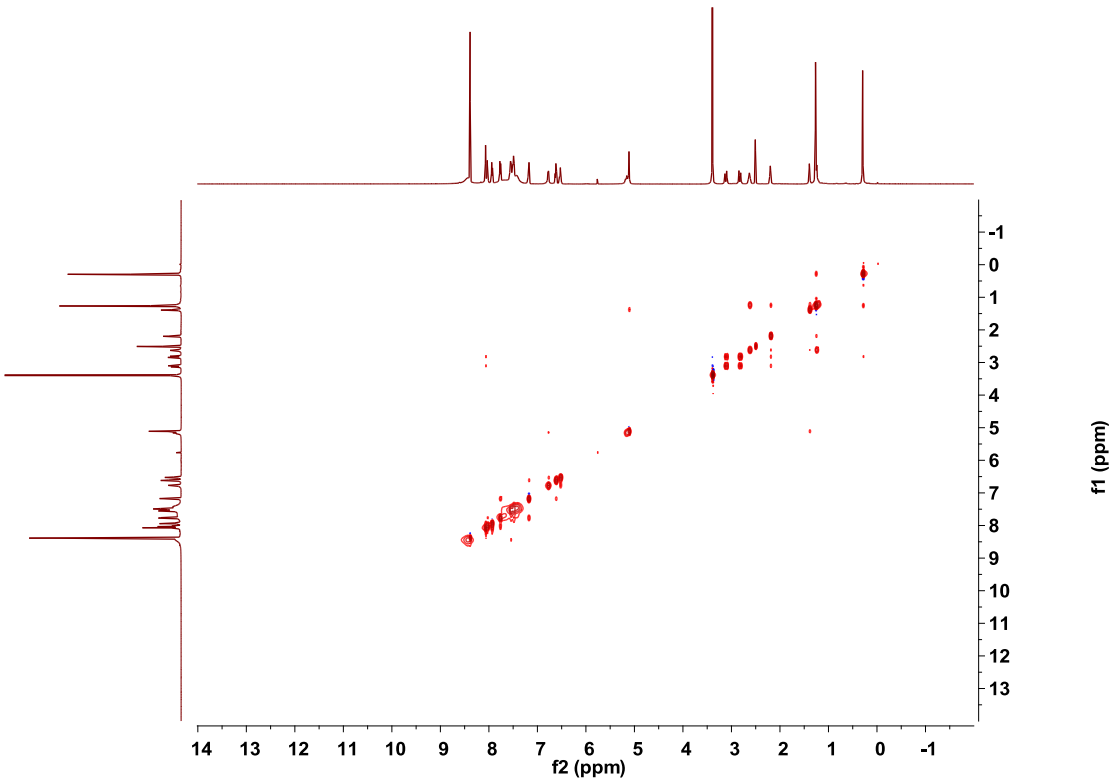

Fig. S8 The $^{1}H - {}^{1}H$ NOESY NMR spectrum of (−)-**1**.

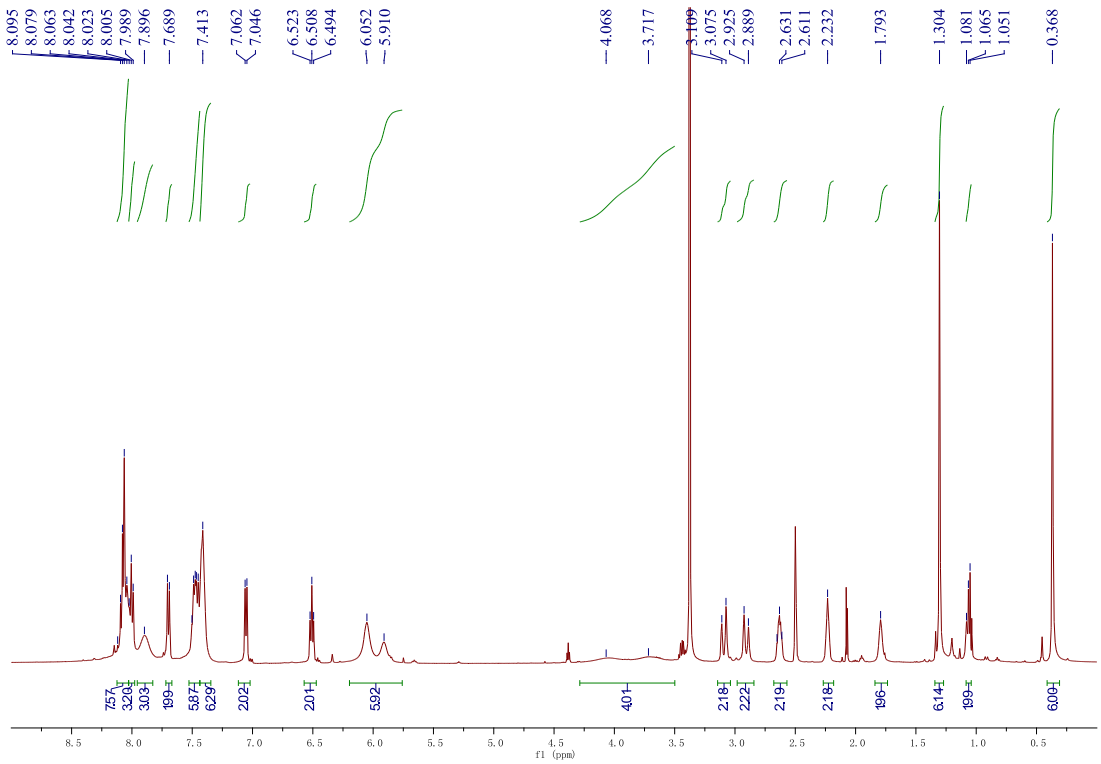

Fig. S9 The ^{1}H NMR spectrum of (−)-**2**.

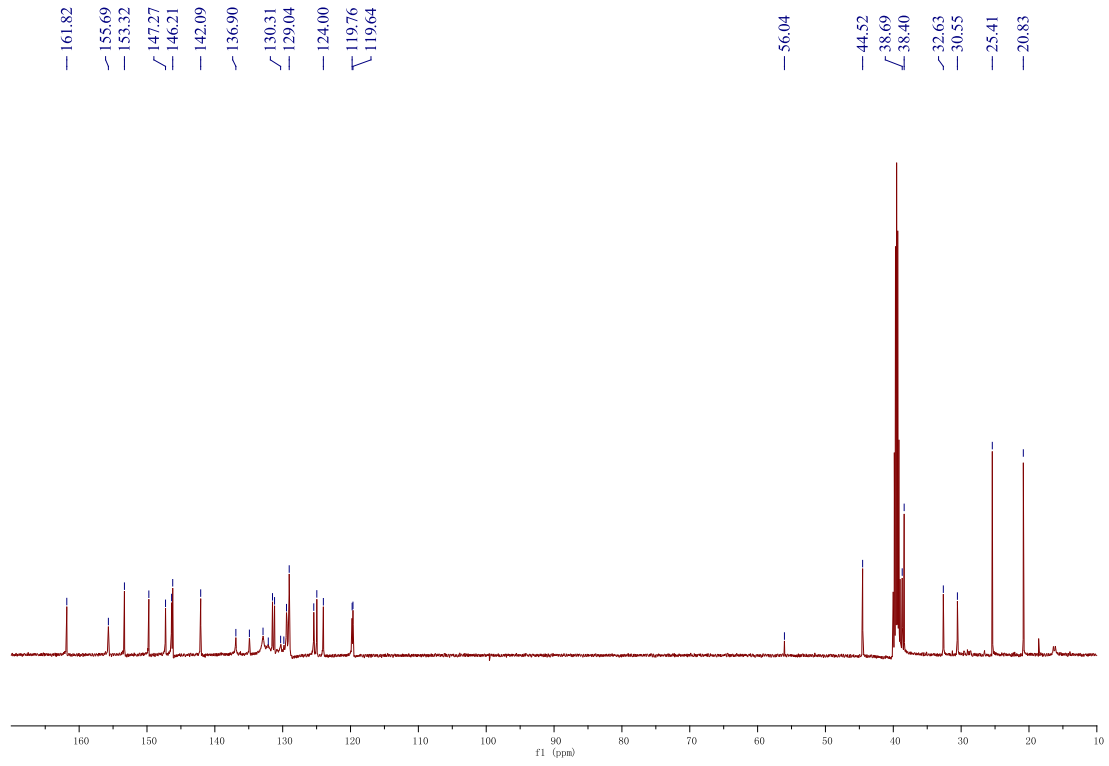

Fig. S10 The ^{13}C NMR spectrum of (−)-**2**.

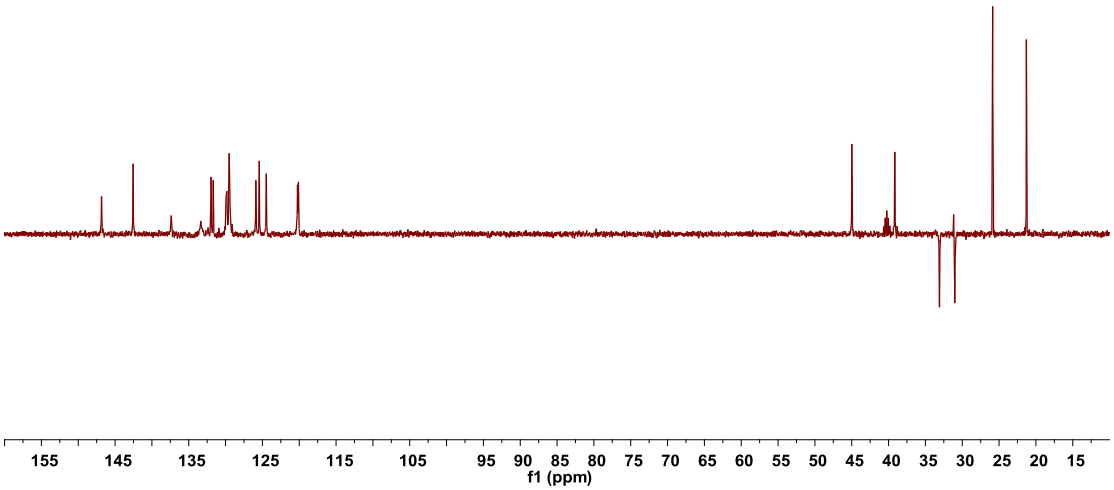

Fig. S11 The ^{13}C/DEPT 135º NMR spectrum of (−)-**2**.

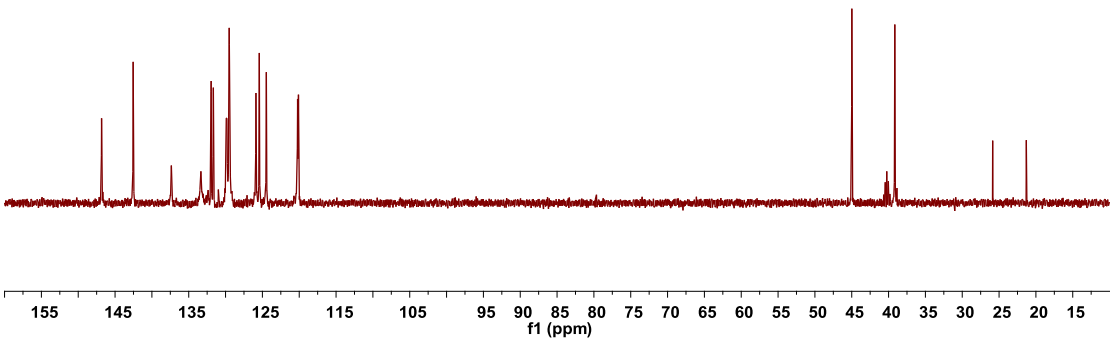

Fig. S12 The ^{13}C/DEPT 90º NMR spectrum of (−)-**2**.

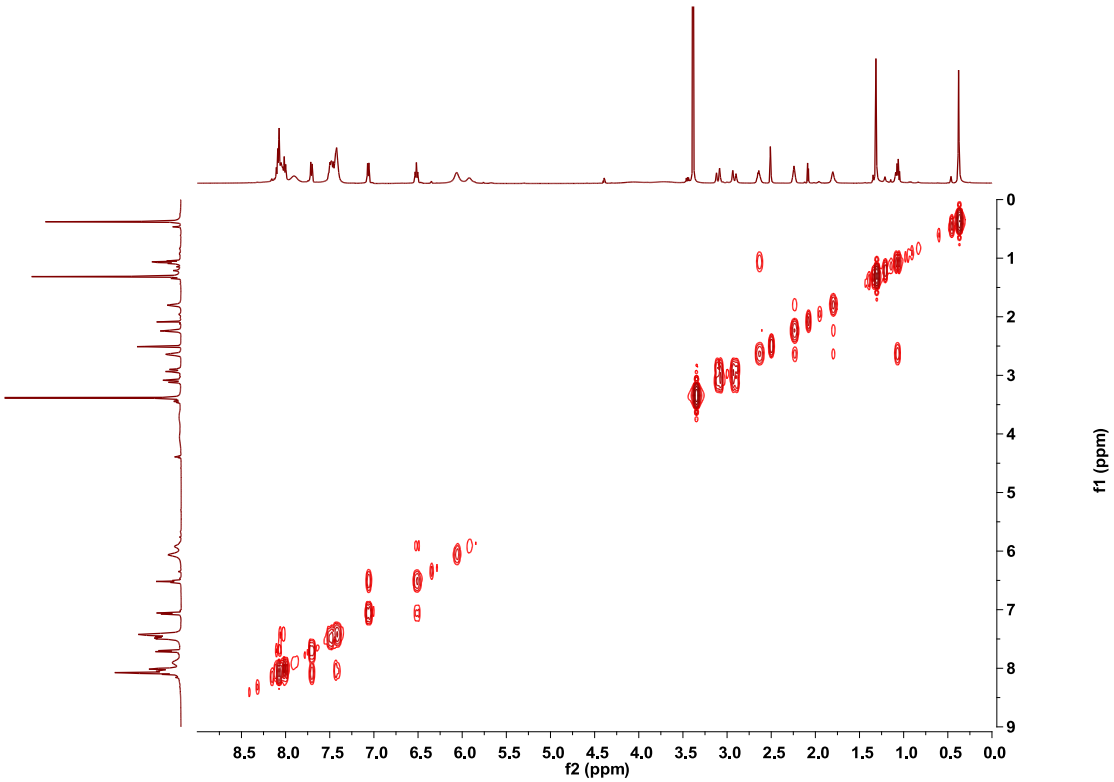

Fig. S13 The $^{1}H - {}^{1}H$ COSY NMR spectrum of (−)-**2**.

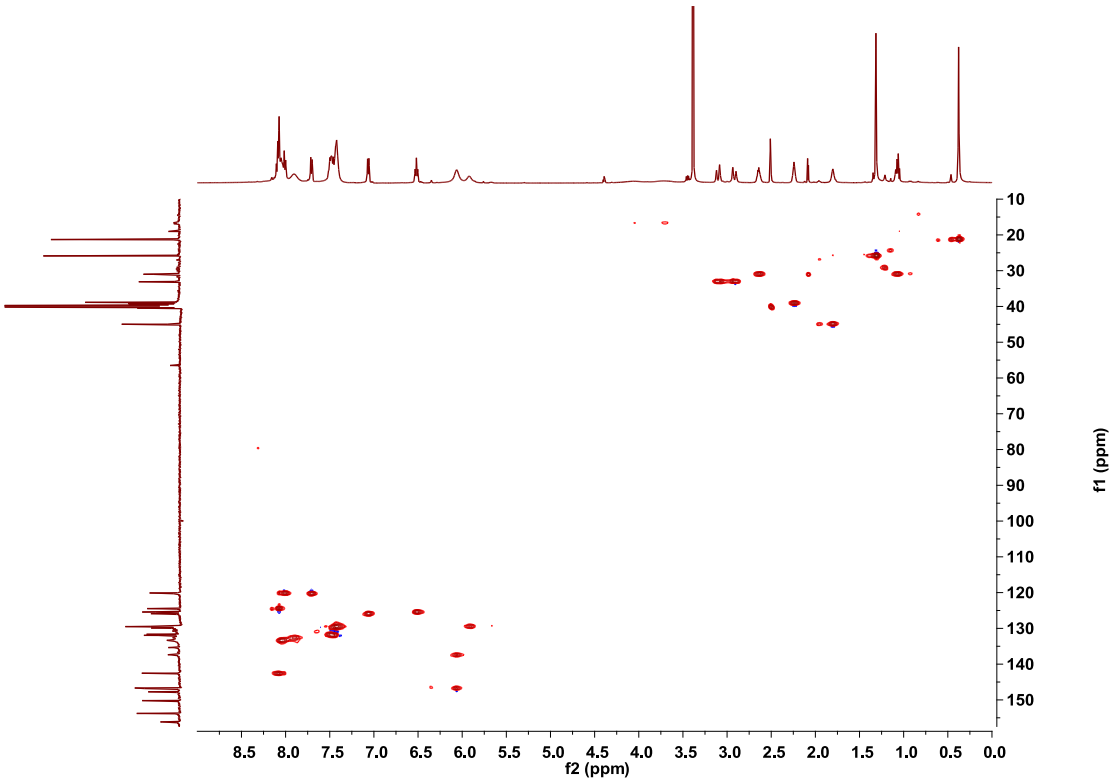

Fig. S14 The HSQC NMR spectrum of (−)-**2**.

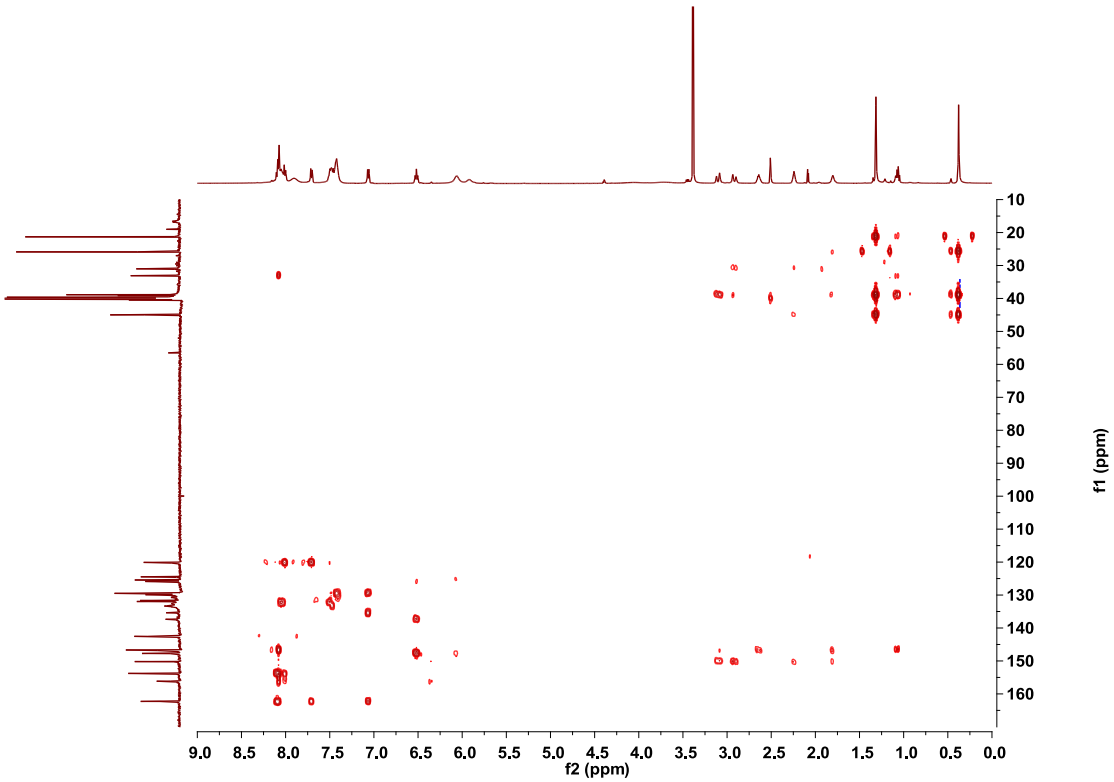

Fig. S15 The HMBC NMR spectrum of (−)-**2**.

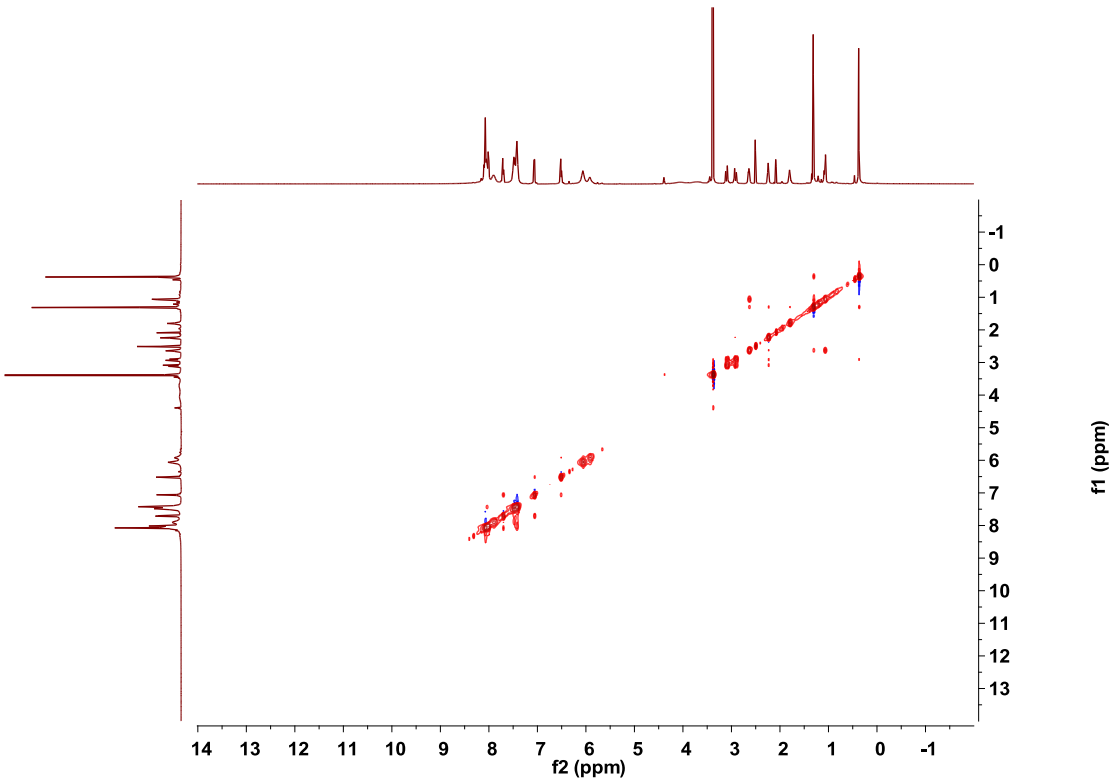

Fig. S16 The $^{1}H - {}^{1}H$ NOESY NMR spectrum of (−)-**2**.

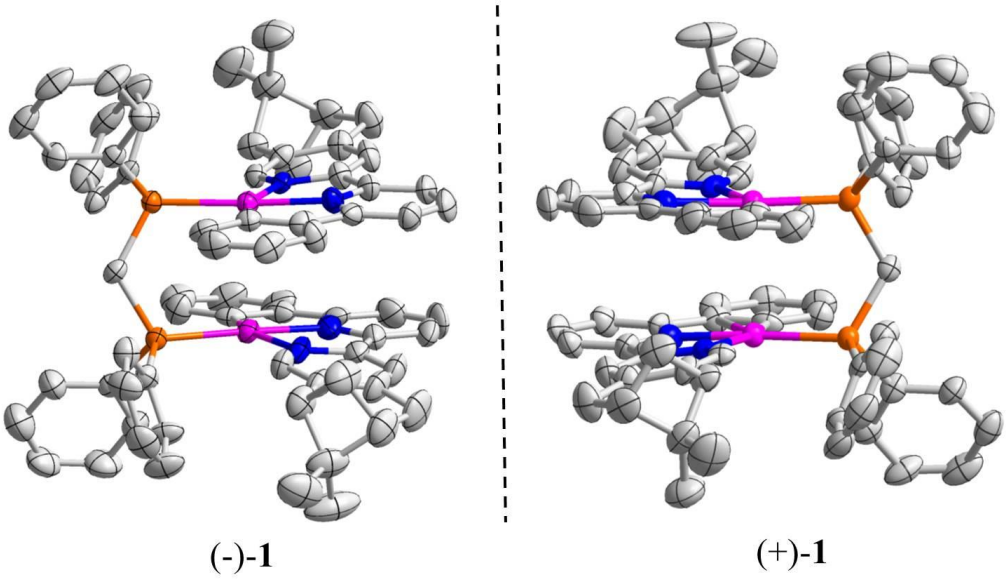

Fig. S17 X-ray crystal structures of (−)-**1** and (+)-**1**. H atoms, solvent molecules as well as anions are omitted for clarity.

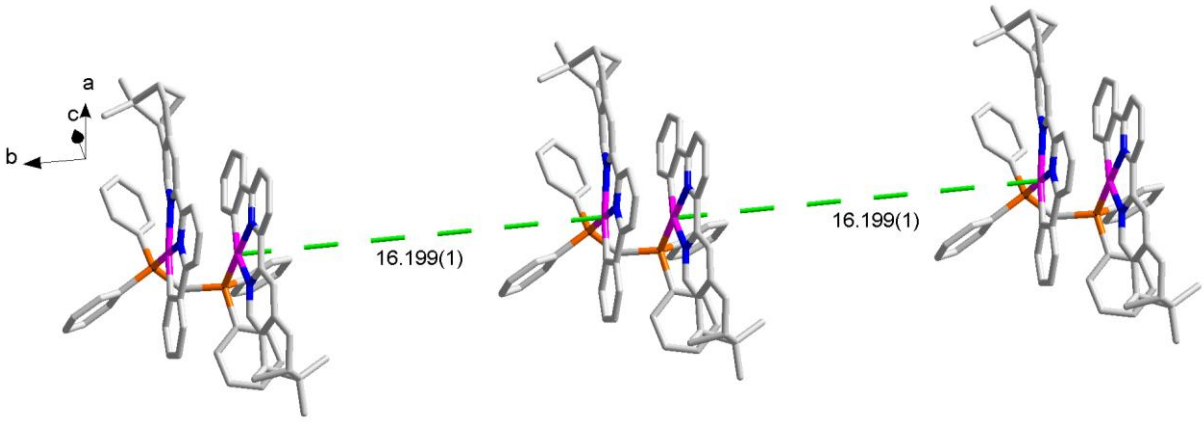

Fig. S18 Intermolecular Pt···Pt separation between the nearest discrete [(−)-(C^N^N)Pt]$_2$dppm^{2+} units of (−)-**1**.

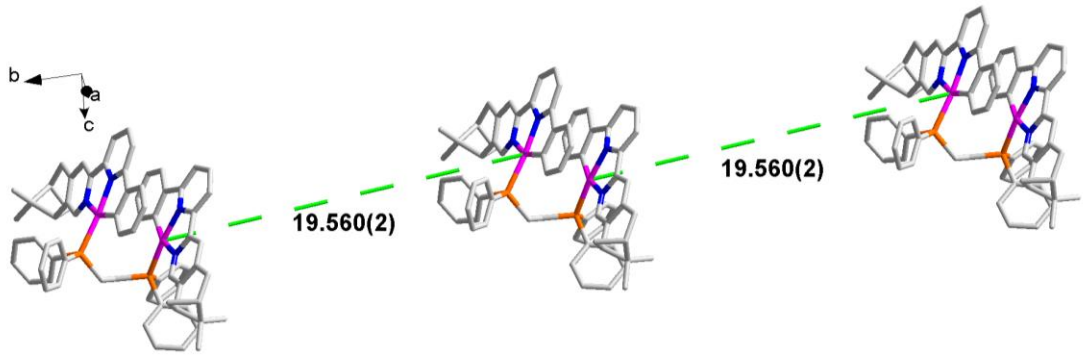

Fig. S19 Intermolecular Pt···Pt separation between the nearest discrete [(−)-(C^N^N)Pt]$_2$dppe^{2+} units of (−)-**2**-ClO_4-Cl.

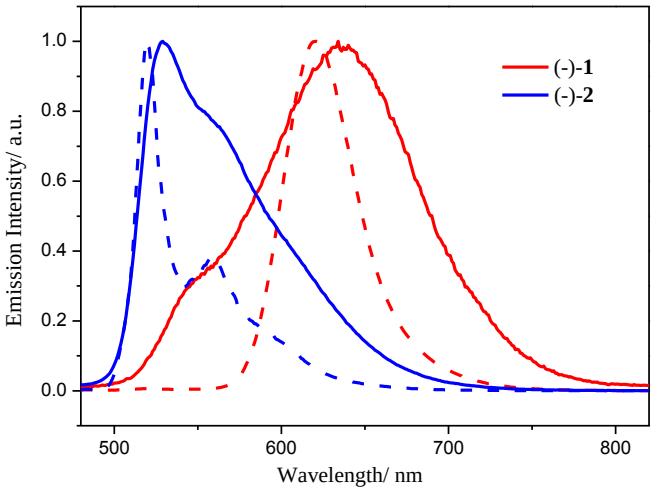

Fig. S20 Emission spectra of (−)-**1** and (−)-**2** at 298 (solid line) and 77 K (dash line) (λ_{ex} = 420 nm)

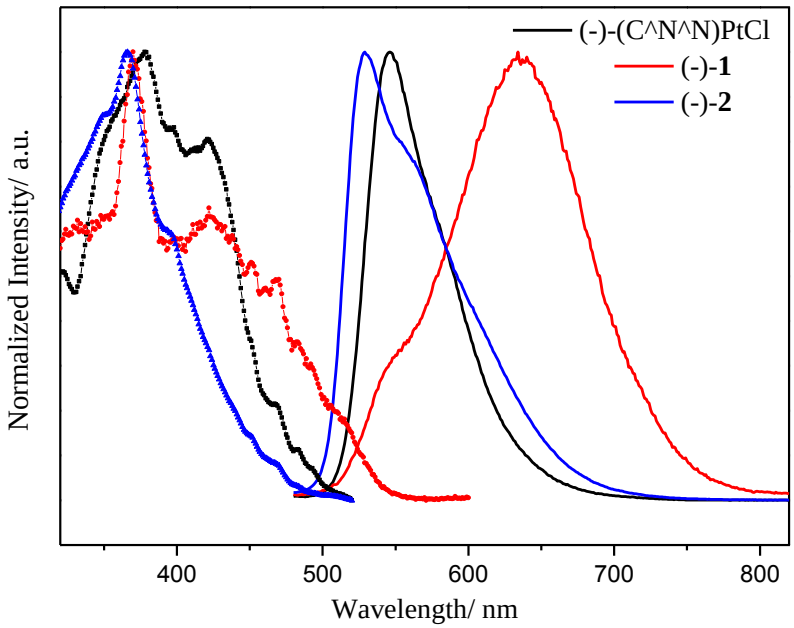

Fig. S21 Normalized emission (line, λ_{ex} = 420 nm) and excitation (symbol + line, monitored at emission maximum) of (−)-(C^N^N)PtCl, (−)-**1** and (−)-**2** in dichloromethane.

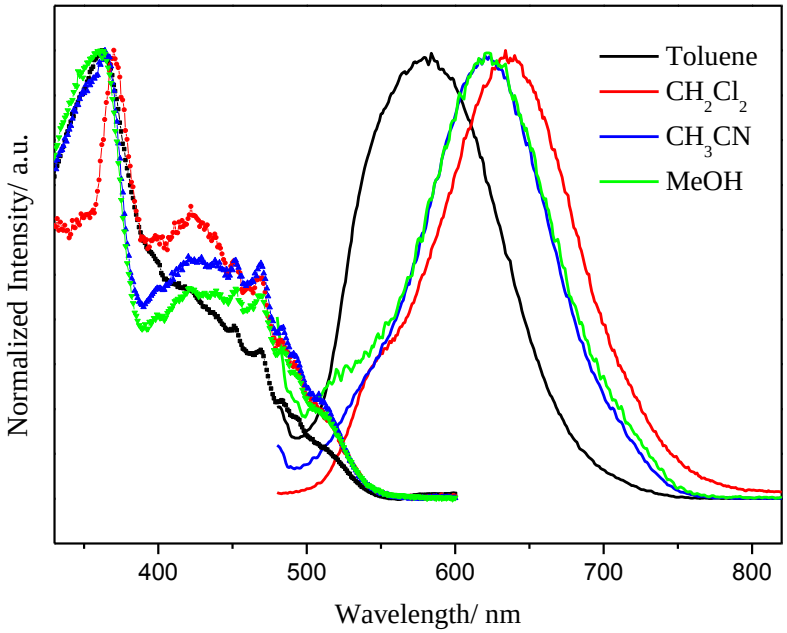

Fig. S22 Normalized emission (line, λ_{ex} = 420 nm) and excitation (symbol + line, monitored at emission maximum) of (−)-**1** in different solvents.

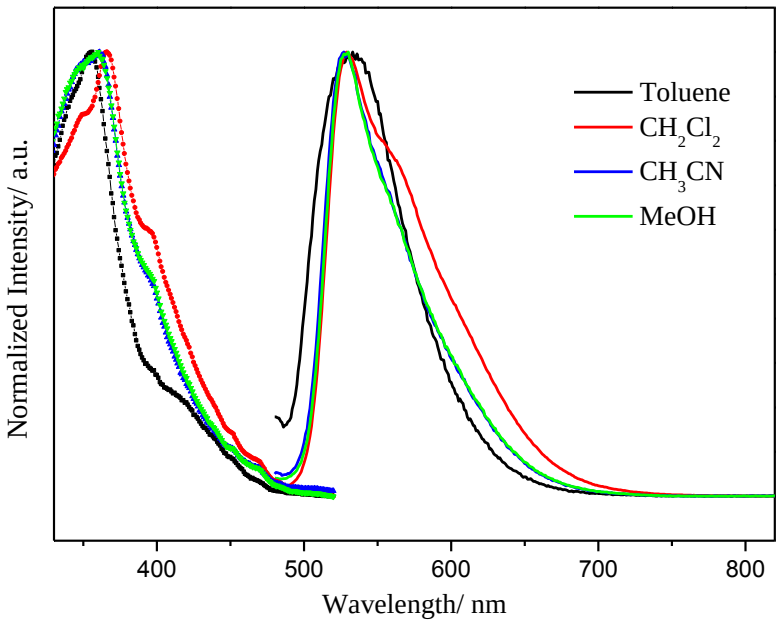

Fig. S23 Normalized emission (line, λ_{ex} = 420 nm) and excitation (symbol + line, monitored at emission maximum) of (−)-**2** in different solvents.