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Supporting Information

Dynamic Neighbouring Participation of Nitrogen Lone Pairs on the Chromogenic Behaviour of *trans*-Bis(salicylaldiminato)Pt(II) Coordination Platforms

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Fig. S1 1 H NMR (500 MHz) spectra of 1a at (a) 298 K and (b) 243 K in CDCl₃.



Fig. S2 NOESY spectrum (500 MHz) of **3** in CDCl₃ (298 K, mixing time = 0.4 s, number of t_1 increments = 1024, number of t_2 increments = 512, number of scans = 68).



Fig. S3 NOESY spectrum (500 MHz) of **4** in CDCl₃ (298 K, mixing time = 0.4 s, number of t_1 increments = 1024, number of t_2 increments = 512, number of scans = 68).



Fig. S4 NOESY spectrum (500 MHz) of **5** in CDCl₃ (298 K, mixing time = 0.4 s, number of t_1 increments = 1024, number of t_2 increments = 512, number of scans = 68).



Fig. S5 UV–vis spectra of 2.0×10⁻⁴ M solutions of (a) **1b**, (b) **1c**, (a) **2b**, and (b) **2c** in CH₃CN at 298 K.



Fig. S6 UV–vis spectra of 2.0×10^{-4} M solutions of 1a in various solvents at 298 K.



Fig. S7 UV–vis spectra of 2.0×10^{-4} M solutions of **2a** in various solvents at 298 K.



Fig. S8 UV–vis spectra of 2.0×10^{-4} M solutions of 3 in various solvents at 298 K.



Fig. S9 UV-vis spectra of 2.0×10^{-4} M solutions of 4 in various solvents at 298 K.



Fig. S10 UV–vis spectra of 2.0×10^{-4} M solutions of 5 in various solvents at 298 K.



Fig. S11 UV–vis spectra of 2.0×10^{-4} M solutions of 6 in various solvents at 298 K.



Fig. S12 Plot of ν_{max} (MLCT/ILCT) for **1a** and **2a** at 298 K against dipole moment μ values. •: **1a**; \circ : **2a**. Solvents: 1, CCl₄; 2, toluene; 3, CHCl₃; 4, chlorobenzene; 5, CH₂Cl₂; 6, pyridine; 7, CH₃CN; 8, DMF; 9, DMSO; a, isopropanol; b, 1-butanol; c, 1-propanol; d, ethanol; e, methanol.



Fig. S13 Plot of ν_{max} (MLCT/ILCT) for **1a** and **2a** at 298 K against dielectric constant ε values. •: **1a**; \circ : **2a**. Solvents: 1, CCl₄; 2, toluene; 3, CHCl₃; 4, chlorobenzene; 5, CH₂Cl₂; 6, pyridine; 7, DMF; 8, CH₃CN; 9, DMSO; a, 1-butanol; b, isopropanol; c, 1-propanol; d, ethanol; e, methanol.



Fig. S14 Plot of ν_{max} (MLCT/ILCT) for **1a** and **2a** at 298 K against Kamlet and Taft's solvent polarity scale π^* values. •: **1a**; o: **2a**. Solvents: 1, CCl₄; 2, toluene; 3, CHCl₃; 4, chlorobenzene; 5, CH₂Cl₂; 6, pyridine; 7, DMF; 8, DMSO; a, ethanol; b, methanol.



Fig. S15 Plots of v_{max} (MLCT/ILCT) of (a) 3, (b) 4, and (c) 5 at 298 K against $E_T(30)$ solvent values.

Complex	State	Excitation energy / eV (nm)	Major configuration
1a	S 1	2.85 (434)	HOMO \rightarrow LUMO (49.1%)
	S2	3.16 (393)	HOMO \rightarrow LUMO+1 (48.4%)
	S3	3.36 (369)	HOMO \rightarrow LUMO+2 (46.8%)
2a (conformer II)	S1	2.84 (436)	HOMO →LUMO (49.0%)
	S2	3.10 (400)	HOMO \rightarrow LUMO+1 (48.3%)
	S3	3.20 (388)	HOMO \rightarrow LUMO+2 (46.7%)
2a (conformer III)	S 1	2.78 (446)	HOMO \rightarrow LUMO (49.0%)
	S2	2.94 (422)	HOMO \rightarrow LUMO+1 (42.2%)
	S3	3.33 (372)	$HOMO \rightarrow LUMO + 2 (38.0\%)$
3	S 1	2 83 (438)	HOMO \rightarrow LUMO (45 7%)
-	S2	3 09 (401)	$HOMO \rightarrow LUMO+1 (47.5\%)$
	S3	3.28 (378)	$HOMO \rightarrow LUMO+2 (42.7\%)$
4	S 1	2.83 (439)	HOMO \rightarrow LUMO (46.7%)
	S2	3.09 (401)	HOMO \rightarrow LUMO+1 (48.1%)
	S3	3.21 (386)	$HOMO \rightarrow LUMO+2 (44.4\%)$
5	S 1	2.83 (438)	HOMO \rightarrow LUMO (47.8%)
	S2	3 10 (400)	$HOMO \rightarrow LUMO+1 (48.0\%)$
	S3	3.23 (384)	$HOMO \rightarrow LUMO+2 (45.4\%)$
6	S 1	2 85 (436)	HOMO \rightarrow LUMO (49.1%)
v	S1 S2	3 12 (398)	$HOMO \rightarrow LUMO + 1 (47.5\%)$
	S2 S3	3 30 (376)	HOMO \rightarrow LUMO+2 (45.0%)
	65	5.50 (570)	10100 / 101010 2 (43.970)

Table S1 Calculated singlet transitions and major electronic contributions of 1a, 2a, 3, 4, 5, and 6^a

^a Estimated from TD-DFT calculations (B3LYP/6-31G*, LanL2DZ) based on the optimized structures.



Fig. S16 Relationship between the HOMO–LUMO energy gap (eV) and wavenumber (cm⁻¹) at the absorption maxima around 350–500 nm for **1** at 298 K in CH₃CN. The energy gaps were estimated from DFT (B3LYP/6-31G*, LanL2DZ) calculations based on the optimized geometries.



Fig. S17 Relationship between the HOMO–LUMO energy gap (eV) and wavenumber (cm⁻¹) at the absorption maxima around 400–500 nm for **2** at 298 K in CH₃CN. The energy gaps were estimated from DFT (B3LYP/6-31G*, LanL2DZ) calculations based on the optimized geometries.



Fig. S18 Emission spectra of 2.0×10^{-4} M solution 6 in DMSO at 77 K ($\lambda_{ex} = 450$ nm).