Electronic Supplementary Information (ESI)

**Multi-molecular emission of a cationic Pt(II) complex through hydrogen bonding interaction.**

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![Emission spectra of Pt·Cl in a mixture of CHCl₃ and methanol (10 μM).](image)

Fig. S1 Emission spectra of Pt·Cl in a mixture of CHCl₃ and methanol (10 μM).
Fig. S2 Structure of the neutral Pt complex and its emission spectra at various concentration.

Fig. S3 Proposed structures with hydrogen bonding based on the $^1$H and DOSY NMR spectra.
Fig. S4 Absorption spectra of (a) Pt·B(C₆F₅)₄, (b) Pt·Cl, and (c) Pt·PF₆ in CHCl₃ at various concentrations.
Fig. S5 $^1$H NMR spectrum of Pt-PF$_6$ (600 MHz, C$_2$D$_2$Cl$_4$, 4.0×10$^{-3}$ M, 353 K).
Analysis for DOSY NMR

Einstein–Stokes equation

\[ D = \frac{kT}{6\pi\eta R_H} \rightarrow R_H = \frac{6\pi \cdot \eta}{kT} \cdot \frac{D}{R_H} \]

\( D \): Diffusion constant, \( k \): Boltzmann’s constant, \( T \): Absolute temperature, \( \eta \): Viscosity of the medium, \( R_H \): Hydrodynamic radius

\[ \frac{R_H(\text{Pt} \cdot \text{Cl})}{R_H(\text{Pt} \cdot \text{B}(C_6F_5)_4)} = \frac{D(\text{Pt} \cdot \text{B}(C_6F_5)_4)}{D(\text{Pt} \cdot \text{Cl})} = 1.29 \]

\[ \frac{V(\text{Pt} \cdot \text{Cl})}{V(\text{Pt} \cdot \text{B}(C_6F_5)_4)} = 1.29^3 \approx 2.2 \]

Analysis for kinetic traces

\[ \text{Pt} \cdot \text{B}(C_6F_5)_4 \]

\[ I = A + B \exp(t/\tau_1) \]

\( \tau_1 = 8.516421 \times 10^{-6} \text{ sec} \)

S.Dev = 2.512945 \times 10^{-8} \text{ sec}

\( A = 2.141593 \)

S.Dev = 0.1749661

\( B = 874.4274 \)

S.Dev = 1.420067

CHISQ = 0.9974415 [2579 degrees of freedom]
Pt·Cl

\[ I = A + B_1 \exp(t/\tau_1) + B_2 \exp(t/\tau_2) \]

\[ \tau_1 = 3.44983 \times 10^{-7} \text{ sec} \quad \text{S.Dev} = 1.30092 \times 10^{-8} \text{ sec} \]

\[ \tau_2 = 8.948246 \times 10^{-7} \text{ sec} \quad \text{S.Dev} = 6.579976 \times 10^{-9} \text{ sec} \]

\[ A = 7.643316 \quad \text{S.Dev} = 0.627084 \]

\[ B_1 = -1711.312 \quad \text{S.Dev} = 12.82049 \]

\[ B_2 = 2461.328 \quad \text{S.Dev} = 8.43819 \]

CHISQ = 1.018696 [568 degrees of freedom]

Pt·PF\textsubscript{6}

\[ I = A + B_1 \exp(t/\tau_1) + B_2 \exp(t/\tau_2) \]

\[ \tau_1 = 5.019333 \times 10^{-8} \text{ sec} \quad \text{S.Dev} = 2.823604 \times 10^{-9} \text{ sec} \]

\[ \tau_2 = 9.721266 \times 10^{-7} \text{ sec} \quad \text{S.Dev} = 2.838167 \times 10^{-9} \text{ sec} \]

\[ A = 8.996995 \quad \text{S.Dev} = 0.2226138 \]

\[ B_1 = -247.476 \quad \text{S.Dev} = 5.820917 \]

\[ B_2 = 1025.245 \quad \text{S.Dev} = 1.346489 \]

CHISQ = 1.023361 [3997 degrees of freedom]