Electronic Supplementary Material (ESI) for New Journal of Chemistry.


# Luminescence studies of new [C,N,N'] cyclometallated platinum(II) and platinum(IV) compounds

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# Supporting Information

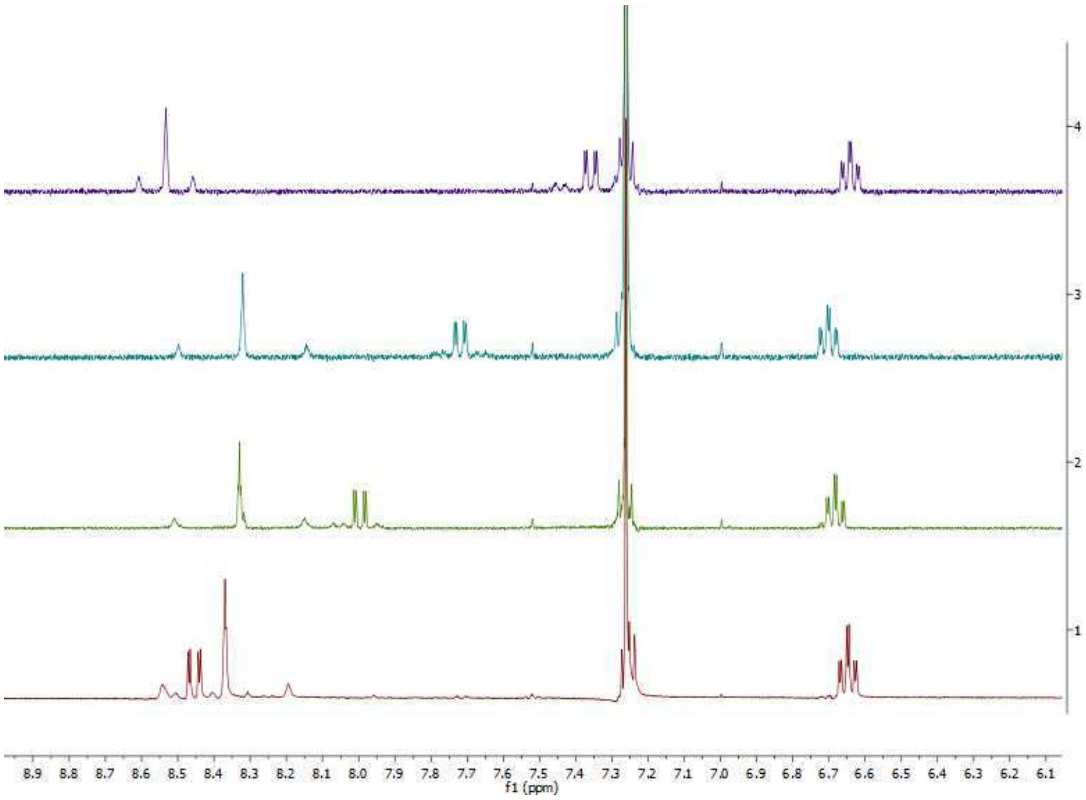



**Figure S1.** Aromatic region of the $^{1}$H-NMR spectra in $CDCl_3$ of the cyclometallated platinum(II) compounds: **1** (purple), **2a** (blue), **2b** (green), **2c** (red).

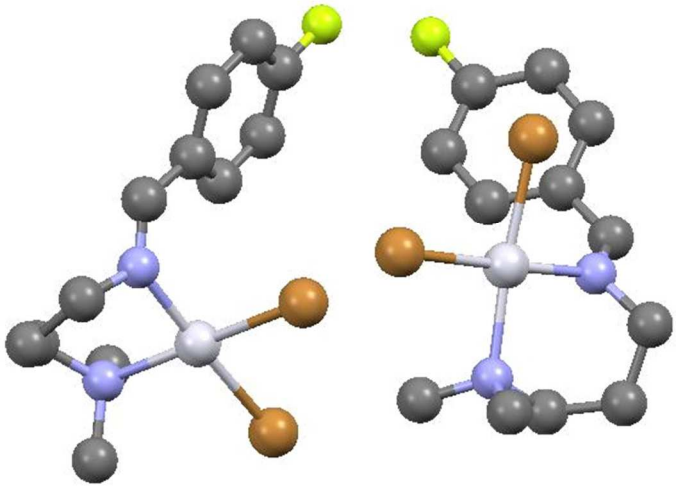


**Figure S2.** Unit cell of compound **Ib** showing the presence of two independent molecules without any Pt···Pt contact (distance: 7.165 Å). Grey: platinum; blue: nitrogen; green: fluorine; brown: bromide; Hydrogens have been omitted for clarity.

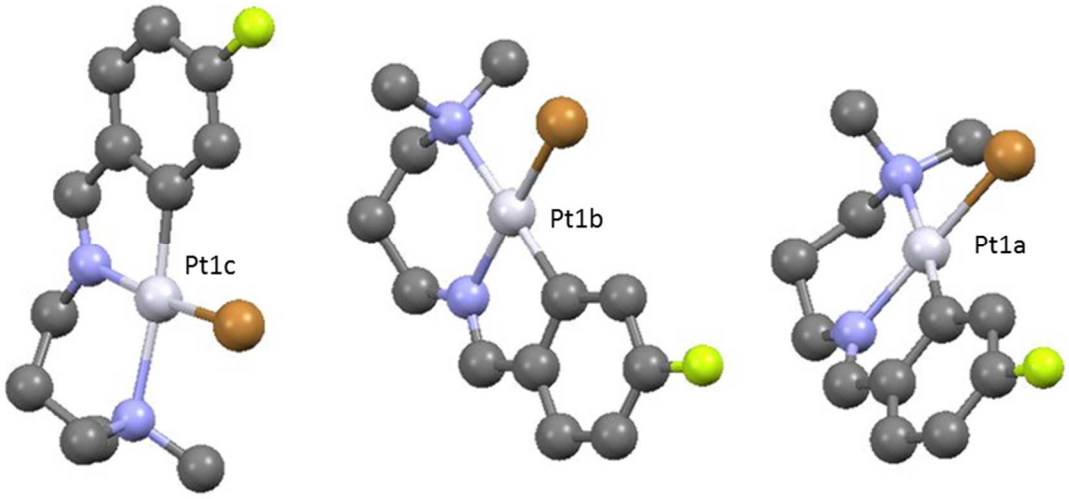



**Figure S3.** Unit cell of compound **2b** showing the presence of three independent molecules without any Pt···Pt contact (Pt1a-Pt1b distance: 8.329 and Pt1b-Pt1c distance: 7.892 Å). Grey: platinum; blue: nitrogen; green: fluorine; brown: bromide; Hydrogens have been omitted for clarity.

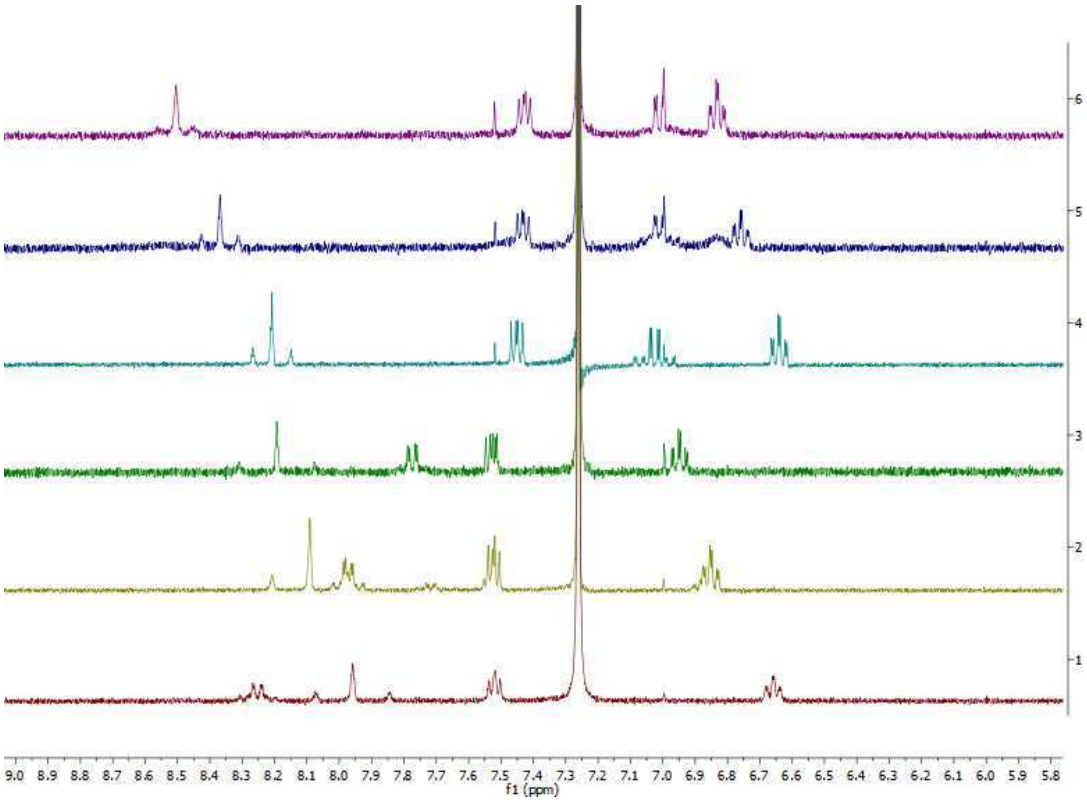
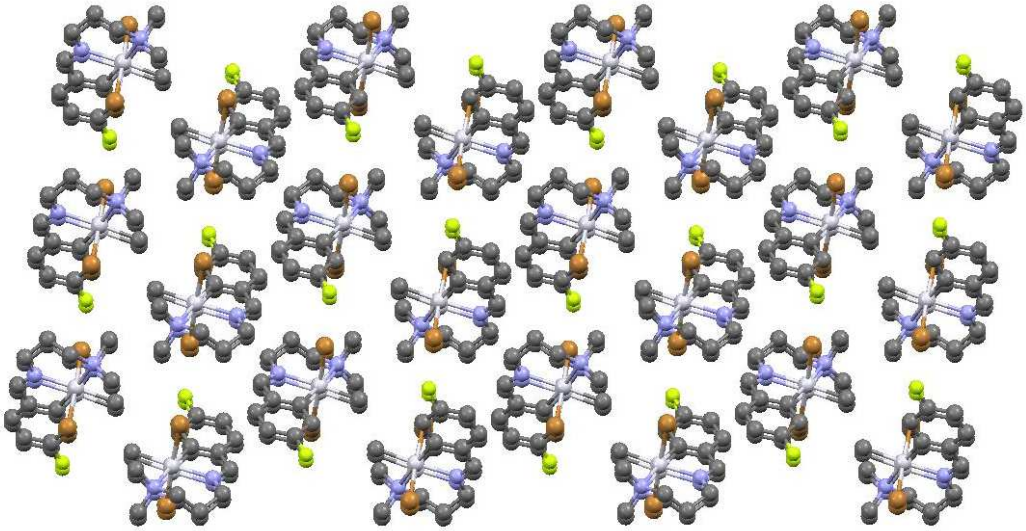
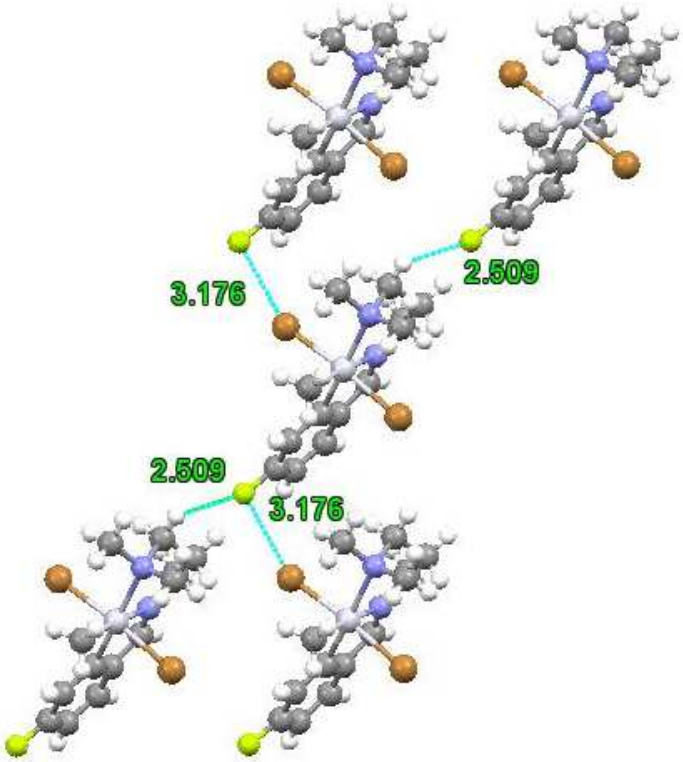



**Figure S4.** Aromatic region of the $^{1}$H-NMR spectra in $CDCl_3$ of the cyclometallated platinum(IV) compounds: **3a** (purple), **3b** (dark blue), **3c** (light blue), **4a** (dark green), **4b** (light green), **4c** (red).

A)



**B)**



**C)**

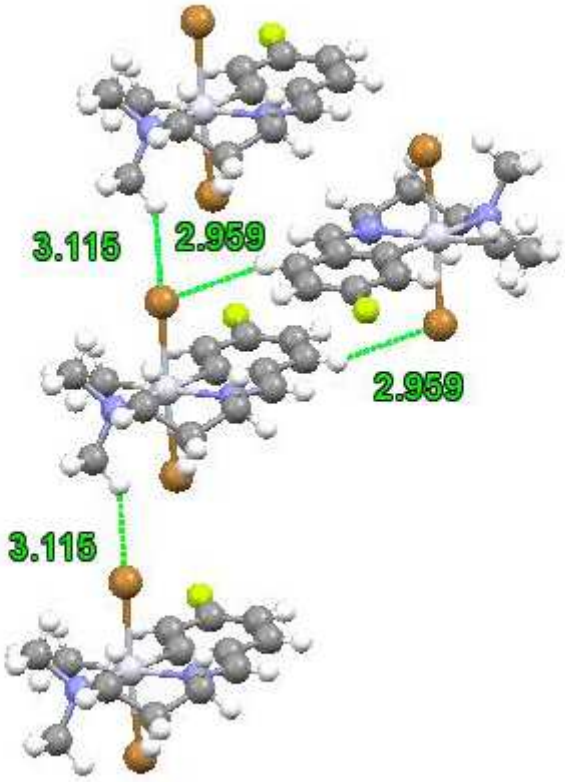
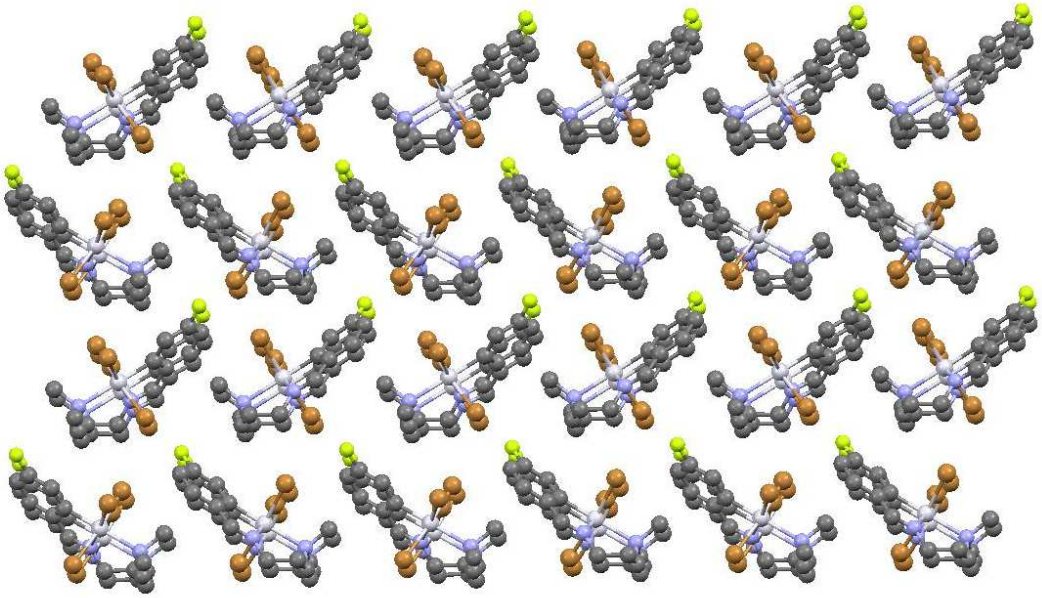
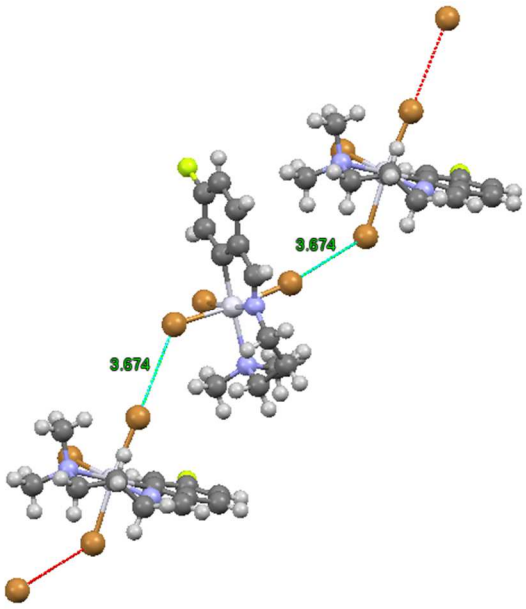



**Figure S5. A**) 3D packing of compound **3b**. Grey: platinum; blue: nitrogen; green: fluorine; brown: bromide; Hydrogens have been omitted for clarity. **B)** Figure highlighting the intramolecular C-F···Br-Pt and C-F···$H_3CN$ interactions. **C)** Figure highlighting the intramolecular Br···H(aromatic) and Br···H(methyl) interactions.

**A)**



**B)**



**C)**

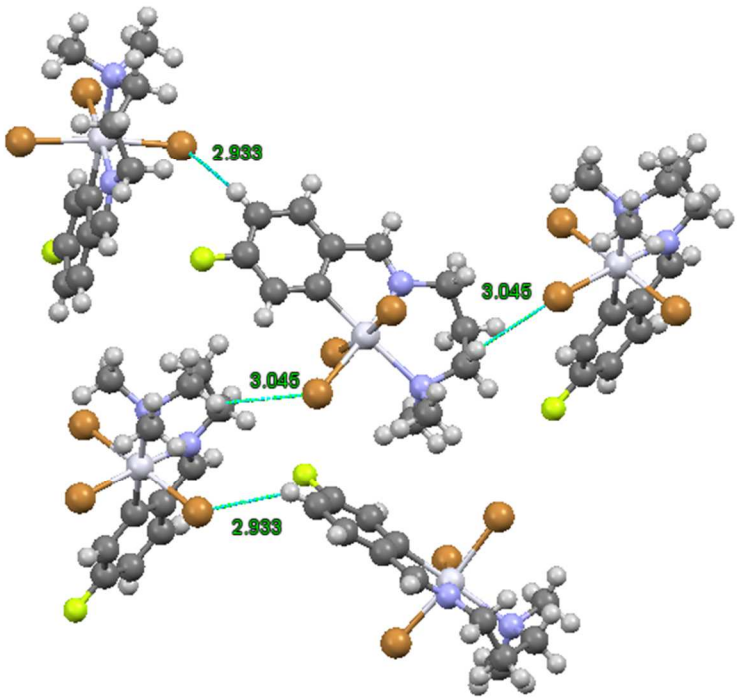



**Figure S6. A)** 3D packing of compound **4b**. Grey: platinum; blue: nitrogen; green: fluorine; brown: bromide; Hydrogens have been omitted for clarity. **B)** Figure highlighting the intramolecular Br···Br interactions. **C)** Figure highlighting the intramolecular Br···H(aromatic) and Br···H(methylene) interactions.

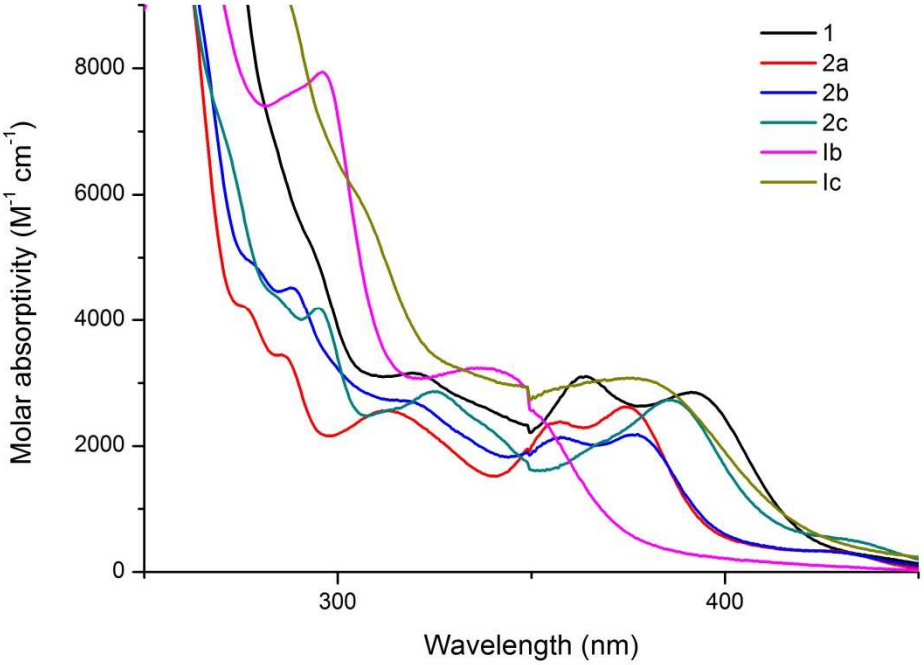



**Figure S7.** Absorption spectra of $10^{-4}$ M dichloromethane solution of Pt(II) compounds at 298 K.

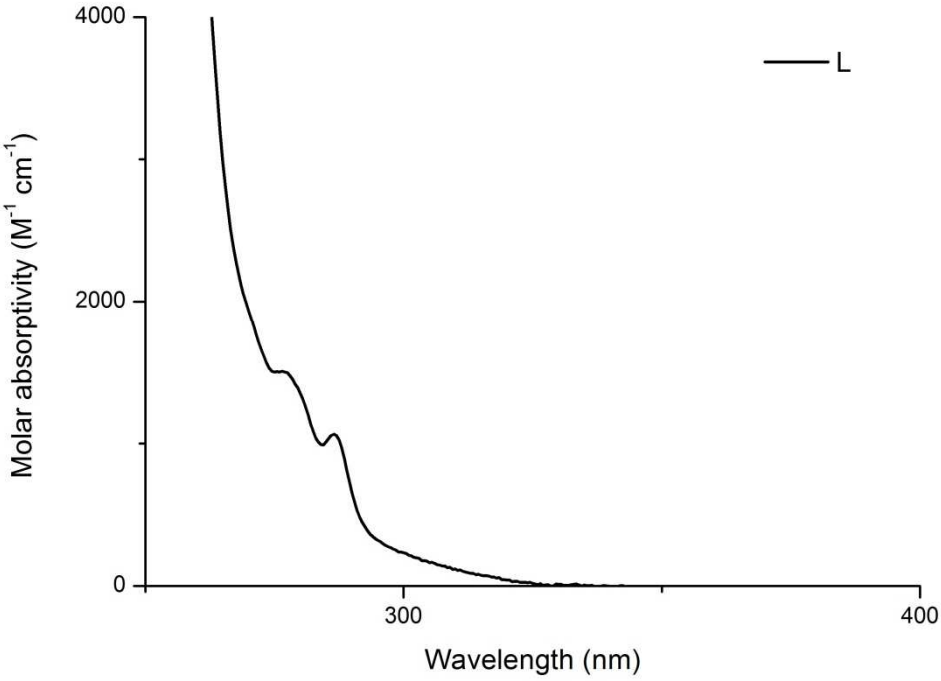



**Figure S8.** Absorption spectra of $10^{-4}$ M dichloromethane solution of the ligand **L** at 298 K.

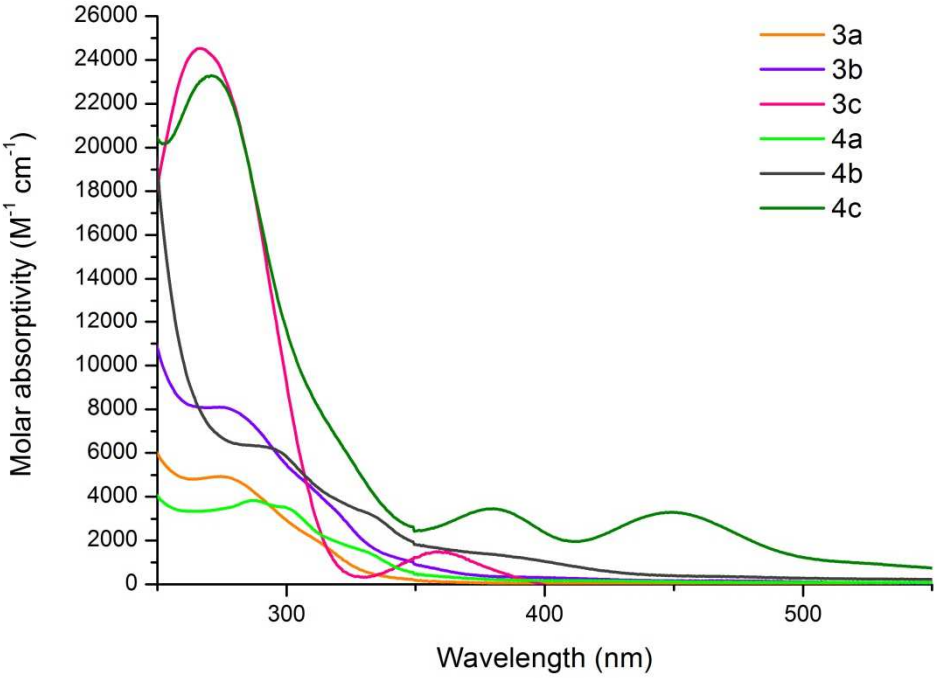



**Figure S9.** Absorption spectra of $10^{-4}$ M dichloromethane solution of platinum(IV) compounds at 298 K.

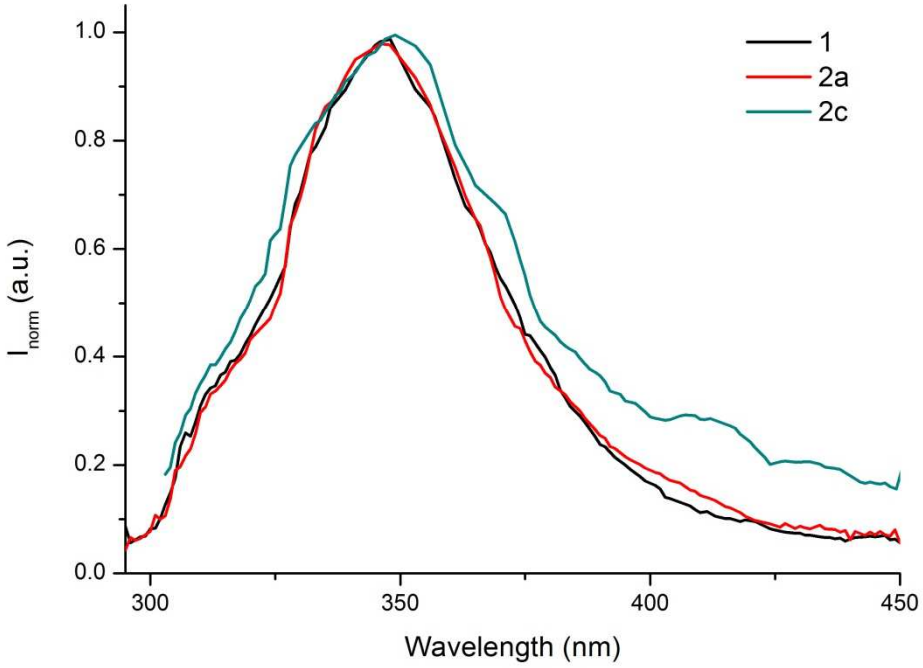



**Figure S10.** Emission spectra of platinum(II) compounds in dichloromethane solution at 298 K. $\lambda_{exc}$ (nm) = 285 (**1**), 285 (**2a**), 295 (**2c**).

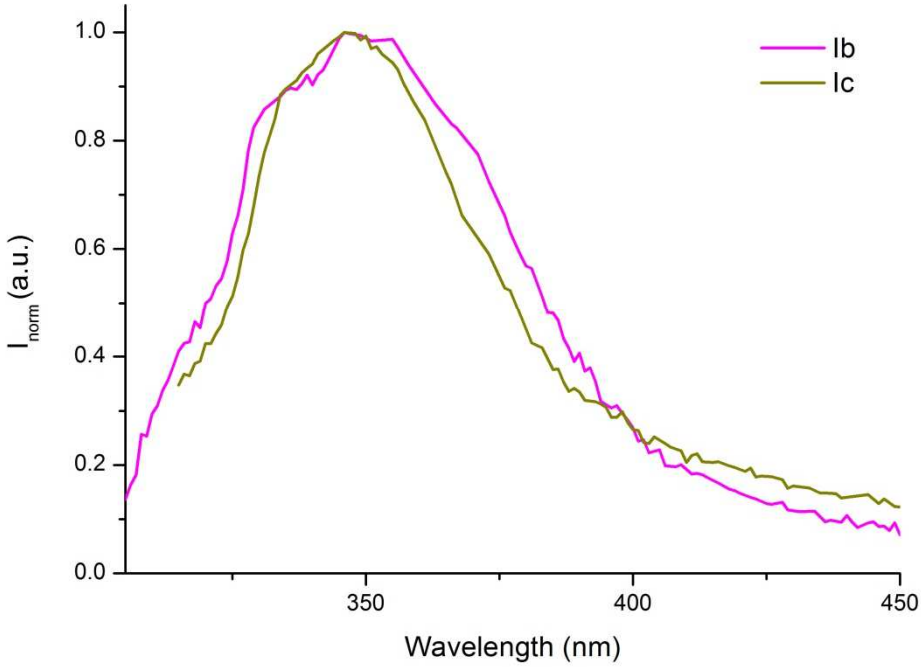



**Figure S11.** Emission spectra of platinum(II) coordination compounds in dichloromethane solution at 298 K. $\lambda_{exc}$ (nm) = 295 (**Ib**), 305 (**Ic**).

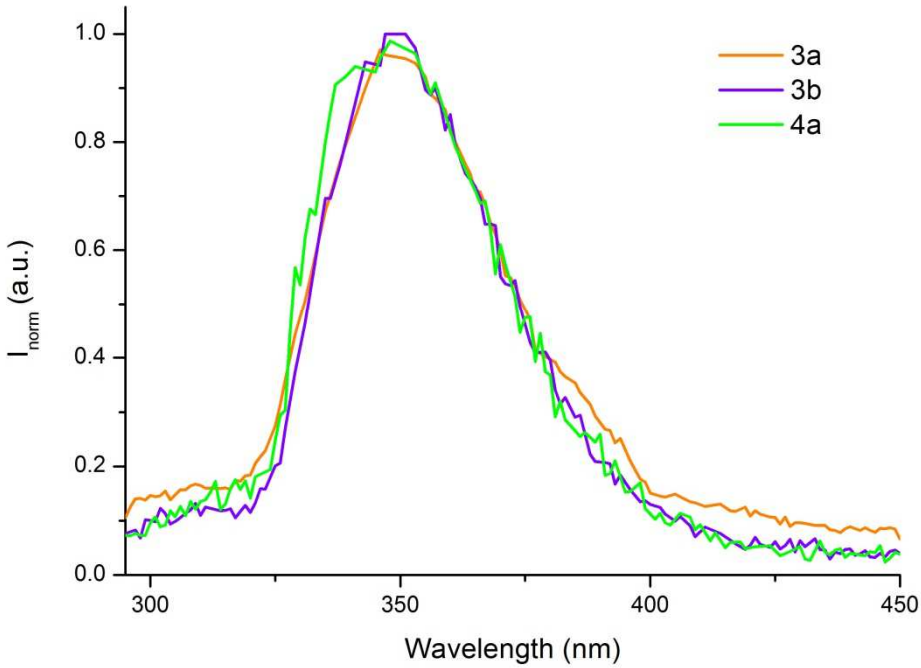



**Figure S12.** Emission spectra of platinum(IV) compounds in dichloromethane solution at 298 K. $\lambda_{exc}$ (nm) = 275 (**3a**), 275 (**3b**), 295 (**4b**).

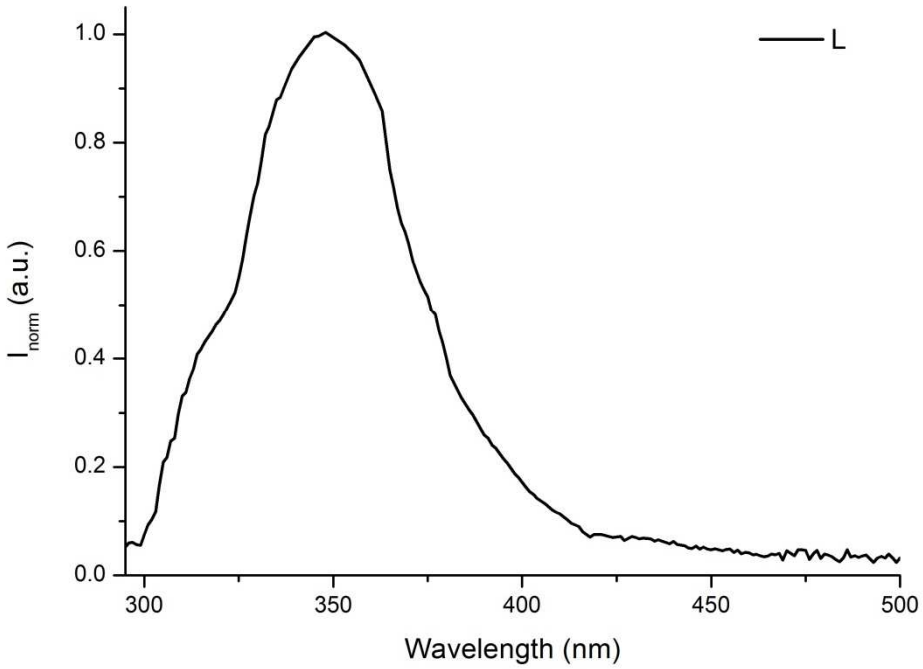



**Figure S13.** Emission spectra of the ligand **L** in dichloromethane solution at 298 K. $\lambda_{exc}$ (nm) = 285.

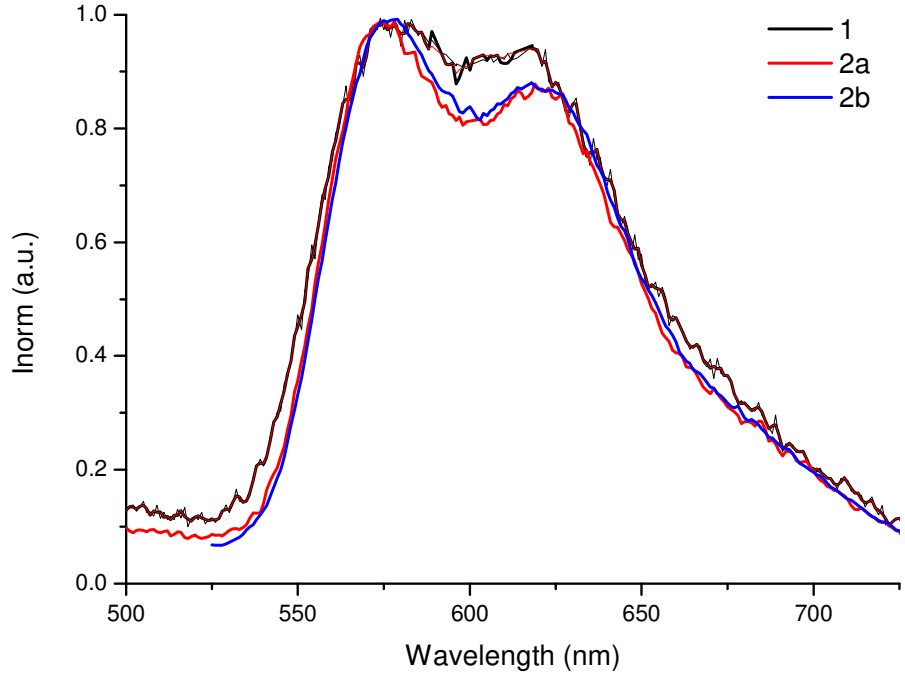



**Figure S14.** Emission spectra of platinum(II) compounds in dichloromethane solution at 298K K: $\lambda_{exc}$ (nm) = 375 (**1**), 390 (**2a**).

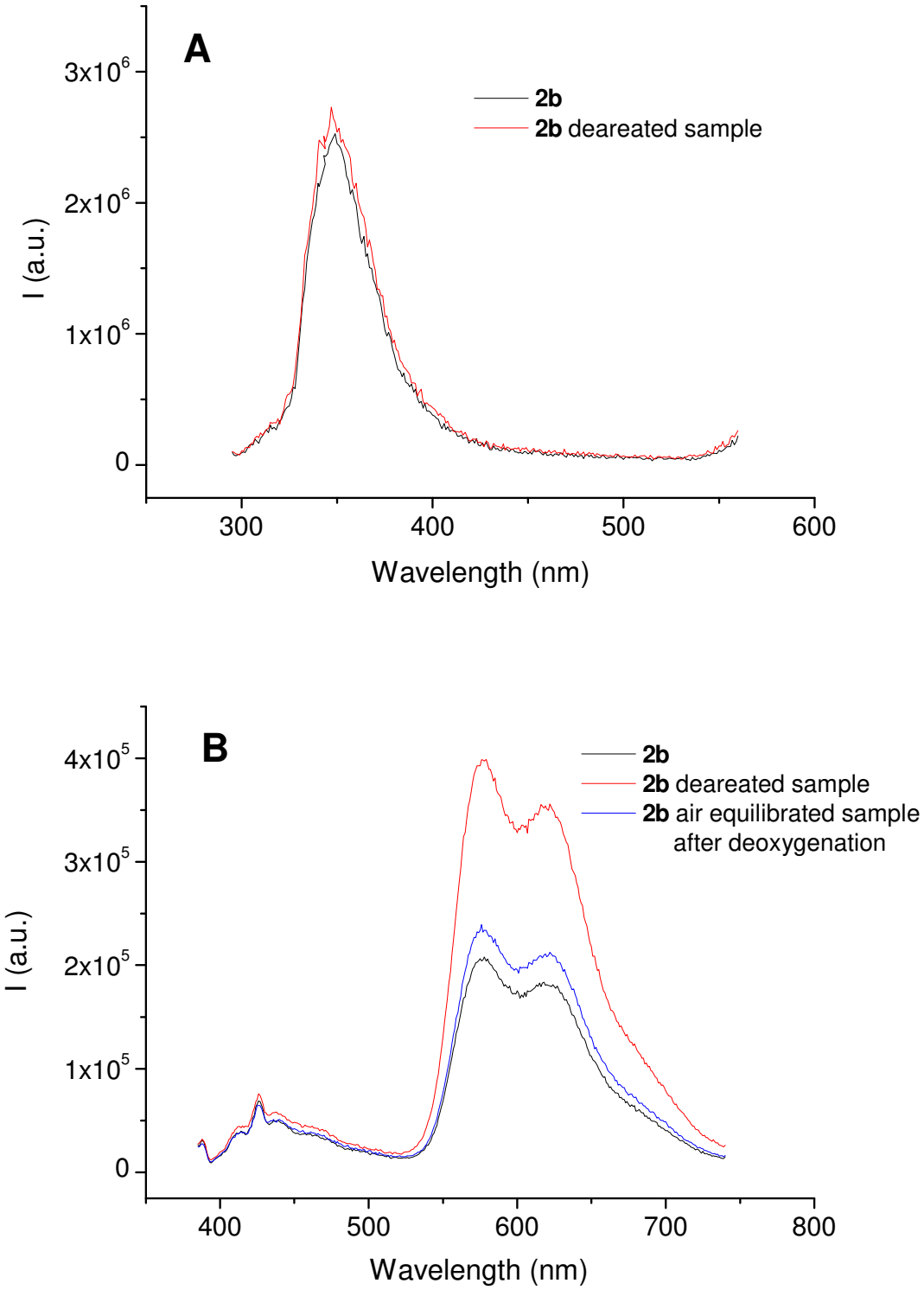



**Figure S15.** Emission spectra of **2b** in the presence and in the absence of oxygen and upon excitation the sample at 285 nm (A) and 375 nm (B).