

## 具有聚集诱导发光特性的新型铂(II)金属配合物及其光激发的自敏化氧化反应

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## Aggregation-Induced Emission Property of a Novel Pt(II) Metal Complex and Its Self-Sensitized Oxidation Reaction at Photo-Excitation State

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## Synthesis

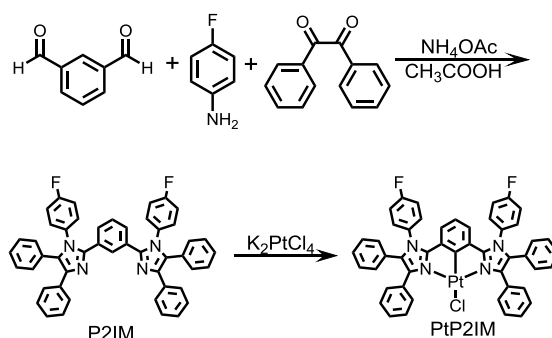


Fig. S1 The synthetic route of P2IM and PtP2IM.

The imidazole-based N<sup>C</sup>N Pt(II) metal complex PtP2IM was obtained from coordination of potassium tetrachloroplatinate and imidazole ligand which was synthesized by a cyclizing reaction of aniline, isophthalaldehyde and benzil, as shown in Fig. S1. The terminal complex PtP2IM was fully characterized by NMR and MS spectra.

### Synthesis of P2IM

A mixture of *m*-Phthalaldehyde (0.268 g, 2 mmol), 4-Fluoroaniline (1.78 g, 16 mmol), ammonium acetate (1.54 g, 20 mmol) and Benzil (1.05 g, 5 mmol) in acetic acid (15 mL) was heated under 120 °C for 24 h. The mixture was then cooled to room temperature and added in a mass of water, yet with the presence of abundant precipitate. The solid product was filtrated and washed with 30 mL water, dissolved in CH<sub>2</sub>Cl<sub>2</sub> and dried in MgSO<sub>4</sub> overnight, then purified by column chromatography. At last 1.26 g (1.8 mmol) white product P2IM (yield 90%) was obtained. <sup>1</sup>H NMR (500 MHz, CDCl<sub>3</sub>): δ 7.90 (s, 1H), 7.59 (d, *J* = 7.5 Hz, 4H), 7.34–7.25 (m, 10H), 7.22 (dd, *J* = 14.1, 7.2 Hz, 4H), 7.18–7.13 (m, 4H), 7.11 (t, *J* = 7.8 Hz, 1H), 7.07–6.95 (m, 8H). MS (MALDI-TOF): MW 702.8, *m/z* 703.7 (M<sup>+</sup>).

### Synthesis of PtP2IM

A mixture of P2IM (1 mmol) and K<sub>2</sub>PtCl<sub>4</sub> (0.41 g, 1 mmol) in acetic acid (8 mL) was stirred and heated with reflux in nitrogen atmosphere for 12 h. After cooling to room temperature, the reaction mixture was filtered. The precipitate was washed with acetic acid, water, methanol and ether. The light green product PtP2IM (in 50% yield) was obtained after thermal evaporation under high vacuum. <sup>1</sup>H NMR (500 MHz, CDCl<sub>3</sub>): δ 7.44–7.34 (m, 8H), 7.25–7.12 (m, 12H), 7.12–7.05 (m, 4H), 6.92–6.85 (m, 4H), 6.57 (t, *J* = 7.8 Hz, 1H), 5.99 (d, *J* = 7.9 Hz, 2H). MS (MALDI-TOF): MW 932.3, *m/z* 933.3 (M<sup>+</sup>).

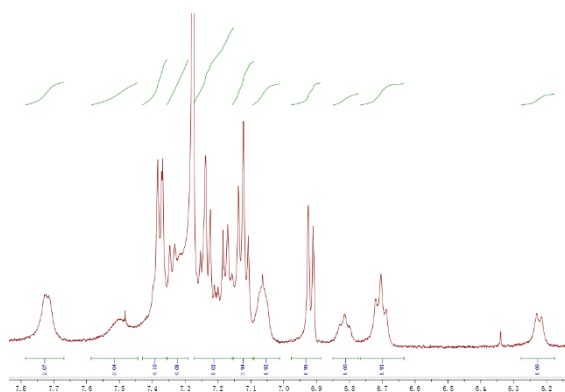


Fig. S2 <sup>1</sup>H NMR spectrum of new reaction compound PtP2IM in CDCl<sub>3</sub>.

The metal complex PtP2IM underwent the photo-oxidation reaction with the generation of a new red-emitting, imidazole/benzoylimino-based N<sup>C</sup>N' Pt(II) metal complex-PtPIMO, which was further confirmed by NMR spectra as shown in Fig. S2.

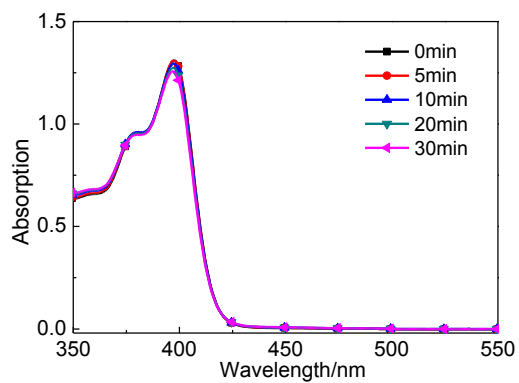


Fig. S3 The UV spectra of PtP2IM with the participation of TEDA under 365 nm UV light.

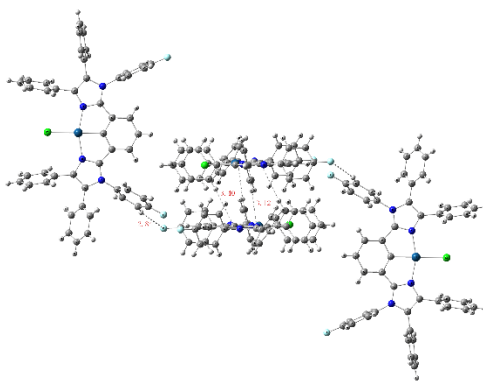


Fig. S4 The stacking modes in the crystal structures of PtP2IM molecules.

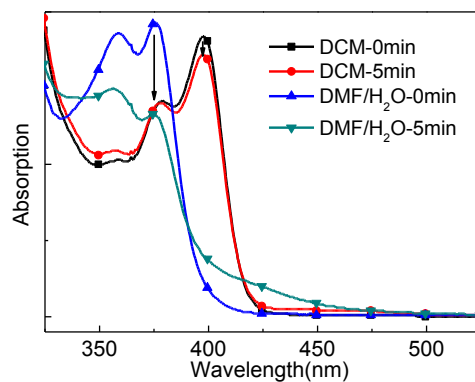


Fig. S5 Comparison of the degradation rate of PtP2IM in DCM and DMF/H<sub>2</sub>O after 5 min 365 nm UV irradiation.