

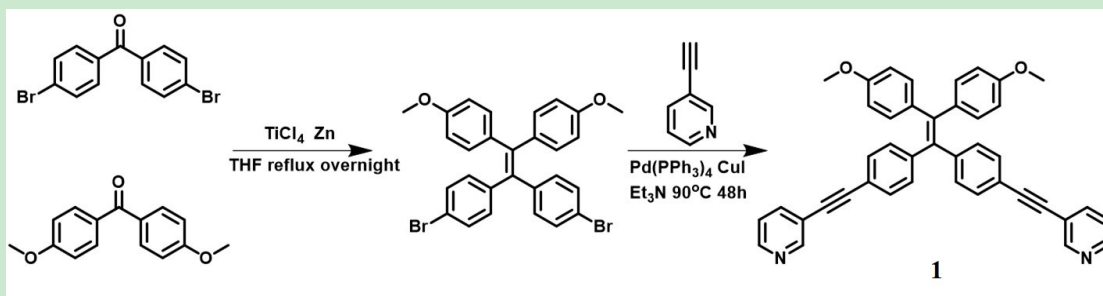
Supporting Information

**A Supramolecular Artificial Light-Harvesting System Based on a
Luminescent Platinum(II) Metallacage**

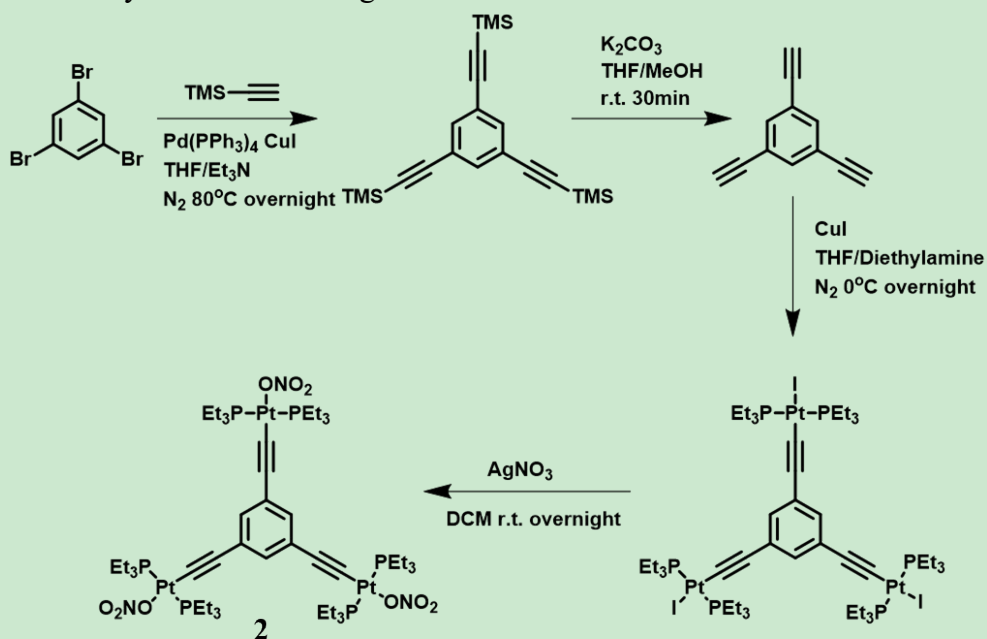
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Scheme S1. Synthetic route to ligand 1.



Scheme S2. Synthetic route to acceptor 2.

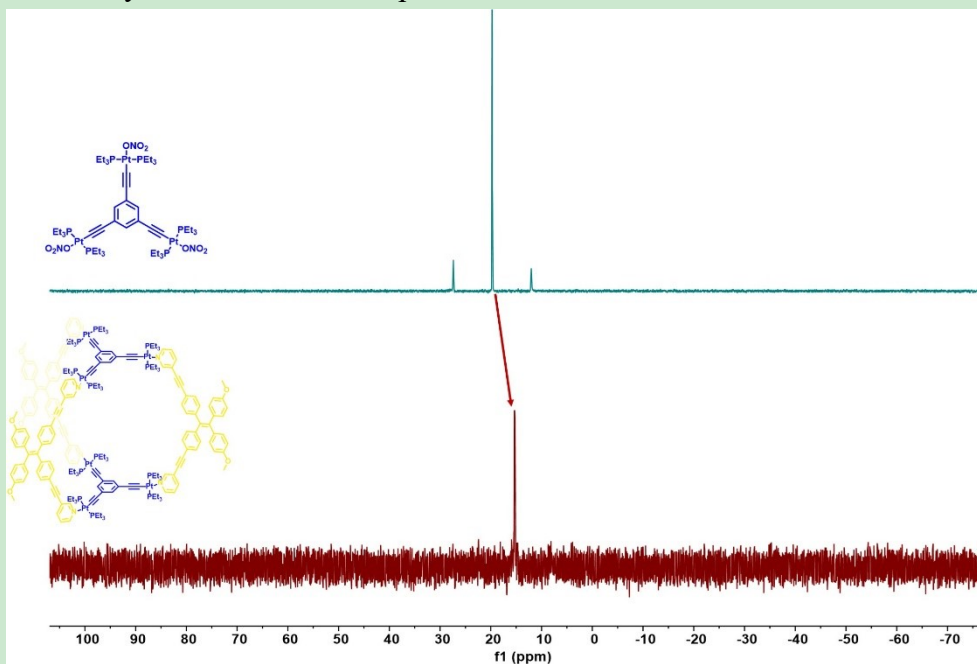


Figure S1. The ^{31}P NMR spectra (162 MHz, Acetone- d_6) of organometallic Pt(II) acceptor 2 (up) and metallacage 3 (bottom)

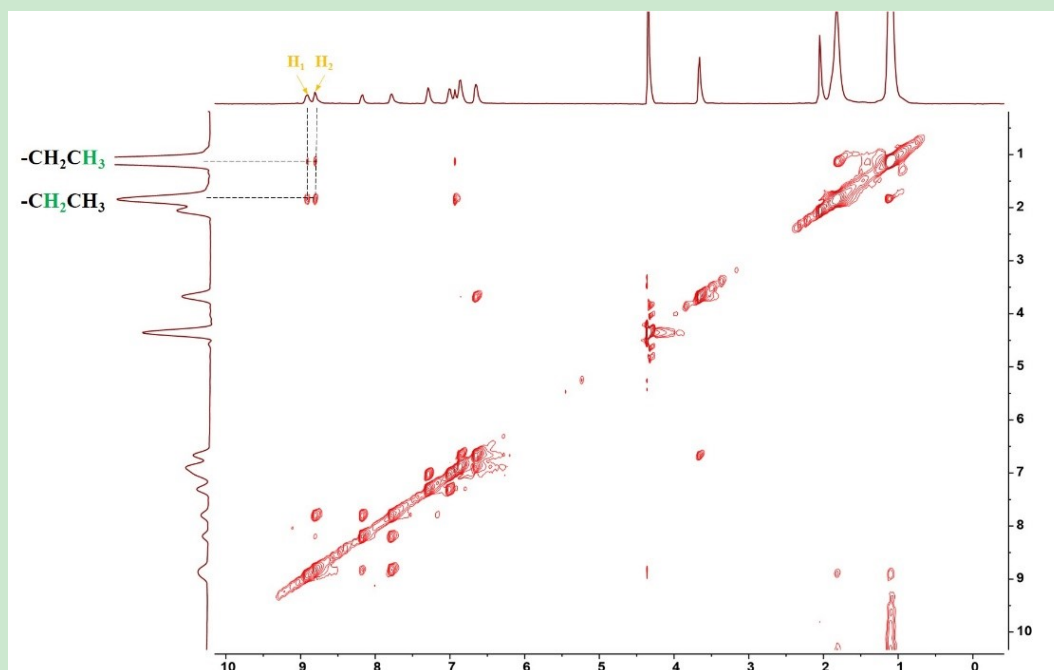


Figure S2 The NOESY spectrum (400 MHz, Acetone- d_6) of metallacage **3**.

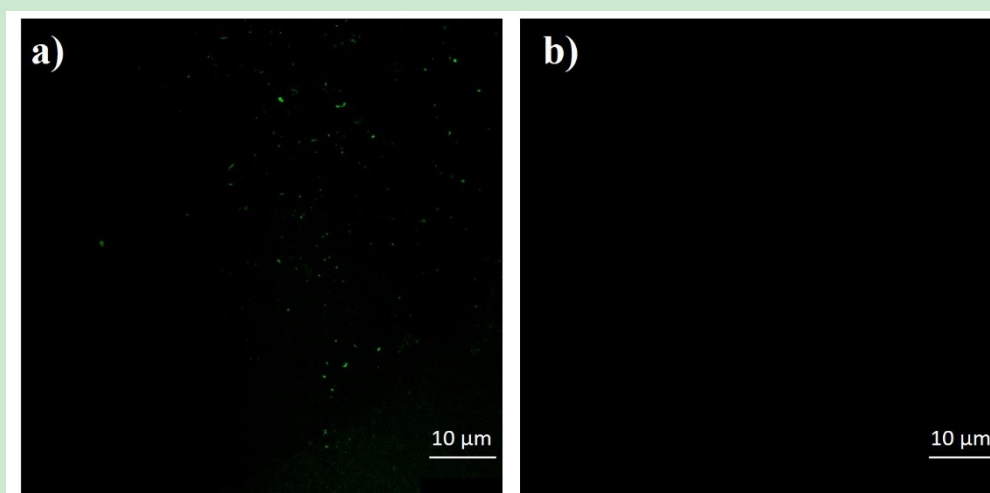


Figure S3. CLSM images of metallacage **3** (a), NiR (b) in acetone/water (1/9, v/v) mixtures (20 μ M, λ_{ex} = 405nm)

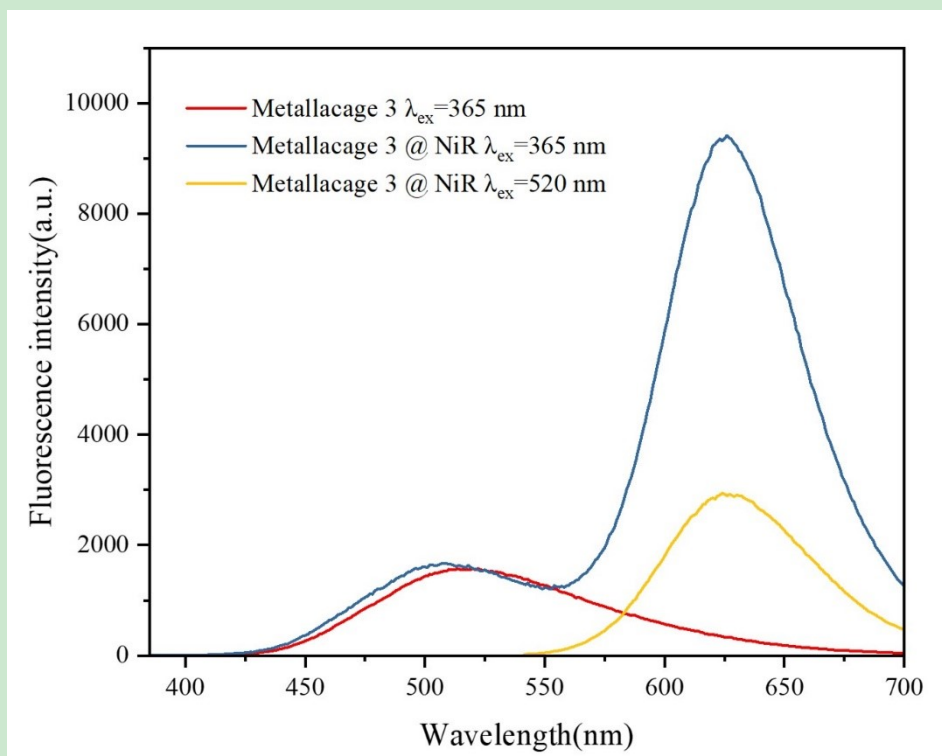


Figure S4. Fluorescence emission spectra of metallacage **3** (red line, $\lambda_{\text{ex}}=365$ nm), metallacage **3** @ NiR (blue line, $\lambda_{\text{ex}}=365$ nm) and metallacage **3** @ NiR (yellow line, $\lambda_{\text{ex}}=365$ nm); the red line normalized according to the intensity at 520 nm of the blue line.

Calculation of energy transfer efficiency (Φ_{ET}): Energy transfer efficiency was calculated based on the following equation.

$$\phi_{\text{ET}} = 1 - I_{\text{DA}}/I_{\text{D}}$$

where I_{DA} and I_{D} are the emission intensity of metallacage **3** @ NiR and **3**, respectively ($\lambda_{\text{ex}}=365$ nm, $\lambda_{\text{em}}=520$ nm).

Calculation of Antenna effect: Antenna effect was calculated based on the following equation.

$$\text{Antenna effect} = \frac{I_{A+D(365\text{ nm})}^{630\text{ nm}} - I_{D(365\text{ nm})}^{630\text{ nm}}}{I_{A+D(520\text{ nm})}^{630\text{ nm}}}$$

where $I_{A+D(365\text{ nm})}^{630\text{ nm}}$ and $I_{A+D(520\text{ nm})}^{630\text{ nm}}$ are the fluorescence intensities of the metallacage **3** @ NiR at 630 nm under excitation at 365 nm and 520 nm, respectively. $I_{A(365\text{ nm})}^{630\text{ nm}}$ represents the fluorescence intensity of metallacage **3** at 630 nm under excitation at 365

nm after normalization of the emission spectrum of **3 @ NiR** according to the intensity of **3 @ NiR** located at 520 nm.

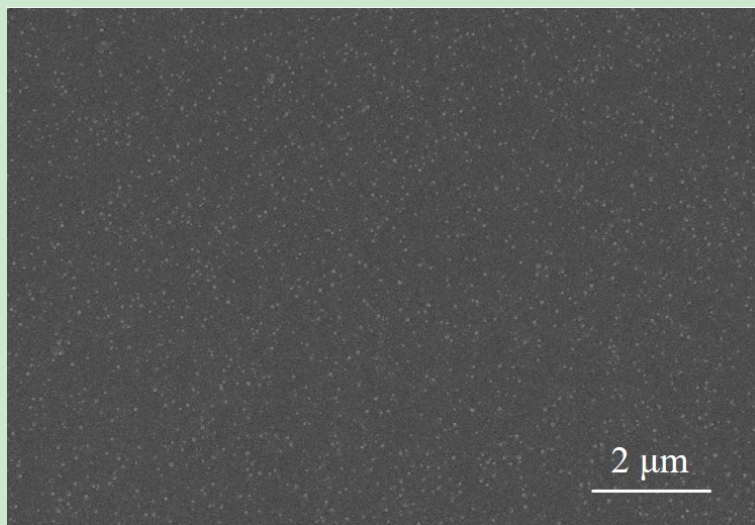


Figure S5. SEM images of the aggregates of the metallacage **M3** in acetone/water (1/9, v/v) mixtures.

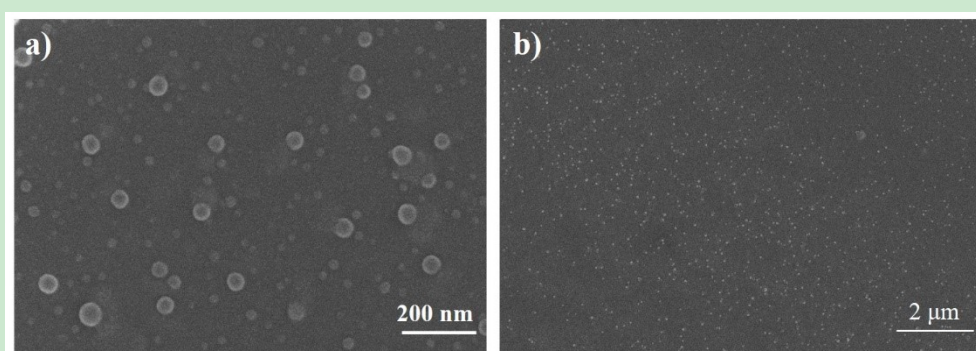


Figure S6. SEM images of the aggregates of the metallacage **M3 @ NiR** in acetone/water (1/9, v/v) mixtures.

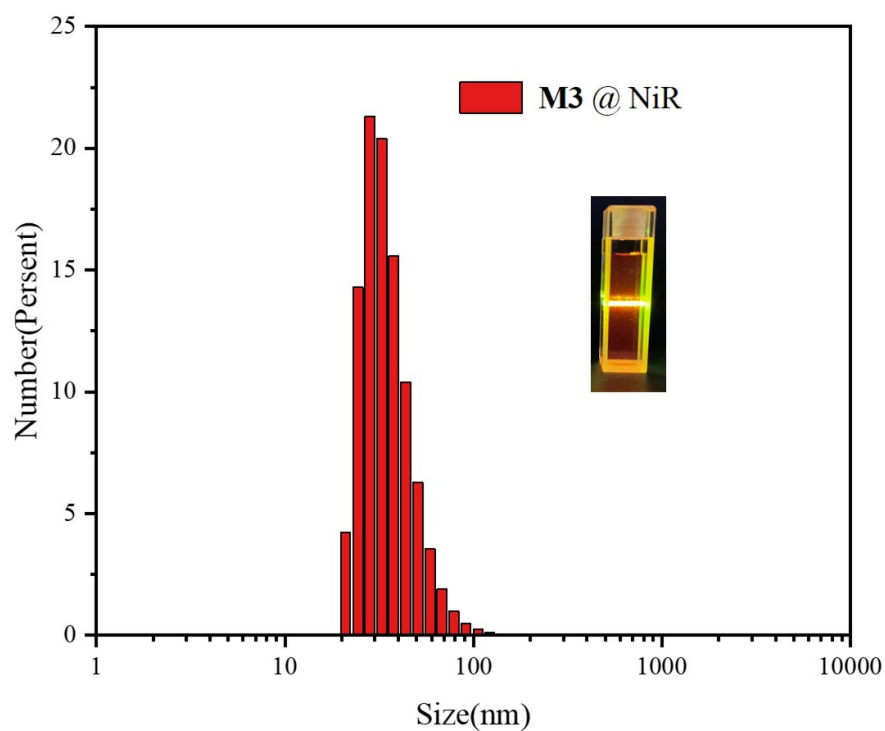


Figure S7. DLS data of metallacage **3 @ NiR** in acetone/water (1/9, v/v) mixtures; Inset: Tyndall effect of and **3 @ NiR** in acetone/water (1/9, v/v).

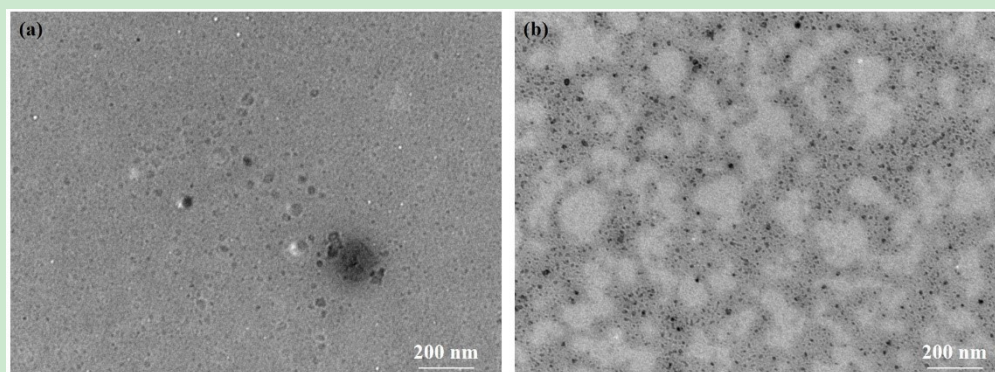


Figure S8. TEM images of the aggregates of the metallacage **M3** (a) and **M3 @ NiR** (b) in acetone/water (1/9, v/v) mixtures.

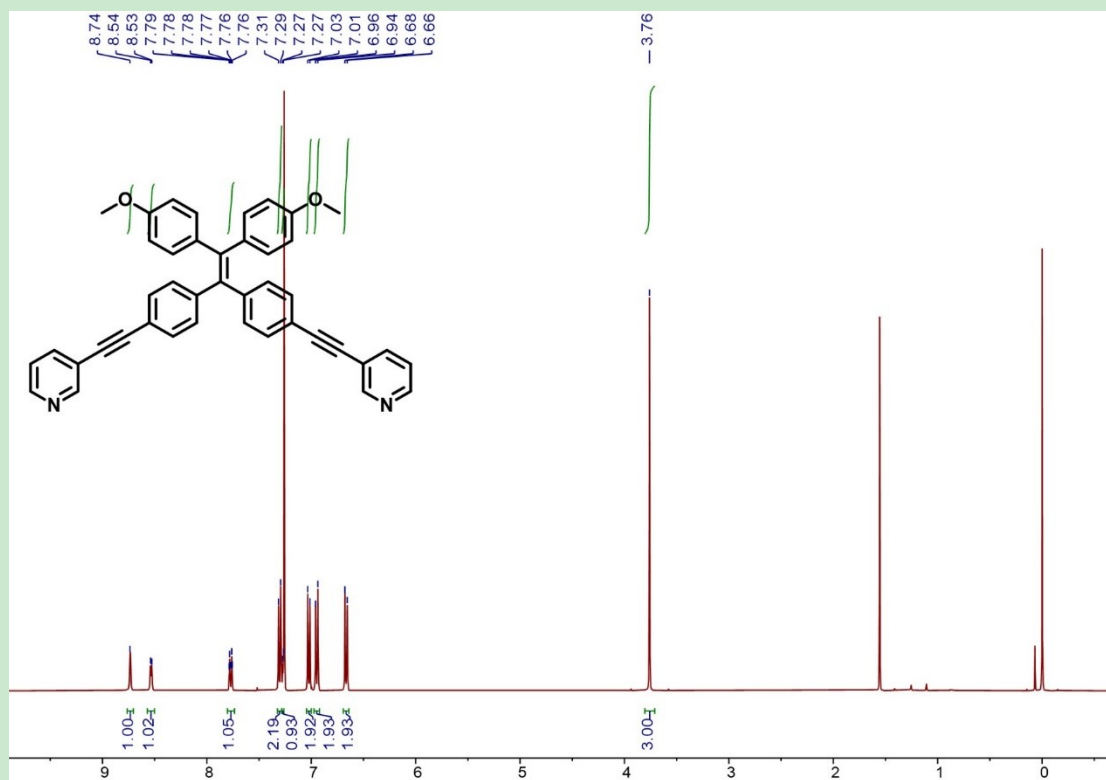


Figure S9. ¹H NMR spectra of ligand 1 (400 MHz, CDCl₃).

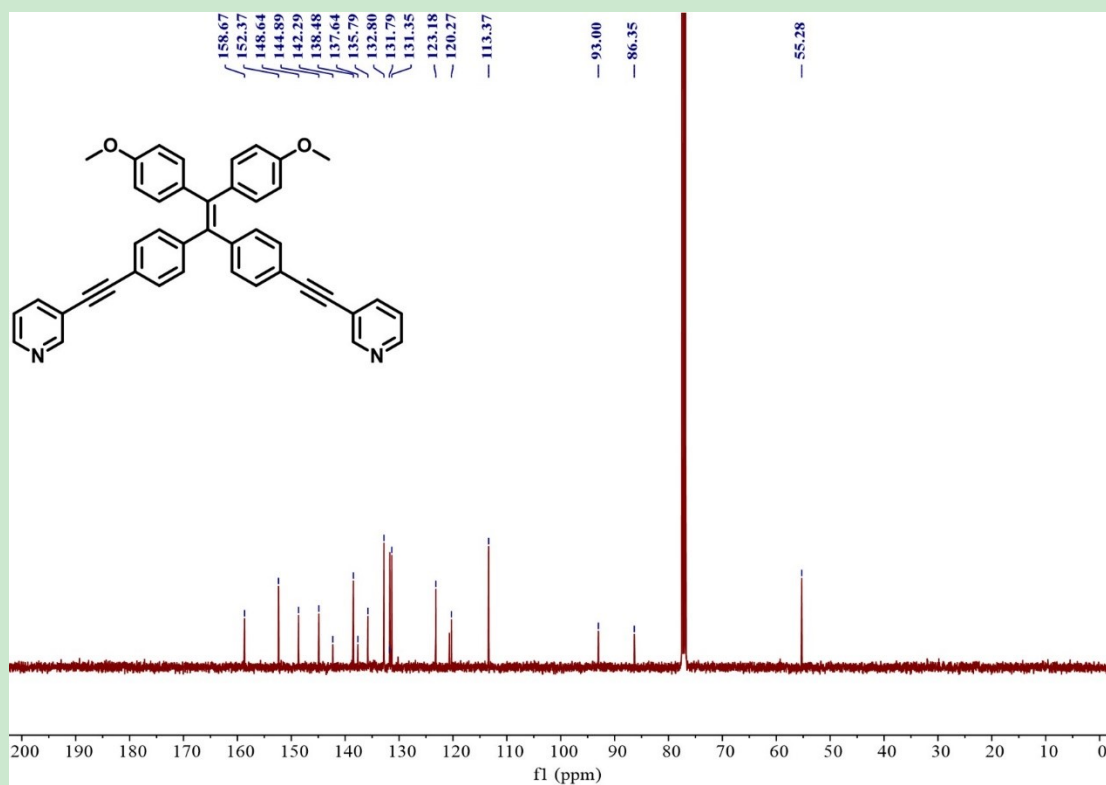


Figure S10. ¹³C NMR spectra of ligand 1 (100 MHz, CDCl₃).

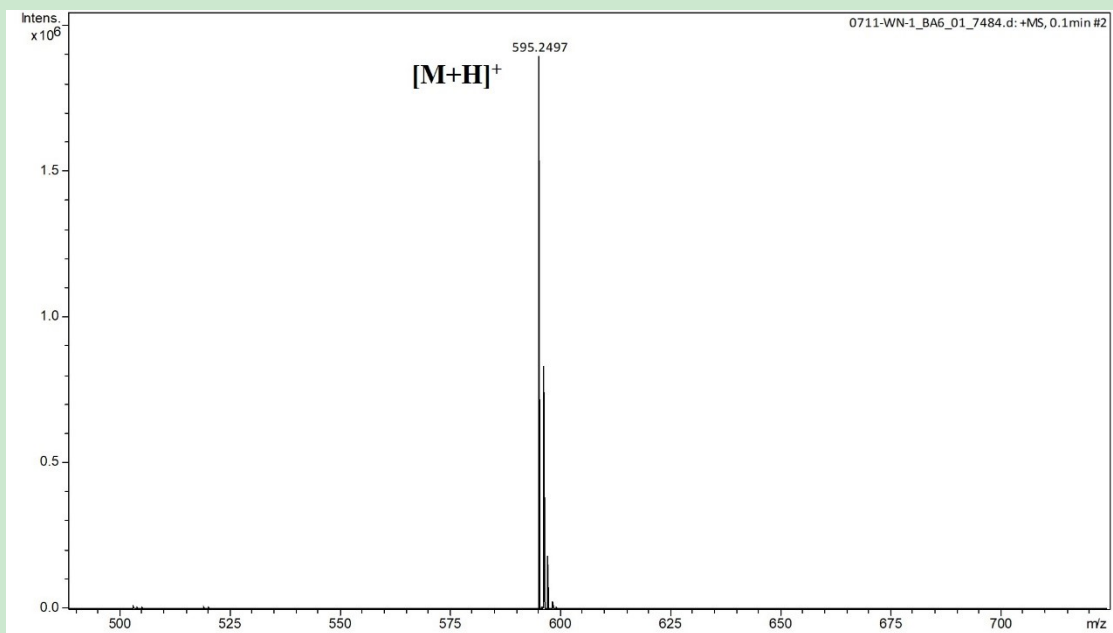


Figure S11. MS spectra of ligand 1.