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Supporting Information

Platinated Porphyrin as a New Organelle and Nucleus Dual-targeted Photosensitizer for Photodynamic Therapy

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1. DNA binding affinity and mode

The binding constants (K) of Pt-Por-RB and Me-Por-RB were calculated by the equation (1).

$$[DNA]/\Delta\varepsilon_{ap}=[DNA]/\Delta\varepsilon+1/(\Delta\varepsilon K) \quad (1)$$

$$\Delta\varepsilon_{ap}=|\varepsilon_A-\varepsilon_F|; \quad \Delta\varepsilon=|\varepsilon_B-\varepsilon_F|;$$

Where the [DNA] is the CT DNA concentration, ε_A, ε_B, ε_F is the apparent extinction coefficient, the extinction coefficient of bound porphyrin and the extinction coefficient of free porphyrin. The fitting curves were shown in Fig S1.

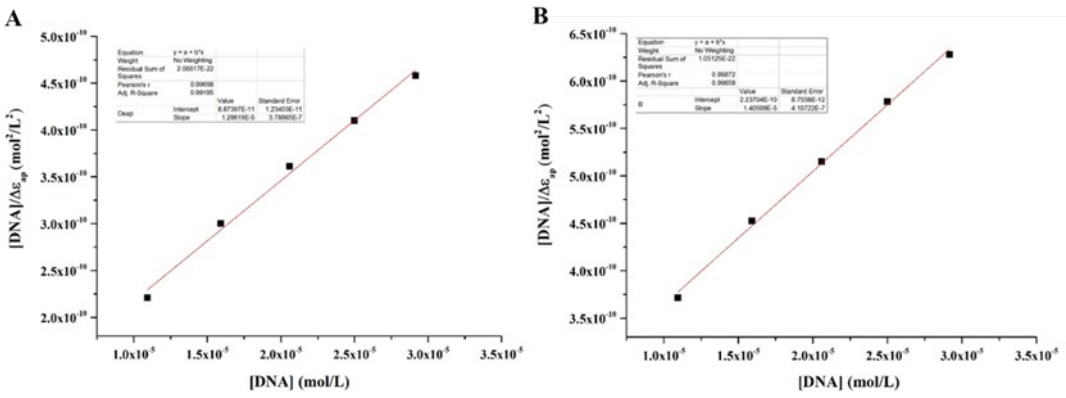

Fig. S1. The relations between the [DNA]/△ ε ap and [DNA] of (A) Pt-Por-RB; (B) Me-Por-RB

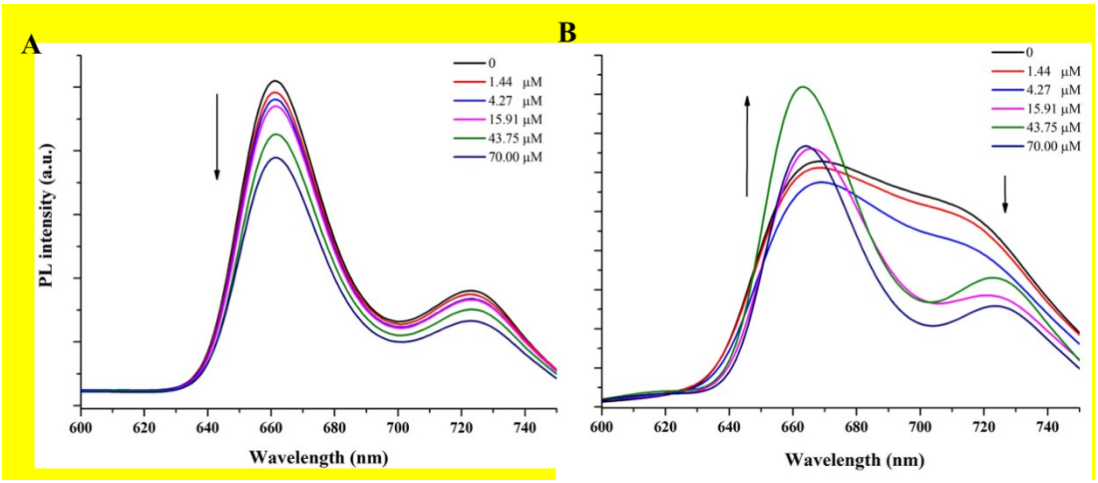

Fig. S2. Emission spectra of (A) Pt-Por-RB; (B) Me-Por-RB; with titration of CT DNA (from 0 to 70 μM)

The fluorescence spectrophotometric titrations of porphyrins with CT DNA (from 0 to 70 μM) were performed as shown in Fig. S2. The change of PL spectrum for Pt-Por-RB and Me-Por-RB were different after the addition of CT DNA. At low concentration of CT DNA (0 to 4.27 μM), the PL intensity of Me-Por-RB was only slightly reduced related to Pt-Por-RB (significantly decrease), probably due to the self-stacking of porphyrin on the surface of CT DNA. However, the emission spectrum of Me-Por-RB increased significantly when the concentration of DNA is beyond 4.27 μM, indicating the interaction mode between porphyrin and CT DNA was changed from self-stacking to intercalation at high concentration of CT DNA.

2. NMR and MS spectra of compounds

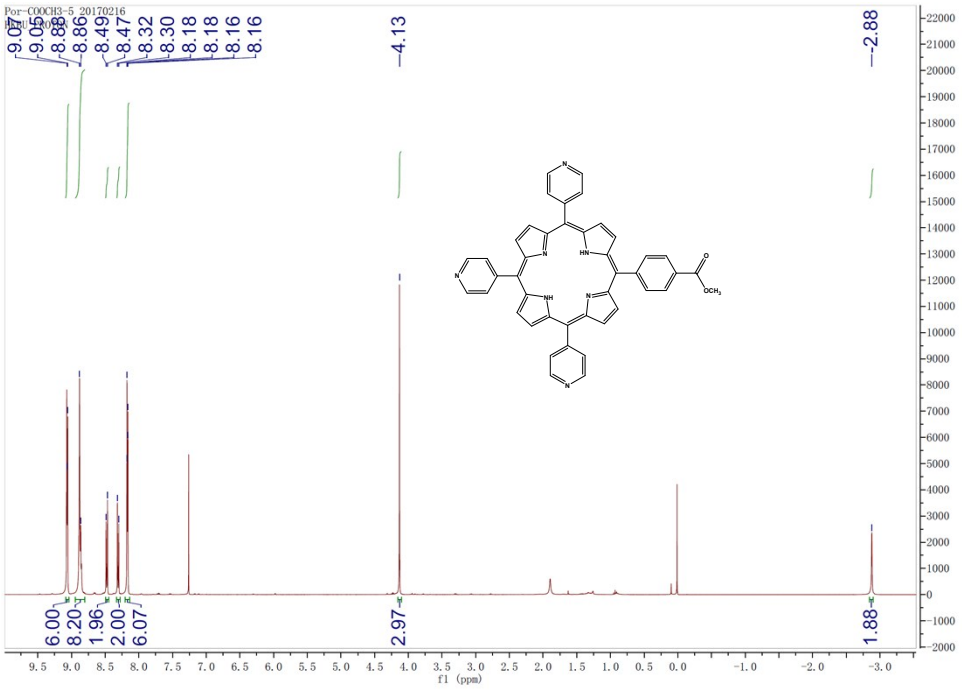

Fig. S3. ^{1}H-NMR ($CDCl_3$) spectrum of meso-5-(4′-carboxymethylphenyl)-10,15,20-tris(4′-pyridyl)porphyrin

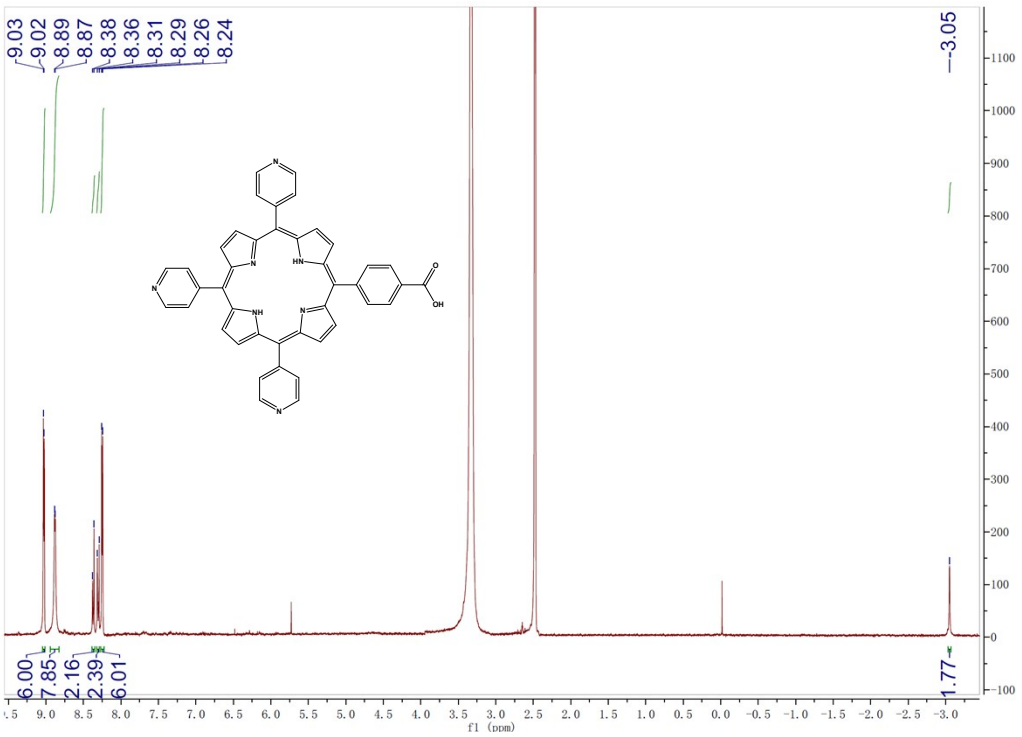

Fig. S4. ^{1}H-NMR (DMSO-d_6) spectrum of Por

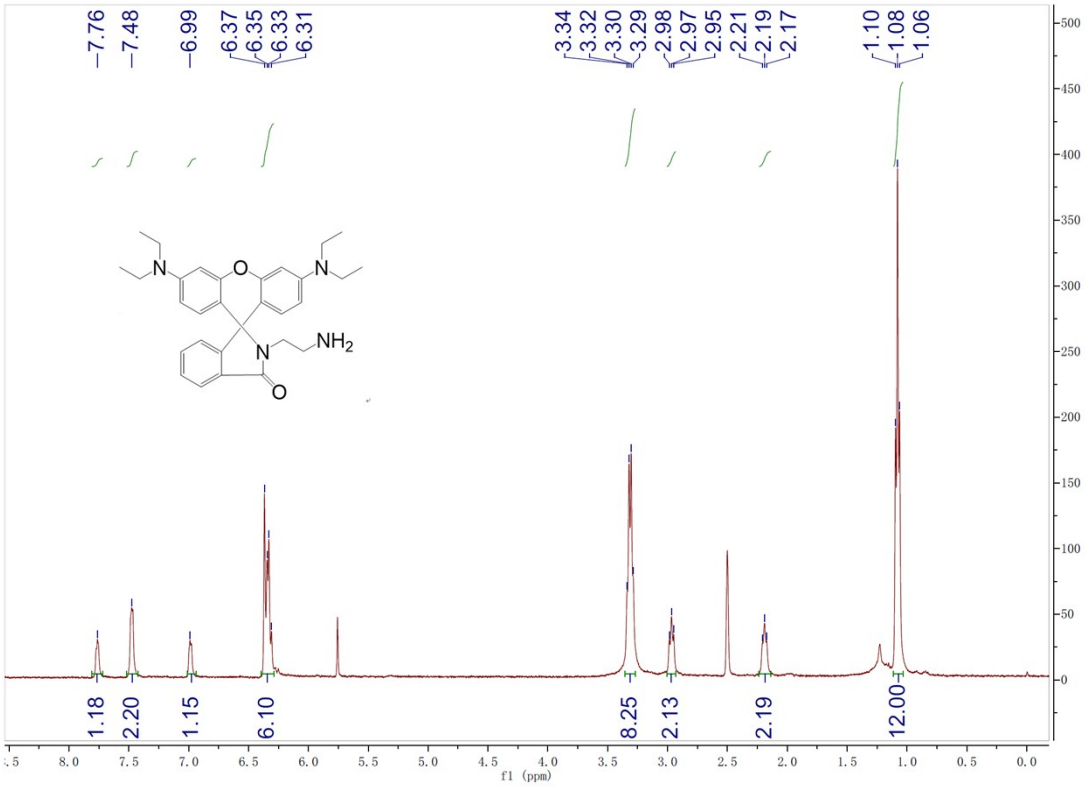

Fig. S5. ^{1}H-NMR (DMSO-d_6) spectrum of RB-NH_2

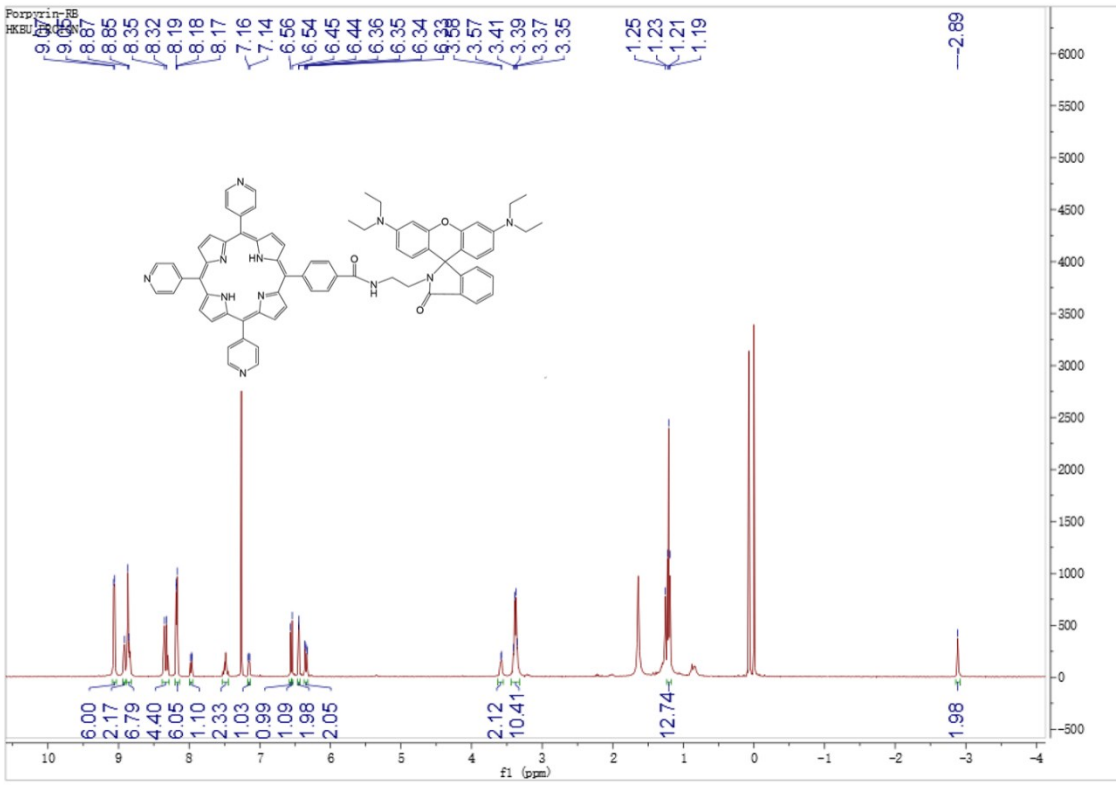

Fig. S6. ^{1}H-NMR ($CDCl_3$) spectrum of Por-RB

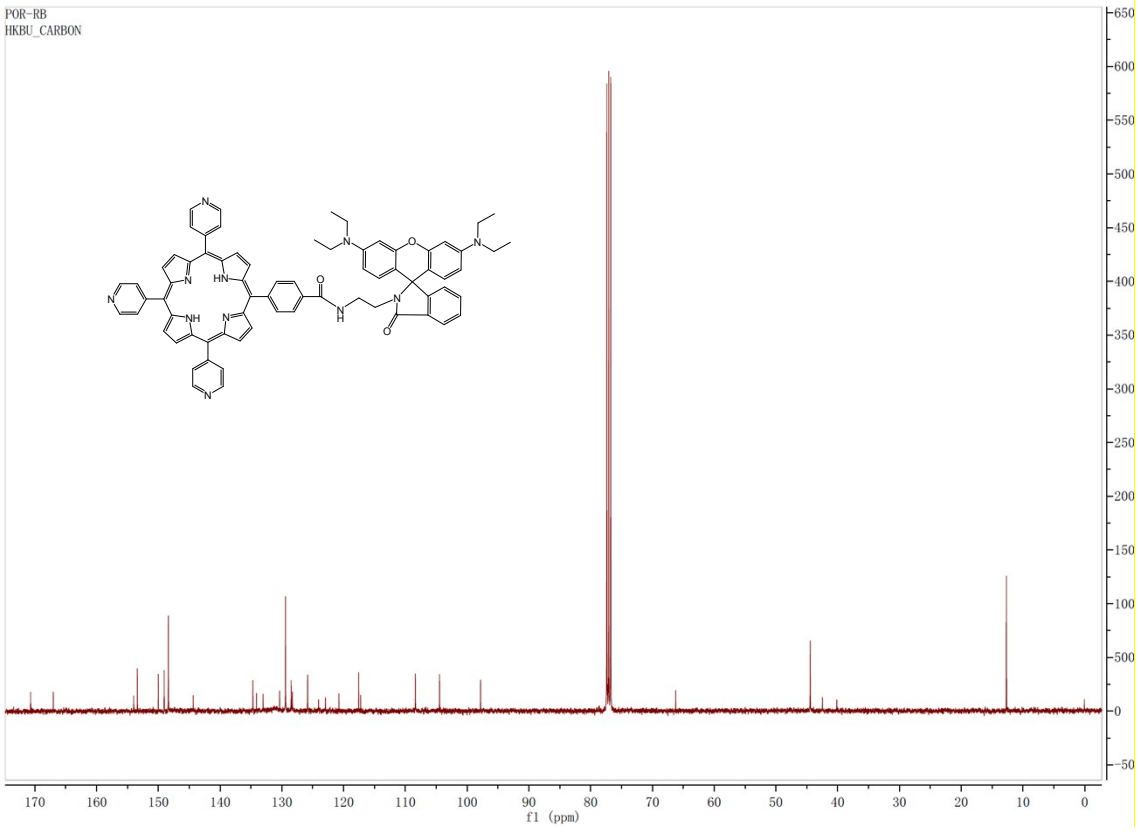

Fig.S7. ^{13}C-NMR ($CDCl_3$) spectrum of Por-RB

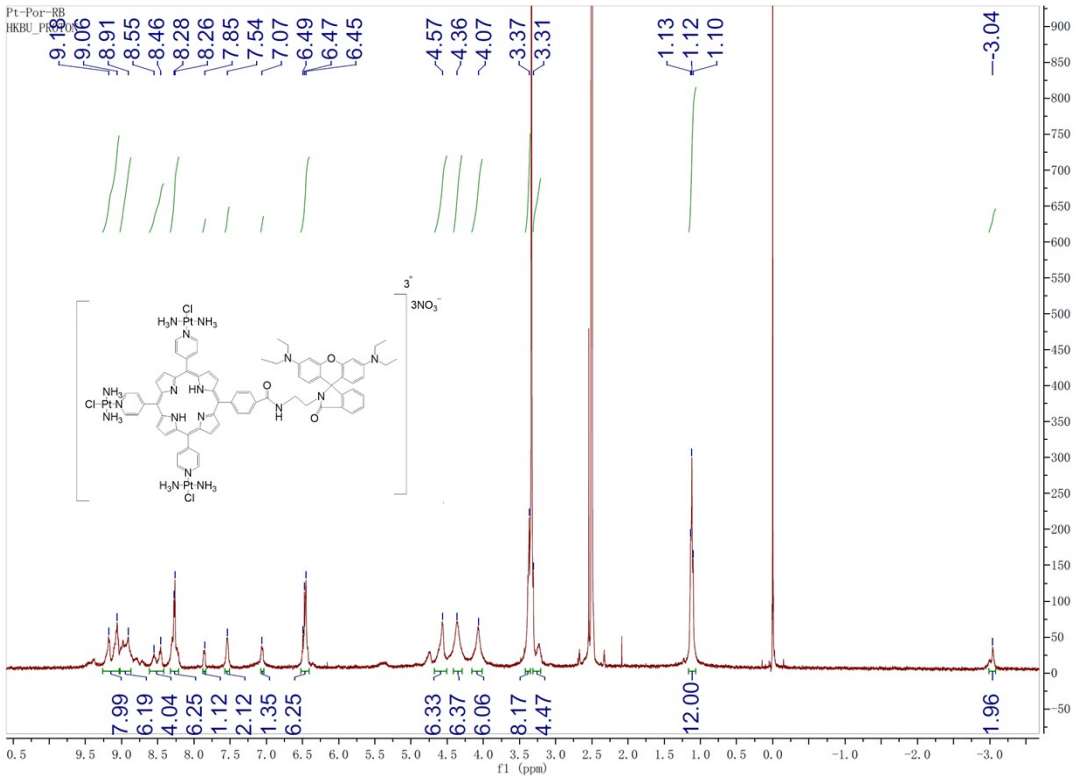

Fig. S8. ^{1}H-NMR (DMSO-d_6) spectrum of Pt-Por-RB

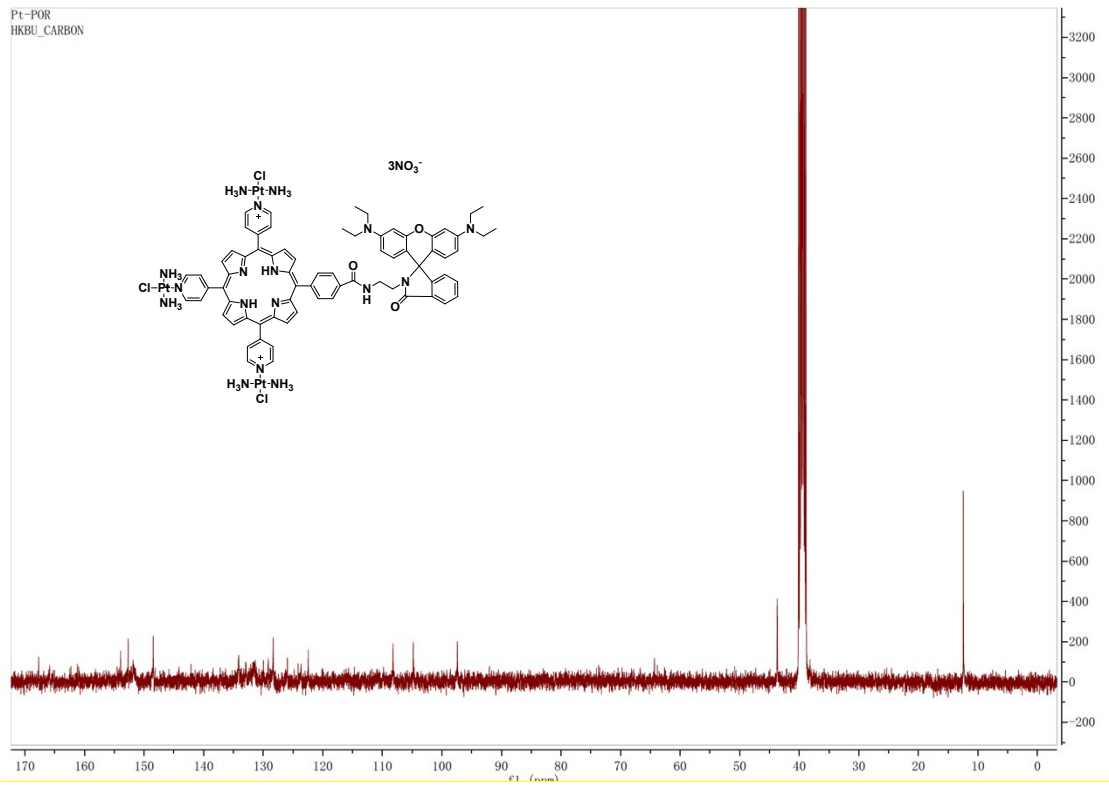

Fig.S9. ^{13}C-NMR (DMSO-d_6) spectrum of Pt-Por-RB

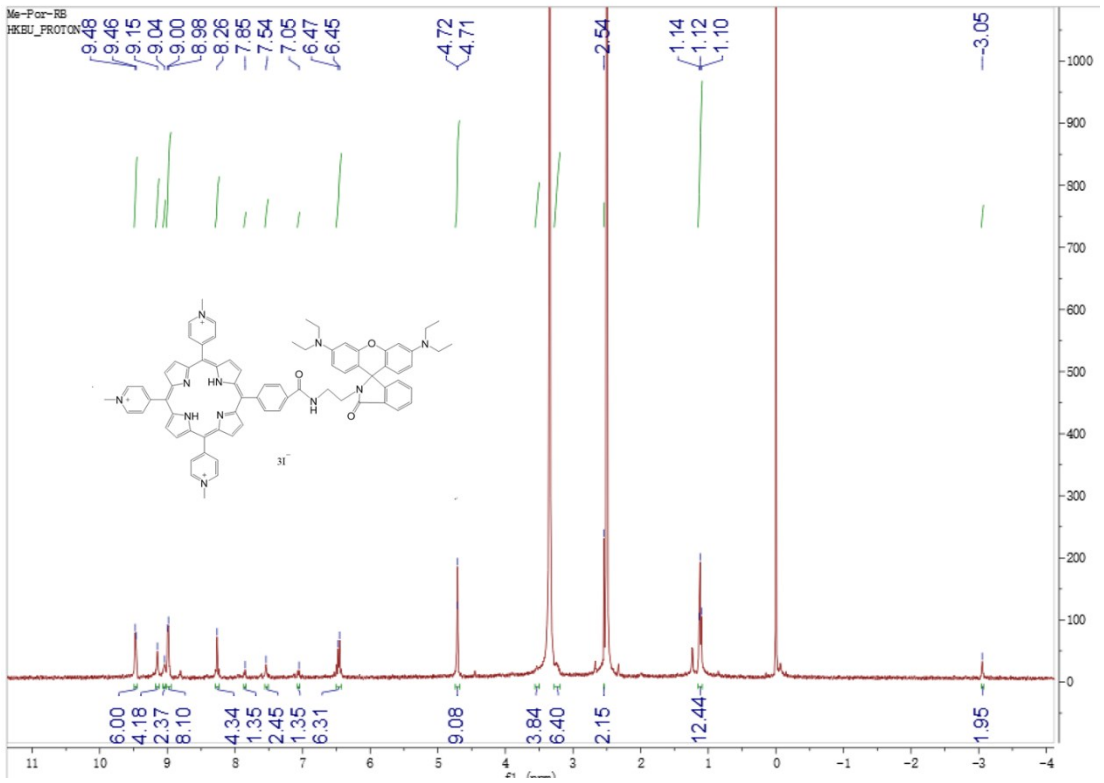

Fig. S10. ^{1}H-NMR (DMSO-d_6) spectrum of Me-Por-RB

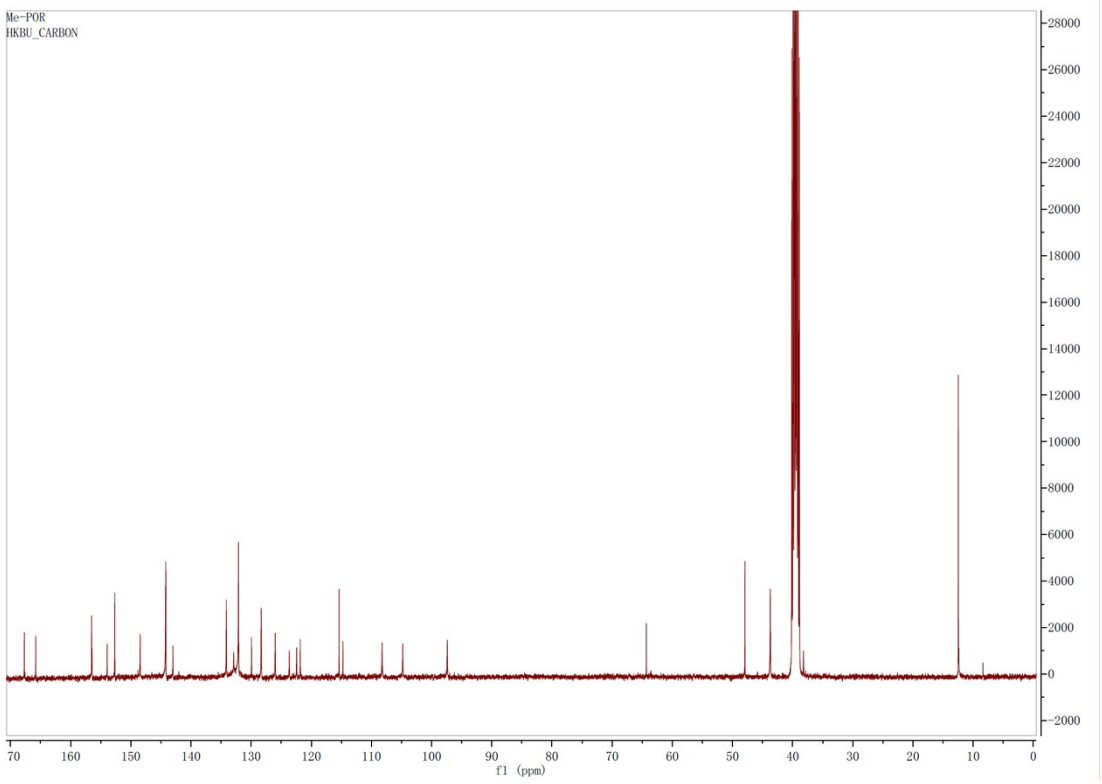

Fig.S11. ^{13}C-NMR (DMSO-d_6) spectrum of Me-Por-RB

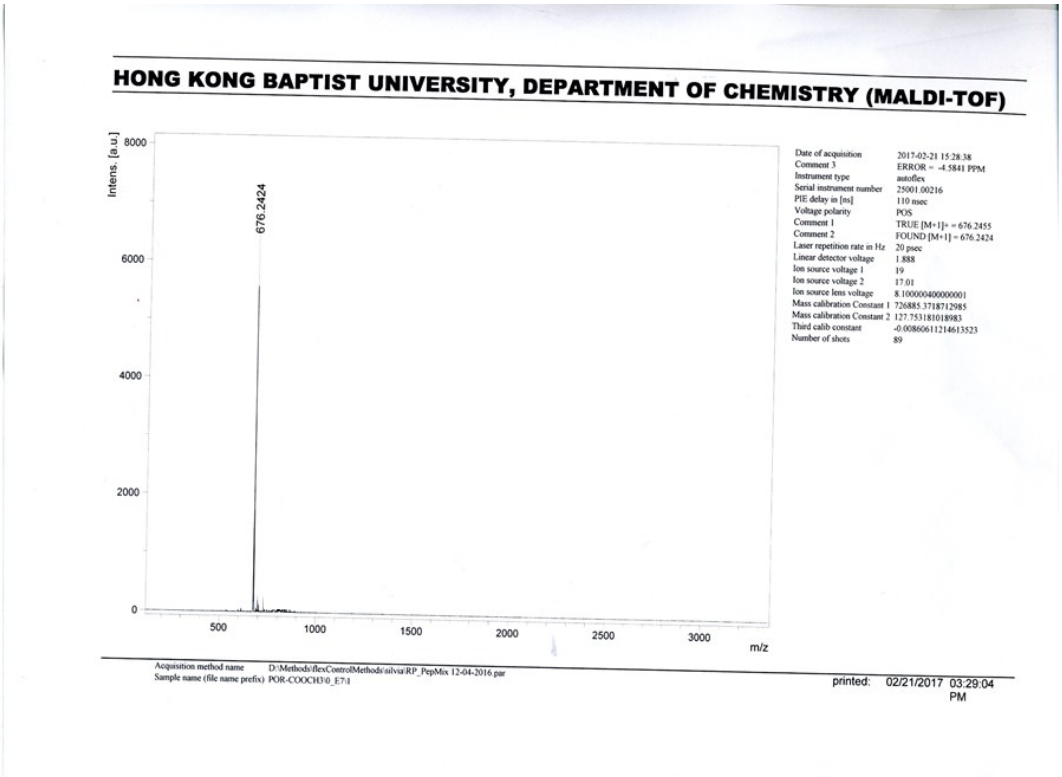

Fig. S12. MALDI-TOF spectrum of meso-5-(4′-carboxymethylphenyl)-10,15,20-tris(4′-pyridyl)porphyrin

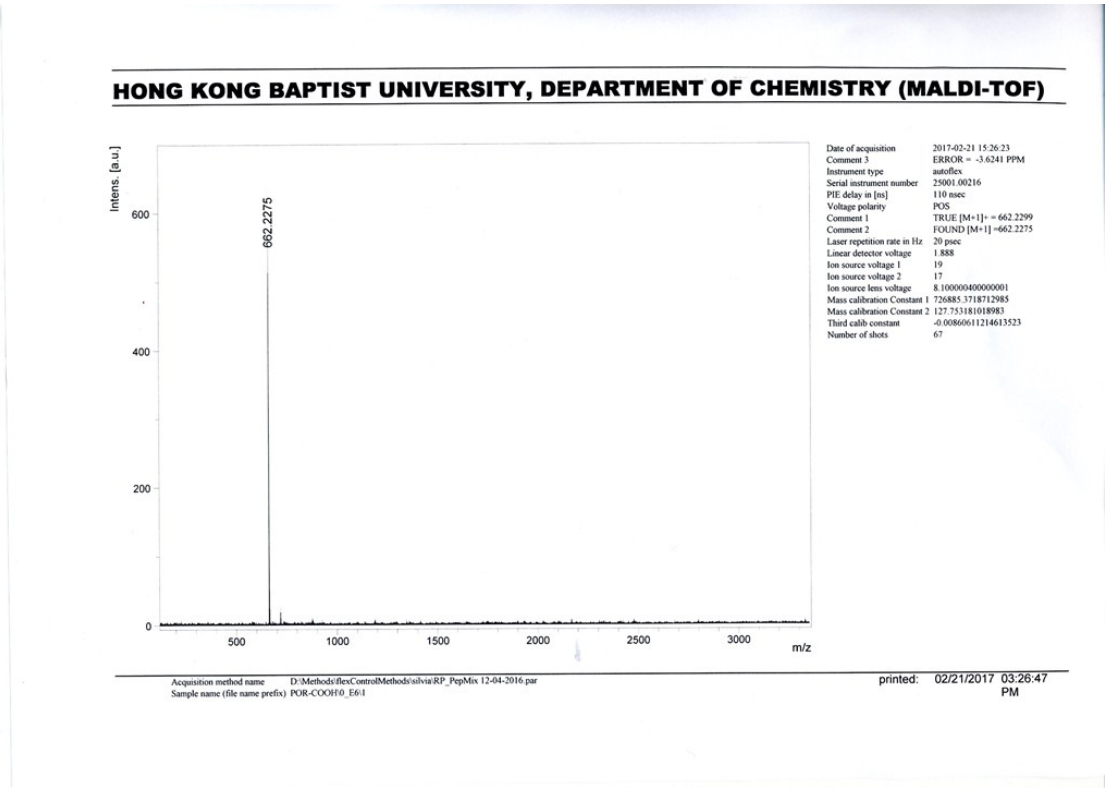

Fig. S13. MALDI-TOF spectrum of Por

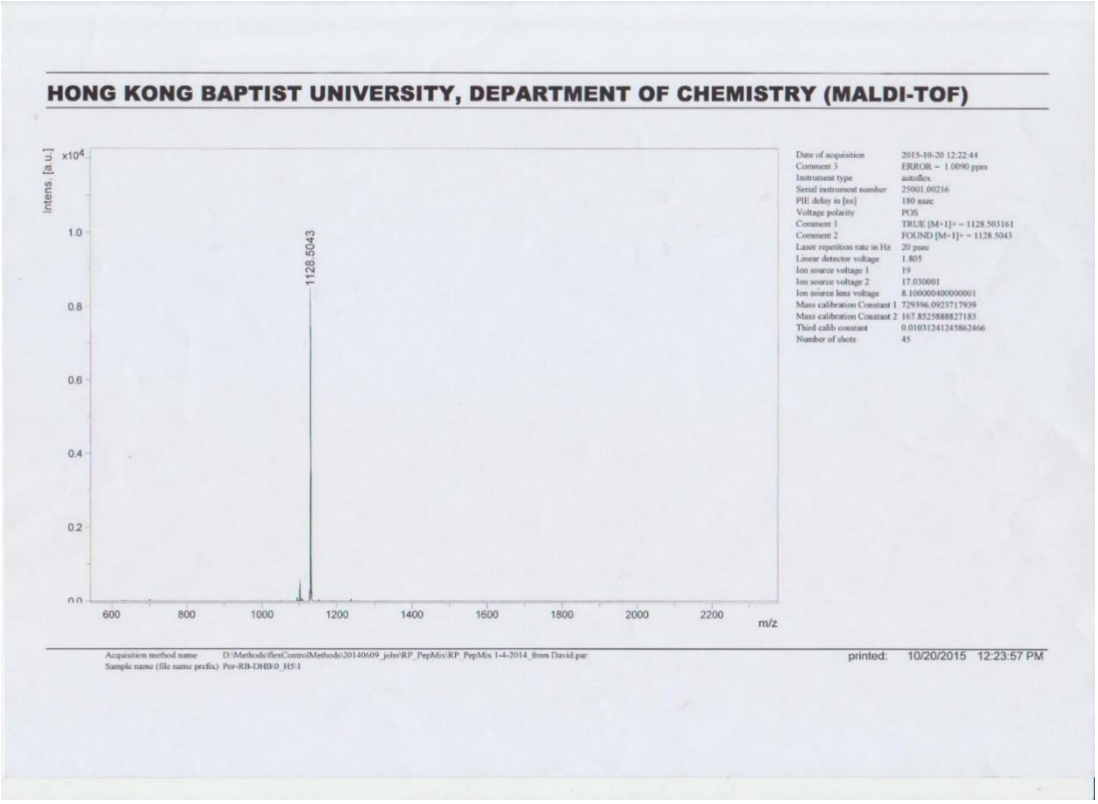

Fig. S14. MALDI-TOF spectrum of Por-RB

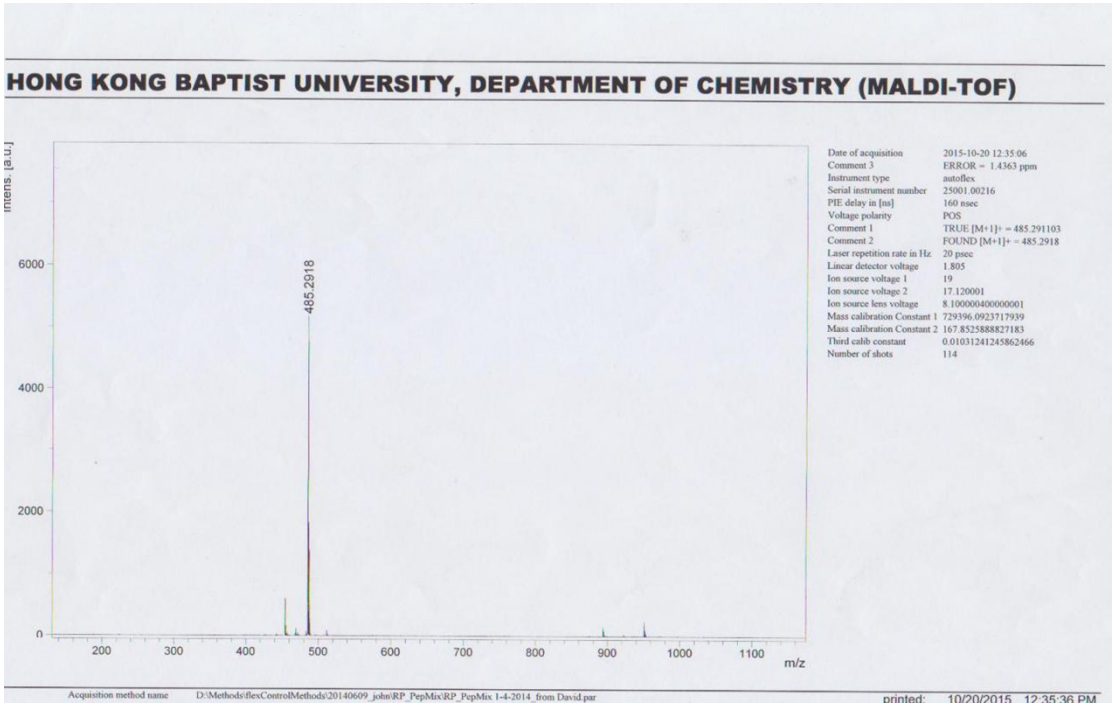

Fig.S15. MALDI-TOF spectrum of RhB-NH_2

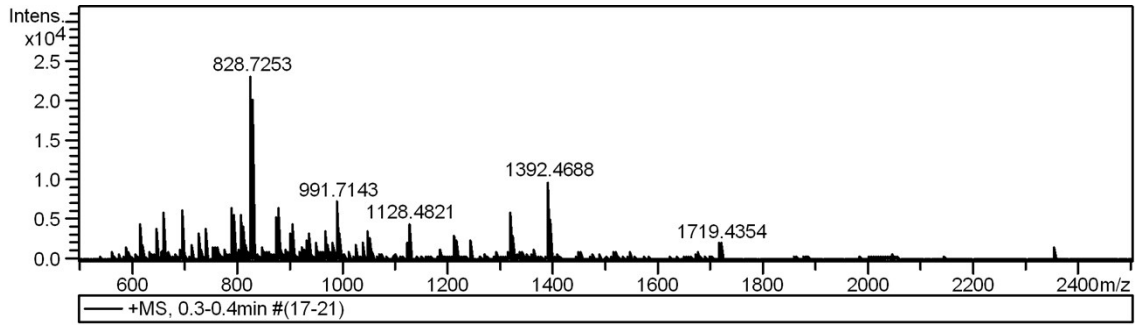

Fig. S16. ESI-MS spectrum of Pt-Por-RB

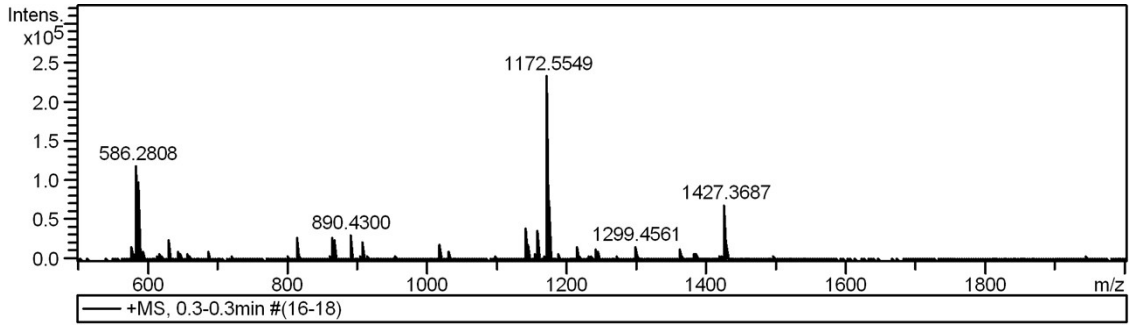

Fig.S17. ESI-MS spectrum of Me-Por-RB