

Supplementary Information for

Synthesis and Characterization of Simple Cost-Effective *Trans*-A₂BC Porphyrins with Various Donor Groups for Dye-Sensitized Solar Cells

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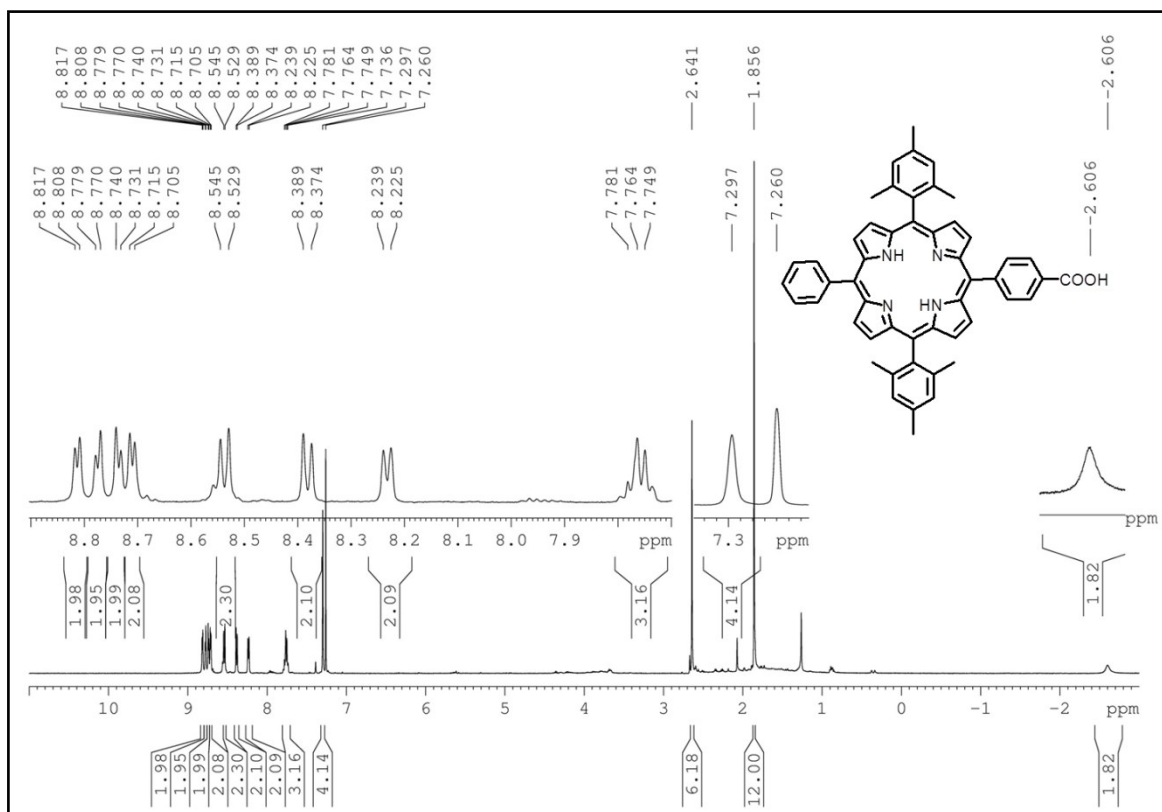


Figure S1. ¹H NMR spectrum of **2a** in CDCl₃

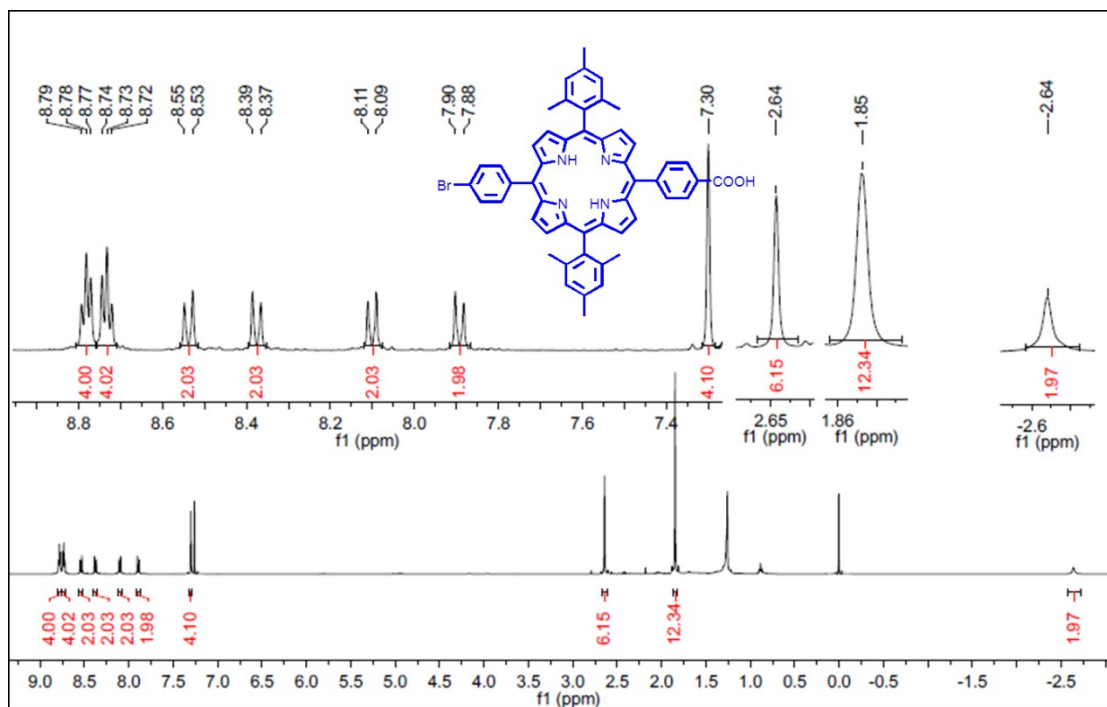


Figure S2. ¹H NMR spectrum of **2b** in CDCl₃

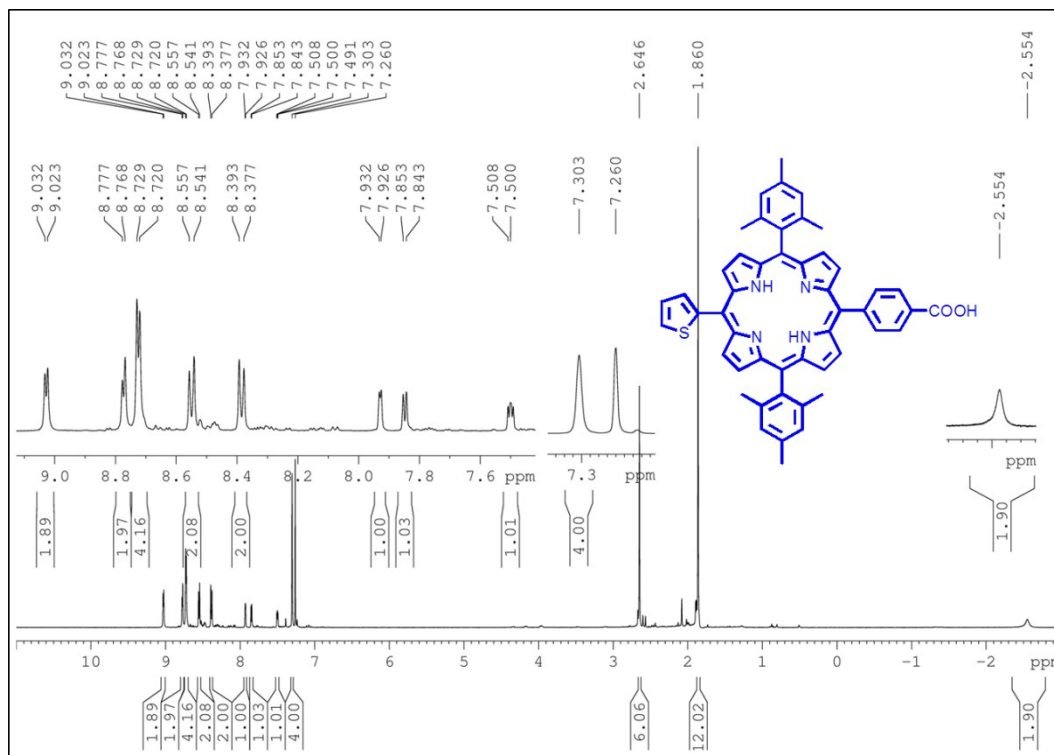


Figure S3. ¹H NMR spectrum of **2c** in CDCl₃

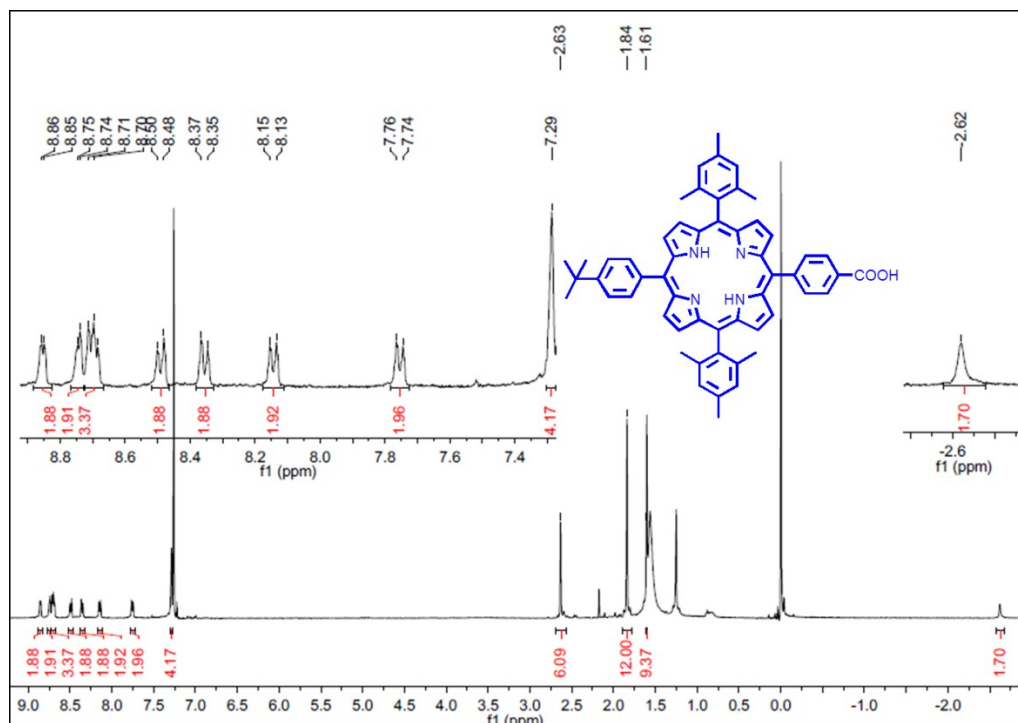


Figure S4. ¹H NMR spectrum of **2d** in CDCl₃

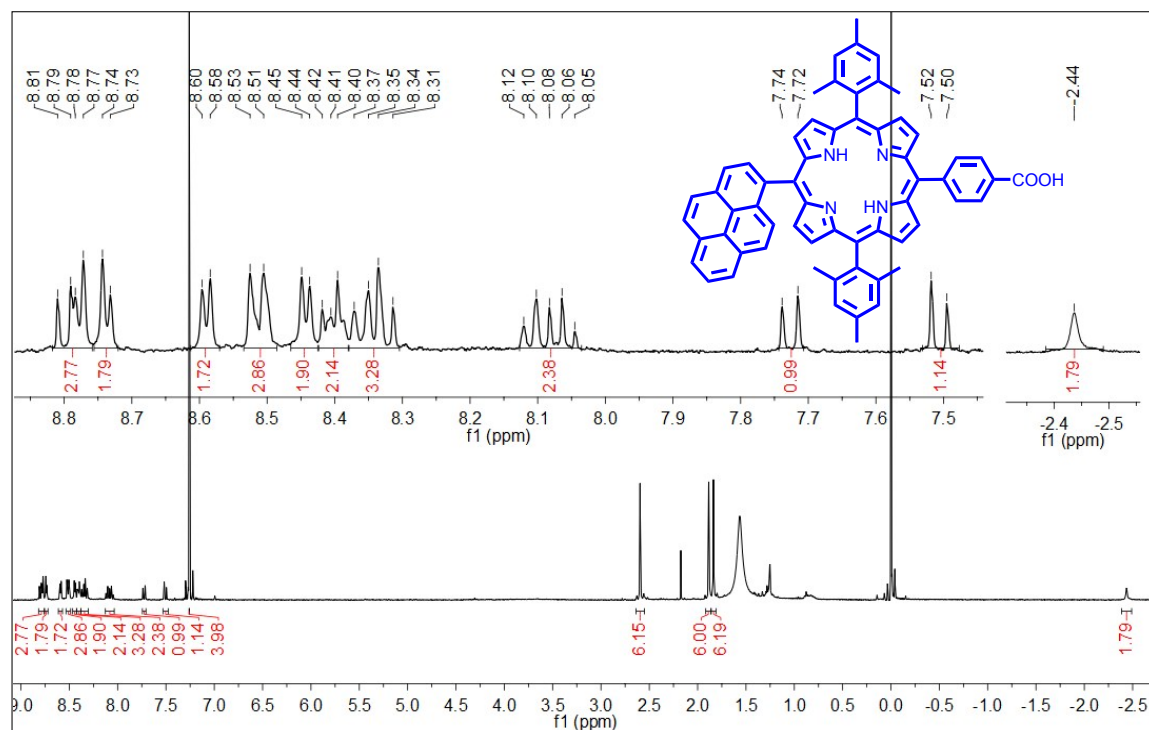


Figure S5. ¹H NMR spectrum of **2e** in CDCl₃

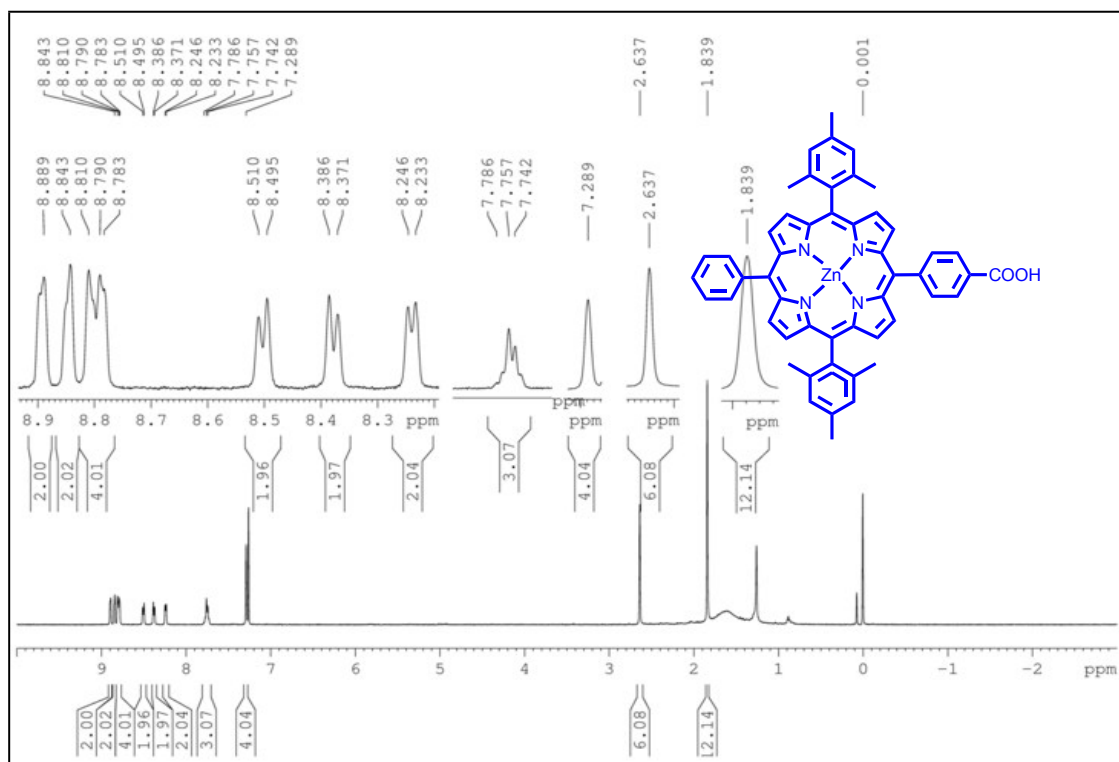


Figure S6. ^1H NMR spectrum of **3a** in CDCl_3

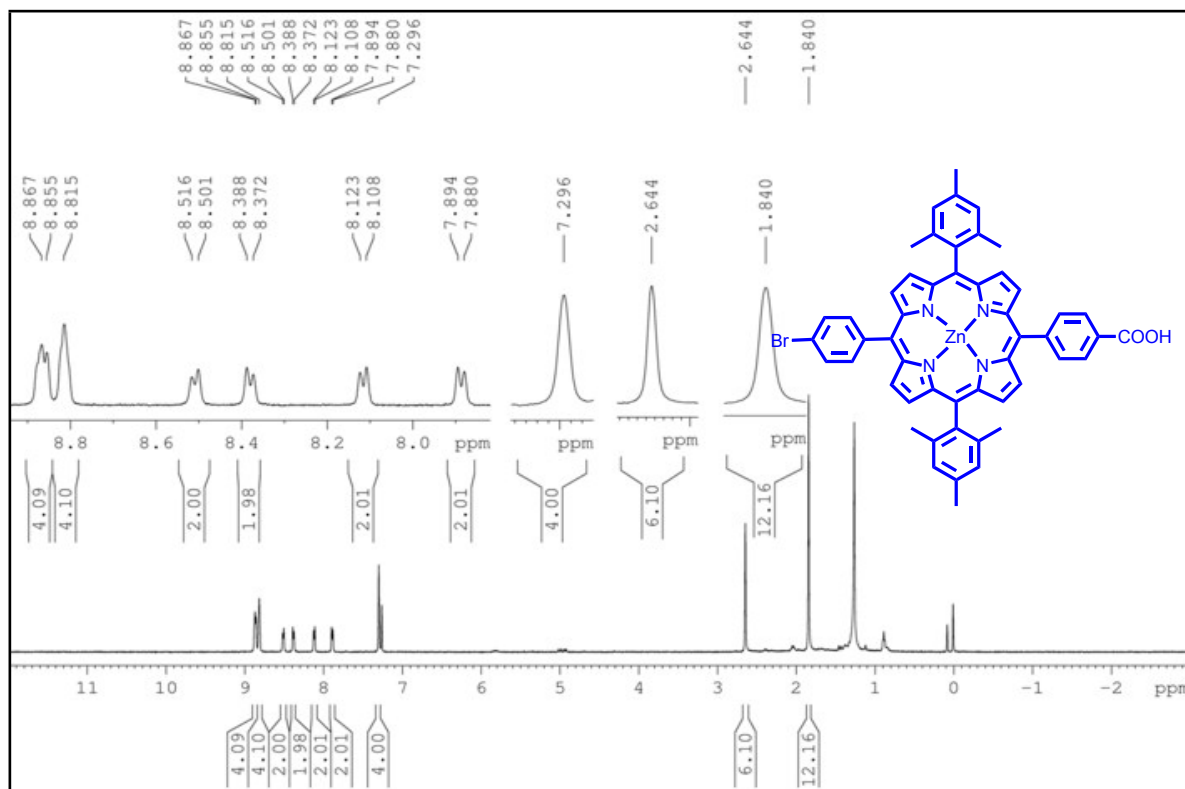


Figure S7. ^1H NMR spectrum of **3b** in CDCl_3

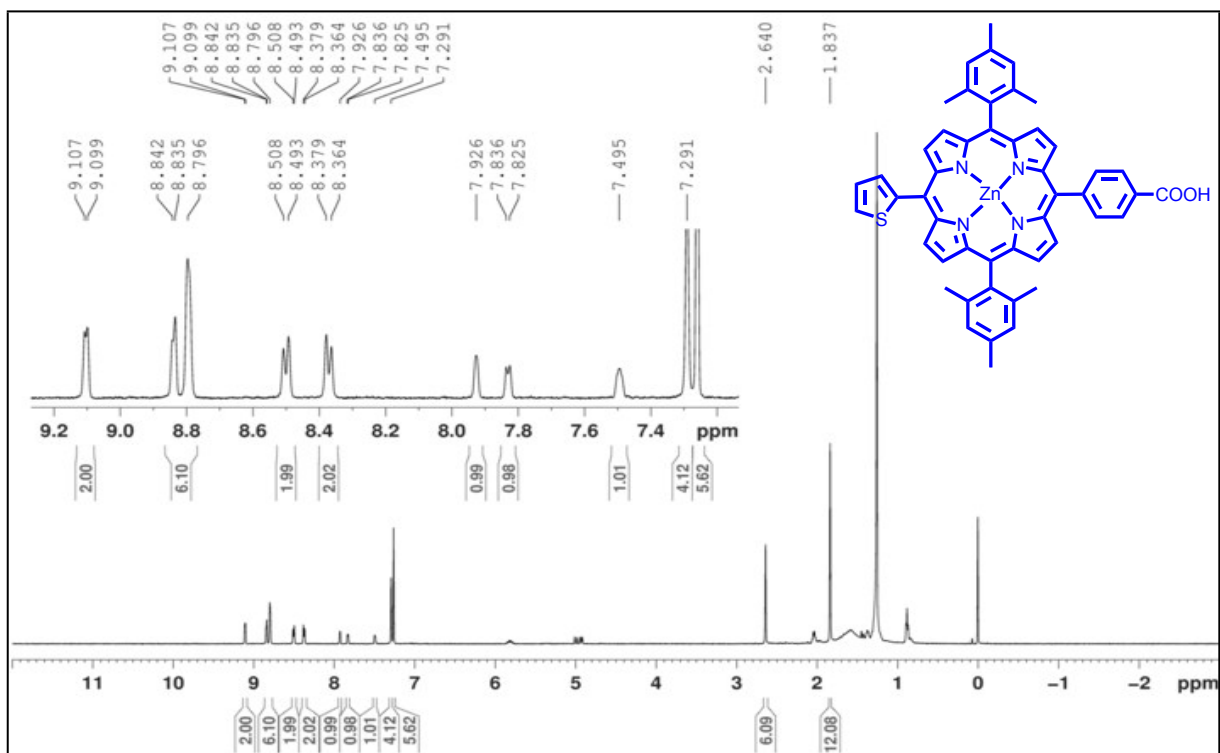


Figure S8. ¹H NMR spectrum of **3cin** in CDCl₃

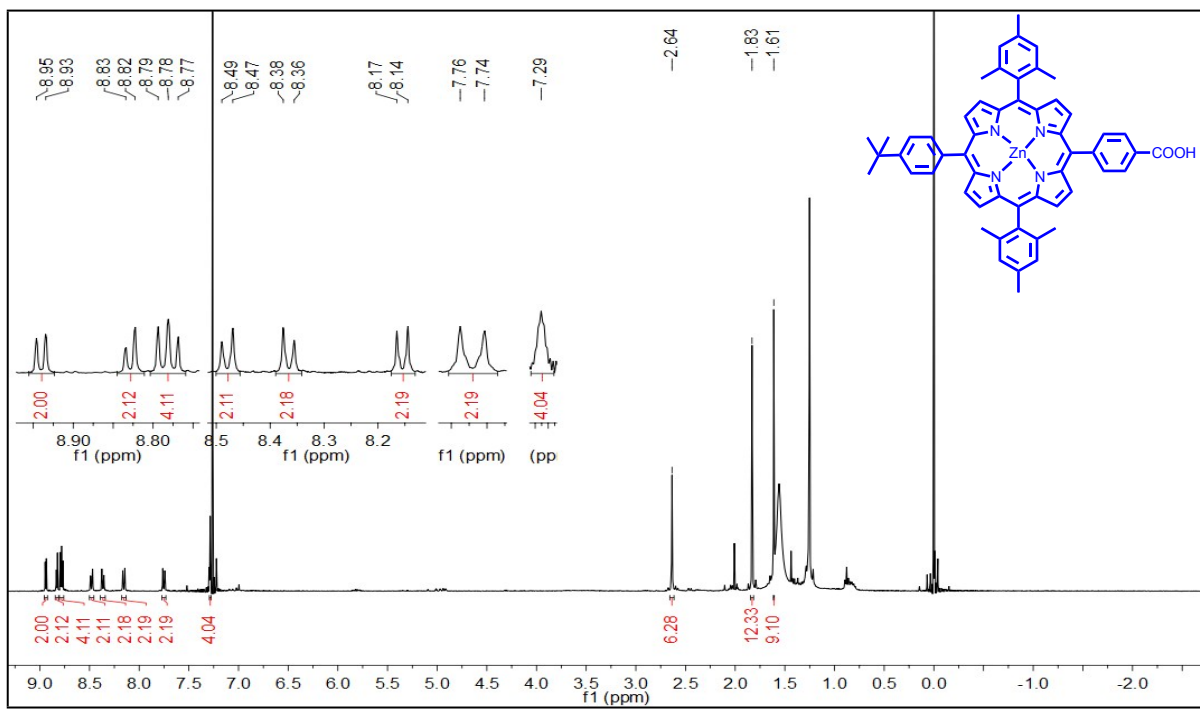


Figure S9. ¹H NMR spectrum of **3d** in CDCl₃

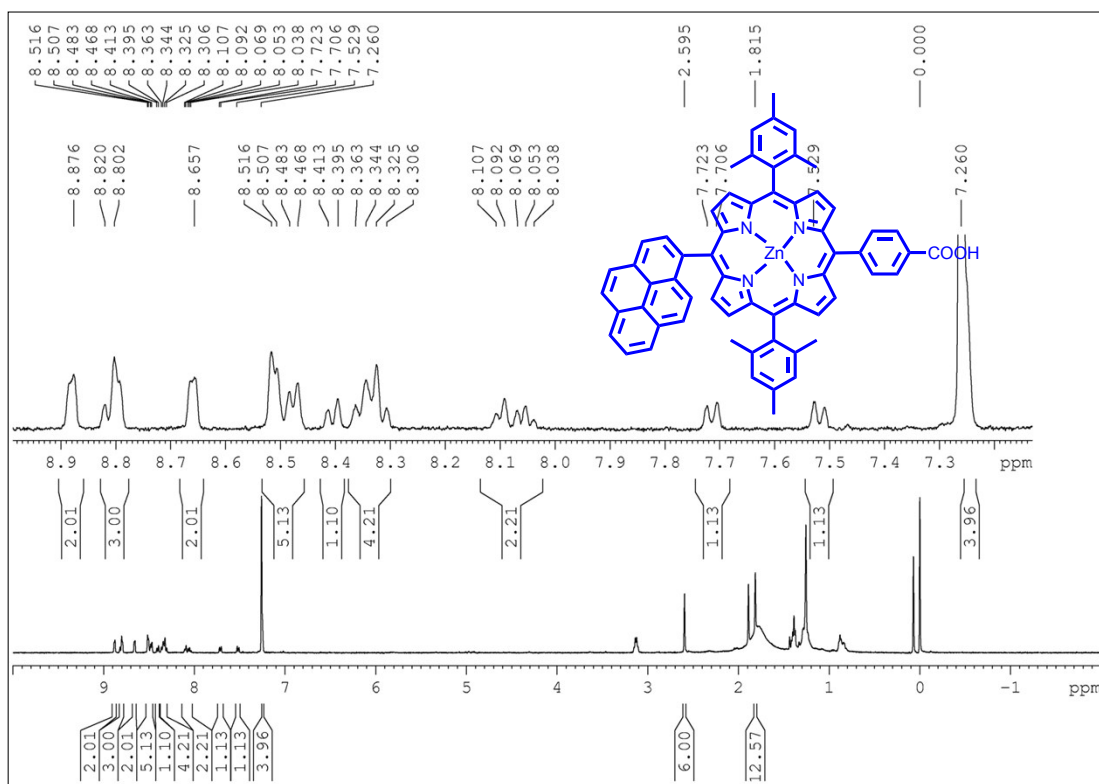


Figure S10. ^1H NMR spectrum of **3e** in CDCl_3

Comment 1
Comment 2

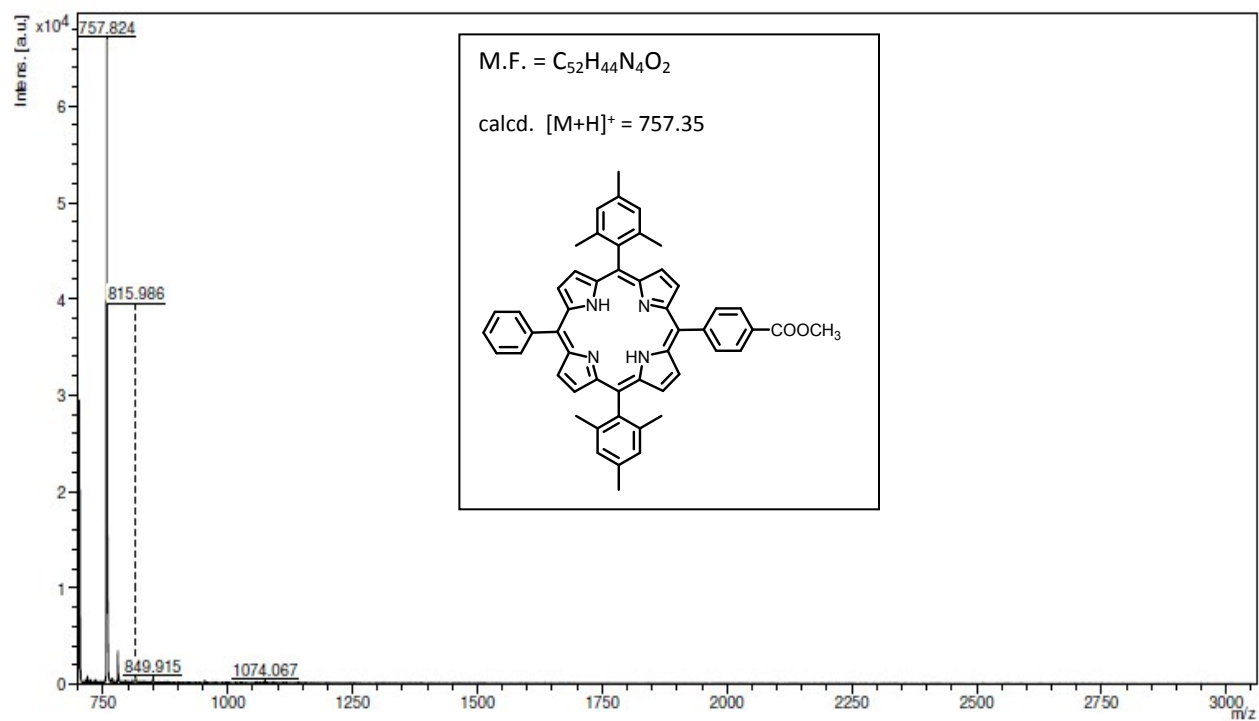


Figure S11. MALDI-TOF mass spectrum of **1a**

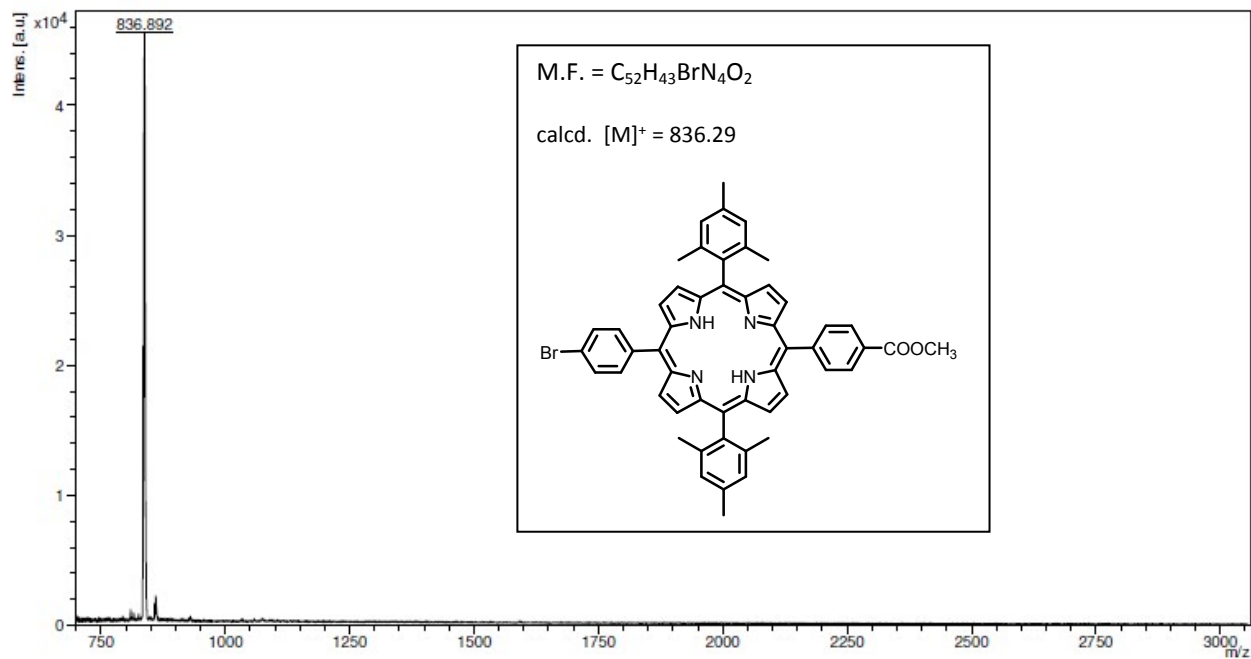


Figure S12. MALDI-TOF mass spectrum of **1b**

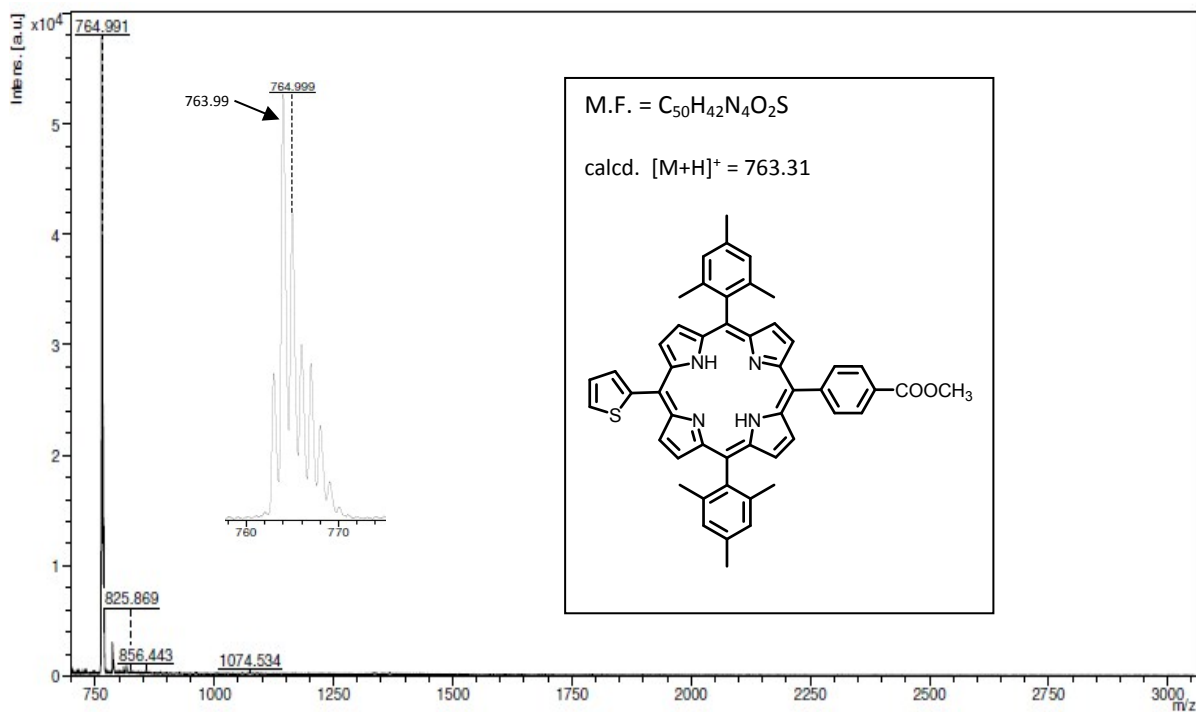


Figure S13. MALDI-TOF mass spectrum of **1c**

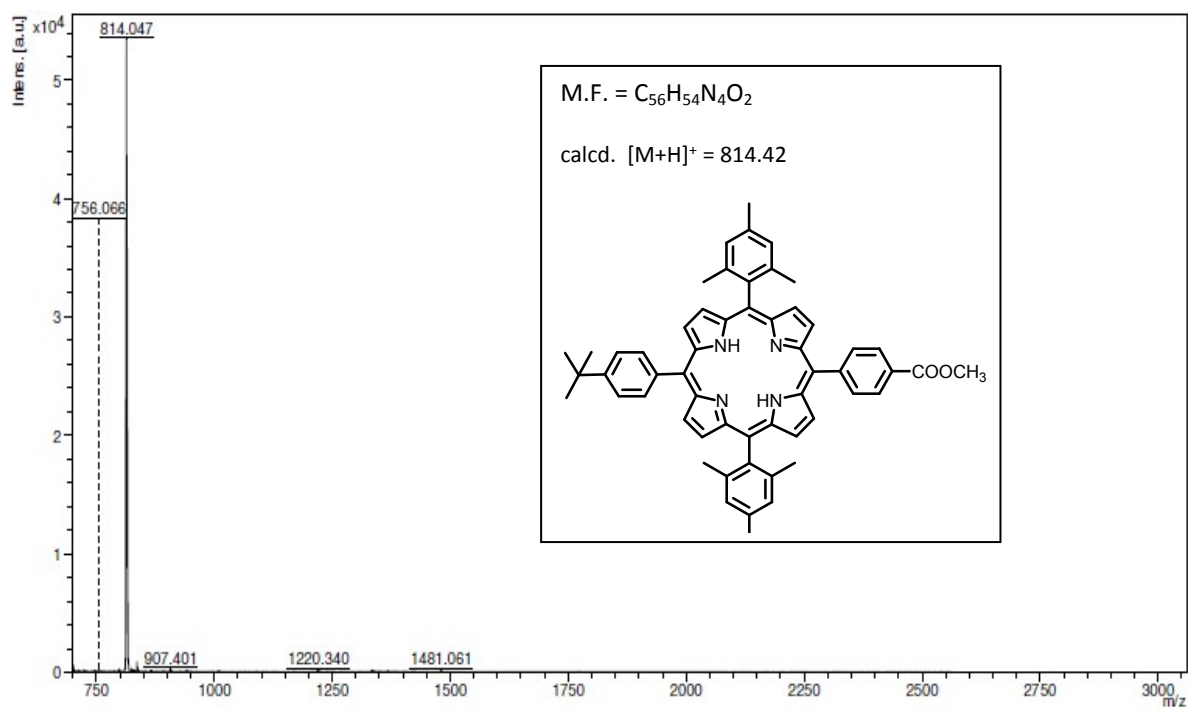


Figure S14. MALDI-TOF mass spectrum of **1d**

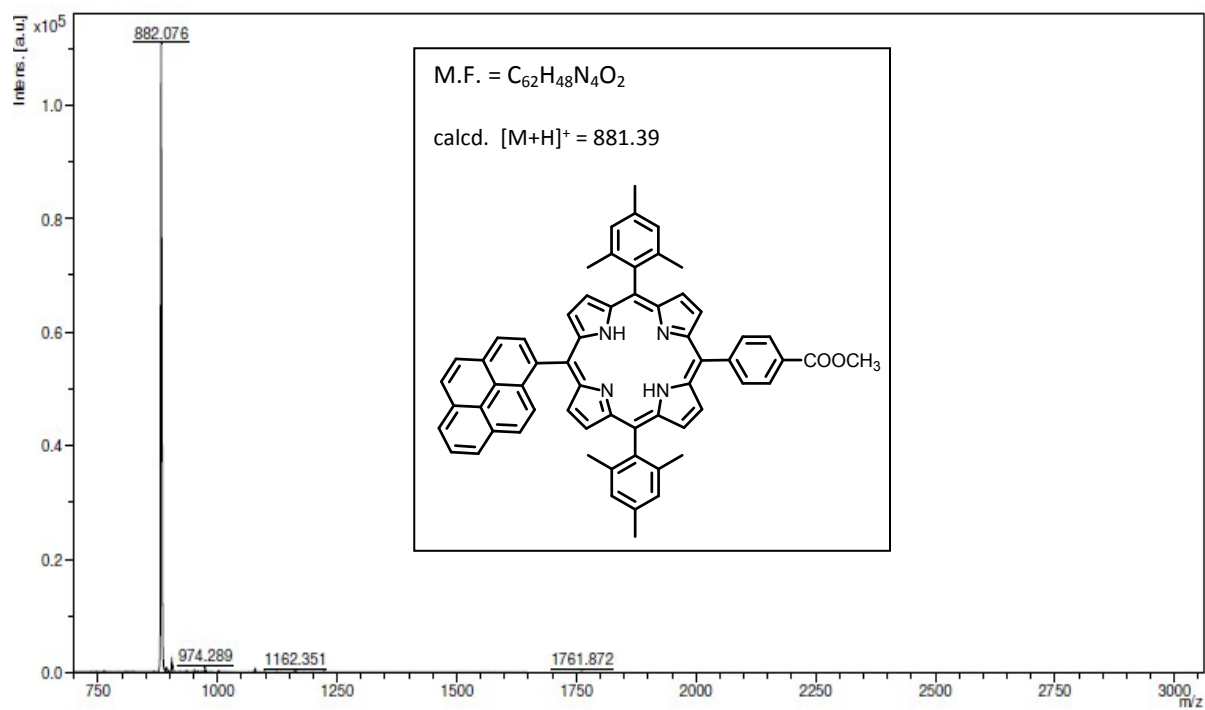


Figure S15. MALDI-TOF mass spectrum of **1e**

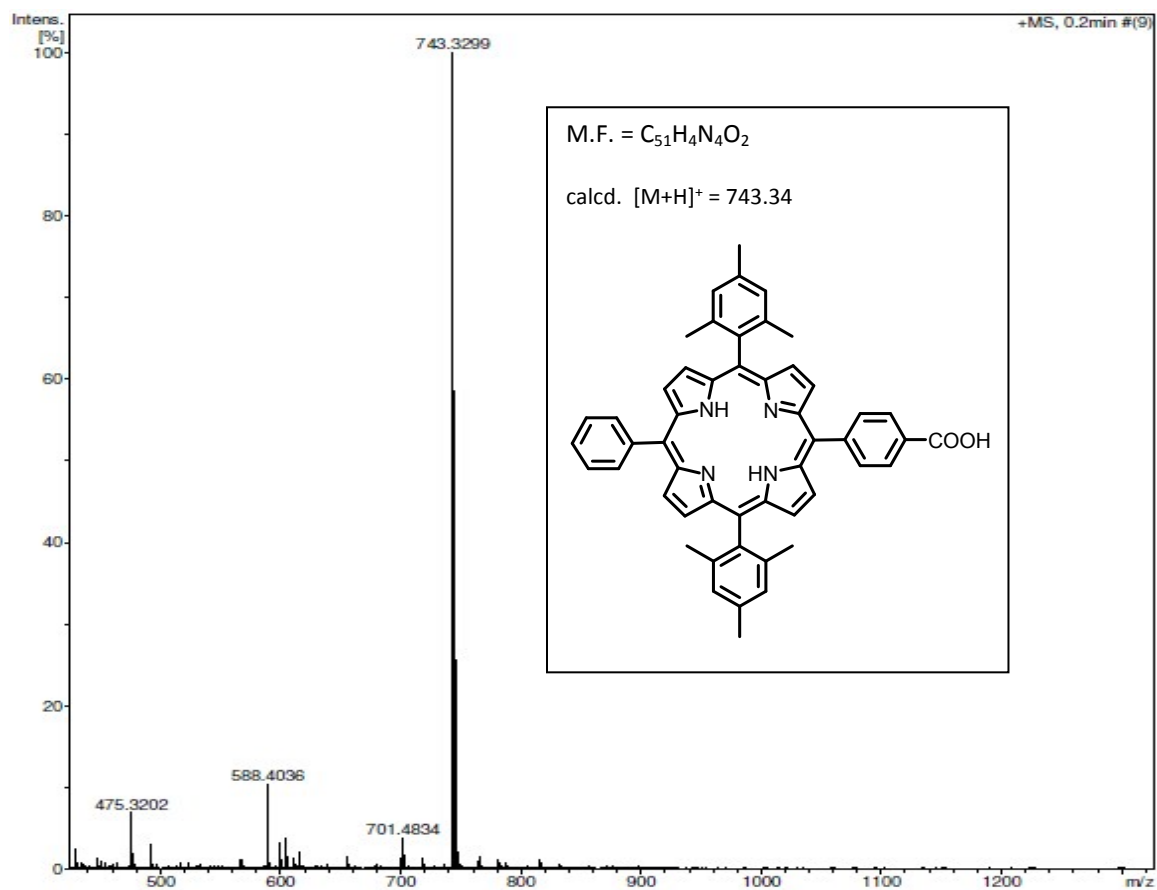


Figure S16. ESI-MS spectrum of **2a**

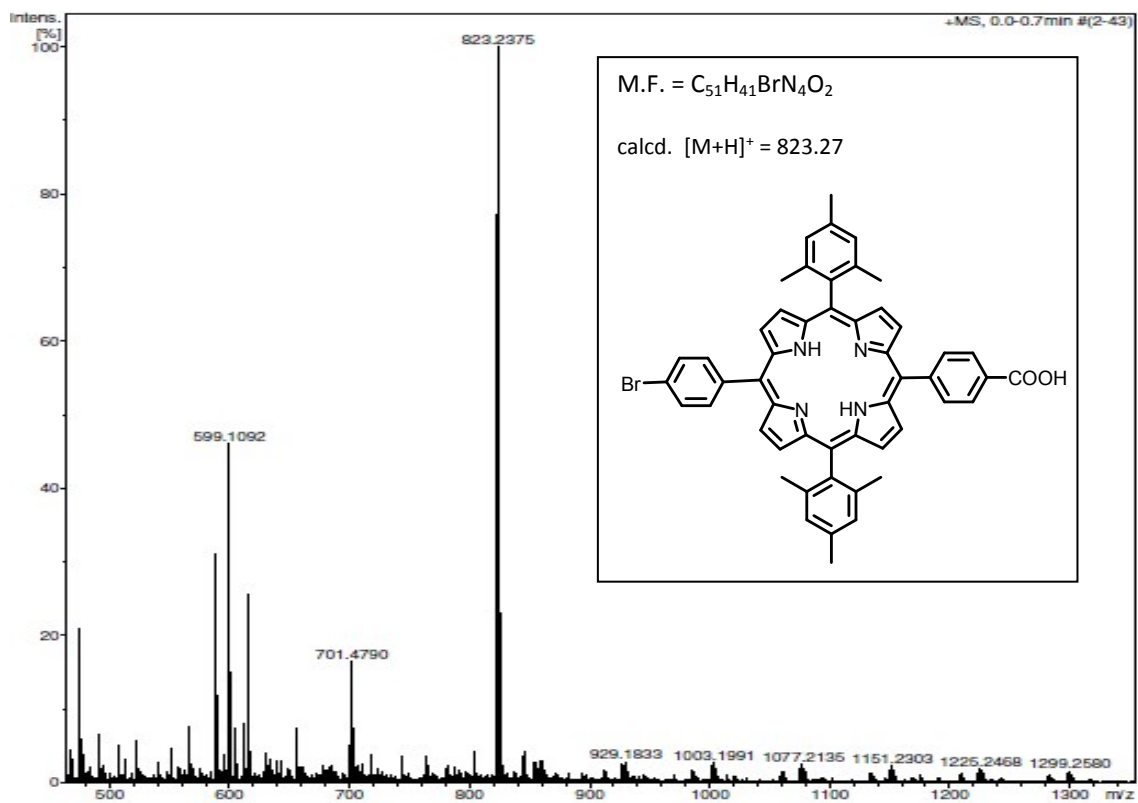


Figure S17. ESI-MS spectrum of **2b**

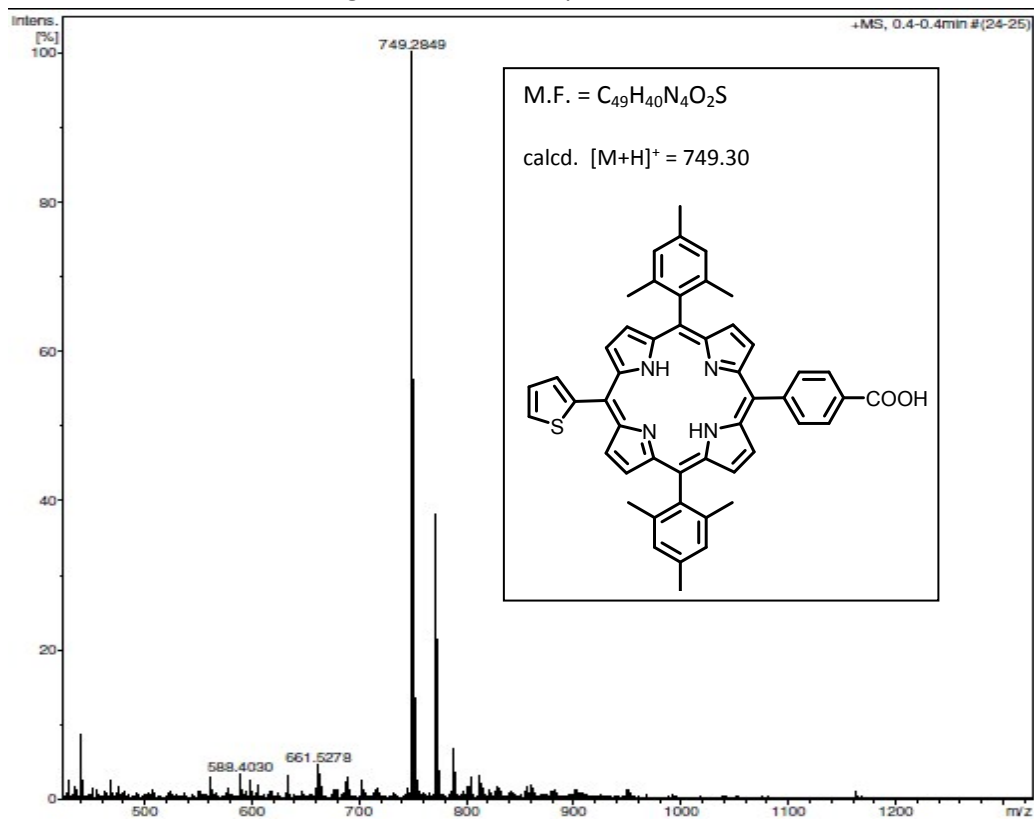


Figure S18. ESI-MS spectrum of **2c**

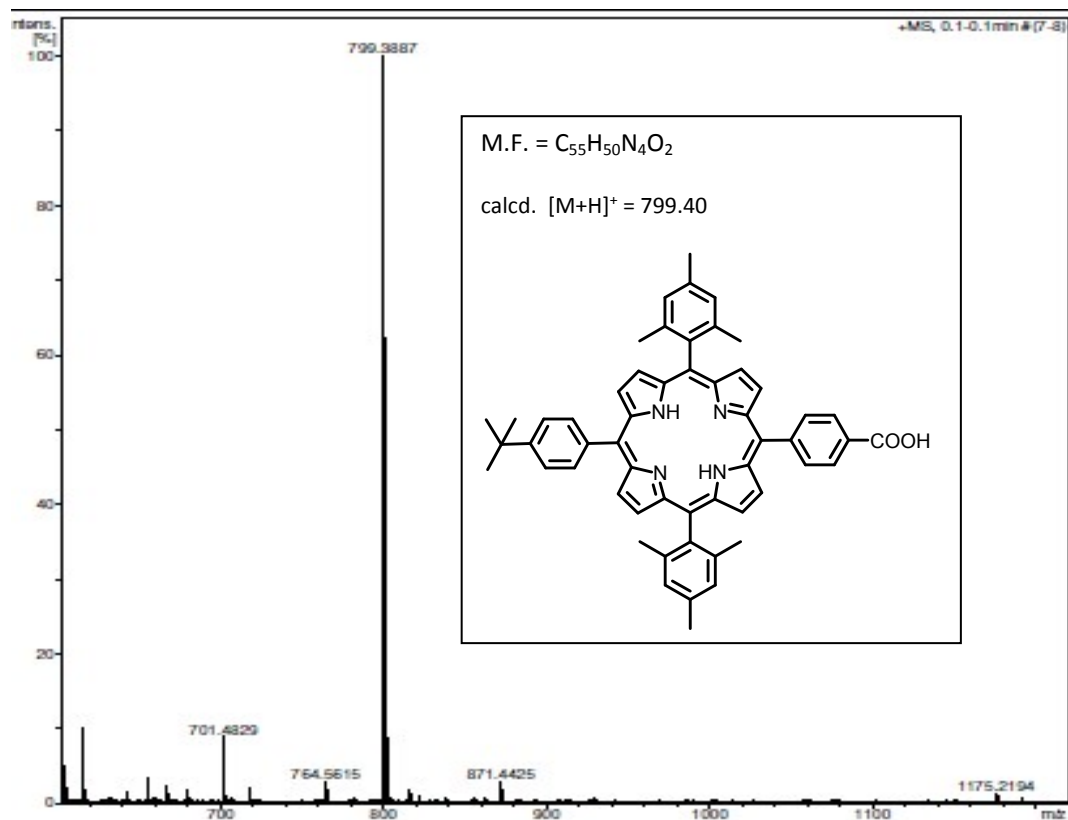


Figure S19. ESI-MS spectrum of **2d**

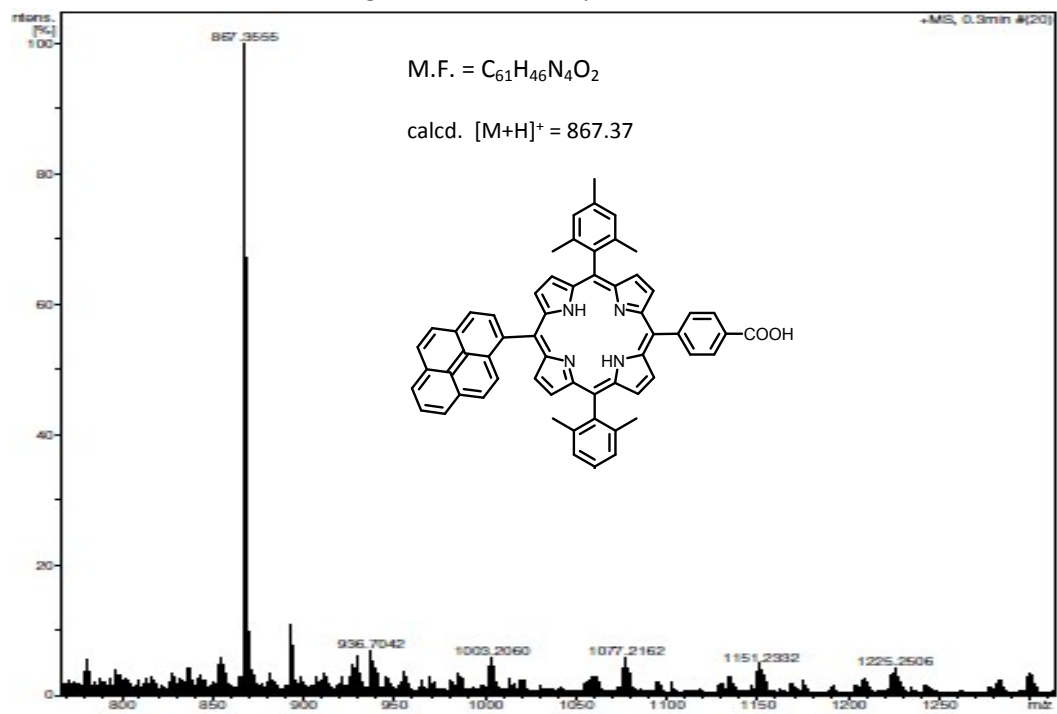


Figure S20. ESI-MS spectrum of **2e**

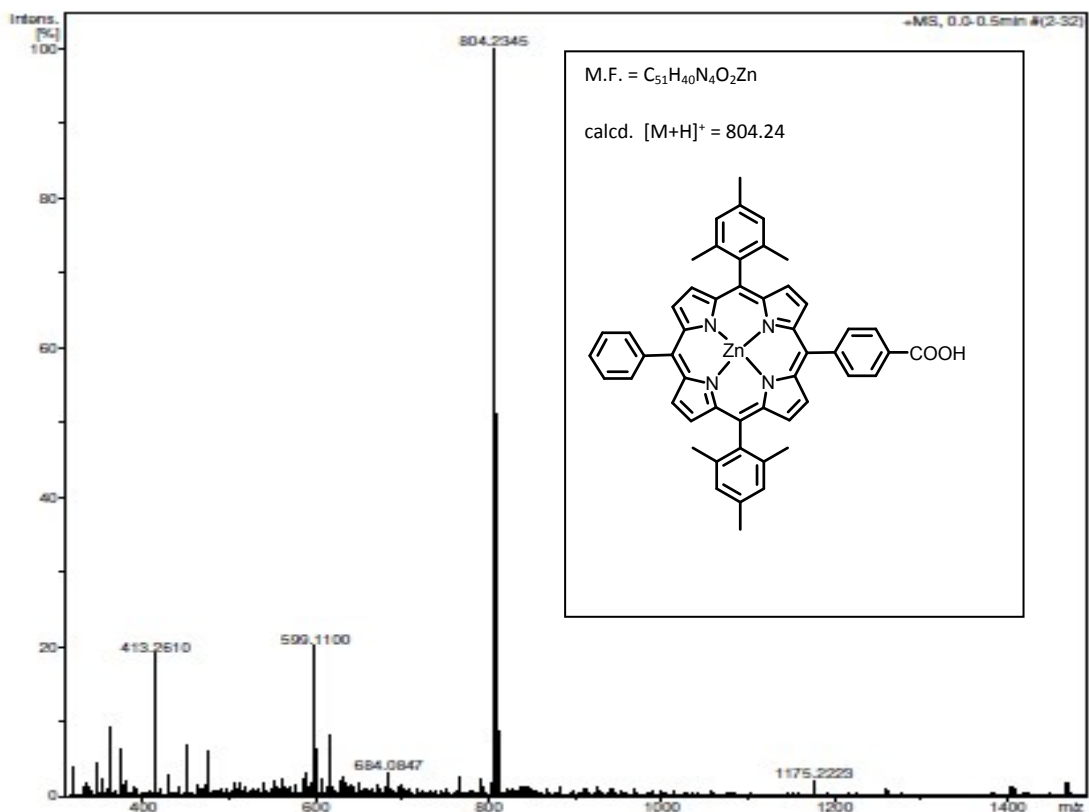


Figure S21. ESI-MS spectrum of **3a**

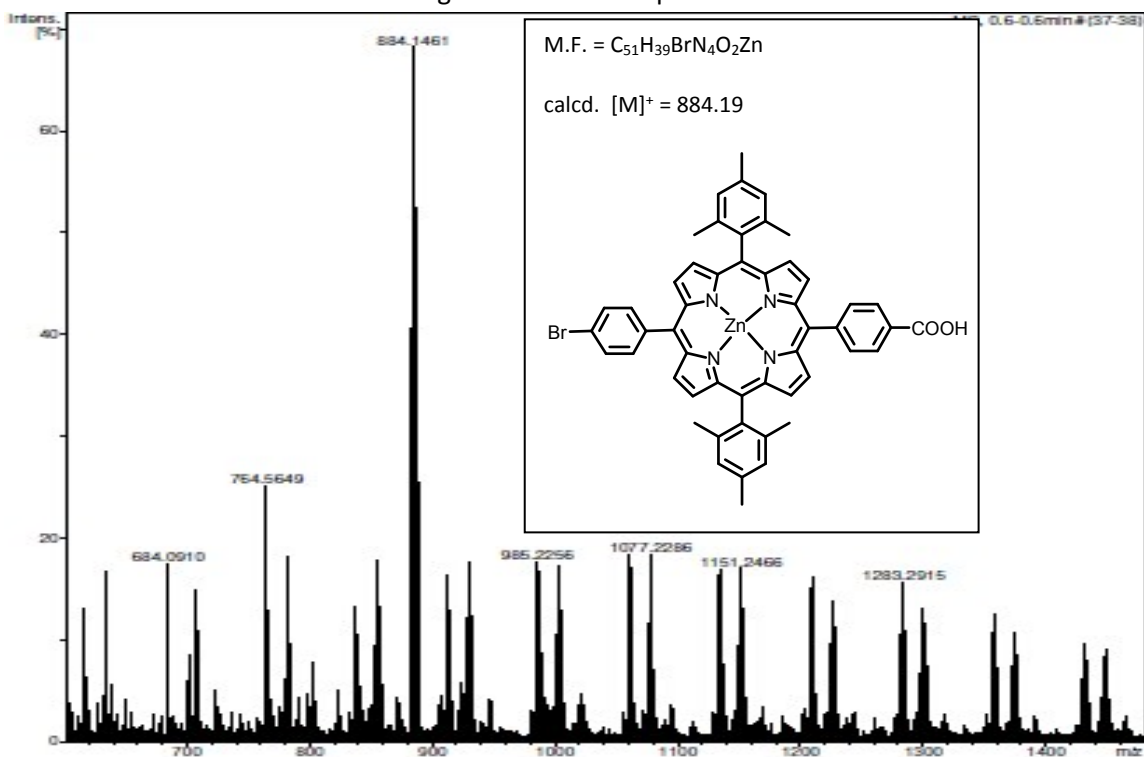


Figure S22. ESI-MS spectrum of **3b**

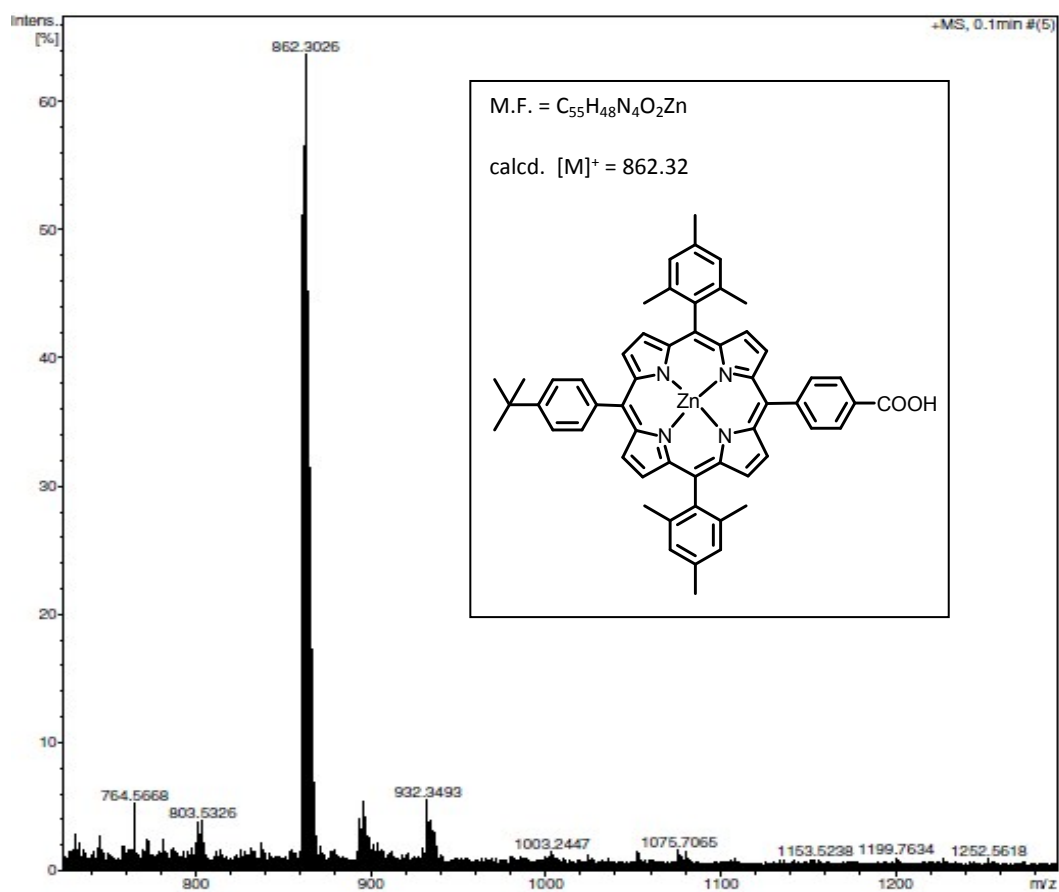


Figure S23. ESI-MS spectrum of **3d**

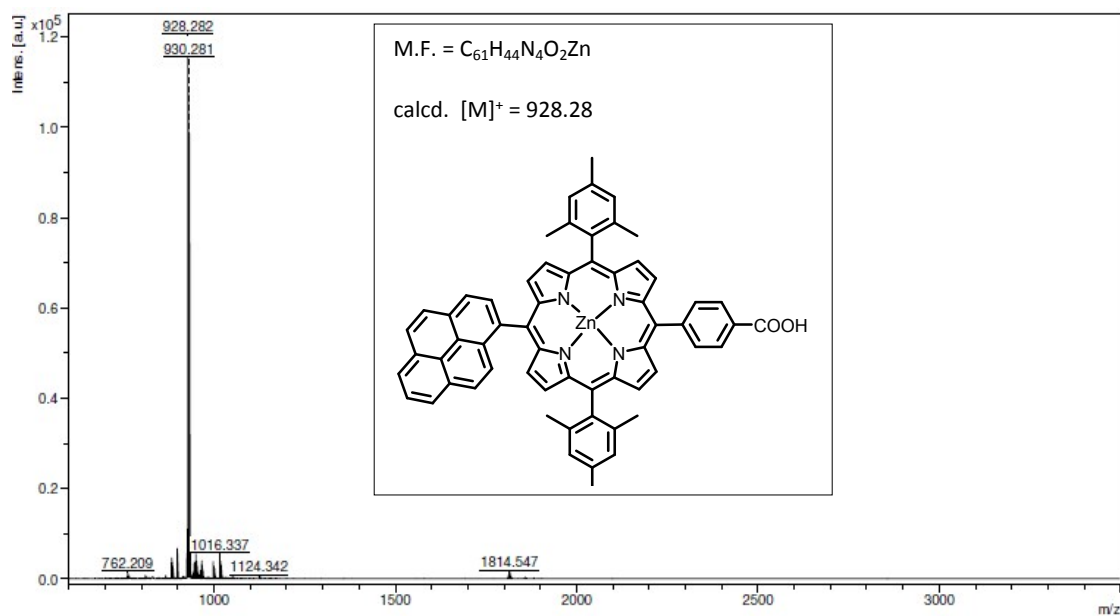
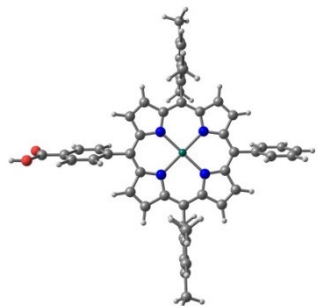
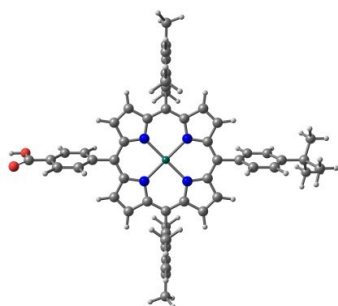


Figure S24. MALDI-TOF mass spectrum of **3e**

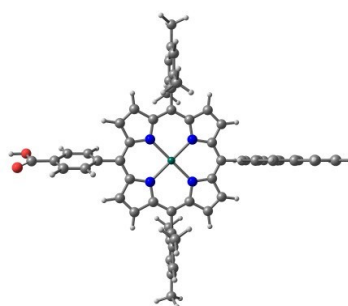
RA-191-Zn
Optimized Geometry



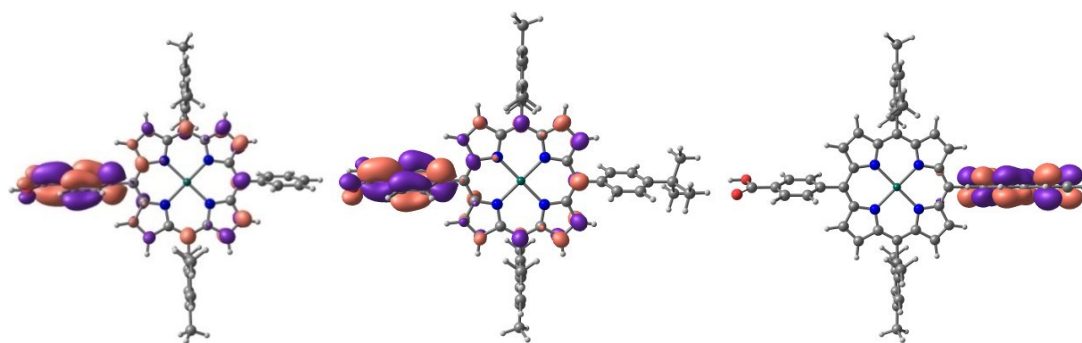
RA-194-Zn



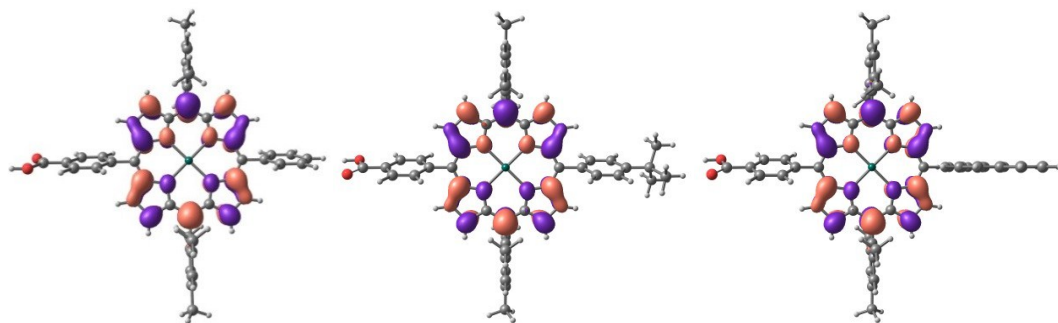
RA-195-Zn



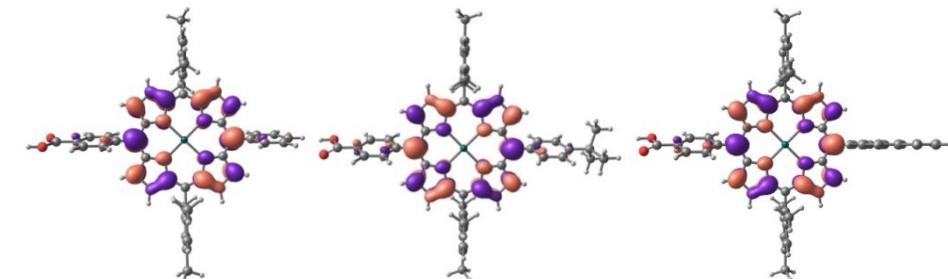
LUMO+2



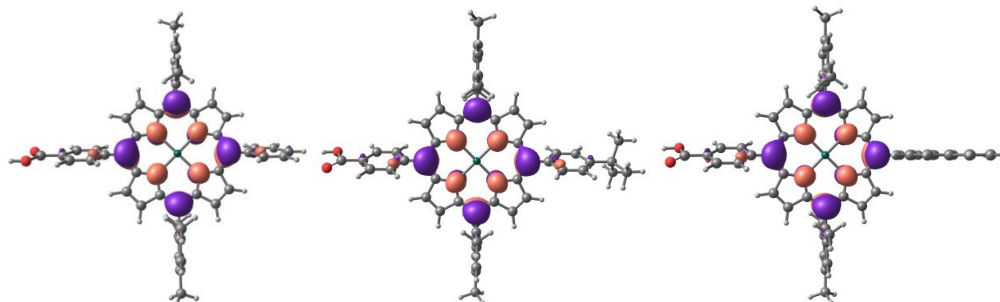
LUMO+1



LUMO



HOMO



HOMO+1

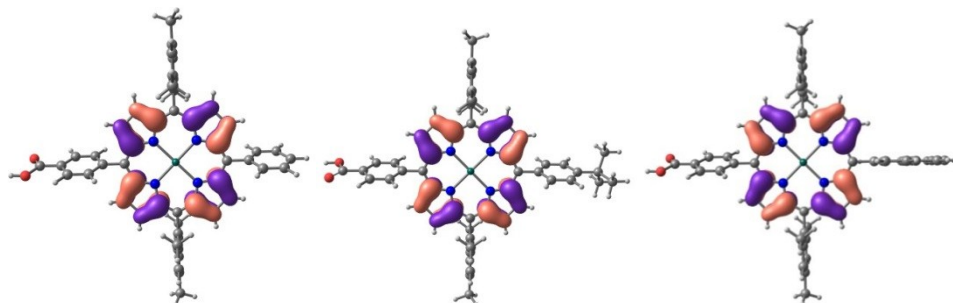
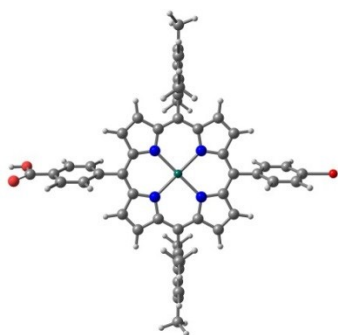
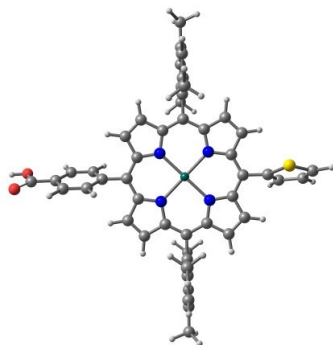


Figure S25. Frontier Molecular Orbitals (FMOs) of **RA-191-Zn**, **RA-194-Zn** and **RA-195-Zn** dyes with their optimized geometries using B3LYP/LANL2DZ basis set.

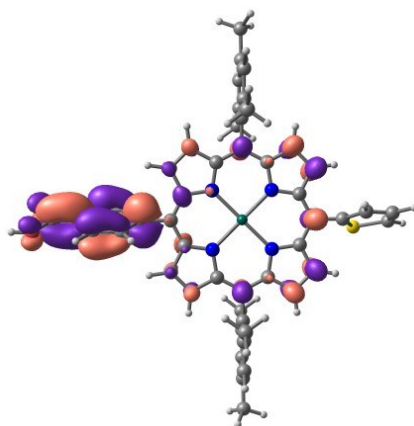
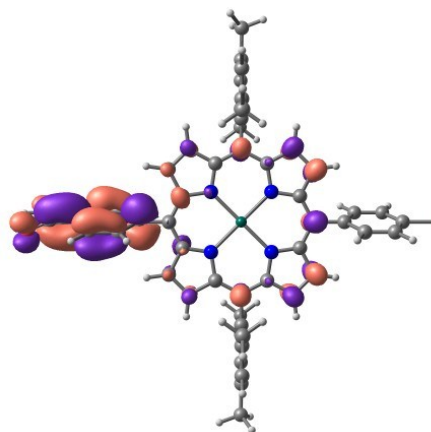
RA-192-Zn
Optimized Geometry



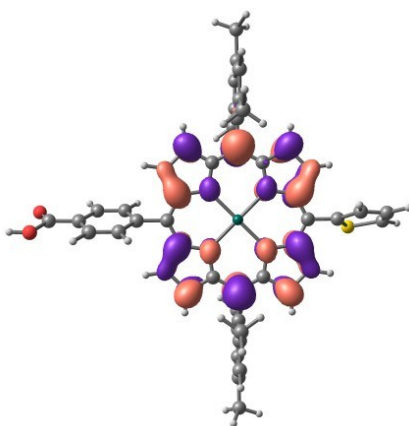
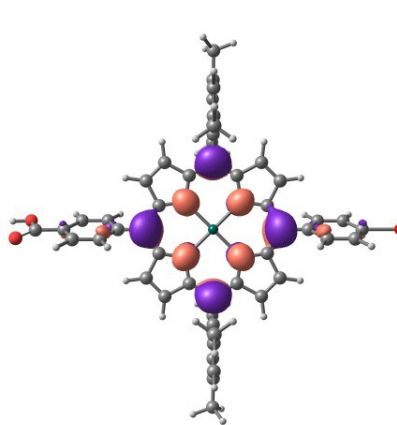
RA-193-Zn



LUMO+2



LUMO+1



LUMO

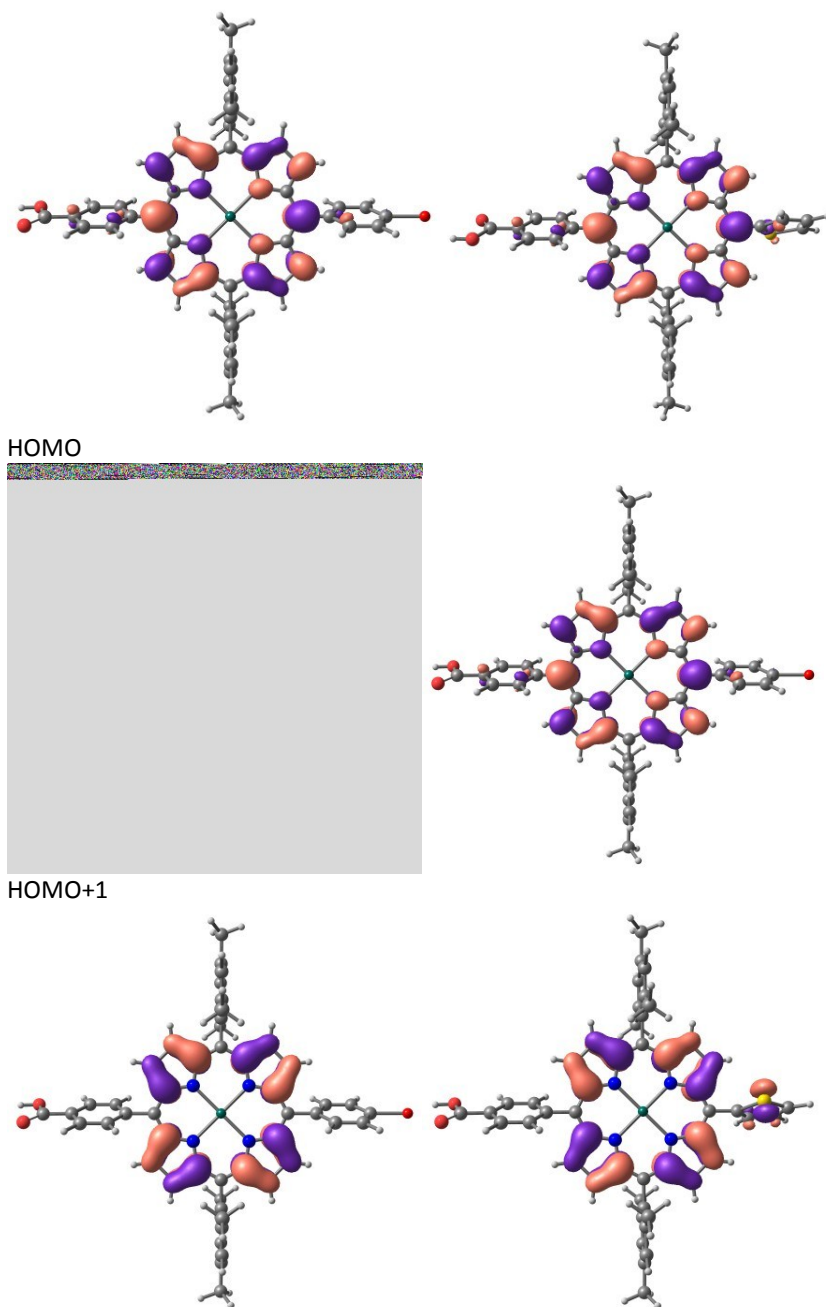


Figure S26. Frontier Molecular Orbitals (FMOs) of **RA-192-Zn** and **RA-193-Zn** dyes with their optimized geometries using B3LYP/LANL2DZ basis set.