Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

The study of perylene diimide-amino acids derivatives on fluorescent detecting of anions

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Section 1 ^{1}H NMR and ^{13}C NMR spectra of the H_2PDIAAs

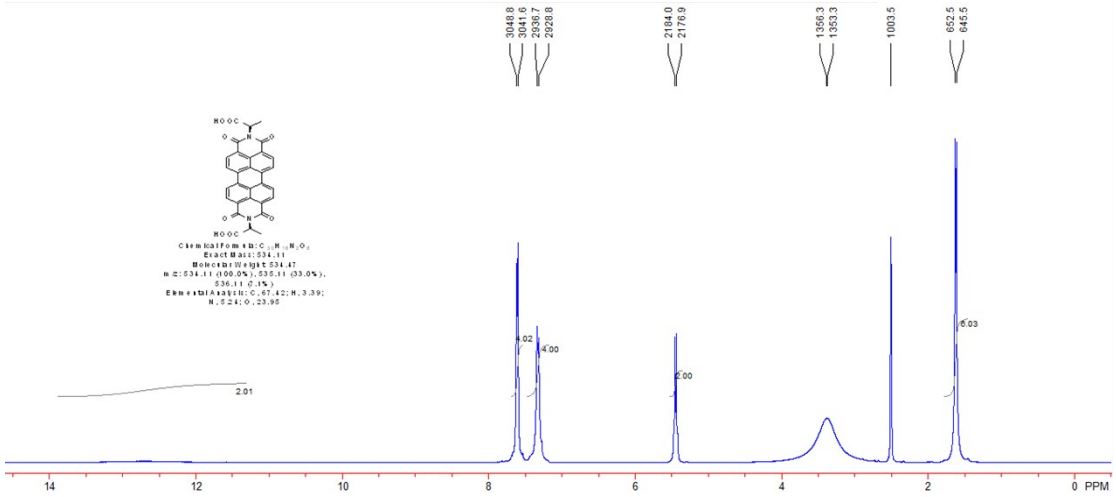


Fig.S1 Spectra of the **H_2PDIAla** in DMSO-d^6 solution.

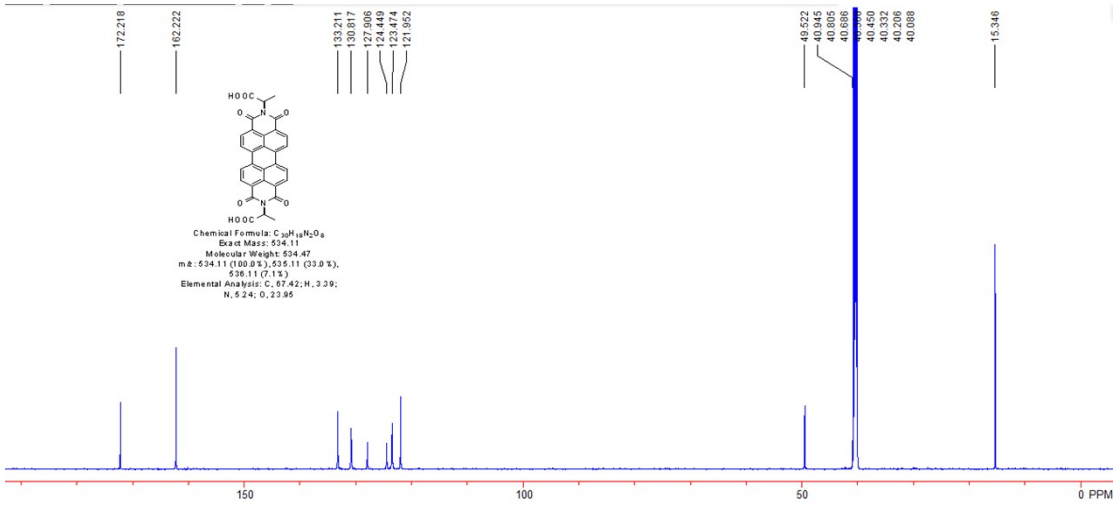


Fig.S2^{13}C NMR spectra of the **H_2PDIAla** in DMSO-d^6 solution.

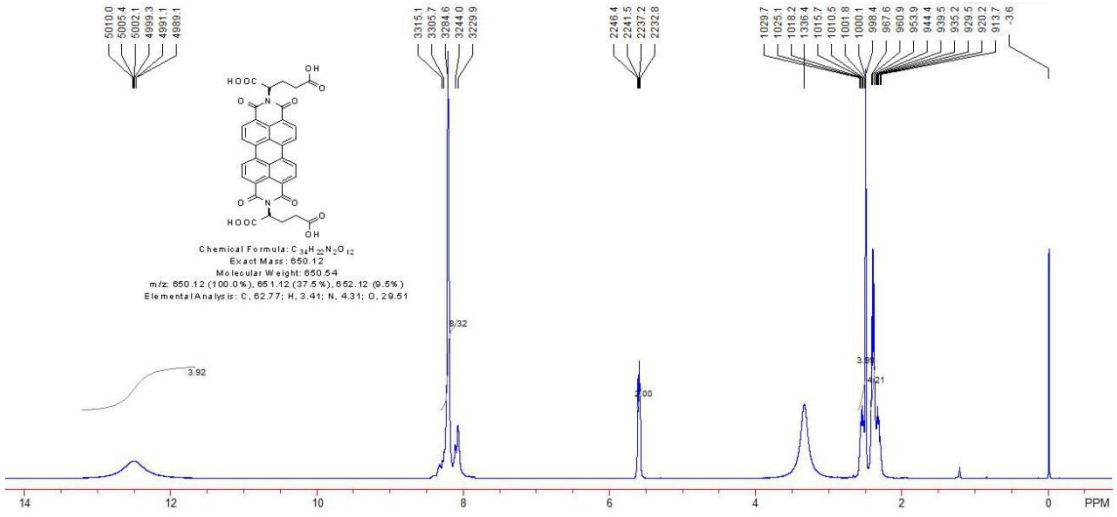


Fig.S3 ^{1}H NMR spectra of the **H_2PDIGlu** in DMSO-*d*^{6} solution.

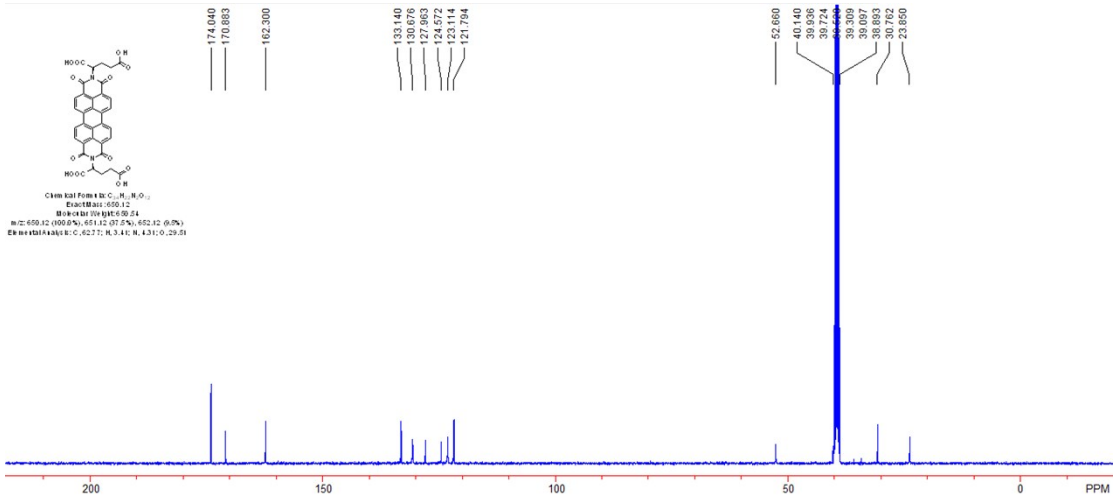


Fig.S4 ^{13}C NMR spectra of the **H_2PDIGlu** in DMSO-*d*^{6} solution.

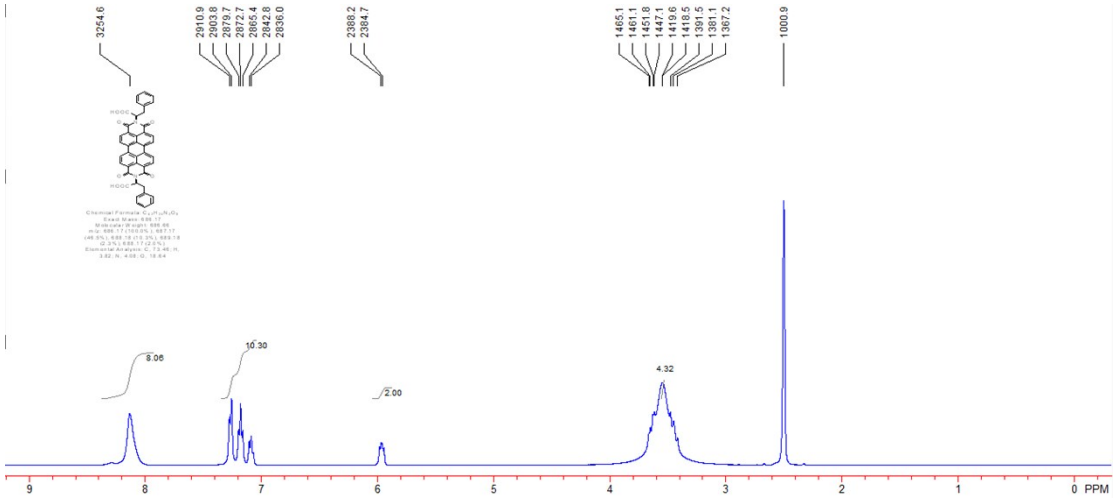


Fig.S5[1]H NMR spectra of the **H_2PDIPhe** in DMSO-d^6 solution.

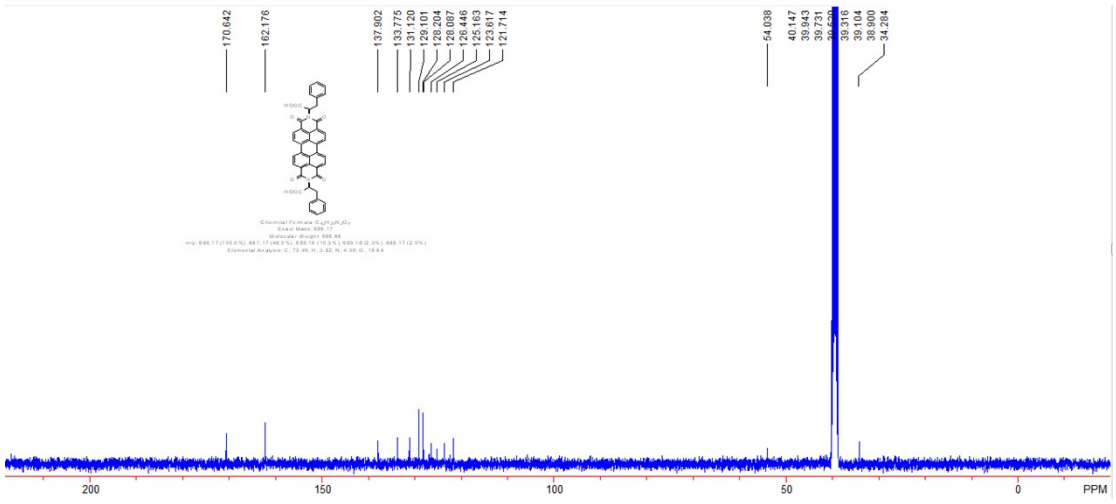


Fig.S6 [13]C NMR spectra of the **H_2PDIPhe** in DMSO-d^6 solution.

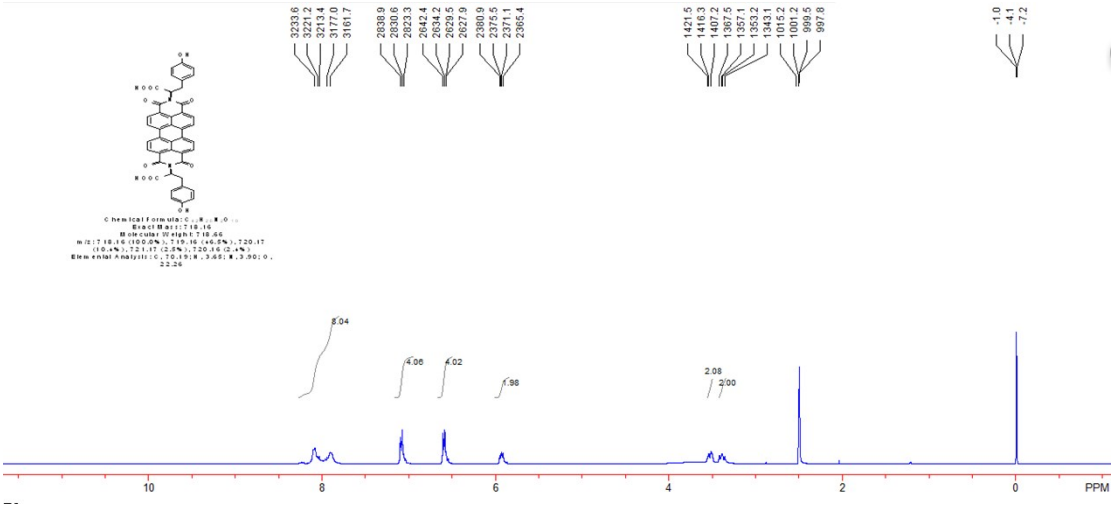


Fig.S7 ^{1}H NMR spectra of the **H_2PDITyr** in DMSO-d^6 solution.

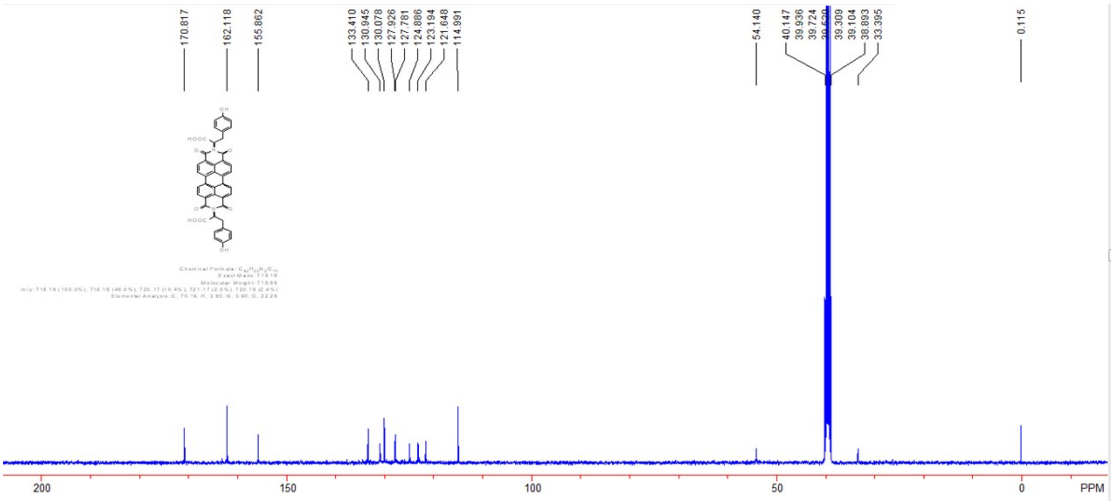


Fig.S8 ^{13}C NMR spectra of the **H_2PDITyr** in DMSO-d^6 solution.

Section 2 IR of the H_2PDIAAs

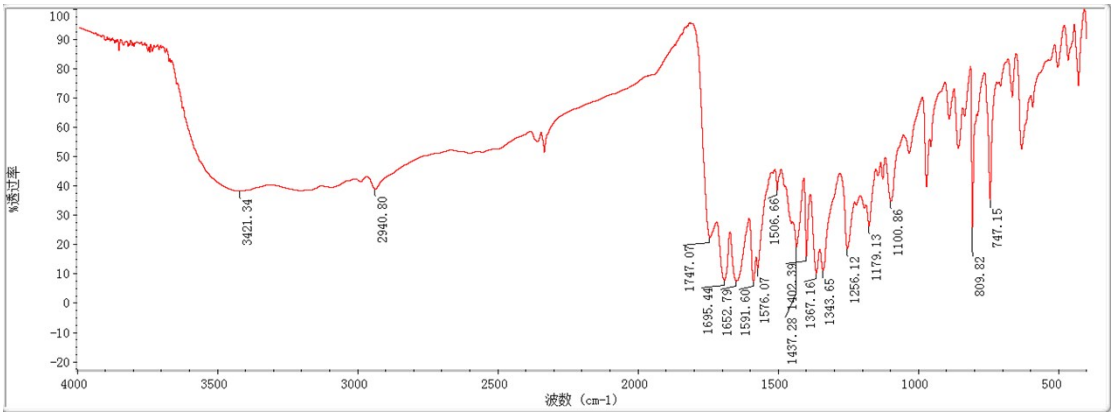


Fig.S9IR of the H_2PDIAla.

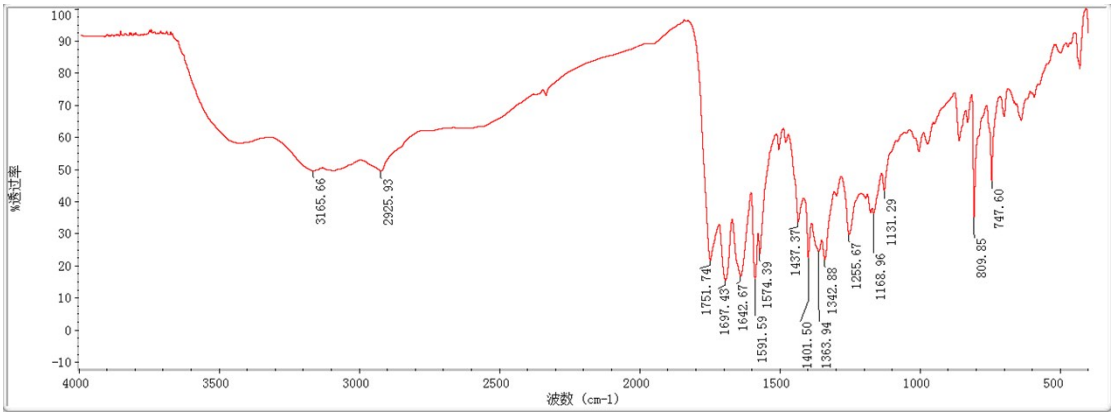


Fig.S10 IR of the H_2PDIGlu.

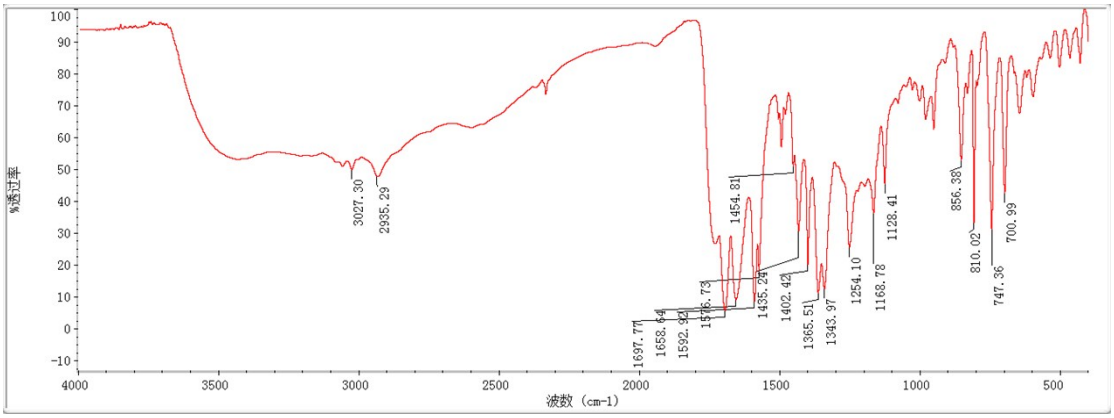


Fig.S11 IR of the H_2PDIPhe.

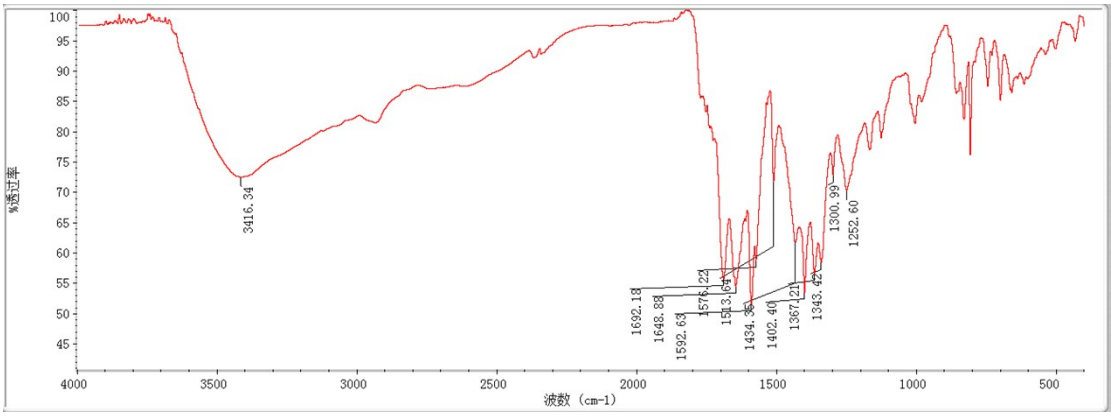


Fig.S12 IR of the H_2PDITyr.

Section 3 ESI-MS of the H_2PDIAAs

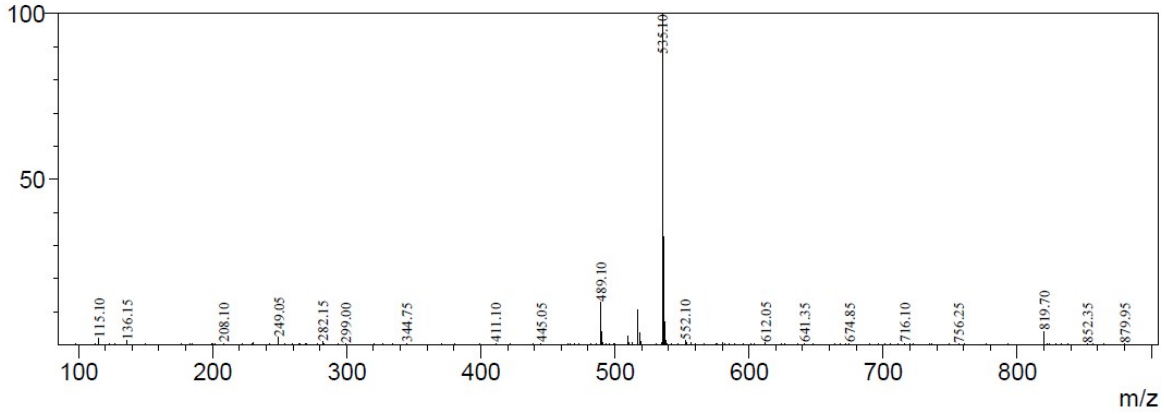


Fig.S13 ESI-MS of the H_2PDIAla.

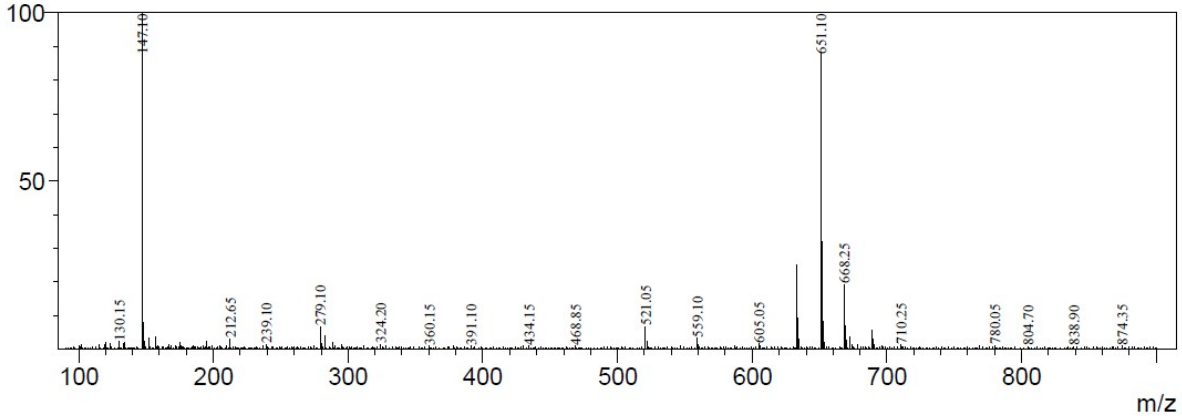


Fig.S14 ESI-MS of the H_2PDIGlu.

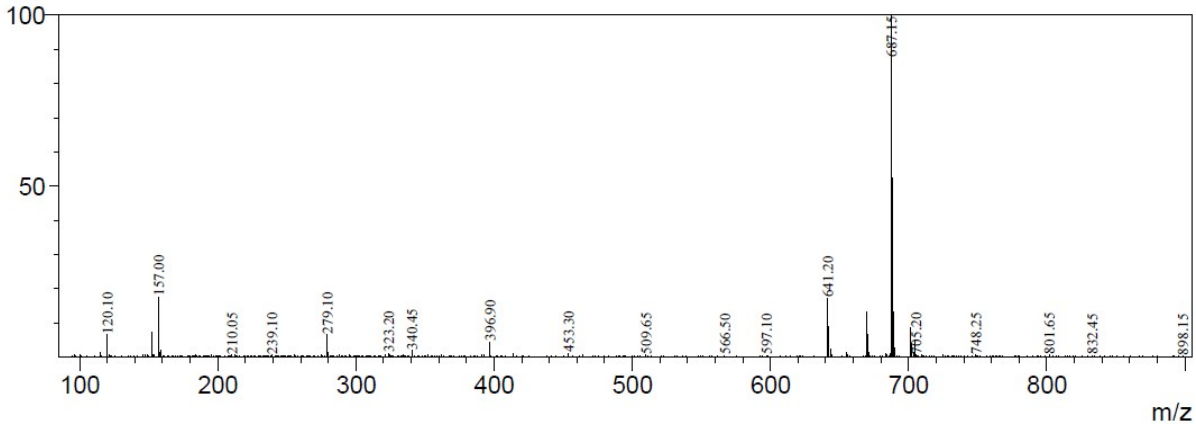
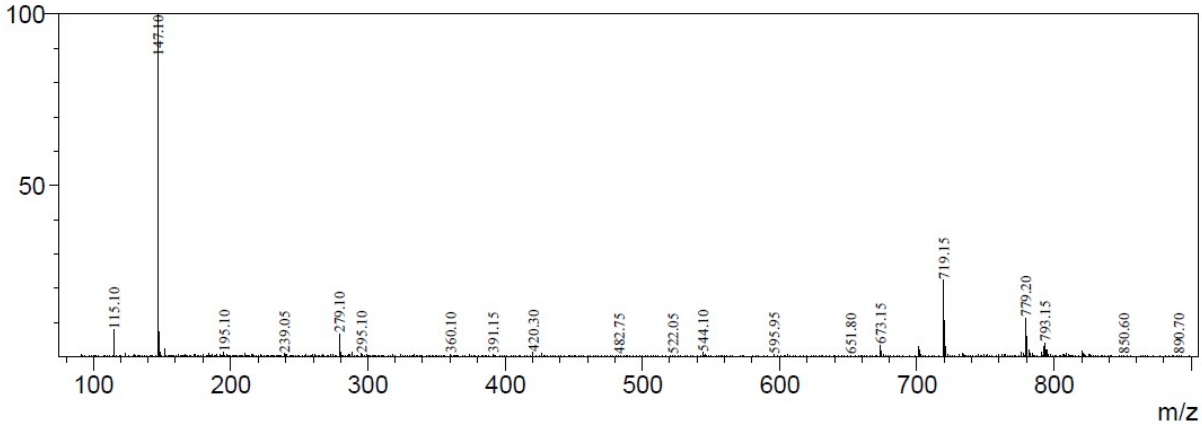


Fig.S15 ESI-MS of the H_2PDIPhe.



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Section 4 UV-Vis absorbance of the **H_2PDIAAs** with anions

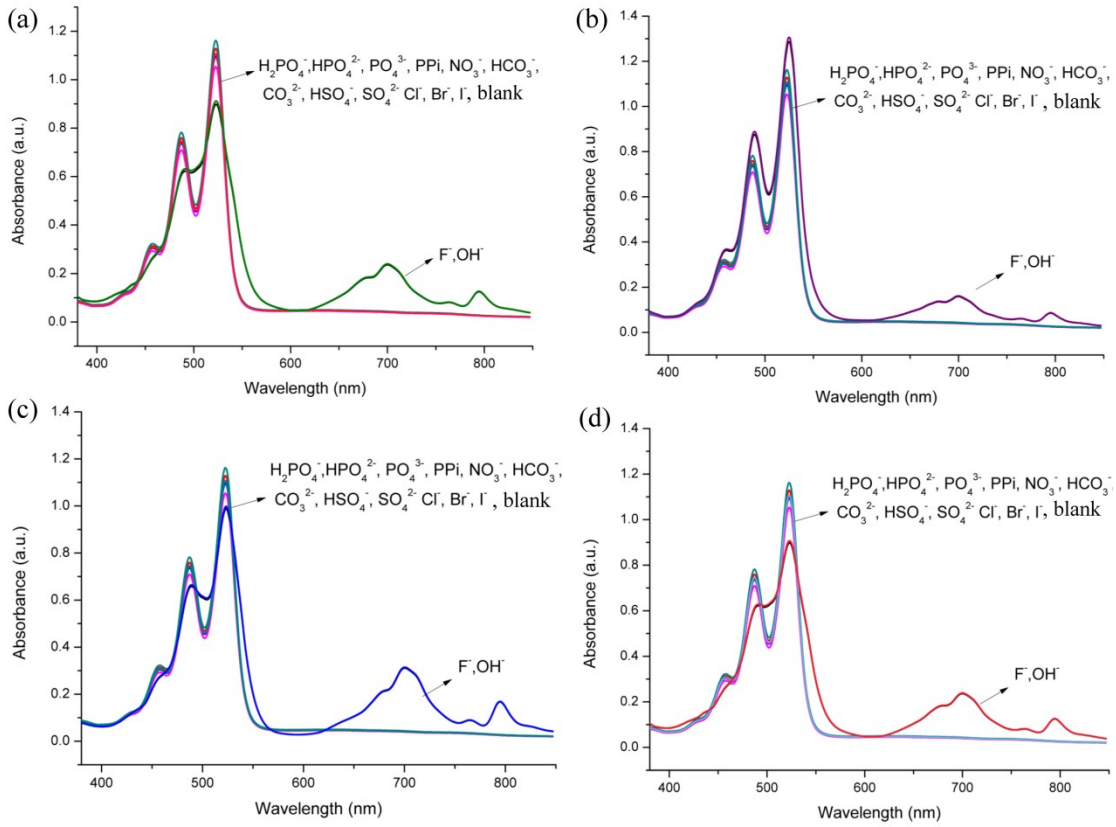


Fig.S17 UV-vis spectra of H_2PDIAAs (1×10^{-5} M) with the different anions(6 eq, each) in DMF, (a) H_2PDIAla, (b) H_2PDIGlu, (c) H_2PDIPhe, (d) H_2PDITyr.

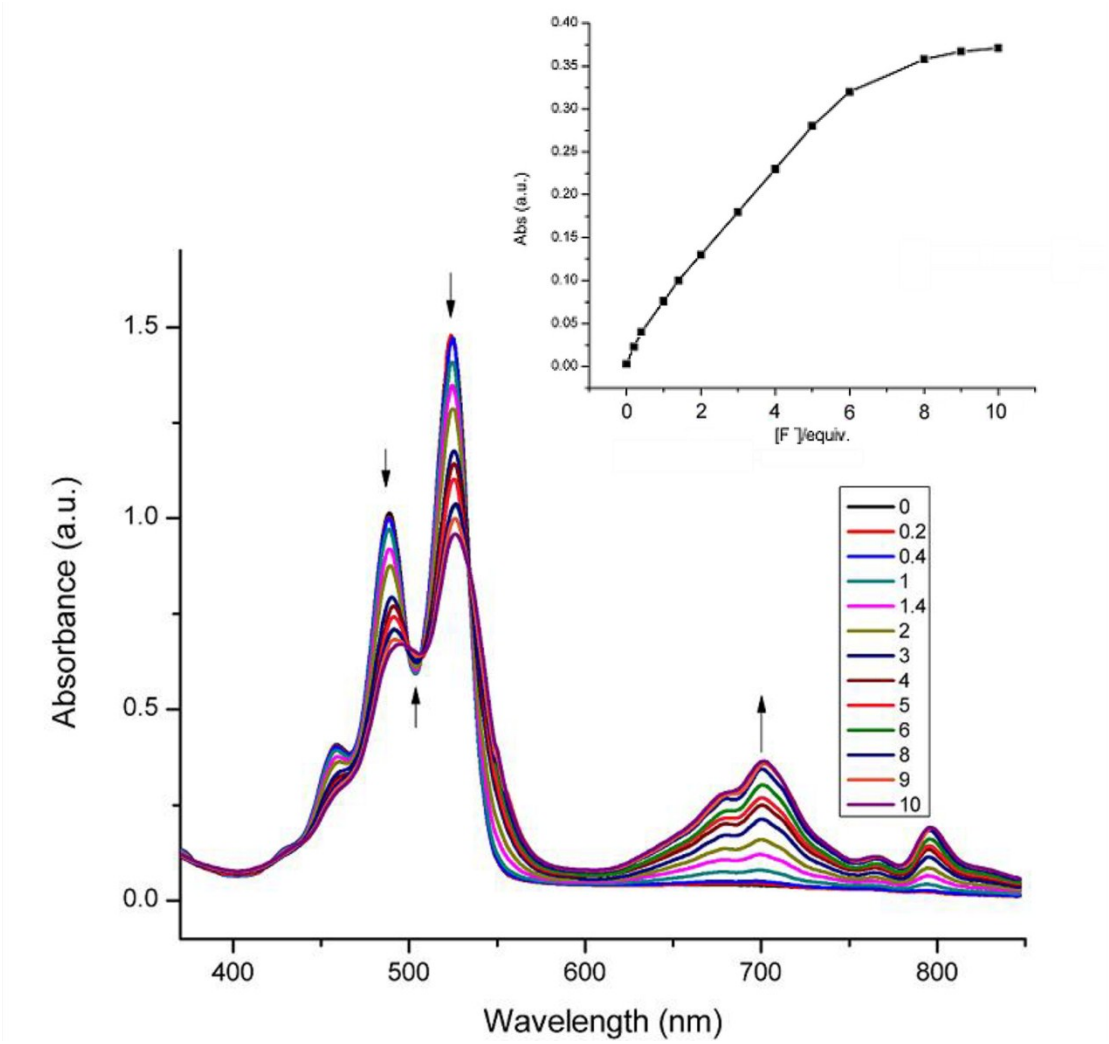


Fig.S18 Absorbance changes of H_2PDIGlu (1×10^{-5} M) in DMF on addition of 0-10 equivalents of TBAF. Inset: UV absorption intensity at 700 nm vs concentration of F^-.

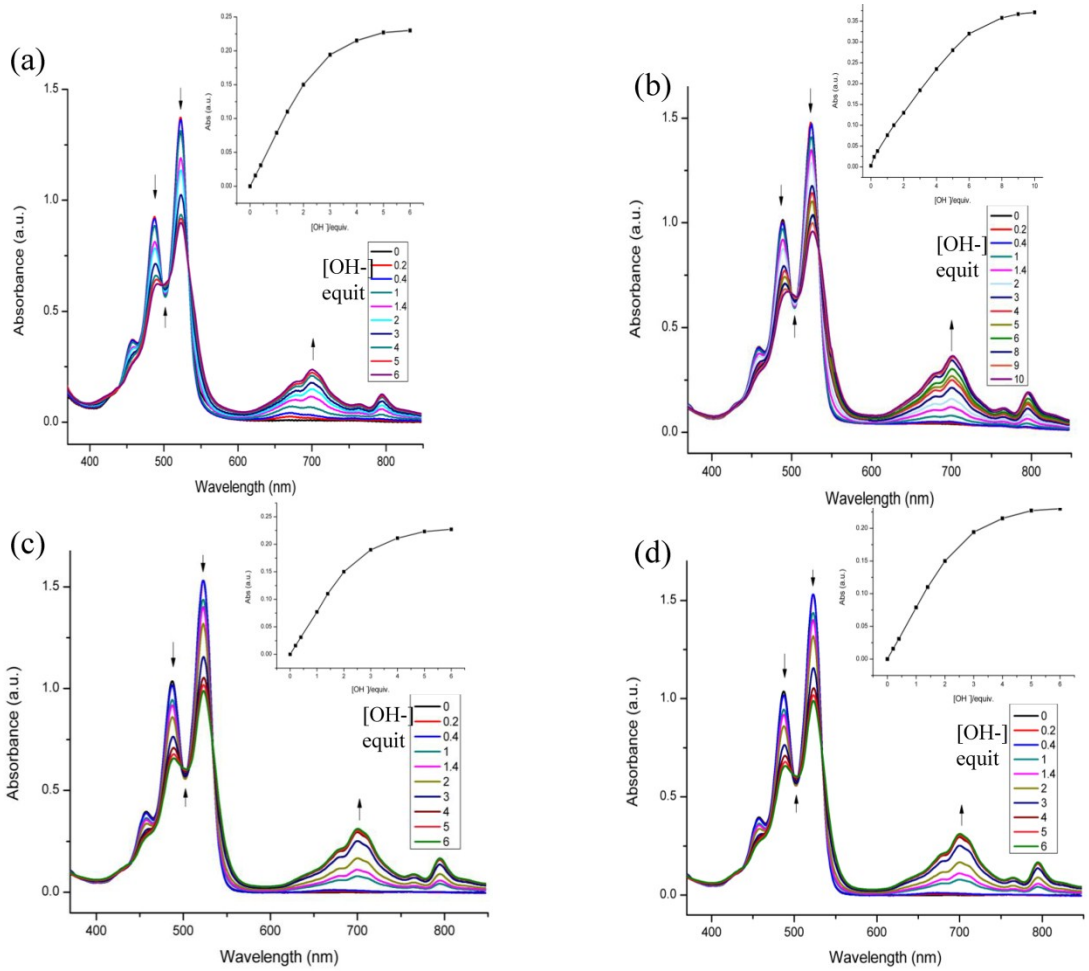


Fig.S19 UV-vis titration of H_2PDIAAs with TBOH in DMF (1×10^{-5} M), (a) H_2PDIAla, (b) H_2PDIGlu, (c) H_2PDIPhe, (d) H_2PDITyr, Inset: UV absorbance intensity at 700 nm vs concentration of OH^- ion.

Section 5 Fluorescence of the **H_2PDIAAs** with anions

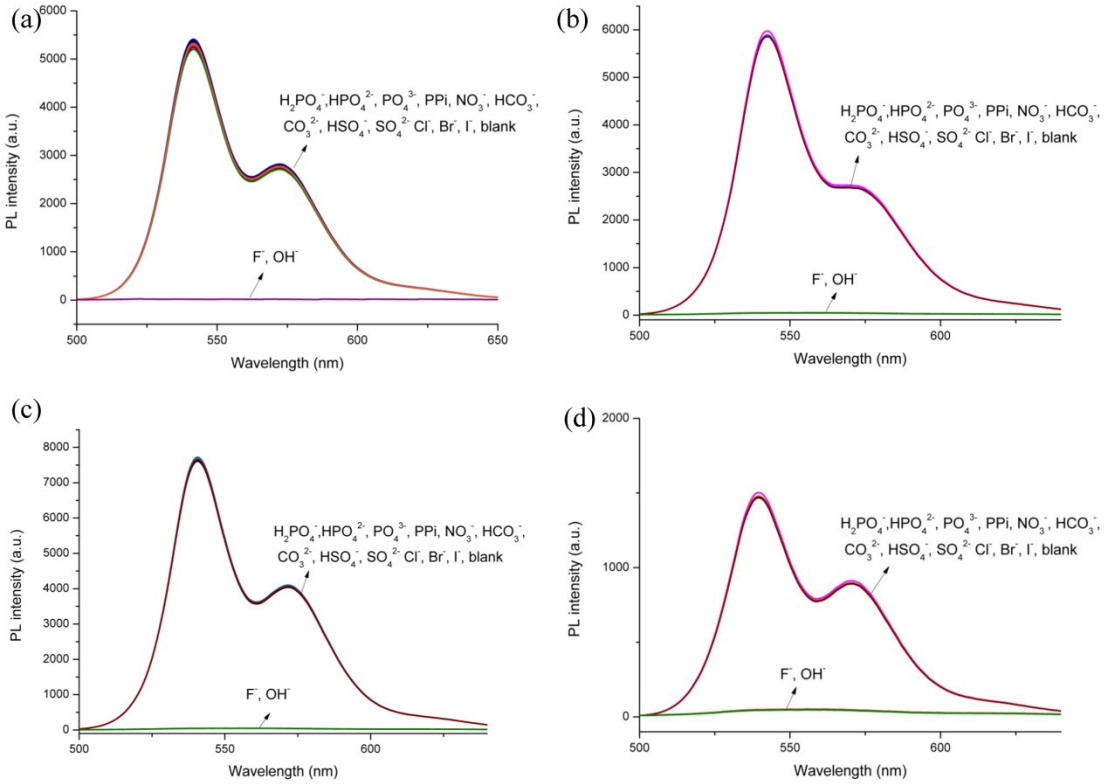


Fig.S20 Fluorescence spectra of H_2PDIAAs (1×10^{-5} M) with the different anions(6 eq, each) in DMF (λ_{ex} = 525 nm), (a) H_2PDIAla, (b) H_2PDIGlu, (c) H_2PDIPhe, (d) H_2PDITyr.

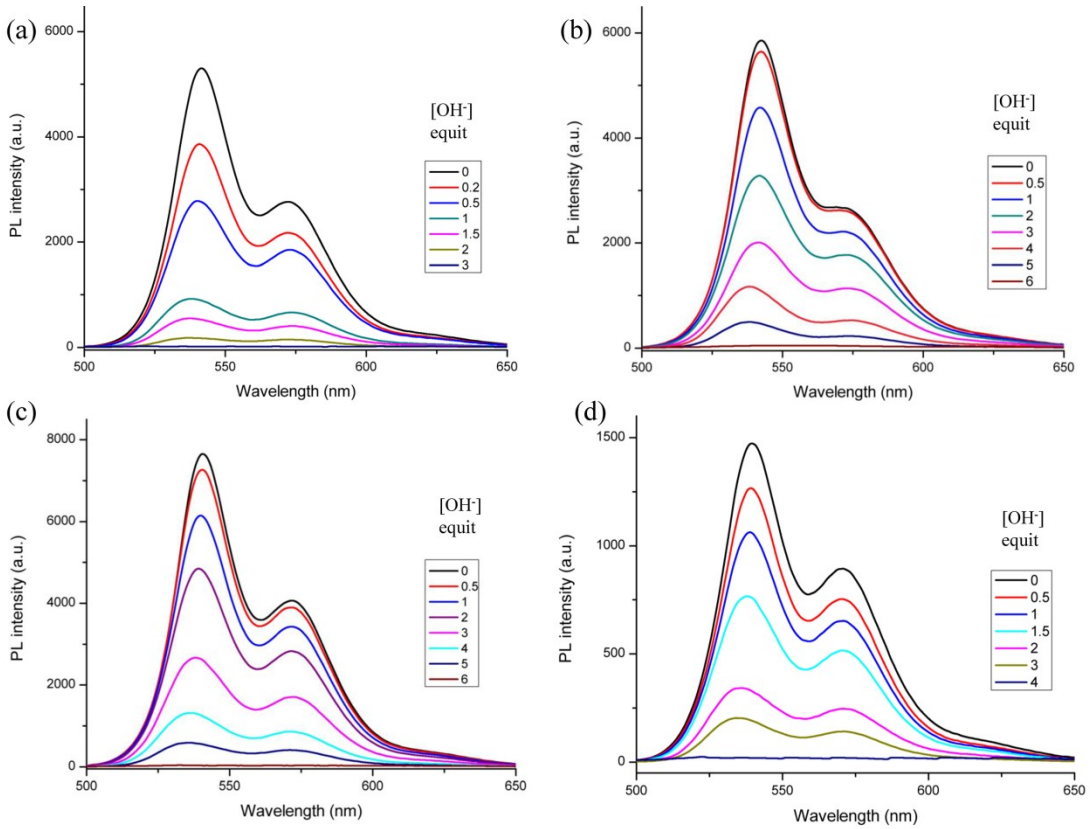


Fig.S21 Fluorescence emission of H_2PDIAAs with TBAOH titration in DMF (1×10^{-5} M) (λ_{ex} = 525 nm), (a) H_2PDIAla, (b) H_2PDIGlu, (c) H_2PDIPhe, (d) H_2PDITyr.

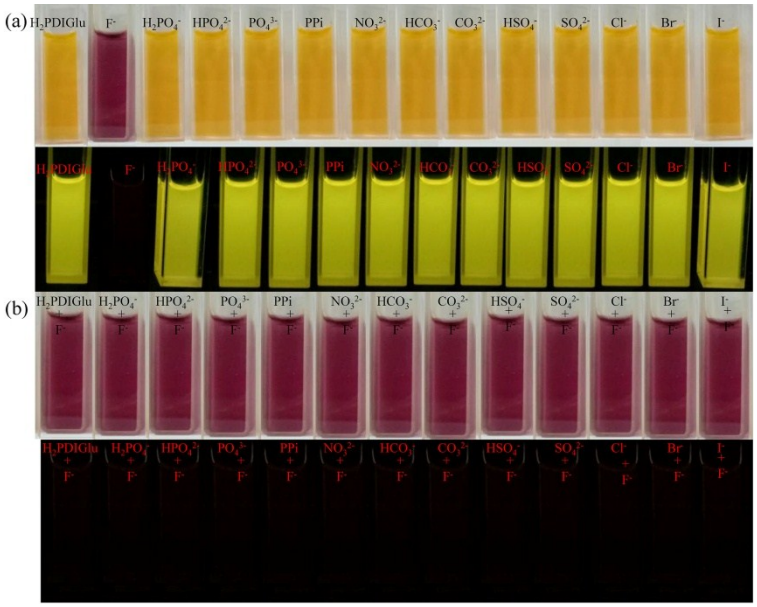
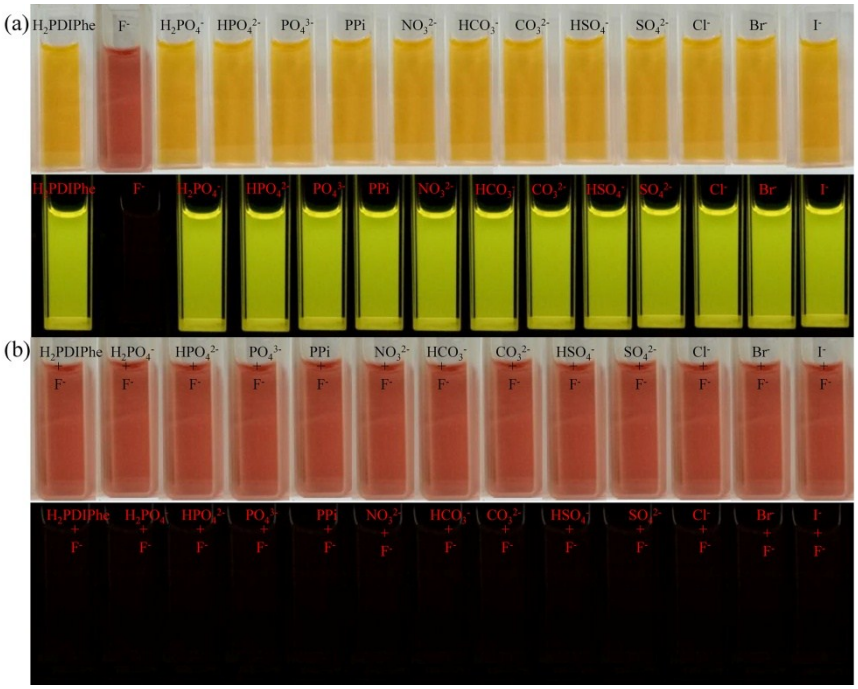


Fig.S22 (a) The photographs of colorimetric identification by naked eye and fluorescence emission (λ = 365 nm) for H_2PDIGlu with various anions(6 eq, each), (b) The photographs of colorimetric identification by naked eye and fluorescence emission (λ = 365 nm) of H_2PDIGlu-F^- ion with various ions (6 eq, each).



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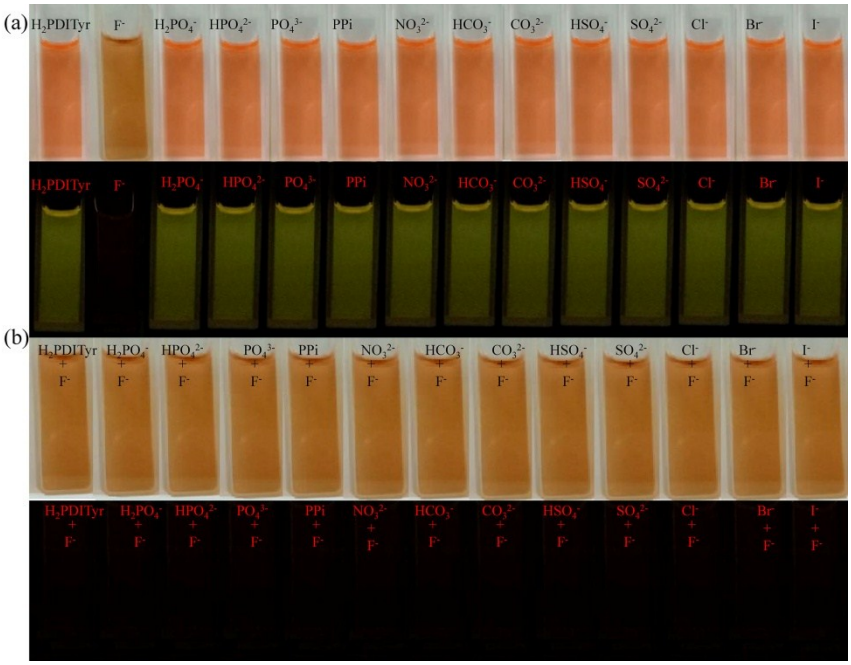

Fig.S24 (a) The photographs of colorimetric identification by naked eye and fluorescence emission (λ = 365 nm) for H_2PDITyr with various anions(6 eq, each), (b) The photographs of colorimetric identification by naked eye and fluorescence emission (λ = 365 nm) of H_2PDITyr-F^- ion with various ions (6 eq, each).

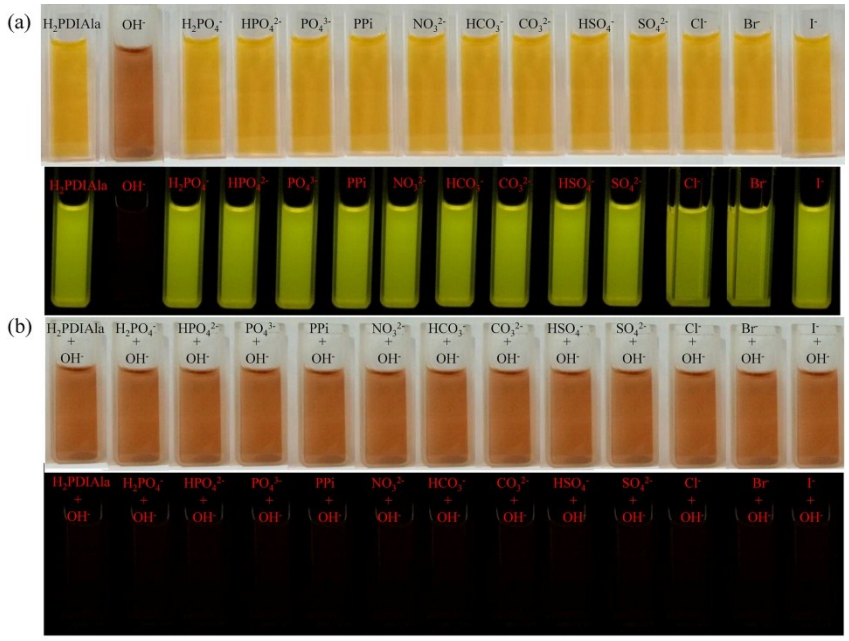

Fig.S25 (a) The photographs of colorimetric identification by naked eye and fluorescence emission (λ = 365 nm) for H_2PDIALa with various anions(6 eq, each), The photographs of colorimetric identification by naked eye and fluorescence emission (λ = 365 nm) of H_2PDIAla-OH^- ion with various ions (6 eq, each).

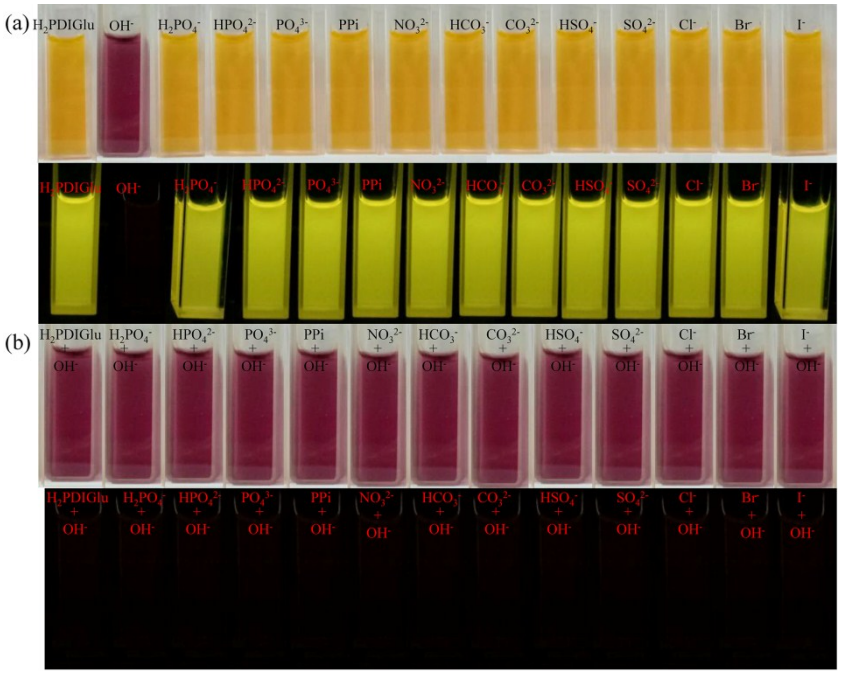

Fig.S26 (a) The photographs of colorimetric identification by naked eye and fluorescence emission (λ = 365 nm) for H_2PDIGlu with various anions(6 eq, each), (b) The photographs of colorimetric identification by naked eye and fluorescence emission (λ = 365 nm) of H_2PDIGlu-OH^- ion with various ions (6 eq, each).

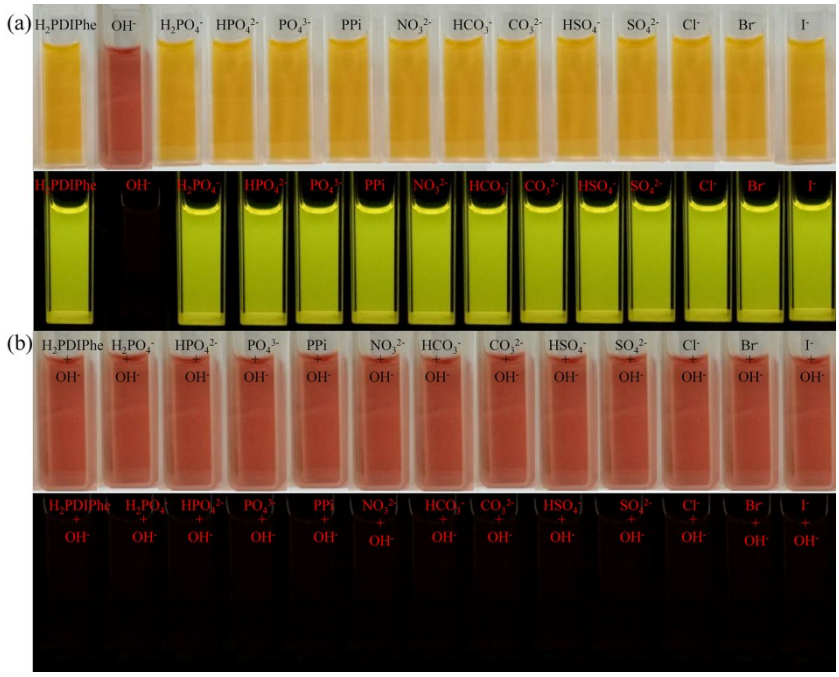

Fig.S27 (a) The photographs of colorimetric identification by naked eye and fluorescence emission (λ = 365 nm) for H_2PDIPhe with various anions(6 eq, each), (b) The photographs of colorimetric identification by naked eye and fluorescence emission (λ = 365 nm) of H_2PDIPhe-OH^- ion with various ions (6 eq, each).

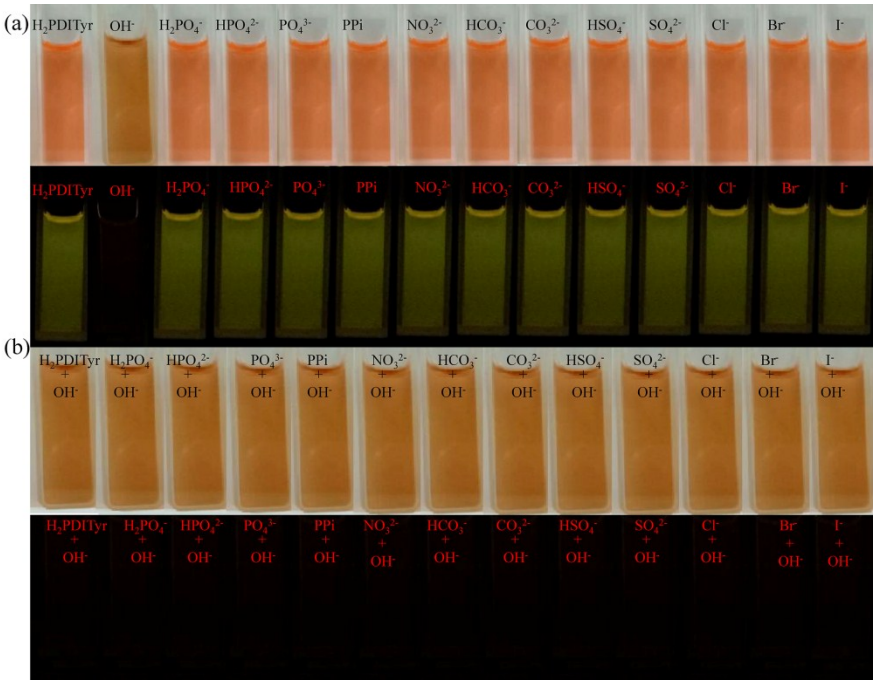

Fig.S28 (a) The photographs of colorimetric identification by naked eye and fluorescence emission (λ = 365 nm) for H_2PDITyr with various anions(6 eq, each), (b) The photographs of colorimetric identification by naked eye and fluorescence emission (λ = 365 nm) of H_2PDITyr-OH^- ion with various ions (6 eq, each).

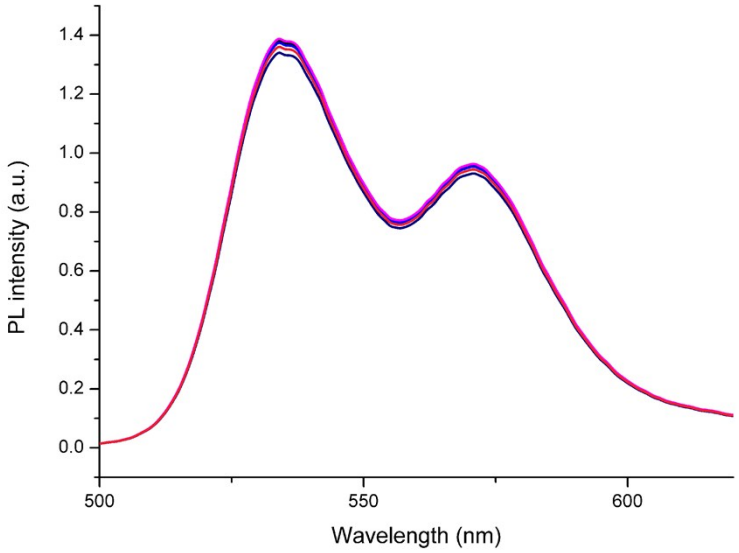

Fig.S29 Fluorescence spectra of H_2PDIAla (1×10^{-5} M) added the TBAF, and the mixture solution with the different anions(6 eq, each) in DMF (λ_{ex} = 525 nm).

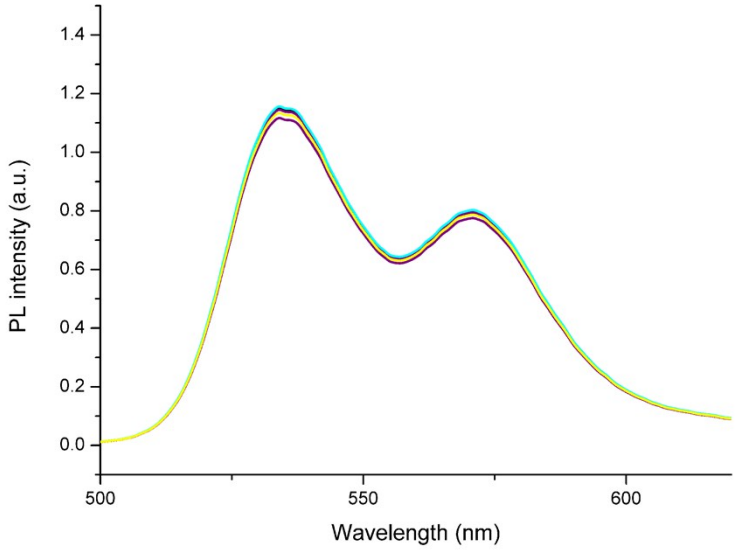

Fig.S30 Fluorescence spectra of H_2PDIAla (1×10^{-5} M) added the TBAOH, and the mixture solution with the different anions(6 eq, each) in DMF (λ_{ex} = 525 nm).

Section 6. Fluorescence lifetime decay of the **H_2PDIAAs**

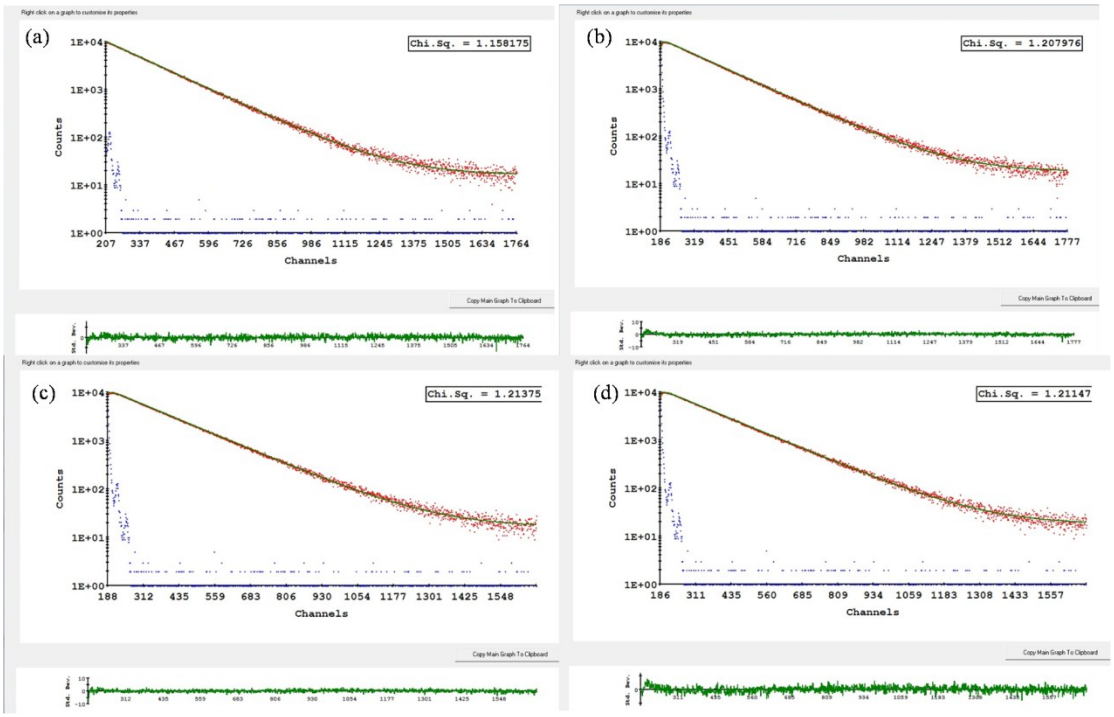

Fig.S31 Fluorescence lifetime decay of H_2PDIAla (1×10^{-5} M) in DMF. (b) Fluorescence lifetime decay of H_2PDIGlu. (c) Fluorescence lifetime decay of H_2PDIPhe. (d) Fluorescence lifetime decay of H_2PDITyr.

Section 7. ^{1}H-NMR of the **H_2PDIAla** with TBAOH

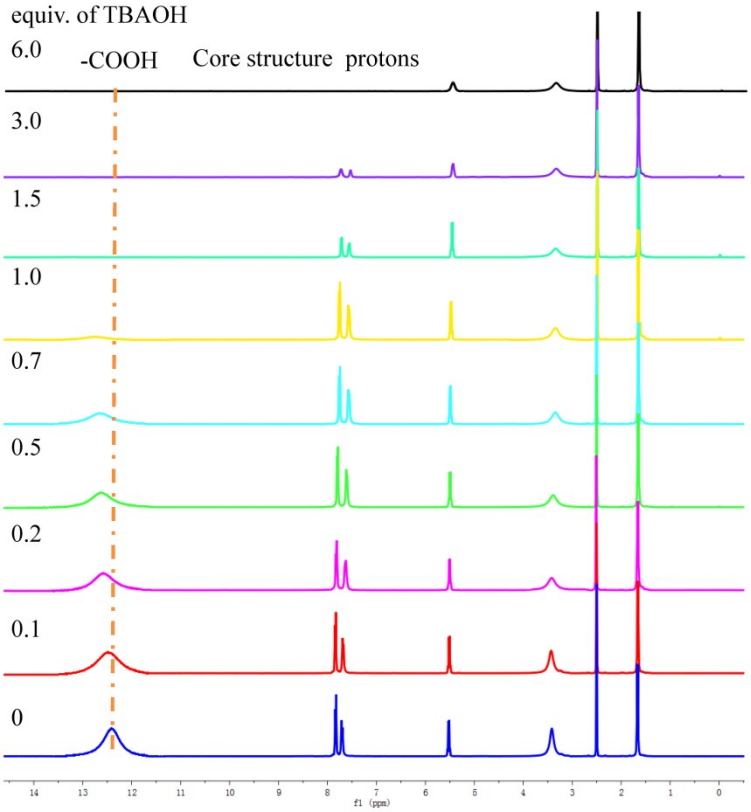

Fig.S32 The ^{1}H-NMR titrations of H_2PDIAla with TBAOH in DMSO-d^6.