

Supporting Information for:

**Equilibrium Acidities of BINOL Type Chiral Phenolic
Hydrogen Bonding Donors in DMSO**

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UV/Vis spectra of the HIn anion in DMSO

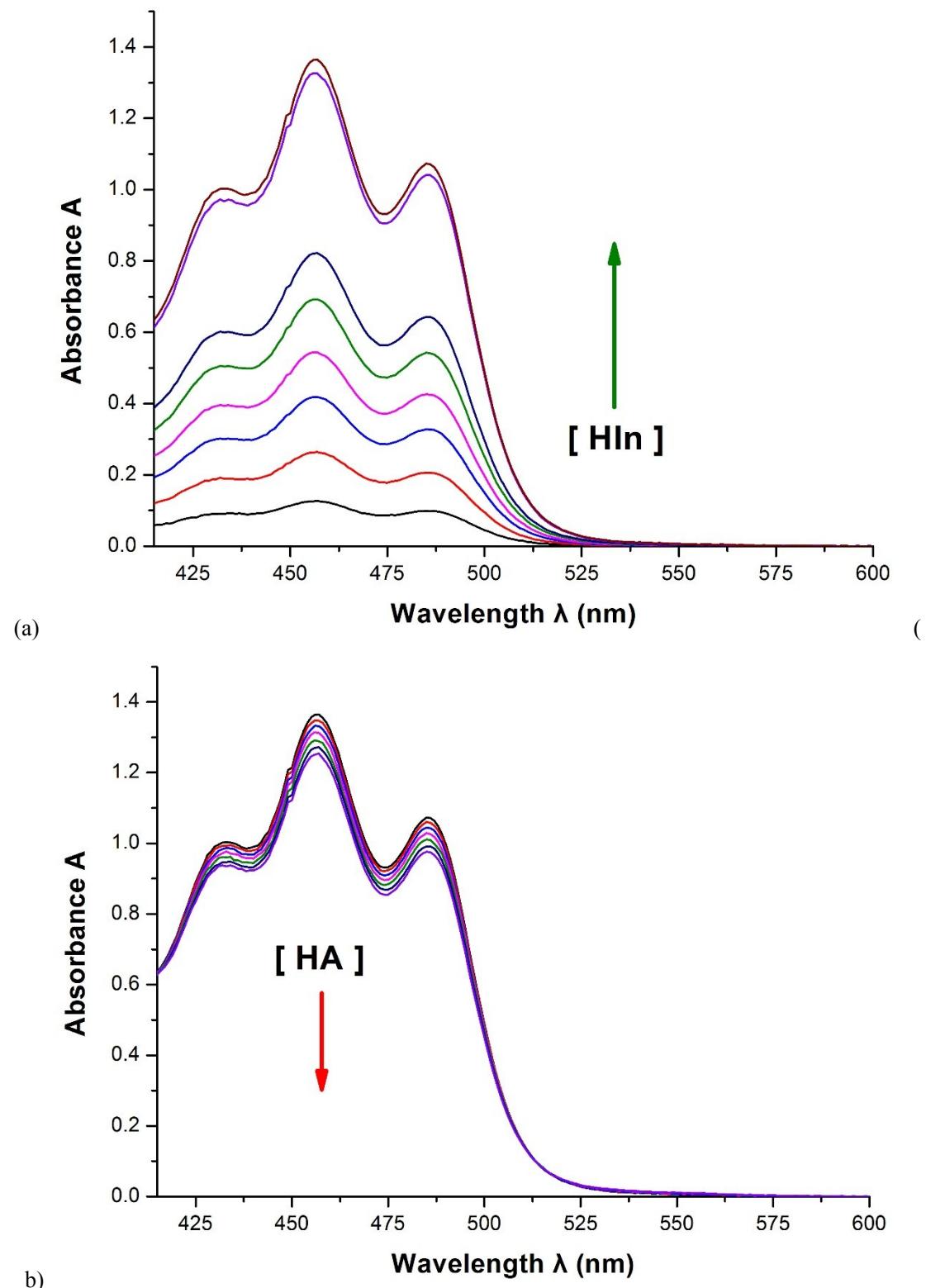
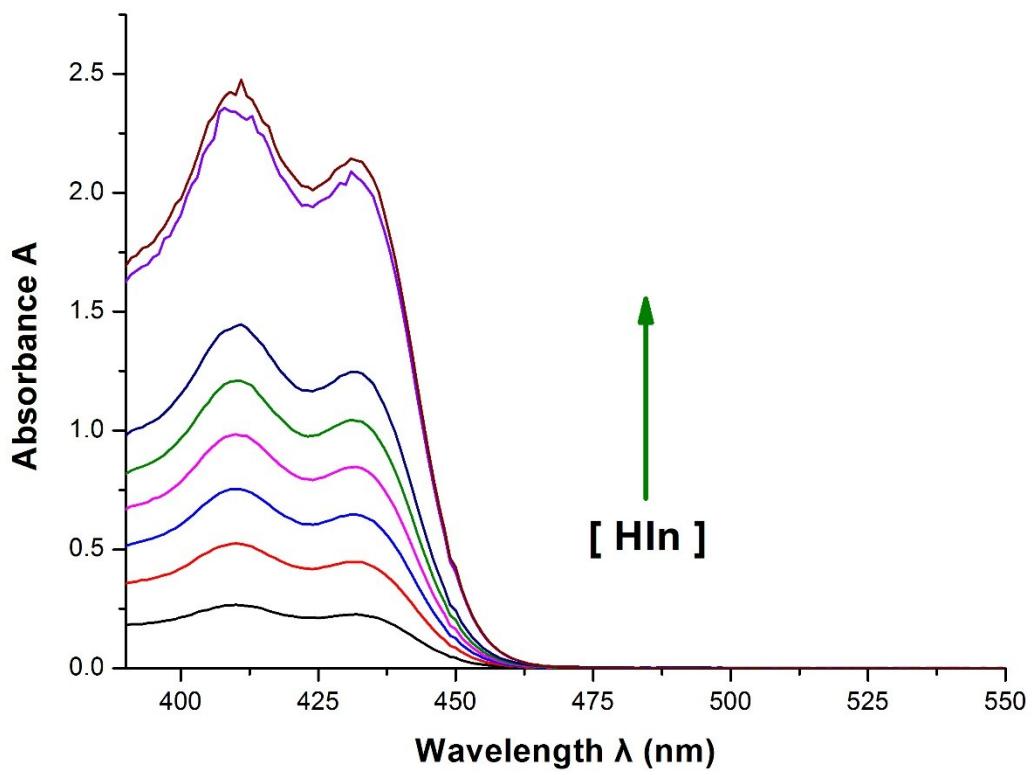
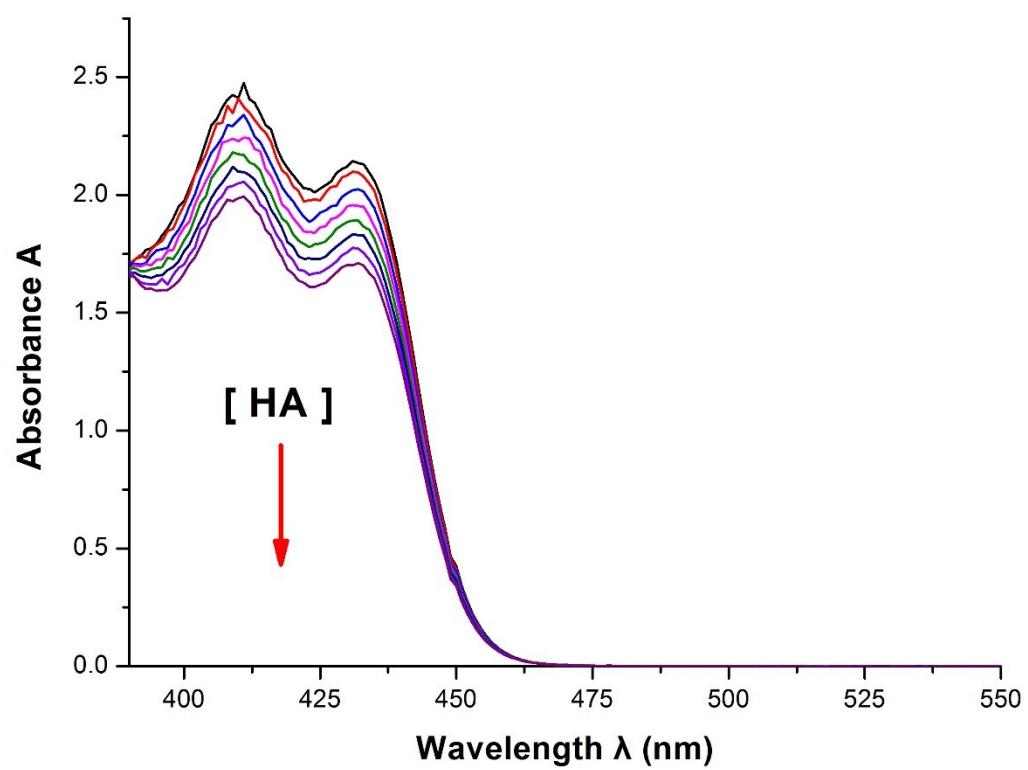


Figure 1. (a) Absorption spectra of the anion derived from **2,7-diBr-9-PhS-FH** for various added amounts of **2,7-diBr-9-PhS-FH** during the titration. (b) Absorption spectra of the anion derived from **2,7-diBr-9-PhS-FH** for various added amounts of catalyst **2** during the titration.



(a)



(b)

Figure 2. (a) Absorption spectra of the anion derived from **9-CO₂Me-FH** for various added amounts of **9-CO₂Me-FH** during the titration. (b) Absorption spectra of the anion derived from **9-CO₂Me-FH** for various added amounts of catalyst **3** during the titration.

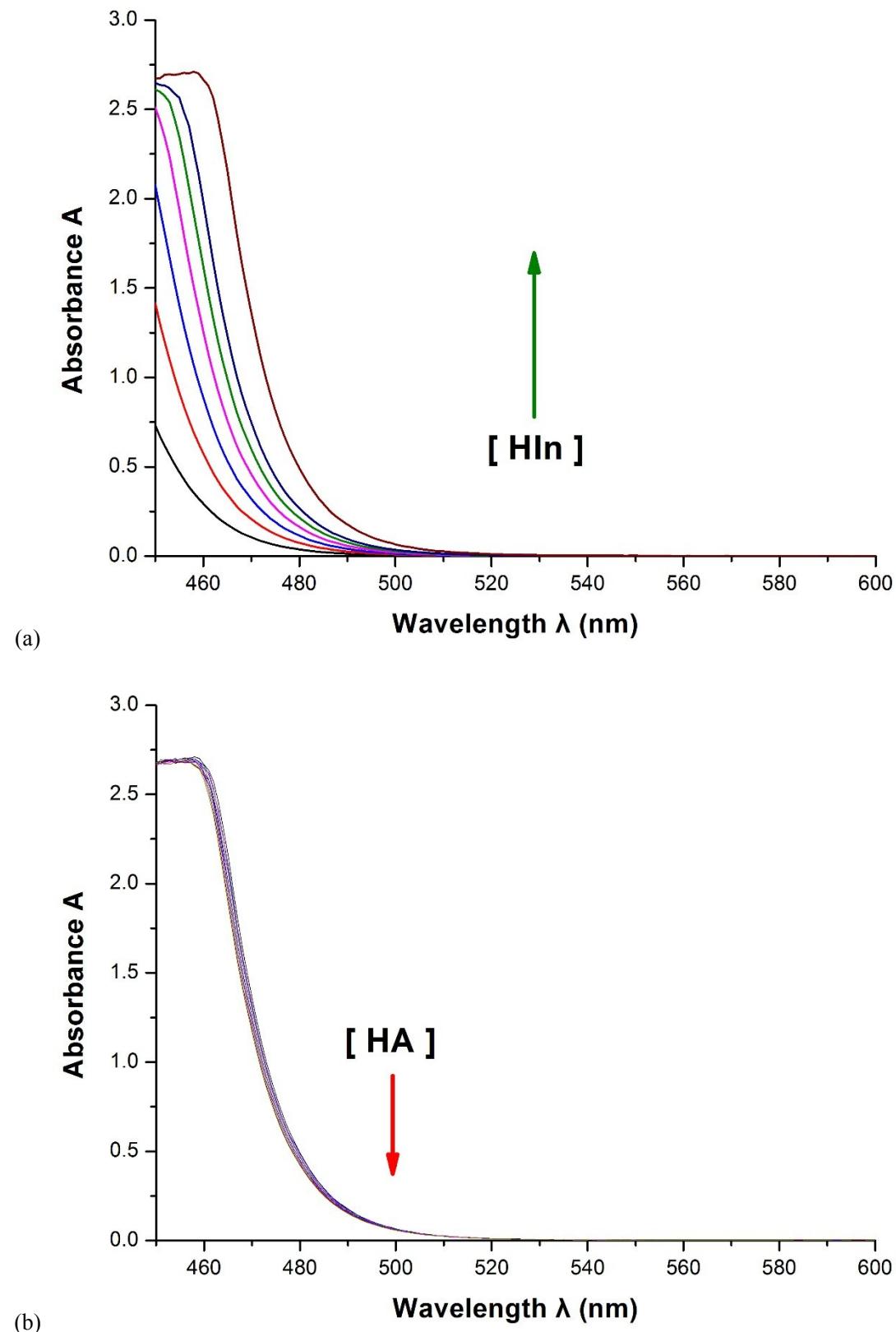
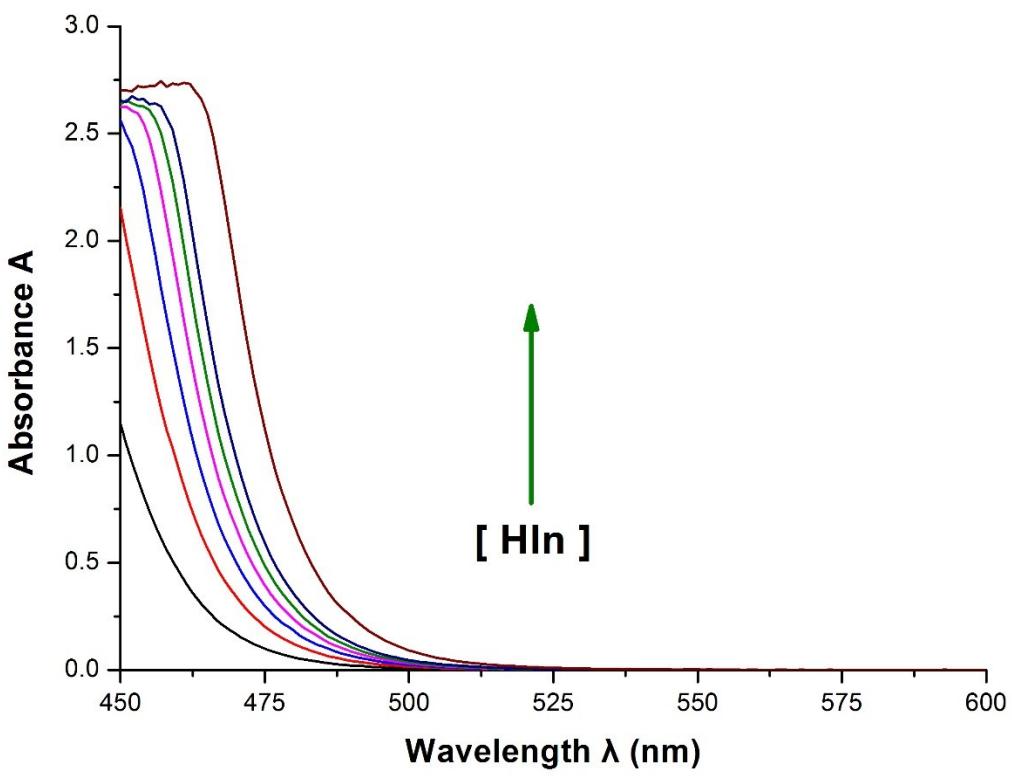
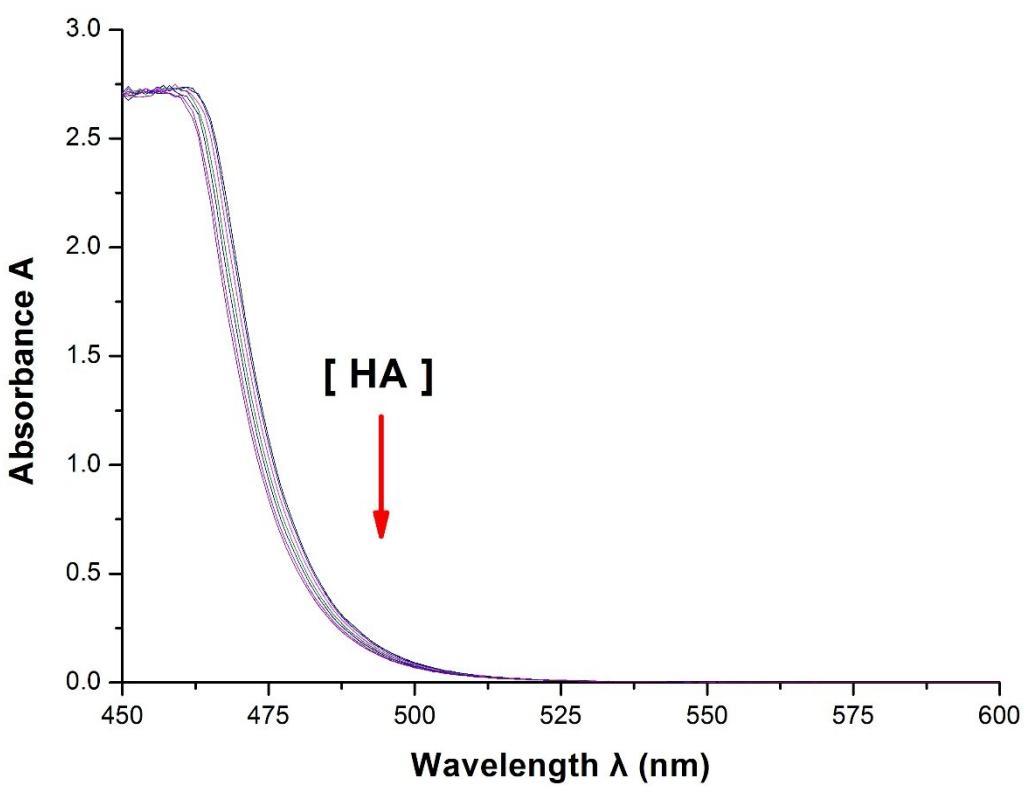


Figure 3. (a) Absorption spectra of the anion derived from **4-NO₂-3-CF₃-phenol** for various added amounts of **4-NO₂-3-CF₃-phenol** during the titration. (b) Absorption spectra of the anion derived from **4-NO₂-3-CF₃-phenol** for various added amounts of catalyst **4** during the titration.

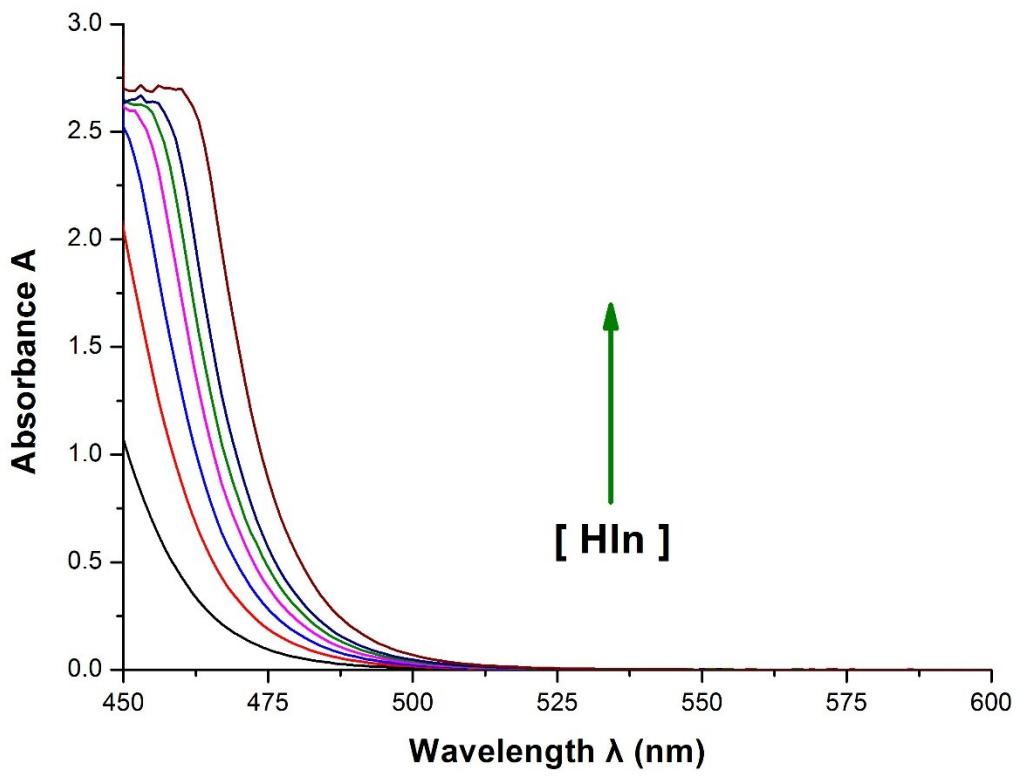


(a)

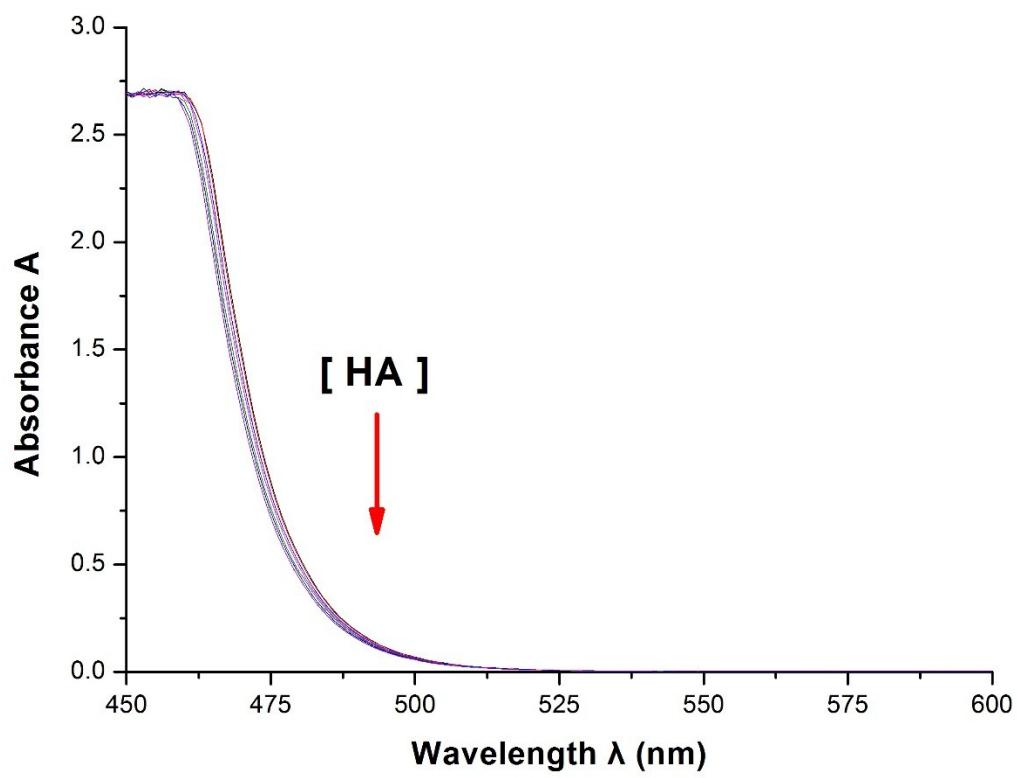


(b)

Figure 4. (a) Absorption spectra of the anion derived from **4-NO₂-3-CF₃-phenol** for various added amounts of **4-NO₂-3-CF₃-phenol** during the titration. (b) Absorption spectra of the anion derived from **4-NO₂-3-CF₃-phenol** for various added amounts of catalyst **5** during the titration.



(a)



(b)

Figure 5. (a) Absorption spectra of the anion derived from **4-NO₂-3-CF₃-phenol** for various added amounts of **4-NO₂-3-CF₃-phenol** during the titration. (b) Absorption spectra of the anion derived from **4-NO₂-3-CF₃-phenol** for various added amounts of catalyst **6** during the titration.

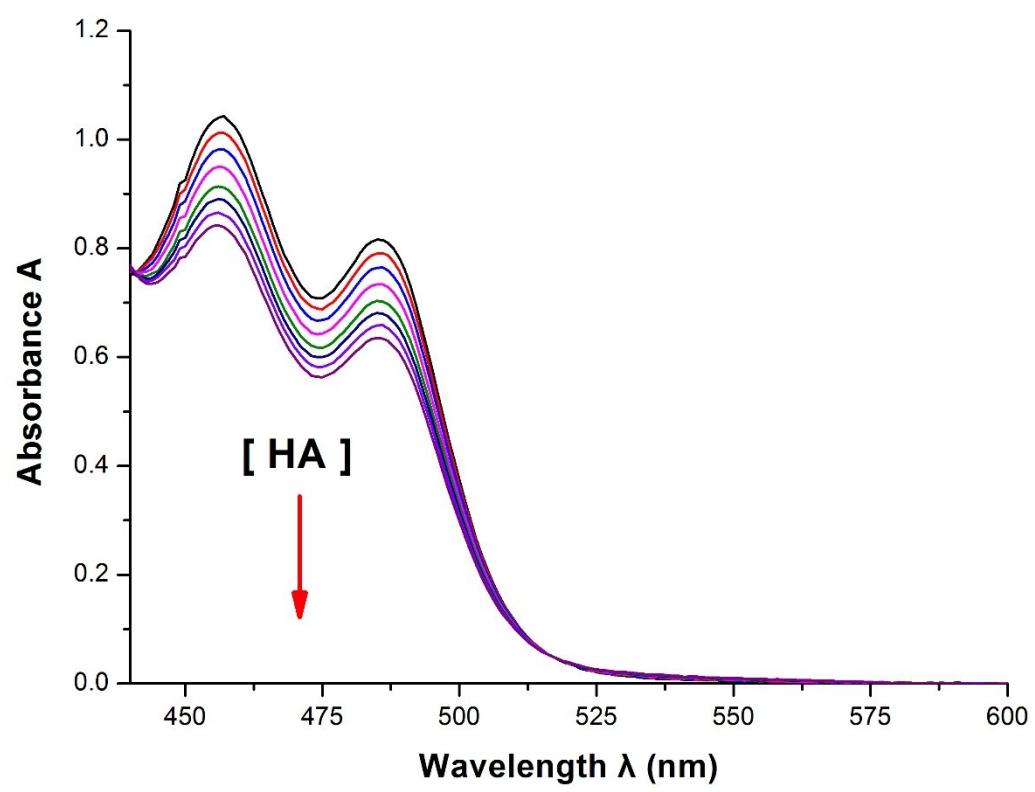
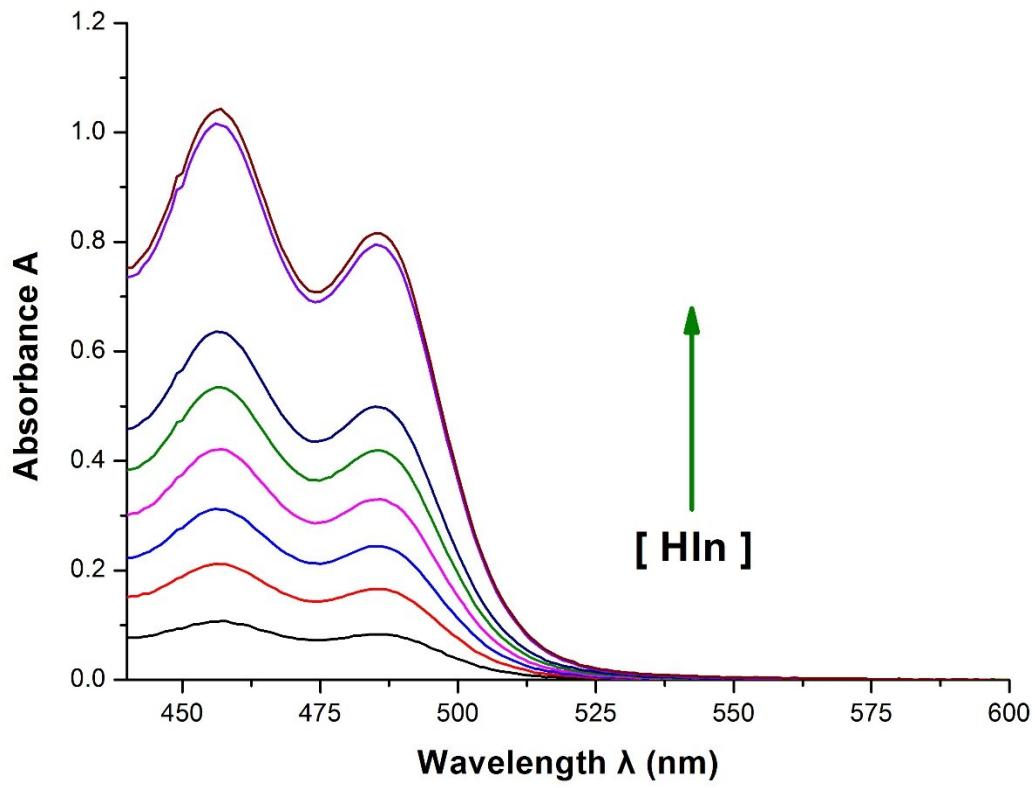


Figure 6. (a) Absorption spectra of the anion derived from **2,7-diBr-9-PhS-FH** for various added amounts of **2,7-diBr-9-PhS-FH** during the titration. (b) Absorption spectra of the anion derived from **2,7-diBr-9-PhS-FH** for various added amounts of catalyst **7** during the titration.

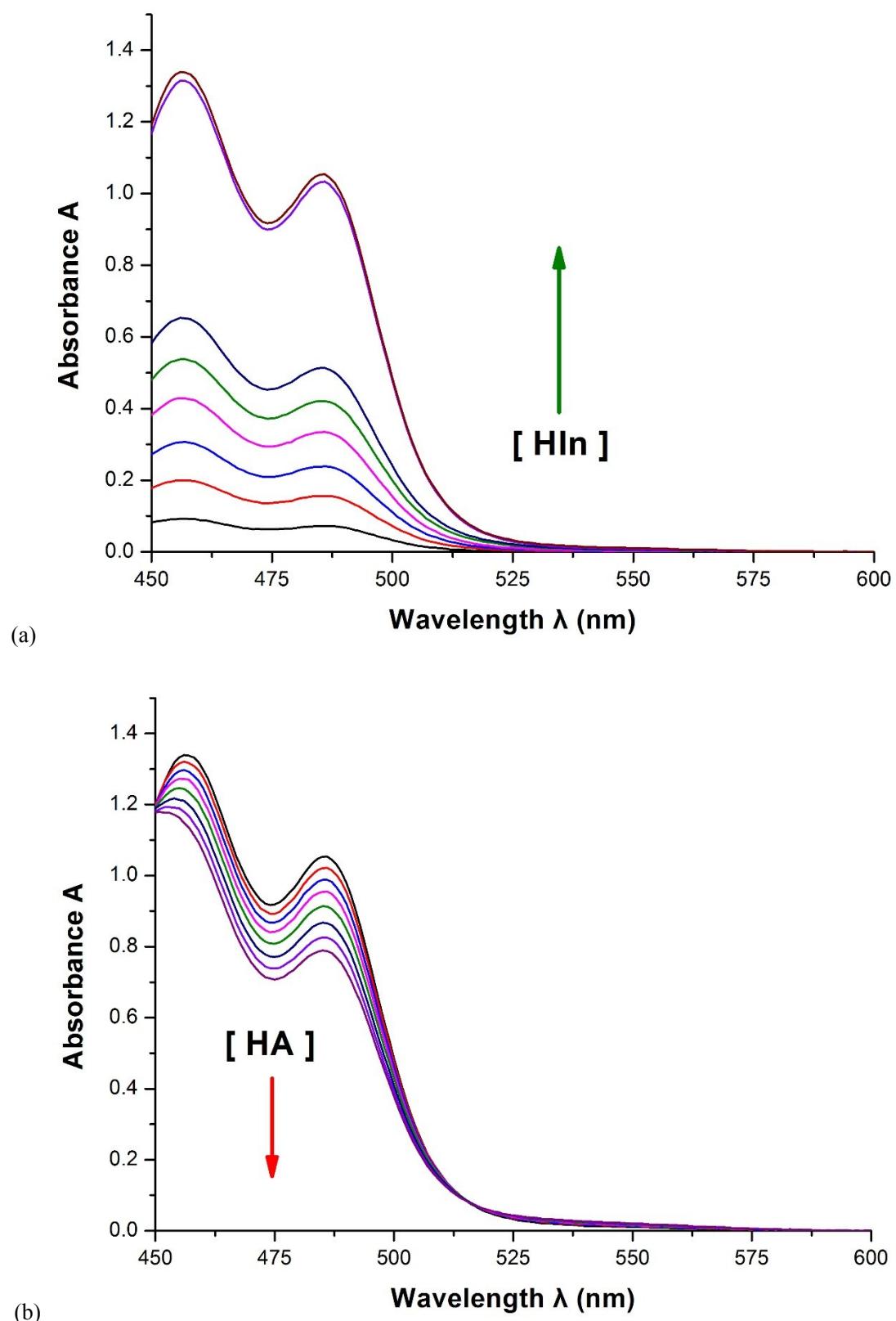


Figure 7. (a) Absorption spectra of the anion derived from **2,7-diBr-9-PhS-FH** for various added amounts of **2,7-diBr-9-PhS-FH** during the titration. (b) Absorption spectra of the anion derived from **2,7-diBr-9-PhS-FH** for various added amounts of catalyst **8** during the titration.

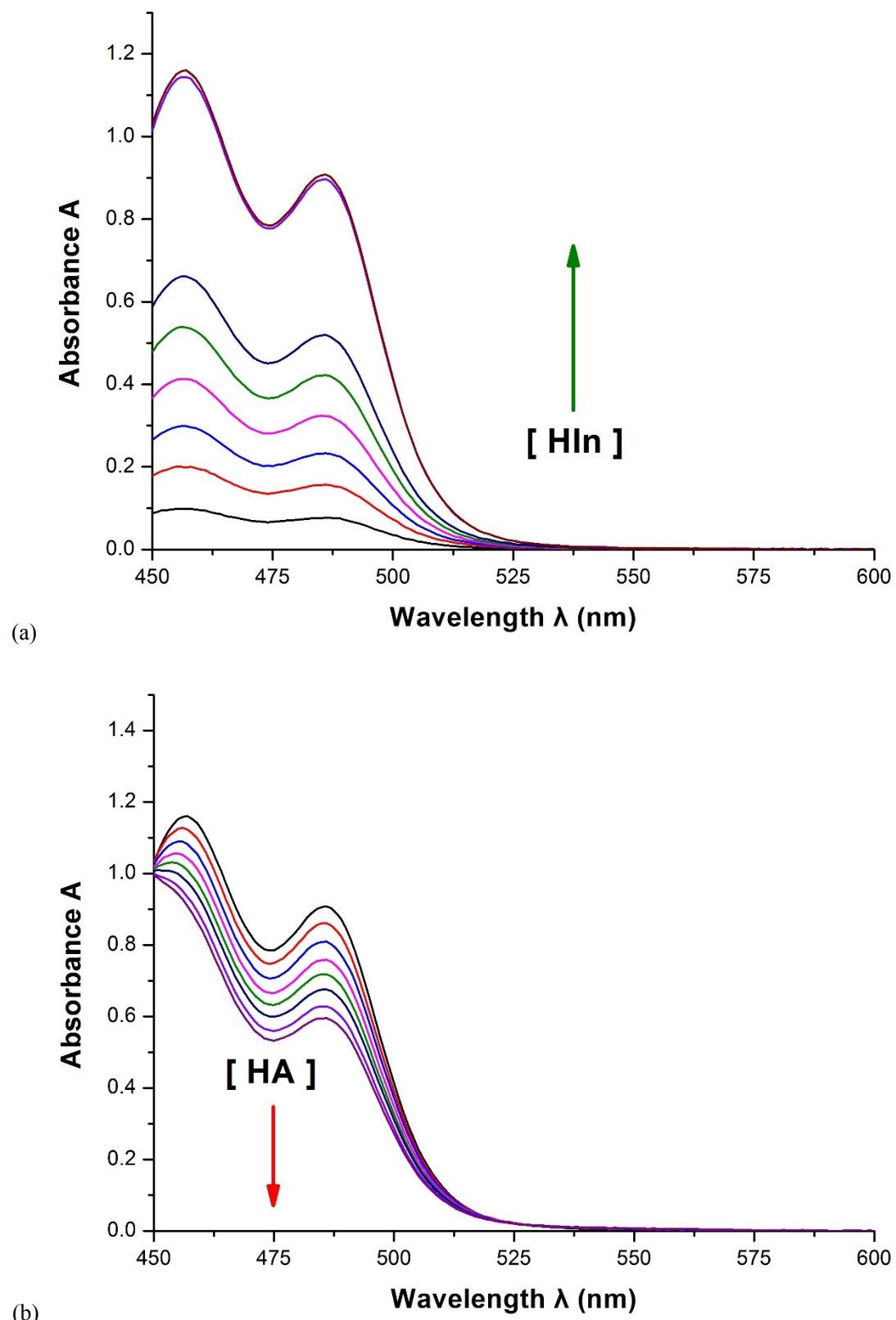


Figure 8. (a) Absorption spectra of the anion derived from **2,7-diBr-9-PhS-FH** for various added amounts of **2,7-diBr-9-PhS-FH** during the titration. (b) Absorption spectra of the anion derived from **2,7-diBr-9-PhS-FH** for various added amounts of catalyst **11** during the titration.

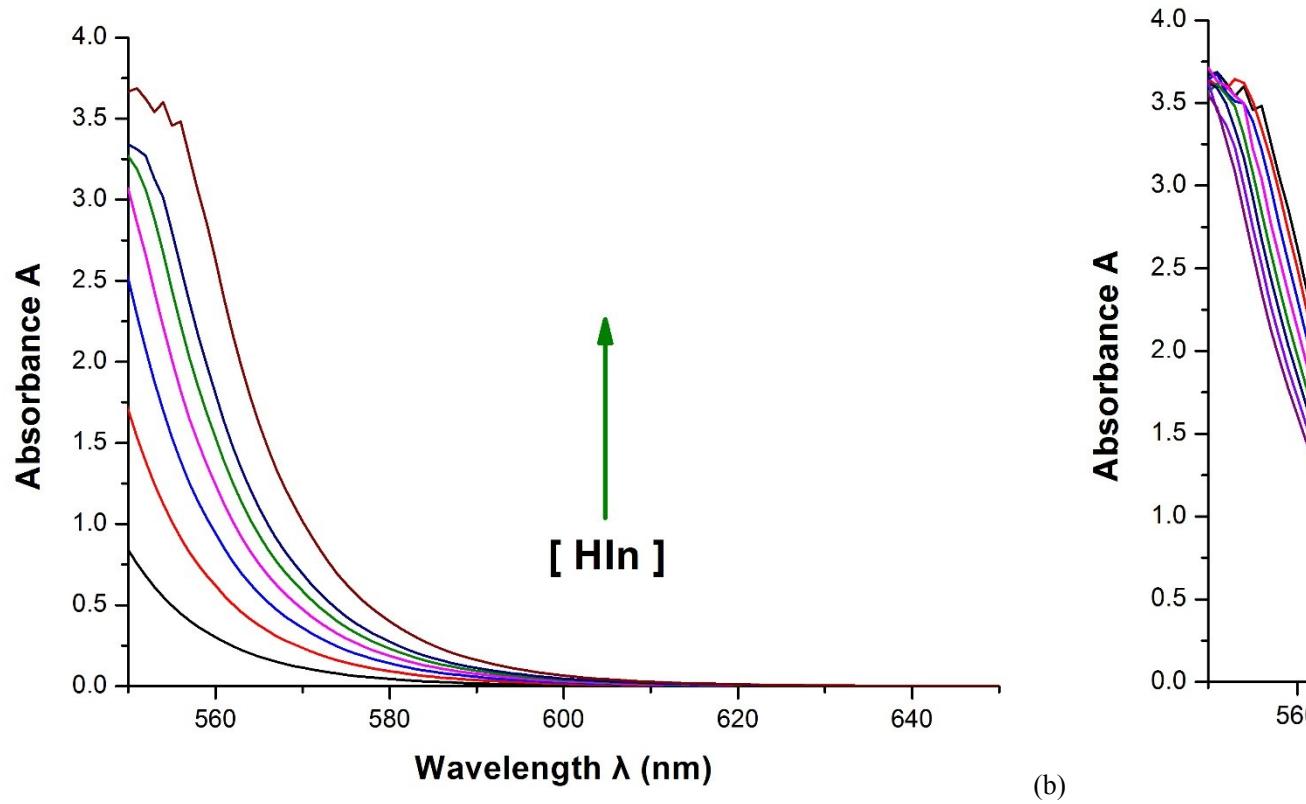
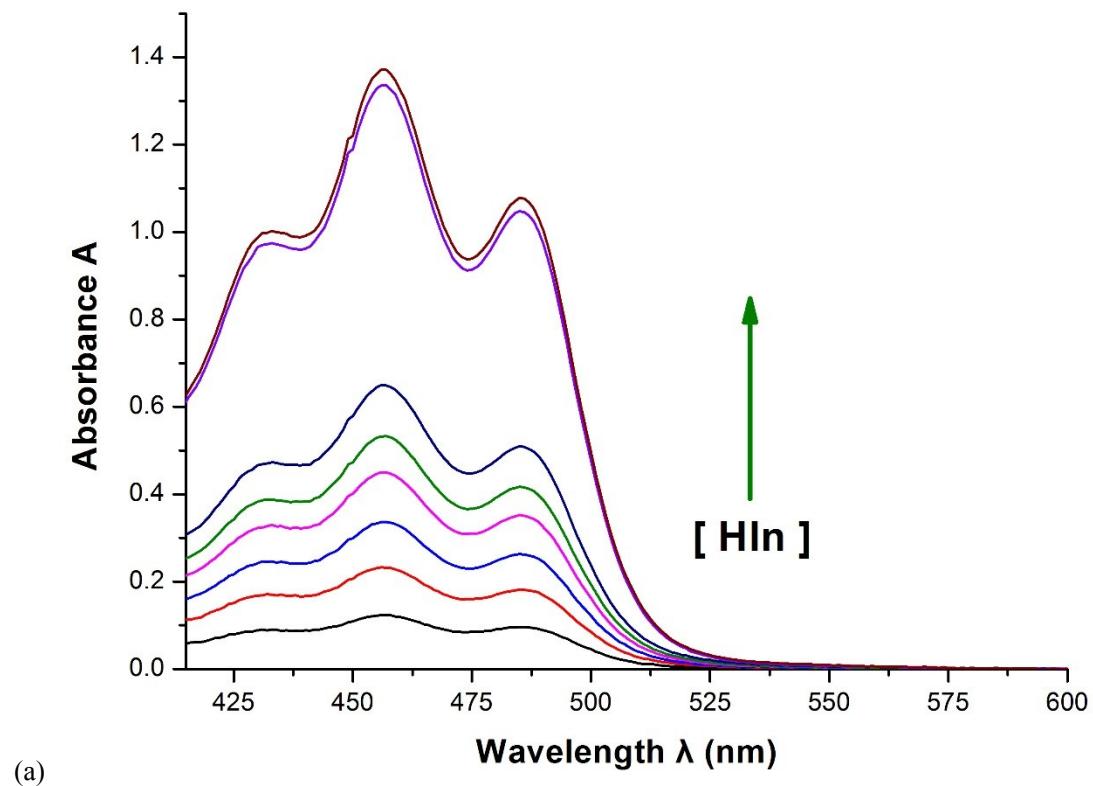


Figure 9. (a) Absorption spectra of the anion derived from **9-(2-Cl-Ph)-NHN-FH** for various added amounts of **9-(2-Cl-Ph)-NHN-FH** during the titration. (b) Absorption spectra of the anion derived from **9-(2-Cl-Ph)-NHN-FH** for various added amounts of catalyst **12** during the titration.



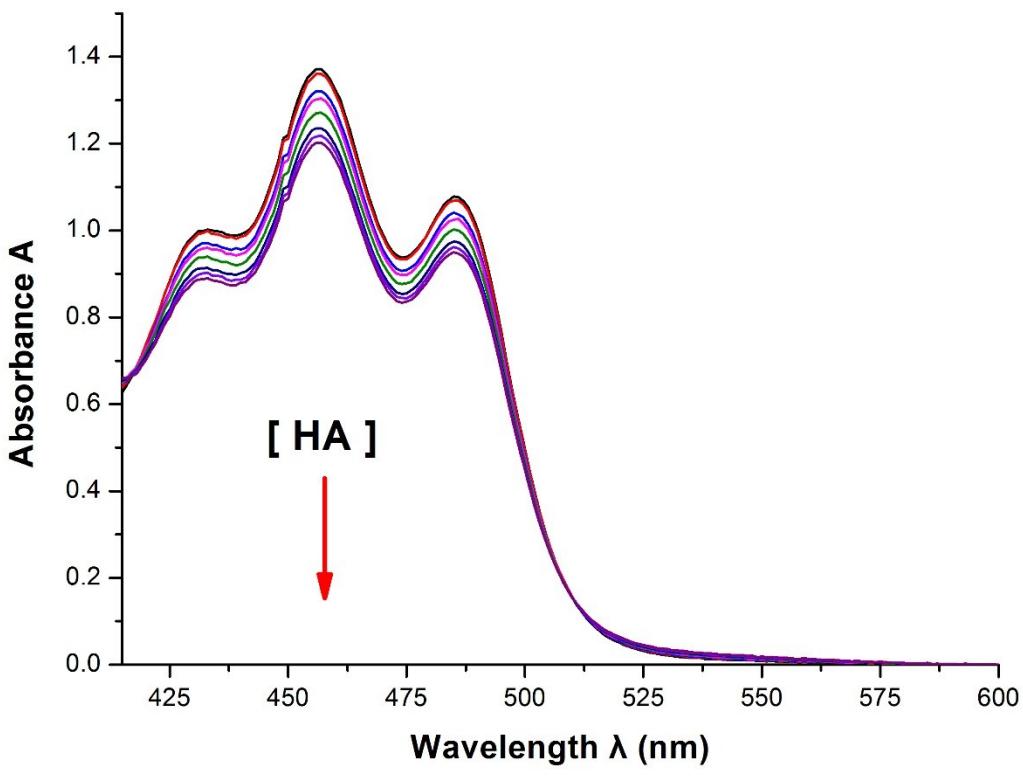
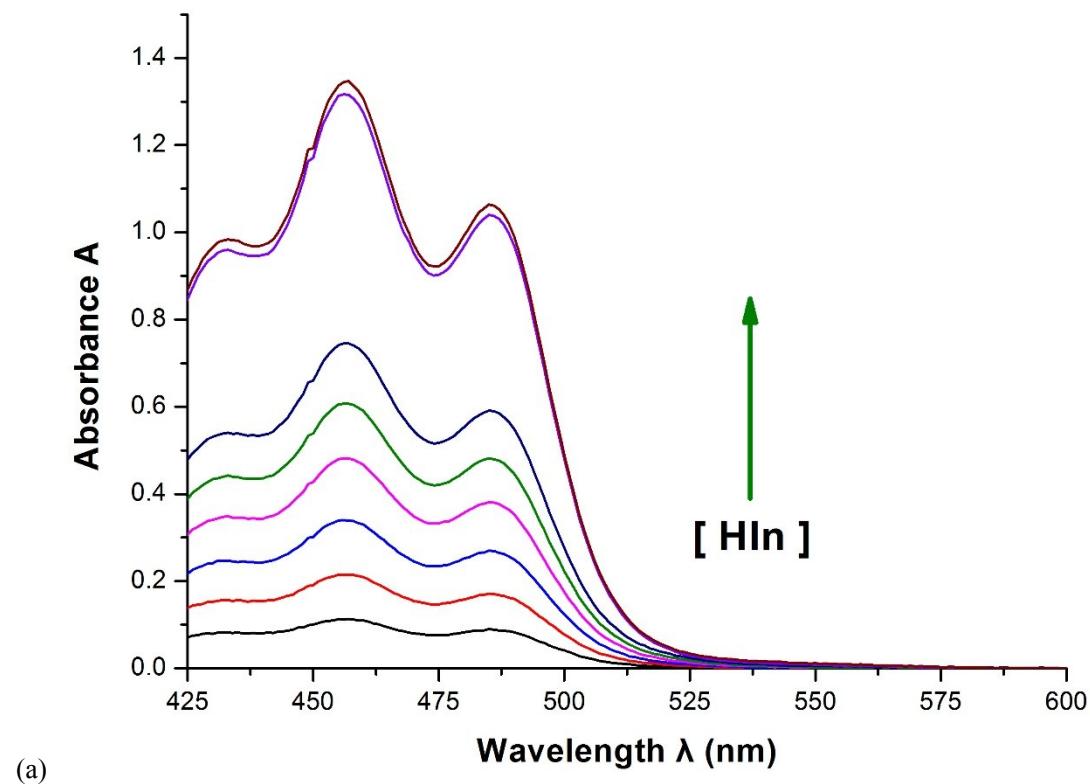


Figure 10. (a) Absorption spectra of the anion derived from **2,7-diBr-9-PhS-FH** for various added amounts of **2,7-diBr-9-PhS-FH** during the titration. (b) Absorption spectra of the anion derived from **2,7-diBr-9-PhS-FH** for various added amounts of catalyst **13** during the titration.



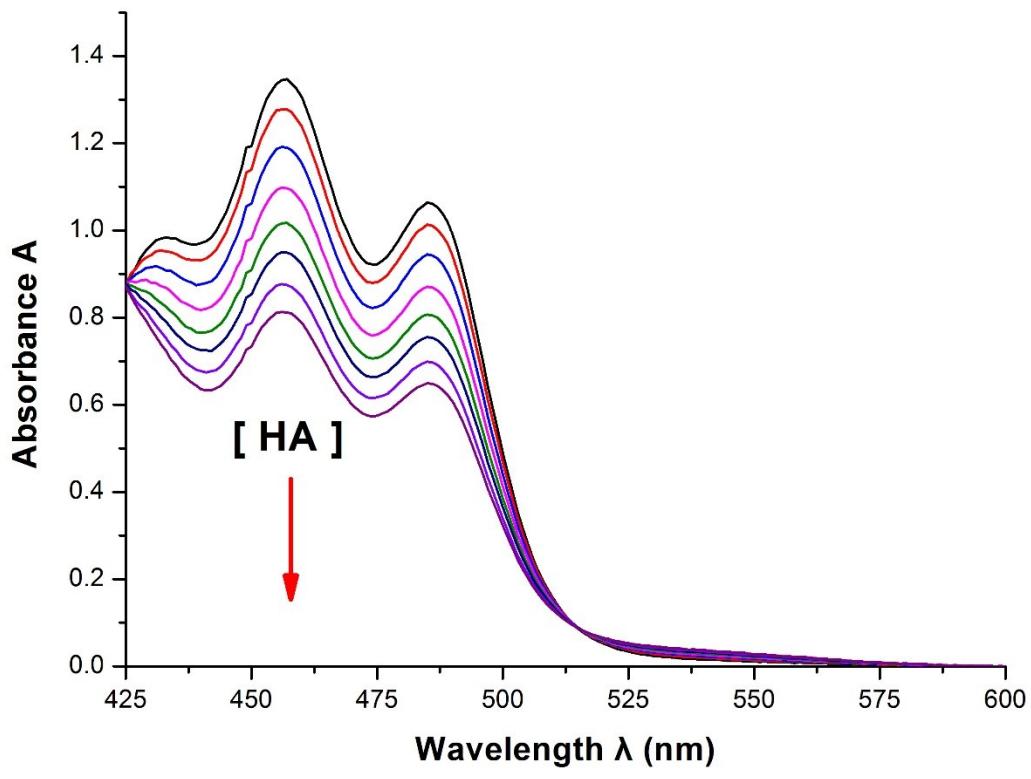
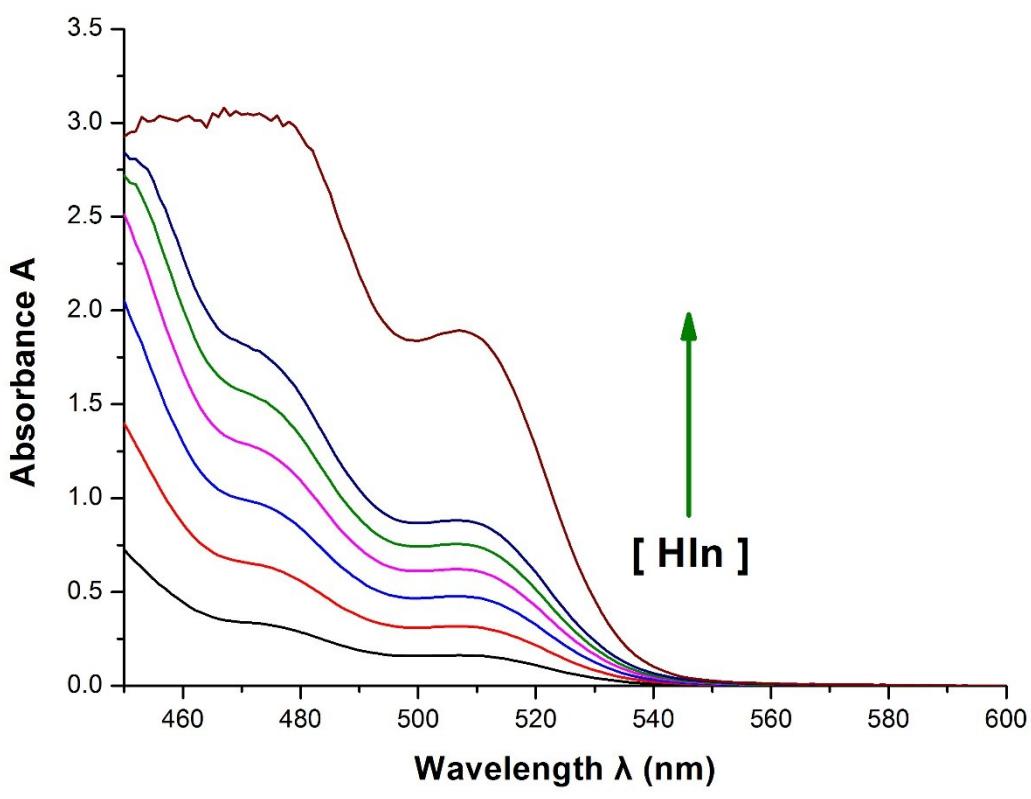


Figure 11. (a) Absorption spectra of the anion derived from **2,7-diBr-9-PhS-FH** for various added amounts of **2,7-diBr-9-PhS-FH** during the titration. (b) Absorption spectra of the anion derived from **2,7-diBr-9-PhS-FH** for various added amounts of catalyst **14** during the titration.



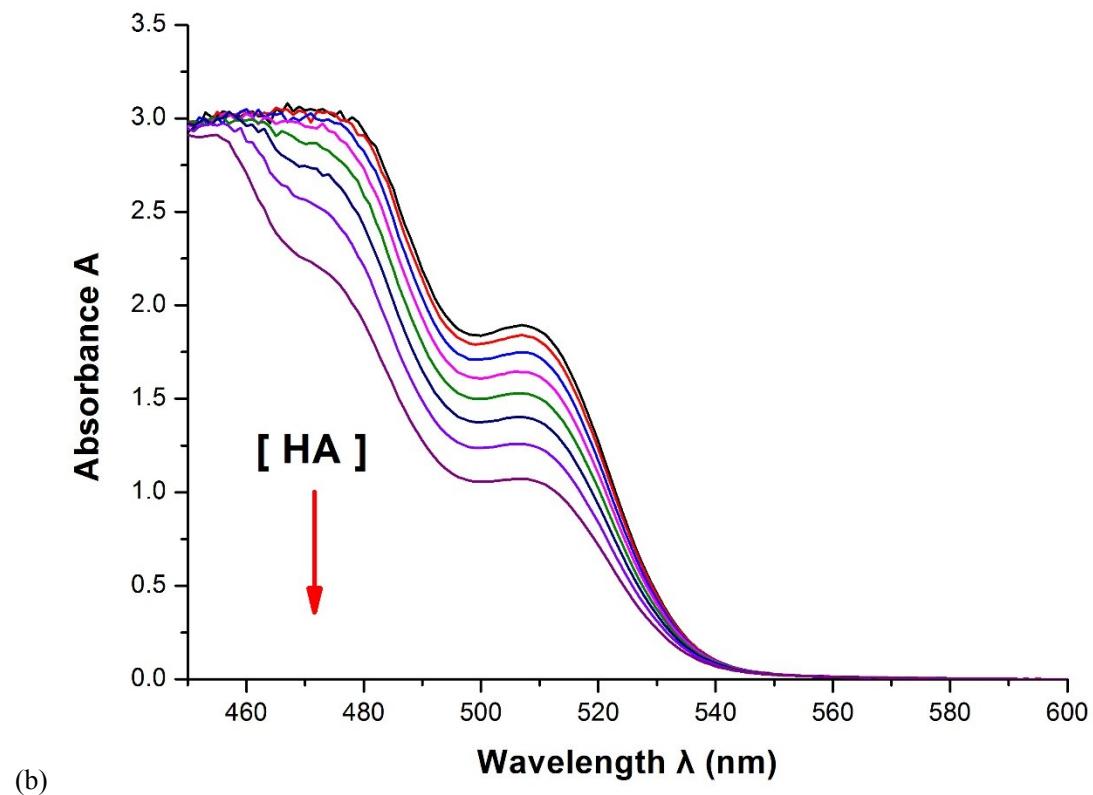
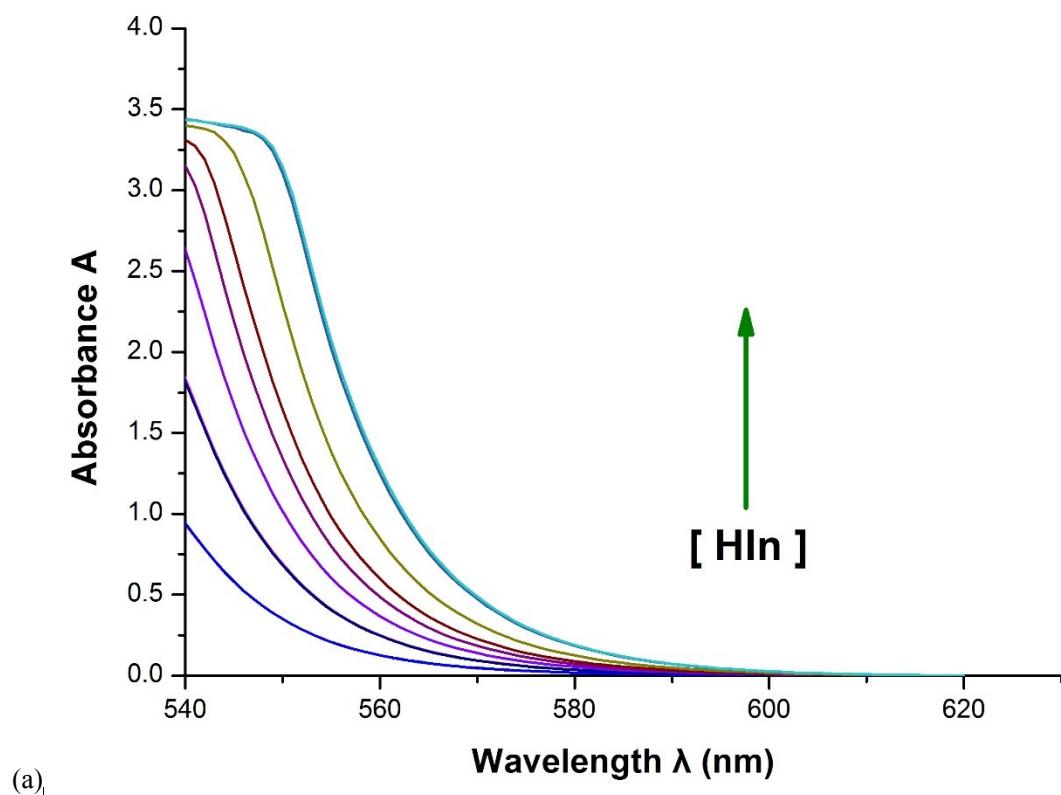
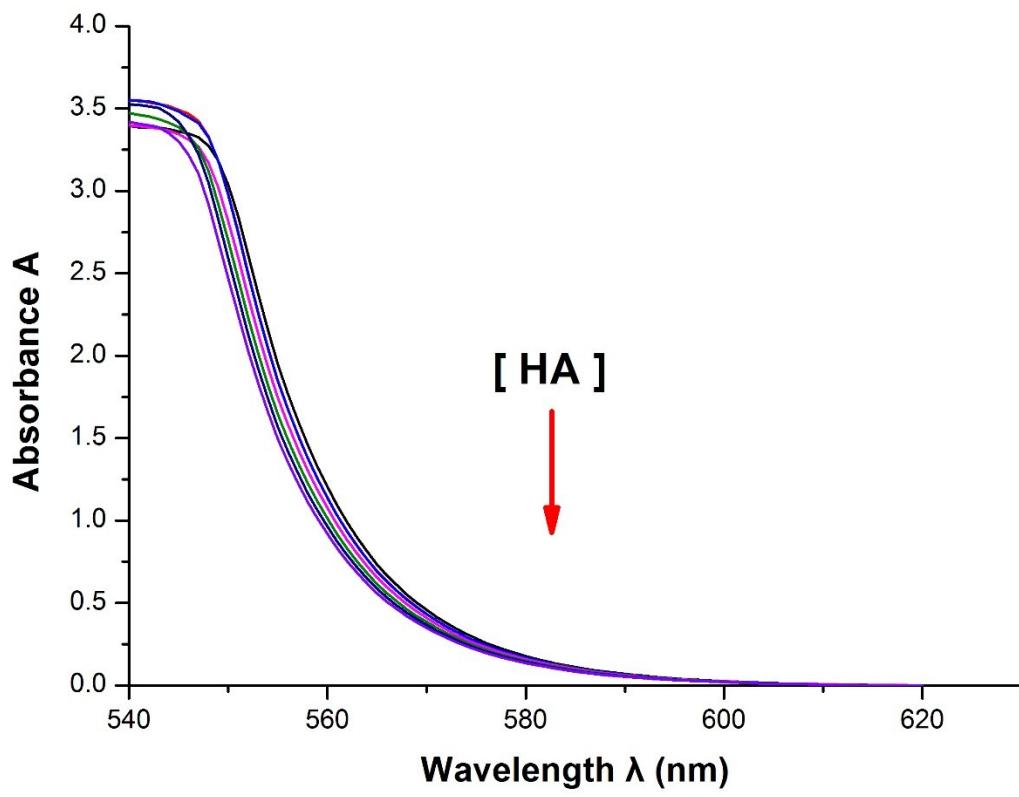


Figure 12. (a) Absorption spectra of the anion derived from **9-(3-Cl-Ph)-FH** for various added amounts of **9-(3-Cl-Ph)-FH** during the titration. (b) Absorption spectra of the anion derived from **9-(3-Cl-Ph)-FH** for various added amounts of catalyst **15** during the titration.





(b),

Figure 13. (a) Absorption spectra of the anion derived from **9-(2-Cl-Ph)-NHN-FH** for various added amounts of **9-(2-Cl-Ph)-NHN-FH** during the titration. (b) Absorption spectra of the anion derived from **9-(2-Cl-Ph)-NHN-FH** for various added amounts of catalyst **1** during the titration.