

Supporting Information for:
**Equilibrium Acidities of Cinchona Alkaloid Organocatalysts
Bearing 6'-Hydrogen Bonding Activator in DMSO**

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UV/Vis spectra of the HIn anion in DMSO

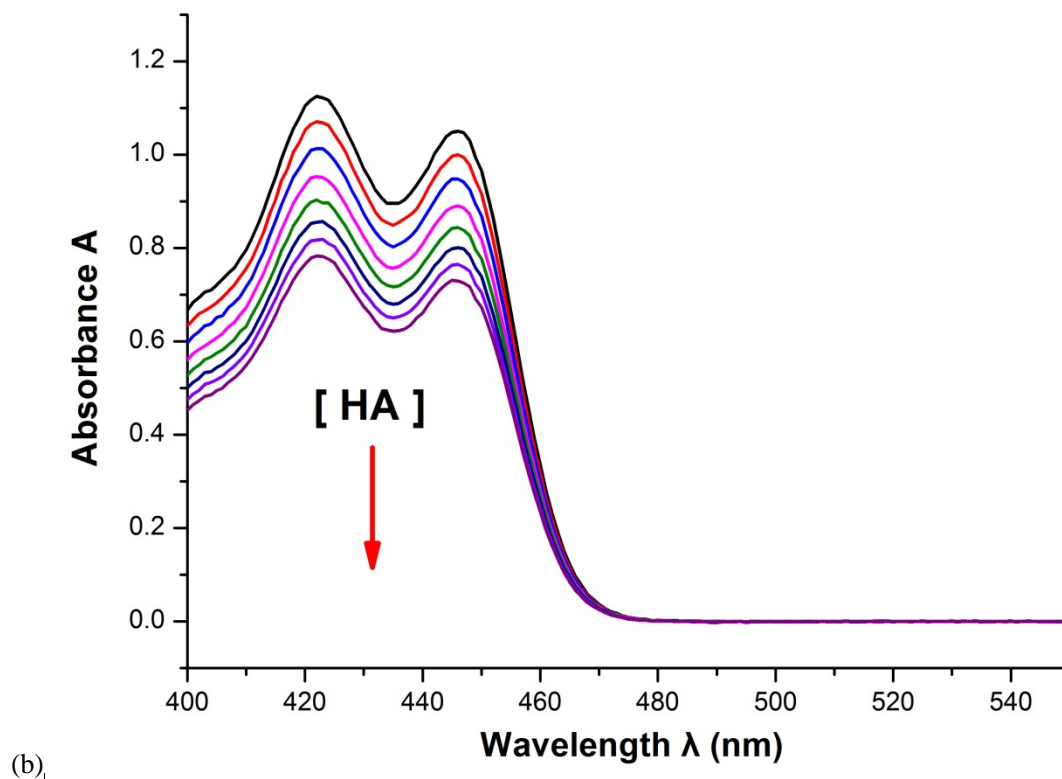
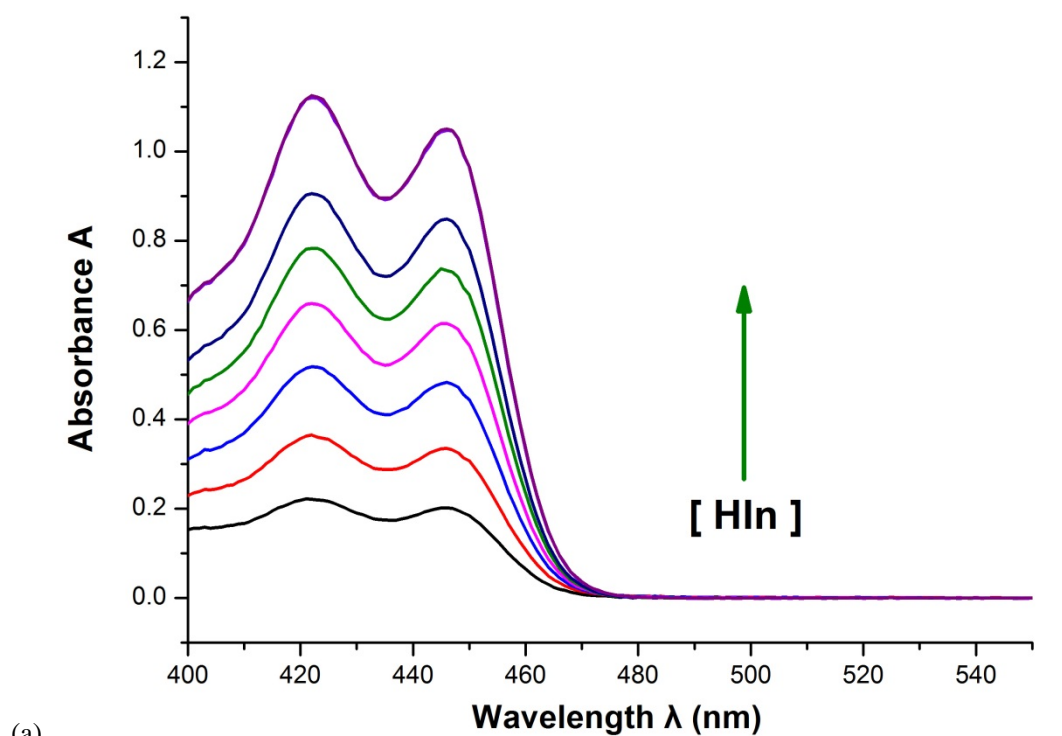


Figure 1. (a) Absorption spectra of the anion derived from 9-CN-FH for various added amount of 9-CN-FH during the titration. (b) Absorption spectra of the anion derived from 9-CN-FH for various added amount of catalyst 1 during the titration.

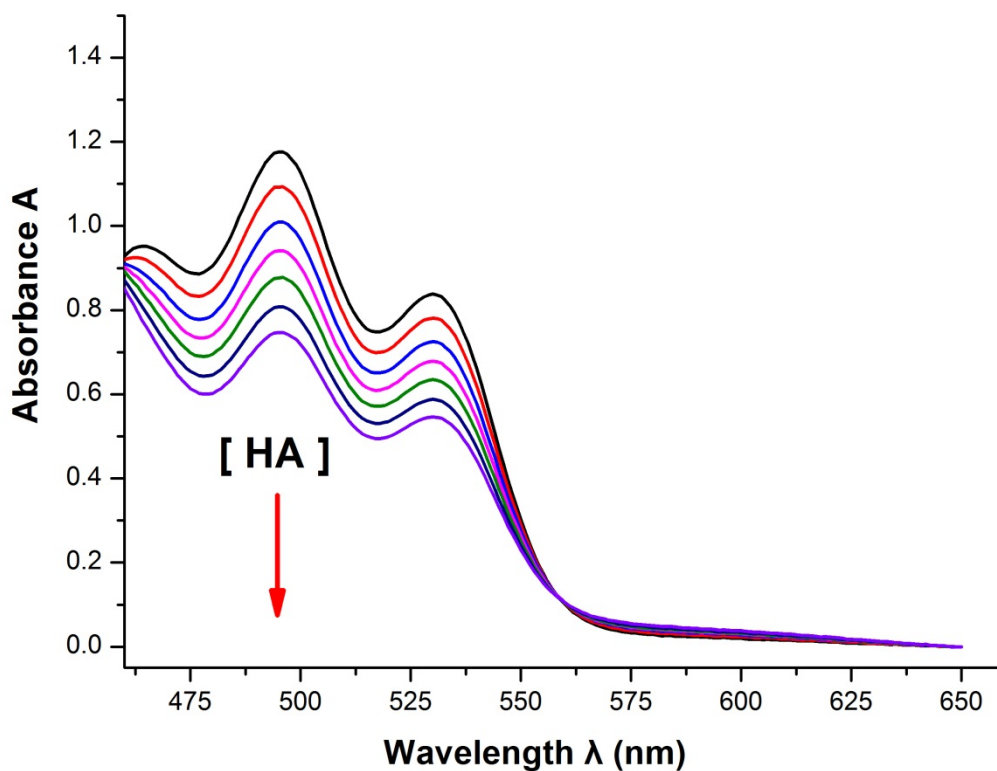
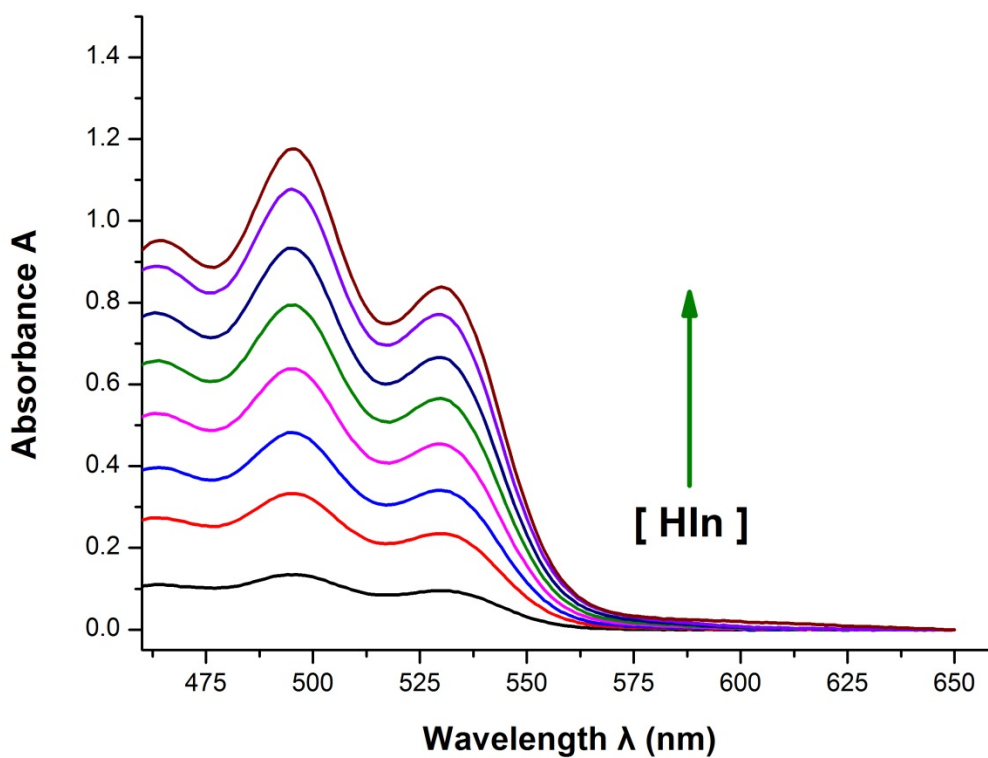


Figure 2. (a) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of **2-Br-9-Ph-FH** during the titration. (b) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of catalyst **2** during the titration.

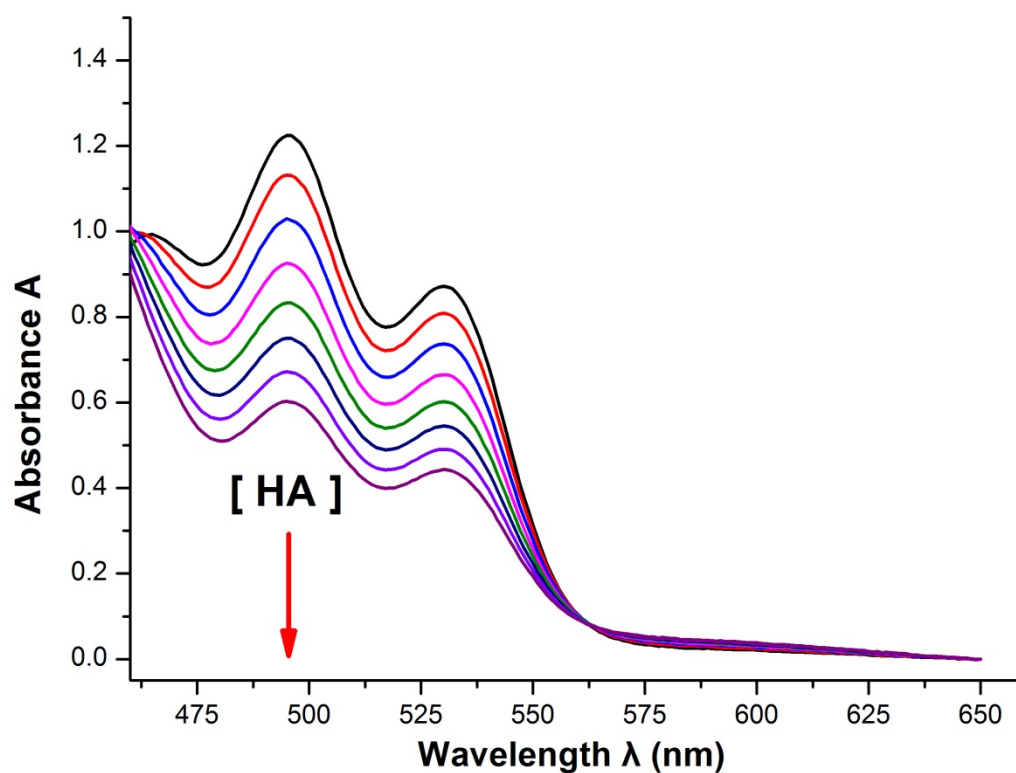
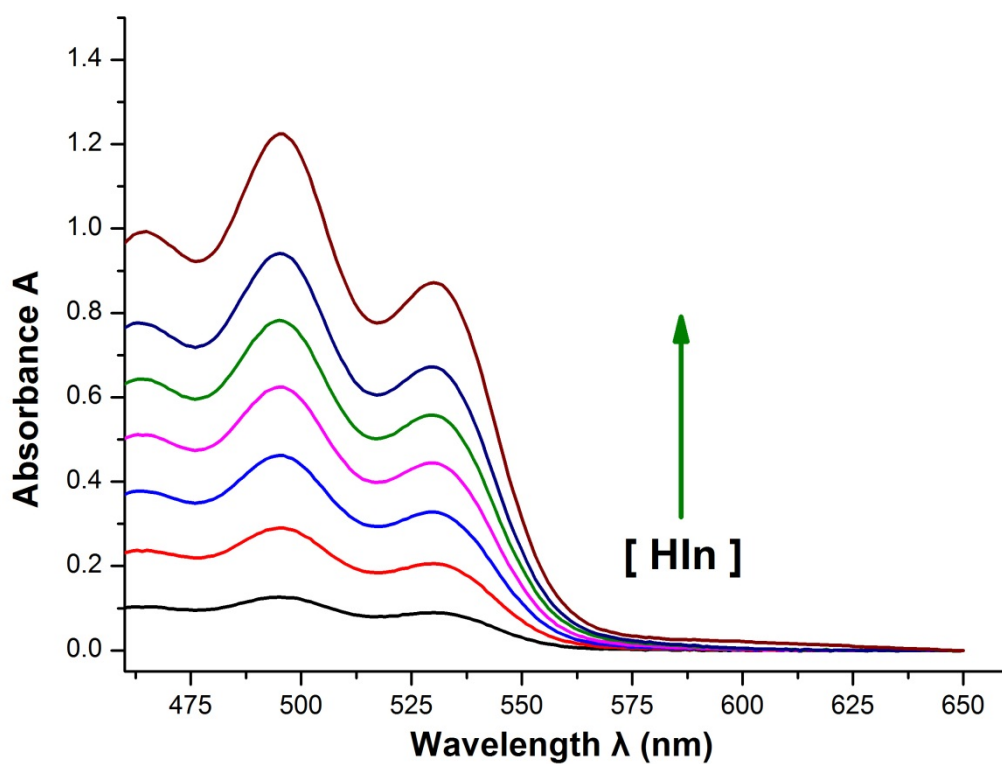
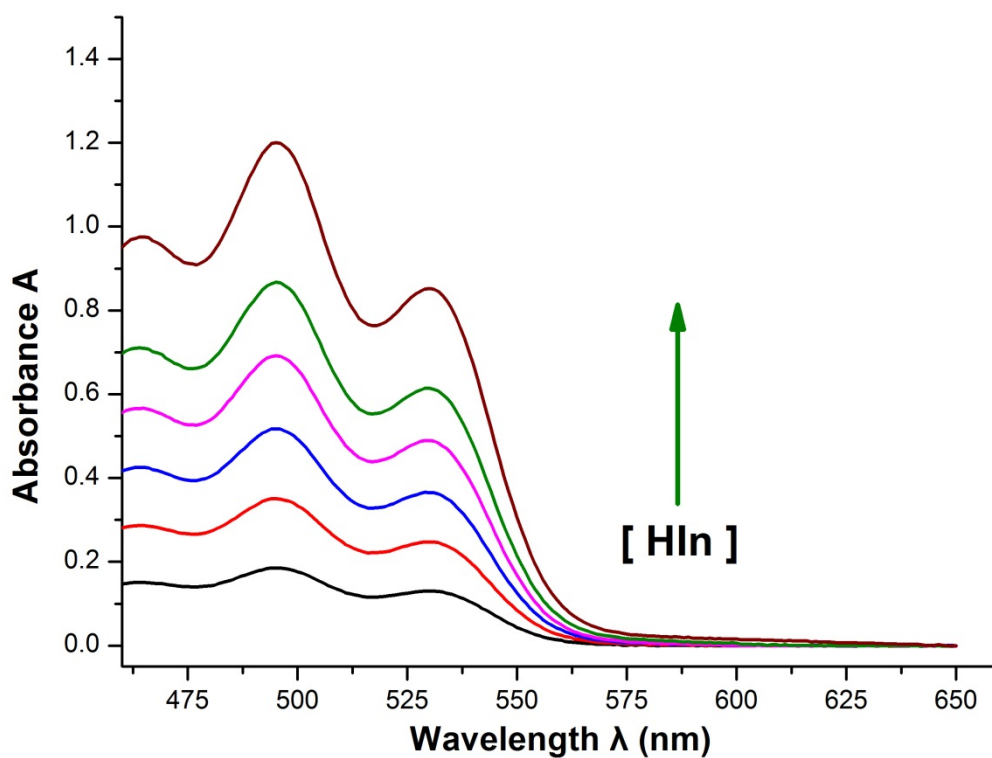
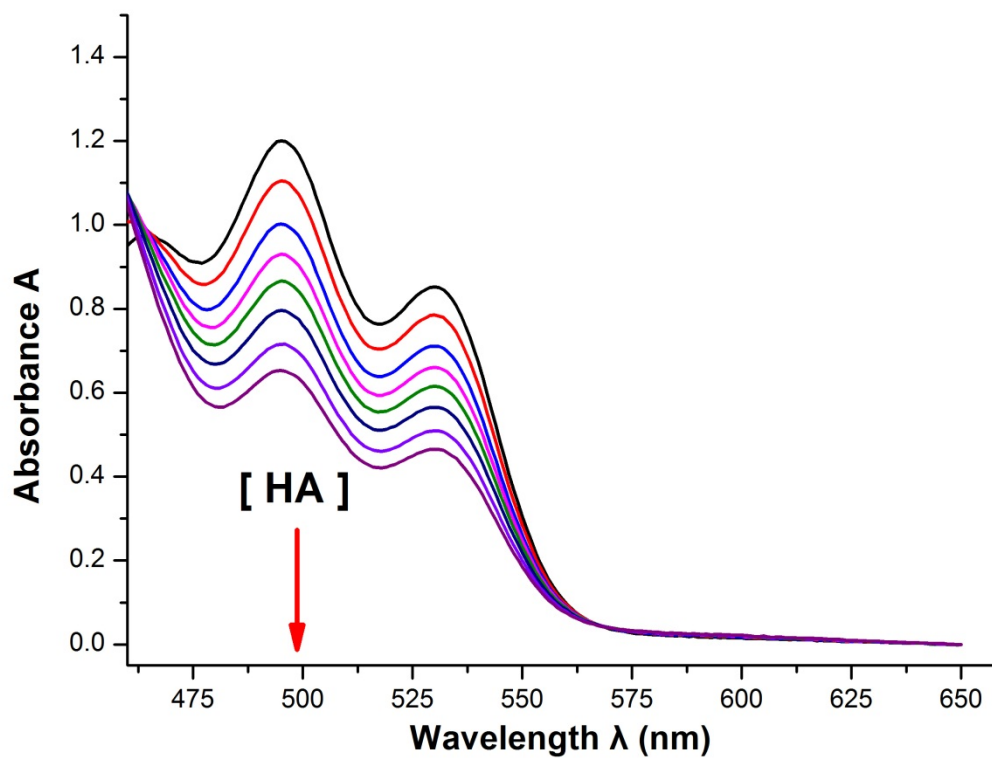


Figure 3. (a) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of **2-Br-9-Ph-FH** during the titration. (b) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of catalyst **3** during the titration.



(a)



(b)

Figure 4. (a) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of **2-Br-9-Ph-FH** during the titration. (b) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of catalyst **4** during the titration.

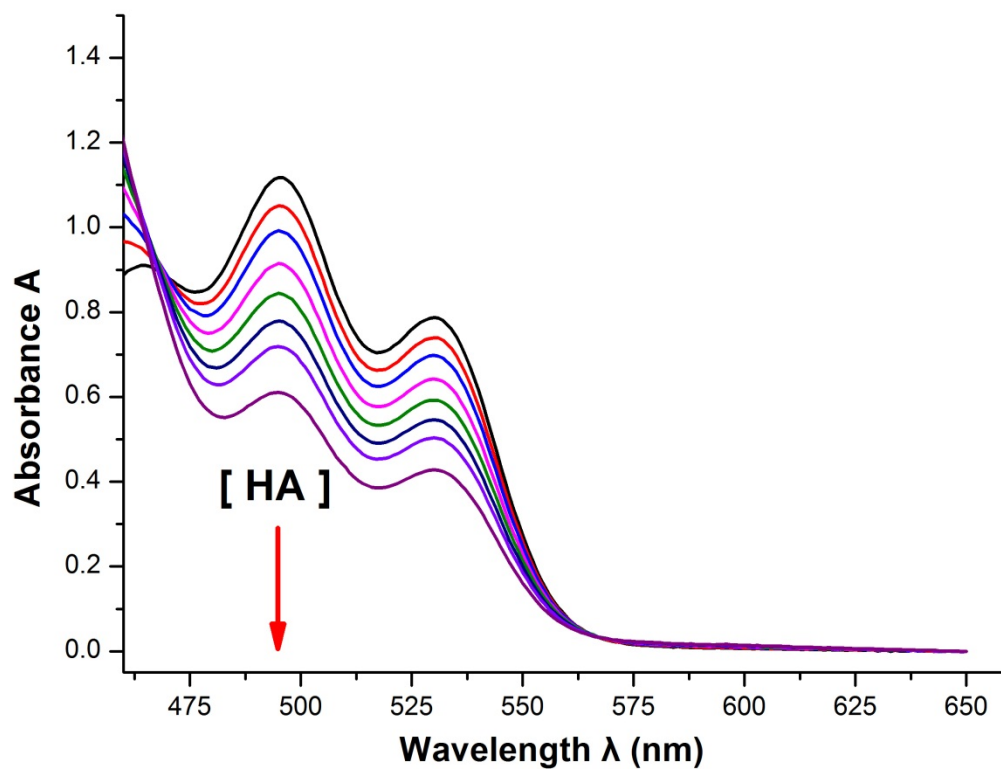
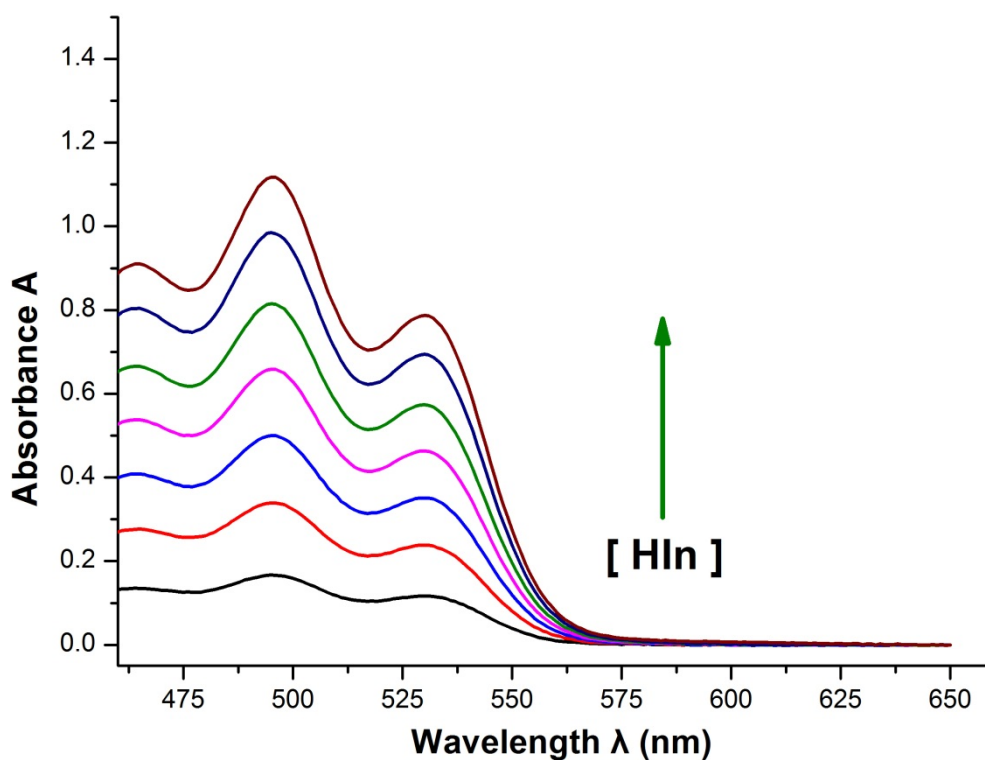


Figure 5. (a) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of **2-Br-9-Ph-FH** during the titration. (b) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of catalyst **5** during the titration.

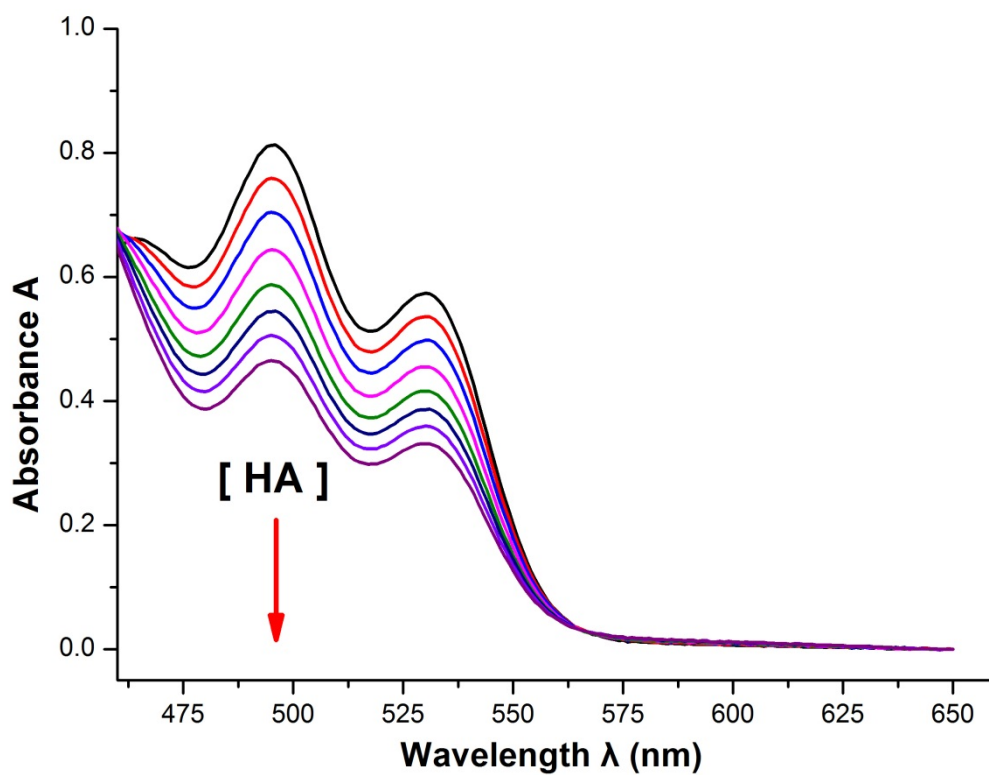
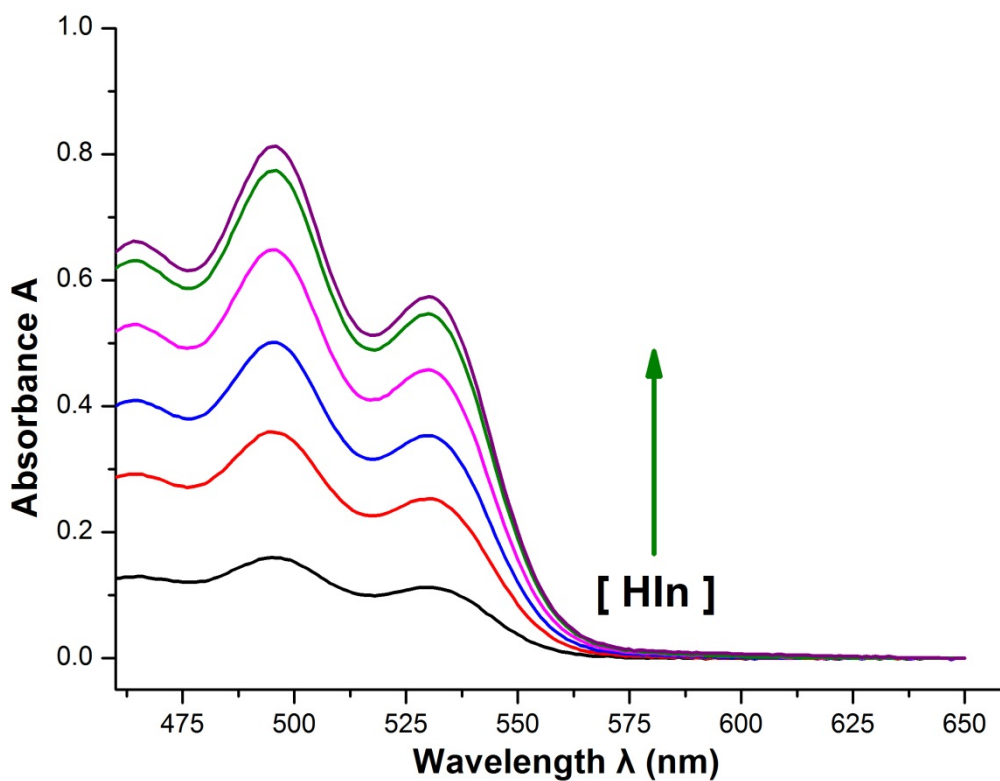
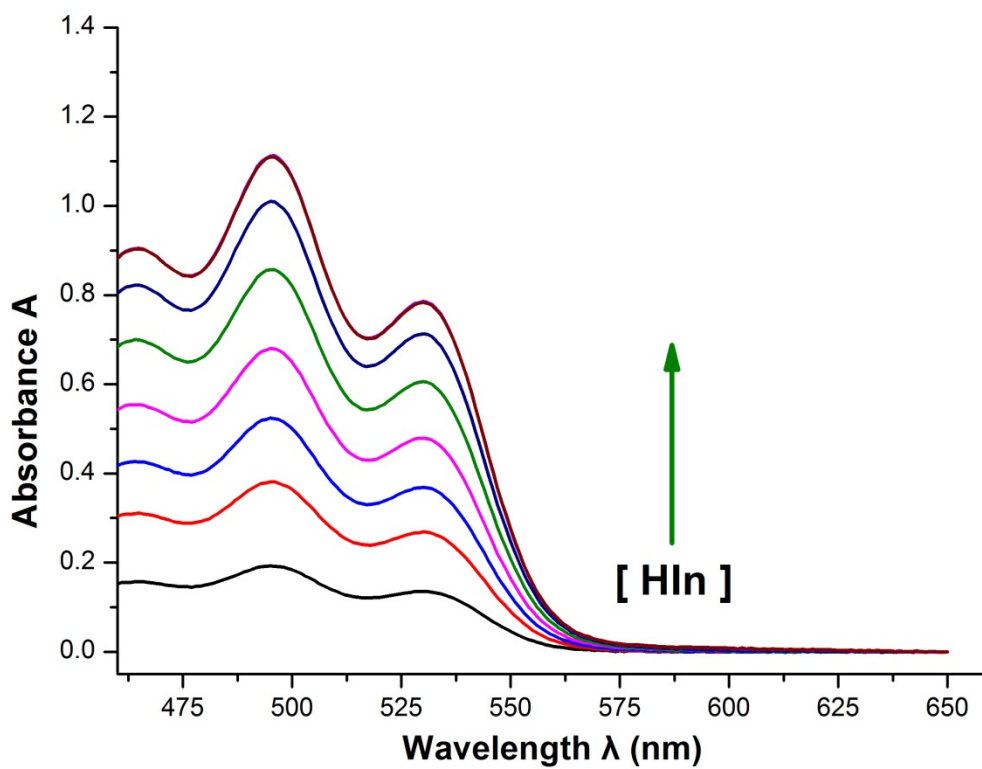
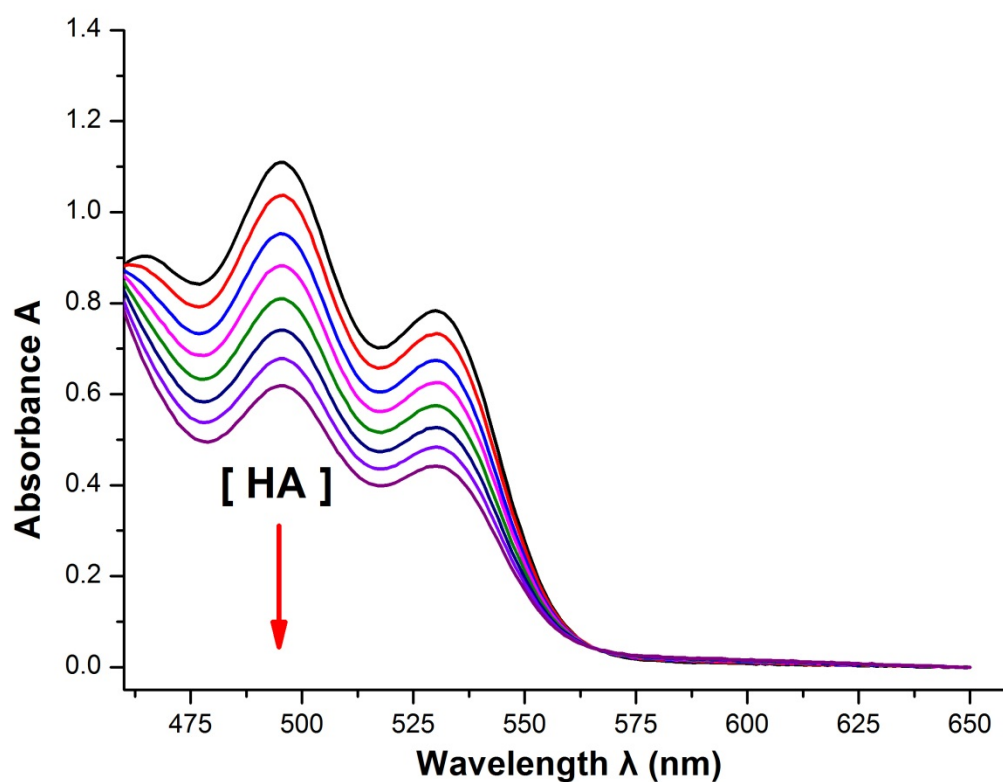


Figure 6. (a) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of **2-Br-9-Ph-FH** during the titration. (b) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of catalyst **6** during the titration.

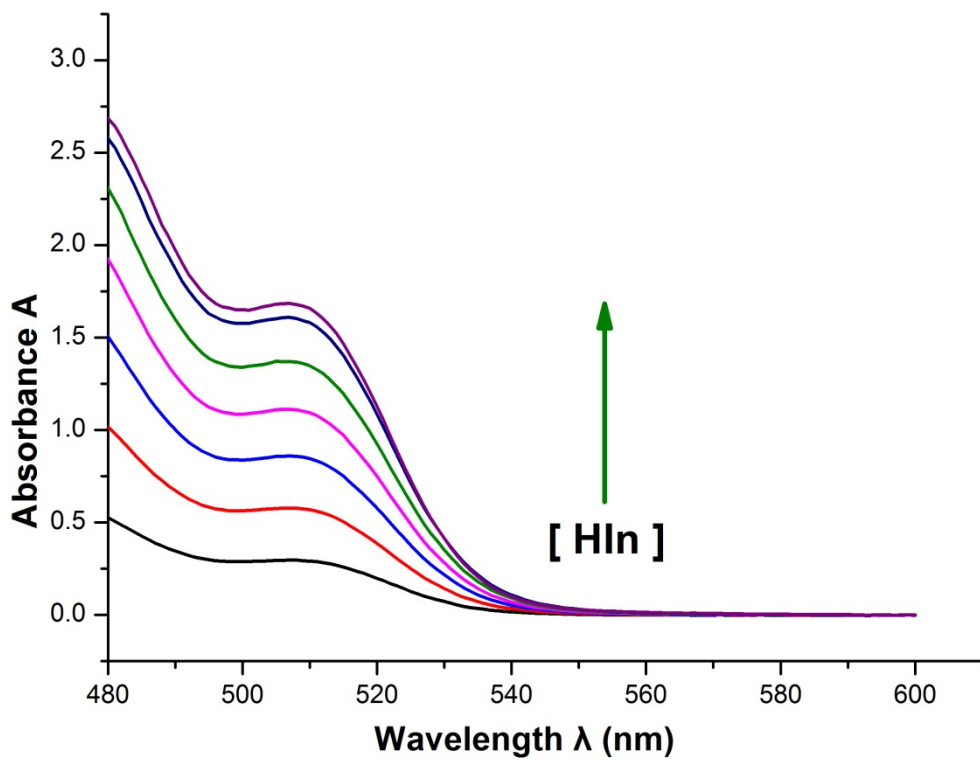


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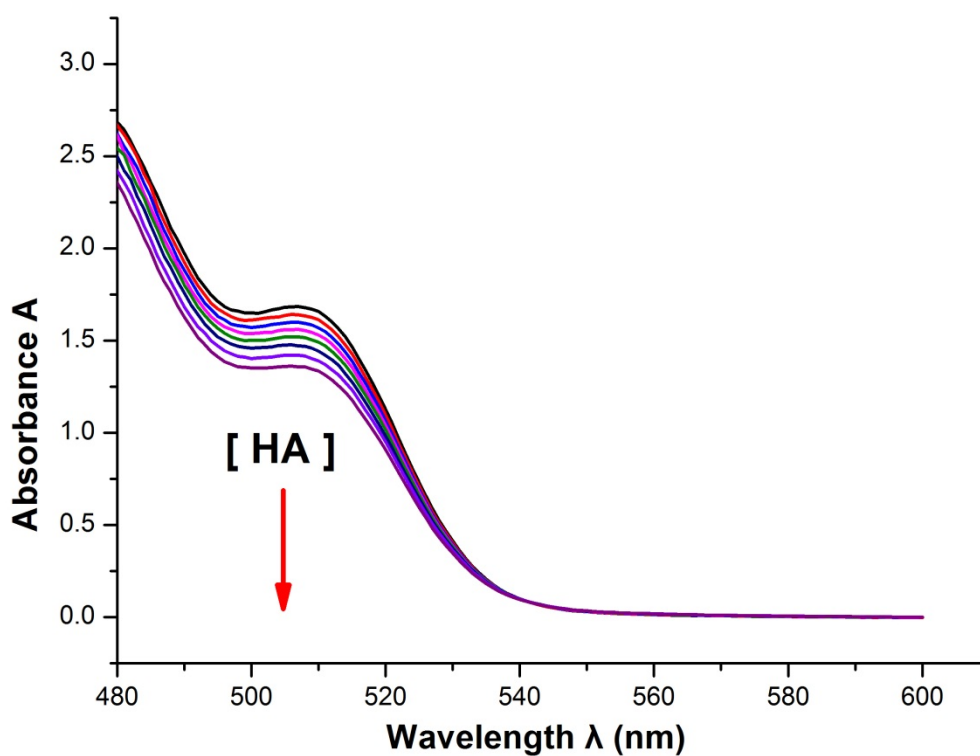


(b),

Figure 7. (a) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of **2-Br-9-Ph-FH** during the titration. (b) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of catalyst **7** during the titration.

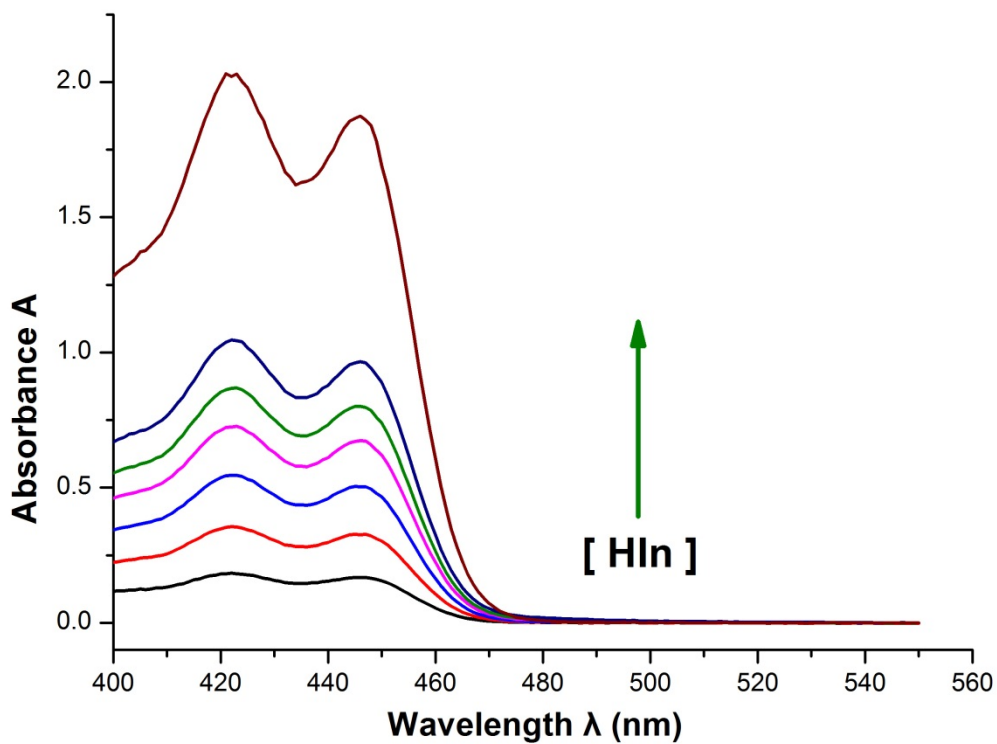


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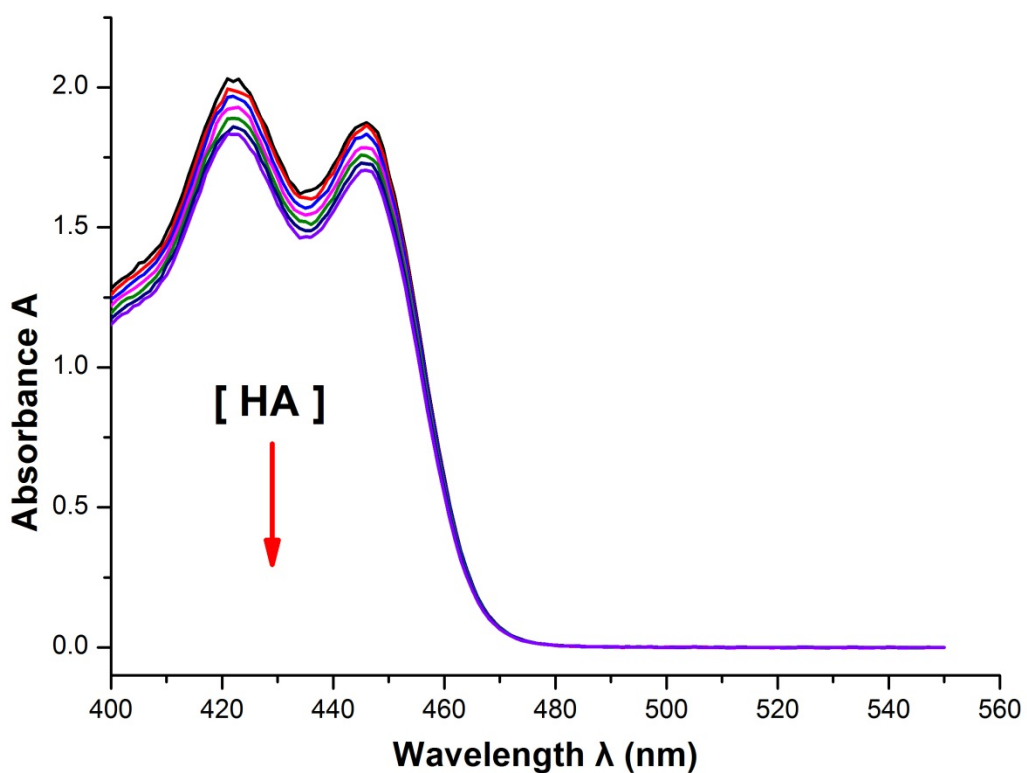


(b),

Figure 8. (a) Absorption spectra of the anion derived from 9-(3-Cl-Ph)-FH for various added amount 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 amount of catalyst 8 during the titration.

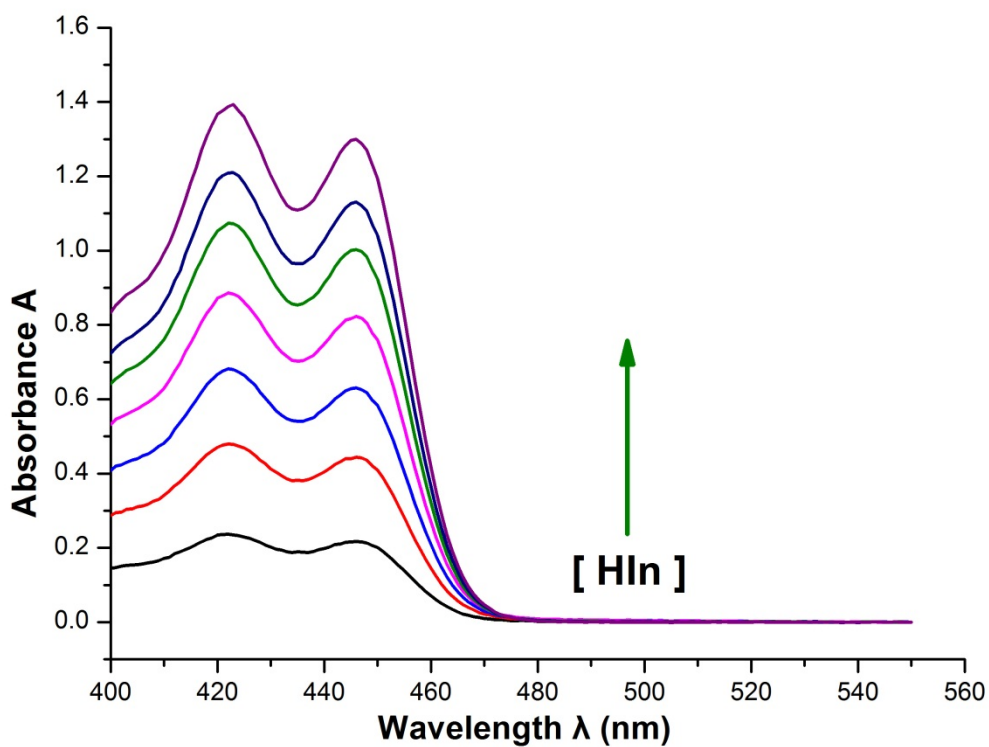


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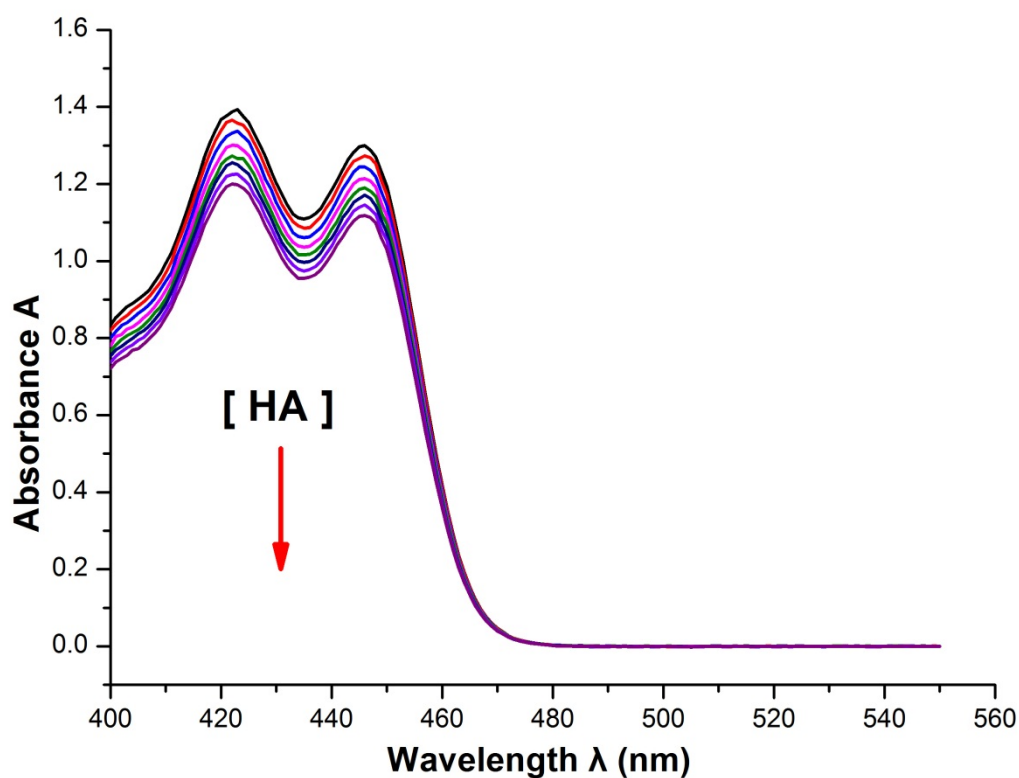


(b),

Figure 9. (a) Absorption spectra of the anion derived from 9-CN-FH for various added amount of 9-CN-FH during the titration. (b) Absorption spectra of the anion derived from 9-CN-FH for various added amount of catalyst 9 during the titration.

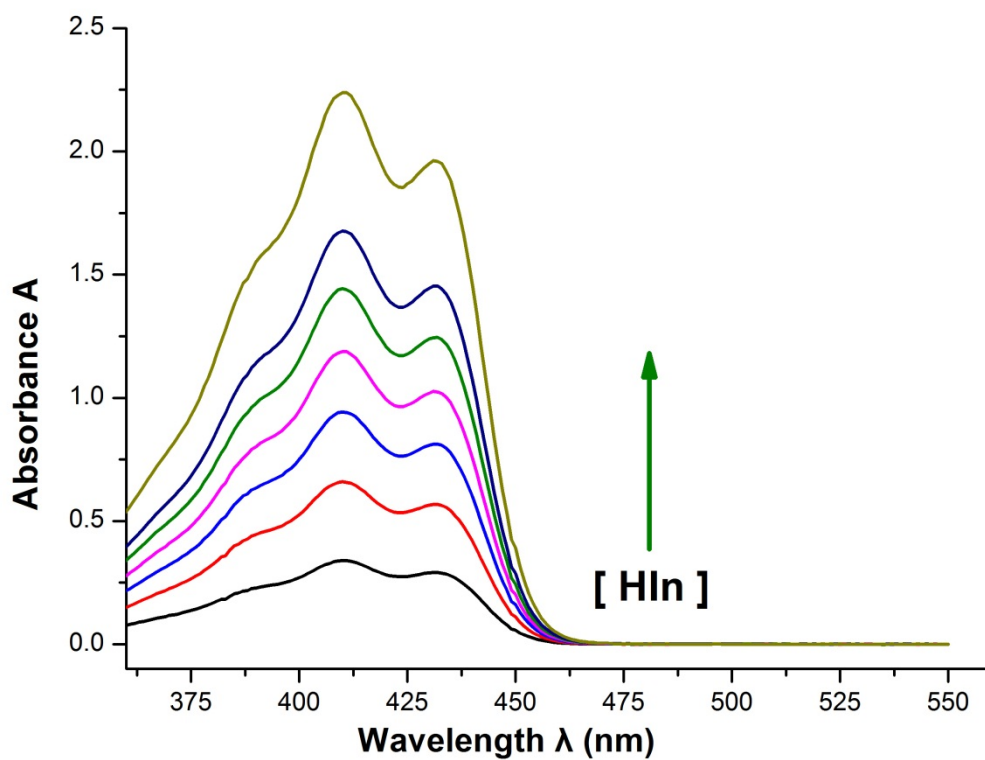


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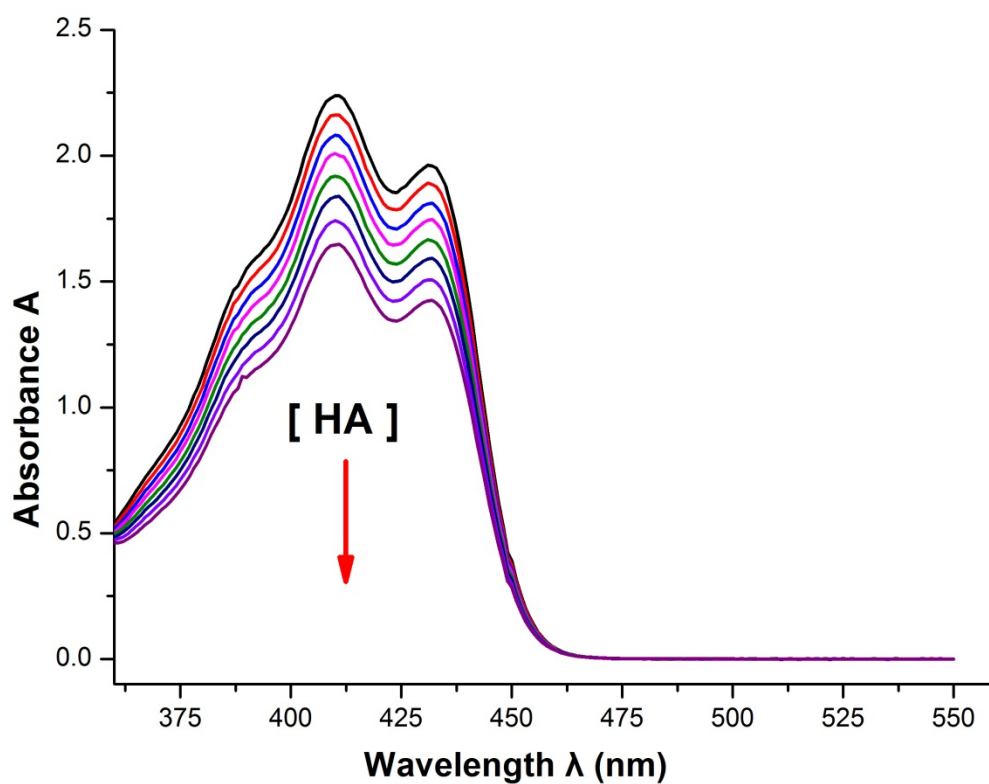


(b),

Figure 10. (a) Absorption spectra of the anion derived from **9-CN-FH** for various added amount of **9-CN-FH** during the titration. (b) Absorption spectra of the anion derived from **9-CN-FH** for various added amount of catalyst **10** during the titration.

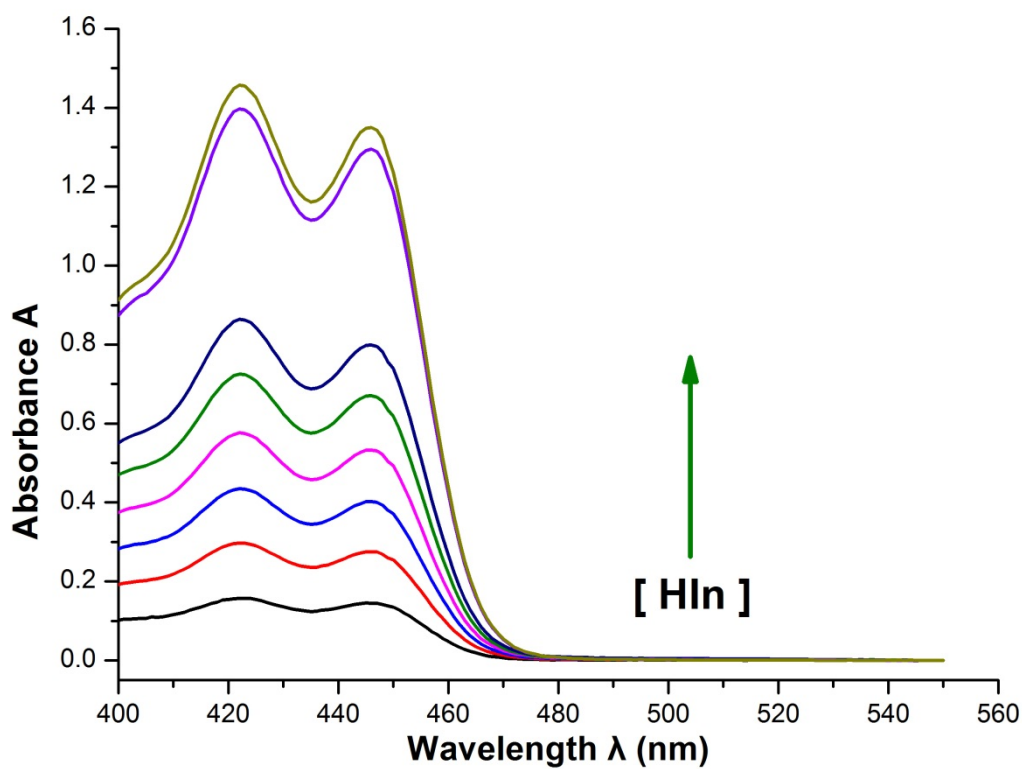


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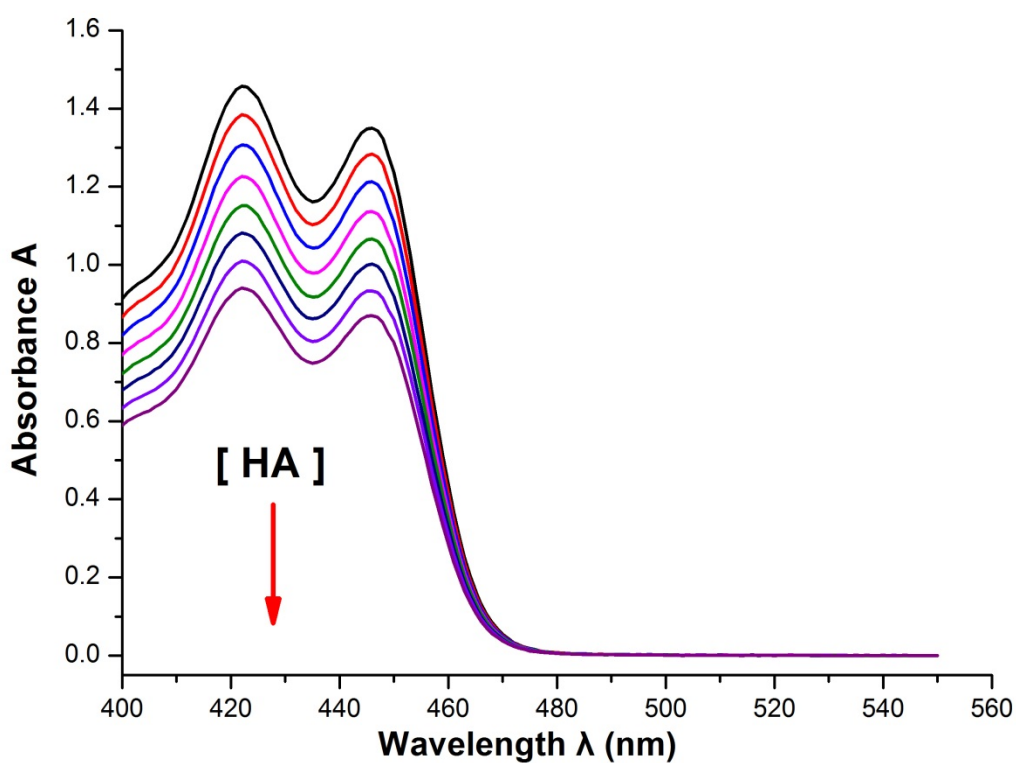


(b),

Figure 11. (a) Absorption spectra of the anion derived from 9-CO₂Me-FH for various added amount of 9-CO₂Me-FH during the titration. (b) Absorption spectra of the anion derived from 9-CO₂Me-FH for various added amount of catalyst 11 during the titration.

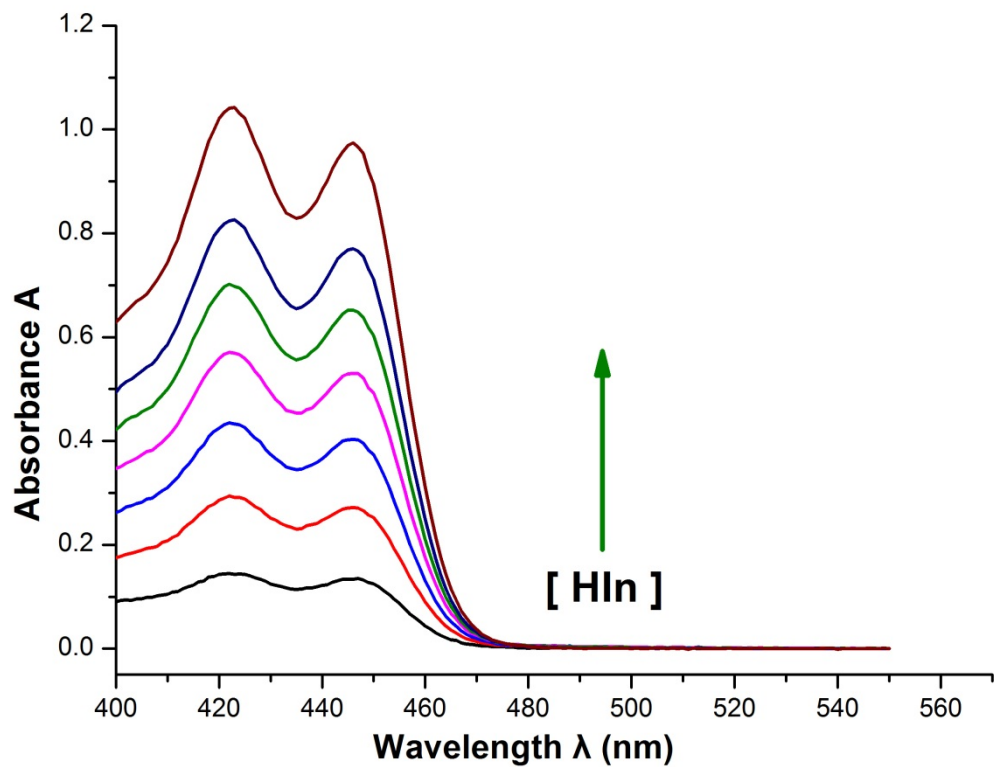


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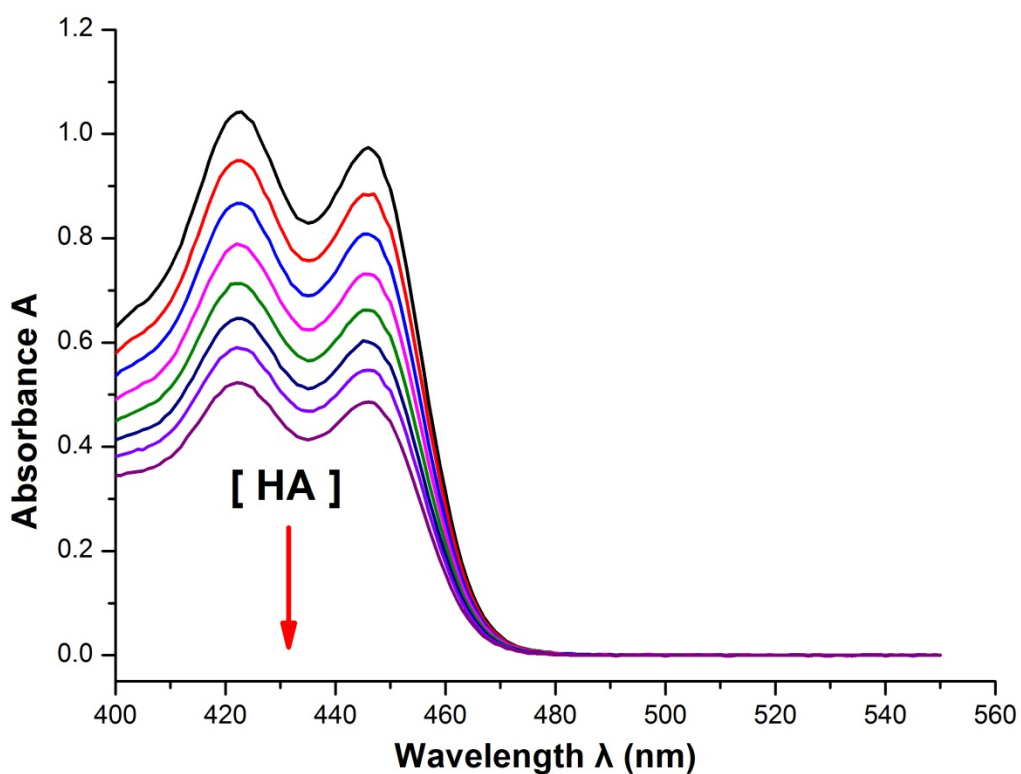


(b),

Figure 12. (a) Absorption spectra of the anion derived from 9-CN-FH for various added amount of 9-CN-FH during the titration. (b) Absorption spectra of the anion derived from 9-CN-FH for various added amount of catalyst 12 during the titration.



(a),



(b),

Figure 13. (a) Absorption spectra of the anion derived from **9-CN-FH** for various added amount of **9-CN-FH** during the titration. (b) Absorption spectra of the anion derived from **9-CN-FH** for various added amount of catalyst **13** during the titration.

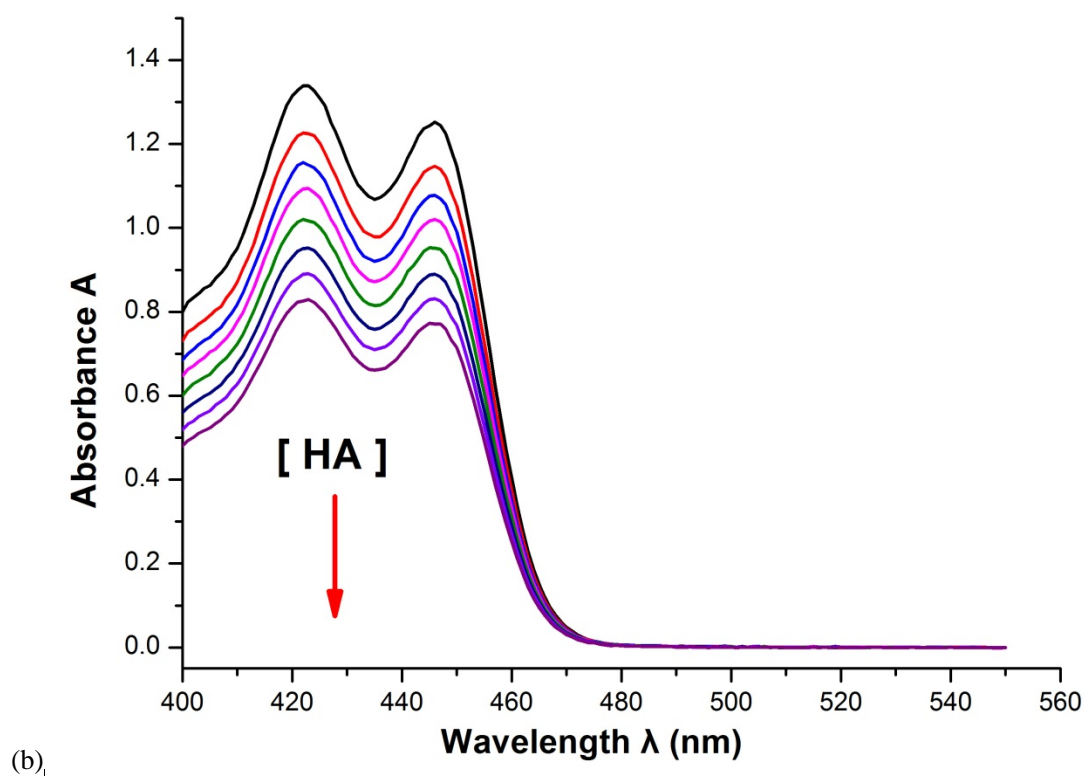
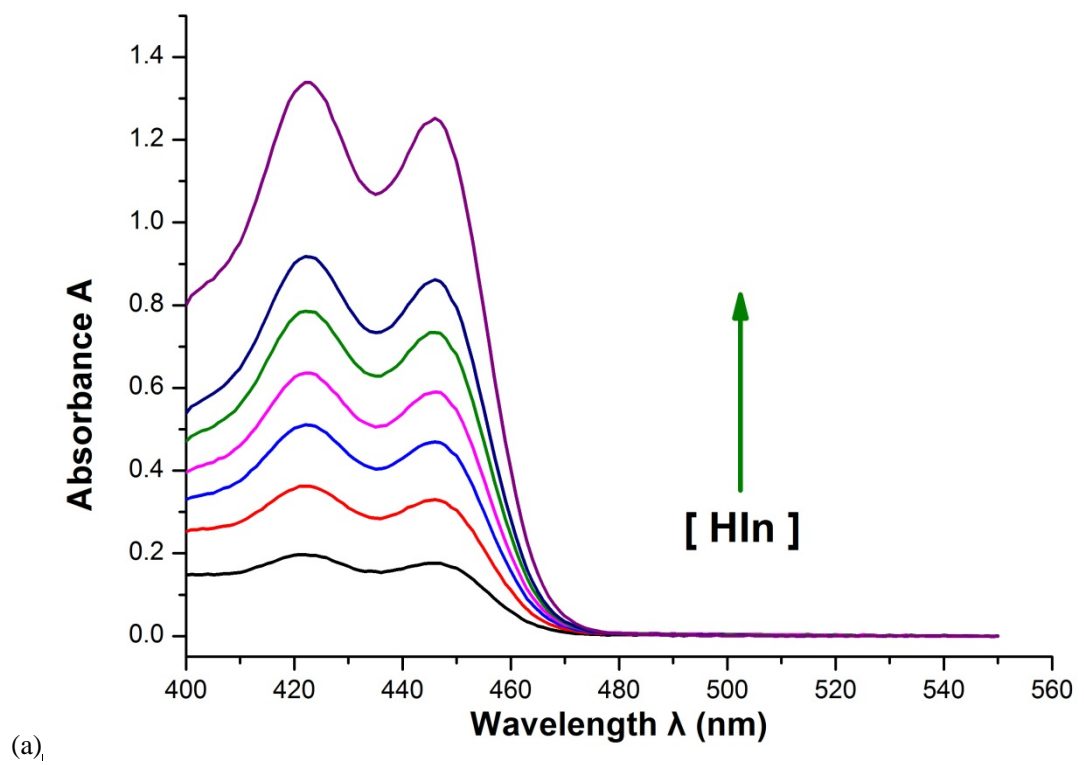
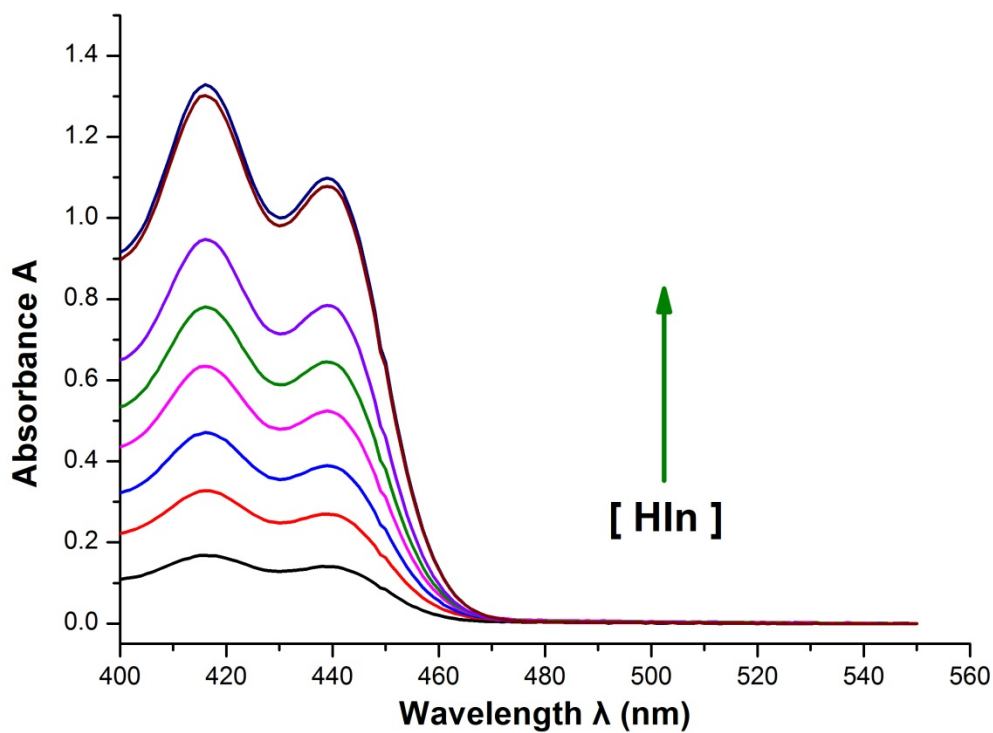
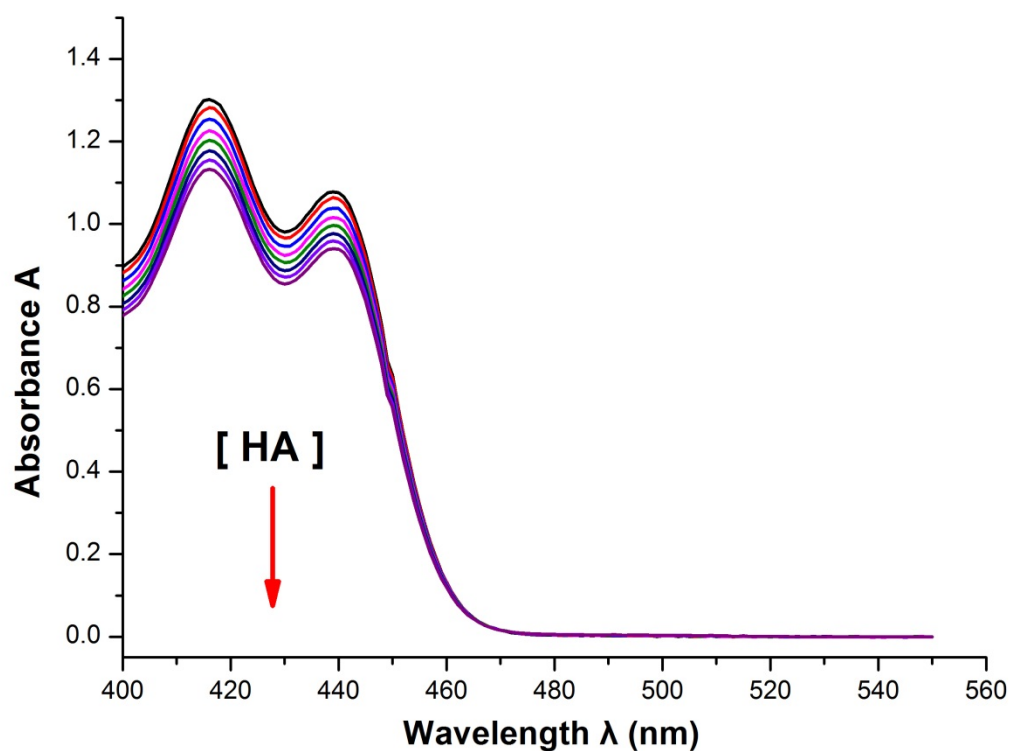


Figure 14. (a) Absorption spectra of the anion derived from 9-CN-FH for various added amount of 9-CN-FH during the titration. (b) Absorption spectra of the anion derived from 9-CN-FH for various added amount of catalyst 15 during the titration.

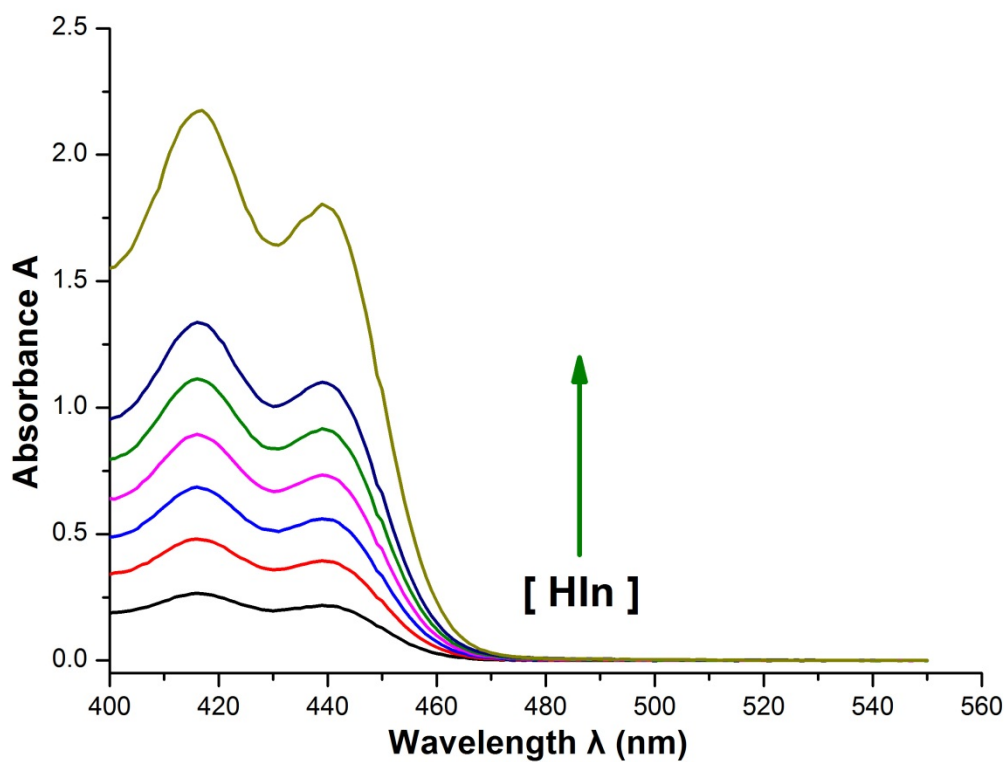


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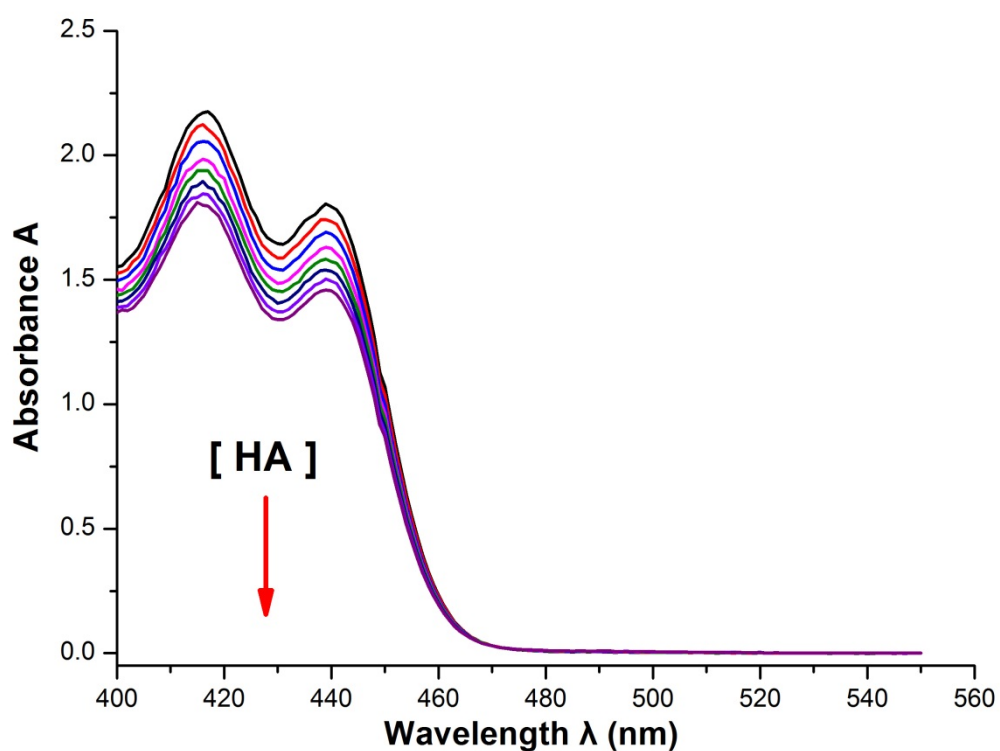


(b),

Figure 15. (a) Absorption spectra of the anion derived from **2,7-diBr-9-CO₂Me-FH** for various added amount of **2,7-diBr-9-CO₂Me-FH** during the titration. (b) Absorption spectra of the anion derived from **2,7-diBr-9-CO₂Me-FH** for various added amount of catalyst **16** during the titration.

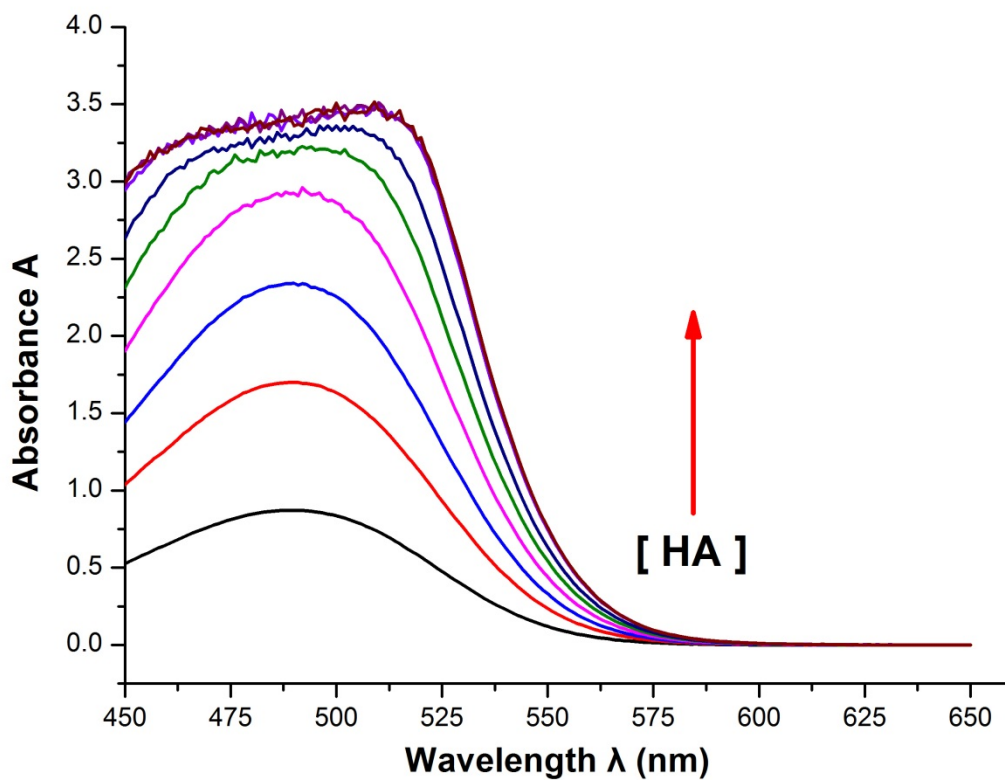


(a)

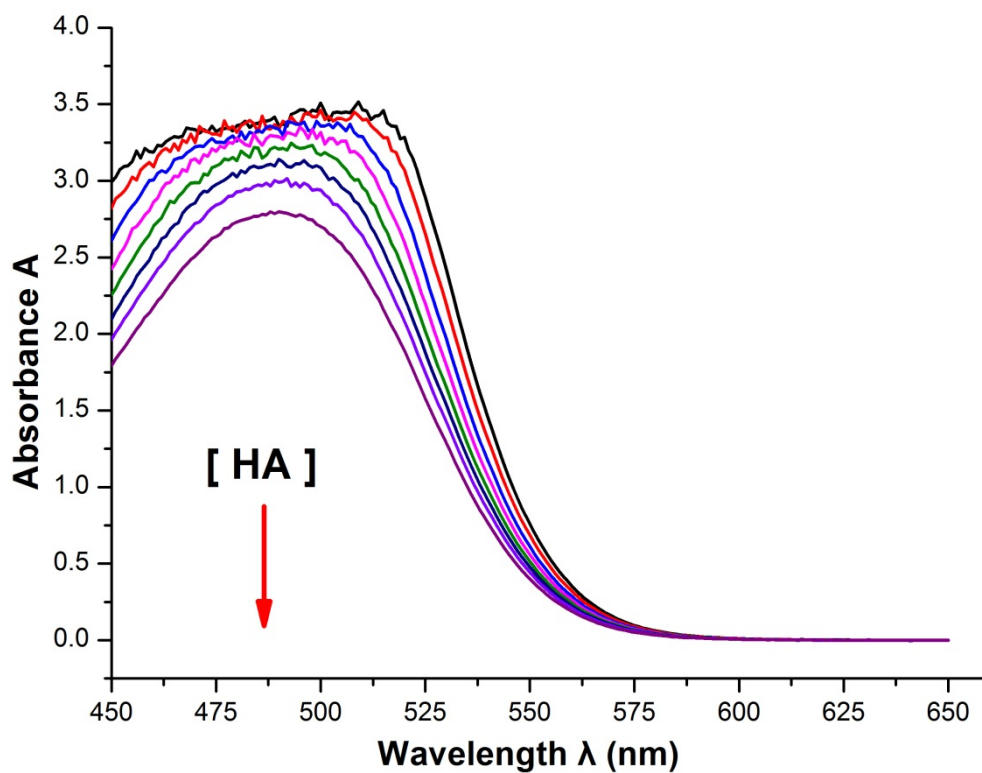


(b)

Figure 16. (a) Absorption spectra of the anion derived from **2,7-diBr-9-CO₂Me-FH** for various added amount of **2,7-diBr-9-CO₂Me-FH** during the titration. (b) Absorption spectra of the anion derived from **2,7-diBr-9-CO₂Me-FH** for various added amount of catalyst **17** during the titration.

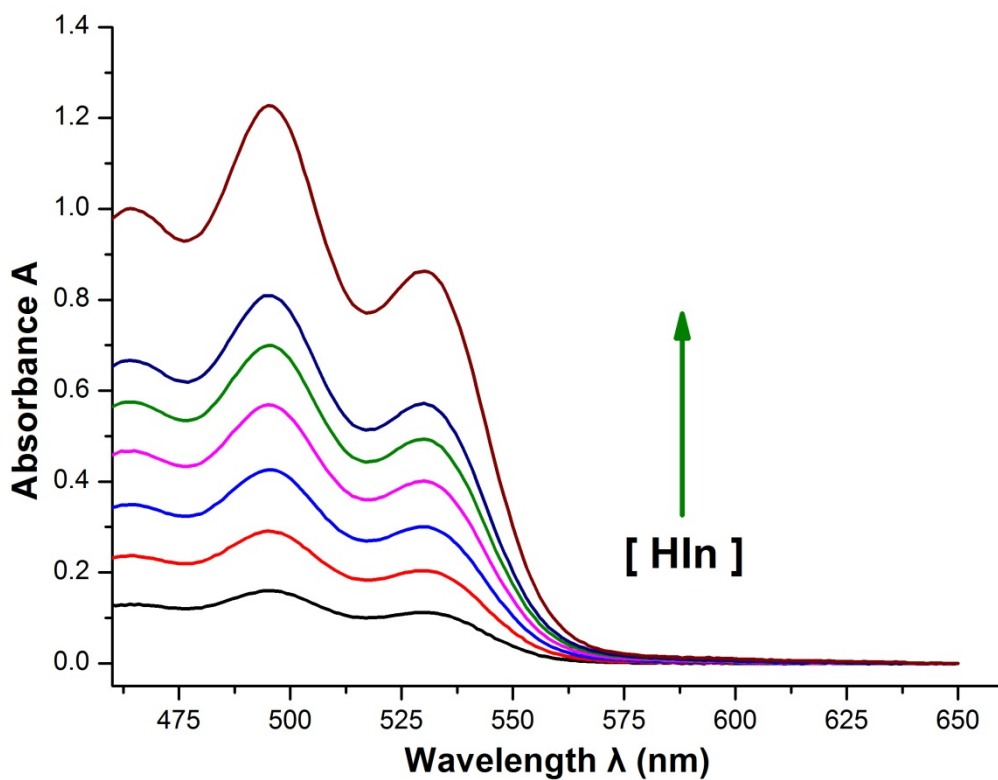


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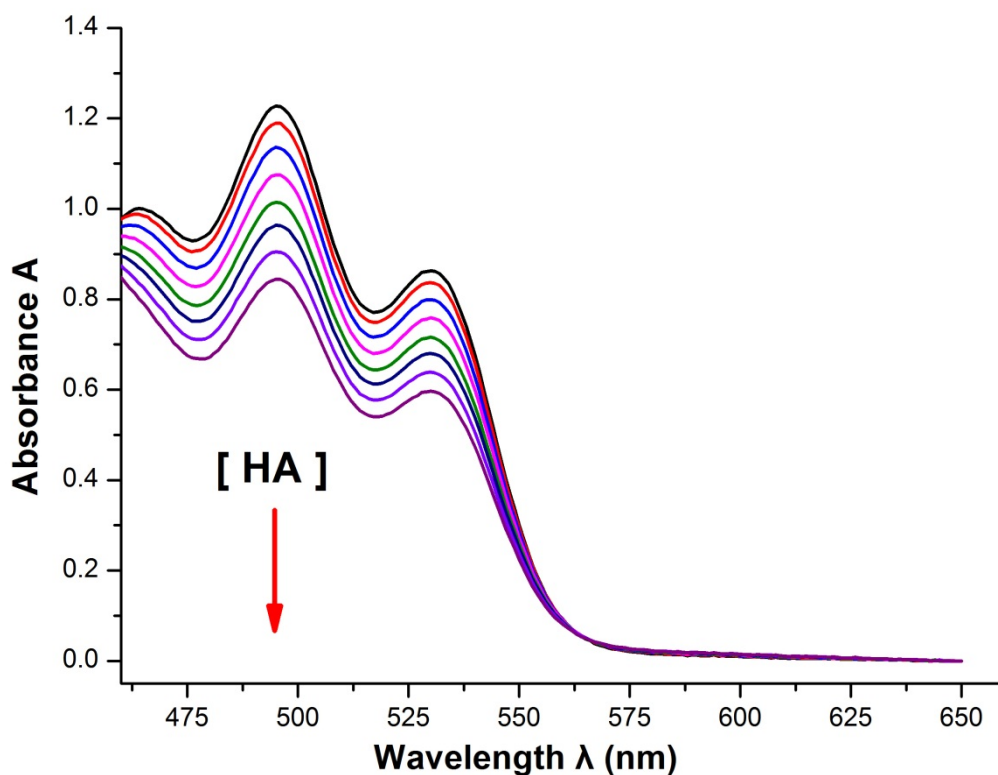


(b),

Figure 17. (a) Absorption spectra of the anion derived from catalyst **18** for various added amount of catalyst **18** during the titration. (b) Absorption spectra of the anion derived from catalyst **18** for various added amount of carbazole during the titration.

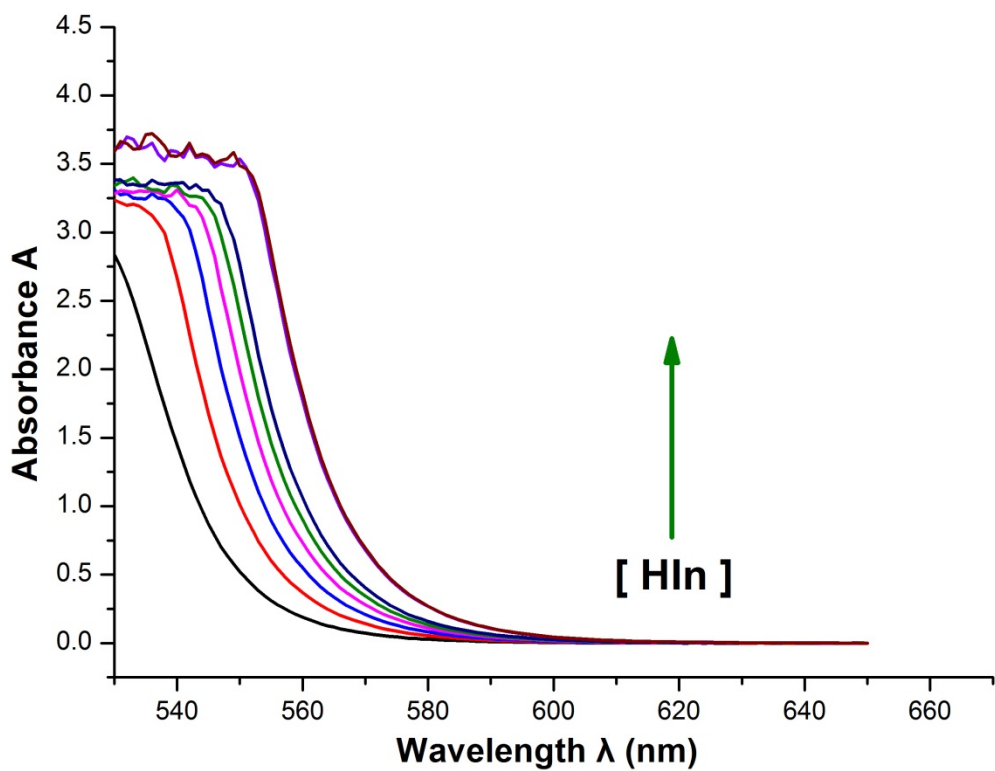


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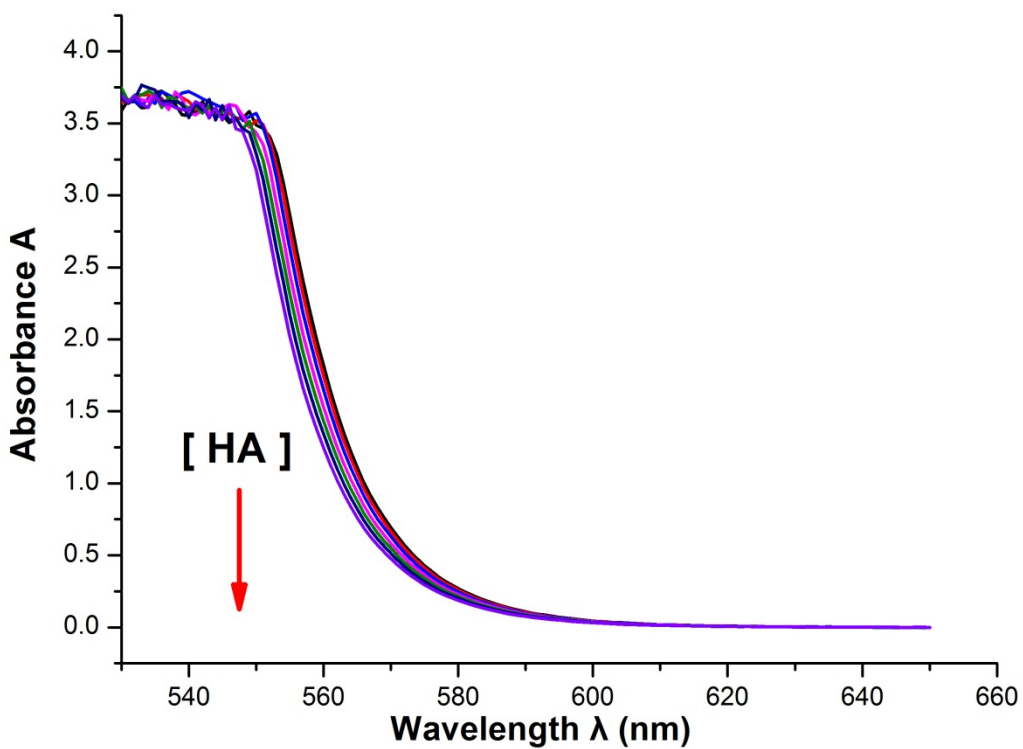


(b),

Figure 18. (a) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of **2-Br-9-Ph-FH** during the titration. (b) Absorption spectra of the anion derived from **2-Br-9-Ph-FH** for various added amount of catalyst **19** during the titration.



(a)



(b)

Figure 19. (a) Absorption spectra of the anion derived from **Fluorenone phenylhydrazone** for various added amount of **Fluorenone phenylhydrazone** during the titration. (b) Absorption spectra of the anion derived from **Fluorenone phenylhydrazone** for various added amount of catalyst **20** during the titration.

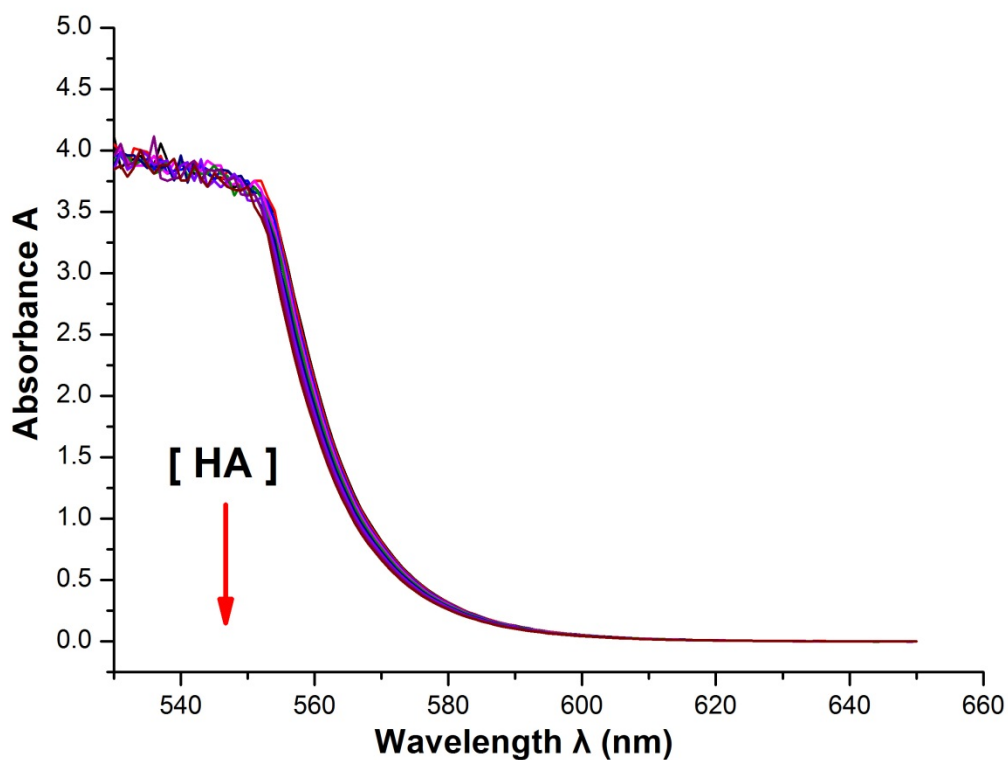
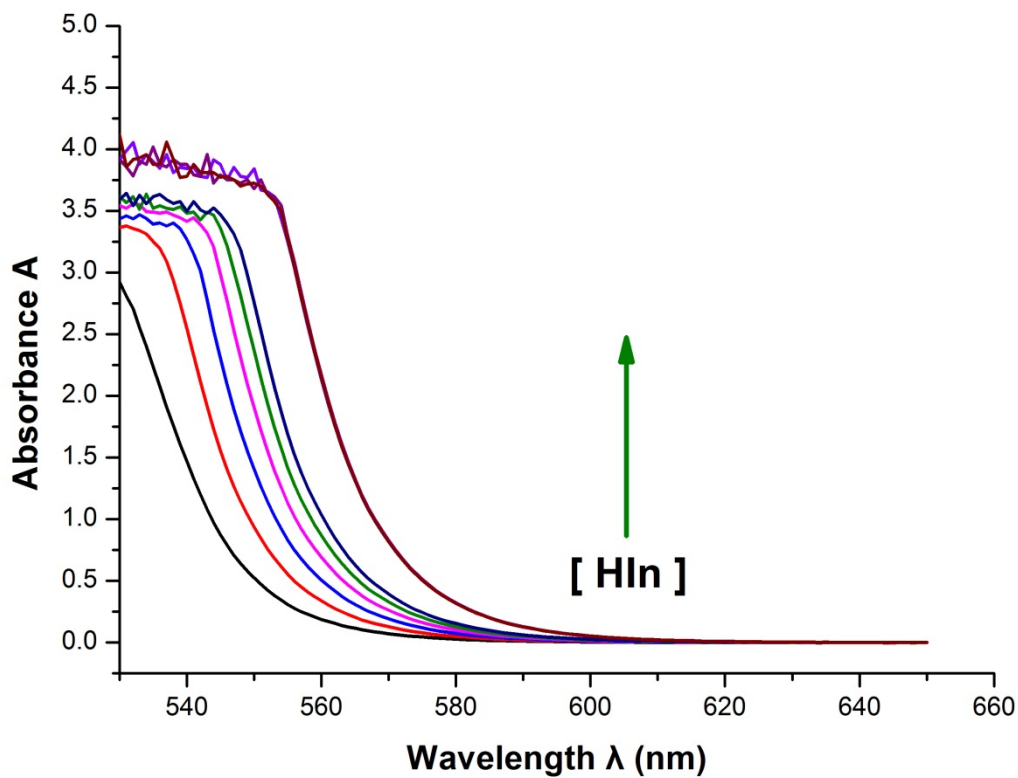


Figure 20. (a) Absorption spectra of the anion derived from **Fluorenone phenylhydrazone** for various added amount of **Fluorenone phenylhydrazone** during the titration. (b) Absorption spectra of the anion derived from **Fluorenone phenylhydrazone** for various added amount of catalyst **21** during the titration.

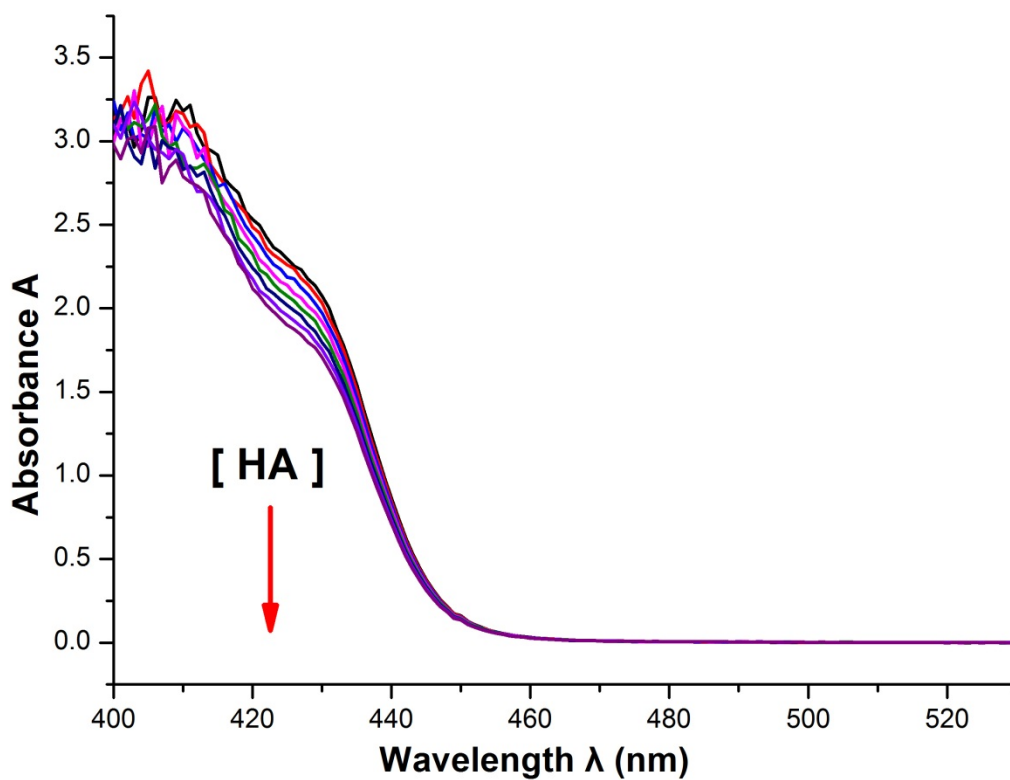
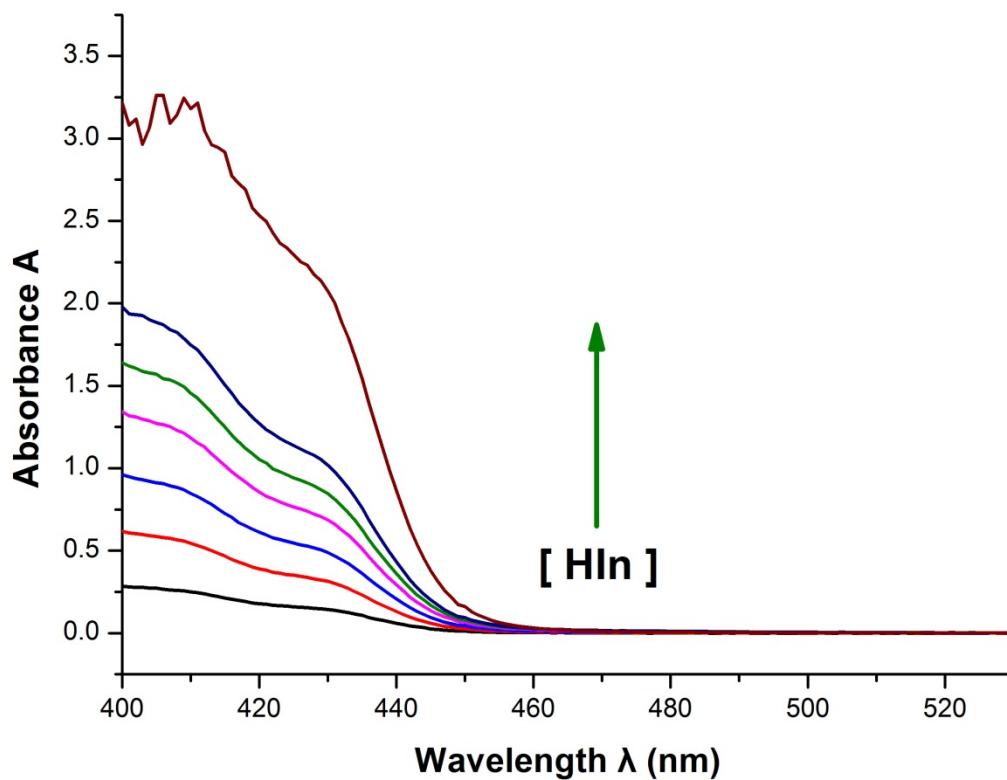


Figure 21. (a) Absorption spectra of the anion derived from **2-Br-9-SO₂Ph-FH** for various added amount of **2-Br-9-SO₂Ph-FH** during the titration. (b) Absorption spectra of the anion derived from **2-Br-9-SO₂Ph-FH** for various added amount of catalyst **22** during the titration.

Copies of ^1H NMR and ^{13}C NMR spectra for all new catalysts:

