

# Supplementary Information

**Diverse and efficient catalytic applications of new cockscomb flower-like  $\text{Fe}_3\text{O}_4@\text{SiO}_2@\text{KCC-1}@\text{MPTMS}@\text{Cu}^{\text{II}}$  mesoporous nanocomposite in the environmentally benign reduction and reductive acetylation of nitroarenes and one-pot synthesis of some coumarin compounds**

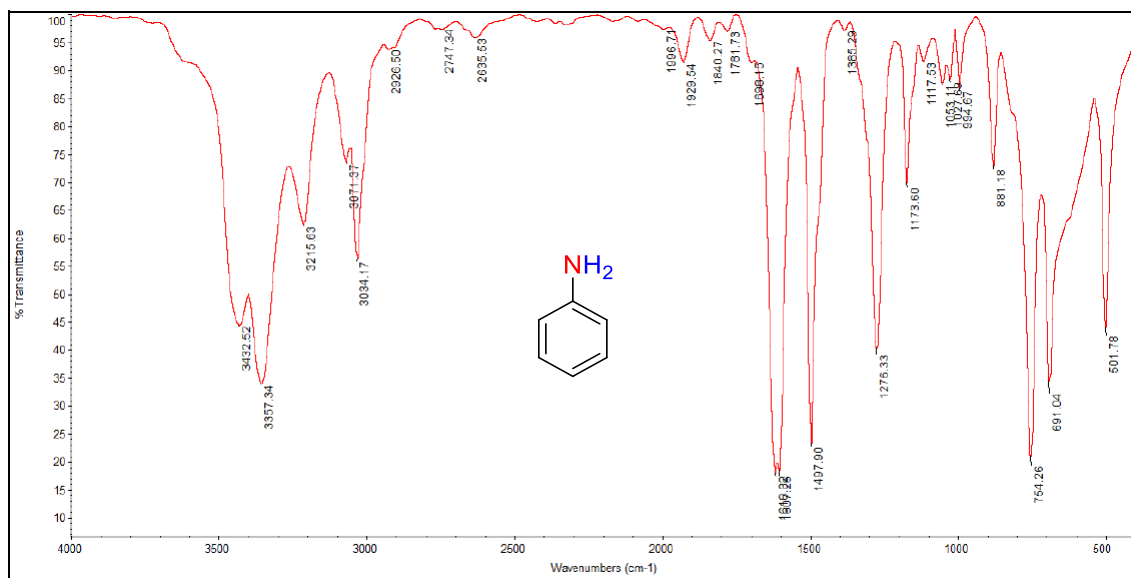
Morteza Hasanpour Galehban, Behzad Zeynizadeh, and Hossein Mousavi\*

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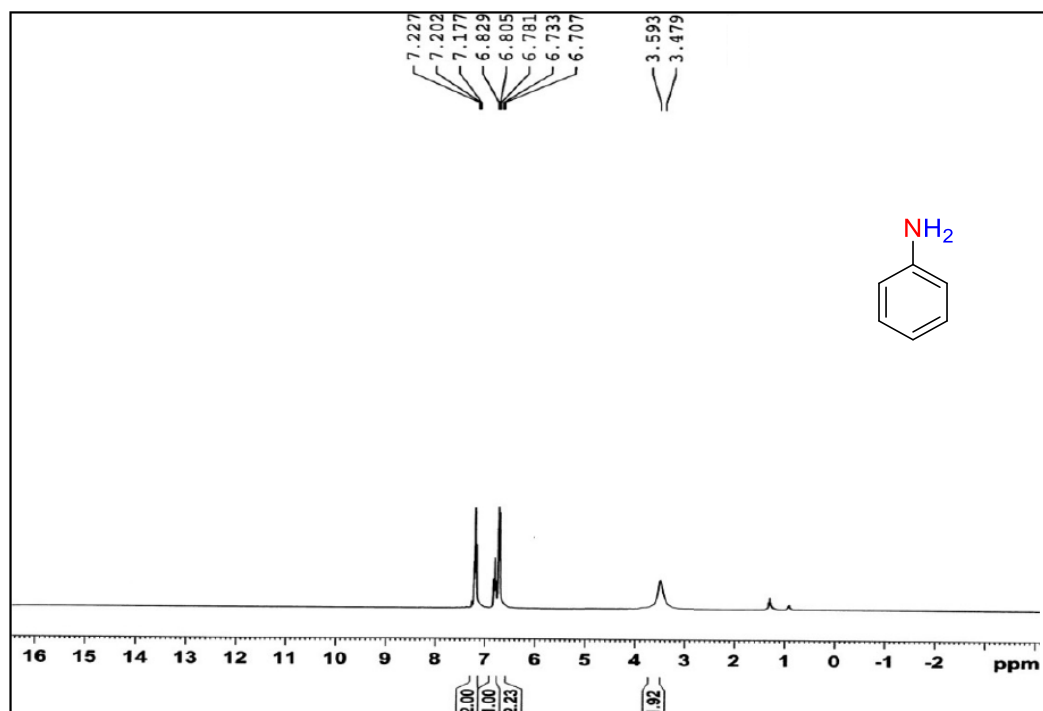
E-mail: [1hossein.mousavi@gmail.com](mailto:1hossein.mousavi@gmail.com)

## S1. Selected spectral data

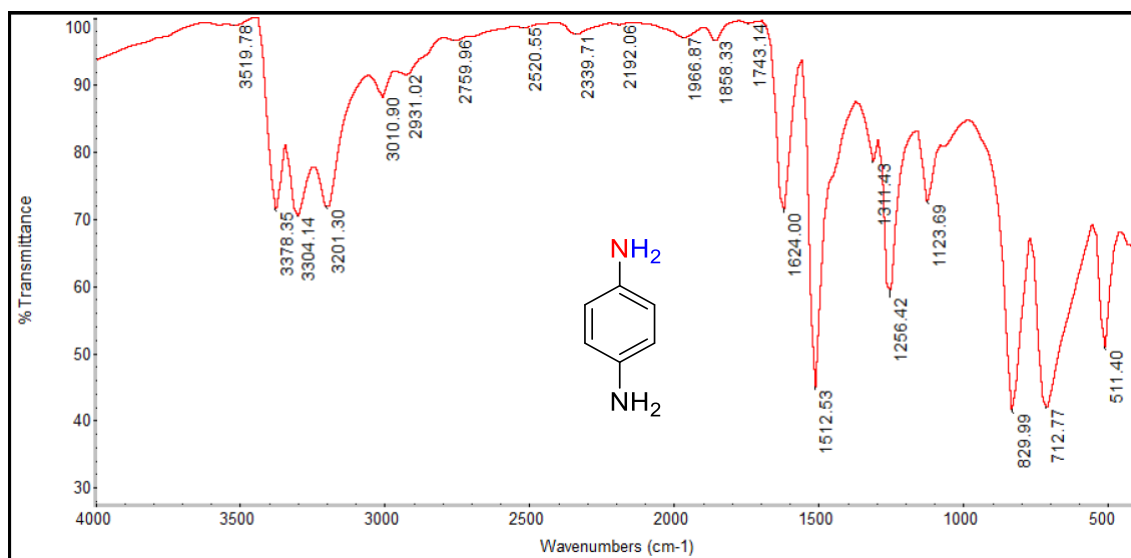
### S1.1. FT-IR spectrum of aniline



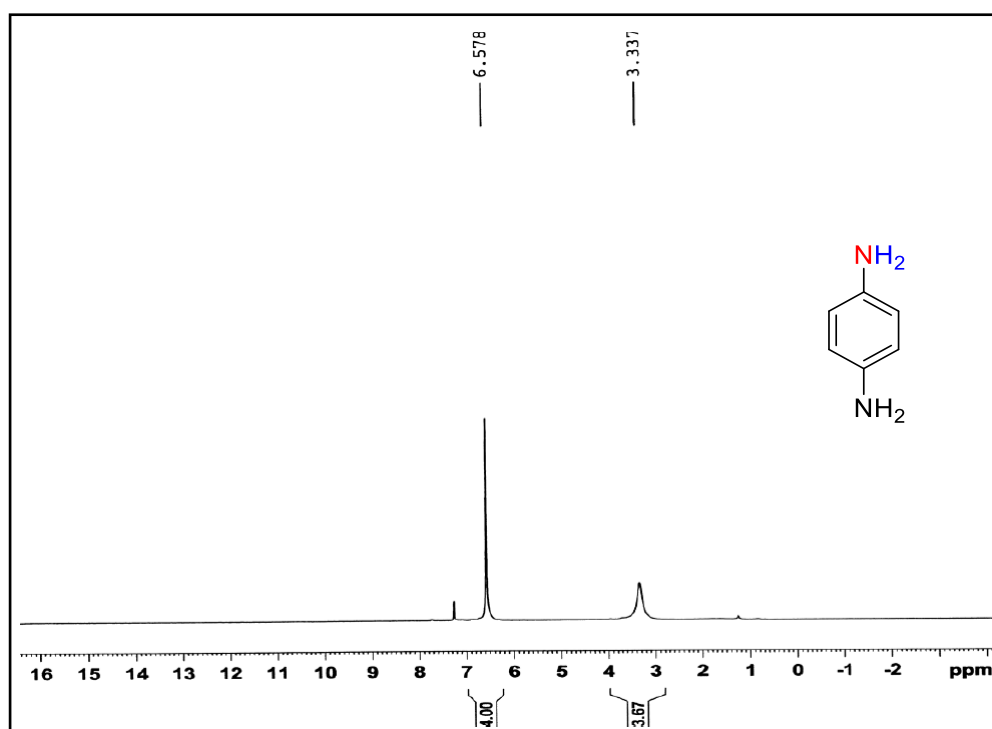
### S1.2. <sup>1</sup>H NMR (300 MHz) spectrum of aniline



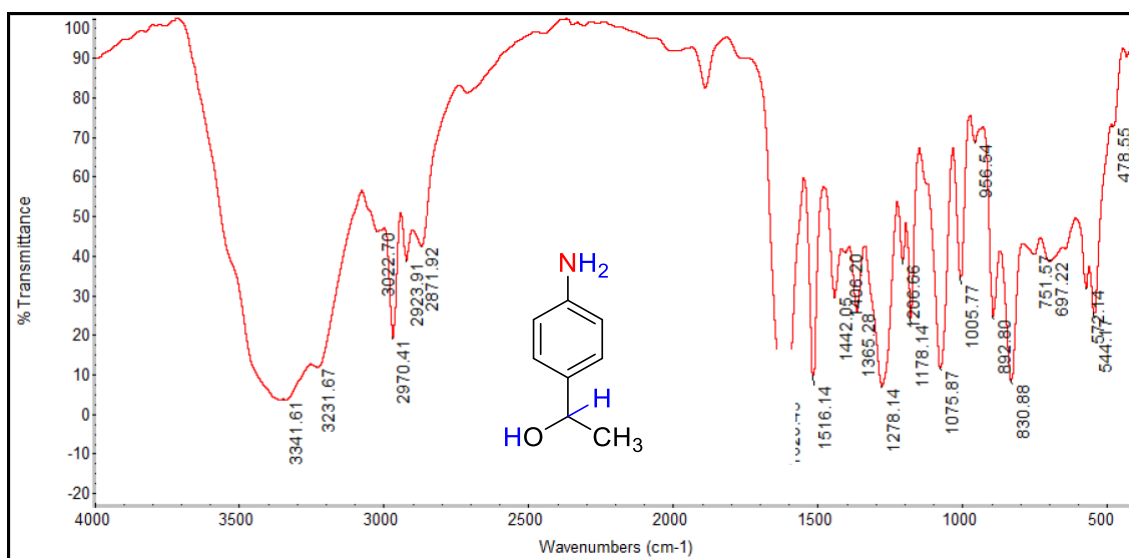
### S1.3. FT-IR spectrum of *p*-aminoaniline



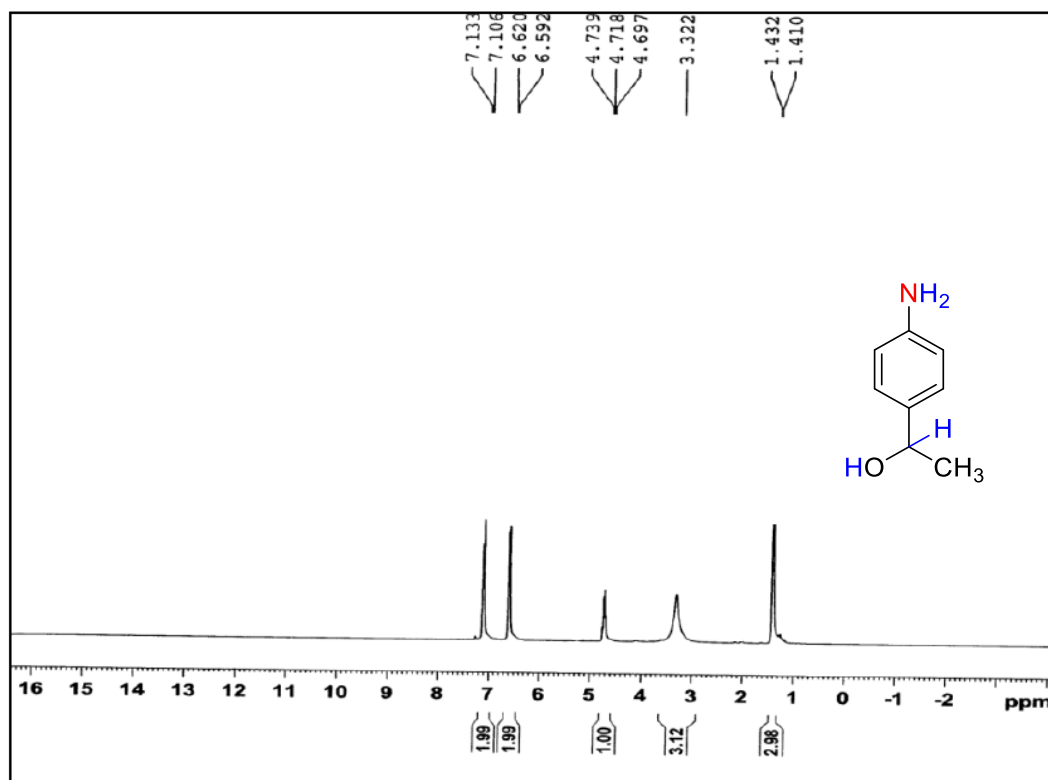
### S1.4. <sup>1</sup>H NMR (300 MHz) spectrum of *p*-aminoaniline



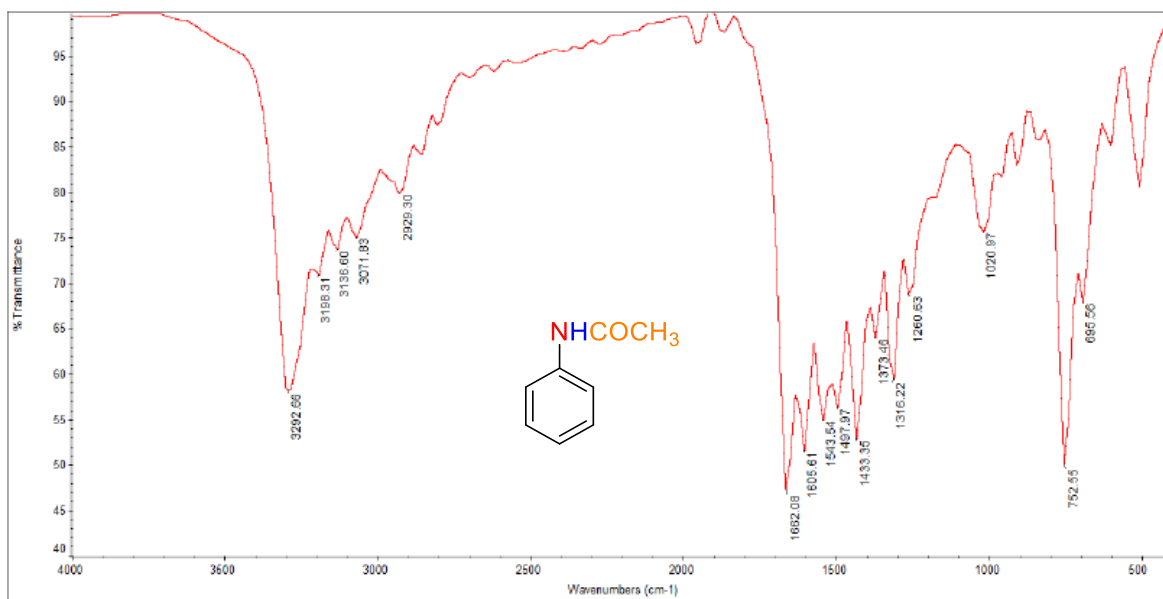
### S1.5. FT-IR spectrum of *p*-(1-hydroxyethyl)aniline



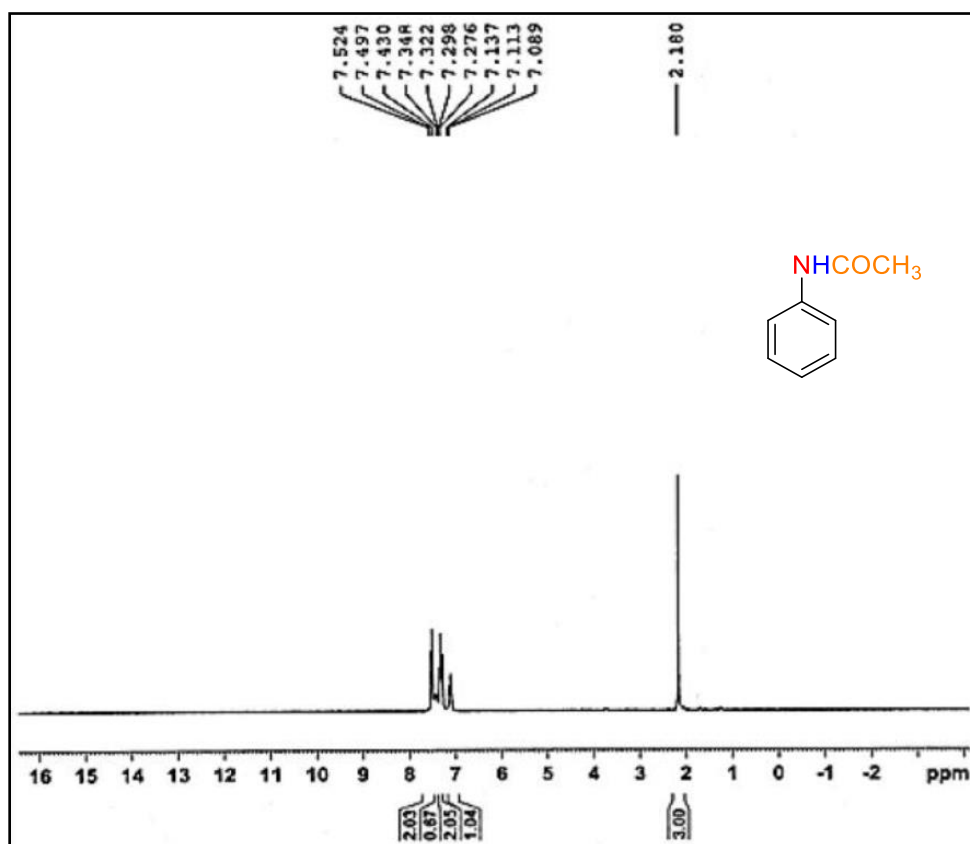
### S1.6. <sup>1</sup>H NMR (300 MHz) spectrum of *p*-(1-hydroxyethyl)aniline



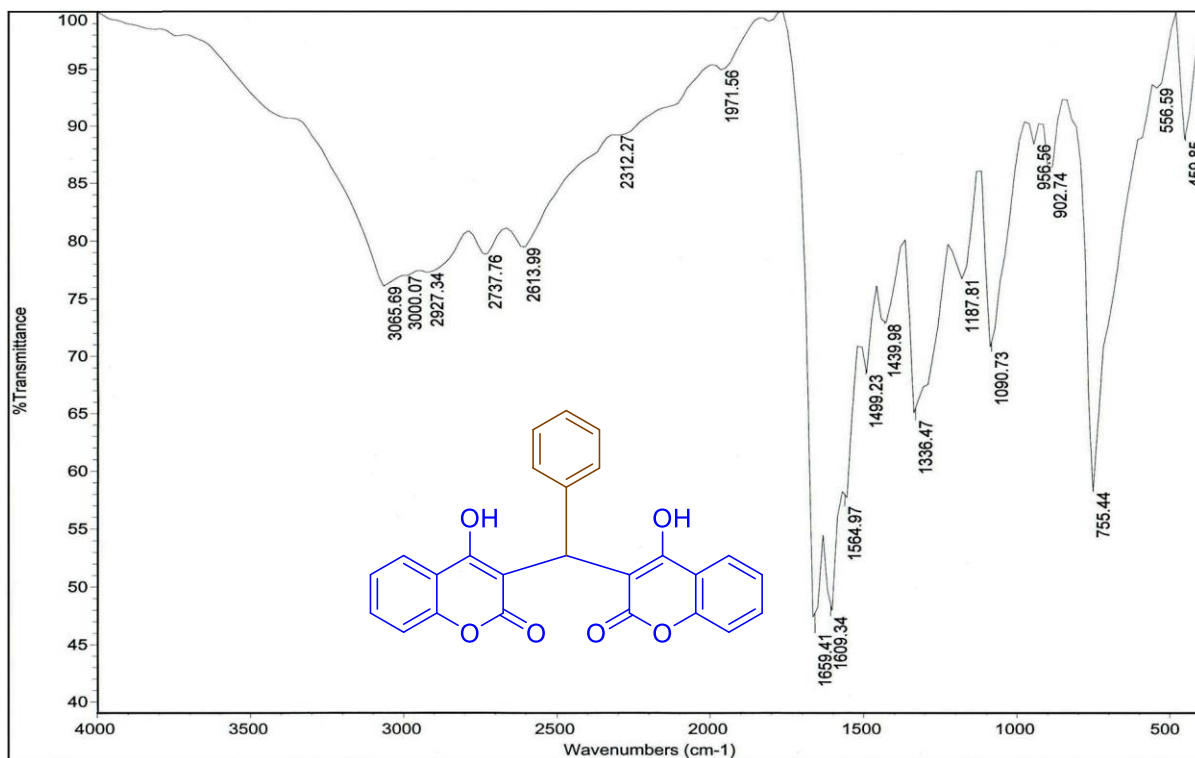
### S1.7. FT-IR spectrum of acetanilide



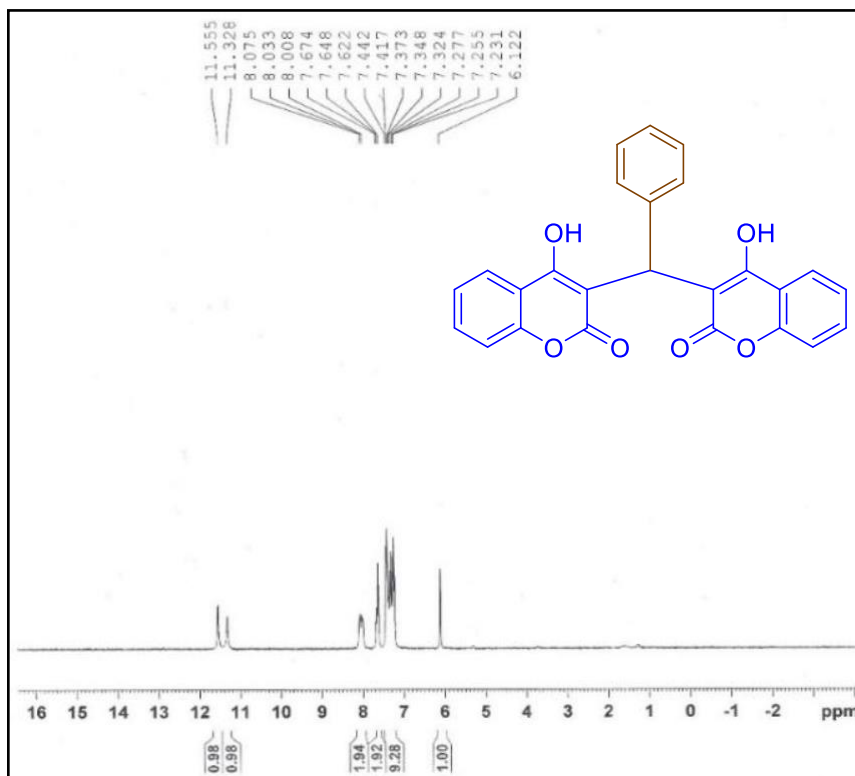
### S1.8. $^1\text{H}$ NMR (300 MHz) spectrum of acetanilide



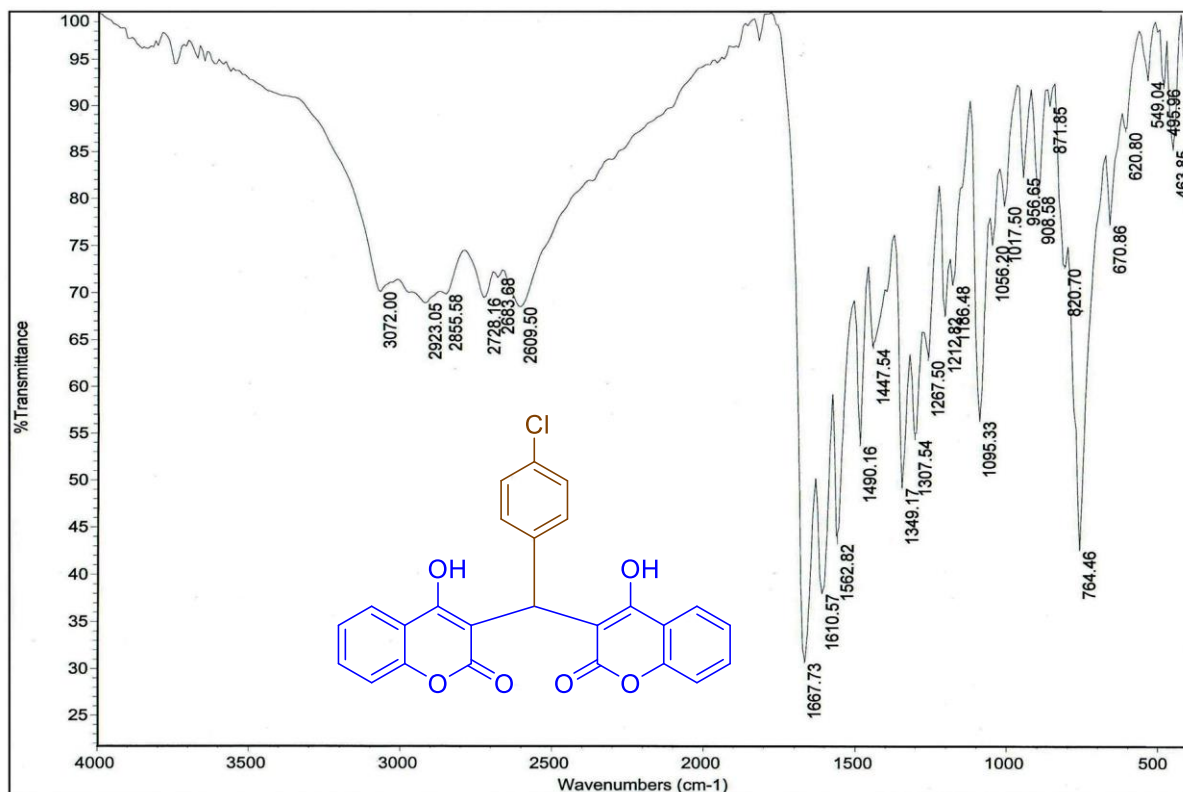
### S1.9. FT-IR spectrum of 3,3'-(phenylmethylene)bis(4-hydroxy-2H-chromen-2-one)



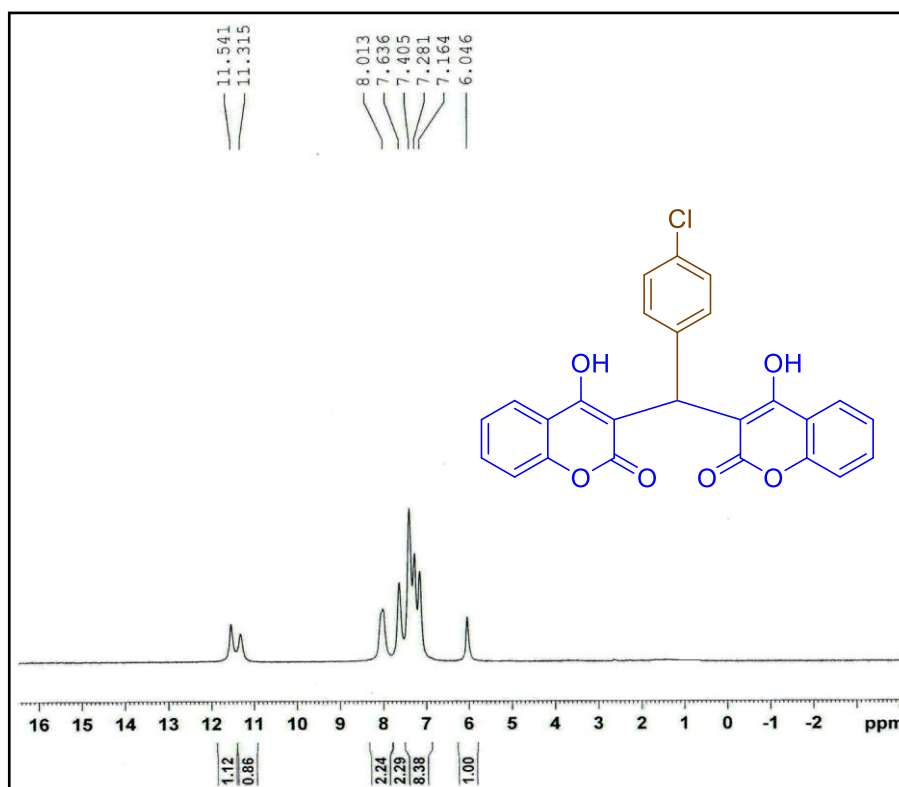
### S1.10. <sup>1</sup>H NMR (300 MHz) spectrum of 3,3'-(phenylmethylene)bis(4-hydroxy-2H-chromen-2-one)



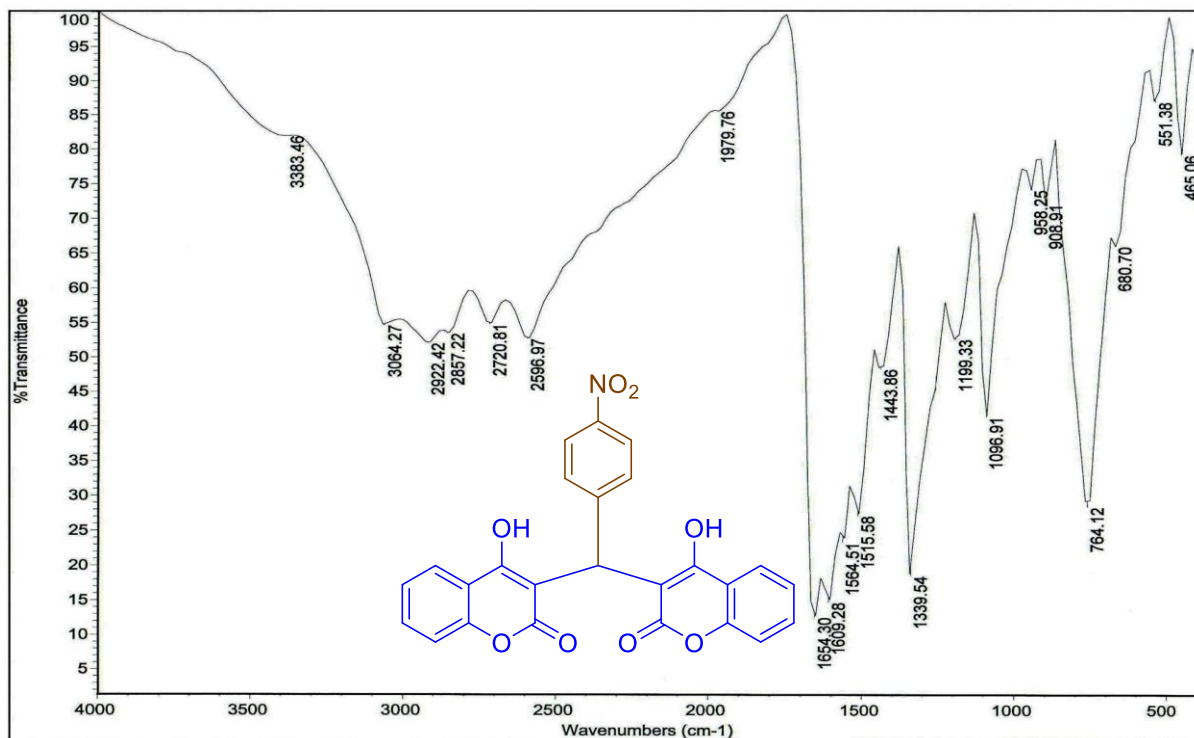
**S1.11. FT-IR spectrum of 3,3'-((4-chlorophenyl)methylene)bis(4-hydroxy-2H-chromen-2-one)**



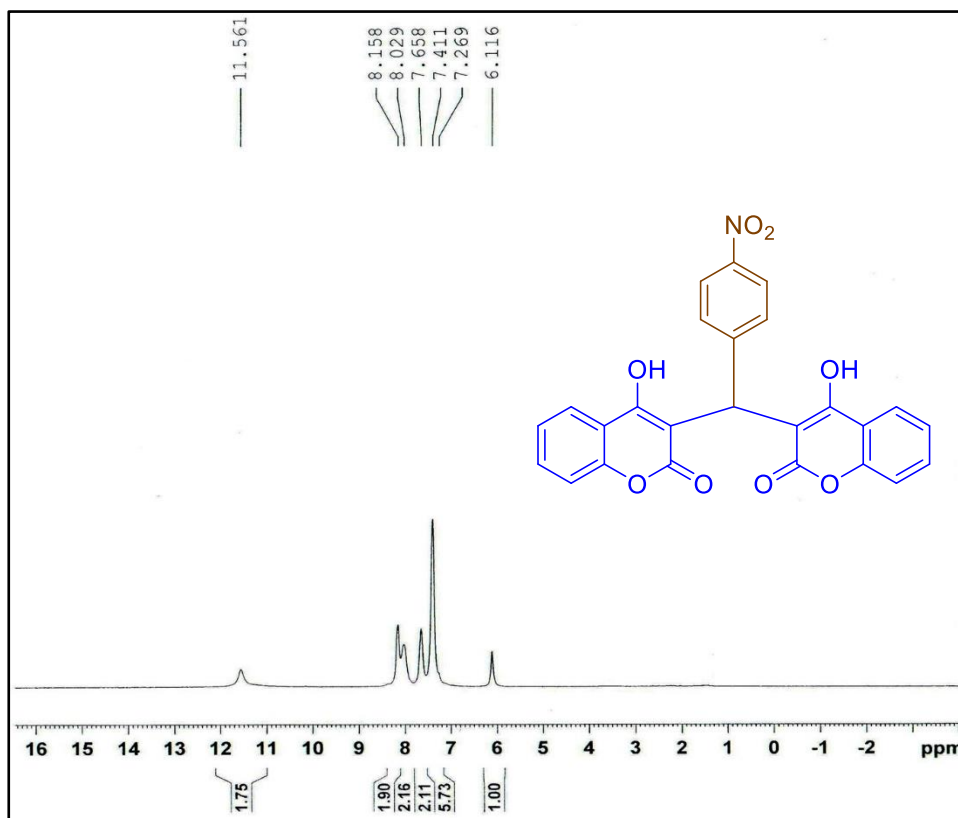
**S1.12. <sup>1</sup>H NMR (300 MHz) spectrum of 3,3'-((4-chlorophenyl)methylene)bis(4-hydroxy-2H-chromen-2-one)**



**S1.13. FT-IR spectrum of 3,3'-((4-nitrophenyl)methylene)bis(4-hydroxy-2H-chromen-2-one)**

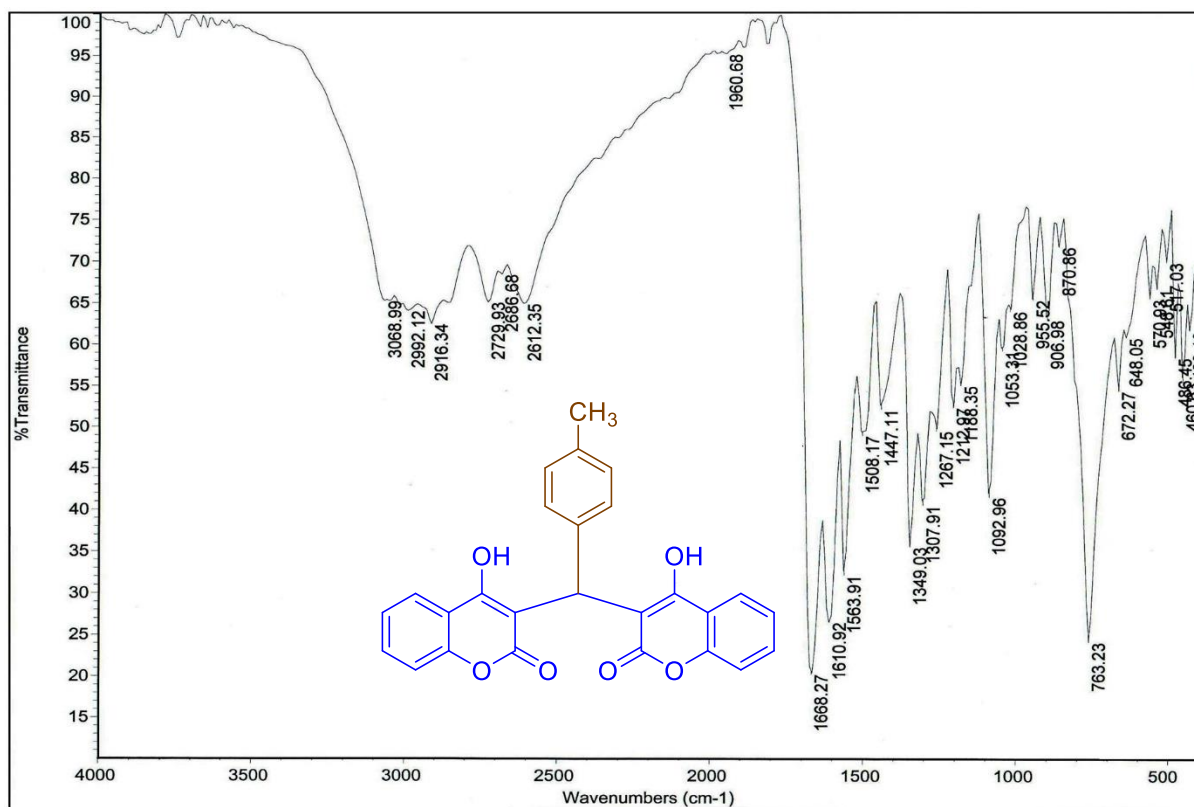


**S1.14. <sup>1</sup>H NMR (300 MHz) spectrum of 3,3'-((4-nitrophenyl)methylene)bis(4-hydroxy-2H-chromen-2-one)**

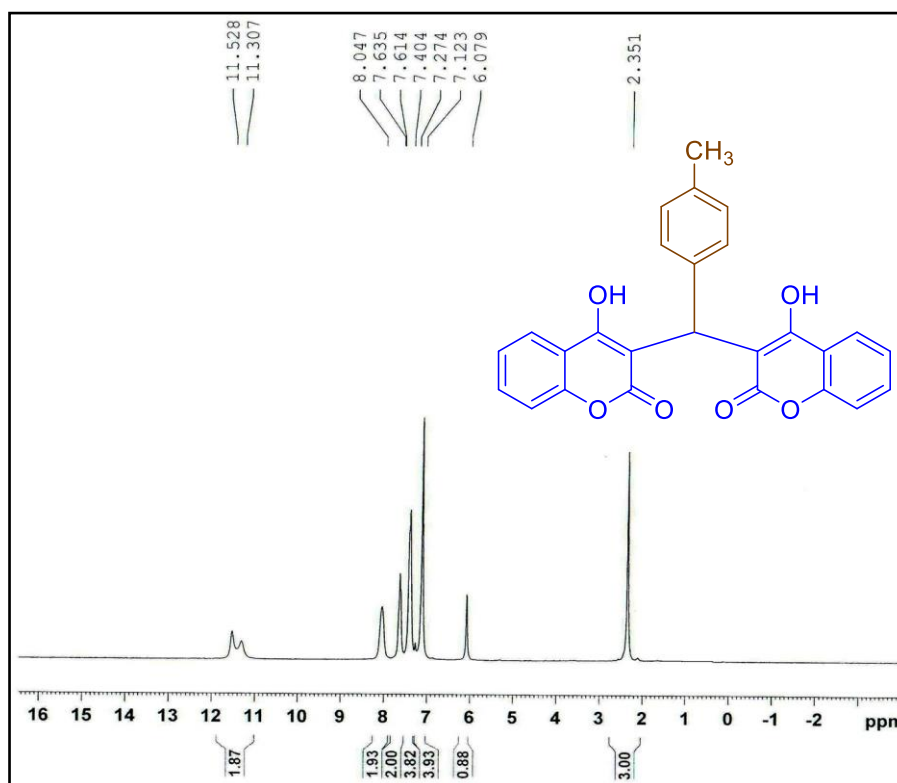




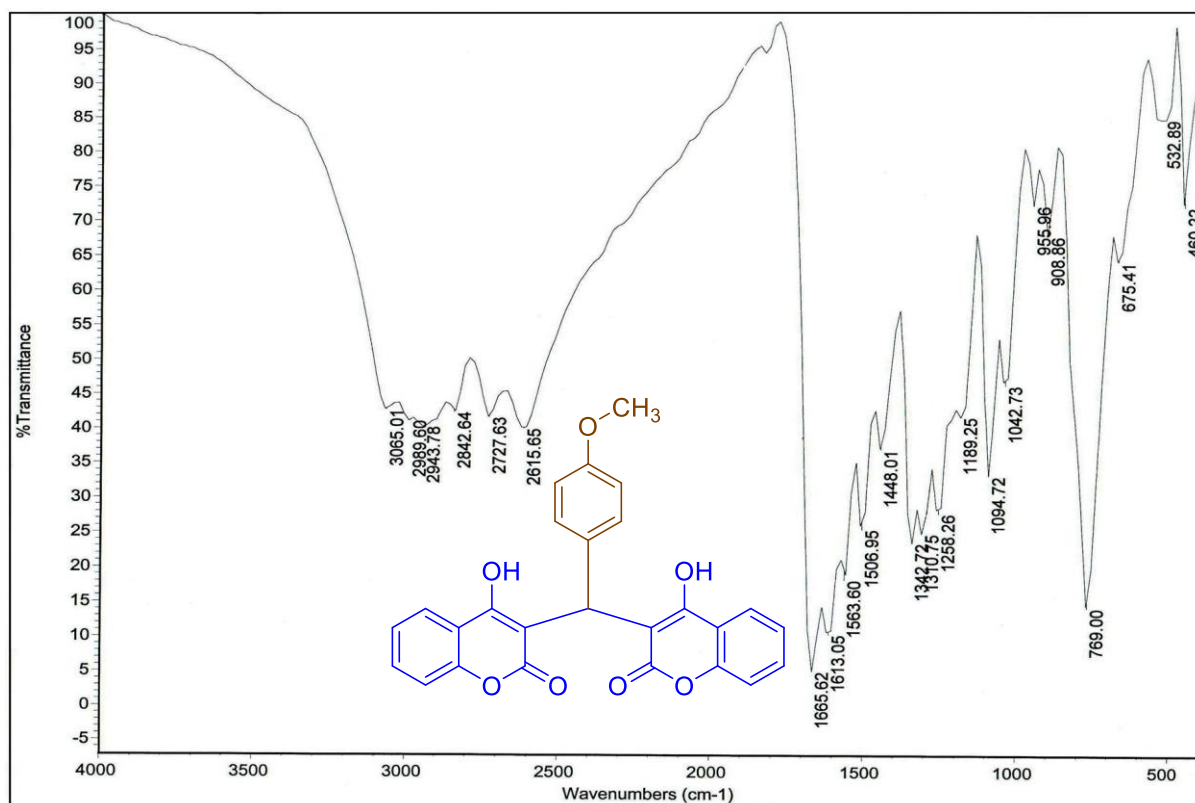
S1.15. FT-IR spectrum of 3,3'-(*p*-tolylmethylene)bis(4-hydroxy-2*H*-chromen-2-one)



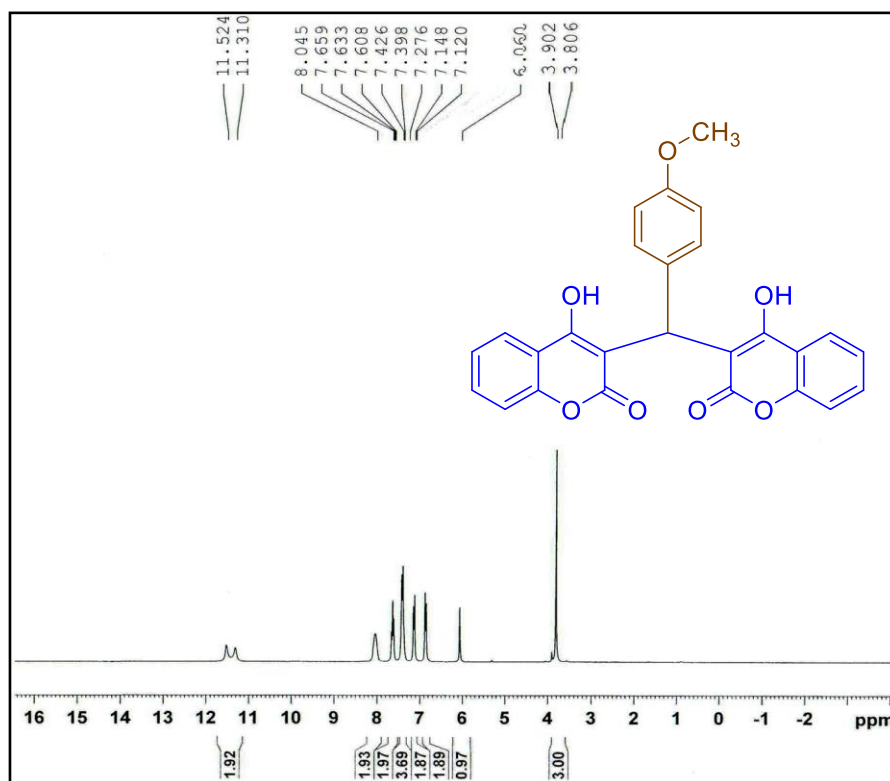
S1.16. <sup>1</sup>H NMR (300 MHz) spectrum of 3,3'-(*p*-tolylmethylene)bis(4-hydroxy-2*H*-chromen-2-one)



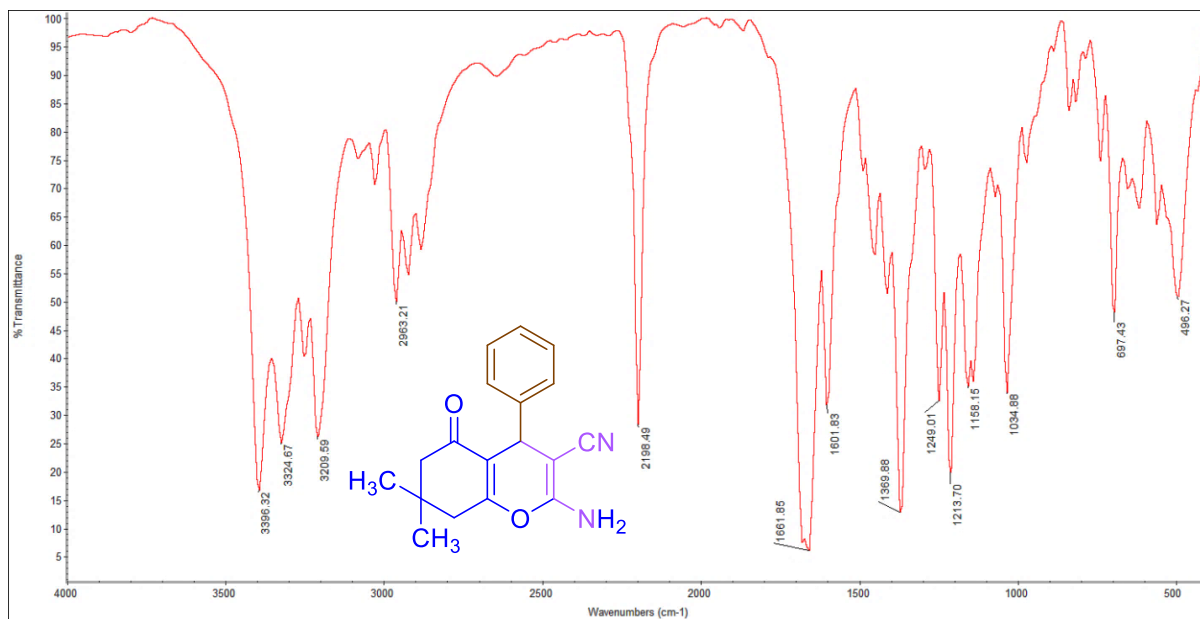
**S1.17. FT-IR spectrum of 3,3'-((4-methoxyphenyl)methylene)bis(4-hydroxy-2H-chromen-2-one)**



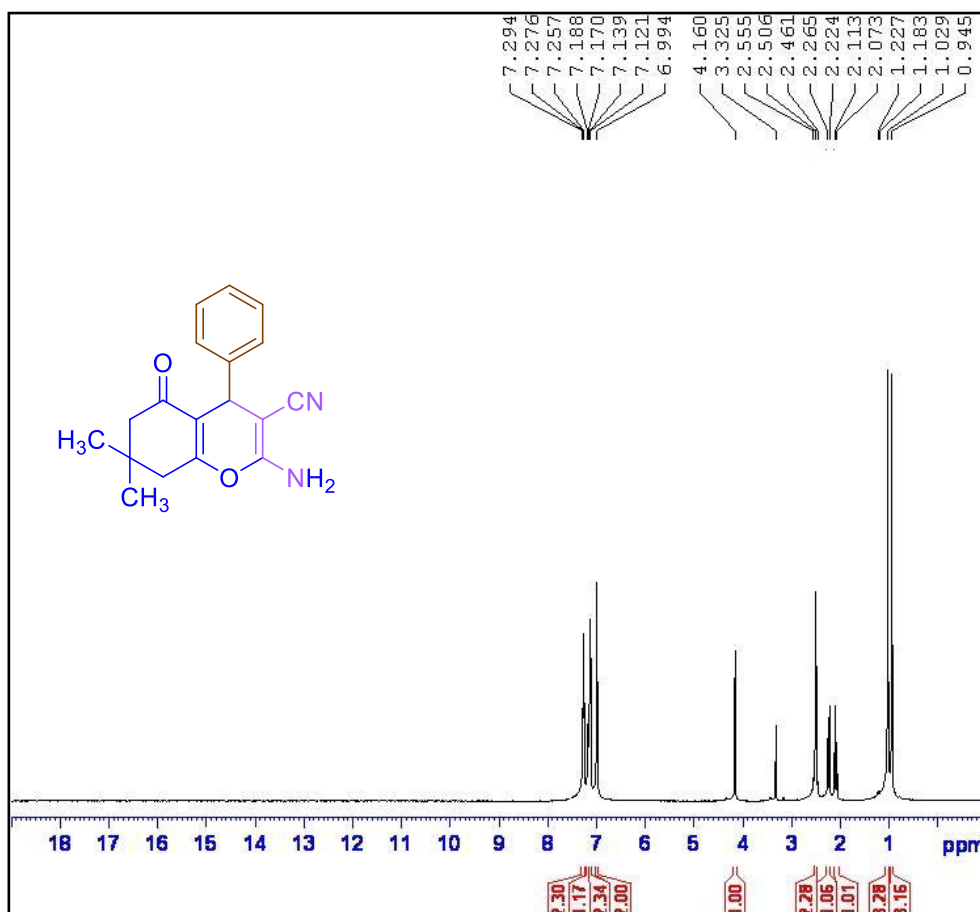
**S1.18. <sup>1</sup>H NMR (300 MHz) spectrum of 3,3'-((4-methoxyphenyl)methylene)bis(4-hydroxy-2H-chromen-2-one)**



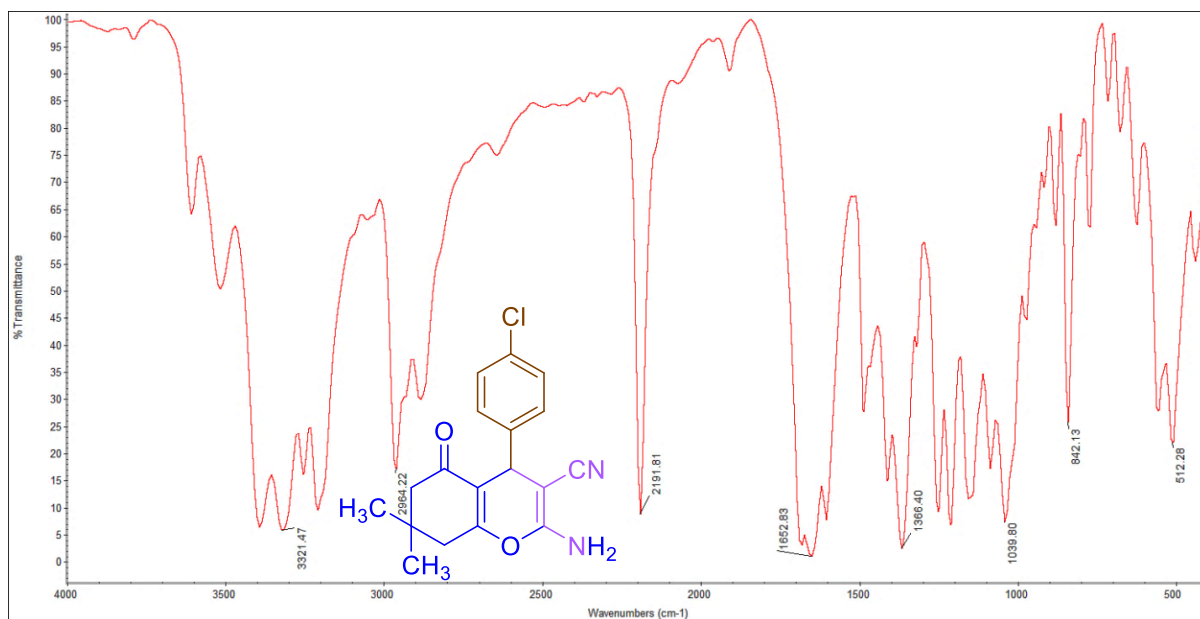
**S1.19. FT-IR spectrum of 2-amino-7,7-dimethyl-5-oxo-4-phenyl-5,6,7,8-tetrahydro-4H-chromene-3-carbonitrile**



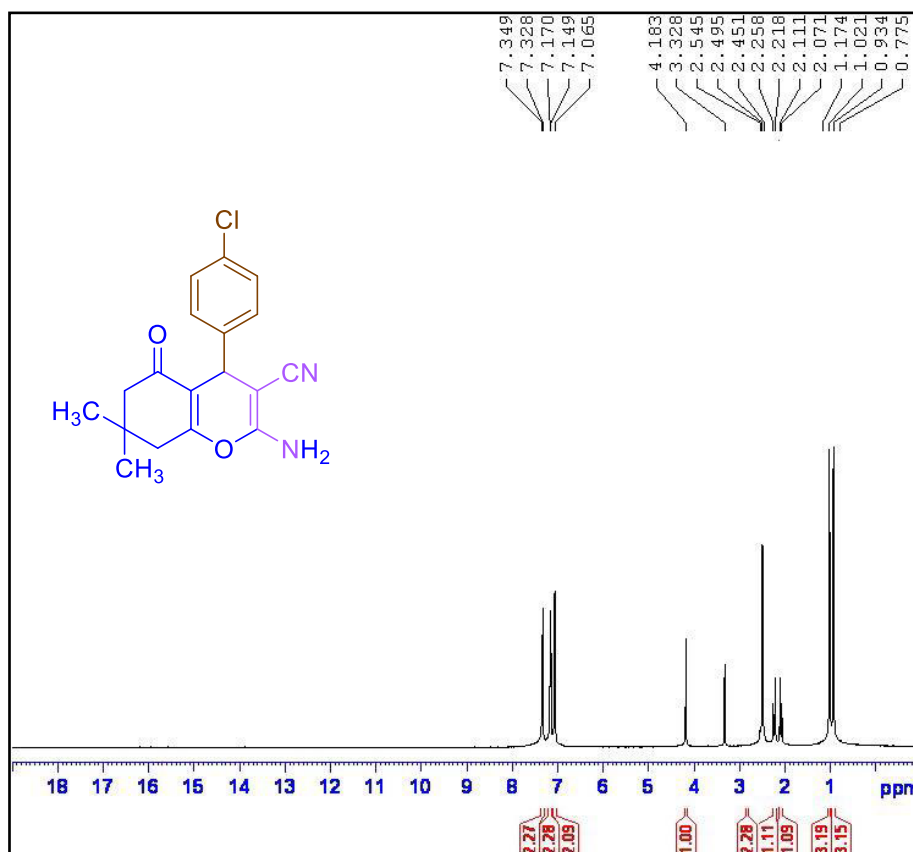
**S1.20. <sup>1</sup>H NMR (400 MHz) spectrum of 2-amino-7,7-dimethyl-5-oxo-4-phenyl-5,6,7,8-tetrahydro-4H-chromene-3-carbonitrile**



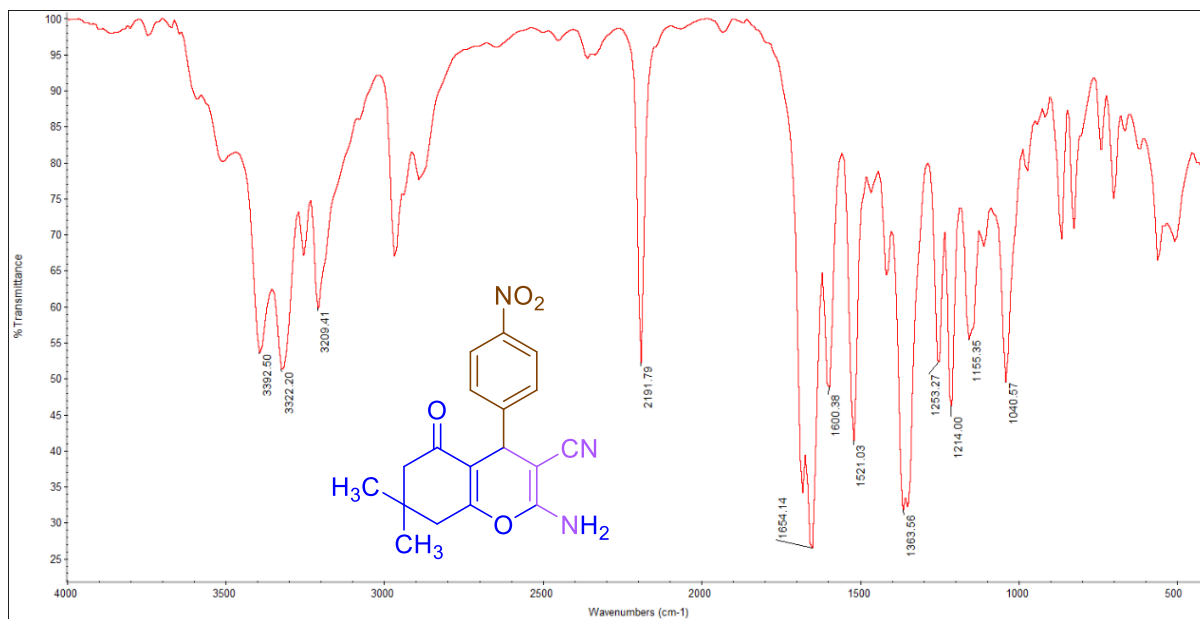
**S1.21. FT-IR spectrum of 2-amino-4-(4-chlorophenyl)-7,7-dimethyl-5-oxo-5,6,7,8-tetrahydro-4H-chromene-3-carbonitrile**



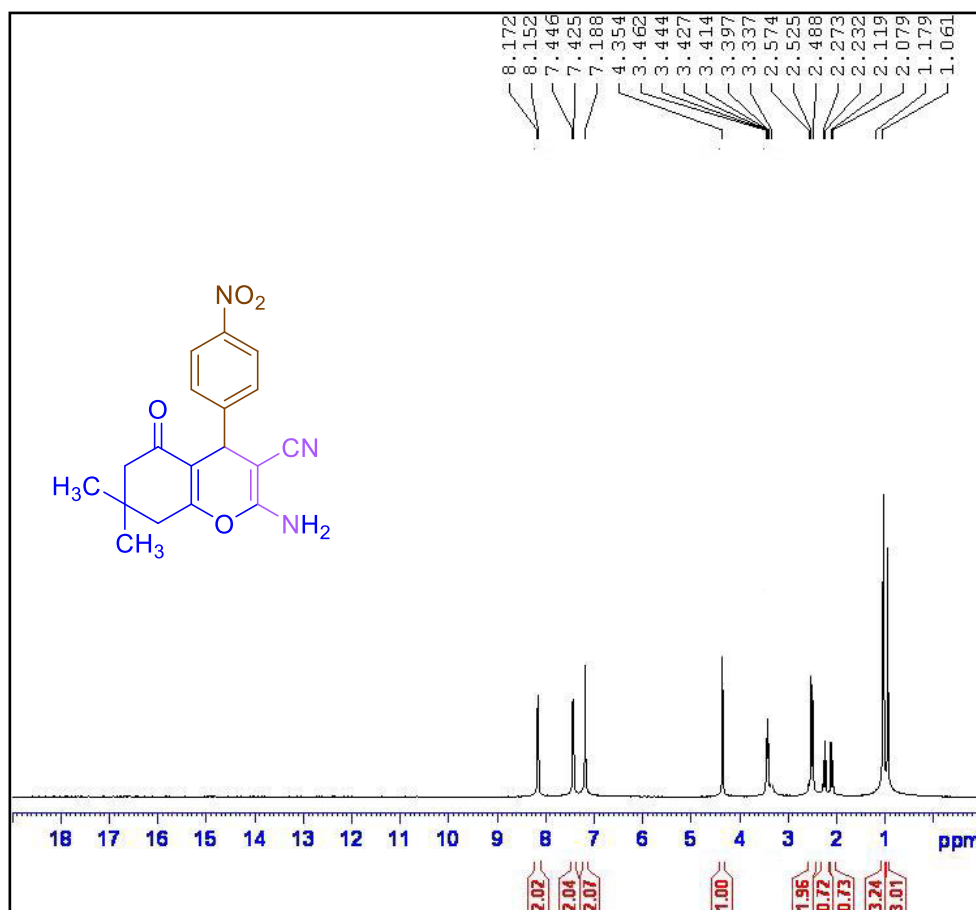
**S1.22. <sup>1</sup>H NMR (400 MHz) spectrum of 2-amino-4-(4-chlorophenyl)-7,7-dimethyl-5-oxo-5,6,7,8-tetrahydro-4H-chromene-3-carbonitrile**



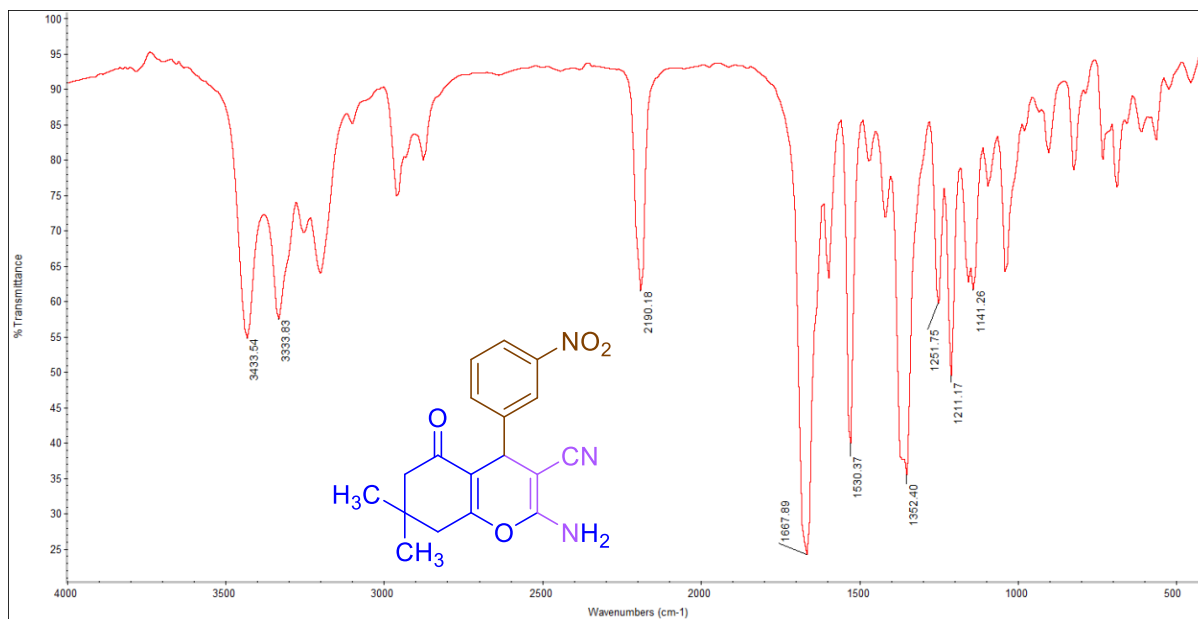
**S1.23. FT-IR spectrum of 2-amino-7,7-dimethyl-4-(4-nitrophenyl)-5-oxo-5,6,7,8-tetrahydro-4H-chromene-3-carbonitrile**



**S1.24. <sup>1</sup>H NMR (400 MHz) spectrum of 2-amino-7,7-dimethyl-4-(4-nitrophenyl)-5-oxo-5,6,7,8-tetrahydro-4H-chromene-3-carbonitrile**



**S1.25. FT-IR spectrum of 2-amino-7,7-dimethyl-4-(3-nitrophenyl)-5-oxo-5,6,7,8-tetrahydro-4H-chromene-3-carbonitrile**



**S1.26. <sup>1</sup>H NMR (400 MHz) spectrum of 2-amino-7,7-dimethyl-4-(3-nitrophenyl)-5-oxo-5,6,7,8-tetrahydro-4H-chromene-3-carbonitrile**

