

Supplementary Material

Cascade Michael-Aldol reaction: efficient annulation of sulfonamide chalcones into novel cyclohexenones under solvent-free conditions

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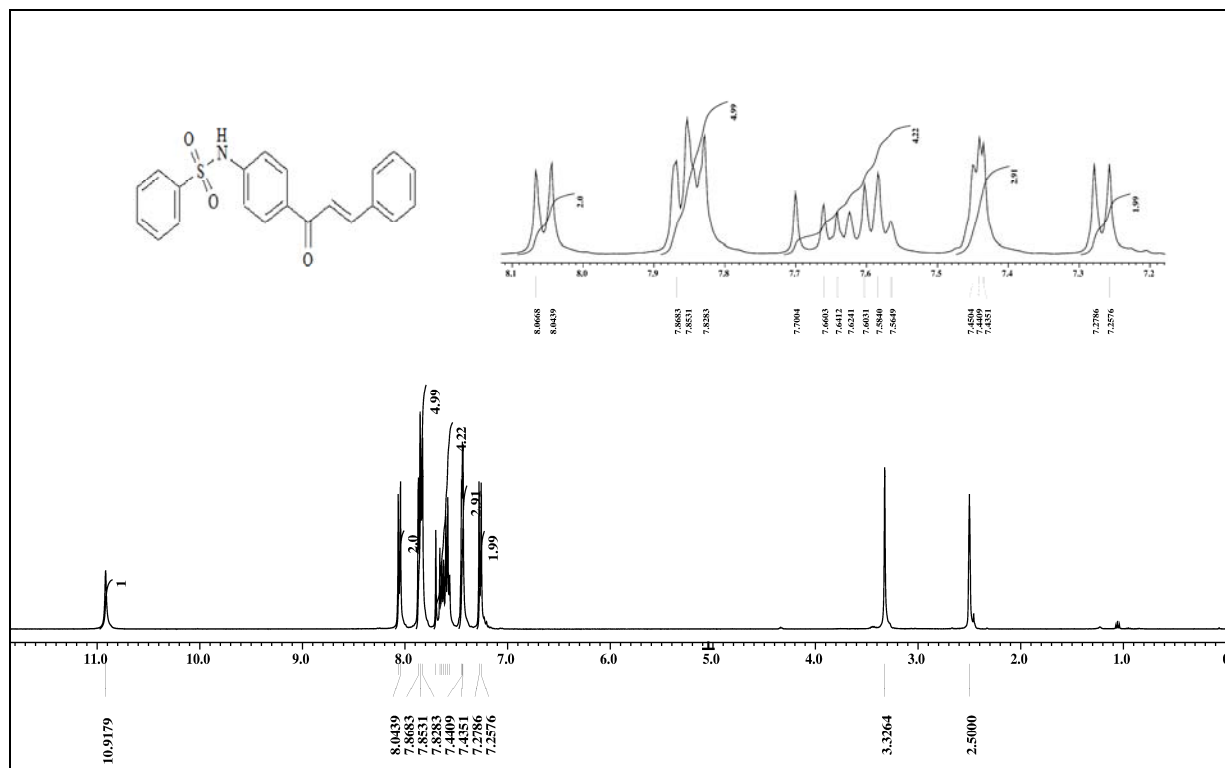


Fig. S1. ¹H spectrum of *N*-(4-cinnamoylphenyl)benzenesulfonamide (5a)

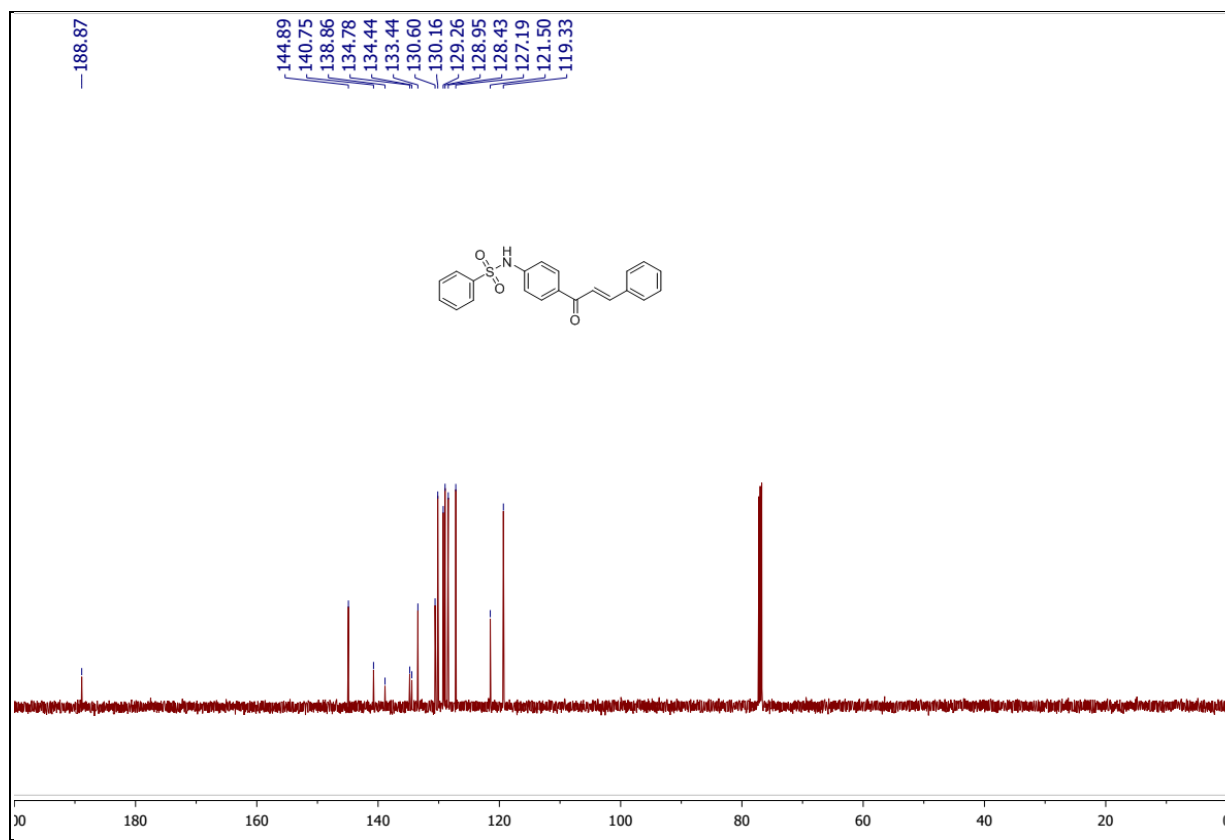


Fig. S2. ¹³C spectrum of *N*-(4-cinnamoylphenyl)benzenesulfonamide (5a)

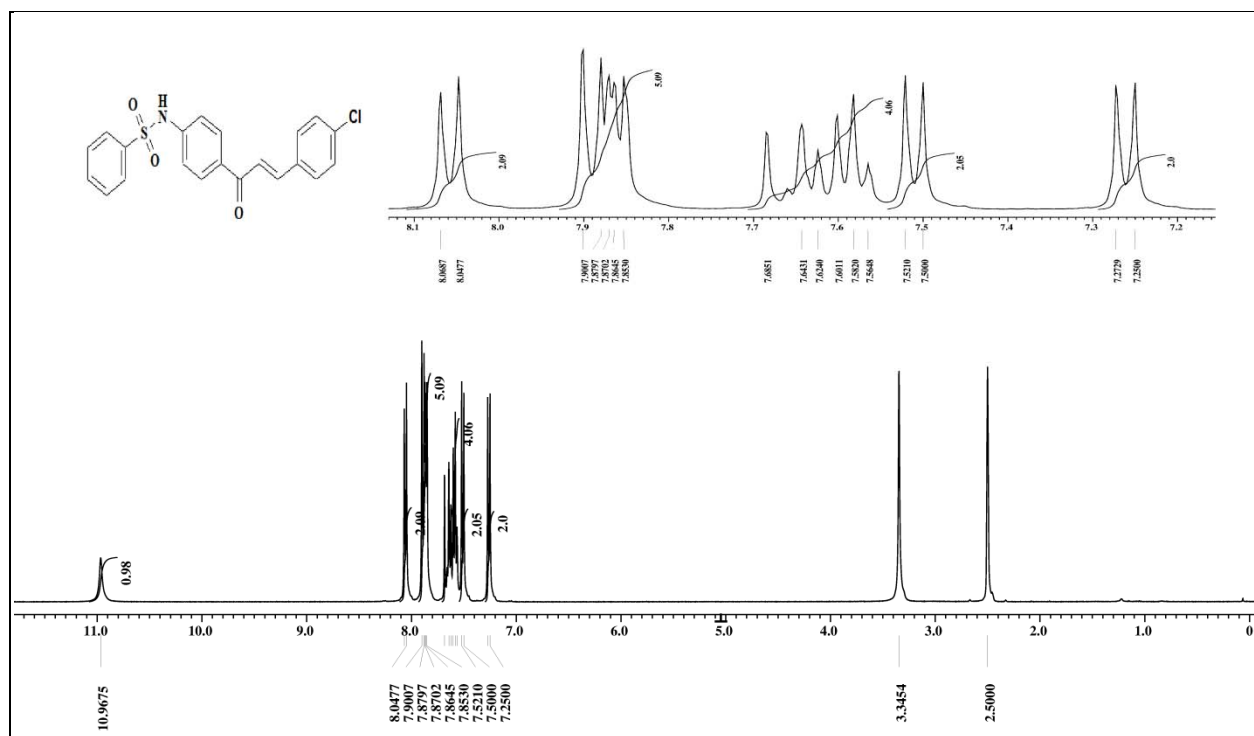


Fig. S3. ¹H spectrum of *N*-[4-(3-(4-chlorophenyl)-acryloyl)-phenyl]-benzenesulfonamide (5b)

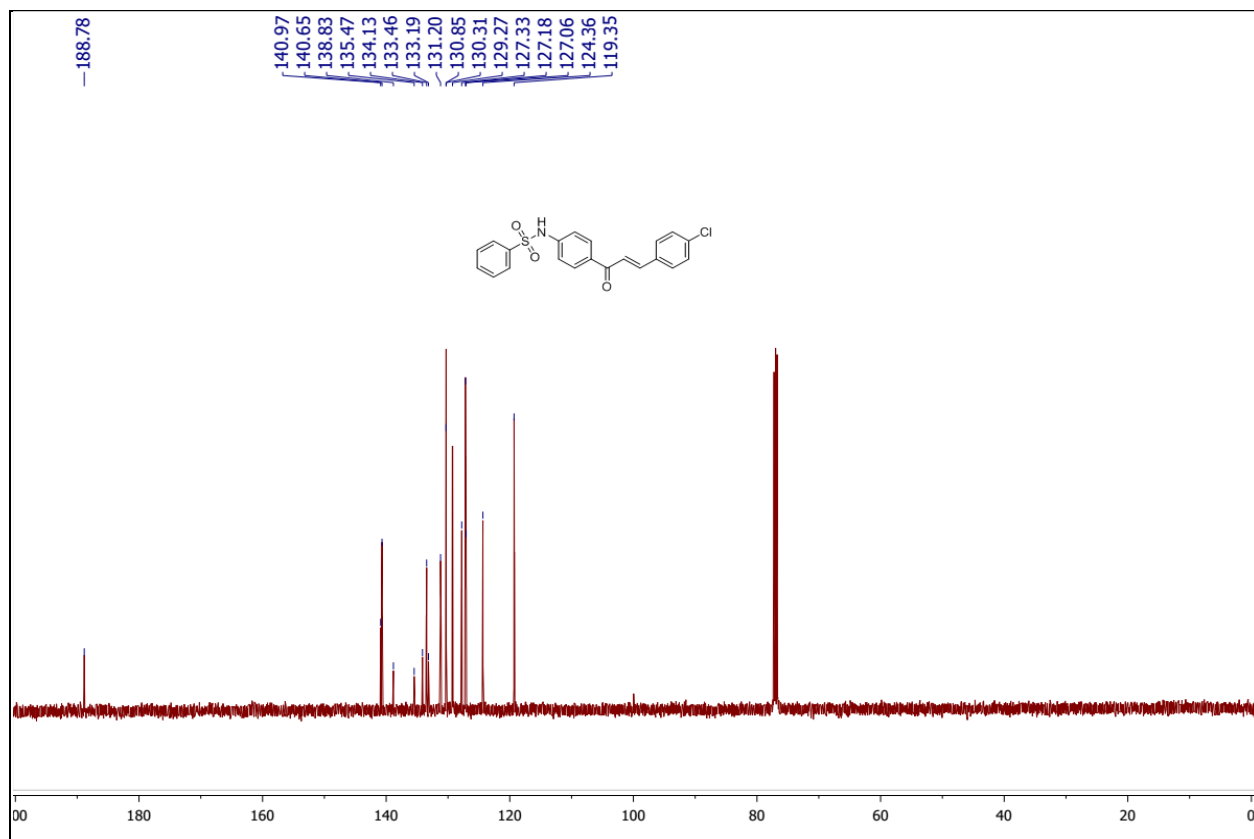


Fig. S4. ¹³C spectrum of *N*-[4-(3-(4-chlorophenyl)-acryloyl)-phenyl]-benzenesulfonamide (5b)

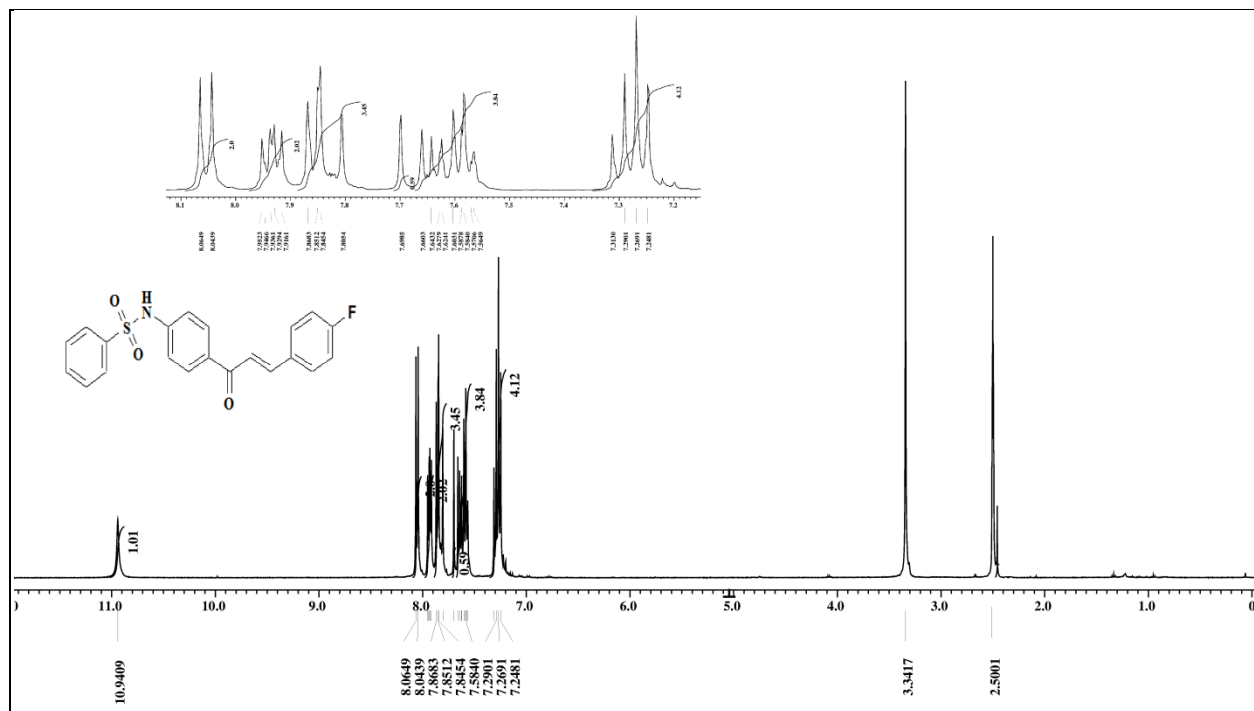


Fig. S5. ¹H spectrum of *N*-[4-(3-(4-fluorophenyl)acryloyl)phenyl]benzenesulfonamide (5c)

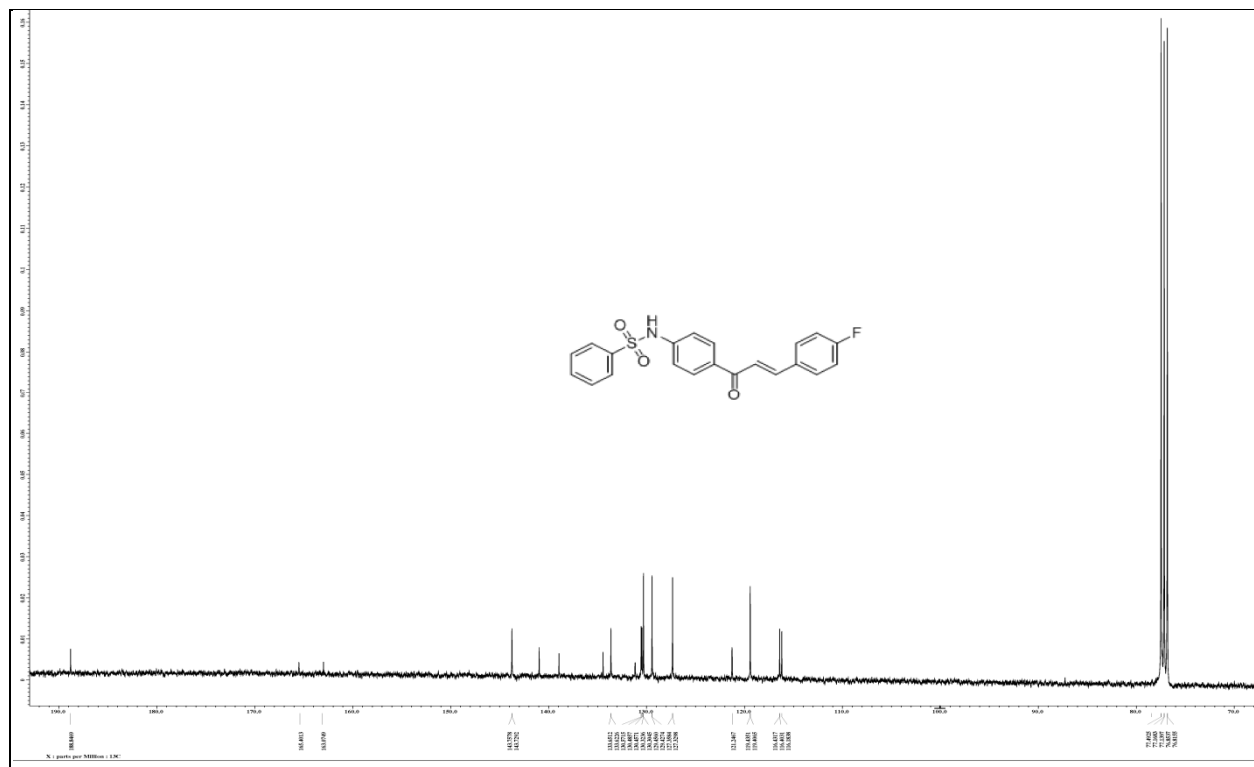


Fig. S6. ¹³C spectrum of *N*-[4-(3-(4-fluorophenyl)acryloyl)phenyl]benzenesulfonamide (5c)

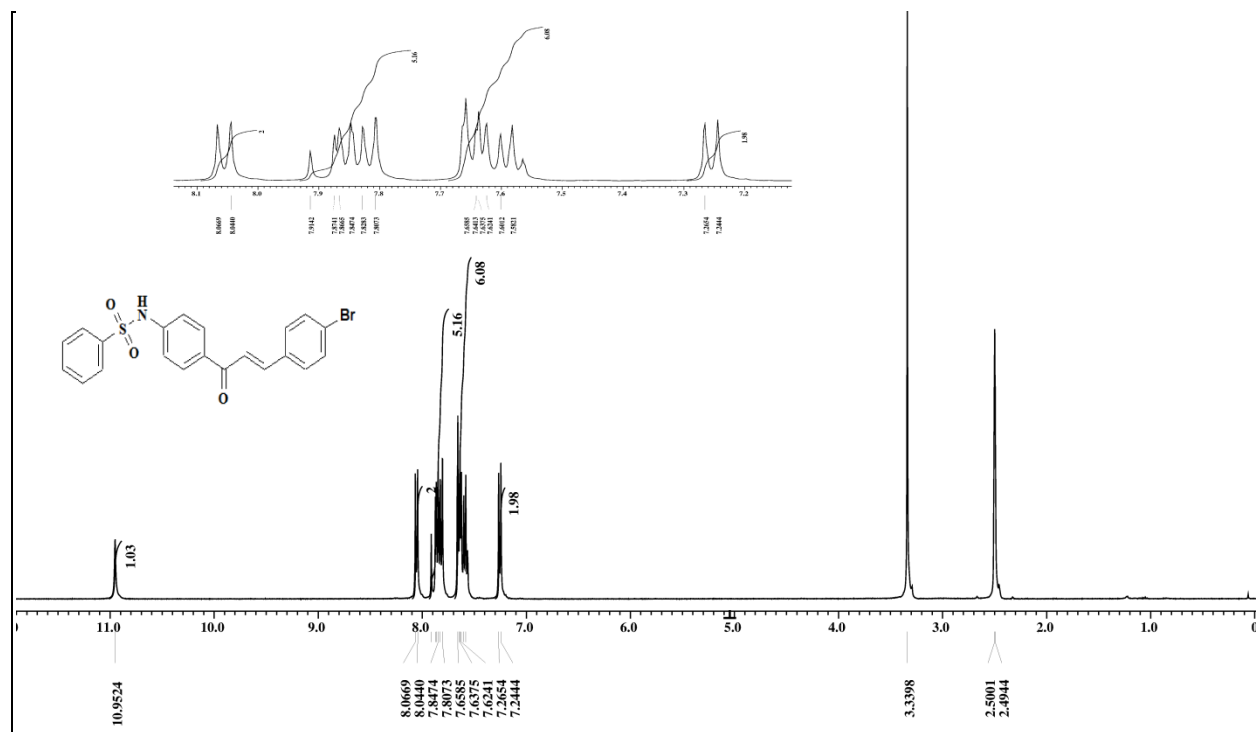


Fig. S7. ¹H spectrum of *N*-[4-(3-(4-bromophenyl)-acryloyl)-phenyl]-benzenesulfonamide (5d)

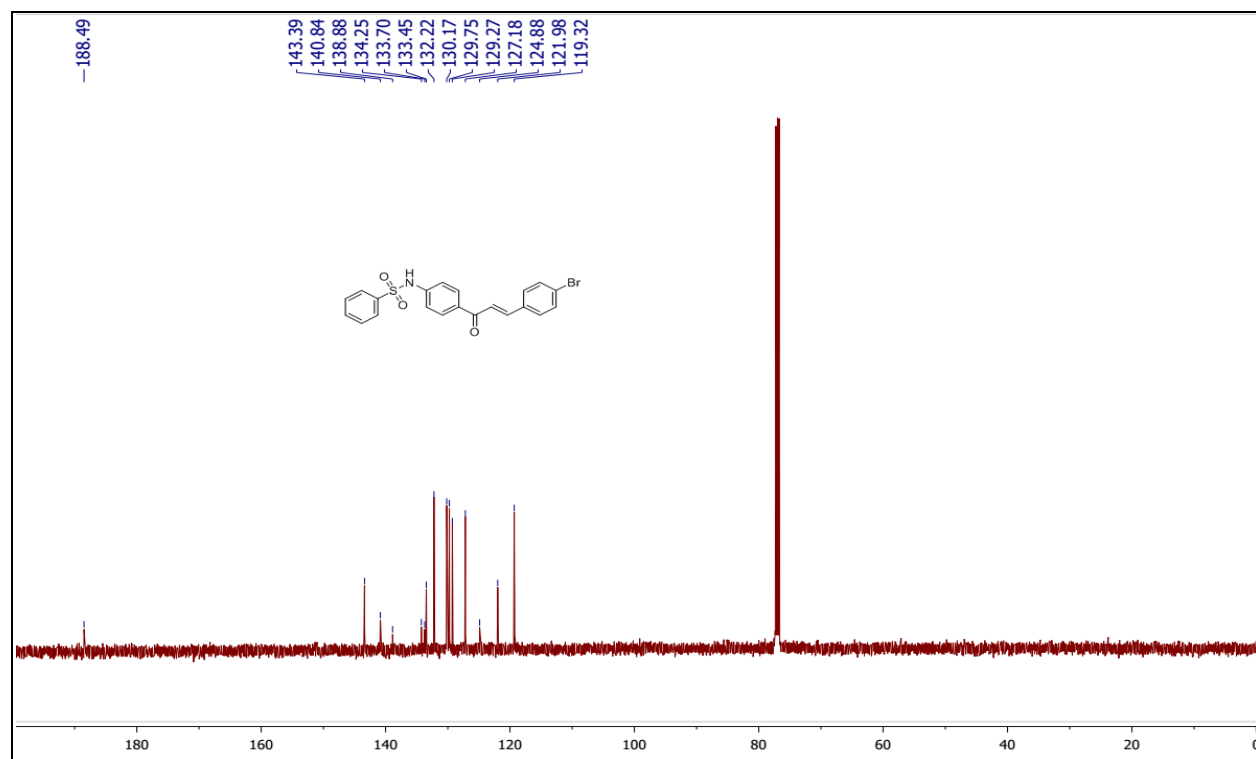


Fig. S8. ¹³C spectrum of *N*-[4-(3-(4-bromophenyl)-acryloyl)-phenyl]-benzenesulfonamide (5d)

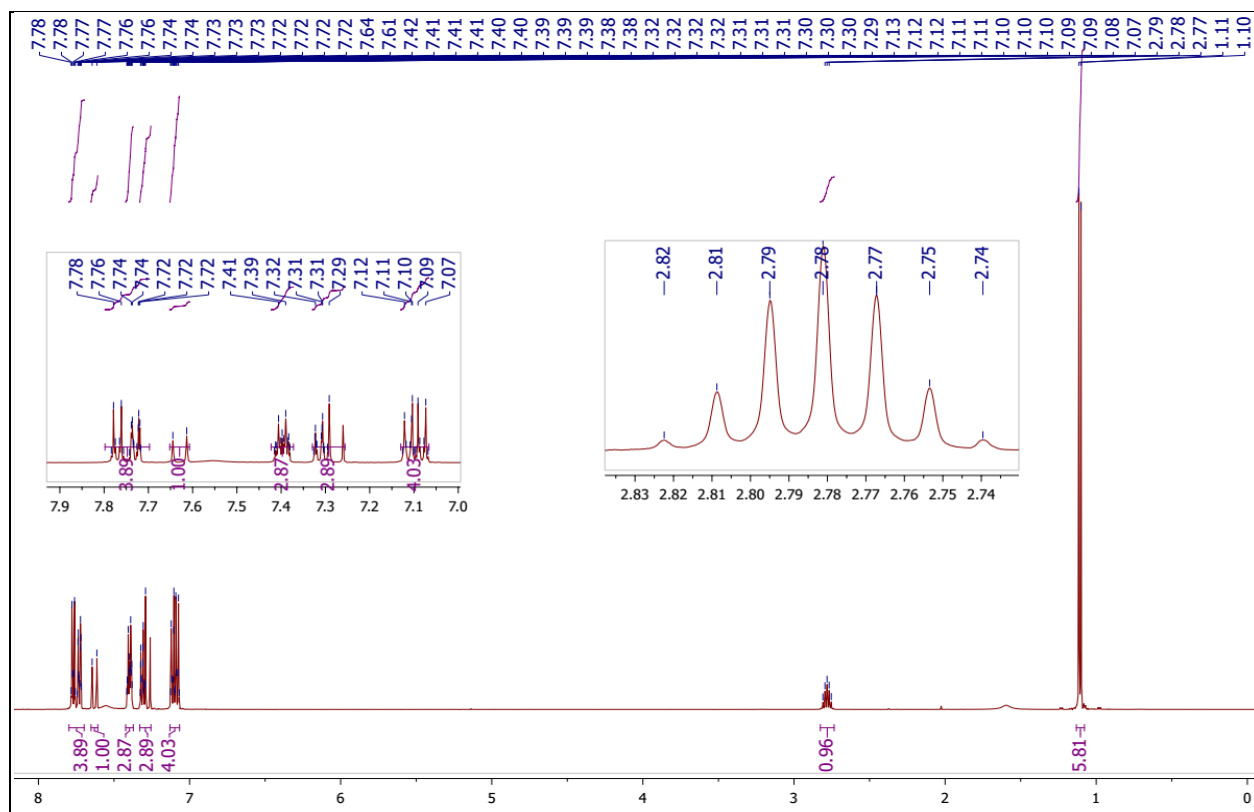


Fig. S9. ¹H spectrum of *N*-(4-(3-(4-isopropylphenyl)acryloyl)phenyl)benzenesulfonamide (5e)

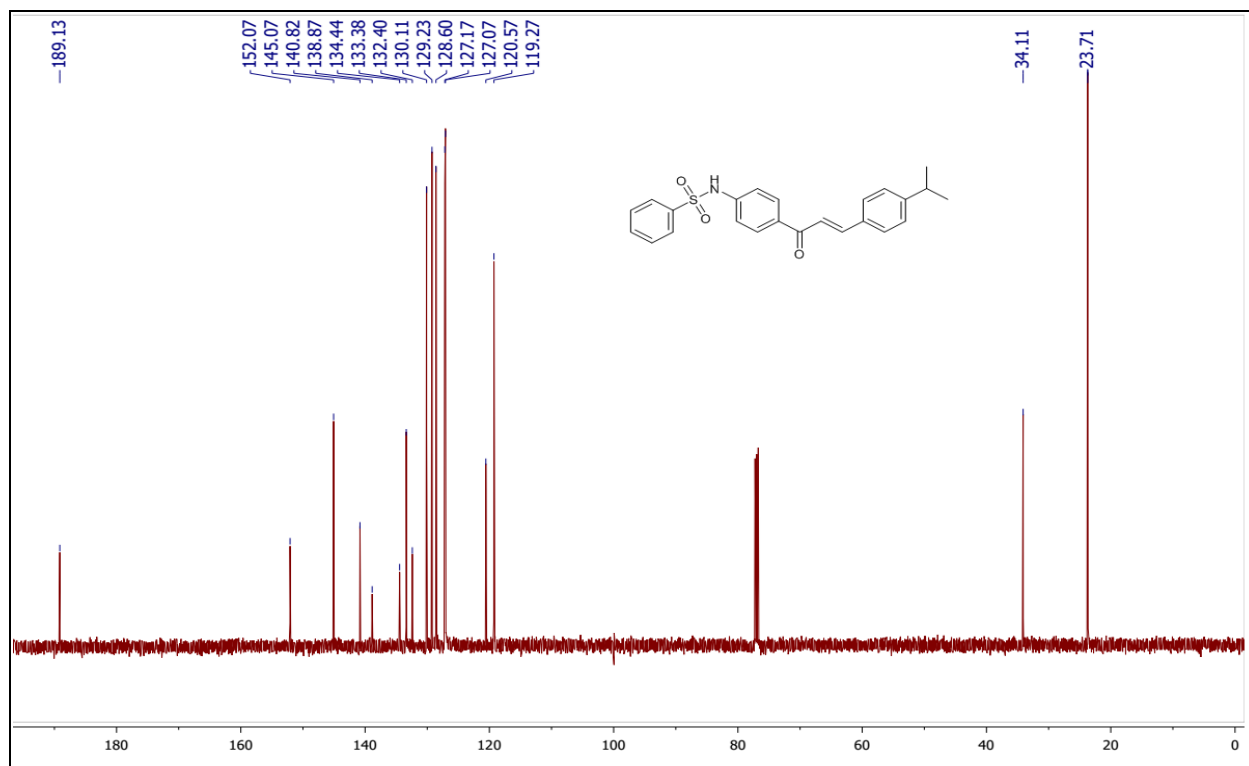


Fig. S10. ¹³C spectrum of *N*-(4-(3-(4-isopropylphenyl)acryloyl)phenyl)benzenesulfonamide (5e)

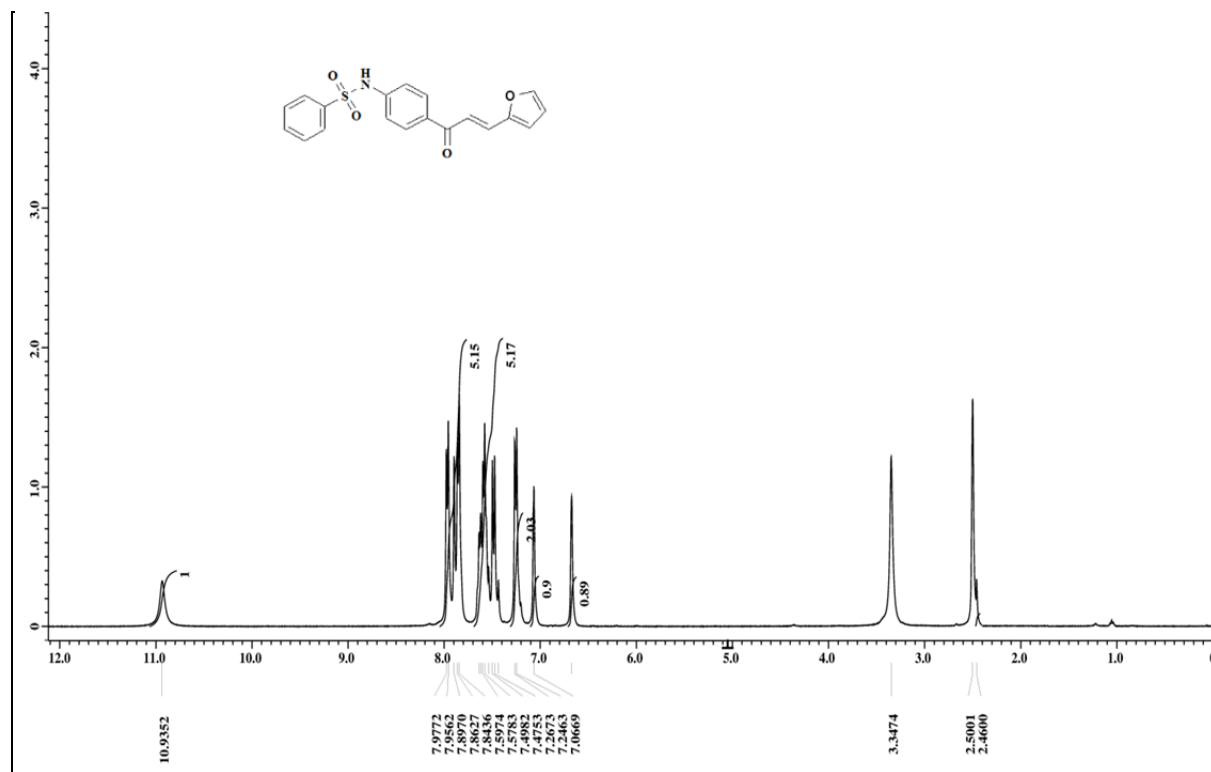


Fig. S11. ¹H spectrum of *N*-(4-(3-(furan-2-yl)acryloyl)phenyl)benzenesulfonamide (5f)

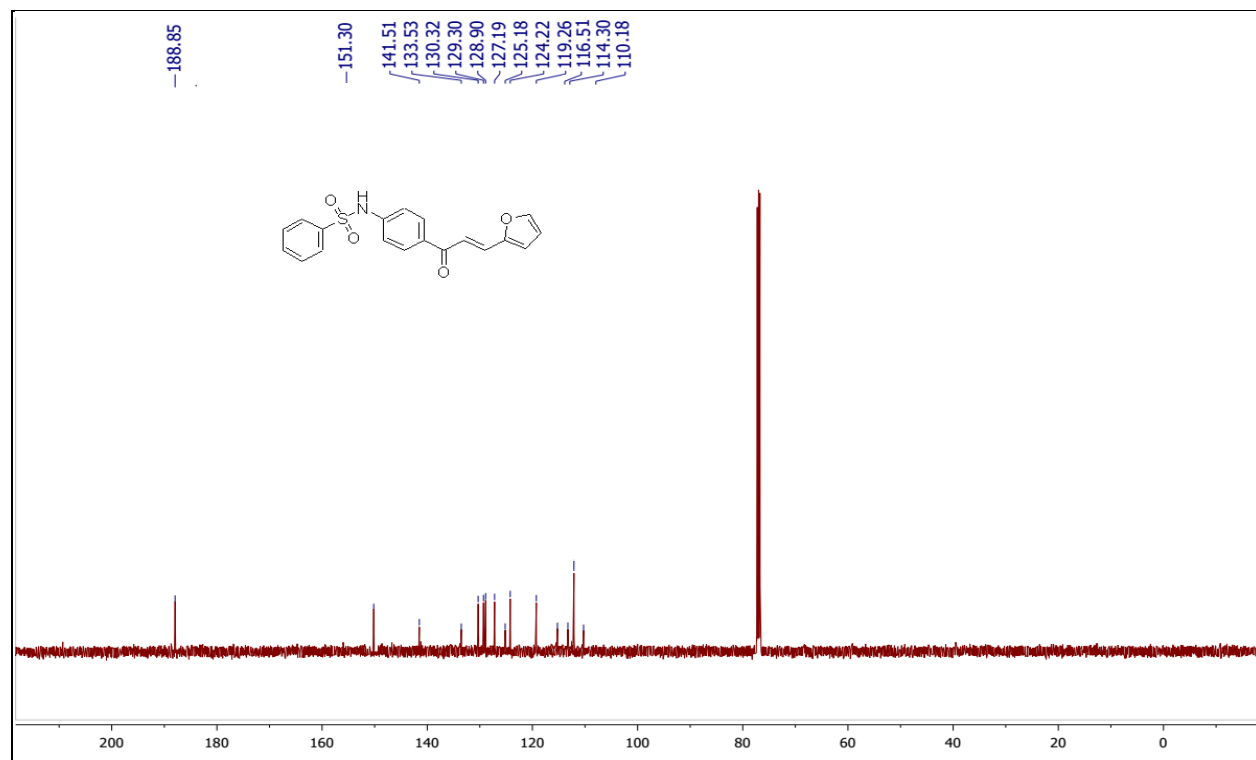


Fig. S12. ¹³C spectrum of *N*-(4-(3-(furan-2-yl)acryloyl)phenyl)benzenesulfonamide (5f)

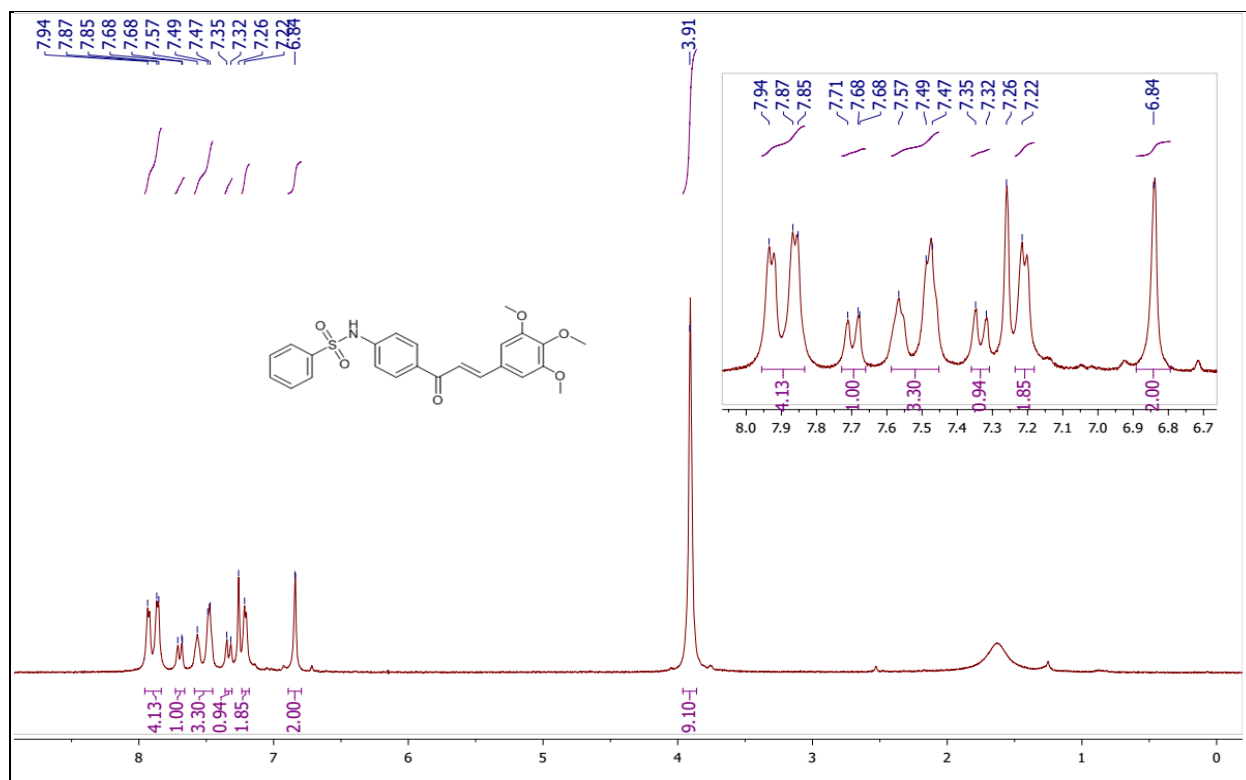


Fig. S13. ¹H spectrum of *N*-(4-(3-(3,4,5-trimethoxyphenyl)acryloyl)phenyl)benzenesulfonamide (5g)

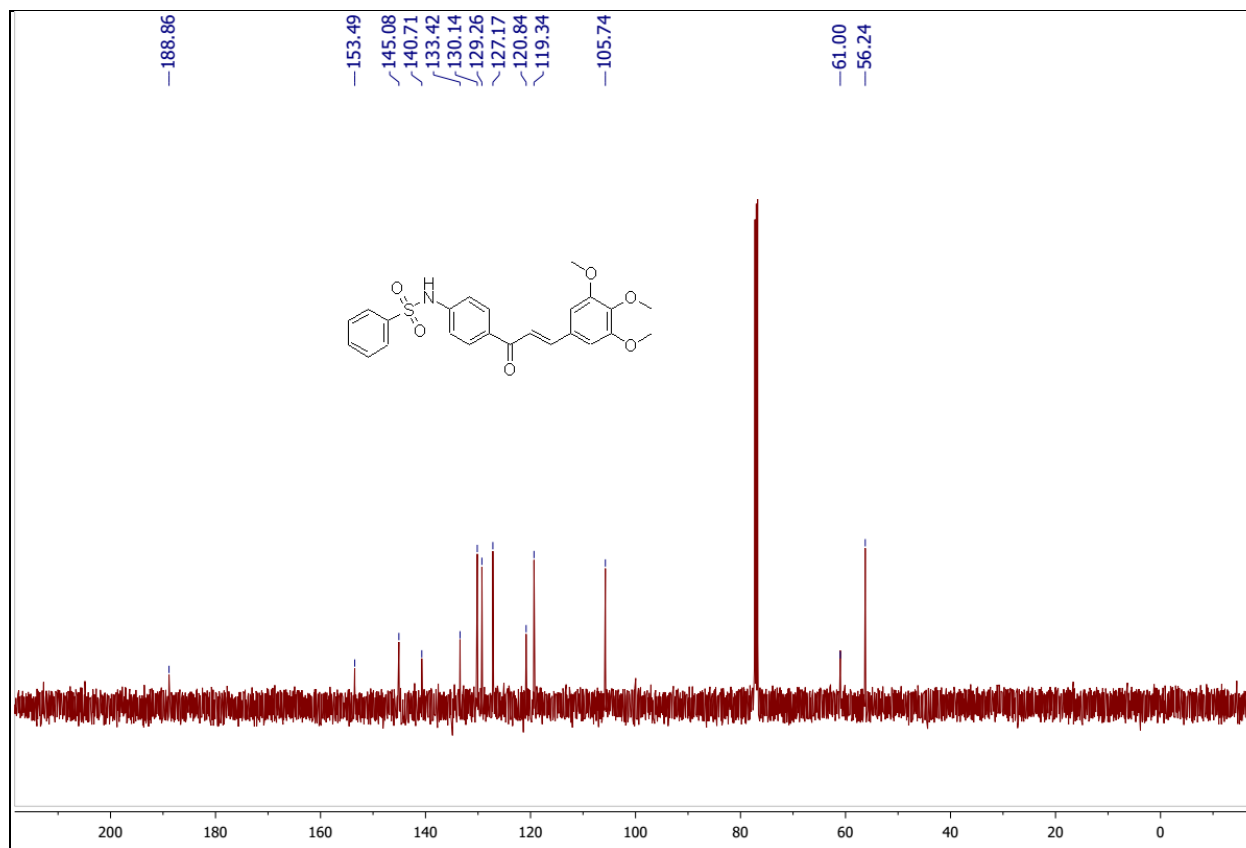
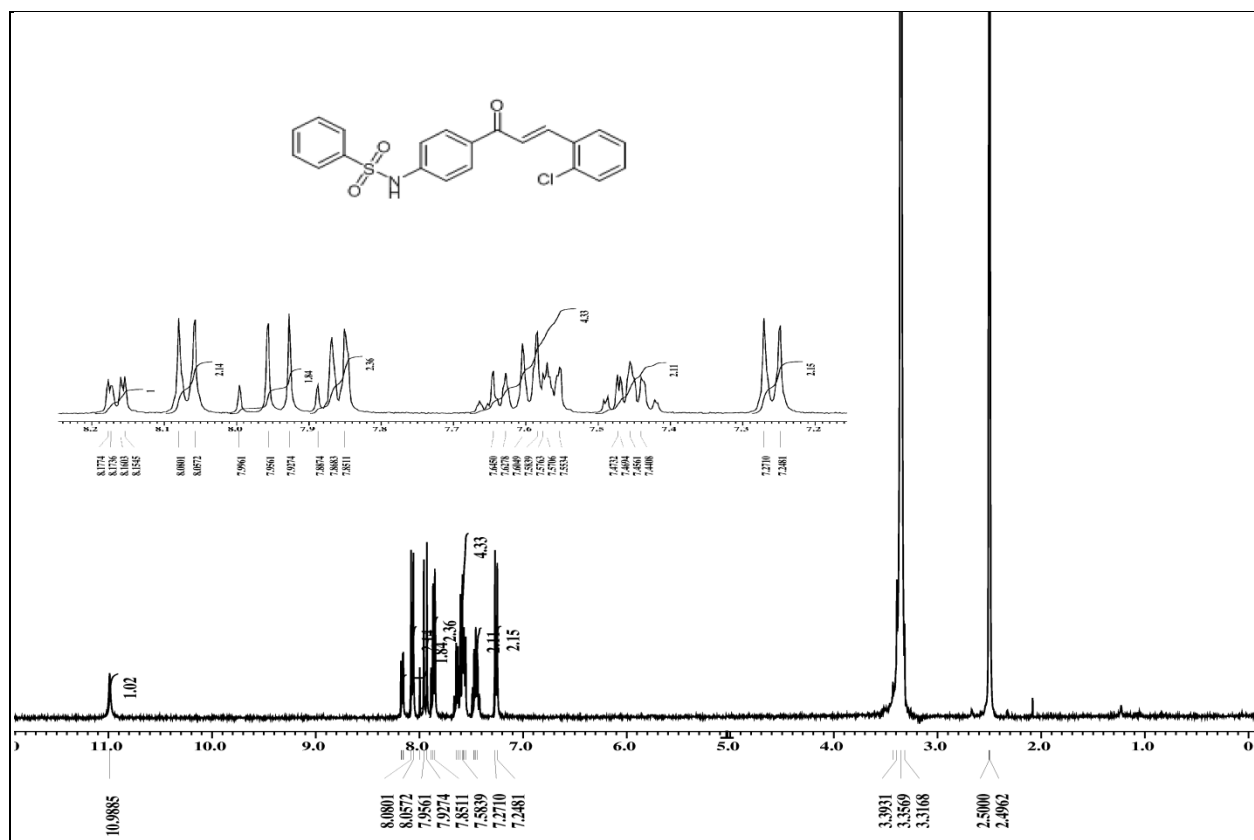


Fig. S14. ^{13}C spectrum of *N*-(4-(3-(3,4,5-trimethoxyphenyl)acryloyl)phenyl)benzenesulfonamide (5g)**Fig. S15.** ^1H spectrum of *N*-(4-(3-(2-chlorophenyl)acryloyl)phenyl)benzenesulfonamide (5h)

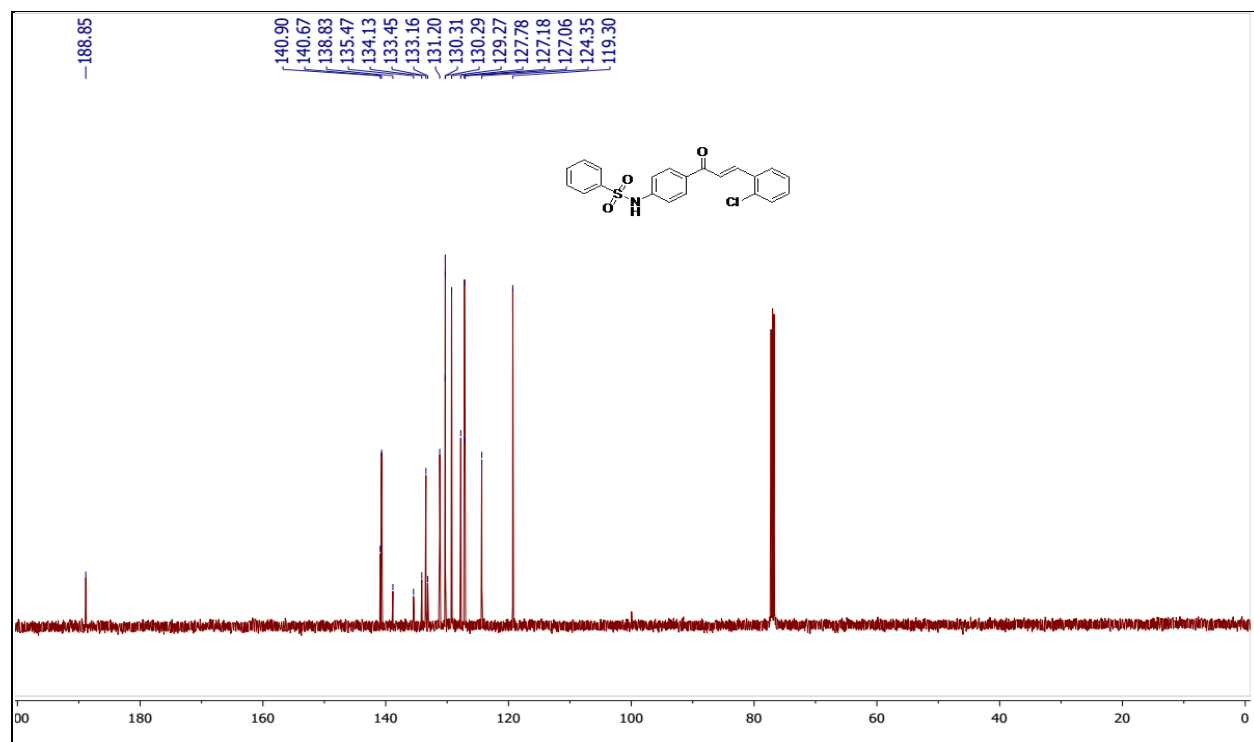


Fig. S16. ¹³C spectrum of *N*-(4-(3-(2-chlorophenyl)acryloyl)phenyl)benzenesulfonamide (5h)

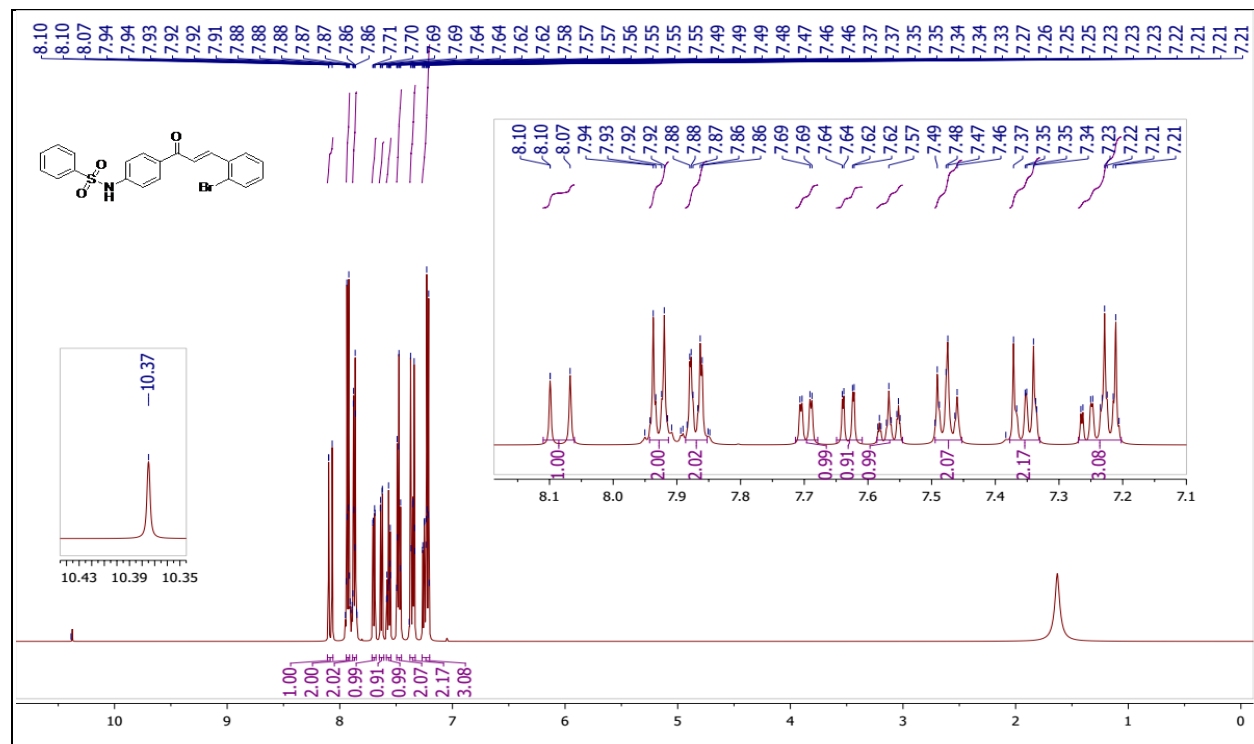


Fig. S17. ¹H spectrum of *N*-(4-(3-(2-bromophenyl)acryloyl)phenyl)benzenesulfonamide (5i)

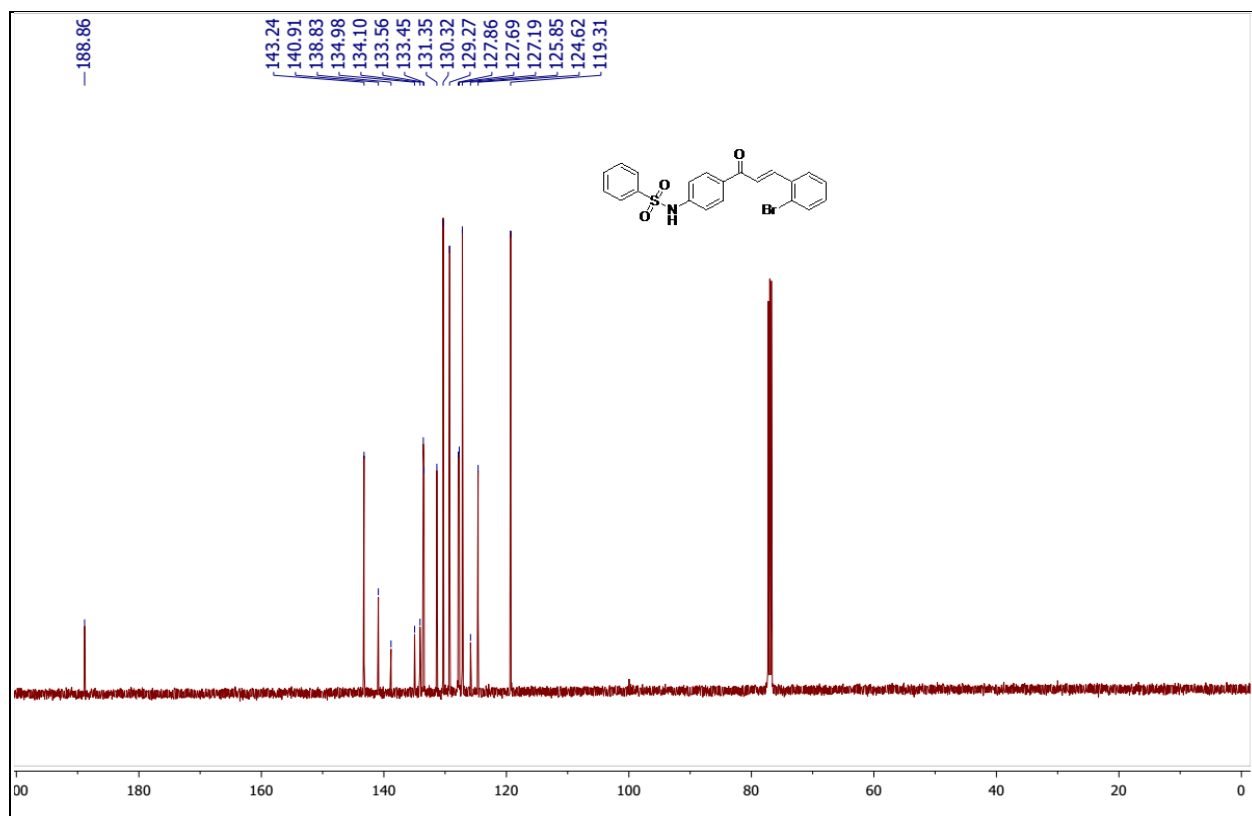


Fig. S18. ^{13}C spectrum of *N*-(4-(3-(2-bromophenyl)acryloyl)phenyl)benzenesulfonamide (5i)

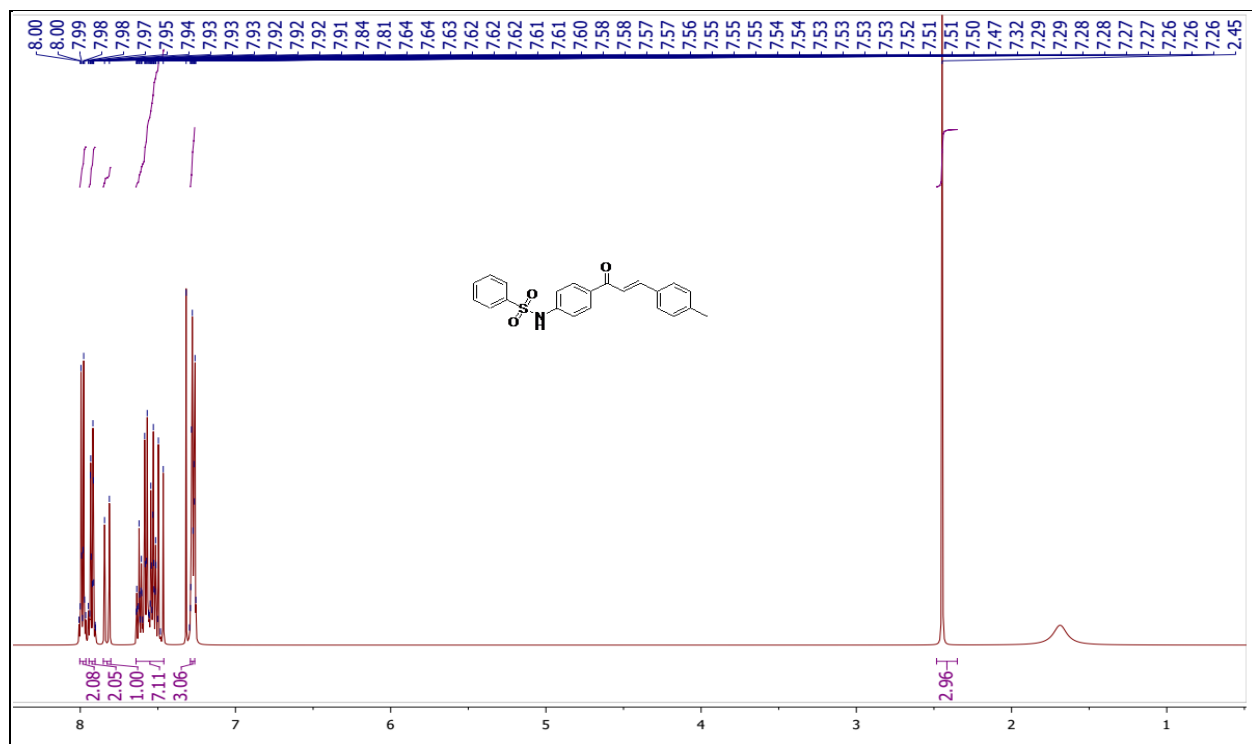


Fig. S19. ^1H spectrum of *N*-(4-(3-(*p*-tolyl)acryloyl)phenyl)benzenesulfonamide (5j)

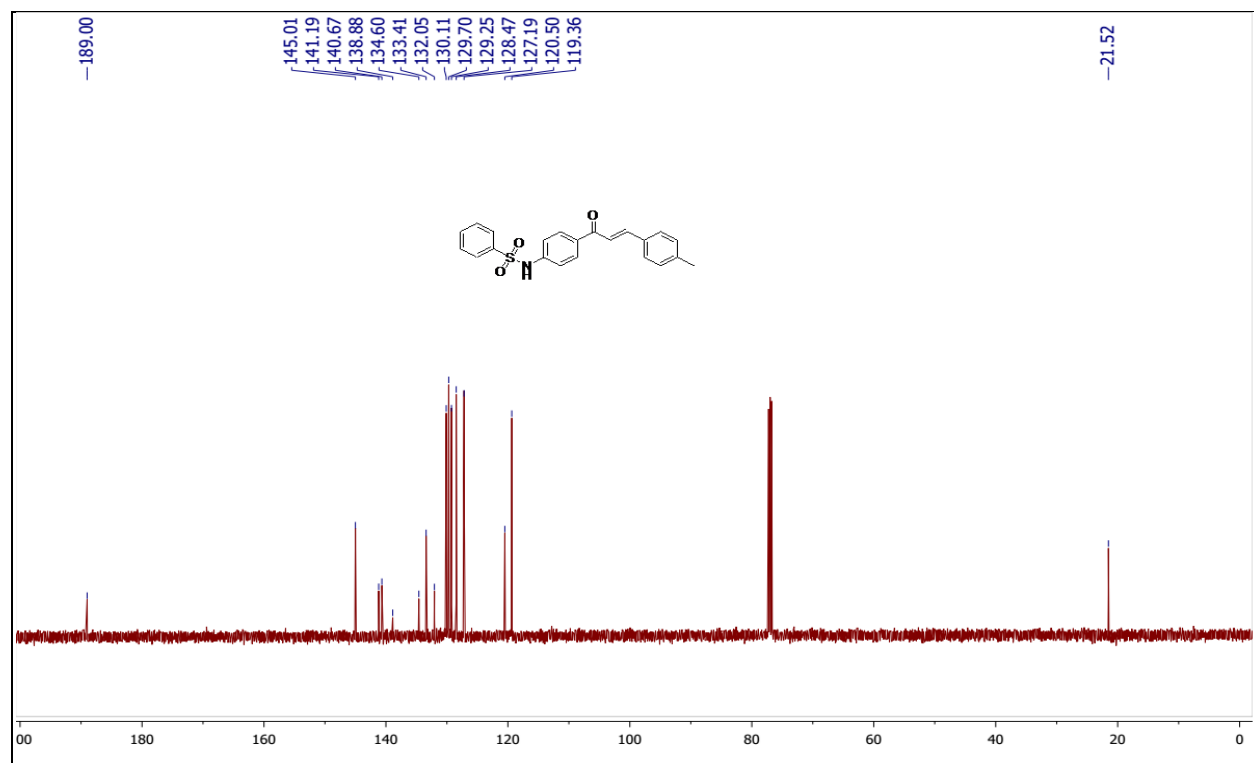


Fig. S20. ^{13}C spectrum of *N*-(4-(3-(*p*-tolyl)acryloyl)phenyl)benzenesulfonamide (5j)

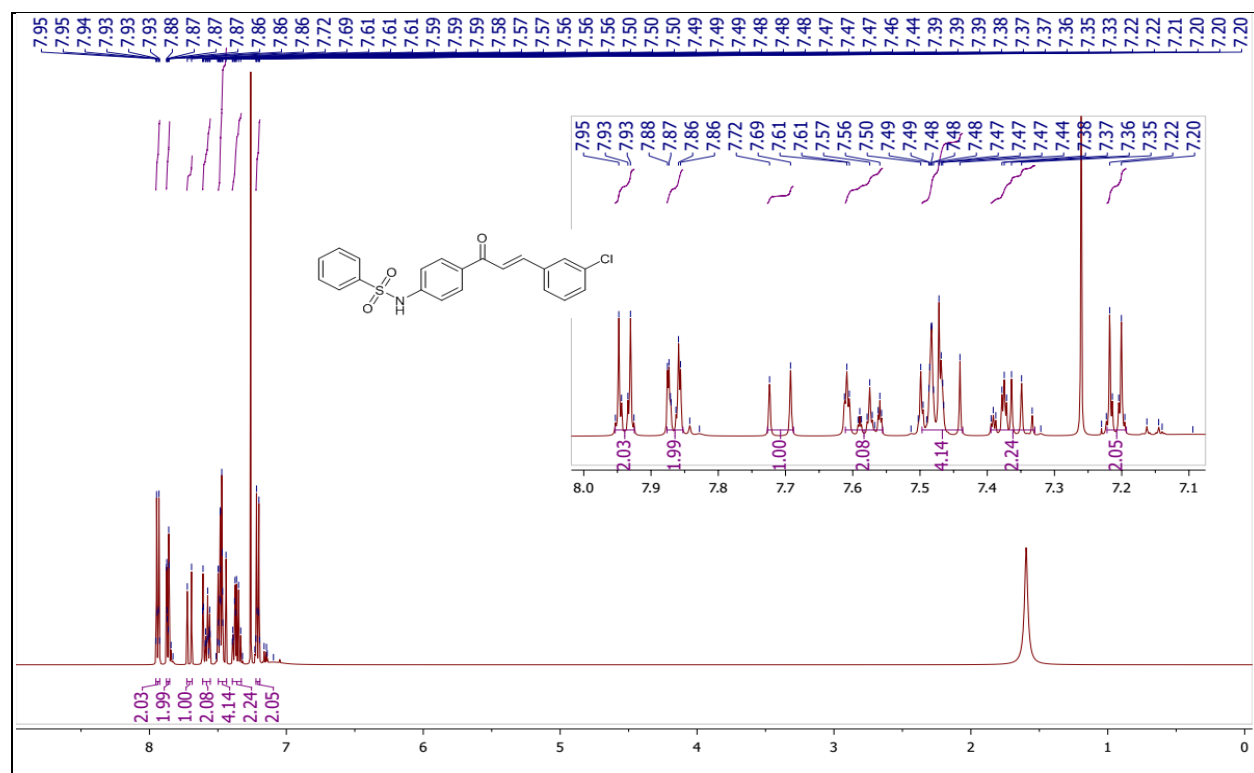
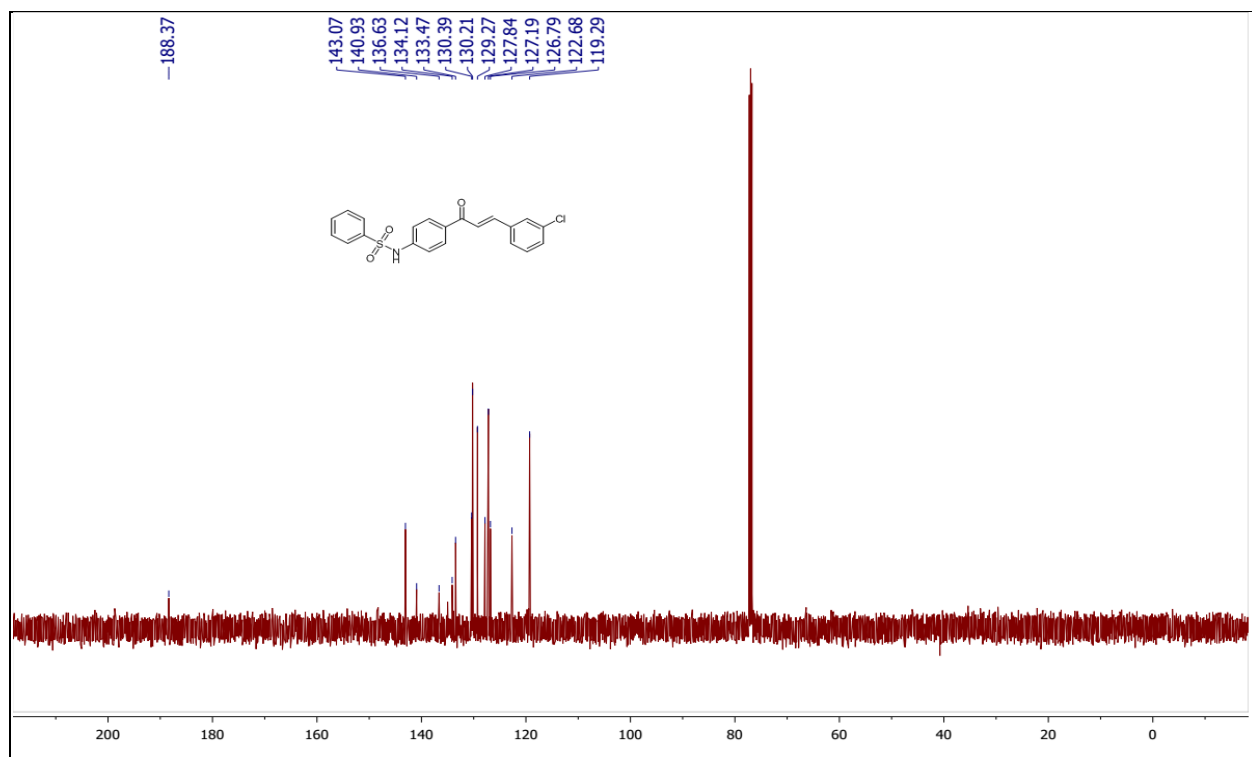
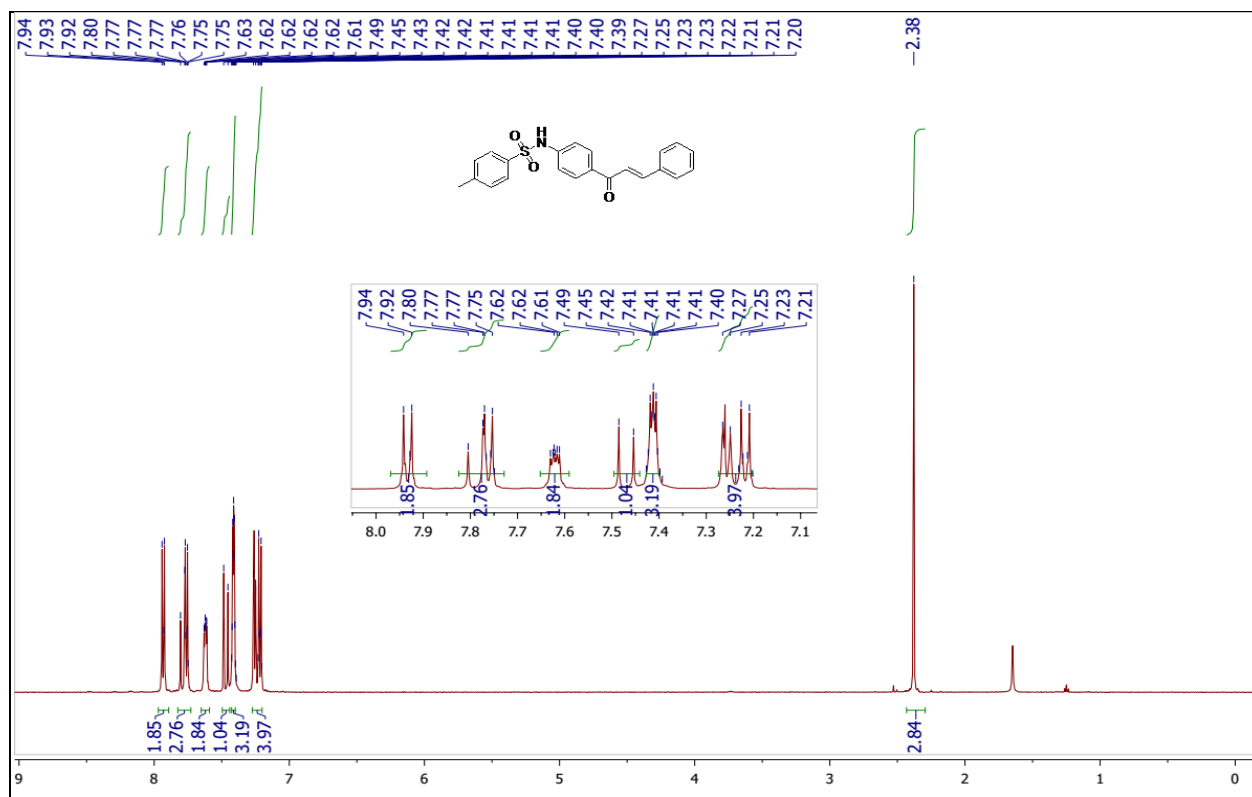


Fig. S21. ^1H spectrum of *N*-(4-(3-(3-chlorophenyl)acryloyl)phenyl)benzenesulfonamide (5k)

Fig. S22. ¹³C spectrum of *N*-(4-(3-(3-chlorophenyl)acryloyl)phenyl)benzenesulfonamide (5k)Fig. S23. ¹H spectrum of *N*-(4-(3-(3-chlorophenyl)acryloyl)phenyl)benzenesulfonamide (5l)

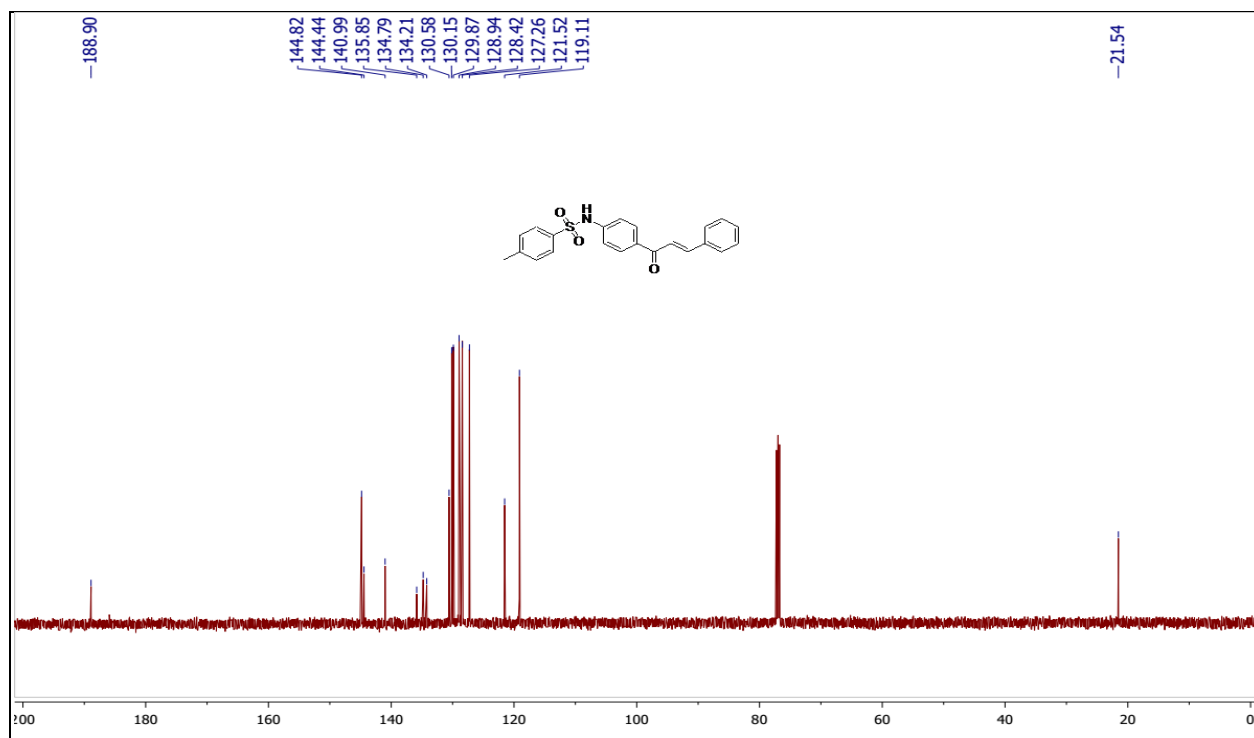


Fig. S24. ¹³C spectrum of *N*-(4-cinnamoylphenyl)-4-methylbenzenesulfonamide (5l)

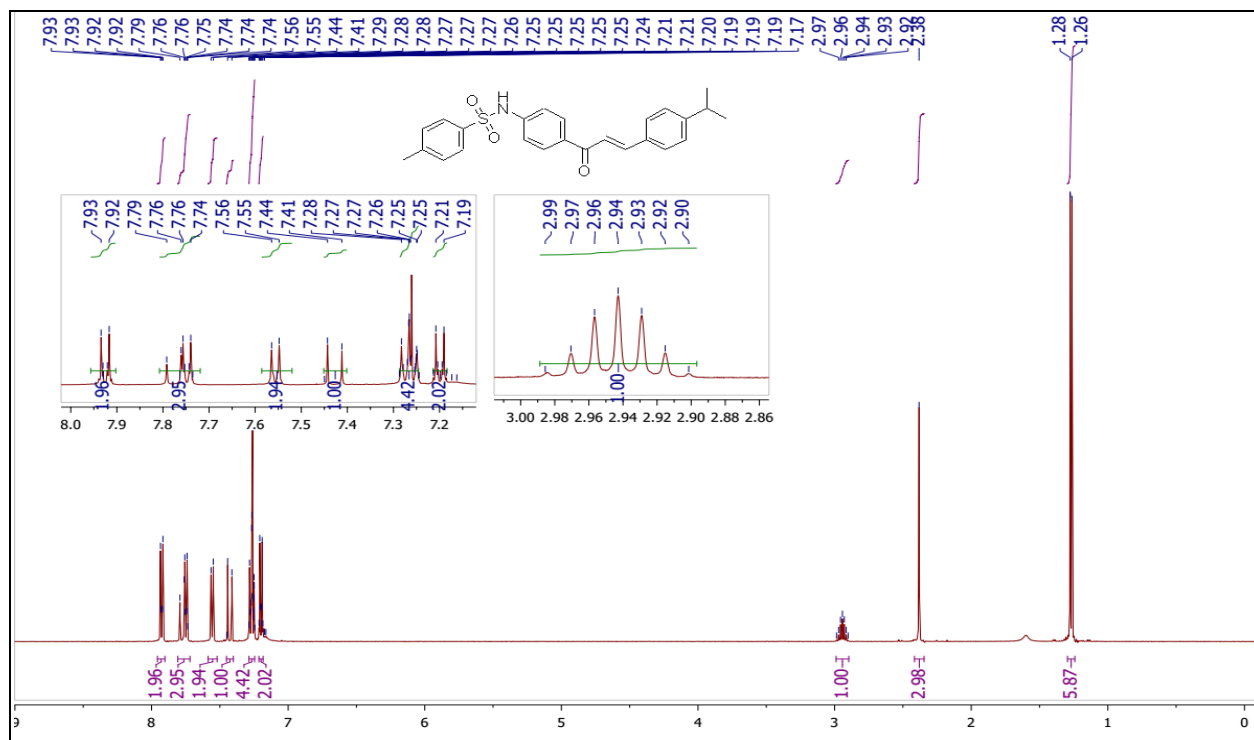


Fig. S25. ¹H spectrum of *N*-(4-(3-(4-isopropylphenyl)acryloyl)phenyl)-4-methylbenzenesulfonamide (5m)

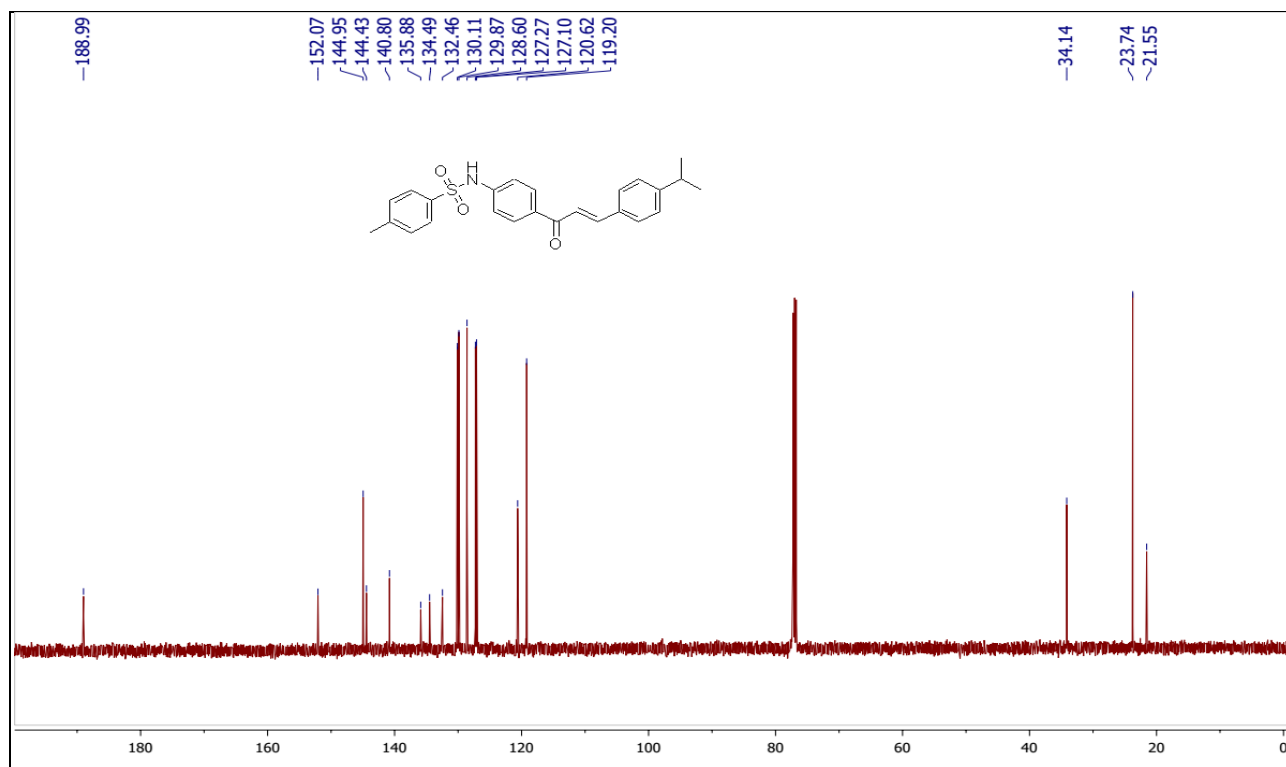


Fig. S26. ^{13}C spectrum of *N*-(4-(3-(4-isopropylphenyl)acryloyl)phenyl)-4-methylbenzenesulfonamide (5m)

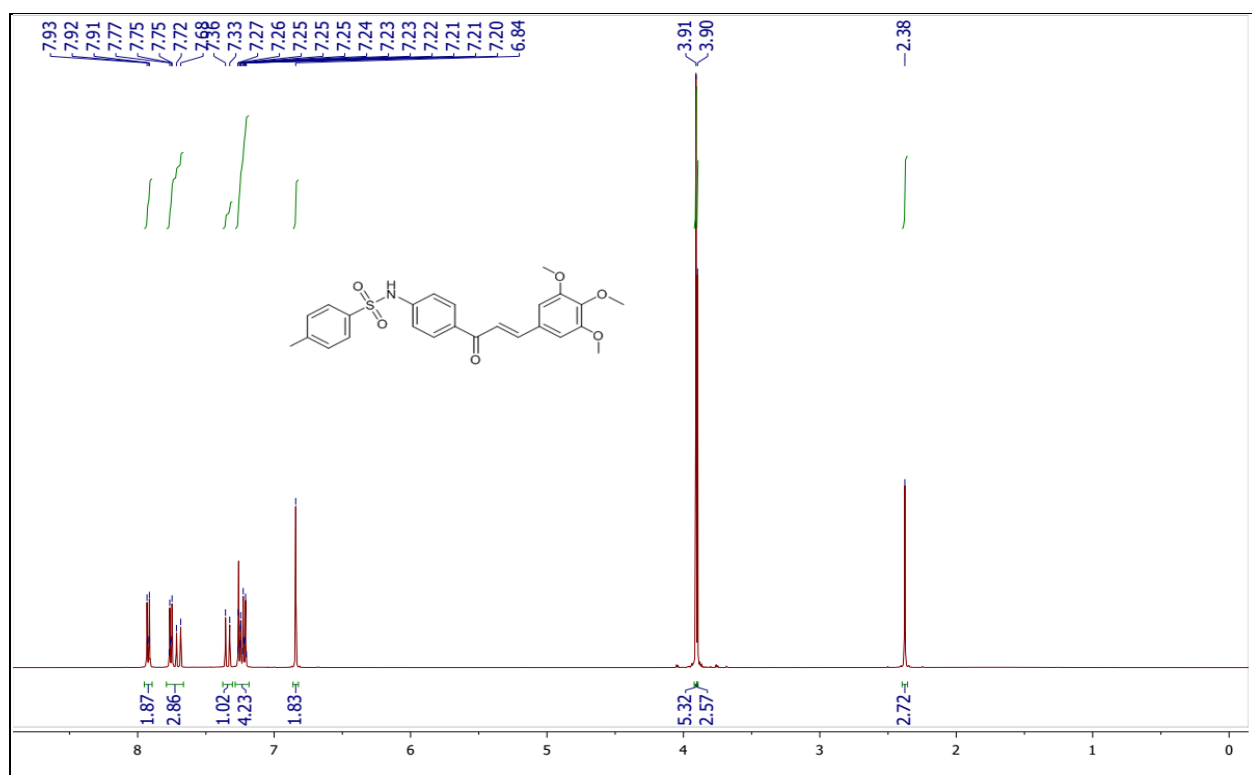


Fig. S27. ^1H spectrum of 4-methyl-*N*-(4-(3-(3,4,5-trimethoxyphenyl)acryloyl)phenyl)benzenesulfonamide (5n)

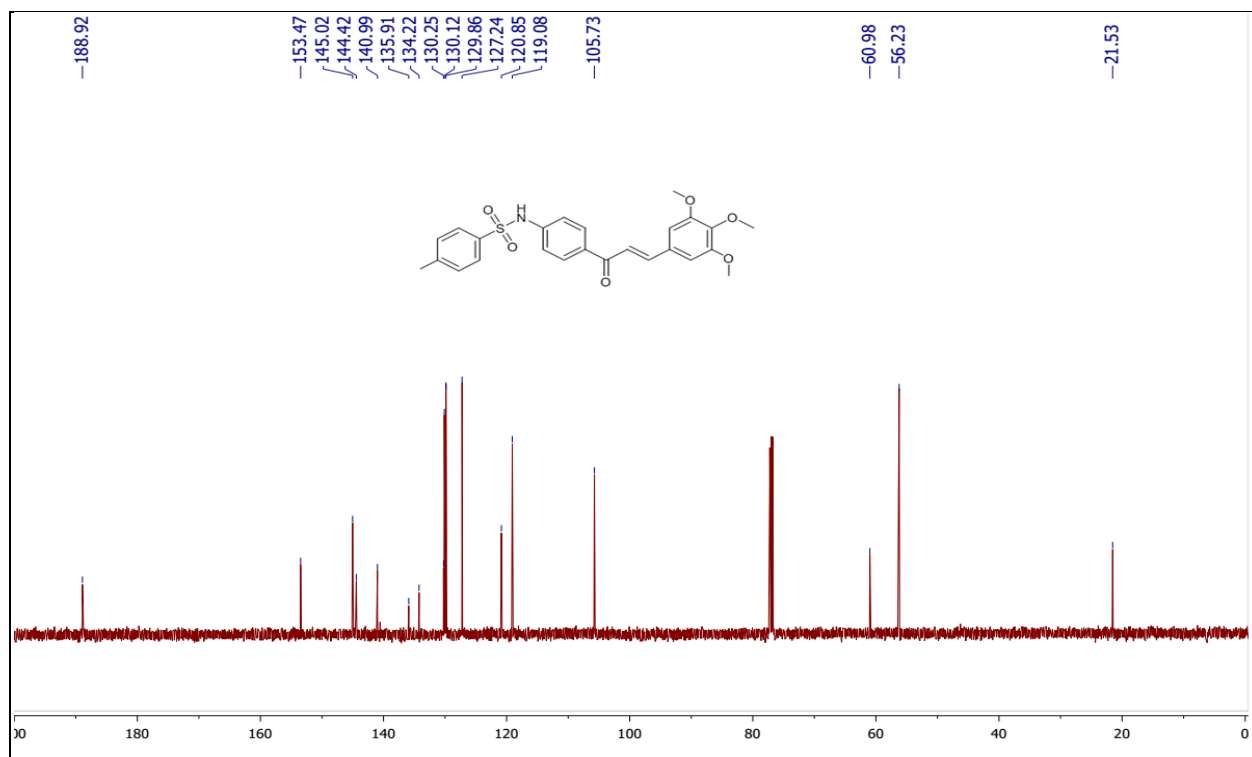


Fig. S28. ¹³C spectrum of 4-methyl-*N*-(4-(3-(3,4,5-trimethoxyphenyl)acryloyl)phenyl)benzenesulfonamide (5n)

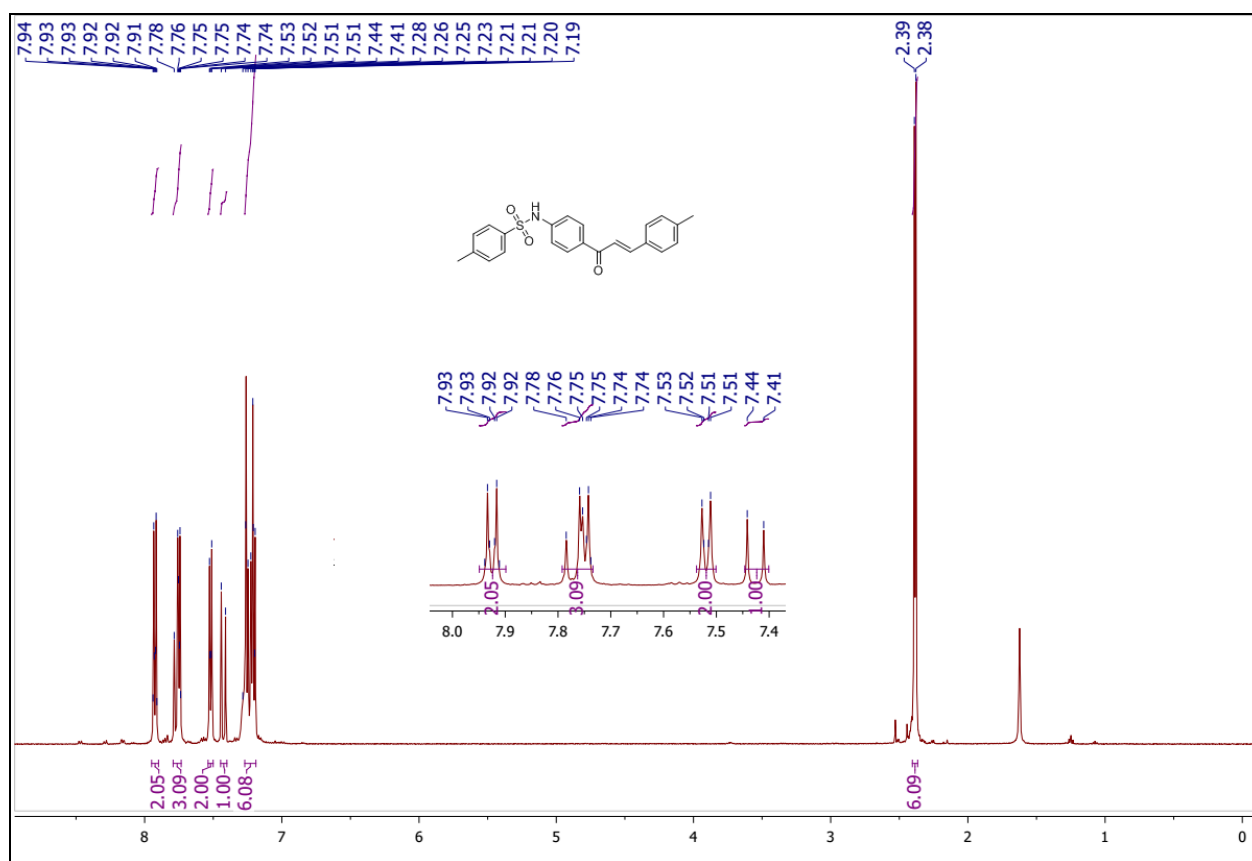
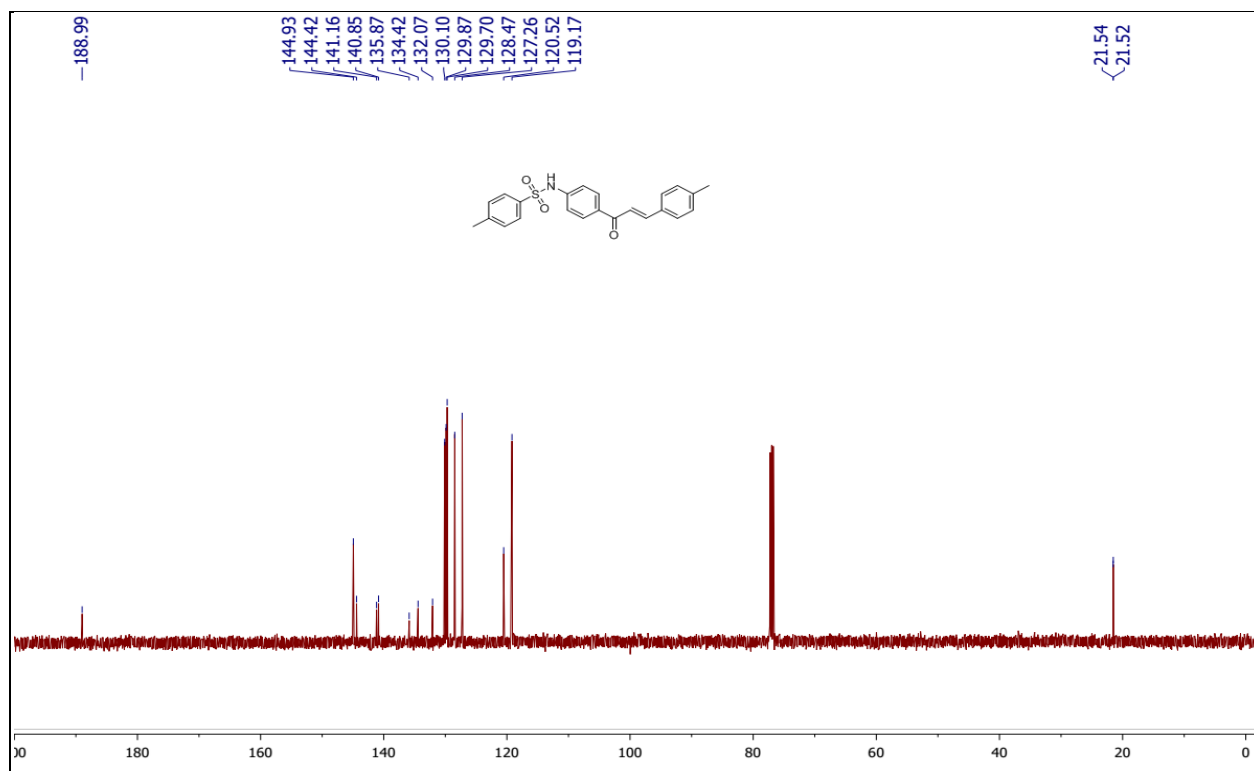
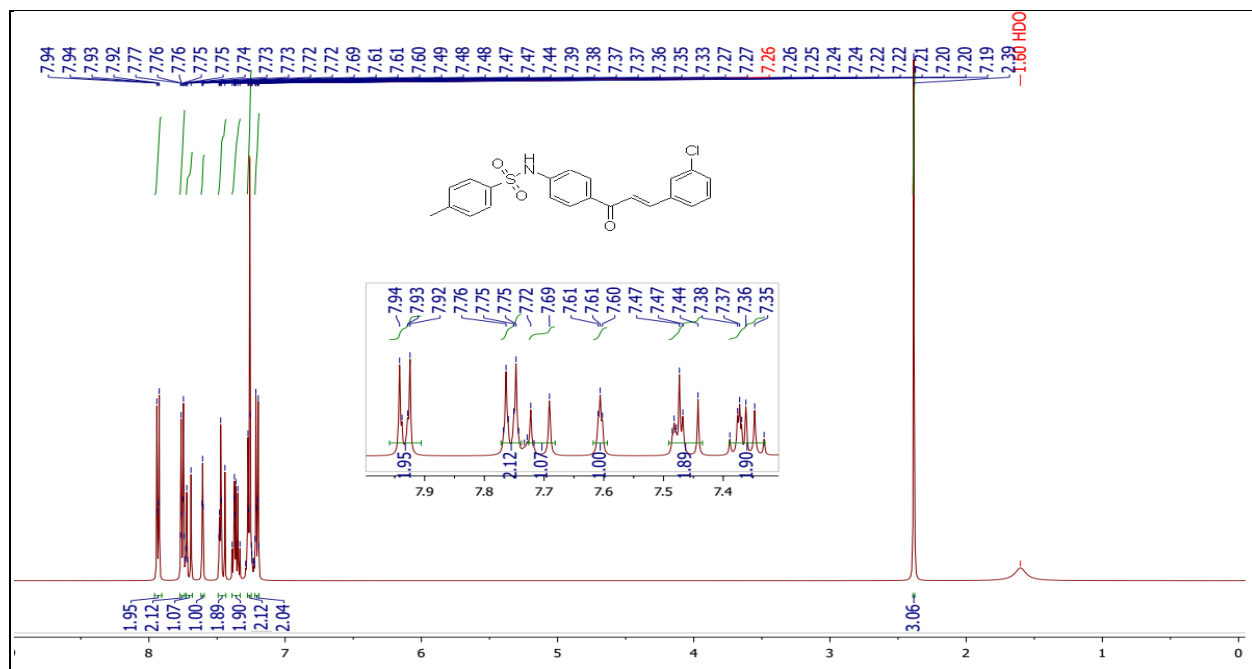


Fig. S29. ^1H spectrum of 4-methyl-*N*-(4-(3-(*p*-tolyl)acryloyl)phenyl)benzenesulfonamide (5o)**Fig. S30.** ^{13}C spectrum of 4-methyl-*N*-(4-(3-(*p*-tolyl)acryloyl)phenyl)benzenesulfonamide (5o)**Fig. S31.** ^1H spectrum of *N*-(4-(3-(3-chlorophenyl)acryloyl)phenyl)-4-methylbenzenesulfonamide (5p)

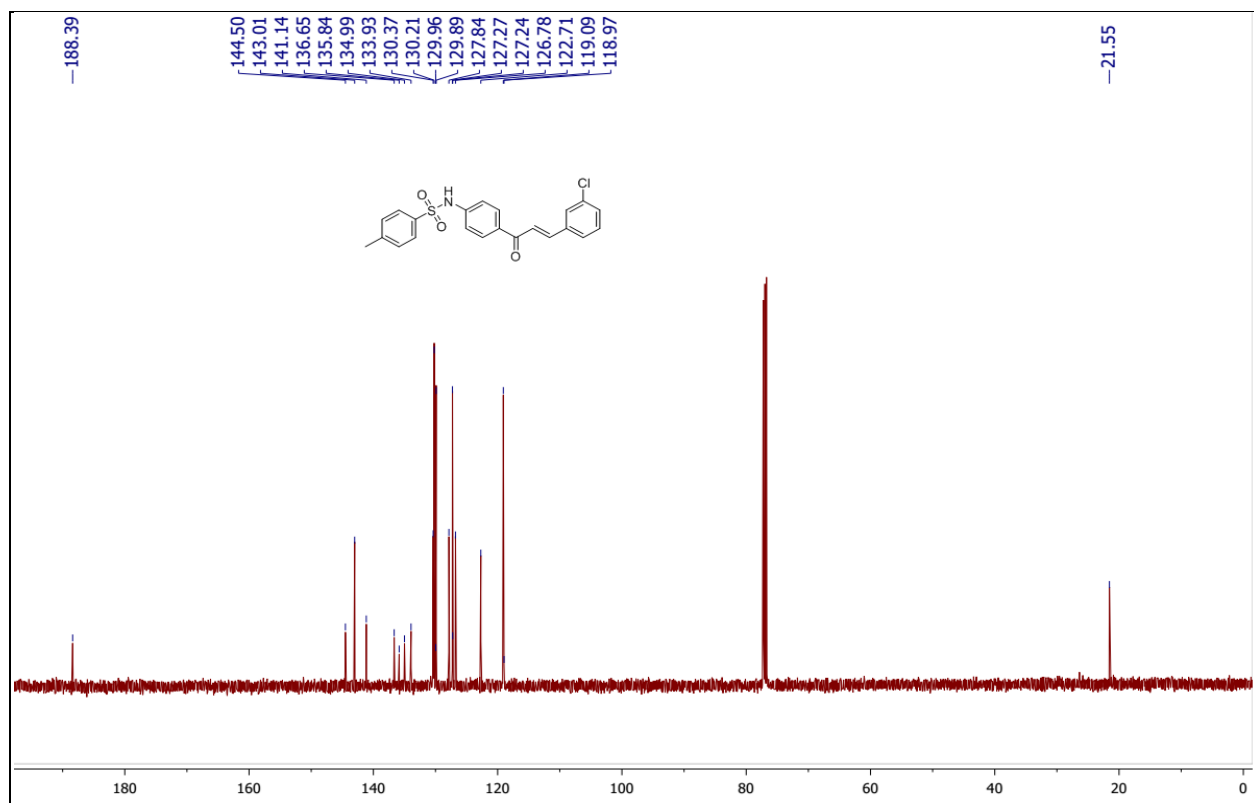


Fig. S32. ¹³C spectrum of *N*-(4-(3-(3-chlorophenyl)acryloyl)phenyl)-4-methylbenzenesulfonamide (5p)

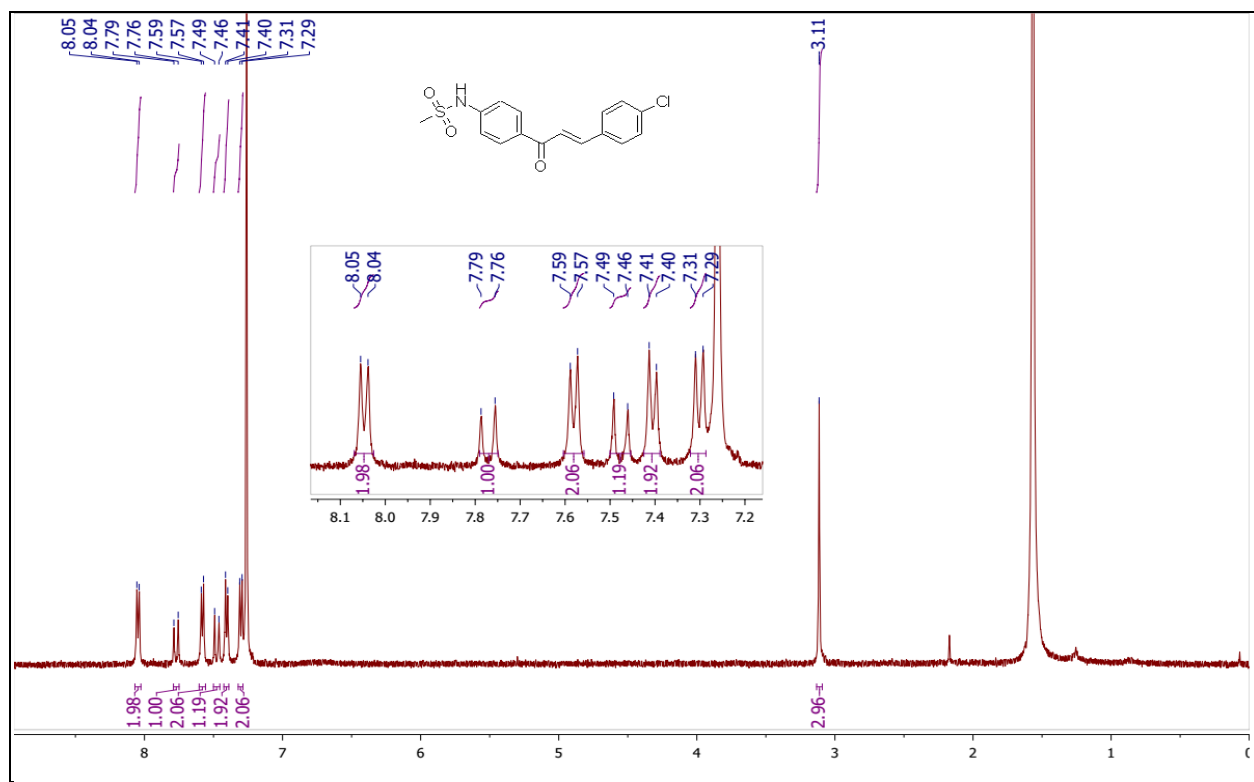


Fig. S33. ¹H spectrum of *N*-(4-(3-(4-chlorophenyl)acryloyl)phenyl)methanesulfonamide (5q)

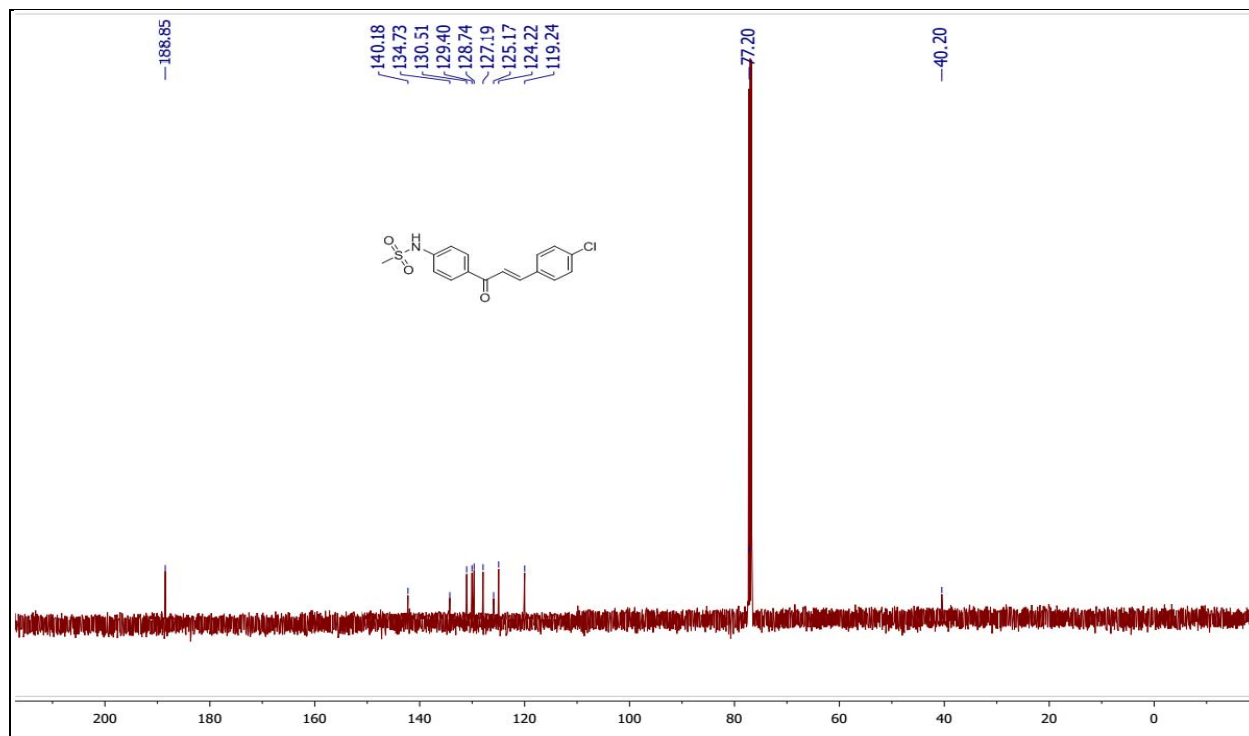


Fig. S34. ^{13}C spectrum of *N*-(4-(3-(4-chlorophenyl)acryloyl)phenyl)methanesulfonamide (5q)

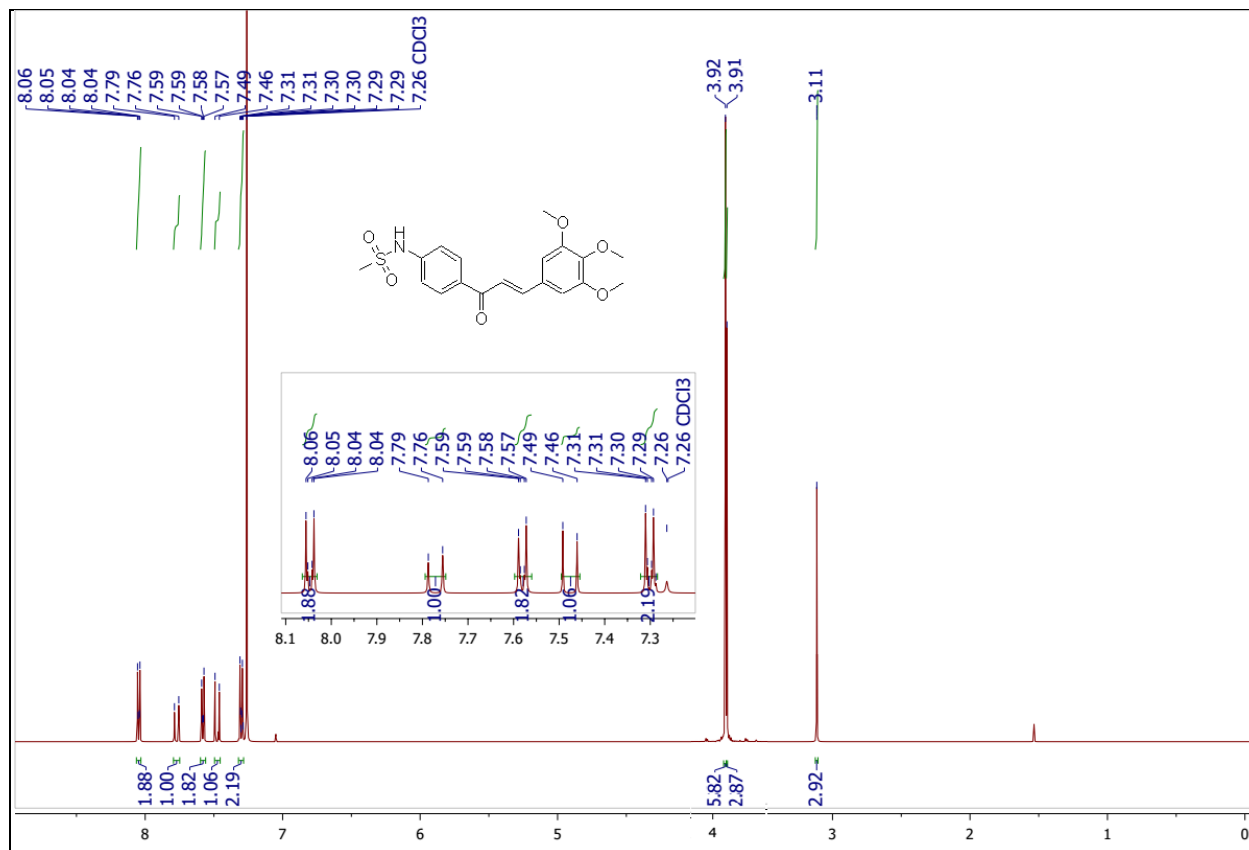


Fig. S35. ^1H spectrum of *N*-(4-(3-(3,4,5-trimethoxyphenyl)acryloyl)phenyl)methanesulfonamide (5r)

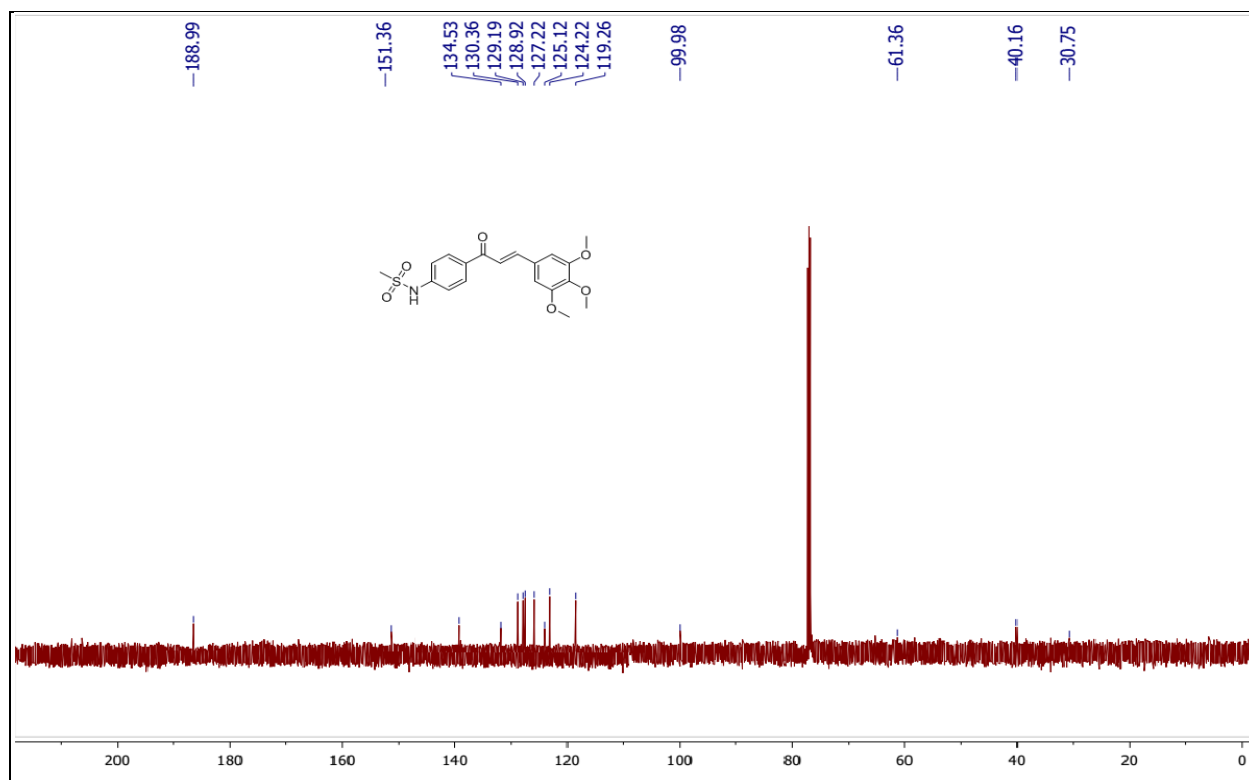


Fig. S36. ¹³C spectrum of *N*-(4-(3-(3,4,5-trimethoxyphenyl)acryloyl)phenyl)methanesulfonamide (5r)

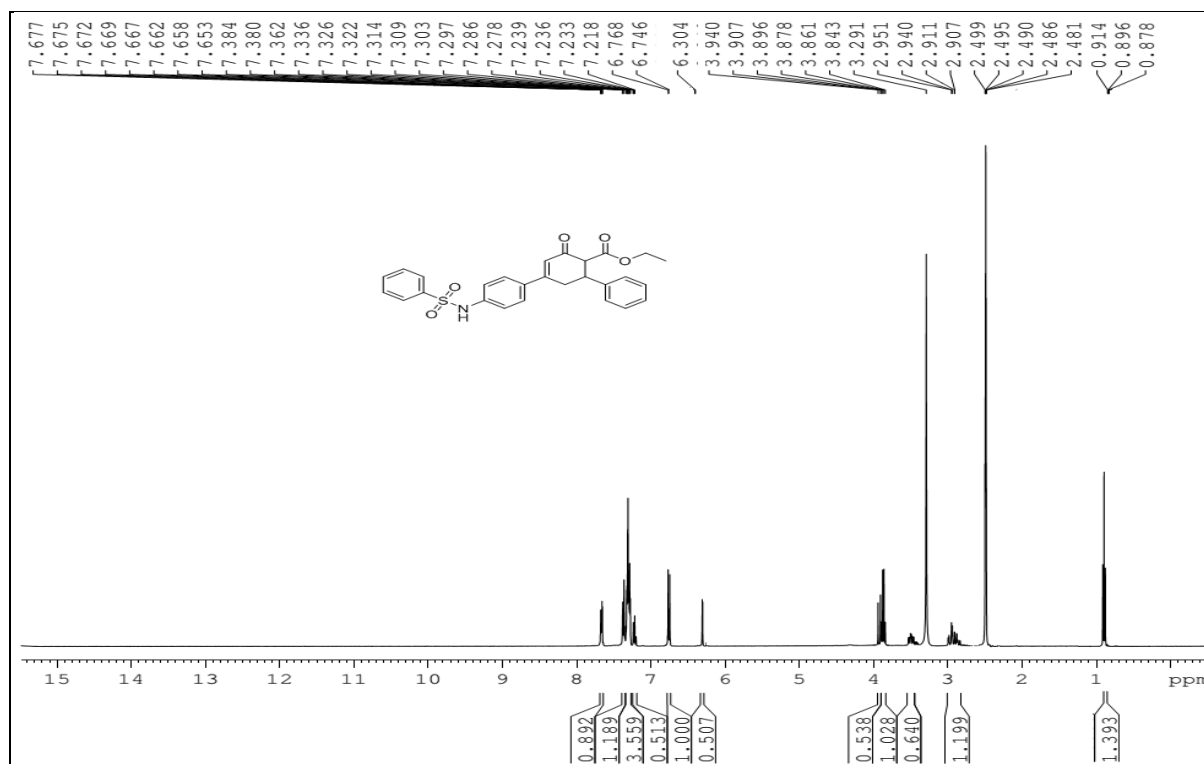


Fig. S37. ¹H spectrum of Ethyl 6-phenyl-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7a)

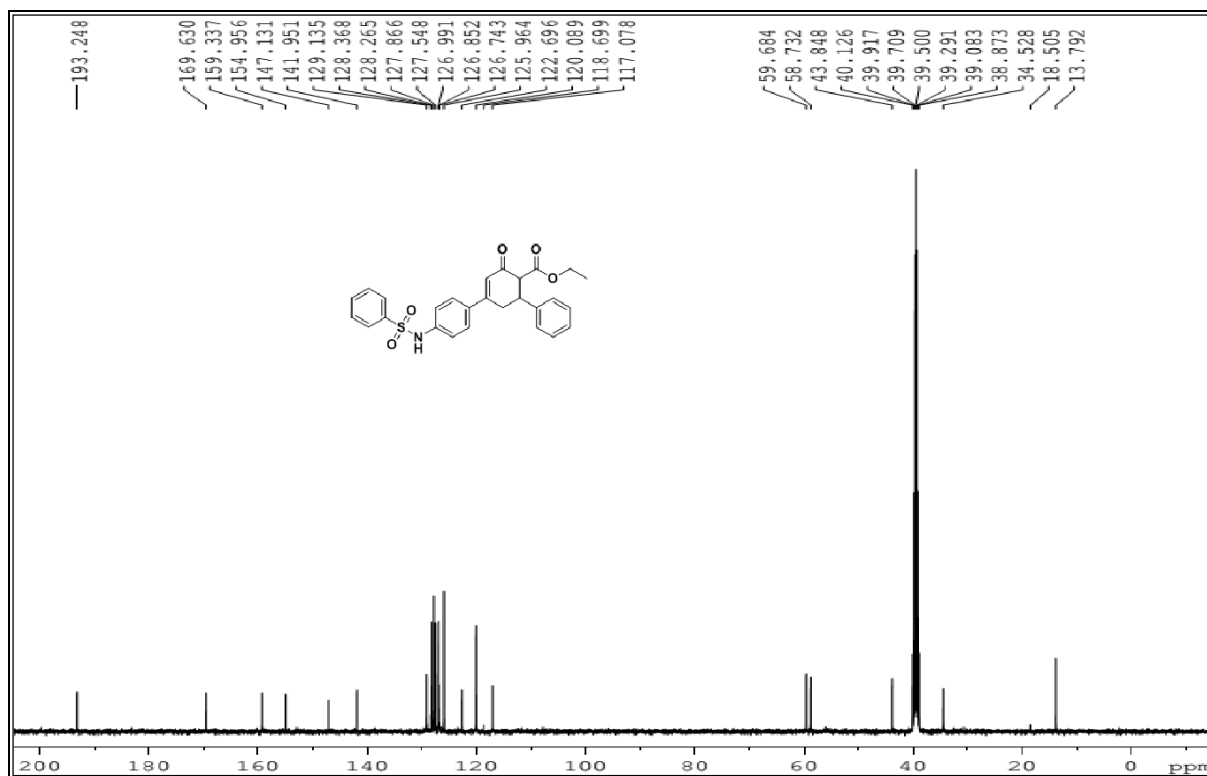


Fig. S38. ^{13}C spectrum of Ethyl 6-phenyl-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7a)

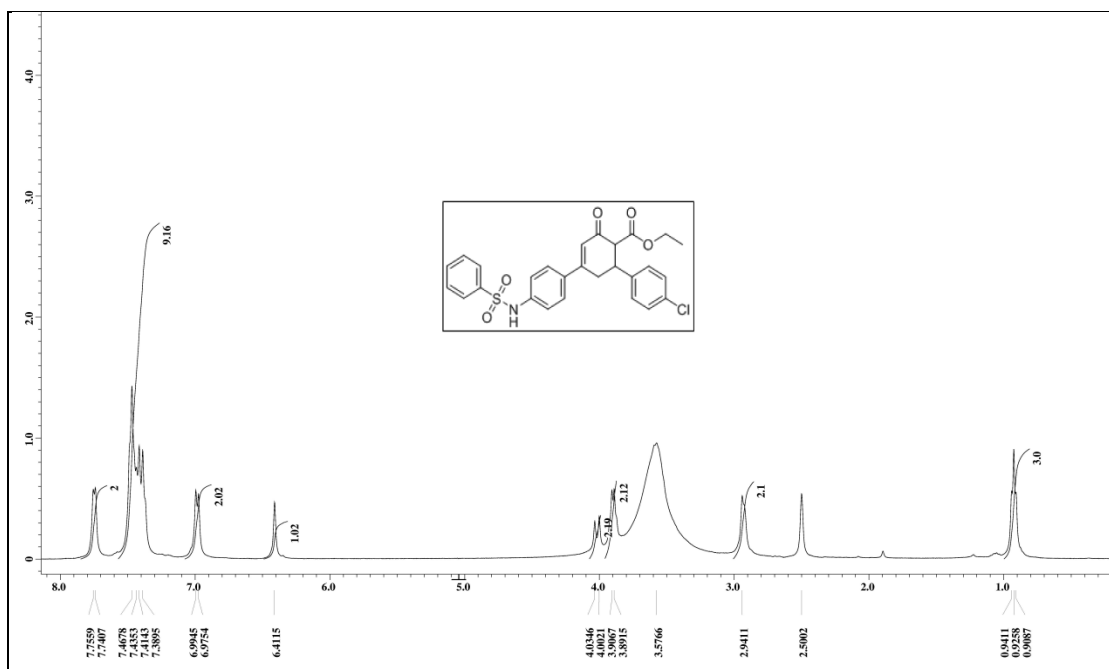


Fig. S39. ^1H Spectrum of Ethyl 6-(4-chlorophenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7b)

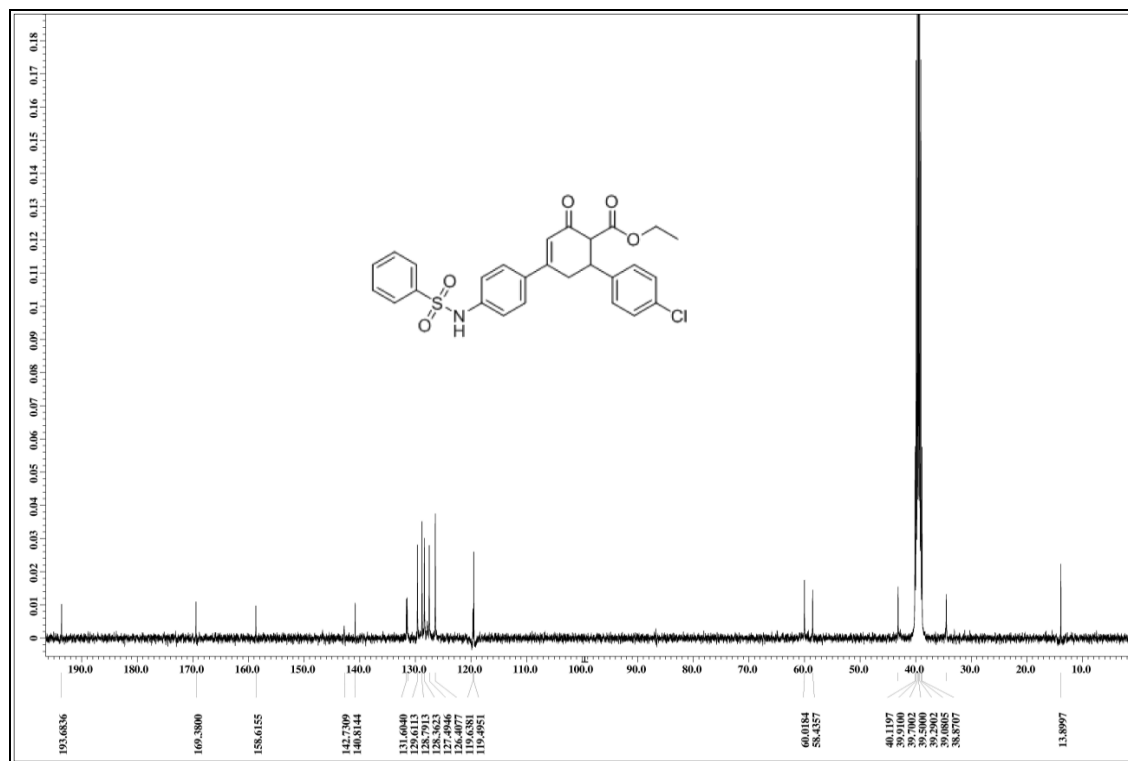


Fig. S40. ¹³C Spectrum of Ethyl 6-(4-chlorophenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7b)

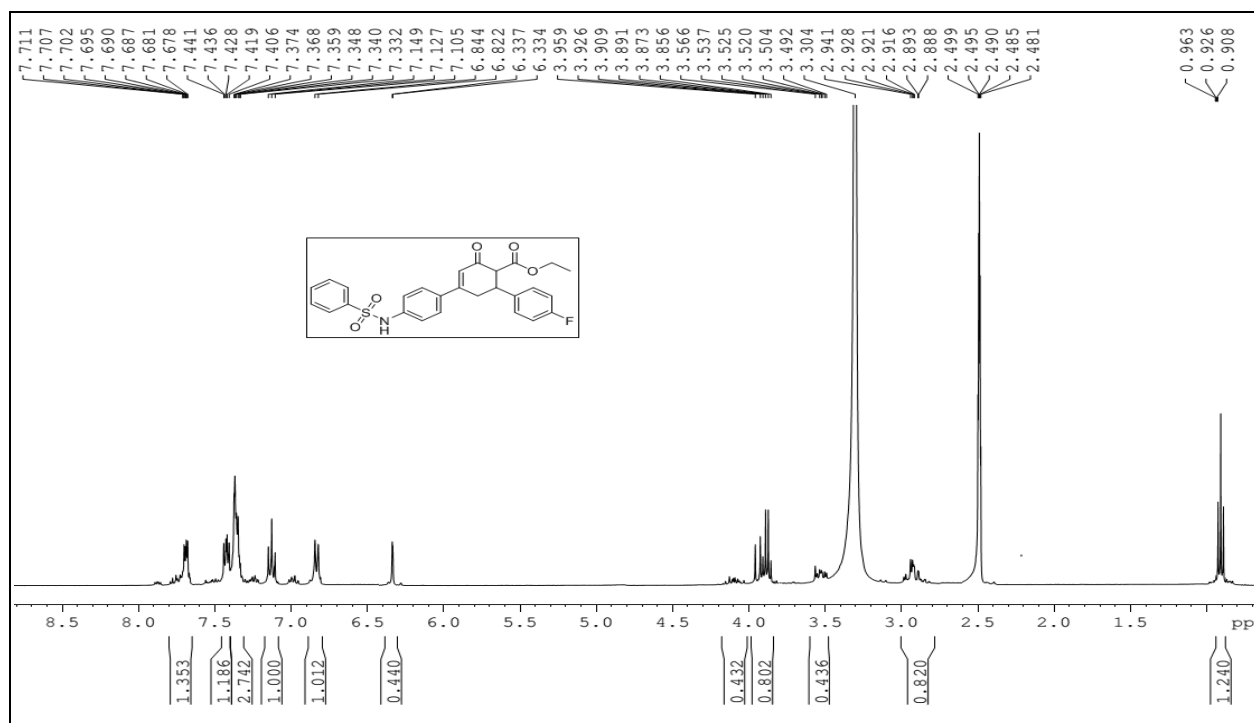


Fig. S41. ¹H Spectrum of Ethyl 6-(4-fluorophenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7c)

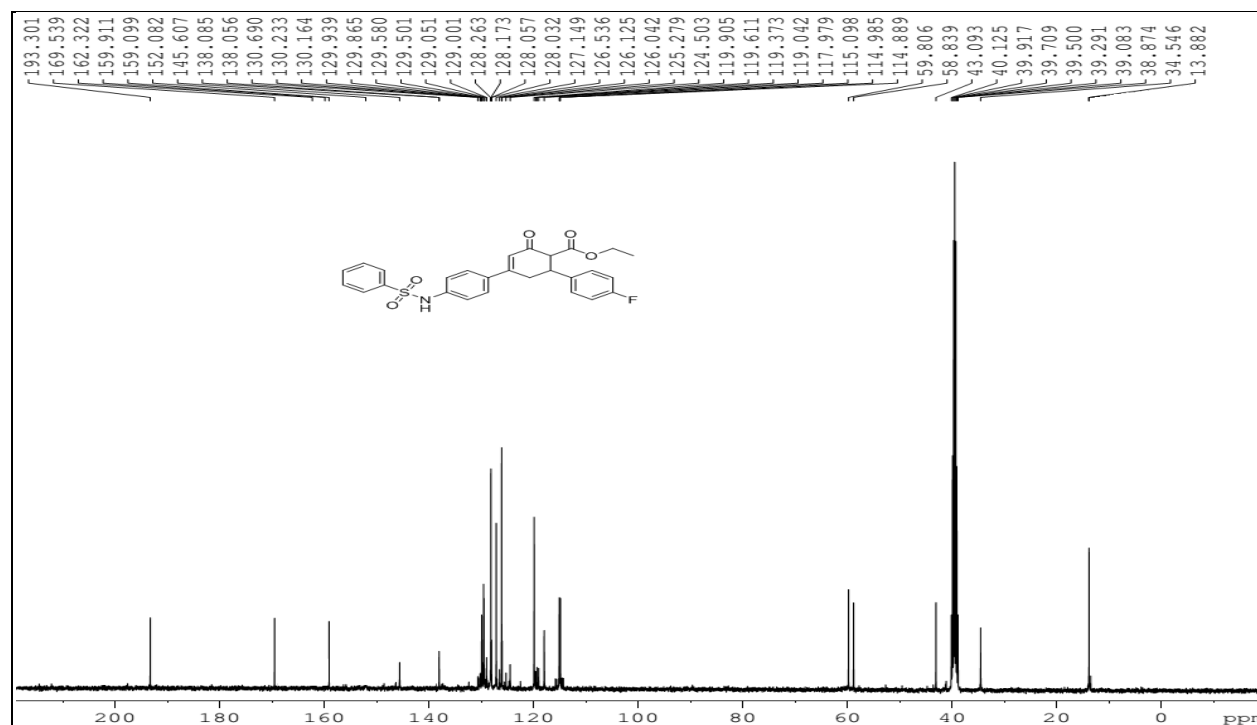


Fig. S42. ¹³C Spectrum of Ethyl 6-(4-fluorophenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7c)

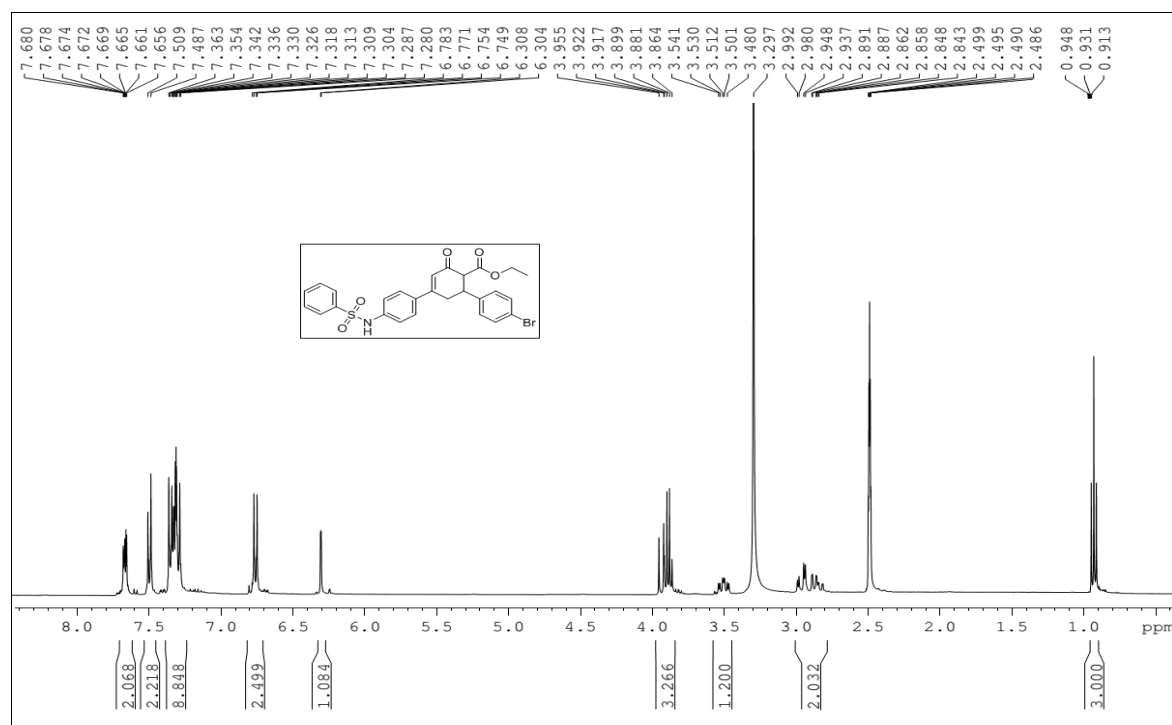


Fig. S43. ¹H spectrum of Ethyl 6-(4-bromophenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7d)

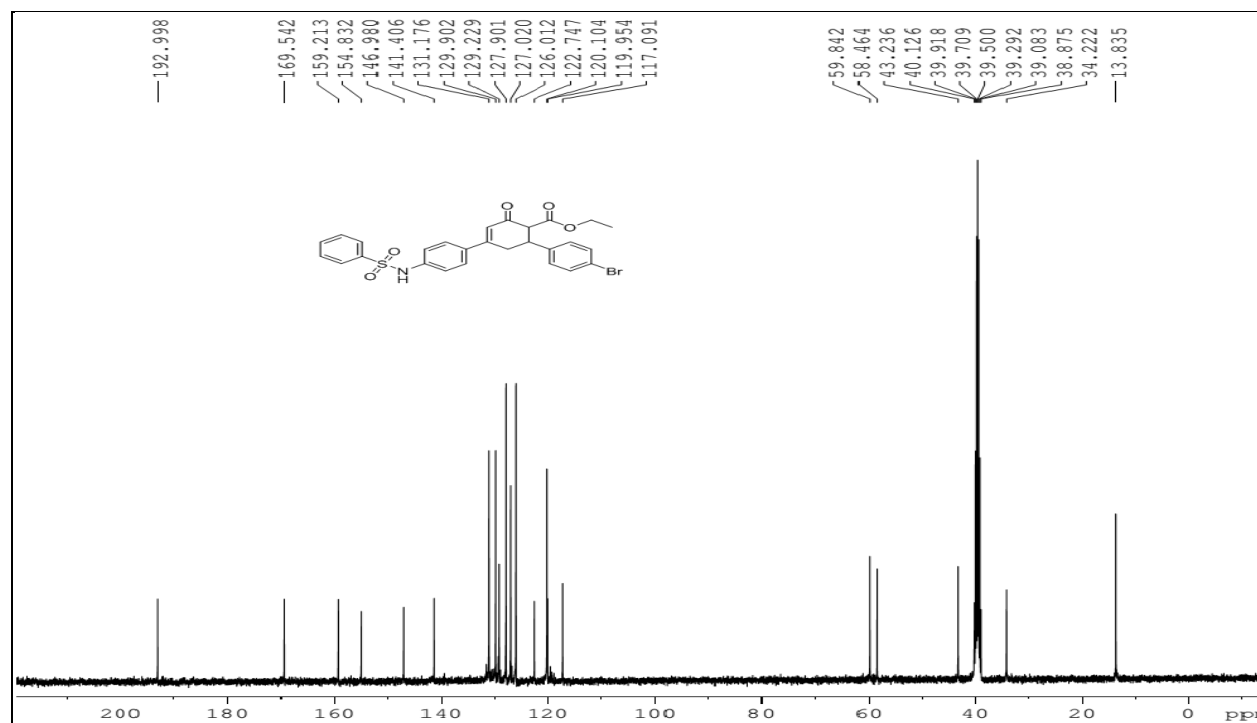


Fig. S44. ¹³C Spectrum of Ethyl 6-(4-bromophenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7d)

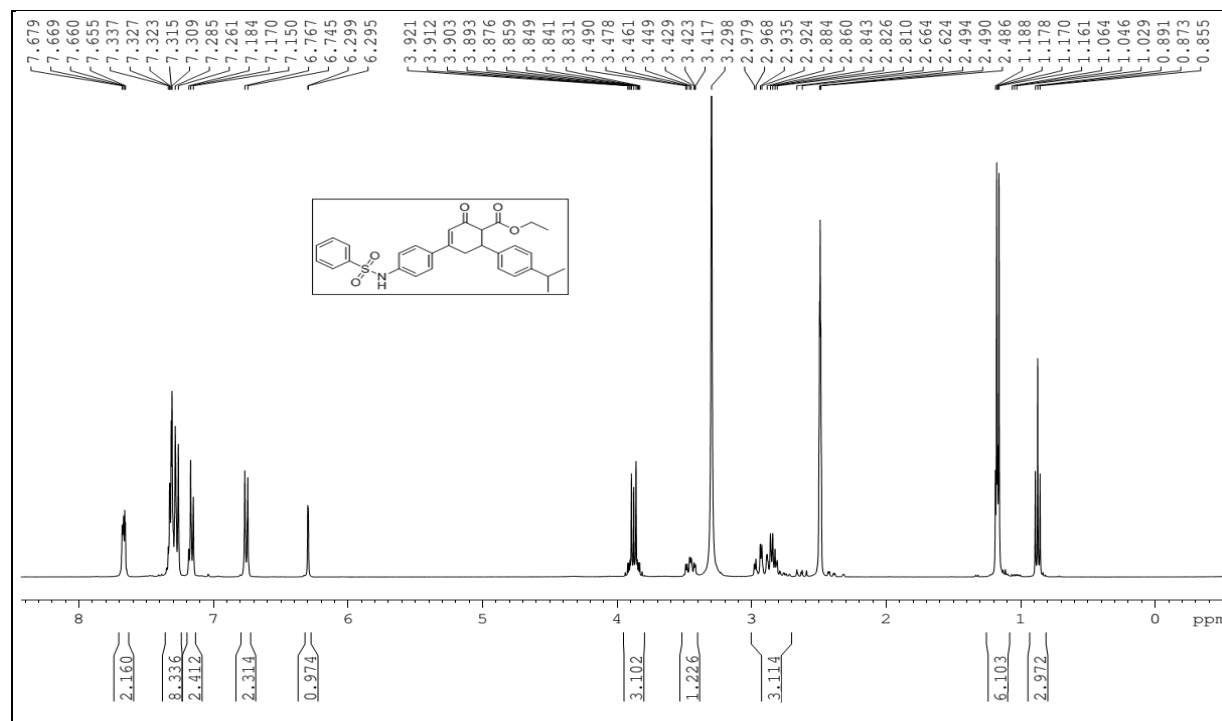


Fig. S45. ¹H Spectrum of Ethyl 6-(4-isopropylphenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7e)

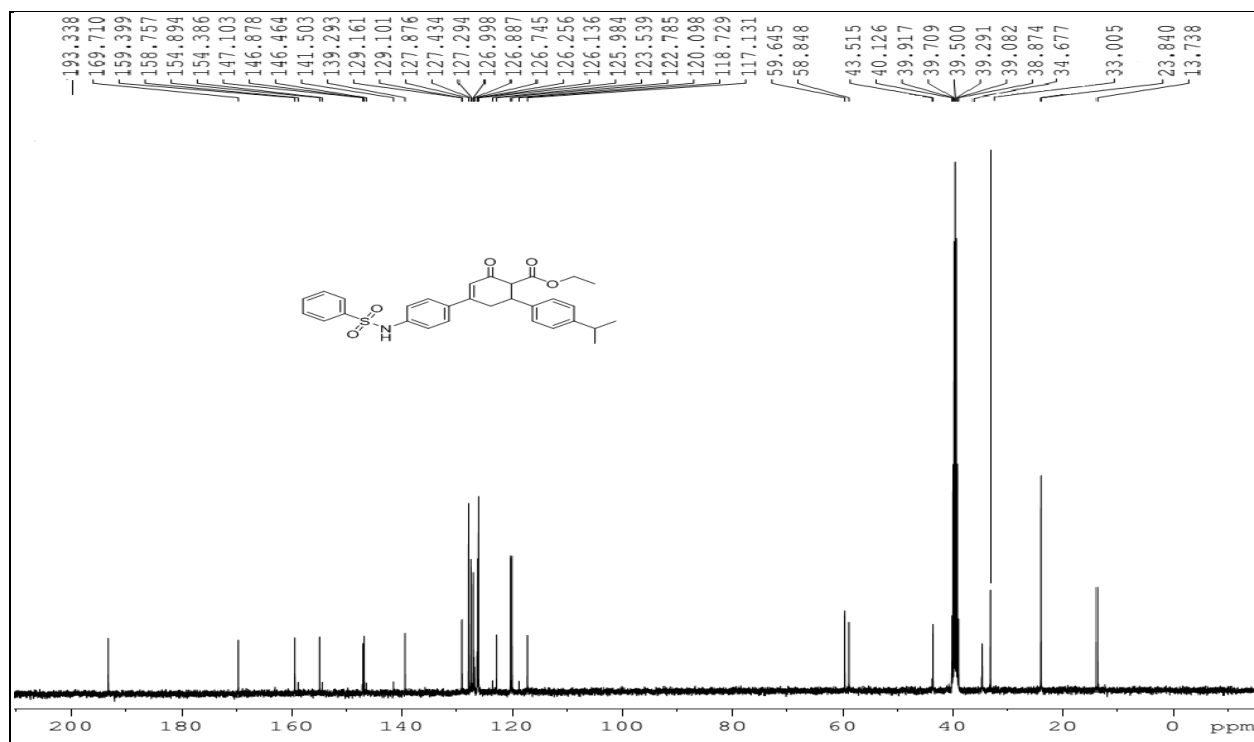


Fig. S46. ¹³C Spectrum of Ethyl 6-(4-isopropylphenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7e)

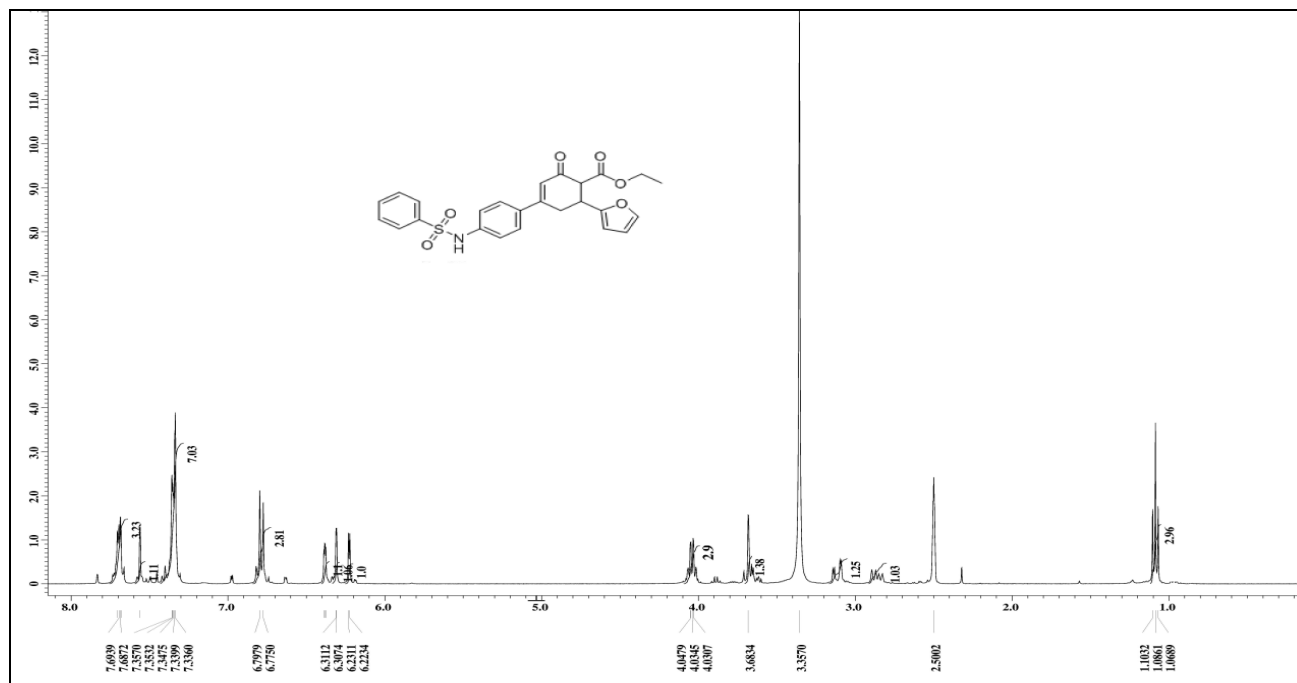


Fig. S47. ¹H Spectrum of Ethyl 6-(2-furyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7f)

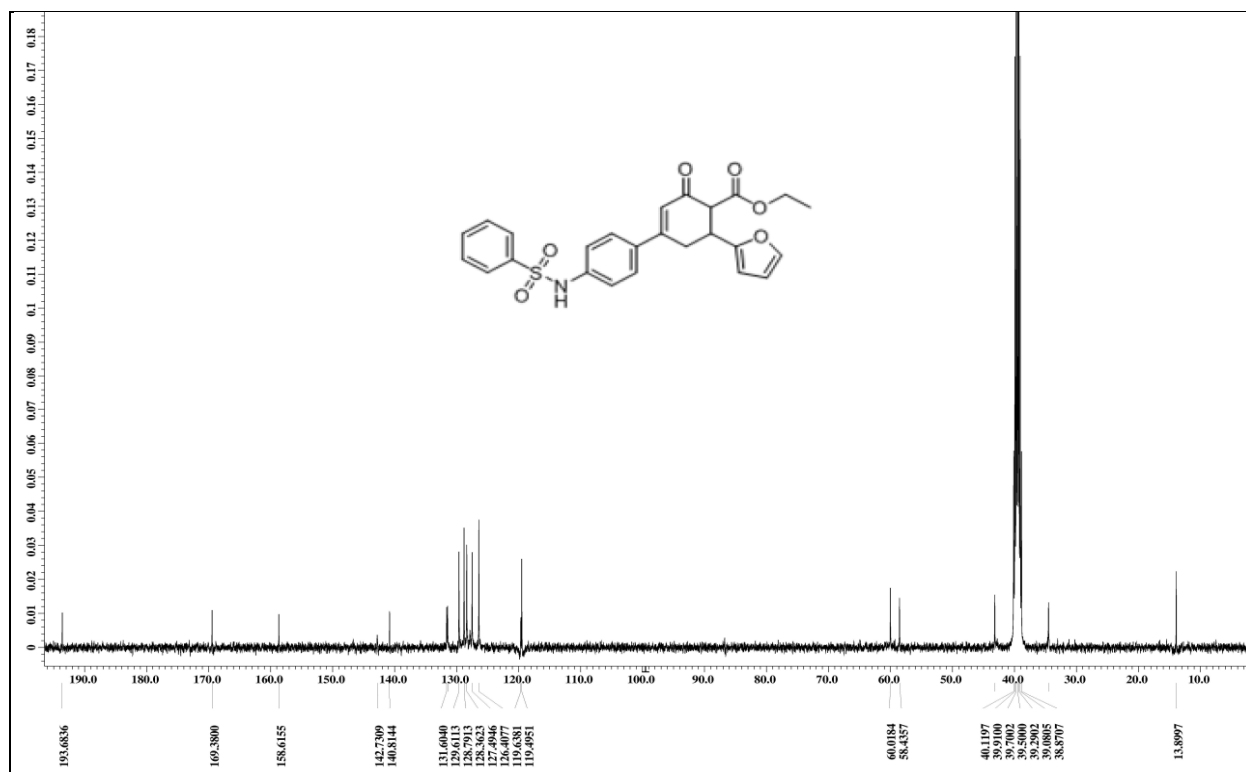


Fig. S48. ¹³C Spectrum of Ethyl 6-(2-furyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-encarboxylate (7f)

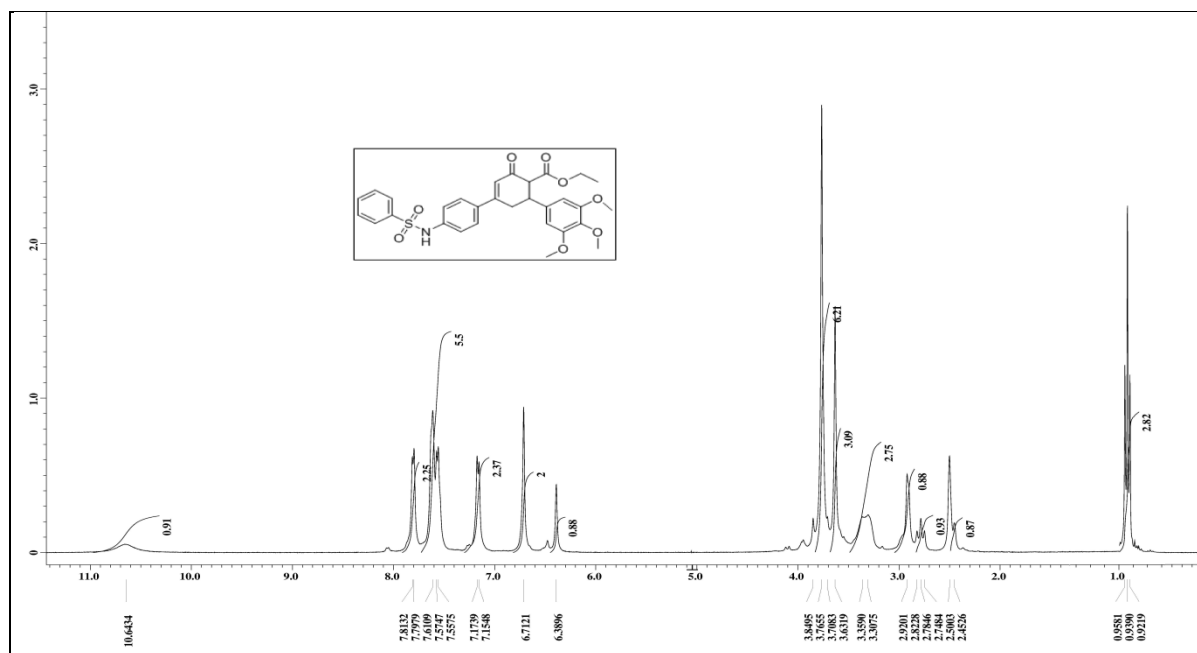


Fig. S49. ¹H Spectrum of Ethyl 6-(3,4,5-trimethoxyphenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-encarboxylate (7g)

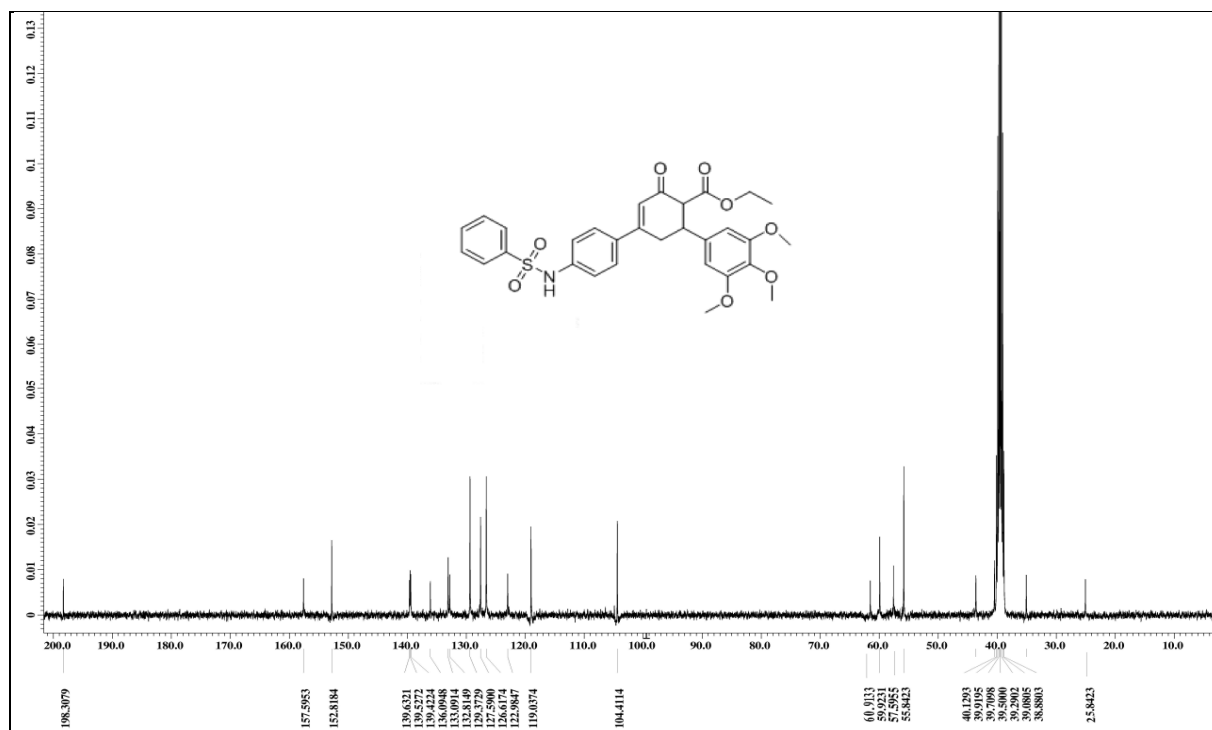


Fig. S50. ^{13}C Spectrum of Ethyl 6-(3,4,5-trimethoxyphenyl)-2-oxo-4-((4-phenylsulfonamido)-phenyl)-cyclohex-3-enecarboxylate (7g)

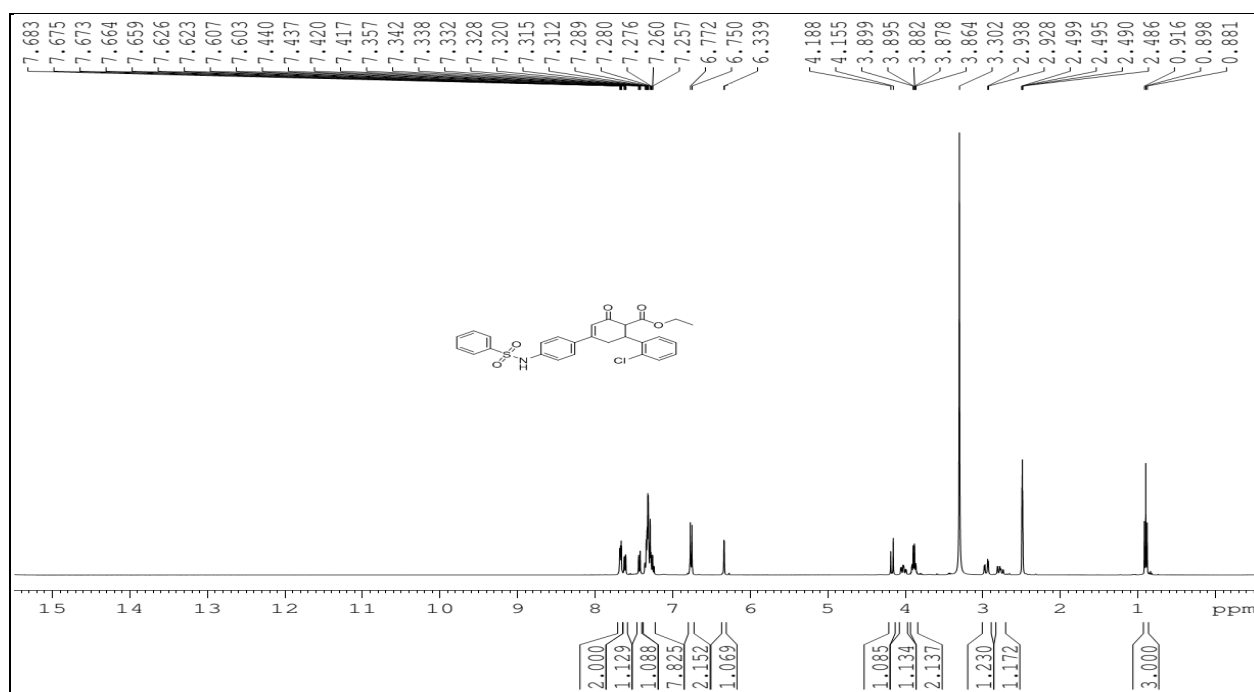


Fig. S51. ^1H spectrum of Ethyl 6-(2-chlorophenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7h)

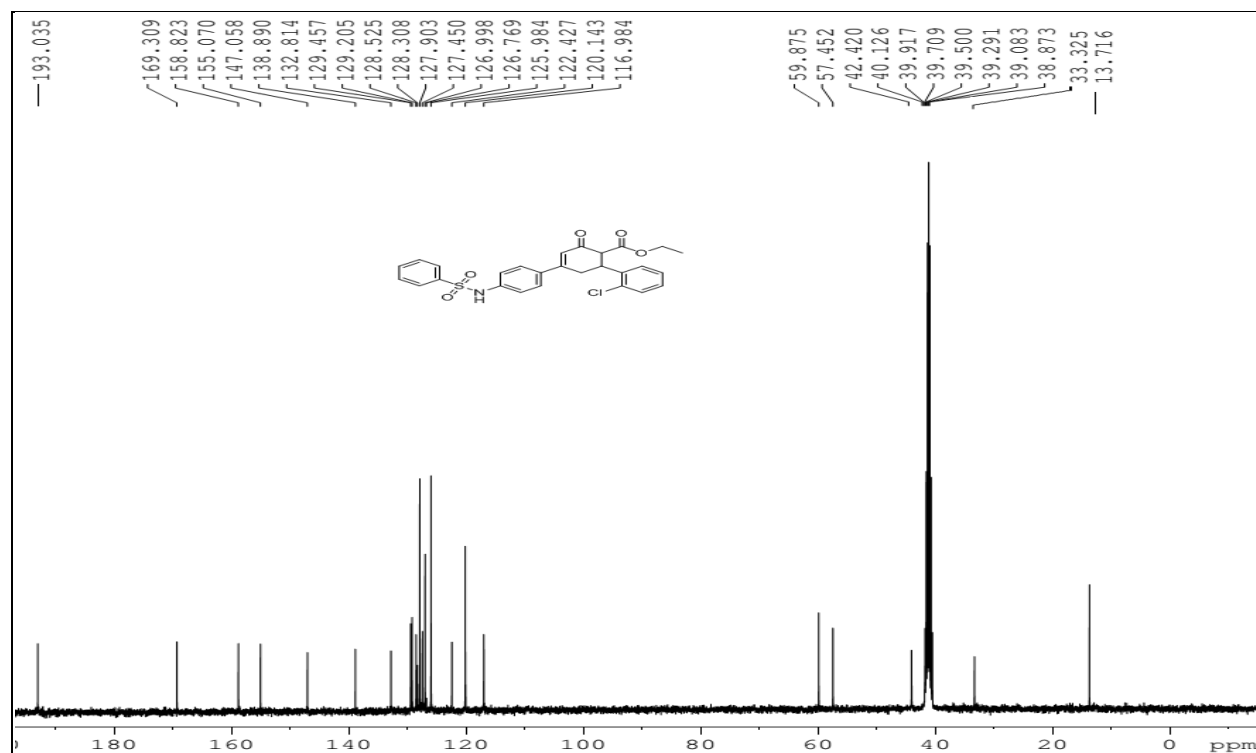


Fig. S52. ¹³C spectrum of Ethyl 6-(2-chlorophenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7h)

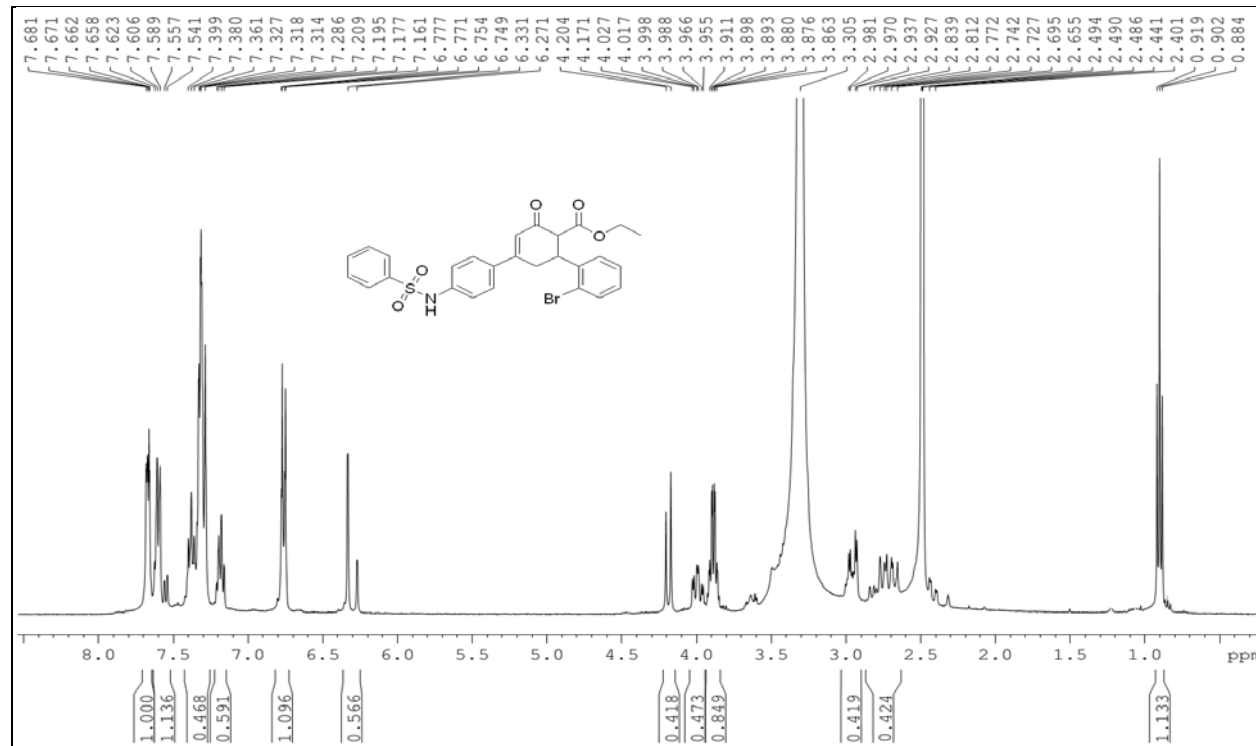


Fig. S53. ¹H spectrum of Ethyl 6-(2-bromophenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7i)

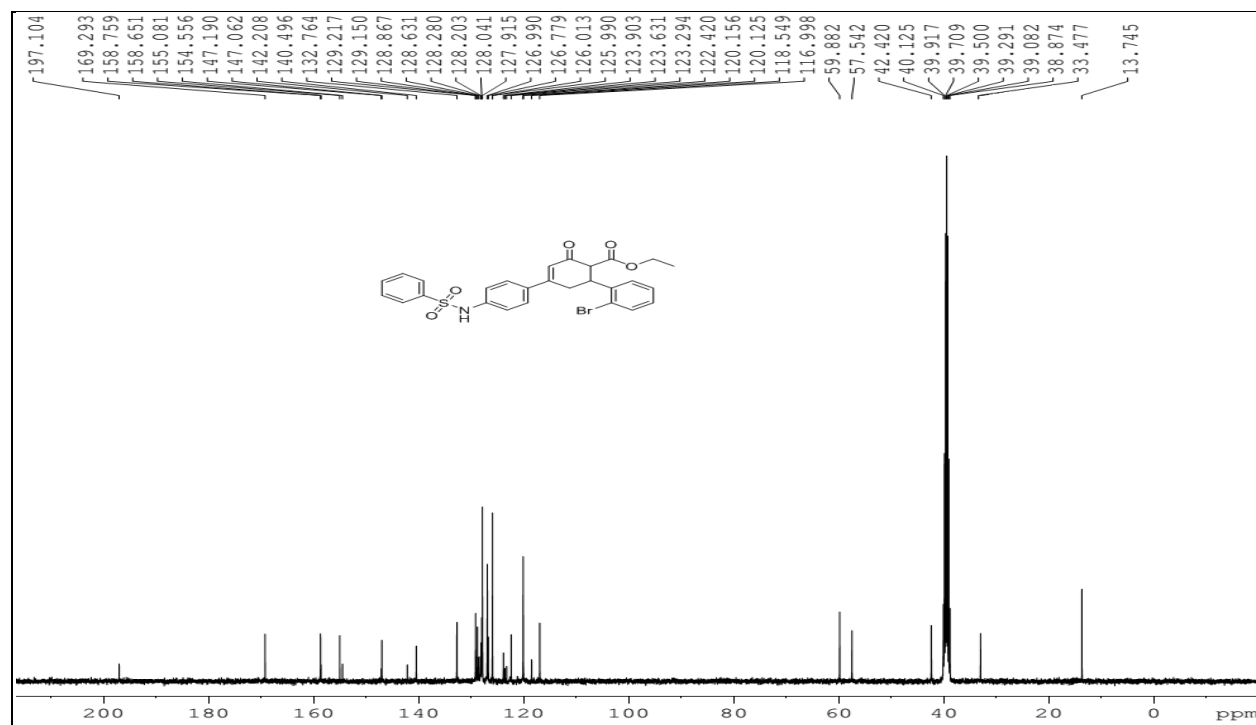


Fig. S54. ^{13}C spectrum of Ethyl 6-(2-bromophenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-ene carboxylate (7i)

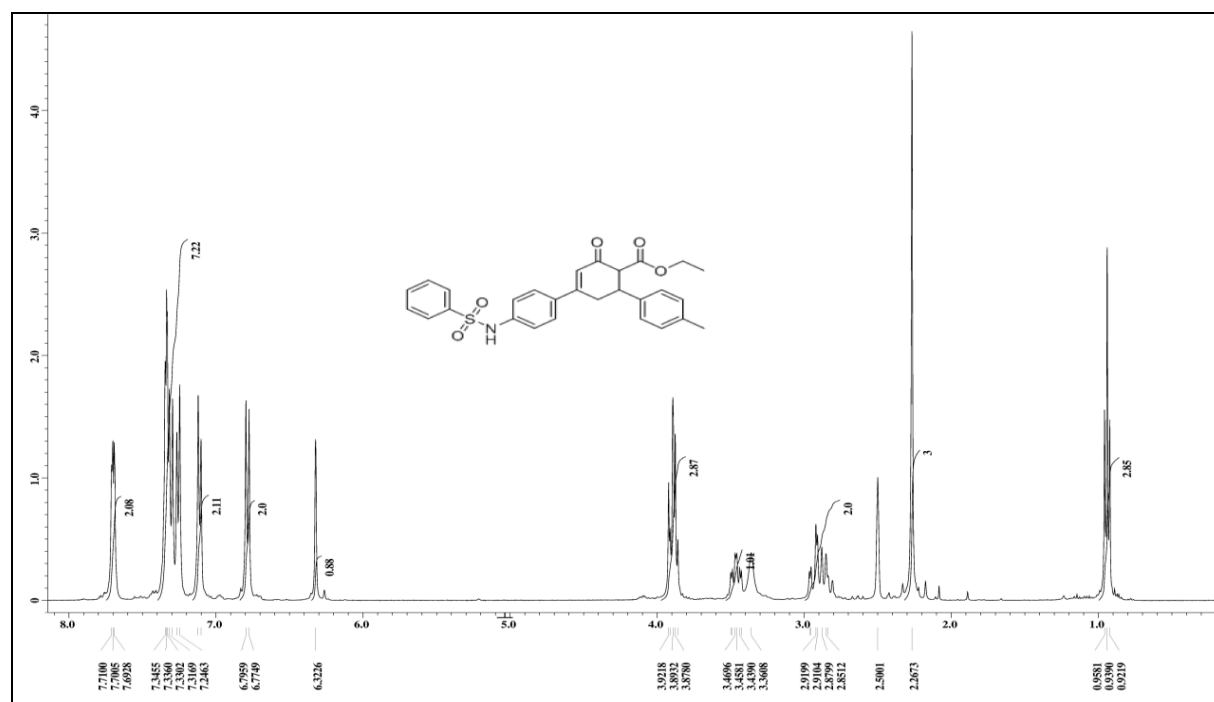


Fig. S55. ^1H spectrum of Ethyl 6-(4-methylphenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-ene carboxylate (7j)

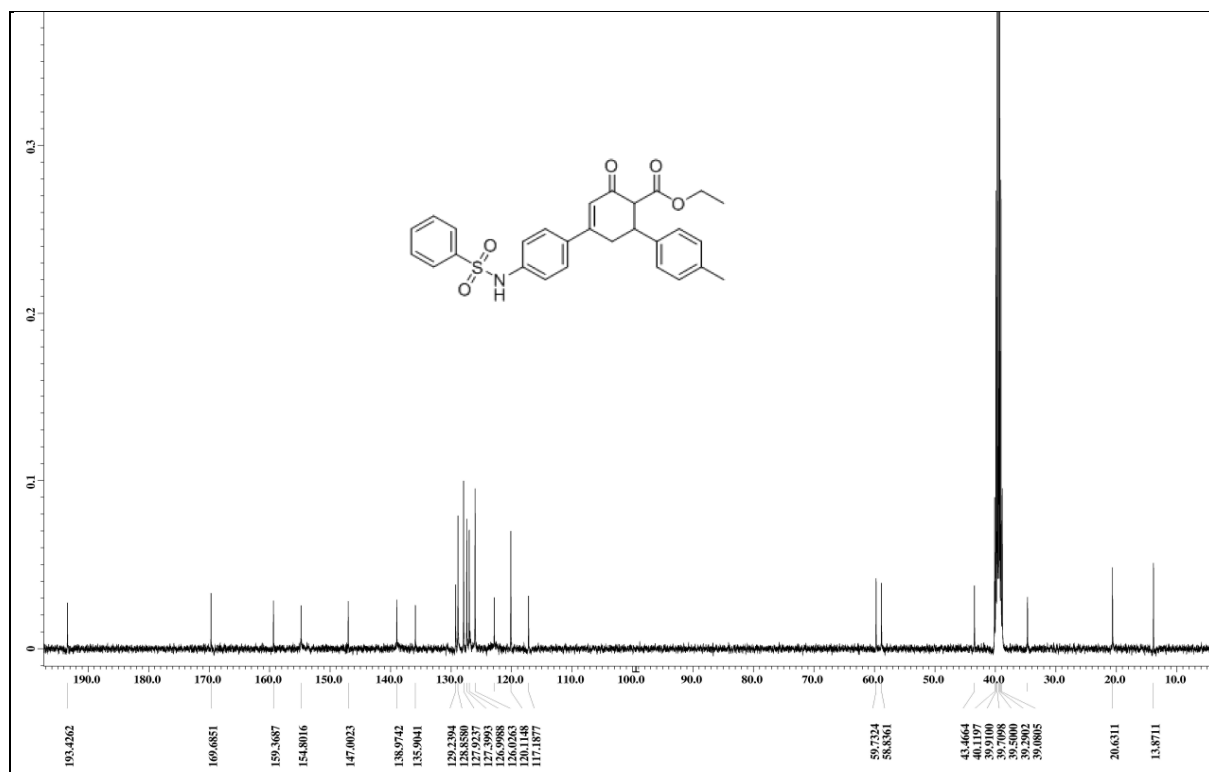


Fig. S56. ¹³C spectrum of Ethyl 6-(4-methylphenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7j)

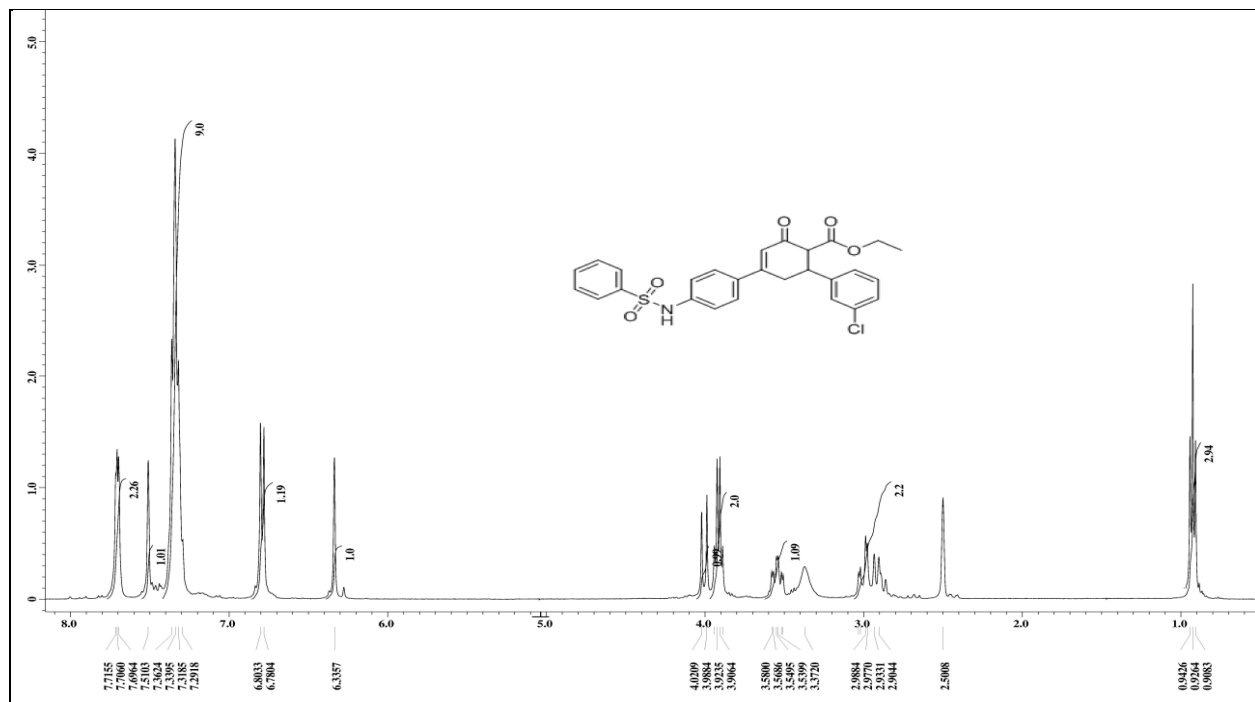


Fig. S57. ¹H spectrum of Ethyl 6-(3-chlorophenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7k)

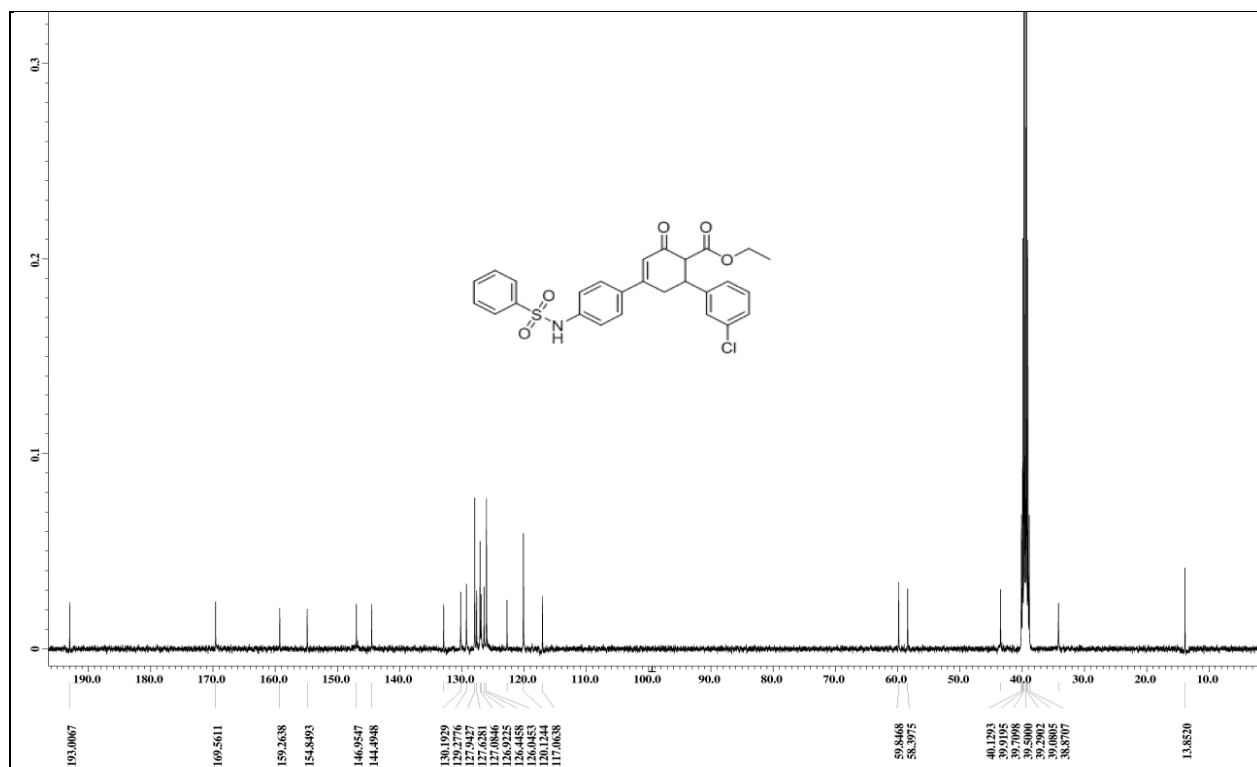


Fig. S58. ¹³C spectrum of Ethyl 6-(3-chlorophenyl)-2-oxo-4-((4-phenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7k)

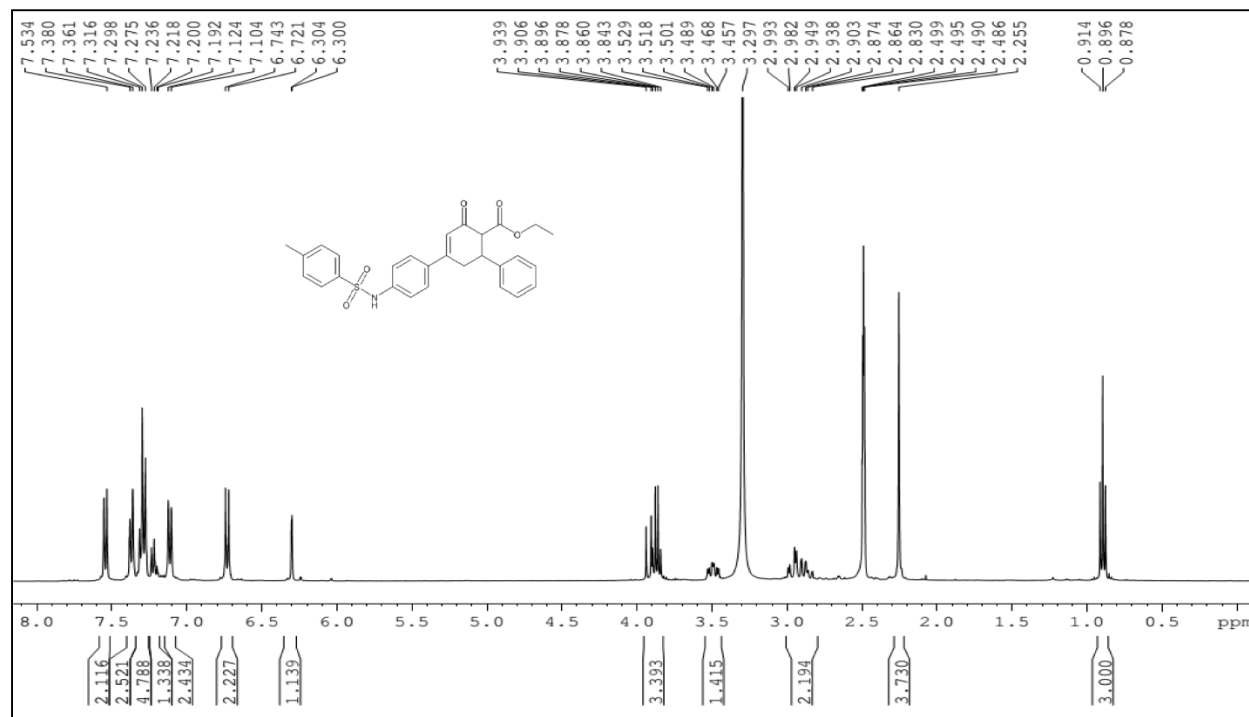


Fig. S59. ¹H spectrum of Ethyl 6-phenyl-2-oxo-4-((4-(4-methylphenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7l)

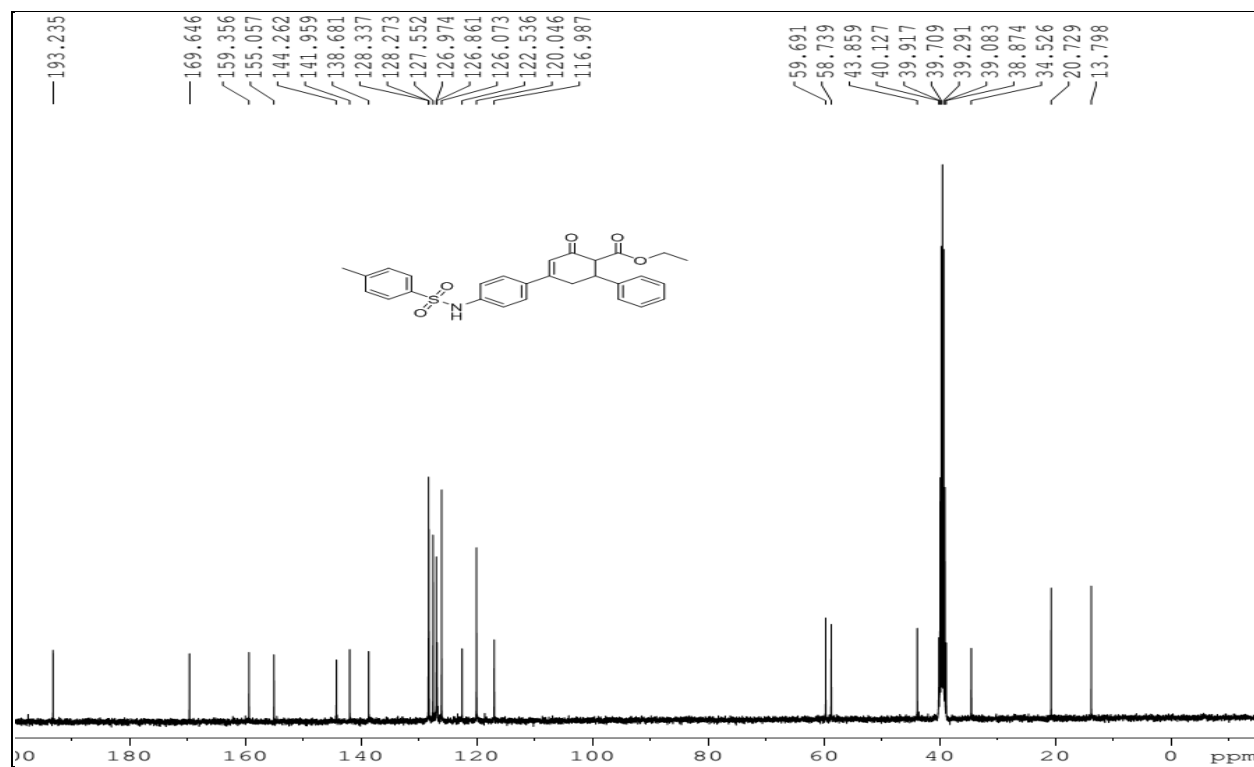


Fig. S60. ¹³C spectrum of Ethyl 6-phenyl-2-oxo-4-((4-(4-methylphenylsulfonamido)phenyl))-cyclohex-3-enecarboxylate (7l)

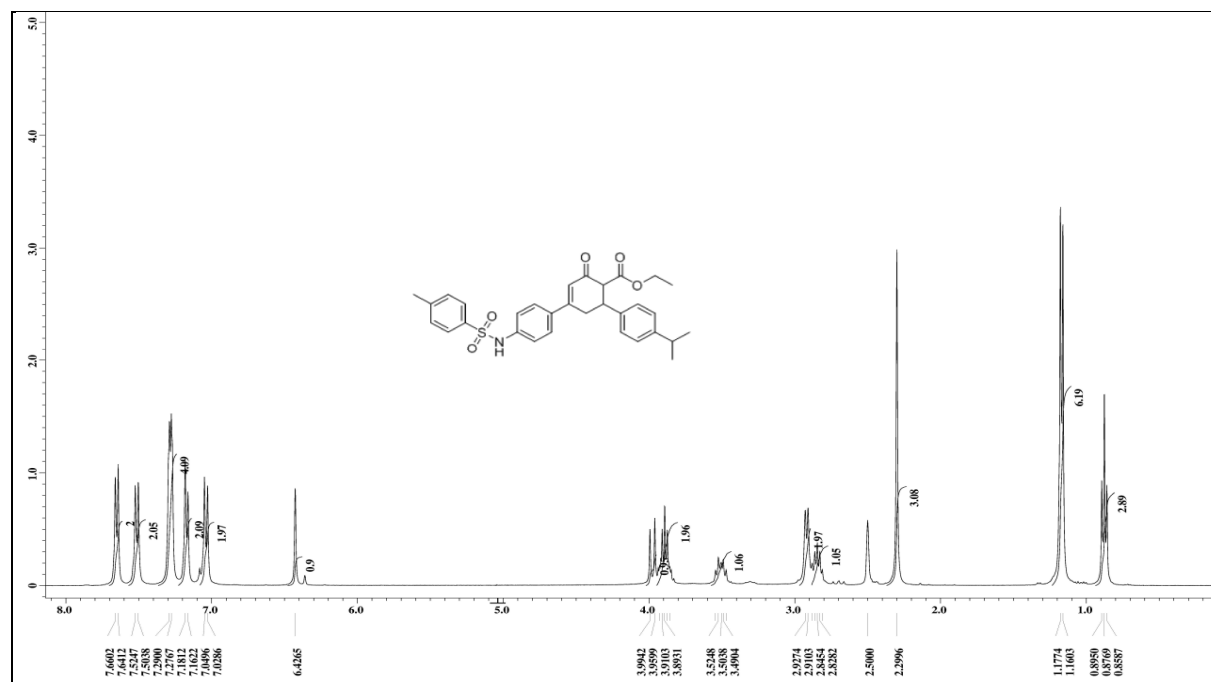


Fig. S61. ¹H spectrum of Ethyl 6-(4-isopropylphenyl)-2-oxo-4-((4-(4-methylphenylsulfonamido)-phenyl))-cyclohex-3-enecarboxylate (7m)

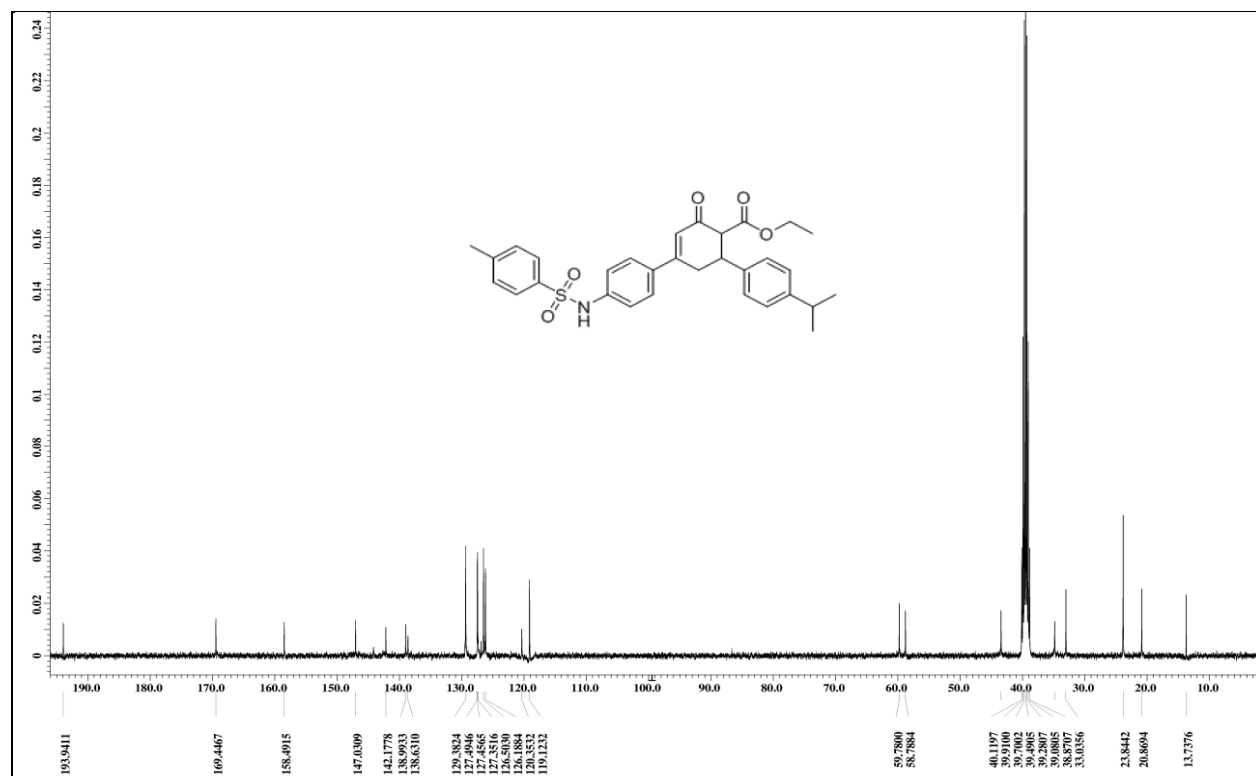


Fig. S62. ¹³C spectrum of Ethyl 6-(4-isopropylphenyl)-2-oxo-4-((4-(4-methylphenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7m)

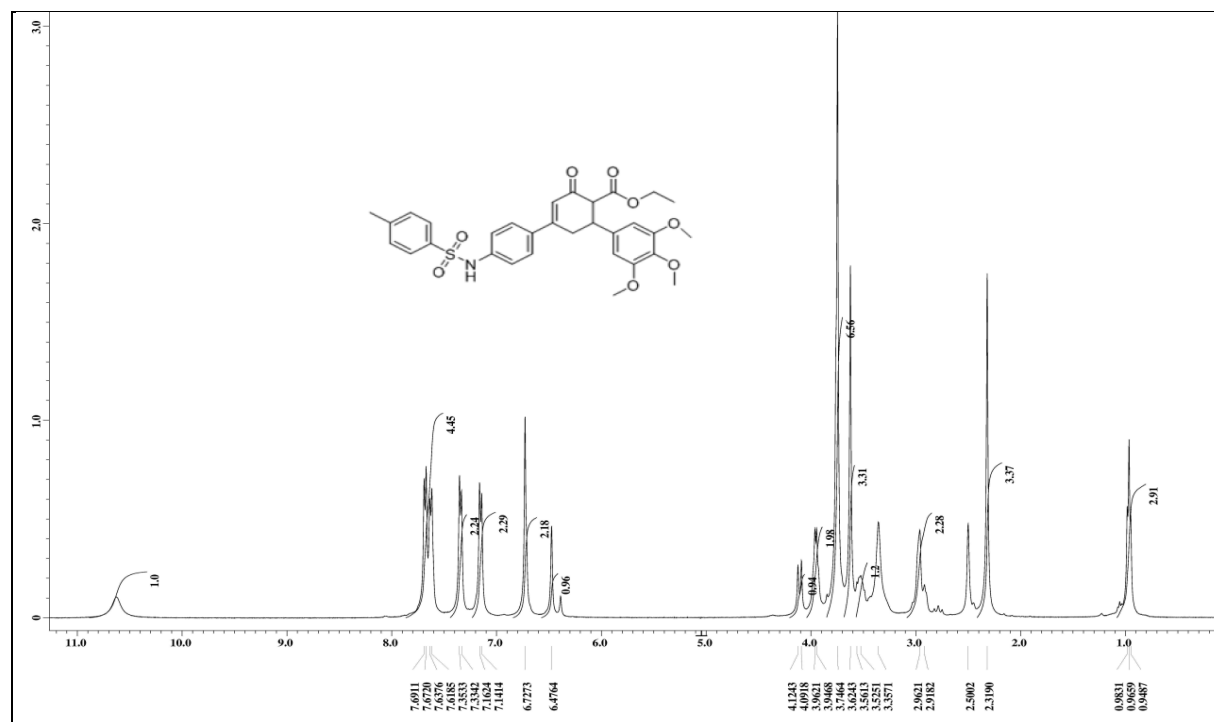


Fig. S63. ¹H spectrum of Ethyl 6-(3,4,5-trimethoxyphenyl)-2-oxo-4-((4-(4-methylphenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7n)

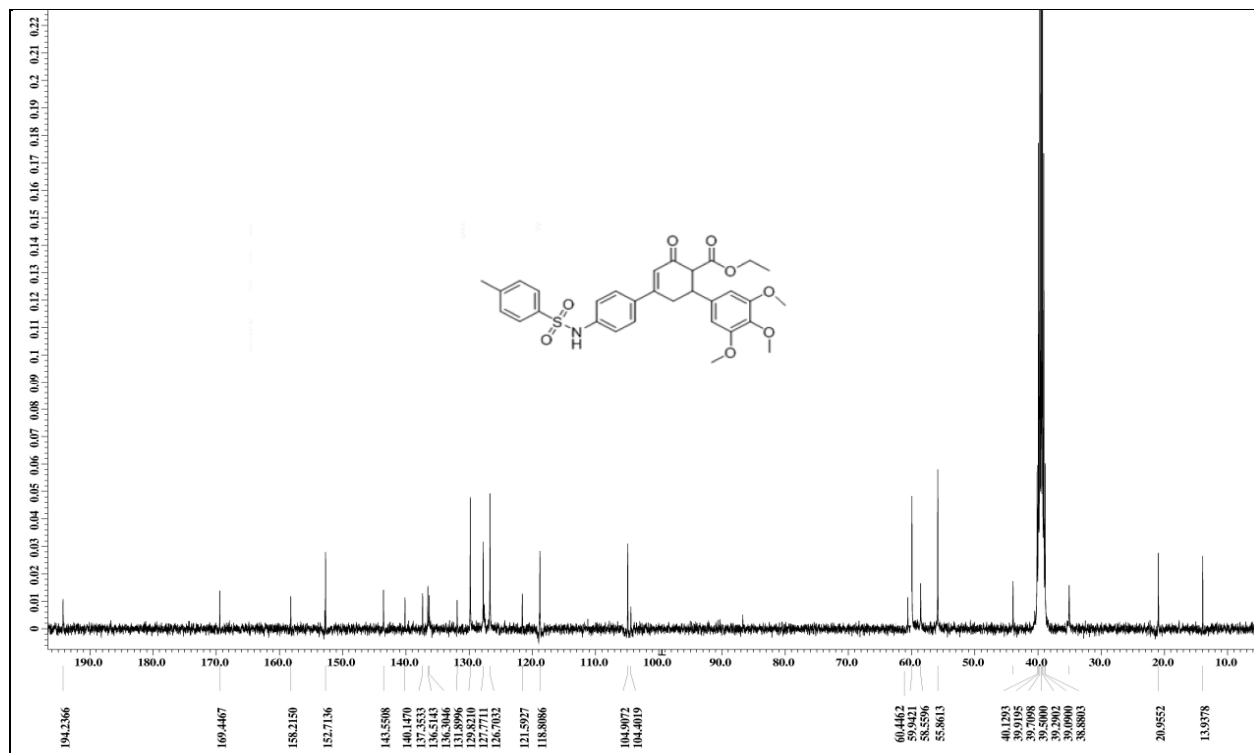


Fig. S64. ¹³C spectrum of Ethyl 6-(3,4,5-trimethoxyphenyl)-2-oxo-4-((4-(4-methylphenylsulfonamido)phenyl)-cyclohex-3-enecarboxylate (7n)

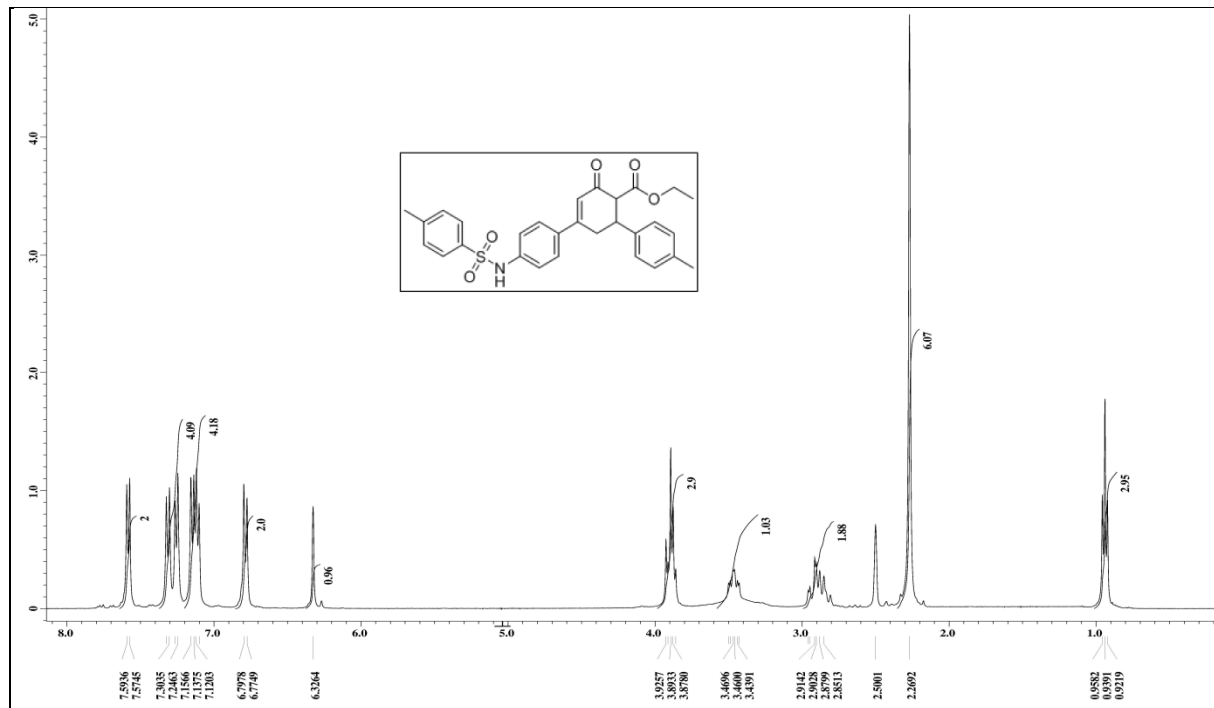


Fig. S65. ¹H spectrum of Ethyl 6-(4-methylphenyl)-2-oxo-4-((4-(4-methylphenylsulfonamido)phenyl)-cyclohex-3-ene carboxylate (7o)

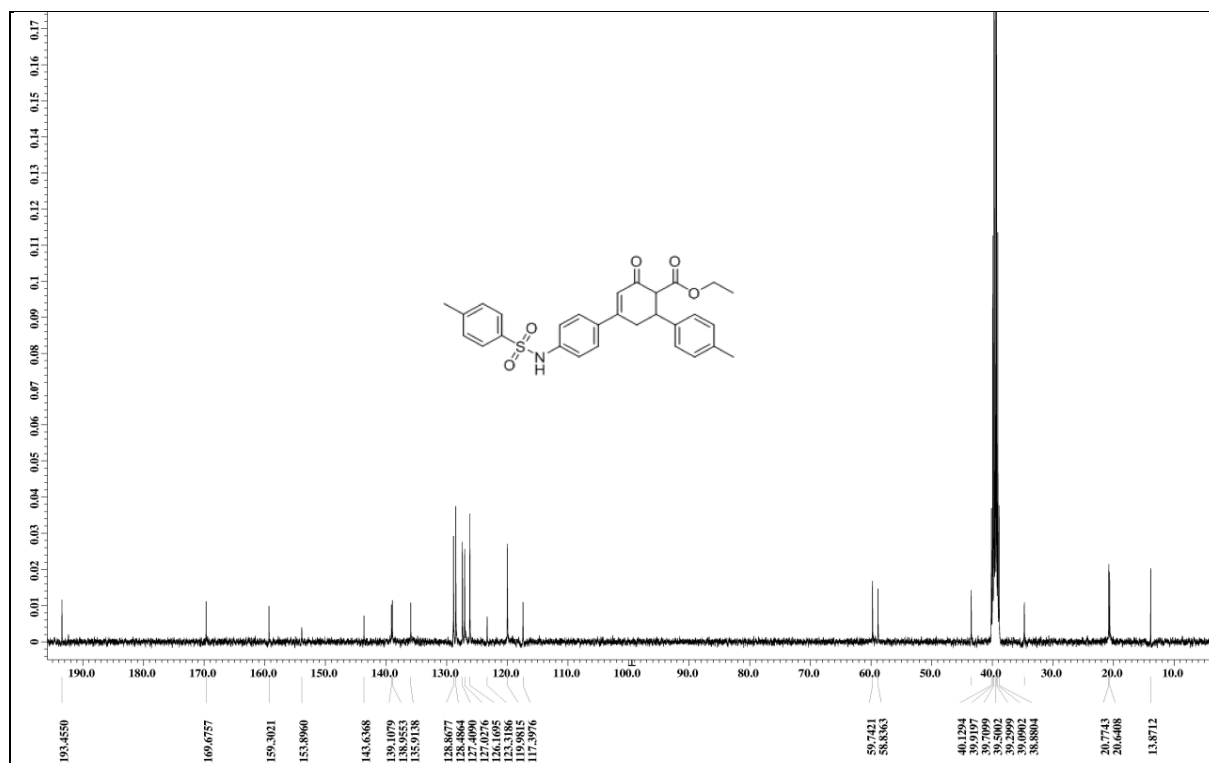


Fig. S66. ¹³C spectrum of Ethyl 6-(4-methylphenyl)-2-oxo-4-((4-(4-methylphenylsulfonamido)-phenyl))-cyclohex-3-ene carboxylate (7o)

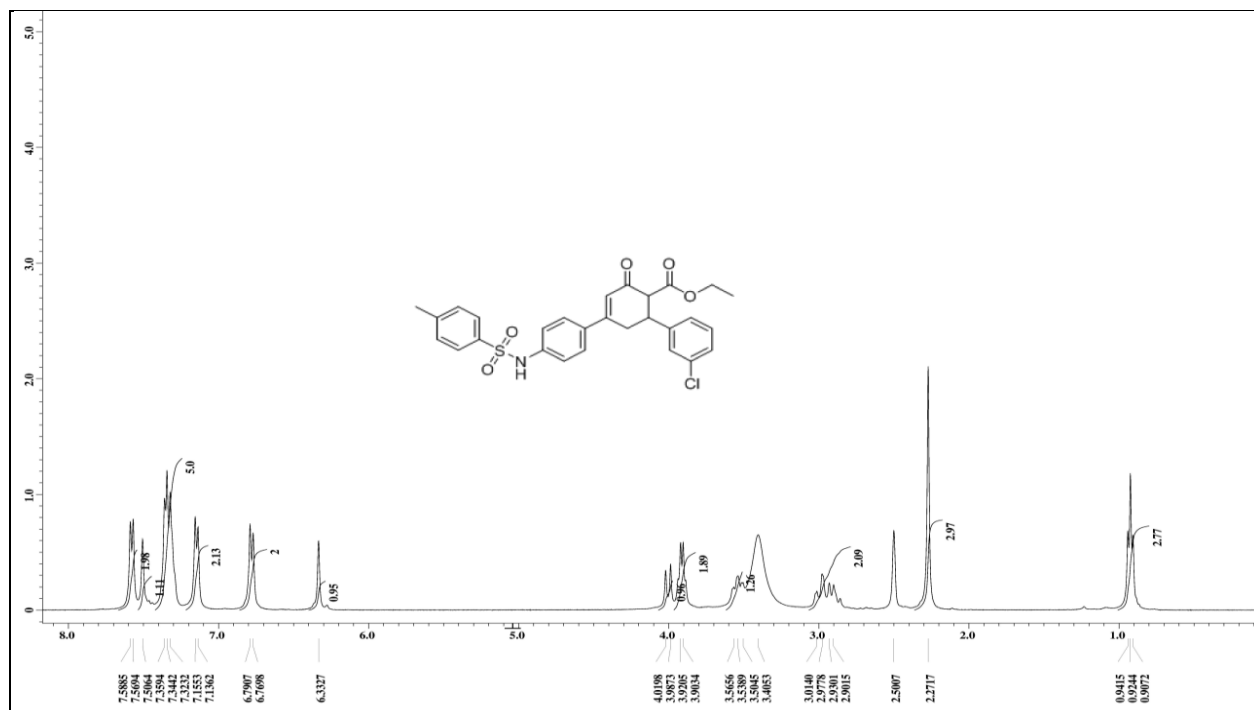


Fig. S67. ¹H spectrum of Ethyl 6-(3-chlorophenyl)-2-oxo-4-((4-(4-methylphenylsulfonamido)-phenyl))-cyclohex-3-ene carboxylate (7p)

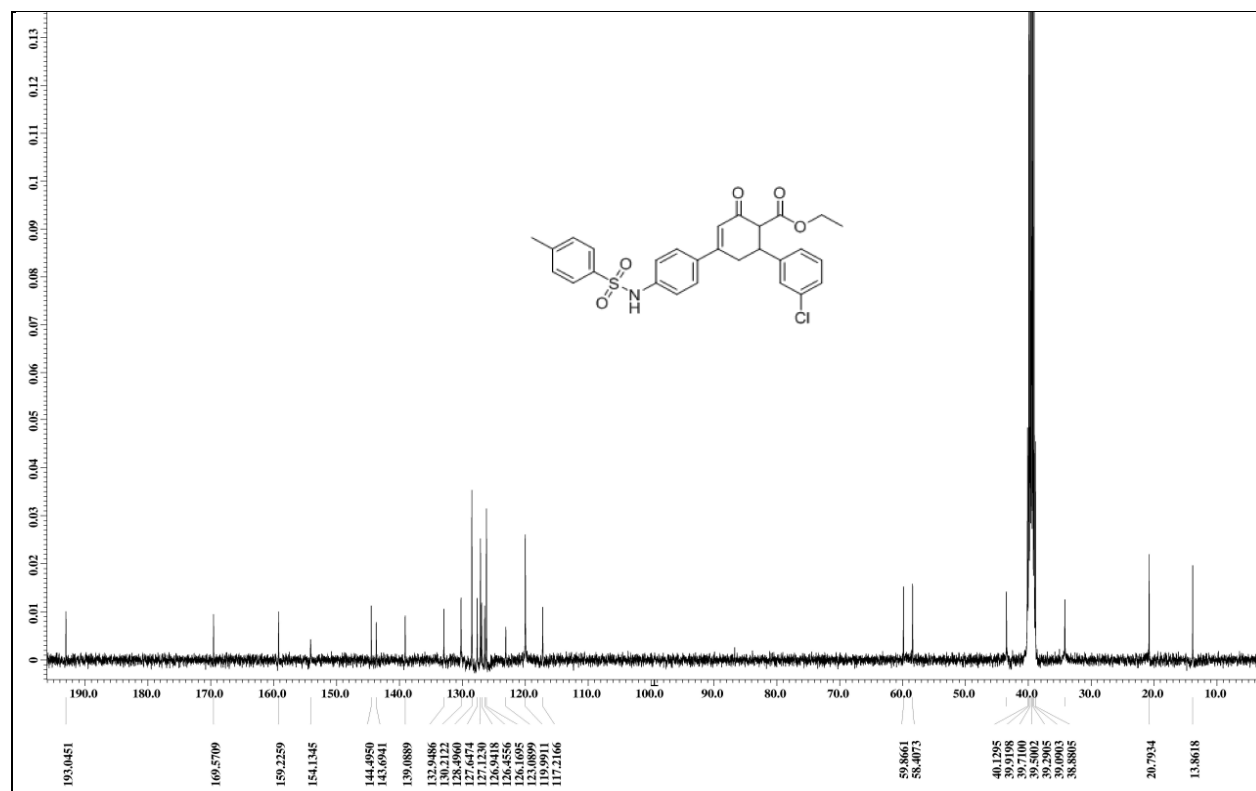


Fig. S68. ^{13}C spectrum of Ethyl 6-(3-chlorophenyl)-2-oxo-4-((4-(4-methylphenylsulfonamido)-phenyl))-cyclohex-3-ene carboxylate (7p)

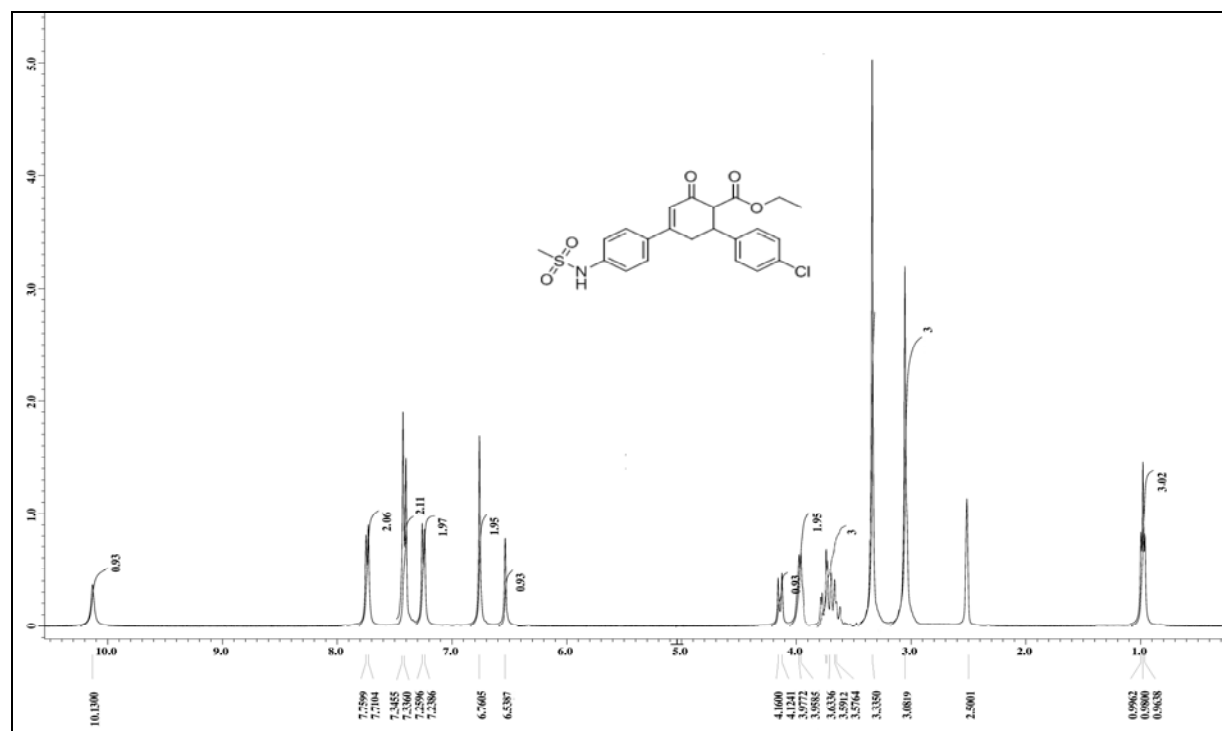


Fig. S69. ^1H spectrum of Ethyl 6-(4-chlorophenyl)-2-oxo-4-(4-methylsulfonamidophenyl)-cyclohex-3-ene carboxylate (7q)

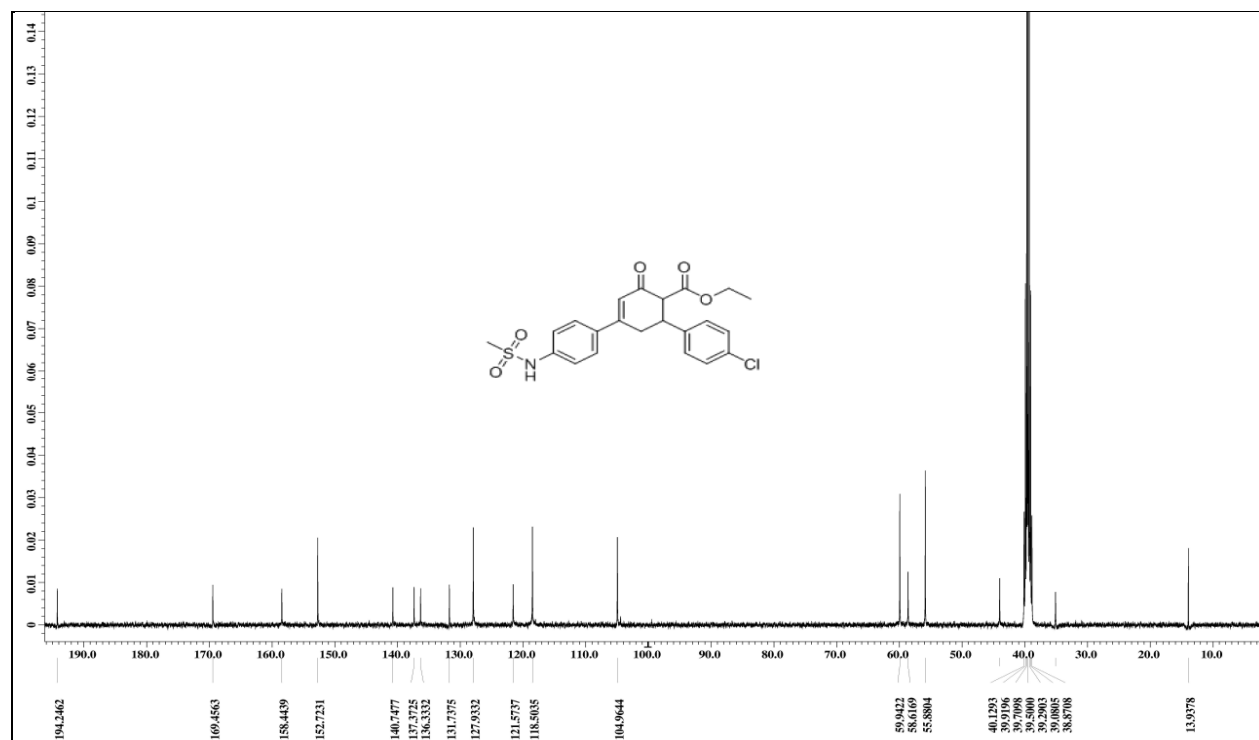


Fig. S70. ^{13}C spectrum of Ethyl 6-(4-chlorophenyl)-2-oxo-4-(4-methylsulfonamidophenyl)-cyclohex-3-ene carboxylate (7q)

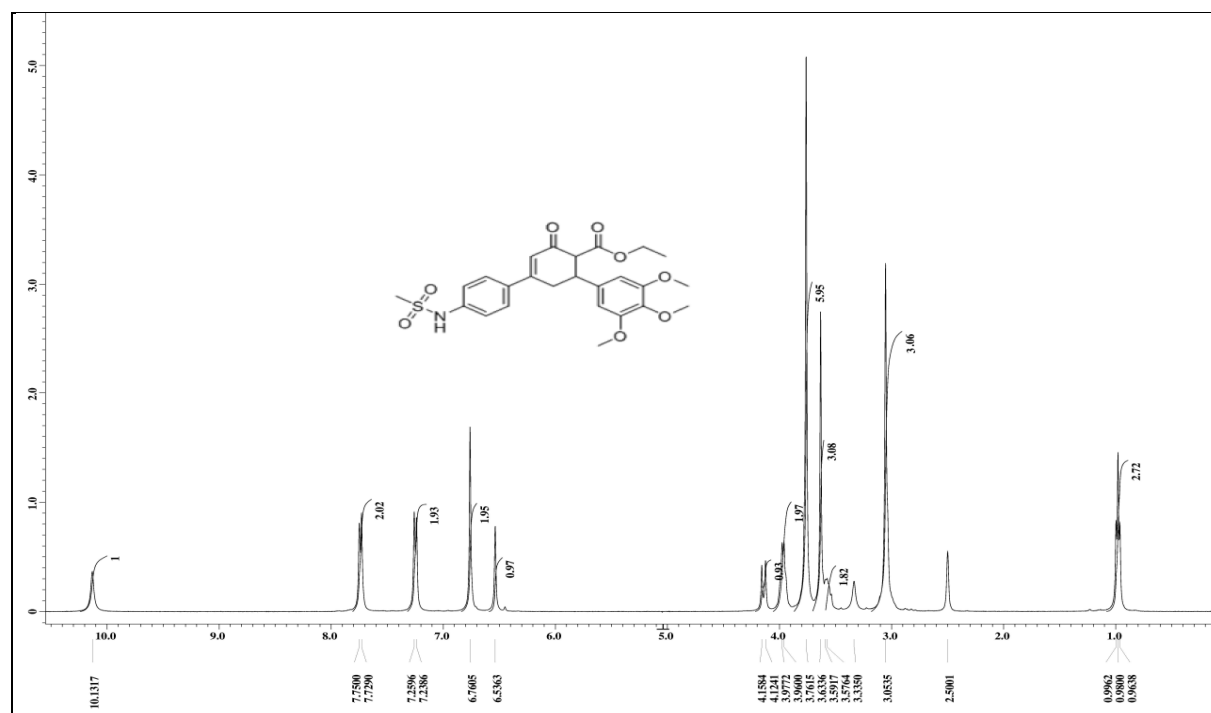


Fig. S71. ^1H spectrum of Ethyl 6-(3,4,5-trimethoxyphenyl)-2-oxo-4-(4-methylsulfonamido -phenyl)-cyclohex-3-ene carboxylate (7r)

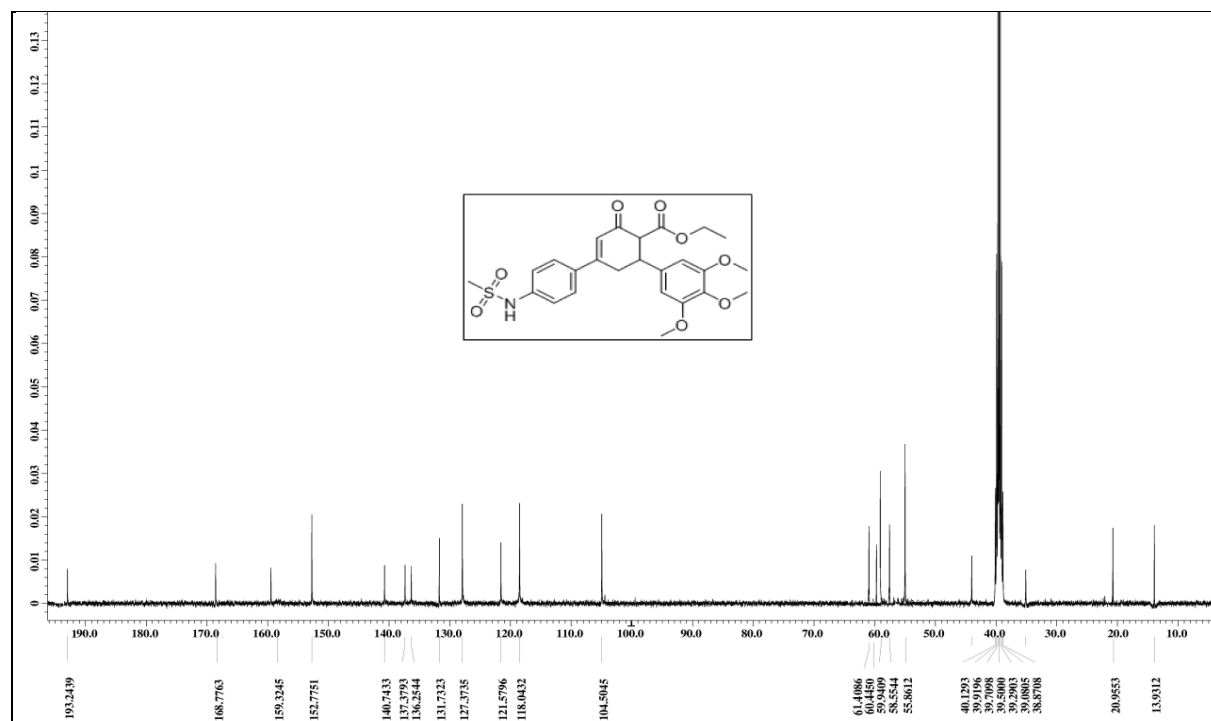


Fig. S72. ^{13}C spectrum of Ethyl 6-(3,4,5-trimethoxyphenyl)-2-oxo-4-(4-methylsulfonamido -phenyl)-cyclohex-3-ene carboxylate (7r)