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Electronic Supplementary Information

Synthesis of thiazolidine-thiones, iminothiazolidines and oxazolidines via base promoted cyclization of epoxy-sulfonamides and heterocumulenes

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1	ORTEP diagrams of compounds **27** and **49**	**S2**
2	X-ray data for Compounds **3**, **13**, **27**, **40** and **49**	**S2-S3**
3	Copies of $^{1}H/^{13}C$ NMR spectra (Figures **S3**-**S88**)	**S4-S46**

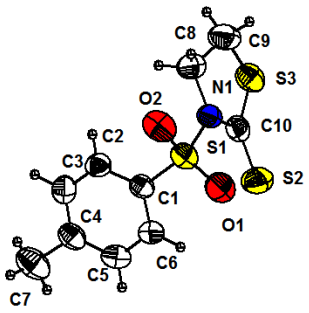

Figure S1. ORTEP of compound **27** (probability ellipsoid at 30%). Selected bond lengths [Å] with esds in parentheses: S1-N1 1.693(3), S2-C10 1.618(3), S3-C10 1.745(3), S3-C9 1.786(4), C10-N1 1.365(4), C9-C8 1.492(6).

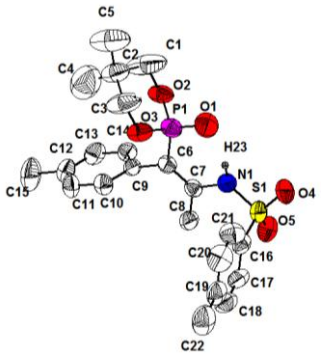

Figure S2. ORTEP of compound **49** (probability ellipsoid at 30%). Selected bond lengths [Å] with esds in parentheses: C7-C8 1.491(4), N1-C7 1.398(4), S1-N1 1.630(3), N1-H23 0.80(4), C7-C6 1.349(4), C9-C6 1.498(4), P1-C6 1.775(3).

X-ray data:

Crystallographic data were collected on a Bruker APX-II-SMART using Mo-K_α radiation (λ = 0.71073 Å) and have been deposited at the Cambridge Crystallographic Data Center (CCDC). Copies of the information may be obtained free of charge from The Director, CCDC, 12 Union Road, Cambridge CB2 1 EZ, UK (Fax: +44-1223-336033; email: deposit@ccdc.cam.ac.uk or www.ccdc.can.ac.uk).

Compound **3**

Colorless block, $C_{11}H_{13}NO_3S_3$, *M* = 303.40, triclinic, space group *P*-1, *a* = 6.0374(7) Å, *b* = 9.0824(10) Å, *c* = 13.2438(15) Å, *V* = 674.86(13) Å^3, *α* = 71.460(2), *β* = 88.791(2), *γ* = 78.837(2), *Z* = 2, *μ* = 0.548 mm^{-1}, data/restraints/parameters: 2749/0/165, R indices (I > 2σ(I)) R1 =0.098, wR2 (all data) = 0.2983. The five-membered ring is partially disordered at S3 with partial occupancy of 08 and 0.2 respectively at the two sites. CCDC no. 1575670.

Compound **13**

Colorless block, $C_{17}H_{17}ClN_2O_3S_2$, *M* = 396.89, monoclinic, space group *P*2(1)/c, *a* = 10.9934(13) Å, *b* = 15.541(2) Å, *c* = 10.7812(15) Å, *V* = 1816.2(4) Å^3, *β* = 99.582(4), *Z* = 4, *μ* = 0.459 mm^{-1}, data/restraints/parameters: 3201/0/217, R indices (I > 2σ(I)) R1 =0.089, wR2 (all data) = 0.2086. CCDC no. 1575671.

Compound **27**

Colorless block, $C_{10}H_{11}NO_2S_3$, M = 273.38, monoclinic, space group *P*2(1)/c, *a* = 6.1417(8) Å, b = 9.6650(13) Å, *c* = 20.803(3) Å, *V* = 1224.3(3) Å^3, *β* = 97.498(2), *Z* = 4, *μ* = 0.589 mm^{-1}, data/restraints/parameters: 2893/0/146, R indices (I > 2σ(I)) R1 =0.073, wR2 (all data) = 0.1700. CCDC no. 1575672.

Compound **40**

$C_{18}H_{19}ClN_2O_2S_2$, *M* = 394.92, monoclinic, space group *P*2(1)/c, *a* = 17.218(7) Å, *b* = 7.657(3) Å, *c* = 14.611(6) Å, *V* = 1875.2(13) Å^3, *β* = 103.225(12), *Z* = 4, μ = 0.440 mm^{-1}, data/restraints/parameters: 3274/0/229, R indices (I > 2σ(I)) R1 =0.054, wR2 (all data) = 0.1277. CCDC no. 1575673.

Compound **49**

Colorless block, $C_{22}H_{28}NO_5PS$, *M* = 449.48, monoclinic, space group *P*2(1)/c, *a* = 15.4813(7) Å, *b* = 13.2156(6) Å, *c* = 11.7370(4) Å, *V* = 2377.94(17) Å^3, *β* = 98.003(10), Z = 4, μ = 0.235 mm^{-1}, data/restraints/parameters: 4165/0/280, R indices (I > 2σ(I)) R1 = 0.0625, wR2 (all data) = 0.1792. CCDC no. 1587468.

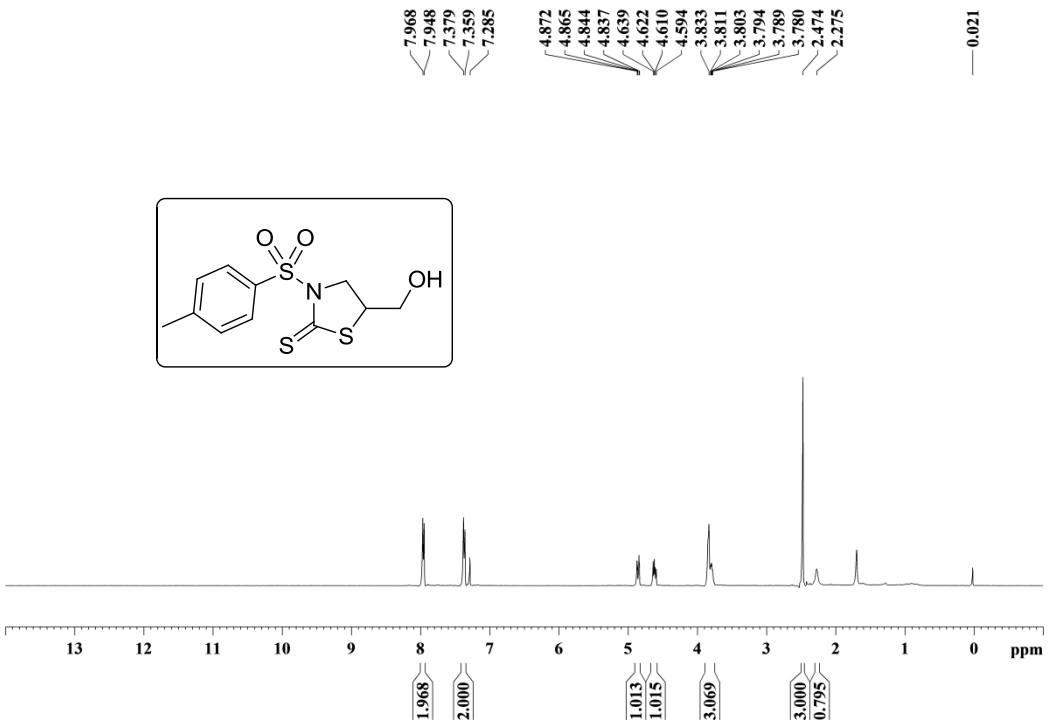

Figure S3. ^{1}H NMR spectrum of compound **3**

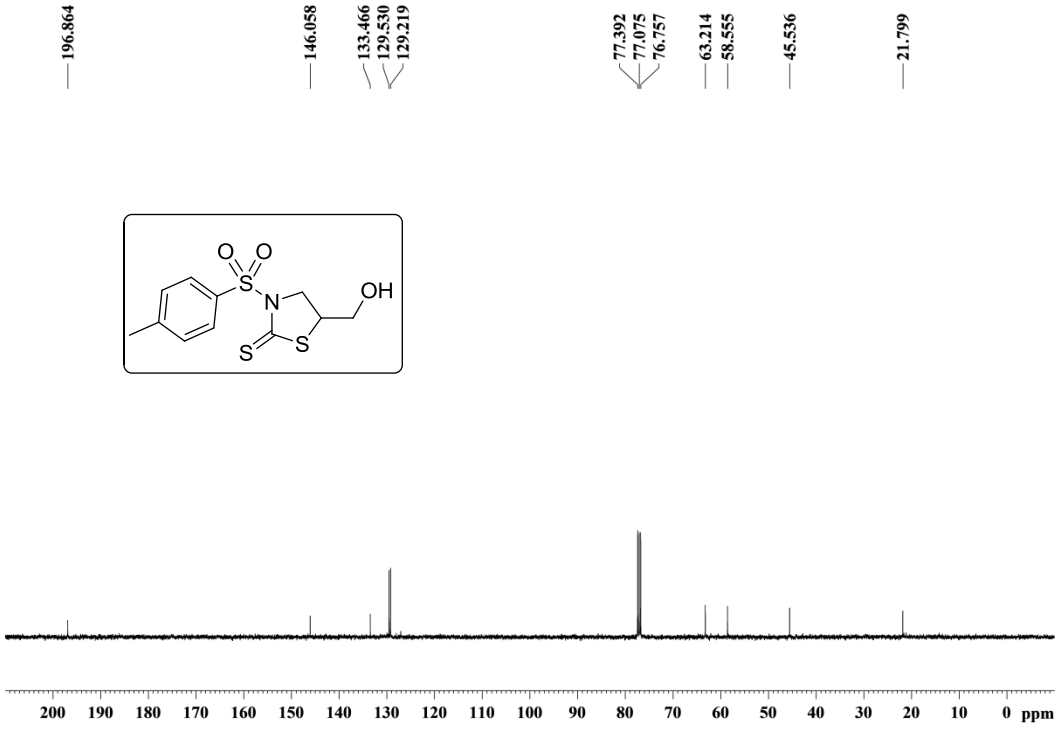

Figure S4. ^{13}C NMR spectrum of compound **3**

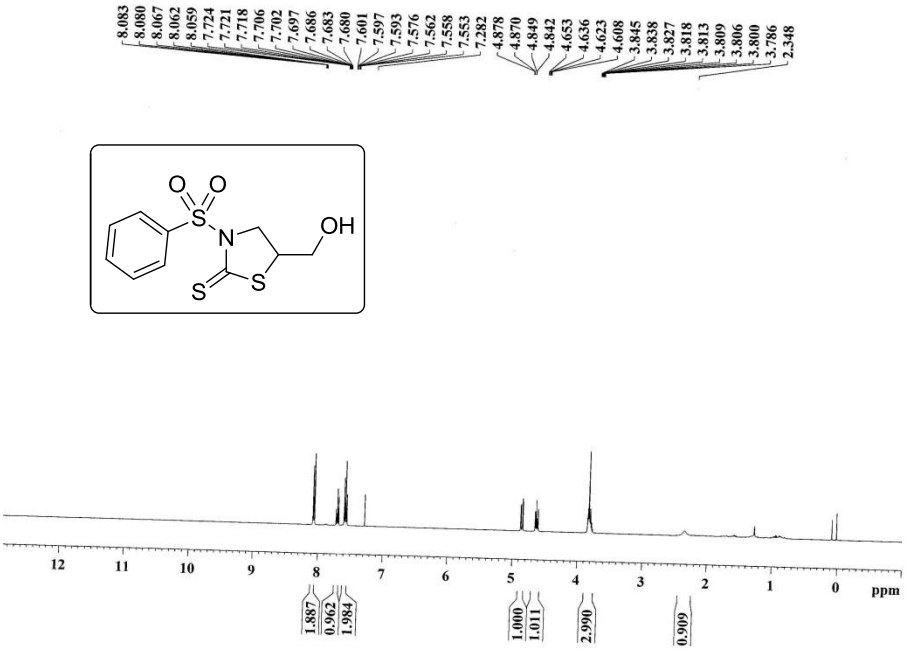

Figure S5. ^{1}H NMR spectrum of compound **4**

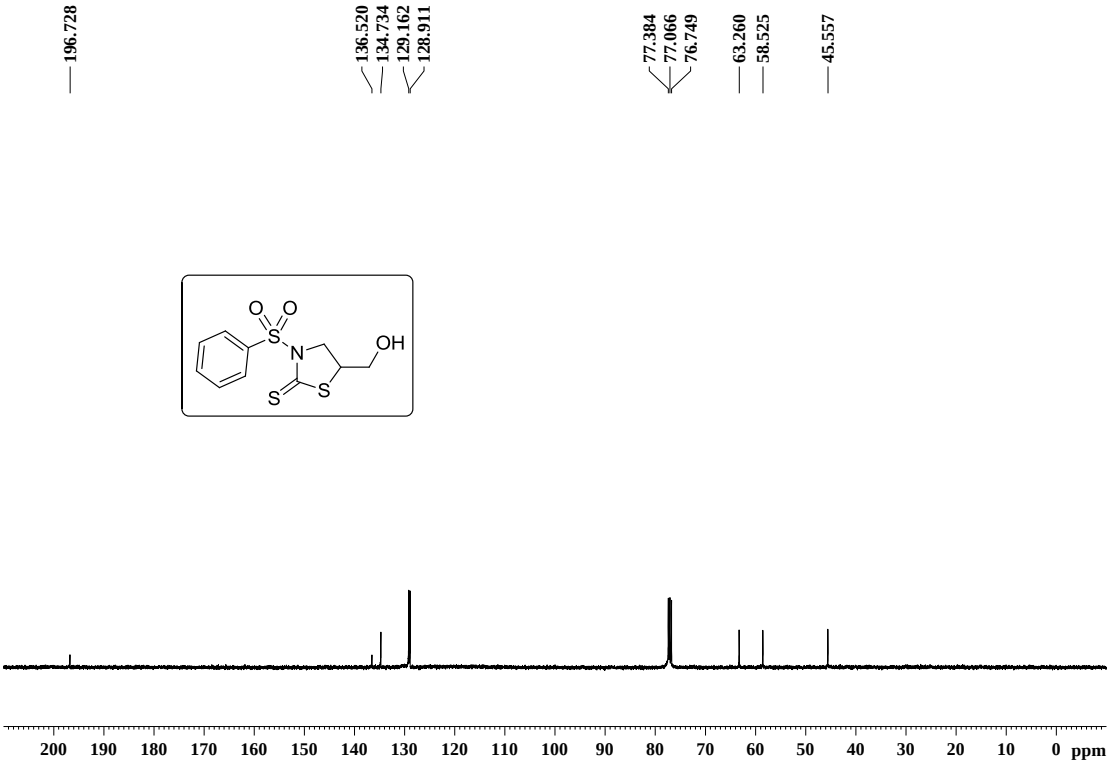

Figure S6. ^{13}C NMR spectrum of compound **4**

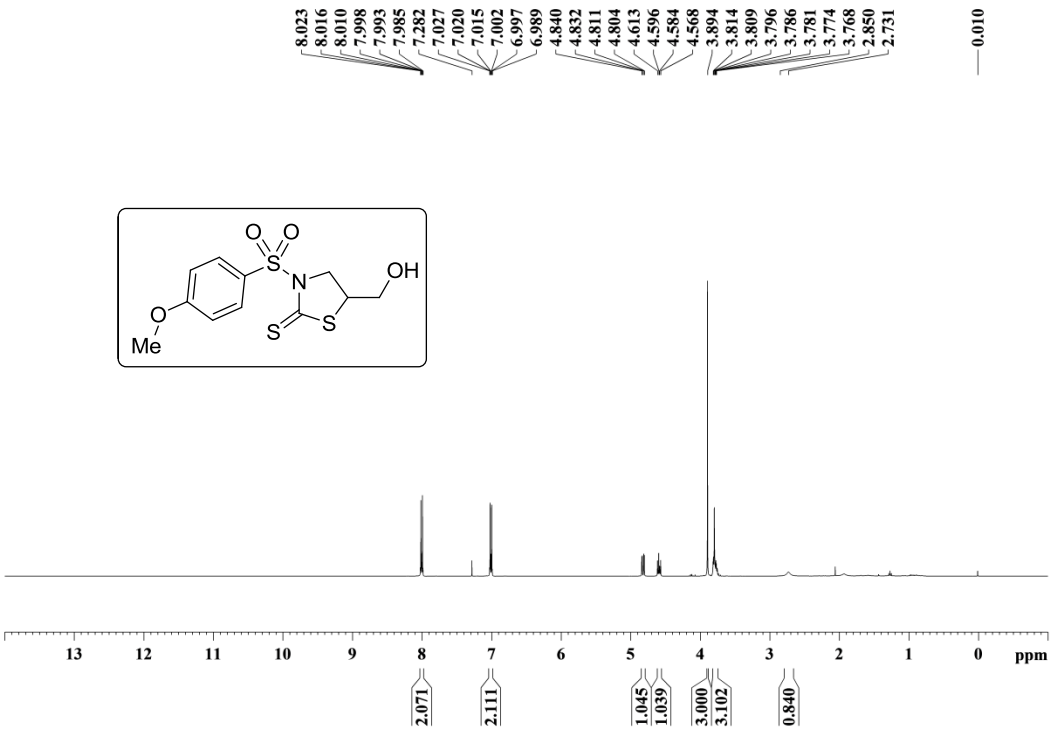

Figure S7. ^{1}H NMR spectrum of compound **5**

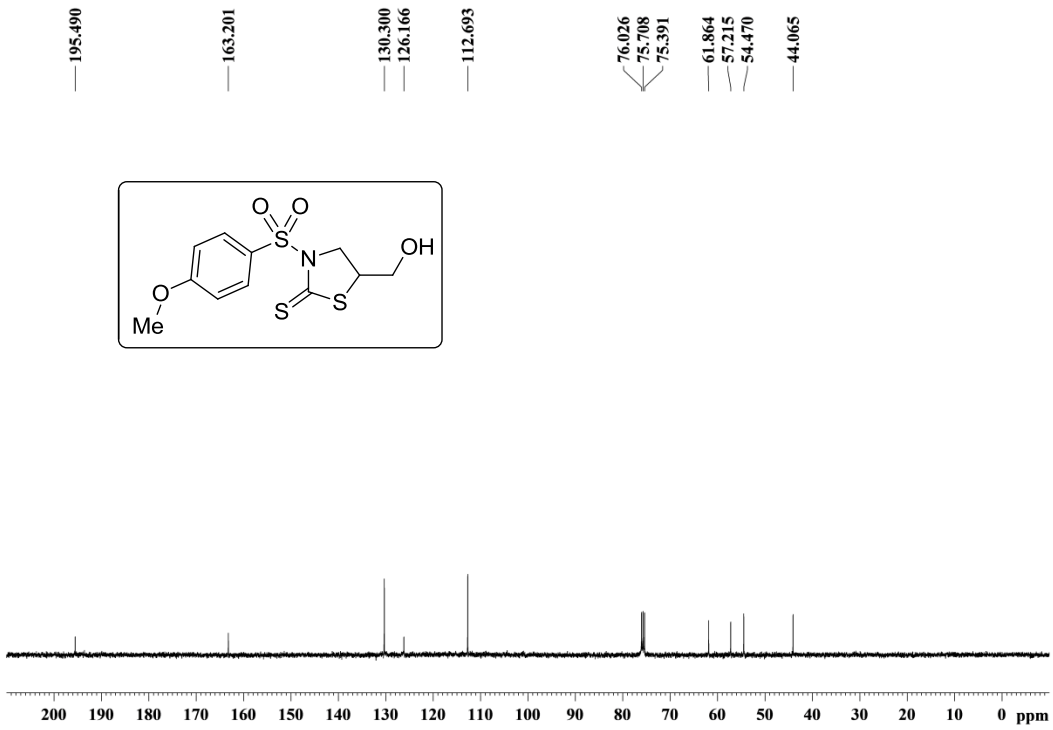

Figure S8. ^{13}C NMR spectrum of compound **5**

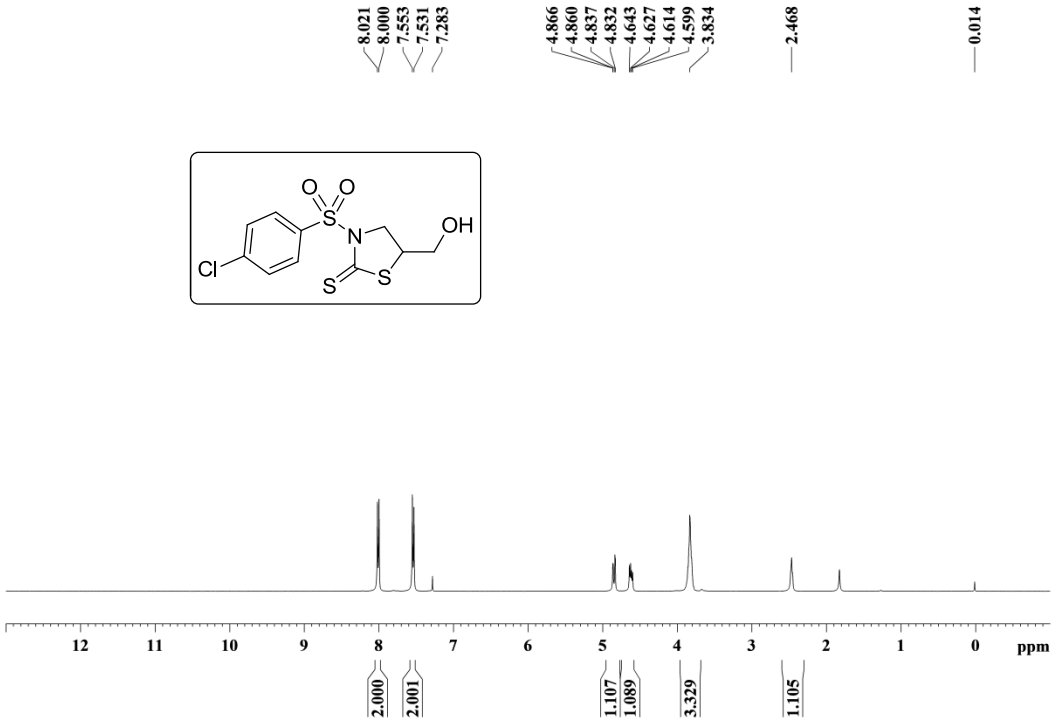

Figure S9. ^{1}H NMR spectrum of compound **6**

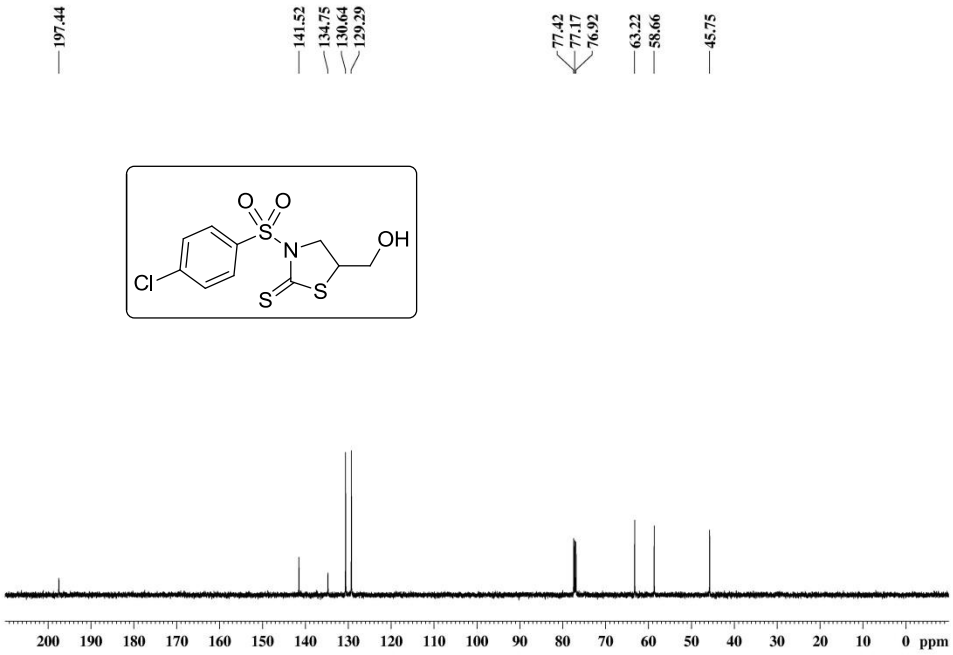

Figure S10. ^{13}C NMR spectrum of compound **6**

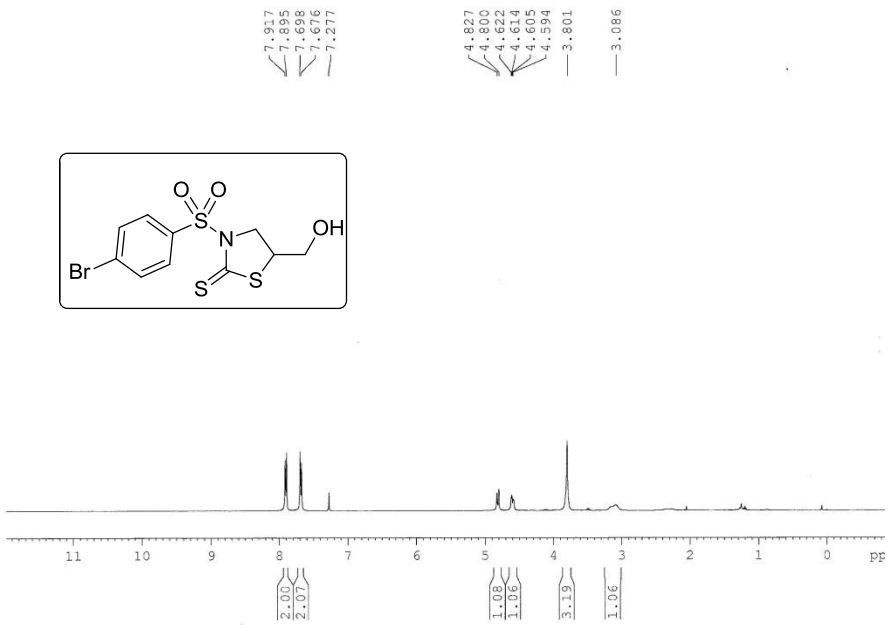

Figure S11. ^{1}H NMR spectrum of compound **7**

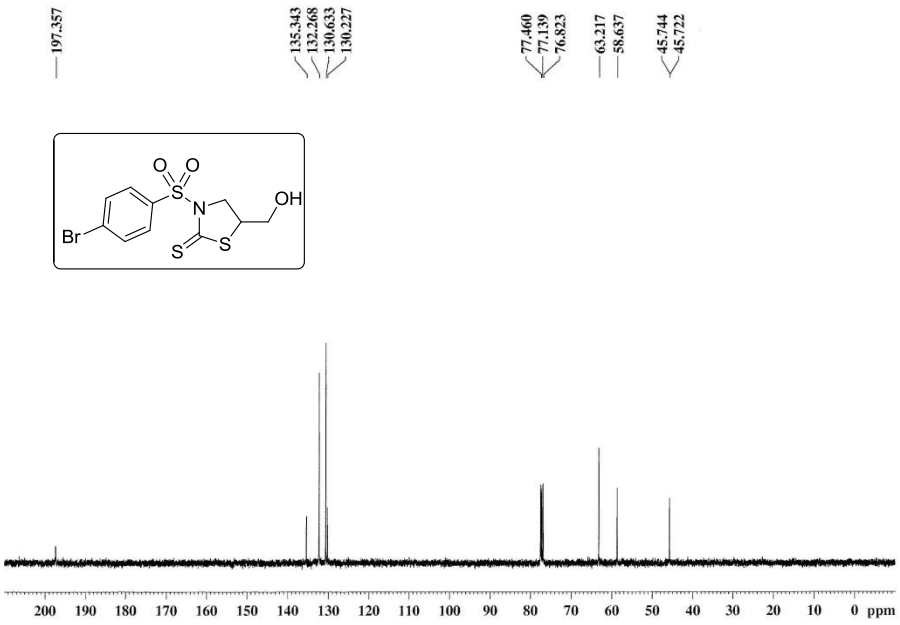

Figure S12. ^{13}C NMR spectrum of compound **7**

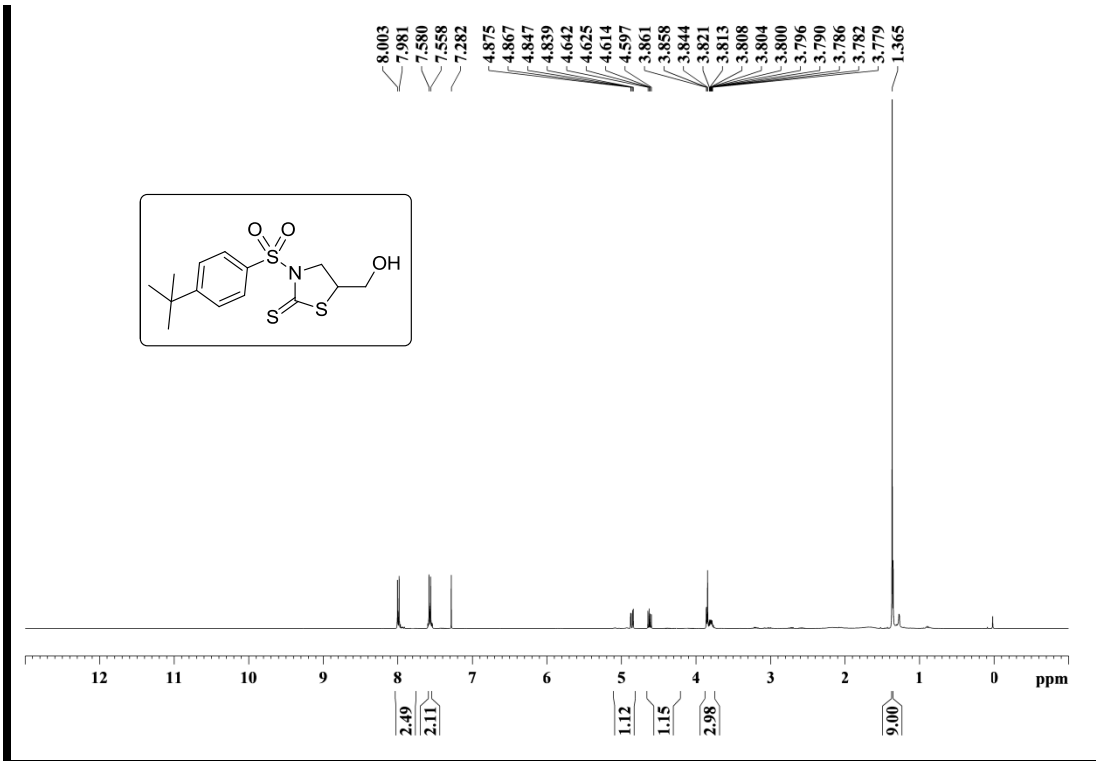

Figure S13. ^{1}H NMR spectrum of compound **8**

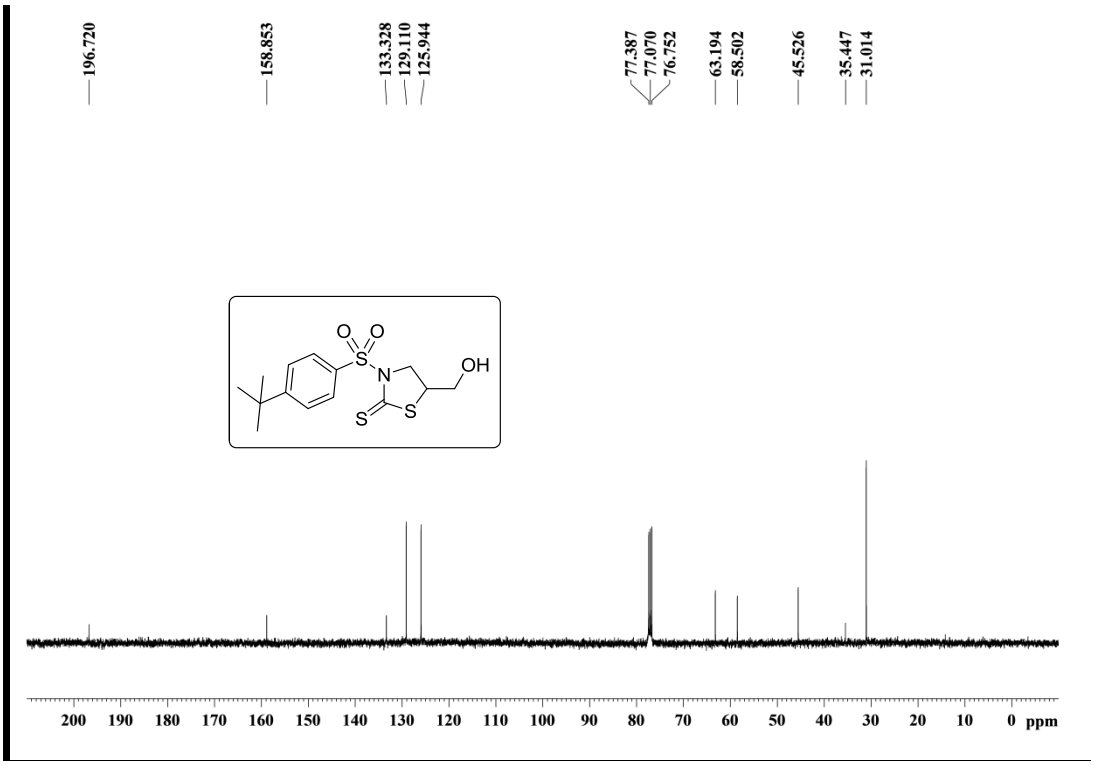

Figure S14. ^{13}C NMR spectrum of compound **8**

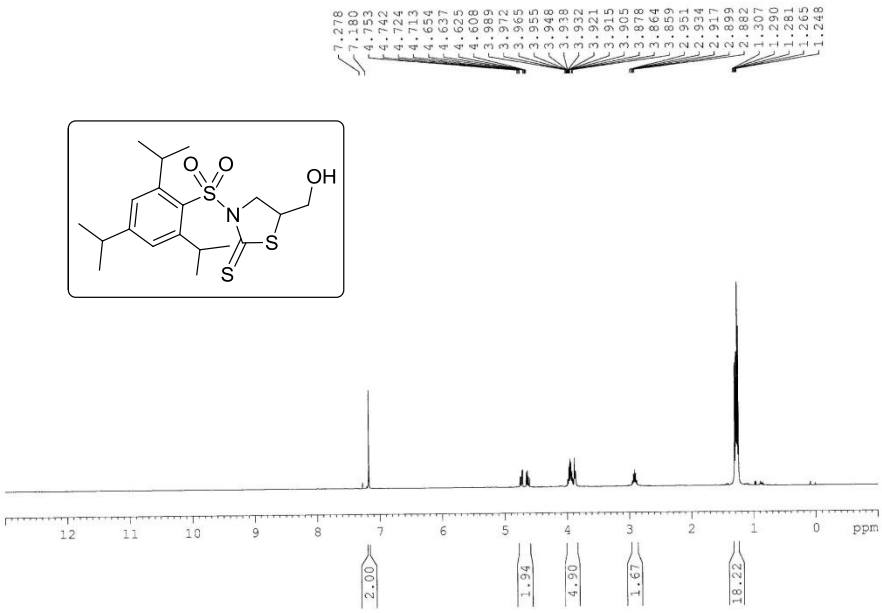

Figure S15. ^{1}H NMR spectrum of compound **9**

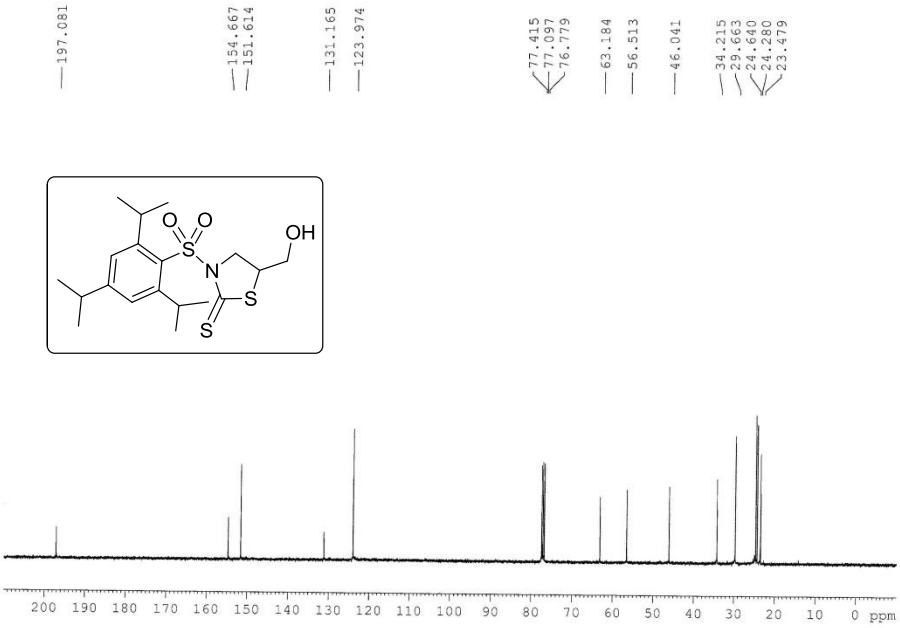

Figure S16. ^{13}C NMR spectrum of compound **9**

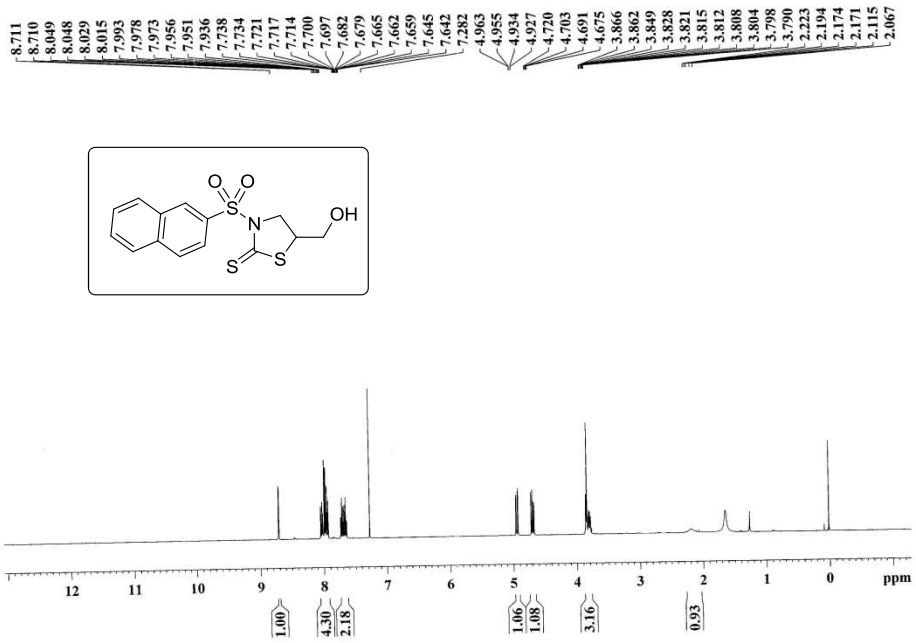

Figure S17. ^{1}H NMR spectrum of compound **10**

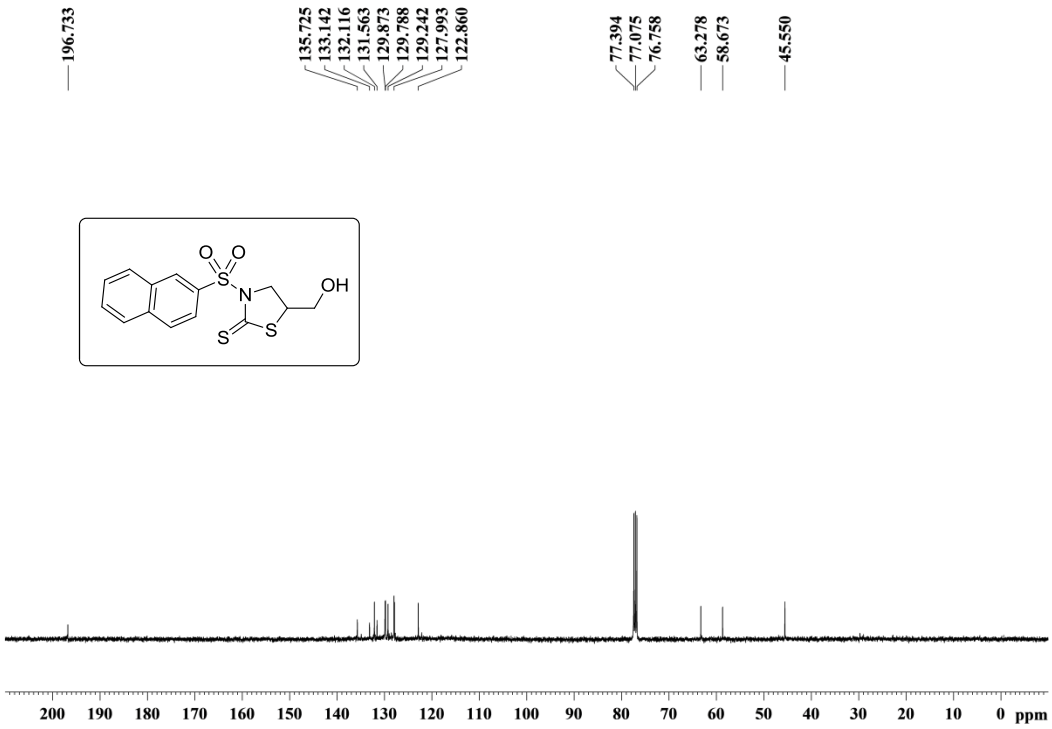

Figure S18. ^{13}C NMR spectrum of compound **10**

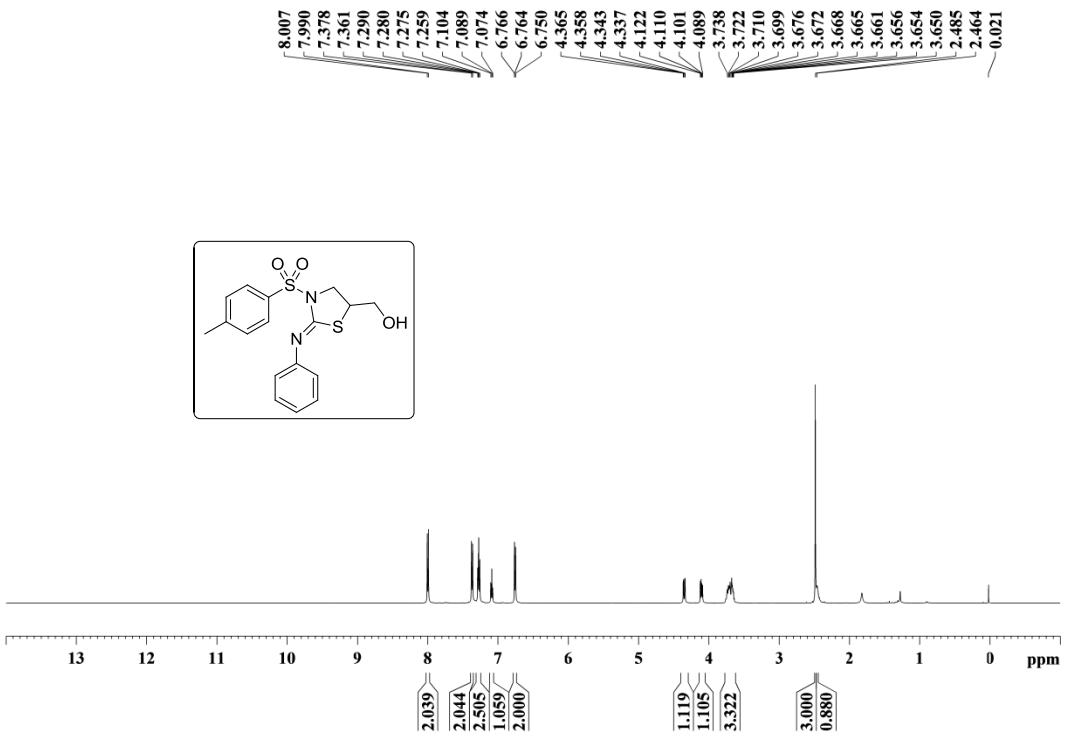

Figure S19. ^{1}H NMR spectrum of compound **11**

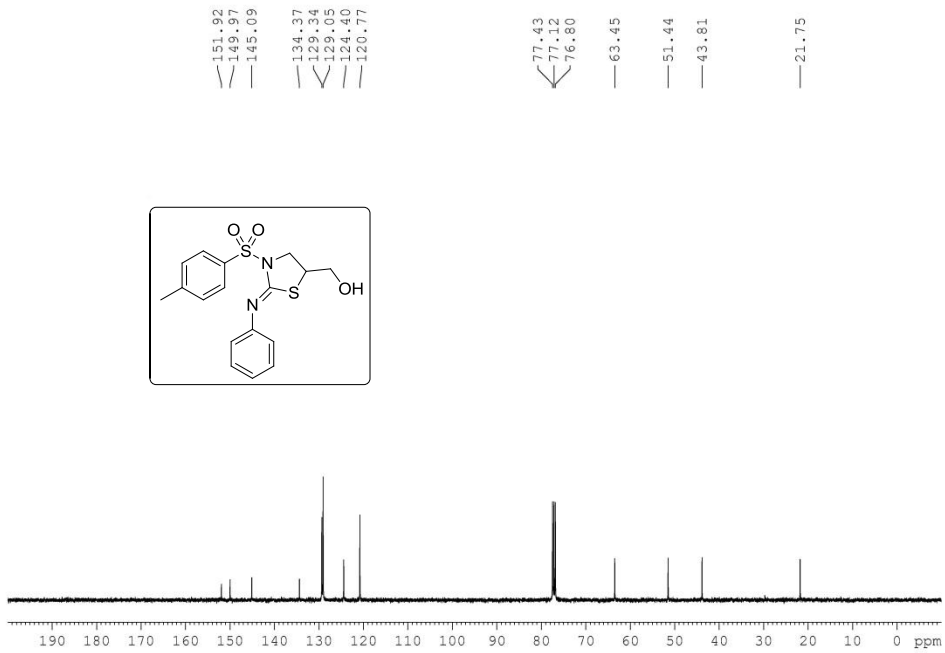

Figure S20. ^{13}C NMR spectrum of compound **11**

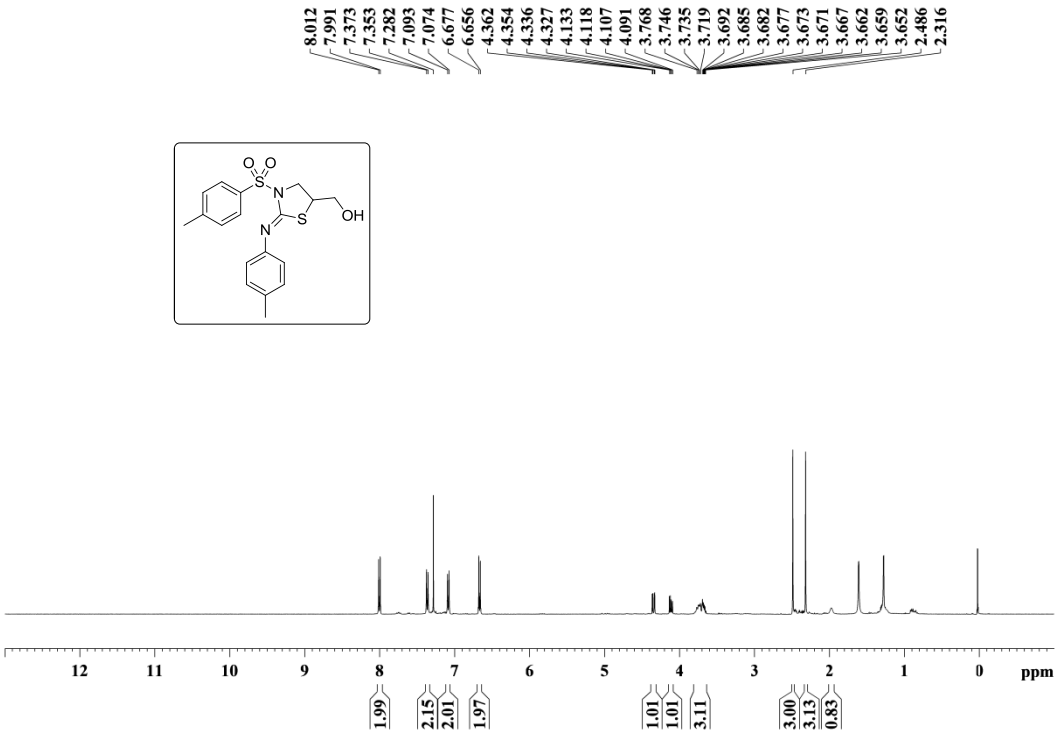

Figure S21. ^{1}H NMR spectrum of compound **12**

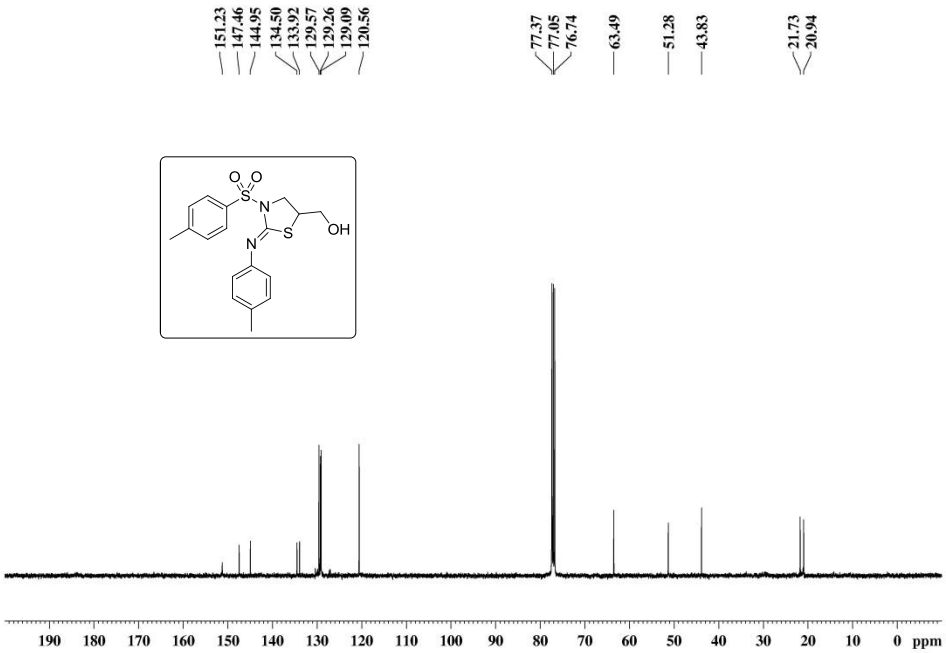

Figure S22. ^{13}C NMR spectrum of compound **12**

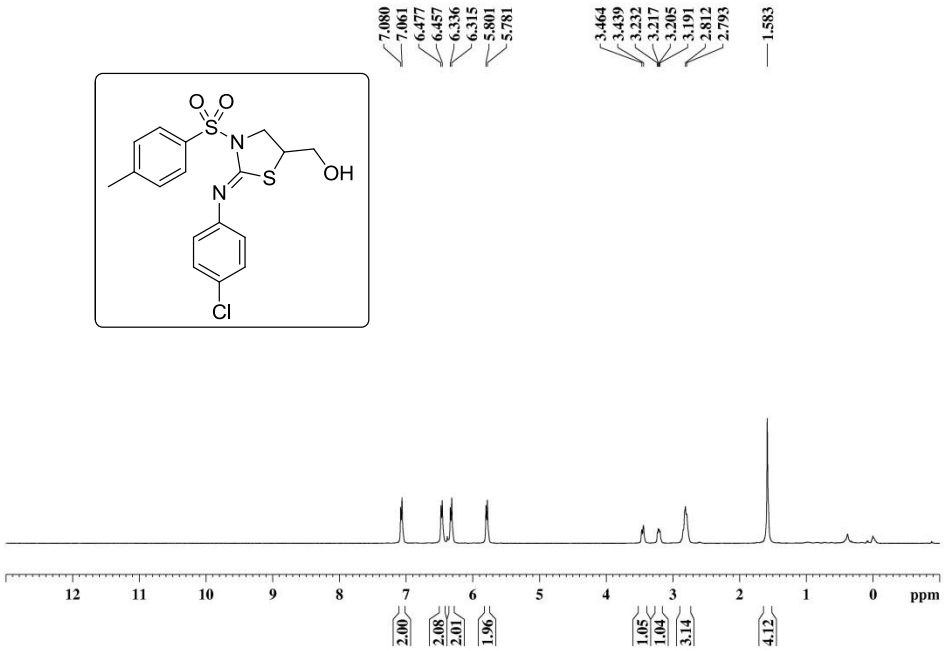

Figure S23. ^{1}H NMR spectrum of compound **13**

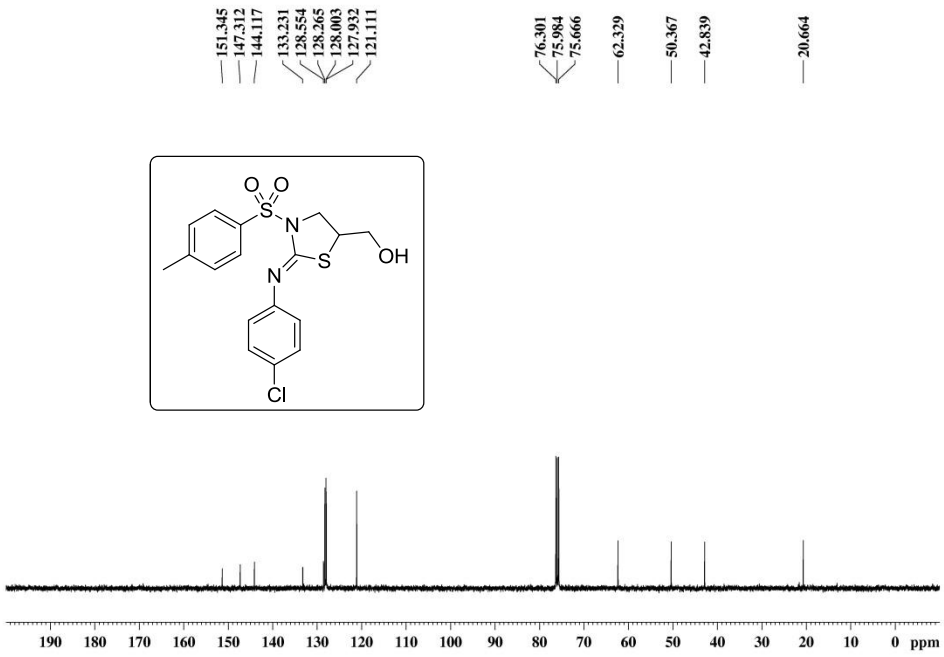

Figure S24. ^{13}C NMR spectrum of compound **13**

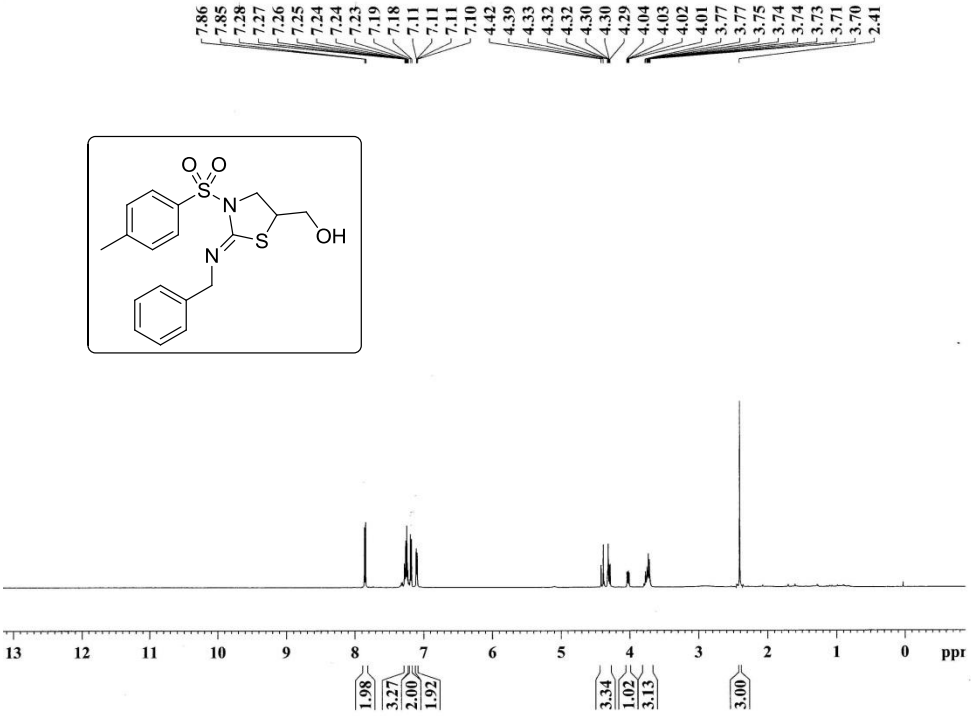

Figure S25. ^{1}H NMR spectrum of compound **14**

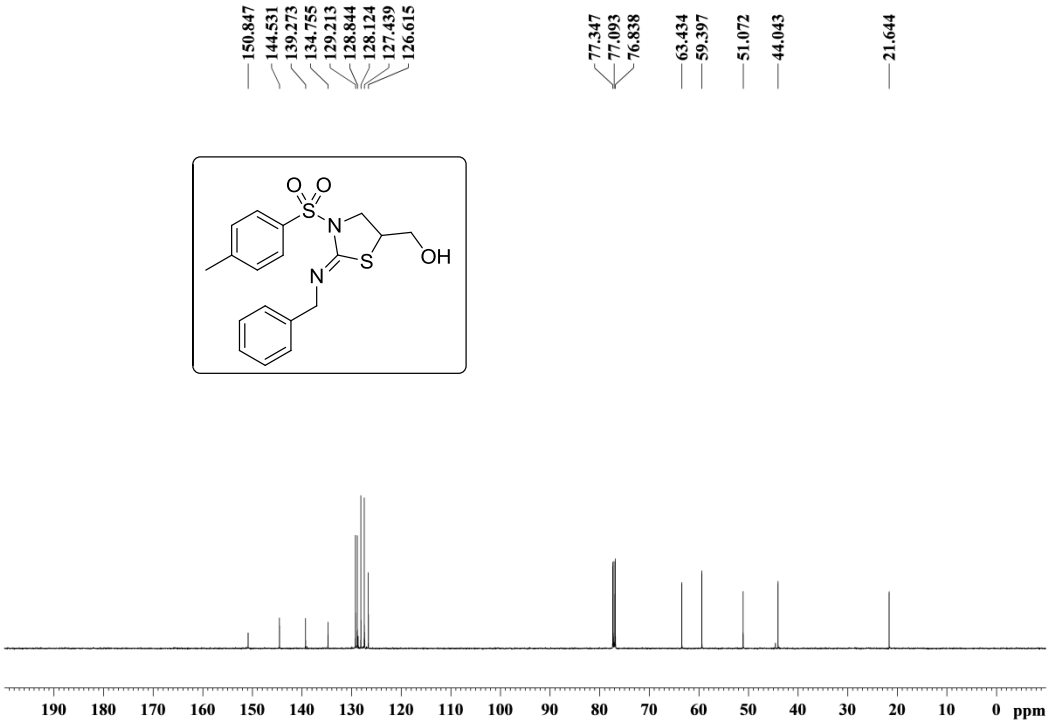

Figure S26. ^{13}C NMR spectrum of compound **14**

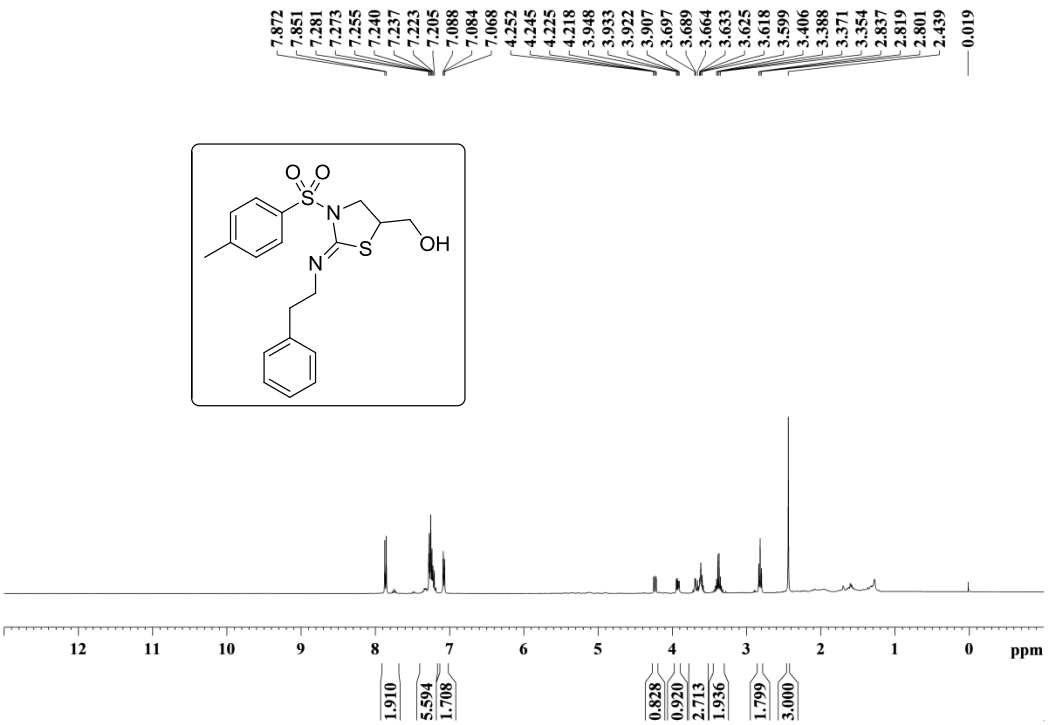

Figure S27. ^{1}H NMR spectrum of compound **15**

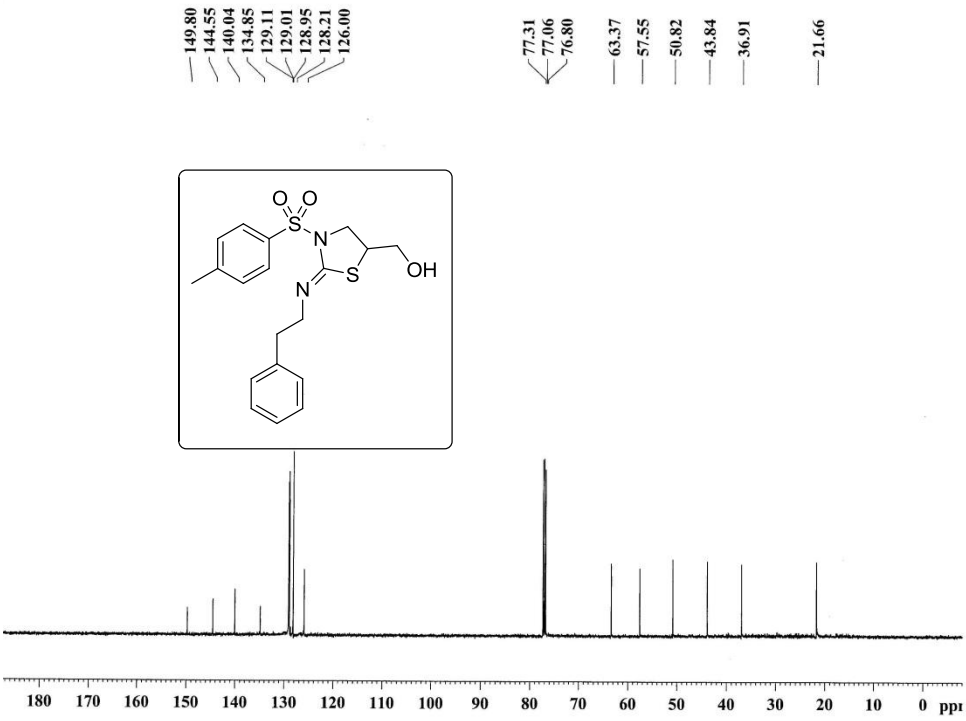

Figure S28. ^{13}C NMR spectrum of compound **15**

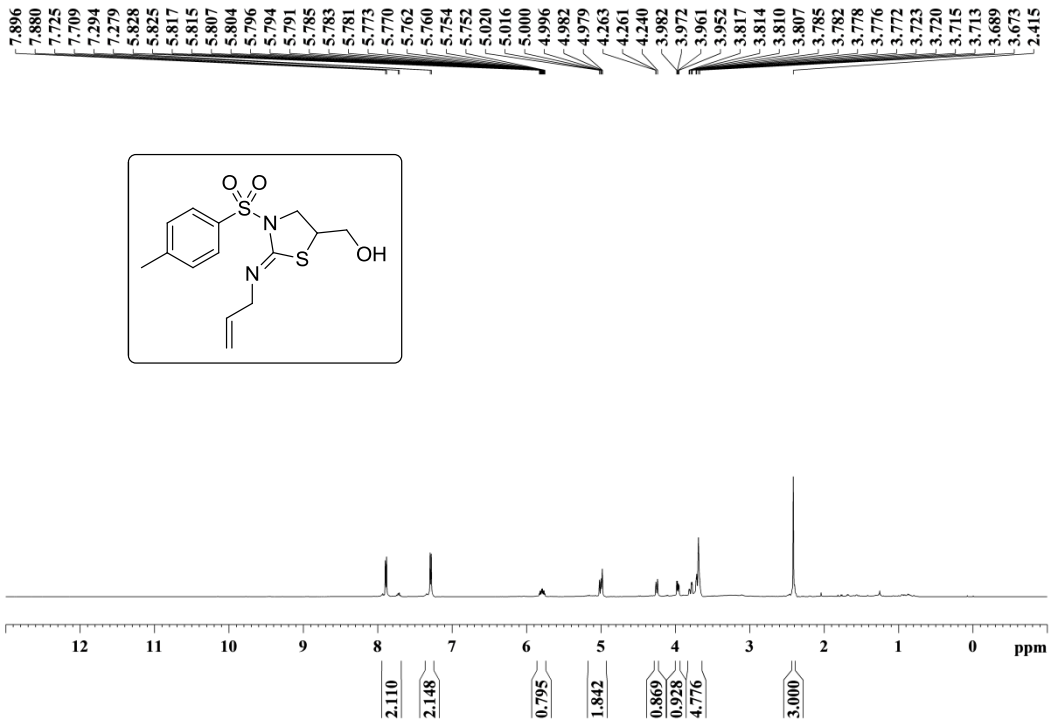

Figure S29. ^{1}H NMR spectrum of compound **16**

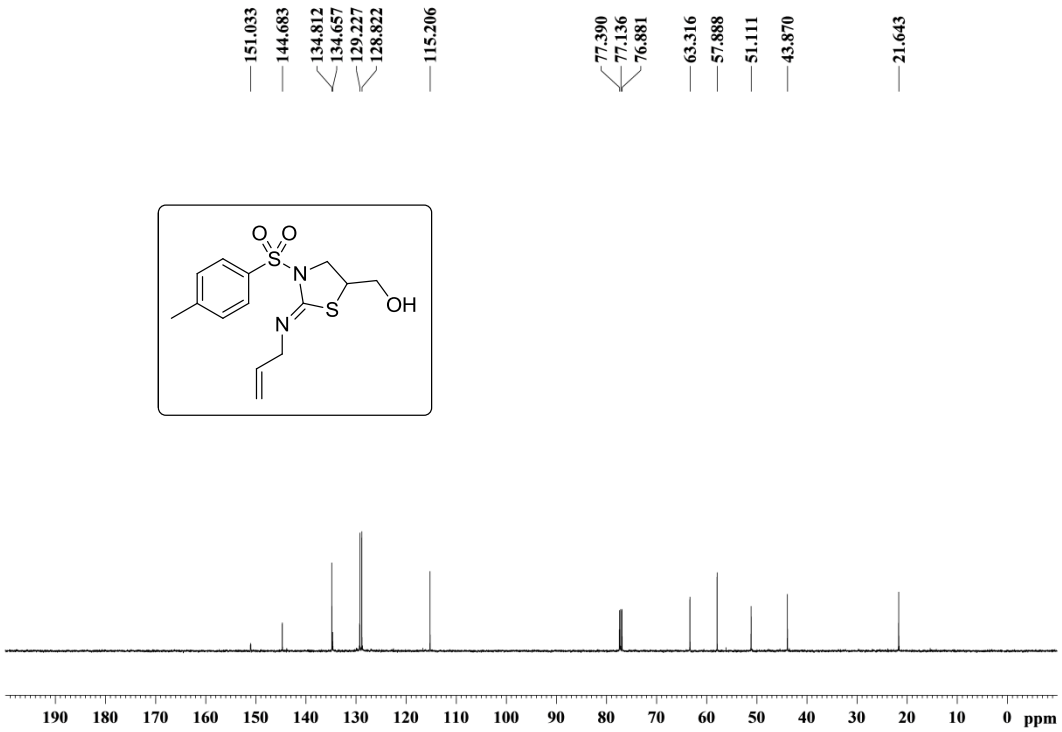

Figure S30. ^{13}C NMR spectrum of compound **16**

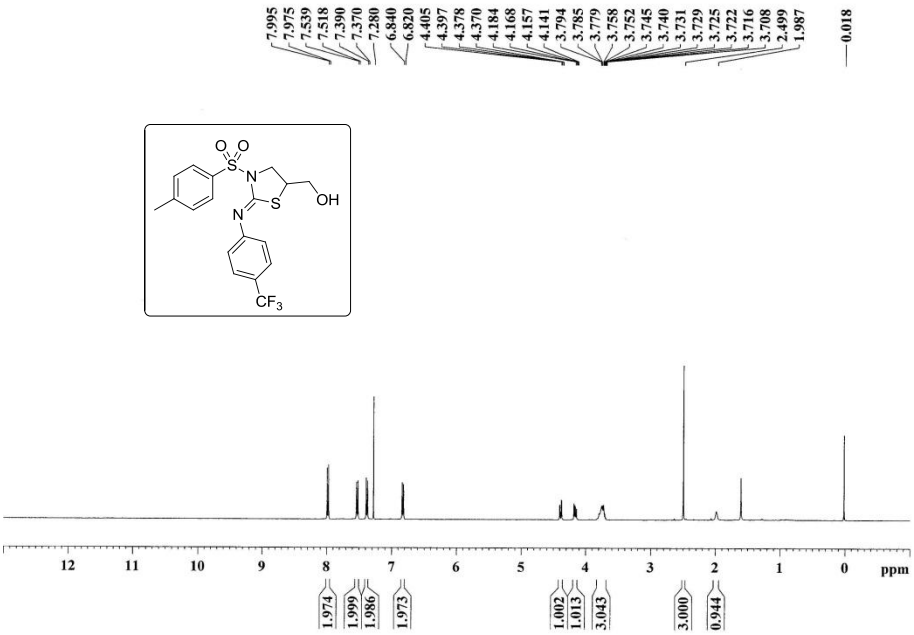

Figure S31. ^{1}H NMR spectrum of compound **17**

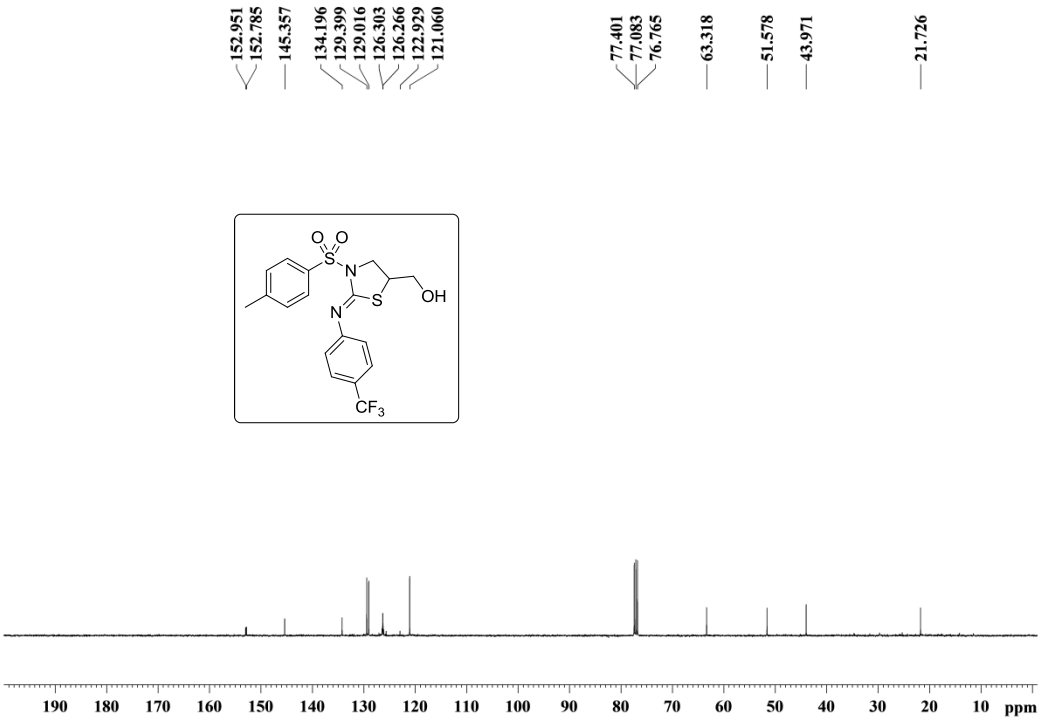

Figure S31. ^{13}C NMR spectrum of compound **17**

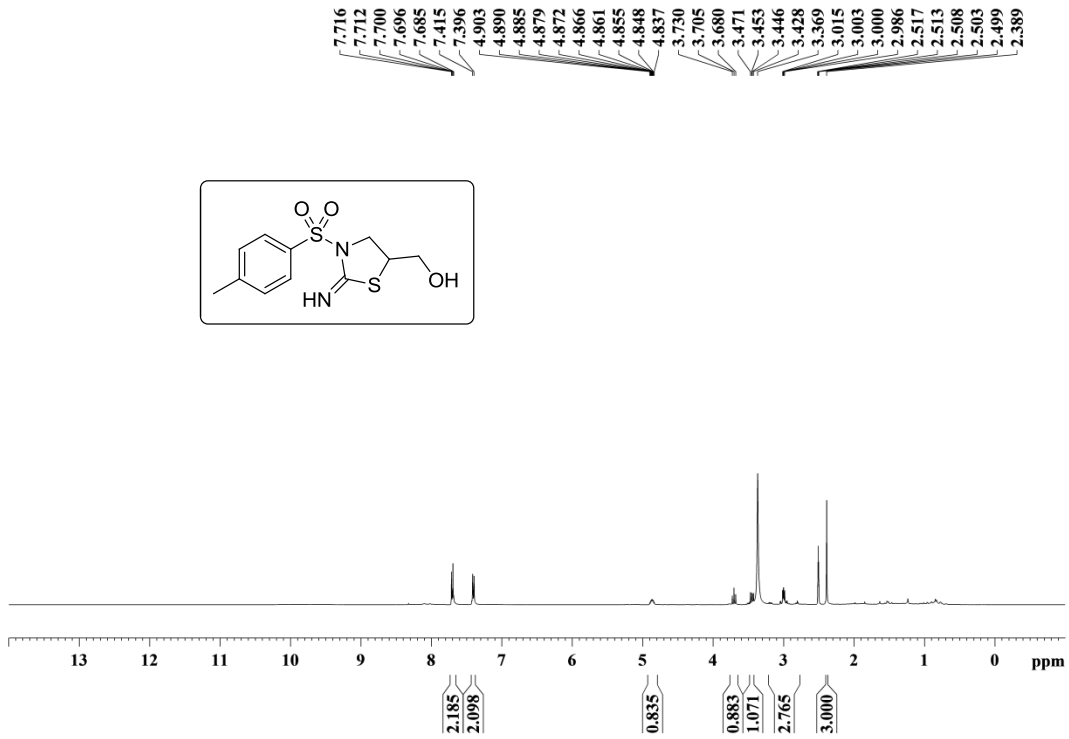

Figure S33. ^{1}H NMR spectrum of compound **18**

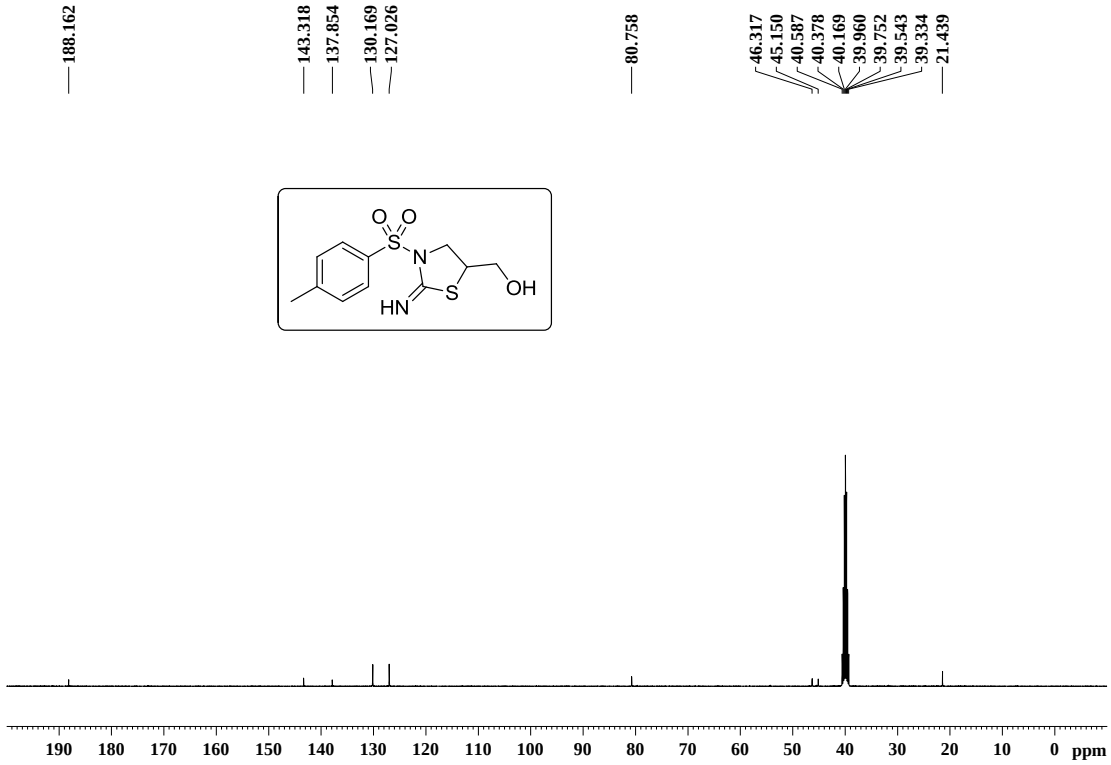

Figure S34. ^{13}C NMR spectrum of compound **18**

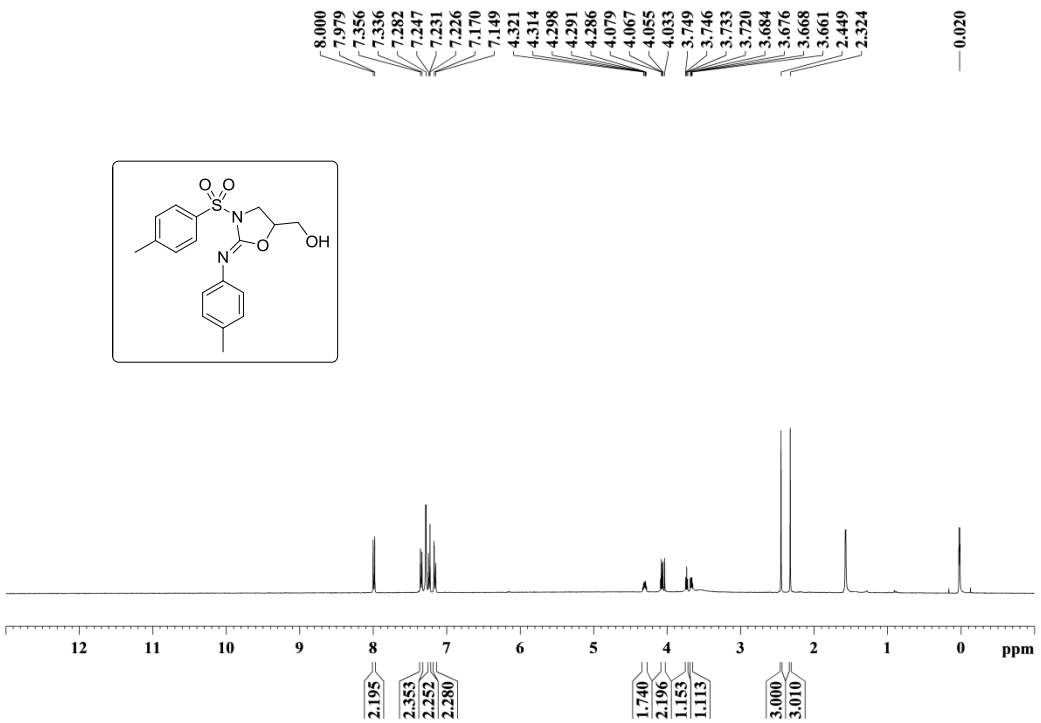

Figure S35. ^{1}H NMR spectrum of compound **19**

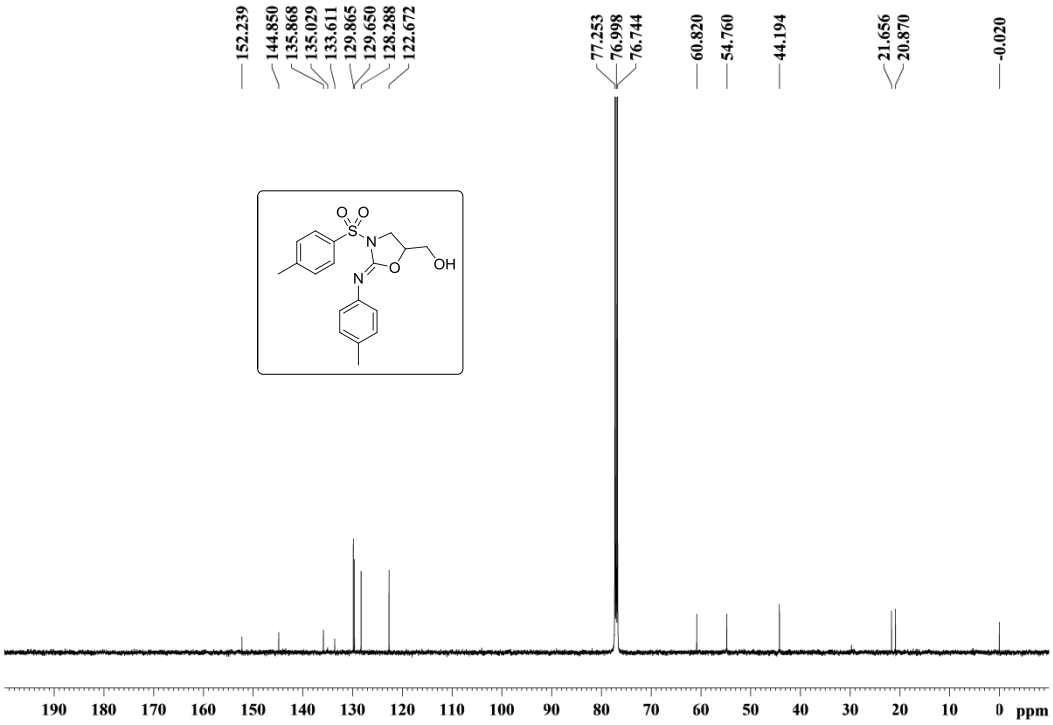

Figure S36. ^{13}C NMR spectrum of compound **19**

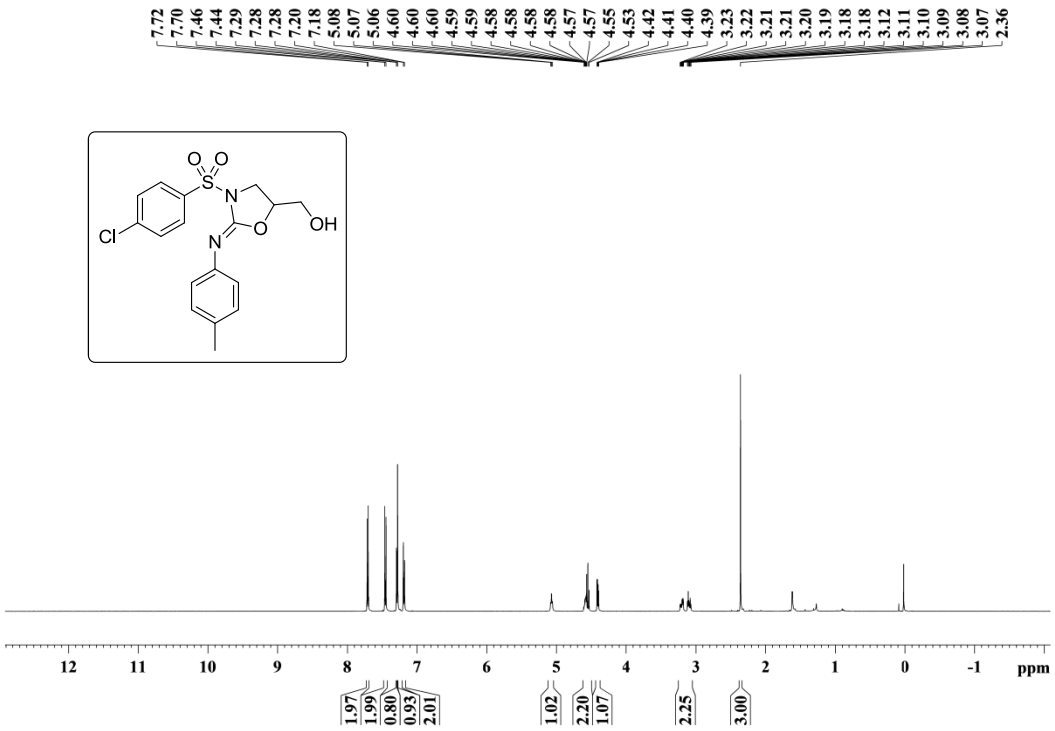

Figure S37. ^{1}H NMR spectrum of compound **20**

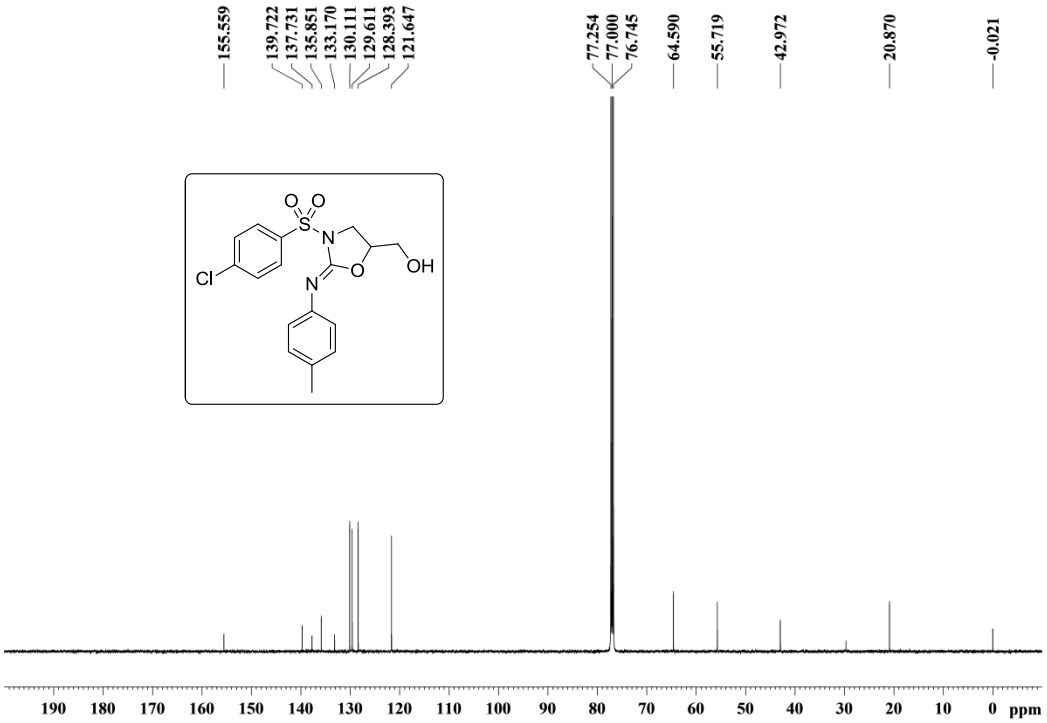

Figure S38. ^{13}C NMR spectrum of compound **20**

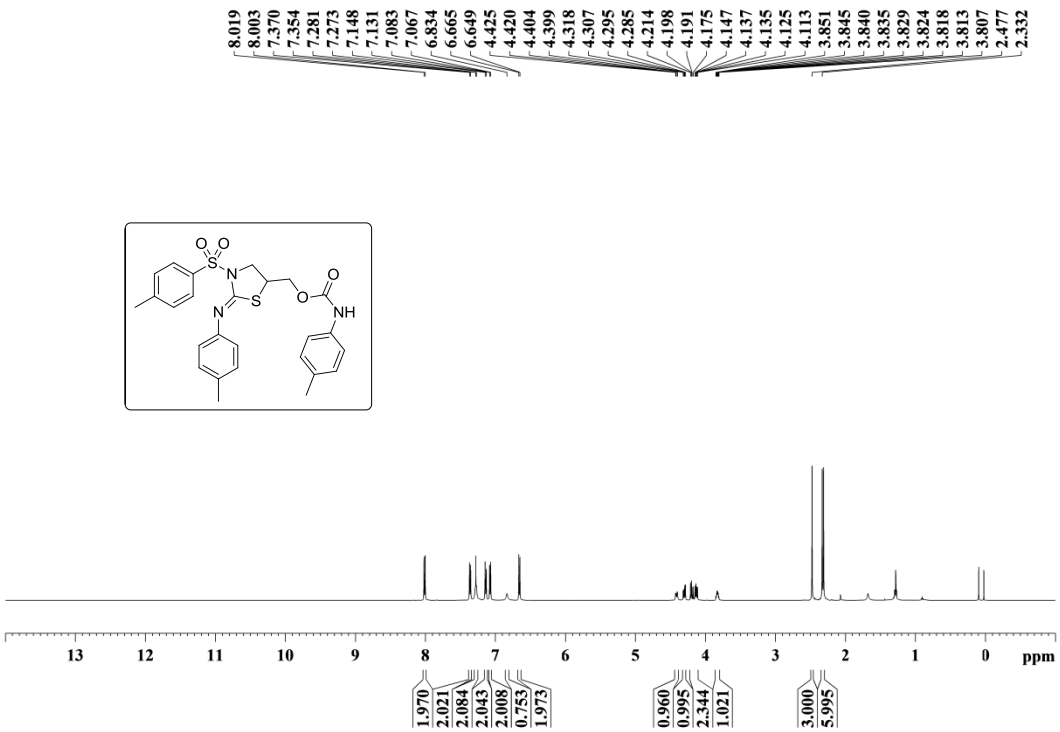

Figure S39. ^{1}H NMR spectrum of compound **21**

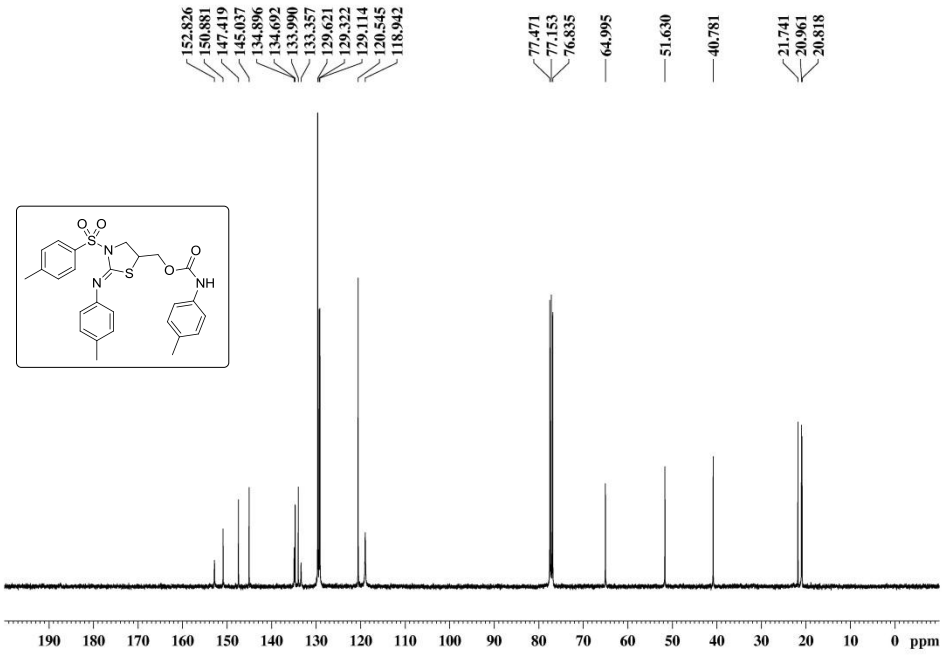

Figure S40. ^{13}C NMR spectrum of compound **21**

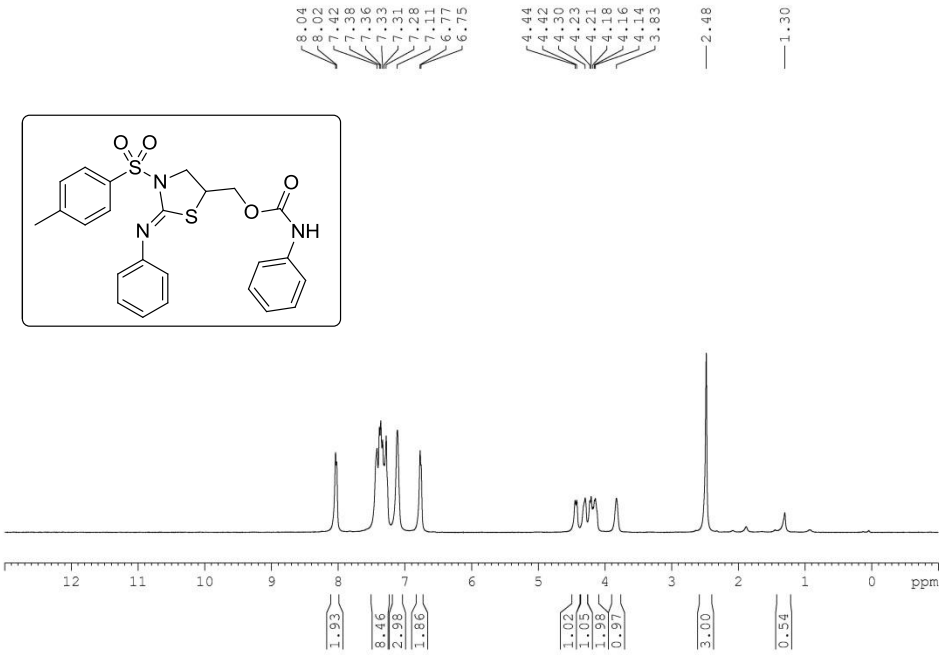

Figure S41. ^{1}H NMR spectrum of compound **22**

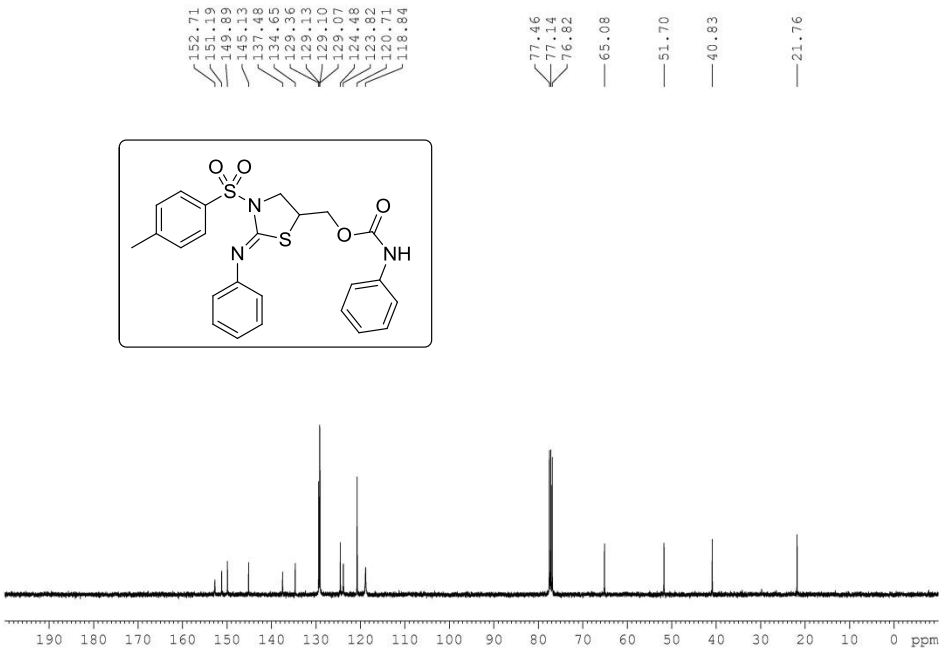

Figure S42. ^{13}C NMR spectrum of compound **22**

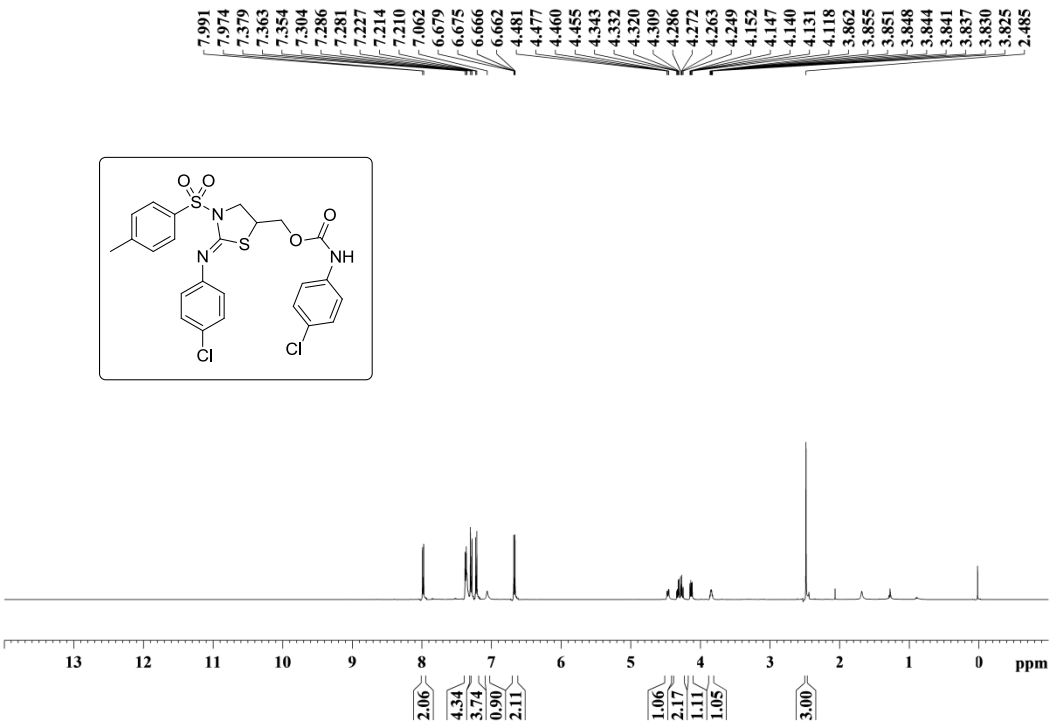

Figure S43. ^{1}H NMR spectrum of compound **23**

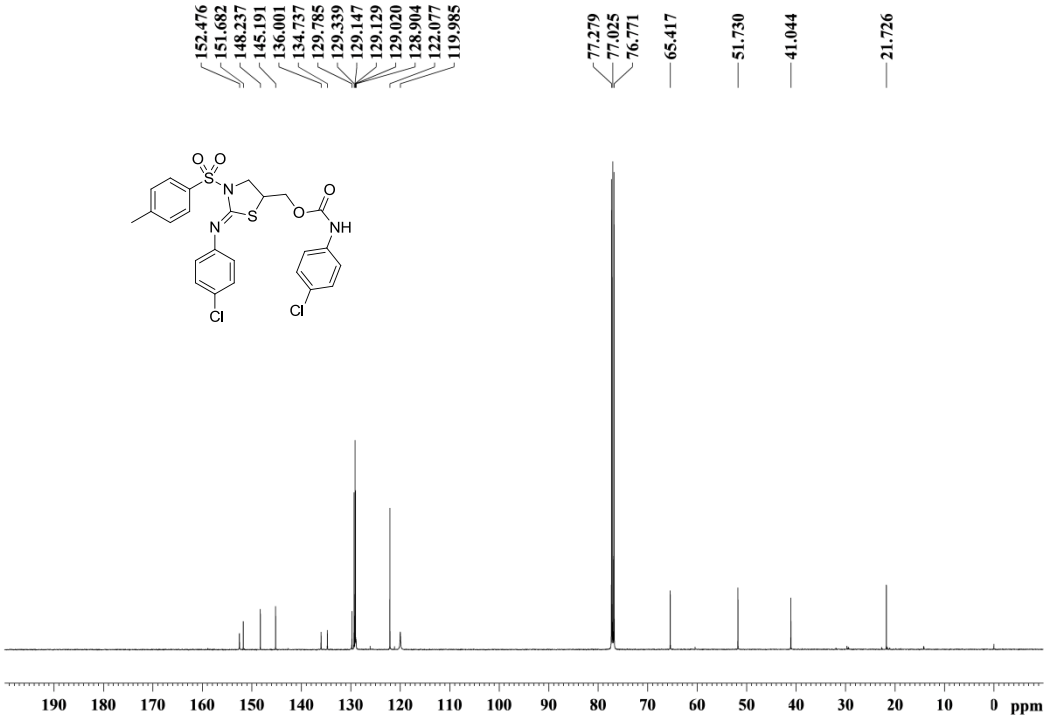

Figure S44. ^{13}C NMR spectrum of compound **23**

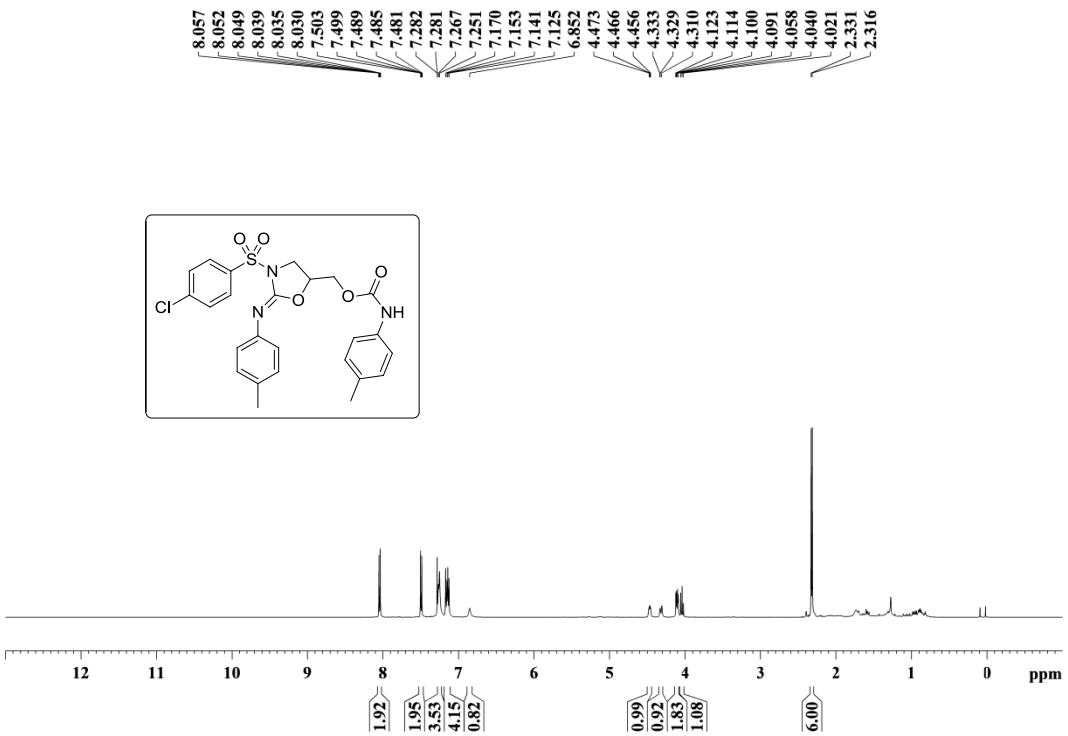

Figure S45. ^{1}H NMR spectrum of compound **24**

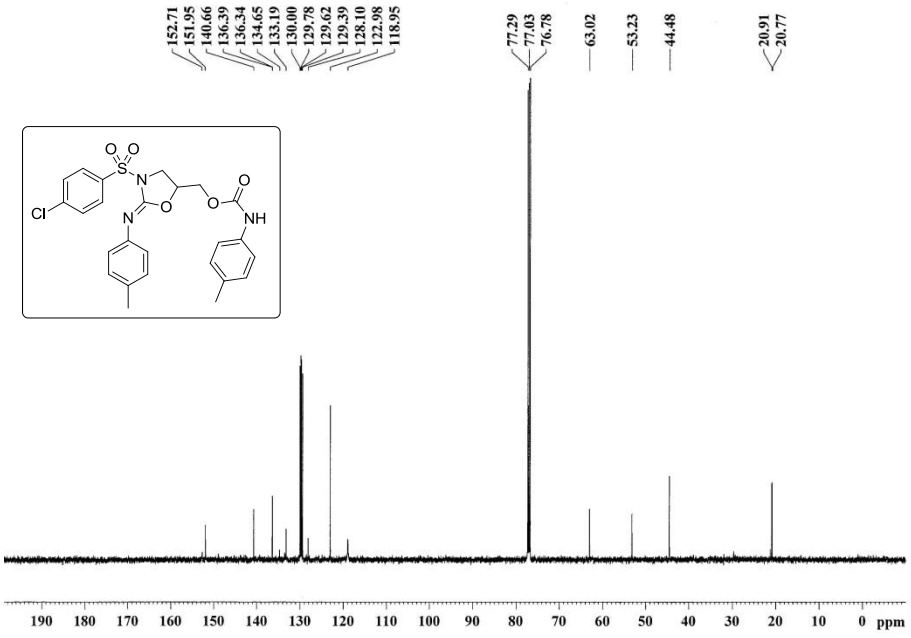

Figure S46. ^{13}C NMR spectrum of compound **24**

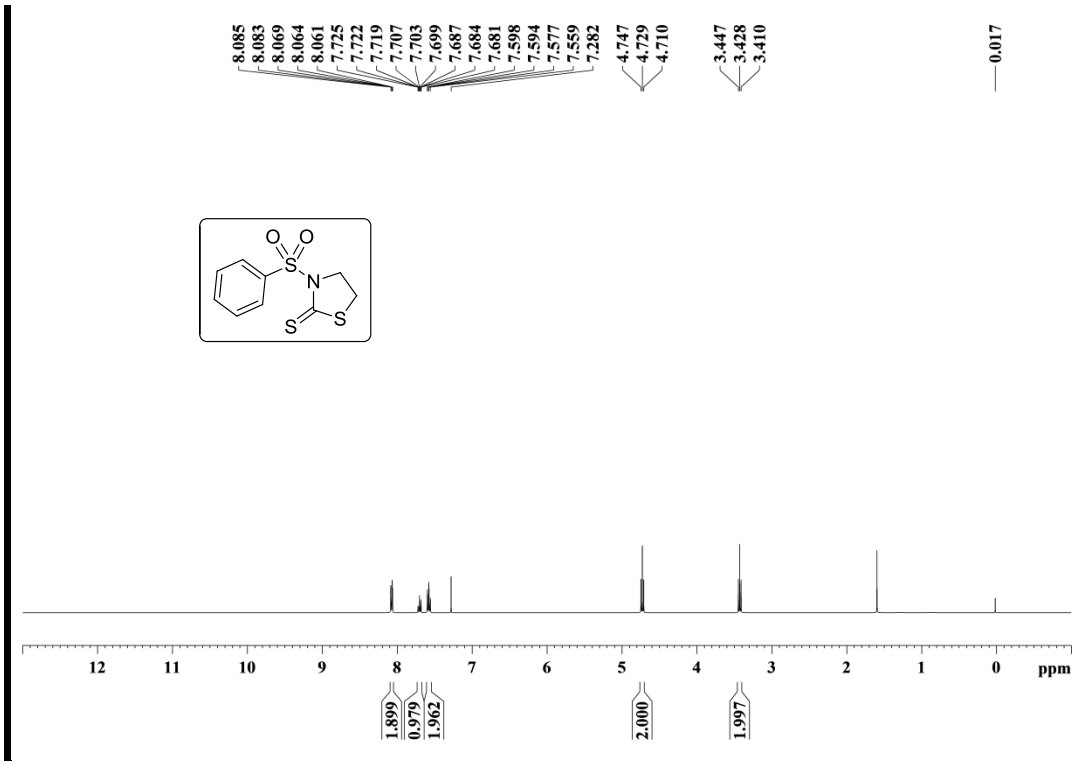

Figure S47. ^{1}H NMR spectrum of compound **26**

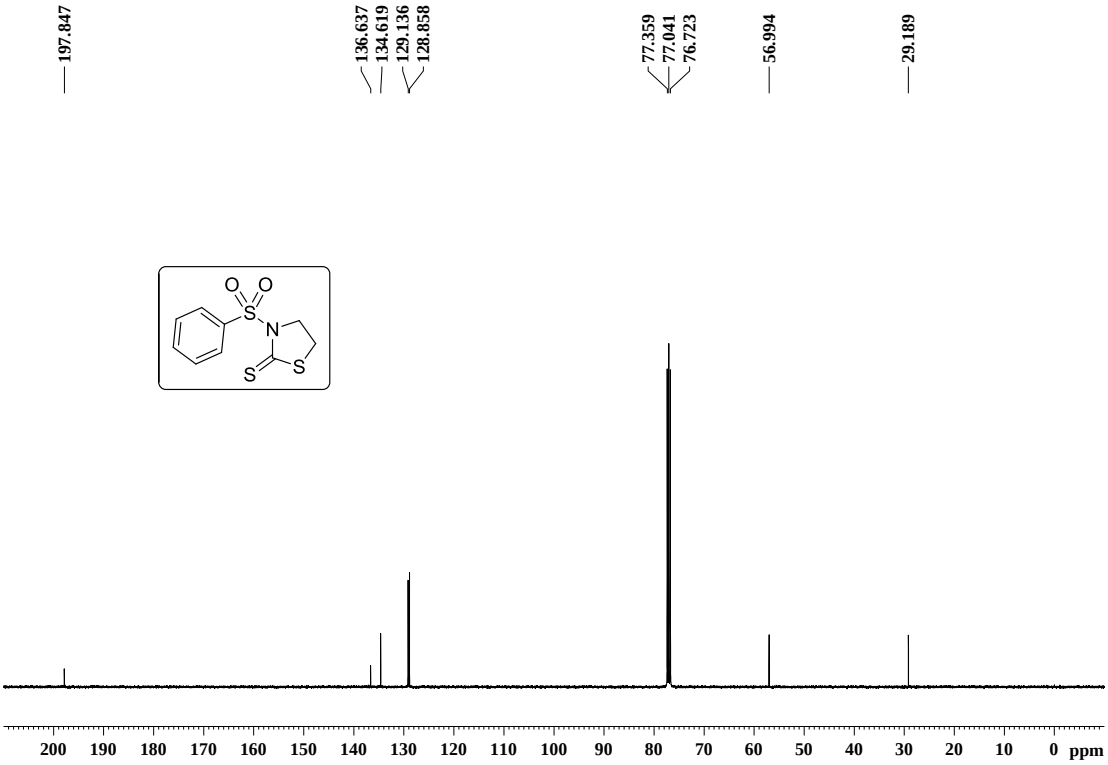

Figure S48. ^{13}C NMR spectrum of compound **26**

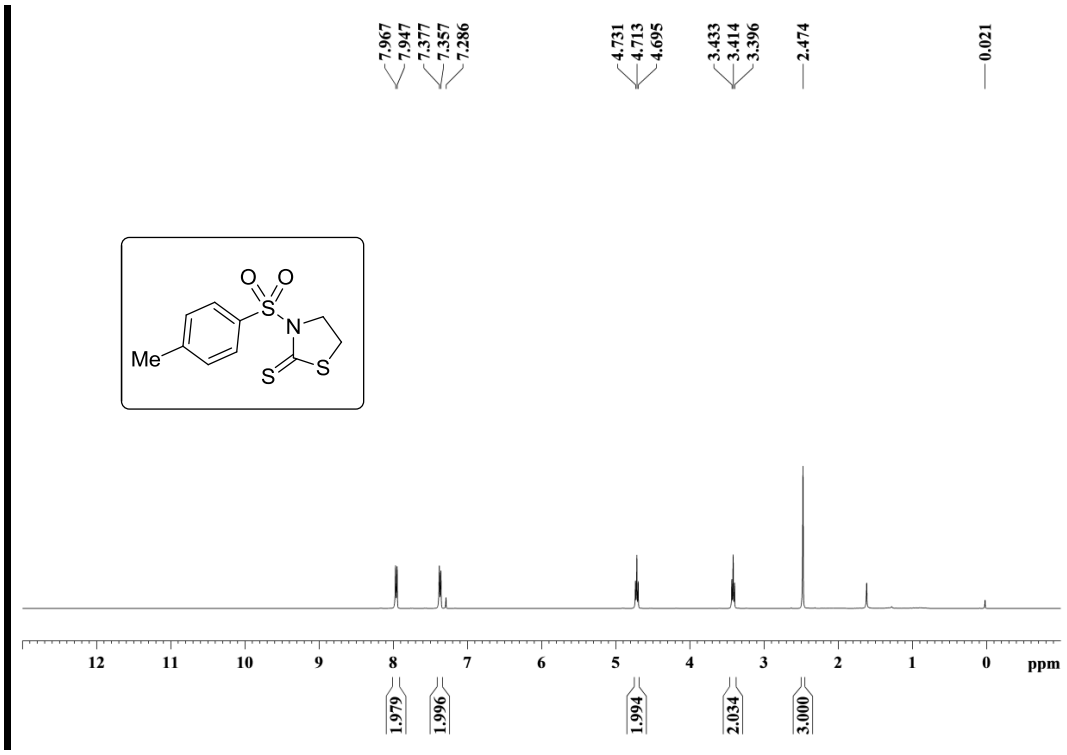

Figure S49. ^{1}H NMR spectrum of compound **27**

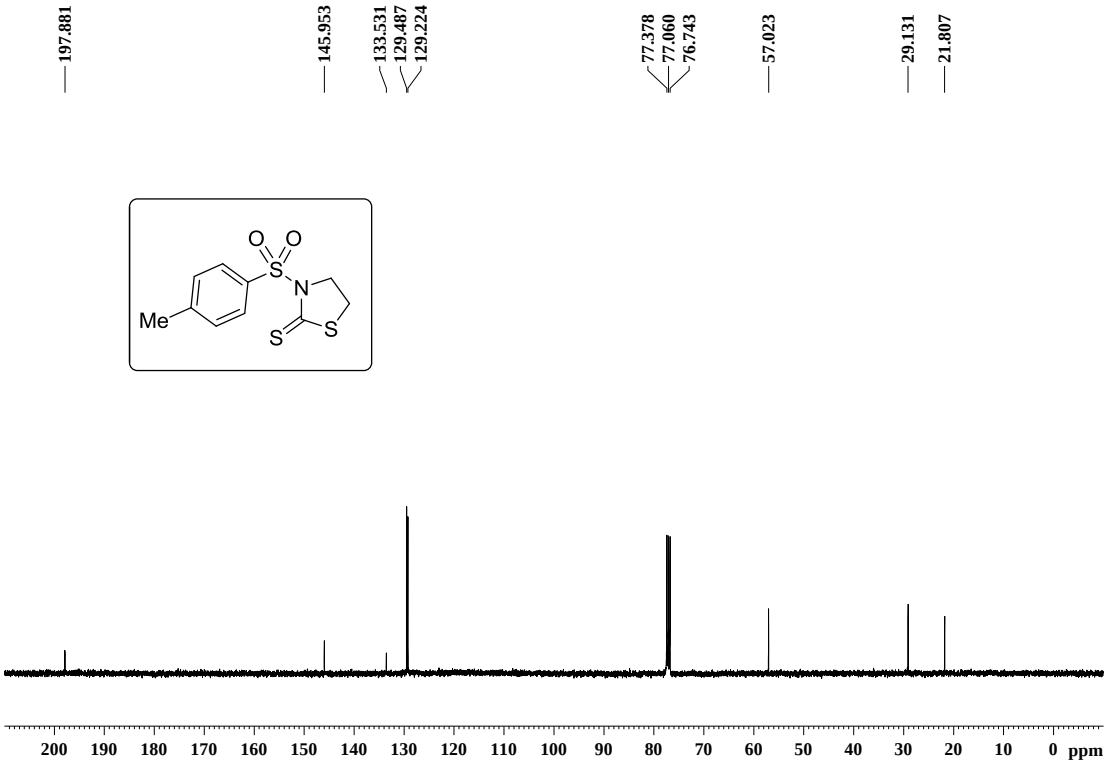

Figure S50. ^{13}C NMR spectrum of compound **27**

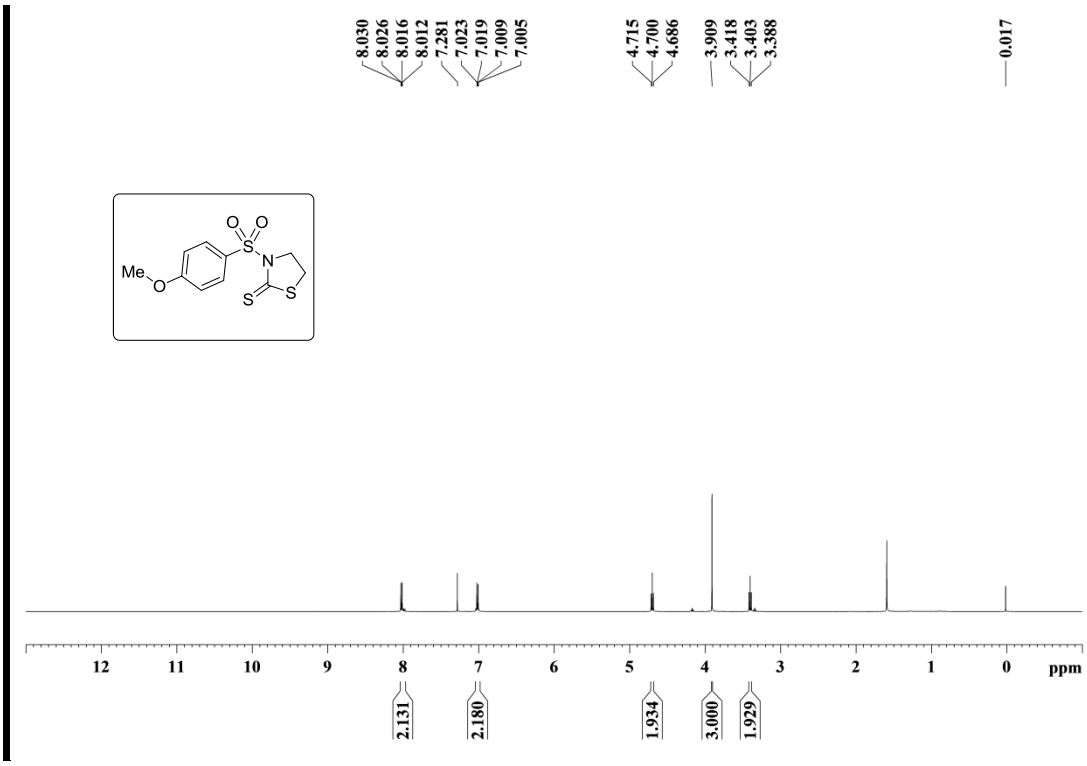

Figure S51. ^{1}H NMR spectrum of compound **28**

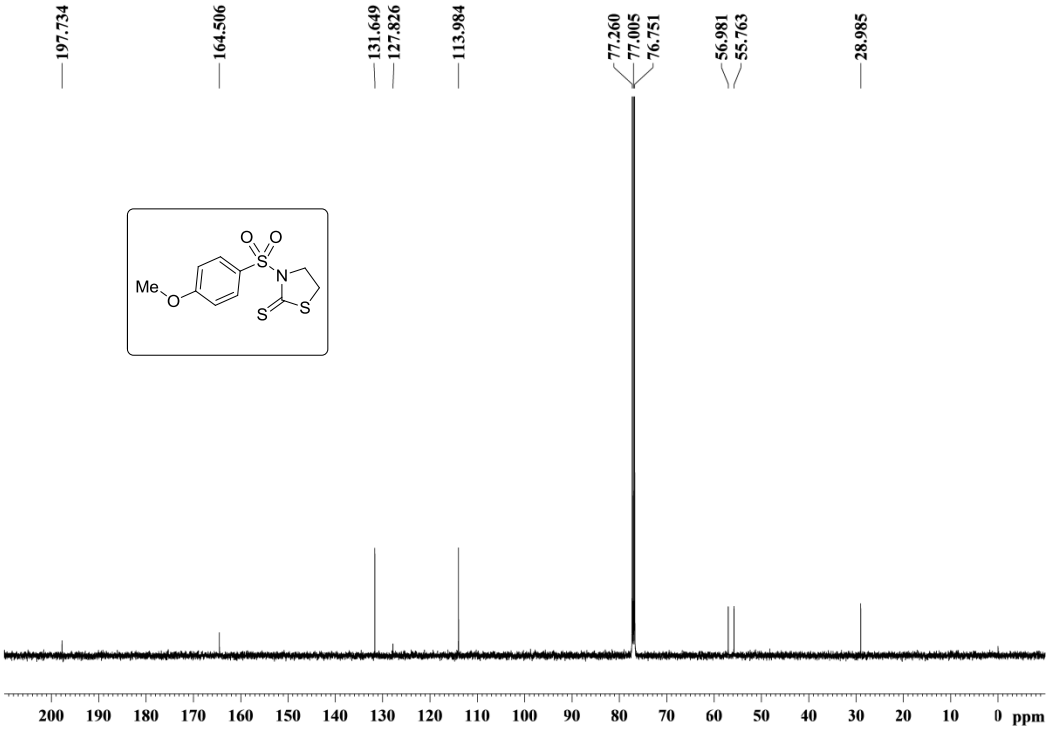

Figure S52. ^{13}C NMR spectrum of compound **28**

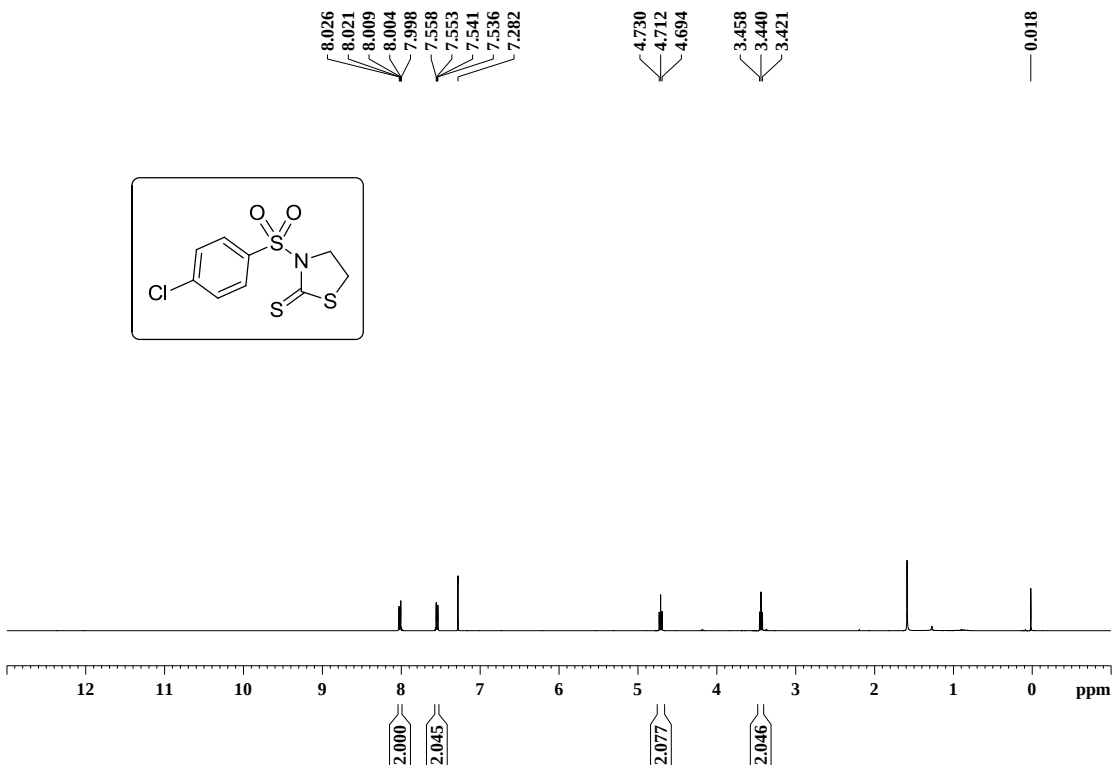

Figure S53. ^{1}H NMR spectrum of compound **29**

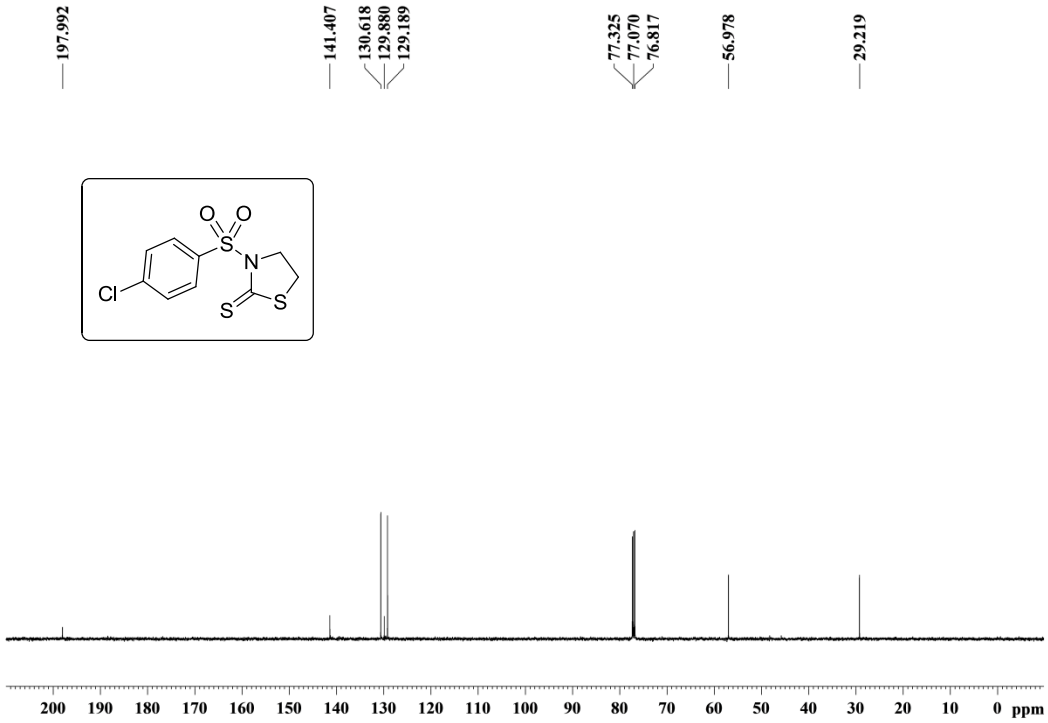

Figure S54. ^{13}C NMR spectrum of compound **29**

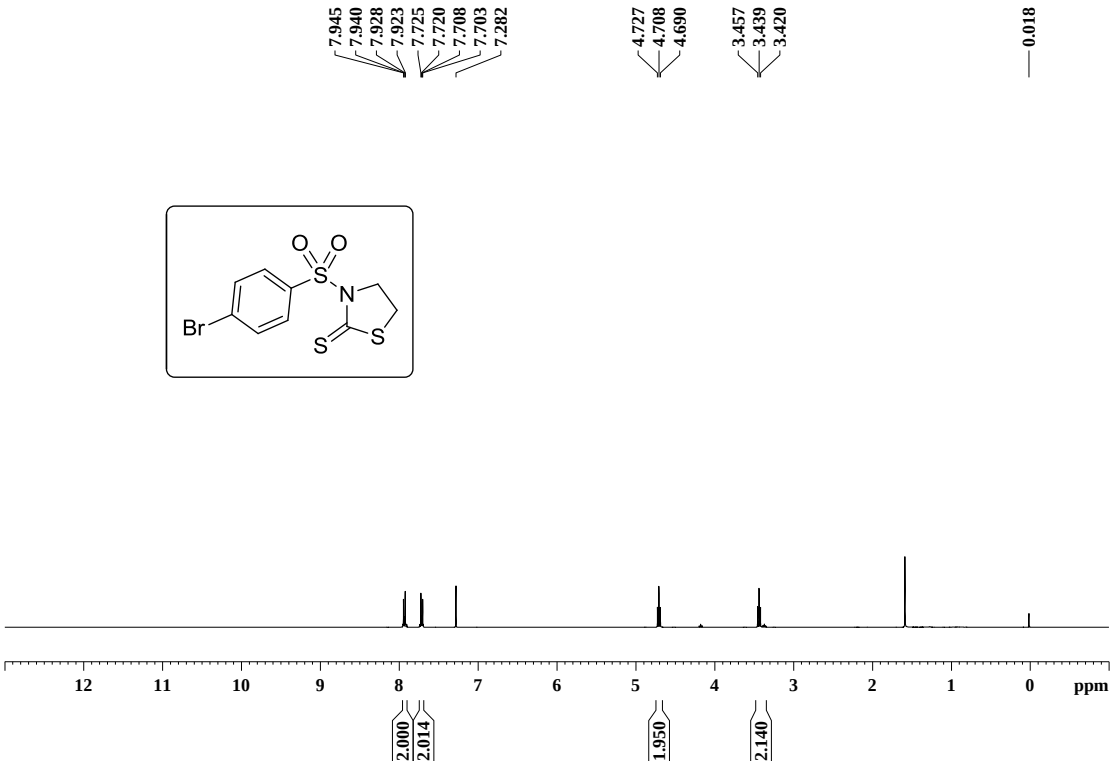

Figure S55. ^{1}H NMR spectrum of compound **30**

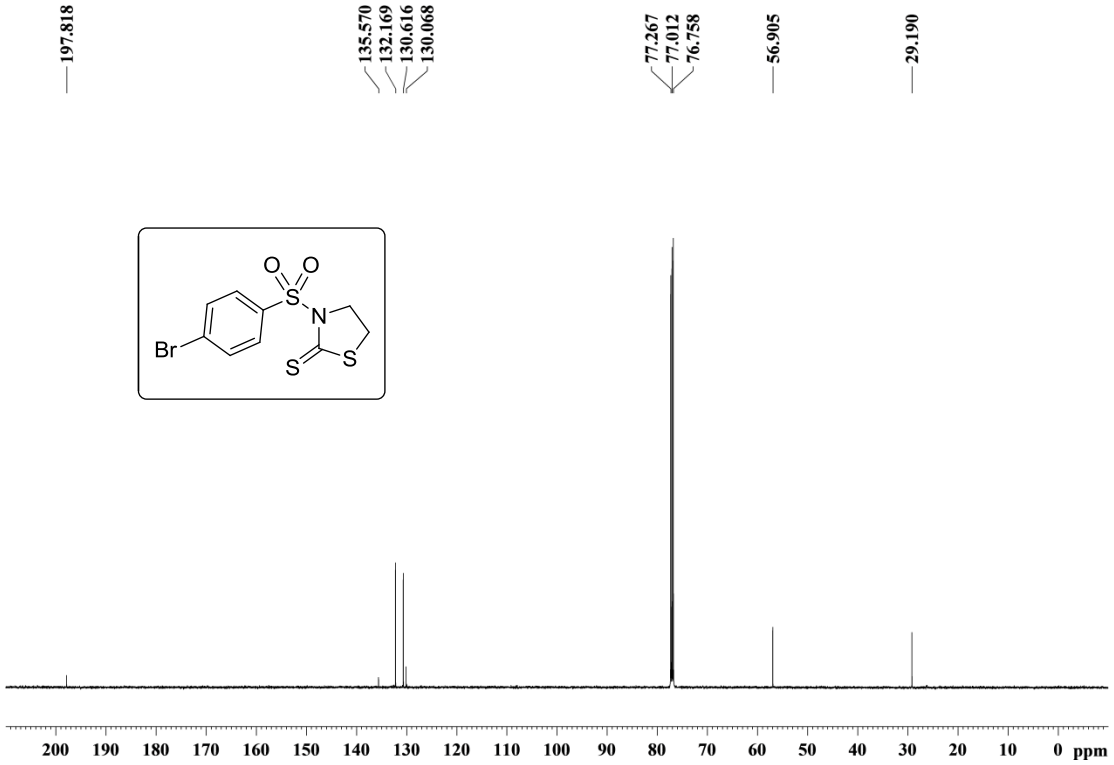

Figure S56. ^{13}C NMR spectrum of compound **30**

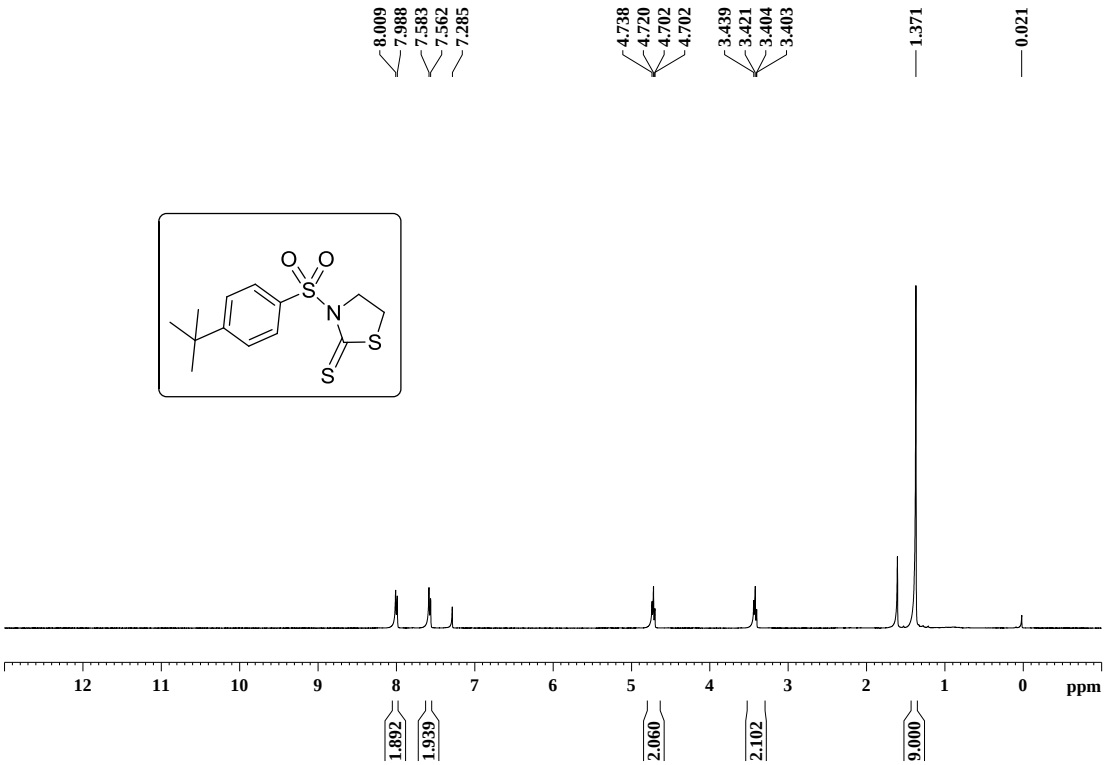

Figure S57. ^{1}H NMR spectrum of compound **31**

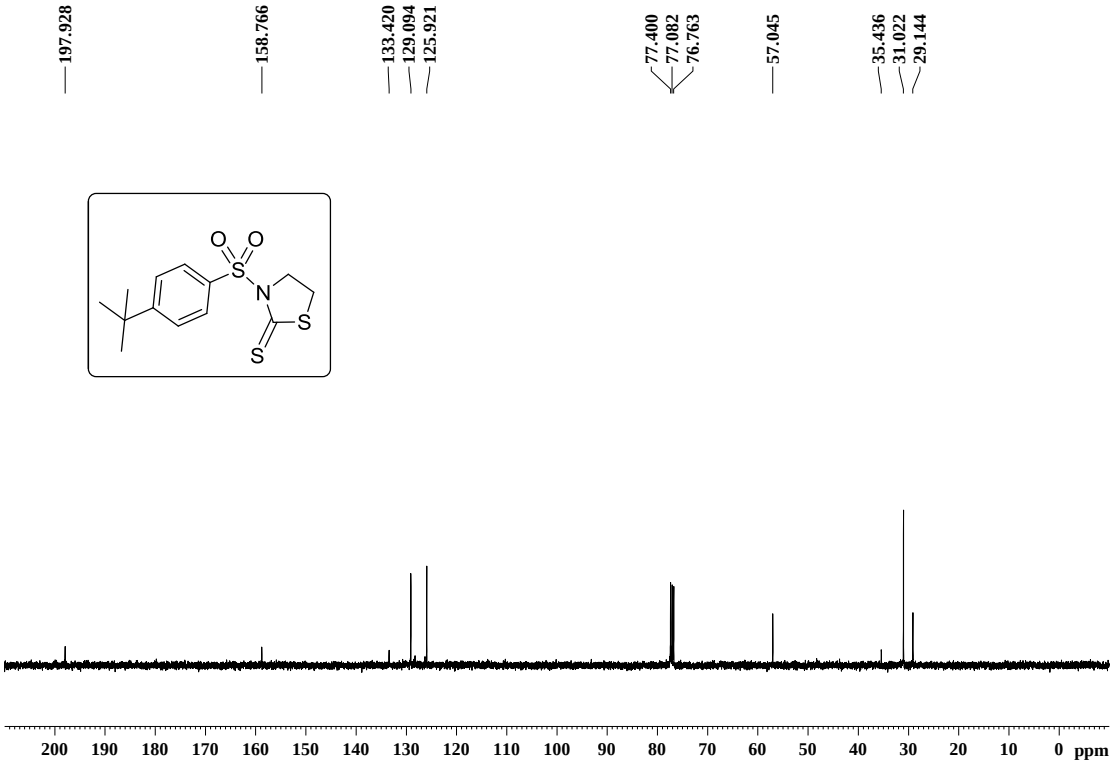

Figure S58. ^{13}C NMR spectrum of compound **31**

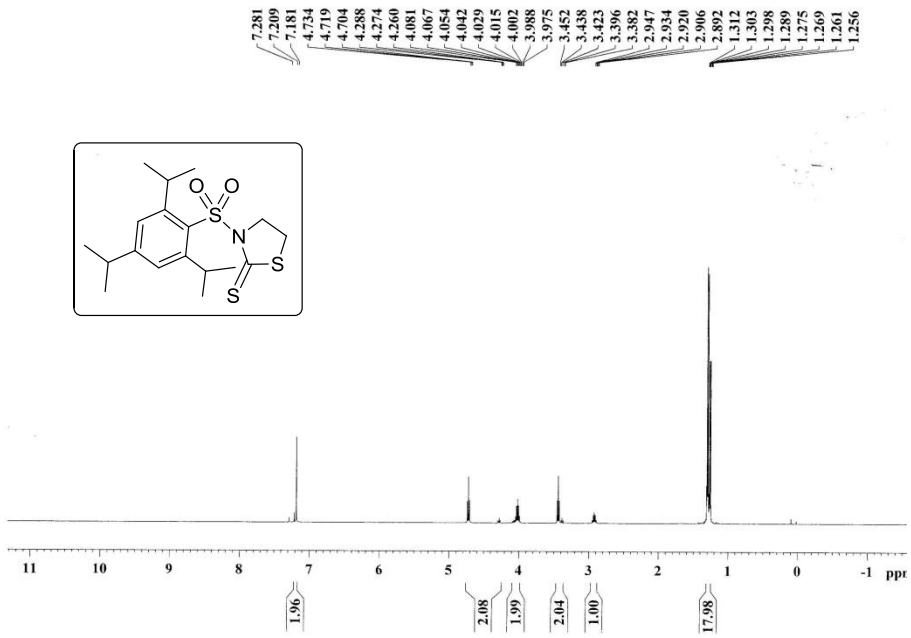

Figure S59. ^{1}H NMR spectrum of compound **32**

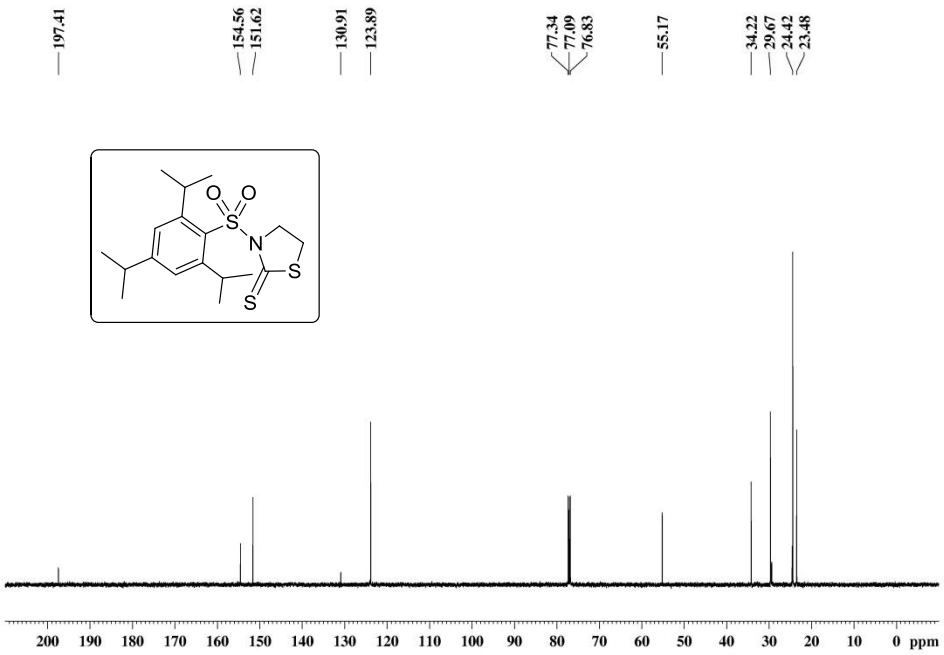

Figure S60. ^{13}C NMR spectrum of compound **32**

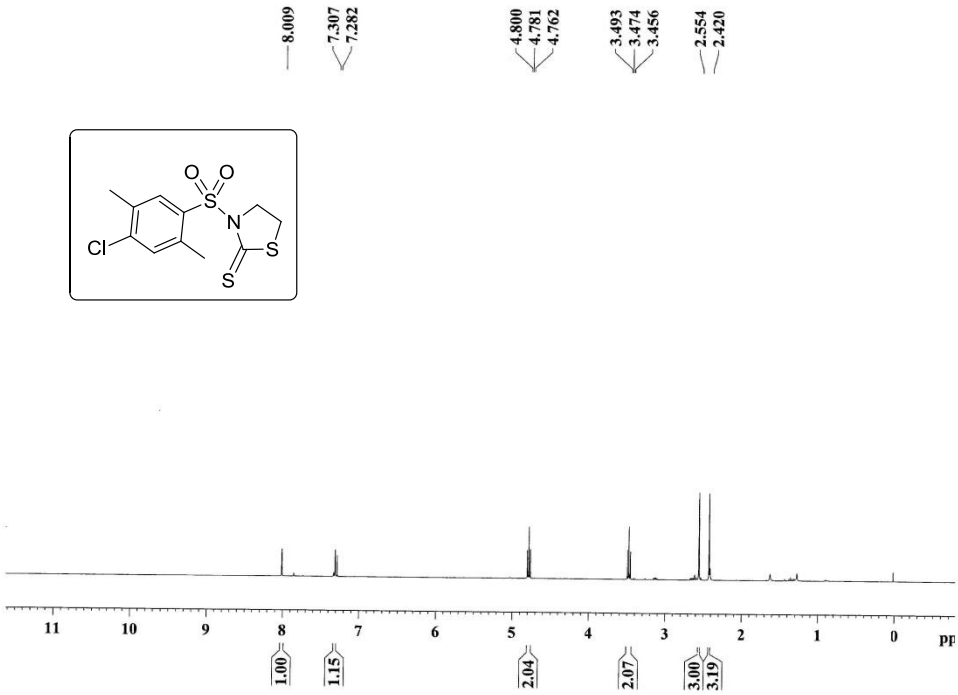

Figure S61. ^{1}H NMR spectrum of compound **33**

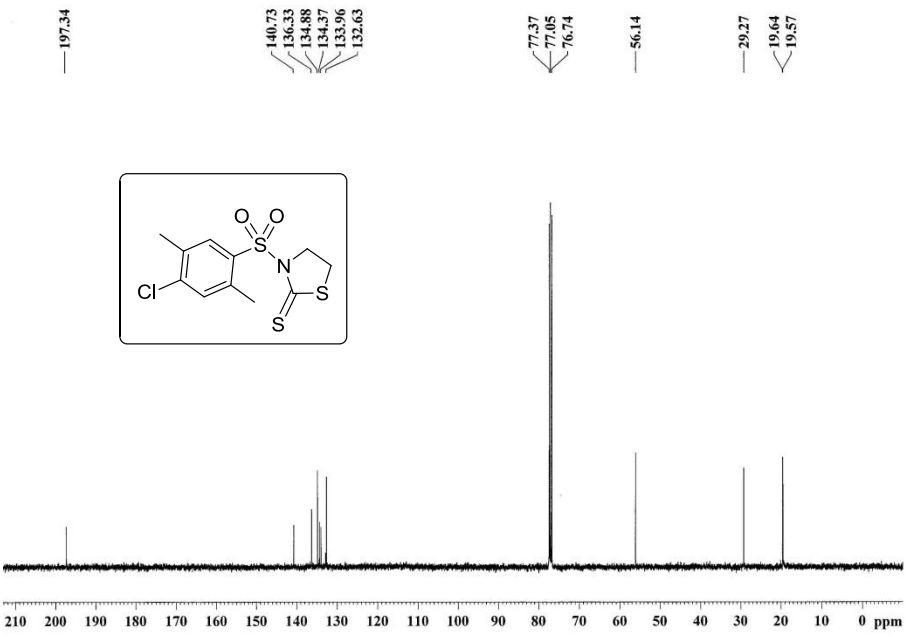

Figure S62. ^{13}C NMR spectrum of compound **33**

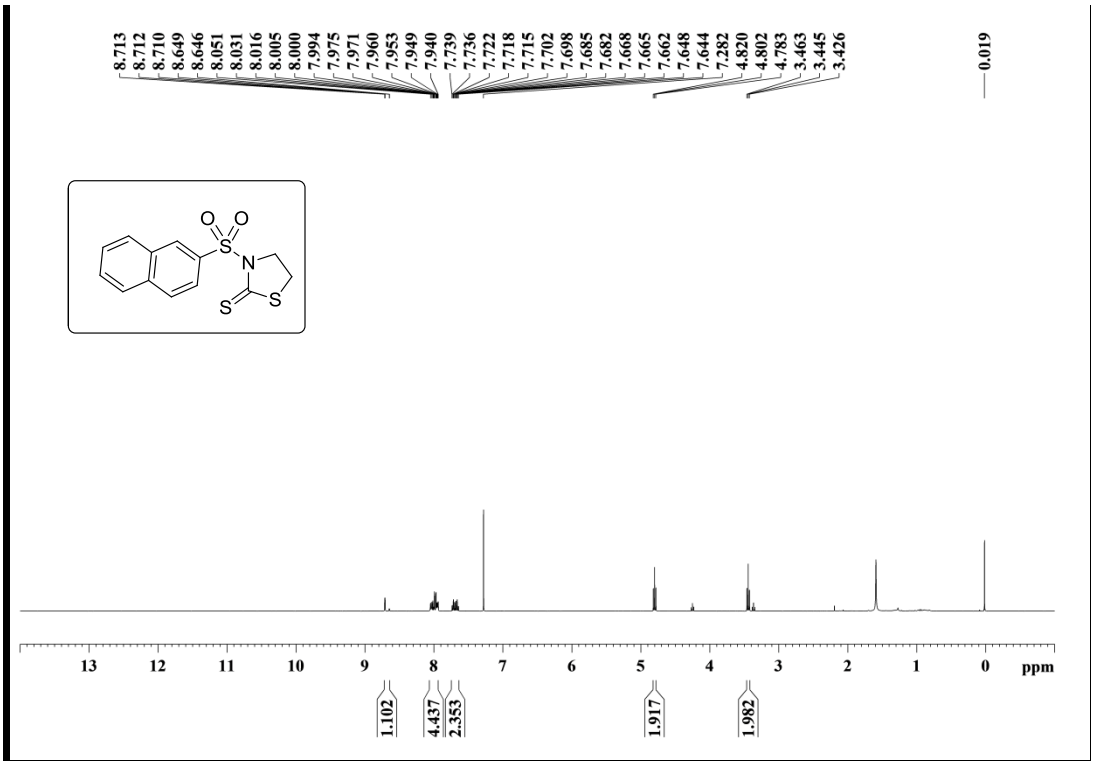

Figure S63. ^{1}H NMR spectrum of compound **34**

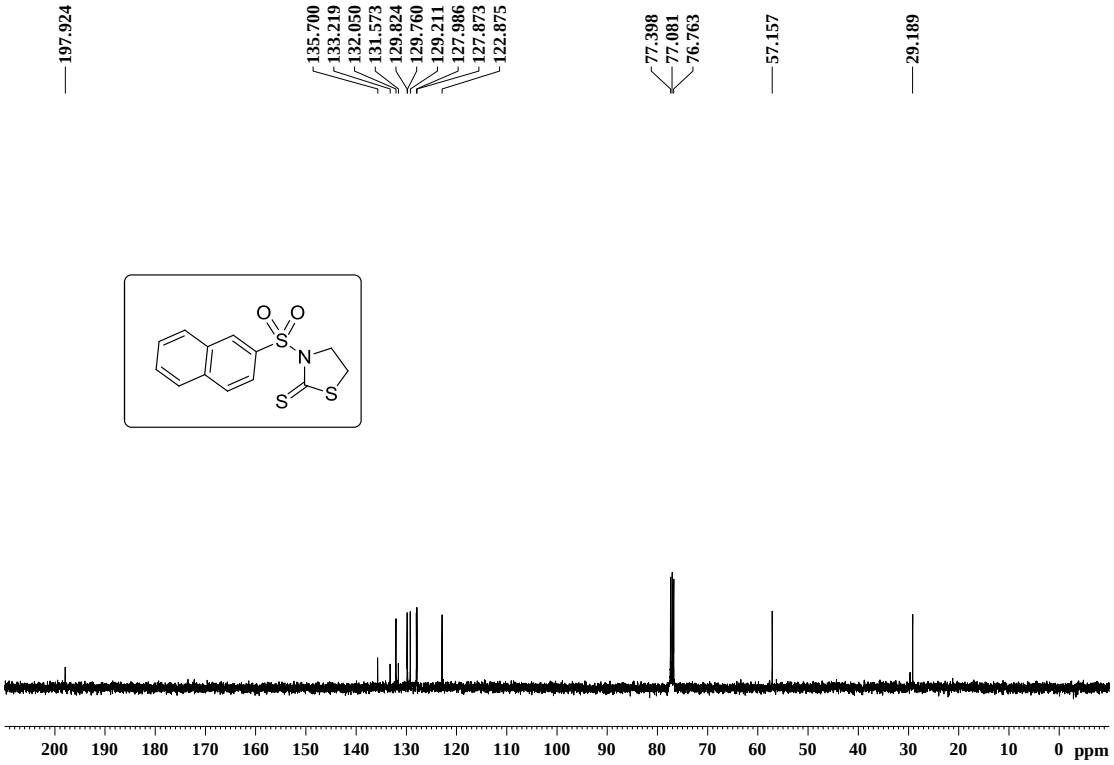

Figure S64. ^{13}C NMR spectrum of compound **34**

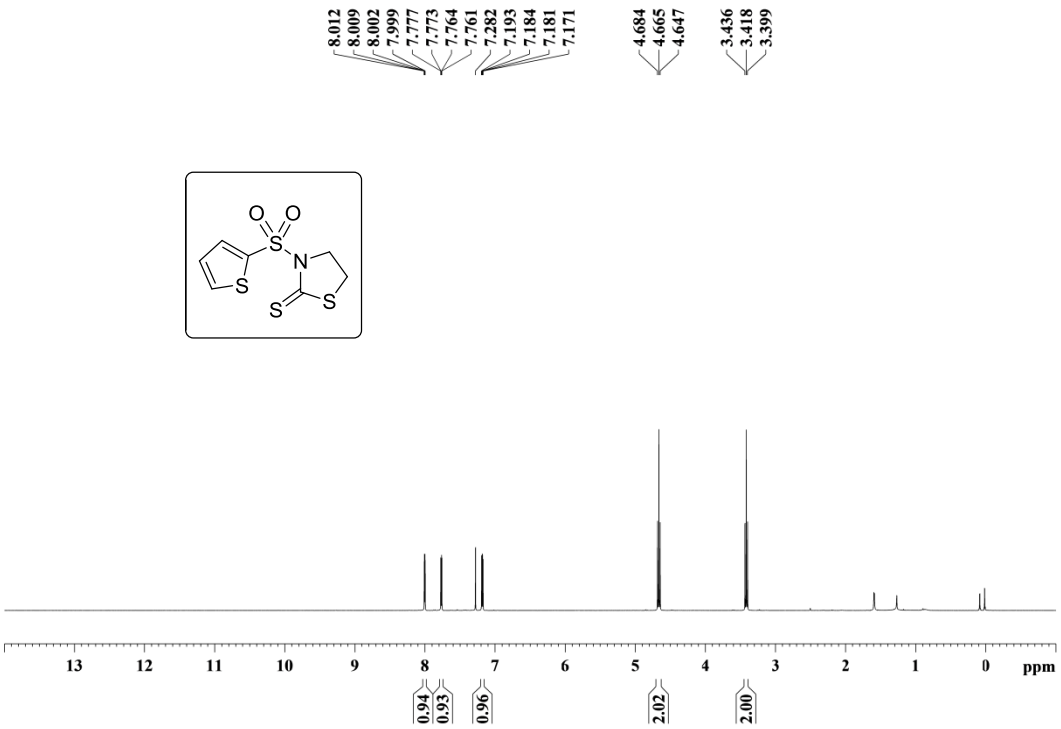

Figure S65. ^{1}H NMR spectrum of compound **35**

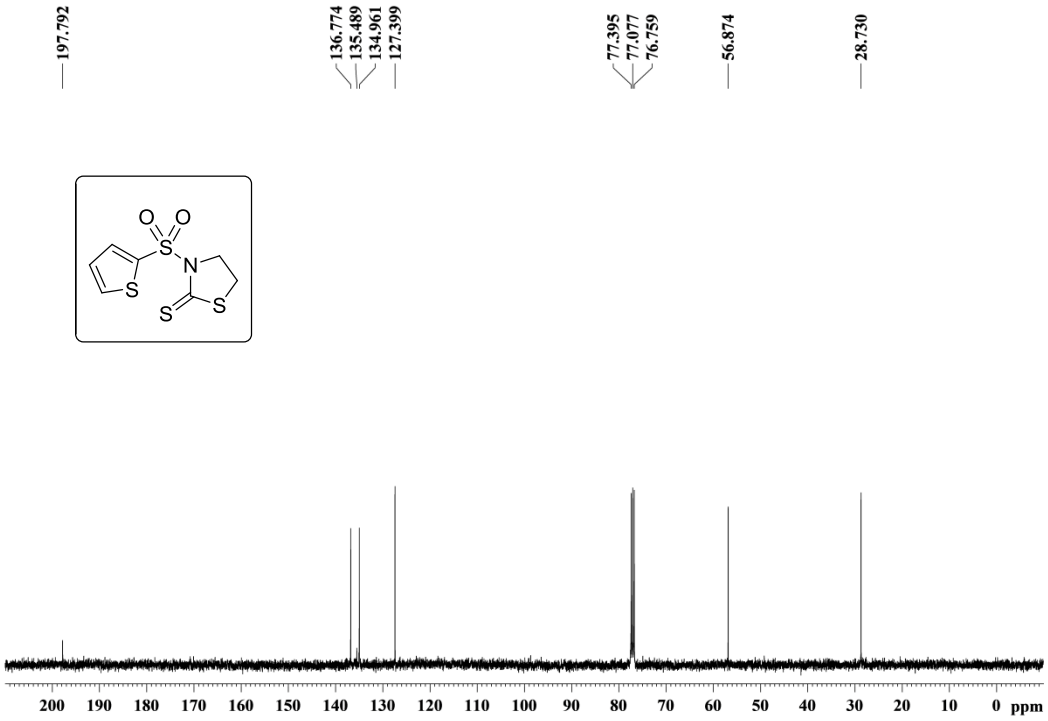

Figure S66. ^{13}C NMR spectrum of compound **35**

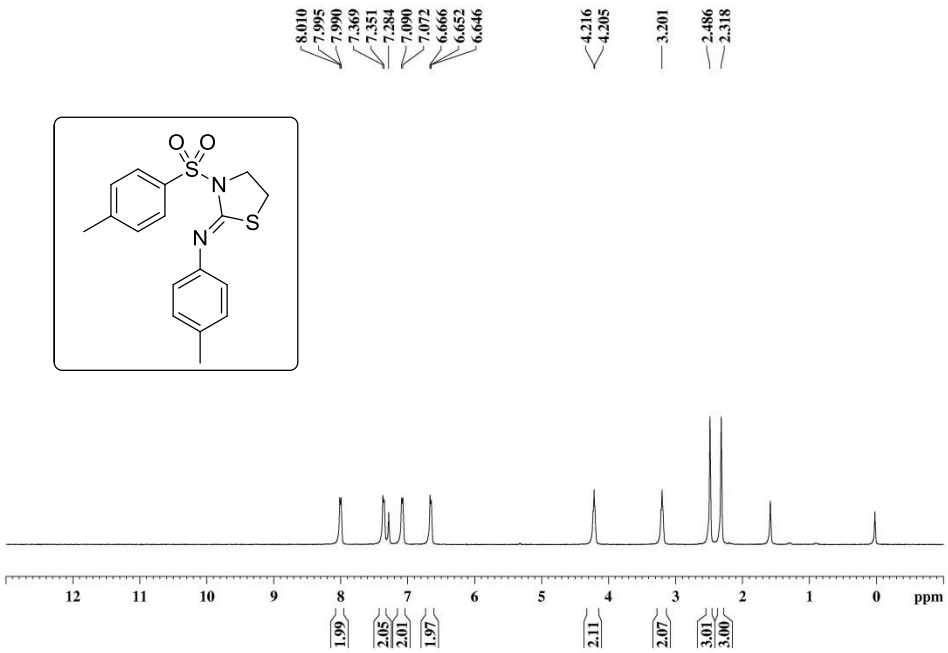

Figure S67. ^{1}H NMR spectrum of compound **37**

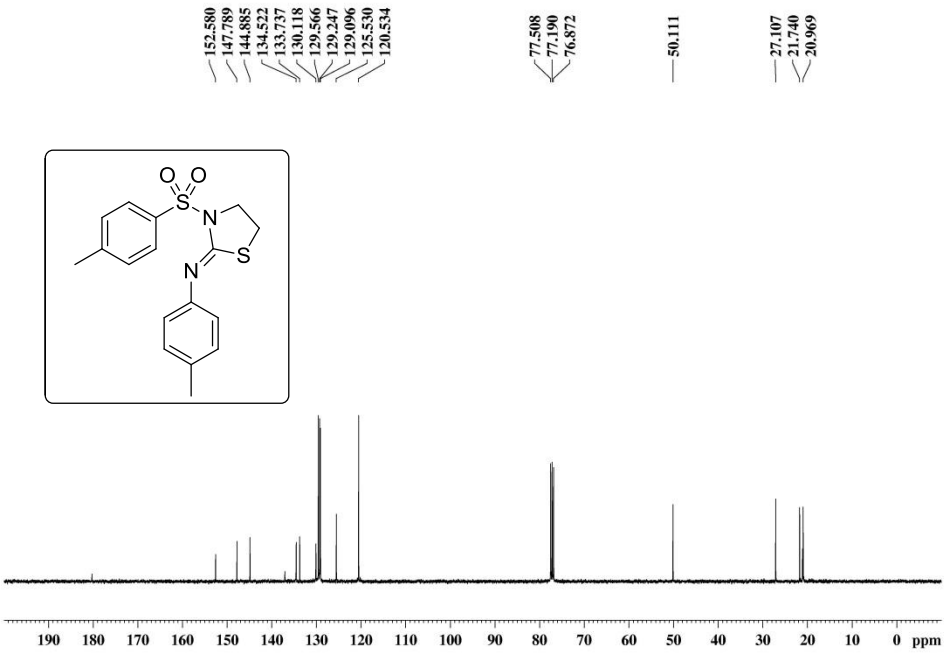

Figure S68. ^{13}C NMR spectrum of compound **37**

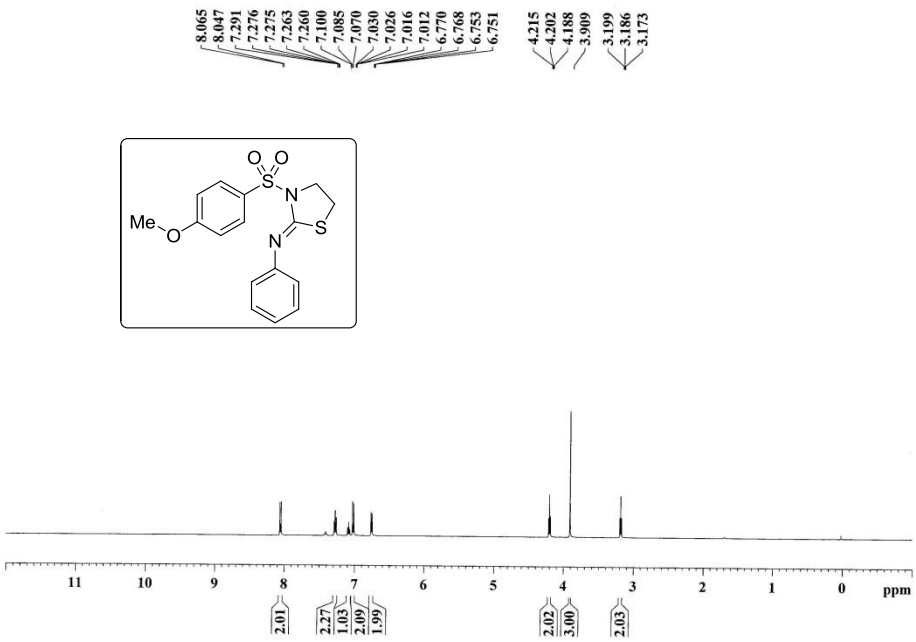

Figure S69. ^{1}H NMR spectrum of compound **38**

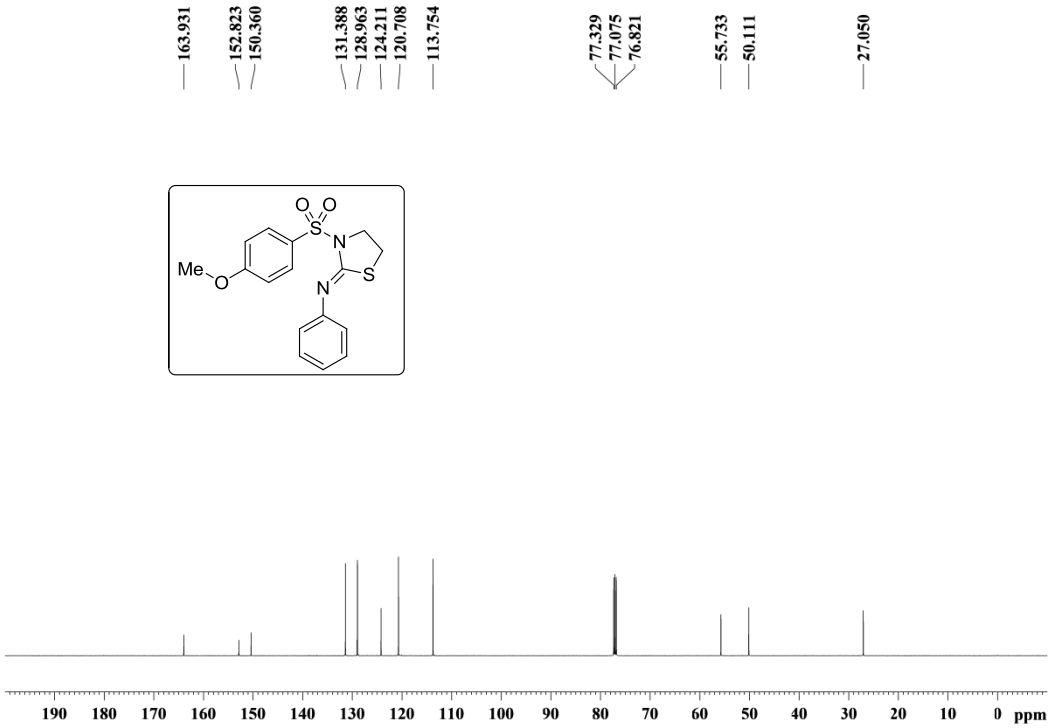

Figure S70. ^{13}C NMR spectrum of compound **38**

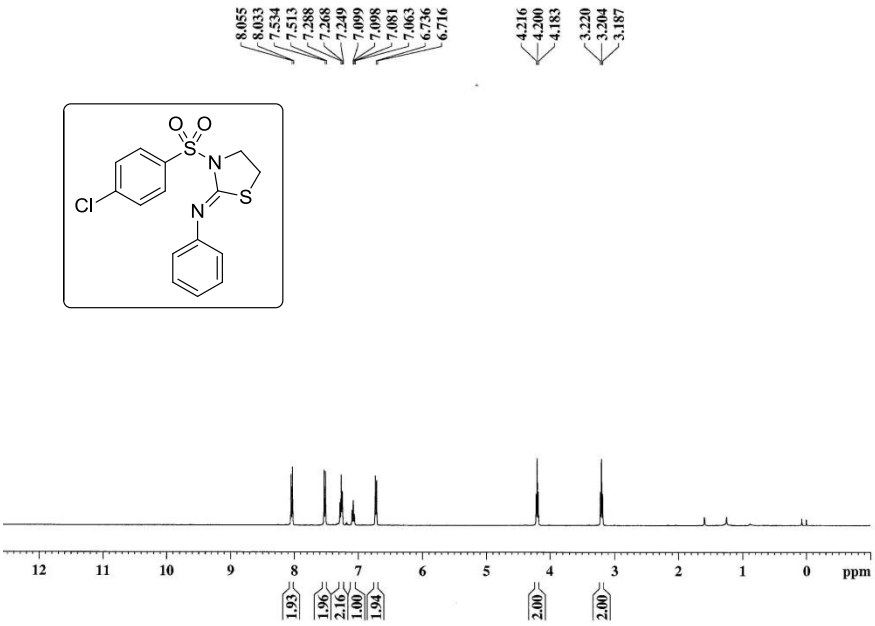

Figure S71. ^{1}H NMR spectrum of compound **39**

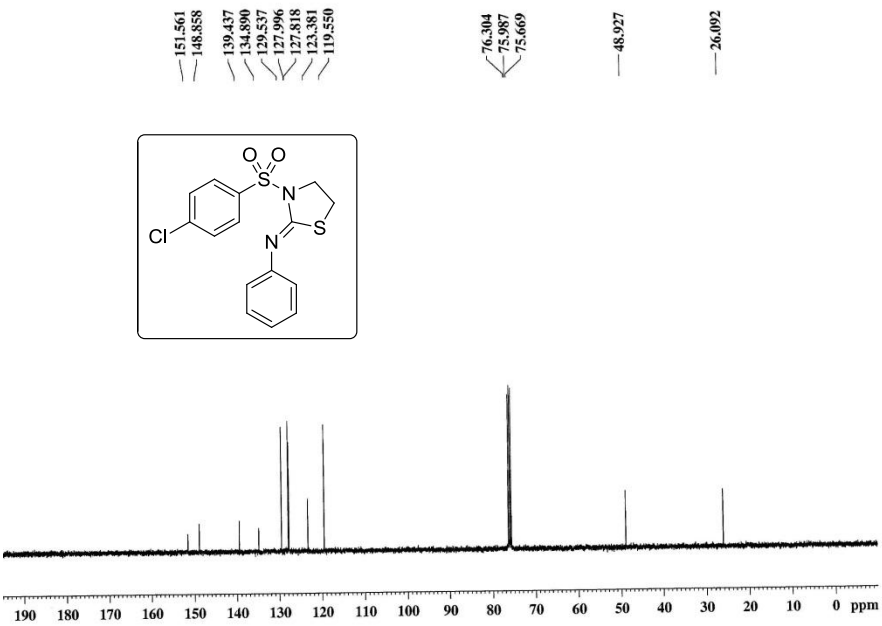

Figure S72. ^{13}C NMR spectrum of compound **39**

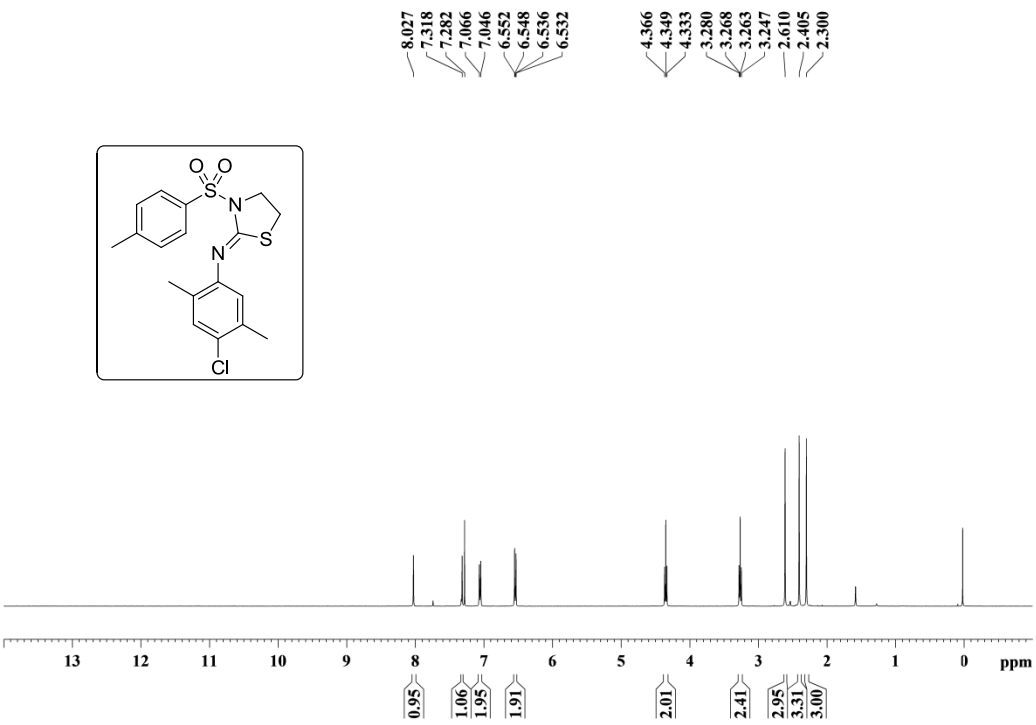

Figure S73. ^{1}H NMR spectrum of compound **40**

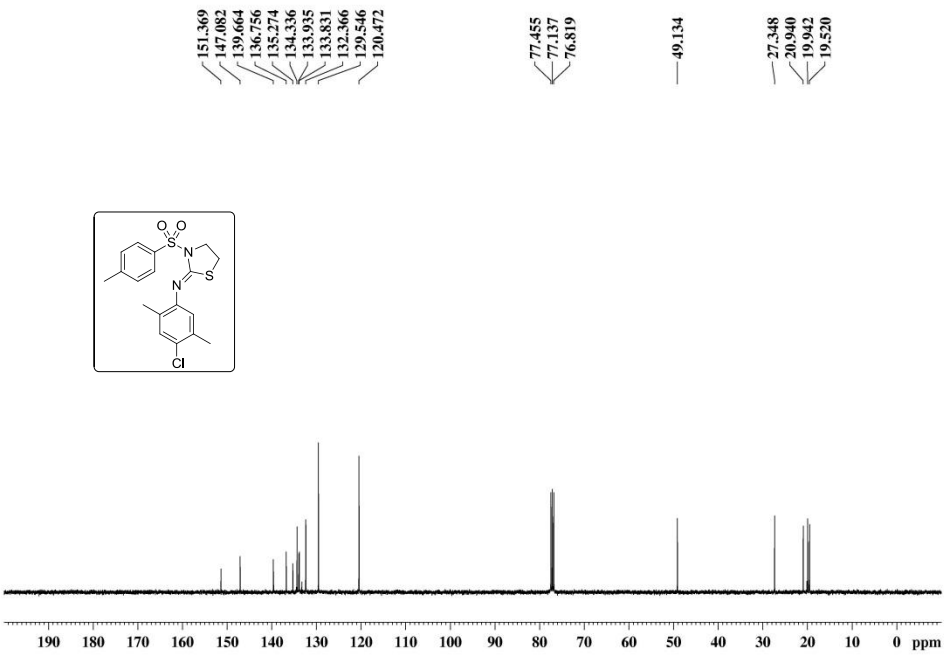

Figure S74. ^{13}C NMR spectrum of compound **40**

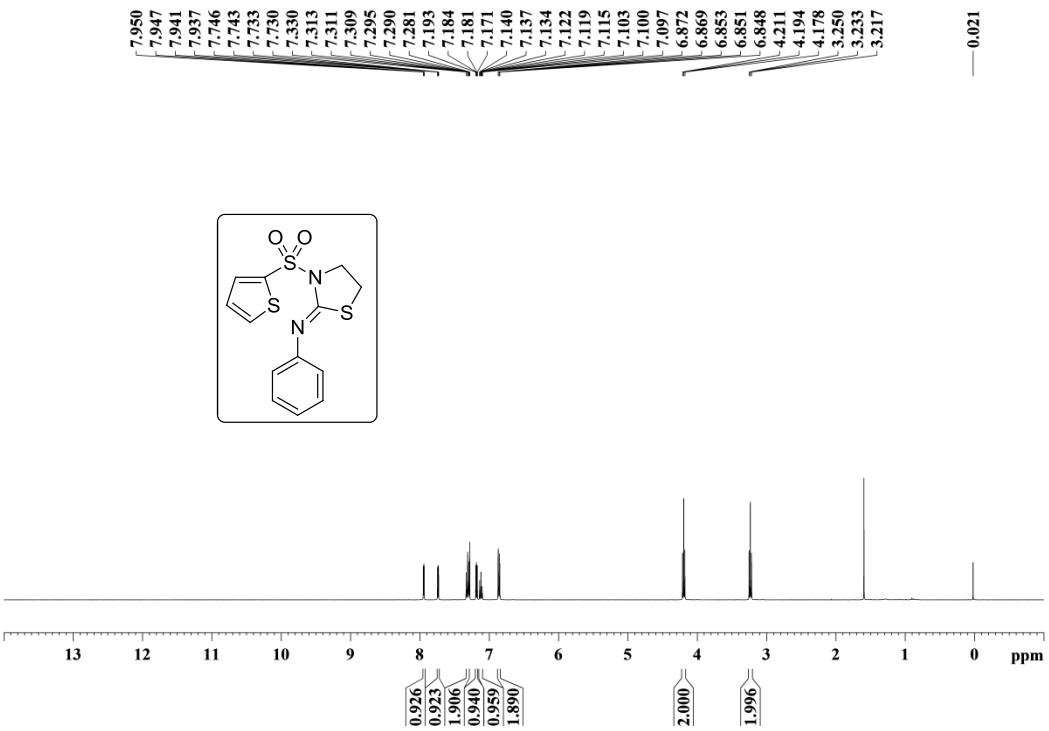

Figure S75. ^{1}H NMR spectrum of compound **41**

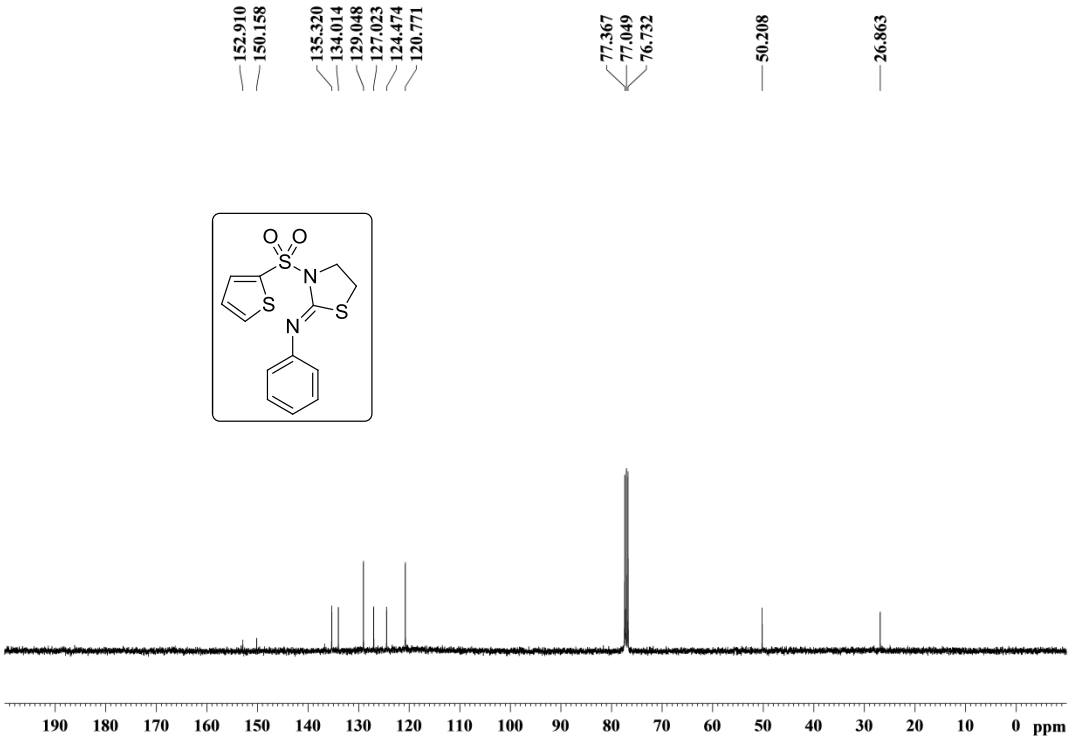

Figure S76. ^{13}C NMR spectrum of compound **41**

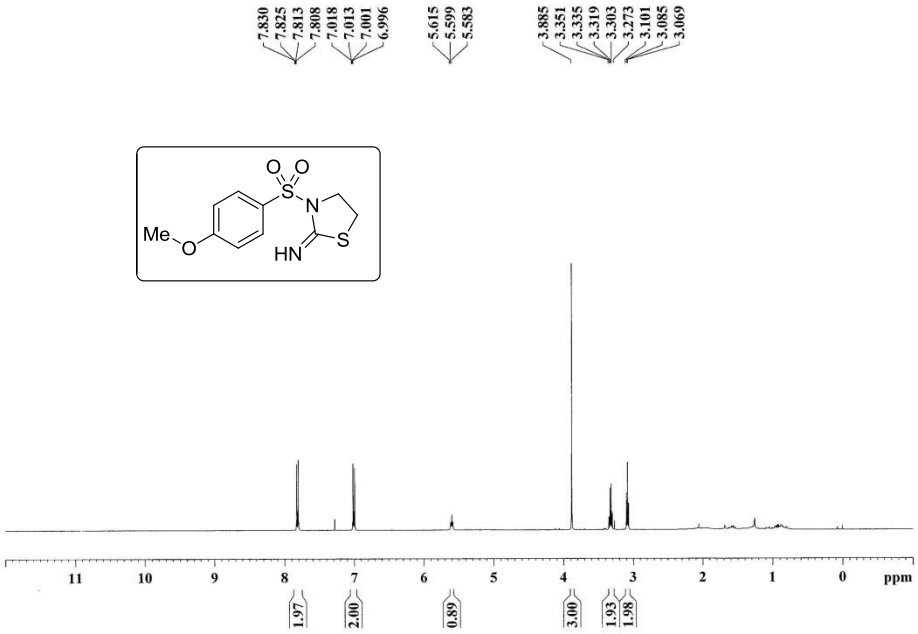

Figure S77. ^{1}H NMR spectrum of compound **42**

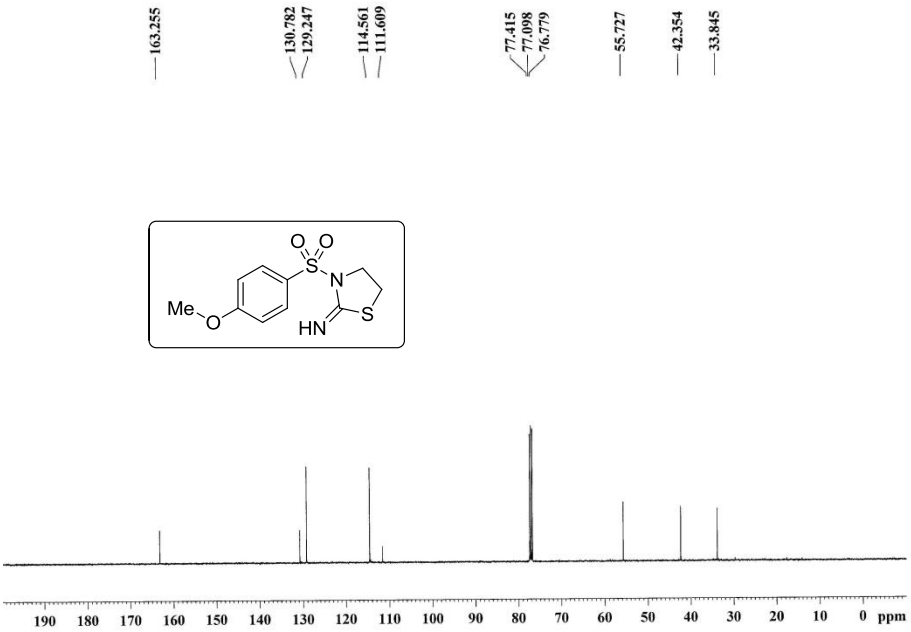

Figure S78. ^{13}C NMR spectrum of compound **42**

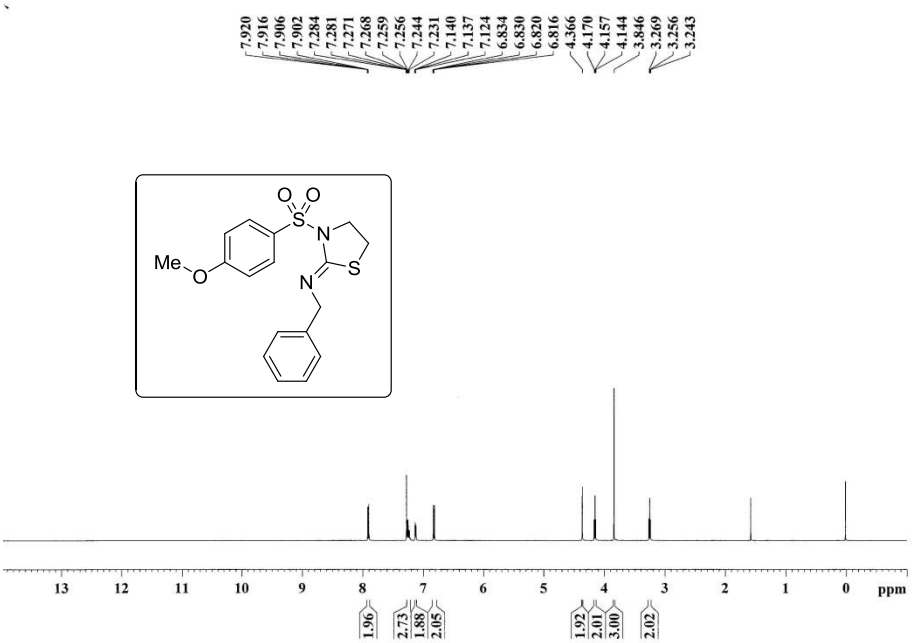

Figure S79. ^{1}H NMR spectrum of compound **43**

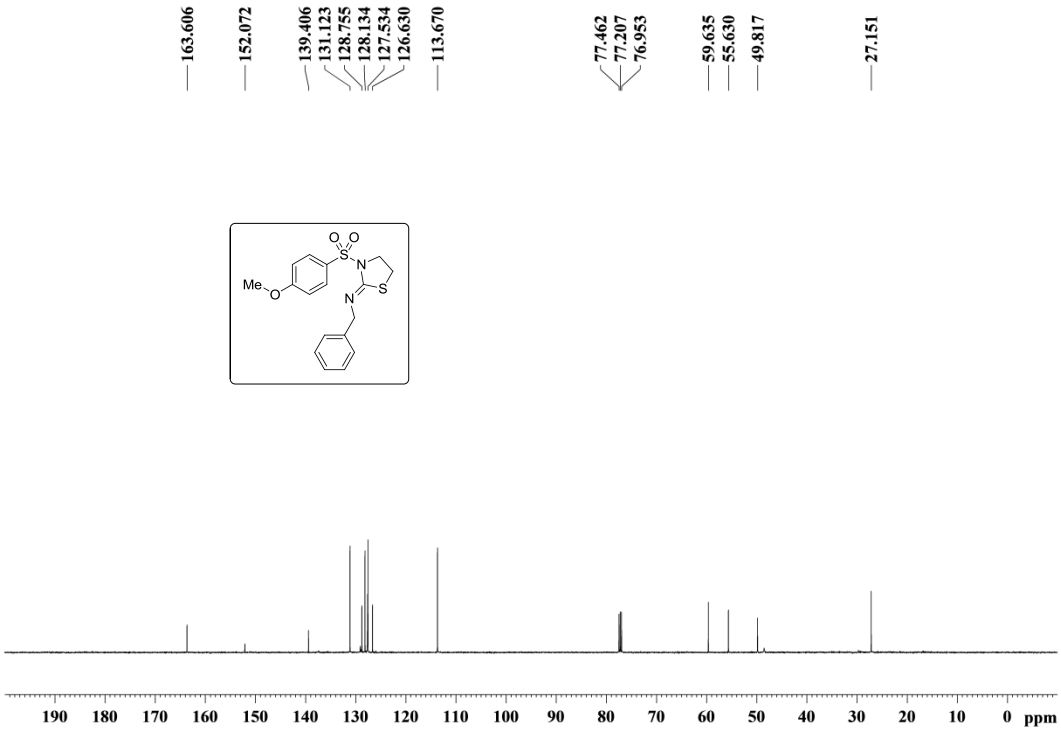

Figure S80. ^{13}C NMR spectrum of compound **43**

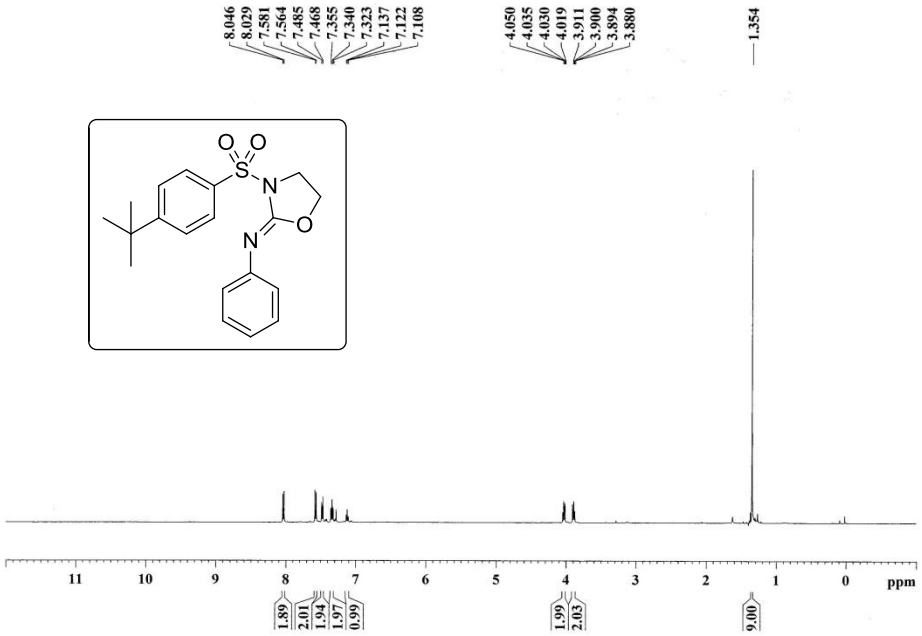

Figure S81. ^{1}H NMR spectrum of compound **44**

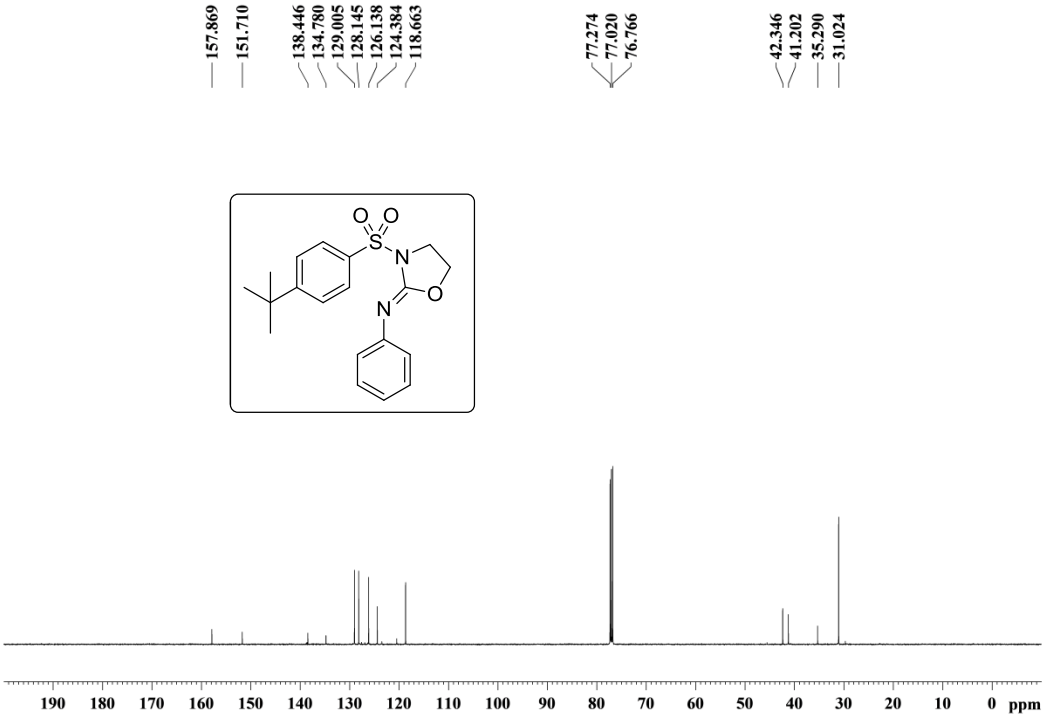

Figure S82. ^{13}C NMR spectrum of compound **44**

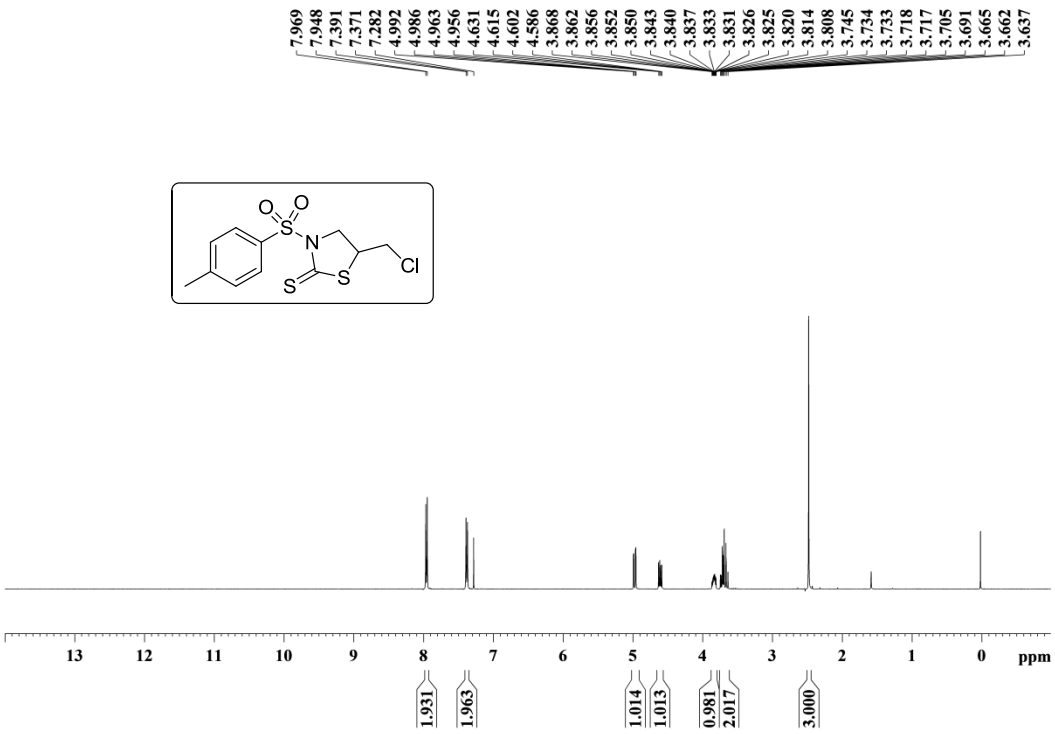

Figure S83. ^{1}H NMR spectrum of compound **46**

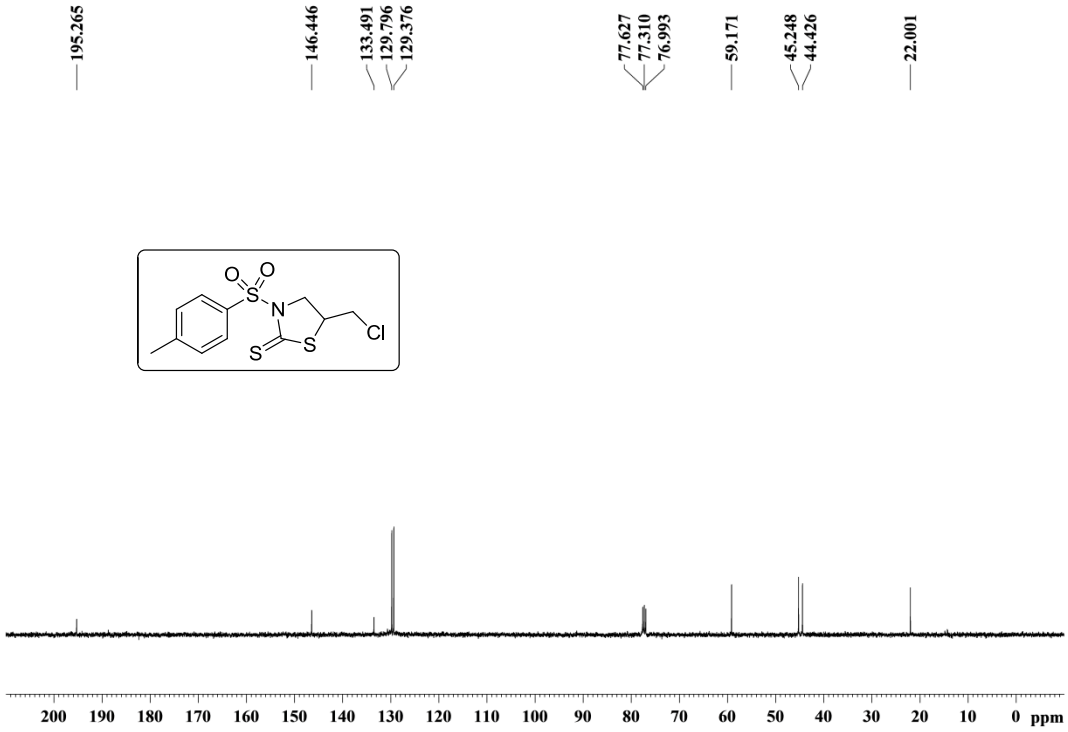

Figure S84. ^{13}C NMR spectrum of compound **46**

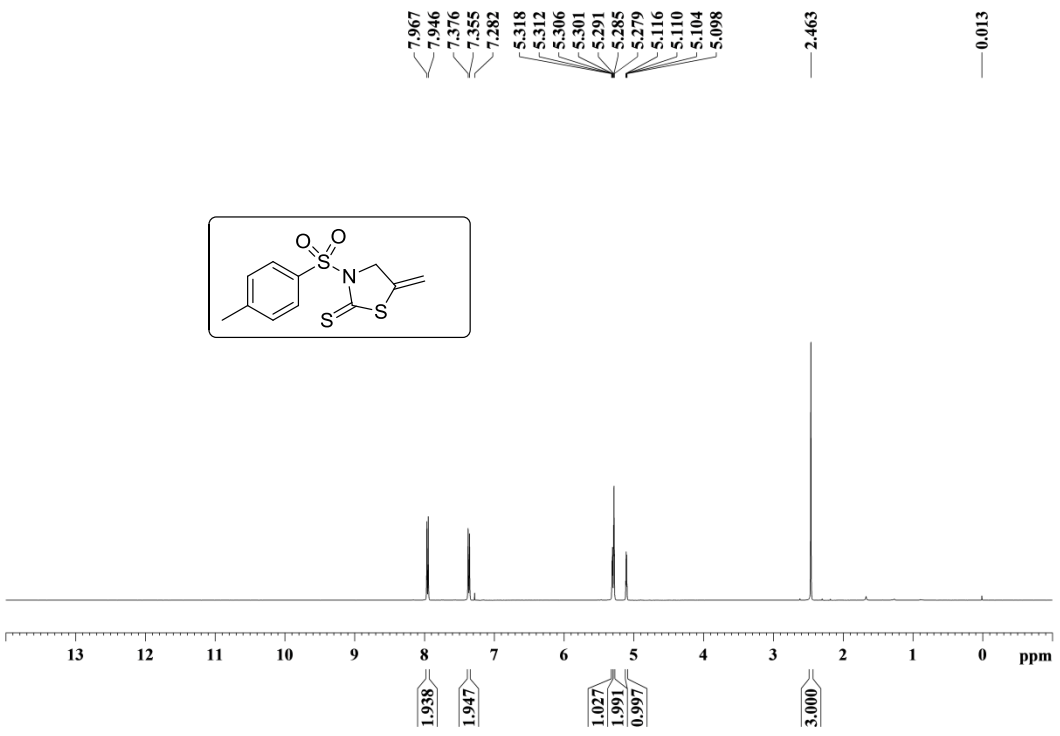

Figure S85. ^{1}H NMR spectrum of compound **47**

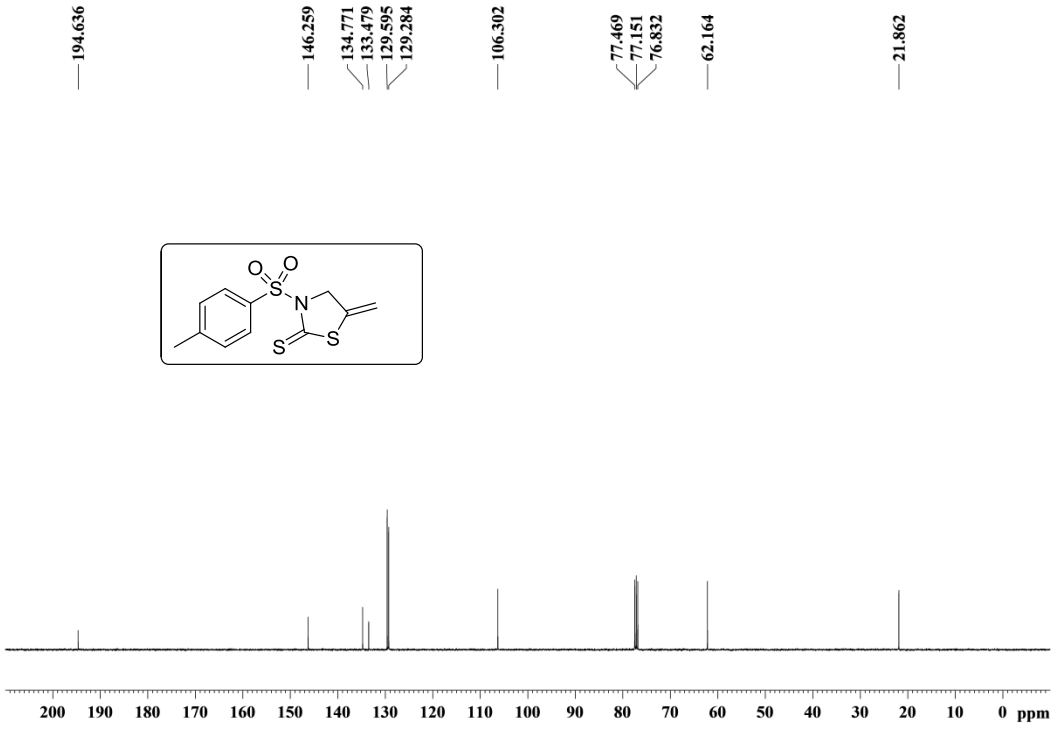

Figure S86. ^{13}C NMR spectrum of compound **47**

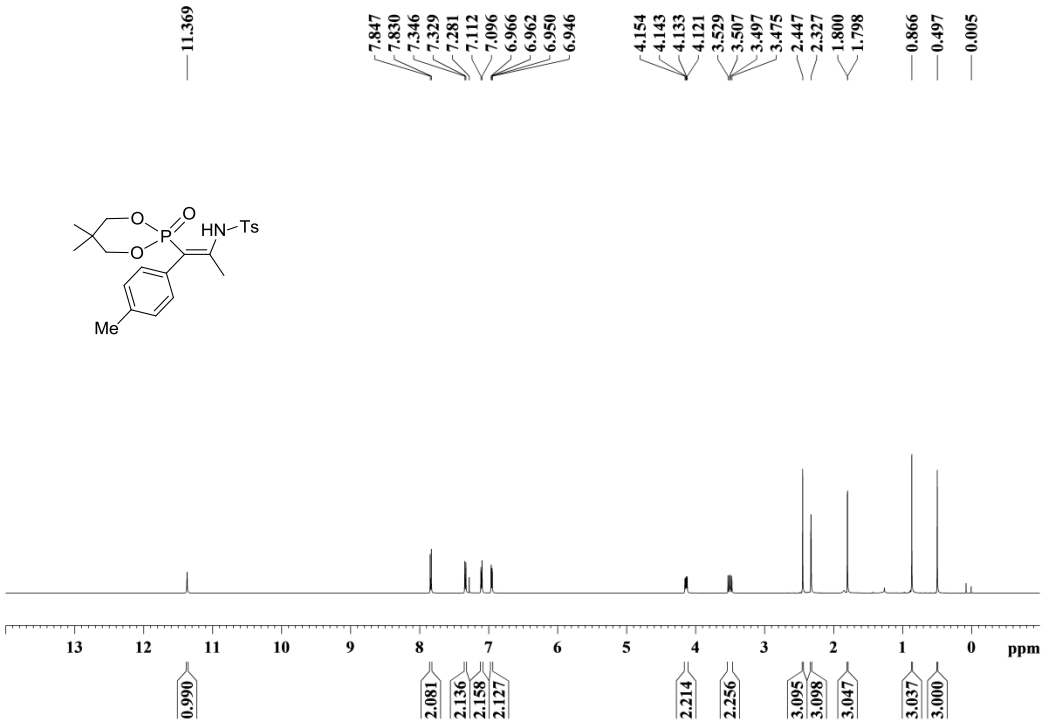

Figure S87. ^{1}H NMR spectrum of compound **49**

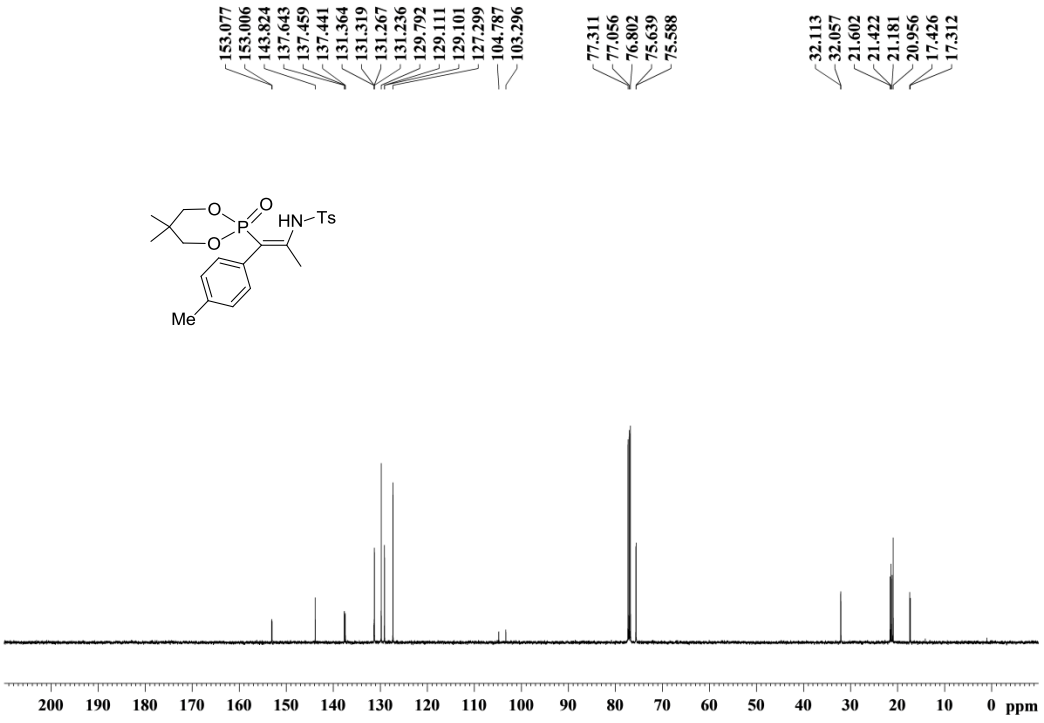

Figure S88. ^{13}C NMR spectrum of compound **49**