Electronic Supplementary Information (ESI)

Iodine Mediated Oxidative Rearrangement of *α,β*-Unsaturated Diaryl Ketones : A Facile Access to 1,2-Diaryl Diketones

Ajay H. Bansode[†‡] and Gurunath Surayvanshi*[†‡]

[†]Chemical Engineering & Process Development Division, CSIR-National Chemical Laboratory,

Dr. Homi Bhabha Road, Pune, Maharashtra, India- 411008.

[‡]Academy of Scientific and Innovative Research (AcSIR), New Delhi 110 025, India

*Corresponding author: Tel.: +91 20 25902547, Fax: +91 20 25902676

e-mail: gm.suryavanshi@ncl.res.in

Table of Contents:

1. GS-MS Analysis:

1.1. GC-MS analysis of standard HCOOH:

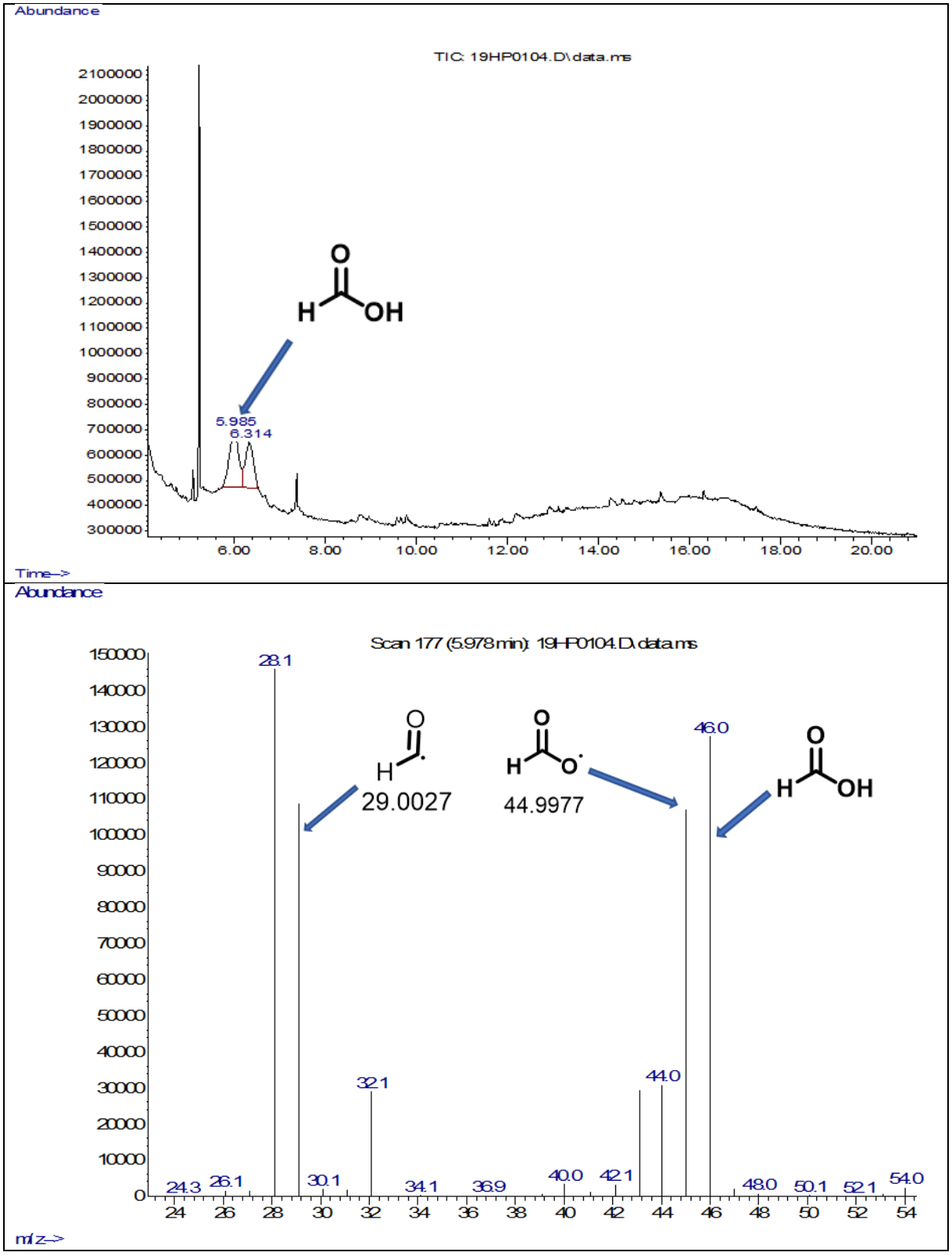


Figure S1. GC-MS Analysis of Standard Formic Acid.

1.2. GC-MS Analysis of Reaction Mixture:

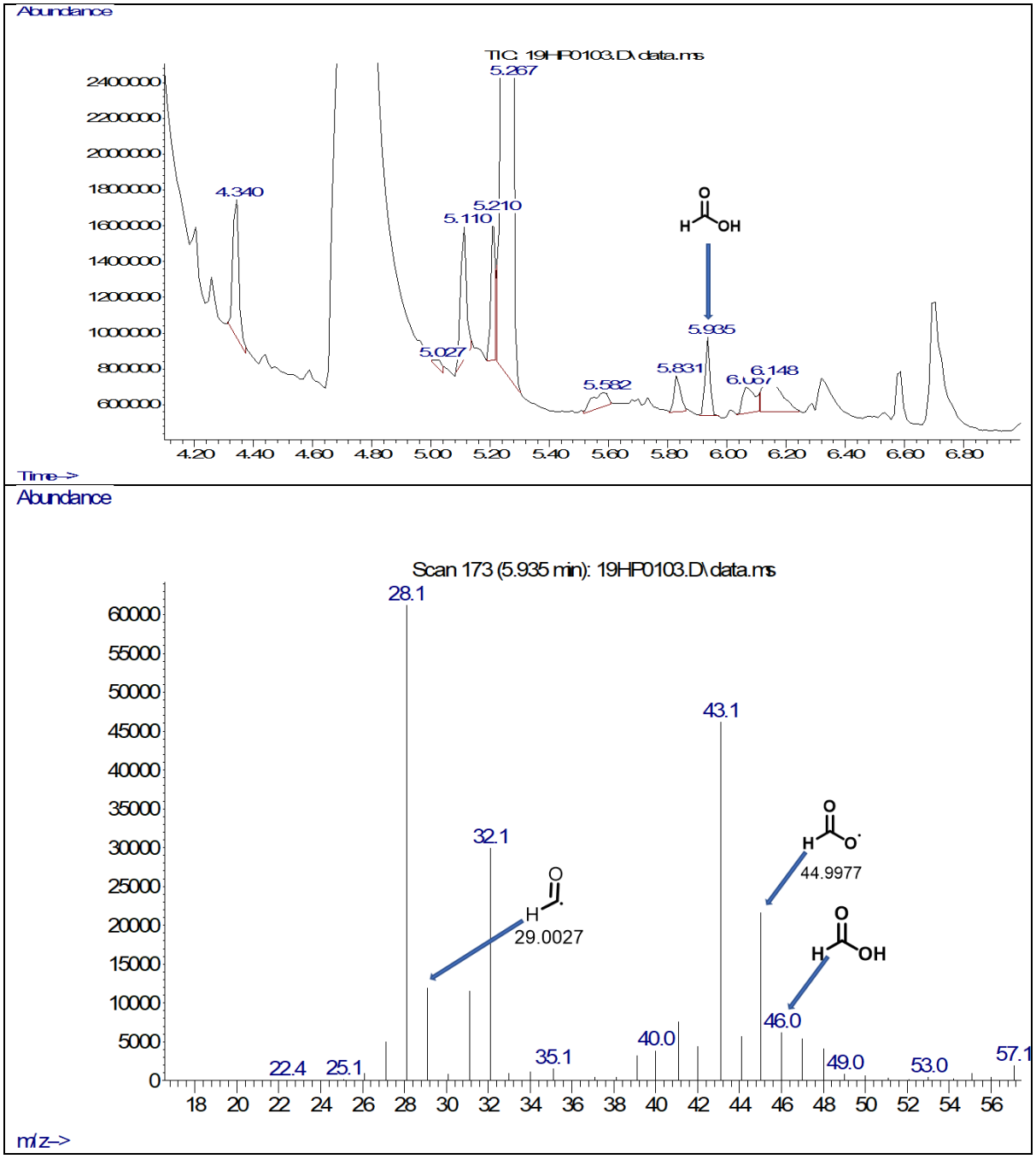


Figure S2. GC-MS Analysis of Reaction Mixture.

The GC-MS analysis was done using Agilent 7890A GC coupled with a mass detector. The injector and detector were operated at 250 °C, respectively. The sample (2 μL) injected in the splitless mode (30 s), and the oven temperature programmed as follows: 40 °C for 0 min, raised to 150 °C (10 °C/min), raised to 250 °C (20 °C/min). The GC-MS analysis of a standard sample of formic acid was carried out. The peak at 5.985 shows mass 46 m/z which corresponds to formic acid (**Figure S1**). Similar GC-MS analysis was carried out on reaction mixture, and a peak at 5.935 showed mass 46 m/z which corresponds to formic acid formed as a by-product in reaction (**Figure S2**).

^{1}H and ^{13}C NMR:

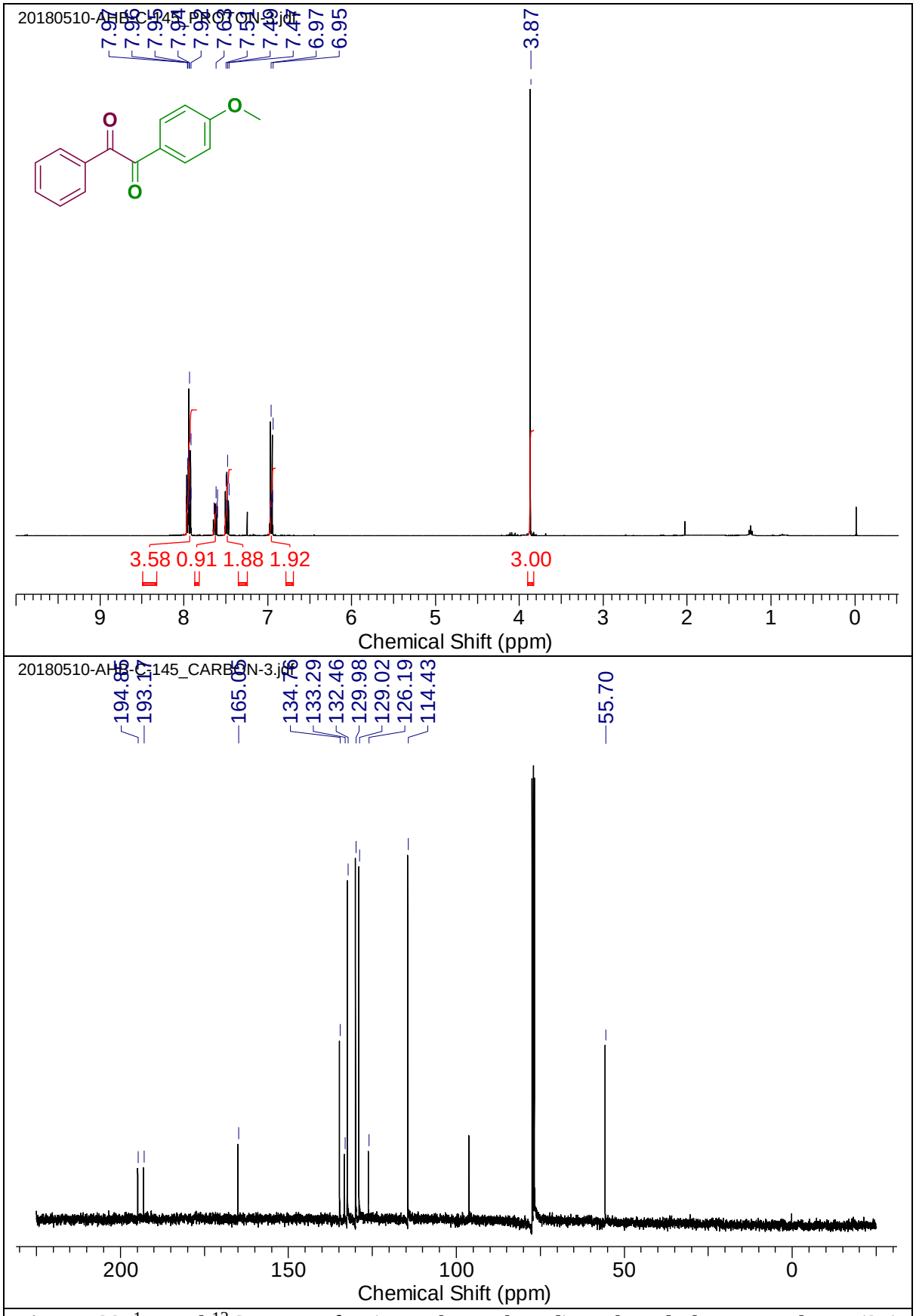


Figure S3. ^{1}H and ^{13}C NMR of 1-(4-methoxyphenyl)-2-phenylethane-1,2-dione **(2a)**

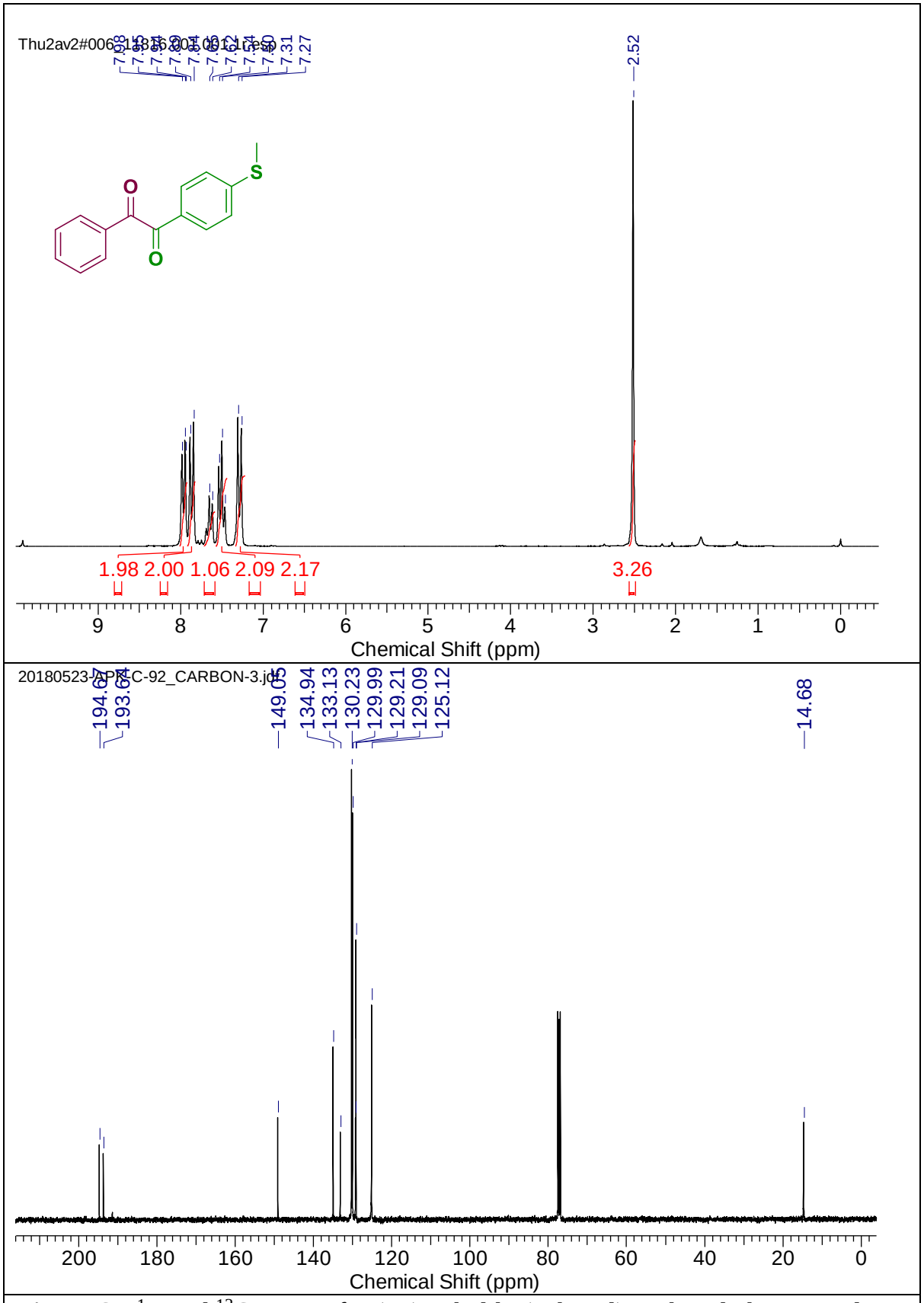


Figure S4. ^{1}H and ^{13}C NMR of 1-(4-(methylthio) phenyl)-2-phenylethane-1,2-dione **(2b)**

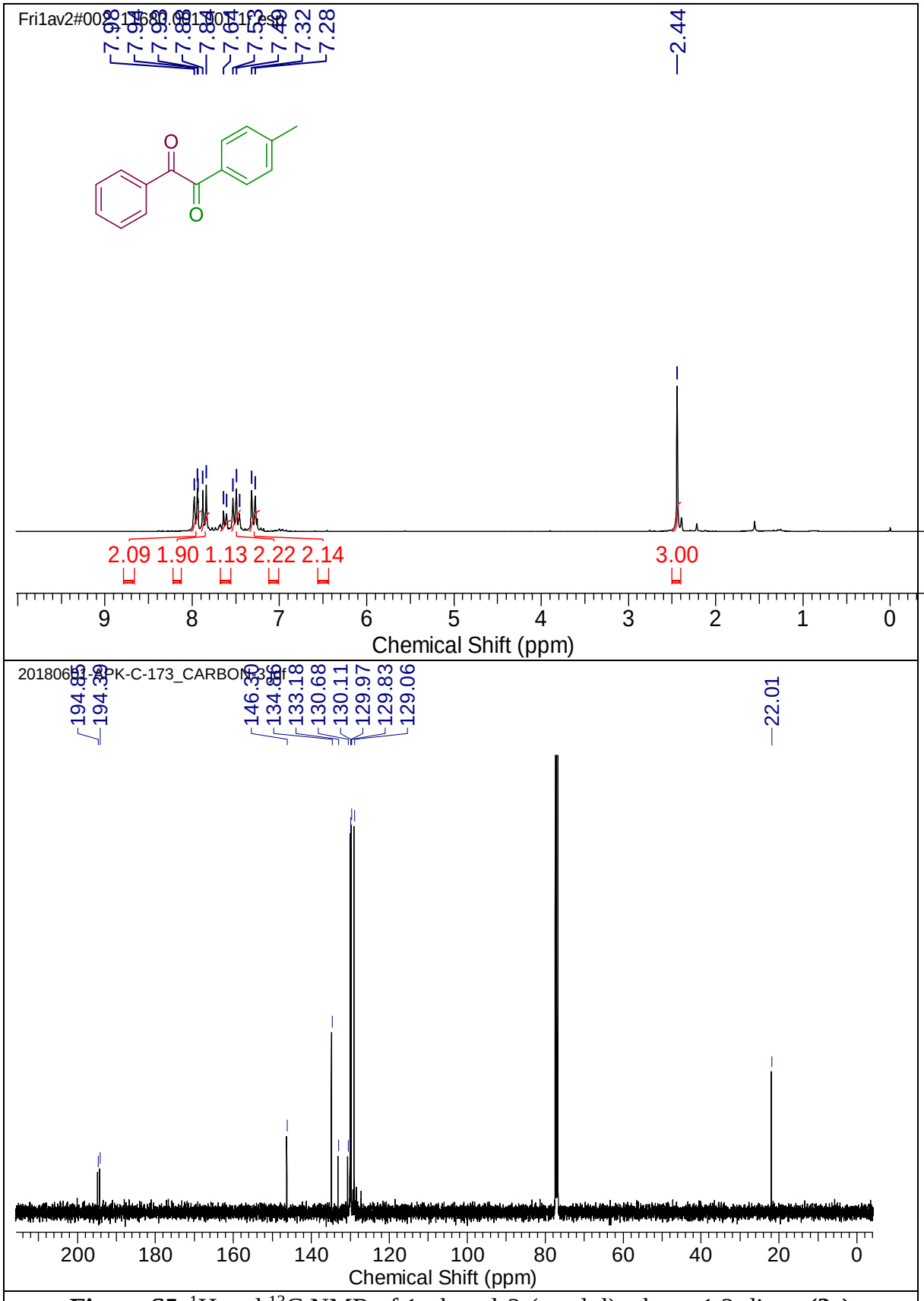


Figure S5. ^{1}H and ^{13}C NMR of 1-phenyl-2-(p-tolyl) ethane-1,2-dione **(2c)**

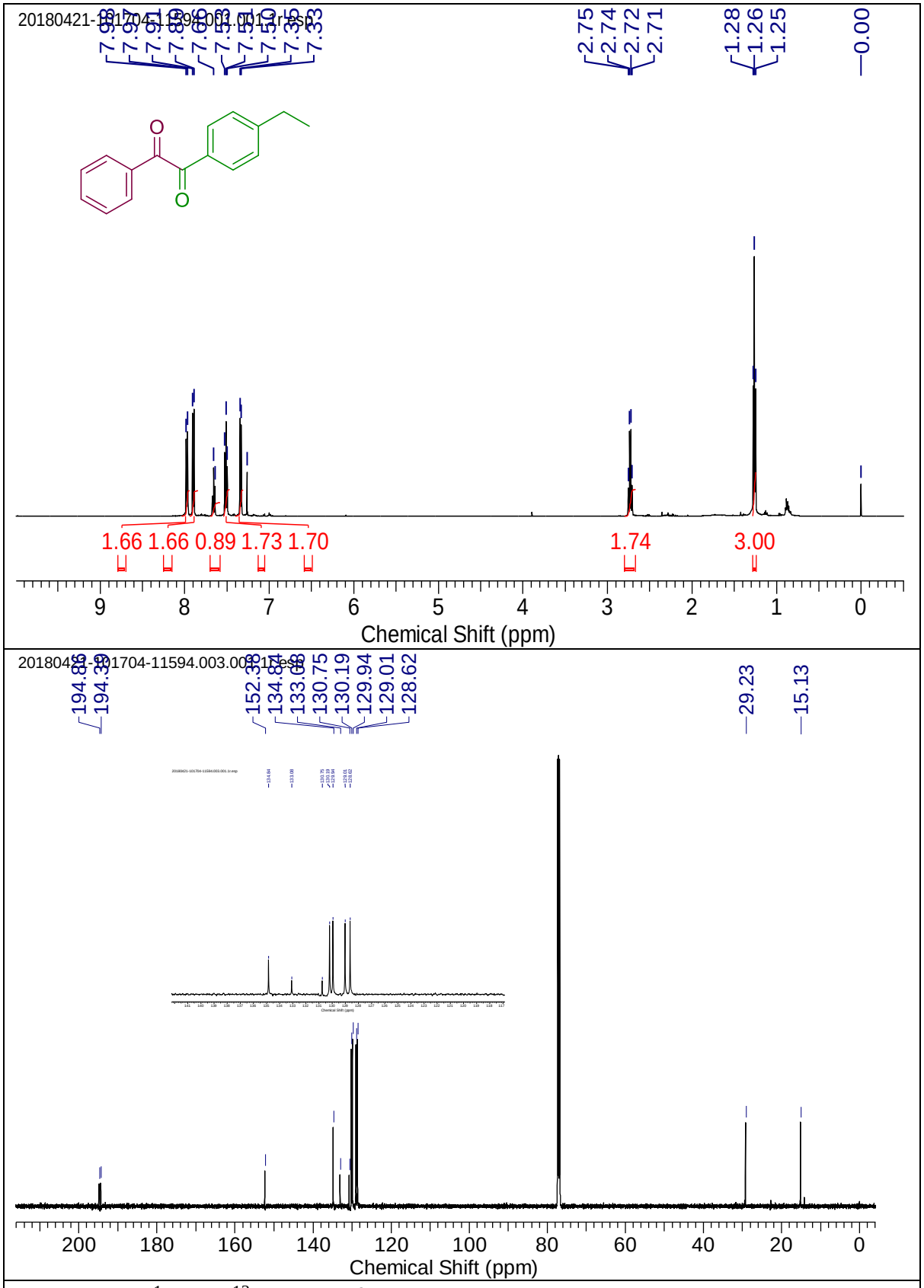


Figure S6. ^{1}H and ^{13}C NMR of 1-(4-ethylphenyl)-2-phenylethane-1,2-dione **(2d)**

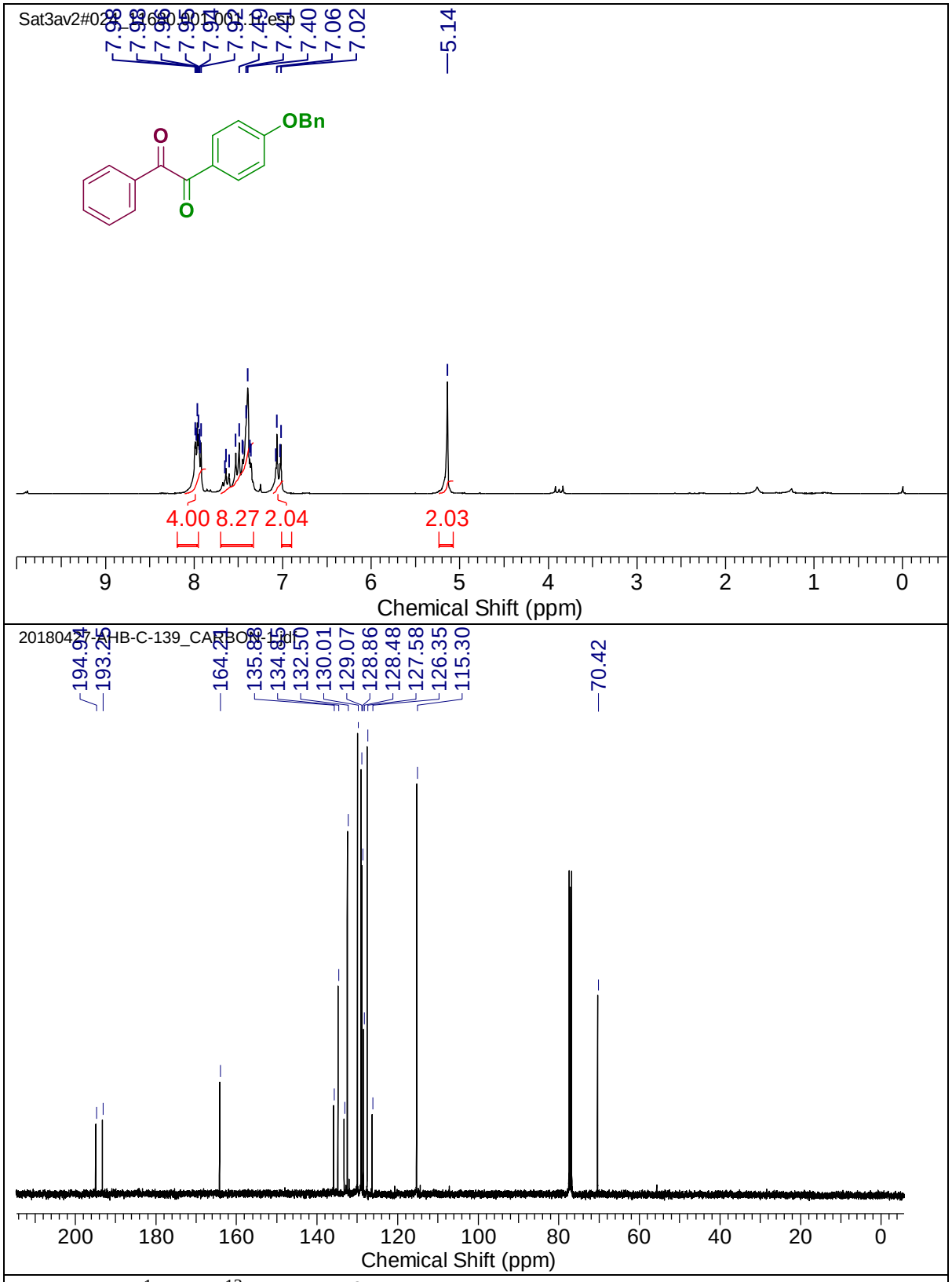


Figure S7. ^{1}H and ^{13}C NMR of 1-(4-(benzyloxy) phenyl)-2-phenylethane-1,2-dione **(2e)**

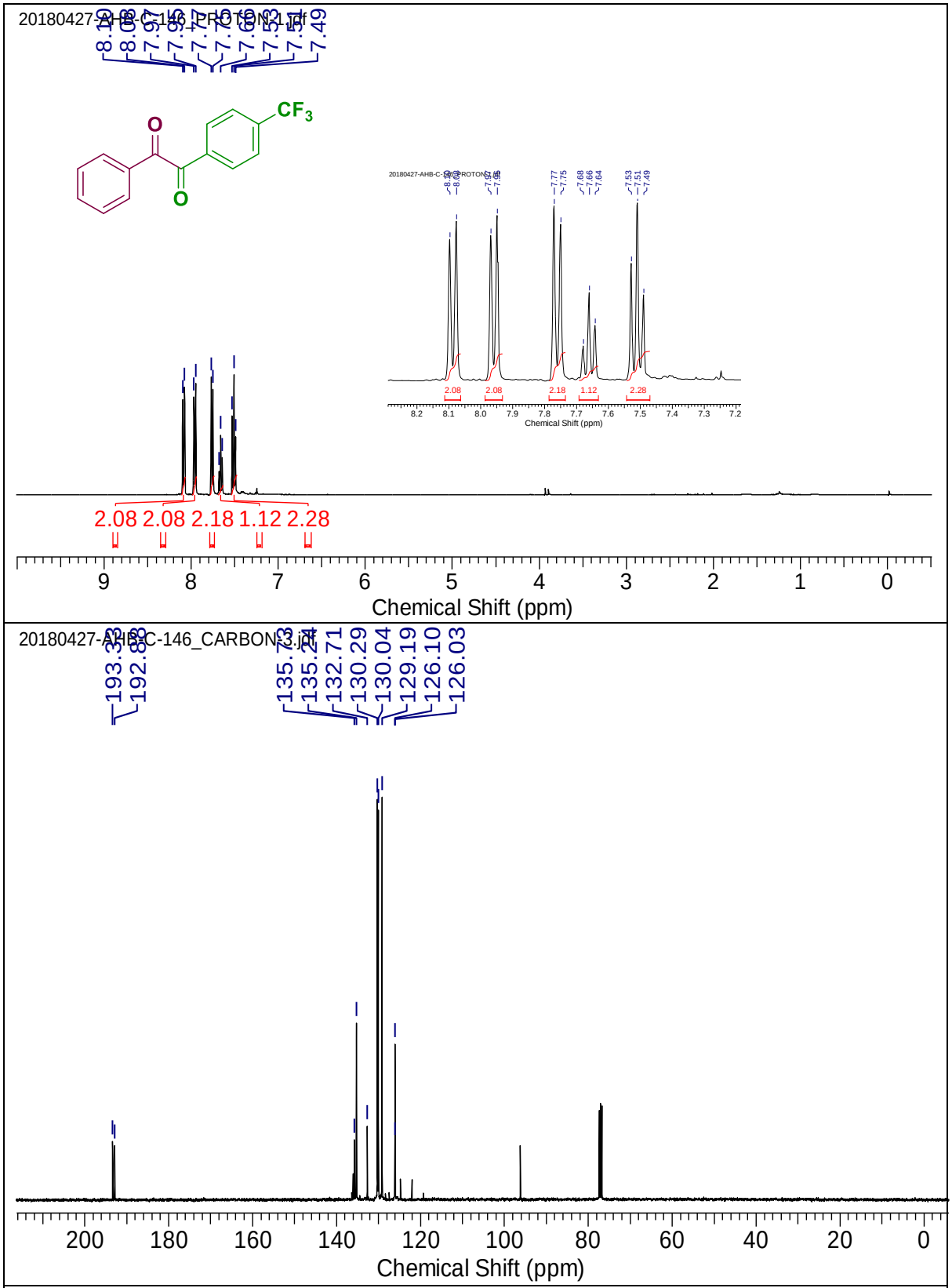


Figure S8. ^{1}H and ^{13}C NMR of 1-phenyl-2-(4-(trifluoromethyl) phenyl) ethane-1,2-dione **(2f)**

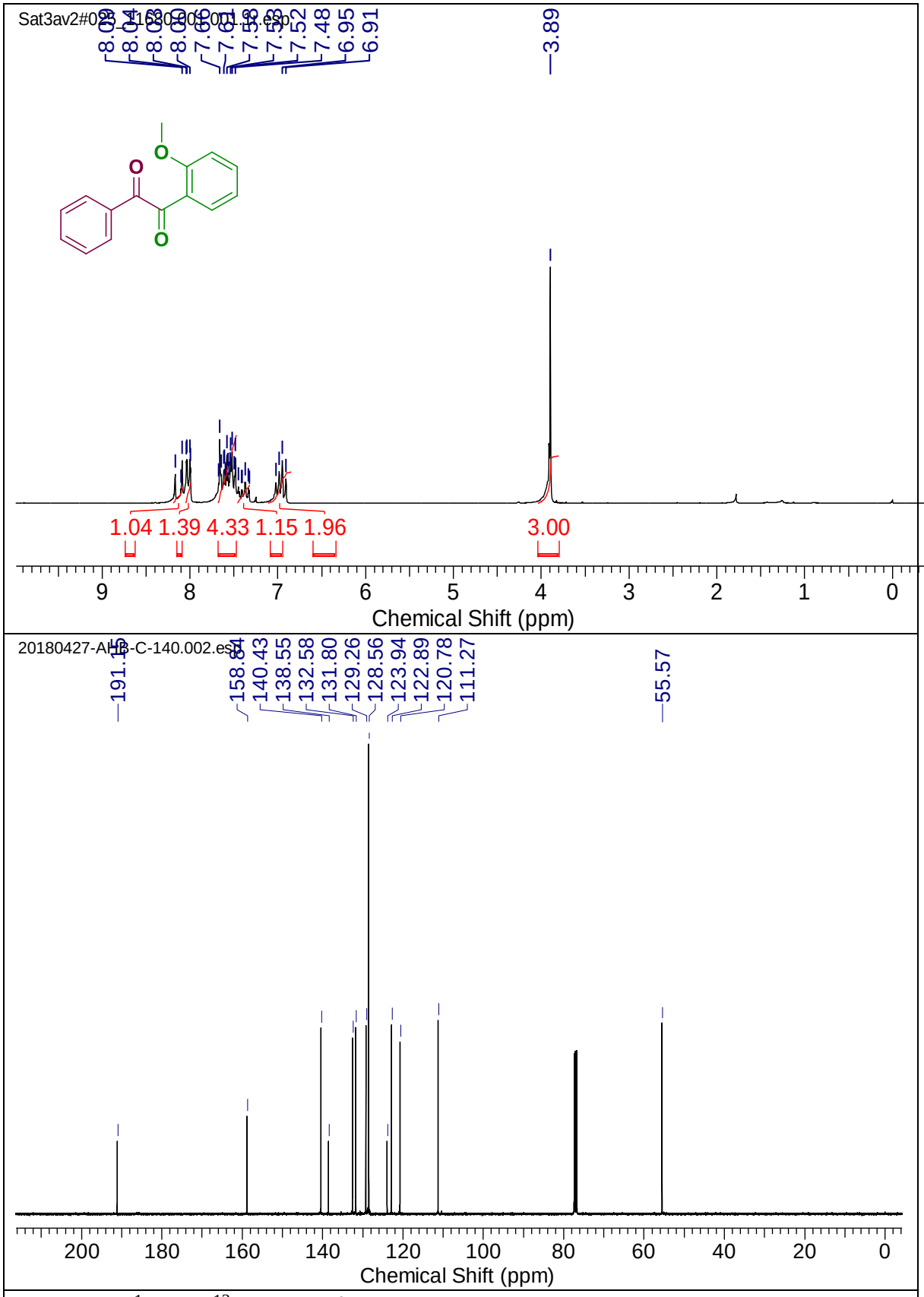


Figure S9. ^{1}H and ^{13}C NMR of 1-(2-methoxyphenyl)-2-phenylethane-1,2-dione **(2g)**

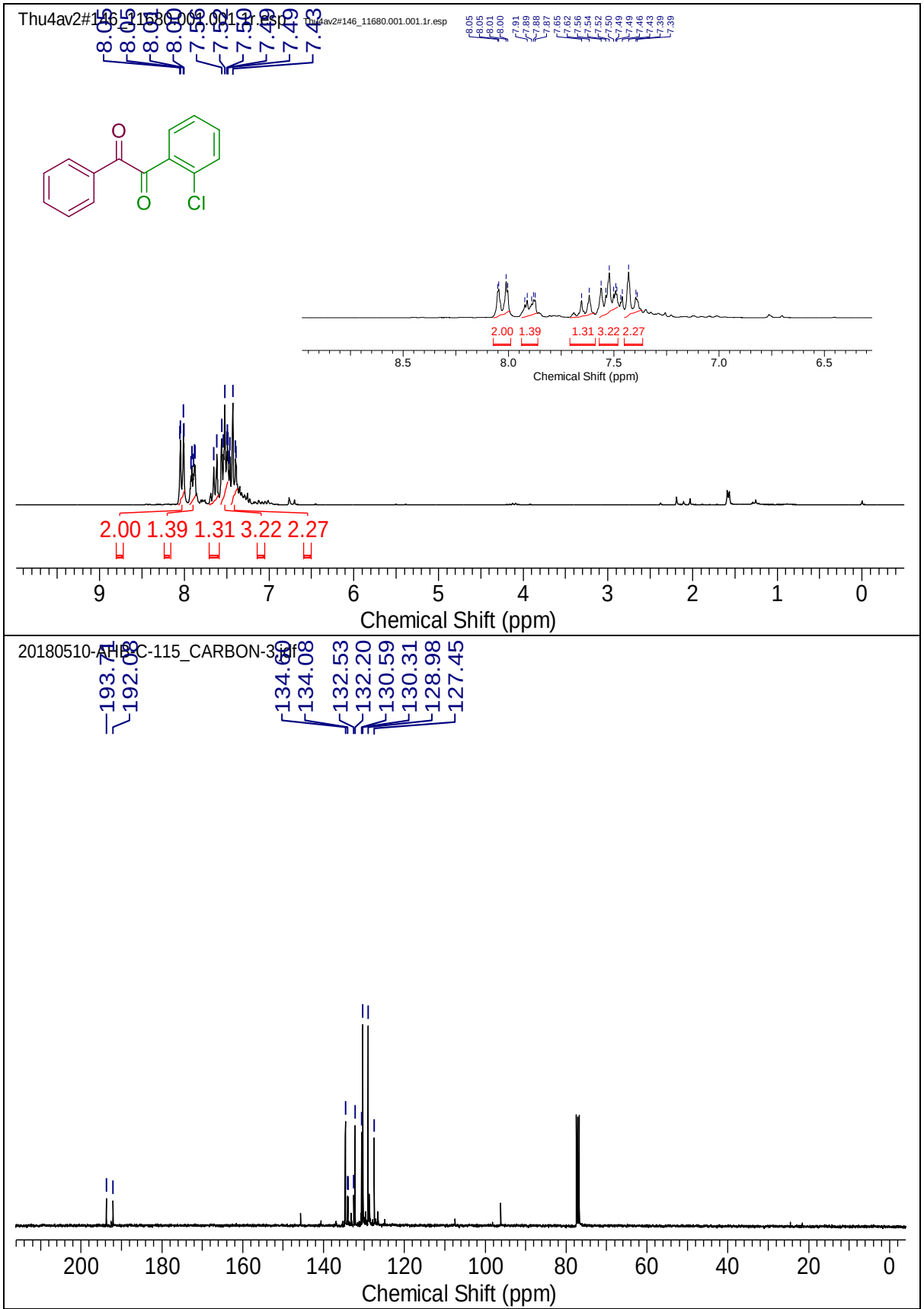


Figure S10. ^{1}H and ^{13}C NMR of 1-(2-chlorophenyl)-2-phenylethane-1,2-dione **(2h)**

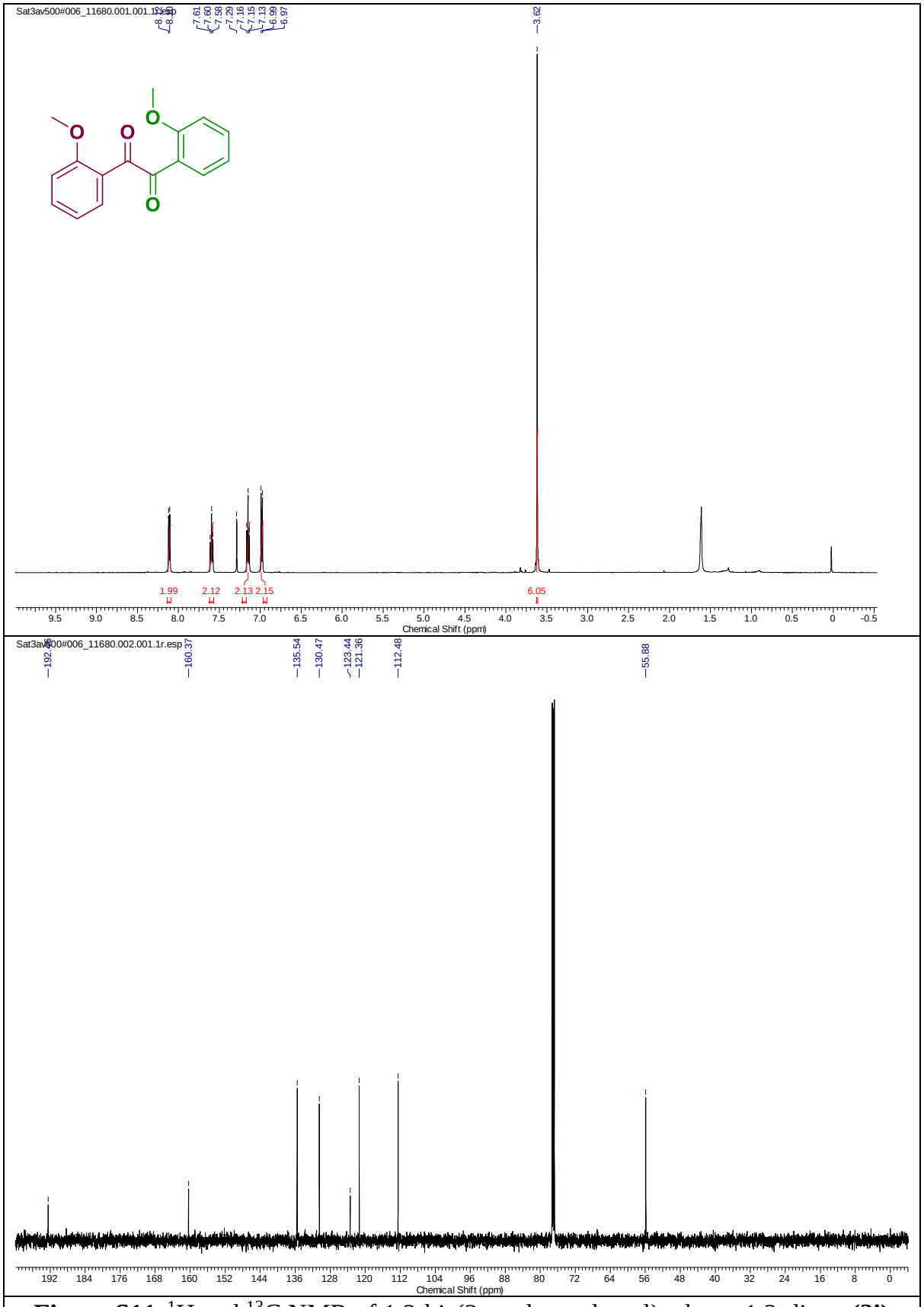


Figure S11. ^{1}H and ^{13}C NMR of 1,2-bis(2-methoxyphenyl) ethane-1,2-dione **(2i)**

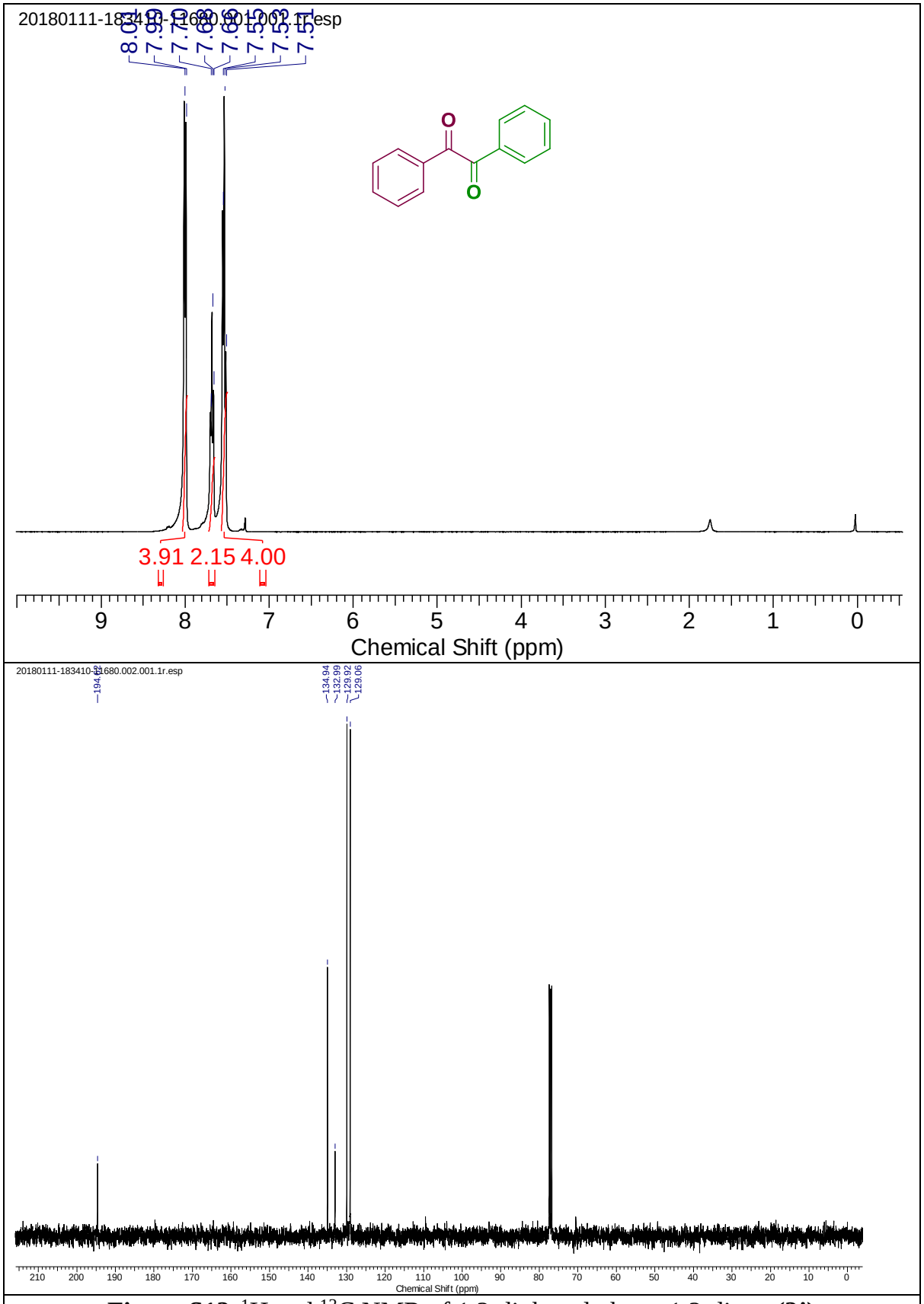
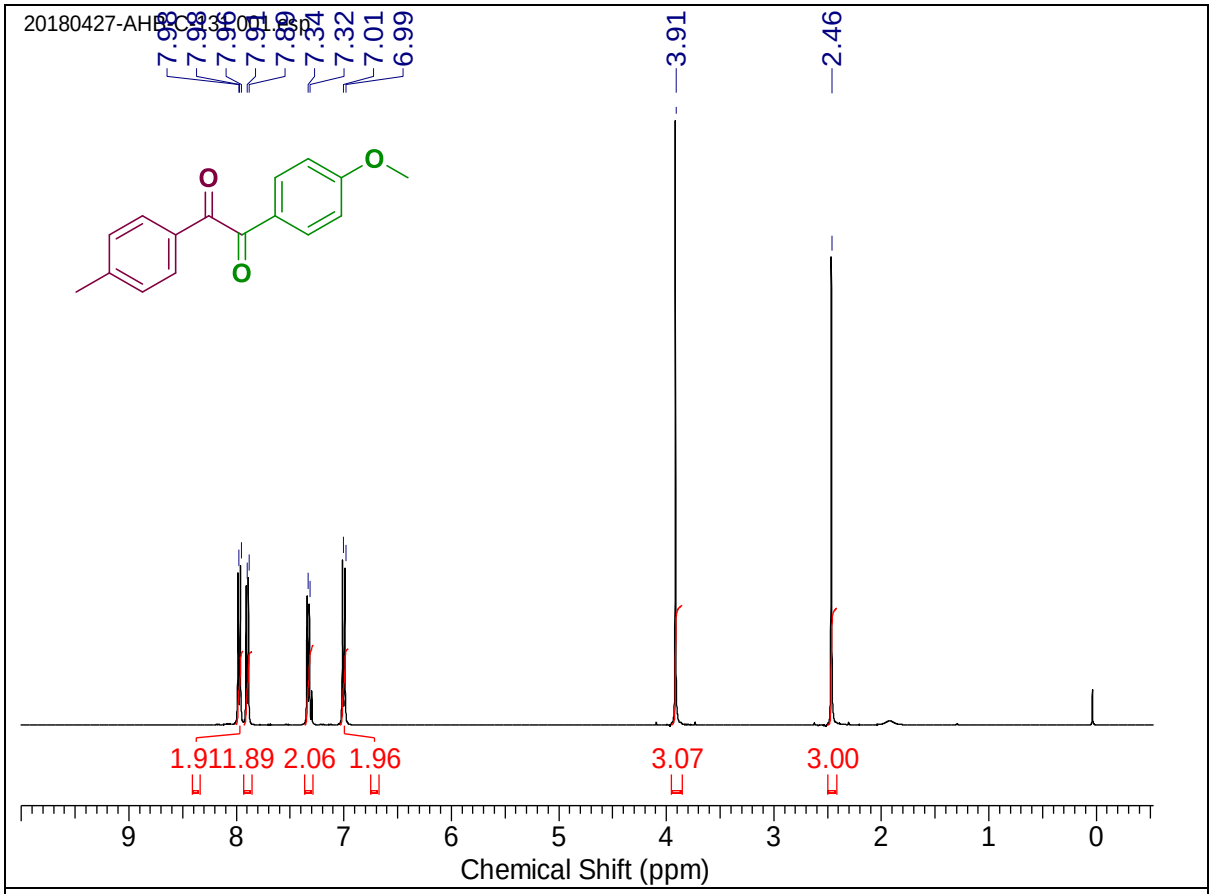


Figure S12. ^{1}H and ^{13}C NMR of 1,2-diphenylethane-1,2-dione **(2j)**



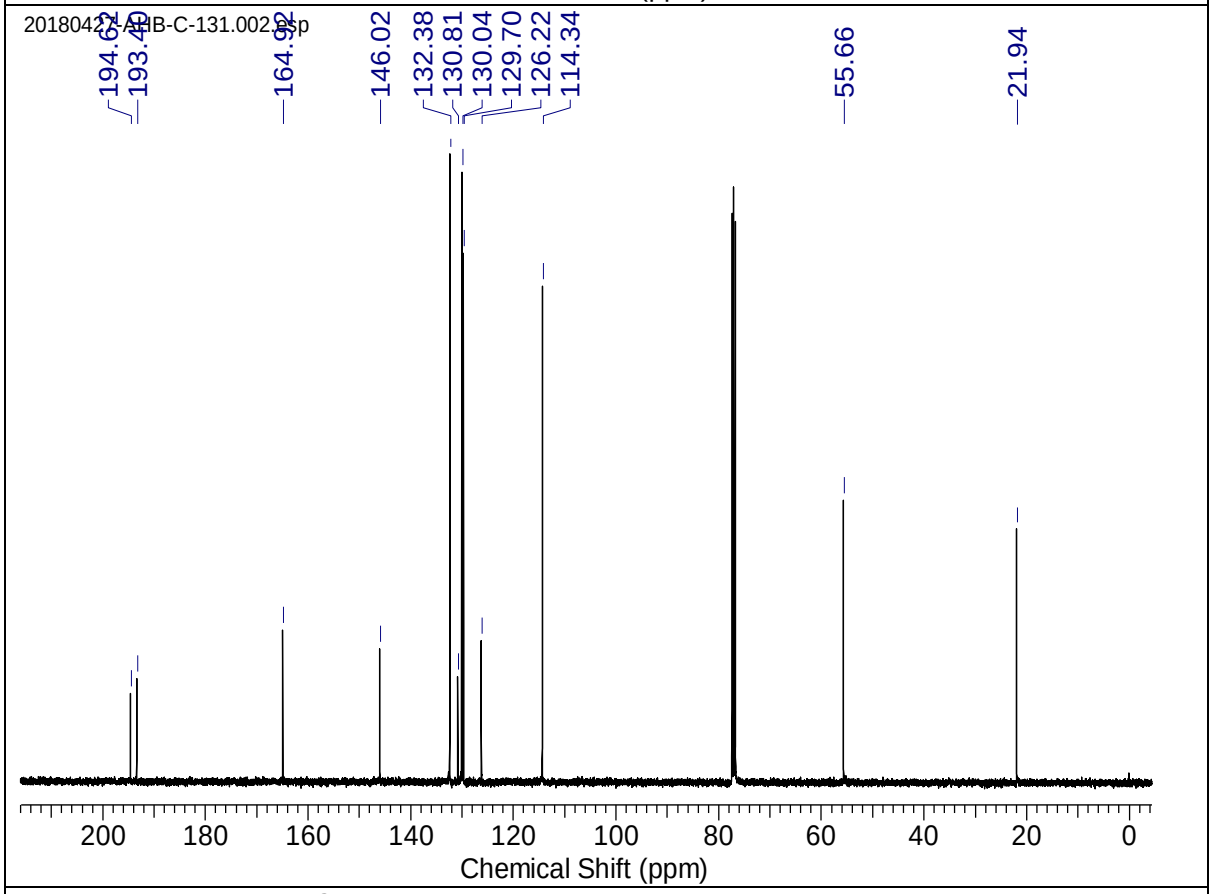
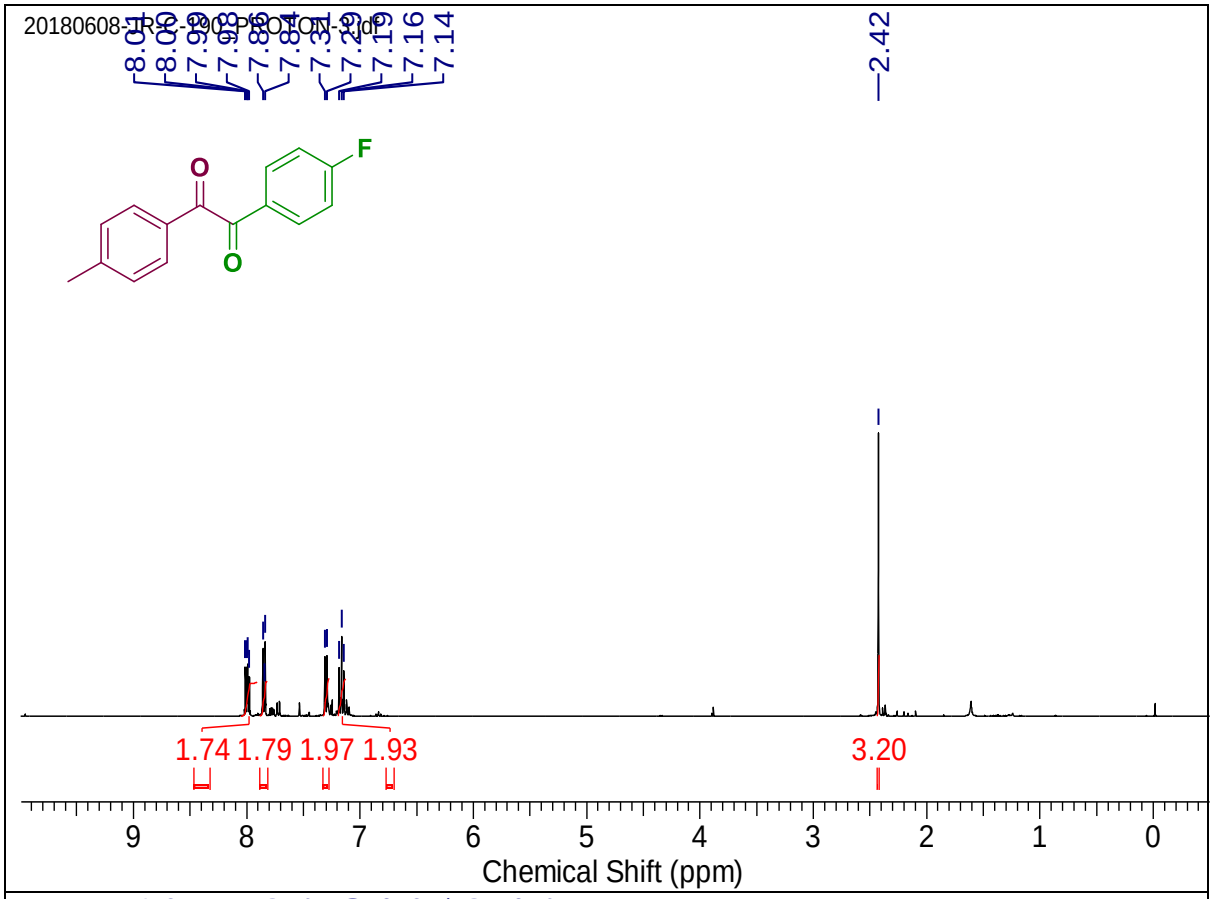


Figure S13. ^{1}H and ^{13}C NMR of 1-(4-methoxyphenyl)-2-(p-tolyl) ethane-1,2-dione **(2k)**



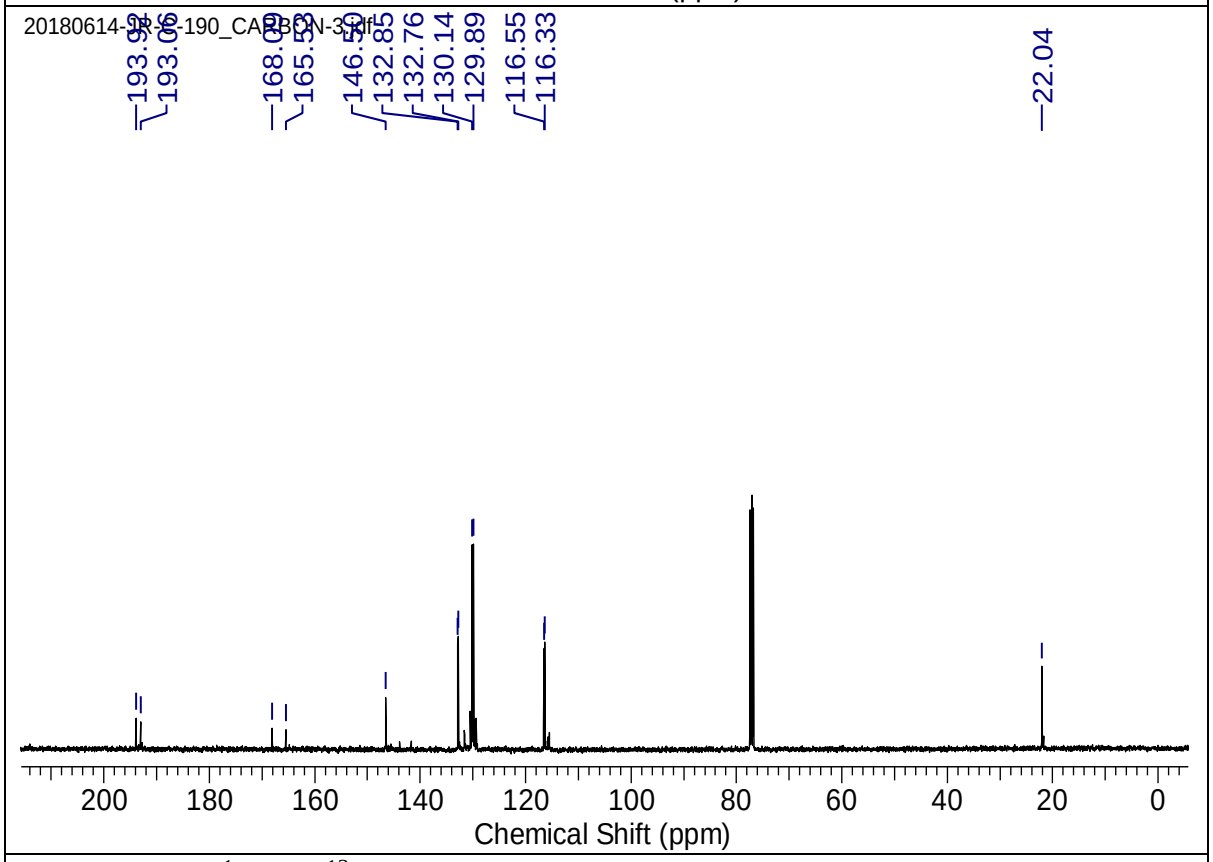


Figure S14. ^{1}H and ^{13}C NMR of 1-(4-fluorophenyl)-2-(p-tolyl) ethane-1,2-dione **(2l)**

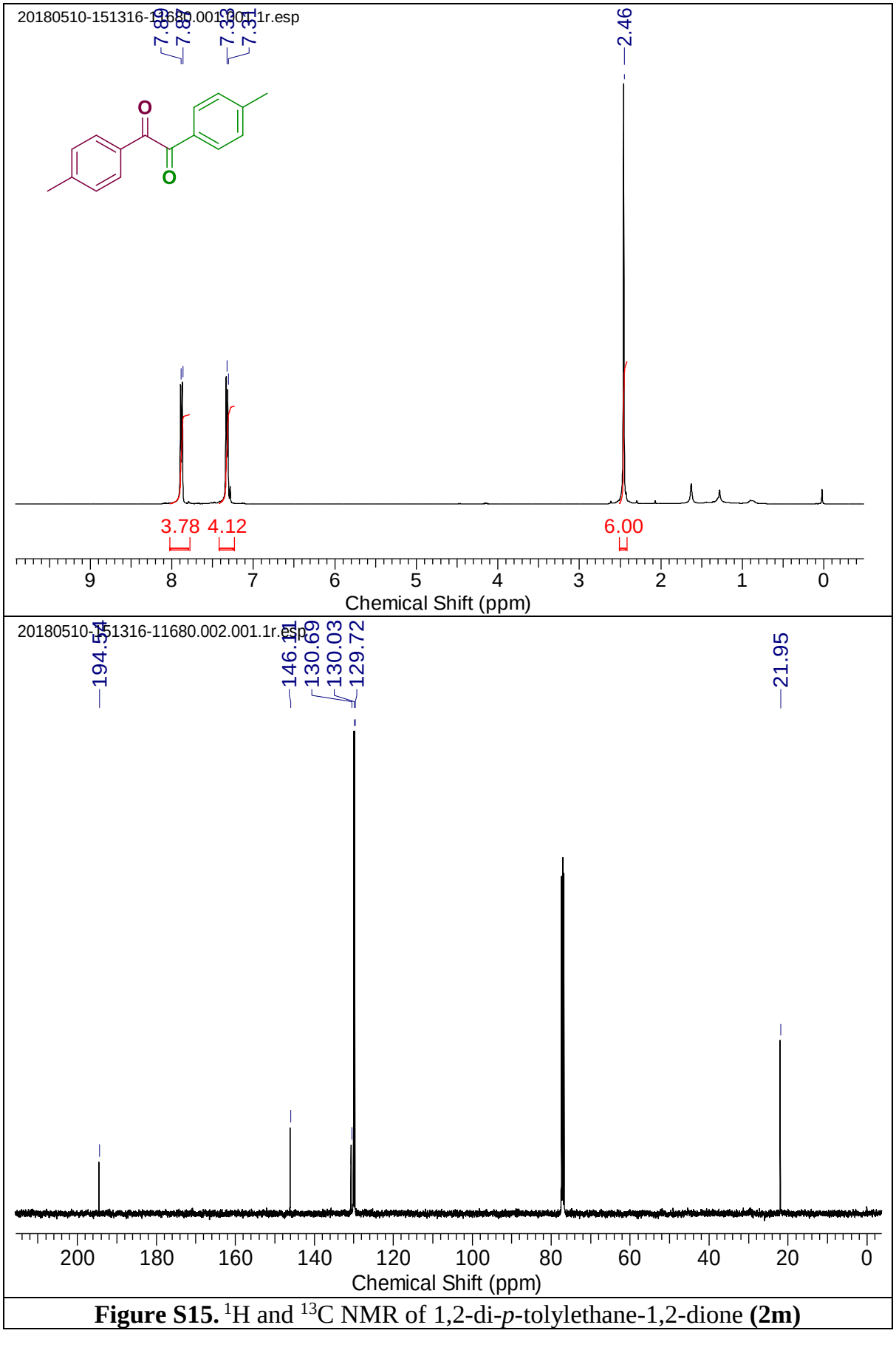


Figure S15. ^{1}H and ^{13}C NMR of 1,2-di-*p*-tolylethane-1,2-dione **(2m)**

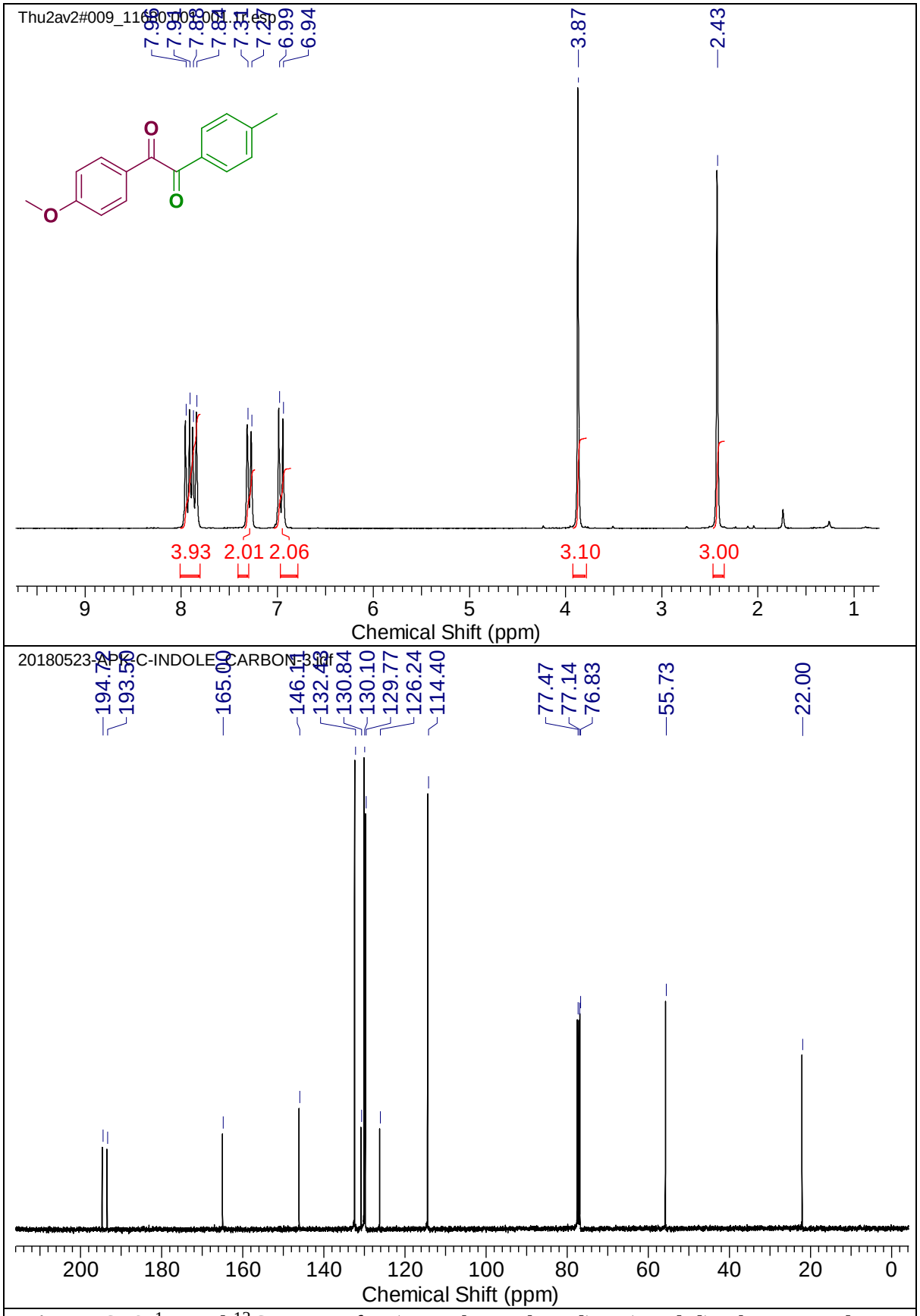


Figure S16. ^{1}H and ^{13}C NMR of 1-(4-methoxyphenyl)-2-(*p*-tolyl) ethane-1,2-dione **(2n)**

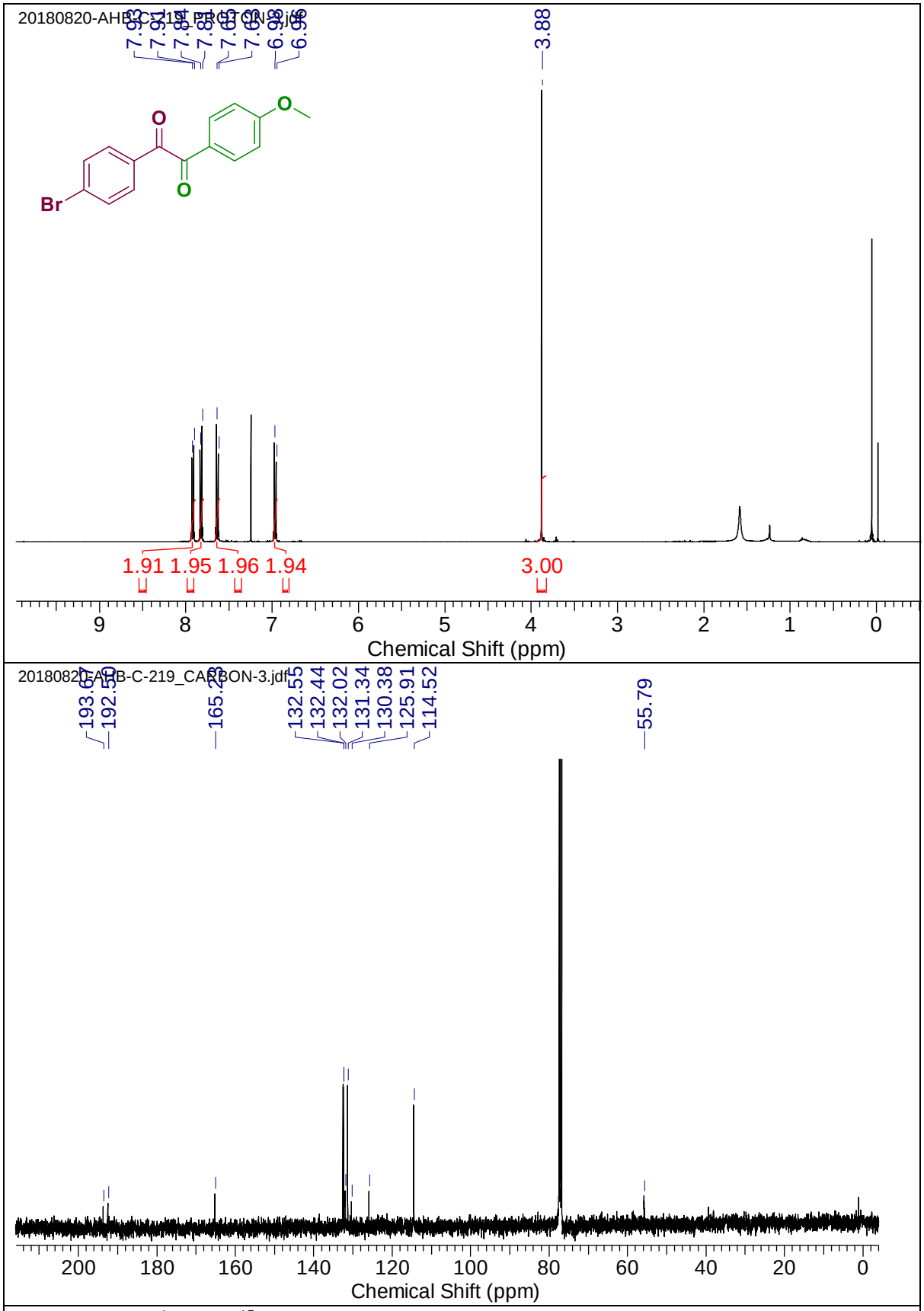


Figure S17. ^{1}H and ^{13}C NMR of 1-(4-bromophenyl)-2-(4-methoxyphenyl) ethane-1,2-dione **(2p)**

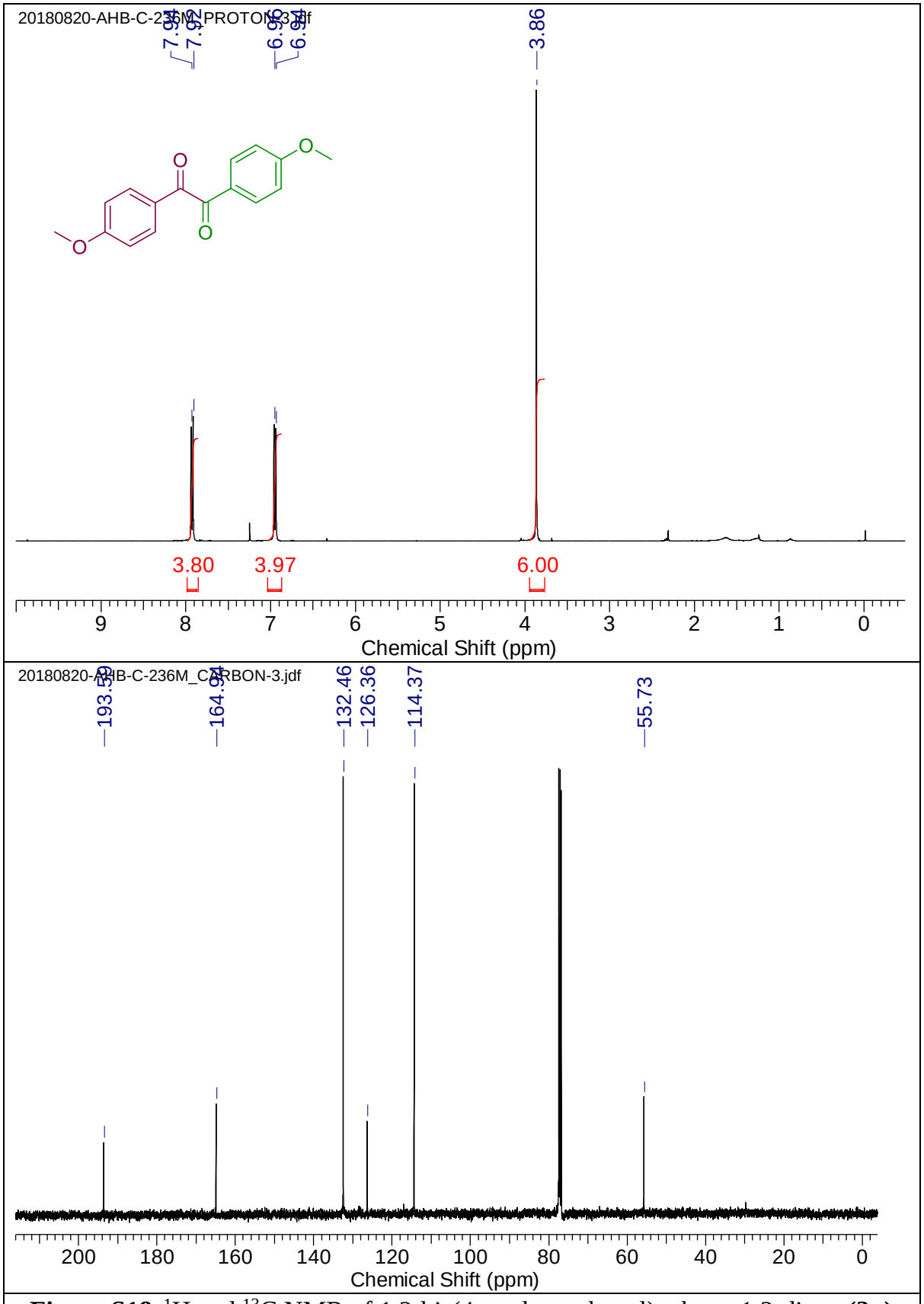


Figure S18. ^{1}H and ^{13}C NMR of 1,2-bis(4-methoxyphenyl) ethane-1,2-dione **(2q)**

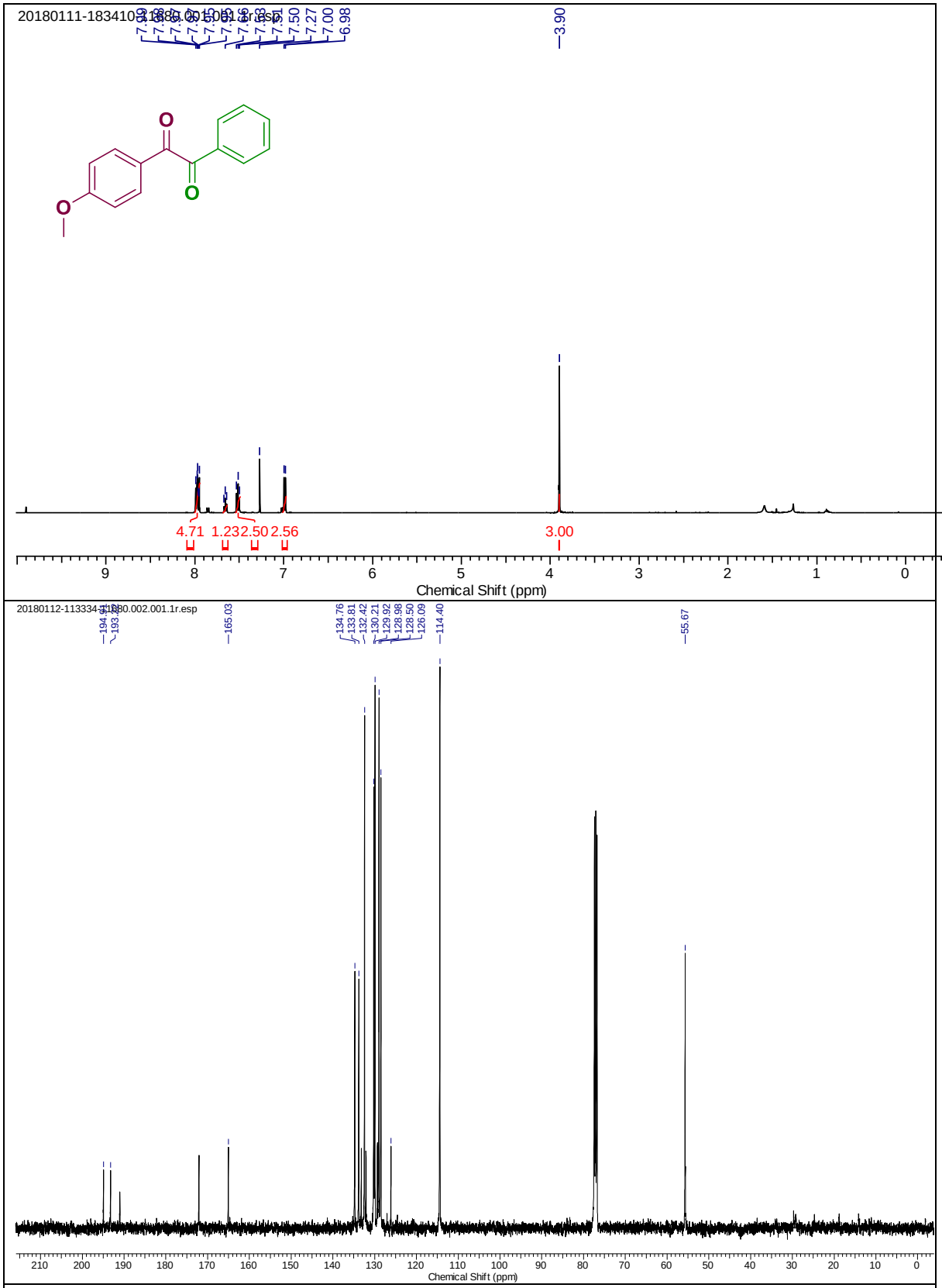


Figure S19. ^{1}H and ^{13}C NMR of 1-(4-methoxyphenyl)-2-phenylethane-1,2-dione **(2r)**

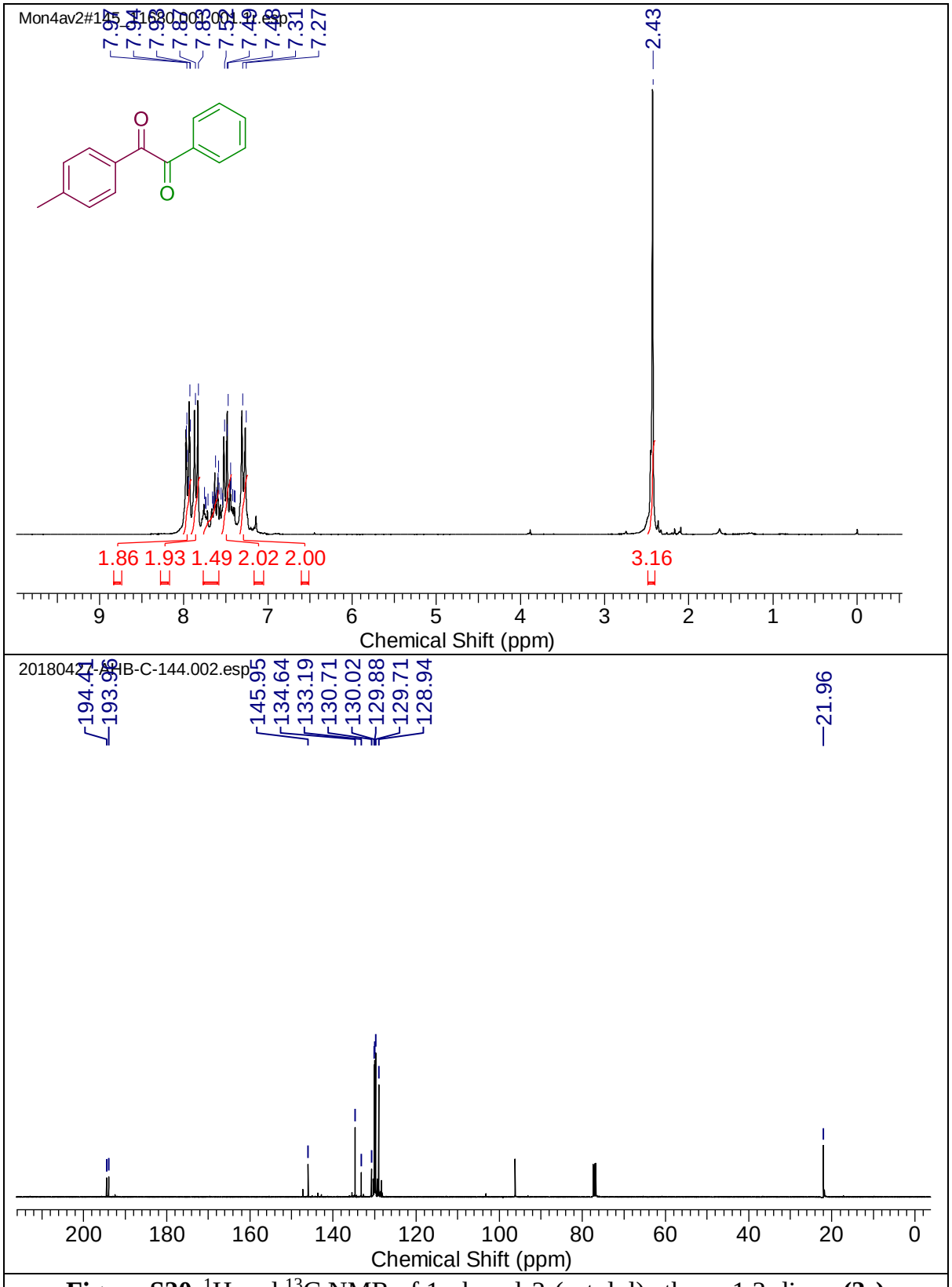


Figure S20. ^{1}H and ^{13}C NMR of 1-phenyl-2-(p-tolyl) ethane-1,2-dione **(2s)**

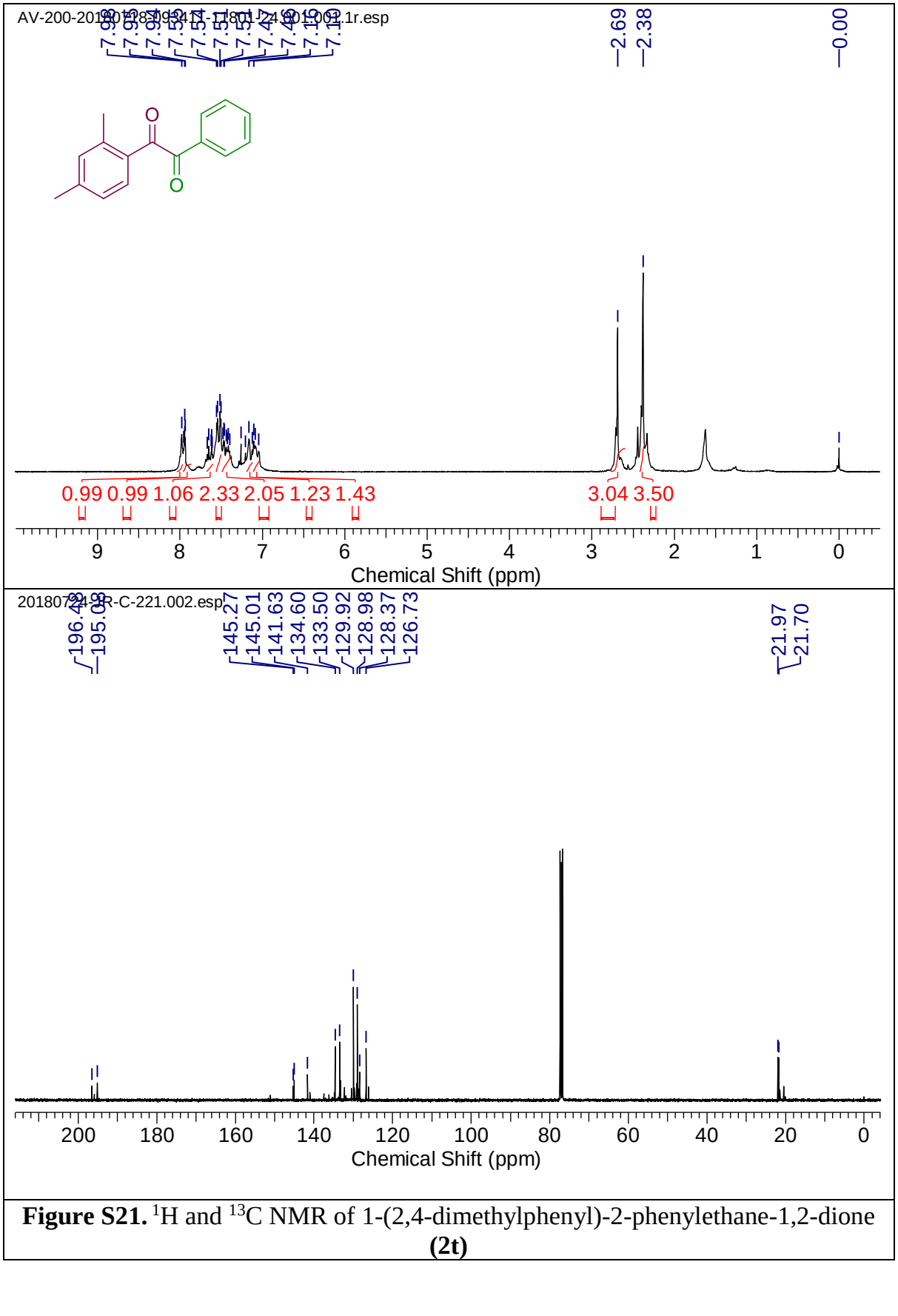


Figure S21. ^{1}H and ^{13}C NMR of 1-(2,4-dimethylphenyl)-2-phenylethane-1,2-dione **(2t)**

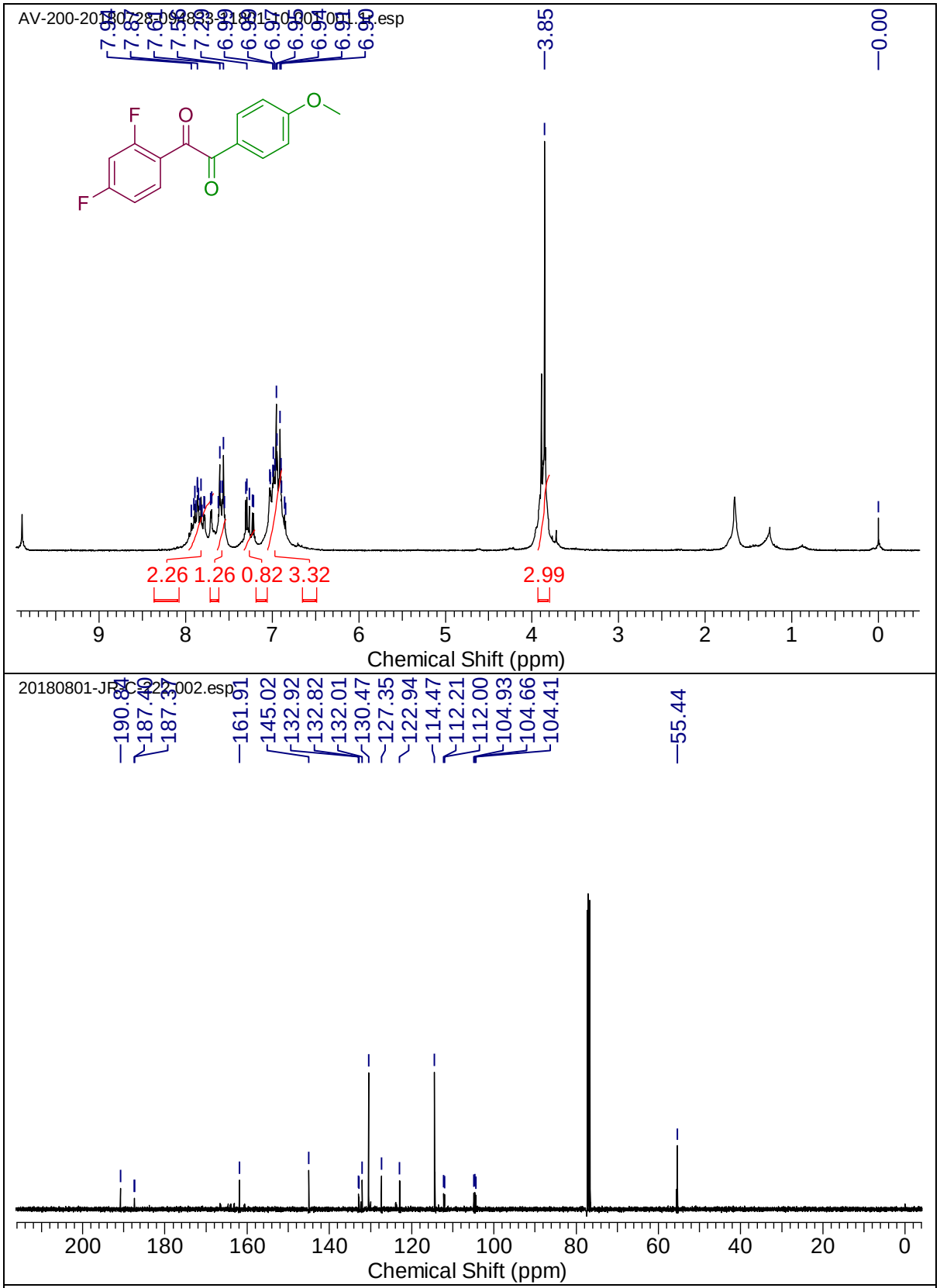


Figure S22. ^{1}H and ^{13}C NMR of 1-(2,4-difluorophenyl)-2-(4-methoxyphenyl) ethane-1,2-dione **(2u)**

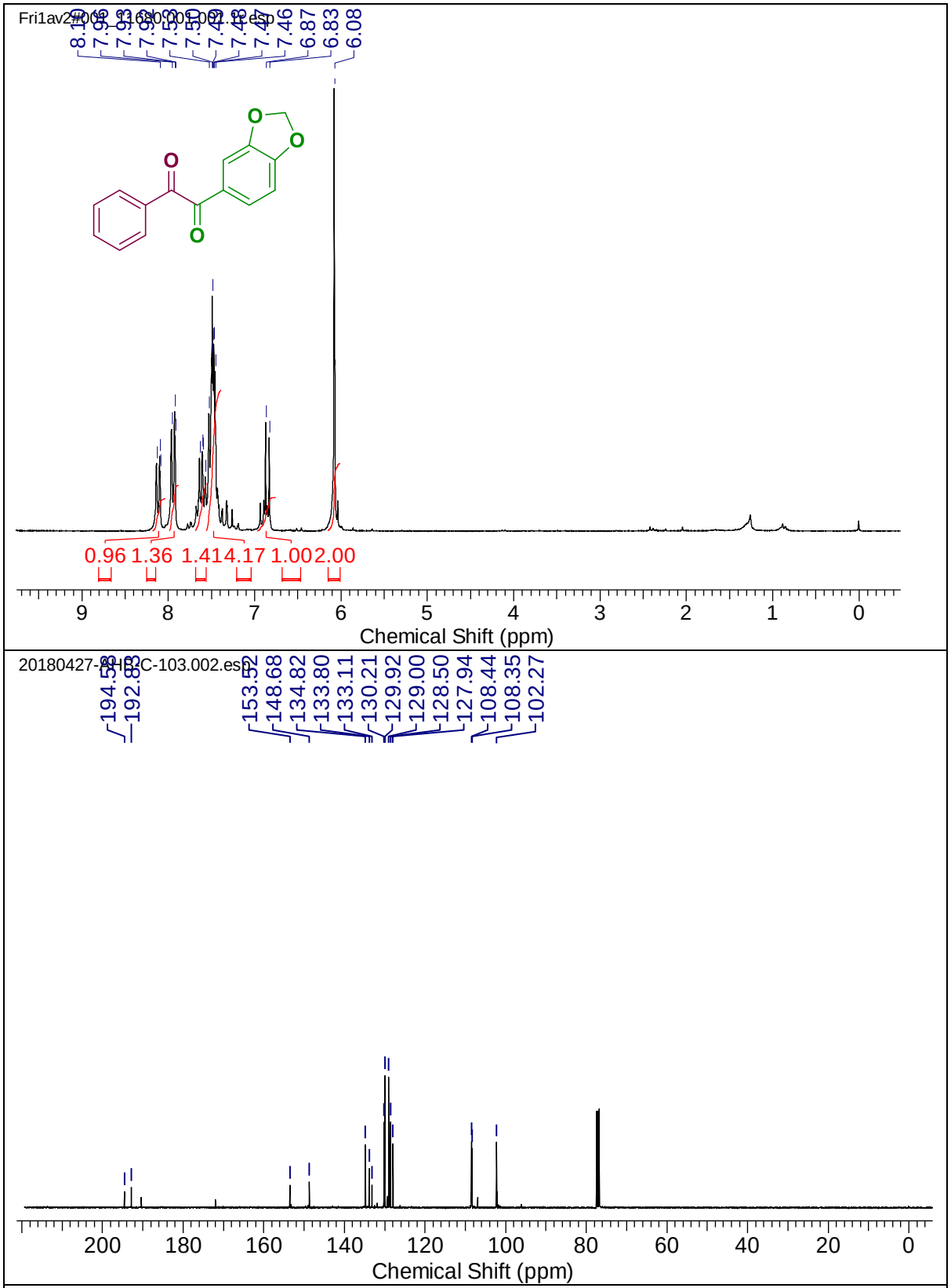


Figure S23. ^{1}H and ^{13}C NMR of 1-(benzo[d] [1,3] dioxol-5-yl)-2-phenylethane-1,2-dione **(2v)**

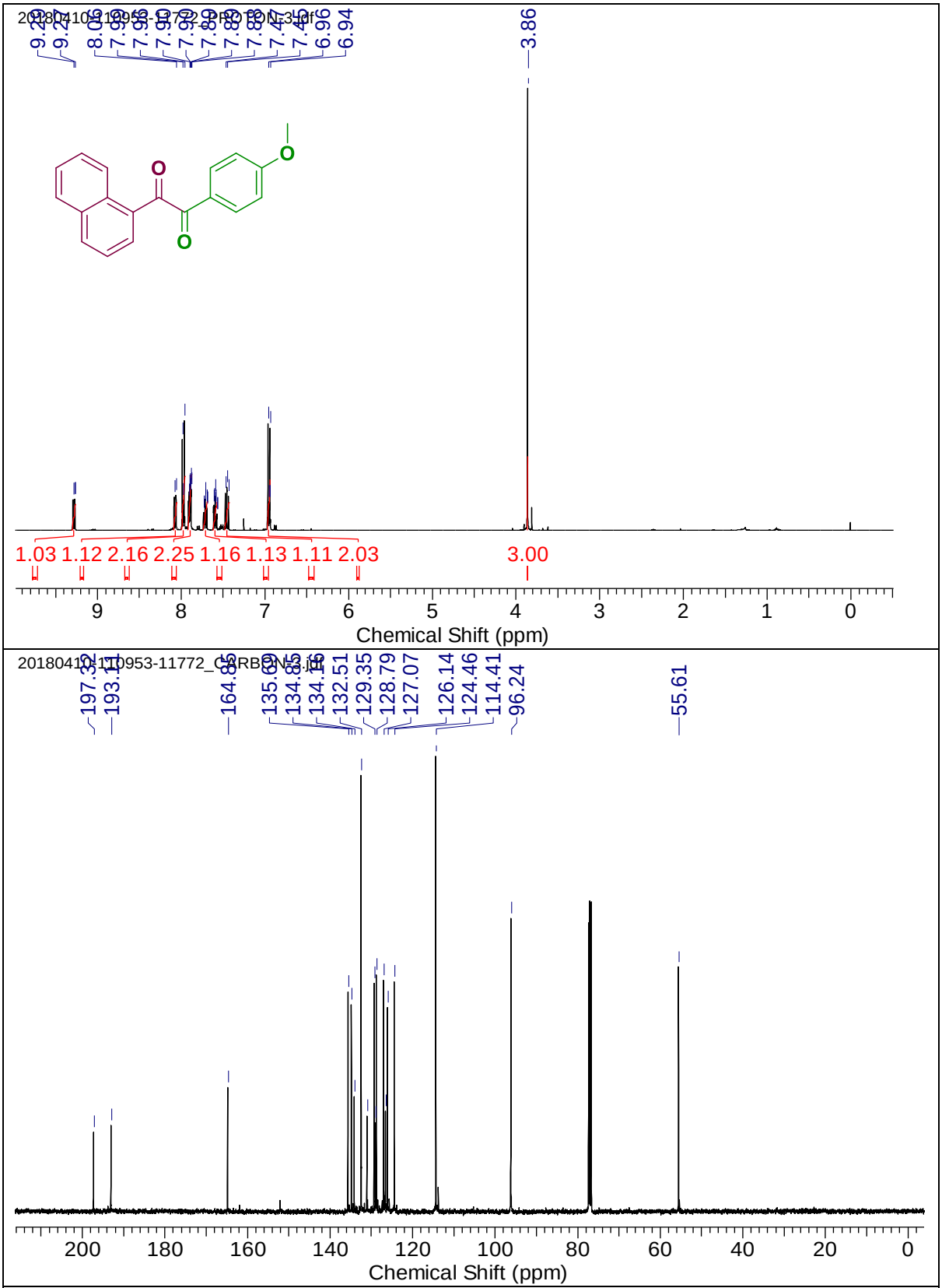


Figure S24. ^{1}H and ^{13}C NMR of 1-(4-methoxyphenyl)-2-(naphthalen-1-yl) ethane-1,2-dione **(2w)**

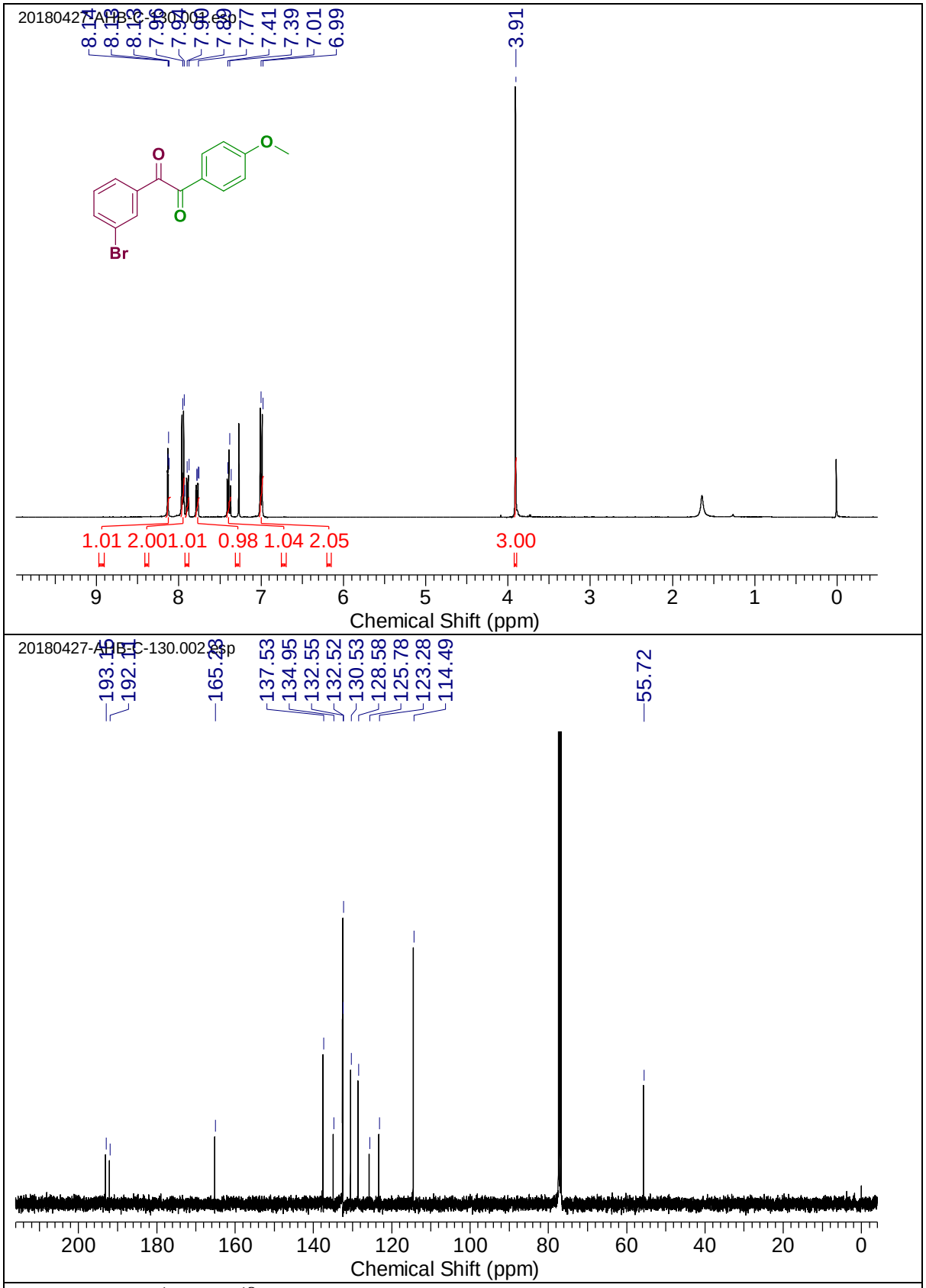


Figure S25. ^{1}H and ^{13}C NMR of 1-(3-bromophenyl)-2-(4-methoxyphenyl) ethane-1,2-dione **(2x)**

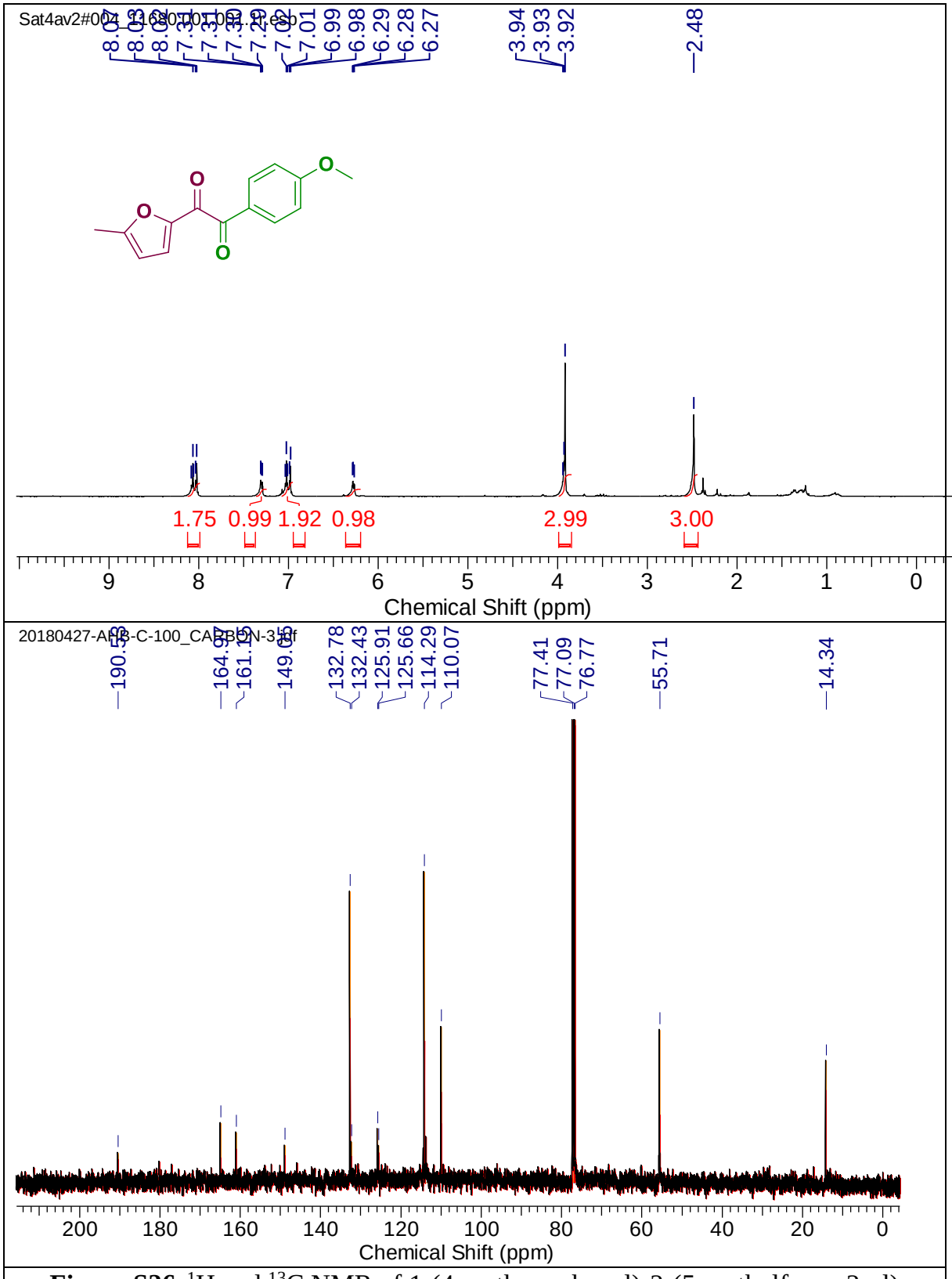


Figure S26. ^{1}H and ^{13}C NMR of 1-(4-methoxyphenyl)-2-(5-methylfuran-2-yl) ethane-1,2-dione **(2y)**

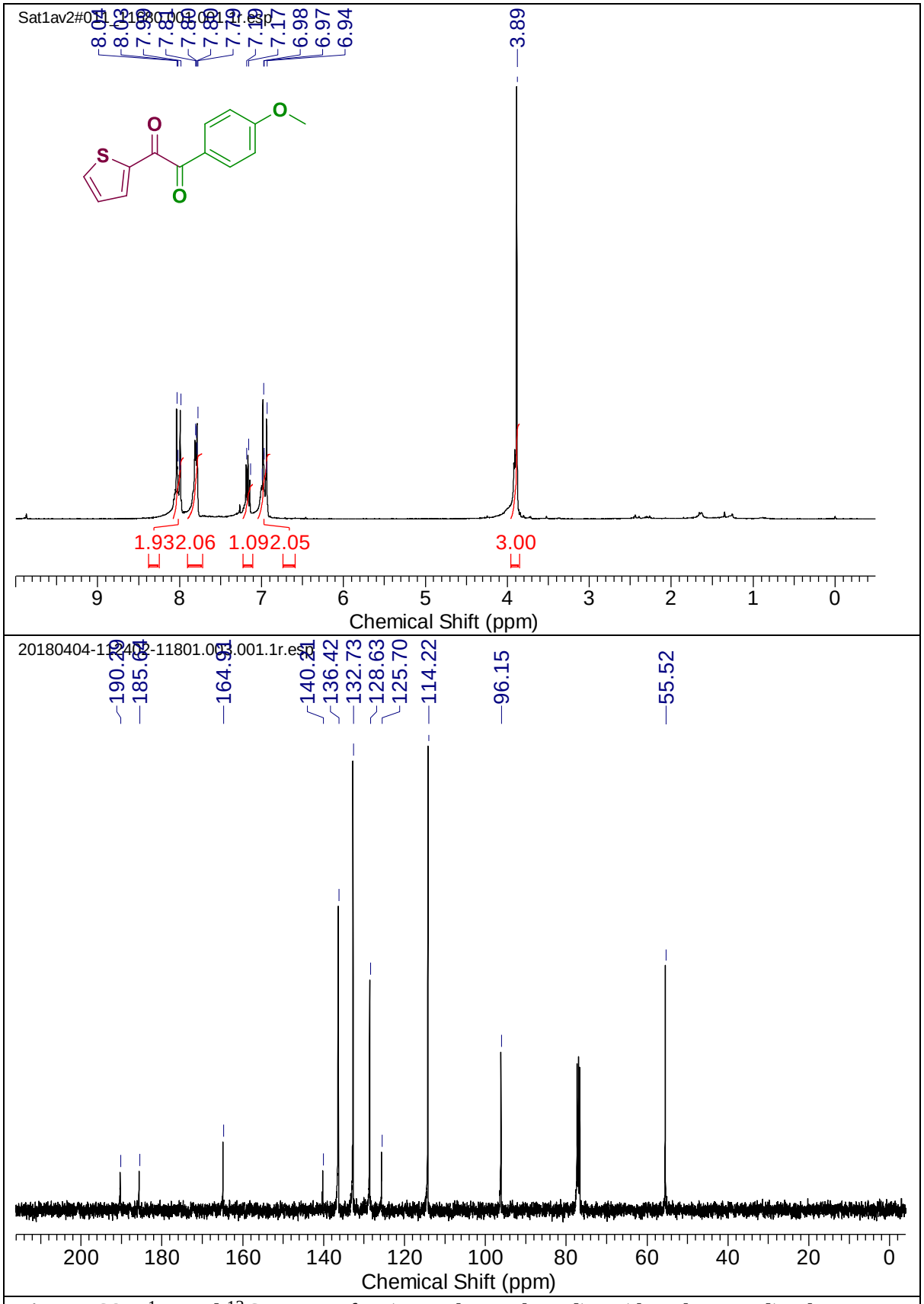


Figure S27. ^{1}H and ^{13}C NMR of 1-(4-methoxyphenyl)-2-(thiophen-2-yl) ethane-1,2-dione **(2z)**

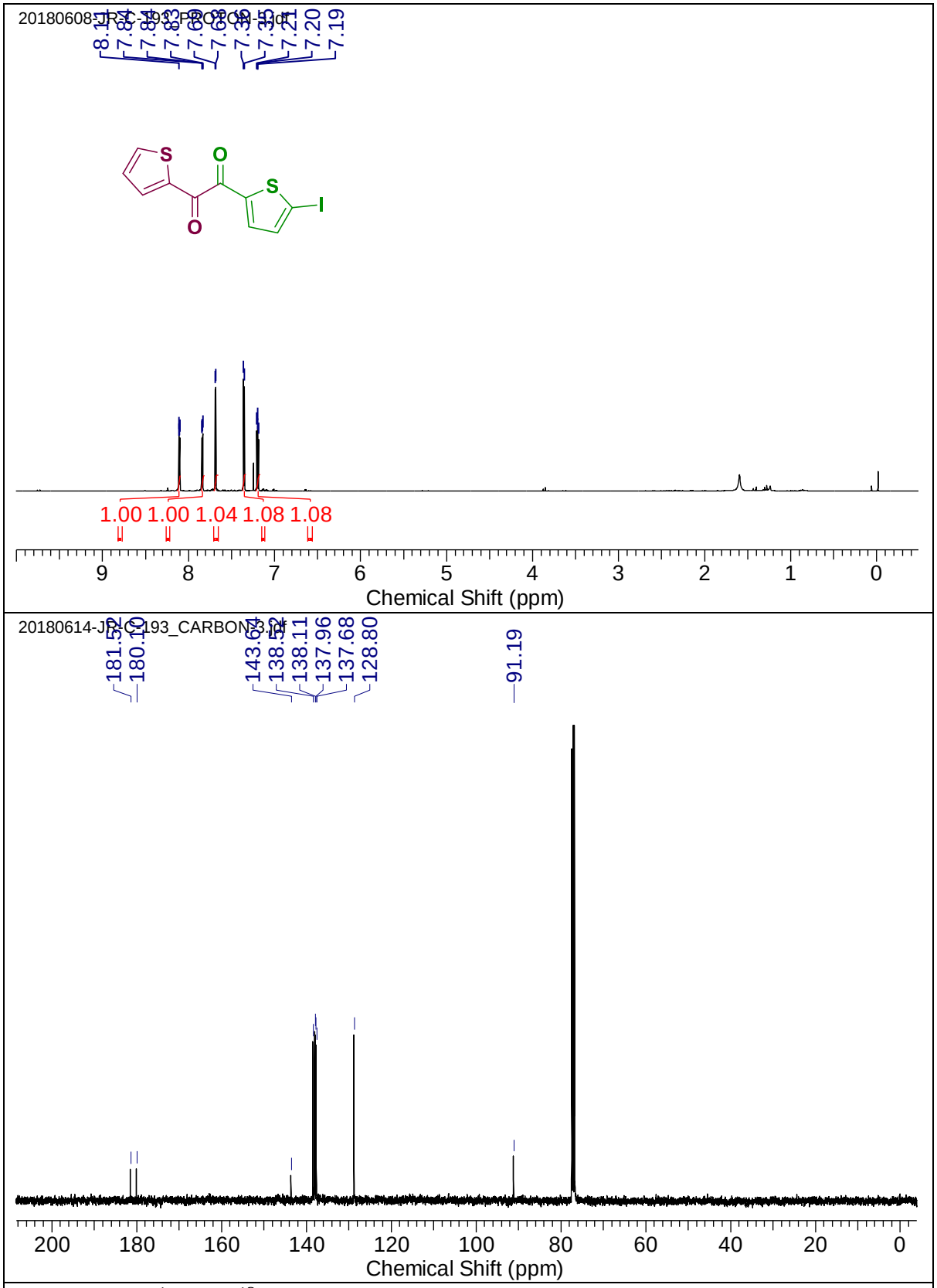


Figure S28. ^{1}H and ^{13}C NMR of 1-(5-iodothiophen-2-yl)-2-(thiophen-2-yl) ethane-1,2-dione **(2za)**

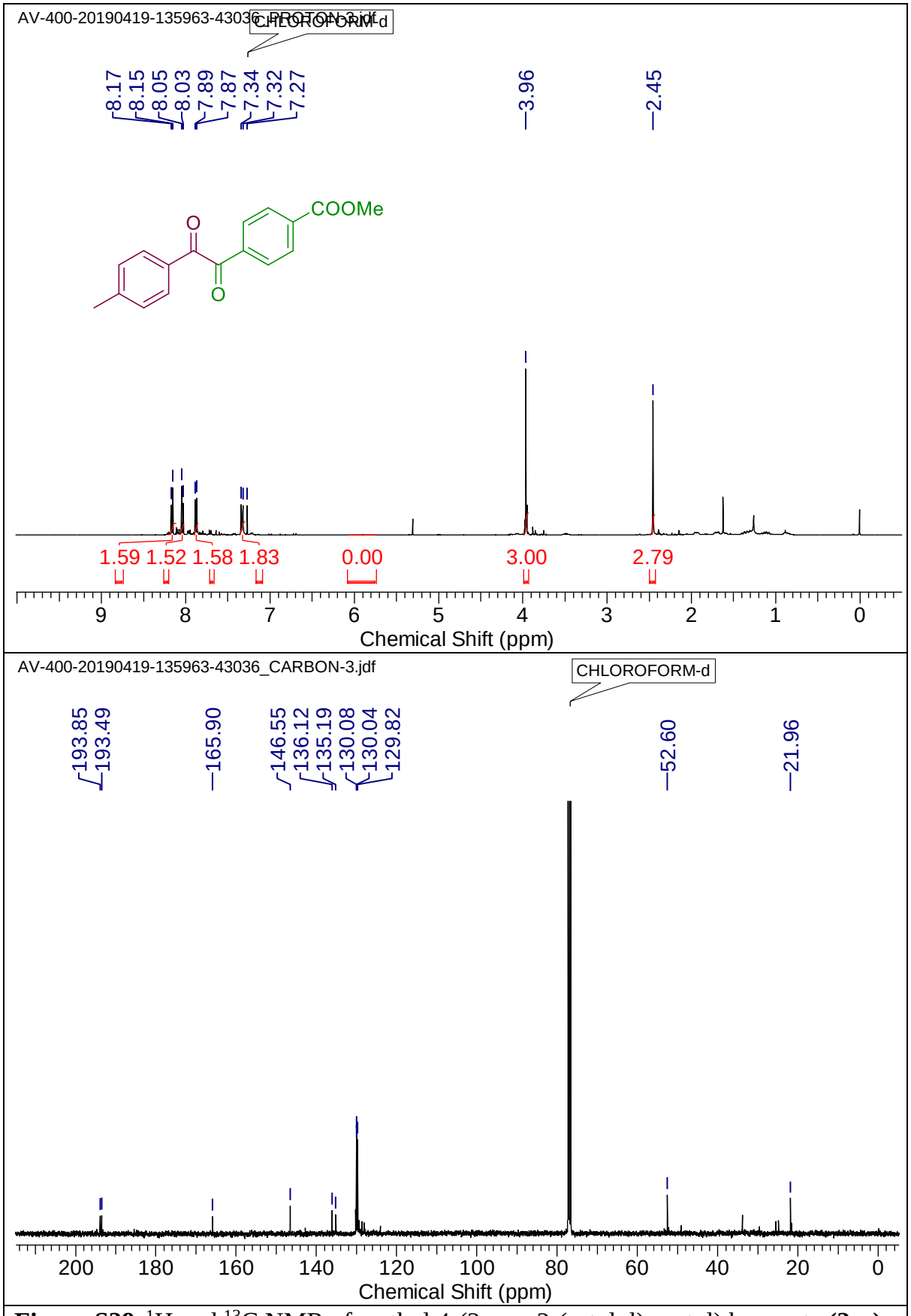


Figure S29. ^{1}H and ^{13}C NMR of methyl 4-(2-oxo-2-(p-tolyl) acetyl) benzoate **(2zc)**

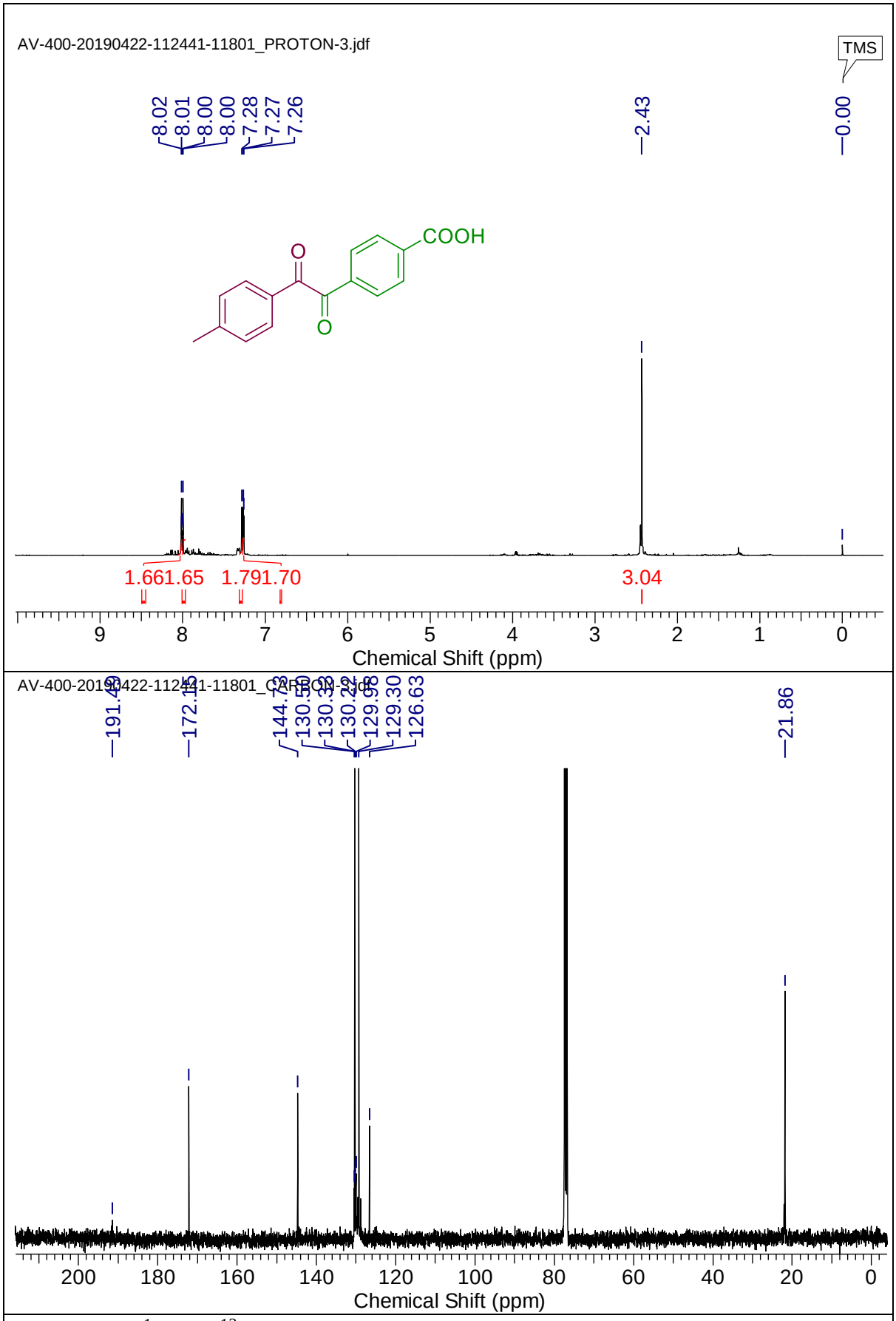
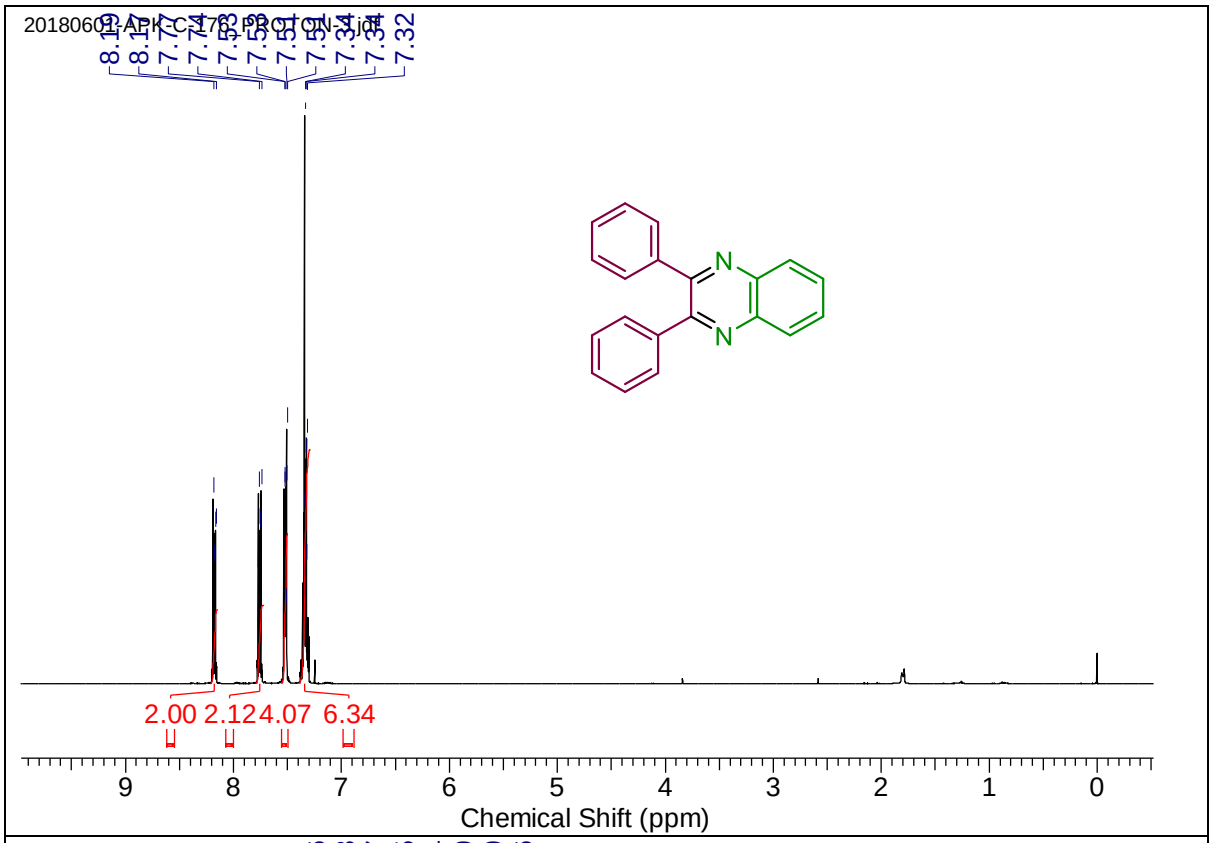


Figure S30. ^{1}H and ^{13}C NMR of 4-(2-oxo-2-(p-tolyl) acetyl) benzoic acid **(2zd)**



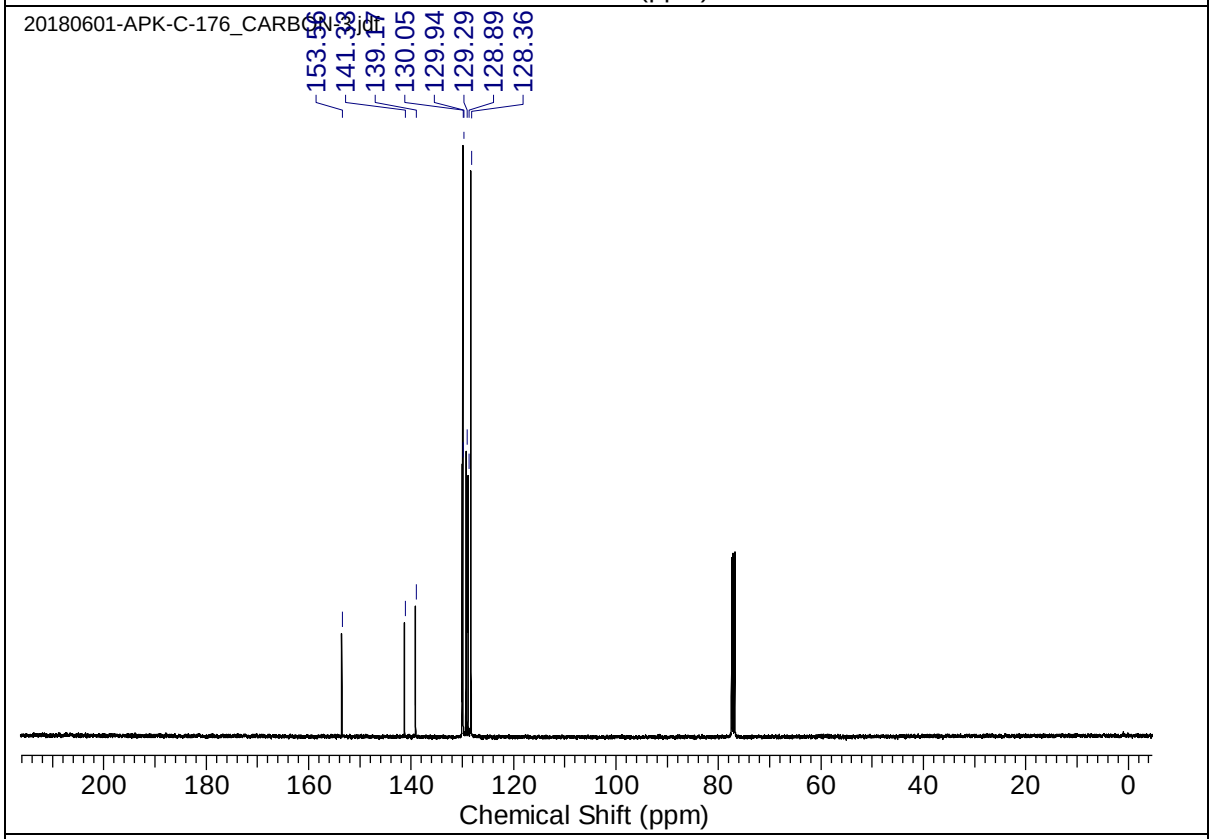


Figure S31. ^{1}H and ^{13}C NMR of 2,3-diphenylquinoxaline **(3a)**

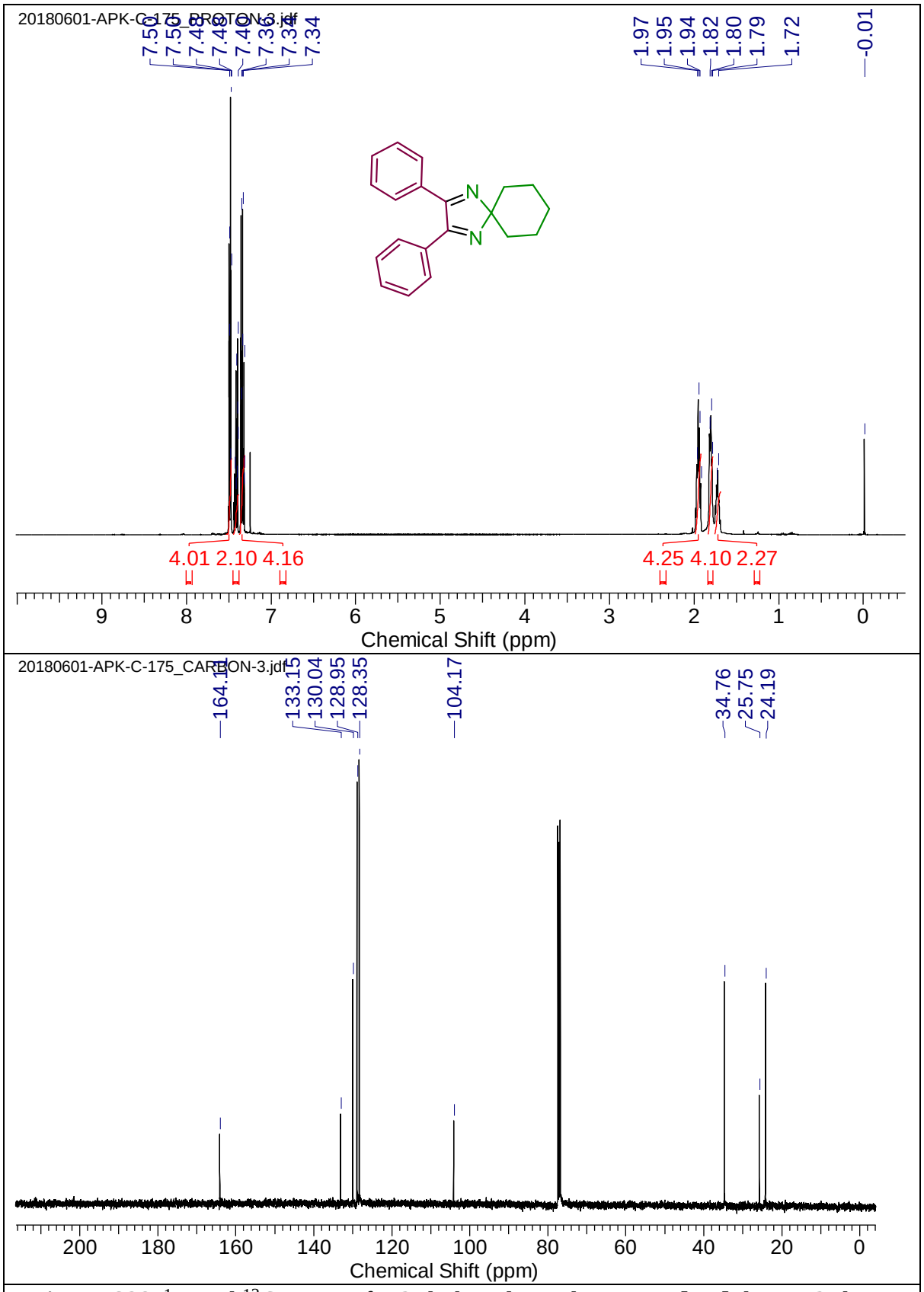


Figure S32. ^{1}H and ^{13}C NMR of 2,3-diphenyl-1,4-diazaspiro [4.5] deca-1,3-diene **(3b)**

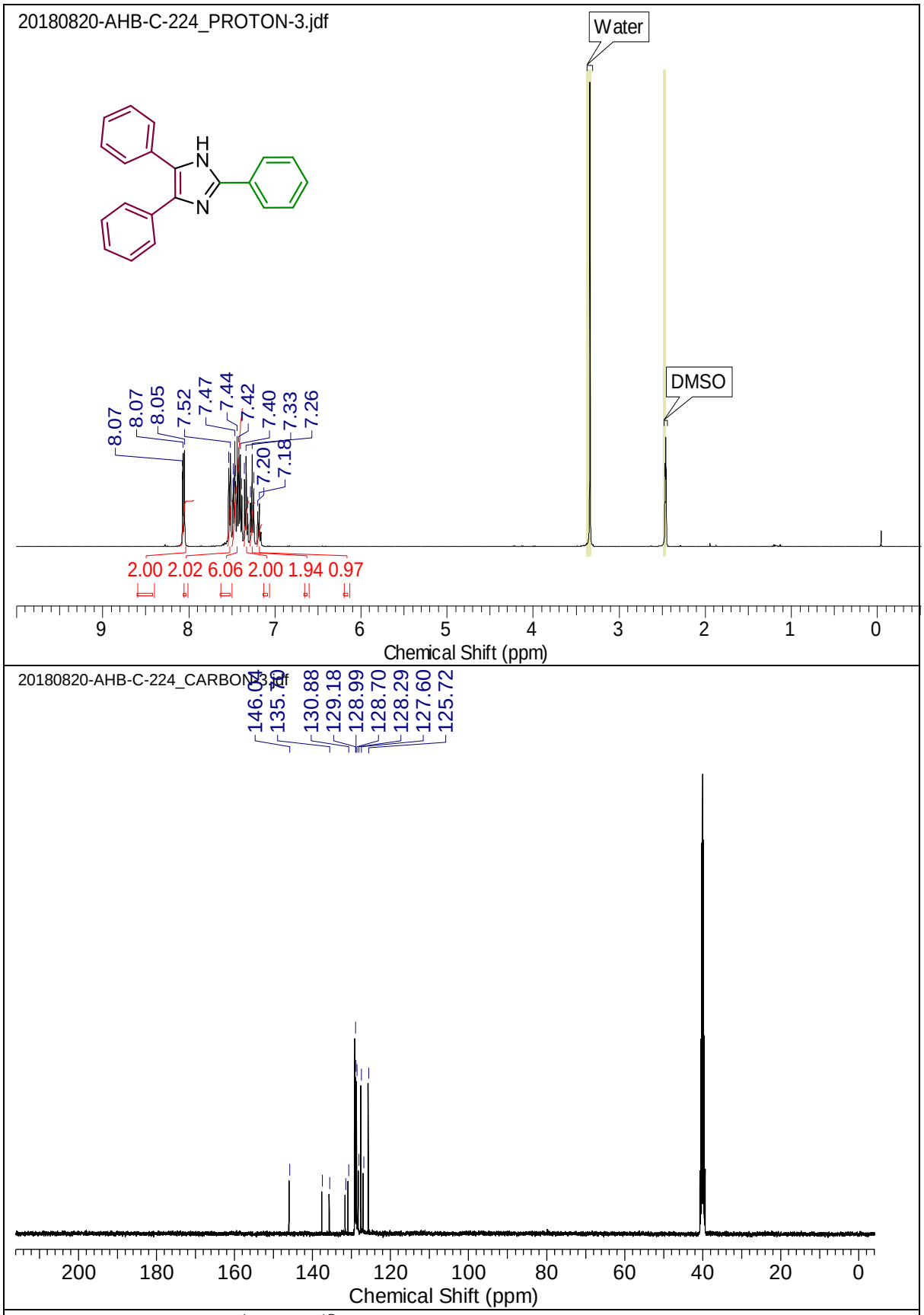


Figure S33. ^{1}H and ^{13}C NMR of 2,4,5-triphenyl-1H-imidazole **(3c)**

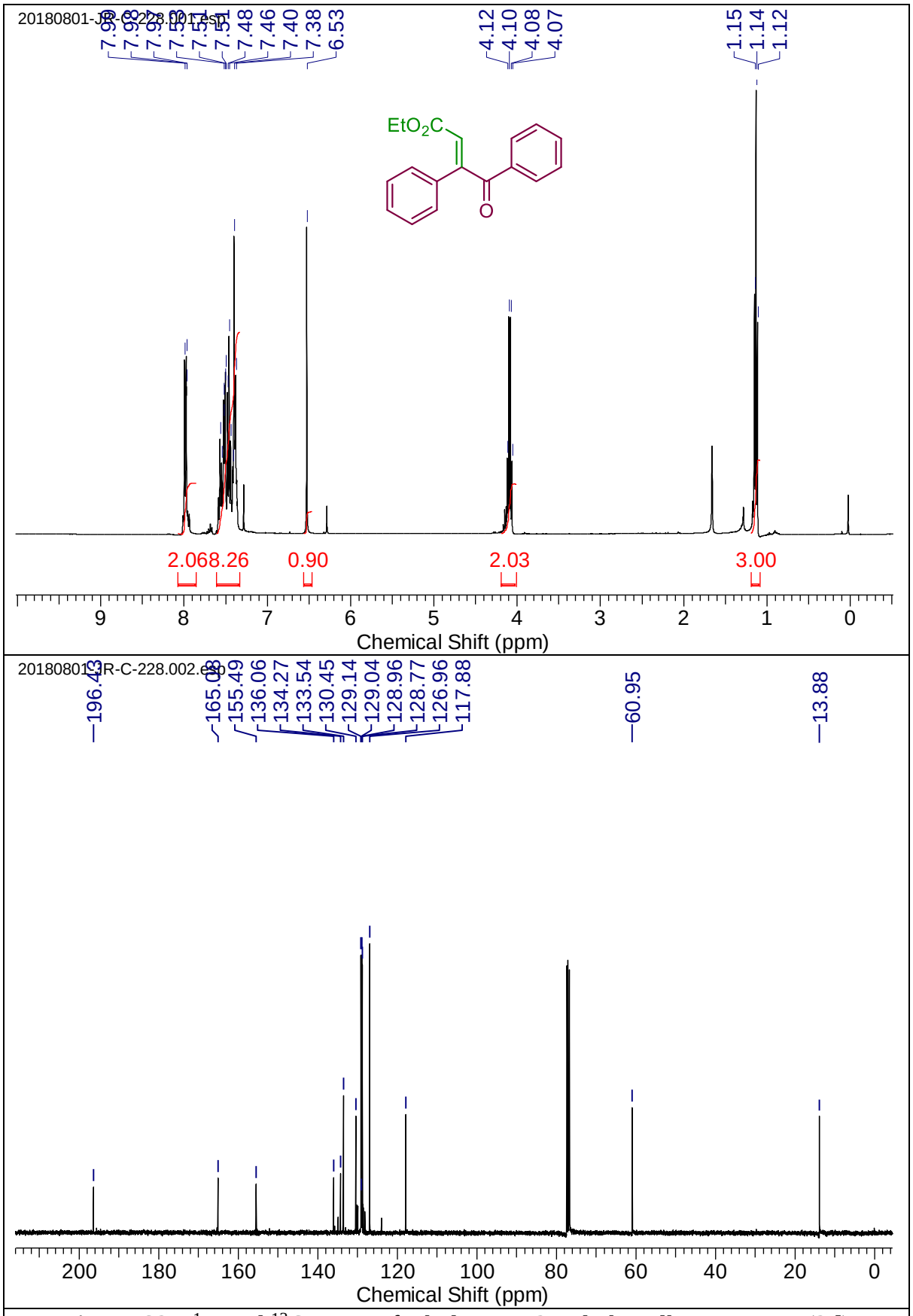


Figure S34. ^{1}H and ^{13}C NMR of ethyl 4-oxo-3,4-diphenylbut-2-enoate **(3d)**

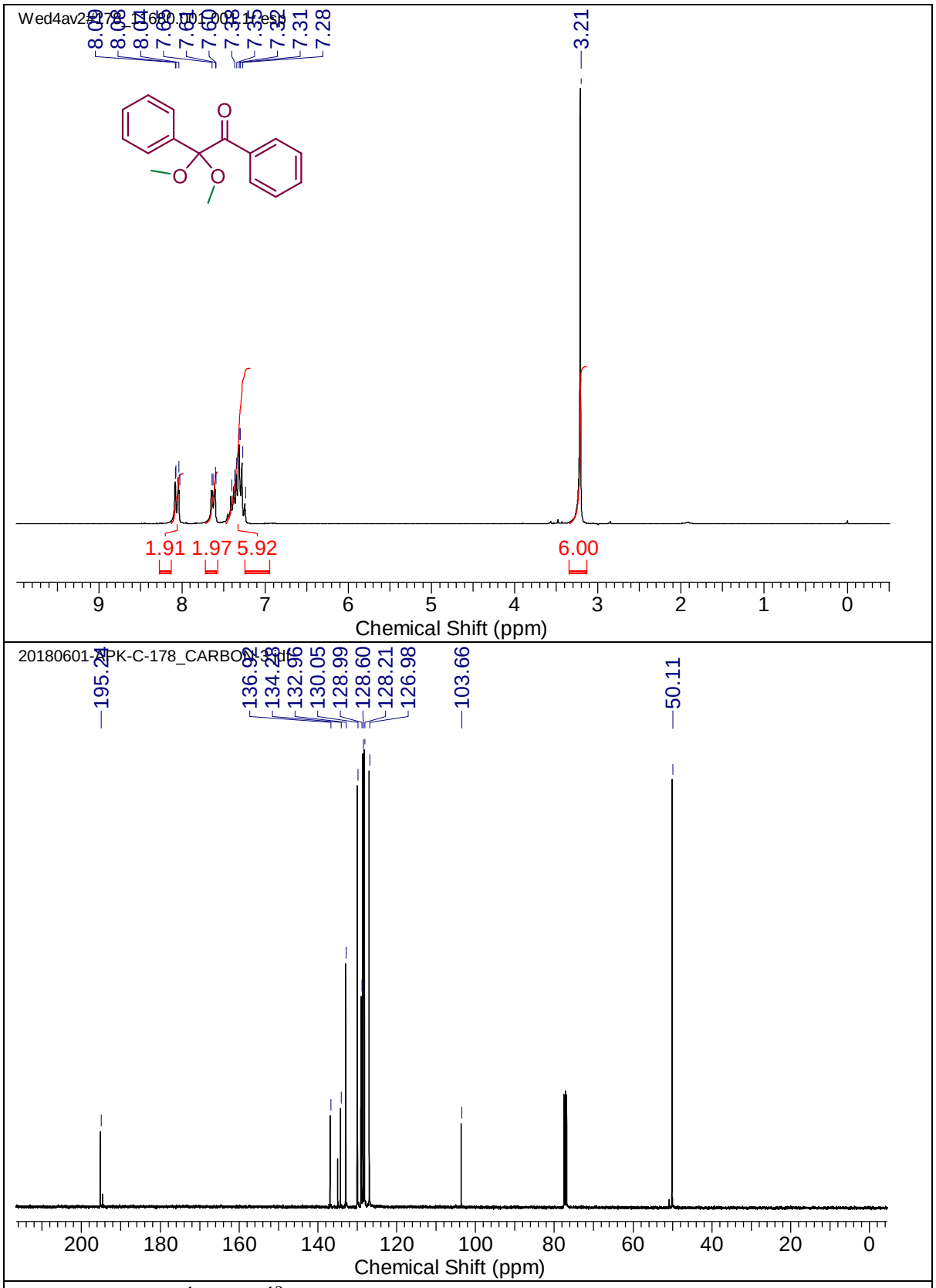


Figure S35. ^{1}H and ^{13}C NMR of 2,2-dimethoxy-1,2-diphenylethan-1-one **(3c)**

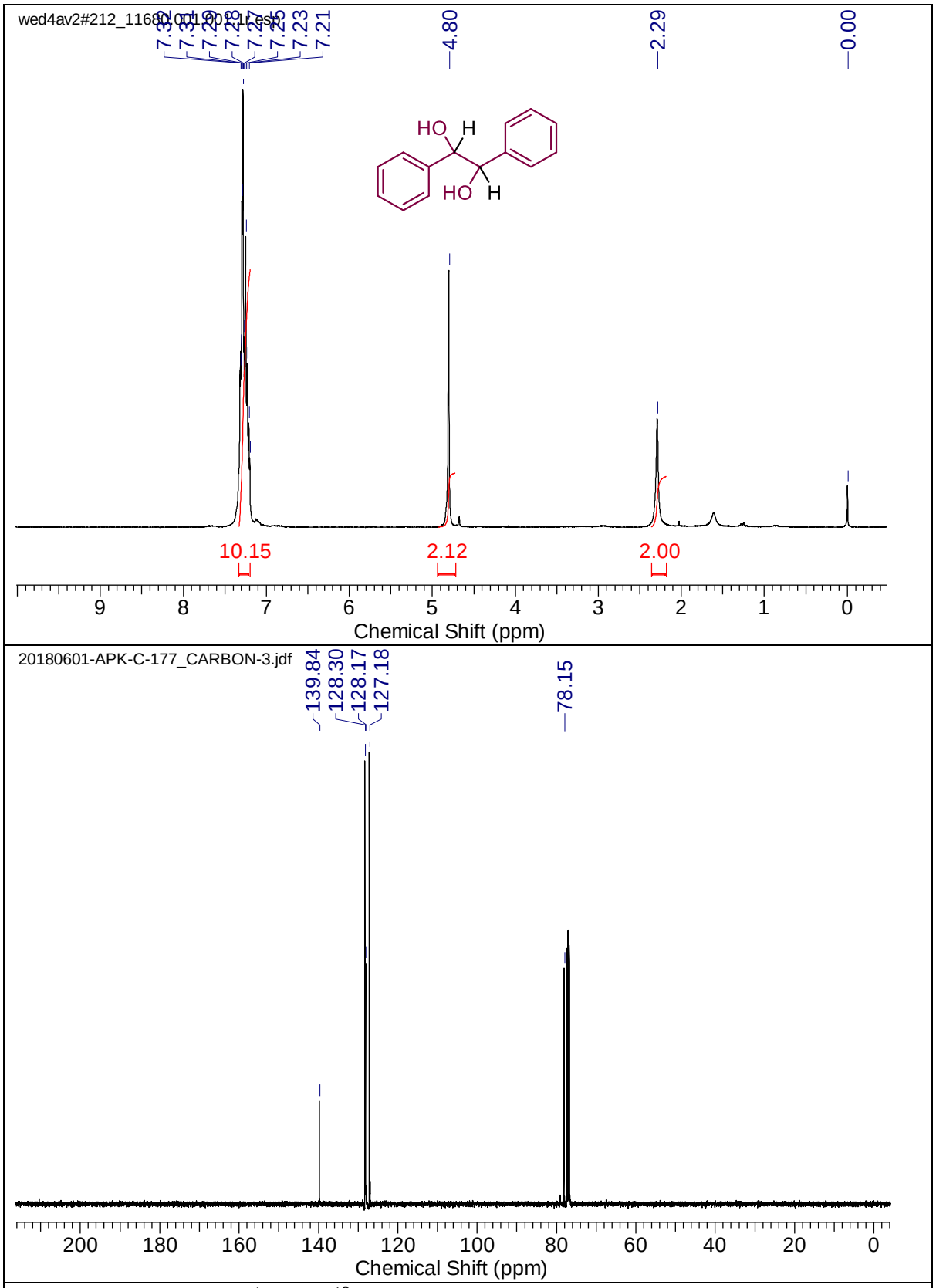


Figure S36. ^{1}H and ^{13}C NMR of 1,2-diphenylethane-1,2-diol **(3f)**

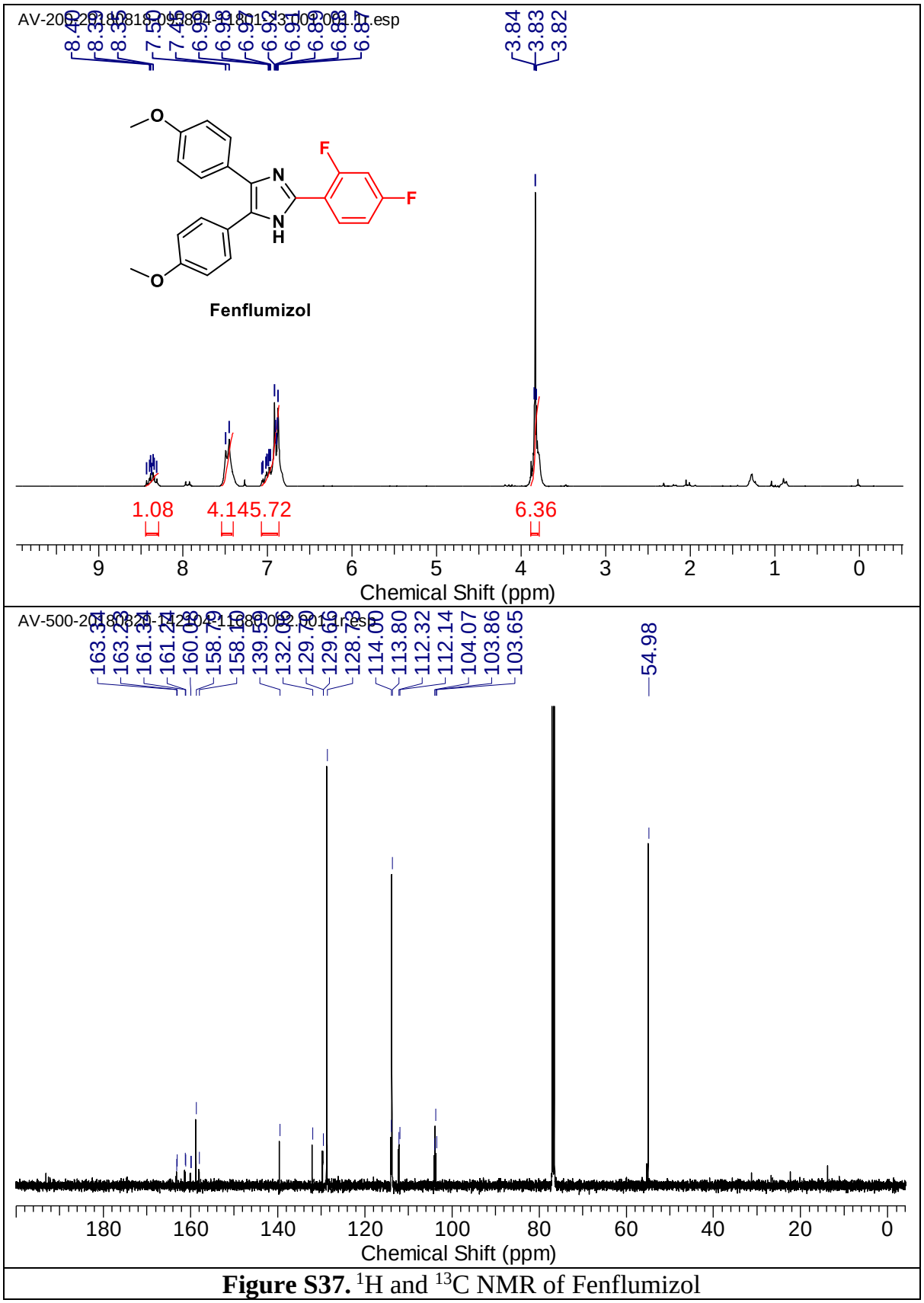
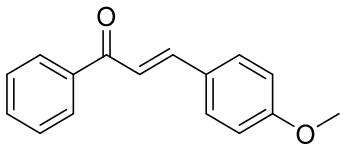
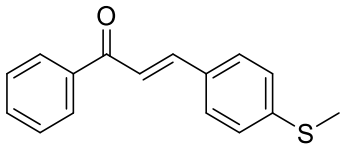
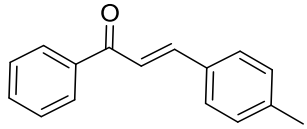
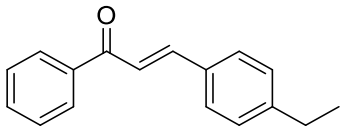
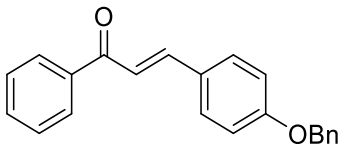
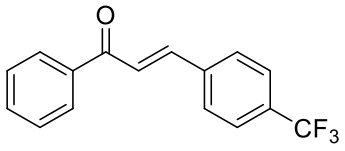
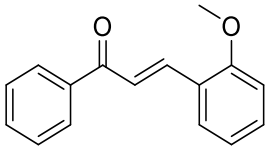
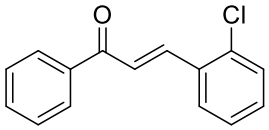
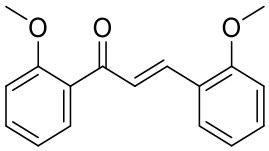
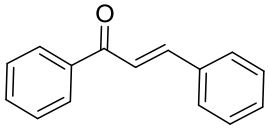
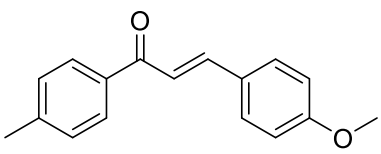


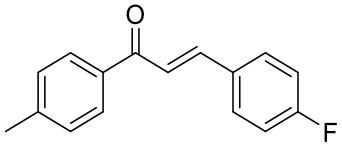
Figure S37. ^{1}H and ^{13}C NMR of Fenflumizol

Table S1. Characterization Data of *α,β*-Unsaturated Ketones:

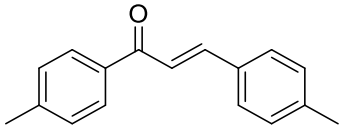
(E)-3-(4-methoxyphenyl)-1-phenylprop-2-en-1-one (1a)[1]	
	Yield: 4.5 gm, 91%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) *δ*: 3.91 (s, 3 H), 7.00 (d, *J*=9.16 Hz, 2 H), 7.39 - 7.50 (m, 3 H), 7.56 (d, *J*=15.87 Hz, 1 H), 7.62 - 7.76 (m, 2 H), 7.82 (d, *J*=15.26 Hz, 1 H), 8.06 (d, *J*=8.55 Hz, 2 H)
(E)-3-(4-(methylthio) phenyl)-1-phenylprop-2-en-1-one (1b)[2]	
	Yield: 478 mg, 92%; yellow solid; ^{1}H NMR (200 MHz, $CDCl_3$) *δ*: 2.51 (s, 3 H), 7.23 (d, J=8.46 Hz, 2 H), 7.41 - 7.64 (m, 7 H), 7.68 - 7.83 (m, 1 H), 8.00 (dd, J=8.08, 1.52 Hz, 2 H)
(E)-1-phenyl-3-(p-tolyl) prop-2-en-1-one (1c)[2]	
	Yield: 365 mg, 86%; faint yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) *δ*: 2.41 (s, 3 H), 7.24 (d, *J*=7.95 Hz, 2 H), 7.47 - 7.54 (m, 3 H), 7.54 - 7.62 (m, 3 H), 7.81 (d, *J*=15.65 Hz, 1 H), 8.01 - 8.05 (m, 2 H)
(E)-3-(4-ethylphenyl)-1-phenylprop-2-en-1-one (1d)[3]	
	Yield: 298 mg, 85%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) *δ*: 1.23 - 1.29 (m, 3 H), 2.69 (d, *J*=7.70 Hz, 2 H), 7.23 - 7.27 (m, 2 H), 7.47 - 7.53 (m, 3 H), 7.54 - 7.61 (m, 3 H), 7.81 (d, *J*=15.65 Hz, 1 H), 7.98 - 8.04 (m, 2 H)
(E)-3-(4-(benzyloxy) phenyl)-1-phenylprop-2-en-1-one (1e)[4]	
	Yield: 655 mg, 87%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) *δ*: 5.13 (s, 2 H), 6.97 - 7.06 (m, 2 H), 7.32 - 7.38 (m, 1 H), 7.38 - 7.47 (m, 5 H), 7.47 - 7.55 (m, 2 H), 7.55 - 7.68 (m, 3 H), 7.80 (d, *J*=15.65 Hz, 1 H), 7.98 - 8.06 (m, 2 H)
(E)-1-phenyl-3-(4-(trifluoromethyl) phenyl) prop-2-en-1-one (1f)[3]	

	Yield: 215 mg, 70 %; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.50 - 7.57 (m, 2 H), 7.58 - 7.64 (m, 2 H), 7.69 (m, *J*=8.31 Hz, 2 H), 7.76 (m, *J*=8.31 Hz, 2 H), 7.82 (d, *J*=15.77 Hz, 1 H), 8.01 - 8.07 (m, 2 H)
(E)-3-(2-methoxyphenyl)-1-phenylprop-2-en-1-one (1g)[5]	
	Yield: 845 mg, 82%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 3.93 (s, 3 H), 6.93 - 7.04 (m, 2 H), 7.35 - 7.44 (m, 1 H), 7.47 - 7.54 (m, 2 H), 7.54 - 7.62 (m, 2 H), 7.63 - 7.67 (m, 1 H), 8.00 - 8.06 (m, 2 H), 8.13 (d, *J*=15.89 Hz, 1 H)
(E)-3-(2-chlorophenyl)-1-phenylprop-2-en-1-one (1h)[6]	
	Yield: 124 mg, 64%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.32 - 7.36 (m, 2 H), 7.43 - 7.48 (m, 1 H), 7.48 - 7.51 (m, 1 H), 7.51 - 7.55 (m, 2 H), 7.58 - 7.64 (m, 1 H), 7.74 - 7.80 (m, 1 H), 8.01 - 8.06 (m, 2 H), 8.20 (d, J=15.57 Hz, 1 H)
(E)-1,3-bis(2-methoxyphenyl) prop-2-en-1-one (1i)[6]	
	Yield: 460 mg, 96%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 3.89 (br. s., 3 H), 3.91 (br. s., 3 H), 6.92-7.02 (m, 4 H), 7.42-7.48 (m, 3 H), 6.62-6.64 (m, 2 H), 7.98 (d, *J*=6.11 Hz, 2 H),
(2E)-1,3-Diphenylprop-2-en-1-one (1j)[1]	
	Yield: 5 gm, 81%; yellow solid; ^{1}H NMR (200 MHz, $CDCl_3$) δ: 7.36 - 7.46 (m, 3 H), 7.46 - 7.59 (m, 4 H), 7.59 - 7.67 (m, 2 H), 7.74 - 7.88 (m, 1 H), 7.97 - 8.07 (m, 2 H)
(E)-3-(4-methoxyphenyl)-1-(p-tolyl) prop-2-en-1-one (1k)[1]	
	Yield: 1.5 gm, 96%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 2.44 (s, 3 H), 3.86 (s, 3 H), 6.95 (d, J=8.80 Hz, 2 H), 7.31 (m, J=8.07 Hz, 2 H), 7.43 (d, J=15.65 Hz, 1 H), 7.61 (m, J=8.80 Hz, 2 H), 7.79 (d, J=15.65 Hz, 1 H), 7.94 (d, J=8.31 Hz, 2 H)

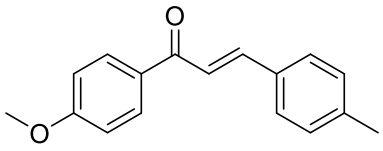
(E)-3-(4-fluorophenyl)-1-(p-tolyl) prop-2-en-1-one (1l)[7]

	Yield: 240 mg, 89%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 2.45 (br. s., 3 H), 7.04 - 7.16 (m, 2 H), 7.31 (d, J=6.36 Hz, 2 H), 7.47 (d, J=15.65 Hz, 1 H), 7.54 - 7.69 (m, 2 H), 7.78 (d, J=15.65 Hz, 1 H), 7.94 (d, J=8.07 Hz, 2 H)

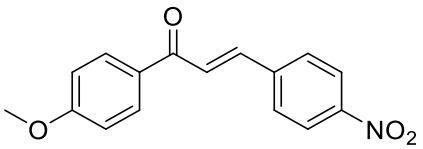
(E)-1,3-di-p-tolylprop-2-en-1-one (1m)[8]

	Yield: 259 mg, 95%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 2.40 (s, 3 H), 2.45 (s, 3 H), 7.24 (m, J=7.83 Hz, 2 H), 7.31 (m, J=8.07 Hz, 2 H), 7.53 (s, 1 H), 7.56 (m, J=8.07 Hz, 2 H), 7.80 (d, J=15.65 Hz, 1 H), 7.95 (m, J=8.07 Hz, 2 H)

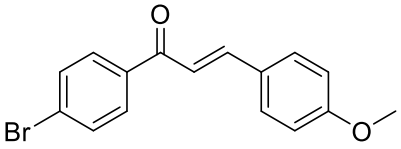
(E)-1-(4-methoxyphenyl)-3-(p-tolyl) prop-2-en-1-one (1n)[1]

	Yield: 500 mg, 93%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 2.40 (s, 3 H), 3.90 (s, 3 H), 6.99 (m, J=8.80 Hz, 2 H), 7.23 (d, J=7.82 Hz, 2 H), 7.48 - 7.59 (m, 3 H), 7.80 (d, J=15.65 Hz, 1 H), 8.05 (m, J=8.80 Hz, 2 H)

(E)-1-(4-methoxyphenyl)-3-(4-nitrophenyl) prop-2-en-1-one (1o)[9]

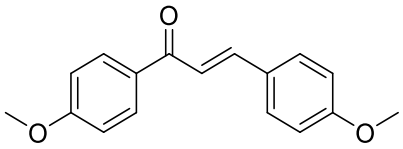
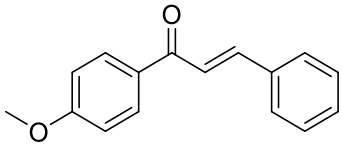
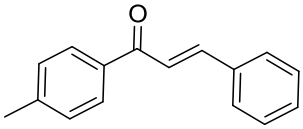
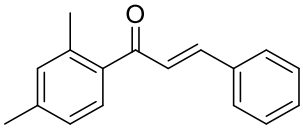
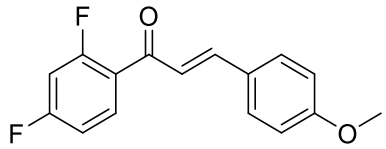
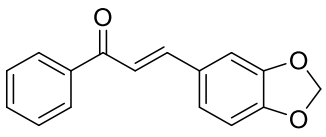
	Yield: 100 mg, 75%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 3.92 (s, 3 H), 7.02 (d, *J*=8.80 Hz, 2 H), 7.58 - 7.73 (m, 1 H), 7.79 (d, *J*=6.85 Hz, 3 H), 8.06 (d, *J*=8.80 Hz, 2 H), 8.29 (d, *J*=8.56 Hz, 2 H)

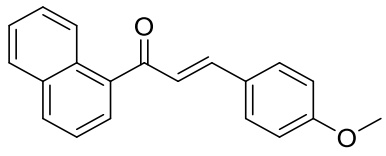
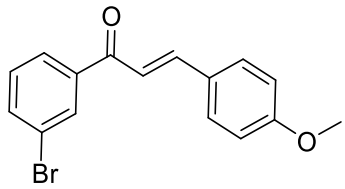
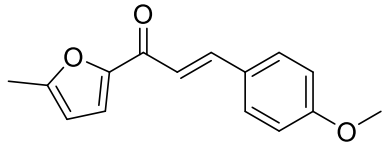
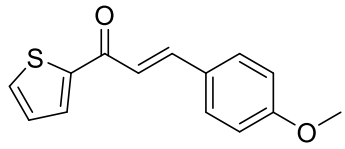
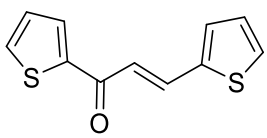
(E)-1-(4-bromophenyl)-3-(4-methoxyphenyl) prop-2-en-1-one (1p)[1]

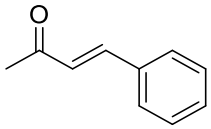
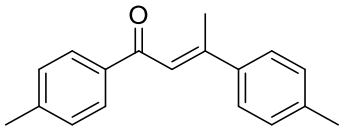
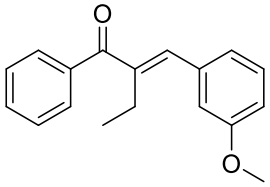
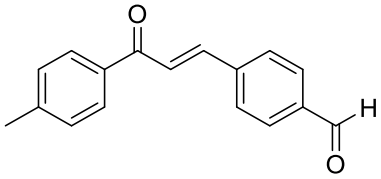
	Yield: 400 mg, 88%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 3.87 (s, 3 H), 6.95 (m, *J*=8.80 Hz, 2 H), 7.36 (d, *J*=15.53 Hz, 1 H), 7.61 (d, *J*=8.80 Hz, 2 H), 7.65 (d, *J*=8.56 Hz, 2 H), 7.80 (d, *J*=15.65 Hz, 1 H), 7.89 (m, *J*=8.56 Hz, 2 H)

(E)-1,3-bis(4-methoxyphenyl)prop-2-en-1-one (1q)[1]

	Yield: 5 gm, 96%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 3.84 (br. s., 3 H),

	3.87 (br. s., 3 H), 6.93 (d, *J*=5.99 Hz, 2 H), 6.97 (d, *J*=6.24 Hz, 2 H), 7.43 (d, *J*=15.53 Hz, 1 H), 7.59 (d, *J*=6.11 Hz, 2 H), 7.77 (d, *J*=15.53 Hz, 1 H), 8.03 (d, *J*=7.58 Hz, 2 H)
(E)-1-(4-methoxyphenyl)-3-phenylprop-2-en-1-one (**1r**)[1]	
	Yield: 192 mg, 93%; yellow solid; ^{1}H NMR (200 MHz, $CDCl_3$) δ: 3.88 (s, 3 H), 6.99 (d, J=8.97 Hz, 2 H), 7.35 - 7.48 (m, 3 H), 7.49 - 7.61 (m, 1 H), 7.61 - 7.69 (m, 2 H), 7.75 - 7.89 (m, 1 H), 8.05 (d, J=8.84 Hz, 2 H)
(E)-3-phenyl-1-(p-tolyl)prop-2-en-1-one (**1s**)[1]	
	Yield: 230 mg, 87%; yellow solid; ^{1}H NMR (200 MHz, $CDCl_3$) δ: 2.45 (s, 3 H), 7.32 (d, J=7.94 Hz, 2 H), 7.38 - 7.48 (m, 3 H), 7.48 - 7.62 (m, 1 H), 7.66 (dd, J=6.50, 2.87 Hz, 2 H), 7.75 - 7.88 (m, 1 H), 7.96 (d, J=8.16 Hz, 2 H)
(E)-1-(2,4-dimethylphenyl)-3-phenylprop-2-en-1-one (**1t**)[10]	
	Yield: 450 mg, 85%; faint yellow solid; ^{1}H NMR (200 MHz, $CDCl_3$) δ: 2.44 (s, 3 H), 3.85 (s, 3 H), 6.92 (m, J=8.01 Hz, 2 H), 6.98 - 7.13 (m, 4 H), 7.42 - 7.45 (m, 1 H), 7.53 (m, J=8.39 Hz, 2 H), 7.85 (d, J=8.01 Hz, 1 H)
(E)-1-(2,4-difluorophenyl)-3-(4-methoxyphenyl) prop-2-en-1-one (**1u**)[11]	
	Yield: 240 mg, 68%; yellow solid; ^{1}H NMR (200 MHz, $CDCl_3$) δ: 3.88 (s, 3 H), 6.88 - 6.96 (m, 2 H), 6.99 (d, J=8.70 Hz, 3 H), 7.18 - 7.32 (m, 1 H), 7.57 (d, J=8.70 Hz, 1 H), 7.73 (d, J=16.03 Hz, 1 H), 7.78 - 7.88 (m, 3 H)
(E)-3-(benzo[d][1,3]dioxol-5-yl)-1-phenylprop-2-en-1-one (**1v**)[8]	
	Yield: 274 mg, 84%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 6.04 (s, 2 H), 6.86 (d, *J*=8.07 Hz, 1 H), 7.14 (dd, *J*=8.07, 1.71 Hz, 1 H), 7.18 (d, *J*=1.71 Hz, 1 H), 7.38 (d, *J*=15.53 Hz, 1 H), 7.47 - 7.54 (m, 2 H), 7.56

	- 7.62 (m, 1 H), 7.75 (d, *J*=15.53 Hz, 1 H), 7.98 - 8.05 (m, 2 H)
(E)-3-(4-methoxyphenyl)-1-(naphthalen-1-yl)prop-2-en-1-one (**1w**)[7]	
	Yield: 645 mg, 92 %; yellow solid; ^{1}H NMR (200 MHz, $CDCl_3$) δ: 3.86 (s, 3 H), 6.89 - 6.96 (m, 2 H), 7.19 (d, *J*=16.02 Hz, 1 H), 7.50 - 7.62 (m, 6 H), 7.75 (dd, *J*=7.09, 1.22 Hz, 1 H), 7.88 - 7.94 (m, 1 H), 8.00 (d, *J*=8.31 Hz, 1 H), 8.23 - 8.34 (m, 1 H)
(E)-1-(3-bromophenyl)-3-(4-methoxyphenyl)prop-2-en-1-one (**1x**)[12]	
	Yield: 456 mg, 87 %; yellow solid; ^{1}H NMR (200 MHz, $CDCl_3$) δ: 3.89 (s, 3 H), 6.91 - 7.03 (m, 2 H), 7.15 - 7.50 (m, 2 H), 7.60 (d, *J*=8.72 Hz, 1 H), 7.68 - 7.81 (m, 1 H), 7.84 (s, 1 H), 7.88 - 7.94 (m, 1 H), 7.94 - 8.02 (m, 1 H), 8.11 (t, *J*=1.58 Hz, 1 H)
(E)-3-(4-methoxyphenyl)-1-(5-methylfuran-2-yl)prop-2-en-1-one (**1y**)[13]	
	Yield: 500 mg, 90 %; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 2.45 (s, 3 H), 3.85 (s, 3 H), 6.19 (d, J=2.65 Hz, 1 H), 6.91 (d, J=8.59 Hz, 2 H), 7.11 - 7.39 (m, 2 H), 7.59 (d, J=8.59 Hz, 2 H), 7.80 (d, J=15.66 Hz, 1 H)
(E)-3-(4-methoxyphenyl)-1-(thiophen-2-yl)prop-2-en-1-one (**1z**)[14]	
	Yield: 346 mg, 88%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 3.85 (s, 3 H), 6.90 (s, 1 H), 6.94 (s, 1 H), 7.11 - 7.23 (m, 1 H), 7.23 - 7.39 (m, 1 H), 7.53 - 7.70 (m, 3 H), 7.73 - 7.84 (m, 1 H), 7.85 (s, 1 H)
(E)-1,3-di(thiophen-2-yl)prop-2-en-1-one (**1za**)[9]	
	Yield: 300 mg, 80%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.12 (dd, J=5.09, 3.66 Hz, 1 H), 7.17 - 7.25 (m, 2 H), 7.27 (d, J=16.07 Hz, 1 H), 7.40 (d, J=3.46 Hz, 1 H), 7.45 (d, J=4.88 Hz, 1 H), 7.68 - 7.73 (m, 1 H), 7.87 (dd, J=3.66, 0.81 Hz, 1 H), 8.00 (d, J=15.06 Hz, 1 H)

(E)-4-phenylbut-3-en-2-one (1aa)[15]	
	Yield: 164 mg, 70%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 2.39 (s, 3 H), 6.72 (d, J=16.38 Hz, 1 H), 7.40 (td, J=2.35, 1.65 Hz, 3 H), 7.46 - 7.59 (m, 3 H)
(E)-1,3-di-p-tolylbut-2-en-1-one (1ma)[17]	
	Yield: 600 mg, 92%; yellow solid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 2.39 (s, 3 H), 2.41 (s, 3 H), 2.57 (s, 3 H), 7.13 - 7.16 (m, 1 H), 7.20 - 7.28 (m, 4 H), 7.47 (d, *J*=8.19 Hz, 2 H), 7.89 (d, *J*=8.07 Hz, 2 H)
(E)-2-(3-methoxybenzylidene)-1-phenylbutan-1-one (1zb)[16]	
	Yield: 256 mg, 68%; yellow solid;^{1}H NMR (400 MHz, $CDCl_3$) δ: 1.21 (t, J=7.44 Hz, 3 H), 2.80 (q, J=7.25 Hz, 2 H), 3.84 (s, 3 H), 6.87 - 6.95 (m, 2 H), 7.00 (d, J=7.25 Hz, 1 H), 7.05 (s, 1 H), 7.34 (t, J=7.63 Hz, 1 H), 7.48 (t, J=6.87 Hz, 2 H), 7.57 (d, J=7.25 Hz, 1 H), 7.81 (d, J=7.63 Hz, 2 H)
Methyl (E)-4-(3-oxo-3-(p-tolyl) prop-1-en-1-yl) benzoate (1zc)	
	Yield: 554 mg, 78%; yellow solid;^{1}H NMR (200 MHz, $CDCl_3$) δ: 2.46 (s, 3 H), 7.33 (d, J=7.93 Hz, 2 H), 7.58 - 7.74 (m, 2 H), 7.76 - 7.83 (m, 2 H), 7.95 (t, J=8.24 Hz, 4 H), 10.06 (s, 1 H)

References:

(1) Li, Z.; Zhao, H.; Han, H.; Liu, Y.; Song, J.; Guo, W.; Chu, W.; Sun, Z. Graphene-Supported ZnO Nanoparticles: An Efficient Heterogeneous Catalyst for the Claisen-Schmidt Condensation Reaction without Additional Base. *Tetrahedron Lett*. **2017**, *58*, 3984-3988.

(2) Umesha, B.; Basavaraju, Y. B. Synthesis and Pharmacological Studiesof New Pyrazole Analogues of Podophyllotoxin. *Russian Journal of Bioorganic Chemistry* **2014**, *40*, 467-476. (3) Stroba, A.; Schaeffer, F.; Hindie, V.; Lopez-Garcia, L.; Adrian, I.; Frohner, W.; Hartmann, R.W.; Biondi, R. M.; Engel, M. 3,5-Diphenylpent-2-enoic Acids as Allosteric Activators of the Protein Kinase PDK1: Structure-Activity Relationships and Thermodynamic Characterization of Binding as Paradigms for PIF-Binding Pocket-Targeting Compounds. *J. Med. Chem*. **2009**, *52*, 4683-4693.

(4) Iftikhar, S.; Khan, S.; Bilal, A.; Manzoor, S.; Abdullah, M.; Emwas, A.; Sioud, S.; Gao, X.; Chotana, G. A.; Faisal, A.; Saleem, R. S. Z. Synthesis and Evaluation of Modified Chalcone Based p53 Stabilizing Agents. *Bioorganic & Medicinal Chemistry Lett*. **2017**, *27*, 4101-4106. (5) Li, L.; Stimac, J. C; Geary, L. M. Synthesis of Olefins via a Wittig Reaction Mediated by Triphenylarsine. *Tetrahedron Lett*. **2017**, *58*, 1379-1381.
(6) Kazi, I.; Guha, S.; Sekar, G. CBr4 as a Halogen Bond Donor Catalyst for the Selective Activation of Benzaldehydes to Synthesize α,β-Unsaturated Ketones. *Org. Lett.* **2017**, *19*, 1244-1247.
(7) Tripathi, S.; Kapoor, R.; Yadav, L. D. S. Visible Light Activated Radical Denitrative Benzoylation of b- Nitrostyrenes: A Photocatalytic Approach to Chalcones. *Adv. Synth. Catal*. **2018**, *360*, 1407-1413.
(8) Chan, C.; Tsai, Y.; Chang, M. Bi(OTf)3 Catalyzed Disproportionation Reaction of Cinnamyl Alcohols. *Tetrahedron* **2017**,*73*, 3368-3376.
(9) Rocchi, D.; González, J. F.; Menéndez, J. C. Montmorillonite Clay-Promoted, Solvent-Free Cross-Aldol Condensations under Focused Microwave Irradiation. *Molecules* **2014**, *19*, 7317-7326.
(10) Wu, Y.; Zhou, G.; Meng, Q.; Tang, X.; Liu, G.; Yin, H.; Zhao, J.; Yang, F.; Yu, Z.; Luo, Y. Visible Light-Induced Aerobic Epoxidation of α,β-Unsaturated Ketones Mediated by Amidines. *J. Org. Chem*. **2018**, *83*, 13051-13062.
(11) Kadnor, V. A.; Pandhare, G. R.; Gadhave, A.G.; Uphade, B. K. Synthesis and Antibacterial Activity of some Florinated Isooxazoline Derivatives. *RASAYAN J. Chem* **2011**, *4*, 437-441.
(12) Zuo, Y.; Yu, Y.; Wang, S.; Shao, W.; Zhou, B.; Lin, L.; Luo, Z.; Huang, R.; Du, J.; Bu, X. Synthesis and Cytotoxicity Evaluation of Biaryl-based Chalcones and their Potential in TNFa-Induced Nuclear Factor-kB Activation Inhibition. *European Journal of Medicinal Chemistry* **2012**, *50*, 393-404.
(13) Liu, W.; Shi, H.; Jin, H.; Zhao, H.; Zhou, G.; Wen, F.; Yu, Z.; Hou T. Design, Synthesis and Antifungal Activity of a Series of Novel Analogs Based on Diphenyl Ketones. *Chem Biol Drug Des* **2009**, *73*, 661-667.
(14) Smith, N. M.; Soh, P.; Asokananthan, N.; Norret, M.; Stewart, G. A.; Raston C. L. Immunomodulatory Effects of Functionalized Chalcones on Pro-inflammatory Cytokine Release from Lung Epithelial Cells. *New J. Chem*., **2009**, *33*, 1869-1873.
(15) Deck, L. M.; Hunsaker, L. A.; Vander Jagt, T. A.; Whalen, L. J.; Royer R. E.; Vander Jagt, D. L. Activation of Anti-Oxidant Nrf2 Signaling by Enone Analogues of Curcumin. *European Journal of Medicinal Chemistry* **2018**, *143*, 854-865.
(16) Endo, K.; Hamada, D.; Yakeishi, S.; Shibata, T. Effect of Multinuclear Copper/Aluminum Complexes in Highly Asymmetric Conjugate Addition of Trimethylaluminum to Acyclic Enones. *Angew. Chem. Int. Ed.* **2013**, *52*, 606-610.
(17) Sharma, L.; Kimb, K. B.; Elliott, G. I. A Selective Solvent-Free Self-Condensation of Carbonyl Compounds Utilizing Microwave Irradiation. *Green Chem*., **2011**, *13*, 1546-1549.
(18) Hu, Z.; Liu, J.; Li, G.; Dong, Z.; Li, W. Synthesis of Asymmetric Triaryl benzenes by Using $SOCl_2$-C_2H_5OH Reagent. *Journal of the Chinese Chemical Society* **2004**, *51*, 581-583.

^{1}H NMR Spectra of α,β-Unsaturated Ketones:

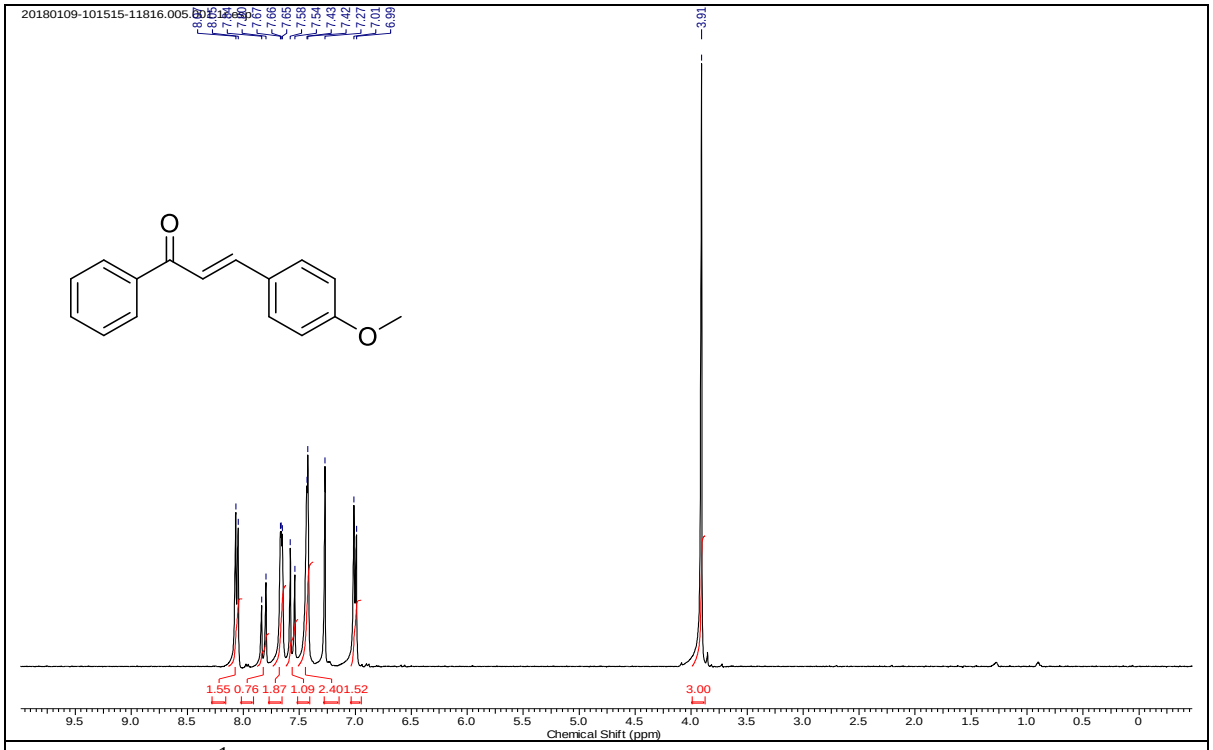


Figure S38. ^{1}H NMR of (E)-3-(4-methoxyphenyl)-1-phenylprop-2-en-1-one **(1a)**

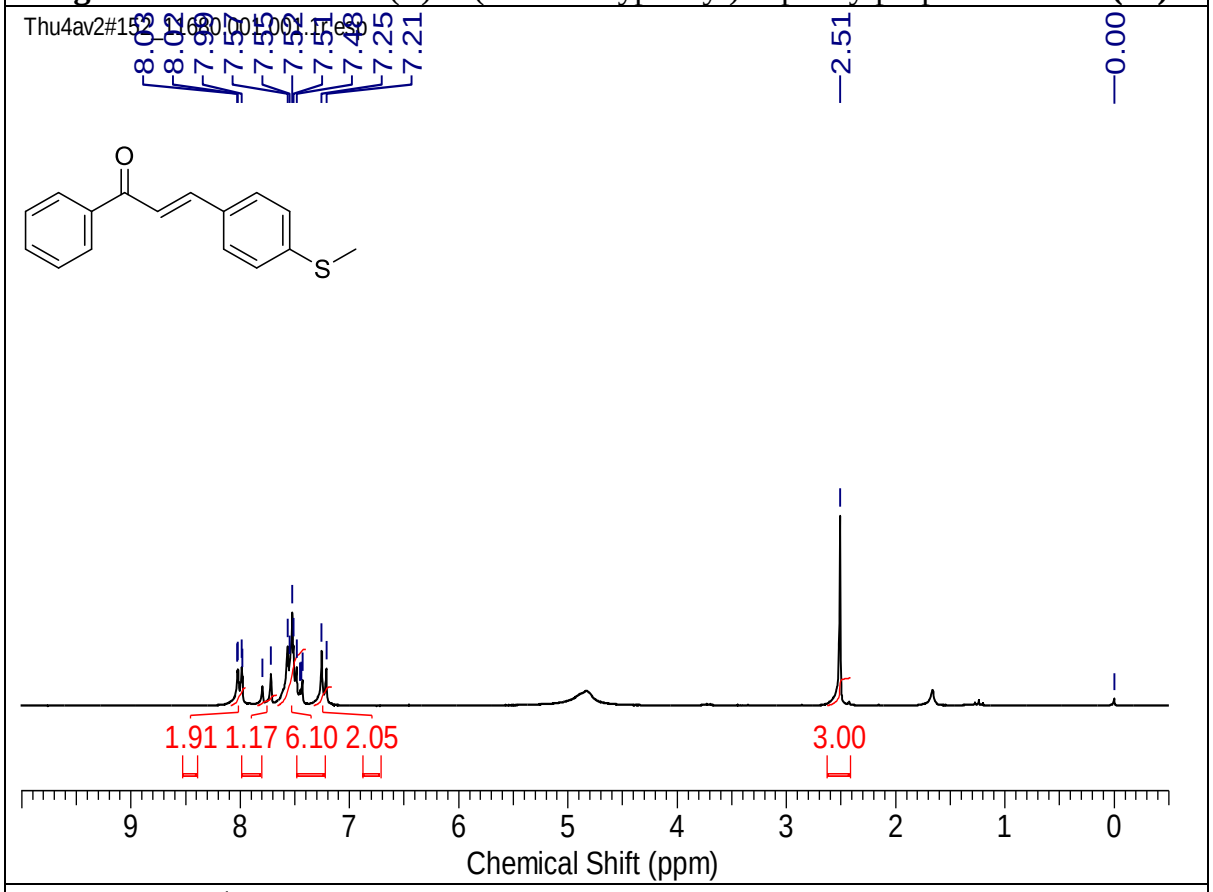


Figure S39. ^{1}H NMR of (E)-3-(4-(methylthio) phenyl)-1-phenylprop-2-en-1-one **(1b)**

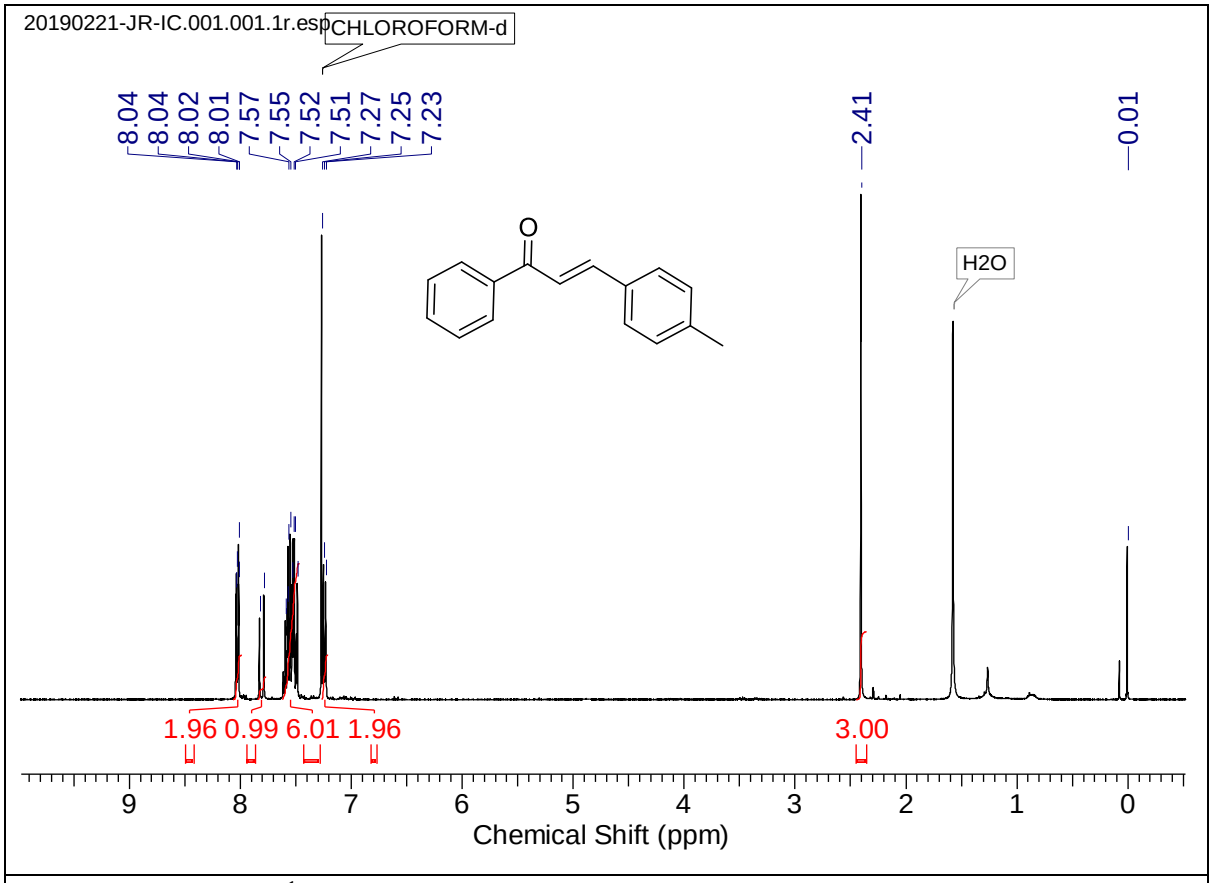


Figure S40. ^{1}H NMR of (E)-1-phenyl-3-(p-tolyl) prop-2-en-1-one **(1c)**

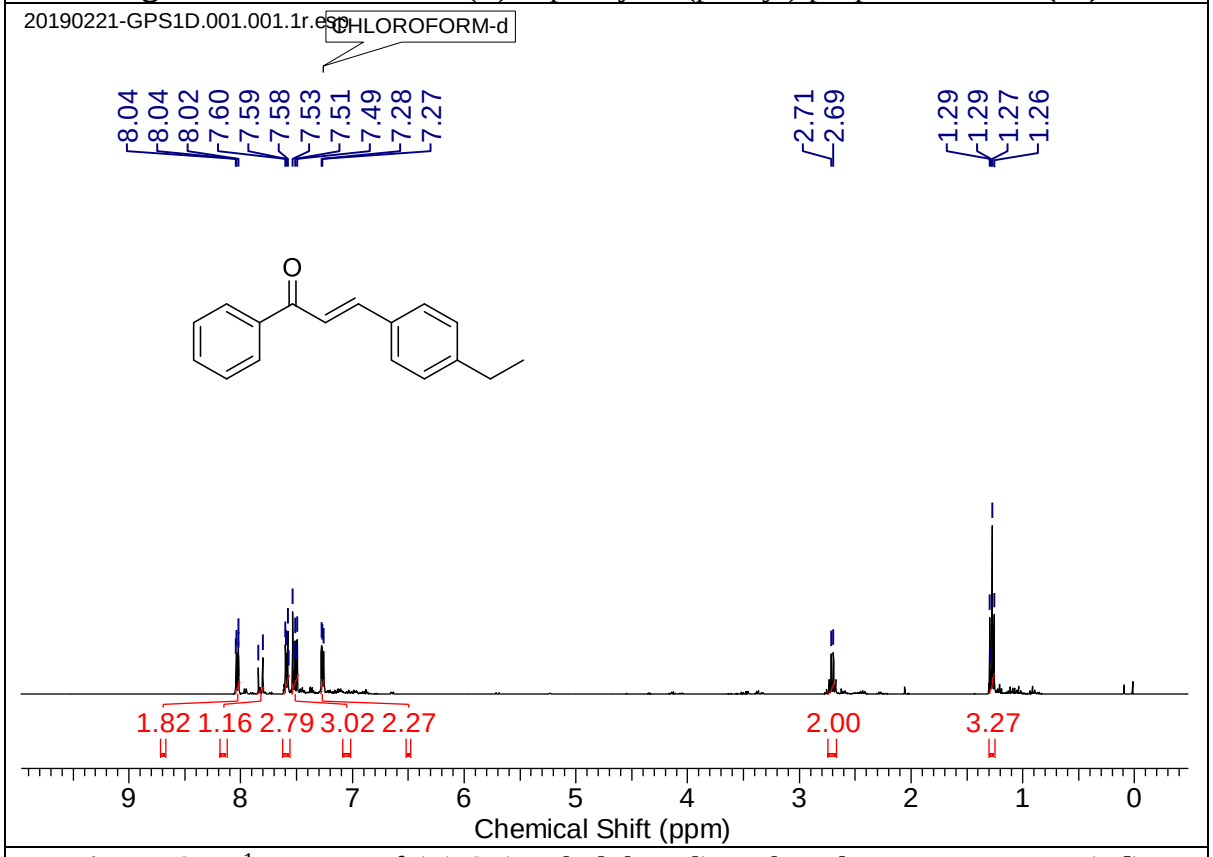


Figure S41. ^{1}H NMR of (E)-3-(4-ethylphenyl)-1-phenylprop-2-en-1-one **(1d)**

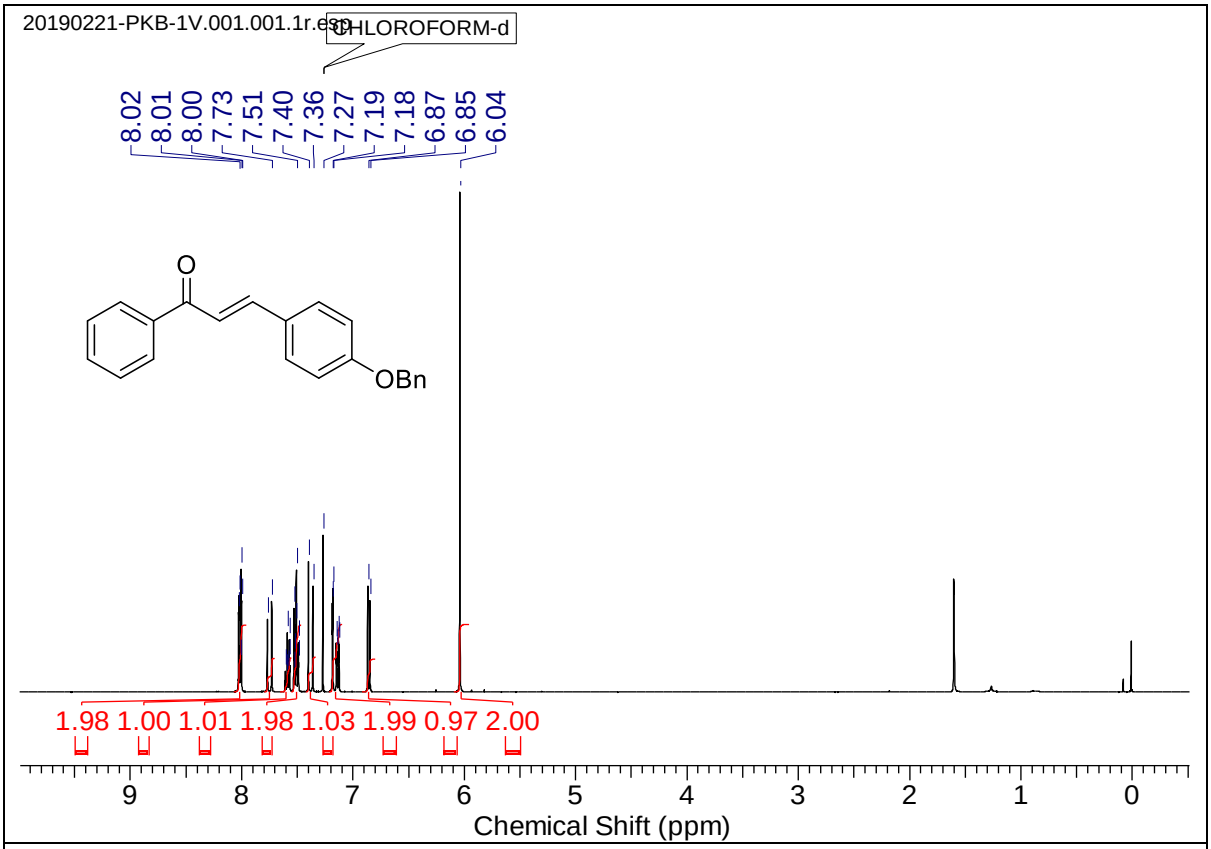


Figure S42. ^{1}H NMR of (E)-3-(4-(benzyloxy) phenyl)-1-phenylprop-2-en-1-one **(1e)**

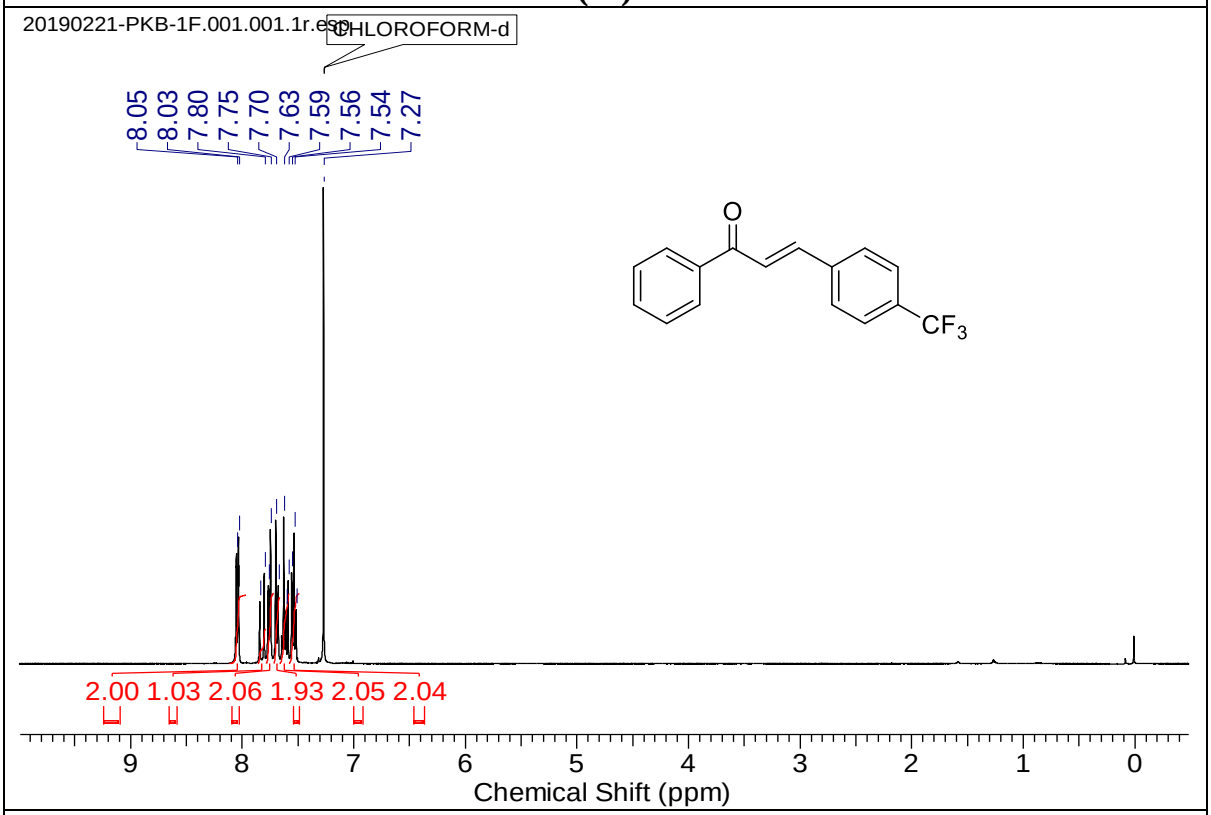


Figure S43. ^{1}H NMR of (E)-1-phenyl-3-(4-(trifluoromethyl) phenyl) prop-2-en-1-one **(1f)**

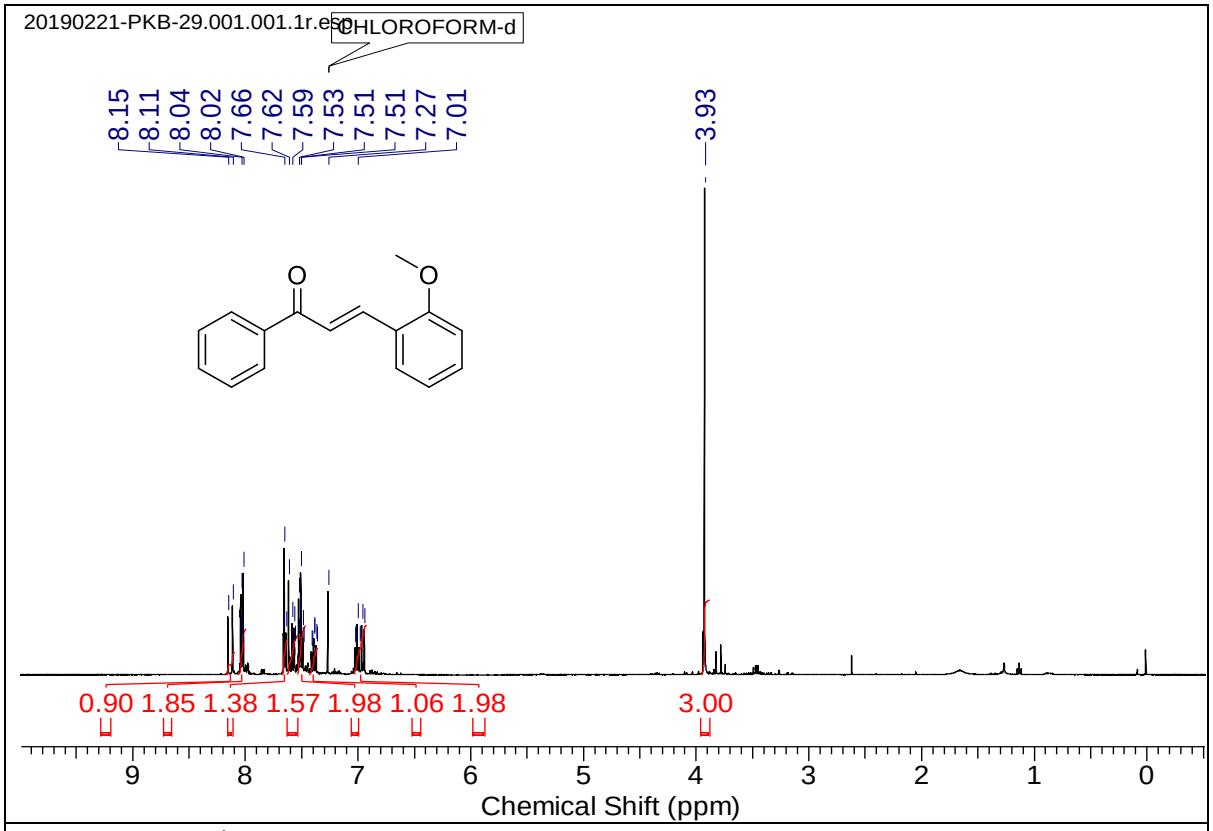


Figure S44. ^{1}H NMR of (E)-3-(2-methoxyphenyl)-1-phenylprop-2-en-1-one **(1g)**

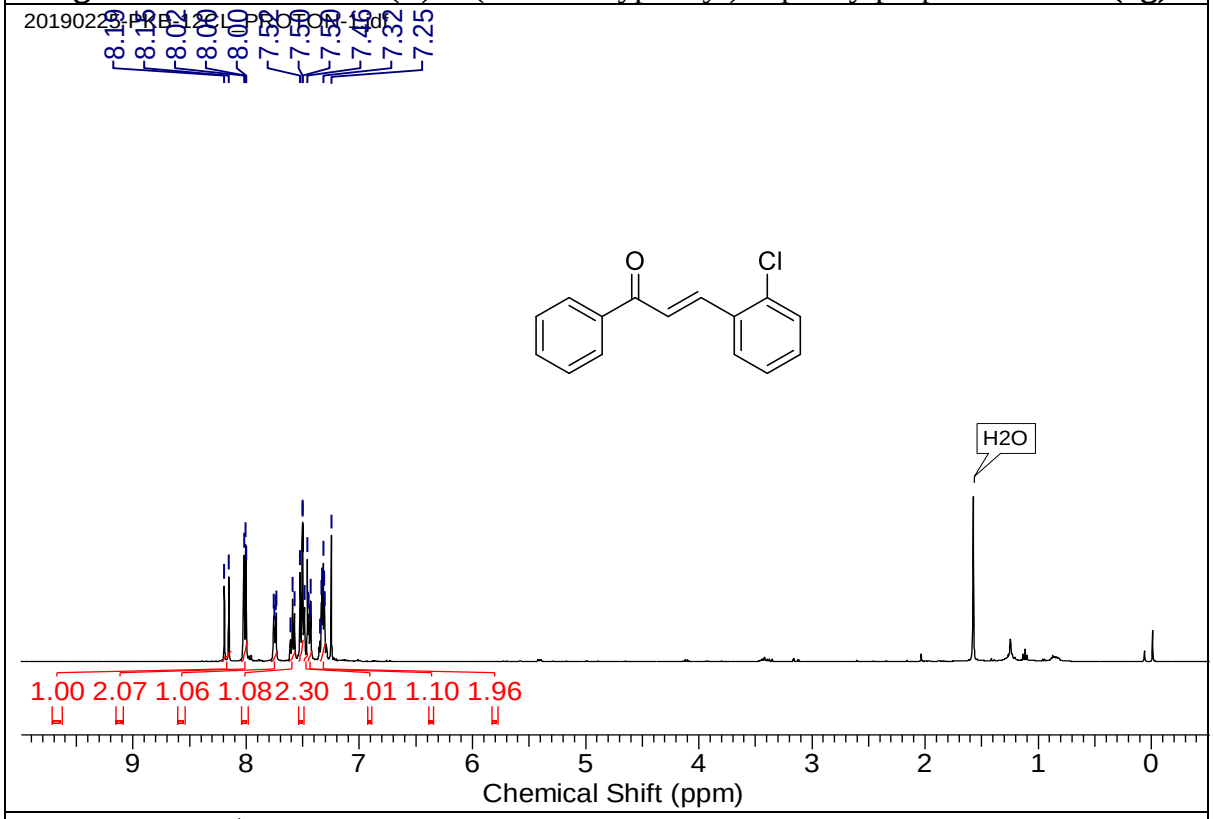


Figure S45. ^{1}H NMR of (E)-3-(2-chlorophenyl)-1-phenylprop-2-en-1-one **(1h)**

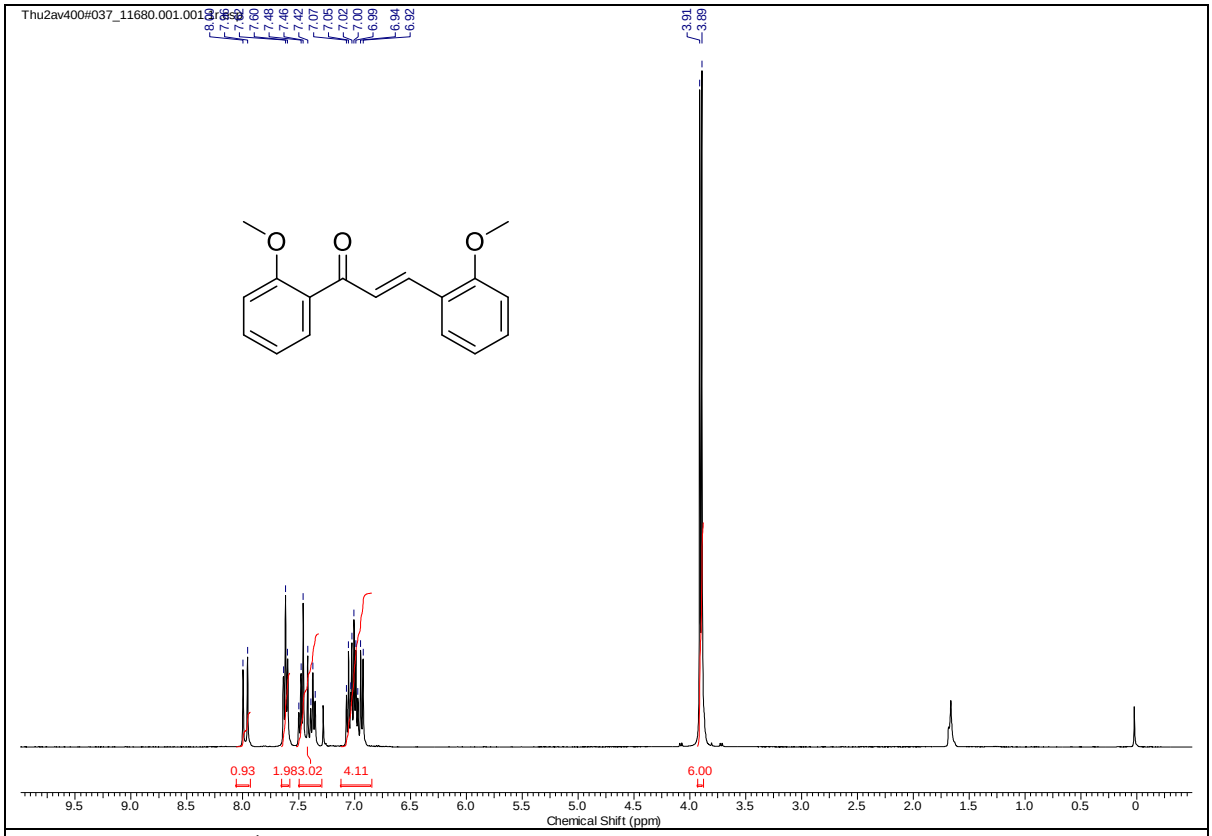


Figure S46. ^{1}H NMR of (E)-1,3-bis(2-methoxyphenyl) prop-2-en-1-one **(1i)**

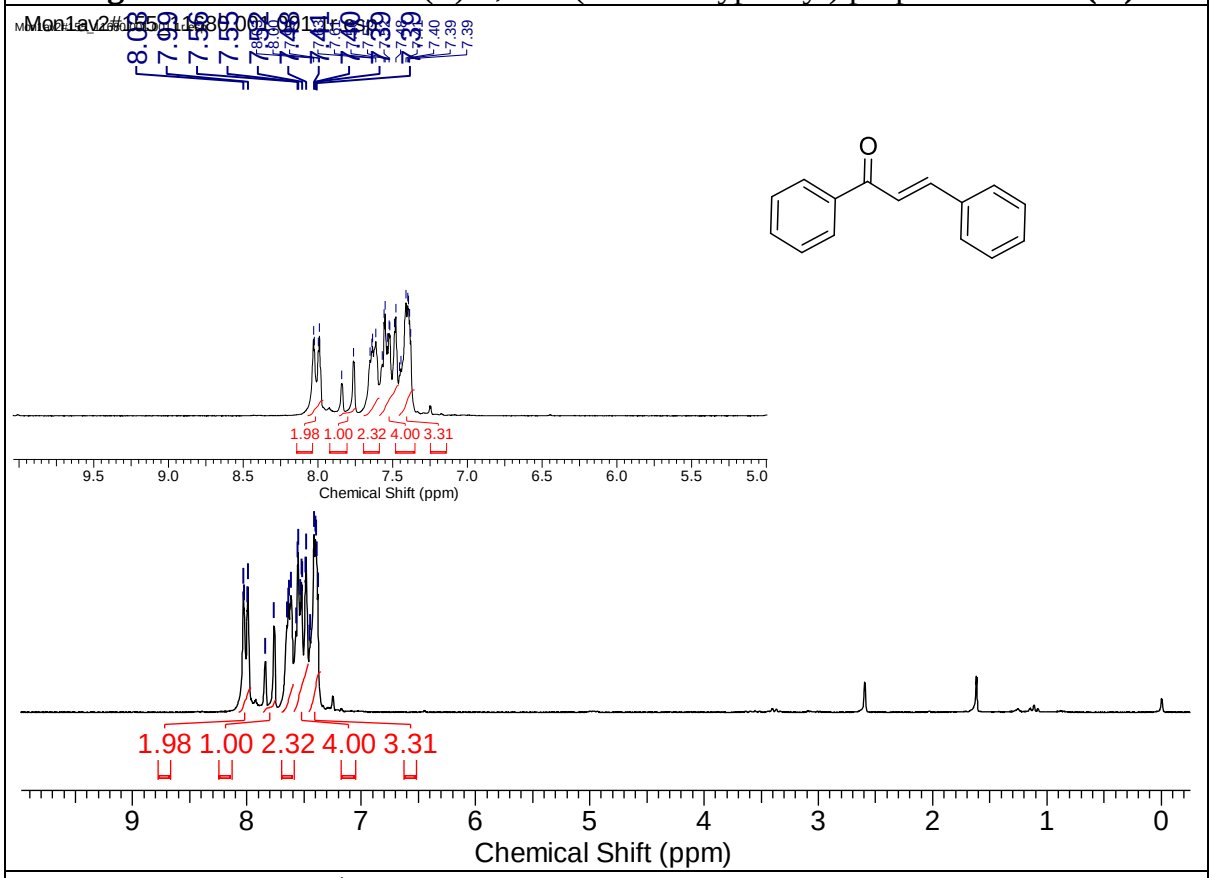


Figure S47. ^{1}H NMR of (2E)-1,3-Diphenylprop-2-en-1-one **(1j)**

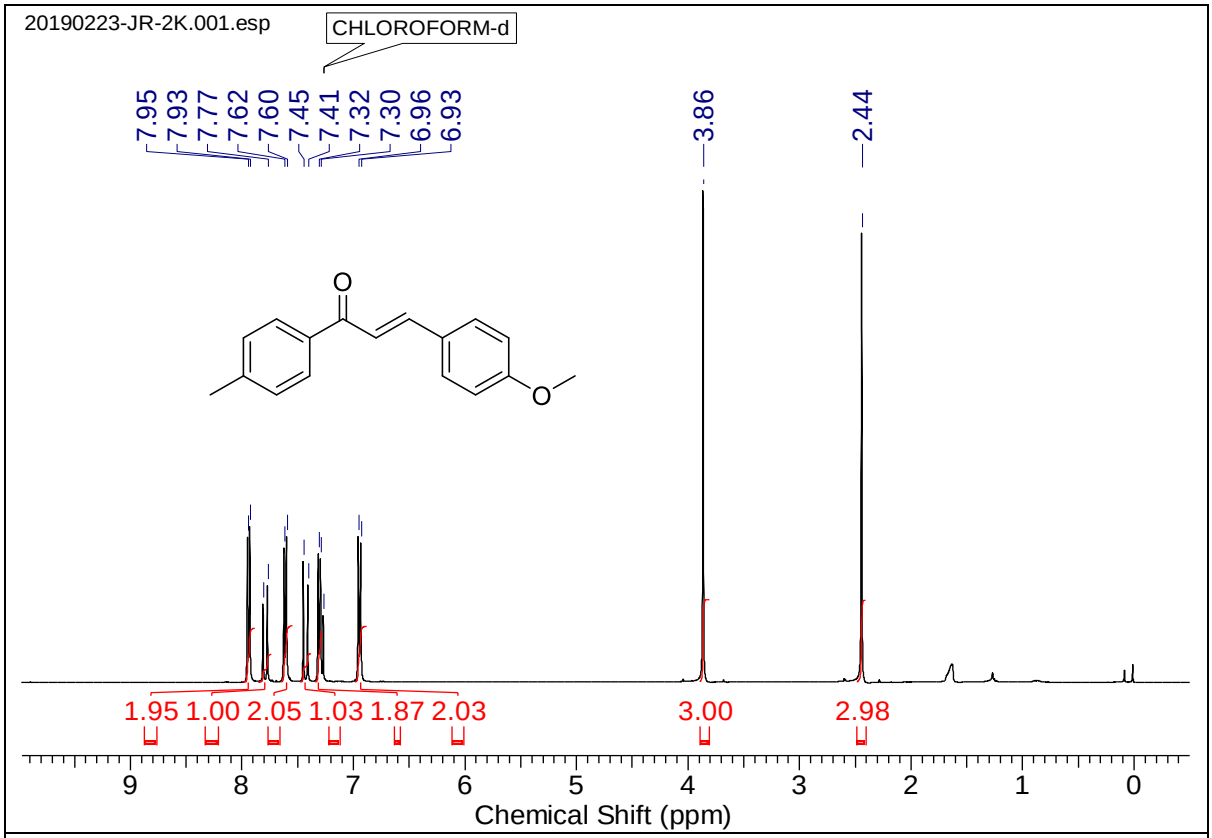


Figure S48. ^{1}H NMR of (E)-3-(4-methoxyphenyl)-1-(p-tolyl) prop-2-en-1-one **(1k)**

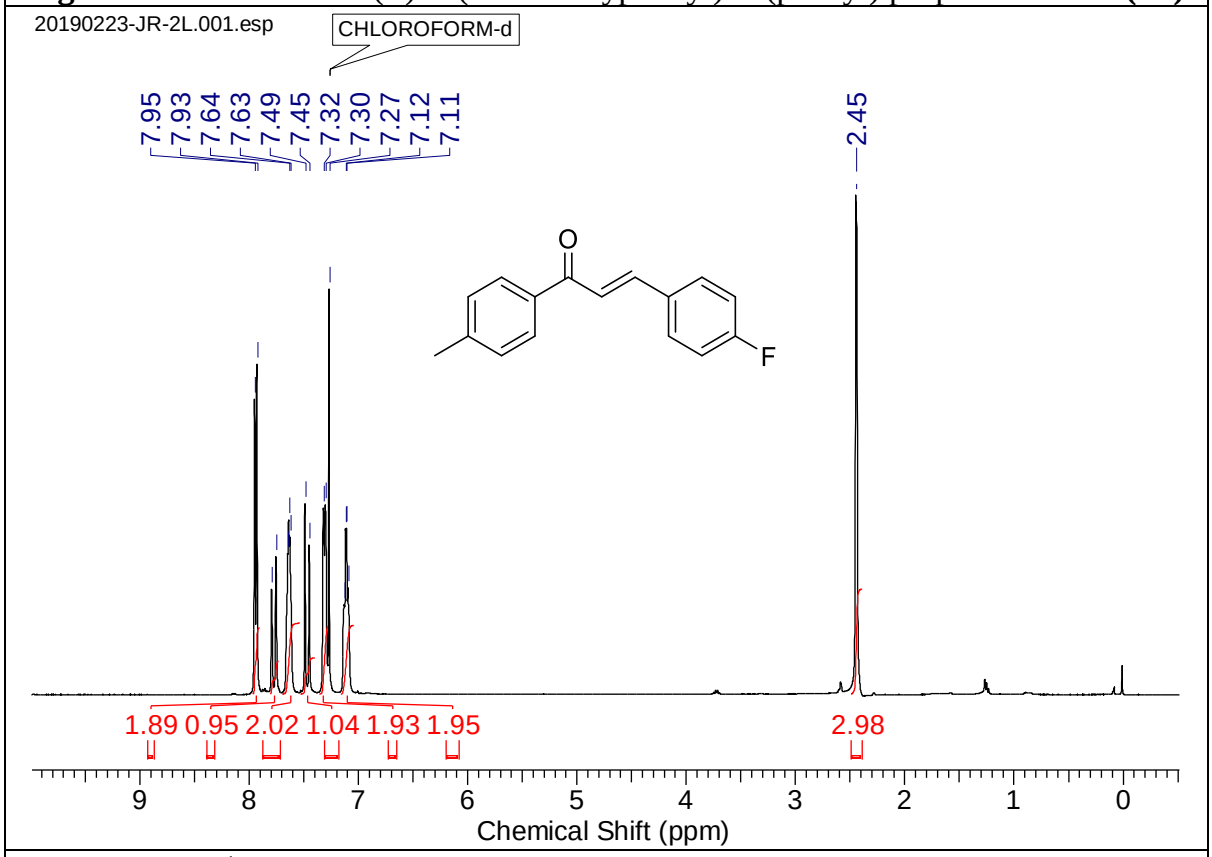


Figure S49. ^{1}H NMR of (E)-3-(4-fluorophenyl)-1-(p-tolyl) prop-2-en-1-one **(1l)**

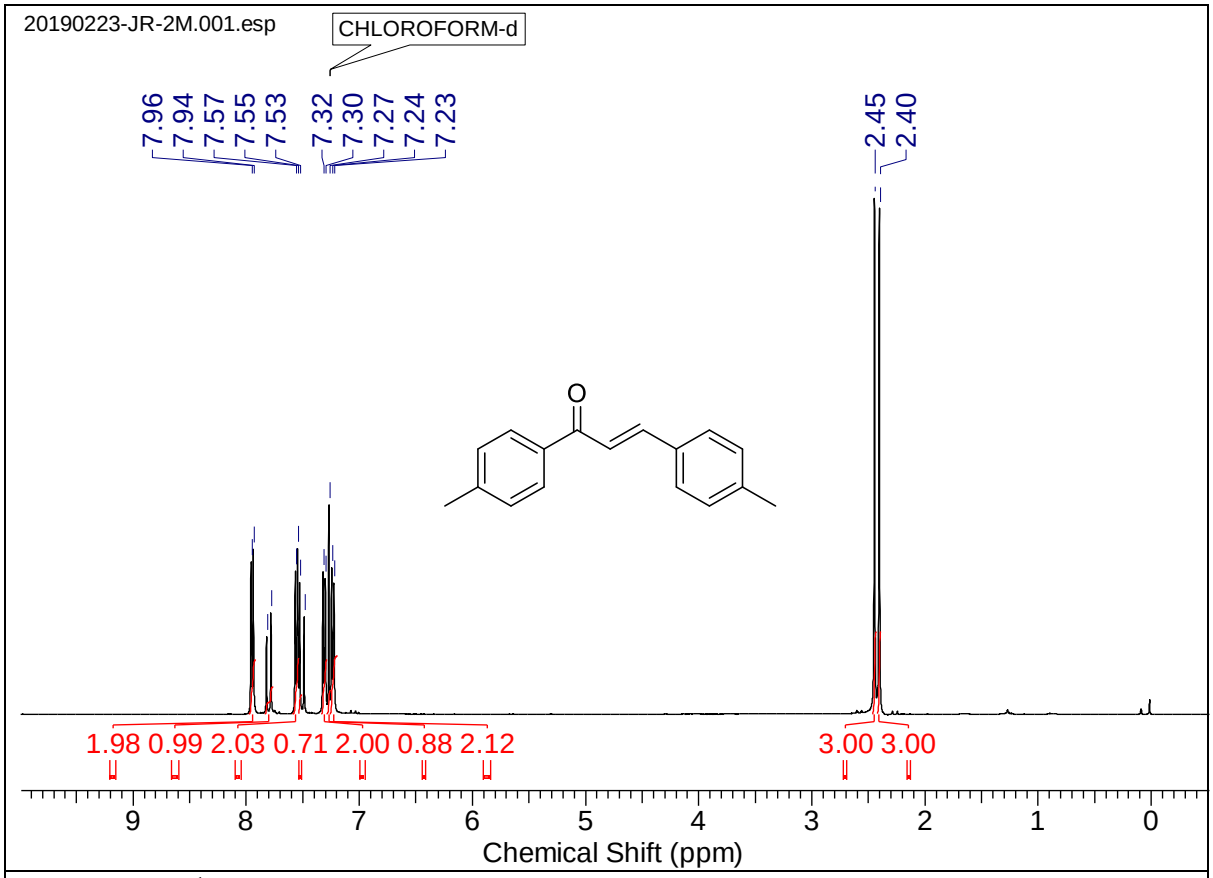


Figure S50. ^{1}H NMR of (E)-1,3-di-p-tolylprop-2-en-1-one **(1m)**

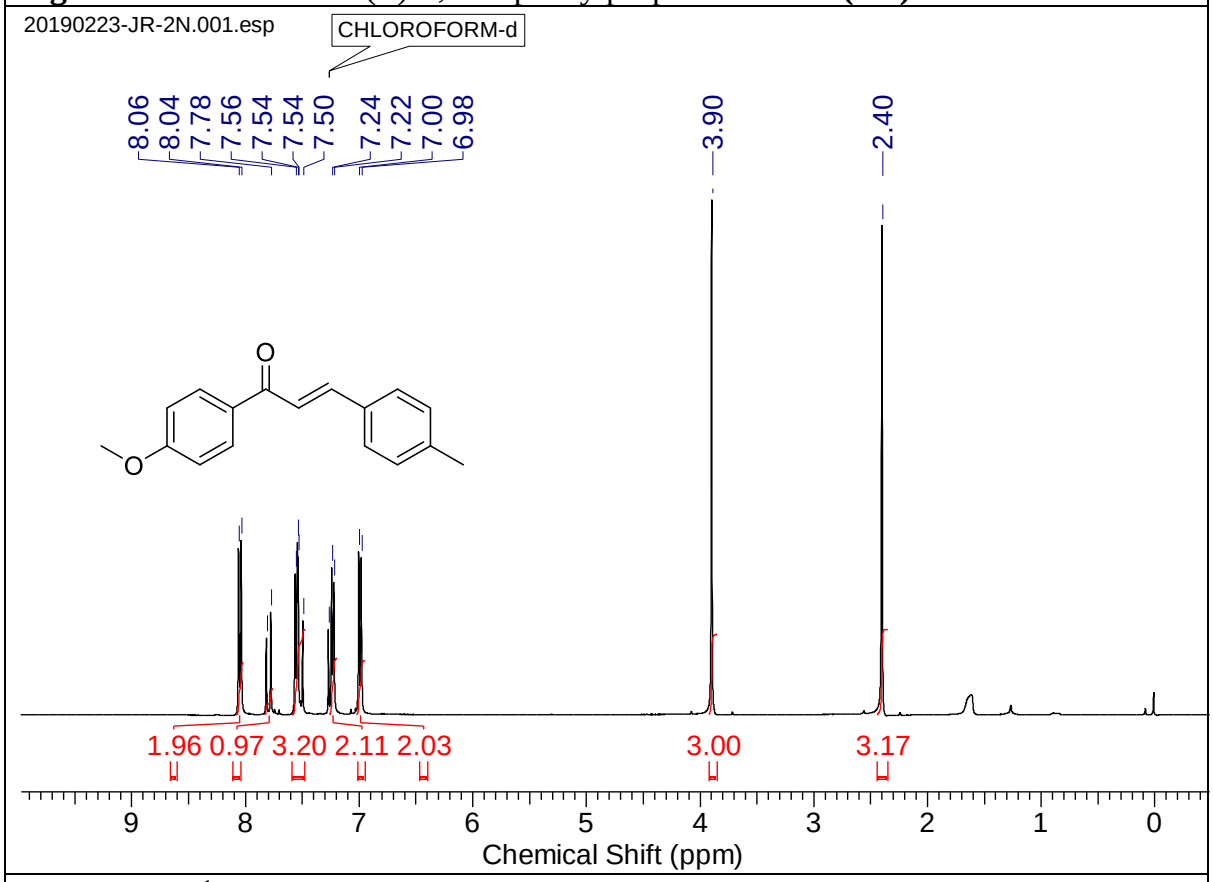


Figure S51. ^{1}H NMR of (E)-1-(4-methoxyphenyl)-3-(p-tolyl) prop-2-en-1-one **(1n)**

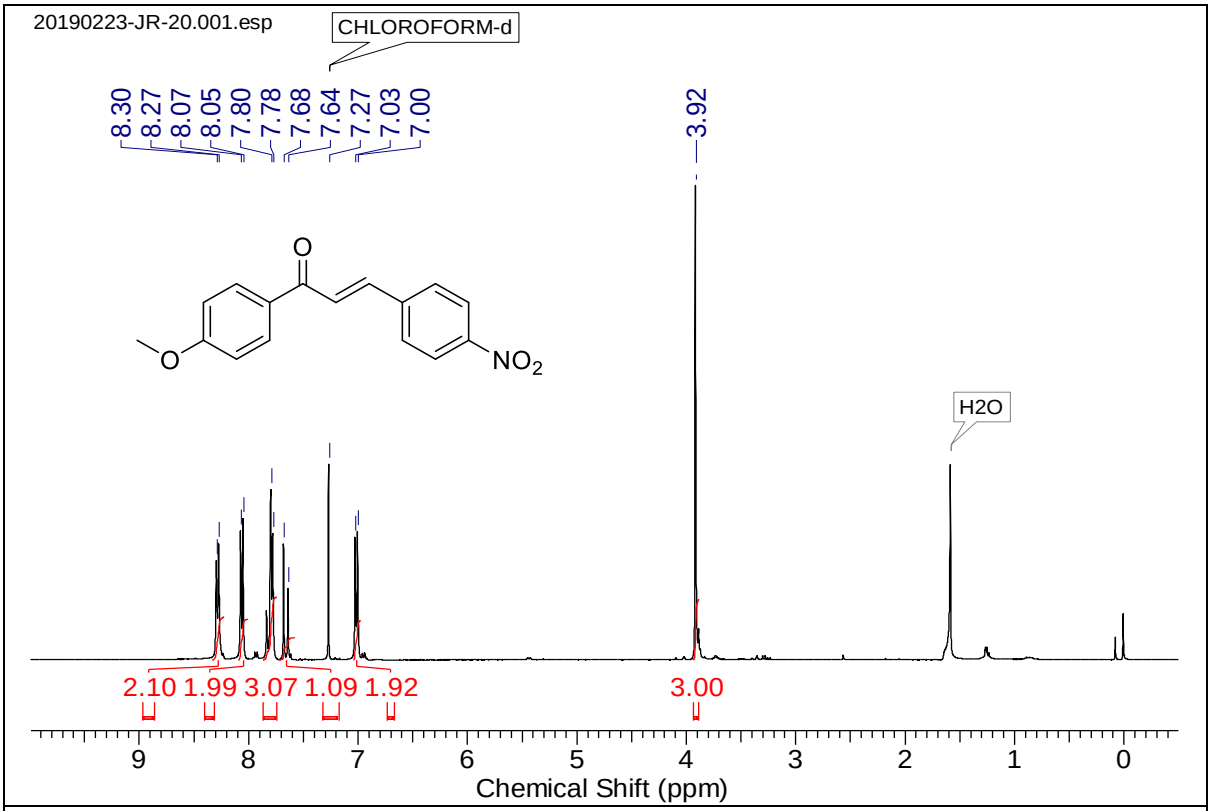


Figure S52. ^{1}H and ^{13}C NMR of (E)-1-(4-methoxyphenyl)-3-(4-nitrophenyl) prop-2-en-1-one **(1o)**

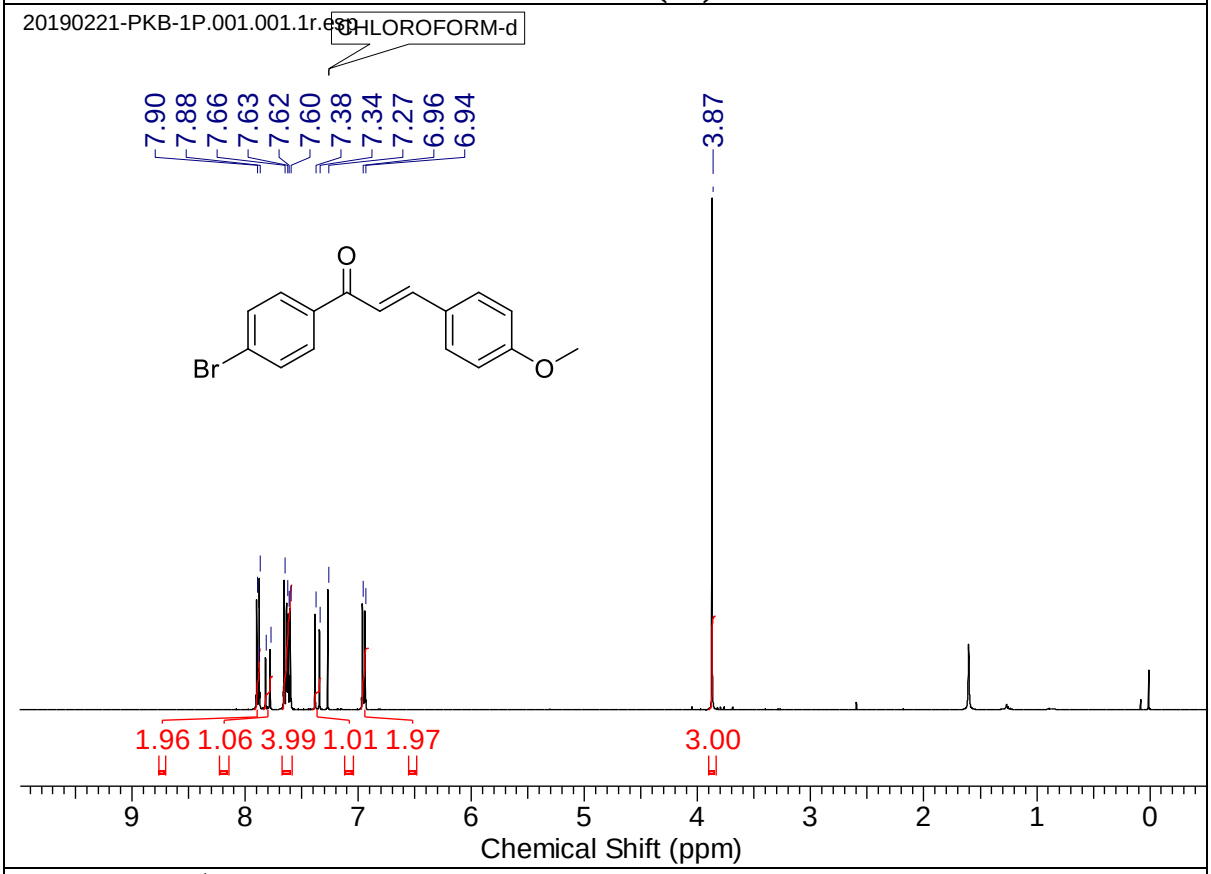


Figure S53. ^{1}H NMR of (E)-1-(4-bromophenyl)-3-(4-methoxyphenyl) prop-2-en-1-one **(1p)**

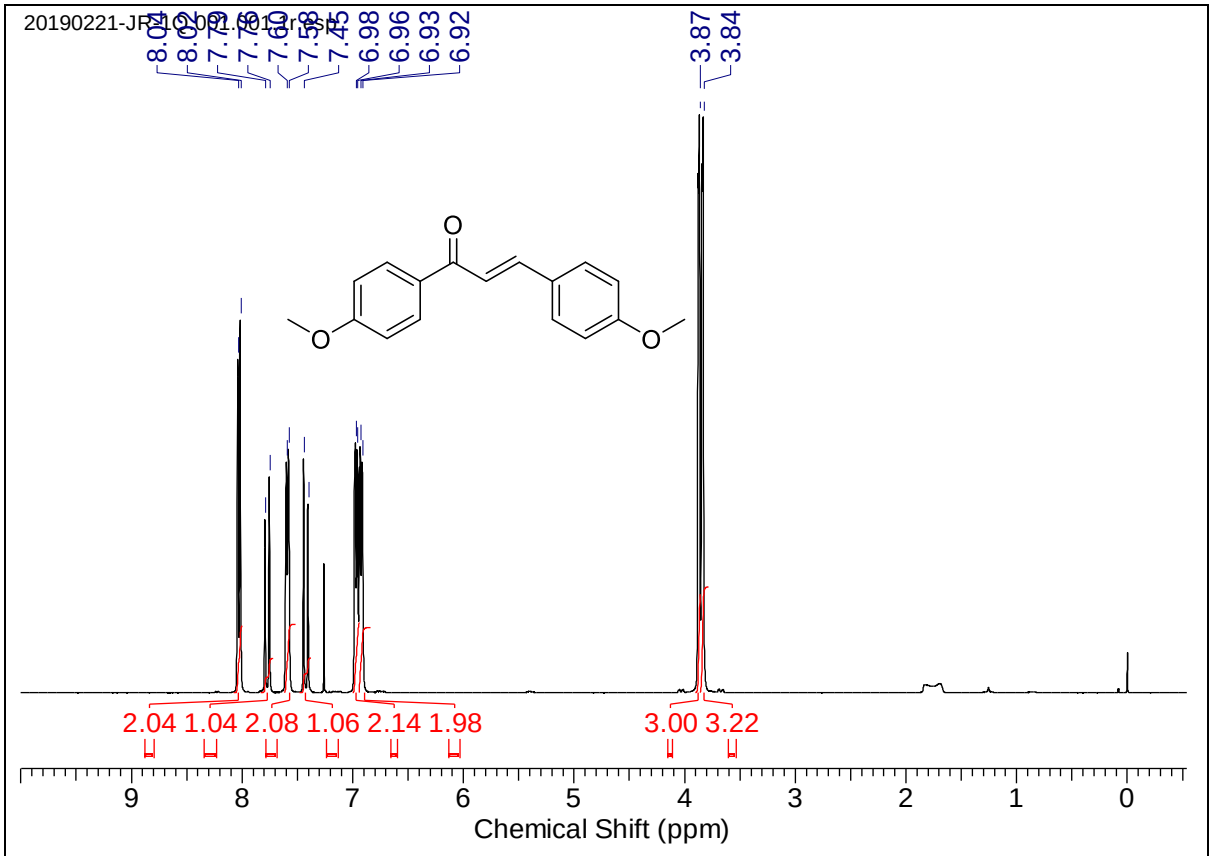


Figure S54. ^{1}H NMR of (E)-1,3-bis(4-methoxyphenyl)prop-2-en-1-one **(1q)**

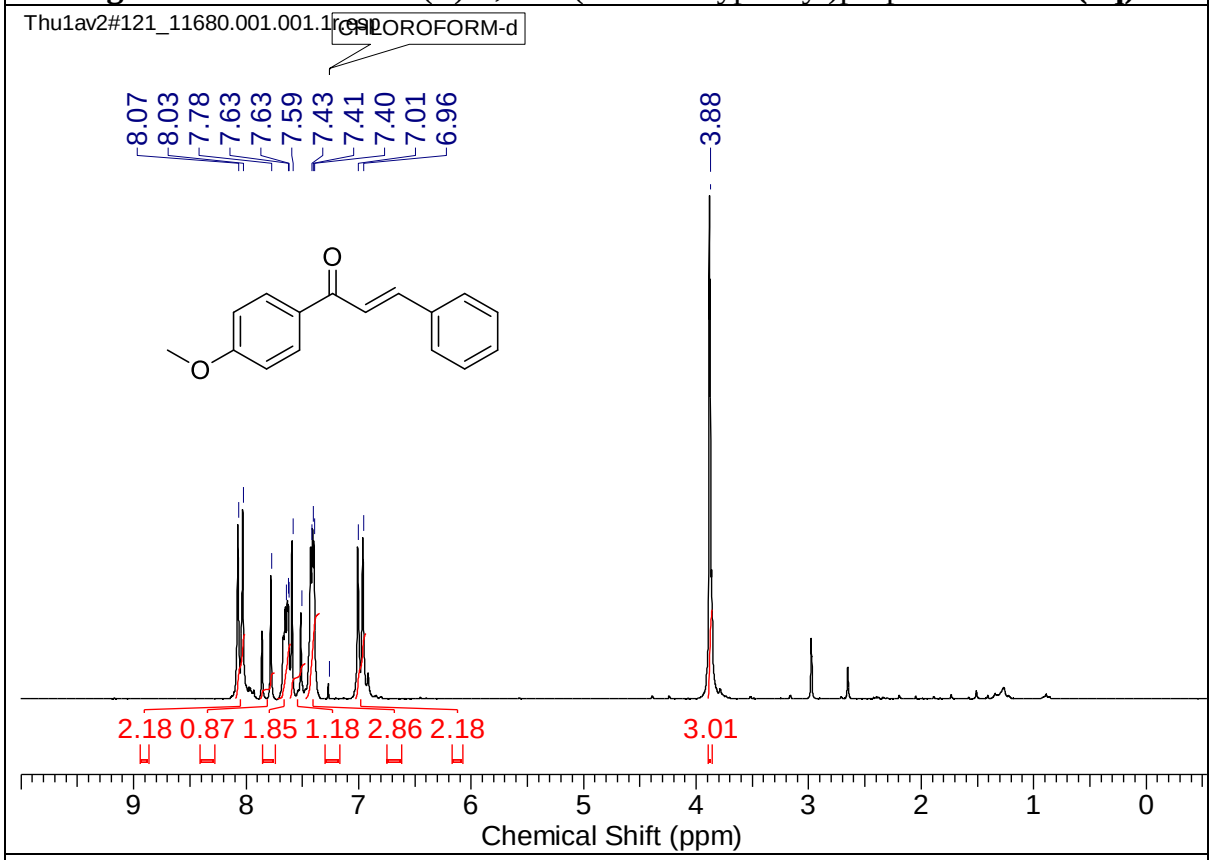


Figure S55. ^{1}H NMR of (E)-1-(4-methoxyphenyl)-3-phenylprop-2-en-1-one **(1r)**

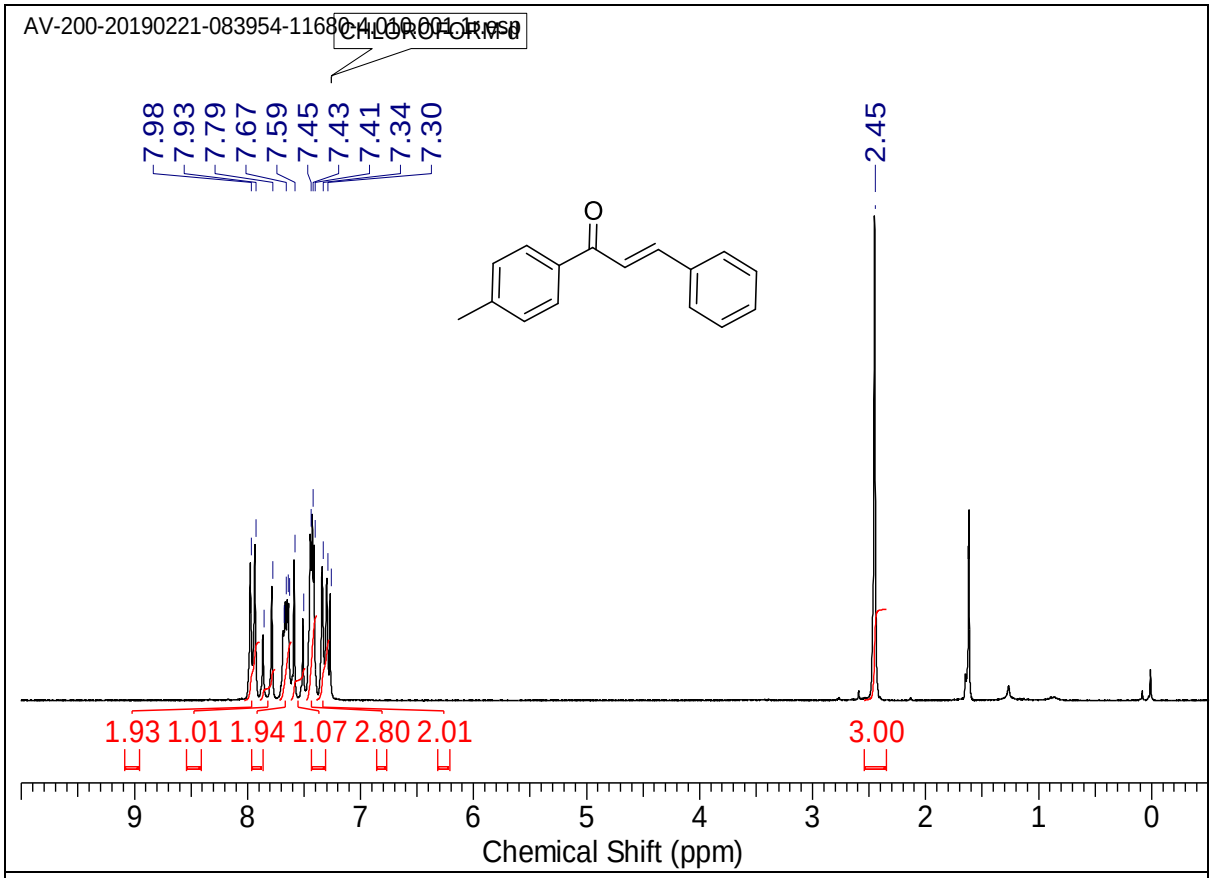


Figure S56. ^{1}H NMR of (E)-3-phenyl-1-(p-tolyl)prop-2-en-1-one **(1s)**

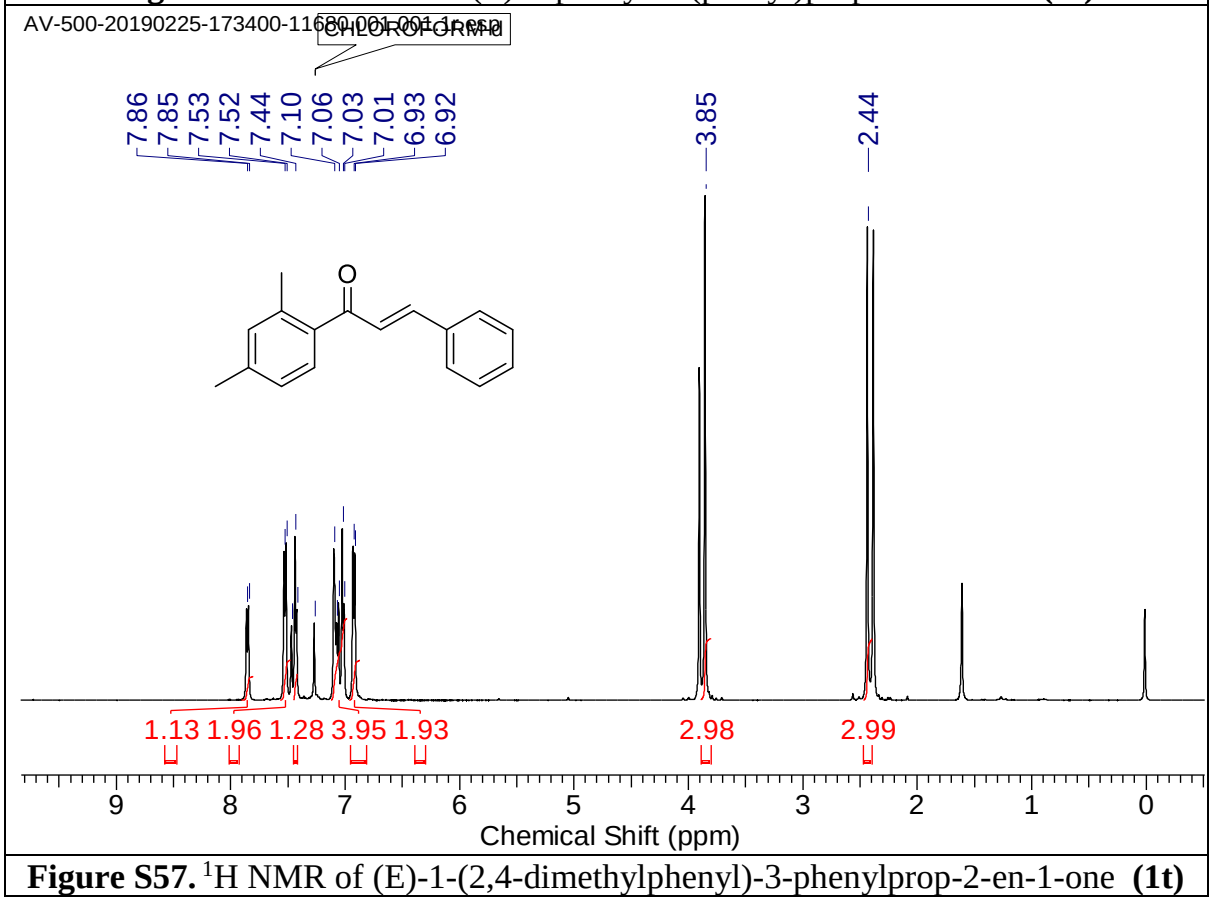


Figure S57. ^{1}H NMR of (E)-1-(2,4-dimethylphenyl)-3-phenylprop-2-en-1-one **(1t)**

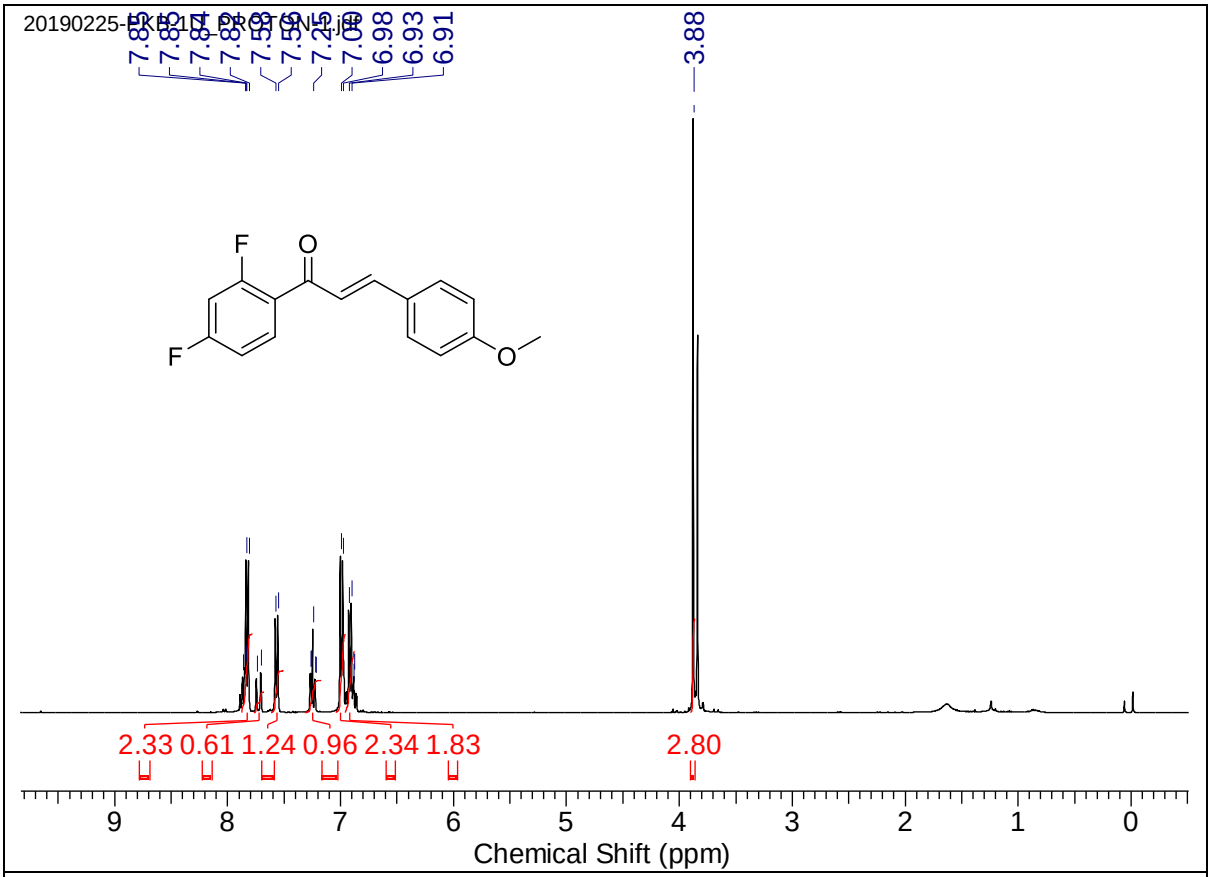


Figure S58. ^{1}H NMR of (E)-1-(2,4-difluorophenyl)-3-(4-methoxy phenyl)prop-2-en-1-one **(1u)**

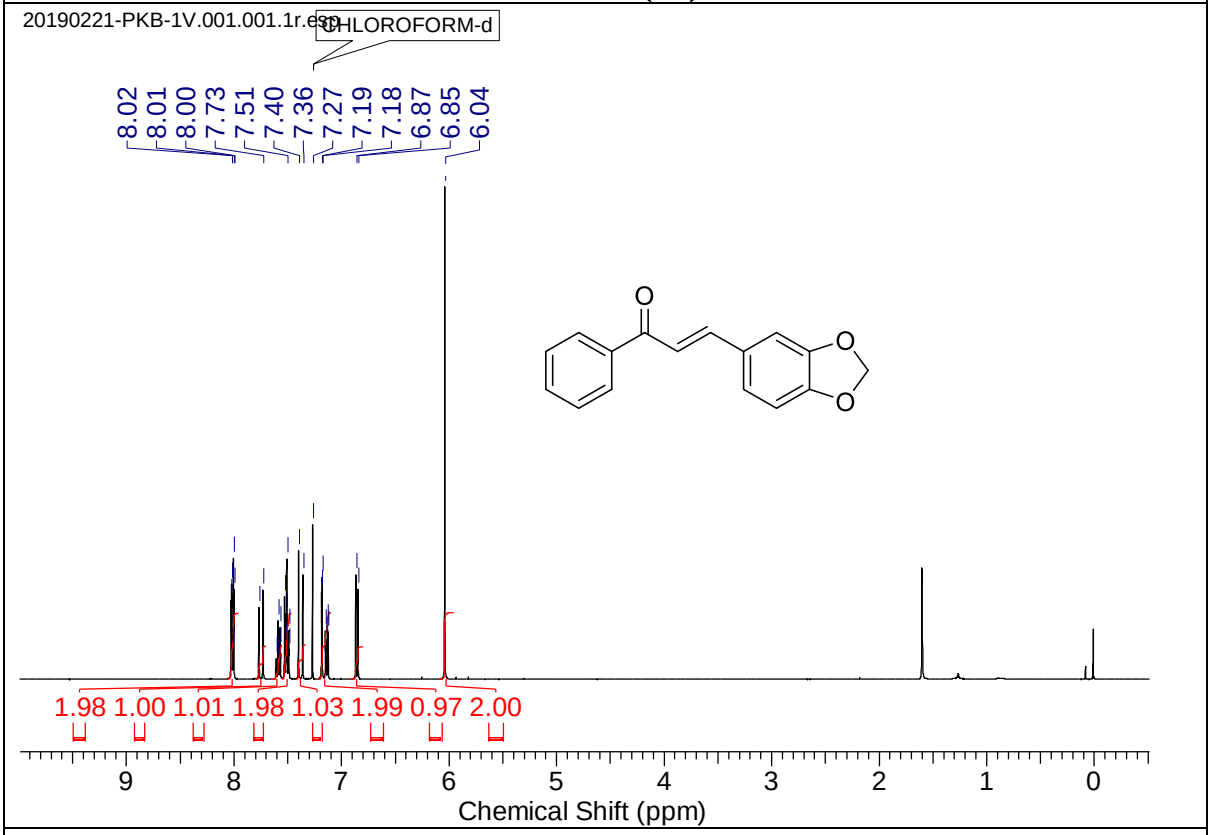


Figure S59. ^{1}H NMR of (E)-3-(benzo[d][1,3]dioxol-5-yl)-1-phenylprop-2-en-1-one **(1v)**

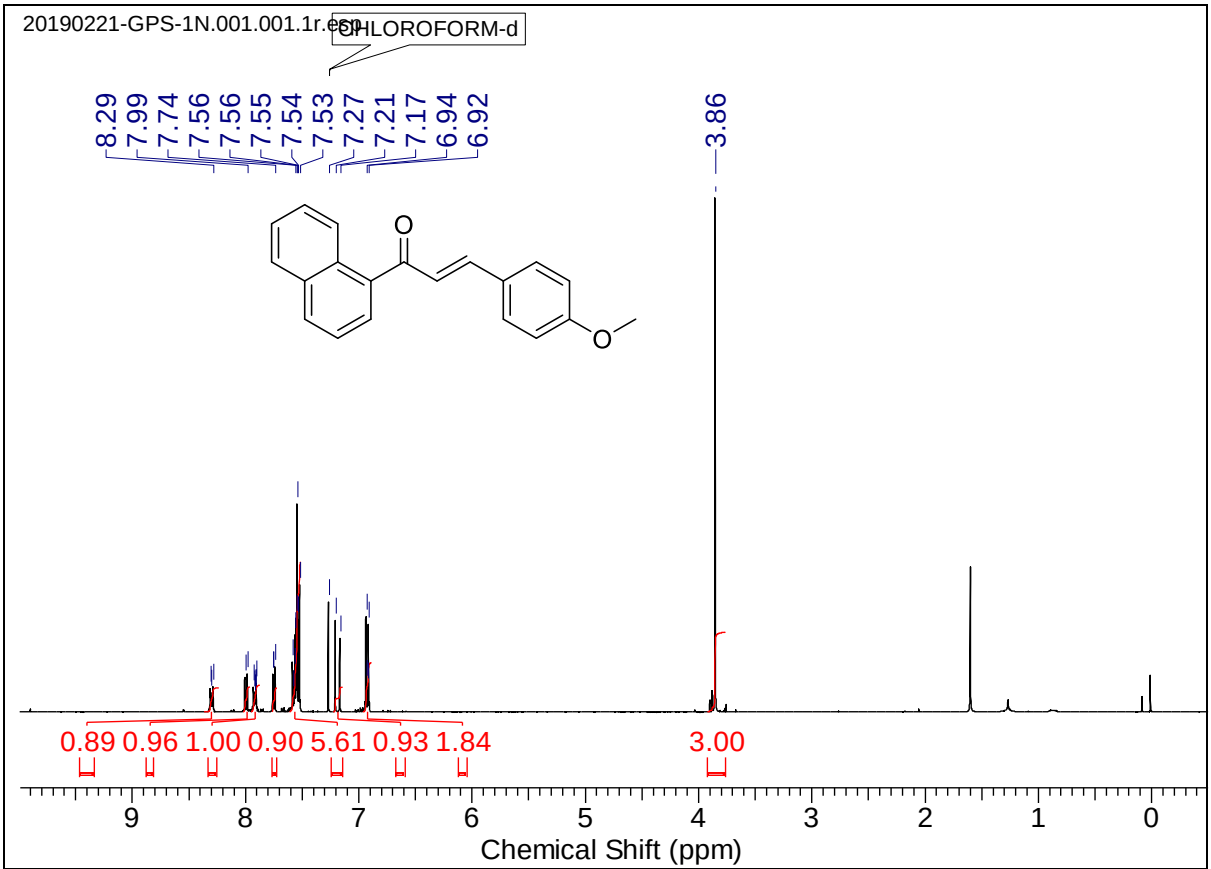


Figure S60. ^{1}H NMR of (E)-3-(4-methoxyphenyl)-1-(naphthalen-1-yl)prop-2-en-1-one **(1w)**

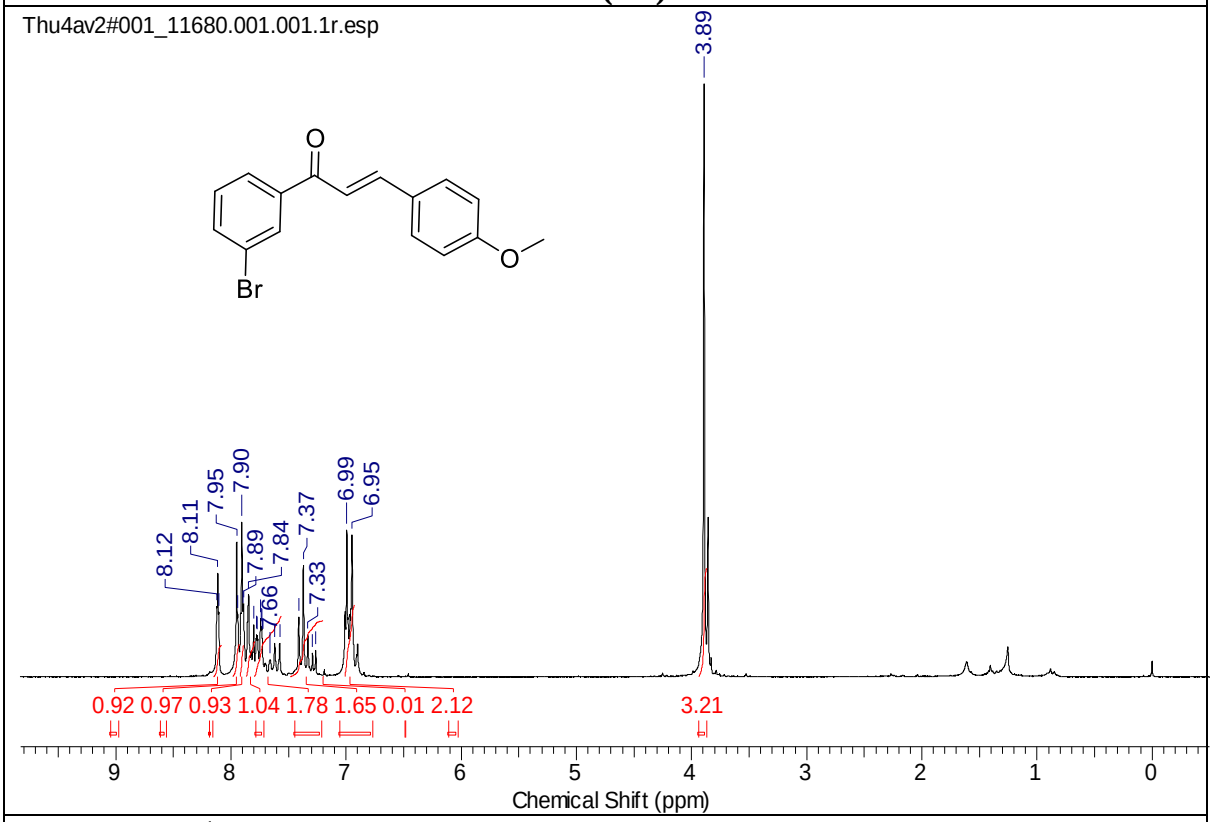


Figure S61. ^{1}H NMR of (E)-1-(3-bromophenyl)-3-(4-methoxyphenyl)prop-2-en-1-one **(1x)**

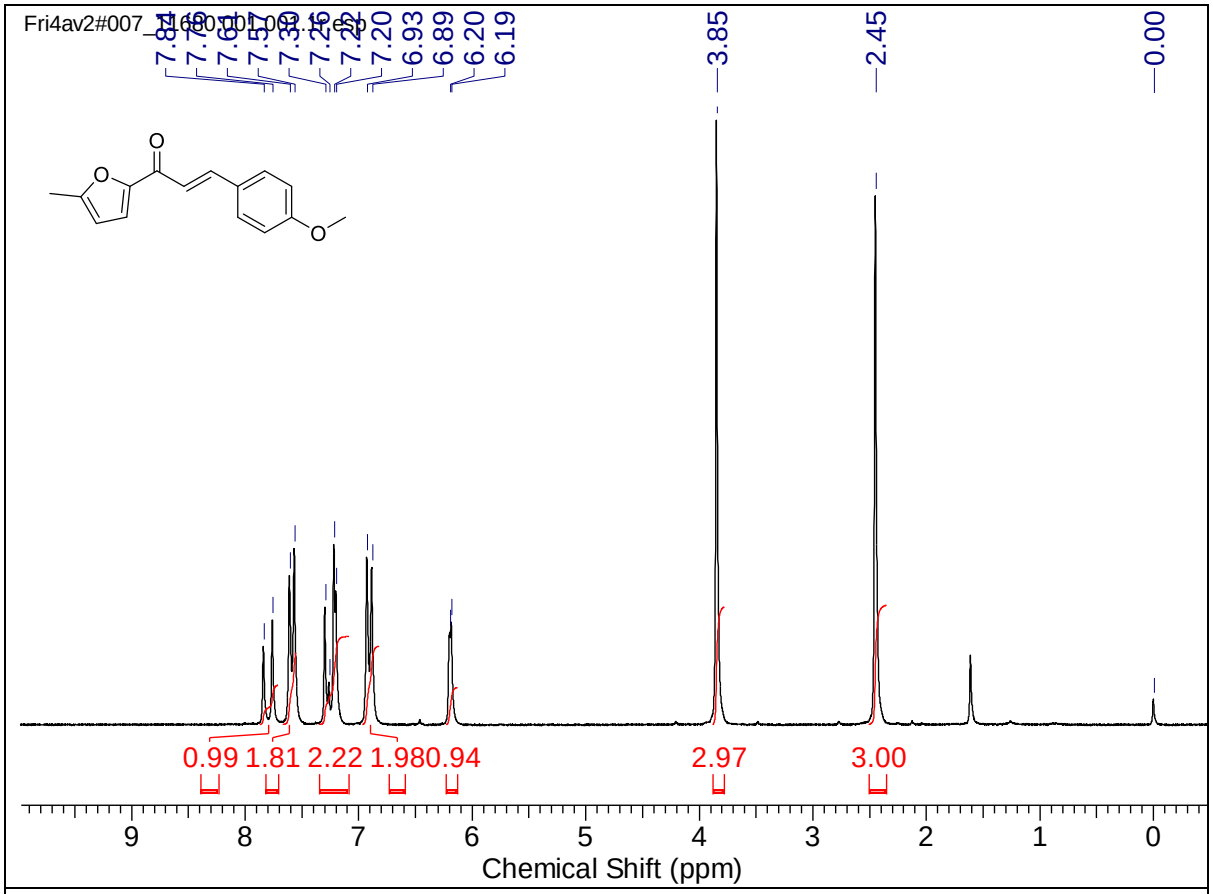


Figure S62. ^{1}H NMR of (E)-3-(4-methoxyphenyl)-1-(5-methylfuran-2-yl)prop-2-en-1-one **(1y)**

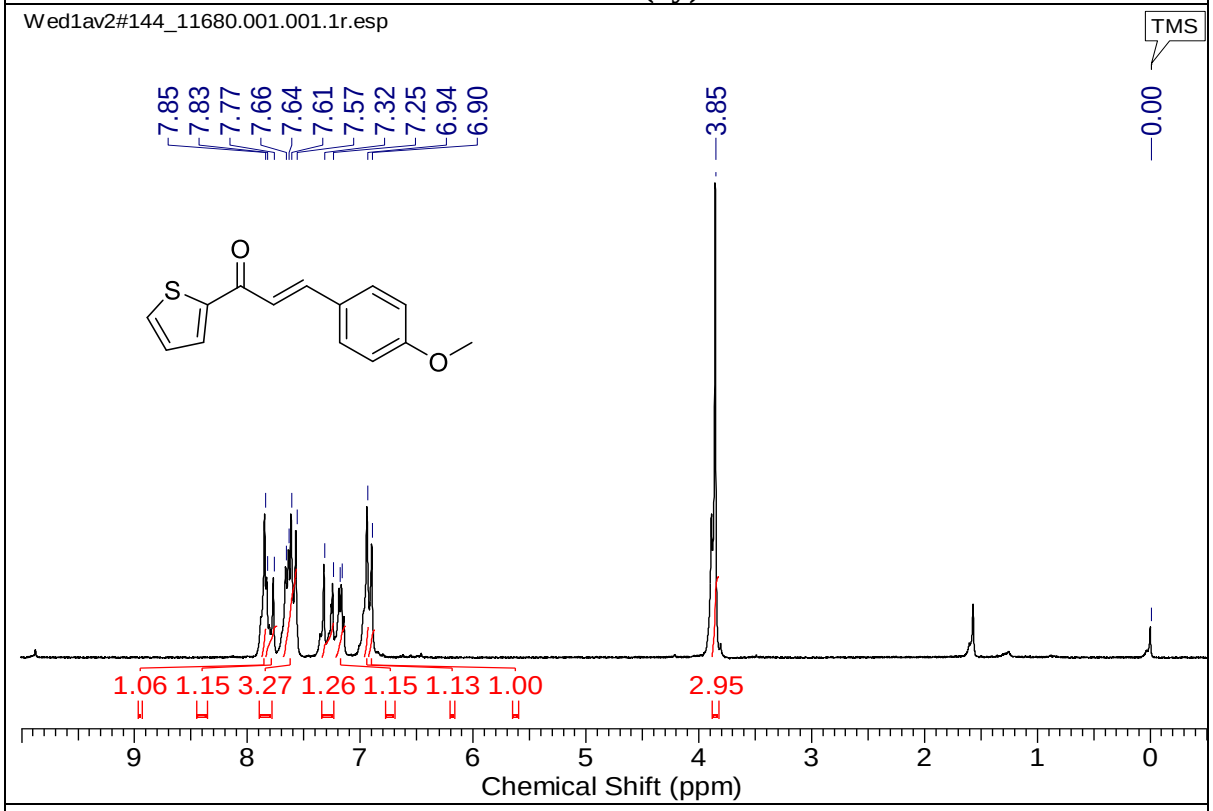


Figure S63. ^{1}H NMR of (E)-3-(4-methoxyphenyl)-1-(thiophen-2-yl)prop-2-en-1-one **(1z)**

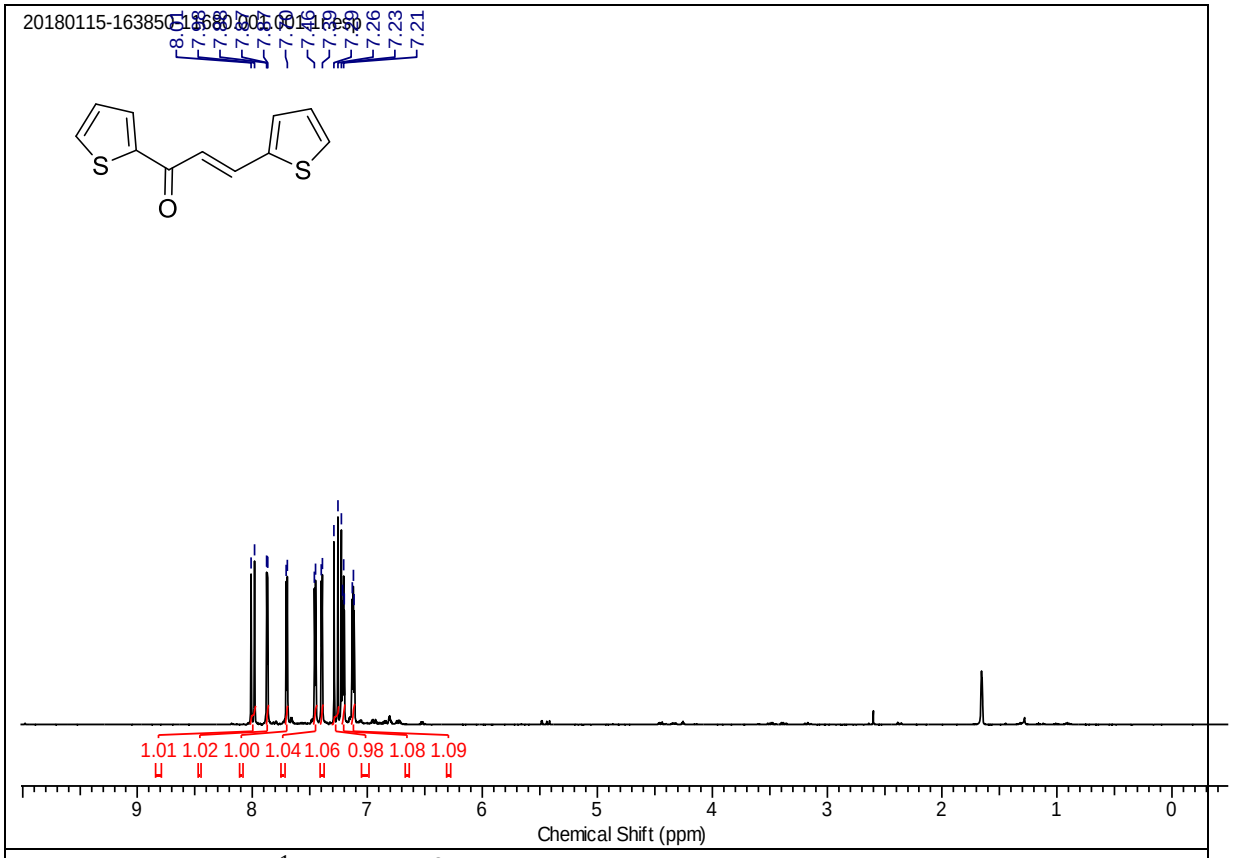


Figure S64. ^{1}H NMR of (E)-1,3-di(thiophen-2-yl)prop-2-en-1-one **(1za)**

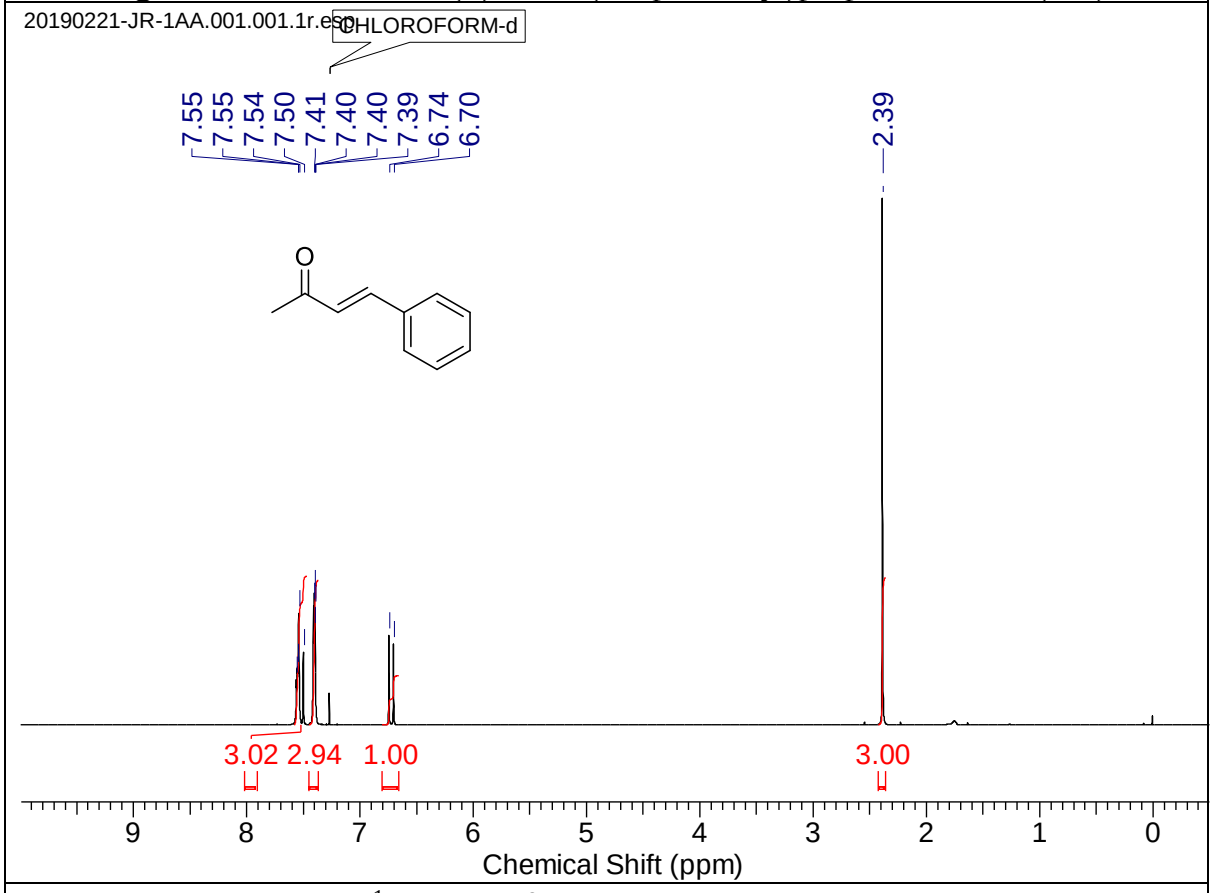


Figure S65. ^{1}H NMR of (E)-4-phenylbut-3-en-2-one **(1aa)**

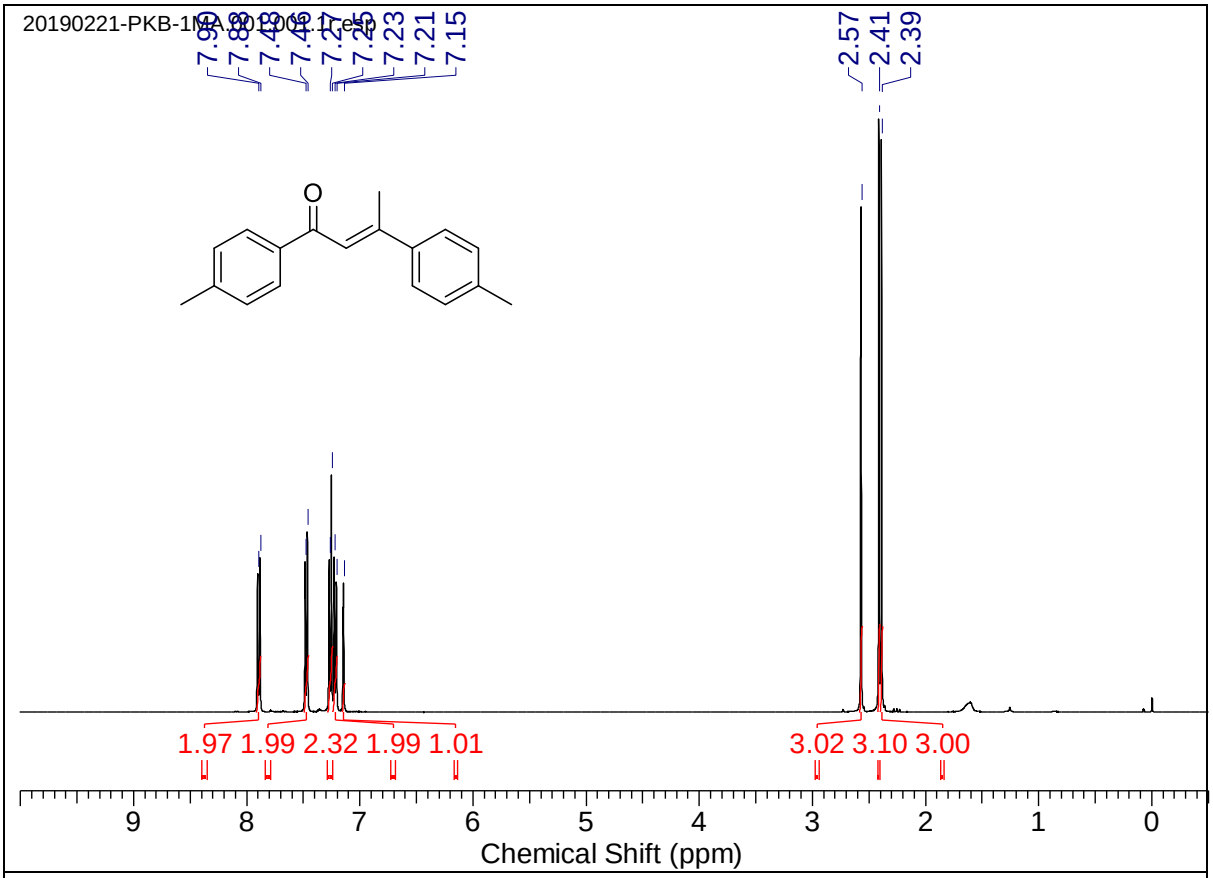


Figure S66. ^{1}H NMR of (E)-1,3-di-p-tolylbut-2-en-1-one **(1ma)**

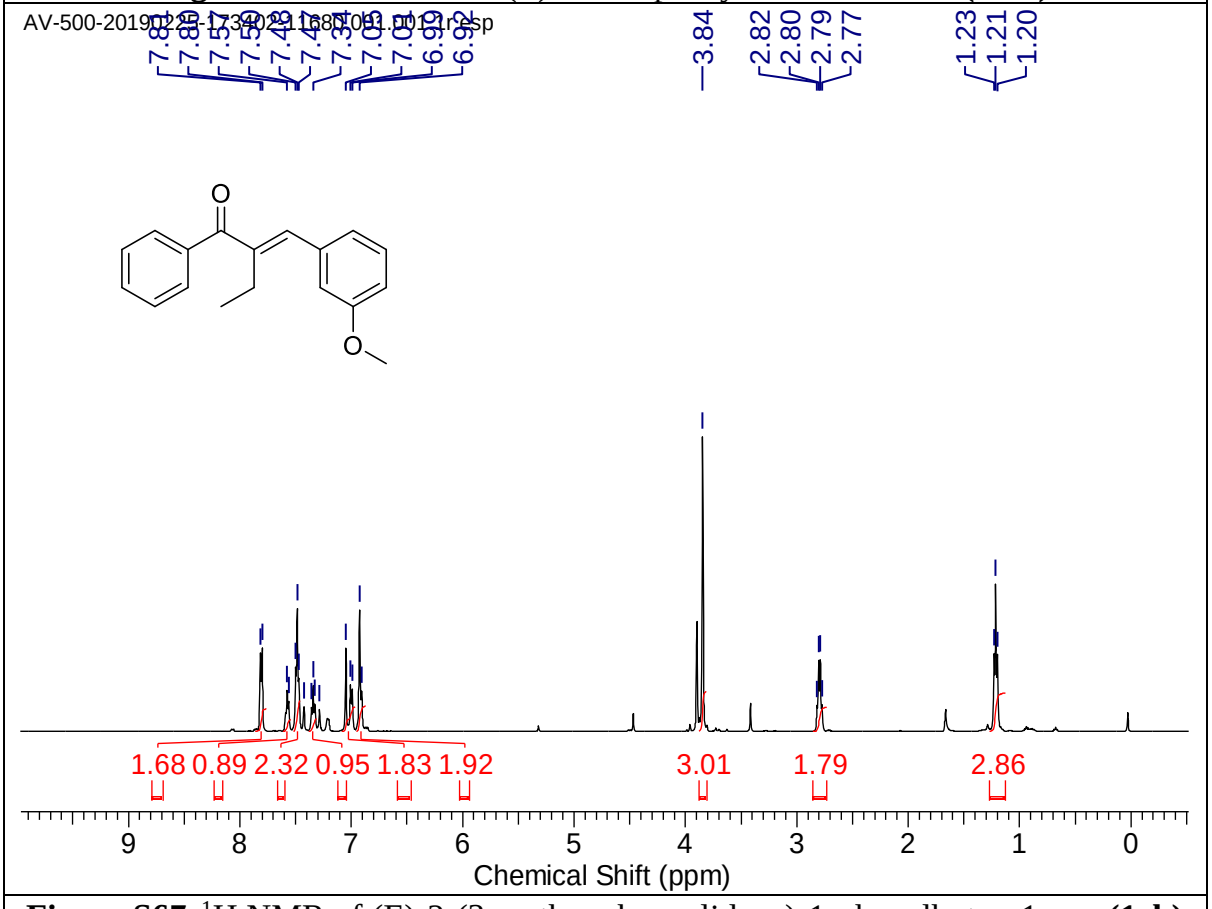


Figure S67. ^{1}H NMR of (E)-2-(3-methoxybenzylidene)-1-phenylbutan-1-one **(1zb)**

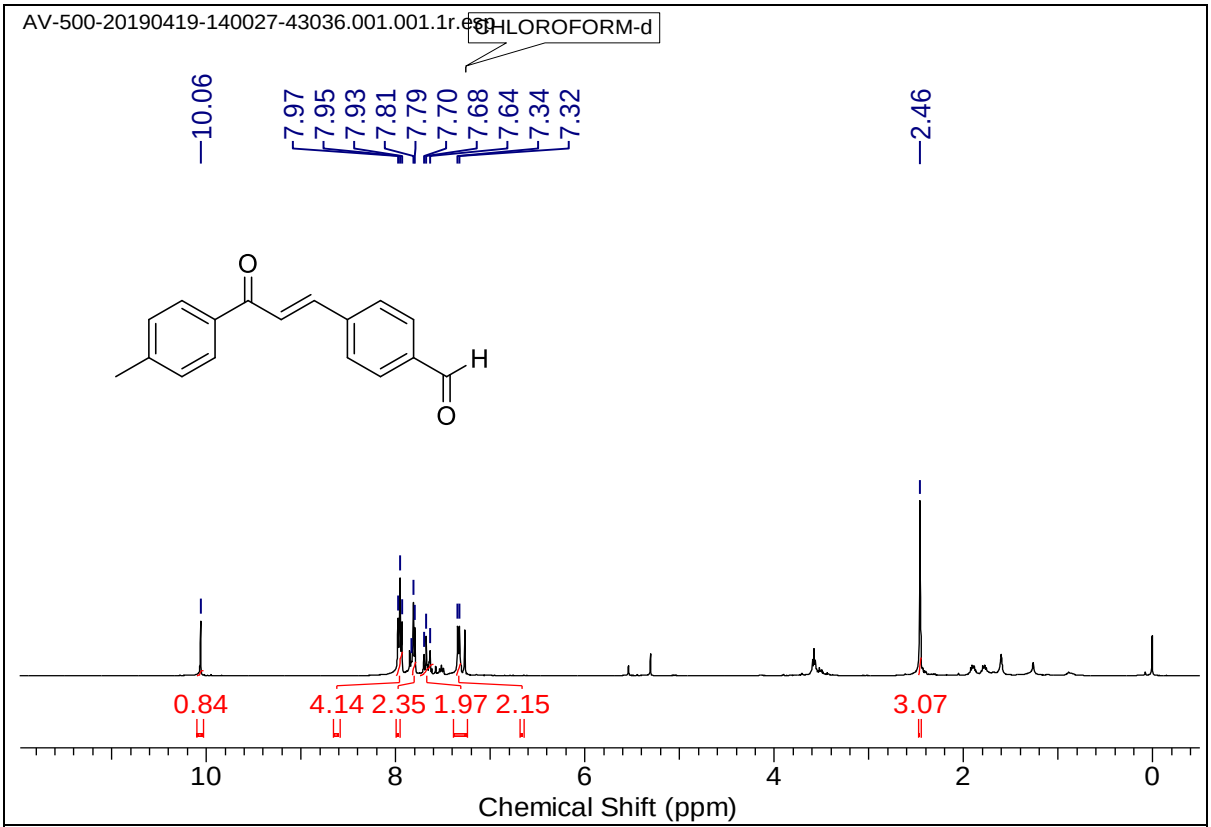


Figure S68. ^{1}H NMR of (E)-4-(3-oxo-3-(p-tolyl)prop-1-en-1-yl) benzaldehyde **(1zd)**