Electronic Supplimentary Information

Reactant cum solvent water: generation of transient λ^3-hypervalent iodane, its reactivity, mechanism and broad application

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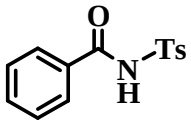
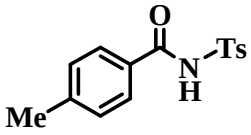
1. Characterization data of synthesized amides (7)

1.1. ***N*-Benzoyl-4-methylbenzenesulfonamide (7a)**[1]



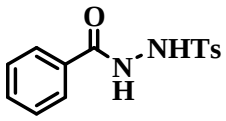
Yield: 65% (179 mg, 0.65 mmol).
Characteristic: Colourless solid.
Melting point: 144-146 ºC.
^{1}H NMR (300 MHz, $CDCl_3$): δ 2.32 (3H, s), 7.29-7.43 (3H, m), 7.48-7.55 (2H, m), 7.58-7.73 (2H, m), 7.69-7.85 (2H, m), 8.01 (2H, d, *J* = 9.0 Hz).
^{13}C NMR (75 MHz, $CDCl_3$): δ 20.5, 127.2, 127.8, 127.9, 128.0, 128.7, 128.8, 130.2, 131.8, 132.3, 134.5, 136.8, 143.1, 166.8.
FT-IR (KBr, cm^{-1}): 1174, 1326, 1439, 1595, 1732, 3259.
HR-MS (*m*/*z*) for $C_{14}H_{13}NO_3S$ (M^+): Calculated 275.0616, found 275.0613.

1.2. **4-Methyl-*N*-(4-methylbenzoyl)benzenesulfonamide (7b)**



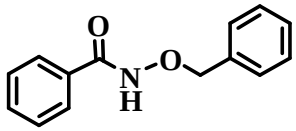
Yield: 72% (208 mg, 0.72 mmol).
Characteristic: Colourless solid.
Melting point: 137-138 ºC.
^{1}H NMR (300 MHz, $CDCl_3$): δ 2.29 (3H, s), 2.36 (3H, s), 7.24 (2H, d, *J* = 7.8 Hz), 7.33 (2H, d, *J* = 8.1 Hz), 7.74 (2H, d, *J* = 8.1 Hz), 8.04 (2H, d, *J* = 8.1 Hz).
^{13}C NMR (75 MHz, $CDCl_3$): δ 21.5, 29.7, 126.5, 127.2, 127.8, 129.6, 129.7, 134.7, 136.1, 143.1, 172.0.
FT-IR (KBr, cm^{-1}): 1075, 1167, 1254, 1336, 1430, 1595, 1699, 3293.
HR-MS (*m*/*z*) for $C_{15}H_{15}NO_3S$ (M^+): Calculated 289.0773, found 289.0778.

1.3. ***N*-Benzoyl-4-methylbenzenesulfonohydrazide (7c)**



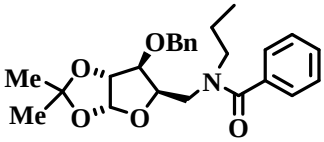
Yield: 60% (174 mg, 0.60 mmol).
Characteristic: Colourless solid.
Melting point: 159-160 ºC.
^{1}H NMR (300 MHz, DMSO-d_6): δ 2.40 (3H, s), 7.22-7.40 (4H, m), 7.47-7.59 (3H, m), 7.84-7.92 (3H, m), 11.81 (1H, s).
^{13}C NMR (75 MHz, DMSO-d_6): δ 26.3, 132.6, 132.9, 133.3, 133.6, 133.9, 134.4, 134.5, 137.2, 137.8, 137.9, 141.2, 169.7.
FT-IR (neat, cm^{-1}): 1170, 1378, 1443, 1595, 1730, 3239.
HR-MS (*m*/*z*) for $C_{14}H_{14}N_2O_3S$ (M^+): Calculated 290.0725, found 290.0728.

1.4. ***N*-Benzyloxybenzamide (7d)**



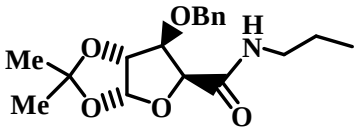
Yield: 60% (136 mg, 0.60 mmol).
Characteristic: Yellowish solid.
Melting point: 108-110 ºC.
^{1}H NMR (300 MHz, DMSO-d_6): δ 4.84 (2H, s), 7.25-7.44 (8H, m), 7.66 (2H, d, *J* = 7.5 Hz), 11.69 (1H, s).
^{13}C NMR (75 MHz, DMSO-d_6): δ 76.5, 126.5, 127.8, 127.9, 128.4, 131.0, 131.8, 135.4, 163.9.
FT-IR (neat, cm^{-1}): 746, 1001, 1144, 1522, 1628, 2968.
HR-MS (*m*/*z*) for $C_{14}H_{13}NO_2$ (M^+): Calculated 227.0946, found 227.0945.

1.5. ***N*-(6-Benzyloxy-2,2-dimethyltetrahydrofuro[2,3-d][1,3]dioxol-5-ylmethyl)-*N*-propylbenzamide (7e)**



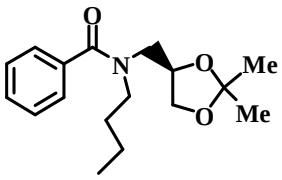
Yield: 65% (276 mg, 0.65 mmol).
Characteristic: Yellow oil.
$[\alpha]_D^{20}$ = -12.4° (c 1.3, $CHCl_3$).
^{1}H NMR (300 MHz, $CDCl_3$): δ 1.12-1.19 (6H, m), 1.30-1.35 (5H, m), 2.97-3.04 (2H, m), 3.95-4.06 (1H, m), 4.44-4.55 (4H, m), 5.22 (2H, s), 5.83 (1H, brs), 7.21-7.30 (7H, m), 7.37-7.42 (1H, m), 7.92-7.96 (2H, m).
^{13}C NMR (75 MHz, $CDCl_3$): δ 11.0, 21.3, 25.9, 26.4, 44.3, 45.1, 66.3, 71.6, 79.1, 81.6, 104.7, 111.3, 126.2, 127.4, 127.6, 127.9, 128.1, 128.2, 129.3, 129.6, 132.5, 132.6, 136.2, 170.1.
FT-IR (neat, cm^{-1}): 1006, 1351, 1408, 15577, 1658, 2621.
HR-MS (*m*/*z*) for $C_{25}H_{31}NO_5$ (M^+): Calculated 425.2202, found 425.2200.

1.6. **6-Benzyloxy-2,2-dimethyltetrahydrofuro[2,3-d][1,3]dioxole-5-carboxylic acid propylamide (7f)**



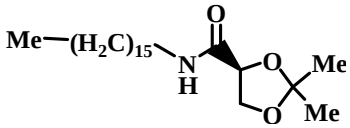
Yield: 75% (251 mg, 0.75 mmol).
Characteristic: Yellow oil.
$[\alpha]_D^{20}$ = -12.3° (c 1.2, $CHCl_3$).
^{1}H NMR (300 MHz, $CDCl_3$): δ 1.14 (3H, t, *J* = 6.0 Hz), 1.24 (3H, s), 1.34-1.36 (2H, m), 1.40 (3H, s), 2.97-3.04 (2H, m), 4.13-4.16 (1H, m), 4.49-4.51 (1H, m), 4.57-4.63 (3H, m), 5.88 (1H, d, *J* = 3.6 Hz), 7.22-7.30 (5H, m).
^{13}C NMR (75 MHz, $CDCl_3$): δ 11.0, 21.3, 25.9, 26.4, 44.3, 45.1, 66.3, 71.6, 79.1, 81.6, 104.7, 111.3, 126.5, 127.8, 127.9, 128.4, 136.2, 172.2.
FT-IR (neat, cm^{-1}): 1026, 1076, 1165, 1214, 1373, 1455, 1645, 1739, 1763, 2871, 2931.
HR-MS (*m*/*z*) for $C_{18}H_{25}NO_5$ (M^+): Calculated 335.1733, found 335.1737.

1.7. ***N*-Butyl-*N*-(2,2-dimethyl-[1,3]dioxolan-4-ylmethyl)benzamide (7g)**



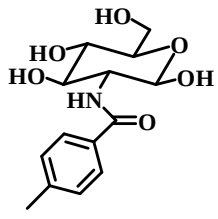
Yield: 75% (218 mg, 0.75 mmol).
Characteristic: Yellow oil.
$[\alpha]_D^{20}$ = -1.5° (c 3.4, $CHCl_3$).
^{1}H NMR (300 MHz, $CDCl_3$): δ 0.77-0.83 (3H, m), 1.04 (3H, s), 1.15 (3H, s), 1.23-1.28 (2H, m), 1.42-1.46 (2H, m), 3.22-3.28 (2H, m), 3.50 (1H, brs), 3.93 (2H, brs), 4.50 (2H, d, *J* = 2.1 Hz), 7.18-7.25 (5H, m).
^{13}C NMR (75 MHz, $CDCl_3$): δ 9.1, 14.2, 16.0, 16.1, 23.7, 25.7, 33.8, 58.5, 66.2, 120.9, 121.1, 121.2, 122.4, 122.5, 125.2, 135.7, 161.9.
FT-IR (neat, cm^{-1}): 1271, 1311, 1454, 1542, 1629, 1686, 2829.
HR-MS (*m*/*z*) for $C_{17}H_{25}NO_3$ (M^+): Calculated 291.1834, found 291.1835.

1.8. **2,2-Dimethyl-[1,3]dioxolane-4-carboxylic acid hexadecylamide (7h)**



Yield: 68% (251 mg, 0.68 mmol).
Characteristic: Yellow oil.
$[\alpha]_D^{20}$ = + 8.9° (c 1.5, $CHCl_3$).
^{1}H NMR (300 MHz, $CDCl_3$): δ 0.87 (3H, t, *J* = 6.6 Hz), 1.25-1.31 (32H, m), 1.54-1.61 (2H, m), 3.59 (3H, t, *J* = 6.3 Hz), 3.84-3.91 (2H, m), 3.93-4.03 (1H, m).
^{13}C NMR (75 MHz, $CDCl_3$): δ 14.0, 22.6, 23.8, 24.7, 25.3, 25.5, 25.8, 26.4, 26.9, 27.4, 28.4, 29.3, 29.6, 31.8, 60.4, 66.2, 110.1, 168.3.
FT-IR (neat, cm^{-1}): 1067, 1148, 1217, 1258, 1371, 1456, 1650, 2855, 2990.
HR-MS (*m*/*z*) for $C_{22}H_{43}NO_3$ (M^+): Calculated 369.3243, found 369.3239.

1.9. **4-Methyl-*N*-(2,4,5-trihydroxy-6-hydroxymethyl-tetrahydro-pyran-3-yl)-benzamide (7i)**

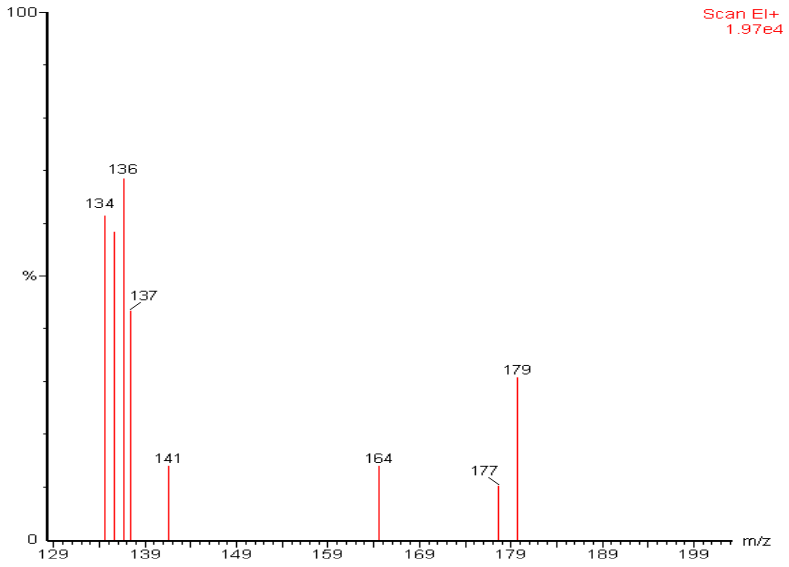


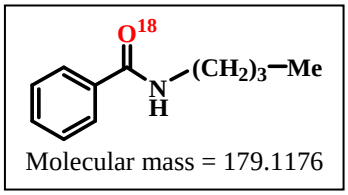
Yield: 60% (178 mg, 0.60 mmol).
Characteristic: Yellow oil.
$[\alpha]_D^{20}$ = +0.1° (c 1.6, $CHCl_3$).
^{1}H NMR (300 MHz, D_2O): δ 2.38 (3H, s), 3.33-3.40 (1H, m), 3.68-3.97 (5H, m), 4.91 (4H, s), 5.50 (1H, s), 7.24 (2H, d, *J* = 7.8 Hz), 7.65 (2H, d, *J* = 8.1 Hz).
^{13}C NMR (75 MHz, D_2O): δ 17.7, 54.2, 65.6, 69.2, 69.7, 71.0, 96.5, 122.5, 123.5, 126.0, 132.7, 165.3.

FT-IR (neat, cm^{-1}): 1048, 1436, 1471, 1634, 1695, 1701, 1712.
HR-MS (*m*/*z*) for $C_{14}H_{19}NO_6$ (M^+): Calculated 297.1212, found 297.1217.

2. **Isotope lebelling experiment**

2.1. **Incorporation of O^{18}-isotope into amide (9b) from H_2O^{18}**



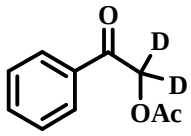


Molecular mass = 179.1176

SI Figure 1: EI-MS spectra of **6a**

2.2. **Incorporation of deuterium into amide (9c) from D_2O**

Characterization data of deuterated acetic acid 2-oxo-2-phenyl-ethyl ester (9c)



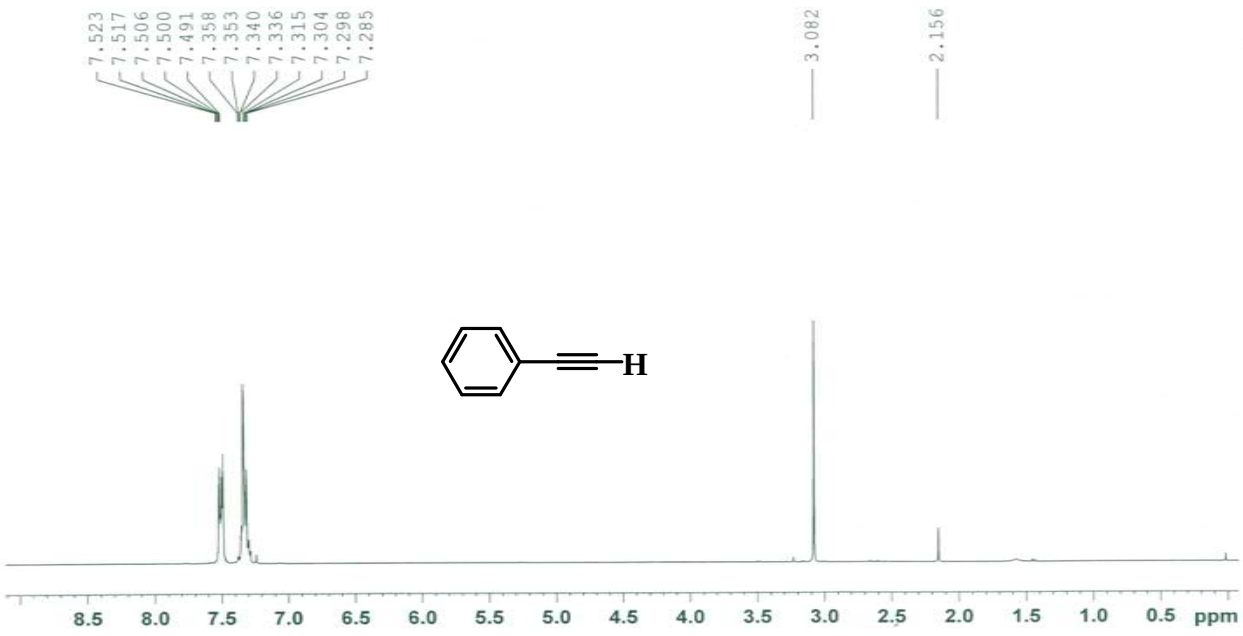
Yield: 82% (148 mg, 0.82 mmol).
Characteristic:Yellow oil.
^{1}H NMR (300 MHz, $CDCl_3$): δ 2.26 (3H, s), 7.48-7.54 (2H, m), 7.61-7.63 (1H, m), 7.92-7.95 (2H, m).
^{13}C NMR (75 MHz, $CDCl_3$): δ 20.5, 127.7, 128.8, 133.8, 134.3, 170.3, 192.2.
FT-IR (neat, cm^{-1}): 1256, 1275, 1397, 1449, 1493, 1625, 1597, 1690, 2342, 3063.
HR-MS (*m*/*z*) for $C_{10}H_8D_2O_3$ (M^+): Calculated 180.0753, found 180.0752.

3. **Investigation of reaction mechanism through NMR study**

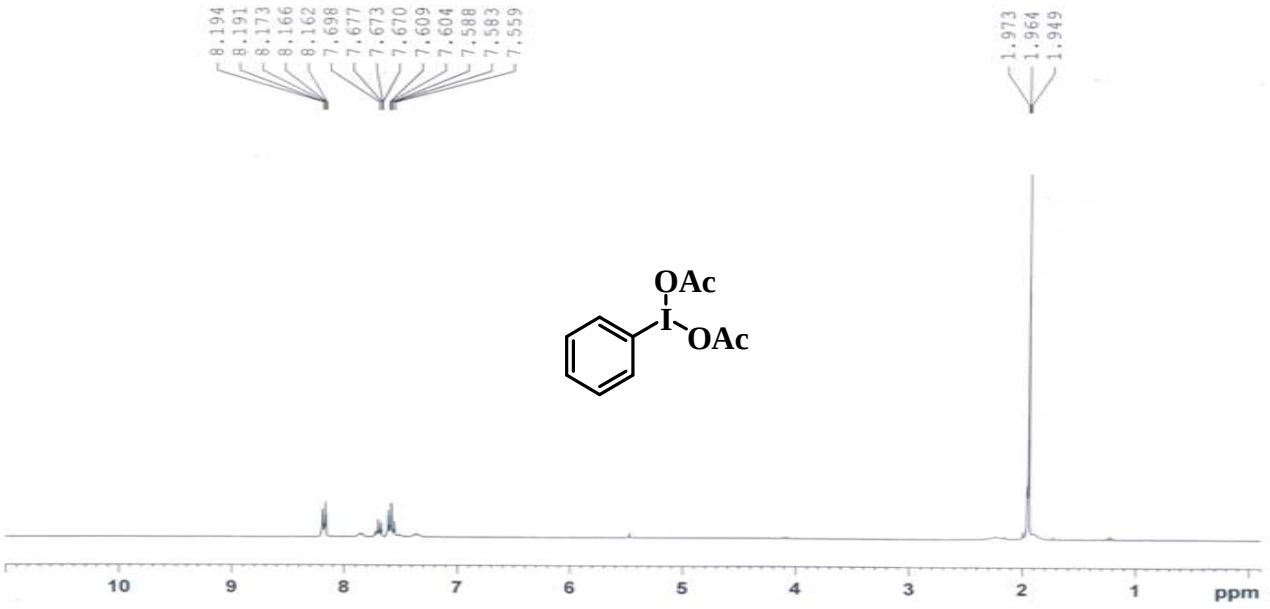
A) Phenyl acetylene (**1a**) [0 min]
B) $PhI(OCOMe)_2$[0 min]
C) Mixture of 1a and $PhI(OCOMe)_2$ [30 min]
D) After addition of $NaHCO_3$ to the above mixture formation of a light yellow coloured solid was started.
E) Then above mixture was allowed to stir for some times. [1.30 h]
F) n-Butyl amine (**2a**) was added to the above mixture. [1.35 h]
G) Then gradually reaction mixture turned into two layers. [1.45 h]

H) After that yellow organic layer slowly turned into brown. [2.0 h]
All the spectra are given according to the above time sequence.

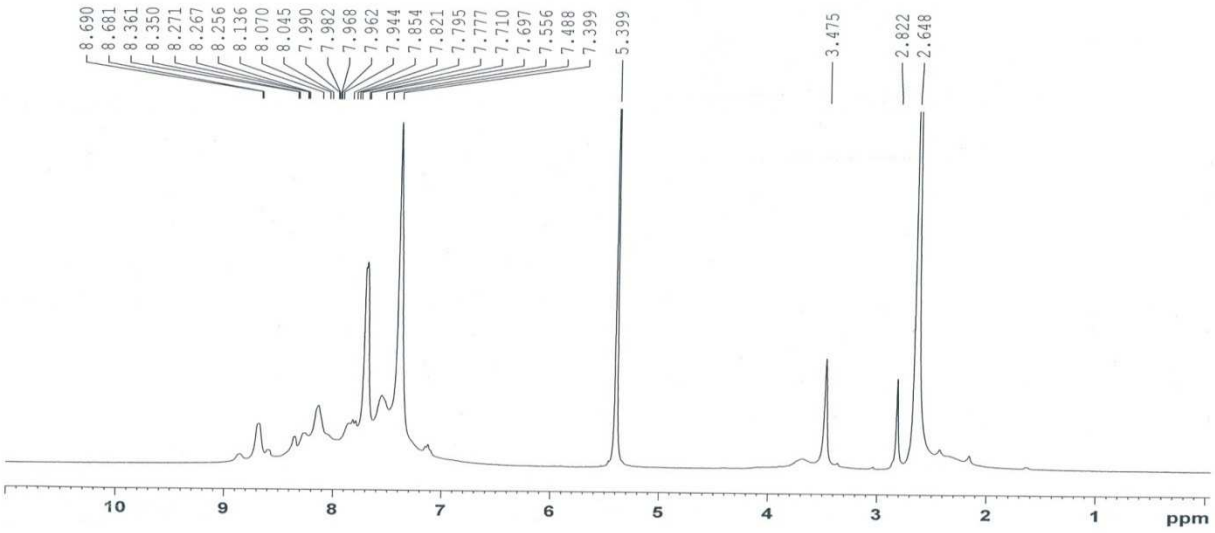
SI Figure 2: ^{1}H-NMR spectra of A [0 min]



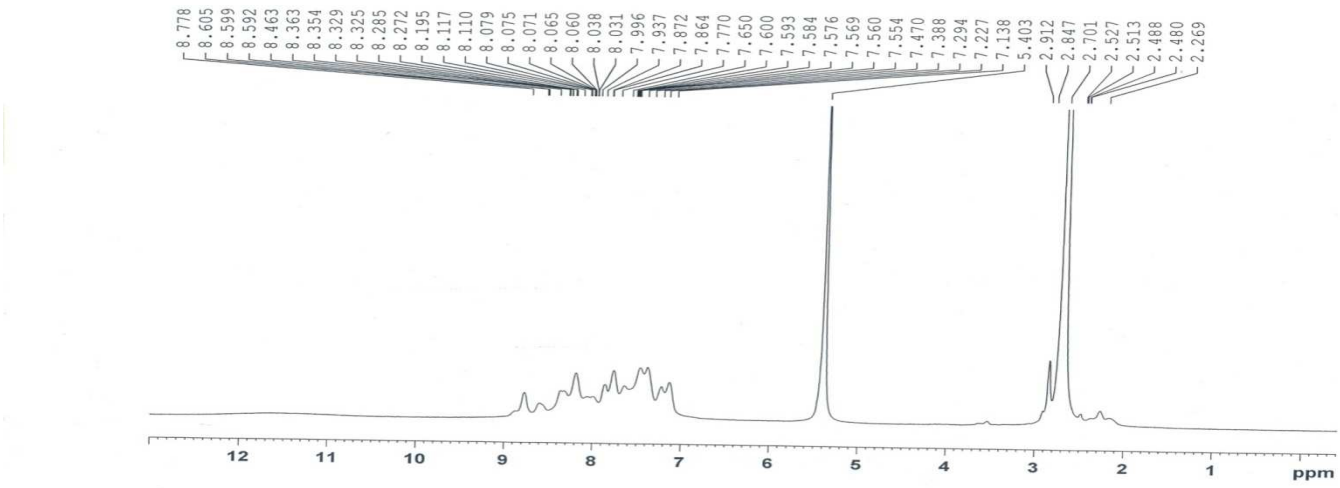
SI Figure 3: ^{1}H-NMR spectra of B [0 min]



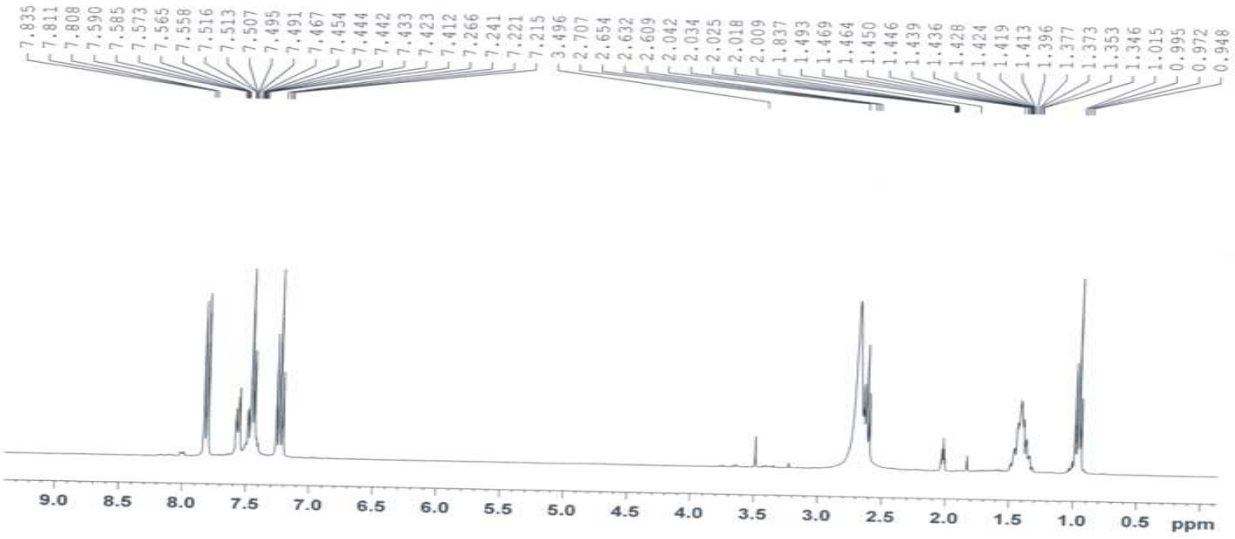
SI Figure 4: ^{1}H-NMR spectra of C [30 min]



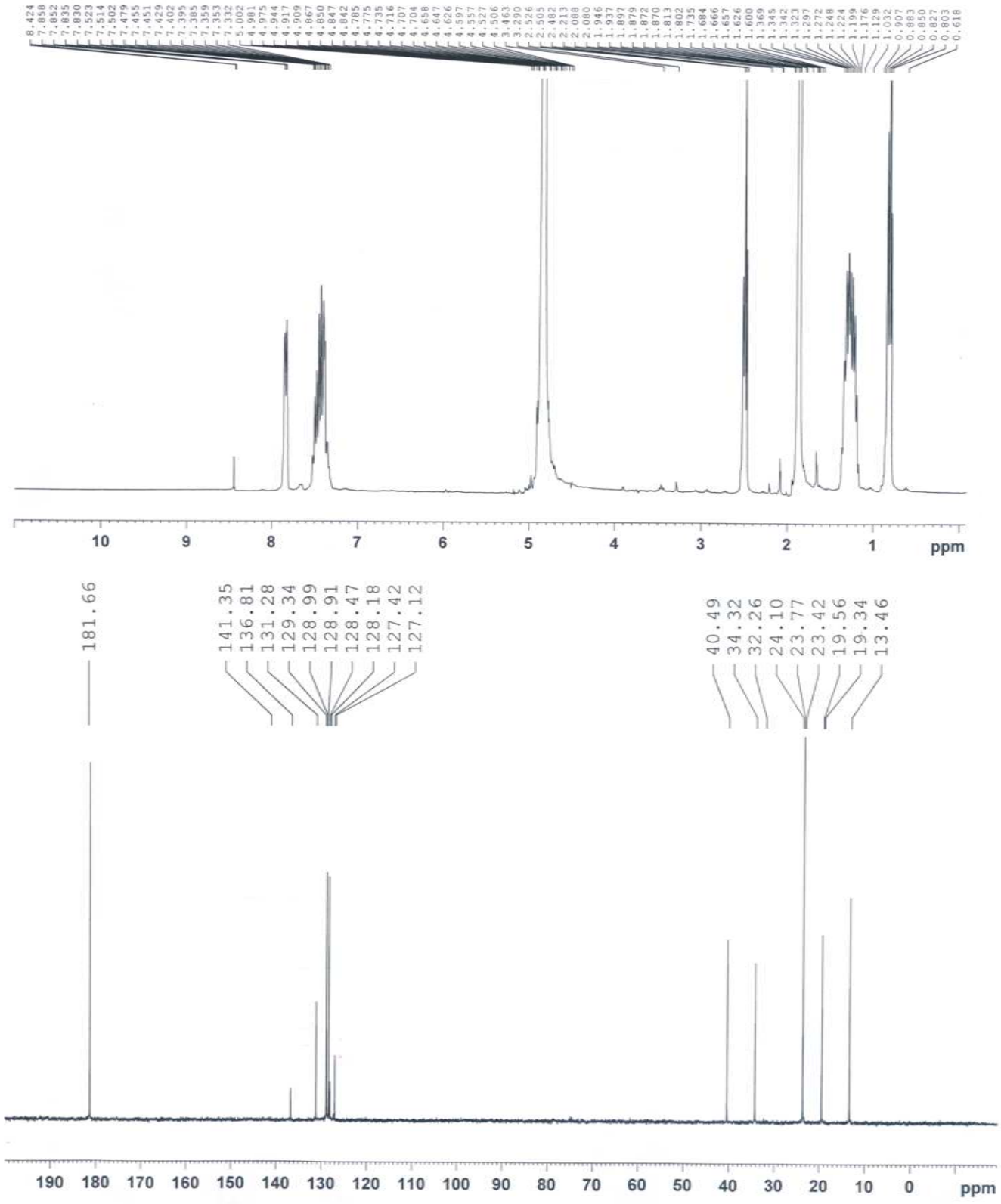
SI Figure 5: ^{1}H-NMR spectra of E [1.30 h]

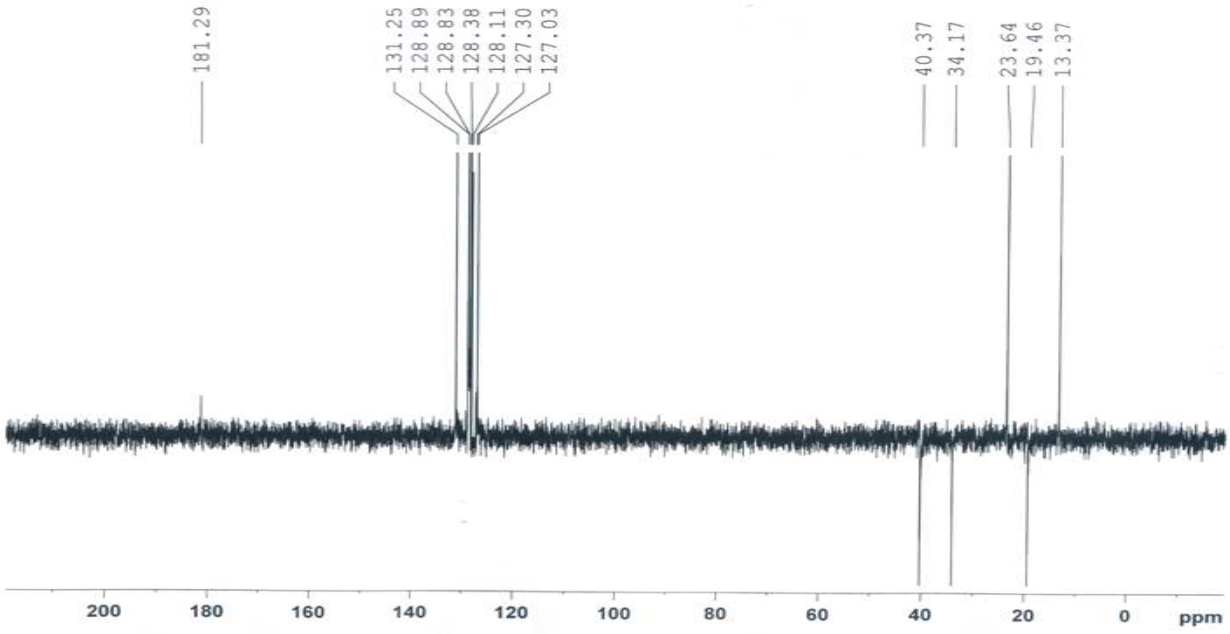


SI Figure 6: ^{1}H-NMR spectra of F [1:35 h]



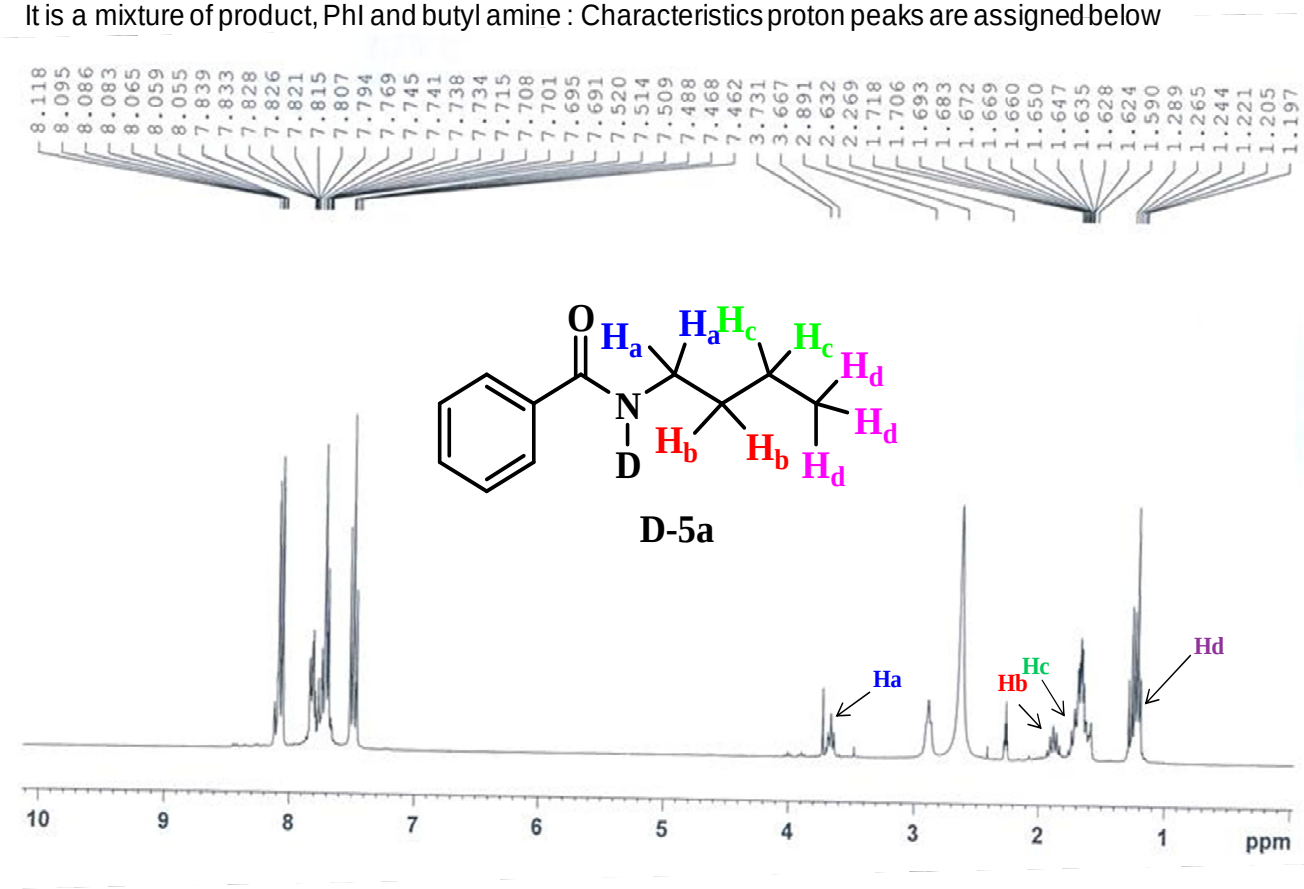
SI Figure 7: ^{1}H and ^{13}C-NMR and DEPT-135 of the aqueous layer of G [1:45 h]





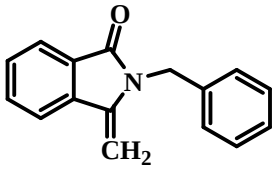
SI Figure 8: ^{1}H-NMR spectra of H [2.0 h]

It is a mixture of product, PhI and butyl amine : Characteristics proton peaks are assigned below



4. **Characterization data of intermediate VIII**

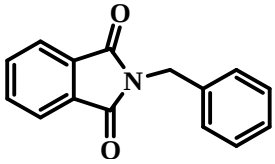
- **2-benzyl-3-methylene-2,3-dihydro-isoindol-1-one**[2]



Yield: 50% (120 mg, 0.50 mmol).
Characteristic:Yellow oil.
^{1}H NMR (300 MHz, $CDCl_3$): δ 4.81 (1H, d, *J* = 2.4 Hz), 5.02 (2H, s), 5.16 (1H, d, *J* = 2.1 Hz), 7.24-7.36 (5H, m), 7.51-7.58 (2H, m), 7.60-7.73 (1H, m), 7.84-7.91 (1H, m).
^{13}C NMR (75 MHz, $CDCl_3$): δ 43.1, 89.8, 119.8, 123.3, 127.1, 127.3, 128.5, 129.4, 132.0, 136.4, 136.8, 141.6, 167.2.
FT-IR (neat, cm^{-1}): 1350, 1395, 1456, 1470, 1495, 1638, 1766, 2925.
HR-MS (*m*/*z*) for $C_{16}H_{13}NO$ (M^+): Calculated 235.0997, found 235.0996.

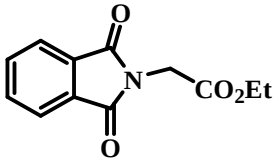
5. **Characterization data of *N*-substituted pthalimides (8a-f)**

5.1. **2-Benzyl-isoindole-1,3-dione (8a)**[3]



Yield: 65% (154 mg, 0.65 mmol).
Characteristic: Colouless solid.
Melting range: 113-115 ˚C
^{1}H NMR (300 MHz, $CDCl_3$): δ 4.53 (2H, d, *J* = 5.7 Hz), 7.29-7.38 (5H, m), 7.46 (2H, dd, *J* = 5.4, 3.3 Hz), 7.62(2H, dd, *J* = 5.4, 3.3 Hz).
^{13}C NMR (75 MHz, $CDCl_3$): δ 43.6, 127.0, 127.6, 128.4, 129.7, 134.9, 138.2, 168.9.
FT-IR (KBr, cm^{-1}):1233, 1309, 1440, 1545, 1630, 3062.
HR-MS (*m*/*z*) for $C_{15}H_{12}NO_2$(M^++H): Calculated 238.0868, found 238.0873.

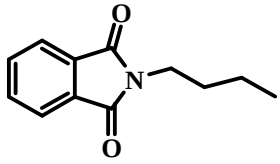
5.2. **(1,3-Dioxo-1,3-dihydro-isoindol-2-yl)acetic acid ethyl ester (9b)**



Yield: 60% (139 mg, 0.60 mmol).
Characteristic: Colourless solid.
Melting range: 112-114 ˚C
^{1}H NMR (300 MHz, $CDCl_3$): δ 1.30 (3H, t, *J* = 7.2 Hz), 4.24(2H, q, *J* = 7.2 Hz), 4.45 (2H, s), 7.76 (2H, dd, *J* = 5.4, 3.3 Hz), 7.90 (2H, dd, *J* = 5.4, 3.3 Hz).

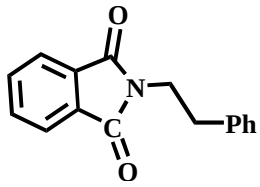
^{13}C NMR (75 MHz, $CDCl_3$): δ 14.0, 38.9, 61.8, 123.5, 132.0, 134.1, 167.2, 167.4.
FT-IR (KBr, cm^{-1}): 1432, 1544, 1630, 1736, 2928.
HR-MS (*m*/*z*) for $C_{12}H_{11}NO_4(M^+)$: Calculated 233.0688, found 233.0685.

5.3. **2-Butyl-isoindole-1,3-dione (9c)**



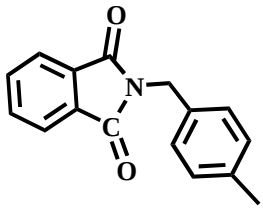
Yield: 60% (122 mg, 0.60 mmol).
Characteristic: Colourless solid.
Melting range: 107-110 ˚C
^{1}H NMR (300 MHz, $CDCl_3$): δ 0.89 (3H, t, *J* = 7.2 Hz), 1.28-1.52 (4H, m), 3.18 (2H, q, *J* = 6.6 Hz), 7.76 (2H, dd, *J* = 5.4, 3.3 Hz), 7.90 (2H, dd, *J* = 5.4, 3.3 Hz).
^{13}C NMR (75 MHz, $CDCl_3$): δ 14.1, 20.0, 31.5, 38.6, 128.1, 129.6, 136.6, 168.5.
FT-IR (KBr, cm^{-1}): 1434, 1541, 1631, 2108, 2926.
HR-MS (*m*/*z*) for $C_{12}H_{13}NO_2$ (M^+): Calculated 203.0946, found 203.0947.

5.4. **2-Phenethylisoindole-1,3-dione (9d)**



Yield: 70% (176 mg, 0.70 mmol).
Characteristic: Colourless solid.
Melting point: 128-130 ˚C.
^{1}H NMR (300 MHz, $CDCl_3$): δ 2.85-2.92 (2H, m), 3.79-3.85 (2H, m), 7.10-7.19 (5H, m), 7.57-7.63 (2H, m), 7.70-7.74 (2H, m).
^{13}C NMR (75 MHz, $CDCl_3$): δ 34.6, 39.2, 123.2, 126.6, 128.5, 128.8, 132.0, 133.8, 138.0, 168.1.
FT-IR (KBr, cm^{-1}): 1032, 1234,1400, 1601, 1713, 1760, 2936.
HR-MS (*m*/*z*) for $C_{16}H_{13}NO_2$ (M^+): Calculated 251.0946, found 251.0941.

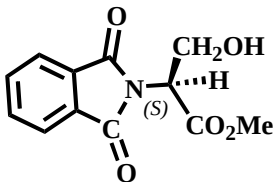
5.5. **2-(4-Methylbenzyl)isoindole-1,3-dione (9e)**



Yield: 64% (161 mg, 0.64 mmol).
Characteristic: Colourless solid.
Melting range: 117-119 ˚C.
^{1}H NMR (300 MHz, $CDCl_3$): δ 2.23 (3H, s), 4.36 (2H, d, *J* = 5.7 Hz), 7.03 (2H, d, *J* = 7.8 Hz), 7.10 (2H, d, *J* = 7.8 Hz), 7.32-7.36 (2H, m), 7.45-7.49 (2H, m).

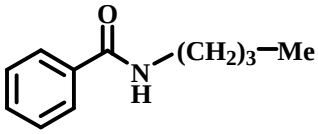
^{13}C NMR (75 MHz, $CDCl_3$): δ 21.0, 43.8, 127.7, 128.3, 129.3, 130.1, 134.4, 134.6, 137.1, 168.8.
FT-IR (KBr, cm^{-1}): 1232, 1312, 1430, 1543, 1630, 2968.
HR-MS (*m*/*z*) for $C_{16}H_{13}NO_2$ (M^+): Calculated 251.0946, found 251.0948.

5.6. **2-(1,3-Dioxo-1,3-dihydroisoindol-2-yl)-3-hydroxypropionic acid methyl ester (9f)**



Yield: 50% (125 mg, 0.50 mmol).
Characteristic: Colourless oil.
$[\alpha]_D^{20}$ = -17.3° (c 1.2, $CHCl_3$).
^{1}H NMR (300 MHz, $CDCl_3$): δ 3.65 (3H, s), 4.08-4.10 (2H, m), 4.91 (1H, t, *J* = 5.4 Hz), 7.61-7.65 (2H, m), 7.74 (2H, dd, *J* = 5.4, 3.0 Hz).
^{13}C NMR (75 MHz, $CDCl_3$): δ 52.8, 54.6, 60.8, 123.7, 123.9, 131.6, 134.4, 168.0, 168.4.
FT-IR (neat, cm^{-1}): 1465, 1609, 1715, 1745, 1772, 3479.
HR-MS (*m*/*z*) for $C_{12}H_{11}NO_5$ (M^+): Calculated 249.0637, found 249.0642.

6. Characterization data of n**-butylbenzamide (9a)**



Yield: 85% (150 mg, 0.85 mmol).
Characteristic:Yellow oil.
^{1}H NMR (300 MHz, $CDCl_3$): δ 0.97(3H, t, *J* = 6.0 Hz), 1.36-1.48 (2H, m), 1.56-1.66 (2H, m), 3.43-3.50 (2H, m), 6.15 (1H, brs), 7.40-7.52 (3H, m), 7.75-7.78 (2H, m).
^{13}C NMR (75 MHz, $CDCl_3$): δ 13.7, 20.1, 31.7, 39.8, 126.8, 128.5, 131.3, 134.8, 167.5.
FT-IR (neat, cm^{-1}): 1308, 1490, 1542, 1578,1603, 1640, 2872, 2931, 2959.
HR-MS (*m*/*z*) for $C_{11}H_{15}NO$ (M^+): Calculated 177.1154, found 177.1156.

7. **Reference**

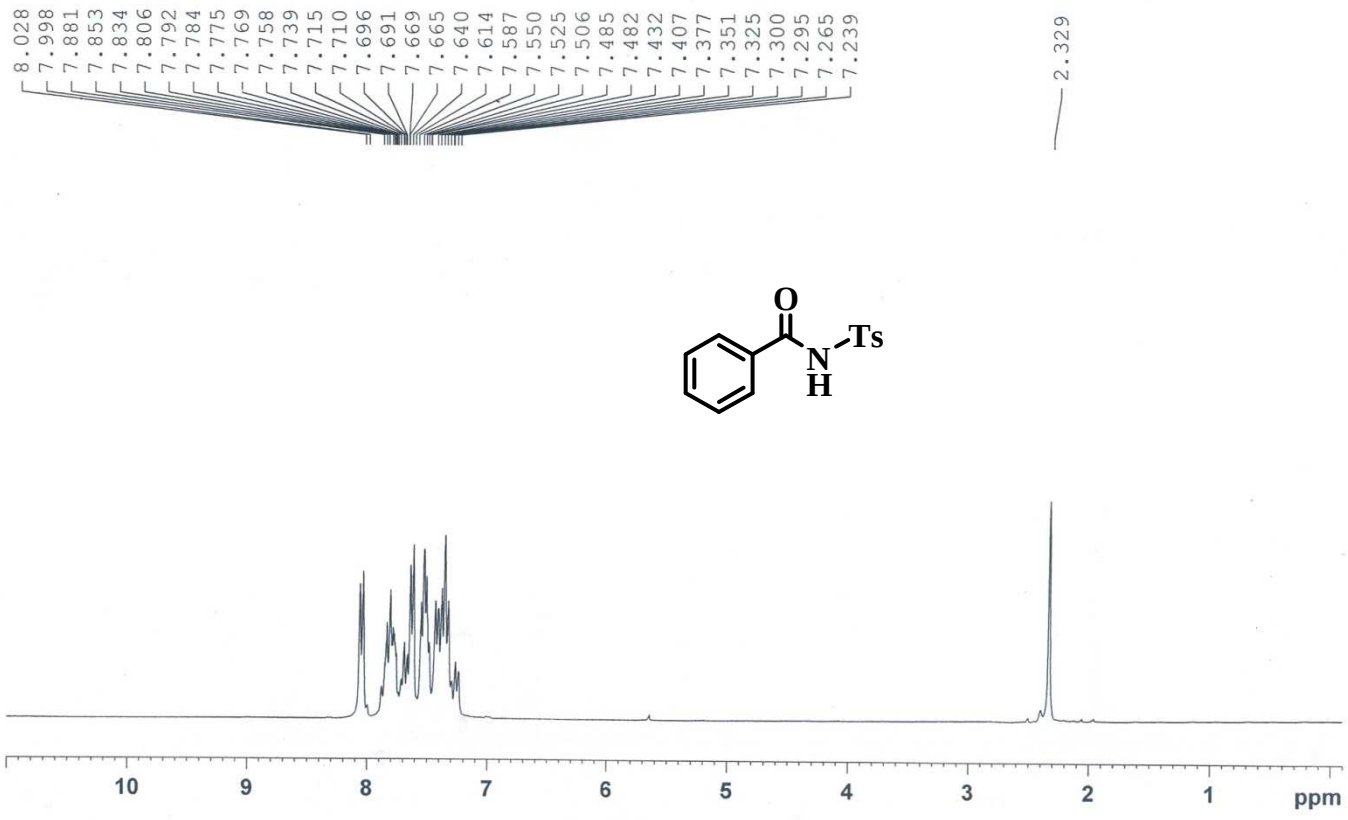
(1) Wu, Xinghua and Hu, Longqin; *J. Org. Chem.* **2007**, *72*, 765-774.

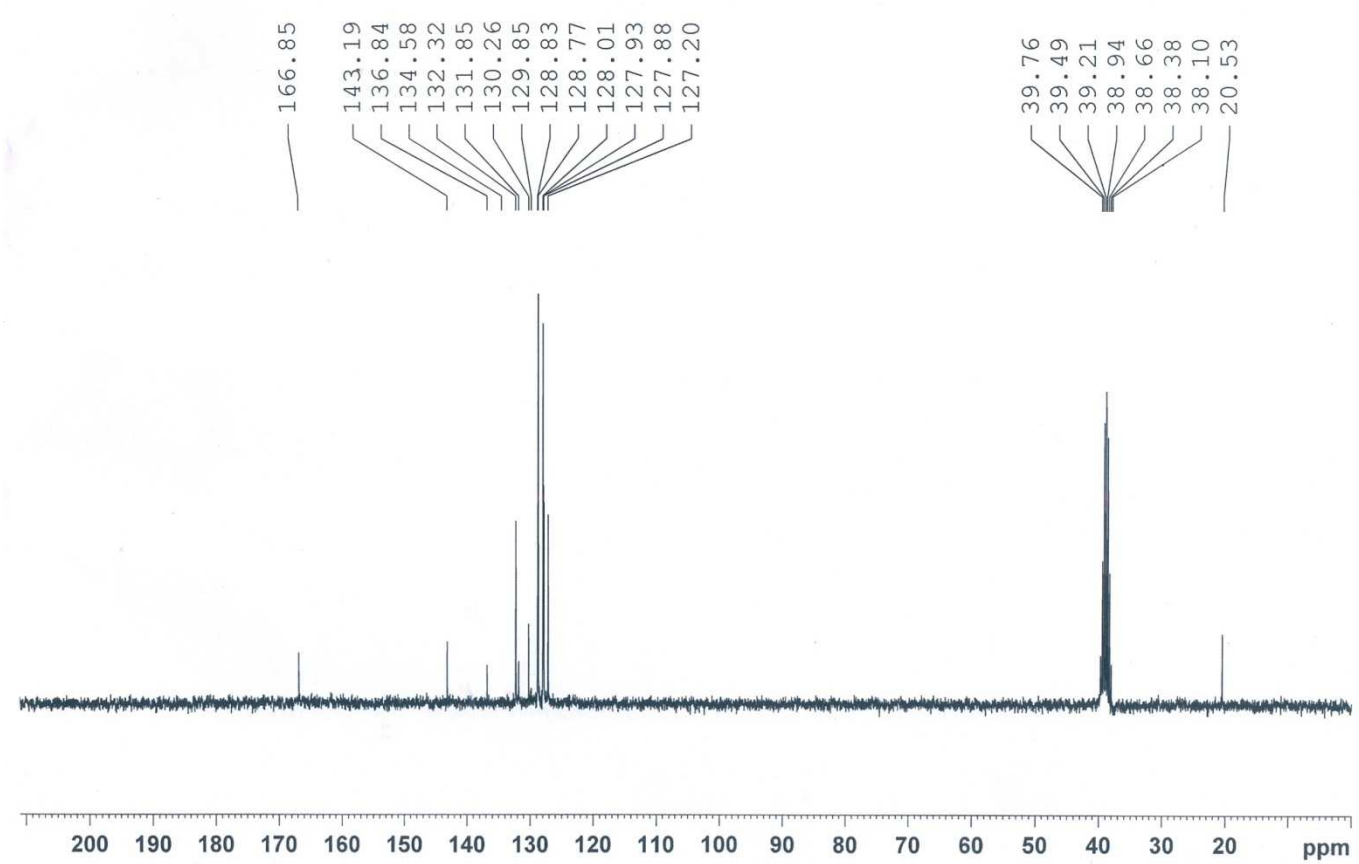
(2) Howe, R. K. and Shelton, B. R. *J. Org. Chem.* **1990**, *55*, 4603-4607.

(3) V. Pace, P. Hoyos, M. Fernandez, J. V. Sinisterra, and A. R. Alcantara; *Green Chem.* **2010**, *12*, 1380-1382.

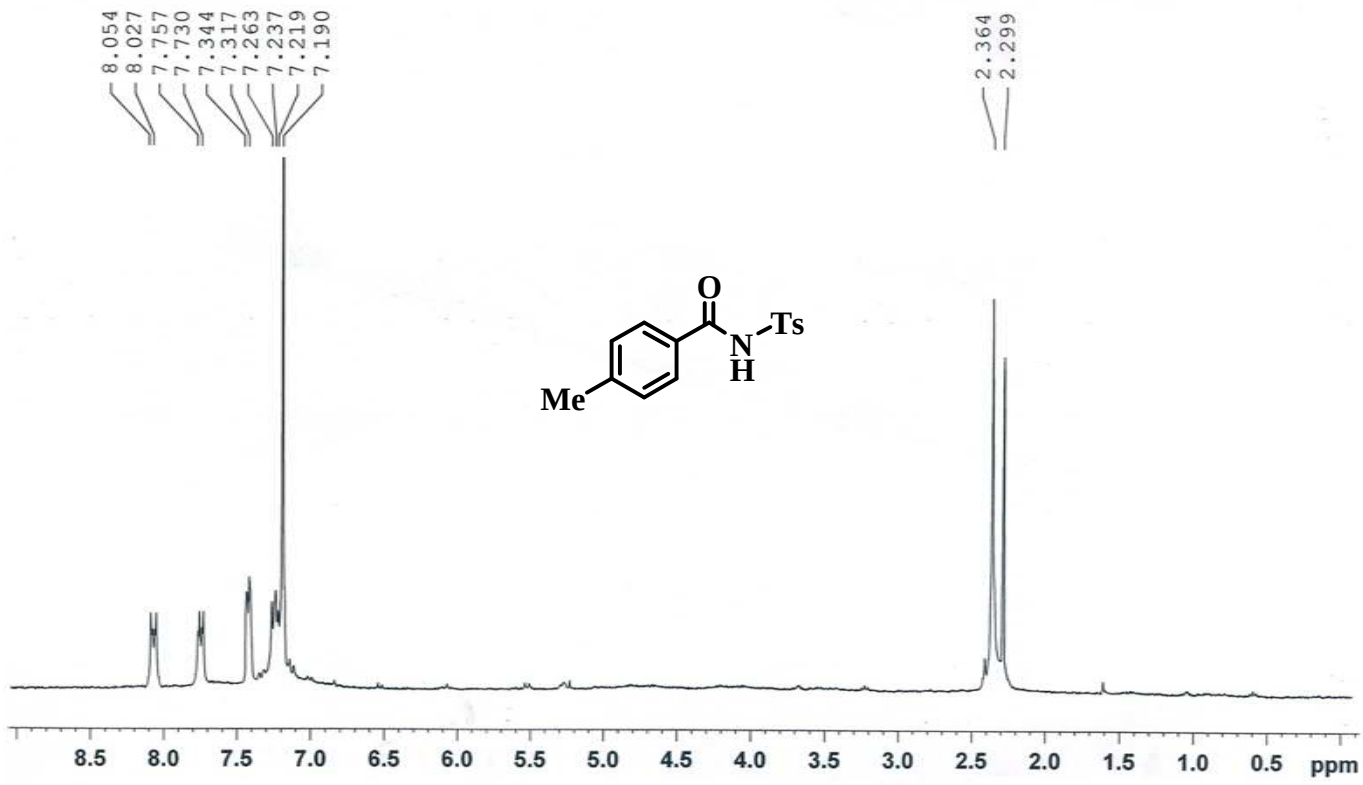
8. **^{1}H and ^{13}C-NMR spectra of the compounds (7a-i, VIII, 8a-f, 9a, 9c)**

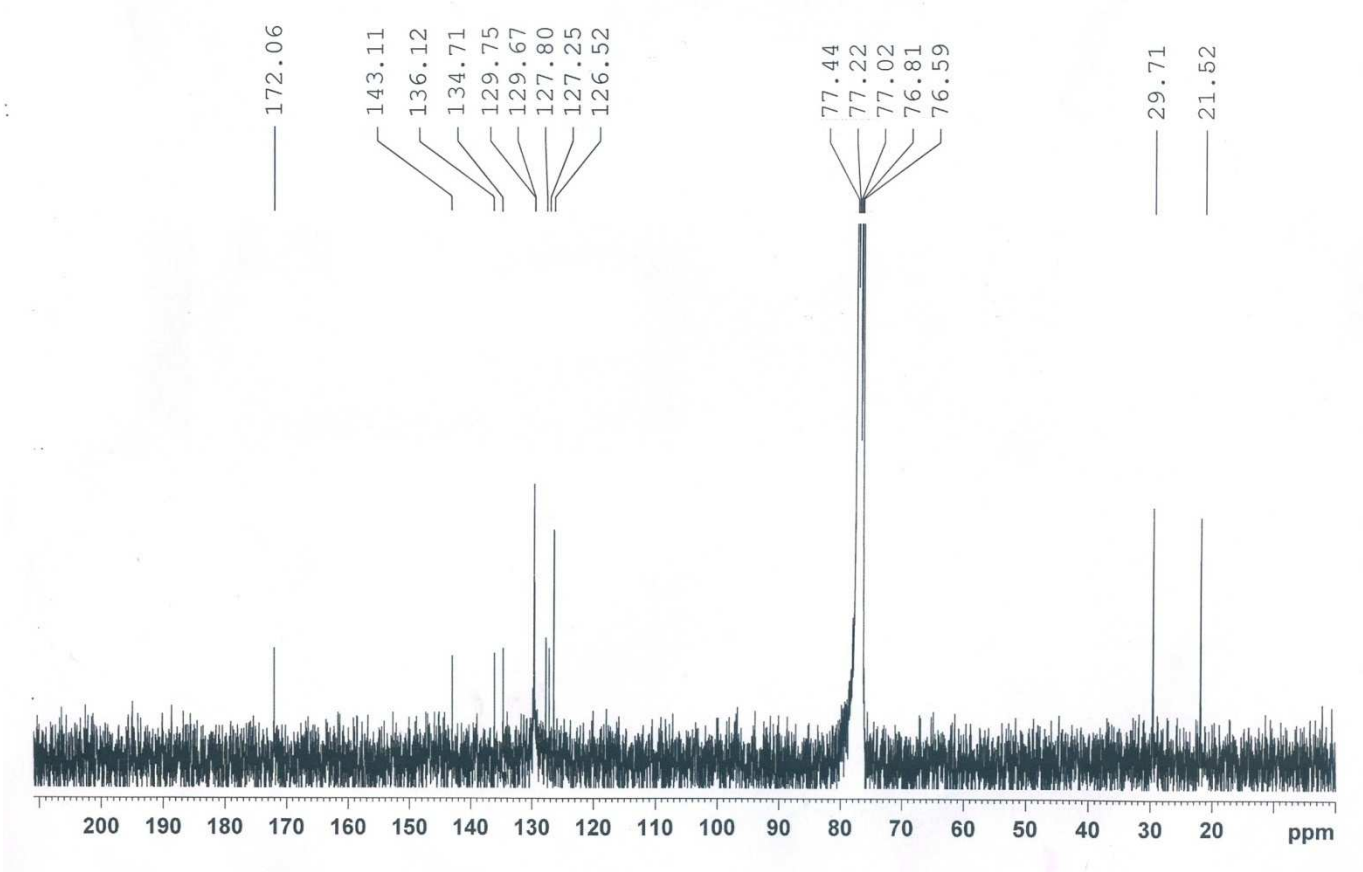
SI Figure 9: ^{1}H and ^{13}C-NMR spectra of compound **7a**



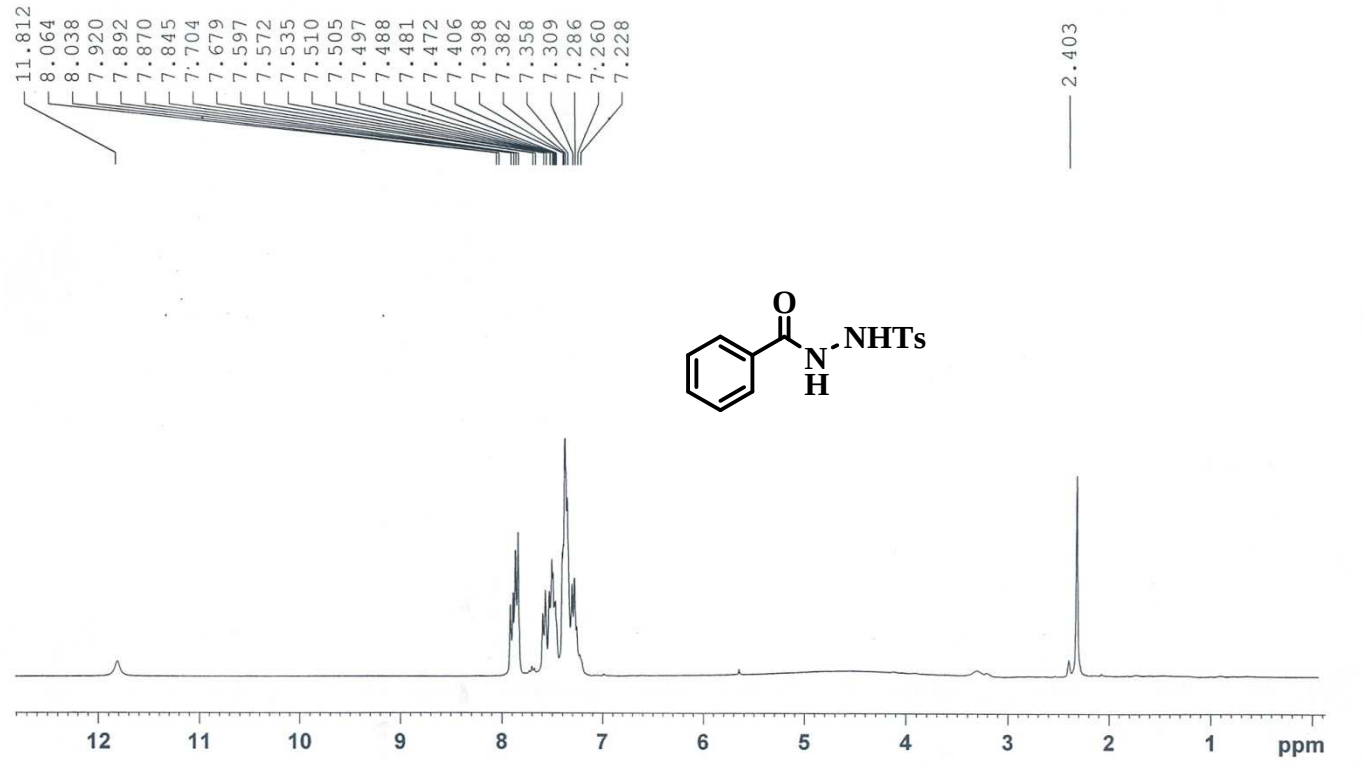


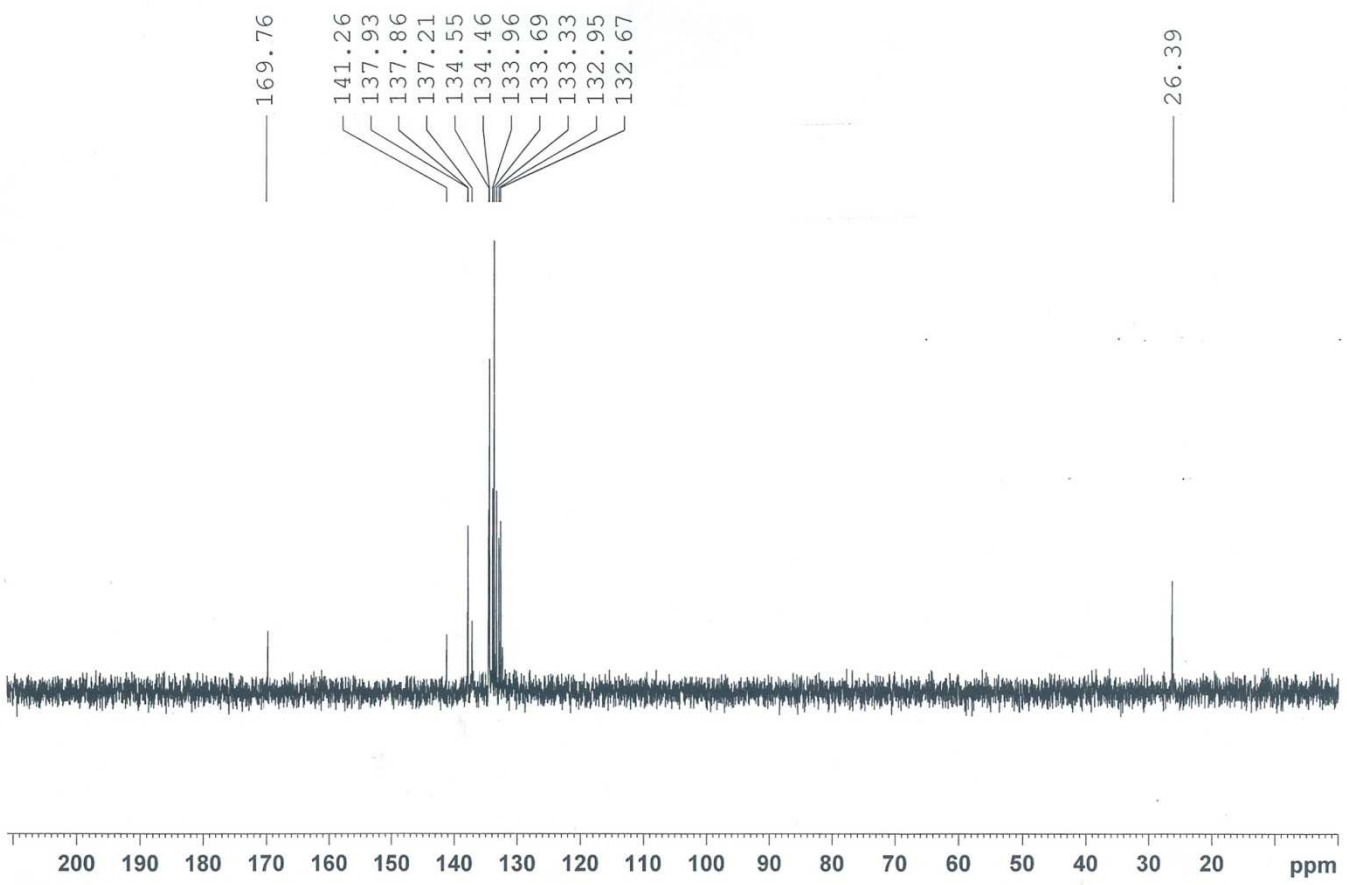
SI Figure 10: ^{1}H and ^{13}C-NMR spectra of compound **7b**



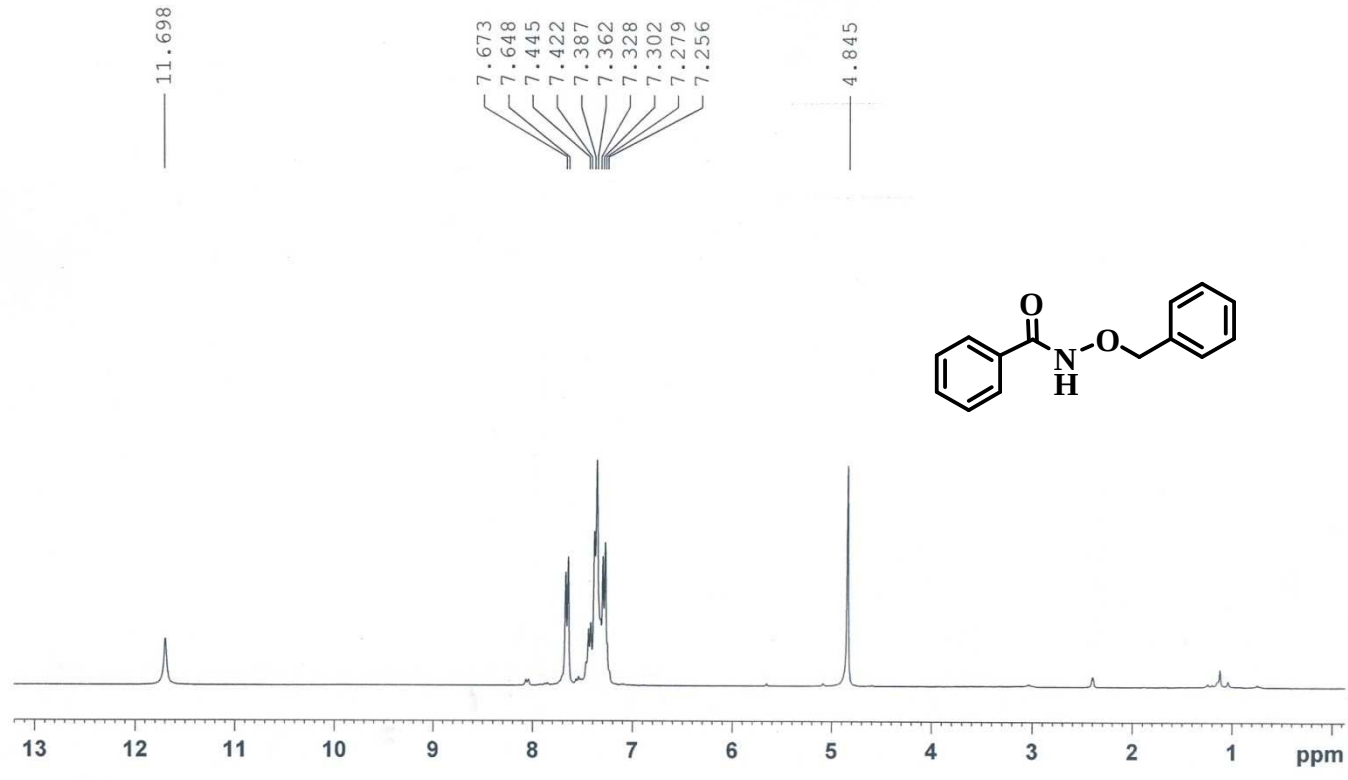


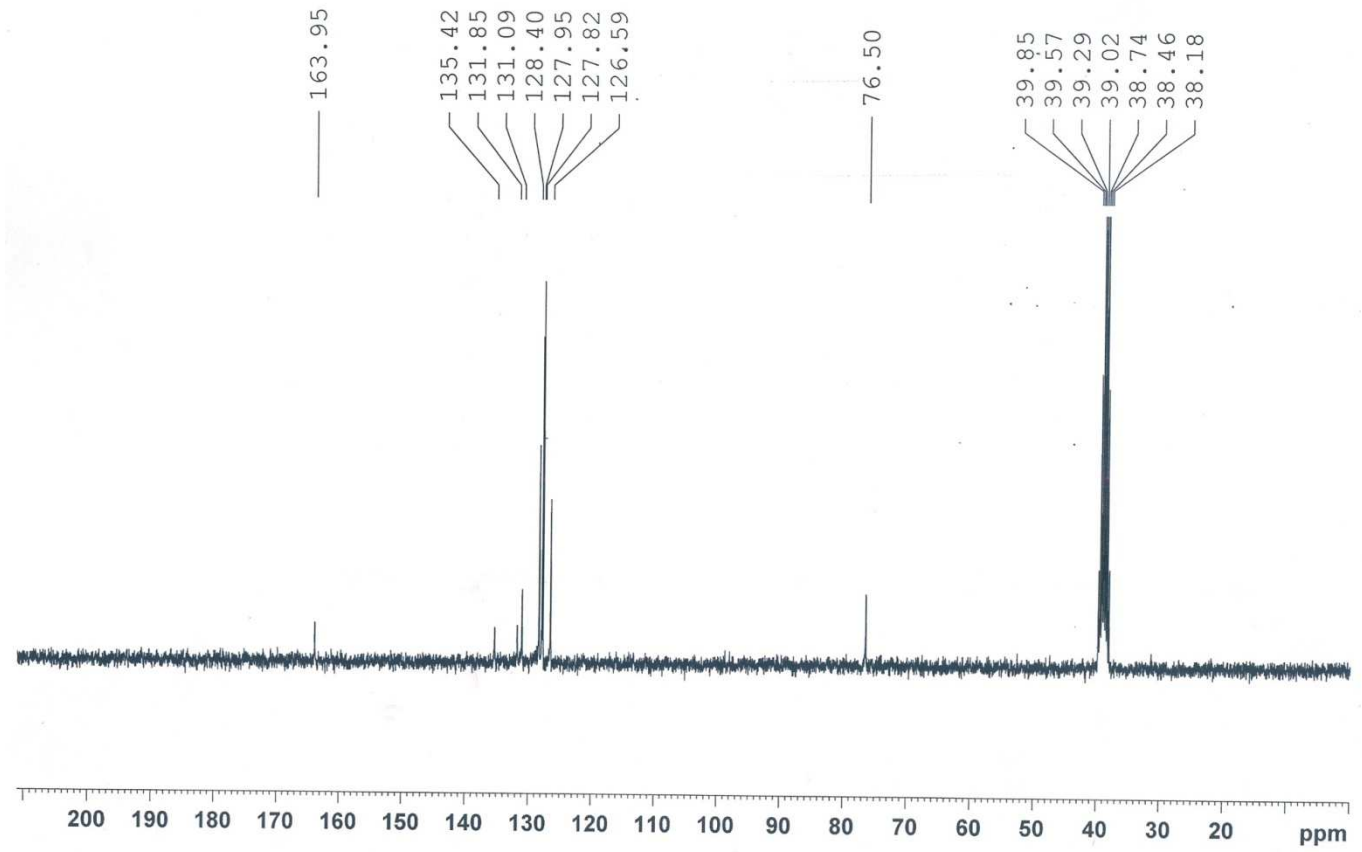
SI Figure 11: ^{1}H and ^{13}C-NMR spectra of compound **7c**



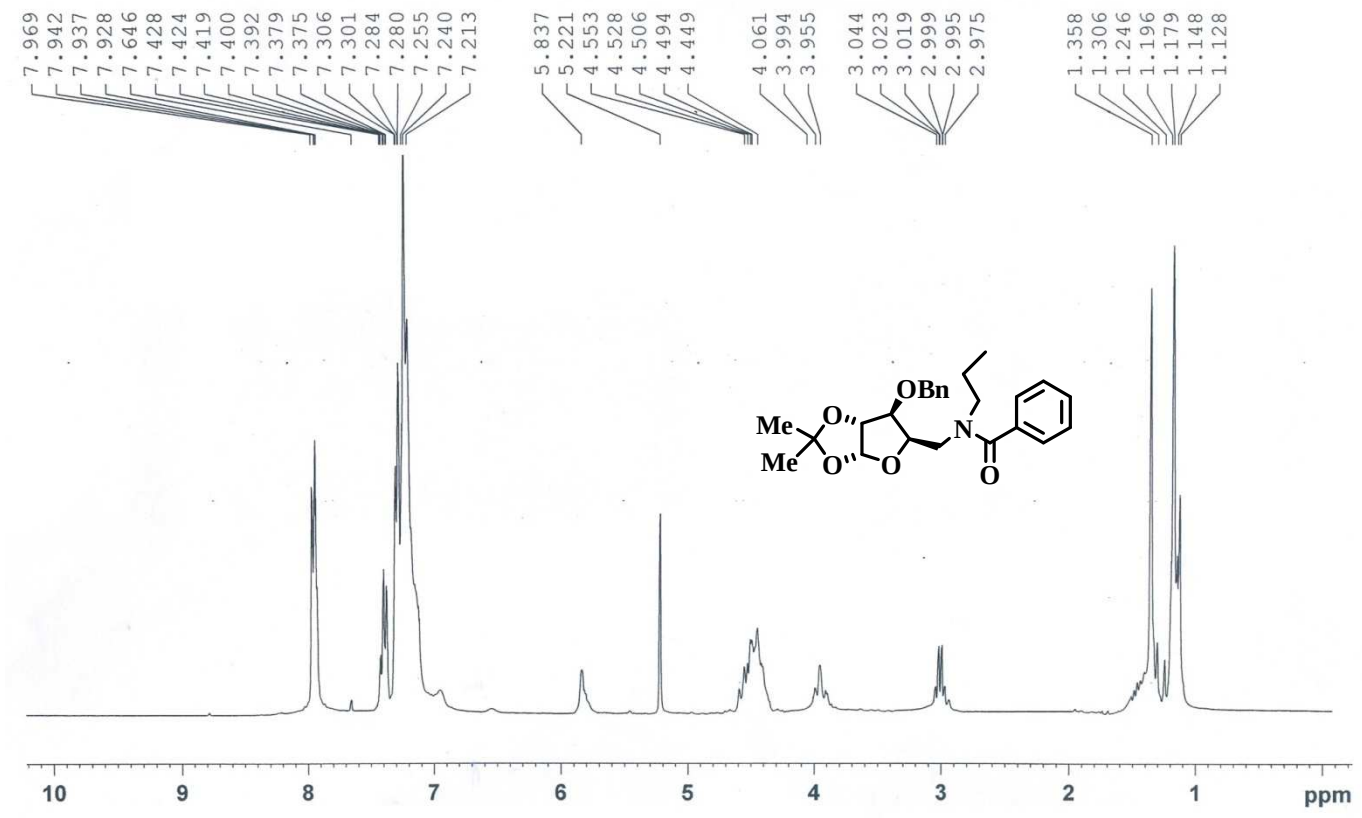


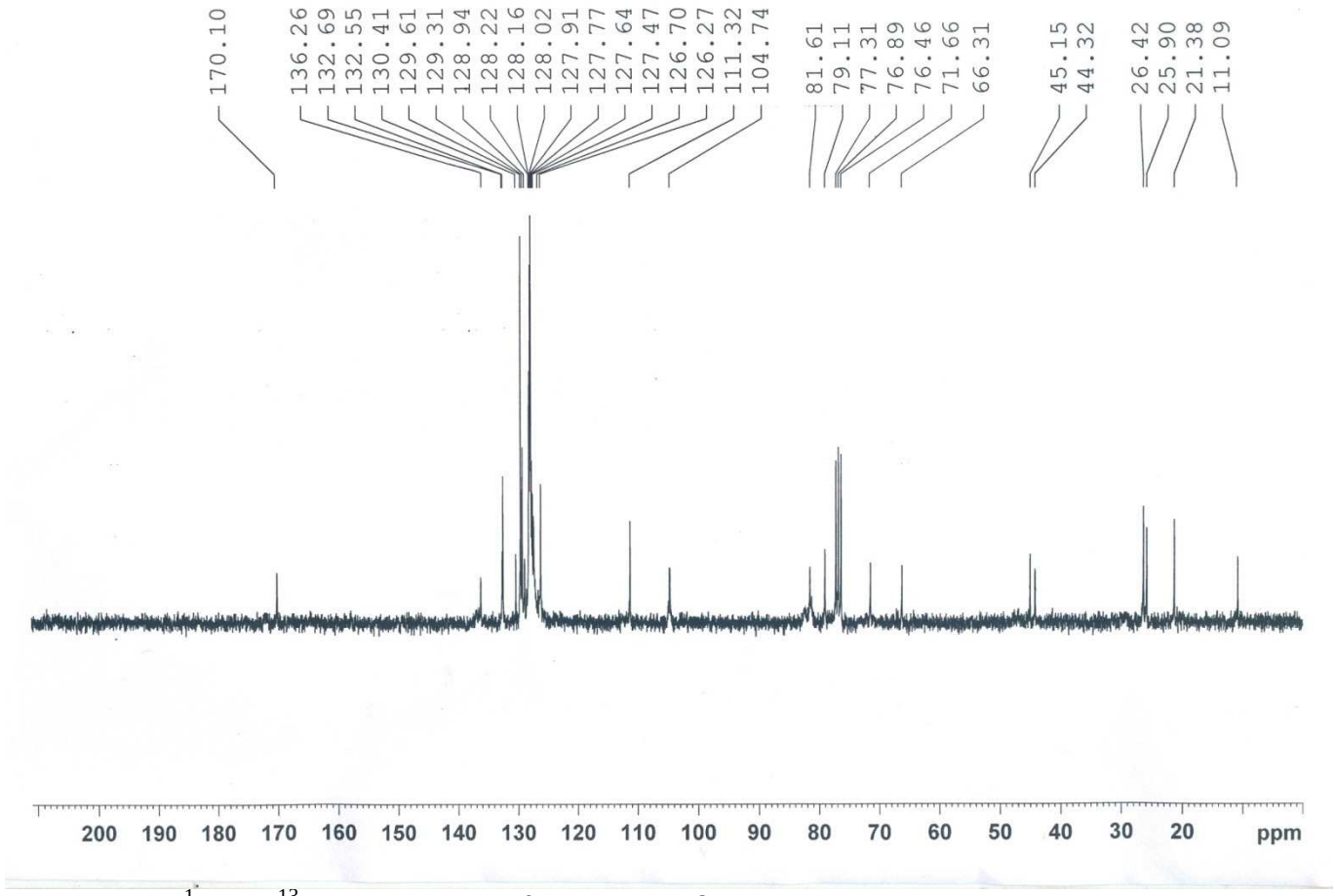
SI Figure 12: ^{1}H and ^{13}C-NMR spectra of compound **7d**



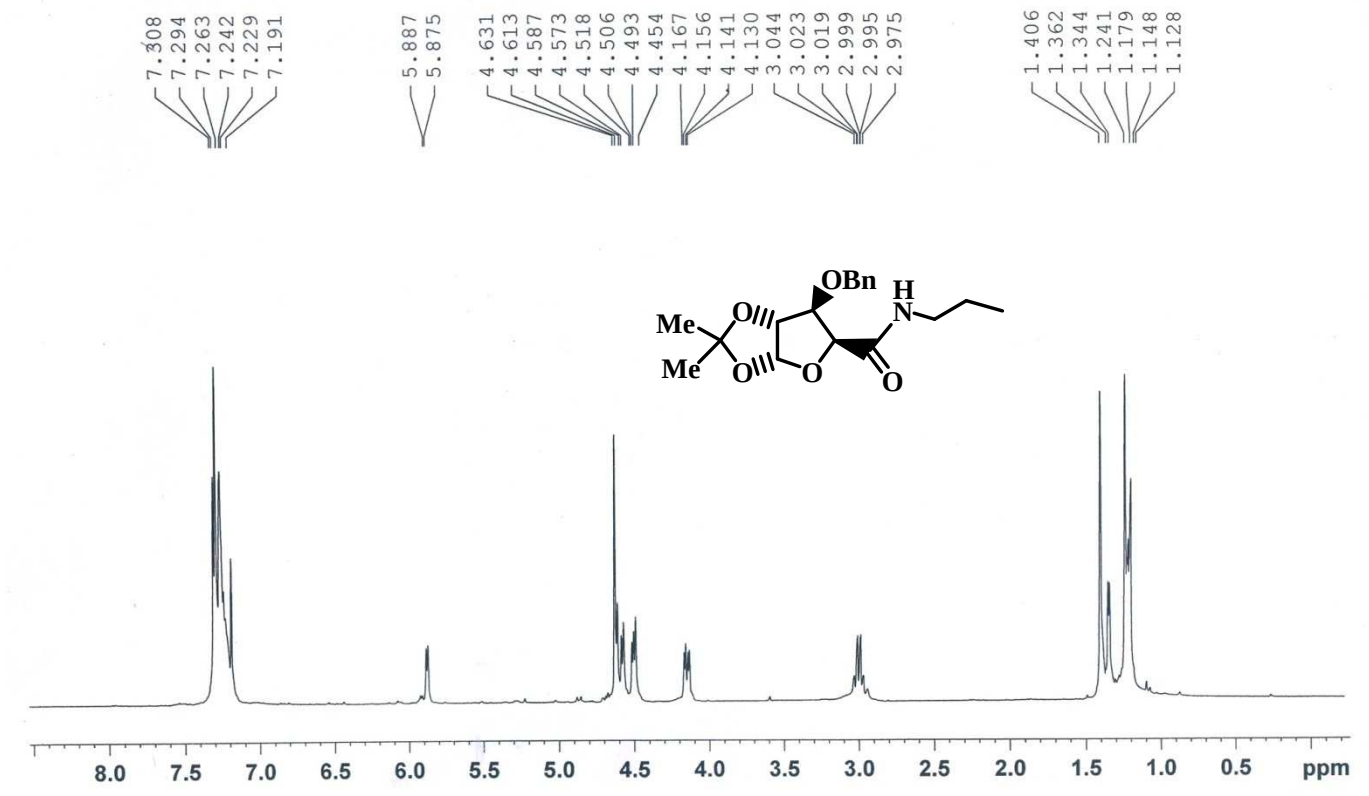


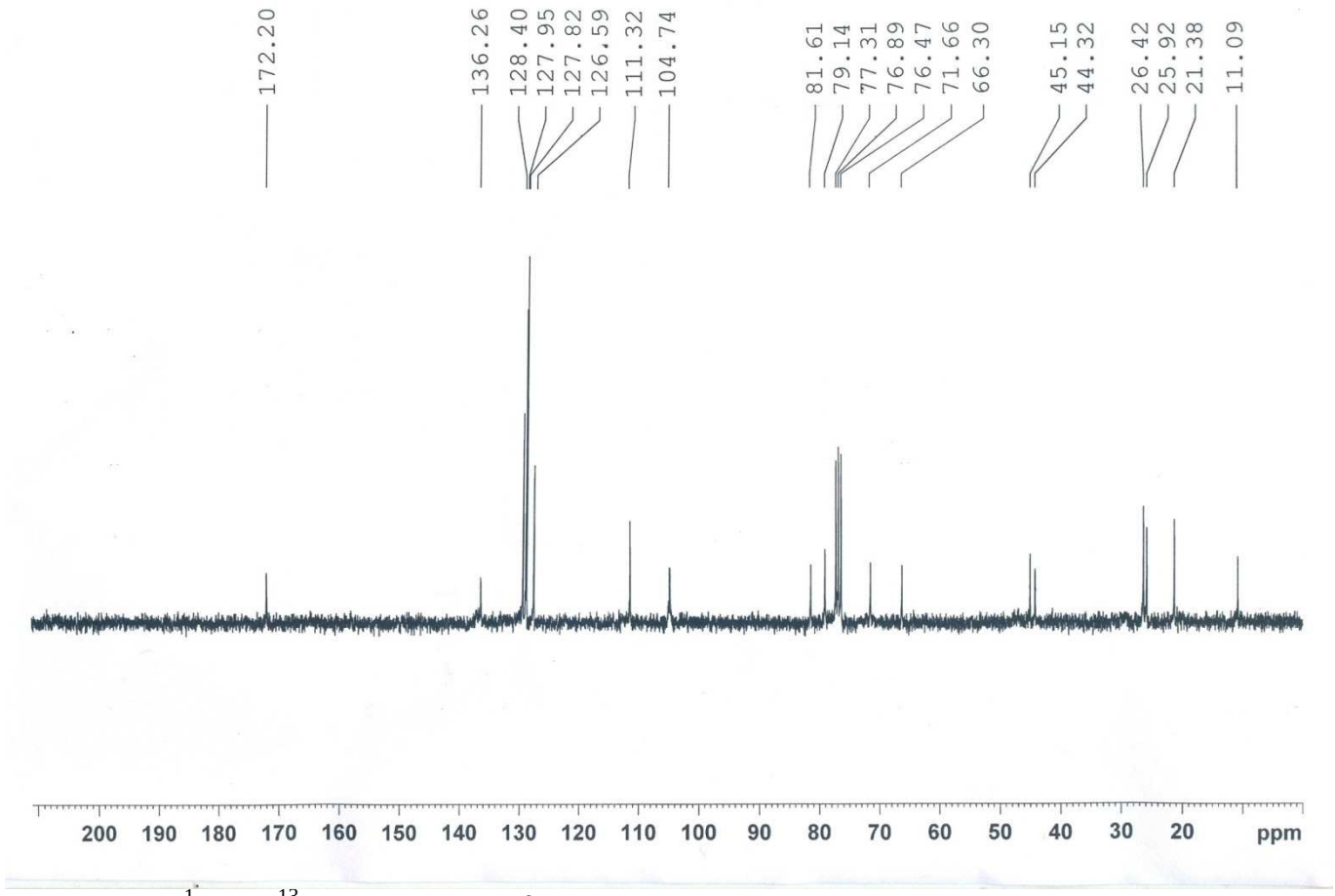
SI Figure 13: ^{1}H and ^{13}C-NMR spectra of compound **7e**



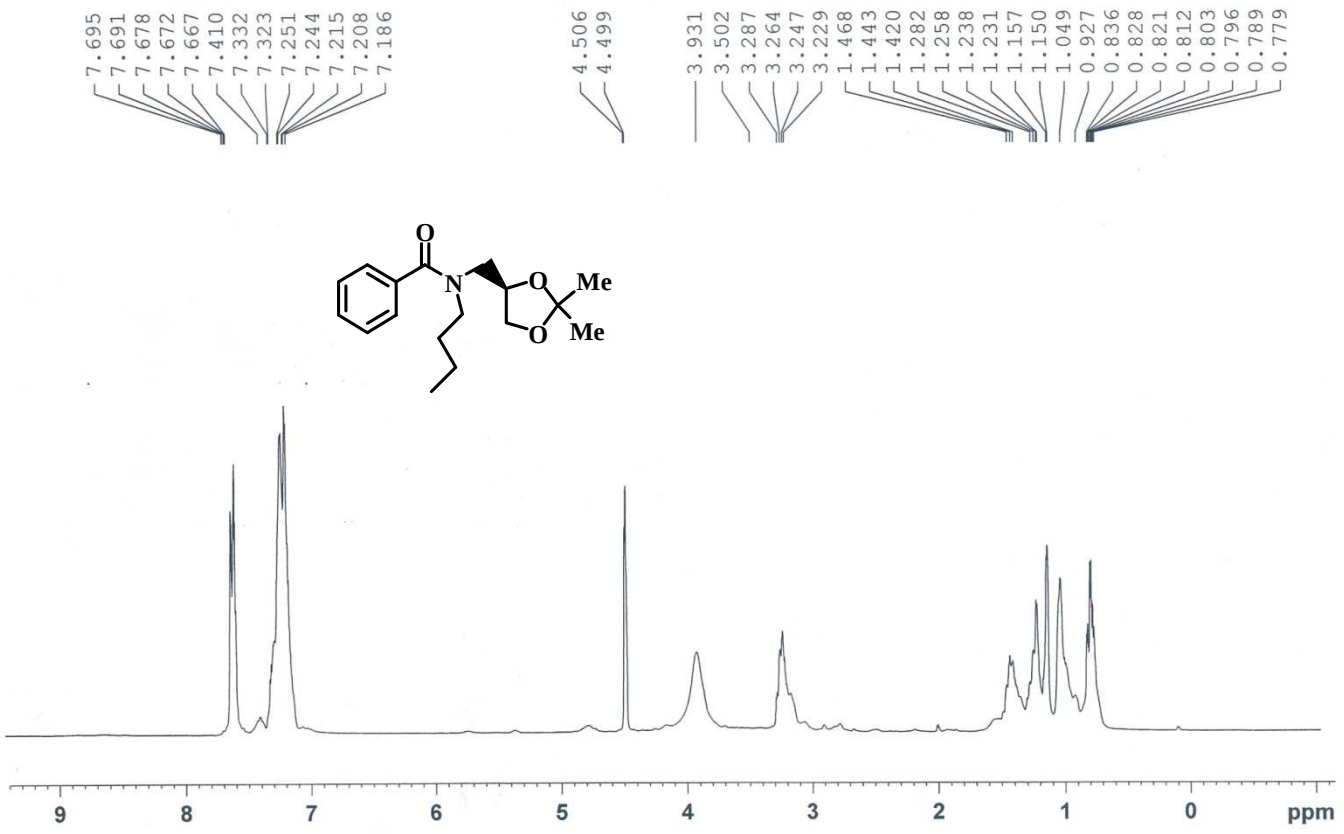


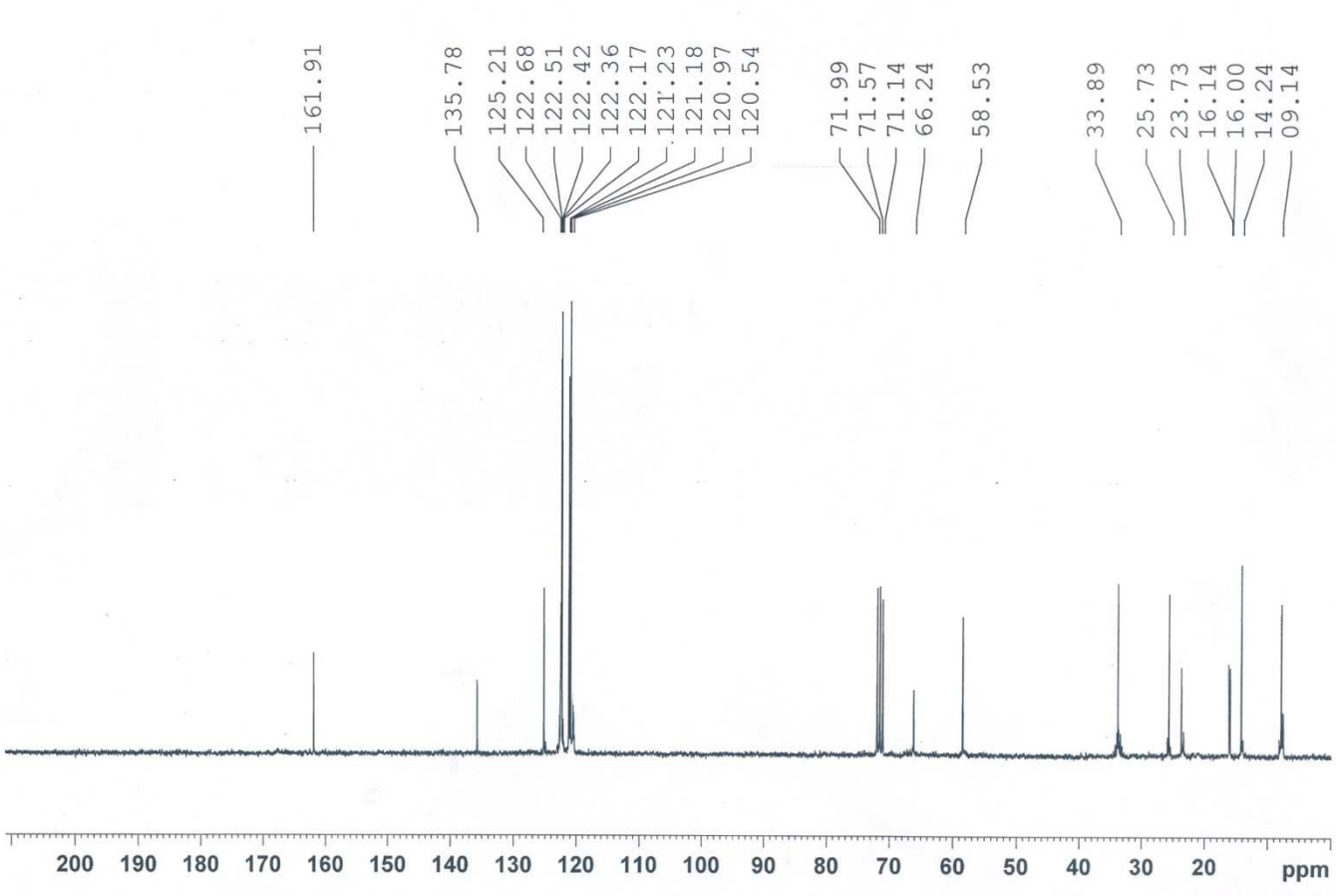
SI Figure 14: ^{1}H and ^{13}C-NMR spectra of compound **7f**



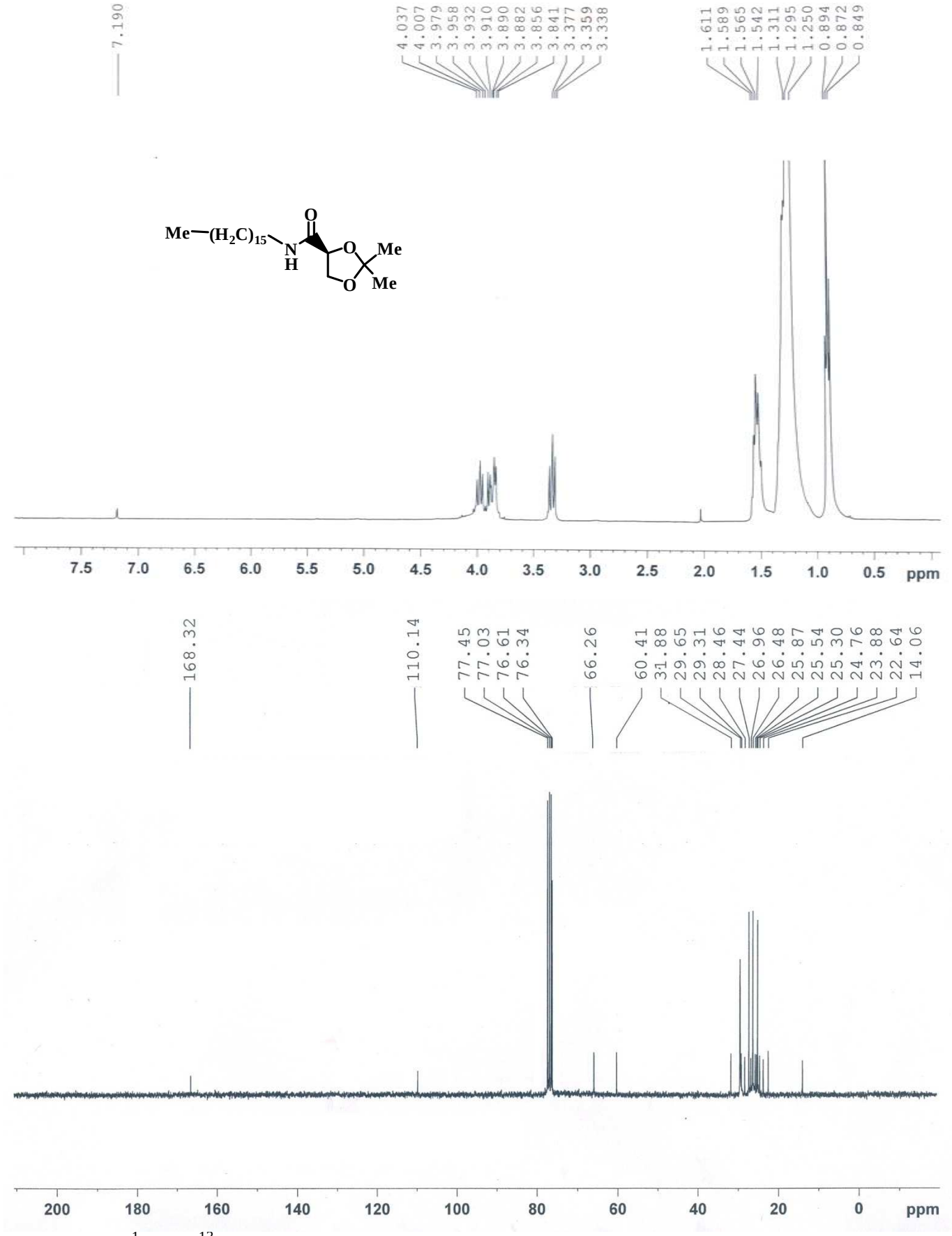


SI Figure 15: ^{1}H and ^{13}C-NMR spectra of compound **7g**

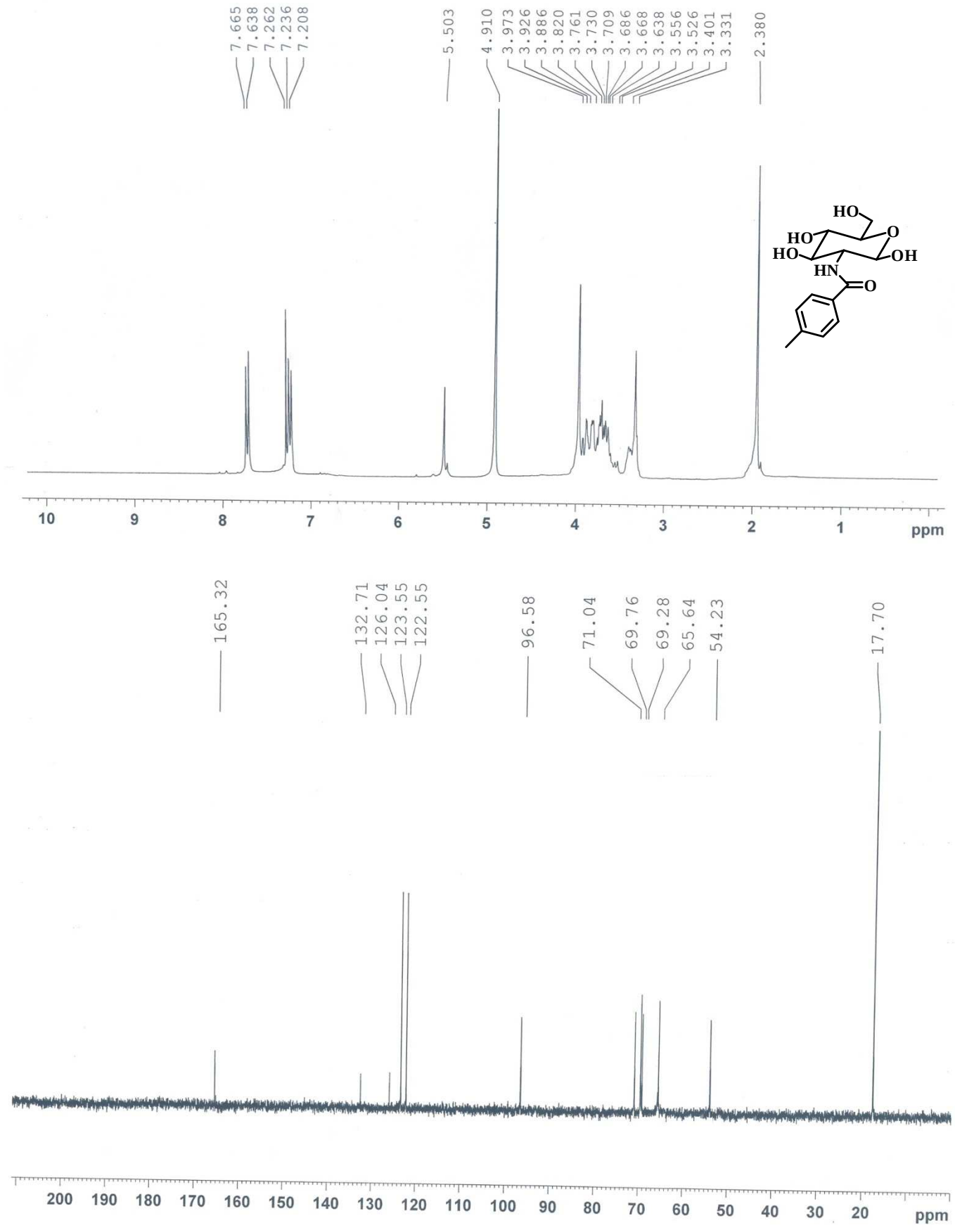




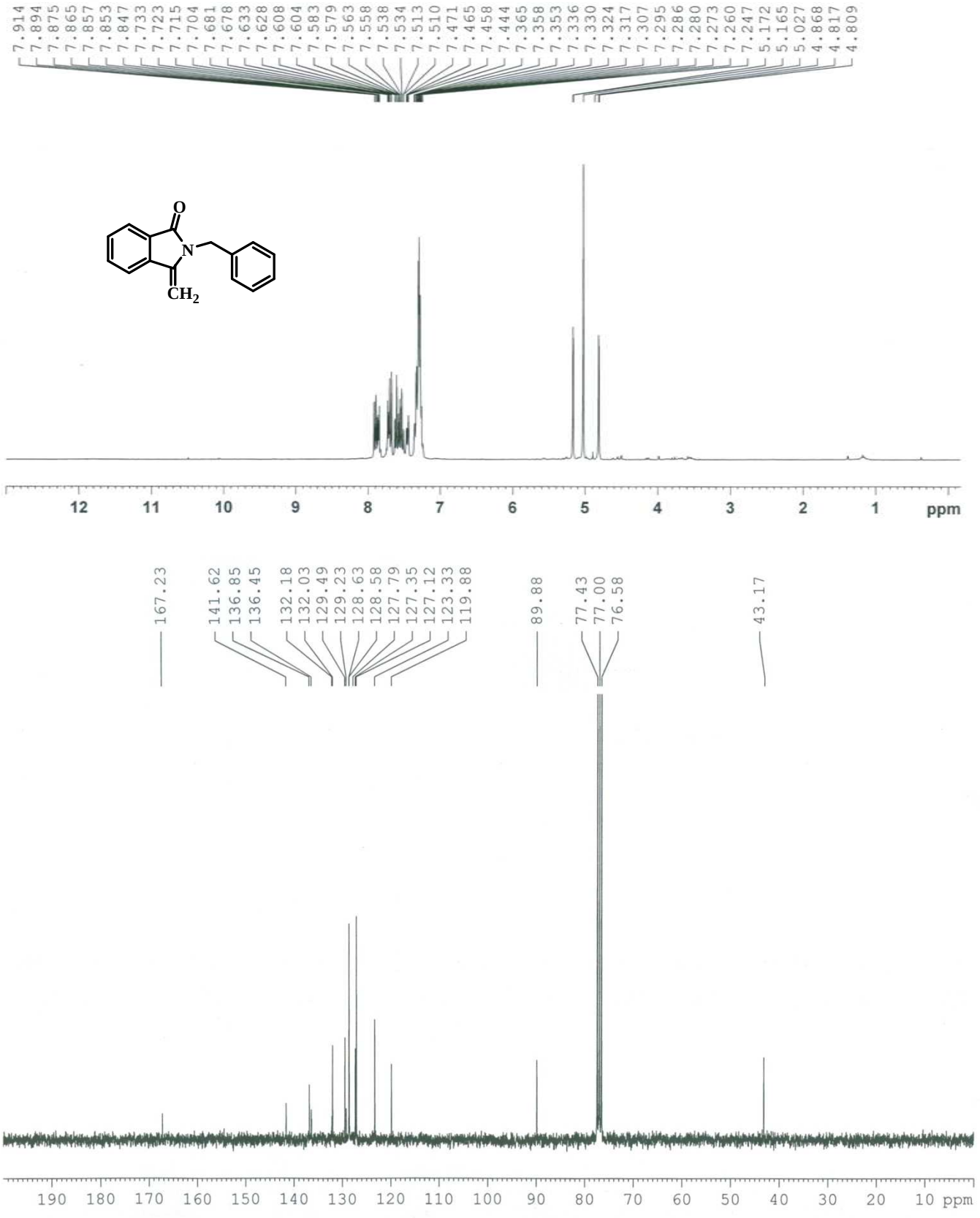
SI Figure 16: ^{1}H and ^{13}C-NMR spectra of compound **7h**



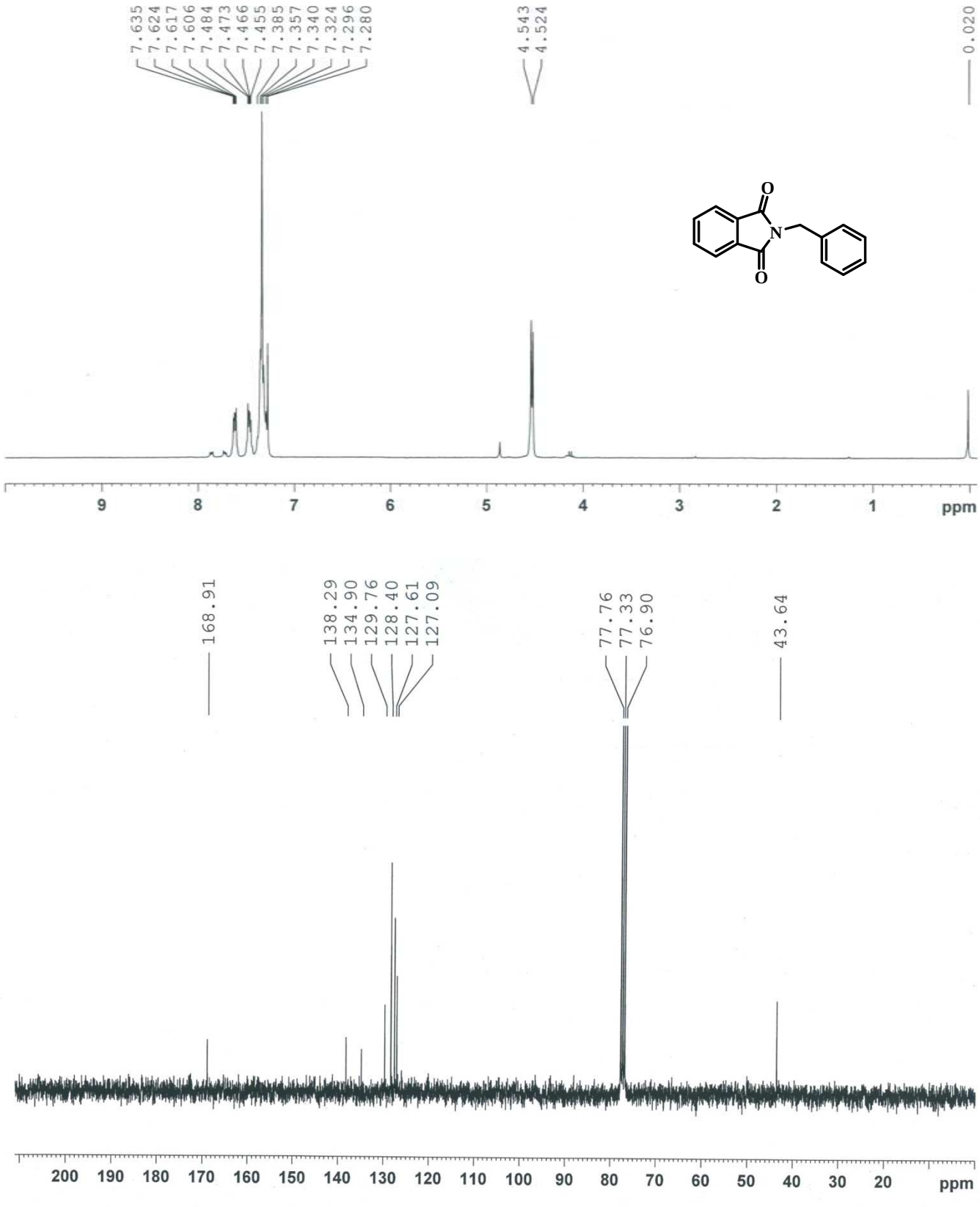
SI Figure 17: ^{1}H and ^{13}C-NMR spectra of compound **7i**



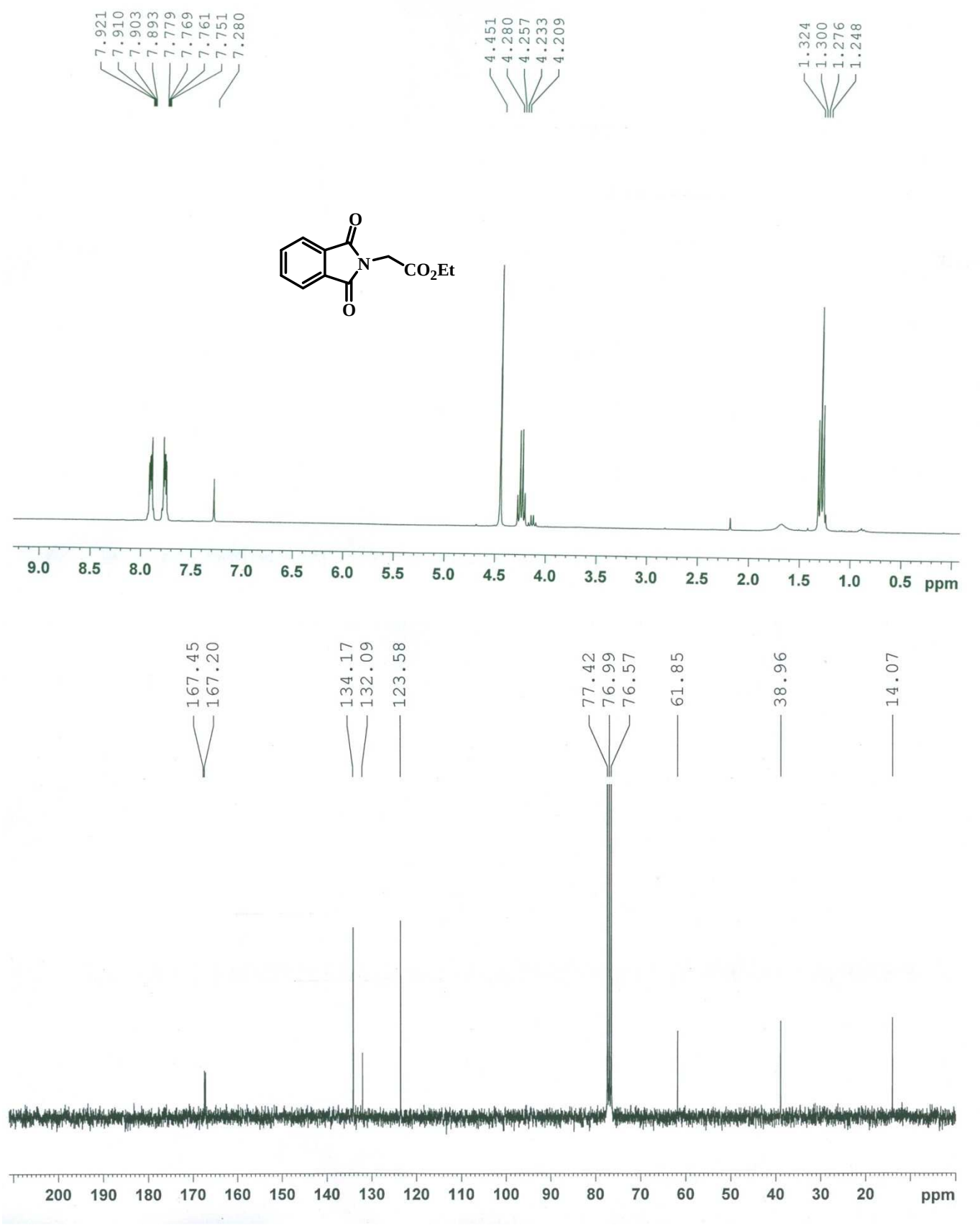
SI Figure 18: ^{1}H and ^{13}C-NMR spectra of compound **VIII**



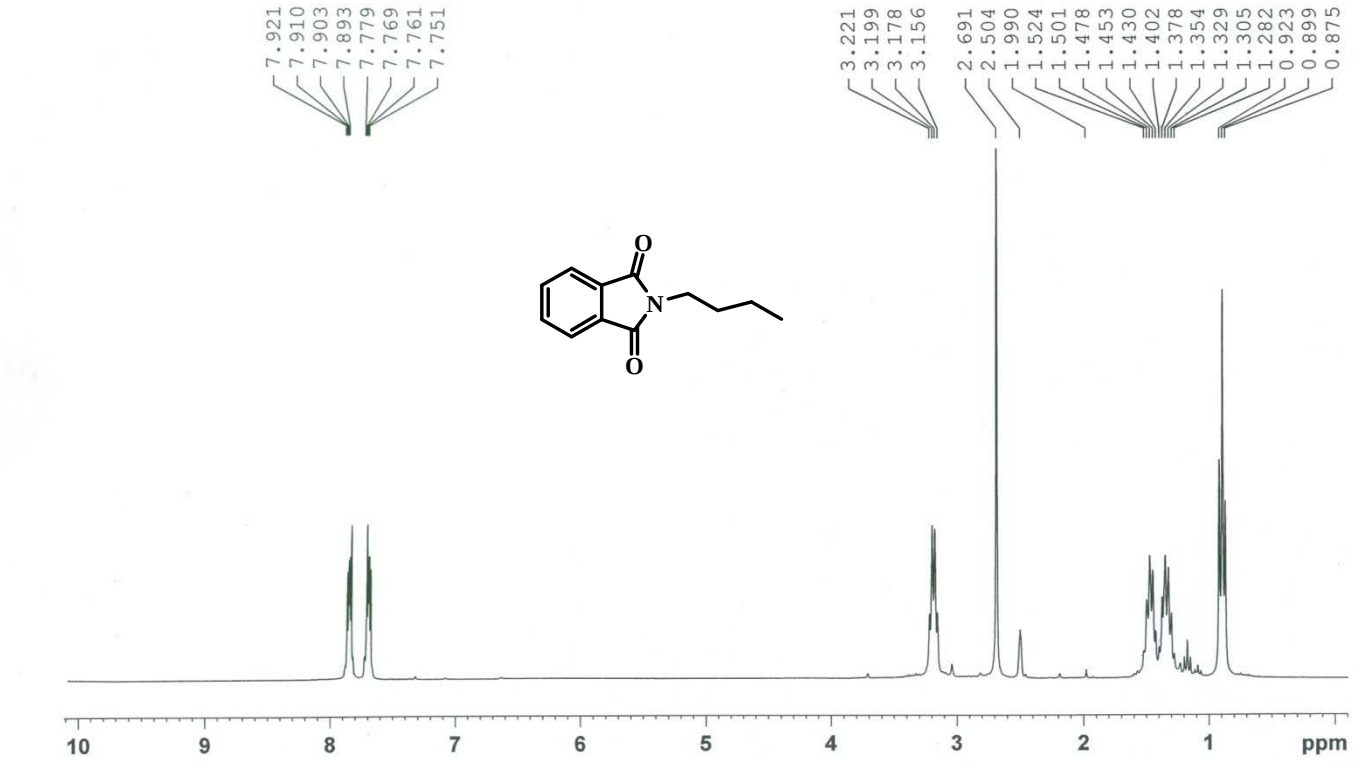
SI Figure 19: ^{1}H and ^{13}C-NMR spectra of compound **8a**

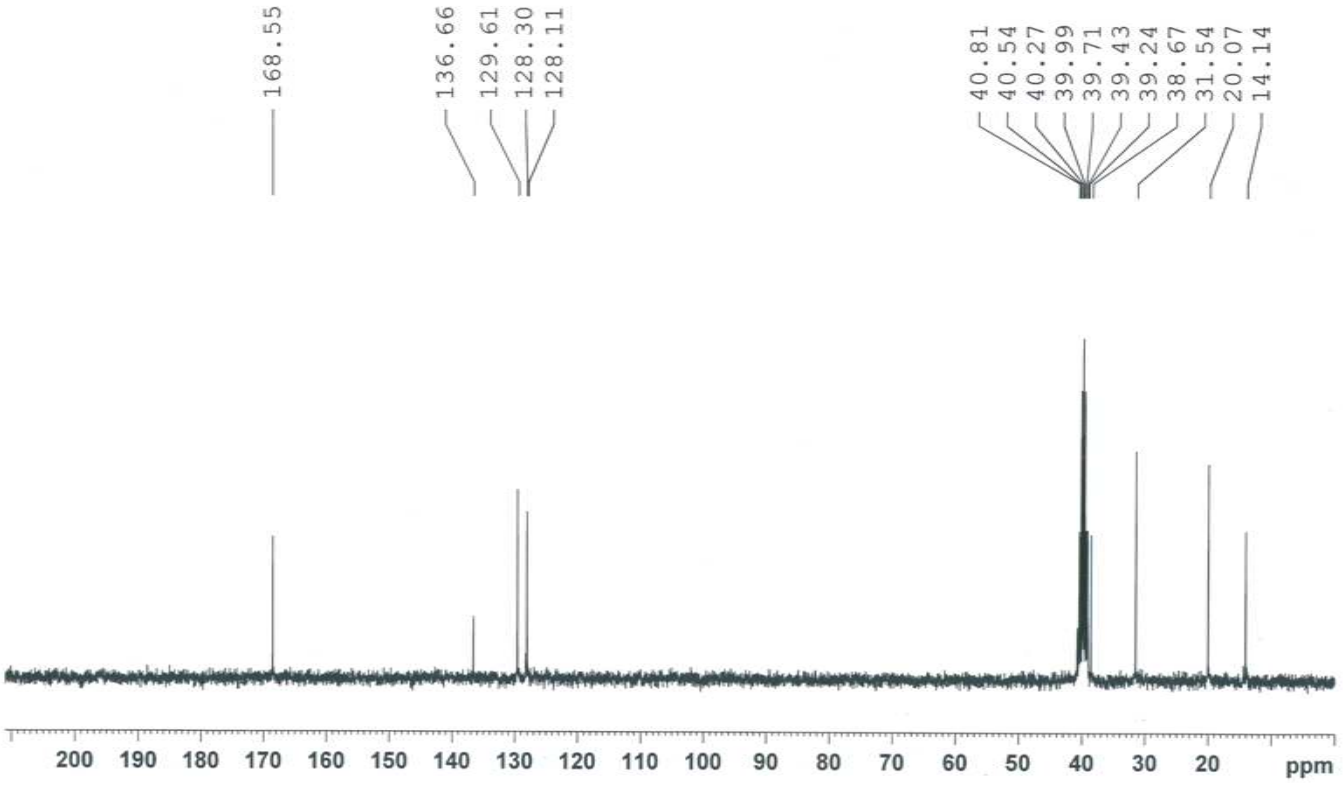


SI Figure 20: ^{1}H and ^{13}C-NMR spectra of compound **8b**

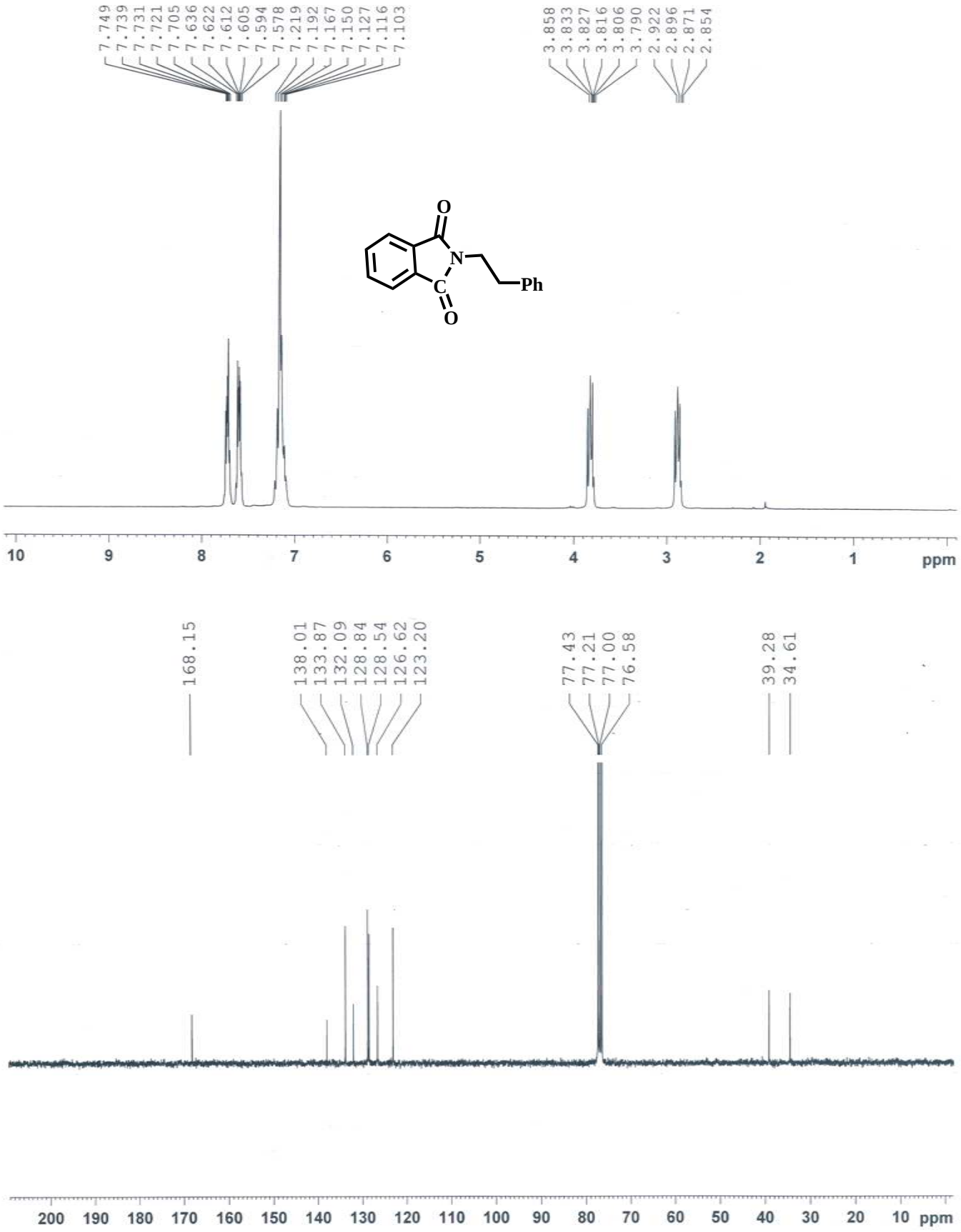


SI Figure 21: ^{1}H and ^{13}C-NMR spectra of compound **8c**

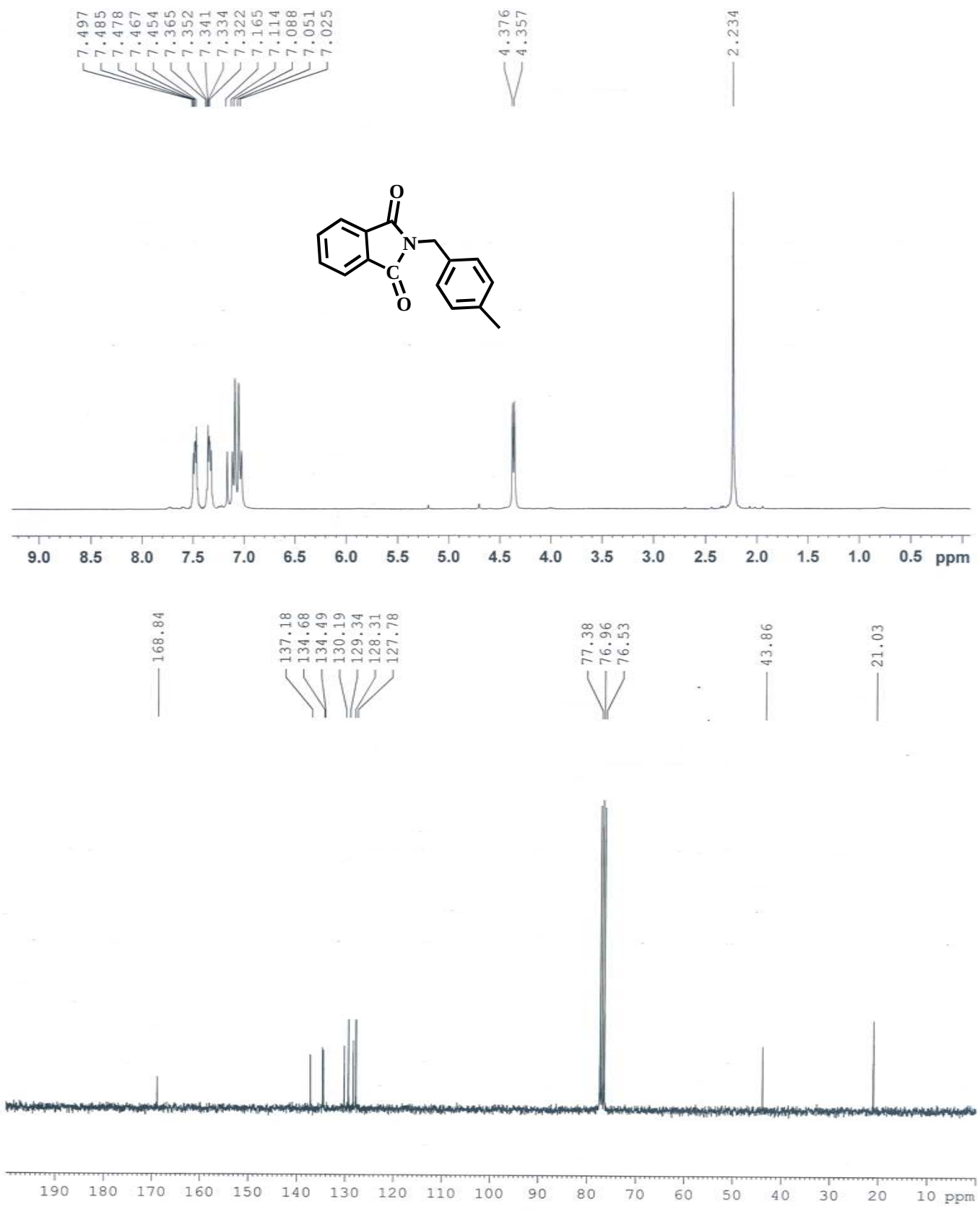

7.921
7.910
7.903
7.893
7.779
7.769
7.761
7.751
3.221
3.199
3.178
3.156
2.691
2.504
1.990
1.524
1.501
1.478
1.453
1.430
1.402
1.378
1.354
1.329
1.305
1.282
0.923
0.899
0.875
O
N
O
10
9
8
7
6
5
4
3
2
1
ppm


168.55
136.66
129.61
128.30
128.11
40.81
40.54
40.27
39.99
39.71
39.43
39.24
38.67
31.54
20.07
14.14
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm

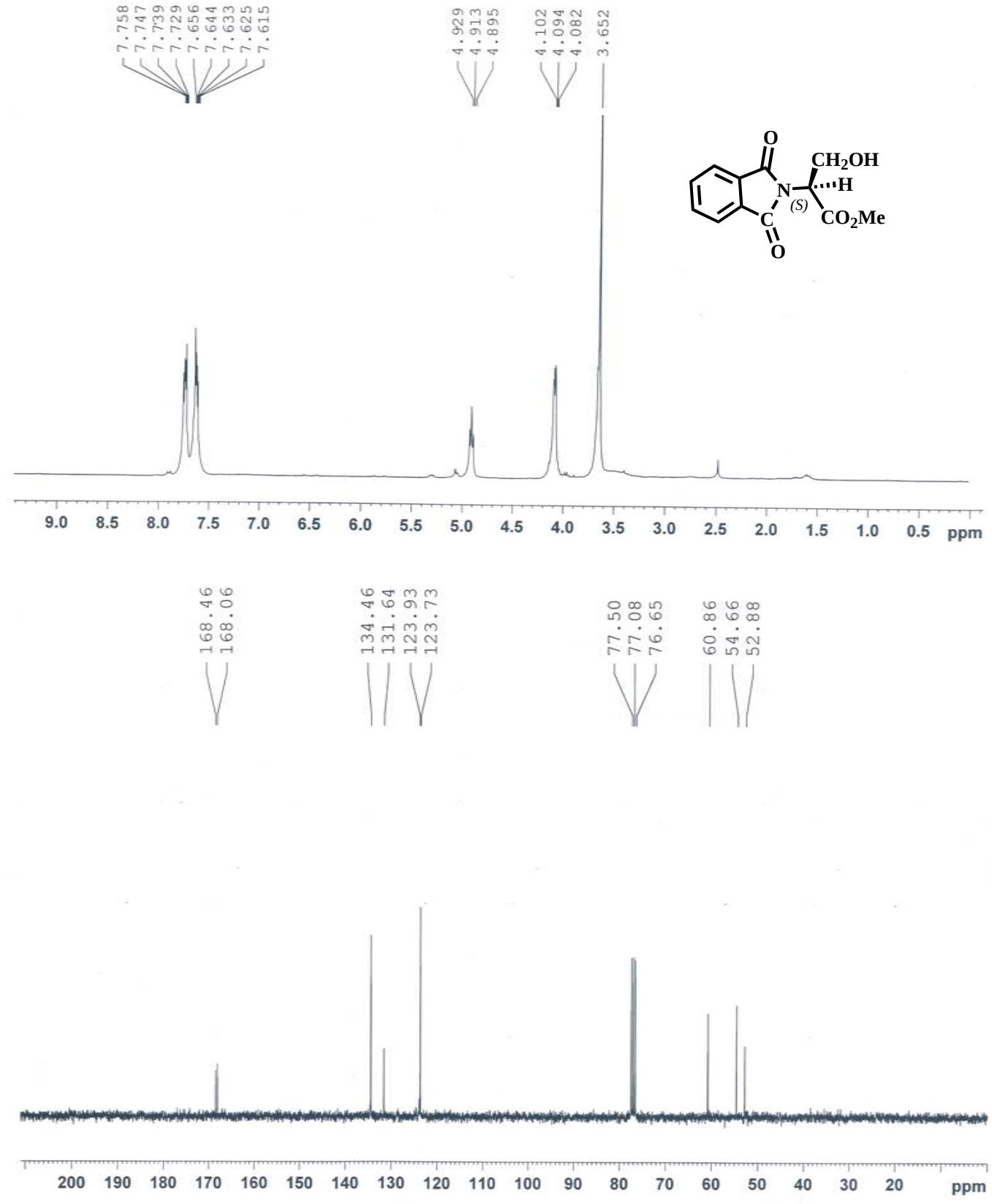
SI Figure 22: ^{1}H and ^{13}C-NMR spectra of compound **8d**



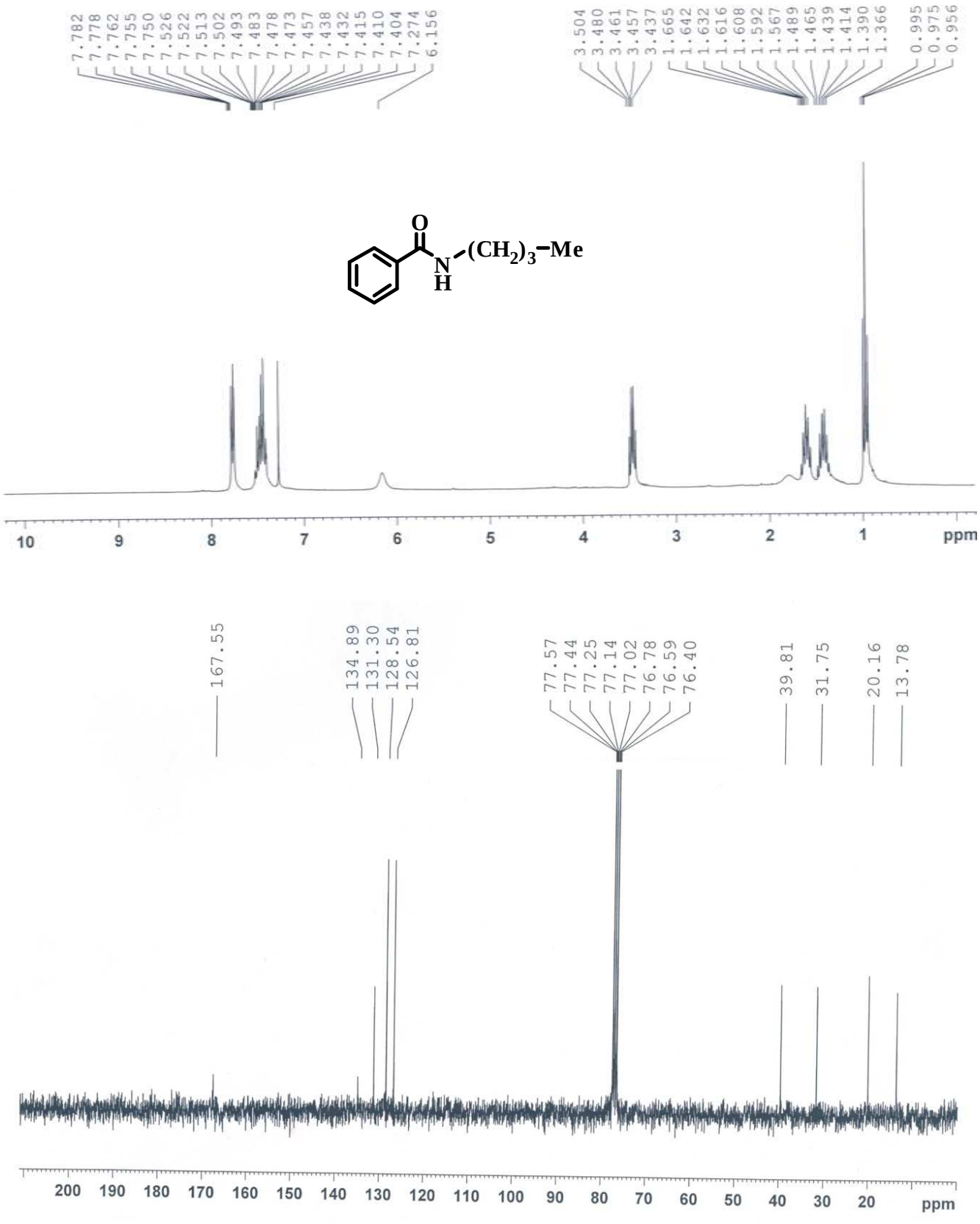
SI Figure 23: ^{1}H and ^{13}C-NMR spectra of compound **8e**



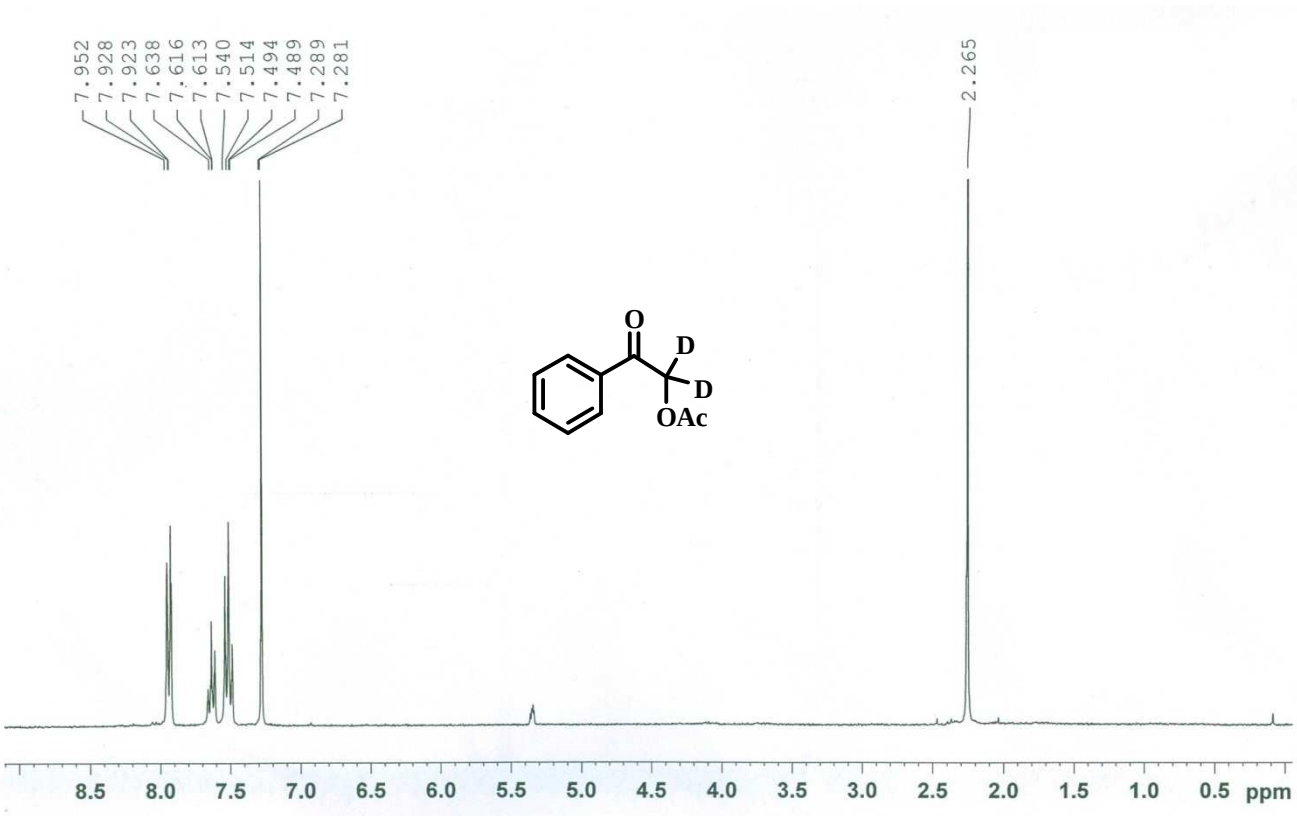
SI Figure 24: ^{1}H and ^{13}C-NMR spectra of compound **8f**



SI Figure 25: ^{1}H and ^{13}C-NMR spectra of compound **9a**



SI Figure 26: ^{1}H and ^{13}C-NMR spectra of compound **9c**


7.952
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7.923
7.638
7.616
7.613
7.540
7.514
7.494
7.489
7.289
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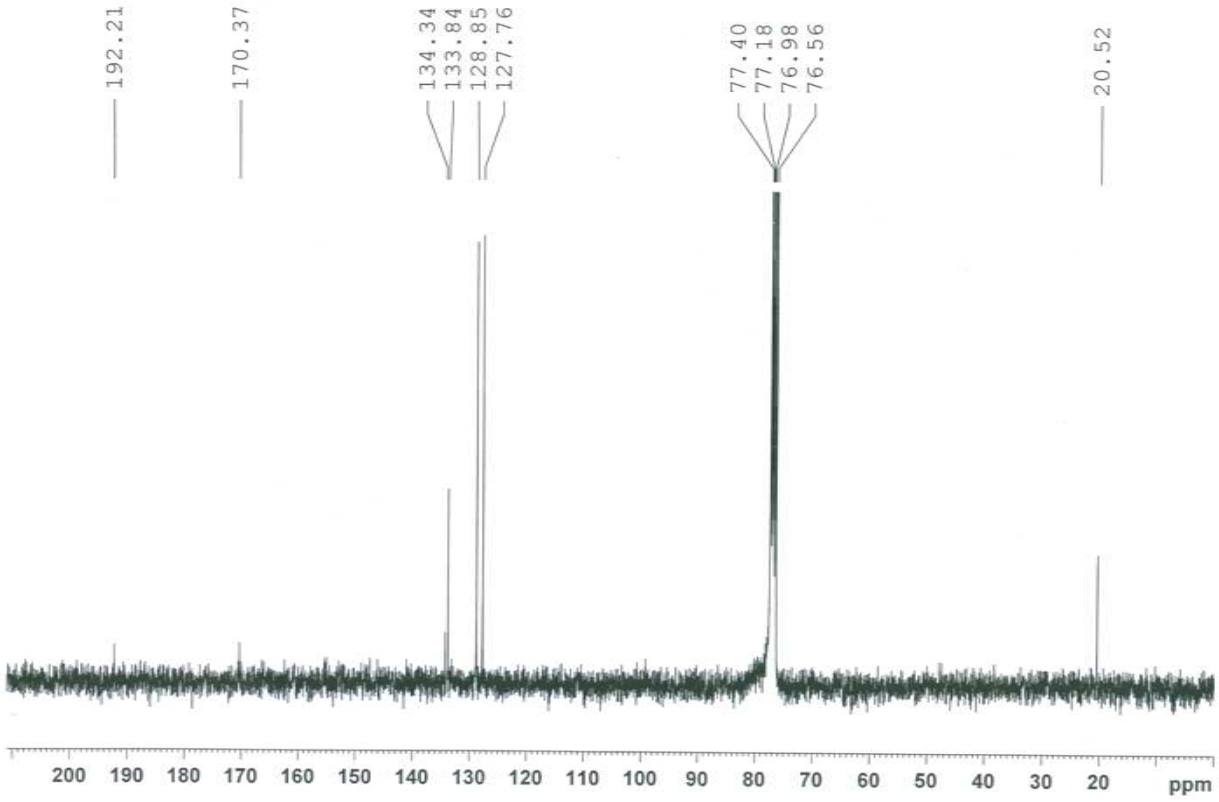
2.265
O
D
D
OAc
8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 ppm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170.37
134.34
133.84
128.85
127.76
77.40
77.18
76.98
76.56
20.52
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm