Electronic Supplementary Information

A Facile Chemoselective Deprotection of Aryl Silyl Ethers using Sodium Hydride/DMF and *in situ* Protection of Phenol with VariousGroups

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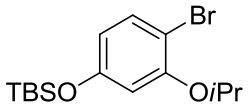
General information

Solvents were dried by standard procedures. Thin-layer chromatography was performed on EM 250 Kieselgel 60 F254 silica gel plates. The spots were visualized by staining with $KMnO_4$ or by using a UV lamp. ^{1}H-NMR and ^{13}C-NMR were recorded on Bruker Avance III 400 or 500 spectrometers and the chemical shifts are based on TMS peak at δ = 0.00 pm for proton NMR and $CDCl_3$ peak at δ = 77.00 ppm (t) in carbon NMR. IR spectra were obtained on Perkin Elmer Spectrum One FT-IR spectrometer. Optical rotations were measured with Jasco P-2000 polarimeter using Sodium D line (589 nm). HRMS were recorded using Micromass: Q-Tof micro (YA-105) spectrometer.

Silyl ethers were prepared from phenols\alcohols using the standard procedure (TBDMS chloride, TBDPS chloride or TES chloride, imidazole, DCM or THF). Silyl ether **4b** synthesis is reported by us.[1] Similarly, **4a** and **4b** were prepared. Silyl ethers **4d**-**p** were prepared from commercially available phenols or known compounds.[2] Bis-silyl ethers **6a**[3], **6b**[4], **6c**[5], **6e**[6], **6f**[7] **9a**[8] and **9b**[2a] are known compounds. Silyl ether **6d**[9] and **6i**[10] were prepared from known phenols. Silyl ethers **6g** and **6j** were prepared from **4c** through Dötz benzannulation reaction similar to **1** and **6h**.[1] The characterization data for all are given.

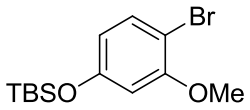
Characterization data of aryl silyl ethers 4a-p

(4-Bromo-3-isopropoxyphenoxy)-*tert*-butyldimethylsilane (4a):



Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.19 (s, 6H), 1.00 (s, 9H), 1.37 (d, *J* = 6.1 Hz, 6H), 4.45–4.51 (m, 1H), 6.34 (dd, *J* = 8.6, 2.6 Hz, 1H), 6.42 (d, *J* = 2.6 Hz, 1H), 7.33 (d, *J* = 8.6 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = –4.5 , 18.2, 22.0, 25.6, 72.0, 105.2, 108.5, 113.7, 133.1, 155.0, 155.9; HRMS *m/z* calcd for $[C_{15}H_{25}O_2SiBr + Na]^+$ 367.0699, found 369.0682; IR ($CHCl_3$) ν = 2956, 2931, 2897, 2859, 1583, 1473, 1412, 1386, 1297, 1255, 1195, 1172, 1123, 1109, 1040, 1005, 938, 866, 838, 781, 714, 670 cm^{-1}.

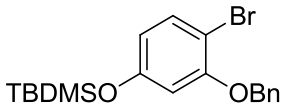
(4-Bromo-3-methoxyphenoxy)-*tert*-butyldimethylsilane (4b):



Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.20 (s, 6H), 0.98 (s, 9H), 3.85 (s, 3H), 6.34 (dd, *J* = 8.5, 2.6 Hz, 1H), 6.41 (d, *J* = 2.6 Hz, 1H), 7.33 (d, *J* = 8.5 Hz,

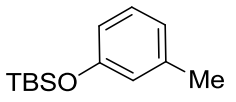
1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −4.5, 18.2, 25.6 , 56.1, 103.0, 105.0, 113.2, 133.0, 156.2, 156.4; HRMS *m/z* calcd for $[C_{13}H_{21}BrO_2Si + H]^+$ 317.0567, found 317.0565; IR ($CHCl_3$) ν = 2956, 2930, 2858, 1589, 1486, 1448, 1404, 1302, 1257, 1205, 1170, 1121, 1053, 1026, 979, 841, 781, 705, 670 cm^{-1}.

3-(Benzyloxy)-4-bromophenoxy-*tert*-butyldimethylsilane (4c):



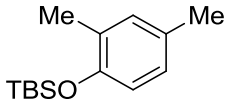
Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.12 (s, 6H), 0.94 (s, 9H), 5.12 (s, 2H), 6.35 (dd, *J* = 8.6, 2.6 Hz, 1H), 6.42 (d, *J* = 2.6 Hz, 1H), 7.29–7.47 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −4.6, 18.2, 25.6, 70.7, 103.8, 106.9, 113.7, 126.9, 127.9, 128.6, 133.1, 136.4, 155.4, 156.0; HRMS *m/z* calcd for $[C_{19}H_{25}BrO_2Si + Na]^+$ 415.0699, found 415.0698; IR ($CHCl_3$) ν = 2956, 2931, 2886, 2859, 1583, 1484, 1471, 1414, 1380, 1300, 1256, 1182, 1121, 1048, 1018, 989, 908, 842, 782, 736 cm^{-1}.

***tert*-Butyldimethyl(*m*-tolyloxy)silane (4d):**



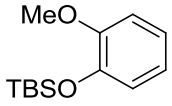
Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.22 (s, 6H), 1.02 (s, 9H), 2.32 (s, 3H), 6.67–6.69 (m, 2H), 6.79 (d, *J* = 7.5 Hz, 1H), 7.13 (t, *J* = 7.7 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −4.4, 18.2, 21.4, 25.7, 117.0, 120.9, 122.1, 129.0, 139.4, 155.5; HRMS *m/z* calcd for $[C_{13}H_{22}OSi + H]^+$ 223.1513, found 223.1513; IR ($CHCl_3$) ν = 2951, 2934, 2851, 2837, 1658, 1607, 1585, 1487, 1465, 1280, 1253, 1159, 1024, 956, 840, 776, 691 cm^{-1}.

***tert*-Butyl(2,4-dimethylphenoxy)dimethylsilane (4e):**



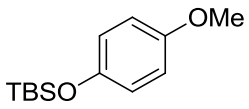
Colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 0.21 (s, 6H), 1.02 (s, 9H), 2.18 (s, 3H), 2.26 (s, 3H), 6.67 (d, *J* = 8.1 Hz, 1H), 6.86 (d, *J* = 8.1 Hz, 1H), 6.95 (s, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −4.3, 16.8, 18.2, 20.5, 25.8, 118.3, 126.9, 128.5, 130.1, 131.6, 151.5; HRMS *m/z* calcd for $[C_{14}H_{24}Osi + H]^+$ 237.1669, found 237.1669; IR ($CHCl_3$): ν = 2958, 2930, 2896, 2859, 1614, 1504, 1473, 1269, 1228, 1150, 1130, 944, 897, 840, 799, 779, 691 cm^{-1}.

***tert*-Butyl(2-methoxyphenoxy)dimethylsilane (4f):**



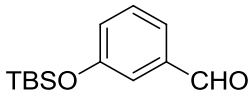
Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.17 (s, 6H), 1.01 (s, 9H), 3.81 (s, 3H), 6.81–6.94 (m, 4H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −4.7, 18.4, 25.7, 55.4, 112.1, 120.9, 121.0, 121.7, 145.0, 151.0; HRMS *m/z* calcd for $[C_{13}H_{22}O_2Si + Na]^+$ 261.1281, found 261.1288; IR ($CHCl_3$) ν = 3065, 3040, 2954, 2930, 2896, 2858, 1593, 1504, 1471, 1456, 1439, 1281, 1266, 1225, 1179, 1114, 1045, 1034, 922, 838, 826, 811, 783, 745, 702, 660 cm^{-1}.

***tert*-Butyl(4-methoxyphenoxy)dimethylsilane (4g):**



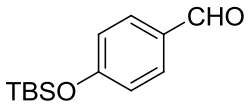
Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.18 (s, 6H), 1.0 (s, 9H), 3.76 (s, 3H), 6.77 (s, 4H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −4.5, 18.2, 25.7, 55.6, 114.4, 120.6, 149.3, 154.0; HRMS *m/z* calcd for $[C_{13}H_{22}O_2Si + K]^+$ 277.1021, found 277.1024; IR ($CHCl_3$) ν = 3043, 2997, 2922, 2931, 2897, 2859, 2834, 1507, 1471, 1442, 1255, 1235, 1180, 1099, 1041, 1007, 932, 830, 812, 780, 689 cm^{-1}.

3-(*tert*-Butyldimethylsilyloxy)benzaldehyde (4h):



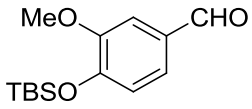
Colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$/TMS): δ = 0.23 (s, 6H), 1.00 (s, 9H), 7.10–712 (m, 1H), 7.33 (dd, *J* = 2.4, 1.5 Hz, 1H), 7.40 (t, *J* = 7.8 Hz, 1H), 7.48 (dt, *J* = 7.1, 1.3 Hz, 1H), 9.95 (s, 1H); ^{13}C NMR (125 MHz, $CDCl_3$): δ = −4.5, 18.2, 25.6, 119.9, 123.5, 126.5, 130.1, 137.9, 156.4, 192.1; HRMS *m/z* calcd for $[C_{13}H_{20}O_2Si + Na]^+$ 259.1125, found 259.1123; IR ($CHCl_3$) ν = 3003, 2943, 2862, 1696, 1637, 1599, 1443, 1376, 1274, 1158, 1039, 918, 846, 705 cm^{-1}.

4-(*tert*-Butyldimethylsilyloxy)benzaldehyde (4i):



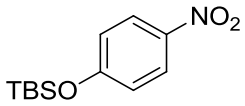
Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.25 (s, 6H), 0.99 (s, 9H), 6.94 (d, *J* = 8.6 Hz, 2H), 7.79 (d, *J* = 8.6 Hz, 2H), 9.88 (s, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −4.4, 18.2, 25.5, 120.5, 130.4, 131.9, 161.5, 190.9; HRMS *m/z* calcd for $[C_{13}H_{20}O_2Si + Na]^+$ 259.1125, found 259.1126; IR ($CHCl_3$) ν = 2956, 2931, 2857, 1702, 1600, 1509, 1471, 1276, 1157, 1046, 1021, 910, 840, 702, 670 cm^{-1}.

4-(*tert*-Butyldimethylsilyloxy)-3-methoxybenzaldehyde (4j):



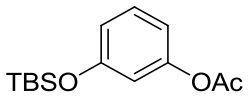
Colorless oil, ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.19 (s, 6H), 0.99 (s, 9H), 3.87 (s, 3H), 6.96 (dd, *J* = 8.0, 1.9 Hz, 1H), 7.36 (dd, *J* = 8.0, 1.9 Hz, 1H), 7.40 (d, *J* = 1.9 Hz, 1H), 9.83 (s, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −4.6, 18.5, 25.6, 55.4, 110.0, 120.7, 126.3, 130.9, 151.3, 151.6, 190.1; HRMS *m/z* calcd for $[C_{14}H_{22}O_3Si + Na]^+$ 289.1230, found 289.1229; IR ($CHCl_3$) ν = 3069, 3002, 2932, 2886, 2858, 2737, 1699, 1594, 1509, 1465, 1422, 1391, 1292, 1257, 1236, 1152, 1123, 1034, 1007, 960, 937, 901, 869, 841, 824, 809, 784, 730, 707, 667 cm^{-1}.

***tert*-Butyldimethyl(4-nitrophenoxy)silane (4k):**



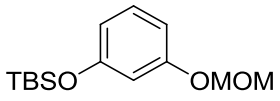
Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.26 (s, 6H), 0.99 (s, 9H), 6.89 (dd, *J* = 7.0, 2.1 Hz, 2H), 8.15 (dd, *J* = 7.1, 2.1 Hz, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −4.4, 18.2, 25.5, 120.1, 125.8, 141.9, 161.7; HRMS *m/z* calcd for $[C_{12}H_{19}O_2NSi + K]^+$ 276.0817, found 276.0814; IR ($CHCl_3$) ν = 2956, 2932, 2887, 2860, 1603, 1591, 1514, 1496, 1472, 1343, 1283, 1164, 1111, 1006, 908, 854, 841, 822, 805, 784, 724, 692, 674 cm^{-1}.

3-(*tert*-Butyldimethylsilyloxy)phenyl acetate (4l)[2a]:



Colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 0.20 (s, 6H), 0.98 (s, 9H), 2.27 (s, 3H), 6.58 (t, *J* = 2.2 Hz, 1H), 6.59–6.71 (m, 2H), 7.20 (t, *J* = 8.2 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −4.5, 18.1, 21.1, 25.6, 113.7, 114.4, 117.5, 129.6, 151.4, 156.5, 169.2; HRMS *m/z* calcd for $[C_{14}H_{22}O_3Si + Na]^+$ 289.1230, found 289.1227; IR ($CHCl_3$) ν = 2957, 2932, 2898, 2859, 1769, 1603, 1588, 1486, 1473, 1443, 1369, 1283, 1258, 1209, 1161, 1136, 1005, 980, 911, 865, 837, 782 cm^{-1}.

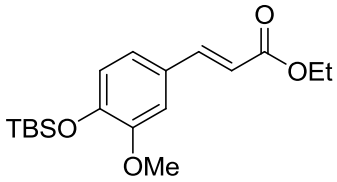
tert-butyl[3-(methoxymethoxy)phenoxy]dimethylsilane (4m)[2b]:



Colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 0.20 (s, 6H), 0.98 (s, 9H), 3.47 (s, 3H), 5.14 (s, 2H), 6.50 (dd, *J* = 8.1, 2.6 Hz, 1H), 6.55 (t, *J* = 2.3 Hz, 1H), 6.65 (ddd, *J* = 8.3, 2.3, 0.7 Hz, 1H), 7.11 (t, *J* = 8.2 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −4.5, 18.2, 25.7, 55.9, 94.4, 108.6, 109.0, 113.7, 129.7, 156.7, 158.3; HRMS *m/z* calcd for $[C_{14}H_{24}O_3Si+$

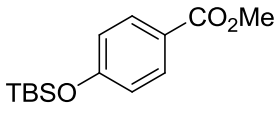
Na]$^+$ 291.1387, found 291.1380; IR ($CHCl_3$) ν = 2956, 2931, 2858, 1646, 1599, 1487, 1472, 1281, 1266, 1144, 1075, 1020, 841, 740 cm^{-1}.

(*E*)-Ethyl 3-[4-(tert-butyldimethylsilyloxy)-3-methoxyphenyl]acrylate (4n)[2c]**:**



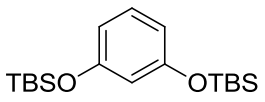
Colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 0.17 (s, 6H), 1.00 (s, 9H), 1.34 (t, *J* = 7.1 Hz, 3H), 3.83 (s, 3H), 4.25 (q, *J* = 7.1 Hz, 2H), 6.30 (d, *J* = 15.9 Hz, 1H), 6.84 (d, *J* = 8.7 Hz, 1H), 7.01–7.02 (m, 2H), 7.61 (d, *J* = 15.9 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −4.6, 14.3, 18.5, 25.6, 55.4, 60.3, 110.7, 115.9, 121.0, 122.2, 128.3, 144.7, 147.4, 151.1, 167.3; HRMS *m/z* calcd for $[C_{18}H_{28}O_4Si + Na]^+$ 359.1649, found 359.1646; IR ($CHCl_3$) ν = 2955, 2930, 2898, 1713, 1635, 1597, 1512, 1465, 1419, 1367, 1285, 1264, 1175, 1160, 1127, 1039, 908, 842, 822, 784, 691 cm^{-1}.

Methyl 4-(*tert*-butyldimethylsilyloxy)benzoate (4o)[2d]**:**



Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.22 (s, 6H), 0.98 (s, 9H), 3.88 (s, 3H), 6.86 (d, *J* = 8.8 Hz, 2H), 7.94 (d, *J* = 8.8 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −4.4, 18.2, 25.6, 51.8, 119.8, 123.2, 131.5, 160.0, 166.9; HRMS *m/z* calcd for $[C_{14}H_{22}O_3Si + Na]^+$ 289.1230, found 289.1233; IR ($CHCl_3$) ν = 2955, 2931, 2860, 1723, 1604, 1509, 1464, 1435, 1272, 1217, 1163, 1113, 1098, 1014, 911, 857, 839, 803, 774, 699 cm^{-1}.

1,3-Bis(*tert*-butyldimethylsilyloxy)benzene (4p):

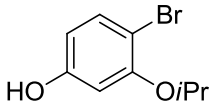


Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.20 (s, 12H), 1.0 (s, 18H), 6.35 (t, *J* = 2.2 Hz, 1H), 6.47 (dd, *J* = 8.1, 2.2 Hz, 2H), 7.07 (t, *J* = 8.1 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −4.4, 18.2, 25.7, 112.3, 113.4, 129.5, 156.6; HRMS *m/z* calcd for $[C_{18}H_{34}O_2Si_2 + Na]^+$ 361.1990, found 361.1991; IR ($CHCl_3$) ν = 2957, 2931, 2896, 2859, 1587, 1479, 1438, 1298, 1259, 1175, 1146, 995, 901, 832, 781, 689, 668 cm^{-1}.

General Procedure for aryl silyl ether deprotection: To a stirred solution of aryl silyl ether **4**/**6**/**9a**/**9b** (0.1 mmol, 1.0 equiv) in dry DMF (3 mL) was added sodium hydride

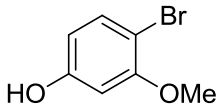
(0.15 mmol, 1.5 equiv) at room temperature and stirred for specified time. After completion of reaction (monitored by TLC) it was quenched with water (1 mL) and diluted with EtOAc (10 mL). The organic layer was separated, washed with water (3 × 5 mL), dried (Na_2SO_4) and concentrated. The residue was purified by silica gel column chromatography using petroleum ether/EtOAc as eluent to give the phenol **5**/**7**/**10a**/**10c**.

4-Bromo-3-*iso*-propoxyphenol (5a):



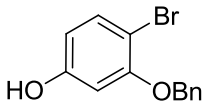
Colorless oil; yield 100%; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 1.36 (d, *J* = 6.1 Hz, 6H), 4.45–4.50 (m, 1H), 5.30 (s, 1H, *OH*), 6.32 (dd, *J* = 8.9, 2.7 Hz, 1H), 6.45 (d, *J* = 2.7 Hz, 1H), 7.33 (d, *J* = 8.6 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = 22.0, 72.3, 103.7, 104.2, 108.9, 133.4, 155.3, 155.9; HRMS *m/z* calcd for $[C_9H_{11}O_2Br + Na]^+$ 252.9835 found 252.9837; IR ($CHCl_3$) ν = 3390, 2979, 2930, 1585, 1483, 1454, 1385, 1374, 1294, 1265, 1189, 1130, 1107, 1037, 998, 919, 834, 799, 623 cm^{-1}.

4-Bromo-3-methoxyphenol (5b)[1]:



White solid; yield 93%; mp = 74–76 °C; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 3.84 (s, 3H), 5.68 (s, 1H, *OH*), 6.34 (dd, *J* = 8.5, 2.7 Hz, 1H), 6.45 (d, *J* = 2.7 Hz, 1H), 7.33 (d, *J* = 8.5 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 56.1, 100.5, 102.1, 108.6, 133.3, 156.1, 156.6; HRMS *m/z* calcd for $[C_7H_7BrO_2 + Na]^+$ 224.9522, found 224.9523; IR ($CHCl_3$) ν = 3462, 3010, 2943, 1607, 1590, 1487, 1468, 1450, 1430, 1297, 1267, 1199, 1168, 1128, 1047, 1024, 951, 830, 797, 625 cm^{-1}.

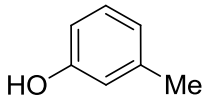
3-(Benzyloxy)-4-bromophenol (5c):



Colorless oil; yield 92%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 5.06 (s, 2H), 5.54 (s, 1H, *OH*), 6.32 (dd, *J* = 8.5, 2.7 Hz, 1H), 6.45 (d, *J* = 2.7 Hz, 1H), 7.28–7.45 (m, 5H), 7.37 (d, *J* = 8.6 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 70.7, 102.2, 102.9, 109.0, 126.9, 127.9, 128.6, 133.4, 136.2, 155.7, 156.0; HRMS *m/z* calcd for $[C_{13}H_{11}O_2Br + Na]^+$ 300.9835,

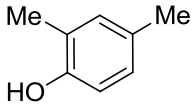
found 300.9835; IR ($CHCl_3$): ν = 3400, 3060, 3033, 2927, 1605, 1586, 1486, 1447, 1381, 1295, 1265, 1176, 1128, 1042, 1025, 971, 829, 738, 696 cm^{-1}.

***m*-Cresol (5d):**



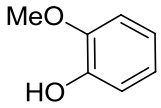
Colorless oil; yield 91%; ^1H NMR (400 MHz, $CDCl_3$/TMS) δ = 2.31 (s, 3H), 4.98 (s, 1H *OH*), 6.63-6.67 (m, 2H), 6.76 (d, *J* = 7.5 Hz, 1H), 7.13 (t, *J* = 7.7 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$/TMS) δ = 21.3, 112.3, 116.0, 121.6, 129.4, 139.8, 155.3.

2,4-Dimethylphenol (5e):



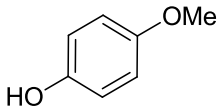
Pale yellow oil; yield 83%; ^1H NMR (400 MHz, $CDCl_3$/TMS) δ = 2.23 (s, 3H), 2.26 (s, 3H), 4.69 (s, 1H, *OH*), 6.67 (d, *J* = 8.0 Hz, 1H), 6.88 (dd, *J* = 8.0, 1.5 Hz, 1H), 6.94 (s, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 15.7, 20.4, 114.7, 127.4, 129.9, 131.6, 151.4.

2-Methoxyphenol (5f):



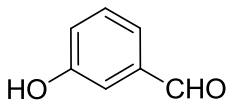
Colorless oil; yield 88%; ^1H NMR (400 MHz, $CDCl_3$/TMS) δ = 3.88 (s, 3H), 5.65 (s, 1H, *OH*), 6.84-6.94 (m, 4H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = 55.8, 110.7, 114.5, 120.1, 121.4, 145.6, 146.5.

4-Methoxyphenol (5g):



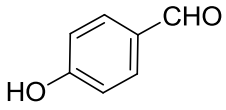
White solid; yield 85%; mp = 54–55 °C; ^1H NMR (400 MHz, $CDCl_3$/TMS) δ = 3.77 (s, 3H), 5.13 (brs, 1H, *OH*), 6.75-6.81 (m, 4H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 55.8, 114.9, 116.1, 149.5, 153.5.

3-Hydroxybenzaldehyde (5h):



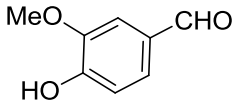
White solid; yield 97%; mp = 100–102 °C; ^1H NMR (500 MHz, $CDCl_3$/TMS) δ = 6.31 (s, 1H, *OH*), 7.16-7.18 (m, 1H), 7.40-7.46 (m, 3H), 9.95 (s, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = 144.8, 122.5, 123.5, 130.4, 137.5, 156.7, 193.3.

4-Hydroxybenzaldehyde (5i):



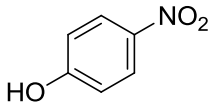
White solid; yield 93%; mp = 109–111 °C; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 7.00 (d, *J* = 8.6 Hz, 2H), 7.82 (d, *J* = 8.6 Hz, 2H), 9.85 (s, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = 116.3, 129.6, 132.6, 161.9, 191.4.

4-Hydroxy-3-methoxybenzaldehyde (5j):



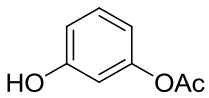
White solid; yield 91%; mp = 80–81 °C; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 3.96 (s, 3H), 6.28 (brs, 1H, *OH*), 7.04 (d, *J* = 8.5 Hz, 1H), 7.42–7.43 (m, 2H), 9.82 (s, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 56.1, 108.7, 114.4, 127.5, 129.9, 147.1, 151.7, 190.9.

4-Nitrophenol (5k):



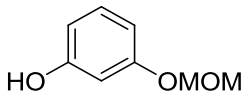
Pale yellow solid; yield 100%; mp = 108–110 °C; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 6.51 (s, 1H, *OH*), 6.94 (d, *J* = 9.2 Hz, 2H), 8.17 (d, *J* = 9.2 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 115.8, 126.3, 141.4, 161.7.

3-Hydroxyphenyl acetate (5l):



Colorless oil; yield 70%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 2.30 (s, 3H), 6.35 (s, 1H, *OH*), 6.54 (t, *J* = 2.2 Hz, 1H), 6.61–6.66 (m, 2H), 7.19 (t, *J* = 8.1 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 21.2, 109.1, 113.3, 113.33, 130.1, 151.3, 156.8, 170.3 ; HRMS *m/z* calcd for $[C_8H_8O_3 + Na]^+$ 175.0366, found 175.0362; IR ($CHCl_3$) ν = 3419, 3020, 2933, 2857, 1736, 1603, 1486, 1462, 1372, 1306, 1272, 1232, 1135, 1018, 1001, 964, 908, 872, 758, 687, 671 cm^{-1}.

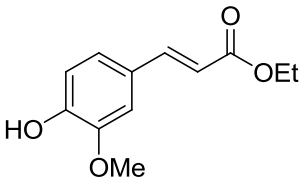
3-(Methoxymethoxy)phenol (5m):



Colorless oil; yield 100%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 3.48 (s, 3H), 5.15 (s, 2H), 6.23 (brs, 1H, *OH*), 6.49–6.52 (m, 1H), 6.56–6.61 (m, 2H), 7.12 (t, *J* = 8.1 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 56.0, 94.3, 103.8, 108.2, 109.1, 130.1, 157.1, 158.4; HRMS *m/z* calcd for $[C_8H_{10}O_3 + Na]^+$ 177.0522, found 177.0521; IR ($CHCl_3$) ν = 3365, 2930,

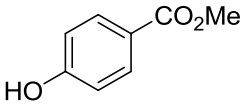
2852, 1661, 1596, 1490, 1463, 1388, 1283, 1215, 1144, 1076, 1019, 995, 942, 925, 848, 769 cm^{-1}.

(*E*)-Ethyl 3-(4-hydroxy-3-methoxyphenyl)acrylate (5n):



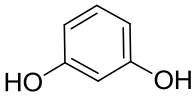
Colorless oil; yield 97%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 1.33 (t, *J* = 7.1 Hz, 3H), 3.92 (s, 3H), 4.25 (q, *J* = 7.1 Hz, 2H), 5.88 (s, 1H), 6.29 (d, *J* = 15.9 Hz, 1H), 6.91 (d, *J* = 8.2 Hz, 1H), 7.03 (d, *J* = 1.9 Hz, 1H), 7.07 (dd, *J* = 8.2, 1.9 Hz, 1H), 7.61 (d, *J* = 15.9 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = 14.3, 55.9, 60.3, 109.3, 114.7, 115.6, 123.0, 127.0, 144.7, 146.7, 147.9, 167.3; HRMS *m/z* calcd for $[C_{12}H_{14}O_4 + Na]^+$ 245.0784, found 245.0778; IR ($CHCl_3$) ν = 3393, 2981, 2938, 1704, 1698, 1633, 1603, 1592, 1515, 1465, 1430, 1369, 1269, 1210, 1178, 1159, 1124, 1034, 981, 846, 818 cm^{-1}.

Methyl 4-hydroxybenzoate (5o):



White solid, yield 97%; mp = 124–127 °C; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 3.80 (s, 3H), 6.89 (d, *J* = 8.9 Hz, 2H), 7.94 (d, *J* = 8.9 Hz, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 52.1, 115.3, 122.0, 131.9, 160.5, 167.6; HRMS *m/z* calcd for $[C_8H_8O_3 + Na]^+$ 175.0366, found 175.0374; IR ($CHCl_3$) ν = 3353, 3025, 2998, 2954, 2848, 1693, 1609, 1591, 1516, 1437, 1313, 1283, 1235, 1195, 1167, 1118, 1101, 1023, 965, 912, 853, 773, 735, 700 cm^{-1}.

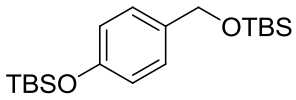
Resorcinol (5p):



White solid, yield 100%; mp = 106–108 °C; ^{1}H NMR (500 MHz, acetone D^6) δ = 3.41 (s, 1H, *OH*), 6.30-6.35 (m, 3H), 6.97 (t, *J* = 8.0 Hz, 1H), 8.32 (s, 1H, *OH*); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 103.2, 107.2, 130.5, 159.3.

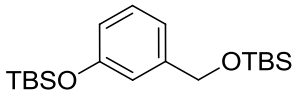
Characterization data for bis-silyl ethers 6a-j and 1:

***tert*-Butyl[4-(*tert*-butyldimethylsilyloxy)benzyloxy]dimethylsilane (6a):**



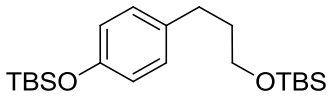
Colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 0.08 (s, 6H), 0.18 (s, 6H), 0.92 (s, 9H), 0.98 (s, 9H), 4.66 (s, 2H), 6.97 (d, *J* = 8.4 Hz, 2H), 7.17 (d, *J* = 8.4 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −5.2, −4.5, 18.2, 18.4, 25.7, 26.0, 64.8, 119.8, 127.4, 134.1,154.6; HRMS *m/z* calcd for $[C_{19}H_{36}O_2Si_2 + Na]^+$ 375.2146, found 375.2154; IR ($CHCl_3$) *ν* = 2956, 2930, 2886, 2858, 1610, 1583, 1510, 1472, 1463, 1389, 1375, 1362, 1256, 1164, 1106, 1087, 1006, 916, 839, 778, 692 cm^{-1}.

***tert*-Butyl[3-(*tert*-butyldimethylsilyloxy)benzyloxy]dimethylsilane (6b):**



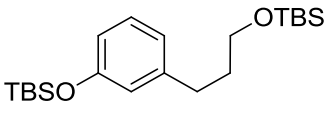
Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.09 (s, 6H), 0.19 (s, 6H), 0.94 (s, 9H), 0.98 (s, 9H), 4.69 (s, 2H), 6.71 (dd, *J* = 7.8, 1.8 Hz, 1H), 6.84 (d, *J* = 1.8 Hz, 1H), 6.89 (dd, *J* = 7.6, 0.7 Hz, 1H), 7.17 (t, *J* = 7.8 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −5.3, −4.4, 18.2, 18.4, 25.7, 25.9, 64.7, 117.6, 118.6, 118.8, 129.1, 143.1, 155.7; HRMS *m/z* calcd for $[C_{19}H_{36}O_2Si_2 + Na]^+$ 375.2146, found 375.2136; IR ($CHCl_3$) *ν* = 2956, 2930, 2886, 2858, 1605, 1589, 1486, 1472, 1459, 1442, 1362, 1279, 1257, 1167, 1153, 1103, 1072, 1004, 965, 939, 839, 779, 691 cm^{-1}.

***tert*-Butyl[3-(4-(tert-butyldimethylsilyloxyphenyl)propoxy]dimethylsilane (6c):**



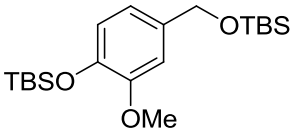
Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.04 (s, 6H), 0.18 (s, 6H), 0.90 (s, 9H), 0.98 (s, 9H), 1.76–1.83 (m, 2H), 2.60 (t, *J* = 7.7 Hz, 2H), 3.61 (t, *J* = 6.4 Hz, 2H), 6.74 (d, *J* = 8.4 Hz, 2H), 7.03 (d, *J* = 8.4 Hz, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.3, −4.5, 18.2, 18.3, 25.7, 26.0, 31.2, 34.5, 62.4, 119.8, 129.2, 134.8, 153.5; HRMS *m/z* calcd for $[C_{21}H_{40}O_2Si_2 + Na]^+$ 403.2459, found 403.2458; IR ($CHCl_3$) *ν* = 2950, 2930, 2857, 1607, 1510, 1470, 1388, 1256, 1168, 1101, 960, 918, 838, 777, 685 cm^{-1}.

***tert*-Butyl[3-(3-(*tert*-butyldimethylsilyloxyphenyl)propoxy]dimethylsilane (6d):**



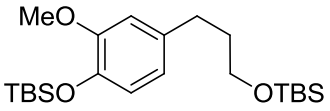
Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.05 (s, 6H), 0.19 (s, 6H), 0.91 (s, 9H), 0.98 (s, 9H), 1.79–1.84 (m, 2H), 2.61 (t, *J* = 7.7 Hz, 2H), 3.62 (t, *J* = 6.4 Hz, 2H), 6.64–6.68 (m, 2H), 6.78 (d, *J* = 7.5 Hz, 1H), 7.12 (t, *J* = 7.7 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.3, −4.4, 18.2, 18.3, 25.7, 26.0, 31.9, 34.3, 62.3, 117.3, 120.3, 121.5, 129.1, 143.8, 155.6; HRMS *m/z* calcd for $[C_{21}H_{40}O_2Si_2 + H]^+$ 381.2640, found 381.2637; IR ($CHCl_3$) ν = 2955, 2931, 2888, 2858, 1603, 1585,1485, 1472, 1277, 1256, 1158, 1103, 1004, 838, 777, 667 cm^{-1}.

***tert*-Butyl[4-(*tert*-butyldimethylsilyloxy)-3-methoxybenzyloxy]dimethylsilane (6e):**



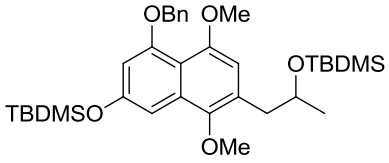
Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.08 (s, 6H), 0.14 (s, 6H), 0.93 (s, 9H), 0.99 (s, 9H), 3.80 (s, 3H), 4.67 (s, 2H), 6.73 (dd, *J* = 8.1, 2.0, Hz, 1H), 6.79 (d, *J* = 8.1 Hz, 1H), 6.87 (d, *J* = 2.0 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.2, −4.7, 18.4, 18.4, 25.7, 26.0, 55.4, 64.9, 110.3, 118.3, 120.5, 134.9, 143.8, 150.8; HRMS *m/z* calcd for $[C_{20}H_{38}O_3Si_2 + Na]^+$ 405.2252, found 405.2250; IR ($CHCl_3$) ν = 2955, 2931, 2886, 2858, 1606, 1513, 1446, 1418, 1285, 1256, 1157, 1090, 1040, 937, 902, 839, 780, 698 cm^{-1}.

***tert*-Butyl [3-(4-*tert*-butyldimethylsilyloxy-3-methoxyphenyl)propoxy]dimethylsilane (6f):**



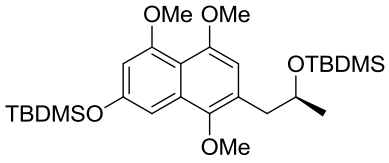
Colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 0.04 (s, 6H); 0.14 (s, 6H), 0.90 (s, 9H), 0.99 (s, 9H), 1.78–1.84 (m, 2H), 2.60 (t, *J* = 7.7 Hz, 2H), 3.61 (t, *J* = 6.4 Hz, 2H), 3.78 (s, 3H), 6.62 (dd, *J* = 8.0, 1.9 Hz, 1H), 6.68 (d, *J* = 1.9 Hz, 1H), 6.74 (d, *J* = 8 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −5.3, −4.7, 18.35, 18.4, 25.8, 26.0, 31.7, 34.5, 55.5, 62.4, 112.6, 120.5, 120.6, 135.7, 142.9, 150.6; HRMS *m/z* calcd for $[C_{22}H_{42}O_3Si_2 + Na]^+$ 433.2565, found 433.2568; IR ($CHCl_3$) ν = 3005, 2942, 2859, 1637, 1513, 1439, 1376, 1256, 1234, 1155, 1098, 1039, 918, 839, 779, 667 cm^{-1}.

1-[(5-Benzyloxy-7-*tert*-butyldimethylsilyloxy-1,4-dimethoxynaphthalen-2-yl)propan-2-yloxy]*tert*-butyldimethylsilane (6g):



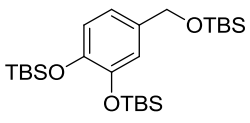
Pale yellow oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = −0.13 (s, 3H), −0.03 (s, 3H), 0.24 (s, 6H), 0.84 (s, 9H), 1.00 (s, 9H), 1.19 (d, *J* = 6.0 Hz, 3H), 2.77 (dd, *J* = 13.1, 6.0 Hz, 1H), 2.92 (dd, *J* = 13.1, 6.9 Hz, 1H), 3.81 (s, 3H), 3.89 (s, 3H), 4.17–4.22 (m, 1H), 5.17 (s, 2H), 6.50 (d, *J* = 2.2 Hz, 1H), 6.54 (s, 1H), 7.02 (d, *J* = 2.2 Hz, 1H), 7.30–7.48 (m, 3H), 7.58 (d, *J* = 7.5 Hz, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) *δ* = −4.93, −4.91, −4.46, −4.32, 18.1, 18.3, 23.9, 25.6, 25.7, 40.7, 56.4, 61.2, 69.2, 71.2, 102.7, 104.4, 107.4, 113.3, 113.8, 126.9, 127.5, 128.3, 131.9, 137.4, 146.7, 153.1, 154.2, 157.5; HRMS *m/z* calcd for $[C_{34}H_{52}O_5Si_2 + H]^+$ 597.3426, found 597.3417. IR ($CHCl_3$): ν = 2955, 2931, 2858, 1621, 1603, 1583, 1507, 1463, 1409, 1374, 1255, 1178, 1154, 1126, 1091, 1046, 998, 939, 867, 837, 778, 735 cm^{-1}.

(*S*)-*tert*-Butyl-1-[(7-tert-butyldimethylsilyloxy-1,4,5-trimethoxynaphthalen-2-yl)propan-2-yloxy]dimethylsilane (6h):



Colorless oil; $[\alpha]_D^{25}$ = +15.4 (*c* = 0.65, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = −0.16 (s, 3H), −0.05 (s, 3H), 0.28 (s, 6H), 0.83 (s, 9H), 1.02 (s, 9H), 1.19 (d, *J* = 6.1 Hz, 3H), 2.77 (dd, *J* = 13.1, 5.8 Hz, 1H), 2.90 (dd, *J* = 13.1, 7.1 Hz, 1H), 3.80 (s, 3H), 3.91 (s, 3H), 3.93 (s, 3H), 4.15–4.21 (m, 1H), 6.42 (d, *J* = 2.2 Hz, 1H), 6.53 (s, 1H), 6.99 (d, *J* = 2.2 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −4.94, −4.90, −4.26, 18.1, 18.3, 23.9, 25.8, 25.9, 40.7, 56.3, 56.6, 61.2, 69.2, 102.1, 107.4, 113.2, 128.4, 131.9, 146.8, 153.0, 154.3, 158.6; HRMS *m/z* calcd for $[C_{28}H_{48}O_5Si_2 + K]^+$ 559.2677, found 559.2670; IR ($CHCl_3$) ν = 2956, 2931, 2858, 1603, 1586, 1507, 1471, 1464, 1455, 1404, 1379, 1255, 1192, 1154, 1124, 1085, 1045, 998, 981, 939, 859, 838, 777, 667 cm^{-1}.

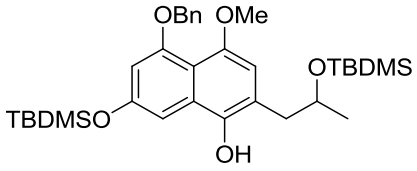
***tert*-Butyldimethyl-(3,4-bis-*tert*-butyldimethylsilyloxy)benzyloxysilane (6i):**



Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.08 (s, 6H), 0.18 (s, 6H), 0.20 (s, 6H), 0.93 (s, 9H), 0.98 (s, 9H), 0.99 (s, 9H), 4.61 (s, 2H), 6.72 (dd, *J* = 8.1, 2.1 Hz,

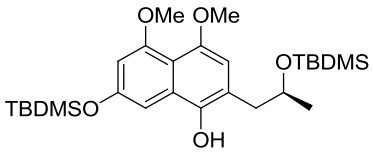
1H), 6.77 (d, *J* = 8.1 Hz, 1H), 6.84 (d, *J* = 2.1 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.0, −3.94, −3.9, 18.6, 18.64, 26.2, 64.8, 119.1, 119.3, 120.9, 134.8, 145.8, 146.9; HRMS *m/z* calcd for $[C_{25}H_{50}O_3Si_3 + Na]^+$ 505.2960, found 505.2963; IR ($CHCl_3$) *ν* = 2956, 2930, 2686, 2858, 1606, 1579, 1510, 1472, 1423, 1390, 1362, 1299, 1255, 1228, 1162, 1122, 1093, 1005, 974, 908, 779, 697, 667 cm^{-1}.

(*S*)-5-Benzyloxy-7-*tert*-butyldimethylsilyloxy-2-(2-*tert*-butyldimethylsilyloxy)propyl-4-methoxynaphthalen-1-ol (6j):



Pale yellow oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = −0.09 (s, 3H), 0.05 (s, 3H), 0.23 (s, 3H), 0.24 (s, 3H), 0.89 (s, 9H), 1.00 (s, 9H), 1.24 (d, *J* = 6.0 Hz, 3H), 2.89 (d, *J* = 5.2 Hz, 2H), 3.86 (s, 3H), 4.23–4.30 (m, 1H), 5.17 (s, 2H), 6.41 (s, 1H), 6.52 (d, *J* = 2.4 Hz, 1H), 7.30 (d, *J* = 2.2 Hz, 1H), 7.32 (d, *J* = 7.4 Hz, 1H), 7.40 (t, *J* = 7.5 Hz, 2H), 7.60 (d, *J* = 7.5 Hz, 2H), 8.06 (s, 1H, *OH*); ^{13}C NMR (100 MHz, $CDCl_3$) *δ* = −5.2, −4.8, −4.4, −4.3, 18.0, 18.3, 23.2, 25.7, 25.8, 41.8, 57.4, 71.1, 71.8, 103.3, 104.5, 109.0, 114.0, 118.9, 127.0, 127.4, 128.3, 129.7, 137.5, 144.2, 150.3, 153.4, 156.6; HRMS *m/z* calcd for $[C_{33}H_{50}O_5Si_2 + K]^+$ 621.2828, found 621.2815; IR ($CHCl_3$) ν = 3273, 2955, 2930, 2858, 1605, 1508, 1464, 1390, 1375, 1327, 1258, 1187, 1158, 1124, 1089, 1067, 1035, 969, 839, 782, 696 cm^{-1}.

(*S*)-7-*tert*-Butyldimethylsilyloxy-2-(2-*tert*-butyldimethylsilyloxypropyl)-4,5-dimethoxy-naphthalen-1-ol (1)[1]:

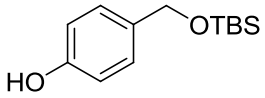


Pale yellow semisolid; $[\alpha]_D^{25}$= −10.6 (*c* = 1.2, $CHCl_3$); ^{1}H NMR(400 MHz, $CDCl_3$/TMS) δ = −0.12 (s, 3H), 0.04 (s, 3H), 0.26 (s, 6H), 0.88 (s, 9H), 1.01 (s, 9H), 1.23 (d, *J* = 6.1 Hz, 3H), 2.88 (d, *J* = 5.2 Hz, 2H), 3.88 (s, 3H), 3.93 (s, 3H), 4.21–4.28 (m, 1H), 6.39 (s, 1H), 6.44 (d, *J* = 2.4 Hz, 1H), 7.26 (d, *J* = 2.4 Hz, 1H), 8.4 (s, 1H, *OH*); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.3, −4.9, −4.44, −4.4, 17.9, 18.3, 23.1, 25.7, 25.8, 41.7, 56.1, 57.4, 71.7, 102.2, 102.6, 108.8, 113.4, 118.9, 129.6, 144.1, 150.2, 153.5, 157.7; HRMS *m/z* calcd for $[C_{27}H_{46}O_5Si_2 + H]^+$ 507.2962, found 507.2955 IR ($CHCl_3$) υ = 3434, 2956, 2927, 2856, 1653, 1605, 1592, 1512, 1464, 1378, 1328, 1258, 1159, 1125, 1090, 1036, 985, 939, 838, 780 cm^{-1}.

Chemoselective deprotection of aryl silyl ethers 6a-i

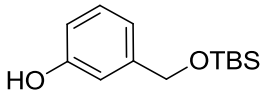
The procedure for chemoselective deprotection of silyl ethers **6a-i** is same as described earlier.

4-(*tert*-Butyldimethylsilyloxymethyl)phenol (7a):



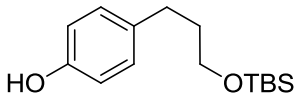
Colorless oil; yield 95%; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 0.09 (s, 6H), 0.93 (s, 9H), 4.66 (s, 2H), 4.85 (s, 1H, *OH*), 6.78 (d, *J* = 8.5 Hz, 2H), 7.19 (d, *J* = 8.6 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −5.2, 18.4, 26.0, 64.7, 115.0, 127.8, 133.7, 154.5; HRMS *m/z* calcd for $[C_{13}H_{22}O_2Si + Na]^+$ 261.1281, found 261.1286; IR ($CHCl_3$) ν = 3368, 2954, 2930, 2884, 2858, 1615, 1599, 1516, 1471, 1376, 1362, 1254, 1168, 1106, 1085, 1006, 938, 909, 838, 778, 668 cm^{-1}.

3-(*tert*-Butyldimethylsilyloxymethyl)phenol (7b):



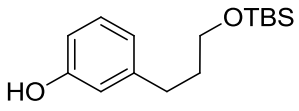
Colorless oil; yield 92%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.11 (s, 6H), 0.95 (s, 9H), 4.70 (s, 2H), 6.70 (dd, *J* = 7.8, 2.2 Hz, 1H), 6.83–647 (m, 2H), 7.18 (t, *J* = 7.8 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.3, 18.4, 25.9, 64.7, 112.9, 113.8, 118.3, 129.4, 143.3, 155.6; HRMS *m/z* calcd for $[C_{13}H_{22}O_2Si + Na]^+$ 261.1281, found 261.1288; IR ($CHCl_3$) ν = 3378, 2955, 2930, 2885, 2857, 1592, 1484, 1461, 1380, 1362, 1257, 1153, 1102, 1073, 1005, 930, 838, 778, 691, 669 cm^{-1}.

4-(3-*tert*-Butyldimethylsilyloxypropyl)phenol (7c):



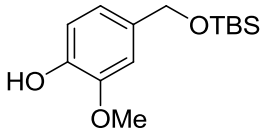
Colorless oil; yield 97%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.06 (s, 6H), 0.90 (s, 9H), 1.77–1.84 (m, 2H), 2.60 (t, *J* = 7.7 Hz, 2H), 3.64 (t, *J* = 6.4 Hz, 2H), 5.18 (brs, 1H, *OH*), 6.75 (d, *J* = 8.5 Hz, 2H), 7.05 (d, *J* = 8.5 Hz, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.3, 18.3, 26.0, 31.1, 34.6, 62.5, 115.1, 129.5, 134.3, 153.5; HRMS *m/z* calcd for $[C_{15}H_{26}O_2Si + Na]^+$ 289.1594, found 289.1590; IR ($CHCl_3$) ν = 3357, 2953, 2930, 2885, 2857, 1614, 1597, 1515, 1471, 1463, 1387, 1361, 1255, 1172, 1100, 1066, 1006, 963, 836, 777, 712, 662 cm^{-1}.

3-(3-*tert*-Butyldimethylsilyloxypropyl)phenol (7d):



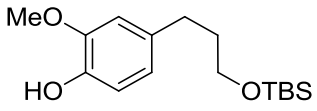
Colorless oil; yield 100%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.07 (s, 6H), 0.92 (s, 9H), 1.80–1.87 (m, 2H), 2.63 (t, *J* = 7.8 Hz, 2H), 3.65 (t, *J* = 6.4 Hz, 2H), 5.42 (s, 1H, *OH*), 6.64–6.68 (m, 2H), 6.76 (d, *J* = 7.5 Hz, 1H), 7.13 (t, *J* = 7.4 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.3, 18.3, 26.0, 31.9, 34.1, 62.6, 112.7, 115.4, 120.8, 129.4, 144.1, 155.6; HRMS *m/z* calcd for $[C_{15}H_{26}O_2Si + H]^+$ 267.1775, found 267.1777; IR ($CHCl_3$) ν = 3391, 2953, 2931, 2858, 1599, 1590, 1460, 1389, 1256, 1156, 1104, 969, 940, 836, 780, 695 cm^{-1}.

4-(*tert*-Butyldimethylsilyloxymethyl)-2-methoxyphenol (7e):



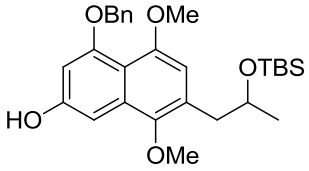
Colorless oil; yield 91%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.10 (s, 6H), 0.94 (s, 9H), 3.87 (s, 3H), 4.67 (s, 2H), 5.59 (s, 1H, *OH*), 6.79 (dd, *J* = 8.0, 1.7 Hz, 1H), 6.87 (d, *J* = 8.0 Hz, 1H), 6.90 (d, *J* = 1.7 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.2, 18.4, 25.9, 55.8, 64.9, 109.0, 114.0, 119.0, 133.4, 144.5, 146.4; HRMS *m/z* calcd for $[C_{14}H_{24}O_3Si + Na]^+$ 291.1387, found 291.1373; IR ($CHCl_3$) ν = 3550, 2929, 2856, 1612, 1515, 1464, 1432, 1362, 1258, 1206, 1185, 1153, 1081, 1036, 1006, 938, 920, 838, 777, 668, 558 cm^{-1}.

4-(3-*tert*-Butyldimethylsilyloxypropyl)-2-methoxyphenol (7f):



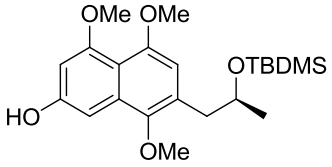
Colorless oil, yield 100%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.05 (s, 6H), 0.91 (s, 9H), 1.77–1.84 (m, 2H), 2.61 (t, *J* = 7.7 Hz, 2H), 3.63 (t, *J* = 6.3 Hz, 2H), 3.87 (s, 3H), 5.48 (s, 1H, *OH*), 6.68 (dd, *J* = 7.9, 2.0 Hz, 1H), 6.70 (d, *J* = 1.6 Hz, 1H), 6.83 (d, *J* = 7.8 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.3, 18.3, 25.9, 31.7, 34.7, 55.8, 62.3, 111.0, 114.1, 120.9, 134.1, 143.5, 146.3; HRMS *m/z* calcd for $[C_{16}H_{28}O_3Si + Na]^+$ 319.1700, found 319.1686; IR ($CHCl_3$) ν = 3548, 2950, 2830, 2857, 1614, 1516, 1464, 1431, 1362, 1270, 1152, 1101,1037, 967, 837 cm^{-1}.

4-Benzyloxy-7-(2-*tert*-butyldimethylsilyloxypropyl)-5,8-dimethoxynaphthalen-2-ol (7g):



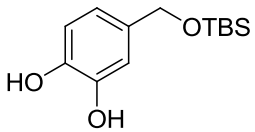
Pale yellow oil; yield 92%; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = −0.12 (s, 3H), 0.02 (s, 3H), 0.85 (s, 9H), 1.20 (d, *J* = 6.1 Hz, 3H), 2.07 (s, 1H, *OH*), 2.79 (dd, *J* = 13.2, 5.9 Hz, 1H), 2.95 (dd, *J* = 13.2, 7.0 Hz, 1H), 3.78 (s, 3H), 3.89 (s, 3H), 4.19–4.23 (m, 1H), 5.07 (s, 2H), 6.53 (d, *J* = 2.1 Hz, 1H), 6.54 (s, 1H), 7.05 (d, *J* = 2.1 Hz, 1H), 7.30–7.4 (m, 3H), 7.55 (d, *J* = 7.5 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −4.9, −4.8, 18.1, 23.9, 25.9, 40.6, 56.5, 61.3, 69.3, 71.1, 97.4, 100.1, 107.1, 113.3, 127.0, 127.6, 128.4, 128.9, 132.2, 137.2, 146.3, 153.4, 154.8, 158.0; HRMS *m/z* calcd for $[C_{28}H_{38}O_5Si + Na]^+$ 505.2381, found 505.2388; IR ($CHCl_3$) ν = 3371, 2955, 2930, 2857, 1622, 1607, 1593, 1463, 1412, 1374, 1256, 1177, 1150, 1123, 1088, 1038, 998, 910, 835, 775, 735, 697 cm^{-1}.

(*S*)-7-(2-*tert*-Butyldimethylsilyloxypropyl)-4,5,8-trimethoxynaphthalen-2-ol (7h):



Colorless oil; yield 85%; $[\alpha]_D^{25}$ = +18.7 (*c* = 0.7, $CHCl_3$); ^{1}H NMR (400 MHz, $CDCl_3$/TMS) *δ* = −0.16 (s, 3H), −0.04 (s, 3H), 0.83 (s, 9H), 1.19 (d, *J* = 6.0 Hz, 3H), 2.77 (dd, *J* = 13.1, 5.7 Hz, 1H), 2.90 (dd, *J* = 13.1, 7.2 Hz, 1H), 3.79 (s, 3H), 3.91 (s, 6H), 4.16–4.21 (m, 1H), 6.47 (d, *J* = 2.3 Hz, 1H), 6.52 (s, 1H), 6.97 (d, *J* = 2.3 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) *δ* = −5.0, −4.9, 18.1, 23.9, 25.8, 40.5, 56.1, 56.6, 61.1, 69.2, 96.8, 98.1, 107.0, 112.5, 128.8, 132.1, 146.3, 153.0, 154.9, 158.8; HRMS *m/z* calcd for $[C_{22}H_{34}O_5Si + H]^+$ 407.2254, found 407.2249; IR ($CHCl_3$) ν = 3409, 2956, 2931, 2857, 1622, 1607, 1594, 1515, 1464, 1454, 1409, 1381, 1361, 1269, 1256, 1192, 1178, 1150, 1120, 1082, 1038, 1001, 971, 871, 836, 776 cm^{-1}.

4-(*tert*-Butyldimethylsilyloxymethyl)benzene-1,2-diol (7i):



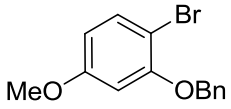
Colorless oil; yield 93%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.10 (s, 6H), 0.94 (s, 9H), 4.62 (s, 2H), 6.71 (d, *J* = 7.4 Hz, 1H), 6.77 (d, *J* = 6.9 Hz, 1H), 6.83 (s, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.2, 18.5, 26.0, 65.0, 113.9, 115.1, 119.0, 133.8, 142.8, 143.5;

HRMS *m/z* calcd for $[C_{13}H_{22}O_3Si + Na]^+$ 277.1230, found 277.1233; IR ($CHCl_3$) ν = 3392, 2954, 2929, 2885, 2856, 1492, 1471, 1463, 1439, 1410, 1388, 1362, 1287, 1255, 1153, 1096, 1007, 939, 877, 835, 773, 666 cm^{-1}.

General procedure for one pot chemoselective aryl silyl deprotection/reprotection with other protecting groups:

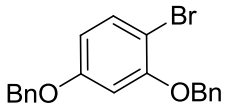
To a stirred solution of aryl silyl ether **1**, **4** or **6** (0.1 mmol, 1.0 equiv) in dry DMF (3 mL) was added sodium hydride (0.15 mmol, 1.5 equiv) at room temperature and subsequently the alkyl halide or acetyl chloride (0.1 mmol, 1.0 equiv) was added. After completion of reaction (monitored by TLC) it was quenched with water (1 mL) and diluted with EtOAc (10 mL). The organic layer was separated, washed with water (3 × 5 mL), dried (Na_2SO_4) and concentrated. The residue was purified by silica gel column chromatography using petroleum ether/EtOAc as eluent to give differently protected product **2** or **8**.

2-Benzyloxy-1-bromo-4-methoxybenzene (8a):



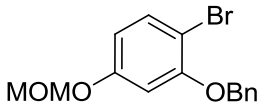
Colorless oil; yield (91%); ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 3.76 (s, 3H), 5.13 (s, 2H), 6.41 (dd, *J* = 8.7, 2.7 Hz, 1H), 6.53 (d, *J* = 2.7 Hz, 1H), 7.30–7.49 (m, 5H), 7.42 (d, *J* = 8.7 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 55.5, 70.7, 101.6, 103.2, 106.5, 127.0, 127.9, 128.5, 133.2, 136.4, 155.6, 160.0; HRMS *m/z* calcd for $[C_{14}H_{13}O_2Br + Na]^+$ 314.9991, found 314.9955; IR ($CHCl_3$) ν = 3031, 2937, 2835, 1595, 1487, 1459, 1418, 1381, 1306, 1282, 1256, 1200, 1168, 1061, 1025, 907, 832, 789, 735, 696, 630, 599 cm^{-1}.

4-Bromo-1,3-dibenzyloxybenzene (8b):



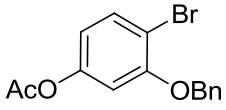
Colorless oil; yield 72%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 4.99 (s, 2H), 5.09 (s, 2H), 6.47 (dd, *J* = 8.7, 2.7 Hz, 1H), 6.60 (d, *J* = 2.7 Hz, 1H), 7.24–7.46 (m, 11H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 70.3, 70.6, 102.4, 103.4, 107.4, 126.9, 127.5, 127.9, 128.1, 128.5, 128.6, 133.1, 136.3, 136.4, 155.6, 159.1; HRMS *m/z* calcd for $[C_{20}H_{17}O_2Br + Na]^+$ 391.0304, found 391.0303; IR ($CHCl_3$): ν = 3088, 3064, 3031, 2927, 2860, 1581, 1485, 1454, 1425, 1379, 1304, 1281, 1256, 1181, 1054, 1022, 907, 833, 786, 737, 696 cm^{-1}.

2-Benzyloxy-1-bromo-4-(methoxymethoxy)benzene (8c):



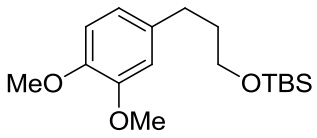
Colorless oil; yield 80%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 3.45 (s, 3H), 5.12 (s, 2H), 5.13 (s, 2H), 6.57 (dd, *J* = 8.7, 2.6 Hz, 1H), 6.68 (d, *J* = 2.6 Hz, 1H), 7.30-7.49 (m, 5H), 7.40 (d, *J* = 8.7 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = 56.0, 70.8, 94.7, 103.3, 104.5, 109.5, 127.1, 127.9, 128.6, 133.3, 136.4, 155.6, 157.7; HRMS *m/z* calcd for $[C_{15}H_{15}O_3Br + Na]^+$ 345.0097, found 345.0096; IR ($CHCl_3$): ν = 2927, 2862, 1586, 1483, 1456, 1421, 1381, 1279, 1152, 1079, 1046, 1015, 921, 836, 754, 734, 696 cm^{-1}.

3-Benzyloxy-4-bromophenyl acetate (8d):



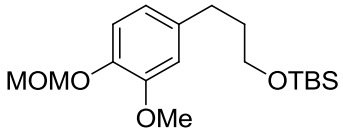
Colorless oil; yield 83%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 2.29 (s, 3H), 5.12 (s, 2H), 6.64 (dd, *J* = 8.6, 2.4 Hz, 1H), 6.73 (d, *J* = 2.4 Hz, 1H), 7.34 (t, *J* = 7.2 Hz, 1H), 7.40 (t, *J* = 7.5 Hz, 2H), 7.47 (d, *J* = 7.3 Hz, 2H), 7.55 (d, *J* = 8.6 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 21.1, 70.9, 107.8, 109.1, 115.1, 127.0, 128.1, 128.6, 133.3, 136.0, 150.6, 155.6, 169.1; HRMS *m/z* calcd for $[C_{15}H_{13}O_3Br + Na]^+$ 342.9940, found 342.9936; IR ($CHCl_3$) ν = 3019, 2918, 2850, 1762, 1596, 1497, 1481, 1416, 1370, 1278, 1156, 1122, 1044, 1018, 970, 897, 838, 696, 668 cm^{-1}.

***tert*-Butyl-3-(3,4-dimethoxyphenyl)propoxydimethylsilane (8e):**



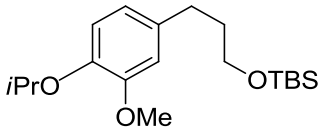
Colorless oil; yield 81%; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 0.05 (s, 6H), 0.91 (s, 9H), 1.79–1.84 (m, 2H), 2.62 (t, *J* = 7.8 Hz, 2H), 3.63 (t, *J* = 6.3 Hz, 2H), 3.86 (s, 3H), 3.87 (s, 3H), 6.71–6.74 (m, 2H), 6.79 (d, *J* = 8.6 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = –5.3, 18.3, 25.9, 31.6, 34.6, 55.7, 55.9, 62.3, 111.1, 111.7, 120.2, 134.8, 147.0, 148.7; HRMS *m/z* calcd for $[C_{17}H_{30}O_3Si + Na]^+$ 333.1856 found: 333.1856 IR ($CHCl_3$) ν = 2953, 2933, 2857, 1591, 1516, 1464, 1417, 1388, 1259, 1156, 1140, 1101, 1031, 968, 912, 837, 809, 775, 734, 665 cm^{-1}.

***tert*-Butyl-[3-(3-methoxy-4-(methoxymethoxy)phenyl)propoxy]dimethylsilane (8f):**



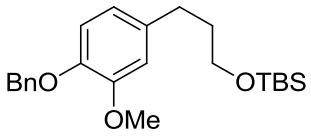
Colorless oil; yield 89%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.05 (s, 6H), 0.90 (s, 9H), 1.78–1.85 (m, 2H), 2.62 (t, *J* = 7.8 Hz, 2H), 3.51 (s, 3H), 3.63 (t, *J* = 6.3 Hz, 2H), 3.86 (s, 3H), 5.19 (s, 2H), 6.70 (dd, *J* = 8.1, 1.9 Hz, 1H), 6.74 (d, *J* = 1.9 Hz, 1H), 7.05 (d, *J* = 8.1 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.3, 18.3, 25.9, 31.7, 34.5, 55.8, 56.1, 62.3, 95.6, 112.2, 116.5, 120.4, 136.7, 144.4, 149.5; HRMS *m/z* calcd for $[C_{18}H_{32}O_4Si + Na]^+$ 363.1962, found 363.1967; IR ($CHCl_3$) ν = 2952, 2930, 2896, 2857, 1591, 1514, 1464, 1418, 1388, 1360, 1262, 1227, 1200, 1156, 1134, 1101, 1079, 1038, 1006, 924, 837, 814, 775, 665 cm^{-1}.

***tert*-Butyl-[3-(4-isopropoxy-3-methoxyphenyl)propoxy]dimethylsilane (8g):**



Colorless oil; yield 85%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.05 (s, 6H), 0.91 (s, 9H), 1.35 (d, *J* = 6.1 Hz, 6H), 1.78–1.85 (m, 2H), 2.61 (t, *J* = 7.7 Hz, 2H), 3.63 (t, *J* = 6.4 Hz, 2H), 3.84 (s, 3H), 4.43–4.49 (m, 1H), 6.69 (dd, *J* = 8.1, 2.0 Hz, 1H), 6.72 (d, *J* = 2.0 Hz, 1H), 6.81 (d, *J* = 8.1 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = –5.1, 18.5, 22.4, 26.2, 31.9, 34.7, 56.1, 62.6, 71.8, 112.7, 116.4, 120.4, 135.7, 145.4, 150.5; HRMS *m/z* calcd for $[C_{19}H_{34}O_3Si + Na]^+$ 361.2169, found 361.2170; IR ($CHCl_3$) ν = 2930, 2858, 1607, 1587, 1511, 1464, 1417, 1382, 1258, 1223, 1157, 1105, 1039, 958, 836, 775, 658 cm^{-1}.

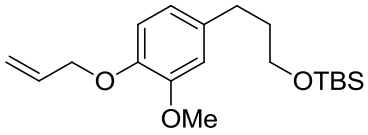
3-(4-Benzyloxy-3-methoxyphenyl)propoxy-*tert*-butyldimethylsilane (8h):



Colorless oil; yield 94%; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 0.05 (s, 6H), 0.91 (s, 9H), 1.78–1.83 (m, 2H), 2.61 (t, *J* = 7.7 Hz, 2H), 3.62 (t, *J* = 6.3 Hz, 2H), 3.87 (s, 3H), 5.12 (s, 2H), 6.65 (dd, *J* = 8.1, 1.9 Hz, 1H), 6.74 (d, *J* = 1.9 Hz, 1H), 6.79 (d, *J* = 8.1 Hz, 1H), 7.29 (t, *J* = 7.3 Hz, 1H), 7.35 (t, *J* = 7.4 Hz, 2H), 7.43 (d, *J* = 7.1 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −5.3, 18.3, 25.9, 31.6, 34.5, 55.9, 62.3, 71.2, 112.4, 114.2, 120.2, 127.3, 127.7, 127.8, 128.4, 128.5, 135.6, 137.4, 146.2, 149.5; HRMS *m/z* calcd for $[C_{23}H_{34}O_3Si + Na]^+$

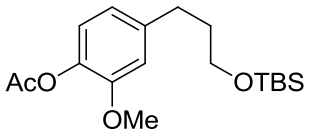
409.2169 found 409.2180; IR ($CHCl_3$) ν = 2950, 2930, 2857, 1590, 1514, 1464, 1418, 1385, 1259, 1229, 1160, 1140, 1101, 1036, 969, 911, 837, 775, 738, 696 cm^{-1}.

3-(4-Allyloxy-3-methoxyphenyl)propoxy-*tert*-butyldimethylsilane (8i):



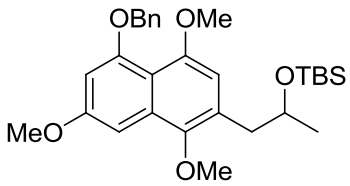
Colorless oil; yield 94%; ^1H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.05 (s, 6H), 0.91 (s, 9H), 1.78–1.85 (m, 2H), 2.62 (t, *J* = 7.7 Hz, 2H), 3.63 (t, *J* = 6.3 Hz, 2H), 3.86 (s, 3H), 4.59 (dt, *J* = 5.4, 1.4 Hz, 2H), 5.27 (dq, *J* = 12.0, 1.3 Hz, 1H), 5.39 (dq, *J* = 17.2, 1.5 Hz, 1H), 6.04–6.13 (m, 1H), 6.69 (dd, *J* = 8.1, 1.9 Hz, 1H), 6.73 (d, *J* = 1.9 Hz, 1H), 6.80 (d, *J* = 8.1 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = –5.3, 18.3, 25.9, 31.6, 34.5, 55.8, 62.3, 70.0, 112.1, 113.5, 117.8, 120.1, 133.6, 135.3, 146.0, 149.2; HRMS *m/z* calcd for $[C_{19}H_{32}O_3Si + Na]^+$ 359.2013 found 359.2016; IR ($CHCl_3$) ν = 2952, 2930, 2858, 1590, 1514, 1464, 1419, 1388, 1361, 1258, 1231, 1158, 1141, 1101, 1079, 1038, 926, 837, 811, 775, 663 cm^{-1}.

4-[3-(Tert-butyldimethylsilyloxy)propyl]-2-methoxyphenyl acetate (8j):



Colorless oil; yield 92%; ^1H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.06 (s, 6H), 0.91 (s, 9H), 1.79–1.87 (m, 2H), 2.30 (s, 3H), 2.66 (t, *J* = 7.8 Hz, 2H), 3.64 (t, *J* = 6.3 Hz, 2H), 3.82 (s, 3H), 6.76 (dd, *J* = 8.0, 1.8 Hz, 1H), 6.80 (d, *J* = 1.8 Hz, 1H), 6.92 (d, *J* = 8.0 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.3, 18.3, 20.7, 25.9, 32.0, 34.3, 55.8, 62.2, 112.6, 120.5, 122.3, 137.6, 141.3, 150.7, 169.3; HRMS *m/z* calcd for $[C_{18}H_{30}O_4Si + Na]^+$ 361.1806 found 361.1801; IR ($CHCl_3$) ν = 2950, 2930, 2857, 1768, 1604, 1511, 1465, 1369, 1279, 1199, 1152, 1101, 1034, 836, 776, 663 cm^{-1}.

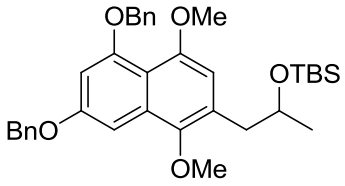
1-[(5-Benzyloxy-1,4,7-trimethoxynaphthalen-2-yl)propan-2-yloxy]-*tert*-butyldimethylsilane (8k) from 6g:



White solid; yield 90%, mp = 68-69 °C; ^1H NMR (500 MHz, $CDCl_3$/TMS) δ = –0.09 (s, 3H), 0.01 (s, 3H), 0.88 (s, 9H), 1.21 (d, *J* = 6.0 Hz, 3H), 2.81 (dd, *J* = 13.1, 6.2 Hz, 1H), 2.97 (dd, *J* = 13.1, 6.8 Hz, 1H), 3.86 (s, 3H), 3.91 (s, 3H), 3.94 (s, 3H),

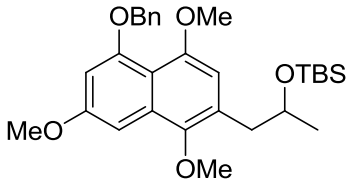
4.21–4.26 (m, 1H), 5.19 (s, 2H), 6.58 (s, 1H), 6.60 (d, *J* = 2.0 Hz, 1H), 7.01 (d, *J* = 1.9 Hz, 1H), 7.33 (t, *J* = 7.2 Hz, 1H), 7.42 (t, *J* = 7.6 Hz, 2H), 7.61 (d, *J* = 7.7 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = −4.9, −4.86, 18.1, 23.8, 25.9, 40.8, 55.2, 56.5, 61.0, 69.2, 71.0, 93.5, 100.3, 107.5, 113.5, 126.9, 127.5, 128.3, 128.7, 132.0, 137.3, 146.9, 153.2, 157.6, 158.3; HRMS *m/z* calcd for $[C_{29}H_{40}O_5Si + Na]^+$ 519.2537, found 519.2529; IR ($CHCl_3$) ν = 2955, 2930, 2857, 1621, 1606, 1511, 1499, 1456, 1406, 1375, 1354, 1244, 1158, 1126, 1088, 1062, 1003, 872, 834, 775, 757, 697 cm^{-1}.

1-[(5,7-Bis-benzyloxy)-1,4-dimethoxynaphthalen-2-yl-propan-2-yloxy]-*tert*-butyldimethylsilane (8l):



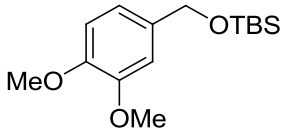
Pale yellow oil; yield 70%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = –0.09 (s, 3H), 0.01 (s, 3H), 0.88 (s, 9H), 1.20 (d, *J* = 6.0 Hz, 3H), 2.80 (dd, *J* = 13.1, 6.2 Hz, 1H), 2.97 (dd, *J* = 13.1, 6.8 Hz, 1H), 3.77 (s, 3H), 3.91 (s, 3H), 4.20–4.24 (m, 1H), 5.19 (s, 2H), 5.21 (s, 2H), 6.58 (s, 1H), 6.69 (d, *J* = 2.3 Hz, 1H), 7.07 (d, *J* = 2.3 Hz, 1H), 7.30–7.44 (m, 6H), 7.51(d, *J* = 7.2 Hz, 2H), 7.60 (d, *J* = 7.2 Hz, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −4.9, −4.8, 18.1, 23.8, 25.9, 40.8, 56.5, 61.0, 69.2, 70.0, 71.0, 94.8, 100.6, 107.6, 113.6, 126.9, 127.5, 127.7, 128.0, 128.3, 128.6, 128.8, 131.9, 136.9, 137.3, 146.9, 153.2, 157.4, 157.7; HRMS *m/z* calcd for $[C_{35}H_{44}O_5Si + Na]^+$ 595.2850, found 595.2837; IR ($CHCl_3$) ν = 3032, 2950, 2929, 2857, 1618, 1603, 1495, 1454, 1412, 1375, 1352, 1255, 1176, 1154, 1124, 1083, 1056, 998, 901, 834, 773, 735, 694 cm^{-1}.

1-[(5-Benzyloxy-1,4,7-trimethoxynaphthalen-2-yl)propan-2-yloxy]-*tert*-butyldimethylsilane (8k) from 6j:



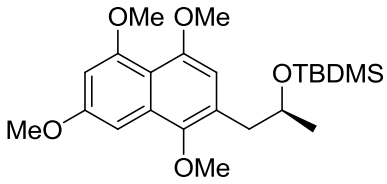
White solid; yield 68%, mp = 68-69 °C. Other data were same as earlier.

***tert*-Butyl-(3,4-dimethoxybenzyloxy)dimethylsilane (8m):**



Colorless oil; yield 82%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.09 (s, 6H), 0.94 (s, 9H), 3.87 (s, 3H), 3.88 (s, 3H), 4.68 (s, 2H), 6.83 (s, 2H), 6.90 (s, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −5.2, 18.4, 25.9, 55.7, 55.9, 64.8, 109.6, 110.8, 118.1, 134.1, 147.9, 148.8; HRMS (*m/z*) calcd for $[C_{15}H_{26}O_3Si + Na]^+$ 305.1543, found 305.1540; IR ($CHCl_3$) ν = 2950, 2931, 2856, 1593, 1516, 1464, 1418, 1376, 1258, 1234, 1157, 1137, 1091, 1031, 927, 838, 812, 777, 668 cm^{-1}.

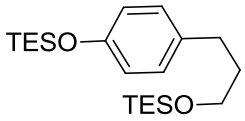
(*S*)-*tert*-Butyldimethyl[1-(1,4,5,7-tetramethoxynaphthalen-2-yl)propan-2-yloxy]silane (2)[1]:



Colorless oil; yield 70%; $[\alpha]_D^{25}$= +24.6 (*c* = 0.25, $CHCl_3$ ^{1}H-NMR(400 MHz, $CDCl_3$/TMS) δ = −0.14 (s, 3H), −0.03 (s, 3H), 0.84 (s, 9H), 1.19 (d, *J* = 6.0 Hz, 3H), 2.78 (dd, *J* = 13.1, 5.9 Hz, 1H), 2.92 (dd, *J* = 13.1, 7.0 Hz, 1H), 3.84 (s, 3H), 3.91 (s, 3H), 3.92 (s, 3H), 3.93 (s, 3H), 4.15–4.23 (m, 1H), 6.49 (d, *J* = 2.4 Hz, 1H), 6.54 (s, 1H), 6.96 (d, *J* = 2.4 Hz, 1H); ^{13}C-NMR (100 MHz, $CDCl_3$) δ = −5.0, −4.9, 18.1, 23.8, 25.8, 40.8, 55.2, 56.2, 56.6, 61.0, 69.2, 92.9, 98.3, 107.5, 113.0, 128.8, 132.0, 146.9, 153.0, 158.4, 158.6; HRMS *m/z* calcd for $[C_{23}H_{36}O_5Si + H]^+$ 421.2410, found 421.2398); IR ($CHCl_3$) υ = 2956, 2930, 2856, 1676, 1621, 1606, 1468, 1404, 1380, 1246, 1155, 1124, 1083, 1061, 1006, 833 cm^{-1}.

Chracterisation data of TES and TBDPS bis-silyl ethers 9a and 9b

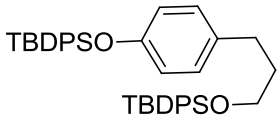
Triethyl-[3-(4-triethylsilyloxyphenyl)propoxy]silane (9a):



Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.6 (q, *J* = 7.9 Hz, 6H), 0.75 (q, *J* = 7.9 Hz, 6H), 0.91–1.01 (m, 18H), 1.79–1.86 (m, 2H), 2.61 (t, *J* = 7.7 Hz, 2H), 3.61 (t, *J* = 6.5 Hz, 2H), 6.76 (d, *J* = 8.5 Hz, 2H), 7.03 (d, *J* = 8.5 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = 4.4, 5.0, 6.4, 6.6, 31.3, 34.6, 62.2, 68.9, 119.7, 129.2, 134.8, 153.5; HRMS *m/z* calcd

for $[C_{21}H_{40}O_2Si_2 + H]^+$ 381.2640 found 381.2644; IR ($CHCl_3$) ν = 2955, 2912, 2877, 1610, 1509, 1458, 1415, 1261, 1239, 1169, 1096, 1074, 1015, 1005, 975, 911, 742 cm^{-1}.

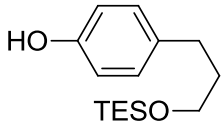
***tert*-Butyl-[3-(4-*tert*-butyldiphenylsilyloxy)phenyl)propoxy]diphenylsilane (9b):**



Colorless oil; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 1.03 (s, 9H), 1.09 (s, 9H), 1.76–1.79 (m, 2H), 2.57 (t, *J* = 7.7 Hz, 2H), 3.62 (t, *J* = 6.3 Hz, 2H), 6.65 (d, *J* = 8.5 Hz, 2H), 6.86 (d, *J* = 8.5 Hz, 2H), 7.33–7.43 (m, 12H), 7.64 (dd, *J* = 8.0, 1.4 Hz, 4H), 7.71 (dd, *J* = 8.0, 1.4 Hz, 4H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = 19.2, 19.5, 26.5, 26.9, 31.1, 34.2, 63.0, 119.3, 127.6, 127.7, 129.1, 129.5, 129.8, 133.1, 134.0, 134.5, 135.5, 135.54, 153.5; HRMS *m/z* calcd for $[C_{41}H_{48}O_2Si_2 + Na]^+$ 651.3085 found 651.3070; IR ($CHCl_3$) ν = 3072, 2959, 2934, 2899, 2860, 1590, 1509, 1474, 1428, 1392, 1363, 1257, 1189, 1113, 1068, 921, 838, 828, 740, 702, 611 cm^{-1}.

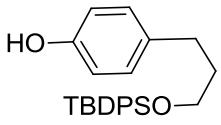
Procedure for selective deprotection of aryl TES or TBDPS silyl ethers: The procedure is same as described earlier.

4-[3-(triethylsilyloxy)propyl]phenol (10a):



Colorless oil; yield 96%; ^{1}H NMR (500 MHz, $CDCl_3$/TMS) δ = 0.61 (q, *J* = 8.0 Hz, 6H), 0.97 (t, *J* = 8.0 Hz, 9H), 1.80–1.85 (m, 2H), 2.60 (t, *J* = 7.8 Hz, 2H), 3.64 (t, *J* = 6.5 Hz, 2H), 5.26 (brs, 1H), 6.75 (d, *J* = 8.4 Hz, 2H), 7.04 (d, *J* = 8.4 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = 4.6, 7.0, 31.4, 34.8, 62.4, 115.3, 129.6, 134.4, 153.8; HRMS *m/z* calcd for $[C_{15}H_{26}O_2Si + H]^+$ 267.1775 found 267.1771; IR ($CHCl_3$) ν = 3357, 2954, 2878, 1614, 1515, 1458, 1238, 1172, 1096, 1014, 804, 668, 553 cm^{-1}.

4-[3-(*tert*-Butyldiphenylsilyloxy]propyl)phenol (10c):

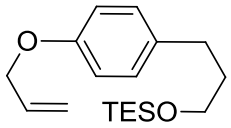


Colorless oil; yield 88%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS): δ = 1.06 (s, 9H), 1.81–1.85 (m, 2H), 2.65 (t, *J* = 7.7 Hz, 2H), 3.63 (t, *J* = 6.2 Hz, 2H), 4.68 (s, 1H, *OH*), 6.73(d, *J* = 8.5 Hz, 2H), 7.03 (d, *J* = 8.5 Hz, 2H), 7.35–7.44 (m, 6H), 7.67 (dd, *J* = 7.9, 1.5 Hz, 4H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 19.2, 26.9, 31.1, 34.4, 63.0, 115.1, 127.6, 129.5, 134.0,

134.4, 134.8, 135.6, 153.5; HRMS *m/z* calcd for $[C_{25}H_{30}O_2Si + H]^+$ 391.2088 found 391.2083; IR ($CHCl_3$) ν = 3412, 2955, 2934, 2858, 1614, 1514, 1473, 1362, 1234, 1112, 822, 751, 742, 702, 610, 506 cm^{-1}.

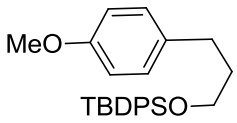
Procedure for one-pot chemoselective aryl TES or TBDPS silyl deprotection/reprotection with other protecting groups: The procedure is same as described earlier for aryl TBS silyl ether.

3-[(4-Allyloxyphenyl)propoxy]triethylsilane (10b):



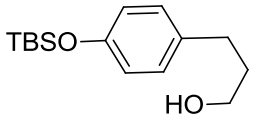
Colorless oil; yield 91%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.06 (q, *J* = 8.0 Hz, 6H), 0.91 (t, *J* = 8.0 Hz, 9H), 1.78–1.85 (m, 2H), 2.62 (t, *J* = 7.8 Hz, 2H), 3.63 (t, *J* = 6.3 Hz, 2H), 4.52 (dt, *J* = 5.3, 1.5 Hz, 2H), 5.28 (dq, *J* = 12.3, 1.6 Hz, 1H), 5.39 (dq, *J* = 17.2, 1.6 Hz, 1H), 6.01–6.10 (m, 1H), 6.84 (d, *J* = 8.7 Hz, 2H), 7.10 (d, *J* = 8.7 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ = 4.4, 6.8, 31.2, 34.7, 62.1, 68.9, 114.6, 117.5, 129.3, 133.5, 134.5, 156.7; HRMS *m/z* calcd for $[C_{18}H_{30}O_2Si + H]^+$ 307.2088, found 307.2080; IR ($CHCl_3$) ν = 2954, 2913, 2877, 1648, 1612, 1584, 1511, 1458, 1415, 1381, 1297, 1241, 1176, 1098, 1075, 1016, 1004, 961, 923, 806, 742 cm^{-1}.

***tert*-Butyl-[3-(4-methoxyphenyl)propoxy]diphenylsilane (10d):**



Colorless oil; yield 85%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 1.09 (s, 9H), 1.83–1.90 (m, 2H), 2.69 (t, *J* = 7.7 Hz, 2H), 3.71 (t, *J* = 6.2 Hz, 2H), 3.80 (s, 3H), 6.83 (d, *J* = 8.6 Hz, 2H), 7.10 (d, *J* = 8.6 Hz, 2H), 7.37–7.44 (m, 6H), 7.70 (dd, *J* = 7.9, 1.5 Hz, 4H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 19.2, 26.9, 31.1, 34.4, 55.2, 63.0, 113.7, 127.6, 129.3, 129.5, 134.0, 134.3, 135.6, 157.7; HRMS *m/z* calcd for $[C_{26}H_{32}O_2Si + Na]^+$ 427.2064 found 427.2060; IR ($CHCl_3$) ν = 3070, 2998, 2932, 2858, 1612, 1512, 1472, 1428, 1389, 1300, 1246, 1177, 1111, 1064, 1040, 965, 910, 823, 740, 702, 687 cm^{-1}.

3-(4-*tert*-Butyldimethylsilyloxyphenyl)propan-1-ol (14):[11]



Colorless oil; yield 59%; ^{1}H NMR (400 MHz, $CDCl_3$/TMS) δ = 0.18 (s, 6H), 0.98 (s, 9H), 1.82–1.89 (m, 2H), 2.63 (t, *J* = 7.7 Hz, 2H), 3.66 (t, *J* = 6.4 Hz, 2H), 6.76 (d, *J* = 8.4 Hz, 2H), 7.04 (d, *J* = 8.4 Hz, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = −4.5, 18.2, 25.7, 31.2, 34.3, 62.3, 119.9, 129.2, 134.4, 153.7.

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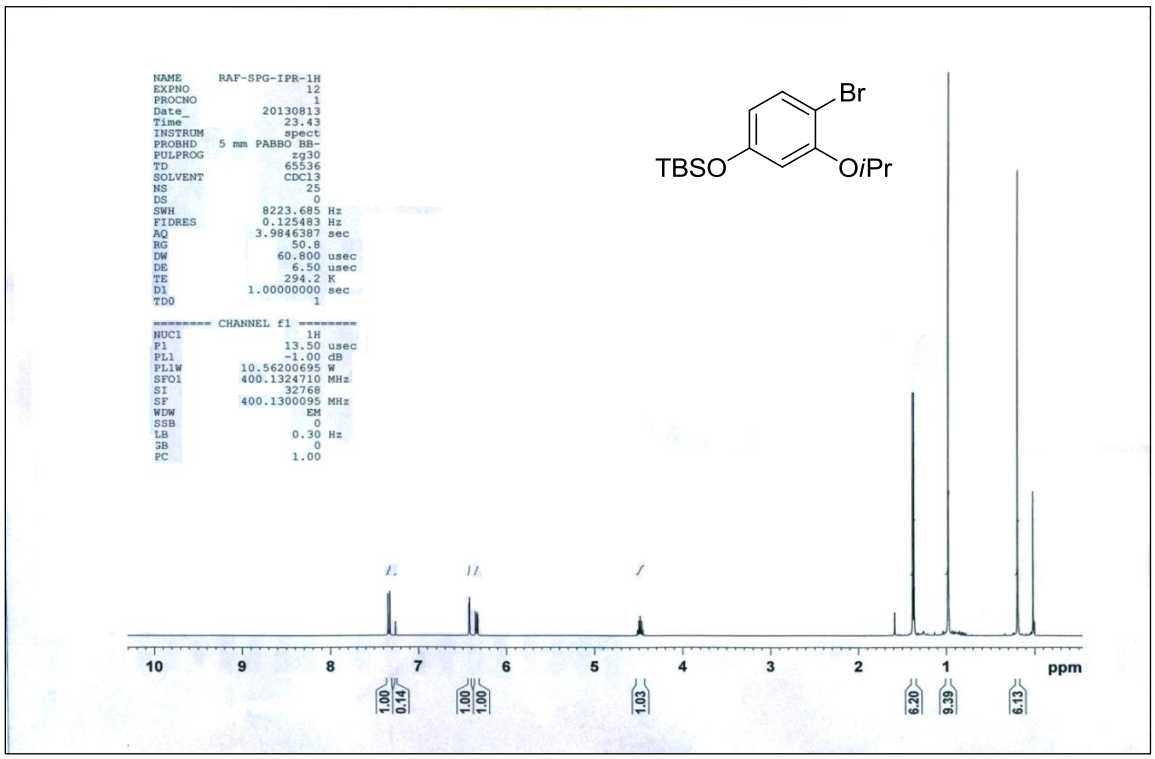
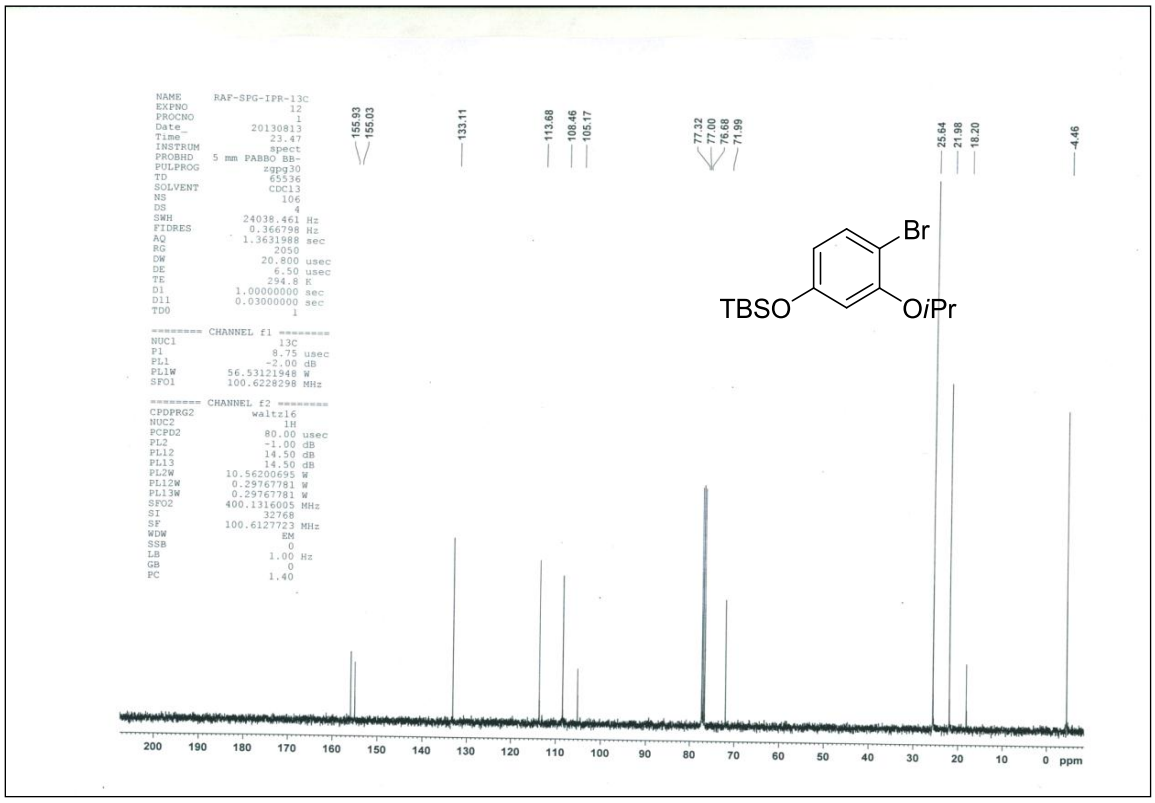
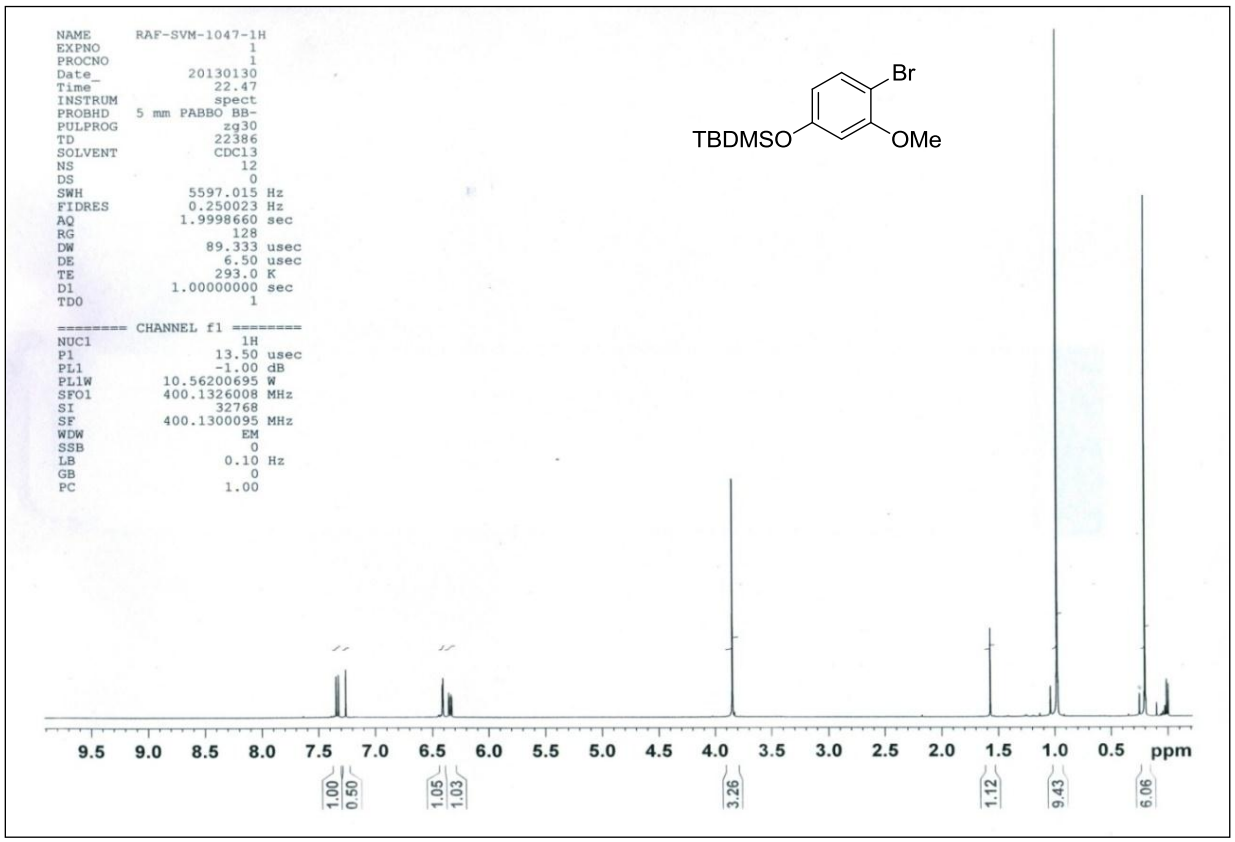
NMR Spectra:

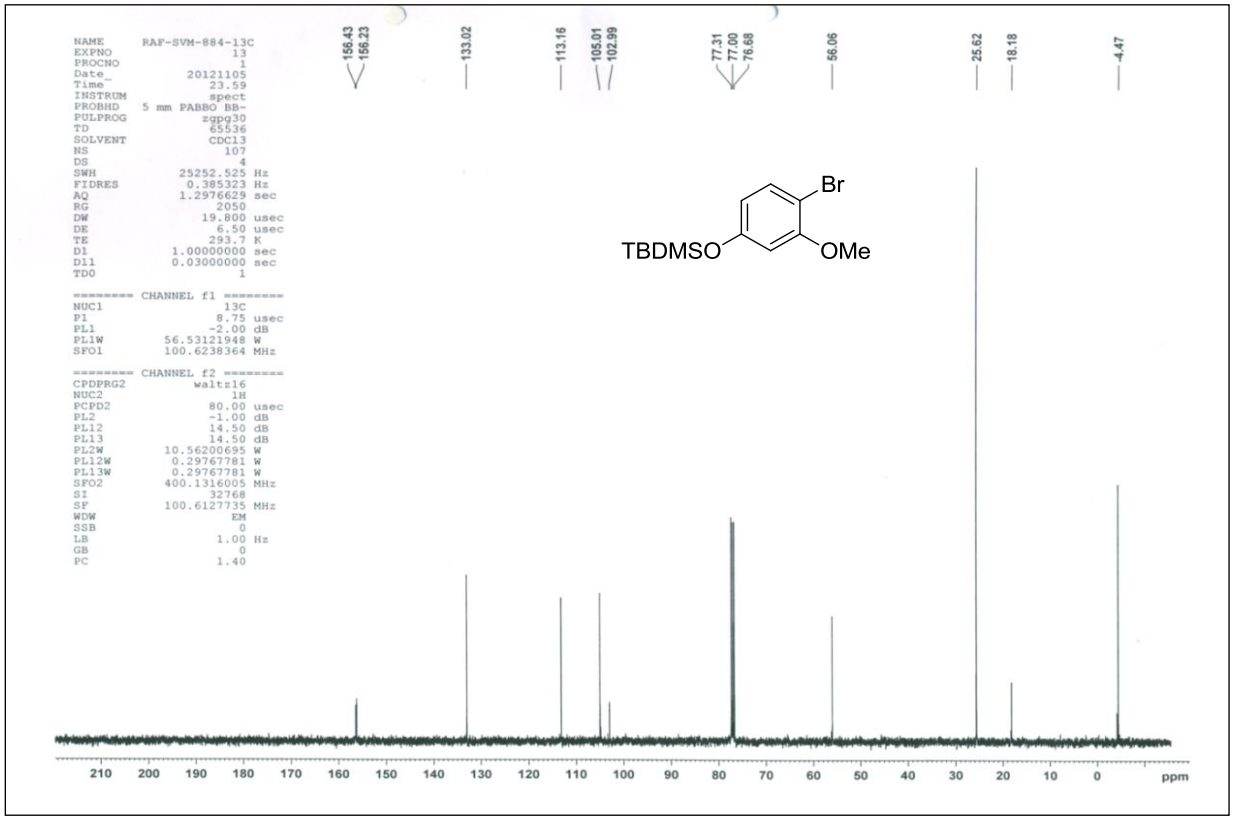
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **4a**



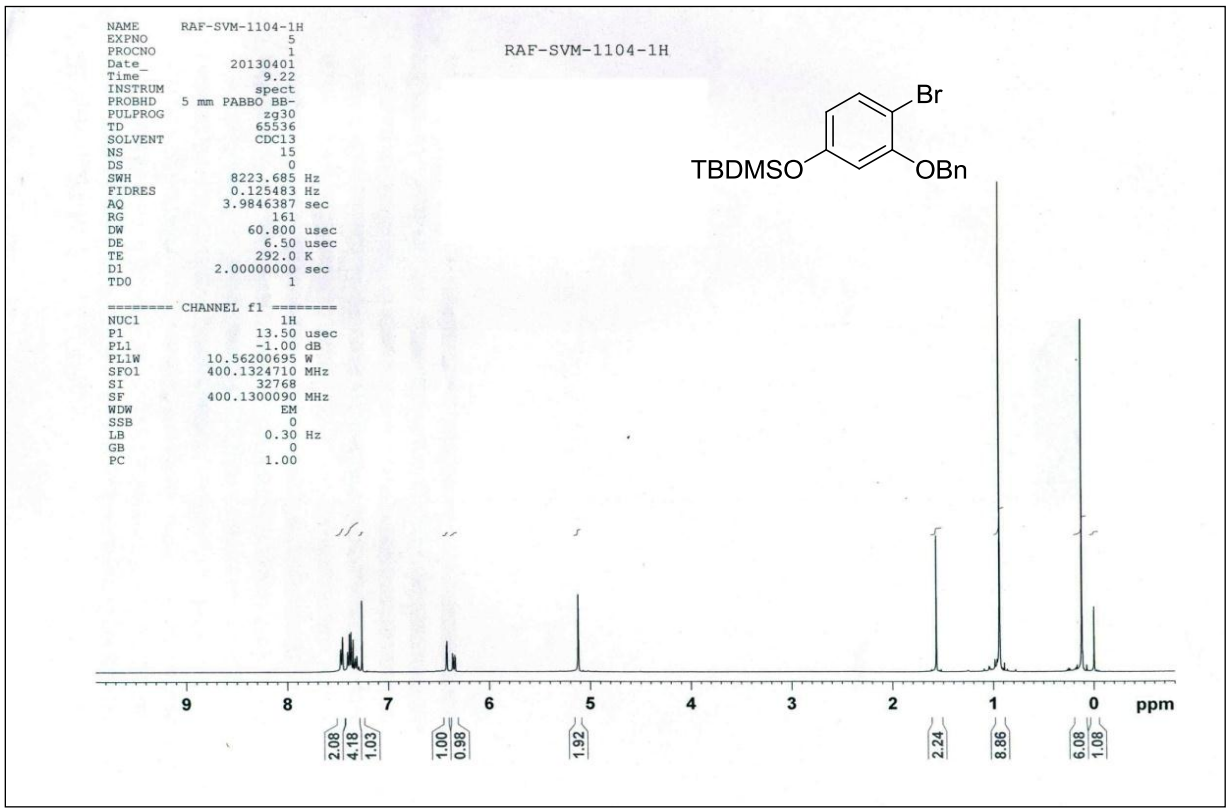


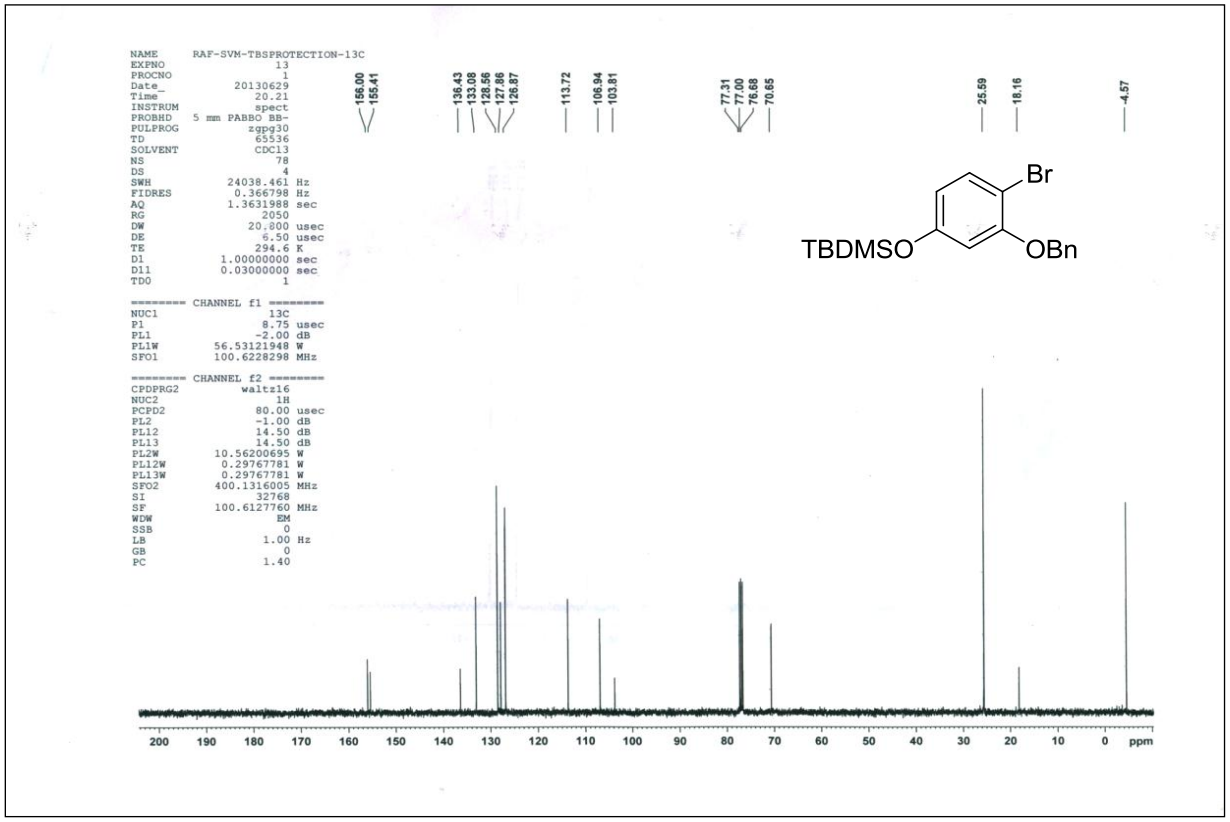
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **4b**



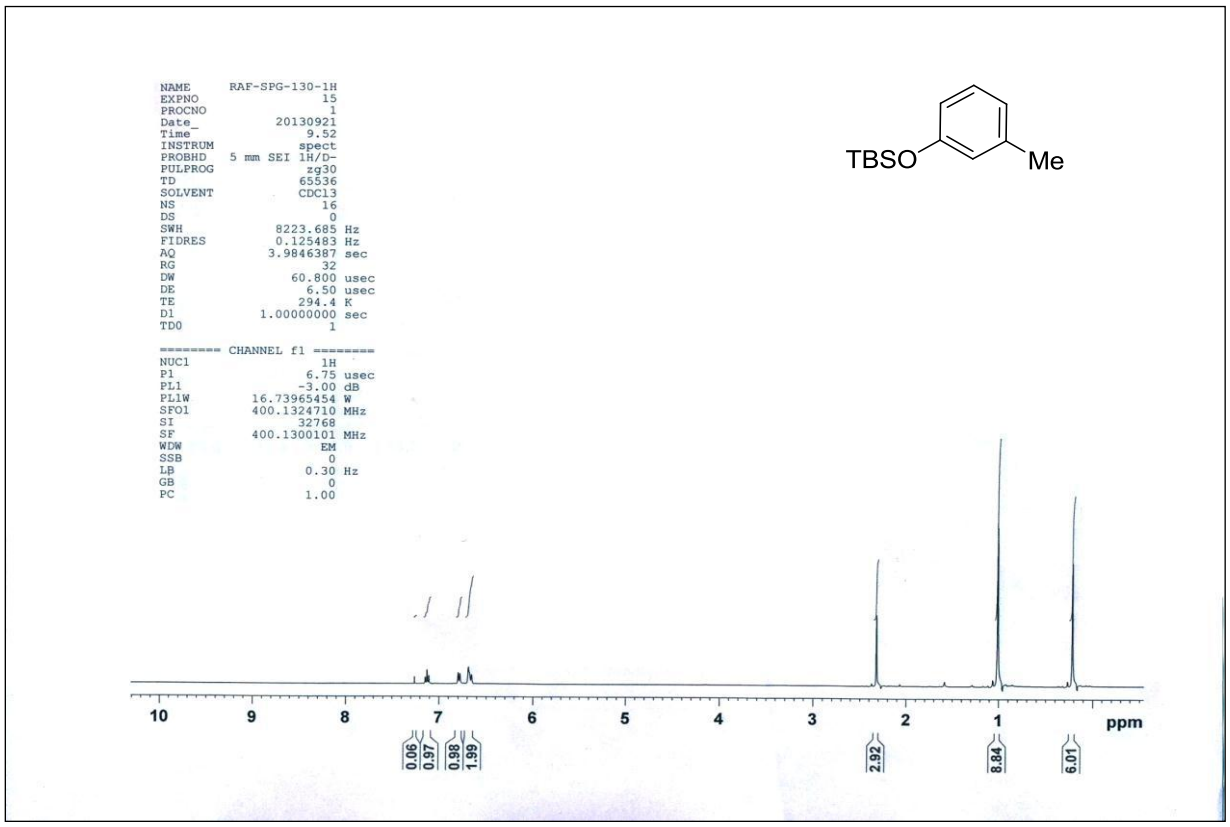


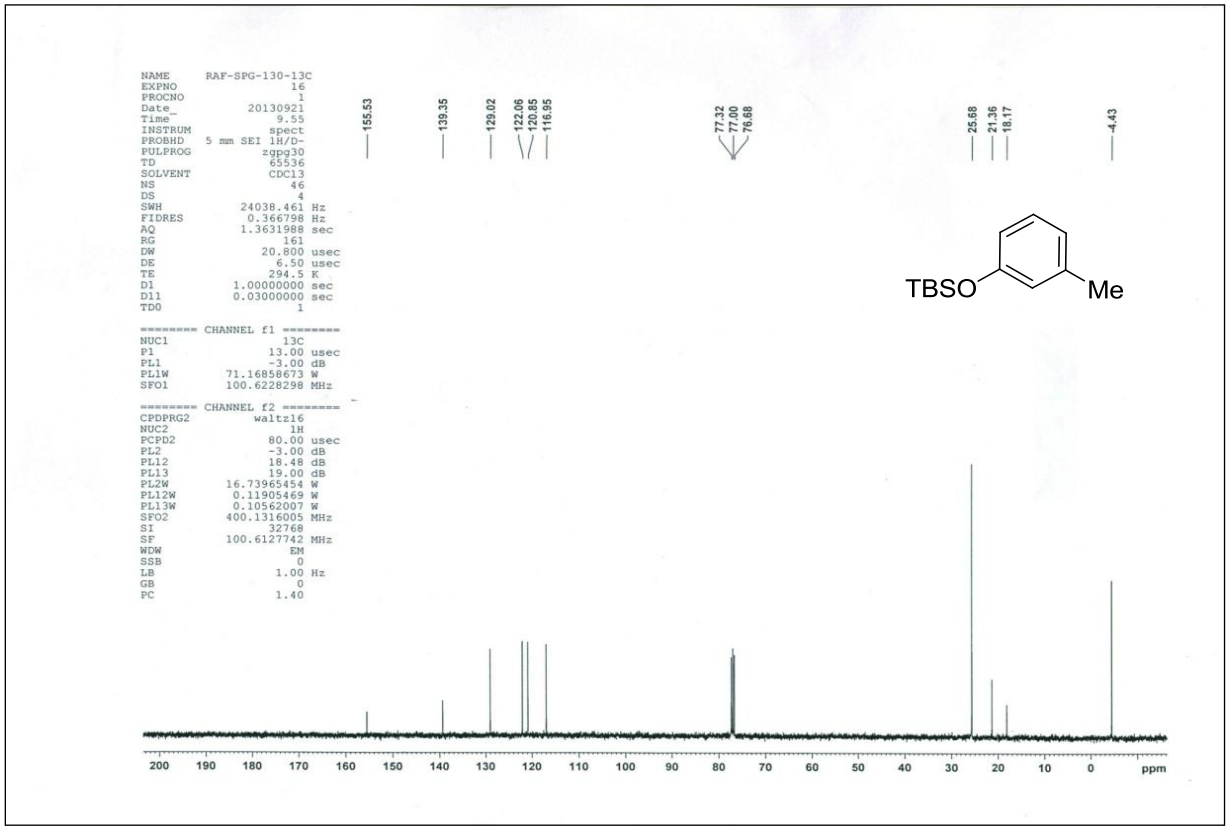
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **4c**



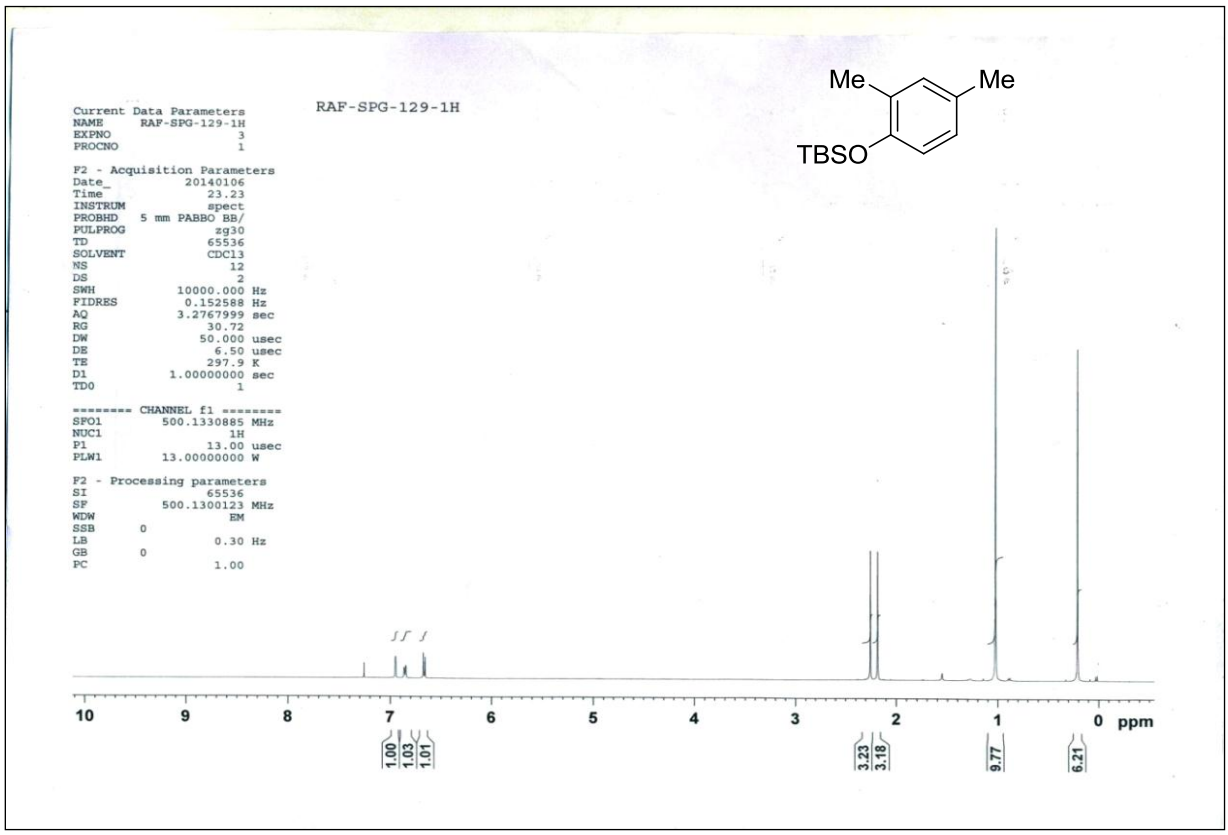


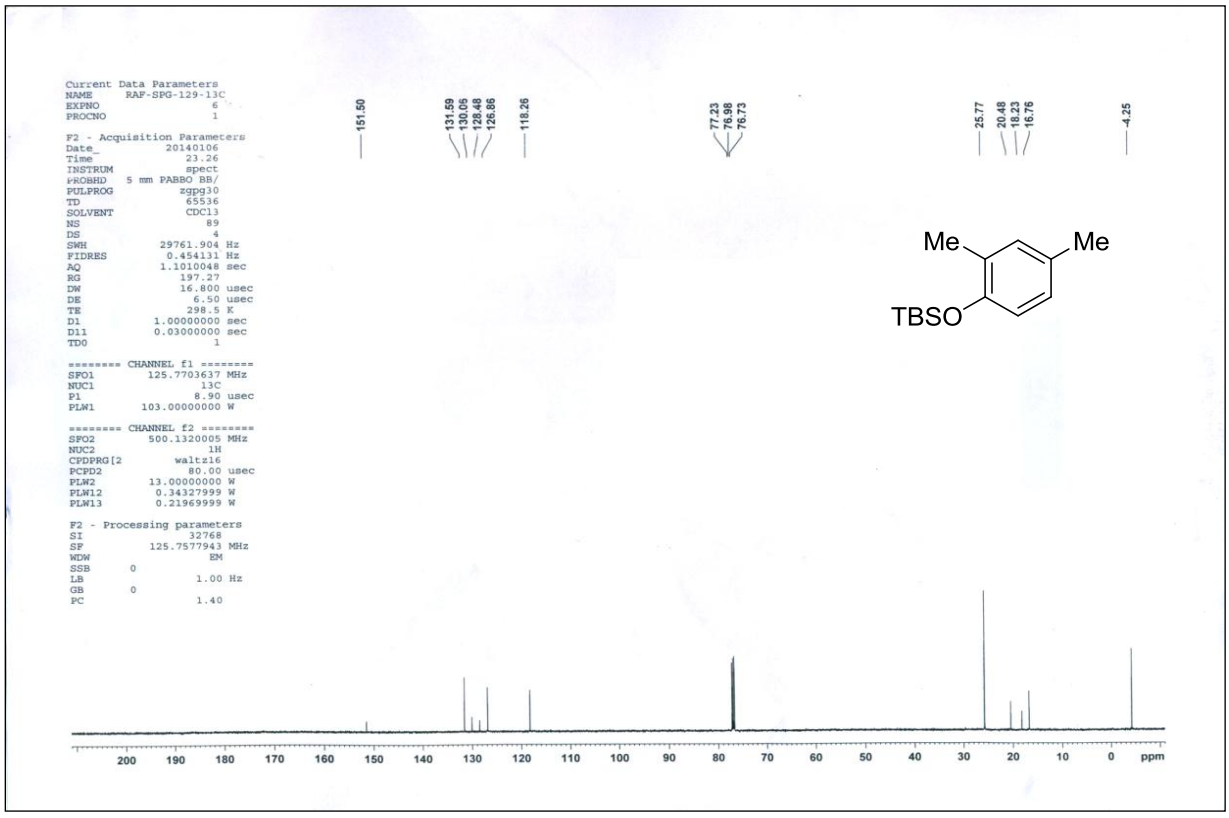
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **4d**



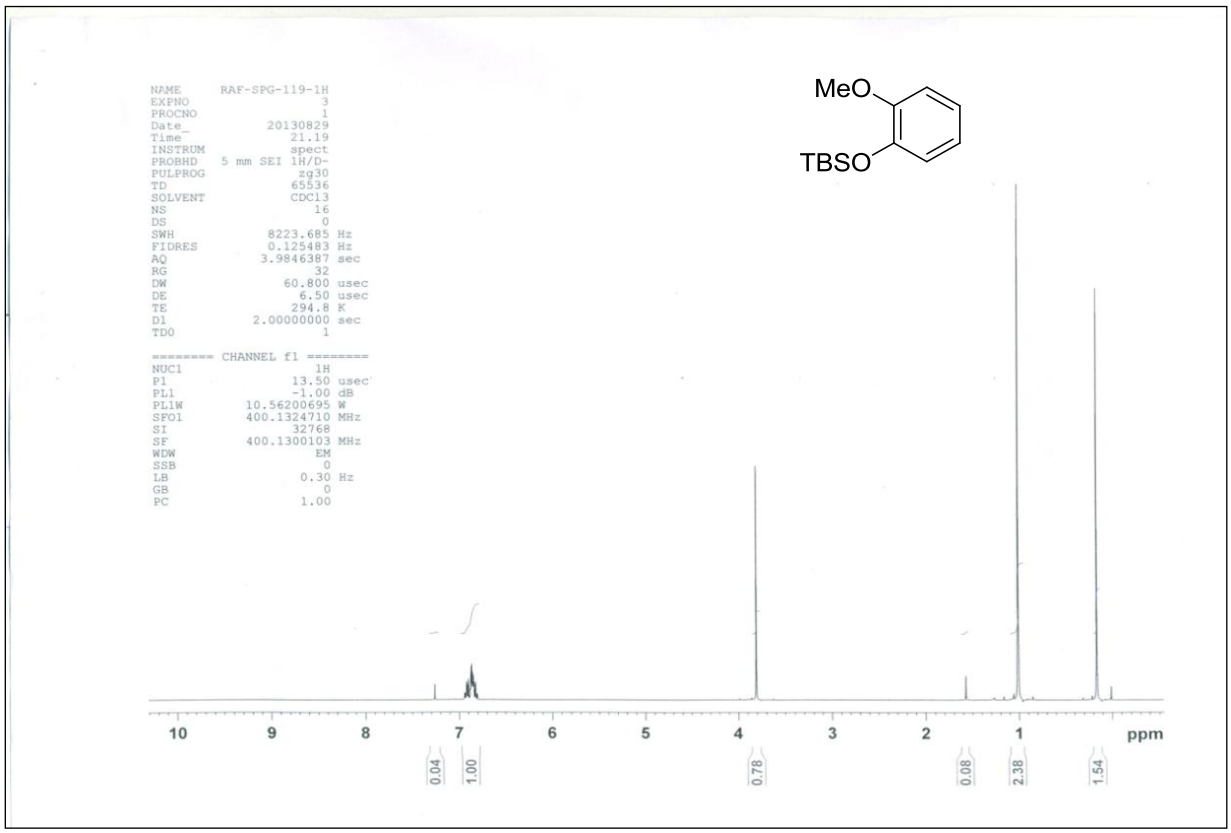


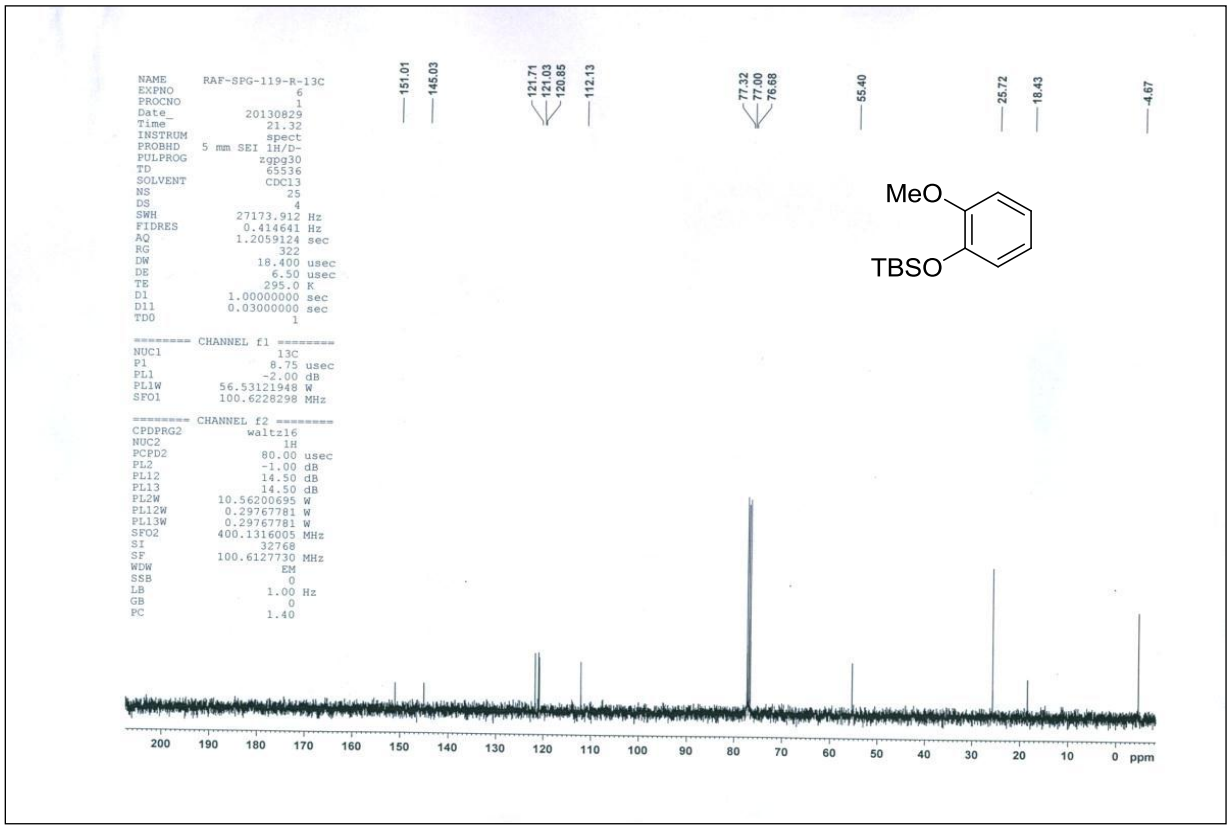
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **4e**



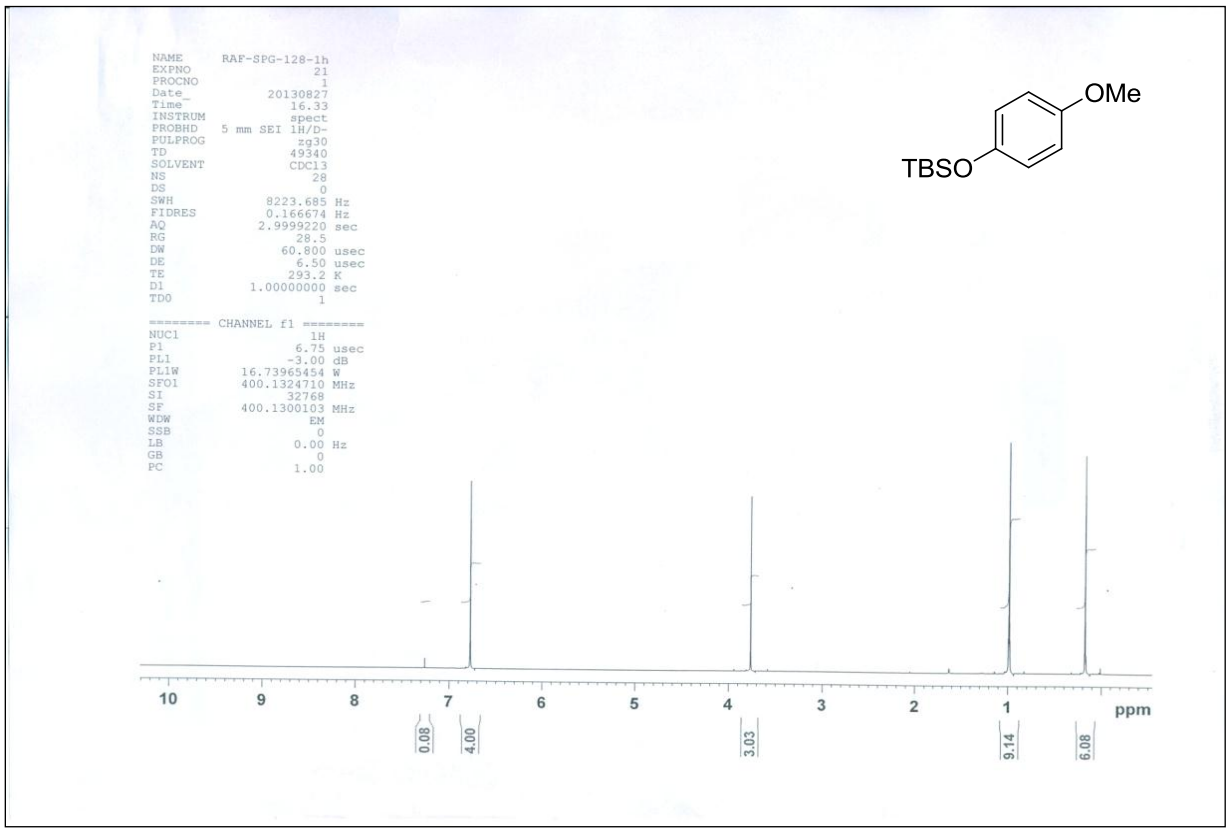


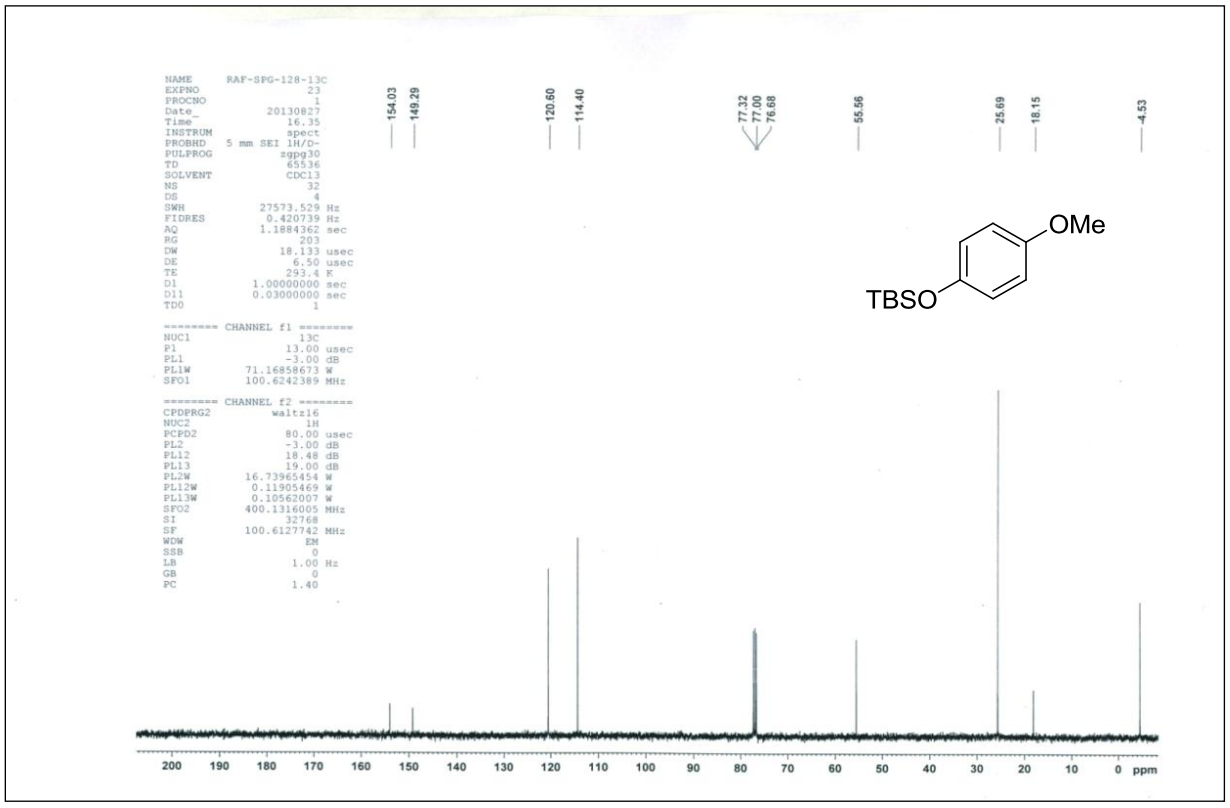
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **4f**



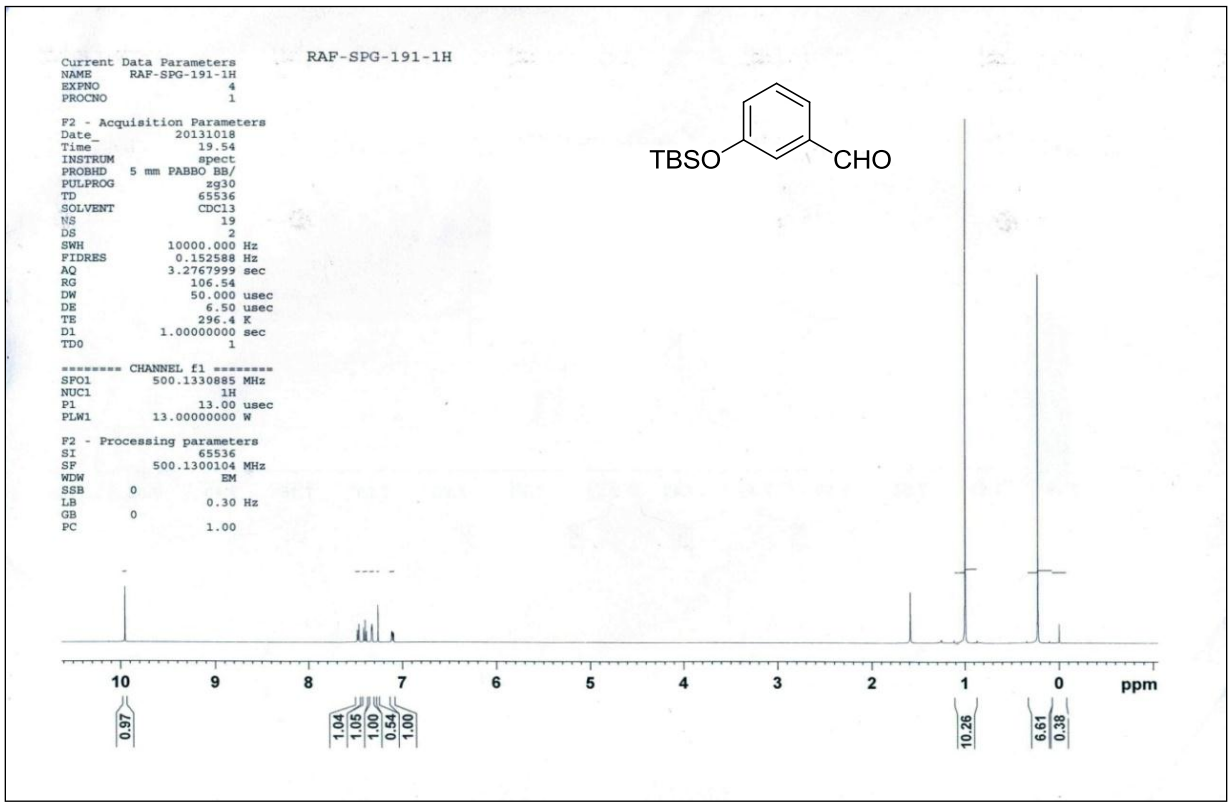


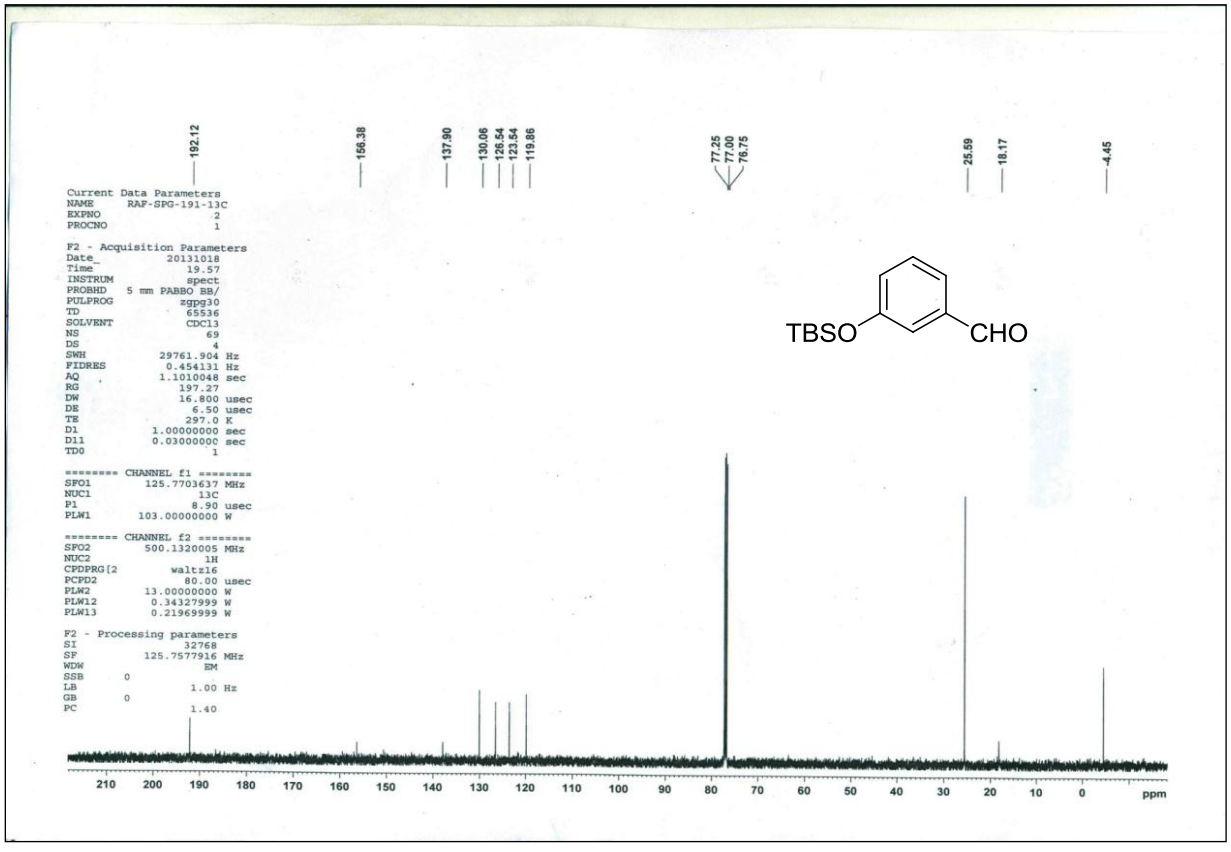
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **4g**



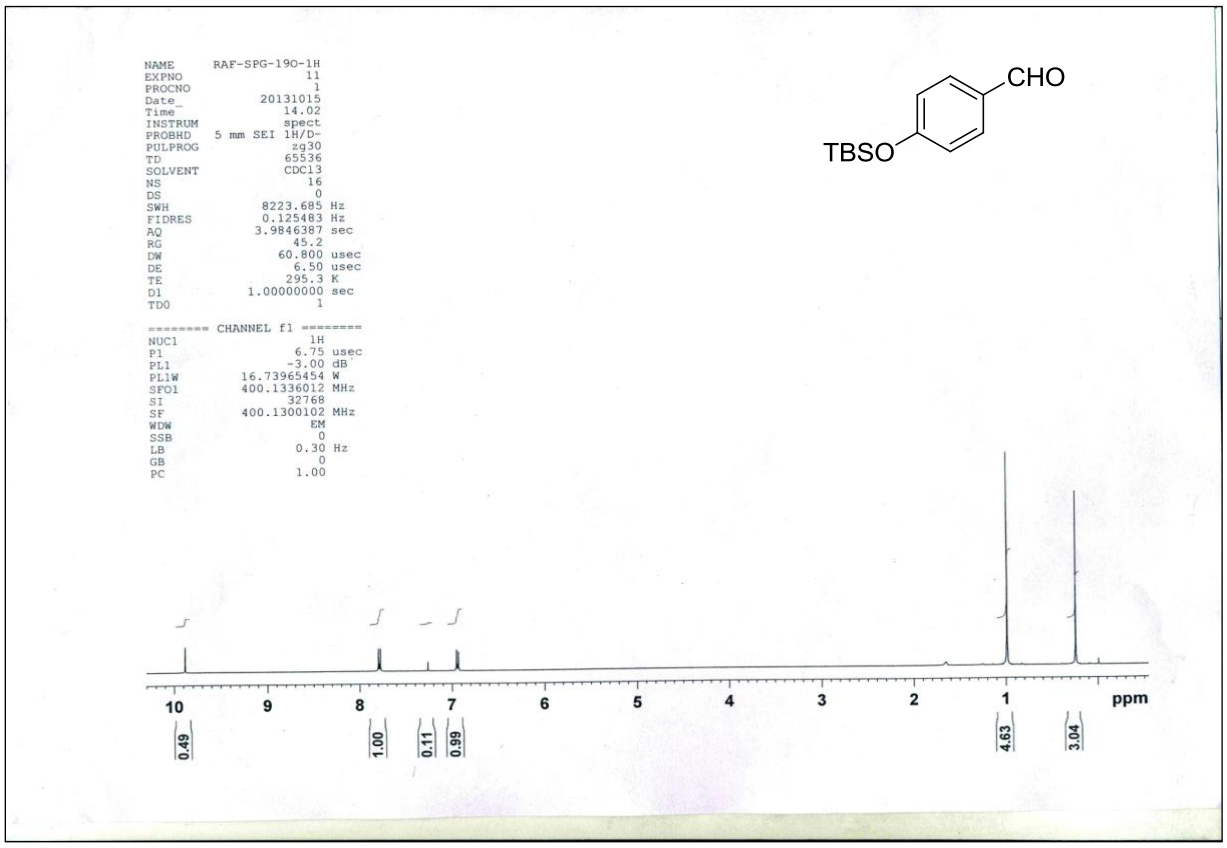


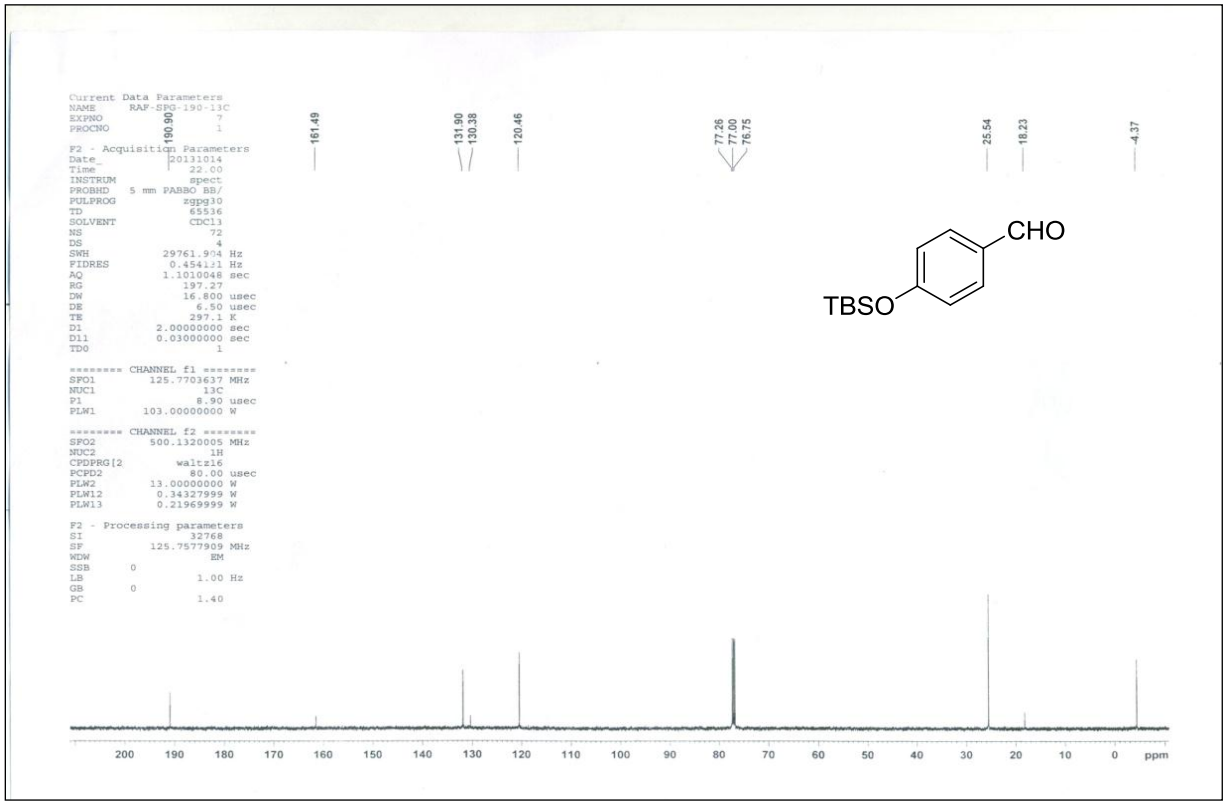
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **4h**



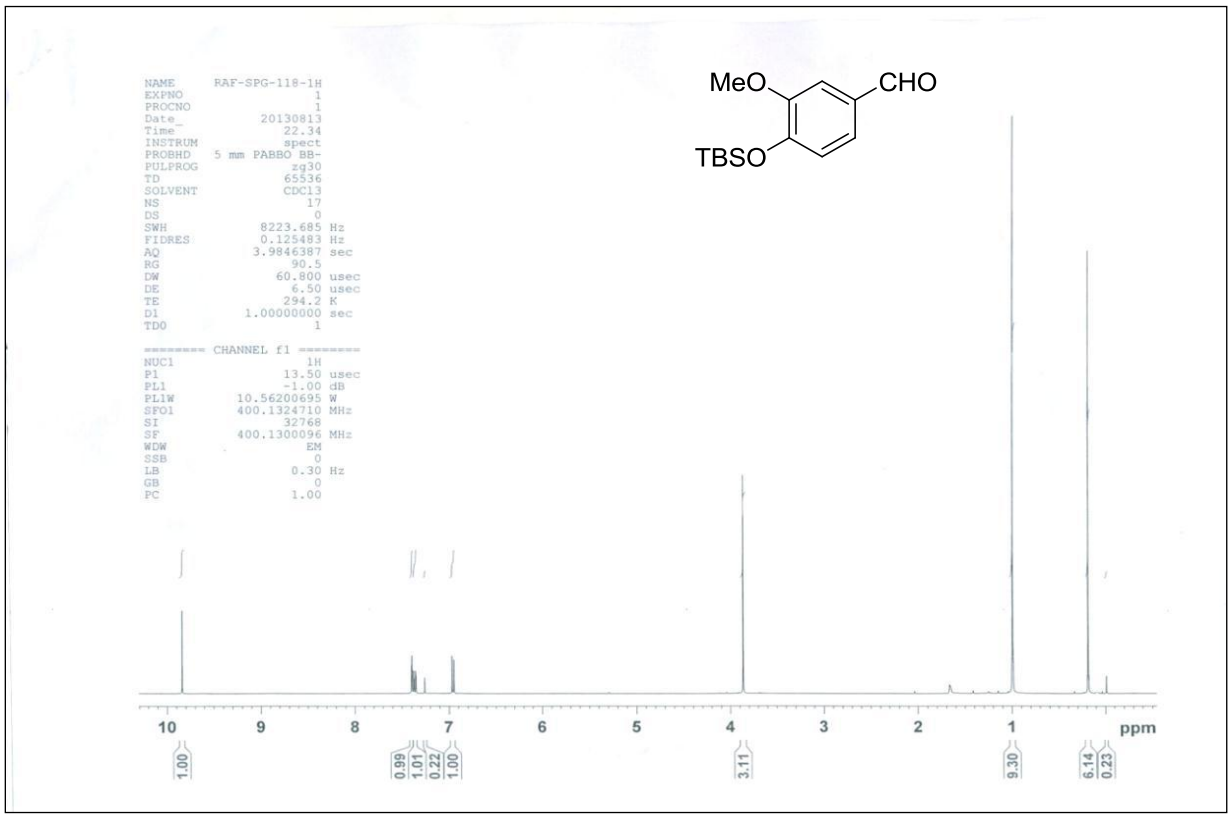


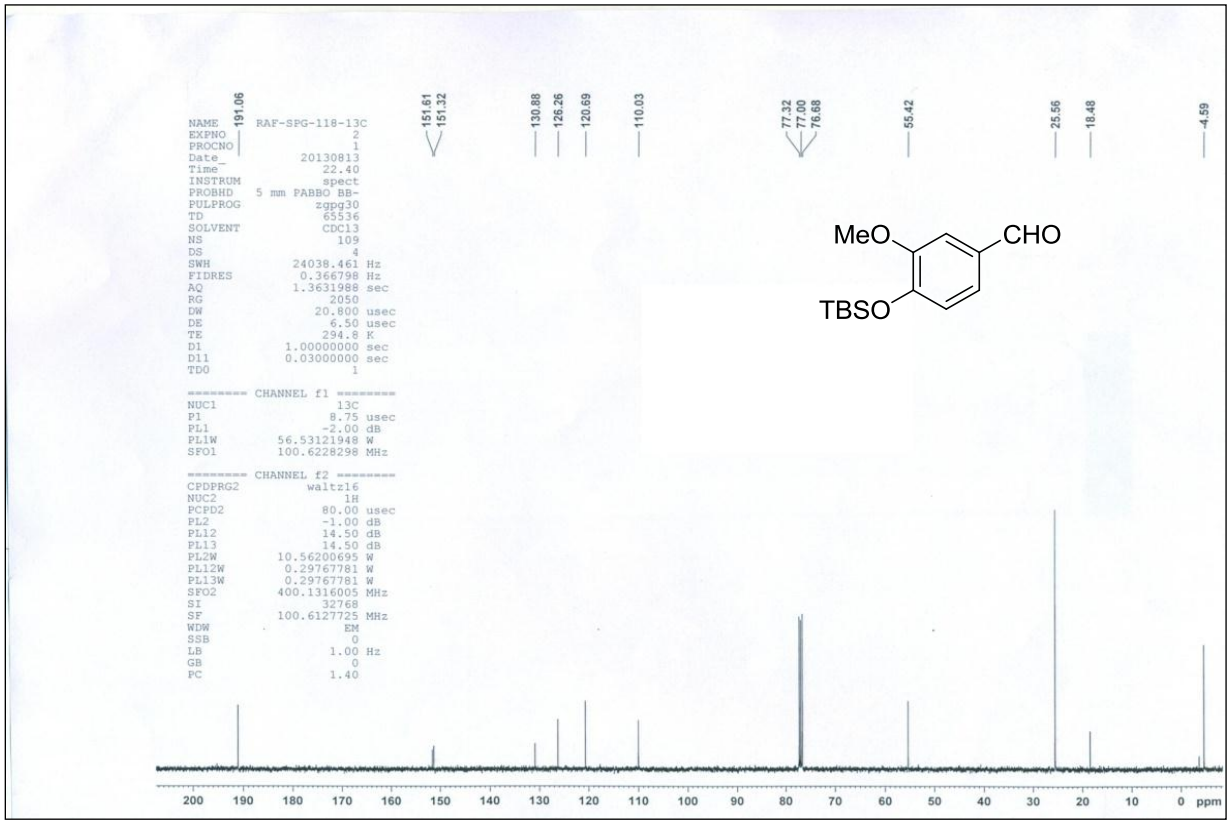
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **4i**



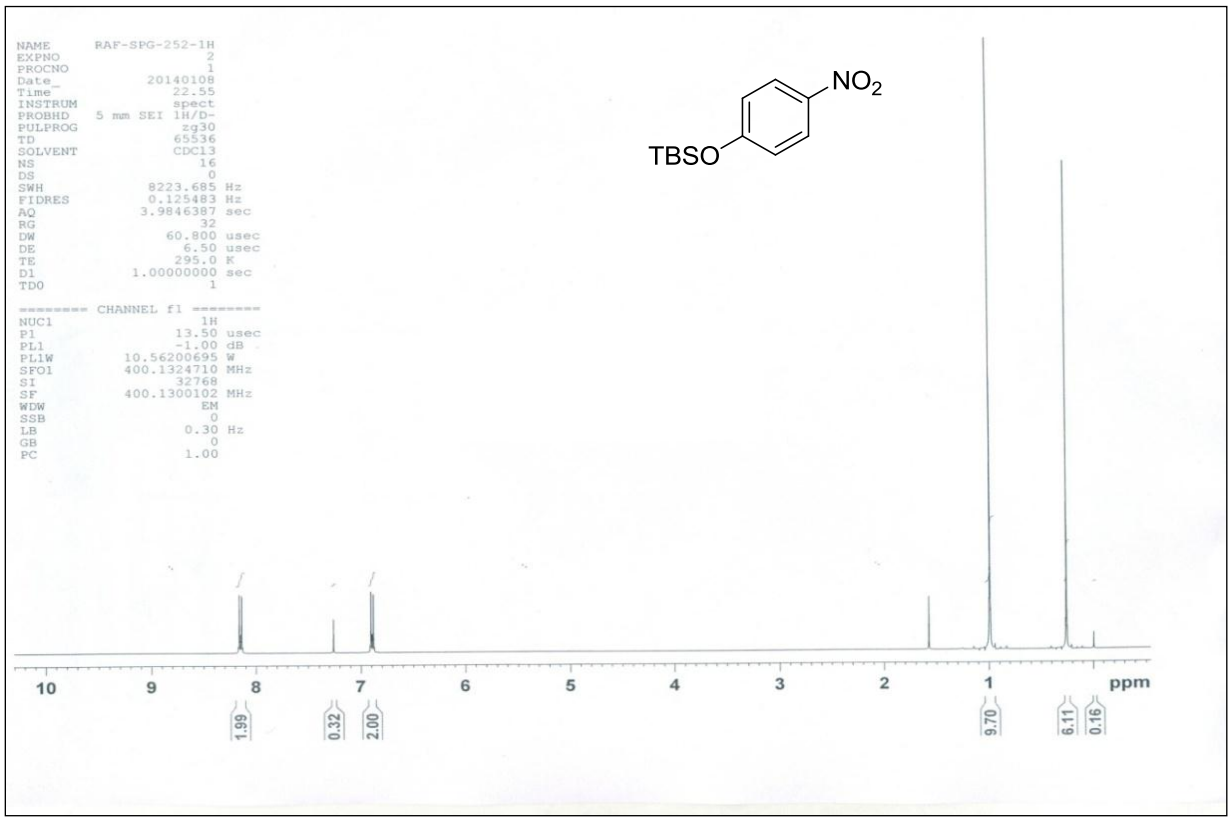


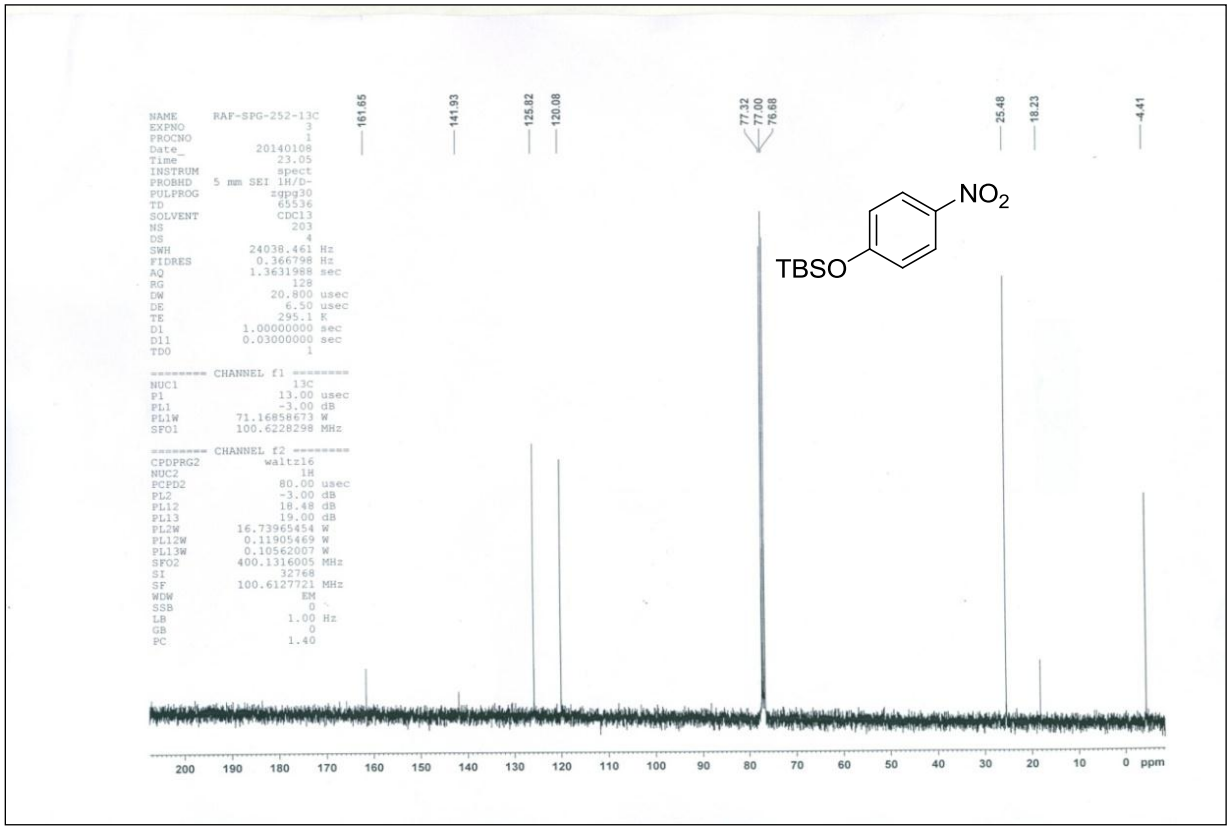
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **4j**



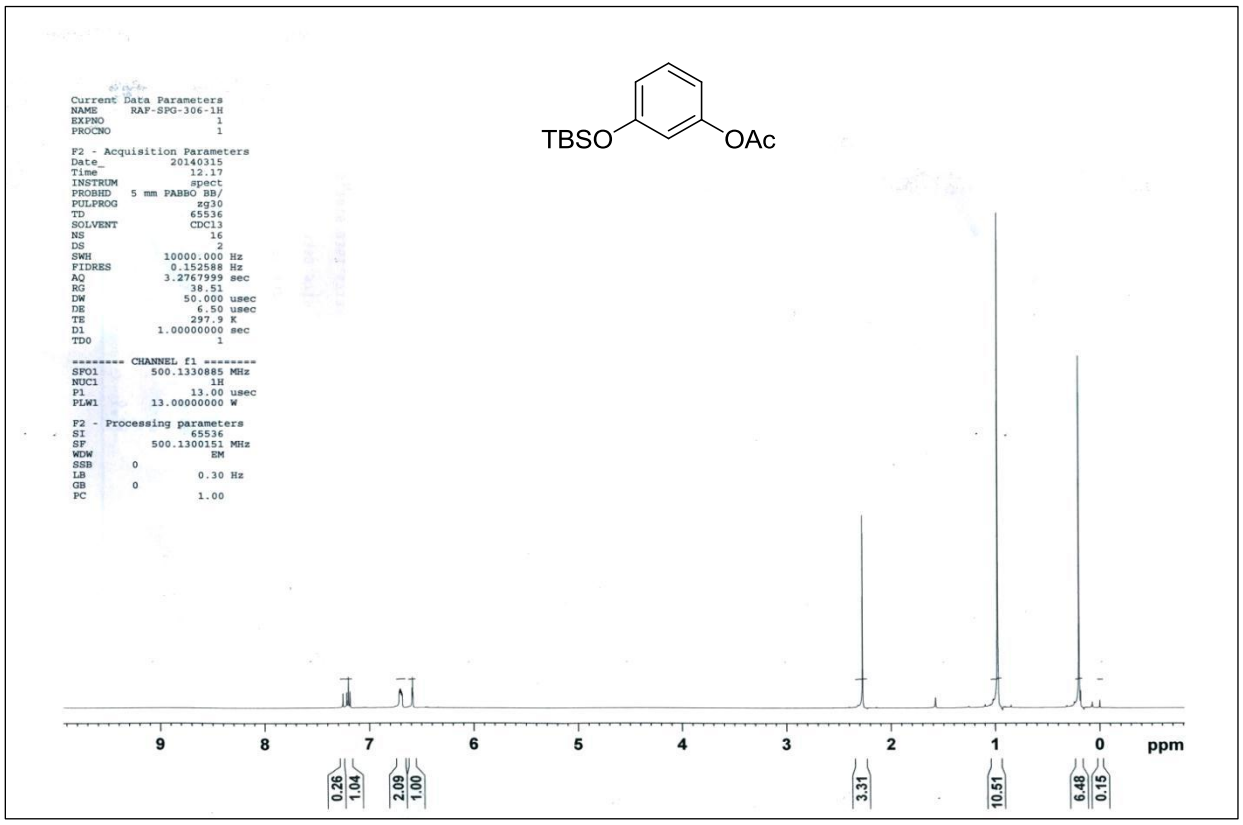


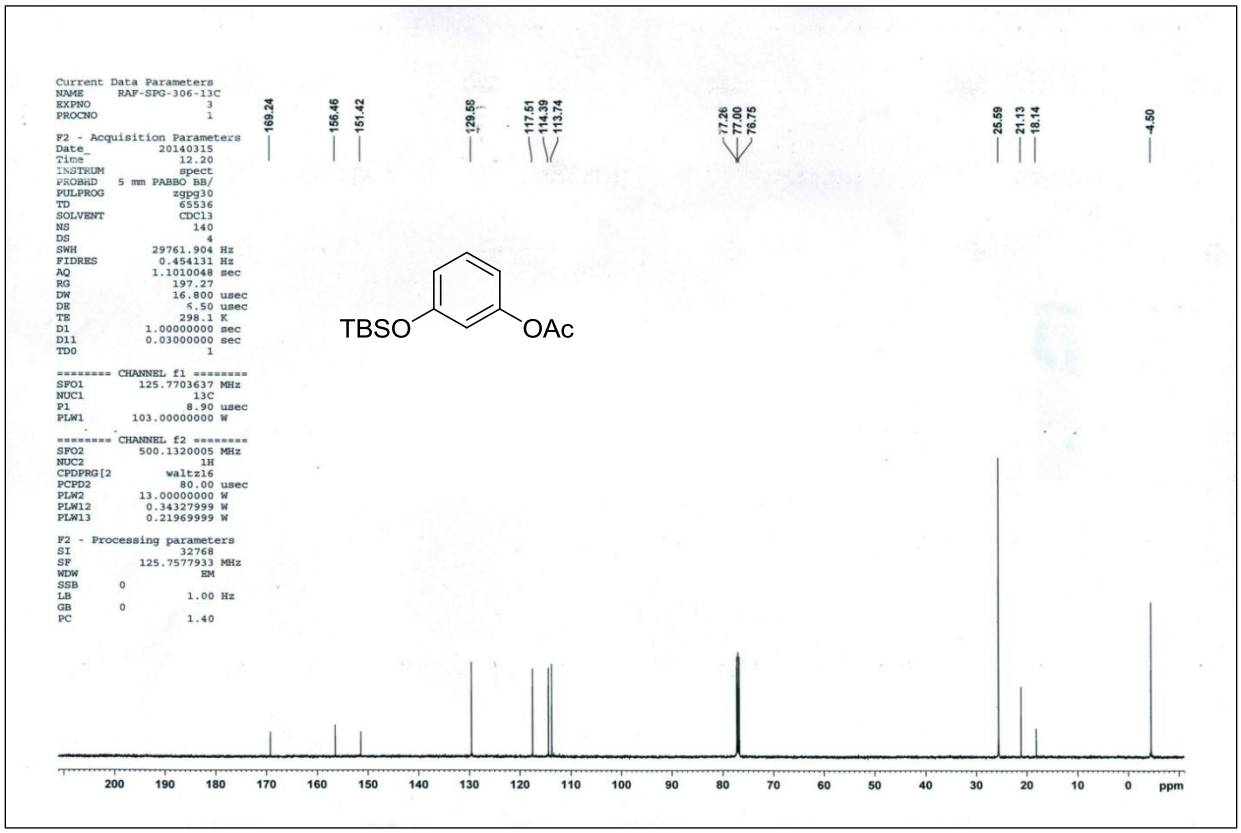
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **4k**



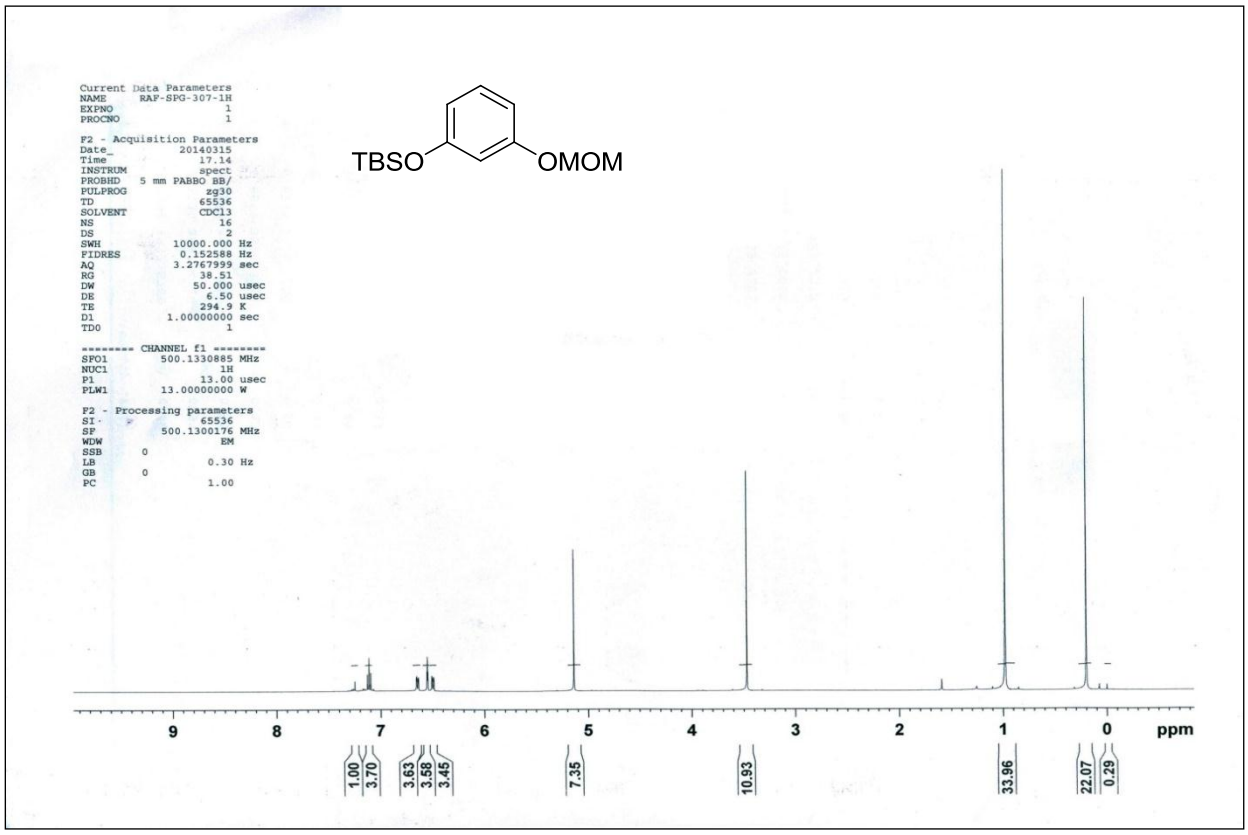


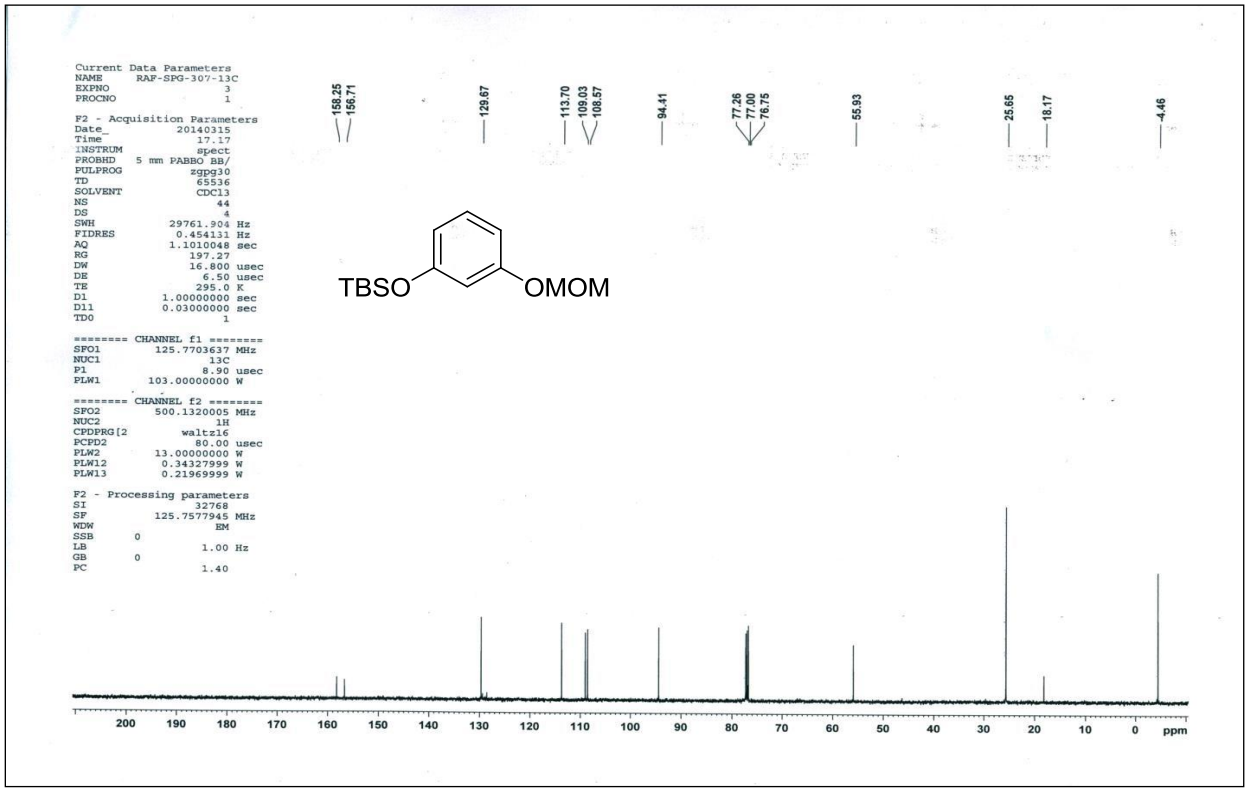
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **4l**



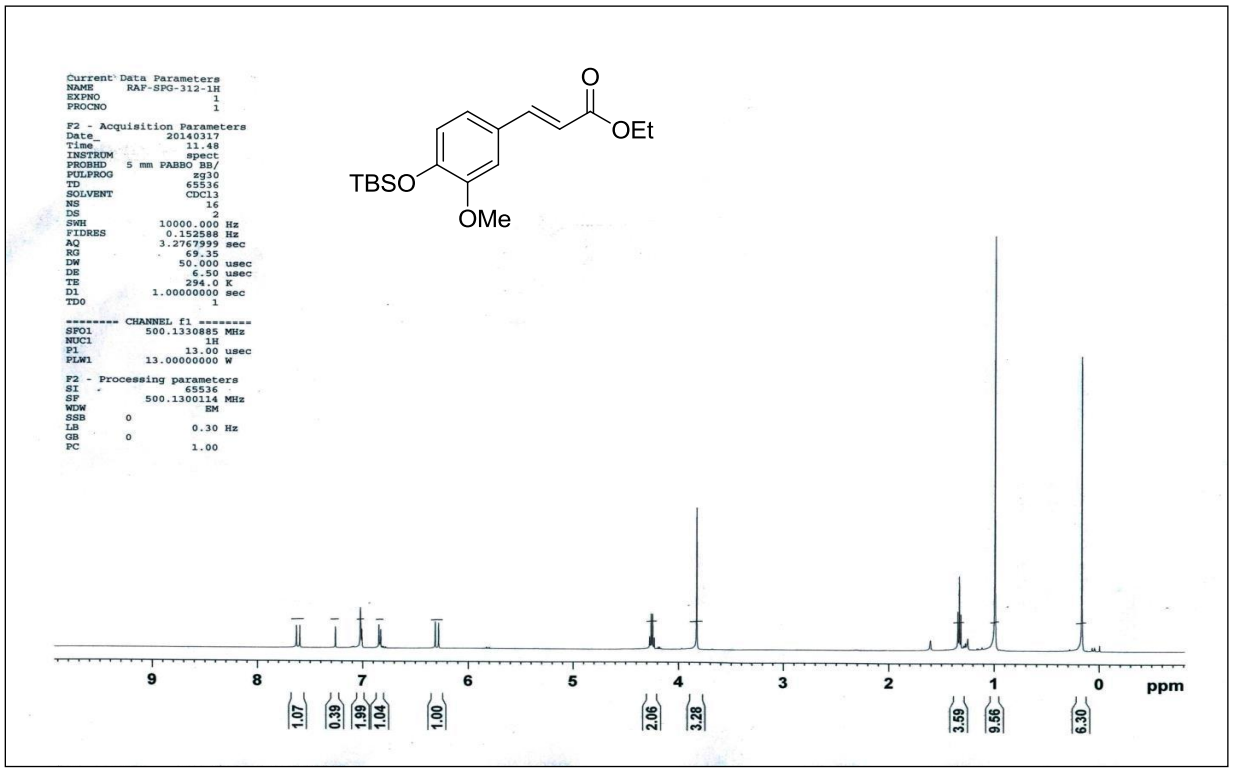


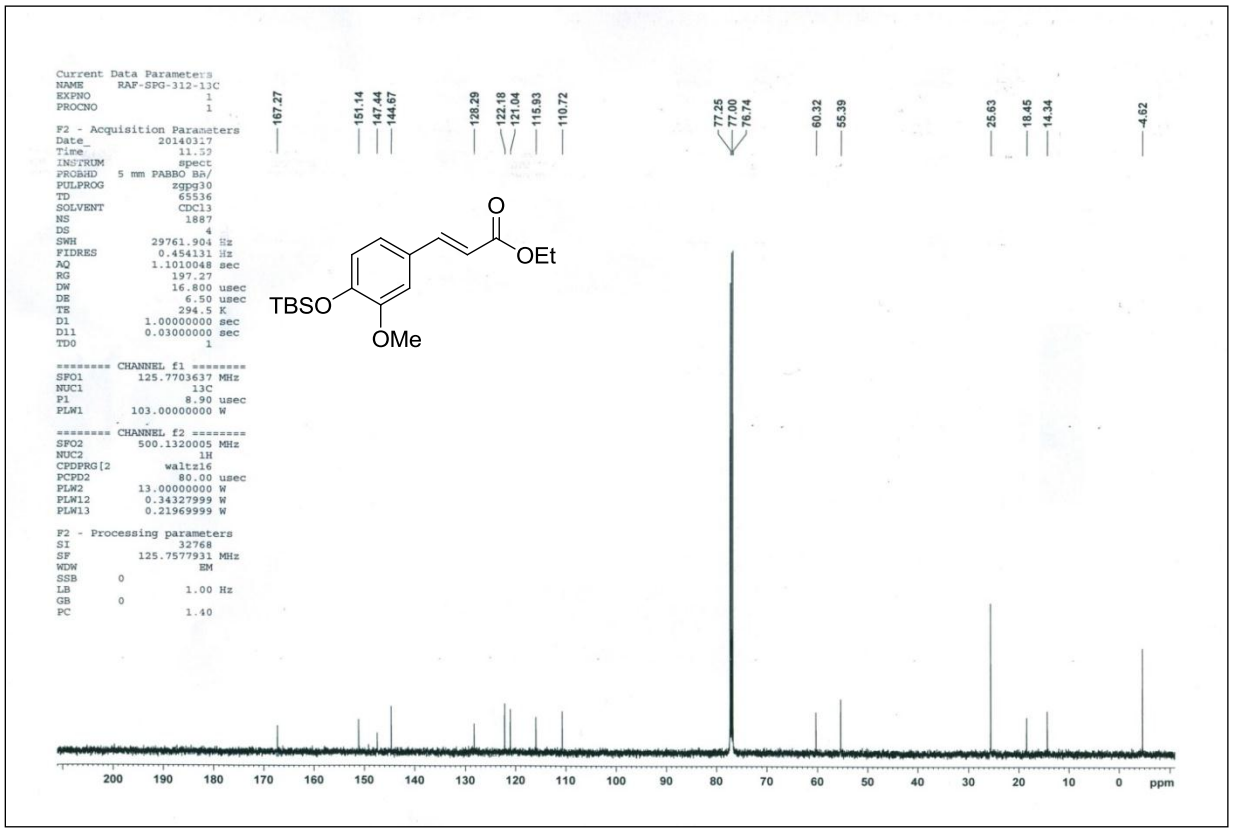
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **4m**



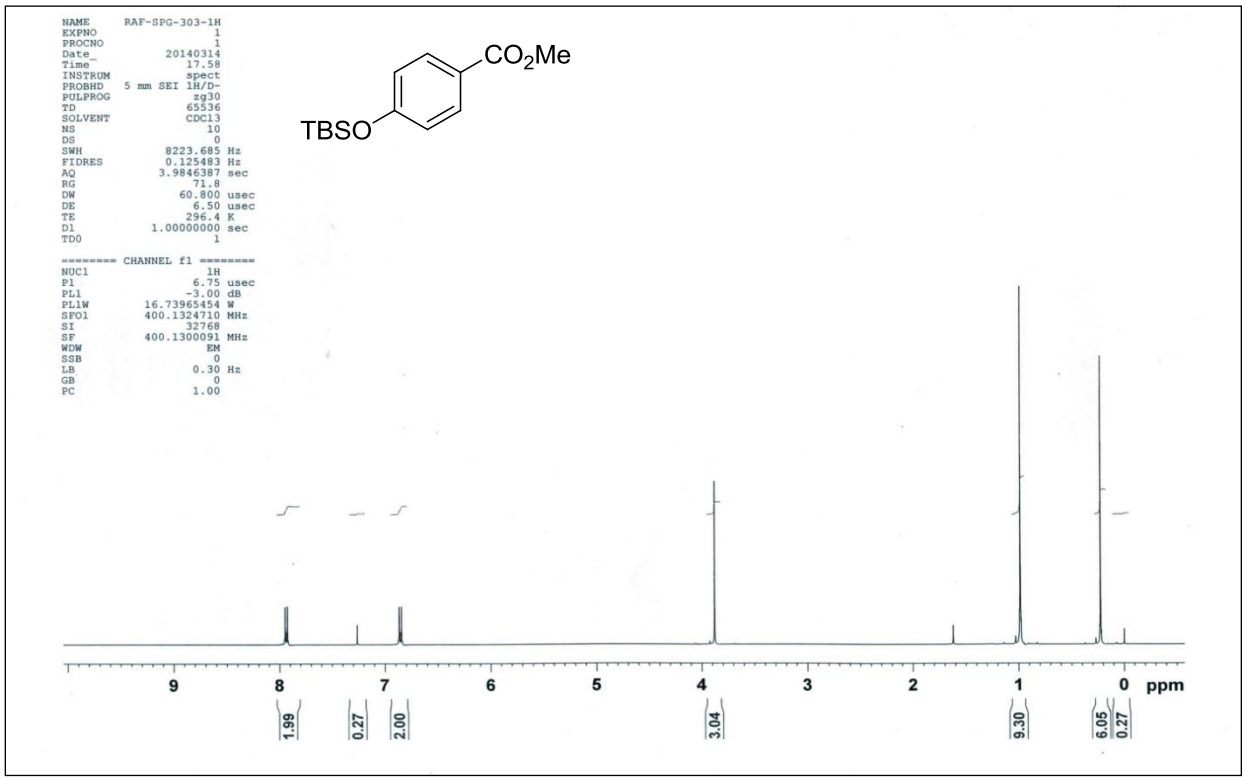


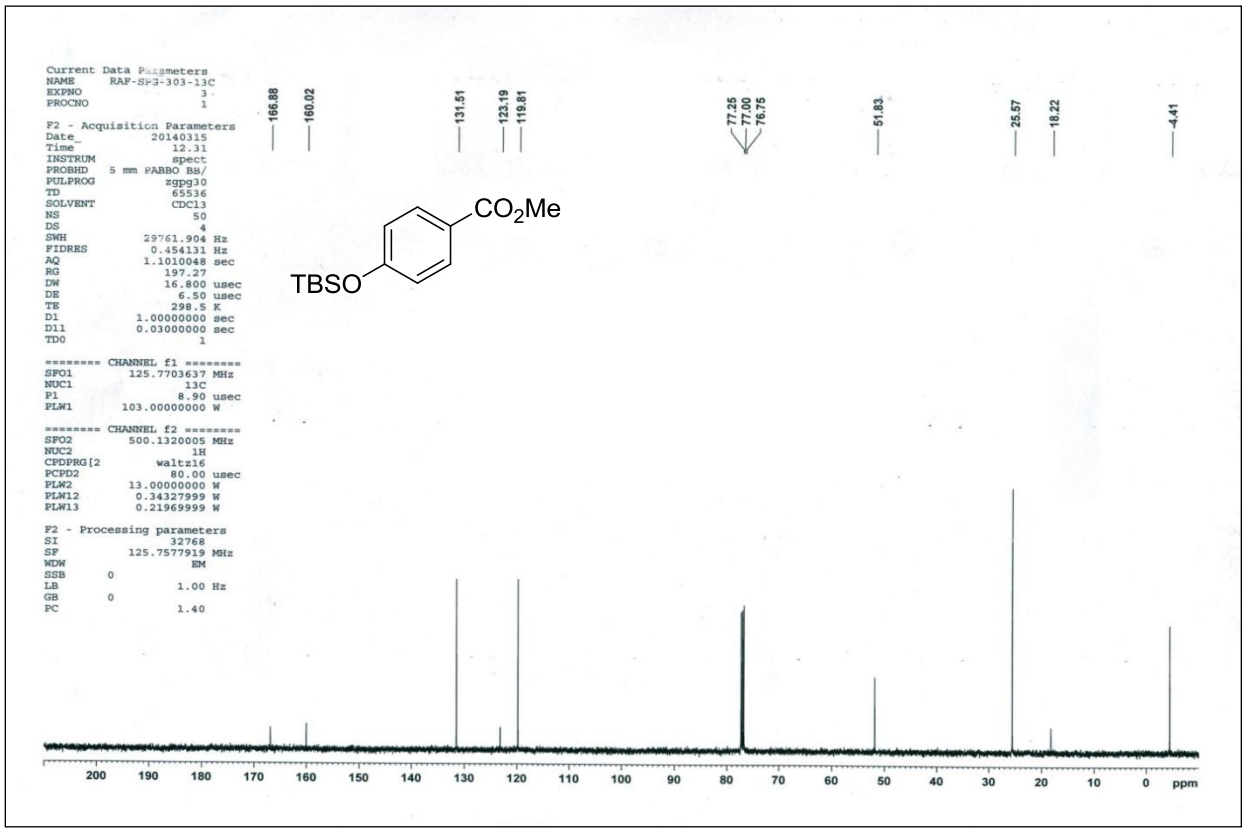
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **4n**



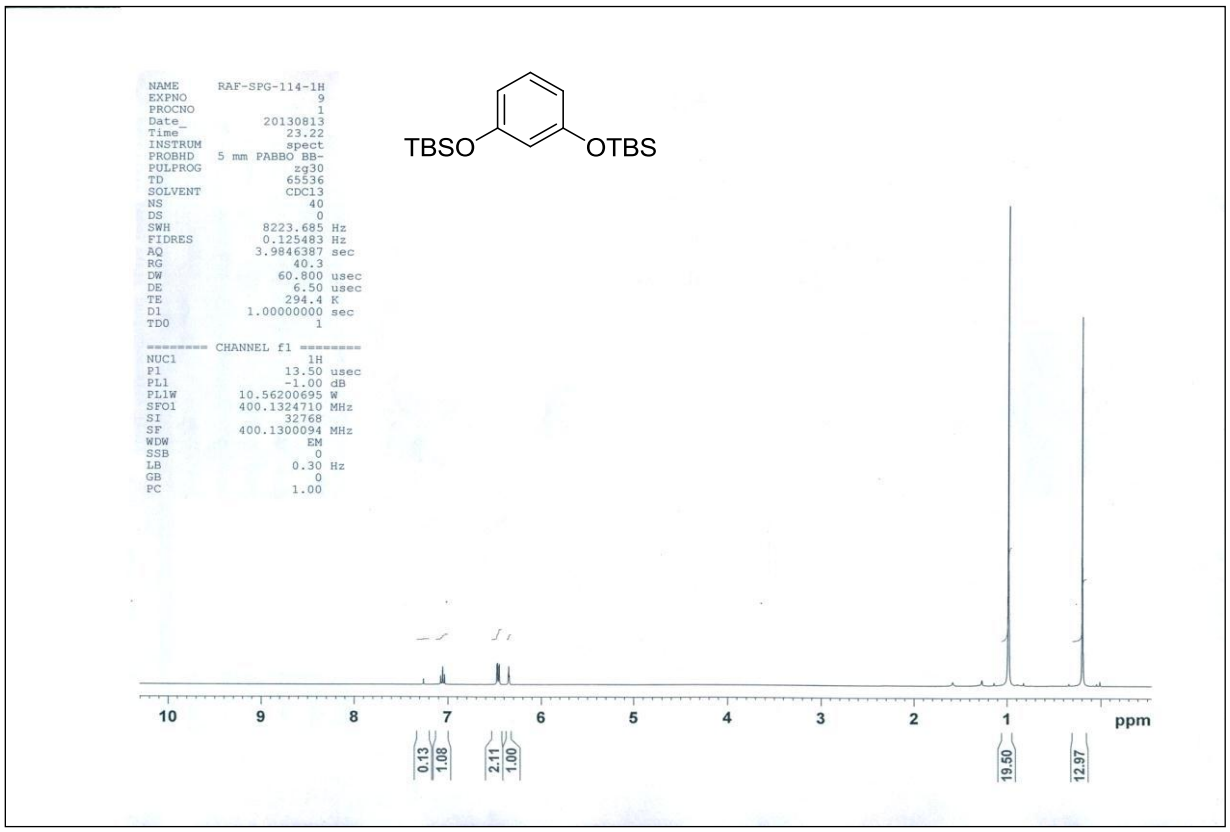


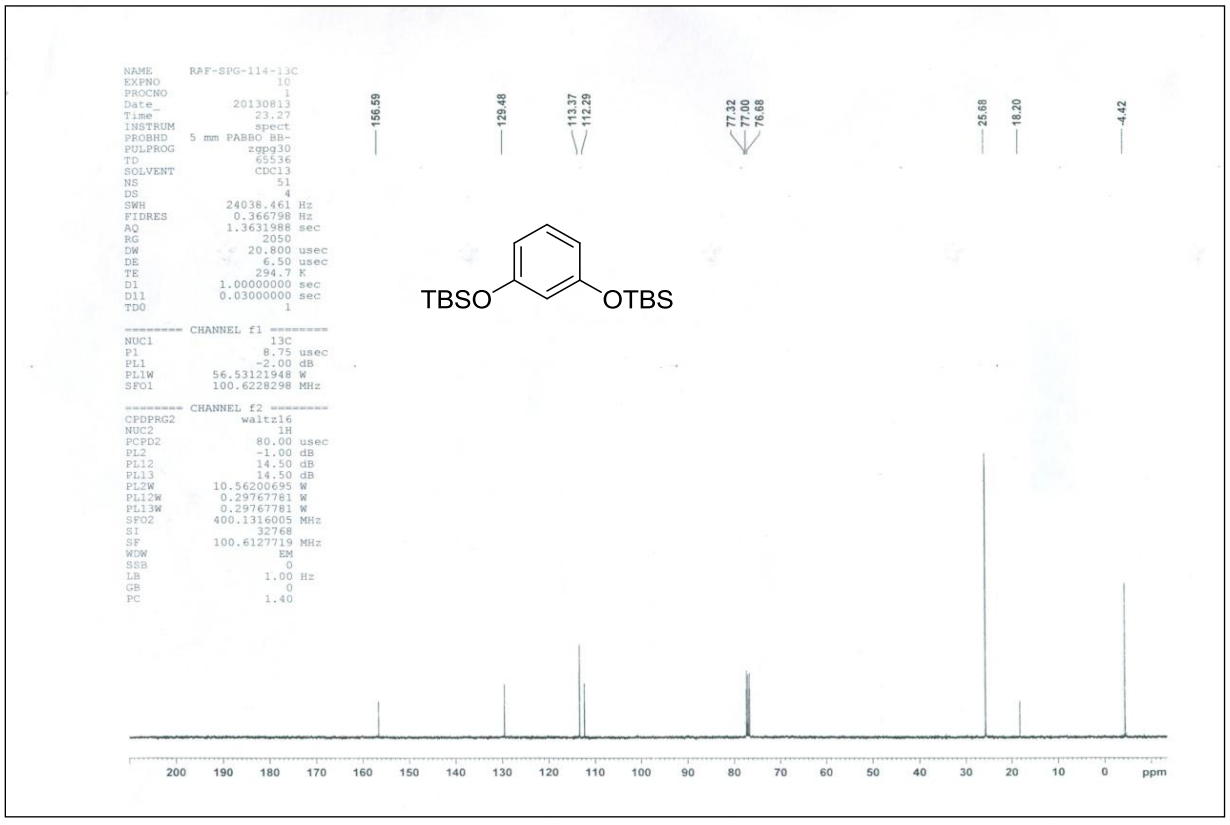
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **4o**



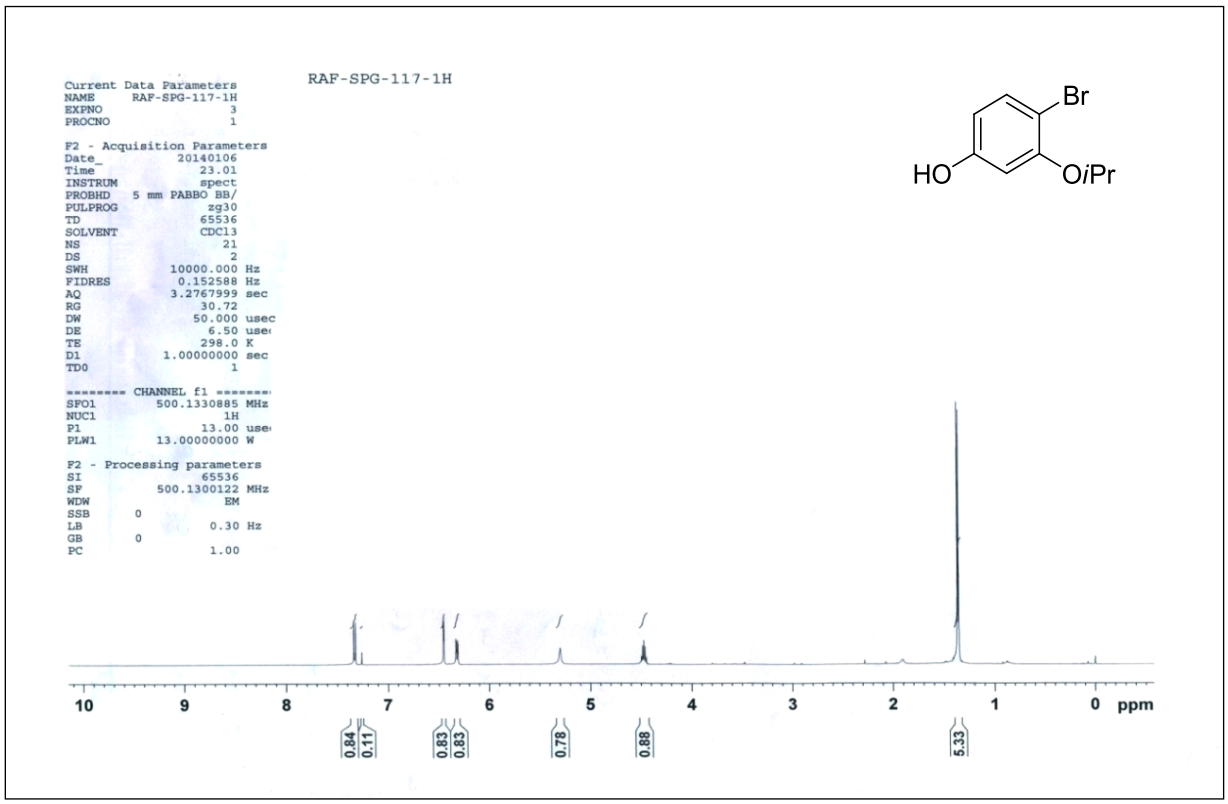


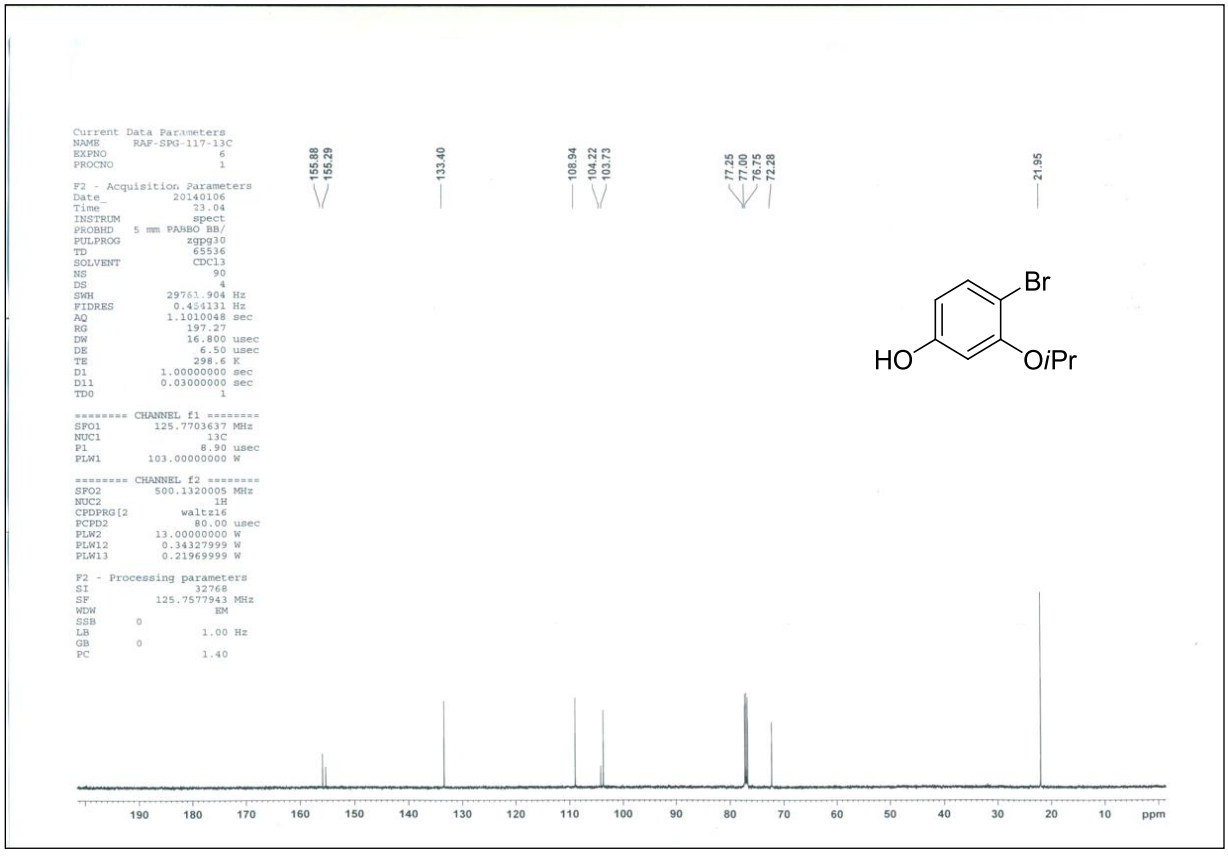
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **4p**



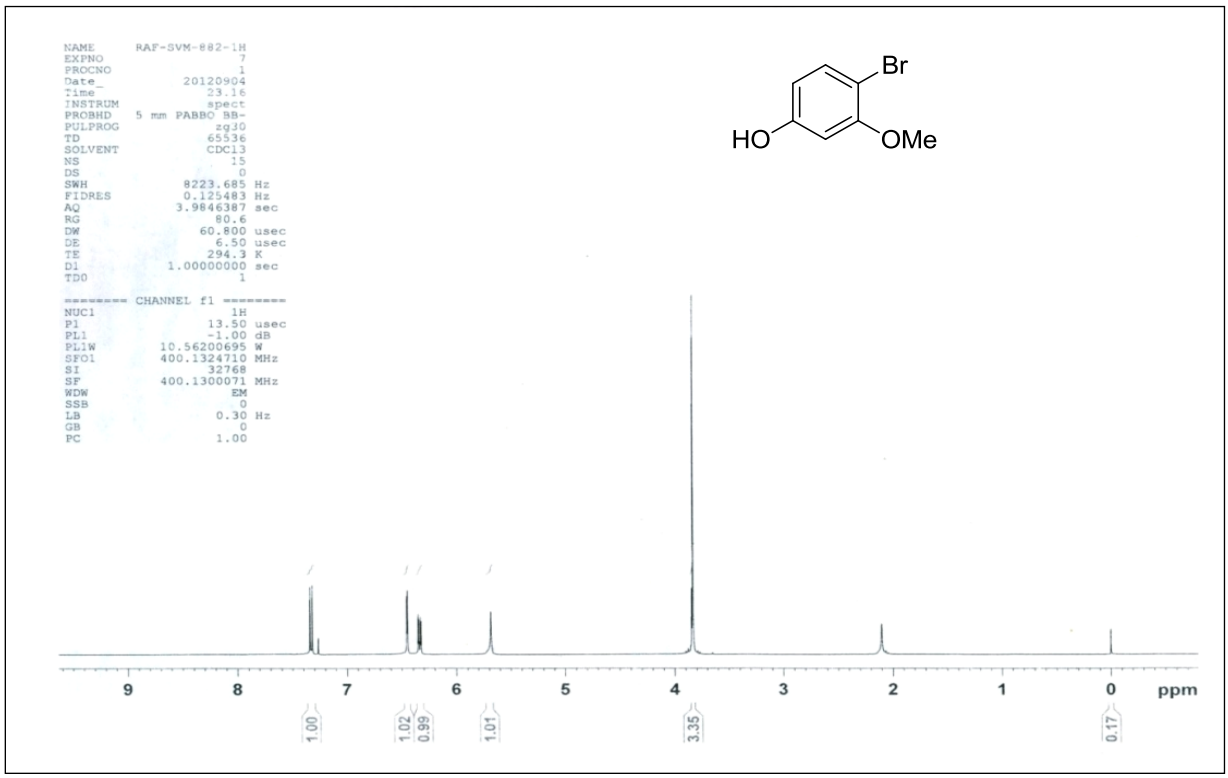


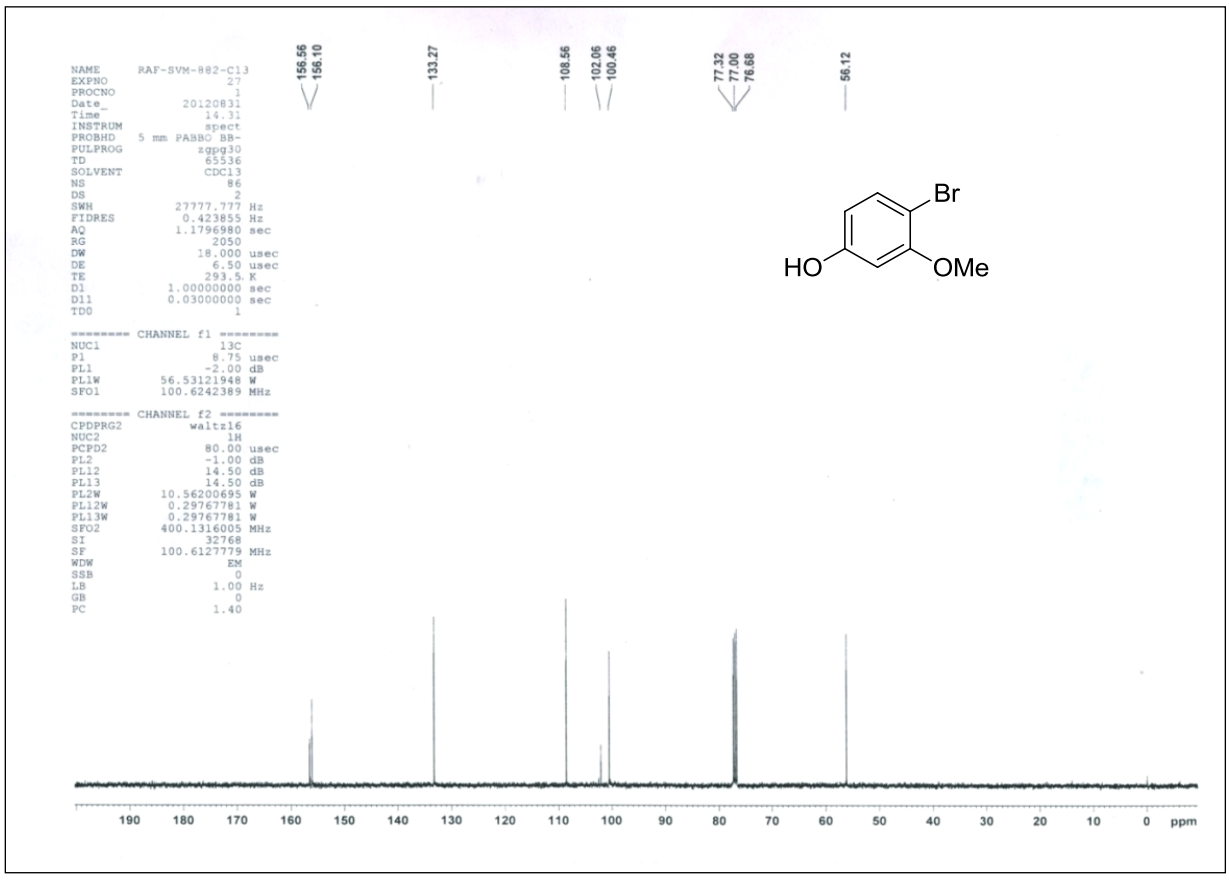
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **5a**



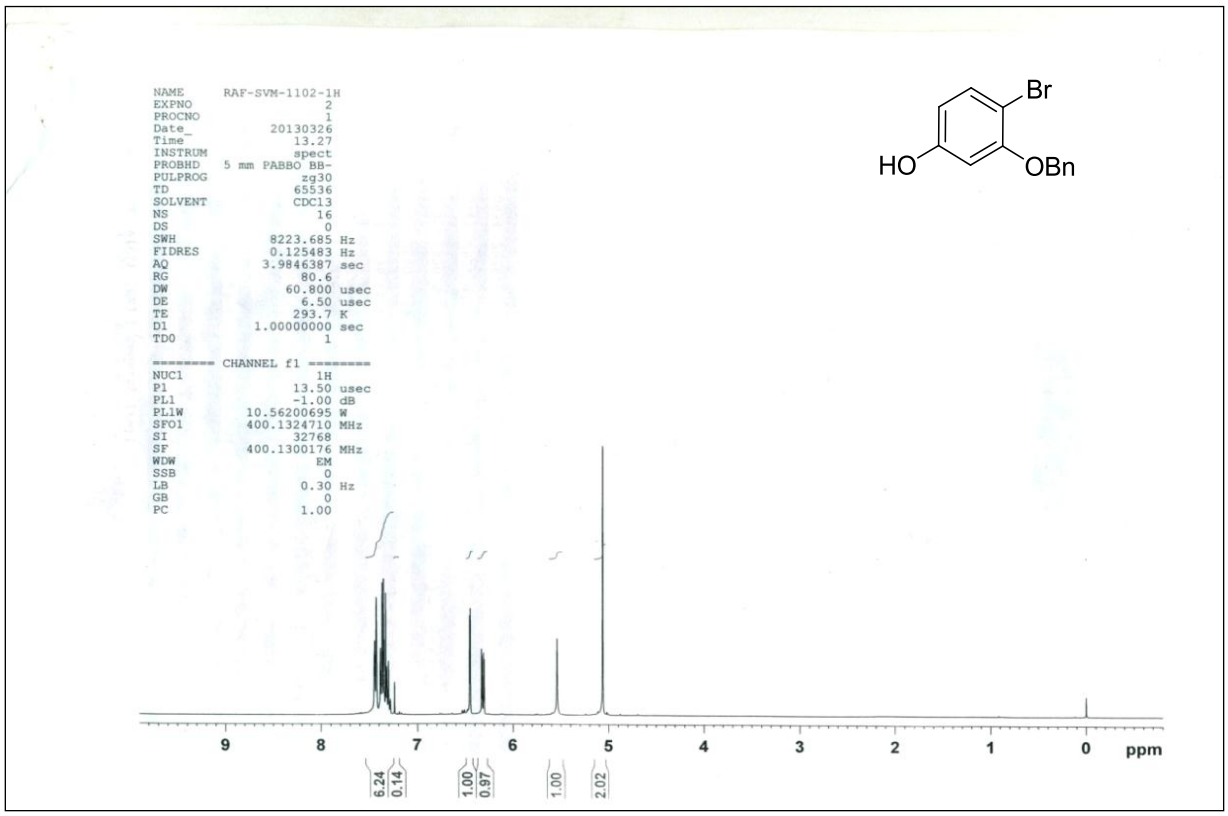


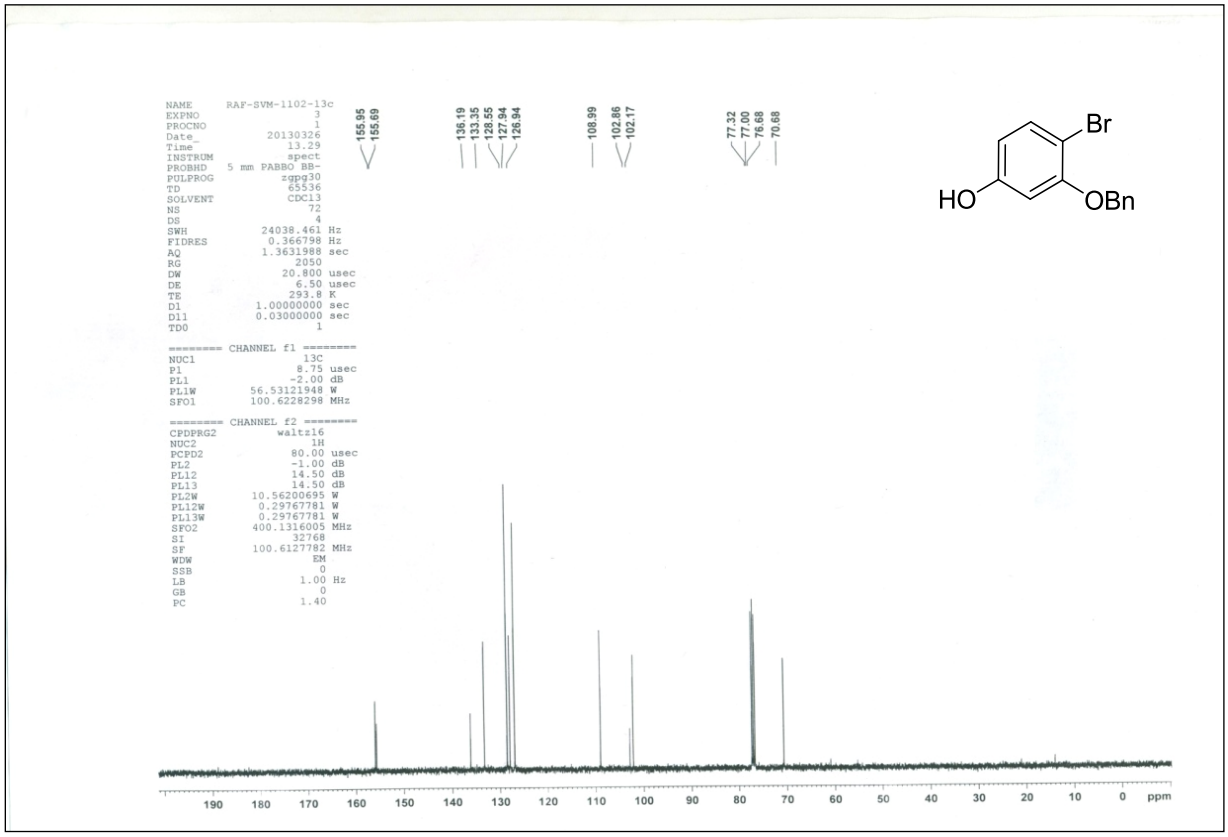
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **5b**



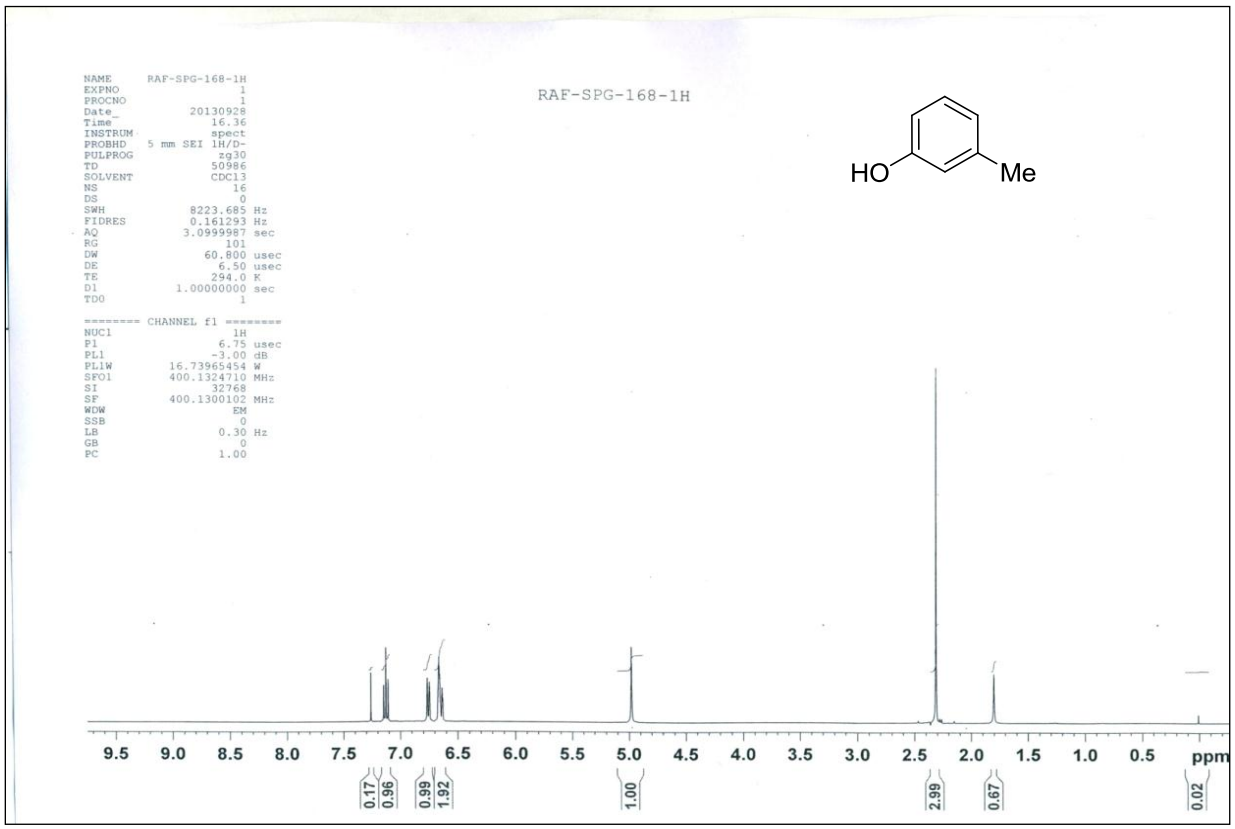


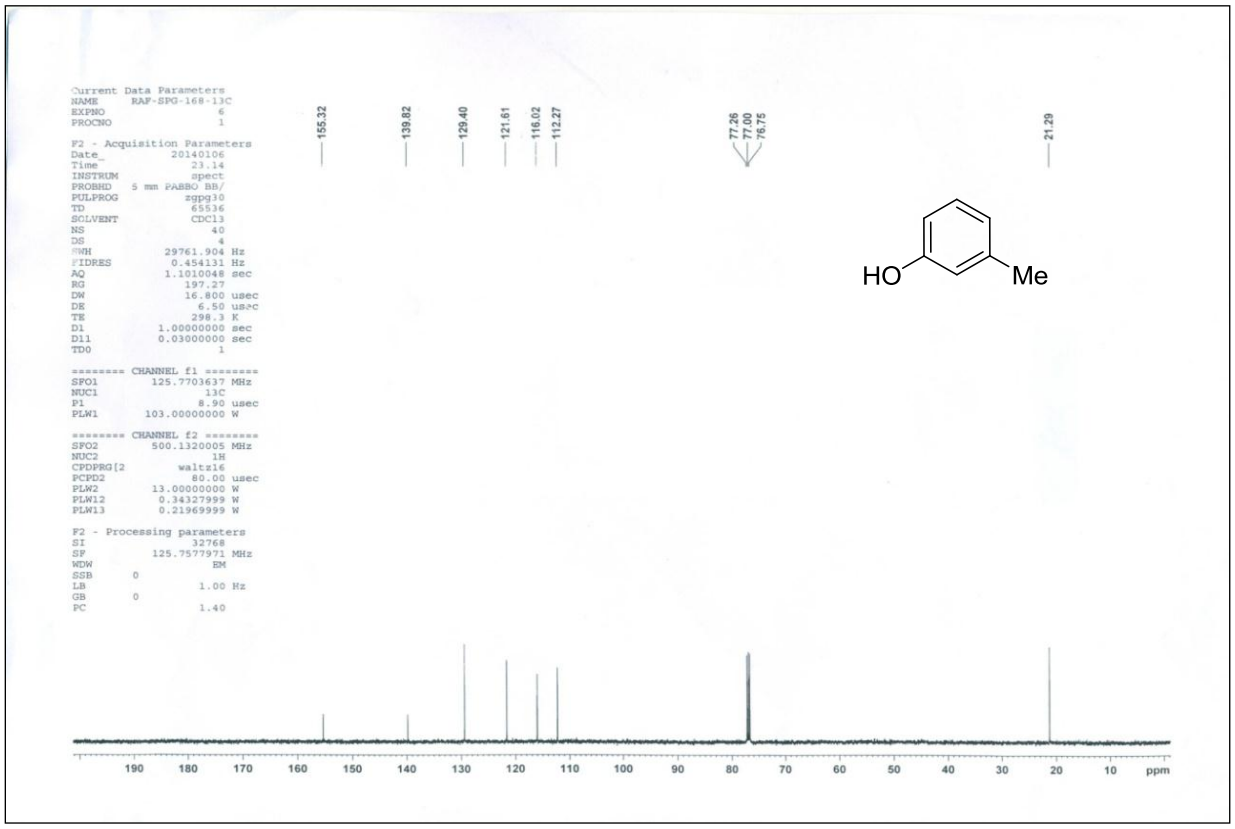
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **5c**



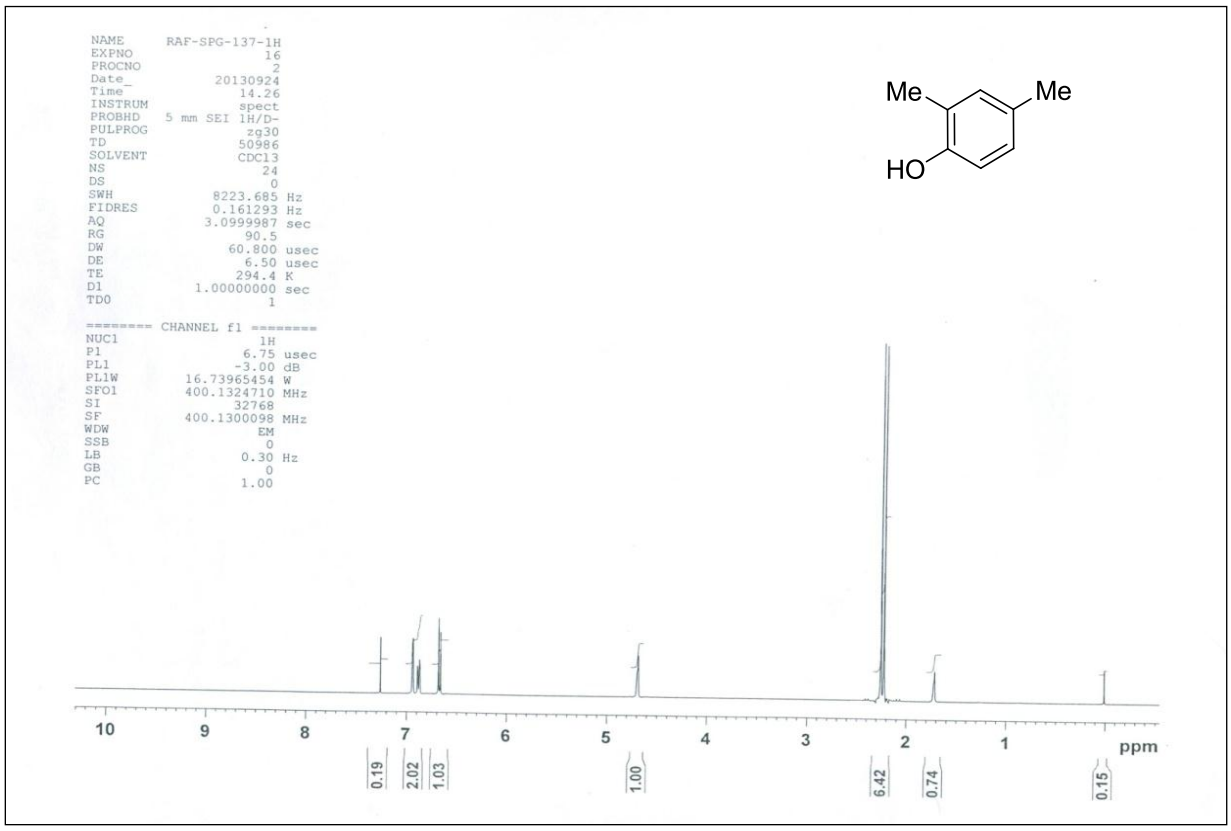


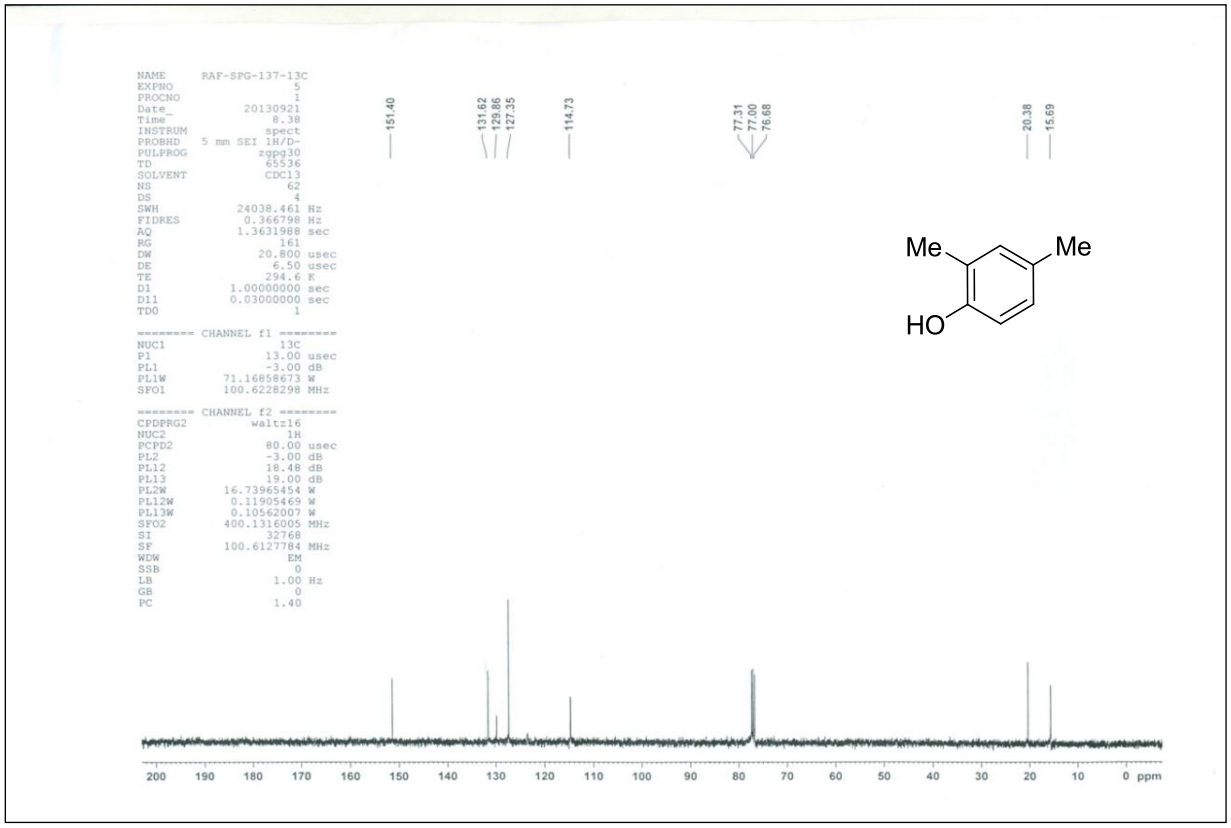
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **5d**



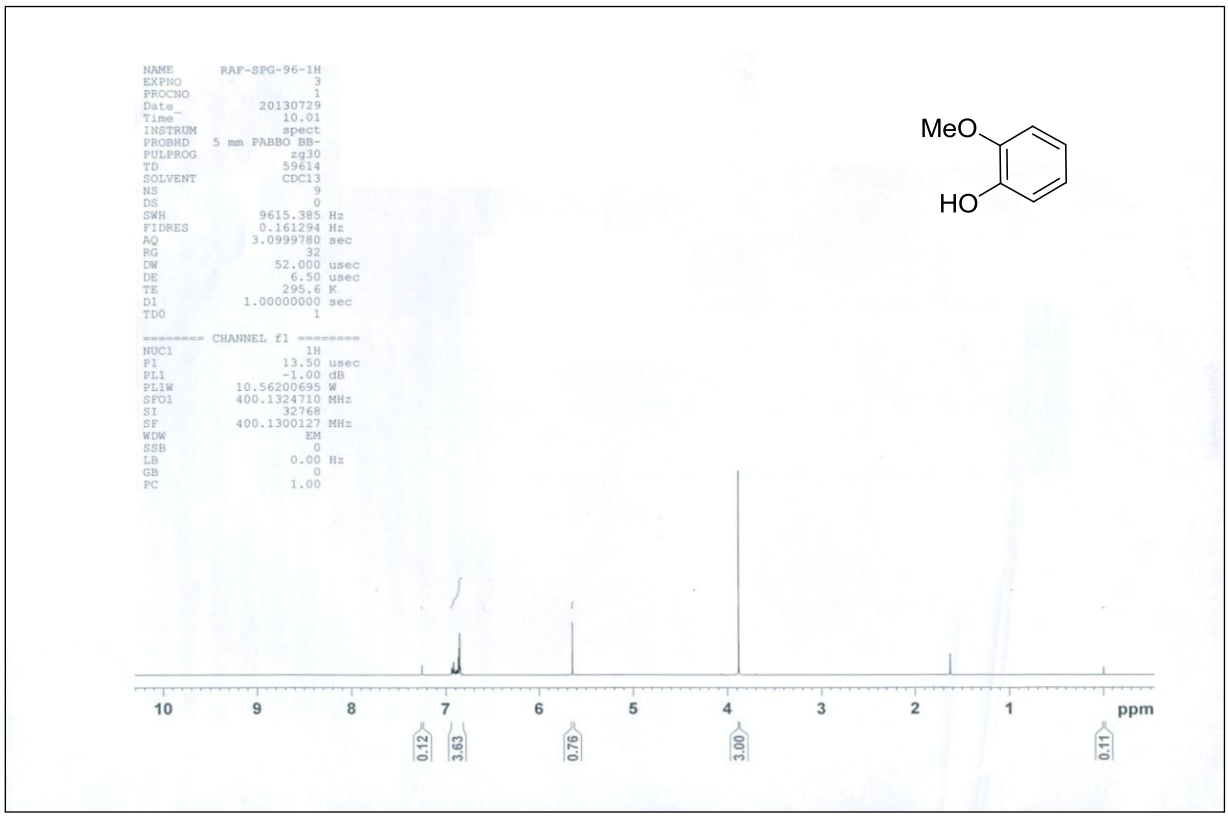


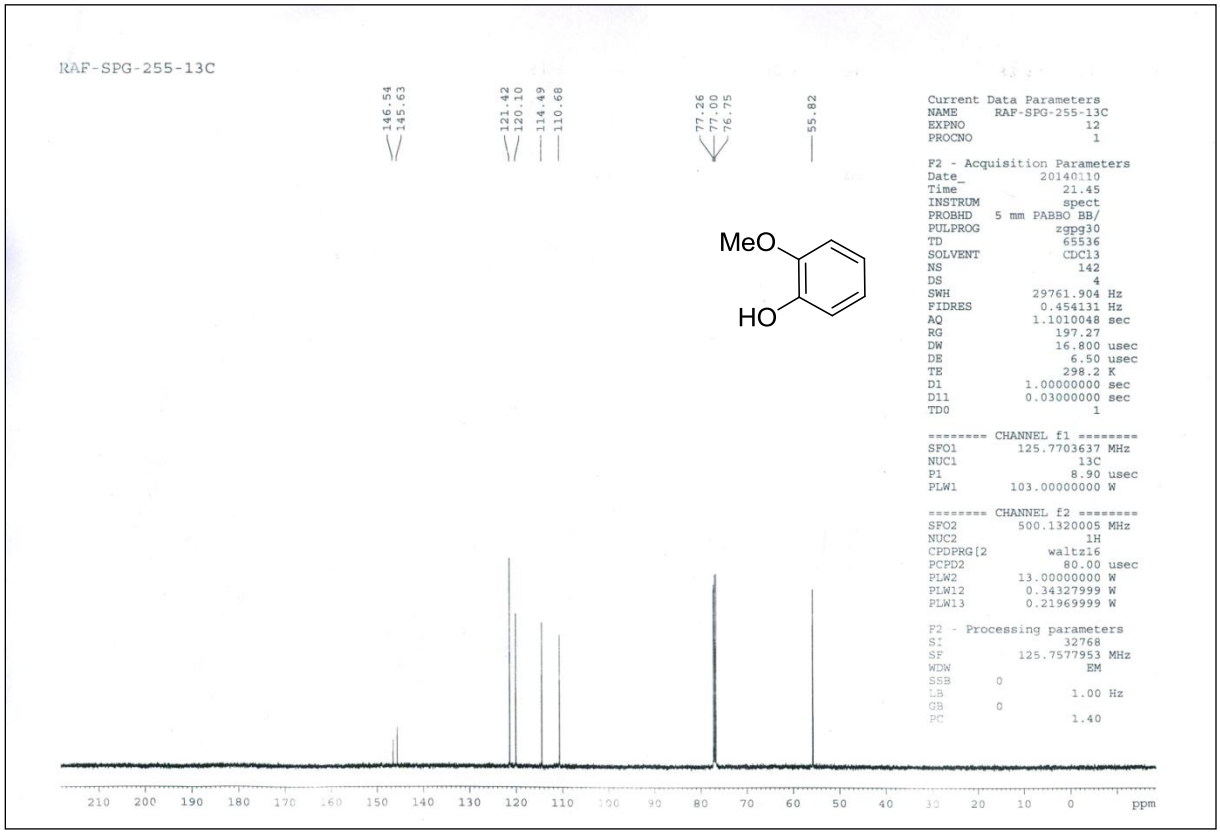
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **5e**



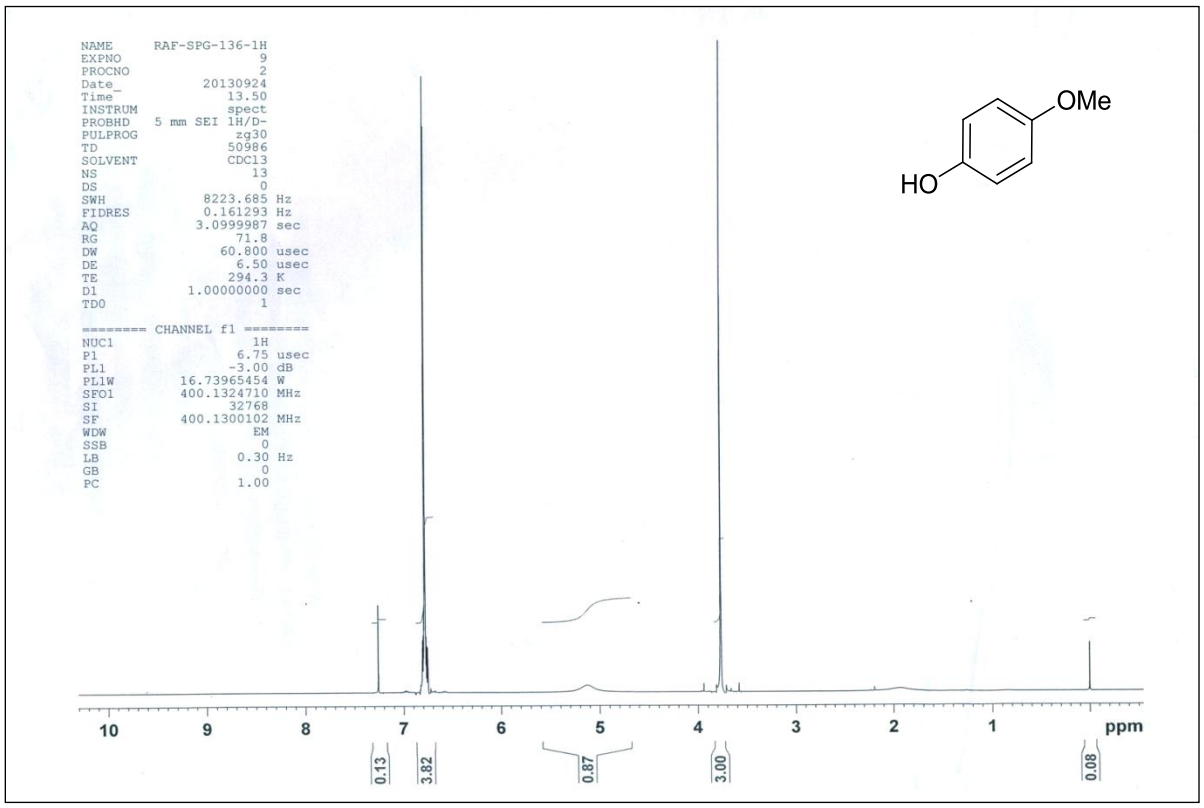


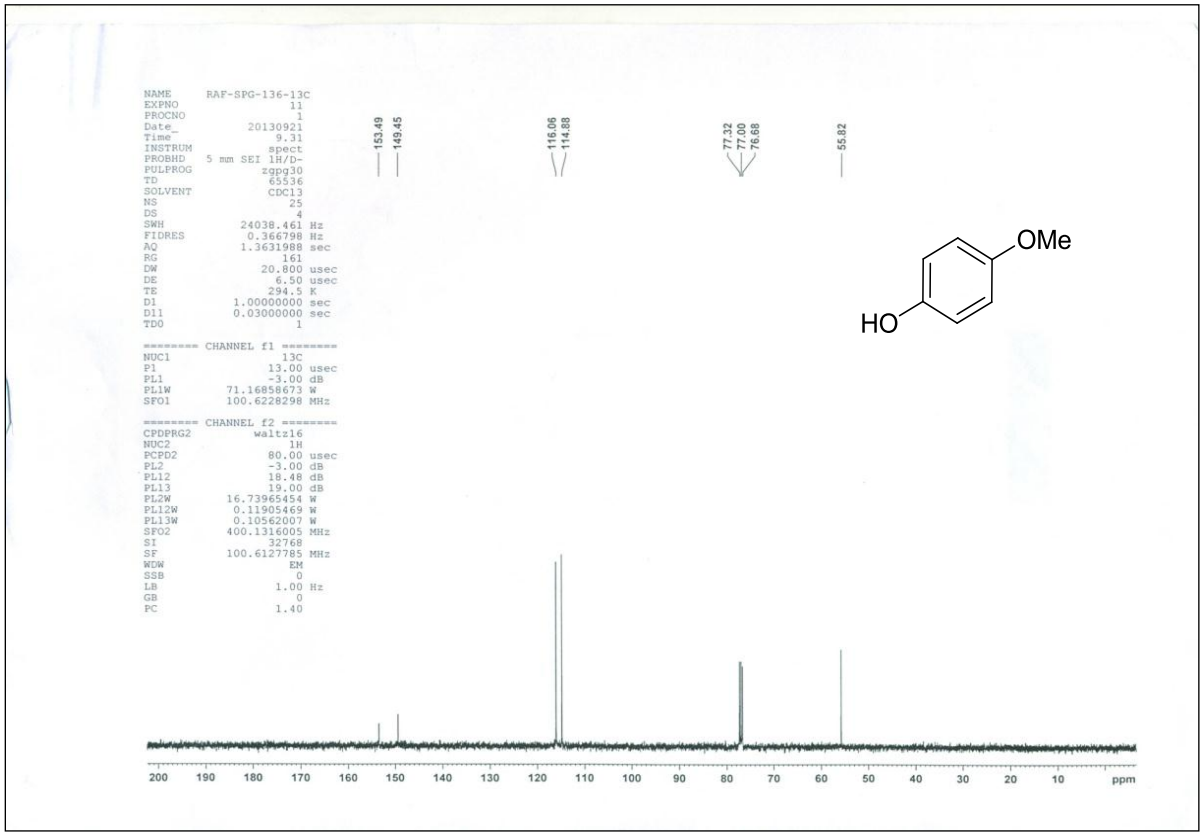
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **5f**



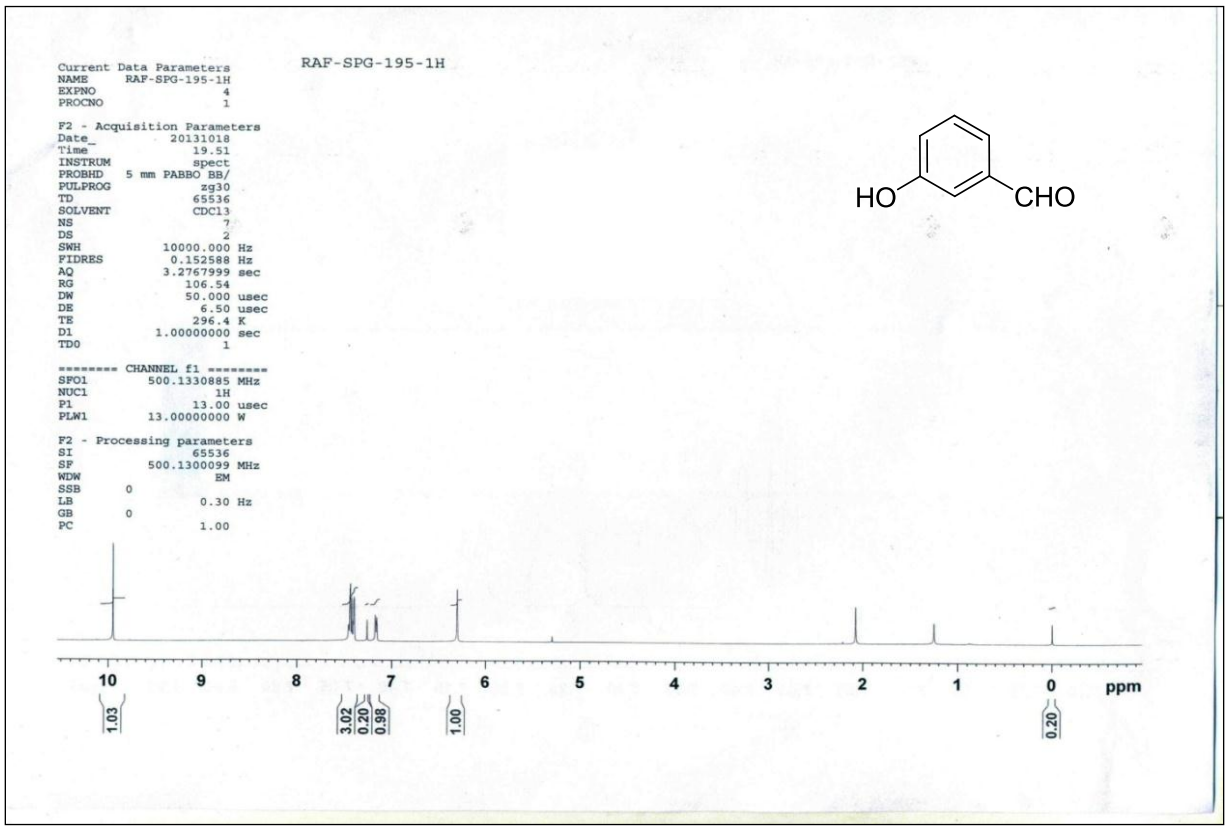


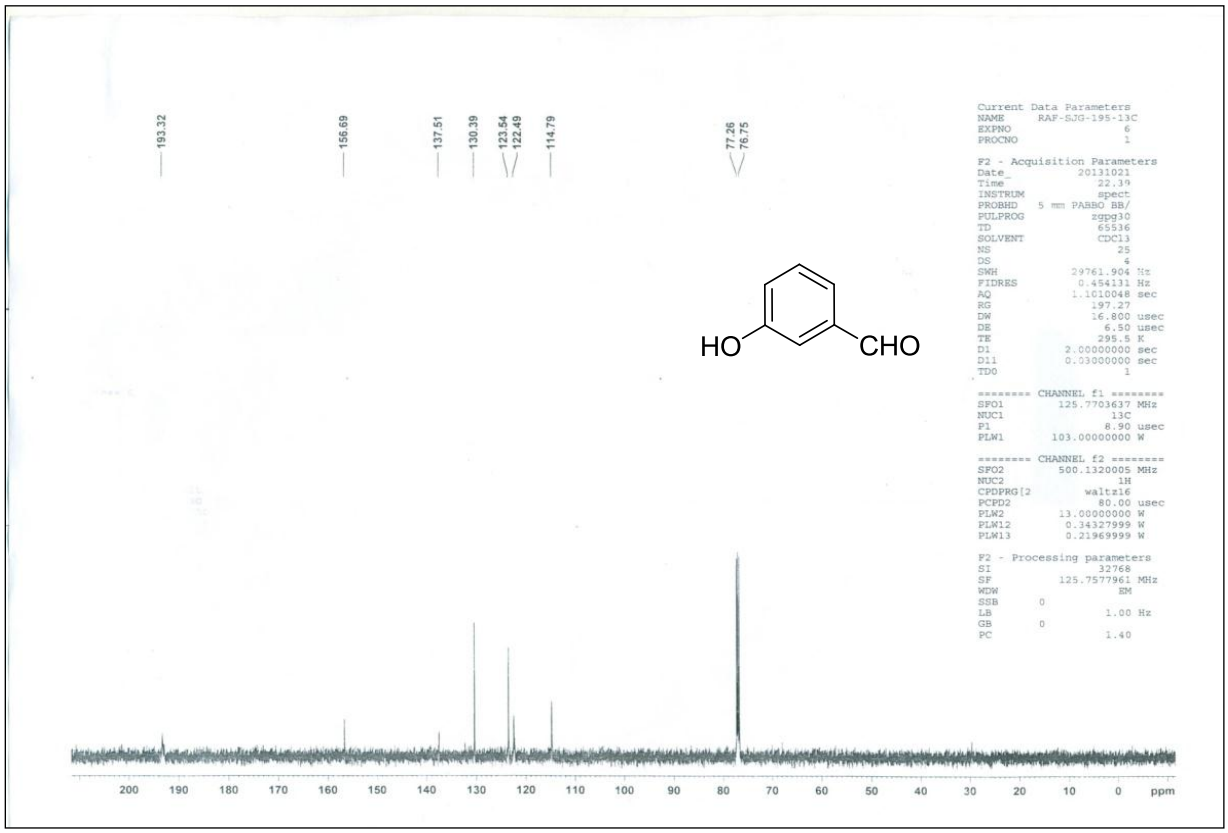
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **5g**



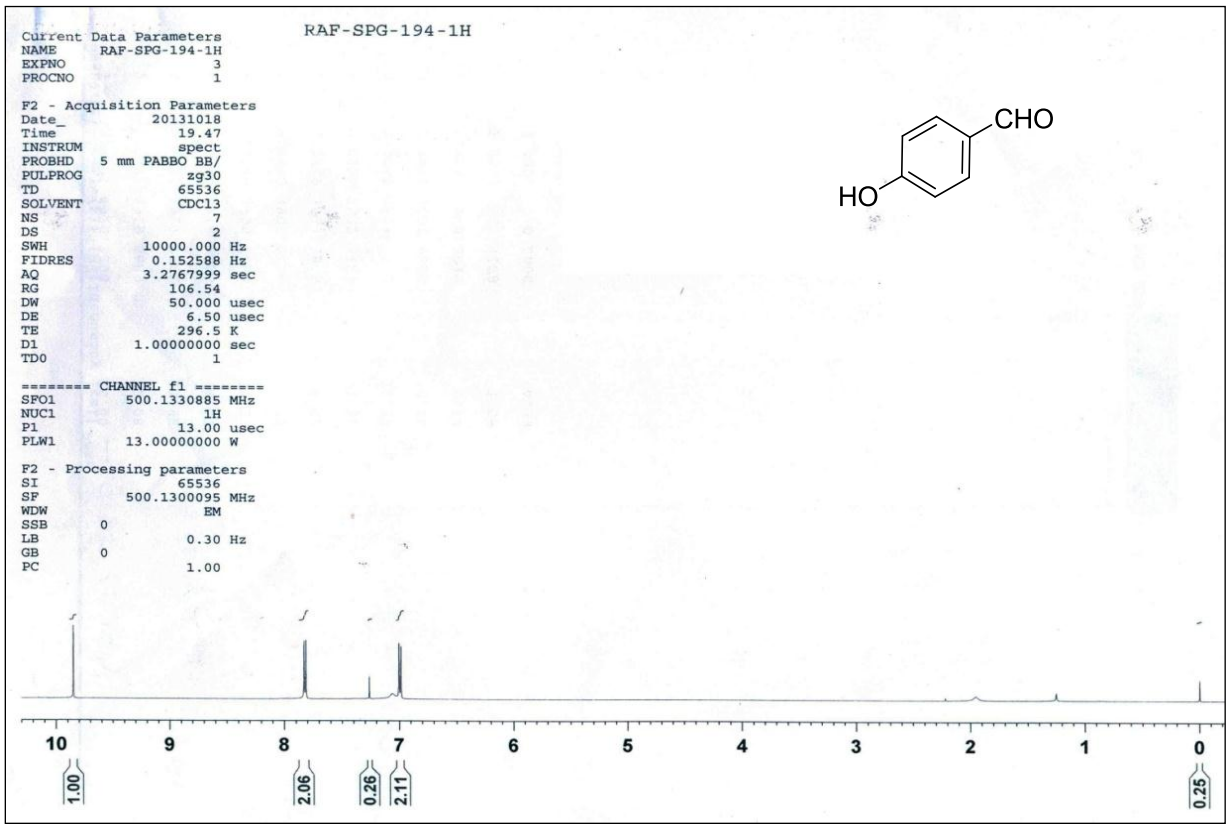


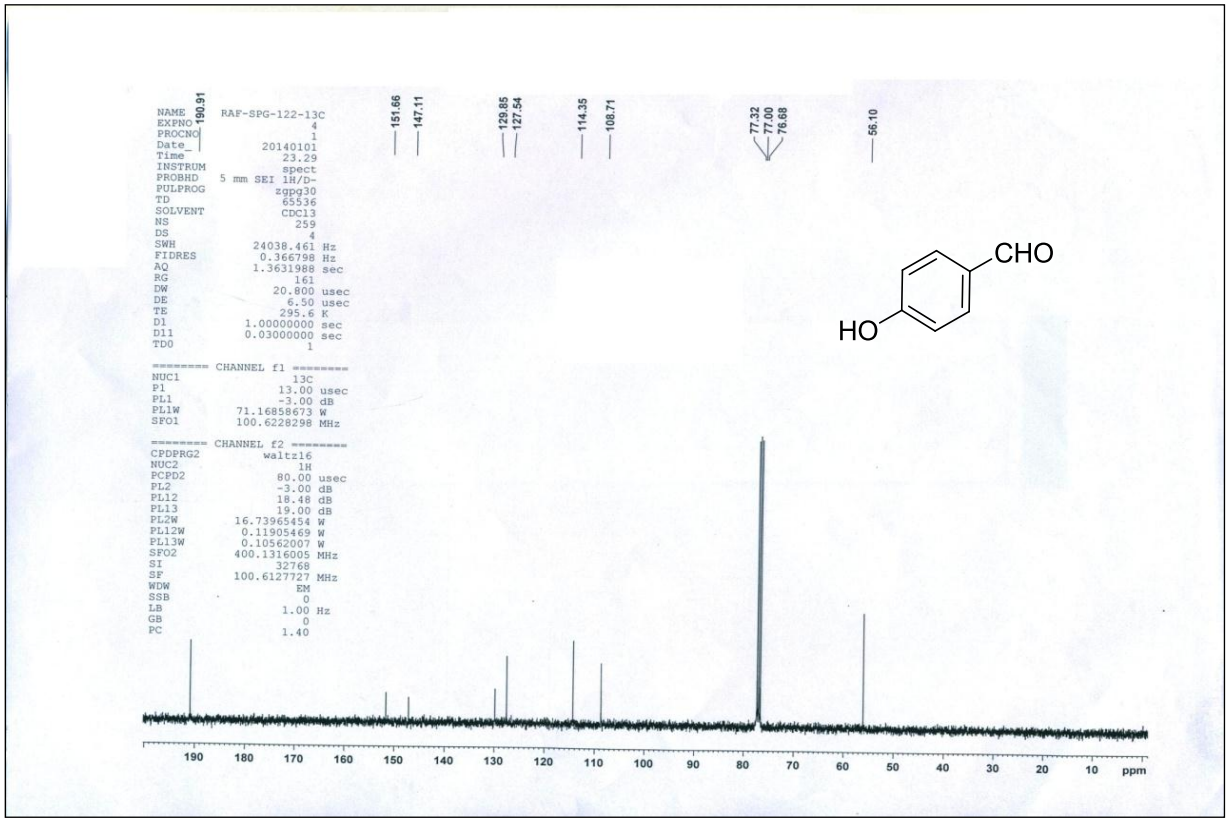
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **5h**



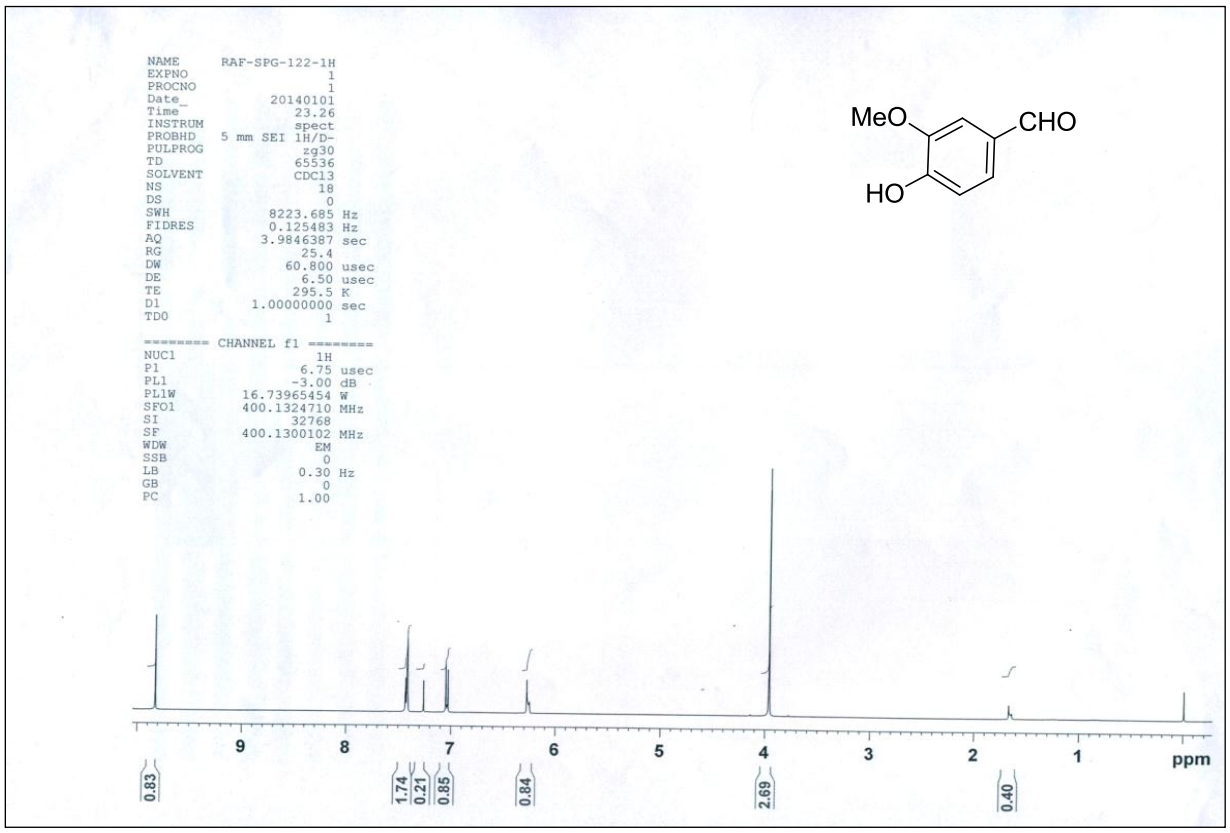


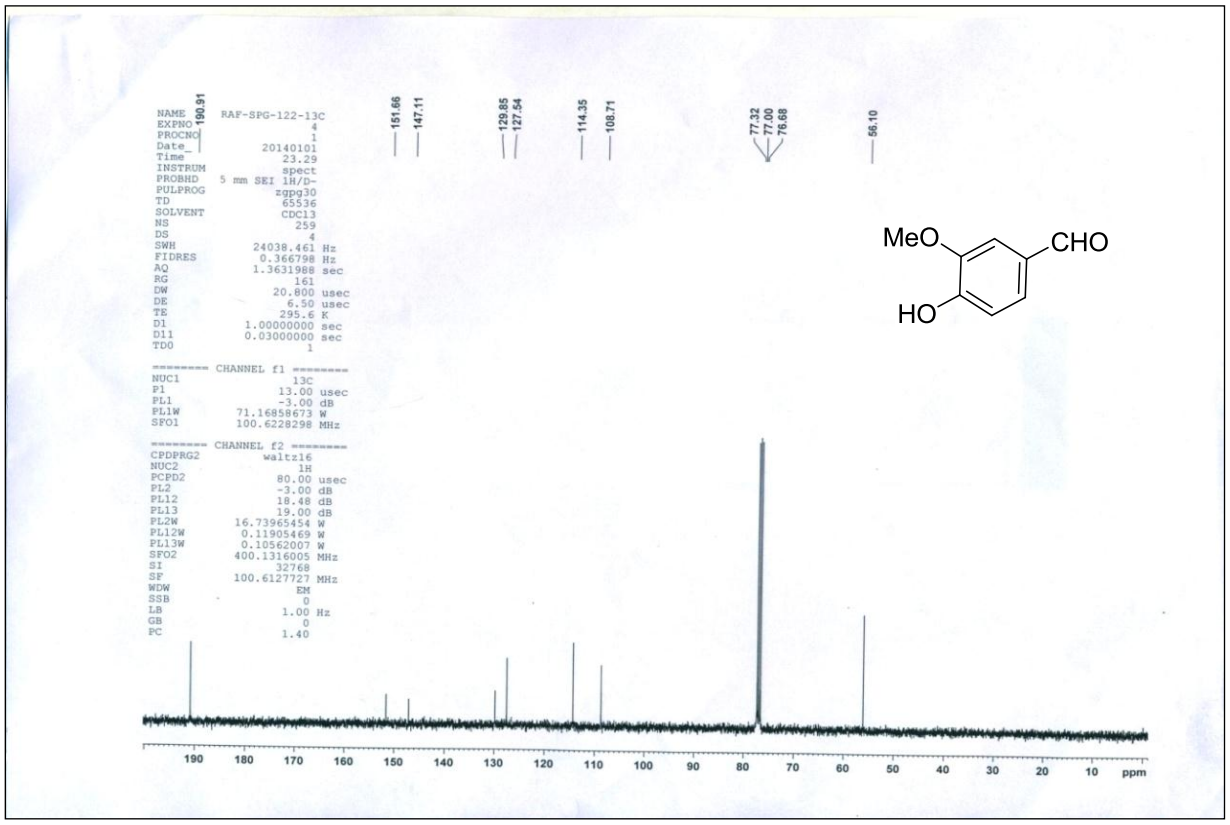
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **5i**



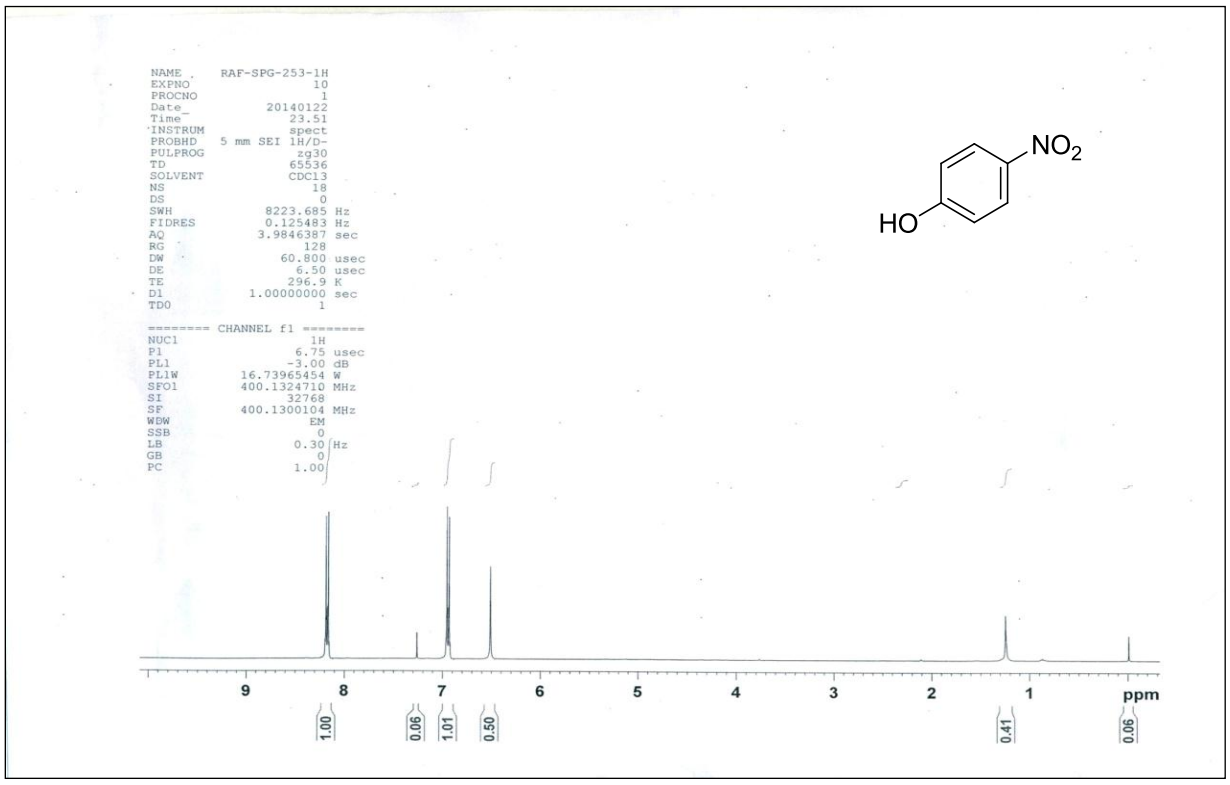


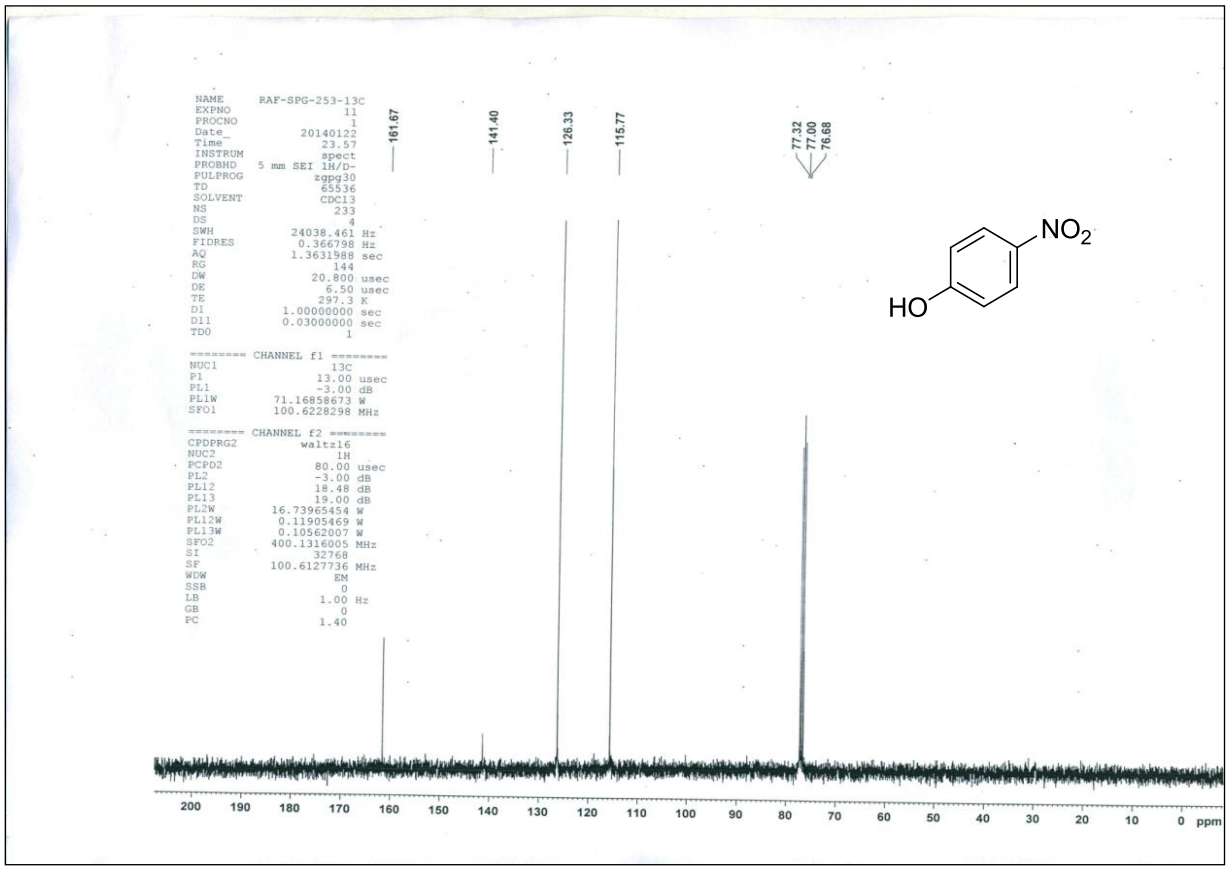
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **5j**



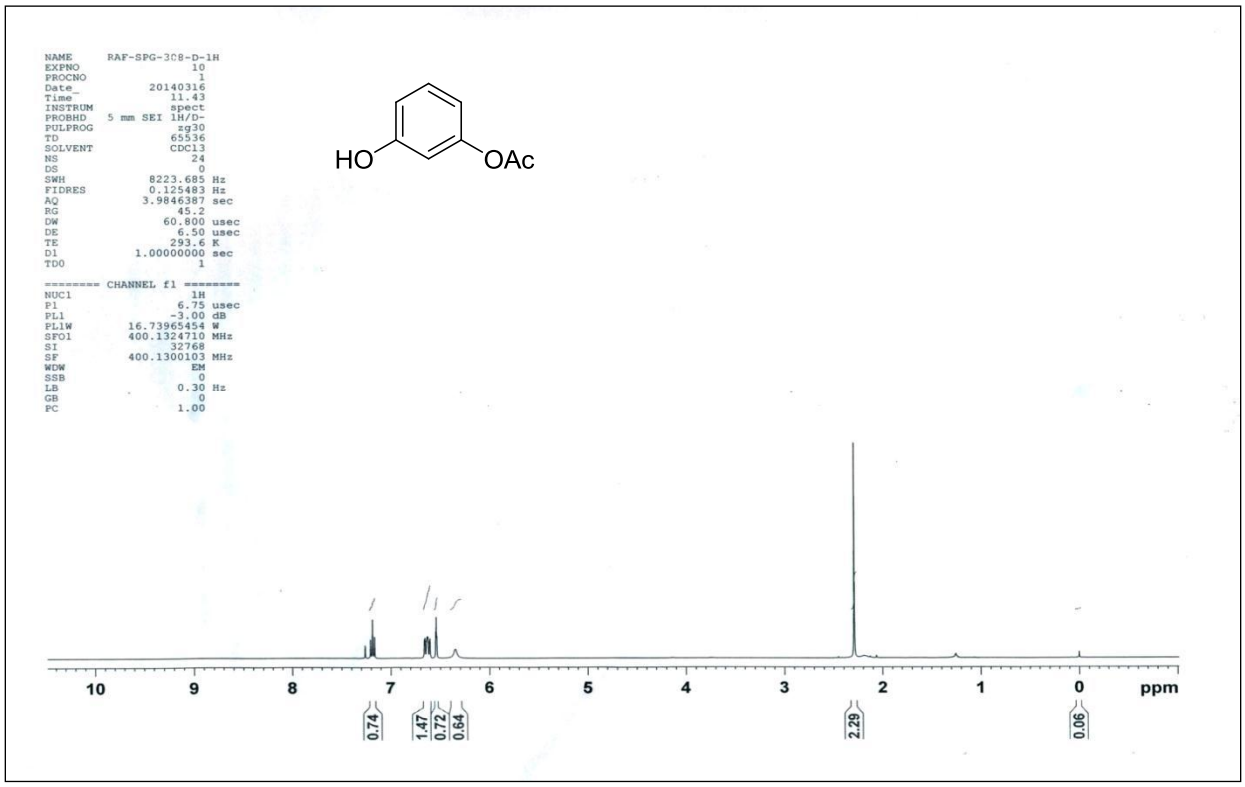


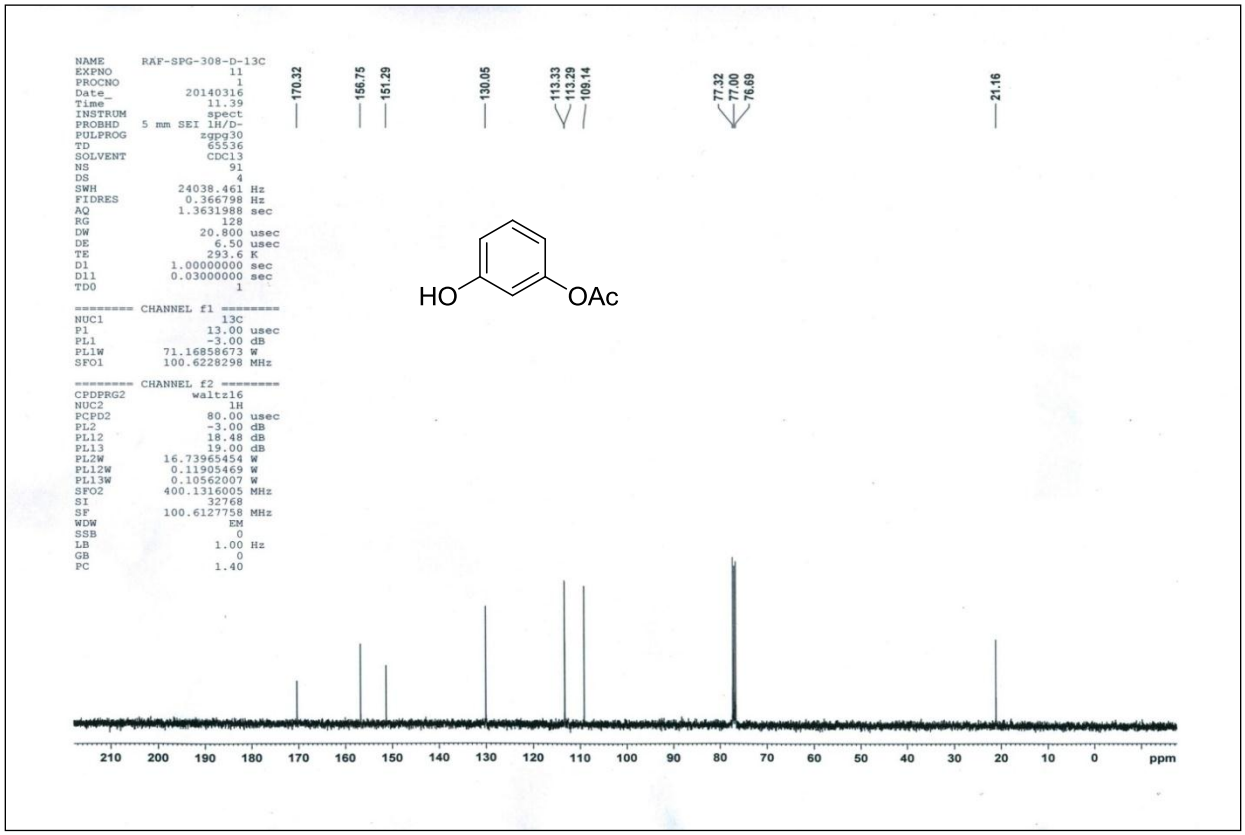
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **5k**



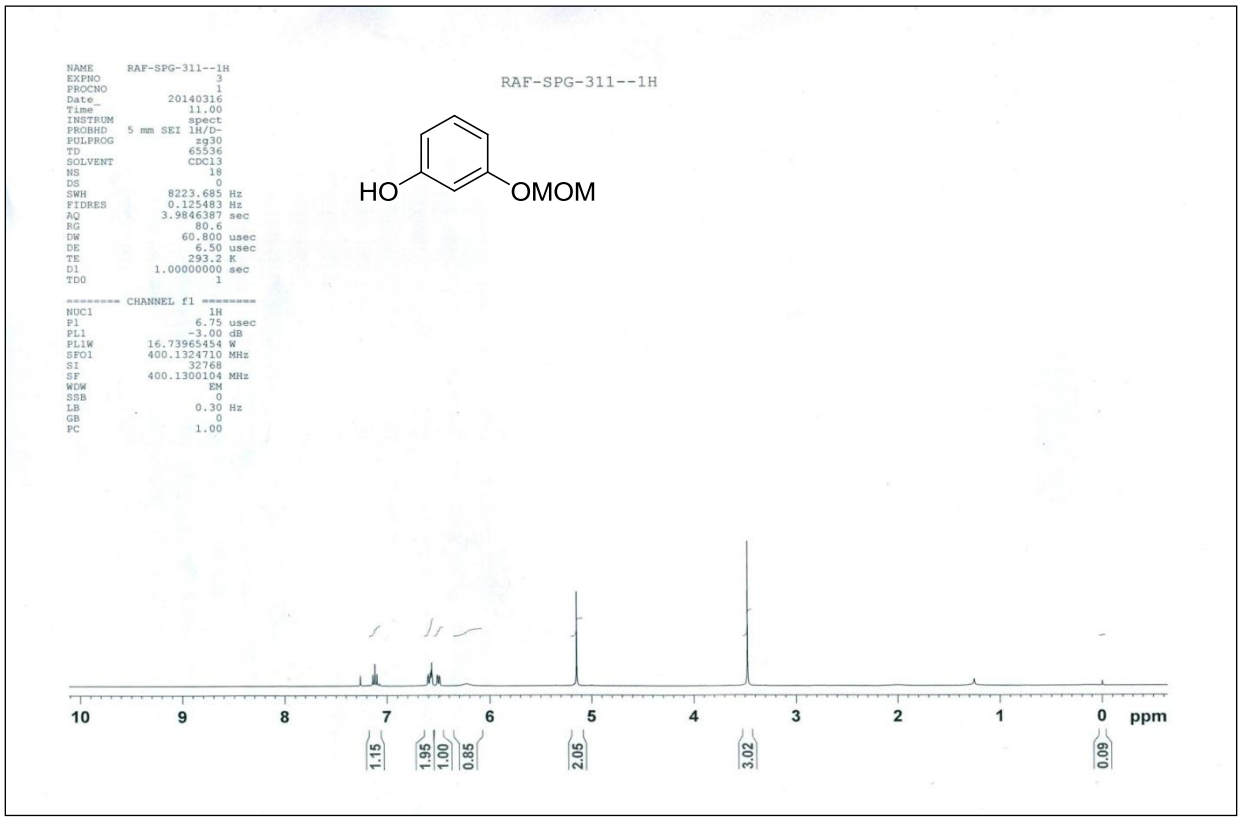


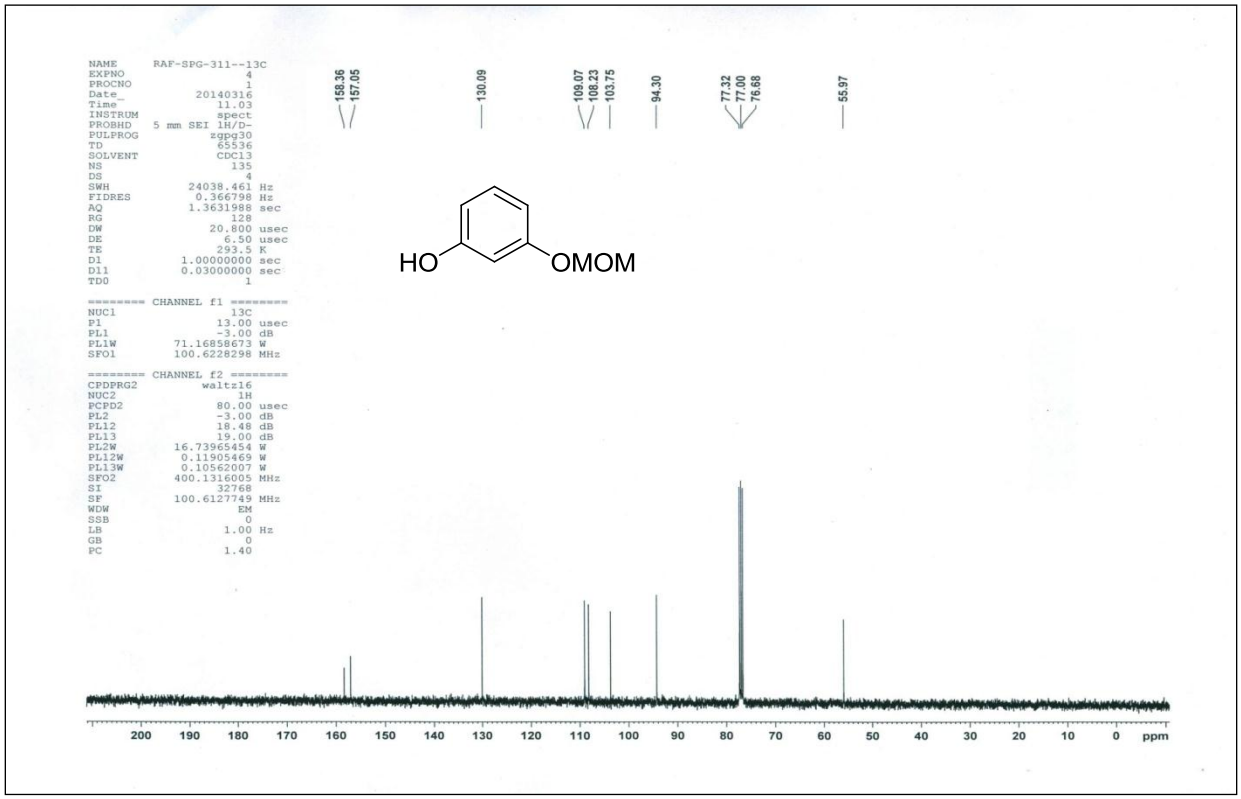
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **5l**



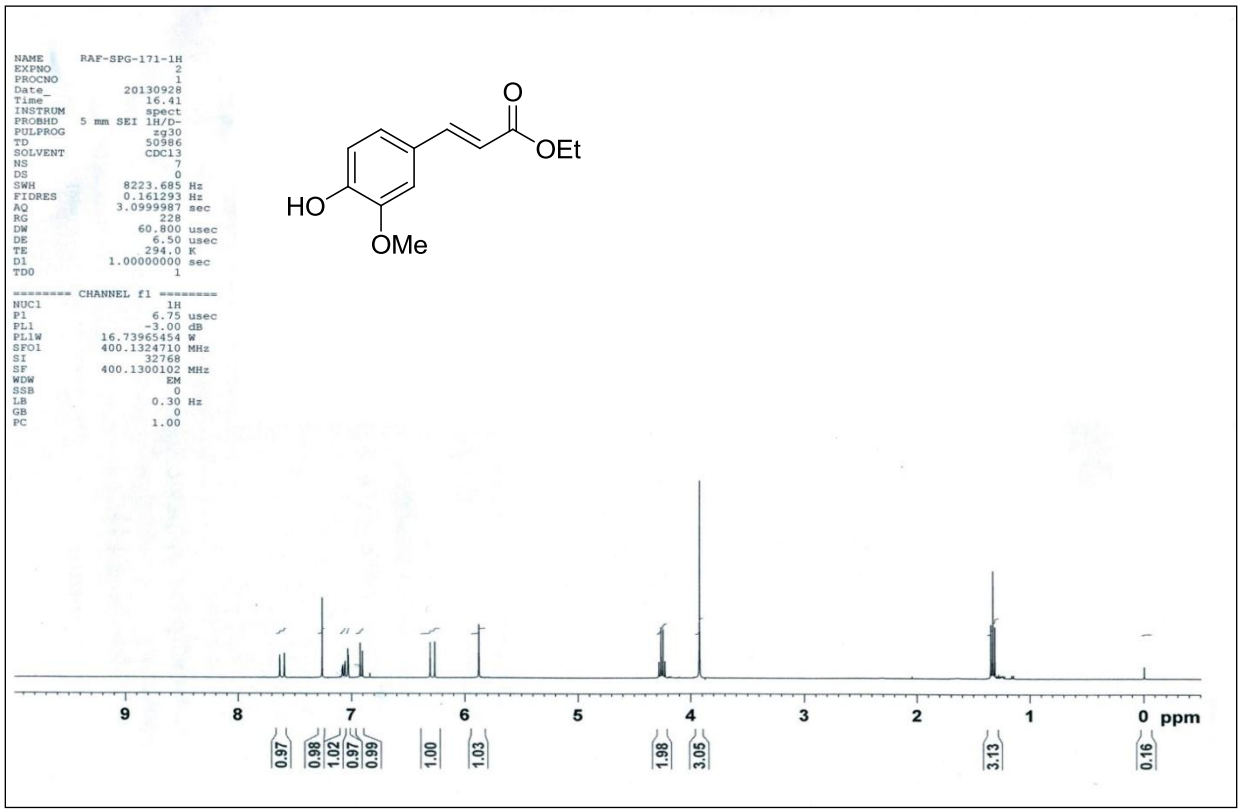


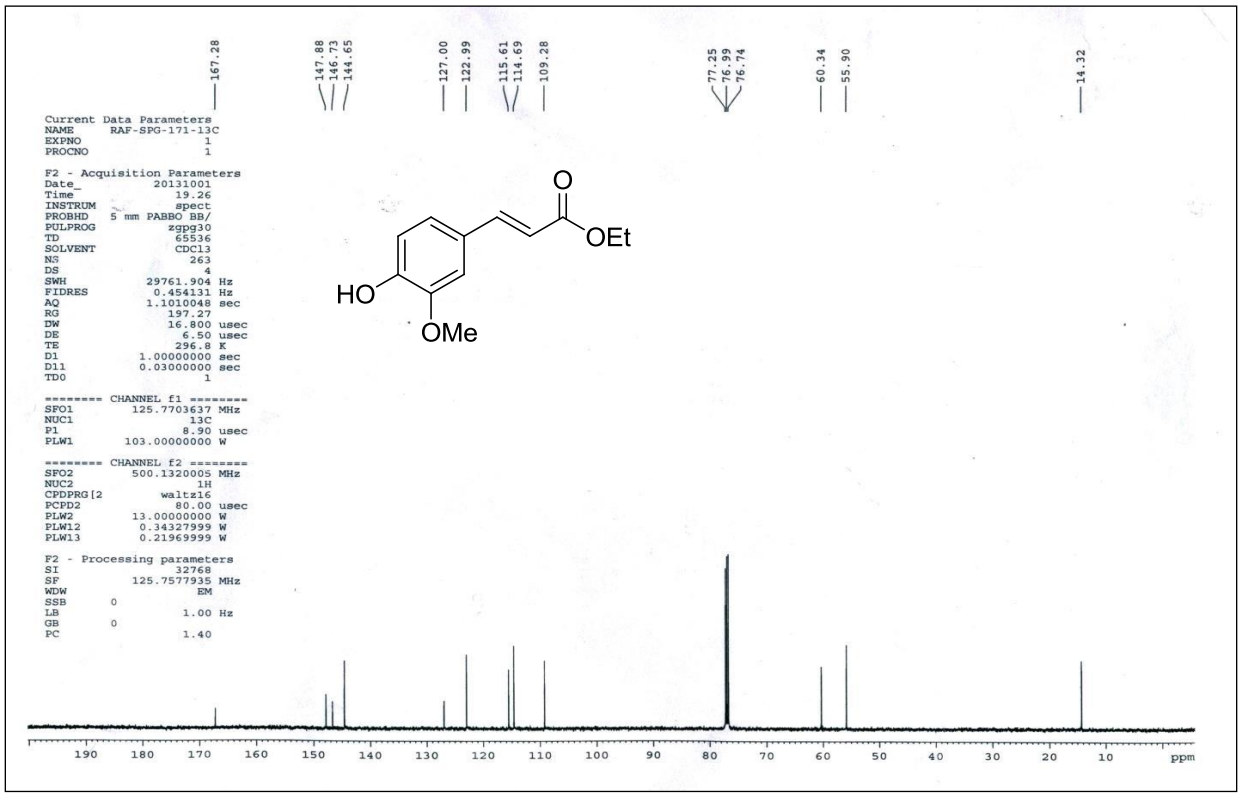
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **5m**



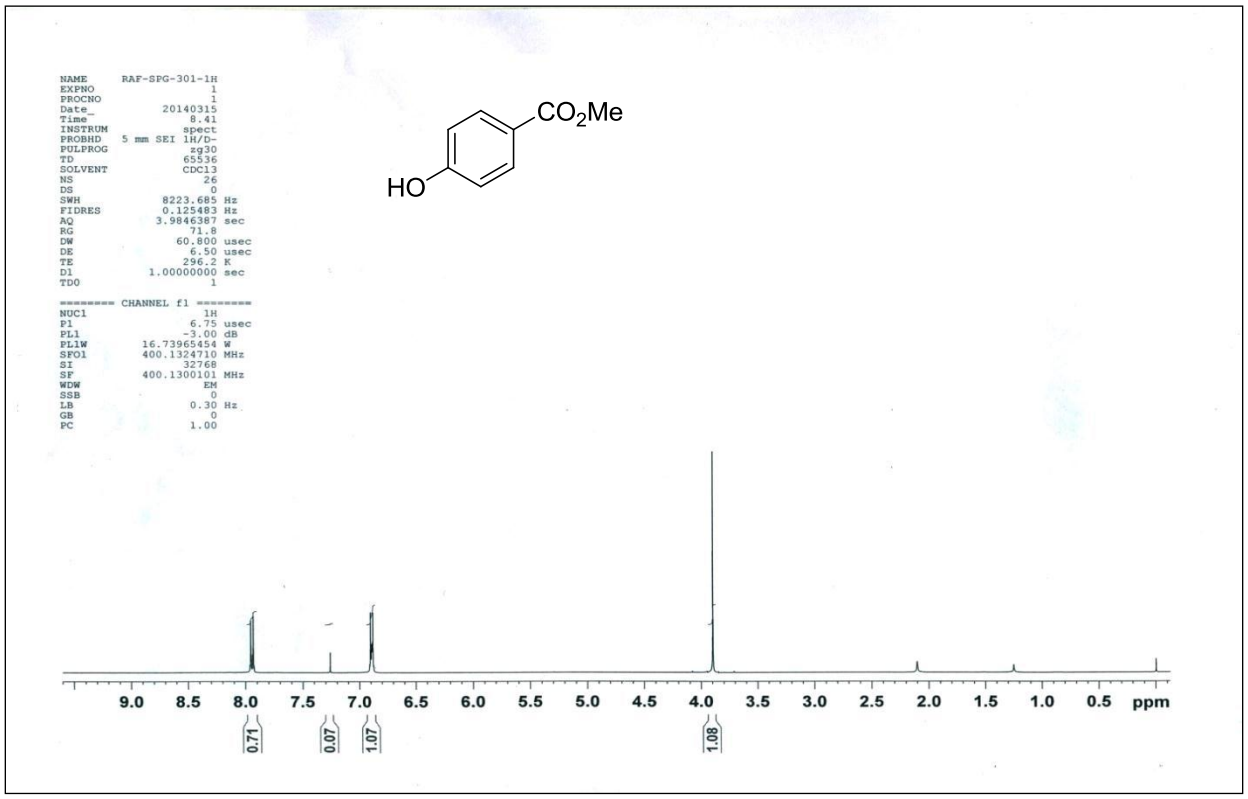


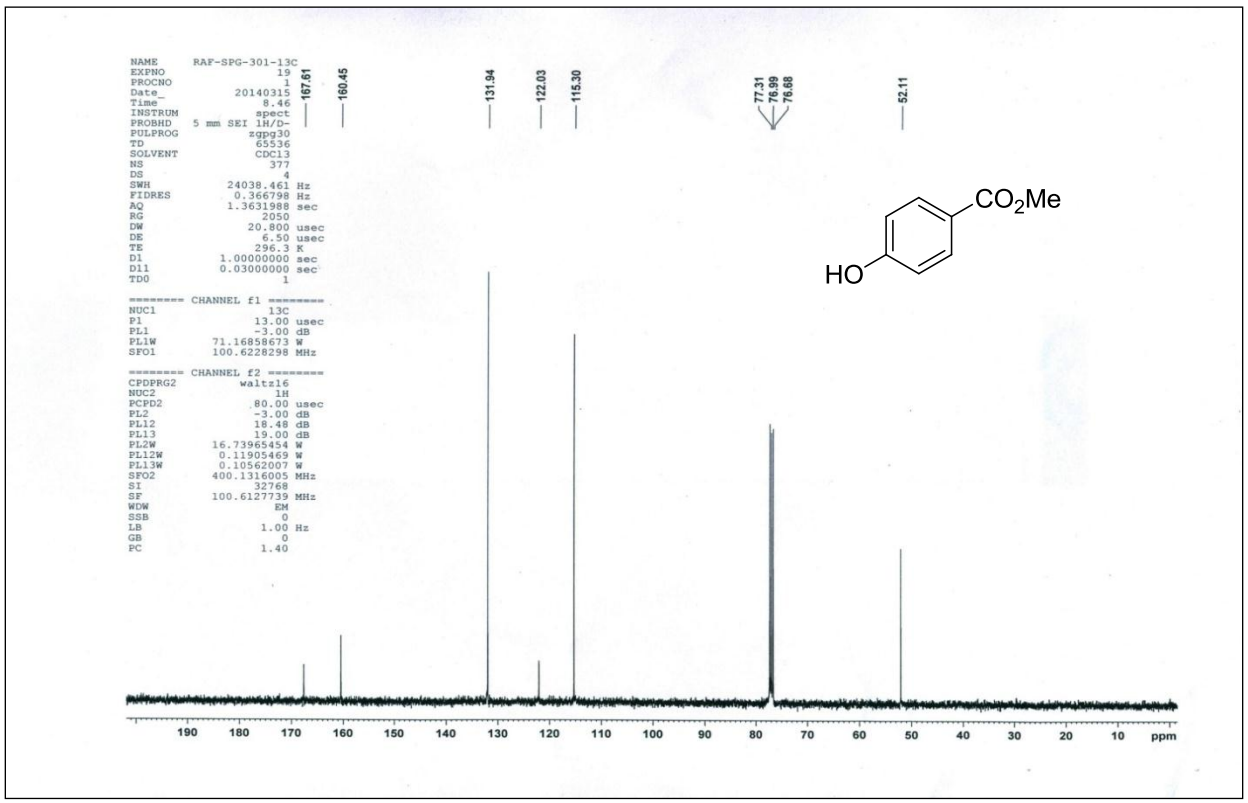
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **5n**



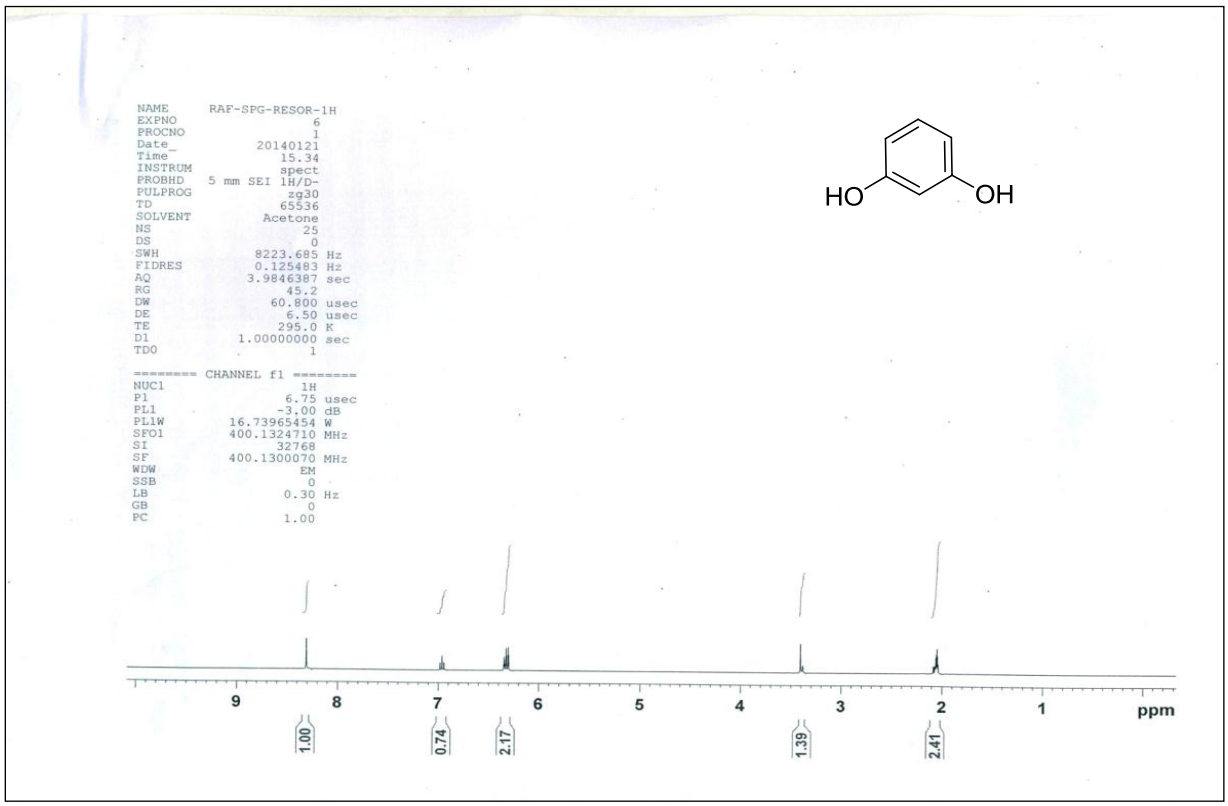


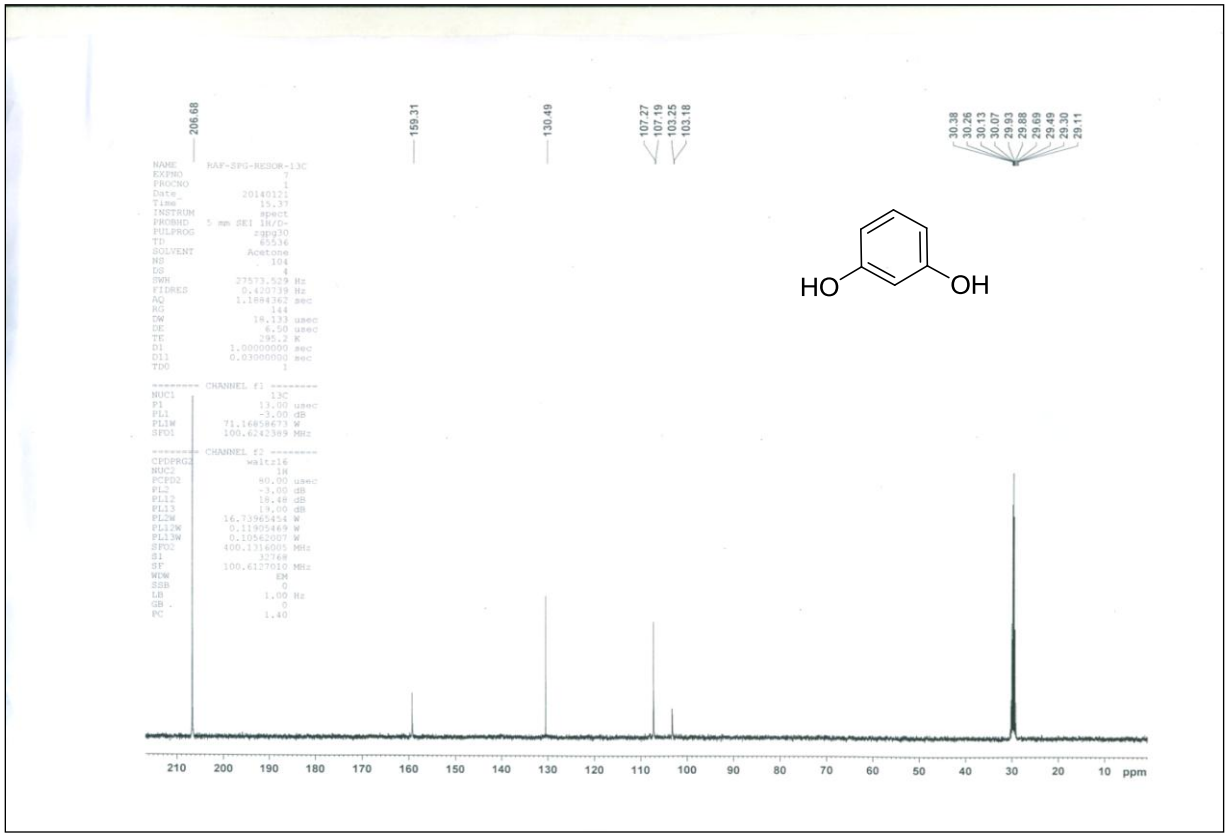
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **5o**



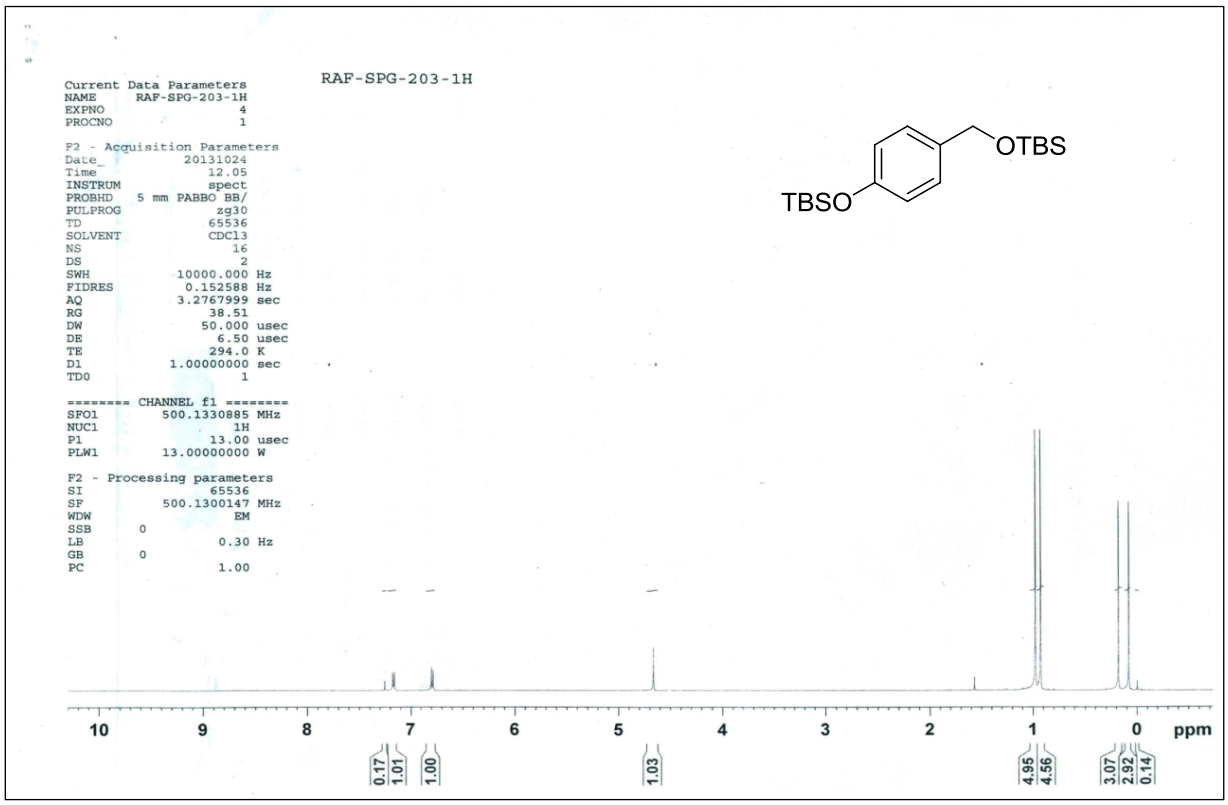


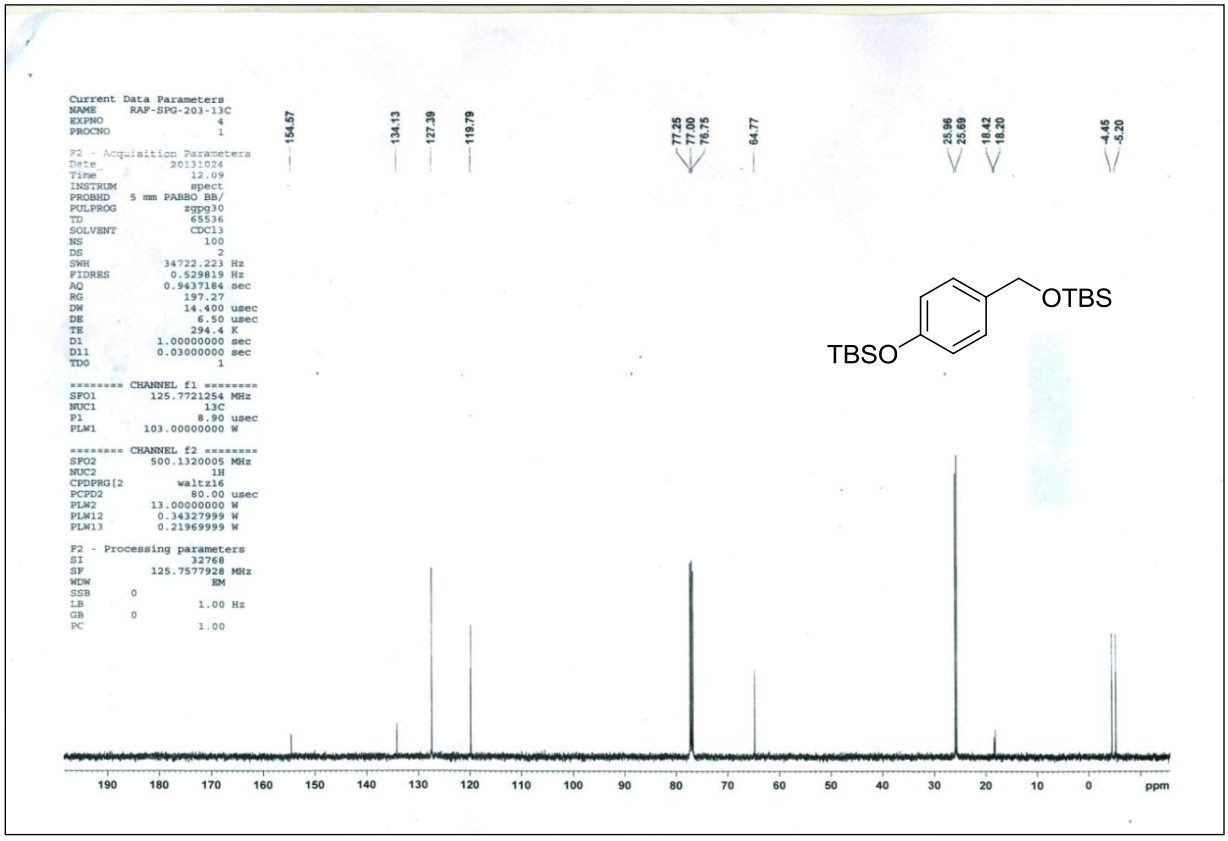
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, acetone d^6) of compound **5p**



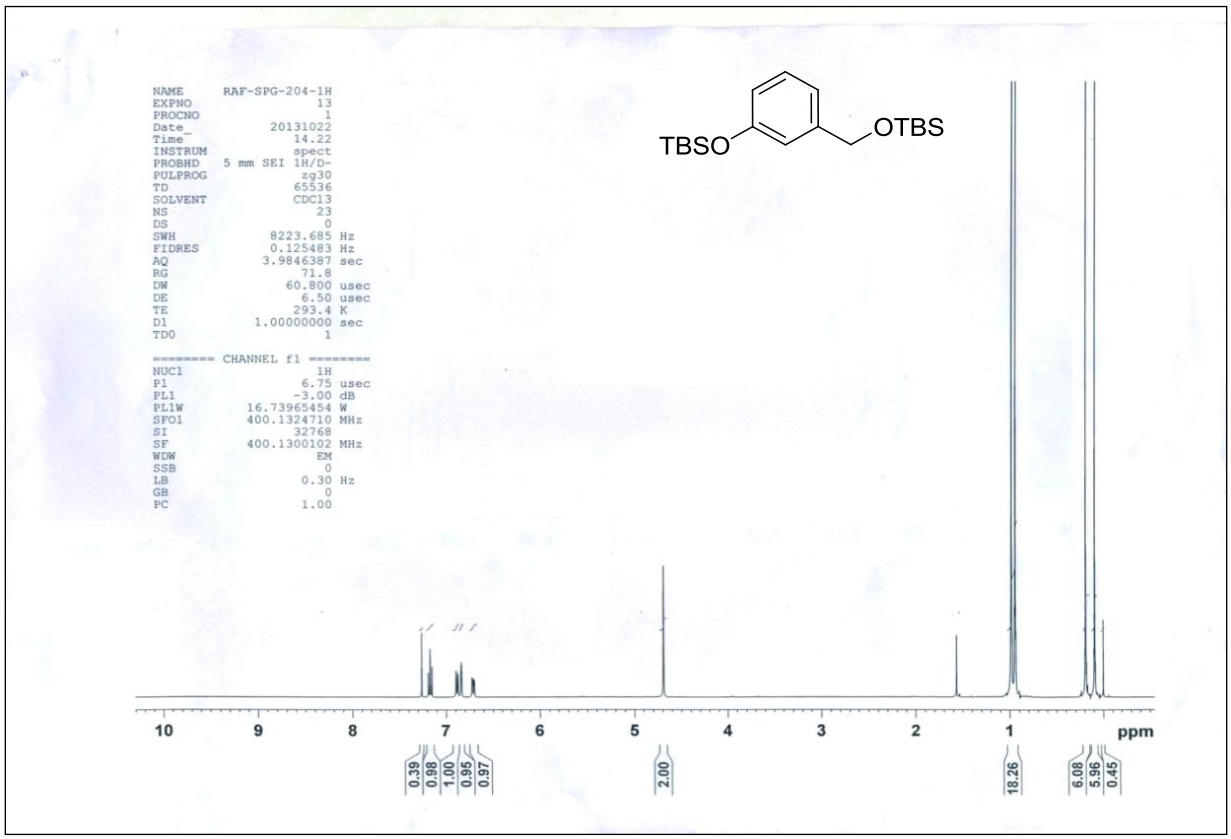


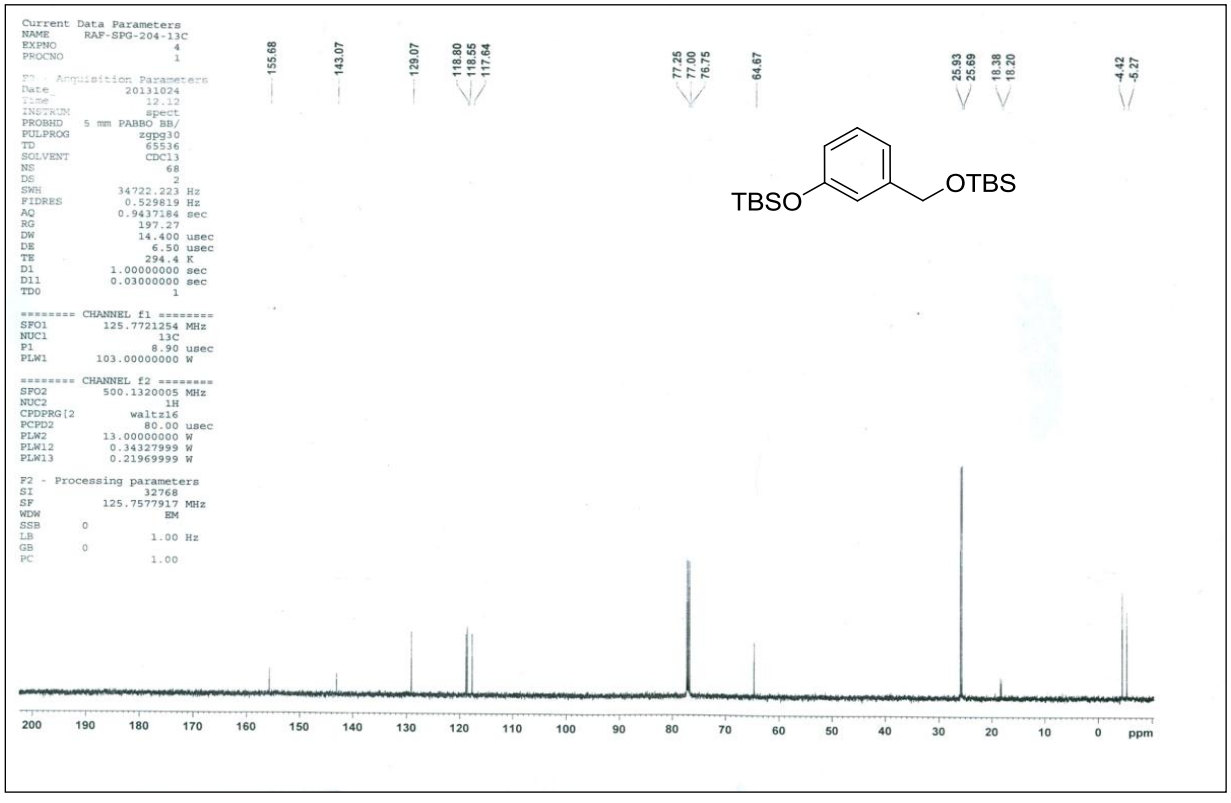
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **6a**



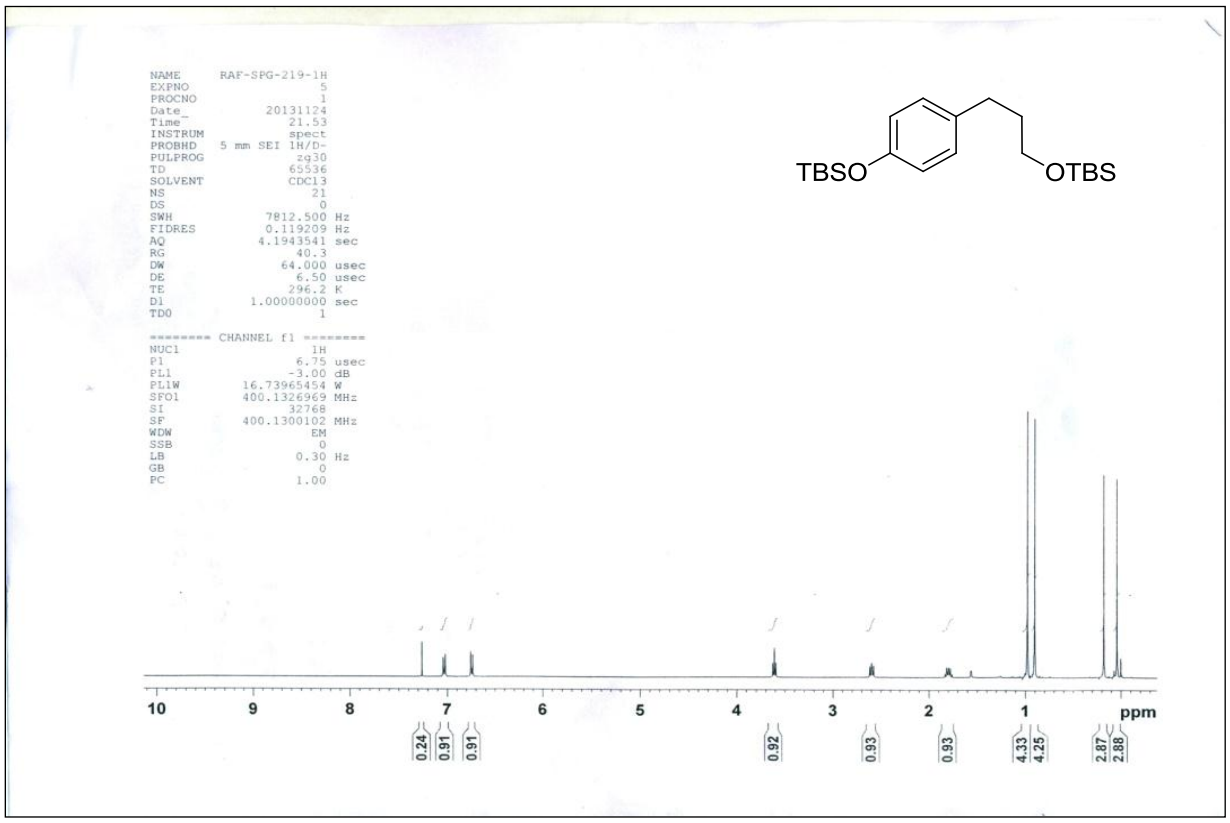


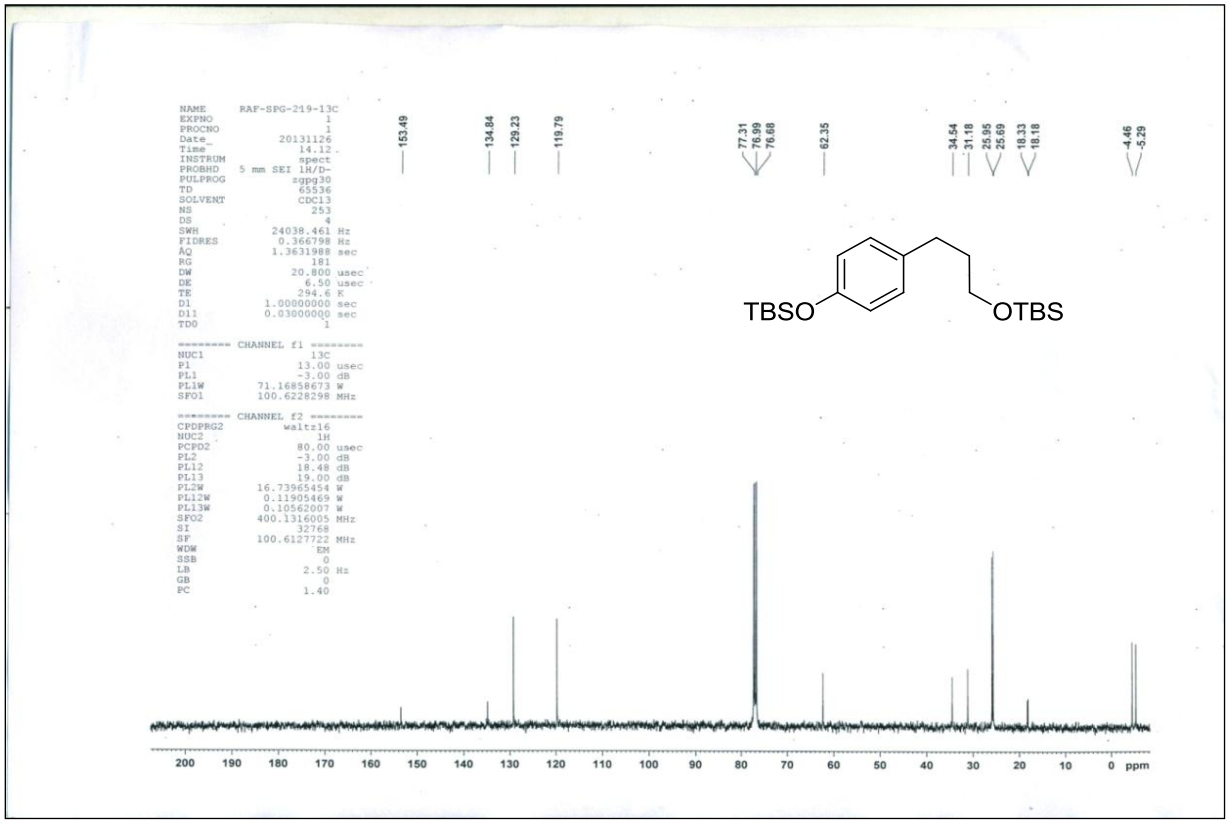
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **6b**



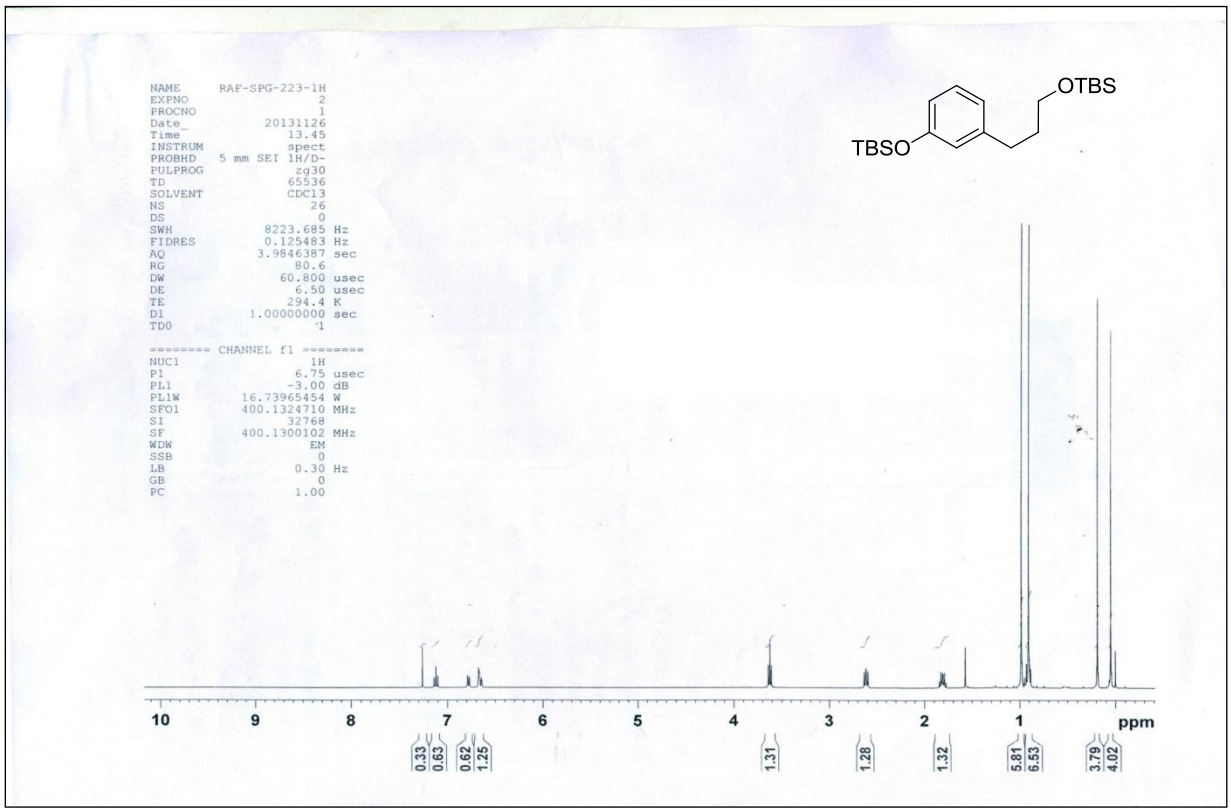


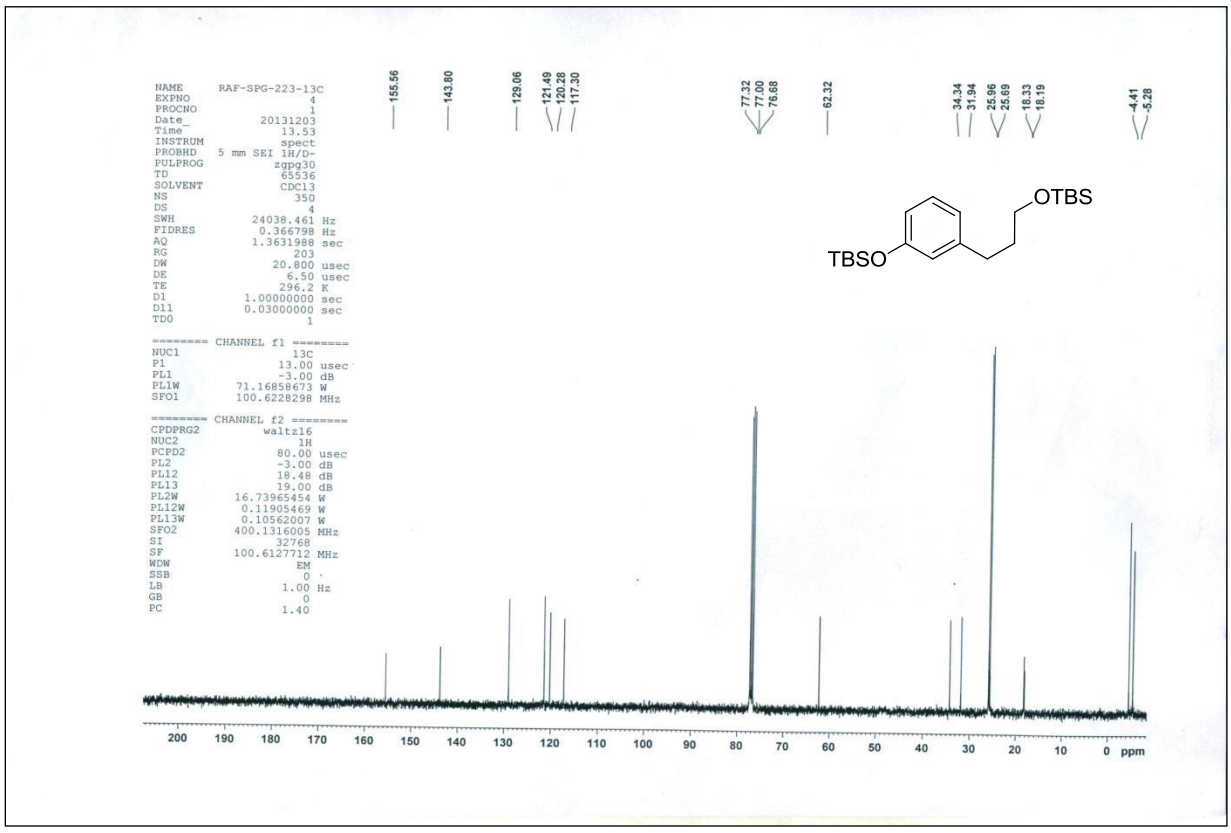
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **6c**



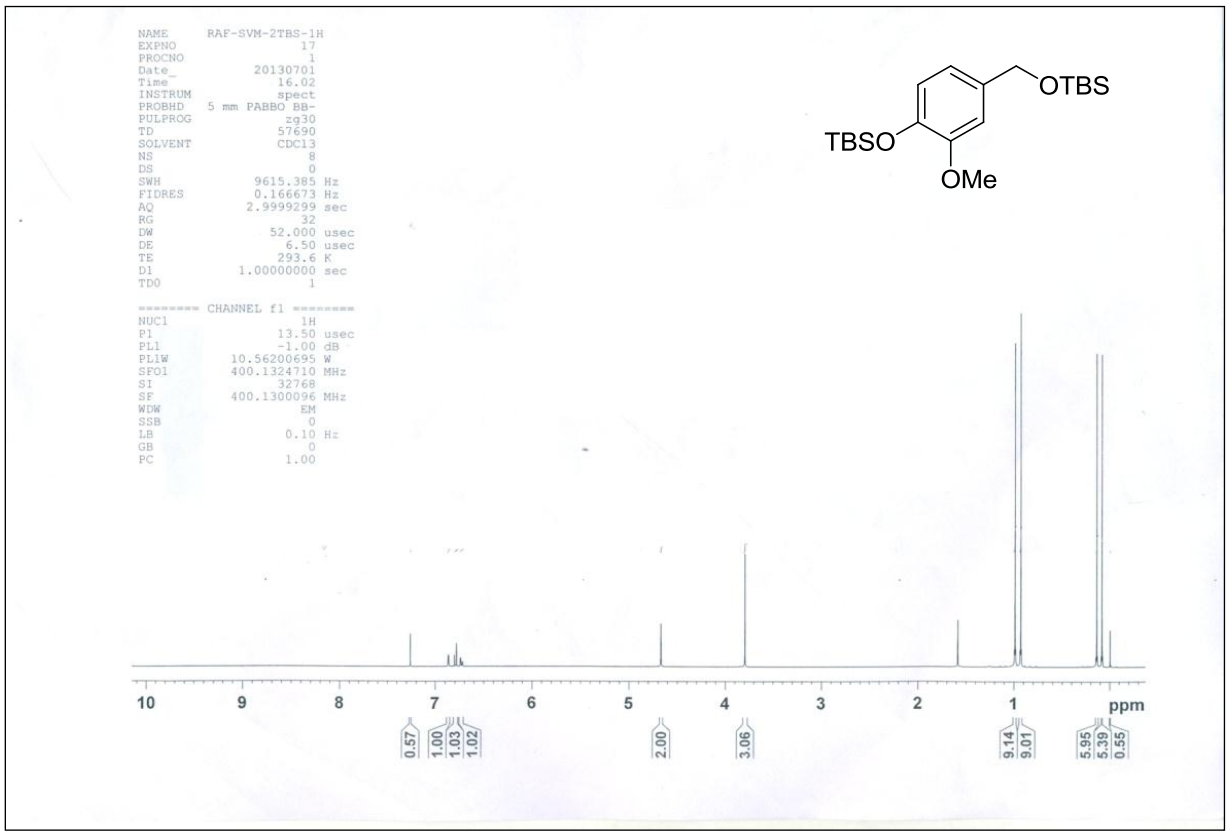


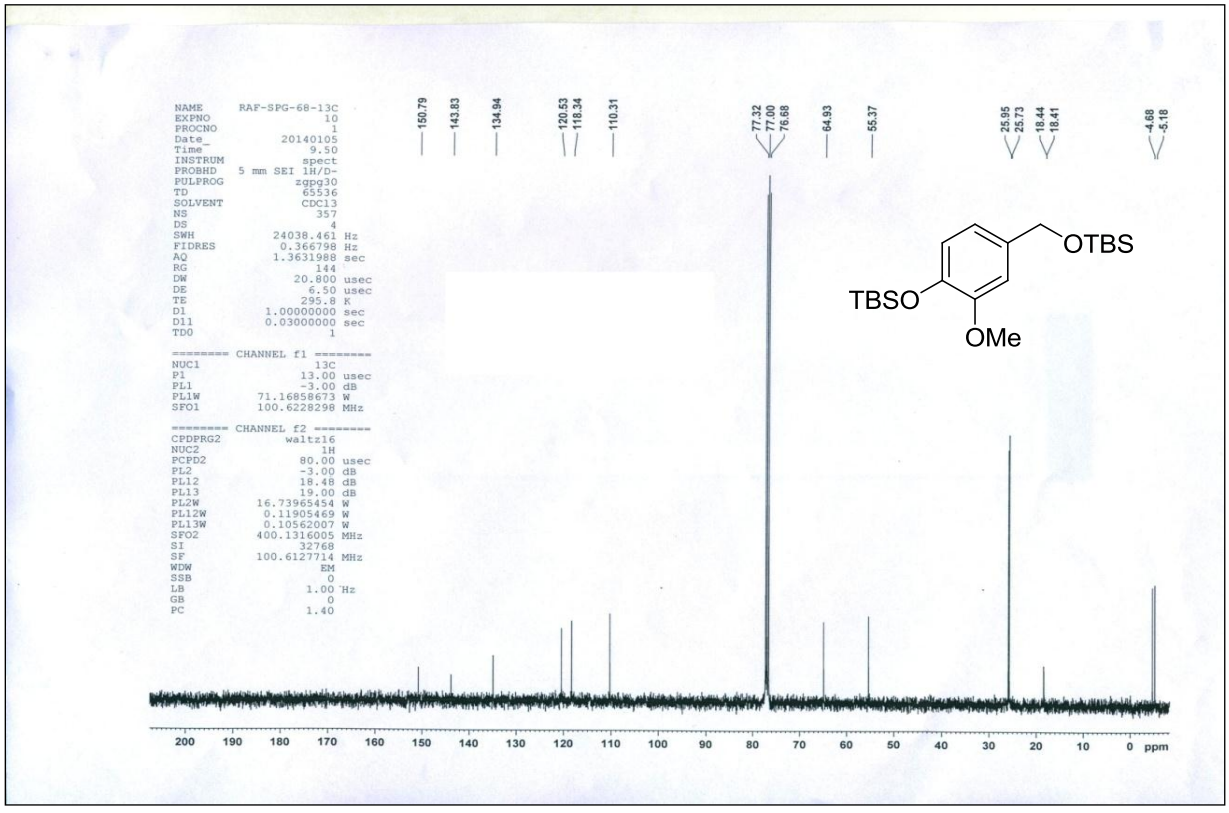
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **6d**



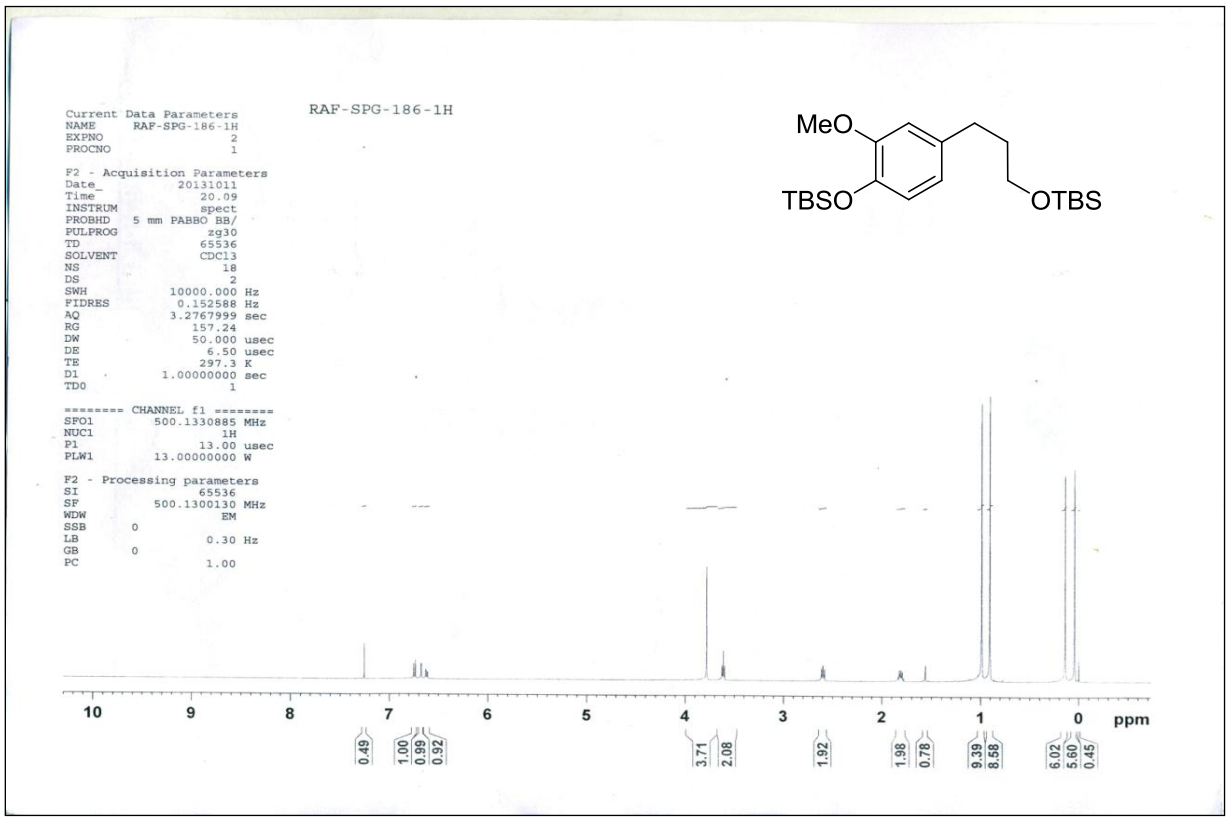


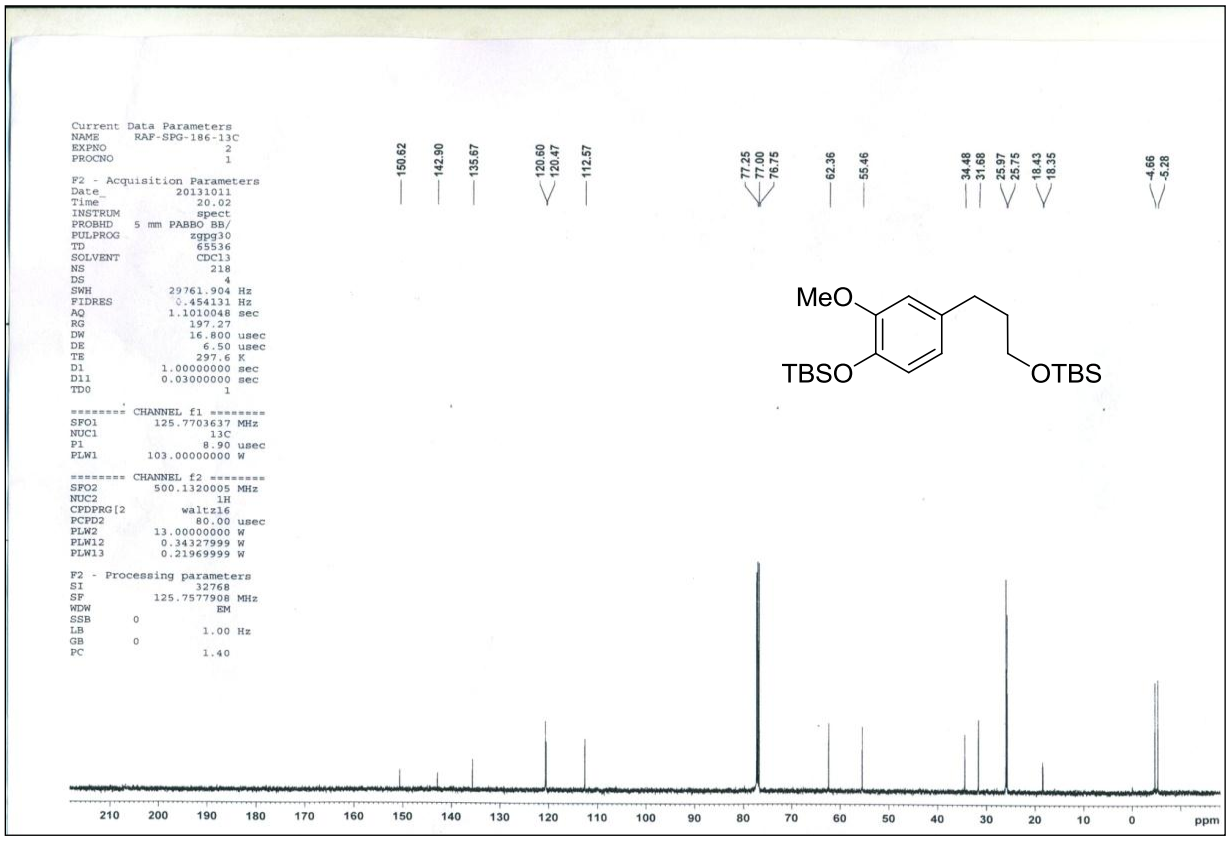
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **6e**



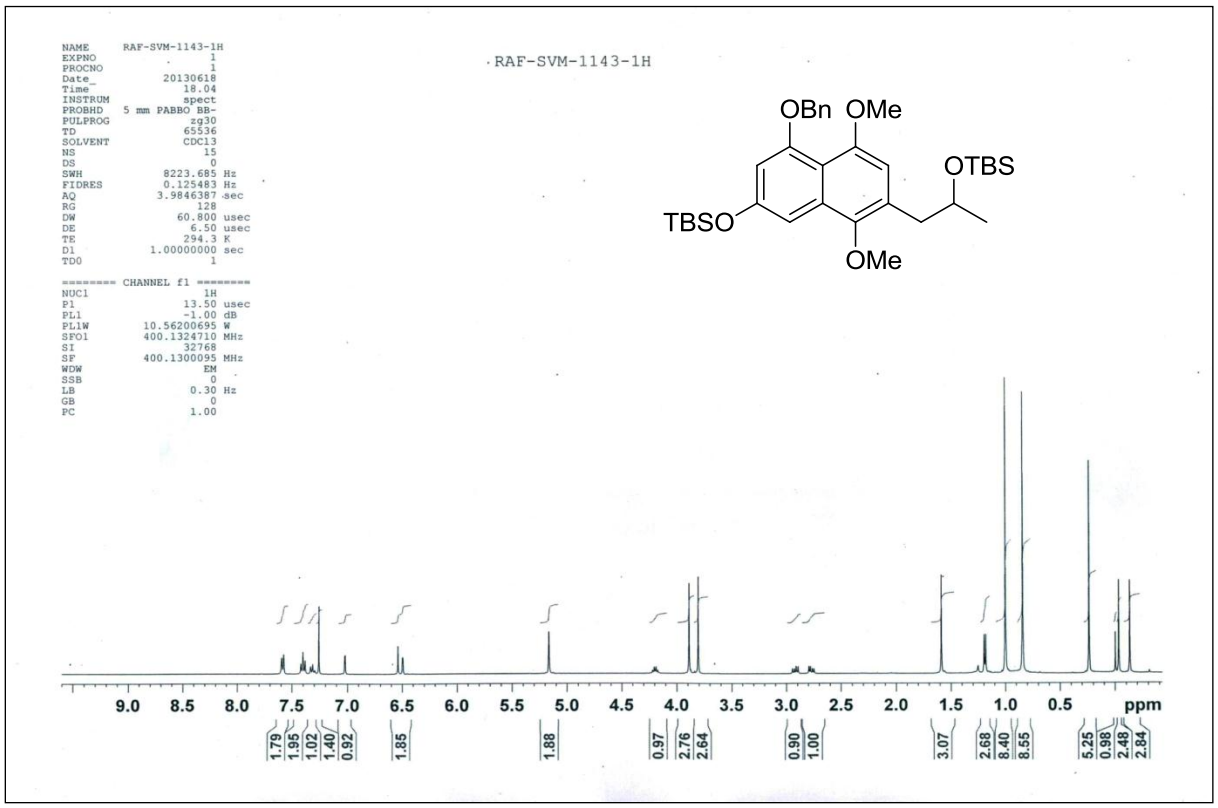


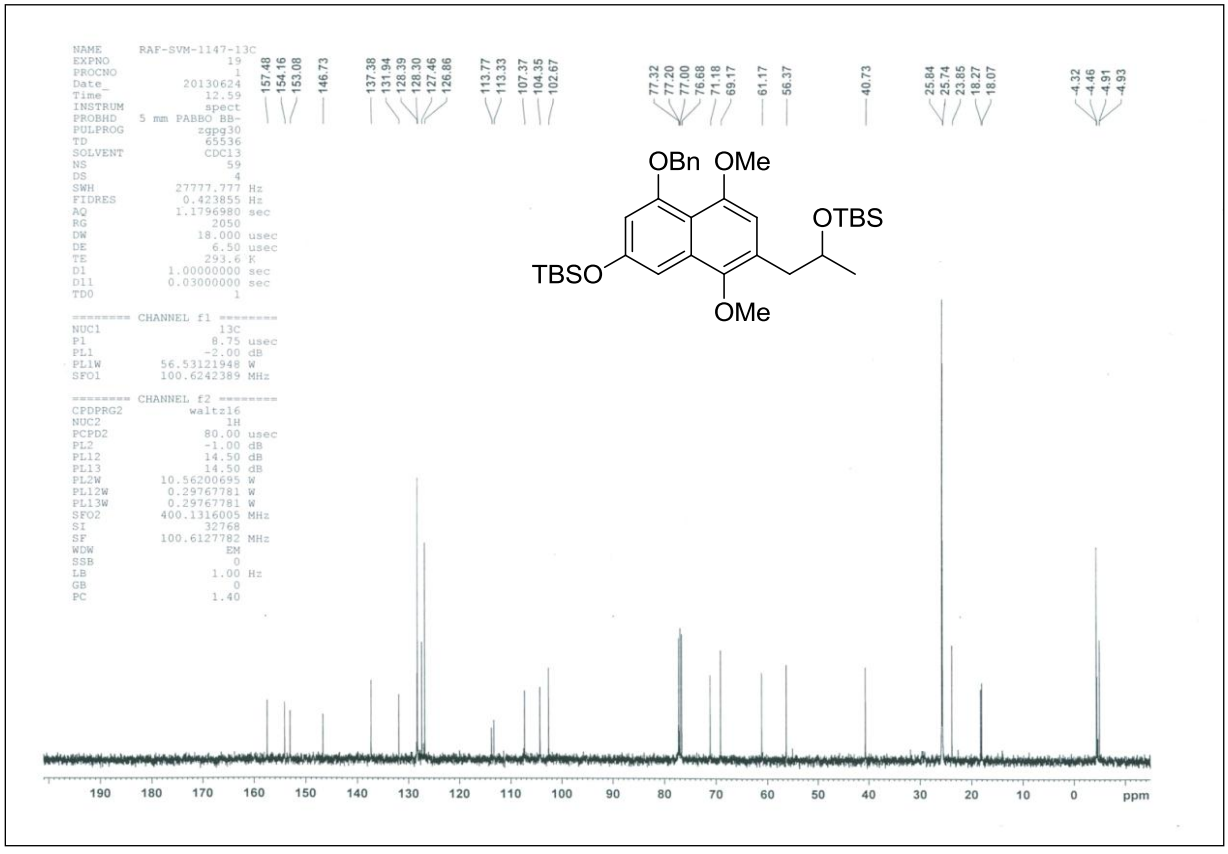
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **6f**



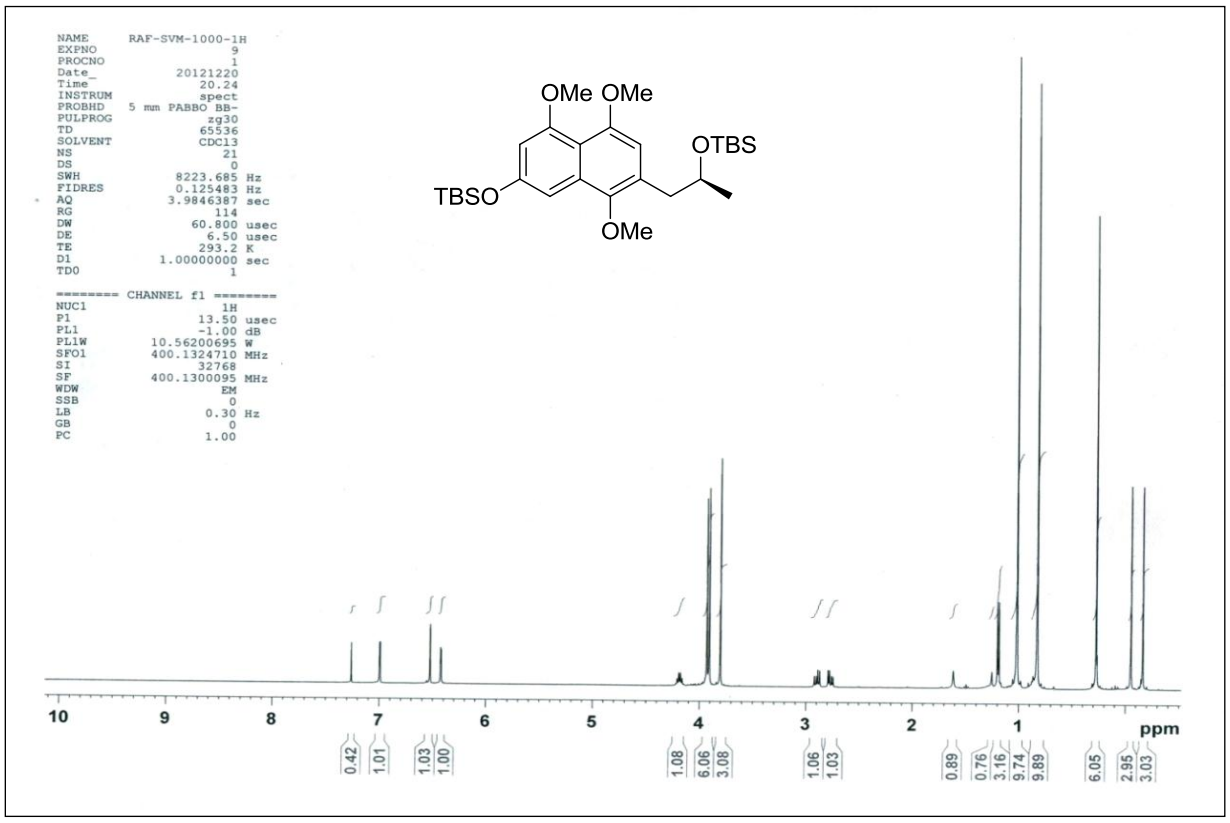


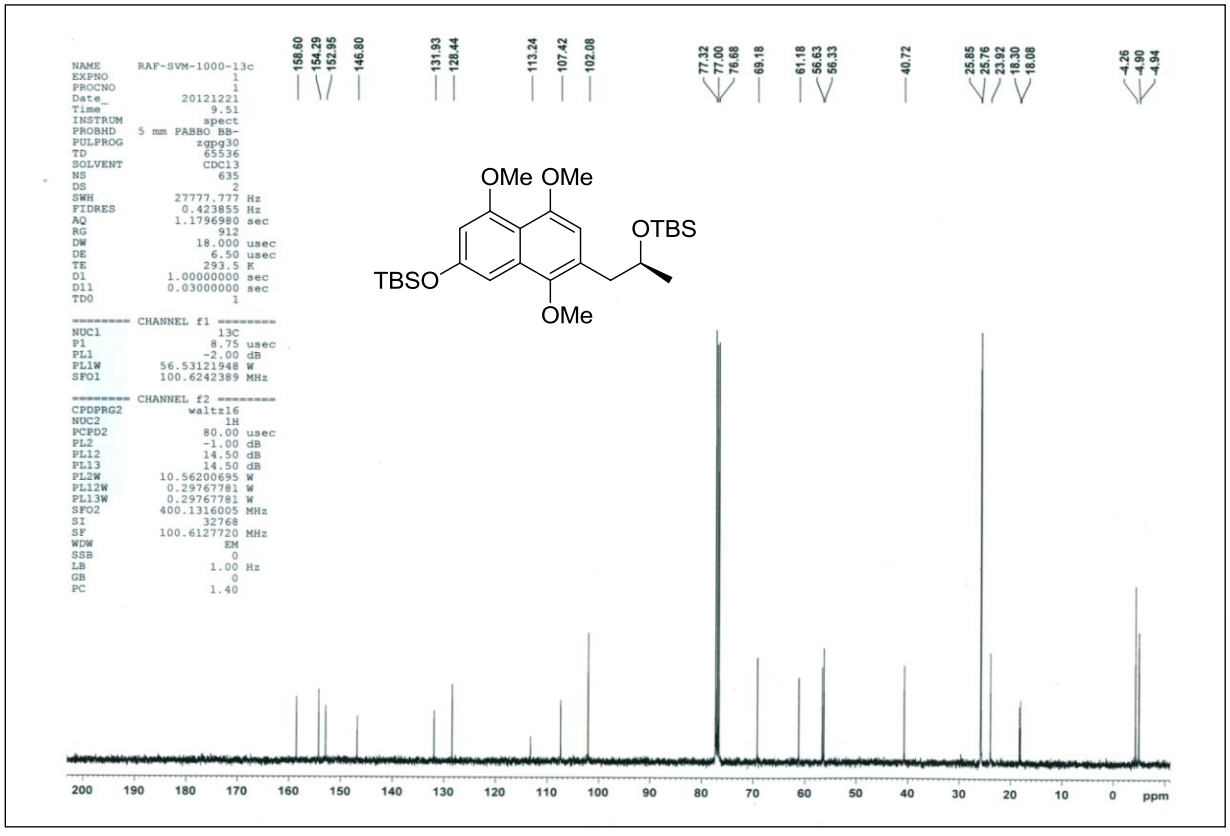
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **6g**



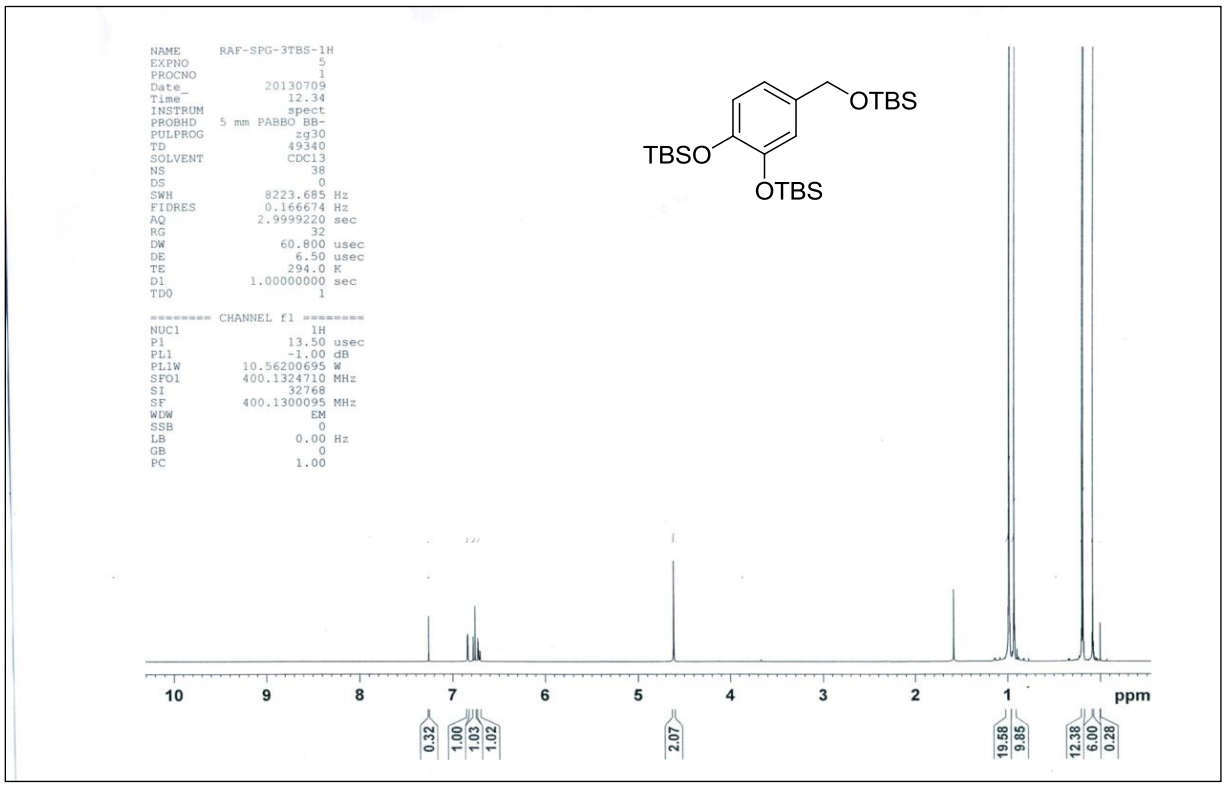


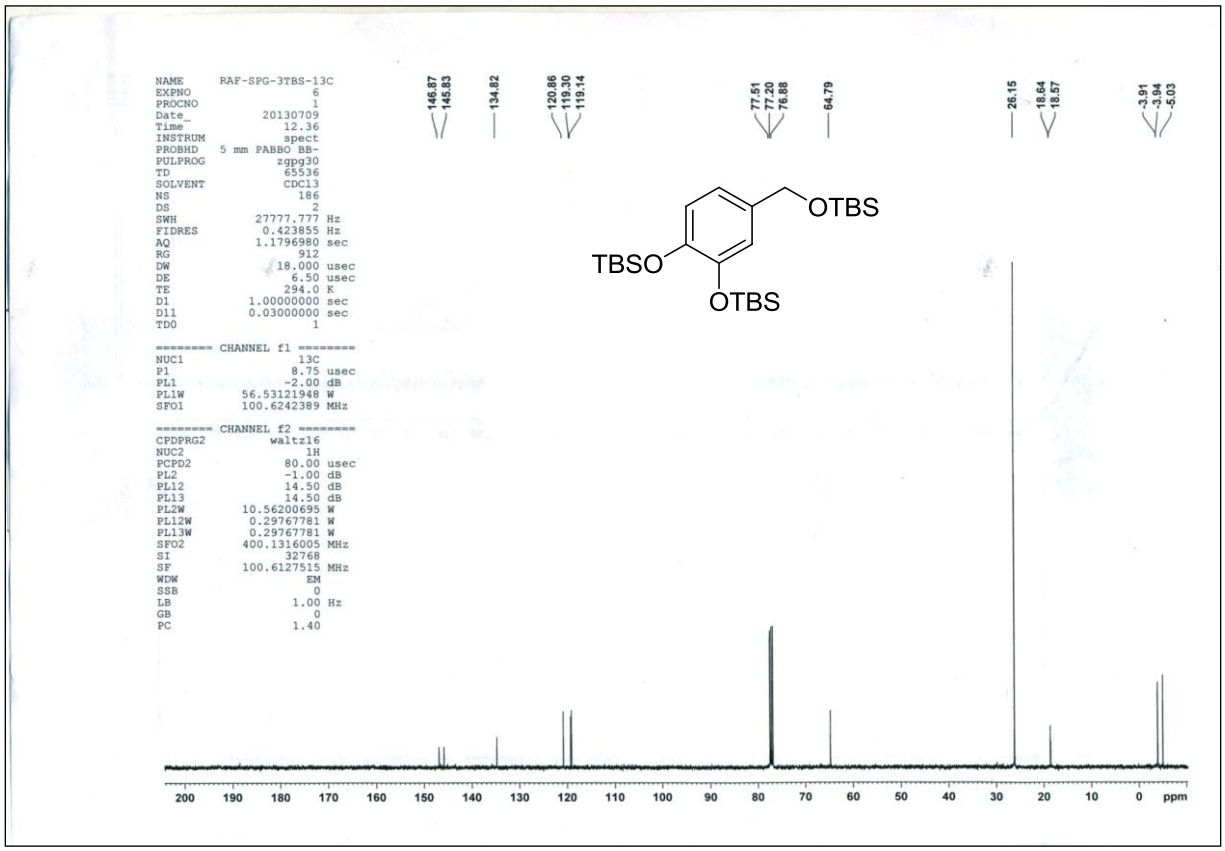
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **6h**



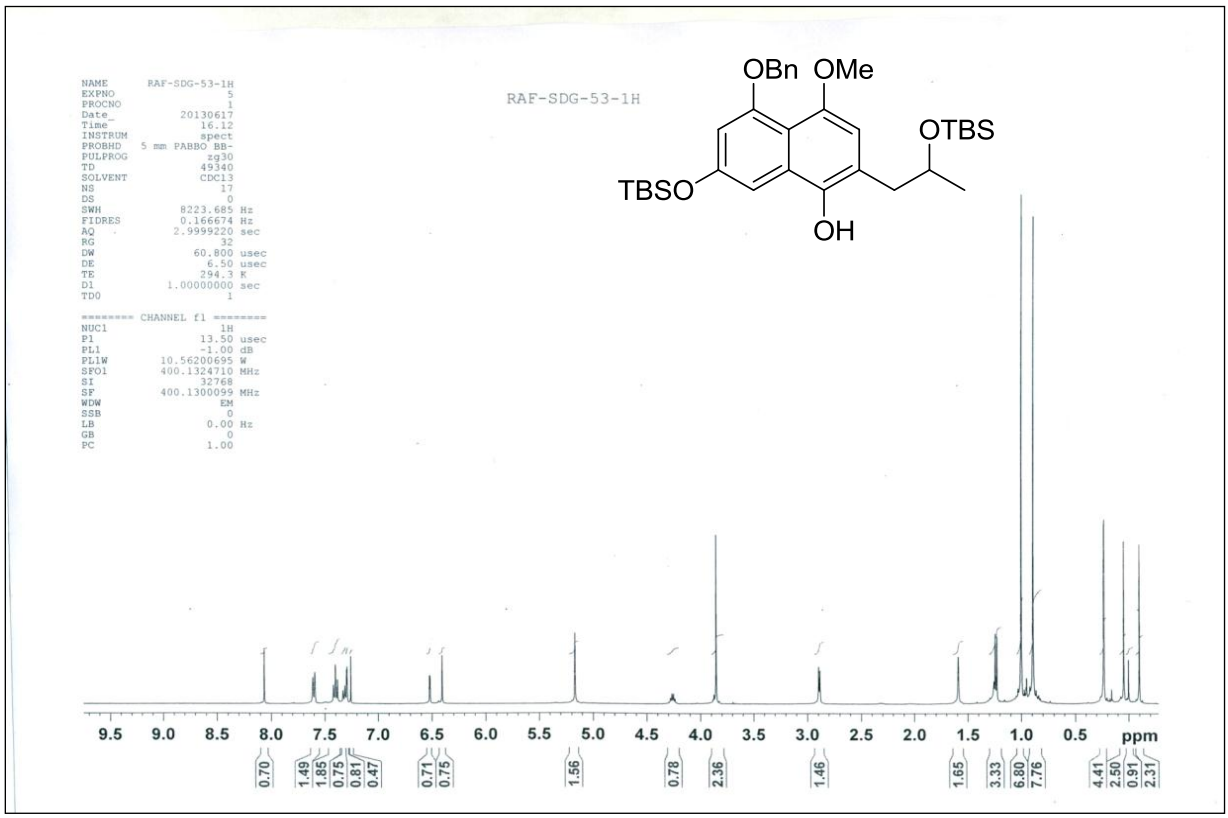


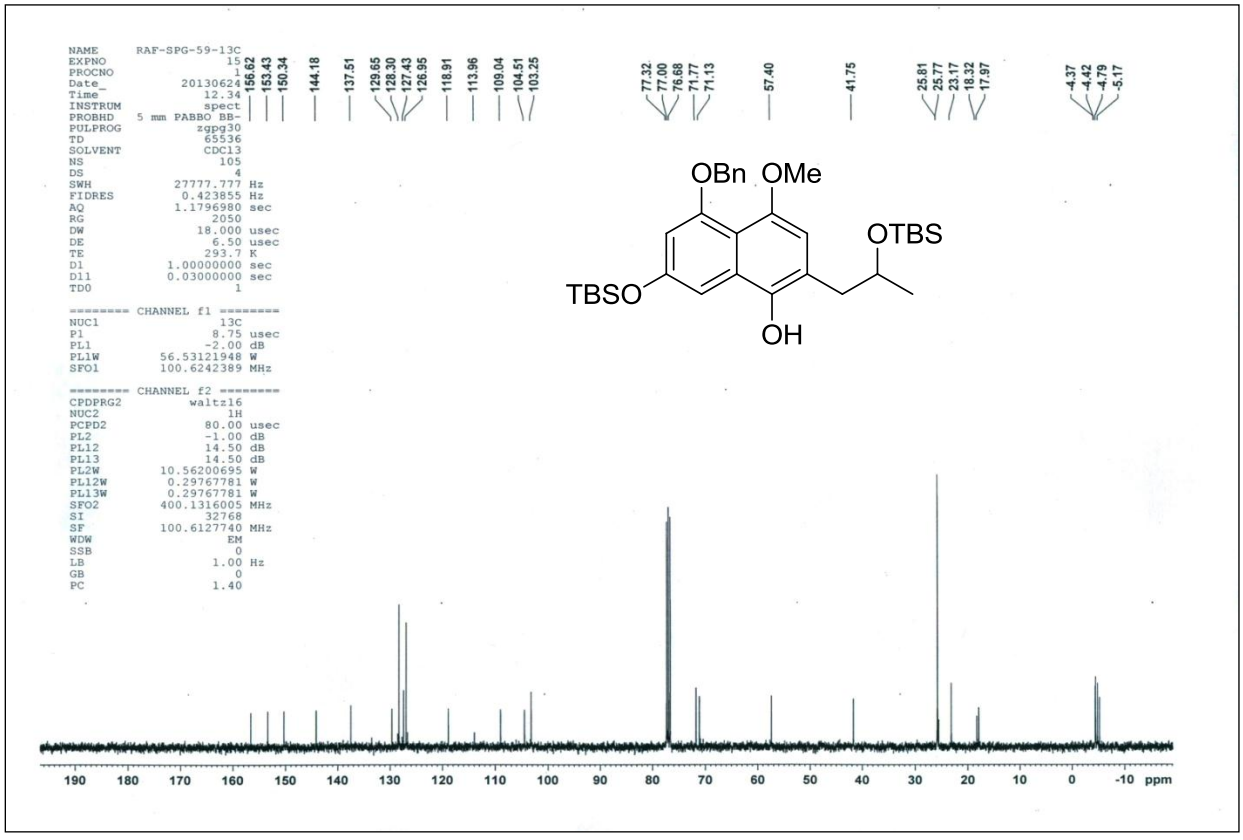
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **6i**



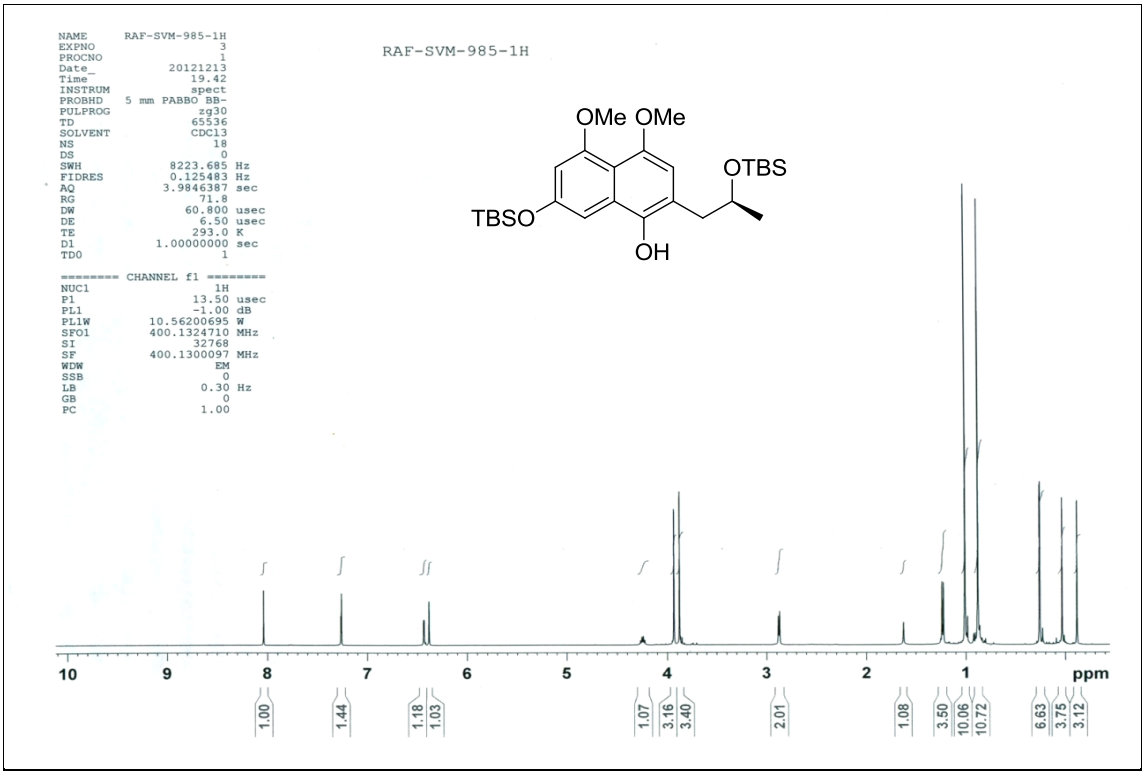


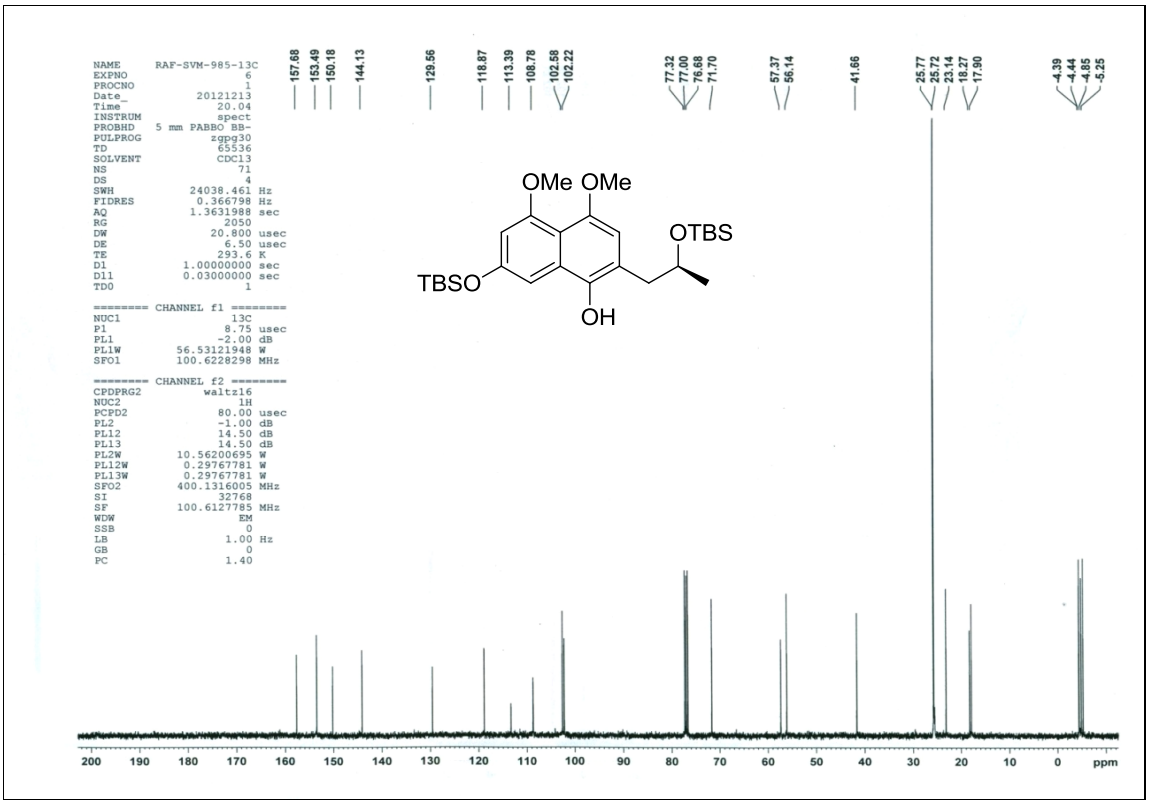
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **6j**



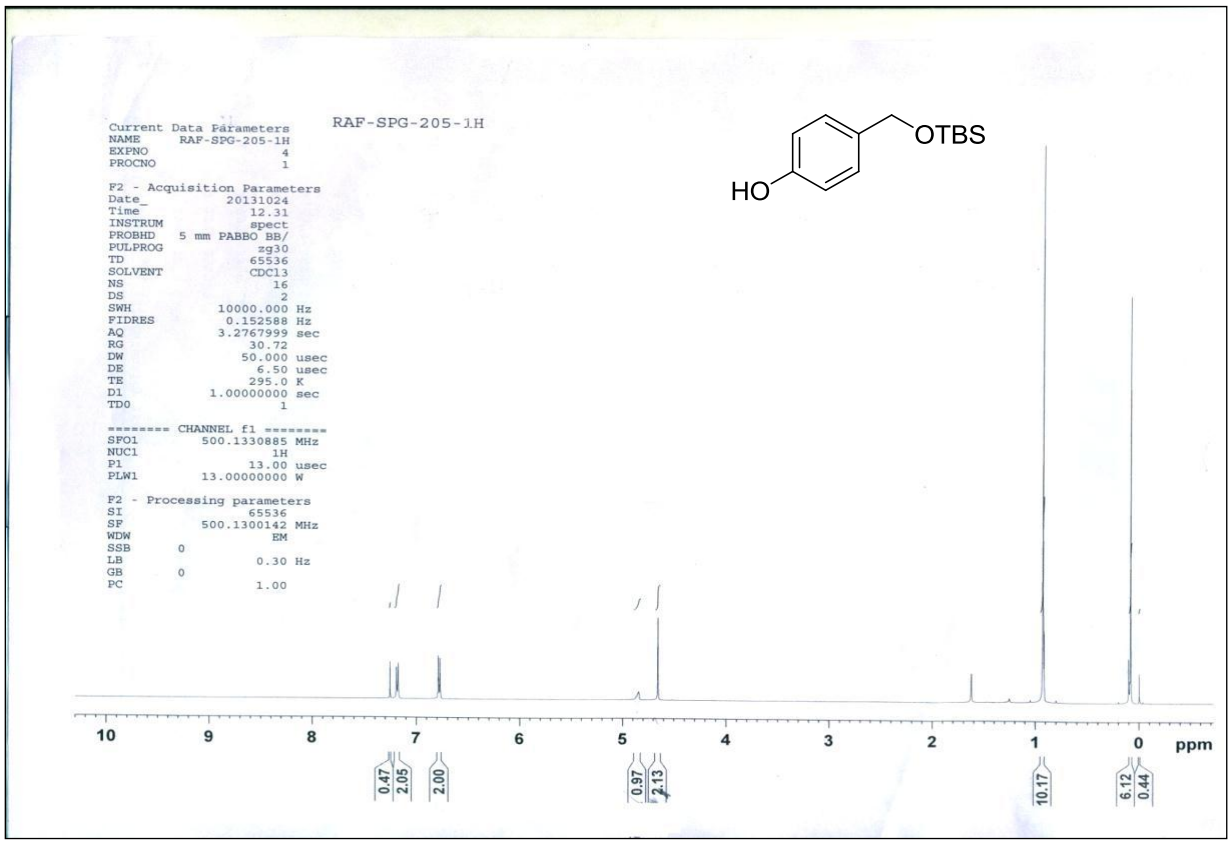


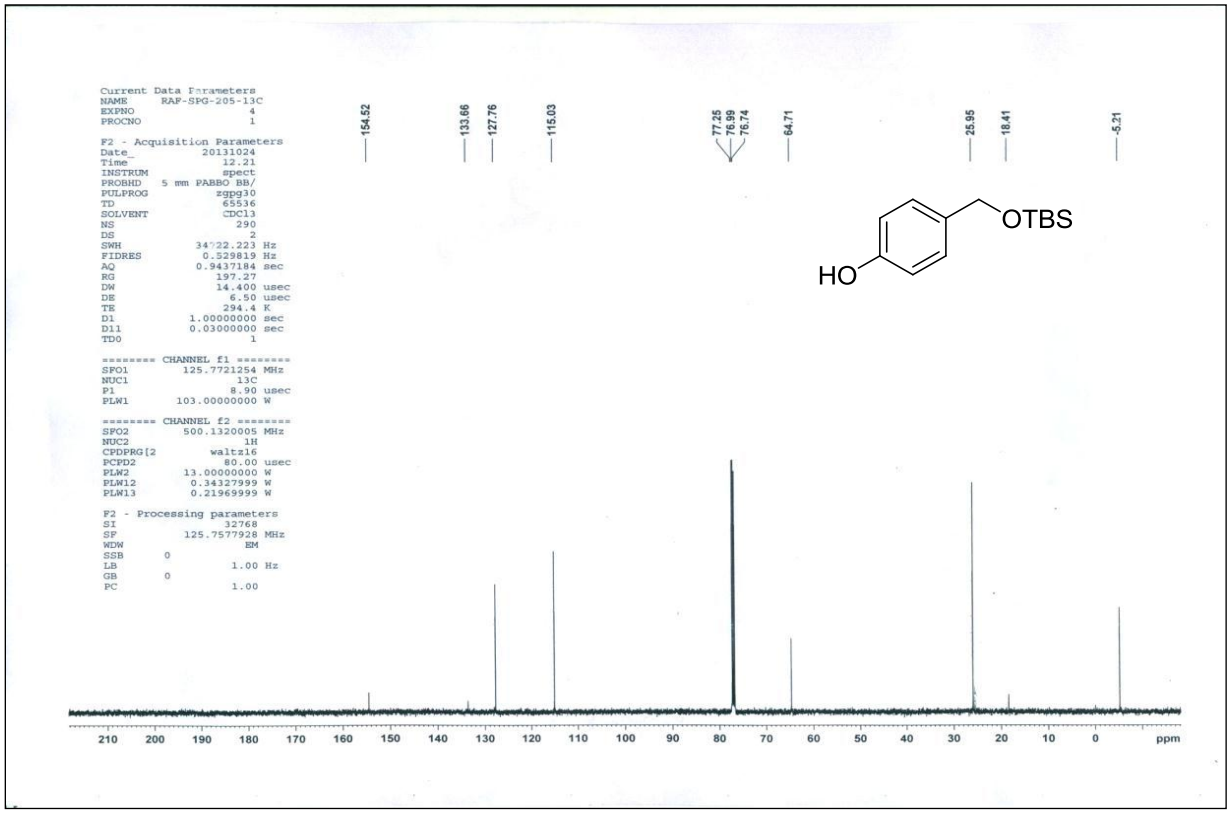
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **1**



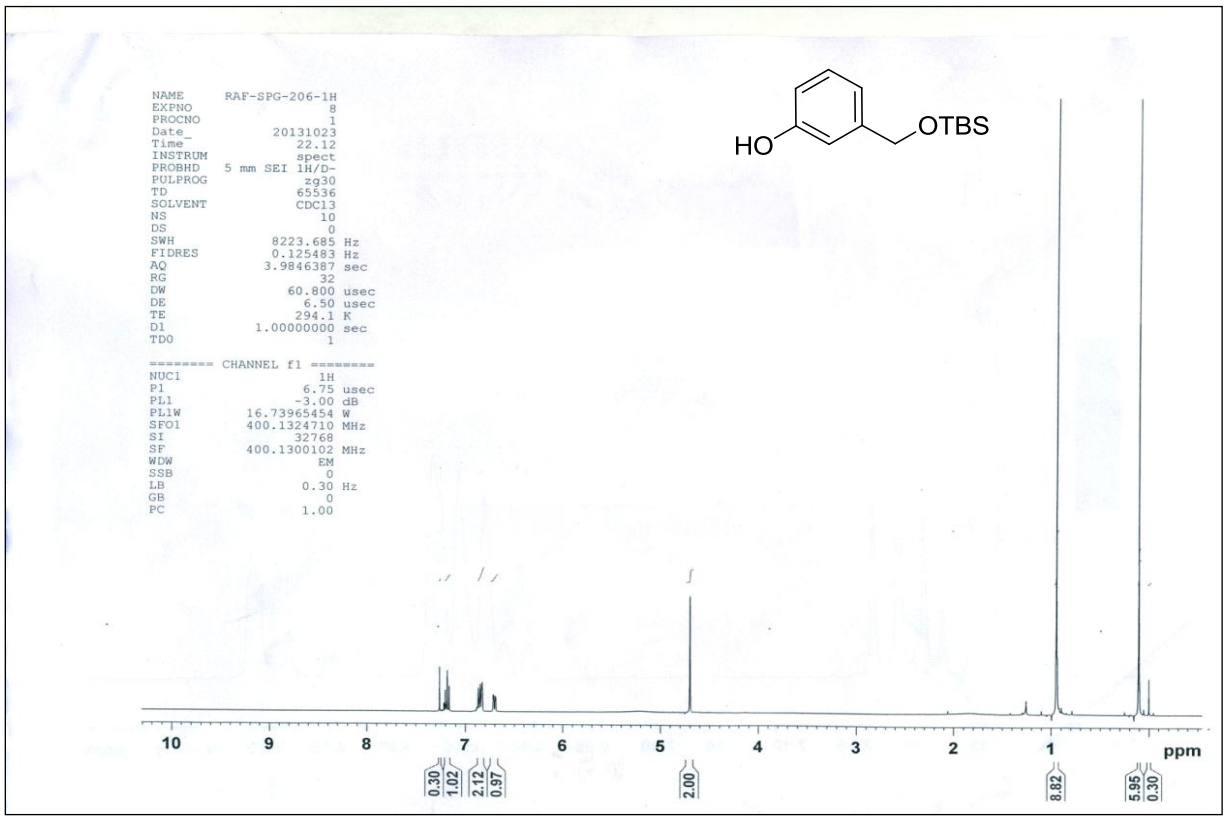


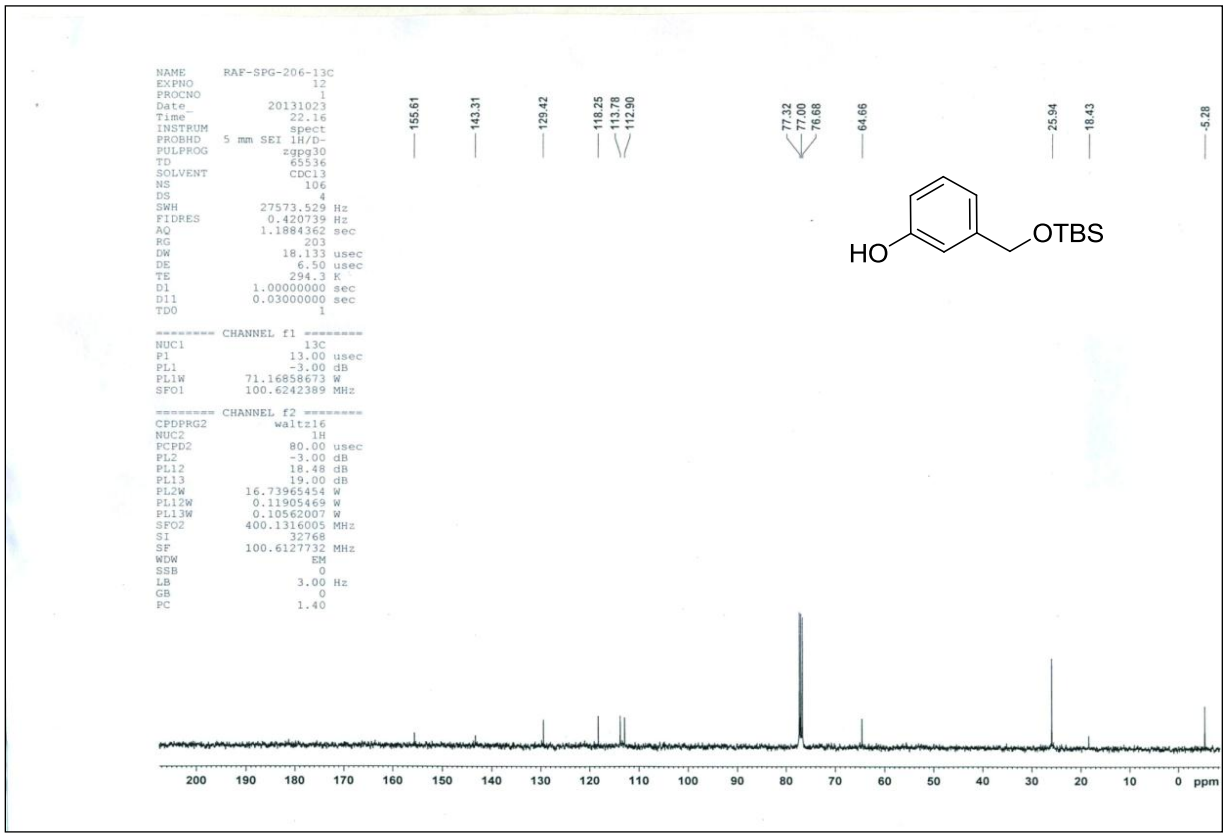
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125MHz, $CDCl_3$) of compound **7a**



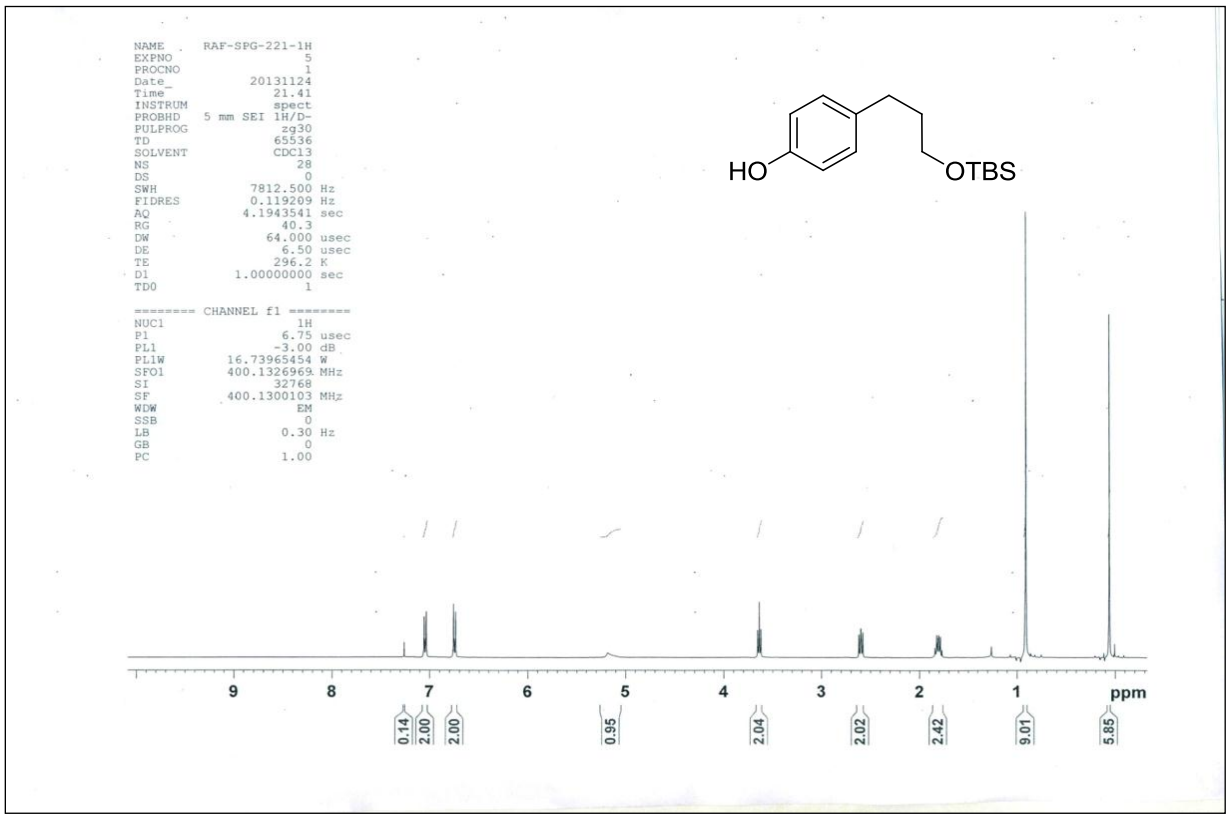


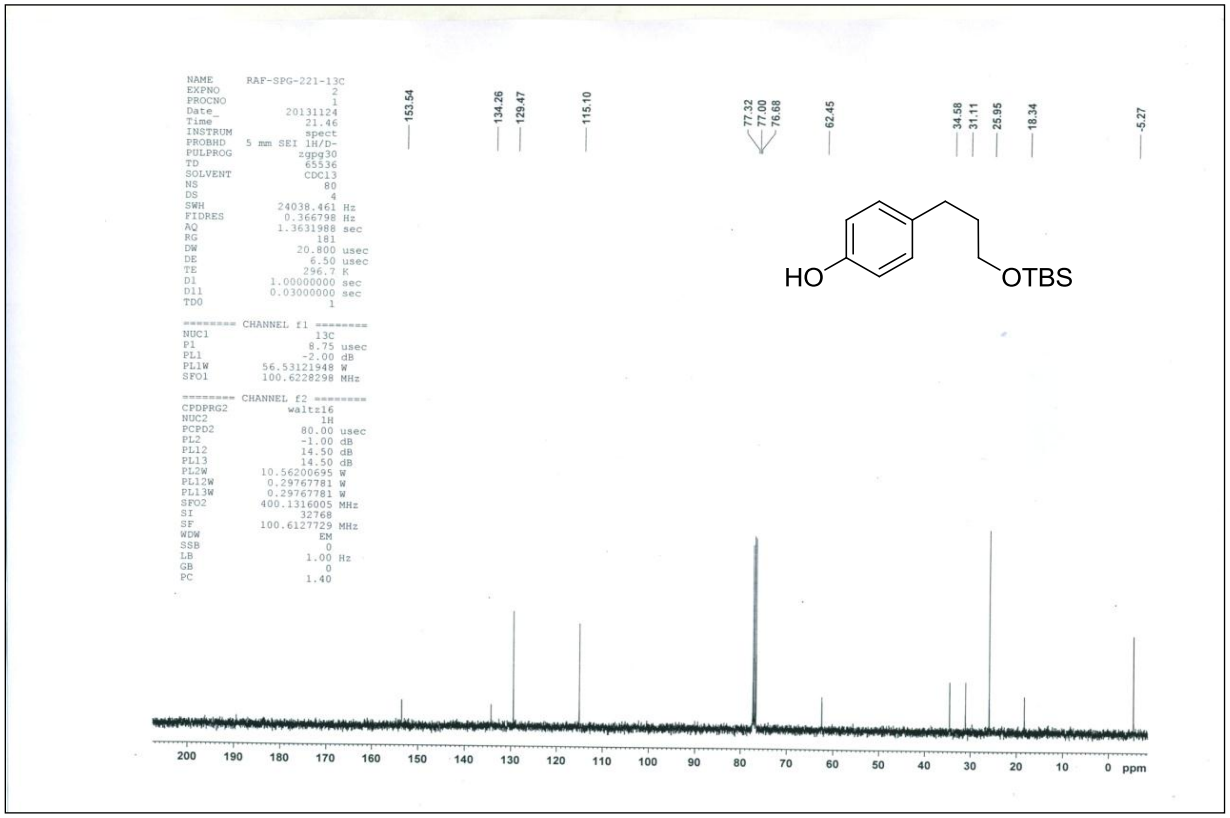
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **7b**



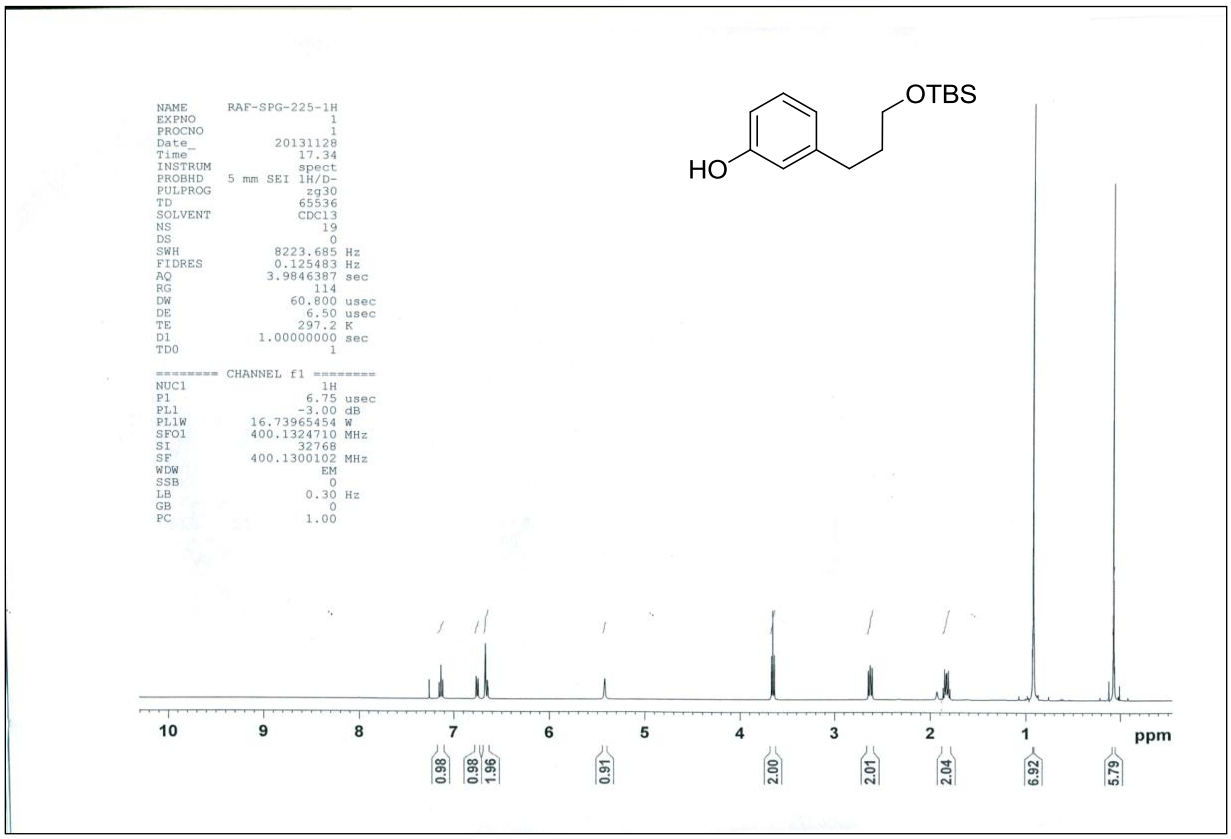


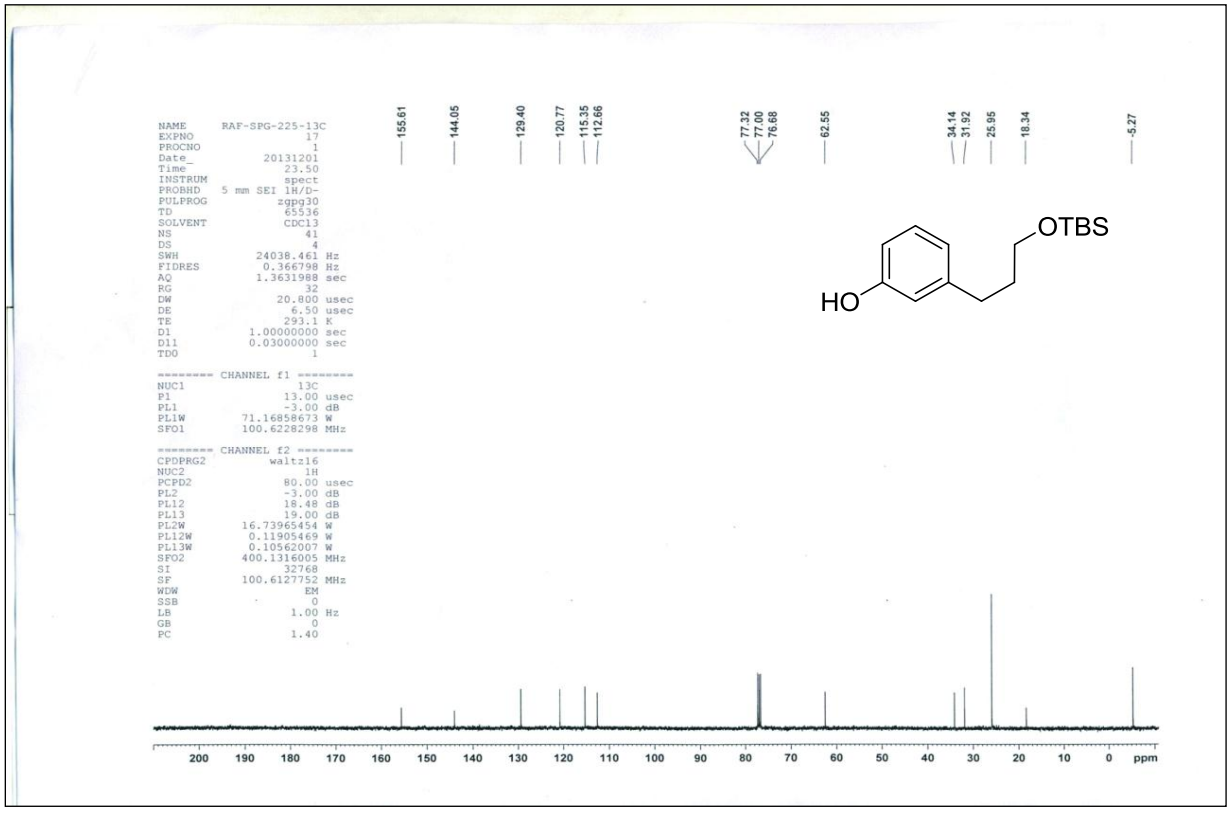
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **7c**



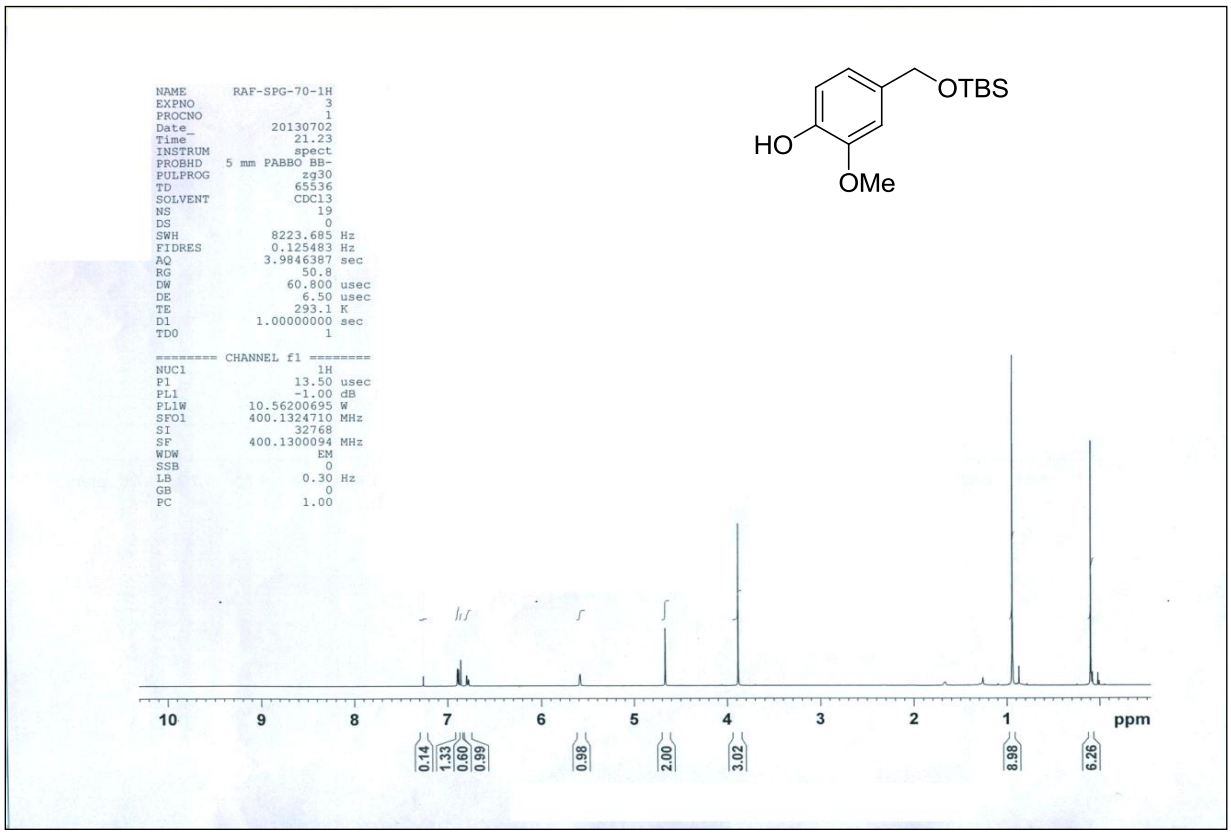


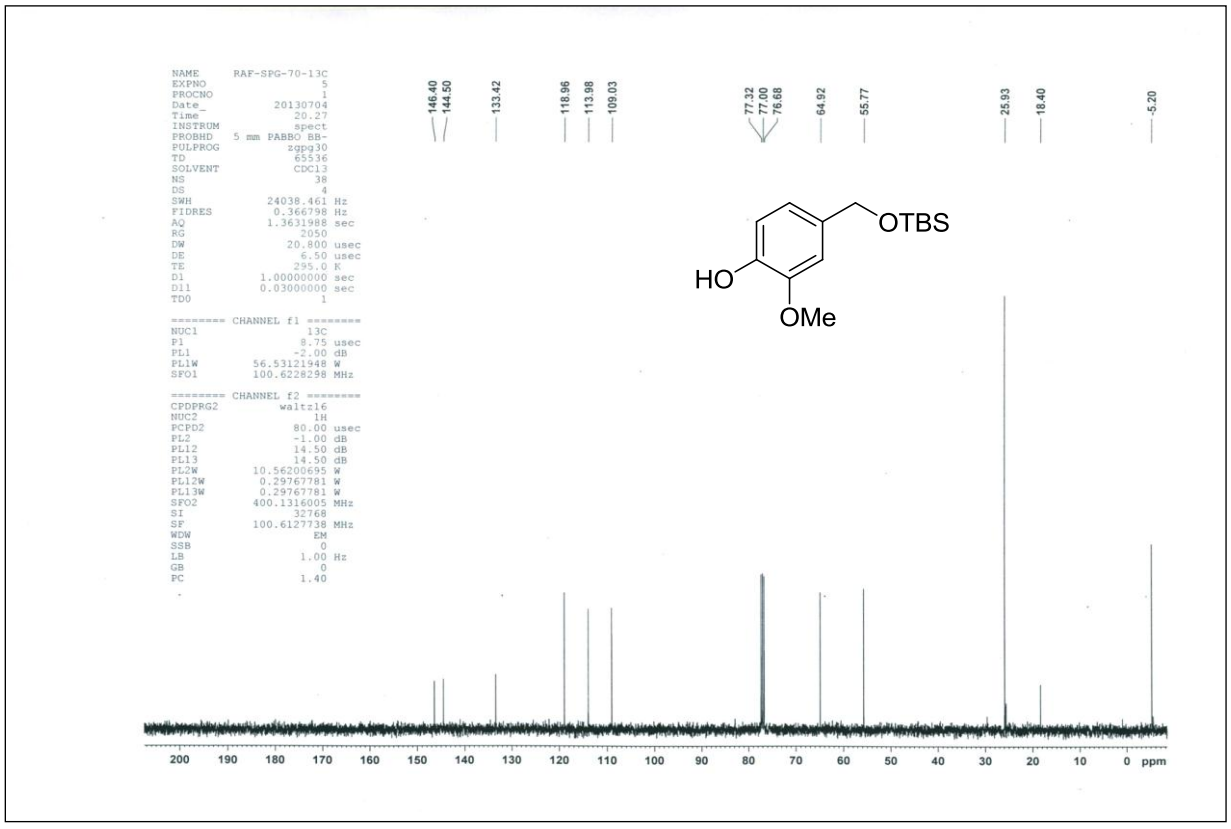
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **7d**



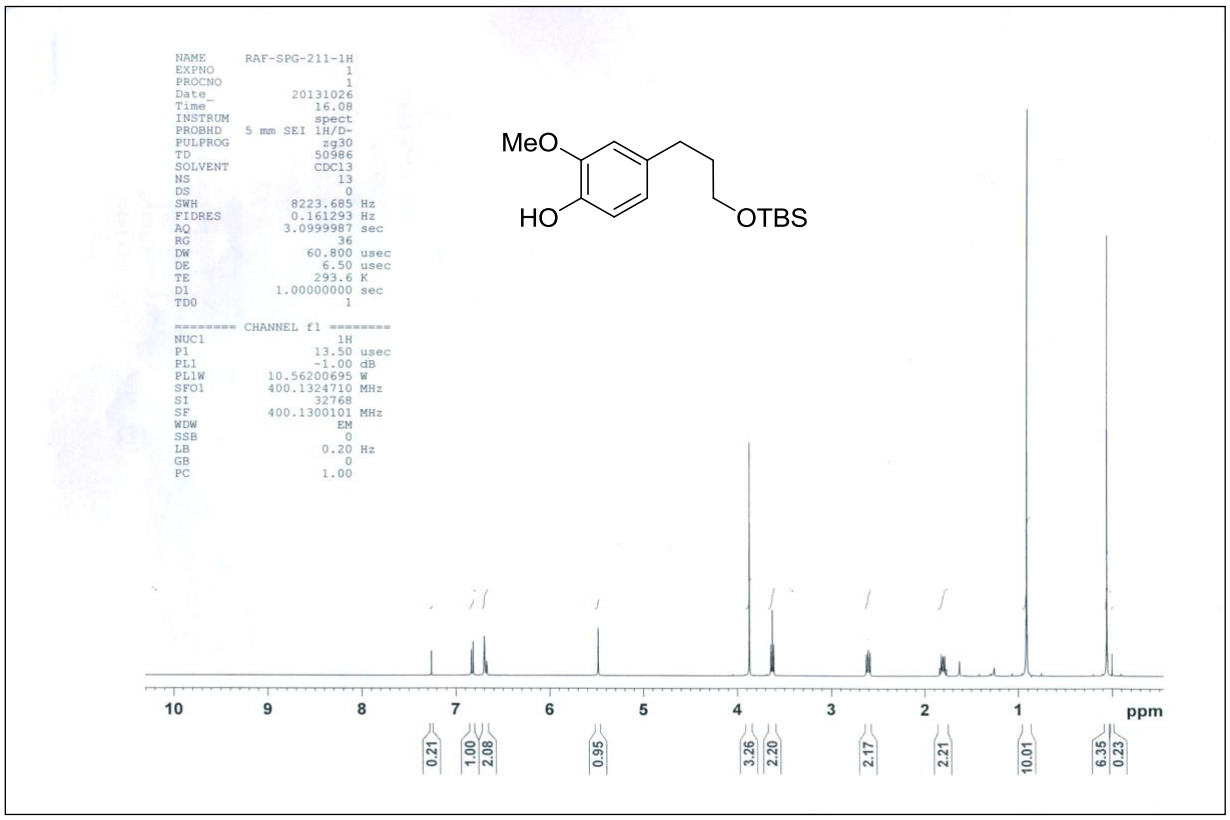


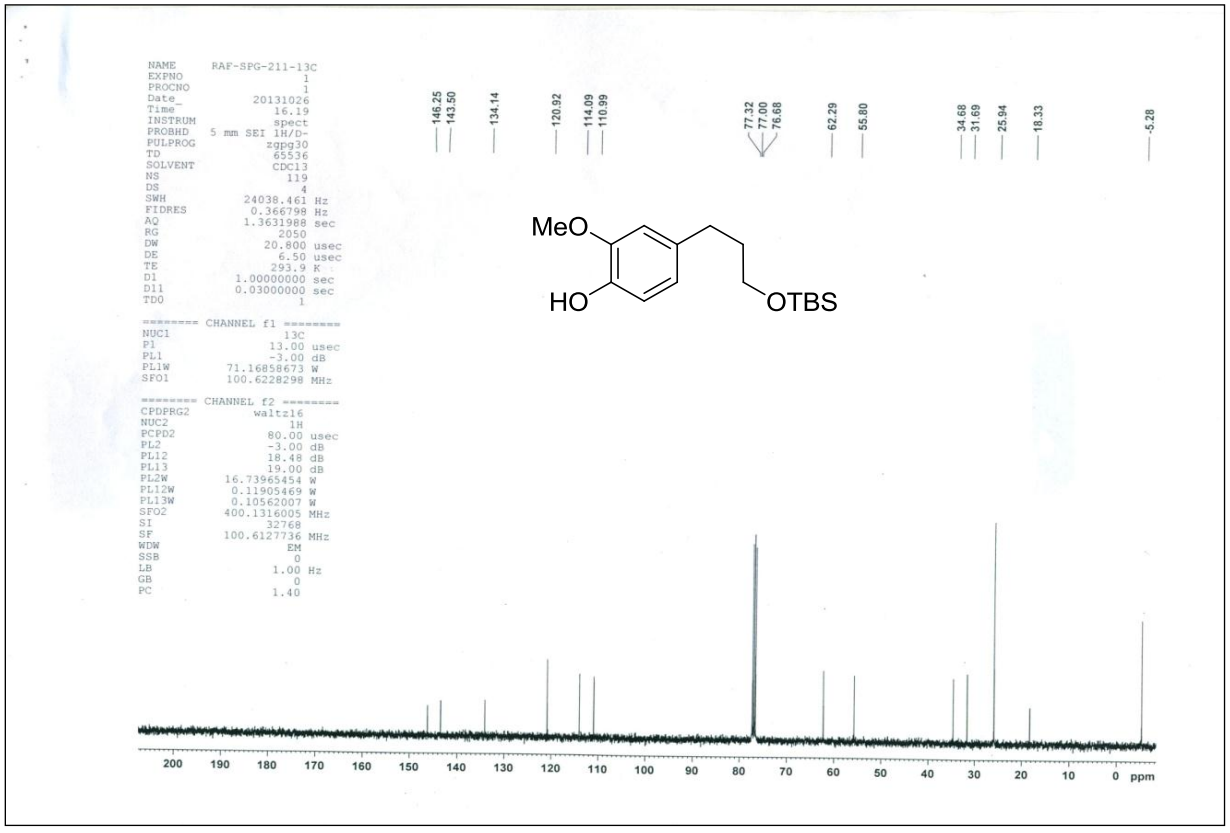
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **7e**



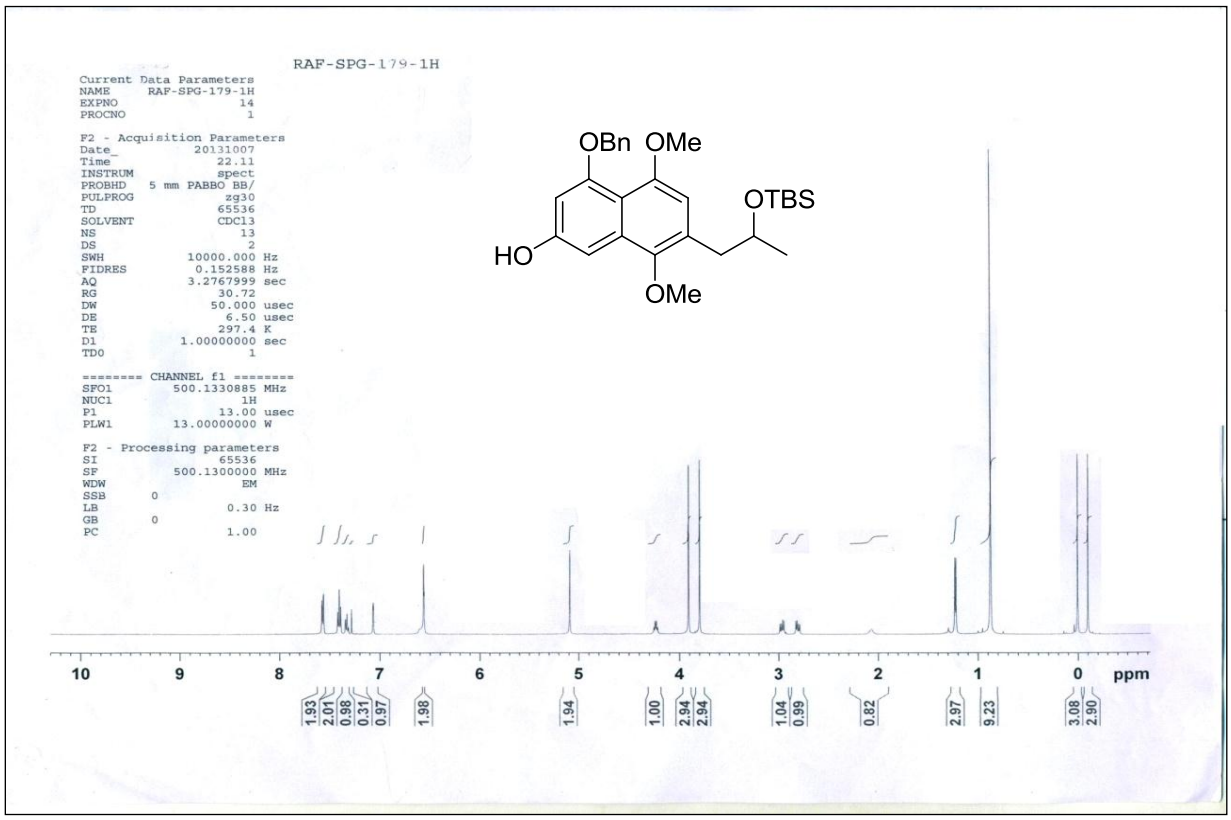


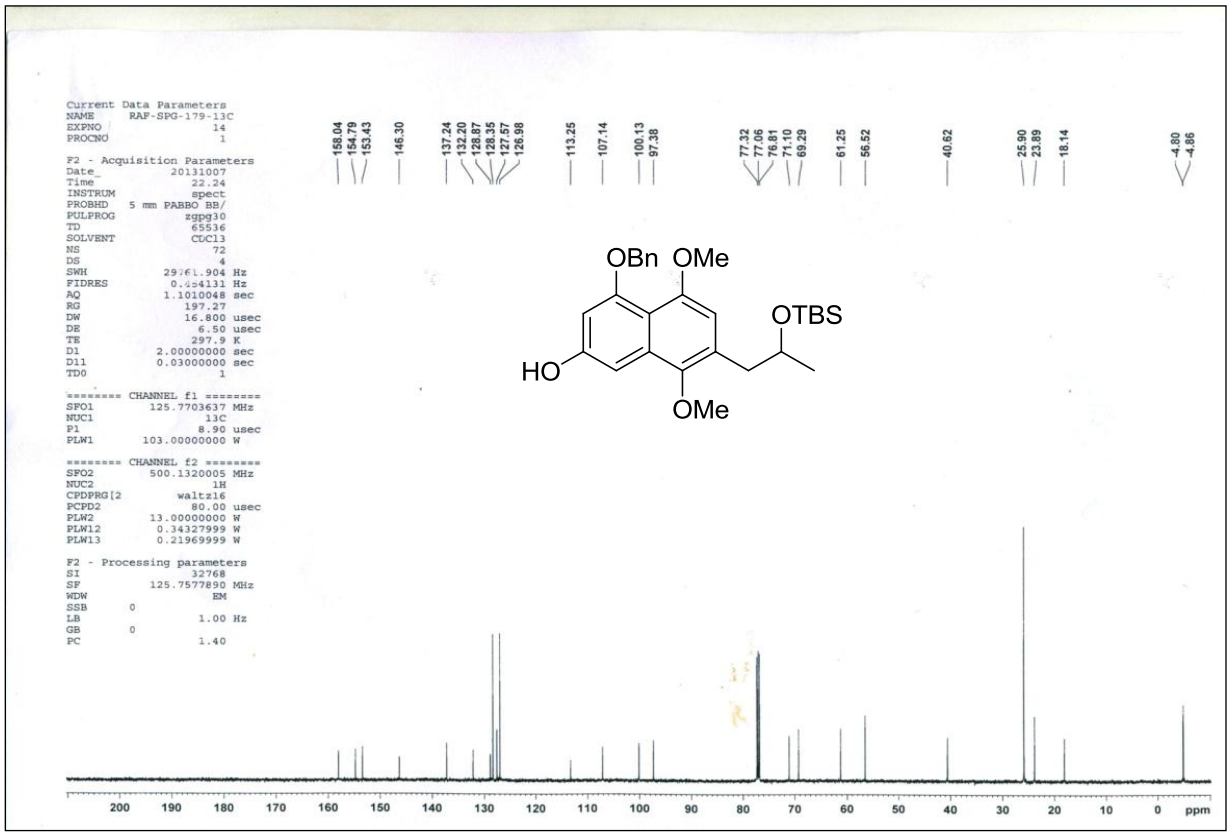
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **7f**



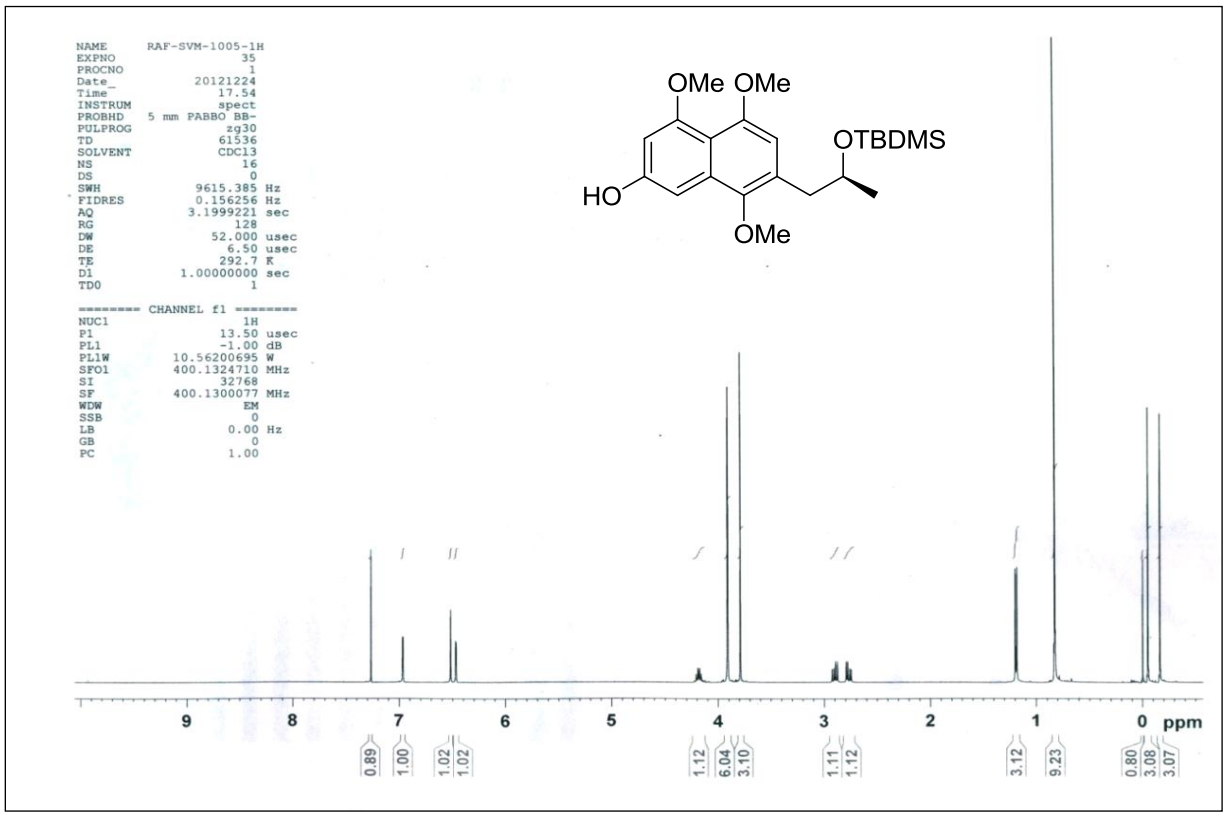


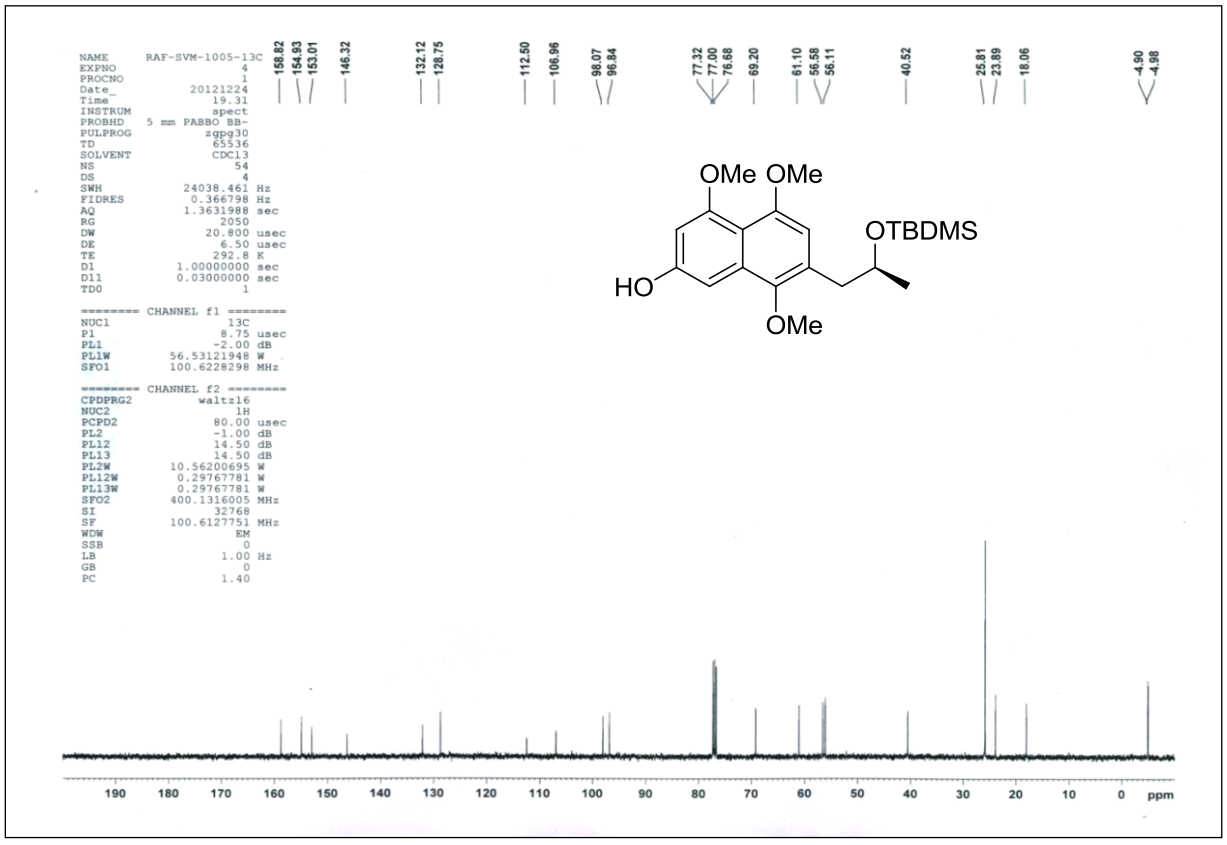
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125MHz, $CDCl_3$) of compound **7g**



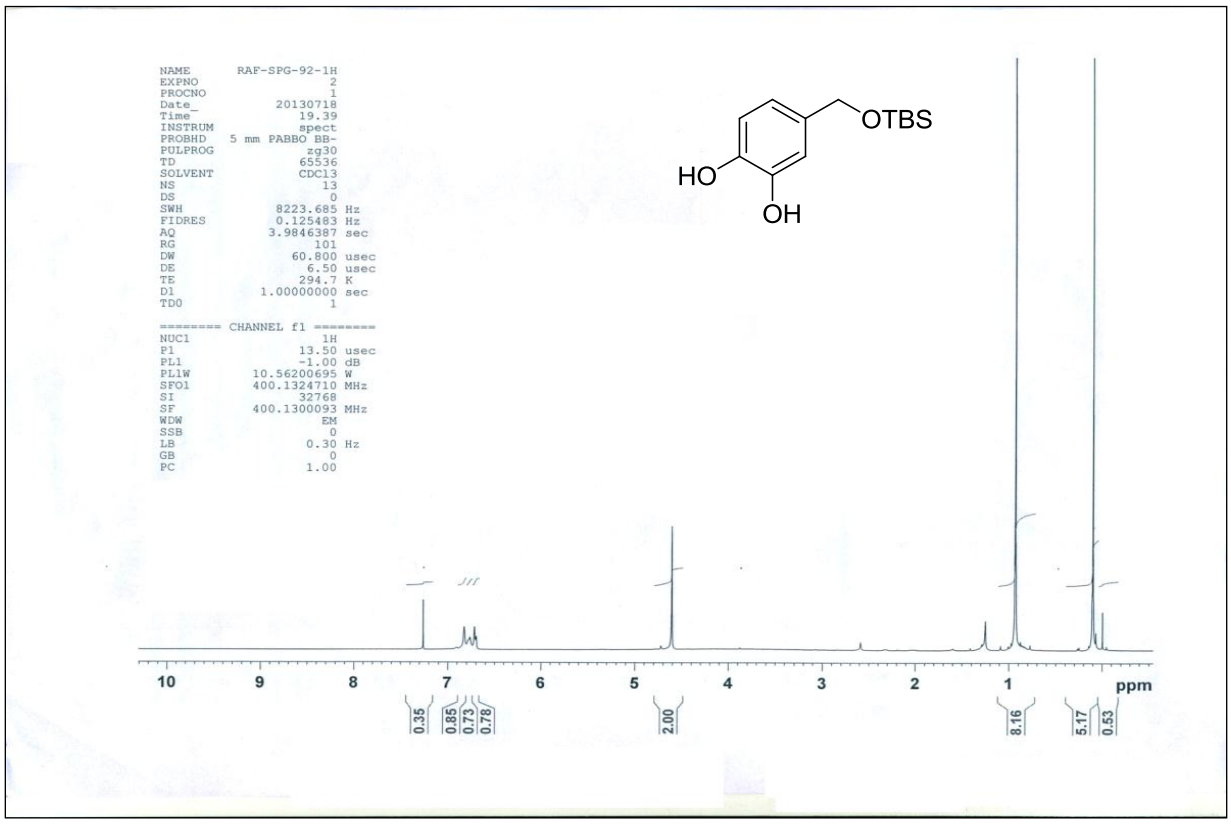


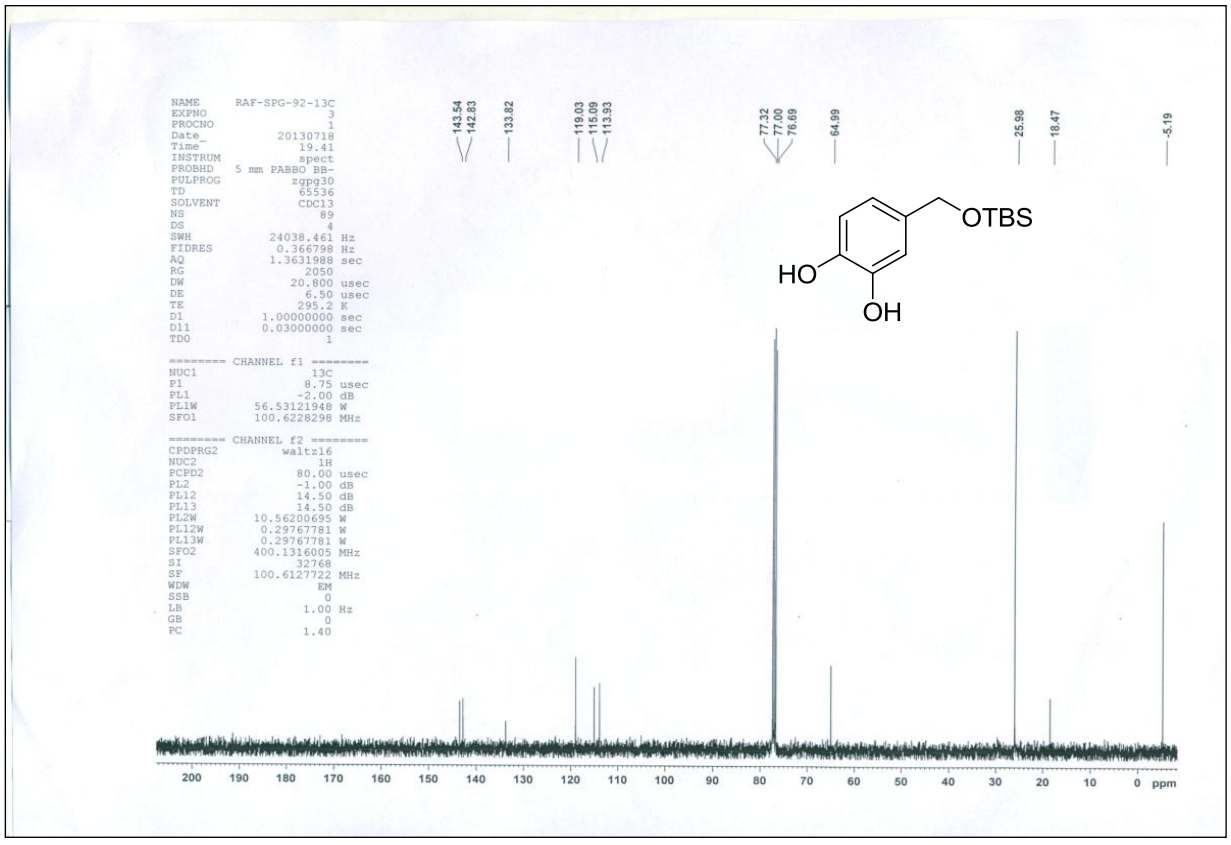
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **7h**



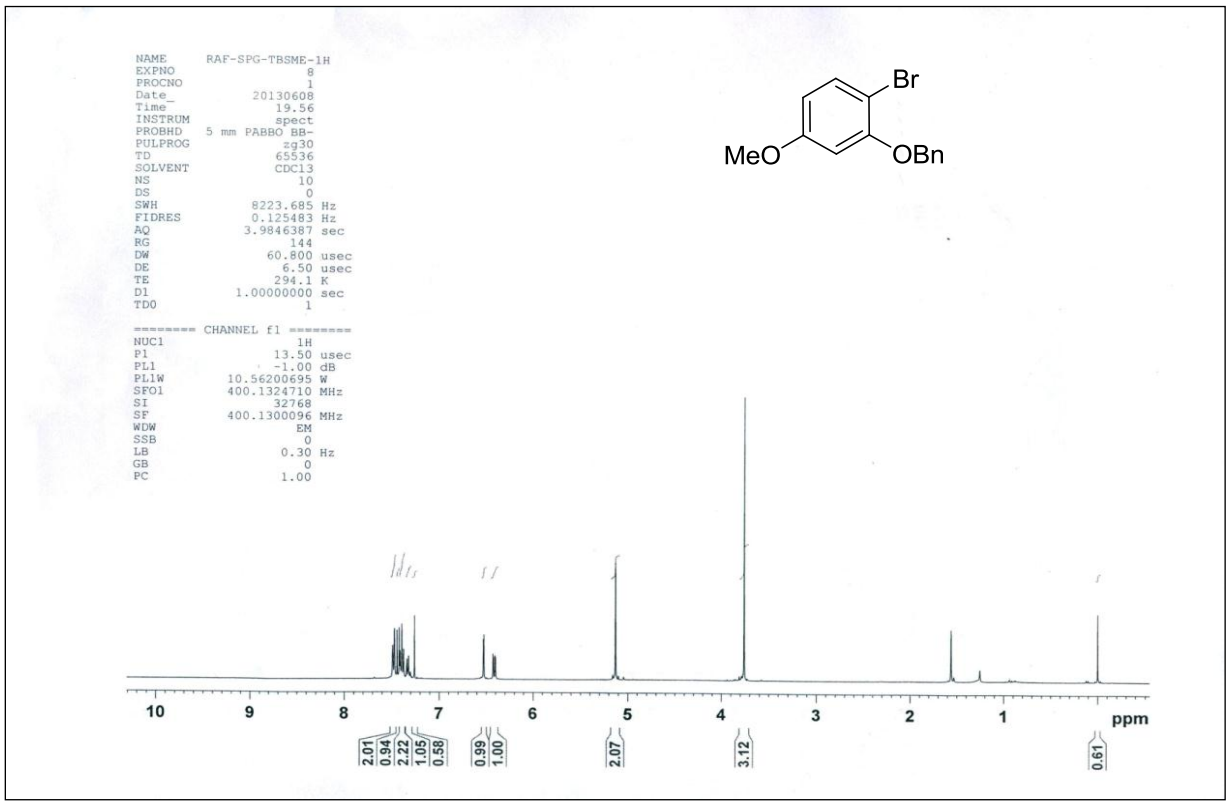


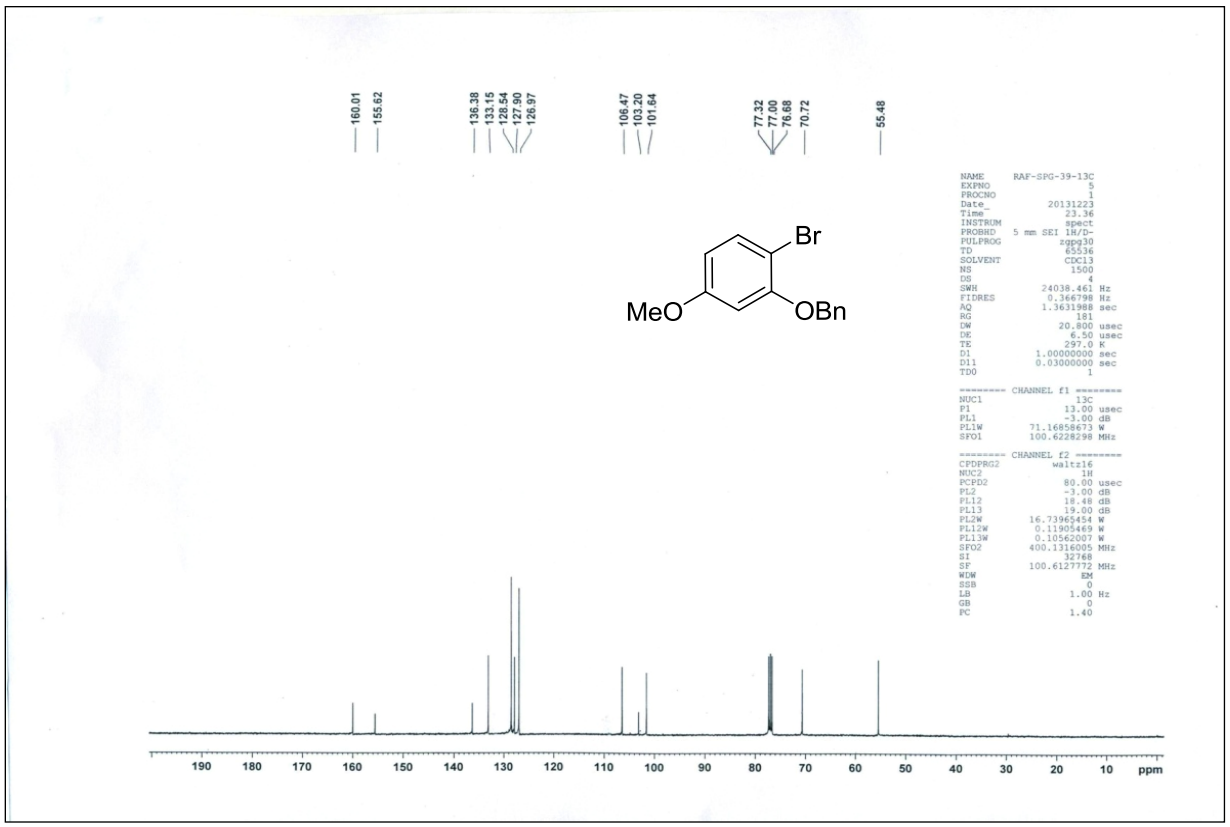
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **7i**



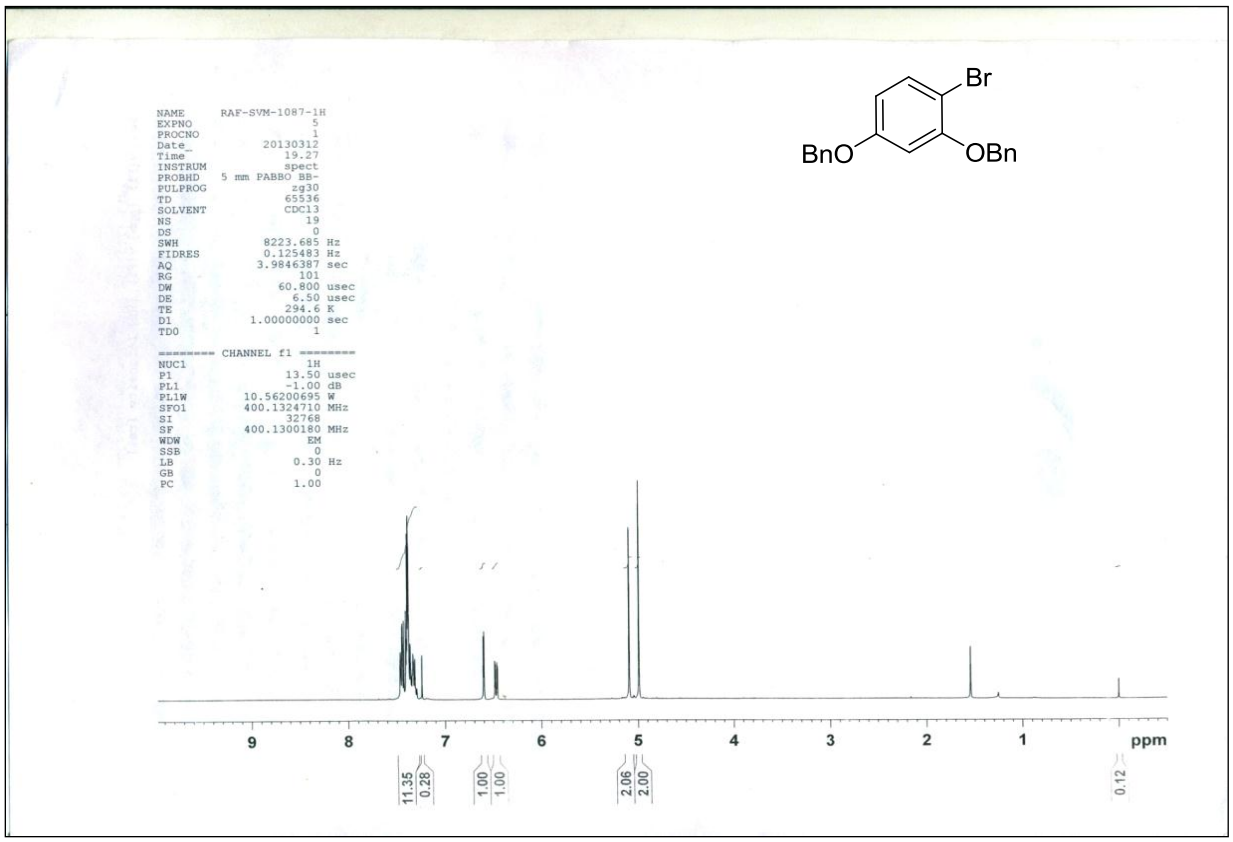


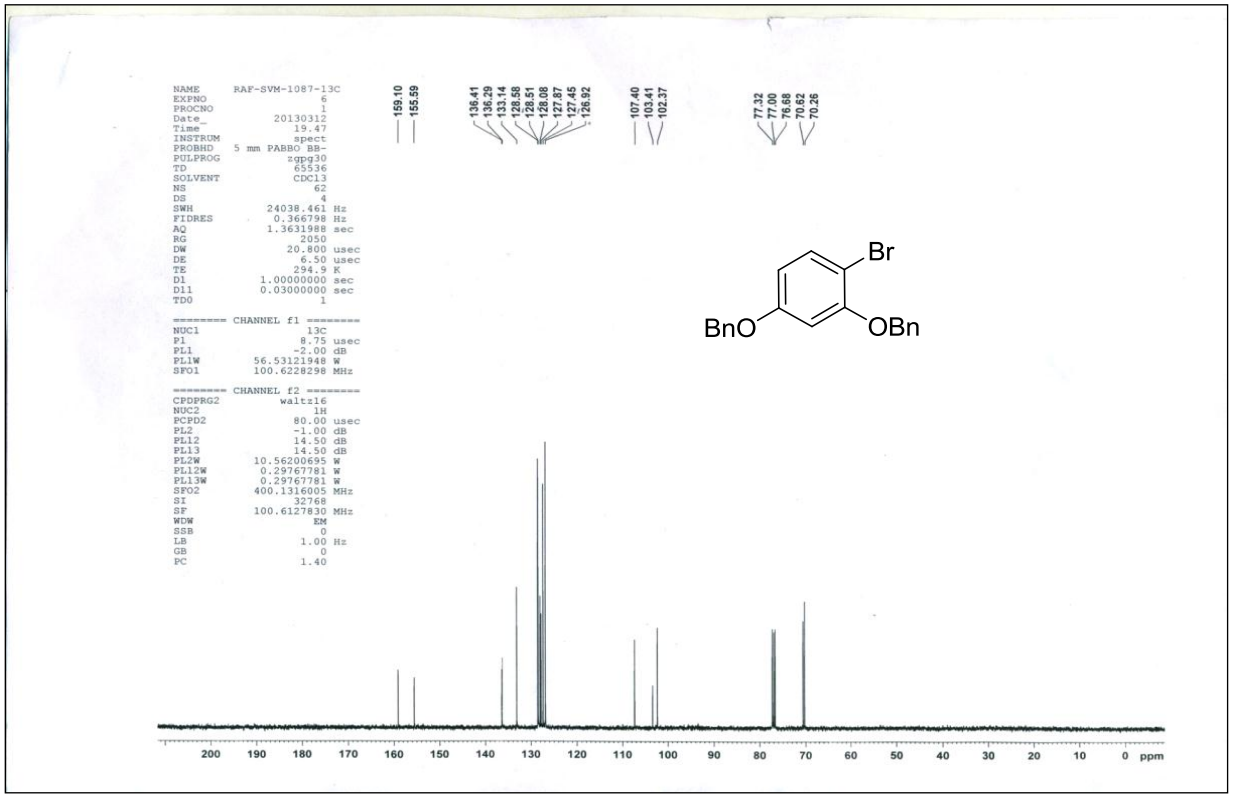
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **8a**



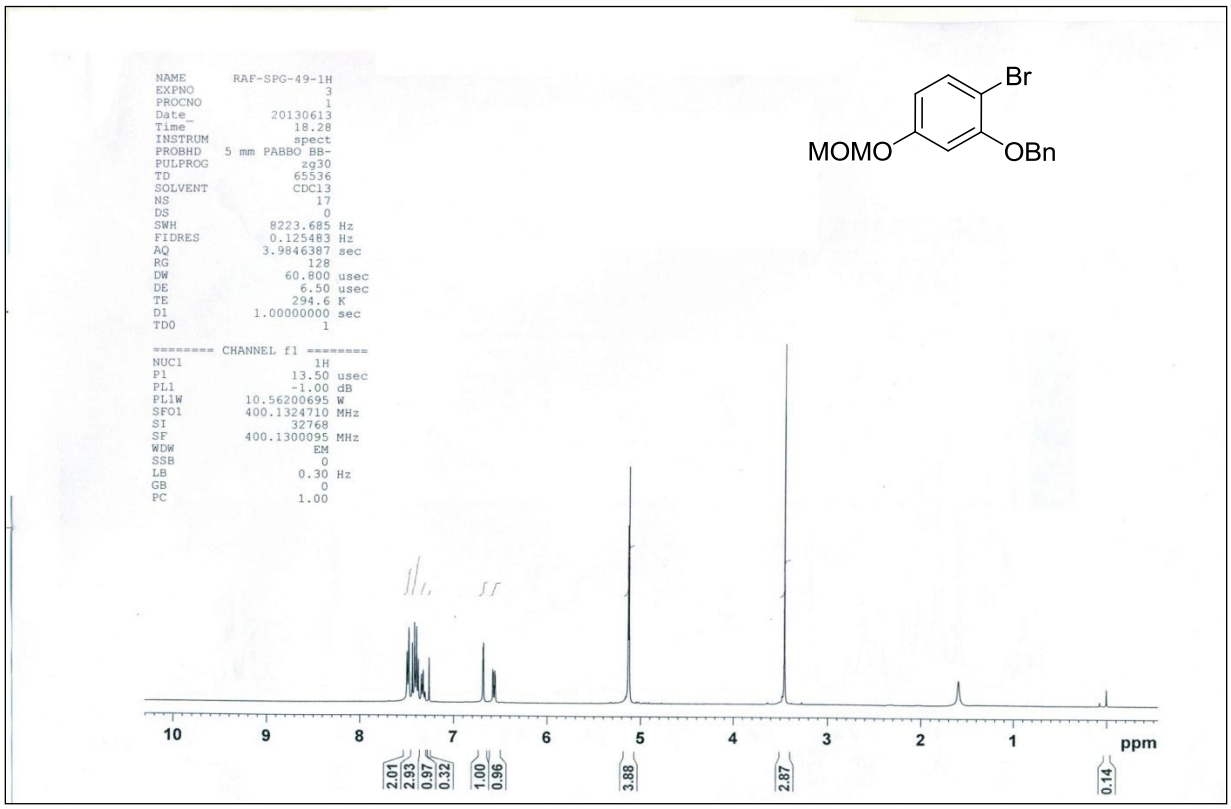


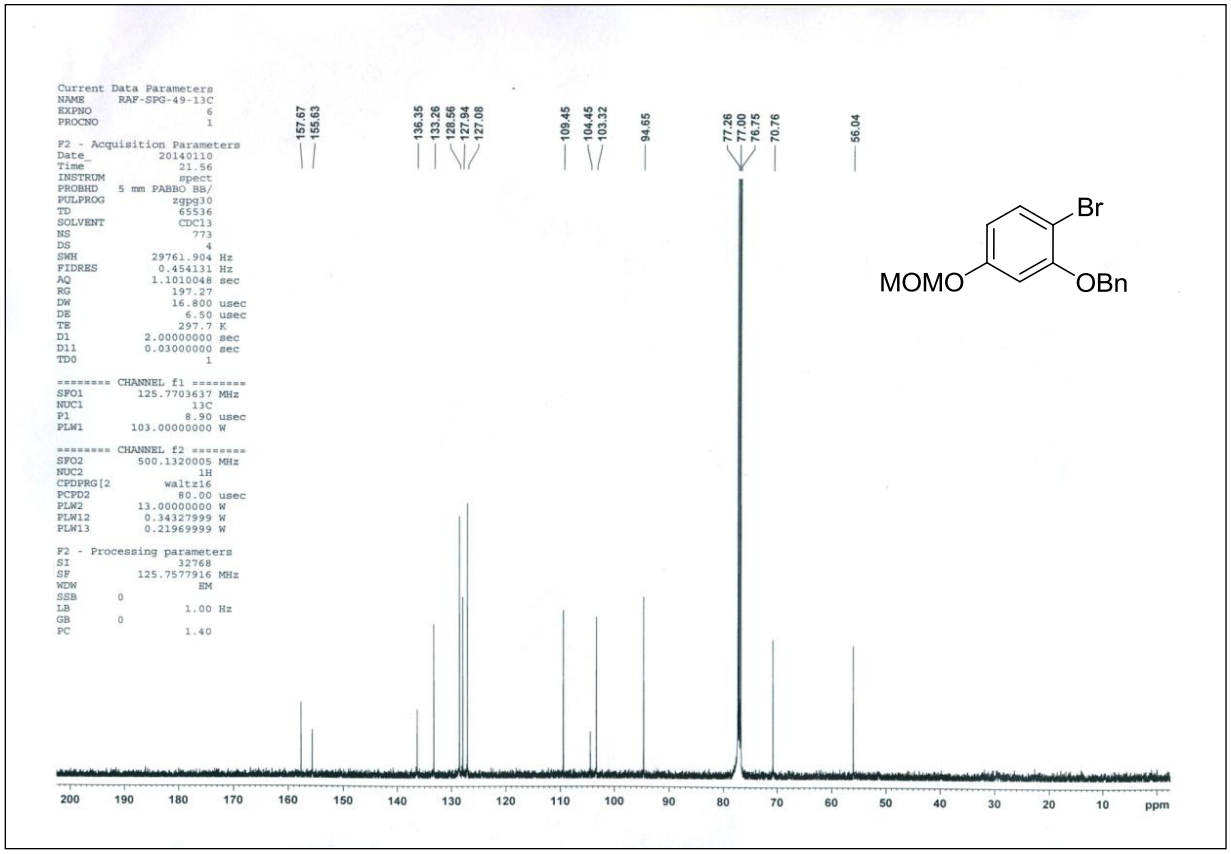
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **8b**



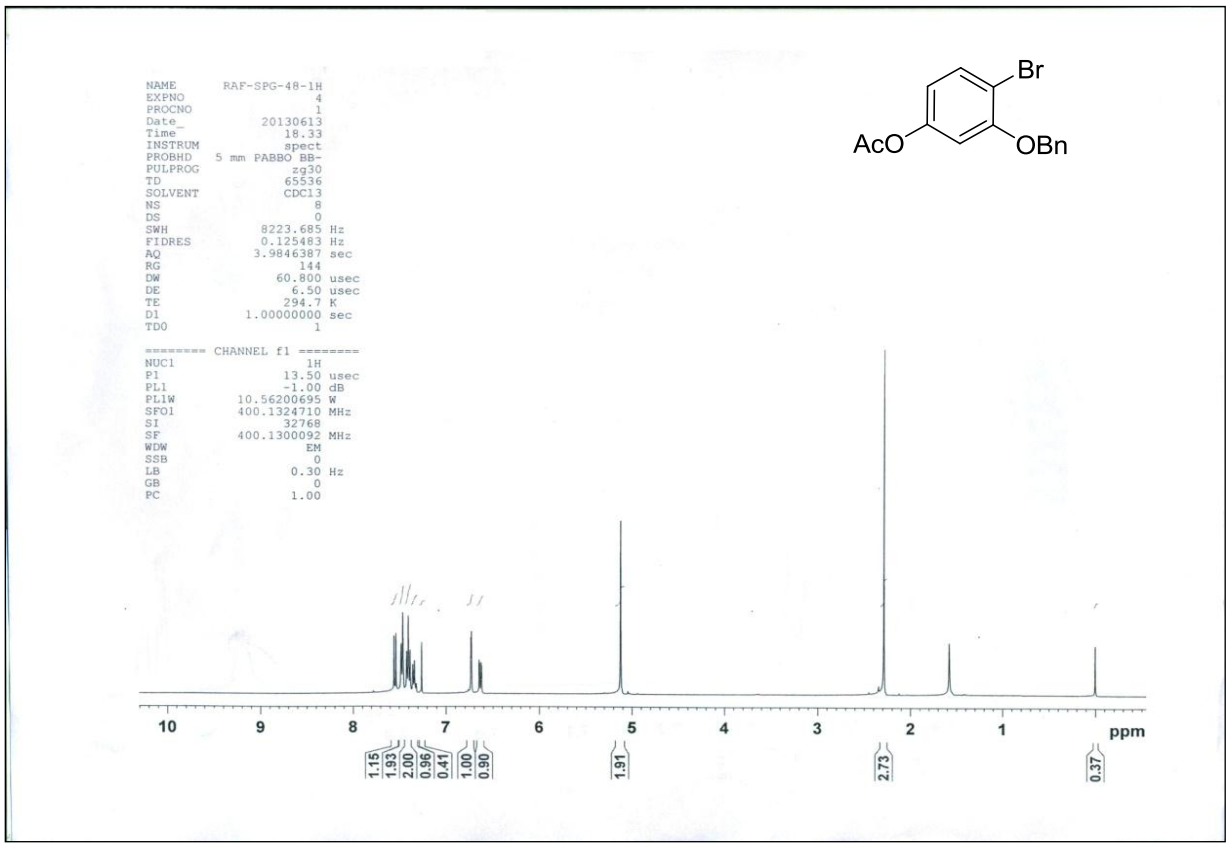


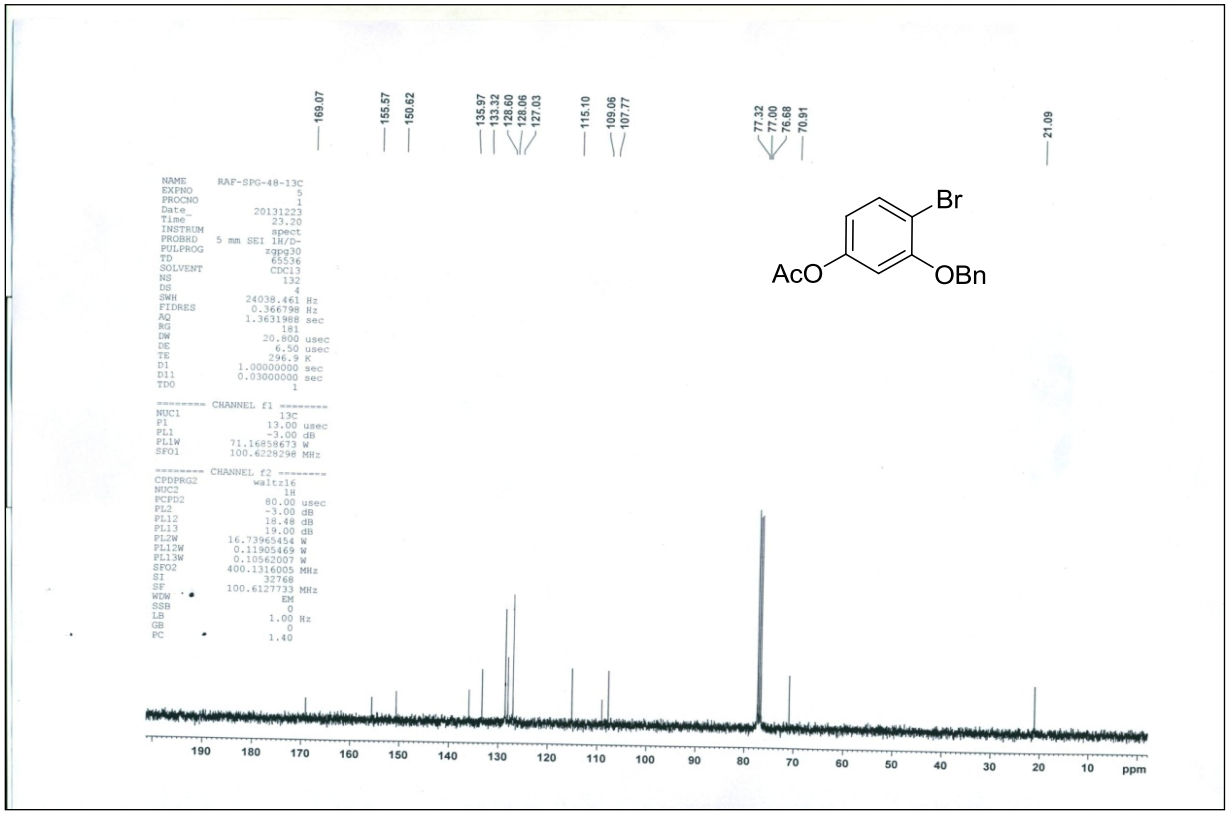
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **8c**



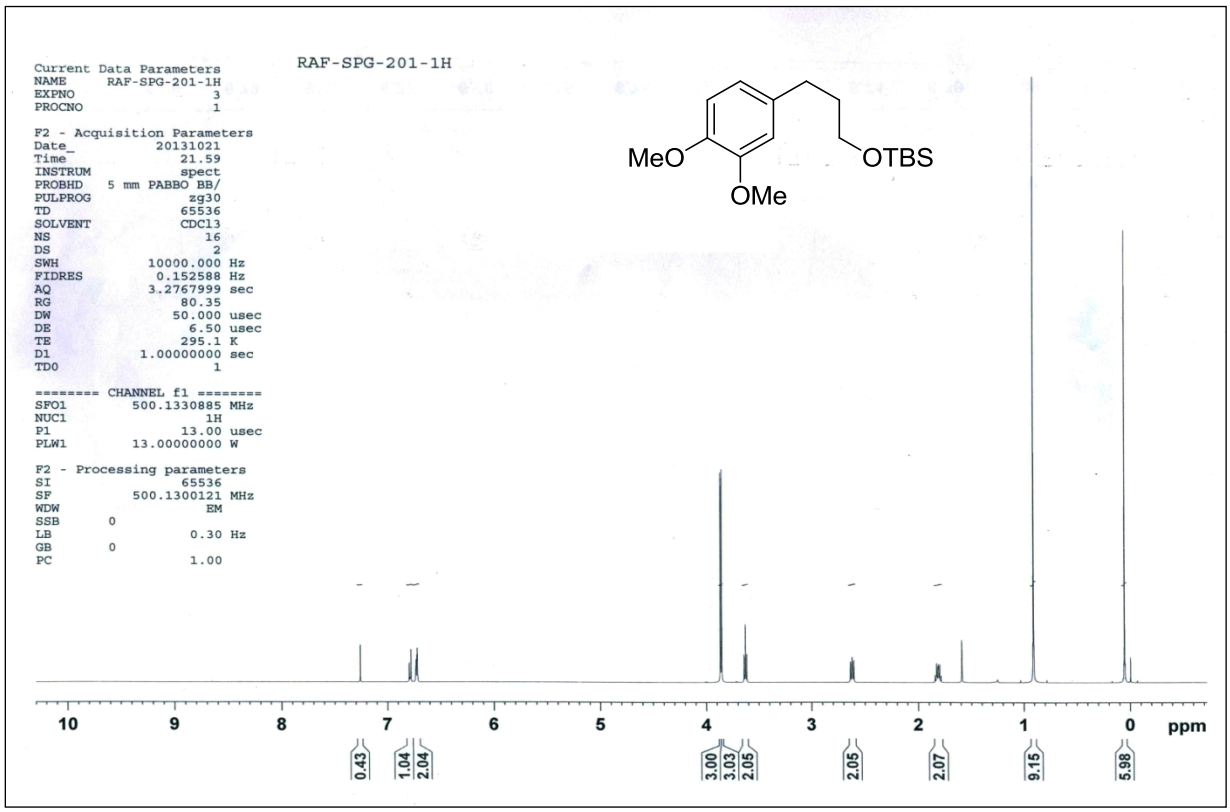


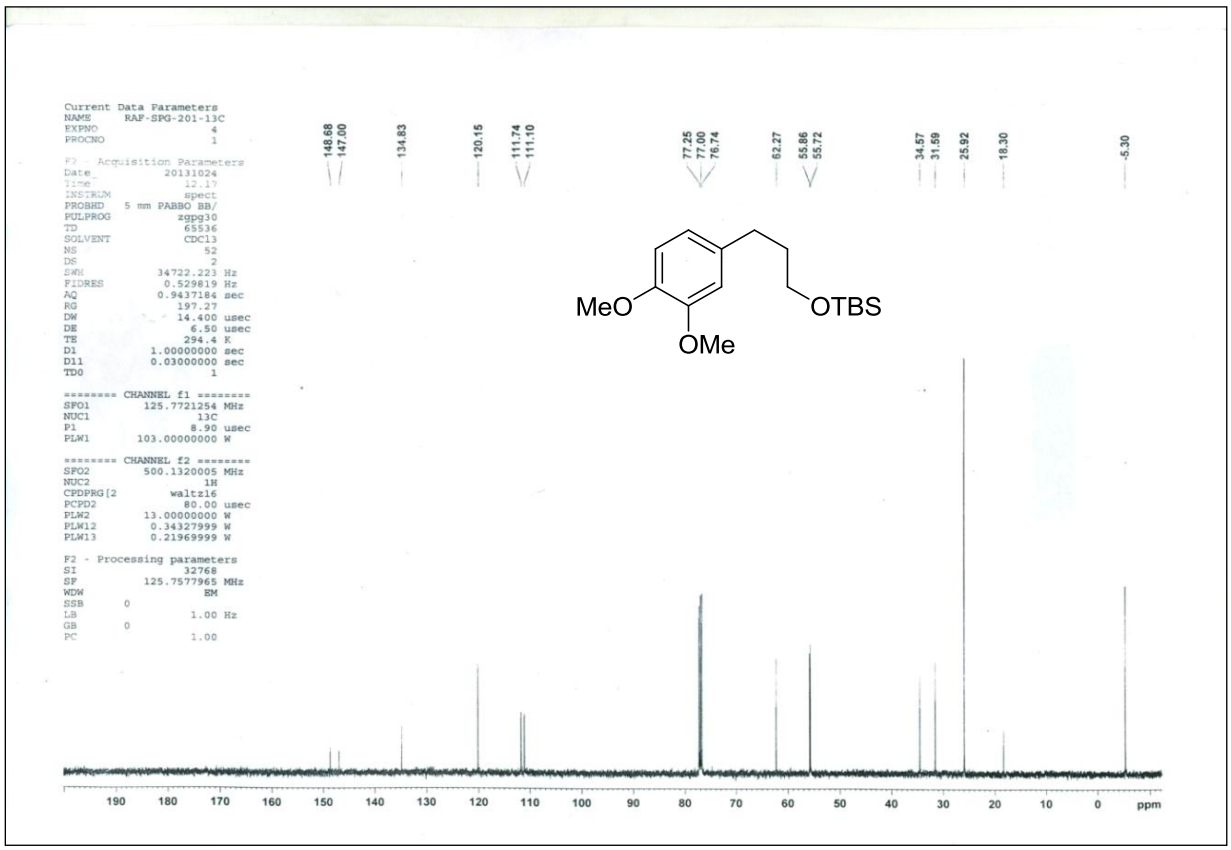
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **8d**



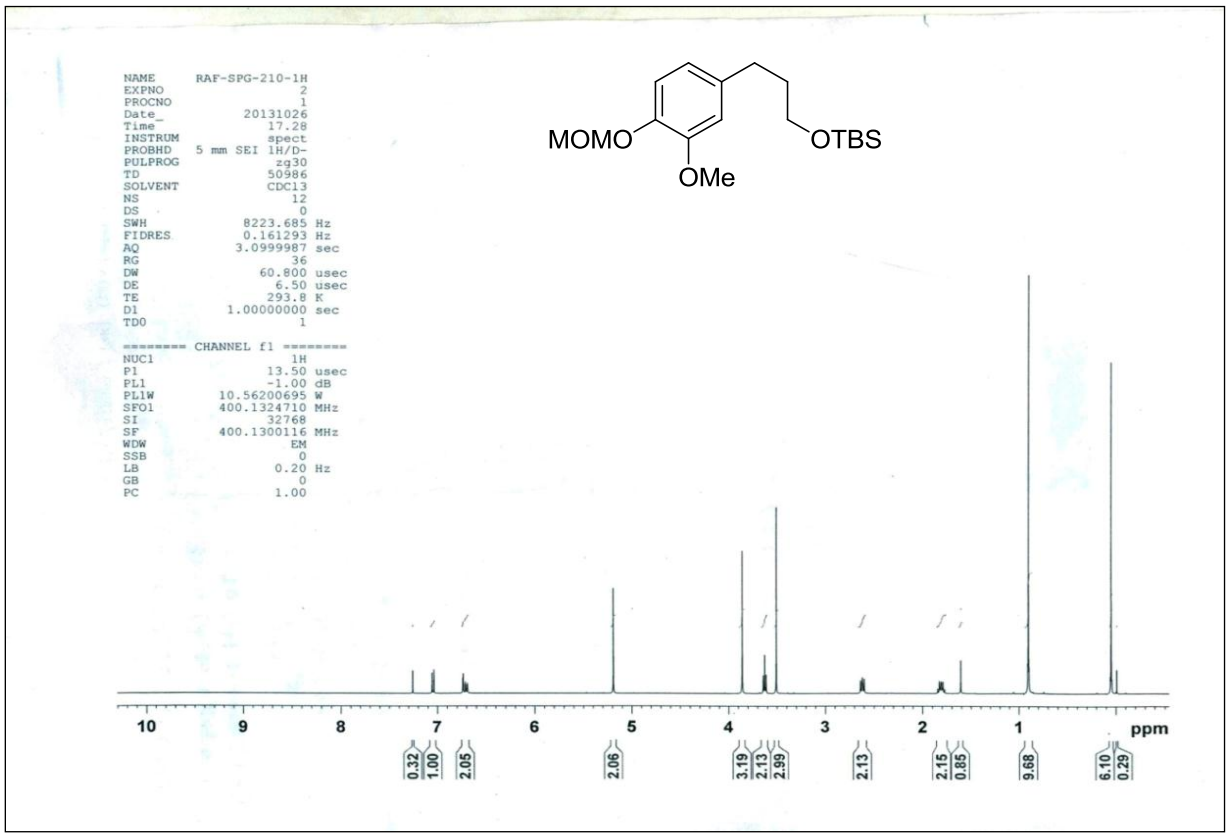


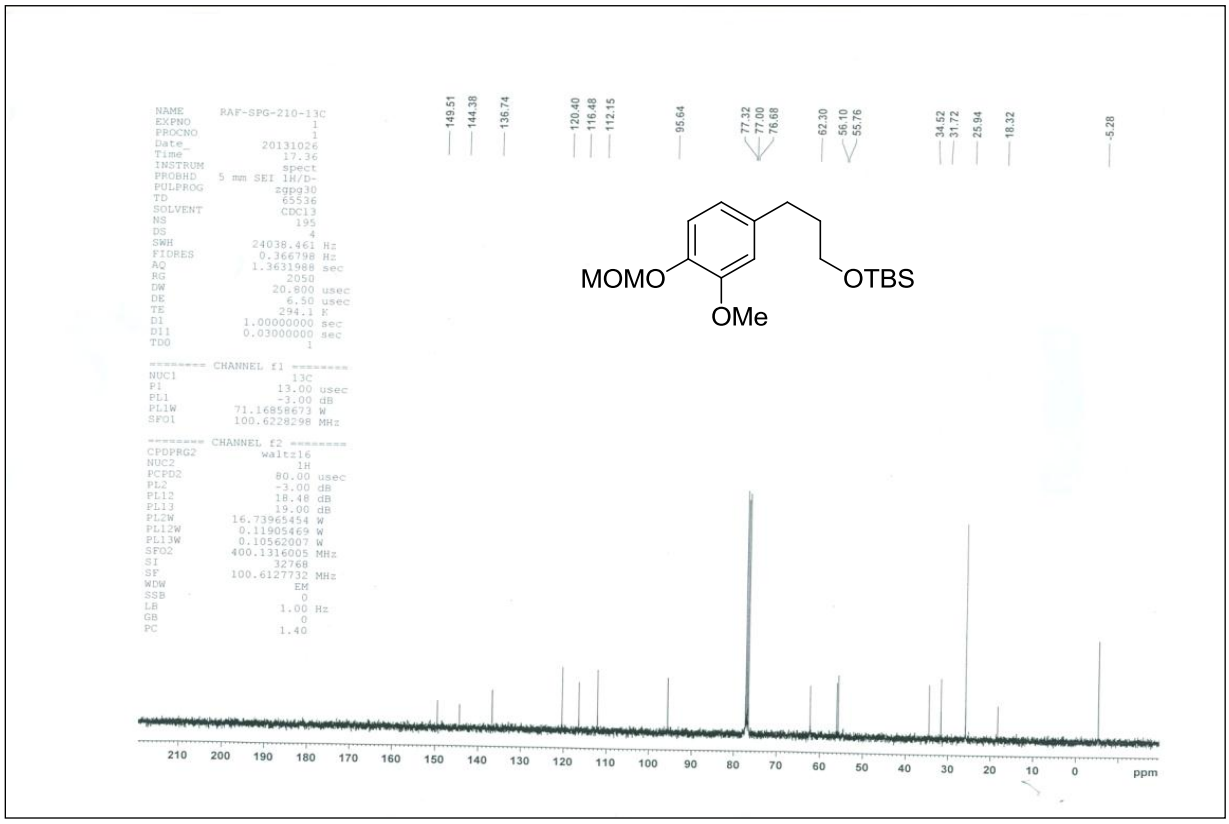
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **8e**



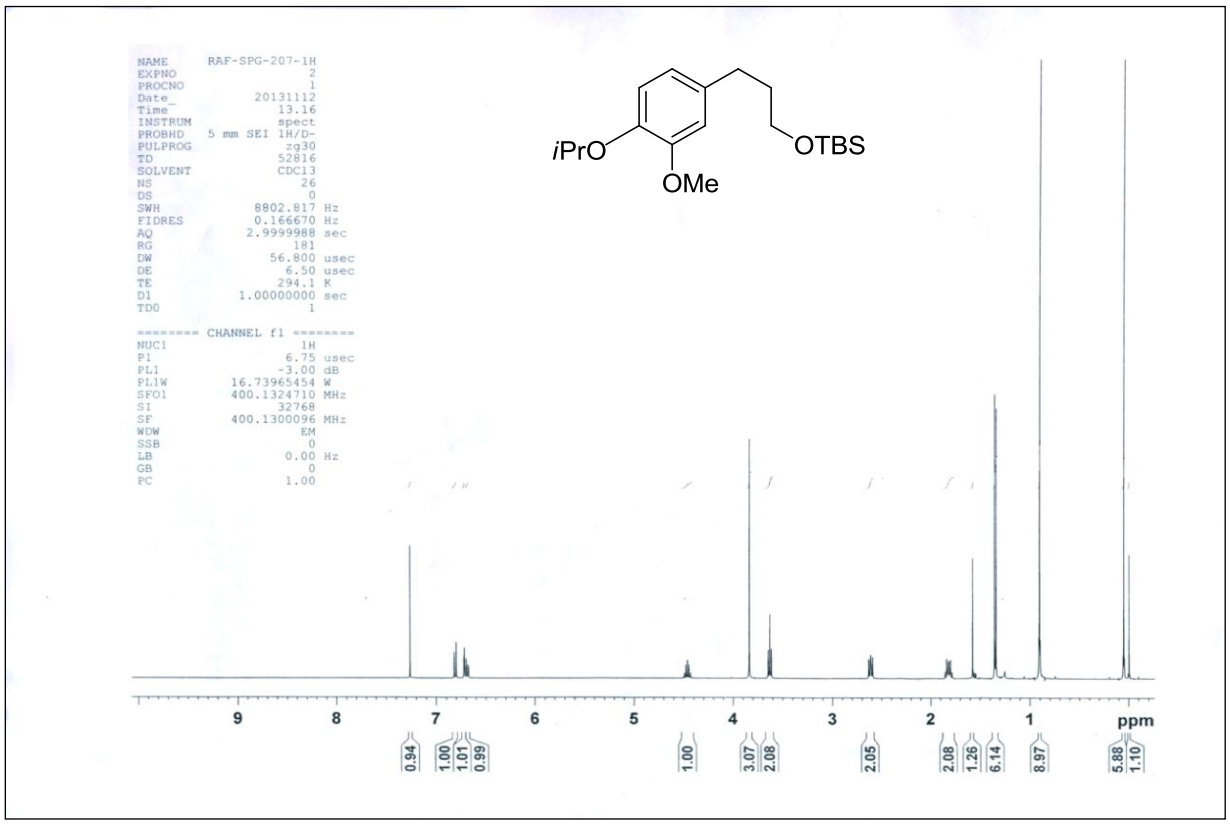


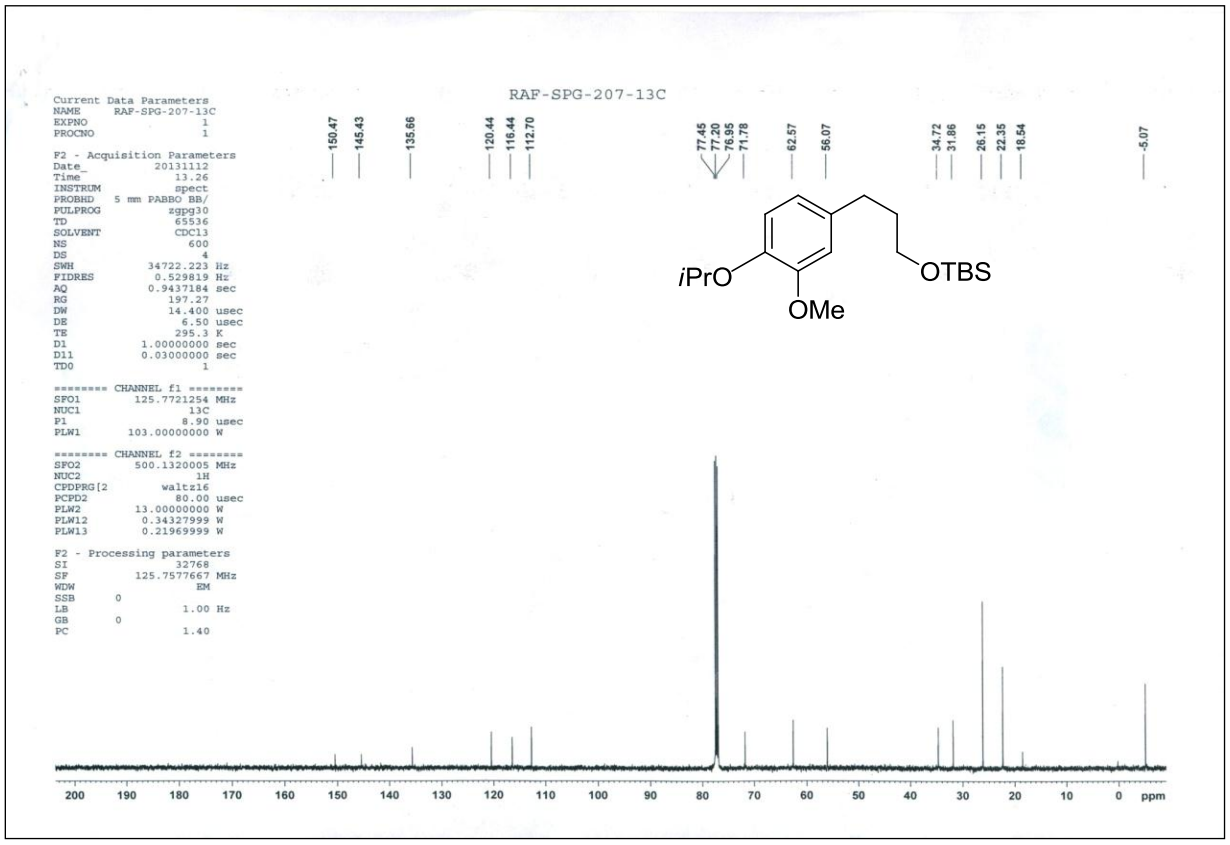
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **8f**



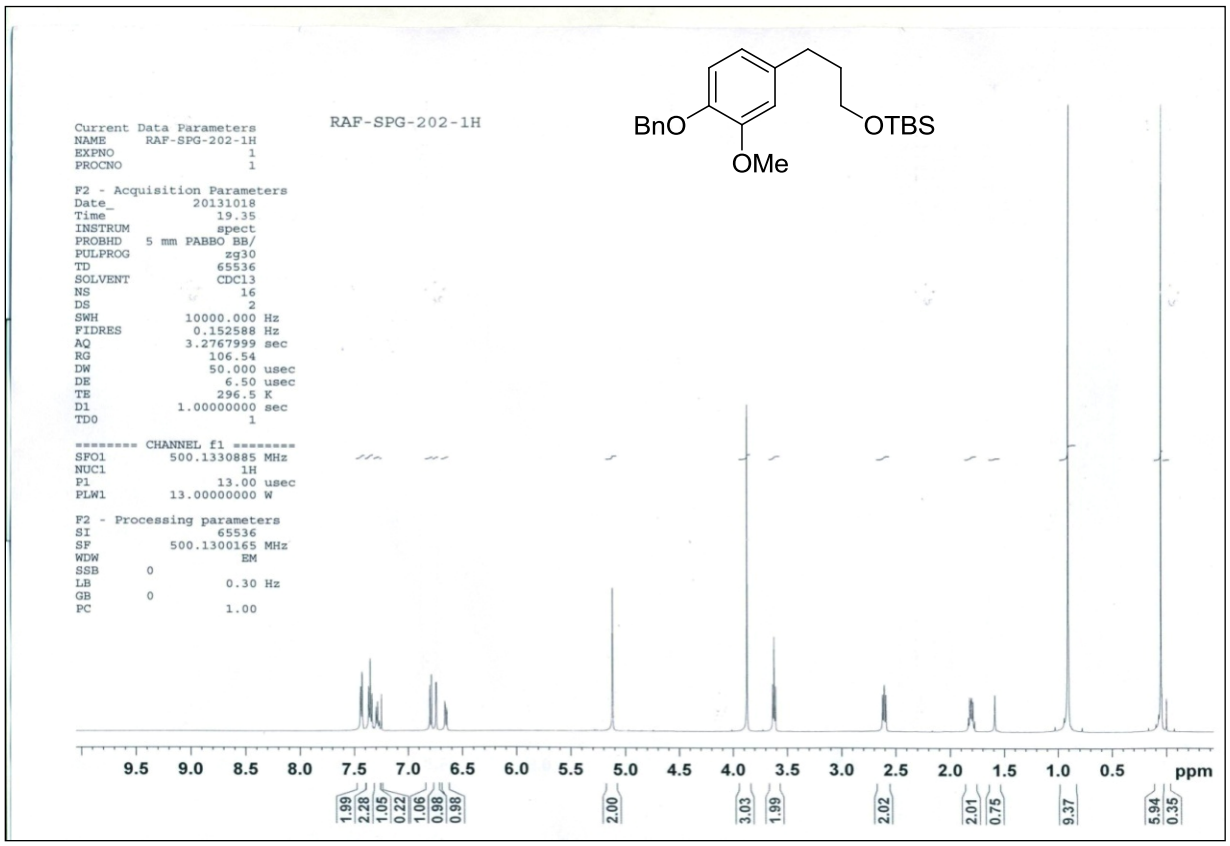


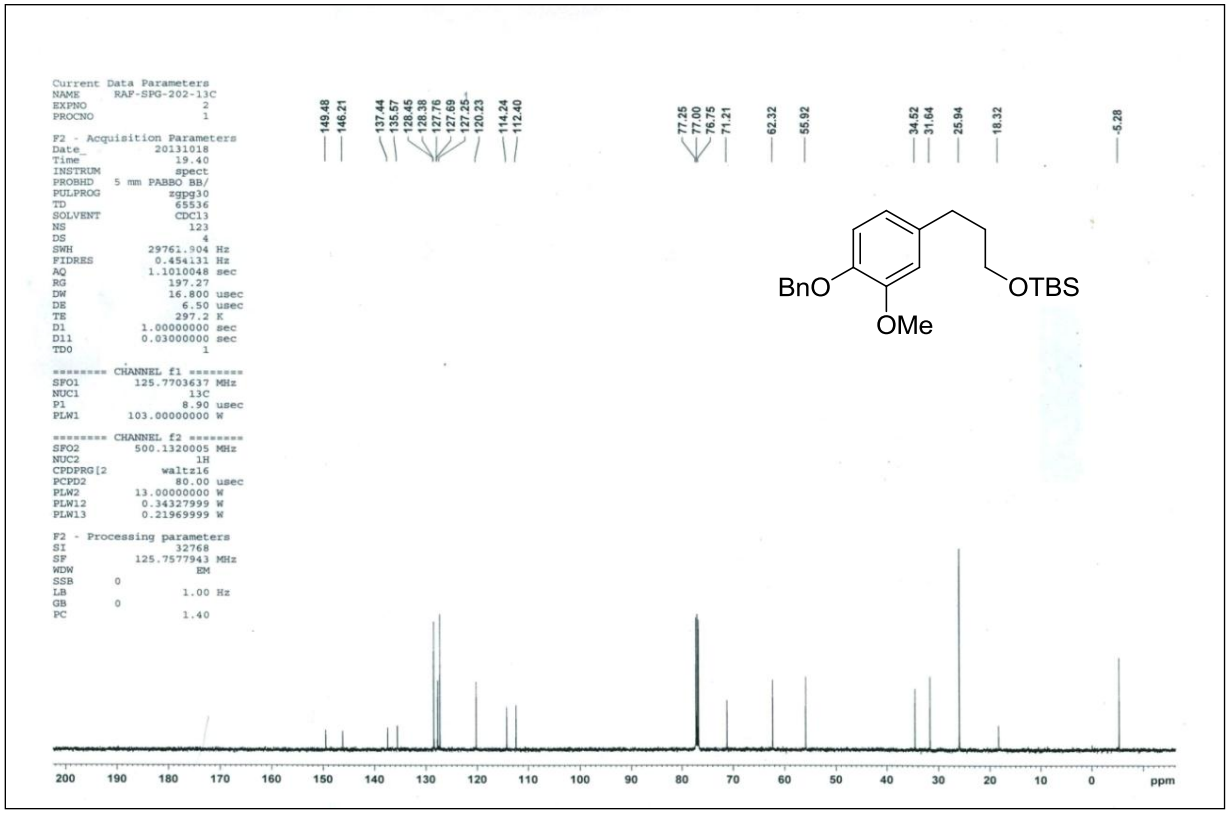
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **8g**



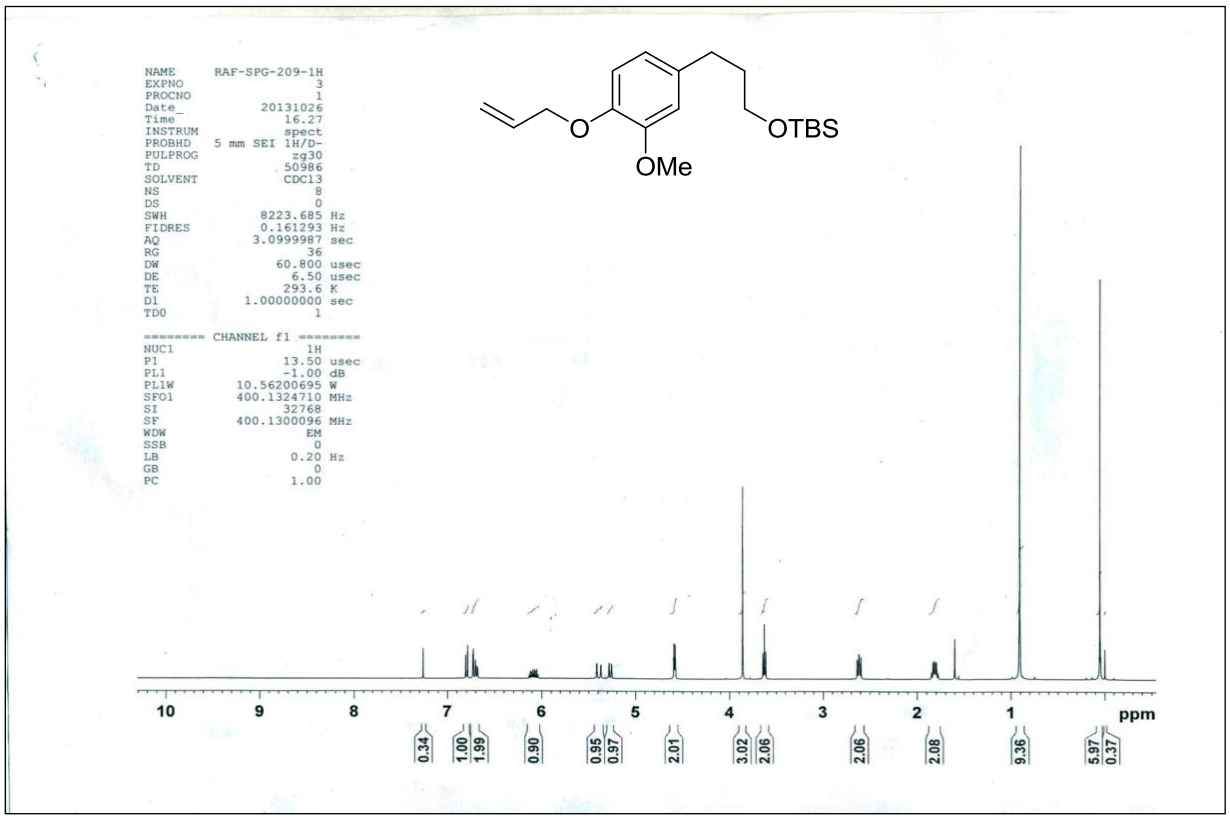


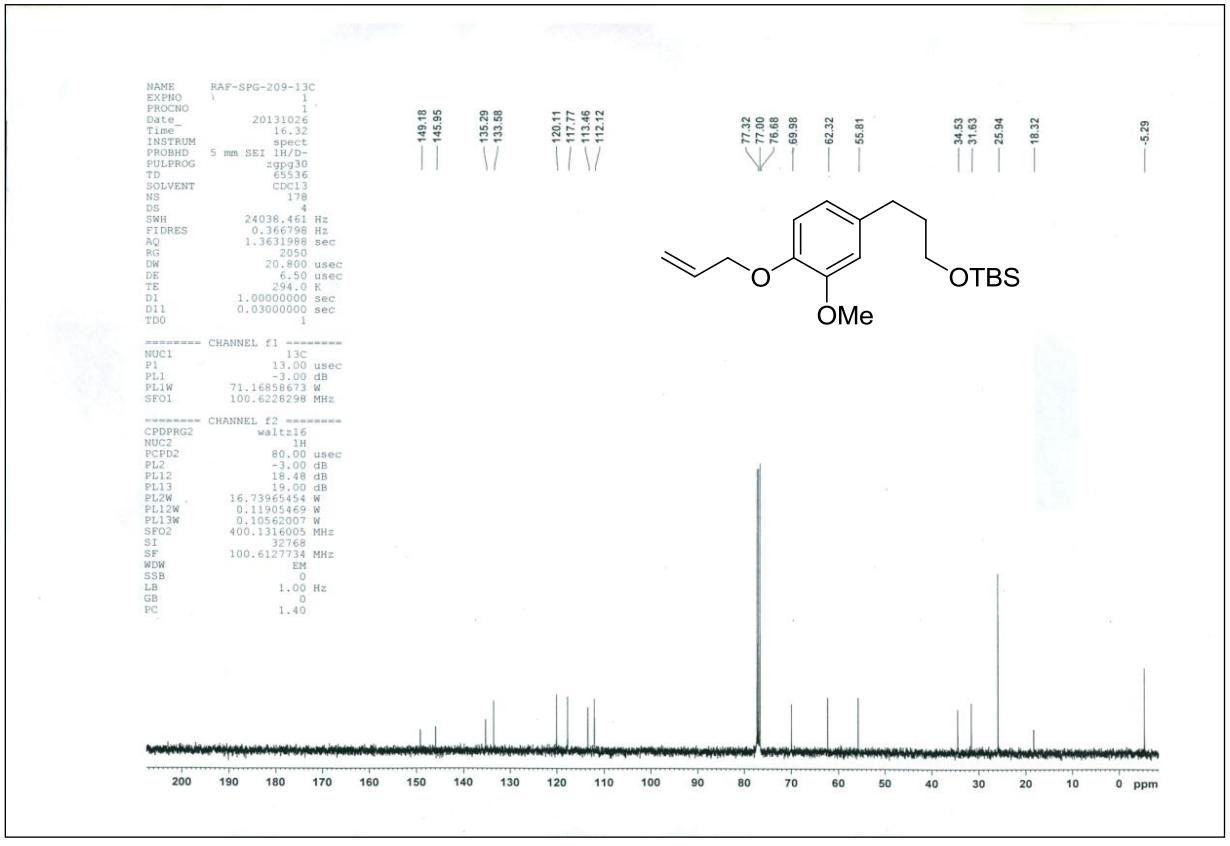
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **8h**



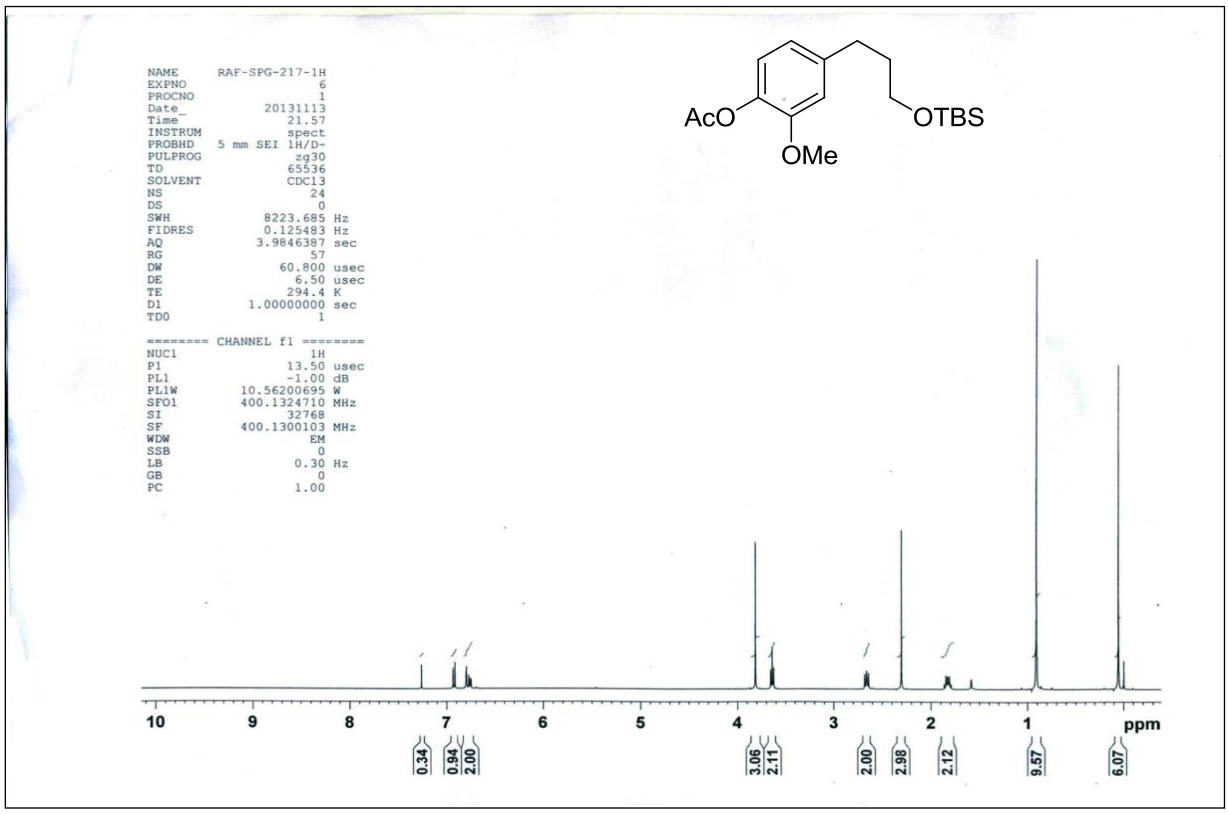


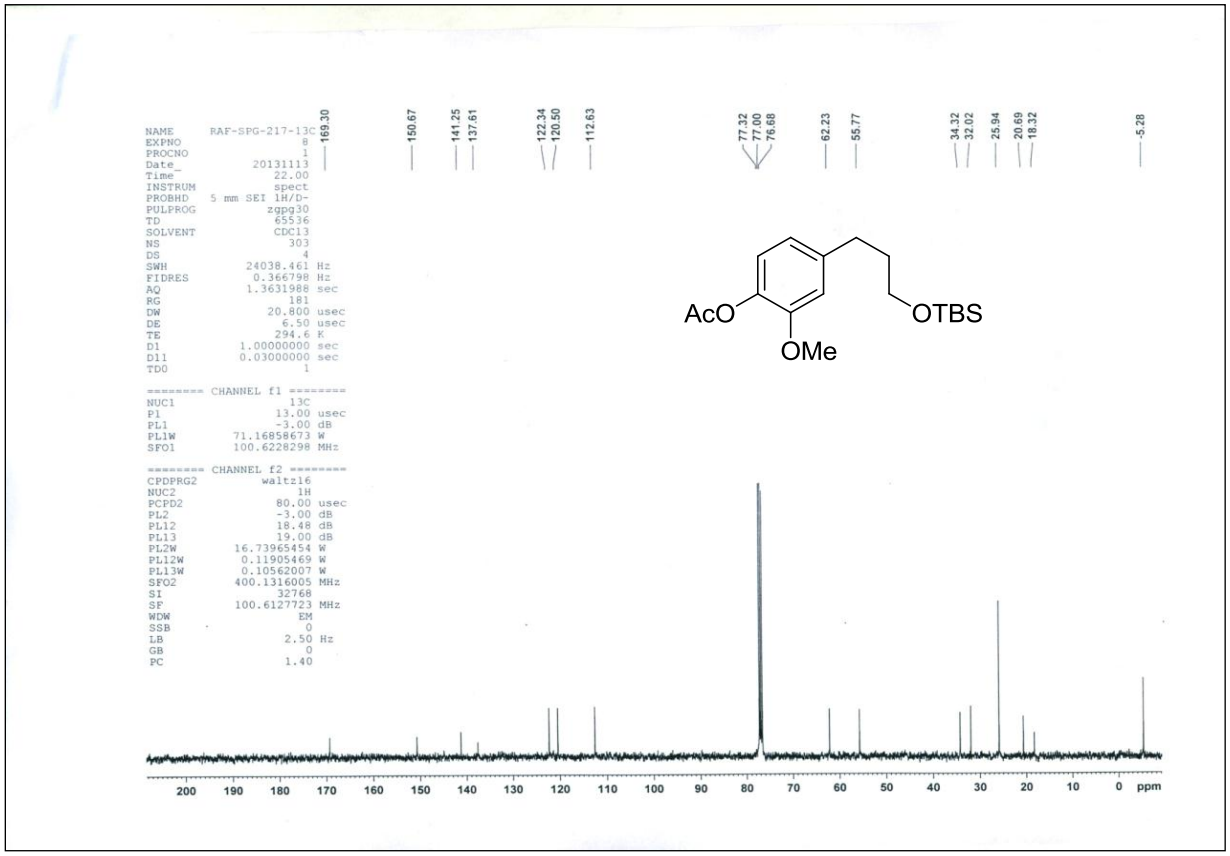
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **8i**



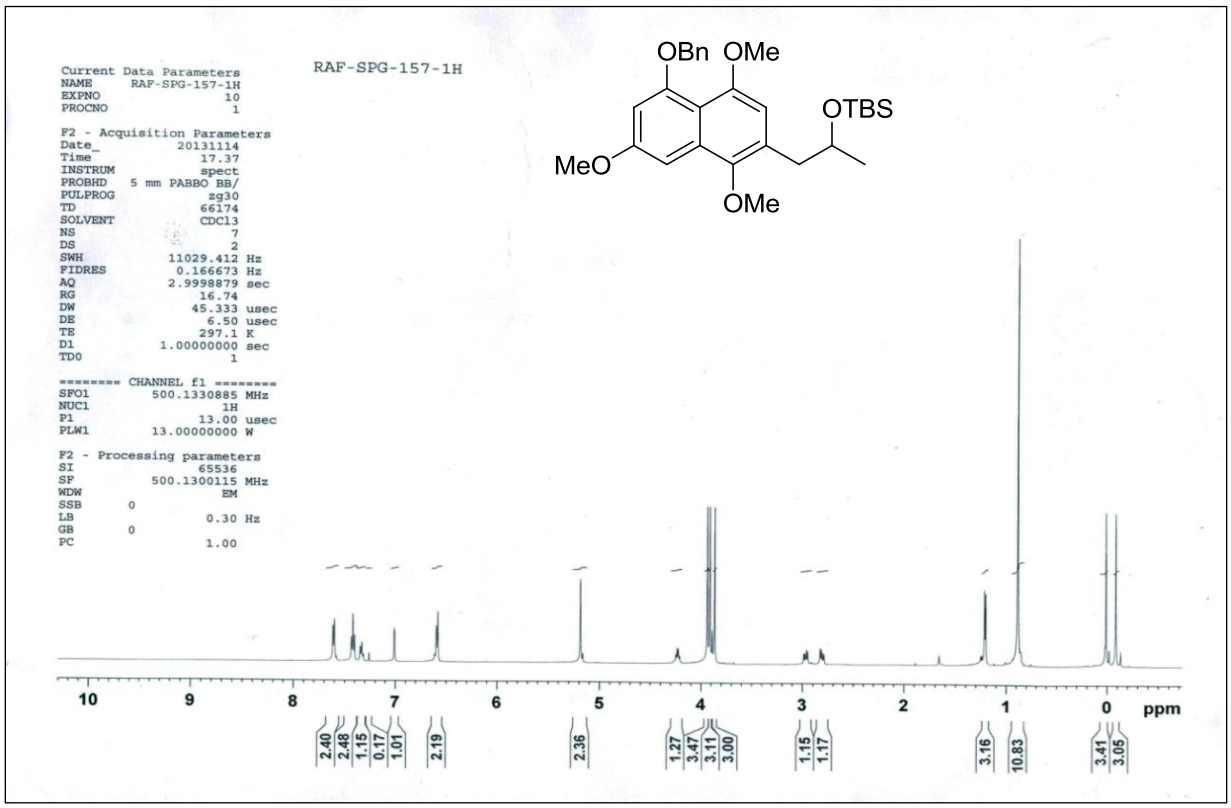


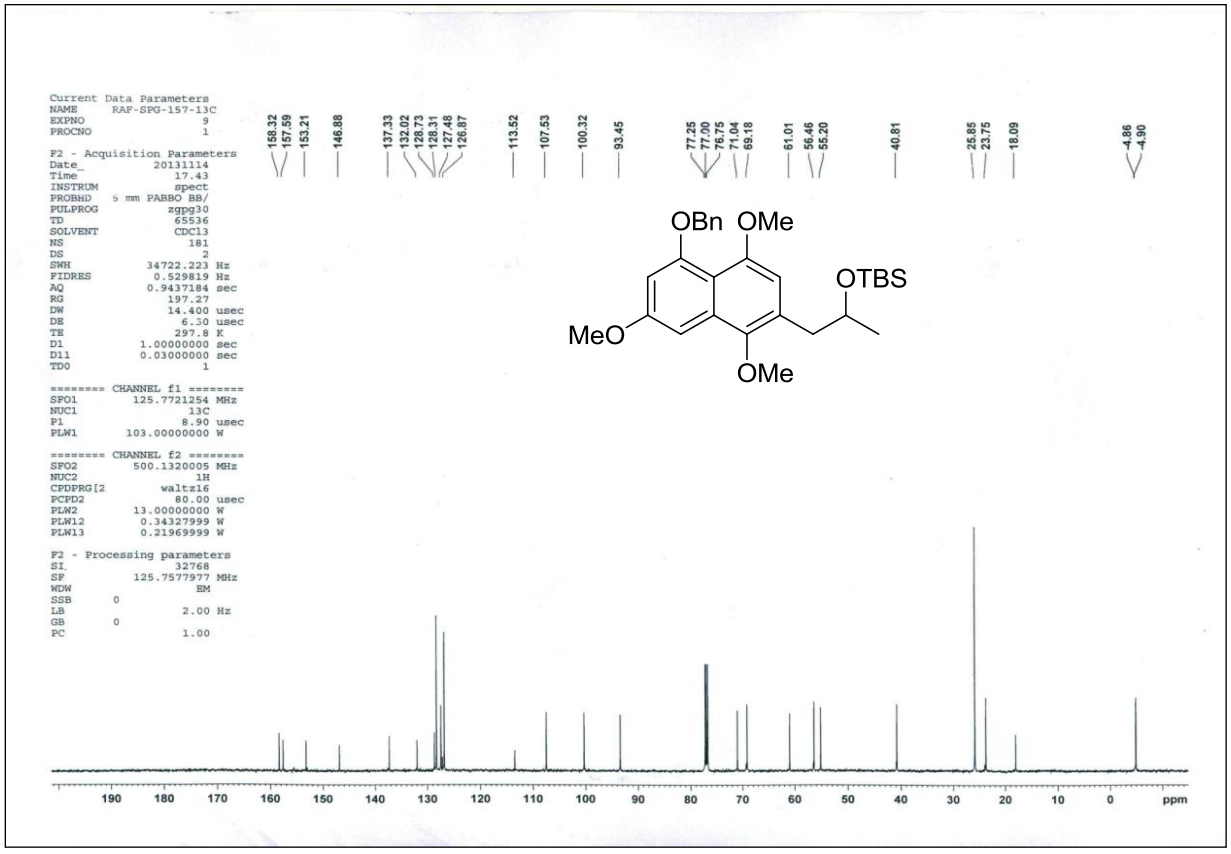
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **8j**



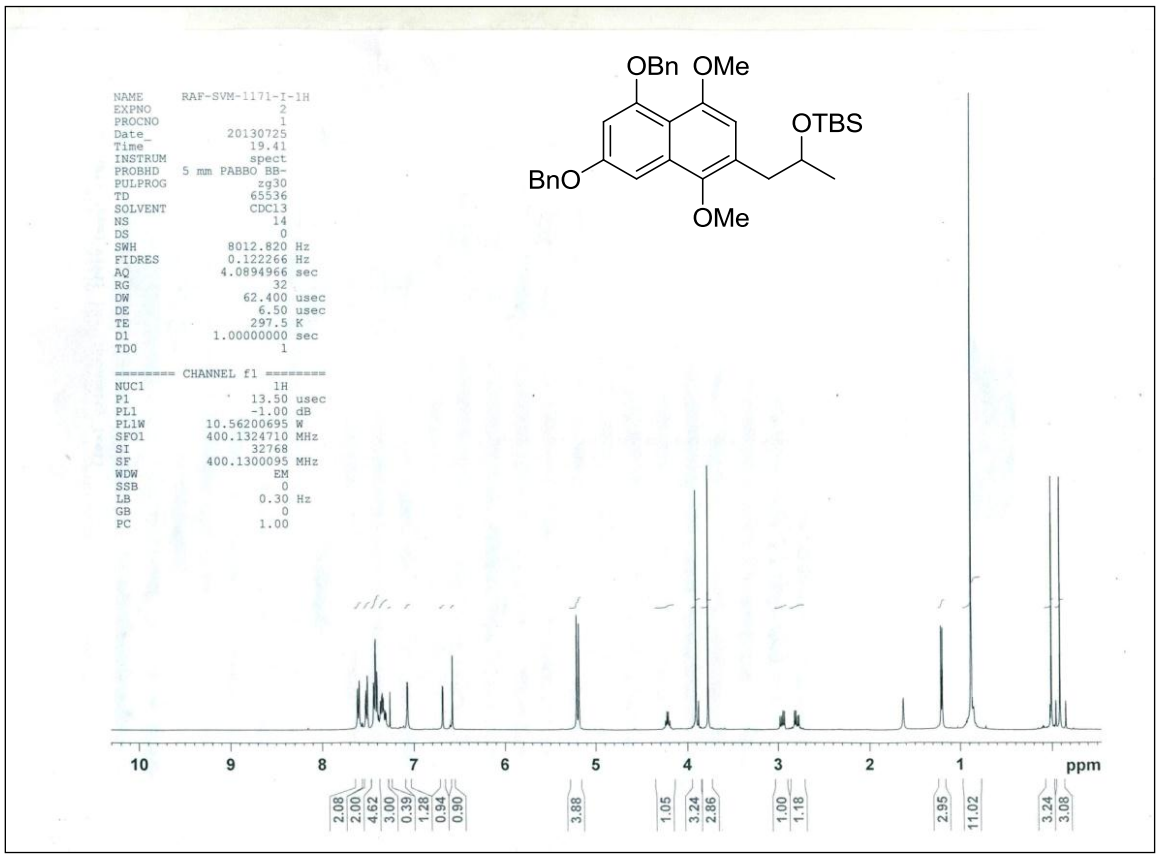


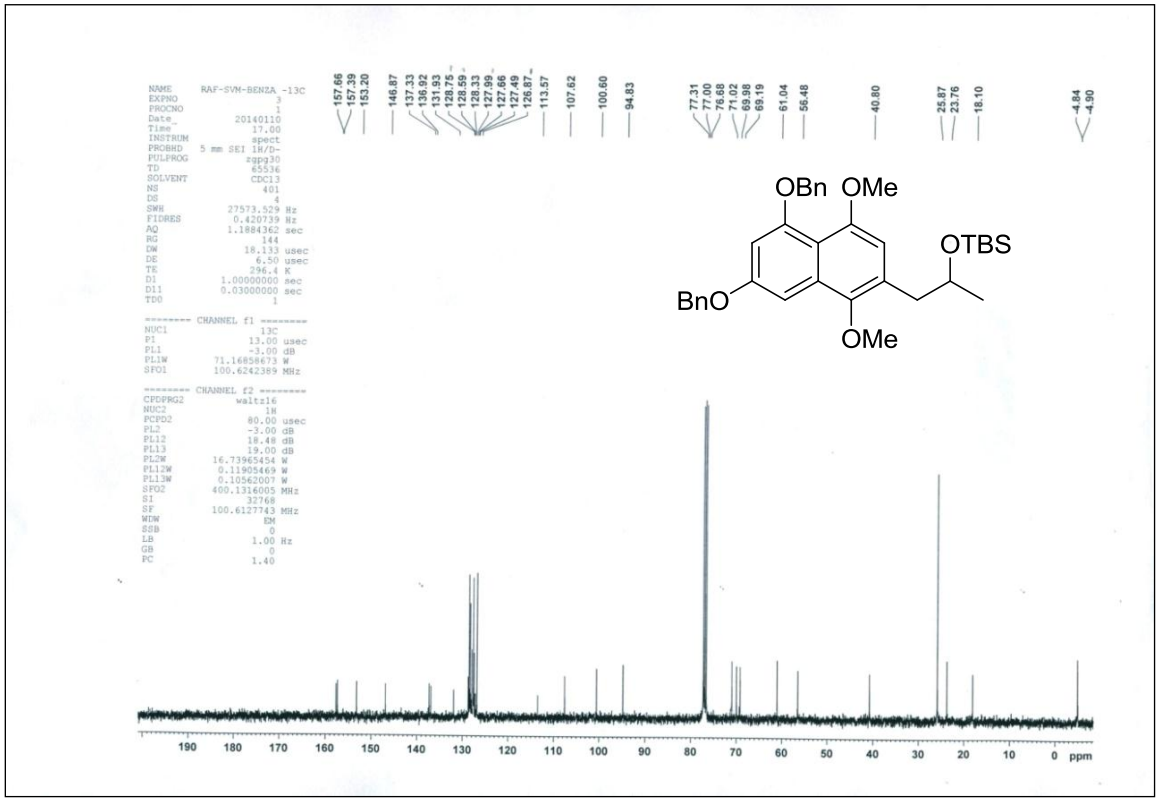
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **8k**



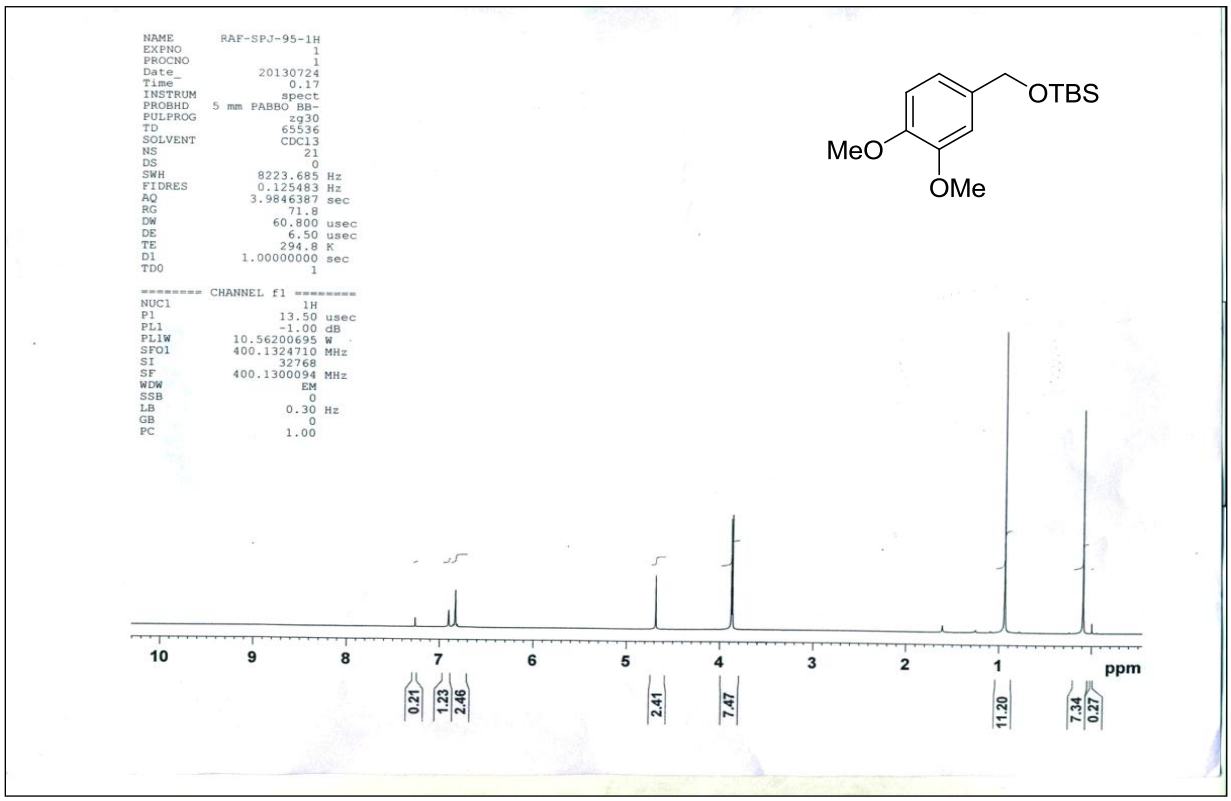


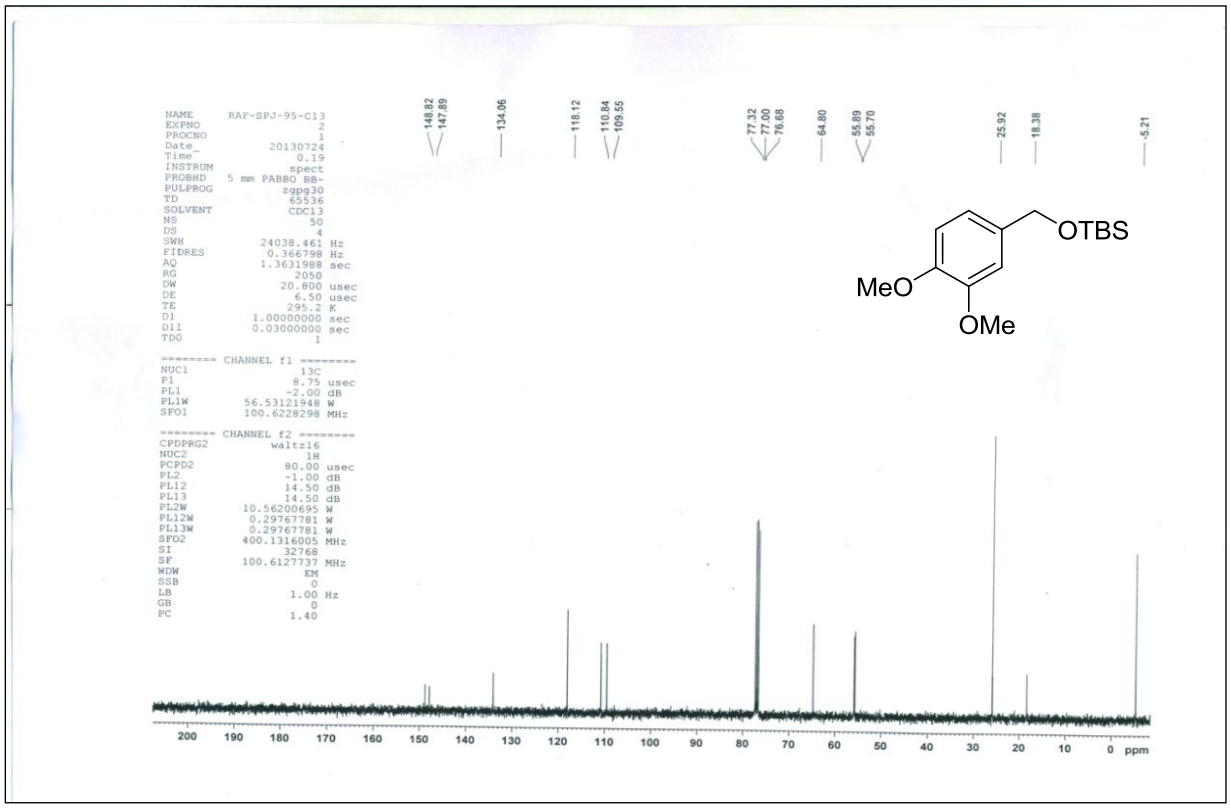
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **8l**



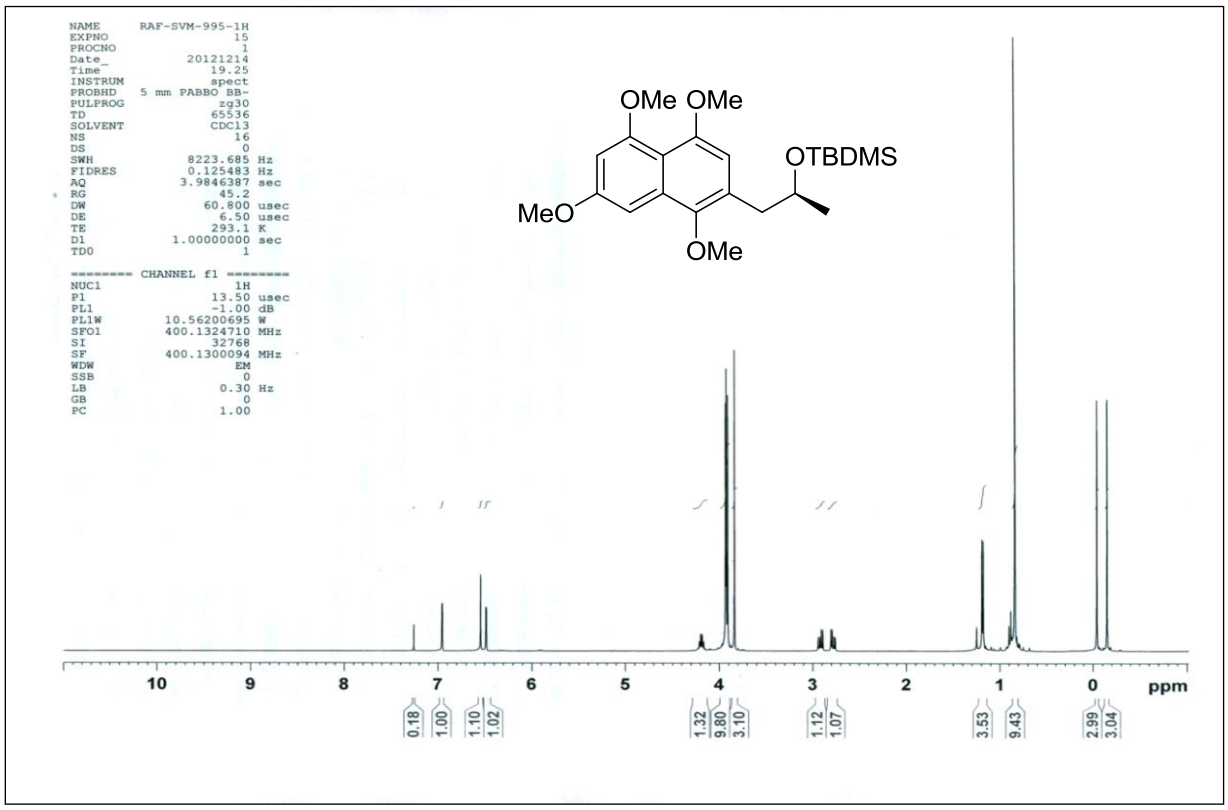


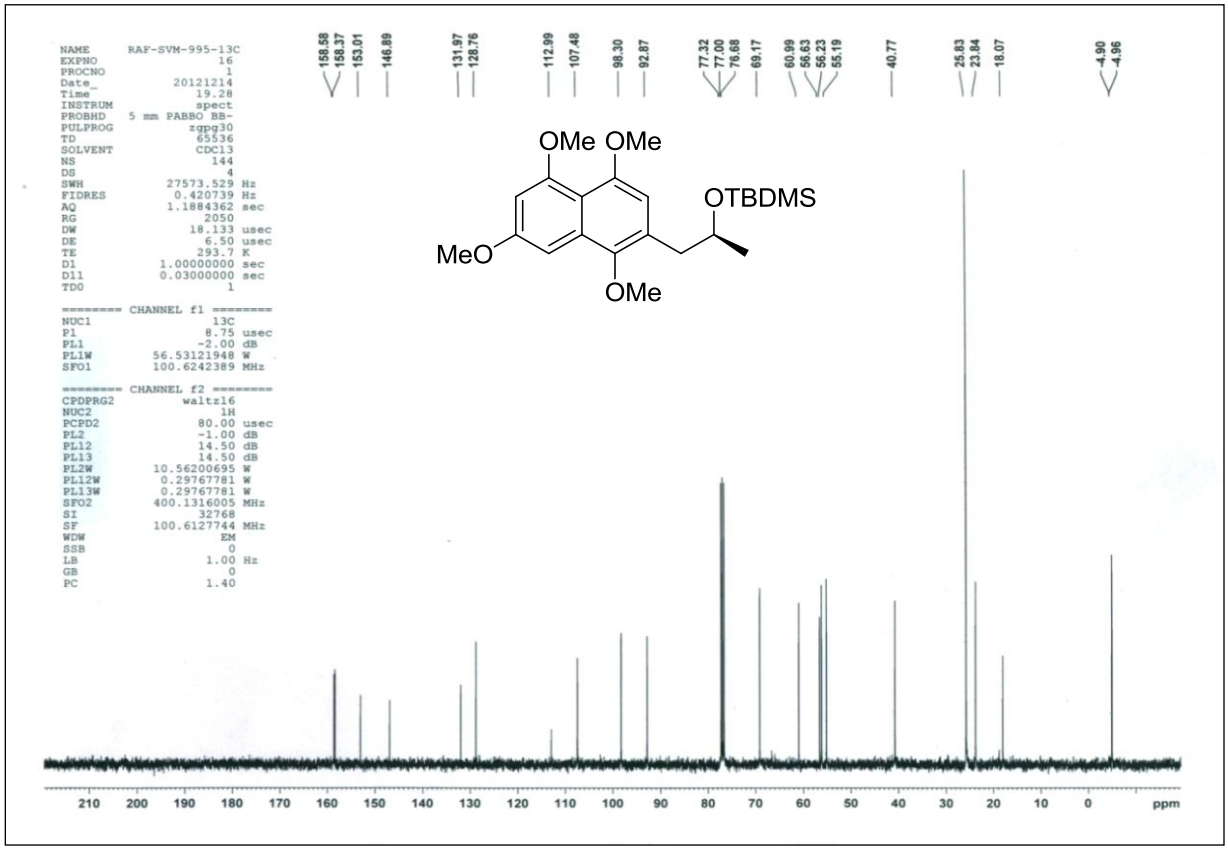
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **8m**



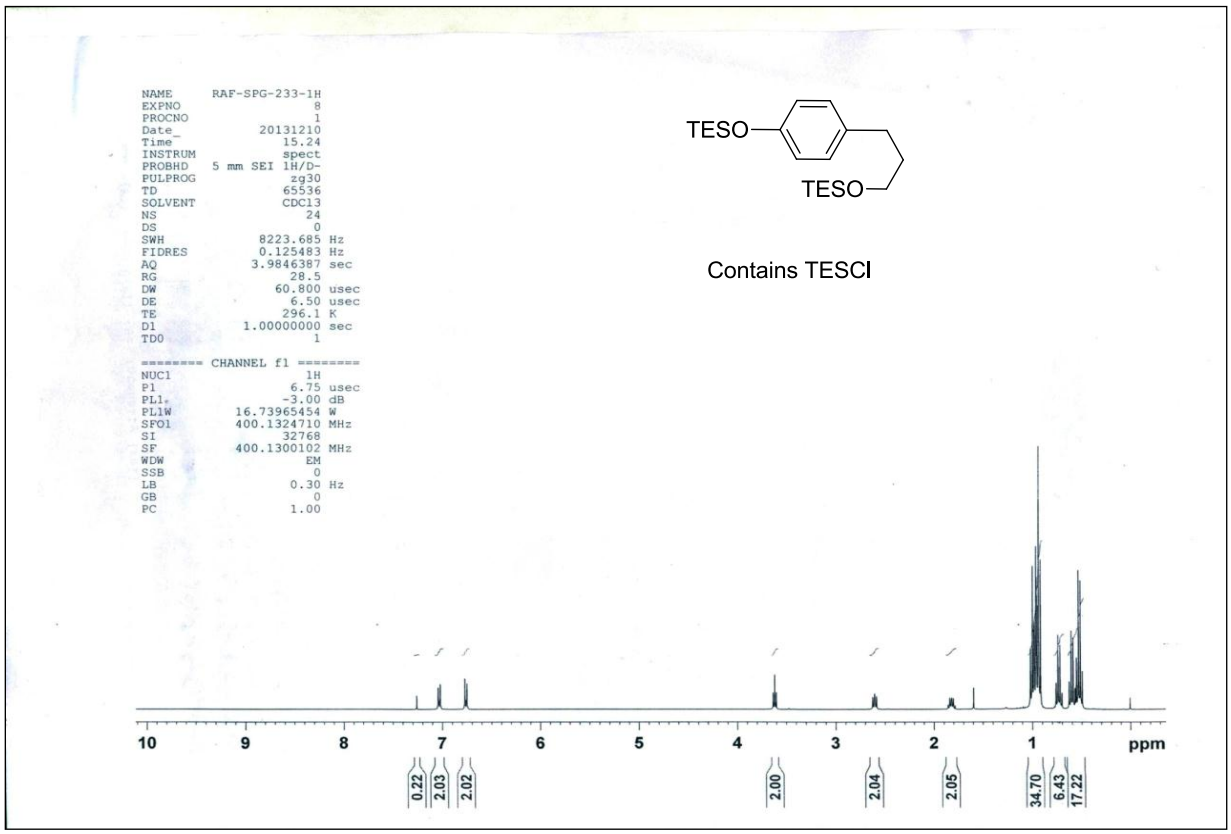


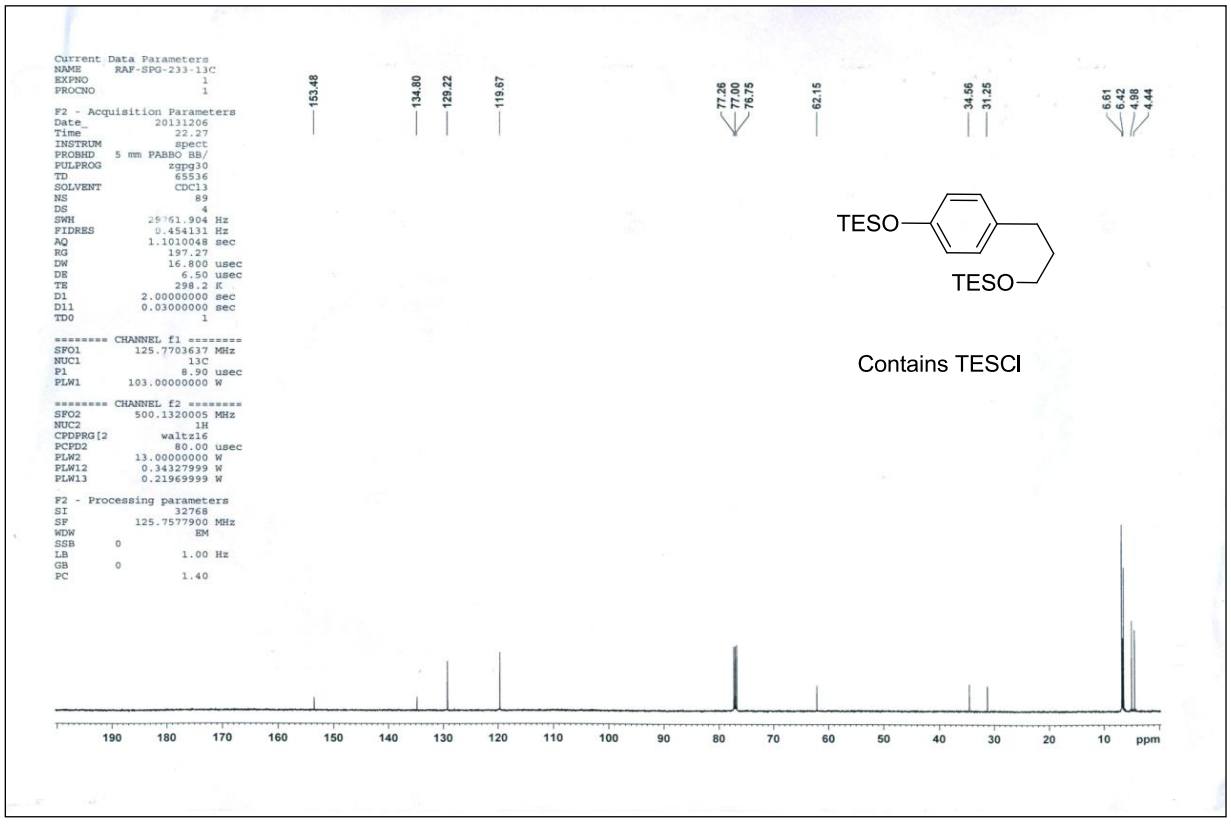
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **2**



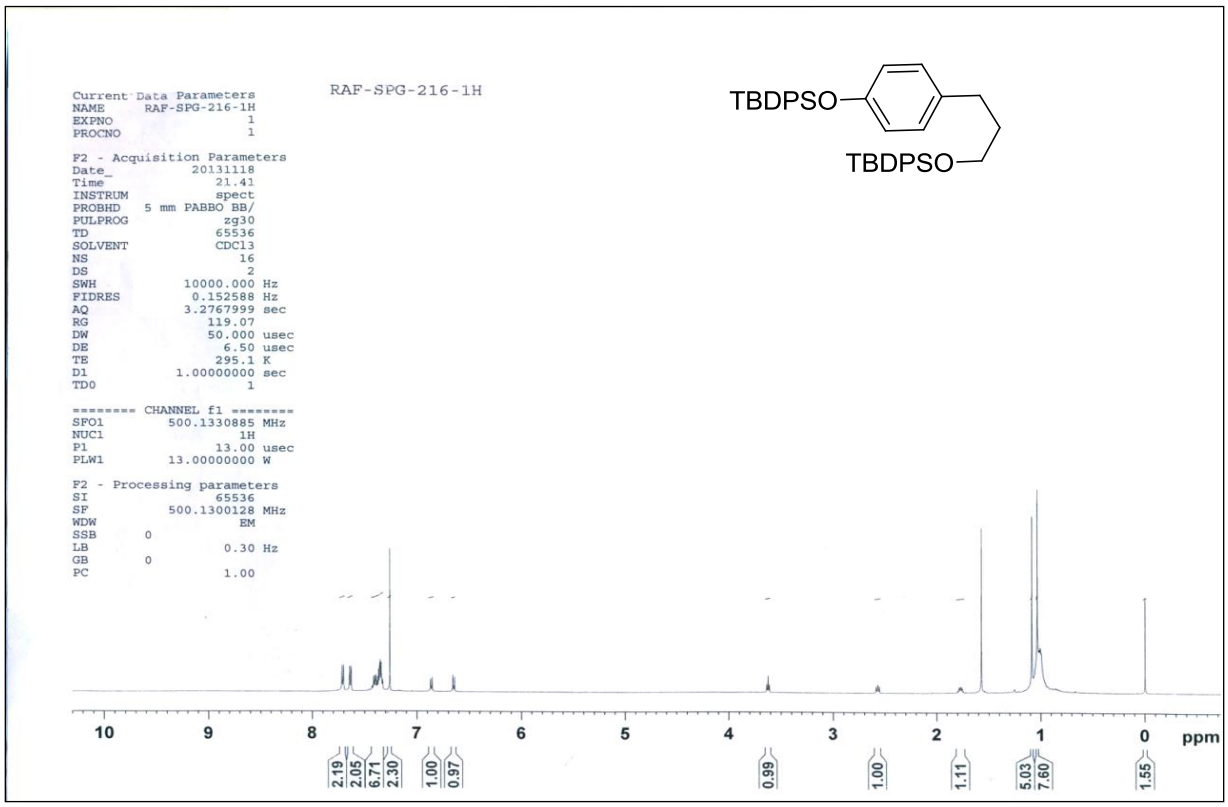


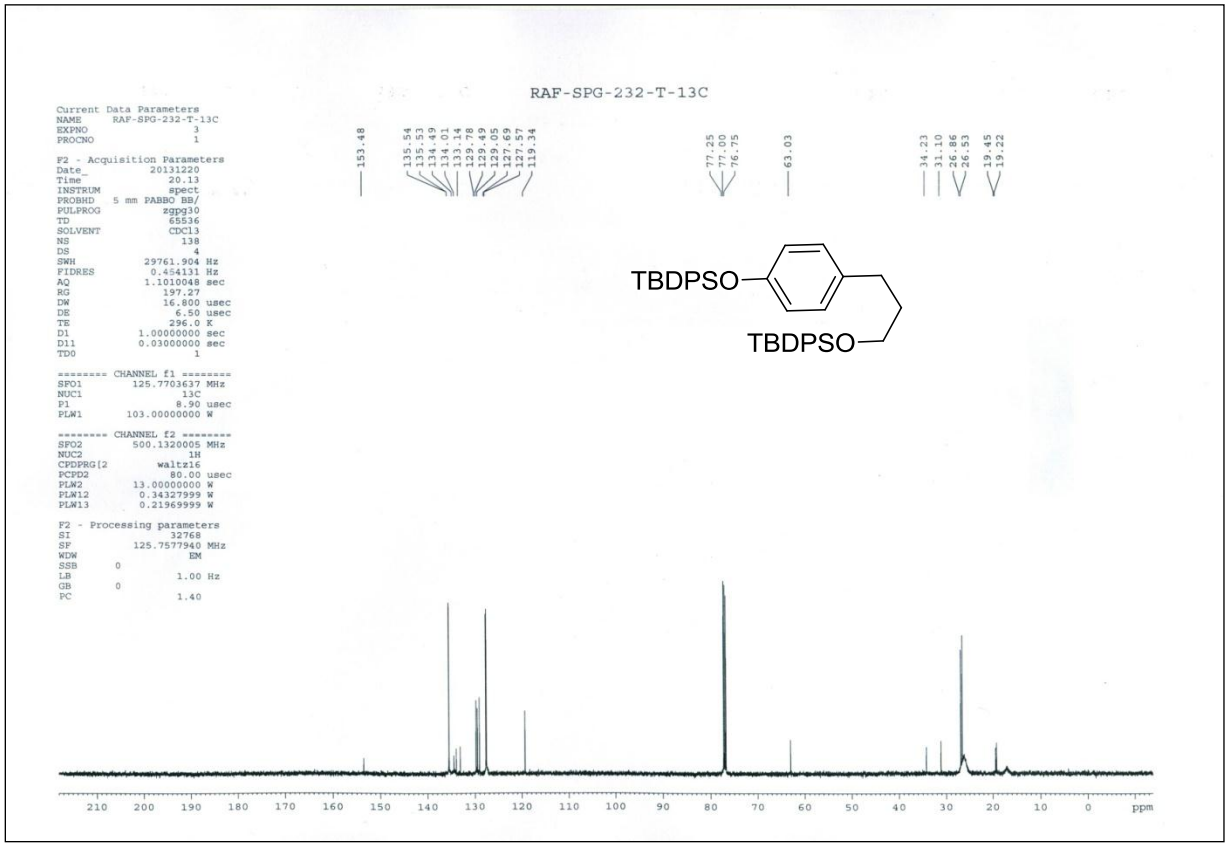
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **9a**



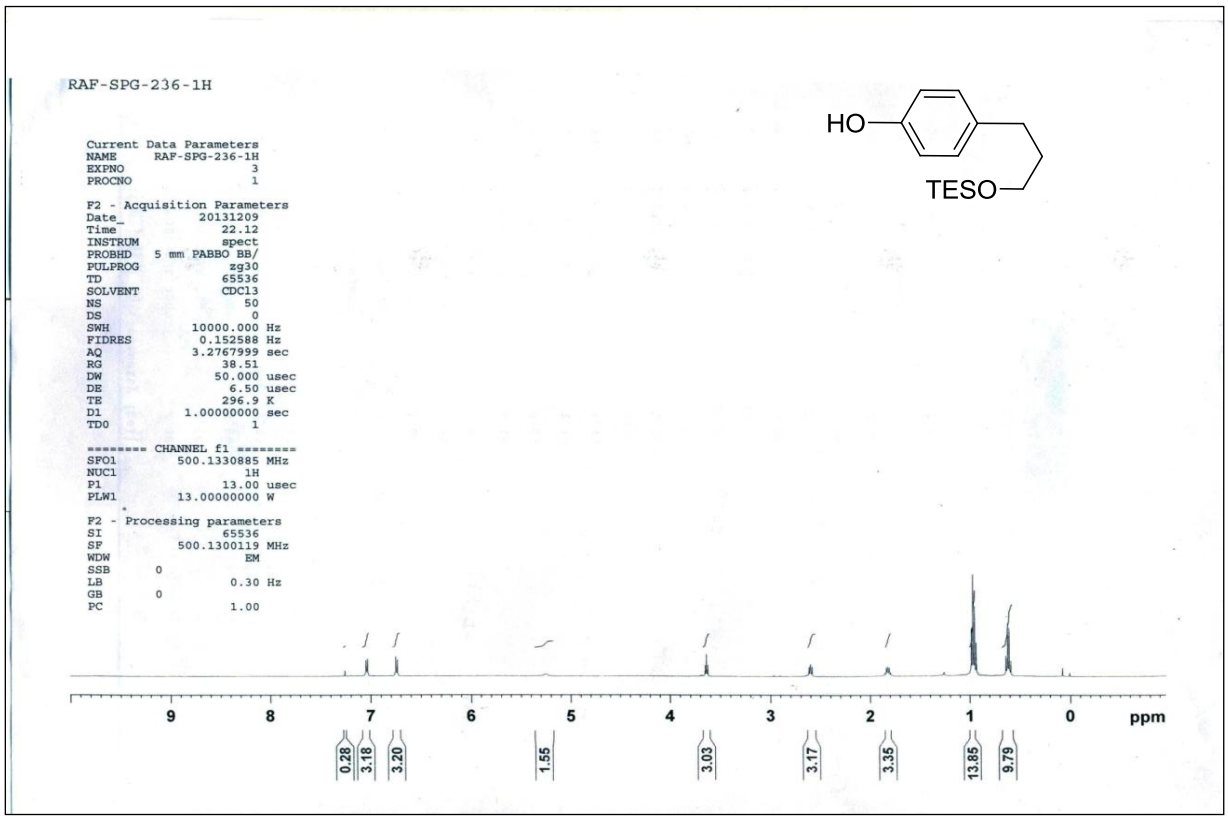


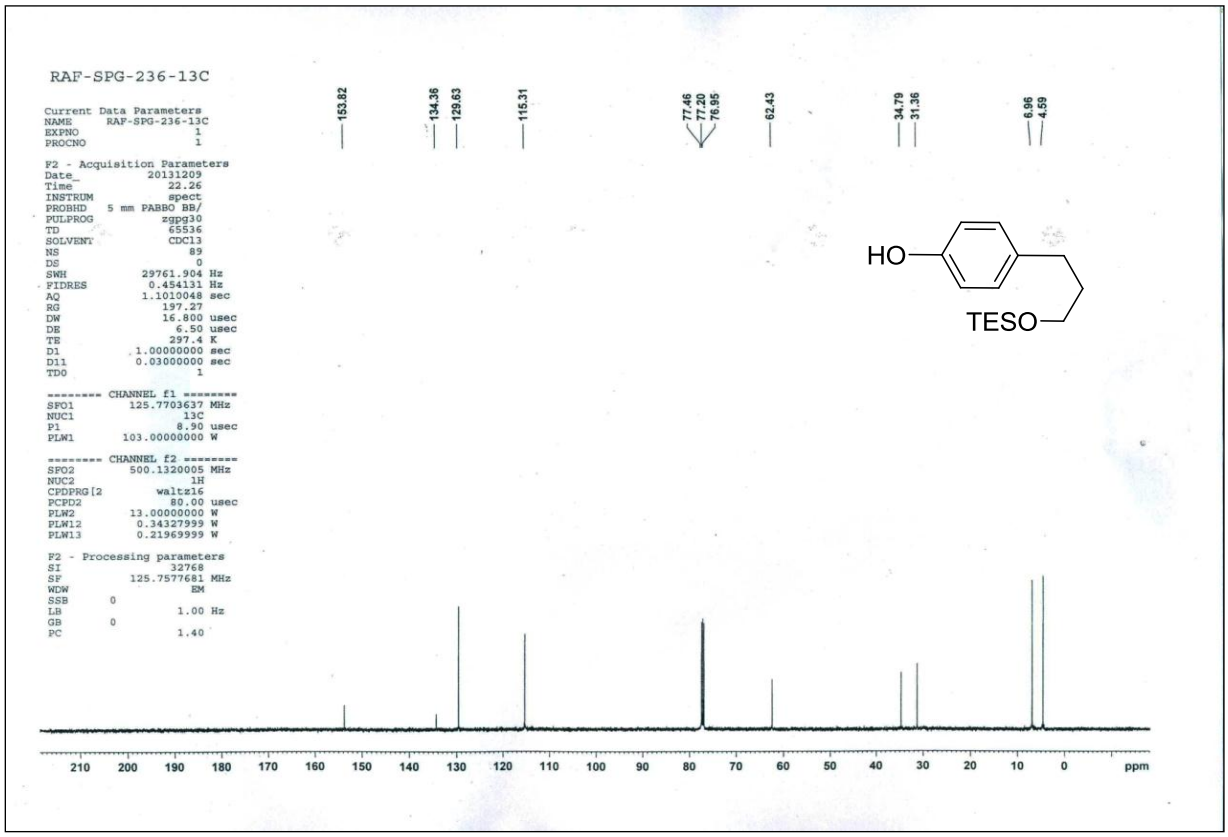
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **9b**



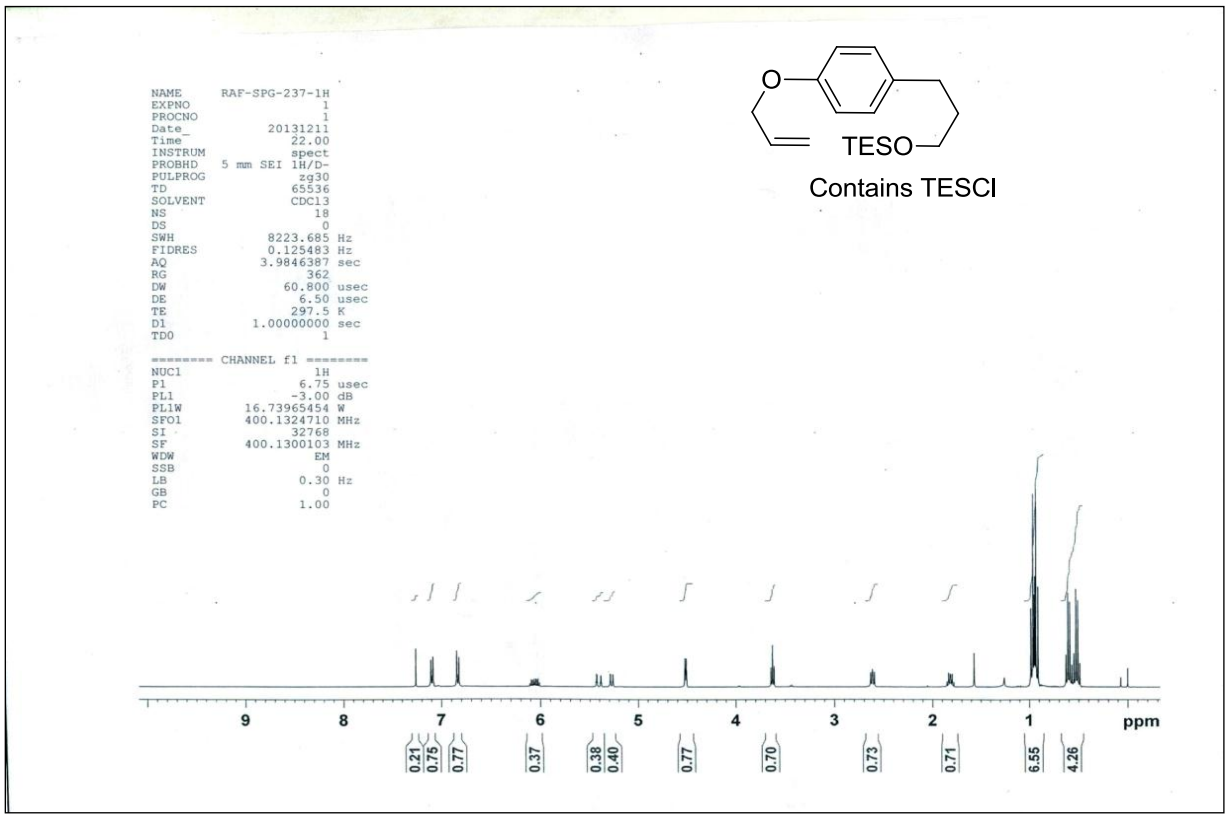


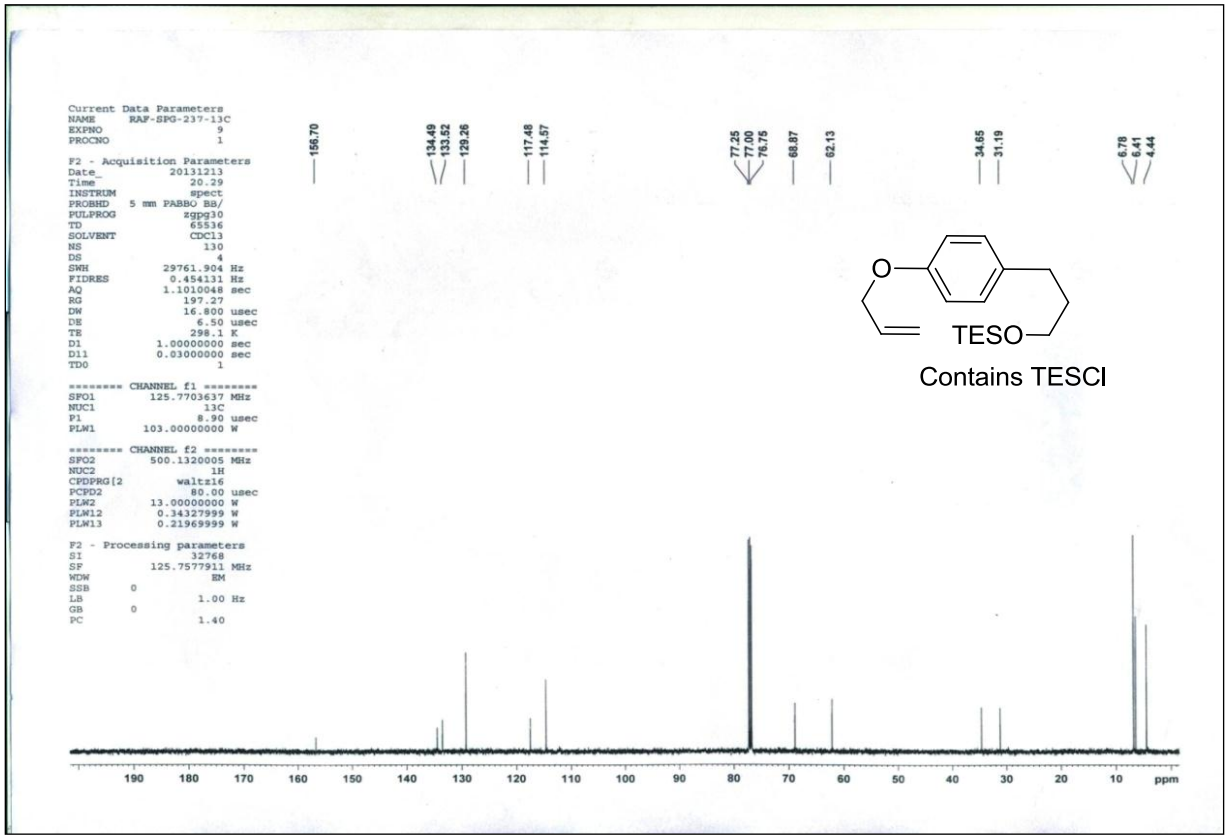
^{1}H NMR (500 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **10a**



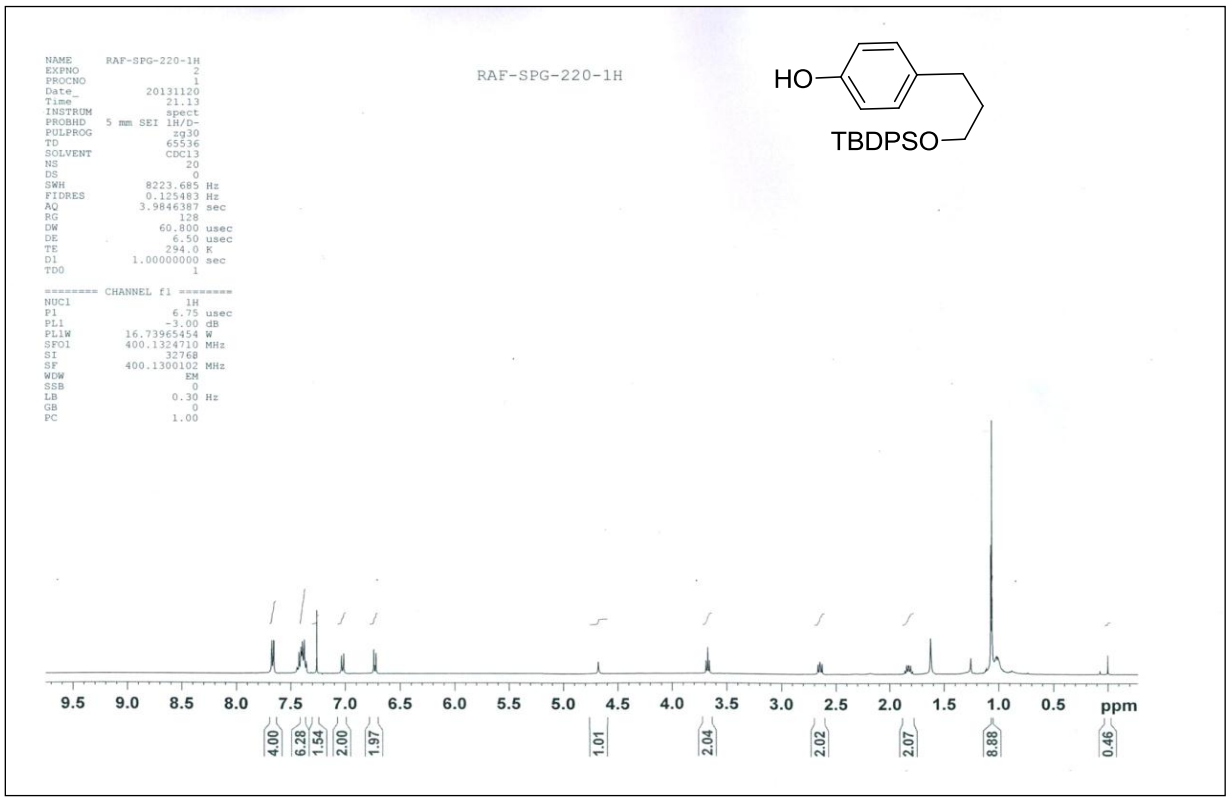


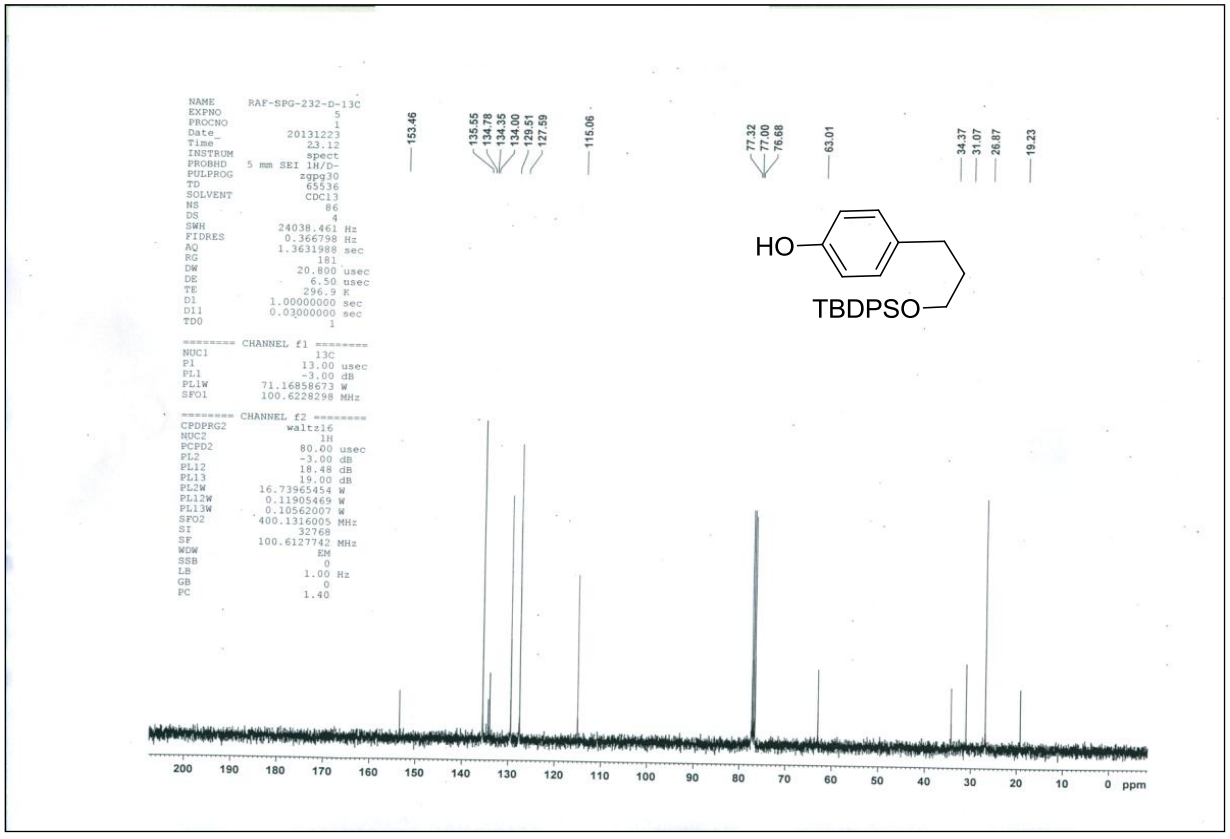
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (125 MHz, $CDCl_3$) of compound **10b**



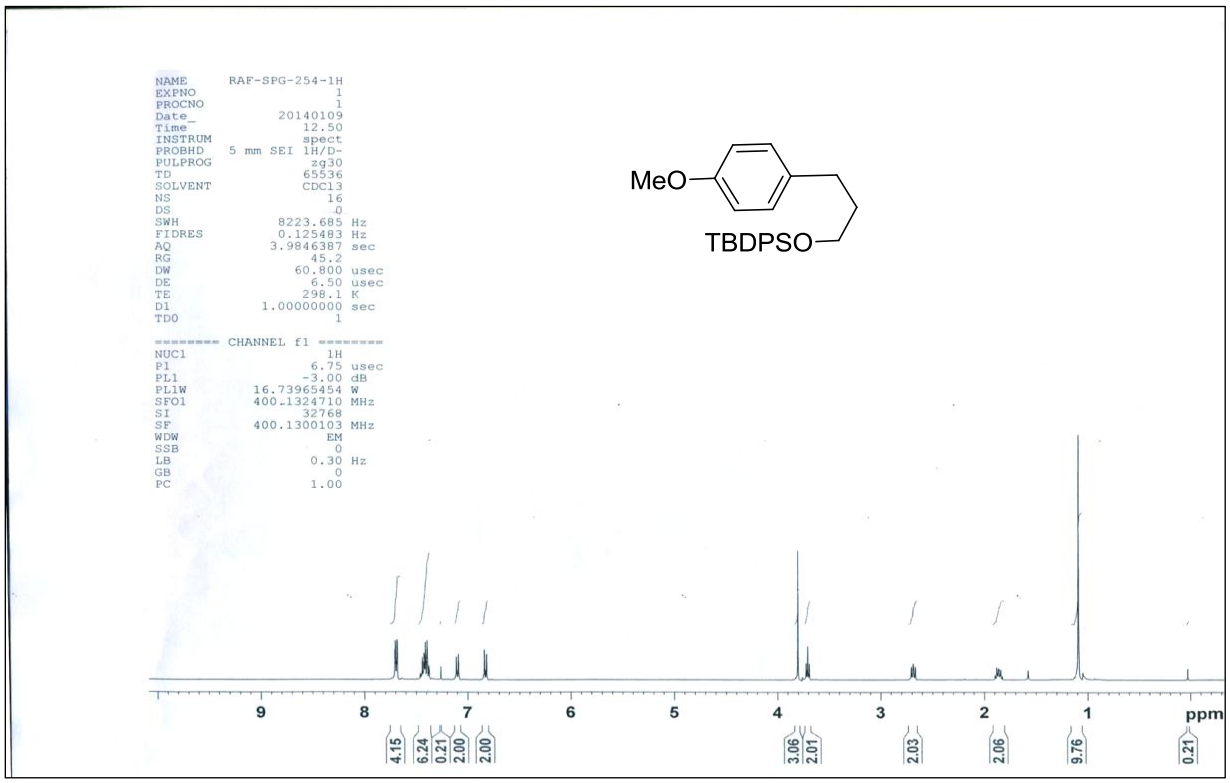


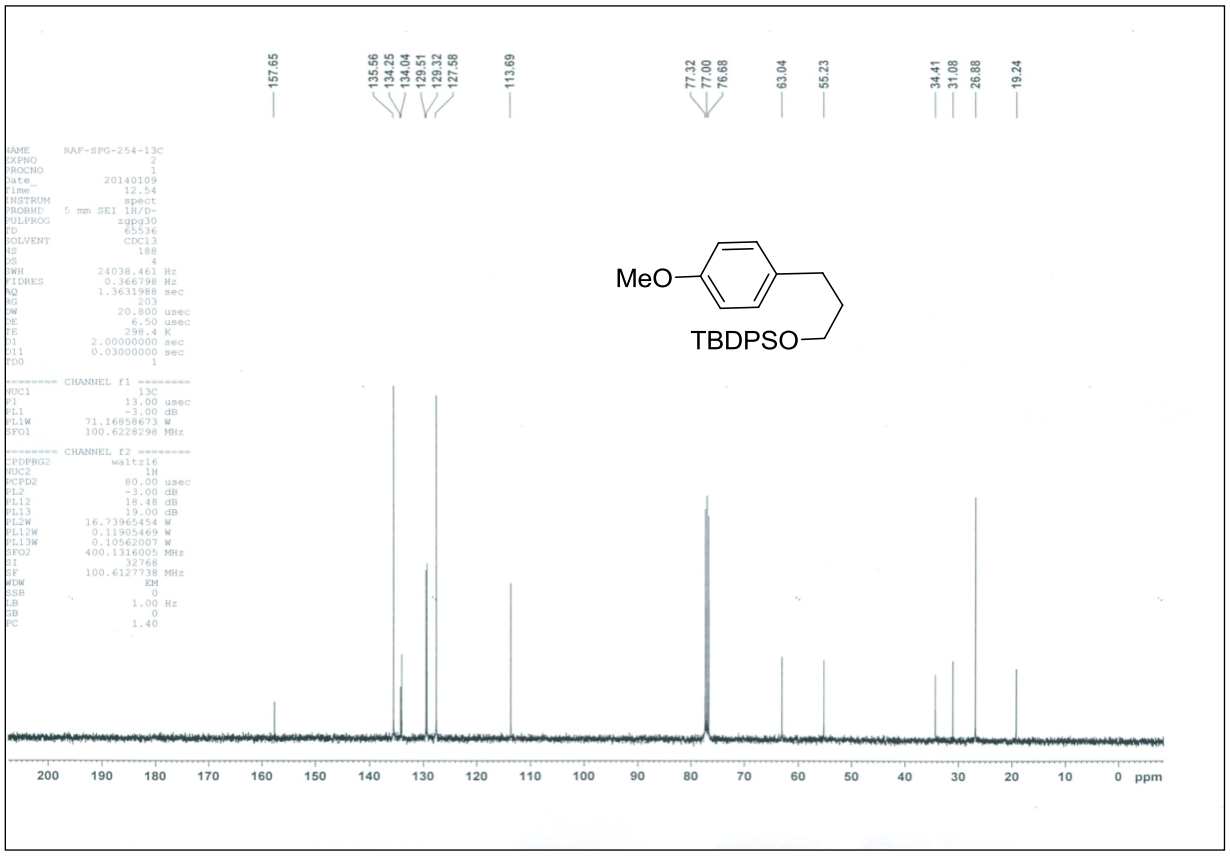
^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **10c**





^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **10d**





^{1}H NMR (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) of compound **14**