Supporting Information

Ru-Catalyzed Hydroamidation of Alkenes and Cooperative Aminocarboxylation Procedure with Chelating Formamide

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General Methods. ^{1}H and ^{13}C NMR spectra were recorded on 300 and 75 MHz NMR spectrometer, respectively. Chemical shifts are reported in delta ( ) units, parts per million (ppm) downfield from tetramethylsilane, or in ppm relative to the singlet at 7.26 ppm of chloroform-*d* or to a center line of a pentet at 2.50 ppm of DMSO-d_6. Splitting patterns are designated as follows: s, singlet; d, doublet; t, triplet; q, quartet; m, multiplet; td, triple of doublet; dd, double of doublet; b, broad. ^{13}C NMR data are reported in ppm relative to the center line of a triplet at 77.0 ppm of chlorofom-*d* or to a center line of a heptet at 39.5 ppm of DMSO-d_6. Column chromatography was carried out using silica gel 60 (230-400 mesh). Solvents were purified by standard procedures. Chemicals including Ru, Pd, and alkenes were purchased from a commercial supplier and used as obtained without further purification.

Representative procedure for the preparation of substituted formamides. To a solution of 2-aminopyridine (5.0 g, 0.053 mol) in THF (10 mL) was added acetyl formyl anhydride (8.7 g, 0.080 mol, 1.5 equiv) at 0 °C. After stirring the reaction mixture for 1 h at rt, the organic layer was extracted with ethyl acetate (20 mL x 3), washed with water, and then dried over $MgSO_4$. The extracts were evaporated under reduced pressure to give analytically pure *N*-(2-pyridyl)formamide (**1b**, 5.95 g, 92%) as a yellow solid; mp 71 °C dec; ^{1}H NMR ($CDCl_3$, 300 MHz) δ 10.59 (bs, 0.45H), 9.26 (d, 1H, J = 7.7 Hz), 8.47 (s, 0.55H), 8.25 (m, 1H), 8.19 (d, 0.55H, J = 6.3 Hz), 7.65 (td, 0.55H, J = 6.7, 1.2 Hz), 7.58 (td, 0.45H, J = 6.3, 1.2 Hz), 6.95-7.02 (m, 1H), 6.88 (td, 0.45H, J = 6.2 Hz); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 163.2, 159.7, 151.0, 148.2, 147.1, 138.7, 138.5, 119.9, 119.6, 115.0, 110.4; IR (KBr) 3189, 2988, 1700, 1594, 1438, 1308, 1174, 776 cm^{-1}; HRMS (EI) calcd for $C_6H_6N_2O$ 122.0481 (M^+), found 122.0485.

***N*-(2-Pyridylmethyl)formamide** (**1a**)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 9.51 (bs, 0.5H), 8.37 (d, 1H, *J* = 3.5 Hz), 8.14 (s, 1H), 7.65 (bs, 0.5H), 7.57 (td, 1H, *J* = 4.2, 1.3 Hz), 7.20 (d, 1H, *J* = 5.9 Hz), 7.10 (m, 1H), 4.45 (d, 2H, *J* = 4.3 Hz), 1.94 (s, 1H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 161.6, 156.0, 148.3, 137.3, 122.5, 122.3, 42.7; HRMS (EI) calcd for $C_7H_8N_2O$ 136.0637 (M^+), found 136.0627.

N-**Methyl-*N*-(2-pyridyl)formamide** (**1c**)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 9.23 (s, 1H), 8.30 (m, 1H), 7.65 (td, 1H, *J* = 6.2, 1.4 Hz), 7.04 (m, 1H), 6.94 (d, 1H, *J* = 6.2 Hz), 3.33 (s, 3H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 162.1, 153.8, 148.3, 138.4, 120.0, 111.4, 28.6; HRMS (EI) calcd for $C_7H_8N_2O$ 136.0637 (M^+), found 136.0636.

***N*-(6-Methyl-2-pyridyl)formamide** (**1d**)**:** mp 68 °C dec; ^{1}H NMR ($CDCl_3$, 300 MHz) δ 9.28 (d, 0.45H, *J* = 10.1 Hz), 9.11 (bs, 1H), 8.43 (s, 0.55H), 7.99 (d, 0.55H, *J* = 3.2 Hz), 7.59 (t, 0.55H, *J* = 7.8 Hz), 7.50 (t, 0.45H, *J* = 7.8 Hz), 6.89 (t, 1H, *J* = 7.2 Hz), 6.65 (d, 1H, *J* = 7.9 Hz), 2.44 (s, 3H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 163.0, 159.3, 158.0, 156.8, 150.1, 150.0, 139.0, 138.7, 119.8, 119.3, 111.9, 107.5, 24.1, 23.8; HRMS (EI) calcd for $C_7H_8N_2O$ 136.0637 (M^+), found 136.0637.

General procedure for the hydroamidation of alkenes with formamide 1b. To a solution of *N*-(2-pyridyl)formamide (**1b**, 122 mg, 1.0 mmol) in acetonitrile (1.0 mL) was added 1-hexene (252 mg, 3.0 mmol) and then $Ru_3(CO)_{12}$ (32 mg, 5 mol %). The reaction mixture was stirred at 135 °C for 6 h in a sealed vial. After removal of the solvent under the reduced pressure, the residue was purified by flash column chromatography on silica gel (ethyl acetate/hexane = 1:6) to obtain *N*-(2-pyridyl) heptanamide (144 mg, 72 %) as a major product: ^{1}H ($CDCl_3$, 300 MHz) 9.14 (bs, 1H), 8.27 (m, 2H), 7.71 (td, 1H, *J* = 8.6, 1.6 Hz), 7.03 (m, 1H), 2.38 (t, 2H, *J* = 7.5 Hz), 1.70 (m, 2H), 1.32 (m, 6H), 0.81 (m, 3H); ^{13}C NMR ($CDCl_3$, 75 MHz) 172.0, 151.7, 147.5, 138.4, 119.5, 114.3, 37.7, 31.4, 28.8, 25.3, 22.4, 13.9; HRMS (EI) calcd for $C_{12}H_{18}N_2O$ 206.1420 (M^+), found 206.1414.

***N*-(2-Pyridyl)-2-methyl hexanamide** (minor isomer in the above reaction, Table 2, entry 1)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 8.22 (m, 2H), 7.95 (bs, 1H), 7.68 (t, 1H, *J* = 6.9 Hz), 7.01 (m, 1H), 2.35 (m, 1H), 1.72 (m, 1H), 1.45 (m, 1H), 1.29 (m, 4H), 1.22 (d, 3H, *J* = 6.9 Hz), 0.88 (m, 3H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 175.4, 151.4, 147.7, 138.4, 119.7, 114.0, 42.8, 34.0, 29.6, 22.7, 17.7, 13.9; HRMS (EI) calcd for $C_{12}H_{18}N_2O$ 206.1420 (M^+), found 206.1412.

***N*-(2-Pyridyl)-3-cyclohexyl propanamide** (Table 2, entry 2)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 8.59 (bs, 1H), 8.22 (m, 2H), 7.67 (td, 1H, *J* = 8.7, 1.9 Hz), 7.00 (m, 1H), 2.36 (t, 2H, *J* = 8.0 Hz),

1.56-1.68 (m, 7H), 1.10-1.23 (m, 4H), 0.88 (m, 2H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 172.2, 151.7, 147.5, 138.4, 119.5, 114.1, 37.2, 35.2, 33.0, 32.7, 26.4, 26.1; HRMS (EI) calcd for $C_{14}H_{20}N_2O$ 232.1577 (M^+), found 232.1570.

***N*-(2-Pyridyl)-4,4-dimethyl pentanamide** (**2**, Table 2, entry 3)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 9.49 (bs, 1H), 8.22 (m, 2H), 7.64 (td, 1H, *J* = 6.6, 1.3 Hz), 6.96 (m, 1H), 2.28 (m, 2H), 1.56 (m, 2H), 0.80 (s, 9H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 172.7, 152.0, 147.2, 138.4, 119.4, 114.5, 38.9, 33.1, 30.0, 29.0; IR (neat) 3243, 2952, 1668, 1532, 1430, 1308, 783 cm^{-1}; HRMS (EI) calcd for $C_{12}H_{18}N_2O$ 206.1420 (M^+), found 206.1425.

***N*-(2-Pyridyl)-3-phenyl propanamide** (Table 2, entry 4, major isomer)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 9.05 (bs, 1H), 8.23 (d, 1H, *J* = 6.2 Hz), 8.18 (dd, 1H, *J* = 3.7, 0.7 Hz), 7.67 (td, 1H, *J* = 6.5, 0.7 Hz), 7.24 (m, 2H), 7.17 (m, 2H), 6.99 (m, 1H), 3.02 (t, 2H, *J* = 5.6 Hz), 2.67 (t, 2H, *J* = 5.6 Hz); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 171.0, 151.7, 147.5, 140.5, 138.5, 128.5, 128.3, 126.3, 119.6, 114.5, 39.1, 31.2; IR (neat) 3260, 3029, 2931, 1694, 1529, 1434, 780 cm^{-1}; HRMS (EI) calcd for $C_{14}H_{14}N_2O$ 226.1107 (M^+), found 226.1107.

***N*-(2-Pyridyl)-2-phenyl propanamide** (Table 2, entry 4, minor isomer)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 8.21 (d, 1H, *J* = 6.3 Hz), 8.15 (m, 2H), 7.65 (m, 1H), 7.25-7.33 (m, 5H), 6.96 (m, 1H), 3.70 (q, 1H, *J* = 5.3 Hz), 1.56 (d, 3H, *J* = 5.3 Hz); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 172.7, 151.4, 147.6, 140.4, 138.3, 129.1, 127.6, 119.7, 113.9, 48.1, 18.4; HRMS (EI) calcd for $C_{14}H_{14}N_2O$ 226.1107 (M^+), found 226.1107.

***N*-(2-Pyridyl)-3-(2,4,6-trimethylphenyl) propanamide** (Table 2, entry 5)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 8.46 (s, 1H), 8.23 (m, 2H), 7.70 (dd, 1H, *J* = 7.2, 1.3 Hz), 7.02 (m, 1H), 6.83 (s, 2H), 3.04 (m, 2H), 2.51 (m, 2H), 2.29 (s, 6H), 2.24 (s, 3H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 171.1, 151.5, 147.6, 138.5, 136.0, 135.6, 133.9, 129.0, 119.7, 114.1, 36.9, 24.9, 20.8, 19.6; HRMS (EI) calcd for $C_{17}H_{20}N_2O$ 268.1577 (M^+), found 268.1574.

***N*-(2-Pyridyl)-4-trimethylsilyl butanamide** (Table 2, entry 6, major isomer)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 8.51 (bs, 1H), 8.22 (m, 2H), 7.67 (dd, 1H, *J* = 8.3, 1.3 Hz), 7.00 (m, 1H), 2.38 (t, 2H, *J* = 7.4 Hz), 1.65-1.76 (m, 2H), 0.53 (m, 2H), -0.04 (s, 9H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 171.9, 151.6, 147.6, 138.4, 119.6, 114.2, 41.5, 20.2, 16.5, -1.8; HRMS (FAB) calcd for $C_{12}H_{20}N_2OSi$ 237.1425 $[M+H]^+$, found 237.1423.

***N*-(2-Pyridyl)-2-methyl-3-trimethylsilyl propanamide** (Table 2, entry 6, minor isomer)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 8.19-8.24 (m, 2H), 7.97 (bs, 1H), 7.67 (td, 1H, *J* = 6.6, 1.4 Hz), 7.00 (m, 1H), 2.48 (m, 1H), 1.26 (d, 3H, *J* = 5.1 Hz), 1.07 (dd, 1H, *J* = 14.6, 6.6 Hz), 0.76 (m, 1H), 0.01 (s, 9H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 176.2, 151.5, 147.7, 138.4, 119.6, 113.9, 38.9, 22.1, 20.8, -1.0.

***N*-(2-Pyridyl)-3-trimethylsilyl propanamide** (Table 2, entry 7)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 8.80 (bs, 1H), 8.22 (m, 2H), 7.67 (td, 1H, *J* = 8.4, 1.9 Hz), 6.98 (m, 1H), 2.32 (m, 2H), 0.89 (m, 2H), -0.02 (s, 9H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 173.2, 151.7, 147.4, 138.4, 119.4, 114.2, 32.1, 12.0, -2.1; IR (neat) 3272, 2958, 1606, 1519, 1331, 770 cm^{-1}; HRMS (EI) calcd for $C_{11}H_{18}N_2OSi$ 223.1268 $[M+H]^+$, found 223.1267.

exo-***N*-(2-Pyridyl)bicyclo [2,2,1] heptancarboxamide** (Table 2, entry 8, major isomer)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 8.35 (d, 1H, *J* = 6.3 Hz), 8.26 (d, 1H, *J* = 3.4 Hz), 8.21 (d, 1H, *J* = 8.4 Hz), 7.69 (t, 1H, *J* = 7.0, 1.7 Hz), 7.01 (m, 1H), 2.53 (s, 1H), 2.28-2.34 (m, 2H), 1.97 (m 1H), 1.44-1.61 (m, 4H), 1.19 (m, 3H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 174.4, 151.8, 147.6, 138.4, 119.4, 114.0, 49.1, 41.6, 36.4, 36.0, 33.9, 29.7, 28.6; HRMS (EI) calcd for $C_{13}H_{15}N_2O$ 215.1186 (M^+), found 215.1190.

Representative Procedure for the Cooperative Catalytic Aminocarbonylation Reaction. To a solution of *N*-(2-pyridyl)formamide (**1b**, 54.8 mg, 0.4 mmol) in acetonitrile (0.4 ml) was added iodobenzene (163.2 mg, 0.8 mmol) followed by $Ru_3(CO)_{12}$ (12.8 mg, 5 mol %), $PdCl_2$ (3.5 mg, 5 mol %) and $NaHCO_3$ (50.4 mg, 0.6 mmol). The reaction mixture was stirred at 135 °C for 6 h in a sealed vial. After removal of the solvent under the reduced pressure, the residue was purified by flash column chromatography on silica gel (15% EtOAc in hexane) to afford *N*-(2-pyridyl)benzamide (26.7 mg, 58%): ^{1}H NMR ($CDCl_3$, 300 MHz) δ 9.70 (bs, 1H), 8.37 (d, 1H, *J* = 8.4 Hz), 7.92 (m, 1H,) 7.87 (d, 2H, *J* = 7.2 Hz), 7.64 (m, 1H), 7.33-7.48 (m, 3H), 6.90 (m, 2H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 166.1, 151.8, 147.5, 138.2, 134.3, 131.9, 128.5, 127.3, 119.5, 114.3; IR (neat) 3059, 2545, 1916, 1813, 1683, 1519, 1302, 1151, 777 cm^{-1}; HRMS (EI) calcd for $C_{12}H_{10}N_2O$ 198.0794 (M^+), found 198.0795.

***N*-(2-Pyridyl)-3-bromobenzamide** (Table 3, entry 2)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 8.82 (bs, 1H), 8.34 (d, 1H, *J* = 8.4 Hz), 8.22 (dd, 1H, *J* = 4.9, 0.8 Hz), 8.06 (m, 1H), 7.81 (dd, 1H, *J* = 7.7, 1.2 Hz), 7.74 (m, 1H), 7.67 (m, 1H), 7.34 (t, 1H, *J* = 8.0 Hz), 7.05 (m, 1H); ^{13}C NMR ($CDCl_3$, 75

MHz) δ 164.3, 151.3, 147.9, 138.6, 136.3, 135.1, 130.6, 130.3, 125.7, 123.0, 120.2, 114.3; HRMS (EI) calcd for $C_{13}H_{10}NO_2Br$ 275.9898 (M^+), found 275.9900.

***N*-(2-Pyridyl)-4-methylbenzamide** (Table 3, entry 3)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 8.85 (bs, 1H), 8.37 (dd, 1H, *J* = 8.4, 0.6 Hz), 8.20 (m, 1H), 7.80 (m, 1H), 7.71 (m, 1H), 7.25 (d, 2H, *J* = 7.8 Hz), 7.01 (m, 1H), 2.39 (s, 3H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 165.7, 151.7, 147.8, 142.7, 138.4, 131.4, 129.4, 127.2, 119.7, 114.2, 21.4; HRMS (EI) calcd for $C_{13}H_{12}N_2O$ 212.0951 (M^+), found 212.0950.

***N*-(2-Pyridyl)-4-methoxylbenzamide** (Table 3, entry 4)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 8.81 (bs, 1H), 8.36 (dd, 1H, *J* = 8.4, 0.8 Hz), 8.20 (m, 1H), 7.88 (m, 2H), 7.71 (m, 1H), 7.01 (m, 2H), 6.93 (m, 2H), 3.84 (s, 3H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 165.3, 162.7, 151.8, 147.7, 138.3, 129.2, 126.4, 119.6, 114.2, 113.9, 55.4; HRMS (EI) calcd for $C_{13}H_{12}N_2O_2$ 228.0900 (M^+), found 228.0894.

***N*-(2-Pyridyl)-4-acetylbenzamide** (Table 3, entry 5)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 9.06 (bs, 1H), 8.38 (d, 1H, *J* = 8.4 Hz), 8.25 (d, 1H, *J* = 4.6 Hz), 8.04 (m, 4H), 7.78 (t, 1H, *J* = 7.2 Hz), 7.09 (t, 1H, *J* = 7.0 Hz), 2.65 (s, 3H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 197.2, 164.9, 151.3, 147.8, 139.6, 138.6, 138.1, 128.6, 127.6,120.2, 114.4, 26.8; HRMS (EI) calcd for $C_{13}H_{10}NO_2Br$ 240.0900 (M^+), found 240.0898.

***N*-(2-Pyridyl)-4-hydroxylbenzamide** (Table 3, entry 6)**:** ^{1}H NMR (DMSO-d_6, 300 MHz) δ 10.4 (s, 1H), 10.1 (s, 1H), 8.31 (dd, 1H, *J* = 4.5, 0.9 Hz), 8.15 (d, 1H), 7.92 (d, 2H, *J* = 8.7 Hz), 7.76 (m, 1H), 7.08 (m, 1H), 6.81 (d, 2H, *J* = 8.7 Hz); ^{13}C NMR (DMSO-d_6, 75 MHz) δ 165.5, 160.9, 152.5, 147.8, 138.0, 130.1, 124.6, 119.4, 115.0, 114.6; HRMS (EI) calcd for $C_{12}H_{10}N_2O_2$ 214.0743 (M^+), found 214.0744.

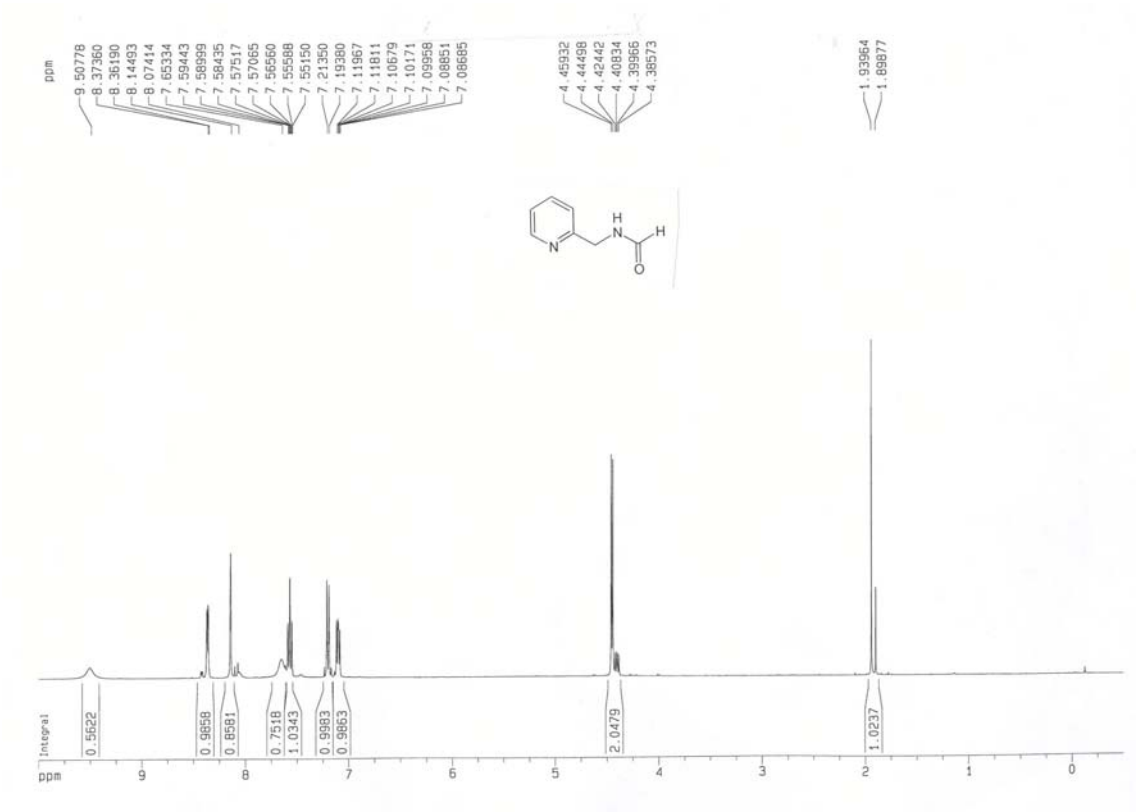
***N*-(2-Pyridyl)-1-naphthalenecarboxamide** (Table 3, entry 7)**:** ^{1}H NMR ($CDCl_3$, 300 MHz) δ 9.77 (bs, 1H), 8.48 (d, 1H, *J* = 8.4 Hz), 8.40 (m, 1H), 7.96 (d, 1H, *J* = 8.4 Hz), 7.90 (m, 1H), 7.67-7.78 (m, 2H), 7.51-7.64 (m, 3H), 7.46 (t, 1H, *J* = 7.3 Hz), 6.87 (m, 1H); ^{13}C NMR ($CDCl_3$, 75 MHz) δ 168.1, 151.8, 147.5, 138.4, 134.0, 133.7, 131.2, 130.1, 128.4, 127.3, 126.5, 125.5, 125.2, 124.6, 119.7, 114.4; IR (KBr) 3050, 1831, 1677, 1525, 1434, 1305, 777 cm^{-1}; HRMS (EI) calcd for $C_{13}H_{10}NO_2Br$ 248.0951 (M^+), found 248.0956.

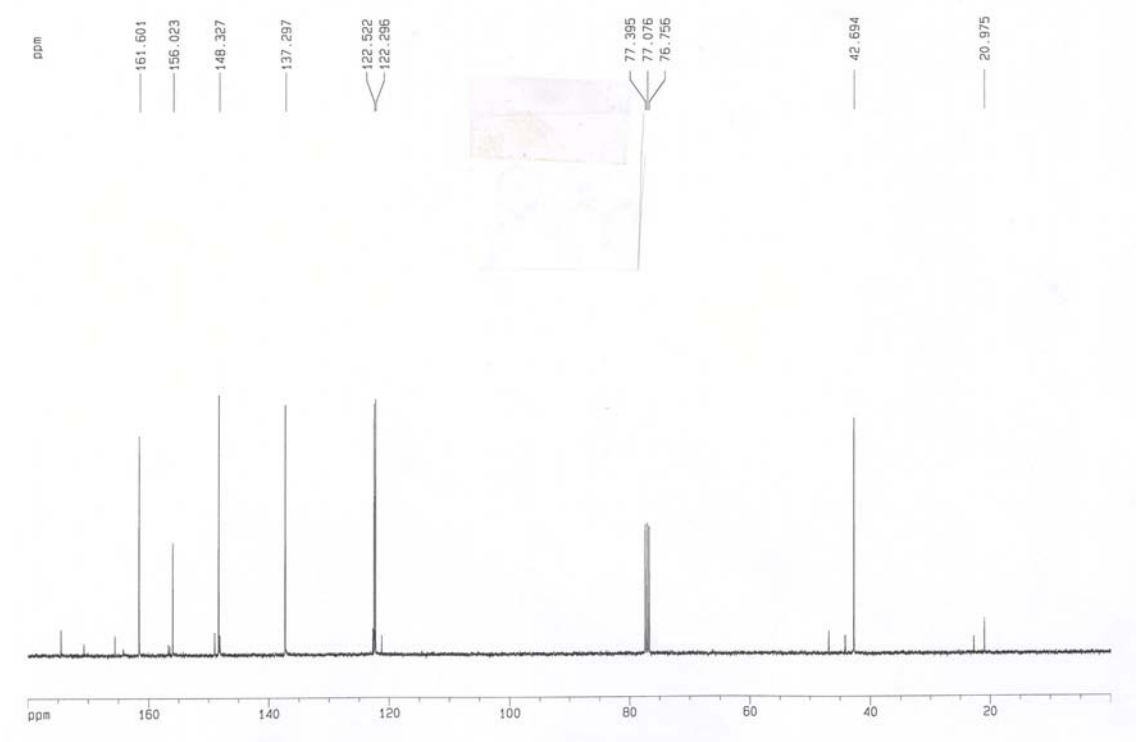
4,4-Dimethylpentanoic acid (3, Eq 1): To a solution of *N*-(2-pyridyl)-4,4-dimethyl pentanamide (**2**, 200 mg, 0.97 mmol) in ethanol (2 mL) was added an aqueous NaOH solution

(20%, 3 mL), and then the reaction mixture was stirred for 1 h at 100 °C. After cooling the mixture to 0 °C, it was acidified (pH ~2) with 2 N HCl solution. Crude product was extracted with ethyl acetate (20 mL x 3), washed with brine, and dried over $MgSO_4$. Evaporation of the organic solvent gave analytically pure 4,4-dimethylpentanoic acid (**3**, 122 mg, 97%); ^{1}H NMR ($CDCl_3$, 300 MHz) 10.4 (bs, 1H), 2.51 (m, 2H), 1.49 (m, 2H), 0.83 (s, 9H); ^{13}C NMR ($CDCl_3$, 75 MHz) 180.9, 38.3, 30.0, 29.9, 29.6, 28.9; IR (neat) 1710, 1416, 1302, 803 cm^{-1}; HRMS (EI) calcd for $C_7H_{14}O_2$ 130.0994 (M^+), found 130.0986.

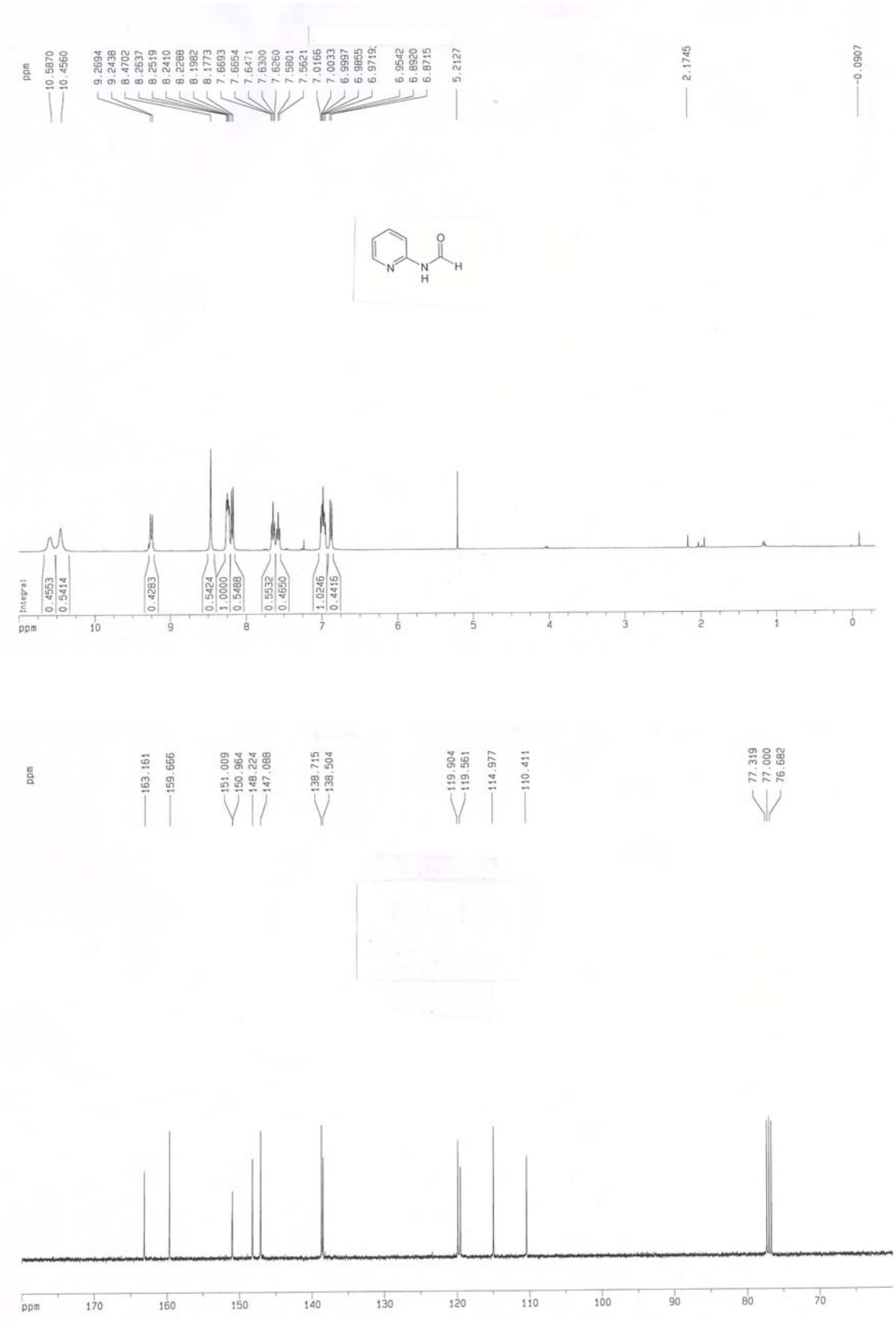
***N*-(2-Pyridyl)-(4,4-dimethylpentyl)amine (4, Eq 1):** To a solution of *N*-(2-pyridyl)-4,4-dimethyl pentanamide (**2**, 200 mg, 0.97 mmol) in THF (3 mL) was added lithium aluminum hydride (110 mg, 2.9 mmol) at 0 °C. The reaction mixture was stirred for 10 min at room temperature and then 1 h at 70 °C. After cooling the mixture to 0 °C, it was quenched with water (1 mL). The crude product was extracted with ethyl acetate (20 mL x 2), dried ($MgSO_4$), and then evaporated under reduced pressure to afford analytically pure *N*-(2-pyridyl)-(4,4-dimethylpentyl)amine (**4**, 183 mg, 98%); ^{1}H NMR ($CDCl_3$, 300 MHz) 8.04 (dd, 1H, J = 5.0, 0.9 Hz), 7.39 (td, 1H, J = 6.8, 1.8 Hz), 6.52 (m, 1H), 6.34 (d, 1H, J = 8.4 Hz), 4.50 (bs, 1H), 3.20 (m, 2H), 1.57 (m 2H), 1.25 (m, 2H), 0.87 (s, 9H); ^{13}C NMR ($CDCl_3$, 75 MHz) 158.8, 147.9, 137.3, 112.3, 106.1, 43.0, 41.3, 30.0, 29.2, 24.7; IR (neat) 3254, 2953, 1699, 1435, 1299, 837 cm^{-1}; HRMS (EI) calcd for $C_{12}H_{20}N_2O$ 192.1628 (M^+), found 192.1627.

***N*-(2-Pyridylmethyl)formamide** (**1a**)

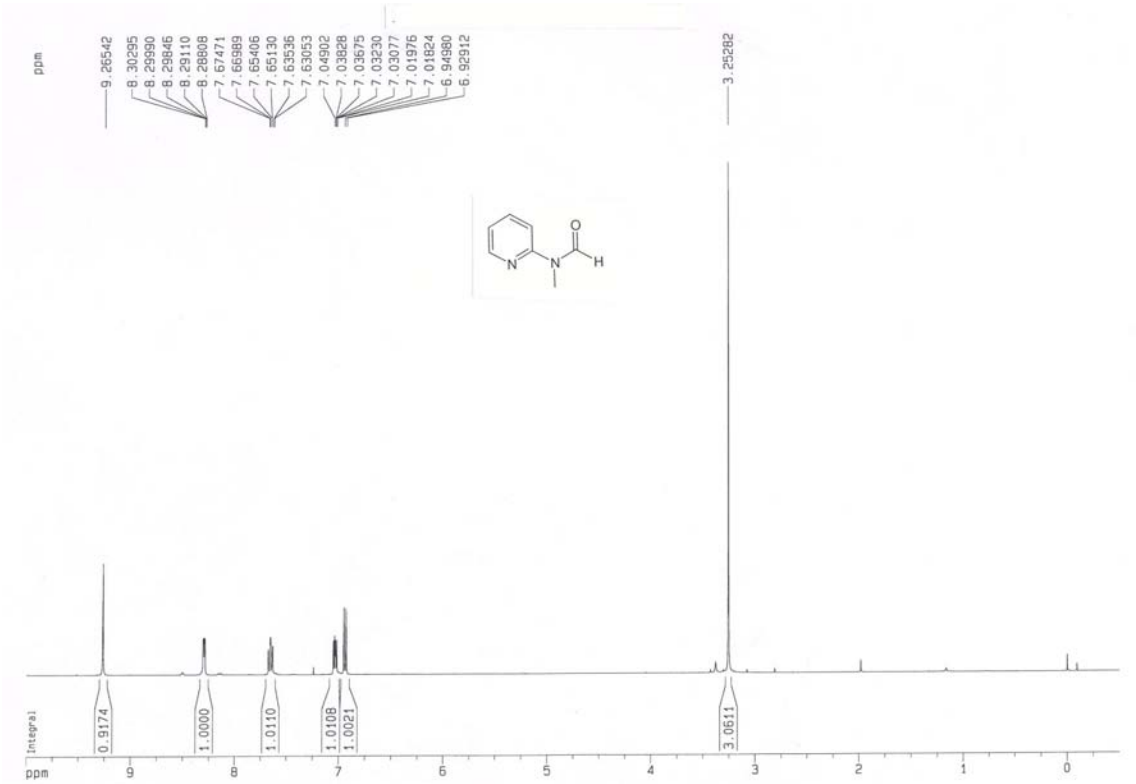


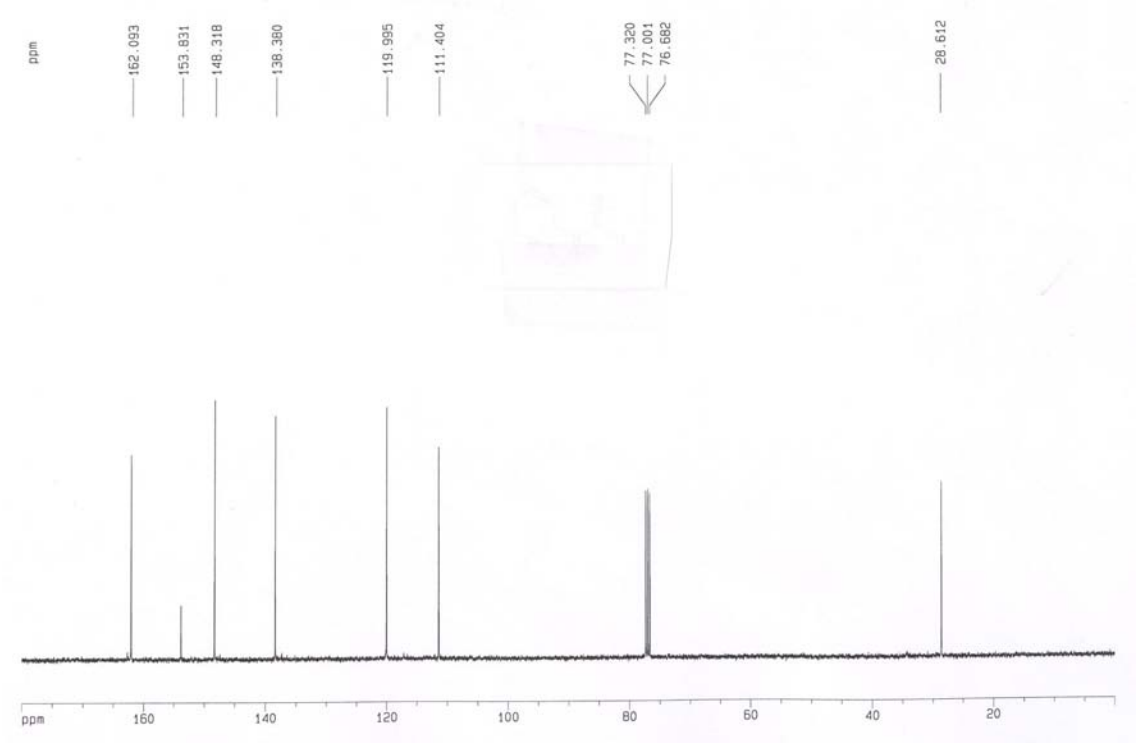


_N_-(2-pyridyl)formamide (1b)

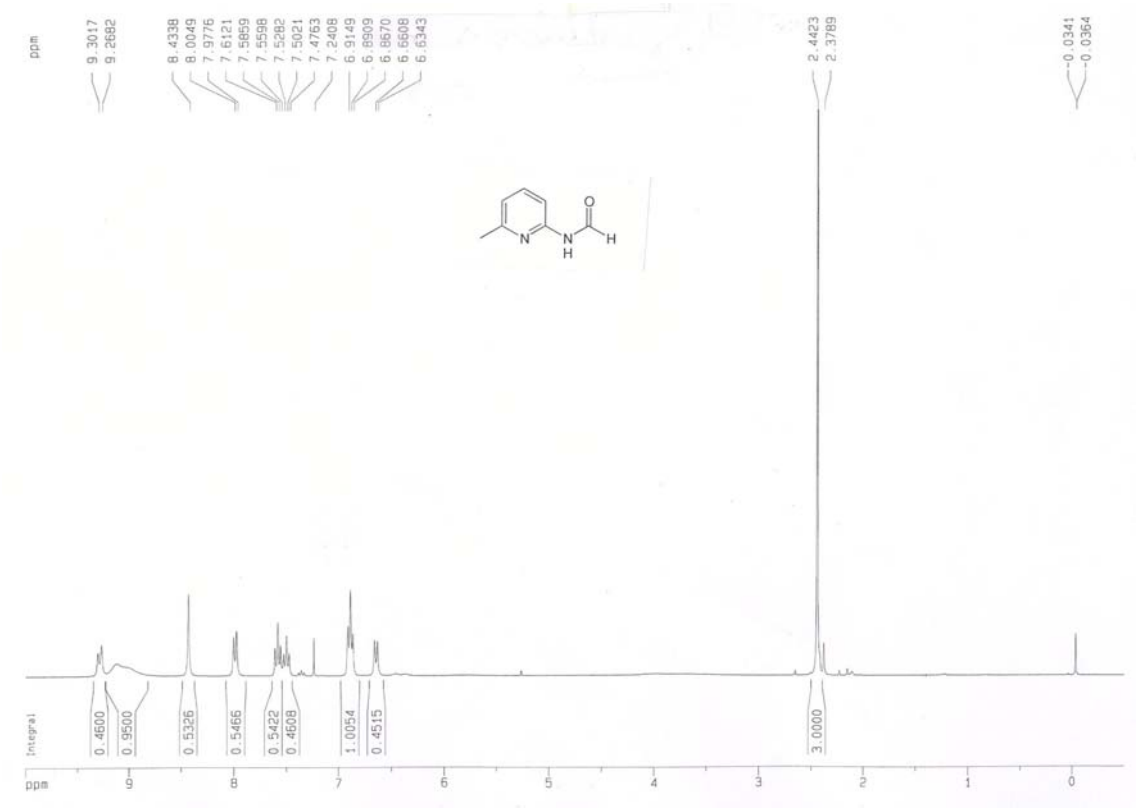


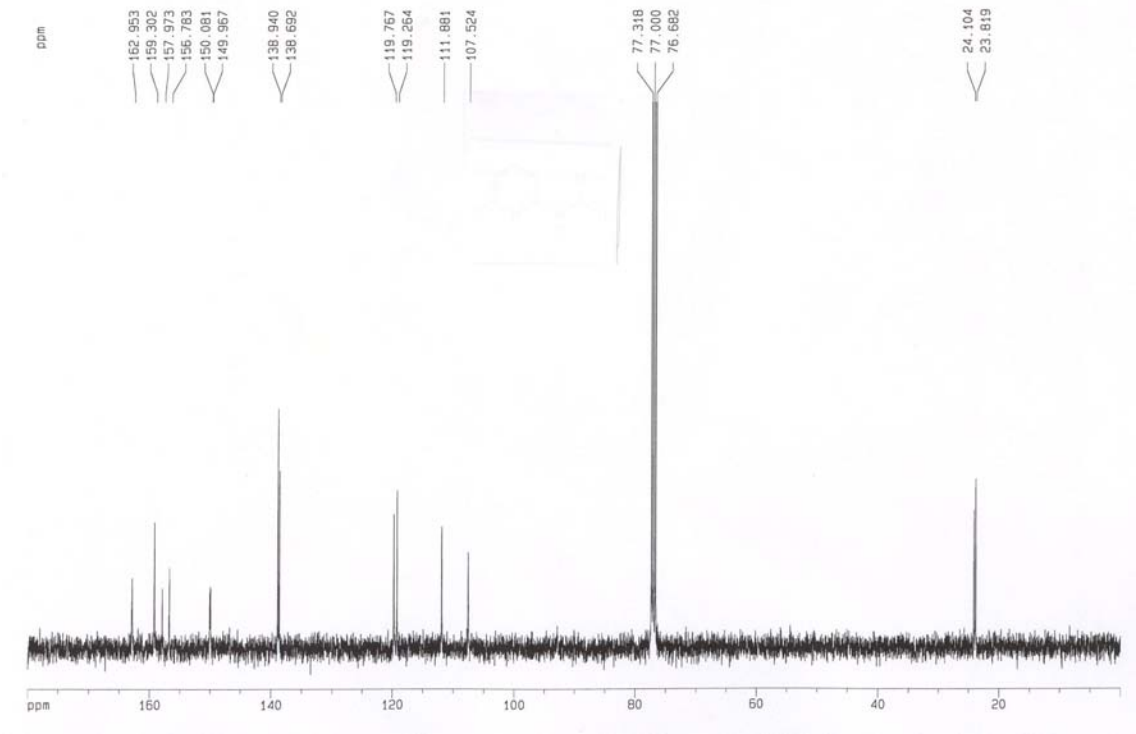
N-**Methyl-***N*-**(2-pyridyl)formamide** (**1c**)



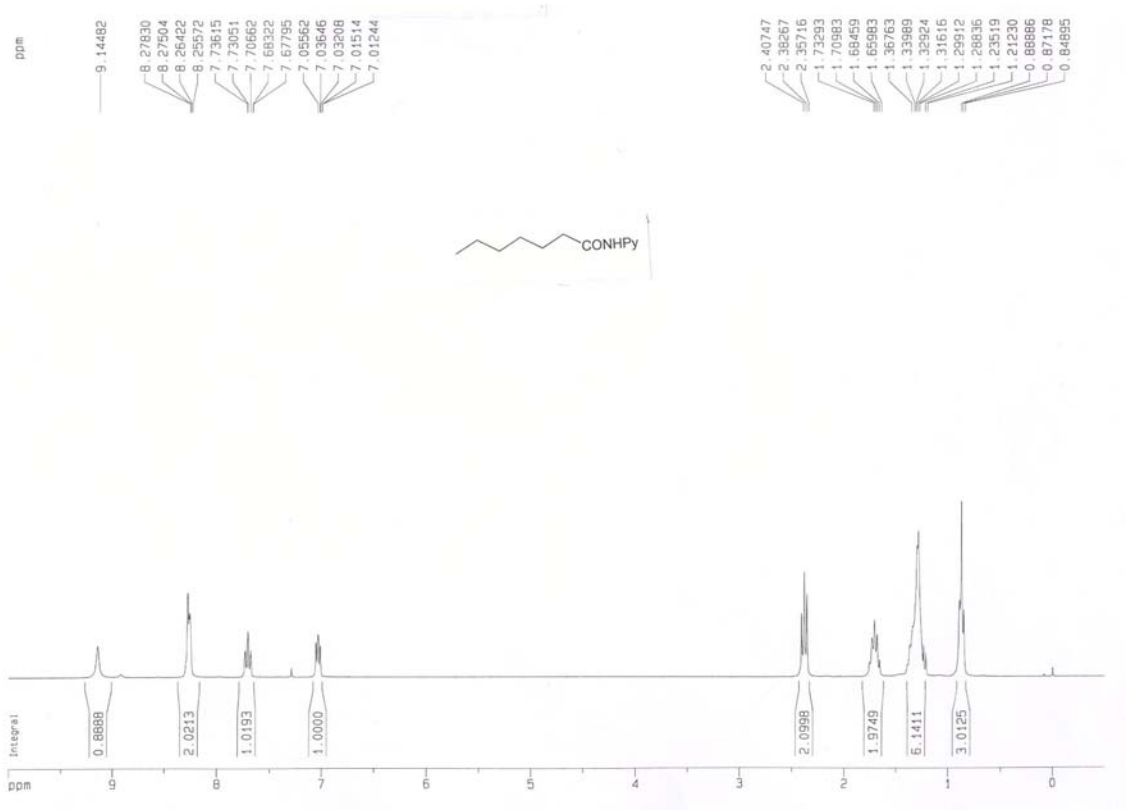


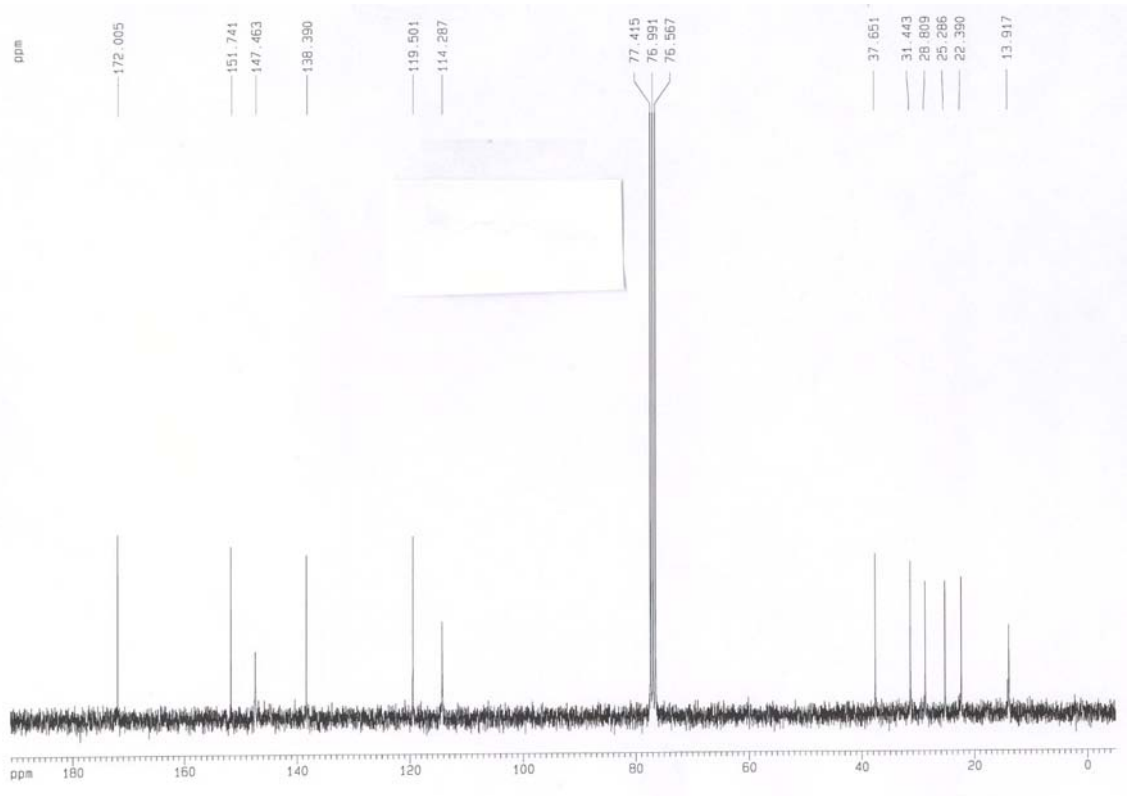
***N*-(6-Methyl-2-pyridyl)formamide** (**1d**)



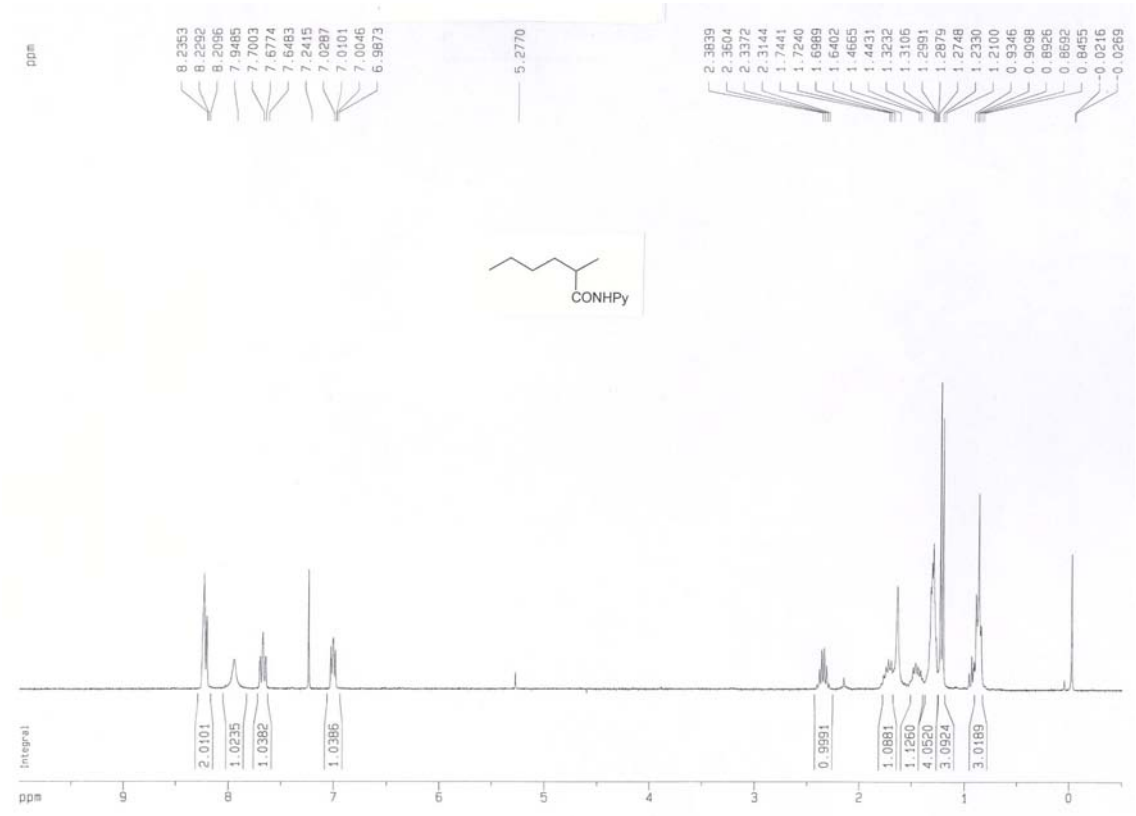


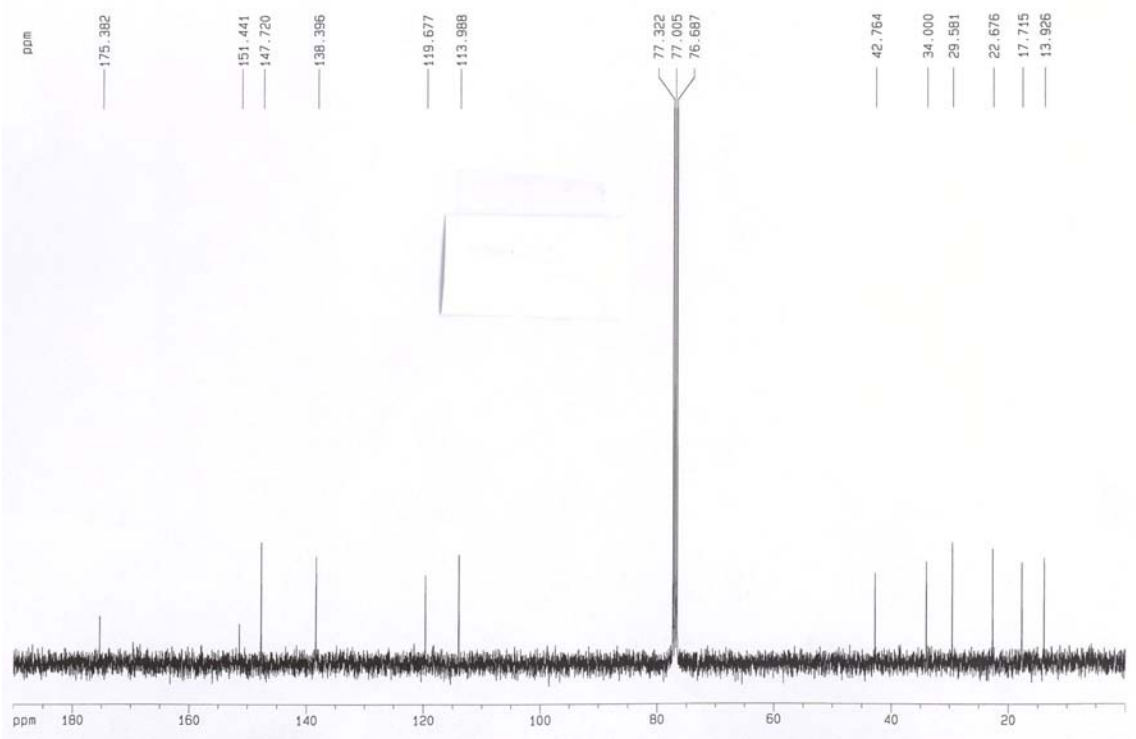
***N*-(2-Pyridyl) heptanamide**(major-isomer , Table 2, entry 1)



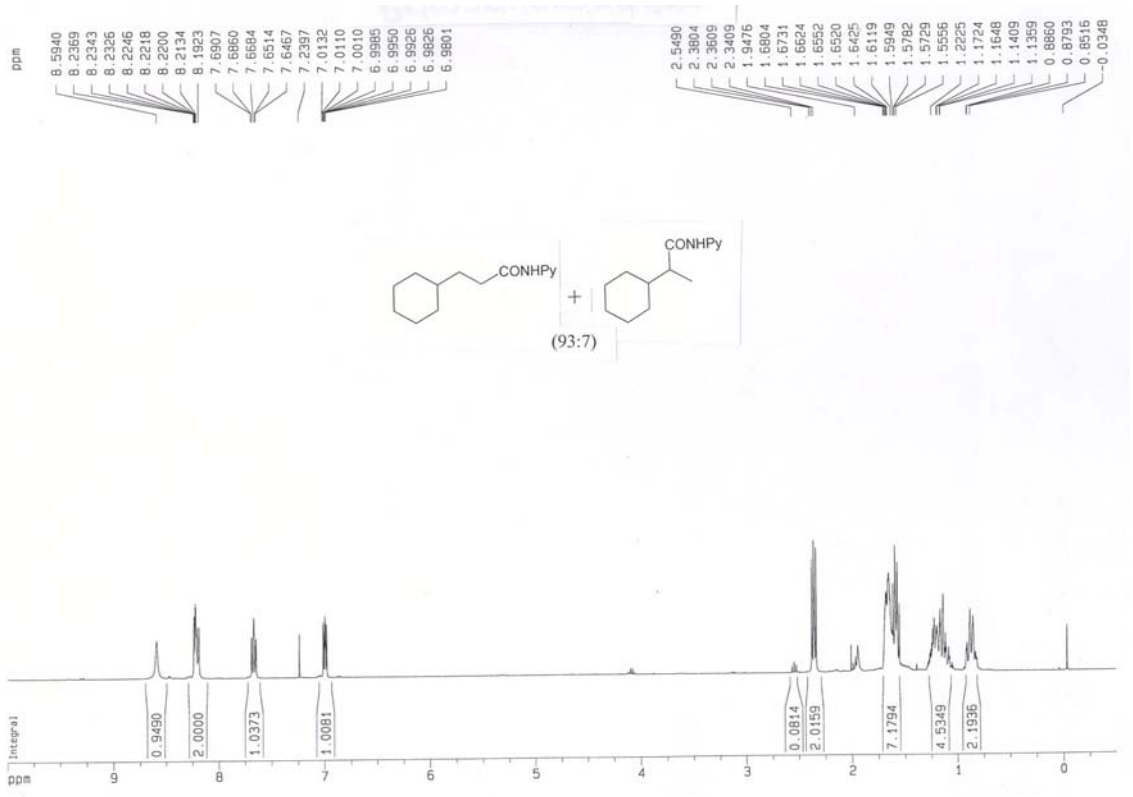


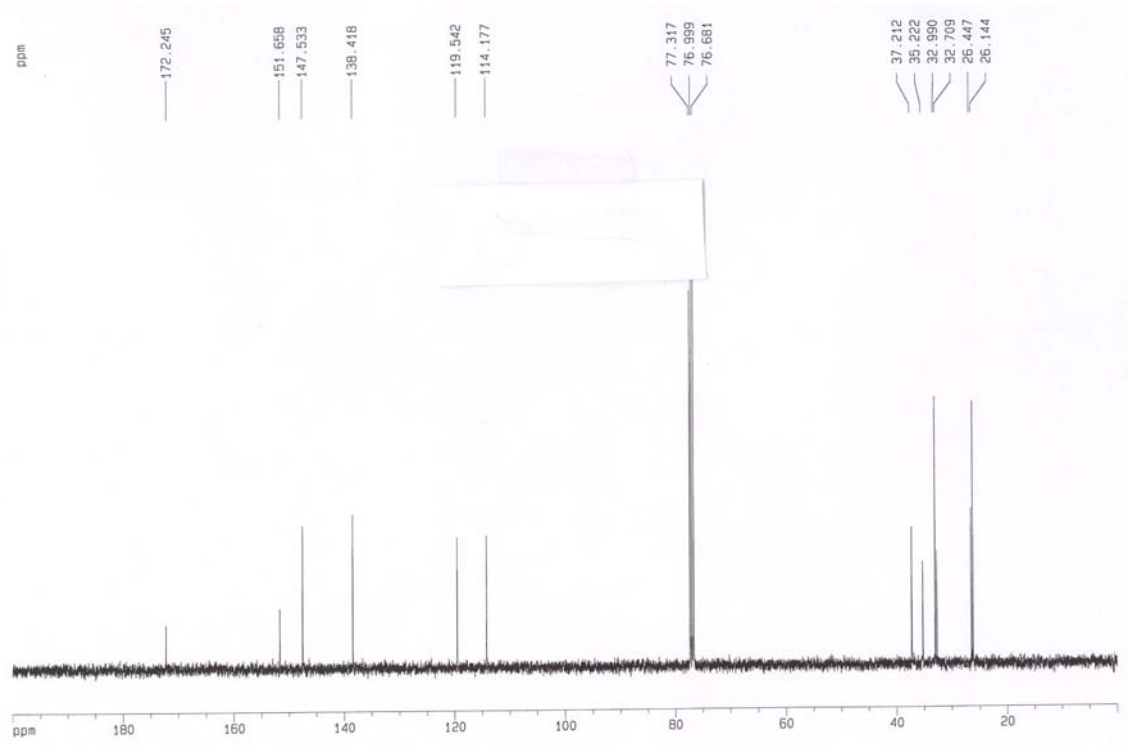
***N*-(2-Pyridyl)-2-methyl hexanamide**(minor-isomer, Table 2, entry 1)



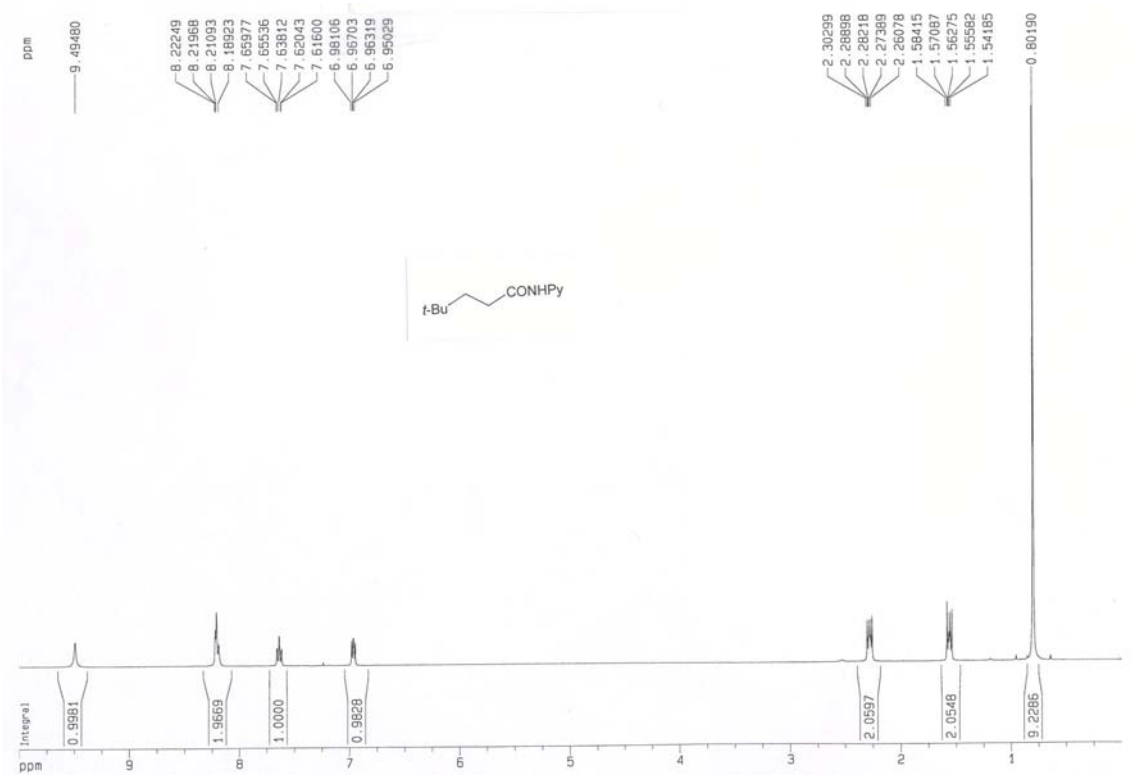


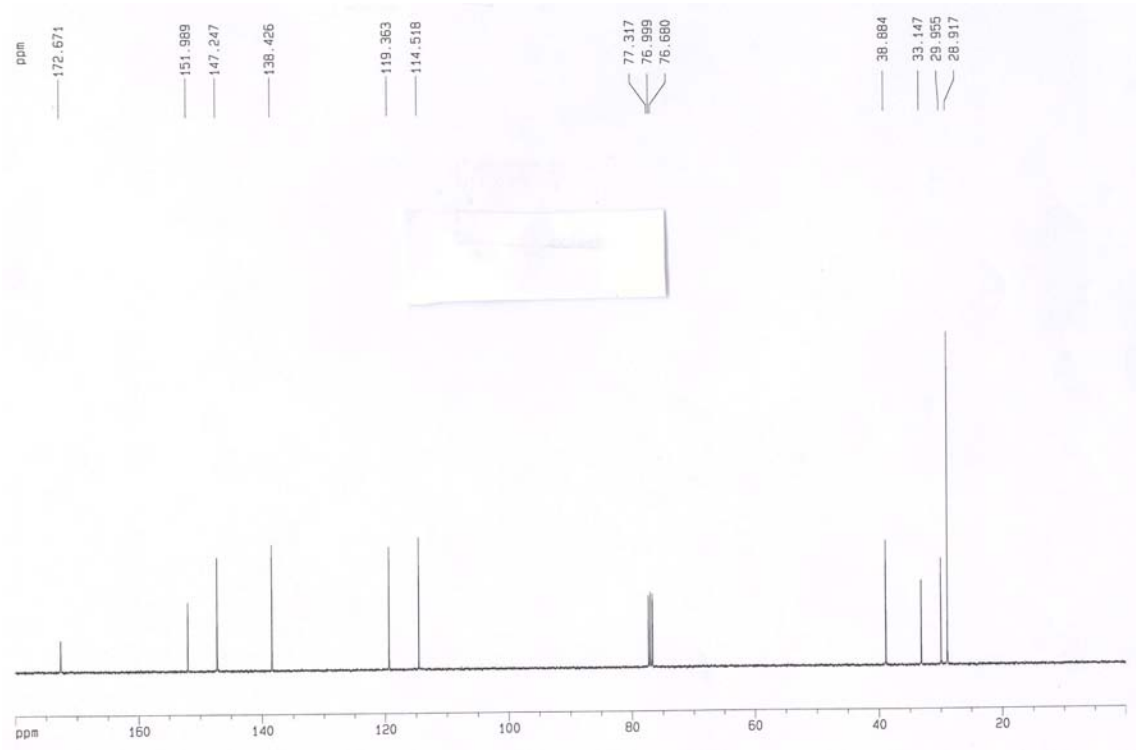
***N*-(2-Pyridyl)-3-cyclohexyl propanamide** (Table 2, entry 2, major isomer)



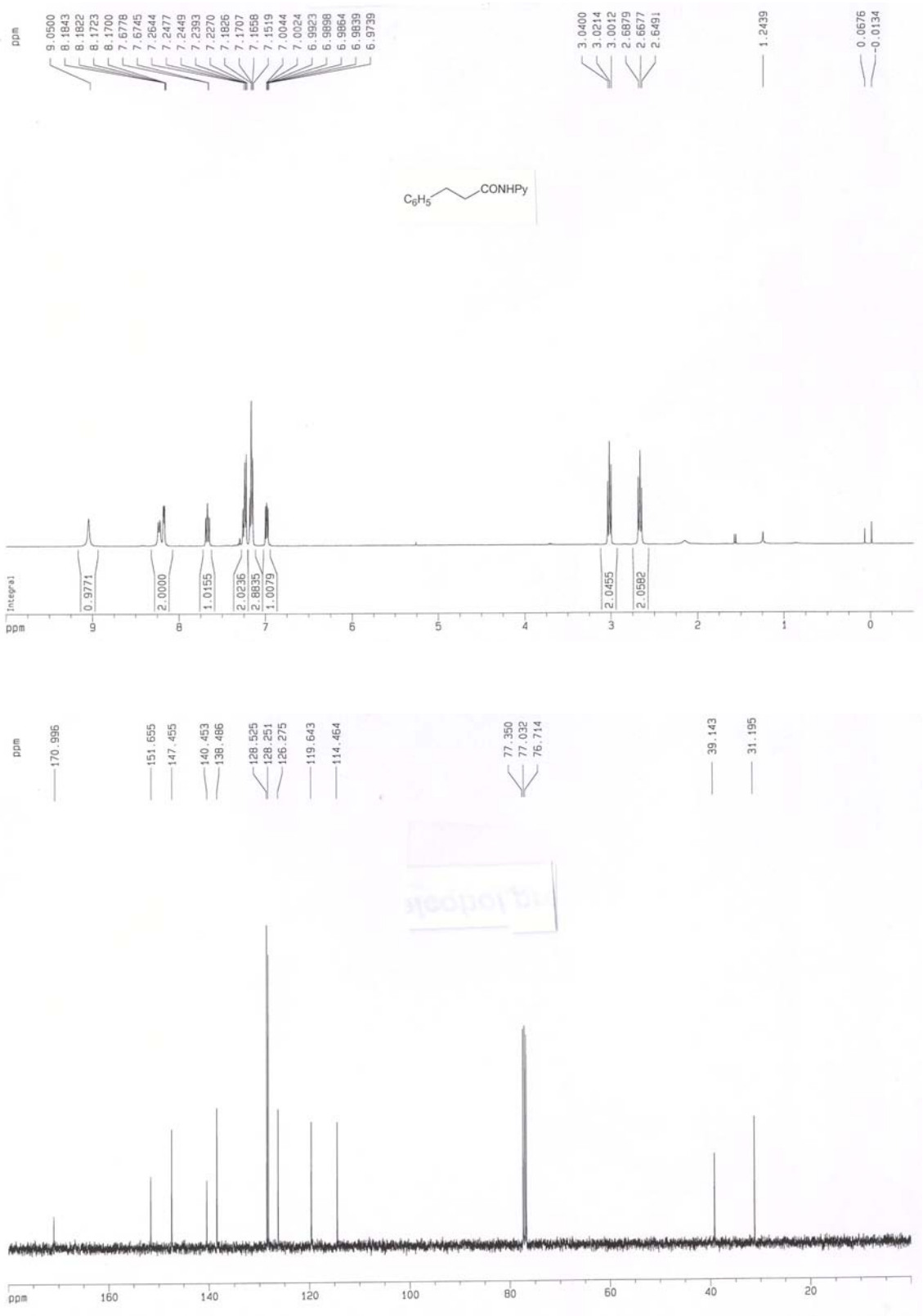


***N*-(2-Pyridyl)-4,4-dimethyl pentanamide** (**2**, Table 2, entry 3)

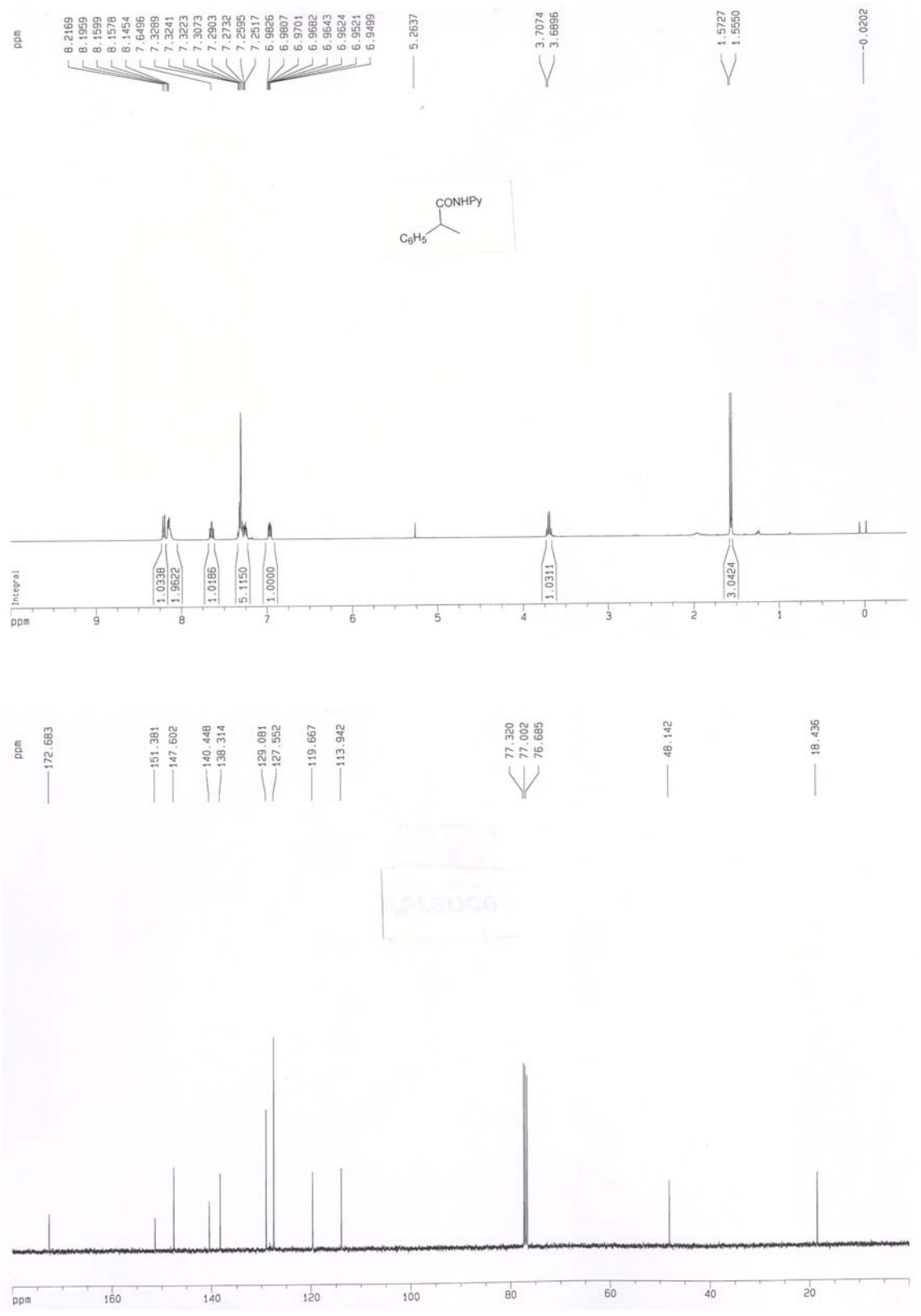




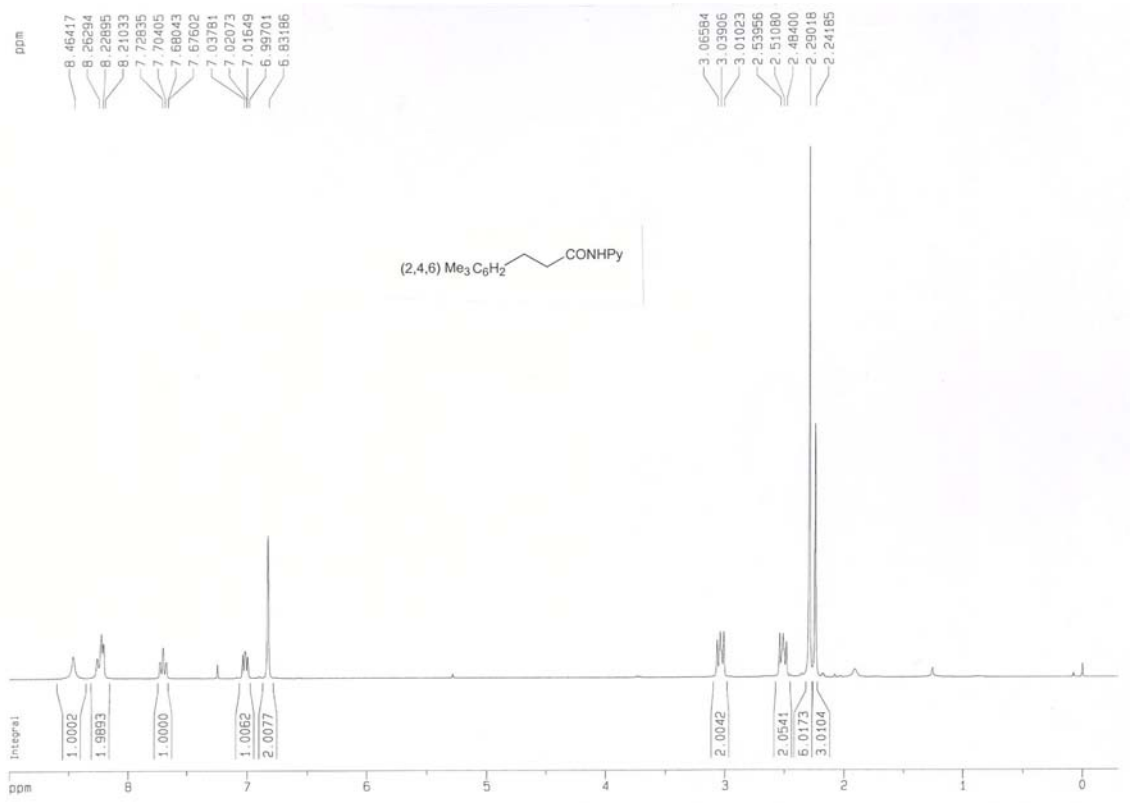
***N*-(2-Pyridyl)-3-phenyl propanamide** (Table 2, entry 4, major-isomer)

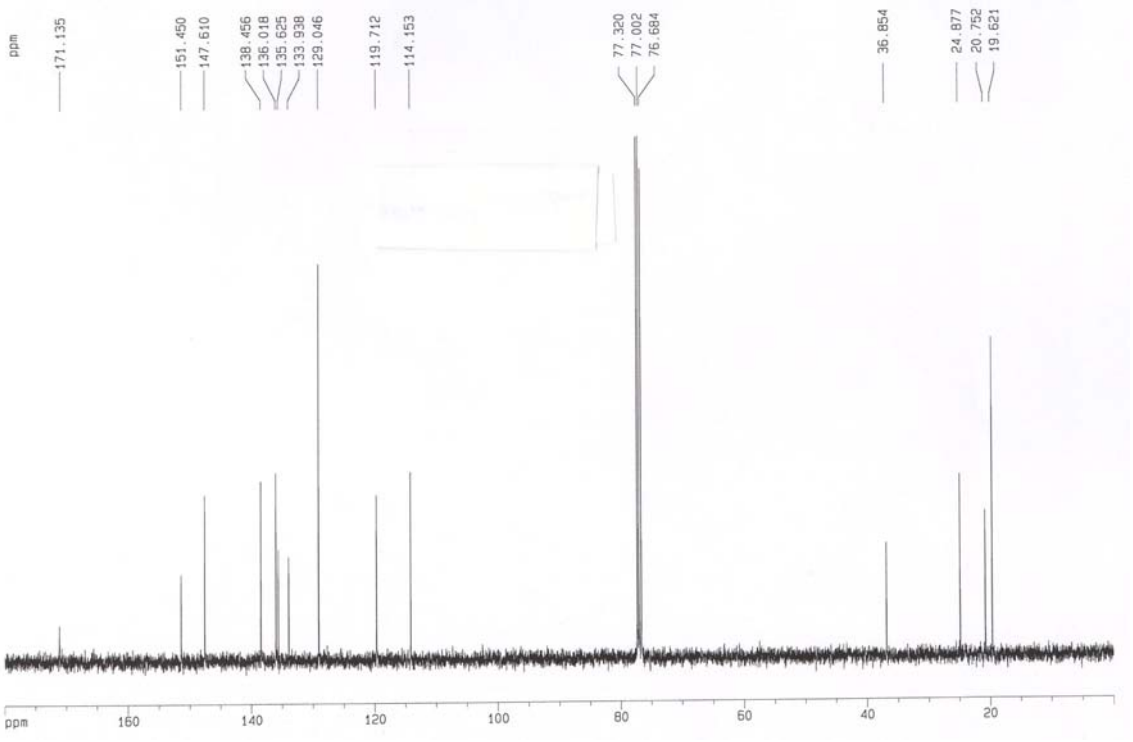


***N*-(2-Pyridyl)-2-phenyl propanamide** (Table 2, entry 4, minor isomer)

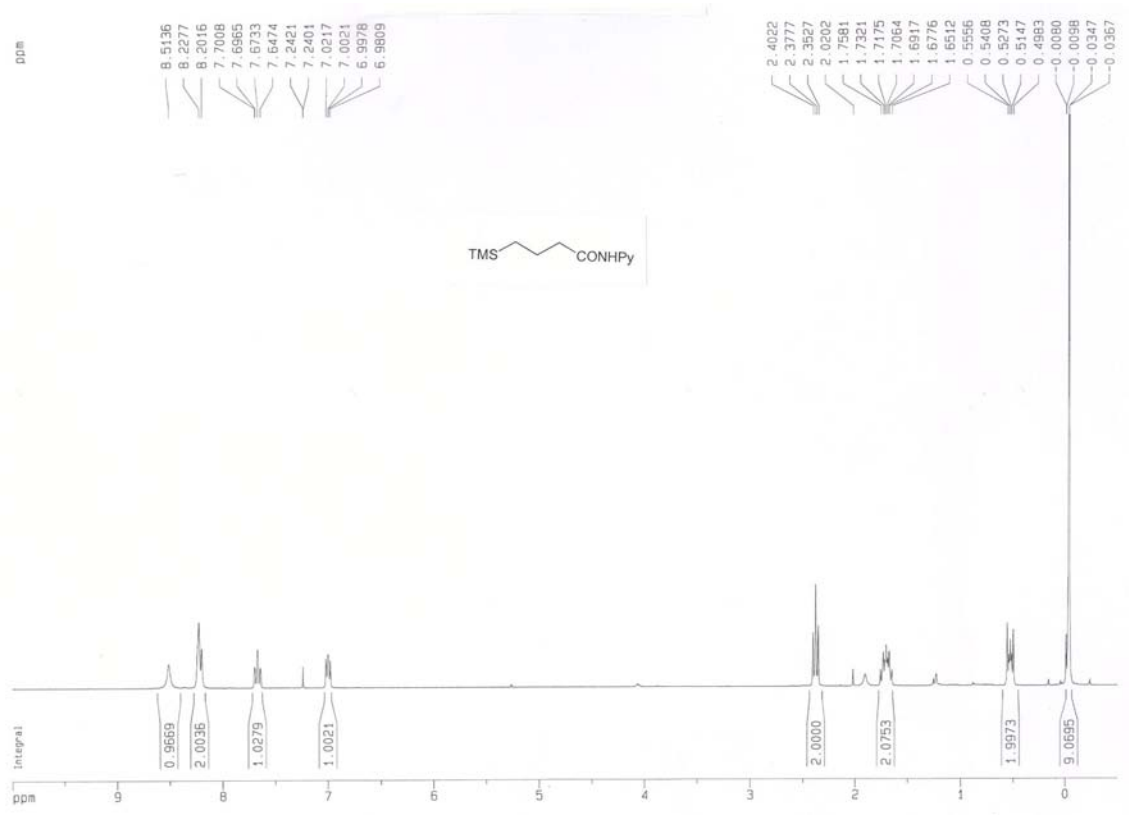


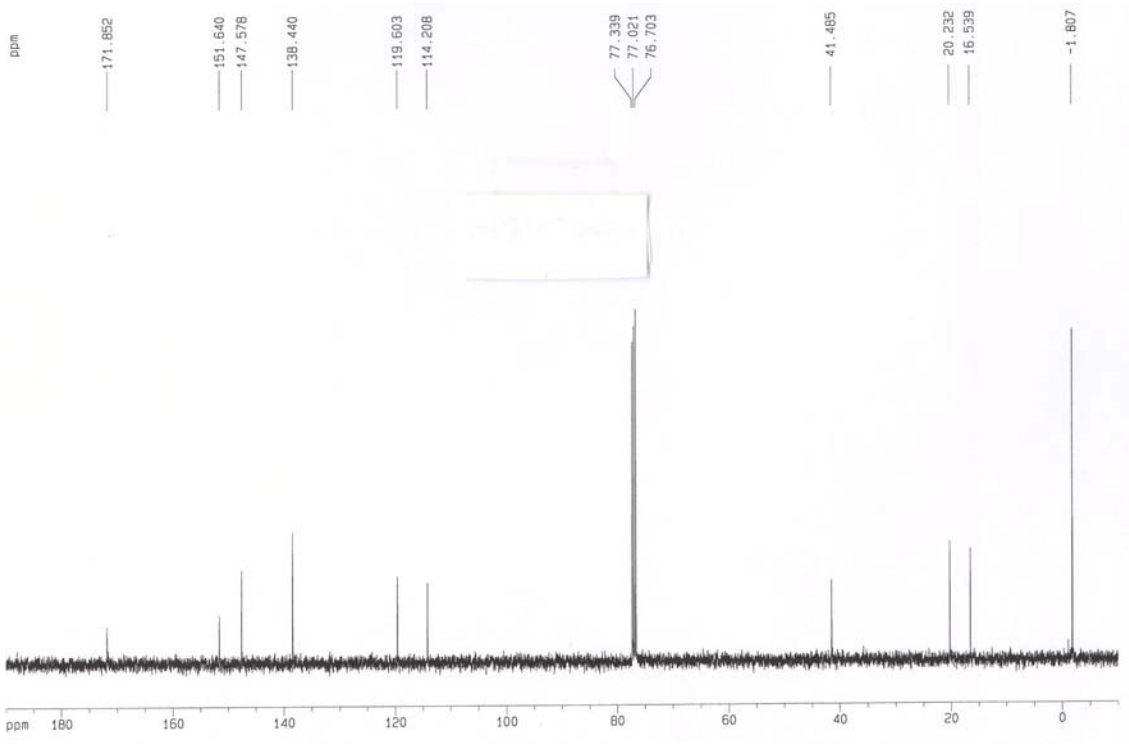
***N*-(2-Pyridyl)-3-(2,4,6-trimethylphenyl) propanamide** (Table 2, entry 5)



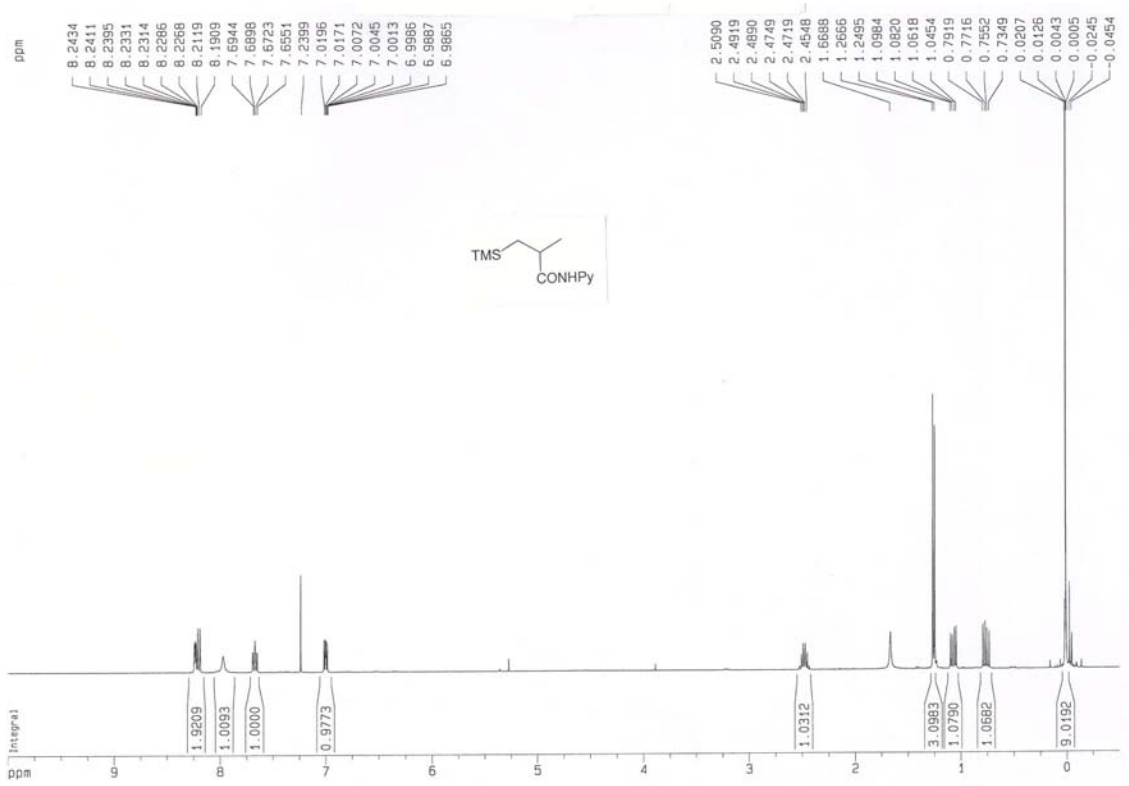


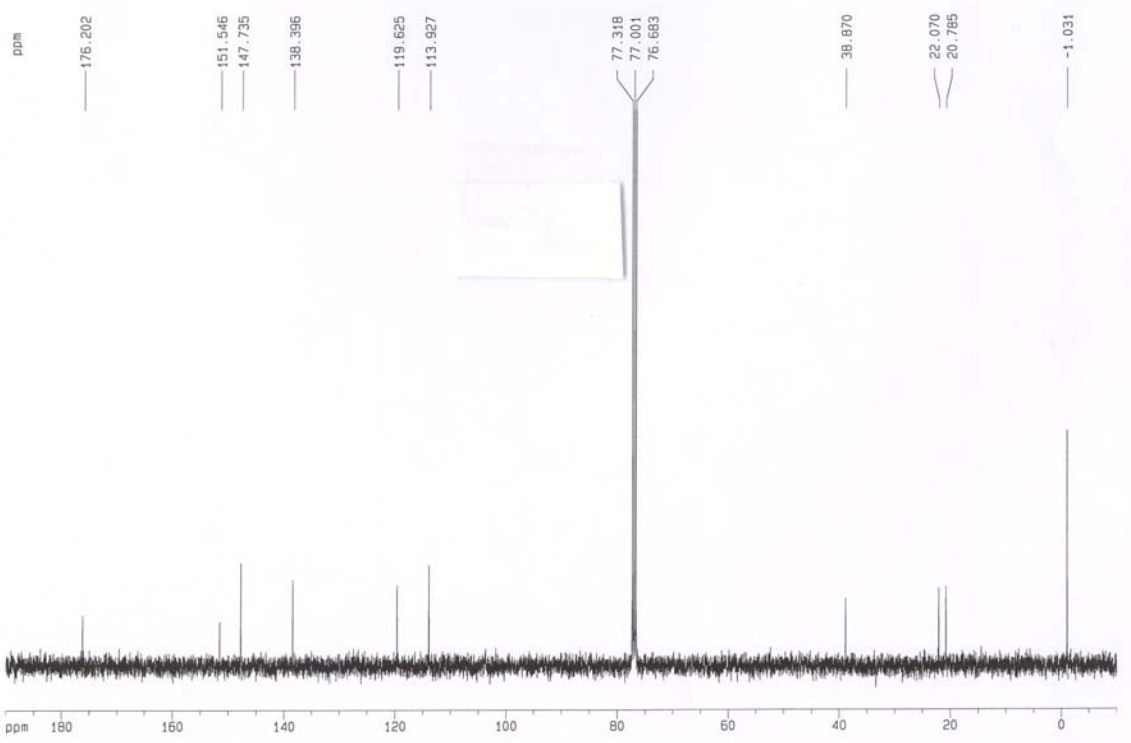
***N*-(2-Pyridyl)-4-trimethylsilyl butanamide** (Table 2, entry 6, major isomer)



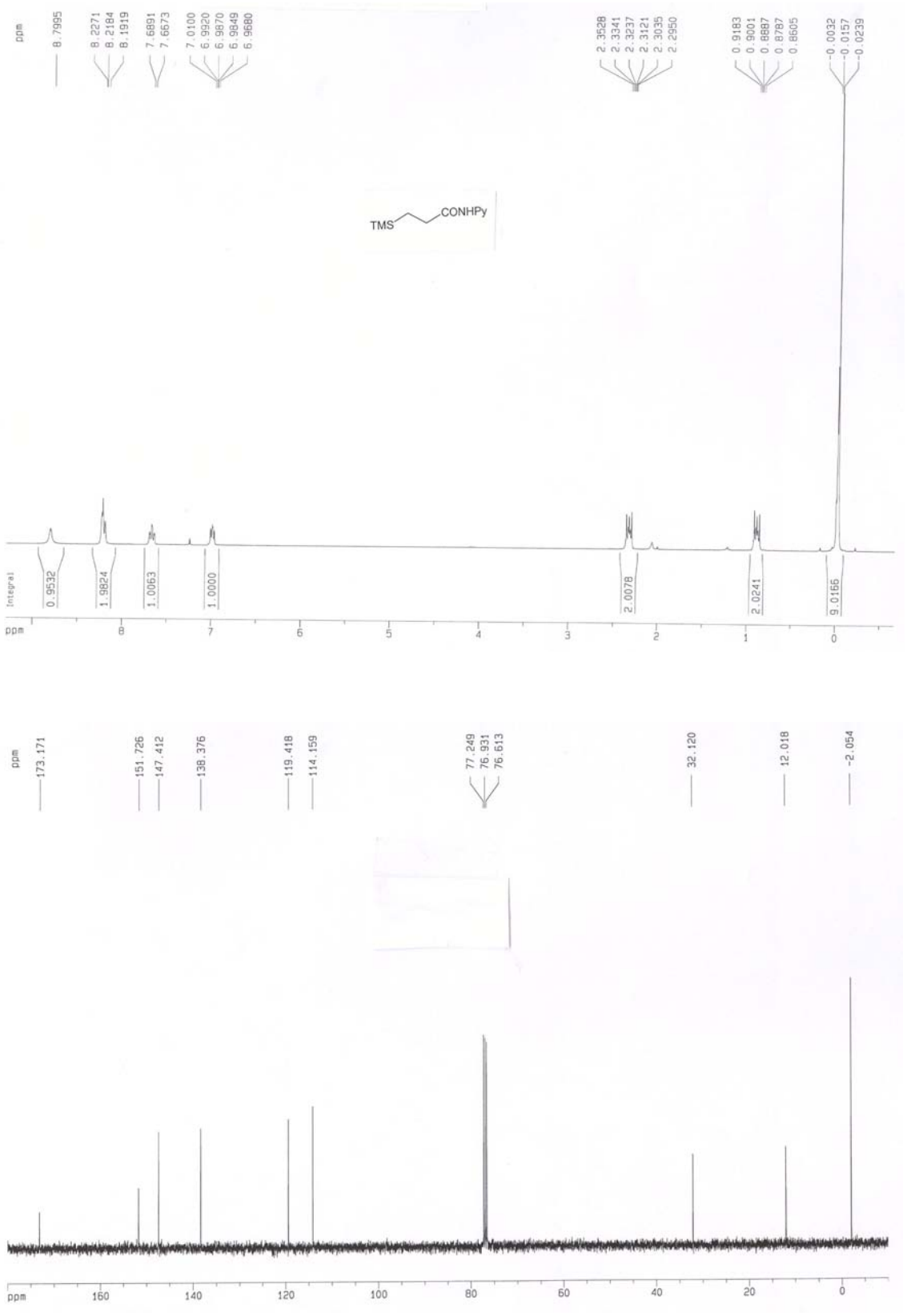


***N*-(2-Pyridyl)-2-methyl-3-trimethylsilyl propanamide** (Table 2, entry 6, minor isomer)

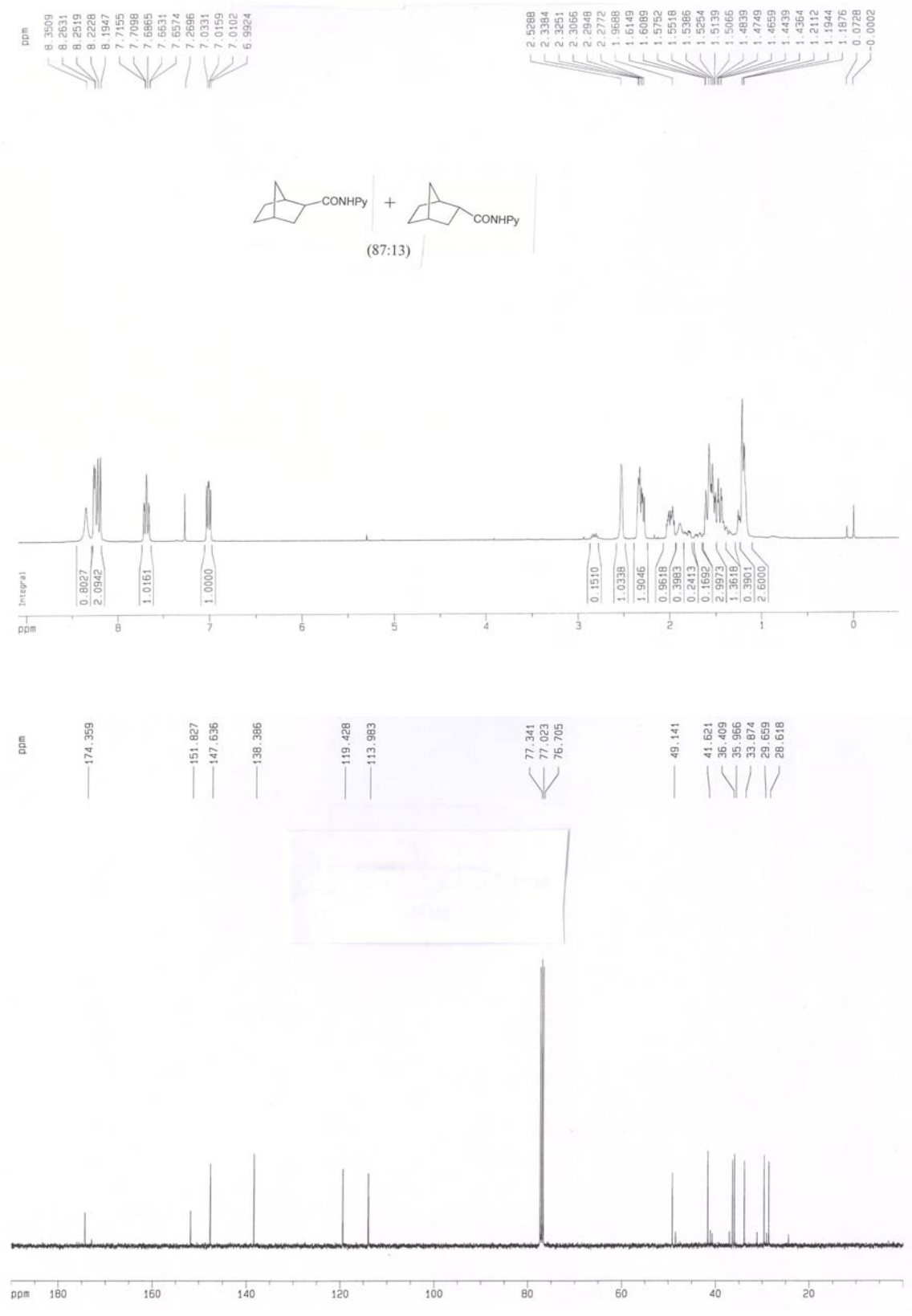




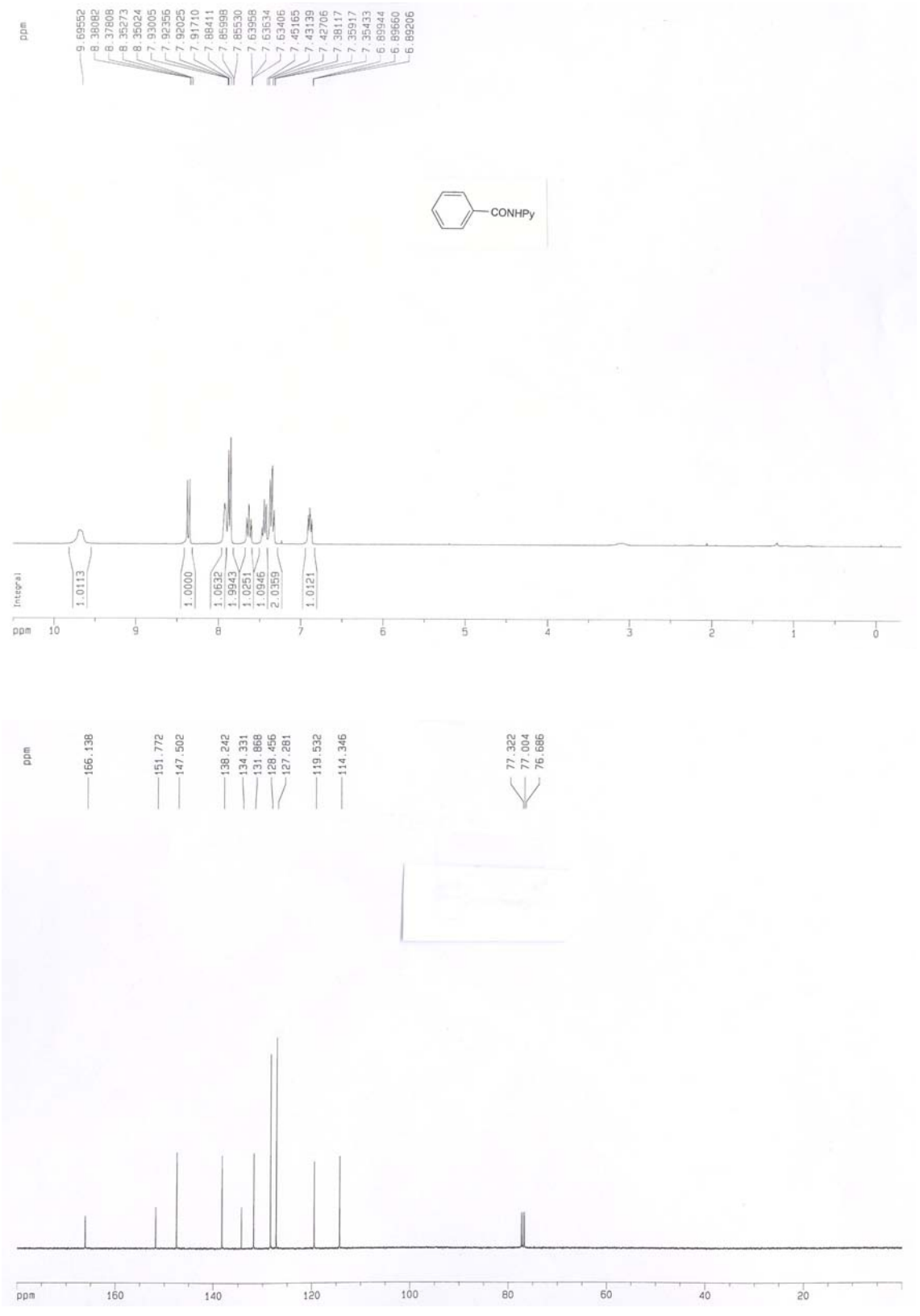
***N*-(2-Pyridyl)-3-trimethylsilyl propanamide** (Table 2, entry 7)



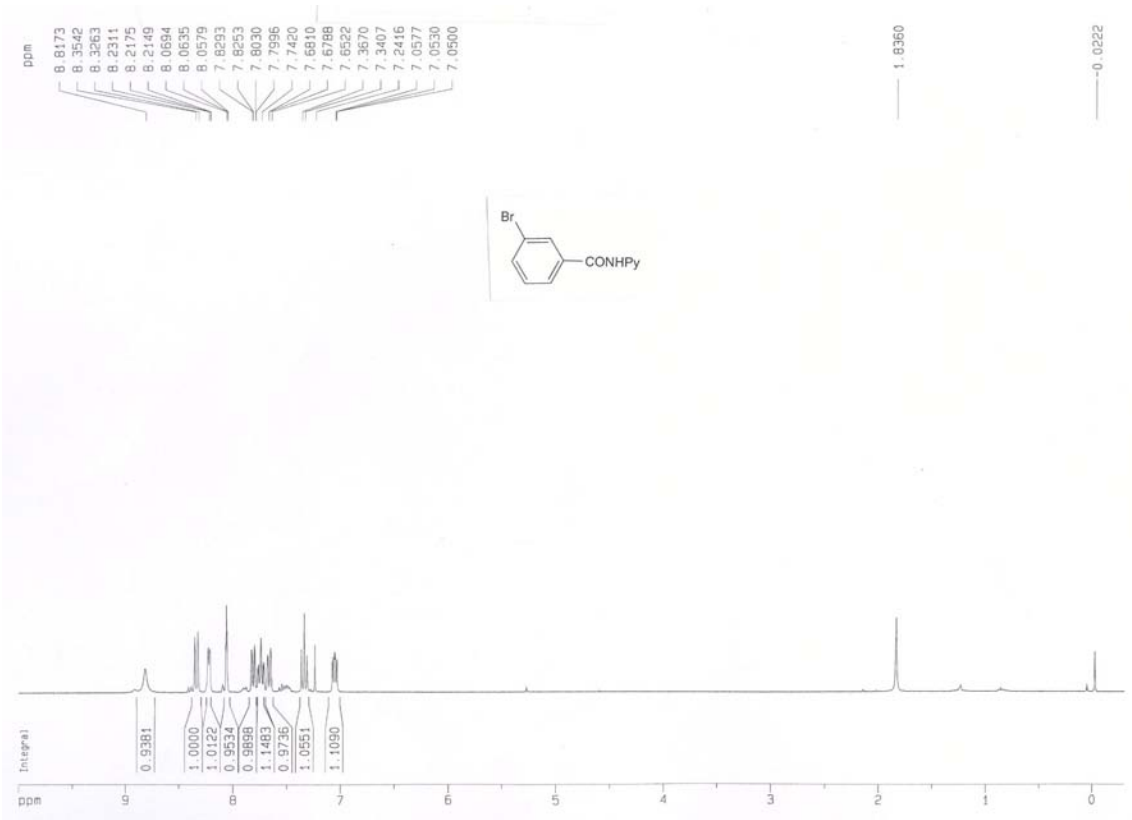
(exo/endo)-***N*-(2-Pyridyl)bicyclo [2,2,1] heptancarboxamide** (Table 2, entry 8)

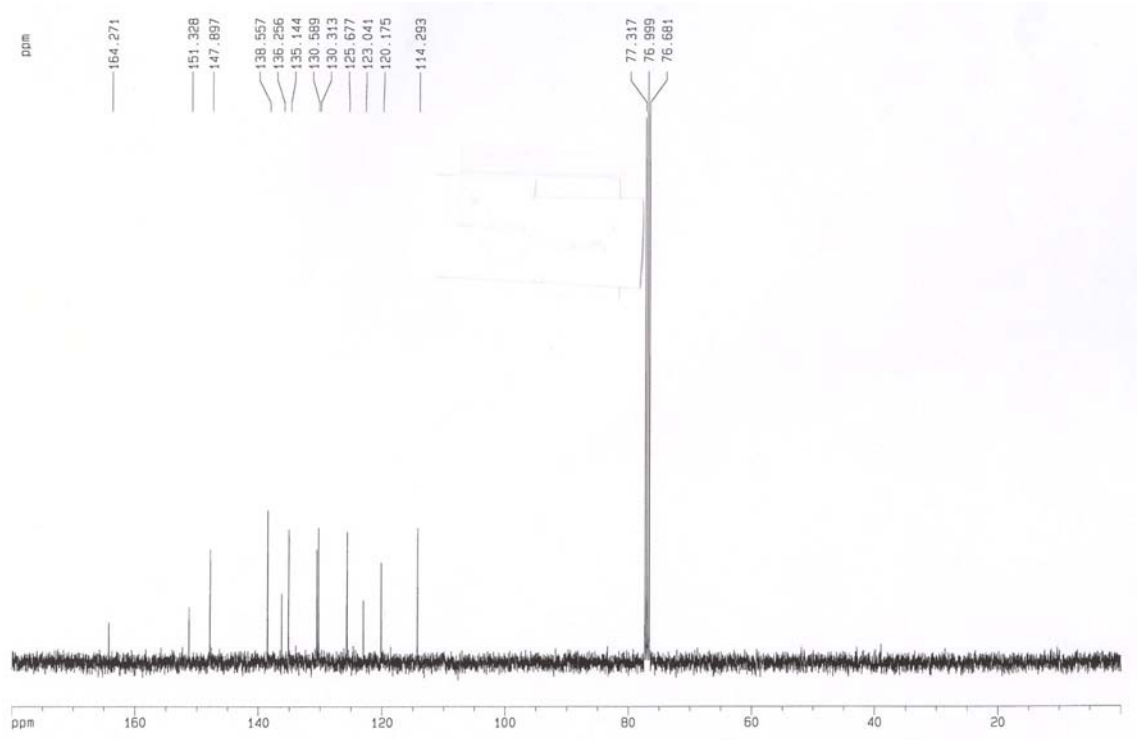


***N*-(2-Pyridyl)benzamide** (Table 3, entry 1)

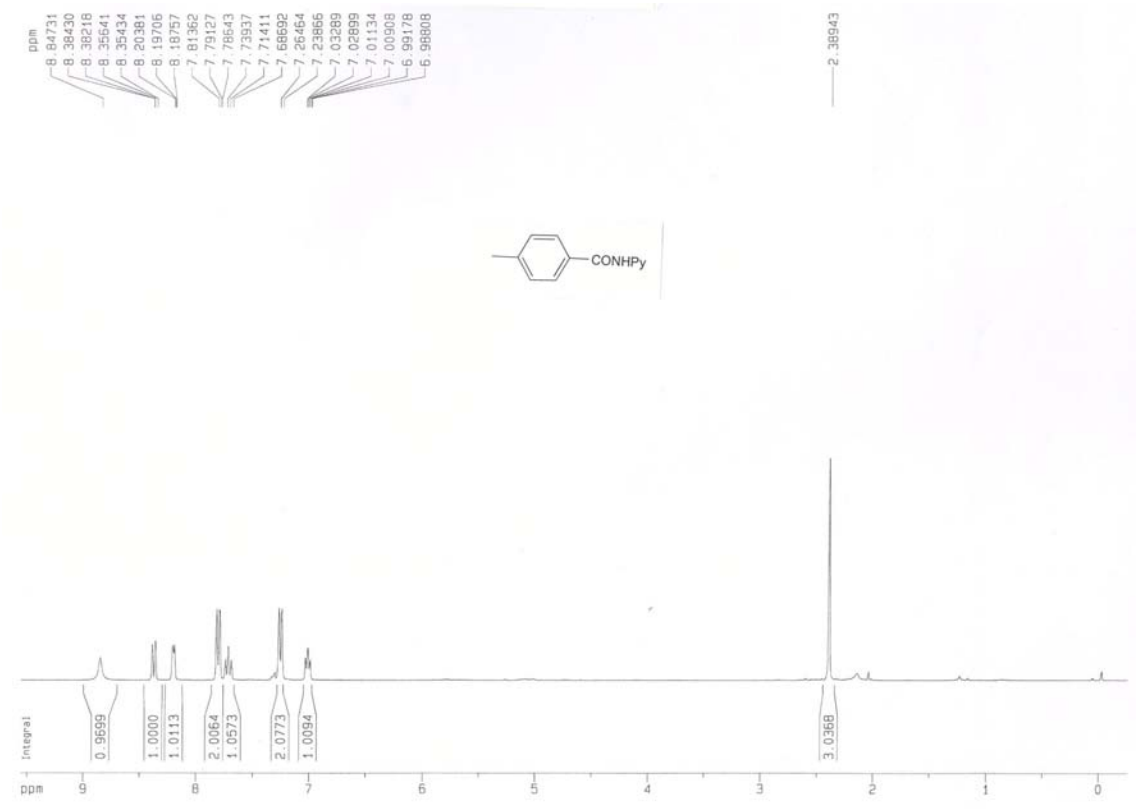


***N*-(2-Pyridyl)-3-bromobenzamide** (Table 3, entry 2)





***N*-(2-Pyridyl)-4-methylbenzamide** (Table 3, entry 3)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8.35641
8.35434
8.20381
8.19706
8.18757
7.81362
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7.78543
7.73937
7.71411
7.68692
7.26464
7.23865
7.03289
7.02899
7.01134
7.00908
6.99178
6.98808
2.38943
CONHPy
Integral
0.9699
1.0000
1.0113
2.0064
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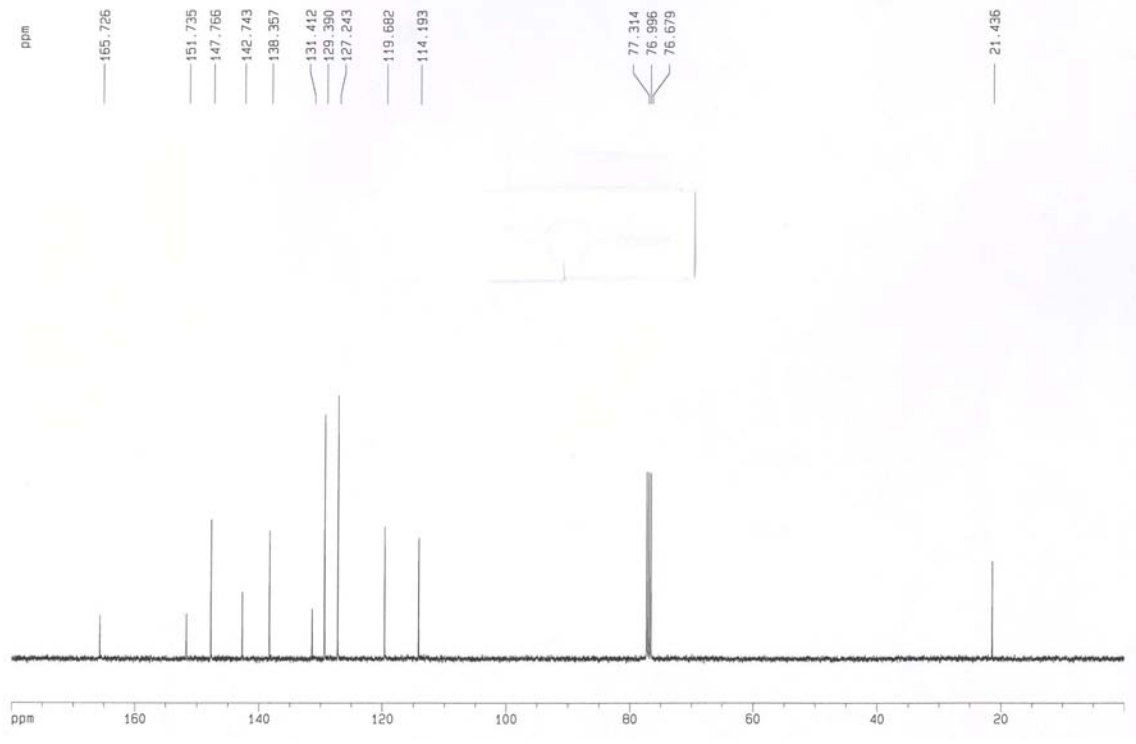
3.0368
ppm
9
8
7
6
5
4
3
2
1
0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147.766
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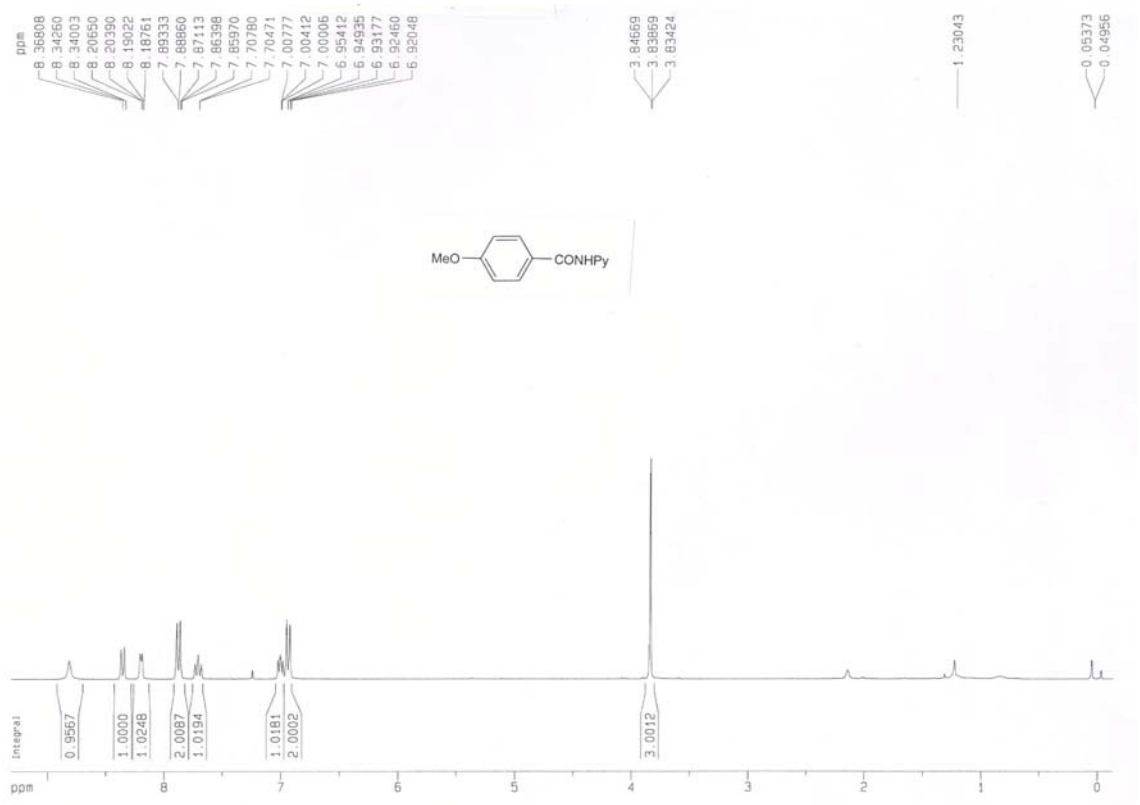
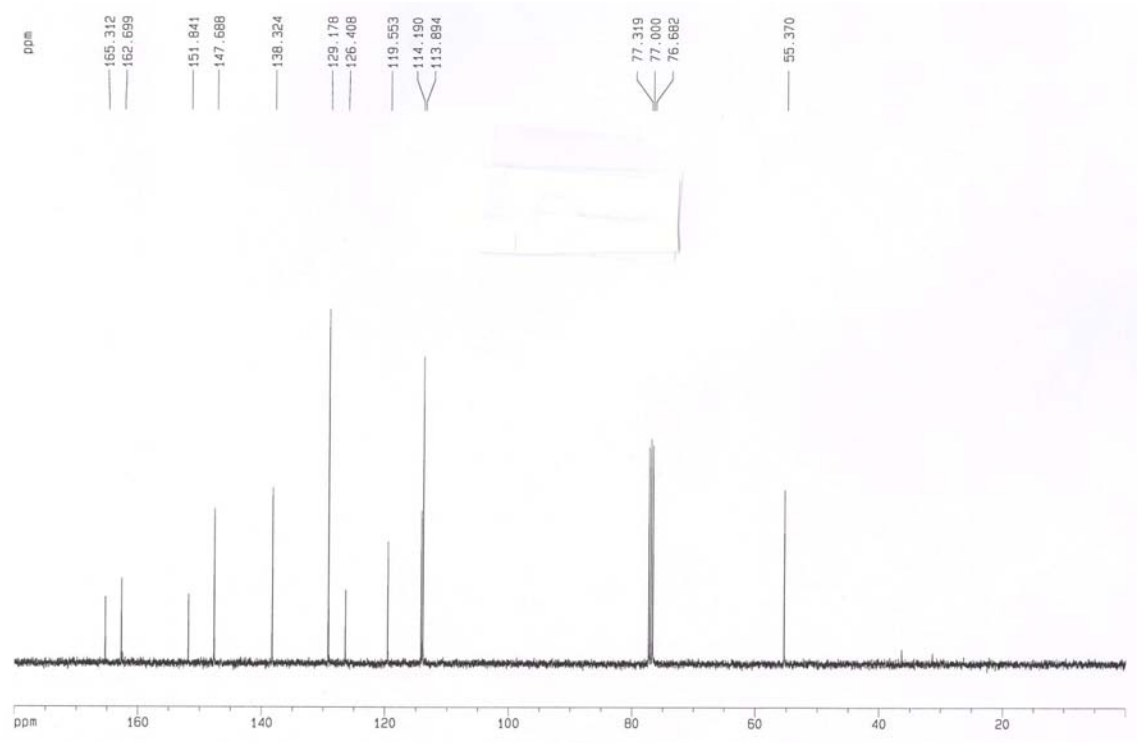
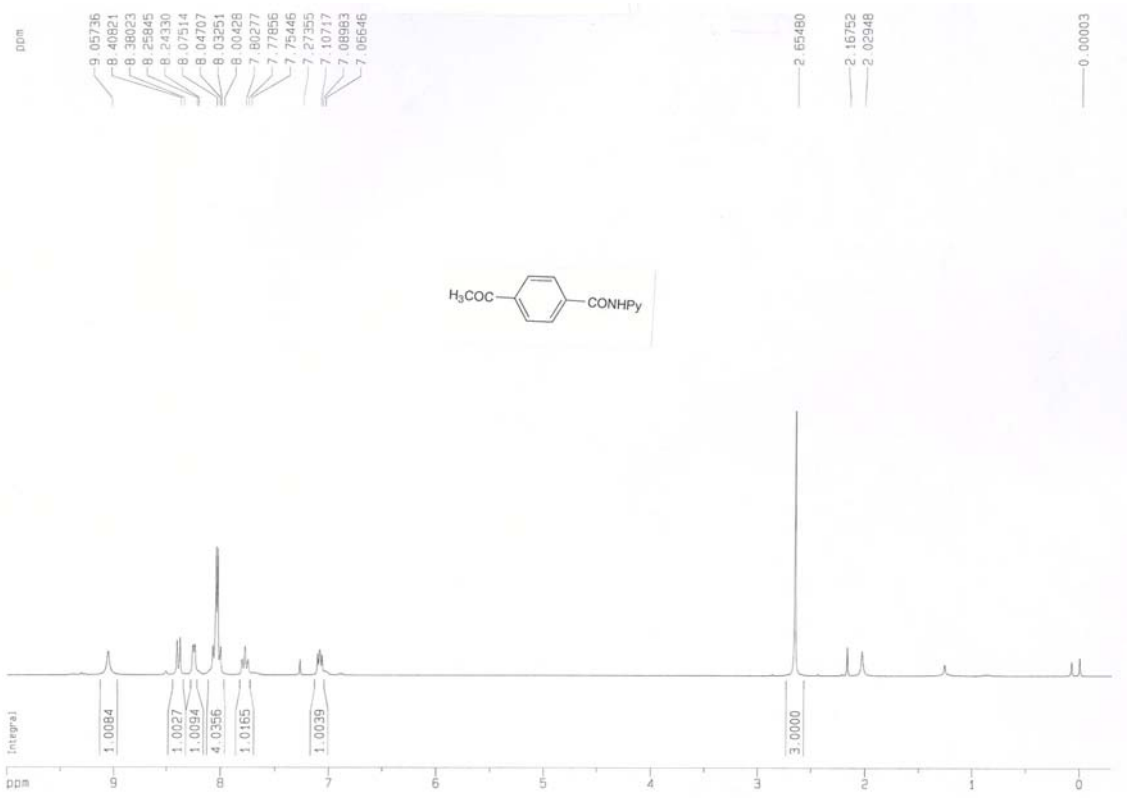
131.412
129.390
127.243
119.682
114.193
77.314
76.996
76.679
21.436
ppm
160
140
120
100
80
60
40
20

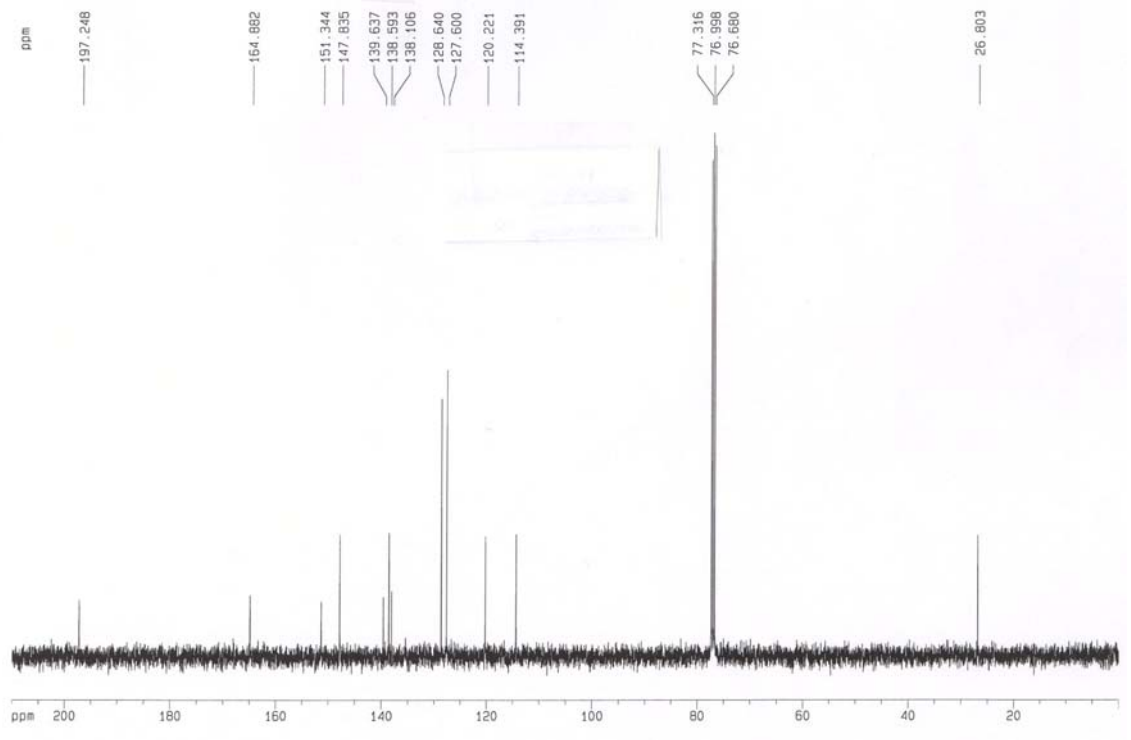
***N*-(2-Pyridyl)-4-methoxylbenzamide**(Table 3, entry 4)



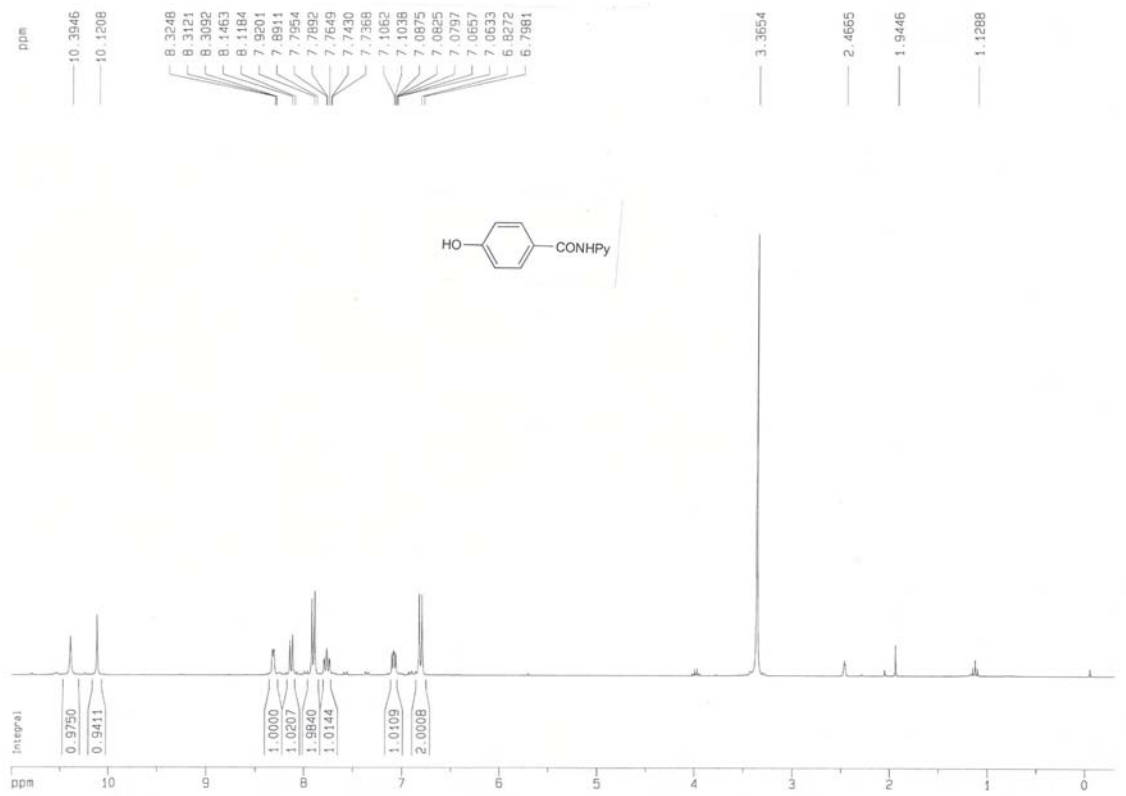


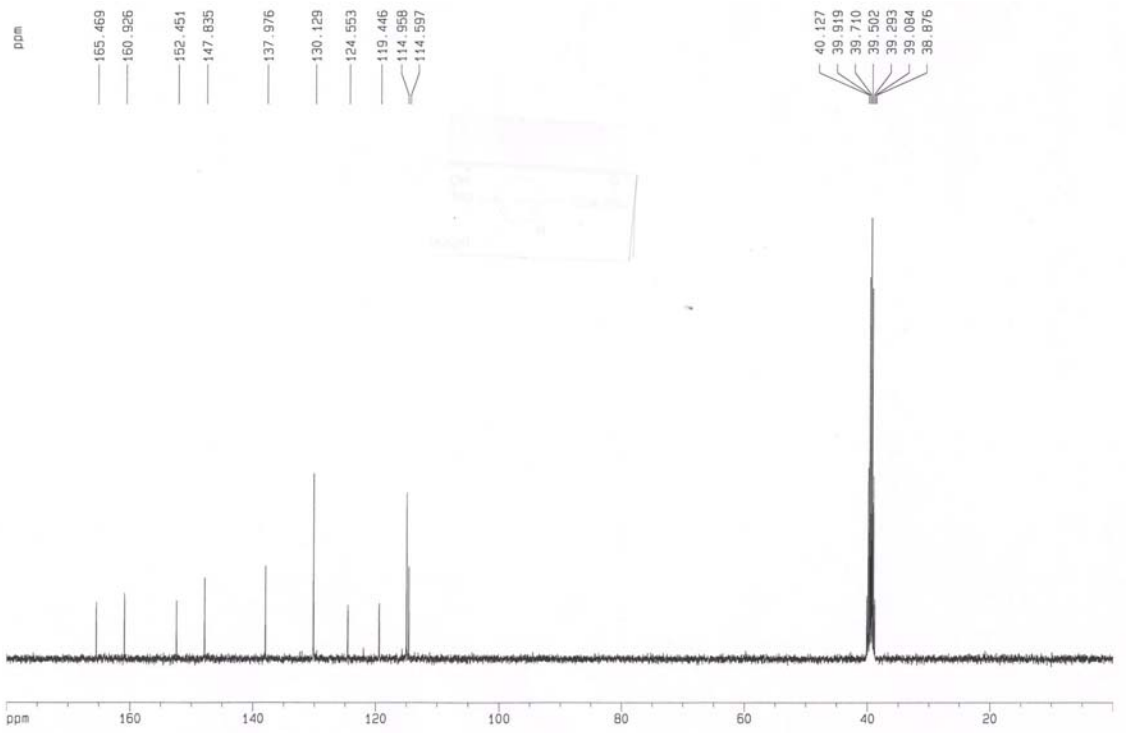
***N*-(2-Pyridyl)-4-acetylbenzamide**(Table 3, entry 5)





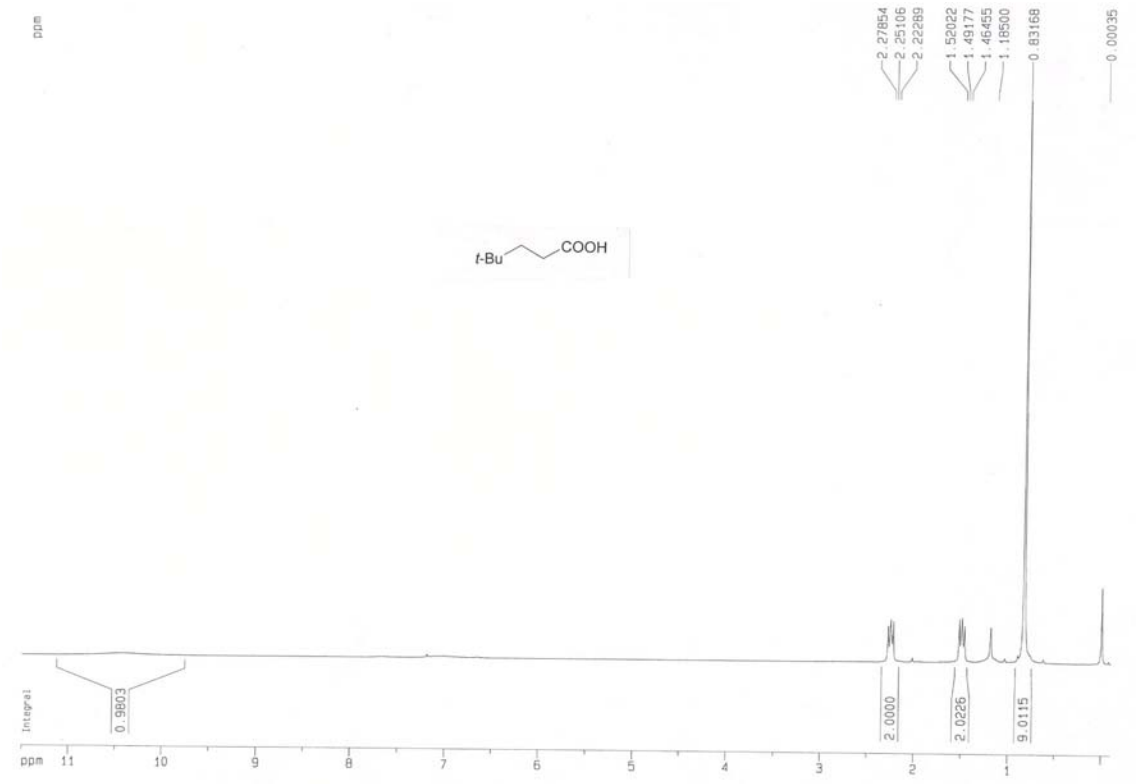
***N*-(2-Pyridyl)-4-hydroxylbenzamide** (Table 3, entry 6)

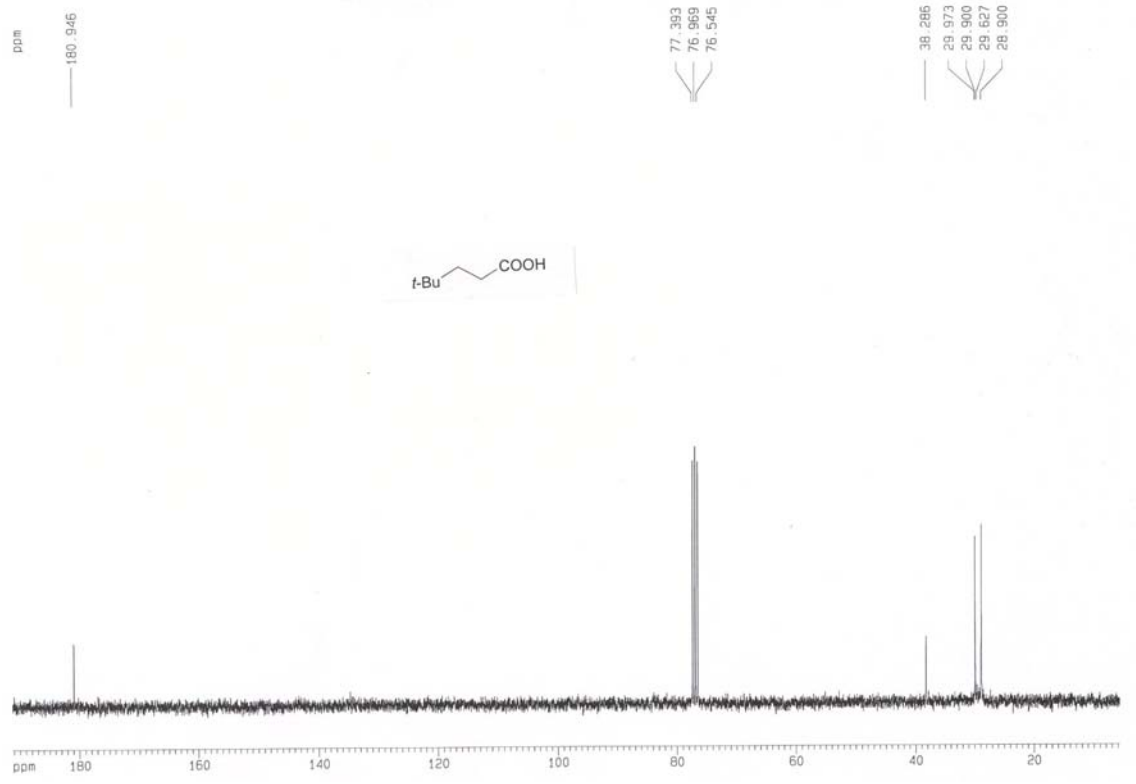




***N*-(2-Pyridyl)-1-naphthalenecarboxamide** (Table 3, entry 7)

4,4-Dimethylpentanoic acid (3, Eq 1)





***N*-(2-Pyridyl)-(4,4-dimethylpentyl)amine(4, Eq 1)**