

Supporting Information

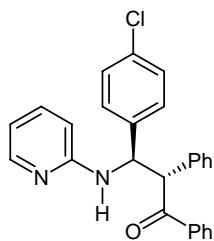
A new mild base-catalyzed Mannich reaction of hetero-arylamines in water: Highly efficient stereoselective synthesis of β -aminoketones under microwave heating

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3-(4-Chlorophenyl)-1,2-diphenyl-3-(pyridin-2-ylamino)propan-1-one (4a)



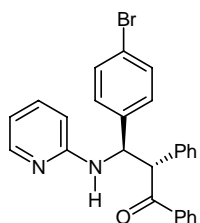
¹H NMR (400MHz, DMSO-*d*₆) δ : 7.87-7.83 (m, 3H, ArH, 2H and Py-H, 1H), 7.59 (d, *J* = 8.4 Hz, 2H, ArH), 7.56-7.53 (m, 3H, ArH, 2H and Py-H, 1H), 7.44 (t, *J* = 7.6 Hz, 2H, ArH), 7.29-7.25 (m, 4H, ArH), 7.24-7.15 (m, 2H, Py-H, 1H and ArH, 1H), 6.84 (d, *J* = 9.6 Hz, 1H, NH), 6.39-6.36 (m, 1H, Py-H), 6.33 (d, *J* = 8.4 Hz, 1H, ArH), 5.79 (t, *J* = 10.4 Hz, 1H, NCH), 5.48 (d, *J* = 11.2 Hz, 1H, CH).

¹³C NMR (100MHz, DMSO-*d*₆) δ : 197.9, 157.6, 147.4, 142.3, 136.7, 136.0, 133.4, 131.2, 129.7, 128.9, 128.5, 128.1, 127.8, 127.2, 112.0, 107.9, 57.5, 55.8.

IR (KBr, ν , cm⁻¹): 3393, 3026, 1662, 1598, 1490, 1148, 1289, 1217, 1091, 815, 700.

HRMS (ESI): *m/z* calcd for: 413.1416 [M+H]⁺, found: 413.1419.

3-(4-Bromophenyl)-1,2-diphenyl-3-(pyridin-2-ylamino)propan-1-one (4b)



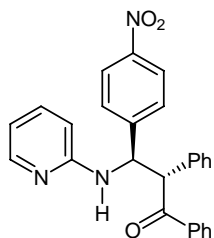
¹H NMR (400MHz, DMSO-*d*₆) δ : 7.87-7.83 (m, 3H, ArH, 2H and Py-H, 1H), 7.58-7.52 (m, 5H, ArH, 4H and Py-H, 1H), 7.45 (d, *J* = 8.0 Hz, 2H, ArH), 7.43-7.40 (m, 2H, ArH), 7.29-7.24 (m, 2H, ArH), 7.22-7.15 (m, 2H, Py-H, 1H and ArH, 1H), 6.83 (d, *J* = 9.6 Hz, 1H, NH), 6.37 (dd, *J*₁ = 5.4 Hz, *J*₂ = 6.6 Hz, 1H, Py-H), 6.33 (d, *J* = 8.4 Hz, 1H, ArH), 5.77 (t, *J* = 10.4 Hz, 1H, NCH), 5.48 (d, *J* = 11.2 Hz, 1H, CH).

¹³C NMR (100MHz, DMSO-*d*₆) δ : 197.8, 157.6, 147.4, 142.7, 136.7, 136.6, 135.9, 133.5, 130.8, 130.1, 128.9, 128.8, 128.5, 128.1, 127.2, 119.8, 112.0, 108.0, 57.3, 55.8.

IR (KBr, ν , cm⁻¹): 3388, 3025, 1669, 1598, 1480, 1329, 1289, 1178, 1012, 750, 696.

HRMS (ESI): *m/z* calcd for: 479.0730 [M+Na]⁺, found: 479.0712.

3-(4-Nitrophenyl)-1,2-diphenyl-3-(pyridin-2-ylamino)propan-1-one (4c)



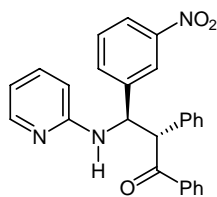
¹H NMR (400MHz, DMSO-*d*₆) δ : 8.11 (d, *J* = 8.8 Hz, 2H, ArH), 7.87-7.84 (m, 5H, ArH, 4H and Py-H, 1H), 7.56-7.54 (m, 3H, ArH, 2H and Py-H, 1H), 7.44 (t, *J* = 7.6 Hz, 2H, ArH), 7.29 (t, *J* = 7.6 Hz, 2H, ArH), 7.26-7.17 (m, 2H, Py-H, 1H and ArH, 1H), 6.98 (d, *J* = 9.2 Hz, 1H, NH), 6.41-6.35 (m, 2H, Py-H, 1H and ArH, 1H), 5.93 (t, *J* = 10.4 Hz, 1H, NCH), 5.56 (d, *J* = 11.2 Hz, 1H, CH).

¹³C NMR (100MHz, DMSO-*d*₆) δ : 197.6, 157.3, 151.3, 147.4, 146.2, 136.8, 136.3, 135.7, 133.6, 129.2, 128.9, 128.8, 128.6, 128.2, 127.4, 123.1, 112.3, 108.2, 57.2, 56.0.

IR (KBr, ν , cm^{-1}): 3378, 3025, 1664, 1598, 1520, 1436, 1347, 1281, 1159, 981, 777, 696.

HRMS (ESI): m/z calcd for: 446.1476 $[\text{M}+\text{H}]^+$, found: 446.1464.

3-(3-Nitrophenyl)-1,2-diphenyl-3-(pyridin-2-ylamino)propan-1-one (4d)



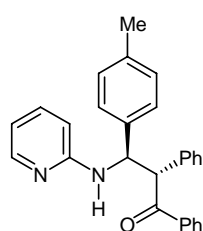
^1H NMR (400MHz, $\text{DMSO}-d_6$) δ : 8.52 (s, 1H, ArH), 8.05 (d, $J = 7.6$ Hz, 1H, ArH), 7.96 (dd, $J_1 = 1.4$ Hz, $J_2 = 8.2$ Hz, 1H, ArH), 7.87-7.83 (m, 3H, ArH, 2H and Py-H, 1H), 7.59-7.51 (m, 4H, ArH, 3H and Py-H, 1H), 7.43 (t, $J = 7.6$ Hz, 2H, ArH), 7.29 (t, $J = 7.6$ Hz, 2H, ArH), 7.25-7.13 (m, 3H, ArH, 1H, Py-H, 1H and NH, 1H), 6.40-6.37 (m, 2H, ArH, 1H and Py-H, 1H), 5.91 (t, $J = 10.4$ Hz, 1H, NCH), 5.63(d, $J = 10.8$ Hz, 1H, CH).

^{13}C NMR (100MHz, $\text{DMSO}-d_6$) δ : 198.0, 157.4, 147.5, 147.4, 145.8, 136.7, 136.5, 135.9, 135.1, 133.5, 129.3, 128.9, 128.8, 128.5, 128.1, 127.3, 122.5, 121.7, 112.2, 108.3, 57.2, 56.2.

IR (KBr, ν , cm^{-1}): 3388, 3063, 1669, 1598, 1530, 1453, 1352, 1291, 767, 697.

HRMS (ESI): m/z calcd for: 446.1476 $[\text{M}+\text{Na}]^+$, found: 446.1489.

3-*p*-Tolyl-1,2-diphenyl-3-(pyridin-2-ylamino)propan-1-one (4e)

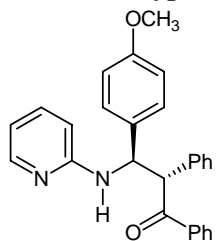


^1H NMR (400MHz, $\text{DMSO}-d_6$) δ : 7.86-7.83 (m, 3H, ArH, 2H and Py-H, 1H), 7.56-7.53 (m, 3H, ArH, 2H and Py-H, 1H), 7.45-7.42 (m, 4H, ArH), 7.26 (t, $J = 7.4$ Hz, 2H, ArH), 7.22-7.13 (m, 2H, Py-H, 1H and ArH, 1H), 6.99 (d, $J = 7.6$ Hz, 2H, ArH), 6.73 (d, $J = 9.2$ Hz, 1H, NH), 6.34 (dd, $J_1 = 5.4$ Hz, $J_2 = 6.6$ Hz, 1H, Py-H), 6.30 (d, $J = 8.4$ Hz, 1H, ArH), 5.75 (t, $J = 10.4$ Hz, 1H, NCH), 5.48 (d, $J = 11.2$ Hz, 1H, CH), 2.14 (s, 3H, OCH_3).

IR (KBr, ν , cm^{-1}): 3385, 1669, 1599, 1514, 1450, 1331, 1287, 771, 745.

HRMS (ESI): m/z calcd for: 393.1962 $[\text{M}+\text{H}]^+$, found: 393.1967.

3-(4-Methoxyphenyl)-1,2-diphenyl-3-(pyridin-2-ylamino)propan-1-one (4f)



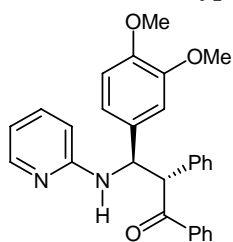
^1H NMR (400MHz, $\text{DMSO}-d_6$) δ : 7.87-7.83 (m, 3H, ArH, 2H and Py-H, 1H), 7.57-7.53 (m, 3H, ArH, 2H and Py-H, 1H), 7.48 (d, $J = 8.8$ Hz, 2H, ArH), 7.46-7.42 (m, 2H, ArH), 7.28-7.14 (m, 4H, Py-H, 1H and ArH, 3H), 6.76 (d, $J = 8.8$ Hz, 2H, ArH), 6.71 (d, $J = 10.0$ Hz, 1H, NH), 6.35 (dd, $J_1 = 5.4$ Hz, $J_2 = 6.6$ Hz, 1H, Py-H), 6.31 (d, $J = 8.4$ Hz, 1H, ArH), 5.74 (t, $J = 10.4$ Hz, 1H, NCH), 5.47 (d, $J = 11.2$ Hz, 1H, CH), 3.63 (s, 3H, OCH_3).

^{13}C NMR (100MHz, $\text{DMSO}-d_6$) δ : 198.0, 157.9, 157.8, 147.4, 137.0, 136.5, 136.2, 135.1, 133.3, 128.8, 128.9, 128.8, 128.4, 128.1, 127.1, 113.2, 111.7, 107.7, 57.8, 55.8, 54.8.

IR (KBr, ν , cm^{-1}): 3385, 1667, 1599, 1515, 1450, 1281, 1176, 1031, 761, 695.

HRMS (ESI): m/z calcd for: 409.1911 $[\text{M}+\text{H}]^+$, found: 409.1911.

3-(3,4-Dimethoxyphenyl)-1,2-diphenyl-3-(pyridin-2-ylamino)propan-1-one (4g)



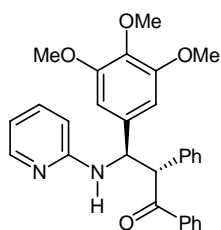
^1H NMR (400MHz, $\text{DMSO}-d_6$) δ : 7.86 (d, $J = 8.8$ Hz 3H, ArH, 2H and Py-H, 1H), 7.57-7.54 (m, 3H, ArH, 2H and Py-H, 1H), 7.44 (t, $J = 7.6$ Hz, 2H, ArH), 7.28-7.22 (m, 4H, ArH), 7.15 (t, $J = 7.4$ Hz, Py-H), 7.03 (dd, $J_1 = 8.2$ Hz, $J_2 = 2.0$ Hz, 1H, ArH), 6.74 (d, $J = 8.0$ Hz, 1H, ArH), 6.66 (d, $J = 9.6$ Hz, 1H, NH), 6.36 (dd, $J_1 = 6.8$ Hz, $J_2 = 5.6$ Hz, 1H, Py-H), 6.33 (d, $J = 8.4$ Hz, 1H, ArH), 5.72 (t, $J = 10.6$ Hz, 1H, NCH), 5.51 (d, $J = 10.8$ Hz, 1H, CH), 3.67 (s, 3H, OCH_3), 3.61(s, 3H, OCH_3).

^{13}C NMR (100MHz, $\text{DMSO}-d_6$) δ : 198.1, 157.8, 148.1, 147.4, 147.3, 137.0, 136.5, 136.3, 135.4, 133.2, 128.8, 128.7, 128.3, 128.0, 127.0, 120.2, 111.7, 111.6, 111.1, 107.6, 57.4, 56.1, 55.4, 55.2.

IR (KBr, ν , cm^{-1}): 3388, 1669, 1599, 1487, 1450, 1329, 1289, 1176, 814, 768, 696.

HRMS (ESI): m/z calcd for: 461.1836 $[M+Na]^+$, found: 461.1841.

3-(3,4,5-Trimethoxyphenyl)-1,2-diphenyl-3-(pyridin-2-ylamino)propan-1-one (4h)



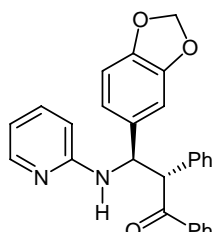
^1H NMR (400MHz, $\text{DMSO-}d_6$) δ : 7.89-7.86 (m, 3H, ArH, 2H and Py-H, 1H), 7.58-7.54 (m, 3H, ArH, 2H and Py-H, 1H), 7.45 (t, $J = 7.6$ Hz, 2H, ArH), 7.16 (t, $J = 7.2$ Hz 1H, Py-H), 6.86 (s, 2H, ArH), 6.70 (d, $J = 9.6$ Hz, 1H, NH), 6.38 (d, $J = 5.2$ Hz, 1H, ArH), 6.36 (dd, $J_1 = 4.2$ Hz, $J_2 = 5.0$ Hz, 1H, Py-H), 5.74 (t, $J = 10.2$ Hz, 1H, NCH), 5.53 (d, $J = 11.2$ Hz, 1H, CH), 3.68 (s, 6H, 2OCH), 3.50 (s, 3H, OCH₃).

^{13}C NMR (100MHz, $\text{DMSO-}d_6$) δ : 198.4, 157.8, 152.3, 147.4, 138.6, 137.0, 136.6, 136.5, 136.2, 133.2, 129.0, 128.7, 128.3, 128.0, 111.8, 107.8, 105.5, 59.8, 57.3, 56.7, 55.9.

IR (KBr, ν , cm^{-1}): 3382, 2937, 1671, 1595, 1509, 1453, 1324, 1247, 1125, 1008, 705.

HRMS (ESI): m/z calcd for: 469.2122 $[M+H]^+$, found: 469.2132.

3-(Benzo[d][1,3]dioxol-6-yl)-1,2-diphenyl-3-(pyridin-2-ylamino)propan-1-one (4i)



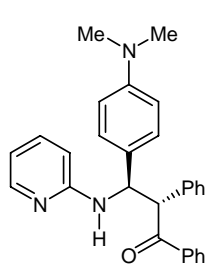
^1H NMR (400MHz, $\text{DMSO-}d_6$) δ : 7.87-7.85 (m, 3H, ArH, 2H and Py-H, 1H), 7.58-7.52 (m, 3H, ArH, 2H and Py-H, 1H), 7.45 (t, $J = 7.6$ Hz, 2H, ArH), 7.28-7.20 (m, 3H, ArH), 7.17-7.13 (m, 2H, Py-H, 1H and ArH, 1H), 7.00 (dd, $J_1 = 1.4$ Hz, $J_2 = 8.2$ Hz, 1H, ArH), 6.72 (d, $J = 8.0$ Hz, 1H, ArH), 6.67 (d, $J = 10.0$ Hz, 1H, NH), 6.38-6.35 (m, 1H, Py-H), 6.32 (d, $J = 8.8$ Hz, 1H, ArH), 5.87 (d, $J = 1.2$ Hz, 2H, OCH₂O), 5.71 (t, $J = 10.4$ Hz, 1H, NCH), 5.45 (d, $J = 10.8$ Hz, 1H, CH).

^{13}C NMR (100MHz, $\text{DMSO-}d_6$) δ : 197.9, 157.7, 147.4, 146.7, 145.7, 137.0, 136.8, 136.6, 136.1, 133.3, 128.8, 128.4, 128.1, 127.1, 121.3, 111.8, 107.9, 107.7, 107.5, 100.6, 57.6, 56.1.

IR (KBr, ν , cm^{-1}): 3384, 3025, 2968, 1599, 1503, 1487, 1448, 1246, 1040, 930, 749, 696.

HRMS (ESI): m/z calcd for: 423.1704 $[M+H]^+$, found: 423.1705.

3-(4-Dimethylaminophenyl)-1,2-diphenyl-3-(pyridin-2-ylamino)propan-1-one (4j)



^1H NMR (400MHz, $\text{DMSO-}d_6$) δ : 7.85-7.83 (m, 3H, ArH, 2H and Py-H, 1H), 7.56-7.52 (m, 3H, ArH, 2H and Py-H, 1H), 7.44 (t, $J = 7.6$ Hz, 2H, ArH), 7.36 (d, $J = 8.8$ Hz, 2H, ArH), 7.28-7.11 (m, 4H, Py-H, 1H and ArH, 3H), 6.61 (d, $J = 9.6$ Hz, 1H, NH), 6.53 (d, $J = 8.8$ Hz, 2H, ArH), 6.35-6.32 (m, 1H, Py-H), 6.28 (d, $J = 8.4$ Hz, 1H, ArH), 5.66 (t, $J = 10.4$ Hz, 1H, NCH), 5.46 (d, $J = 10.8$ Hz, 1H, CH), 2.76 (s, 6H, NCH₃).

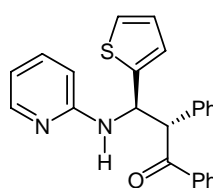
^{13}C NMR (100MHz, $\text{DMSO-}d_6$) δ : 197.6, 161.7, 148.6, 147.4, 138.2, 137.2, 136.5, 136.3, 133.2, 131.0, 129.7, 128.8, 128.4, 128.3, 128.1, 127.0, 126.5, 121.0, 119.0, 112.7, 111.8,

111.6, 111.5, 107.6, 57.8, 55.8, 44.7.

IR (KBr, ν , cm^{-1}): 3379, 3024, 1668, 1599, 1525, 1449, 1331, 1273, 1168, 809, 772, 695.

HRMS (ESI): m/z calcd for: 422.2227 $[M+H]^+$, found: 422.2226

3-(Thiophen-2-yl)-1,2-diphenyl-3-(pyridin-2-ylamino)-propan-1-one (4k)



^1H NMR (400MHz, $\text{DMSO-}d_6$) δ : 7.96-7.92 (m, 3H, ArH, 2H and Py-H, 1H), 7.59 (t, $J = 7.2$ Hz, 1H, Py-H), 7.50-7.47 (m, 4H, ArH), 7.25-7.21 (m, 4H, ArH), 7.13 (t, $J = 7.2$ Hz, 1H, Py-H), 7.02 (d, $J = 3.2$ Hz, 1H, thienyl-H), 6.82 (dd, $J_1 = 3.6$ Hz, $J_2 = 5.2$ Hz, 2H, thienyl-H), 6.40 (dd, $J_1 = 5.4$ Hz, $J_2 = 6.6$ Hz, 1H, Py-H), 6.31 (d, $J = 8.4$ Hz, 1H, NH), 6.25 (t, $J = 10.4$ Hz, 1H, NCH), 5.52 (d, $J = 11.2$ Hz, 1H, CH).

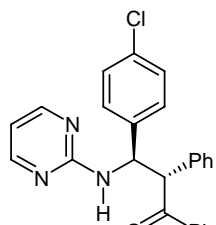
^{13}C NMR (100MHz, $\text{DMSO-}d_6$) δ : 197.8, 157.5, 147.3, 147.0, 136.6, 136.4, 136.0, 133.5, 128.9, 128.8, 128.4,

128.2, 127.2, 126.3, 124.7, 124.1, 112.0, 108.3, 58.0, 51.2.

IR (KBr, ν , cm^{-1}): 3371, 1671, 1598, 1514, 1451, 1330, 1287, 1157, 772, 698.

HRMS (ESI): m/z calcd for: 407.1189 $[\text{M}+\text{Na}]^+$, found: 407.1171.

3-(4-Chlorophenyl)-1,2-diphenyl-3-(pyrimidin-2-ylamino)propan-1-one (4l)



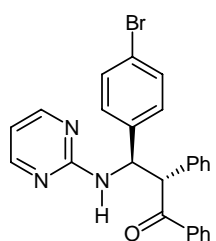
^1H NMR (400MHz, $\text{DMSO}-d_6$) δ : 8.15 (brs, 2H, ArH, 1H and Pyrimidine-H, 1H), 7.83-7.81 (m, 2H, ArH), 7.61-7.53 (m, 6H, ArH, 5H and NH, 1H), 7.45 (t, $J = 7.6$ Hz, 2H, ArH), 7.30-7.25 (m, 4H, ArH), 7.16 (t, $J = 7.4$ Hz, 1H, Pyrimidine-H), 6.46 (t, $J = 4.8$ Hz, 1H, Pyrimidine-H), 5.86 (t, $J = 10.6$ Hz, 1H, NCH), 5.56 (d, $J = 11.2$ Hz, 1H, CH).

^{13}C NMR (100MHz, $\text{DMSO}-d_6$) δ : 197.7, 161.3, 157.7, 141.8, 136.4, 135.9, 133.5, 131.3, 129.7, 128.9, 128.8, 128.5, 128.0, 127.9, 127.3, 110.3, 56.8, 55.9.

IR (KBr, ν , cm^{-1}): 3399, 3025, 1666, 1586, 1519, 1450, 1539, 1219, 1089, 798, 696.

HRMS (ESI): m/z calcd for: 436.1188 $[\text{M}+\text{Na}]^+$, found: 436.1189.

3-(4-Bromophenyl)-1,2-diphenyl-3-(pyrimidin-2-ylamino)propan-1-one (4m)



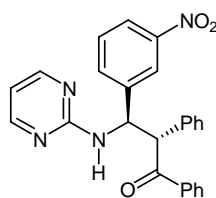
^1H NMR (400MHz, $\text{DMSO}-d_6$) δ : 8.15 (brs, 2H, ArH, 1H and Pyrimidine-H, 1H), 7.83 (d, $J = 7.6$ Hz, 2H, ArH), 7.61-7.53 (m, 6H, ArH, 5H and NH, 1H), 7.47-7.42 (m, 4H, ArH), 7.27 (t, $J = 7.6$ Hz, 2H, ArH), 7.17 (t, $J = 7.4$ Hz, 1H, Pyrimidine-H), 6.47 (t, $J = 4.8$ Hz, 1H, Pyrimidine-H), 5.83 (t, $J = 10.4$ Hz, 1H, NCH), 5.58 (d, $J = 11.2$ Hz, 1H, CH).

^{13}C NMR (100MHz, $\text{DMSO}-d_6$) δ : 197.7, 161.3, 157.7, 142.3, 136.4, 135.9, 133.5, 130.8, 130.1, 128.9, 128.8, 128.5, 128.0, 127.3, 119.9, 110.3, 56.7, 56.0.

IR (KBr, ν , cm^{-1}): 3389, 3026, 1670, 1585, 1519, 1449, 1359, 1287, 1218, 1072, 1012, 799, 696.

HRMS (ESI): m/z calcd for: 480.0682 $[\text{M}+\text{Na}]^+$, found: 480.0688

3-(3-Nitrophenyl)-1,2-diphenyl-3-(pyrimidin-2-ylamino)propan-1-one (4n)



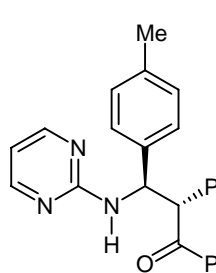
^1H NMR (400MHz, $\text{DMSO}-d_6$) δ : 8.56 (s, 1H, ArH), 8.17 (brs, 2H, ArH, 1H and Pyrimidine-H, 1H), 8.02 (d, $J = 7.6$ Hz, 1H, ArH), 7.99 (dd, $J_1 = 2.0$, $J_2 = 8.0$ Hz, 1H, ArH), 7.83 (d, $J = 7.2$ Hz, 2H, ArH), 7.71 (d, $J = 9.6$ Hz, 1H, NH), 7.58-7.53 (m, 4H, ArH, 3H and Pyrimidine-H, 1H), 7.44 (t, $J = 7.8$ Hz, 2H, ArH), 7.30 (t, $J = 7.6$ Hz, 2H, ArH), 7.19 (t, $J = 7.2$ Hz, 1H, Pyrimidine-H), 6.49 (t, $J = 4.8$ Hz, 1H, Pyrimidine-H), 5.95 (t, $J = 10.6$ Hz, 1H, NCH), 5.66 (d, $J = 11.2$ Hz, 1H, CH).

^{13}C NMR (100MHz, $\text{DMSO}-d_6$) δ : 197.6, 161.2, 157.9, 157.8, 147.6, 145.1, 136.2, 135.7, 135.1, 133.7, 129.5, 128.9, 128.8, 128.7, 128.1, 127.5, 122.3, 122.0, 110.7, 56.8, 56.2.

IR (KBr, ν , cm^{-1}): 3384, 3025, 1672, 1586, 1455, 1412, 1353, 1200, 1030, 984, 696.

HRMS (ESI): m/z calcd for: 425.1609 $[\text{M}+\text{H}]^+$, found: 425.1618.

3-*p*-Tolyl-1,2-diphenyl-3-(pyrimidin-2-ylamino)propan-1-one (4o)



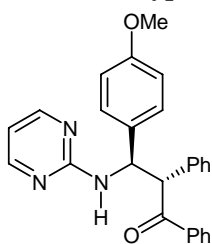
^1H NMR (400MHz, $\text{DMSO}-d_6$) δ : 8.14 (brs, 2H, ArH, 1H and Pyrimidine-H, 1H), 7.83 (d, $J = 7.2$ Hz, 2H, ArH), 7.57-7.43 (m, 8H, ArH, 7H and NH, 1H), 7.26 (t, $J = 7.6$ Hz, 2H, ArH), 7.15 (t, $J = 7.4$ Hz, 1H, Pyrimidine-H), 7.01 (d, $J = 8.0$ Hz, 2H, ArH), 6.43 (t, $J = 4.8$ Hz, 1H, Pyrimidine-H), 5.86 (t, $J = 10.4$ Hz, 1H, NCH), 5.57 (d, $J = 11.2$ Hz, 1H, CH), 2.15 (s, 3H, CH_3).

^{13}C NMR (100MHz, $\text{DMSO}-d_6$) δ : 197.8, 161.5, 157.7, 139.9, 136.8, 136.1, 135.8, 133.4, 128.9, 128.8, 128.5, 128.4, 128.0, 127.7, 110.1, 56.9, 56.1, 20.6.

IR (KBr, ν , cm^{-1}): 3387, 3025, 1673, 1587, 1524, 1453, 1409, 1631, 1271, 1121, 1069, 985, 800, 695.

HRMS (ESI): m/z calcd for: 394.1914 $[\text{M}+\text{H}]^+$, found: 394.1911.

3-(4-Methoxyphenyl)-1,2-diphenyl-3-(pyrimidin-2-ylamino)propan-1-one (4p)



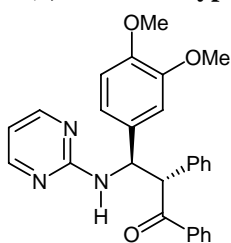
^1H NMR (400MHz, $\text{DMSO}-d_6$) δ : 8.20 (brs, 2H, ArH, 1H and Pyrimidine-H, 1H), 7.82 (d, $J = 7.6$ Hz, 2H, ArH), 7.57-7.43 (m, 8H, ArH, 7H and NH, 1H), 7.26 (t, $J = 7.6$ Hz, 2H, ArH), 7.15 (t, $J = 7.6$ Hz, 1H, Pyrimidine-H), 6.77 (d, $J = 8.4$ Hz, 2H, ArH), 6.43 (t, $J = 4.6$ Hz, 1H, Pyrimidine-H), 5.85 (t, $J = 10.6$ Hz, 1H, NCH), 5.51 (d, $J = 11.2$ Hz, 1H, CH), 3.63 (s, 3H, OCH_3).

^{13}C NMR (100MHz, $\text{DMSO}-d_6$) δ : 197.9, 161.4, 157.9, 157.7, 136.8, 136.1, 134.9, 133.4, 128.9, 128.8, 128.4, 128.0, 127.2, 113.3, 110.1, 57.1, 55.8, 54.8.

IR (KBr, ν , cm^{-1}): 3387, 2952, 1673, 1585, 1515, 1454, 1360, 1247, 1177, 1032, 801, 696.

HRMS (ESI): m/z calcd for: 432.1683 $[\text{M}+\text{Na}]^+$, found: 432.1678.

3-(3,4-Dimethoxyphenyl)-1,2-diphenyl-3-(pyrimidin-2-ylamino)propan-1-one (4q)

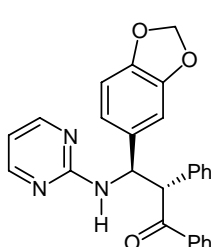


^1H NMR (400MHz, $\text{DMSO}-d_6$) δ : 8.15 (brs, 2H, ArH, 1H and Pyrimidine-H, 1H), 7.85 (d, $J = 7.6$ Hz, 2H, ArH), 7.58-7.42 (m, 6H, ArH, 5H and NH, 1H), 7.28-7.24 (m, 3H, ArH), 7.17-7.13 (m, 1H, Pyrimidine-H), 7.02 (d, $J = 8.0$ Hz, 1H, ArH), 6.76 (d, $J = 8.4$ Hz, 1H, ArH), 6.44 (t, $J = 4.8$ Hz, 1H, Pyrimidine-H), 5.86 (t, $J = 10.4$ Hz, 1H, NCH), 5.59 (d, $J = 11.2$ Hz, 1H, CH), 3.68 (s, 3H, OCH_3), 3.62 (s, 3H, OCH_3).

IR (KBr, ν , cm^{-1}): 3389, 2946, 1671, 1585, 1519, 1452, 1359, 1212, 1142, 1027, 801, 696.

HRMS (ESI): m/z calcd for: 462.1789 $[\text{M}+\text{Na}]^+$, found: 462.1794.

3-(Benzo[d][1,3]dioxol-6-yl)-1,2-diphenyl-3-(pyrimidin-2-ylamino)propan-1-one (4r)



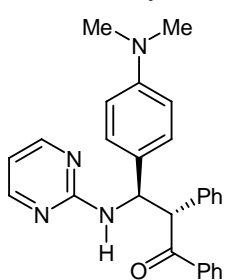
^1H NMR (400MHz, $\text{DMSO}-d_6$) δ : 8.15 (brs, 2H, ArH, 1H and Pyrimidine-H, 1H), 7.85-7.83 (m, 2H, ArH), 7.58-7.51 (m, 3H, ArH), 7.46 (t, $J = 7.6$ Hz, 2H, ArH), 7.40 (d, $J = 10.0$ Hz, 1H, NH), 7.25 (t, $J = 7.6$ Hz, 2H, ArH), 7.18 (d, $J = 1.6$ Hz, 1H, ArH), 7.15 (t, $J = 7.4$ Hz, 1H, Pyrimidine-H), 7.01 (dd, $J_1 = 1.6$, $J_2 = 8.0$ Hz, 1H, ArH), 6.73 (d, $J = 8.0$ Hz, 1H, ArH), 6.45 (t, $J = 4.8$ Hz, 1H, Pyrimidine-H), 5.87 (d, $J = 4.0$ Hz, 2H, CH_2), 5.83 (t, $J = 10.8$ Hz, 1H, NCH), 5.52 (d, $J = 11.6$ Hz, 1H, CH).

^{13}C NMR (100MHz, $\text{DMSO}-d_6$) δ : 197.8, 161.4, 157.7, 146.8, 145.8, 136.7, 136.6, 136.1, 133.4, 128.8, 128.4, 128.0, 127.1, 121.3, 110.2, 107.9, 107.6, 100.6, 57.0, 56.1.

IR (KBr, ν , cm^{-1}): 3386, 3024, 1671, 1589, 1532, 1488, 1366, 1244, 1104, 1040, 923, 797, 696.

HRMS (ESI): m/z calcd for: 424.1656 $[\text{M}+\text{H}]^+$, found: 424.1661.

3-(4-Dimethylaminophenyl)-1,2-diphenyl-3-(pyrimidin-2-ylamino)propan-1-one (4s)



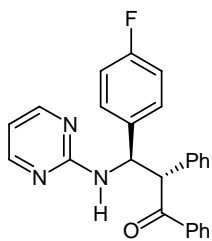
^1H NMR (400MHz, $\text{DMSO}-d_6$) δ : 8.13 (brs, 2H, ArH, 1H and Pyrimidine-H, 1H), 7.84 (t, $J = 7.6$ Hz, 2H, ArH), 7.57-7.52 (m, 3H, ArH), 7.45 (t, $J = 7.6$ Hz, 2H, ArH), 7.40-7.37 (m, 3H, ArH, 2H and NH, 1H), 7.24 (t, $J = 7.6$ Hz, 2H, ArH), 7.15-7.11 (m, 1H, Pyrimidine-H), 6.55 (d, $J = 8.8$ Hz, 2H, ArH), 6.41 (t, $J = 4.8$ Hz, 1H, Pyrimidine-H), 5.81 (t, $J = 10.8$ Hz, 1H, NCH), 5.55 (d, $J = 11.2$ Hz, 1H, CH), 2.76 (s, 6H, NCH_3).

^{13}C NMR (100MHz, $\text{DMSO}-d_6$) δ : 197.9, 161.5, 157.6, 149.2, 137.0, 136.2, 133.3, 130.4, 128.9, 128.8, 128.4, 128.3, 128.0, 127.0, 111.8, 109.9, 62.8, 57.1, 56.7.

IR (KBr, ν , cm^{-1}): 3383, 3025, 1673, 1585, 1525, 1454, 1358, 1216, 1067, 801, 695.

HRMS (ESI): m/z calcd for: 423.2180 $[\text{M}+\text{H}]^+$, found: 423.2182.

3-(4-Fluorophenyl)-1,2-diphenyl-3-(pyrimidin-2-ylamino)propan-1-one (4t)



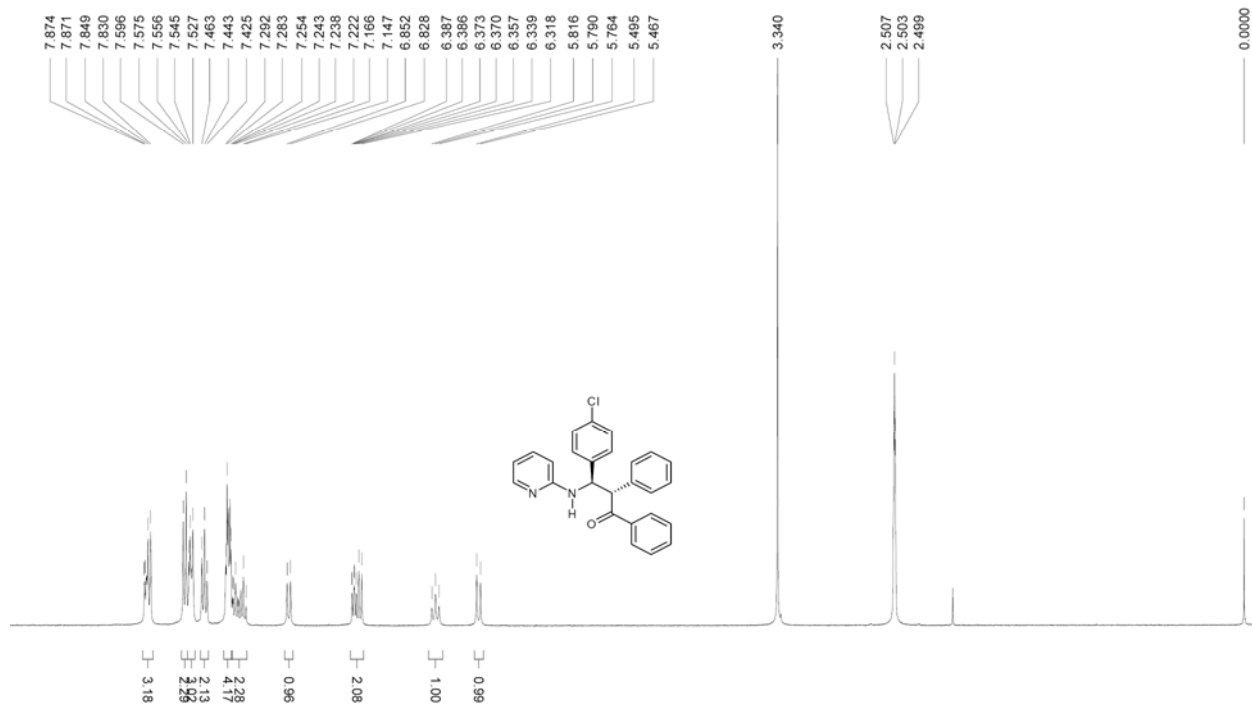
^1H NMR (400MHz, $\text{DMSO-}d_6$) δ : 8.15 (brs, 2H, ArH, 1H and Pyrimidine-H, 1H), 7.82 (d, $J = 7.2$ Hz, 2H, ArH), 7.61 (dd, $J_1 = 5.6$, $J_2 = 8.8$ Hz, 2H, ArH), 7.57-7.53 (m, 4H, ArH, 3H and NH, 1H), 7.44 (t, $J = 7.8$ Hz, 2H, ArH), 7.27 (t, $J = 7.4$ Hz, 2H, ArH), 7.05 (t, $J = 9.0$ Hz, 2H, ArH), 6.46 (t, $J = 4.8$ Hz, 1H, Pyrimidine-H), 5.88 (t, $J = 10.4$ Hz, 1H, NCH), 5.56 (d, $J = 11.2$ Hz, 1H, CH).

^{13}C NMR (100MHz, $\text{DMSO-}d_6$) δ : 197.9, 162.2, 161.4, 159.7, 157.7, 157.6, 139.1, 139.0, 136.6, 136.0, 133.5, 129.8, 129.7, 128.9, 128.8, 128.5, 128.0, 127.3, 114.8, 114.6, 110.3, 57.1, 55.8.

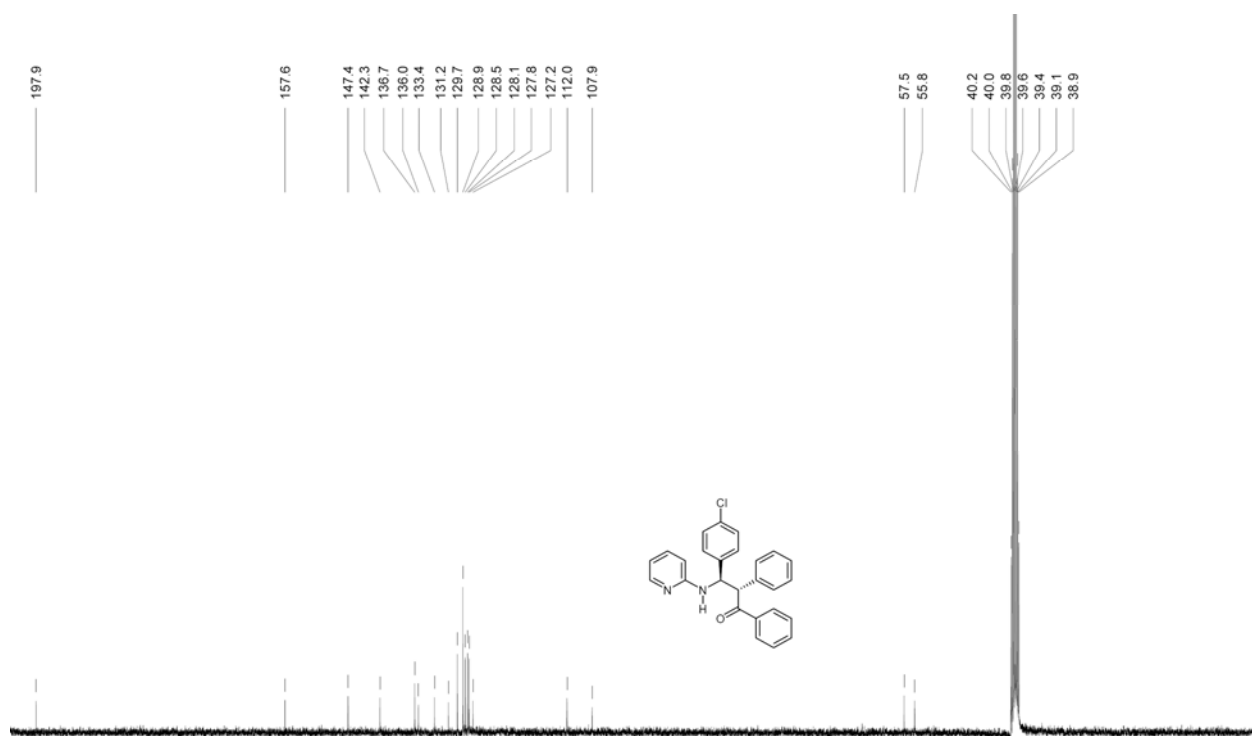
IR (KBr, ν , cm^{-1}): 3390, 3035, 1666, 1584, 1523, 1451, 1362, 1274, 1158, 1119, 985, 799, 695.

HRMS (ESI): m/z calcd for: 420.1483 $[\text{M}+\text{H}]^+$, found: 420.1500

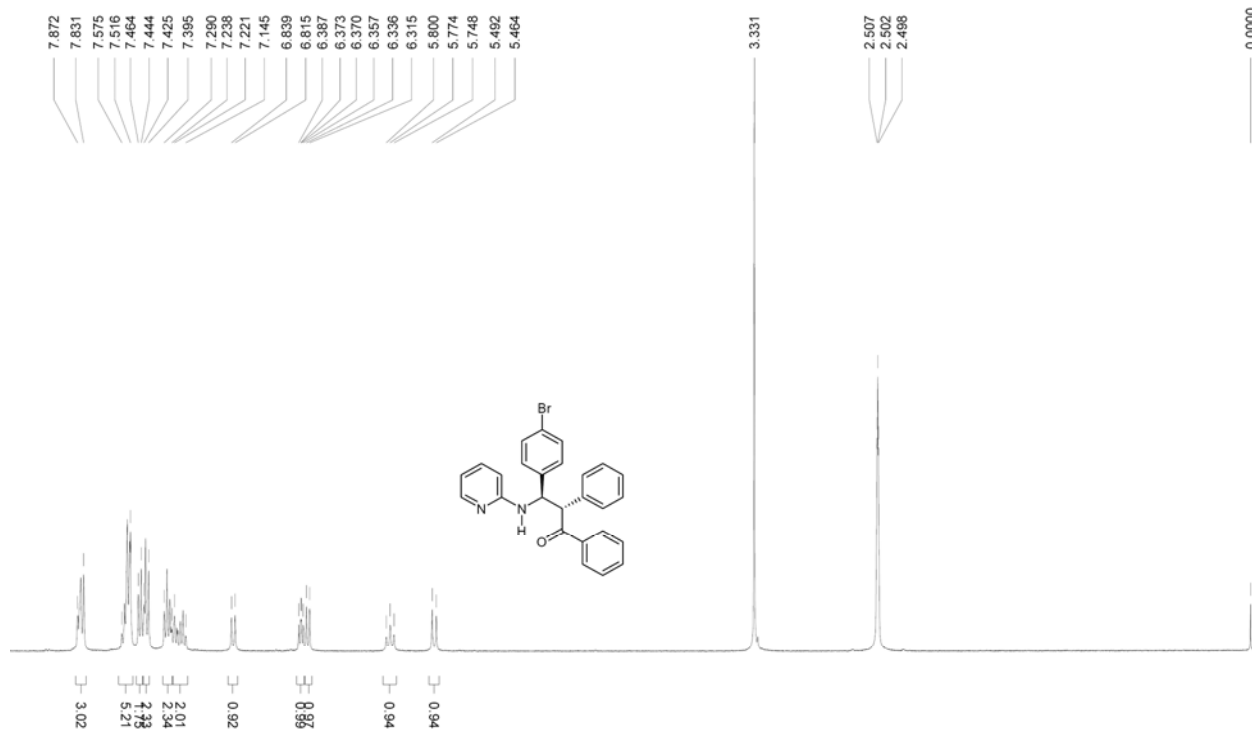
Copies of spectra for compounds 4



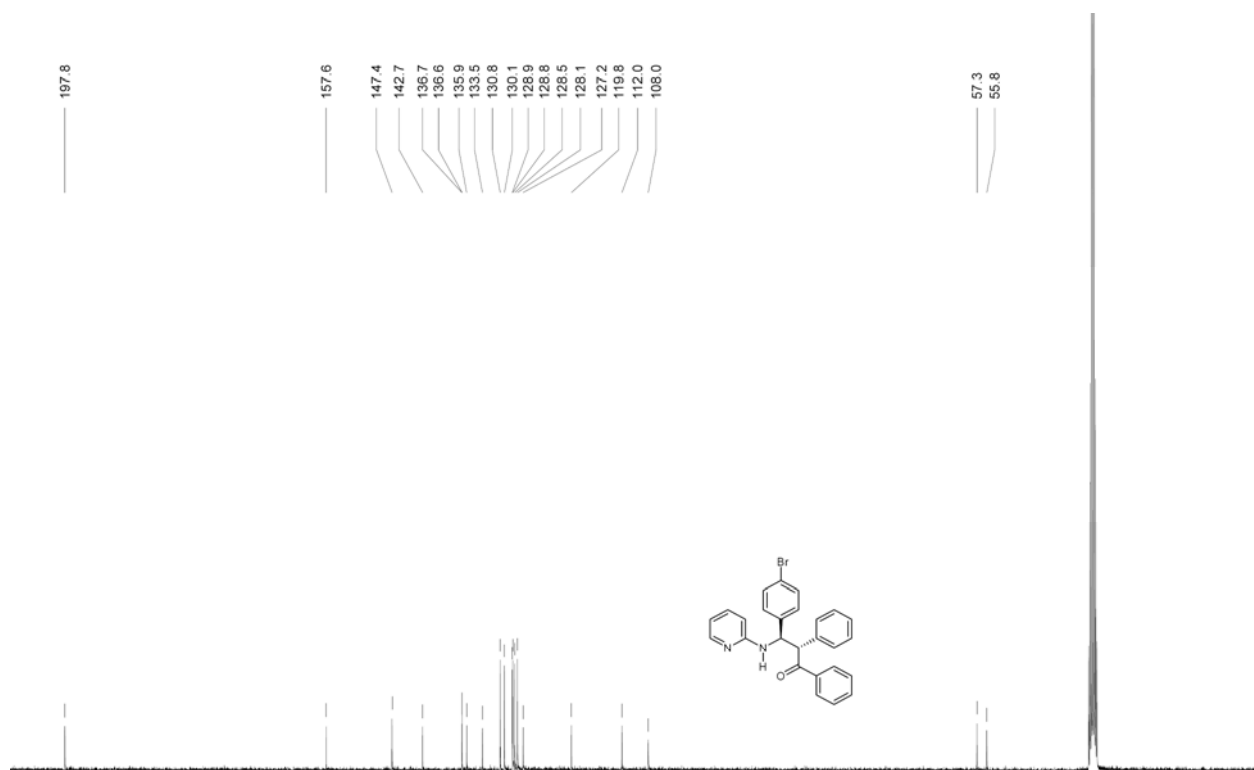
¹H NMR Spectrum of Compound 4a



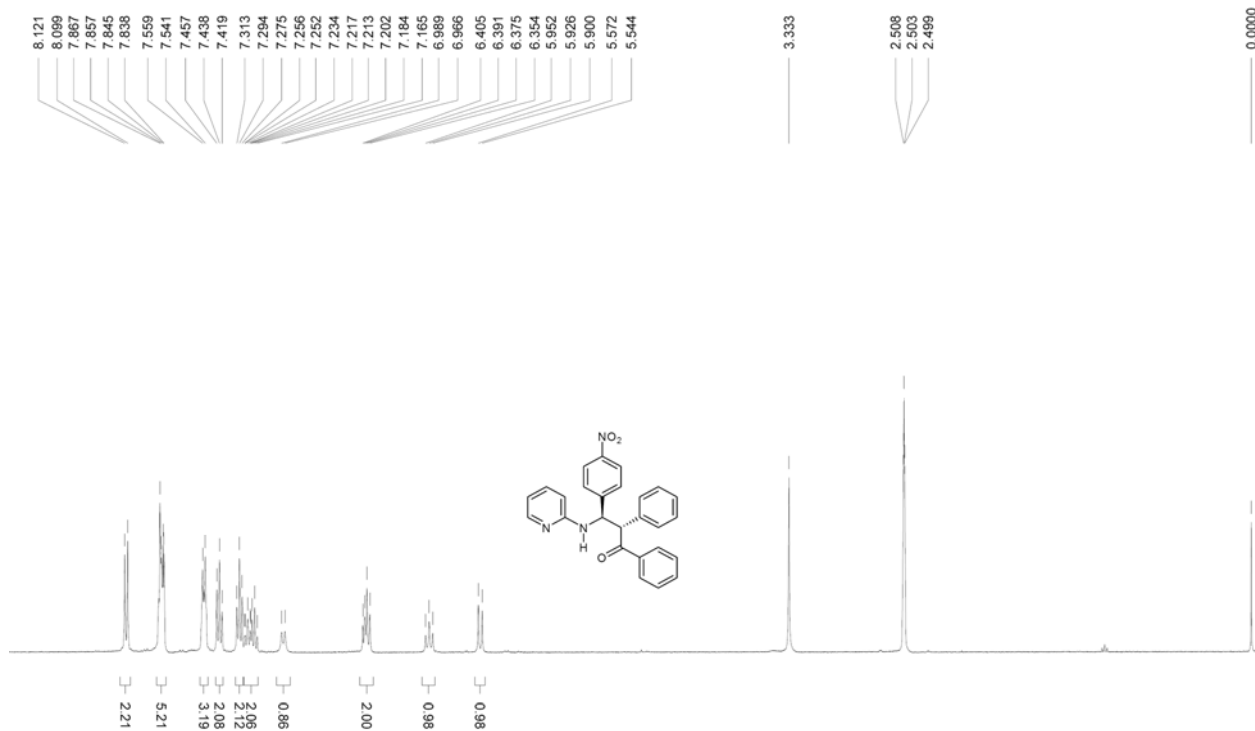
¹³C NMR Spectrum of Compound 4a



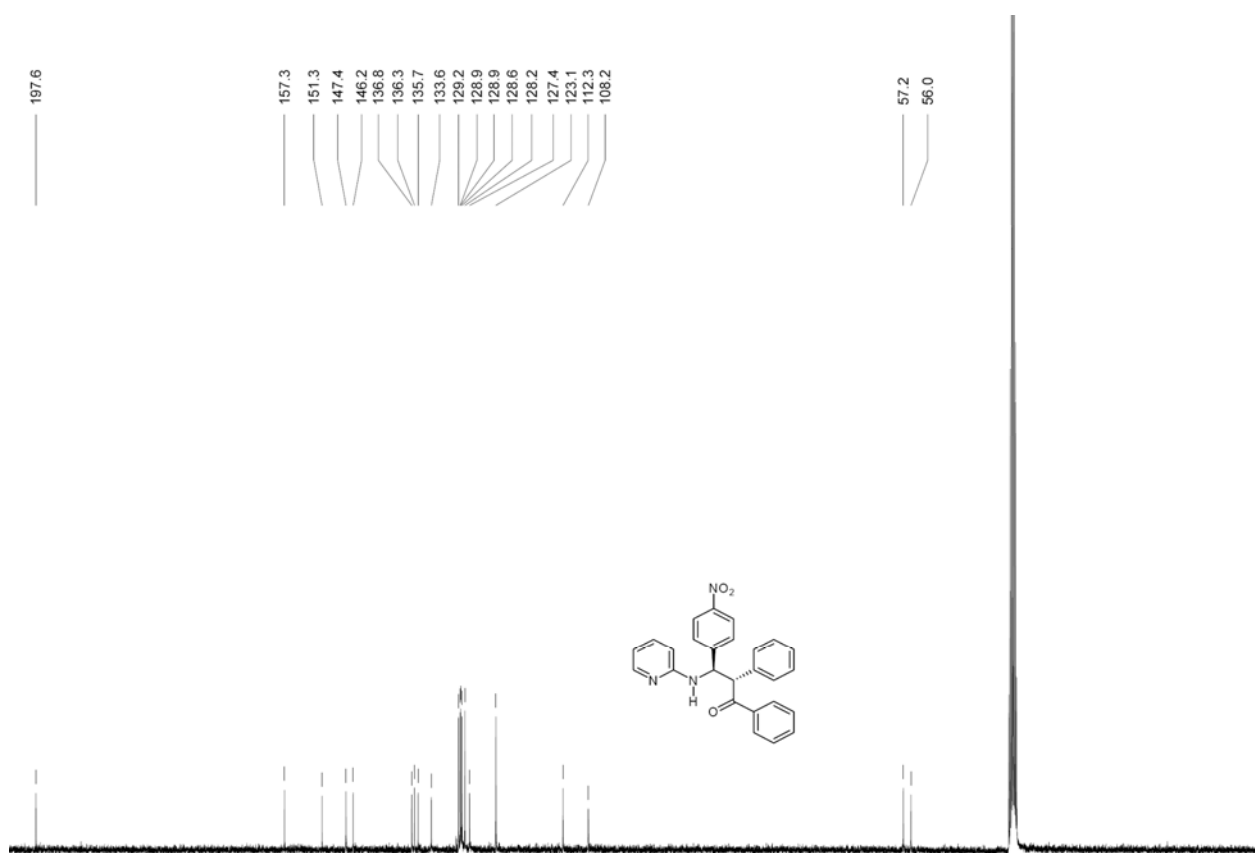
¹H NMR Spectrum of Compound 4b



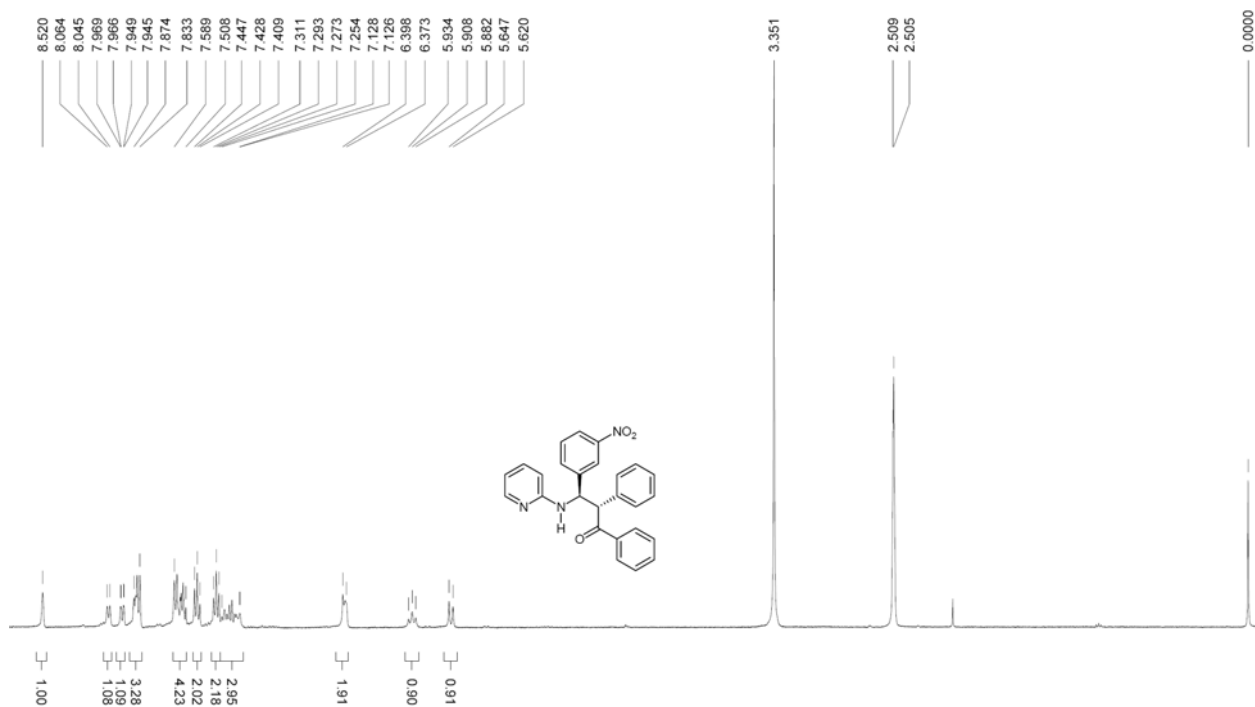
¹³C NMR Spectrum of Compound 4b



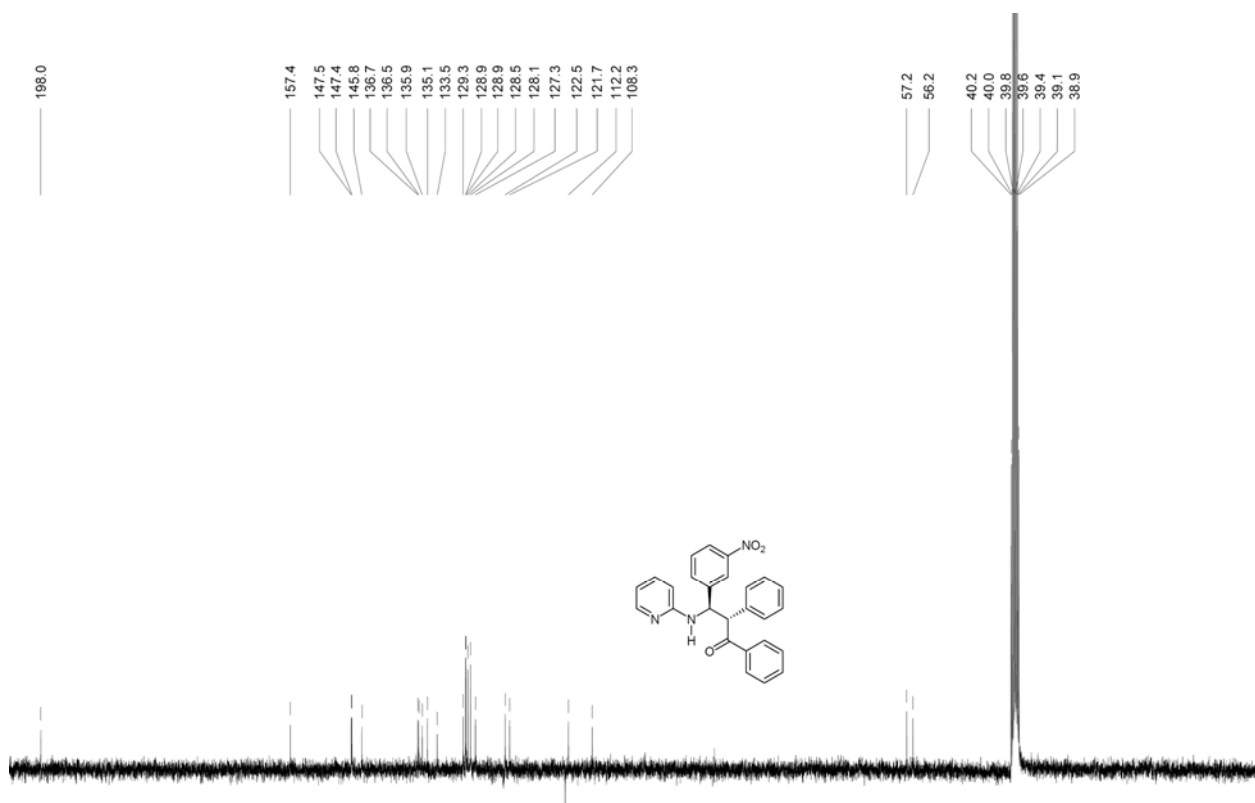
¹H NMR Spectrum of Compound 4c



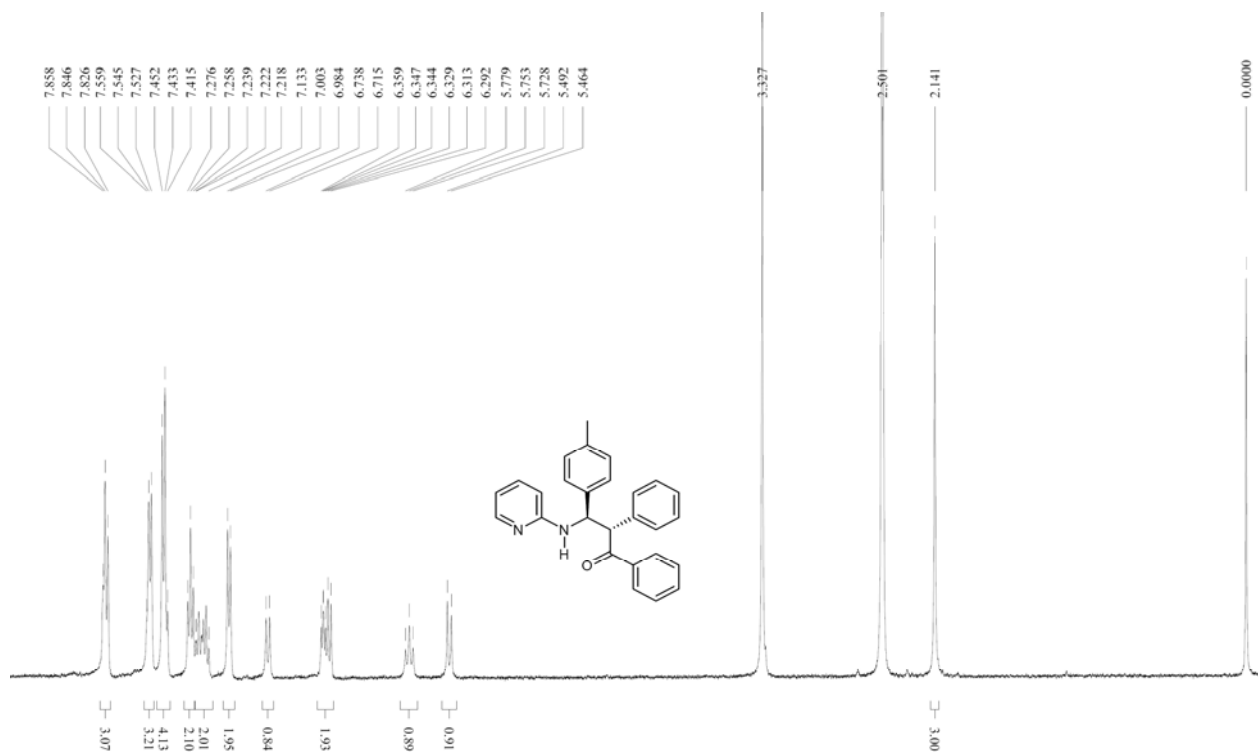
¹³C NMR Spectrum of Compound 4c



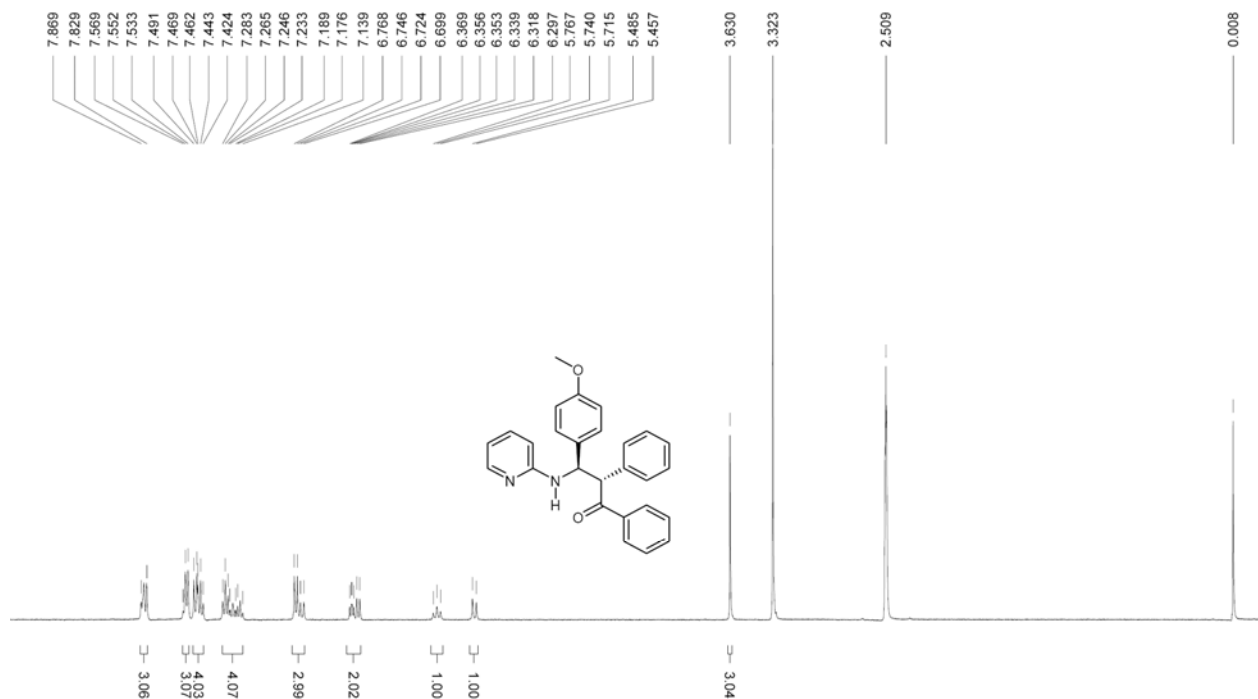
¹H NMR Spectrum of Compound 4d



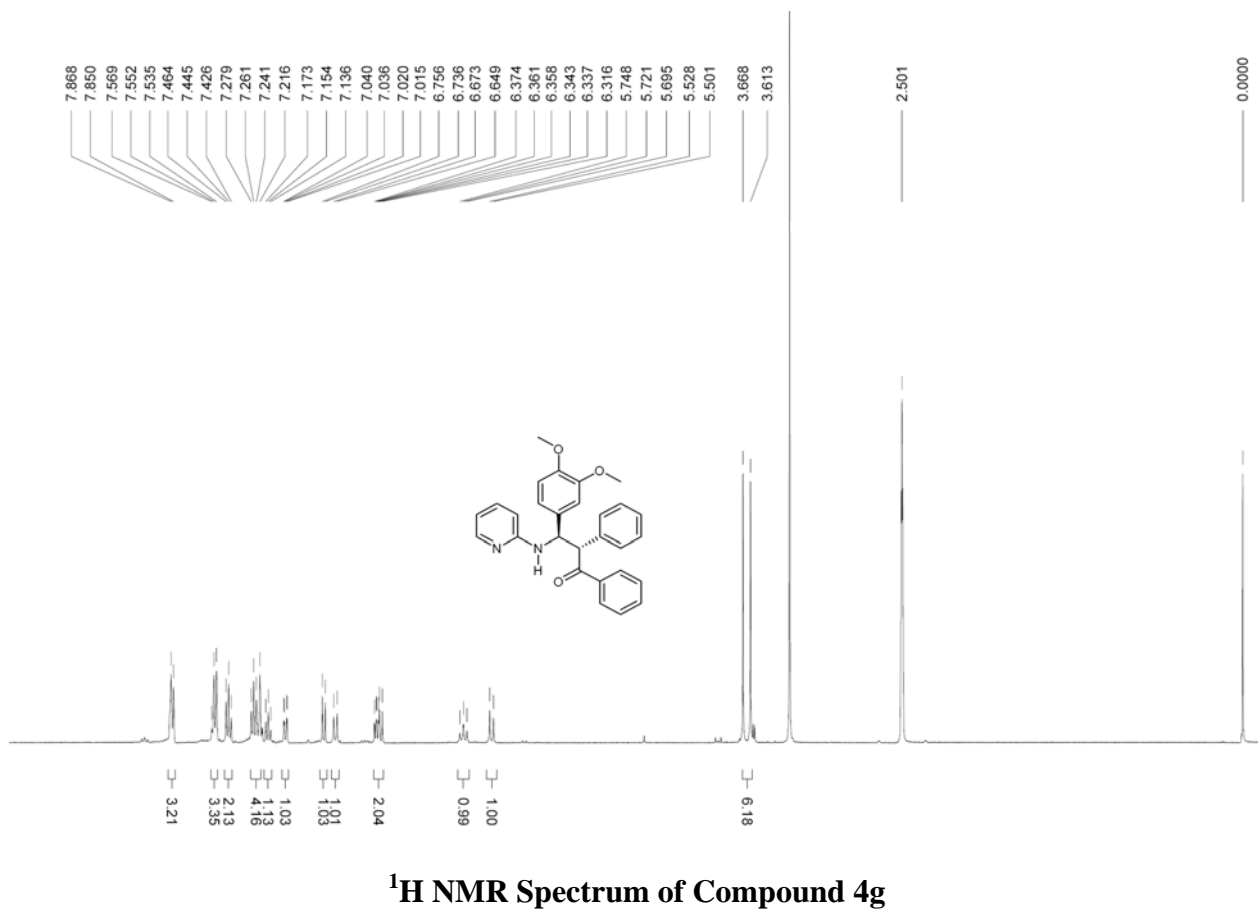
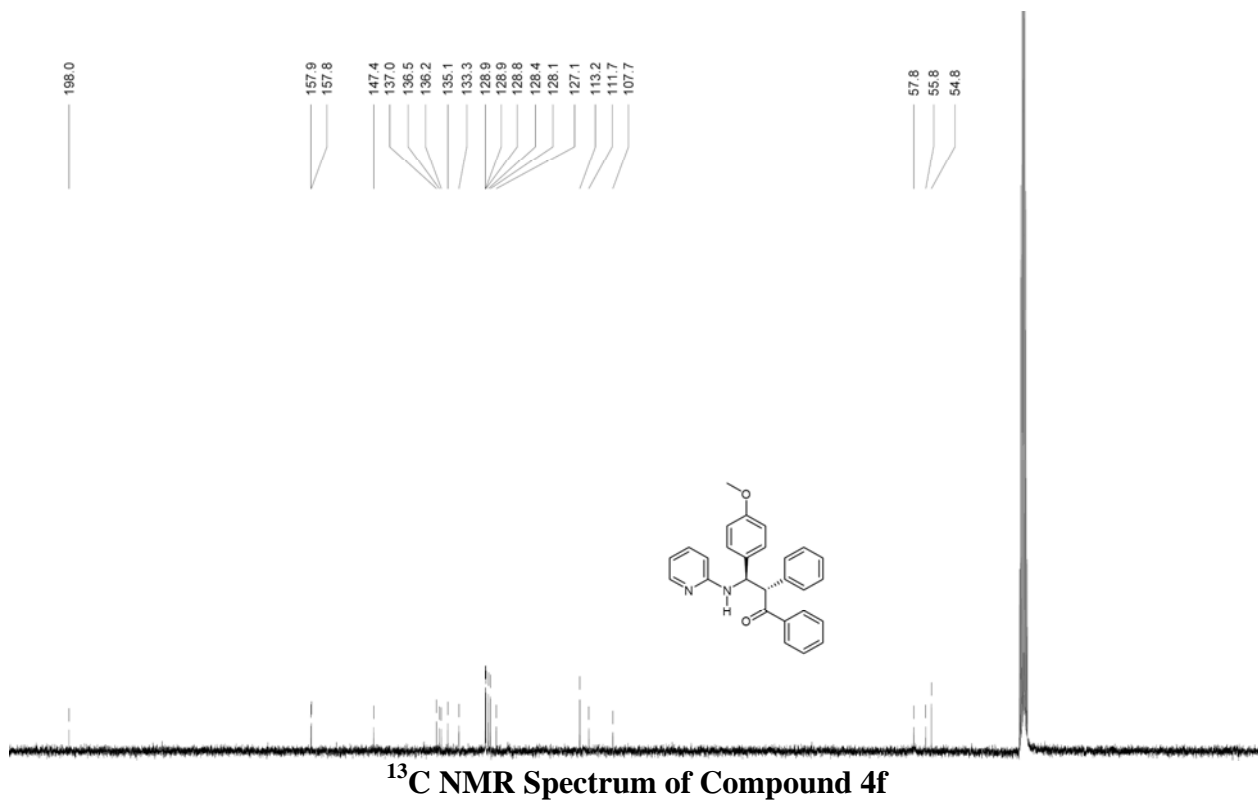
¹³C NMR Spectrum of Compound 4d

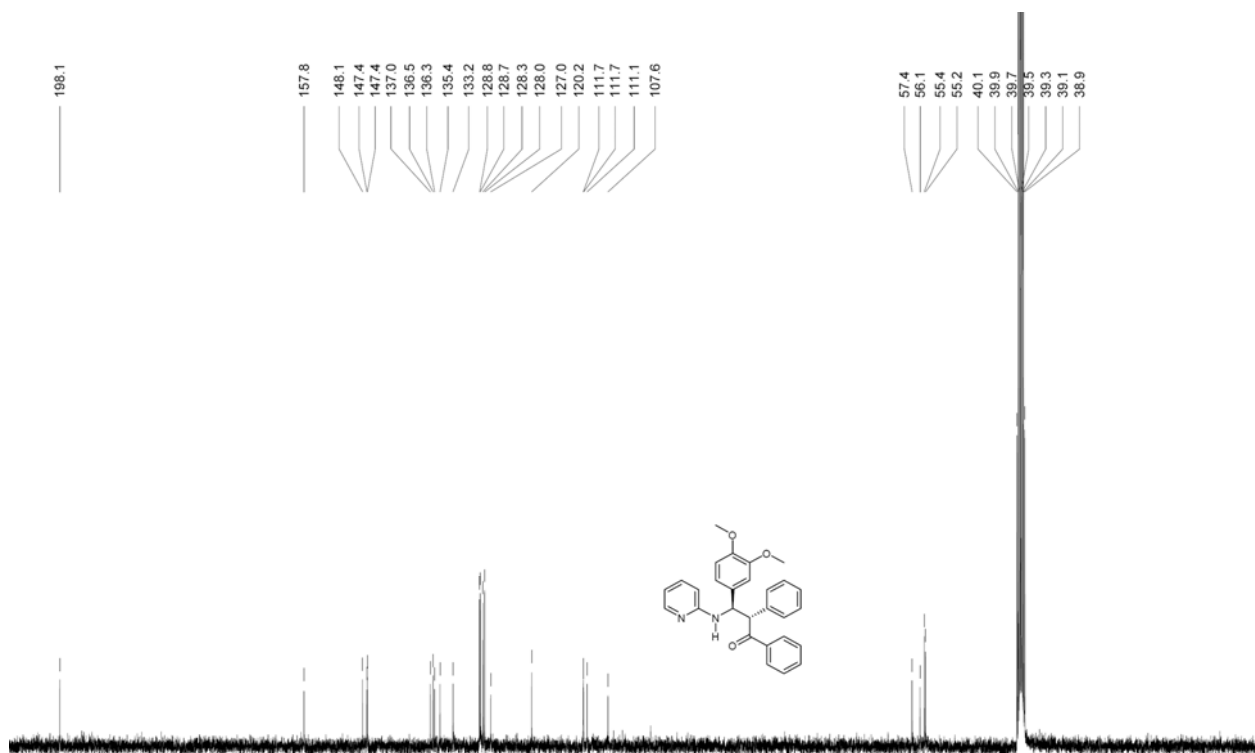


¹H NMR Spectrum of Compound 4e

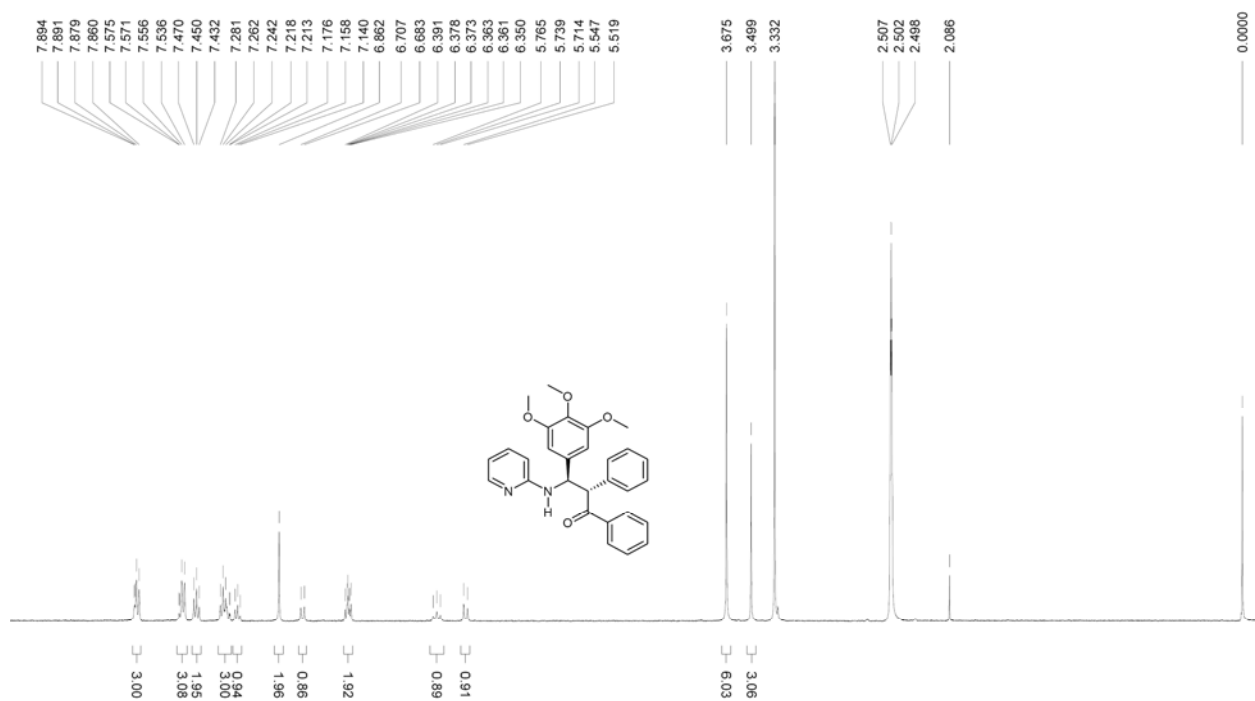


¹H NMR Spectrum of Compound 4f

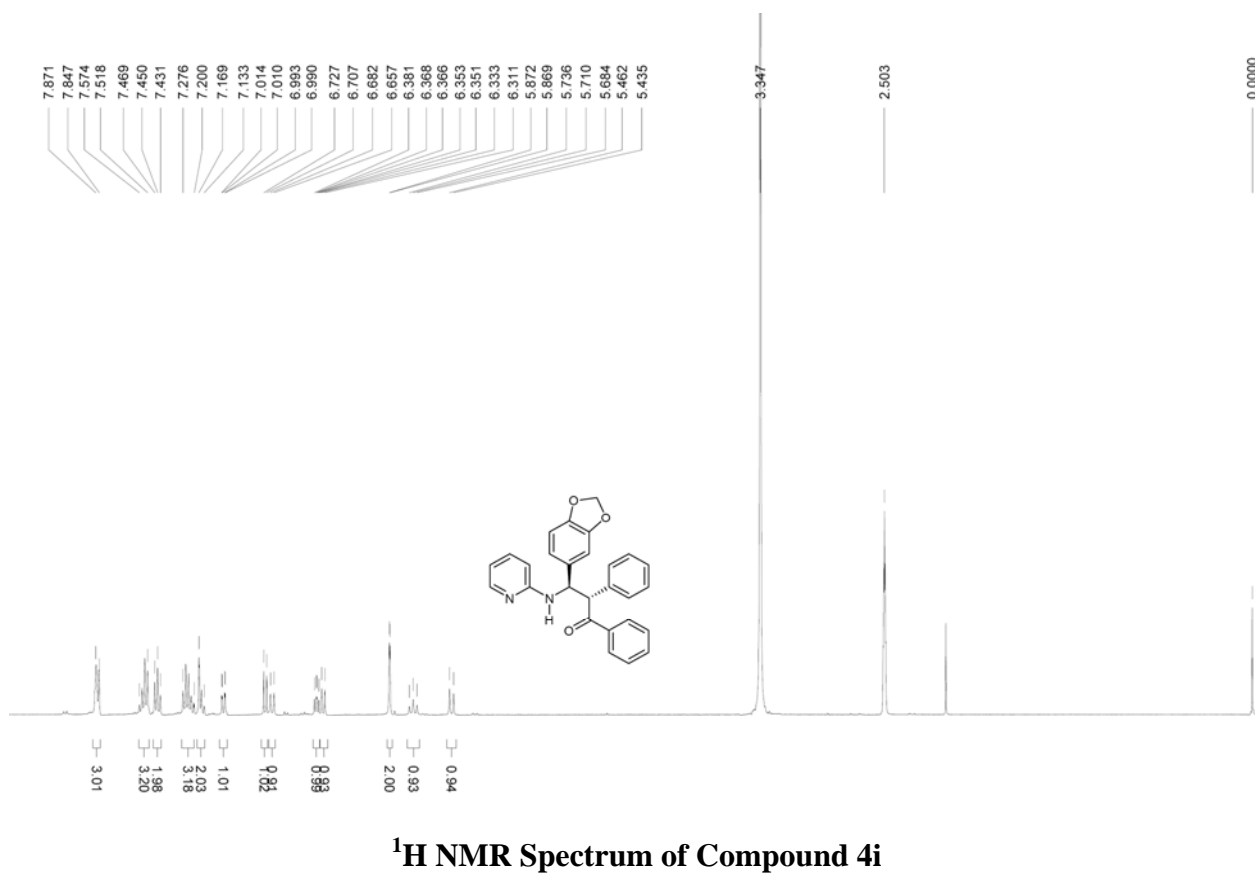
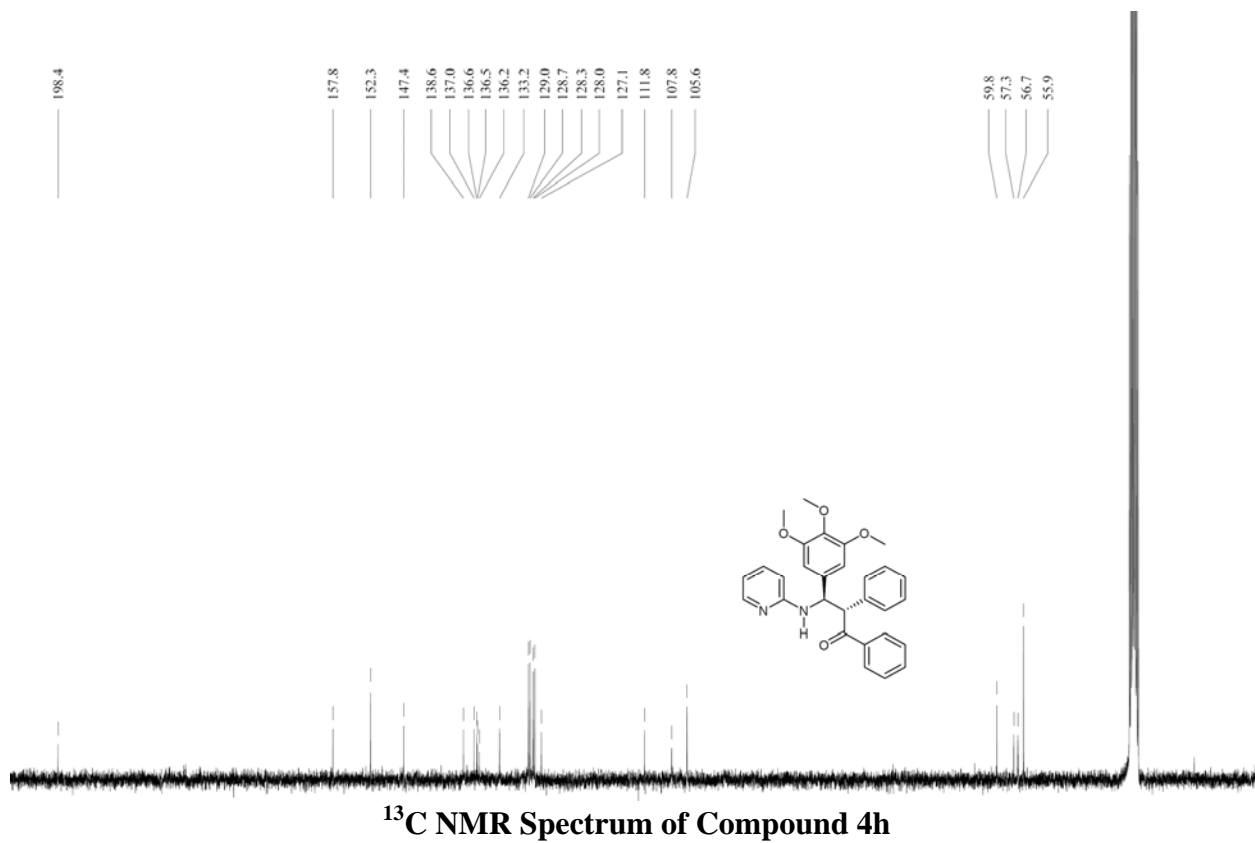


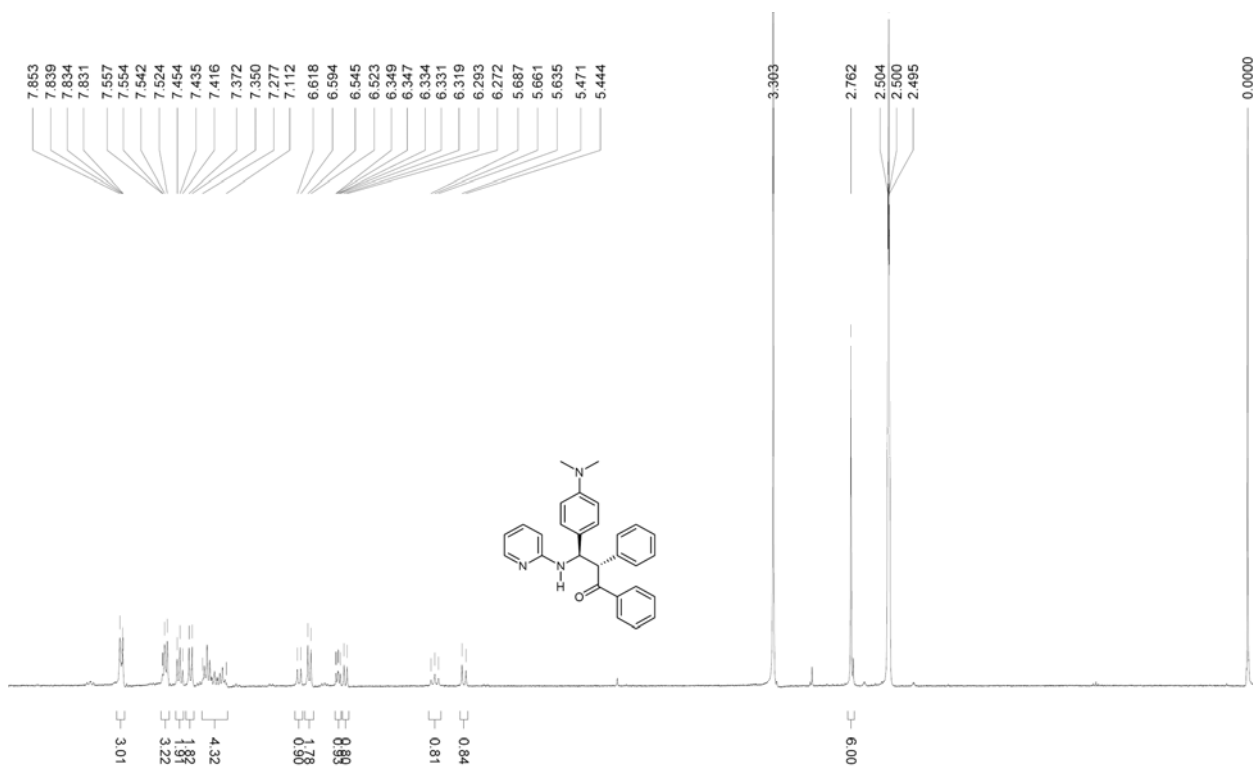


¹³C NMR Spectrum of Compound 4g

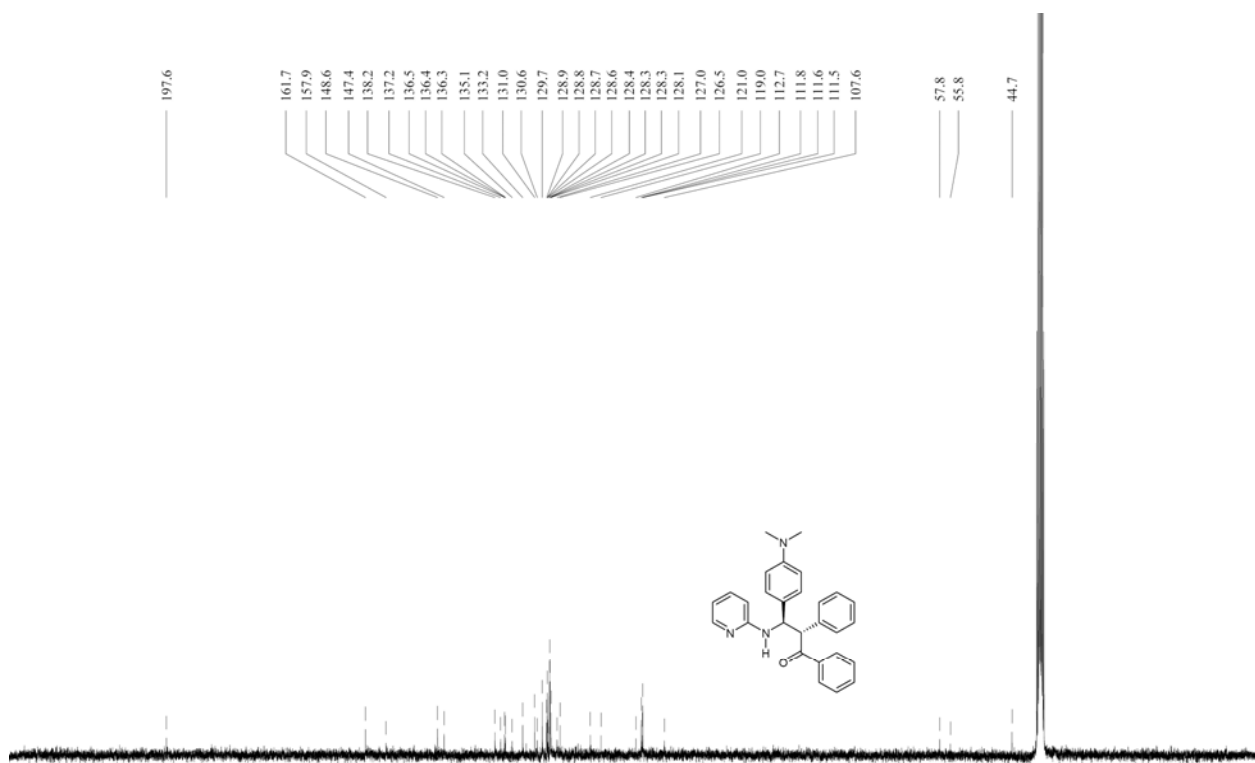


¹H NMR Spectrum of Compound 4h

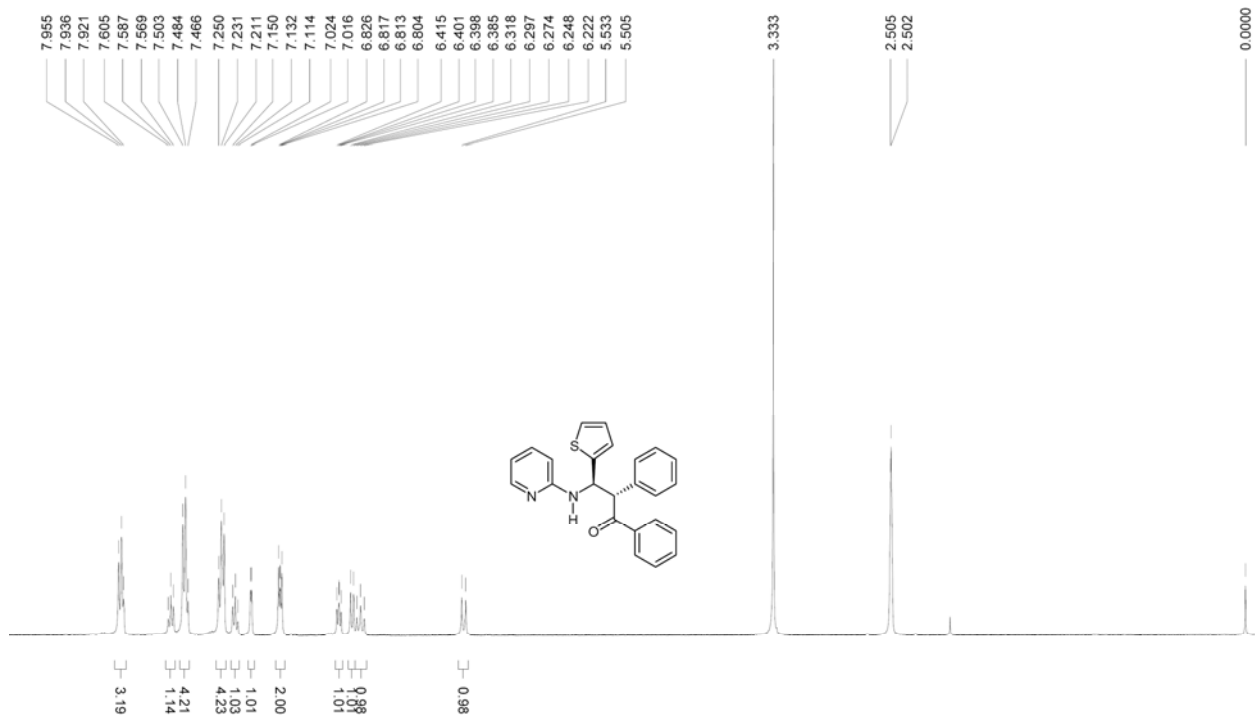




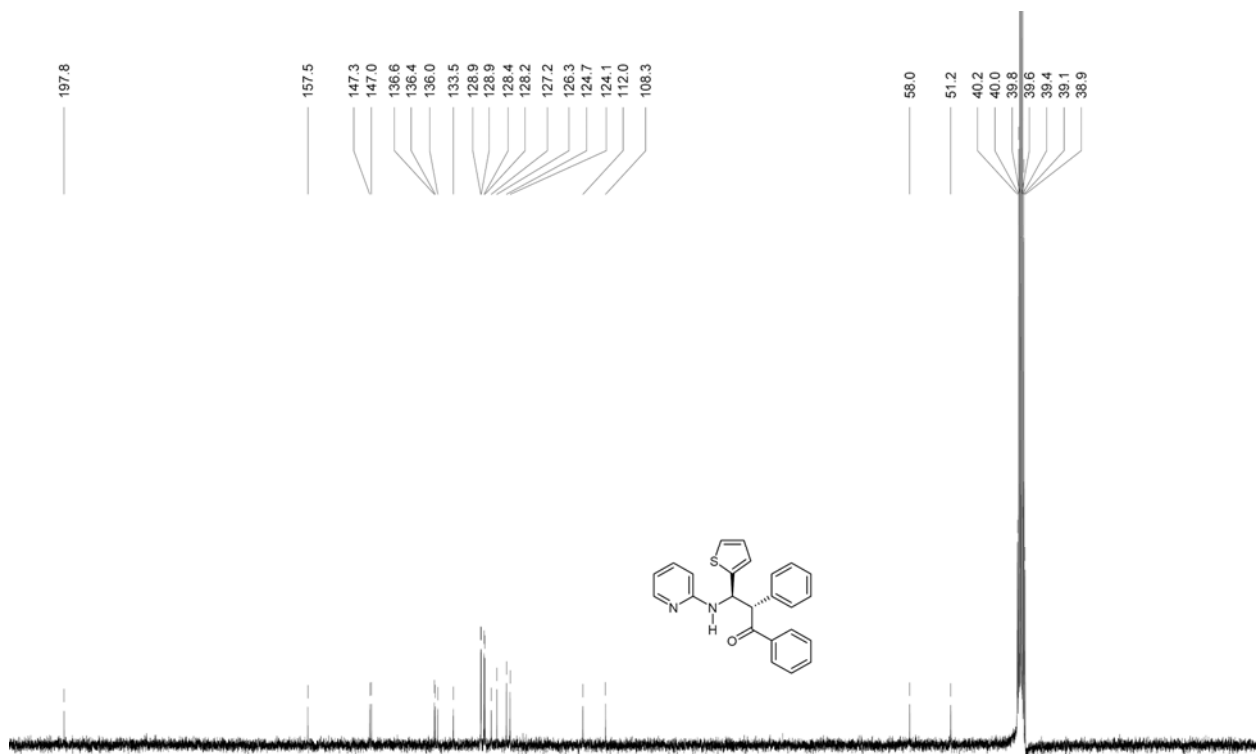
¹H NMR Spectrum of Compound 4j



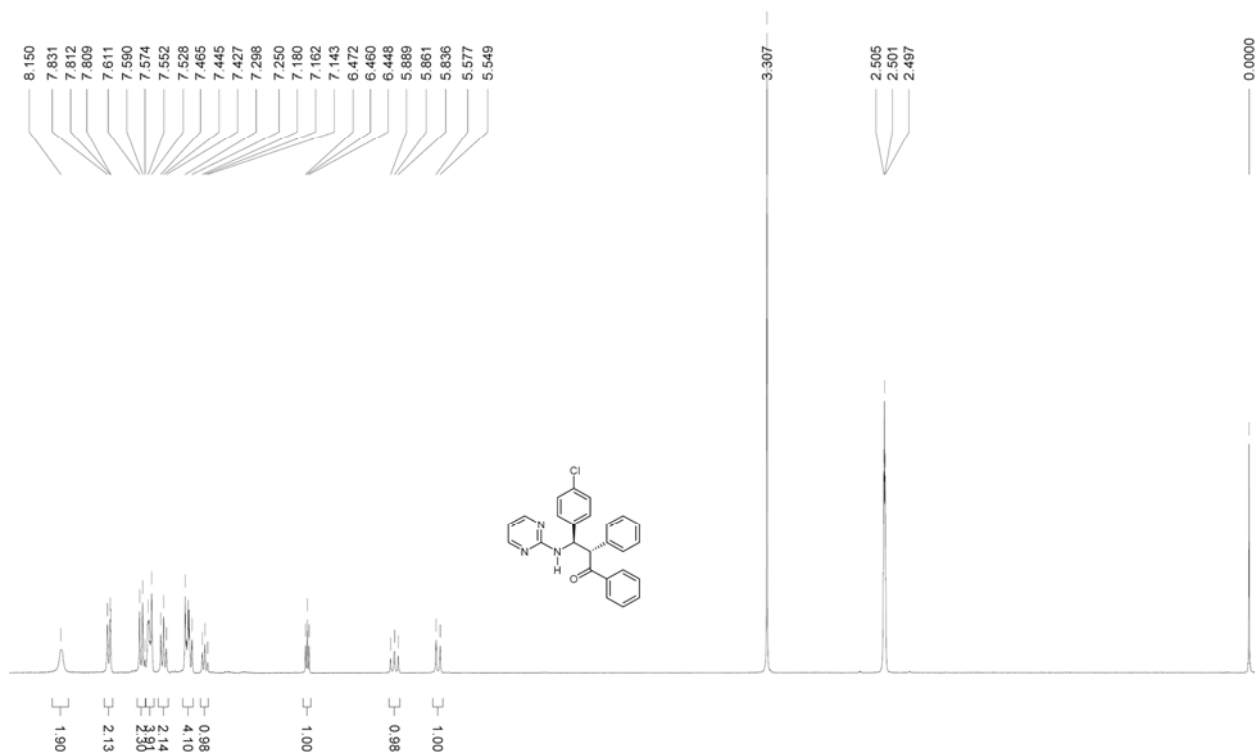
¹³C NMR Spectrum of Compound 4j



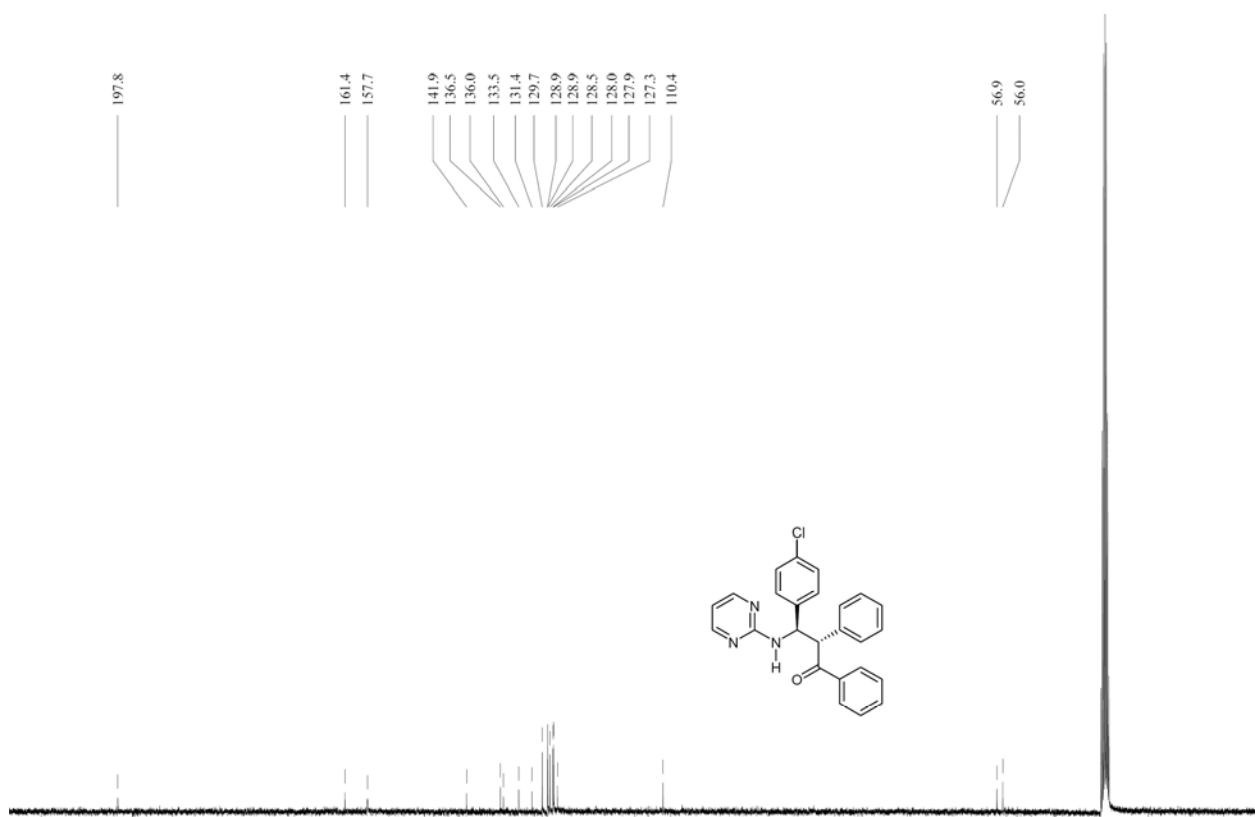
¹H NMR Spectrum of Compound 4k



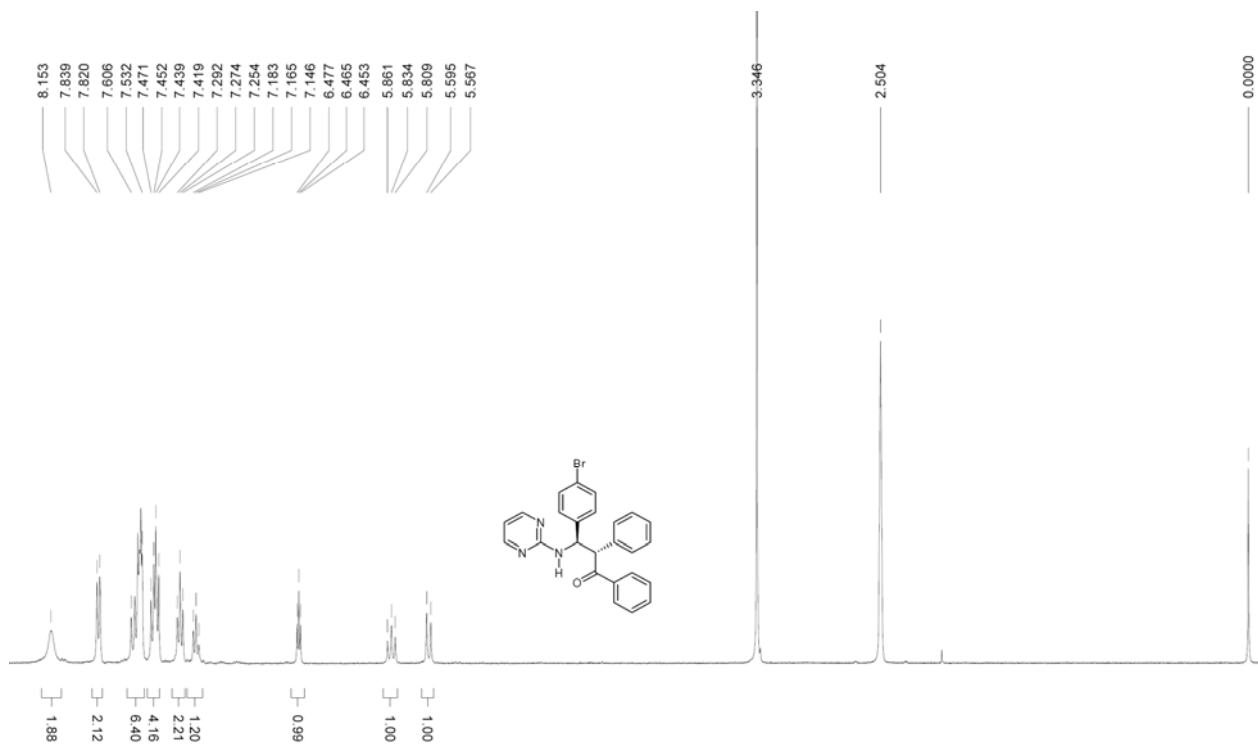
¹³C NMR Spectrum of Compound 4k



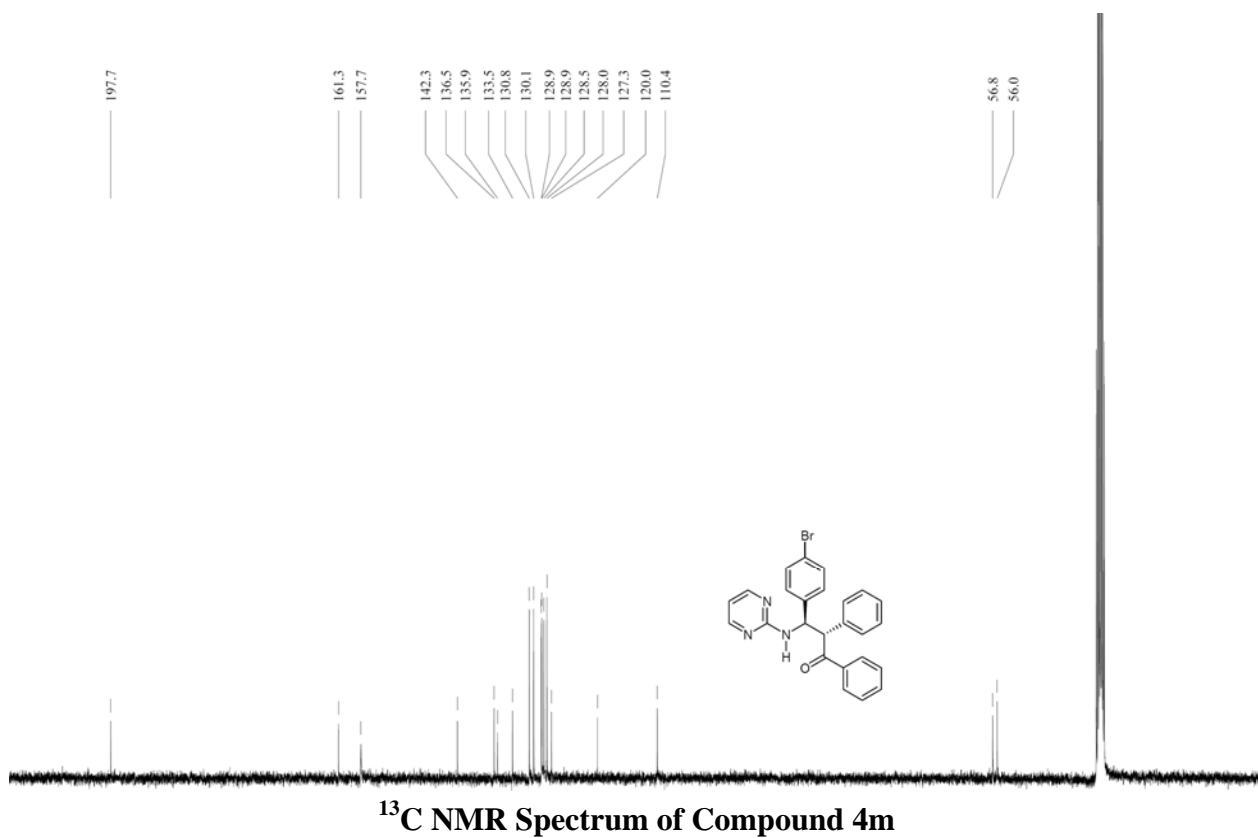
¹H NMR Spectrum of Compound 4l



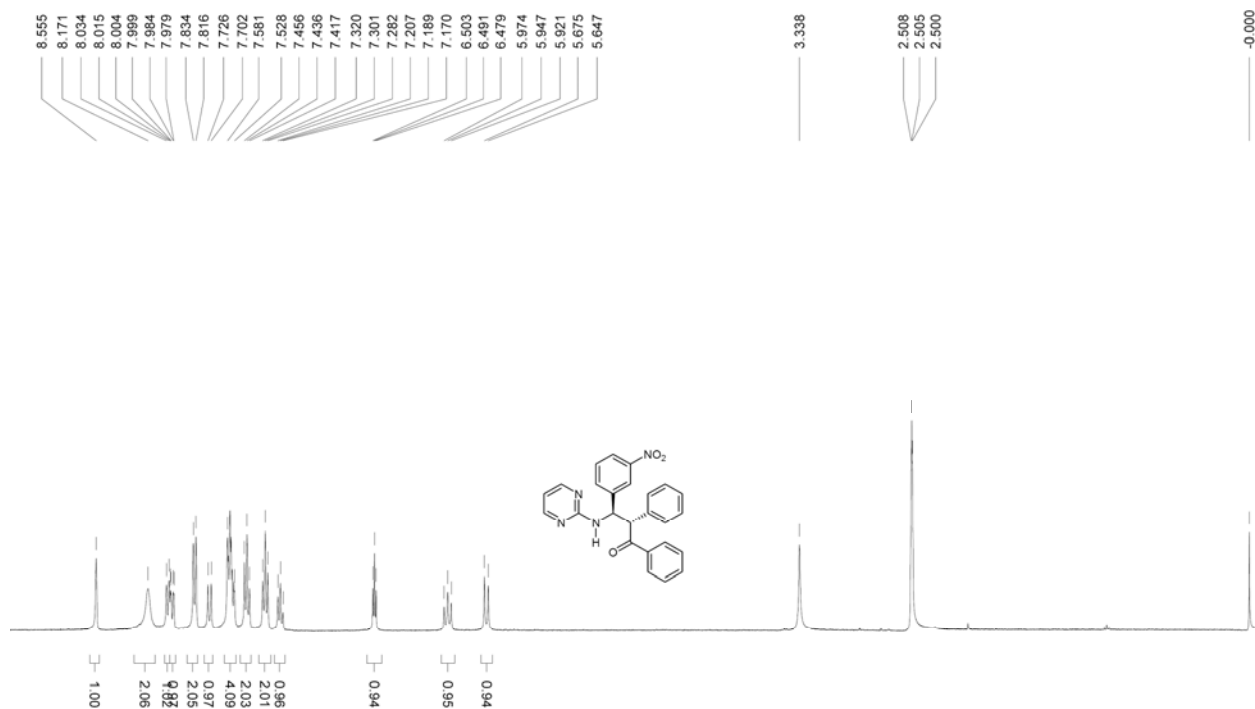
¹³C NMR Spectrum of Compound 4l



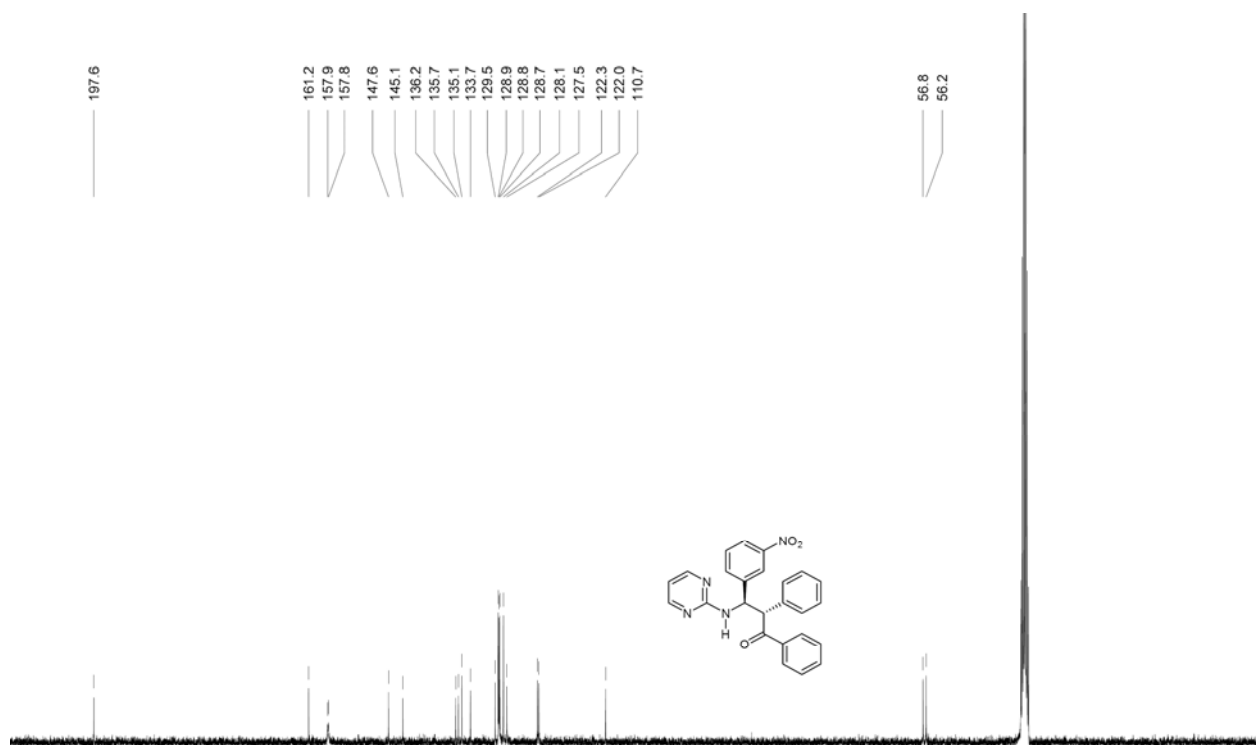
¹H NMR Spectrum of Compound 4m



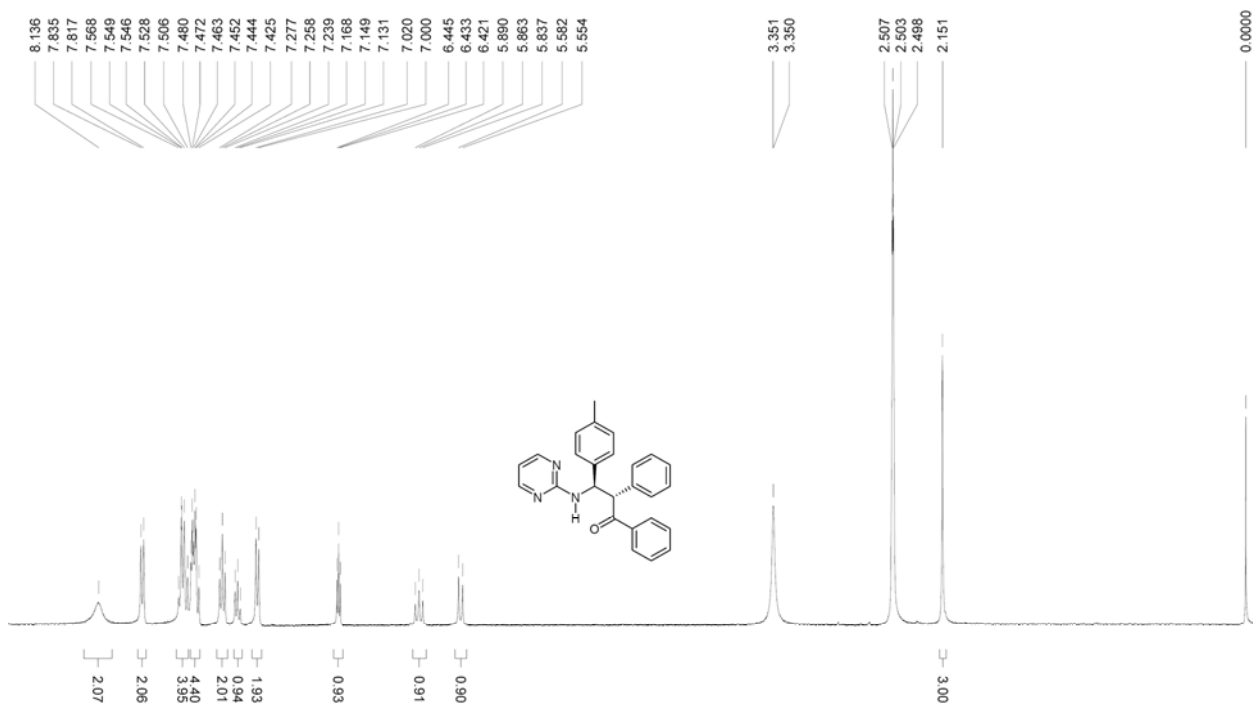
¹³C NMR Spectrum of Compound 4m



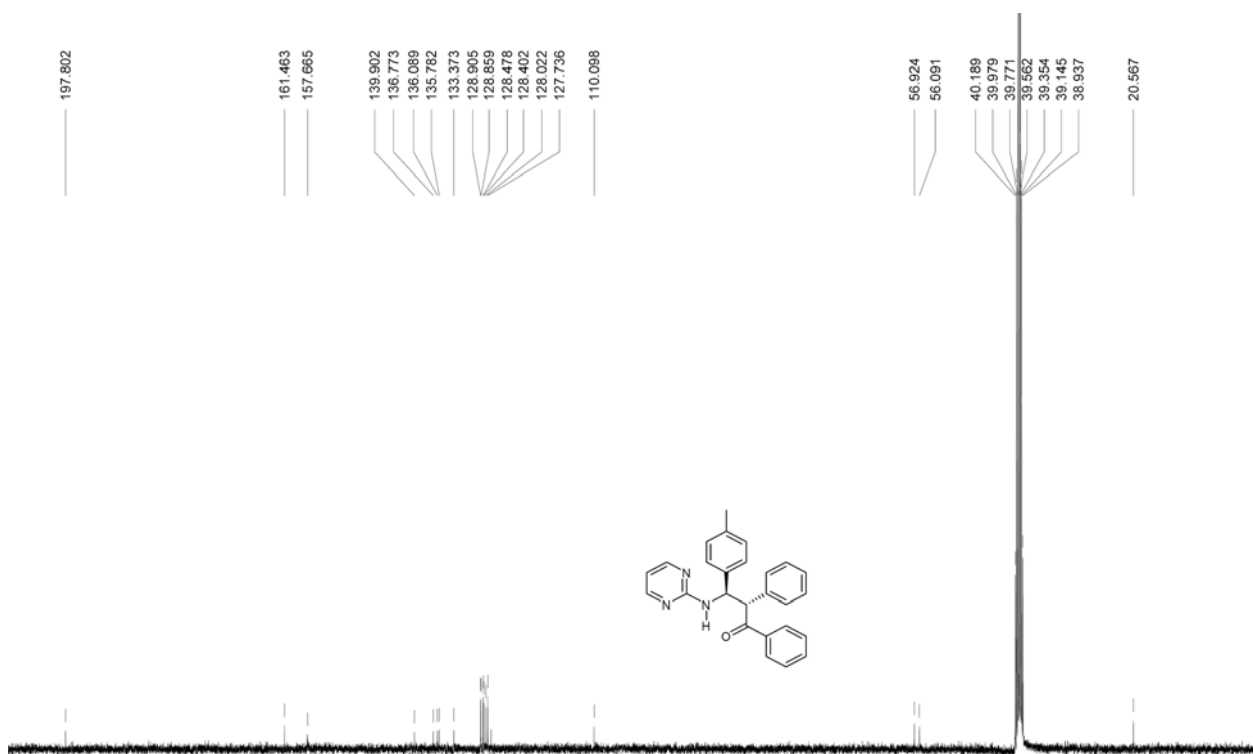
¹H NMR Spectrum of Compound 4n



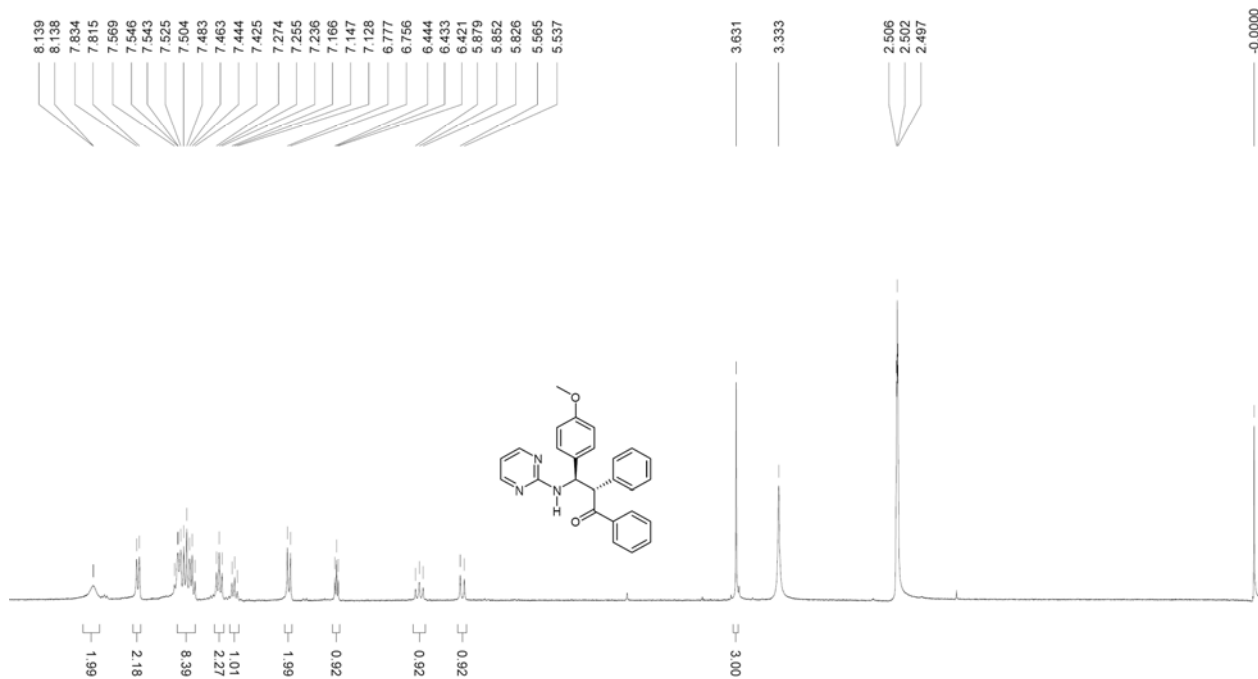
¹³C NMR Spectrum of Compound 4n



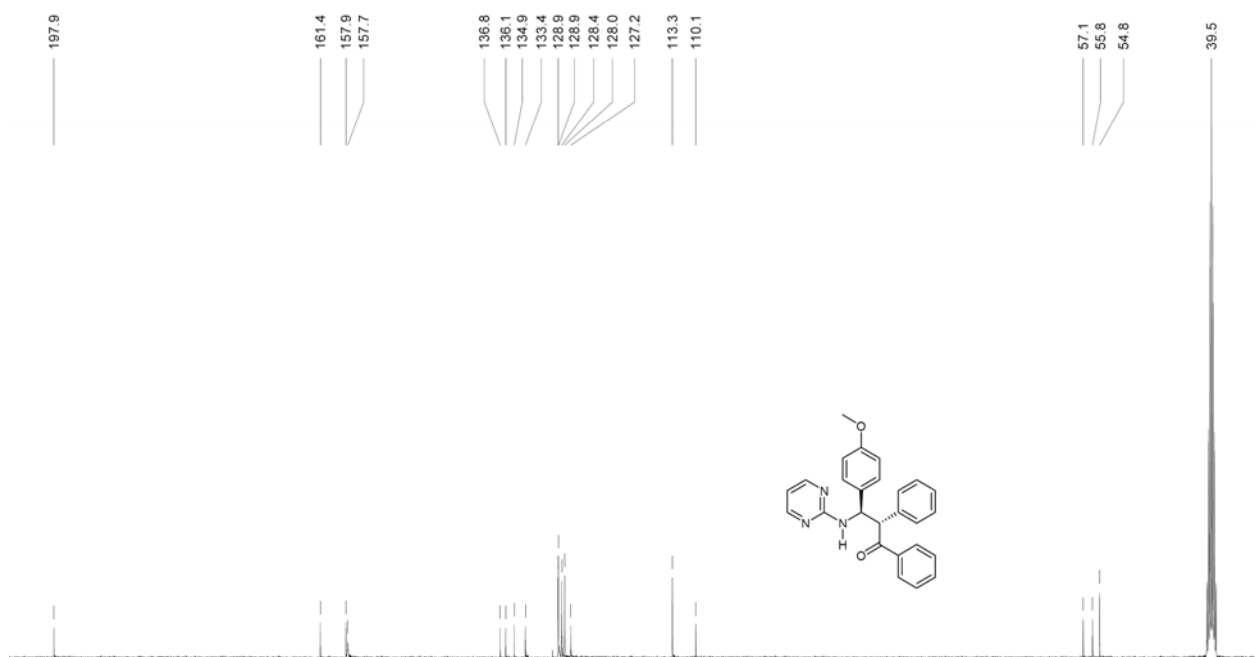
¹H NMR Spectrum of Compound 4o



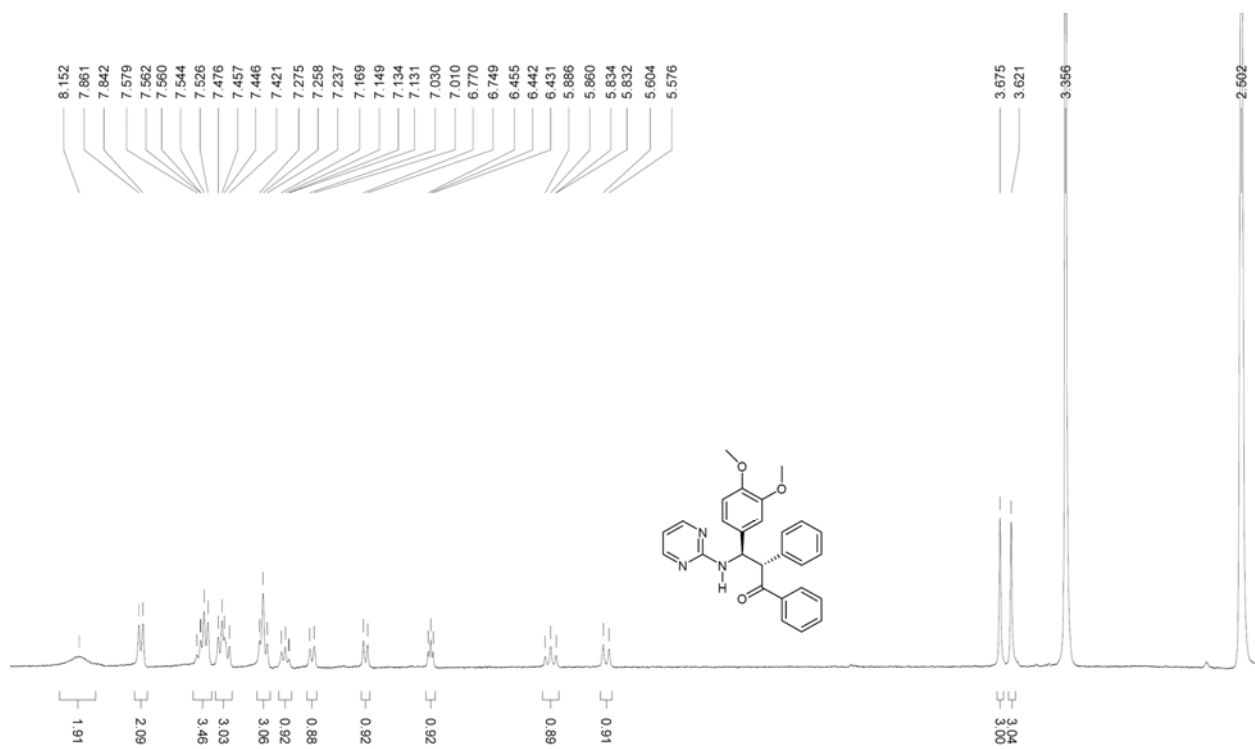
¹³C NMR Spectrum of Compound 4o



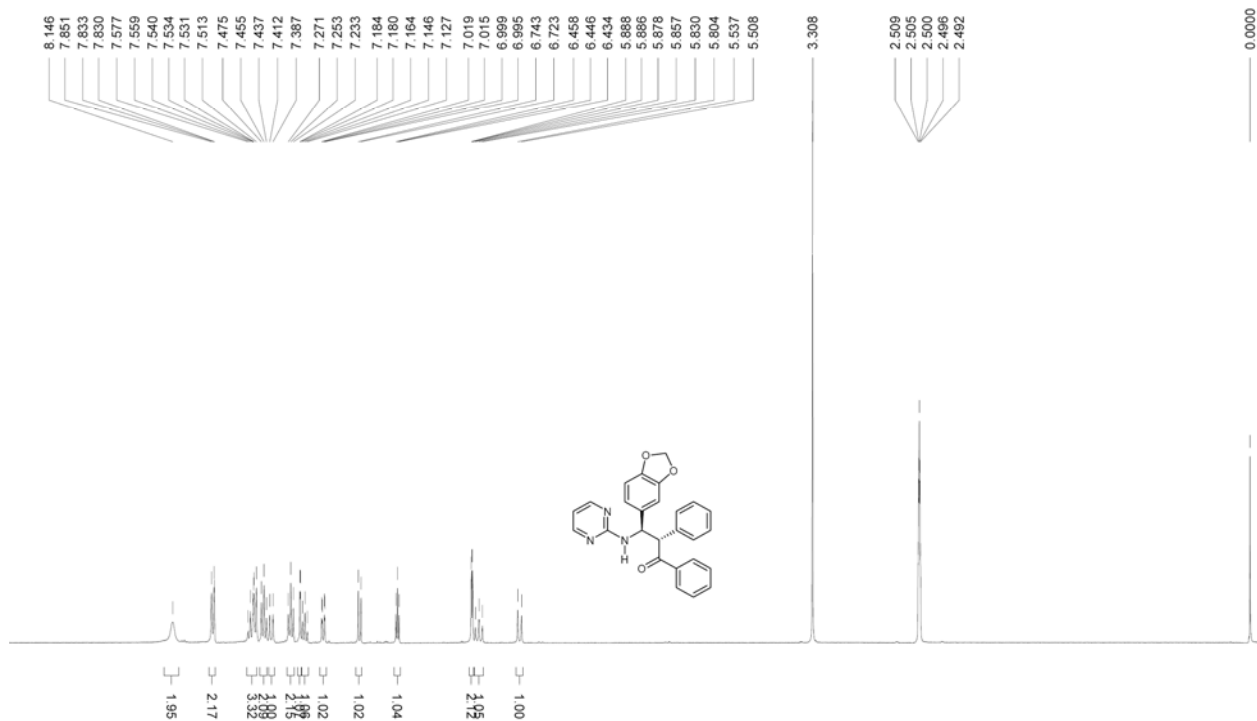
¹H NMR Spectrum of Compound 4p



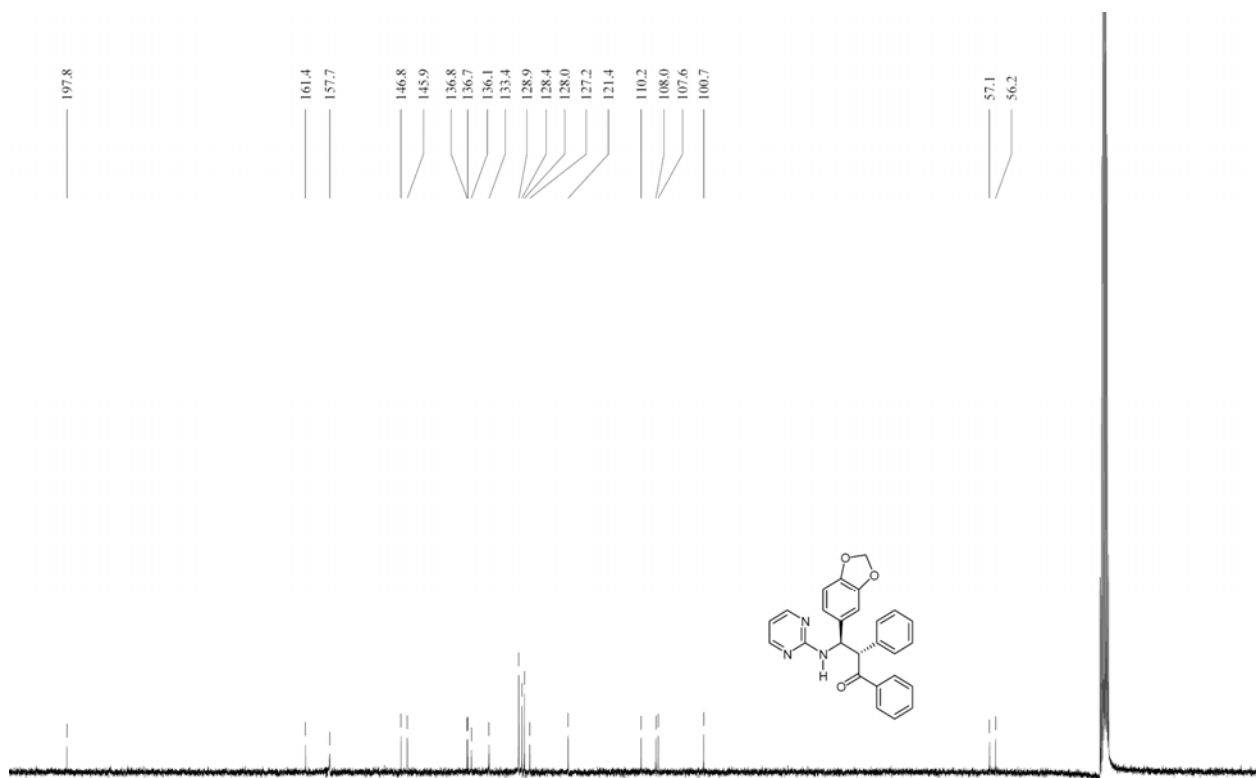
¹³C NMR Spectrum of Compound 4p



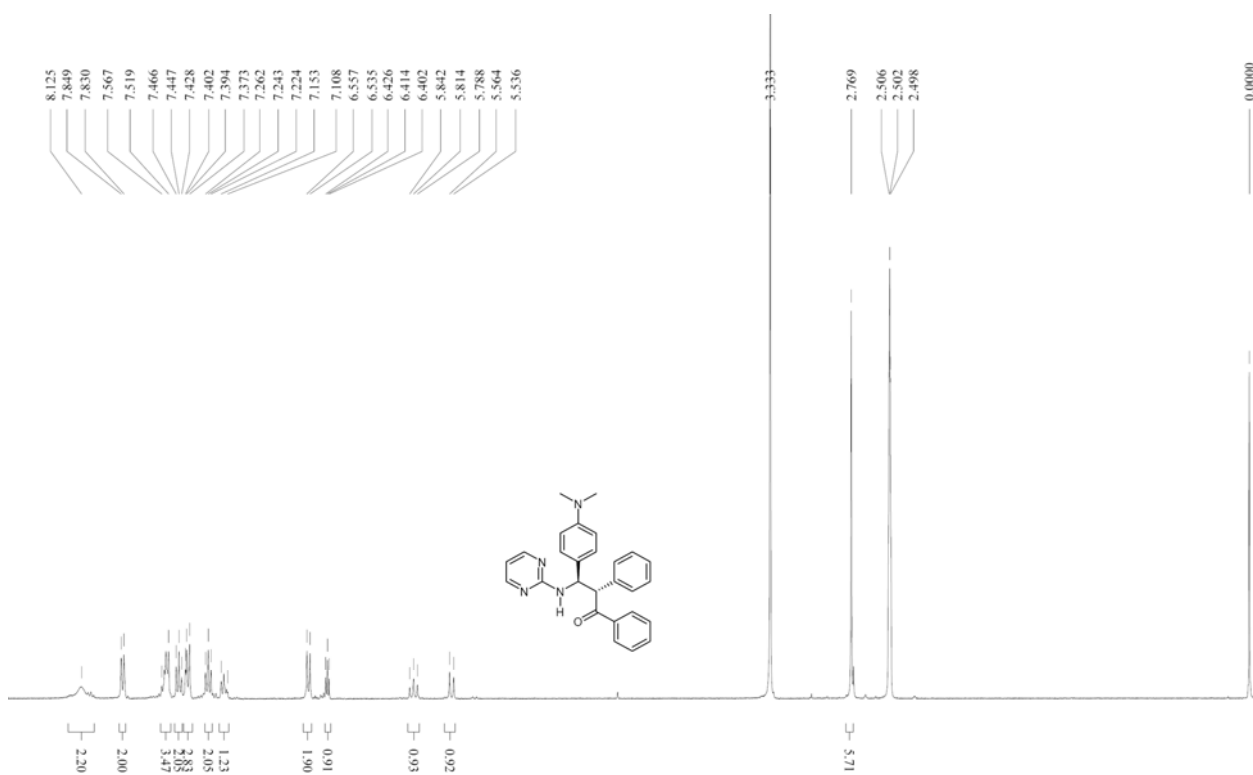
¹H NMR Spectrum of Compound 4q



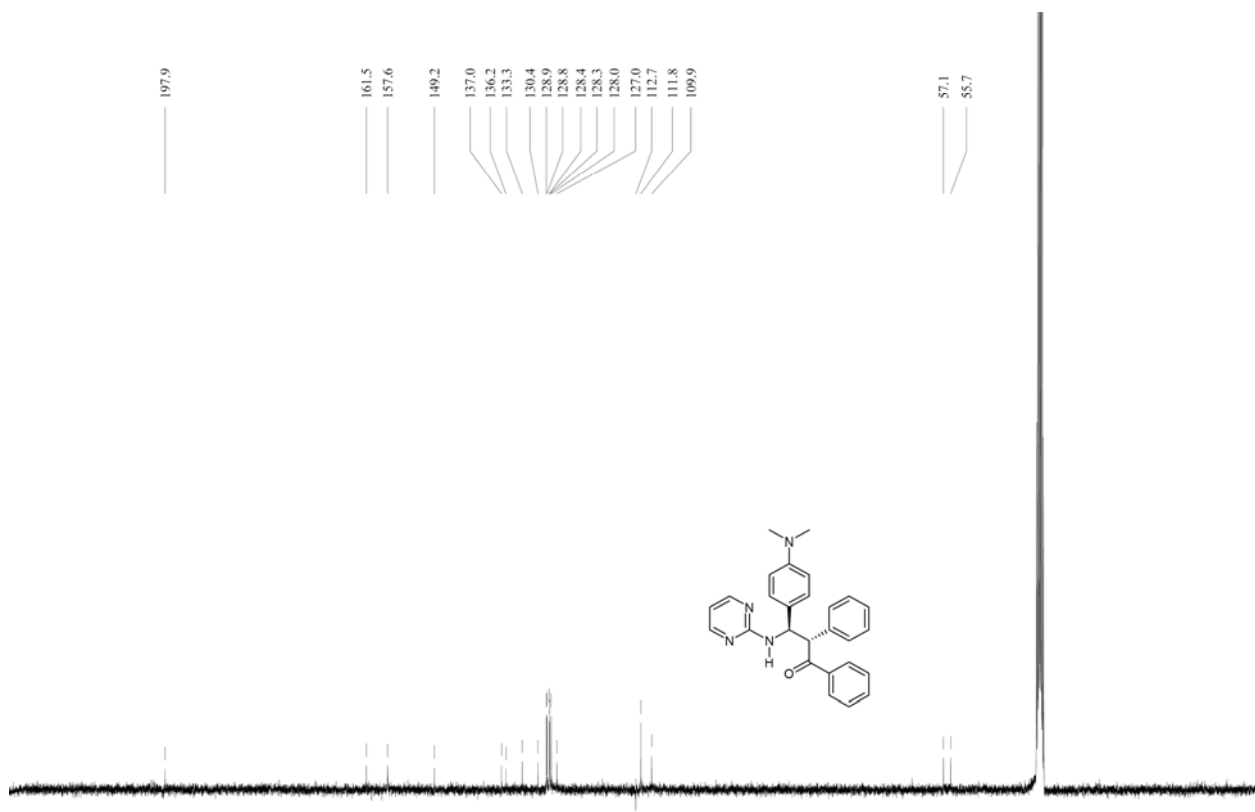
¹H NMR Spectrum of Compound 4r



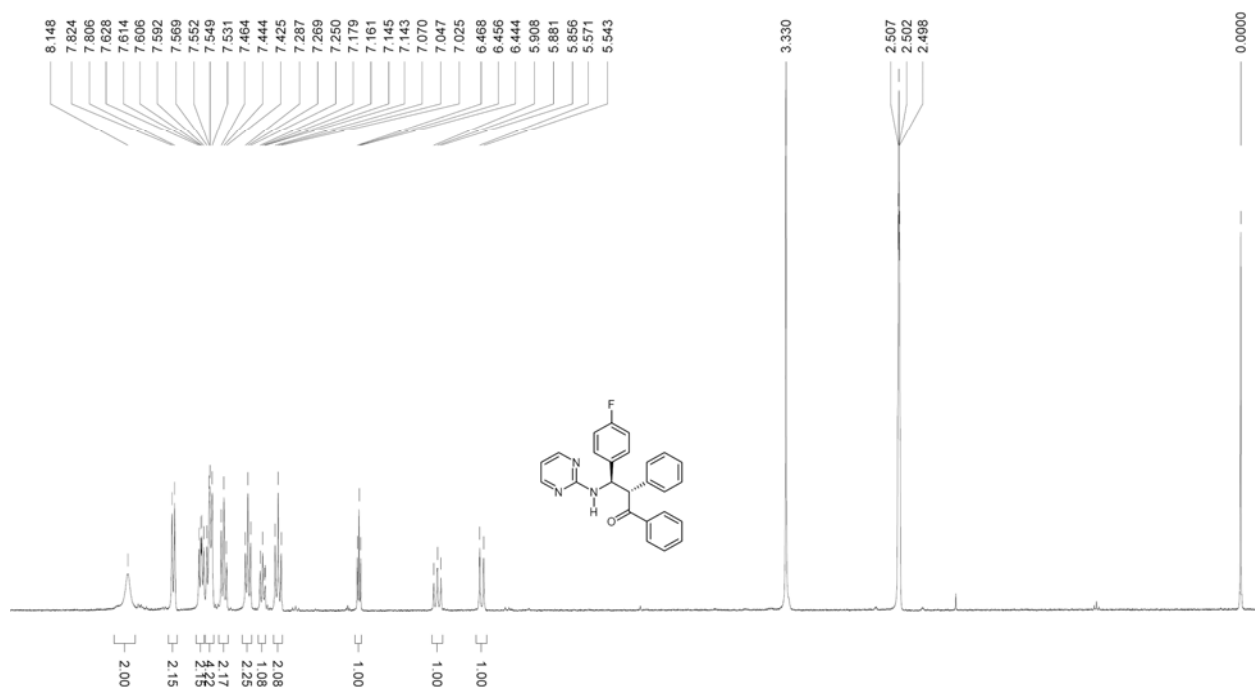
¹³C NMR Spectrum of Compound 4r



¹H NMR Spectrum of Compound 4s



¹³C NMR Spectrum of Compound 4s



¹H NMR Spectrum of Compound 4t

