Supporting Information

Iodine(III) Mediated Oxidative Rearrangement of Enamines: Efficient Synthesis of α-Aminoketones

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1. General Comments:

All reactions were carried out under an atmosphere of dry nitrogen using reaction tubes. Dry DCM was prepared by distilling over CaH_2 and stored over molecular sieves 4Å under N_2 atmosphere. All the enamines were synthesized employing literature procedure.[1,2] PIDA and PIFA were obtained from Spectrochem and TEMPO was purchased from Sigma Aldrich and they were used as received.

Column chromatography was performed using Rankem Silicagel (100-200 mesh) and the solvent system used unless otherwise specified, was ethylacetate-hexanes with various percentage of polarity depending on the nature of the substrate.

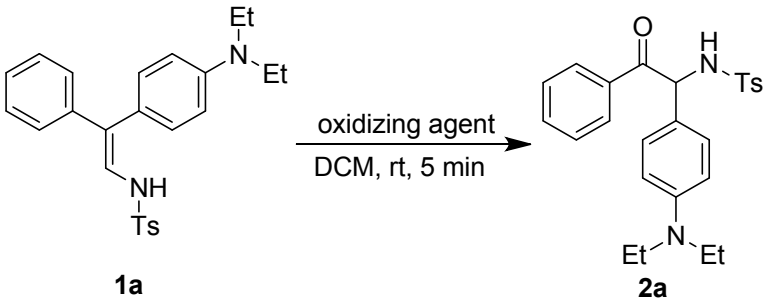
It is important to note that purity of enamines significantly affects the reactions and synthesized α-amino ketones all are move very slow in column chromatography.

2. Analytical Methods:

NMR data were recorded on Bruker DPX 400 and AVC 500 MHz spectrometers. ^{13}C and ^{1}H NMR spectra were referenced to signals of deutero solvents and residual protiated solvents, respectively. Infrared spectra were recorded on a Thermo Nicolet iS10 FT spectormeter. HRMS were recorded by electron spry ionization (ESI) method on a Q-TOF Micro with lock spray source. Melting points are corrected. The crystal data were collected and integrated using a Bruker Axs kappa apex2 CCD diffractometer, with graphite monochromated Mo-Kα radiation.

[1] D. Yadagiri, P. Anbarasan, *Org. Lett.* 2014, **16**, 2510.
[2] K. Inamoto, K. Saito, K. Hiroya, T. Doi, *Synlett,* 2008, **20**, 3157.

3. Typical procedure for the synthesis of α-amino ketones *via* oxidative rearrangement of enamines:



1a **2a**

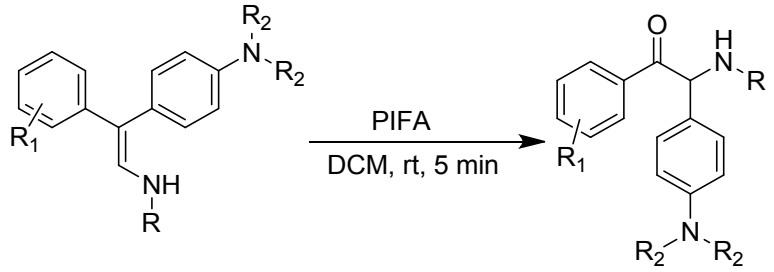
To an over dried 10 mL reaction tube equipped with stir bar, enamine **1a** (50 mg, 0.12 mmol) was dissolved in dichloromethane (1 mL). To this solution oxidizing agent (X equiv) was added under nitrogen atmosphere. The reaction tube was sealed and stirred at room temperature. After the TLC analysis, the reaction mixture was diluted with 5 mL dichloromethane and washed with saturated sodium bicarbonate solution. The combined organic layer was dried over Na_2SO_4. The crude product was purified by column chromatography using hexane/ethyl acetate mixture as eluent to afford α-amino ketones **2a**.

Optimization table:[a]

Entry	Oxidizing agent (X equiv)	Solvent	Time	Yield (%)[b]
1	PIFA (1)	DCM	5 min	61%
2	PIFA (1)	Toluene	5 min	40
3	PIFA (1)	THF	5 min	42
4	PIFA (1)	$CHCl_3$	5 min	39
5	PIFA (1.2)	DCM	5 min	81
6	PIDA (1.2)	DCM	0.5 h	26[c]
7	Ph_2IOTf (1.2)	DCM	48 h	20
8	PIFA (1.2)	DCM	30 min	76[d]
9	TEMPO (1.2)	DCM	12 h	0
10	IBX (1.2)	DCM	12 h	0

[a] Enamine (0.12 mmol, 1 equiv), oxidizing agent (X equiv), solvent (1 mL); [b] Isolated yields; [c] 12 h. [d] portion wise addition of PIFA over 15 min.

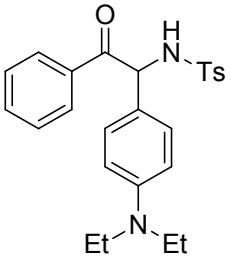
4. General procedure for the synthesis of α-amino ketones 2.



To an over dried 10 mL reaction tube equipped with stir bar, enamine **1** (50 mg, 0.12 mmol) was dissolved in dichloromethane (1 mL). To this solution [bis(trifluoroacetoxyiodo)]benzene (PIFA) (1.2 equiv) was added under nitrogen atmosphere. The reaction tube was sealed and stirred at room temperature for 5 min. After the TLC analysis, the reaction mixture was diluted with 5 mL dichloromethane, washed with saturated sodium bicarbonate solution. The combined organic layer was dried over Na_2SO_4. The crude product was purified by column chromatography using hexane/ethyl acetate mixture as eluent to afford α-amino ketones in high yield and purity.

5. Properties of isolated α-amino ketones:

***N*-(1-(4-(Diethylamino)phenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide (2a):**



According to the general procedure the product was isolated in 81% yield using the mixture of hexanes/ ethyl acetate (82:18) as an eluent for column chromatography.

Mp: 112-114 ºC

FTIR (KBr): 3313, 3056, 2984, 1685, 1595, 1431, 1267, 1159, 1088, 896, 813, 742, 555 cm^{-1}.

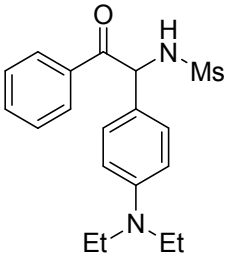
^1H NMR (500 MHz, $CDCl_3$, 24 °C): δ 7.81 (d, 2H, J = 8.4 Hz), 7.51 (d, 2H, J = 8.3 Hz), 7.48-7.45 (m, 1H), 7.36-7.33 (m, 2H), 7.03 (d, 2H, J = 7.9 Hz), 6.95 (d, 2H, J = 8.8 Hz), 6.40 (d, 2H, J = 8.9 Hz),

6.11 (d, 1H, *J* = 7.4 Hz), 5.90 (d, 1H, *J* = 7.5 Hz), 3.24 (q, 4H, *J* = 7.0Hz), 2.28 (s, 3H), 1.08 (t, 6H, *J* = 6.9 Hz).

$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.7, 147.7, 142.7, 137.9, 134.3, 133.6, 129.4, 129.2, 129.0, 128.6, 127.1, 121.2, 111.7, 61.5, 44.3, 21.5, 12.5.

HRMS: calcd. for $C_{25}H_{28}N_2O_3S$+H: 437.1893; found: 437.1888.

***N*-(1-(4-(Diethylamino)phenyl)-2-oxo-2-phenylethyl)methanesulfonamide (2b):**



According to the general procedure the product was isolated in 75% yield using the mixture of hexanes/ ethyl acetate (81:19) as an eluent for column chromatography.

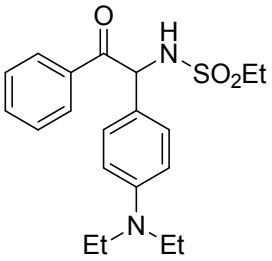
FTIR: 3271, 3058, 2976, 1686, 1605, 1521, 1411, 1325, 1267, 1190, 1147, 1085, 985, 730, 517, 419 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.94 (d, 2H, *J* = 8.56 Hz), 7.50-7.37 (m, 3H), 7.16 (d, 2H, *J* = 8.9 Hz), 6.58 (d, 2H, *J* = 8.9 Hz), 6.02 (d, 1H, *J* = 6.5 Hz), 5.93 (d, 1H, *J* = 6.5 Hz), 3.29 (q, 4H, *J* = 7.0Hz), 2.59 (s, 3H), 1.10 (t, 6H, *J* = 7.1 Hz).

$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.4, 148.1, 133.8, 129.5, 129.2, 128.8, 127.8, 121.5, 112.2, 61.8, 44.3, 42.3, 12.5.

HRMS: calcd. for $C_{19}H_{24}N_2O_3S$+H: 361.1580; found: 361.1570.

***N*-(1-(4-(Diethylamino)phenyl)-2-oxo-2-phenylethyl)ethanesulfonamide (2c):**



According to the general procedure the product was isolated in 77% yield using the mixture of hexanes/ ethyl acetate (81:19) as an eluent for column chromatography.

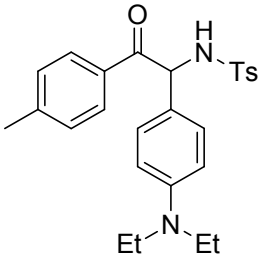
FTIR: 3302, 3066, 2978, 2931, 1686, 1601, 1522, 1419, 1329, 1267, 1143, 1070, 895, 830, 741, 509 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.93 (d, 2H, *J* = 8.50 Hz), 7.51-7.47 (m, 1H), 7.40-7.36 (m, 2H), 7.14 (d, 2H, *J* = 8.8 Hz), 6.56 (d, 2H, *J* = 8.8 Hz), 6.00 (d, 1H, *J* = 6.3 Hz), 5.84 (d, 1H, *J* = 6.3 Hz), 3.29 (q, 4H, *J* = 7.0 Hz), 2.74 (dt, 1H, *J* = 14.6, 6.9 Hz), 2.53 (dt, 1H, *J* = 14.6, 6.9 Hz), 1.18 (t, 3H, *J* = 7.3 Hz), 1.10 (t, 6H, *J* = 6.9 Hz).

$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.7, 148.1, 134.1, 133.7, 129.4, 129.2, 128.7, 121.8, 112.0, 61.6, 48.5, 44.3, 42.3, 12.5, 8.2.

HRMS: calcd. for $C_{20}H_{26}N_2O_3S$+H: 375.1737; found: 375.1749.

***N*-(1-(4-(Diethylamino)phenyl)-2-oxo-2-(p-tolyl)ethyl)-4-methylbenzenesulfonamide (2d):**



According to the general procedure the product was isolated in 63% yield using the mixture of hexanes/ ethyl acetate (82:18) as an eluent for column chromatography.

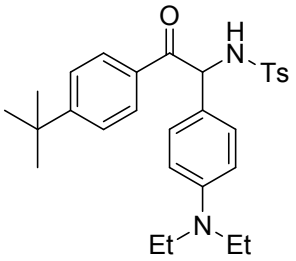
FTIR: 3300, 2965, 2923, 2851, 1674, 1605, 1520, 1399, 1338, 1267, 1158, 1086, 1024, 912, 803, 733, 666, 559, 431 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.72 (d, 2H, *J* = 8.3 Hz), 7.50 (d, 2H, *J* = 8.3 Hz), 7.14 (d, 2H, *J* = 8.0 Hz), 7.03 (d, 2H, *J* = 8.0 Hz), 6.94 (d, 2H, *J* = 8.8 Hz), 6.39 (d, 2H, *J* = 8.9 Hz), 6.11 (d, 1H, *J* = 7.4 Hz), 5.88 (d, 1H, *J* = 7.4 Hz), 3.25 (q, 4H, *J* = 7.0 Hz), 2.33 (s, 3H), 2.28 (s, 3H), 1.09 (t, 6H, *J* = 7.0 Hz).

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.3, 148.1, 144.6, 142.6, 138.1, 131.8, 130.3, 129.4, 129.3,129.2, 127.1, 111.8, 61.4, 44.3, 21.8, 21.5, 12.6.

HRMS: calcd. for $C_{26}H_{30}N_2O_3S$+H: 451.2050; found: 451.2063.

_N_-(2-(4-(*Tert*-butyl)phenyl)-1-(4-(diethylamino)phenyl)-2-oxoethyl)-4-methylbenzenesulfonamide (2e):



According to the general procedure the product was isolated in 61% yield using the mixture of hexanes/ ethyl acetate (82:18) as an eluent for column chromatography.

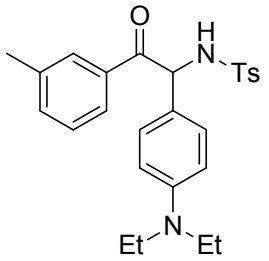
FTIR: 3346, 2928, 2857, 1667, 1523, 1495, 1471, 1463, 1159, 913, 745, 550 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.76 (d, 2H, *J* = 8.6 Hz), 7.50 (d, 2H, *J* = 8.2 Hz), 7.35 (d, 2H, *J* = 8.6 Hz), 7.02 (d, 2H, *J* = 8.0 Hz), 6.96 (d, 2H, *J* = 8.9 Hz), 6.40 (d, 2H, *J* = 8.9 Hz), 6.11 (d, 1H, *J* = 7.2 Hz), 5.88 (d, 1H, *J* = 7.2 Hz), 3.25 (q, 4H, *J* = 7.0 Hz), 2.27 (s, 3H), 1.27 (s, 9H), 1.09 (t, 6H, *J* = 7.0 Hz).

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.4, 157.5, 147.8, 142.6, 138.1, 131.7, 129.4, 129.2, 129.0, 127.1, 125.6, 121.8, 111.8, 61.4, 44.3, 35.2, 33.1, 21.5, 12.6.

HRMS: calcd. for $C_{29}H_{36}N_2O_3S$+H: 493.2519; found: 493.2538.

***N*-(1-(4-(Diethylamino)phenyl)-2-oxo-2-(m-tolyl)ethyl)-4-methylbenzenesulfonamide (2f):**



According to the general procedure the product was isolated in 81% yield using the mixture of hexanes/ ethyl acetate (82:18) as an eluent for column chromatography.

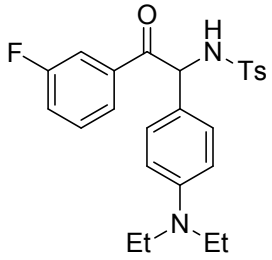
FTIR: 3302, 2965, 2945, 2851, 1668, 1606, 1520, 1399, 1338, 1324, 1266, 1148, 1124, 1090, 909, 800, 736, 559 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.62-7.59 (m, 2H), 7.50 (d, 2H, *J* = 8.3 Hz), 7.29-7.22 (m, 1H), 7.24-7.22 (m, 1H), 7.03 (d, 2H, *J* = 8.0 Hz), 6.94 (d, 2H, *J* = 8.9 Hz), 6.39 (d, 2H, *J* = 8.9 Hz), 6.08 (d, 1H, *J* = 7.6 Hz), 5.89 (d, 1H, *J* = 7.5 Hz), 3.25 (q, 4H, *J* = 7.1 Hz), 2.32 (s, 3H), 2.28 (s, 3H), 1.09 (t, 6H, *J* = 7.1 Hz).

$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 195.0, 147.8, 142.7, 138.1, 138.5, 134.4, 133.6, 129.5, 129.4, 129.3, 128.5, 127.1, 126.3, 121.5, 111.9, 61.5, 44.3, 21.5, 21.4, 12.6.

HRMS: calcd. for $C_{26}H_{30}N_2O_3S$+H: 451.2050; found: 451.2040.

***N*-(2-(3-Fluorophenyl)-2-oxo-1-(4-(pentan-3-yl)phenyl)ethyl)-4-methylbenzenesulfonamide (2g):**



According to the general procedure the product was isolated in 66% yield using the mixture of hexanes/ ethyl acetate (82:18) as an eluent for column chromatography.

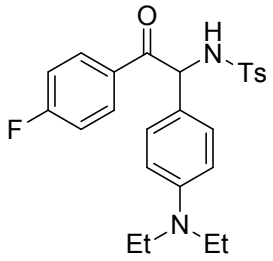
FTIR: 3286, 2952, 2859, 1682, 1605, 1519, 1455, 1335, 1290, 1159, 1089, 916, 810, 733, 674, 560, 428 cm^{-1}.^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.59 (d, 1H, *J* = 7.76 Hz), 7.50 (d, 2H, *J* = 7.78 Hz),

7.47 (d, 1H, *J* = 9.40 Hz), 7.32-7.27 (m, 1H), 7.18-7.17 (m, 1H), 7.04 (d, 2H, *J* = 7.9 Hz), 6.93-6.92 (m, 2H), 6.41-6.39 (m, 2H), 6.05 (d, 1H, *J* = 6.5 Hz), 5.84 (d, 1H, *J* = 6.5 Hz), 3.25 (q, 4H, *J* = 7.0 Hz), 2.29 (s, 3H), 1.09 (t, 6H, *J* = 7.0 Hz).

$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 193.6, 162.7 (d, *J* = 248.0 Hz), 142.8, 137.8, 130.4, 130.3 (d, *J* = 7.02 Hz), 129.4, 129.3, 127.1, 127.1, 124.7, 124.7, 120.8, 120.6, 115.8, 115.6 (d, *J* = 22.9 Hz), 111.8, 61.7, 44.3, 21.5, 12.5.

HRMS: calcd. for $C_{25}H_{27}N_2O_3S$+H: 455.1799; found: 437.1820.

_N_-(2-(4-Fluorophenyl)-2-oxo-1-(4-(pentan-3-yl)phenyl)ethyl)-4-methylbenzenesulfonamide (2h):



According to the general procedure the product was isolated in 74% yield using the mixture of hexanes/ ethyl acetate (82:18) as an eluent for column chromatography.

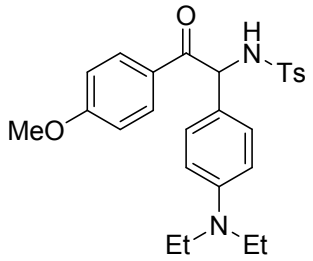
FTIR: 3285, 2965, 2925, 1681, 1601, 1520, 1457, 1402, 1334, 1272, 1197, 1087, 993, 812, 667, 563, 527, 427 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.86-7.85 (m, 2H), 7.50 (d, 2H, *J* = 8.3 Hz), 7.05-6.99 (m, 4H), 6.92 (d, 2H, *J* = 8.9 Hz), 6.40 (d, 2H, *J* = 8.9 Hz), 6.06 (d, 1H, *J* = 7.4 Hz), 5.85 (d, 1H, *J* = 7.4 Hz), 3.25 (q, 4H, *J* = 7.0 Hz), 2.28 (s, 3H), 1.09 (t, 6H, *J* = 7.0 Hz).

$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 193.2, 165.9 (d, *J* = 256.0 Hz), 147.8, 142.7, 138.0, 131.7 (d, *J* = 9.4 Hz), 130.7(4), 130.7, 129.3 (d, *J* = 8.7 Hz), 127.1, 121.1, 115.9 (d, *J* = 22.0 Hz), 111.8, 61.5, 44.3, 21.5, 12.5.

HRMS: calcd. for $C_{25}H_{27}N_2O_3S$+H: 455.1799; found: 455.1796.

***N*-(1-(4-(Diethylamino)phenyl)-2-(4-methoxyphenyl)-2-oxoethyl)-4-methylbenzenesulfonamide (2i) :**



According to the general procedure the product was isolated in 65% yield using the mixture of hexanes/ ethyl acetate (81:19) as an eluent for column chromatography.

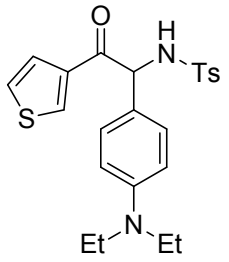
FTIR: 3280, 3057, 2971, 2930, 1672, 1603, 1518, 1456, 1409, 1333, 1263, 1163, 1085, 1023, 986, 815, 738, 670, 564, 434 cm^{-1}.

^{1}H NMR (500 MHz, $CDCl_3$, 24 °C): δ 7.80 (d, 2H, *J* = 8.9 Hz), 7.49 (d, 2H, *J* = 8.3 Hz), 7.03 (d, 2H, *J* = 8.0 Hz), 6.94 (d, 2H, *J* = 8.9 Hz), 6.81 (d, 2H, *J* = 9.0 Hz), 6.39 (d, 2H, *J* = 8.9 Hz), 6.13 (d, 1H, *J* = 7.4 Hz), 5.84 (d, 1H, *J* = 7.4 Hz), 3.80 (s, 3H), 3.24 (q, 4H, *J* = 7.0 Hz), 2.28 (s, 3H), 1.08 (t, 6H, *J* = 7.0 Hz).

$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 193.1, 163.9, 142.6, 137.9, 132.3, 131.4, 129.7, 129.3, 129.2, 127.0, 126.5, 113.9, 113.8, 61.1, 55.5, 44.6, 21.5, 21.4, 12.4.

HRMS: calcd. for $C_{26}H_{30}N_2O_4S$+Na: 489.1818; found: 489.1801.

***N*-(1-(4-(Diethylamino)phenyl)-2-oxo-2-(thiophen-3-yl)ethyl)-4-methylbenzenesulfonamide (2j):**



According to the general procedure the product was isolated in 68% yield using the mixture of hexanes/ ethyl acetate (82:18) as an eluent for column chromatography.

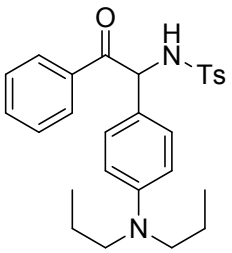
FTIR: 3275, 3056, 2972, 2929, 1672, 1610, 1519, 1404, 1340, 1267, 1159, 1083, 738, 563 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.95-7.94 (m, 1H), 7.49 (d, 2H, *J* = 8.3 Hz), 7.39-7.38 (m, 1H), 7.20-7.18 (m, 1H), 7.03 (d, 2H, *J* = 8.1 Hz), 6.94 (d, 2H, *J* = 8.8 Hz), 6.41 (d, 2H, *J* = 8.8 Hz), 6.04 (d, 1H, *J* = 7.0 Hz), 5.65 (d, 1H, *J* = 7.0 Hz), 3.25 (q, 4H, *J* = 7.0 Hz), 2.29 (s, 3H), 1.09 (t, 6H, *J* = 7.0 Hz).

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C): δ 188.8, 147.9, 142.7, 139.2, 138.1, 133.8, 129.4, 129.2, 127.1, 126.3, 121.6, 111.9, 62.9, 44.3, 21.5, 12.6.

HRMS: calcd. for $C_{23}H_{26}N_2O_3S_2$+H: 443.1458; found: 443.1477.

***N*-(1-(4-(Dipropylamino)phenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide (2k):**



According to the general procedure the product was isolated in 72% yield using the mixture of hexanes/ ethyl acetate (82:18) as an eluent for column chromatography.

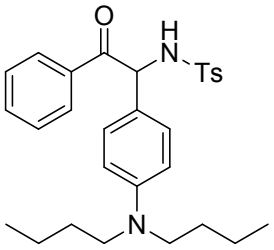
FTIR: 3289, 2930, 2871, 1681, 1606, 1519, 1335, 1293, 1159, 1089, 810, 732, 677, 546, 415 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.81 (d, 2H, *J* = 8.3 Hz), 7.51-7.44 (m, 3H), 7.36-7.32 (m, 2H), 7.02 (d, 2H, *J* = 8.0 Hz), 6.93 (d, 2H, *J* = 8.9 Hz), 6.35 (d, 2H, *J* = 8.9 Hz), 6.09 (d, 1H, *J* = 7.5 Hz), 5.90 (d, 1H, *J* = 7.5 Hz), 3.12 (t, 4H, *J* = 7.7 Hz), 2.28 (s, 3H), 1.56-1.47 (m, 4H), 0.88 (t, 6H, *J* = 7.4 Hz).

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.7, 148.2, 142.6, 138.1, 134.4, 133.6, 129.3, 129.2, 129.0, 128.6, 127.1, 121.2, 111.8, 61.5, 52.8, 21.4, 20.4, 11.4.

HRMS: calcd. for $C_{27}H_{32}N_2O_3S$+H: 465.2206; found: 465.2225.

***N*-(1-(4-(Dibutylamino)phenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide (2l):**



According to the general procedure the product was isolated in 63% yield using the mixture of hexanes/ ethyl acetate (82:18) as an eluent for column chromatography.

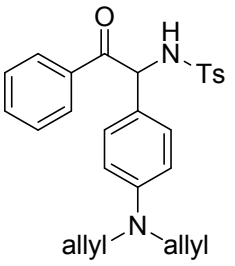
FTIR: 3286, 2952, 2859, 1682, 1605, 1519, 1455, 1335, 1159, 1089, 916, 810, 733, 674, 560, 428 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.81 (d, 2H, *J* = 7.5 Hz), 7.51-7.45 (m, 3H), 7.34 (t, 2H, *J* = 7.5 Hz), 7.03 (d, 2H, *J* = 8.1 Hz), 6.94 (d, 2H, *J* = 8.7 Hz), 6.36 (d, 2H, *J* = 8.7 Hz), 6.11 (d, 1H, *J* = 7.5 Hz), 5.90 (d, 1H, *J* = 7.5 Hz), 3.15 (t, 4H, *J* = 7.7 Hz), 2.28 (s, 3H), 1.51-1.43 (m, 4H), 1.35-1.24 (m, 4H), 0.93 (t, 6H, *J* = 7.3 Hz).

$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.7, 148.1, 142.6, 137.9, 134.3, 133.6, 129.3, 129.2, 129.0, 128.6, 127.1, 121.0, 111.7, 61.5, 50.7, 29.3, 21.5, 20.3, 14.0.

HRMS: calcd. for $C_{29}H_{36}N_2O_3S$+H: 493.2519; found: 493.2512.

***N*-(1-(4-(Diallylamino)phenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide (2m):**



According to the general procedure the product was isolated in 68% yield using the mixture of hexanes/ ethyl acetate (82:18) as an eluent for column chromatography.

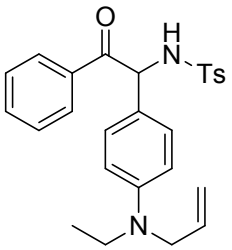
FTIR: 3296, 3057, 2983, 2925, 2856, 1683, 1608, 1519, 1447, 1394, 1334, 1265, 1159, 1089, 990, 812, 702, 561 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.80 (d, 2H, *J* = 8.3 Hz), 7.52-7.46 (m, 3H), 7.36-7.33 (m, 2H), 7.04 (d, 2H, *J* = 8.1 Hz), 6.95 (d, 2H, *J* = 8.8 Hz), 6.44 (d, 2H, *J* = 8.8 Hz), 6.09 (d, 1H, *J* = 7.5 Hz), 5.90 (d, 1H, *J* = 7.5 Hz), 5.81-5.72 (m, 2H), 5.14-5.07 (m, 4H), 3.82-3.80 (m, 4H), 2.29 (s, 3H).

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.7, 148.8, 142.7, 137.9, 134.3, 133.7,133.5, 129.3, 129.2, 129.0, 128.7, 127.1, 122.5, 116.3, 112.5, 61.4, 52.7, 21.5.

HRMS: calcd. for $C_{27}H_{28}N_2O_3S$+H: 461.1893; found: 461.1888.

***N*-(1-(4-(Allyl(ethyl)amino)phenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide (2n):**



According to the general procedure the product was isolated in 64% yield using the mixture of hexanes/ ethyl acetate (82:18) as an eluent for column chromatography.

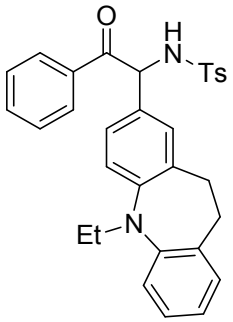
FTIR: 3271, 3046, 2969, 1685, 1615, 1521, 1325, 1267, 1190, 1147, 1097, 1085, 730, 517, 419 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.80 (d, 2H, *J* = 7.5 Hz), 7.51-7.46 (m, 3H), 7.33 (t, 2H, *J* = 7.7 Hz), 7.03 (d, 2H, *J* = 8.0 Hz), 6.94 (d, 2H, *J* = 8.7 Hz), 6.40 (d, 2H, *J* = 8.7 Hz), 6.11 (d, 1H, *J* = 7.5 Hz), 5.89 (d, 1H, *J* = 7.5 Hz), 5.80-5.70 (m, 1H), 5.11-5.06 (m, 2H), 3.78 (d, 2H, *J* = 4.5 Hz), 3.27 (q, 2H, *J* = 7.0 Hz), 2.28 (s, 3H), 1.08 (t, 3H, *J* = 7.0 Hz).

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.7, 148.1, 142.6, 137.9, 134.2, 133.9, 133.6, 129.3, 129.2, 129.0, 128.9, 128.8, 128.6, 127.1, 121.8, 116.0, 112.1, 61.4, 52.5, 44.7, 21.5, 12.2.

HRMS: calcd. for $C_{26}H_{28}N_2O_3S$+H: 449.1893; found: 449.1902.

***N*-(1-(5-Ethyl-10,11-dihydro-5*H*-dibenzo[b,f]azepin-2-yl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide (2o):**



According to the general procedure the product was isolated in 47% yield using the mixture of hexanes/ ethyl acetate (83:17) as an eluent for column chromatography.

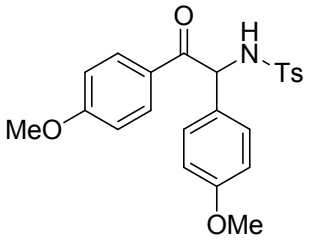
FTIR: 3346, 3056, 2984, 2925, 2847, 1684, 1595, 1488, 1431, 1330, 1266, 1159, 1095, 989, 900, 743, 551.5, 419 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.81 (d, 2H, *J* = 8.1 Hz), 7.50-7.46 (m, 1H), 7.39 (d, 2H, *J* = 8.3 Hz), 7.37-7.33 (m, 2H), 7.14-7.07 (m, 2H), 7.0 (d, 1H, *J* = 7.3 Hz), 6.95-6.88 (m, 4H), 6.80-6.76 (m, 2H), 6.10 (d, 1H, *J* = 7.0 Hz), 5.92 (d, 1H, *J* = 7.1 Hz), 3.67 (q, 2H, *J* = 7.0 Hz), 3.05-3.01 (m, 2H), 2.91-2.86 (m, 2H), 2.13 (s, 3H), 1.06 (t, 3H, *J* = 7.0 Hz).

$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.4, 148.2, 148.0, 142.9, 137.9, 135.5, 134.0, 133.9, 133.5, 130.0, 129.3, 129.1, 129.1, 128.8, 128.0, 126.9, 126.6, 126.4, 123.1, 120.7, 120.1, 61.4, 45.4, 32.8, 31.6, 21.4, 13.9.

HRMS: calcd.for $C_{31}H_{30}N_2O_3S$+H: 511.2050; found: 511.2052.

***N*-(1,2-Bis(4-methoxyphenyl)-2-oxoethyl)-4-methylbenzenesulfonamide (2p):**



According to the general procedure the product was isolated in 61% yield using the mixture of hexanes/ ethyl acetate (82:18) as an eluent for column chromatography.

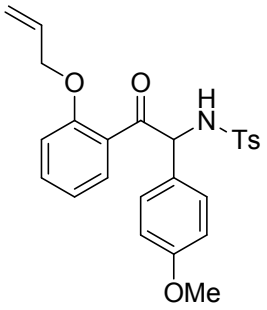
FTIR: 3286, 2952, 2859, 1682, 1605, 1519, 1455, 1335, 1290, 1156, 1164, 1090, 909, 736, 520 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.77 (d, 2H, *J* = 9.0 Hz), 7.51 (d, 2H, *J* = 8.3 Hz), 7.09-7.03 (m, 4H), 6.80 (d, 2H, *J* = 9.0 Hz), 6.66 (d, 2H, *J* = 8.8 Hz), 6.30 (d, 1H, *J* = 7.4 Hz), 5.89 (d, 1H, *J* = 7.4 Hz), 3.78 (s, 3H), 3.68 (s, 3H), 2.28 (s, 3H).

$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 193.0, 164.1, 159.6, 143.0, 137.7, 131.4, 129.7, 129.4, 129.3, 127.0, 126.5, 114.5, 114.0, 60.9, 55.6, 55.3, 21.4.

HRMS: calcd. for $C_{23}H_{23}NO_5S$+Na: 448.1189; found: 448.1172.

***N*-(2-(2-(Allyloxy)phenyl)-1-(4-methoxyphenyl)-2-oxoethyl)-4-methylbenzenesulfonamide (2q):**



According to the general procedure the product was isolated in 34% yield using the mixture of hexanes/ ethyl acetate (81:19) as an eluent for column chromatography.

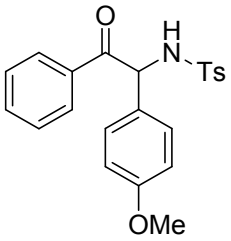
FTIR: 3288, 3061, 2929, 2850, 1675, 1599, 1507, 1449, 1338, 1259, 1165, 1090, 997, 937, 817, 742, 673, 557 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.60 (d, 2H, *J* = 8.3 Hz), 7.47 (dd, 1H, *J* = 1.8 Hz), 7.35-7.31 (m, 1H), 7.10 (d, 2H, *J* = 8.0 Hz), 7.01 (d, 2H, *J* = 8.8 Hz), 6.87-6.83 (m, 1H), 6.79 (d, 1H, *J* = 8.5 Hz), 6.64 (d, 2H, *J* = 8.3 Hz), 6.25-6.21 (m, 2H), 6.04-5.95 (m, 1H), 5.40-5.35 (m, 2H), 4.55 (d, 2H, *J* = 5.4 Hz), 3.78 (s, 3H), 3.69 (s, 3H), 2.31 (s, 3H).

$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 196.5, 159.4, 157.1, 143.0, 137.6, 134.4, 132.2, 131.5, 129.5, 129.4, 128.1, 127.2, 125.1, 121.0, 119.0, 114.1, 112.7, 69.6, 64.4, 55.3, 21.5.

HRMS: calcd. for $C_{25}H_{25}NO_5S$+H: 452.1526; found: 452.1515.

_N_-(1-(4-Methoxyphenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide (2r):



According to the general procedure the product was isolated in 61% yield using the mixture of hexanes/ ethyl acetate (83:17) as an eluent for column chromatography.

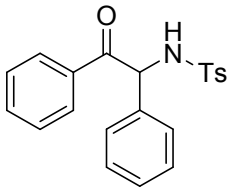
FTIR: 3280, 3057, 2971, 2930, 1672, 1603, 1518, 1407, 1376, 1263, 1163, 1124, 1090, 909, 521 cm^{-1}.

^1H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.78 (d, 2H, J = 8.1 Hz), 7.52 (d, 2H, J = 8.3 Hz), 7.48-7.46 (m, 1H), 7.36-7.32 (m, 2H), 7.09-7.04 (m, 4H), 6.67 (d, 2H, J = 8.8 Hz), 6.23 (d, 1H, J = 4.0 Hz), 5.95 (d, 1H, J = 7.3 Hz), 3.69 (s, 3H), 2.29 (s, 3H).

$^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.7, 159.7, 143.1, 137.6, 133.9, 133.9, 129.5, 129.4, 129.0, 128.7, 127.7, 127.0, 114.5, 61.2, 55.3, 21.5.

HRMS: calcd. for $C_{22}H_{21}NO_4S$+Na: 418.1083; found: 418.1072.

4-Methyl-_N_-(2-oxo-1,2-diphenylethyl)benzenesulfonamide (2s):



According to the general procedure the product was isolated in 47% yield (12 h) using the mixture of hexanes/ ethyl acetate (85:15) as an eluent for column chromatography.

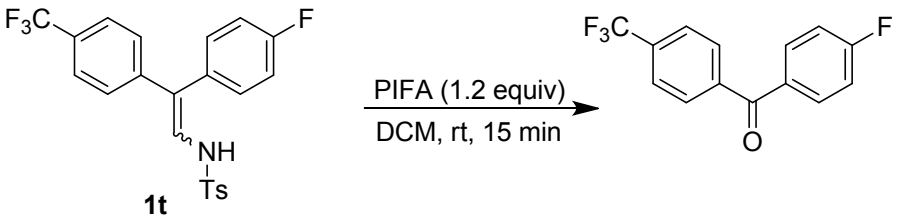
FTIR: 3286, 3057, 2926, 2854, 1687, 1597, 1450, 1336, 1283, 1263, 1161, 1092, 1164, 986, 813, 700, 539 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.79 (d, 2H, *J* = 8.3 Hz), 7.52 (d, 2H, *J* = 8.3 Hz), 7.48 (d, 1H, *J* = 7.5 Hz), 7.37-7.33 (m, 2H), 7.17 (s, 5H), 7.05 (d, 2H, *J* = 8.1 Hz), 6.23 (d, 1H, *J* = 7.3 Hz), 5.99 (d, 1H, *J* = 7.4 Hz), 2.29 (s, 3H).

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.7, 143.2, 137.5, 135.8, 134.0, 133.9, 129.4, 129.2, 129.0, 128.8, 128.5, 128.2, 127.0, 61.8, 21.5.

HRMS: calcd. for $C_{21}H_{19}NO_3S$+Na: 388.0978; found: 388.0985.

Synthesis of (4-fluorophenyl)(4-(trifluoromethyl)phenyl)methanone:



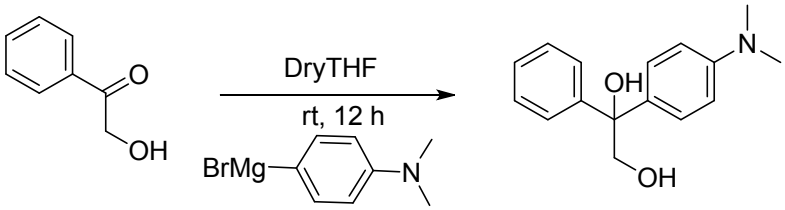
According to the general procedure the product was isolated in 60% yield using the mixture of hexanes/ ethyl acetate (96:4) as an eluent for column chromatography.

FTIR: 2925, 2854, 1716, 1627, 1596, 1505, 1385, 1350, 1130, 1067, 862, 770 cm^{-1}.

^{1}H NMR (500 MHz, $CDCl_3$, 24 °C): δ 7.87-7.83 (m, 4H), 7.76 (d, 2H, *J* = 8.1 Hz), 7.20-7.17 (m, 2H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$, 24 °C): δ 194.2, 165.9 (d, *J* = 255.6 Hz), 140.7, 133.9 (q, *J* = 32.6 Hz), 133.1 (d, *J* = 3.2 Hz), 132.9 (d, *J* = 9.3 Hz), 125.5 (q, *J* = 3.6 Hz), 123.7 (q, *J* = 272.5 Hz), 115.9 (d, *J* = 22.0 Hz).

6. Synthesis of 1-(4-(dimethylamino)phenyl)-1-phenylethane-1,2-diol :



Preparation of Grignard: To an oven dried 50 mL two-neck round bottom flask equipped with stir bar, activated magnisum turnings (4.2 equiv) was added followed by 1 mL of dry THF. To the mixture

1M solution of 4-bromo-*N*,*N*-dimethyl aniline (4 equiv) in THF was added slowly (for initiating the reaction 1,2-dibromoethane was used) at room temperature and the temperature of the reaction was mentioned around 35-40 °C.

After preparation of Grignard reagent, α–hydroxyacetophenone (408 mg, 3 mmol, 1 equiv) was dissolved in dry THF (3 mL) to that Grignard reagent was added slowly at room temperature. The reaction mixture was stirred for another 12 h at room temperature for the complete consumption of starting material. After 12 h, the reaction mixture was quenched with the addition of saturated NH_4Cl solution and extracted with ethyl acetate. The combined organic layer was dried over Na_2SO_4 and solvent was under reduced pressure. The crude compound obtained was purified by column chromatography to afford the product in 70% yield using the mixture of hexanes/ ethyl acetate (81:19) as an eluent for column chromatography.

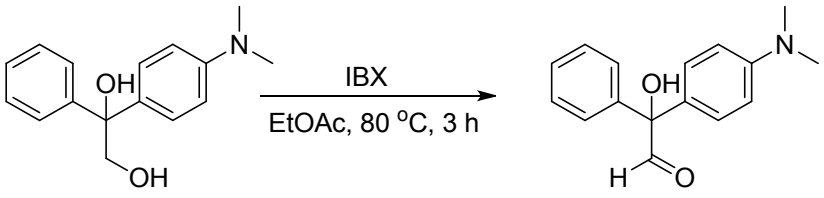
FTIR: 3414, 2803, 1603, 1513, 1452, 1352, 1274, 1221, 1121, 1054, 942, 820, 711, 559 cm^{-1}.

^1H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.40 (d, 2H, J = 7.5 Hz), 7.30 (t, 2H, J = 7.0 Hz), 7.25-7,23 (m, 3H), 6.67 (d, 2H, J = 7.5 Hz), 4.08 (q, 2H, J = 11.5 Hz), 2.90 (s, 6H), 2.44 (bs, 2H).

$^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$, 24 °C): δ 149.9, 144.4, 131.6, 128.4, 127.5, 127.3, 126.5, 112.4, 78.5, 69.7, 40.6.

HRMS: calcd. for $C_{16}H_{19}NO_2$+H: 258.1489; found: 258.1507.

7. Synthesis of 2-(4-(dimethylamino)phenyl)-2-hydroxy-2-phenylacetaldehyde.



To an oven dried 25 mL round bottom flask equipped with stir bar, 1,2-diol (257mg, 1 mmol, 1 equiv) was added and dissolved in 10 mL of dry EtOAc. Next, IBX (1.2 equiv) was added under the nitrogen atmosphere and the reaction mixture was stirred at 80 °C for 3 h. After the complete consumption of starting material, the reaction mixture was cool to room temperature and filtered through the short pad

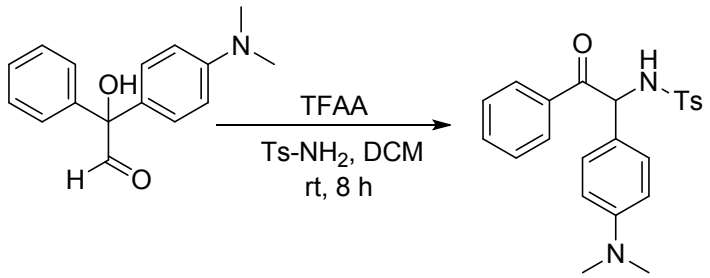
of Celite using EtOAc. Evaporation of solvent followed by purification of the crude compound by column chromatography furnished the product in 60% yield using the mixture of hexanes/ ethyl acetate (98:02) as an eluent for column chromatography.

^{1}H NMR (500 MHz, $CDCl_3$, 24 °C): δ 9.79 (s, 1H), 7.32-7.27 (m, 4H), 7.25-7,23 (m, 1H), 7.06 (d, 2H, *J* = 8.8 Hz), 6.60 (d, 2H, *J* = 8.8 Hz), 2.96 (s, 1H), 2.84 (s, 6H).

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$, 24 °C): δ 198.2, 150.4, 139.6, 132.8, 128.7, 128.5, 128.2, 127.5, 112.4, 83.3, 40.4.

HRMS: calcd. for $C_{16}H_{18}NO_2$+H: 256.1332; found: 256.1332.

8. Synthesis of *N*-(1-(4-(dimethylamino)phenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide (2v):



To an oven dried 25 mL round bottom flask equipped with stir bar, *α*-hydroxyaldehyde (128mg, 0.5 mmol, 1 equiv) was added followed by 10 mL of dry DCM and $TsNH_2$ (1.1 equiv) under the nitrogen atmosphere. The mixture was stirrer at room temperature for 5 mins, subsequently trifluoroacetic anhydride (TFAA, 1.1 equiv) was added and stirred at the same temperature for 8 h. The reaction mixture was diluted with DCM (10 mL) and washed with saturated sodium bicarbonate solution. After the evaporation of solvent, the crude product was purified by column chromatography to give the product in 56% yield using the mixture of hexanes/ ethyl acetate (85:15) as an eluent for column chromatography.

Mp: 108-110 ºC

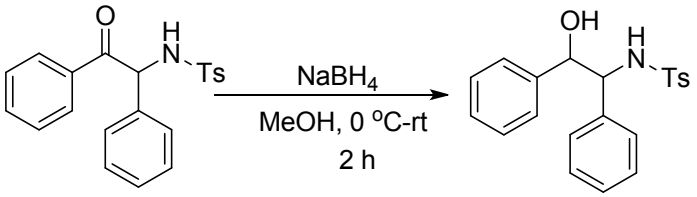
FTIR (KBr): 3265, 3057, 2982, 2927, 1684, 1606, 1523, 1336, 1269, 1160,986, 813, 736, 559 cm^{-1}.

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C): δ 7.79 (d, 2H, *J* = 8.52 Hz), 7.52 (d, 2H, *J* = 8.32 Hz), 7.48-7.44 (m, 1H), 7.35-7.31 (m, 2H), 7.04 (d, 2H, *J* = 8.1 Hz), 6.99 (d, 2H, *J* = 8.8 Hz), 6.46 (d, 2H, *J* = 8.8 Hz), 6.11 (d, 1H, *J* = 7.5 Hz), 5.90 (d, 1H, *J* = 7.5 Hz), 2.85 (s, 6H), 2.29 (s, 3H).

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C): δ 194.8, 150.5, 142.8, 137.8, 134.2, 133.7, 129.3, 129.1, 129.0, 128.7, 127.1, 122.6, 112.6, 61.5, 40.3, 21.5.

HRMS: calcd.for $C_{23}H_{24}N_2O_3S$+H: 409.1580; found: 409.1589.

9. Synthesis of *N*-(2-hydroxy-1,2-diphenylethyl)-4-methylbenzenesulfonamide :



To an oven dried 25 mL round bottom flask equipped with stir bar, *α*-amino ketone (40mg, 0.1 mmol, 1 equiv) was added followed by 2 mL of dry MeOH under the nitrogen atmosphere. The mixture was cooled to 0 °C in an ice both and stirrer for 5 mins. Subsequently, $NaBH_4$ (3 equiv) was added at the same temperature. After the addition, the reaction mixture was slowly warmed to room temperature and stirred for 2 h. The reaction mixture was quenched by saturated NH_4Cl solution, extracted with ethyl acetate and dried over Na_2SO_4. Evaporation of solvent followed by purification of the crude compound by column chromatography afforded the product in 81% yield using the mixture of hexanes/ ethyl acetate (81:19) as an eluent for column chromatography.

Mp: 208-210 ºC

FTIR (KBr): 3472, 3323, 2923, 2854, 1627, 1406, 1313, 1120, 700, 618, 566, 542 cm^{-1}.

^{1}H NMR (400 MHz, DMSO-d_6, 24 °C): δ 8.15 (d, 1H, *J* = 9.3 Hz), 7.35 (d, 2H, *J* = 8.2 Hz), 7.25-7.24 (m, 2H), 7.19-7.18 (m, 2H), 7.13-7.08 (m, 8H), 5.42 (d, 1H, *J* = 4.8 Hz), 4.68 (dd, 1H, *J* = 5.2, 6.2 Hz), 4.34 (dd, 1H, *J* = 6.8, 9.0 Hz), 2.32 (s, 3H).

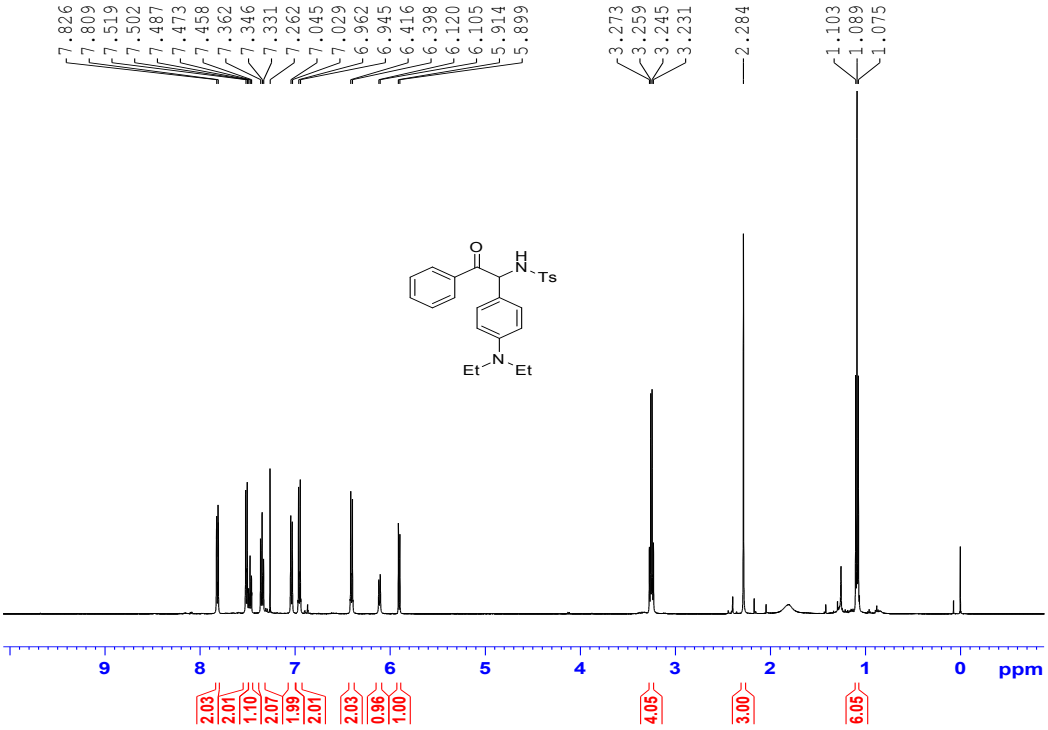
^{13}C{^{1}H} NMR (100 MHz, DMSO-d_6, 24 °C): δ 142.6, 141.6, 138.8, 138.6, 128.8, 128.2, 127.5, 127.0, 126.9, 126.7, 126.4, 126.1, 75.3, 63.3, 20.8.

HRMS: calcd. for $C_{21}H_{21}NO_3S$+Na: 390.1134; found: 390.1126.

10. NMR spectra of isolated α-amino ketones :

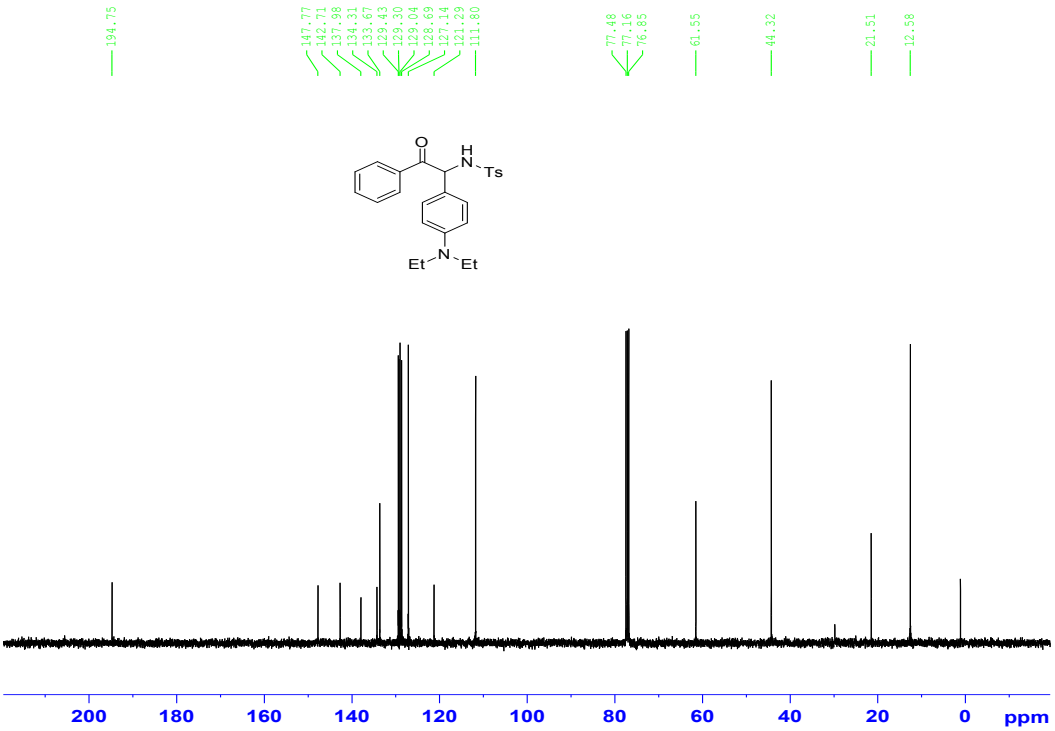
N-(1-(4-(Diethylamino)phenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide(2a) :

^{1}H NMR (500 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                  spa50813
EXPNO                      235
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20130828
Time_                    16.10
INSTRUM                  spect
PROBHD     5 mm PABBO BB/
PULPROG                  zg30
TD                      32768
SOLVENT                 CDCl3
NS                         32
DS                          2
SWH                 10000.000 Hz
FIDRES                0.305176 Hz
AQ                    1.6384500 sec
RG                       114.76
DW                       50.000 usec
DE                        6.50 usec
TE                       298.2 K
D1                    0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
SFO1                500.1525008 MHz
NUC1                        1H
P1                       11.75 usec
PLW1                15.30000019 W

F2 - Processing parameters
SI                       65536
SF                  500.1500114 MHz
WDW                         EM
SSB                  0
LB                       0.30 Hz
GB                   0
PC                       1.00
```

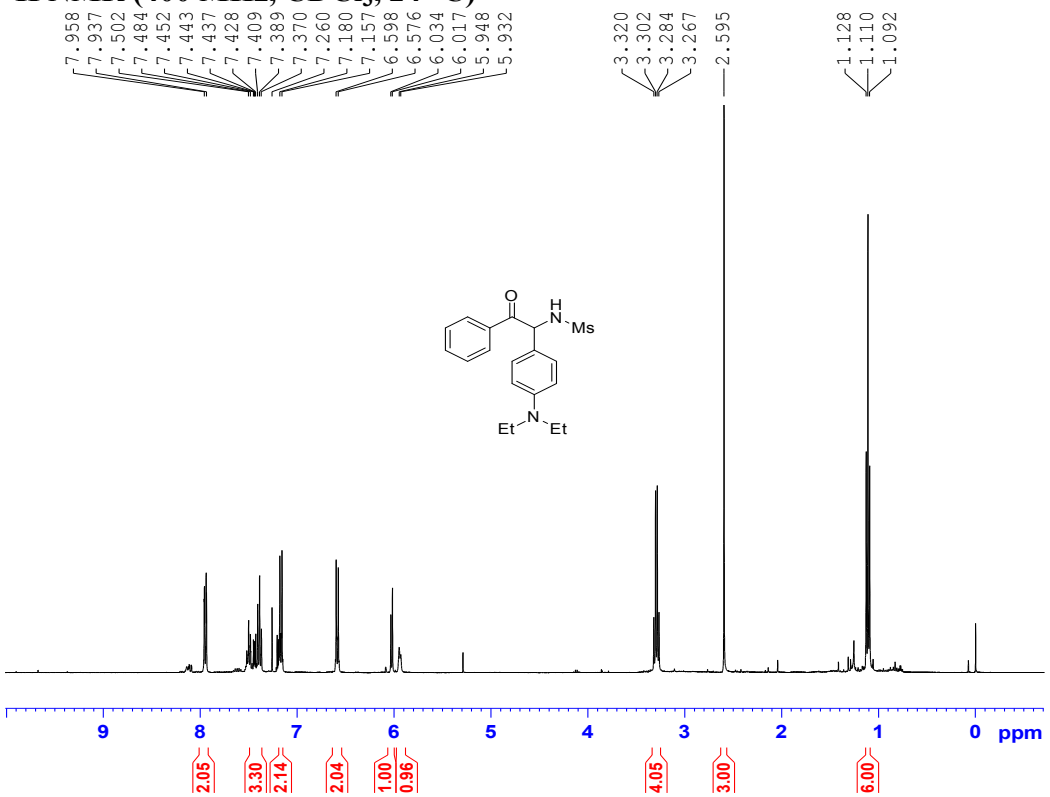
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24°C)




```
Current Data Parameters
NAME                  spa40813
EXPNO                      461
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20130827
Time_                    16.50
INSTRUM                  spect
PROBHD     5 mm PABBO BB-
PULPROG                zgpg30
TD                      16540
SOLVENT                 CDCl3
NS                        512
DS                          4
SWH                 24038.461 Hz
FIDRES                1.453353 Hz
AQ                    0.3440820 sec
RG                       200.34
DW                       20.800 usec
DE                        6.50 usec
TE                       297.5 K
D1                    1.00000000 sec
D11                   0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        13C
P1                        9.25 usec
PLW1                47.00000000 W
SFO1                100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                 waltz16
NUC2                        1H
PCPD2                    90.00 usec
PLW2                 7.75000000 W
PLW12                0.23583999 W
PLW13                0.19103000 W
SFO2                400.1316005 MHz

F2 - Processing parameters
SI                       32768
SF                  100.6127572 MHz
WDW                         EM
SSB                  0
LB                       1.00 Hz
GB                   0
PC                       1.40
```

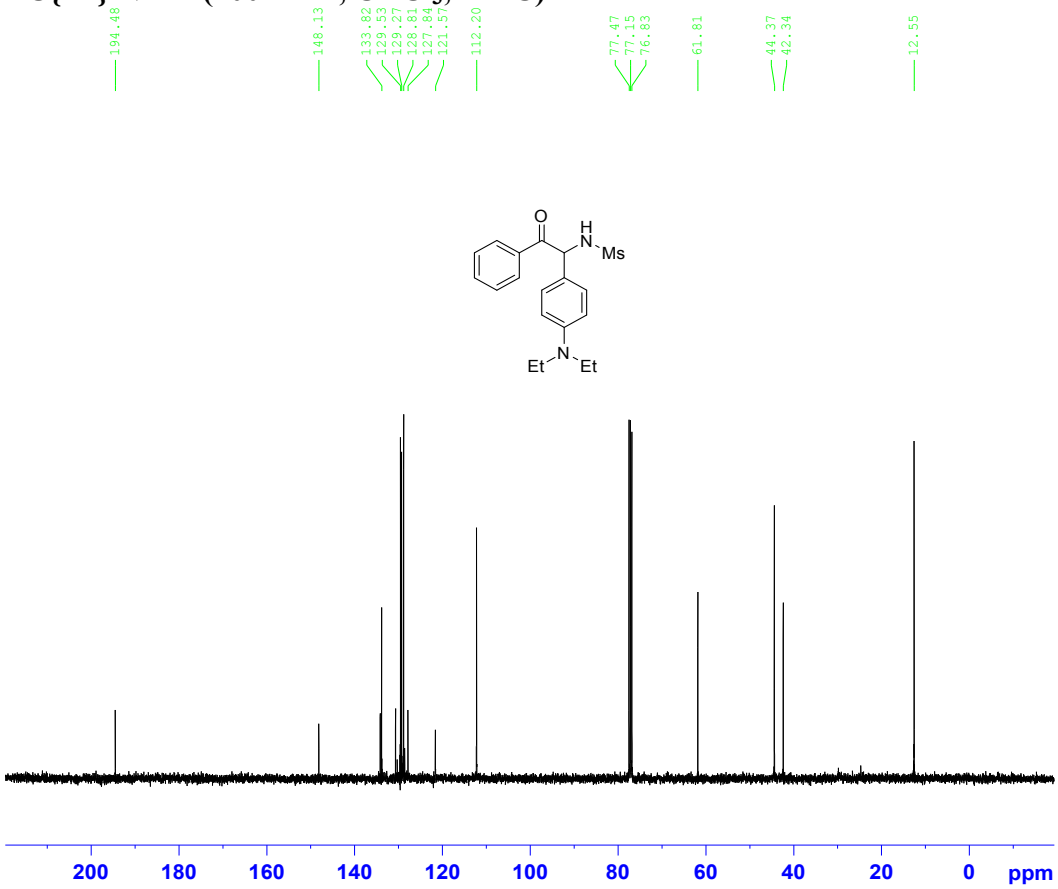
***N*-(1-(4-(Diethylamino)phenyl)-2-oxo-2-phenylethyl)methanesulfonamide(2b):**

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)



```
Current Data Parameters
NAME                  spa40114
EXPNO                      186
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20140109
Time                      3.03
INSTRUM                   spect
PROBHD    5 mm PABBO BB-
PULPROG                   zg30
TD                       65536
SOLVENT                  CDCl3
NS                          16
DS                           2
SWH                   8012.820 Hz
FIDRES                0.122266 Hz
AQ                    4.0894966 sec
RG                       108.26
DW                       62.400 usec
DE                        6.50 usec
TE                       298.0 K
D1                    0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        1H
P1                       15.70 usec
PLW1                7.75000000 W
SFO1              400.1320007 MHz

F2 - Processing parameters
SI                       65536
SF                400.1300095 MHz
WDW                         EM
SSB                  0
LB                        0.30 Hz
GB                   0
PC                        1.00
```

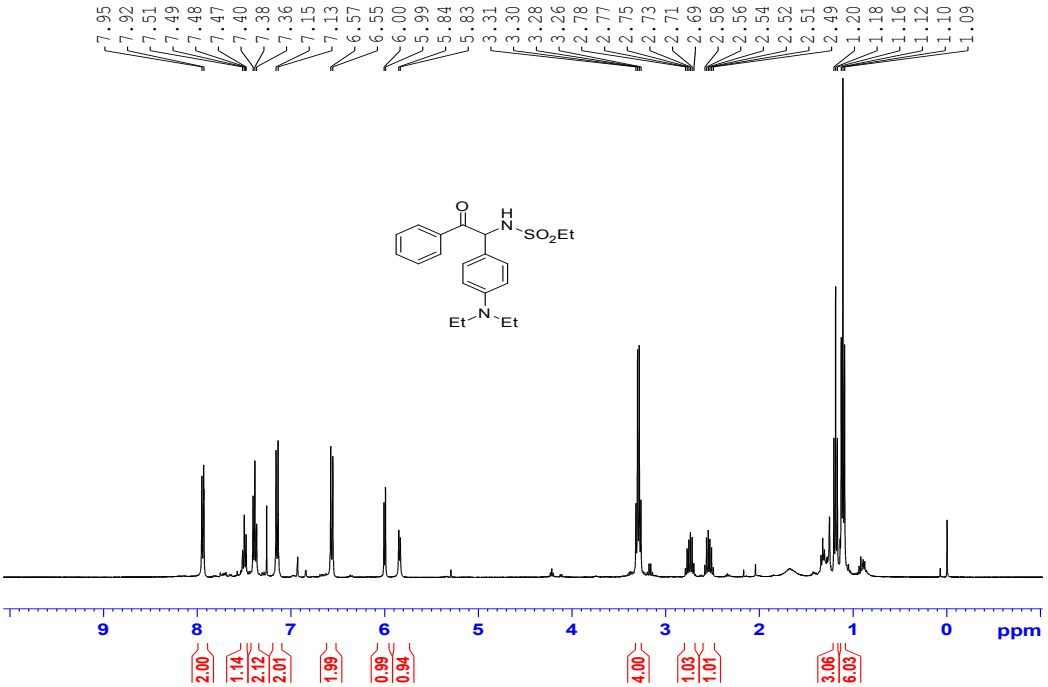
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)



```
Current Data Parameters
NAME                  spa40114
EXPNO                      187
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20140109
Time                      3.16
INSTRUM                   spect
PROBHD    5 mm PABBO BB-
PULPROG                 zgpg30
TD                       16540
SOLVENT                  CDCl3
NS                          512
DS                           4
SWH                  24038.461 Hz
FIDRES                1.453353 Hz
AQ                    0.3440820 sec
RG                       200.34
DW                       20.800 usec
DE                        6.50 usec
TE                       298.0 K
D1                    1.00000000 sec
D11                   0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                        9.25 usec
PLW1               47.00000000 W
SFO1              100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                        1H
PCPD2                    90.00 usec
PLW2                7.75000000 W
PLW12               0.23583999 W
PLW13               0.19103000 W
SFO2              400.1316005 MHz

F2 - Processing parameters
SI                       32768
SF                100.6127583 MHz
WDW                         EM
SSB                  0
LB                        1.00 Hz
GB                   0
PC                        1.40
```

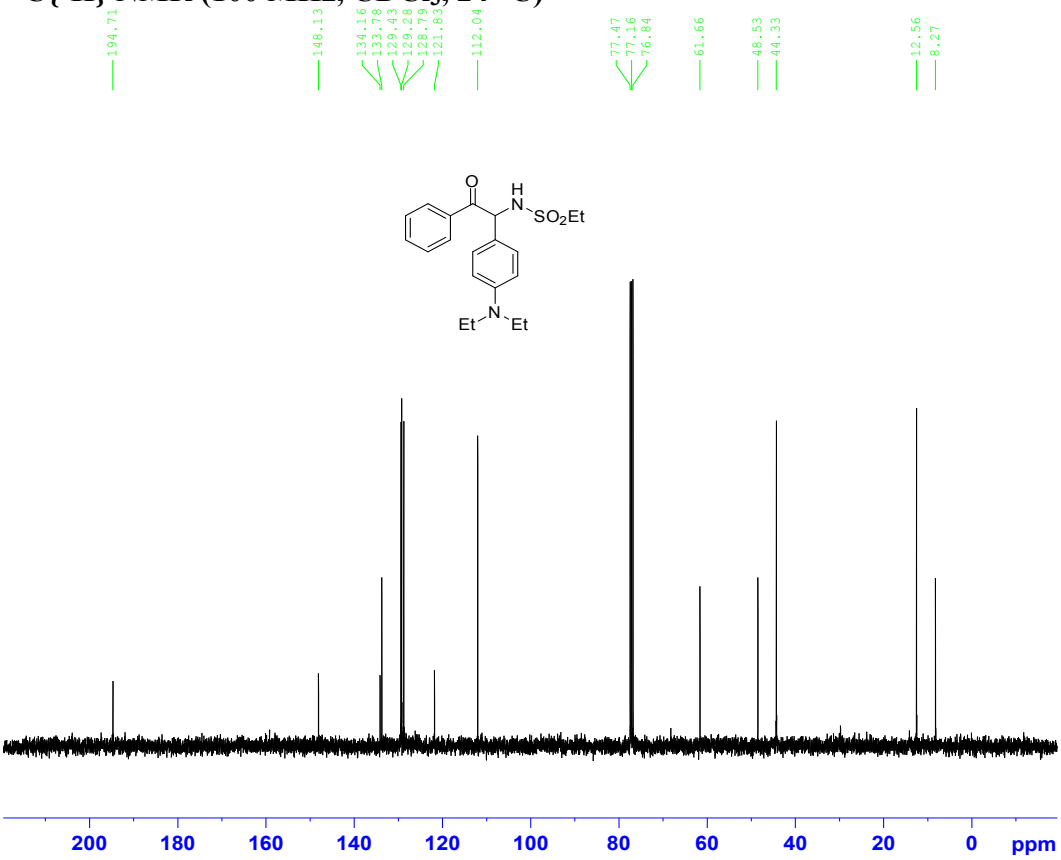
***N*-(1-(4-(Diethylamino)phenyl)-2-oxo-2-phenylethyl)ethanesulfonamide(2c):**

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)



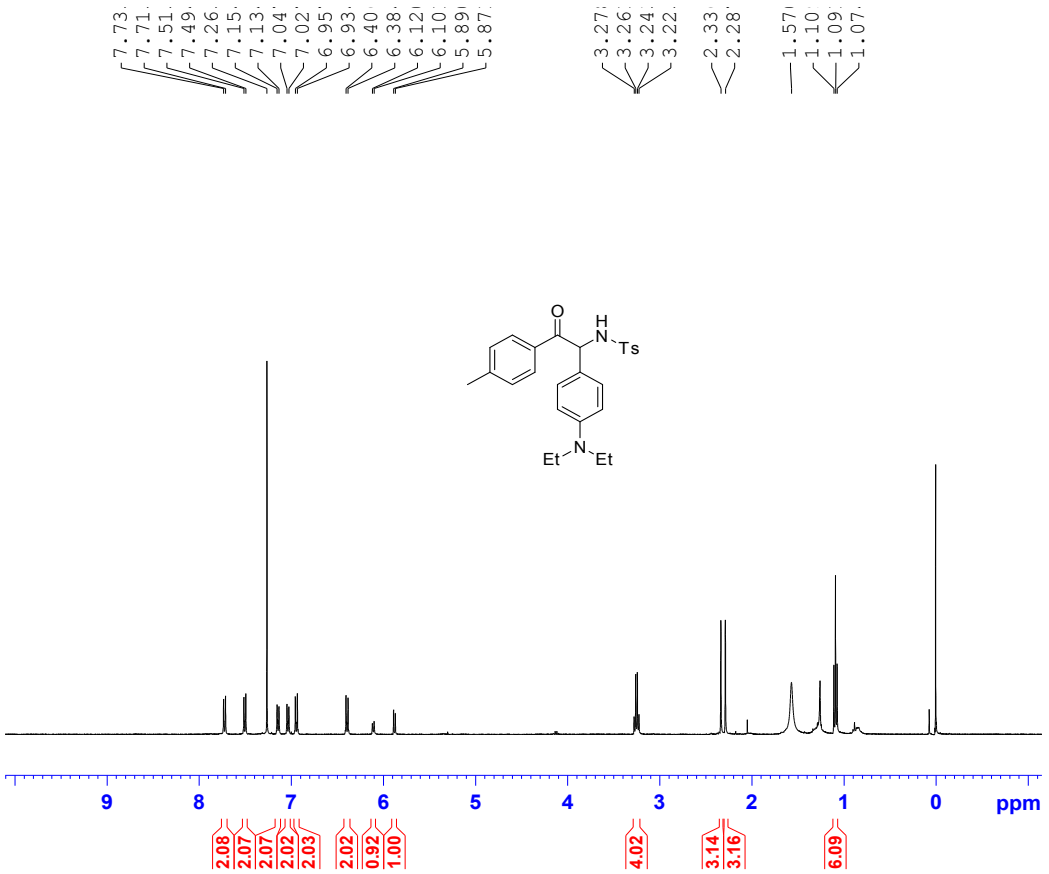

```
Current Data Parameters
NAME                  spa40714
EXPNO                      690
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20140721
Time_                    20.52
INSTRUM                  spect
PROBHD     5 mm PABBO BB-
PULPROG                  zg30
TD                      65536
SOLVENT                 CDCl3
NS                         16
DS                          2
SWH                  8012.820 Hz
FIDRES               0.122266 Hz
AQ                   4.0894966 sec
RG                      138.85
DW                      62.400 usec
DE                       6.50 usec
TE                  0 K
D1                   0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        1H
P1                       15.70 usec
PLW1                 7.75000000 W
SFO1               400.1320007 MHz

F2 - Processing parameters
SI                      65536
SF                 400.1300099 MHz
WDW                        EM
SSB                 0
LB                       0.30 Hz
GB                  0
PC                       1.00
```

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)



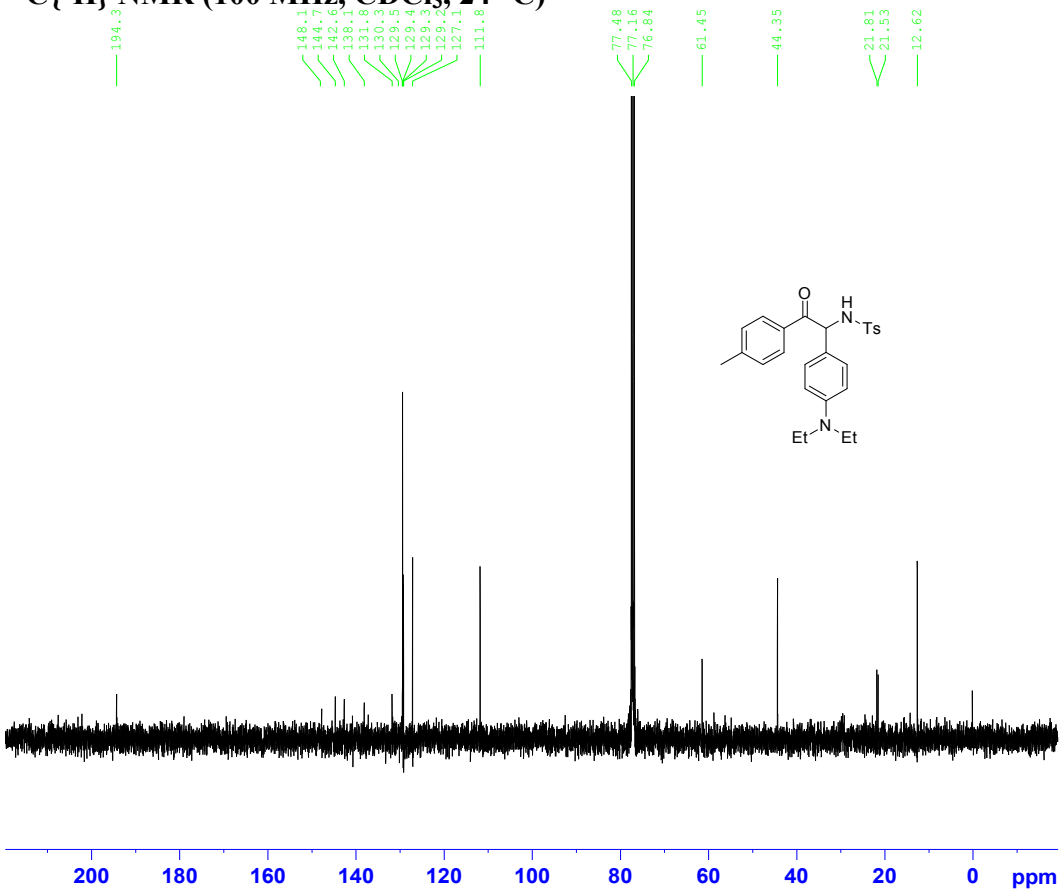

```
Current Data Parameters
NAME                  spa40714
EXPNO                      683
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20140721
Time_                    13.44
INSTRUM                  spect
PROBHD     5 mm PABBO BB-
PULPROG                 zgpg30
TD                      16540
SOLVENT                 CDCl3
NS                         256
DS                           4
SWH                 24038.461 Hz
FIDRES               1.453353 Hz
AQ                   0.3440820 sec
RG                      200.34
DW                      20.800 usec
DE                       6.50 usec
TE                  0 K
D1                   1.00000000 sec
D11                  0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                       9.25 usec
PLW1                47.00000000 W
SFO1               100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                        1H
PCPD2                   90.00 usec
PLW2                 7.75000000 W
PLW12                0.23583999 W
PLW13                0.19103000 W
SFO2               400.1316005 MHz

F2 - Processing parameters
SI                      32768
SF                 100.6127580 MHz
WDW                        EM
SSB                 0
LB                       1.00 Hz
GB                  0
PC                       1.40
```

***N*-(1-(4-(Diethylamino)phenyl)-2-oxo-2-(p-tolyl)ethyl)-4-methylbenzenesulfonamide(2d):**
^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME            spa40615
EXPNO                707
PROCNO                 1

F2 - Acquisition Parameters
Date_           20150626
Time                6.41
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH             8012.820 Hz
FIDRES          0.122266 Hz
AQ              4.0894966 sec
RG                200.34
DW                62.400 usec
DE                 6.50 usec
TE                298.8 K
D1              0.50000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                15.70 usec
PLW1           7.75000000 W
SFO1         400.1320007 MHz

F2 - Processing parameters
SI                 65536
SF           400.1300075 MHz
WDW                   EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```

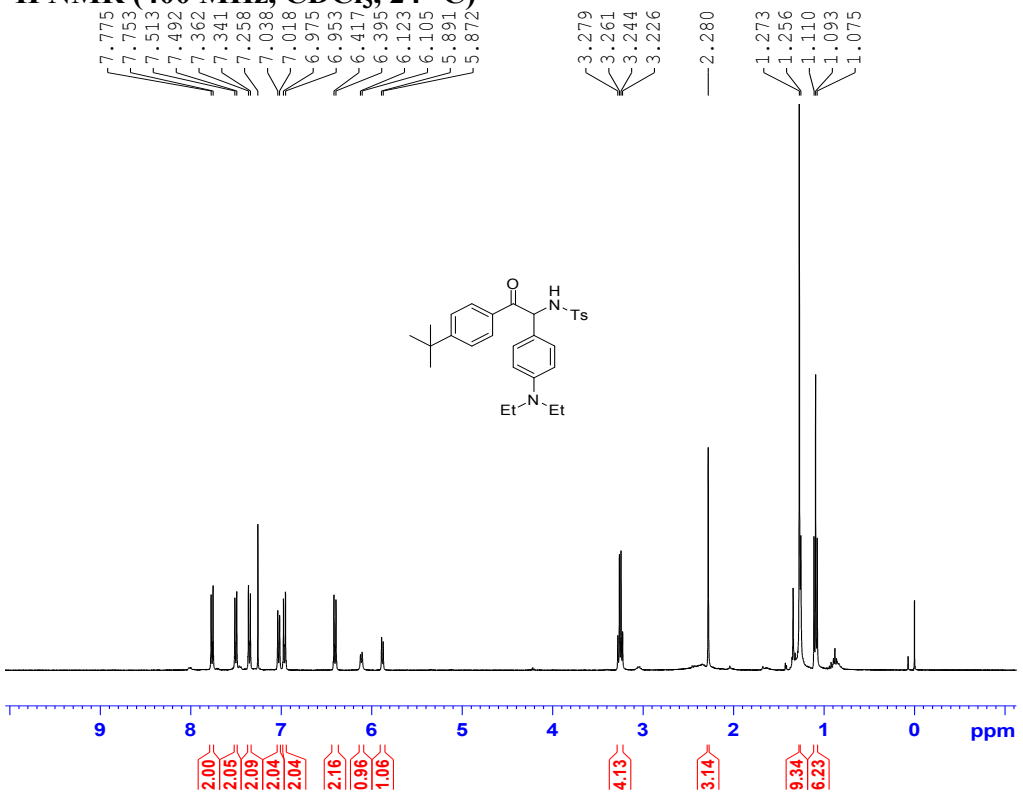
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME            spa40615
EXPNO                802
PROCNO                 1

F2 - Acquisition Parameters
Date_           20150630
Time                2.07
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                 16540
SOLVENT            CDCl3
NS                  3000
DS                     4
SWH            24038.461 Hz
FIDRES          1.453353 Hz
AQ              0.3440820 sec
RG                200.34
DW                20.800 usec
DE                 6.50 usec
TE                300.1 K
D1              1.00000000 sec
D11             0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.25 usec
PLW1          47.00000000 W
SFO1         100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                  1H
PCPD2             90.00 usec
PLW2           7.75000000 W
PLW12          0.23583999 W
PLW13          0.19103000 W
SFO2         400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF           100.6127690 MHz
WDW                   EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

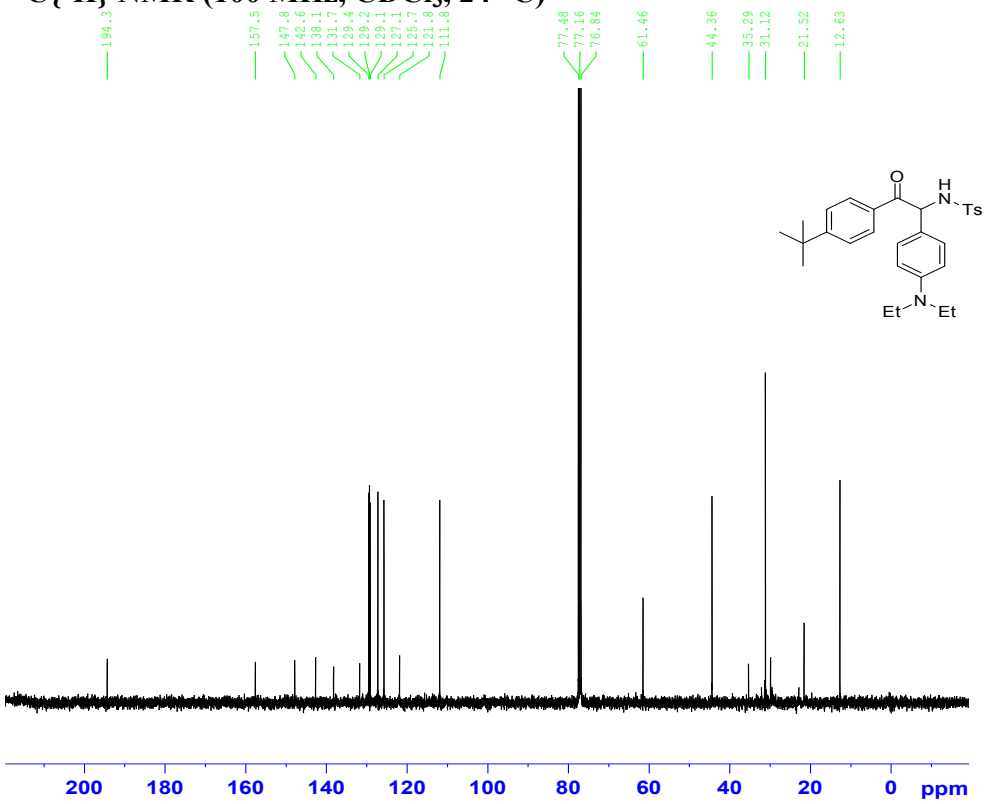
N-(2-(4-(Tert-butyl)phenyl)-1-(4-(diethylamino)ph enyl)-2-oxoethyl)-4-methylbenzenesulfonamide (2e):

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                  spa40615
EXPNO                      524
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20150621
Time                     19.04
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                  zg30
TD                      65536
SOLVENT                 CDCl3
NS                         16
DS                          2
SWH                  8012.820 Hz
FIDRES               0.122266 Hz
AQ                   4.0894966 sec
RG                      200.34
DW                      62.400 usec
DE                       6.50 usec
TE                      302.7 K
D1                   0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        1H
P1                       15.70 usec
PLW1                 7.75000000 W
SFO1               400.1320007 MHz

F2 - Processing parameters
SI                      65536
SF                 400.1300102 MHz
WDW                        EM
SSB                 0
LB                       0.30 Hz
GB                  0
PC                       1.00
```

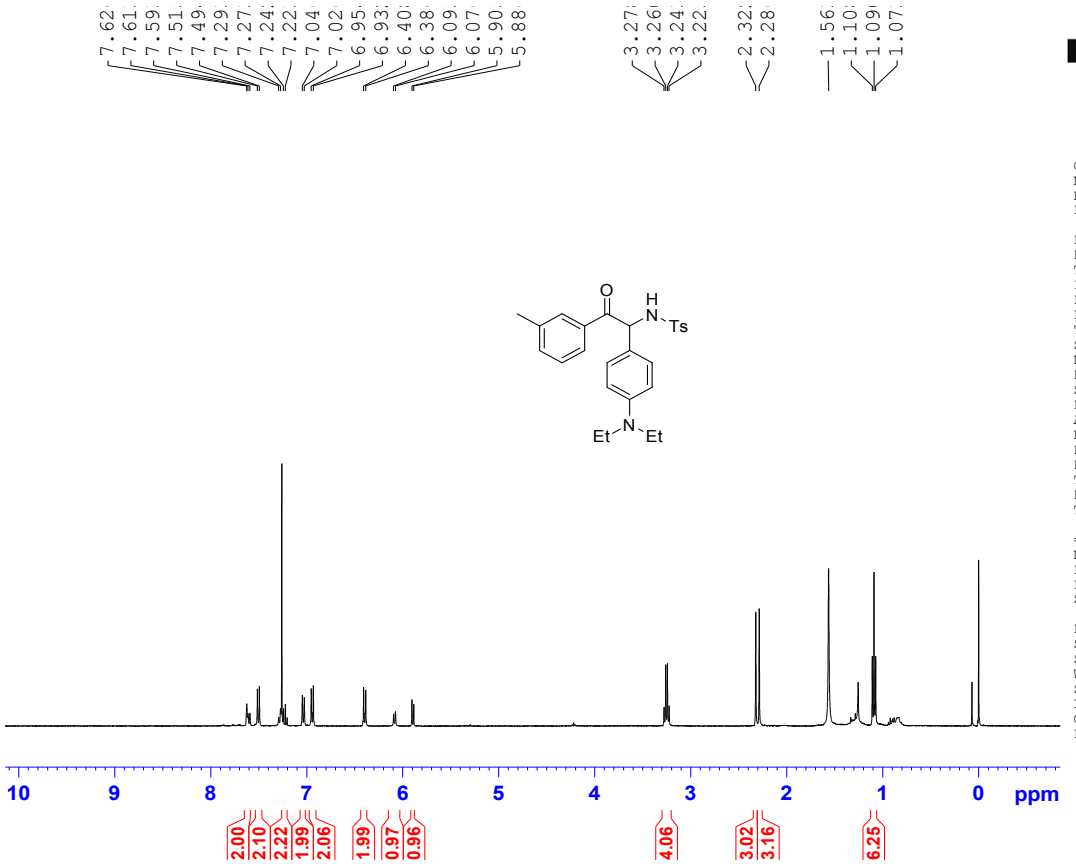
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                  spa40615
EXPNO                      572
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20150622
Time                     21.12
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                 zgpg30
TD                      16540
SOLVENT                 CDCl3
NS                        1300
DS                           4
SWH                 24038.461 Hz
FIDRES               1.453353 Hz
AQ                   0.3440820 sec
RG                      200.34
DW                      20.800 usec
DE                       6.50 usec
TE                      303.6 K
D1                   1.00000000 sec
D11                  0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                       9.25 usec
PLW1                47.00000000 W
SFO1               100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                        1H
PCPD2                   90.00 usec
PLW2                 7.75000000 W
PLW12                0.23583999 W
PLW13                0.19103000 W
SFO2               400.1316005 MHz

F2 - Processing parameters
SI                      32768
SF                 100.6127525 MHz
WDW                        EM
SSB                 0
LB                       1.00 Hz
GB                  0
PC                       1.40
```

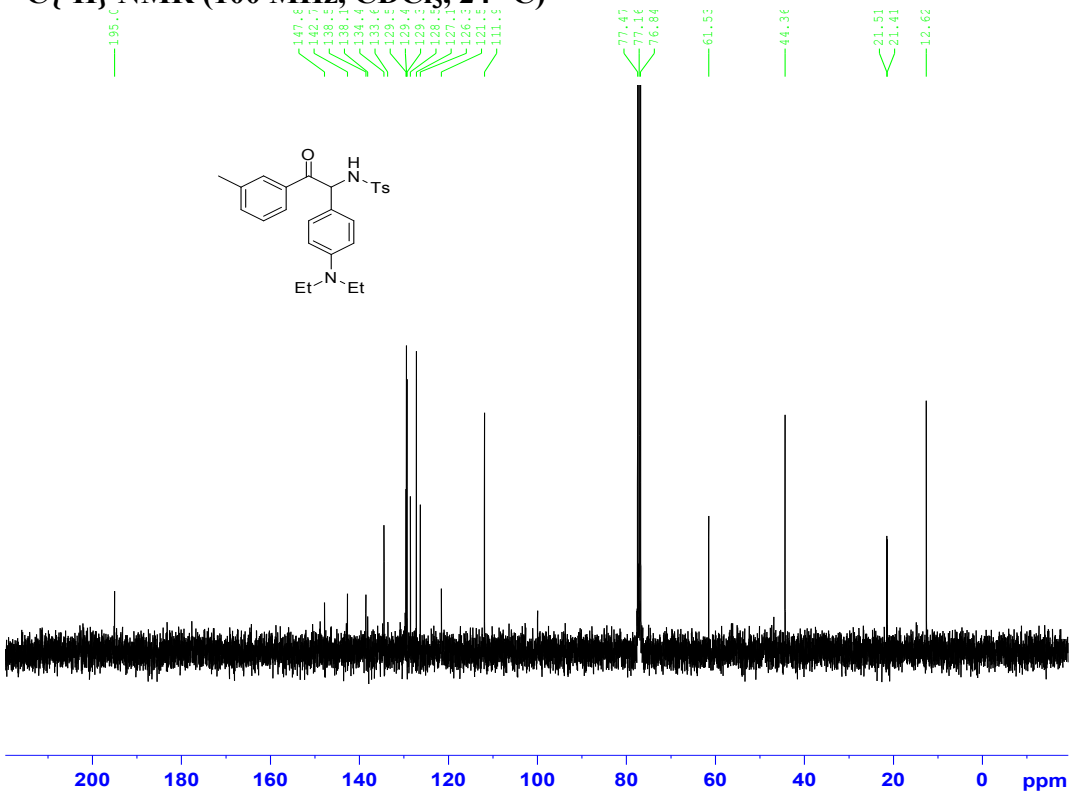
N-(1-(4-(Diethylamino)phenyl)-2-oxo-2-(m-tolyl)ethyl)-4-methylbenzenesulfonamide(2f):

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)



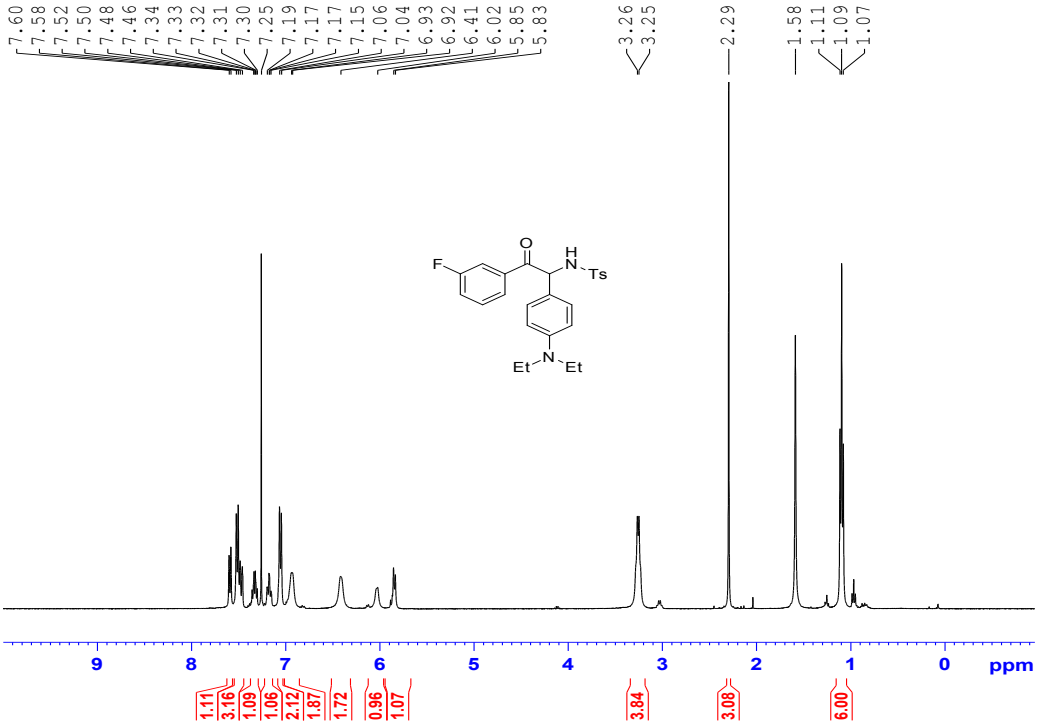

```
Current Data Parameters
NAME            spa40615
EXPNO                814
PROCNO                 1

F2 - Acquisition Parameters
Date_           20150630
Time               12.46
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                     7
DS                     2
SWH             8012.820 Hz
FIDRES          0.122266 Hz
AQ              4.0894966 sec
RG                200.34
DW                62.400 usec
DE                 6.50 usec
TE                298.4 K
D1              0.50000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                15.70 usec
PLW1          7.75000000 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                 65536
SF          400.1300092 MHz
WDW                   EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)



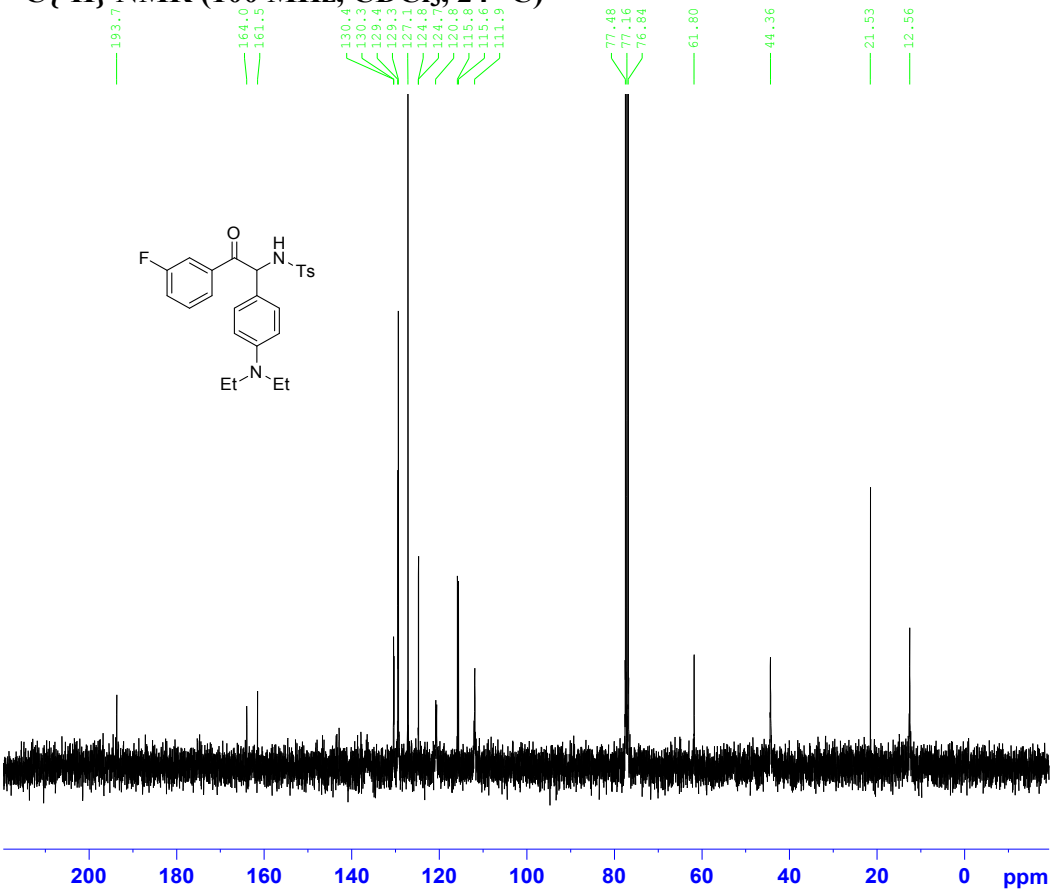

```
Current Data Parameters
NAME            spa40913
EXPNO                542
PROCNO                 1

F2 - Acquisition Parameters
Date_           20130925
Time               16.17
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                 16540
SOLVENT            CDCl3
NS                   750
DS                     4
SWH            24038.461 Hz
FIDRES          1.453353 Hz
AQ              0.3440820 sec
RG                200.34
DW                20.800 usec
DE                 6.50 usec
TE                303.8 K
D1              1.00000000 sec
D11             0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                 13C
P1                9.25 usec
PLW1         47.00000000 W
SFO1        100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                  1H
PCPD2             90.00 usec
PLW2          7.75000000 W
PLW12         0.23583999 W
PLW13         0.19103000 W
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF          100.6127523 MHz
WDW                   EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

***N*-(2-(3-Fluorophenyl)-2-oxo-1-(4-(pentan-3-yl)phenyl)ethyl)-4-methylbenzenesulfonamide(2g):**
^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)



```
Current Data Parameters
NAME                  spa41014
EXPNO                      764
PROCNO                       1

F2 - Acquisition Parameters
Date_              20141021
Time                   14.14
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8012.820 Hz
FIDRES             0.122266 Hz
AQ                 4.0894966 sec
RG                    200.34
DW                    62.400 usec
DE                     6.50 usec
TE                    300.0 K
D1                 0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                      1H
P1                     15.70 usec
PLW1              7.75000000 W
SFO1            400.1320007 MHz

F2 - Processing parameters
SI                        65536
SF                400.1300103 MHz
WDW                          EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.00
```

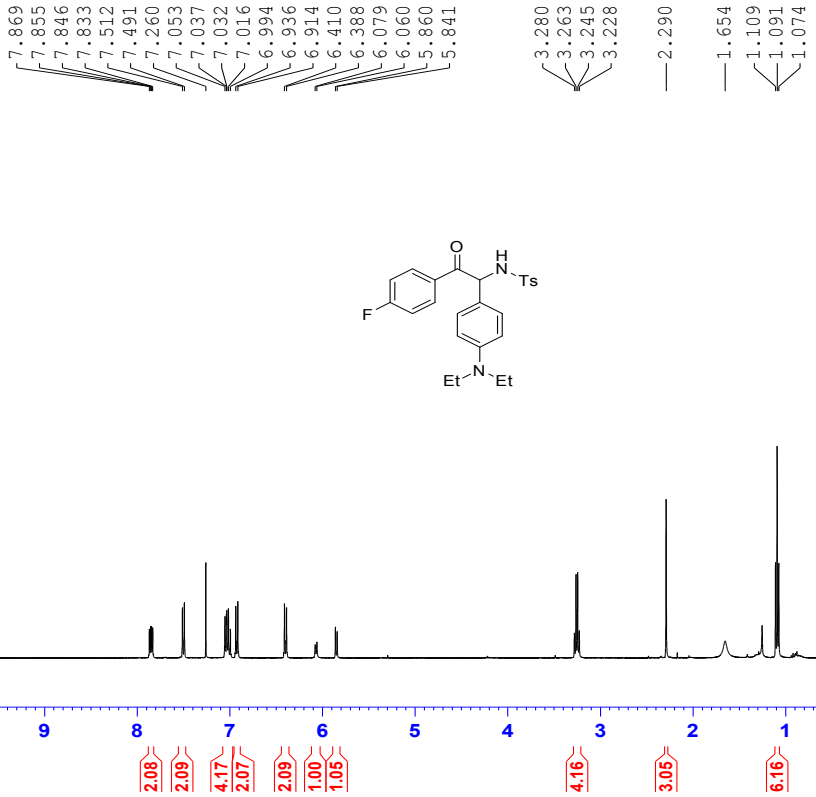
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)



```
Current Data Parameters
NAME                  spa41014
EXPNO                      785
PROCNO                       1

F2 - Acquisition Parameters
Date_              20141022
Time                   14.38
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                    16540
SOLVENT               CDCl3
NS                     1024
DS                        4
SWH               24038.461 Hz
FIDRES             1.453353 Hz
AQ                 0.3440820 sec
RG                    200.34
DW                    20.800 usec
DE                     6.50 usec
TE                    301.1 K
D1                 1.00000000 sec
D11                0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                     13C
P1                      9.25 usec
PLW1             47.00000000 W
SFO1            100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2              waltz16
NUC2                      1H
PCPD2                 90.00 usec
PLW2              7.75000000 W
PLW12             0.23583999 W
PLW13             0.19103000 W
SFO2            400.1316005 MHz

F2 - Processing parameters
SI                        32768
SF              100.6127541 MHz
WDW                          EM
SSB          0
LB                     1.00 Hz
GB           0
PC                     1.40
```

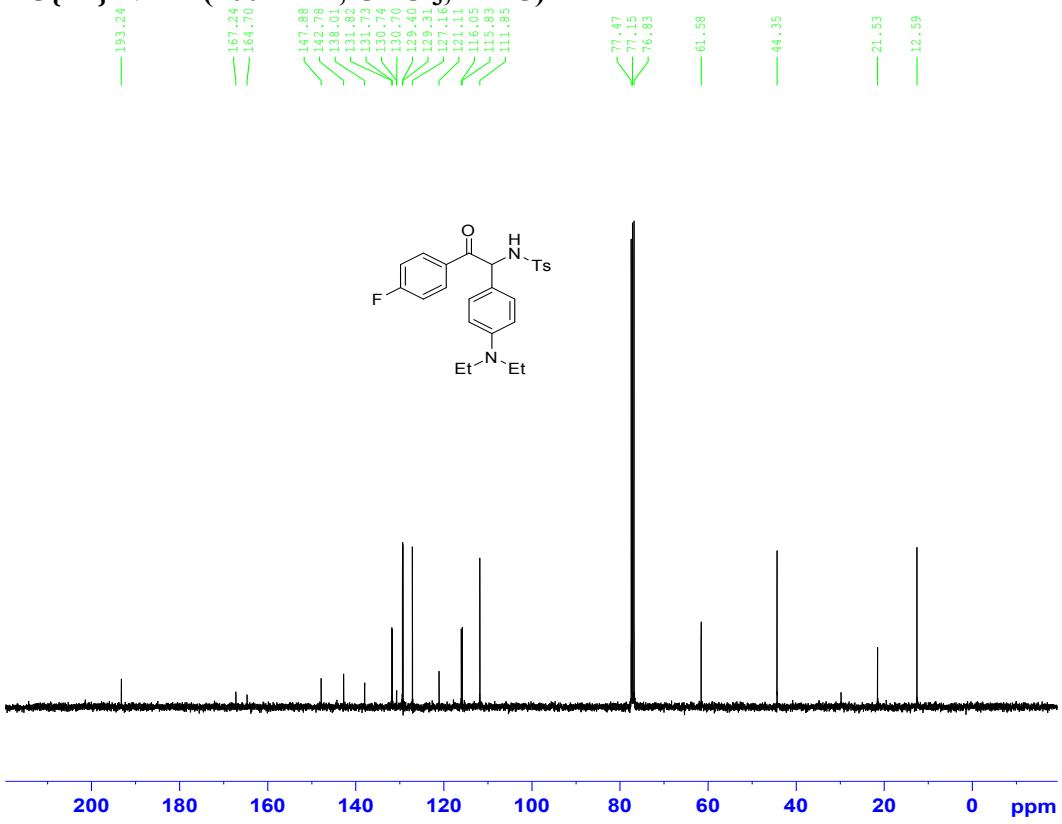
N-(2-(4-Fluorophenyl)-2-oxo-1-(4-(pentan-3-yl)phenyl)ethyl)-4-methylbenzenesulfonamide(2h):

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)



```
Current Data Parameters
NAME                  spa40615
EXPNO                      661
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20150625
Time_                     3.21
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                  zg30
TD                      65536
SOLVENT                 CDCl3
NS                         16
DS                          2
SWH                  8012.820 Hz
FIDRES               0.122266 Hz
AQ                   4.0894966 sec
RG                      200.34
DW                      62.400 usec
DE                       6.50 usec
TE                      297.9 K
D1                   0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        1H
P1                       15.70 usec
PLW1                 7.75000000 W
SFO1               400.1320007 MHz

F2 - Processing parameters
SI                      65536
SF                 400.1300096 MHz
WDW                        EM
SSB                 0
LB                       0.30 Hz
GB                  0
PC                       1.00
```

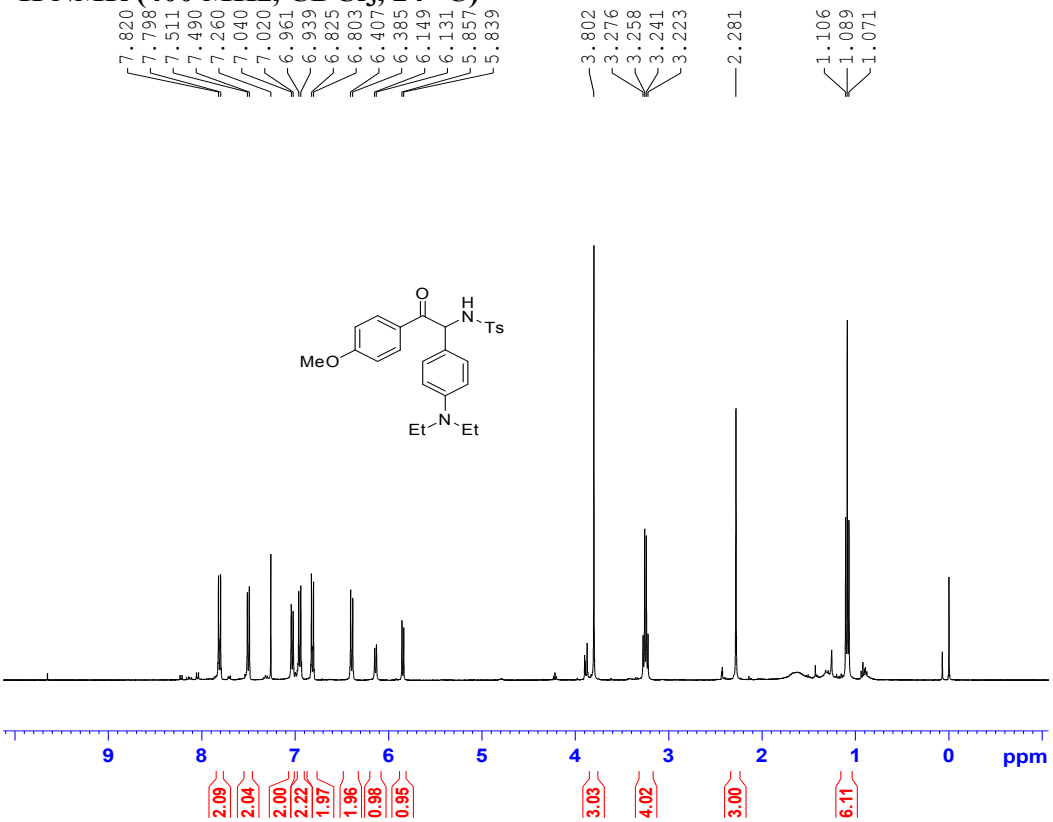
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)



```
Current Data Parameters
NAME                  spa40615
EXPNO                      662
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20150625
Time                      3.58
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                      16540
SOLVENT                 CDCl3
NS                         1500
DS                            4
SWH                 24038.461 Hz
FIDRES               1.453353 Hz
AQ                   0.3440820 sec
RG                      200.34
DW                      20.800 usec
DE                       6.50 usec
TE                      298.6 K
D1                   1.00000000 sec
D11                  0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                        9.25 usec
PLW1                47.00000000 W
SFO1               100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                        1H
PCPD2                    90.00 usec
PLW2                 7.75000000 W
PLW12                0.23583999 W
PLW13                0.19103000 W
SFO2               400.1316005 MHz

F2 - Processing parameters
SI                      32768
SF                 100.6127549 MHz
WDW                        EM
SSB                 0
LB                       1.00 Hz
GB                  0
PC                       1.40
```

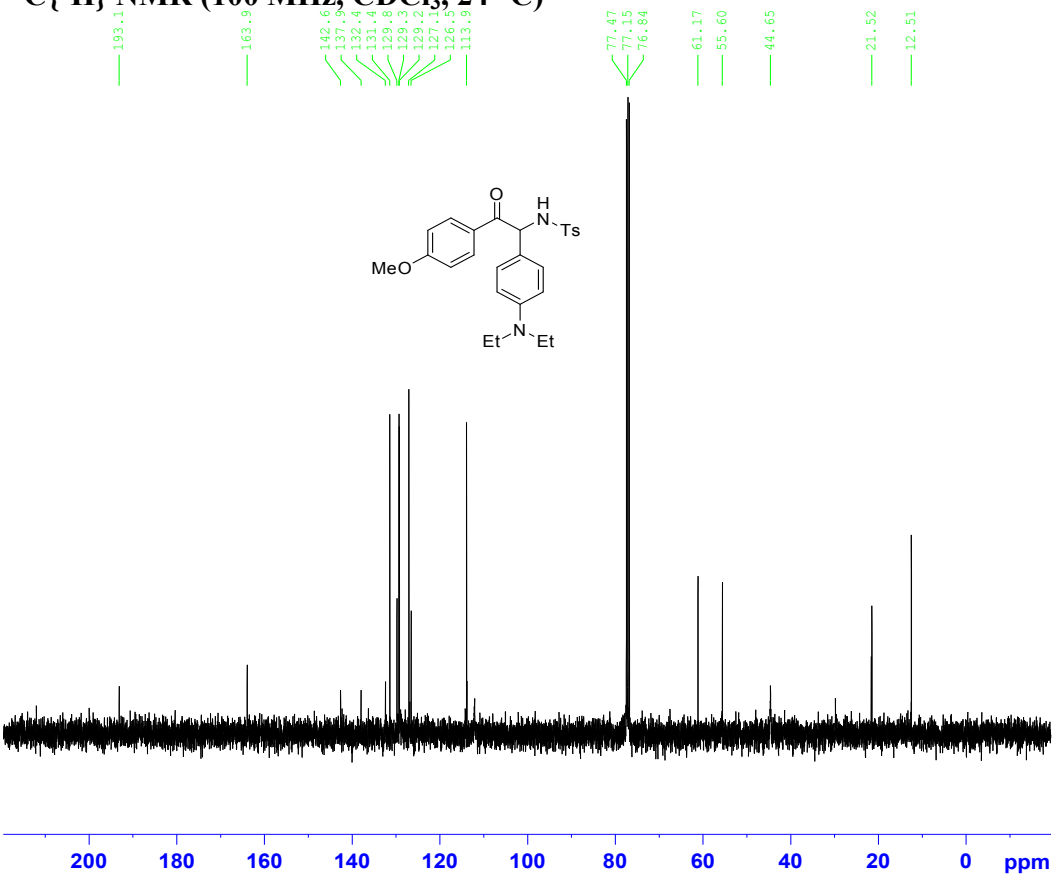
***N*-(1-(4-(Diethylamino)phenyl)-2-(4-methoxyphenyl)-2-oxoethyl)-4-methylbenzenesulfonamide(2i):**

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME            spa41014
EXPNO                502
PROCNO                 1

F2 - Acquisition Parameters
Date_           20141014
Time                15.05
INSTRUM             spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                 200.34
DW                 62.400 usec
DE                  6.50 usec
TE                 300.4 K
D1              0.50000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 15.70 usec
PLW1           7.75000000 W
SFO1         400.1320007 MHz

F2 - Processing parameters
SI                 65536
SF           400.1300096 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```

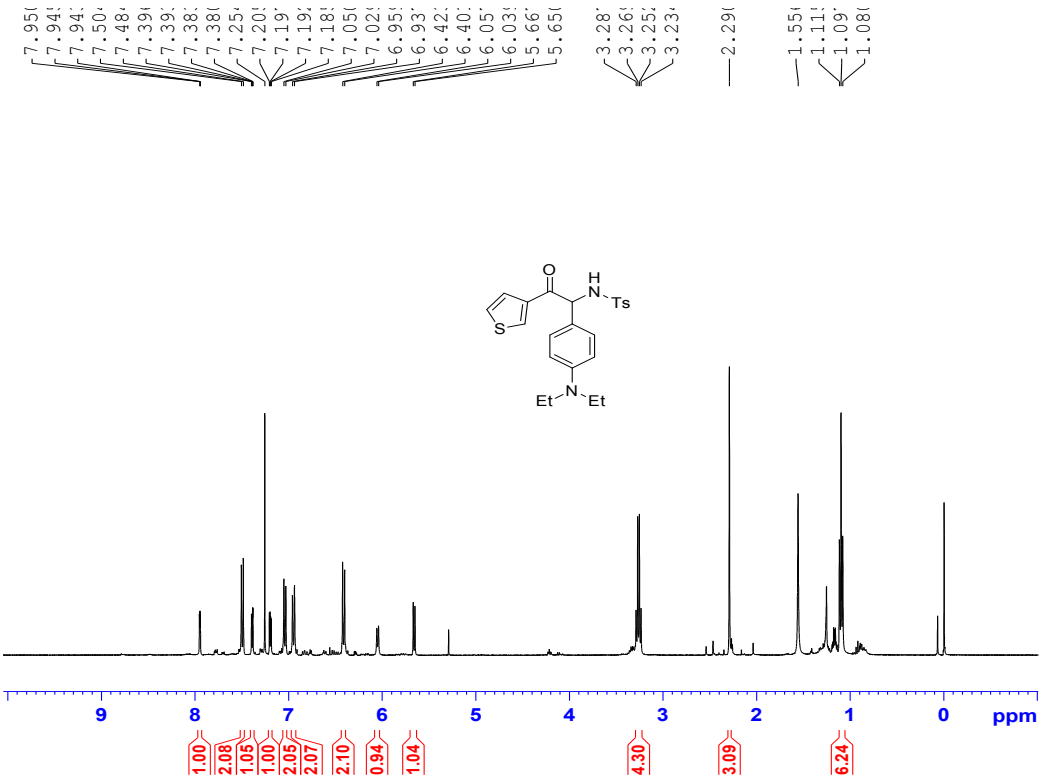
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME            spa40914
EXPNO                105
PROCNO                 1

F2 - Acquisition Parameters
Date_           20140912
Time                10.08
INSTRUM             spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                 16540
SOLVENT            CDCl3
NS                   256
DS                     4
SWH             24038.461 Hz
FIDRES           1.453353 Hz
AQ               0.3440820 sec
RG                 200.34
DW                 20.800 usec
DE                  6.50 usec
TE                 0 K
D1              1.00000000 sec
D11             0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                 13C
P1                  9.25 usec
PLW1           47.00000000 W
SFO1          100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                  1H
PCPD2              90.00 usec
PLW2           7.75000000 W
PLW12          0.23583999 W
PLW13          0.19103000 W
SFO2          400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF           100.6127570 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

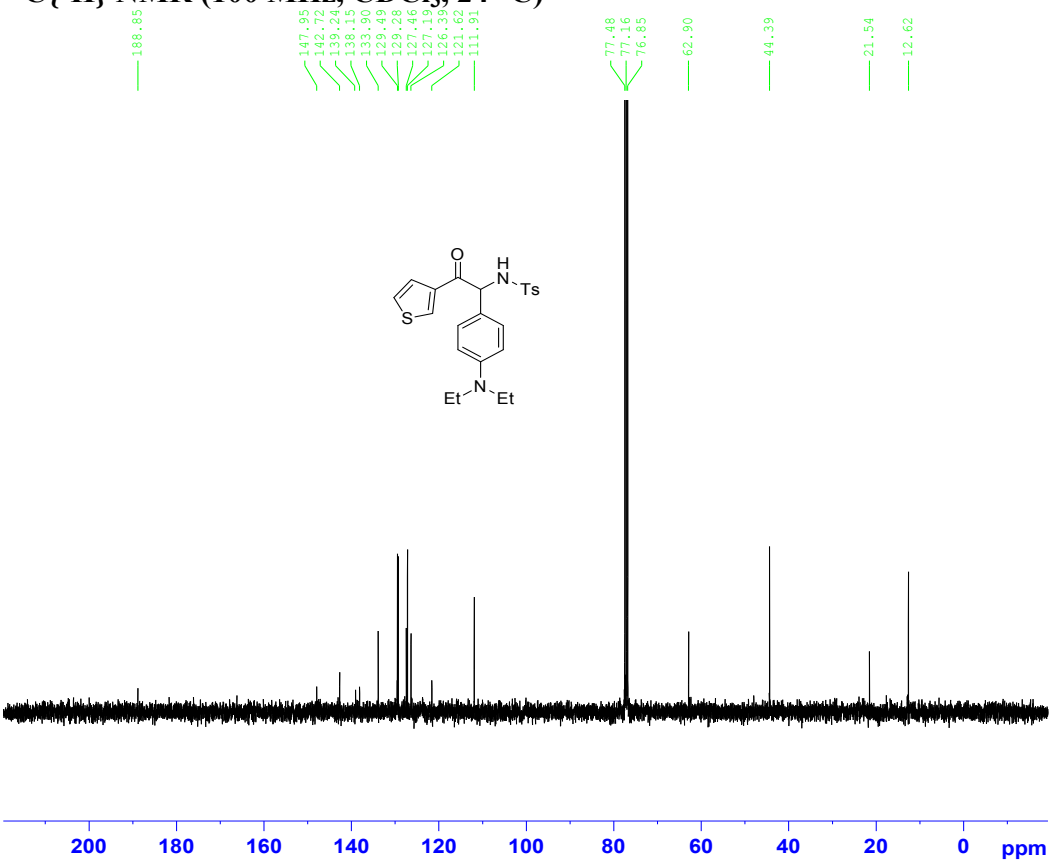
N-(1-(4-(Diethylamino)phenyl)-2-oxo-2-(thiophen-3-yl)ethyl)-4-methylbenzenesulfonamide(2j):

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                  spa40615
EXPNO                      546
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20150622
Time_                    17.16
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                  zg30
TD                      65536
SOLVENT                 CDCl3
NS                         16
DS                          2
SWH                  8012.820 Hz
FIDRES               0.122266 Hz
AQ                   4.0894966 sec
RG                      200.34
DW                      62.400 usec
DE                       6.50 usec
TE                      302.8 K
D1                   0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        1H
P1                       15.70 usec
PLW1                 7.75000000 W
SFO1               400.1320007 MHz

F2 - Processing parameters
SI                          65536
SF                 400.1300117 MHz
WDW                            EM
SSB                 0
LB                       0.30 Hz
GB                  0
PC                       1.00
```

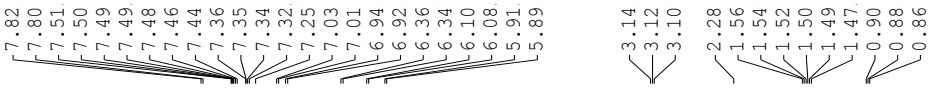
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)

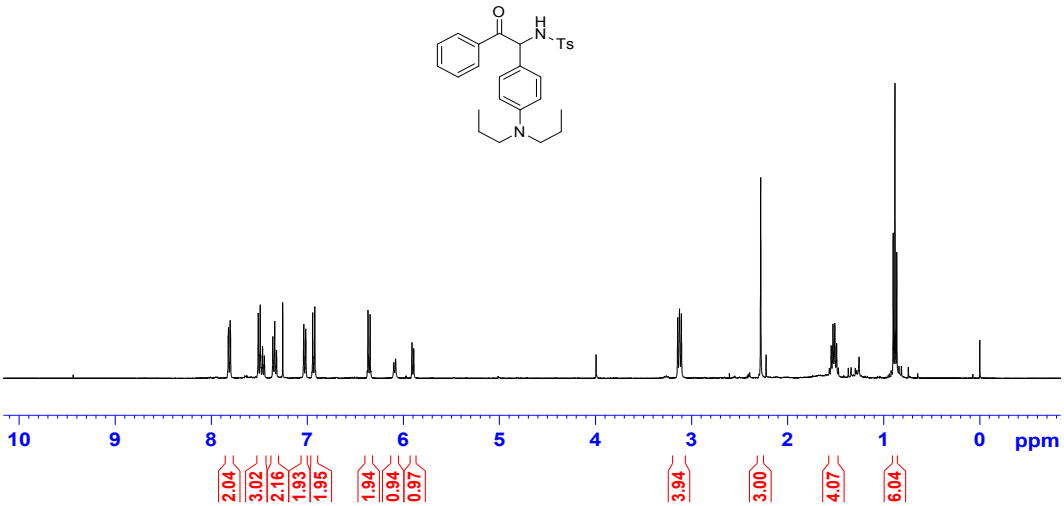



```
Current Data Parameters
NAME                  spa40615
EXPNO                      547
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20150622
Time_                    17.22
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                      16540
SOLVENT                 CDCl3
NS                         541
DS                          4
SWH                 24038.461 Hz
FIDRES               1.453353 Hz
AQ                   0.3440820 sec
RG                      200.34
DW                      20.800 usec
DE                       6.50 usec
TE                      303.4 K
D1                   1.00000000 sec
D11                  0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        13C
P1                       9.25 usec
PLW1                47.00000000 W
SFO1               100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                 waltz16
NUC2                        1H
PCPD2                    90.00 usec
PLW2                 7.75000000 W
PLW12                0.23583999 W
PLW13                0.19103000 W
SFO2               400.1316005 MHz

F2 - Processing parameters
SI                          32768
SF                 100.6127521 MHz
WDW                            EM
SSB                 0
LB                       1.00 Hz
GB                  0
PC                       1.40
```

N-(1-(4-(Dipropylamino)phenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide(2k):

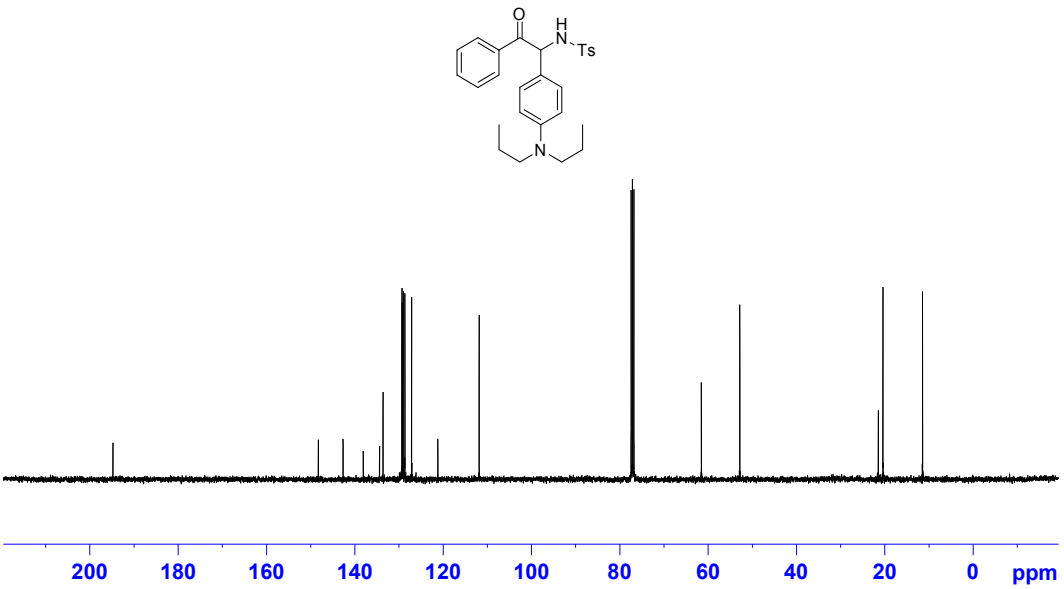
^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)





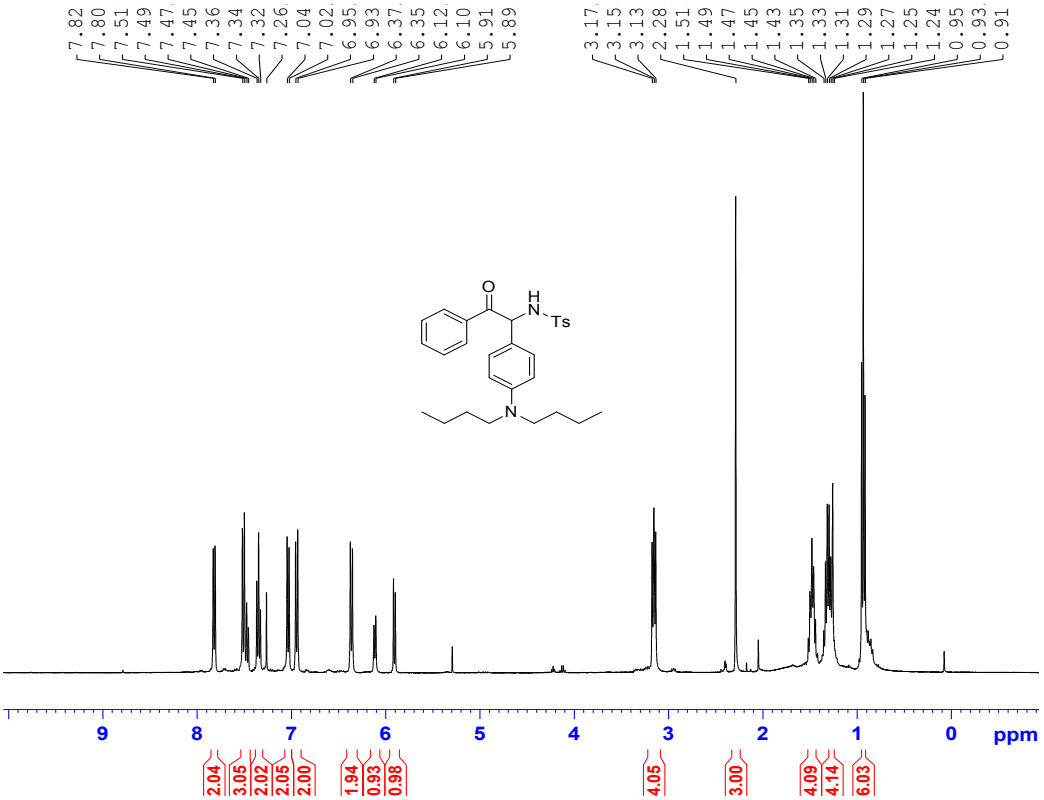

```
Current Data Parameters
NAME                  spa40615
EXPNO                      522
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20150621
Time                     18.42
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                  zg30
TD                      65536
SOLVENT                 CDCl3
NS                         16
DS                          2
SWH                  8012.820 Hz
FIDRES               0.122266 Hz
AQ                   4.0894966 sec
RG                      153.13
DW                      62.400 usec
DE                        6.50 usec
TE                      302.5 K
D1                   0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        1H
P1                       15.70 usec
PLW1                7.75000000 W
SFO1              400.1320007 MHz

F2 - Processing parameters
SI                      65536
SF                400.1300105 MHz
WDW                        EM
SSB          0
LB                       0.30 Hz
GB           0
PC                       1.00
```

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)



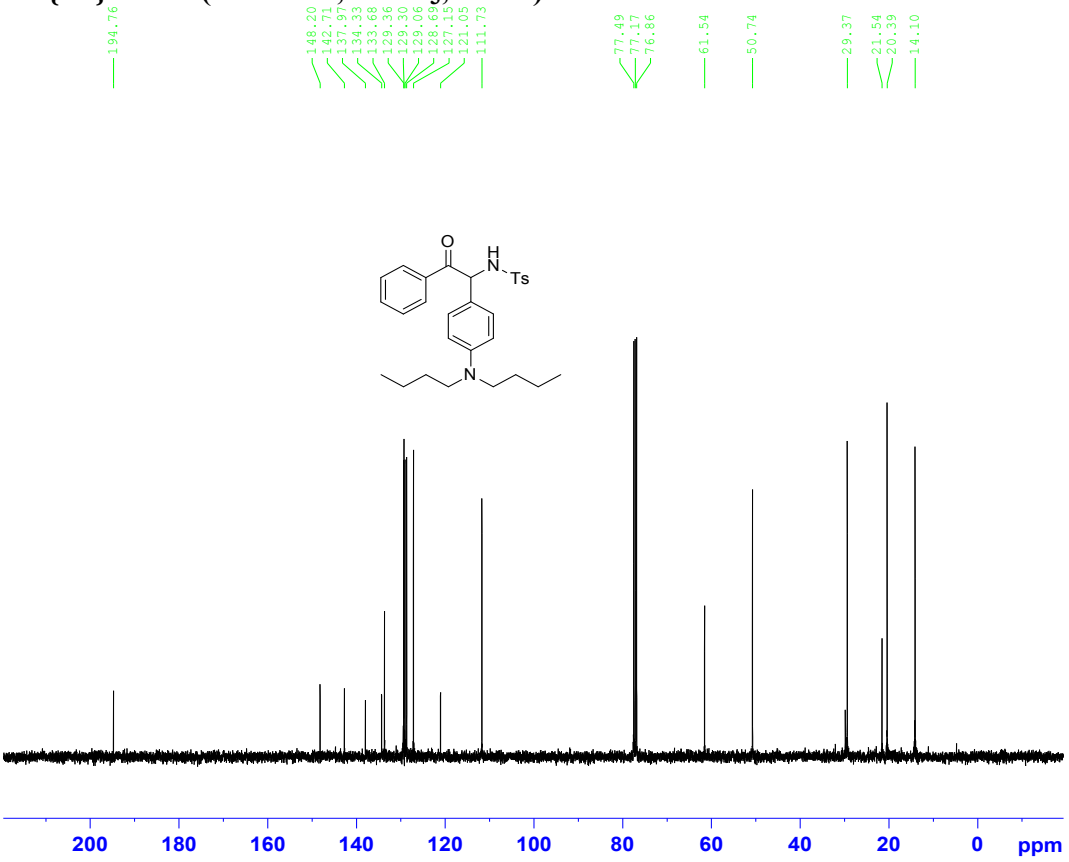

```
Current Data Parameters
NAME                  spa40615
EXPNO                      571
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20150622
Time                     21.04
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                      16540
SOLVENT                 CDCl3
NS                       1062
DS                          4
SWH                 24038.461 Hz
FIDRES               1.453353 Hz
AQ                   0.3440820 sec
RG                      200.34
DW                      20.800 usec
DE                        6.50 usec
TE                      303.7 K
D1                   1.00000000 sec
D11                  0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                        9.25 usec
PLW1               47.00000000 W
SFO1              100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                        1H
PCPD2                    90.00 usec
PLW2                7.75000000 W
PLW12               0.23583999 W
PLW13               0.19103000 W
SFO2              400.1316005 MHz

F2 - Processing parameters
SI                      32768
SF                100.6127539 MHz
WDW                        EM
SSB          0
LB                       1.00 Hz
GB           0
PC                       1.40
```

***N*-(1-(4-(Dibutylamino)phenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide(2l):**
^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                  spa41213
EXPNO                      406
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20131214
Time                     18.42
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                  zg30
TD                      65536
SOLVENT                 CDCl3
NS                         16
DS                          2
SWH                  8012.820 Hz
FIDRES               0.122266 Hz
AQ                   4.0894966 sec
RG                       95.73
DW                      62.400 usec
DE                       6.50 usec
TE                      296.3 K
D1                   0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        1H
P1                       15.70 usec
PLW1                 7.75000000 W
SFO1               400.1320007 MHz

F2 - Processing parameters
SI                      65536
SF                 400.1300089 MHz
WDW                        EM
SSB          0
LB                       0.30 Hz
GB           0
PC                       1.00
```

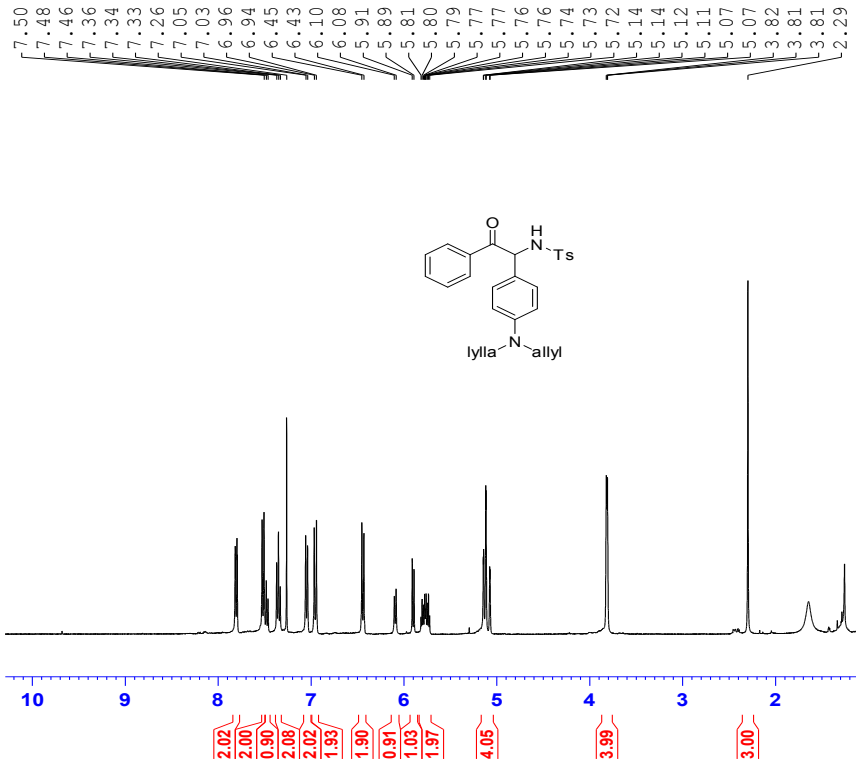
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                  spa41213
EXPNO                      407
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20131214
Time                     18.55
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                      16540
SOLVENT                 CDCl3
NS                         512
DS                           4
SWH                 24038.461 Hz
FIDRES               1.453353 Hz
AQ                   0.3440820 sec
RG                      200.34
DW                      20.800 usec
DE                       6.50 usec
TE                      297.0 K
D1                   1.00000000 sec
D11                  0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                        9.25 usec
PLW1                47.00000000 W
SFO1               100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                        1H
PCPD2                    90.00 usec
PLW2                 7.75000000 W
PLW12                0.23583999 W
PLW13                0.19103000 W
SFO2               400.1316005 MHz

F2 - Processing parameters
SI                      32768
SF                 100.6127563 MHz
WDW                        EM
SSB          0
LB                       1.00 Hz
GB           0
PC                       1.40
```

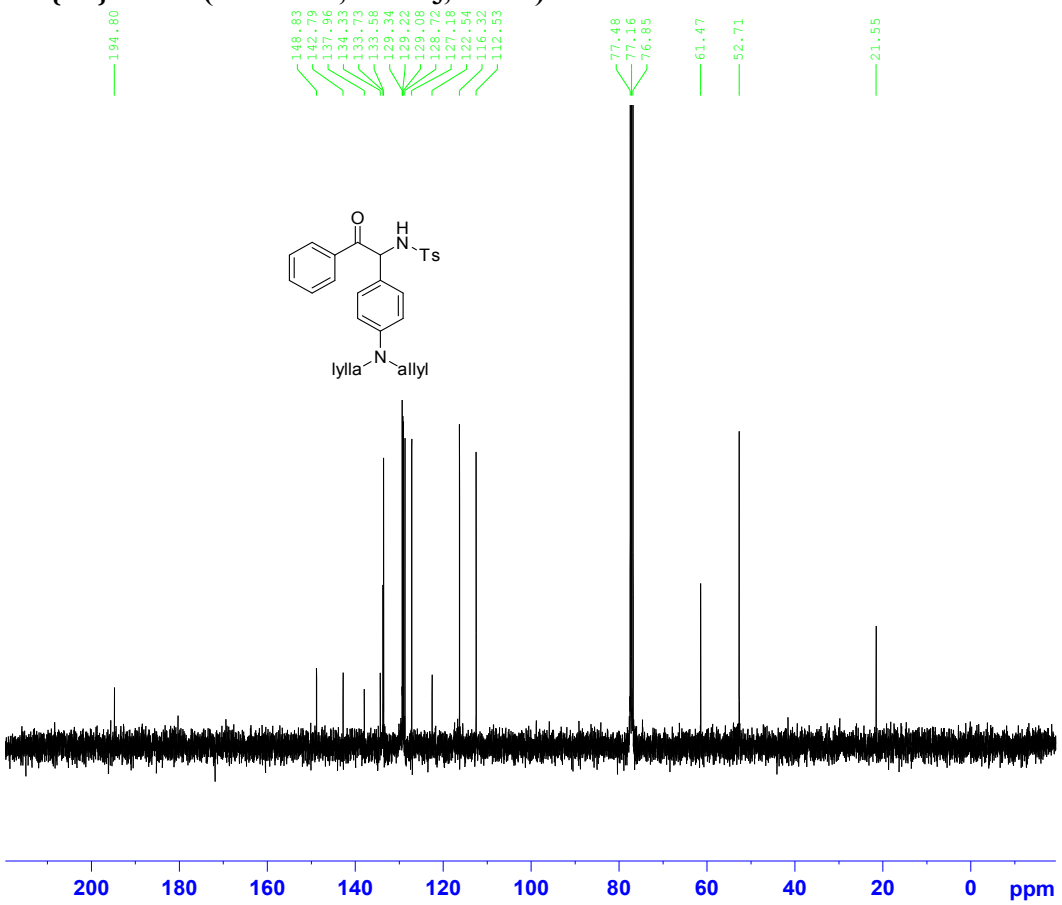
N-(1-(4-(Diallylamino)phenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide(2m):

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                  spa41213
EXPNO                       15
PROCNO                       1

F2 - Acquisition Parameters
Date_               20131201
Time                   21.48
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8012.820 Hz
FIDRES            0.122266 Hz
AQ                4.0894966 sec
RG                    200.34
DW                   62.400 usec
DE                    6.50 usec
TE                   298.8 K
D1                0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       1H
P1                      15.70 usec
PLW1              7.75000000 W
SFO1            400.1320007 MHz

F2 - Processing parameters
SI                        65536
SF              400.1300090 MHz
WDW                        EM
SSB          0
LB                      0.30 Hz
GB           0
PC                      1.00
```

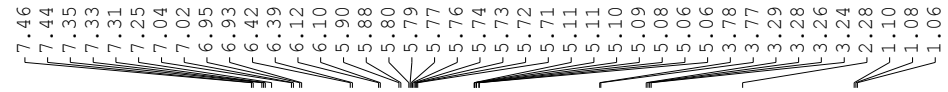
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)

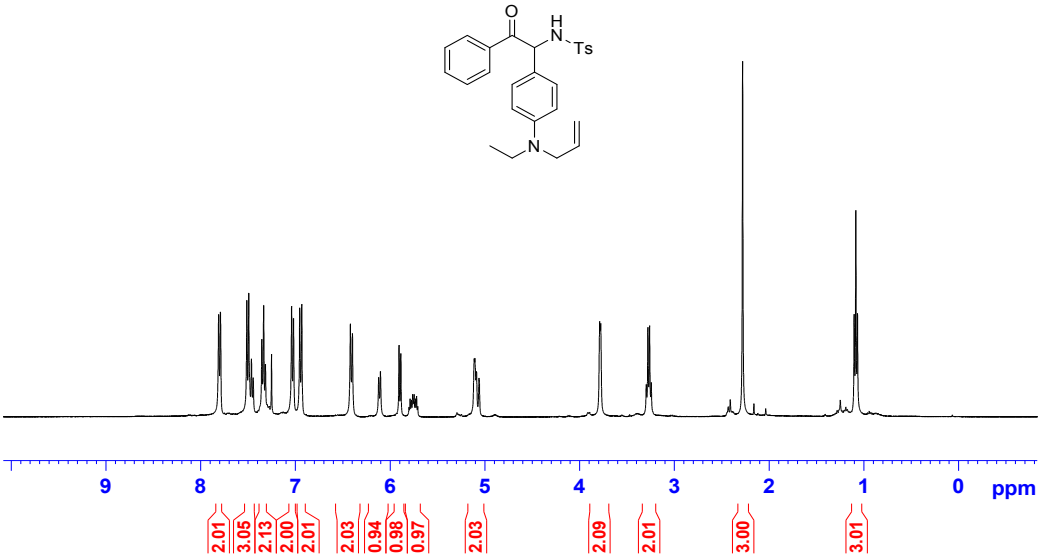



```
Current Data Parameters
NAME                  spa41213
EXPNO                       16
PROCNO                       1

F2 - Acquisition Parameters
Date_               20131201
Time                   22.01
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                    16540
SOLVENT               CDCl3
NS                      512
DS                        4
SWH               24038.461 Hz
FIDRES            1.453353 Hz
AQ                0.3440820 sec
RG                    200.34
DW                   20.800 usec
DE                    6.50 usec
TE                   299.5 K
D1                1.00000000 sec
D11               0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                      13C
P1                       9.25 usec
PLW1             47.00000000 W
SFO1            100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2              waltz16
NUC2                       1H
PCPD2                 90.00 usec
PLW2              7.75000000 W
PLW12             0.23583999 W
PLW13             0.19103000 W
SFO2            400.1316005 MHz

F2 - Processing parameters
SI                        32768
SF              100.6127542 MHz
WDW                        EM
SSB          0
LB                      1.00 Hz
GB           0
PC                      1.40
```

N-(1-(4-(Allyl(ethyl)amino)phenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide(2n):

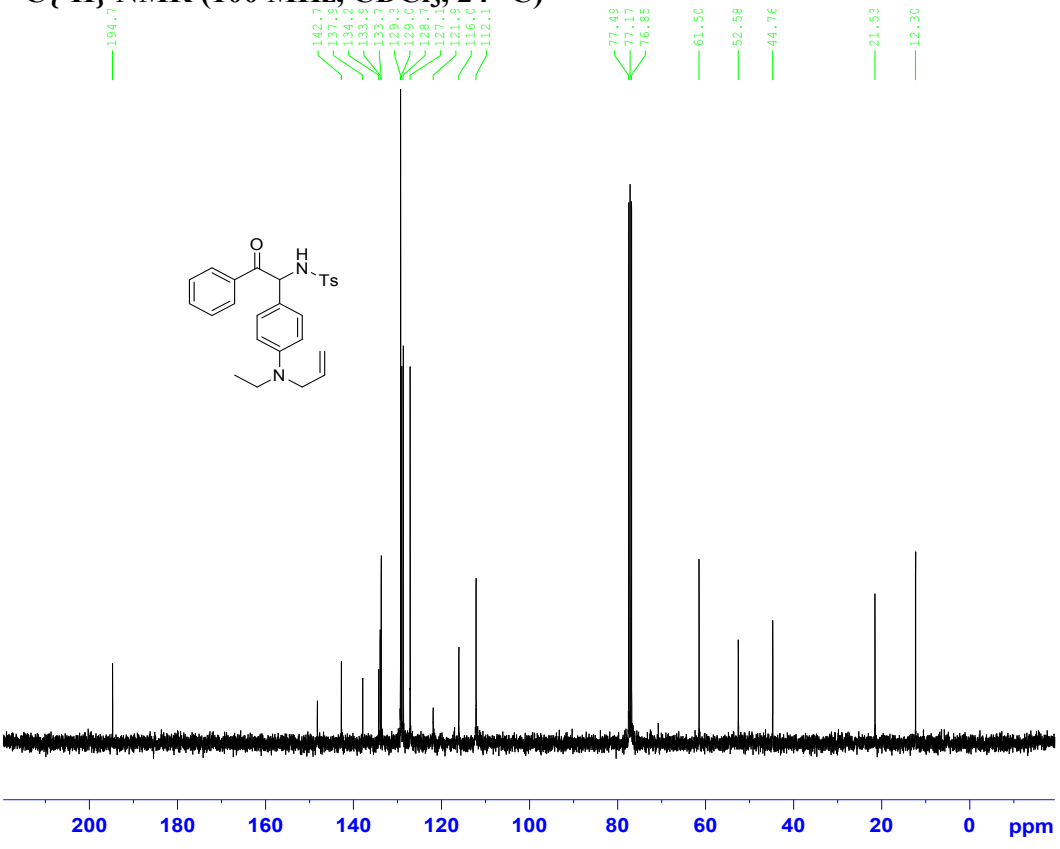
^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)






```
Current Data Parameters
NAME            spa41213
EXPNO                457
PROCNO                 1

F2 - Acquisition Parameters
Date_           20131216
Time                22.46
INSTRUM             spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                    16
DS                     2
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                 138.85
DW                62.400 usec
DE                 6.50 usec
TE                296.5 K
D1             0.50000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                15.70 usec
PLW1          7.75000000 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                 65536
SF           400.1300122 MHz
WDW                   EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```

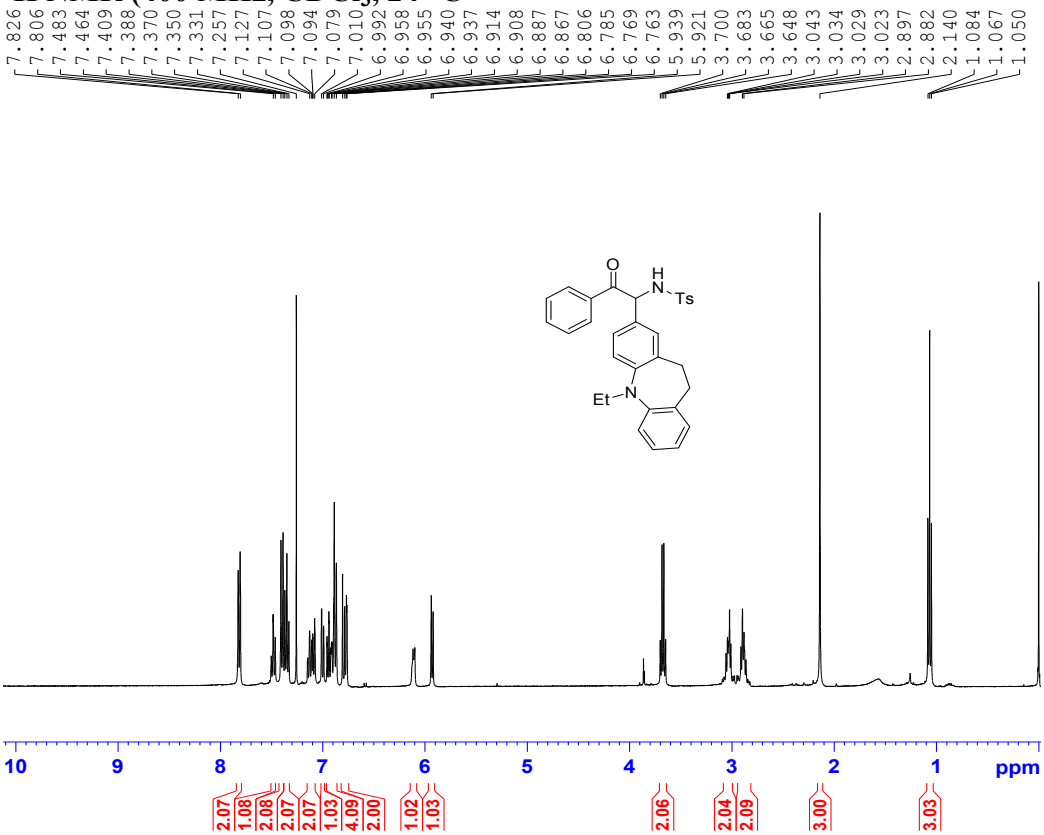
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME            spa41213
EXPNO                458
PROCNO                 1

F2 - Acquisition Parameters
Date_           20131216
Time                22.59
INSTRUM             spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                 16540
SOLVENT            CDCl3
NS                   512
DS                     4
SWH             24038.461 Hz
FIDRES           1.453353 Hz
AQ               0.3440820 sec
RG                 200.34
DW                20.800 usec
DE                 6.50 usec
TE                297.2 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.25 usec
PLW1         47.00000000 W
SFO1        100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                  1H
PCPD2              90.00 usec
PLW2          7.75000000 W
PLW12         0.23583999 W
PLW13         0.19103000 W
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF           100.6127563 MHz
WDW                   EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

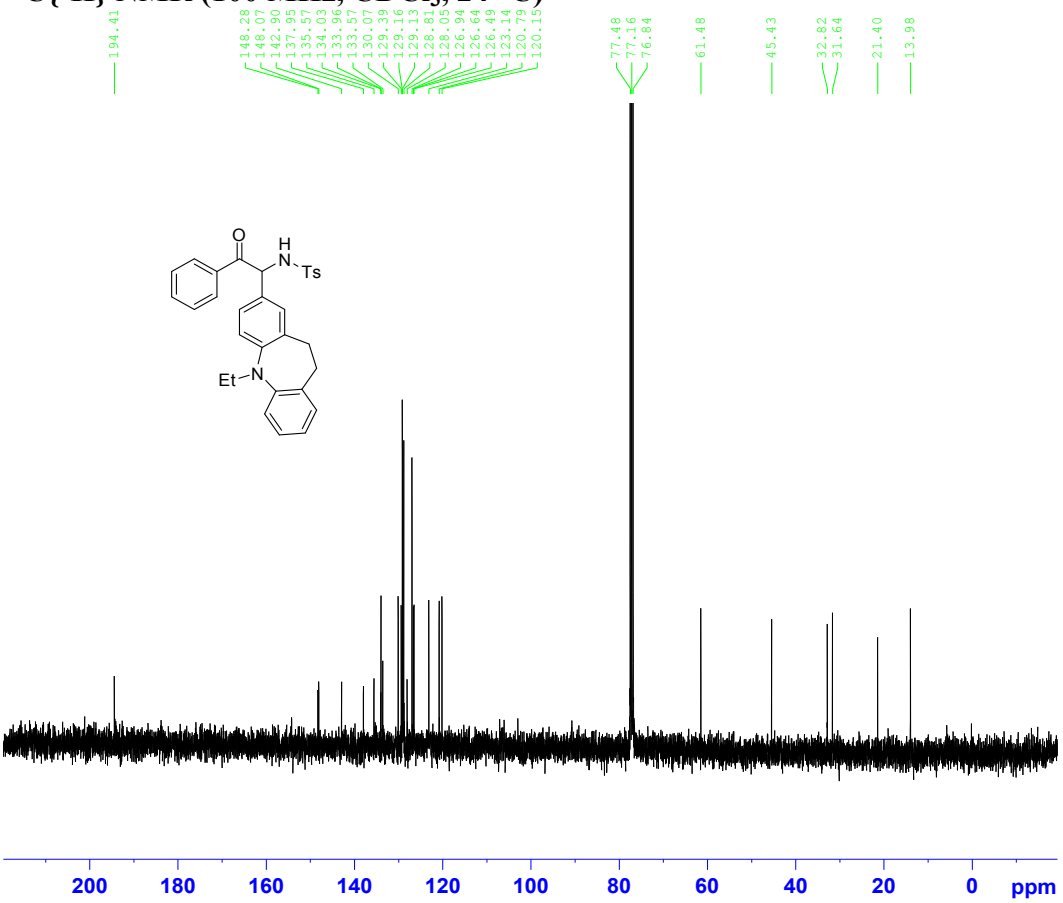
***N*-(1-(5-Ethyl-10,11-dihydro-5H-dibenzo[b,f]azepin-2-yl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide(2o):**

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C



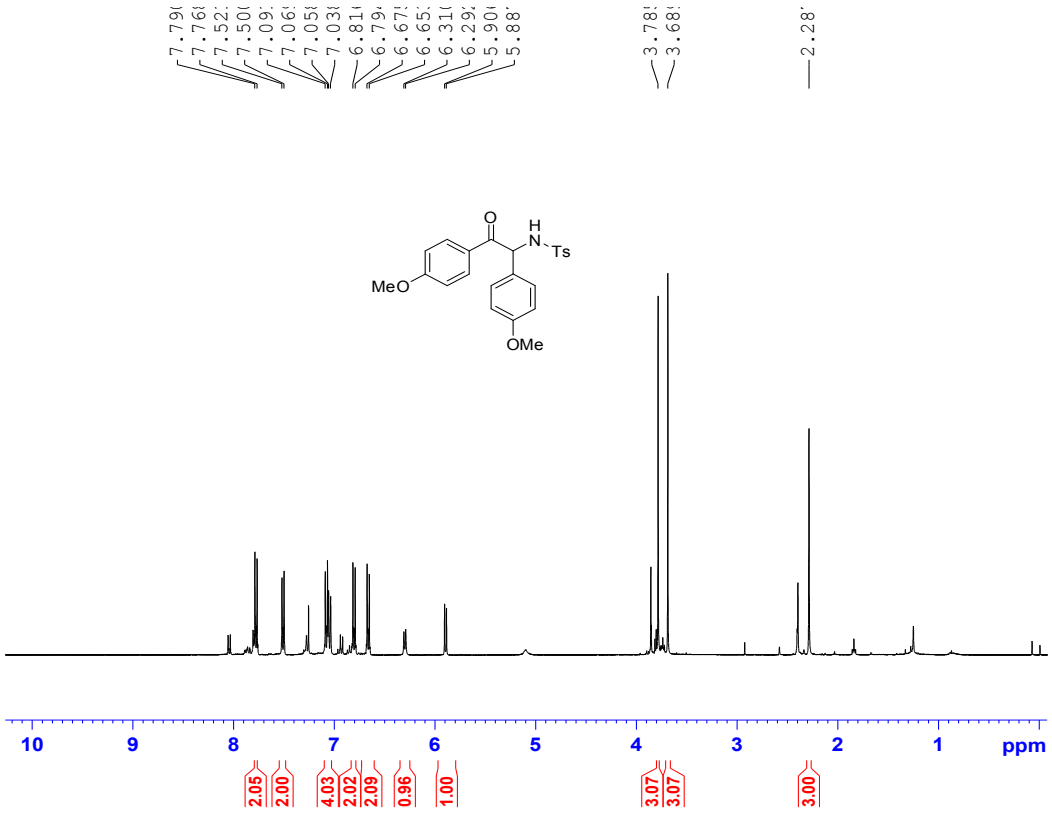

```
Current Data Parameters
NAME                  spa40114
EXPNO                      295
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20140112
Time                     21.43
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                  zg30
TD                      65536
SOLVENT                 CDCl3
NS                         16
DS                          2
SWH                  8012.820 Hz
FIDRES               0.122266 Hz
AQ                   4.0894966 sec
RG                      200.34
DW                      62.400 usec
DE                       6.50 usec
TE                      300.0 K
D1                   0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        1H
P1                       15.70 usec
PLW1                 7.75000000 W
SFO1               400.1320007 MHz

F2 - Processing parameters
SI                      65536
SF                 400.1300105 MHz
WDW                        EM
SSB                 0
LB                       0.30 Hz
GB                  0
PC                       1.00
```

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)



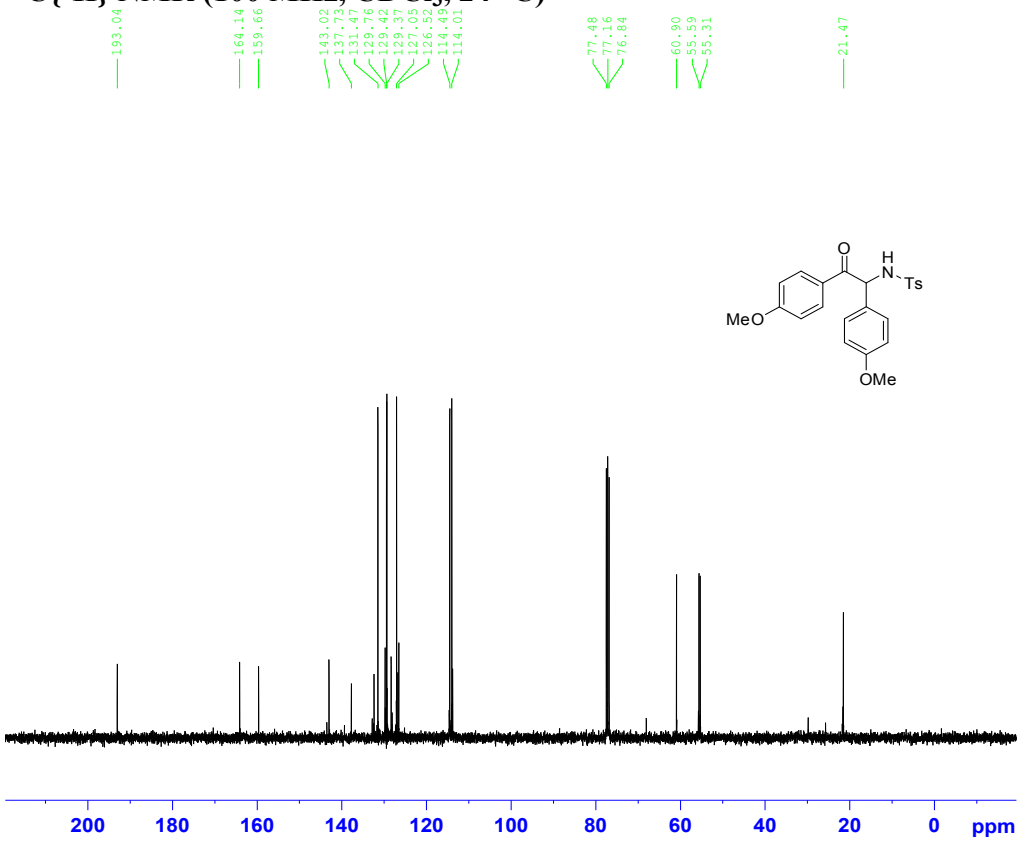

```
Current Data Parameters
NAME                  spa40114
EXPNO                      296
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20140112
Time                     22.02
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                      16540
SOLVENT                 CDCl3
NS                         750
DS                           4
SWH                 24038.461 Hz
FIDRES               1.453353 Hz
AQ                   0.3440820 sec
RG                      200.34
DW                      20.800 usec
DE                       6.50 usec
TE                      300.0 K
D1                   1.00000000 sec
D11                  0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                        9.25 usec
PLW1                47.00000000 W
SFO1               100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                        1H
PCPD2                    90.00 usec
PLW2                 7.75000000 W
PLW12                0.23583999 W
PLW13                0.19103000 W
SFO2               400.1316005 MHz

F2 - Processing parameters
SI                      32768
SF                 100.6127538 MHz
WDW                        EM
SSB                 0
LB                       1.00 Hz
GB                  0
PC                       1.40
```

***N*-(1,2-bis(4-methoxyphenyl)-2-oxoethyl)-4-methylbenzenesulfonamide(2p):**
^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                 spa40314
EXPNO                     589
PROCNO                      1

F2 - Acquisition Parameters
Date_               20140327
Time                   21.23
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                 zg30
TD                     65536
SOLVENT                CDCl3
NS                        16
DS                         2
SWH                 8012.820 Hz
FIDRES              0.122266 Hz
AQ                  4.0894966 sec
RG                     88.51
DW                    62.400 usec
DE                     6.50 usec
TE                    297.8 K
D1                  0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
NUC1                       1H
P1                      15.70 usec
PLW1                7.75000000 W
SFO1              400.1320007 MHz

F2 - Processing parameters
SI                         65536
SF                400.1300107 MHz
WDW                           EM
SSB          0
LB                      0.30 Hz
GB           0
PC                         1.00
```

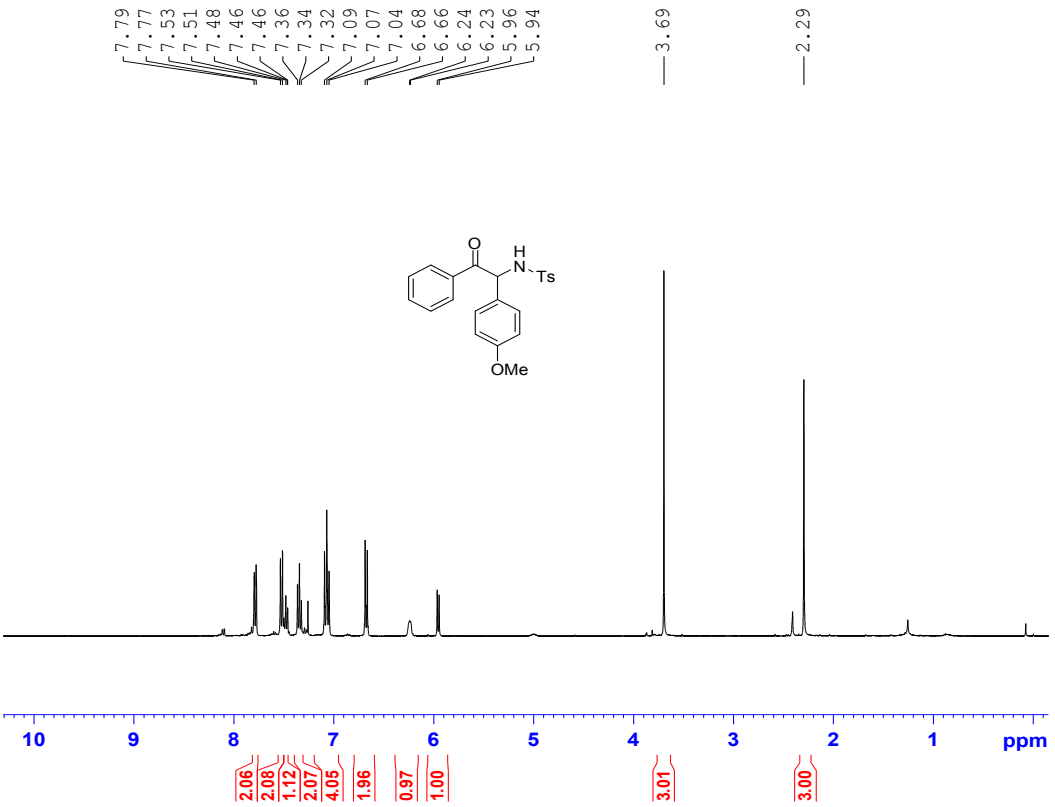
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                 spa40314
EXPNO                     590
PROCNO                      1

F2 - Acquisition Parameters
Date_               20140327
Time                   21.31
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                     16540
SOLVENT                CDCl3
NS                       256
DS                         4
SWH                24038.461 Hz
FIDRES              1.453353 Hz
AQ                  0.3440820 sec
RG                     200.34
DW                    20.800 usec
DE                     6.50 usec
TE                    298.4 K
D1                  1.00000000 sec
D11                 0.03000000 sec
TD0                         1

======== CHANNEL f1 ========
NUC1                      13C
P1                      9.25 usec
PLW1               47.00000000 W
SFO1              100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                  90.00 usec
PLW2                7.75000000 W
PLW12               0.23583999 W
PLW13               0.19103000 W
SFO2              400.1316005 MHz

F2 - Processing parameters
SI                         32768
SF                100.6127598 MHz
WDW                           EM
SSB          0
LB                      1.00 Hz
GB           0
PC                         1.40
```

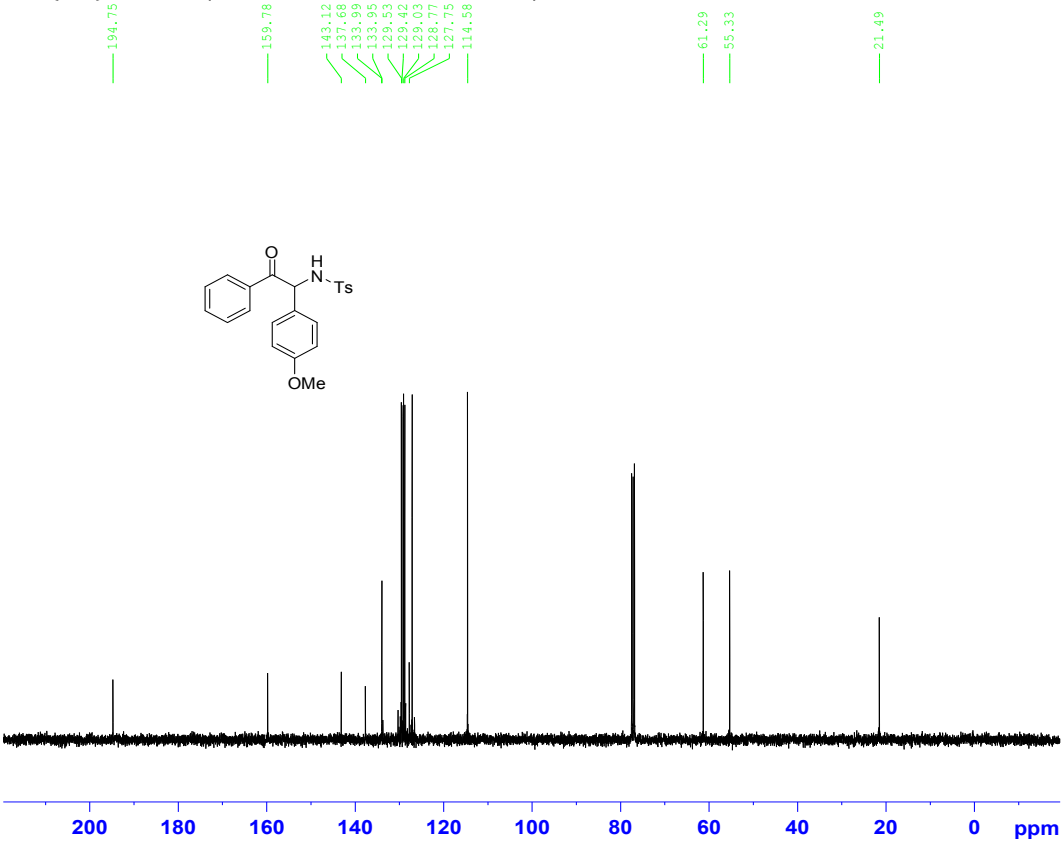
N-(1-(4-Methoxyphenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide(2r):

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)



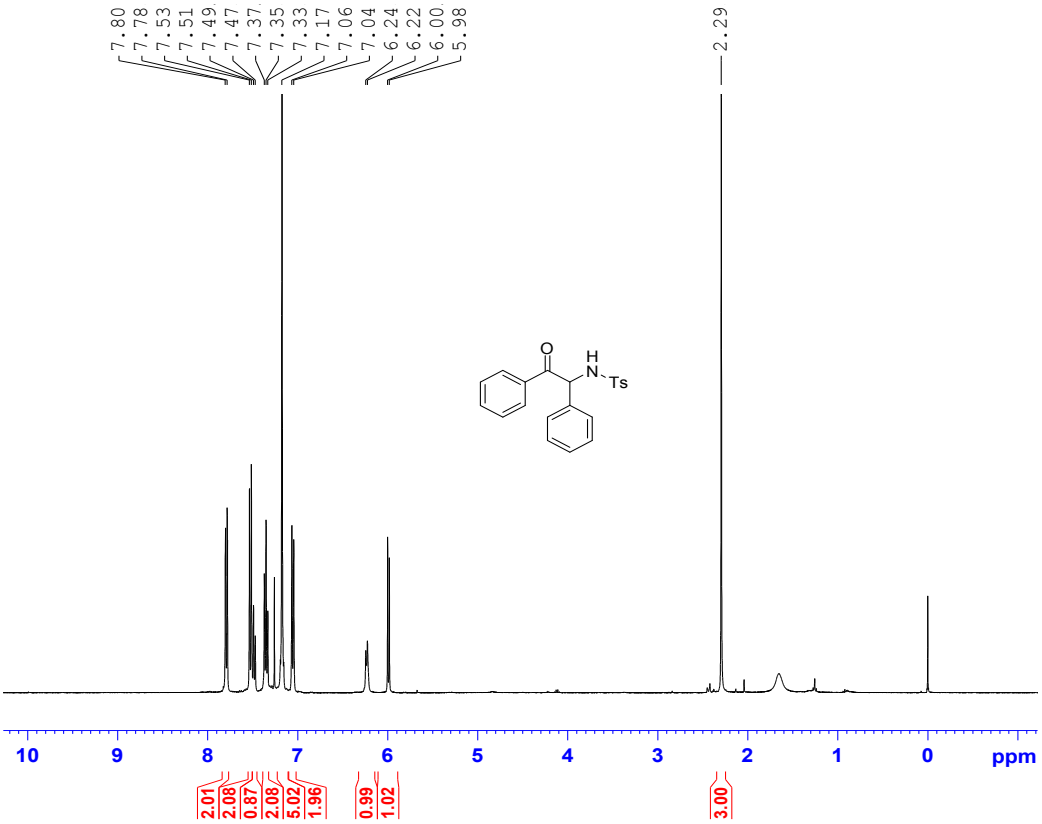

```
Current Data Parameters
NAME              spa40314
EXPNO                  610
PROCNO                   1

F2 - Acquisition Parameters
Date_              20140329
Time                 11.08
INSTRUM              spect
PROBHD    5 mm PABBO BB-
PULPROG              zg30
TD                  65536
SOLVENT             CDCl3
NS                     16
DS                      2
SWH              8012.820 Hz
FIDRES           0.122266 Hz
AQ               4.0894966 sec
RG                  108.26
DW                  62.400 usec
DE                   6.50 usec
TE                  297.5 K
D1              0.50000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                    1H
P1                   15.70 usec
PLW1            7.75000000 W
SFO1          400.1320007 MHz

F2 - Processing parameters
SI                      65536
SF            400.1300099 MHz
WDW                        EM
SSB       0
LB                    0.30 Hz
GB        0
PC                    1.00
```

^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)



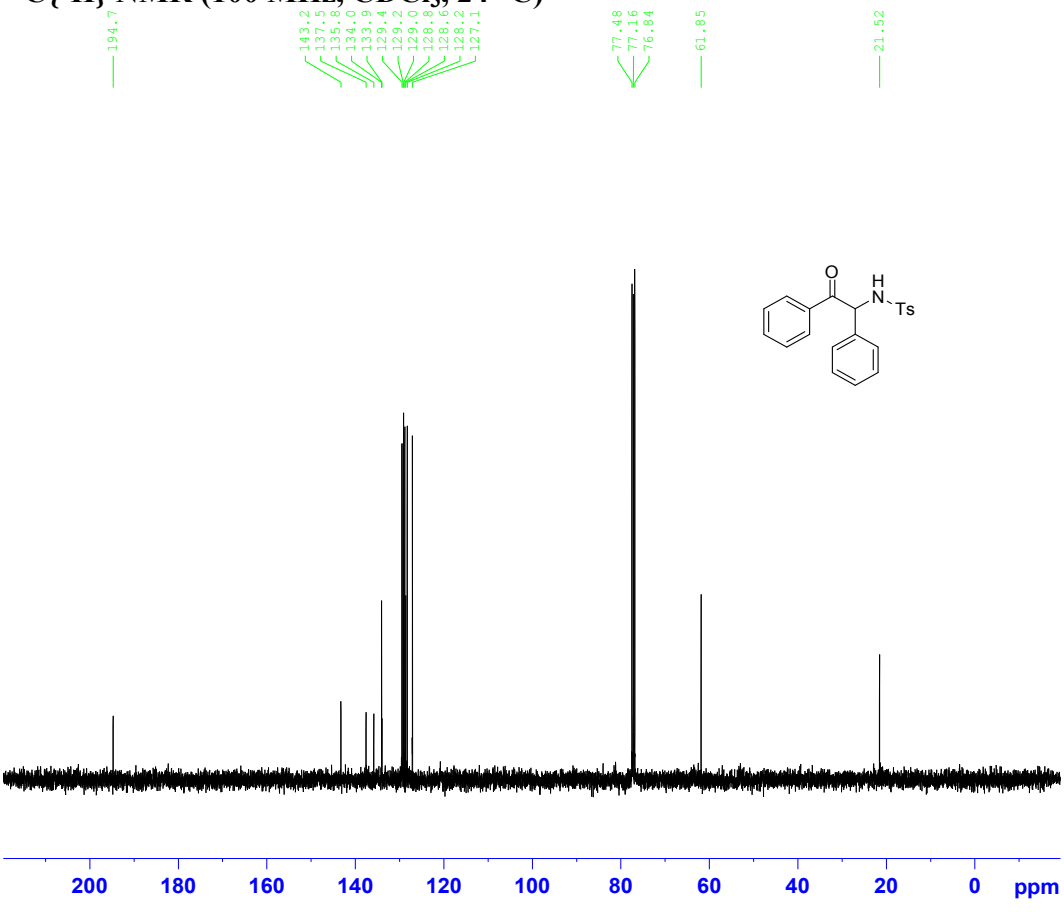

```
Current Data Parameters
NAME              spa40314
EXPNO                  611
PROCNO                   1

F2 - Acquisition Parameters
Date_              20140329
Time                 11.13
INSTRUM              spect
PROBHD    5 mm PABBO BB-
PULPROG            zgpg30
TD                  16540
SOLVENT             CDCl3
NS                     228
DS                      4
SWH             24038.461 Hz
FIDRES           1.453353 Hz
AQ               0.3440820 sec
RG                  200.34
DW                  20.800 usec
DE                   6.50 usec
TE                  298.0 K
D1              1.00000000 sec
D11             0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                   13C
P1                    9.25 usec
PLW1           47.00000000 W
SFO1          100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2           waltz16
NUC2                    1H
PCPD2                90.00 usec
PLW2            7.75000000 W
PLW12           0.23583999 W
PLW13           0.19103000 W
SFO2          400.1316005 MHz

F2 - Processing parameters
SI                      32768
SF            100.6127585 MHz
WDW                        EM
SSB       0
LB                    1.00 Hz
GB        0
PC                    1.40
```

4-Methyl-*N*-(2-oxo-1,2-diphenylethyl)benzenesulfonamide(2s):
^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                  spa40814
EXPNO                      660
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20140829
Time                     10.48
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                  zg30
TD                      65536
SOLVENT                  CDCl3
NS                          16
DS                           2
SWH                   8012.820 Hz
FIDRES                0.122266 Hz
AQ                    4.0894966 sec
RG                       200.34
DW                       62.400 usec
DE                        6.50 usec
TE                       300.1 K
D1                    0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        1H
P1                       15.70 usec
PLW1                7.75000000 W
SFO1              400.1320007 MHz

F2 - Processing parameters
SI                      65536
SF                400.1300094 MHz
WDW                        EM
SSB          0
LB                       0.30 Hz
GB           0
PC                       1.00
```

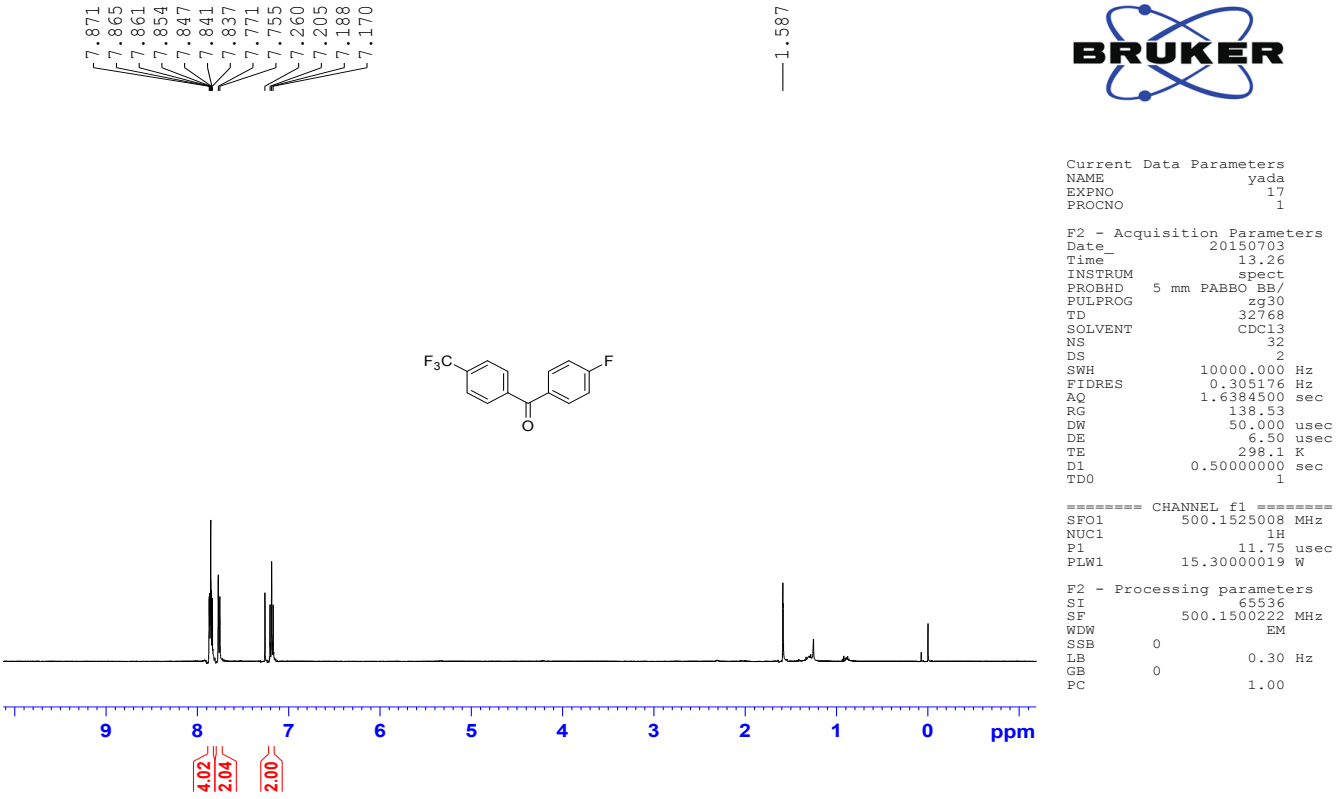
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                  spa40814
EXPNO                      661
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20140829
Time                     10.55
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                      16540
SOLVENT                  CDCl3
NS                         256
DS                           4
SWH                  24038.461 Hz
FIDRES                1.453353 Hz
AQ                    0.3440820 sec
RG                       200.34
DW                       20.800 usec
DE                        6.50 usec
TE                       300.1 K
D1                    1.00000000 sec
D11                   0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                        9.25 usec
PLW1               47.00000000 W
SFO1              100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                        1H
PCPD2                    90.00 usec
PLW2                7.75000000 W
PLW12               0.23583999 W
PLW13               0.19103000 W
SFO2              400.1316005 MHz

F2 - Processing parameters
SI                      32768
SF                100.6127554 MHz
WDW                        EM
SSB          0
LB                       1.00 Hz
GB           0
PC                       1.40
```

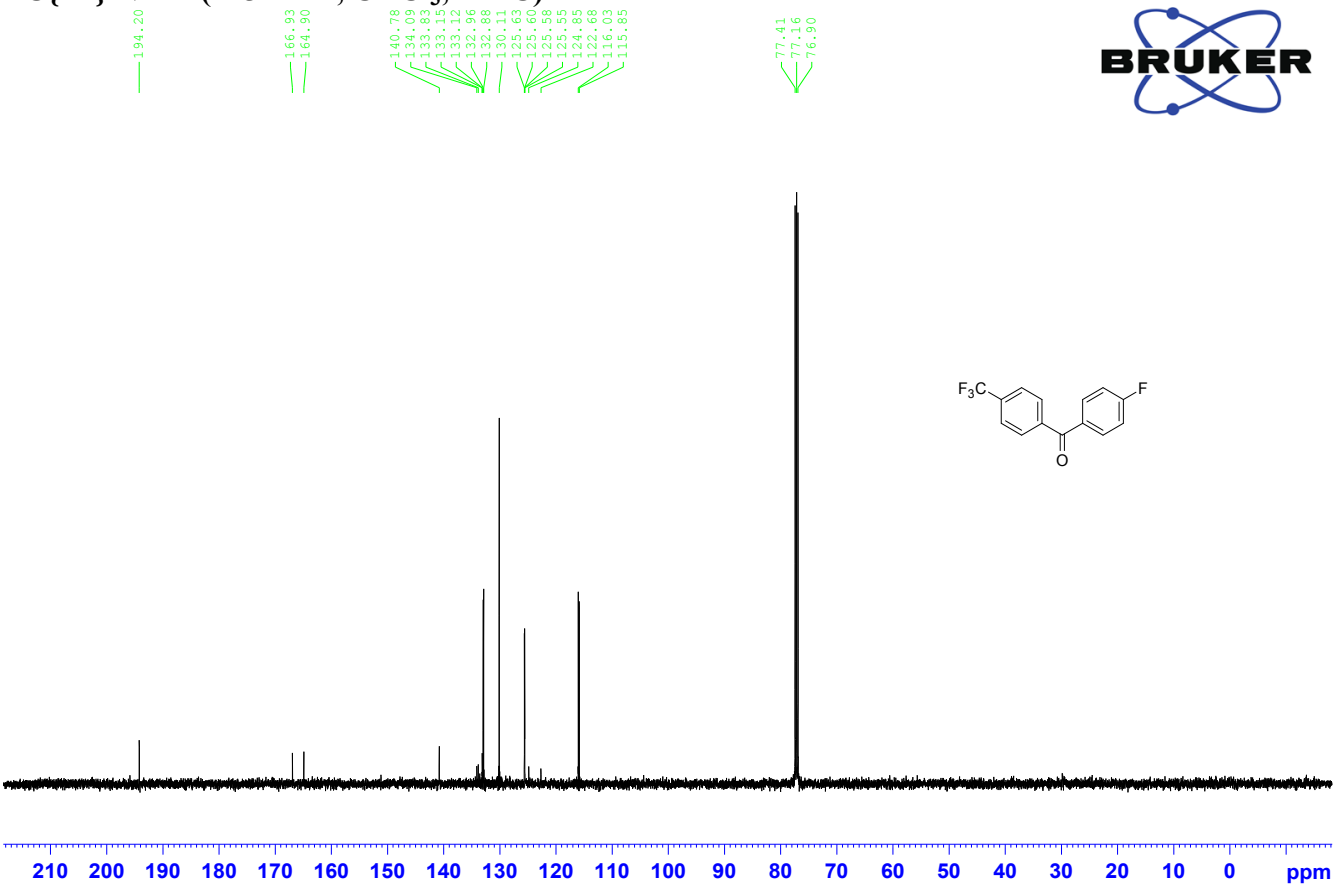
(4-Fluorophenyl)(4-(trifluoromethyl)phenyl)methanone :

^{1}H NMR (500 MHz, $CDCl_3$, 24 °C)



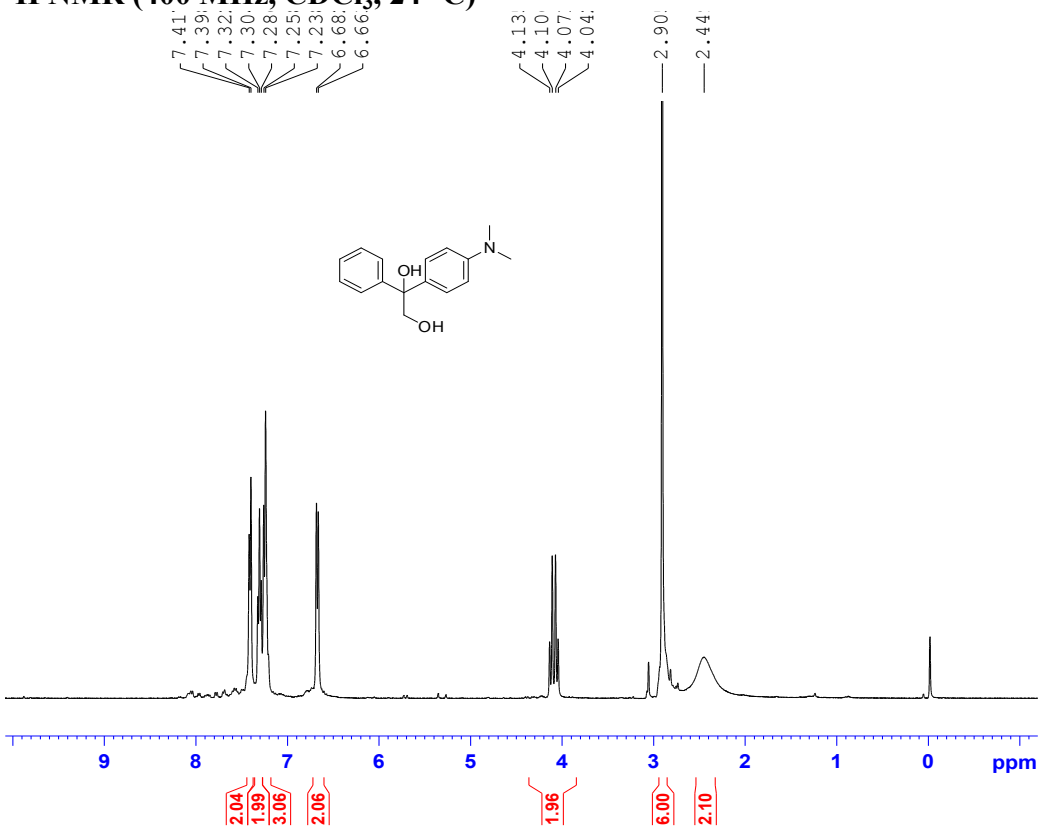

```
Current Data Parameters
NAME                  yada
EXPNO                   17
PROCNO                   1

F2 - Acquisition Parameters
Date_           20150703
Time                13.26
INSTRUM             spect
PROBHD    5 mm PABBO BB/
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                    32
DS                     2
SWH             10000.000 Hz
FIDRES          0.305176 Hz
AQ              1.6384500 sec
RG                 138.53
DW                 50.000 usec
DE                  6.50 usec
TE                 298.1 K
D1              0.50000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          500.1525008 MHz
NUC1                  1H
P1                 11.75 usec
PLW1          15.30000019 W

F2 - Processing parameters
SI                 65536
SF            500.1500222 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$, 24 °C)



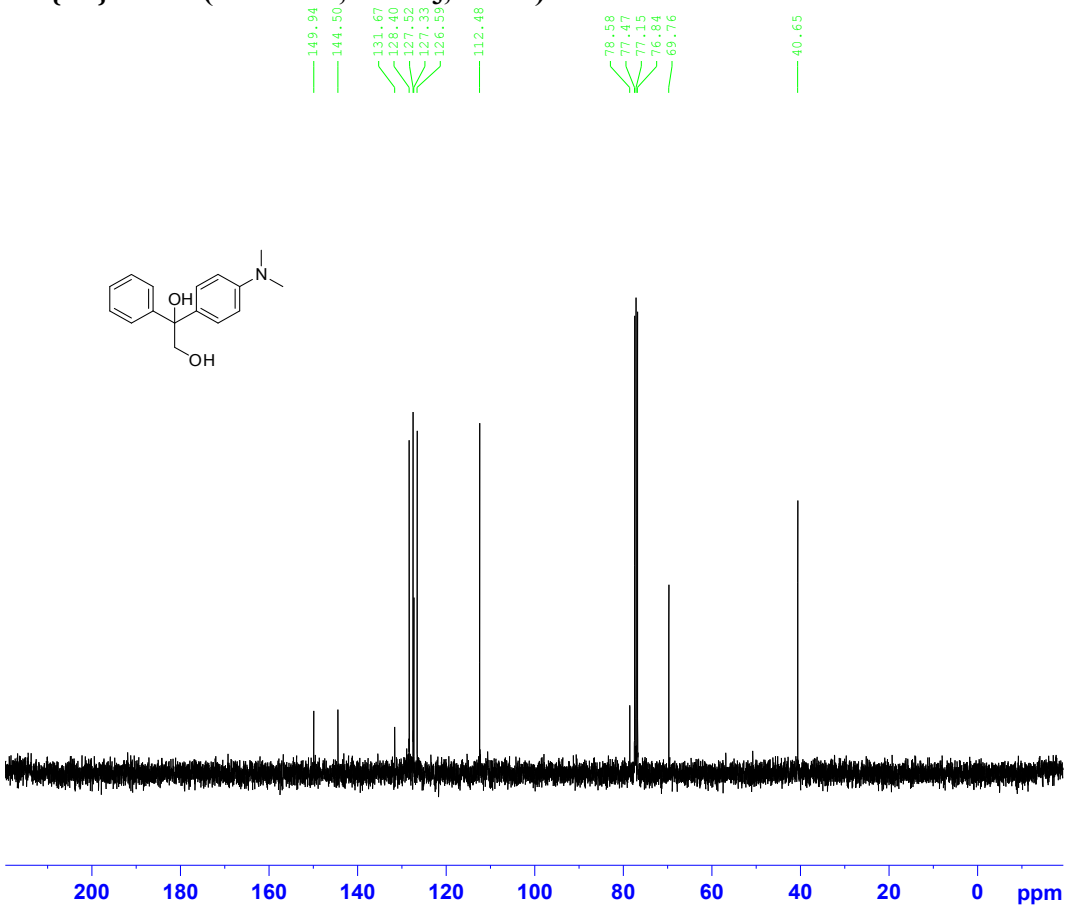
1-(4-(Dimethylamino)phenyl)-1-phenylethane-1,2-diol :

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)



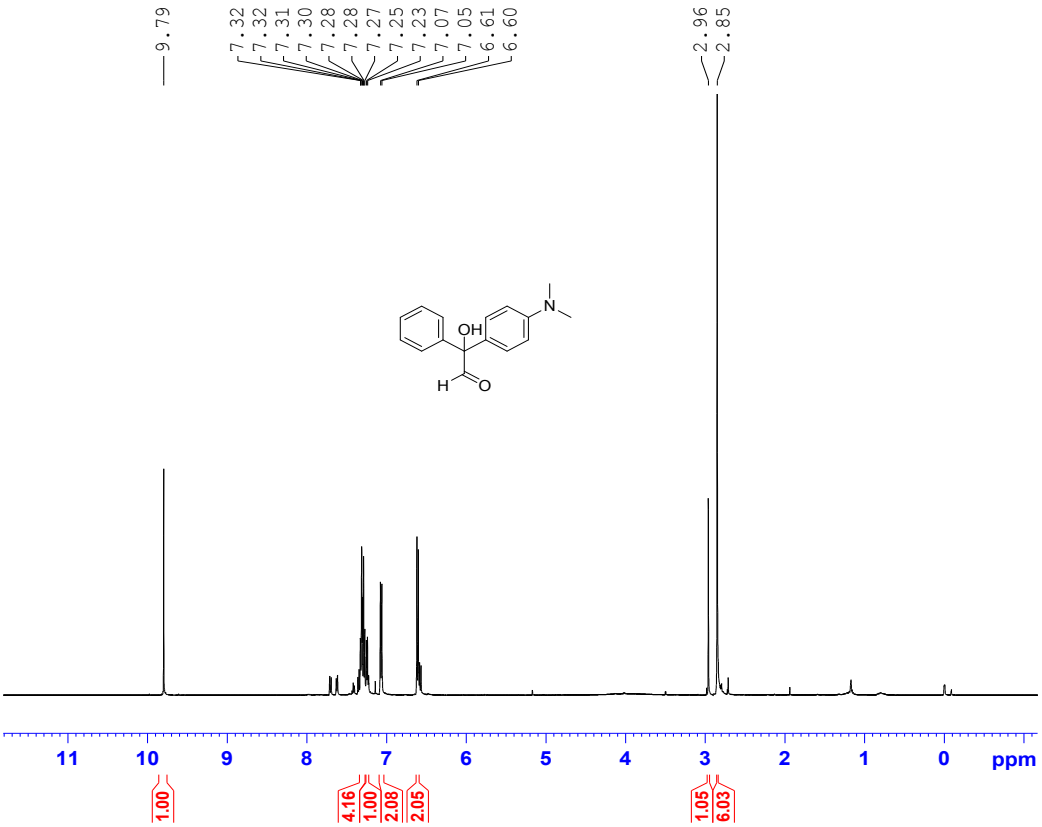

```
Current Data Parameters
NAME                 spa40914
EXPNO                      80
PROCNO                      1

F2 - Acquisition Parameters
Date_               20140911
Time                   17.00
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8012.820 Hz
FIDRES                0.122266 Hz
AQ                 4.0894966 sec
RG                    169.77
DW                    62.400 usec
DE                     6.50 usec
TE                  0 K
D1                  0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
NUC1                       1H
P1                      15.70 usec
PLW1               7.75000000 W
SFO1             400.1320007 MHz

F2 - Processing parameters
SI                        65536
SF                 400.1300201 MHz
WDW                          EM
SSB                0
LB                        0.30 Hz
GB                 0
PC                        1.00
```

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$, 24 °C)



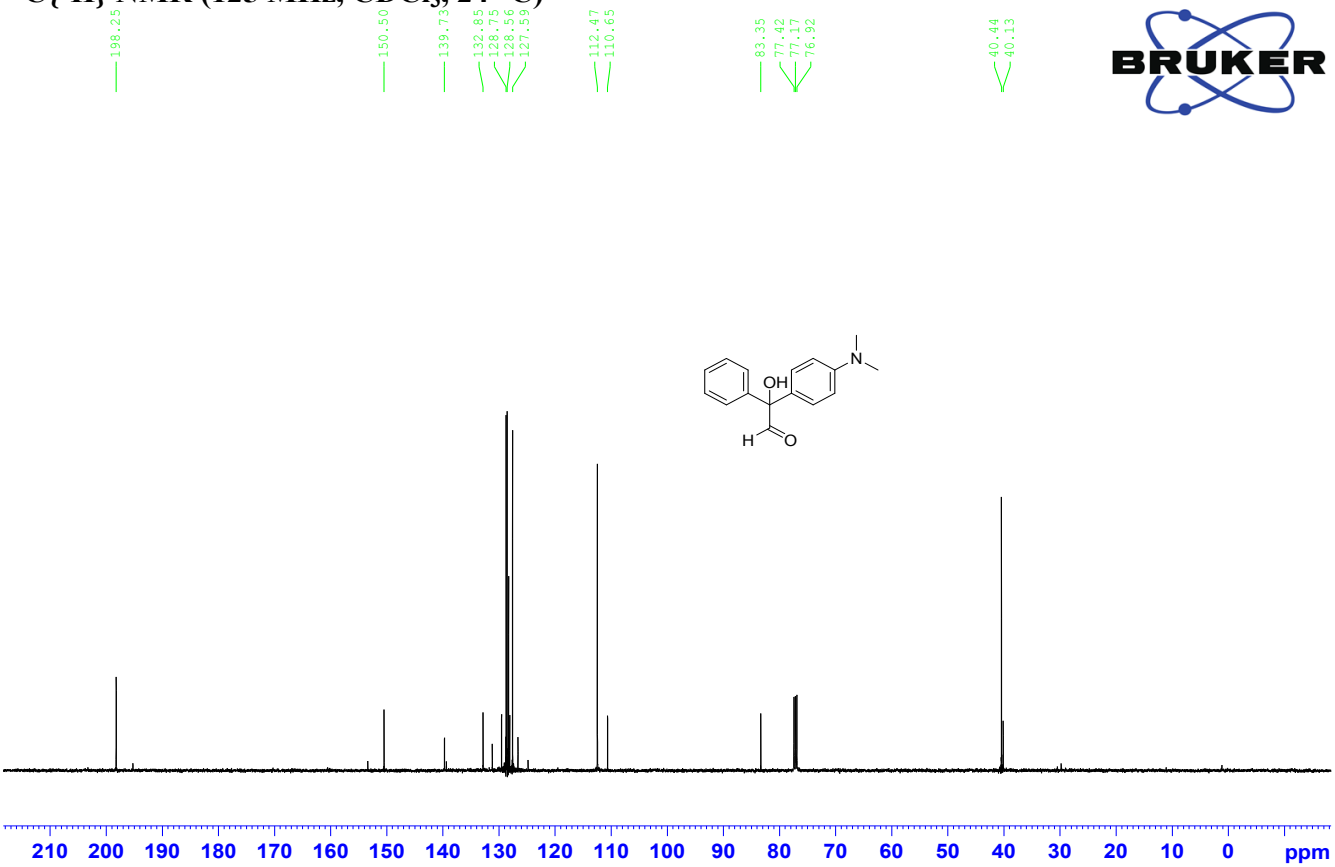

```
Current Data Parameters
NAME                 spa40914
EXPNO                      81
PROCNO                      1

F2 - Acquisition Parameters
Date_               20140911
Time                   17.08
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG              zgpg30
TD                    16540
SOLVENT               CDCl3
NS                       256
DS                        4
SWH               24038.461 Hz
FIDRES                1.453353 Hz
AQ                 0.3440820 sec
RG                    200.34
DW                    20.800 usec
DE                     6.50 usec
TE                  0 K
D1                  1.00000000 sec
D11                 0.03000000 sec
TD0                         1

======== CHANNEL f1 ========
NUC1                      13C
P1                      9.25 usec
PLW1              47.00000000 W
SFO1             100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2             waltz16
NUC2                       1H
PCPD2                 90.00 usec
PLW2               7.75000000 W
PLW12              0.23583999 W
PLW13              0.19103000 W
SFO2             400.1316005 MHz

F2 - Processing parameters
SI                        32768
SF                 100.6127557 MHz
WDW                          EM
SSB                0
LB                        1.00 Hz
GB                 0
PC                        1.40
```

2-(4-(Dimethylamino)phenyl)-2-hydroxy-2-phenylacetaldehyde :
^{1}H NMR (500 MHz, $CDCl_3$, 24 °C)



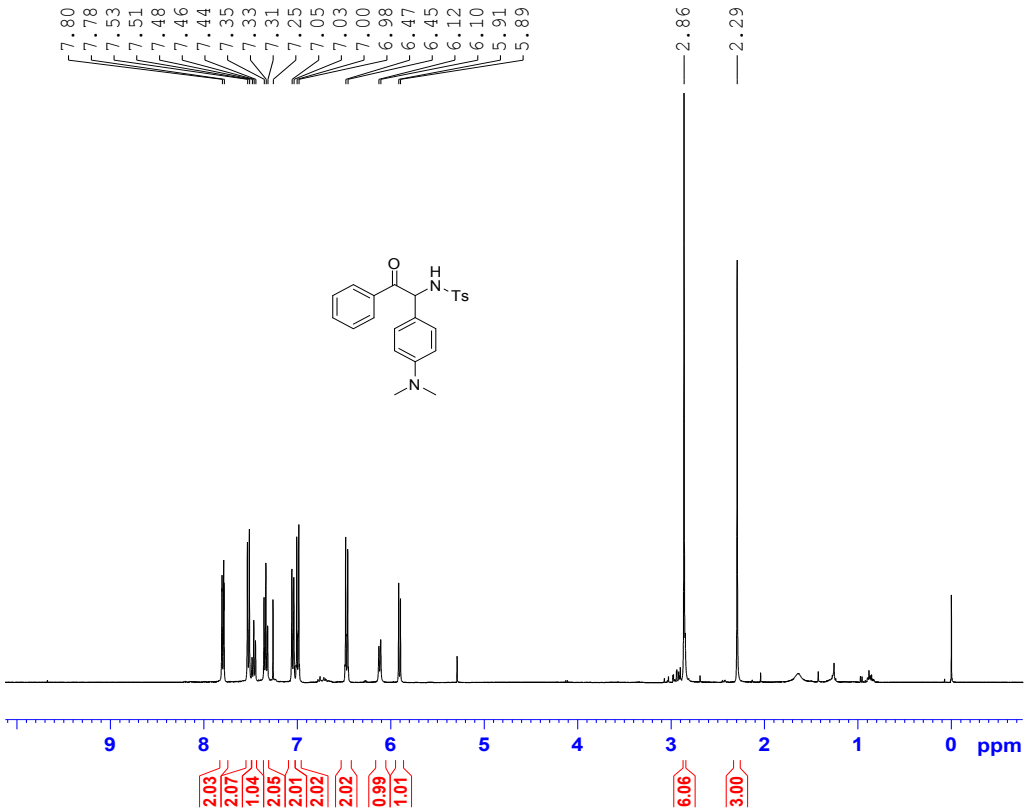

```
Current Data Parameters
NAME                 spa50914
EXPNO                     214
PROCNO                      1

F2 - Acquisition Parameters
Date_               20140909
Time                   12.23
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                       32
DS                        2
SWH                10000.000 Hz
FIDRES                 0.305176 Hz
AQ                     1.6384500 sec
RG                        31.24
DW                        50.000 usec
DE                         6.50 usec
TE                       298.5 K
D1                  0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1               500.1525008 MHz
NUC1                       1H
P1                        11.75 usec
PLW1               15.30000019 W

F2 - Processing parameters
SI                        65536
SF                 500.1500825 MHz
WDW                        EM
SSB          0
LB                         0.30 Hz
GB           0
PC                         1.00
```

^{13}C{^{1}H} NMR (125 MHz, $CDCl_3$, 24 °C)



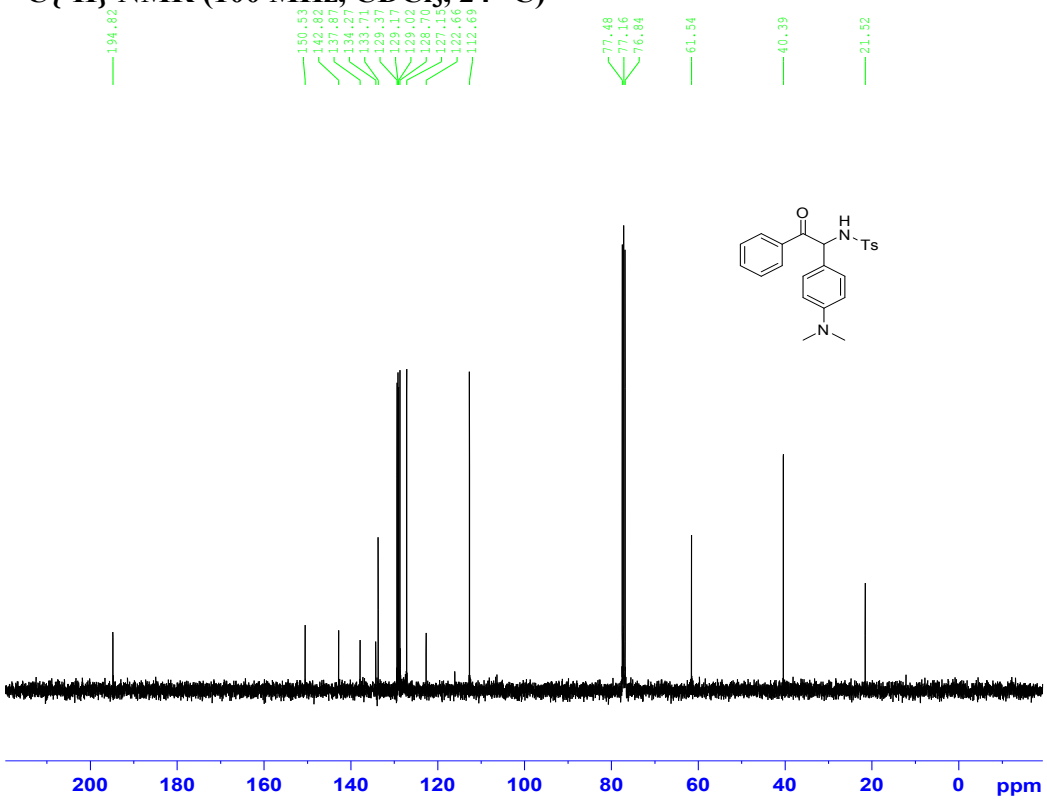
N-(1-(4-(Dimethylamino)phenyl)-2-oxo-2-phenylethyl)-4-methylbenzenesulfonamide(2v):

^{1}H NMR (400 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                  spa40914
EXPNO                       60
PROCNO                       1

F2 - Acquisition Parameters
Date_               20140911
Time                    0.49
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                 zg30
TD                     65536
SOLVENT                CDCl3
NS                        16
DS                         2
SWH                 8012.820 Hz
FIDRES              0.122266 Hz
AQ                  4.0894966 sec
RG                     153.13
DW                     62.400 usec
DE                      6.50 usec
TE                     297.7 K
D1                  0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       1H
P1                      15.70 usec
PLW1               7.75000000 W
SFO1             400.1320007 MHz

F2 - Processing parameters
SI                         65536
SF               400.1300108 MHz
WDW                           EM
SSB          0
LB                      0.30 Hz
GB           0
PC                      1.00
```

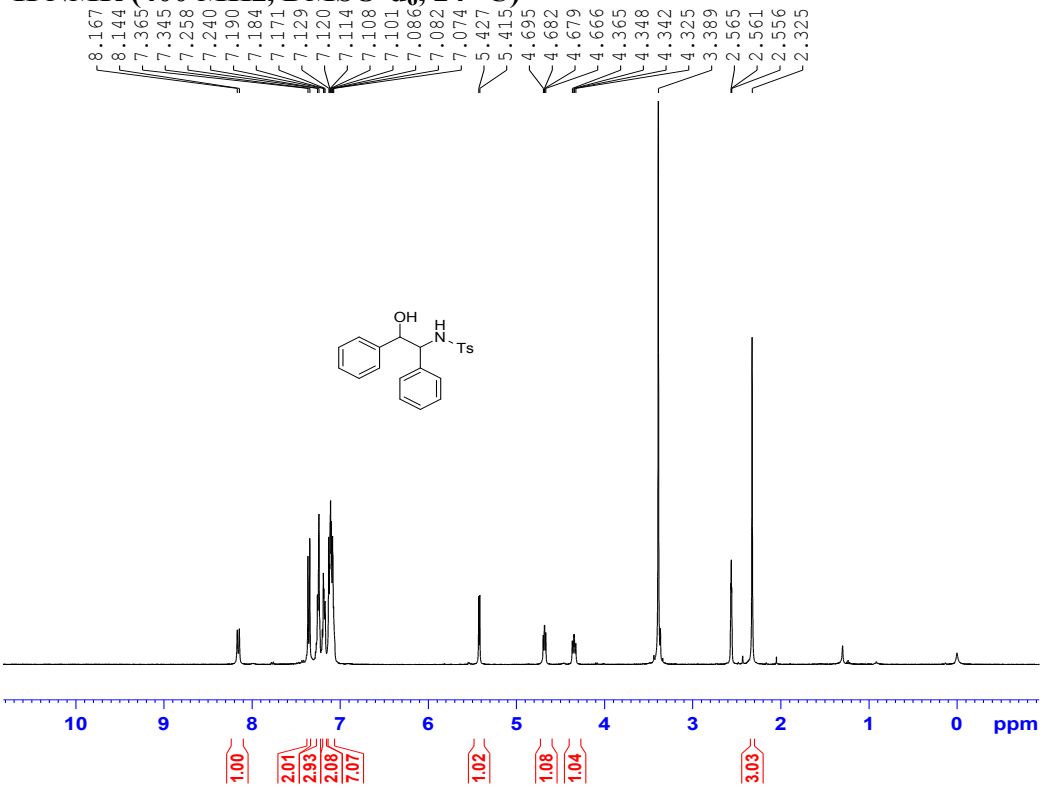
^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$, 24 °C)




```
Current Data Parameters
NAME                  spa40914
EXPNO                       61
PROCNO                       1

F2 - Acquisition Parameters
Date_               20140911
Time                    0.56
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG              zgpg30
TD                     16540
SOLVENT                CDCl3
NS                       256
DS                         4
SWH                24038.461 Hz
FIDRES              1.453353 Hz
AQ                  0.3440820 sec
RG                     200.34
DW                     20.800 usec
DE                      6.50 usec
TE                     298.3 K
D1                  1.00000000 sec
D11                 0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                      13C
P1                       9.25 usec
PLW1               47.00000000 W
SFO1             100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                   90.00 usec
PLW2               7.75000000 W
PLW12              0.23583999 W
PLW13              0.19103000 W
SFO2             400.1316005 MHz

F2 - Processing parameters
SI                         32768
SF               100.6127567 MHz
WDW                           EM
SSB          0
LB                      1.00 Hz
GB           0
PC                      1.40
```

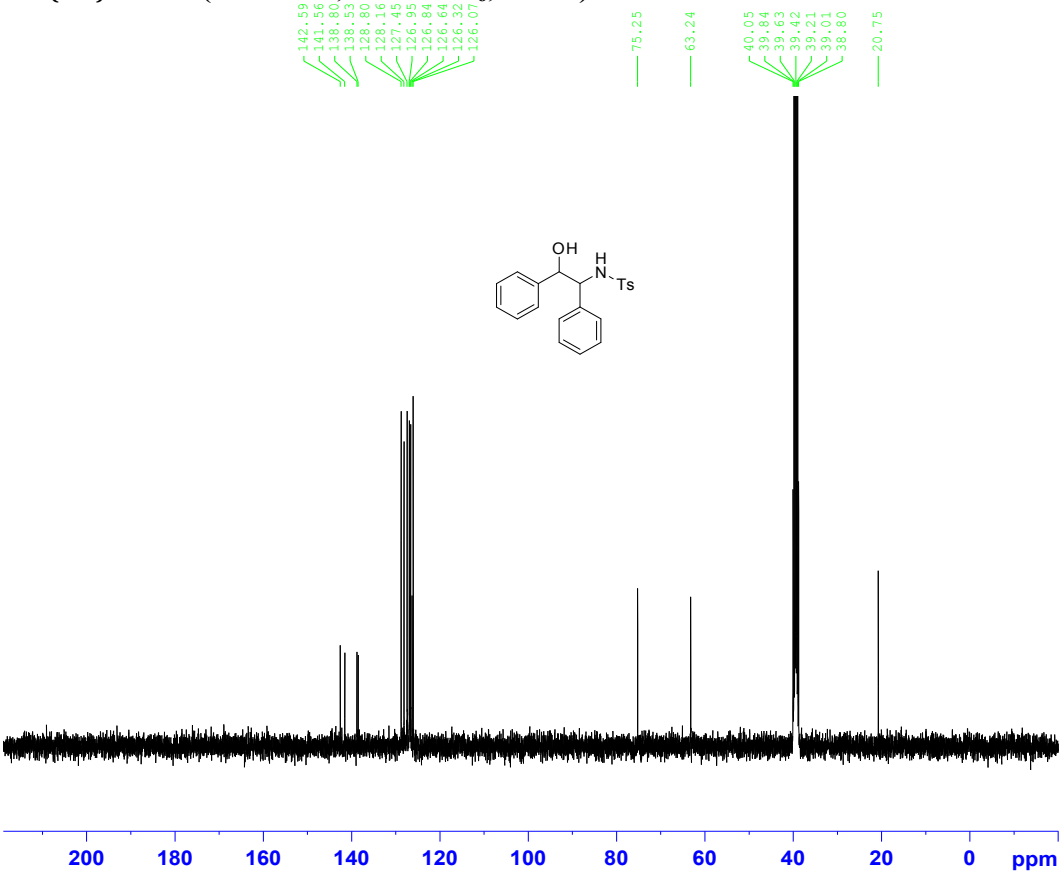
N-(2-Hydroxy-1,2-diphenylethyl)-4-methylbenzenesulfonamide :

^{1}H NMR (400 MHz, DMSO-d$_6$, 24 °C)



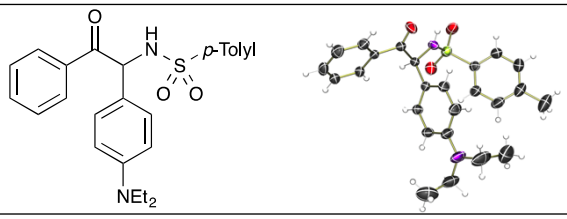

```
Current Data Parameters
NAME                  spa41014
EXPNO                      275
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20141008
Time                     19.49
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                  zg30
TD                      65536
SOLVENT                  DMSO
NS                         16
DS                          2
SWH                  8012.820 Hz
FIDRES               0.122266 Hz
AQ                   4.0894966 sec
RG                       200.34
DW                       62.400 usec
DE                        6.50 usec
TE                       298.9 K
D1                  0.50000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        1H
P1                       15.70 usec
PLW1                7.75000000 W
SFO1              400.1320007 MHz

F2 - Processing parameters
SI                      65536
SF                400.1299787 MHz
WDW                        EM
SSB          0
LB                       0.30 Hz
GB           0
PC                       1.00
```

^{13}C{^{1}H} NMR (100 MHz, DMSO-d$_6$, 24 °C)




```
Current Data Parameters
NAME                  spa41014
EXPNO                      276
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20141008
Time                     20.02
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                      16540
SOLVENT                  DMSO
NS                         512
DS                           4
SWH                 24038.461 Hz
FIDRES               1.453353 Hz
AQ                   0.3440820 sec
RG                       200.34
DW                       20.800 usec
DE                        6.50 usec
TE                       299.5 K
D1                  1.00000000 sec
D11                 0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                        9.25 usec
PLW1               47.00000000 W
SFO1              100.6228289 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                        1H
PCPD2                    90.00 usec
PLW2                7.75000000 W
PLW12               0.23583999 W
PLW13               0.19103000 W
SFO2              400.1316005 MHz

F2 - Processing parameters
SI                      32768
SF                100.6128267 MHz
WDW                        EM
SSB          0
LB                       1.00 Hz
GB           0
PC                       1.40
```

11. Crystallographic data and structure refinements summary for compound 2a.

DATA	2a
Molecular Structure (Ortep Structure)	
CCDC number	1030816
Formula	$C_{25}H_{28}N_2O_3S$
Formula weight	436.58
Color	Colorless
Temperature/K	298(2)
Radiation	Mo Kα
Wavelength/Å	0.71073
Crystal system	Monoclinic
Space group	*C 2/c*
a (Å)	10.9399(18)
b (Å)	21.020(4)
c (Å)	20.547(4)
α (°)	90
β (°)	98.769(6)
γ (°)	90
Volume (Å^3)	4669.6(14)
Z	8
Density (g/ml)	1.242
μ (1/mm)	0.167
F (000)	1856
θ (min, max)	1.94, 23.51
No. of unique reflns	3177
No. of parameters	283
*R*_obs, wR_2_obs	0.0451, 0.0977
$\Delta\rho_{min}$, $\Delta\rho_{max}$ (eÅ^{-3})	−0.271, 0.177
GooF	1.041