

Electronic Supplementary Information

Syntheses of Indolizinones From an Intramolecular One-Pot Process of *gem*-Dibromoolefins

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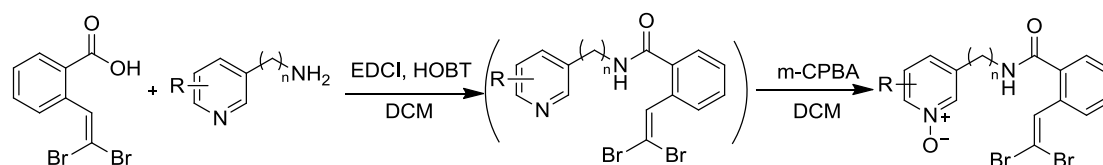
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I. General Information

All reactions involving air sensitive reagents were carried out in pre-heated glassware under an argon atmosphere using standard Schlenk techniques. All reagents were obtained from commercial suppliers and used without further purification. Reactions were monitored using thin-layer chromatography (TLC) on commercial silica gel plates (GF254). Column chromatography was performed on silica gel (200-300 mesh). ^1H and ^{13}C NMR spectra were recorded on a 400 or 500 MHz spectrometer. The ^1H NMR chemical shifts were measured relative to CDCl_3 or DMSO-d_6 as the internal reference (CDCl_3 : $\delta = 7.26$; DMSO-d_6 : $\delta = 2.50$). The ^{13}C NMR chemical shifts were given using CDCl_3 or DMSO-d_6 as the internal standard (CDCl_3 : $\delta = 77.16$; DMSO-d_6 : $\delta = 39.52$). The following abbreviations were used to describe peak splitting patterns when appropriate: br s = broad singlet, s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet. High resolution mass spectra (HRMS) were obtained on an ESI-LC-MS/MS Spectrometer.

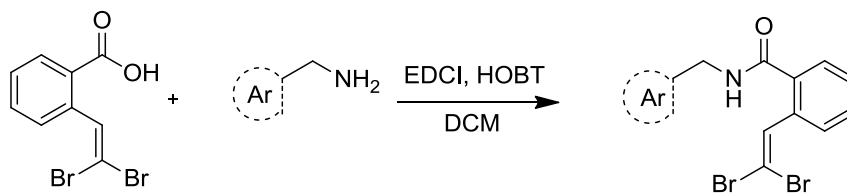
II. General procedure for the preparation of starting material 1

1. General procedure for the preparation of pyridines N-oxides (1b–1e)

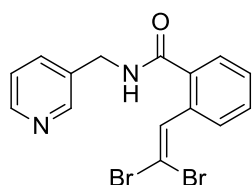


To a solution of 2-(2,2-dibromovinyl)benzoic acid (1.0 equiv) in dichloromethane were added EDCI (1.1 equiv) and HOBT (1.1 equiv), then amine reagent (1.0 equiv) was added and the reaction mixture was stirred at r.t. for 1h. The reaction mixture was washed with brine and the organic layer was dried over anhydrous Na_2SO_4 . Then m-CPBA (2.0 equiv) was added to the organic layer and the reaction mixture was stirred at r.t. for 5h. The reaction mixture was quenched by Na_2SO_3 and brine. The resulting mixture was extracted with dichloromethane. The combined organic extracts were dried over anhydrous Na_2SO_4 and concentrated under reduced pressure. The crude product was purified by column chromatography to give the pure product.

2. General procedure for the preparation of other starting material (**1a**, **1g–1t**)

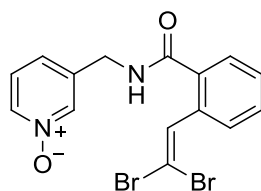


To a solution of 2-(2,2-dibromovinyl)benzoic acid (1.0 equiv) in dichloromethane were added EDCI (1.1 equiv) and HOBT (1.1 equiv), then amine reagent (1.0 equiv) was added and the reaction mixture was stirred at r.t. for 1h. The reaction mixture was added brine. The resulting mixture was extracted with dichloromethane. The combined organic extracts were dried over anhydrous Na₂SO₄ and concentrated under reduced pressure. The crude product was purified by column chromatography to give the pure product.



2-((2-(2,2-dibromovinyl)benzoyl)amino)methyl)pyridine (**1a**)

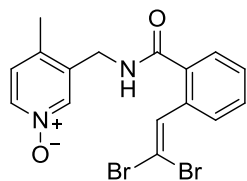
Yield = 48.8%. Yed oil. ¹H NMR (400 MHz, CDCl₃): δ= 8.53 (s, 1H), 8.48 (s, 1H), 7.73 (d, *J* = 8 Hz, 2H), 7.53 (t, *J* = 8 Hz, 2H), 7.45 (t, *J* = 8 Hz, 1H), 7.36 (t, *J* = 8 Hz, 1H), 7.29 (t, *J* = 8 Hz, 1H), 6.69 (s, 1H), 4.59 (d, *J* = 8 Hz, 2H) ppm. ¹³C NMR (500 MHz, CDCl₃): δ= 168.55, 149.17, 149.00, 136.08, 135.94, 134.75, 134.26, 133.95, 130.57, 129.70, 128.69, 127.60, 123.95, 92.29, 41.62 ppm.



3-((2-(2,2-dibromovinyl)benzoyl)amino)methyl)pyridine 1-oxide (**1b**)

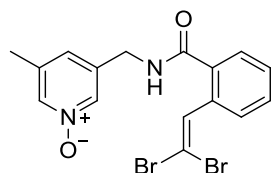
Yield = 45%. White solid. M.p. 147-148 °C. ¹H NMR (400 MHz, CDCl₃): 8.12 (s, 1H), 7.93 (d, *J* = 4Hz, 1H), 7.76 (s, 1H), 7.60-7.54 (m, 2H), 7.50-7.46 (m, 1H), 7.42-7.35 (m, 2H), 7.24-7.20 (m, 2H), 4.55 (d, *J* = 4Hz, 2H) ppm. ¹³C NMR (500 MHz, DMSO-d₆): δ= 167.71, 138.78, 137.62, 137.24, 136.60, 134.75, 133.95, 130.14,

129.06, 128.43, 127.67, 126.23, 124.24, 90.53, 40.00 ppm.



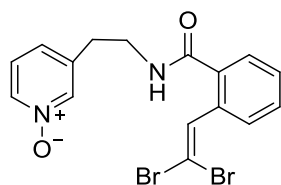
3-((2-(2,2-dibromovinyl)benzamido)methyl)-4-methylpyridine 1-oxide (1c)

Yield = 64.6%. Yellow solid. M.p. 140-141 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 8.07 (s, 1H), 7.76-7.63 (m, 2H), 7.61 (d, $J = 8\text{Hz}$, 1H), 7.56 (d, $J = 8\text{Hz}$, 1H), 7.49-7.45 (m, 2H), 7.39 (t, $J = 8\text{Hz}$, 1H), 7.01 (d, $J = 8\text{Hz}$, 1H), 4.56 (d, $J = 4\text{Hz}$, 2H), 2.38 (s, 3H) ppm. $^{13}\text{C NMR}$ (500 MHz, DMSO-d_6): $\delta = 167.93, 138.09, 137.12, 136.98, 136.47, 135.22, 135.14, 134.39, 130.55, 129.51, 128.86, 128.12, 127.94, 90.88, 38.78, 17.62$ ppm.



3-((2-(2,2-dibromovinyl)benzamido)methyl)-5-methylpyridine 1-oxide (1d)

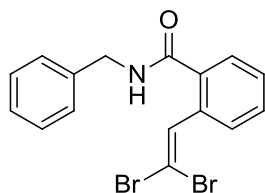
Yield = 48.8%. White solid. M.p. 145-146 °C. $^1\text{H NMR}$ (500 MHz, CDCl_3): 9.00 (s, 1H), 8.05 (s, 2H), 7.82 (s, 1H), 7.62-7.49 (m, 4H), 7.14 (s, 1H), 4.37 (d, $J = 5\text{Hz}$, 2H), 2.27 (s, 3H) ppm. $^{13}\text{C NMR}$ (500 MHz, DMSO-d_6): $\delta = 168.15, 138.45, 137.46, 137.12, 136.80, 135.42, 135.25, 134.43, 130.56, 129.47, 128.86, 128.13, 125.65, 90.89, 39.48, 18.13$ ppm.



3-(2-(2-(2,2-dibromovinyl)benzamido)ethyl)pyridine 1-oxide (1e)

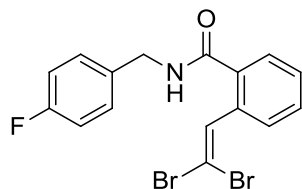
Yield = 76.5%. Yellow oil. $^1\text{H NMR}$ (400 MHz, CDCl_3): 8.07 (s, 1H), 7.96 (s, 1H), 7.73 (s, 1H), 7.54 (d, $J = 8\text{Hz}$, 1H), 7.46-7.41 (m, 2H), 7.36-7.32 (m, 1H), 7.21 (d, $J = 4\text{Hz}$, 2H), 6.60 (s, 1H), 3.70 (dd, 2H), 2.92 (t, $J = 8\text{Hz}$, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta = 168.54, 139.15, 138.25, 137.32, 136.06, 134.68, 134.14, 130.33,$

129.60, 128.51, 127.33, 126.90, 125.83, 91.83, 39.97, 32.47 ppm.



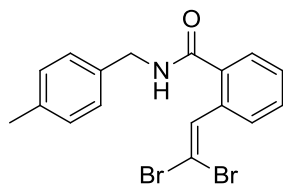
N-benzyl-2-(2,2-dibromovinyl)benzamide (1g)

Yield = 54.6%. White solid. M.p. 95-97 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.78 (s, 1H), 7.58-7.54 (m, 2H), 7.47-7.43 (m, 1H), 7.40-7.35 (m, 5H), 7.33-7.30 (m, 1H), 6.12 (s, 1H), 4.62 (d, $J = 4\text{Hz}$, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta = 168.28, 137.96, 136.18, 135.14, 134.24, 130.47, 129.77, 129.08, 128.74, 128.04, 127.88, 127.66, 92.29, 44.41$ ppm.



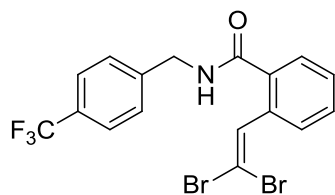
2-(2,2-dibromovinyl)-N-(4-fluorobenzyl)benzamide (1h)

Yield = 72.3%. White solid. M.p. 91-93 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.74 (s, 1H), 7.55 (t, $J = 8\text{Hz}$, 2H), 7.46 (t, $J = 8\text{Hz}$, 1H), 7.40-7.32 (m, 3H), 7.06 (t, $J = 8\text{Hz}$, 2H), 6.13 (s, 1H), 4.58 (d, $J = 4\text{Hz}$, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta = 168.29, 163.45, 161.49, 136.17, 135.02, 134.22, 133.86, 133.84, 130.54, 129.78, 129.71, 128.76, 127.64, 116.01, 115.84, 92.37, 43.63$ ppm.



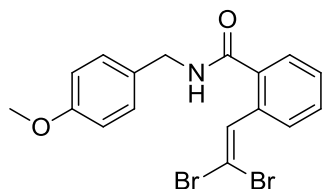
2-(2,2-dibromovinyl)-N-(4-methylbenzyl)benzamide (1i)

Yield = 87.7%. White solid. M.p. 90-91 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.78 (s, 1H), 7.58-7.53 (m, 2H), 7.45 (t, $J = 8\text{Hz}$, 1H), 7.37 (t, $J = 8\text{Hz}$, 1H), 7.24 (d, $J = 4\text{Hz}$, 2H), 7.18 (d, $J = 8\text{Hz}$, 2H), 6.07 (s, 1H), 4.57 (d, $J = 4\text{Hz}$, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, DMSO-d_6): $\delta = 168.15, 138.45, 137.46, 137.12, 136.80, 135.42, 135.25, 134.43, 130.56, 129.47, 128.86, 128.13, 125.65, 90.89, 18.13$ ppm.



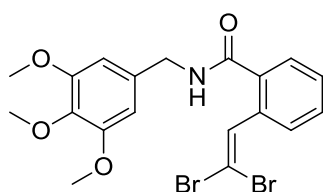
2-(2,2-dibromovinyl)-N-(4-(trifluoromethyl)benzyl)benzamide (1j)

Yield = 84.8%. Yellow solid. M.p. 82-83 °C. ¹H NMR (400 MHz, CDCl₃): 7.74 (s, 1H), 7.63 (d, *J* = 8Hz, 2H), 7.57-7.55 (m, 2H), 7.49-7.45 (m, 3H), 7.39 (t, *J* = 8Hz, 1H), 6.27 (s, 1H), 4.67 (d, *J* = 8Hz, 2H) ppm. ¹³C NMR (500 MHz, CDCl₃): δ= 168.48, 142.15, 136.15, 134.81, 134.30, 130.67, 129.83, 128.79, 128.16, 127.61, 126.01, 125.98, 125.95, 92.49, 43.77 ppm.



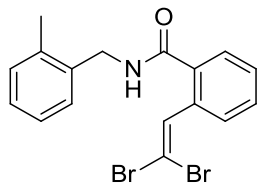
2-(2,2-dibromovinyl)-N-(4-methoxybenzyl)benzamide (1k)

Yield = 85.3%. White solid. M.p. 92-94 °C. ¹H NMR (400 MHz, CDCl₃): 7.76 (s, 1H), 7.57-7.52 (m, 2H), 7.44 (t, *J* = 8Hz, 1H), 7.37 (t, *J* = 8Hz, 1H), 7.28 (t, *J* = 8Hz, 2H), 6.90 (d, *J* = 8Hz, 2H), 6.07 (s, 1H), 4.54 (d, *J* = 4Hz, 2H), 3.80 (s, 3H) ppm. ¹³C NMR (500 MHz, CDCl₃): δ= 168.18, 159.36, 136.18, 135.21, 134.19, 130.40, 130.06, 129.73, 129.41, 128.71, 127.65, 114.46, 92.21, 55.48, 43.88 ppm.



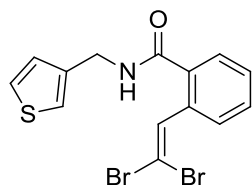
2-(2,2-dibromovinyl)-N-(3,4,5-trimethoxybenzyl)benzamide (1l)

Yield = 76.9%. Yellow solid. M.p. 153-154 °C. ¹H NMR (400 MHz, CDCl₃): 7.79 (s, 1H), 7.57 (t, *J* = 8Hz, 2H), 7.46 (t, *J* = 8Hz, 1H), 7.39 (t, *J* = 8Hz, 1H), 6.58 (s, 2H), 6.13 (s, 1H), 4.54 (d, *J* = 4Hz, 2H), 3.87 (s, 6H), 3.83 (s, 3H) ppm. ¹³C NMR (500 MHz, CDCl₃): δ= 168.01, 153.56, 137.57, 136.01, 134.79, 134.15, 133.57, 130.41, 129.70, 128.61, 127.44, 105.07, 91.99, 60.84, 56.22, 44.59 ppm.



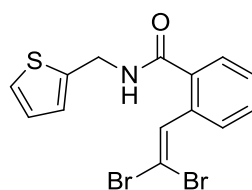
2-(2,2-dibromovinyl)-N-(2-methylbenzyl)benzamide (1m)

Yield = 86.1%. White solid. M.p. 98-99 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.79 (s, 1H), 7.58-7.53 (m, 2H), 7.43 (t, $J = 8\text{Hz}$, 1H), 7.37 (t, $J = 8\text{Hz}$, 1H), 7.30 (s, 1H), 7.25-7.22 (m, 3H), 5.93 (s, 1H), 4.62 (d, $J = 4\text{Hz}$, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta =$ 167.91, 136.49, 135.97, 135.36, 134.96, 134.09, 130.69, 130.25, 129.62, 128.67, 128.53, 127.98, 127.38, 126.40, 92.06, 42.35, 19.03 ppm.



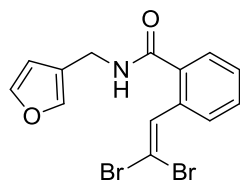
2-(2,2-dibromovinyl)-N-(thiophen-3-ylmethyl)benzamide (1n)

Yield = 59.6%. Yellow solid. M.p. 77-78 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.76 (s, 1H), 7.56-7.53 (m, 2H), 7.46-7.44 (m, 1H), 7.38-7.33 (m, 2H), 7.24 (m, 1H), 7.12-7.10 (m, 1H), 6.10 (s, 1H), 4.62 (d, $J = 4\text{ Hz}$, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, DMSO-d_6): $\delta =$ 167.97, 140.41, 136.84, 135.65, 133.97, 130.25, 129.25, 128.79, 127.87, 127.62, 126.67, 121.72, 90.91, 38.50 ppm.



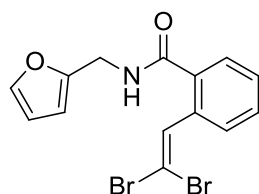
2-(2,2-dibromovinyl)-N-(thiophen-2-ylmethyl)benzamide (1o)

Yield = 87.5%. Yellow solid. M.p. 87-89 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.77 (s, 1H), 7.59-7.54 (m, 2H), 7.48-7.45 (m, 1H), 7.40-7.36 (m, 1H), 7.27 (m, 1H), 6.06-6.05 (m, 1H), 6.98-6.97 (m, 1H), 6.17 (s, 1H), 4.79 (d, $J = 4\text{ Hz}$, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta =$ 167.85, 140.33, 135.89, 134.63, 134.16, 130.40, 129.65, 128.56, 127.52, 127.02, 126.30, 125.49, 92.16, 38.87 ppm.



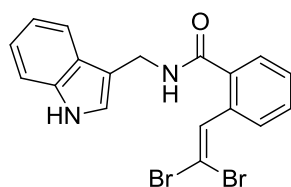
2-(2,2-dibromovinyl)-N-(furan-3-ylmethyl)benzamide (1p)

Yield = 56.9%. Brown oil. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.73 (s, 1H), 7.57-7.51 (m, 2H), 7.46-7.26 (m, 4H), 6.44 (s, 1H), 6.07 (s, 1H), 4.44 (d, $J = 4$ Hz, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta = 168.11, 143.65, 140.26, 135.94, 134.82, 133.99, 130.30, 129.55, 128.55, 127.49, 121.85, 110.24, 92.01, 34.98$ ppm.



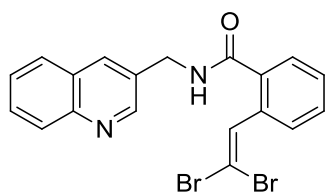
2-(2,2-dibromovinyl)-N-(furan-2-ylmethyl)benzamide (1q)

Yield = 87.5%. Yellow solid. M.p. 87-89 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.74 (s, 1H), 7.59-7.54 (m, 2H), 7.47-7.45 (m, 1H), 7.40-7.36 (m, 2H), 6.36-6.34 (m, 1H), 6.32-6.31 (m, 1H), 6.17 (s, 1H), 4.61 (d, $J = 4$ Hz, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta = 167.87, 150.69, 142.45, 135.85, 134.58, 134.10, 130.38, 129.62, 128.55, 127.63, 110.52, 107.73, 92.08, 37.07$ ppm.



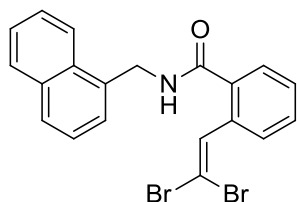
N-((1H-indol-3-yl)methyl)-2-(2,2-dibromovinyl)benzamide (1r)

Yield = 54.7%. Yellow oil. $^1\text{H NMR}$ (400 MHz, CDCl_3): 8.52 (s, 1H), 7.73 (s, 1H), 7.67 (d, $J = 8$ Hz, 1H), 7.53 (d, $J = 8$ Hz, 1H), 7.46 (d, $J = 8$ Hz, 1H), 6.41-6.27 (m, 3H), 7.23-7.12 (m, 2H), 6.13 (s, 1H), 4.76 (d, $J = 8$ Hz, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta = 168.34, 136.64, 135.98, 135.14, 134.12, 130.29, 129.63, 128.61, 127.54, 126.54, 123.59, 122.53, 120.12, 118.81, 112.13, 111.60, 91.98, 35.89$ ppm.



2-(2,2-dibromovinyl)-N-(quinolin-3-ylmethyl)benzamide (1s)

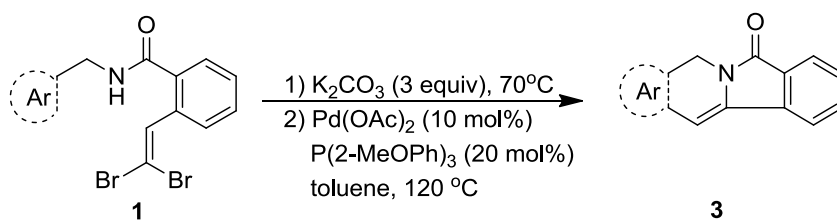
Yield = 68.4%. White oil. $^1\text{H NMR}$ (400 MHz, CDCl_3): 8.92 (s, 1H), 8.17 (s, 1H), 7.10 (d, $J = 8$ Hz, 1H), 7.85 (d, $J = 8$ Hz, 1H), 7.77 (s, 1H), 7.71 (t, $J = 2$ Hz, 1H), 7.59-7.55 (m, 3H), 7.47 (d, $J = 8$ Hz, 1H), 7.40 (d, $J = 8$ Hz, 1H), 6.35 (s, 1H), 4.82 (d, $J = 8$ Hz, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta = 168.47, 150.41, 135.93, 135.29, 134.88, 134.48, 134.16, 130.76, 130.52, 129.95, 129.60, 128.99, 128.58, 127.78, 127.50, 127.24, 127.03, 92.17, 41.73$ ppm.



2-(2,2-dibromovinyl)-N-(naphthalen-1-ylmethyl)benzamide (1t)

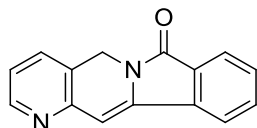
Yield = 89.5%. Yellow solid. M.p. 105-106 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 8.10 (d, $J = 8$ Hz, 1H), 7.89 (d, $J = 8$ Hz, 1H), 7.84 (d, $J = 8$ Hz, 1H), 7.72 (s, 1H), 7.61 (t, $J = 8$ Hz, 1H), 7.55-7.40 (m, 6H), 7.33 (t, $J = 8$ Hz, 1H), 6.08 (s, 1H), 5.07 (d, $J = 4$ Hz, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta = 167.95, 136.02, 135.00, 134.26, 134.20, 133.27, 131.57, 130.45, 129.75, 129.06, 129.02, 128.68, 127.69, 127.18, 127.10, 126.28, 125.60, 123.59, 92.20, 42.57$ ppm.

III. General procedure for the preparation of indolizone compounds 3



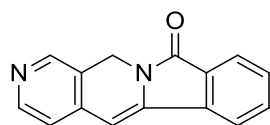
Compound **1** (1.0 equiv) was dissolved in toluene and K_2CO_3 (3.0 equiv) was added. The mixture was stirred at 70°C for 5h. Then $\text{Pd}(\text{OAc})_2$ (10 mol%) and $\text{P}(2\text{-MeOPh})_3$

(20 mol%) were added. The reaction mixture was stirred under an argon atmosphere at 120°C for 12 h. The resulting mixture was concentrated in vacuo and purified by column chromatography on silica gel to give the product **3**.



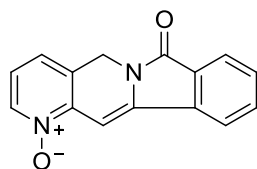
isoindolo[2,1-g][1,6]naphthyridin-7(5H)-one (3a)

Yield = 90.0% (from **1b**), 30.0% (from **1a**). Yellow solid. M.p. 202-204 °C. ¹H NMR (400 MHz, CDCl₃): 8.47 (d, *J* = 4 Hz, 1H), 7.91 (d, *J* = 8 Hz, 1H), 7.82 (d, *J* = 8 Hz, 1H), 7.67-7.63 (m, 1H), 7.60-7.56 (m, 1H), 7.49 (d, *J* = 8 Hz, 1H), 7.14-7.11 (m, 1H), 6.64 (s, 1H), 5.15 (s, 2H) ppm. ¹³C NMR (500 MHz, CDCl₃): δ= 166.07, 150.13, 149.10, 138.41, 134.33, 133.85, 131.91, 130.26, 129.15, 125.29, 123.31, 121.86, 120.94, 104.13, 42.64 ppm. HRMS (ESI): calcd for C₁₅H₁₁N₂O [M+H]⁺ 235.0867, found 235.0856.



isoindolo[2,1-b][2,6]naphthyridin-7(5H)-one (4)

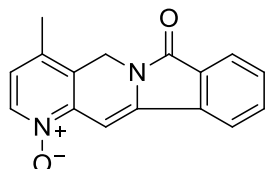
Yield = 60.2%. Yellow solid. M.p. 208-209 °C. ¹H NMR (400 MHz, CDCl₃): 8.48-8.45 (m, 2H), 7.92 (d, *J* = 8 Hz, 1H), 7.79 (d, *J* = 8 Hz, 1H), 7.67-7.57 (m, 2H), 7.09 (d, *J* = 4 Hz, 1H), 6.38 (s, 1H), 5.12 (s, 2H) ppm. ¹³C NMR (500 MHz, CDCl₃): δ= 166.35, 149.80, 147.69, 138.40, 138.11, 134.31, 132.13, 130.70, 129.67, 123.80, 123.63, 120.94, 120.57, 100.37, 40.84 ppm. HRMS (ESI): calcd for C₁₅H₁₁N₂O [M+H]⁺ 235.0867, found 235.0851.



7-oxo-5,7-dihydroisoindolo[2,1-g][1,6]naphthyridine 1-oxide (3b)

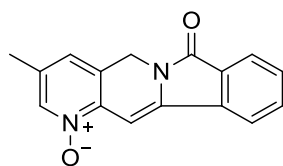
Yield = 90.6%. Yellow solid. M.p. 217-219 °C. ¹H NMR (400 MHz, CDCl₃): 8.13 (t, *J* = 4 Hz, 1H), 7.90-7.85 (m, 2H), 7.67 (t, *J* = 8 Hz, 1H), 7.60 (t, *J* = 8 Hz, 1H), 7.33

(s, 1H), 7.06 (d, $J = 4$ Hz, 2H), 5.12 (s, 2H) ppm. ^{13}C NMR (500 MHz, CDCl_3): $\delta =$ 165.98, 142.30, 139.80, 138.43, 134.12, 132.37, 130.83, 129.09, 128.19, 123.45, 123.02, 122.79, 121.46, 93.33, 42.01 ppm. HRMS (ESI): calcd for $\text{C}_{15}\text{H}_{11}\text{N}_2\text{O}_2$ $[\text{M}+\text{H}]^+$ 251.0815, found 251.0821.



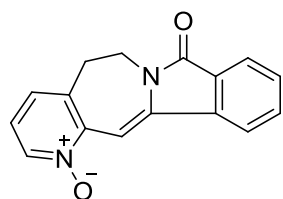
4-methyl-7-oxo-5,7-dihydroisindolo[2,1-g][1,6]naphthyridine 1-oxide (3c)

Yield = 81.2%. Yellow solid. M.p. 237-329 °C. ^1H NMR (400 MHz, CDCl_3): 8.05 (d, $J = 4$ Hz, 1H), 7.92-7.86 (m, 2H), 7.67 (t, $J = 8$ Hz, 1H), 7.60 (t, $J = 8$ Hz, 1H), 7.36 (s, 1H), 6.90 (d, $J = 4$ Hz, 1H), 5.02 (s, 2H), 2.28 (s, 3H) ppm. ^{13}C NMR (500 MHz, CDCl_3): $\delta =$ 165.99, 141.47, 139.10, 137.59, 134.01, 133.30, 132.32, 130.74, 129.10, 126.53, 124.57, 123.40, 121.49, 93.57, 40.86, 17.71 ppm. HRMS (ESI): calcd for $\text{C}_{16}\text{H}_{13}\text{N}_2\text{O}_2$ $[\text{M}+\text{H}]^+$ 265.0972, found 265.1003.



3-methyl-7-oxo-5,7-dihydroisindolo[2,1-g][1,6]naphthyridine 1-oxide (3d)

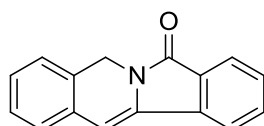
Yield = 84.2%. Yellow solid. M.p. 228-229 °C. ^1H NMR (400 MHz, CDCl_3): 8.00 (s, 1H), 7.90-7.84 (m, 2H), 7.66 (t, $J = 8$ Hz, 1H), 7.59 (t, $J = 8$ Hz, 1H), 7.31 (s, 1H), 6.91 (s, 1H), 5.08 (s, 2H), 2.30 (s, 3H) ppm. ^{13}C NMR (500 MHz, CDCl_3): $\delta =$ 166.02, 139.57, 138.87, 138.20, 134.20, 133.82, 132.31, 130.63, 129.09, 127.65, 124.80, 123.41, 121.36, 93.55, 41.97, 18.28 ppm. HRMS (ESI): calcd for $\text{C}_{16}\text{H}_{13}\text{N}_2\text{O}_2$ $[\text{M}+\text{H}]^+$ 265.0972, found 265.0986.



8-oxo-6,8-dihydro-5H-pyrido[2',3':4,5]azepino[2,1-a]isoindole 1-oxide (3e)

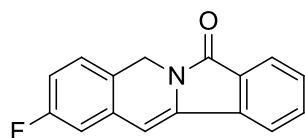
Yield = 63.3%. Yellow solid. M.p. 216-217 °C. ^1H NMR (400 MHz, CDCl_3):

8.25-8.24 (m, 1H), 7.97 (d, $J = 8$ Hz, 1H), 7.85 (d, $J = 8$ Hz, 1H), 7.67-7.64 (m, 2H), 7.56-7.53 (m, 1H), 7.05 (s, 2H), 3.13 (s, 2H) ppm. ^{13}C NMR (500 MHz, CDCl_3): $\delta =$ 165.93, 145.42, 139.94, 138.46, 138.04, 137.05, 132.56, 130.10, 128.23, 126.26, 123.62, 122.43, 120.62, 95.97, 40.98, 34.11 ppm. HRMS (ESI): calcd for $\text{C}_{16}\text{H}_{13}\text{N}_2\text{O}_2$ $[\text{M}+\text{H}]^+$ 265.0972, found 265.0982.



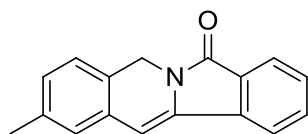
isoindolo[2,1-b]isoquinolin-7(5H)-one (3g)

Yield = 84.6%. Yellow solid. M.p. 149-151 °C. ^1H NMR (400 MHz, CDCl_3): 7.91 (d, $J = 8$ Hz, 1H), 7.77 (d, $J = 8$ Hz, 1H), 7.61 (t, $J = 8$ Hz, 1H), 7.53 (t, $J = 8$ Hz, 1H), 7.26 (m, 4H), 6.48 (s, 1H), 5.13 (s, 2H) ppm. ^{13}C NMR (500 MHz, CDCl_3): $\delta =$ 166.17, 134.57, 134.05, 131.39, 130.30, 129.34, 129.27, 127.98, 127.89, 127.30, 126.74, 123.11, 120.15, 103.44, 42.96 ppm. HRMS (ESI): calcd for $\text{C}_{16}\text{H}_{12}\text{NO}$ $[\text{M}+\text{H}]^+$ 234.0914, found 234.0979.



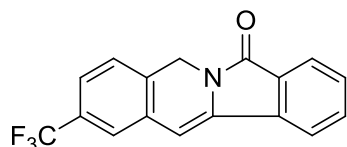
2-fluoroisoindolo[2,1-b]isoquinolin-7(5H)-one (3h)

Yield = 95.2%. Yellow solid. M.p. 203-205 °C. ^1H NMR (400 MHz, CDCl_3): 7.90 (d, $J = 8$ Hz, 1H), 7.76 (d, $J = 8$ Hz, 1H), 7.62 (t, $J = 8$ Hz, 1H), 7.54 (t, $J = 8$ Hz, 1H), 7.17 (t, $J = 8$ Hz, 1H), 6.95-6.91 (m, 2H), 6.40 (s, 1H), 5.07 (s, 2H) ppm. ^{13}C NMR (500 MHz, CDCl_3): $\delta =$ 166.34, 163.39, 161.44, 135.35, 134.51, 132.63, 132.57, 131.77, 129.92, 129.53, 128.28, 128.21, 124.90, 124.88, 123.41, 120.51, 114.71, 114.53, 113.88, 113.70, 102.46, 102.44, 42.73 ppm. HRMS (ESI): calcd for $\text{C}_{16}\text{H}_{11}\text{FNO}$ $[\text{M}+\text{H}]^+$ 252.0819, found 252.0833.



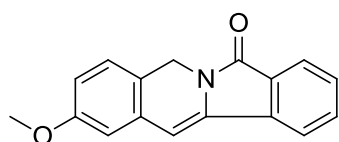
2-methylisoindolo[2,1-b]isoquinolin-7(5H)-one (3i)

Yield = 92.2%. Yellow solid. M.p. 187-189 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.90 (d, $J = 8$ Hz, 1H), 7.76 (d, $J = 8$ Hz, 1H), 7.60 (t, $J = 8$ Hz, 1H), 7.52 (t, $J = 8$ Hz, 1H), 7.13-7.05 (m, 3H), 6.44 (s, 1H), 5.08 (s, 2H), 2.35 (s, 3H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta = 166.18, 137.54, 134.62, 134.02, 131.32, 130.12, 129.30, 129.25, 128.73, 127.96, 126.60, 126.35, 123.10, 120.11, 103.62, 42.77, 20.97$ ppm. HRMS (ESI): calcd for $\text{C}_{17}\text{H}_{14}\text{NO}$ $[\text{M}+\text{H}]^+$ 248.1070, found 248.1082.



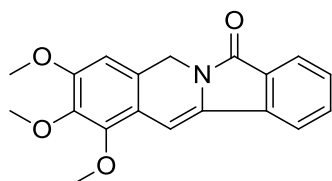
2-(trifluoromethyl)isoindolo[2,1-b]isoquinolin-7(5H)-one (3j)

Yield = 66.3%. Yellow solid. M.p. 213-214 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.91 (d, $J = 8$ Hz, 1H), 7.78 (d, $J = 8$ Hz, 1H), 7.64 (t, $J = 8$ Hz, 1H), 7.57 (t, $J = 8$ Hz, 1H), 7.47 (d, $J = 8$ Hz, 2H), 7.32 (d, $J = 8$ Hz, 1H), 6.47 (s, 1H), 5.16 (s, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta = 166.33, 135.71, 134.48, 132.94, 131.94, 131.53, 130.13, 129.47, 127.32, 124.54, 124.51, 123.85, 123.82, 123.50, 120.62, 101.95, 43.10$ ppm. HRMS (ESI): calcd for $\text{C}_{17}\text{H}_{11}\text{F}_3\text{NO}$ $[\text{M}+\text{H}]^+$ 302.0787, found 302.0793.



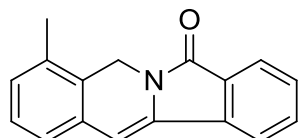
2-methoxyisoindolo[2,1-b]isoquinolin-7(5H)-one (3k)

Yield = 95.1%. Yellow solid. M.p. 136-137 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.90 (d, $J = 8$ Hz, 1H), 7.77 (d, $J = 8$ Hz, 1H), 7.61 (t, $J = 8$ Hz, 1H), 7.53 (t, $J = 8$ Hz, 1H), 7.14 (d, $J = 8$ Hz, 1H), 6.79 (s, 2H), 6.44 (s, 1H), 5.06 (s, 2H), 3.83 (s, 3H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta = 166.36, 159.34, 134.71, 134.67, 131.61, 131.57, 129.57, 129.54, 127.80, 123.31, 121.57, 120.34, 113.54, 112.75, 103.62, 55.55, 42.67$ ppm. HRMS (ESI): calcd for $\text{C}_{17}\text{H}_{14}\text{NO}_2$ $[\text{M}+\text{H}]^+$ 264.1019, found 264.1022.



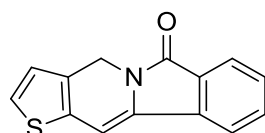
1,2,3-trimethoxyisoindolo[2,1-b]isoquinolin-7(5H)-one (3l)

Yield = 85.2%. Yellow solid. M.p. 177-179 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.89 (d, $J = 8$ Hz, 1H), 7.80 (d, $J = 8$ Hz, 1H), 7.60 (t, $J = 8$ Hz, 1H), 7.50 (t, $J = 8$ Hz, 1H), 6.78 (s, 1H), 6.56 (s, 1H), 5.04 (s, 2H), 3.98 (s, 3H), 3.90 (s, 6H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta =$ 166.01, 149.46, 147.35, 137.45, 134.46, 134.36, 131.85, 131.76, 129.96, 129.08, 124.89, 123.20, 120.75, 104.20, 42.55, 18.27 ppm. HRMS (ESI): calcd for $\text{C}_{19}\text{H}_{18}\text{NO}_4$ $[\text{M}+\text{H}]^+$ 324.1231, found 324.1249.



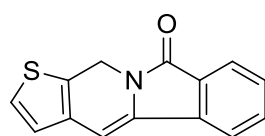
4-methylisoindolo[2,1-b]isoquinolin-7(5H)-one (3m)

Yield = 88.2%. Yellow solid. M.p. 200-201 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.92 (d, $J = 8$ Hz, 1H), 7.78 (d, $J = 8$ Hz, 1H), 7.61 (t, $J = 8$ Hz, 1H), 7.53 (t, $J = 8$ Hz, 1H), 7.18 (t, $J = 8$ Hz, 1H), 7.09 (d, $J = 8$ Hz, 2H), 6.46 (s, 1H), 5.03 (s, 2H), 2.32 (s, 3H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta =$ 166.32, 135.50, 134.60, 133.55, 131.50, 130.20, 130.05, 129.50, 129.42, 128.03, 127.79, 125.49, 123.29, 120.34, 104.07, 41.76, 18.85 ppm. HRMS (ESI): calcd for $\text{C}_{17}\text{H}_{14}\text{NO}$ $[\text{M}+\text{H}]^+$ 248.1070, found 248.1075.



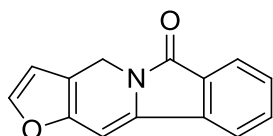
thieno[2',3':4,5]pyrido[2,1-a]isoindol-6(4H)-one (3n)

Yield = 88.4%. Yellow solid. M.p. 187-188 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.90 (d, $J = 8$ Hz, 1H), 7.72 (d, $J = 8$ Hz, 1H), 7.61-7.57 (m, 1H), 7.53-7.49 (m, 1H), 7.29 (d, $J = 4$ Hz, 1H), 6.98 (d, $J = 4$ Hz, 1H), 6.53 (s, 1H), 5.13 (s, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, DMSO-d_6): $\delta =$ 165.04, 133.92, 131.81, 131.66, 130.72, 130.37, 129.18, 128.14, 126.83, 126.55, 122.42, 120.75, 98.18, 42.06 ppm. HRMS (ESI): calcd for $\text{C}_{14}\text{H}_{10}\text{NOS}$ $[\text{M}+\text{H}]^+$ 240.0478, found 240.0479.



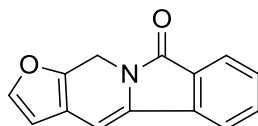
thieno[3',2':4,5]pyrido[2,1-a]isoindol-9(11H)-one (3o)

Yield = 87.2%. Yellow solid. M.p. 120-121 °C. ¹H NMR (400 MHz, CDCl₃): 7.89 (d, *J* = 8 Hz, 1H), 7.73 (d, *J* = 8 Hz, 1H), 7.59 (t, *J* = 8 Hz, 1H), 7.50 (t, *J* = 8 Hz, 1H), 7.27-7.26 (m, 1H), 6.99 (d, *J* = 4 Hz, 1H), 6.52 (s, 1H), 5.23 (s, 2H) ppm. ¹³C NMR (500 MHz, DMSO-d₆): δ= 161.71, 129.91, 128.25, 127.09, 126.65, 124.85, 124.25, 123.96, 120.37, 120.01, 118.32, 115.11, 93.95, 37.10 ppm. HRMS (ESI): calcd for C₁₄H₁₀NOS [M+H]⁺ 240.0478, found 240.0468.



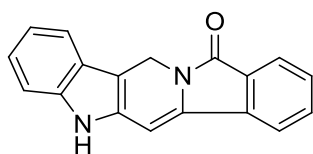
furo[2',3':4,5]pyrido[2,1-a]isoindol-6(4H)-one (3p)

Yield = 93.5%. Yellow solid. M.p. 172-173 °C. ¹H NMR (400 MHz, CDCl₃): 7.89 (d, *J* = 8 Hz, 1H), 7.70 (d, *J* = 8 Hz, 1H), 7.59 (t, *J* = 8 Hz, 1H), 7.50 (t, *J* = 8 Hz, 1H), 7.44 (s, 1H), 6.46 (s, 2H), 5.03 (s, 2H) ppm. ¹³C NMR (500 MHz, CDCl₃): δ= 166.38, 147.75, 143.67, 134.47, 133.84, 131.55, 129.22, 128.77, 123.32, 120.09, 114.71, 110.36, 94.05, 41.13 ppm. HRMS (ESI): calcd for C₁₄H₁₀NO₂ [M+H]⁺ 224.0706, found 224.0721.



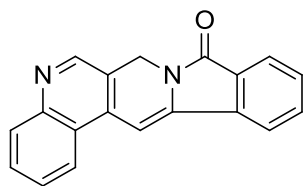
furo[3',2':4,5]pyrido[2,1-a]isoindol-9(11H)-one (3q)

Yield = 69.8%. Yellow solid. M.p. 112-113 °C. ¹H NMR (400 MHz, CDCl₃): 7.90 (d, *J* = 8 Hz, 1H), 7.70 (d, *J* = 8 Hz, 1H), 7.58 (t, *J* = 8 Hz, 1H), 7.48 (t, *J* = 8 Hz, 1H), 7.42 (s, 1H), 6.44 (s, 1H), 6.37 (s, 1H), 5.08 (s, 2H) ppm. ¹³C NMR (500 MHz, CDCl₃): δ= 166.11, 146.13, 143.59, 134.81, 132.20, 131.64, 129.10, 128.79, 123.37, 119.92, 115.65, 108.11, 97.43, 41.35 ppm. HRMS (ESI): calcd for C₁₄H₁₀NO₂ [M+H]⁺ 224.0706, found 224.0730.



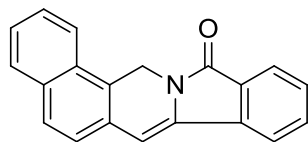
5H-benzo[1,2]indolizino[7,6-b]indol-11(13H)-one (3r)

Yield = 60.2%. Yellow solid. M.p. 182-184 °C. $^1\text{H NMR}$ (400 MHz, DMSO- d_6): 11.40 (s, 1H), 8.11 (d, $J = 8$ Hz, 1H), 7.82 (d, $J = 8$ Hz, 1H), 7.70 (t, $J = 8$ Hz, 1H), 7.59-7.52 (m, 2H), 7.39 (d, $J = 8$ Hz, 1H), 7.13 (t, $J = 8$ Hz, 1H), 7.05 (t, $J = 8$ Hz, 1H), 6.89 (s, 1H), 5.16 (s, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, DMSO- d_6): $\delta =$ 165.31, 137.35, 134.21, 133.91, 131.58, 130.08, 129.09, 127.95, 125.27, 122.40, 122.15, 120.94, 119.69, 118.01, 111.55, 104.64, 96.02, 39.35 ppm. HRMS (ESI): calcd for $\text{C}_{18}\text{H}_{13}\text{N}_2\text{O}$ $[\text{M}+\text{H}]^+$ 273.1022, found 273.1023.



benzo[h]isoindolo[2,1-b][2,6]naphthyridin-12(14H)-one (3s)

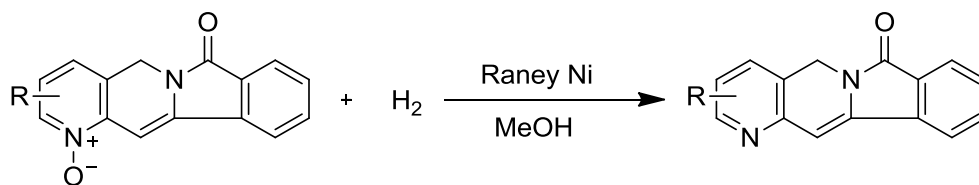
Yield = 58.4%. Yellow solid. M.p. 218-219 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 8.76 (s, 1H), 8.20 (d, $J = 12$ Hz, 1H), 8.11 (d, $J = 8$ Hz, 1H), 7.97-7.92 (m, 2H), 7.76-7.61 (m, 4H), 7.12 (s, 1H), 5.31 (s, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta =$ 148.49, 131.95, 130.59, 130.25, 129.38, 127.15, 123.50, 123.41, 122.16, 120.85, 120.11, 95.74, 41.56 ppm. HRMS (ESI): calcd for $\text{C}_{19}\text{H}_{13}\text{N}_2\text{O}$ $[\text{M}+\text{H}]^+$ 285.1022, found 285.1025.



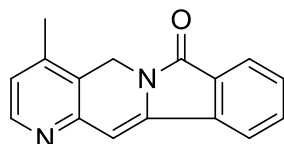
benzo[h]isoindolo[2,1-b]isoquinolin-12(14H)-one (3t)

Yield = 76.7%. Yellow solid. M.p. 208-209 °C. $^1\text{H NMR}$ (400 MHz, CDCl_3): 7.95 (d, $J = 8$ Hz, 1H), 7.90 (d, $J = 8$ Hz, 1H), 7.85-7.78 (m, 3H), 7.63-7.58 (m, 2H), 7.57-7.51 (m, 2H), 7.39 (d, $J = 8$ Hz, 1H), 6.59 (s, 1H), 5.52 (s, 2H) ppm. $^{13}\text{C NMR}$ (500 MHz, CDCl_3): $\delta =$ 166.56, 134.58, 134.21, 133.19, 131.60, 130.16, 129.55, 129.44, 128.83, 128.50, 127.64, 127.39, 126.27, 125.67, 124.26, 123.34, 122.53, 120.44, 103.73, 41.70 ppm. HRMS (ESI): calcd for $\text{C}_{20}\text{H}_{14}\text{NO}$ $[\text{M}+\text{H}]^+$ 284.1070, found 284.1097.

IV. General procedure for reduction of the pyridine N-oxides

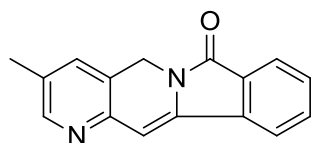


Methanol was added to the mixture of pyridine N-oxide (1.0 equiv) and Raney Ni (10%), and the reaction mixture was stirred under H₂ for 5h. The mixture was filtered to give the product.



4-methylisoindolo[2,1-g][1,6]naphthyridin-7(5H)-one (4c)

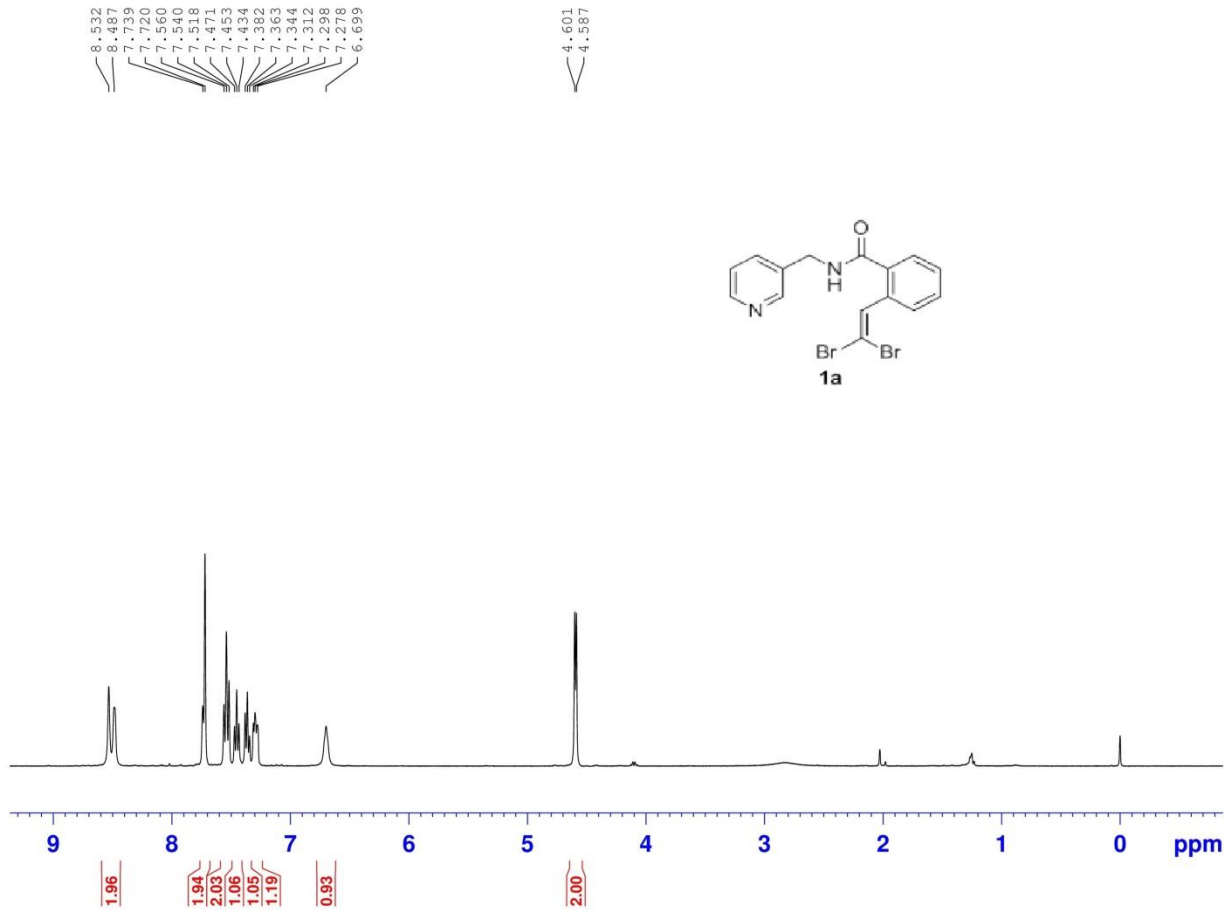
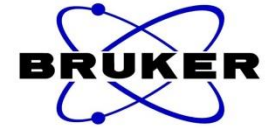
Yield = 95.4%. Yellow solid. M.p. 247-248 °C. ¹H NMR (400 MHz, CDCl₃): 8.34 (d, *J* = 4 Hz, 1H), 7.92 (d, *J* = 8 Hz, 1H), 7.82 (d, *J* = 8 Hz, 1H), 7.67-7.64 (m, 1H), 7.58 (t, *J* = 8 Hz, 1H), 6.96 (d, *J* = 4 Hz, 1H), 6.62 (s, 1H), 5.08 (s, 2H), 2.31 (s, 3H) ppm. ¹³C NMR (500 MHz, CDCl₃): δ = 166.05, 149.45, 148.61, 143.76, 137.68, 134.23, 131.83, 130.12, 129.19, 124.38, 123.74, 123.26, 120.90, 104.45, 41.04, 18.19 ppm. HRMS (ESI): calcd for C₁₆H₁₃N₂O [M+H]⁺ 249.1022, found 249.1032.



3-methylisoindolo[2,1-g][1,6]naphthyridin-7(5H)-one (4d)

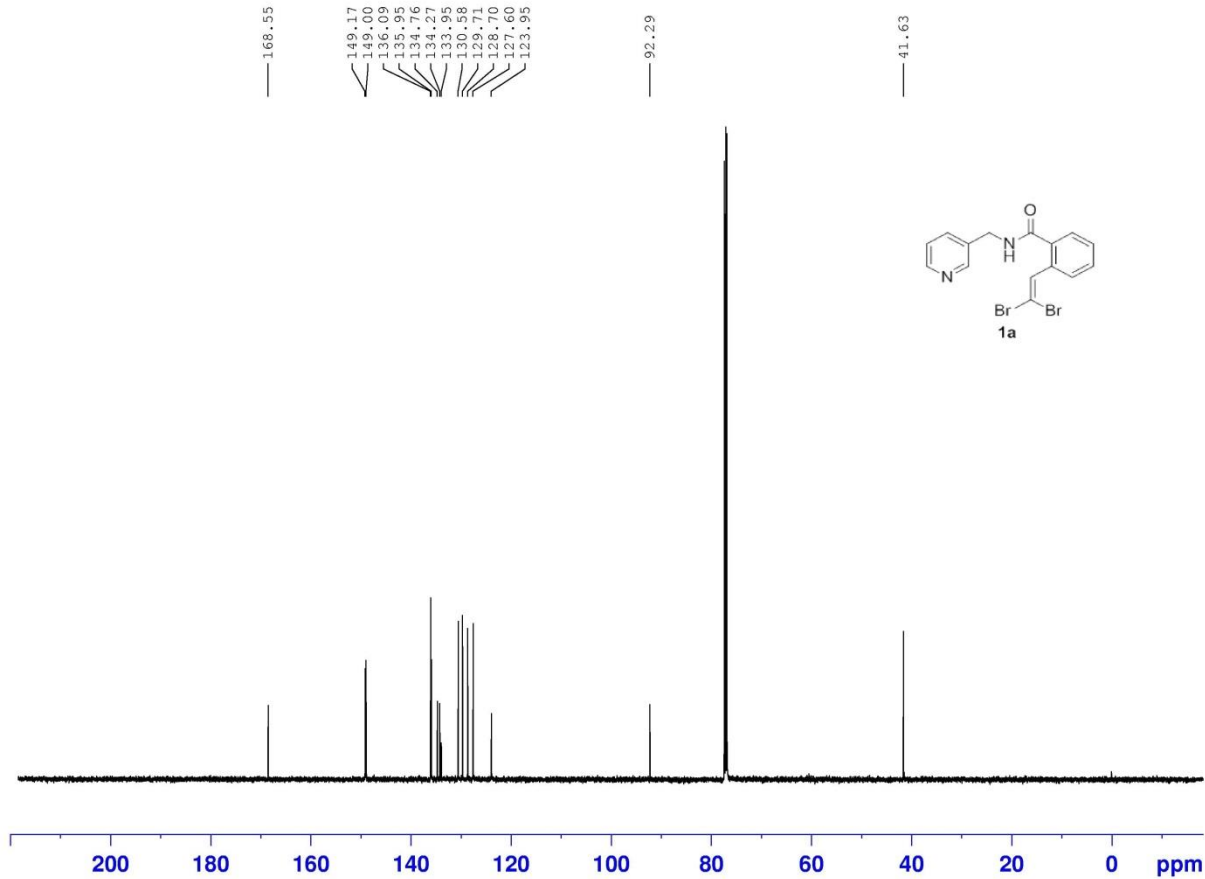
Yield = 96.3%. Yellow solid. M.p. 222-223 °C. ¹H NMR (400 MHz, CDCl₃): 8.31 (s, 1H), 7.90 (d, *J* = 8 Hz, 1H), 7.80 (d, *J* = 8 Hz, 1H), 7.62 (t, *J* = 8 Hz, 1H), 7.56 (t, *J* = 8 Hz, 1H), 7.31 (s, 1H), 6.63 (s, 1H), 5.11 (s, 2H), 2.34 (s, 3H) ppm. ¹³C NMR (500 MHz, CDCl₃): δ = 166.03, 149.40, 147.33, 137.48, 134.50, 134.36, 131.87, 131.77, 129.98, 129.08, 124.90, 123.21, 120.77, 104.15, 42.55, 18.27 ppm. HRMS (ESI): calcd for C₁₆H₁₃N₂O [M+H]⁺ 249.1022, found 249.1026.

V. Copies of ¹H and ¹³C NMR spectra



NAME TF120823-1
EXPNO 1
PROCNO 1
Date_ 20131224
Time 10.34
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 181
DW 60.400 usec
DE 6.50 usec
TE 298.0 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300044 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00

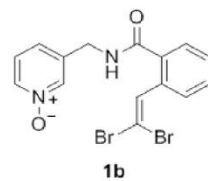


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NAME          TF120823-1
EXPNO         1
PROCNO        1
Date_         20131224
Time         23.18
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            870
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            297.9 K
D1            2.0000000 sec
D11           0.0300000 sec
TD0           1
===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz
===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320005 MHz
SI            32768
SF            125.7577775 MHz
WEW           EM
SFB           0
LB            1.00 Hz
GB            0
PC            1.40
```



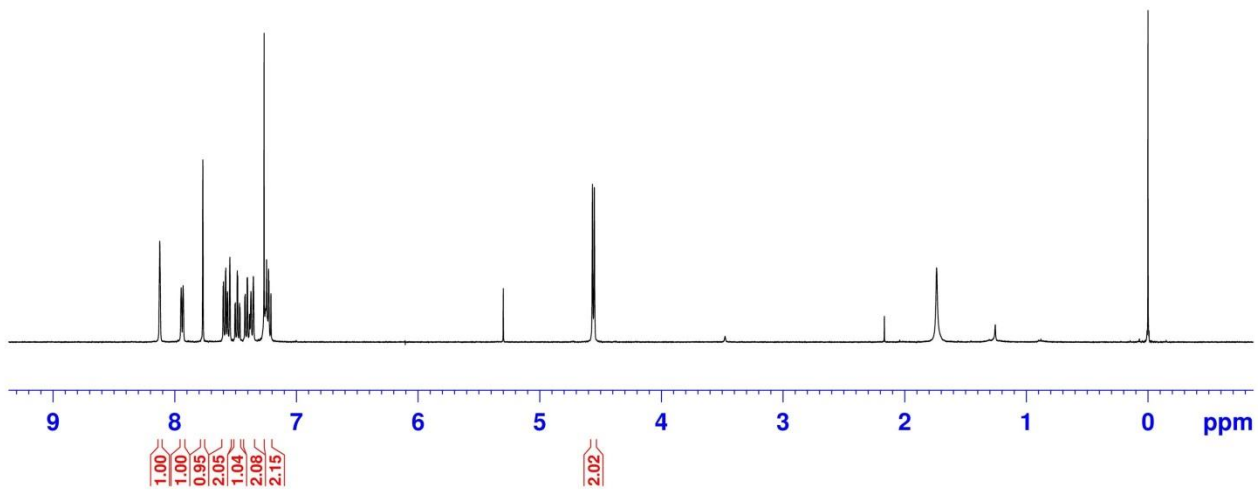
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7.931
7.768
7.601
7.598
7.582
7.578
7.566
7.546
7.504
7.501
7.486
7.482
7.466
7.463
7.423
7.420
7.404
7.401
7.373
7.353
7.252
7.245
7.229
7.225
7.209

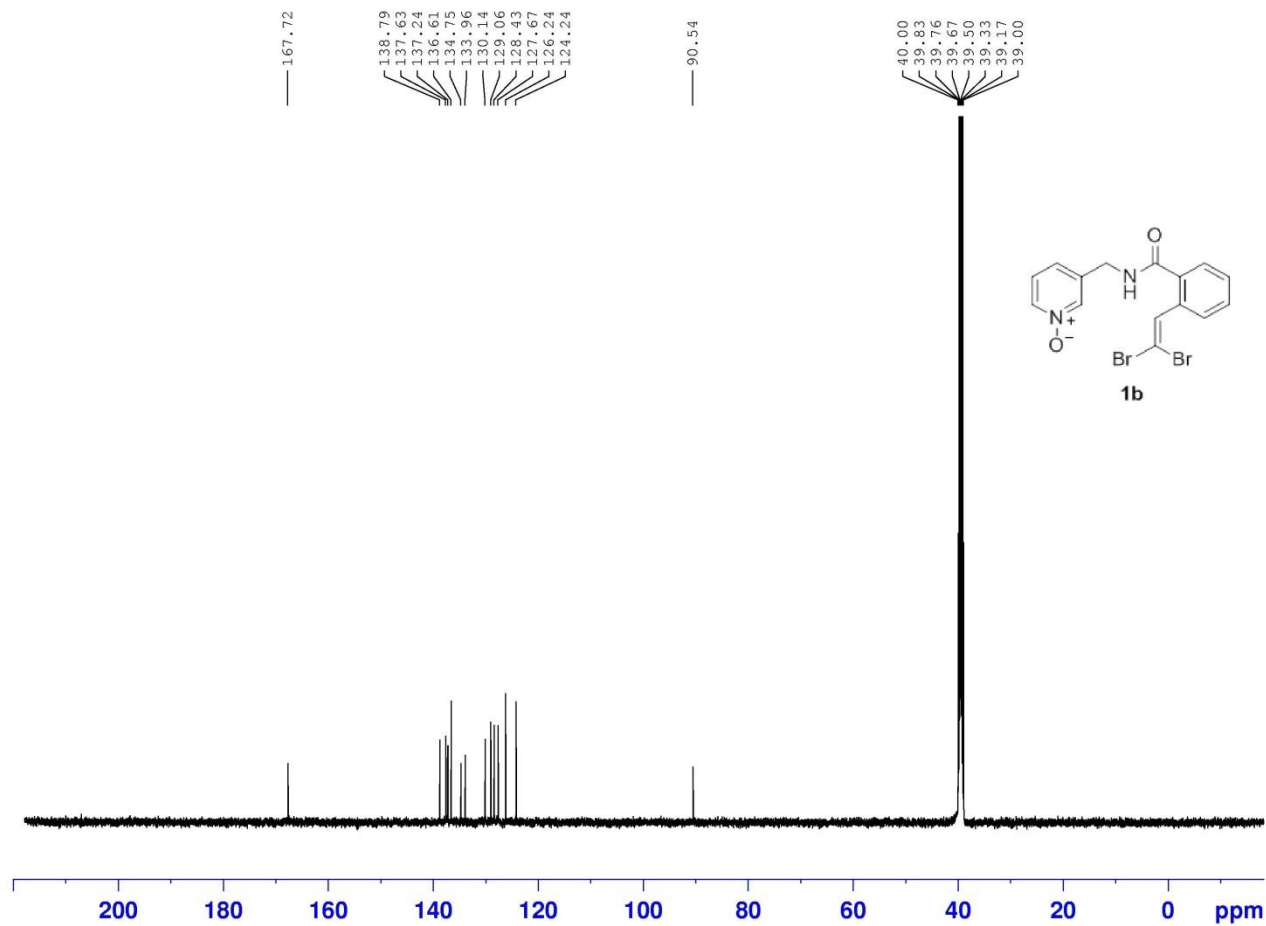
4.567
4.551



NAME TF120831-2
EXPNO 16
PROCNO 1
Date_ 20120903
Time 11.25
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 673.2 K
D1 1.0000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 14.50 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300072 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00

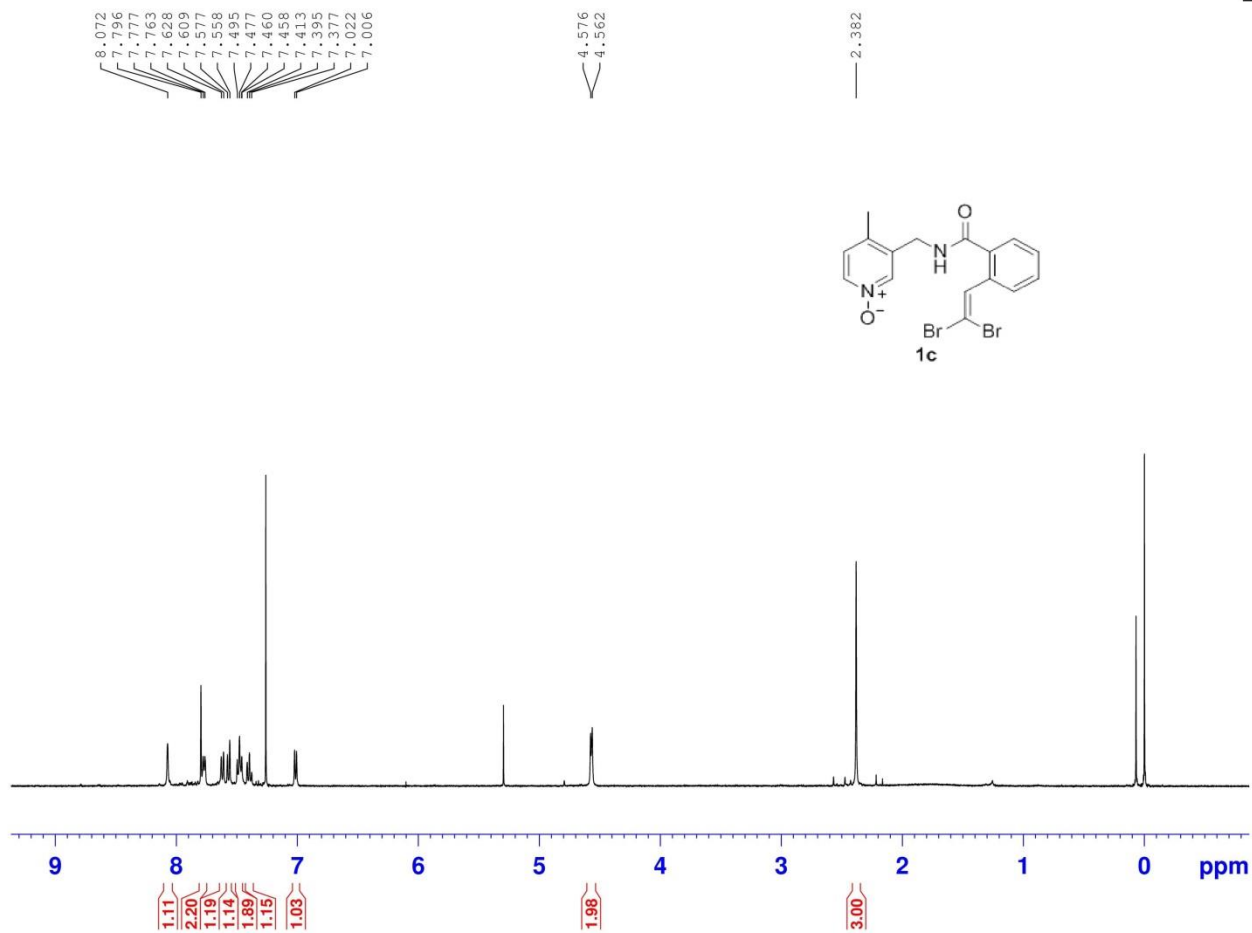




NAME TF131031-3
EXPNO 20
PROCNO 1
Date_ 20130307
Time 18.08
INSTRUM Spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT DMSO
NS 1457
DS 4
SWH 29761.904 Hz
FIDRES 0.454131 Hz
AQ 1.1010548 sec
RG 203
DW 16.800 usec
DE 6.50 usec
TE 295.5 K
D1 2.0000000 sec
D11 0.0300000 sec
TD0 1

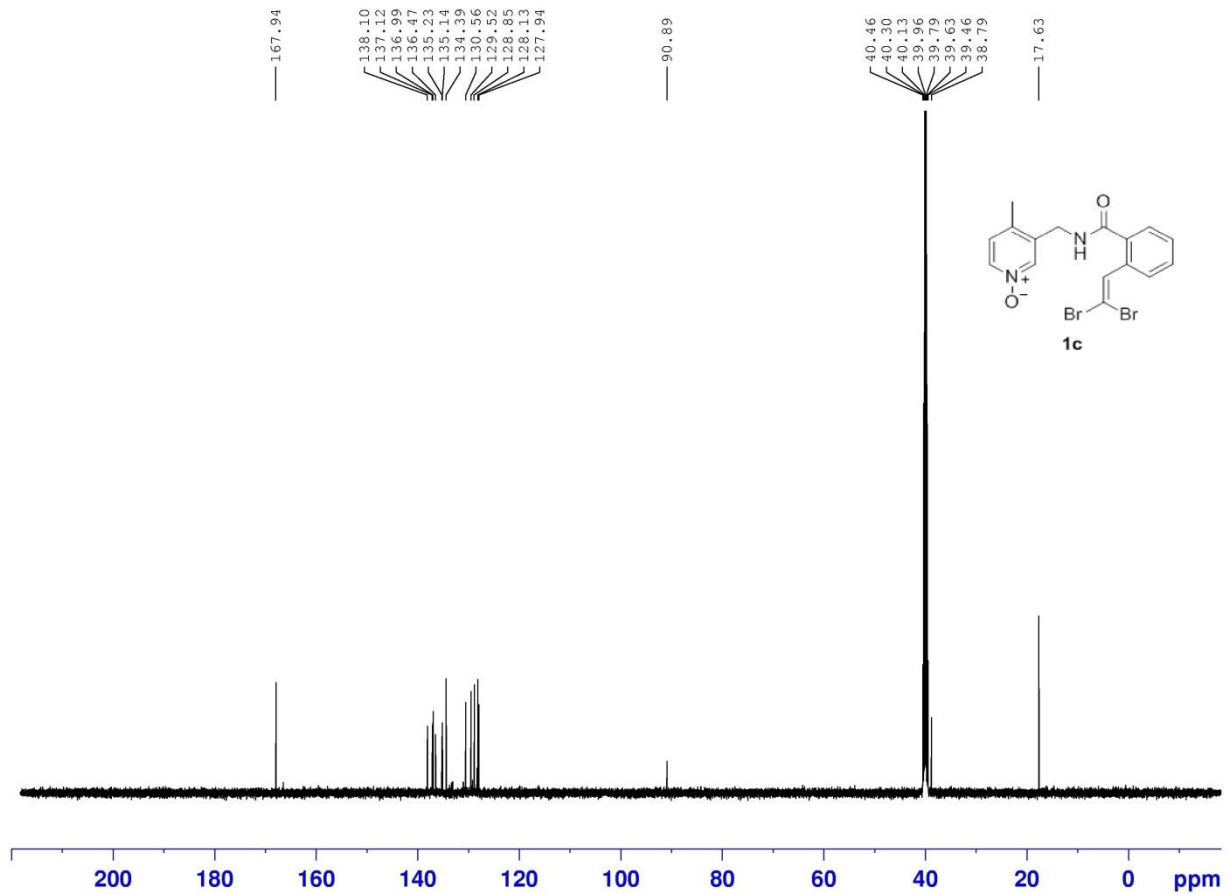
----- CHANNEL f1 -----
NUC1 13C
P1 11.66 usec
PL1 0.00 dB
PL1W 83.39463043 W
SFO1 125.7703643 MHz

----- CHANNEL f2 -----
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 2.50 dB
PL12 17.40 dB
PL13 17.40 dB
PL2W 13.02359581 W
PL12W 0.42143536 W
PL13W 0.42143536 W
SFO2 500.1320003 MHz
SI 32768
SF 125.7578510 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



NAME TF121206-1
EXPNO 9
PROCNO 1
Date_ 20121207
Time 18.41
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 456.1
DW 60.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TDO 1

===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300088 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00

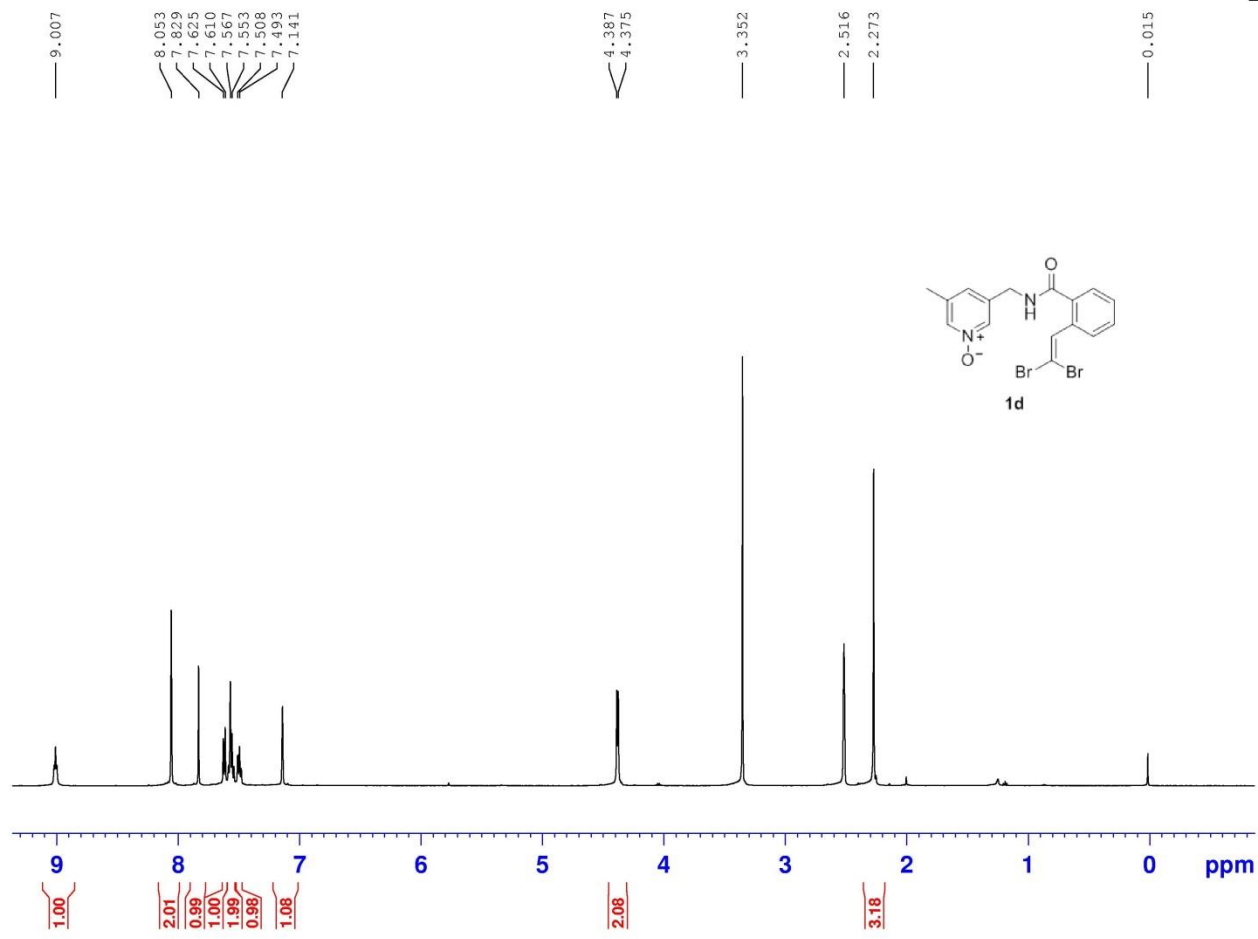
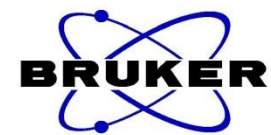


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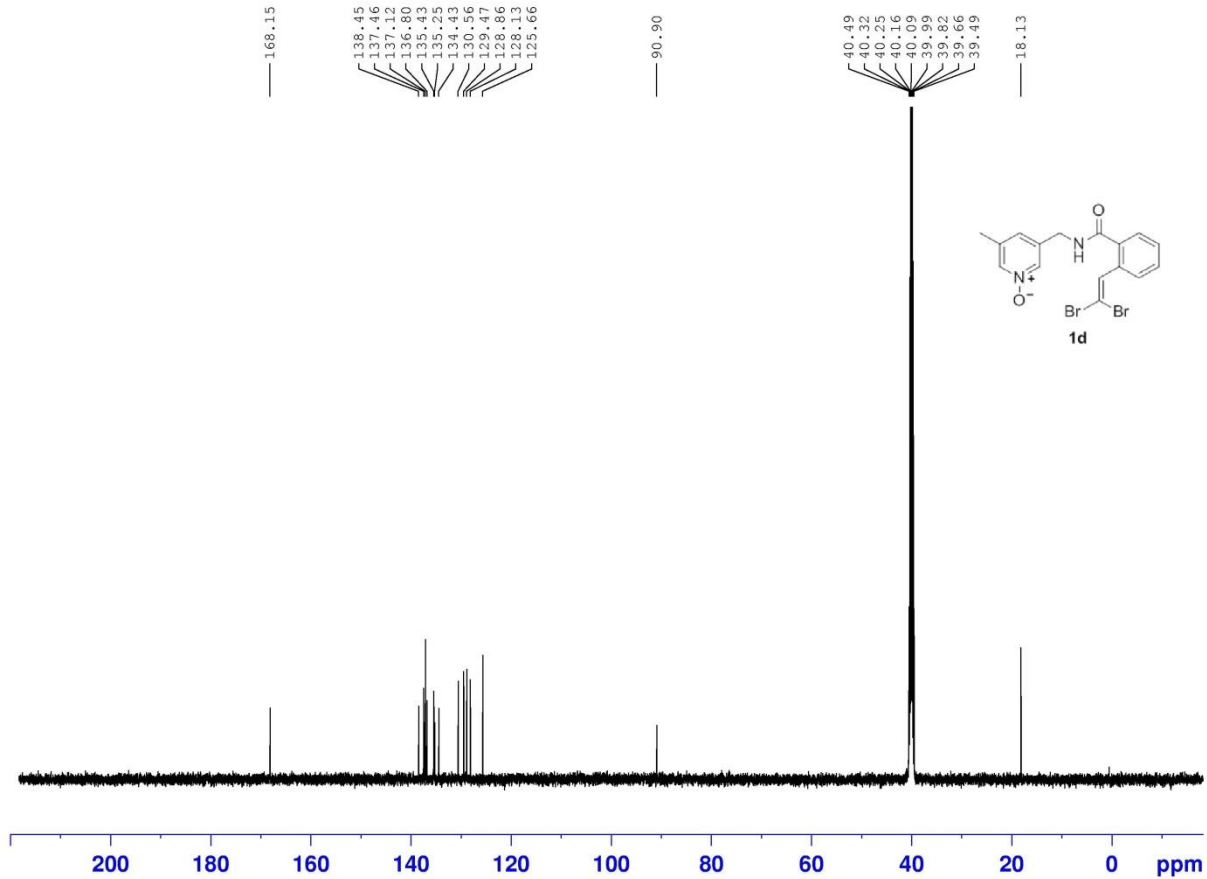
NAME      TF121206-1
EXPNO    2
PROCNO    1
Date_    20130606
Time     2.01
INSTRUM   Spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD        65536
SOLVENT   DMSO
NS        1024
DS        4
SWH       29761.904 Hz
FIDRES    0.454131 Hz
AQ        1.1010548 sec
RG        203
DW        16.800 usec
DE        6.50 usec
TE        297.8 K
D1        2.00000000 sec
D11       0.03000000 sec
TD0       1

===== CHANNEL f1 =====
NUC1      13C
P1        11.66 usec
PL1       0.00 dB
PL1W      83.39463043 W
SFO1      125.7703643 MHz

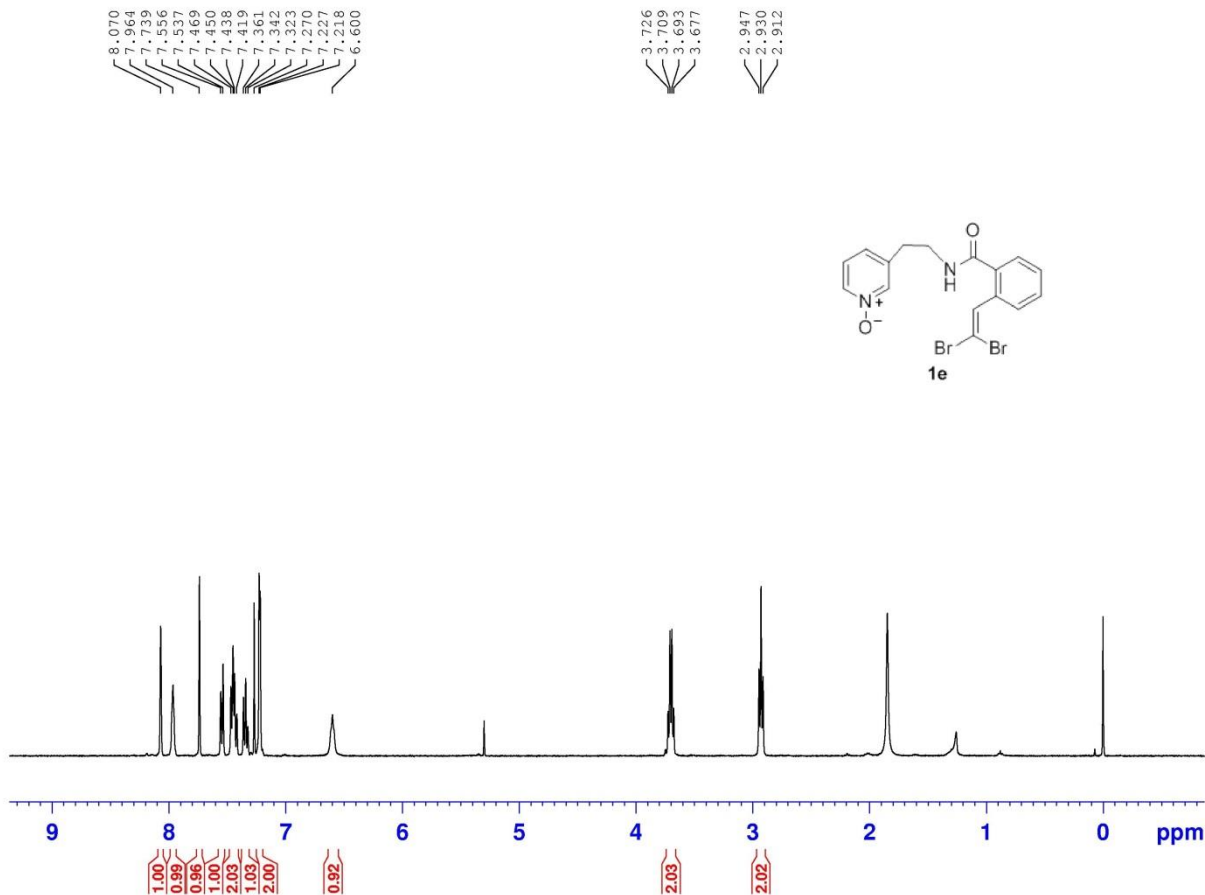
===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPDZ     80.00 usec
PL2       2.50 dB
PL12      17.40 dB
PL13      17.40 dB
PL2W      13.02359381 W
PL12W     0.42143536 W
PL13W     0.42143536 W
SFO2      500.1320005 MHz
SI        32768
SF        125.7577966 MHz
WDW       no
SFB       0
EB        0.00 Hz
GB        0
PC        1.40
  
```



```
NAME TF130228-1
EXPNO 1
PROCNO 1
Date_ 20130705
Time 15.34
INSTRUM Spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT DMSO
NS 16
DS 0
SWH 10330.578 Hz
FIDRES 0.157632 Hz
AQ 3.1719923 sec
RG 181
DW 48.400 usec
DE 6.50 usec
TE 296.2 K
D1 1.0000000 sec
TD0 1
===== CHANNEL f1 =====
NUC1 1H
P1 14.00 usec
PL1 2.50 dB
PL1W 13.02359581 W
SFO1 500.1330885 MHz
SI 32768
SF 500.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
```

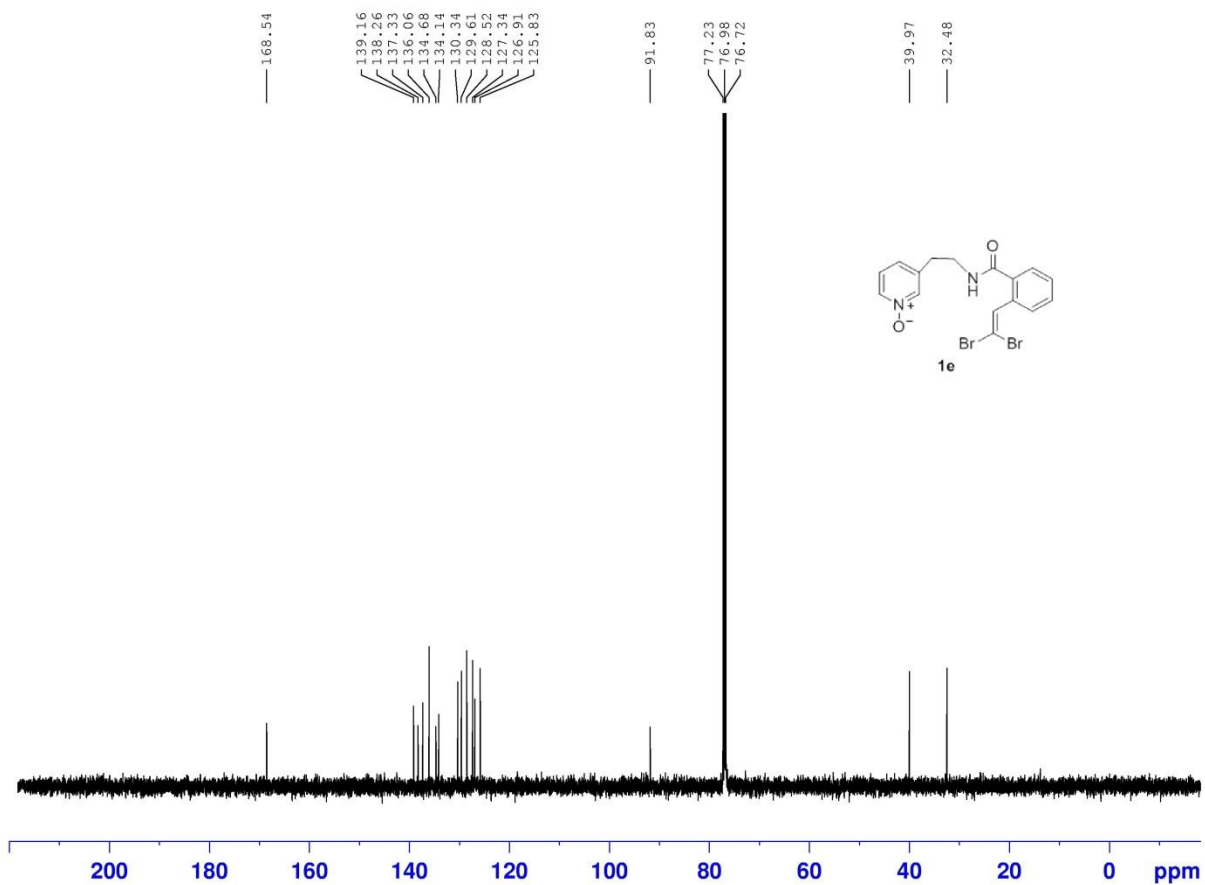



```
NAME          TF130228-1
EXPNO         2
PROCNO        1
Date_         20130712
Time          18.51
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            32768
SOLVENT       DMSO
NS            2042
DS            4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            0.5505524 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            299.8 K
D1            2.0000000 sec
D11           0.0300000 sec
TD0           1
===== CHANNEL F1 =====
NUC1          13C
P1            11.66 usec
PL1           0.00 dB
PL1W          83.39463043 W
SF01          125.7703643 MHz
===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320005 MHz
SI            32768
SF            125.7577966 MHz
WVW           EM
SFB           0
LB            1.00 Hz
GB            0
PC            1.40
```



NAME TF131022-1
EXPNO 91
PROCNO 1
Date_ 20130709
Time 20.15
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8278.146 Hz
FIDRES 0.126514 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 299.8 K
D1 1.0000000 sec
TD0 1

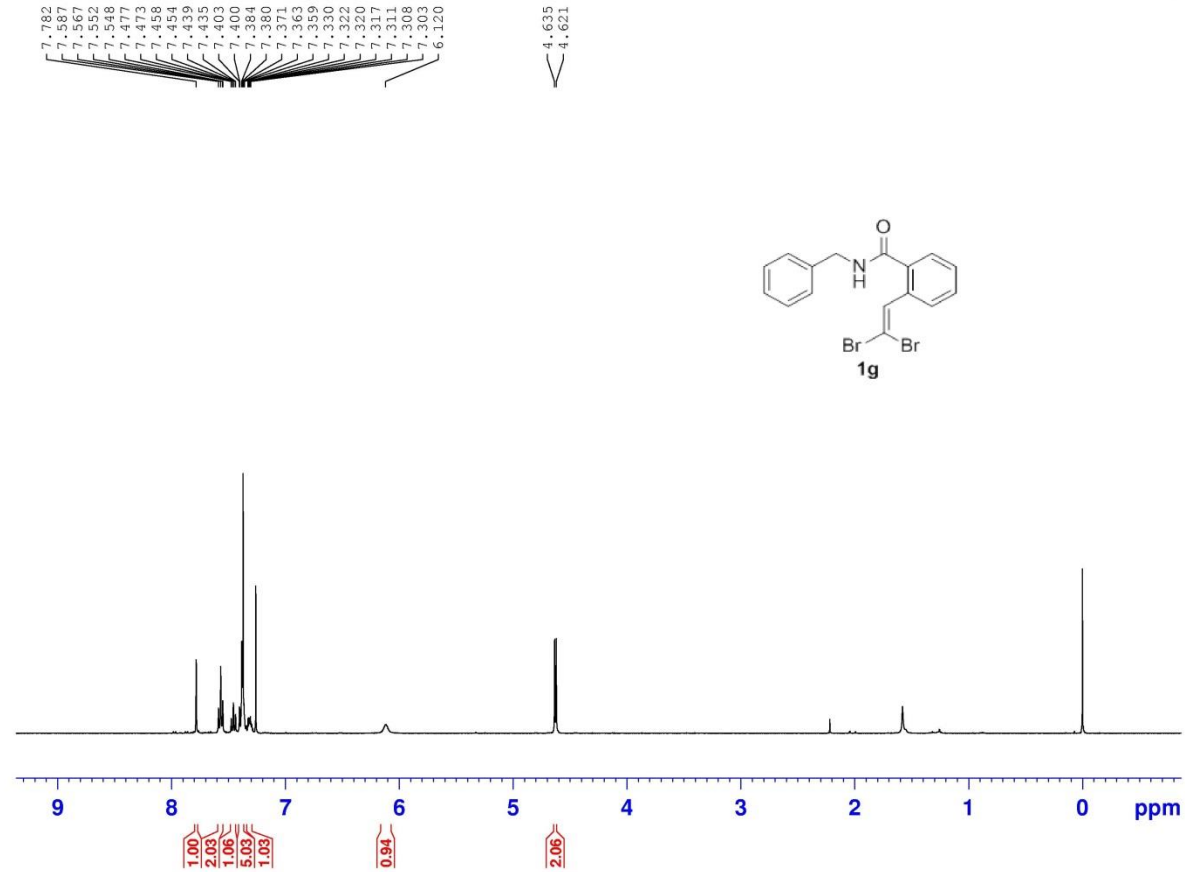
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300059 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00



```
NAME TF130708-1
EXPNO 1
PROCNO 1
Date_ 20130710
Time 16.46
INSTRUM Spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 318
DS 4
SWH 29761.904 Hz
FIDRES 0.454131 Hz
AQ 1.1010548 sec
RG 203
DW 16.800 usec
DE 6.50 usec
TE 298.7 K
D1 2.0000000 sec
D11 0.0300000 sec
TDD 1

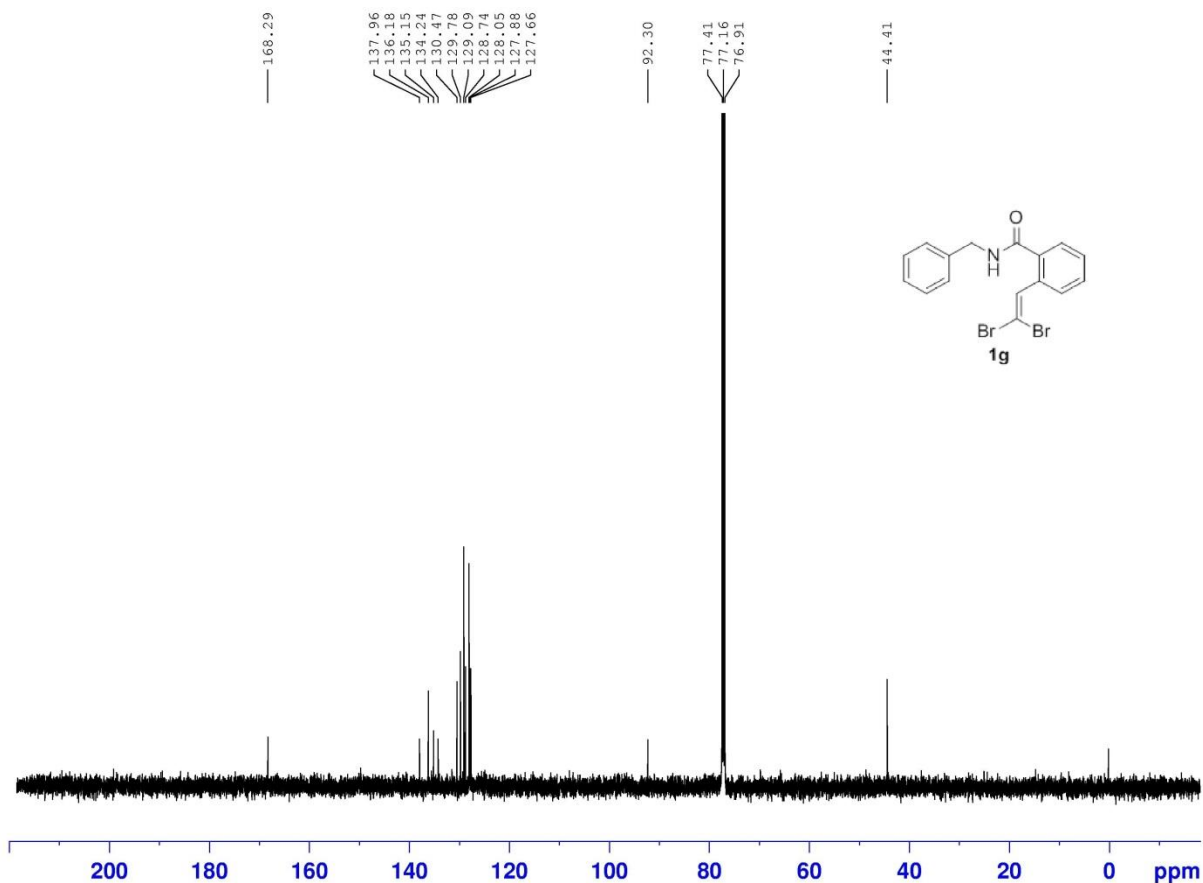
===== CHANNEL F1 =====
NUC1 13C
P1 11.66 usec
PL1 0.00 dB
PL1W 83.39463043 W
SF01 125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 2.50 dB
PL12 17.40 dB
PL13 17.40 dB
PL1W 13.02359381 W
PL12W 0.42143536 W
PL13W 0.42143536 W
SFO2 500.1320003 MHz
SI 32768
SF 125.7577966 MHz
WVW EM
SFB 0
LB 1.00 Hz
GB 0
PC 1.40
```



```
NAME TF121022-1
EXPNO 43
PROCNO 1
Date_ 20121023
Time 14.36
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 298.6 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 14.50 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300094 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```



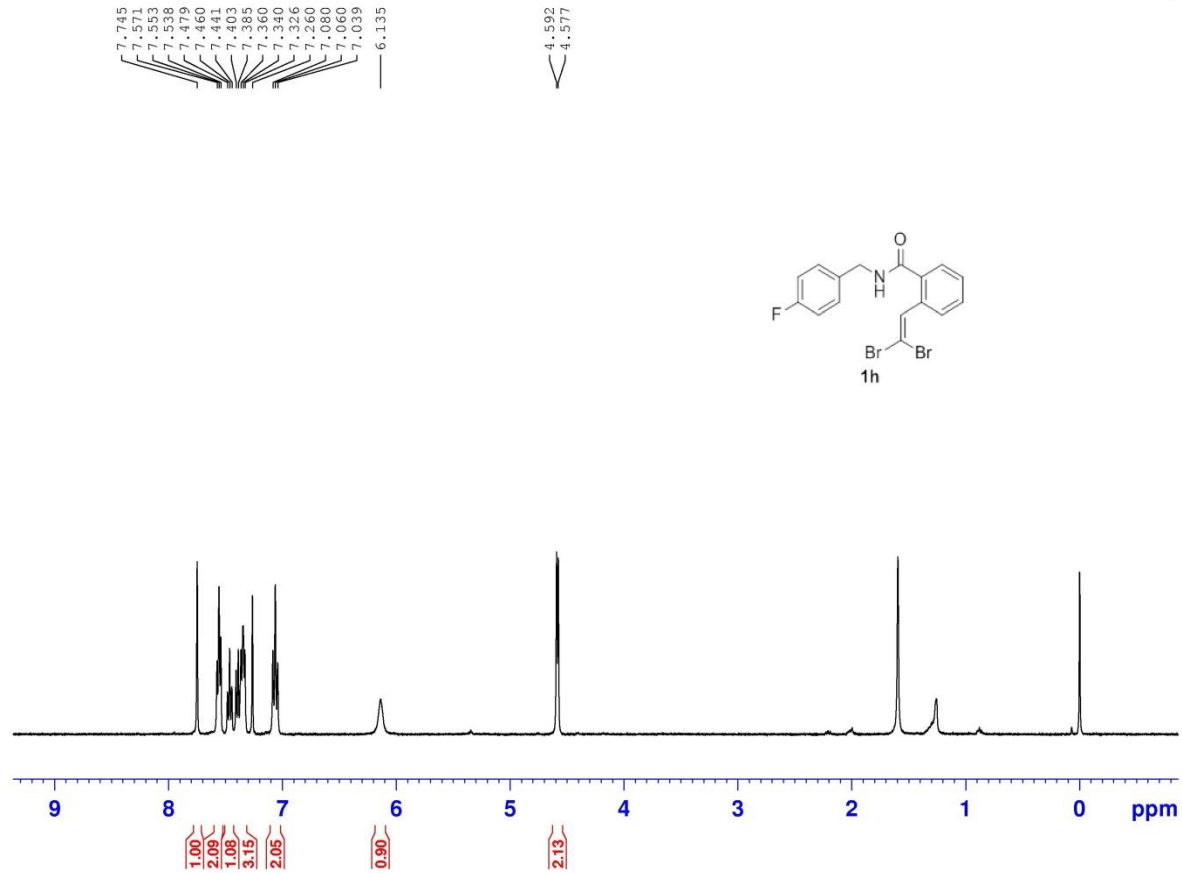
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NAME          TF121022-1
EXPNO         1
PROCNO       1
Date_        20131226
Time         6.52
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS           2048
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           298.0 K
D1           2.0000000 sec
D11          0.03000000 sec
TDD          1

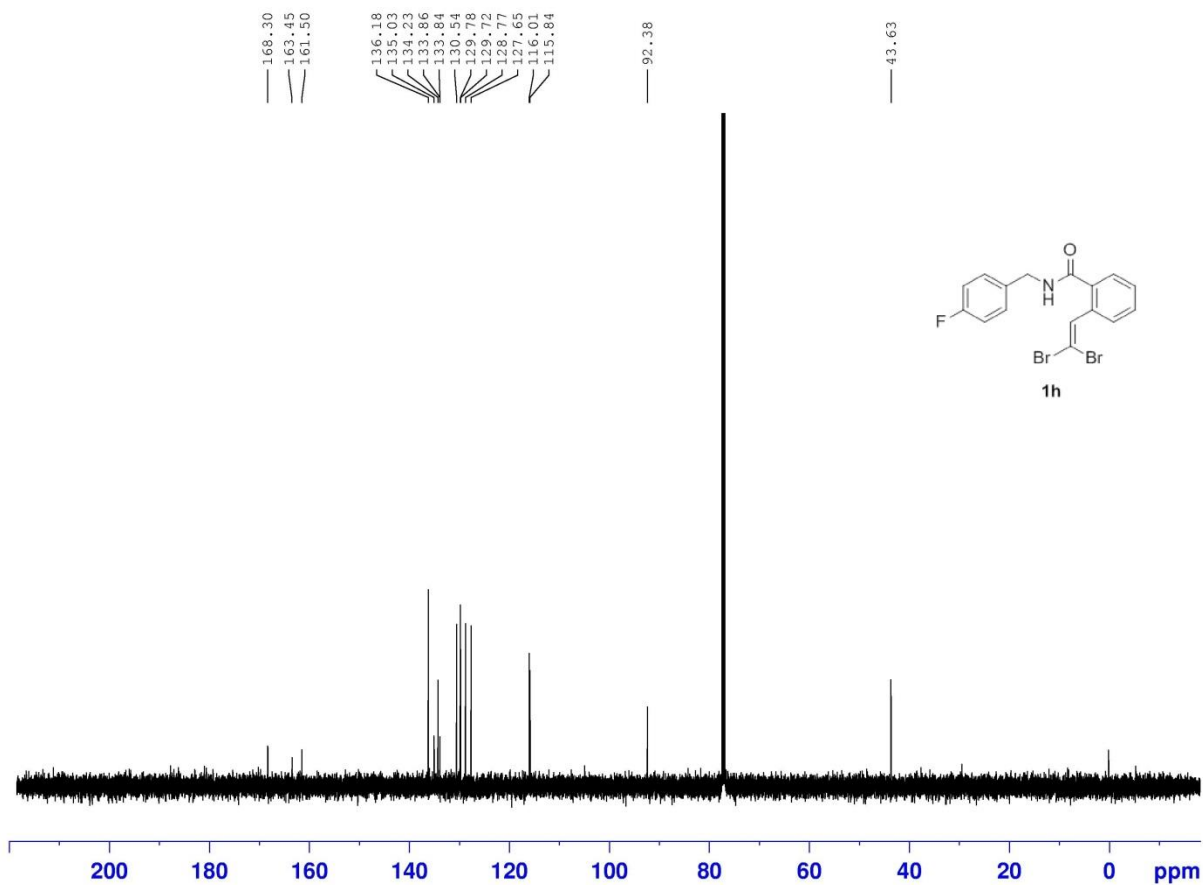
===== CHANNEL F1 =====
NUC1         13C
P1           13.84 usec
PL1          2.50 dB
PL1W         46.89624786 W
SF01         125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2     waltz16
NUC2         1H
PCPD2       80.00 usec
PL2          2.50 dB
PL12         17.40 dB
PL13         17.40 dB
PL1W         13.02359381 W
PL12W        0.42143536 W
PL13W        0.42143536 W
SFO2         500.1320003 MHz
SI           32768
SF           125.7577723 MHz
WWS         EM
SFS         0
LB           1.00 Hz
GB           0
PC           1.40
```



```
NAME TF131029-1
EXPNO 1
PROCNO 1
Date_ 20131030
Time 14.54
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 297.5 K
D1 1.00000000 sec
TD0 1
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300098 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```

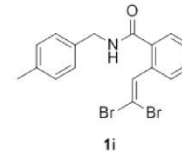
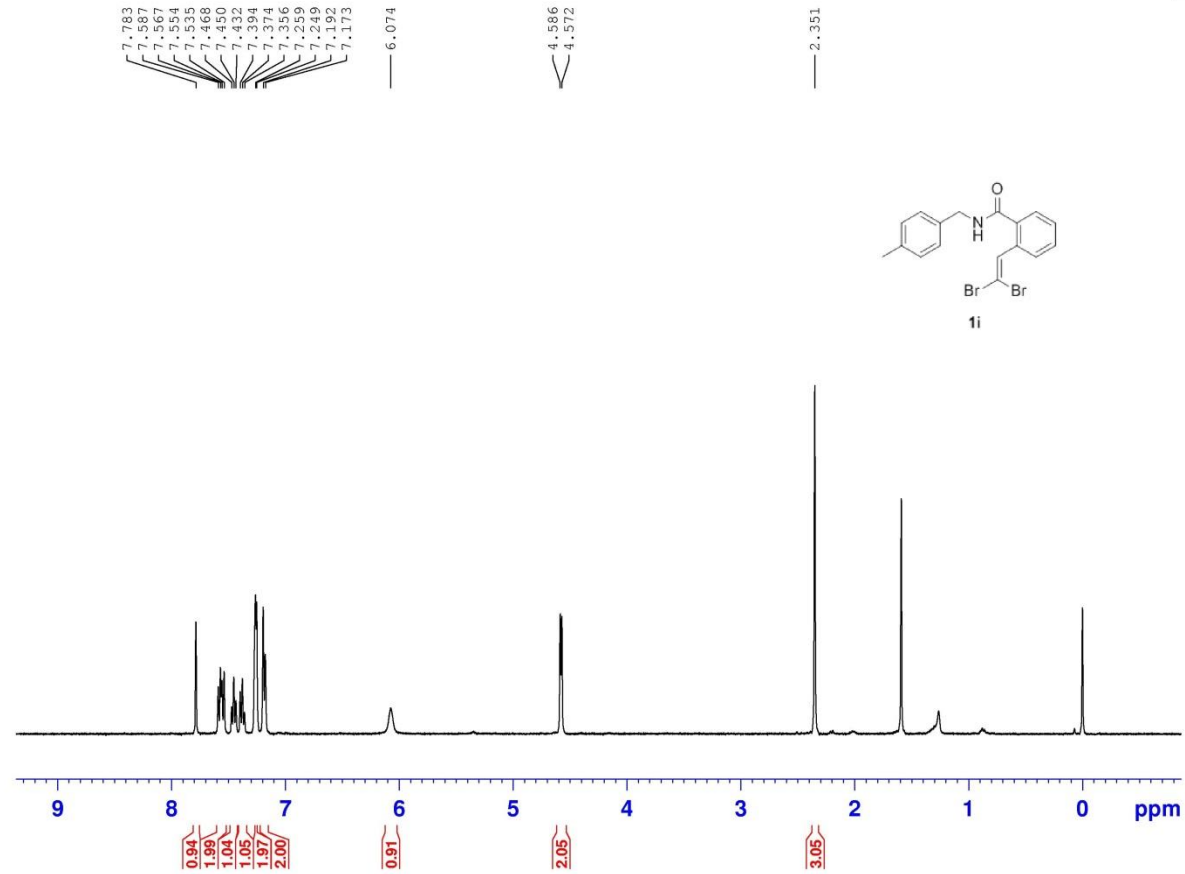




```
NAME          TF131029-1
EXPNO         1
PROCNO       1
Date_        20131206
Time         5.01
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS           1024
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           298.0 K
D1           2.0000000 sec
D11          0.03000000 sec
TD0          1

===== CHANNEL F1 =====
NUC1         13C
P1           13.84 usec
PL1         2.50 dB
PL1W        46.89624786 W
SF01        125.7703643 MHz

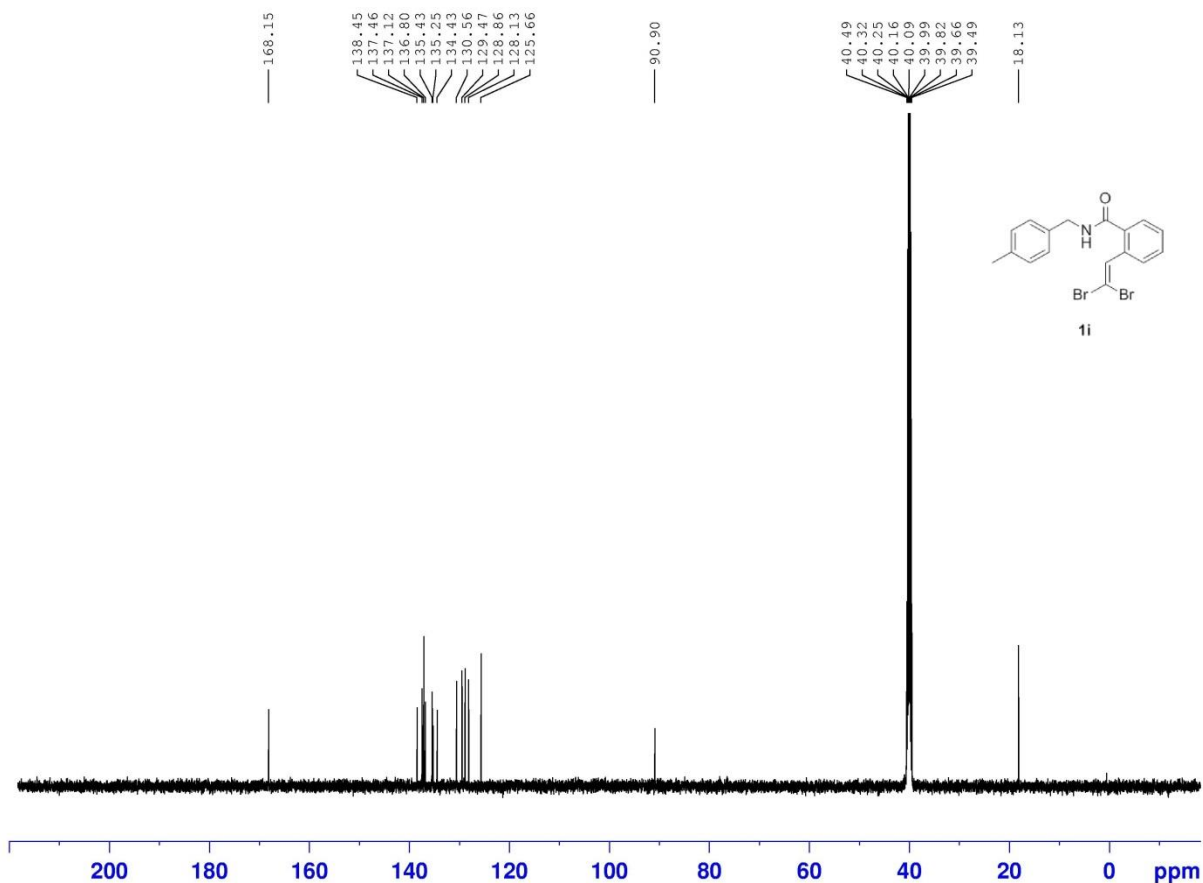
===== CHANNEL F2 =====
CPDPRG2     waltz16
NUC2         1H
PCPD2       80.00 usec
PL2         2.50 dB
PL12        17.40 dB
PL13        17.40 dB
PL1W        13.02359381 W
PL12W       0.42143536 W
PL13W       0.42143536 W
SFO2        500.1320003 MHz
SI          32768
SF          125.7577728 MHz
WWS         no
SBS         0
LB          0.00 Hz
GB          0
PC          1.40
```



```

NAME          TF131028-1
EXPNO         1
PROCNO        1
Date_         20131029
Time          17.03
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            8
DS            2
SWH           8278.146 Hz
FIDRES        0.126314 Hz
AQ            3.9584243 sec
RG            362
DW            60.400 usec
DE            6.50 usec
TE            297.4 K
D1            1.00000000 sec
TD0           1

===== CHANNEL f1 =====
NUC1          1H
P1            12.58 usec
PL1           0.00 dB
PL1W          10.87646866 W
SFO1          400.1324710 MHz
SI            32768
SF            400.1300099 MHz
WDW           no
SSB           0
LB            0.00 Hz
GB            0
PC            1.00
  
```

```
NAME          TF131028-1
EXPNO         2
PROCNO       1
Date_        20130712
Time         18.51
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           32768
SOLVENT      DMSO
NS           2042
DS           1
SWH          29761.904 Hz
FIDRES       0.908261 Hz
AQ           0.5505524 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           299.8 K
D1           2.0000000 sec
D11          0.03000000 sec
TDD          1

===== CHANNEL F1 =====
NUC1          13C
P1            11.66 usec
PL1           0.00 dB
PL1W          83.39463043 W
SF01          125.7703643 MHz

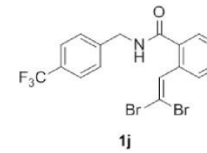
===== CHANNEL F2 =====
CPDPRG2      waltz16
NUC2          1H
PCPD2        80.00 usec
PL2           2.50 dB
PL12         17.40 dB
PL13         17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577966 MHz
W0W          EM
S0S           0
LB            1.00 Hz
GB            0
PC            1.40
```



7.743
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7.570
7.553
7.494
7.474
7.455
7.413
7.394
7.375
7.259

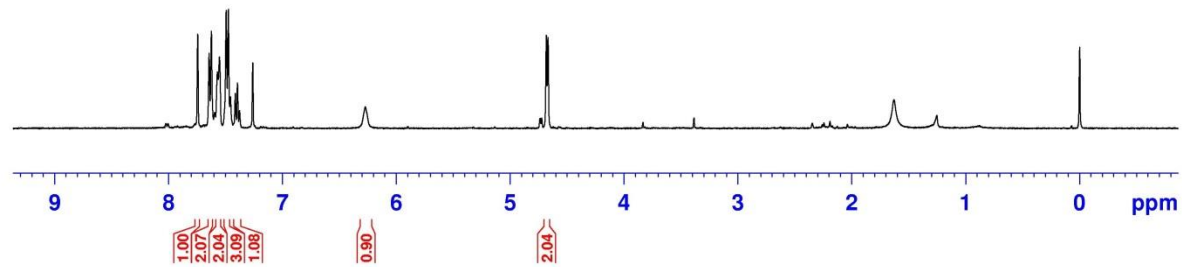
6.272

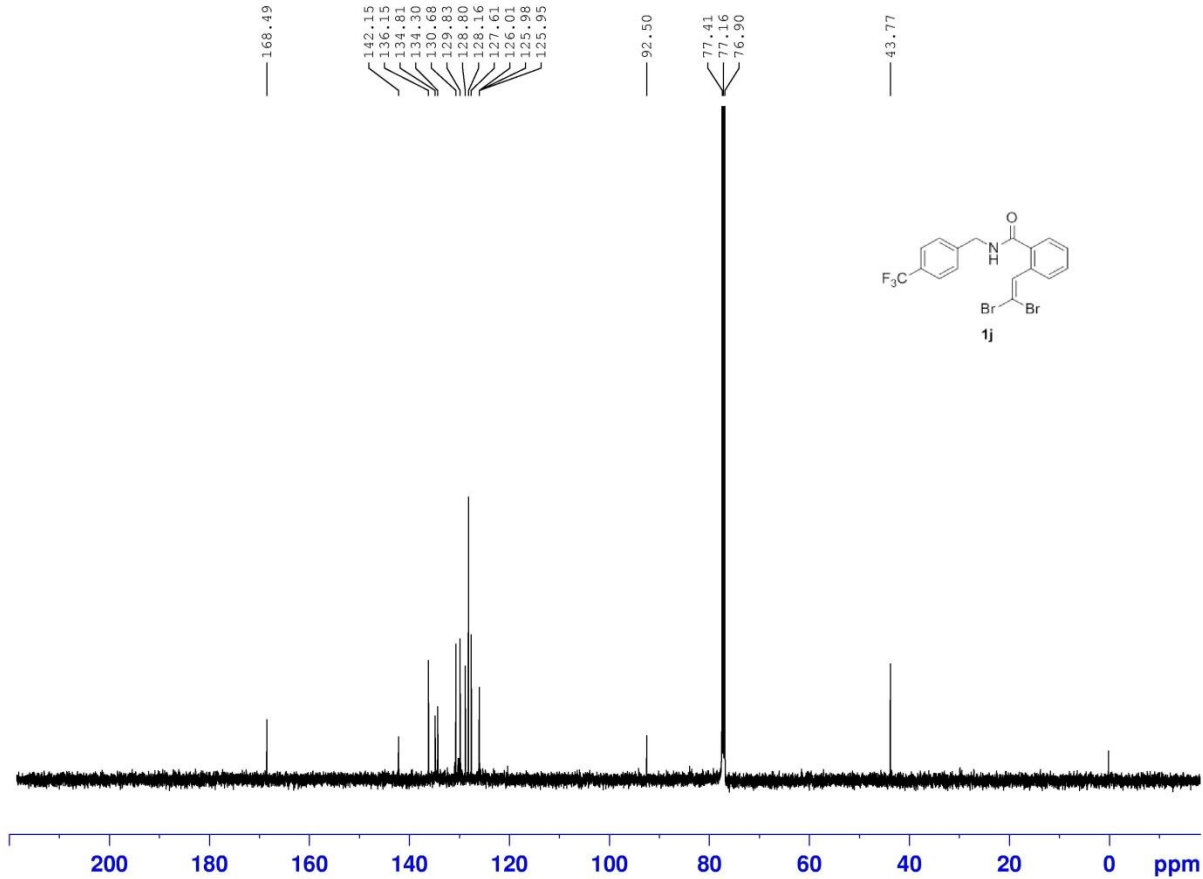
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```
NAME TF131114-1
EXPNO 1
PROCNO 1
Date_ 20131119
Time 14.44
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 295.9 K
D1 1.00000000 sec
TD0 1
```

```
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300097 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```

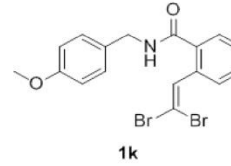




```
NAME          TF131114-1
EXPNO         1
PROCNO       1
Date_        20131212
Time         21.10
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS           980
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           298.0 K
D1           2.0000000 sec
D11          0.0300000 sec
TDD          1

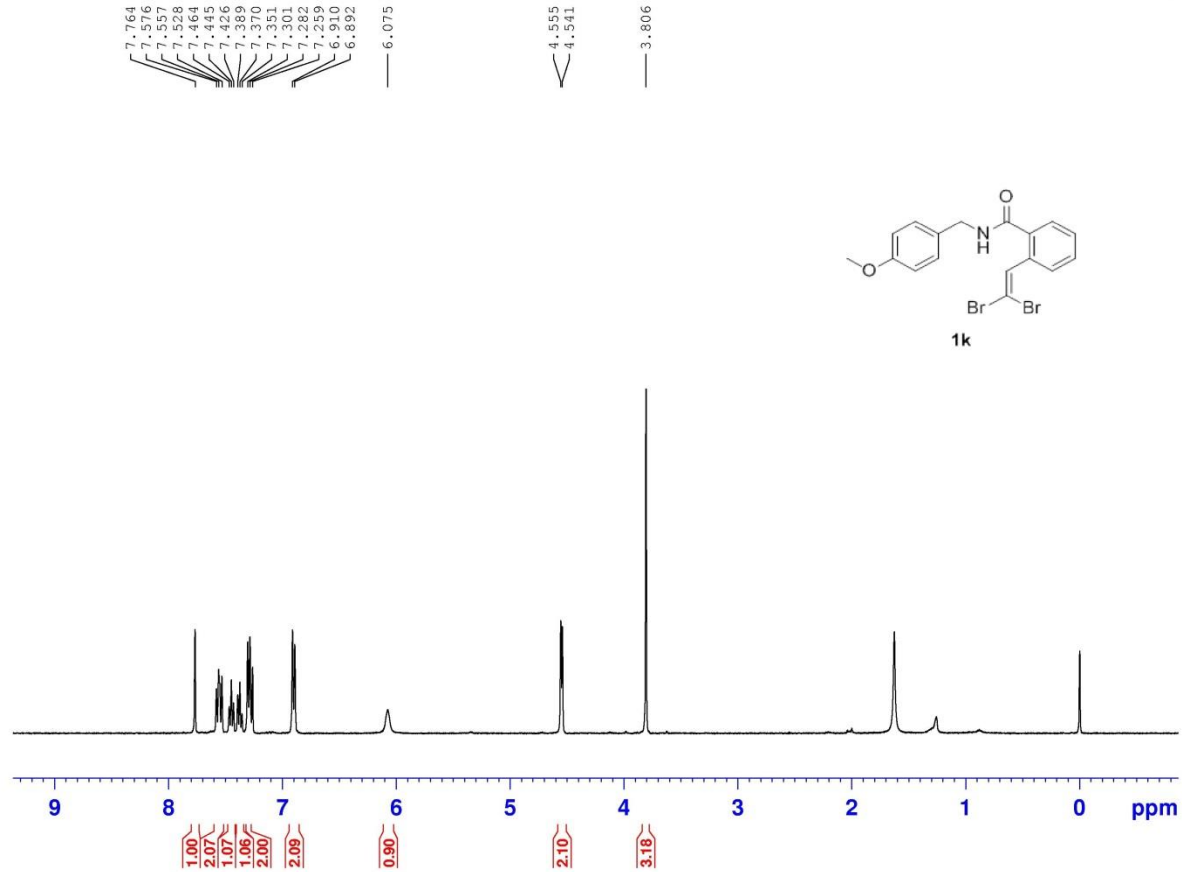
===== CHANNEL F1 =====
NUC1         13C
P1           13.84 usec
PL1          2.50 dB
PL1W         46.89624786 W
SF01         125.7703643 MHz

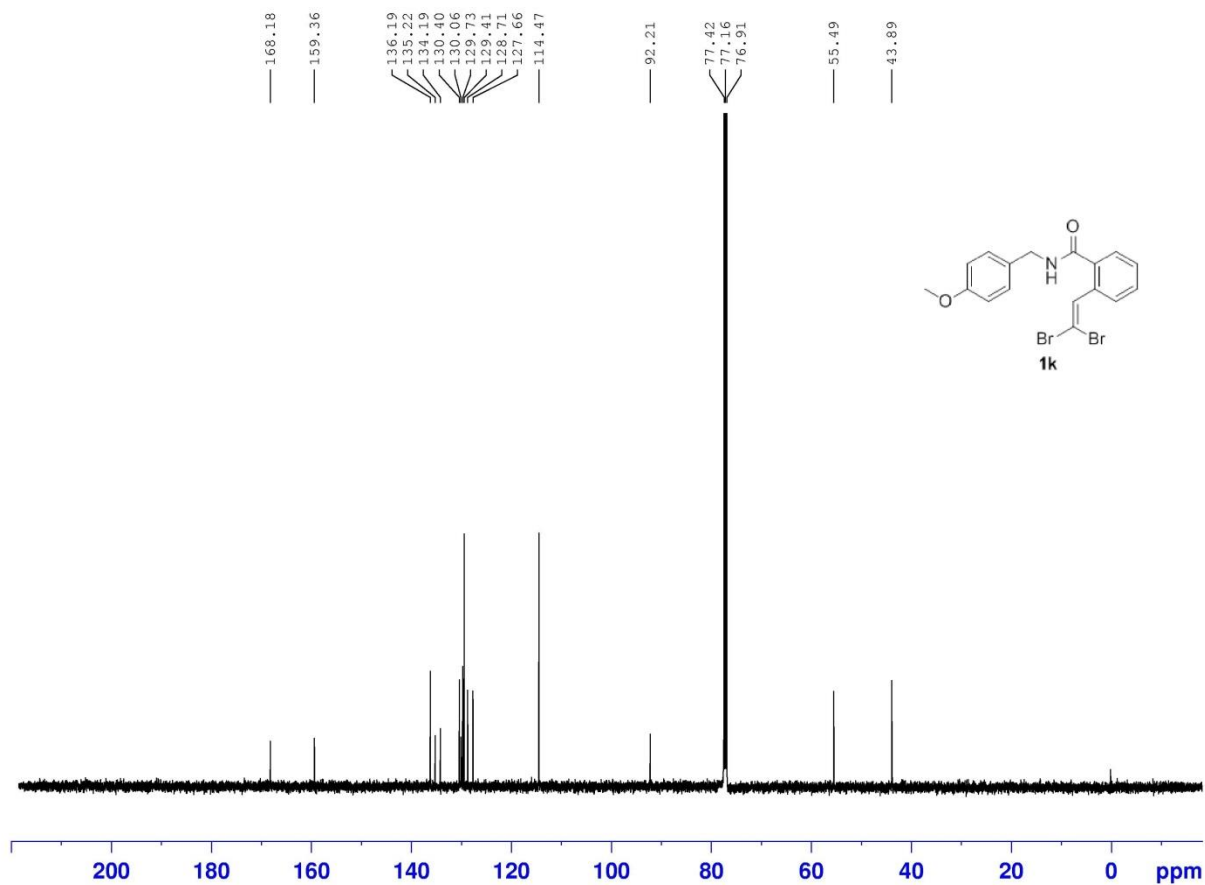
===== CHANNEL F2 =====
CPDPRG2     waltz16
NUC2         1H
PCPD2       80.00 usec
PL2          2.50 dB
PL12         17.40 dB
PL13         17.40 dB
PL1W         13.02359381 W
PL12W        0.42143536 W
PL13W        0.42143536 W
SFO2         500.1320003 MHz
SI           32768
SF           125.7577732 MHz
WWS         EM
SFB          0
LB           1.00 Hz
GB           0
PC           1.40
```



NAME TF131112-1
EXPNO 1
PROCNO 1
Date_ 20131122
Time 11.37
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 298.0 K
D1 1.00000000 sec
TD0 1

==== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300101 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00

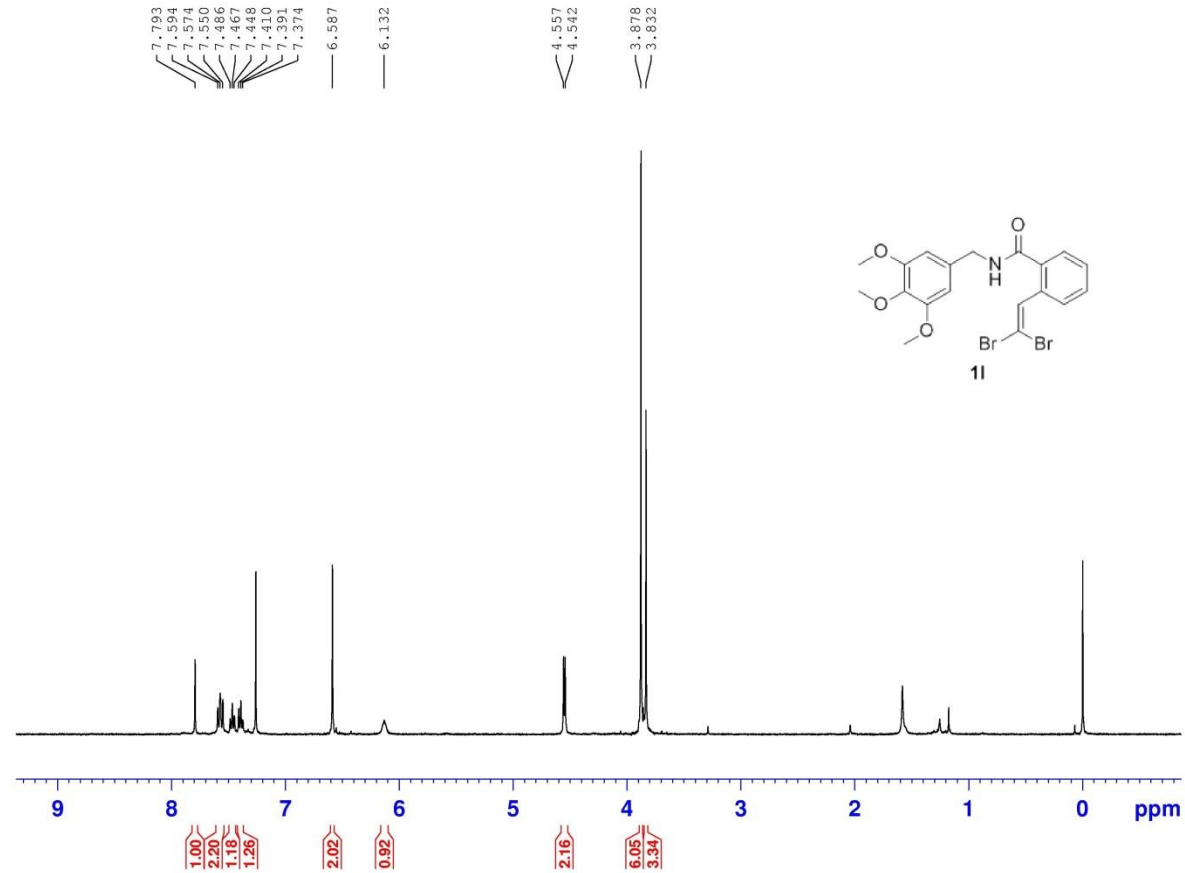




```
NAME          TF131112-1
EXPNO         1
PROCNO       1
Date_        20131216
Time         22.17
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS           914
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           298.0 K
D1           2.0000000 sec
D11          0.03000000 sec
TD0          1

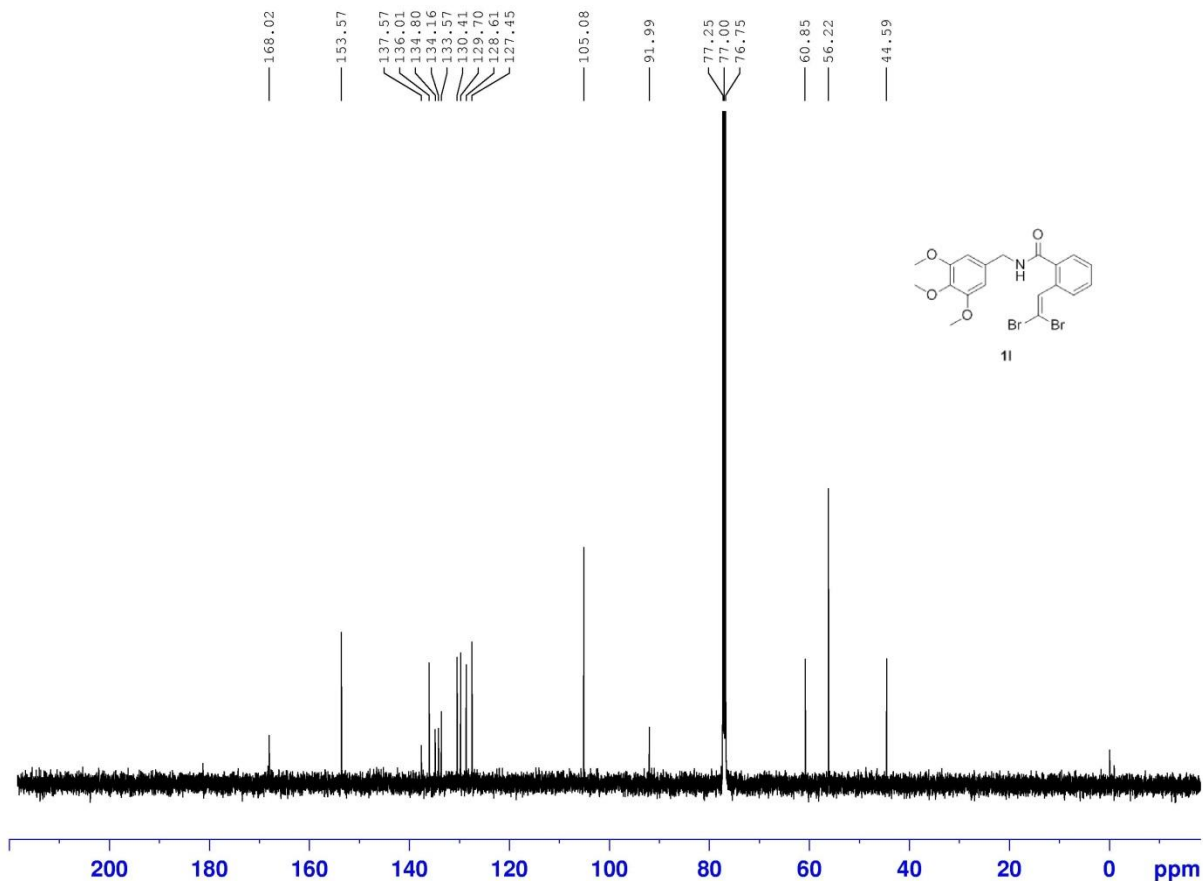
===== CHANNEL F1 =====
NUC1         13C
P1           13.84 usec
PL1          2.50 dB
PL1W         46.89624786 W
SF01         125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2     waltz16
NUC2         1H
PCPD2       80.00 usec
PL2          2.50 dB
PL12         17.40 dB
PL13         17.40 dB
PL1W         13.02359381 W
PL12W        0.42143536 W
PL13W        0.42143536 W
SFO2         500.1320003 MHz
SI           32768
SF           125.7577732 MHz
WWS         EM
SFB          0
LB           1.00 Hz
GB           0
PC           1.40
```



NAME TF131024-1
EXPNO 19
PROCNO 1
Date_ 20130408
Time 11.19
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 296.3 K
D1 1.00000000 sec
TD0 1

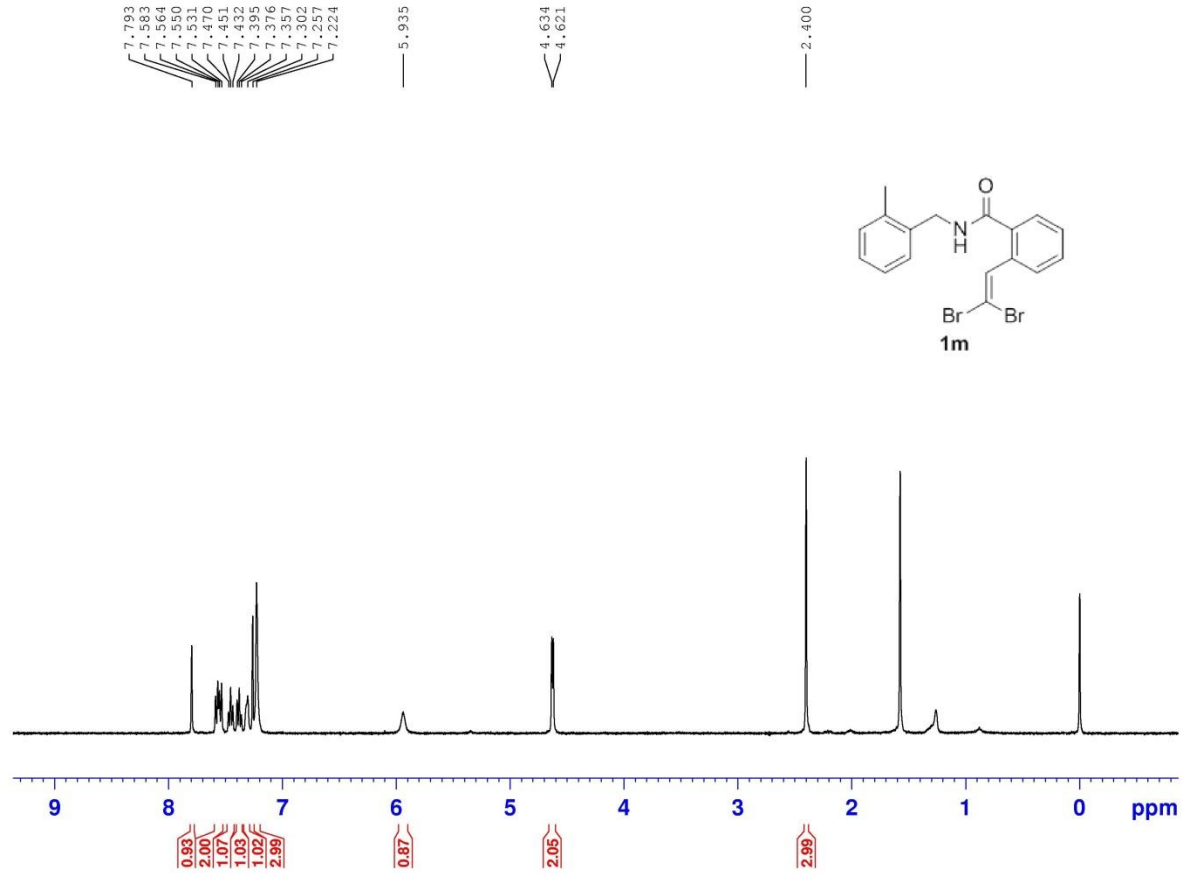
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300092 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00



```
NAME          TF130407-1
EXPNO         1
PROCNO        1
Date_         20130410
Time          21.36
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            1024
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            296.2 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

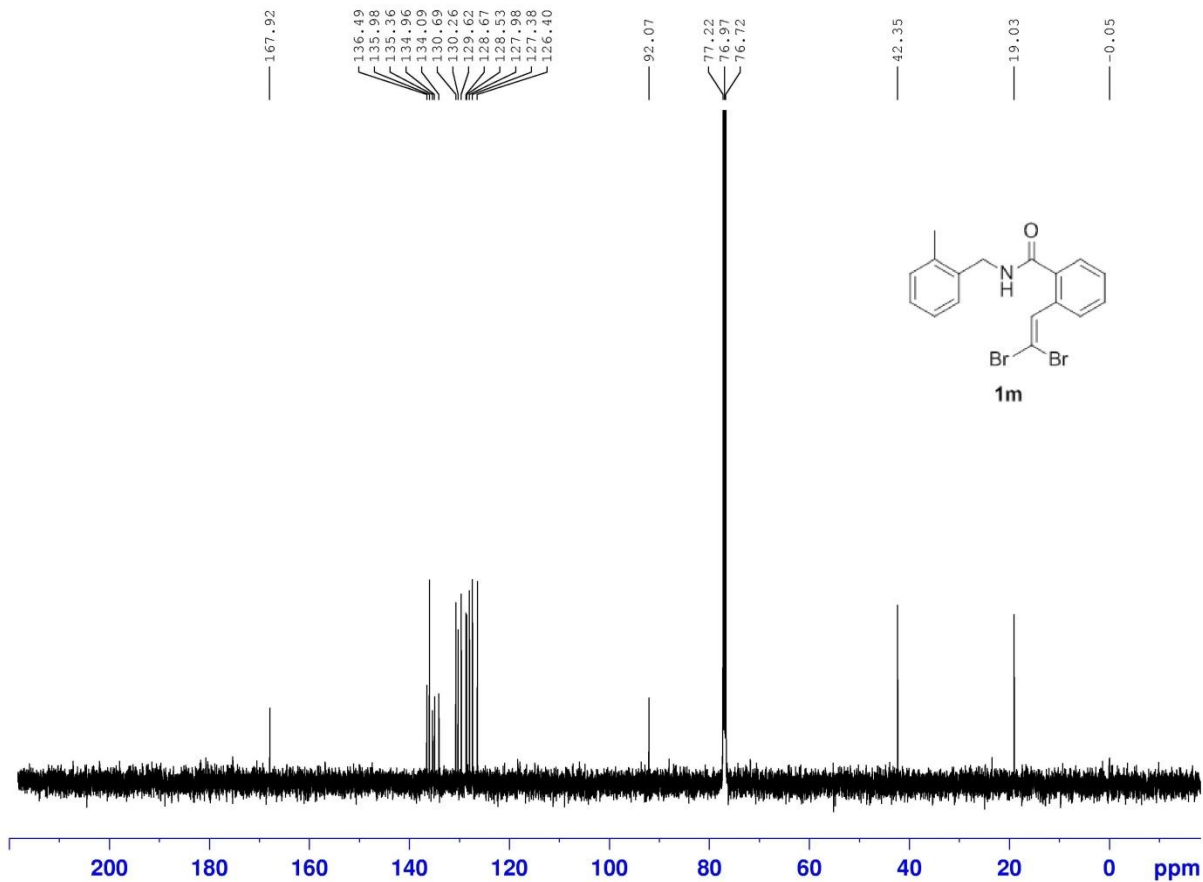
===== CHANNEL F1 =====
NUC1          13C
P1            11.66 usec
PL1           0.00 dB
PL1W          83.39463043 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577934 MHz
WWS          EM
SBS           0
LB            1.00 Hz
GB            0
PC            1.40
```



NAME TF131118-1
EXPNO 1
PROCNO 1
Date_ 20131122
Time 11.44
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 298.0 K
D1 1.00000000 sec
TD0 1

==== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300105 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00



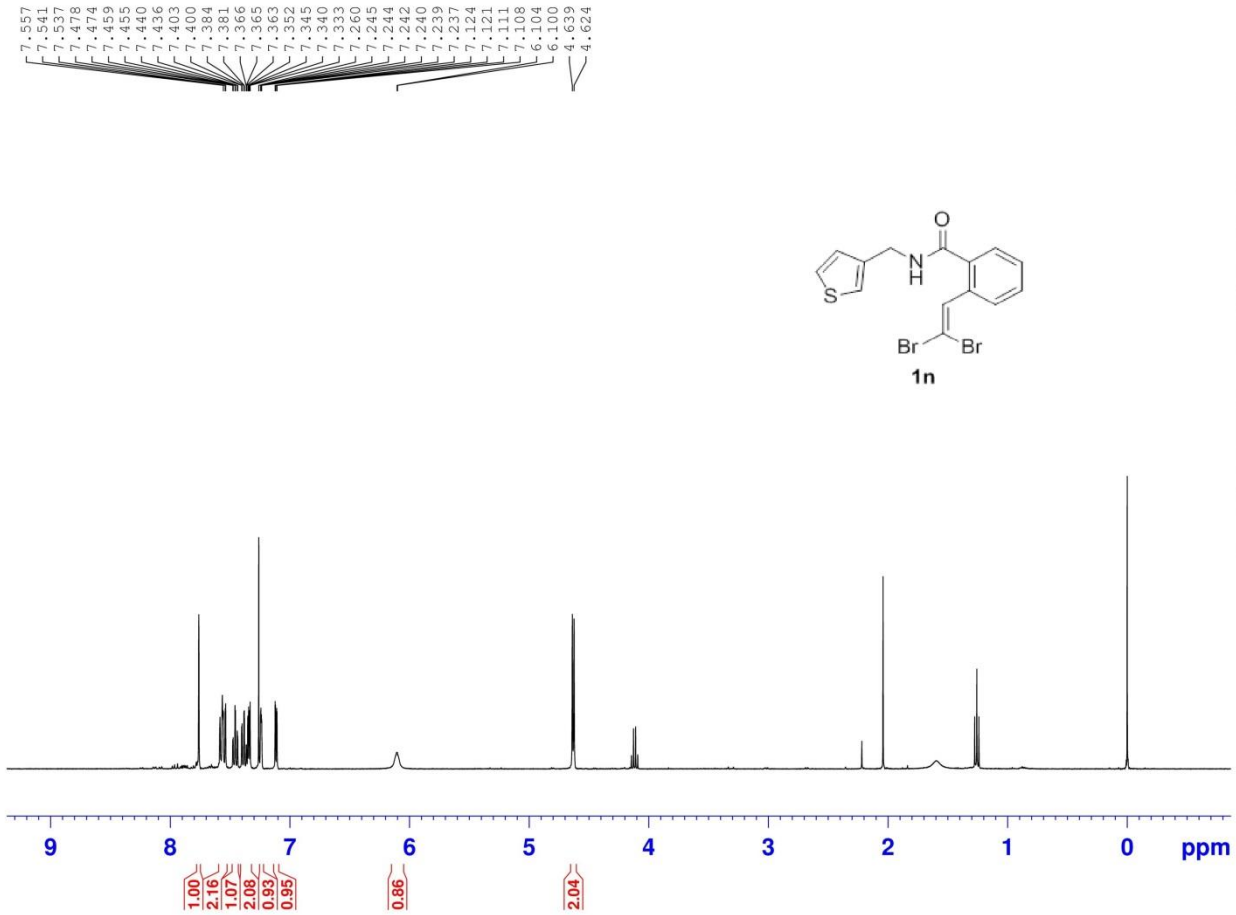
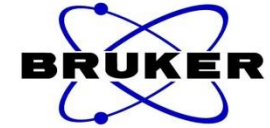
```

NAME          TF131118-1
EXPNO         1
PROCNO        1
Date_         20131218
Time          20.57
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            813
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            298.0 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

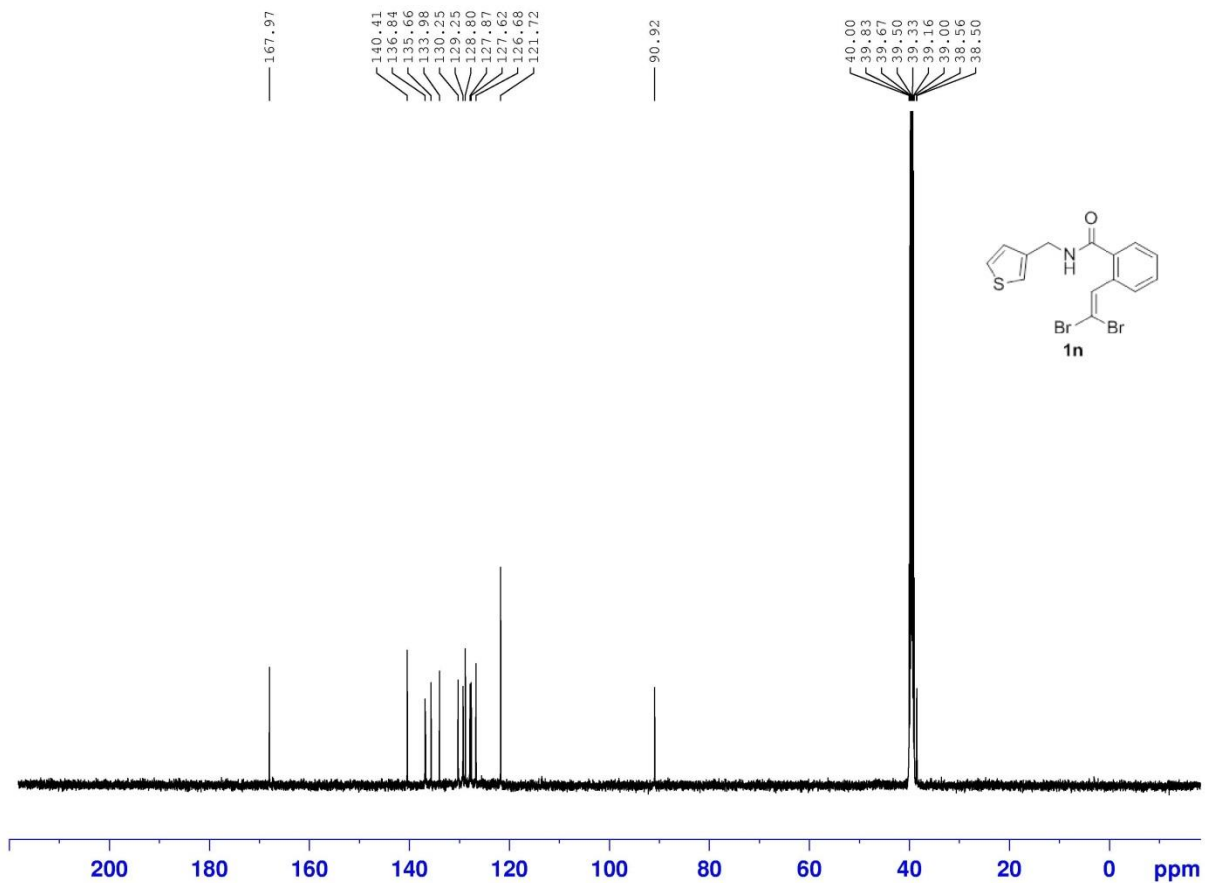
===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577966 MHz
WVW           EM
SFB           0
LB            1.00 Hz
GB            0
PC            1.40

```



```
NAME          TF120906-1
EXPNO         62
PROCNO        1
Date_         20120907
Time          17.54
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8278.146 Hz
FIDRES        0.126314 Hz
AQ            3.9584243 sec
RG            362
DW            60.400 usec
DE            6.50 usec
TE            673.2 K
D1            1.00000000 sec
TD0           1

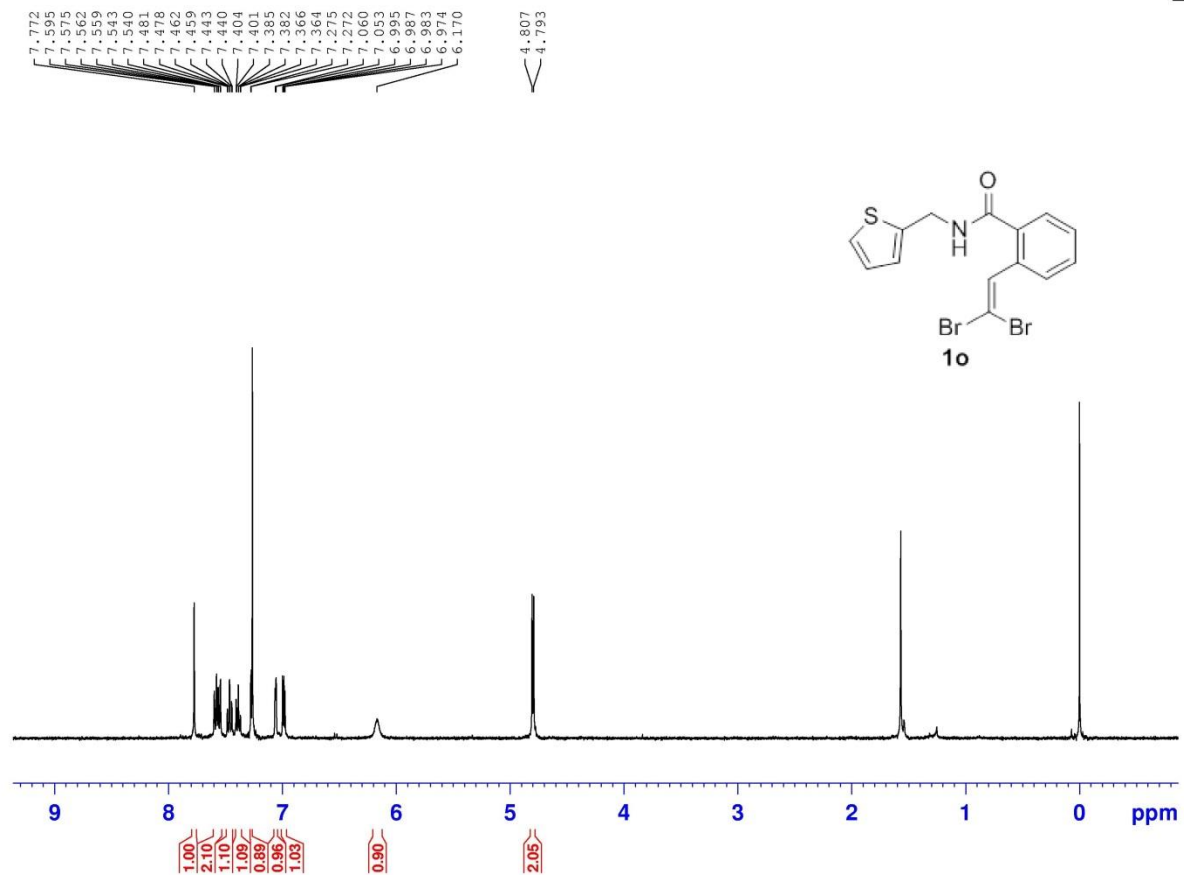
===== CHANNEL f1 =====
NUC1          1H
P1            14.50 usec
PL1           0.00 dB
PL1W          10.87646866 W
SFO1          400.1324710 MHz
SI            32768
SF            400.1300090 MHz
WDW           no
SSB           0
LB            0.00 Hz
GB            0
PC            1.00
```



```
NAME          TF121020-1
EXPNO         17
PROCNO        1
Date_         20130226
Time         20.41
INSTRUM       Spect
PROBHD        5 mm PASEI 1H/
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            1024
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            293.9 K
D1            2.0000000 sec
D11           0.03000000 sec
TDD           1

===== CHANNEL F1 =====
NUC1          13C
P1            14.50 usec
PL1           -1.00 dB
PL1W          104.98761749 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.00 dB
PL12          22.50 dB
PL13          22.50 dB
PL14          14.61271477 W
PL12W         0.13023596 W
PL13W         0.13023596 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7578079 MHz
W0W           EM
SFB           0
LB            1.00 Hz
GB            0
PC            1.40
```

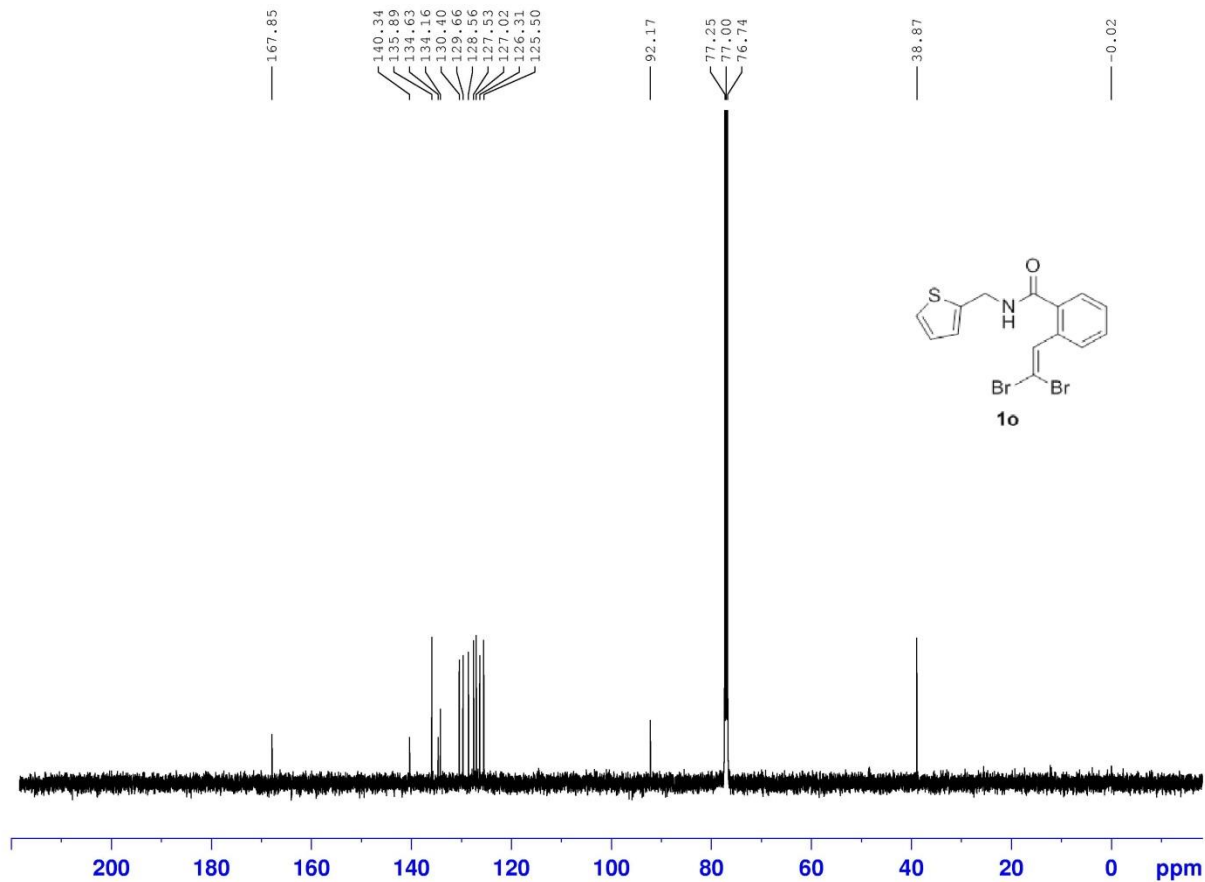


```

NAME          TF131024-2
EXPNO         23
PROCNO        1
Date_         20130422
Time          14.17
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            8
DS            2
SWH           8278.146 Hz
FIDRES        0.126314 Hz
AQ            3.9584243 sec
RG            574.7
DW            60.400 usec
DE            6.50 usec
TE            297.4 K
D1            1.00000000 sec
TD0           1

===== CHANNEL f1 =====
NUC1          1H
P1            12.58 usec
PL1           0.00 dB
PL1W          10.87646866 W
SFO1          400.1324710 MHz
SI            32768
SF            400.1300091 MHz
WDW           no
SSB           0
LB            0.00 Hz
GB            0
PC            1.00

```



```

NAME          TF130417-1
EXPNO         1
PROCNO        1
Date_         20130424
Time         22.47
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            1826
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            295.7 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

===== CHANNEL F1 =====
NUC1          13C
P1            11.66 usec
PL1           0.00 dB
PL1W          83.39463043 W
SF01          125.7703643 MHz

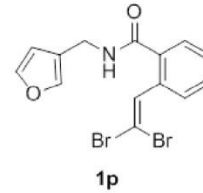
===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577931 MHz
W0W          EM
S0S           0
LB            1.00 Hz
GB            0
PC            1.40

```



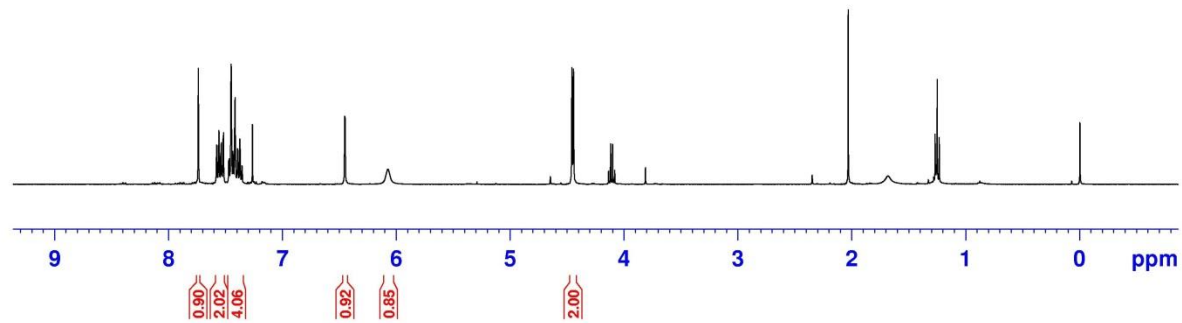
7.735
7.574
7.555
7.536
7.533
7.517
7.514
7.468
7.465
7.449
7.446
7.431
7.427
7.417
7.413
7.409
7.398
7.392
7.386
7.383
7.351
7.280
6.449
6.447
6.071

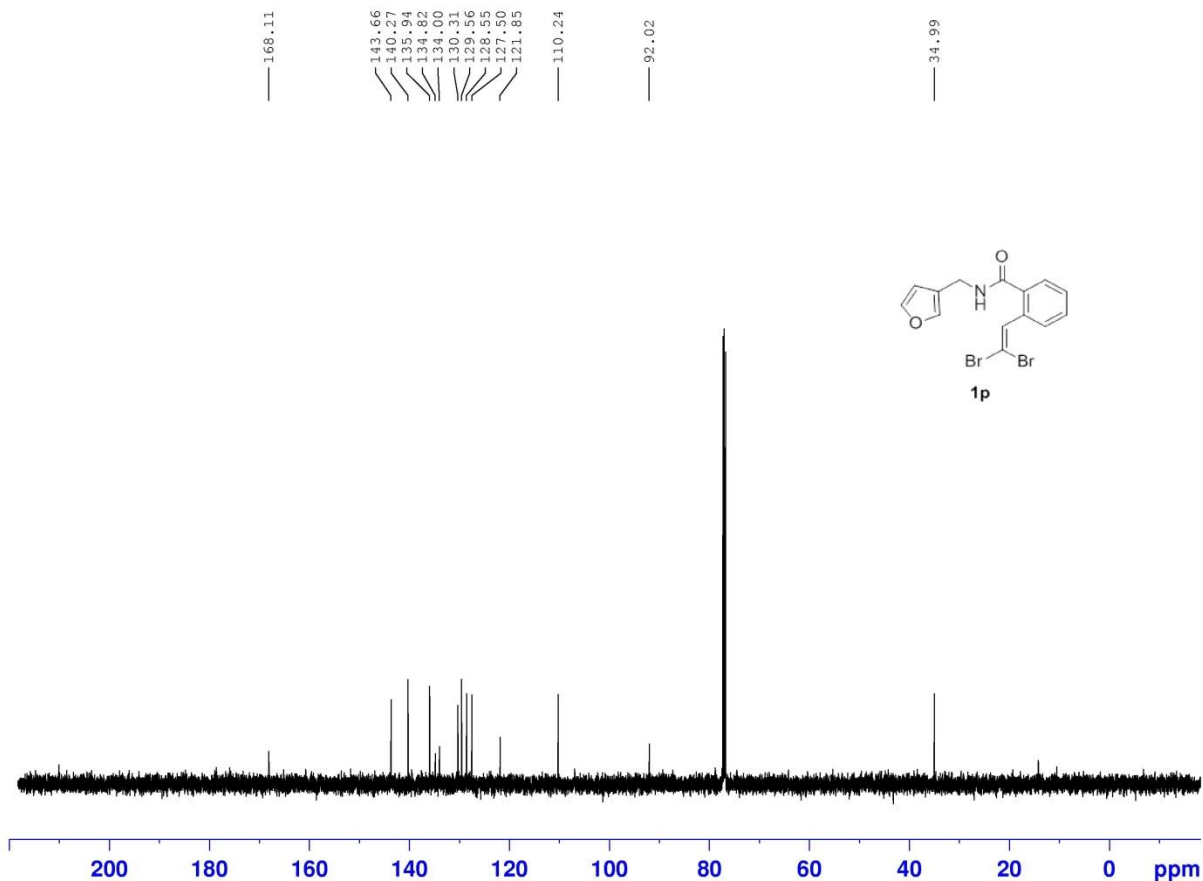
4.458
4.444



```
NAME          TF131030-1
EXPNO         56
PROCNO        1
Date_         20130608
Time          19.42
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8278.146 Hz
FIDRES        0.126314 Hz
AQ            3.9584243 sec
RG            228.1
DW            60.400 usec
DE            6.50 usec
TE            299.4 K
D1            1.00000000 sec
TD0           1
```

```
===== CHANNEL f1 =====
NUC1          1H
P1            12.58 usec
PL1           0.00 dB
PL1W          10.87646866 W
SFO1          400.1324710 MHz
SI            32768
SF            400.1300090 MHz
WDW           no
SSB           0
LB            0.00 Hz
GB            0
PC            1.00
```

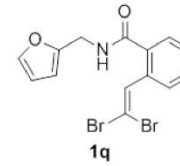




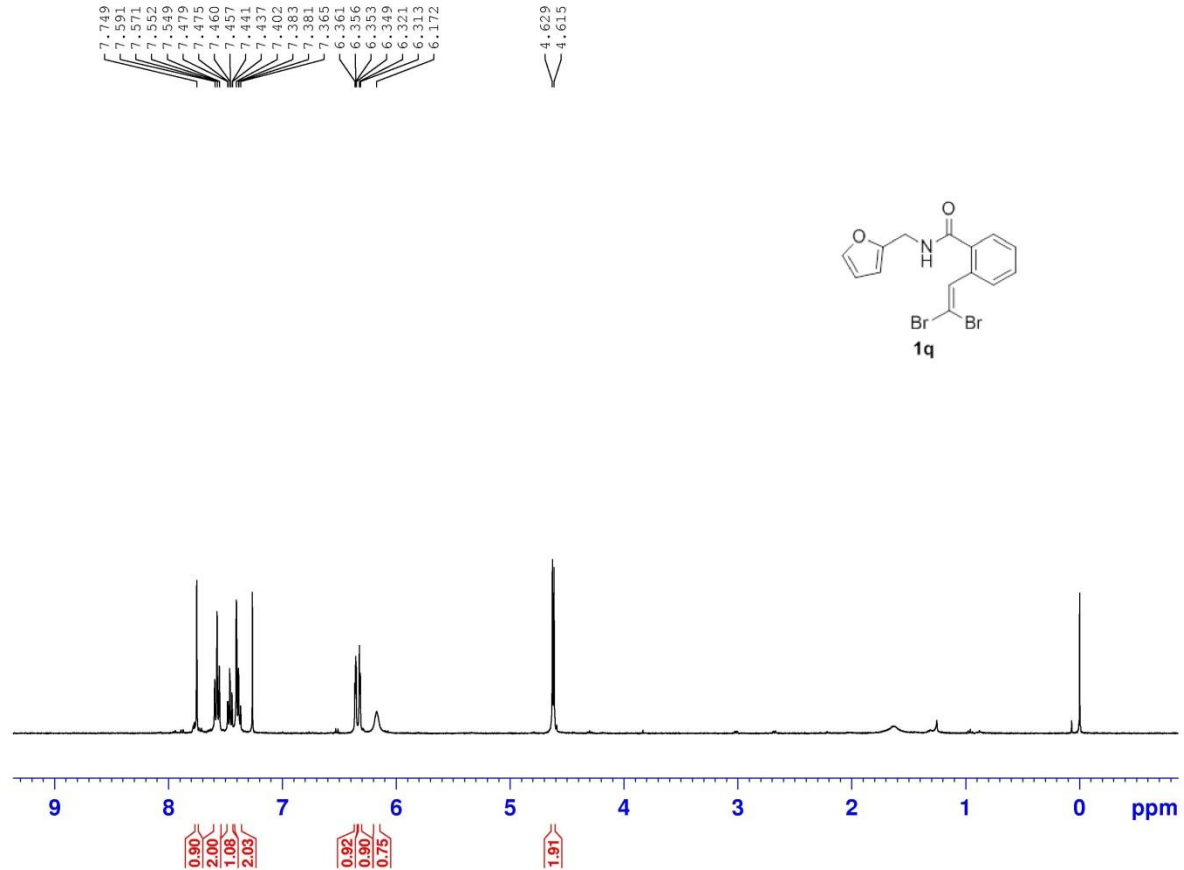
```
NAME          TF130607-3
EXPNO         1
PROCNO       1
Date_         20130614
Time         22.25
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS           1024
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           296.1 K
D1           2.0000000 sec
D11          0.0300000 sec
TD0          1

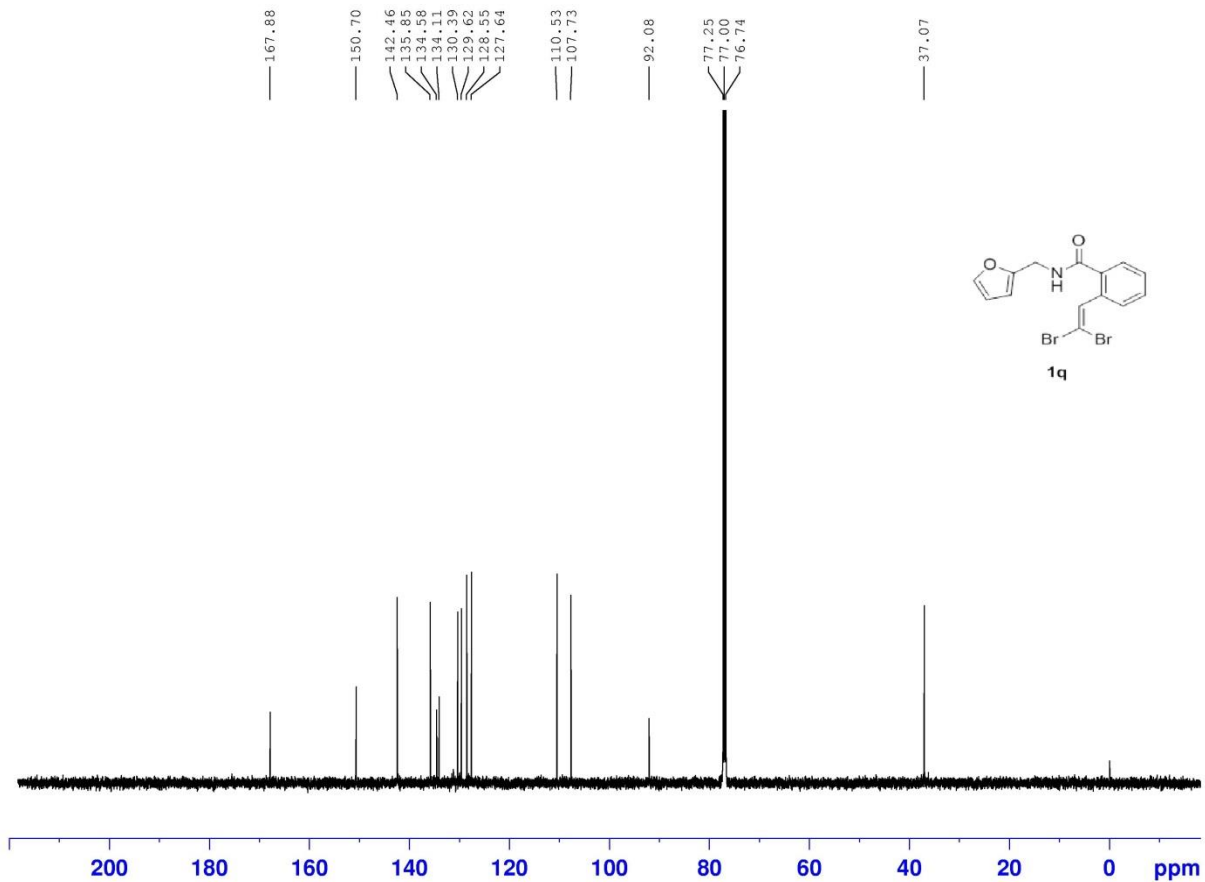
===== CHANNEL F1 =====
NUC1         13C
P1           11.66 usec
PL1          0.00 dB
PL1W         83.39463043 W
SF01         125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2      waltz16
NUC2         1H
PCPD2        80.00 usec
PL2          2.50 dB
PL12         17.40 dB
PL13         17.40 dB
PL1W         13.02359381 W
PL12W        0.42143536 W
PL13W        0.42143536 W
SFO2         500.1320003 MHz
SI           32768
SF           125.7577966 MHz
W0W         EM
S0S          0
LB           1.00 Hz
GB           0
PC           1.40
```



```
NAME TF131023-1
EXPNO 24
PROCNO 1
Date_ 20130422
Time 14.25
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 297.3 K
D1 1.00000000 sec
TD0 1
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300091 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```





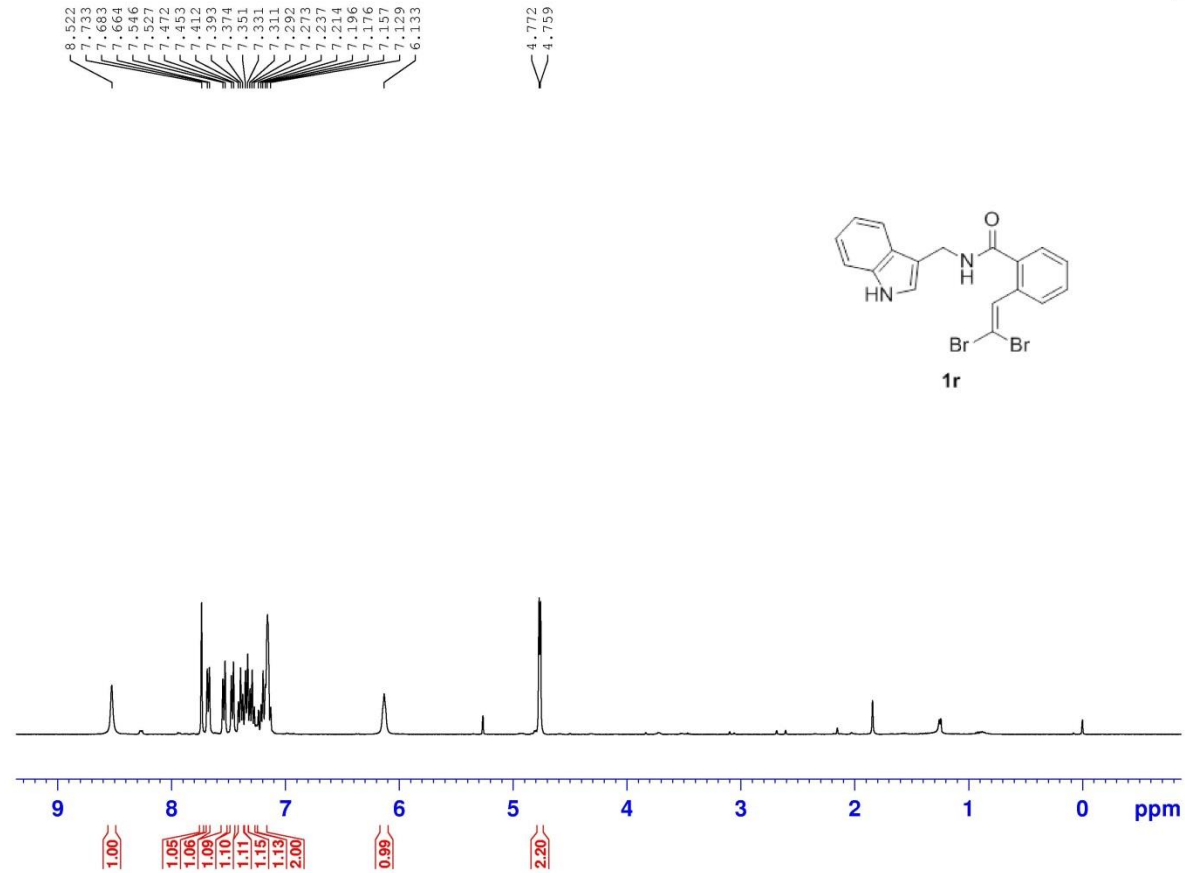
```

NAME          TF130417-2
EXPNO         1
PROCNO        1
Date_         20130426
Time         21.03
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            1024
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            296.3 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

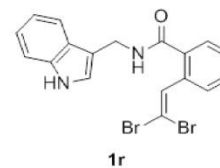
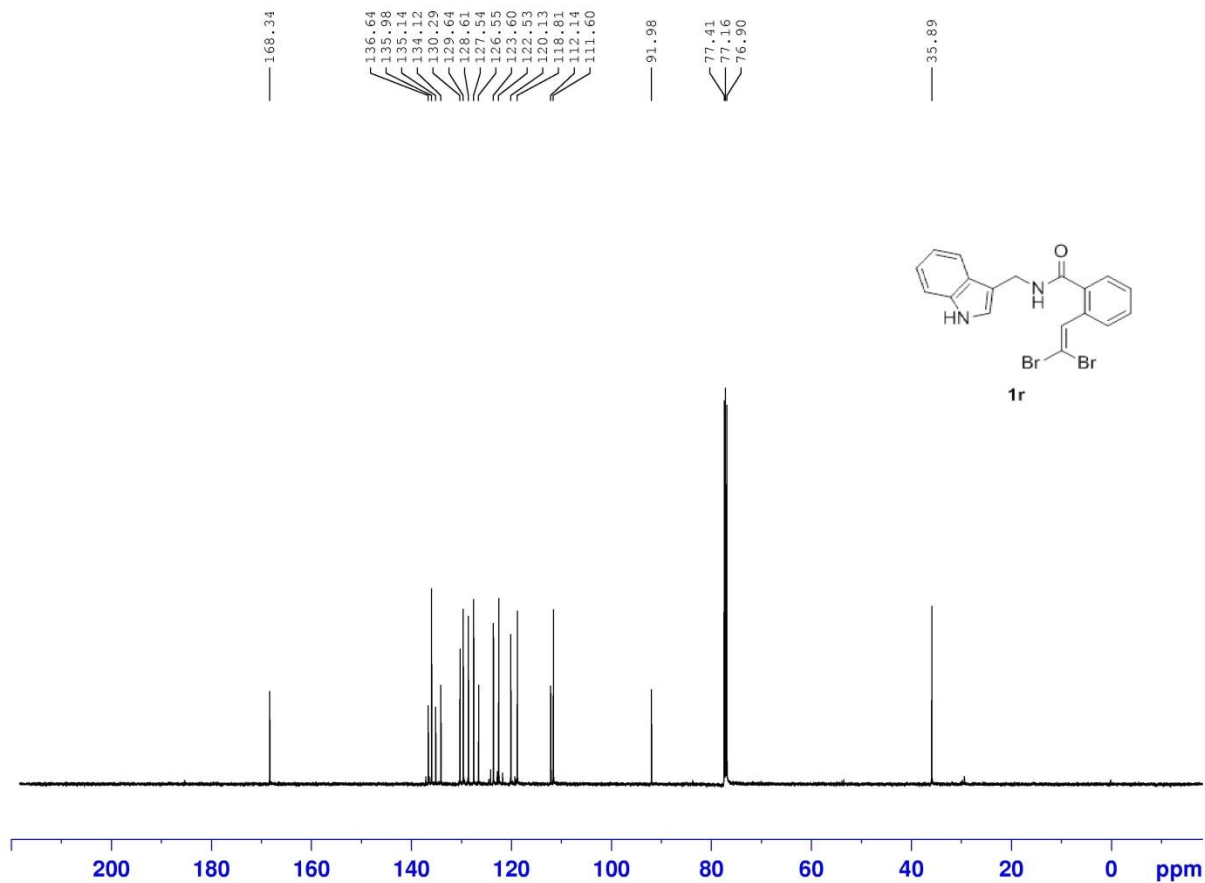
===== CHANNEL F1 =====
NUC1          13C
P1            11.66 usec
PL1           0.00 dB
PL1W          83.39463043 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577949 MHz
WWS          EM
SFS           0
LB            1.00 Hz
GB            0
PC            1.40

```



TF131122-1

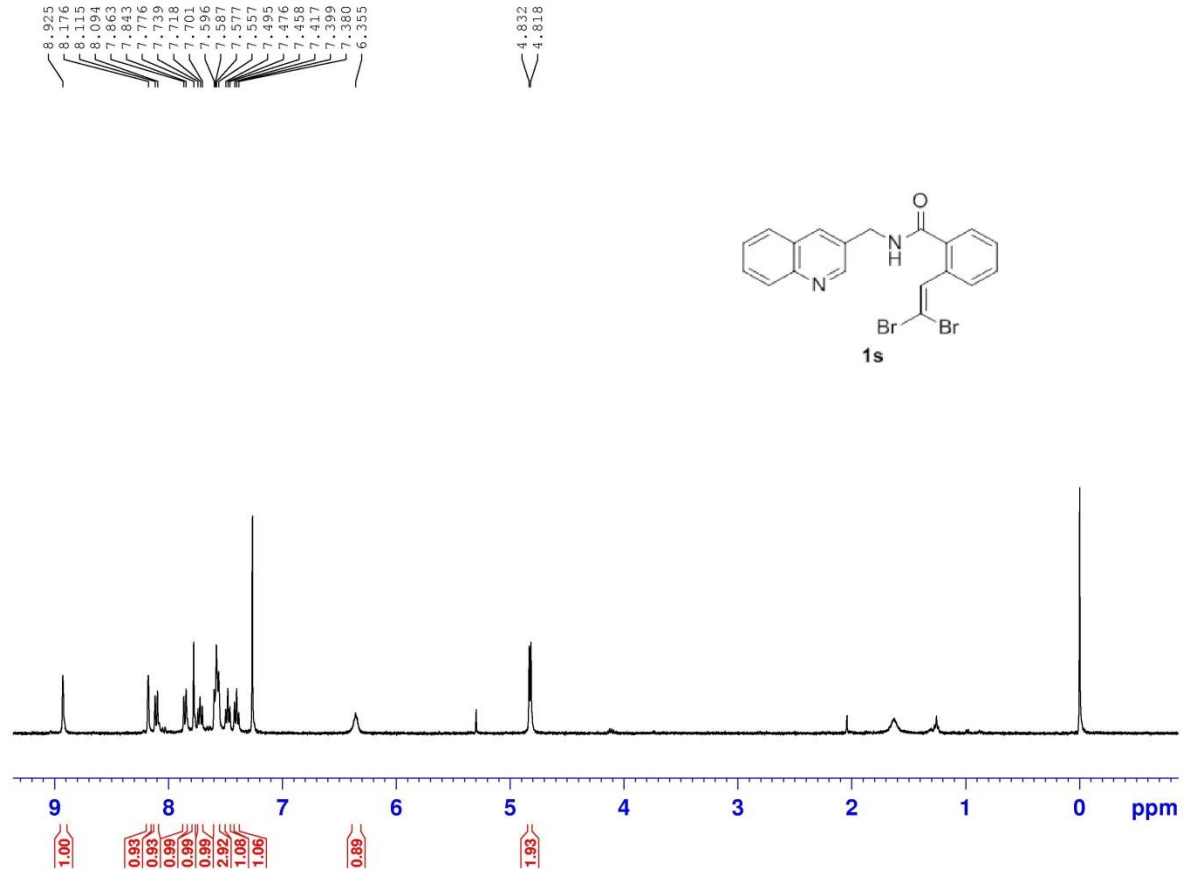


```

NAME          TF131122-1
EXPNO         1
PROCNO        1
Date_         20131220
Time          5.52
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            1293
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            298.1 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

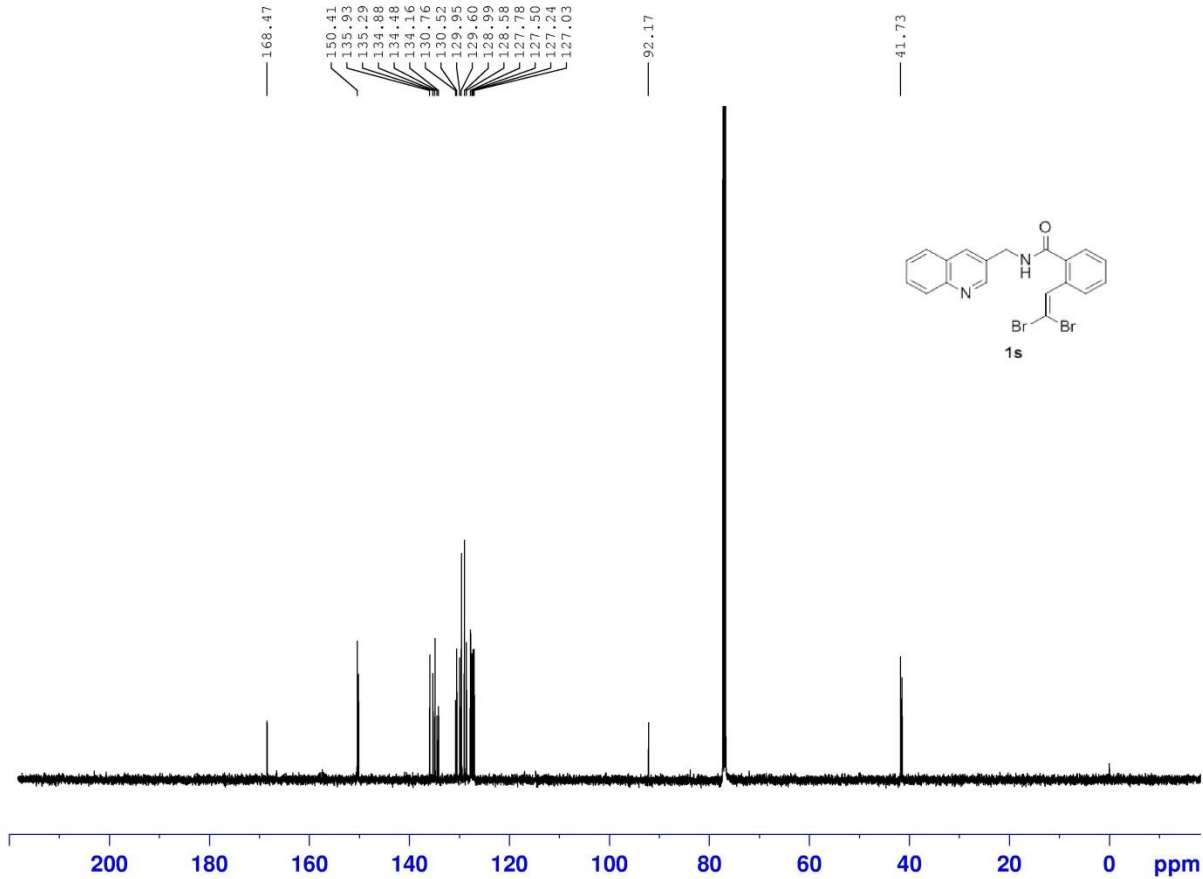
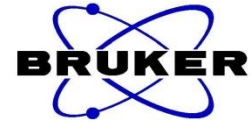
===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577858 MHz
W0W           EM
SFB           0
LB            1.00 Hz
GB            0
PC            1.40
    
```



NAME TF131125-1
EXPNO 33
PROCNO 1
Date_ 20130105
Time 15.13
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 456.1
DW 60.400 usec
DE 6.50 usec
TE 295.3 K
D1 1.00000000 sec
TD0 1

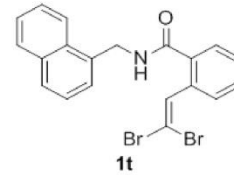
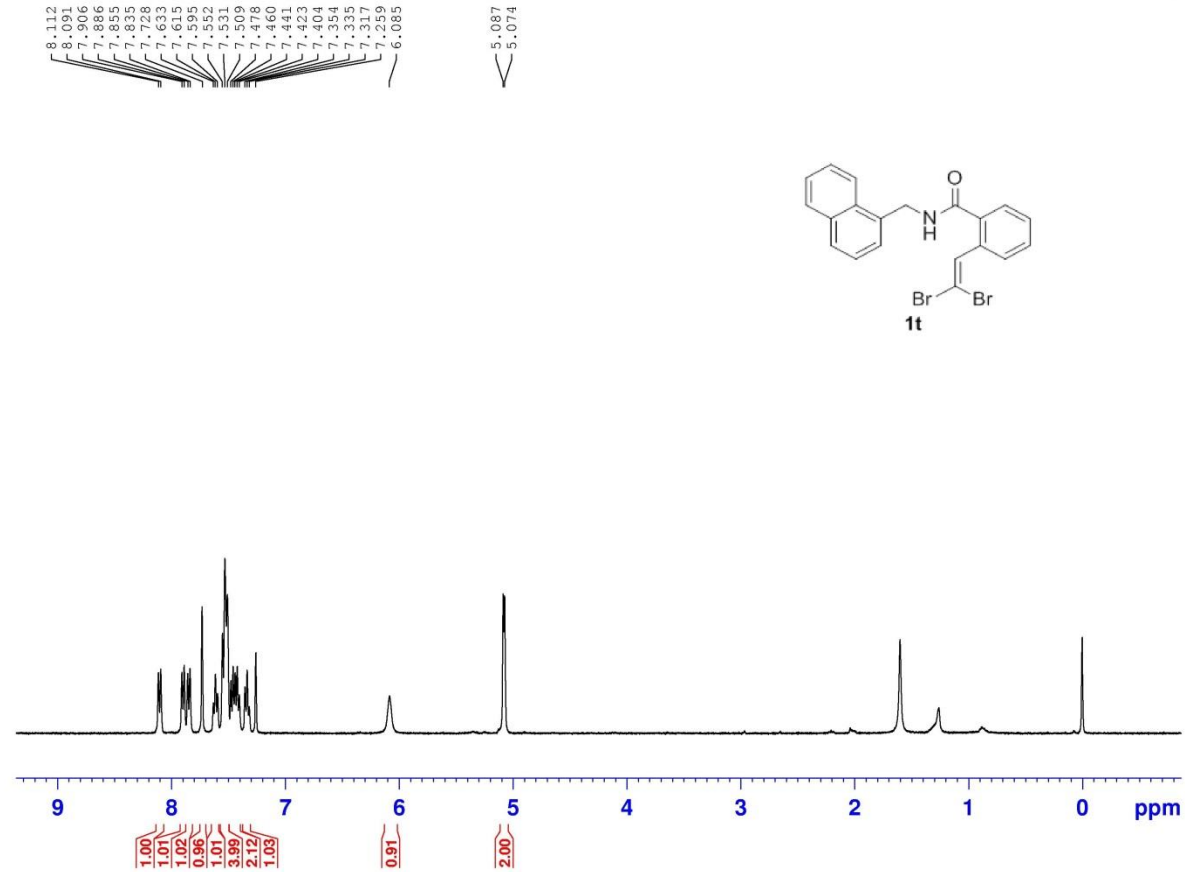
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300083 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00



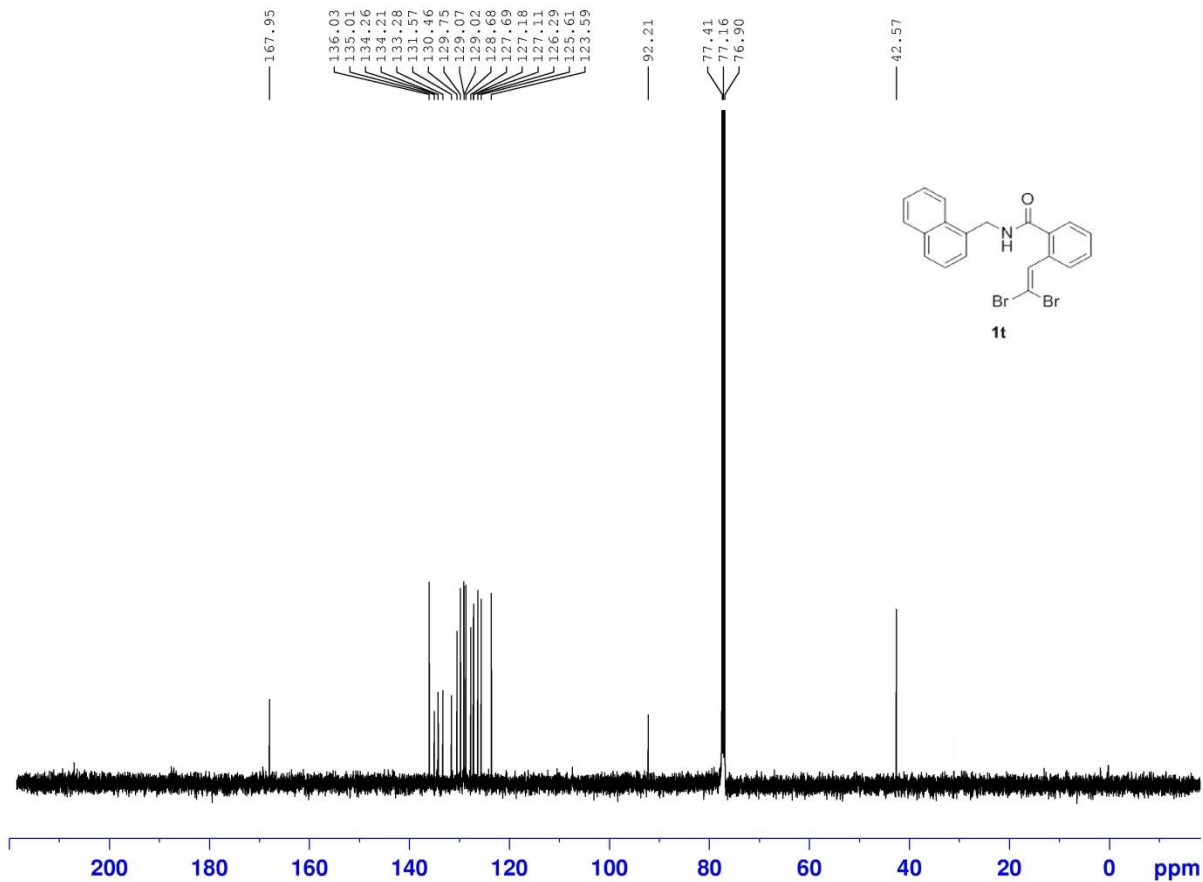
```
NAME          TF130104-1
EXPNO         1
PROCNO        1
Date_         20140226
Time          0.04
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            27
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            294.1 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577966 MHz
WVW           EM
SFB           0
LB            1.00 Hz
GB            0
PC            1.40
```



```
NAME TF131119-1
EXPNO 1
PROCNO 1
Date_ 20131128
Time 14.34
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 298.0 K
D1 1.00000000 sec
TD0 1
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300099 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```



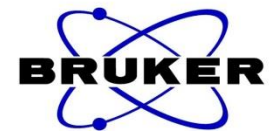
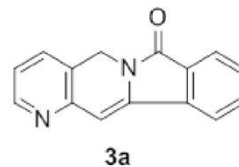
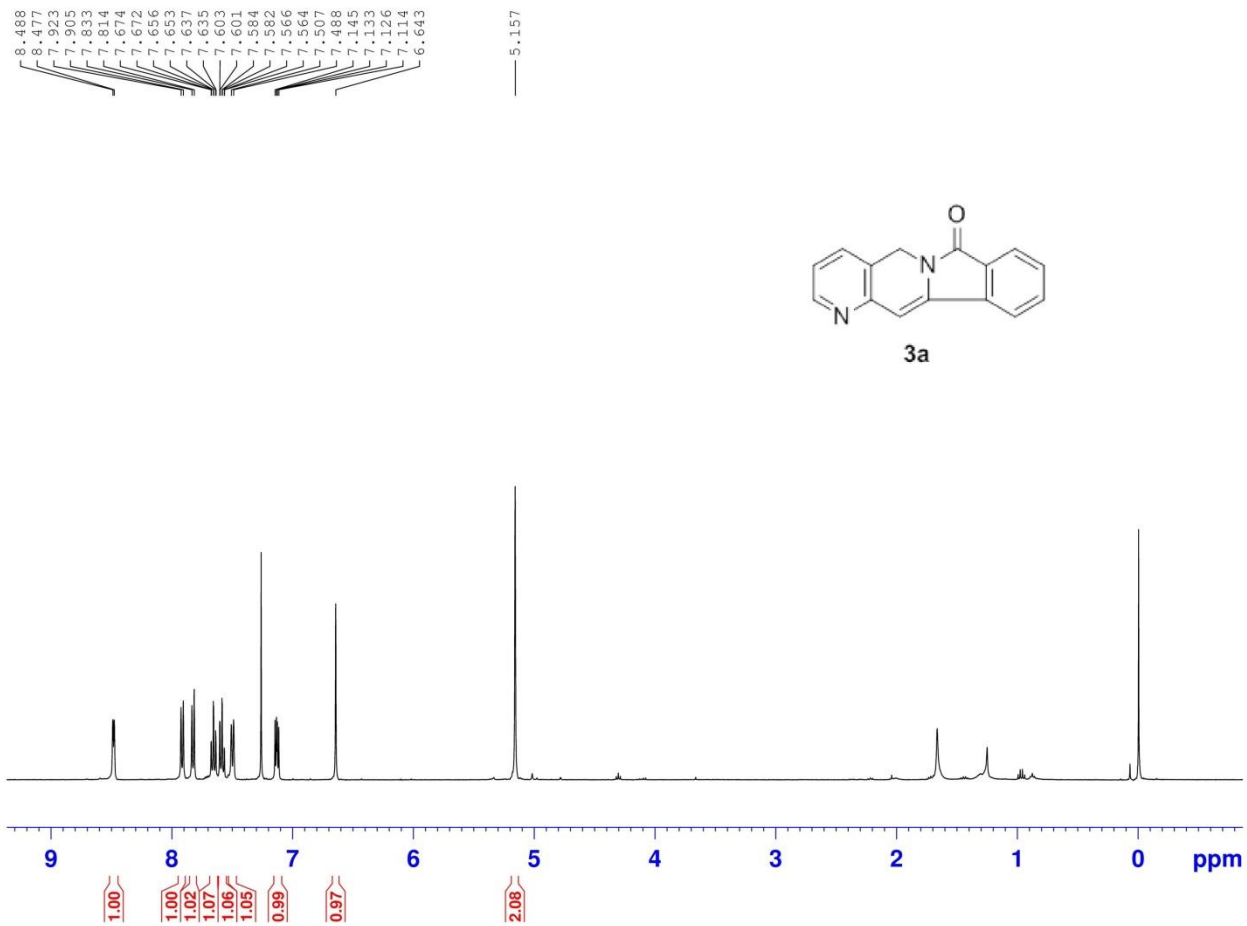
```

NAME          TF131119-1
EXPNO         1
PROCNO        1
Date_         20131216
Time          23.04
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            816
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            297.3 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577740 MHz
WWS          EM
SBS           0
LB            1.00 Hz
GB            0
PC            1.40

```



```

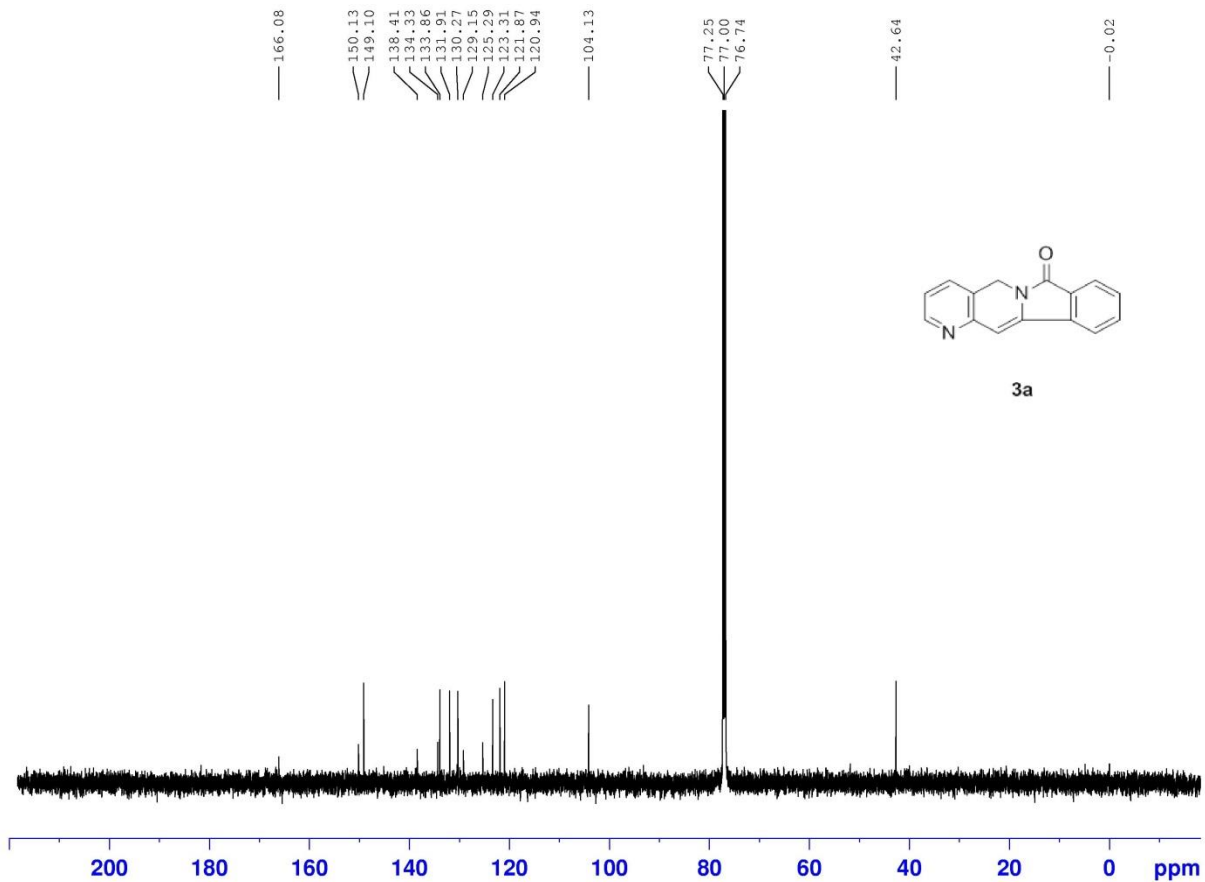
NAME      TF121020-1
EXPNO     1
PROCNO    1
Date_     20121028
Time      15.12
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zg30
TD         65536
SOLVENT   CDCl3
NS         16
DS         2
SWH       8278.146 Hz
FIDRES    0.126314 Hz
AQ         3.9584243 sec
RG         322.5
DW         60.400 usec
DE         6.50 usec
TE         298.3 K
D1         1.00000000 sec
TDO       1

```

```

===== CHANNEL f1 =====
NUC1      1H
P1        14.50 usec
PL1       0.00 dB
PL1W      10.87646866 W
SFO1      400.1324710 MHz
SI        32768
SF        400.1300091 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00

```

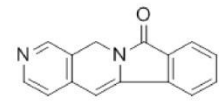
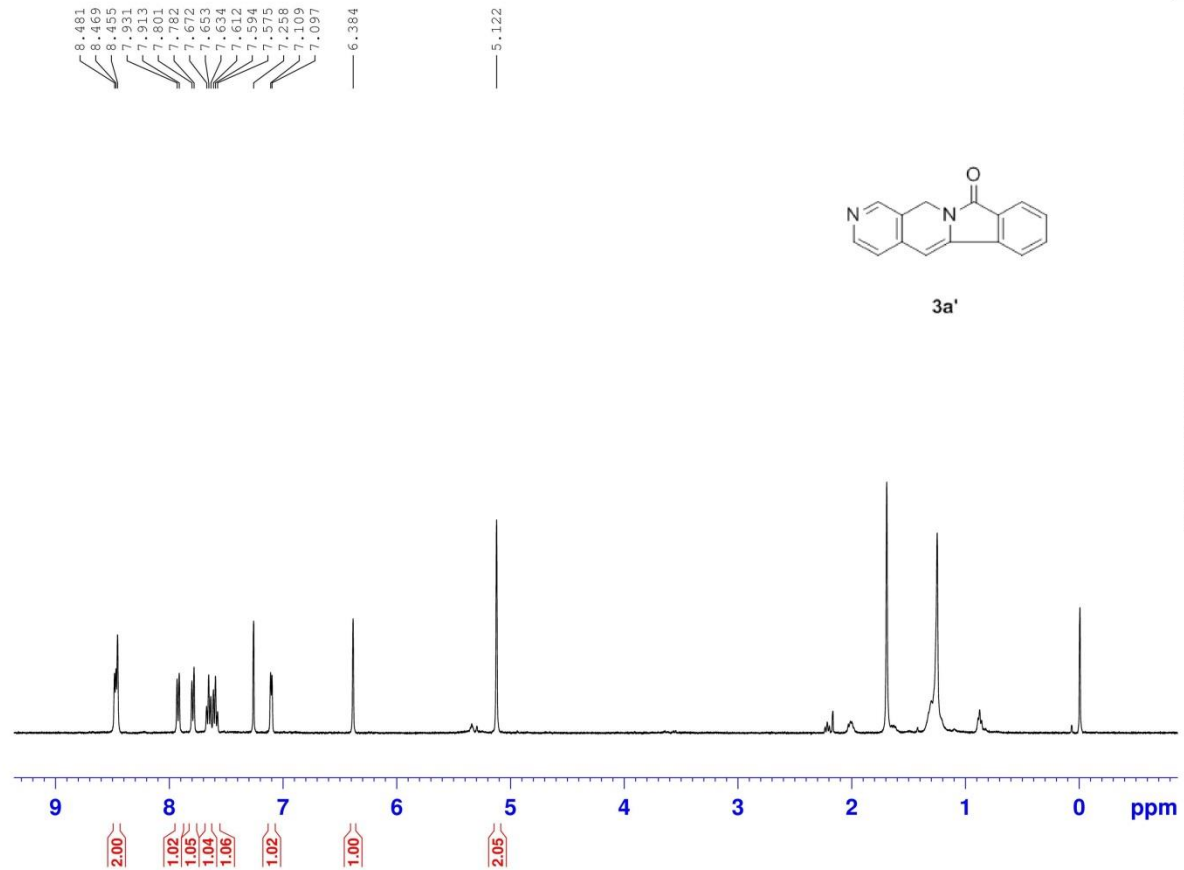
```

NAME          TF121020-1
EXPNO         1
PROCNO        1
Date_         20130402
Time          17.05
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            2048
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            296.3 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

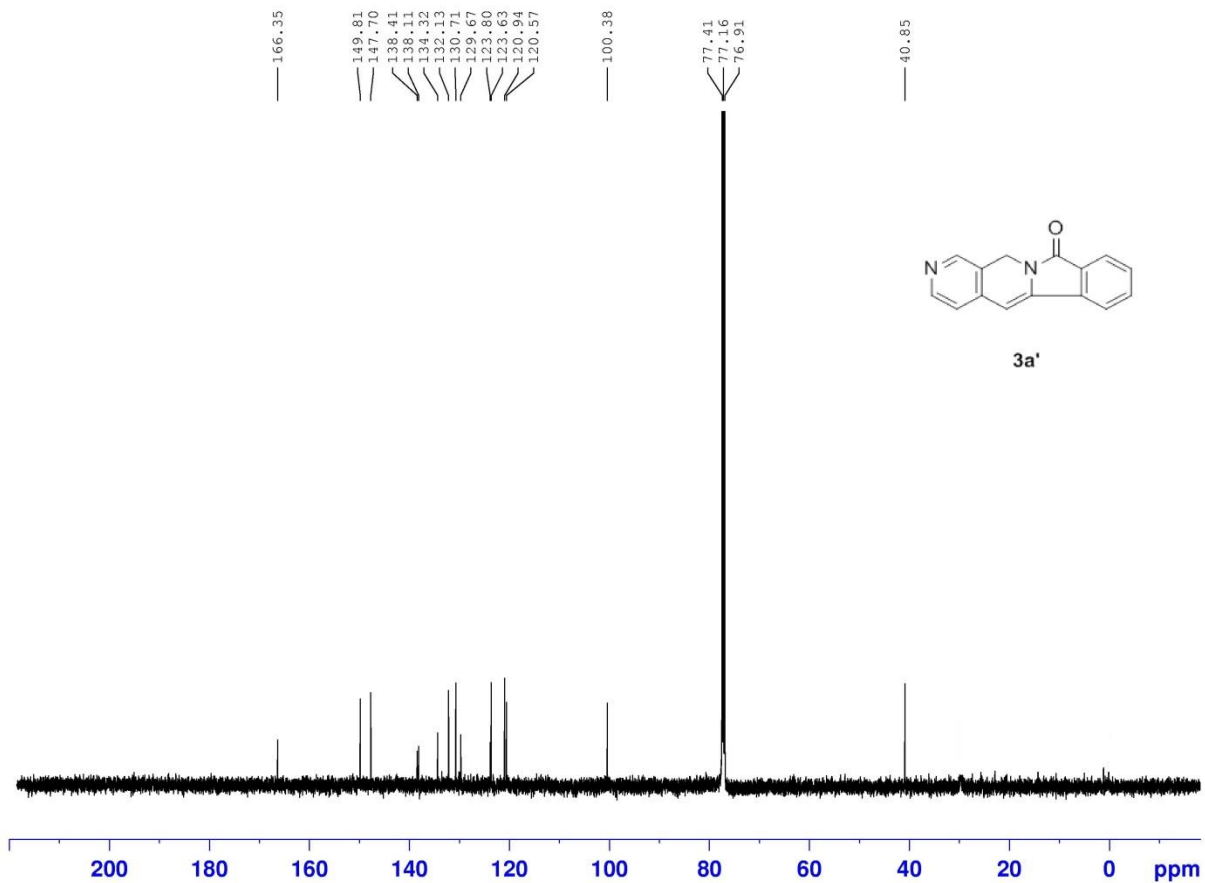
===== CHANNEL F1 =====
NUC1          13C
P1            11.66 usec
PL1           0.00 dB
PL1W          83.39463043 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577930 MHz
WWS           EM
SBS           0
LB            1.00 Hz
GB            0
PC            1.40

```



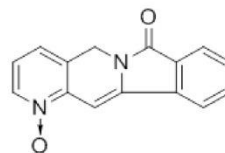
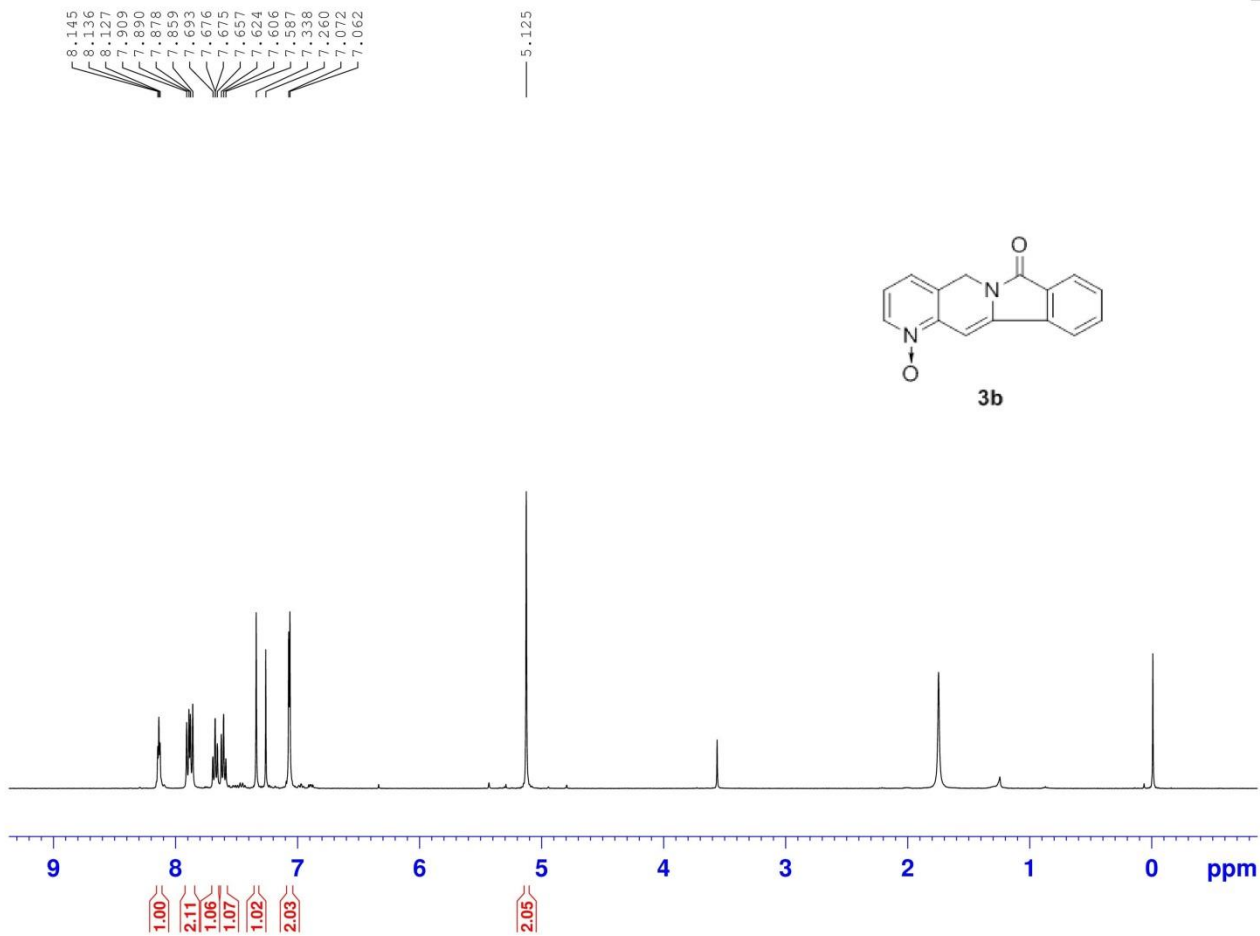
```
NAME TF131031-3
EXPNO 1
PROCNO 1
Date_ 20131105
Time 19.10
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 322.5
DW 60.400 usec
DE 6.50 usec
TE 297.4 K
D1 1.00000000 sec
TDO 1
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300103 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```



```
NAME          TF131031-3
EXPNO         1
PROCNO        1
Date_         20131210
Time         1.52
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            1984
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            298.0 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577730 MHz
WWS          EM
SBS           0
LB            1.00 Hz
GB            0
PC            1.40
```



3b

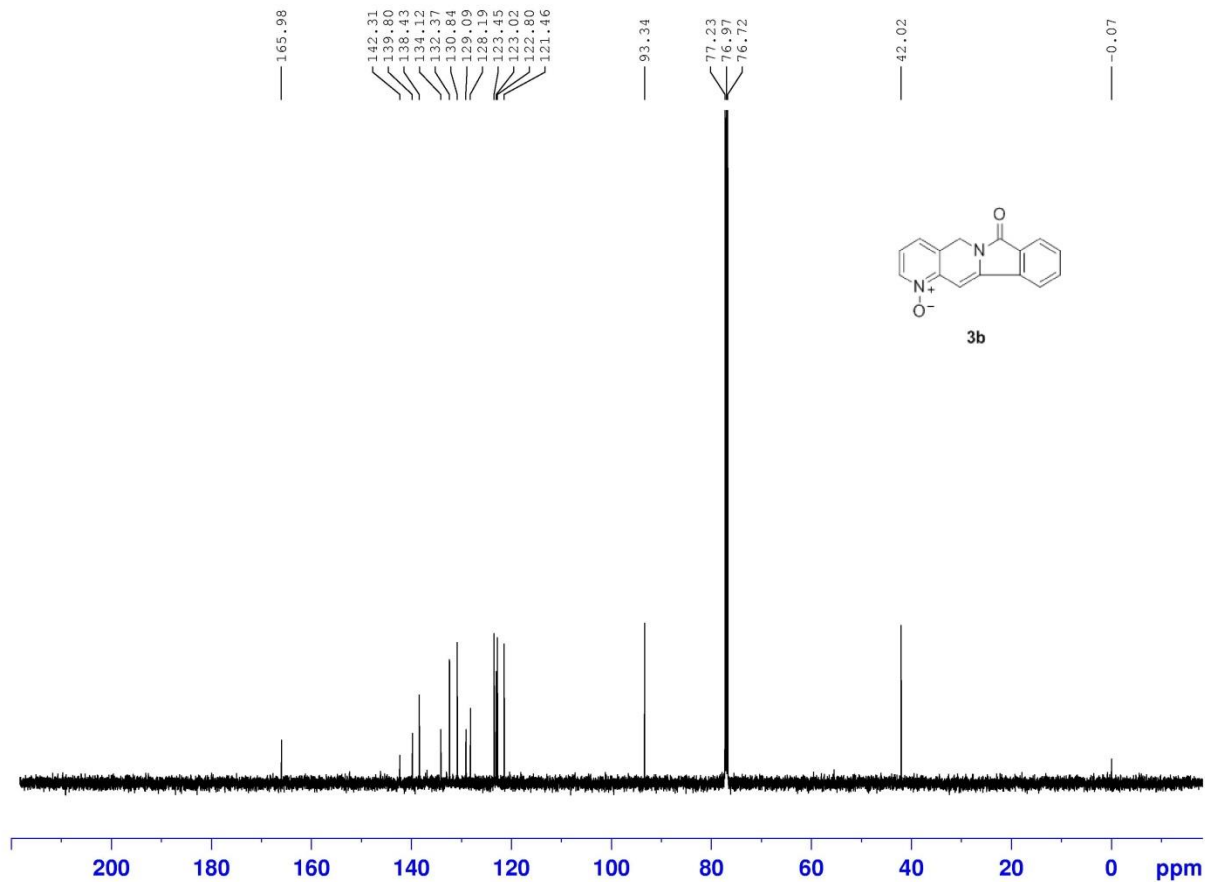


```

NAME          TF121010-1
EXPNO         1
PROCNO        1
Date_         20130623
Time          15.10
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8278.146 Hz
FIDRES        0.126314 Hz
AQ            3.9584243 sec
RG            322.5
DW            60.400 usec
DE            6.50 usec
TE            298.9 K
D1            1.00000000 sec
TD0           1

===== CHANNEL f1 =====
NUC1          1H
P1            12.58 usec
PL1           0.00 dB
PL1W          10.87646866 W
SFO1          400.1324710 MHz
SI            32768
SF            400.1300086 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00

```



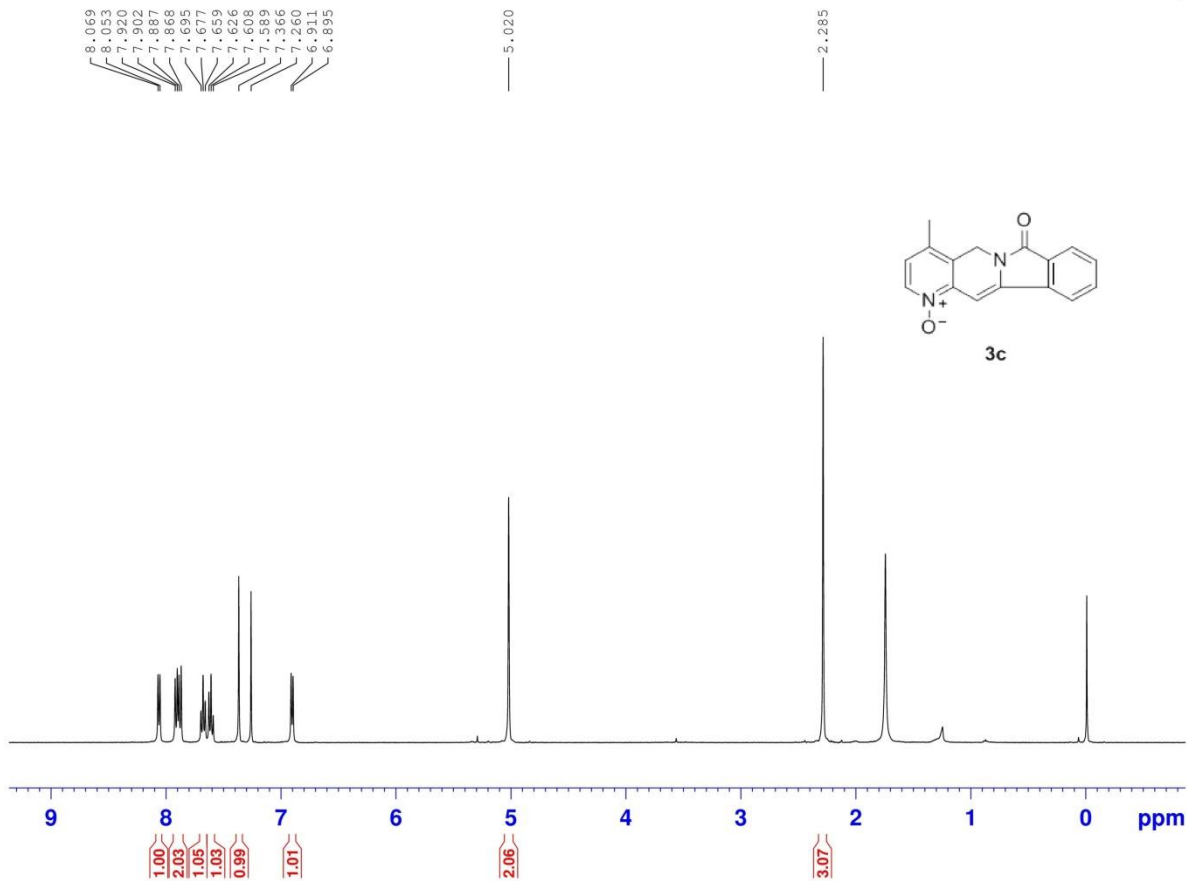
```

NAME          TF121010-1A
EXPNO         1
PROCNO        1
Date_         20130624
Time          10.08
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            32768
SOLVENT       CDCl3
NS            689
DS            4
SWH           29761.904 Hz
FIDRES        0.908261 Hz
AQ            0.5505524 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            298.2 K
D1            2.0000000 sec
D11           0.03000000 sec
TDD           1

===== CHANNEL F1 =====
NUC1          13C
P1            11.66 usec
PL1           0.00 dB
PL1W          83.39463043 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577966 MHz
WVW           EM
SFB           0
LB            1.00 Hz
GB            0
PC            1.40

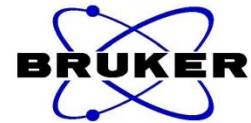
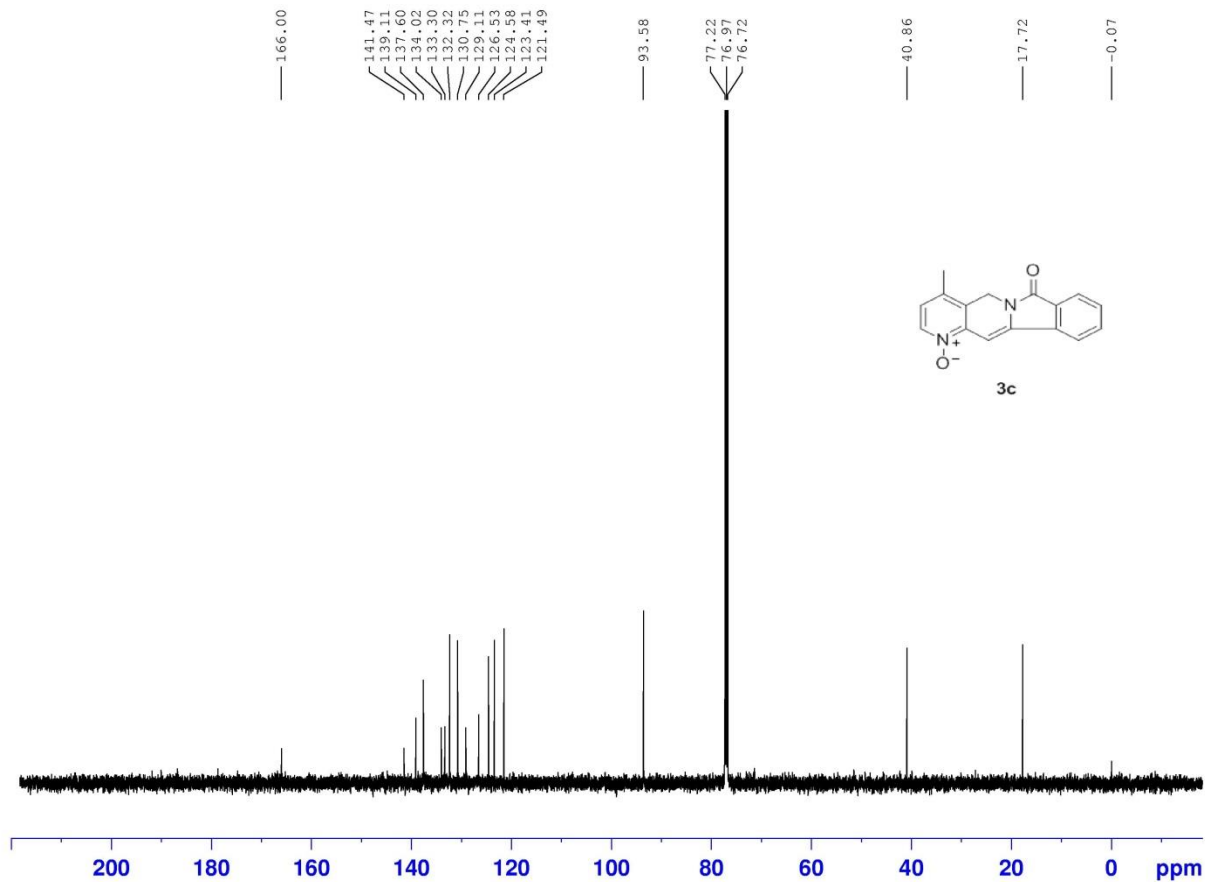
```



```

=====
NAME          TF121211-2
EXPNO         1
PROCNO        1
Date_         20130623
Time          18.52
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8278.146 Hz
FIDRES        0.126314 Hz
AQ            3.9584243 sec
RG            322.5
DW            60.400 usec
DE            6.50 usec
TE            299.1 K
D1            1.00000000 sec
TD0           1
===== CHANNEL f1 =====
NUC1          1H
P1            12.58 usec
PL1           0.00 dB
PL1W          10.87646866 W
SFO1          400.1324710 MHz
SI            32768
SF            400.1300089 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00

```



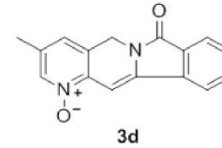
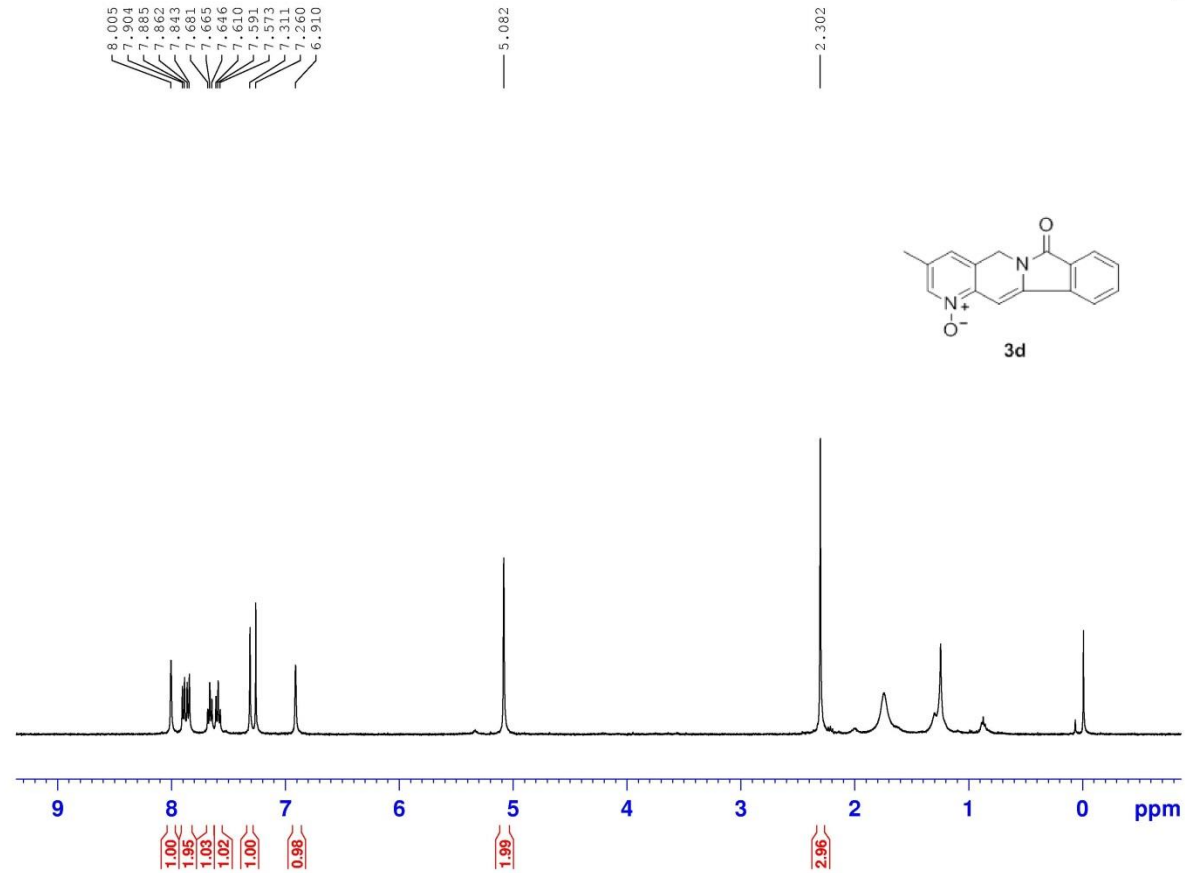
```

NAME      TF121211-2A
EXPNO     1
PROCNO    1
Date_     20130624
Time      16.48
INSTRUM   Spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD         32768
SOLVENT   CDCl3
NS         976
DS         4
SWH        29761.904 Hz
FIDRES     0.308261 Hz
AQ         0.5505524 sec
RG         203
DW         16.800 usec
DE         6.50 usec
TE         298.3 K
D1         2.0000000 sec
D11        0.0300000 sec
TDD        1

===== CHANNEL F1 =====
NUC1       13C
P1         11.66 usec
PL1        0.00 dB
PL1W       83.39463043 W
SF01       125.7703643 MHz

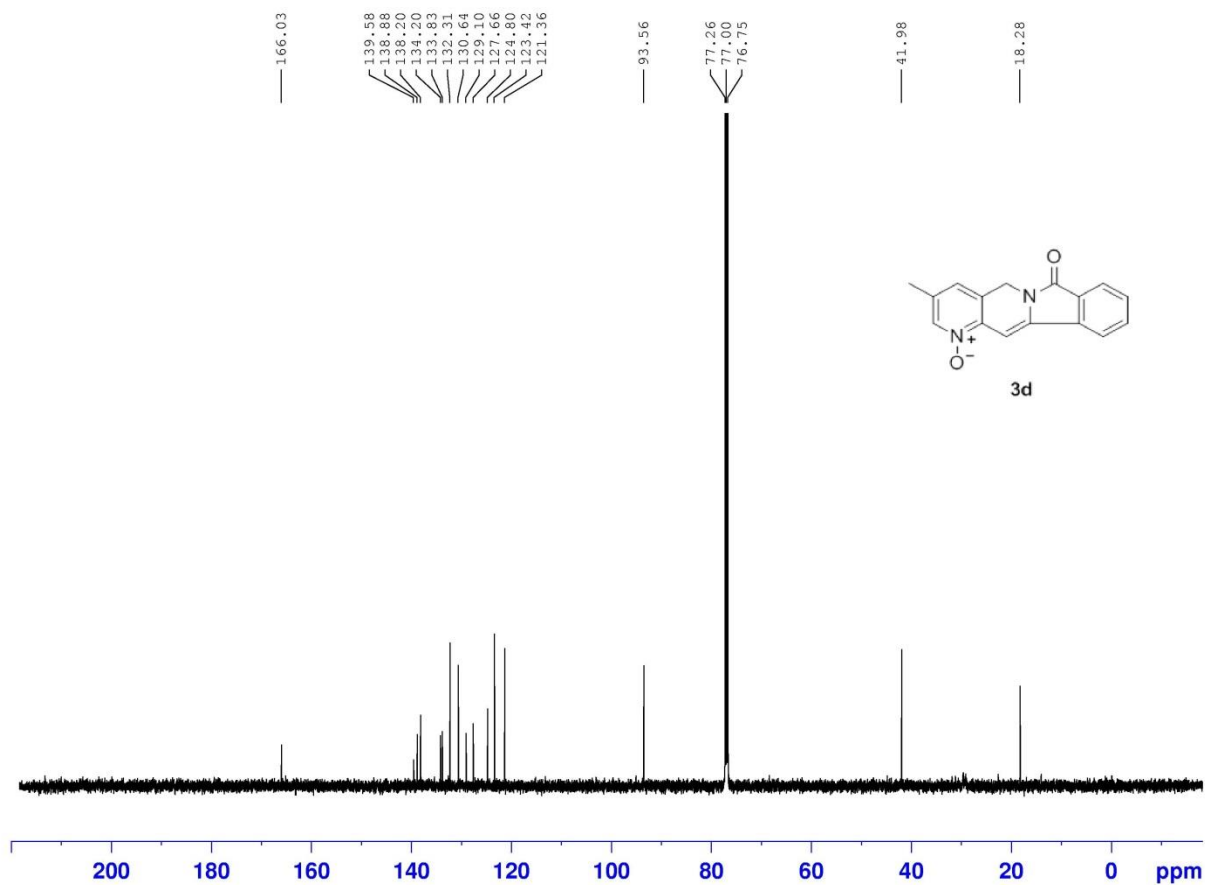
===== CHANNEL F2 =====
CPDPRG2    waltz16
NUC2       1H
PCPD2      80.00 usec
PL2         2.50 dB
PL12        17.40 dB
PL13        17.40 dB
PL1W       13.02359381 W
PL12W      0.42143536 W
PL13W      0.42143536 W
SFO2       500.1320003 MHz
SI         32768
SF         125.7577966 MHz
W0W        EM
SFB         0
LB          1.00 Hz
GB          0
PC          1.40

```

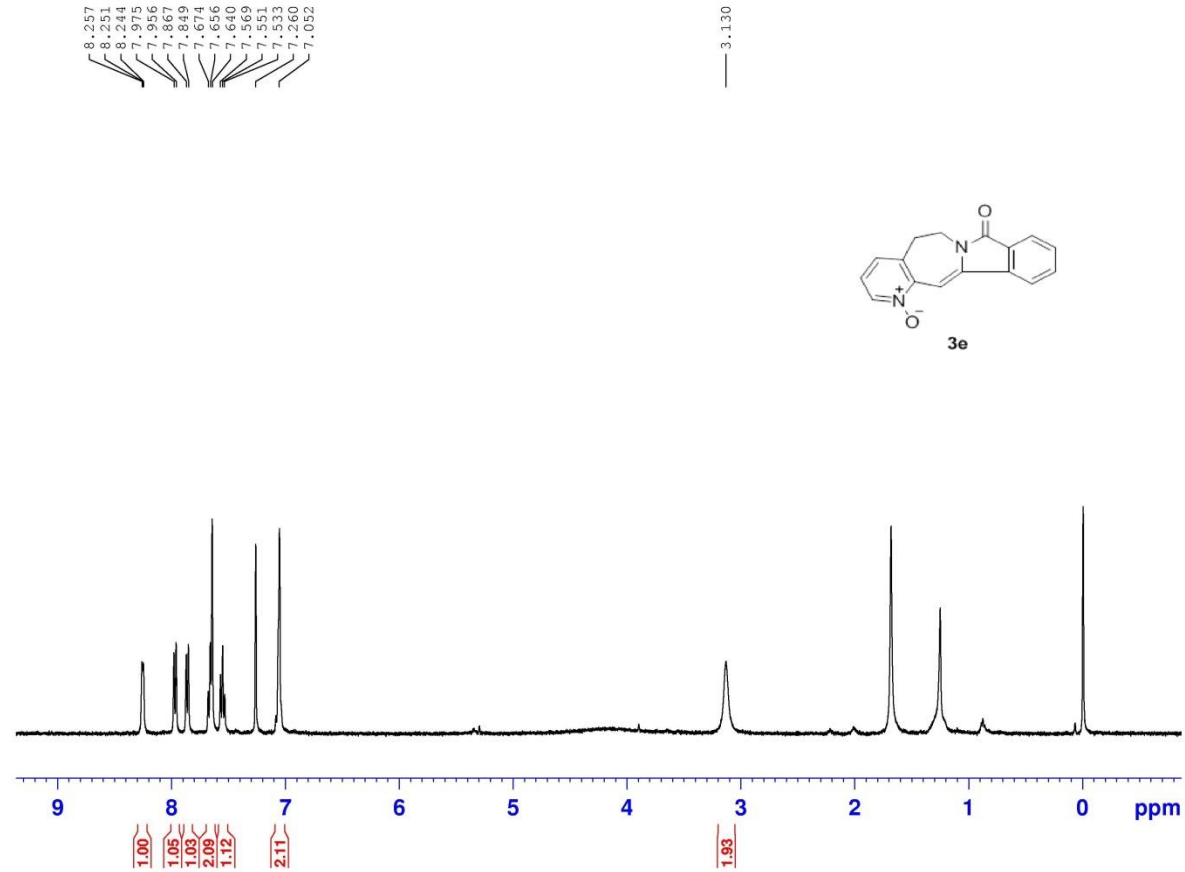


NAME TF130228-1
EXPNO 78
PROCNO 1
Date_ 20130416
Time 18.21
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 297.6 K
D1 1.00000000 sec
TD0 1

==== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300092 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00

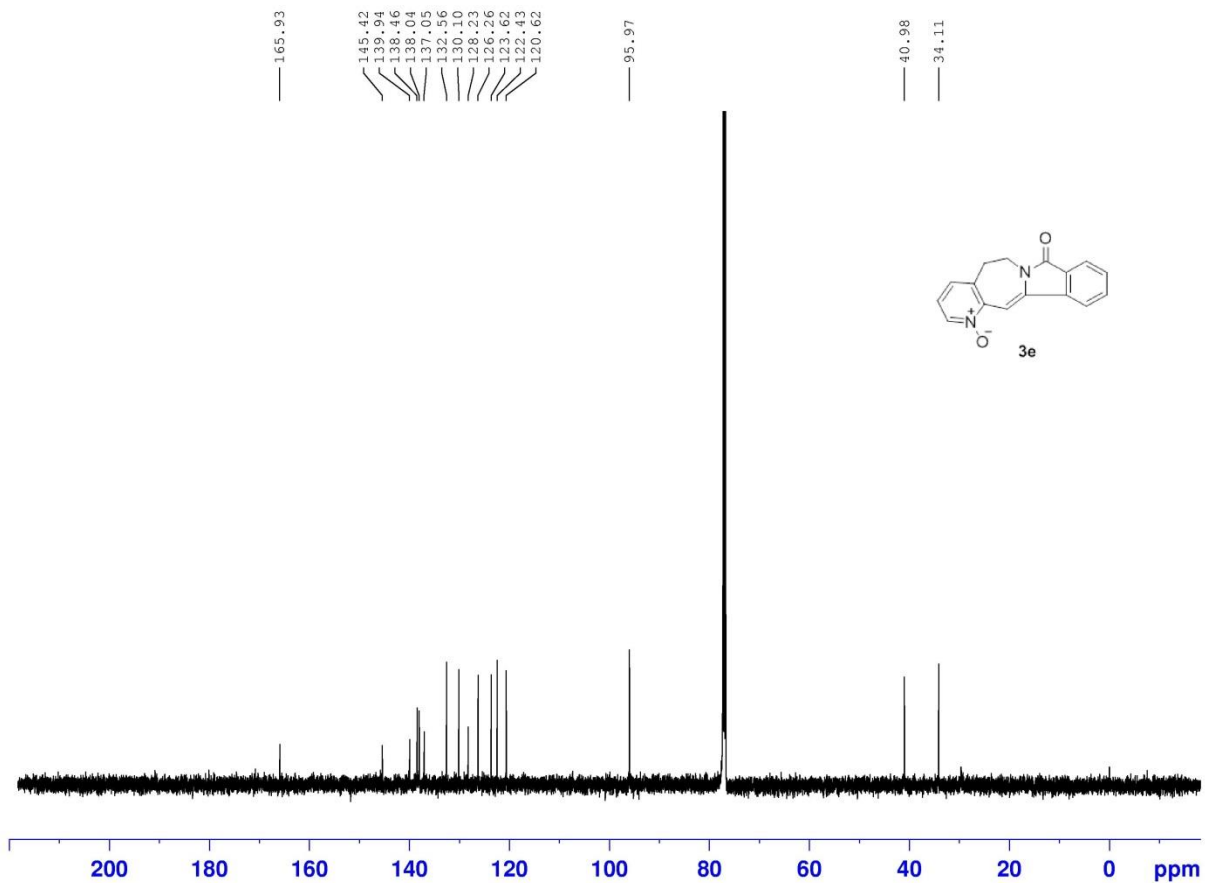


```
NAME          TF130414-1
EXPNO         1
PROCNO       1
Date_        20130418
Time         20.10
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS           1024
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           295.3 K
D1           2.0000000 sec
D11          0.03000000 sec
TD0          1
===== CHANNEL F1 =====
NUC1         13C
P1           11.66 usec
PL1          0.00 dB
PL1W         83.39463043 W
SF01         125.7703643 MHz
===== CHANNEL F2 =====
CPDPRG2      waltz16
NUC2         1H
PCPD2        80.00 usec
PL2          2.50 dB
PL12         17.40 dB
PL13         17.40 dB
PL1W         13.02359381 W
PL12W        0.42143536 W
PL13W        0.42143536 W
SFO2         500.1320003 MHz
S1           32768
SF           125.7577942 MHz
W0W         EM
S0S         0
LB           1.00 Hz
GB           0
PC           1.40
```



```
NAME          TF131024-2
EXPNO         1
PROCNO        1
Date_         20131028
Time          16.57
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            8
DS            2
SWH           8278.146 Hz
FIDRES        0.126314 Hz
AQ            3.9584243 sec
RG            362
DW            60.400 usec
DE            6.50 usec
TE            297.1 K
D1            1.00000000 sec
TD0           1
```

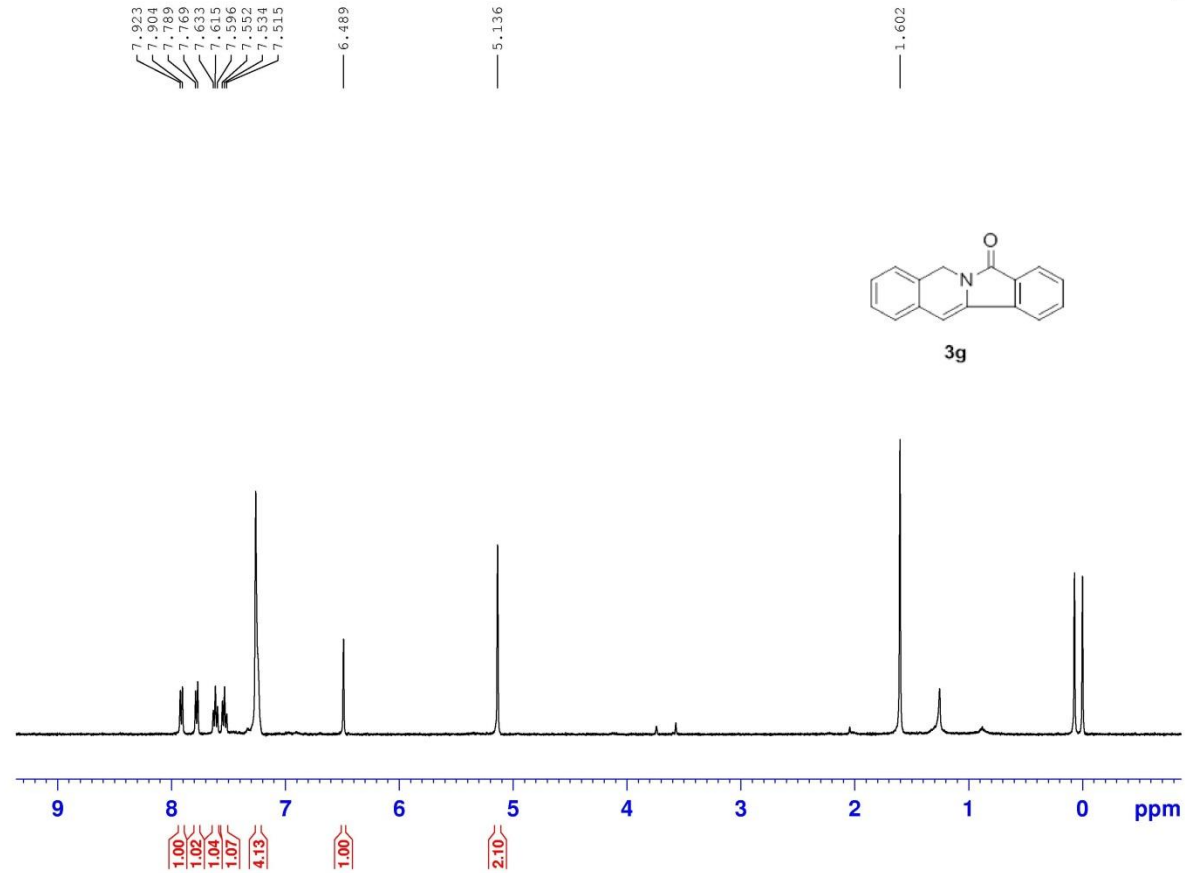
```
===== CHANNEL f1 =====
NUC1          1H
P1            12.58 usec
PL1           0.00 dB
PL1W          10.87646866 W
SFO1          400.1324710 MHz
SI            32768
SF            400.1300096 MHz
WDW           no
SSB           0
LB            0.00 Hz
GB            0
PC            1.00
```



```
NAME          TF131024-2
EXPNO         1
PROCNO       1
Date_        20131106
Time         17.51
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS           1024
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           298.0 K
D1           2.0000000 sec
D11          0.03000000 sec
TDD          1

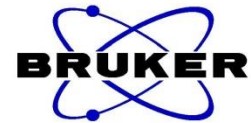
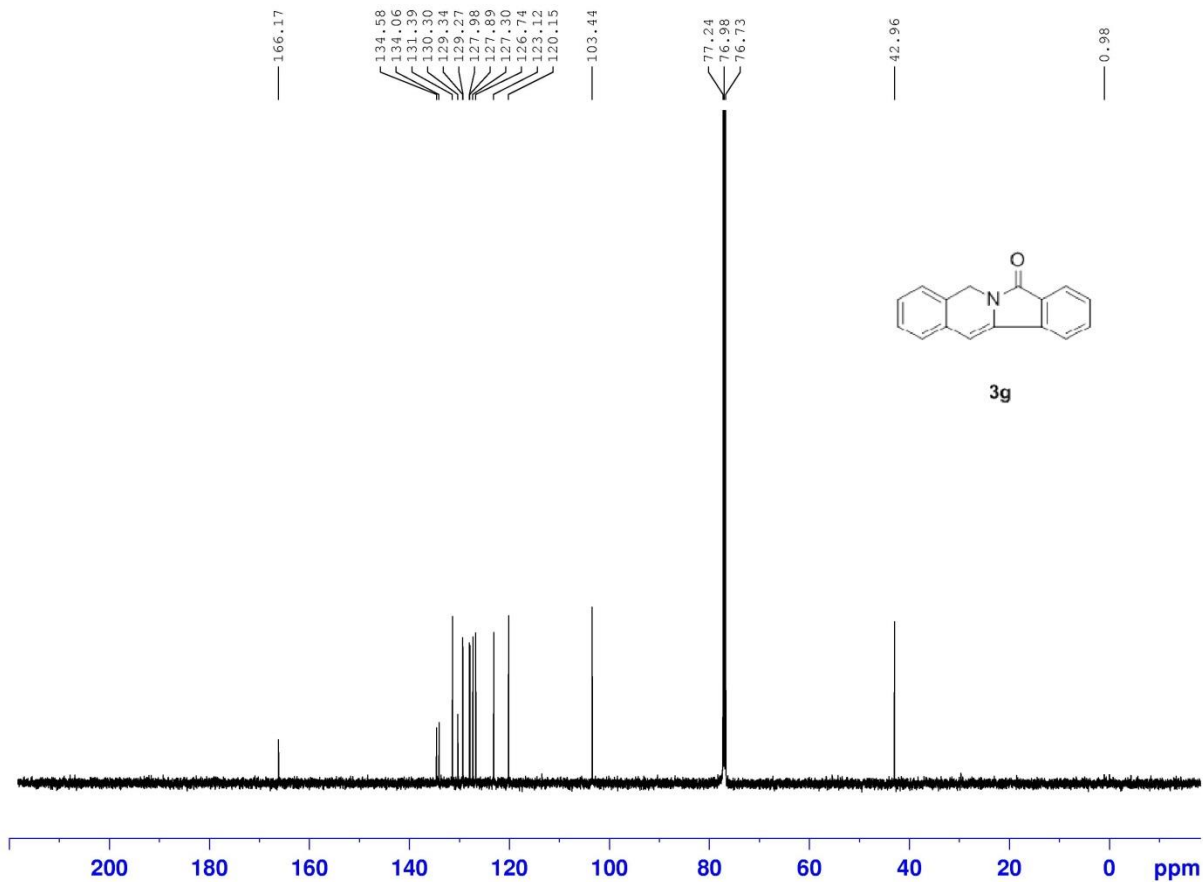
===== CHANNEL F1 =====
NUC1         13C
P1           13.84 usec
PL1          2.50 dB
PL1W         46.89624786 W
SF01         125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2     waltz16
NUC2         1H
PCPD2       80.00 usec
PL2          2.50 dB
PL12         17.40 dB
PL13         17.40 dB
PL1W         13.02359381 W
PL12W        0.42143536 W
PL13W        0.42143536 W
SFO2         500.1320003 MHz
SI           32768
SF           125.7577966 MHz
WWS         EM
SFB          0
LB           1.00 Hz
GB           0
PC           1.40
```



NAME TF131008-2
EXPNO 1
PROCNO 1
Date_ 20131009
Time 15.02
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 297.8 K
D1 1.00000000 sec
TD0 1

==== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300095 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00



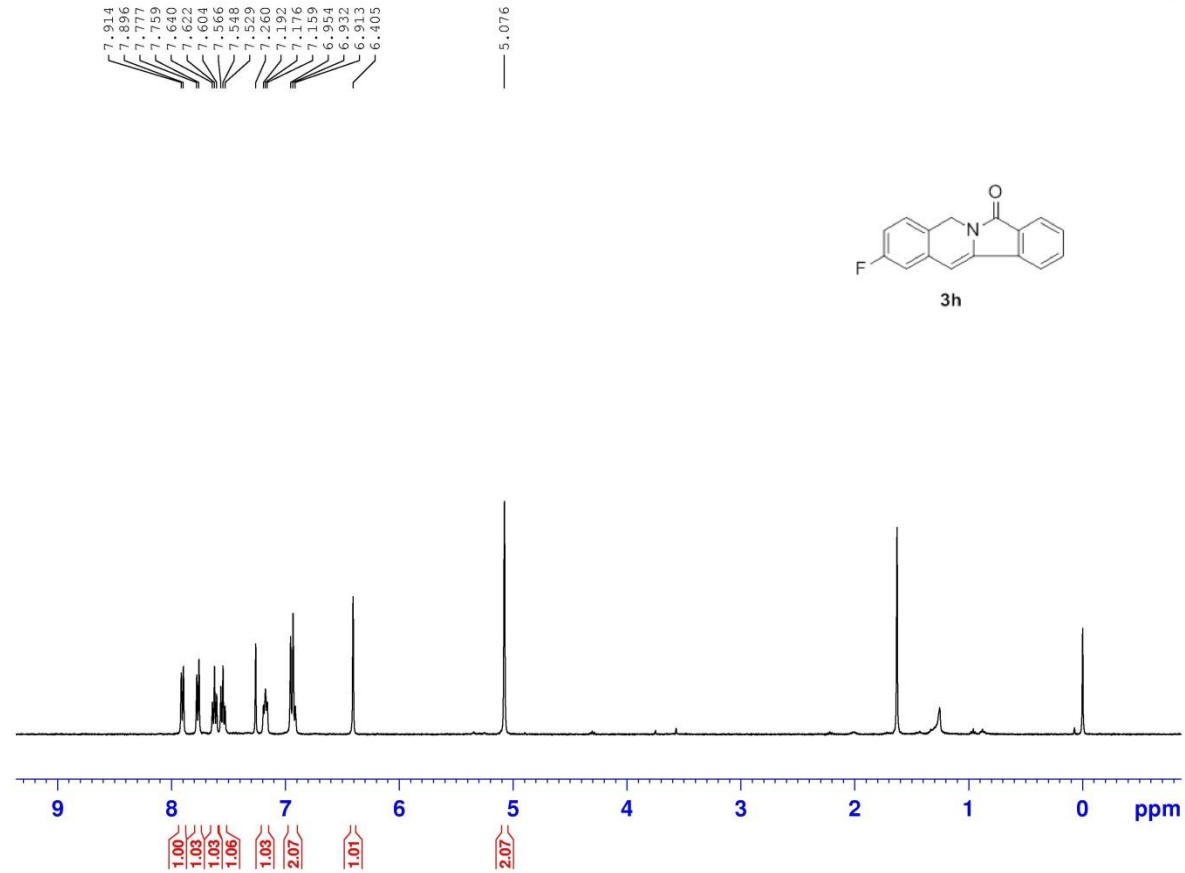
```

NAME          TF131008-2
EXPNO         1
PROCNO        1
Date_         20131010
Time         21.37
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            818
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            297.3 K
D1            2.0000000 sec
D11           0.0300000 sec
TD0           1

===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

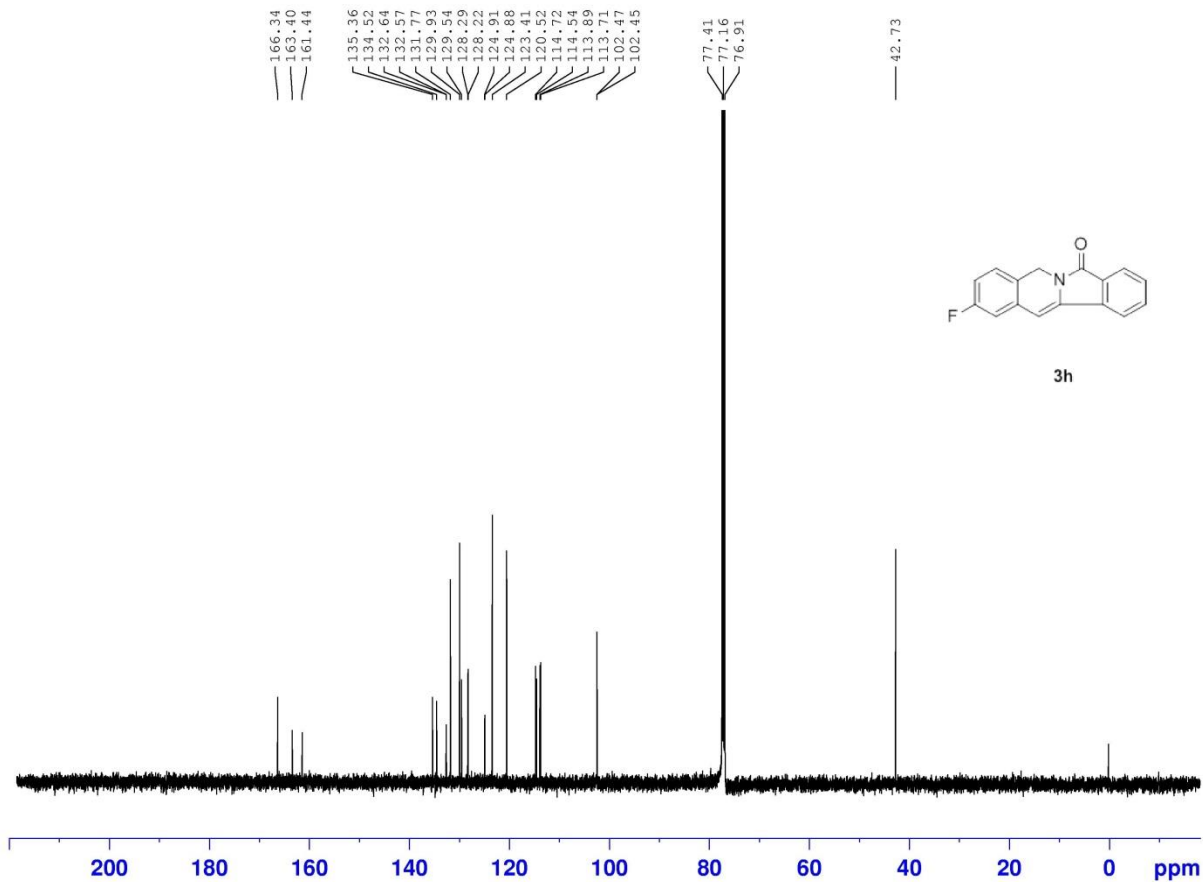
===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577966 MHz
WWS          EM
SBS           0
LB            1.00 Hz
GB            0
PC            1.40

```



```
NAME TF131030-1
EXPNO 1
PROCNO 1
Date_ 20131031
Time 16.51
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 322.5
DW 60.400 usec
DE 6.50 usec
TE 297.6 K
D1 1.00000000 sec
TD0 1
```

```
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300094 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```



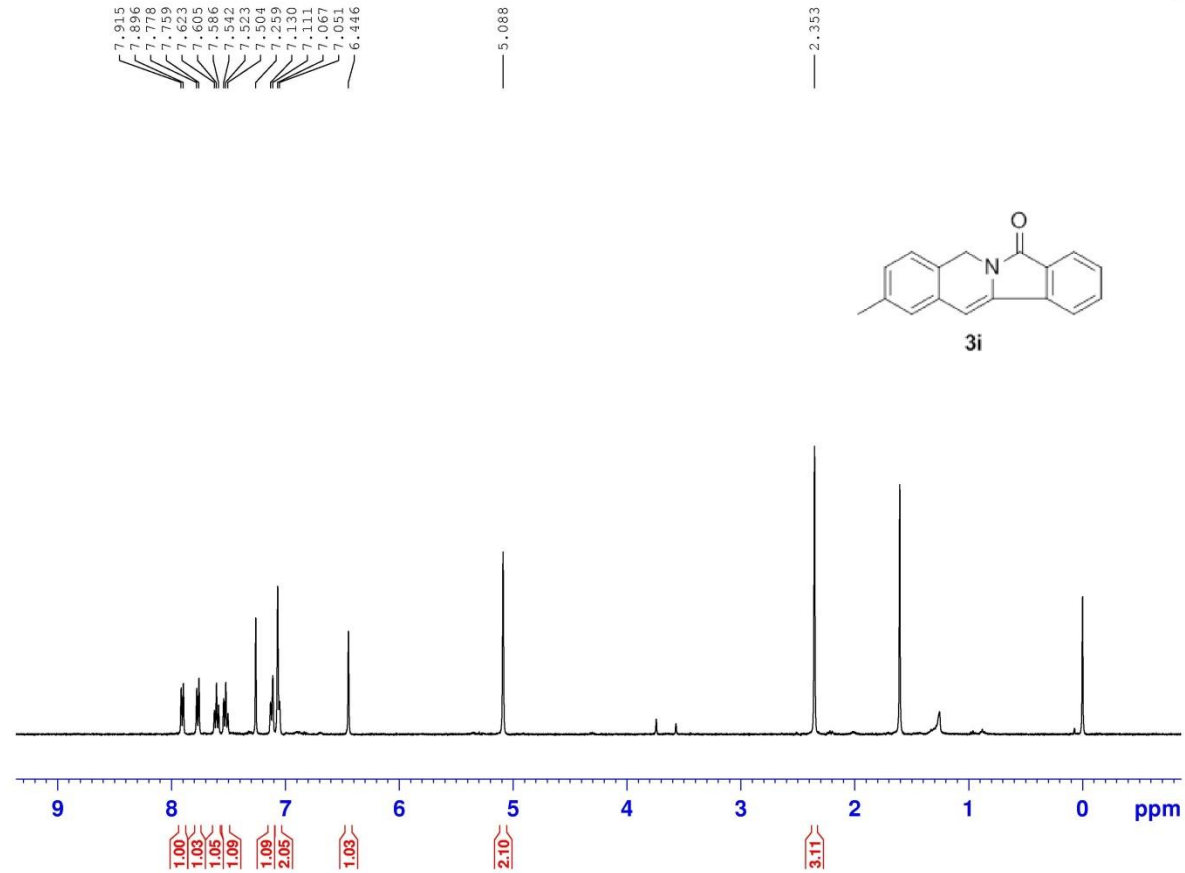
```

NAME          TF131030-1
EXPNO         1
PROCNO        1
Date_         20131228
Time         6.08
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            1822
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            298.0 K
D1            2.0000000 sec
D11           0.03000000 sec
TDD           1

===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

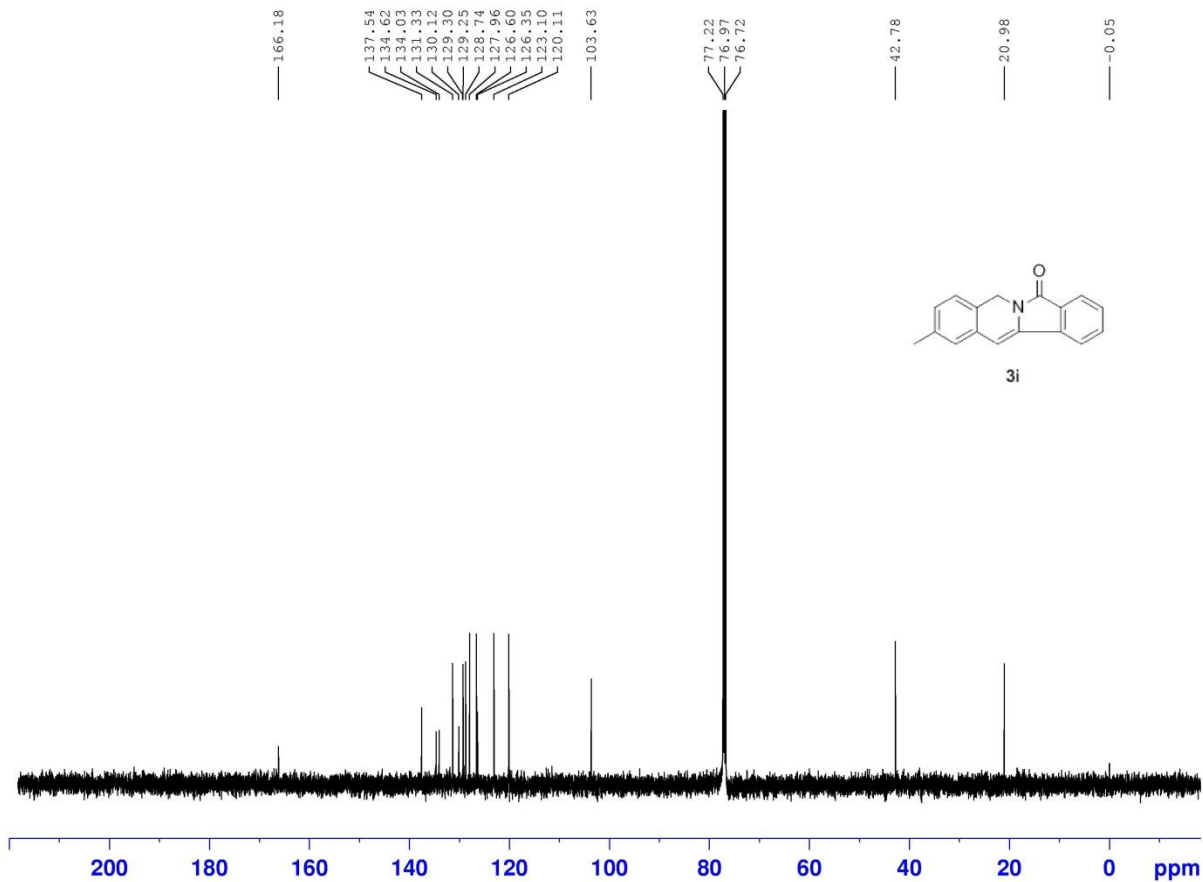
===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577729 MHz
WVW           EM
SFB           0
LB            1.00 Hz
GB            0
PC            1.40

```



NAME TF131028-2
EXPNO 1
PROCNO 1
Date_ 20131030
Time 14.47
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 297.6 K
D1 1.00000000 sec
TD0 1

==== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300097 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00



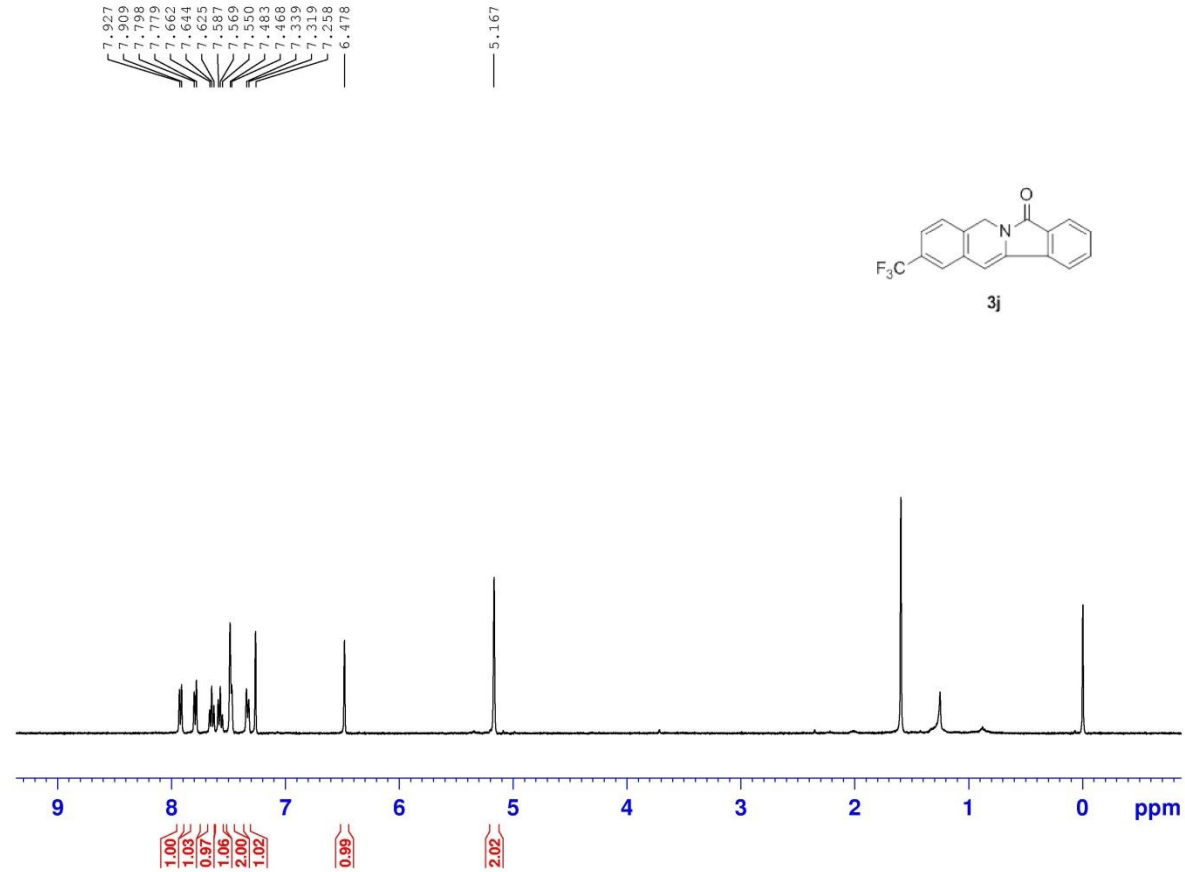
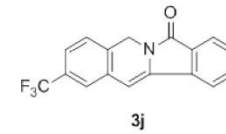
```

NAME          TF131028-2
EXPNO         1
PROCNO        1
Date_         20131115
Time          17.42
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            728
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            297.3 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

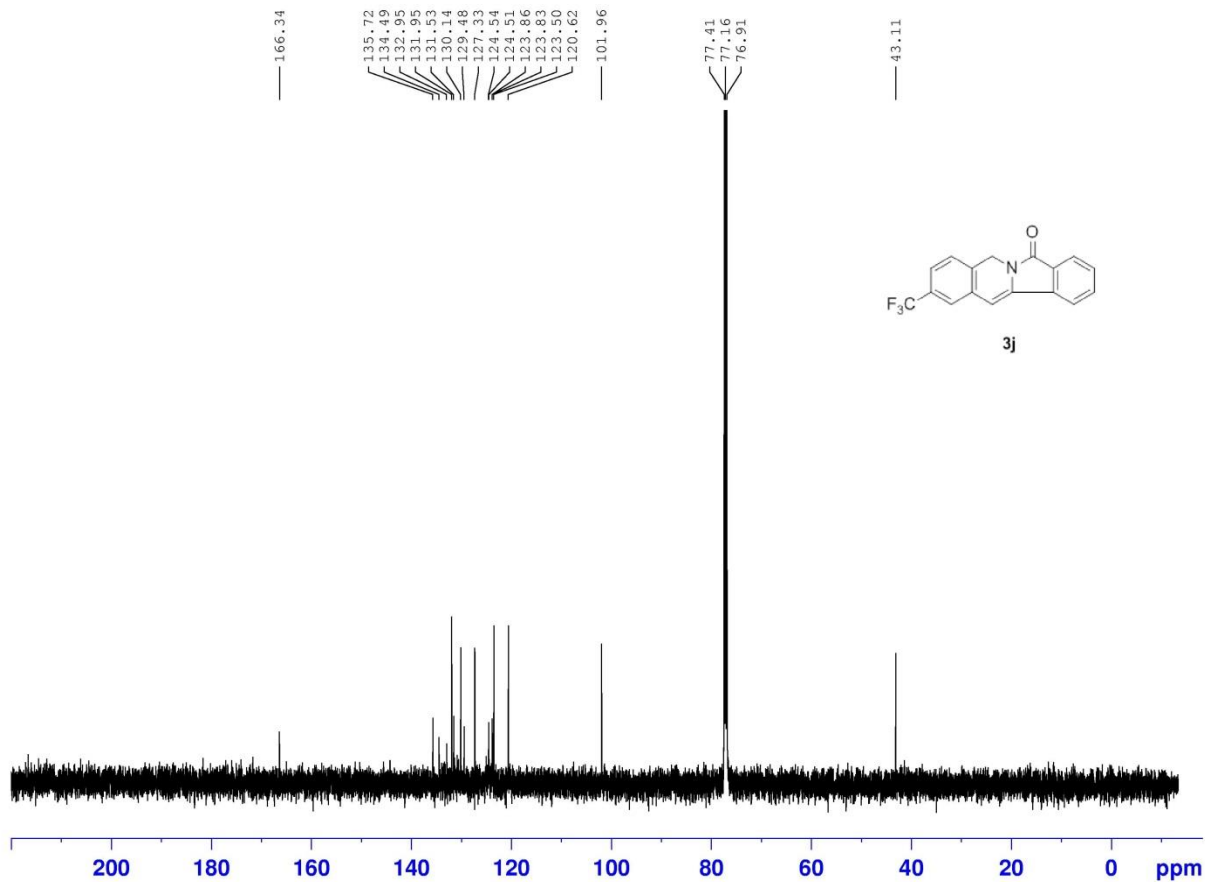
===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577966 MHz
WOW           EM
SFB           0
LB            1.00 Hz
GB            0
PC            1.40

```



```
NAME TF131114-2
EXPNO 1
PROCNO 1
Date_ 20131119
Time 14.51
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 296.3 K
D1 1.0000000 sec
TD0 1
```

```
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300100 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```



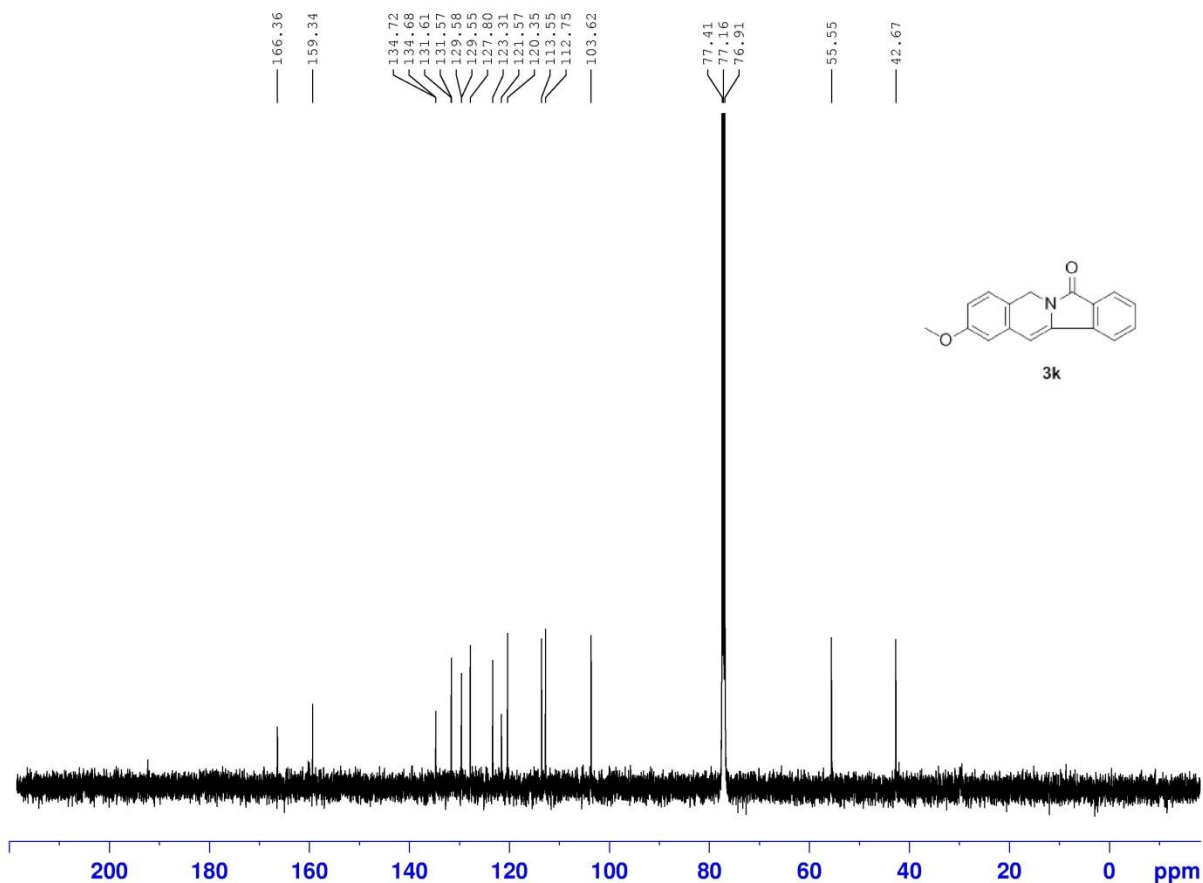
```

NAME          TF131114-2
EXPNO         1
PROCNO        1
Date_         20131217
Time          21.48
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            1024
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            298.0 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7571722 MHz
WOW           EM
SFB           0
LB            1.00 Hz
GB            0
PC            1.40

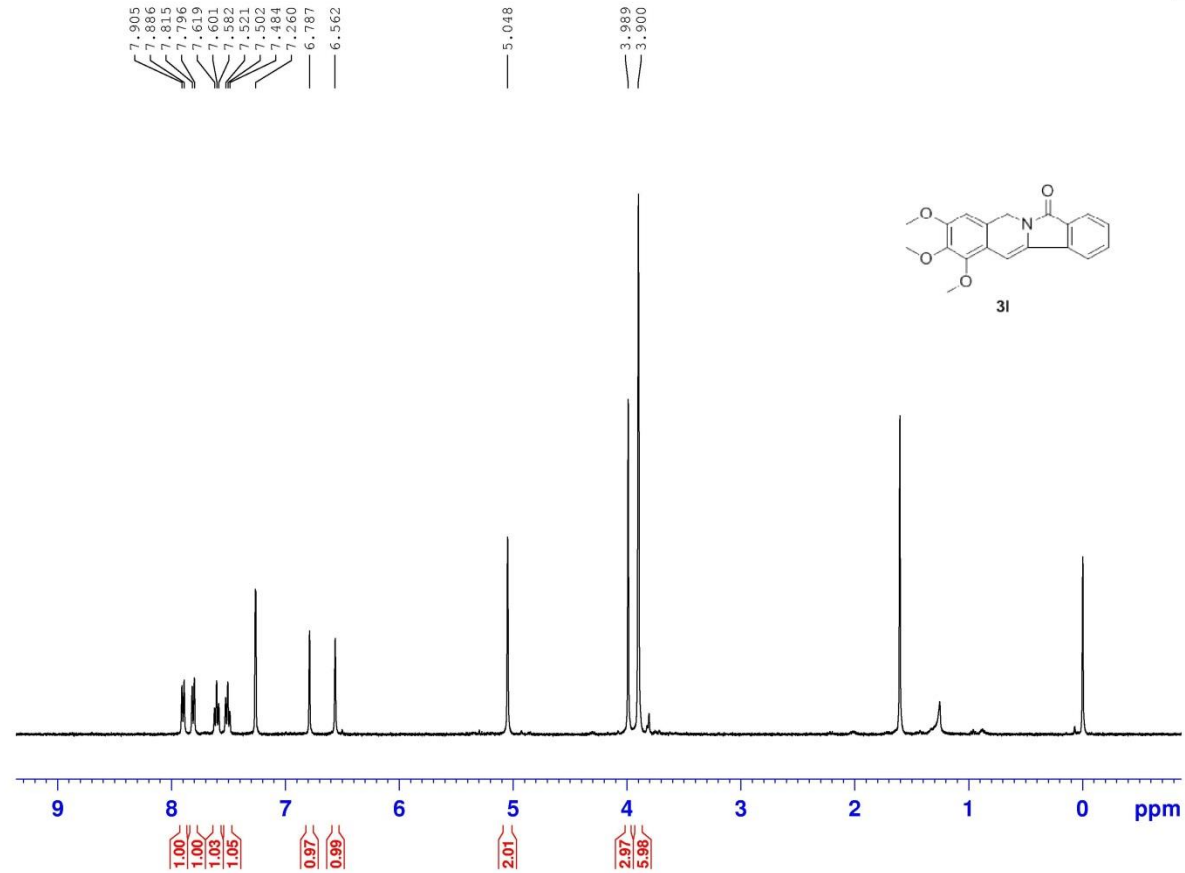
```

```
NAME          TF131112-2
EXPNO         1
PROCNO       1
Date_        20131213
Time         1.01
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS           1001
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           298.0 K
D1           2.0000000 sec
D11          0.03000000 sec
TDD          1

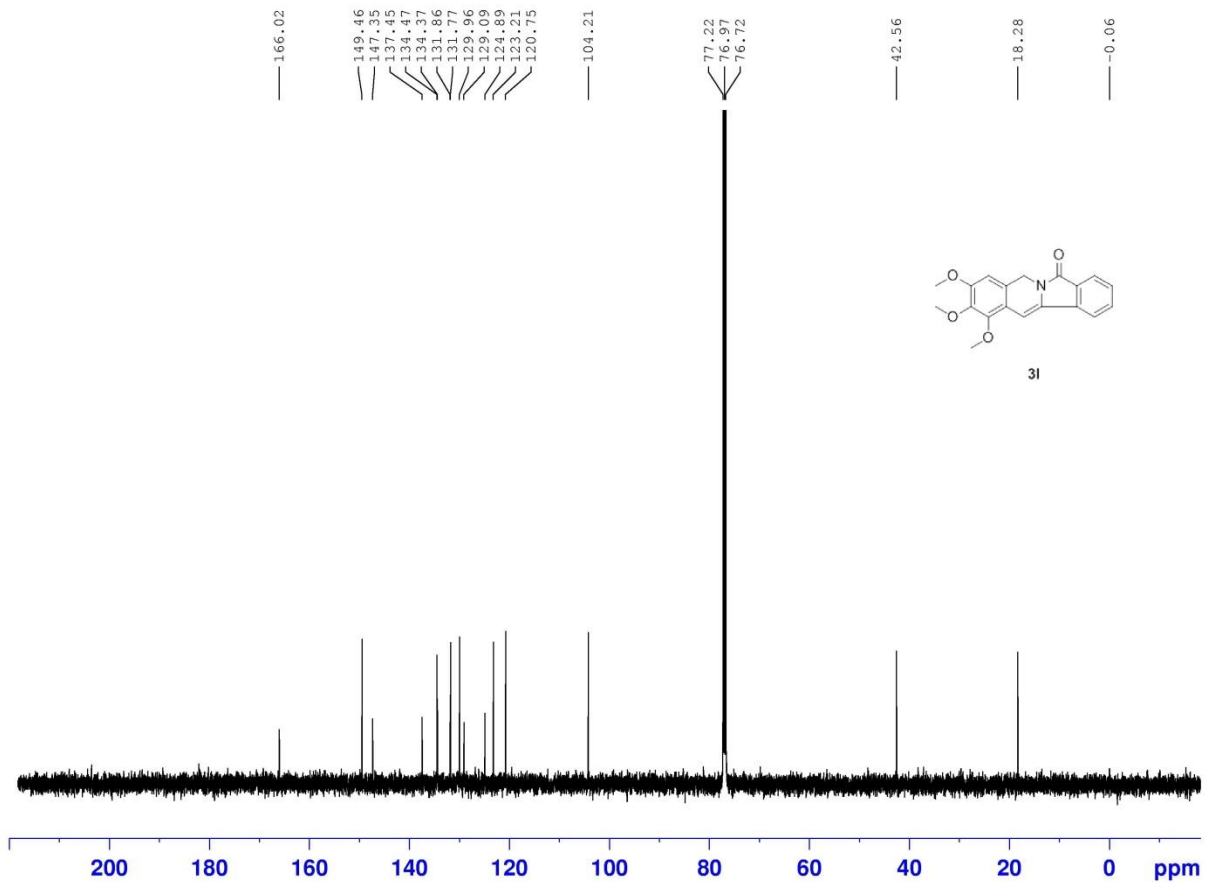
===== CHANNEL F1 =====
NUC1         13C
P1           13.84 usec
PL1         2.50 dB
PL1W        46.89624786 W
SF01        125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2     waltz16
NUC2         1H
PCPD2       80.00 usec
PL2         2.50 dB
PL12        17.40 dB
PL13        17.40 dB
PL1W        13.02359381 W
PL12W       0.42143536 W
PL13W       0.42143536 W
SFO2        500.1320003 MHz
SI          32768
SF          125.7577730 MHz
W0W         EM
S0S         0
LB          1.00 Hz
GB          0
PC          1.40
```



NAME TF131022-2
EXPNO 1
PROCNO 1
Date_ 20131023
Time 14.55
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 297.5 K
D1 1.00000000 sec
TD0 1

==== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300096 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00



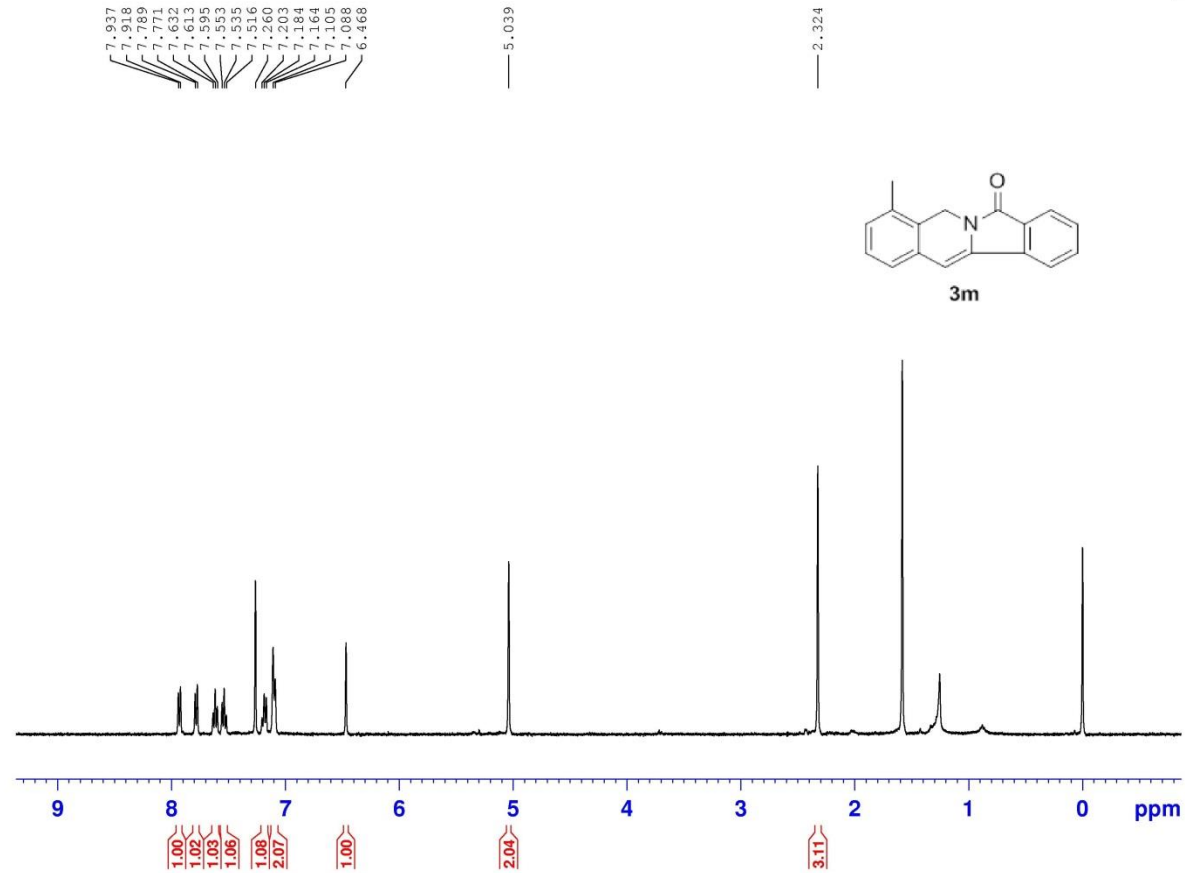
```

NAME          TF131022-2
EXPNO         1
PROCNO       1
Date_        20131029
Time         21.14
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS           834
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           298.0 K
D1           2.0000000 sec
D11          0.0300000 sec
TDD          1

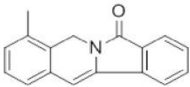
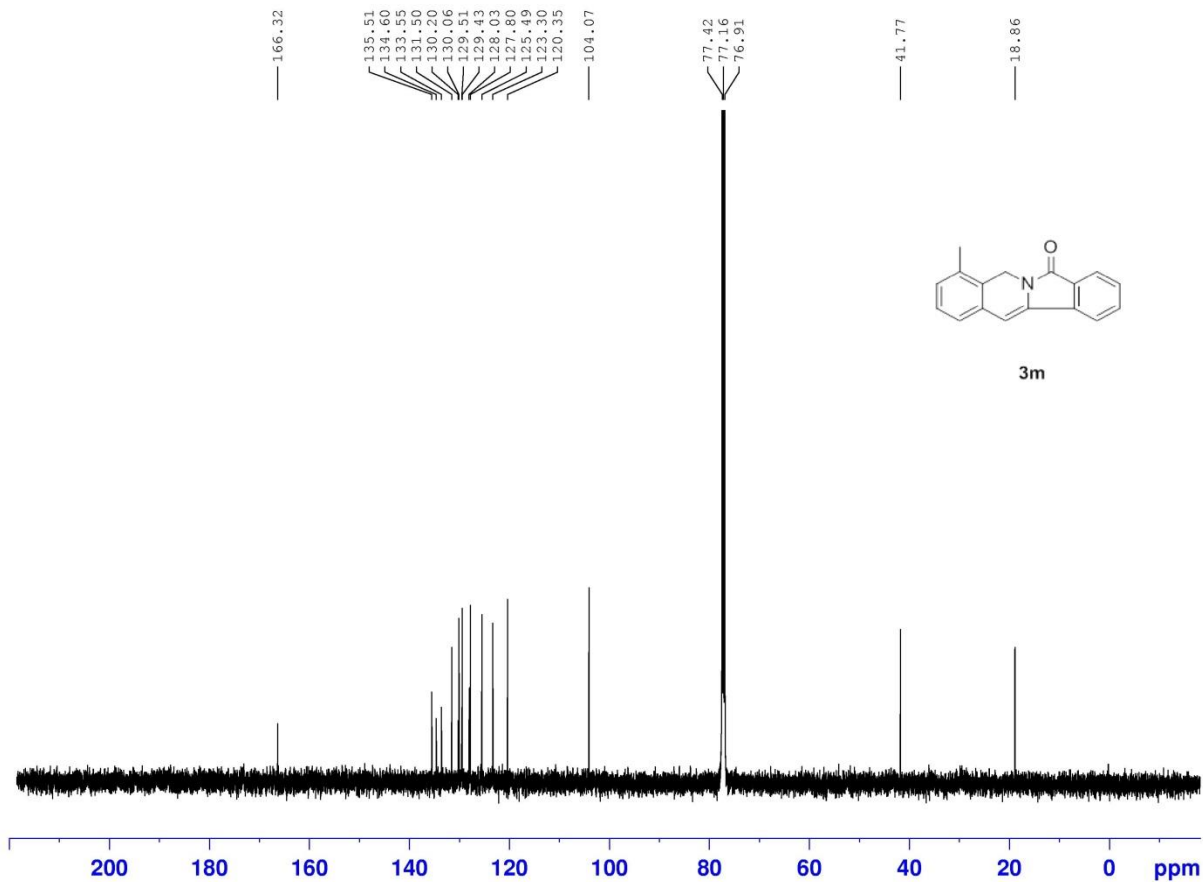
===== CHANNEL F1 =====
NUC1         13C
P1           13.84 usec
PL1          2.50 dB
PL1W         46.89624786 W
SF01         125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2     waltz16
NUC2         1H
PCPD2       80.00 usec
PL2          2.50 dB
PL12         17.40 dB
PL13         17.40 dB
PL1W         13.02359381 W
PL12W        0.42143536 W
PL13W        0.42143536 W
SFO2         500.1320003 MHz
SI           32768
SF           125.7577966 MHz
W0W         EM
SFB          0
LB           1.00 Hz
GB           0
PC           1.40

```



```
NAME TF131118-2
EXPNO 1
PROCNO 1
Date_ 20131122
Time 11.51
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 298.0 K
D1 1.00000000 sec
TD0 1
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300099 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```

3m



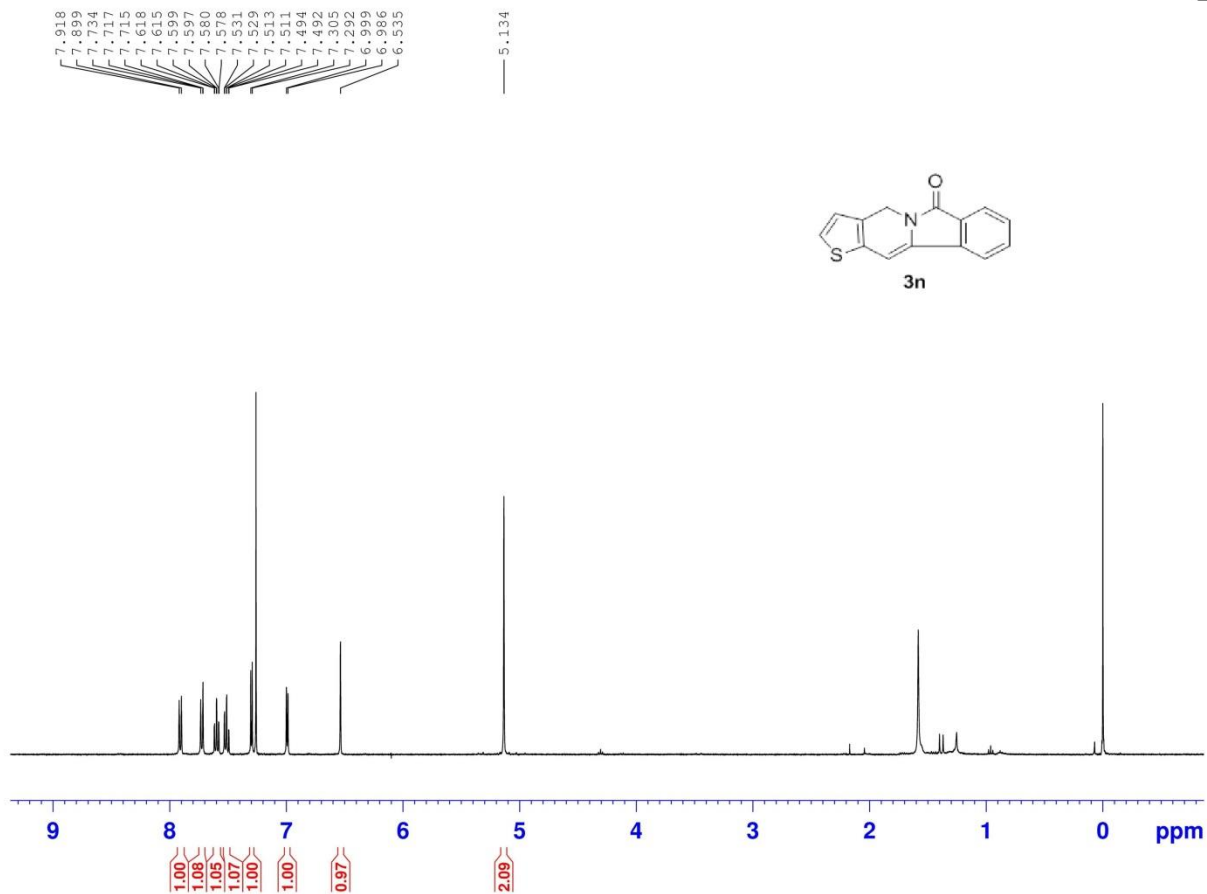
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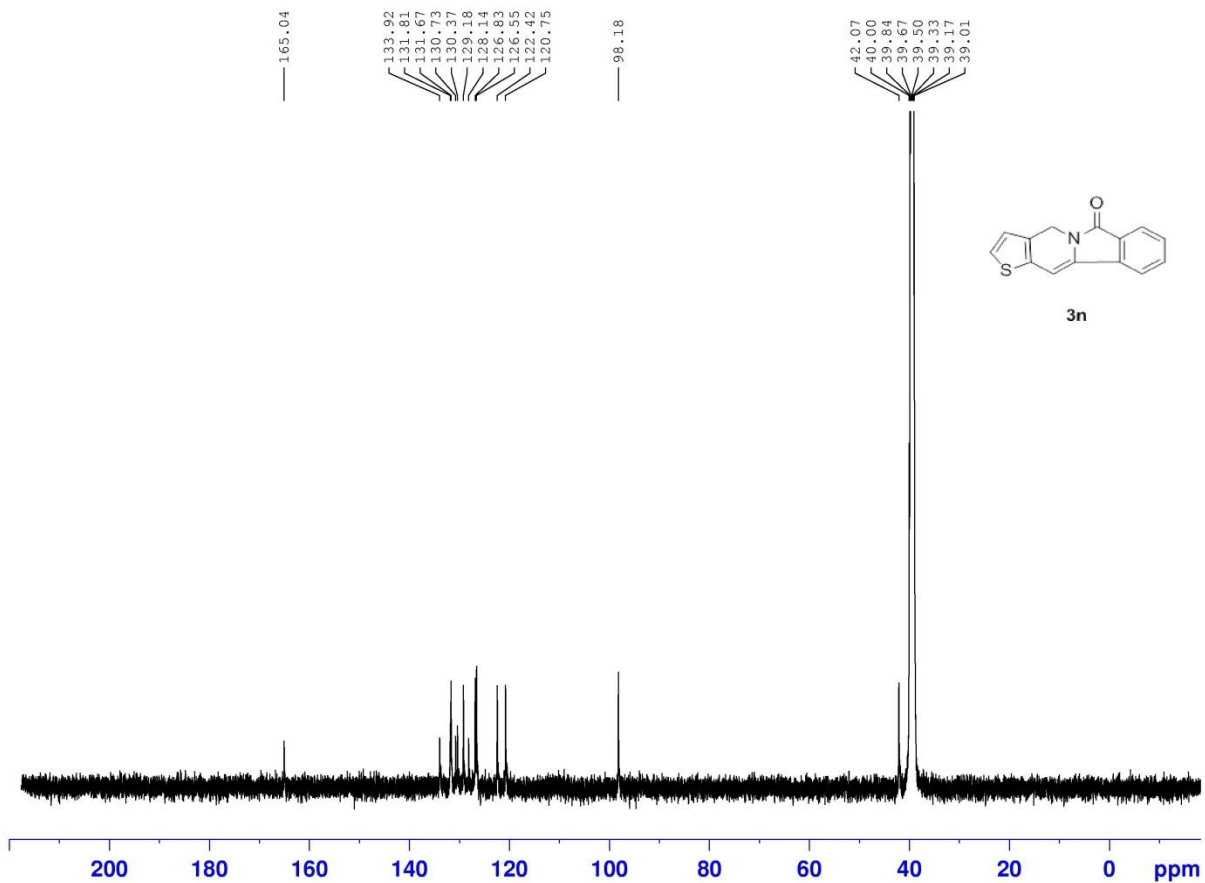
NAME          TF131118-2
EXPNO         1
PROCNO        1
Date_         20131220
Time          1.23
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            2048
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            298.0 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359881 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577720 MHz
W0W          EM
S0S           0
LB            1.00 Hz
GB            0
PC            1.40

```





```
NAME          TF121020-1
EXPNO         19
PROCNO        1
Date_         20130306
Time         21.18
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       DMSO
NS            2079
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            294.3 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

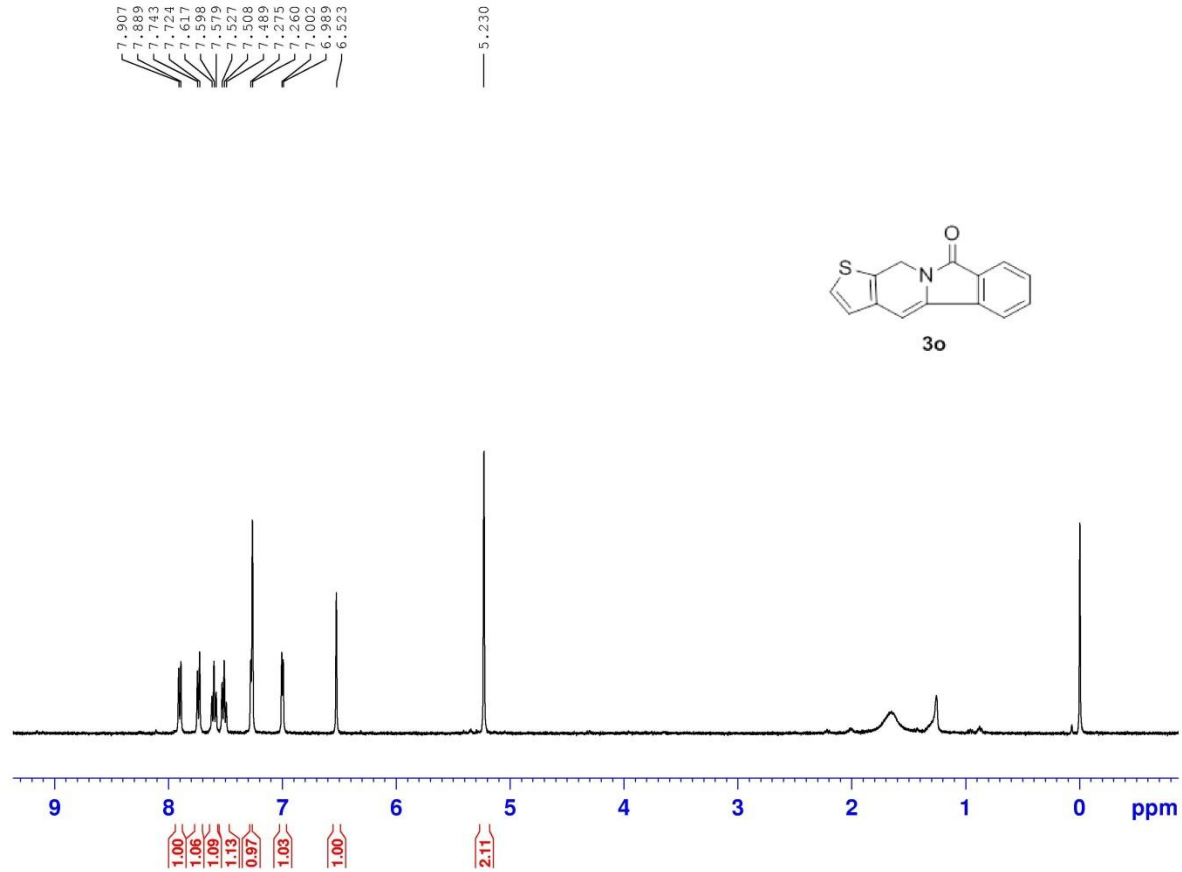
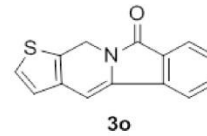
===== CHANNEL F1 =====
NUC1          13C
P1            11.66 usec
PL1           0.00 dB
PL1W          83.39463043 W
SF01          125.7703643 MHz

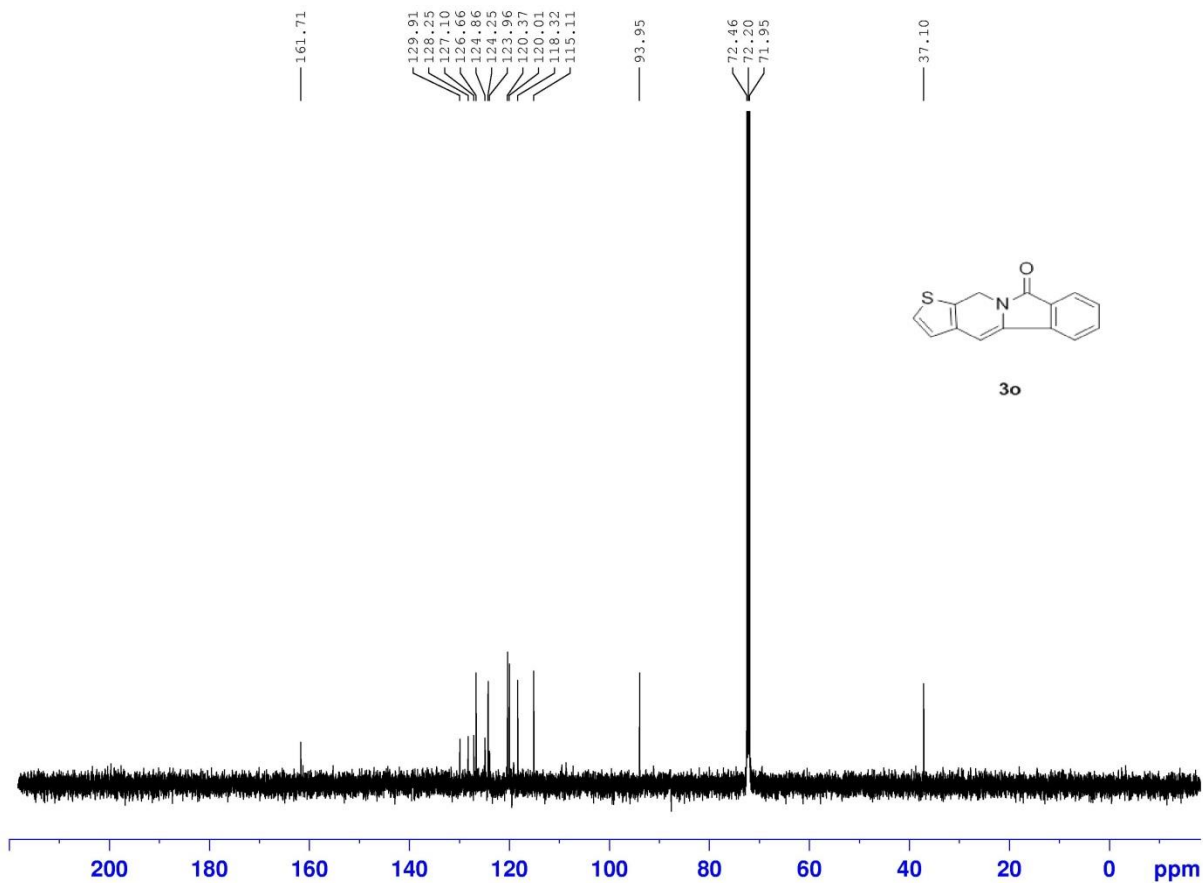
===== CHANNEL F2 =====
CPDPRG2      waltz16
NUC2          1H
PCPD2        80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359881 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7578833 MHz
W0W          EM
S0S           0
LB            1.00 Hz
GB            0
PC            1.40
```



NAME TF131023-1
EXPNO 1
PROCNO 1
Date_ 20131028
Time 14.48
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 297.2 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300103 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00

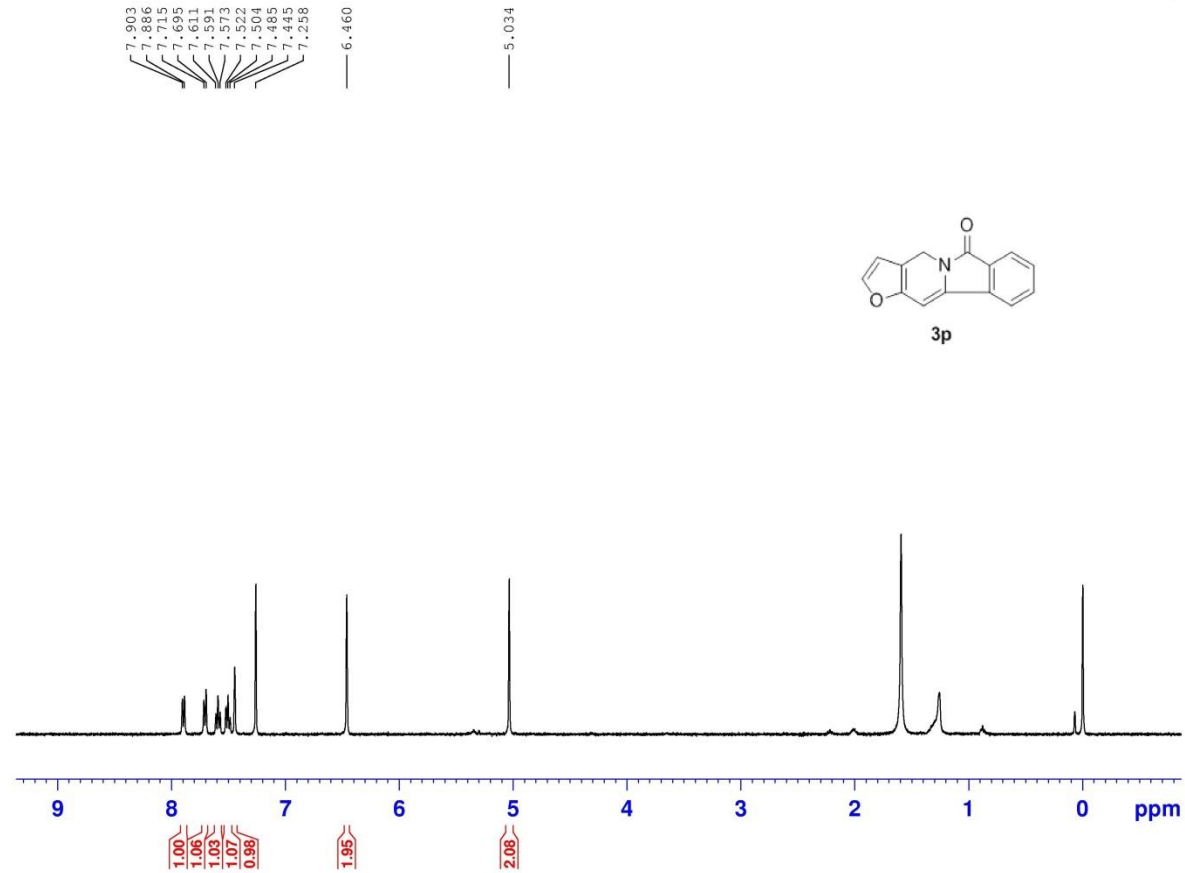
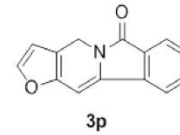




```
NAME          TF131023-1
EXPNO         1
PROCNO       1
Date_        20131106
Time         16.35
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      DMSO
NS           332
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           297.3 K
D1           2.0000000 sec
D11          0.0300000 sec
TD0          1

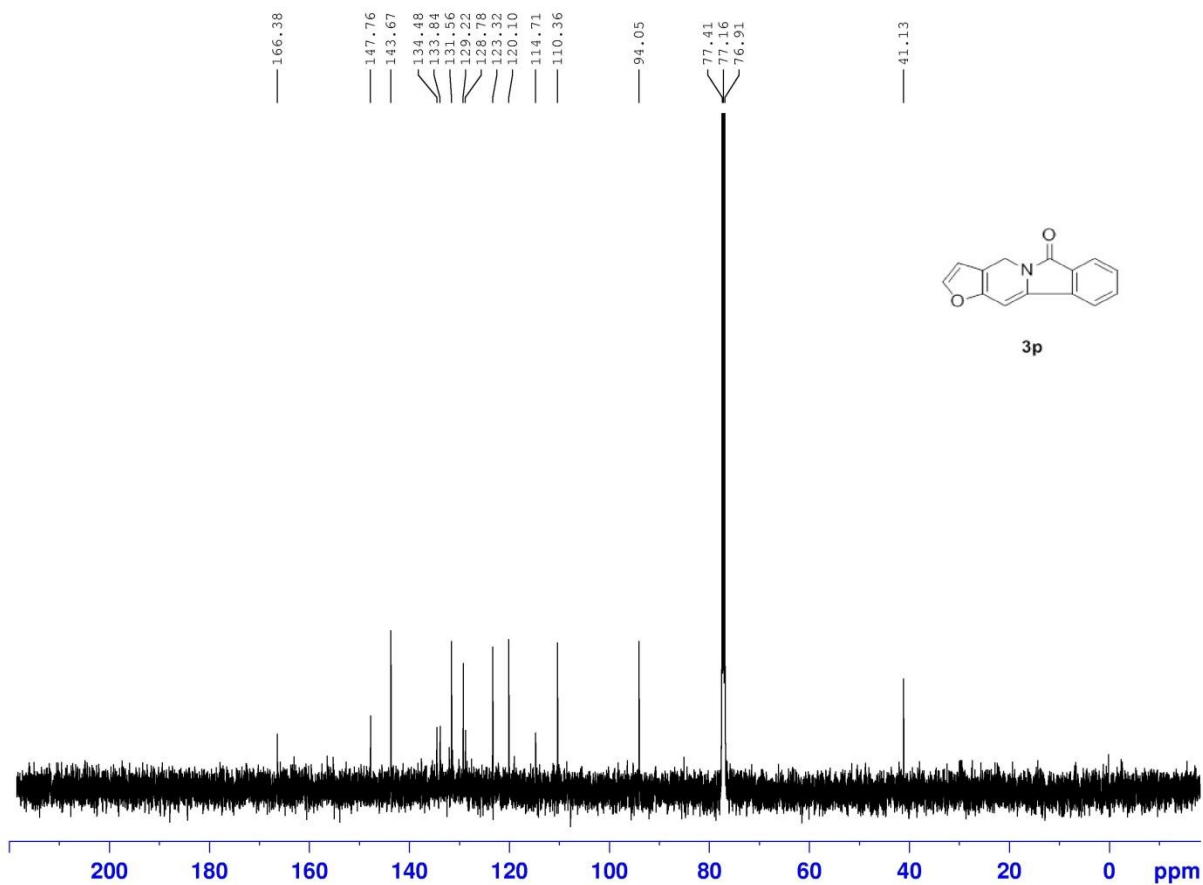
===== CHANNEL F1 =====
NUC1         13C
P1           13.84 usec
PL1          2.50 dB
PL1W         46.89624786 W
SF01         125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2     waltz16
NUC2         1H
PCPD2       80.00 usec
PL2          2.50 dB
PL12         17.40 dB
PL13         17.40 dB
PL1W         13.02359381 W
PL12W        0.42143536 W
PL13W        0.42143536 W
SFO2         500.1320003 MHz
SI           32768
SF           125.7577966 MHz
W0W         EM
S0S         0
LB           1.00 Hz
GB           0
PC           1.40
```



```
NAME          TF131111-1
EXPNO         1
PROCNO       1
Date_        20131114
Time         15.23
INSTRUM      spect
PROBHD       5 mm PABBO BB-
PULPROG      zg30
TD           65536
SOLVENT      CDCl3
NS           8
DS           2
SWH          8278.146 Hz
FIDRES       0.126314 Hz
AQ           3.9584243 sec
RG           512
DW           60.400 usec
DE           6.50 usec
TE           296.9 K
D1           1.00000000 sec
TD0          1
```

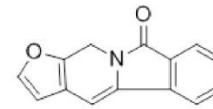
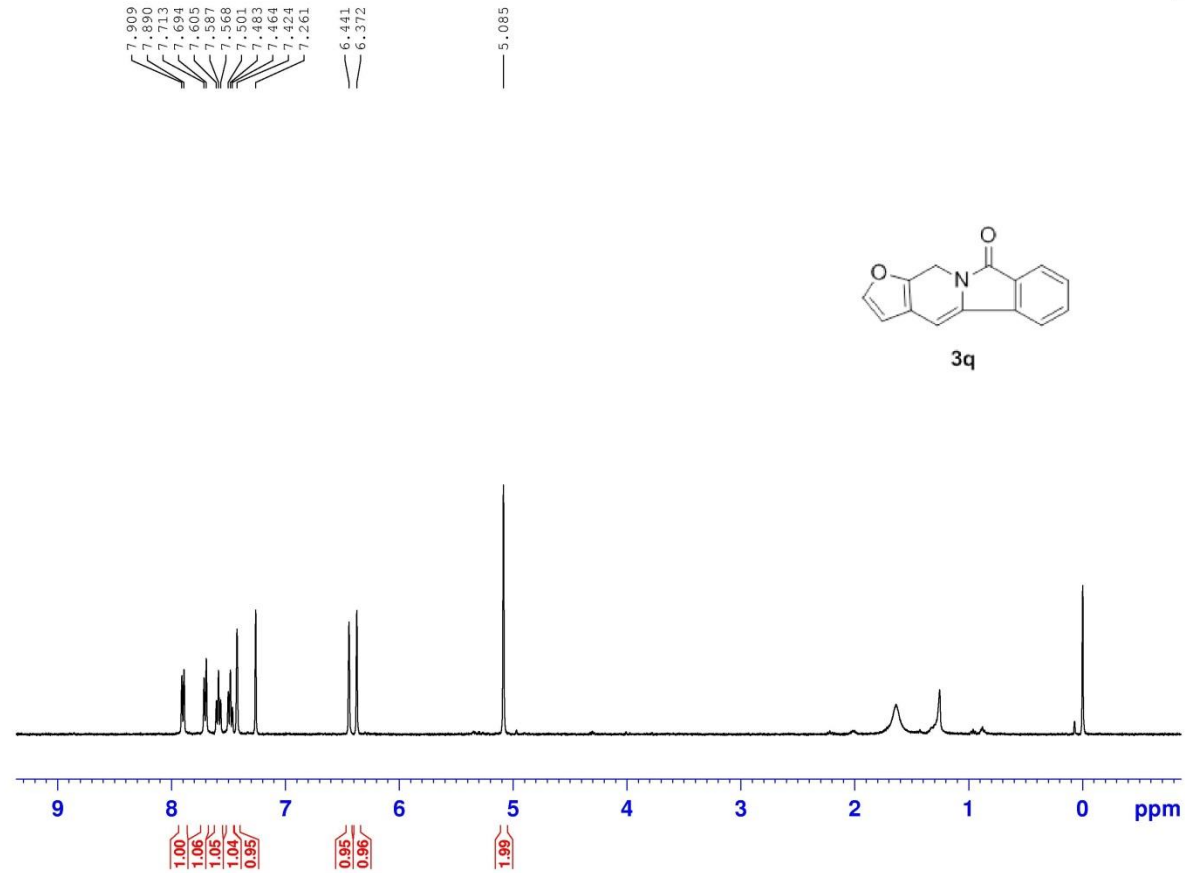
```
===== CHANNEL f1 =====
NUC1         1H
P1           12.58 usec
PL1          0.00 dB
PL1W         10.87646866 W
SFO1         400.1324710 MHz
SI           32768
SF           400.1300100 MHz
WDW          no
SSB          0
LB           0.00 Hz
GB           0
PC           1.00
```



```
NAME          TF131111-1
EXPNO         1
PROCNO        1
Date_         20131212
Time         1.04
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            1905
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            298.0 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

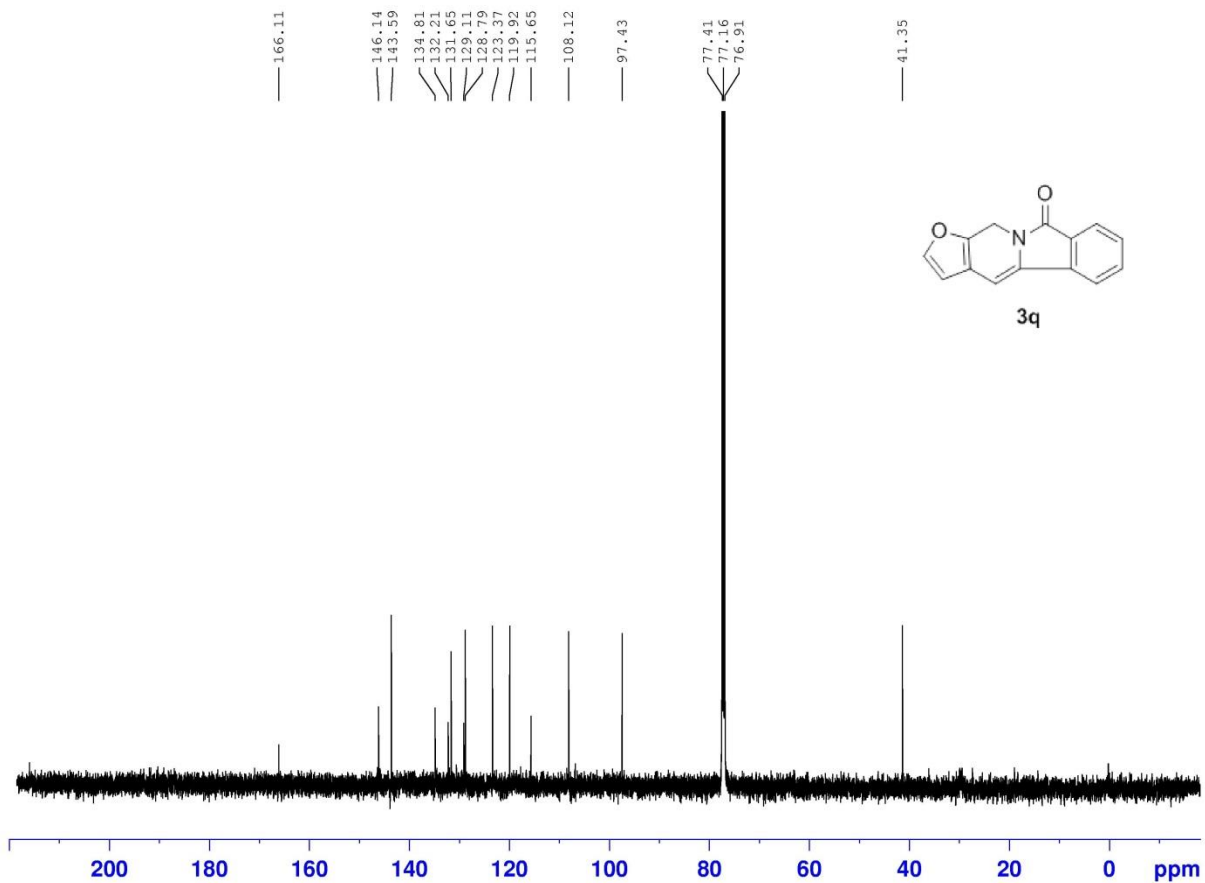
===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577721 MHz
W0W          EM
S0S           0
LB            1.00 Hz
GB            0
PC            1.40
```



NAME TF131024-1
EXPNO 1
PROCNO 1
Date_ 20131028
Time 16.49
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 297.3 K
D1 1.00000000 sec
TD0 1

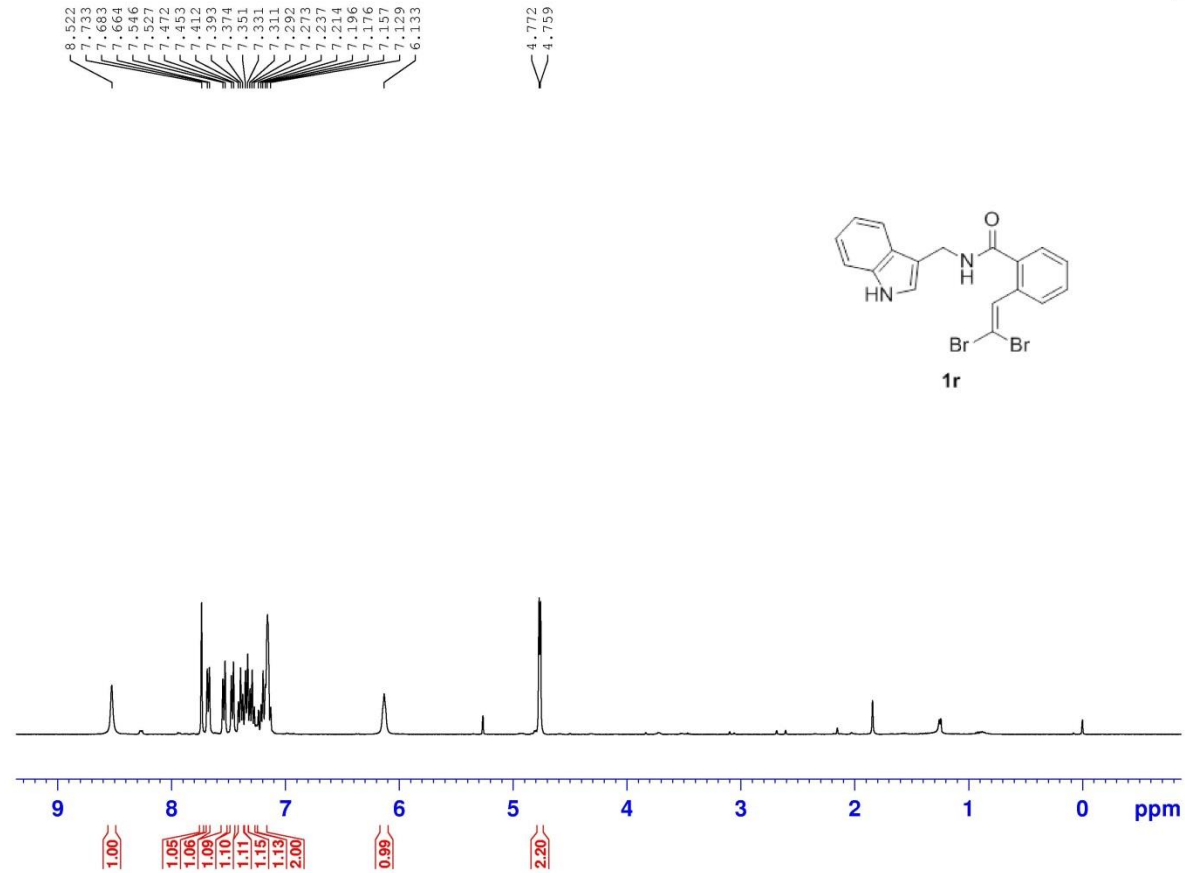
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300095 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00



```
NAME          TF131024-1
EXPNO          1
PROCNO         1
Date_          20131206
Time           2.50
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD             65536
SOLVENT       CDCl3
NS             2101
DS             4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            298.0 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

===== CHANNEL F1 =====
NUC1           13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

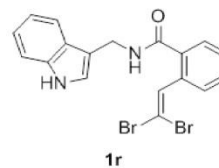
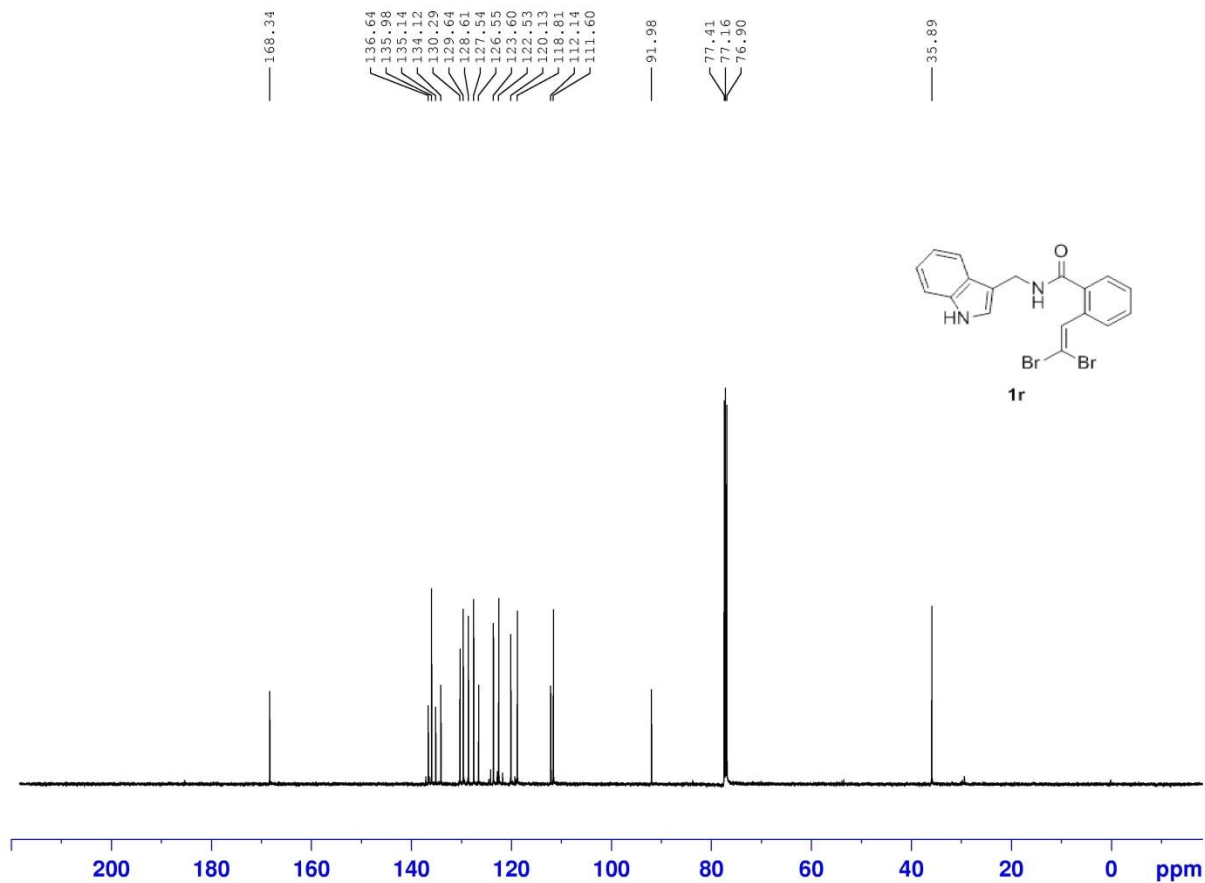
===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2           1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577722 MHz
WWS          EM
SBS           0
LB            1.00 Hz
GB           0
PC            1.40
```



NAME TF131122-1
EXPNO 1
PROCNO 1
Date_ 20131202
Time 12.20
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 71.8
DW 60.400 usec
DE 6.50 usec
TE 298.0 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300192 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00

TF131122-1



```

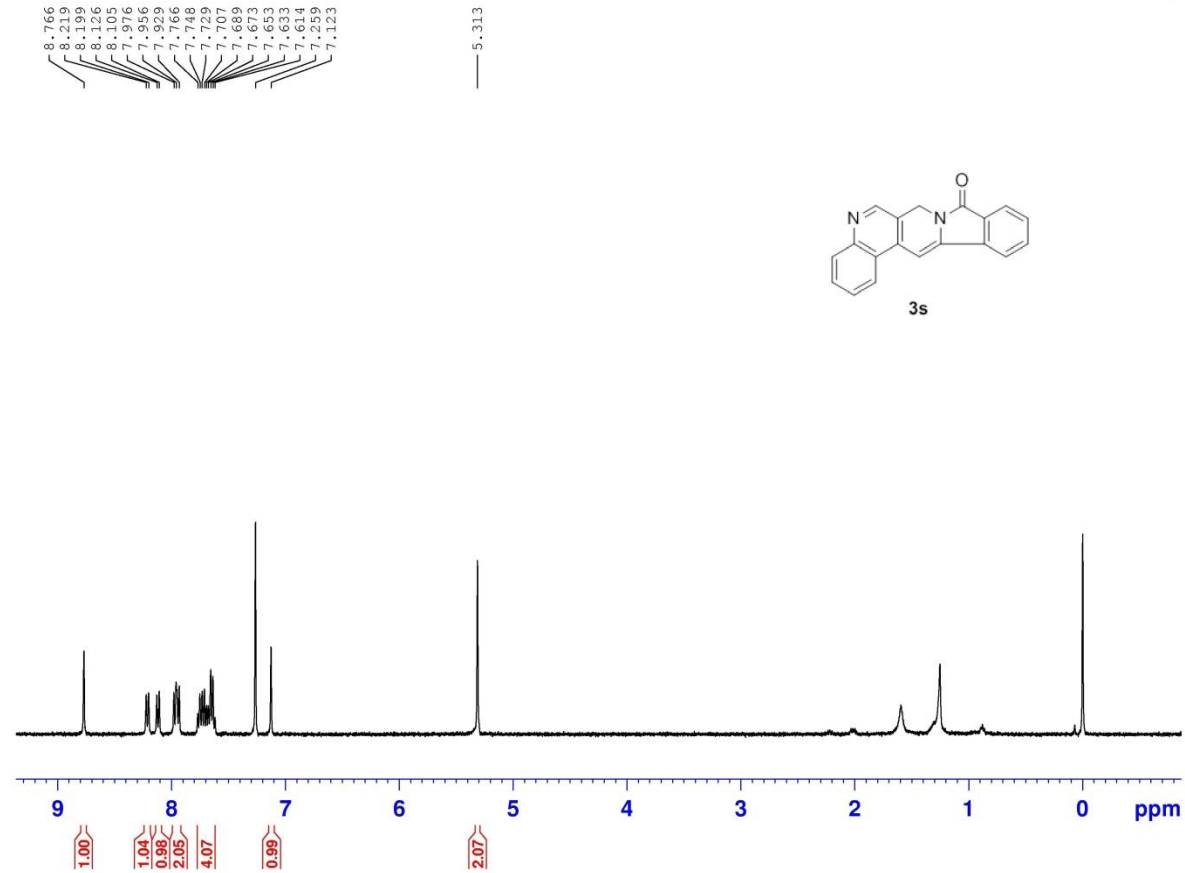
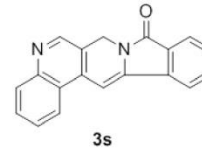
NAME          TF131122-1
EXPNO         1
PROCNO        1
Date_         20131220
Time          5.52
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            1293
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            298.1 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

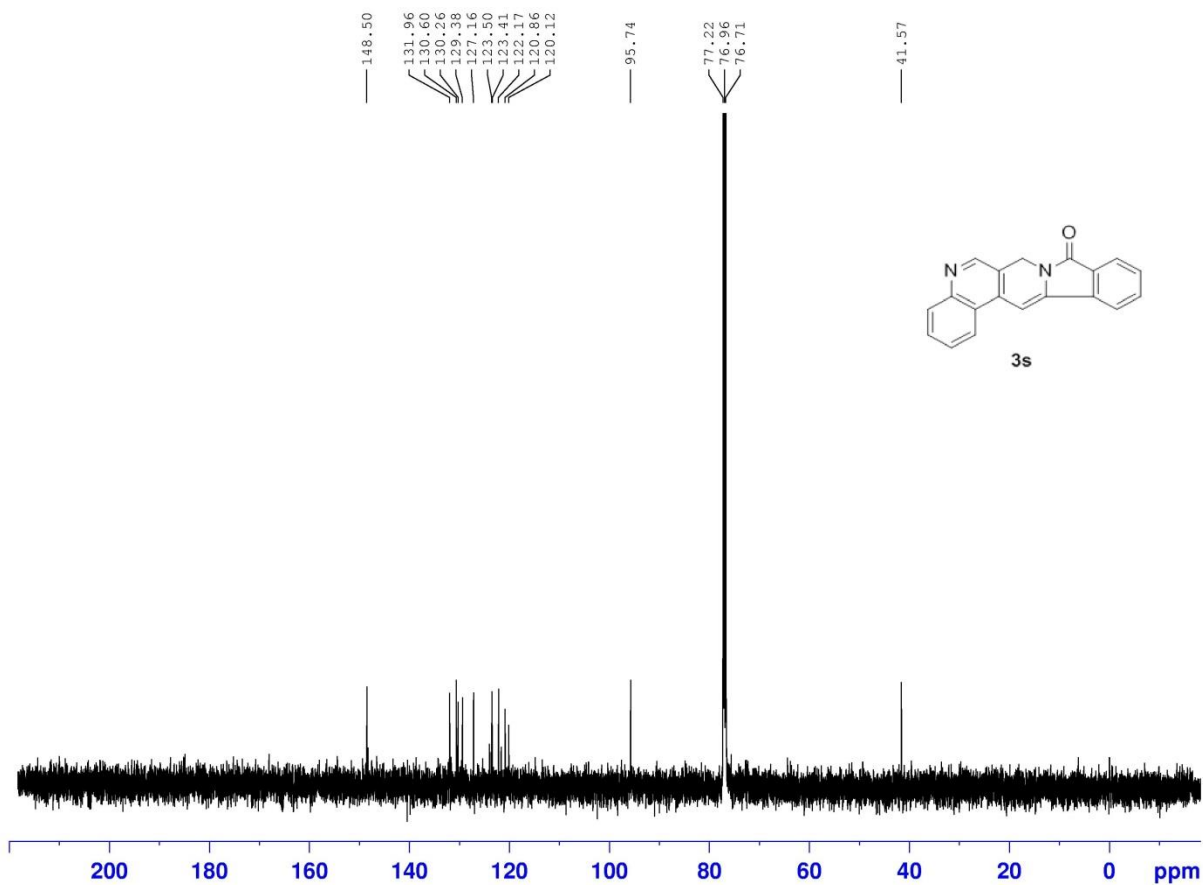
===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577858 MHz
W0W          EM
SFB           0
LB            1.00 Hz
GB            0
PC            1.40
    
```



```
NAME TF140109-1
EXPNO 1
PROCNO 1
Date_ 20140108
Time 14.33
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 512
DW 60.400 usec
DE 6.50 usec
TE 297.1 K
D1 1.00000000 sec
TDO 1
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300098 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```

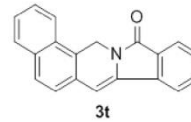
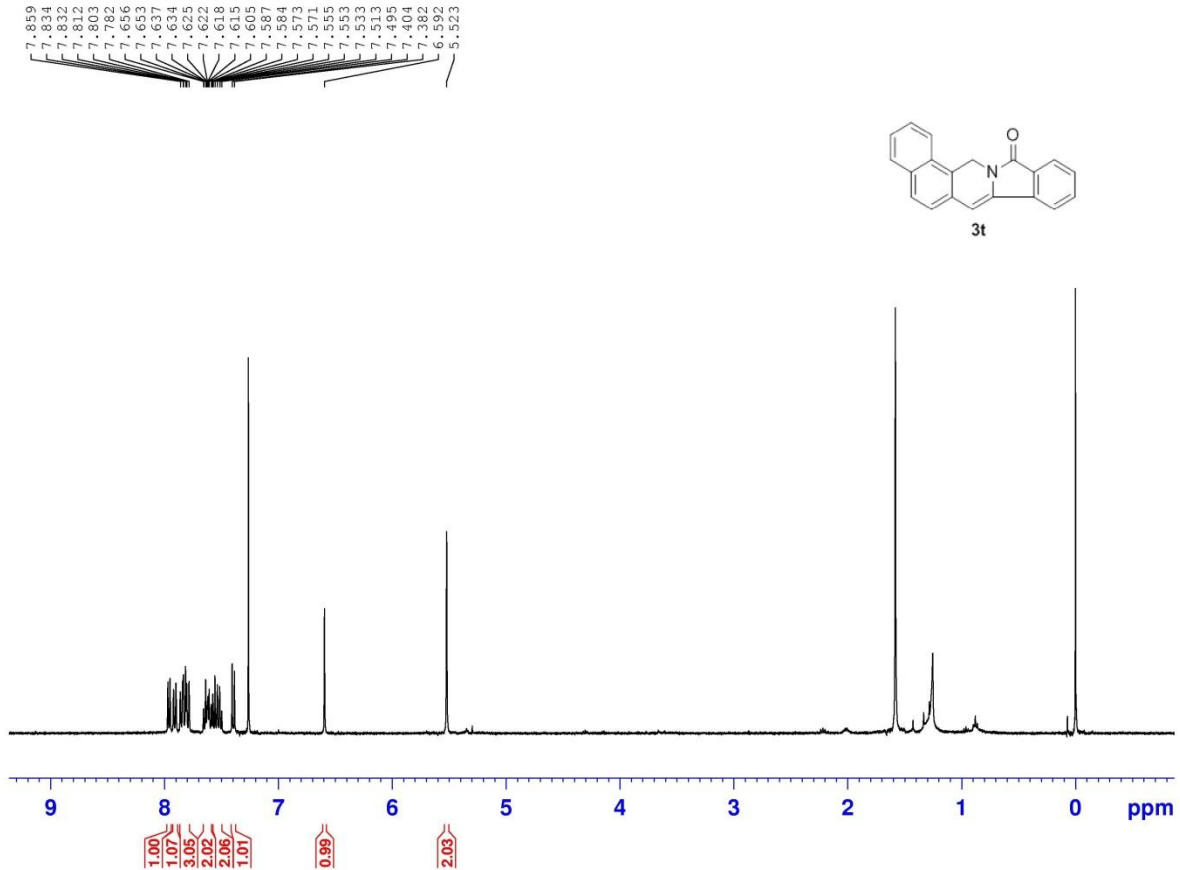




```
NAME          TF140109-1
EXPNO         1
PROCNO        1
Date_         20140114
Time         6.50
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            1744
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            298.0 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

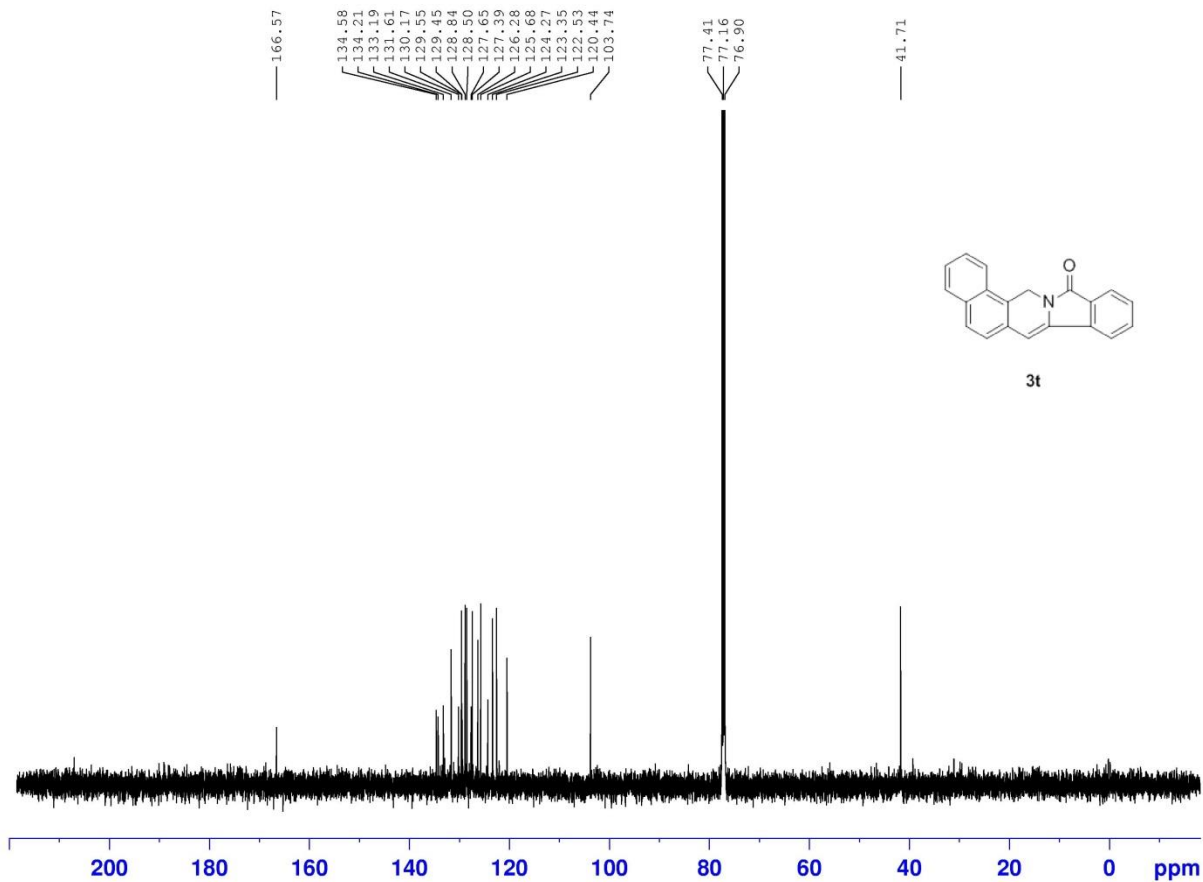
===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577966 MHz
WWS          EM
SBS           0
LB            1.00 Hz
GB            0
PC            1.40
```



```
NAME          TF131119-2
EXPNO         1
PROCNO       1
Date_        20131128
Time         14.42
INSTRUM      spect
PROBHD       5 mm PABBO BB-
PULPROG      zg30
TD           65536
SOLVENT      CDCl3
NS           8
DS           2
SWH          8278.146 Hz
FIDRES       0.126314 Hz
AQ           3.9584243 sec
RG           362
DW           60.400 usec
DE           6.50 usec
TE           298.0 K
D1           1.00000000 sec
TD0          1

===== CHANNEL f1 =====
NUC1         1H
P1           12.58 usec
PL1          0.00 dB
PL1W         10.87646866 W
SFO1         400.1324710 MHz
SI           32768
SF           400.1300095 MHz
WDW          no
SSB          0
LB           0.00 Hz
GB           0
PC           1.00
```



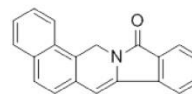
```

NAME          TF131119-2
EXPNO         1
PROCNO        1
Date_         20131213
Time         23.05
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            850
DS            4
SWH           29761.904 Hz
FIDRES        0.454131 Hz
AQ            1.1010548 sec
RG            203
DW            16.800 usec
DE            6.50 usec
TE            298.0 K
D1            2.0000000 sec
D11           0.0300000 sec
TDD           1

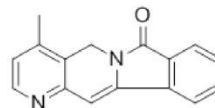
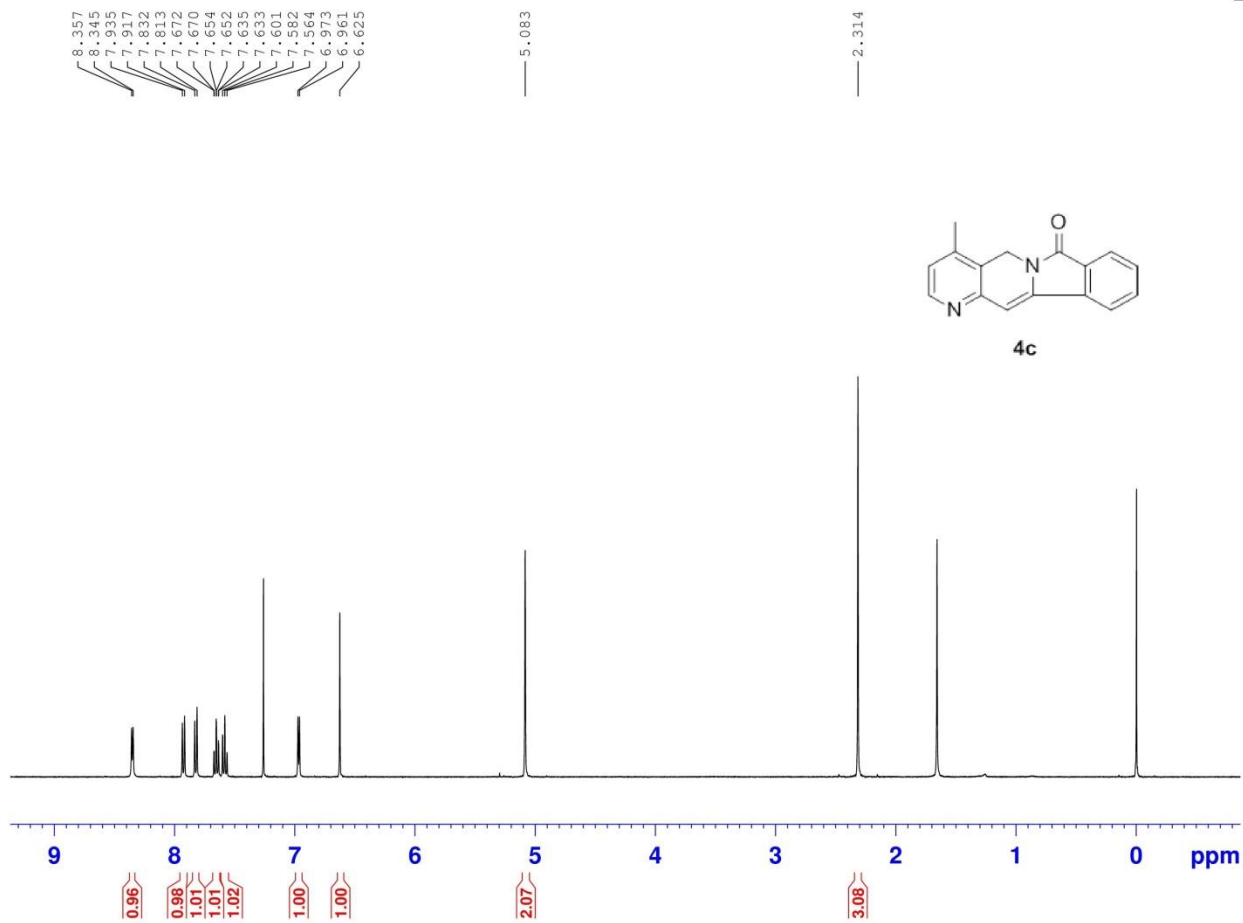
===== CHANNEL F1 =====
NUC1          13C
P1            13.84 usec
PL1           2.50 dB
PL1W          46.89624786 W
SF01          125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           2.50 dB
PL12          17.40 dB
PL13          17.40 dB
PL1W          13.02359381 W
PL12W         0.42143536 W
PL13W         0.42143536 W
SFO2          500.1320003 MHz
SI            32768
SF            125.7577735 MHz
W0W          EM
S0S           0
LB            1.00 Hz
GB            0
PC            1.40

```



3t



```

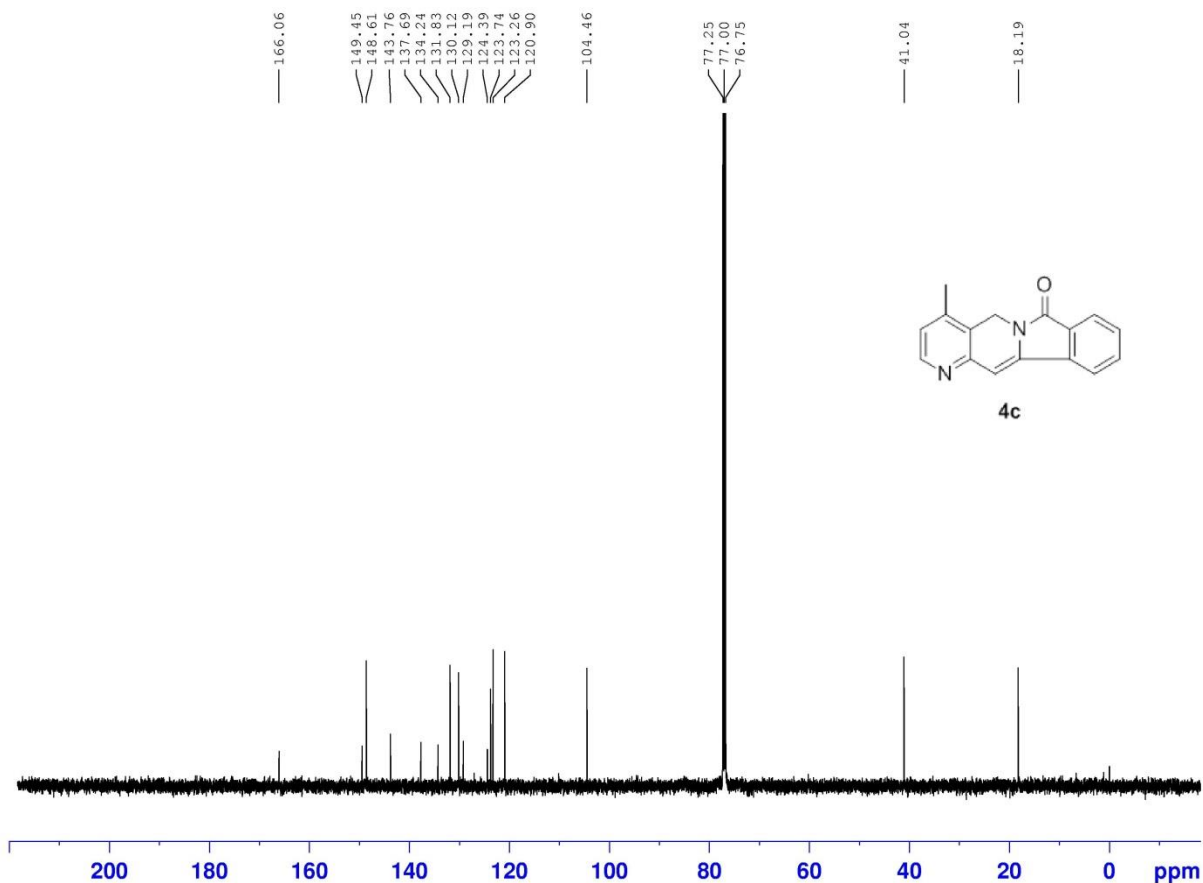
NAME      TF121211-2
EXPNO     20
PROCNO    1
Date_     20130626
Time      14.16
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zg30
TD         65536
SOLVENT   CDCl3
NS         16
DS         2
SWH        8278.146 Hz
FIDRES     0.126314 Hz
AQ         3.9584243 sec
RG         362
DW         60.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.00000000 sec
TD0        1

```

```

===== CHANNEL f1 =====
NUC1      1H
P1        12.58 usec
PL1       0.00 dB
PL1W      10.87646866 W
SF01      400.1324710 MHz
SI        32768
SF        400.1300085 MHz
WDW       no
SSB       0
LB        0.00 Hz
GB        0
PC        1.00

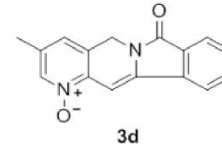
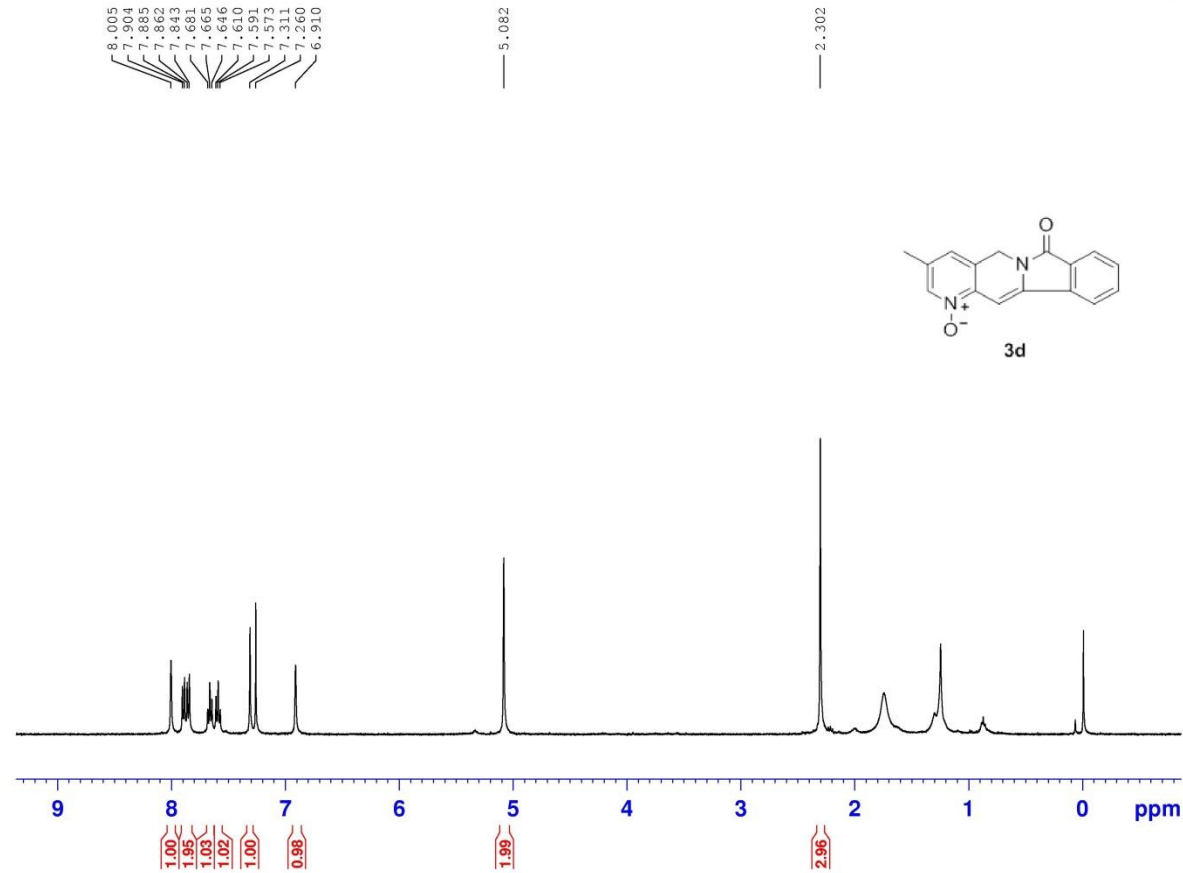
```

```
NAME          TF130625-1
EXPNO         2
PROCNO       1
Date_        20130627
Time         15.55
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS           1024
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           299.3 K
D1           2.0000000 sec
D11          0.03000000 sec
TDD          1

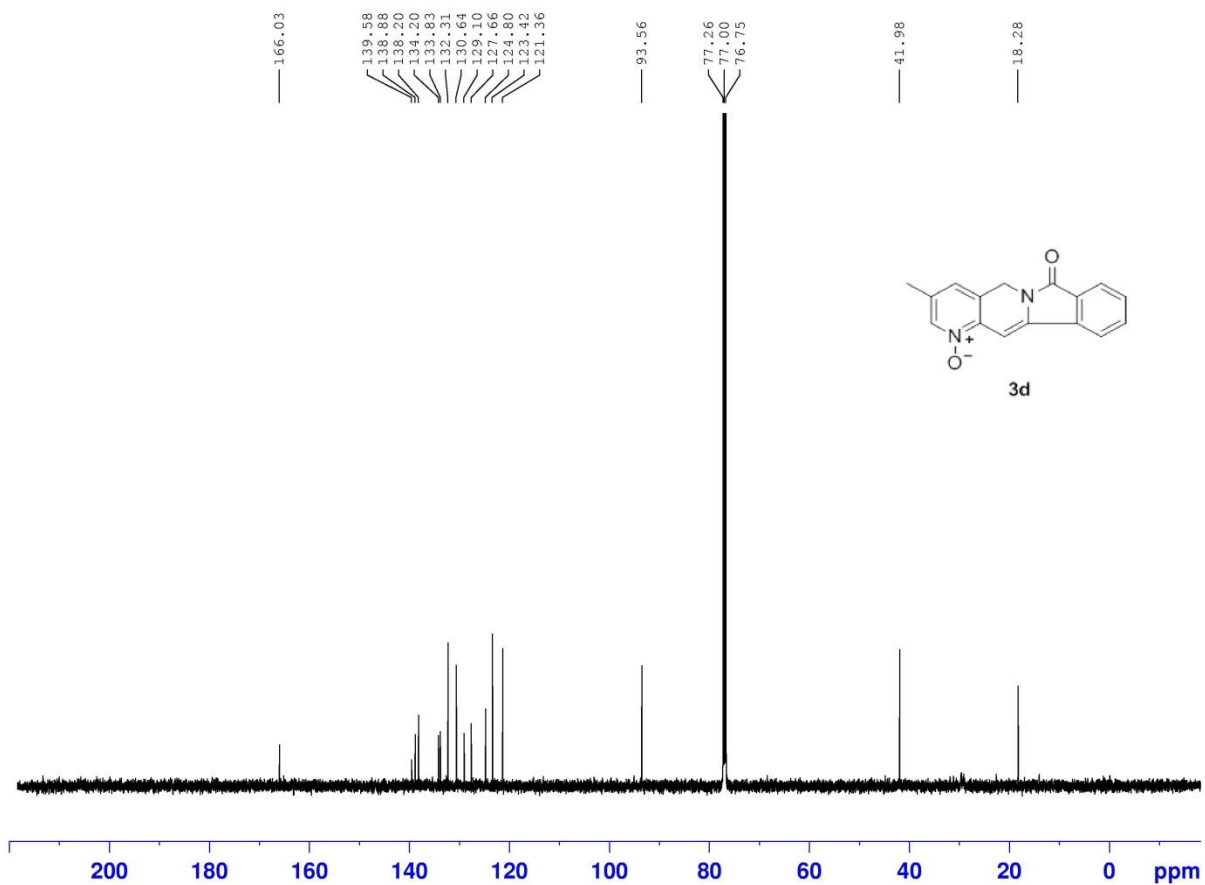
===== CHANNEL F1 =====
NUC1          13C
P1           11.66 usec
PL1          0.00 dB
PL1W         83.39463043 W
SF01         125.7703643 MHz

===== CHANNEL F2 =====
CPDPRG2      waltz16
NUC2          1H
PCPD2        80.00 usec
PL2          2.50 dB
PL12         17.40 dB
PL13         17.40 dB
PL1W         13.02359381 W
PL12W        0.42143536 W
PL13W        0.42143536 W
SFO2         500.1320003 MHz
SI           32768
SF           125.7577914 MHz
W0W         EM
SFB          0
LB           1.00 Hz
GB           0
PC           1.40
```



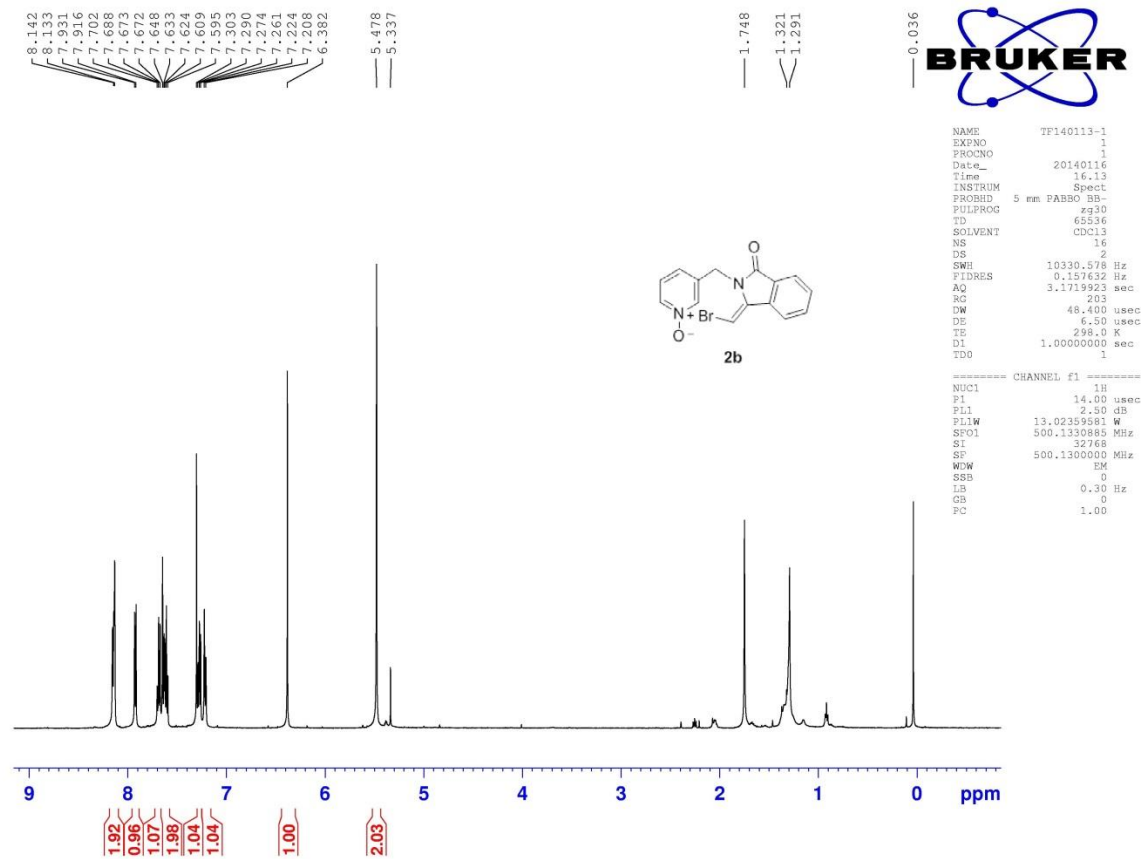
```
NAME TF130228-1
EXPNO 78
PROCNO 1
Date_ 20130416
Time 18.21
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8278.146 Hz
FIDRES 0.126314 Hz
AQ 3.9584243 sec
RG 362
DW 60.400 usec
DE 6.50 usec
TE 297.6 K
D1 1.00000000 sec
TD0 1
```

```
===== CHANNEL f1 =====
NUC1 1H
P1 12.58 usec
PL1 0.00 dB
PL1W 10.87646866 W
SFO1 400.1324710 MHz
SI 32768
SF 400.1300092 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
```

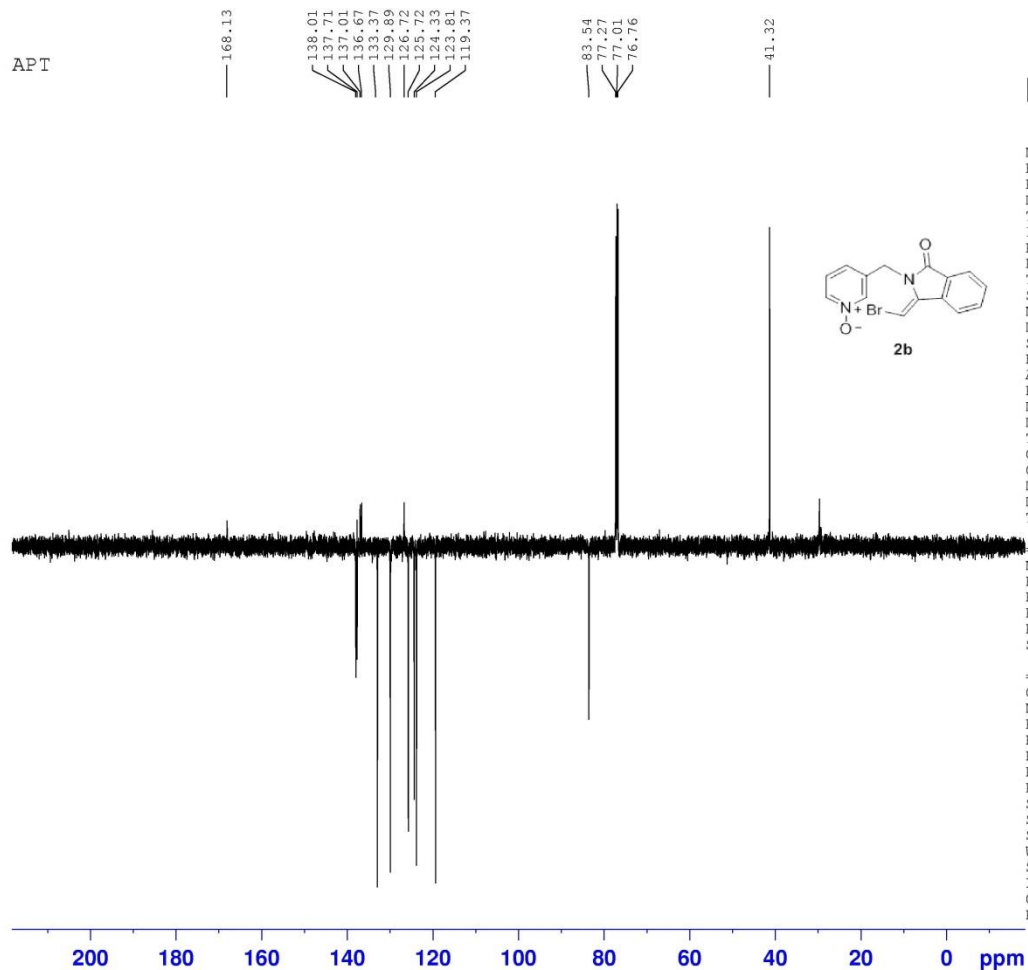


```
NAME          TF130414-1
EXPNO         1
PROCNO       1
Date_        20130418
Time         20.10
INSTRUM      Spect
PROBHD       5 mm PABBO BB-
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS           1024
DS           4
SWH          29761.904 Hz
FIDRES       0.454131 Hz
AQ           1.1010548 sec
RG           203
DW           16.800 usec
DE           6.50 usec
TE           295.3 K
D1           2.0000000 sec
D11          0.0300000 sec
TDD          1
===== CHANNEL F1 =====
NUC1         13C
P1           11.66 usec
PL1          0.00 dB
PL1W        83.39463043 W
SF01        125.7703643 MHz
===== CHANNEL F2 =====
CPDPRG2     waltz16
NUC2         1H
PCPD2       80.00 usec
PL2         2.50 dB
PL12        17.40 dB
PL13        17.40 dB
PL1W        13.02359381 W
PL12W       0.42143536 W
PL13W       0.42143536 W
SFO2        500.1320003 MHz
S1          32768
SF          125.7577942 MHz
W0W         EM
S0S         0
LB          1.00 Hz
GB          0
PC          1.40
```

VI. Copies of ¹H, ¹³C and 2-D NMR spectra for 2b



APT

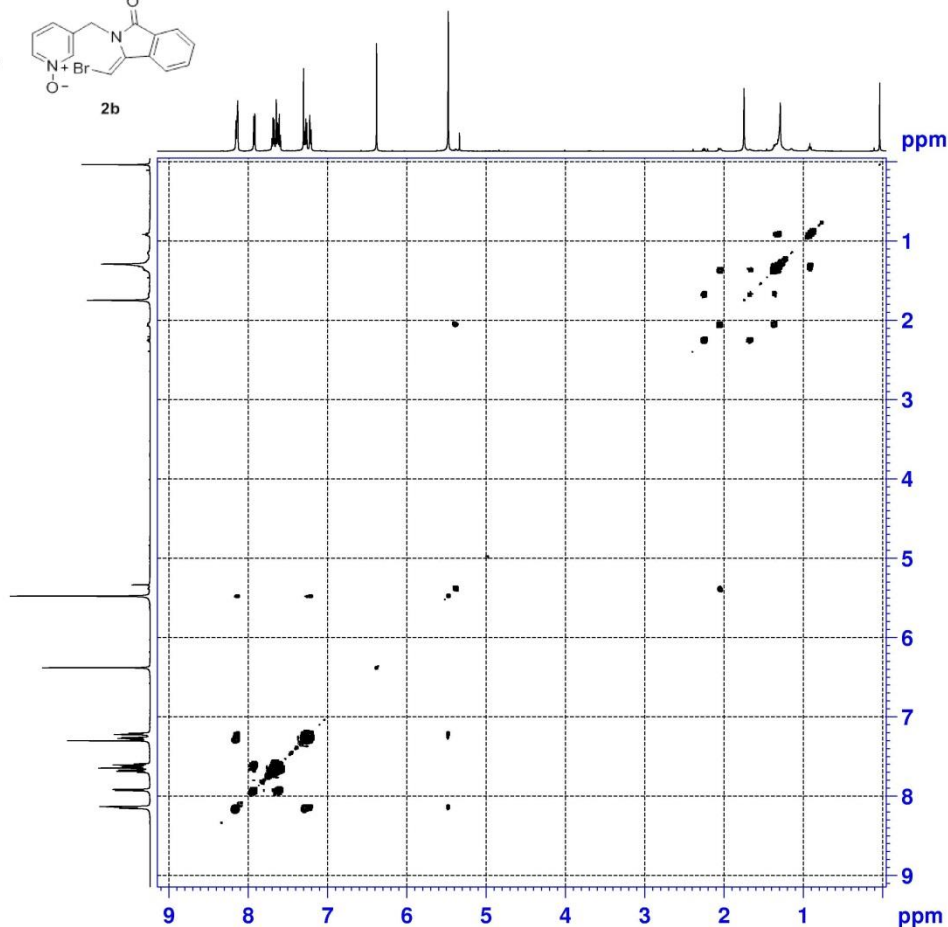
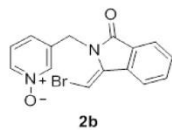


NAME TF140113-1
EXPNO 6
PROCNO 1
Date_ 20140117
Time_ 8.01
INSTRUM Spect
PROBHD 5 mm PABBO BB-
PULPROG jmod
TD 65536
SOLVENT CDCl3
NS 5120
DS 4
SWH 29761.904 Hz
FIDRES 0.454131 Hz
AQ 1.1010548 sec
RG 203
DW 16.800 usec
DE 6.50 usec
TE 297.9 K
CNST2 145.0000000
CNST11 1.0000000
D1 2.0000000 sec
D20 0.00689655 sec
TD0 1

==== CHANNEL f1 =====
NUC1 13C
P1 13.84 usec
P2 27.68 usec
PL1 2.50 dB
PL1W 46.89624786 W
SFO1 125.7703643 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 2.50 dB
PL12 17.40 dB
PL2W 13.02359581 W
PL12W 0.42143536 W
SFO2 500.1320005 MHz
SI 32768
SF 125.7577890 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

COSY

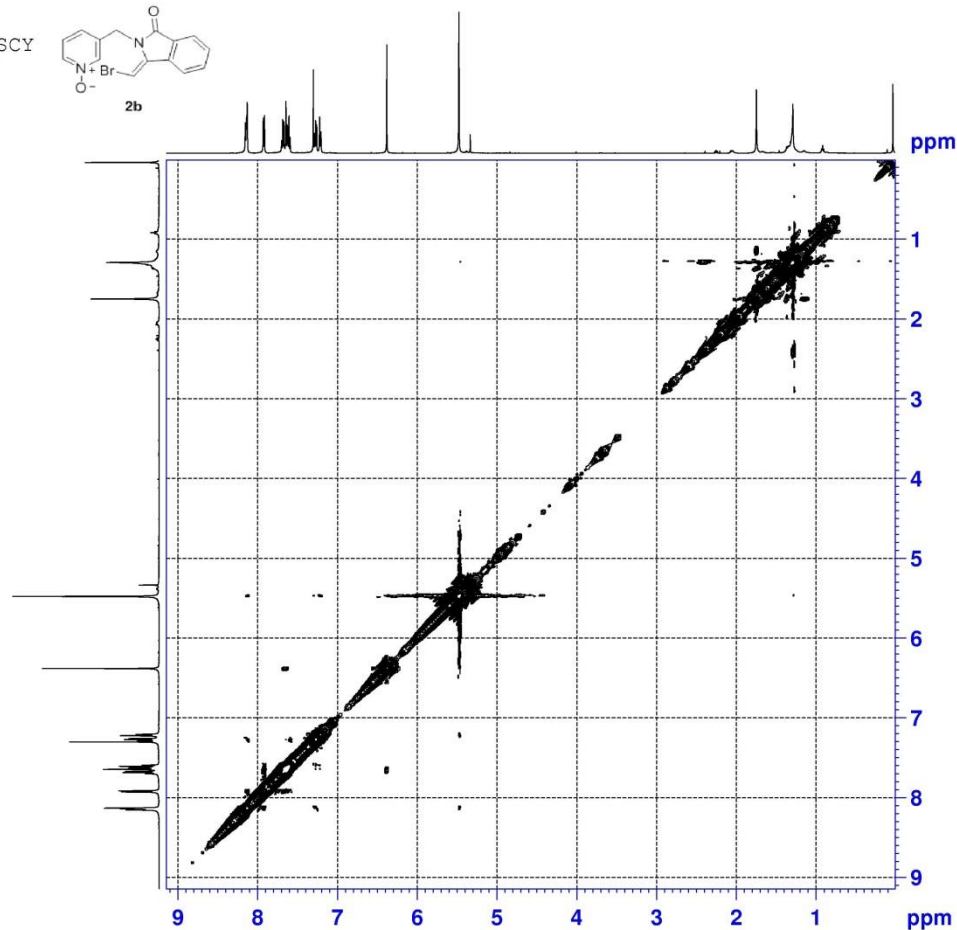
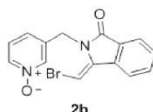


```
NAME          TF140113-1
EXPNO         2
PROCNO        1
Date_         20140116
Time          16.19
INSTRUM       Spect
PROBHD        5 mm PABBO BB-
PULPROG       cosygpmqf
TD            2048
SOLVENT       CDCl3
NS            16
DS            16
SWH           4595.588 Hz
FIDRES        2.243940 Hz
AQ            0.2228724 sec
RG            203
DW            108.800 usec
DE            6.50 usec
TE            298.0 K
DO            0.00000300 sec
D1            2.00000000 sec
D13           0.00000400 sec
D16           0.00020000 sec
IN0           0.00021760 sec

===== CHANNEL f1 =====
NUC1           1H
P1             14.00 usec
PL1            2.50 dB
PL1W          13.02359581 W
SFO1          500.1322756 MHz

===== GRADIENT CHANNEL =====
GPNAM1        SINE.100
GPNAM2        SINE.100
GPNAM3        SINE.100
GPZ1          16.00 %
GPZ2          12.00 %
GPZ3          40.00 %
P16           1000.00 usec
ND0            1
TD            128
SFO1          500.1323 MHz
FIDRES        35.902855 Hz
SW            9.189 ppm
FnMODE        QF
SI            1024
SF            500.1300000 MHz
WDW           SINE
SSB           0
LB            0.00 Hz
GB            0
PC            1.40
SI            1024
MC2           QF
SF            500.1300000 MHz
WDW           SINE
SSB           0
LB            0.00 Hz
GB            0
```

ROESY



NAME TF140113-1
EXPNO 5
PROCNO 1
Date_ 20140117
Time_ 0.47
INSTRUM Spect
PROBHD 5 mm PABBO BB-
PULPROG roesyph
TD 2048
SOLVENT CDCl3
NS 32
DS 16
SWH 4595.588 Hz
FIDRES 2.243940 Hz
AQ 0.2228724 sec
RG 203
DW 108.800 usec
DE 6.50 usec
TE 298.0 K
D0 0.00009589 sec
D1 2.00000000 sec
D12 0.00002000 sec
IN0 0.00021760 sec

===== CHANNEL f1 =====
NUC1 1H
P1 14.00 usec
P15 200000.00 usec
PL1 2.50 dB
PL11 21.22 dB
PL1W 13.02359581 W
PL11W 0.17487632 W
SFO1 500.1323022 MHz
ND0 1
TD 128
SFO1 500.1323 MHz
FIDRES 35.902859 Hz
SW 9.189 ppm
FnMODE States-TPPI
SI 1024
SF 500.1300000 MHz
WDW QSINE
SSB 2
LB 0.00 Hz
GB 0
PC 1.00
SI 1024
MC2 States-TPPI
SF 500.1300000 MHz
WDW QSINE
SSB 2
LB 0.00 Hz
GB 0

