

Electronic Supplementary Information (ESI) for:

**Efficient Metal-free Aminoiodination of Alkene with
N-fluorobenzenesulfonimide under Mild Conditions**

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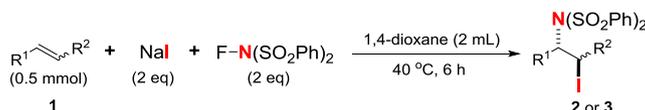
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General Remarks

All commercially available compounds were purchased from Sigma-Aldrich, TCI, Acros, J&K Chemicals and Adamas-beta. NaI (99% purity, CAS No. 7681-82-5), NFSI (98% purity, CAS No. 133745-75-2) and TEMPO (98% purity, CAS No. 2564-83-2) was purchased from Adamas-beta. 1,4-Dioxane (99%, ACS grade, CAS No. 123-91-1) were purchased from J&K Chemicals. Unless otherwise noted, materials obtained from commercial suppliers were used without further purification. Products were purified by flash chromatography on silica gel using petroleum ether, ethyl acetate and dichloromethane as the eluents. ¹H-NMR spectra were recorded on Bruker AVANCE III-400 spectrometers. Chemical shifts (in ppm) were referenced with TMS in CDCl₃ (0 ppm). ¹³C-NMR spectra were obtained by using the same NMR spectrometers and were calibrated with CDCl₃ (δ = 77.00 ppm). High resolution mass spectra were obtained from an Agilent 6520B Q-TOF mass spectrometer with electron spray ionization (ESI) as the ion source.

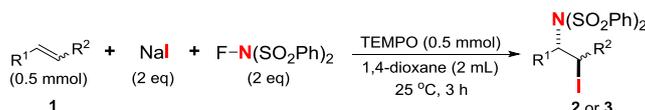
Experimental Procedure and Characterization Data

1) Method A: Transition-metal and additive-free aminoiodination with NaI and NFSI at 40 °C



Typical Procedure: To a reaction tube charged with NaI (150 mg, 1 mmol) and NFSI (315 mg, 1 mmol) was added a solution of alkene (**1**, 0.5 mmol) in 1,4-dioxane (2 mL) via a syringe. The reaction mixture was stirred at 40 °C in air for 6 hours. After rapidly cooling by ice, the mixture was diluted with ethyl acetate, and concentrated *in vacuo* to give dark residue, which was then purified by flash chromatography using petroleum ether and ethyl acetate as the eluent on silical gel to afford aminoiodinated product **2** or **3**.

2) Method B: TEMPO-assisted aminoiodination with NaI and NFSI at 25 °C



Typical Procedure: To a reaction tube charged with NaI (150 mg, 1 mmol) and NFSI (315 mg, 1 mmol) was added a solution of alkene (**1**, 0.5 mmol) and TEMPO (78 mg, 0.5 mmol) in 1,4-dioxane (2 mL) via a syringe. The reaction mixture was stirred at 25 °C in air for 3 hours, and then diluted with ethyl acetate, washed with water and brine, dried over Na₂SO₄, and concentrated *in vacuo* to give dark residue, which was then purified by flash chromatography using petroleum ether and ethyl acetate as the eluent on silical gel to afford aminoiodinated product **2** or **3**.

3) Charaterization of the aminoiodinated product 2 and 3

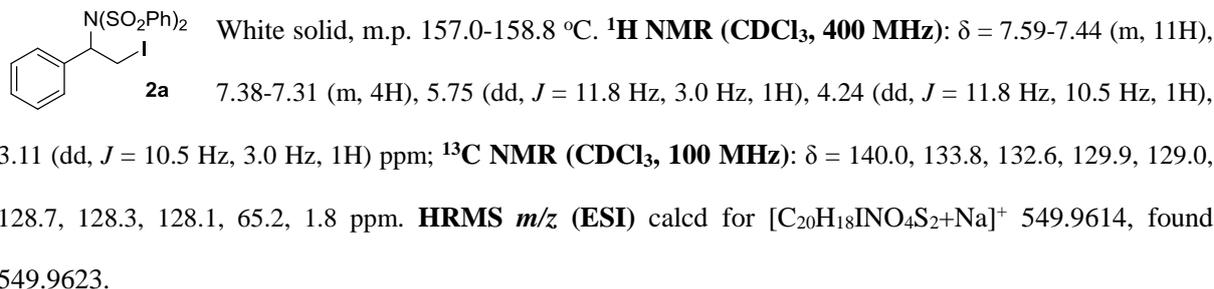
Aminoiodination of Styrene (1a):

Method A: The reaction of 0.5 mmol of styrene (**1a**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 223.5 mg of **2a** (85%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

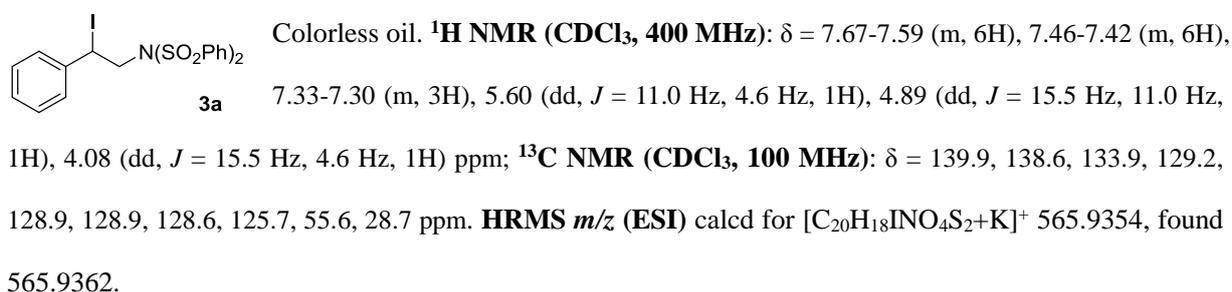
Method B: The reaction of 0.5 mmol of styrene (**1a**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 218.0 mg of **2a** (83%) and trace **3a** after flash chromatography on silica gel using

petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-(2-Iodo-1-phenylethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (2a)**



***N*-(2-Iodo-2-phenylethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (3a)**

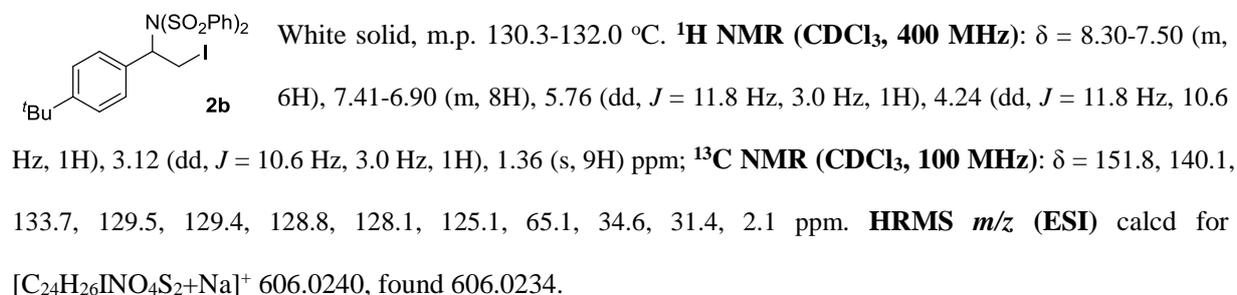


Aminoiodination of 4-*tert*-Butylstyrene (1b):

Method A: The reaction of 0.5 mmol of 4-*tert*-butylstyrene (**1b**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 235.8 mg of **2b** (81%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of 4-*tert*-butylstyrene (**1b**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 176.4 mg of **2b** (61%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-(1-(4-(*Tert*-butyl)phenyl)-2-iodoethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (2b)**



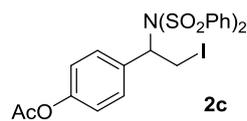
Aminoiodination of 4-vinylphenyl acetate (1c):

Method A: The reaction of 0.5 mmol of 4-vinylphenyl acetate (**1c**) with NaI (1 mmol) and NFSI (1 mmol)

at 40 °C afforded 247.3 mg of **2c** (85%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of 4-vinylphenyl acetate (**1c**) with NaI (1.5 mmol), NFSI (1.5 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 227.5 mg of **2c** (78%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

4-(2-Iodo-1-(N-(phenylsulfonyl)phenylsulfonamido)ethyl)phenyl acetate (**2c**)

 White solid, m.p. 149.1-151.3 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.30-7.30 (m, 12H), 7.05 (d, *J* = 8.6 Hz, 2H), 5.72 (dd, *J* = 11.8 Hz, 3.0 Hz, 1H), 4.21 (t, *J* = 11.2 Hz, 1H), 3.08 (dd, *J* = 10.6 Hz, 3.0 Hz, 1H), 2.34 (s, 3H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 169.2, 150.9, 139.9, 134.0, 131.1, 130.3, 129.1, 128.1, 121.7, 64.7, 21.1, 1.7 ppm. HRMS *m/z* (ESI) calcd for [C₂₂H₂₀INO₆S₂+Na]⁺ 607.9669, found 607.9677.

Aminoiodination of 4-vinyl-1,1'-biphenyl (**1d**):

Method A: The reaction of 0.5 mmol of 4-vinyl-1,1'-biphenyl (**1d**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 240.6 mg of **2d** (80%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of 4-vinyl-1,1'-biphenyl (**1d**) with NaI (1.5 mmol), NFSI (1.5 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 204.5 mg of **2d** (68%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

N-(1-([1,1'-biphenyl]-4-yl)-2-iodoethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (**2d**)

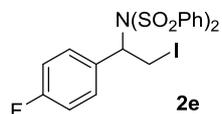
 White solid, m.p. 160.1-162.1 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.40-7.60 (m, 7H), 7.53-7.46 (m, 8H), 7.41-7.20 (m, 4H), 5.82 (dd, *J* = 11.8 Hz, 3.0 Hz, 1H), 4.27 (t, *J* = 11.2 Hz, 1H), 3.15 (dd, *J* = 10.5 Hz, 3.0 Hz, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 141.5, 140.3, 140.0, 133.8, 131.5, 130.4, 128.9, 128.1, 127.7, 127.1, 126.9, 65.0, 1.8 ppm. HRMS *m/z* (ESI) calcd for [C₂₆H₂₂INO₄S₂+Na]⁺ 625.9927, found 625.9930.

Aminoiodination of 4-fluorostyrene (**1e**):

Method A: The reaction of 0.5 mmol of 4-fluorostyrene (**1e**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 181.5 mg of **2e** (67%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of 4-fluorostyrene (**1e**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 170.8 mg of **2e** (63%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-(1-(4-Fluorophenyl)-2-iodoethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (**2e**)**



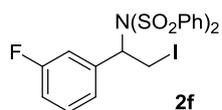
White solid, m.p. 138.1-139.5 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.20-7.20 (m, 12H), 7.01 (t, *J* = 8.6 Hz, 2H), 5.70 (dd, *J* = 11.9 Hz, 3.0 Hz, 1H), 4.18 (dd, *J* = 11.9 Hz, 10.6 Hz, 1H), 3.09 (dd, *J* = 10.6 Hz, 3.0 Hz, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 162.7 (d, *J* = 247.6 Hz), 139.9, 134.0, 131.8 (d, *J* = 8.3 Hz), 129.1, 128.6 (d, *J* = 3.5 Hz), 128.0, 115.2 (d, *J* = 21.6 Hz), 64.6, 1.8 ppm. HRMS *m/z* (ESI) calcd for [C₂₀H₁₇FINO₄S₂+Na]⁺ 567.9520, found 567.9526.

Aminoiodination of 3-fluorostyrene (1f**):**

Method A: The reaction of 0.5 mmol of 3-fluorostyrene (**1f**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 173.8 mg of **2f** (64%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of 3-fluorostyrene (**1f**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 160.1 mg of **2f** (59%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-(1-(3-Fluorophenyl)-2-iodoethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (**2f**)**



White solid, m.p. 140.1-141.6 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.40-7.40 (m, 10H), 7.33-7.25 (m, 2H), 7.19-7.16 (m, 1H), 7.08-7.03 (m, 1H), 5.69 (dd, *J* = 11.8 Hz, 3.0 Hz, 1H), 4.16 (dd, *J* = 11.8 Hz, 10.6 Hz, 1H), 3.09 (dd, *J* = 10.6 Hz, 3.0 Hz, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 162.6 (d, *J* = 245.4 Hz), 139.8, 135.3 (d, *J* = 7.3 Hz), 134.1, 129.7 (d, *J* = 8.0 Hz), 129.1, 128.0, 125.5 (d, *J* = 2.9 Hz), 117.0 (d, *J* = 22.6 Hz), 115.7 (d, *J* = 21.0 Hz), 64.6 (d, *J* = 1.2 Hz), 1.4 ppm. HRMS *m/z* (ESI) calcd for [C₂₀H₁₇FINO₄S₂+Na]⁺ 567.9520, found 567.9521.

Aminoiodination of 4-chlorostyrene (1g**):**

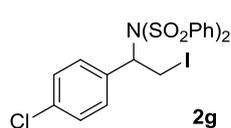
Method A: The reaction of 0.5 mmol of 4-chlorostyrene (**1g**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 226.2 mg of **2g** (81%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of 4-chlorostyrene (**1g**) with NaI (1 mmol), NFSI (1 mmol) and

TEMPO (0.5 mmol) at 25 °C afforded 192.7 mg of **2g** (69%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-(1-(4-Chlorophenyl)-2-iodoethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (**2g**)**

White solid, m.p. 131.2-132.8 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.30-7.39 (m, 12H), 7.28 (d, *J* = 8.6 Hz, 2H), 5.69 (dd, *J* = 11.8 Hz, 3.0 Hz, 1H), 4.16 (dd, *J* = 11.8 Hz, 10.6 Hz, 1H), 3.08 (dd, *J* = 10.6 Hz, 3.0 Hz, 1H)



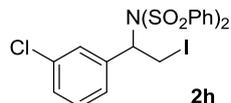
ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 139.8, 134.7, 134.0, 131.3, 131.3, 129.1, 128.4, 128.0, 64.5, 1.4 ppm. HRMS *m/z* (ESI) calcd for [C₂₀H₁₇ClINO₄S₂+Na]⁺ 583.9224, found 583.9224.

Aminoiodination of 3-chlorostyrene (1h**):**

Method A: The reaction of 0.5 mmol of 3-chlorostyrene (**1h**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 212.7 mg of **2h** (76%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of 3-chlorostyrene (**1h**) with NaI (1.5 mmol), NFSI (1.5 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 184.4 mg of **2h** (66%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-(1-(3-Chlorophenyl)-2-iodoethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (**2h**)**



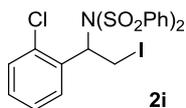
White solid, m.p. 157.6-159.2 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.20-7.37 (m, 12H), 7.33-7.24 (m, 2H), 5.68 (dd, *J* = 11.8 Hz, 3.0 Hz, 1H), 4.15 (t, *J* = 11.2 Hz, 1H), 3.10 (dd, *J* = 10.6 Hz, 3.0 Hz, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 139.7, 134.7, 134.3, 134.1, 130.1, 129.5, 129.0, 128.8, 128.0, 127.8, 64.4, 1.3 ppm. HRMS *m/z* (ESI) calcd for [C₂₀H₁₇ClINO₄S₂+Na]⁺ 583.9224, found 583.9229.

Aminoiodination of 2-chlorostyrene (1i**):**

Method A: The reaction of 0.5 mmol of 2-chlorostyrene (**1i**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 156.6 mg of **2i** (56%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of 2-chlorostyrene (**1i**) with NaI (1.5 mmol), NFSI (1.5 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 153.5 mg of **2i** (55%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-(1-(2-Chlorophenyl)-2-iodoethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (2i)**



2i

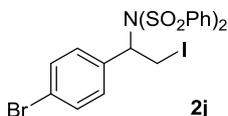
White solid, m.p. 197.1-198.7 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 7.90-7.70 (m, 4H), 7.61-7.52 (m, 3H), 7.38-7.28 (m, 5H), 7.14-7.10 (m, 1H), 6.85-6.83 (m, 1H), 6.19 (dd, *J* = 12.0 Hz, 3.8 Hz, 1H), 4.15 (dd, *J* = 12.0 Hz, 10.6, 1H), 3.80 (dd, *J* = 10.6 Hz, 3.8 Hz, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 140.0, 136.8, 133.5, 132.6, 130.3, 129.7, 128.7, 128.6, 128.0, 126.9, 61.5, 2.5 ppm. HRMS *m/z* (ESI) calcd for [C₂₀H₁₇ClINO₄S₂+Na]⁺ 583.9224, found 583.9232.

Aminoiodination of 4-bromostyrene (1j):

Method A: The reaction of 0.5 mmol of 4-bromostyrene (**1j**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 238.1 mg of **2j** (79%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, *v/v*) as the eluent.

Method B: The reaction of 0.5 mmol of 4-bromostyrene (**1j**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 201.8 mg of **2j** (67%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, *v/v*) as the eluent.

***N*-(1-(4-Bromophenyl)-2-iodoethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (2j)**



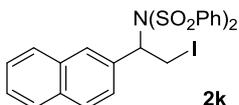
2j

White solid, m.p. 148.5-149.8 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.20-7.42 (m, 11H), 7.34-7.20 (m, 3H), 5.67 (dd, *J* = 11.8 Hz, 3.0 Hz, 1H), 4.16 (dd, *J* = 11.8 Hz, 10.6 Hz, 1H), 3.08 (dd, *J* = 10.6 Hz, 3.0 Hz, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 139.8, 134.0, 131.8, 131.6, 131.41, 129.1, 128.0, 122.9, 64.5, 1.4 ppm. HRMS *m/z* (ESI) calcd for [C₂₀H₁₇BrINO₄S₂+Na]⁺ 627.8719, found 627.8730.

Aminoiodination of 2-vinylnaphthalene (1k):

Method A: The reaction of 0.5 mmol of 2-vinylnaphthalene (**1k**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 236.7 mg of **2k** (82%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, *v/v*) as the eluent.

***N*-(2-Iodo-1-(naphthalen-2-yl)ethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (2k)**



2k

Colorless oil. ¹H NMR (CDCl₃, 400 MHz): δ = 7.91-7.80 (m, 5H), 7.70 (d, *J* = 8.6 Hz, 1H), 7.55-7.00 (m, 11H), 5.94 (dd, *J* = 11.8 Hz, 3.0 Hz, 1H), 4.37 (dd, *J* = 11.8 Hz, 10.6 Hz, 1H), 3.22 (dd, *J* = 10.6 Hz, 3.0 Hz, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 139.9, 133.8, 133.1, 132.7, 129.7, 129.4, 128.9, 128.4, 128.0, 127.9, 127.4, 127.1, 126.8, 126.4, 65.3, 1.9 ppm. HRMS *m/z* (ESI)

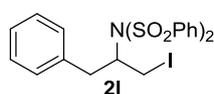
calcd for [C₂₄H₂₀INO₄S₂+Na]⁺ 599.9771, found 599.9764.

Aminoiodination of allylbenzene (1I):

Method A: The reaction of 0.5 mmol of allylbenzene (**1I**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 211.3 mg of **3I** (78%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of allylbenzene (**1I**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 39.3 mg of **2I** (14.5%) and 181.8 mg of **3I** (67.2%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

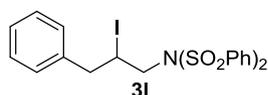
***N*-(1-Iodo-3-phenylpropan-2-yl)-*N*-(phenylsulfonyl)benzenesulfonamide (**2I**)**



Colorless oil. ¹H NMR (CDCl₃, 400 MHz): δ = 8.20-7.80 (m, 4H), 7.66-7.63 (m, 2H), 7.56-7.52 (m, 4H), 7.25-7.22 (m, 3H), 7.11-7.09 (m, 2H), 4.55-4.48 (m, 1H), 3.66 (dd, *J* =

10.7 Hz, 7.8 Hz, 1H), 3.48-3.40 (m, 2H), 3.27 (dd, *J* = 14.0 Hz, 5.7 Hz, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 137.1, 134.1, 134.0, 129.1, 129.1, 128.9, 128.8, 127.1, 67.0, 40.0, 4.3 ppm. HRMS *m/z* (ESI) calcd for [C₂₁H₂₀INO₄S₂+Na]⁺ 563.9771, found 563.9763.

***N*-(2-Iodo-3-phenylpropyl)-*N*-(phenylsulfonyl)benzenesulfonamide (**3I**)**



White solid, m.p. 114.0-115.8 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.02-8.00 (m, 4H), 7.67 (t, *J* = 7.5 Hz, 2H), 7.54 (t, *J* = 7.8 Hz, 4H), 7.27-7.24 (m, 3H), 6.94-6.92

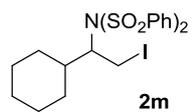
(m, 2H), 4.51-4.44 (m, 1H), 4.35 (dd, *J* = 15.1 Hz, 5.6 Hz, 1H), 4.19 (dd, *J* = 15.1 Hz, 9.8 Hz, 1H), 3.22 (dd, *J* = 14.8 Hz, 4.2 Hz, 1H), 2.94 (dd, *J* = 14.8 Hz, 11.0 Hz, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 139.2, 139.0, 134.2, 129.2, 128.7, 128.4, 128.4, 126.9, 56.2, 42.9, 31.9 ppm. HRMS *m/z* (ESI) calcd for [C₂₁H₂₀INO₄S₂+Na]⁺ 563.9771, found 563.9778.

Aminoiodination of vinylcyclohexane (1m):

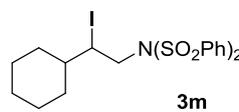
Method A: The reaction of 0.5 mmol of vinylcyclohexane (**1m**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 51.2 mg of **2m** (19.2%) and 175.2 mg of **3m** (65.7%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of vinylcyclohexane (**1m**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 196.3 mg of **3m** (74%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-(1-Cyclohexyl-2-iodoethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (2m)**

 White solid, m.p. 176.1-177.7 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.16-8.11 (m, 4H), 7.70-7.54 (m, 6H), 4.39-4.34 (m, 1H), 3.54 (dd, *J* = 11.3 Hz, 7.2 Hz, 1H), 3.30 (dd, *J* = 11.3 Hz, 3.2 Hz, 1H), 2.15-2.07 (m, 2H), 1.85-1.82 (m, 1H), 1.65-1.45 (m, 3H), 1.26-1.09 (m, 3H), 0.95-0.89 (m, 2H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 140.7, 139.5, 134.1, 133.8, 129.2, 128.9, 128.8, 128.7, 71.1, 42.4, 31.9, 31.7, 26.6, 25.8, 25.5, 4.8 ppm. HRMS *m/z* (ESI) calcd for [C₂₀H₂₄INO₄S₂+Na]⁺ 556.0084, found 556.0086.

***N*-(2-Cyclohexyl-2-iodoethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (3m)**

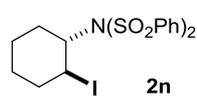
 White solid, m.p. 121.8-123.2 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.04-8.02 (m, 4H), 7.66 (t, *J* = 7.5 Hz, 2H), 7.56 (t, *J* = 7.5 Hz, 4H), 4.44-4.40 (m, 1H), 4.24-4.10 (m, 2H), 1.86-1.60 (m, 4H), 1.29-1.02 (m, 6H), 0.61-0.58 (m, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 139.5, 134.1, 129.1, 128.2, 53.8, 41.7, 38.6, 33.5, 30.4, 26.0, 25.8, 25.3 ppm. HRMS *m/z* (ESI) calcd for [C₂₀H₂₄INO₄S₂+Na]⁺ 556.0084, found 556.0087.

Aminoiodination of cyclohexene (1n):

Method A: The reaction of 0.5 mmol of cyclohexene (**1n**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 193.7 mg of **2n** (77%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, *v/v*) as the eluent.

Method B: The reaction of 0.5 mmol of cyclohexene (**1n**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 191.4 mg of **2n** (76%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, *v/v*) as the eluent.

***N*-(*trans*-2-Iodocyclohexyl)-*N*-(phenylsulfonyl)benzenesulfonamide (2n)**

 White solid, m.p. 164.7-166.3 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.25 (s, 2H), 7.93 (s, 2H), 7.70-7.50 (m, 6H), 4.96-4.89 (m, 1H), 4.04-3.97 (m, 1H), 2.66-2.62 (m, 1H), 2.31-2.21 (m, 1H), 2.04-1.77 (m, 3H), 1.51-1.48 (m, 1H), 1.32-1.26 (m, 2H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 141.3, 138.5, 134.2, 133.8, 129.4, 129.0, 128.5, 128.2, 70.4, 42.0, 32.8, 30.8, 28.0, 26.2 ppm. HRMS *m/z* (ESI) calcd for [C₁₈H₂₀INO₄S₂+Na]⁺ 527.9771, found 527.9775.

Aminoiodination of cyclopentene (1o):

Method A: The reaction of 0.5 mmol of cyclopentene (**1o**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C

afforded 173.4 mg of **2o** (71%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of cyclopentene (**1o**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 175.8 mg of **2o** (72%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-(*trans*-2-Iodocyclopentyl)-*N*-(phenylsulfonyl)benzenesulfonamide (**2o**)**

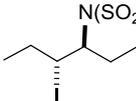
 **2o** White solid, m.p. 162.2-163.5 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.08-8.05 (m, 4H), 7.66 (t, *J* = 7.4 Hz, 2H), 7.58-7.54 (m, 4H), 4.84-4.78 (m, 1H), 4.55 (dd, *J* = 17.7 Hz, 8.8 Hz, 1H), 2.45-2.37 (m, 1H), 2.10-1.93 (m, 2H), 1.85-1.76 (m, 1H), 1.69-1.60 (m, 2H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 140.0, 134.0, 129.0, 128.5, 72.5, 38.2, 29.1, 24.3, 23.3 ppm. HRMS *m/z* (ESI) calcd for [C₁₇H₁₈INO₄S₂+Na]⁺ 513.9614, found 513.9622.

Aminoiodination of (*E*)-3-hexene (1p**):**

Method A: The reaction of 0.5 mmol of (*E*)-3-hexene (**1p**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 163.8 mg of **2p** (65%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of (*E*)-3-hexene (**1p**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 184.6 mg of **2p** (73%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-((3*S*,4*R*)- or (3*R*,4*S*)-4-Iodohexan-3-yl)-*N*-(phenylsulfonyl)benzenesulfonamide (**2p**)**

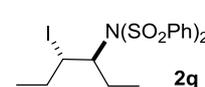
 **2p** Colorless oil. ¹H NMR (CDCl₃, 400 MHz): δ = 8.12-8.08 (m, 4H), 7.68-7.53 (m, 2H), 7.59-7.54 (m, 4H), 4.38 (td, *J* = 10.2 Hz, 3.2 Hz, 1H), 4.31-4.25 (m, 1H), 2.58-2.49 (m, 1H), 2.11-2.01 (m, 1H), 1.58-1.50 (m, 1H), 0.84 (t, *J* = 7.0 Hz, 3H), 0.79-0.75 (m, 1H), 0.70 (t, *J* = 7.4 Hz, 3H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 140.8, 138.8, 134.2, 133.9, 129.1, 129.0, 128.9, 128.7, 71.9, 44.47, 30.0, 26.4, 15.0, 11.7 ppm. HRMS *m/z* (ESI) calcd for [C₁₈H₂₂INO₄S₂+K]⁺ 545.9667, found 545.9671.

Aminoiodination of (*Z*)-3-hexene (1q**):**

Method A: The reaction of 0.5 mmol of (*Z*)-3-hexene (**1q**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 186.7 mg of **2q** (74%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of (*Z*)-3-hexene (**1q**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 199.7 mg of **2q** (79%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-((3*S*,4*S*)- or (3*R*,4*R*)-4-Iodohexan-3-yl)-*N*-(phenylsulfonyl)benzenesulfonamide (**2q**)**

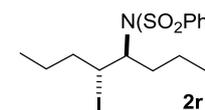
 Colorless oil. ¹H NMR (CDCl₃, 400 MHz): δ = 8.12-8.07 (m, 4H), 7.64 (t, *J* = 7.4 Hz, 2H), 7.54 (t, *J* = 7.6 Hz, 4H), 4.61-4.56 (m, 1H), 4.41-4.36 (m, 1H), 2.16-1.97 (m, 3H), 1.74-1.66 (m, 1H), 1.05 (t, *J* = 7.1 Hz, 3H), 0.71 (t, *J* = 7.4 Hz, 3H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 141.3, 138.7, 134.1, 133.8, 133.7, 129.3, 129.0, 128.7, 72.3, 42.1, 30.1, 23.6, 14.8, 12.2 ppm. HRMS *m/z* (ESI) calcd for [C₁₈H₂₂INO₄S₂+Na]⁺ 529.9927, found 529.9932.

Aminoiodination of (*E*)-4-octene (1r**):**

Method A: The reaction of 0.5 mmol of (*E*)-4-octene (**1r**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 122.3 mg of **2r** (46%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of (*E*)-4-octene (**1r**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 154.6 mg of **2r** (58%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-((4*S*,5*R*)- or (4*R*, 5*S*)-5-Iodoctan-4-yl)-*N*-(phenylsulfonyl)benzenesulfonamide (**2r**)**

 Colorless oil. ¹H NMR (CDCl₃, 400 MHz): δ = 8.15-8.11 (m, 4H), 7.70-7.64 (m, 2H), 7.61-7.55 (m, 4H), 4.44 (td, *J* = 10.3 Hz, 2.8 Hz, 1H), 4.35-4.29 (m, 1H), 2.45-2.35 (m, 1H), 2.06-2.01 (m, 1H), 1.45-1.26 (m, 3H), 1.14-1.03 (m, 2H), 0.75 (t, *J* = 7.3 Hz, 3H), 0.63 (t, *J* = 7.3 Hz, 3H), 0.60-0.50 (m, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 141.1, 138.9, 134.2, 133.8, 129.2, 129.1, 128.8, 128.8, 70.7, 42.4, 38.6, 34.7, 23.3, 20.1, 13.4, 12.8 ppm. HRMS *m/z* (ESI) calcd for [C₂₀H₂₆INO₄S₂+NH₄]⁺ 553.0686, found 553.0688.

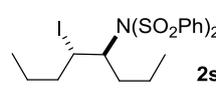
Aminoiodination of (*Z*)-4-octene (1s**):**

Method A: The reaction of 0.5 mmol of (*Z*)-4-octene (**1s**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 151.4 mg of **2s** (57%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of (*Z*)-4-octene (**1s**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO

(0.5 mmol) at 25 °C afforded 207.8 mg of **2s** (78%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

***N*-((4*S*,5*S*)- or (4*R*, 5*R*)-5-Iodoctan-4-yl)-*N*-(phenylsulfonyl)benzenesulfonamide (**2s**)**

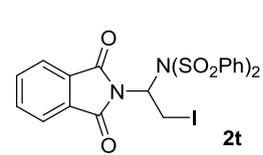
 Colorless oil. ¹H NMR (CDCl₃, 400 MHz): δ = 8.20-8.00 (m, 4H), 7.65 (t, *J* = 7.4 Hz, 2H), 7.54 (t, *J* = 7.7 Hz, 4H), 4.57-4.44 (m, 2H), 2.06-2.00 (m, 1H), 1.94-1.83 (m, 2H), 1.73-1.58 (m, 2H), 1.40-1.31 (m, 1H), 1.13-1.08 (m, 2H), 0.91 (t, *J* = 7.3 Hz, 3H), 0.72 (t, *J* = 7.3 Hz, 3H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 141.4, 138.9, 134.1, 133.7, 129.4, 128.8, 128.8, 128.7, 71.1, 40.0, 38.8, 32.7, 23.5, 21.1, 13.7, 13.0 ppm. HRMS *m/z* (ESI) calcd for [C₂₀H₂₆INO₄S₂+Na]⁺ 558.0240, found 558.0248.

Aminoiodination of 2-vinylisindoline-1,3-dione (1t**):**

Method A: The reaction of 0.5 mmol of 2-vinylisindoline-1,3-dione (**1t**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 213.8 mg of **2t** (72%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (10:1 to 6:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of 2-vinylisindoline-1,3-dione (**1t**) with NaI (1.5 mmol), NFSI (1.5 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 127.5 mg of **2t** (43%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (10:1 to 6:1, v/v) as the eluent.

***N*-(1-(1,3-Dioxoisindolin-2-yl)-2-iodoethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (**2t**)**

 White solid, m.p. 199.6-201.5 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.16-8.14 (m, 4H), 7.80 (dd, *J* = 5.5 Hz, 3.0 Hz, 2H), 7.73 (dd, *J* = 5.5 Hz, 3.0 Hz, 2H), 7.59-7.47 (m, 6H), 6.74 (dd, *J* = 12.4 Hz, 4.1 Hz, 1H), 4.75 (dd, *J* = 12.4 Hz, 10.0 Hz, 1H), 3.51 (dd, *J* = 12.4 Hz, 4.1 Hz, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 166.9, 140.1, 134.6, 134.1, 131.0, 129.1, 128.9, 128.7, 127.8, 123.8, 68.2, 1.6 ppm. HRMS *m/z* (ESI) calcd for [C₂₂H₁₇IN₂O₆S₂+Na]⁺ 618.9465, found 618.9472.

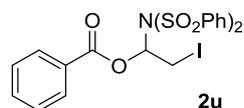
Aminoiodination of vinyl benzoate (1u**):**

Method A: The reaction of 0.5 mmol of vinyl benzoate (**1u**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 244.6 mg of **2u** (86%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1 to 10:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of vinyl benzoate (**1u**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 218.9 mg of **2u** (77%) after flash chromatography on silica gel using

petroleum ether and ethyl acetate (10:1, v/v) as the eluent.

2-Iodo-1-(*N*-(phenylsulfonyl)phenylsulfonamido)ethyl benzoate (**2u**)



White solid, m.p. 116.7-118.2 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.05 (d, *J* = 0.76

Hz, 4H), 7.83-7.81 (m, 2H), 7.59-7.51 (m, 3H), 7.44-7.37 (m, 6H), 7.07 (t, *J* = 7.1 Hz,

1H), 4.00 (dd, *J* = 10.6 Hz, 7.7 Hz, 1H), 3.86 (dd, *J* = 10.6 Hz, 6.6 Hz, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz):

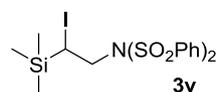
δ = 164.0, 139.5, 134.1, 133.8, 130.0, 129.0, 128.7, 128.4, 127.9, 82.9, 2.2 ppm. HRMS *m/z* (ESI) calcd for [C₂₁H₁₈INO₆S₂+Na]⁺ 593.9512, found 593.9518.

Aminoiodination of trimethyl(vinyl)silane (**1v**):

Method A: The reaction of 0.5 mmol of trimethyl(vinyl)silane (**1v**) with NaI (1 mmol) and NFSI (1 mmol) at 40 °C afforded 174.3 mg of **3v** (67%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1, v/v) as the eluent.

Method B: The reaction of 0.5 mmol of trimethyl(vinyl)silane (**1v**) with NaI (1 mmol), NFSI (1 mmol) and TEMPO (0.5 mmol) at 25 °C afforded 208.4 mg of **3v** (80%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1, v/v) as the eluent.

N-(2-Iodo-2-(trimethylsilyl)ethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (**3v**)



White solid, m.p. 119.8-121.4 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 8.09-8.07 (m, 4H),

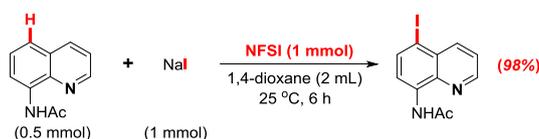
7.68-7.64 (m, 2H), 7.58-7.54 (m, 4H), 4.18 (dd, *J* = 15.5 Hz, 11.7, 1H), 3.93 (dd, *J* = 15.5

Hz, 3.8 Hz, 1H), 3.55 (dd, *J* = 11.7 Hz, 3.8 Hz, 1H), 0.19 (s, 9H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ =

139.6, 134.0, 129.0, 128.6, 52.9, 15.5, -2.0 ppm. HRMS *m/z* (ESI) calcd for [C₁₇H₂₂INO₄S₂Si+K]⁺ 561.9436, found 561.9434.

Control Experiments

1) Control experiments proving NFSI can oxidize I⁻ to I⁺



Typical Procedure: To a reaction tube charged with NaI (150 mg, 1 mmol) and NFSI (315 mg, 1 mmol) was added a solution of *N*-(quinolin-8-yl)acetamide (93 mg, 0.5 mmol) in 1,4-dioxane (2 mL) via a syringe. The reaction mixture was stirred at 25 °C in air for 6 hours. After diluted with ethyl acetate, the reaction mixture was concentrated *in vacuo* to give dark residue, which was then purified by flash chromatography using petroleum ether and ethyl acetate (6:1, *v/v*) as the eluent on silical gel to afford the C5-iodinated product 152.7 mg (98%). White solid, m.p. 144.3-145.6 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 9.77 (s, 1H), 8.75 (dd, *J* = 4.2 Hz, 1.5 Hz, 1H), 8.52 (d, *J* = 8.3 Hz, 1H), 8.34 (dd, *J* = 8.5 Hz, 1.5 Hz, 1H), 8.04 (d, *J* = 8.3 Hz, 1H), 7.51 (dd, *J* = 8.5 Hz, 4.2 Hz, 1H), 2.34 (s, 3H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 168.8, 148.6, 140.7, 138.8, 138.2, 135.4, 129.5, 123.1, 117.7, 89.2, 25.1 ppm. HRMS *m/z* (ESI) calcd for [C₁₁H₉IN₂O+Na]⁺ 334.9652, found 334.9654.

1) Control experiments proving TEMPO cannot oxidize I⁻ to I⁺



Typical Procedure: To a reaction tube charged with NaI (150 mg, 1 mmol) was added a solution of *N*-(quinolin-8-yl)acetamide (93 mg, 0.5 mmol) and TEMPO (156 mg, 1 mmol) in 1,4-dioxane (2 mL) via a syringe. The reaction mixture was stirred at 25 °C in air for 6 hours, and TLC suggested that no iodinated product was generated. After diluted with ethyl acetate, the reaction mixture was concentrated *in vacuo* to give dark residue, which was then purified by flash chromatography using petroleum ether and ethyl acetate (6:1, *v/v*) as the eluent on silical gel to recover the substrate *N*-(quinolin-8-yl)acetamide 86.7 mg (93%). White solid, m.p. 100.5-101.4 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 9.78 (s, 1H), 8.79-8.75 (m, 2H),

8.14 (dd, $J = 8.3$ Hz, 1.7 Hz, 1H), 7.54-7.47 (m, 2H), 7.43 (dd, $J = 8.3$ Hz, 4.2 Hz, 1H), 2.34 (s, 3H) ppm; ^{13}C

NMR (CDCl₃, 100 MHz): $\delta = 168.7, 148.0, 138.2, 136.3, 134.5, 127.9, 127.3, 121.5, 121.4, 116.3, 25.1$ ppm.

at 40 °C afforded 1.74 g of **2m** (32.6%) and 2.73 g of **3m** (51.2%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1 to 6:1, v/v) as the eluent.

Method B: The reaction of 10 mmol of vinylcyclohexane (**1m**) with NaI (20 mmol), NFSI (20 mmol) and TEMPO (10 mmol) at 25 °C afforded 0.64 g of **2m** (12.0%) and 3.94 g of **3m** (73.9%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (25:1 to 6:1, v/v) as the eluent.

Gram-scale Aminoiodination of cyclohexene (1o):

Method A: The reaction of 10 mmol of cyclohexene (**1o**) with NaI (20 mmol) and NFSI (20 mmol) at 40 °C afforded 4.02 g of **2o** (80%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1 to 6:1, v/v) as the eluent.

Method B: The reaction of 10 mmol of cyclohexene (**1o**) with NaI (20 mmol), NFSI (20 mmol) and TEMPO (10 mmol) at 25 °C afforded 4.08 g of **2o** (81%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1 to 6:1, v/v) as the eluent.

Gram-scale Aminoiodination of vinyl benzoate (1v):

Method A: The reaction of 10 mmol of vinyl benzoate (**1v**) with NaI (20 mmol) and NFSI (20 mmol) at 40 °C afforded 4.66 g of **2v** (82%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (10:1 to 6:1, v/v) as the eluent.

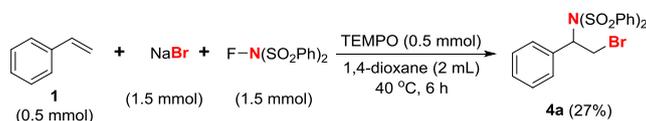
Method B: The reaction of 10 mmol of vinyl benzoate (**1v**) with NaI (20 mmol), NFSI (20 mmol) and TEMPO (10 mmol) at 25 °C afforded 4.55 g of **2v** (80%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (10:1 to 6:1, v/v) as the eluent.

Gram-scale Aminoiodination of trimethyl(vinyl)silane (1w):

Method A: The reaction of 10 mmol of trimethyl(vinyl)silane (**1w**) with NaI (20 mmol) and NFSI (20 mmol) at 40 °C afforded 3.23 g of **3w** (62%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1 to 6:1, v/v) as the eluent.

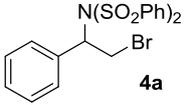
Method B: The reaction of 10 mmol of trimethyl(vinyl)silane (**1w**) with NaI (20 mmol), NFSI (20 mmol) and TEMPO (10 mmol) at 25 °C afforded 3.88 g of **3w** (74%) after flash chromatography on silica gel using petroleum ether and ethyl acetate (15:1 to 6:1, v/v) as the eluent.

A Preliminary Attempt on Aminobromination of Styrene



General Procedure: To a reaction tube charged with NaBr (155 mg, 1.5 mmol) and NFSI (473 mg, 1.5 mmol) was added a solution of styrene **1a** (52 mg, 0.5 mmol) and TEMPO (78 mg, 0.5 mmol) in 1,4-dioxane (2 mL) via a syringe. The reaction mixture was stirred at 40 °C in air for 6 hours. After cooling by iced water, the reaction mixture was diluted with ethyl acetate, washed with water and brine, dried over Na₂SO₄, and concentrated *in vacuo* to give dark residue, which was then purified by flash chromatography using petroleum ether and ethyl acetate (15:1, *v/v*) as the eluent on silical gel to afford 64.8 mg of the aminobrominated products **4a** (27%).

***N*-(2-Bromo-1-phenylethyl)-*N*-(phenylsulfonyl)benzenesulfonamide (**4a**)**

 White solid, m.p. 148.5-149.5 °C. ¹H NMR (CDCl₃, 400 MHz): δ = 7.58-7.43 (m, 10H), 7.35-7.32 (m, 5H), 5.79 (dd, *J* = 10.9 Hz, 3.6 Hz, 1H), 4.44 (t, *J* = 10.8 Hz, 1H), 3.32 (dd, *J* = 10.7 Hz, 3.7 Hz, 1H) ppm; ¹³C NMR (CDCl₃, 100 MHz): δ = 139.9, 133.9, 132.7, 129.6, 128.9, 128.6, 128.4, 128.2, 64.6, 29.8 ppm. HRMS *m/z* (ESI) calcd for [C₂₀H₁₈BrNO₄S₂+Na]⁺ 501.9753, found 501.9758.

7.5926
7.4996
7.4831
7.4792
7.4596
7.4533
7.4440
7.3828
7.3790
7.3756
7.3648
7.3427
7.3240
7.3082
7.2537
5.7678
5.7602
5.7381
5.7306

4.2670
4.2408
4.2376
4.2113

3.1233
3.1156
3.0972
3.0895

0.0000

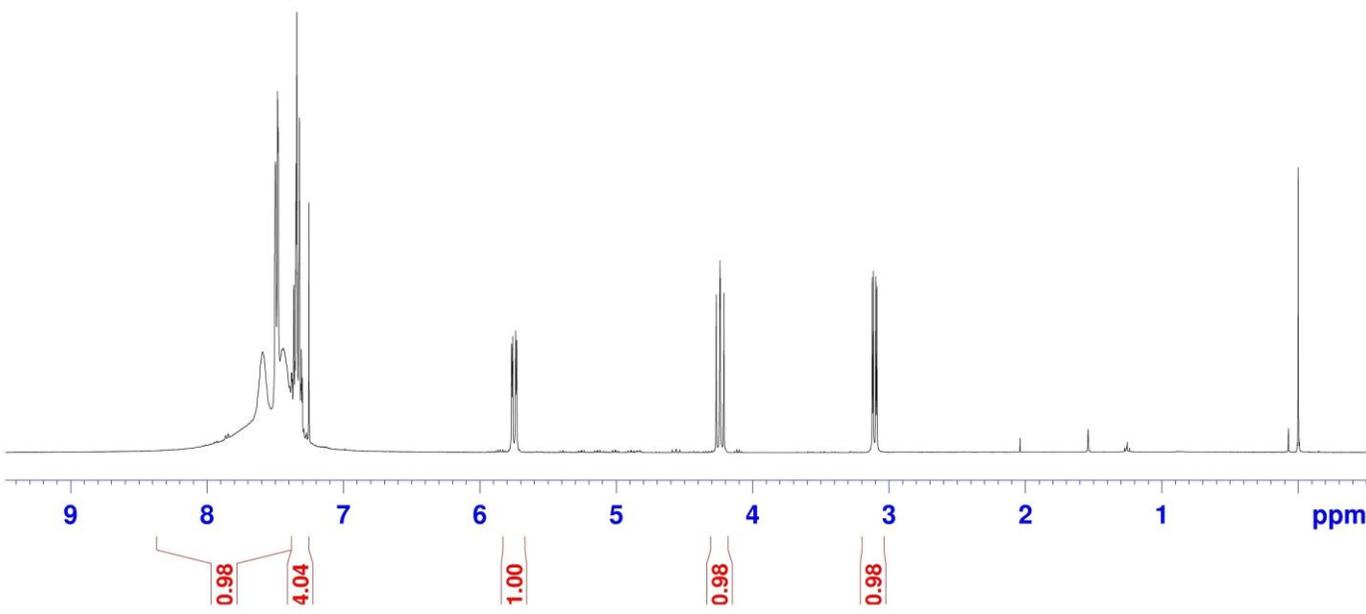


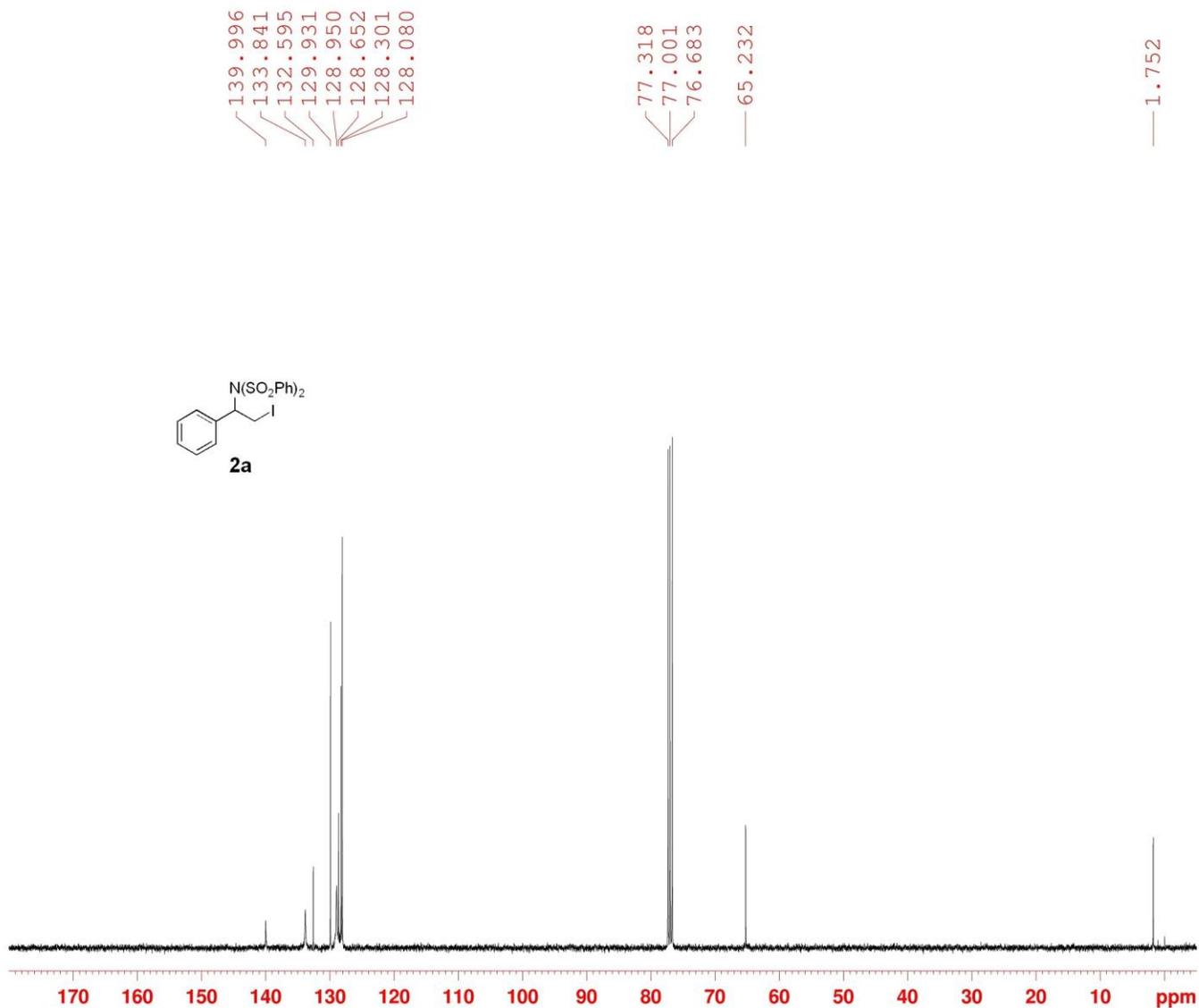
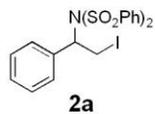
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NAME      CLJ-WL-L206
EXPNO     1
PROCNO    1
Date_     20180314
Time      21.03
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   CDCl3
NS         12
DS         0
SWH        8012.820 Hz
FIDRES     0.122266 Hz
AQ         4.0894966 sec
RG         70.36
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.00000000 sec
TD0        1
  
```

```

===== CHANNEL f1 =====
SF01      400.1324710 MHz
NUC1       1H
P1         8.04 usec
SI         65536
SF         400.1300122 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00
  
```



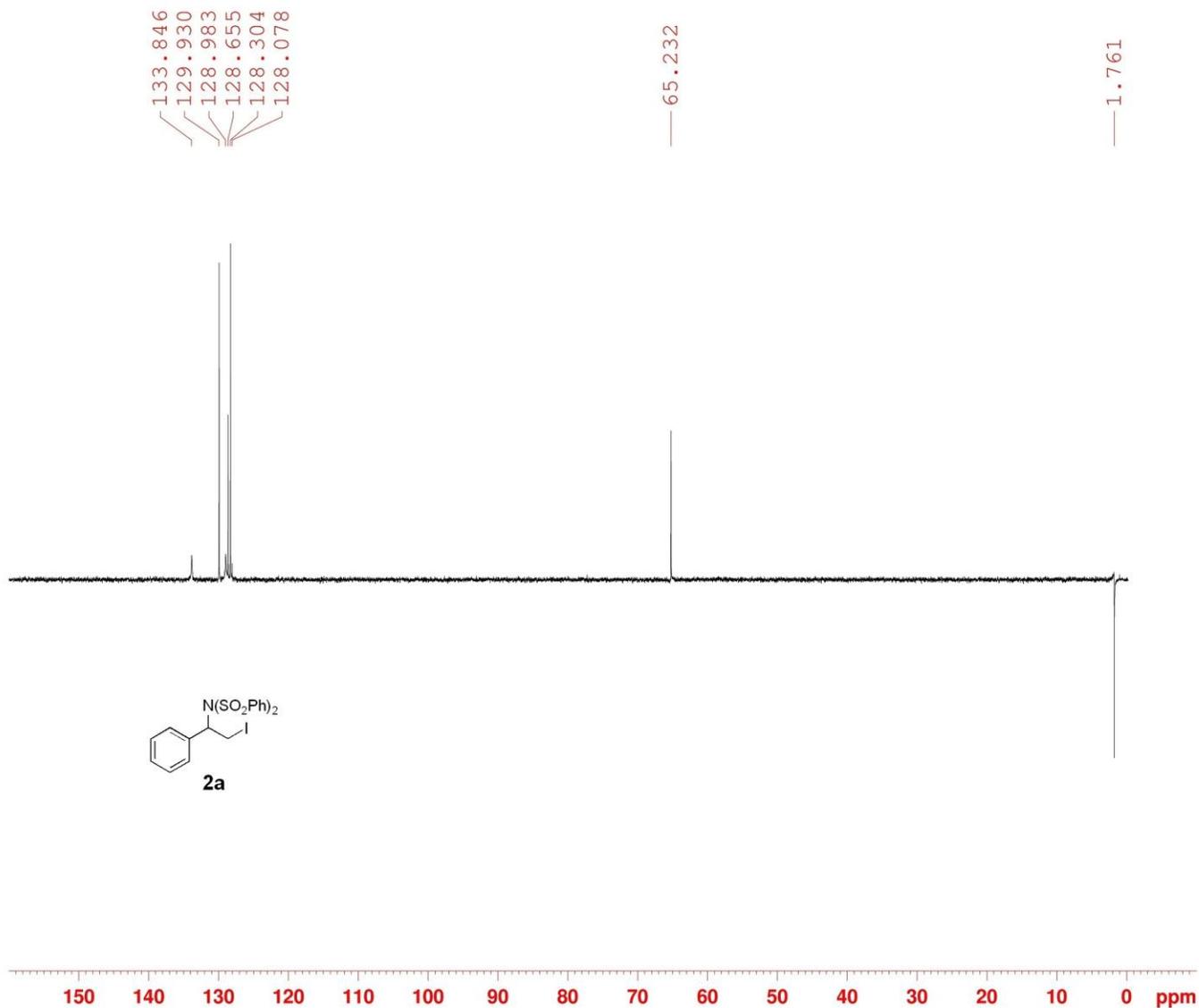


```

NAME          CLJ-WL-L206
EXPNO         2
PROCNO        1
Date_         20180314
Time          21.28
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            412
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SFO1          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127721 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```



```

NAME          CLJ-WL-L255
EXPNO         1
PROCNO       1
Date_        20180509
Time         22.02
INSTRUM      spect
PROBHD       5 mm PABBO BB/
PULPROG      deptsp135
TD           65536
SOLVENT      CDCl3
NS           256
DS           4
SWH          16129.032 Hz
FIDRES       0.246110 Hz
AQ           2.0316660 sec
RG           194.26
DW           31.000 usec
DE           6.50 usec
TE           300.0 K
CNST2        145.0000000
D1           2.00000000 sec
D2           0.00344828 sec
D12          0.00002000 sec
TD0          1

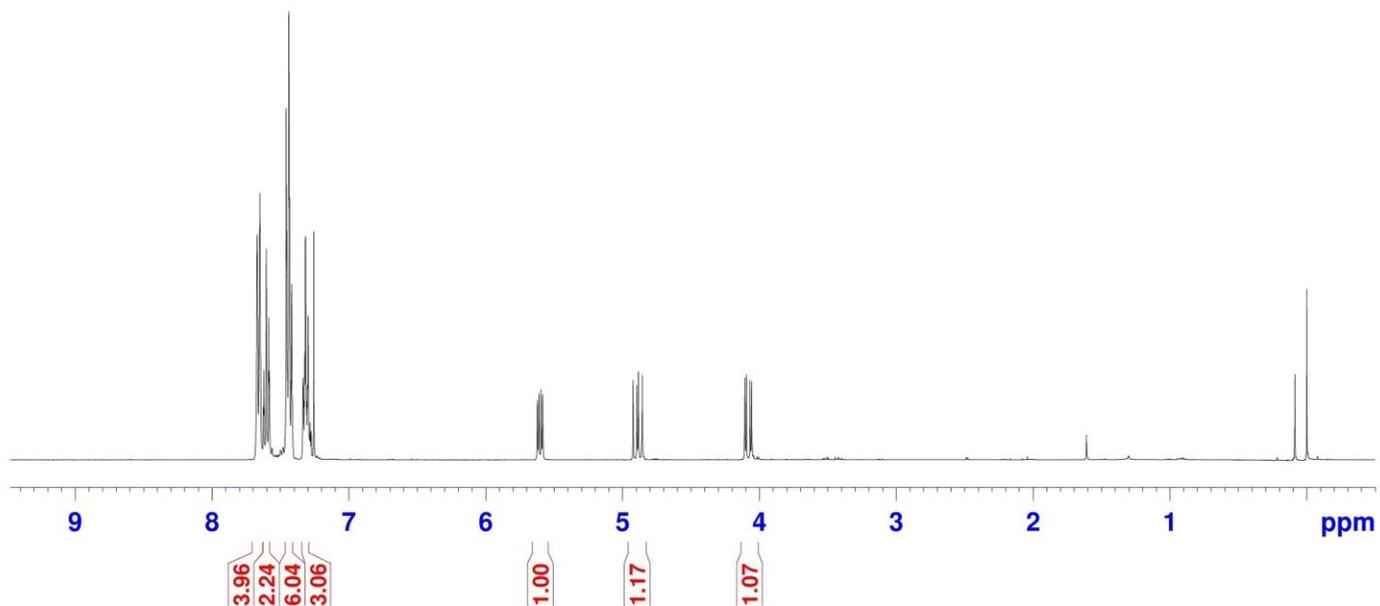
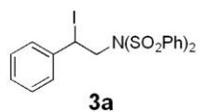
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```

===== CHANNEL f1 =====
SFO1          100.6208171 MHz
NUC1           13C
P1             8.54 usec
P13            2000.00 usec
SI             32768
SF            100.6127725 MHz
WDW            EM
SSB            0
LB             1.00 Hz
GB             0
PC             1.40

```

7.6708
7.6522
7.6494
7.6229
7.6041
7.5854
7.4583
7.4394
7.4380
7.4190
7.3336
7.3234
7.3179
7.2985
7.2572
5.6232
5.6117
5.5956
5.5841
4.9235
4.8958
4.8848
4.8572
4.1072
4.0957
4.0686
4.0571

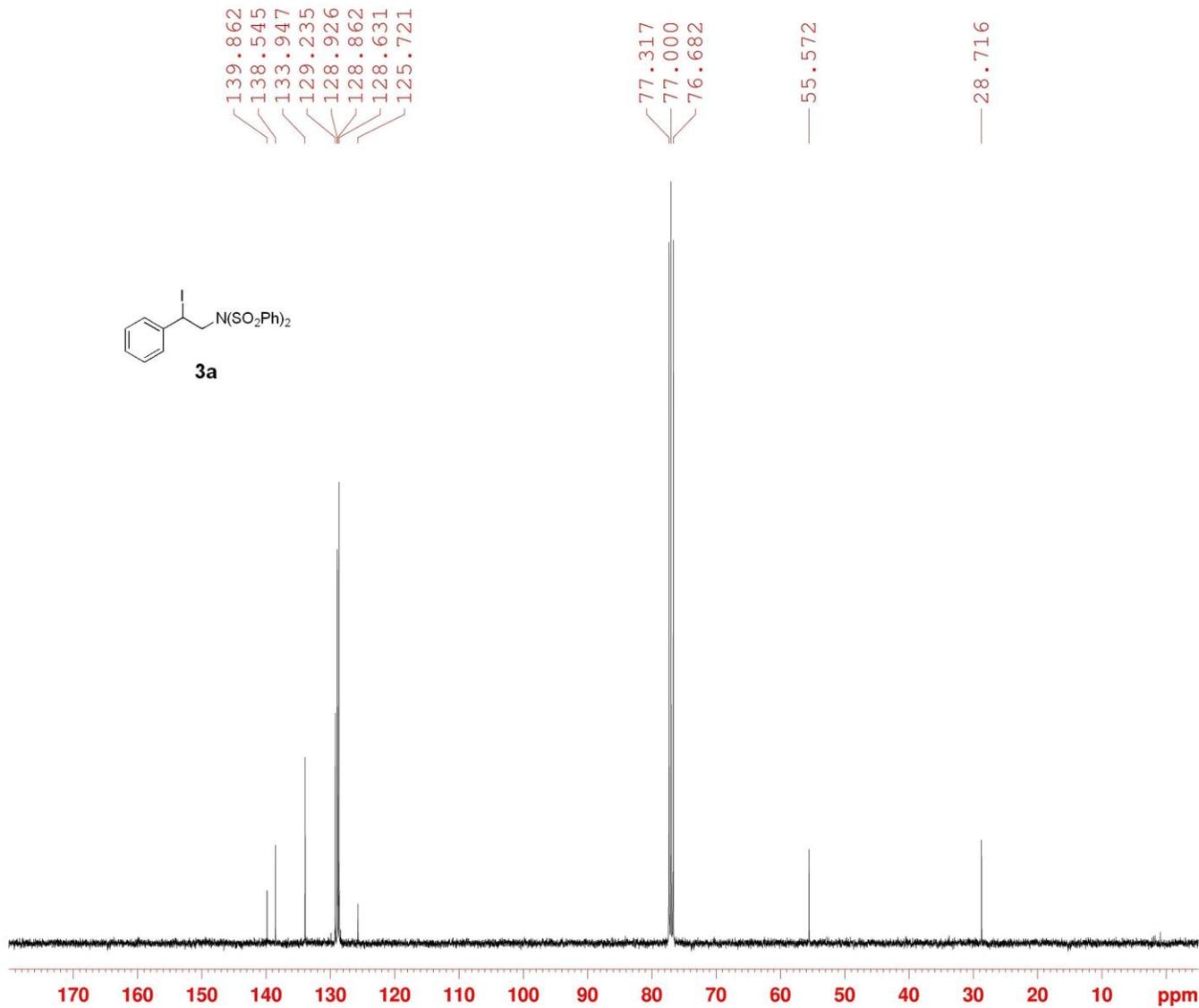


0.0000



```

NAME      2018-06-07 leibowen-292
EXPNO     4
PROCNO    1
Date_     20180607
Time      9.34 h
INSTRUM   spect
PROBHD    z116098_0673 (
PULPROG   zg30
TD        65536
SOLVENT   CDCl3
NS        16
DS        2
SWH       8012.820 Hz
FIDRES    0.244532 Hz
AQ        4.0894966 sec
RG        80.75
DW        62.400 usec
DE        6.50 usec
TE        298.2 K
D1        1.00000000 sec
TD0       1
SFO1      400.1324708 MHz
NUC1      1H
P1        10.00 usec
SI        65536
SF        400.1300108 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
  
```

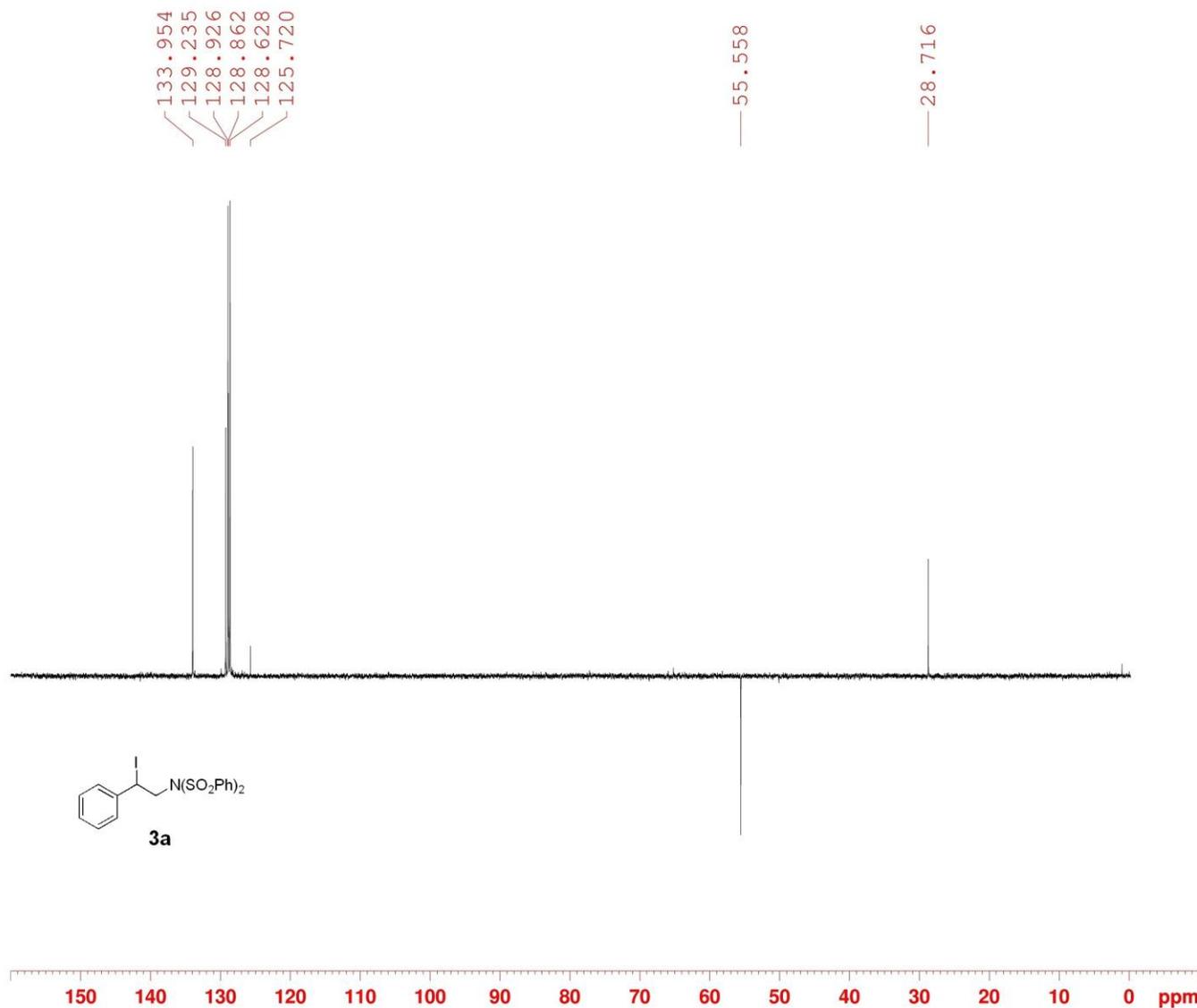


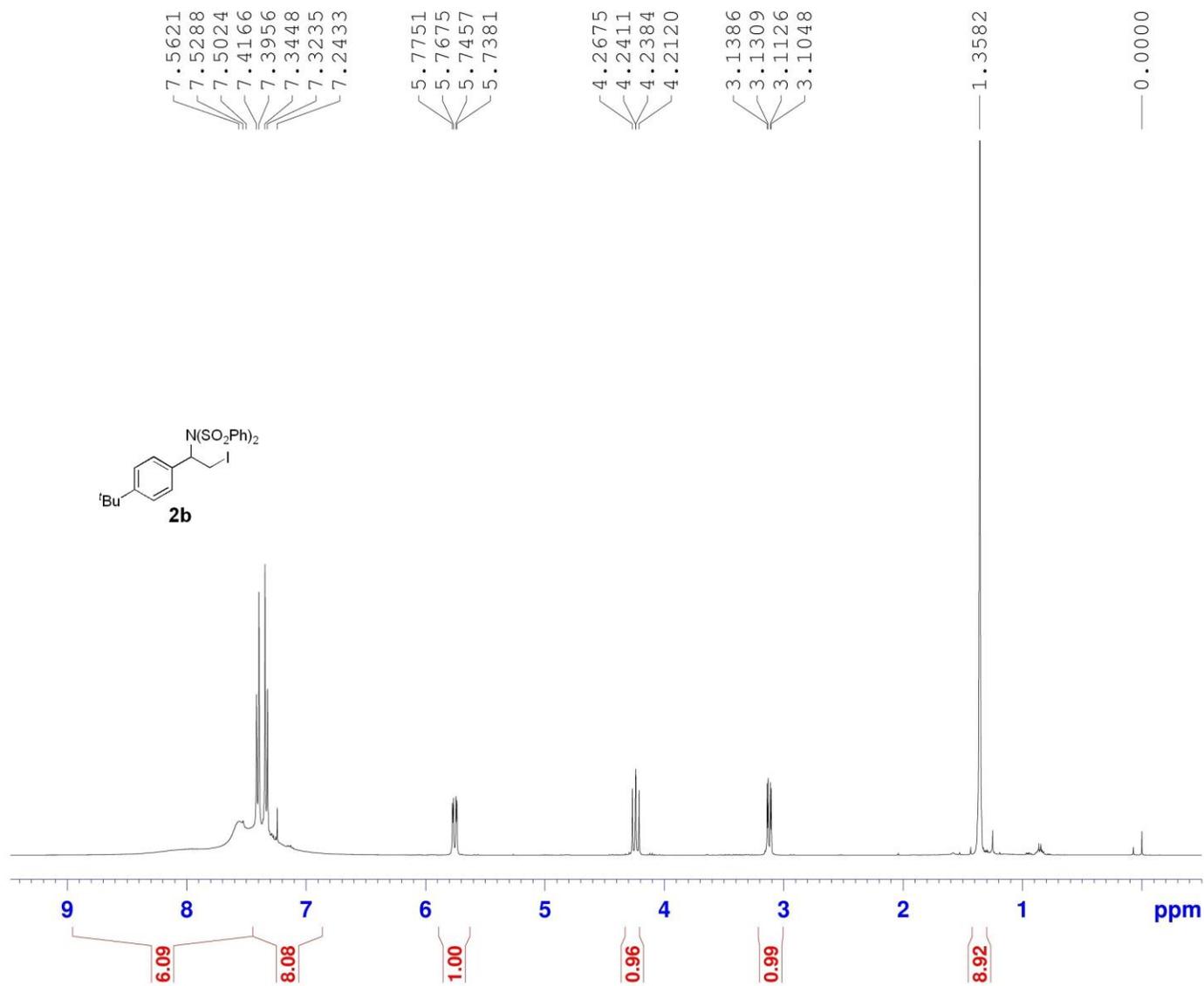
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NAME      2018-06-07 leibowen-292
EXPNO    3
PROCNO   1
Date_    20180607
Time     10.05 h
INSTRUM  spect
PROBHD   Z116098_0673 (
PULPROG  zgpg30
TD       65536
SOLVENT  CDC13
NS       512
DS       4
SWH      24038.461 Hz
FIDRES   0.733596 Hz
AQ       1.3631988 sec
RG       203.48
DW       20.800 usec
DE       6.50 usec
TE       298.2 K
D1       2.00000000 sec
D11      0.03000000 sec
TD0      1
SFO1     100.6228298 MHz
NUC1     13C
P1       10.00 usec
SI       32768
SF       100.6127722 MHz
WDW      EM
SSB      0
LB       1.00 Hz
GB       0
PC       1.40
  
```



```
NAME      2018-06-11 leibowen-298
EXPNO     1
PROCNO    1
Date_     20180611
Time      15.17 h
INSTRUM   spect
PROBHD    Z116098_0673 (
PULPROG   deptsp135
TD         65536
SOLVENT   CDC13
NS         512
DS         8
SWH       16129.032 Hz
FIDRES    0.492219 Hz
AQ         2.0316660 sec
RG         203.48
DW         31.000 usec
DE         6.50 usec
TE         296.8 K
CNST2     145.0000000
D1         2.0000000 sec
D2         0.00344828 sec
D12        0.00002000 sec
TD0        1
SFO1      100.6208175 MHz
NUC1       13C
P1         10.00 usec
P13        2000.00 usec
SI         32768
SF         100.6127729 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
PC         1.40
```



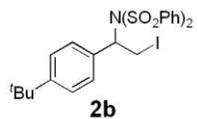


```

NAME      CLJ-WL-L264
EXPNO     1
PROCNO    1
Date_     20180513
Time      0.43
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   CDCl3
NS         12
DS         0
SWH        8012.820 Hz
FIDRES     0.122266 Hz
AQ         4.0894966 sec
RG         18.6
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.00000000 sec
TDO        1
  
```

```

===== CHANNEL f1 =====
SF01     400.1324710 MHz
NUC1      1H
P1        8.04 usec
SI        65536
SF        400.1300164 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB         0
PC         1.00
  
```



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 129.429
 128.828
 128.048
 125.136

77.317
 76.999
 76.682
 65.138

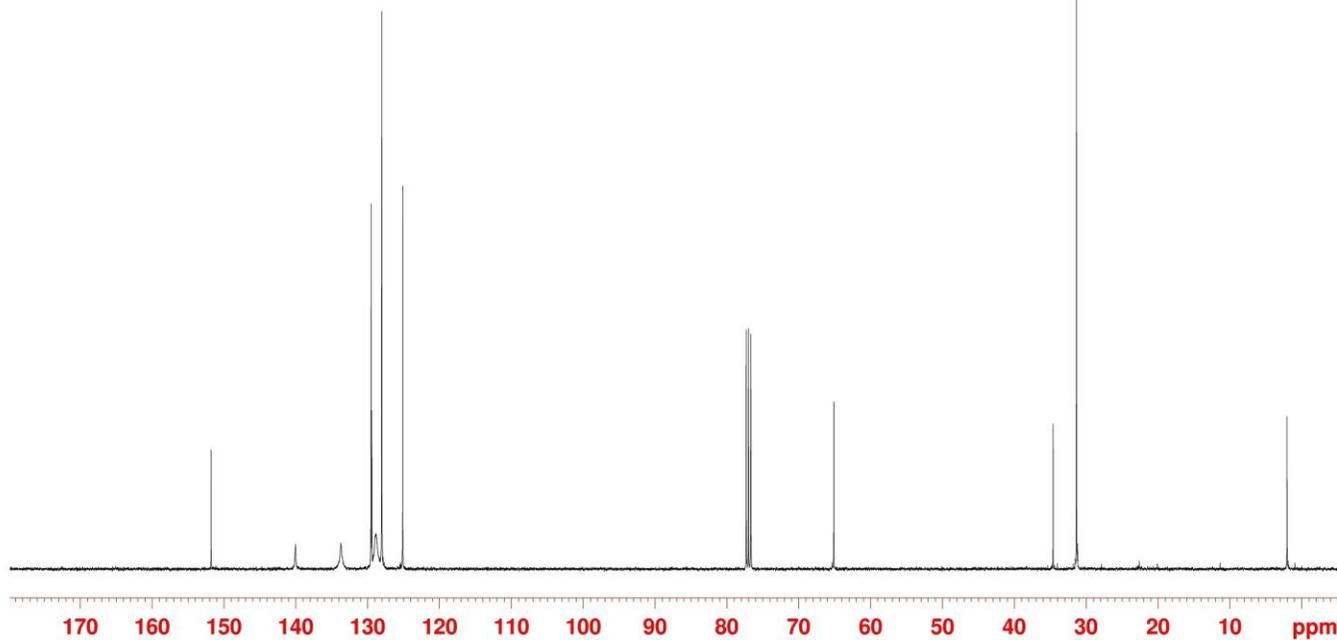
34.612
 31.356

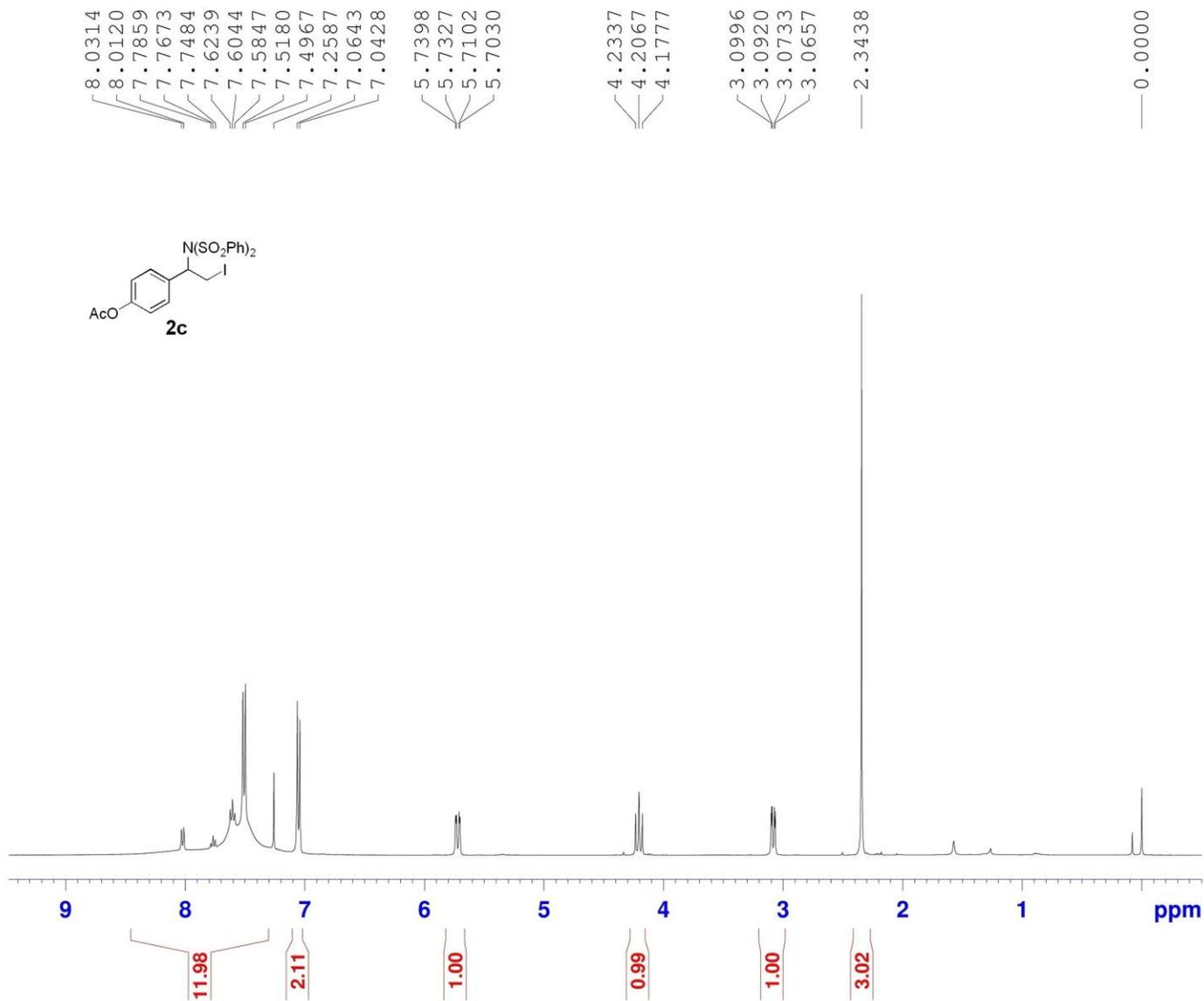
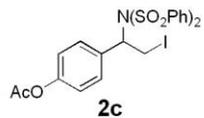
2.058



NAME CLJ-WL-L264
 EXPNO 2
 PROCNO 1
 Date_ 20180513
 Time 1.13
 INSTRUM spect
 PROBHD 5 mm PABBO BB/
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 194.26
 DW 20.800 usec
 DE 6.50 usec
 TE 299.9 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 SF01 100.6228293 MHz
 NUC1 13C
 P1 8.54 usec
 SI 32768
 SF 100.6127778 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



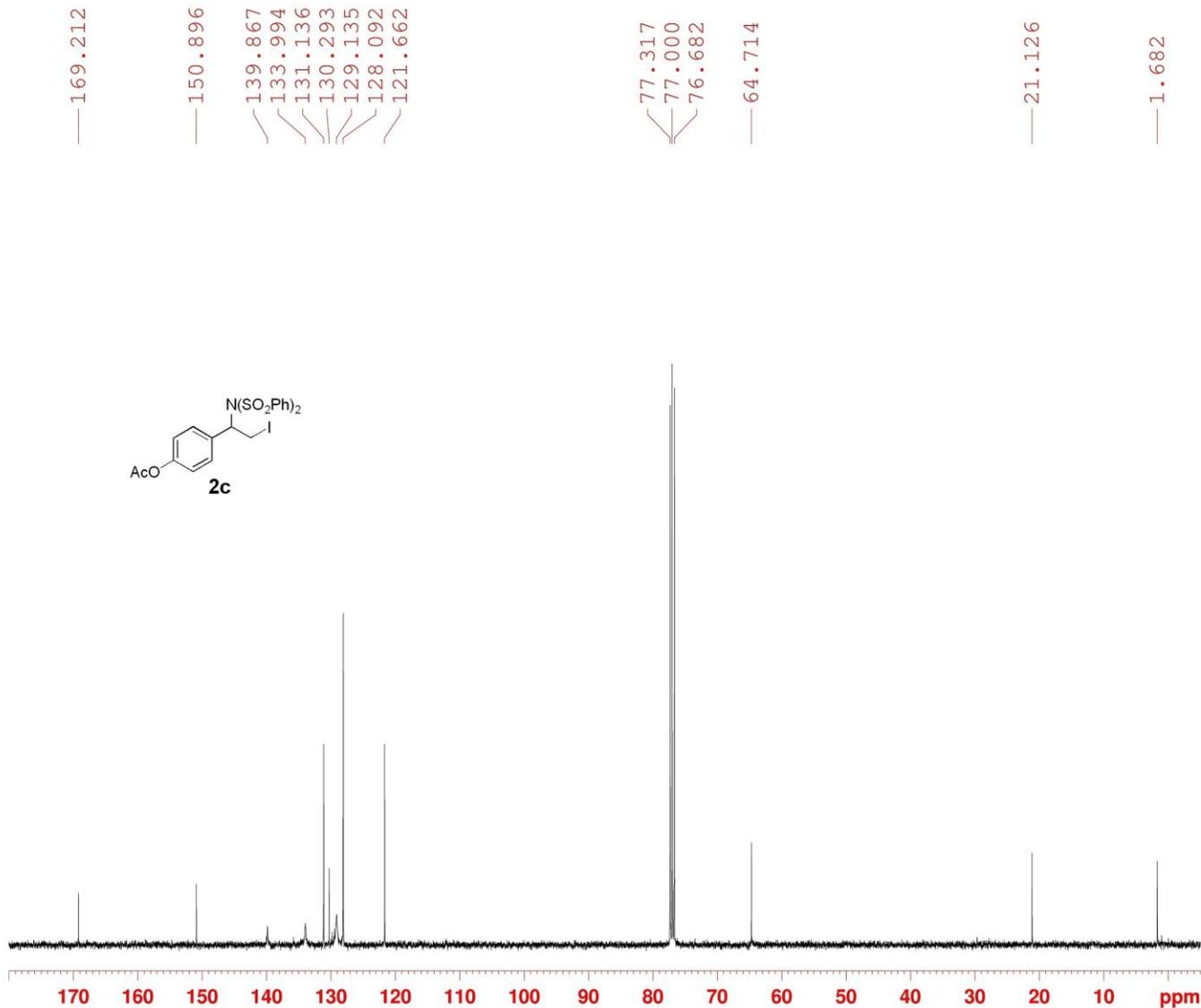


```

NAME      CLJ-WL-L228
EXPNO     1
PROCNO    1
Date_     20180414
Time      13.00
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   cdcl3
NS         12
DS         0
SWH       8012.820 Hz
FIDRES    0.122266 Hz
AQ         4.0894966 sec
RG         77.71
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.00000000 sec
TDO        1
  
```

```

===== CHANNEL f1 =====
SF01    400.1324710 MHz
NUC1     1H
P1       8.04 usec
SI       65536
SF       400.1300102 MHz
WDW      EM
SSB      0
LB       0.30 Hz
GB       0
PC       1.00
  
```

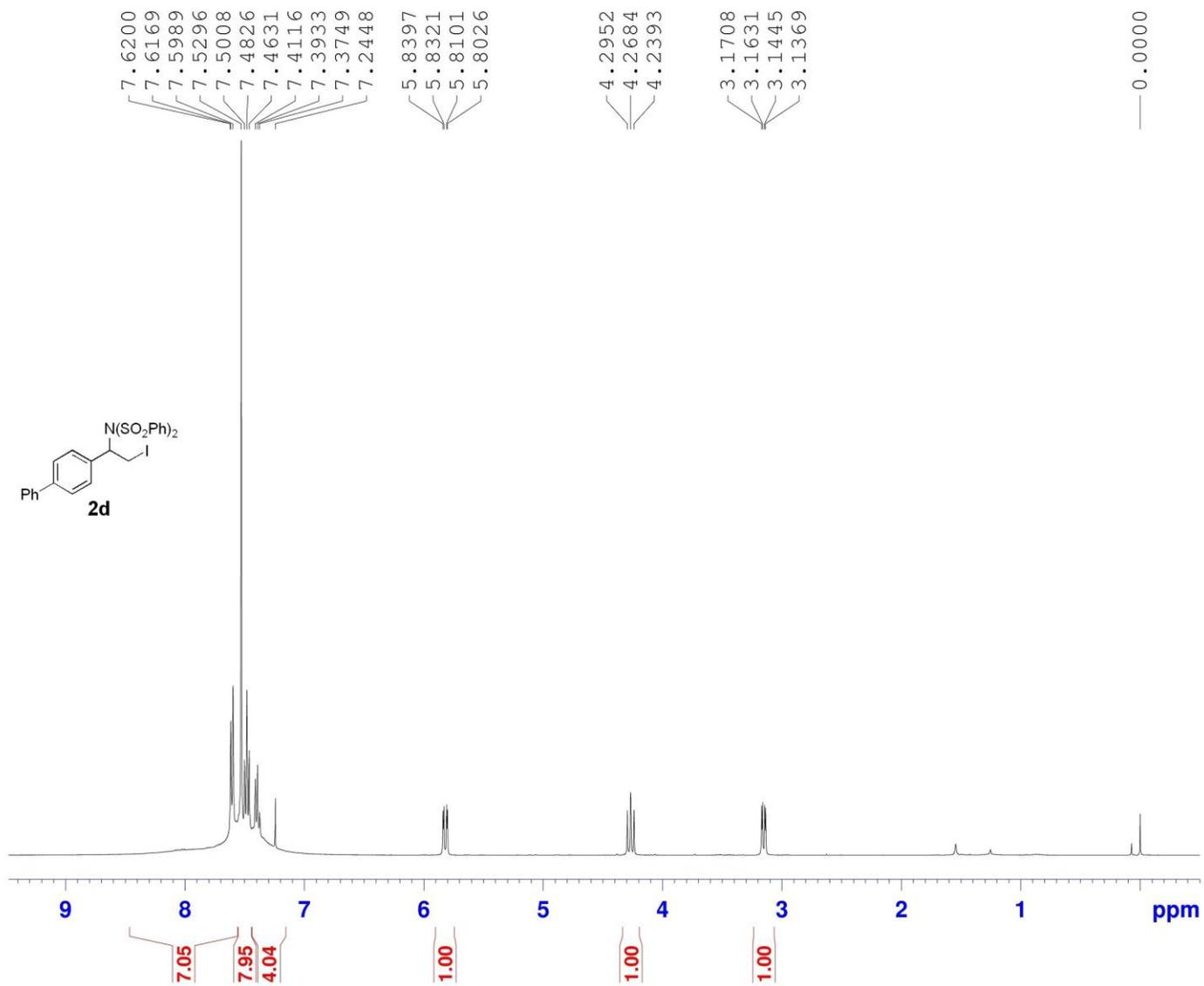


```

NAME          CLJ-WL-L228
EXPNO         2
PROCNO        1
Date_         20180414
Time          13.30
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1           13C
P1             8.54 usec
SI            32768
SF            100.6127716 MHz
WDW            EM
SSB            0
LB             1.00 Hz
GB            0
PC            1.40
  
```

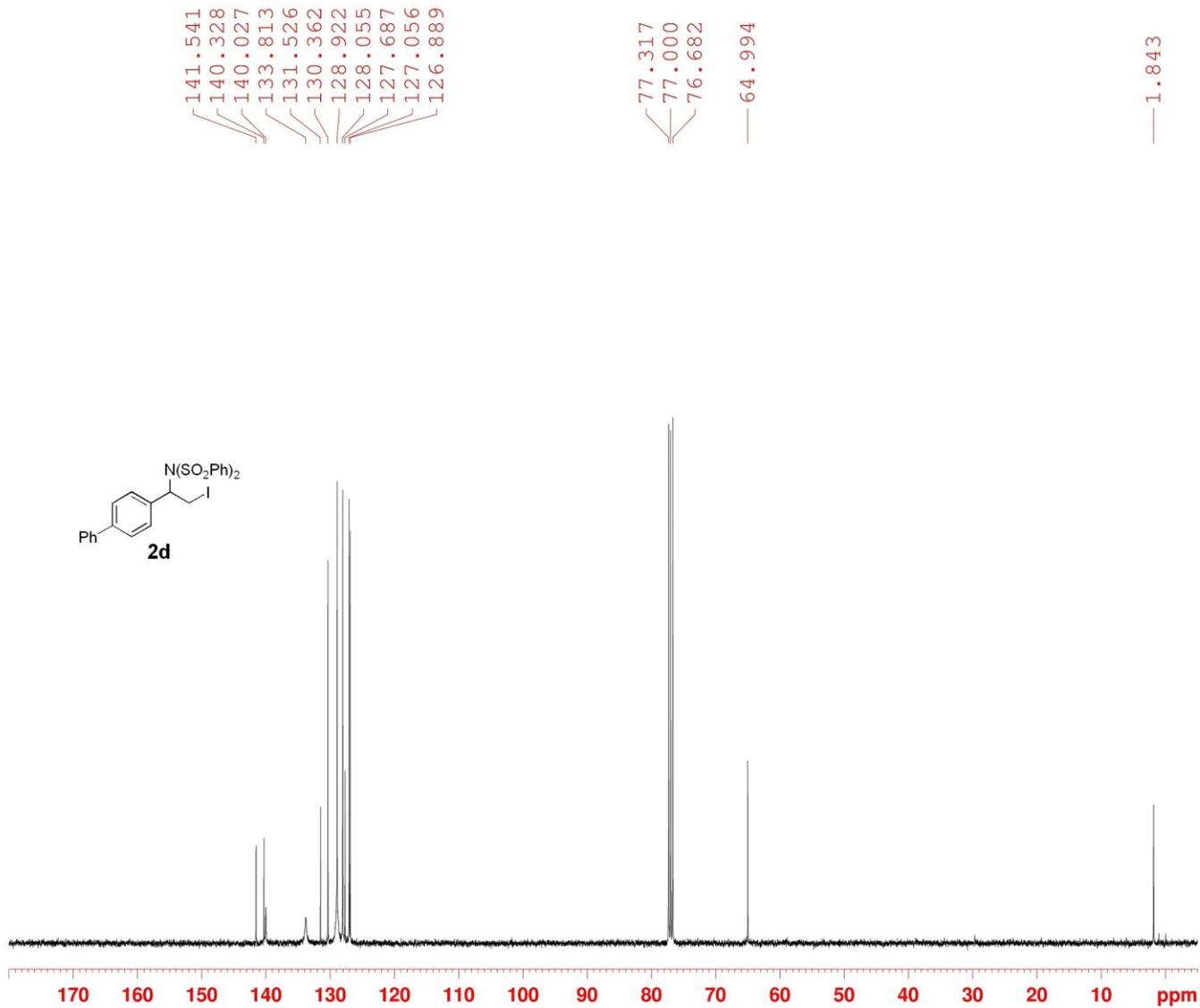


```

NAME      CLJ-WL-L256
EXPNO     1
PROCNO    1
Date_     20180509
Time      23.55
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   CDCl3
NS         12
DS         0
SWH        8012.820 Hz
FIDRES     0.122266 Hz
AQ         4.0894966 sec
RG         57.79
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.0000000 sec
TDO        1
  
```

```

===== CHANNEL f1 =====
SF01     400.1324710 MHz
NUC1      1H
P1        8.04 usec
SI        65536
SF        400.1300159 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
  
```

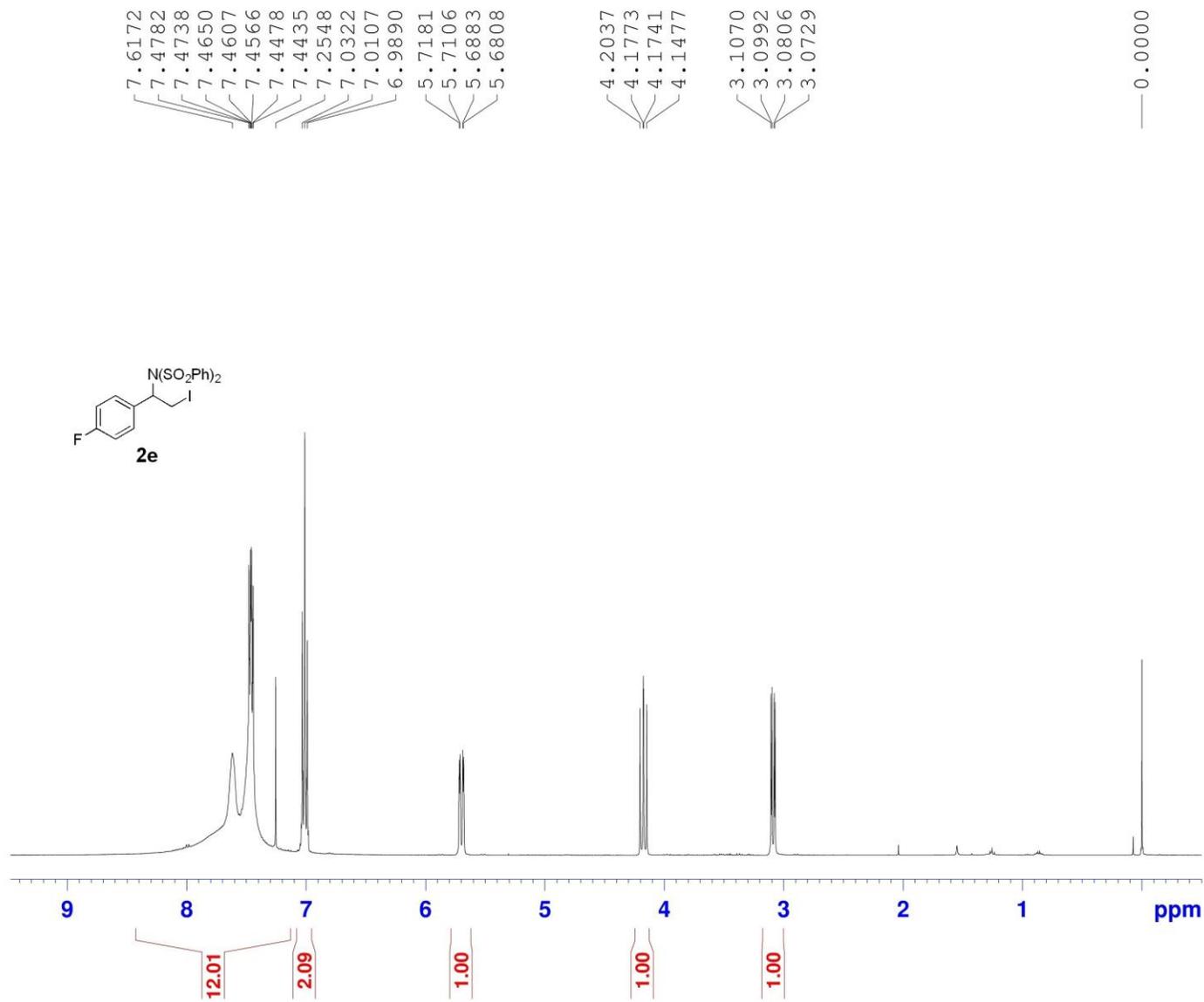


```

NAME          CLJ-WL-L256
EXPNO         2
PROCNO        1
Date_         20180510
Time          3.51
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            299.9 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

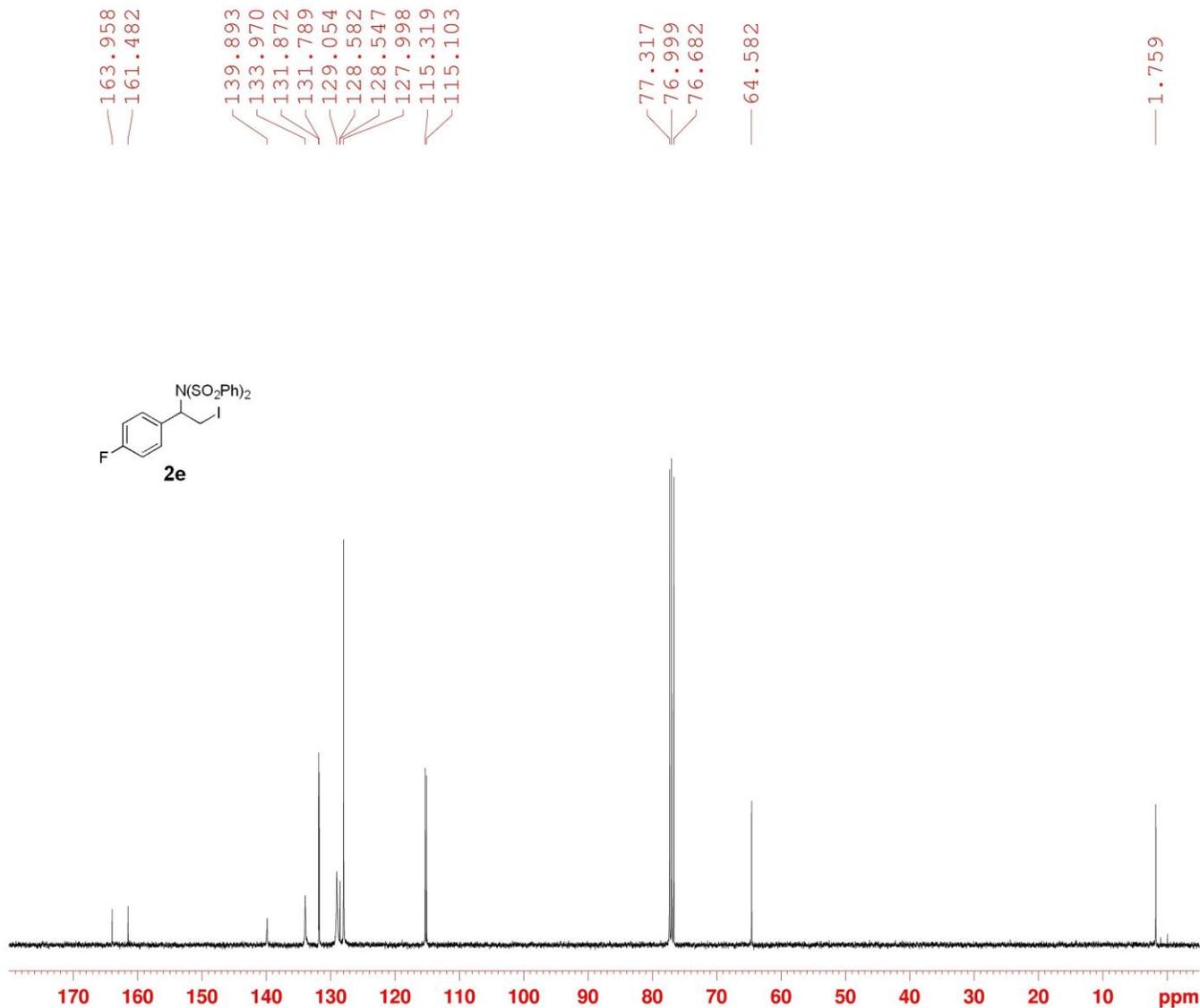
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SF01          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127744 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```



BRUKER

```

NAME      CLJ-WL-L220
EXPNO     1
PROCNO    1
Date_     20180410
Time      7.30
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD        65536
SOLVENT   cdcl3
NS        12
DS        0
SWH       8012.820 Hz
FIDRES    0.122266 Hz
AQ        4.0894966 sec
RG        63
DW        62.400 usec
DE        6.50 usec
TE        300.1 K
D1        1.00000000 sec
TDO       1
===== CHANNEL f1 =====
SF01     400.1324710 MHz
NUC1     1H
P1       8.04 usec
SI       65536
SF       400.1300113 MHz
WDW      EM
SSB      0
LB       0.30 Hz
GB       0
PC       1.00
  
```



```

NAME          CLJ-WL-L220
EXPNO         2
PROCNO        1
Date_         20180410
Time          8.01
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127727 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```

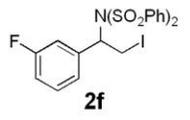
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7.4770
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7.3272
7.3078
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7.2812
7.2684
7.2537
7.1910
7.1665
7.1648
7.0802
7.0746
7.0696
7.0568
7.0507
7.0452
7.0368
7.0300
5.7122
5.7047
5.6828
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3.1024
3.0834
3.0759

0.0000



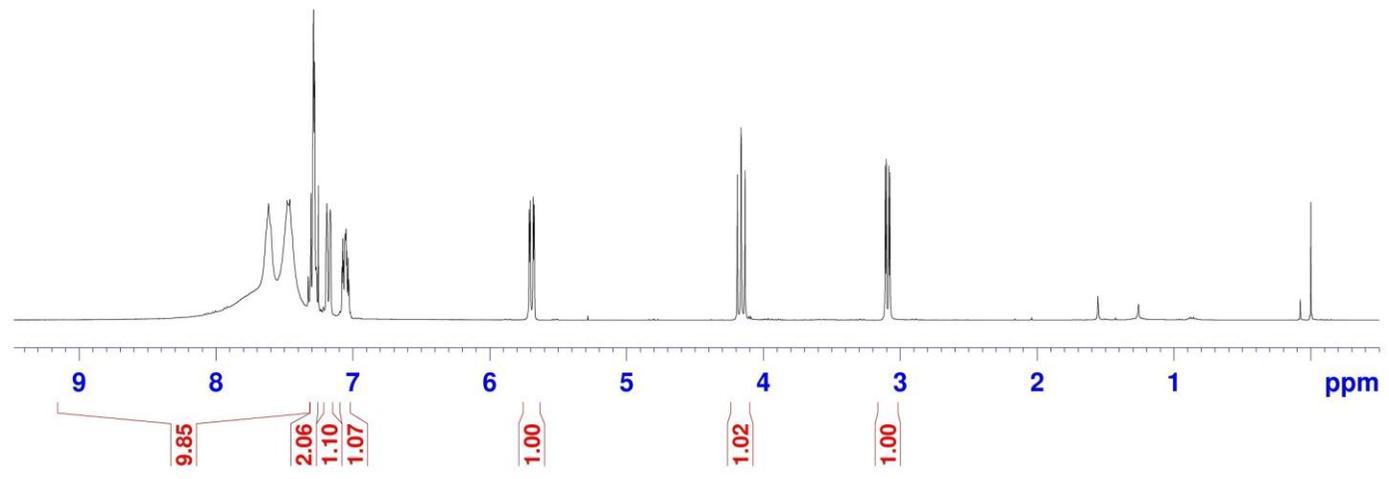
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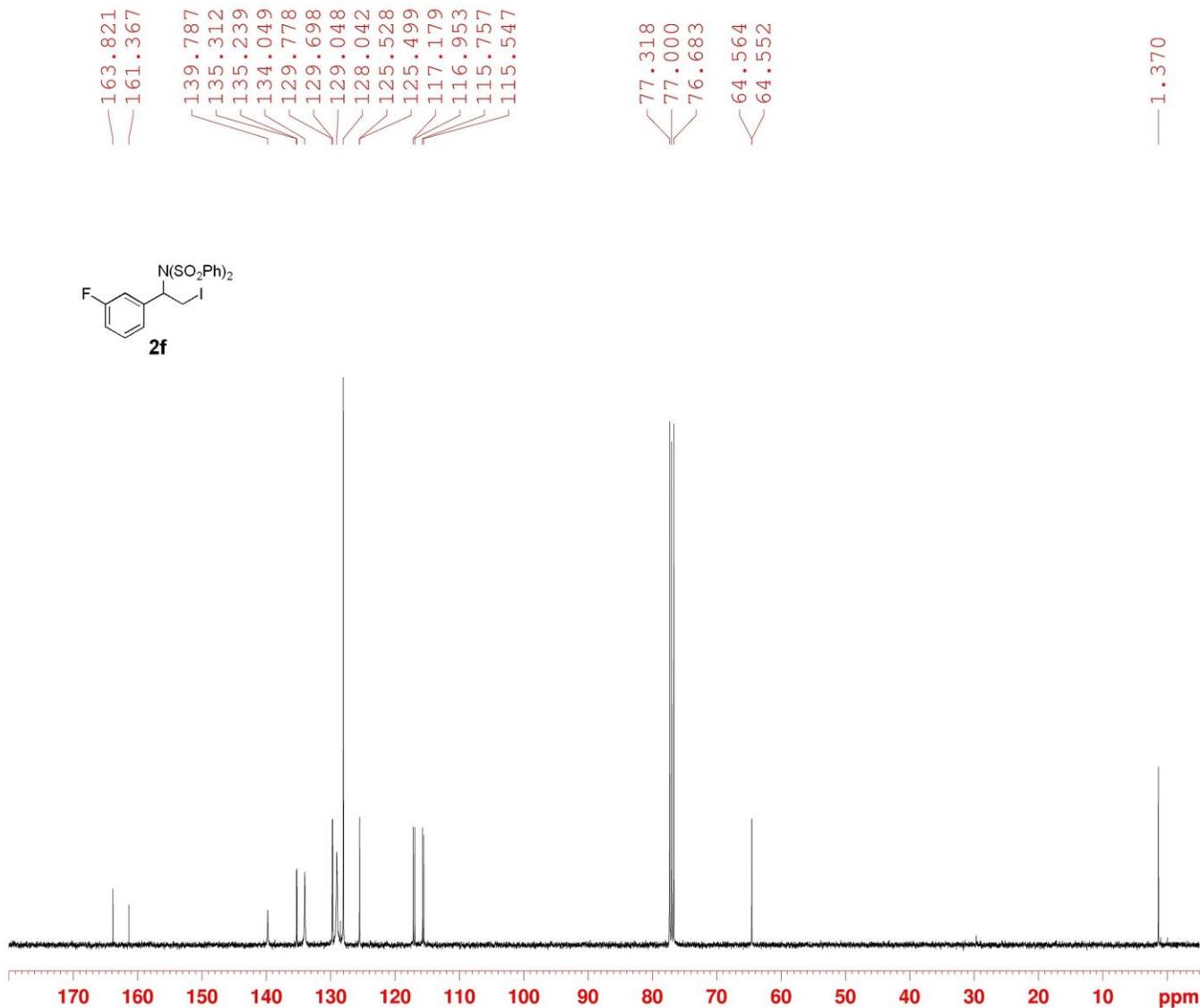
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EXPNO     1
PROCNO    1
Date_     20180427
Time      6.23
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   cdcl3
NS         12
DS         0
SWH       8012.820 Hz
FIDRES    0.122266 Hz
AQ         4.0894966 sec
RG         57.79
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.0000000 sec
TDO        1
  
```



```

===== CHANNEL f1 =====
SF01   400.1324710 MHz
NUC1    1H
P1       8.04 usec
SI       65536
SF       400.1300123 MHz
WDW      EM
SSB      0
LB       0.30 Hz
GB       0
PC       1.00
  
```



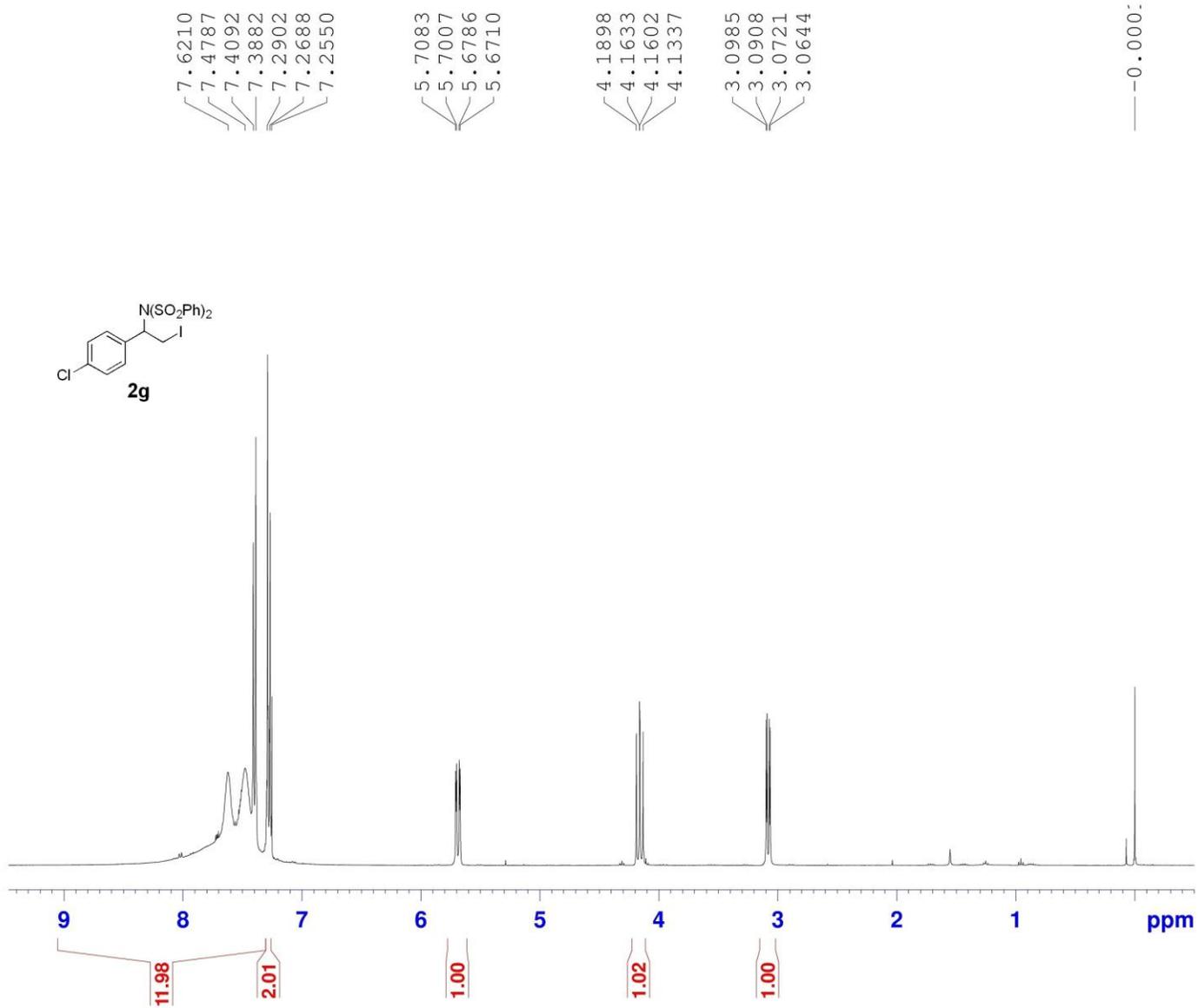


```

NAME          CLJ-WL-L241
EXPNO         2
PROCNO        1
Date_         20180427
Time          6.53
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1           13C
P1             8.54 usec
SI            32768
SF            100.6127735 MHz
WDW            EM
SSB            0
LB             1.00 Hz
GB            0
PC            1.40
  
```

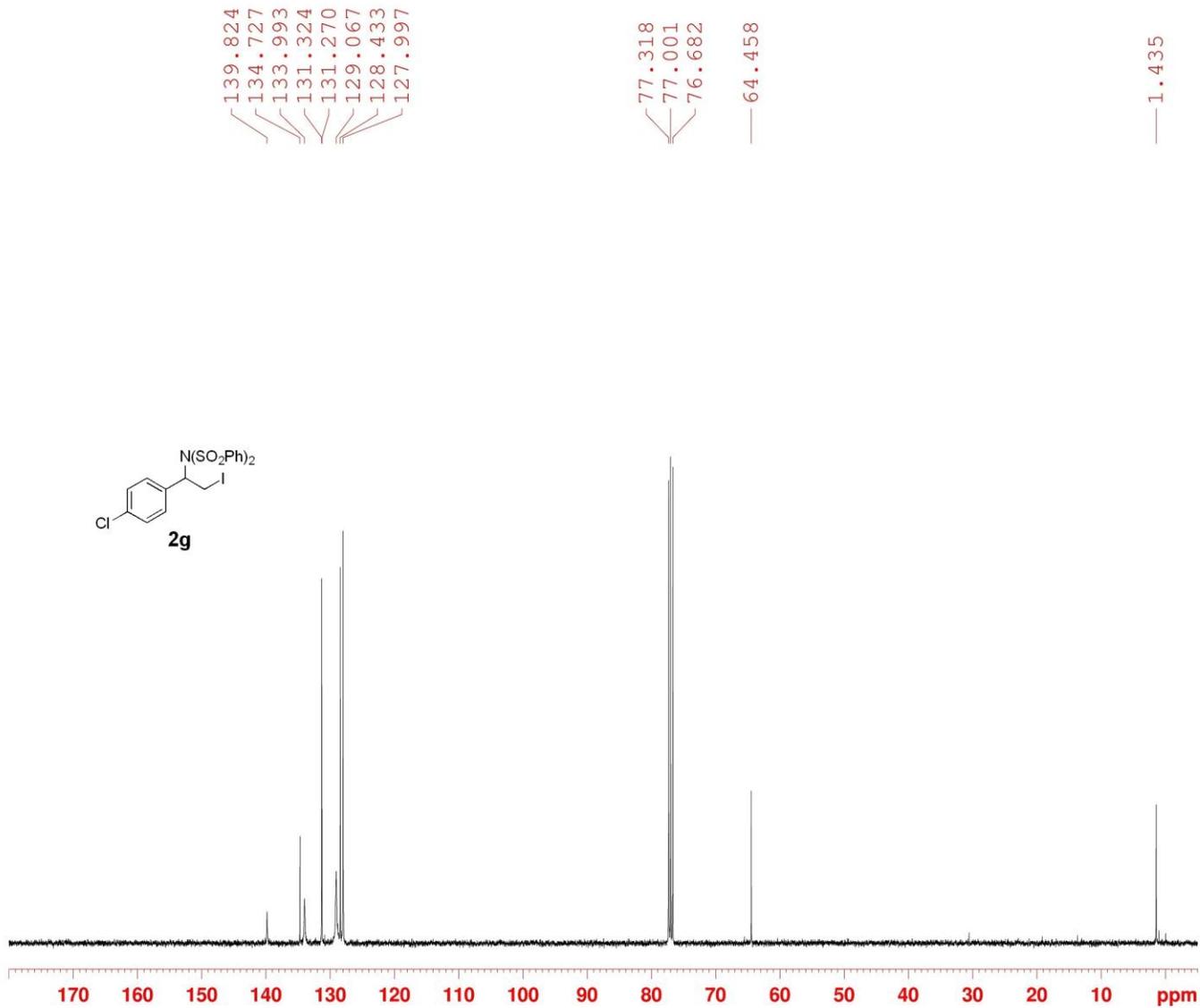


```

NAME      CLJ-WL-L222
EXPNO     1
PROCNO    1
Date_     20180412
Time      13.23
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   cdcl3
NS         12
DS         0
SWH       8012.820 Hz
FIDRES    0.122266 Hz
AQ         4.0894966 sec
RG         63
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.0000000 sec
TDO        1
  
```

```

===== CHANNEL f1 =====
SF01     400.1324710 MHz
NUC1      1H
P1        8.04 usec
SI        65536
SF        400.1300113 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
  
```

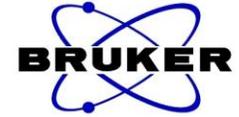
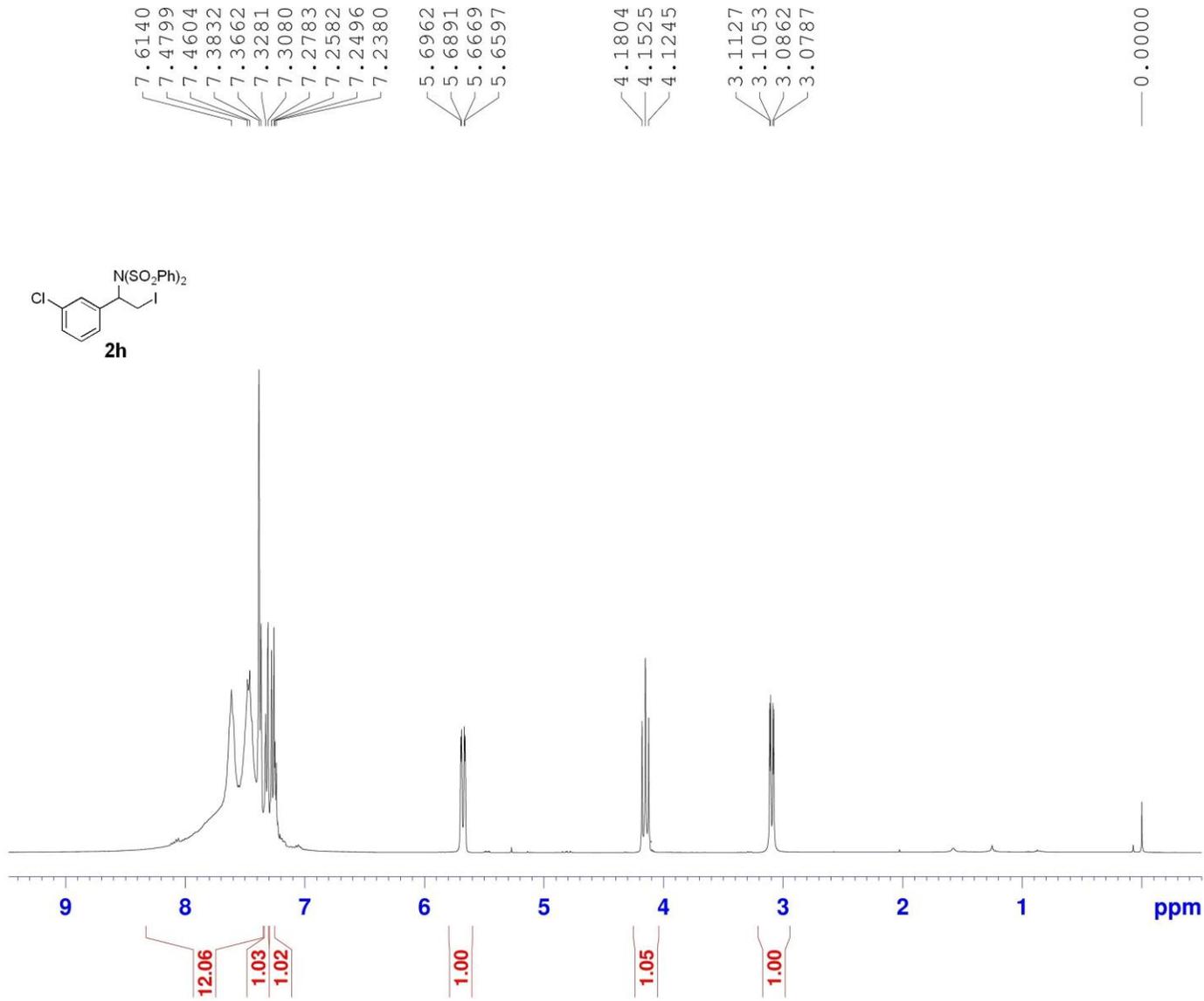
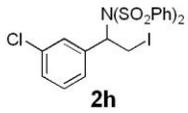


```

NAME          CLJ-WL-L222
EXPNO         2
PROCNO        1
Date_         20180412
Time          13.53
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127730 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```

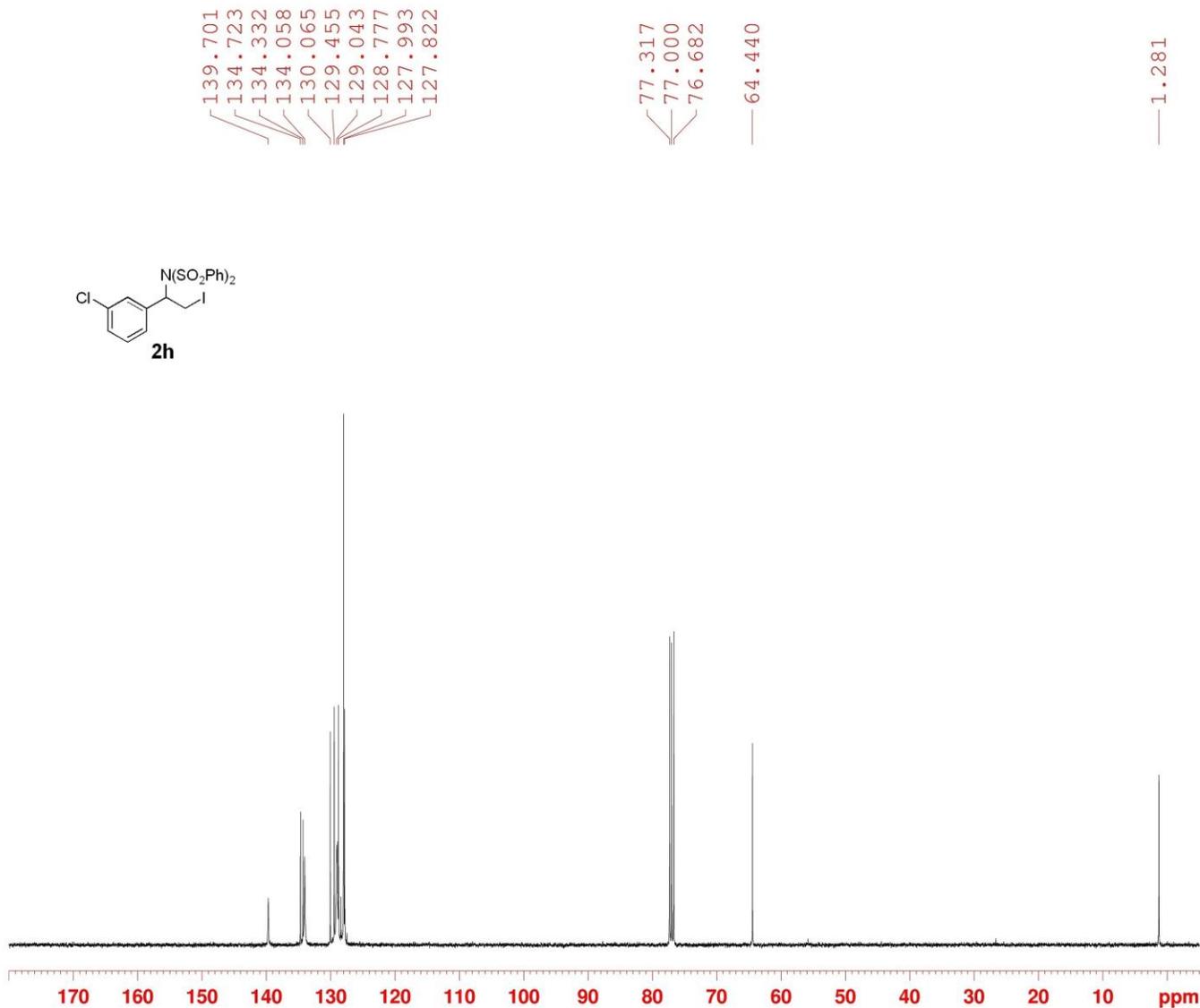
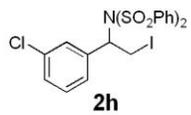


```

NAME      CLJ-WL-L245
EXPNO     1
PROCNO    1
Date_     20180429
Time      10.43
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD        65536
SOLVENT   cdcl3
NS        12
DS        0
SWH       8012.820 Hz
FIDRES    0.122266 Hz
AQ        4.0894966 sec
RG        41.07
DW        62.400 usec
DE        6.50 usec
TE        300.0 K
D1        1.00000000 sec
TDO       1
  
```

```

===== CHANNEL f1 =====
SF01    400.1324710 MHz
NUC1     1H
P1       8.04 usec
SI       65536
SF       400.1300141 MHz
WDW      EM
SSB      0
LB       0.30 Hz
GB       0
PC       1.00
  
```



```

NAME          CLJ-WL-L245
EXPNO         2
PROCNO        1
Date_         20180429
Time          11.14
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127773 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```

7.7493
7.6071
7.6041
7.5872
7.5841
7.5588
7.5405
7.5222
7.3791
7.3206
7.3176
7.3015
7.2987
7.2823
7.2793
7.2565
7.1408
7.1370
7.1212
7.1176
7.1023
7.0985
6.8545
6.8513
6.8344
6.8313
6.2096
6.2001
6.1795
6.1700
4.1812
4.1546
4.1515
4.1249
3.8217
3.8121
3.7952
3.7856

0.0000

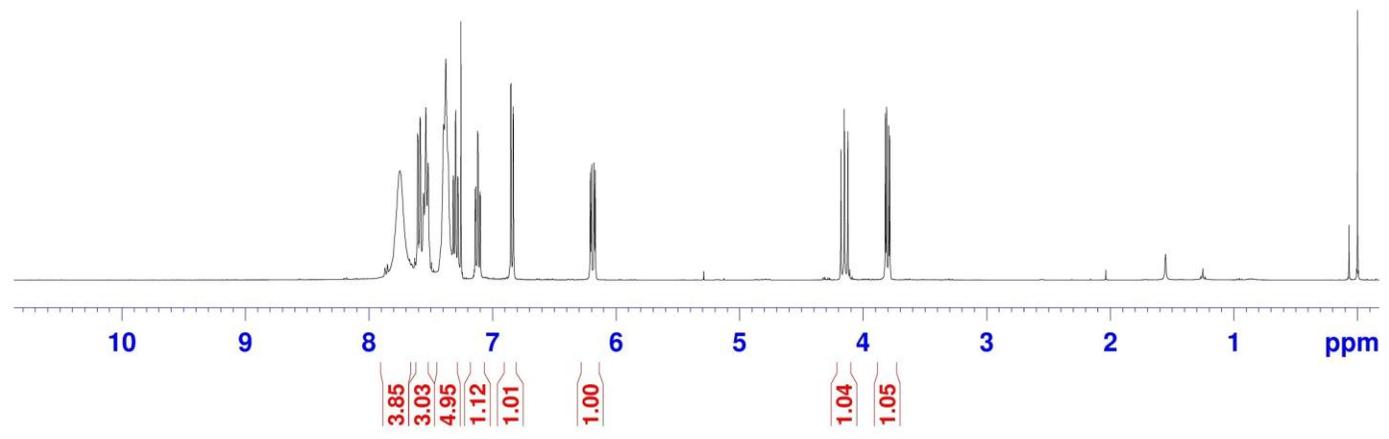
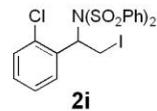


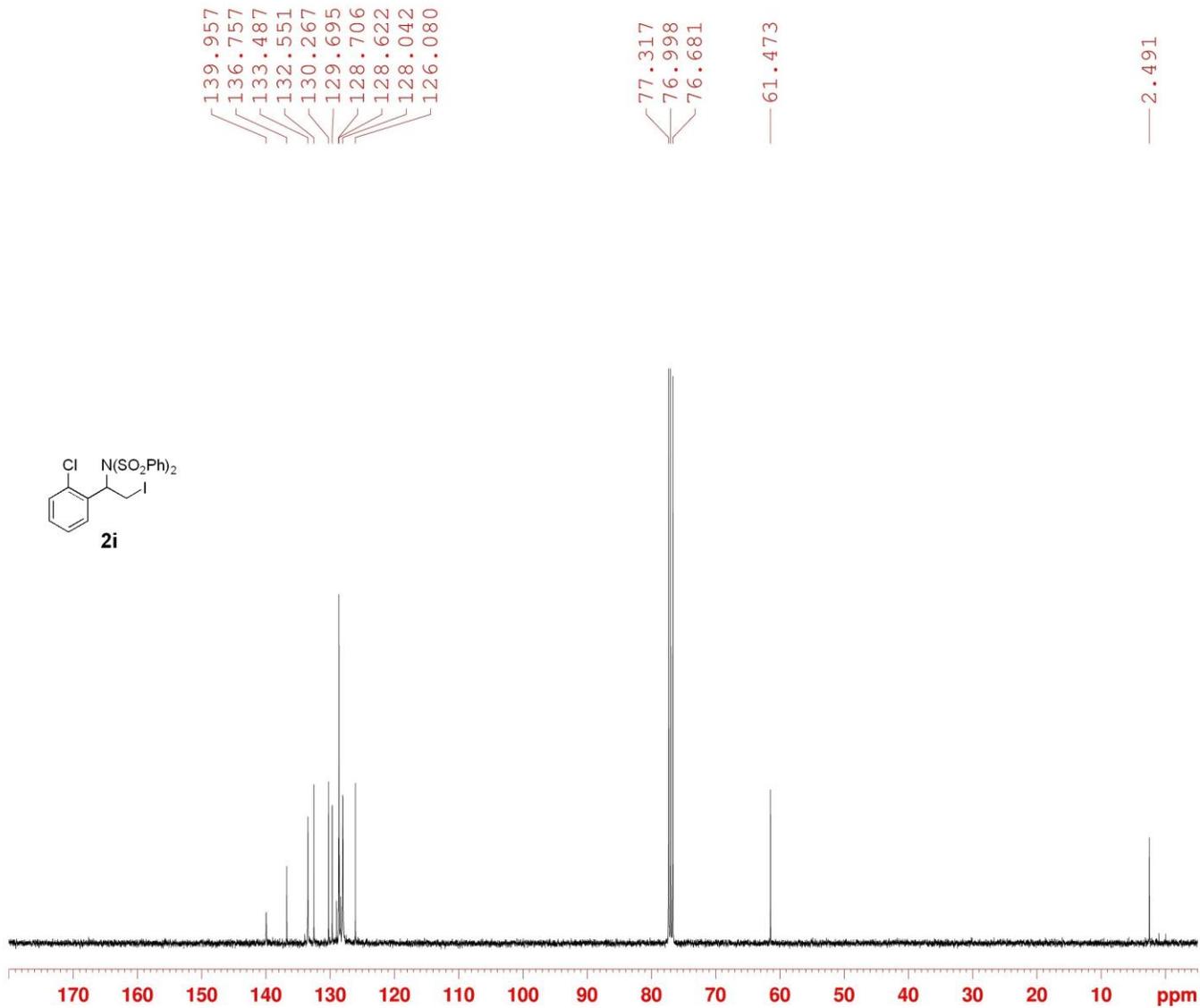
```

NAME      CLJ-WL-L236
EXPNO     1
PROCNO    1
Date_     20180421
Time      12.32
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   cdcl3
NS         12
DS         0
SWH        8012.820 Hz
FIDRES     0.122266 Hz
AQ         4.0894966 sec
RG         70.36
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.00000000 sec
TDO        1
  
```

```

===== CHANNEL f1 =====
SF01     400.1324710 MHz
NUC1      1H
P1        8.04 usec
SI        65536
SF        400.1300112 MHz
WDW       EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00
  
```



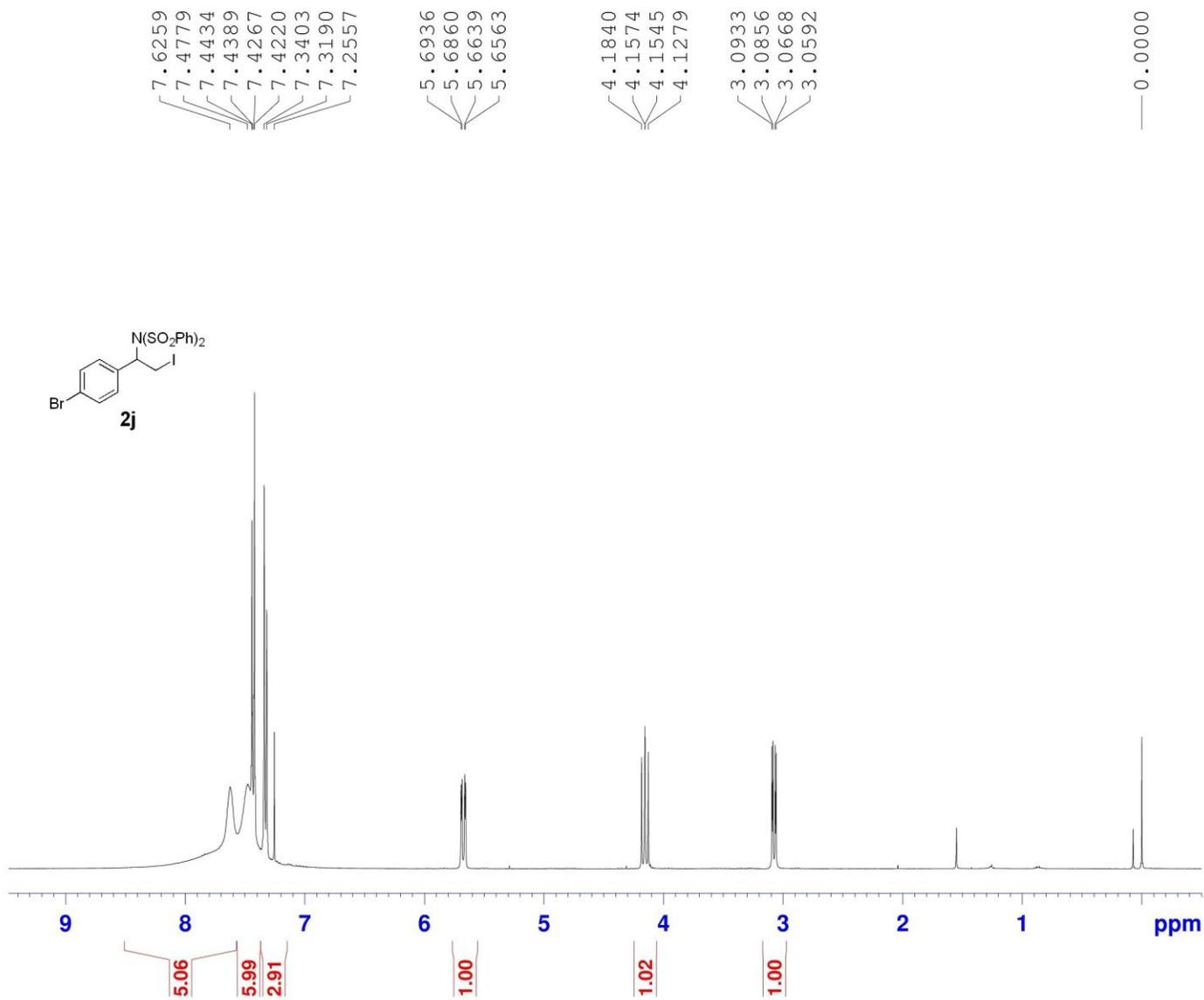


```

NAME          CLJ-WL-L236
EXPNO         2
PROCNO        1
Date_         20180421
Time          13.02
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1           13C
P1             8.54 usec
SI            32768
SF            100.6127727 MHz
WDW            EM
SSB            0
LB             1.00 Hz
GB            0
PC            1.40
  
```

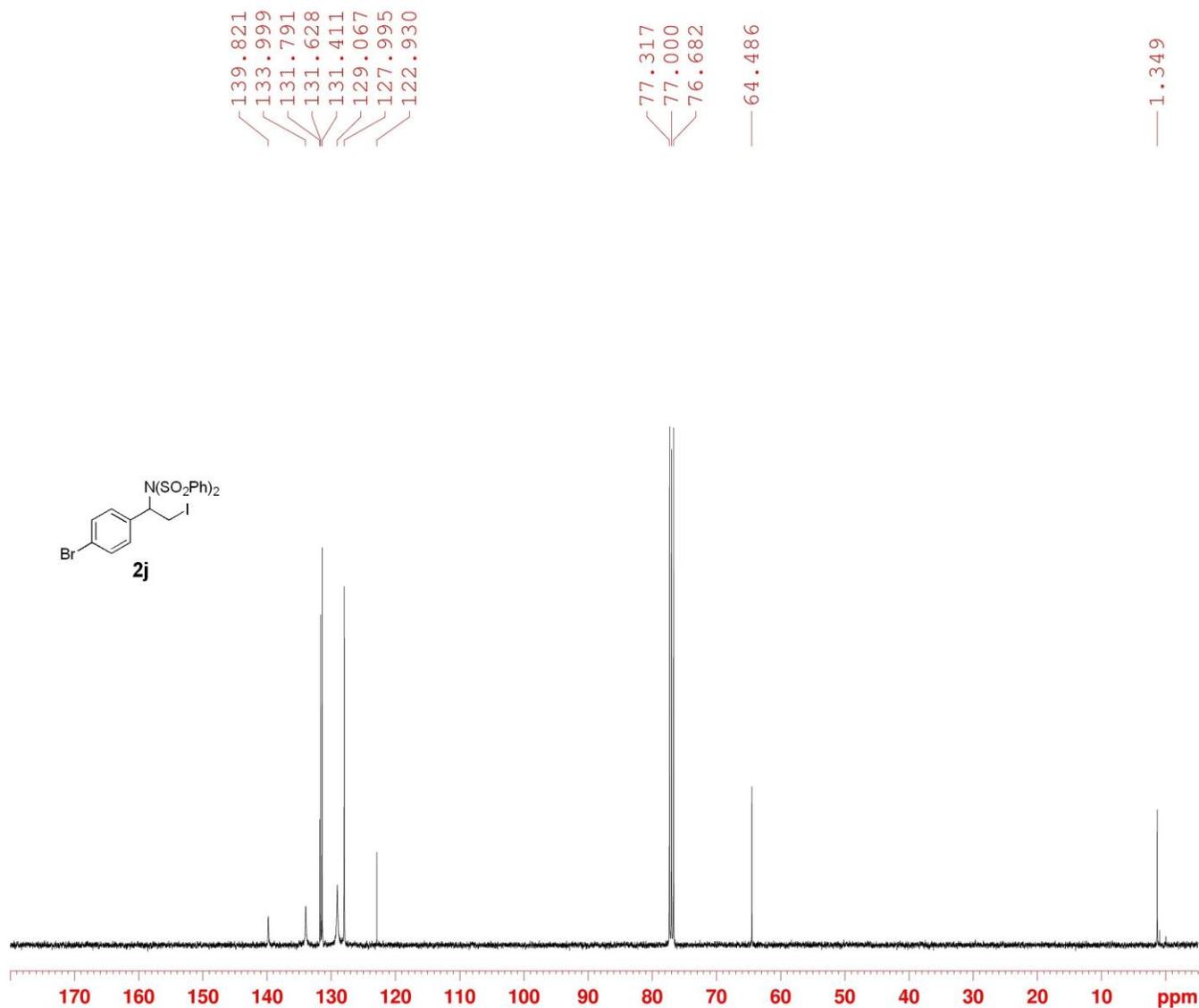


```

NAME      CLJ-WL-L232
EXPNO     1
PROCNO    1
Date_     20180418
Time      23.47
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   cdcl3
NS         12
DS         0
SWH        8012.820 Hz
FIDRES     0.122266 Hz
AQ         4.0894966 sec
RG         63
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.00000000 sec
TDO        1
  
```

```

===== CHANNEL f1 =====
SF01     400.1324710 MHz
NUC1      1H
P1        8.04 usec
SI        65536
SF        400.1300114 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
  
```



```

NAME          CLJ-WL-L232
EXPNO         2
PROCNO        1
Date_         20180419
Time          0.17
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127728 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```

7.9054
7.8326
7.8141
7.7952
7.7133
7.6918
7.5501
7.5324
7.5187
7.5050
7.5023
7.4982
7.4847
7.3489
7.3260
7.3052
7.2459
5.9547
5.9475
5.9252
5.9180

4.3950
4.3684
4.3659
4.3392

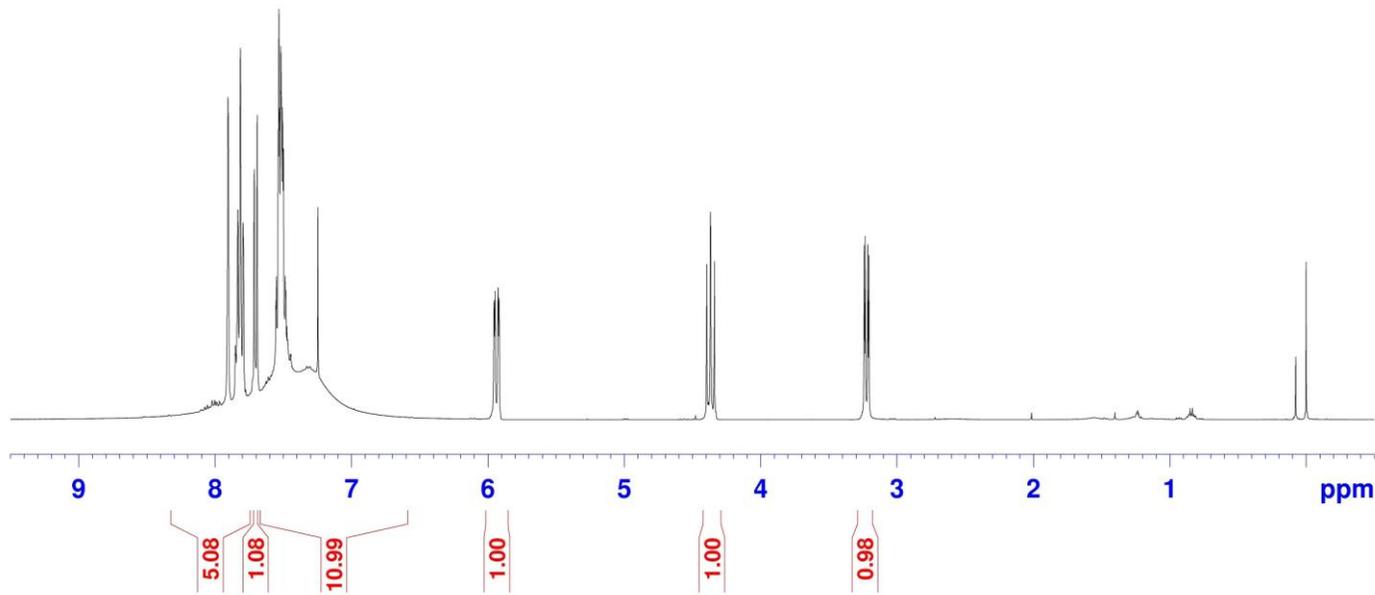
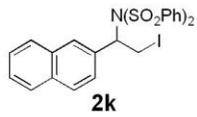
3.2402
3.2326
3.2139
3.2063

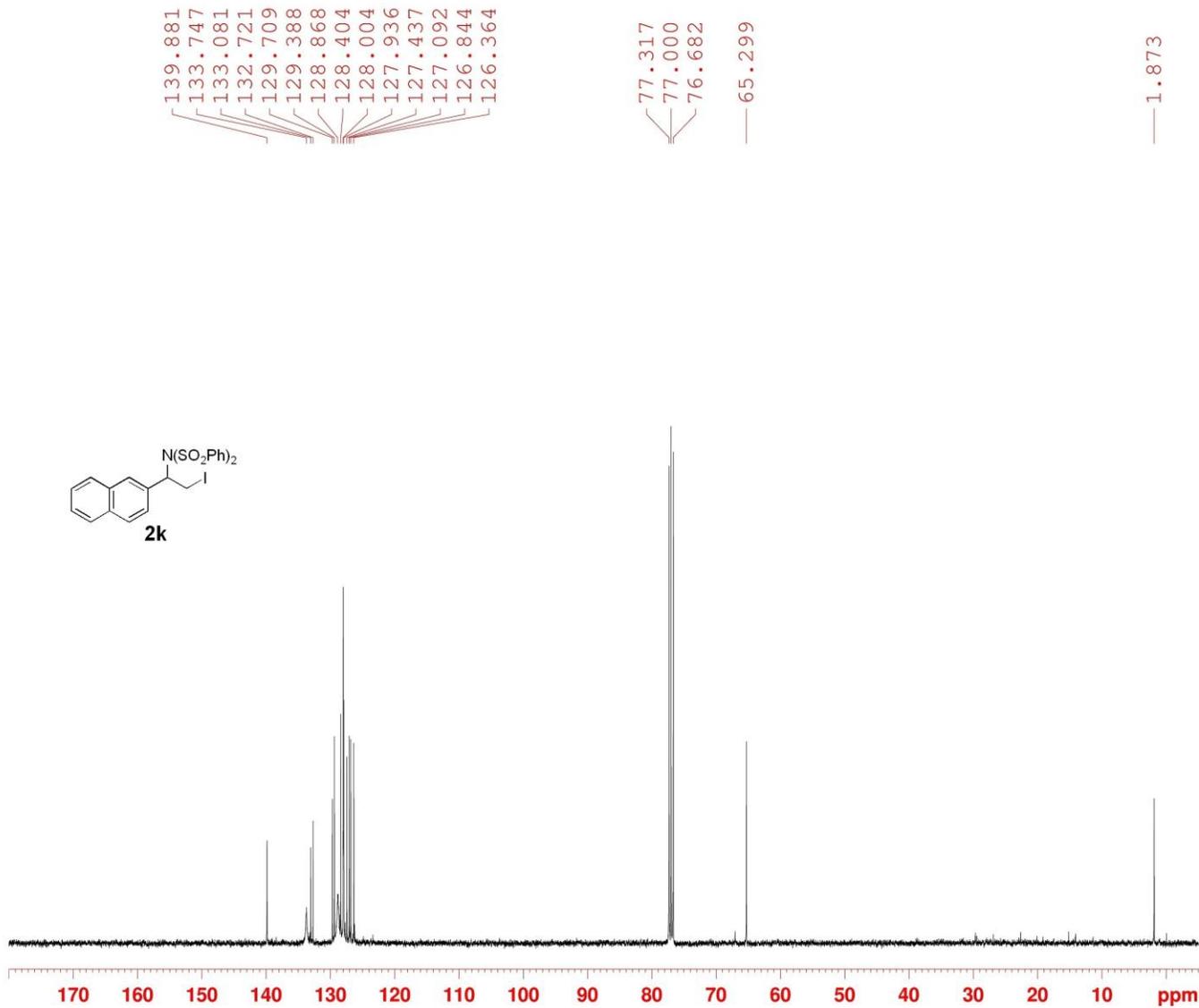
— -0.0001



NAME CLJ-WL-L261
EXPNO 1
PROCNO 1
Date_ 20180512
Time 23.34
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 12
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 s
RG 51.19
DW 62.400 μs
DE 6.50 μs
TE 300.0 K
D1 1.0000000 s
TD0 1

===== CHANNEL f1 =====
SFO1 400.1324710 MHz
NUC1 1H
P1 8.04 μs
SI 65536
SF 400.1300153 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00





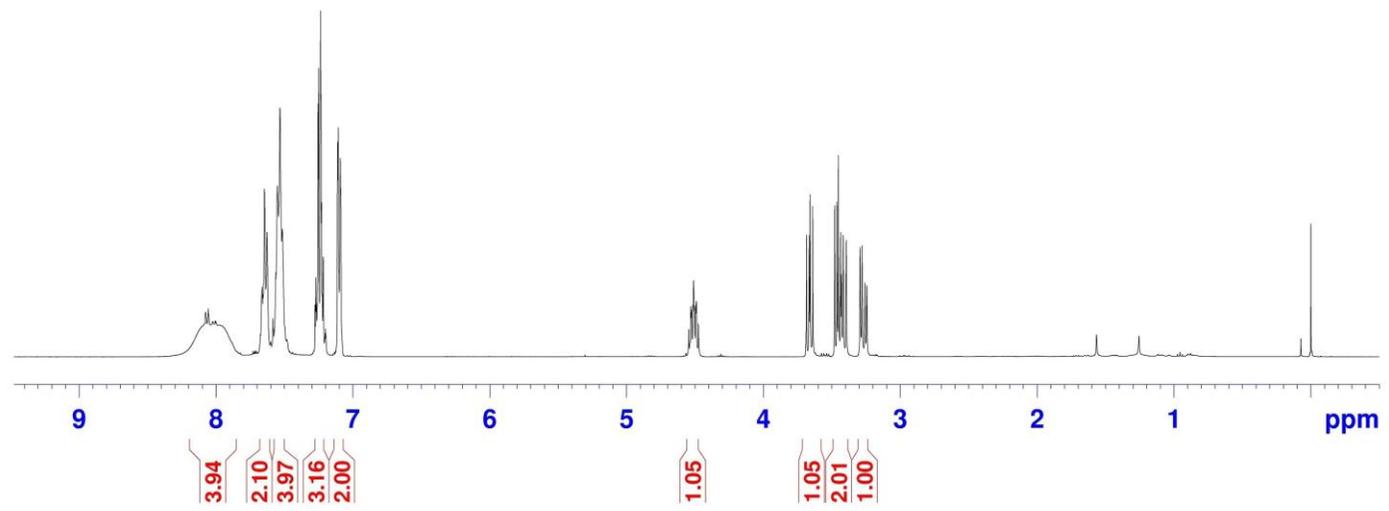
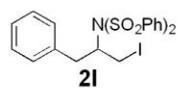
```

NAME          CLJ-WL-L261
EXPNO         2
PROCNO        1
Date_         20180513
Time          0.04
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127746 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```

8.0766
8.0584
8.0032
7.8370
7.6639
7.6458
7.6274
7.5637
7.5510
7.5325
7.5158
7.2502
7.2362
7.2173
7.2157
7.1112
7.1065
7.0914
4.5467
4.5309
4.5109
4.4908
4.4750
3.6864
3.6670
3.6597
3.6403
3.4798
3.4636
3.4529
3.4369
3.4174
3.3954
3.2940
3.2798
3.2590
3.2448



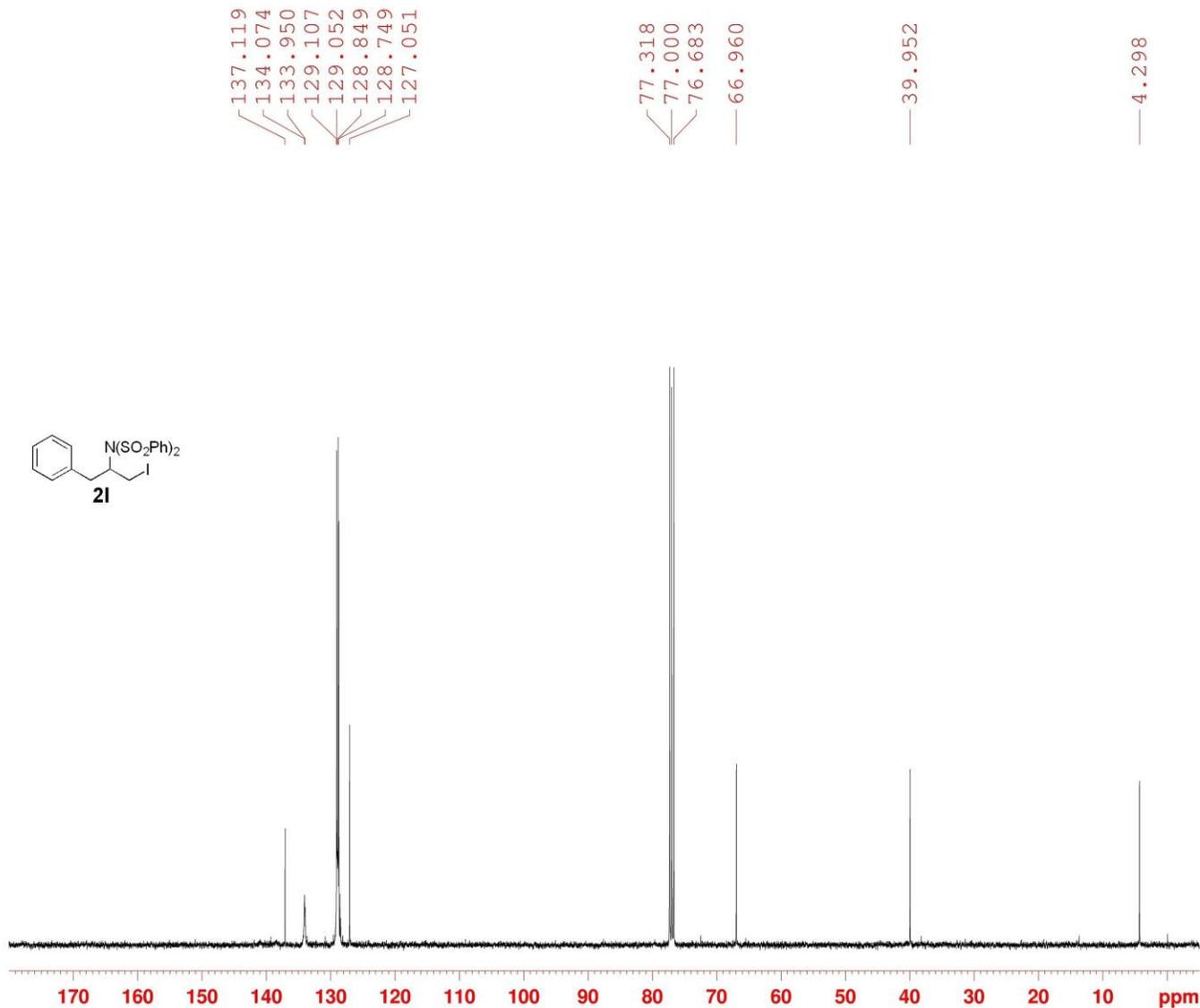
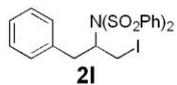
0.0000



```

NAME      CLJ-WL-L307
EXPNO     1
PROCNO    1
Date_     20180620
Time      4.00
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   cdcl3
NS         12
DS         0
SWH        8012.820 Hz
FIDRES     0.122266 Hz
AQ         4.0894966 sec
RG         51.19
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.00000000 sec
TDO        1
===== CHANNEL f1 =====
SF01      400.1324710 MHz
NUC1       1H
P1         8.04 usec
SI         65536
SF         400.1300135 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00

```

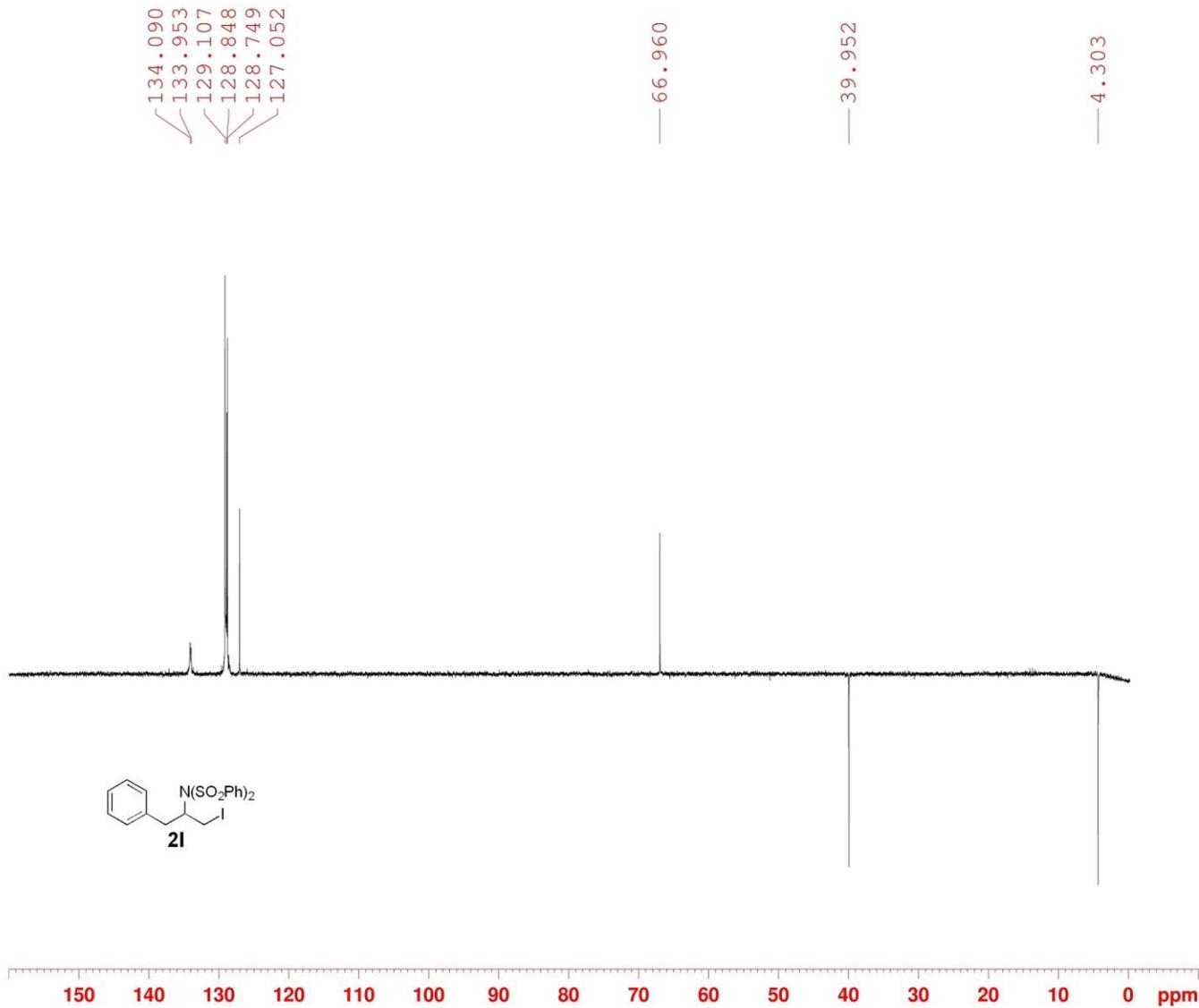


```

NAME          CLJ-WL-L307
EXPNO         2
PROCNO        1
Date_         20180620
Time          4.30
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127749 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```



```

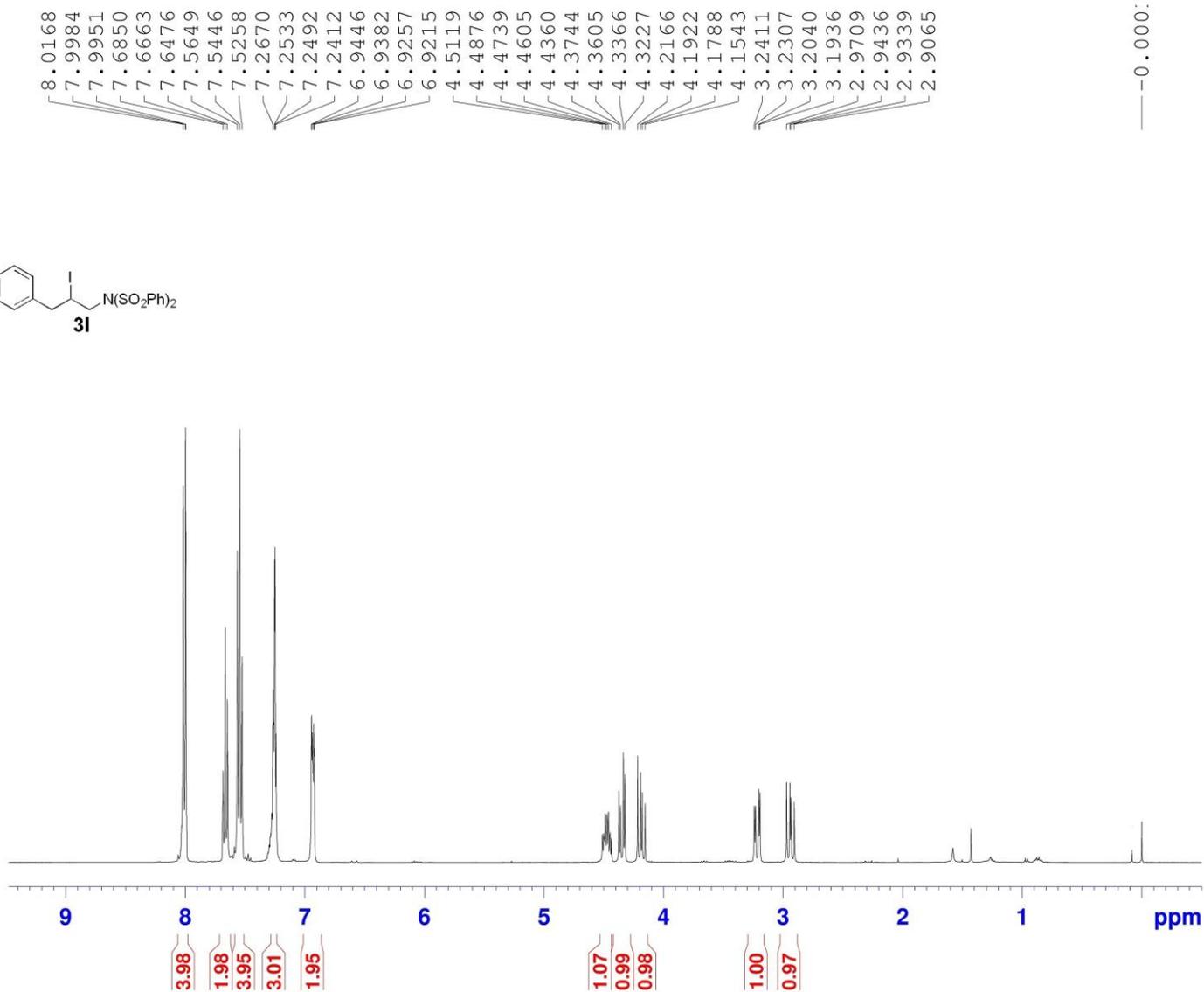
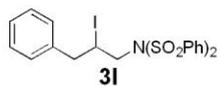
NAME          CLJ-WL-L319
EXPNO         1
PROCNO        1
Date_         20180622
Time          3.29
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       deptsp135
TD            65536
SOLVENT       CDCl3
NS            256
DS            4
SWH           16129.032 Hz
FIDRES        0.246110 Hz
AQ            2.0316660 sec
RG            194.26
DW            31.000 usec
DE            6.50 usec
TE            300.1 K
CNST2         145.0000000
D1            2.00000000 sec
D2            0.00344828 sec
D12           0.00002000 sec
TD0           1

```

```

===== CHANNEL f1 =====
SFO1          100.6208171 MHz
NUC1          13C
P1            8.54 usec
P13           2000.00 usec
SI            32768
SF            100.6127752 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40

```

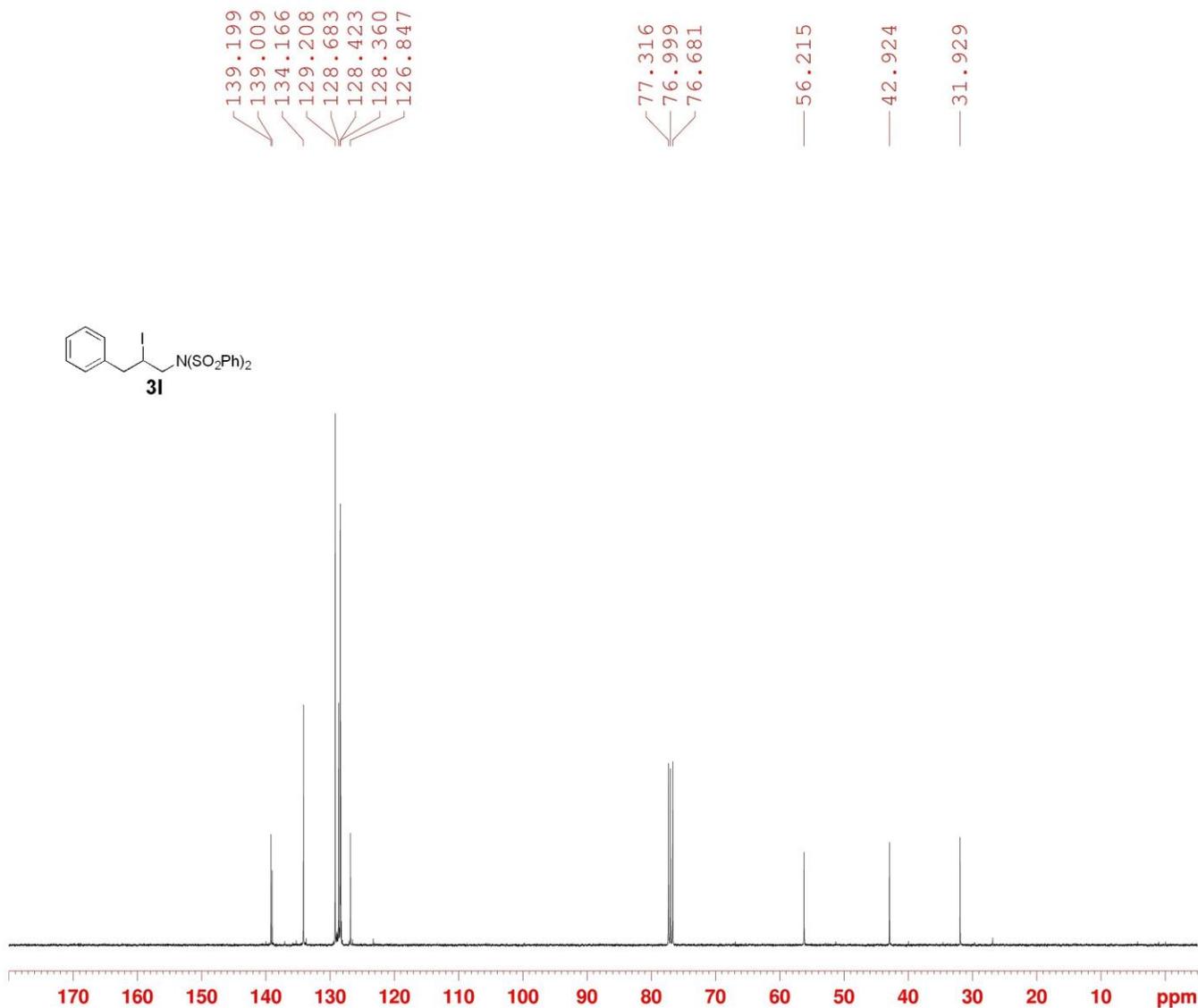
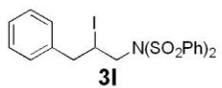


```

NAME      CLJ-WL-L265
EXPNO     1
PROCNO    1
Date_     20180513
Time      1.18
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   cdcl3
NS         12
DS         0
SWH        8012.820 Hz
FIDRES     0.122266 Hz
AQ         4.0894966 sec
RG         26.24
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.00000000 sec
TDO        1
  
```

```

===== CHANNEL f1 =====
SF01     400.1324710 MHz
NUC1      1H
P1        8.04 usec
SI        65536
SF        400.1300173 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00
  
```

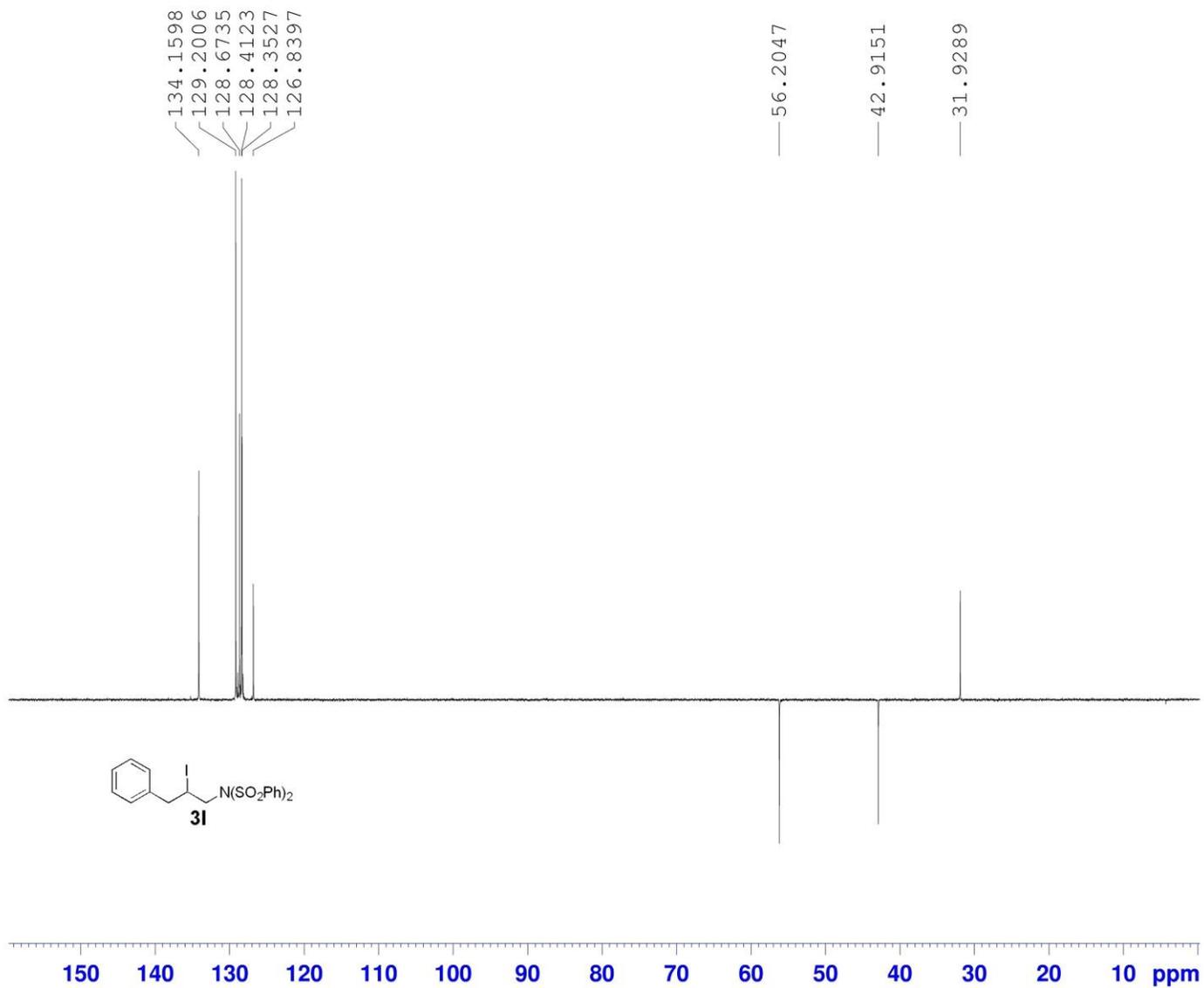


```

NAME          CLJ-WL-L265
EXPNO         2
PROCNO        1
Date_         20180513
Time          1.48
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1           13C
P1             8.54 usec
SI            32768
SF            100.6127773 MHz
WDW            EM
SSB            0
LB             1.00 Hz
GB            0
PC            1.40
  
```



```

NAME      CLJ-WL-L268
EXPNO     1
PROCNO    1
Date_     20180516
Time      9.14
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   deptsp135
TD         65536
SOLVENT   CDCl3
NS         256
DS         4
SWH        16129.032 Hz
FIDRES     0.246110 Hz
AQ         2.0316660 sec
RG         194.26
DW         31.000 usec
DE         6.50 usec
TE         300.0 K
CNST2     145.0000000
D1         2.00000000 sec
D2         0.00344828 sec
D12        0.00002000 sec
TD0        1

```

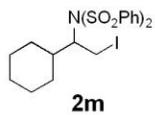
```

===== CHANNEL f1 =====
SFO1     100.6208171 MHz
NUC1      13C
P1        8.54 usec
P13       2000.00 usec
SI        32768
SF        100.6127796 MHz
WDW       EM
SSB       0
LB        1.00 Hz
GB        0
PC        1.40

```

8.1644
8.1454
8.1256
8.1062
7.7036
7.6851
7.6449
7.6107
7.5907
7.5573
7.5389
7.2567

4.3927
4.3847
4.3749
4.3669
4.3589
4.3490
4.3411
3.5634
3.5455
3.5351
3.5173
3.3210
3.3130
3.2928
3.2848
2.1457
2.0968
2.0696
1.8456
1.8205
1.6450
1.6141
1.5320
1.4484
1.2571
1.2224
1.1968
1.1184
1.0874
0.9450
0.9225
0.8944
0.0000

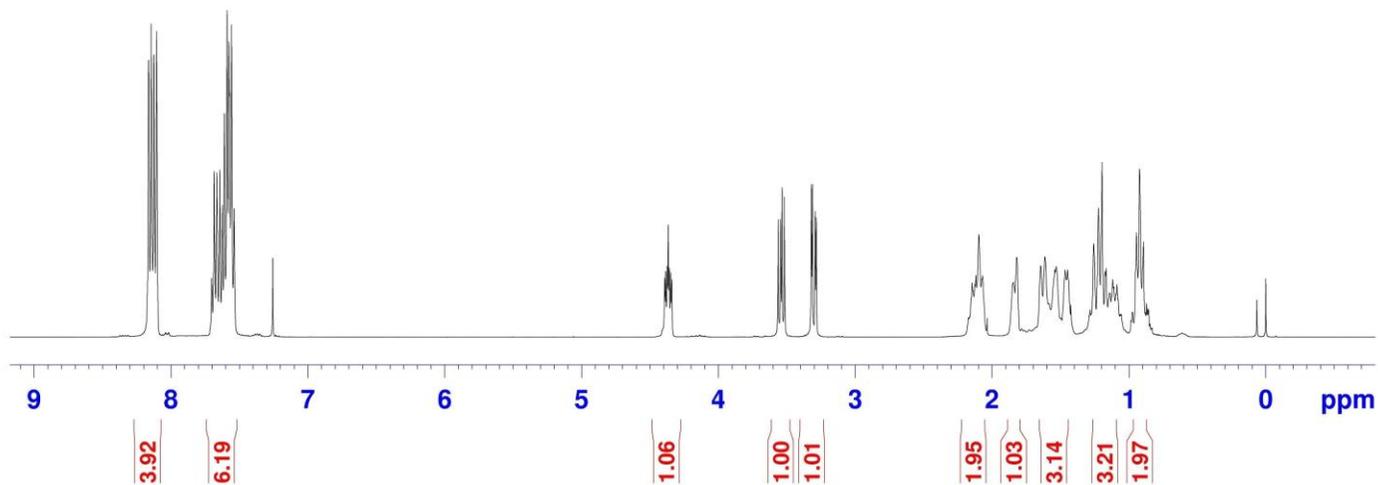


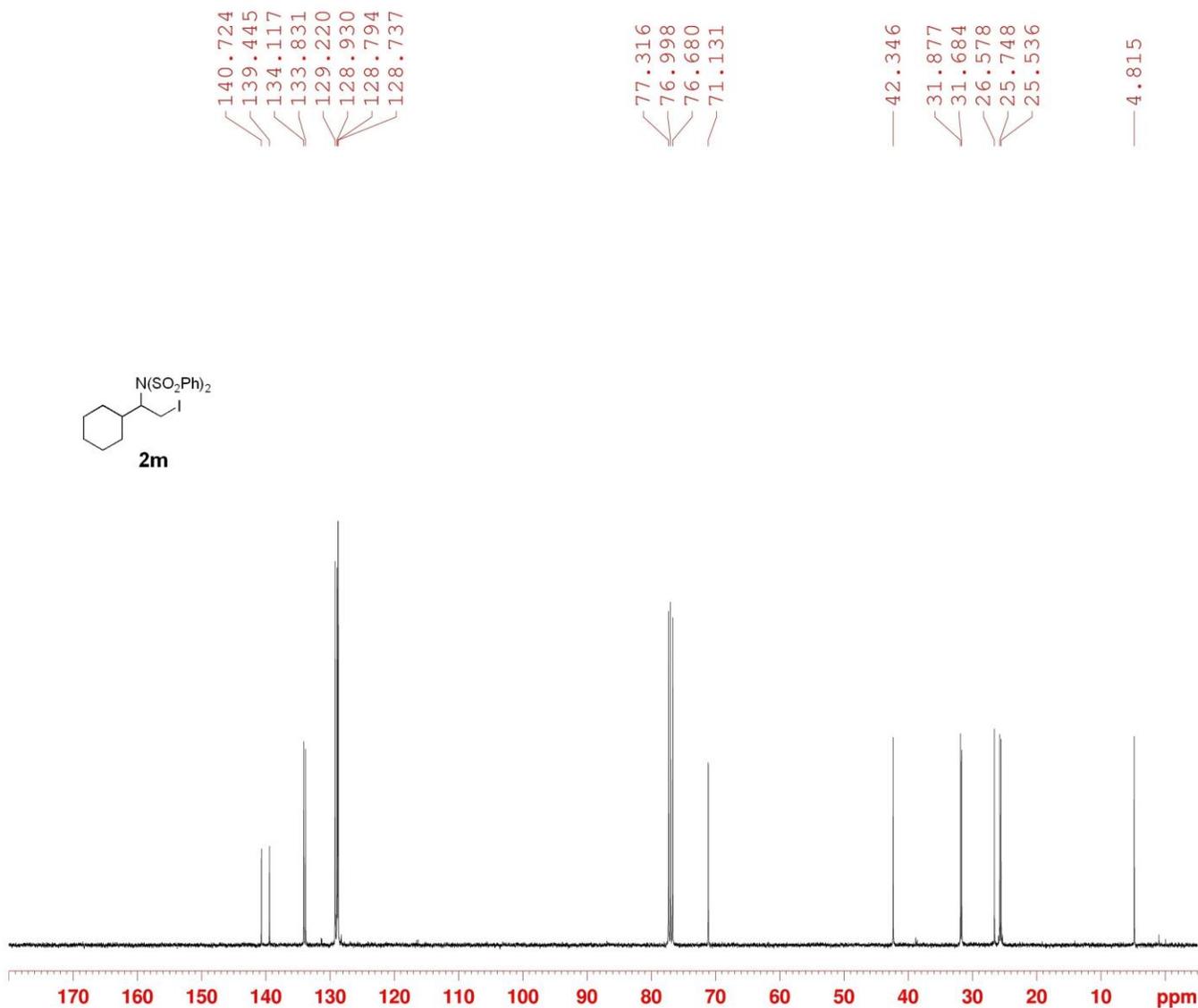
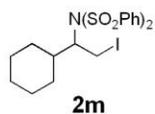
```

NAME      CLJ-WL-L258
EXPNO     1
PROCNO    1
Date_     20180512
Time      6.23
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   cdcl3
NS         12
DS         0
SWH        8012.820 Hz
FIDRES     0.122266 Hz
AQ         4.0894966 sec
RG         23.9
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.00000000 sec
TDO        1
  
```

```

===== CHANNEL f1 =====
SF01     400.1324710 MHz
NUC1      1H
P1        8.04 usec
SI        65536
SF        400.1300111 MHz
WDW        EM
SSB        0
LB        0.30 Hz
GB         0
PC         1.00
  
```



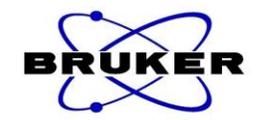
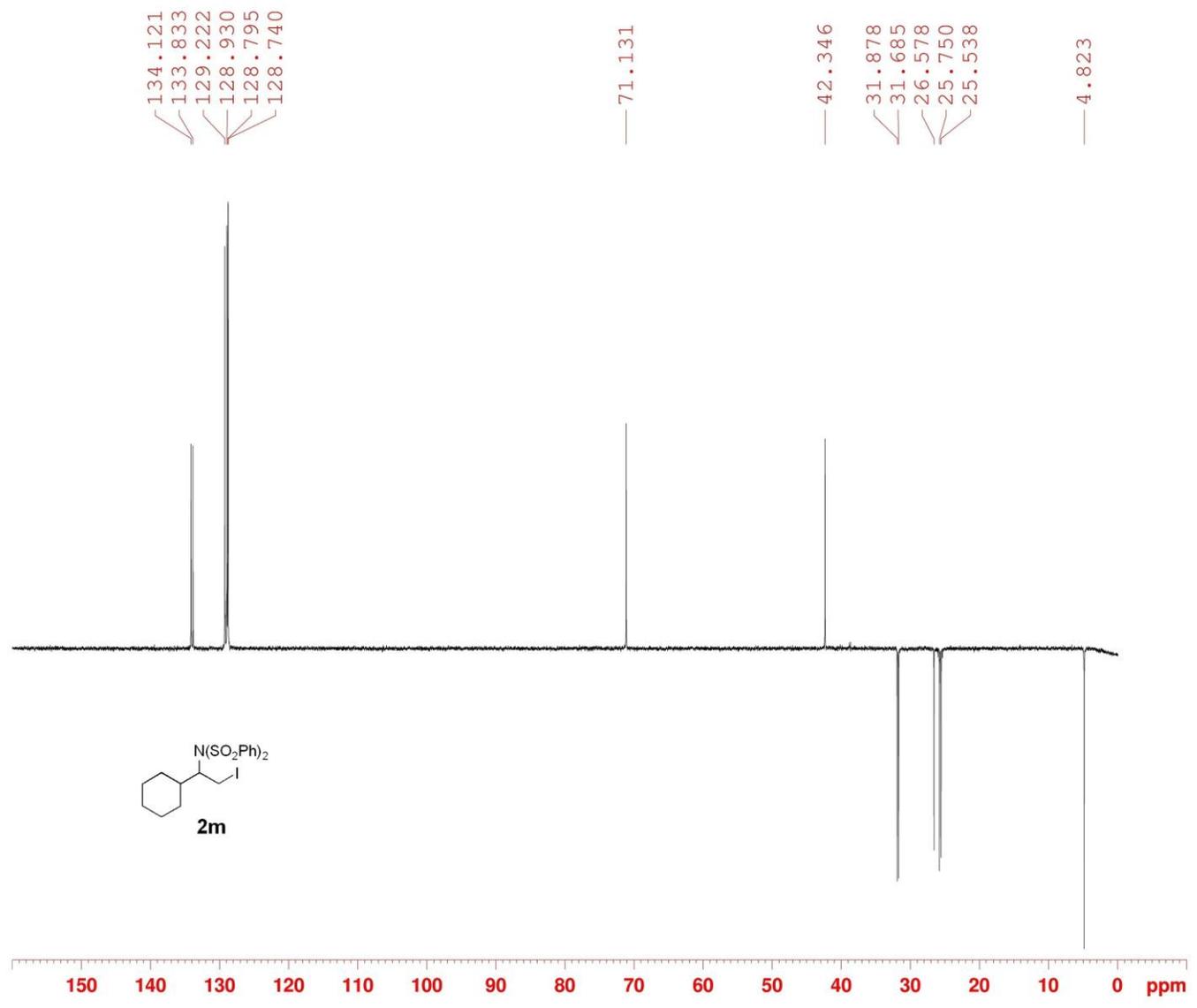


```

NAME          CLJ-WL-L258
EXPNO         2
PROCNO       1
Date_        20180512
Time         6.53
INSTRUM      spect
PROBHD       5 mm PABBO BB/
PULPROG      zgpg30
TD           65536
SOLVENT      CDCl3
NS           512
DS           0
SWH          24038.461 Hz
FIDRES       0.366798 Hz
AQ           1.3631988 sec
RG           194.26
DW           20.800 usec
DE           6.50 usec
TE           300.0 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0          1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1           13C
P1             8.54 usec
SI            32768
SF            100.6127757 MHz
WDW            EM
SSB            0
LB             1.00 Hz
GB             0
PC             1.40
  
```



```

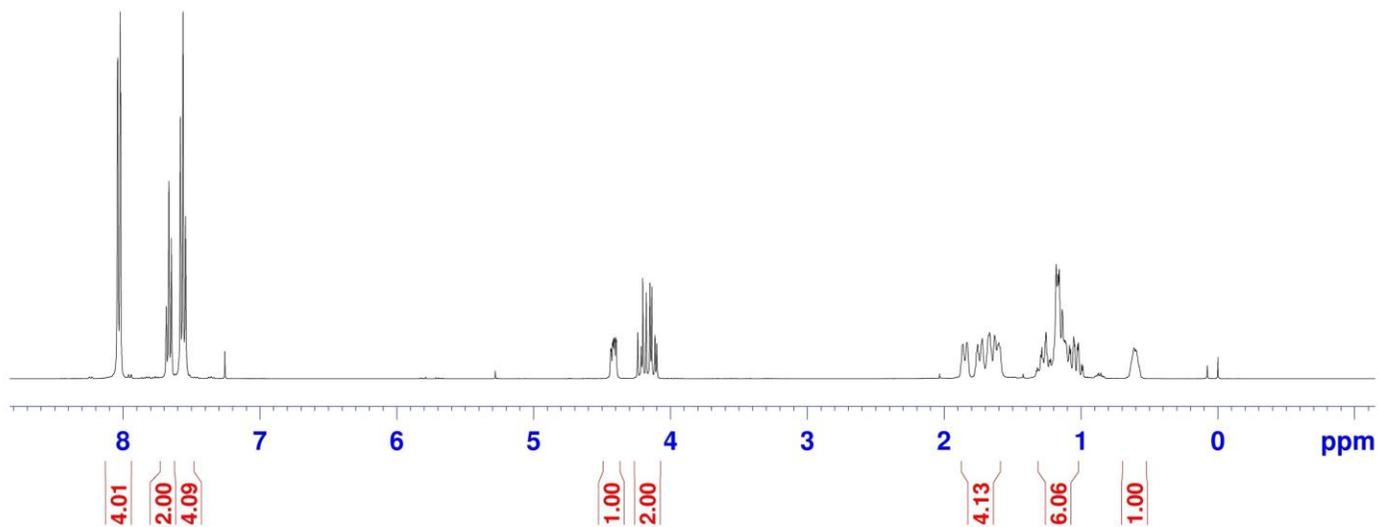
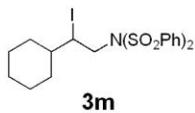
NAME          CLJ-WL-L266
EXPNO         1
PROCNO        1
Date_         20180515
Time          7.32
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       deptsp135
TD            65536
SOLVENT       CDCl3
NS            256
DS            4
SWH           16129.032 Hz
FIDRES        0.246110 Hz
AQ            2.0316660 sec
RG            194.26
DW            31.000 usec
DE            6.50 usec
TE            300.0 K
CNST2         145.0000000
D1            2.00000000 sec
D2            0.00344828 sec
D12           0.00002000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SFO1         100.6208171 MHz
NUC1         13C
P1           8.54 usec
P13          2000.00 usec
SI           32768
SF           100.6127758 MHz
WDW          EM
SSB          0
LB           1.00 Hz
GB           0
PC           1.40
  
```

8.0394
8.0206
8.0173
7.6840
7.6654
7.6467
7.5815
7.5614
7.5427
7.2558

4.4381
4.4337
4.4248
4.4199
4.4137
4.4090
4.4001
4.3957
4.2399
4.2151
4.2027
4.1780
4.1507
4.1371
4.1136
4.1000
1.8617
1.8363
1.8308
1.7555
1.7225
1.6767
1.6686
1.6318
1.6017
1.2869
1.2561
1.1820
1.1598
1.1368
1.0535
1.0186
0.6142
0.6006
0.5942
0.5757
-0.0001

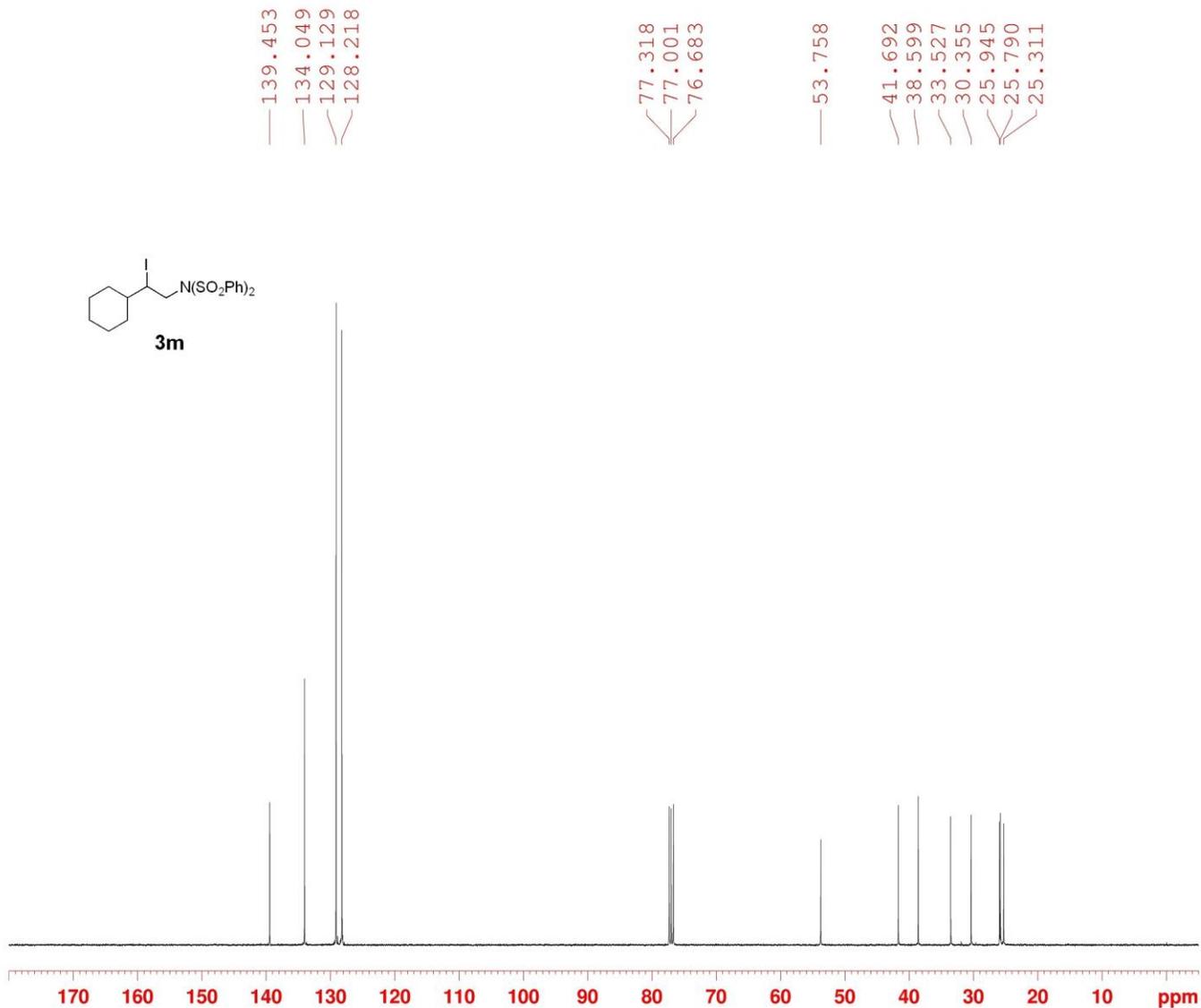
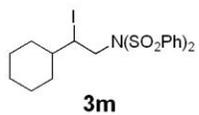


```

NAME      CLJ-WL-L259
EXPNO     1
PROCNO    1
Date_     20180512
Time      6.57
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD        65536
SOLVENT   cdcl3
NS        12
DS        0
SWH       8012.820 Hz
FIDRES    0.122266 Hz
AQ        4.0894966 sec
RG        18.6
DW        62.400 usec
DE        6.50 usec
TE        300.0 K
D1        1.00000000 sec
TDO       1
  
```

```

===== CHANNEL f1 =====
SF01     400.1324710 MHz
NUC1      1H
P1        8.04 usec
SI        65536
SF        400.1300114 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
  
```

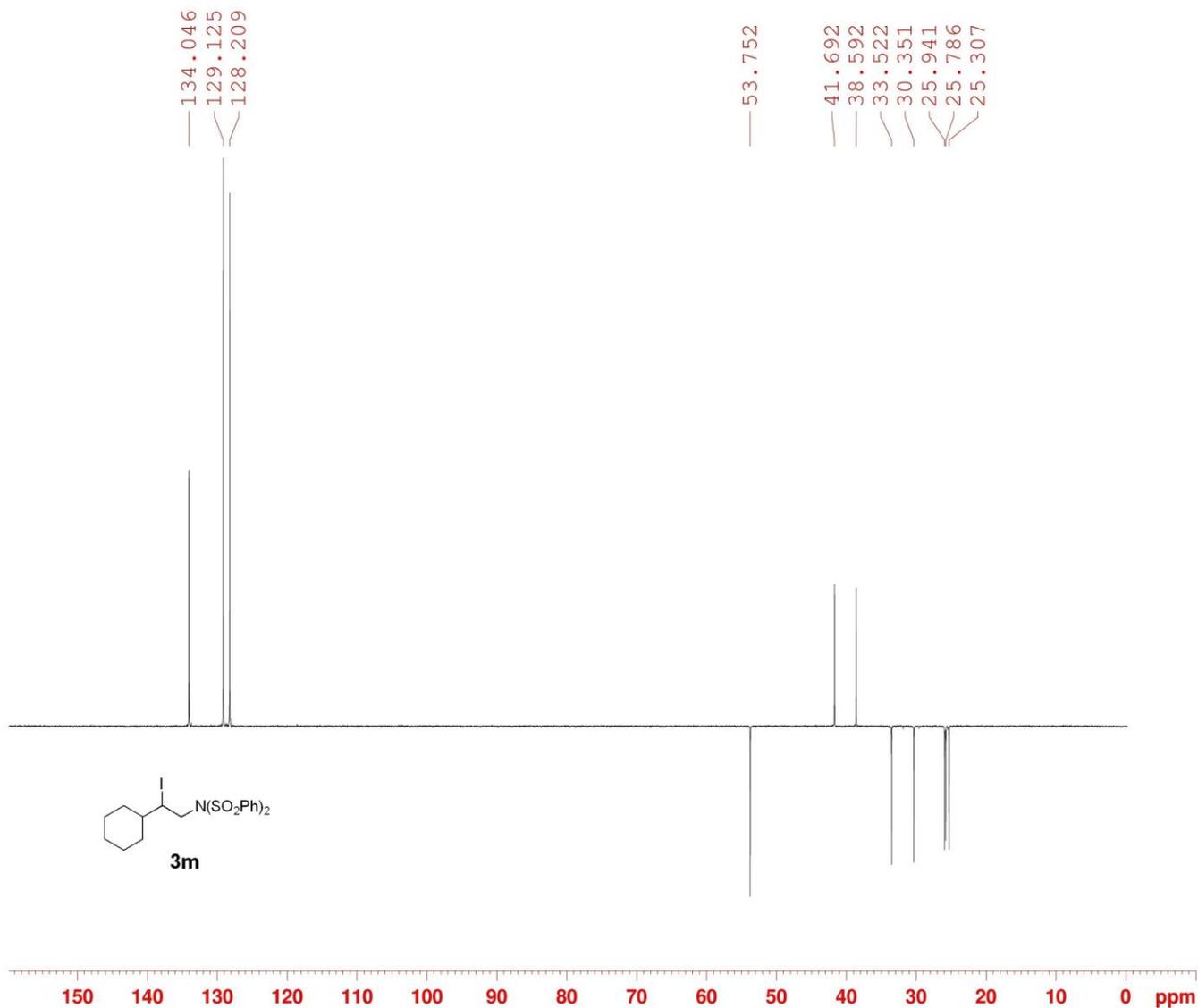


```

NAME          CLJ-WL-L259
EXPNO         2
PROCNO        1
Date_         20180512
Time          7.28
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127779 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```



```

NAME          CLJ-WL-L267
EXPNO         1
PROCNO        1
Date_         20180515
Time          7.53
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       deptsp135
TD            65536
SOLVENT       CDCl3
NS            256
DS            4
SWH           16129.032 Hz
FIDRES        0.246110 Hz
AQ            2.0316660 sec
RG            194.26
DW            31.000 usec
DE            6.50 usec
TE            300.0 K
CNST2         145.0000000
D1            2.00000000 sec
D2            0.00344828 sec
D12           0.00002000 sec
TD0           1

```

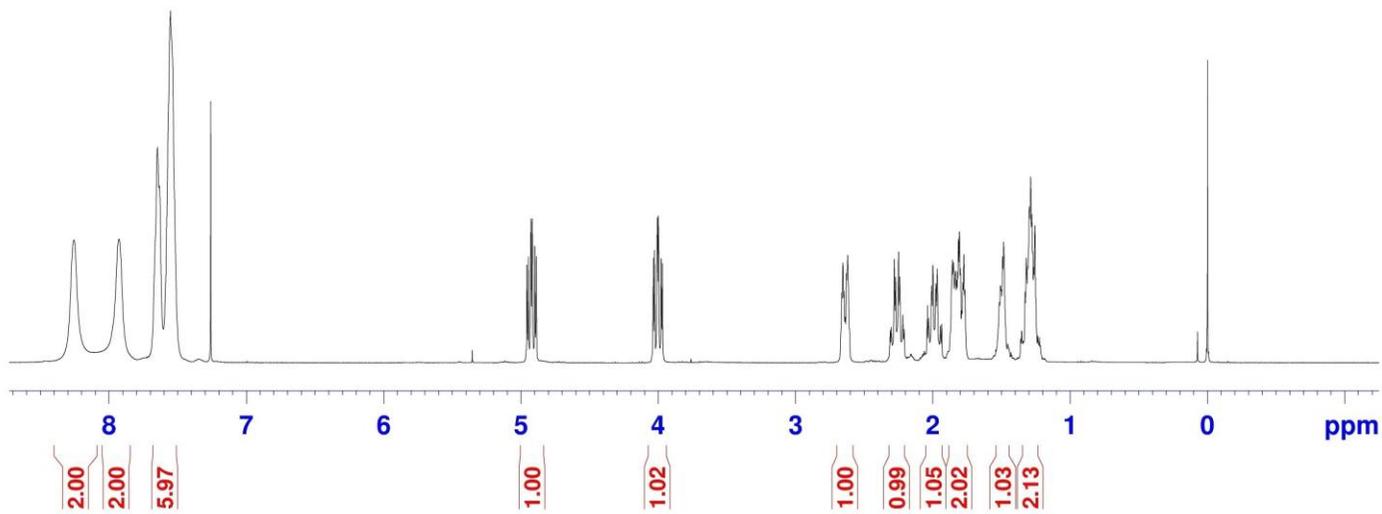
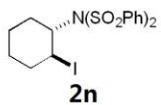
```

===== CHANNEL f1 =====
SFO1          100.6208171 MHz
NUC1           13C
P1             8.54 usec
P13            2000.00 usec
SI             32768
SF            100.6127787 MHz
WDW            EM
SSB            0
LB             1.00 Hz
GB             0
PC             1.40

```

8.2549
7.9273
7.6480
7.6328
7.5551
7.5521
7.2591

4.9571
4.9466
4.9296
4.9192
4.8995
4.8889
4.0367
4.0275
4.0090
4.0000
3.9789
3.9701
2.6559
2.6303
2.6248
2.6203
2.3116
2.2813
2.2503
2.2190
2.2095
2.0398
2.0001
1.9681
1.9458
1.9364
1.8581
1.8139
1.8069
1.7748
1.5082
1.5012
1.4925
1.4847
1.3200
1.2876
1.2569
-0.0001

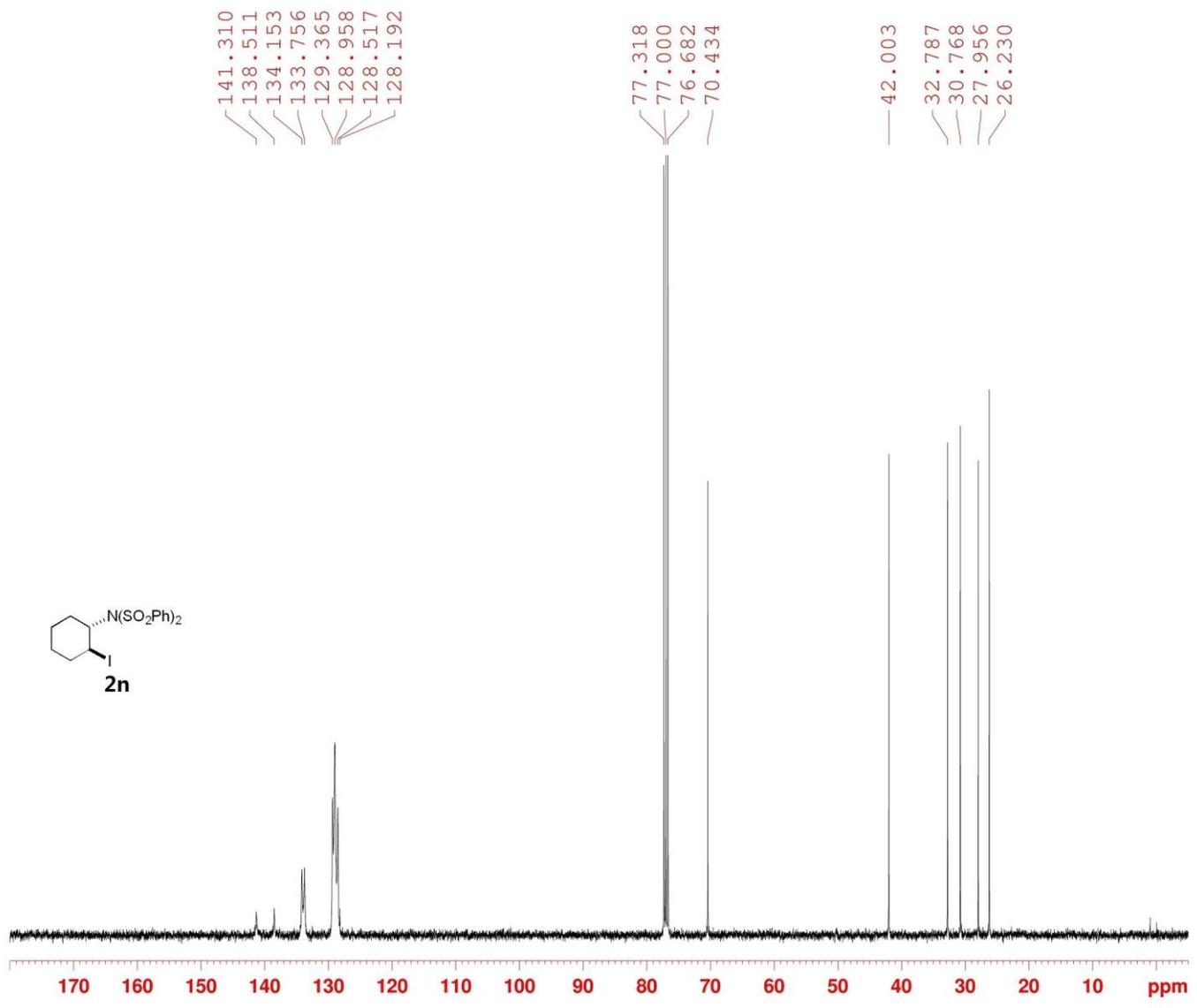


```

NAME      CLJ-WL-L219
EXPNO     1
PROCNO    1
Date_     20180410
Time      6.56
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD        65536
SOLVENT   CDCl3
NS        12
DS        0
SWH       8012.820 Hz
FIDRES    0.122266 Hz
AQ        4.0894966 sec
RG        57.79
DW        62.400 usec
DE        6.50 usec
TE        300.0 K
D1        1.00000000 sec
TD0       1
  
```

```

===== CHANNEL f1 =====
SFO1     400.1324710 MHz
NUC1     1H
P1       8.04 usec
SI       65536
SF       400.1300101 MHz
WDW      EM
SSB      0
LB       0.30 Hz
GB       0
PC       1.00
  
```



```

NAME          CLJ-WL-L253
EXPNO         2
PROCNO        1
Date_         20180509
Time          7.08
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1

```

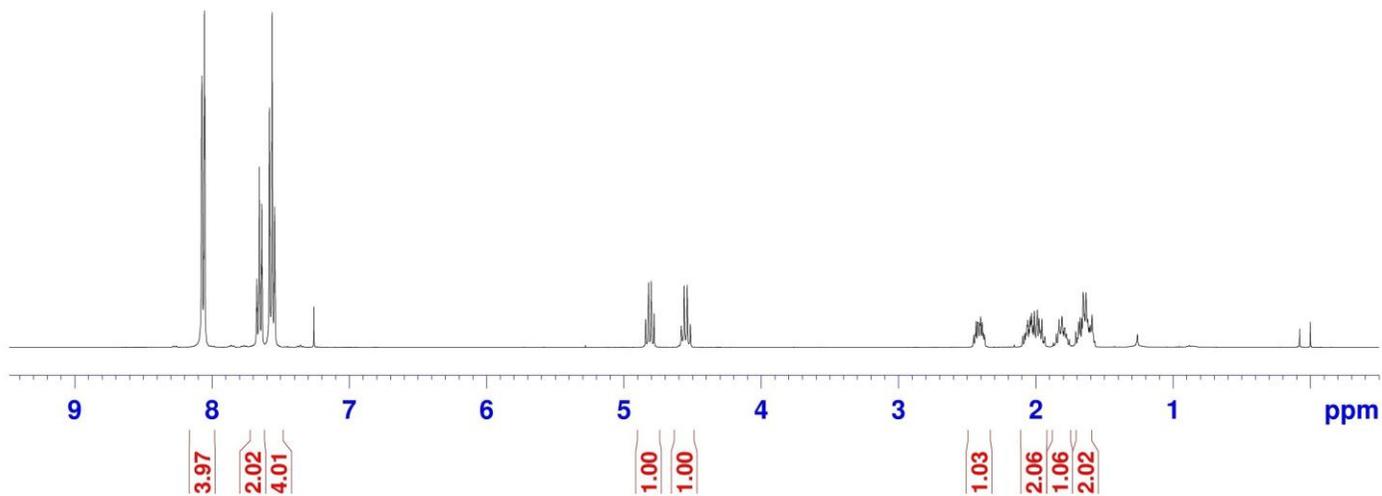
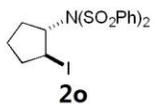
```

===== CHANNEL f1 =====
SFO1          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127761 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40

```

8.0770
8.0746
8.0564
8.0530
7.6747
7.6562
7.6375
7.5829
7.5629
7.5447
7.5429
7.2584

4.8423
4.8206
4.8024
4.7991
4.7806
4.5829
4.5612
4.5390
4.5168
2.4531
2.4346
2.4016
2.3907
2.3738
2.0956
2.0589
2.0309
2.0098
1.9555
1.9340
1.8497
1.8319
1.8088
1.7771
1.7567
1.6881
1.6762
1.6548
1.6347
1.6029
0.0001

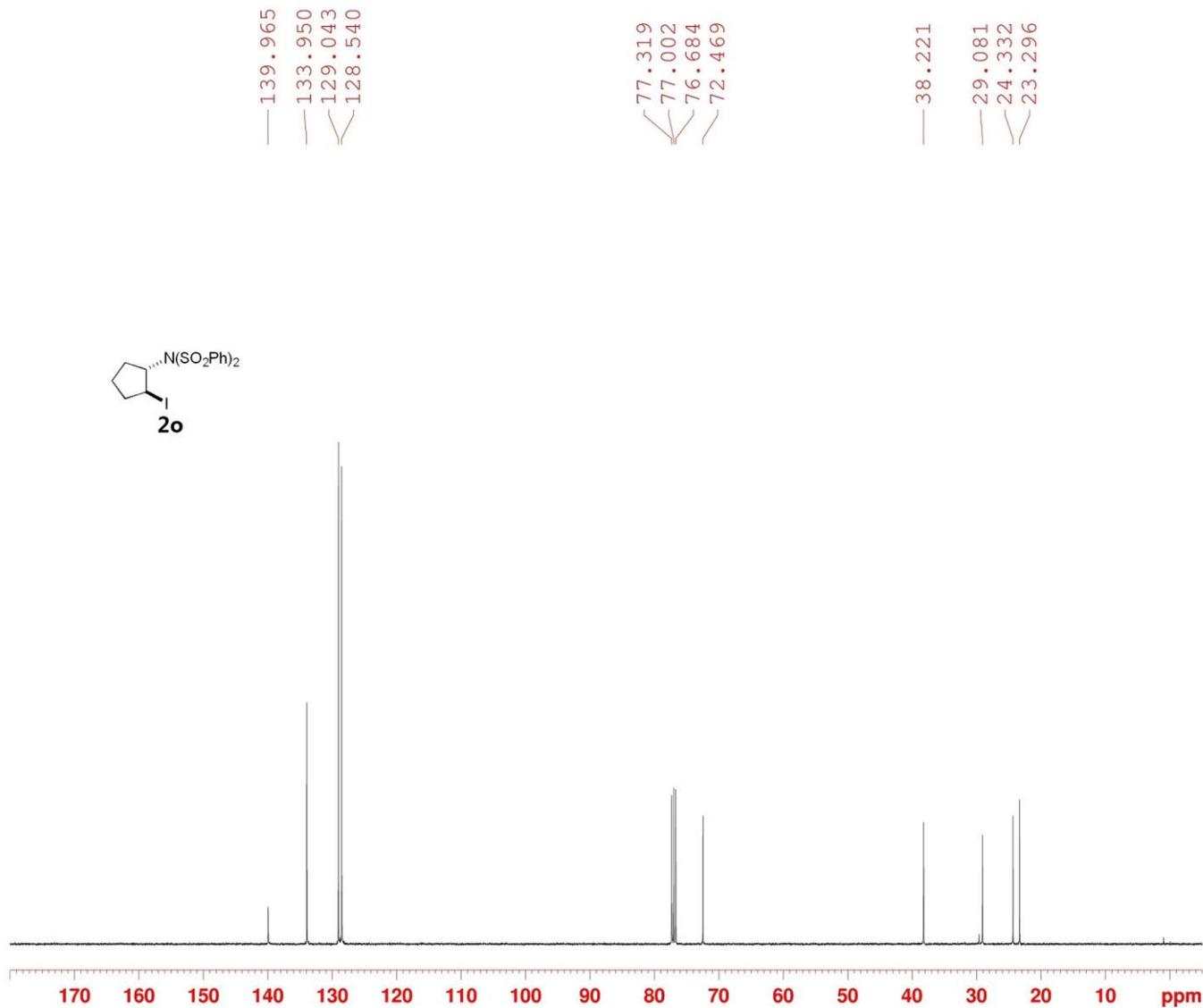
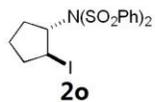


```

NAME      CLJ-WL-L250
EXPNO     1
PROCNO    1
Date_     20180505
Time      22.43
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   CDC13
NS         12
DS         0
SWH       8012.820 Hz
FIDRES    0.122266 Hz
AQ         4.0894966 sec
RG         41.07
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.00000000 sec
TD0        1
  
```

```

===== CHANNEL f1 =====
SFO1     400.1324710 MHz
NUC1      1H
P1        8.04 usec
SI        65536
SF        400.1300105 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB         0
PC         1.00
  
```

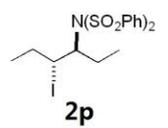
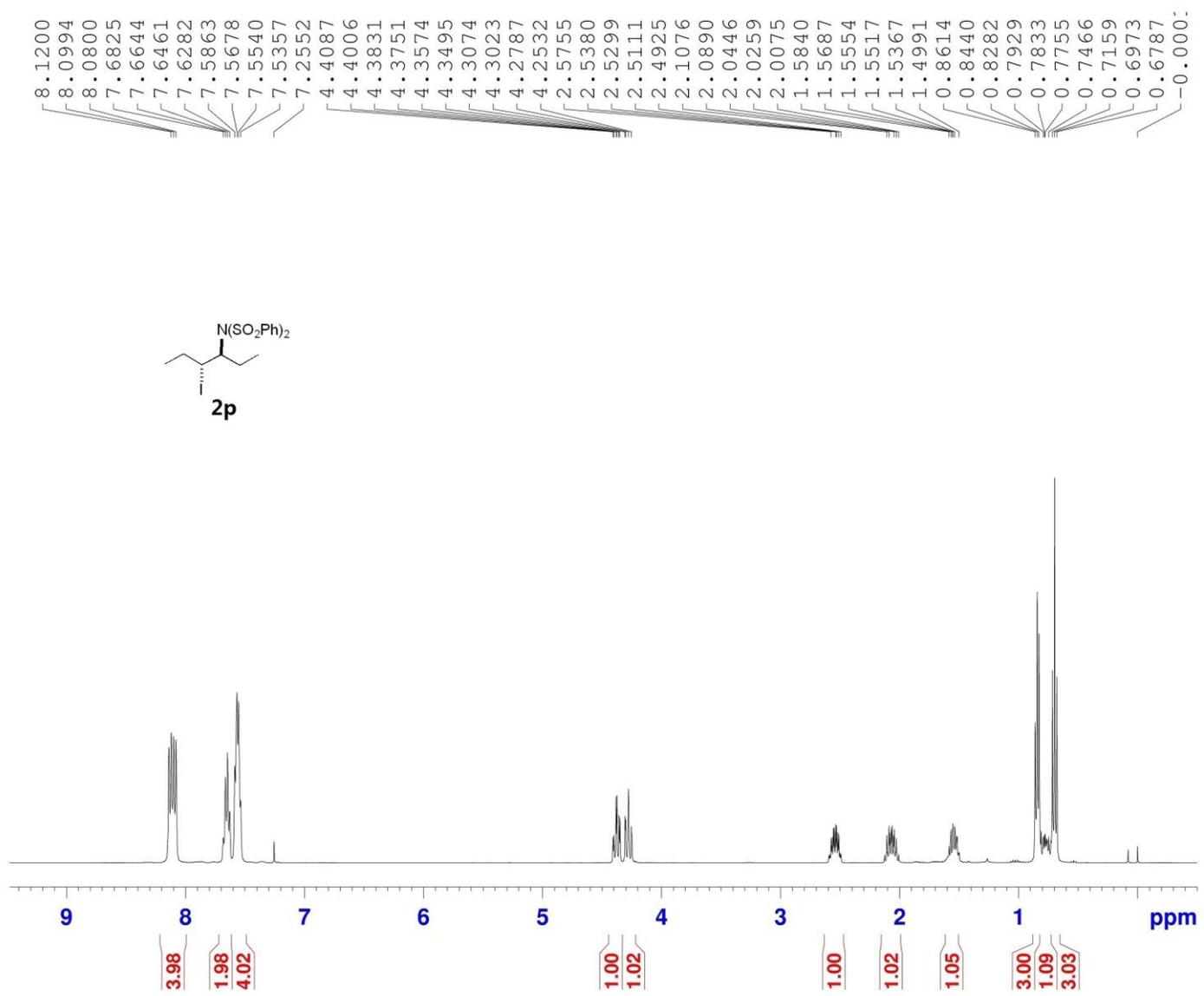


```

NAME          CLJ-WL-L250
EXPNO         2
PROCNO        1
Date_         20180505
Time          23.13
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

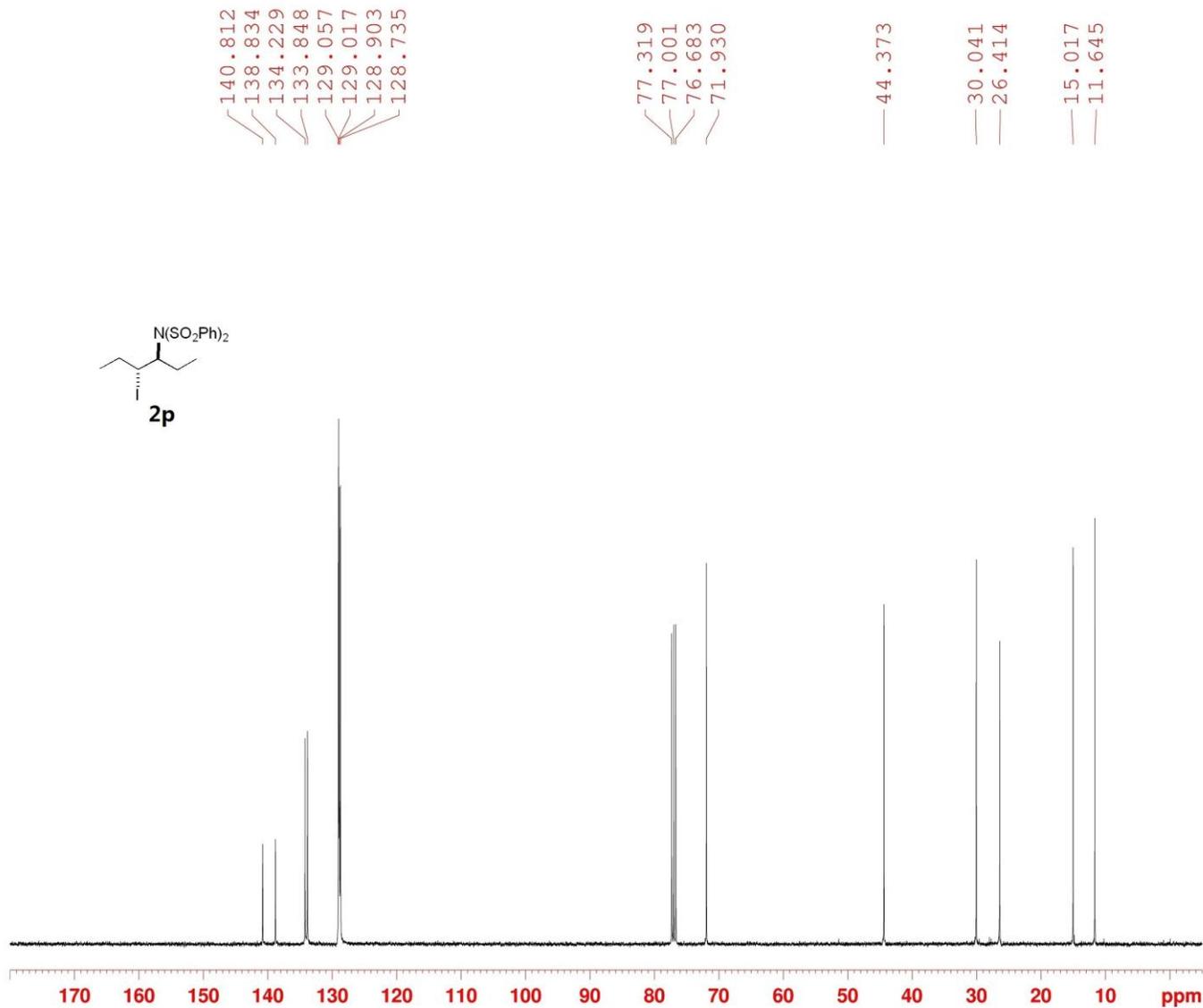
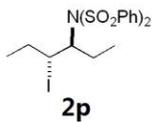
===== CHANNEL f1 =====
SFO1          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127765 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```



```

NAME          CLJ-WL-L246
EXPNO         1
PROCNO        1
Date_         20180429
Time          11.18
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zg30
TD            65536
SOLVENT       CDC13
NS            12
DS            0
SWH           8012.820 Hz
FIDRES        0.122266 Hz
AQ            4.0894966 sec
RG            16.03
DW            62.400 usec
DE            6.50 usec
TE            299.9 K
D1            1.00000000 sec
TD0           1

===== CHANNEL f1 =====
SFO1          400.1324710 MHz
NUC1          1H
P1            8.04 usec
SI            65536
SF            400.1300117 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



```

NAME          CLJ-WL-L246
EXPNO         2
PROCNO        1
Date_         20180429
Time          11.48
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

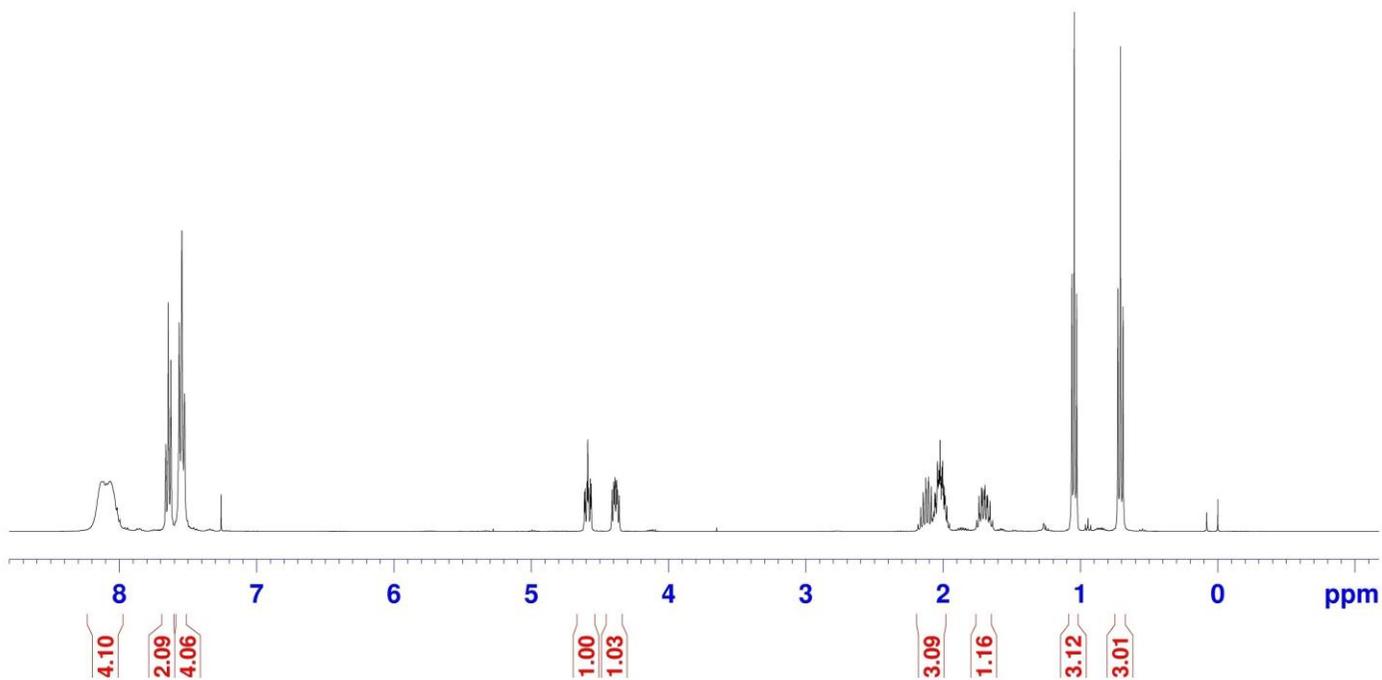
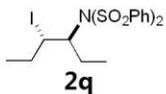
```

===== CHANNEL f1 =====
SFO1          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127787 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```

8.1150
8.0698
8.0651
7.6619
7.6434
7.6247
7.5641
7.5443
7.5254
7.2582

4.6132
4.6067
4.5949
4.5885
4.5821
4.5703
4.5638
4.4128
4.4004
4.3943
4.3907
4.3820
4.3784
4.3724
4.3600

2.1645
2.1459
2.1274
2.1054
2.0867
2.0607
2.0411
2.0227
2.0046
1.9917
1.9732
1.7385
1.7206
1.6960
1.6762
1.6582
1.0631
1.0453
1.0275
0.7273
0.7087
0.6902
-0.0000

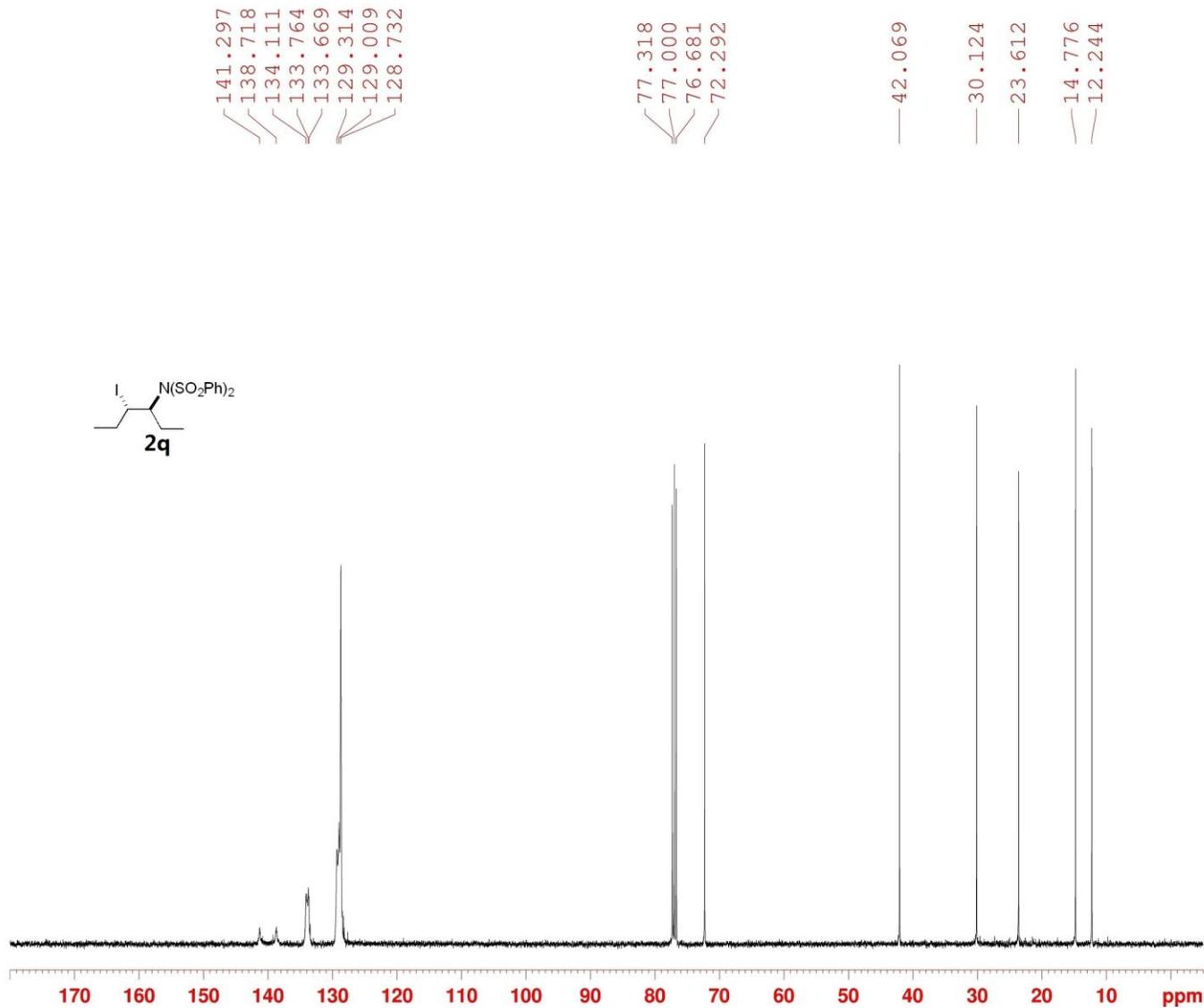
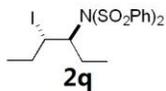


```

NAME      CLJ-WL-L249
EXPNO     1
PROCNO    1
Date_     20180505
Time      23.17
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   CDCl3
NS         12
DS         0
SWH        8012.820 Hz
FIDRES     0.122266 Hz
AQ          4.0894966 sec
RG          18.6
DW          62.400 usec
DE          6.50 usec
TE          300.0 K
D1          1.00000000 sec
TD0         1
  
```

```

===== CHANNEL f1 =====
SFO1      400.1324710 MHz
NUC1       1H
P1         8.04 usec
SI         65536
SF         400.1300105 MHz
WDW        EM
SSB         0
LB         0.30 Hz
GB         0
PC         1.00
  
```

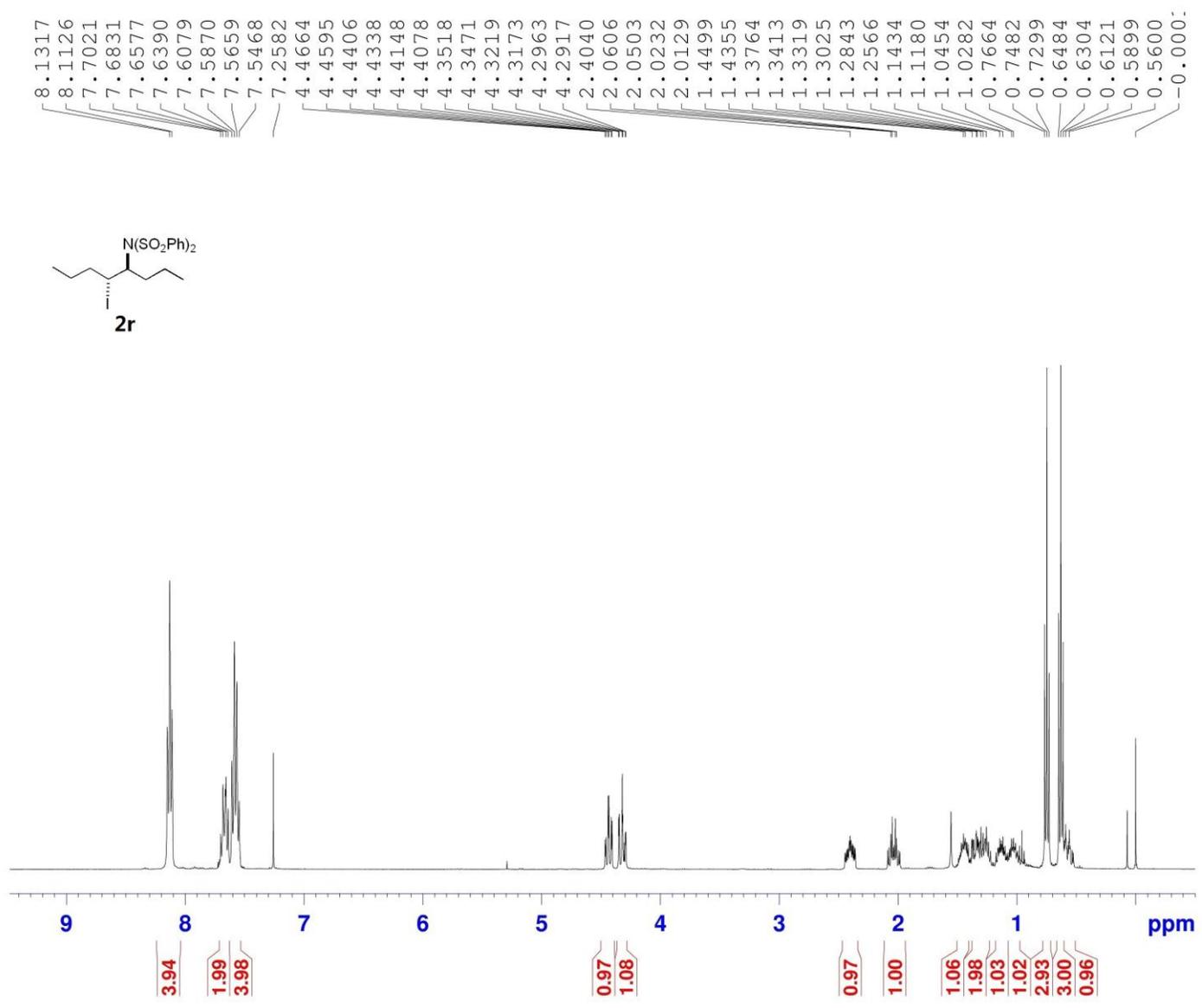


```

NAME          CLJ-WL-L249
EXPNO         2
PROCNO        1
Date_         20180505
Time          23.47
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

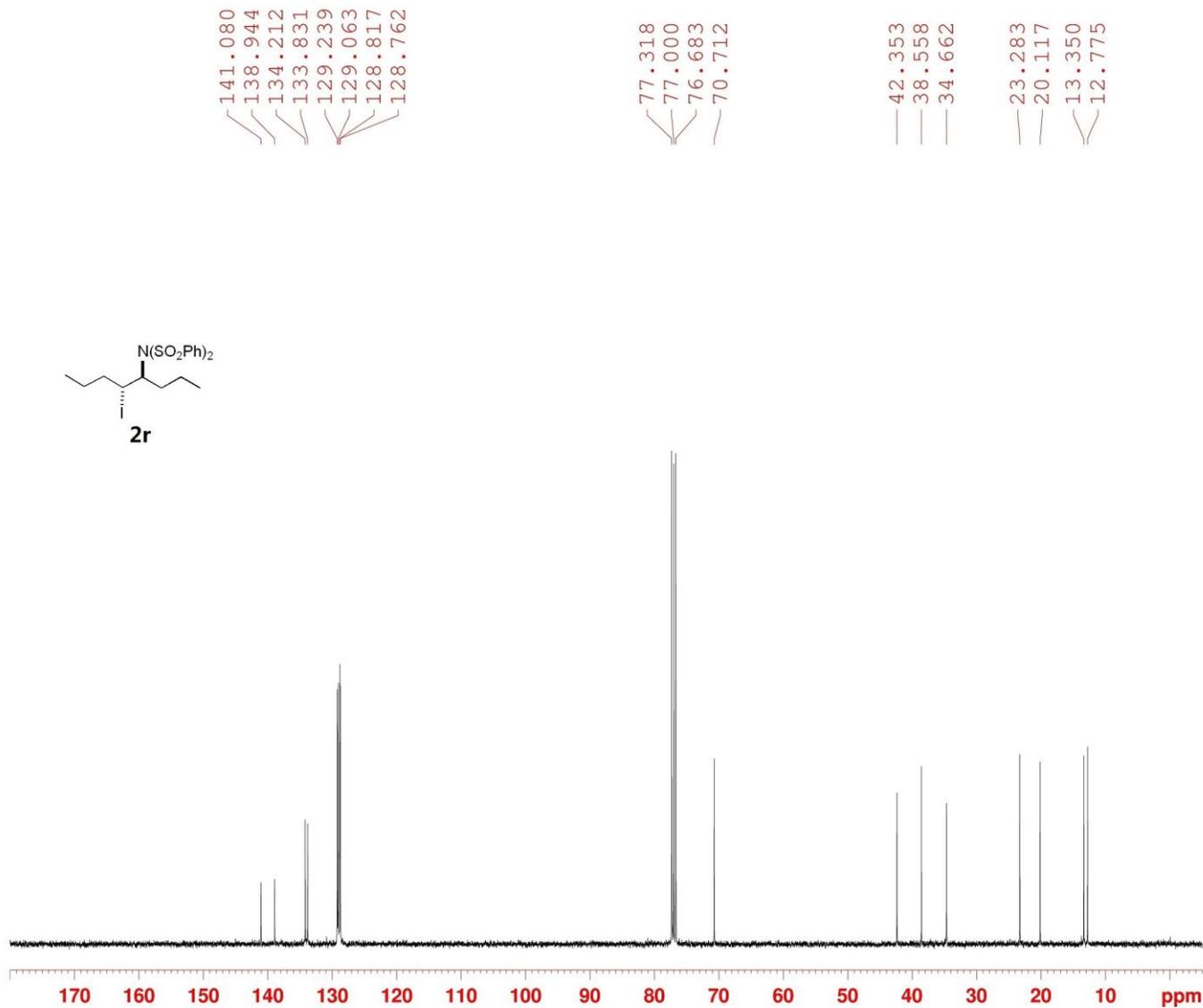
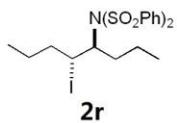
===== CHANNEL f1 =====
SFO1          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127797 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```



```

NAME          CLJ-WL-L223
EXPNO         1
PROCNO        1
Date_         20180412
Time          7.44
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zg30
TD            65536
SOLVENT       CDC13
NS            12
DS            0
SWH           8012.820 Hz
FIDRES        0.122266 Hz
AQ            4.0894966 sec
RG            51.19
DW            62.400 usec
DE            6.50 usec
TE            300.0 K
D1            1.00000000 sec
TD0           1

===== CHANNEL f1 =====
SFO1          400.1324710 MHz
NUC1          1H
P1            8.04 usec
SI            65536
SF            400.1300105 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



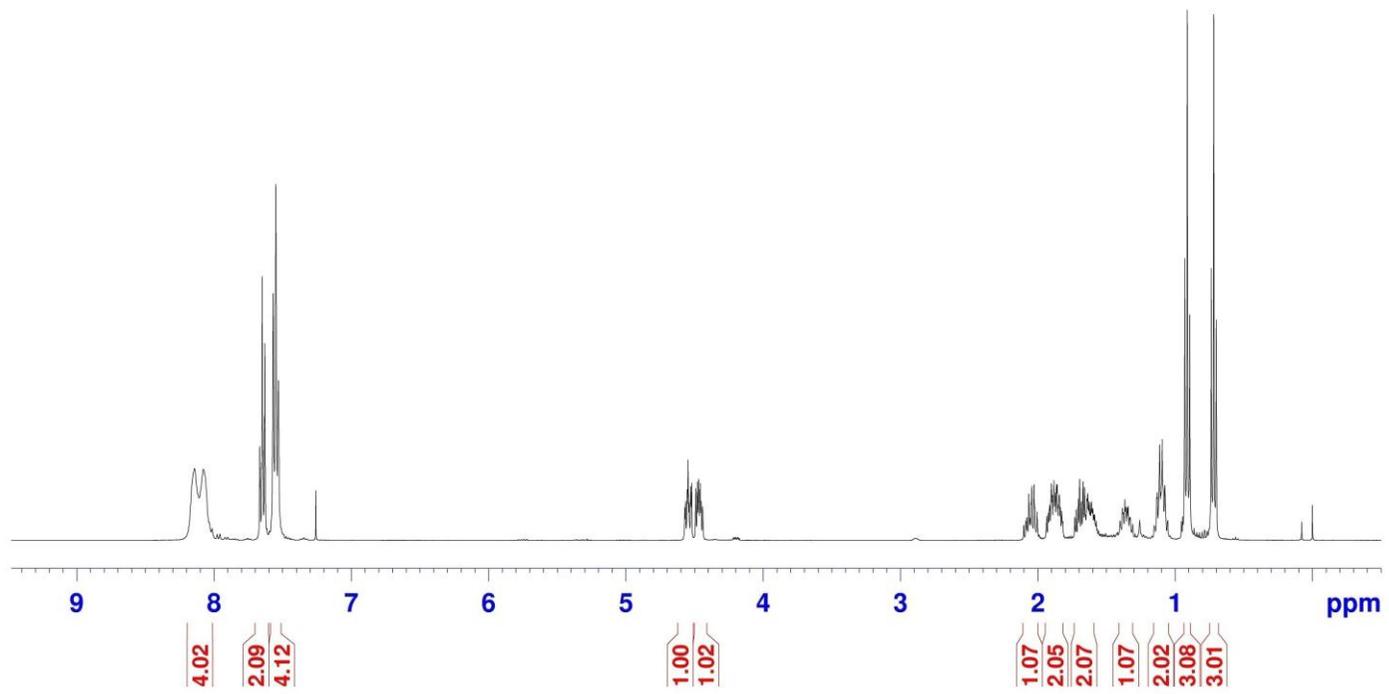
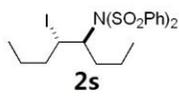
```

NAME      CLJ-WL-L223
EXPNO     2
PROCNO    1
Date_     20180412
Time      8.14
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zgpg30
TD         65536
SOLVENT   CDCl3
NS         512
DS         0
SWH       24038.461 Hz
FIDRES    0.366798 Hz
AQ         1.3631988 sec
RG         194.26
DW         20.800 usec
DE         6.50 usec
TE         300.0 K
D1         2.00000000 sec
D11        0.03000000 sec
TD0        1
  
```

```

===== CHANNEL f1 =====
SFO1     100.6228293 MHz
NUC1      13C
P1        8.54 usec
SI        32768
SF        100.6127720 MHz
WDW       EM
SSB       0
LB        1.00 Hz
GB        0
PC        1.40
  
```

8.0771
7.6663
7.6477
7.6292
7.5694
7.5495
7.5307
7.2578
4.5718
4.5475
4.5223
4.4927
4.4712
4.4628
4.4596
4.4415
2.0661
2.0441
2.0268
2.0046
1.9371
1.9024
1.8836
1.8433
1.8271
1.7317
1.7069
1.6958
1.6710
1.6374
1.6097
1.5862
1.5755
1.4018
1.3848
1.3667
1.3427
1.3092
1.1304
1.1124
1.0942
1.0755
0.9300
0.9117
0.8936
0.7371
0.7190
0.7006
0.0000

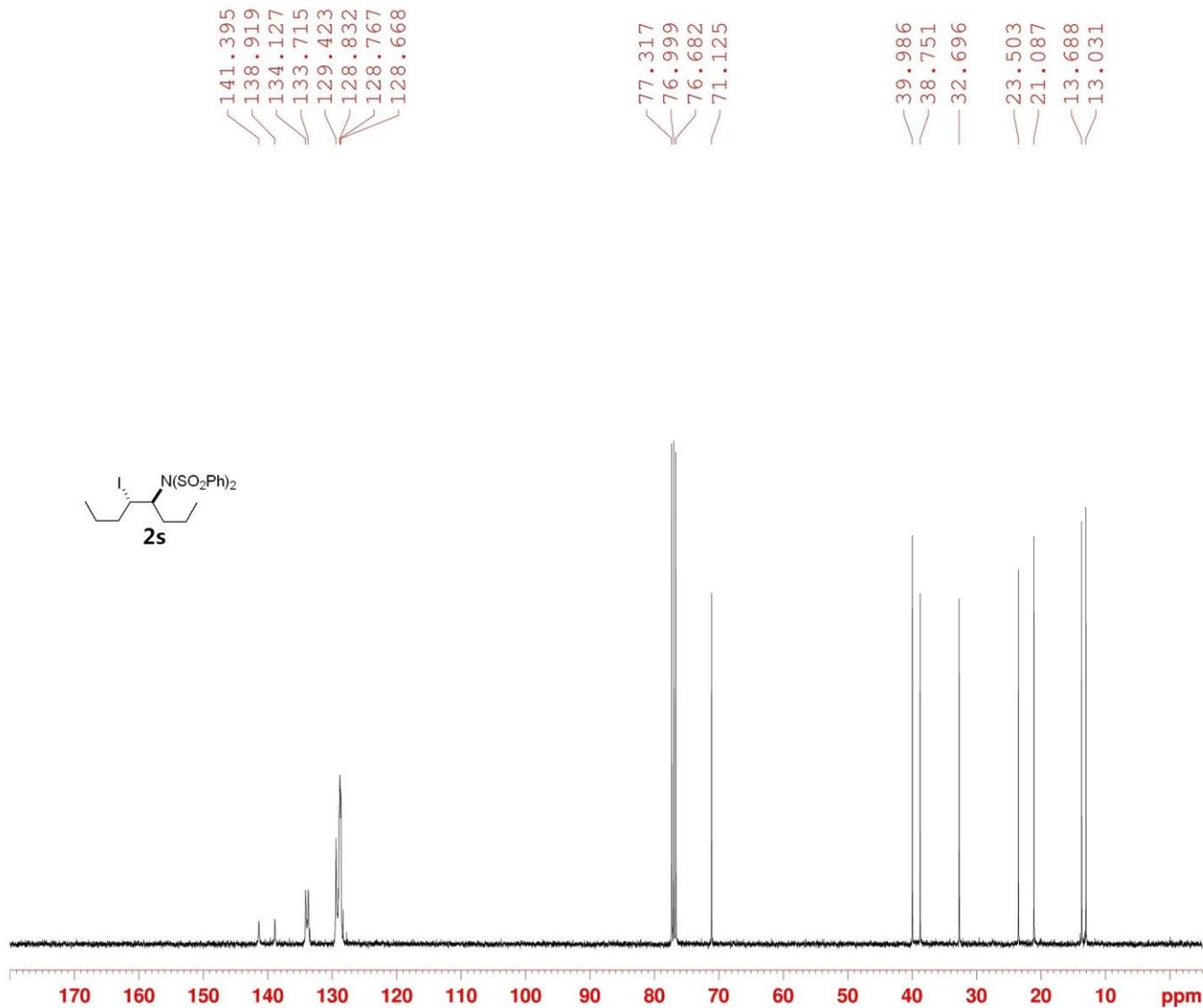
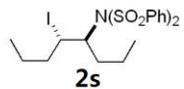


```

NAME      CLJ-WL-L235
EXPNO     2
PROCNO    1
Date_     20180420
Time      7.04
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   CDCl3
NS         12
DS         0
SWH        8012.820 Hz
FIDRES     0.122266 Hz
AQ         4.0894966 sec
RG         29.13
DW         62.400 usec
DE         6.50 usec
TE         299.9 K
D1         1.00000000 sec
TD0        1

===== CHANNEL f1 =====
SFO1      400.1324710 MHz
NUC1       1H
P1         8.04 usec
SI         65536
SF         400.1300107 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00

```



```

NAME          CLJ-WL-L235
EXPNO         1
PROCNO        1
Date_         20180420
Time          7.02
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SFO1          100.6228293 MHz
NUC1           13C
P1             8.54 usec
SI            32768
SF            100.6127764 MHz
WDW            EM
SSB            0
LB             1.00 Hz
GB             0
PC             1.40
  
```

8.1609
8.1598
8.1416
8.1380
7.8145
7.8068
7.8003
7.7931
7.7387
7.7311
7.7250
7.7172
7.5928
7.5743
7.5558
7.5118
7.4918
7.4738
7.2627
6.7618
6.7515
6.7308
6.7206

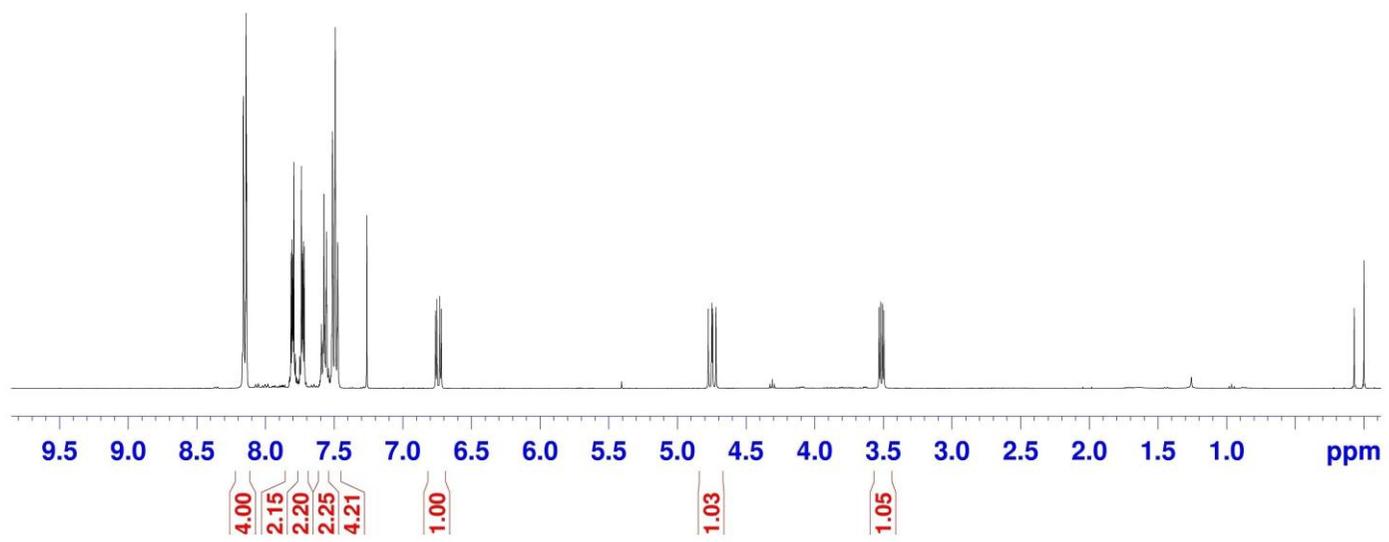
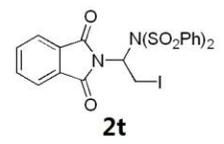
4.7753
4.7503
4.7443
4.7193

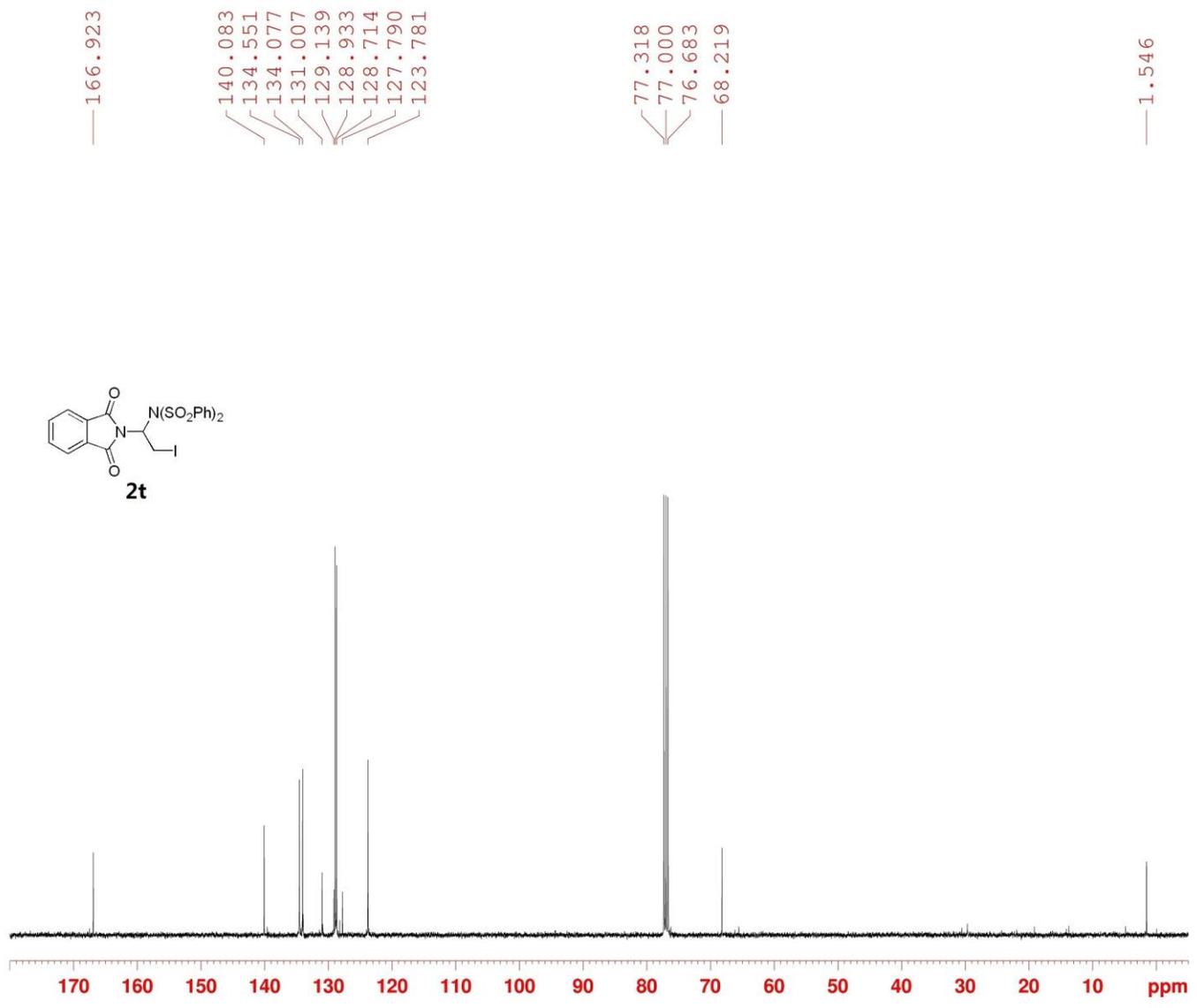
3.5312
3.5209
3.5062
3.4959

0.0000



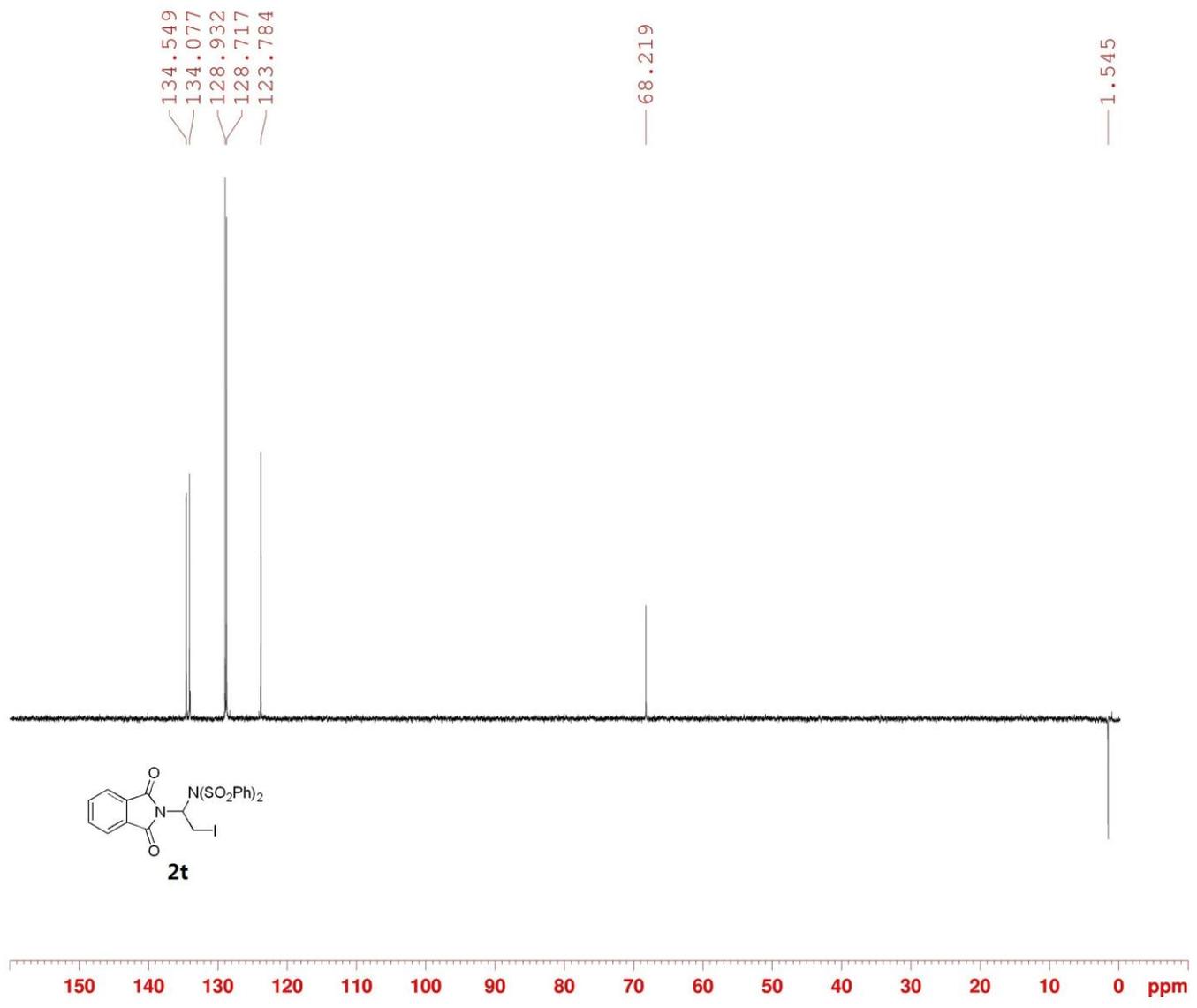
NAME 2018-05-24 leibowen-277
EXPNO 1
PROCNO 1
Date_ 20180524
Time 15.27 h
INSTRUM spect
PROBHD Z116098_0673 (
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.244532 Hz
AQ 4.0894966 sec
RG 80.75
DW 62.400 usec
DE 6.50 usec
TE 296.8 K
D1 1.00000000 sec
TD0 1
SFO1 400.1324708 MHz
NUC1 1H
P1 10.00 usec
SI 65536
SF 400.1300086 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00





```

NAME      2018-05-29 leibowen-283
EXPNO    1
PROCNO   1
Date_    20180529
Time     17.54 h
INSTRUM  spect
PROBHD   Z116098_0673 (
PULPROG  zgpg30
TD       65536
SOLVENT  CDCl3
NS       512
DS       4
SWH      24038.461 Hz
FIDRES   0.733596 Hz
AQ       1.3631988 sec
RG       203.48
DW       20.800 usec
DE       6.50 usec
TE       297.0 K
D1       2.0000000 sec
D11      0.0300000 sec
TD0      1
SF01     100.6228298 MHz
NUC1     13C
P1       10.00 usec
SI       32768
SF       100.6127738 MHz
WDW      EM
SSB      0
LB       1.00 Hz
GB       0
PC       1.40
  
```



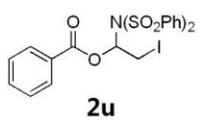
```

NAME      2018-05-30 leibowen-286
EXPNO    1
PROCNO   1
Date_    20180531
Time     3.06 h
INSTRUM  spect
PROBHD   Z116098_0673 (
PULPROG  deptsp135
TD       65536
SOLVENT  CDC13
NS       512
DS       8
SWH      16129.032 Hz
FIDRES   0.492219 Hz
AQ       2.0316660 sec
RG       203.48
DW       31.000 usec
DE       6.50 usec
TE       296.6 K
CNST2    145.0000000
D1       2.0000000 sec
D2       0.00344828 sec
D12      0.00002000 sec
TDO      1
SF01     100.6208175 MHz
NUC1     13C
P1       10.00 usec
P13     2000.00 usec
SI       32768
SF       100.6127738 MHz
WDW      EM
SSB      0
LB       1.00 Hz
GB       0
PC       1.40
  
```

8.0492
8.0473
7.8283
7.8099
7.8078
7.5911
7.5723
7.5707
7.5456
7.5260
7.5082
7.5063
7.4396
7.4199
7.4005
7.3896
7.3707
7.2583
7.0861
7.0674
7.0504

4.0227
4.0034
3.9962
3.9768
3.8835
3.8670
3.8569
3.8405

0.0001

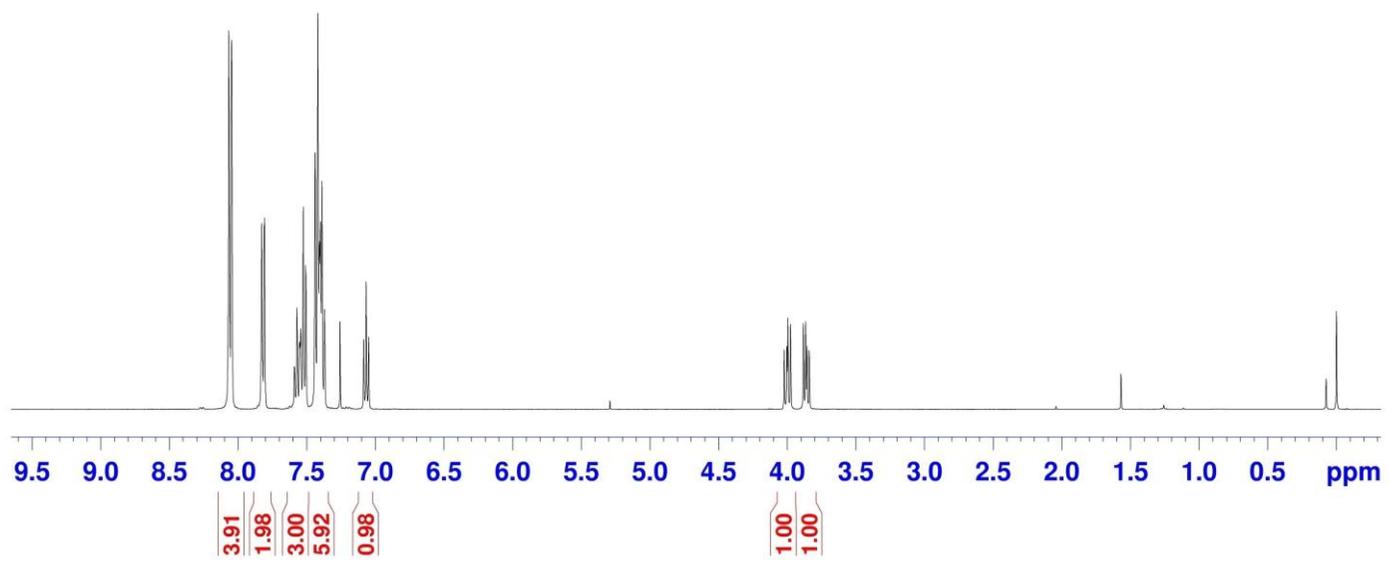


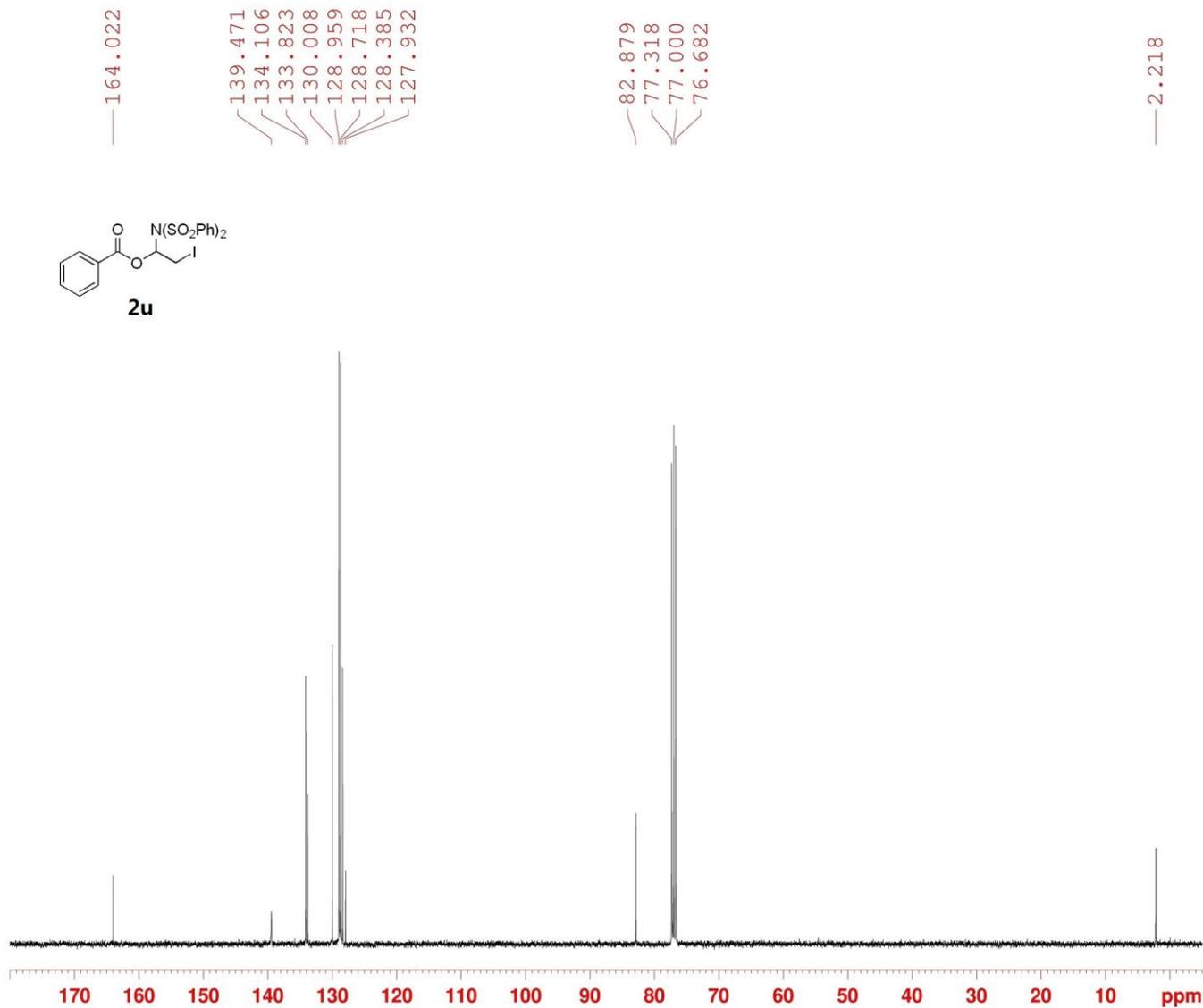
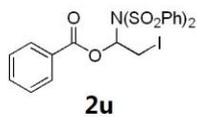
```

NAME      CLJ-WL-L273
EXPNO     1
PROCNO    1
Date_     20180519
Time      19.53
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   CDCl3
NS         12
DS         0
SWH        8012.820 Hz
FIDRES     0.122266 Hz
AQ         4.0894966 sec
RG         70.36
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.00000000 sec
TD0        1
  
```

```

===== CHANNEL f1 =====
SFO1      400.1324710 MHz
NUC1       1H
P1         8.04 usec
SI         65536
SF         400.1300110 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00
  
```



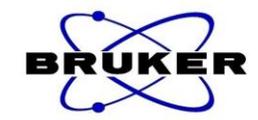
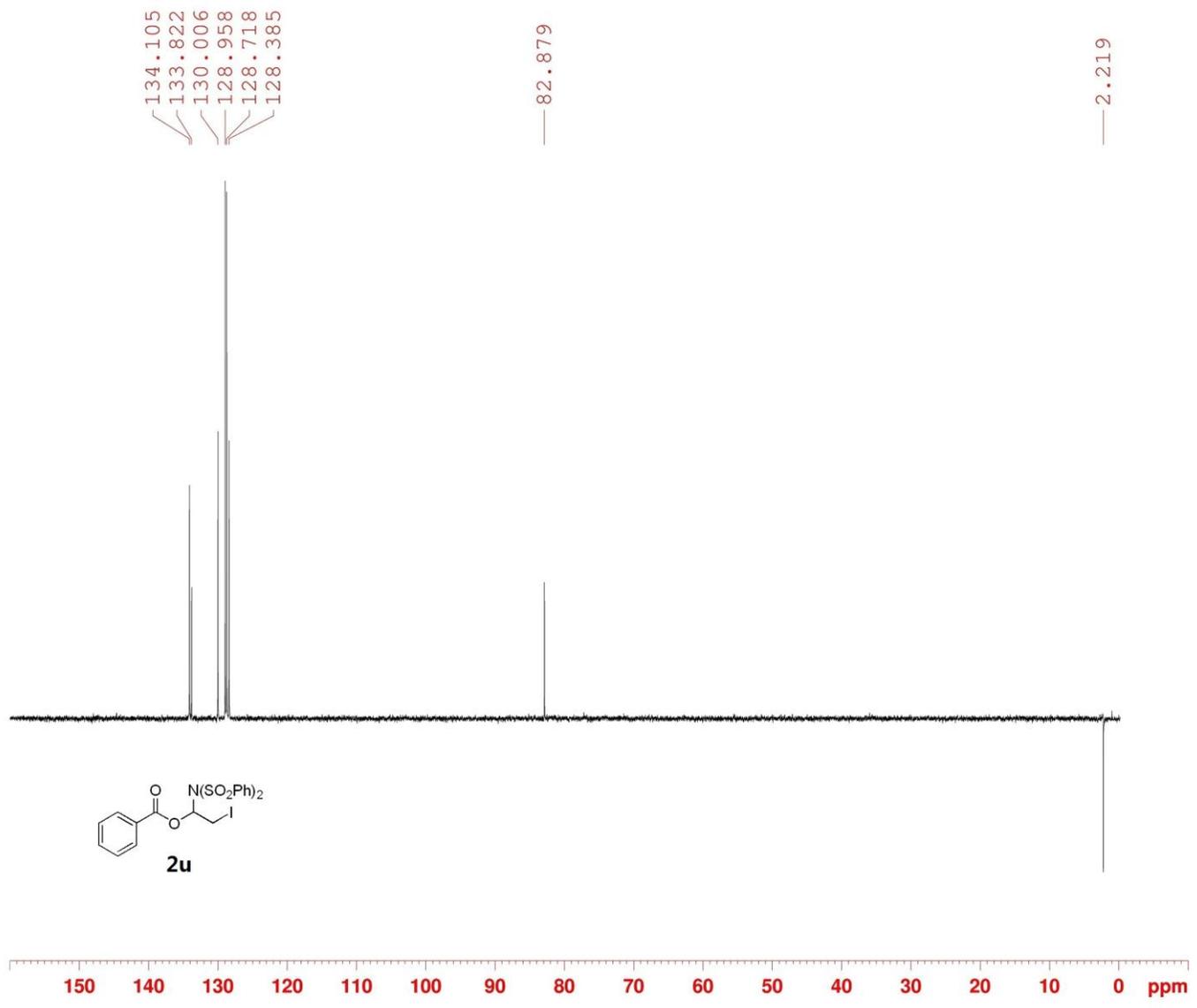


```

NAME      CLJ-WL-L273
EXPNO     2
PROCNO    1
Date_     20180519
Time      20.23
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zgpg30
TD         65536
SOLVENT   CDCl3
NS         512
DS         0
SWH       24038.461 Hz
FIDRES    0.366798 Hz
AQ         1.3631988 sec
RG         194.26
DW         20.800 usec
DE         6.50 usec
TE         299.9 K
D1         2.00000000 sec
D11        0.03000000 sec
TD0        1
  
```

```

===== CHANNEL f1 =====
SFO1     100.6228293 MHz
NUC1      13C
P1        8.54 usec
SI        32768
SF        100.6127723 MHz
WDW       EM
SSB       0
LB        1.00 Hz
GB        0
PC        1.40
  
```



```

NAME          CLJ-WL-L274
EXPNO         1
PROCNO        1
Date_         20180518
Time          19.58
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       deptsp135
TD            65536
SOLVENT       CDCl3
NS            256
DS            4
SWH           16129.032 Hz
FIDRES        0.246110 Hz
AQ            2.0316660 sec
RG            194.26
DW            31.000 usec
DE            6.50 usec
TE            300.0 K
CNST2         145.0000000
D1            2.00000000 sec
D2            0.00344828 sec
D12           0.00002000 sec
TD0           1
  
```

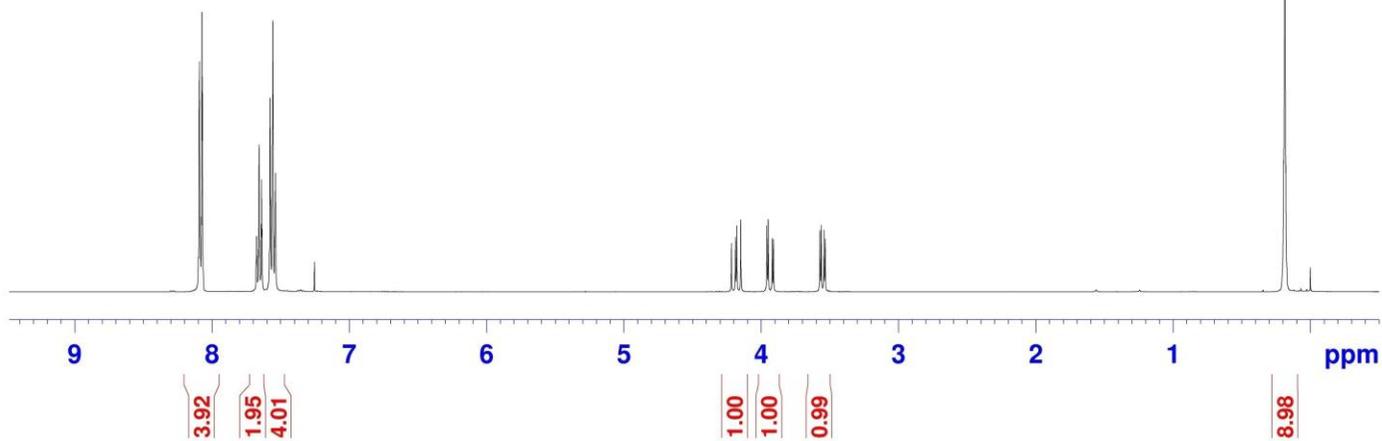
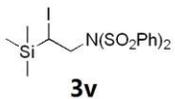
```

===== CHANNEL f1 =====
SFO1         100.6208171 MHz
NUC1         13C
P1            8.54 usec
P13          2000.00 usec
SI           32768
SF           100.6127725 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```

8.0949
8.0924
8.0742
8.0708
7.6763
7.6578
7.6422
7.6391
7.6361
7.5781
7.5610
7.5579
7.5396
7.2549

4.2171
4.1879
4.1783
4.1492
3.9590
3.9495
3.9203
3.9108
3.5731
3.5637
3.5440
3.5345

0.1868
0.0000

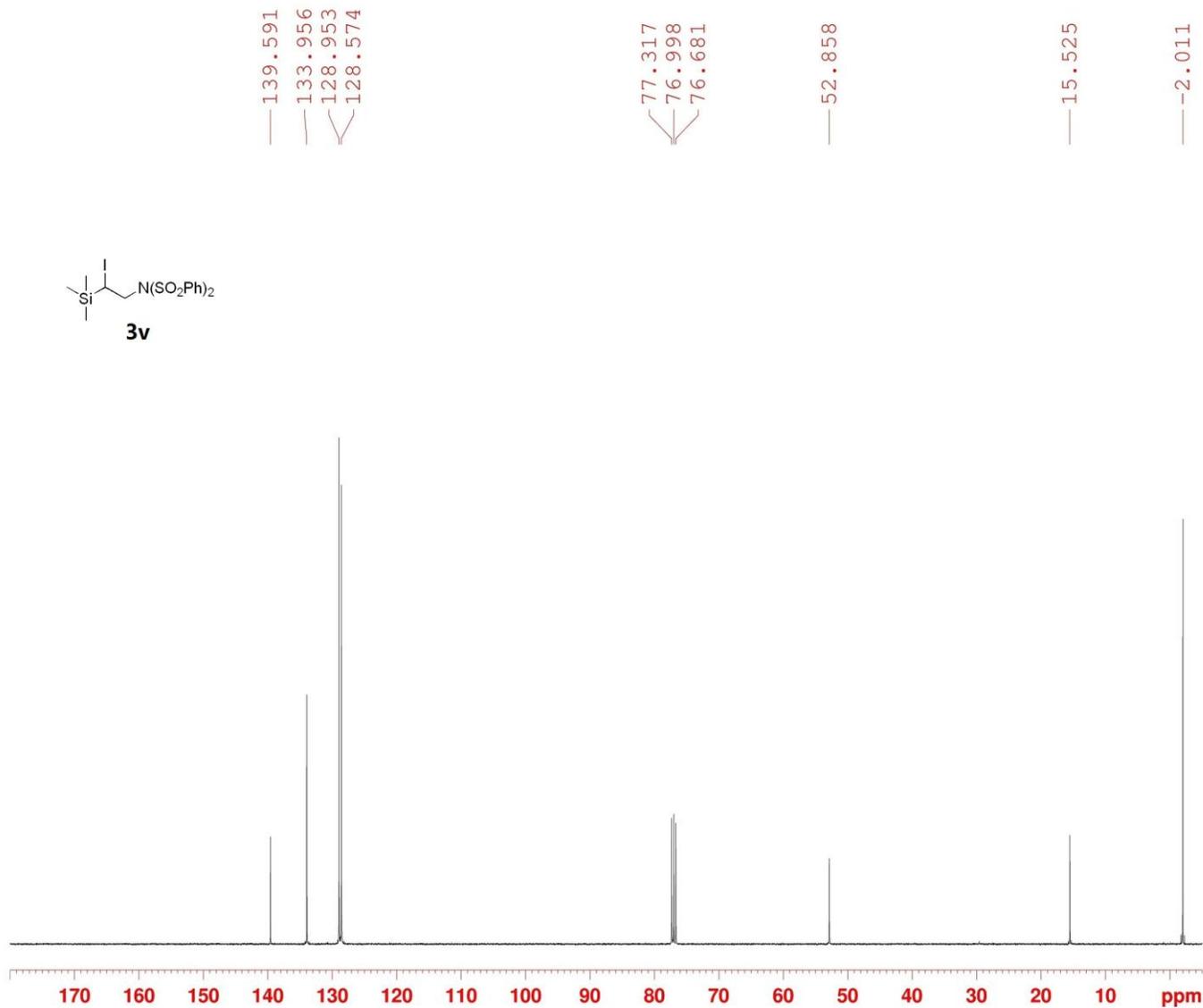
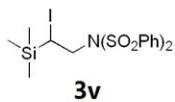


```

NAME      CLJ-WL-L247
EXPNO     1
PROCNO    1
Date_     20180502
Time      18.17
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD         65536
SOLVENT   CDCl3
NS         12
DS         0
SWH        8012.820 Hz
FIDRES     0.122266 Hz
AQ         4.0894966 sec
RG         21.11
DW         62.400 usec
DE         6.50 usec
TE         300.0 K
D1         1.00000000 sec
TD0        1
  
```

```

===== CHANNEL f1 =====
SFO1      400.1324710 MHz
NUC1      1H
P1         8.04 usec
SI         65536
SF         400.1300118 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00
  
```

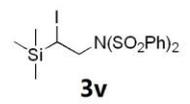
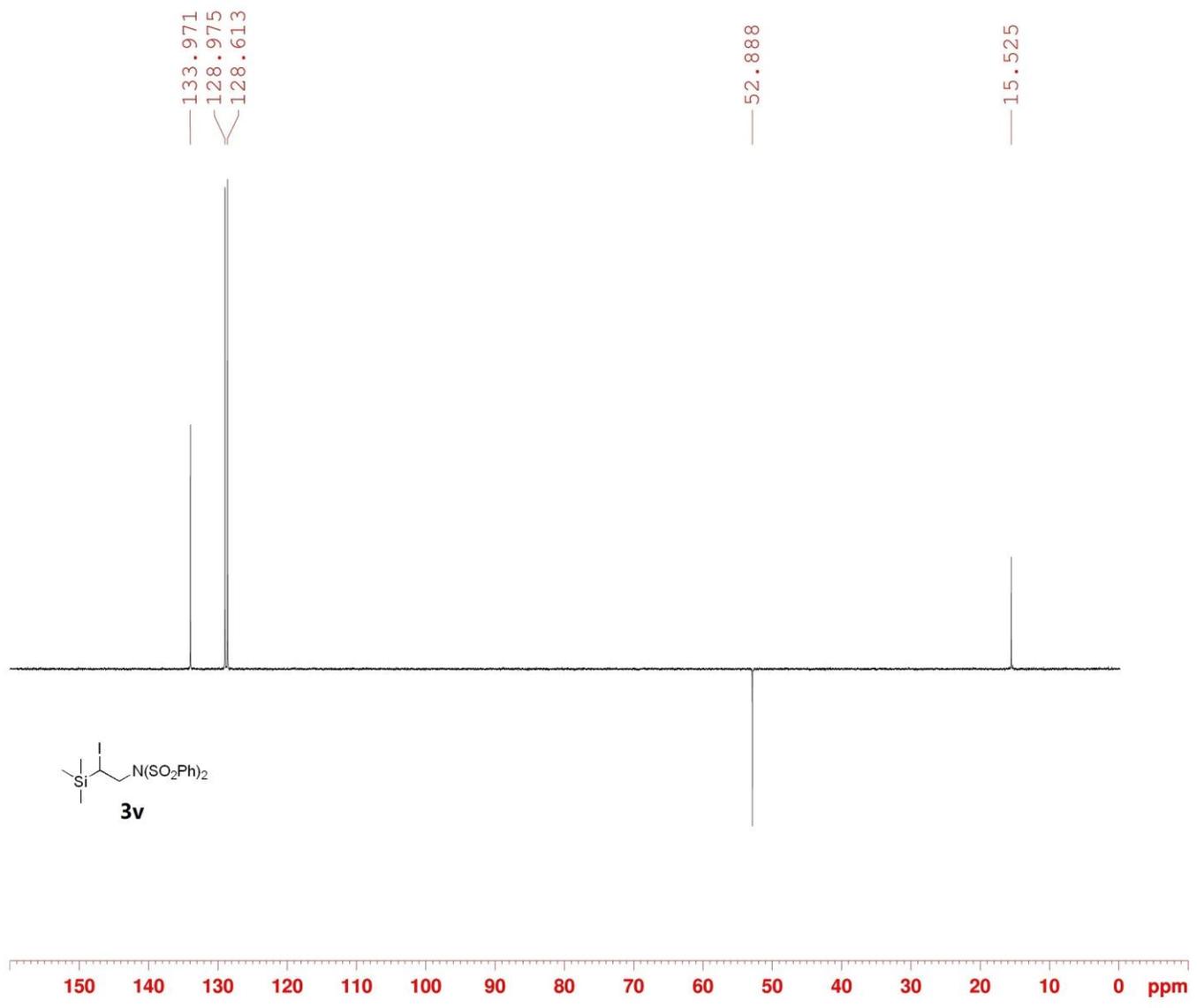


```

NAME          CLJ-WL-L248
EXPNO         1
PROCNO        1
Date_         20180504
Time          22.53
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SFO1          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127778 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```



```

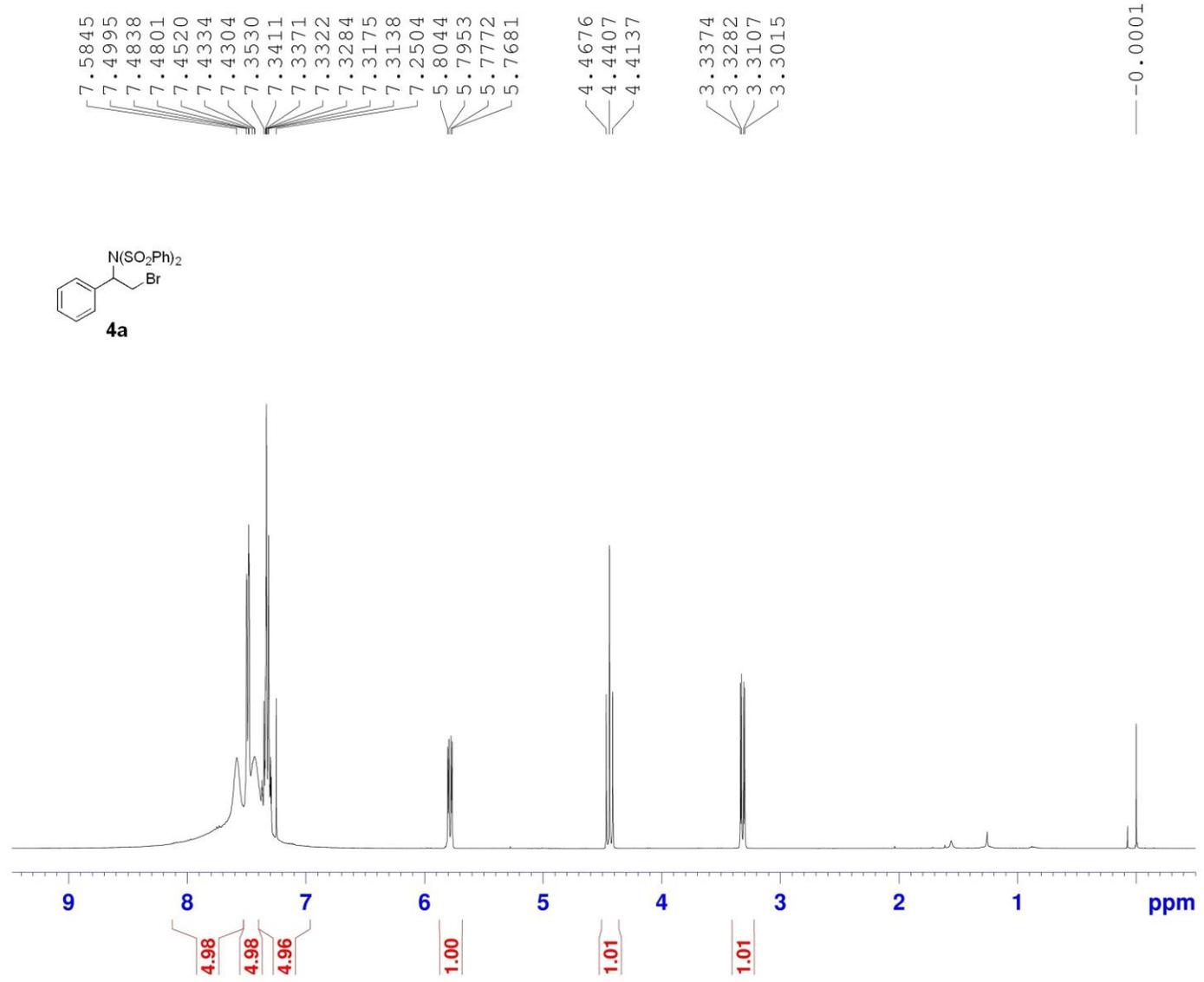
NAME          CLJ-WL-L272
EXPNO         1
PROCNO        1
Date_         20180517
Time          19.37
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       deptsp135
TD            65536
SOLVENT       CDCl3
NS            256
DS            4
SWH           16129.032 Hz
FIDRES        0.246110 Hz
AQ            2.0316660 sec
RG            194.26
DW            31.000 usec
DE            6.50 usec
TE            300.0 K
CNST2         145.0000000
D1            2.00000000 sec
D2            0.00344828 sec
D12           0.00002000 sec
TD0           1

```

```

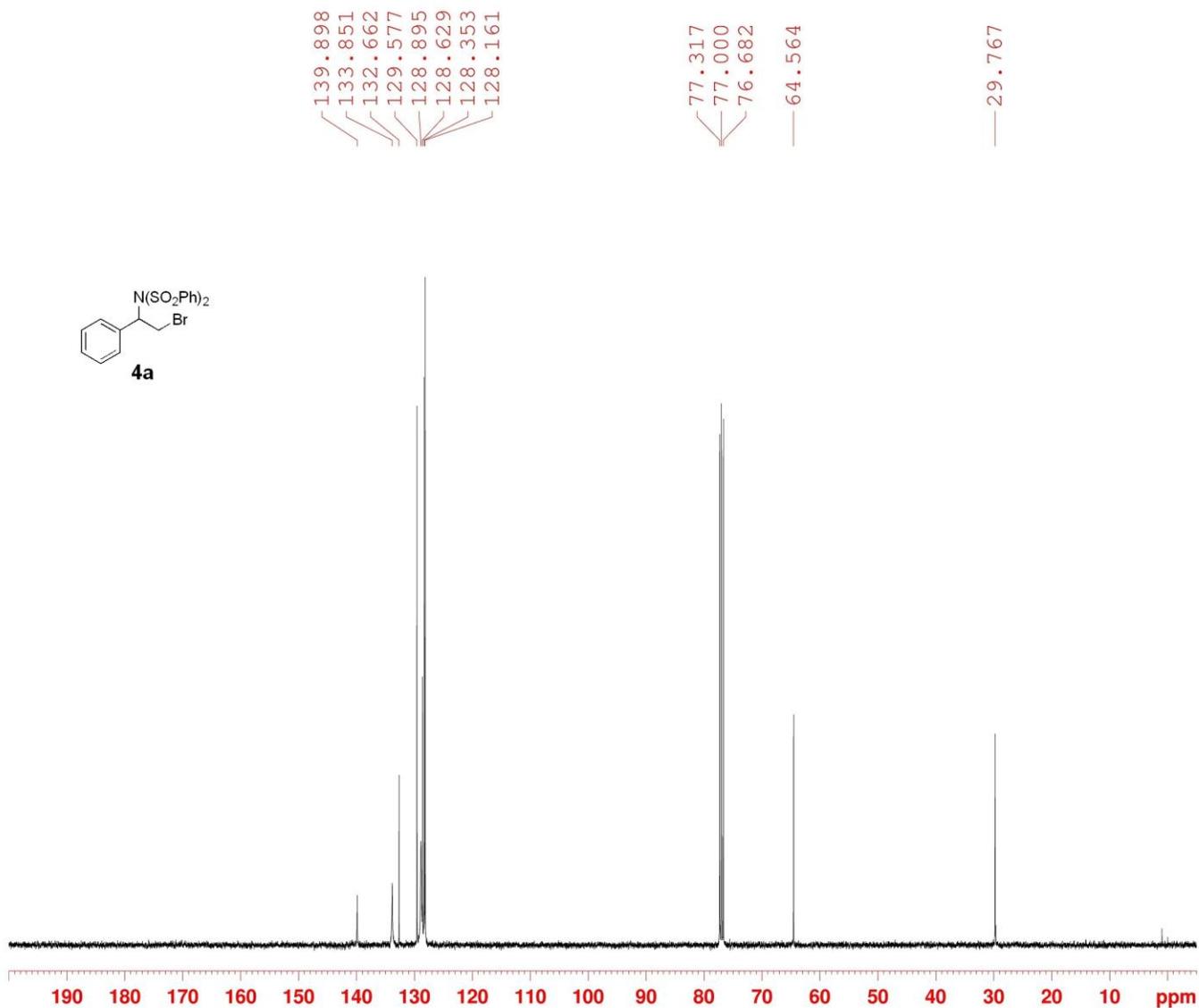
===== CHANNEL f1 =====
SFO1          100.6208171 MHz
NUC1          13C
P1            8.54 usec
P13           2000.00 usec
SI            32768
SF            100.6127746 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40

```



BRUKER
 NAME CLJ-WL-M071
 EXPNO 2
 PROCNO 1
 Date_ 20180621
 Time_ 4.11
 INSTRUM spect
 PROBHD 5 mm PABBO BB/
 PULPROG zg30
 TD 65536
 SOLVENT cdcl3
 NS 12
 DS 0
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 51.19
 DW 62.400 usec
 DE 6.50 usec
 TE 299.9 K
 D1 1.0000000 sec
 TDO 1

 ===== CHANNEL f1 =====
 SF01 400.1324710 MHz
 NUC1 1H
 P1 8.04 usec
 S1 65536
 SF 400.1300134 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

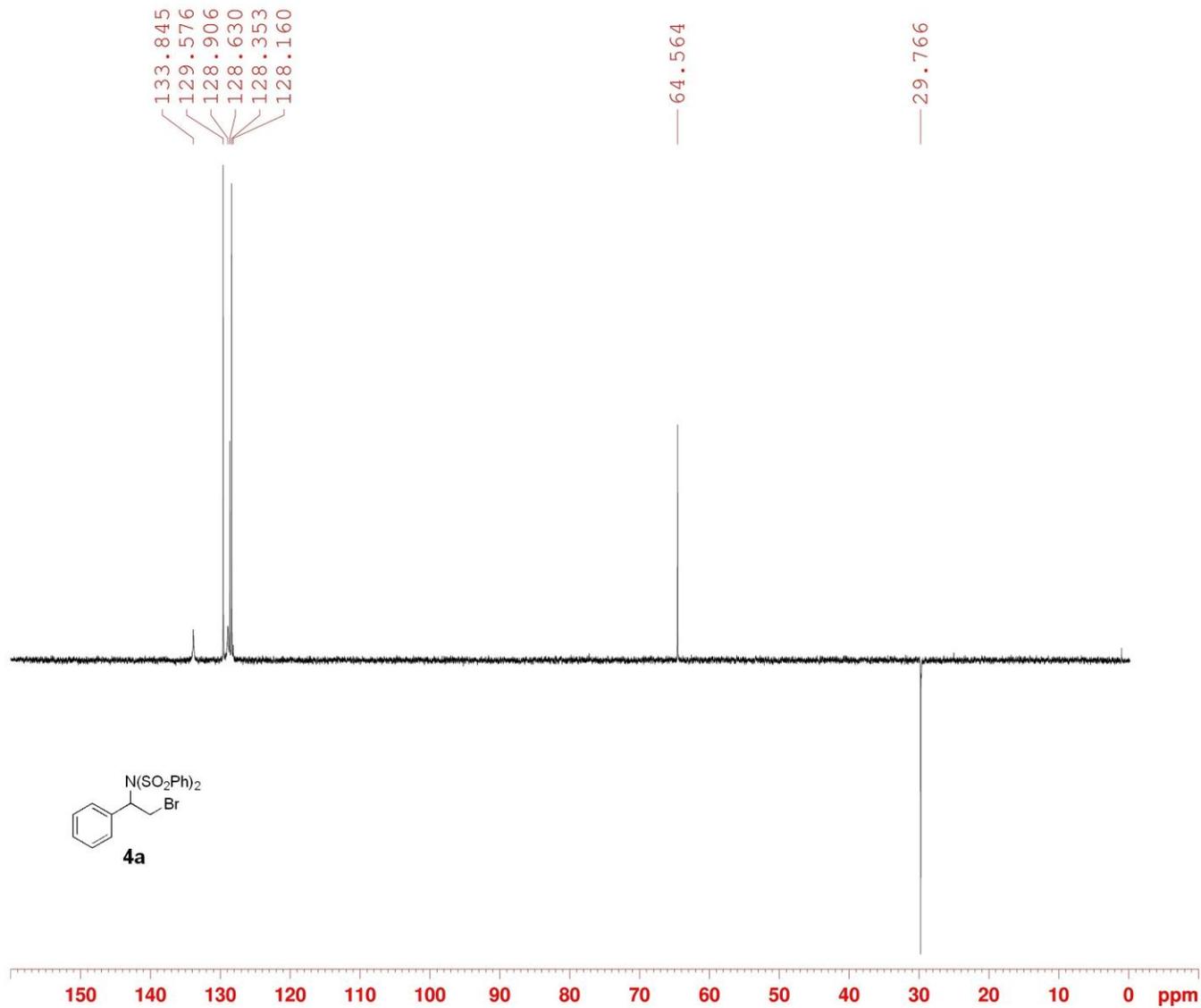


```

NAME          CLJ-WL-M071
EXPNO         1
PROCNO        1
Date_         20180621
Time          4.09
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.1 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SF01          100.6228293 MHz
NUC1          13C
P1            8.54 usec
SI            32768
SF            100.6127738 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
  
```



```

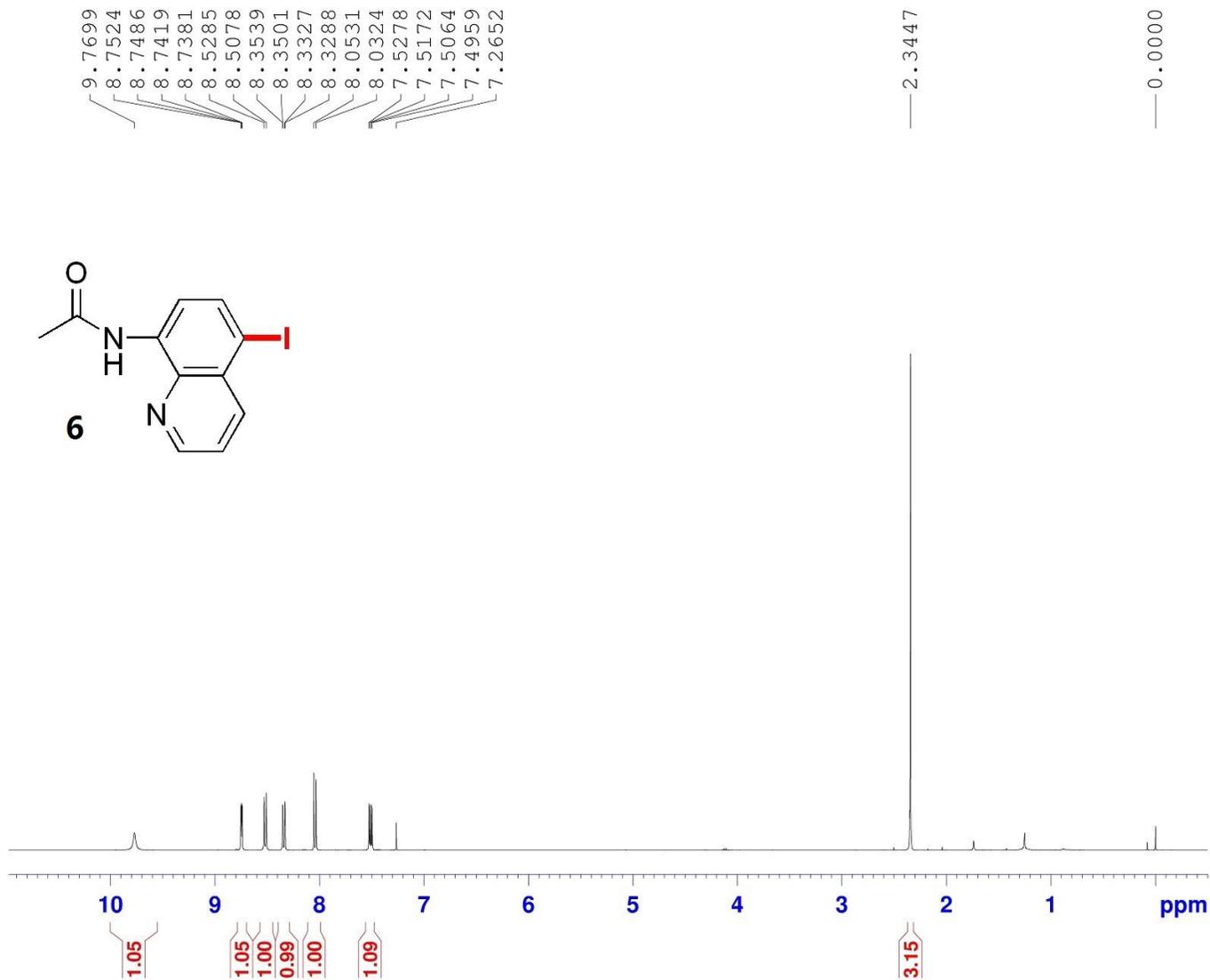
NAME          CLJ-WL-M076
EXPNO         1
PROCNO       1
Date_        20180626
Time         20.46
INSTRUM      spect
PROBHD       5 mm PABBO BB/
PULPROG      deptsp135
TD           65536
SOLVENT      CDCl3
NS           256
DS           4
SWH          16129.032 Hz
FIDRES       0.246110 Hz
AQ           2.0316660 sec
RG           194.26
DW           31.000 usec
DE           6.50 usec
TE           300.0 K
CNST2        145.0000000
D1           2.00000000 sec
D2           0.00344828 sec
D12          0.00002000 sec
TD0          1

```

```

===== CHANNEL f1 =====
SFO1        100.6208171 MHz
NUC1         13C
P1           8.54 usec
P13          2000.00 usec
SI           32768
SF           100.6127738 MHz
WDW          EM
SSB          0
LB           1.00 Hz
GB           0
PC           1.40

```



```

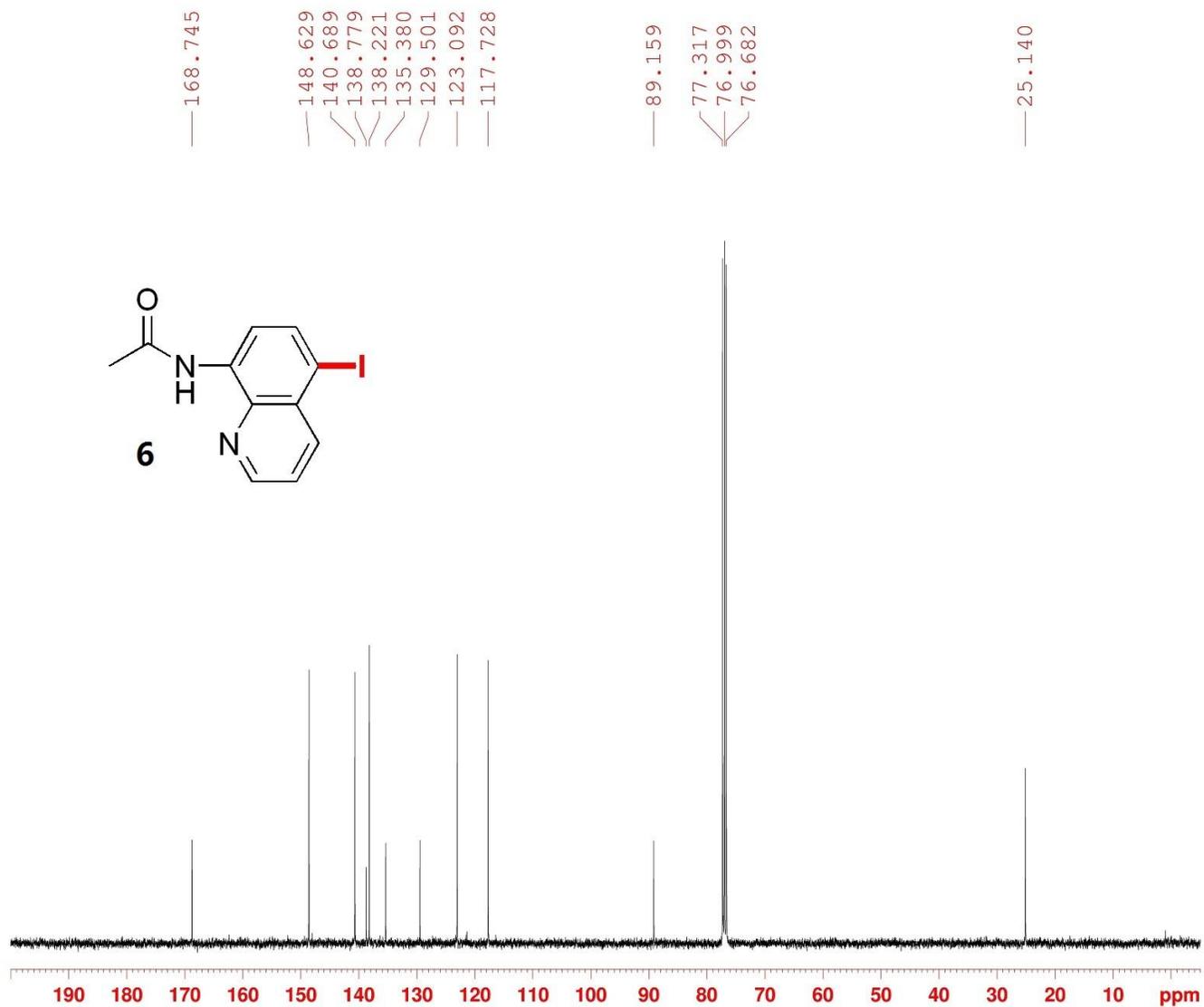
NAME      CLJ-WL-S098
EXPNO     2
PROCNO    1
Date_     20180420
Time      2.05
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg30
TD        65536
SOLVENT   CDCl3
NS        12
DS        0
SWH       8012.820 Hz
FIDRES    0.122266 Hz
AQ        4.0894966 sec
RG        70.36
DW        62.400 usec
DE        6.50 usec
TE        299.9 K
D1        1.00000000 sec
TDO       1

```

```

===== CHANNEL f1 =====
SF01     400.1324710 MHz
NUC1     1H
P1       8.04 usec
SI       65536
SF       400.1300077 MHz
WDW      EM
SSB      0
LB       0.30 Hz
GB       0
PC       1.00

```



```

NAME          CLJ-WL-S098
EXPNO         4
PROCNO        1
Date_         20180425
Time          20.22
INSTRUM       spect
PROBHD        5 mm PABBO BB/
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            512
DS            0
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631988 sec
RG            194.26
DW            20.800 usec
DE            6.50 usec
TE            300.0 K
D1            2.0000000 sec
D11           0.0300000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
SFO1          100.6228293 MHz
NUC1           13C
P1             8.54 usec
SI            32768
SF            100.612727 MHz
WDW            EM
SSB            0
LB             1.00 Hz
GB             0
PC             1.40
  
```