

Alkyl radical addition to aliphatic and aromatic *N*-acylhydrazones using an organic photoredox catalyst

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Supporting Information

Table of Contents

Materials and Methods	S2
Photoreactor Assembly	S2
Synthesis of <i>N</i> -acylhydrazones	S3
Synthesis of Ammonium Biscatecholatoalkylsilicate Salts and 4CzIPN	S4
General Procedure for Radical Additions to Hydrazones	S4
Full Optimization of Radical Addition	S5
Determination of Percent Conversion of 2a	S6
Experimental Details of Radical Addition Reactions	S7
Reductive Cleavage of N-N bond	S16
Formal Synthesis of Racemic Repaglinide	S17
Spectral Data for New Compounds	S20

Materials and Methods

New scintillation vials were employed in radical addition reactions, and all other reactions were performed in oven dried glassware with magnetic stirring. Radical addition reactions were performed under static argon atmosphere. DMSO used for reactions was purchased in a bottle sealed under argon, used without further purification. THF was degassed with argon and passed through columns of activated alumina prior to use. Argon was passed through columns of CaSO_4 and R3-11 catalyst for removal of water and oxygen, respectively. Reagents were used without further purification. CDCl_3 for NMR spectroscopy was passed through a column of basic alumina. Thin layer chromatography employed glass 0.25 mm silica gel plates with UV indicator. TLC plates were visualized with either UV lamp or phosphomolybdic acid stain. Flash chromatography columns were packed with 230-400 mesh silica gel loaded as a slurry in eluting solvent. Crude material was loaded onto columns as a solution in eluting solvent (with added CH_2Cl_2 to aid in solubility as needed). Columns for purifying radical addition products were buffered with ~1% Et_3N in loading slurries and eluting solvents. HRMS was run by independent facility at the University of Iowa. Melting point ranges were obtained using a Meltemp apparatus and are uncorrected.

Photoreactor Assembly

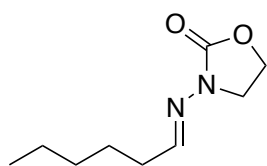
The photoreactor¹ depicted at right was built with 470 nm LED strips (60 LED/m, 1 m) purchased from superbrightleds.com and fitted with 12V power supplies. Two LED strips were adhered to the inside of a crystallizing dish, the outside of which was



covered with duct tape. During photoredox reactions, the reactor was surrounded by aluminum foil to contain the light, and the temperature was stabilized through use of either a small fan or compressed air.

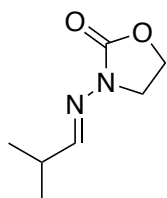
Synthesis of *N*-acylhydrazones

Compounds **1a-b** and **6a-h** were synthesized by known procedures, and characterization data matched prior reports.¹⁻²



3-(Hexylidene)amino-2-oxazolidinone (1c): To a mixture of 3-amino-2-oxazolidinone (0.4286 g, 4.20 mmol, 1.00 eq) and MgSO₄ (0.75 g) in 10 mL of CH₂Cl₂ was added hexanal (1.00 mL, 8.14 mmol, 1.94 eq),

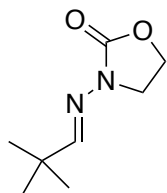
followed by *p*-TsOH·H₂O (100 mg, 0.526 mmol, 0.125 eq). After 19h, filtration, concentration, and gradient flash chromatography (hexanes and EtOAc, 6:1 hex:EtOAc → 1:1) furnished the title compound (0.4956 g, 64% yield) as a colorless oil. HRMS(ESI) *m/z* calcd for C₉H₁₆N₂O₂Na 207.1109 ([M+Na]⁺), found 207.1120; ¹H NMR (300 MHz, CDCl₃) δ 7.05-7.02 (t, *J* = 5.7 Hz, 1H), 4.51-4.46 (m, 2H), 3.80-3.75 (m, 2H), 2.43-2.36 (td, *J* = 7.5, 9.5 Hz, 2H), 1.56-1.50 (m, 2H), 1.36-1.30 (m, 4H), 0.89 (t, *J* = 7.0 Hz, 3H); ¹³C NMR {¹H} (75 MHz, CDCl₃) δ 154.8, 149.0, 61.4, 42.4, 32.8, 31.5, 26.7, 22.5, 14.1.



3-(2-Methylpropylidene)amino-2-oxazolidinone (1d): Using the procedure for the synthesis of **1c**, from 3-amino-2-oxazolidinone (0.1954 g, 1.91 mmol, 1.00 eq) and isobutyraldehyde (0.90 mL, 9.9 mmol, 5.2 eq) was obtained the title

compound (0.1833 g, 61% yield) as a colorless solid. mp 51-53°C; HRMS(ESI) *m/z* calcd for C₇H₁₂N₂O₂Na 179.0796 ([M+Na]⁺), found 179.0791; ¹H NMR (300 MHz, CDCl₃) δ 6.90 (d, *J* =

6.1 Hz, 1H), 4.48 (t, $J = 8.1$ Hz, 2H), 3.76 (t, $J = 8.1$ Hz, 2H), 2.78-2.62 (m, 1H), 1.13 (d, $J = 6.9$ Hz, 6H); ^{13}C NMR $\{^1\text{H}\}$ (75 MHz, CDCl_3) δ 154.7, 153.5, 61.3, 42.3, 31.9, 20.2.



3-(2,2-Dimethylpropylidene)amino-2-oxazolidinone (1e): Using the procedure for the synthesis of **1c**, from 3-amino-2-oxazolidinone (0.4135 g, 4.05 mmol, 1.00 eq) and pivalaldehyde (0.80 mL, 7.4 mmol, 1.82 eq) was obtained the title

compound (0.5808 g, 84% yield) as a colorless solid. mp 142-144°C; HRMS(ESI) m/z calcd for $\text{C}_8\text{H}_{14}\text{N}_2\text{O}_2\text{Na}$ 193.0953 ($[\text{M}+\text{Na}]^+$), found 193.0946; ^1H NMR (300 MHz, CDCl_3) δ 6.97 (s, 1H), 4.47 (t, $J = 7.8$ Hz, 2H), 3.76 (t, $J = 7.8$ Hz, 2H), 1.15 (s, 9); ^{13}C NMR $\{^1\text{H}\}$ δ 156.2, 154.7, 61.3, 42.5, 35.3, 27.7.

Synthesis of Ammonium Biscatecholatoalkylsilicate Salts and 4CzIPN

Alkylsilicate salts were prepared from the corresponding trimethoxysilanes, and characterization data matched that reported previously.³

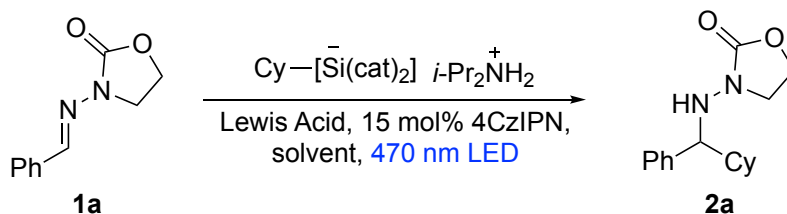
The photocatalyst 4CzIPN was prepared and characterized as previously reported.⁴

General Procedure A: Radical Additions to Hydrazones

A scintillation vial containing hydrazone (0.1 M in DMSO), and MgCl_2 was capped under Ar and allowed to stir. After 1 h, the appropriate bis(catecolato)alkylsilicate was added along with catalyst 4CzIPN. The vial was capped under Ar, sealed with Parafilm or electrical tape, and irradiated at 470 nm with the LED photoreactor (p. S2) at ca. 30°C. After 42–48 h, the reaction mixture was partitioned between EtOAc and H_2O . The organic phase was washed with 10% aq KOH and brine, dried (either Na_2SO_4 or MgSO_4), and concentrated. Percent conversion was determined by ^1H NMR integration of the crude product (detailed in next section). Gradient flash

chromatography (hexanes/EtOAc or hexanes/Et₂O, buffered with ~1% Et₃N) afforded the target compounds.

Table S1. Additional Conditions Screened for Radical Addition



entry	Lewis Acid (2 eq.)	Eq. silicate	Solvent	Time (h)	% conv. ^a
1	none	2	DMSO	24	40
2	none	2	DMSO	49	48
3	ZnBr ₂	1	DMSO	18	27
4	Zn(OTf) ₂	1	DMSO	18	27
5	CuCl ₂	1	DMSO	18	0
6	ZnBr ₂	2	DMSO	18	63
7	ZnBr ₂	4	DMSO	18	64
8	3 eq. ZnBr ₂	2	DMSO	18	49
9	Sc(OTf) ₃	2	DMSO	18	23
10	AlCl ₃	2	DMSO	18	40
11	MgCl ₂	2	DMSO	18	59
12	MgBr ₂	2	DMSO	18	54
13	Mg(OTf) ₂	2	DMSO	18	31
14	InCl ₃	2	DMSO	18	33
15	ZnBr ₂	2	DMF	16	28
16	MgCl ₂	2	DMF	16	44
17	MgCl ₂	1.2	EtOH	23	10
18	MgCl ₂	2.6	DMSO	48	86
19	MgCl ₂	1.3	DMSO	22	63
20	MgCl ₂	3	DMSO	48	22 ^b
21	MgCl ₂	3	DMSO	48	68 ^c
22	MgCl ₂	3	DMSO	47	88 (60 ^d)
23	MgCl ₂	2	DMSO	24	73

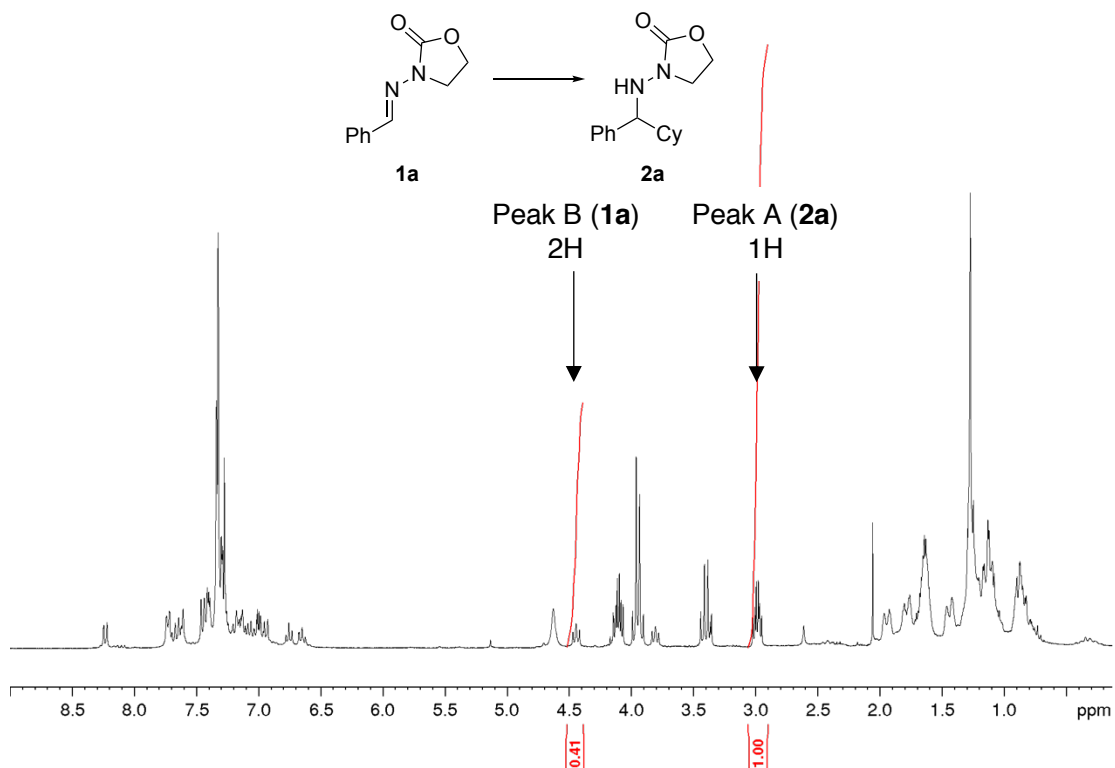
^a Determined by ¹H NMR integration. ^b 1 mol% catalyst loading. ^c 5 mol% catalyst loading. ^d Isolated yield.

Determination of Percent Conversion of 2a

Percent conversions of hydrazone **1a** to radical addition product **2a** are reported in Table S1.

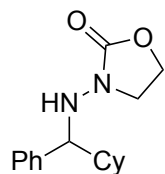
Insignificant amounts of other products from **1a** were observed, so that the percent conversion could be reasonably estimated from ¹H NMR integrals of oxazolidinone peaks from **1a** and **2a**.

An example is presented below. Integrals for peaks A (product **2a**, 1H) and B (reactant **1a**, 2H), corresponding to oxazolidinone hydrogens, are substituted in the equation below. Note that the hydrogens on the oxazolidinone are non-equivalent due to diastereotopicity in **2a**.



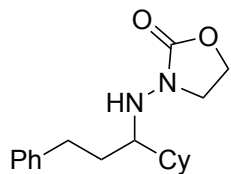
$$\text{estimated \% conversion} = \frac{\text{Int Peak A}}{\text{Int Peak A} + (0.5 * \text{Int Peak B})} * 100$$

Experimental Details of Radical Addition Reactions



3-[(Cyclohexylphenylmethyl)amino]-2-oxazolidinone (2a): Using General Procedure A, from hydrazone **1a** (0.0233 g, 0.123 mmol, 1.00 eq), MgCl₂ (0.0256 g, 0.269 mmol, 2.19 eq), diisopropylammonium bis(catecholato)-

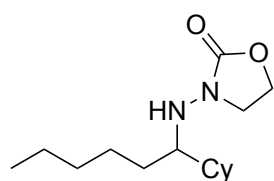
cyclohexylsilicate (0.1670g, 0.389 mmol, 3.16 eq), and 4CzIPN (0.0148 g, 0.0187 mmol, 0.150 eq) was obtained the title compound (0.0203 g, 60% yield) as a colorless solid. mp 91-93°C; HRMS(ESI) *m/z* calcd for C₁₆H₂₂N₂O₂Na 297.1579 ([M+Na]⁺), found 297.1577; ¹H NMR (300 MHz, CDCl₃) δ 7.37-7.24 (m, 5H), 4.67-4.60 (br s, 1H), 4.10 (td, *J* = 8.8, 4.7 Hz, 1H), 4.03-3.90 (m, apparent q, *J* = 8.8 Hz, 1H), 3.95 (dd, *J* = 7.6, 2.1 Hz, 1H), 3.48-3.35 (m, apparent q, 1H), 3.05-2.95 (td, *J* = 8.2, 4.1 Hz, 1H), 2.01-1.87 (m, 1H), 1.86-1.73 (m, 1H), 1.73-1.54 (m, 3H), 1.51-1.37 (m, 1H), 1.33-1.01 (m, 4H), 0.92-0.76 (m, 1H); ¹³C NMR {¹H} (75 MHz, CDCl₃) δ 158.8, 140.9, 128.8, 128.1, 127.5, 69.6, 61.4, 47.9, 41.9, 30.2, 29.1, 26.4, 26.2 (2C).



3-((1-Cyclohexyl-3-phenylpropyl)amino)oxazolidin-2-one (2b): Using General Procedure A, from hydrazone **1b** (0.0433 g, 0.198 mmol, 1.00 eq), MgCl₂ (0.0417 g, 0.438 mmol, 2.21 eq), diisopropylammonium

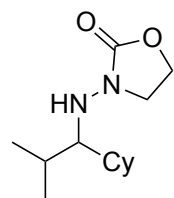
bis(catecholato)cyclohexylsilicate (0.2551 g, 0.594 mmol, 3.00 eq), and 4CzIPN (0.0247 g, 0.0313 mmol, 0.158 eq) was obtained the title compound (0.0168 g, 28% yield) as amorphous solid. mp 61-64°C; HRMS(ESI) *m/z* calcd for C₁₈H₂₆N₂O₂Na 325.1892 ([M+Na]⁺), found 325.1900; ¹H NMR (300 MHz, CDCl₃) δ 7.31-7.25 (m, 2H), 7.23-7.15 (m, 3H), 4.30-4.23 (m, apparent t, *J* = 7.8 Hz, 2H), 4.16 (br d, *J* = 4.1 Hz, 1H), 3.62-3.52 (m, 2H), 2.85-2.76 (m, 1H), 2.75-2.68 (m, apparent t, *J* = 7.8 Hz, 2H), 1.87-1.57 (m, 7H), 1.57-1.44 (m, 1H), 1.30-1.00 (m,

5H); ^{13}C NMR $\{^1\text{H}\}$ (75 MHz, CDCl_3) δ 159.3, 142.4, 128.5, 125.9, 63.6, 61.3, 48.4, 39.5, 32.6, 31.0, 29.3, 27.9, 26.8, 26.7 (2C).



3-((1-Cyclohexylhexyl)amino)oxazolidin-2-one (2c): Using General Procedure A, from hydrazone **1c** (0.0428 g, 0.232 mmol, 1.00 eq), MgCl_2 (0.0474 g, 0.498 mmol, 2.15 eq), diisopropylammonium

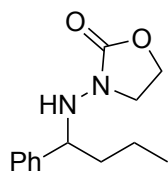
bis(catecholato)cyclohexylsilicate (0.2995 g, 0.697 mmol, 3.00 eq), and 4CzIPN (0.0318 g, 0.0403 mmol, 0.174 eq) was obtained the title compound (0.0136 g, 22% yield) as a pale yellow oil. HRMS(ESI) m/z calcd for $\text{C}_{15}\text{H}_{28}\text{N}_2\text{O}_2\text{Na}$ 291.2048 ($[\text{M}+\text{Na}]^+$), found 291.2051; ^1H NMR (300 MHz, CDCl_3) δ 4.29 (m, apparent t, $J = 7.8$ Hz, 2H), 4.11 (br s, 1H), 3.61 (m, apparent t, $J = 7.8$ Hz, 2H), 2.82-2.74 (m, 1H), 1.81-1.73 (m, 1H), 1.72-1.62 (m, 1H), 1.51-0.97 (m, 17H), 0.88 (t, $J = 6.9$ Hz, 3H); ^{13}C NMR $\{^1\text{H}\}$ (125 MHz, CDCl_3) δ 159.2, 64.2, 61.3, 48.7, 39.6, 32.4, 29.3, 29.1, 28.0, 26.9 (2C), 26.8, 26.1, 22.7, 14.2.



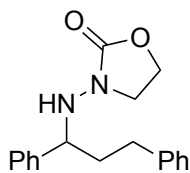
3-((1-Cyclohexyl-2-methylpropyl)amino)oxazolidin-2-one (2d): Using General Procedure A, from hydrazone **1d** (0.0347 g, 0.222 mmol, 1.00 eq), MgCl_2 (0.0450 g, 0.473 mmol, 2.13 eq), diisopropylammonium

bis(catecholato)cyclohexylsilicate (0.2873 g, 0.669 mmol, 3.01 eq), and 4CzIPN (0.0275 g, 0.0348 mmol, 0.157 eq) was obtained the title compound (0.0099 g, 19% yield) as amorphous solid. mp 69-71°C; HRMS(ESI) m/z calcd for $\text{C}_{13}\text{H}_{24}\text{N}_2\text{O}_2\text{Na}$ 263.1735 ($[\text{M}+\text{Na}]^+$), found 263.1734; ^1H NMR (300 MHz, CDCl_3) δ 4.27 (m, apparent t, $J = 7.9$ Hz, 2H), 4.07 (br d, $J = 4.0$ Hz, 1H), 3.62 (m, apparent t, $J = 7.9$ Hz, 2H), 2.53 (m, apparent q, $J = 4.3$ Hz, 1H), 1.93-1.83 (m, 1H), 1.80-1.60 (m, 5H), 1.31-1.06 (m, 6H), 1.00 (d, $J = 6.9$ Hz, 3H), 0.96 (d, $J = 6.9$ Hz, 3H);

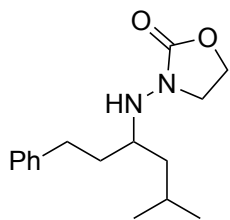
^{13}C NMR $\{^1\text{H}\}$ (75 MHz, CDCl_3) δ 159.0, 69.0, 61.2, 48.2, 39.5, 30.9, 29.4, 28.8, 27.1, 26.9, 26.7, 20.5, 18.8.



3-((1-Phenylbutyl)amino)oxazolidin-2-one (3): Using General Procedure A, from hydrazone **1a** (0.0355 g, 0.187 mmol, 1.00 eq), MgCl_2 (0.0422 g, 0.443 mmol, 2.37 eq), diisopropylammonium bis(catecholato)propylsilicate (0.2192 g, 0.563 mmol, 3.01 eq), and 4CzIPN (0.0263 g, 0.0333 mmol, 0.178 eq) was obtained the title compound (0.0197 g, 45% yield) as a yellow oil. HRMS(ESI) m/z calcd for $\text{C}_{13}\text{H}_{18}\text{N}_2\text{O}_2\text{Na}$ 257.1266 ($[\text{M}+\text{Na}]^+$), found 257.1273; ^1H NMR (300 MHz, CDCl_3) δ 7.43-7.23 (m, 5H), 4.43 (br s, 1H), 4.20-4.12 (m, 2H), 4.00 (m, apparent q, $J = 8.2$ Hz, 1H), 3.43 (m, apparent q, $J = 8.8$ Hz, 1H), 3.04 (ddd, $J = 8.4, 8.4, 5.3$ Hz, 1H), 1.79-1.54 (m, 2H), 1.37-1.08 (m, 2H), 0.88 (t, $J = 7.2$ Hz, 3H); ^{13}C NMR $\{^1\text{H}\}$ (75 MHz, CDCl_3) δ 158.9, 141.9, 128.5, 128.1, 127.8, 64.3, 61.5, 48.1, 37.3, 19.2, 14.2.



3-((1,3-Diphenylpropyl)amino)oxazolidin-2-one (4): Using General Procedure A, from hydrazone **1a** (0.0438 g, 0.230 mmol, 1.00 eq), MgCl_2 (0.0491 g, 0.516 mmol, 2.24 eq), diisopropylammonium bis(catecholato)(2-phenylethyl)silicate (0.3202 g, 0.709 mmol, 3.08 eq), and 4CzIPN (0.0284 g, 0.0360 mmol, 0.157 eq) was obtained the title compound (0.0144 g, 21% yield) as a yellow oil. HRMS(ESI) m/z calcd for $\text{C}_{18}\text{H}_{21}\text{N}_2\text{O}_2$ 297.1603 ($[\text{M}+\text{H}]^+$), found 297.1602; ^1H NMR (300 MHz, CDCl_3) δ 7.42-7.27 (m, 5H), 7.26-7.09 (m, 5H), 4.45 (br s, 1H), 4.25-4.18 (m, 1H), 4.17-4.09 (m, 1H), 4.02 (m, apparent q, $J = 8.2$ Hz, 1H), 3.43 (m, apparent q, $J = 8.2$ Hz, 1H), 3.06 (ddd, $J = 8.4, 8.4, 6.1$ Hz, 1H), 2.61-2.41 (m, 2H), 2.17-1.89 (m, 2H); ^{13}C NMR $\{^1\text{H}\}$ (75 MHz, CDCl_3) δ 158.9, 141.7, 141.3, 128.6, 128.5, 128.4, 128.2, 128.0, 126.1, 64.2, 61.5, 48.1, 36.8, 32.2.



3-((5-Methyl-1-phenylhexan-3-yl)amino)oxazolidin-2-one (5): Using

General Procedure A, from hydrazone **1b** (0.0426 g, 0.195 mmol, 1.00 eq),

MgCl₂ (0.0413 g, 0.434 mmol, 2.23 eq), diisopropylammonium

bis(catecholato)isobutylsilicate (0.2370 g, 0.587 mmol, 3.01 eq), and

4CzIPN (0.0247 g, 0.0313 mmol, 0.161 eq) was obtained the title compound (0.0076 g, 14%

yield) as a yellow oil. HRMS(ESI) *m/z* calcd for C₁₆H₂₄N₂O₂Na 299.1735 ([M+Na]⁺), found

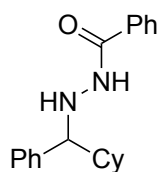
299.1727; ¹H NMR (300 MHz, CDCl₃) δ 7.32-7.26 (m, 2H), 7.23-7.15 (m, 3H), 4.28 (m, apparent

t, *J* = 7.8 Hz, 2H), 4.14 (br s, 1H), 3.60 (m, apparent t, *J* = 7.8 Hz, 2H), 3.13-3.02 (m, 1H), 2.81-

2.59 (m, 2H), 1.84-1.65 (m, 3H), 1.34 (m, apparent t, *J* = 6.8 Hz, 2H), 0.94 (d, *J* = 6.5 Hz, 3H),

0.90 (d, *J* = 6.5 Hz, 3H); ¹³C NMR {¹H} (75 MHz, CDCl₃) δ 159.5, 142.4, 128.5, 128.5, 126.0,

61.4, 56.9, 48.8, 41.9, 34.8, 31.5, 25.0, 23.1, 22.9.



N'-(Cyclohexyl(phenyl)methyl)benzohydrazide (7a): Using General Procedure

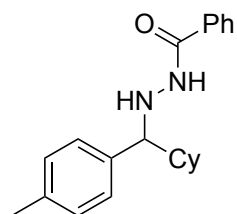
A, from hydrazone **6a** (0.0295 g, 0.132 mmol, 1.00 eq), MgCl₂ (0.0269 g, 0.282

mmol, 2.15 eq), diisopropylammonium bis(catecholato)cyclohexylsilicate (0.0882

g, 0.205 mmol, 1.55 eq), and 4CzIPN (0.0059 g, 0.00747 mmol, 0.0566 eq) was obtained the

title compound (0.0307 g, 75% yield) as a colorless solid. Product identity was confirmed by

comparison of ¹H NMR to literature reports.²



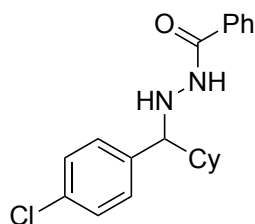
N'-(Cyclohexyl(p-tolyl)methyl)benzohydrazide (7b): Using General

Procedure A, from hydrazone **6b** (0.0298 g, 0.125 mmol, 1.00 eq), MgCl₂

(0.0275 g, 0.289 mmol, 2.31 eq), diisopropylammonium bis(catecholato)-

cyclohexylsilicate (0.1604 g, 0.373 mmol, 2.98 eq), and 4CzIPN (0.0164 g,

0.0208 mmol, 0.166 eq) was obtained the title compound (0.0377 g, 94% yield) as a colorless solid. mp 152-153°C; HRMS(ESI) m/z calcd for $C_{21}H_{26}N_2ONa$ 345.1943 ($[M+Na]^+$), found 345.1948; 1H NMR (300 MHz, $CDCl_3$) δ 7.56-7.54 (m, 1H), 7.53-7.51 (m, 1H), 7.49-7.41 (m, 1H), 7.40-7.32 (m, 2H), 7.25-7.18 (m, 3H), 7.17-7.11 (m, 2H), 5.40 (br d, $J = 7.3$ Hz, 1H), 3.80 (d, $J = 7.7$ Hz, 1H), 2.35 (s, 3H), 2.09-2.00 (m, 1H), 1.85-1.75 (m, 1H), 1.75-1.55 (m, 2H), 1.51-1.39 (m, 1H), 1.34-1.02 (m, 4H), 0.93-0.72 (m, 2H); ^{13}C NMR $\{^1H\}$ (75 MHz, $CDCl_3$) δ 166.9, 138.0, 137.1, 133.2, 131.8, 129.1, 128.7, 128.5, 126.9, 70.4, 42.4, 30.2, 29.5, 26.5, 26.3 (2C), 21.3.

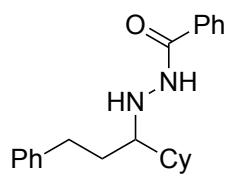


***N'*-((4-Chlorophenyl)(cyclohexyl)methyl)benzohydrazide (7c):** Using

General Procedure A, from hydrazone **6c** (0.0335 g, 0.129 mmol, 1.00 eq), $MgCl_2$ (0.0268 g, 0.281 mmol, 2.18 eq), diisopropylammonium

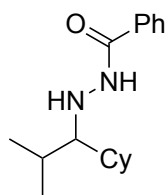
bis(catecholato)cyclohexylsilicate (0.1677 g, 0.390 mmol, 3.02 eq), and

4CzIPN (0.0167 g, 0.0211 mmol, 0.164 eq) was obtained the title compound (0.0373 g, 84% yield) as a colorless solid. mp 173-176°C; HRMS(ESI) m/z calcd for $C_{20}H_{23}N_2OCINa$ 365.1397 ($[M+Na]^+$), found 365.1383; 1H NMR (300 MHz, $CDCl_3$) δ 7.58-7.55 (m, 1H), 7.54-7.52 (m, 1H), 7.51-7.43 (m, 1H), 7.41-7.36 (m, 2H), 7.35-7.31 (m, 1H), 7.31-7.27 (m, 3H), 7.26-7.22 (m, 1H), 5.40 (br s, 1H), 3.84 (d, $J = 7.3$ Hz, 1H), 2.06-1.94 (m, 1H), 1.86-1.75 (m, 1H), 1.74-1.56 (m, 2H), 1.51-1.38 (m, 1H), 1.35-1.04 (m, 4H), 0.95-0.76 (m, 2H); ^{13}C NMR $\{^1H\}$ (75 MHz, $CDCl_3$) δ 167.2, 139.7, 133.1, 132.9, 132.0, 129.9, 128.8, 128.6, 126.9, 70.0, 42.4, 30.1, 29.3, 26.4, 26.2 (2C).



***N'*-(1-Cyclohexyl-3-phenylpropyl)benzohydrazide (7d)**: Using General Procedure A, from hydrazone **6d** (0.0669 g, 0.265 mmol, 1.00 eq), MgCl₂ (0.0520 g, 0.546 mmol, 2.06 eq), diisopropylammonium

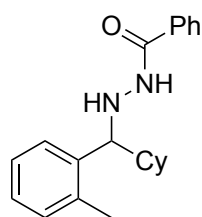
bis(catecholato)cyclohexylsilicate (0.1789 g, 0.416 mmol, 1.57 eq), and 4CzIPN (0.0128 g, 0.0162 mmol, 0.0611 eq) was obtained the title compound (0.0564 g, 63% yield) as a colorless solid. mp 111-114°C; HRMS(ESI) *m/z* calcd for C₂₂H₂₉N₂O 337.2280 ([M+H]⁺), found 337.2281; ¹H NMR (300 MHz, CDCl₃) δ 7.75-7.70 (m, 2H), 7.56-7.49 (m, 1H), 7.49-7.40 (m, 1H), 7.32-7.32 (m, 2H), 7.25-7.14 (m, 3H), 5.02 (br s, 1H), 2.92-2.68 (m, 3H), 1.91-1.62 (m, 7H) 1.62-1.47 (m, 1H) 1.35-1.04 (m, 5H); ¹³C NMR {¹H} (75 MHz, CDCl₃) δ 167.3, 142.7, 133.1, 131.9, 128.9, 128.5 (2C), 126.9, 125.9, 65.3, 40.2, 32.9, 31.6, 29.3, 28.8, 26.8 (3C). **Gram-scale reaction:** Using the same procedure, from hydrazone **6d** (1.0062 g, 3.99 mmol, 1.00 eq), MgCl₂ (0.8235 g, 8.65 mmol, 2.17 eq), diisopropylammonium bis(catecholato)cyclohexylsilicate (2.5945 g, 6.04 mmol, 1.51 eq), and 4CzIPN (0.1822 g, 0.231 mmol, 0.0579 eq) in 40 mL of DMSO was obtained **7d** (0.8005 g, 60% yield) as a colorless solid.



***N'*-(1-Cyclohexyl-2-methylpropyl)benzohydrazide (7e)**: Using General Procedure A, from hydrazone **6e** 0.0399 g (0.210 mmol, 1.00 eq), MgCl₂ (0.0462 g, 0.485 mmol, 2.31 eq), diisopropylammonium bis(catecholato)cyclohexylsilicate

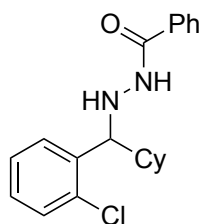
(0.1394 g, 0.324 mmol, 1.55 eq), and 4CzIPN (0.0114 g, 0.0144 mmol, 0.0687 eq) was obtained the title compound (0.0146 g, 25% yield) as a yellow oil. HRMS(ESI) *m/z* calcd for C₁₇H₂₇N₂O 275.2123 ([M+H]⁺), found 275.2122; ¹H NMR (300 MHz, CDCl₃) δ 7.78-7.74 (m, 2H), 7.61-7.54 (m, 1H), 7.53-7.41 (m, 3H), 4.70 (br s, 1H), 2.51 (dd, *J* = 4.9, 4.9 Hz, 1H), 2.04-1.86 (m, 2H), 1.85-1.49 (m, 4H), 1.37-1.12 (m, 6H), 1.07 (d, *J* = 6.9 Hz, 3H), 1.04 (d, *J* = 6.9 Hz, 3H); ¹³C

NMR {¹H} (75 MHz, CDCl₃) δ 166.6, 133.3, 131.9, 128.9, 126.9, 71.5, 39.9, 31.6, 29.4, 29.1, 27.0, 26.8, 26.7, 21.3, 18.7.



N'-(Cyclohexyl(o-tolyl)methyl)benzohydrazide (7f): Using General Procedure A, from hydrazone **6f** (0.0574 g, 0.241 mmol, 1.00 eq), MgCl₂ (0.475 g, 0.499 mmol, 2.07 eq), diisopropylammonium bis(catecholato)cyclohexylsilicate (0.3197 g, 0.744 mmol, 3.09 eq), and

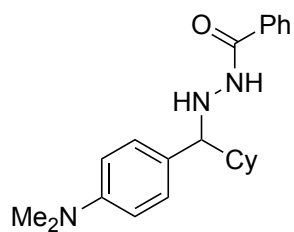
4CzIPN (0.320 g, 0.0405 mmol, 0.168 eq) was obtained the title compound (0.0727 g, 94% yield) as an amorphous solid. mp 130-132 °C; HRMS(ESI) *m/z* calcd for C₂₁H₂₆N₂ONa 345.1943 ([M+Na]⁺), found 345.1938; ¹H NMR (300 MHz, CDCl₃) δ 7.55-7.42 (m, 4H), 7.39-7.32 (m, 2H), 7.28-7.21 (m, 2H), 7.20-7.10 (m, 2H), 4.23 (d, *J* = 8.1 Hz, 1H), 2.26 (s, 3H), 2.19-2.08 (m, 1H), 1.87-1.79 (m, 1H), 1.75-1.59 (m, 3H), 1.40-1.00 (4H), 0.99-0.81 (m, 2H); ¹³C NMR {¹H} (75 MHz, CDCl₃) δ 167.1, 139.7, 137.4, 133.0, 131.7, 130.3, 128.6, 126.8, 126.7, 126.2, 29.8, 29.5, 26.4, 26.3, 26.1, 19.9.



N'-(2-Chlorophenyl)(cyclohexyl)methyl)benzohydrazide (7g): Using General Procedure A, from hydrazone **6g** (0.0443 g, 0.171 mmol, 1.00 eq), MgCl₂ (0.0395g, 0.415 mmol, 2.46 eq), diisopropylammonium bis(catecholato)cyclohexylsilicate (0.2319 g, 0.540 mmol, 3.16 eq), and

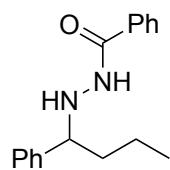
4CzIPN (0.0247 g, 0.313 mmol, 0.183 eq) was obtained the title compound (0.0494 g, 84% yield) as amorphous solid. mp 128-129°C; HRMS(ESI) *m/z* calcd for C₂₀H₂₄N₂OCl 343.1577 ([M+H]⁺), found 343.1576; ¹H NMR (300 MHz, CDCl₃) δ 7.65-7.59 (m, 1H), 7.58-7.53 (m, 2H), 7.50-7.42 (m, 1H), 7.40-7.28 (m, 4H), 7.24-7.15 (m, 2H), 5.49 (br s, 1H), 4.50 (d, *J* = 7.4 Hz, 1H), 2.13-2.03 (m, 1H), 1.88-1.53 (m, 4H), 1.49-1.05 (m, 6H); ¹³C NMR {¹H} (75 MHz, CDCl₃) δ

167.1, 139.0, 135.2, 133.0, 131.7, 129.5, 129.0, 128.6, 128.2, 126.9, 126.8, 65.7, 42.2, 29.4 (2C), 26.3, 26.2, 26.1.



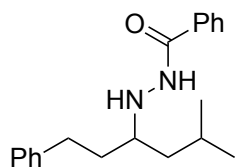
N'-(Cyclohexyl(4-(dimethylamino)phenyl)methyl)benzohydrazide

(7h): Using General Procedure A, from hydrazone **6h** (0.0464 g, 0.174 mmol, 1.00 eq), MgCl₂ (0.0360 g, 0.378 mmol, 2.17 eq), diisopropylammonium bis(catecholato)cyclohexylsilicate (0.2318 g, 0.540 mmol, 3.10 eq), and 4CzIPN (0.0224 g, 0.284 mmol, 0.163 eq) was obtained the title compound (0.0195 g, 32% yield) as a yellow solid. mp 123-125°C; HRMS(ESI) *m/z* calcd for C₂₂H₃₀N₃O 352.2389 ([M+H]⁺), found 352.2397; ¹H NMR (300 MHz, CDCl₃) δ 7.58-7.52 (m, 2H), 7.49-7.41 (m, 1H), 7.39-7.31 (m, 2H), 7.25-7.14 (m, 3H), 6.75-6.68 (m, 2H), 5.43 (br s, 1H), 3.72 (d, *J* = 7.7 Hz, 1H), 2.96 (s, 6H), 2.09-1.99 (m, 1H), 1.85-1.75 (m, 1H), 1.70-1.40 (m, 4H), 1.35-0.79 (m, 5H); ¹³C NMR {¹H} (75 MHz, CDCl₃) δ 166.7, 150.0, 133.3, 131.7, 129.3, 128.7 (2C), 126.9, 112.4, 70.1, 42.5, 40.8, 30.3, 29.5, 26.5, 26.3 (2C).



N'-(1-Phenylbutyl)benzohydrazide (8): Using General Procedure A, from

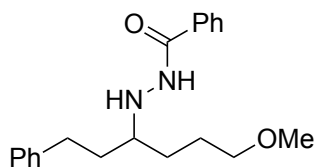
hydrazone **6a** (0.0287 g, 0.128 mmol, 1.00 eq), MgCl₂ (0.0283 g, 0.297 mmol, 2.32 eq), diisopropylammonium bis(catecholato)propylsilicate (0.1543 g, 0.396 mmol, 3.09 eq), and 4CzIPN (0.0179 g, 0.0227 mmol, 0.177 eq) was obtained the title compound (0.0231 g, 67% yield) as a yellow oil. HRMS(ESI) *m/z* calcd for C₁₇H₂₀N₂O 291.1473 ([M+Na]⁺), found 291.1472; ¹H NMR (300 MHz, CDCl₃) δ 7.61-7.56 (m, 2H), 7.51-7.44 (m, 1H), 7.42-7.39 (m, 2H), 7.38-7.34 (m, 5H), 7.33-7.26 (m, 1H), 5.20 (br s, 1H), 4.07 (dd, *J* = 8.2, 5.8 Hz, 1H), 1.89-1.59 (m, 2H) 1.44-1.14 (m, 2H), 0.91 (t, *J* = 7.3 Hz, 3H); ¹³C NMR {¹H} (75 MHz, CDCl₃) δ 167.3, 142.2, 133.0, 131.9, 128.8, 128.7, 128.0, 127.7, 126.9, 65.3, 37.6, 19.4, 14.2.



***N'*-(5-Methyl-1-phenylhexan-3-yl)benzohydrazide (9):** Using General Procedure A, from hydrazone **6b** (0.0517 g, 0.205 mmol, 1.00 eq), MgCl₂ (0.0433 g, 0.455 mmol, 2.22 eq), diisopropylammonium

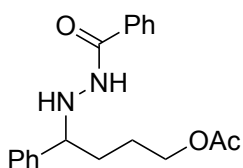
bis(catecholato)isobutylsilicate (0.1403 g, 0.348 mmol, 1.70 eq), and 4CzIPN (0.0101 g, 0.0128 mmol, 0.0624 eq) was obtained the title compound (0.0296 g, 47% yield) as a yellow oil.

HRMS(ESI) *m/z* calcd for C₂₀H₂₇N₂O 311.2123 ([M+H]⁺), found 311.2121; ¹H NMR (300 MHz, CDCl₃) δ 7.74-7.69 (m, 2H), 7.56-7.40 (m, 4H), 7.32-7.25 (m, 2H), 7.25-7.14 (m, 3H), 4.98 (br s, 1H), 3.09-3.02 (m, 1H), 2.84-2.66 (m, 2H), 1.90-1.71 (m, 3H), 1.49-1.29 (m, 2H), 0.97 (d, *J* = 6.5 Hz, 3H), 0.92 (d, *J* = 6.6 Hz, 3H); ¹³C NMR {¹H} (75 MHz, CDCl₃) δ 167.5, 142.6, 133.1, 132.0, 128.9, 128.5 (2C), 126.9, 125.9, 58.2, 42.3, 35.0, 31.9, 25.2, 23.3, 22.9.



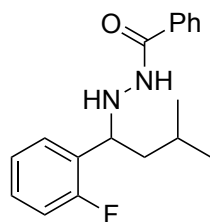
***N'*-(6-Methoxy-1-phenylhexan-3-yl)benzohydrazide (10):** Using General Procedure A, from hydrazone **6b** (0.0640 g, 0.254 mmol, 1.00 eq), MgCl₂ (0.0525 g, 0.551 mmol, 2.17 eq), diisopropyl-

ammonium bis(catecholato)(3-methoxypropyl)silicate (0.1661 g, 0.396 mmol, 1.56 eq), and 4CzIPN (0.0123 g, 0.0156 mmol, 0.0614 eq) was obtained the title compound (0.0508 g, 61% yield) as a colorless oil. HRMS(ESI) *m/z* calcd for C₂₀H₂₇N₂O₂ 327.2073 ([M+H]⁺), found 327.2073; ¹H NMR (300 MHz, CDCl₃) δ 7.77-7.70 (m, 3H), 7.56-7.40 (m, 3H), 7.32-7.15 (m, 5H), 5.02 (br s, 1H), 3.48-3.40 (m, 2H), 3.34 (s, 3H), 3.07-2.98 (m, 1H), 2.76 (m, apparent t, *J* = 8.0 Hz, 2H), 1.89-1.52 (m, 6H); ¹³C NMR {¹H} (75 MHz, CDCl₃) δ 167.2, 142.4, 133.1, 131.9, 128.8, 128.5 (2C), 127.0, 126.0, 73.0, 59.7, 58.8, 34.4, 32.1, 28.7, 25.3.



4-(2-Benzoylhydrazinyl)-4-phenylbutyl acetate (11): Using General Procedure A, from hydrazone **6a** (0.0589 g, 0.263 mmol, 1.00 eq), MgCl₂

(0.570 g, 0.599 mmol, 2.28 eq), diisopropylammonium bis(catecholato)(3-acetoxypropyl)silicate (0.1900 g, 0.424 mmol, 1.61 eq), and 4CzIPN (0.0123 g, 0.0156 mmol, 0.0593 eq) was obtained the title compound (0.0638 g, 74% yield) as an amorphous solid. mp 94-97°C; HRMS(ESI) m/z calcd for $C_{19}H_{22}N_2O_3Na$ 349.1528 ($[M+Na]^+$), found 349.1525; 1H NMR (300 MHz, $CDCl_3$) δ 7.62-7.57 (m, 2H), 7.51-7.44 (m, 2H), 7.41 -7.26 (m, 7H), 5.16 (br s, 1H), 4.09 (dd, $J = 8.2, 6.7$ Hz, 1H), 4.02 (m, apparent t, $J = 6.4$ Hz, 2H), 2.01 (s, 3H), 1.98-1.85 (m, 1H), 1.82-1.43 (m, 3H); ^{13}C NMR $\{^1H\}$ (75 MHz, $CDCl_3$) δ 171.2, 167.3, 141.3, 132.8, 131.9, 128.7 (3C), 127.9, 126.8, 64.9, 64.2, 31.5, 25.1, 21.0.



***N'*-(1-(2-Fluorophenyl)-3-methylbutyl)benzohydrazide (12):** Using General

Procedure A, from 2-fluorobenzaldehyde *N*-benzoylhydrazone (0.0506 g, 0.209 mmol, 1.00 eq), $MgCl_2$ (0.0424 g, 0.445 mmol, 2.13 eq),

diisopropylammonium bis(catecholato)isobutylsilicate (0.1436 g, 0.356 mmol,

1.70 eq), and 4CzIPN (0.0099 g, 0.0125 mmol, 0.0598 eq) was obtained the title compound

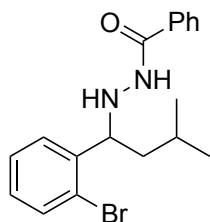
(0.0485 g, 77% yield) as a yellow oil. mp 67-70°C; HRMS(ESI) m/z calcd for $C_{18}H_{22}N_2OF$

301.1716 ($[M+H]^+$), found 301.1720; 1H NMR (300 MHz, $CDCl_3$) δ 7.63-7.55 (m, 2H), 7.55-7.44 (m, 3H), 7.42-7.33 (m, 3H), 7.29-7.13 (m, 2H), 7.07-6.99 (m, 1H), 5.23 (br s, 1H), 4.55 (m,

apparent t, $J = 7.3$ Hz, 1H), 1.76-1.58 (m, 3H), 0.97 (d, $J = 6.3$ Hz, 3H), 0.95 (d, $J = 6.3$ Hz, 6H);

^{13}C NMR $\{^1H\}$ (75 MHz, $CDCl_3$) δ 167.4, 160.0, 133.1, 131.9, 128.9, 128.8 (2C), 127.0 (2C),

124.5, 115.8 (d, $J_{CF} = 22.8$ Hz), 56.7, 43.6, 25.3, 23.1, 22.8.



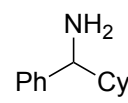
***N'*-(1-(2-Bromophenyl)-3-methylbutyl)benzohydrazide (13):** Using General

Procedure A, from 2-bromobenzaldehyde *N*-benzoylhydrazone (0.0828 g,

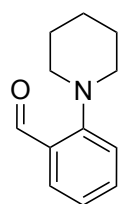
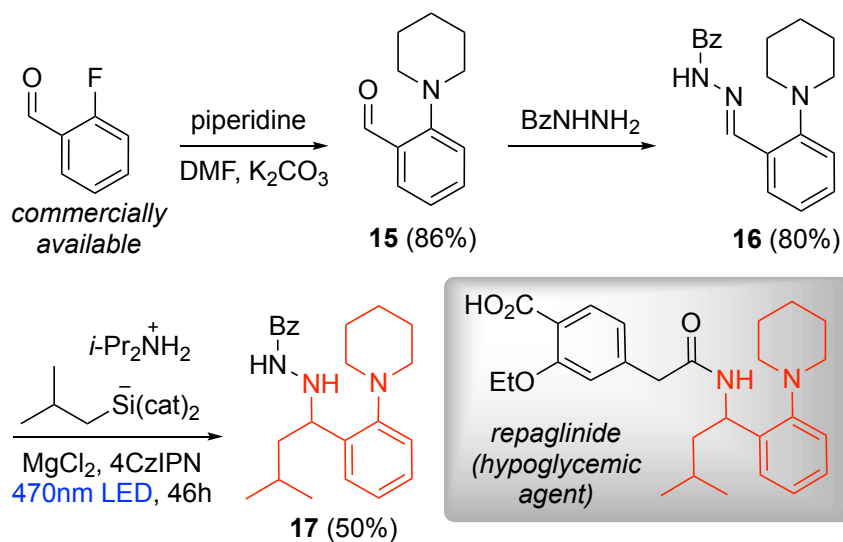
0.273 mmol, 1.00 eq), $MgCl_2$ (0.0576 g, 0.605 mmol, 2.22 eq),

diisopropylammonium bis(catecholato)isobutylsilicate (0.1728 g, 0.428 mmol, 1.57 eq), and 4CzIPN (0.0151 g, 0.0191 mmol, 0.07 eq) was obtained the title compound (0.0800 g, 81% yield) as an amorphous solid. mp 106-107°C; HRMS(ESI) m/z calcd for $C_{18}H_{22}N_2O^{\delta 1}Br$ 363.08941($[M+H]^+$), found 363.0894; 1H NMR (300 MHz, $CDCl_3$) δ 7.65-7.57 (m, 3H), 7.56-7.51 (m, 1H), 7.50-7.43 (m, 1H), 7.40-7.31 (m, 4H), 7.15-7.09 (m, 1H), 5.28 (br s, 1H), 4.73 (t, $J = 7.0$ Hz, 1H), 1.81-1.51 (m, 3H), 1.04 (d, $J = 6.4$ Hz, 3H), 0.97 (d, $J = 6.5$ Hz, 3H); ^{13}C NMR { 1H } (75 MHz, $CDCl_3$) δ 167.4, 141.8, 133.0, 131.8, 128.9, 128.7 (2C), 127.9, 127.0 (2C), 125.1, 61.7, 44.2, 25.4, 23.4, 22.6.

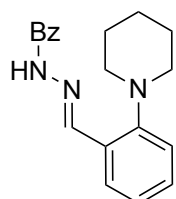
Reductive Cleavage of N-N Bond

 **Cyclohexyl(phenyl)methanamine (14)**: To a solution of **7a** (0.0895 g, 0.290 mmol, 1.00 eq) in 1:1 THF:MeOH (1 mL) under Ar was added a solution of Sml_2 in THF dropwise via syringe until the reaction mixture sustained a blue color. At this time, opening the reaction to air caused the mixture to quickly turn yellow, and it was promptly filtered through a pad of Celite using EtOAc. Concentration and gradient flash chromatography (hexanes and EtOAc, with 1% Et_3N to buffer silica) furnished the title compound (0.0363 g, 66% yield) as an orange oil. Product identity was confirmed by comparison of 1H NMR to literature reports.⁵

Formal Synthesis of Racemic Repaglinide

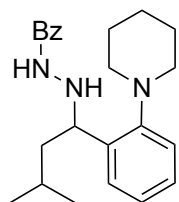


2-(Piperidin-1-yl)benzaldehyde (15): To a mixture of K_2CO_3 (2.7298 g, 19.8 mmol, 2.08 eq) and 2-fluorobenzaldehyde (1.00 mL, 9.51 mmol, 1.00 eq) in DMF (10 mL) was added piperidine (0.95 mL, 9.62 mmol, 1.01 eq). The reaction mixture was heated at reflux for 20.5 h, and then cooled to room temperature. Filtration, rinsing the solid fraction with EtOAc, and concentration afforded an orange oil. Gradient flash chromatography (50:1 hexanes:EtOAc to 10:1) furnished the title compound (1.5462 g, 86% yield) as a viscous yellow oil. Product identity was confirmed by comparison of 1H NMR to literature reports.⁶



N'-(2-(Piperidin-1-yl)benzylidene)benzohydrazide (16): A mixture of **15** (0.3488 g, 1.84 mmol, 1.07 eq), benzoic hydrazide (0.2345 g, 1.72 mmol, 1.00 eq) and EtOH (5 mL) was irradiated in sealed tube in a microwave reactor (limits set at 160 °C, 300W) for 15 min. After concentration, the solid was washed with Et_2O and stored in vacuo, removing residual solvent, to furnish the title compound (0.4219 g, 80% yield) as a yellow solid. mp 231-233°C (decomp.); HRMS(ESI) m/z calcd for $C_{19}H_{22}N_3O$ 308.1763 ($[M+H]^+$),

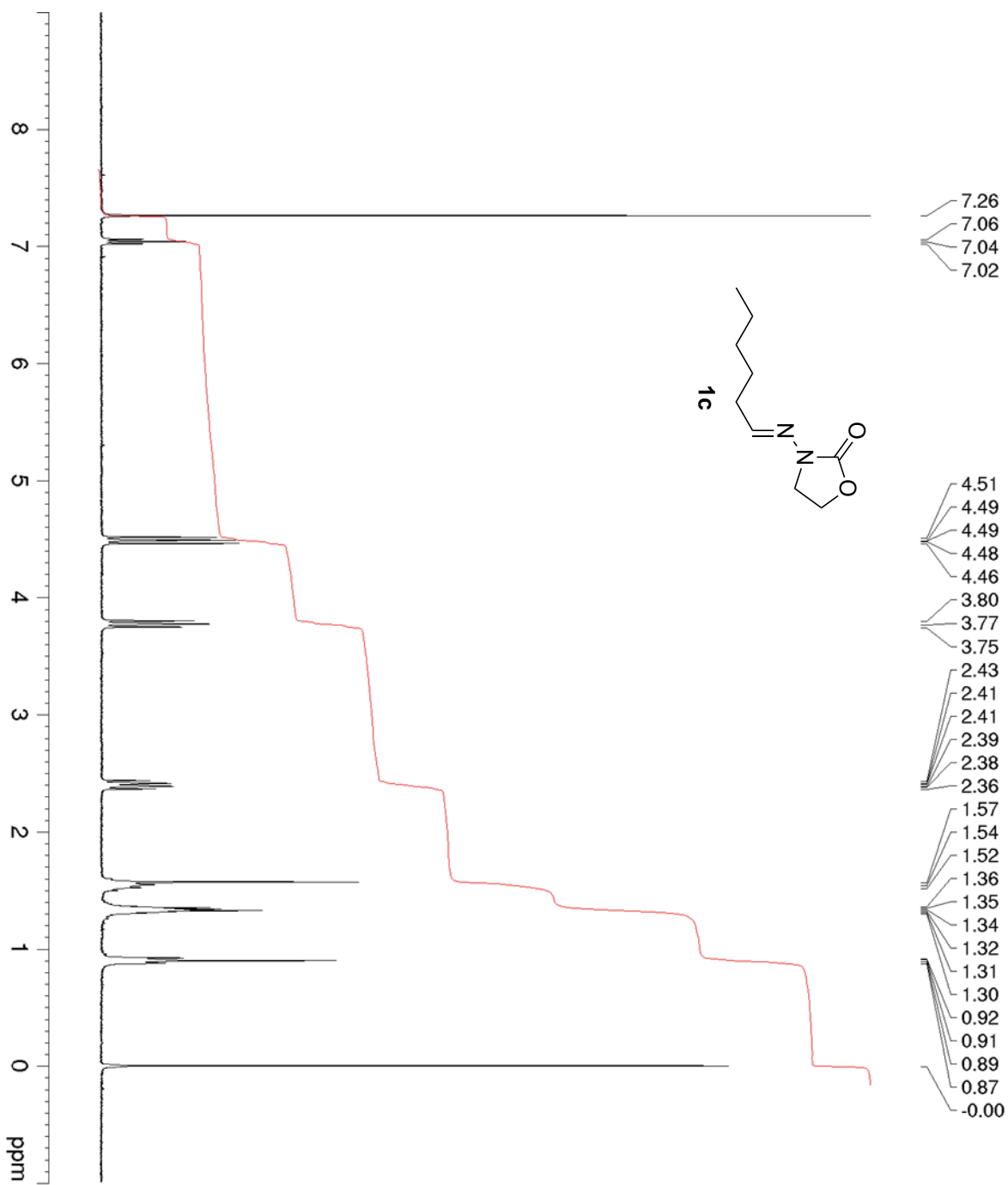
found 308.1762; ^1H NMR (300 MHz, DMSO) δ 11.87 (s, 1H), 8.71 (s, 1H), 7.96-7.81 (m, 3H), 7.64-7.47 (m, 3H), 7.42-7.32 (m, 1H), 7.16-7.06 (m, 2H), 2.90-2.79 (m, 4H), 1.77-1.66 (m, 4H), 1.60-1.48 (m, 2H); ^{13}C NMR $\{\text{H}\}$ δ 163.3, 153.5, 145.6, 133.7, 131.6, 131.4, 130.7, 128.4, 127.7, 126.3, 122.8, 119.3, 54.3, 53.0, 25.8, 25.0, 23.6.



***N'*-(3-methyl-1-(2-(piperidin-1-yl)phenyl)butyl)benzohydrazide (17): A**

mixture of **16** (0.0537 g, 0.175 mmol, 1.00 eq) and MgCl_2 (0.0491 g, 0.516 mmol, 2.95 eq) in DMSO (2.7 mL) was stirred under Ar. After 1 h, diisopropylammonium bis(catecholato)isobutylsilicate (0.960 g, 0.238 mmol, 1.36 eq) and 4CzIPN (0.0233 g, 0.0295 mmol, 0.169 eq) were added. The reaction mixture was irradiated with 470 nm LED light under Ar at ca. 30 °C. At 6 h and 15 h, additional portions of silicate (0.0641 g, 0.0571 g, and 0.0516 g) were added as solutions in DMSO (0.2 mL) and radiation was resumed. A total of 3.80 equivalents of silicate were added in 4 portions. After 44 h of irradiation, workup and purification as in General Procedure A furnished the title compound (0.0321 g, 50% yield) as a yellow oil. HRMS(ESI) m/z calcd for $\text{C}_{23}\text{H}_{32}\text{N}_3\text{O}$ 366.2545 ($[\text{M}+\text{H}]^+$), found 366.2546; ^1H NMR (300 MHz, CDCl_3) δ 7.61-7.51 (m, 3H), 7.49-7.32 (m, 4H), 7.24-7.20 (m, 1H), 7.17-7.08 (m, 2H), 5.26 (br s, 1H), 4.87 (t, $J = 7.2$ Hz, 1H), 2.97-2.62 (m, 4H), 1.78-1.36 (m, 9H), 1.01 (t, $J = 6.4$ Hz, 1H), 0.99 (t, $J = 6.1$ Hz, 1H); ^{13}C NMR $\{\text{H}\}$ (75 MHz, CDCl_3) δ 167.1, 154.0, 138.6, 133.3, 131.7, 128.7, 127.9, 127.7, 126.8, 124.4, 120.8, 56.2, 55.0, 45.1, 26.6 (2C), 25.3, 24.3, 23.5, 22.8.

Spectral Data for New Compounds



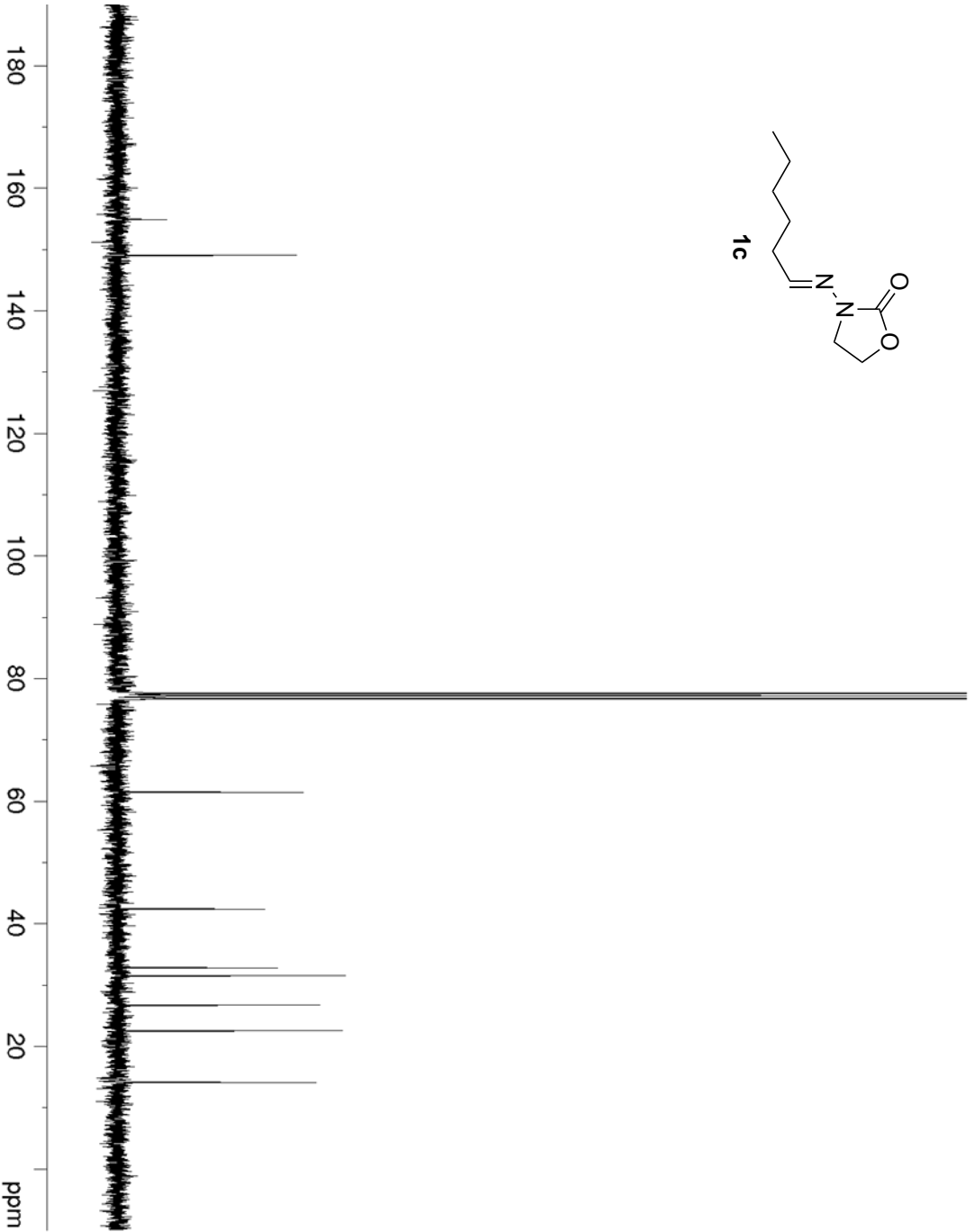
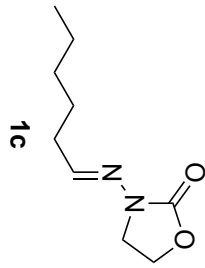
Current Data Parameters
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 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20180611
 Time 14:56
 INSTRUM FURIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 8
 DS 2
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQ 5.3687091 sec
 RG 131.952
 DW 81.920 usec
 DE 6.50 usec
 TE 294.6 K
 D1 1.00000000 sec
 TDO 1

===== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800050 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

154.8
149.0
61.4
42.4
32.8
31.5
26.7
22.5
14.1



Current Data Parameters
NAME SC-03-148 13C
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20190605

Time 11.23
INSTRUM FOUERIER300
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 500
DS 4
SWH 24414.063 Hz
FIDRES 0.372529 Hz
AQ 1.3421773 sec
RG 501.187
DW 20.480 usec
DE 6.50 usec
TE 294.5 K
D1 2.00000000 sec
D11 0.03000000 sec
D31 0.00001500 sec
D40 0.030008300 sec
L4 40
L5 57
P32 90.00 usec
TD0 1

===== CHANNEL f1 =====
SFO1 75.4878687 MHz
NUC1 13C
P1 15.00 usec
PLW1 22.00000000 W

===== CHANNEL f2 =====
SFO2 300.1812007 MHz
NUC2 1H
CPDPRG12 waltz16
PCPD2 90.00 usec
PLW2 13.80399990 W
PLW12 0.38343999 W
PLW13 0.31059000 W

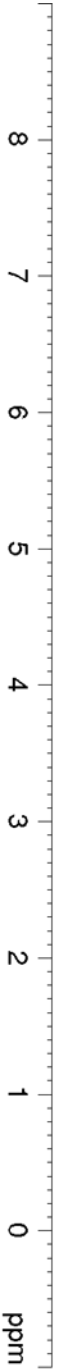
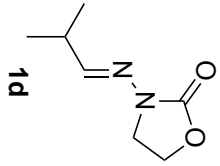
F2 - Processing parameters
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SF 75.4803128 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

7.26
6.91
6.89

4.51
4.48
4.48
4.45
3.79
3.76
3.74

2.73
2.71
2.69
2.66

1.14
1.12



Current Data Parameters
NAME SC-02-268 1H washed
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20190612
Time 13:32

INSTRUM FOUJIER300
PROBHD 5 mm DUL 13C-1
PULPROG zg30

TD 65536
SOLVENT CDC13
NS 8

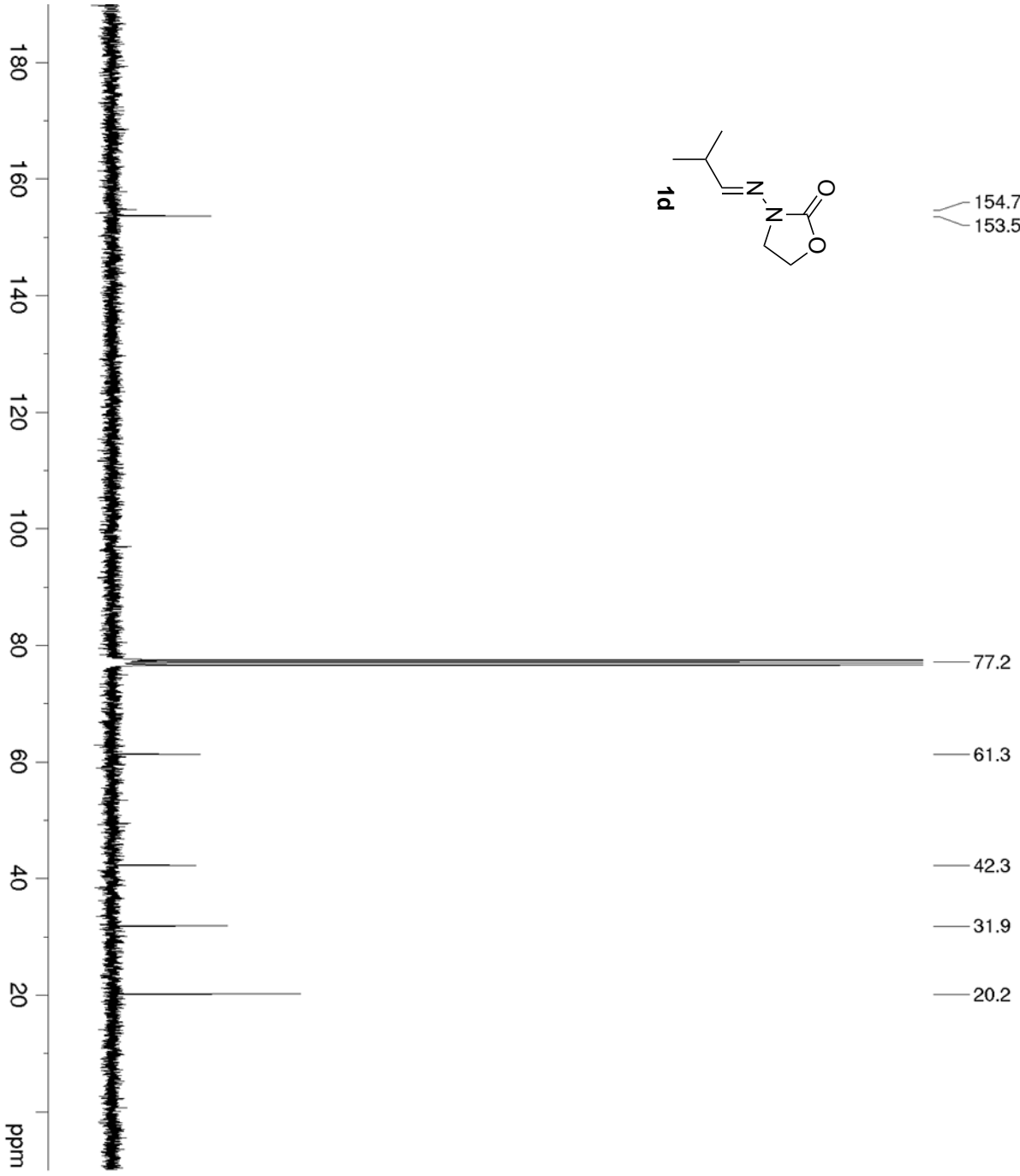
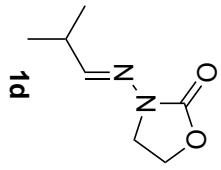
DS 0
SWH 6103.516 Hz
FIDRES 0.093132 Hz

RG 103.888
AQ 5.3687091 sec
DW 81.920 usec
DE 6.50 usec
TE 294.5 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
SFO1 300.1818537 MHz
NUC1 1H
P1 15.00 usec
PLW1 13.80399990 W

F2 - Processing parameters
SI 65536
SF 300.1800050 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

154.7
153.5



Current Data Parameters
 NAME SC-02-268 13C
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190615
 Time 12.39

INSTRUM FURIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 857
 DS 4

SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQC 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.3 K

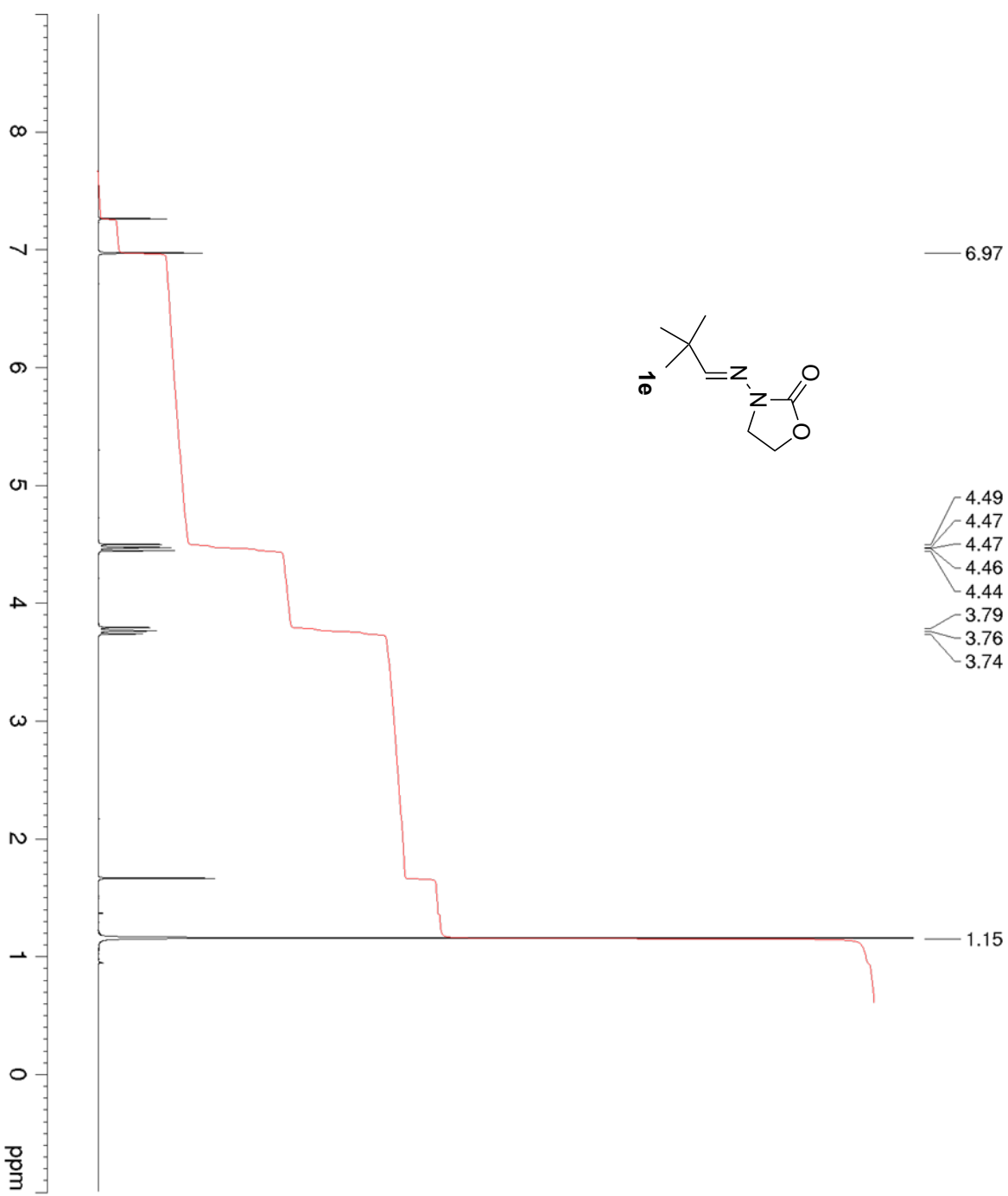
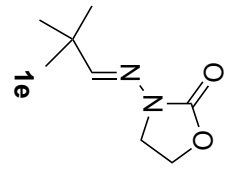
D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.030008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TD0 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803210 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

6.97
 4.49
 4.47
 4.47
 4.46
 4.44
 3.79
 3.76
 3.74



Current Data Parameters
 NAME SC-03-147 1H wash
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190612
 Time 13:38

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30

TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0

SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQC 5.3687091 sec

RG 59.1213
 DW 81.920 usec
 DE 6.50 usec
 TE 294.5 K

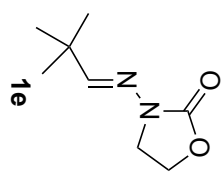
D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

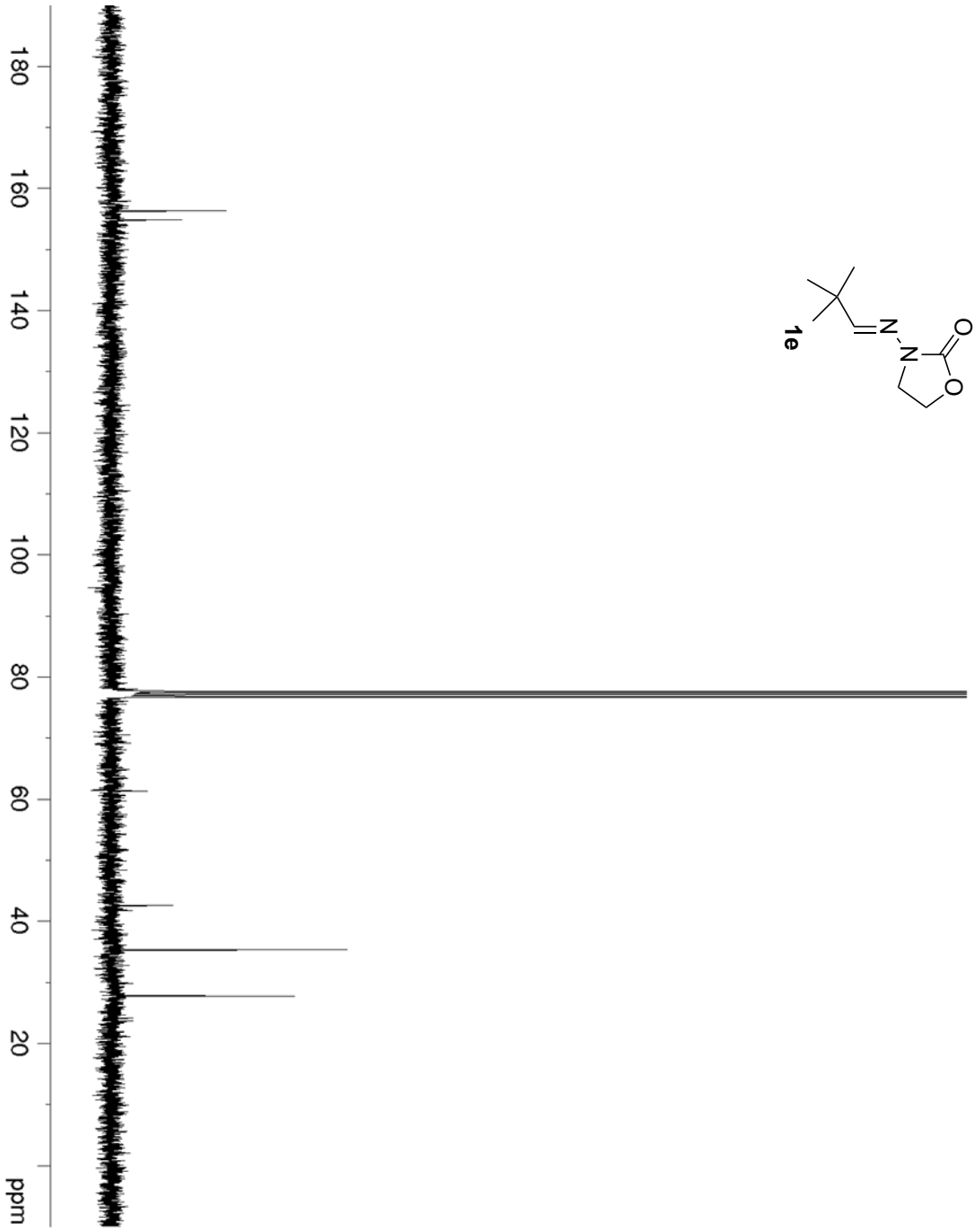
F2 - Processing parameters
 SI 65536
 SF 300.1800049 MHz
 WDW EM

SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

156.2
154.7



61.3
42.5
35.3
27.7



Current Data Parameters
 NAME SC-03-147 13C
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190615
 Time 13:32

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 845
 DS 4
 SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQC 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.5 K

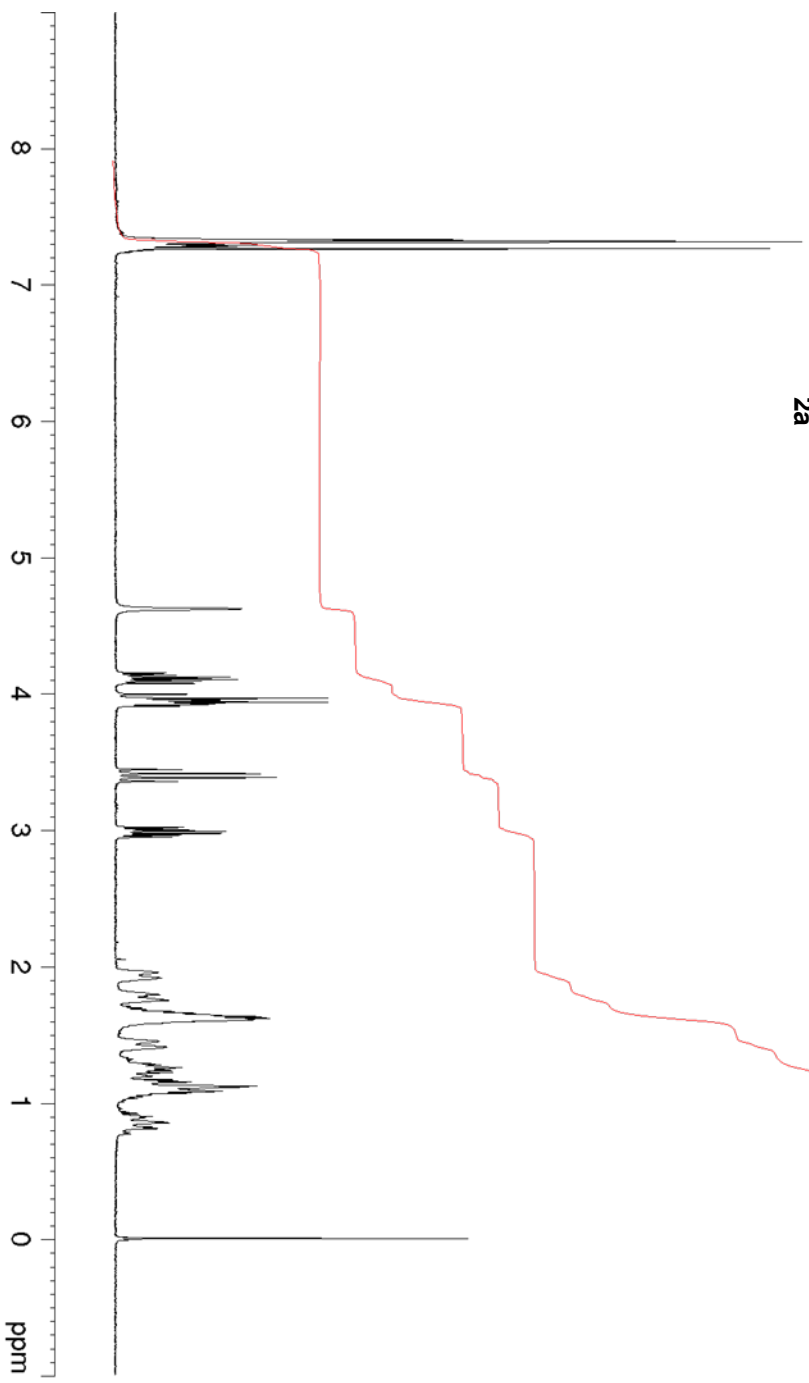
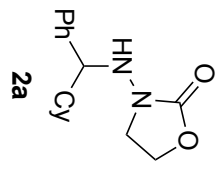
D1 4.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.02560300 sec
 L4 40
 L5 115
 P32 90.00 usec
 TD0 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803124 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

7.33
7.33
7.32
7.31
7.30
7.30
7.30
7.29
7.28
7.28
7.26
4.62
4.62
4.12
4.10
4.09
4.07
3.99
3.97
3.95
3.95
3.94
3.93
3.92
3.91
3.44
3.41
3.41
3.38
3.35
3.02
3.00
2.99
2.97
2.96
1.65
1.64
1.63
1.62
1.61
1.59
1.25
1.16
1.15
1.12
1.11
1.09
1.08
1.07
-0.00



Current Data Parameters
NAME SC-02-196 Trxns 13-19
EXPNO 1
PROCNO 1

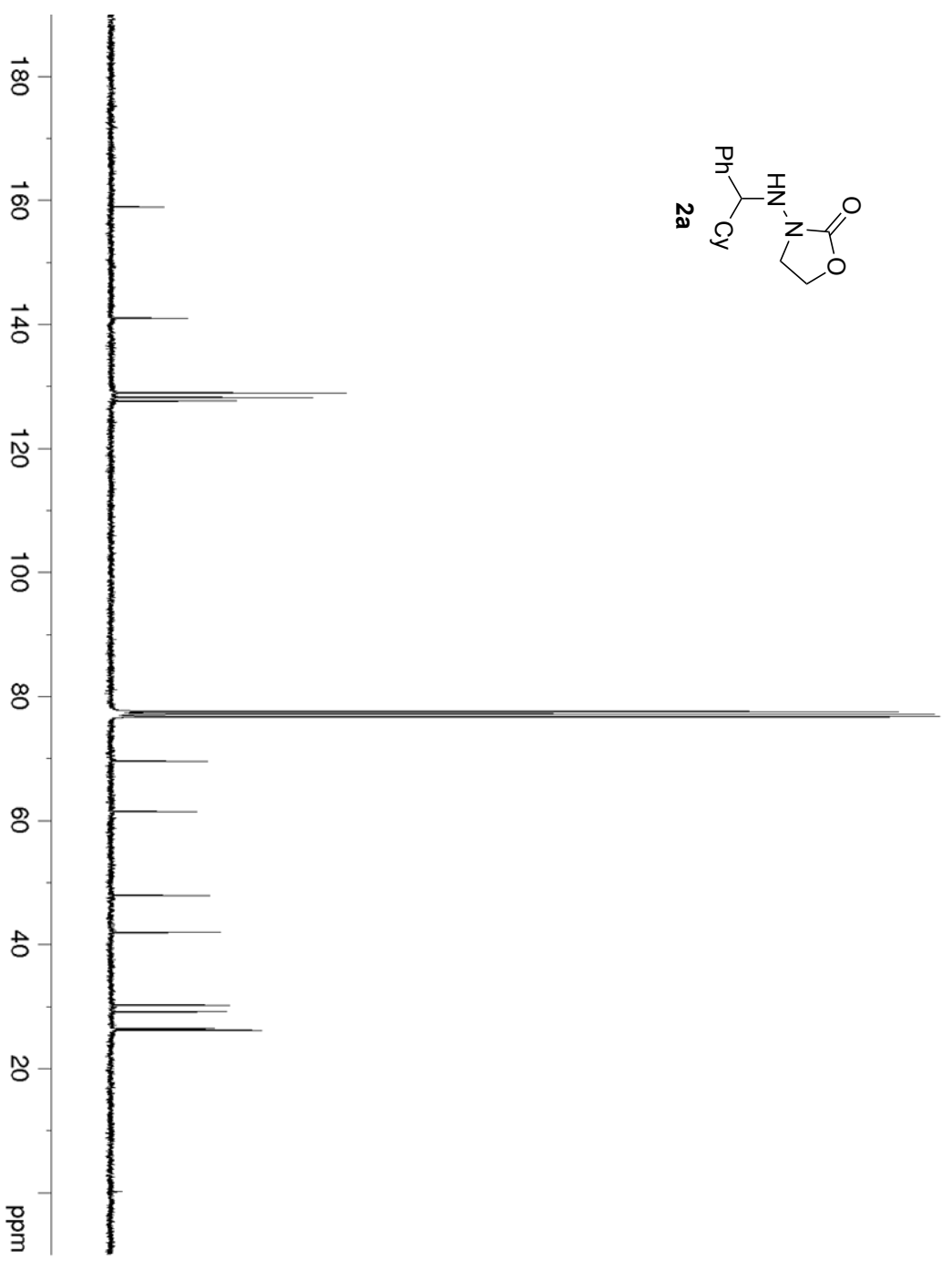
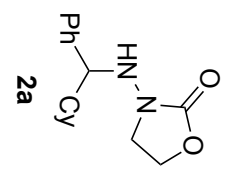
F2 - Acquisition Parameters
Date_ 20180419
Time 15:53

INSTRUM FOUERIER300
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 8
DS 2
SWH 6103.516 Hz
FIDRES 0.093132 Hz
AQ 5.3687091 sec
RG 59.732
DW 81.920 usec
DE 6.50 usec
TE 294.4 K
D1 1.00000000 sec
TD0 1

==== CHANNEL f1 =====
SFO1 300.1818537 MHz
NUC1 1H
P1 15.00 usec
PLW1 13.80399990 W

F2 - Processing parameters
SI 65536
SF 300.1800039 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

158.8
 140.9
 128.8
 128.1
 127.5
 69.6
 61.4
 47.9
 41.9
 30.2
 29.1
 26.4
 26.2



Current Data Parameters
 NAME SC-02-196 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20180510
 Time 19:51

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30

TD 65536
 SOLVENT CDC13

NS 3500
 DS 4
 SWH 24414.063 Hz
 FIDRES 0.372529 Hz

AQ 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.7 K

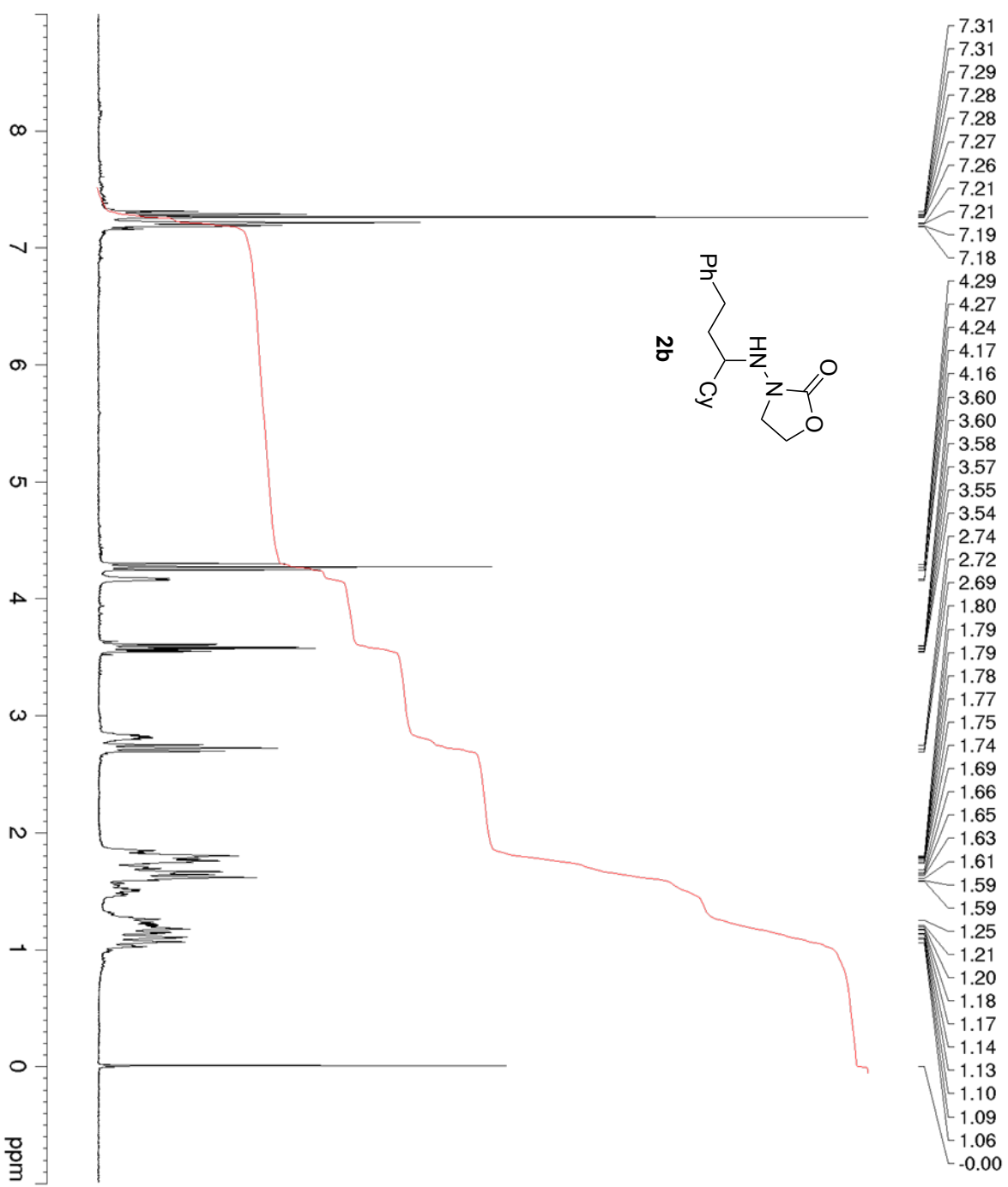
D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.030008300 sec

L4 40
 L5 57
 P32 90.00 usec
 TDO 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803128 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



Current Data Parameters
 NAME SC-02-265 ftrns 5-6
 EXPNO 1
 PROCNO 1

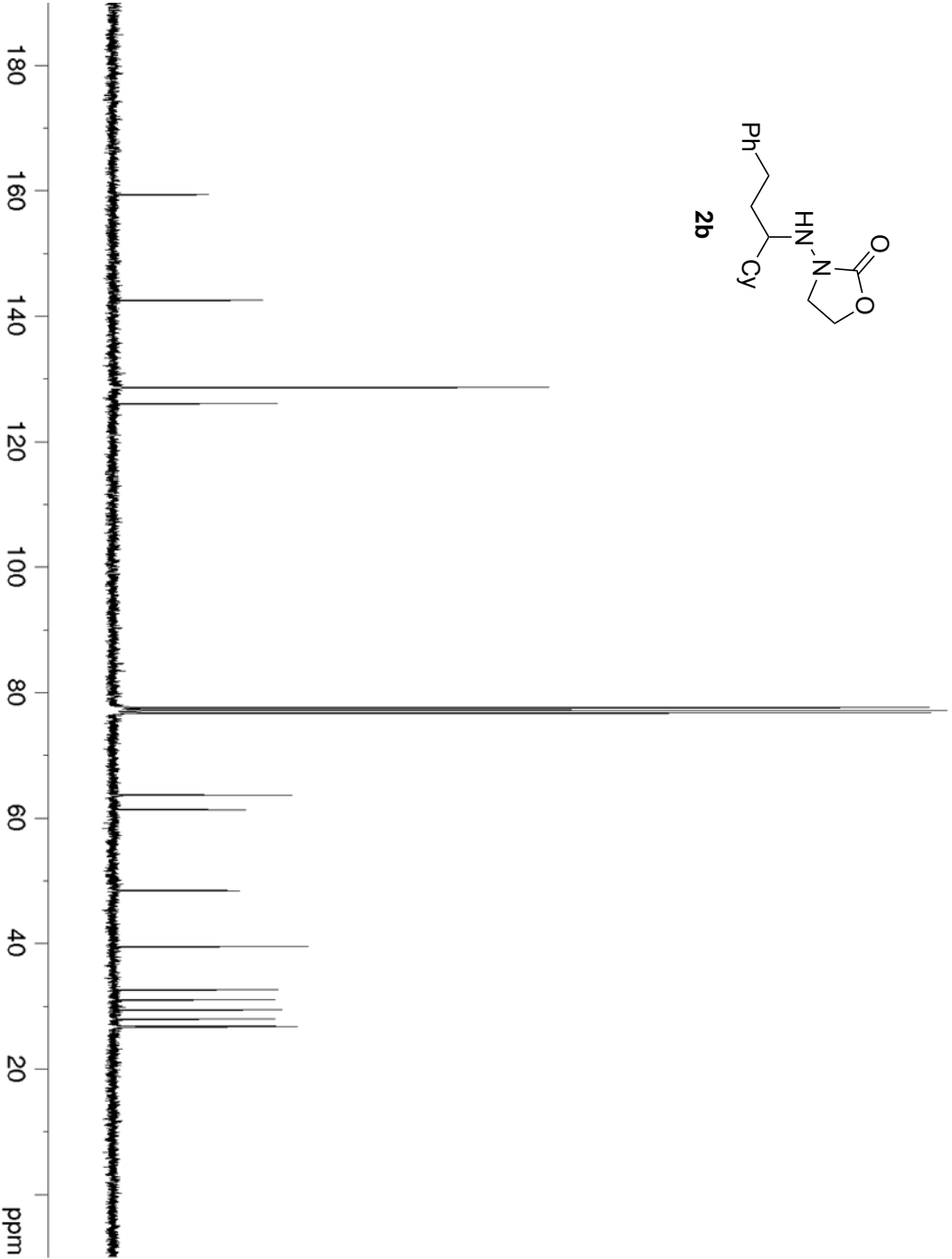
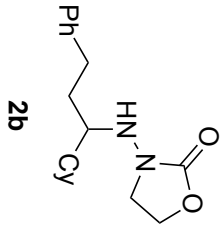
F2 - Acquisition Parameters
 Date_ 20180702
 Time 9:51

INSTRUM FOURIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 8
 DS 2
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQ 5.3687091 sec
 RG 32
 DW 81.920 usec
 DE 6.50 usec
 TE 294.7 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800052 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

- 159.3
- 142.4
- 128.5
- 128.5
- 125.9
- 63.6
- 61.3
- 48.4
- 39.5
- 32.6
- 31.0
- 29.4
- 27.9
- 26.8
- 26.7
- 26.7



Current Data Parameters
 NAME SC-03-175-13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190328
 Time 15:04

INSTRUM FOUJIER300
 PROBHD 5 mm DUL-13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 850
 DS 0

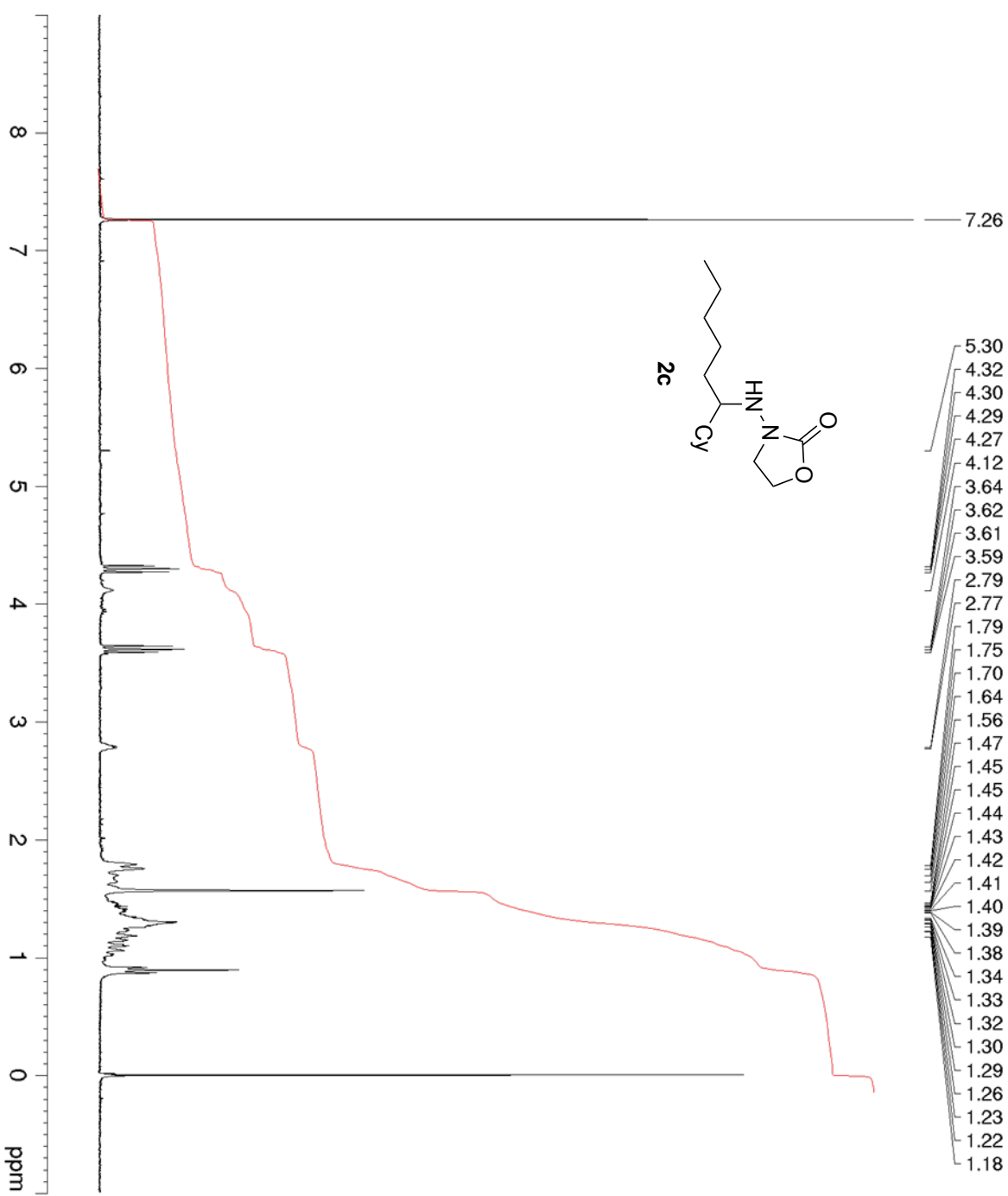
SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQ 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.2 K

D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.03008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TD0 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803139 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



- 5.30
- 4.32
- 4.30
- 4.29
- 4.27
- 4.12
- 3.64
- 3.62
- 3.61
- 3.59
- 2.79
- 2.77
- 1.79
- 1.75
- 1.70
- 1.64
- 1.56
- 1.47
- 1.45
- 1.45
- 1.44
- 1.43
- 1.42
- 1.41
- 1.40
- 1.39
- 1.38
- 1.34
- 1.33
- 1.32
- 1.30
- 1.29
- 1.26
- 1.23
- 1.22
- 1.18

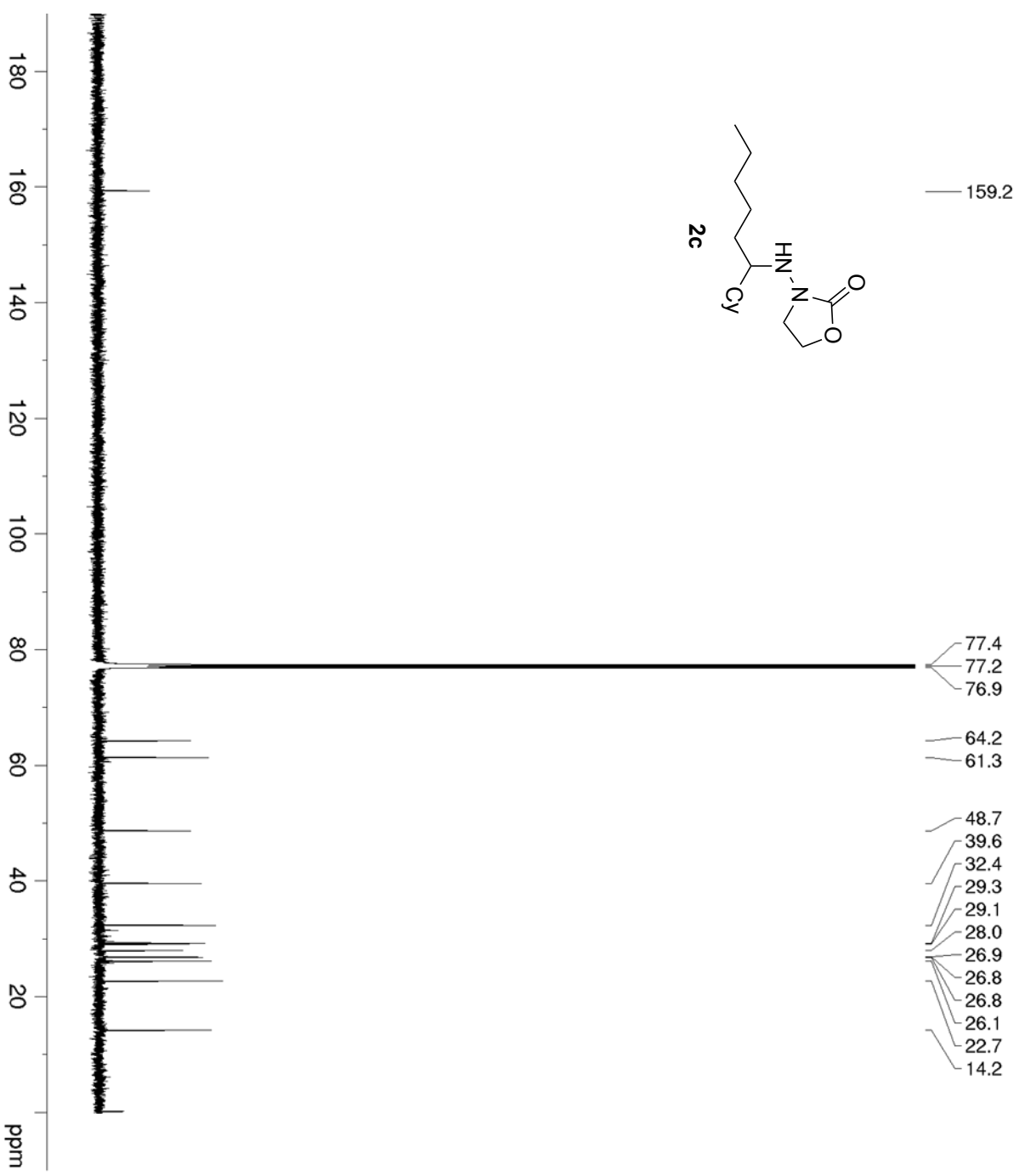
Current Data Parameters
 NAME SC-03-150 1H
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190304
 Time 16.26

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 8
 DS 0
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQ 5.3687091 sec
 RG 103.315
 DW 81.920 usec
 DE 6.50 usec
 TE 295.2 K
 D1 0.10000000 sec
 TD0 1

===== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800050 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



Current Data Parameters
 NAME sc-03-150
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190307
 Time 9:06

INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30

TD 65536
 SOLVENT CDCI3

NS 1024
 DS 4

SWH 25252.525 Hz
 FIDRES 0.385323 Hz

AQ 1.2976128 sec
 RG 23170.5

DW 19.800 usec
 DE 6.50 usec

TE 297.2 K
 D1 10.00000000 sec

D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C

P1 10.00 usec
 PL1 -1.70 dB

PL1W 148.61408997 W
 SFO1 125.8131151 MHz

===== CHANNEL f2 =====
 CPDPRG12 waitz16

NUC2 1H
 PCPD2 80.00 usec

PL2 -1.10 dB
 PL12 15.40 dB

PL13 17.40 dB
 PL2W 19.41561890 W

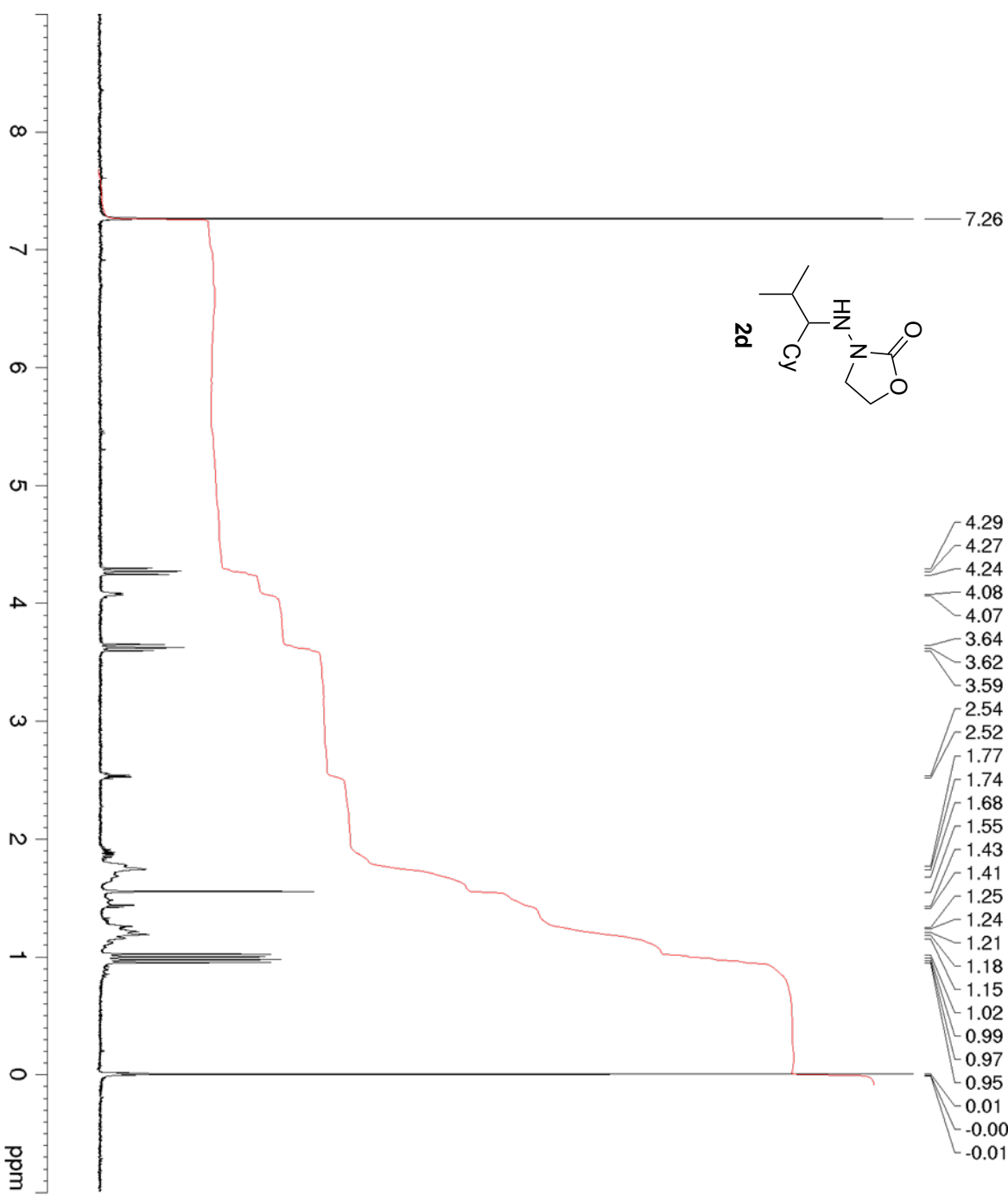
PL12W 0.43466163 W
 PL13W 0.27425295 W

SFO2 500.3020012 MHz

F2 - Processing parameters
 SI 32768

SF 125.8005176 MHz
 WDW EM

SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



Current Data Parameters
 NAME SC-03-138 1H
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190114
 Time 15.45

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3

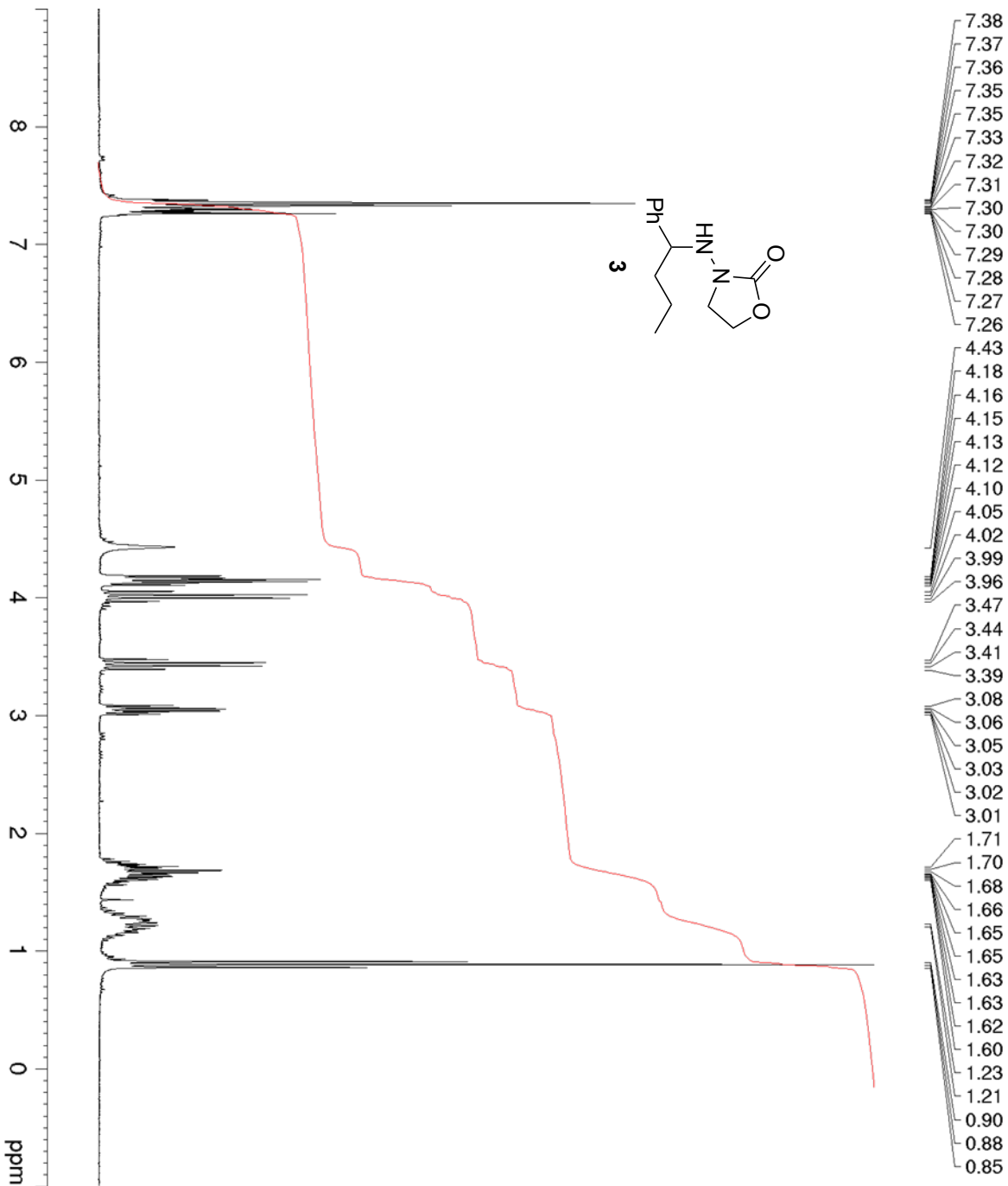
NS 8
 DS 2
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz

RG 5.3687091 sec
 282.504
 DW 81.920 usec
 DE 6.50 usec
 TE 294.7 K

D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800050 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



- 7.38
- 7.37
- 7.36
- 7.35
- 7.33
- 7.32
- 7.31
- 7.30
- 7.30
- 7.29
- 7.28
- 7.27
- 7.26
- 4.43
- 4.18
- 4.16
- 4.15
- 4.13
- 4.12
- 4.10
- 4.05
- 4.02
- 3.99
- 3.96
- 3.47
- 3.44
- 3.41
- 3.39
- 3.08
- 3.06
- 3.05
- 3.03
- 3.02
- 3.01
- 1.71
- 1.70
- 1.68
- 1.66
- 1.65
- 1.65
- 1.63
- 1.63
- 1.62
- 1.60
- 1.23
- 1.21
- 0.90
- 0.88
- 0.85

Current Data Parameters
 NAME SC-03-122 1H
 EXPNO 1
 PROCNO 1

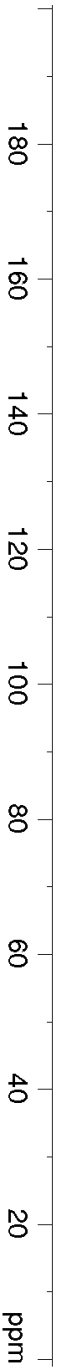
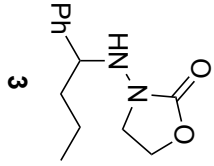
F2 - Acquisition Parameters
 Date_ 20190314
 Time 14.45

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQ 5.3687091 sec
 RG 32
 DW 81.920 usec
 DE 6.50 usec
 TE 294.0 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800050 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

158.9
 141.9
 128.5
 128.1
 127.8
 64.3
 61.5
 48.1
 37.3
 19.2
 14.2



Current Data Parameters
 NAME SC-03-122 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190314
 Time 17:00

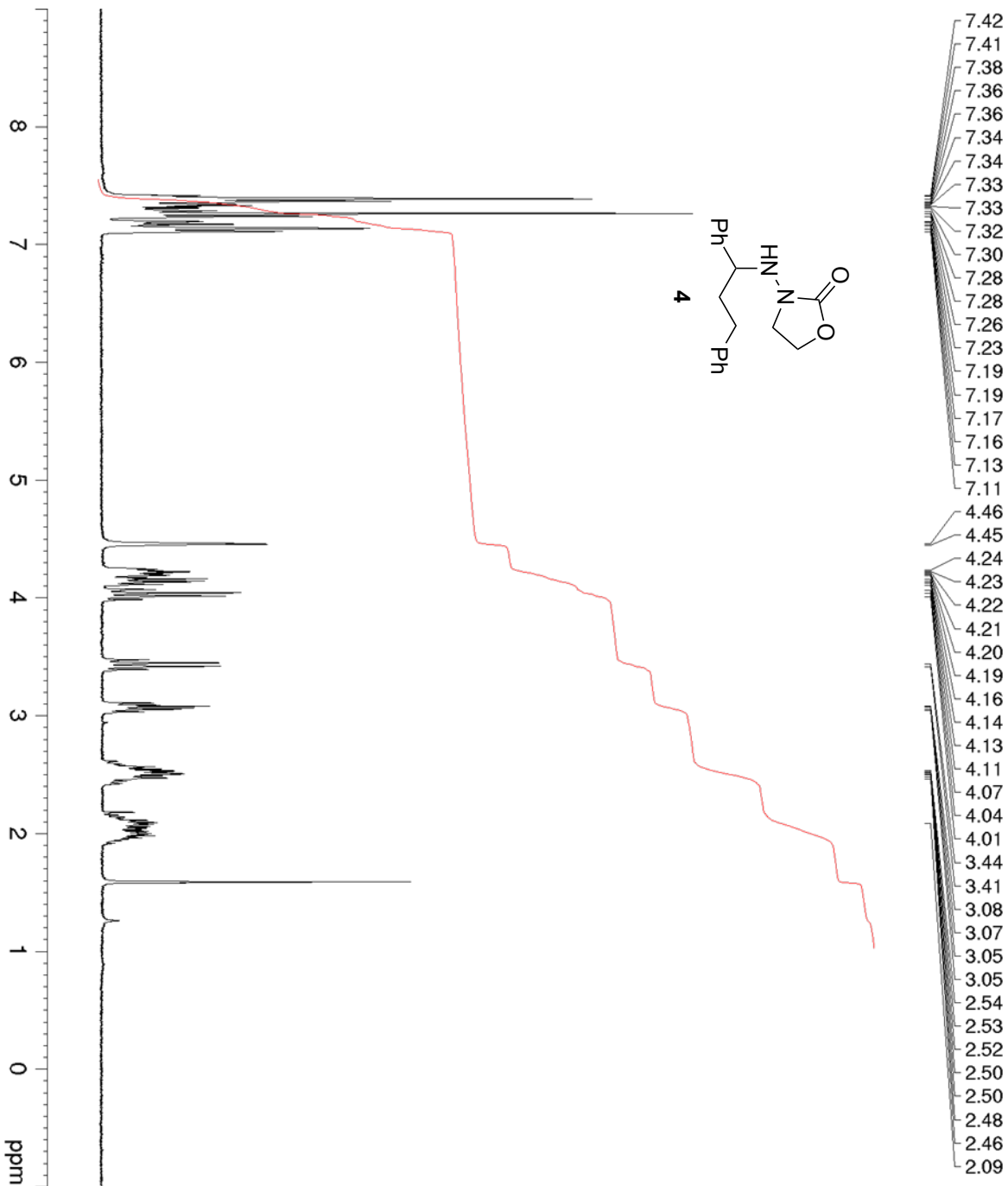
INSTRUM FOUERIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 850
 DS 0
 SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQC 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.2 K

D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.030008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TD0 1

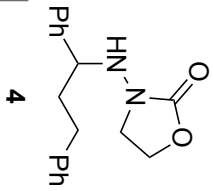
===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRGf2 waltz16
 PCPD2 90.00 usec
 PLW2 13.80339990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803131 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



7.42
7.41
7.38
7.36
7.36
7.34
7.34
7.33
7.33
7.32
7.30
7.28
7.28
7.26
7.23
7.19
7.19
7.17
7.16
7.13
7.11
4.46
4.45
4.24
4.23
4.22
4.21
4.20
4.19
4.16
4.14
4.13
4.11
4.07
4.04
4.01
3.44
3.41
3.08
3.07
3.05
3.05
2.54
2.53
2.52
2.50
2.50
2.48
2.46
2.09



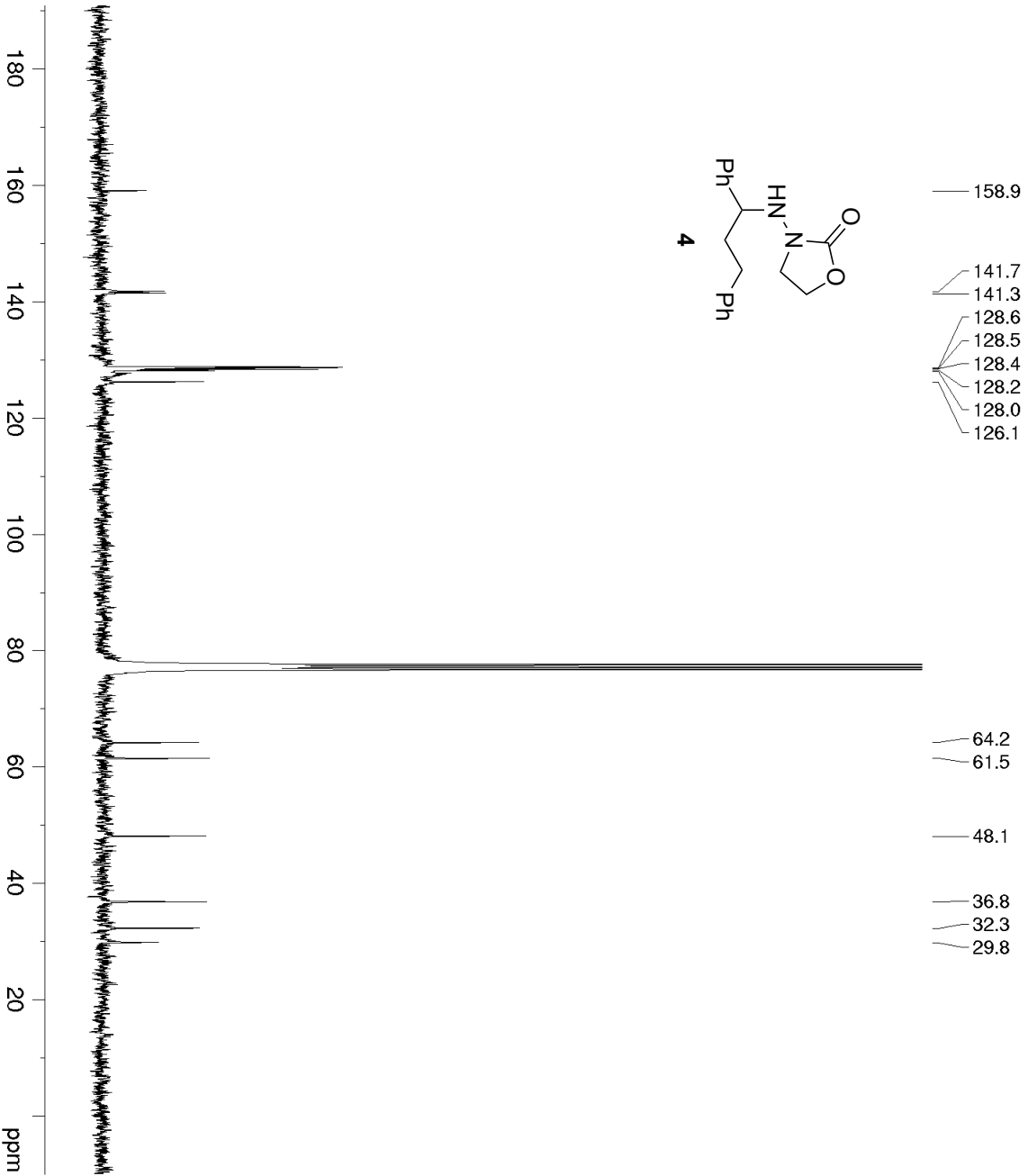
Current Data Parameters
NAME SC-03-PhEt addn ox
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20190415
Time 9:34

INSTRUM FOUJIER300
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 0
SWH 6103.516 Hz
FIDRES 0.093132 Hz
AQ 5.3687091 sec
RG 72.4421
DW 81.920 usec
DE 6.50 usec
TE 294.1 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
SFO1 300.1818537 MHz
NUC1 1H
P1 15.00 usec
PLW1 13.80399990 W

F2 - Processing parameters
SI 65536
SF 300.1800053 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



Current Data Parameters
 NAME SC-03-PhEt ox 13C
 EXPNO 2
 PROCNO 1

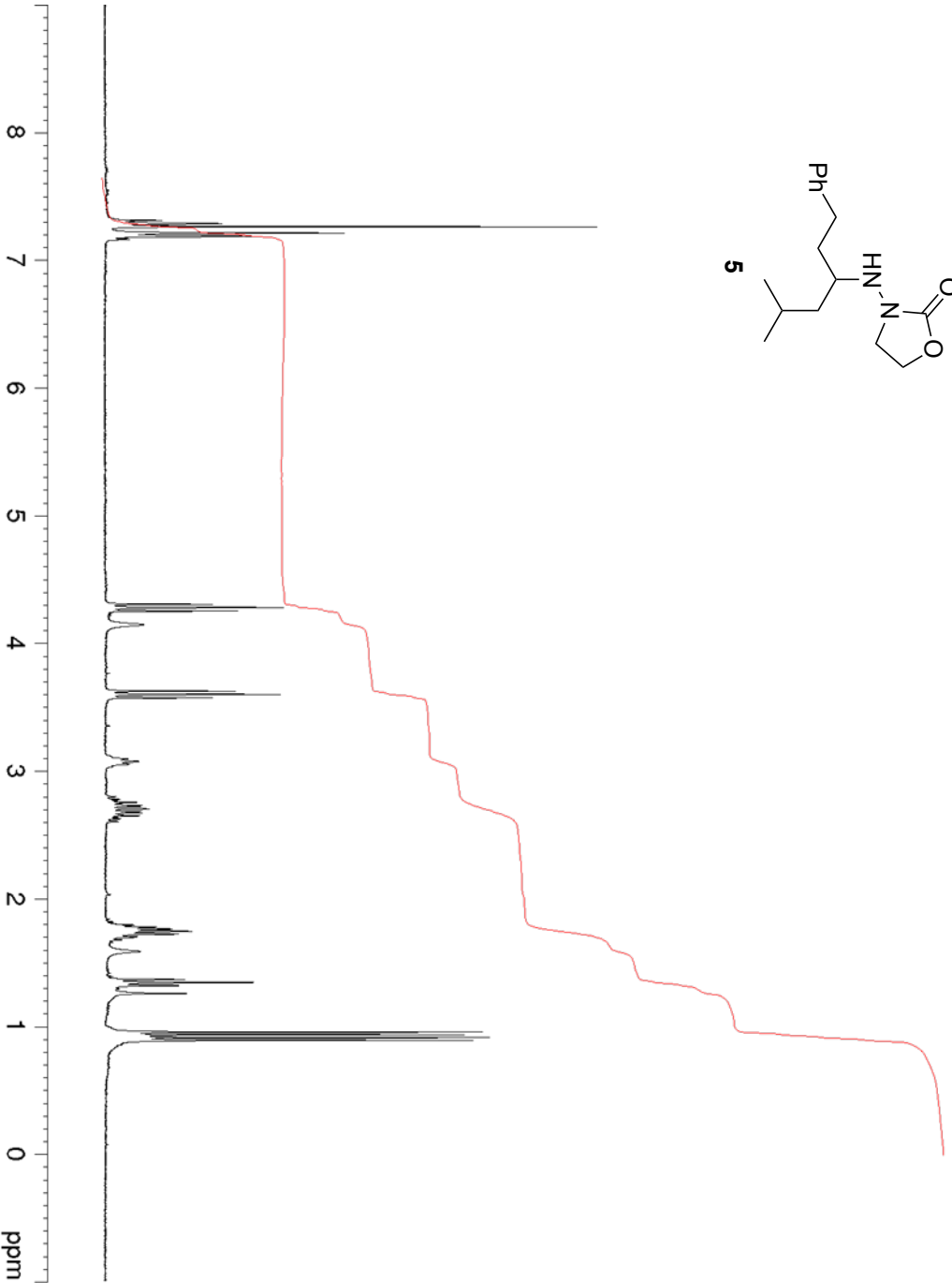
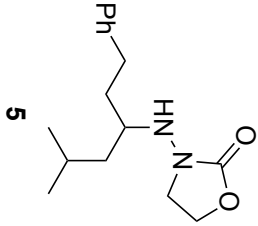
F2 - Acquisition Parameters
 Date_ 20190801
 Time 3.42
 INSTRUM spect
 PROBD 5 mm QNP 1H/13
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 4000
 DS 0
 SWH 19960.080 Hz
 FIDRES 0.304567 Hz
 AQ 1.6416768 sec
 RG 16384
 DW 25.050 usec
 DE 6.50 usec
 TE 300.0 K
 D1 5.00000000 sec
 d11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 9.50 usec
 PL1 0 dB
 SFO1 75.4803253 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 87.00 usec
 PL2 0 dB
 PL12 20.00 dB
 SFO2 300.1512006 MHz

F2 - Processing parameters
 SI 32768
 SF 75.4727666 MHz
 WDW EM
 SSB 0
 LB 3.50 Hz
 GB 0
 PC 1.40

- 7.31
- 7.30
- 7.30
- 7.29
- 7.28
- 7.27
- 7.26
- 7.21
- 7.19
- 7.17
- 7.16
- 7.16
- 4.30
- 4.28
- 4.25
- 4.14
- 3.62
- 3.59
- 3.57
- 3.09
- 3.07
- 3.05
- 2.75
- 2.73
- 2.72
- 2.70
- 2.68
- 2.67
- 2.65
- 1.79
- 1.78
- 1.77
- 1.77
- 1.76
- 1.75
- 1.74
- 1.72
- 1.70
- 1.69
- 1.58
- 1.36
- 1.36
- 1.34
- 1.32
- 1.31
- 1.25



Current Data Parameters
 NAME SC-03-176
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190327
 Time 15.43

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 RG 5.3687091 sec
 DW 80.0521
 DE 81.920 usec
 TE 294.4 K
 D1 6.50 usec
 TD0 1.00000000 sec

===== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800050 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

Current Data Parameters
 NAME SC-03-176 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190328
 Time 10:09

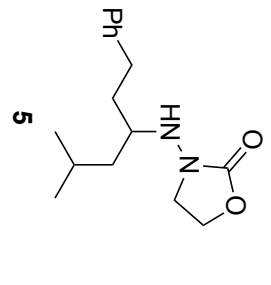
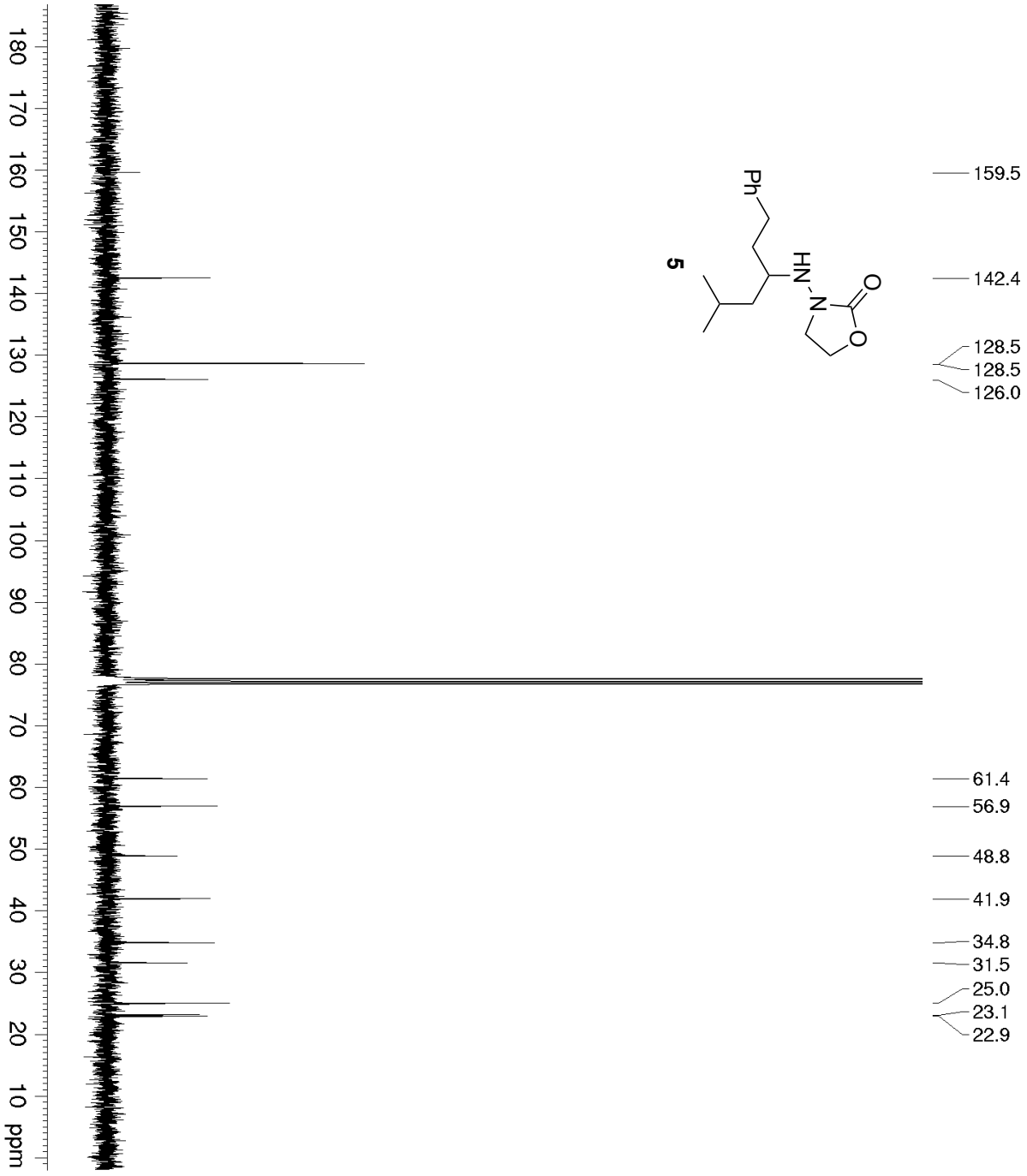
INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCI3
 NS 1000
 DS 4

SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQC 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.3 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.03008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TD0 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

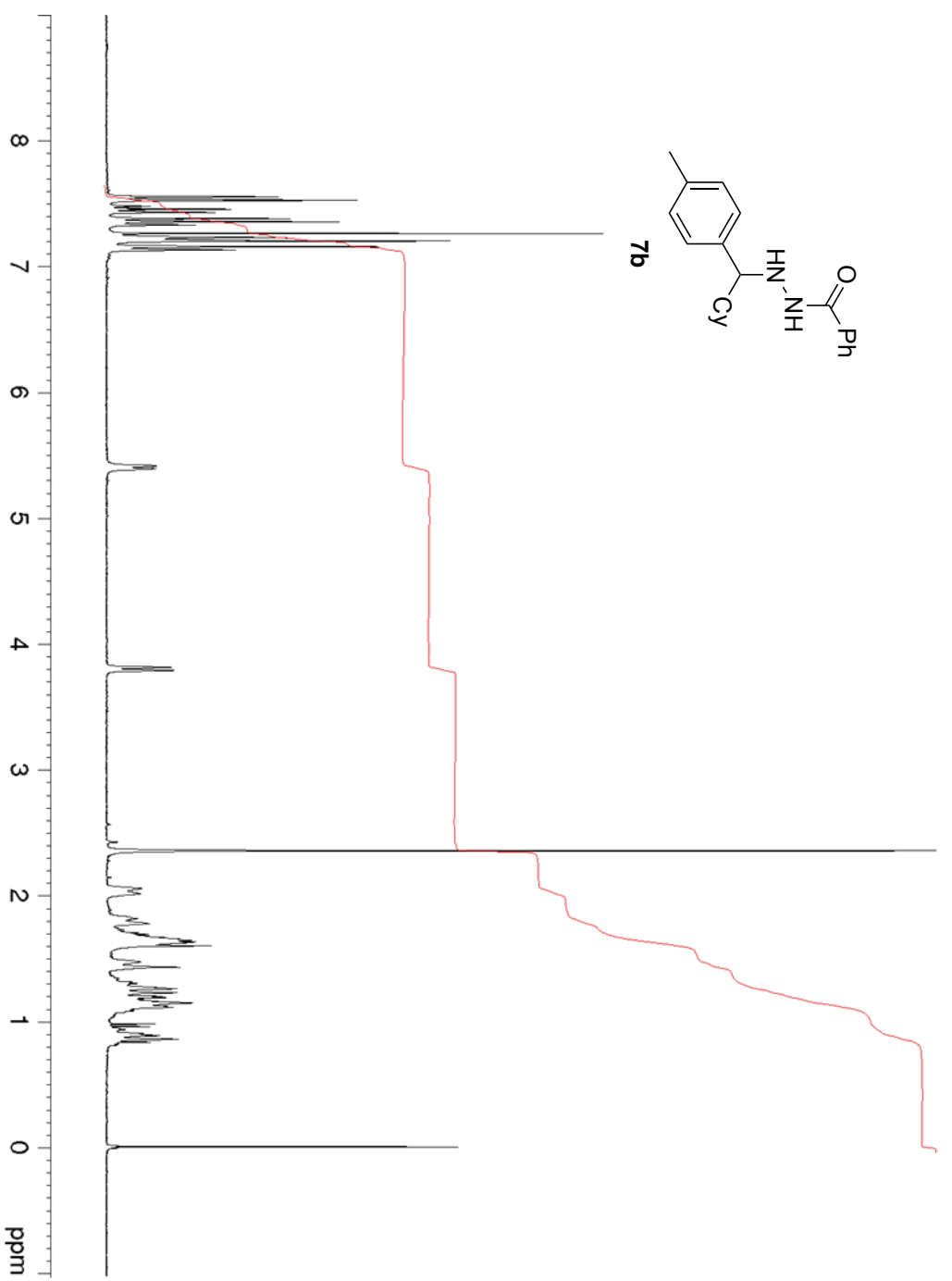
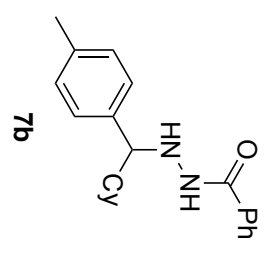
===== CHANNEL 12 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG12 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803116 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



- 159.5
- 142.4
- 128.5
- 128.5
- 126.0
- 61.4
- 56.9
- 48.8
- 41.9
- 34.8
- 31.5
- 25.0
- 23.1
- 22.9

7.55
7.55
7.54
7.53
7.53
7.52
7.45
7.43
7.43
7.42
7.38
7.37
7.36
7.35
7.35
7.33
7.33
7.26
7.23
7.21
7.20
7.16
7.13
5.42
5.41
3.81
3.81
3.79
2.35
1.67
1.65
1.64
1.63
1.62
1.60
1.43
1.43
1.27
1.26
1.23
1.20
1.19
1.16
1.14
1.12
1.11
0.88
0.86
0.85
-0.00



Current Data Parameters
 NAME SC-03-137 1H
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190114
 Time 15:39

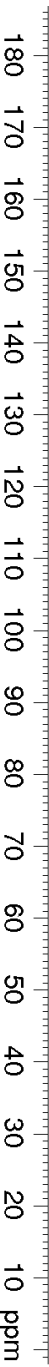
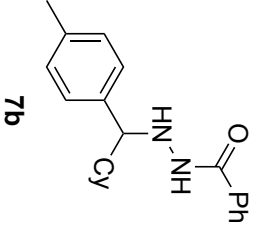
INSTRUM FURIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 8
 DS 2

SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQ 5.3687091 sec
 RG 59 9049
 DW 81.920 usec
 DE 6.50 usec
 TE 294.7 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800050 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

166.9
 138.0
 137.1
 133.1
 131.8
 129.1
 128.7
 128.5
 126.9
 77.6
 76.7
 70.4
 42.4
 30.2
 29.5
 26.5
 26.3
 21.3



Current Data Parameters
 NAME SC-03-137 13C
 EXPNO 1
 PROCNO 1

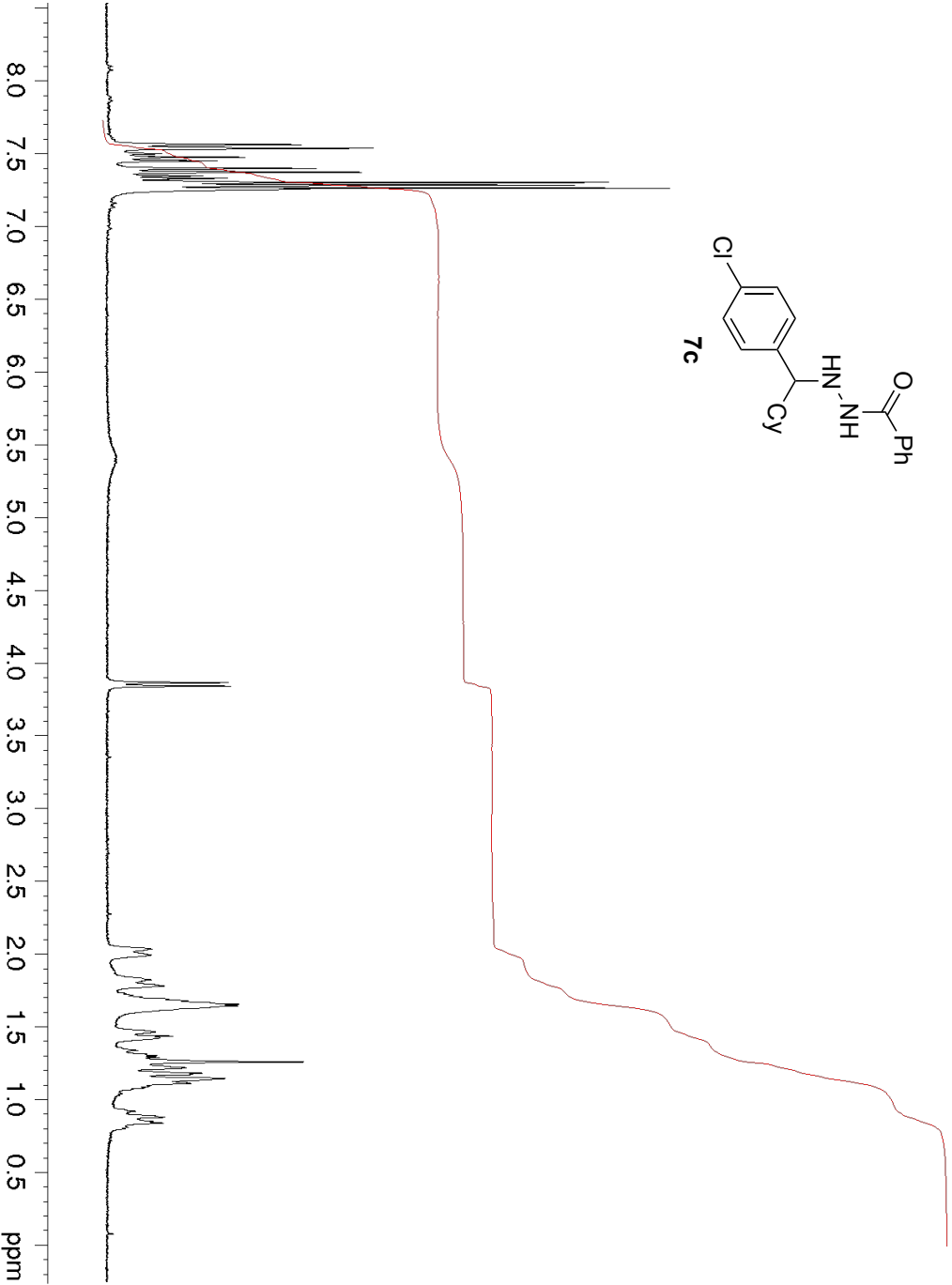
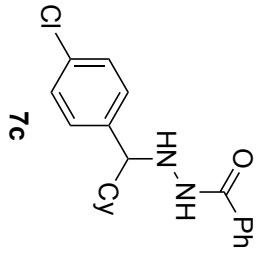
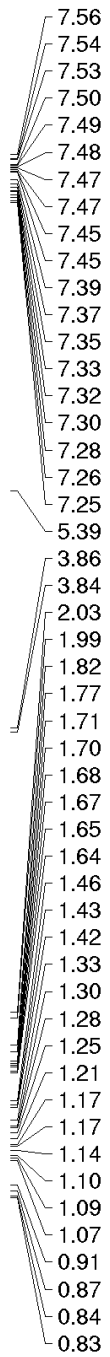
F2 - Acquisition Parameters
 Date_ 20190116

Time 7.43
 INSTRUM FOUERIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG ZPGP30
 TD 65536
 SOLVENT CDCl3
 NS 1500
 DS 4
 SWH 24414.063 Hz
 FIDRES 0.372929 Hz
 AQ 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 295.2 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.030008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TD0 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803117 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



Current Data Parameters
 NAME SC-03-141 1H h vac
 EXPNO 1
 PROCNO 1

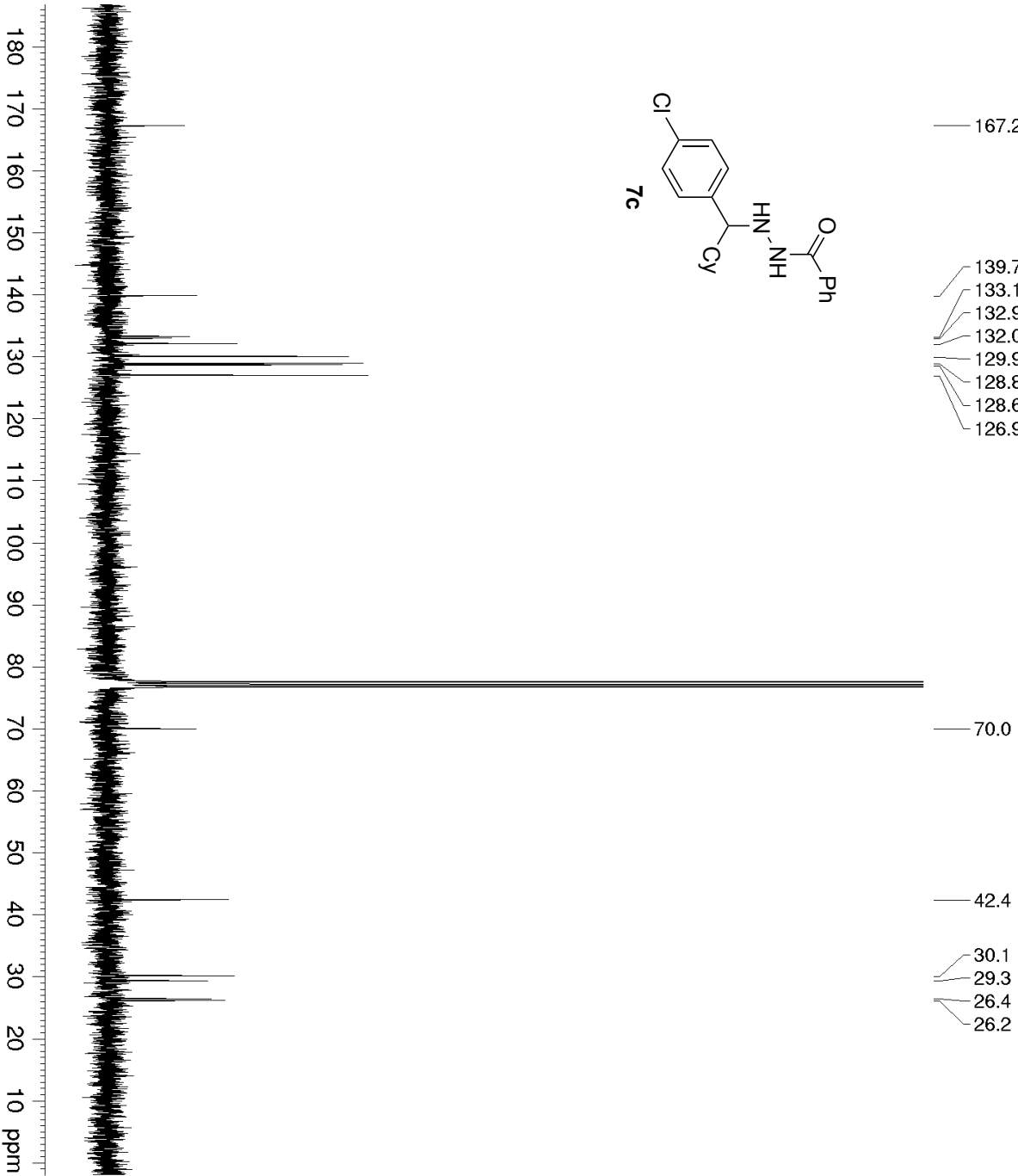
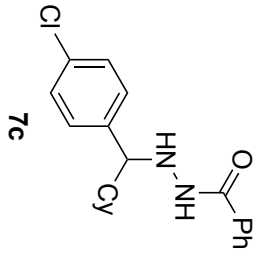
F2 - Acquisition Parameters
 Date_ 20190315

Time 7.38
 INSTRUM FOUERIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SMWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQ 5.3687091 sec
 RG 75.2855
 DW 81.920 usec
 DE 6.50 usec
 TE 294.3 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800050 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

167.2
 139.7
 133.1
 132.9
 132.0
 129.9
 128.8
 128.6
 126.9
 70.0
 42.4
 30.1
 29.3
 26.4
 26.2



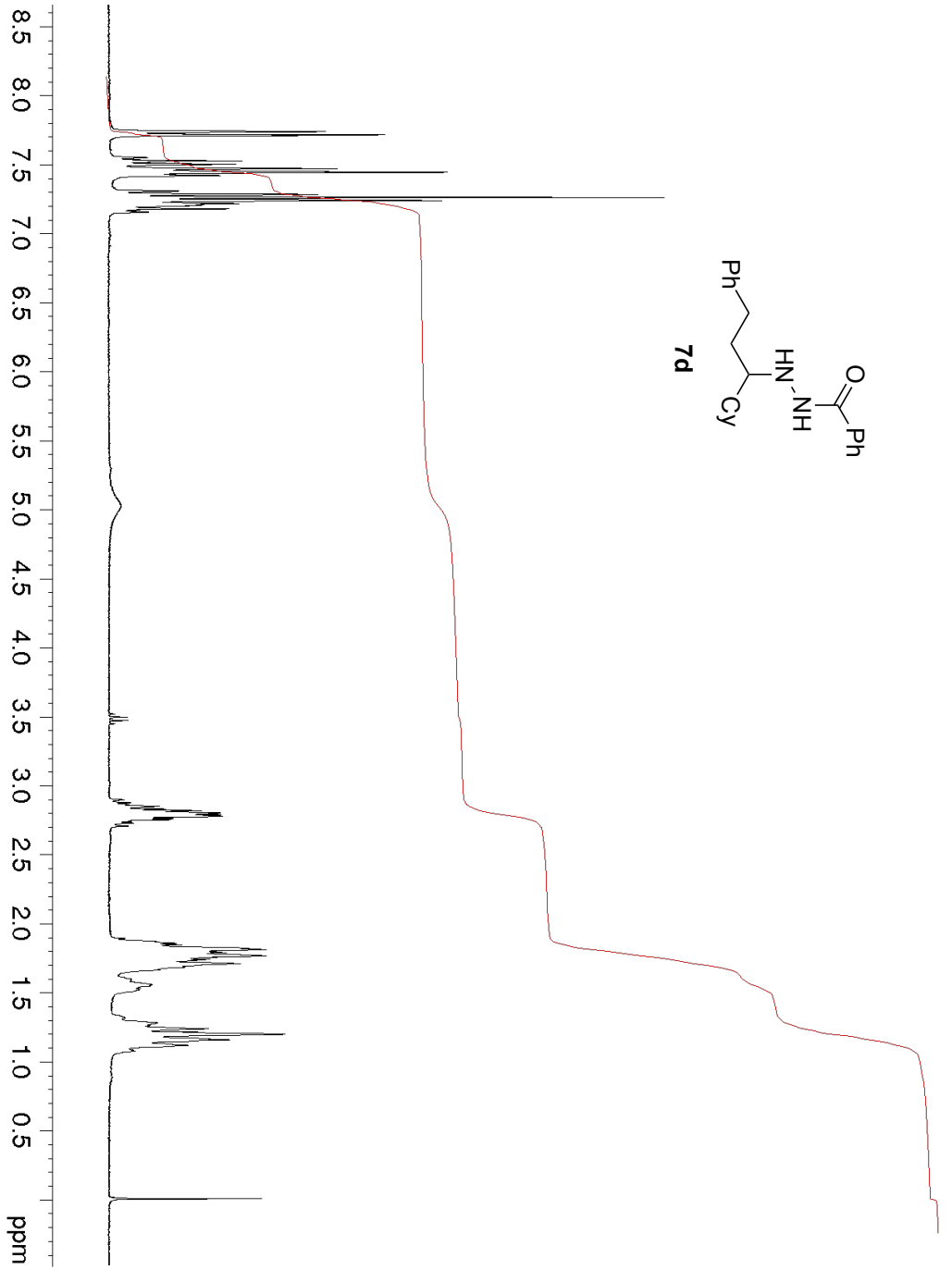
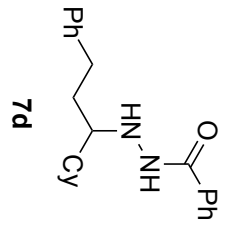
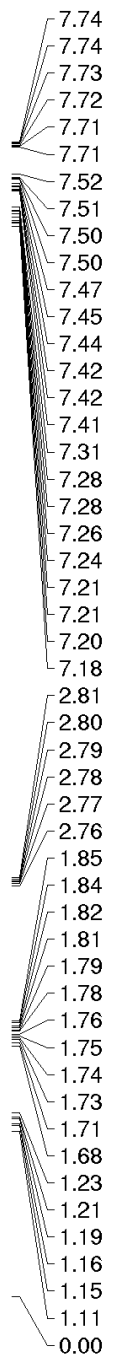
Current Data Parameters
 NAME SC-03-141 13C conc
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190315
 Time 8:02
 INSTRUM FOUJRIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 850
 DS 0
 SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQC 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.3 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.03008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TD0 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG12 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803116 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



Current Data Parameters
 NAME SC-03-112 1H pure
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20181220
 Time 10.43

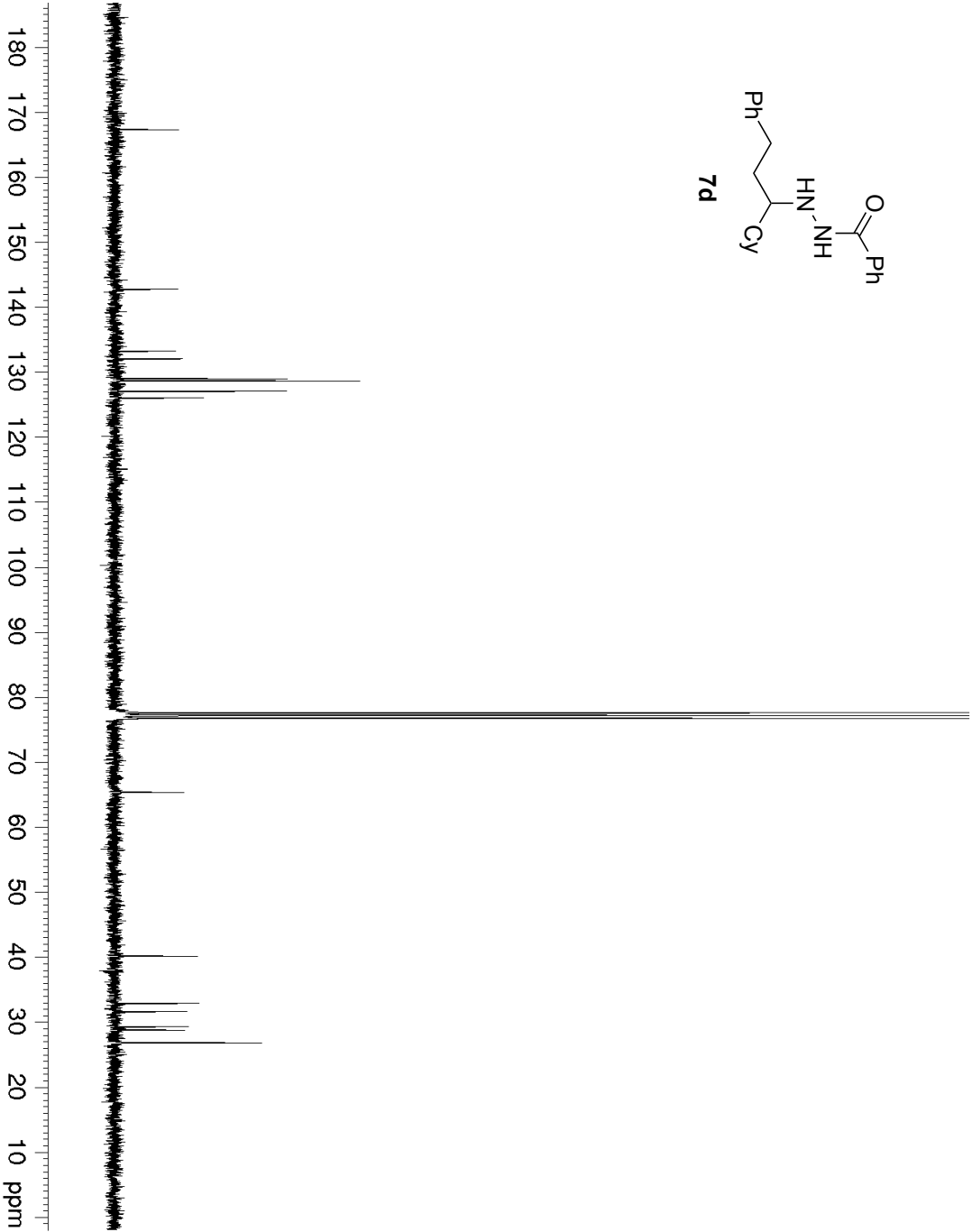
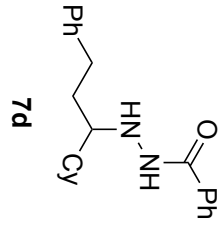
INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3

NS 8
 DS 2
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQ 5.3687091 sec
 RG 49.2875
 DW 81.920 usec
 DE 6.50 usec
 TE 294.9 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800049 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

- 167.3
- 142.6
- 133.1
- 131.9
- 128.8
- 128.5
- 126.9
- 125.9
- 65.3
- 40.1
- 32.9
- 31.6
- 29.3
- 28.8
- 26.8
- 26.8



Current Data Parameters
 NAME SC-03-112-13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20181220
 Time 10.49

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30

TD 65536
 SOLVENT CDC13

NS 700
 DS 4

SWH 24414.063 Hz
 FIDRES 0.372529 Hz

AQ 1.3421773 sec
 RG 501.187

DW 20.480 usec
 DE 6.50 usec

TE 295.0 K
 D1 2.00000000 sec

D11 0.03000000 sec
 D31 0.00001500 sec

D40 0.03008300 sec
 L4 40

L5 57
 P32 90.00 usec

TDO 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C

P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL 12 =====
 SFO2 300.1812007 MHz

NUC2 1H
 CPDPRG12 waltz16

PCPD2 90.00 usec
 PLW2 13.80399990 W

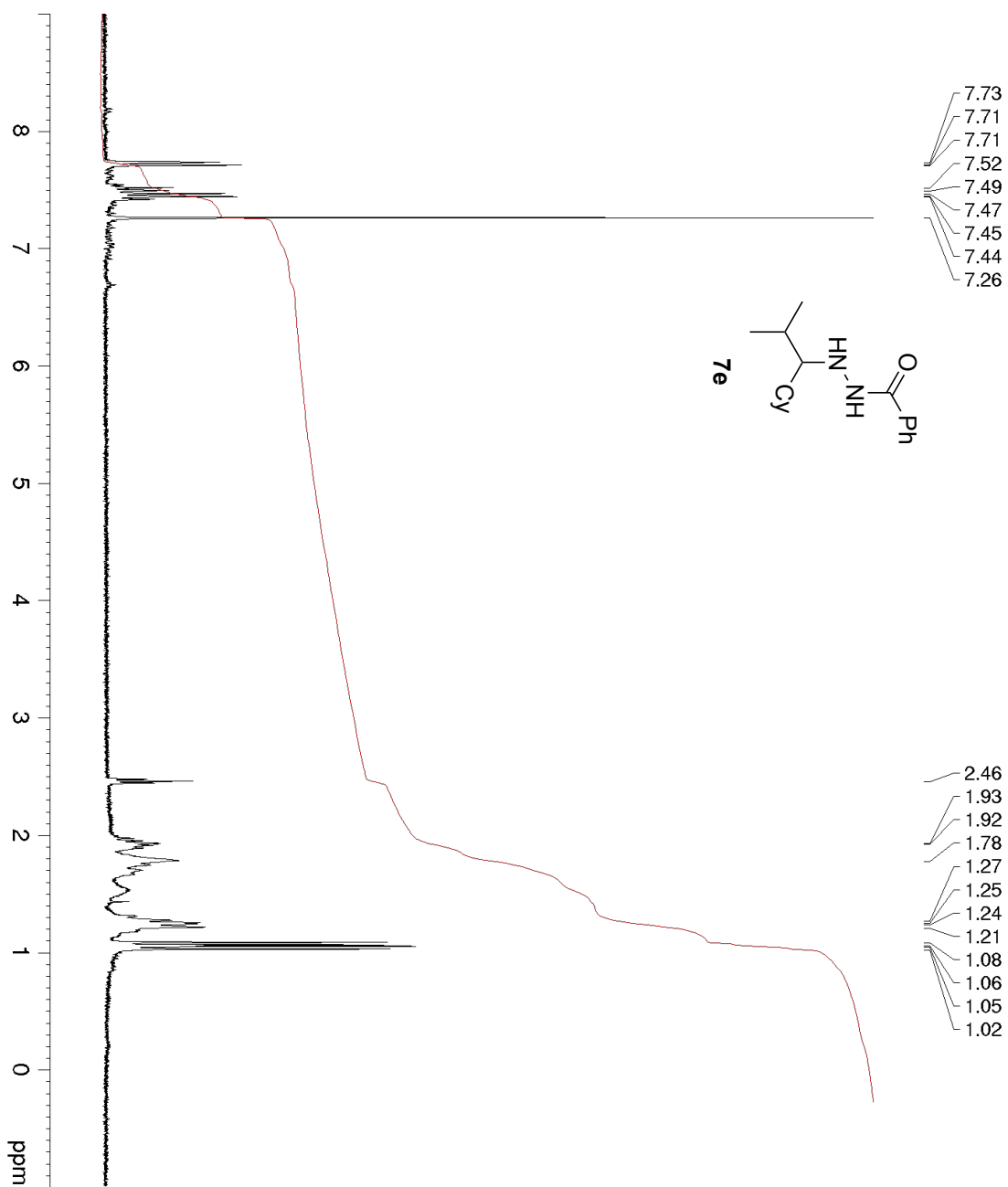
PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803116 MHz

WDW EM
 SSB 0

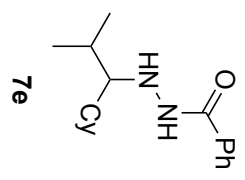
LB 1.00 Hz
 GB 0

PC 1.40



7.73
7.71
7.71
7.52
7.49
7.47
7.45
7.44
7.26

2.46
1.93
1.92
1.78
1.27
1.25
1.24
1.21
1.08
1.06
1.05
1.02



Current Data Parameters
 NAME SC-03-219 1H column
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190801
 Time 15.03

INSTRUM FURIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30

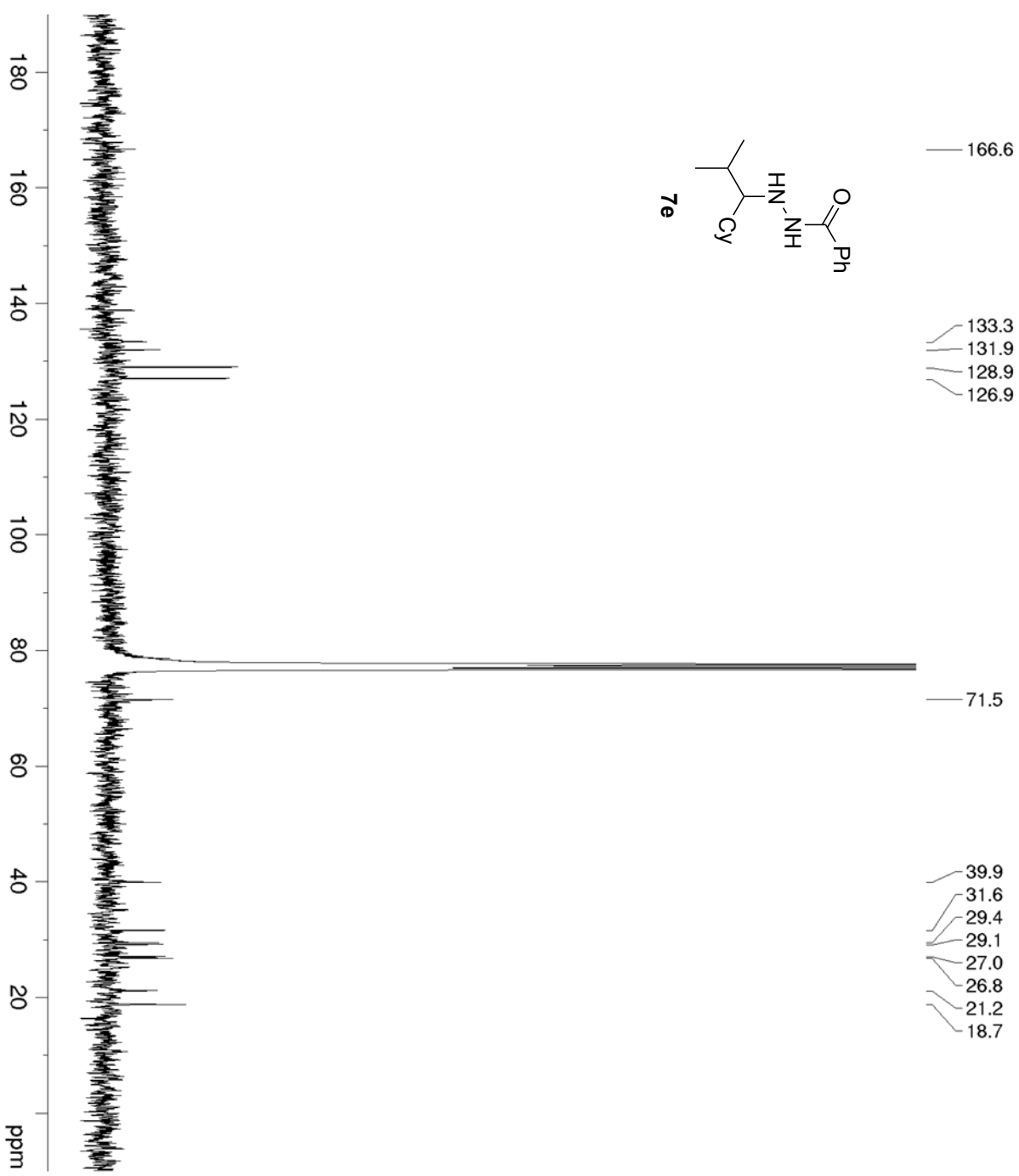
TD 65536
 SOLVENT CDCl3
 NS 8

DS 0
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz

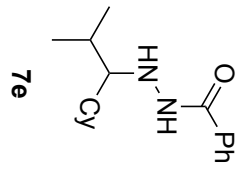
RG 172.312
 DW 81.920 usec
 DE 6.50 usec
 TE 294.5 K
 D1 0.10000000 sec
 TDO 1

==== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800054 MHz
 WDWW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



166.6
 133.3
 131.9
 128.9
 126.9
 71.5
 39.9
 31.6
 29.4
 29.1
 27.0
 26.8
 21.2
 18.7



Current Data Parameters
 NAME SC-03-219 13C cool
 EXPNO 2
 PROCNO 1

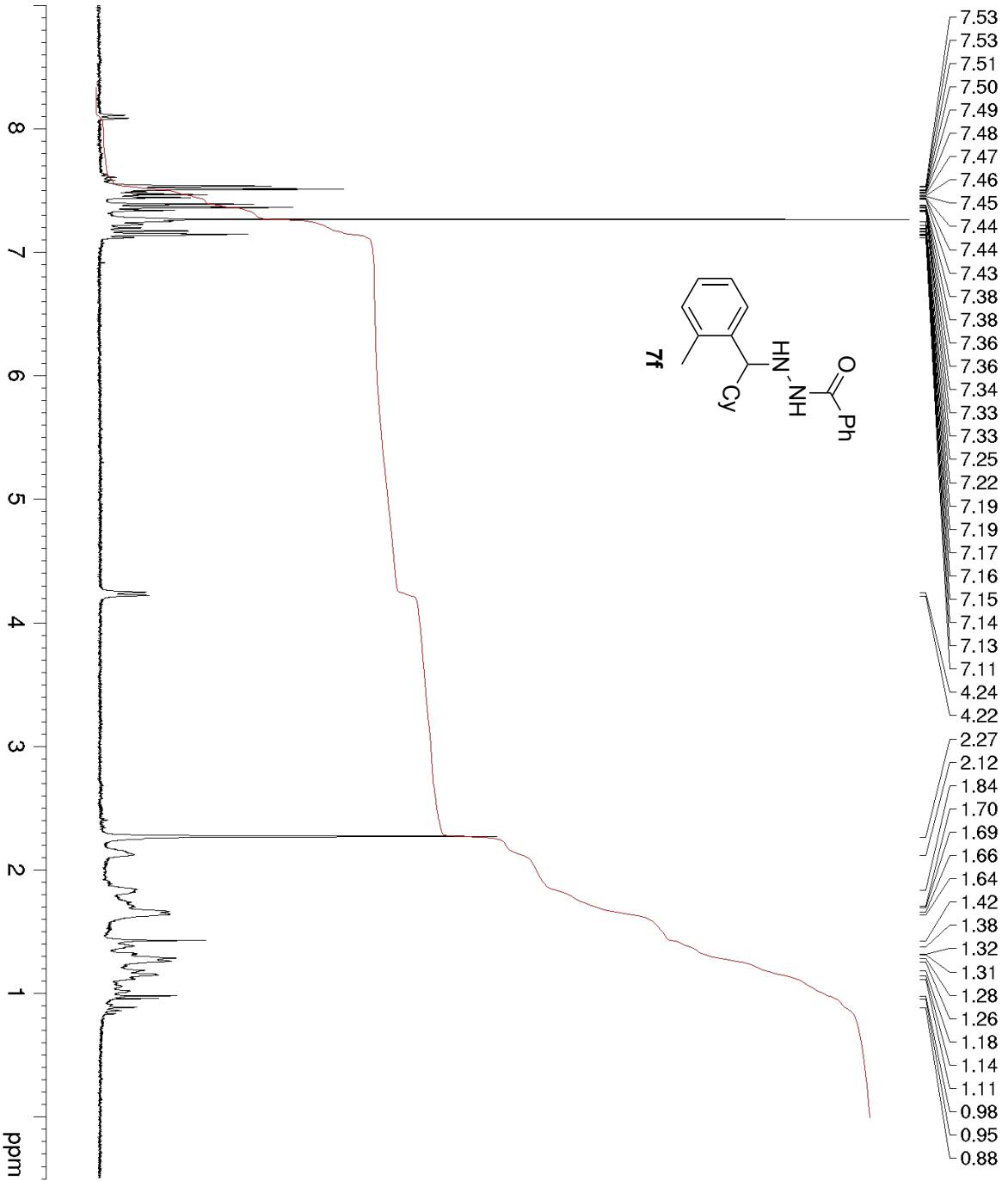
F2 - Acquisition Parameters
 Date_ 20190802
 Time 6.23

INSTRUM spect
 PROBHD 5 mm QNP 1H/13
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 7500
 DS 16
 SWH 19960.080 Hz
 FIDRES 0.304567 Hz
 AQ 1.6416768 sec
 RG 8192
 DW 25.050 usec
 DE 6.50 usec
 TE 300.0 K
 D1 3.00000000 sec
 d11 0.03000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 9.50 usec
 PL1 0 dB
 SFO1 75.4803253 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 87.00 usec
 PL2 0 dB
 PL12 20.00 dB
 SFO2 300.1512006 MHz

F2 - Processing parameters
 SI 32768
 SF 75.4727651 MHz
 WDW EM
 SSB 0
 LB 3.50 Hz
 GB 0
 PC 1.40



Current Data Parameters
 NAME SC-03-187 repur
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190424
 Time 11:35

INSTRUM FURIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30

TD 65536
 SOLVENT CDC13
 NS 8
 DS 0

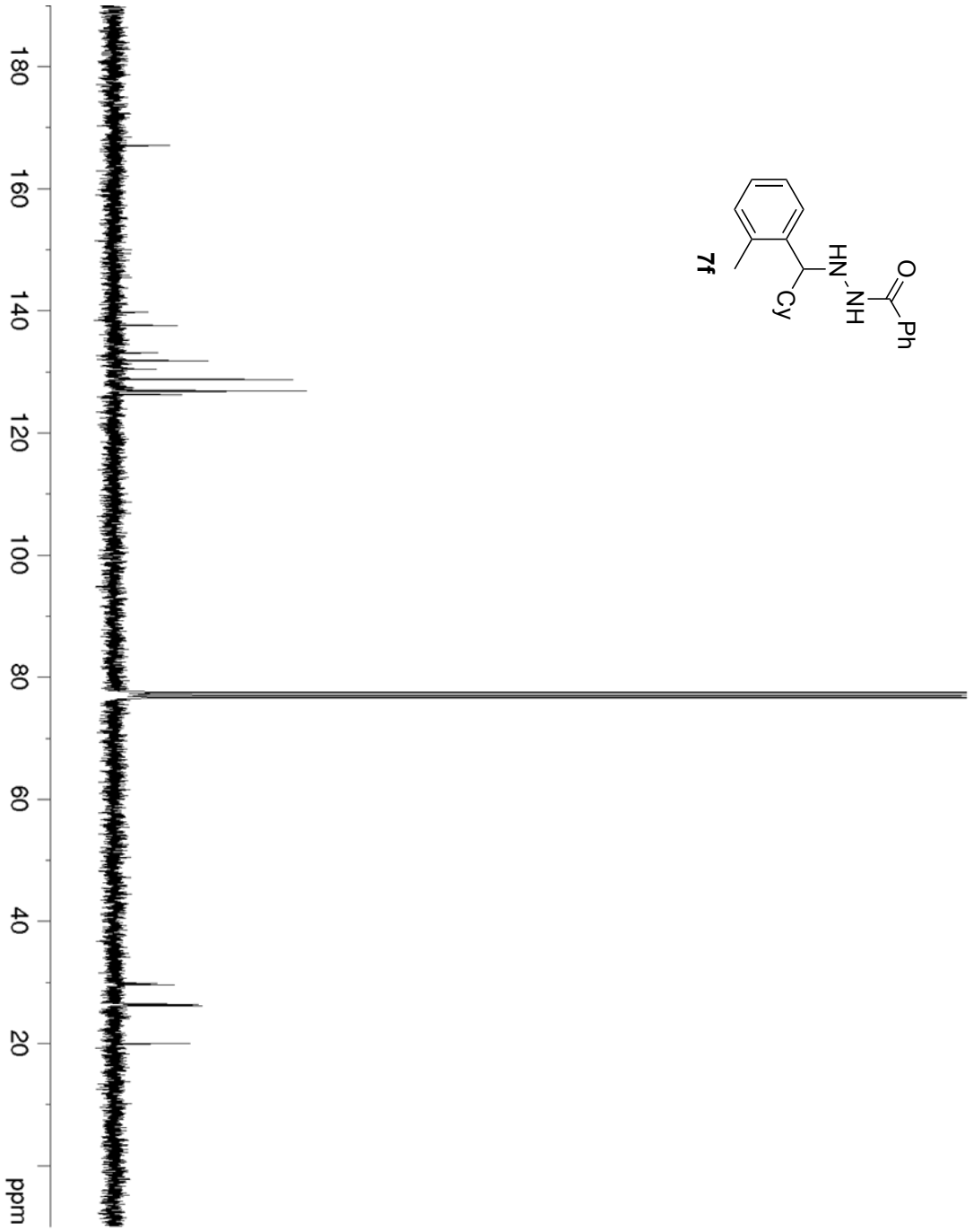
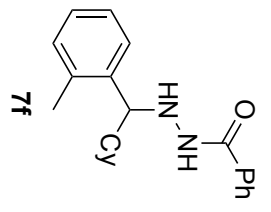
SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQC 5.3687091 sec

RG 125.468
 DW 81.920 usec
 DE 6.50 usec
 TE 294.2 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800050 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

- 167.0
- 139.6
- 137.4
- 133.0
- 131.7
- 130.3
- 128.6
- 126.8
- 126.7
- 126.2
- 29.8
- 29.5
- 26.4
- 26.3
- 26.1
- 19.9



Current Data Parameters
 NAME SC-03-214.13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190611
 Time 15.10

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 1024

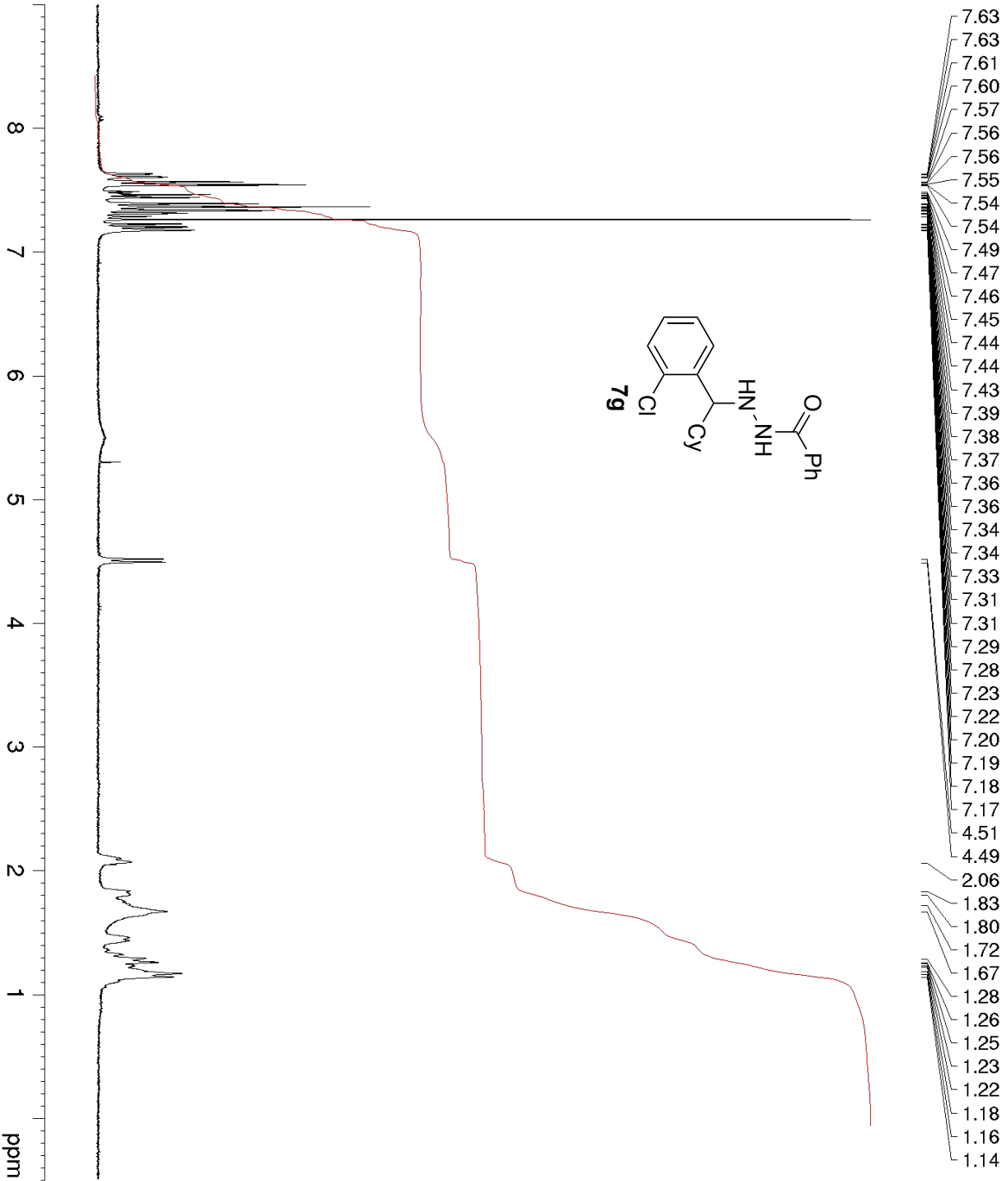
DS 4
 SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQ 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.5 K

D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.03008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TD0 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803210 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



7.63
7.63
7.61
7.60
7.57
7.56
7.56
7.55
7.54
7.54
7.49
7.47
7.46
7.45
7.44
7.44
7.43
7.39
7.38
7.37
7.36
7.36
7.34
7.34
7.33
7.31
7.31
7.29
7.28
7.23
7.22
7.20
7.19
7.18
7.17
4.51
4.49
2.06
1.83
1.80
1.72
1.67
1.28
1.26
1.25
1.23
1.22
1.18
1.16
1.14

Current Data Parameters
 NAME SC-03-192 1H
 EXPNO 1
 PROCNO 1

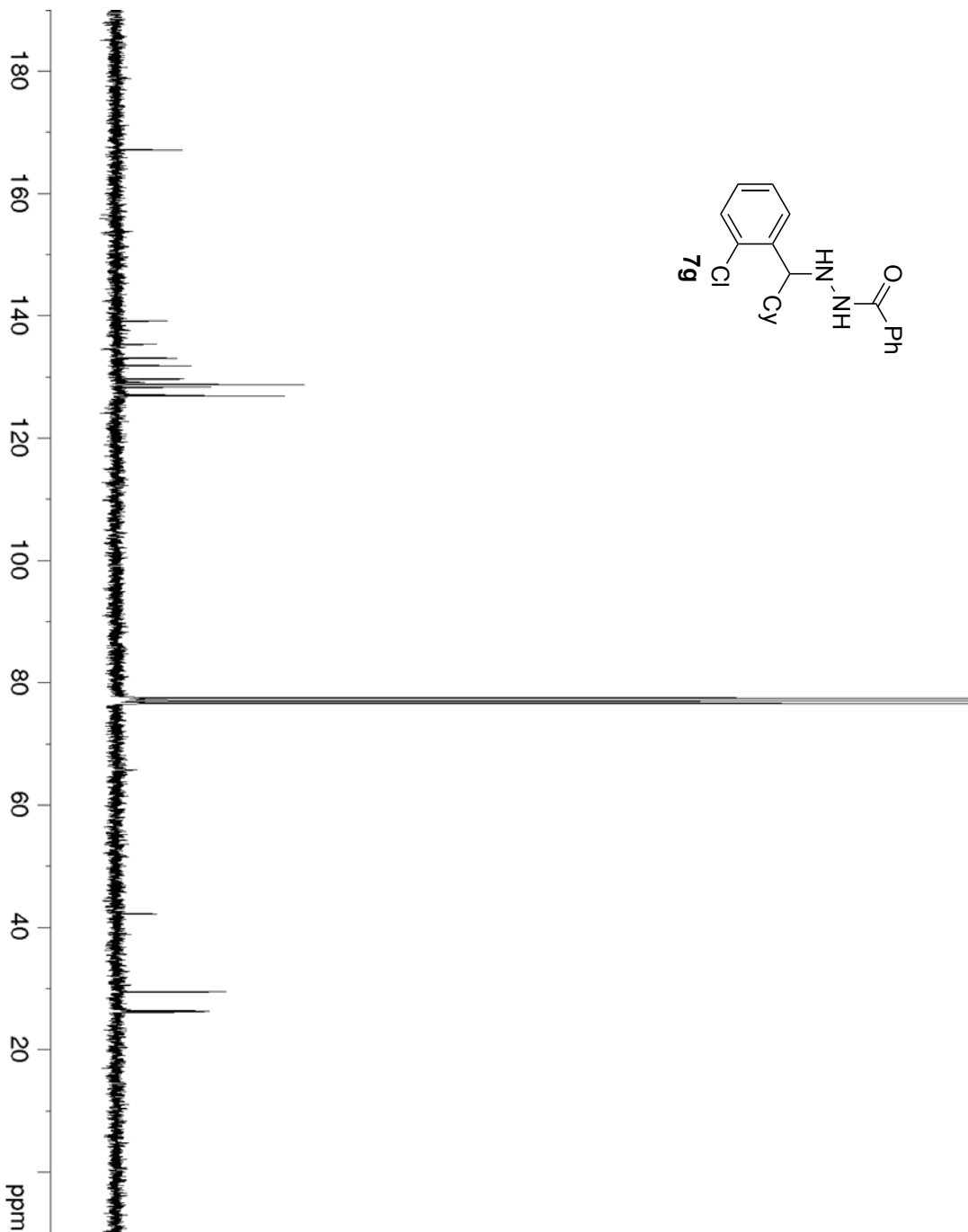
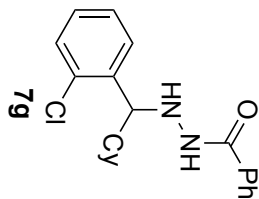
F2 - Acquisition Parameters
 Date_ 20190424
 Time_ 11:30

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 8
 DS 0
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQ 5.3687091 sec
 RG 111.9
 DW 81.920 usec
 DE 6.50 usec
 TE 294.1 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800051 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

- 167.1
- 139.0
- 135.2
- 133.0
- 131.7
- 129.5
- 129.0
- 128.6
- 128.2
- 126.9
- 126.8
- 65.7
- 42.2
- 29.4
- 26.3
- 26.2
- 26.1



Current Data Parameters
 NAME SC-03-192 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190422

Time 9.48
 INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 800

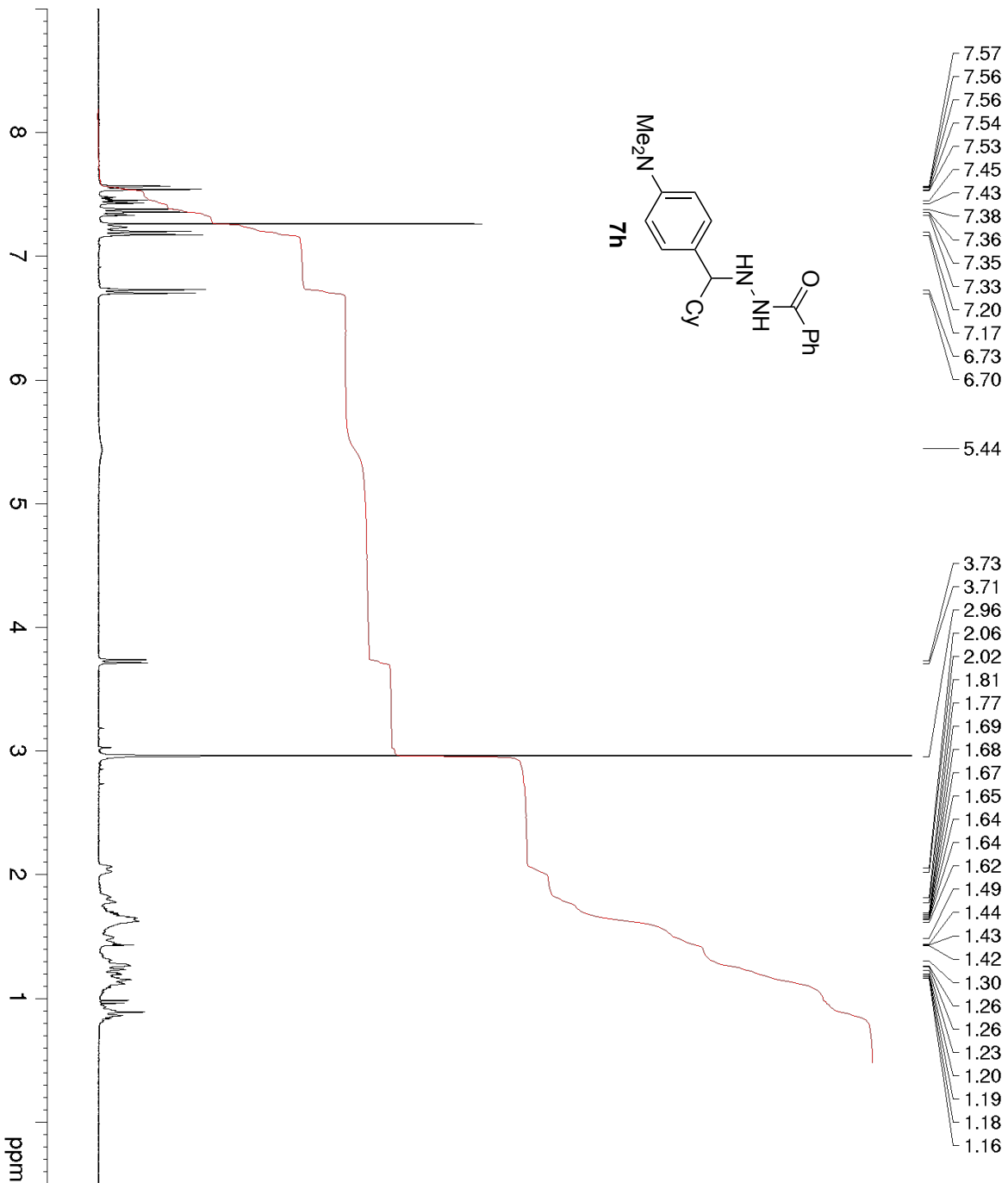
DS 0
 SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQ 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.2 K

D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.03008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TDO 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803210 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



Current Data Parameters
 NAME SC-03-188.d11.1H
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190422
 Time 9.38

INSTRUM FOUJIER300
 PROBHD 5 mm DUL.13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 8
 DS 0
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQ 5.3687091 sec
 RG 92.2176
 DW 81.920 usec
 DE 6.50 usec
 TE 294.2 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800051 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

Current Data Parameters
 NAME SC-03-188 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190421
 Time 12:11

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 800

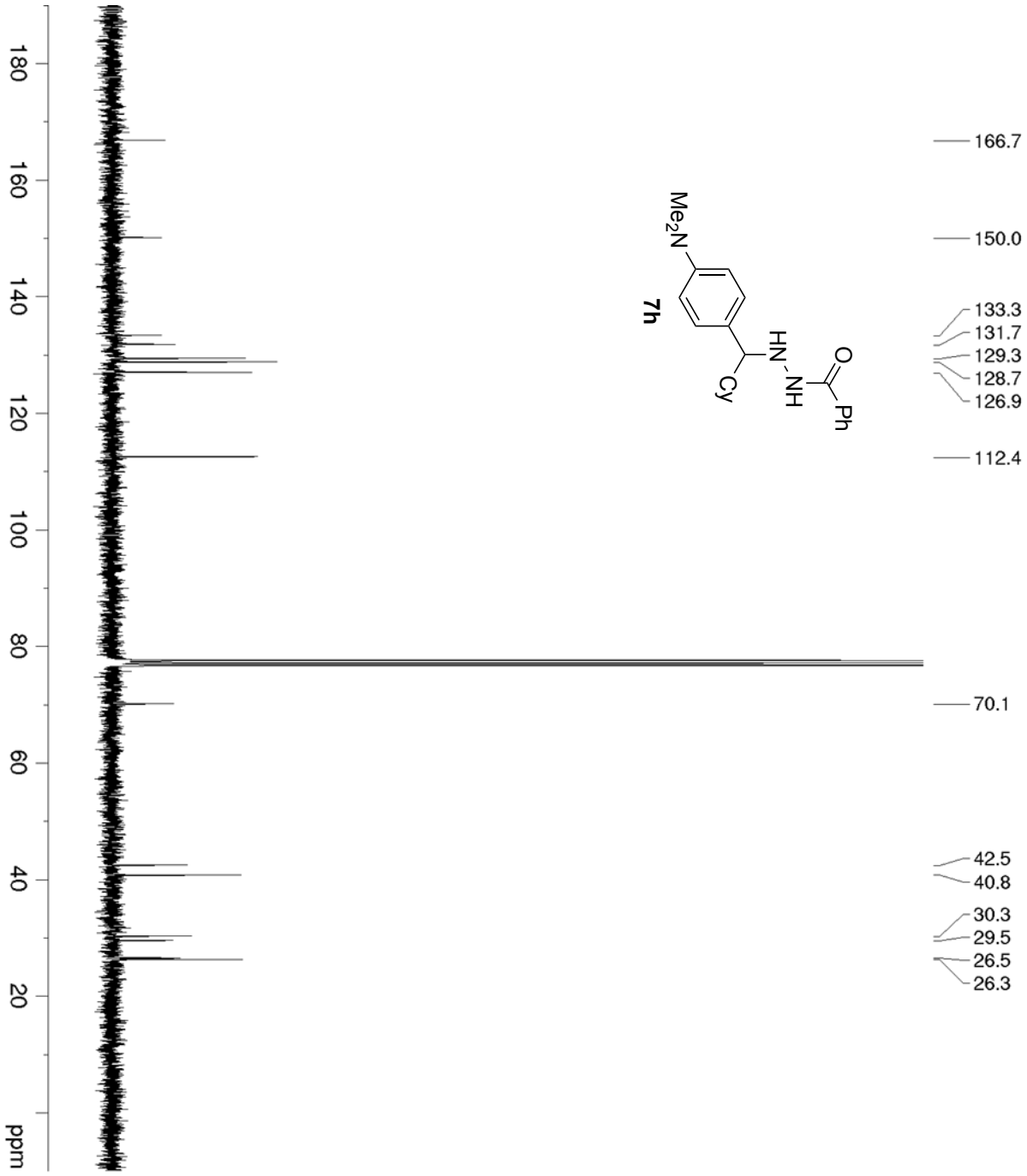
DS 0
 SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQC 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.4 K

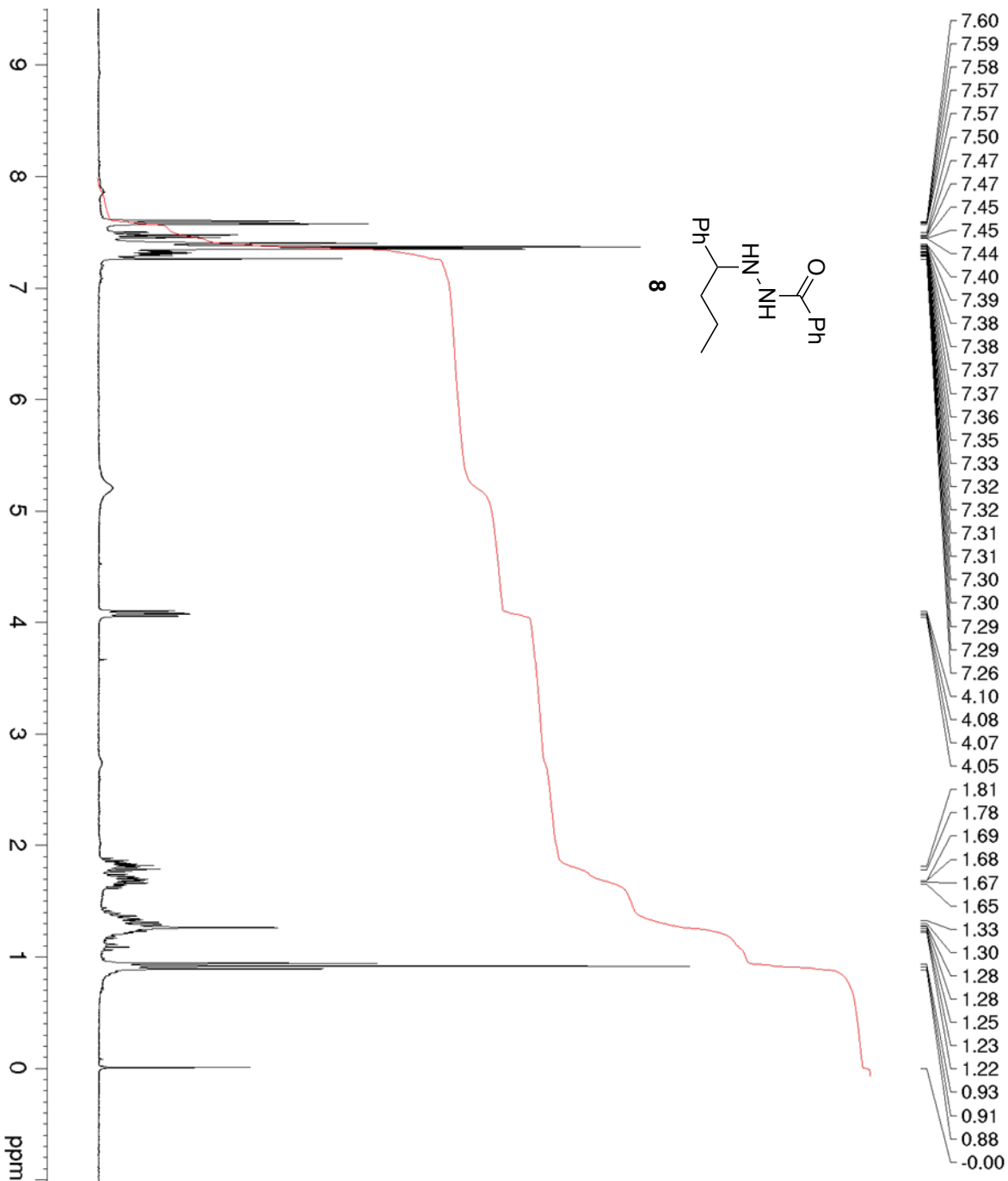
D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.03008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TDO 1

==== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

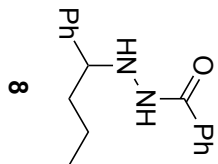
==== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803118 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40





7.60
7.59
7.58
7.57
7.57
7.50
7.47
7.47
7.45
7.45
7.44
7.40
7.39
7.38
7.38
7.37
7.37
7.36
7.35
7.33
7.32
7.32
7.31
7.31
7.30
7.30
7.29
7.29
7.26
4.10
4.08
4.07
4.05
1.81
1.78
1.69
1.68
1.67
1.65
1.33
1.30
1.28
1.28
1.25
1.23
1.22
0.93
0.91
0.88
-0.00



```

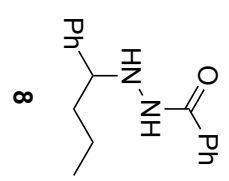
Current Data Parameters
NAME      SC-03-098 1H
EXPNO    1
PROCNO   1

F2 - Acquisition Parameters
Date_    20181127
Time     14.52
INSTRUM  FOURIER300
PROBHD   5 mm DUL 13C-1
PULPROG  zg30
TD        65536
SOLVENT  CDCl3
NS        8
DS        2
SWH       6103.516 Hz
FIDRES   0.093132 Hz
AQ        5.3687091 sec
RG        32
DW        81.920 usec
DE        6.50 usec
TE        294.0 K
D1        1.00000000 sec
TD0       1

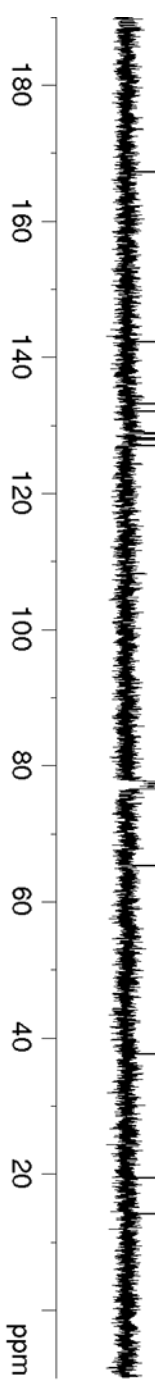
===== CHANNEL f1 =====
SFO1     300.1818537 MHz
NUC1     1H
P1       15.00 usec
PLW1     13.80399990 W

F2 - Processing parameters
SI       65536
SF       300.1800051 MHz
WDW      EM
SSB      0
LB       0.30 Hz
GB       0
PC       1.00
  
```

167.3
142.2
133.0
131.9
128.8
128.7
128.0
127.7
126.9



65.3
37.6
19.4
14.2



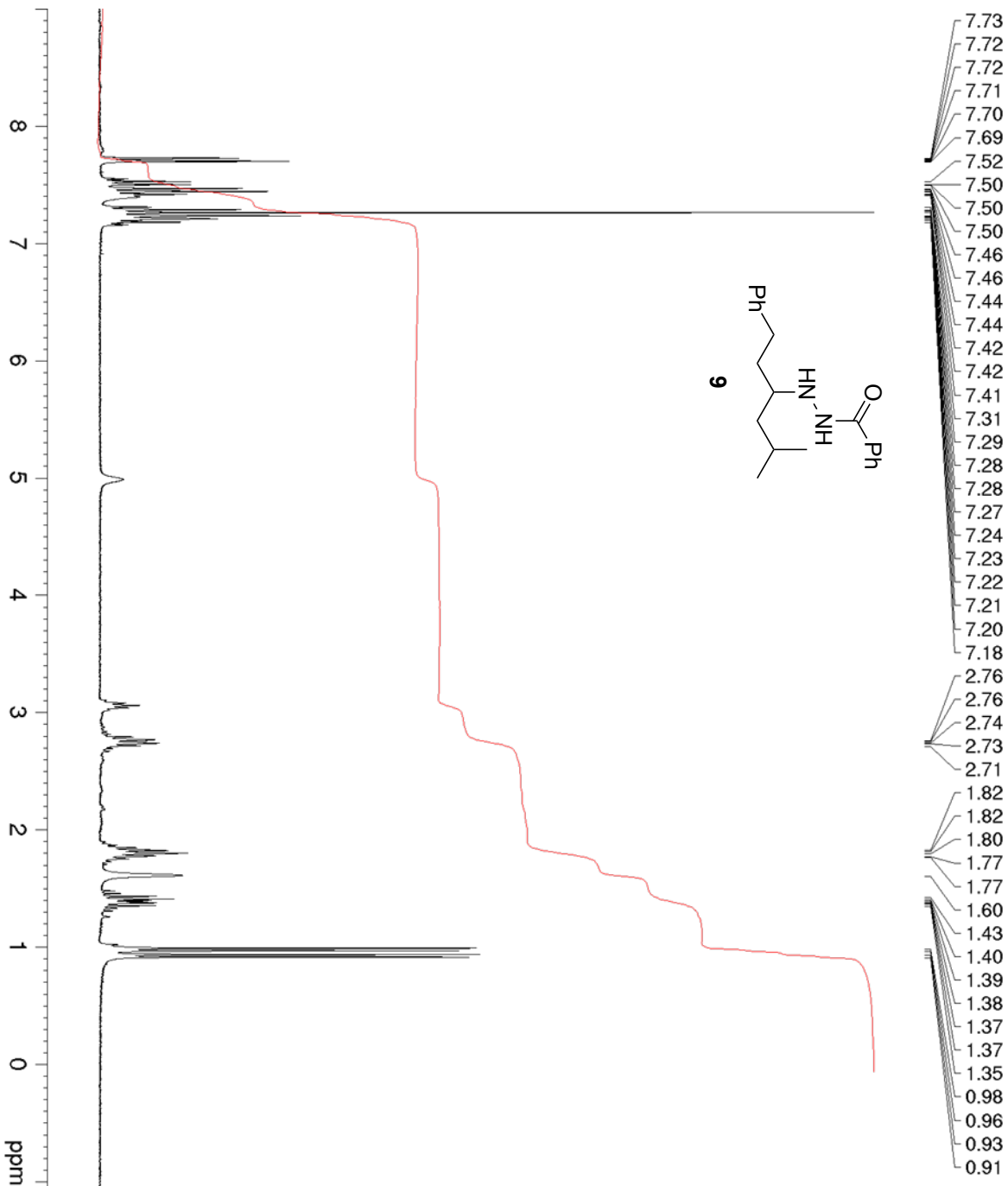
Current Data Parameters
NAME SC-03-098 13C
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20190314
Time 18:07
INSTRUM FOUJIER300
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 841
DS 0
SWH 24414.063 Hz
FIDRES 0.372529 Hz
AQ 1.3421773 sec
RG 501.187
DW 20.480 usec
DE 6.50 usec
TE 294.0 K
D1 2.00000000 sec
D11 0.03000000 sec
D31 0.00001500 sec
D40 0.03008300 sec
L4 40
L5 57
P32 90.00 usec
TDO 1

===== CHANNEL f1 =====
SFO1 75.4878687 MHz
NUC1 13C
P1 15.00 usec
PLW1 22.00000000 W

===== CHANNEL f2 =====
SFO2 300.1812007 MHz
NUC2 1H
CPDPRG2 waltz16
PCPD2 90.00 usec
PLW2 13.80399990 W
PLW12 0.38343999 W
PLW13 0.31059000 W

F2 - Processing parameters
SI 32768
SF 75.4803116 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



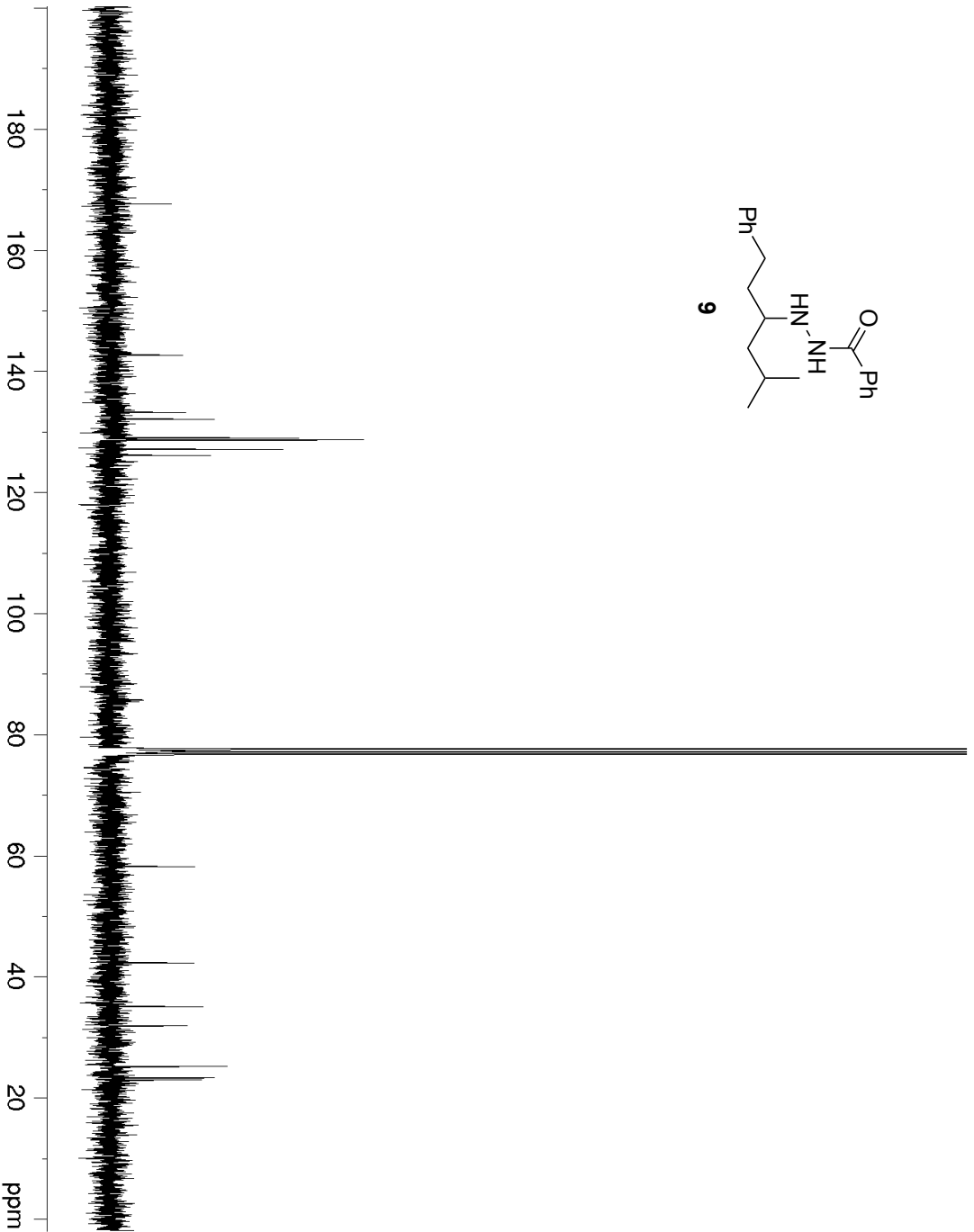
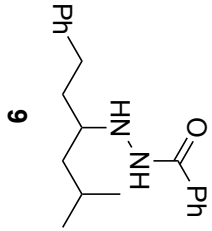
- 7.73
- 7.72
- 7.72
- 7.71
- 7.70
- 7.69
- 7.52
- 7.50
- 7.50
- 7.50
- 7.46
- 7.46
- 7.44
- 7.44
- 7.42
- 7.42
- 7.41
- 7.31
- 7.29
- 7.28
- 7.28
- 7.27
- 7.24
- 7.23
- 7.22
- 7.21
- 7.20
- 7.18
- 2.76
- 2.76
- 2.74
- 2.73
- 2.71
- 1.82
- 1.82
- 1.80
- 1.77
- 1.77
- 1.60
- 1.43
- 1.40
- 1.39
- 1.38
- 1.37
- 1.37
- 1.35
- 0.98
- 0.96
- 0.93
- 0.91

Current Data Parameters
 NAME SC-03-210.dil
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190524
 Time 13:03
 INSTRUM FOURIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 8
 DS 0
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQ 5.3687091 sec
 RG 90.4153
 DW 81.920 usec
 DE 6.50 usec
 TE 294.0 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800051 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



Current Data Parameters
 NAME SC-03-210 13C II
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190524
 Time 13.07

INSTRUM FOUERIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 780
 DS 0

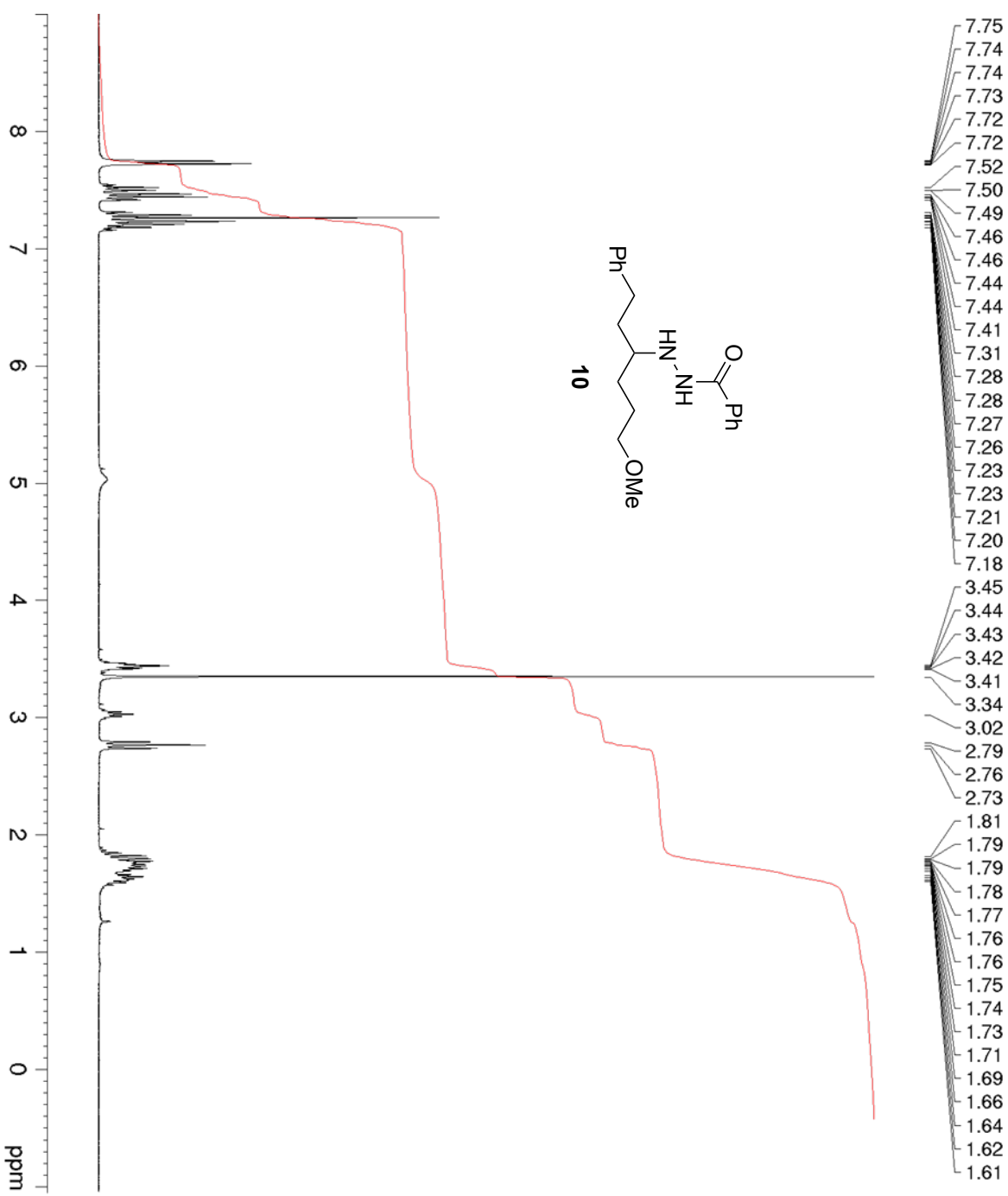
SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQC 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.1 K

D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.030008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TD0 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG12 waltz16
 PCPD2 90.00 usec
 PLW2 13.80339990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803116 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



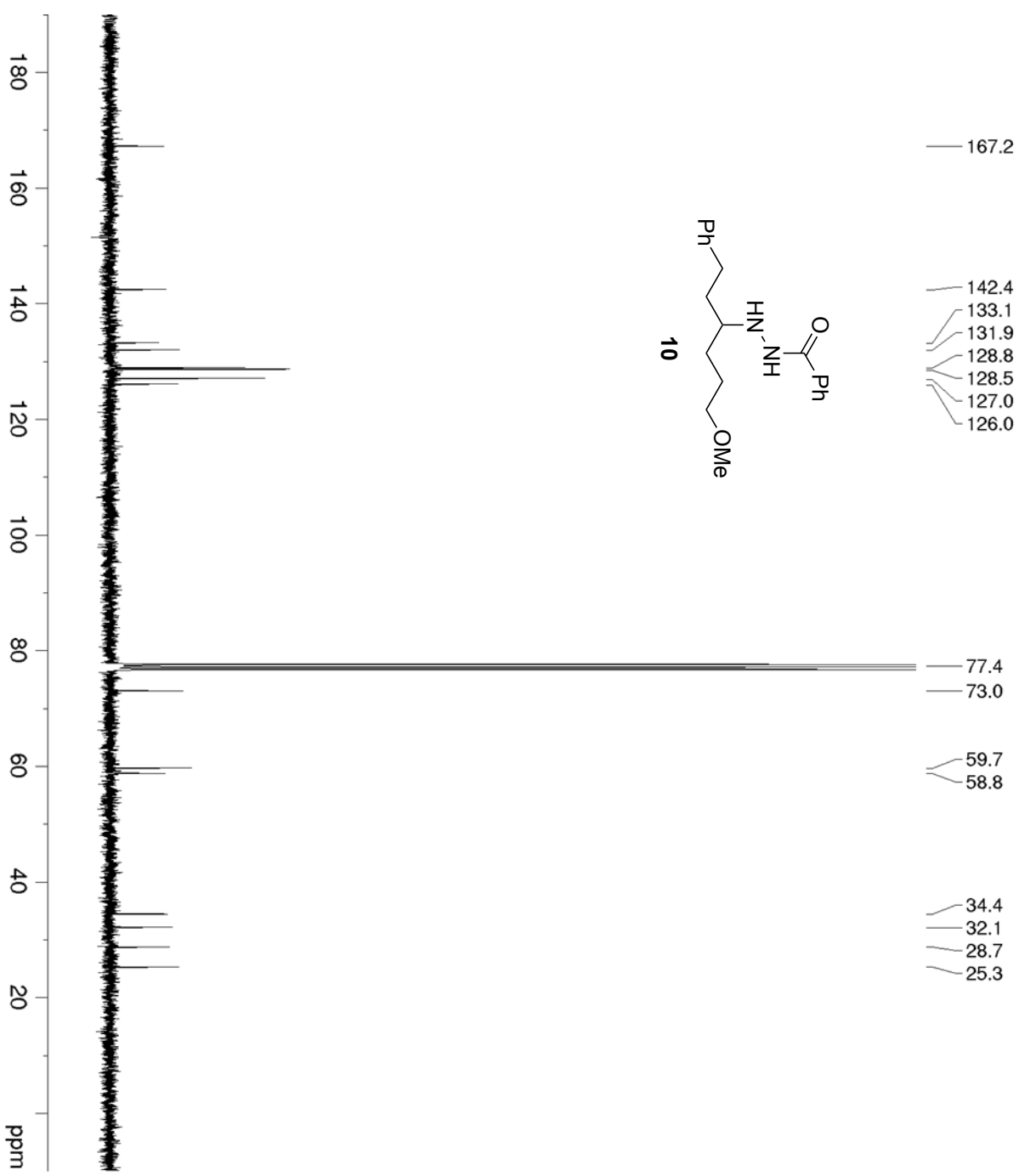
Current Data Parameters
 NAME SC-03-211.d1
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190524
 Time 13:55

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 8
 DS 0
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQC 5.3687091 sec
 RG 62.5742
 DW 81.920 usec
 DE 6.50 usec
 TE 294.4 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800051 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



Current Data Parameters
 NAME SC-03-211 13C
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190524
 Time 13:59

INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 1024

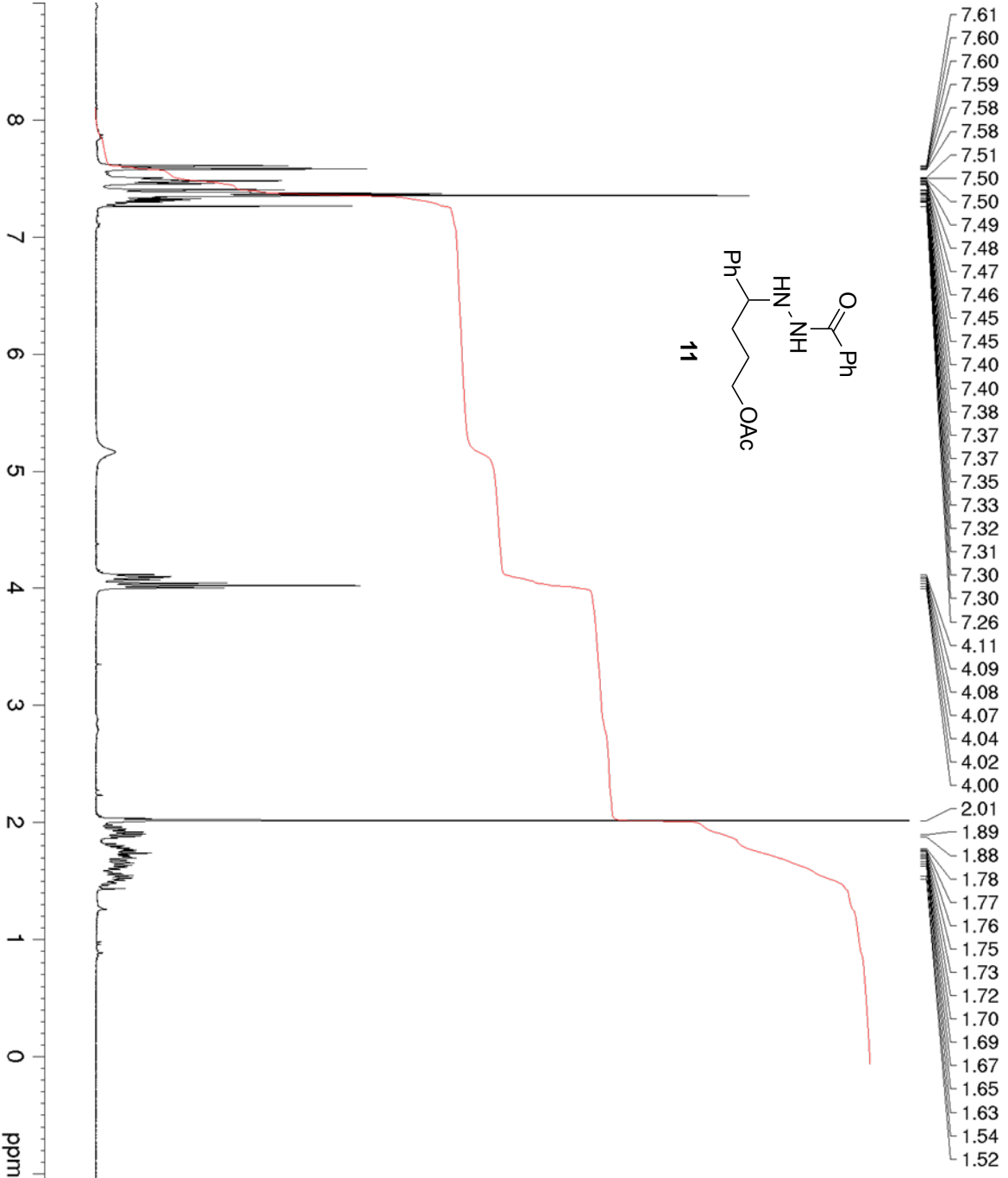
DS 0
 SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQC 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.4 K

D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.03008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TDO 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803117 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



Current Data Parameters
 NAME SC-03-AcPr radical addn a
 EXPNO 1
 PROCNO 1

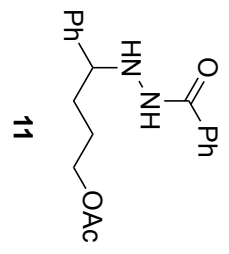
F2 - Acquisition Parameters
 Date_ 20190409

Time 12:35
 INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 8
 DS 0
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQ 5.3687091 sec
 RG 32
 DW 81.920 usec
 DE 6.50 usec
 TE 294.4 K
 D1 1.00000000 sec
 TD0 1

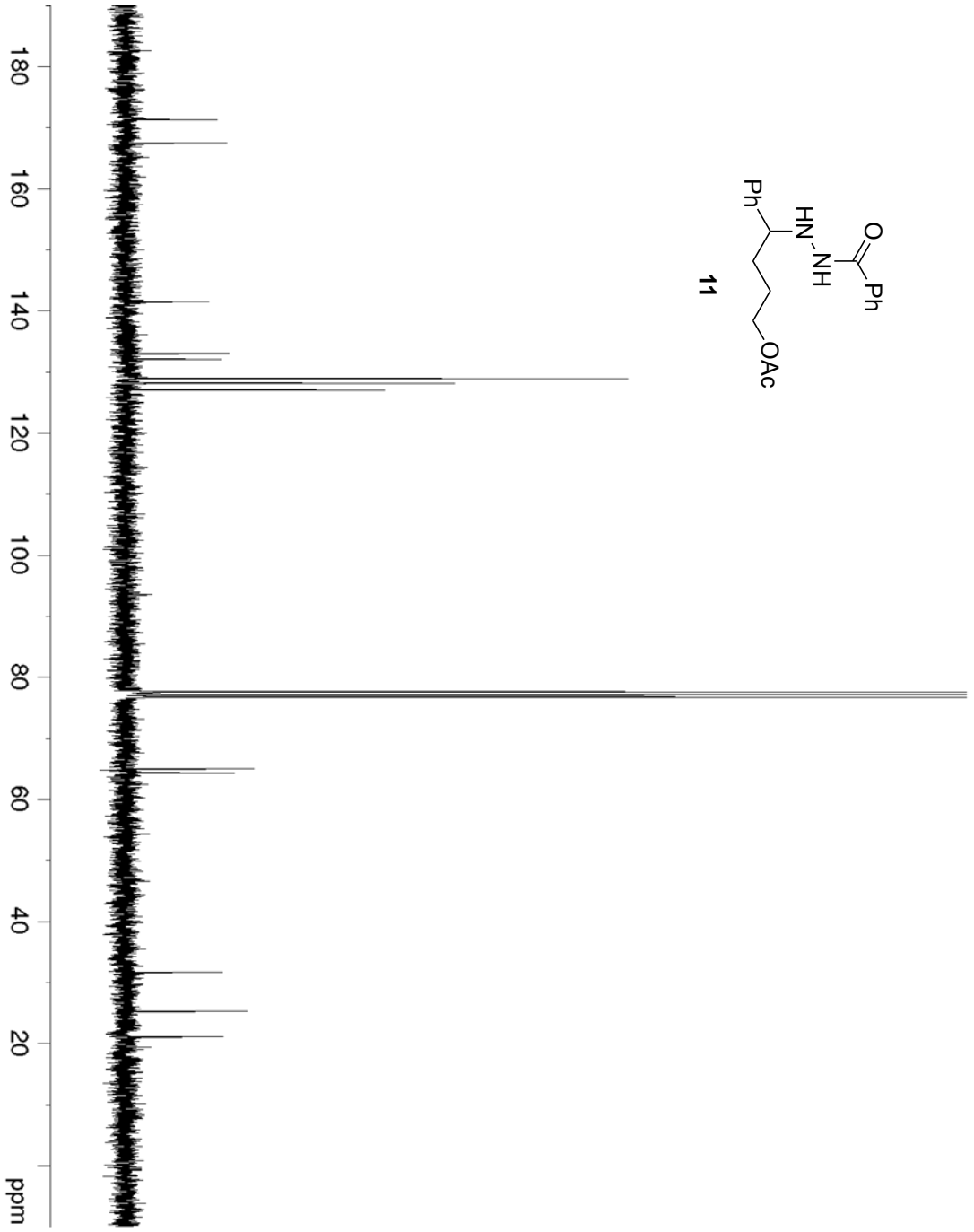
==== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800050 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

171.2
167.3
141.3
132.8
131.9
128.7
127.9
126.8



64.8
64.2
31.5
25.1
21.0



Current Data Parameters
NAME SC-03-AcPr radical addn
EXPNO 1
PROCNO 1

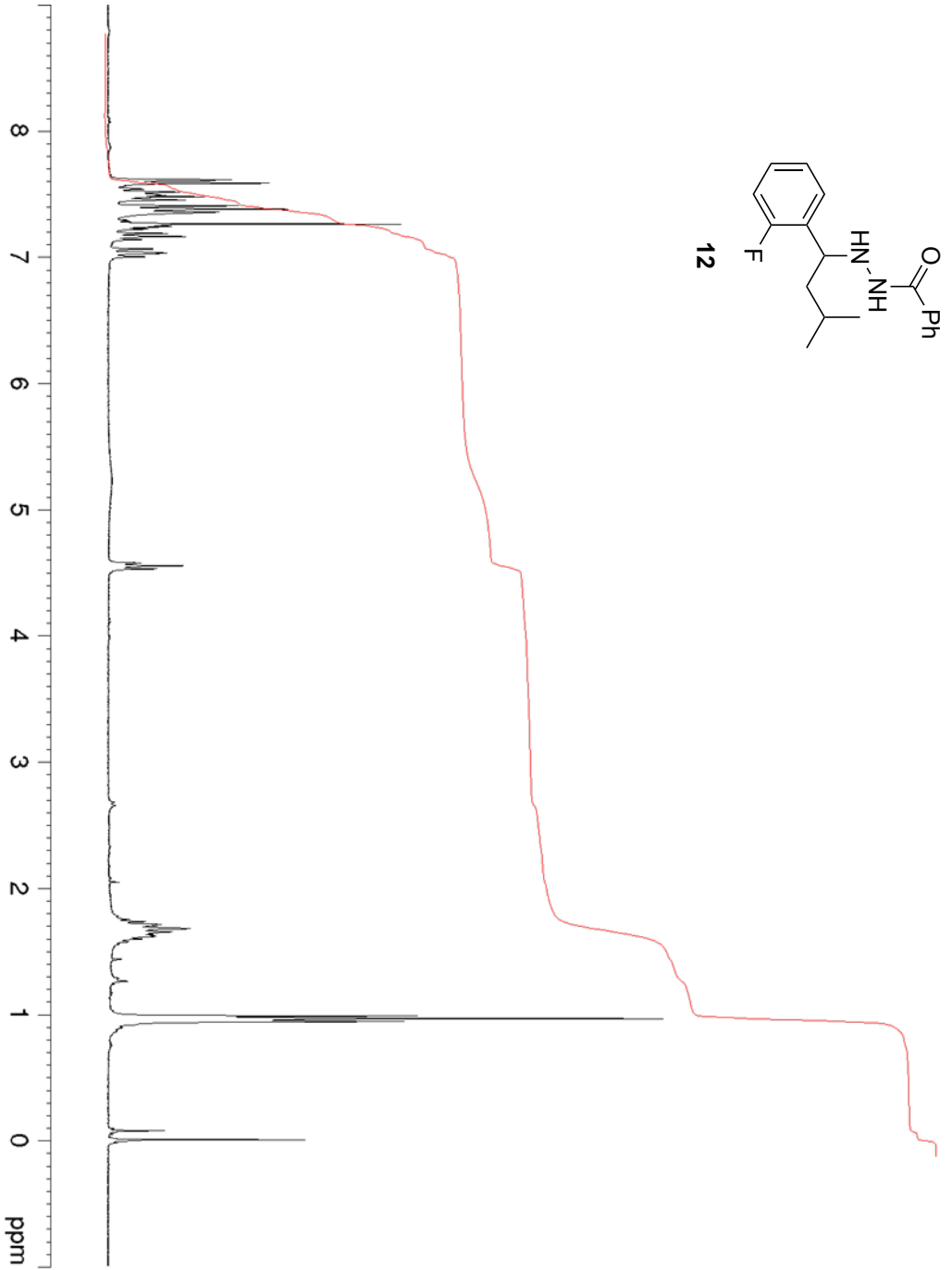
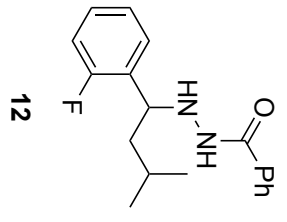
F2 - Acquisition Parameters
Date_ 20190409
Time 12.39
INSTRUM FOUJIER300
PROBHD 5 mm DUL 13C-1
PULPROG zgpg30
TD 65536
SOLVENT CDCI3
NS 195
DS 4
SWH 24414.063 Hz
FIDRES 0.372529 Hz
AQ 1.3421773 sec
RG 501.187
DW 20.480 usec
DE 6.50 usec
TE 294.6 K
D1 2.00000000 sec
D11 0.03000000 sec
D31 0.00001500 sec
D40 0.03008300 sec
L4 40
L5 57
P32 90.00 usec
TDO 1

==== CHANNEL f1 =====
SFO1 75.4878687 MHz
NUC1 13C
P1 15.00 usec
PLW1 22.00000000 W

==== CHANNEL f2 =====
SFO2 300.1812007 MHz
NUC2 1H
CPDPRG2 waltz16
PCPD2 90.00 usec
PLW2 13.80399990 W
PLW12 0.38343999 W
PLW13 0.31059000 W

F2 - Processing parameters
SI 32768
SF 75.4803132 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

7.59
7.58
7.52
7.51
7.49
7.48
7.46
7.45
7.40
7.38
7.35
7.26
7.25
7.24
7.19
7.16
7.03
5.22
4.55
1.68
1.65
0.98
0.96
0.94



Current Data Parameters
NAME SC-03-156 purified
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20190219
Time 16:38

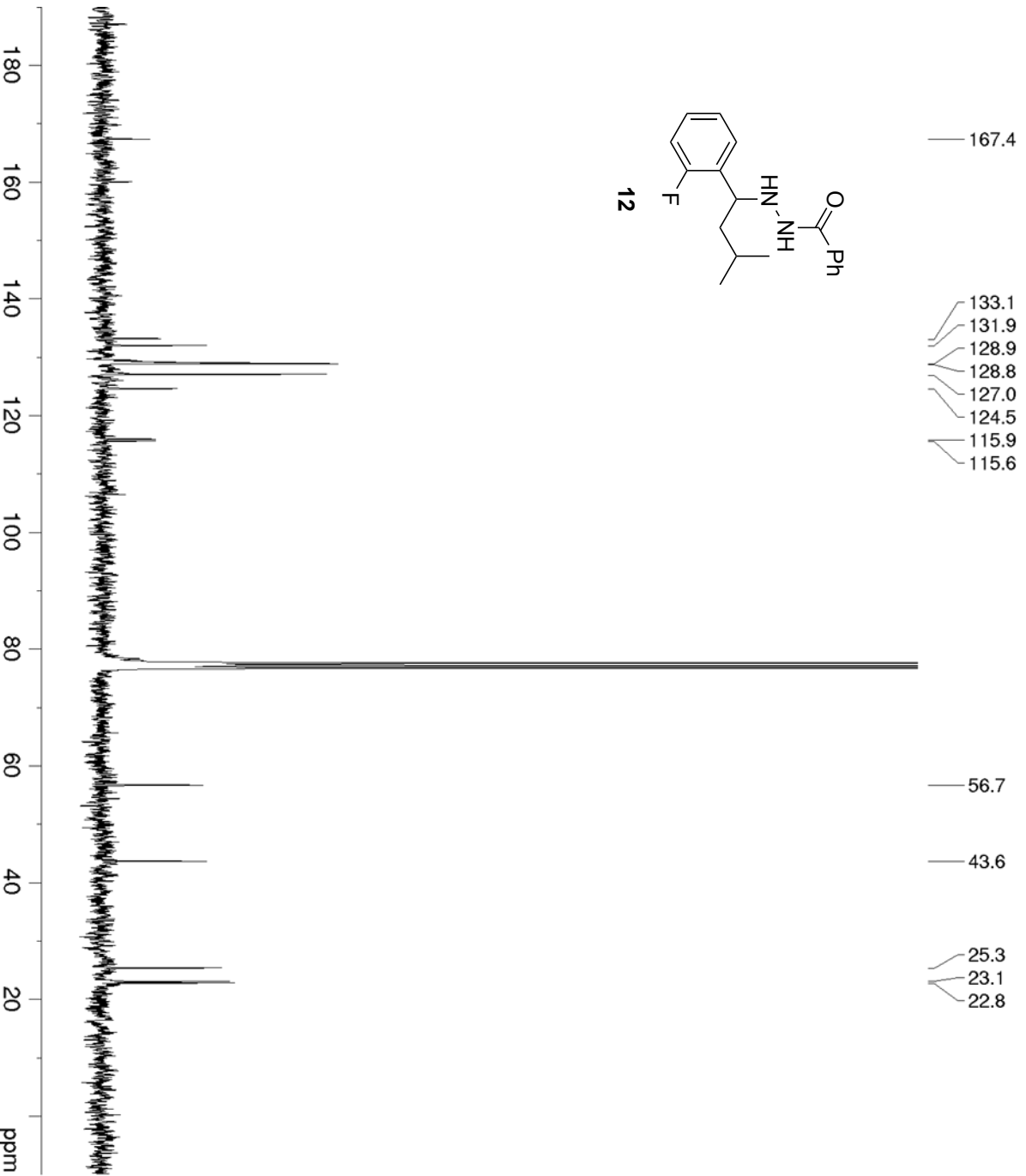
INSTRUM spect
PROBHD 5 mm QNP 1H/13
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 8
DS 0

SWH 5995.204 Hz
FIDRES 0.182959 Hz
AQ 2.7328513 sec
RG 812.7

DW 83.400 usec
DE 6.50 usec
TE 300.0 K
D1 0.01000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 9.00 usec
PL1 -0.50 dB
SFO1 300.1524012 MHz

F2 - Processing parameters
SI 16384
SF 300.1500050 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



Current Data Parameters
 NAME SC-03-156 13C
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190219
 Time 18.03

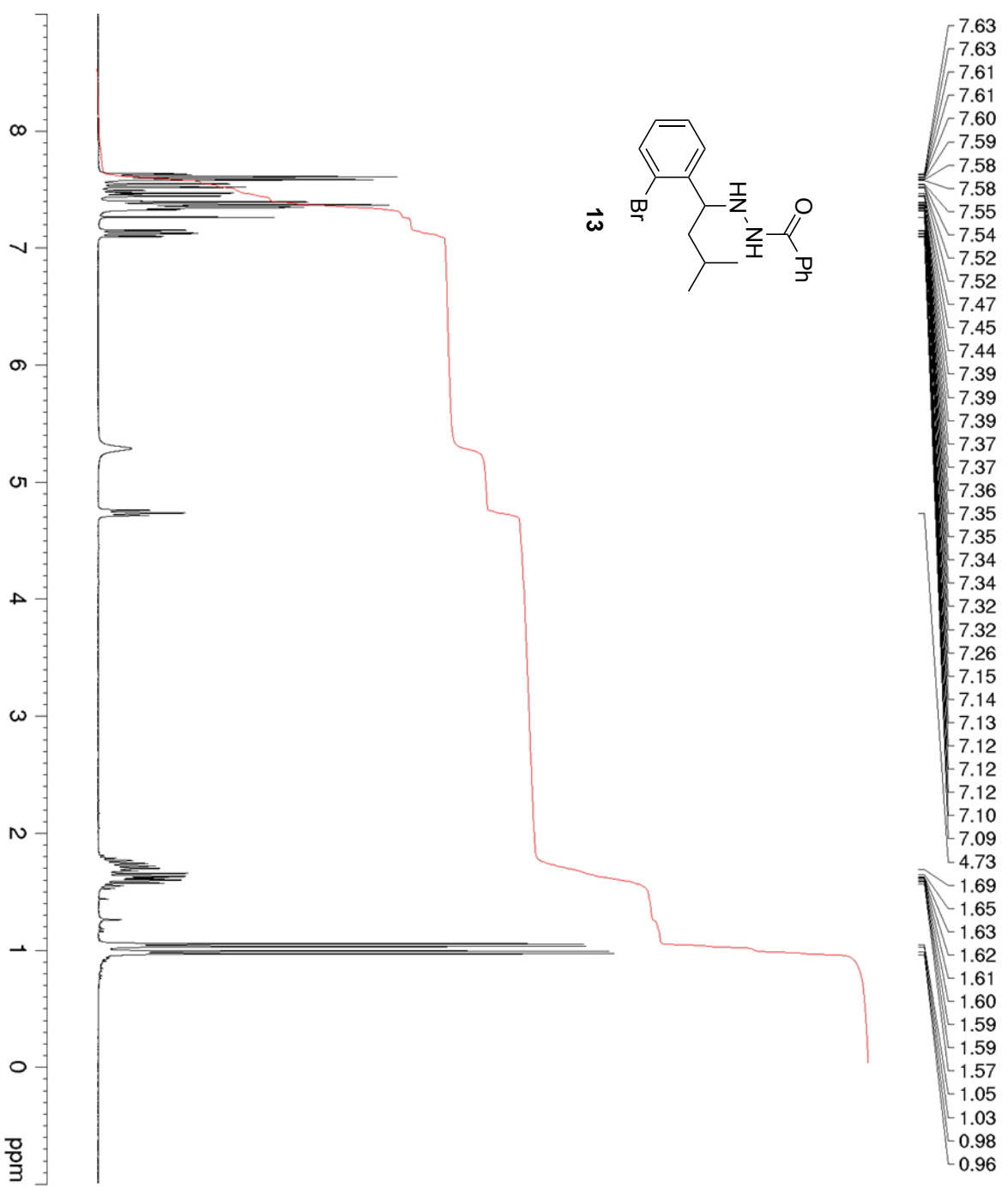
INSTRUM spect
 PROBHD 5 mm QNP 1H/13
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 2316

DS 0
 SWH 19960.080 Hz
 FIDRES 0.304567 Hz
 AQ 1.6416768 sec
 RG 14596.5
 DW 25.050 usec
 DE 6.50 usec
 TE 300.0 K
 D1 0.35830000 sec
 d11 0.030000000 sec
 TD0 1

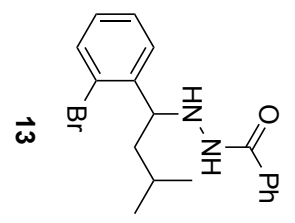
==== CHANNEL f1 =====
 NUC1 13C
 P1 9.50 usec
 PL1 0 dB
 SFO1 75.4803253 MHz

==== CHANNEL f2 =====
 CPDPRG12 waltz16
 NUC2 1H
 PCPD2 87.00 usec
 PL2 0 dB
 PL12 20.00 dB
 SFO2 300.1512006 MHz

F2 - Processing parameters
 SI 32768
 SF 75.4727655 MHz
 WDW EM
 SSB 0
 LB 3.50 Hz
 GB 0
 PC 1.40



7.63
7.63
7.61
7.60
7.59
7.58
7.58
7.55
7.54
7.52
7.52
7.47
7.45
7.44
7.39
7.39
7.39
7.37
7.37
7.36
7.35
7.35
7.34
7.34
7.32
7.32
7.26
7.15
7.14
7.13
7.12
7.12
7.10
7.09
4.73
1.69
1.65
1.63
1.62
1.61
1.60
1.59
1.59
1.57
1.05
1.03
0.98
0.96



Current Data Parameters
 NAME SC-03-215 1H hivac
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190610
 Time 10:37

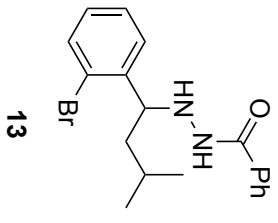
INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 8
 DS 0

SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 AQ 5.3687091 sec
 RG 32
 DW 81.920 usec
 DE 6.50 usec
 TE 294.6 K
 D1 1.00000000 sec
 TD0 1

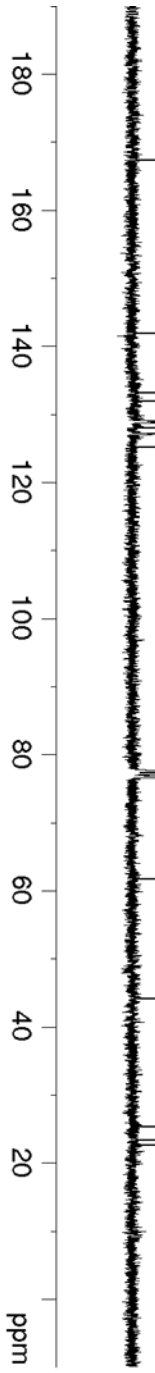
==== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800050 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

167.4
 141.8
 133.0
 131.8
 128.9
 128.7
 128.7
 127.9
 127.0
 125.1



61.7
 44.2
 25.4
 23.4
 22.6



Current Data Parameters
 NAME SC-03-215 13C
 EXPNO 1
 PROCNO 1

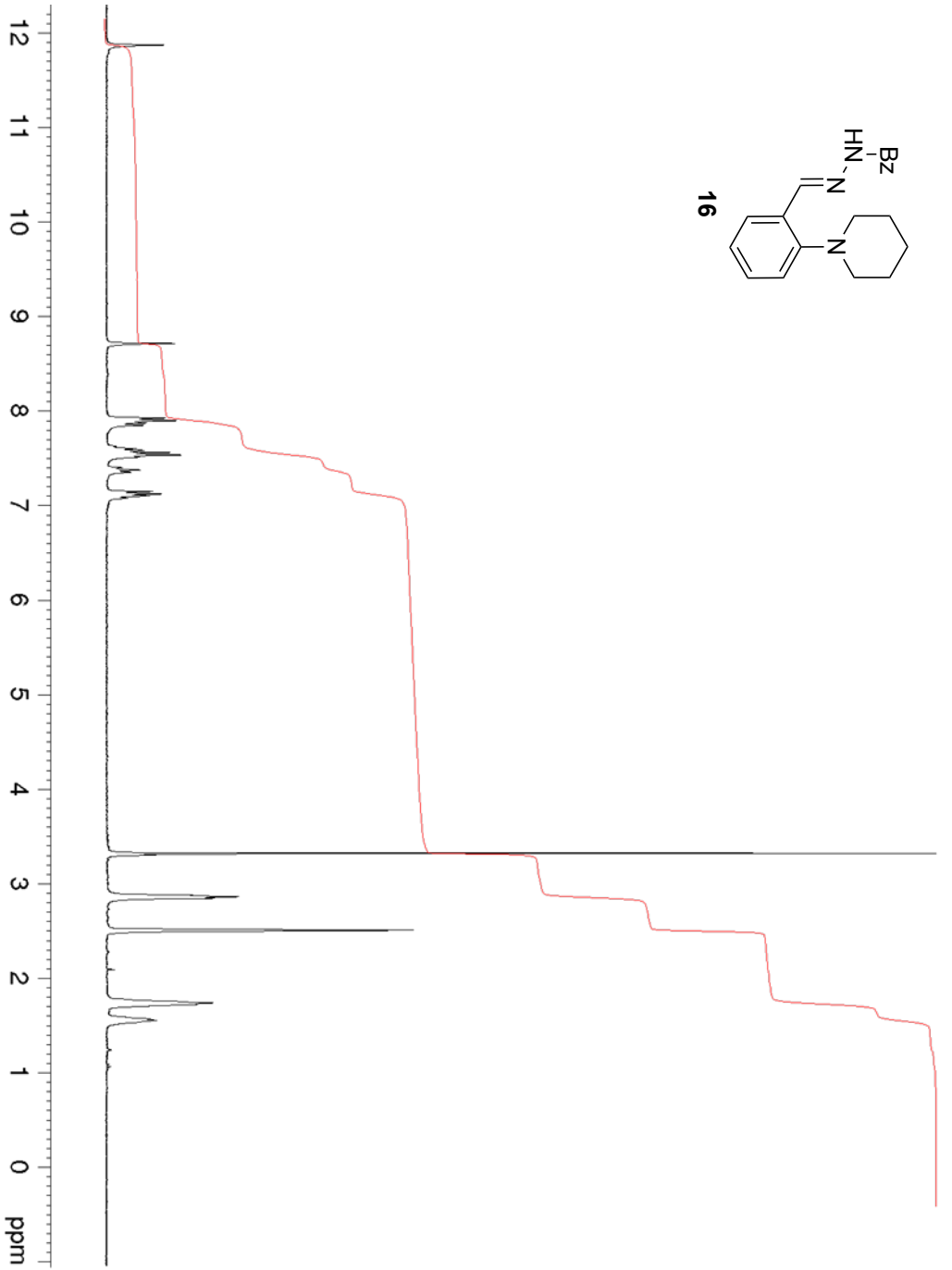
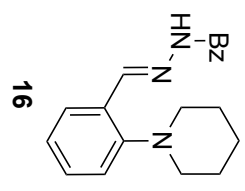
F2 - Acquisition Parameters
 Date_ 20190610
 Time 10:42
 INSTRUM FOUJIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 635
 DS 4
 SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQ 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.8 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.03008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TDO 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803130 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

- 11.87
- 8.71
- 7.92
- 7.90
- 7.87
- 7.85
- 7.60
- 7.58
- 7.55
- 7.53
- 7.51
- 7.37
- 7.14
- 7.12
- 7.10
- 3.29
- 2.87
- 2.85
- 2.84
- 2.51
- 2.50
- 2.49
- 1.73
- 1.71
- 1.56
- 1.54



Current Data Parameters
 NAME SC-03-208 1H
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190603
 Time 13:21

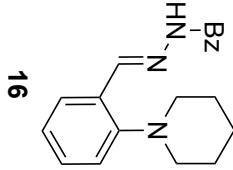
INSTRUM spect
 PROBHD 5 mm QNP 1H/13
 PULPROG zg30
 TD 32768
 SOLVENT DMSO

NS 8
 DS 0
 SWH 5995.204 Hz
 FIDRES 0.182959 Hz
 AQC 2.7328513 sec
 RG 912.3
 DW 83.400 usec
 DE 6.50 usec
 TE 300.0 K
 D1 0.01000000 sec
 TD0 1

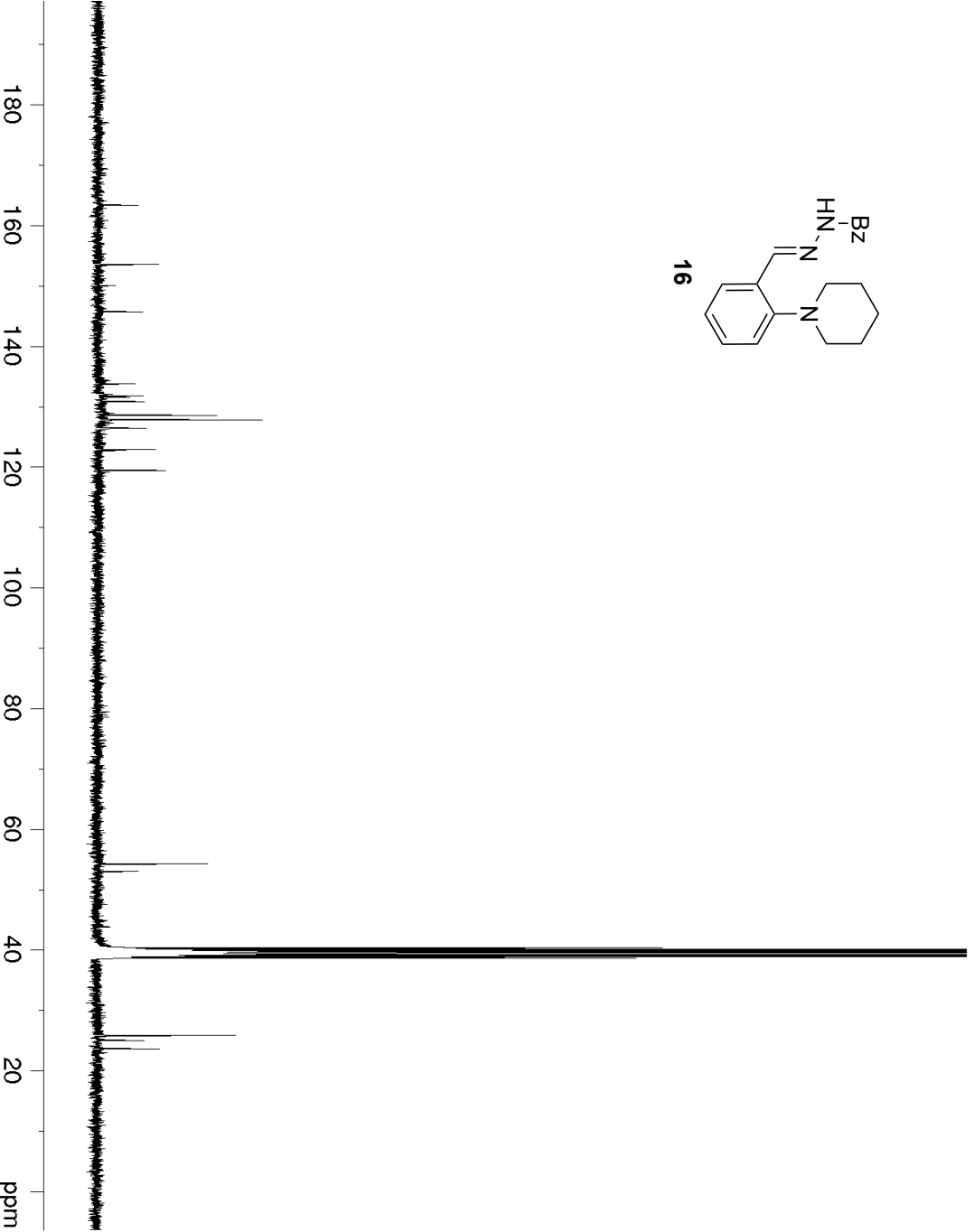
===== CHANNEL f1 =====
 NUC1 1H
 P1 9.00 usec
 PL1 -0.50 dB
 SFO1 300.1524012 MHz

F2 - Processing parameters
 SI 16384
 SF 300.1500005 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

- 163.3
- 153.5
- 149.9
- 145.6
- 133.7
- 131.6
- 131.4
- 130.7
- 128.4
- 127.7
- 126.3
- 122.8
- 119.3



- 54.3
- 53.0
- 25.8
- 25.0
- 23.6



Current Data Parameters
 NAME SC-03-208 13C conc
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters

Date_ 20190615
 Time 14:52
 INSTRUM FOURIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30
 TD 65536
 SOLVENT DMSO
 NS 6500
 DS 4
 SWH 24414.063 Hz
 FIDRES 0.372529 Hz
 AQ 1.3421773 sec
 RG 501.187
 DW 20.480 usec
 DE 6.50 usec
 TE 294.4 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 D31 0.00001500 sec
 D40 0.03008300 sec
 L4 40
 L5 57
 P32 90.00 usec
 TDO 1

==== CHANNEL f1 =====

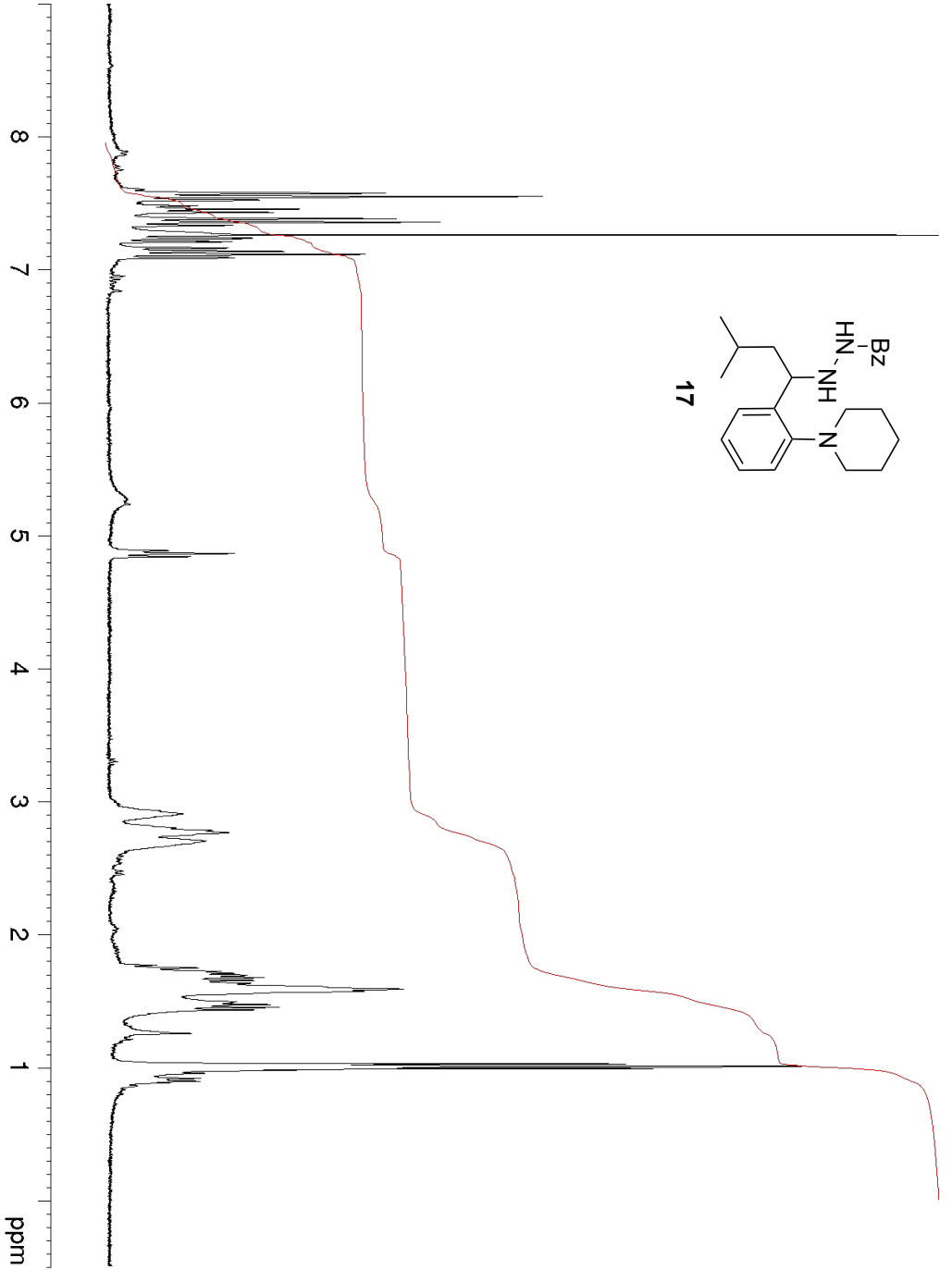
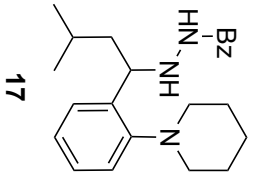
SFO1 75.4878687 MHz
 NUC1 13C
 P1 15.00 usec
 PLW1 22.00000000 W

==== CHANNEL f2 =====

SFO2 300.1812007 MHz
 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 13.80399990 W
 PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters

SI 32768
 SF 75.4803557 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



Current Data Parameters
 NAME SC-03-209 purified rshimr
 EXPNO 1
 PROCNO 1

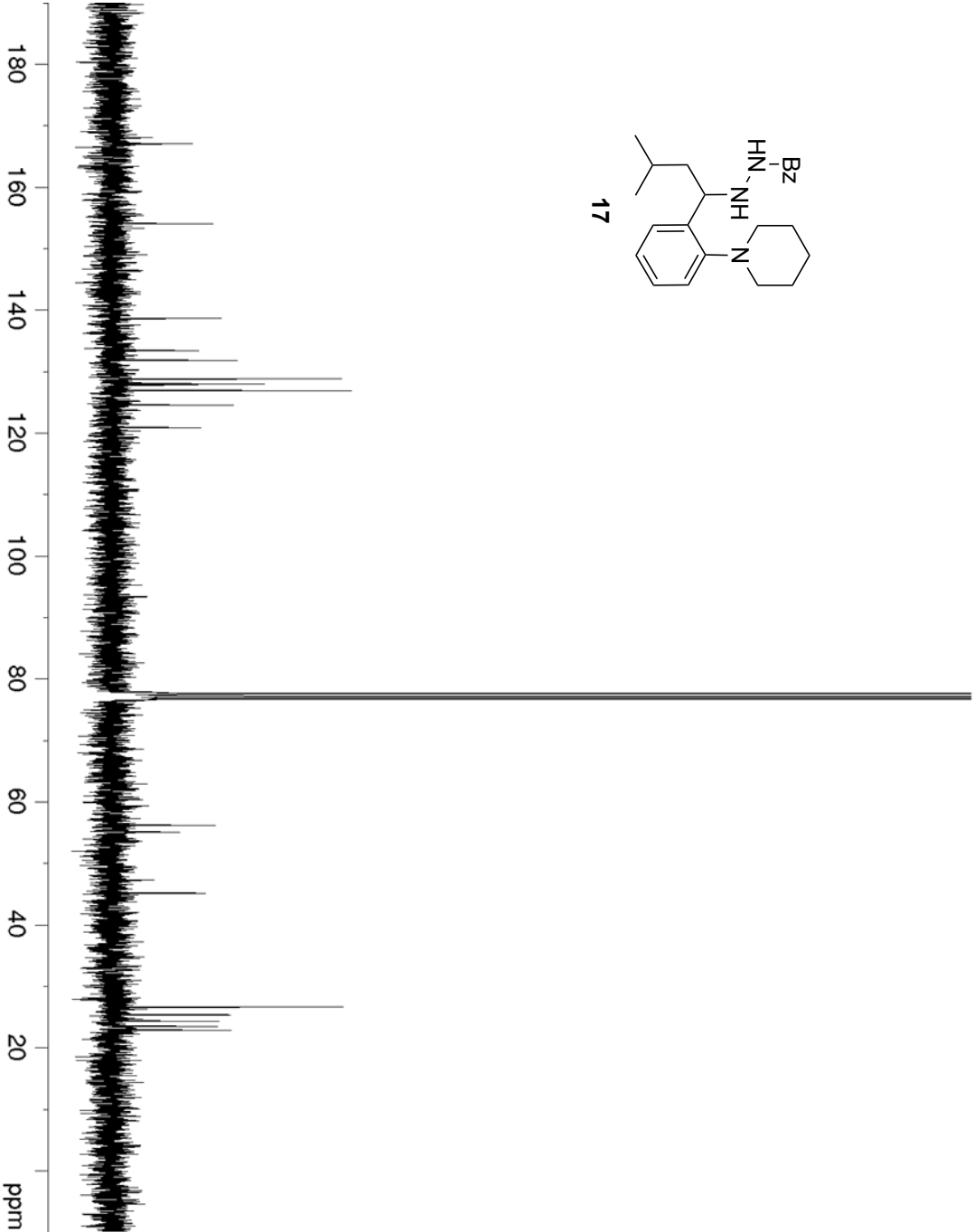
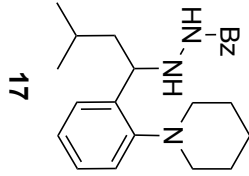
F2 - Acquisition Parameters
 Date_ 20190521
 Time 16.48

INSTRUM FURIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 6103.516 Hz
 FIDRES 0.093132 Hz
 RG 66.2649
 AQ 5.3687091 sec
 DW 81.920 usec
 DE 6.50 usec
 TE 293.7 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 SFO1 300.1818537 MHz
 NUC1 1H
 P1 15.00 usec
 PLW1 13.80399990 W

F2 - Processing parameters
 SI 65536
 SF 300.1800053 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

- 167.1
- 154.0
- 138.6
- 133.3
- 131.7
- 128.7
- 127.9
- 127.7
- 126.8
- 124.4
- 120.8
- 56.2
- 55.0
- 45.1
- 26.6
- 25.3
- 24.3
- 23.5
- 22.8



Current Data Parameters
 NAME SC-03-209 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20190521
 Time 18.54

INSTRUM FOURIER300
 PROBHD 5 mm DUL 13C-1
 PULPROG zgpg30

TD 65536
 SOLVENT CDC13

NS 747
 DS 4

SWH 24414.063 Hz
 FIDRES 0.372529 Hz

AQ 1.3421773 sec
 RG 501.187

DW 20.480 usec
 DE 6.50 usec

TE 293.8 K
 D1 2.00000000 sec

D11 0.03000000 sec
 D31 0.00001500 sec

D40 0.03008300 sec
 L4 40

L5 57
 P32 90.00 usec
 TDO 1

===== CHANNEL f1 =====
 SFO1 75.4878687 MHz
 NUC1 13C

P1 15.00 usec
 PLW1 22.00000000 W

===== CHANNEL f2 =====
 SFO2 300.1812007 MHz

NUC2 1H
 CPDPRG2 waltz16

PCPD2 90.00 usec
 PLW2 13.80399990 W

PLW12 0.38343999 W
 PLW13 0.31059000 W

F2 - Processing parameters
 SI 32768
 SF 75.4803118 MHz

WDW EM
 SSB 0

LB 1.00 Hz
 GB 0

PC 1.40

References

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