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Supporting Information

Selective Catalytic synthesis of α-Alkylated Ketones and β-Alkylated Secondary Alcohols via Hydrogen-Borrowing Strategy

Md. Bakibillah, Sahin Reja, Kaushik Sarkar, Deboshmita Mukherjee, Rajesh Kumar Das*

Department of Chemistry, University of North Bengal, Darjeeling, West Bengal, India. Email. rajeshnbu@gmail.com

**** Corresponding author:** Rajesh Kumar Das, Assistant Professor, Department of Chemistry, University of North Bengal, Darjeeling, West Bengal, 734013, India, Mob: +919434459238*

***E-mail address:**rajeshnbu@gmail.com*

1. General Information:

All the reagents were purchased commercially and used without further purification. ^{1}H NMR and ^{13}C NMR were recorded with Bruker 400 MHz. ^{1}H NMR (400MHz) and ^{13}C NMR (100MHz) spectra were recorded in $CDCl_3$, CD_3OD or DMSO-d6 with tetramethylsilane as the internal standard. Multiplicities are reported using the following abbreviations: s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet, sep = septet, br = broad resonance. All the NMR spectra were acquired at ambient temperature. Analytical thin layer chromatography (TLC) was performed using Silica Gel 60 Å F254 pre-coated plates (0.25 mm thickness). Visualization of I_2 stained TLC plate was accomplished by a UV lamp and single-crystal data were collected from a Bruker-APEX-II CCD X-ray diffractometer.

2. General experimental procedure for preparation of catalyzed product [7a-7w, 8a-8r and 10aa-10fm] (C):

Ketone or secondary alcohol (1 mmol), alcohol (1.2 mmol), Ir(III) complex (0.005 mmol), ^{t}BuOK (0.2 mmol) and toluene (2 ml) were placed in a 5 ml screw-capped vial and allowed to react at 110°C for 2-10 h. The progress of the reaction was monitored by TLC. After completion of starting material, the reaction mass was evaporated and the residue was purified with column chromatography over silica gel where hexane/ethyl acetate mixture was used as eluent.

3. *Characterization data of ligands (3a-3c):*

All the reactions were carried out according to the general procedure A. (All reactions were carried out in 4 m.mol scale)

N-(naphthalen-1-yl) picolinamide(3a): Yield 860 mg, 85%

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 10.75 (s, 1H), 8.71 (d, *J* = 4.6 Hz, 1H), 8.40-8.35 (m, 2H), 8.1 (d, *J* = 8.1 Hz, 1H), 7.95 (t, *J* = 6.2 Hz, 1H), 7.89 (d, *J* = 7.9 Hz, 1H), 7.70 (d, *J* = 8.2 Hz, 1H), 7.60-7.52 (m, 4H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$):δ (ppm) =162.1, 149.9, 148, 137.6, 134, 132.3, 128.7, 126.4, 126.2, 126.1, 125.9, 124.9, 122.3, 120.3, 118.4.

N-(naphthalen-2-yl) picolinamide (3b): Yield 840 mg, 84%

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 10.2 (s, 1H), 8.64 (d, *J* = 7.5 Hz, 1H), 8.5 (s, 1H), 8.33 (d, *J* = 7.7 Hz, 1H), 7.94 (t, *J* = 6.4 Hz, 1H), 7.86 (d, *J* = 5.2 Hz, 2H), 7.80 (d, *J* = 7.7 Hz, 1H), 7.71 (d, *J* = 6.9 Hz, 1H), 7.51-7.45 (m, 2H), 7.43-7.39 (m, 1H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$):δ (ppm) =162, 149.7, 147.9, 137.6, 135.1, 133.9, 130.6, 128.7, 127.6, 127.5, 126.44, 126.41, 124.9, 122.3, 119.7, 116.3.

N-(2,5-dimethylphenyl)picolinamide (3c): Yield 742 mg, 82%

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 10.03 (s, 1H), 8.61 (d, *J* = 4.4 Hz, 1H), 8.29 (d, *J* = 7.7 Hz, 1H), 8.11 (s, 1H), 7.9 (t, *J* = 7.7 Hz, 1H), 7.48-7.45 (m, 1H), 7.09 (d, *J* = 7.6 Hz, 1H), 6.89 (d, *J* = 7.4 Hz, 1H), 2.36 (s, 6H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$):δ (ppm) = 161.6, 150, 147.9, 137.4, 136.4, 135.5, 130, 126.2, 125.1, 124.7, 122.1, 121.7, 21.1, 17.1.

Characterization data of Ir(III) complexes (4a-Ir-4c-Ir):

All the reaction was carried out according to the general procedure B. (All reactions were carried out in 4 m.mol scale)

[*N*-(naphthalen-1-yl) picolinamide] Cp*Ir(III) chloride (4a-Ir): Yield 2.22 g, 92%

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 8.61 (d, *J* = 5.2 Hz, 1H), 8.21 (d, *J* = 7.5 Hz, 1H), 7.96-7.92 (m, 2H), 7.85-7.84 (m, 2H), 7.65 (d, *J* = 7.8 Hz, 1H), 7.52-7.40 (m, 4H), 1.29 (s, 15H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ (ppm) = 168.8, 155.1, 149.6, 146, 138.5, 133.6, 130.2, 128.2, 127.5, 127.4, 127.2, 126.6, 126.4, 126.1, 125.8, 125.2, 125.1, 125, 124.1, 122.4, 87.8, 86.7, 86.4, 84.6, 8.7, 8.6, 8.5, 8.

[*N*-(naphthalen-2-yl) picolinamide] Cp*Ir(III) chloride (4b-Ir): Yield 2.1 g, 86%

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 8.62 (d, *J* = 5.2 Hz, 1H), 8.21 (d, *J* = 7.8 Hz, 1H), 813 (s, 1H), 7.96 (t, *J* = 7.1 Hz, 1H), 7.90-7.87 (m, 1H), 7.84-7.78 (m, 3H), 7.52 (t, *J* = 6.9 Hz, 1H), 7.44-7.37 (m, 2H), 1.40 (s, 15H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ (ppm) = 168.7, 155.7, 149.7, 145.9, 138.7, 133.8, 131.1, 127.7, 127.5, 127.1, 126.4, 125.6, 124.6, 123.9, 86.7, 8.5.

[*N*-(2, 5-dimethylphenyl)picolinamide] Cp*Ir(III) chloride (4c-Ir): 1.98 g, 85%

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 8.57 (d, *J* = 5.2 Hz, 1H), 8.17 (d, *J* = 7.7 Hz, 1H), 8.90 (t, *J* = 6.9 Hz, 1H), 7.49 (s, 1H), 7.46 (t, *J* = 6.7 Hz, 1H), 7.05 (d, *J* = 7.5 Hz, 1H), 6.84 (d, *J* = 8.1 Hz, 1H), 2.25-2.21(m, 6H), 1.41 (s, 15H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ (ppm) = 167.5, 155.4, 149.1, 146.6, 138.3, 135.3, 131.4, 129, 127, 126.6, 126.5, 125.5, 86.7, 29.5, 29.2, 20.8, 18.5, 8.45, 8.15.

4. *Characterization data of Ir catalysed compounds (7a-7w, 8a-8r, 10ab-10fm and 14).*

All the reactions were carried out in 1 mmol scale of ketone and according to the general procedure C.

1,3-diphenylpropan-1-one (7a) [1] **:** *Yield 206 mg, 98%*

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.95 (d, *J* = 7.6 Hz, 2H), 7.54 (t, *J* = 7.4 Hz, 1H), 7.44 (t, *J* = 7.6 Hz, 2H), 7.31-7.21 (m, 4H), 7.19-7.13 (m, 1H),3.30 (t, *J* = 7.6 Hz, 2H), 3.06 (t, *J* = 7.6 Hz, 2H).

1-(2-fluorophenyl)-3-phenylpropan-1-one (7b) [2]*: Yield 187 mg, 82%*

^{1}H NMR (400 MHz, CD_3OD): δ (ppm) = 7.82-7.77 (m, 1H), 7.60-7.55 (m, 1H), 7.31-7.18 (m, 6H), 7.17-7.13 (m, 1H), 3.27 (m, 2H), 2.99 (t, *J* = 7.5 Hz, 2H).

1-(3-fluorophenyl)-3-phenylpropan-1-one (7c)[3]***:*** *Yield 184 mg, 85%*

^{1}H NMR (400 MHz, CD_3OD): δ (ppm) = 7.79 (d, *J* = 7.7 Hz, 1H), 7.64 (d, *J* = 9.6 Hz, 1H), 7.49 (q, J_1 = 8.04 Hz, J_2 = 13.8 Hz, 1H), 7.34-7.30 (m, 1H),7.25-7.23(m, 4H), 7.16-7.12(m, 1H) 3.32 (t, *J* = 7.6 Hz, 2H), 3.00 (t, *J* = 7.2 Hz, 2H).

1-(4-fluorophenyl)-3-phenylpropan-1-one (7d)[1]***:*** *Yield189 mg, 83%*

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.98-7.95(m, 2H), 7.31-7.20 (m, 4H), 7.10 (t, *J* = 8.4 Hz, 2H) 3.26 (t, *J* = 7.6 Hz, 2H), 3.05 (t, *J* = 8.4 Hz, 2H).

3-phenyl-1-(o-tolyl)propan-1-one (7e)[4]***: Yield 188 mg, 84%***

^{1}H NMR (400 MHz, CD_3OD): δ (ppm) = 7.64 (d, *J* = 6.8 Hz, 1H), 7.37-7.31 (m, 1H), 7.26-7.16 (m, 6H), 7.14-7.12 (m, 1H), 3.23 (t, *J* = 7.4 Hz, 2H), 2.97 (t, *J* = 7.4 Hz, 2H), 2.35 (s, 3H).

3-phenyl-1-(m-tolyl) propan-1-one (7f) [4]***: yield197 mg, 88%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.75-7.73 (m, 2H), 7.43-7.13 (m, 7H), 3.28 (t, *J* = 7.6 Hz, 2H), 3.05 (t, *J* = 7.7 Hz, 2H), 2.39 (s, 3H).

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 7.79-7.76 (m, 2H), 7.45-7.37 (m, 2H), 7.28-7.27 (m, 4H), 7.20-7.15 (m, 1H), 3.37-3.29 (m, 2H), 2.93 (t, *J* = 7.56 Hz, 2H), 2.36 (s, 3H).

1-(2-methoxyphenyl)-3-phenylpropan-1-one (7g)[4]***: Yield 207 mg, 86%***

^{1}H NMR (400 MHz, CD_3OD): δ (ppm) = 7.55 (d, *J* = 7.4 Hz, 1H), 7.49 (t, *J* = 8.2 Hz, 1H), 7.23-7.09 (m, 6H), 6.98 (t, *J* = 7.4 Hz, 1H), 3.98 (s, 3H), 3.29-3.144 (m, 2H), 2.94 (t, *J* =7.6 Hz, 2H).

1-(3-methoxyphenyl)-3-phenylpropan-1-one (7h)[1]***: Yield 214 mg, 89%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.52 (d, *J* = 7.2 Hz, 1H), 7.47 (s, 1H), 7.36-7.19 (m, 6H), 7.13-7.7.08 (m, 1H), 3.83 (s, 3H), 3.28 (t, *J* = 7.6 Hz, 2H), 3.05 (t, *J* = 7.6 Hz, 2H).

1-(4-methoxyphenyl)-3-phenylpropan-1-one (7i)[1]***: Yield, 216 mg, 90%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.93 (d, *J* = 8.7 Hz, 2H) 7.28-7.19 (m, 5H), 6.91 (d, *J* = 8.7 Hz, 2H), 3.85 (s, 3H), 3.24 (t, *J* = 7.2 Hz, 2H), 3.04 (t, *J* = 7.6 Hz, 2H).

3-phenyl-1-(pyridin-3-yl) propan-1-one (7j)[5] ***: Yield, 159 mg, 75%***

^{1}H NMR (400 MHz, CD_3OD): δ (ppm) = 9.07 (s, 1H), 8.69 (d, *J* = 4.8 Hz, 1H), 8.36-8.33 (m, 1H), 7.55-7.52 (m, 1H), 7.25-7.24(m, 4H), 7.17-7.13 (m, 1H), 3.38 (t, *J* = 7.4 Hz, 2H), 3.01 (t, *J* = 7.6 Hz, 2H).

3-phenyl-1-(pyridin-4-yl) propan-1-one (7k)[5]***: Yield, 163 mg, 77%***

^{1}H NMR (400 MHz, CD_3OD): δ (ppm) = 8.72-8.70 (m, 2H), 7.86-7.84 (m, 2H), 7.26-7.24 (m, 4H), 7.17-7.13 (m, 1H), 3.37 (t, *J* = 7.4 Hz, 2H), 3.02 (t, *J* = 7.4 Hz, 2H).

1-(naphthalen-1-yl)-3-phenylpropan-1-one (7l)[1] ***: Yield,242 mg, 93%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.53 (d, *J* = 8 Hz, 1H), 7.96 (d, *J* = 8.4 Hz, 1H), 7.88 (d, *J* = 6.8 Hz, 1H), 7.81 (d, *J* = 7.2 Hz, 1H), 7.58-7.44 (m, 3H), 7.29-7.13 (m, 6H),3.44-3.36 (m, 2H), 3.13 (t, *J* = 7.6 Hz, 2H).

^{1}H NMR (400 MHz, CD_3OD): δ (ppm) = 8.38-8.36 (m, 1H), 8.02 (d, *J* = 8.2 Hz, 1H), 7.91-7.89(m, 2H), 7.53-7.49 (m, 3H), 7.24-7.23(m, 4H), 7.117-7.13 (q, J_1 = 4.5 Hz, J_2 = 8.6 Hz, 1H), 3.40 (t, *J* = 7.4 Hz, 2H), 3.07 (t, *J* =7.4 Hz, 2H).

1-(4-(1H-imidazol-1-yl) phenyl)-3-phenylpropan-1-one (7m): Yield 246 mg, 89%

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 8.07 (d, *J* = 8.5 Hz, 2H), 7.93 (s, 1H), 7.47 (d, *J* = 8.5 Hz, 2H), 7.33-7.28 (m, 4H), 7.24-7.19 (m, 3H), 3.31 (t, *J* = 7.6 Hz, 2H), 3.08 (t, *J* = 7.8 Hz, 2H); $^{13}C\{^1H\}$ NMR (100 MHz, $CDCl_3$):δ (ppm) = 197.6, 140.9, 140.5, 135.5, 130.8, 130.0, 128.5, 128.3, 126.2, 120.7, 40.4, 29.9.

2-benzyl-2,3-dihydro-1H-inden-1-one (7n)[6] ***: Yield182 mg, 82%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.77 (d, *J* = 7.6 Hz, 1H), 7.56 (t, *J* = 6.8 Hz, 1H), 7.40-7.34 (m, 2H), 7.31-7.27 (m, 2H), 7.24-7.20 (m, 3H), 3.41(m, 1H), 3.19-3.13 (m, 1H), 3.02-2.97 (m, 1H), 2.87-2.82 (m, 1H), 2.65-2.63 (m, 1H).

2-benzyl-3,4-dihydronaphthalen-1(2H)-one (7o) [7]***: Yield 201 mg, 85%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 8.06 (d, *J* = 6.9 Hz, 1H), 7.45 (t, *J* = 6 Hz, 1H), 7.31-7.21 (m, 7H), 3.51-3.46 (dd, J_1 = 3.6 Hz, J_2 = 13.5 Hz, 1H), 2.93 (m, 2H), 2.76-2.71 (m, 1H), 2.66-2.60 (m,1H), 2.13-2.08 (m, 1H), 1.88-1.74(m, 1H).

1-(3,5-difluorophenyl)-3-phenylpropan-1-one (7p) [8]***: Yield 224 mg, 91%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.44-7.41 (m, 2H), 7.31-7.27 (m, 2H), 7.25-7.18 (m, 3H), 7.02-6.97 (m, 1H), 3.24 (t, *J* = 7.3 Hz, 2H), 3.05 (t, *J* = 7.7 Hz, 2H).

1-(2-bromophenyl)-3-phenylpropan-1-one (7q) [9]***: Yield 243 mg, 84%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.58 (d, *J* = 7.8 Hz, 1H), 7.35-7.19 (m, 8H), 3.30-3.22 (m, 2H), 3.05 (t, *J* = 7.7 Hz, 2H).

1-(3-bromophenyl)-3-phenylpropan-1-one (7r) [4]***: Yield 254 mg, 88%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 8.06-8.03 (br, 1H), 7.86 (d, *J* = 7.7 Hz, 1H), 7.67 (d, *J* = 8.1 Hz, 1H), 7.34-7.20 (m, 6H), 3.33-3.24 (m, 2H), 3.09-3.03 (m, 2H).

1-(4-bromophenyl)-3-phenylpropan-1-one (7s) [7]***: Yield 249 mg, 86%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.80 (d, *J* = 8.4 Hz, 2H), 7.58 (d, *J* = 8.5 Hz, 2H), 7.30-7.19 (m, 5H), 3.25 (t, *J* = 7.2 Hz, 2H), 3.05 (t, *J* = 7.8 Hz, 2H).

3-phenyl-1-(4-(trifluoromethyl) phenyl) propan-1-one (7t) [5]***: Yield 256 mg, 92%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 8.04 (d, *J* = 8.2 Hz, 2H), 7.7 (d, *J* = 8.4 Hz, 2H), 7.31-7.27 (m, 3H), 7.22-7.20 (m, 2H), 3.31 (t, *J* = 7.4 Hz, 2H), 3.07 (t, *J* = 7.5 Hz, 2H).

1-(2-chlorophenyl)-3-phenylpropan-1-one (7u) [10]***: Yield 222 mg, 91%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.40-7.34 (m, 3H), 7.27-7.24 (m, 2H), 7.22-7.18 (m, 4H), 3.26 (t, *J* = 7.4 Hz, 2H), 3.04 (t, *J* = 7.8 Hz, 2H).

4-methyl-1-phenylpentan-3-one (7v) [6]***: Yield 162 mg, 92%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.28-7.24 (m, 2H), 7.17 (d, *J* = 6.8 Hz, 3H), 2.88 (t, *J* = 7.4 Hz, 2H), 2.75 (t, *J* = 7.3 Hz, 2H), 2.59-2.52 (m, 1H), 1.06 (d, *J* = 6.7 Hz, 6H).

4,4-dimethyl-1-phenylpentan-3-one (7w) [6]***: Yield 165 mg, 87%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.28-7.24 (m, 2H), 7.18-7.16 (m, 3H), 2.84 (d, *J* = 7.1 Hz, 2H), 2.78 (d, *J* = 6.8 Hz, 2H), 1.09 (s, 9H).

4-(3-phenylpropanoyl) benzonitrile (7x) [31]**: Yield 167 mg, 71%**

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 8.12 (d, *J* = 8.24Hz, 2H), 7.99 (d, *J* = 8.16 Hz, 2H), 7.31-7.25 (m, 4H), 7.19-7.16 (m, 1H), 3.43 (t, *J* = 7.4 Hz, 2H), 2.94 (t, *J* = 7.44 Hz, 2H), 1.06 (d, *J* = 6.7 Hz, 6H); IR(ATR): ($\tilde{\nu}_{max,}$ cm^{-1}) = 3062, 3027, 2925, 2854, **2230**, **1689,** 1605, 1452, 1403, 1290, 1205, 980.

1-(3-nitrophenyl)-3-phenylpropan-1-one (7y) [32]: Yield 107 mg, 42%

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 8.65 (m, 1H), 8.47-8.45 (m, 1H), 8.42 (d, *J* = 7.72 Hz, 1H), 7.82 (t, *J* = 7.96 Hz, 1H), 7.31-7.26 (m, 4H), 7.26-7.16 (m, 1H), 3.50 (t, *J* = 7.4 Hz, 2H), 2.96 (t, *J* = 7.44 Hz, 2H).

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 8.74 (s, 1H), 8.41-8.39 (m, 1H), 8.26 (d, *J* = 7.76 Hz, 1H), 7.65 (t, *J* = 8.04 Hz, 1H), 7.32-7.28 (m, 2H), 7.25-7.24 (m, 2H), 7.21-7.19 (m, 1H), 3.33 (t, *J* = 7.24 Hz, 2H), 3.09 (t, *J* = 7.6 Hz, 2H).

2-methyl-1,3-diphenylpropan-1-one (7z) [33]: Yield 171 mg, 76%

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.91 (d, *J* = 7.4 Hz, 2H), 7.56 (t, *J* = 7.48 Hz, 1H), 7.45 (t, *J* = 7.72 Hz, 1H), 7.28-7.16 (m, 4H), 7.13-7.10 (m, 1H), 3.90-3.85 (m, 1H), 3.10-3.04 (m, 1H), 2.71-2.66 (m, 1H), 1.19-1.14 (m, 3H).

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 7.96 (d, *J* = 7.28 Hz, 2H), 7.62 (t, *J* = 7.44 Hz, 1H), 7.51 (t, *J* = 7.36 Hz, 2H), 7.26-7.20 (m, 4H), 7.18-7.13 (m, 1H), 3.94-3.88 (m, 1H), 3.07-2.99 (m, 1H), 2.66-2.63 (m, 1H), 1.10-1.06 (m, 3H).

1-(4-chlorophenyl)-2-methyl-3-phenylpropan-1-one (7za) [34]: Yield 209 mg, 81%

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 7.97 (d, *J* = 8.56 Hz, 2H), 7.57 (d, *J* = 8.56 Hz, 2H), 7.26-7.20 (m, 4H), 7.17-7.13 (m, 1H), 3.92-3.88 (m, 1H), 3.02-2.97 (m, 1H), 2.66-2.61 (m, 1H), 1.06 (d, *J* = 6.84 Hz, 3H).

3-(3-chloro-4-methylphenyl)-1-phenylpropan-1-one (8a): Yield 235 mg, 91%

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.94 (d, *J* = 7.4 Hz, 2H), 7.55 (t, *J* = 7.4 Hz, 1H), 7.46-7.42 (m, 2H), 7.23 (d, *J* =7.6 Hz, 1H), 7.13 (d, *J* = 7.6 Hz, 1H), 7.03 (d, *J* = 7.5 Hz, 1H), 3.27 (t, *J* = 7.3 Hz, 2H), 3.00 (t, *J* = 7.5 Hz, 2H), 2.32 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ (ppm) = 198.7, 140.4, 136.6, 134.1, 133.5, 133, 130, 128.8, 128.5,128.1, 127.9, 40, 29.2, 19.5;

3-(3,4-dimethoxyphenyl)-1-phenylpropan-1-one (8b) [1]***: Yield 246 mg, 91%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.95 (d, *J* = 7.7 Hz, 2H), 7.54 (t, *J* = 7.2 Hz, 1H), 7.44 (t, *J* = 7.6 Hz, 2H), 6.78- 6.76 (m, 3H), 3.84 (s, 6H), 3.27 (t, *J* = 7.6 Hz, 2H), 3.01 (t, *J* = 7.6 Hz, 2H).

3-(4-methoxyphenyl)-1-phenylpropan-1-one (8c) [1]***: Yield 216 mg, 90%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.94 (d, *J* = 7.8 Hz, 2H), 7.54 (t, *J* = 7.4 Hz, 1H), 7.44 (t, *J* = 7.6 Hz, 2H), 7.16 (t, *J* = 8.4 Hz, 2H), 6.83 (d, *J* = 8.4 Hz, 2H), 3.78 (s, 3H), 3.26 (t, *J* = 7.6 Hz, 2H), 3.01 (t, *J* = 7.6 Hz, 2H).

3-(3,4-dimethoxyphenyl)-1-(p-tolyl) propan-1-one (8d) [11]***: Yield 234 mg, 82% to be replaced***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.84 (d, *J* = 8.04 Hz, 1H), 7.24-7.22 (m, 2H), 6.80-6.76 (m, 3H), 3.85-3.84 (m, 6H), 3.24 (t, *J* = 7.32 Hz, 2H), 2.99 (t, *J* = 7.84 Hz, 2H), 2.39 (s, 3H).

1,6-diphenylhexan-1-one (8e) [1]***: Yield 229 mg, 91%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.94 (d, *J* = 7.4 Hz, 2H), 7.54 (d, *J* = 7.3 Hz, 1H), 7.44 (t, *J* = 7.6 Hz, 2H), 7.28-7.25 (m, 2H), 7.17-7.15 (m, 3H), 2.95 (t, *J* = 7.4 Hz, 2H), 2.62 (t, *J* = 7.6 Hz, 2H), 1.80-1.71 (m, 2H), 1.69-1.59 (m, 2H), 1.46-1.42 (m, 2H).

3-(4-bromophenyl)-1-phenylpropan-1-one (8f) [1]***: Yield 260 mg, 90%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) =7.93 (d, *J* = 7.2 Hz, 2H), 7.55-7.5 (m, 1H), 7.46-7.38 (m, 4H), 7.12 (d, *J* = 7.0 Hz, 2H), 3.27 (t, J = 7.4 Hz, 2H), 3.03-3.02 (m, 2H).

1-phenyl-3-(pyridin-2-yl) propan-1-one (8g) [12]***: Yield 175 mg, 83%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 8.51-8.50 (m, 1H), 7.98 (d, *J* = 7.2 Hz, 2H), 7.61-7.52 (m, 2H), 7.44 (t, *J* = 7.6 Hz, 2H), 7.21-7.20 (m, 1H), 7.12-7.09 (m, 1H), 3.51 (t, *J* = 7.2 Hz, 2H), 3.23 (t, *J* = 7.2 Hz, 2H).

3-(6-(dimethylamino) pyridin-3-yl)-1-phenylpropan-1-one (8h): Yield 206 mg, 81%

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 8.05 (s, 1H), 7.93 (d, *J* = 7.2 Hz, 2H), 7.54 (t, *J* = 7.2 Hz, 1H), 7.43 (t, *J* = 7.6 Hz, 2H), 7.37-7.35 (m, 1H), 6.46 (d, *J* = 8.4 Hz, 1H), 3.22 (t, *J* = 7.4 Hz, 2H), 3.04 (s, 6H), 2.92 (t, *J* = 7.6 Hz, 2H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ (ppm) = 198.6, 158.1, 147, 137.6, 136.7,133.1, 128.6,128.5, 127.4, 123.6, 105.7, 40.4, 38.2, 26.7;

3-(3-bromophenyl)-1-phenylpropan-1-one (8i) [13]***: Yield 263 mg 91%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) 7.95-7.93 (m, 2H), 7.55 (t, *J* = 6.8 Hz, 1H), 7.47-7.40 (m, 3H), 7.33-7.31 (m, 1H), 7.18-7.12 (m, 2H), 3.28 (t, *J* = 7.4 Hz, 2H), 3.03 (t, *J* = 7.4 Hz, 2H).

3-(4-methoxy-3-(trifluoromethyl) phenyl)-1-phenylpropan-1-one (8j): Yield 290 mg, 94%

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) =7.94 (d, *J* = 7.4 Hz, 2H), 7.55 (t, *J* = 7.2 Hz, 1H), 7.46-7.42 (m, 3H), 7.38-7.36 (m, 1H), 6.91 (d, *J* = 8.4 Hz, 1H), 3.86 (s, 3H), 3.32 (t, *J* = 4.5 Hz, 2H), 3.03 (t, *J* = 7.2 Hz, 2H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$):δ (ppm) = 198.8, 155.8, 136.7, 133.18, 133.13, 132.9, 128.6, 127.9, 126.9,126.8, 125, 122.3, 118.7, 118.4, 112.1, 55.9, 40.2, 29.6, 28.9 .

1-phenyl-3-(5-phenylthiophen-2-yl) propan-1-one (8k): Yield 269 mg, 92%

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.97 (d, *J* = 7.3 Hz, 2H), 7.59-7.53 (m, 4H), 7.46 (t, *J* = 7.4 Hz, 2H), 7.33 (t, *J* = 7.4 Hz, 2H), 7.11 (d, *J* = 3.5 Hz, 1H), 6.82 (d, *J* = 3.5 Hz, 1H), 3.39 (t, *J* = 6.5 Hz, 2H), 3.28 (t, *J* = 6.8 Hz, 2H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$):δ (ppm) = 198.4, 145, 143.6, 142.7, 139.9, 136.6, 134.6, 134.3, 133.1, 129.1, 128.8, 128.7, 128.5,127.9, 127.7, 127, 125.7, 125.5,122.7, 122.5, 40.31, 24.4

3-(2-chlorophenyl)-1-phenylpropan-1-one (8l) [14]***: Yield 201 mg, 82%***

^{1}H NMR (400 MHz, CD_3OD): δ (ppm) = 7.98-7.96 (m, 2H), 7.58 (t, *J* = 7.4 Hz, 1H), 7.47 (t, *J* = 7.6 Hz, 2H), 7.36-7.32 (m, 2H), 7.22-7.15 (m, 2H), 3.35-3.29 (m, 2H), 3.13 (t, *J* = 7.4 Hz, 2H).

3-(2-(3-chlorophenyl) thiazol-4-yl)-1-phenylpropan-1-one (8m): yield 258 mg, 79%

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.99 (d, *J* = 7.3 Hz, 2H), 7.92 (s, 1H), 7.76-7.74 (m, 1H), 7.55-7.53 (m, 1H), 7.45 (t, *J* = 7.8 Hz, 1H), 7.35-7.31 (m, 2H), 7.01 (s, 1H), 3.48 (t, *J* = 7.2 Hz, 2H), 3.26 (t, *J* = 7.3 Hz, 2H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$):δ (ppm) =199, 165, 157.2, 136.8, 135.3, 134.8, 133, 130.8, 130.3, 130, 129.6, 128.5, 128, 127.2, 126.7,126.3, 124.9, 114.4, 37.8, 25.9

Propiophenone (8n) [15]***: Yield 114 mg, 85%,***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.95 (d, *J* = 7.6 Hz, 2H), 7.54 (t, *J* = 7.2 Hz, 1H), 7.44 (t, *J* = 7.6 Hz, 1H), 3.0 (q, J_1 = 7.2 Hz, J_2 = 14.4 Hz, 2H), 1.22 (t, *J* = 7.6 Hz, 3H);

1-phenylbutan-1-one (8o) [16]***: Yield 132 mg, 89%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.95 (d, *J* = 7.1 Hz, 2H), 7.53 (t, *J* = 7.3 Hz, 1H), 7.44 (t, *J* = 7.8 Hz, 2H), 2.94 (t, *J* = 7.3 Hz, 2H), 1.79-1.73 (m, 2H), 0.99 (t, *J* = 7.5 Hz, 3H);

4-methyl-1-phenylpentan-1-one (8p) [1]***: Yield 149 mg, 84%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.95 (d, *J* = 7.1 Hz, 2H), 7.54 (t, *J* = 7.3 Hz, 1H), 7.44 (t, *J* = 7.8 Hz, 2H), 2.97-2.89 (m, 2H), 1.62 (t, *J* = 6.7 Hz, 3H), 0.94 (d, *J* = 6.1 Hz, 6H);

1-phenylhexan-1-one (8q) [1]***: Yield 148 mg, 84%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.95 (d, *J* = 7.4 Hz, 2H), 7.56-7.52 (m, 1H), 7.44 (t, *J* = 7.6 Hz, 2H), 2.95 (t, *J* = 7.4 Hz, 2H), 1.73-1.71 (m, 2H), 1.36-1.35 (m, 4H), 0.90-0.83 (m, 3H);

1-phenylheptan-1-one (8r) [14]***: Yield 167 mg, 88%***

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.94 (d, *J* = 7.6 Hz, 2H), 7.54 (t, *J* = 7.2 Hz, 1H), 7.44 (t, *J* = 7.5 Hz, 2H), 2.95 (t, *J* = 7.3 Hz, 2H), 1.74-1.68 (m, 2H), 1.37-1.30 (m, 6H),0.88(s, 3H);

Ethyl 2-(3-oxo-3-phenylpropyl) thiazole-4-carboxylate(8s): Yield 148 mg, 51%

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 8.23 (s, 1H), 8.01 (d, *J* = 7.44 Hz, 2H), 7.60 (t, *J* = 7.44 Hz, 1H), 7.49 (t, *J* =7.68 Hz, 2H), 4.36-4-32 (m, 2H), 3.62 (t, *J* = 6.88 Hz, 2H), 3.43 (t, *J* = 6.76 Hz, 2H), 1.38-1.27 (m, 3H), 2.32 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$): δ (ppm) = 197.76, 170.36, 161.31, 153.34, 146.71, 136.29, 133.30, 128.58, 128.54, 127.99, 127.24, 127.09, 61.29, 3792, 27.41, 14.27.

2-(3-oxo-3-phenylpropyl) thiazole-4-carboxylic acid(8s'): Yield 65 mg, 25%z

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 12.93 (br, 1H), 8.27 (m, 1H), 8.01-7.99 (m, 1H), 7.65-7.63 (m,1H), 7.55-7.53 (m, 2H), 3.59 (br, 2H), 3.31 (br, 2H).

1,3-diphenylpropan-1-one(10aa) [1]**:** *Yield 195 mg, 93%*

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 7.98 (d, *J* = 7.6 Hz, 2H), 7.64-7.61 (m, 1H), 7.53-7.49 (m, 2H), 7.28-7.27 (m, 4H), 7.18-7.17 (m, 1H), 3.39 (m, 2H), 2.94 (t, *J* = 7.4, 2H);

3-(2,4-dimethoxyphenyl)-1-phenylpropan-1-one (10ab) [17]*. Yield 238 mg, 88%*

^{1}H NMR (400 MHz, CD_3OD): δ (ppm) = 7.95-7.94 (m, 2H), 7.57 (m, 1H), 7.48-7.46 (m, 2H), 7.02 (d, *J* = 7.8 Hz, 1H), 6.47 (s, 1H), 6.41-6.39 (m, 1H), 3.77-3.74 (m, 6H), 3.21-3.18 (m, 2H), 2.91-2.89 (m, 2H);

3-(2-bromo-4-fluorophenyl)-1-phenylpropan-1-one(10ac)*: Yield 255 mg, 83%*

^{1}H NMR (400 MHz, CD_3OD): δ (ppm) = 7.95 (d, *J* = 7.2 Hz, 2H), 7.58-7.56 (m, 1H), 7.49-7.46 (m, 2H), 7.36 (t, *J* = 7.4 Hz, 2H), 7.03 (t, *J* = 8.0 Hz, 1H), 3.32-3.29 (m, 2H), 3.12 (t, *J* = 7.2 Hz, 2H); $^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$):δ (ppm) =198.7, 162.2, 159.7, 136.6, 136.3, 133, 131.5, 131.4, 128.6, 120, 119.7, 114.7, 114.5, 38.4, 29.8;

3-(5-fluoro-2-methoxyphenyl)-1-phenylpropan-1-one (10ad)*: Yield 221 mg, 86%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.96 (d, *J* = 7.2 Hz, 2H), 7.59-7.56 (m, 1H), 7.47 (t, *J* = 7.8 Hz, 2H), 6.95-6.92 (m, 1H), 6.88-6.86 (m, 2H), 3.81 (s, 3H), 3.29 (m, 2H), 2.96 (t, *J* = 7.6 Hz, 2H);

^{1}H NMR (400 MHz, CDCl3): δ (ppm) = 7.96 (d, *J* = 7.4 Hz, 2H), 7.54-7.52 (m, 1H), 7.44 (t, *J* = 7.6 Hz, 2H), 6.93-6.90 (m, 1H), 6.86-6.83 (m, 1H), 6.76-6.73 (m, 1H), 3.79 (s, 3H), 3.24 (t, *J* = 7.2 Hz, 2H), 3.01 (t, *J* = 7.8 Hz, 2H);$^{13}C\{^{1}H\}$ NMR (100 MHz, $CDCl_3$):δ (ppm) = 199.4, 157.96, 155.6, 153.5, 136.7, 132.9, 131.2, 131.1, 128.4, 128, 116.9, 116.7, 113.1, 113, 110.8, 110.7, 56.1, 55.6, 38.4, 25.4

1-phenyl-3-(2-(trifluoromethoxy)phenyl)propan-1-one (10ae)*: Yield 232 mg, 79%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.98-7.96 (m, 2H), 7.60-7.57 (m, 1H), 7.49-7.46 (m, 2H), 7.41-7.39 (m, 1H), 7.29-7.24 (m, 3H), 3.34-3.29 (m, 2H), 3.08 (t, *J* = 7.6 Hz, 2H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$):δ (ppm) =198.8, 147.7, 147.6,136.6, 133.1, 131, 128.6, 127.6,126.8, 121.9, 120.4, 119, 38.7, 24.7

3-(4-methoxy-3-(trifluoromethyl)phenyl)-1-phenylpropan-1-one(10af):*Yield 241 mg, 78%*

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) =7.98 (d, *J* = 7.4 Hz, 2H), 7.64-7.61 (m, 1H), 7.53-7.49 (m, 4H), 7.16 (d, *J* = 8.4 Hz, 1H), 3.84 (s, 3H), 3.40-3.30 (m, 2H), 3.03 (t, *J* = 7.2 Hz, 2H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$):δ (ppm) = 198.8, 155.8, 136.7, 133.18, 133.1, 132.9, 128.6, 127.9, 126.9,126.8, 124.9, 122.2, 118.7, 118.4, 112.1, 55.9, 40.2, 28.9;

3-(4-chloro-2-fluorophenyl)-1-phenylpropan-1-one (10ag): *Yield 213 mg, 81%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.96 (d, *J* = 7.4 Hz, 2H), 7.60-7.56 (m, 1H), 7.49-7.45 (m, 2H), 7.29 (t, *J* = 8.6 Hz, 1H), 7.11 (t, *J* = 7.8Hz, 2H), 3.35-3.29 (m, 2H), 3.02 (t, *J* = 7.4 Hz, 2H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$):δ (ppm) =198.64 162.1, 159.6, 136.5, 133.1, 132.8, 132.5, 131.6, 131.5, 128.5, 128.3, 128.1, 128, 126.7, 124.3, 116.1, 115.8, 38.4, 23.3, 23.2;

3-(3-bromo-5-methylphenyl)-1-phenylpropan-1-one (10ah)*: Yield 252 mg, 83%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.96 (d, *J* = 7.4 Hz, 2H), 7.58 (t, *J* = 7.4Hz, 1H), 7.47 (t, *J* = 7.6Hz, 2H), 7.21 (s, 1H), 7.15 (s, 1H), 7.04 (s, 1H), 3.34-3.30 (m, 2H), 2.95 (t, *J* = 7.4 Hz, 2H), 2.27 (s, 3H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$):δ (ppm) =198.6, 143.3, 140.1, 136.6, 133.1, 129.8, 128.5, 128.3, 128.0, 127.9, 122.2, 40.0, 29.5, 21.0;

3-(5-chloro-2-fluorophenyl)-1-phenylpropan-1-one (10ai)*: Yield 245 mg, 92%*

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 7.99 (d, *J* = 7.4 Hz, 2H), 7.63 (t, *J* = 7.2 Hz, 1H), 7.54-7.48 (m, 3H), 7.32-7.28 (m, 1H), 7.20 (t, *J* = 9.2 Hz, 1H), 3.40 (t, *J* = 7.4 Hz, 2H), 2.94 (t, *J* = 7.2 Hz, 2H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$):δ (ppm) =198.3160.9, 158.5, 136.5, 133.1, 130.69, 130.64, 129.9, 129.8, 128.96, 128.93, 128.6, 127.9, 127.79, 127.0, 116.6, 116.4, 38.3, 23.6;

1-phenylhexan-1-one (10aj) [1]*: Yield 148 mg,84%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.97-7.95 (m, 2H), 7.60-7.56 (m, 1H), 7.48 (t, *J* = 7.8Hz, 2H), 3.0 (t, *J* = 7.4 Hz, 2H), 1.73-1.66 (m, 2H), 1.39-1.32 (m, 4H), 0.94-0.90 (m, 3H);

1-phenyl-3-(pyridin-2-yl)propan-1-one (10ak) [12]***:*** *Yield 170 mg,80%*

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 8.44-8.43 (m, 1H), 7.98 (d, *J* = 7.4Hz, 2H), 7.70-7.68 (m, 1H), 7.63 (t, *J* = 7.2 Hz, 1H), 7.52 (t, *J* = 7.6 Hz, 2H), 7.33 (d, *J* = 7.6 Hz, 1H), 7.19-7.16 (m, 1H) 3.49 (t, *J* = 7.08 Hz, 2H), 3.11 (t, *J* = 7.08 Hz, 2H

3-(6-methoxypyridin-3-yl)-1-phenylpropan-1-one (10al)*: Yield 209 mg, 87%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.99-7.95 (m, 3H), 7.62-7.56 (m, 2H), 7.47 (t, *J* = 7.6 Hz, 2H), 6.71 (d, *J* = 8.4 Hz, 1H), 3.85 (s, 3H), 3.35-3.29 (m, 2H), 2.96 (t, *J* = 7.2 Hz, 2H); ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$):δ (ppm) =198.7, 162.7, 146, 139, 136.6, 133.1, 129.1, 128.5, 128.3, 128, 127.9, 127.3, 125, 110, 53.2, 40, 26.1;

3-phenyl-1-(p-tolyl)propan-1-one (10ba) [14]: **Y***ield 201 mg,89%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.86 (d, *J* = 8.0 Hz, 2H), 7.29-7.23 (m, 6H), 7.16-7.14 (m, 1H), 3.29-3.27 (m, 2H), 2.99 (t, *J* = 7.6 Hz, 2H), 2.38 (s, 3H);

1-(p-tolyl)hexan-1-one (10bj) [18]***:*** *Yield 165 mg,86%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.86 (d, *J* = 7.8 Hz, 2H), 7.29 (d, *J* = 7.6 Hz, 2H), 2.96 (t, *J* = 7.2 Hz, 2H), 2.39 (s, 3H), 1.68-1.66 (m, 2H), 1.44-1.21 (m, 4H), 0.97-0.90 (m, 3H);

1-(4-methoxyphenyl)-3-phenylpropan-1-one (10ca) [14]**:** *Yield 195 mg,81%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.95 (d, *J* = 8.8 Hz, 2H), 7.24-7.23 (m, 4H), 7.15-7.14 (m, 1H), 6.96 (d, *J* = 7.8 Hz, 1H), 3.85 (s, 2H), 3.29-3.25 (m, 2H), 2.98 (t, *J* = 7.4 Hz, 2H);

1-(4-methoxyphenyl) hexan-1-one (10cj) [19]***:*** *Yield 178 mg,86%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.95 (d, *J* = 8.8 Hz, 2H), 6.99 (d, *J* = 8.8 Hz, 2H), 3.86 (s, 3H), 2.94 (t, *J* = 7.4 Hz, 2H), 1.70-1.66 (m, 2H), 1.37-1.33 (m, 4H), 0.93-0.89 (m, 3H);

3-phenyl-1-(pyridin-3-yl) propan-1-one (10da) [5]*: Yield 181 mg,85%*

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 9.13 (s, 1H), 8.87-8.77 (m, 1H), 8.31 (d, *J* = 8.0 Hz, 1H), 7.56-7.53 (m, 1H), 7.29-7.28 (m, 4H), 7.18-7.17 (m, 1H), 3.43 (t, *J* = 7.4 Hz, 2H), 2.94 (t, *J* = 7.4 Hz, 2H);

3-phenyl-1-(pyridin-4-yl) propan-1-one (10ea) [5]***:*** *Yield 191 mg,90%*

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 8.79 (d, *J* = 4.4 Hz, 2H), 7.83 (d, *J* = 4.4 Hz, 2H), 7.33-7.27 (m, 4H), 7.19-7.18 (m, 1H), 3.42 (t, *J* = 7.2 Hz, 2H), 2.94 (t, *J* = 7.2 Hz, 2H);

1-(naphthalen-1-yl)-3-phenylpropan-1-one (10fa) [1]***:*** *Yield 224 mg,86%*

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 8.53 (d, *J* = 8.2 Hz, 1H), 7.96 (d, *J* = 8.2 Hz, 1H), 7.88 (d, *J* = 7.8 Hz, 1H), 7.81(d, *J* = 7.08 Hz, 1H), 7.60-7.50 (m, 2H), 7.46 (t, *J* = 7.6 Hz, 1H), 7.31-7.24 (m, 4H), 7.21-7.18 (m, 4H), 3.42 (t, *J* = 8.4 Hz, 2H), 3.13 (t, *J* = 7.8 Hz, 2H);

3-(3,4-dimethoxyphenyl)-1-(naphthalen-1-yl)propan-1-one (10fm) [20]*:Yield 259 mg,81%*

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 8.39 (d, *J* = 7.6 Hz, 1H), 8.12 (d, *J* = 9.2 Hz, 1H), 8.07 (d, *J* = 6.8 Hz, 1H), 8.0(s, 1H), 7.61-7.57 (m, 3H), 6.87 (s, 1H), 3.69 (s, 6H), 3.42 (t, *J* = 7.2 Hz, 2H), 2.94 (t, *J* = 7.2 Hz, 2H);

3-phenyl-1-(pyridin-3-yl)propan-1-ol (10da') [10] **:** *Yield 90 mg,42%, 2h*

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 8.52 (s, 1H), 8.44 (d, *J* = 3.6 Hz, 1H), 7.73 (d, *J* = 7.8 Hz, 1H), 7.36-7.33 (m, 1H), 7.28-7.24 (m, 2H), 7.19-7.14 (m, 3H), 5.44 (d, *J* = 3.6 Hz, 1H), 4.60-4.57(m, 1H), 2.67-2.63 (m, 1H), 2.61-2.56(m, 1H), 1.92-1.90 (m, 2H);

3-phenyl-1-(pyridin-4-yl)propan-1-ol (10ea') [21]**:** *Yield 75 mg,35%, 2h*

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 8.49 (d, *J* = 5.6 Hz, 2H), 7.34-7.33 (m, 2H), 7.28-7.24 (m, 2H), 7.19-7.14 (m, 3H), 5.51(d, J = 4.8 Hz, 1H), 4.56-4.53 (m, 1H), 2.66-2.60 (m, 2H), 1.91-1.82 (m, 2H);

2,5-dibenzylcyclopentan-1-one (12aa)[22]: *Yield 246 mg 93%*

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.27-7.23 (m, 2H), 7.19-7.15 (m, 2H), 7.14-7.12 (m, 6H), 3.18-3.14 (dd, *J_1 = 4.2 Hz, J_2 = 13.8 Hz,* 2H), 2.62-2.56 (m, 2H), 2.31-2.24 (m, 2H), 2.0-1.94 (m, 2H), 1.41-1.36 (m, 2H);

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.26-7.22 (m, 4H), 7.18-7.11 (m, 6H), 2.95-2.90 (dd, *J_1 = 3.6 Hz, J_2 = 13.6 Hz,* 2H), 2.54 (m, 2H), 2.47-2.42 (m, 2H), 1.89-1.79 (m, 2H), 1.56-1.53 (m, 2H);

2,6-dibenzylcyclohexan-1-one (12ab) [9]: *Yield 253 mg, 91%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.38-7.24 (m, 4H), 7.22-7.13 (m, 6H), 3.15-3.10 (dd, *J_1 = 4.8Hz, J_2 = 13.8 Hz,* 2H), 2.73-2.76 (m, 2H), 2.40-2.34 (m, 2H), 2.02-2.00 (m, 2H), 1.77-1.73 (m, 1H), 1.62-1.56(m, 1H), 1.32-1.28(m, 2H);

2,7-dibenzylcycloheptan-1-one (12ac)[23]: *Yield 213 mg, 73%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.22-7.18 (m, 4H), 7.14 (d, *J* = 7.2 Hz, 2H), 7.01-6.99 (m, 4H), 2.80-2.76 (m, 2H), 2.68-2.63(m, 2H), 4.50-2.45 (m, 2H), 1.83-1.76 (m, 4H), 1.34-1.25 (m, 2H), 1.23-1.8(m, 2H);

2-benzylcycloheptan-1-one (12ac')[24]: *Yield 27 mg, 15%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.25-7.21 (m, 2H), 7.15-7.13 (m, 3H), 3.0-2.95 (m, 1H), 2.91-2.85 (m, 1H), 2.57-2.52(m, 1H), 2.44-2.41 (m, 2H), 1.85-1.78 (m, 4H), 1.68-1.59 (m, 1H), 1.37-1.26 (m, 3H);

2,8-dibenzylcyclooctan-1-one (12ad)[22]*: Yield 220 mg, 72%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.17-7.15 (m, 4H), 7.12.7-10 (m, 2H), 7.05-7.03 (m, 4H), 3.07-3.02 (m, 2H), 2.95-2.92(m, 2H), 2.48-2.43 (m, 2H), 1.79 (m, 2H), 1.60 (m, 3H), 1.46 (m, 2H), 1.40-1.28 (m, 3H);

2-benzylcyclooctan-1-one (12ad')[25]: *Yield 54 mg, 25%*

^{1}H NMR (400 MHz, MeOD): δ (ppm) = 7.24-7.20 (m, 2H), 7.15-7.11 (m, 3H), 3.03-3.01 (m, 1H), 2.91-2.86 (m, 1H), 2.64-2.59(m, 1H), 2.31-2.24 (m, 1H), 2.14-2.11(m, 1H), 2.09-2.01 (m, 1H), 1.89-1.84(m, 1H), 1.76-1.74 (m,, 1H), 1.71-1.58(m, 4H), 1.51-1.45 (m, 1H), 1.44-1.39 (m, 1H), 1.20-1.18(m, 1H);

H-indole (14): Yield: 2.45 g, 96% (22 mmol scale reaction).

^{1}H NMR (400 MHz, DMSO): δ (ppm) =11.05 (s, 1H), 7.53 (d, *J* = 7.7 Hz, 1H), 7.38 (t, *J* = 7.3 Hz, 1H), 7.32-7.31 (m, 1H), 7.06 (t, *J* = 7.2 Hz, 1H), 6-97 (t, *J* = 7.5 Hz, 1H), 6.41 (br, 1H).

5. Characterization data of controlled experiments (10, 10a, 10b & 7bd):

Benzaldehyde (10):

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 10.01 (s, 1H), 7.87 (d, *J* = 6.9 Hz, 2H), 7.54-7.44 (m, 3H);

2-fluorobenzaldehyde (10b):

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 10.36 (s, 1H), 7.86 (t, *J* = 7.2 Hz, 1H), 7.62-7.57 (m, 1H), 7.25 (t, *J* = 7.5 Hz, 1H), 7.16 (t, *J* = 8.9 Hz, 1H);

2-hydroxybenzaldehyde (10c):

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 11.0 (s, 1H), 9.89 (s, 1H), 7.56-7.50 (m, 2H), 7.03-6.97 (m, 2H).

chalcone (7bd):

^{1}H NMR (400 MHz, DMSO-d6): δ (ppm) = 7.88 (d, *J* = 7.7 Hz, 1H), 7.71 (s, 1H), 7.53-7.41 (m, 3H), 7.30-7.14 (m, 7H).

^{1}H NMR (400 MHz, $CDCl_3$): δ (ppm) = 7.79 (m, 2H), 7.55-7.53 (m, 1H), 7.47-7.42 (m, 1H), 7.39-7.30 (m, 5H), 7.21-7.12 (m, 4H).

6. Crystallographic data and refinement details of 4a-Ir

A Bruker SMART APEX-II area detector single crystal X-ray diffractometer was used to collect the X-ray diffraction data of suitable crystal **of picolinamidato complex 4a-Ir** using monochromatic Cu K\α, (λ= 1.54178 Å) with the ω and φ scan technique. The data collection of **4a-Ir** was done by using Bruker SAINT system and the data were corrected for absorption using Bruker SADABS [26] software. The structure of **4a-Ir** was solved using olex2.solve 1.5 [27] and was refined by full matrix least squares based on F^2 using SHELXL-2018/3 [28]. All non-hydrogen

atoms were refined anisotropically and the H atoms bonded to carbon atoms were included at calculated positions as riding atoms with C(sp^2)–H distances of 0.95 Å and C(sp^3)–H distances of 0.98 Å whereas the hydrogen atoms of water molecule were located from respective Q-peaks. ORTEP-plot and packing diagram were generated with ORTEP-3 for Windows [28d]. WinGX [28d] was used to prepare the material for publication. CCDC reference number **2165585** contains supplementary crystallographic data for this paper. Crystal data, data collection and structure refinement details of the complex have been summarized in **table S1.**

To prepare suitable single crystal of picolinamidato complex 4a-Ir, slow evaporation of the methanolic solution was followed. The Complex crystallizes in monoclinic space group $P2_1/n$. The selected bond lengths and bond angles are presented in **table S2** while the intermolecular hydrogen bonding interactions are presented in **table S3 & figure S2**. **FigureS1** represents the ORTEP view of asymmetric unit of 4a-Ir. Crystal packing diagram of 4a-Ir has been shown in **figure S3** in the supplementary section. X-ray crystallography showed that the asymmetric unit possess**es** half-sandwich pseudo-octahedral "three-legged piano-stool" structures, with Cp* as the seat and three coordination positions are occupied by neutral N,N-chelating picolinamide ligand and a terminal chloride**.** Each asymmetric unit experiences one intermolecular classical O–H---Cl type hydrogen bonding between uncoordinated water molecule and Cl atom bonded to the central metal ion with a bond distance 3.335(3) Å while two other intermolecular nonclassical C–H···O type hydrogen bonding interactions with the distances 3.228(4) Å, 3.488(4) Å are shown in **figure S2** & **table S3**. Here in, the picolinamide ligand bind to the metal center through the amine nitrogen and the pyridine N forming a five member chelate ring with an angle of N1–Ir1–N2 76.40°, indicating a distortion from the regular octahedron, in analogy with similar Cp*Ir(III) Complexes bearing a picolinamide ligand and Ru–arenethiosemicarbazone complexes. [29].. The dihedral angle between the naphthalene ring plane and the picoline moiety is around -176.9°. Notably, this type of ligand adopts a flat conformation [30] but owing to exceptional metal coordination sites, it's coplanarity is lost. The T-shaped edge-to-face stacking orientation of the complex is developed through intramolecular C–H---π interactions between two hydrogen atoms (H24B and H25B) of the Cp* ring and the π electron density from the naphthalene ring Cg3 and Cg4 of the picolinamide ligand (distances from 2.74 to 2.82 Å).

Figure S1. The ORTEP diagram of **4a-Ir** with ellipsoid of 50% probability.

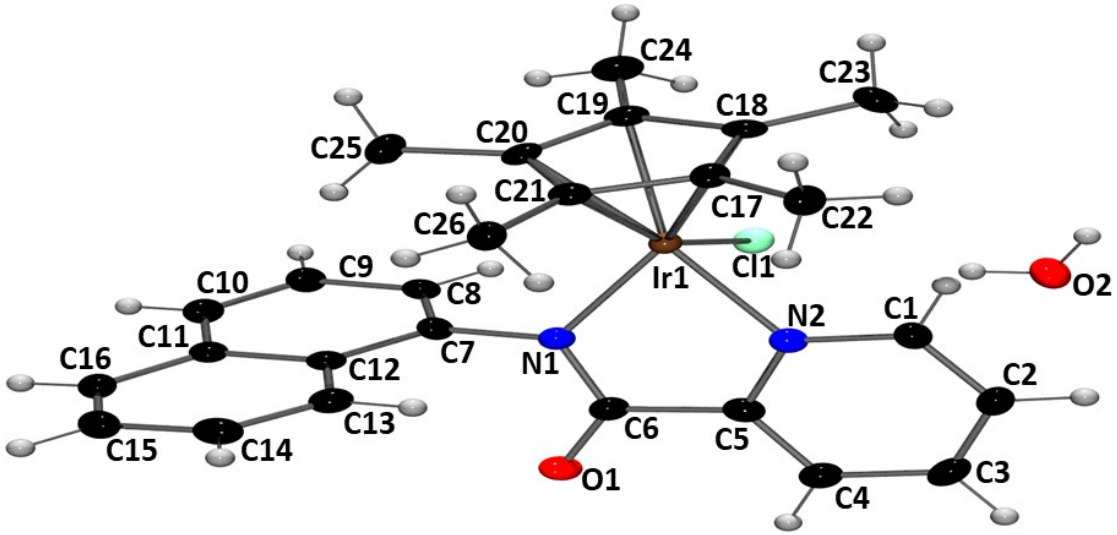


Figure S2. Intermolecular hydrogen bonding interactions in **4a-Ir** along *b* axis.

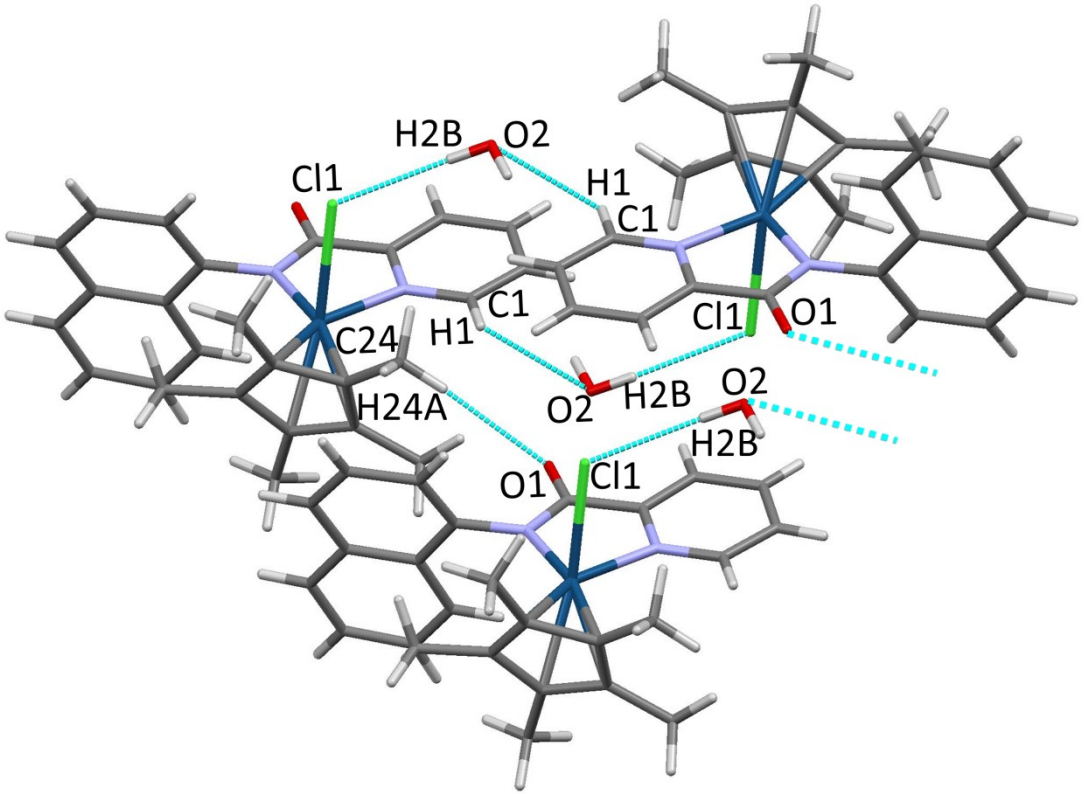
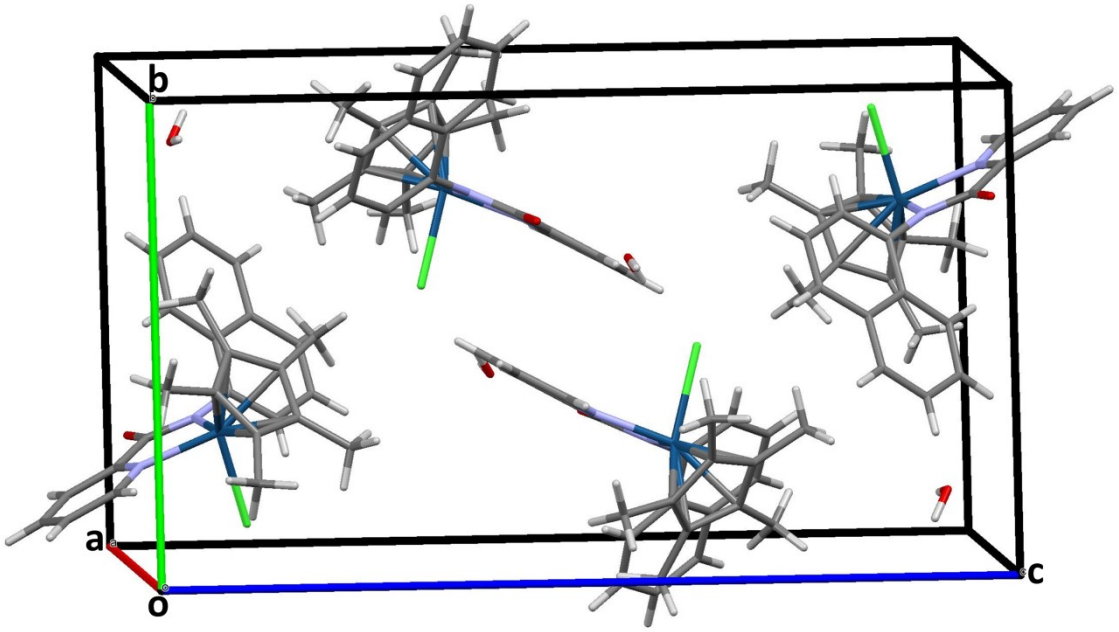


Figure S3. Molecular packing diagram of **4a-Ir** in ***bc*** plane.



Tables

Table S1: Crystal data collection and structure refinement for 4a-Ir

Crystal data	
CCDC reference number	**2165585**
Empirical formula	$C_{26}H_{22}ClIrN_2O_2$
Moiety formula	$C_{26}H_{26}ClIrN_2O$, H_2O
Formula weight	622.10
Crystal system	Monoclinic
Space group	P 2_1/n
Colour, habit	Orange red, block
Size, mm	0.2 × 0.12 × 0.1
Unit cell dimensions	
	a = 9.4305(7) Å
	b = 11.9858(9) Å
	c = 20.8802(17)Å
	α = 90°

	$\beta = 100.870(2)°$
	$\gamma = 90°$
Volume $Å^3$	2317.8(3)
Z	4
Density (calculated), Mg/m^3	1.783
Absorption coefficient, mm^{-1}	12.417
F(000)	1232.0
Data collection	
Temperature, K	101.00
Theta range for data collection	8.544° to 136.492°
Index ranges	$-11 \leq h \leq 11$
	$-14 \leq k \leq 14$
	$-25 \leq l \leq 23$
Reflections collected	39503
Unique reflections	4246
Observed reflections ($>2\sigma(I)$)	4099
R_{int}	0.0486

Completeness to θ, %	68.246, 97.7%
Absorption correction	SADABS-2016/2 (Bruker,2016/2)
	T_{min} = 0.209, T_{max} = 0.289

Refinement

Refinement method	Full-matrix least-squares on F^2
Data / restraints / parameters	4146 / 0 / 298
Goodness-of-fit on F^2	1.198
Final R indices [I > 2σ(I)]	R_1 = 0.0303, wR_2 = 0.0837
R indices (all data)	R_1 = 0.0306, wR_2 = 0.0839
Largest diff. peak and hole	1.07 and -1.54 e.Å^{-3}

Table S2: Selected bond lengths (Å), bond angles (°) and torsion angles (°) for 4a-Ir

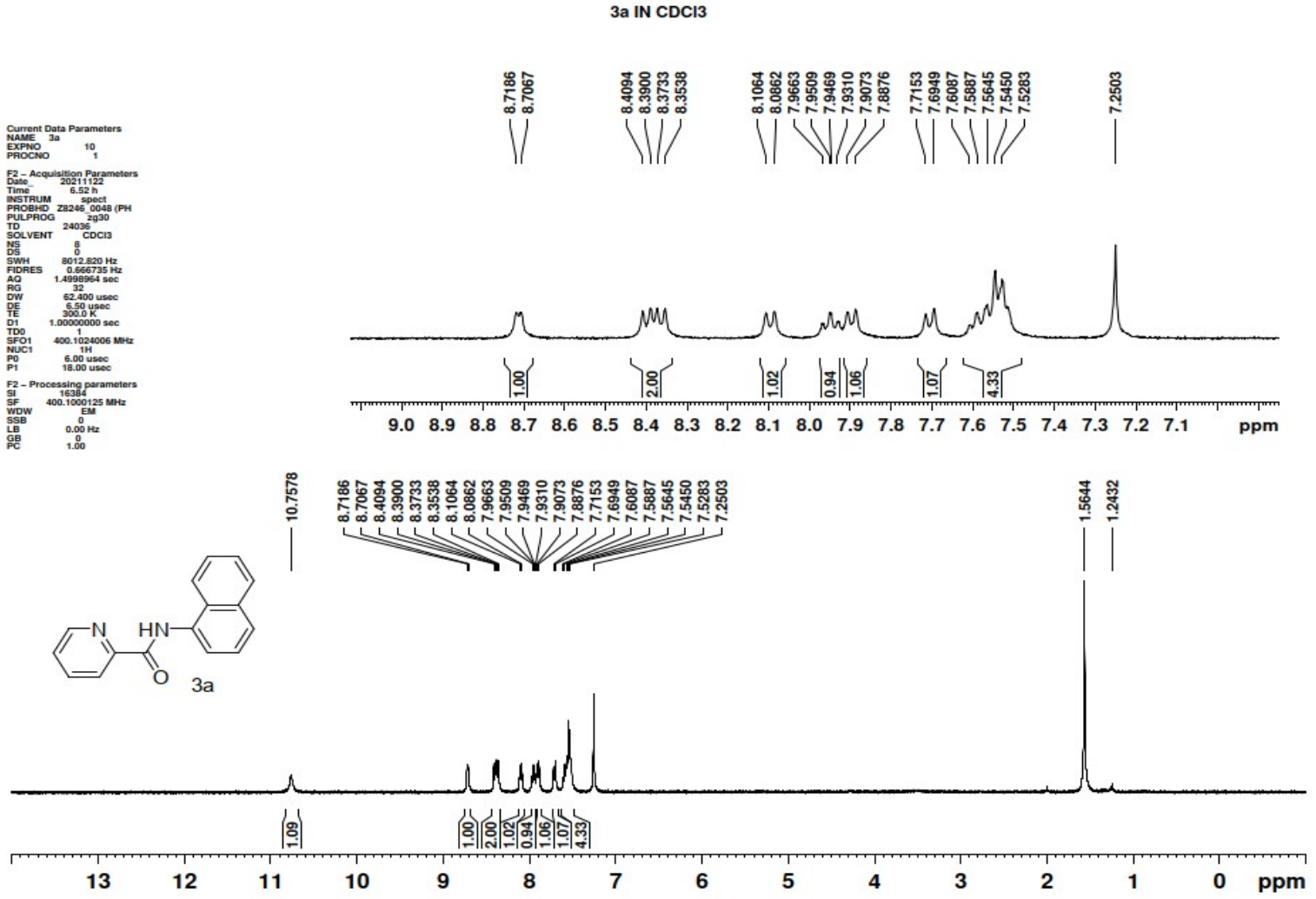
Compound	Bond lengths (Å)			
4a-Ir	Ir(1)-N(1)	2.096(4)	Ir(1)-N(2)	2.090(3)
	Ir(1)-C(17)	2.180(3)	Ir(1)-C(18)	2.177(3)
	Ir(1)-C(19)	2.170(4)	Ir(1)-C(20)	2.169(3)
	Ir(1)-C(21)	2.156(3)	Ir(1)-Cl(1)	2.4368(8)
	Bond angles (°)			
4a-Ir	N(1)-Ir(1)-N(2)	76.40(12)	N(1)-Ir(1)-C(17)	103.57(12)
	N(2)-Ir(1)-C(17)	156.90(11)	N(1)-Ir(1)-C(18)	130.71(14)
	N(2)-Ir(1)-C(18)	152.24(12)	N(1)-Ir(1)-C(19)	168.64(15)
	N(2)-Ir(1)-C(19)	114.43(14)	N(1)-Ir(1)-C(20)	139.58(11)
	N(2)-Ir(1)-C(20)	99.91(11)	N(1)-Ir(1)-C(21)	106.78(11)
	N(2)-Ir(1)-C(21)	118.15(11)	N(1)-Ir(1)-Cl(1)	87.17(7)
	N(2)-Ir(1)-Cl(1)	82.65(7)	C(17)-Ir(1)-Cl(1)	120.43(9)
	C(18)-Ir(1)-Cl(1)	91.93(10)	C(19)-Ir(1)-Cl(1)	97.35(9)
	C(20)-Ir(1)-Cl(1)	132.82(9)	C(21)-Ir(1)-Cl(1)	156.82(9)

Table S3: Hydrogen bonded geometries in 4a-Ir

Compound	Bond	D–H(Å)	H···A(Å)	D···A(Å)	D–H···A(°)
4a-Ir	O(2)–H(2B)···Cl(1)	0.87	2.48	3.335(3)	169
	C(1)–H(1)···O(2)^{i}	0.95	2.55	3.228(4)	129
	C(24)–H(24A)···O(1)^{ii}	0.98	2.54	3.488(4)	163

Symmetry codes: (i) 2-x,1--y, 1-z; (ii) 1+x, y, z

7. Copies of 1H NMR of ^{1}H NMR, ^{13}C NMR Spectra



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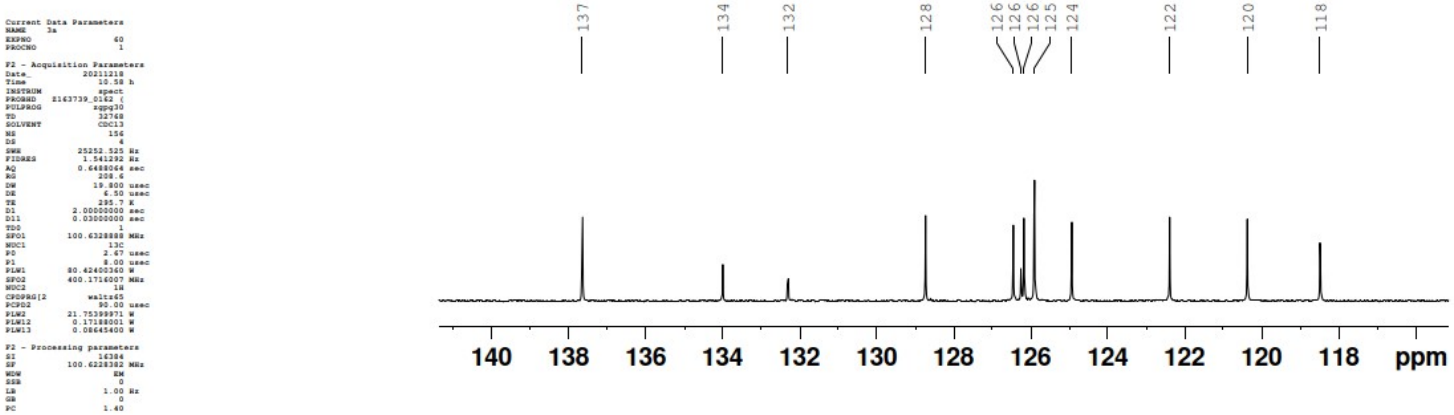

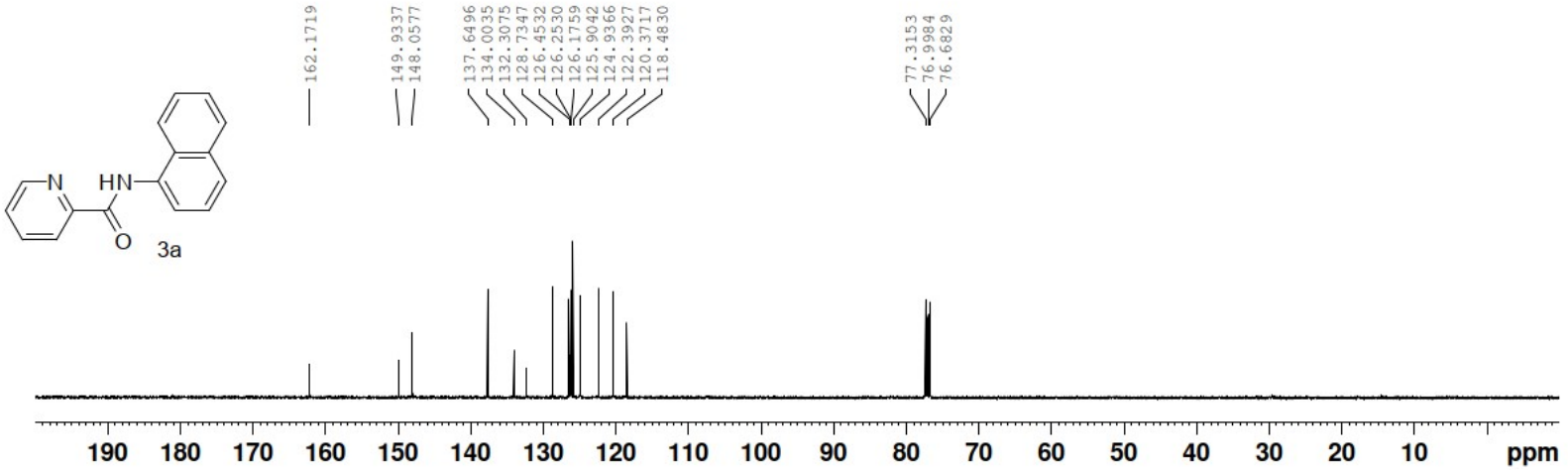

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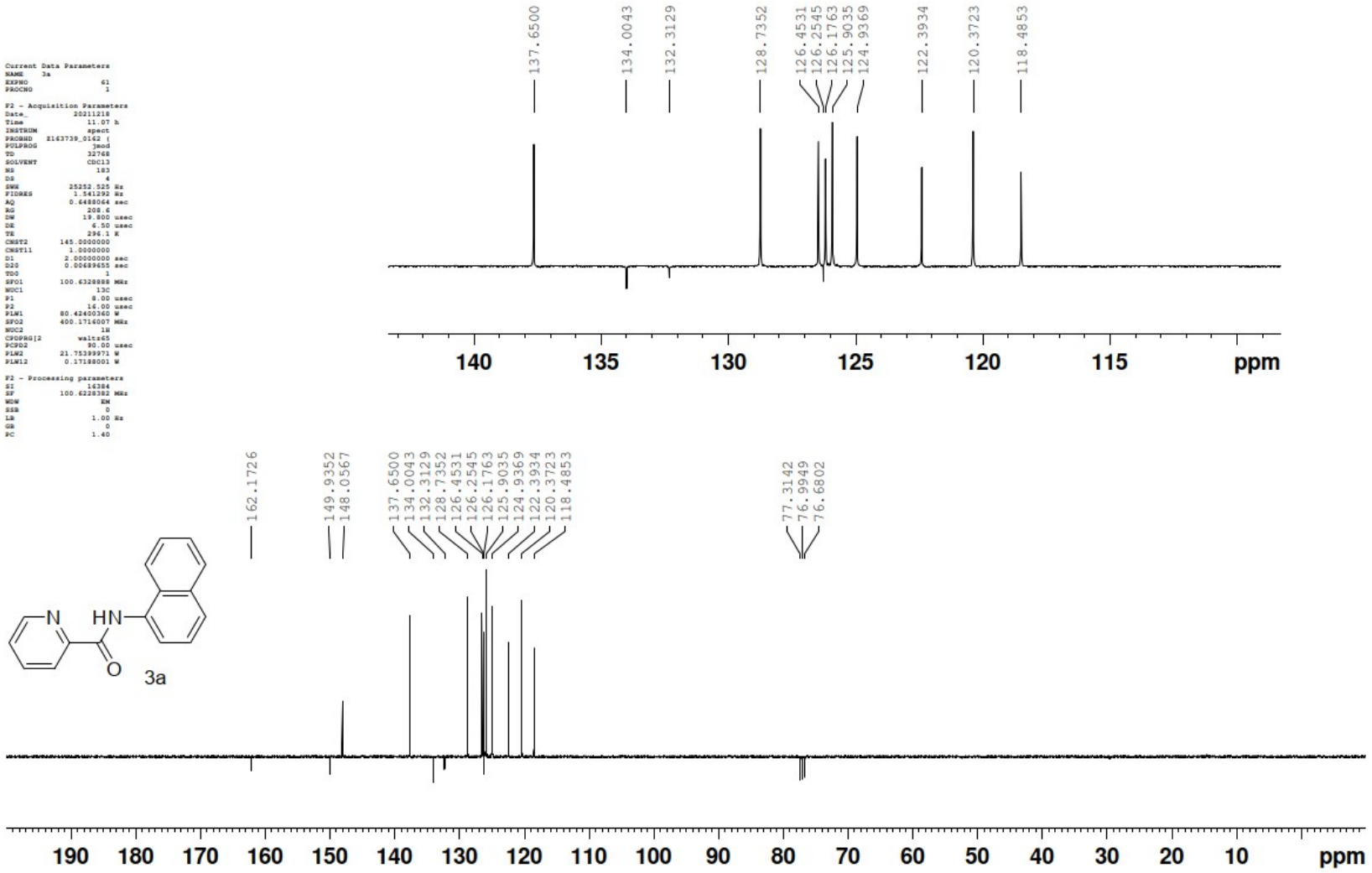

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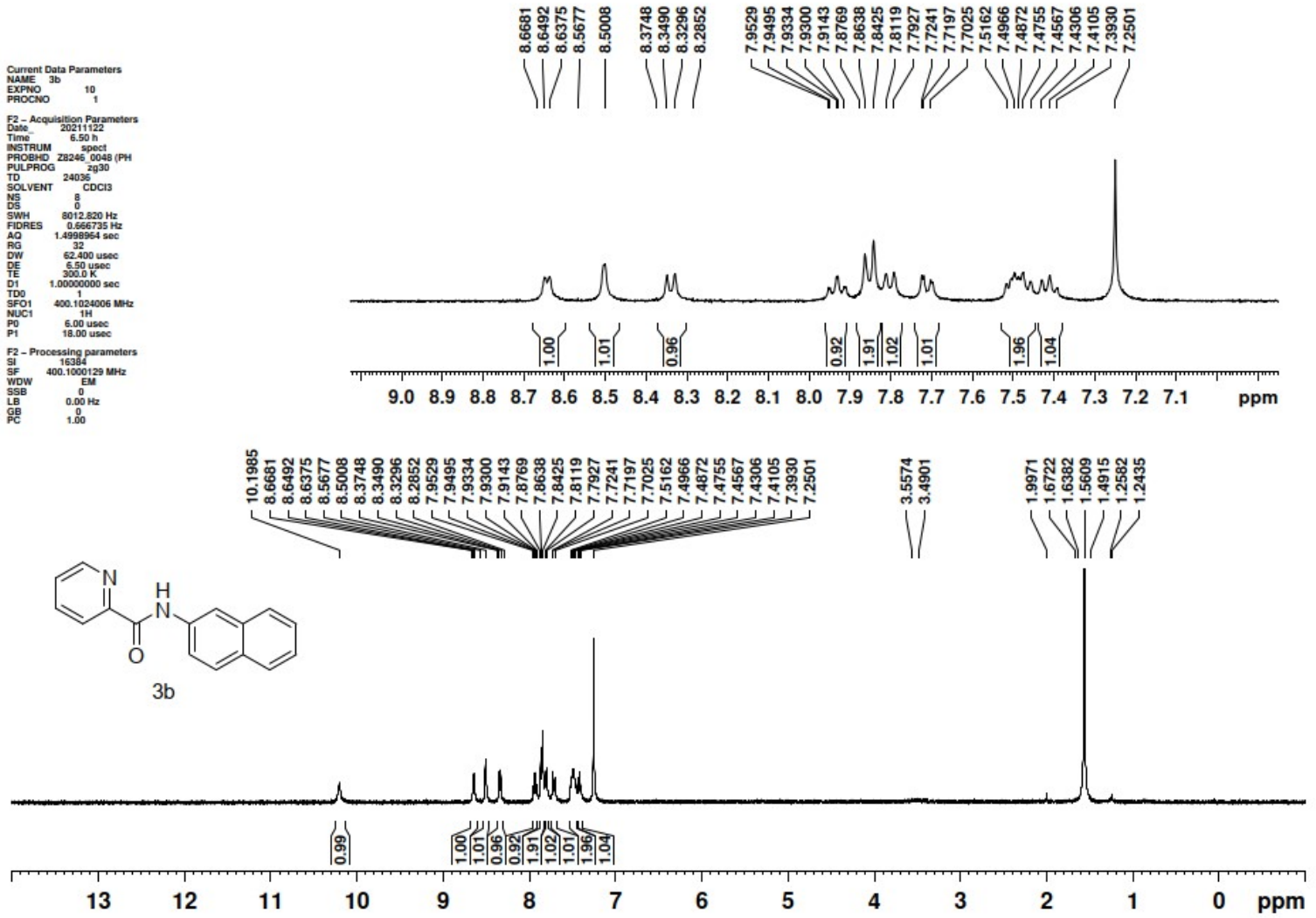
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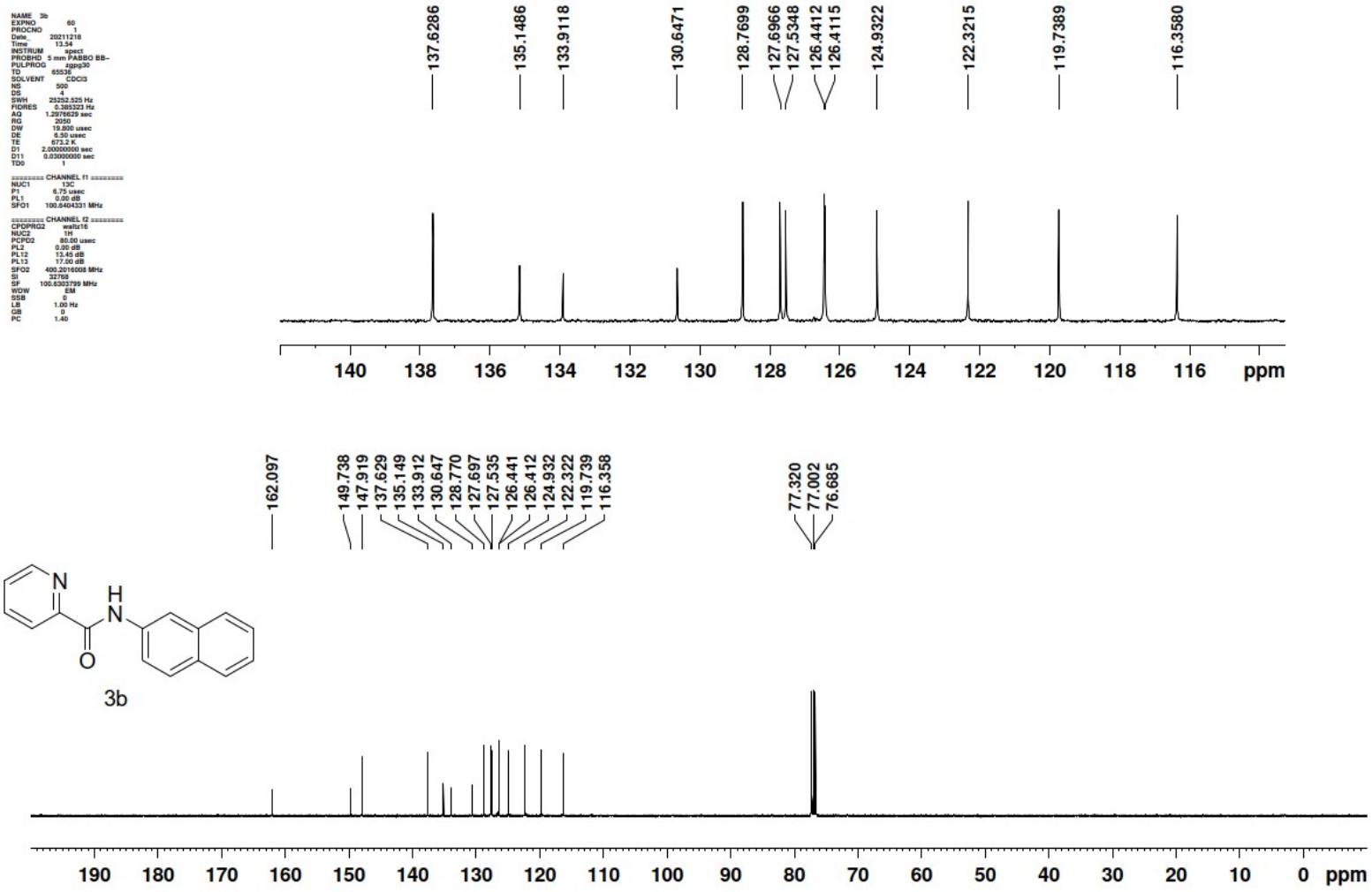

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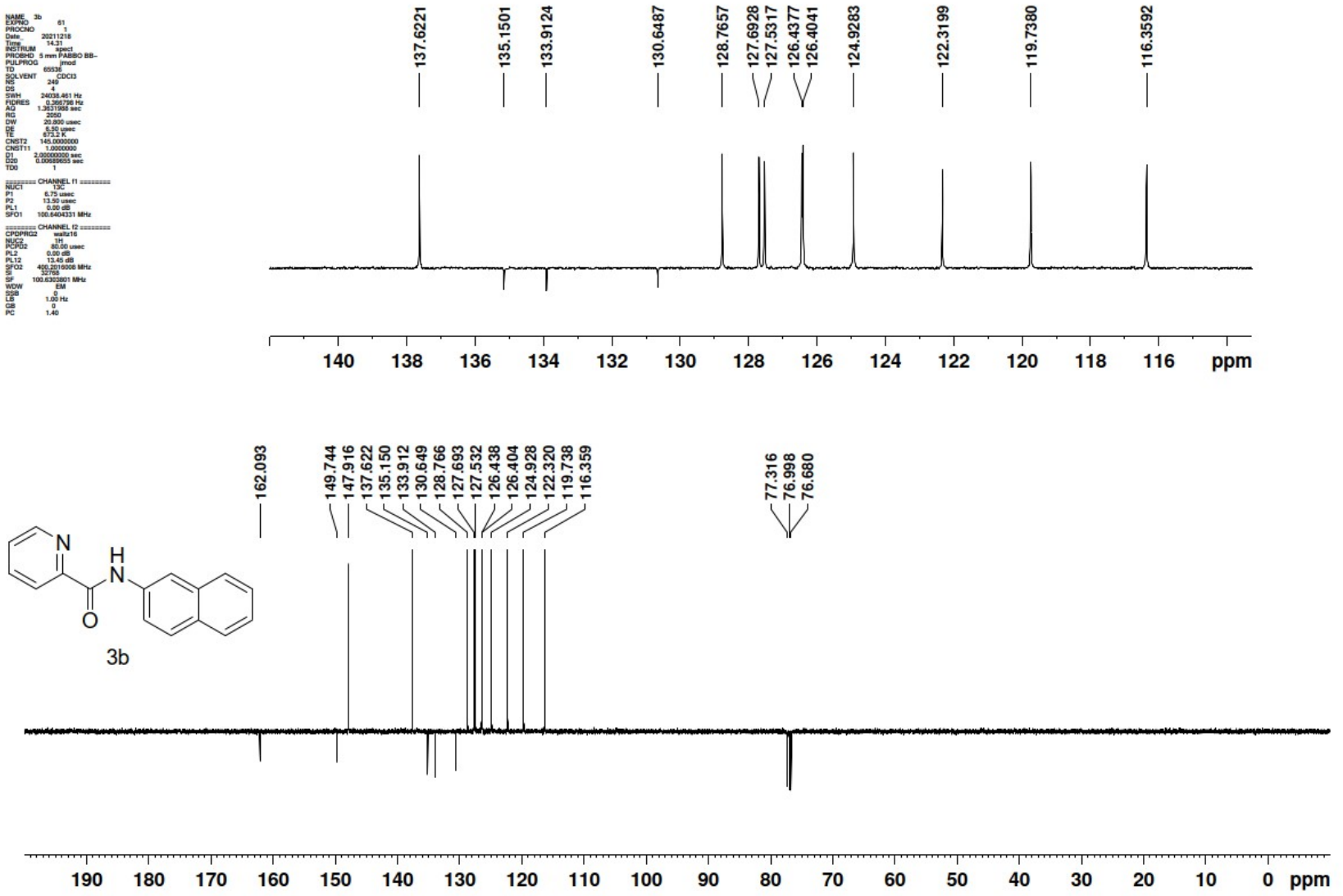

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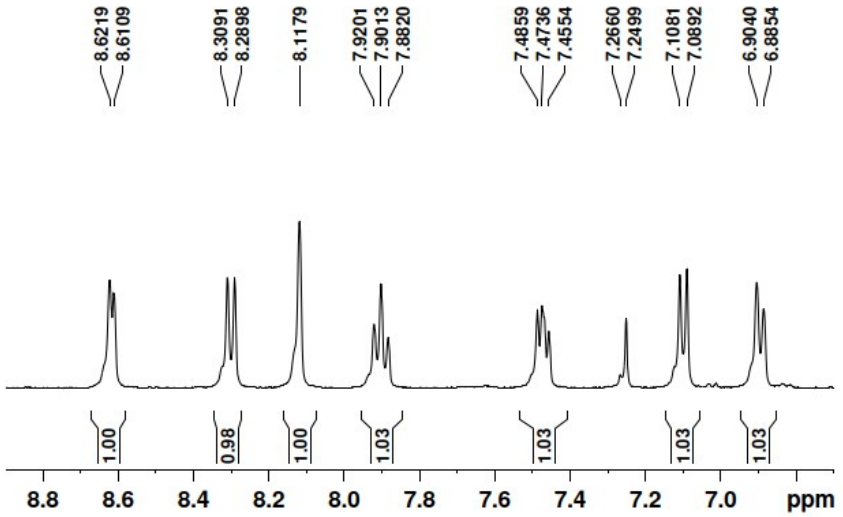

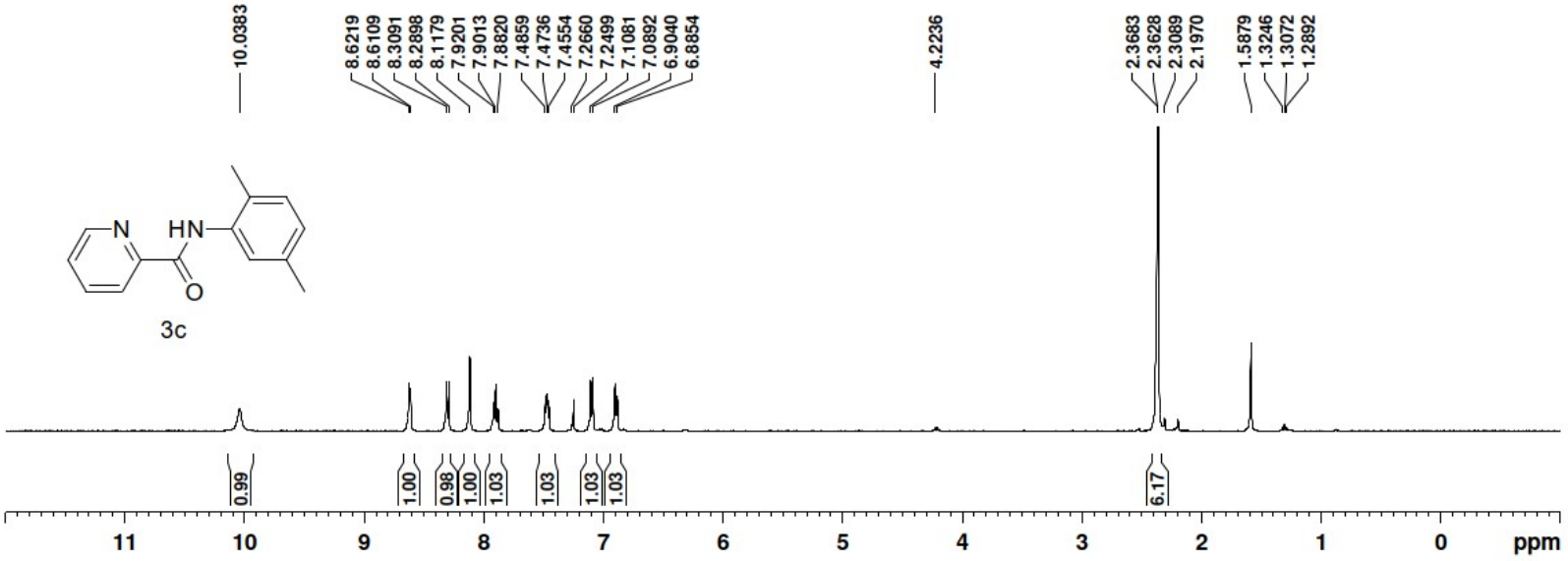

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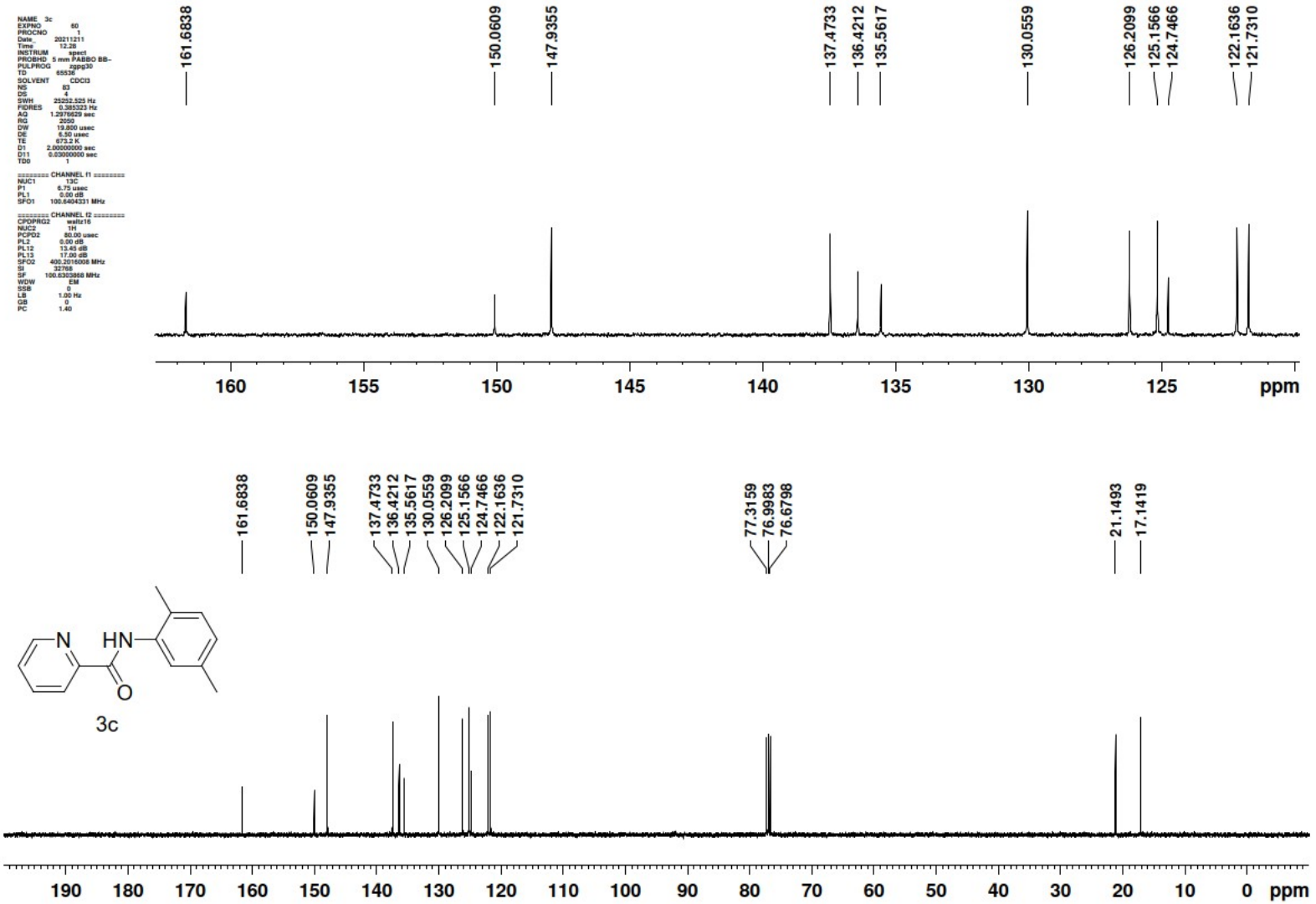

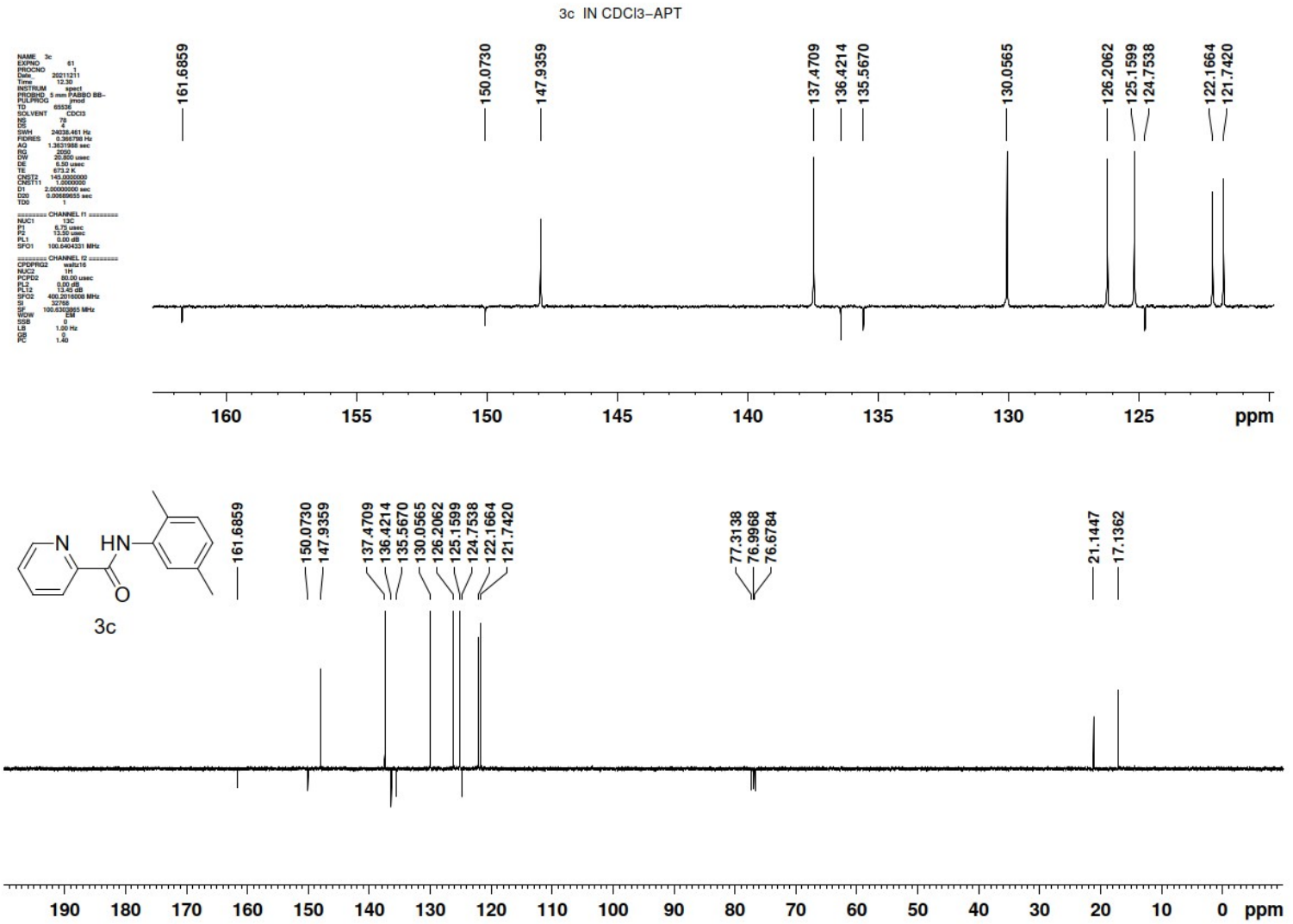
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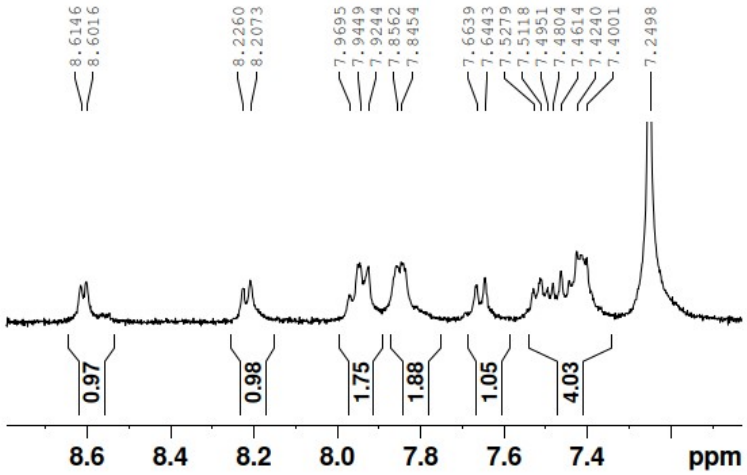
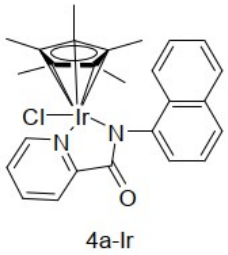
122.1664
121.7420
77.3138
76.9968
76.6784
21.1447
17.1362
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
ppm

4a-Ir IN CDCl3

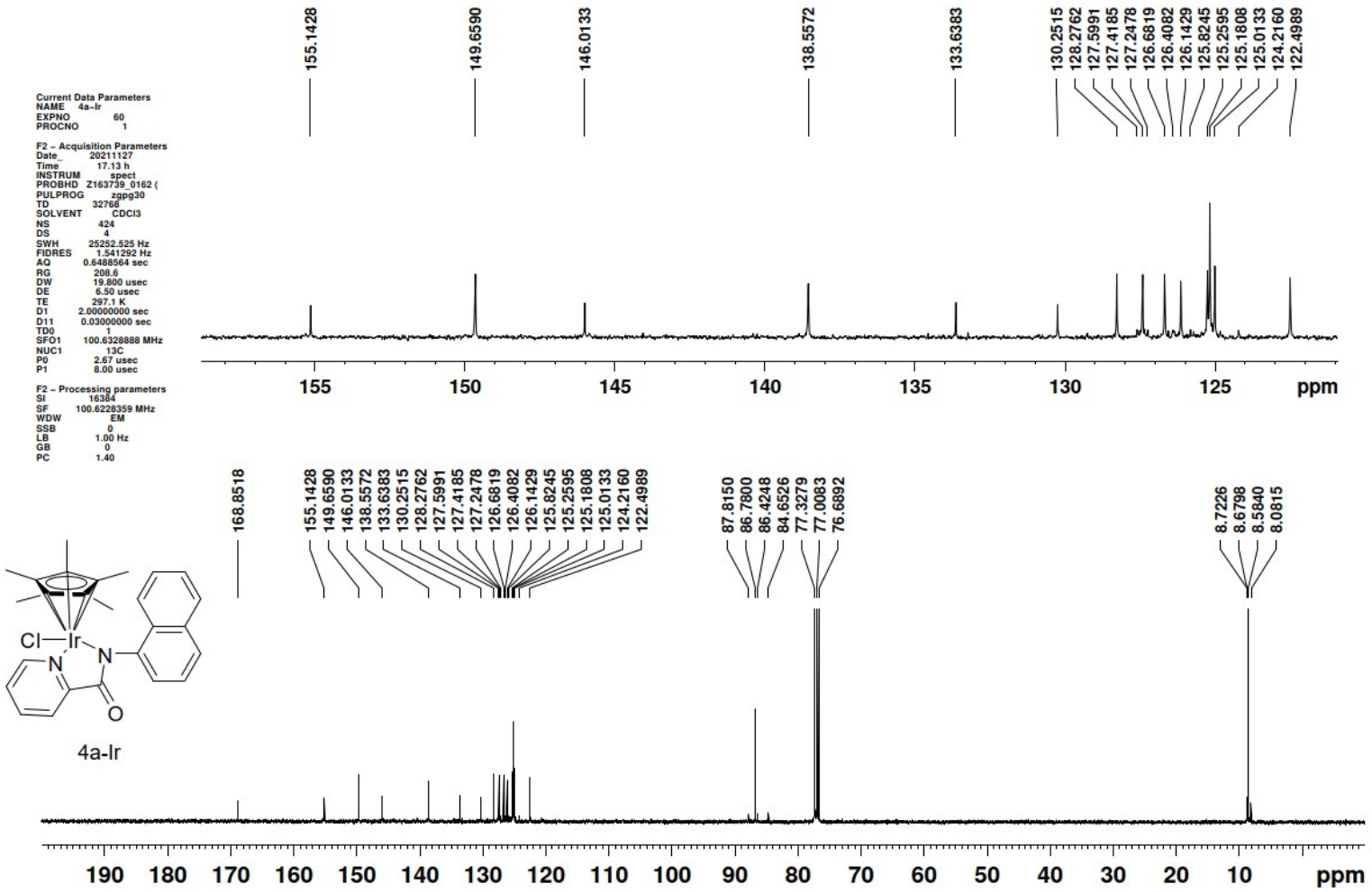
```
Current Data Parameters
NAME      4a-Ir
EXPNO             10
PROCNO             1

F2 - Acquisition Parameters
Date_        20220518
Time              0.09 h
INSTRUM          spect
PROBHD   Z8246_0048 (PH
PULPROG          zg30
TD              24036
SOLVENT          CDCl3
NS                 8
DS                 0
SWH           8012.820 Hz
FIDRES        0.666735 Hz
AQ            1.4998465 sec
RG                128
DW             62.400 usec
DE              6.50 usec
TE             300.0 K
D1          1.00000000 sec
TD0                1
SFO1        400.1024006 MHz
NUC1               1H
P0              6.00 usec
P1             18.00 usec
PLW1       10.00000000 W

F2 - Processing parameters
SI             16384
SF          400.1000139 MHz
WDW               EM
SSB                0
LB                 0 Hz
GB                 0
PC              1.00
```





4a-Ir

4a–Ir IN CDCl3–13C

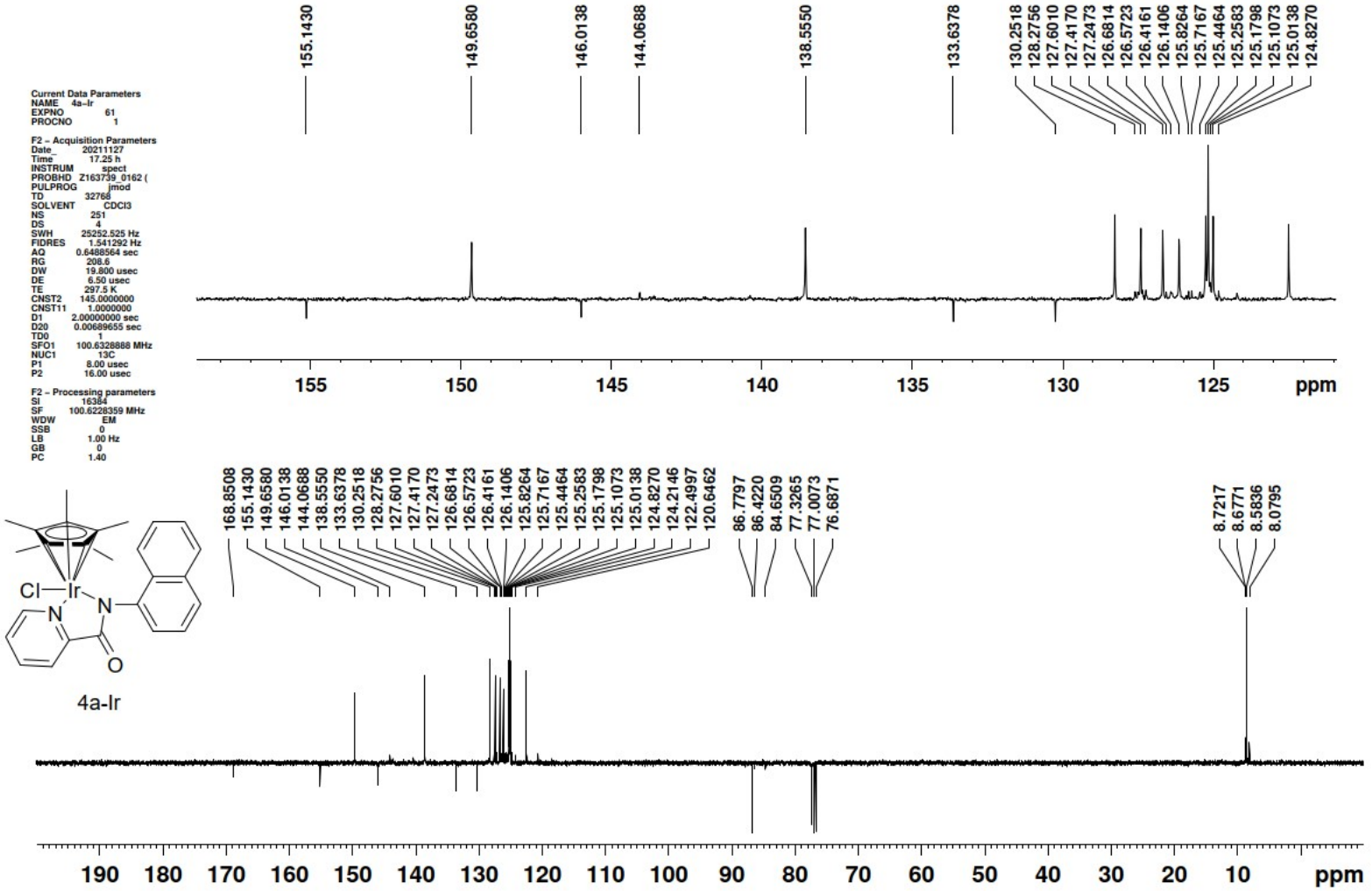


Current Data Parameters
NAME 4a–Ir
EXPNO 60
PROCNO 1

F2 – Acquisition Parameters
Date_ 20211127
Time 17.13 h
INSTRUM spect
PROBHD Z163739_0162 (
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 424
DS 4
SWH 25252.525 Hz
FIDRES 1.541292 Hz
AQ 0.6488564 sec
RG 208.6
DW 19.800 usec
DE 6.50 usec
TE 297.1 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1
SFO1 100.6328888 MHz
NUC1 13C
P0 2.67 usec
P1 8.00 usec

F2 – Processing parameters
SI 16384
SF 100.6228359 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

4a–Ir IN CDCl3–APT

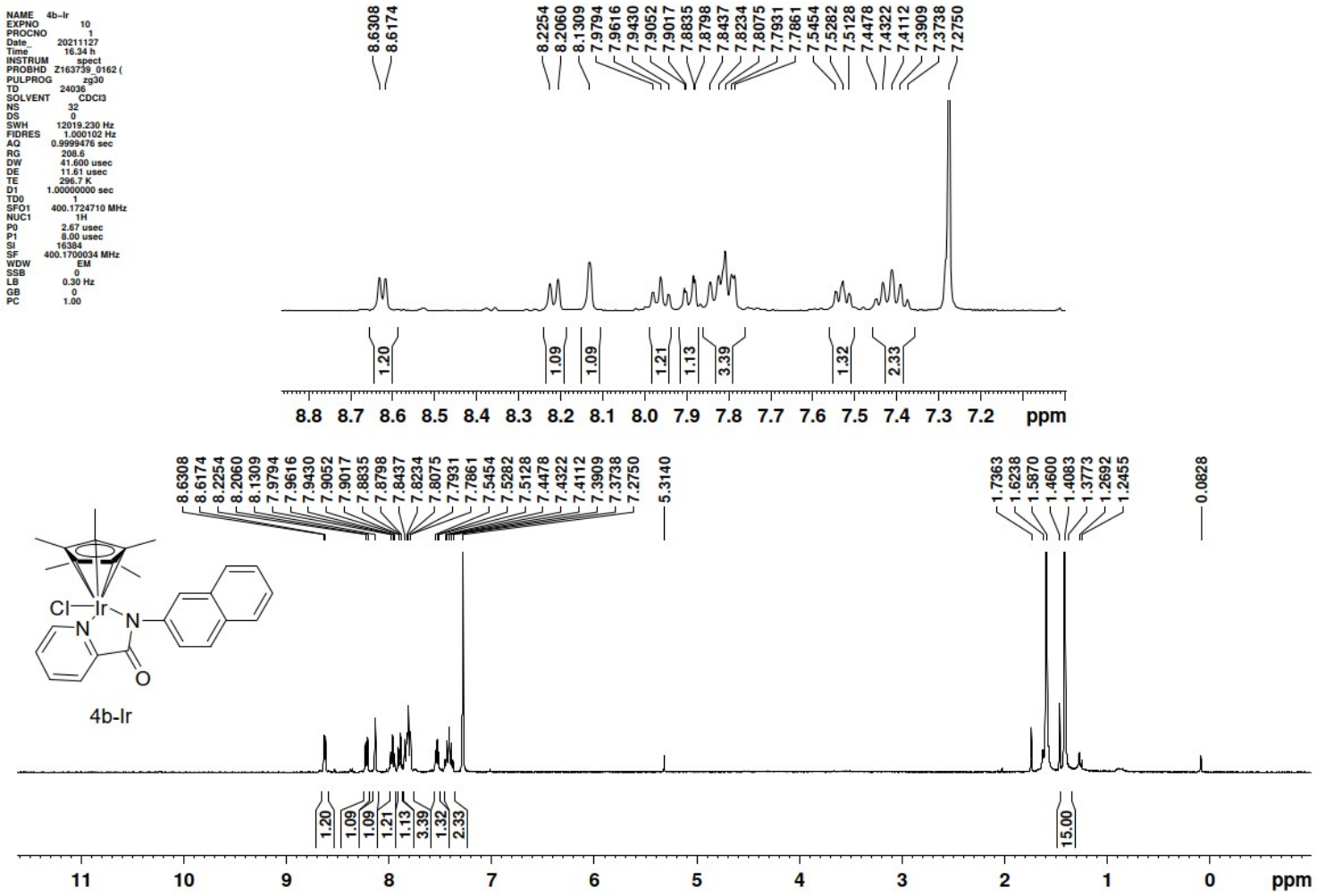


Current Data Parameters
NAME 4a–Ir
EXPNO 61
PROCNO 1

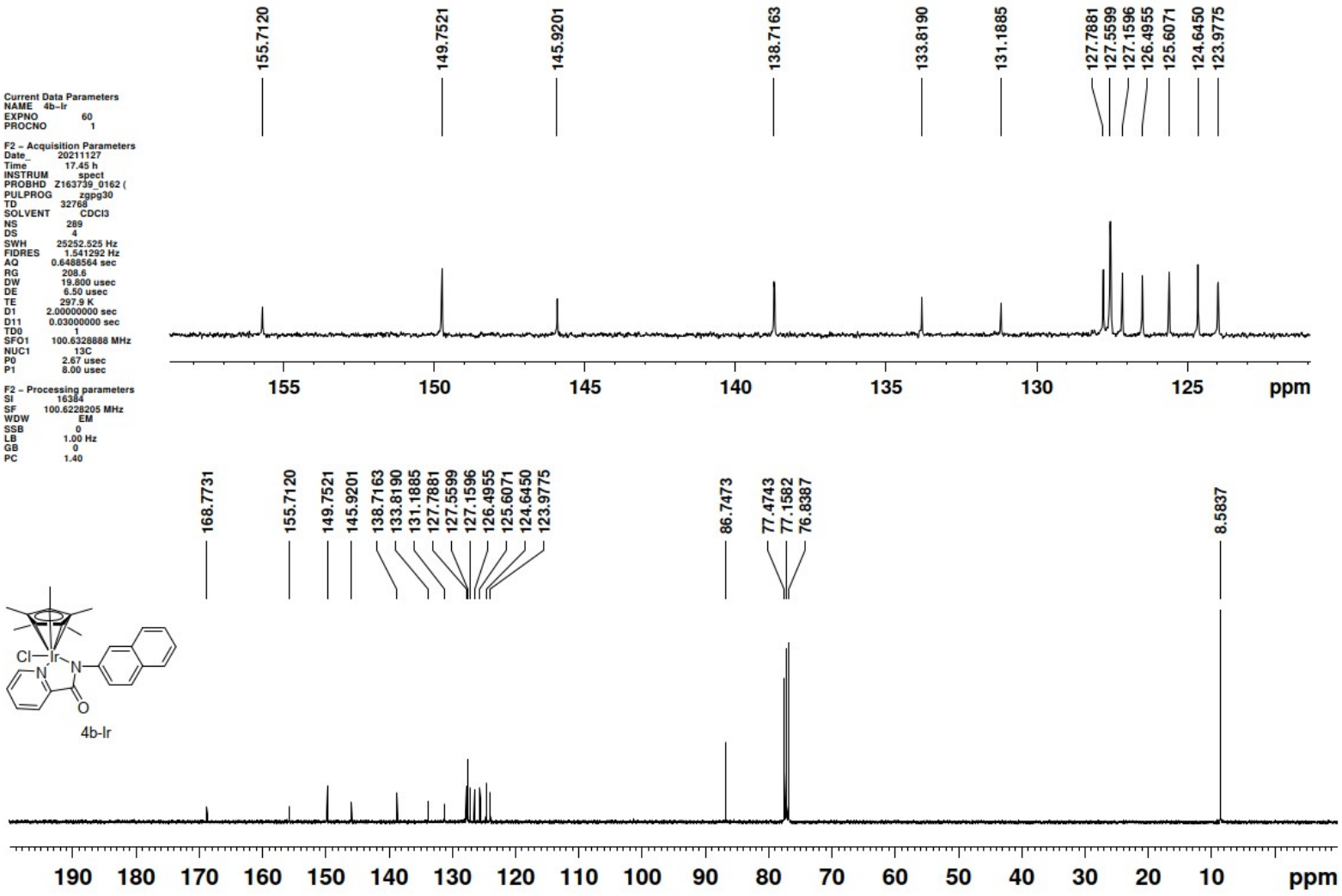
F2 – Acquisition Parameters
Date_ 20211127
Time 17.25 h
INSTRUM spect
PROBHD Z163739_0162 (
PULPROG jmod
TD 32768
SOLVENT CDCl3
NS 251
DS 4
SWH 25252.525 Hz
FIDRES 1.541292 Hz
AQ 0.6488564 sec
RG 208.6
DW 19.800 usec
DE 6.50 usec
TE 297.5 K
CNST2 145.0000000
CNST11 1.0000000
D1 2.00000000 sec
D20 0.00689655 sec
TD0 1
SFO1 100.6328888 MHz
NUC1 13C
P1 8.00 usec
P2 16.00 usec

F2 – Processing parameters
SI 16384
SF 100.6228359 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

4b–Ir IN CDCl3



4b–Ir IN CDCl3–13C

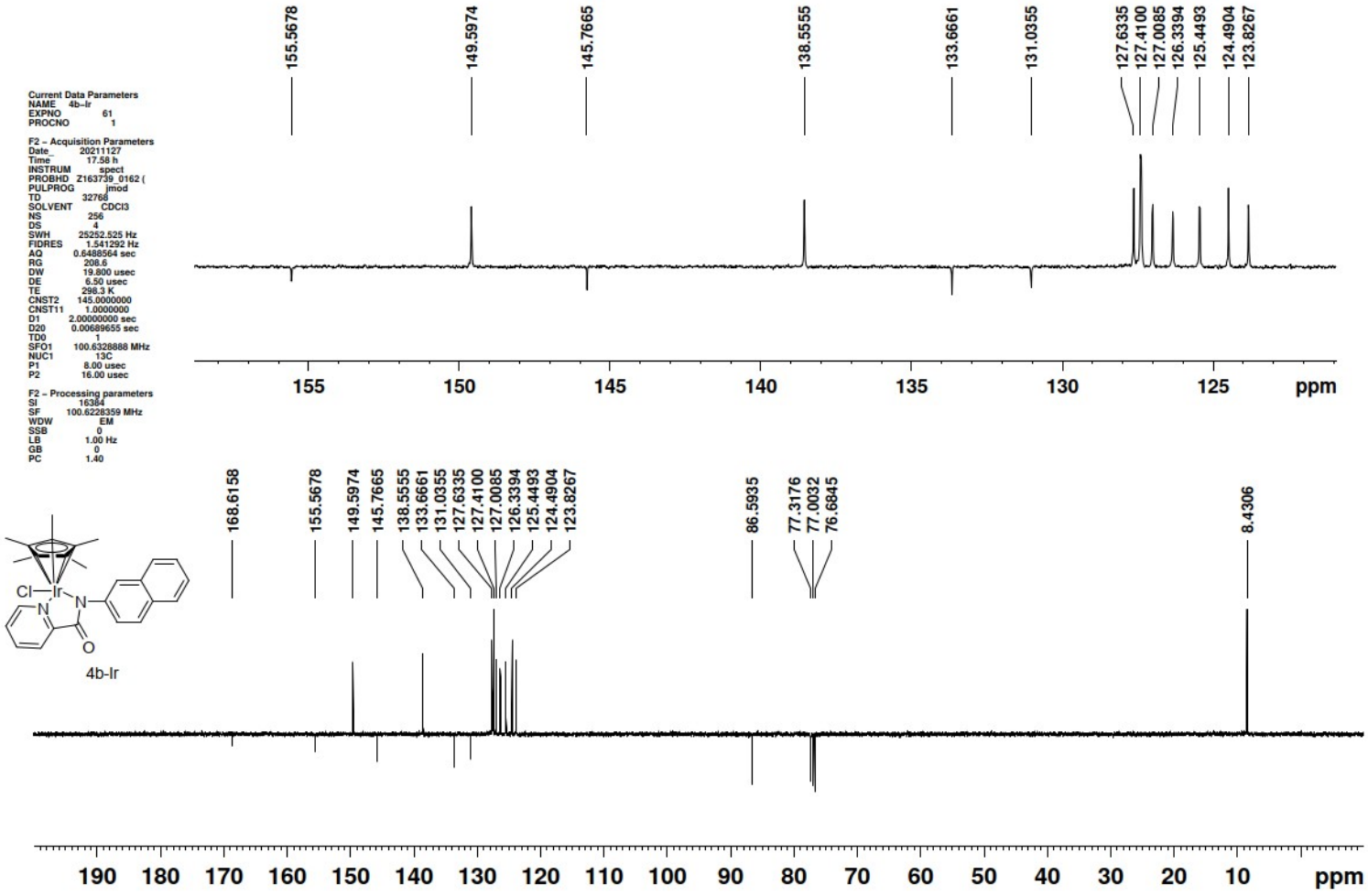


Current Data Parameters
NAME 4b–Ir
EXPNO 60
PROCNO 1

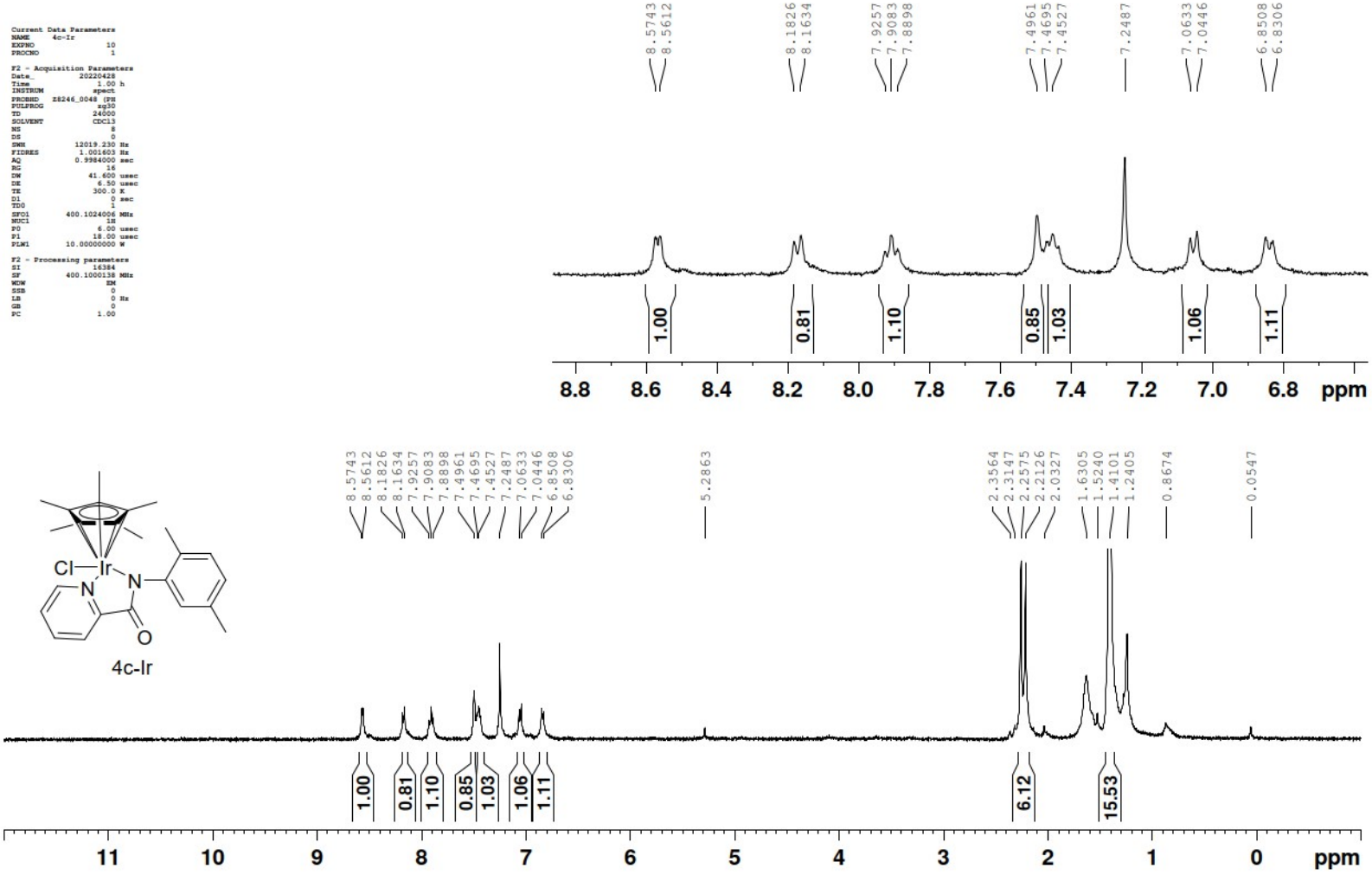
F2 – Acquisition Parameters
Date_ 20211127
Time 17.45 h
INSTRUM spect
PROBHD Z163739_0162 (
PULPROG zgpg30
TD 32768
SOLVENT CDCl3
NS 289
DS 4
SWH 25252.525 Hz
FIDRES 1.541292 Hz
AQ 0.6488564 sec
RG 208.6
DW 19.800 usec
DE 6.50 usec
TE 297.9 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1
SFO1 100.6328888 MHz
NUC1 13C
P0 2.67 usec
P1 8.00 usec

F2 – Processing parameters
SI 16384
SF 100.6228205 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

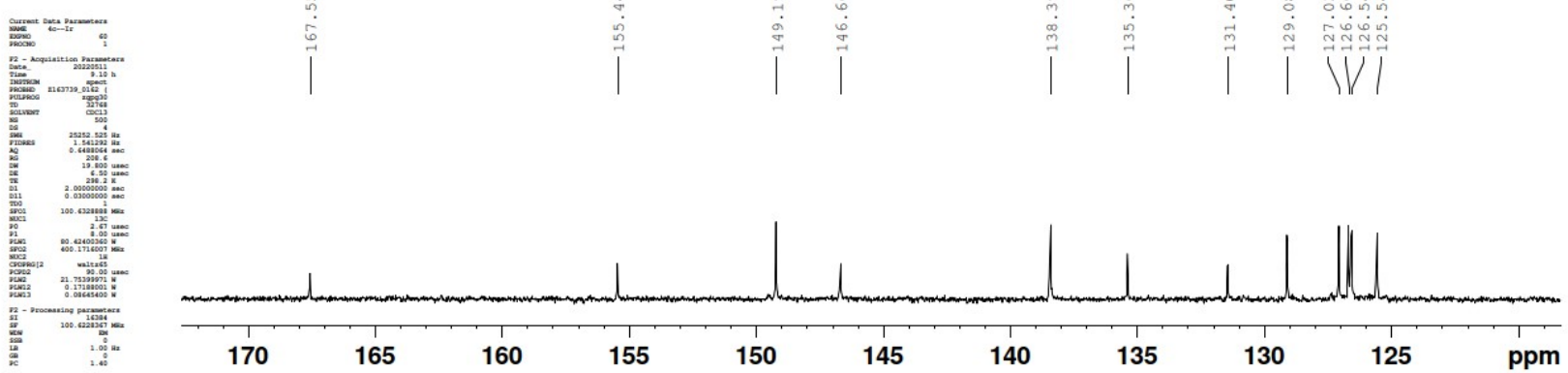
4b–Ir IN CDCl3–APT

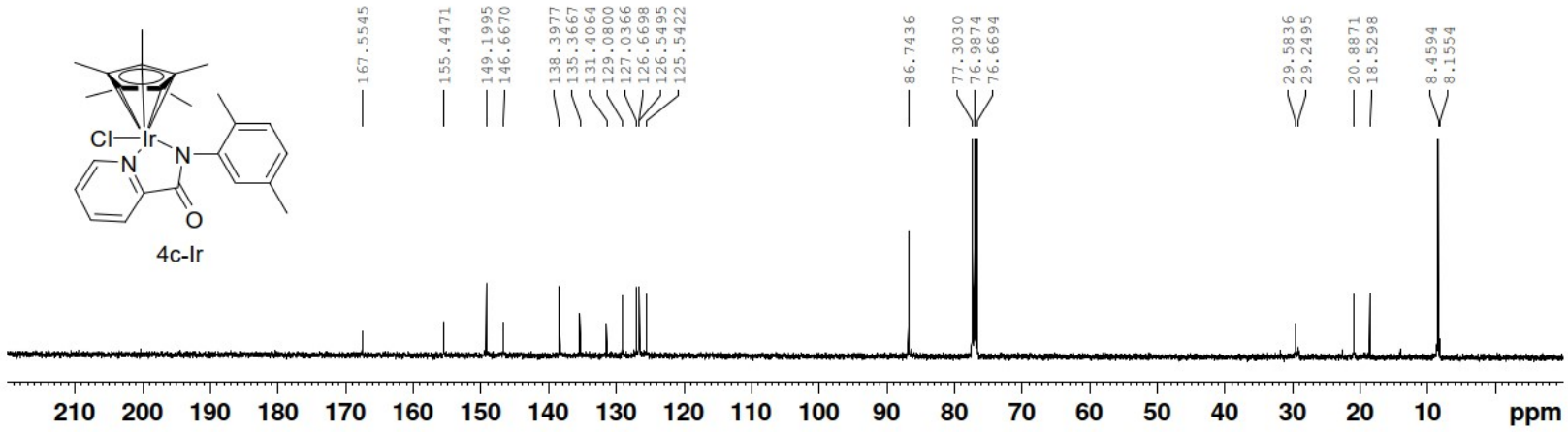


4c-Ir IN CDC13

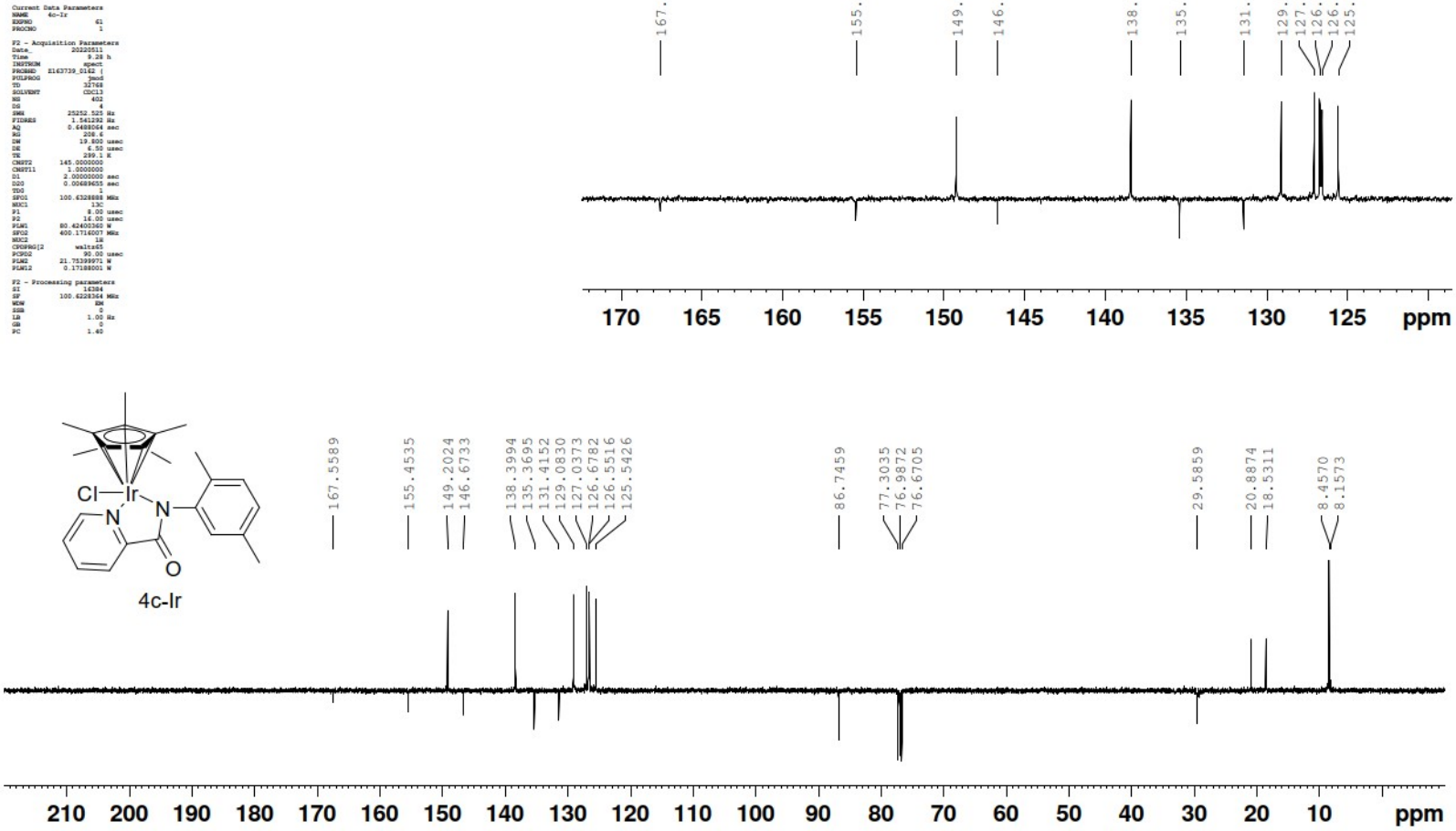


4c-Ir IN CDCl3-13C





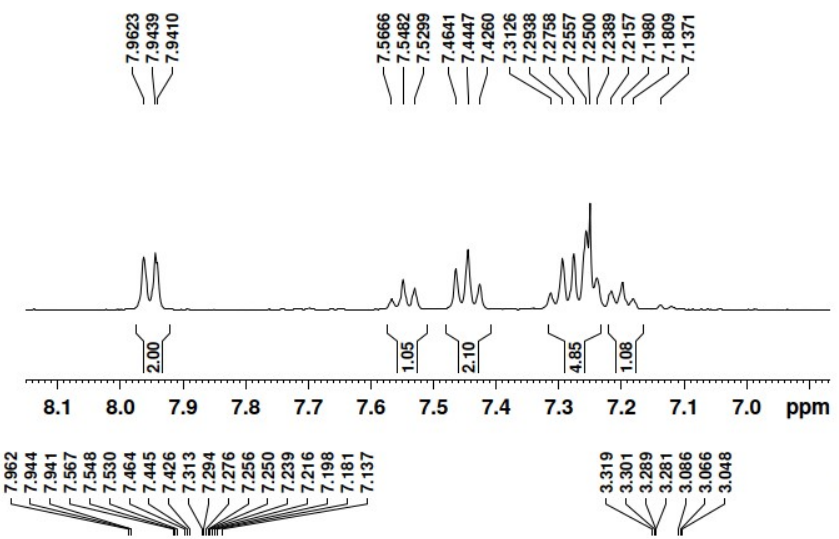
4c-Ir IN CDCl3-APT

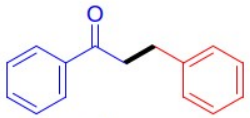


7a IN CDCl3

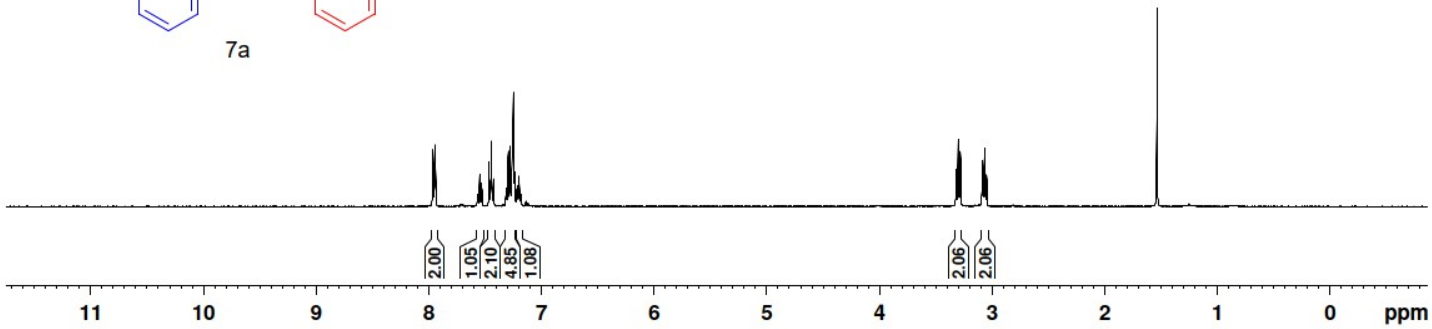
Current Data Parameters

NAME	7a
EXPNO	10
PROCNO	1
Date_	20211203
Time	18.00
INSTRUM	spect
PROBHD	5 mm PABBO BB-
PULPROG	zg30
TD	24576
SOLVENT	CDCl3
NS	8
DS	0
SWH	8012.820 Hz
FIDRES	0.326043 Hz
AQ	1.5335923 sec
RG	512
DW	62.400 usec
DE	6.50 usec
TE	673.2 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
NUC1	1H
P1	17.00 usec
PL1	0.00 dB
SFO1	400.2024714 MHz
SI	16384
SF	400.2000182 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

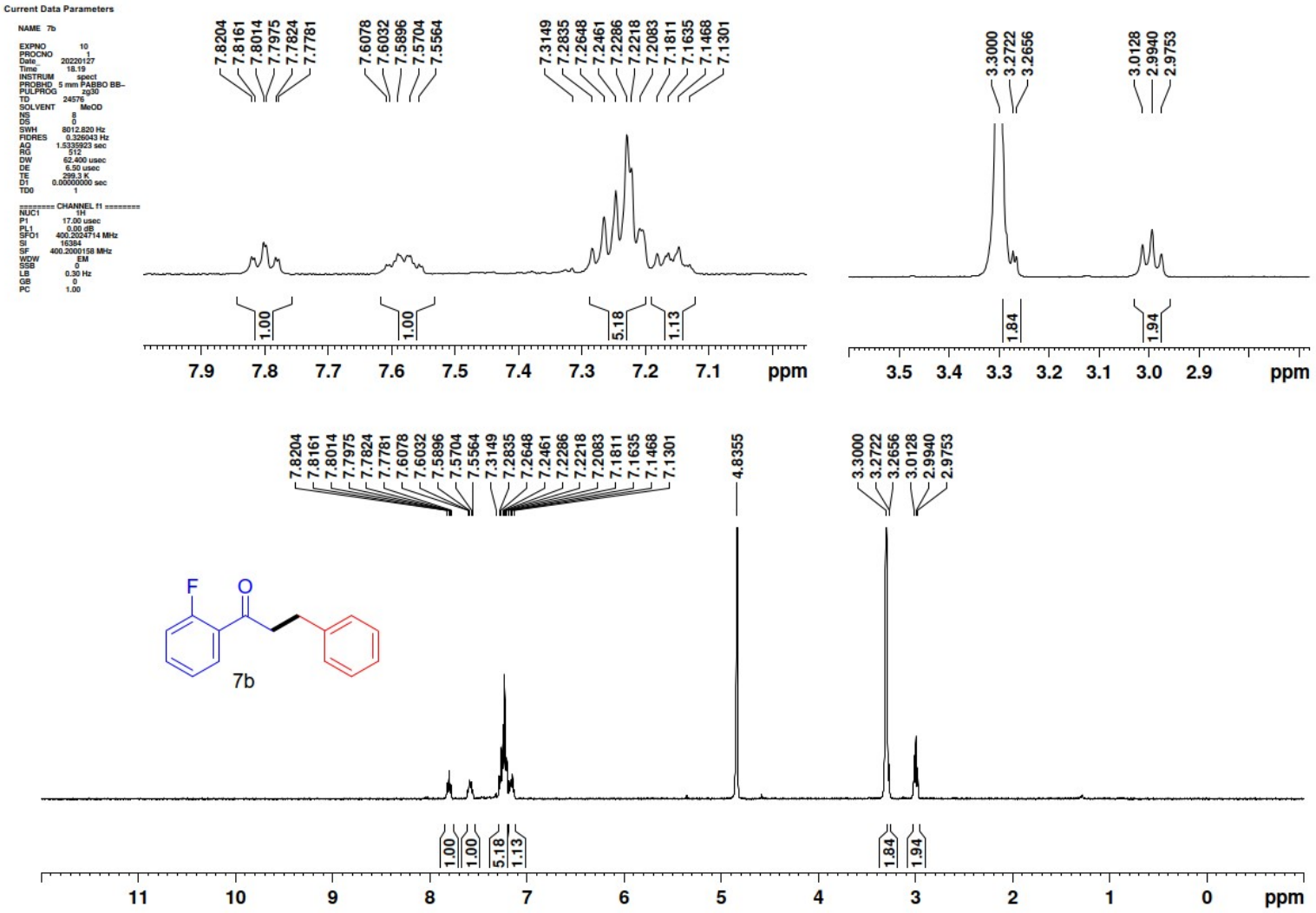




7a



7b IN MeOD


Current Data Parameters
NAME 7b
EXPNO 10
PROCNO 1
Date_ 20220127
Time_ 18.19
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 24576
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.326043 Hz
AQ 1.5335923 sec
RG 512
DW 62.400 usec
DE 6.50 usec
TE 299.3 K
D1 0.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 17.00 usec
PL1 0.00 dB
SFO1 400.2024714 MHz
SI 16384
SF 400.2000158 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.8204
7.8161
7.8014
7.7975
7.7824
7.7781
7.6078
7.6032
7.5896
7.5704
7.5564
7.3149
7.2835
7.2648
7.2461
7.2286
7.2218
7.2083
7.1811
7.1635
7.1468
7.1301
3.3000
3.2722
3.2656
3.0128
2.9940
2.9753
4.8355
1.00
1.00
5.18
1.13
1.84
1.94
ppm
F
O
7b

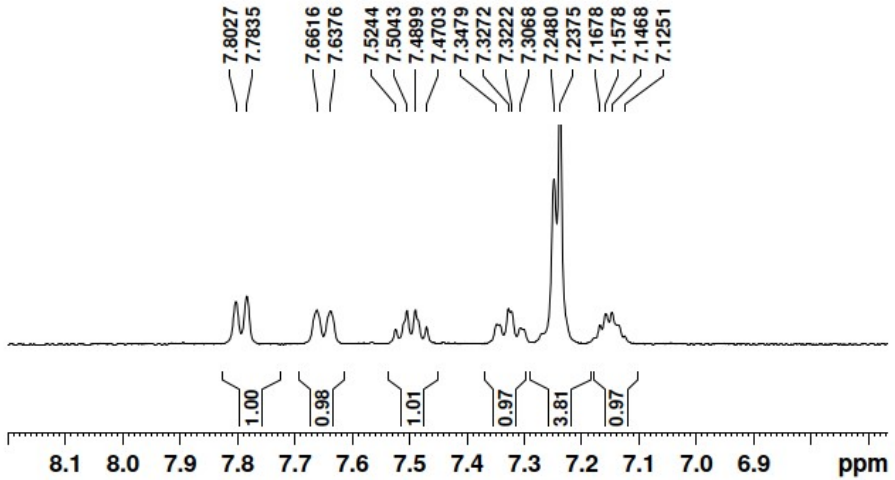
7c IN MeOD

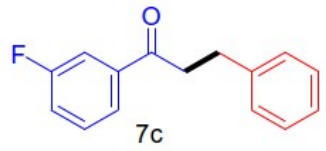
Current Data Parameters

NAME	7c
EXPNO	10
PROCNO	1
Date_	20220122
Time	13.48
INSTRUM	spect
PROBHD	5 mm PABBO BB-
PULPROG	zg30
TD	24576
SOLVENT	MeOD
NS	8
DS	0
SWH	8012.820 Hz
FIDRES	0.326043 Hz
AQ	1.5335923 sec
RG	101
DW	62.400 usec
DE	6.50 usec
TE	298.5 K
D1	1.00000000 sec
TD0	1

======== CHANNEL f1 ========

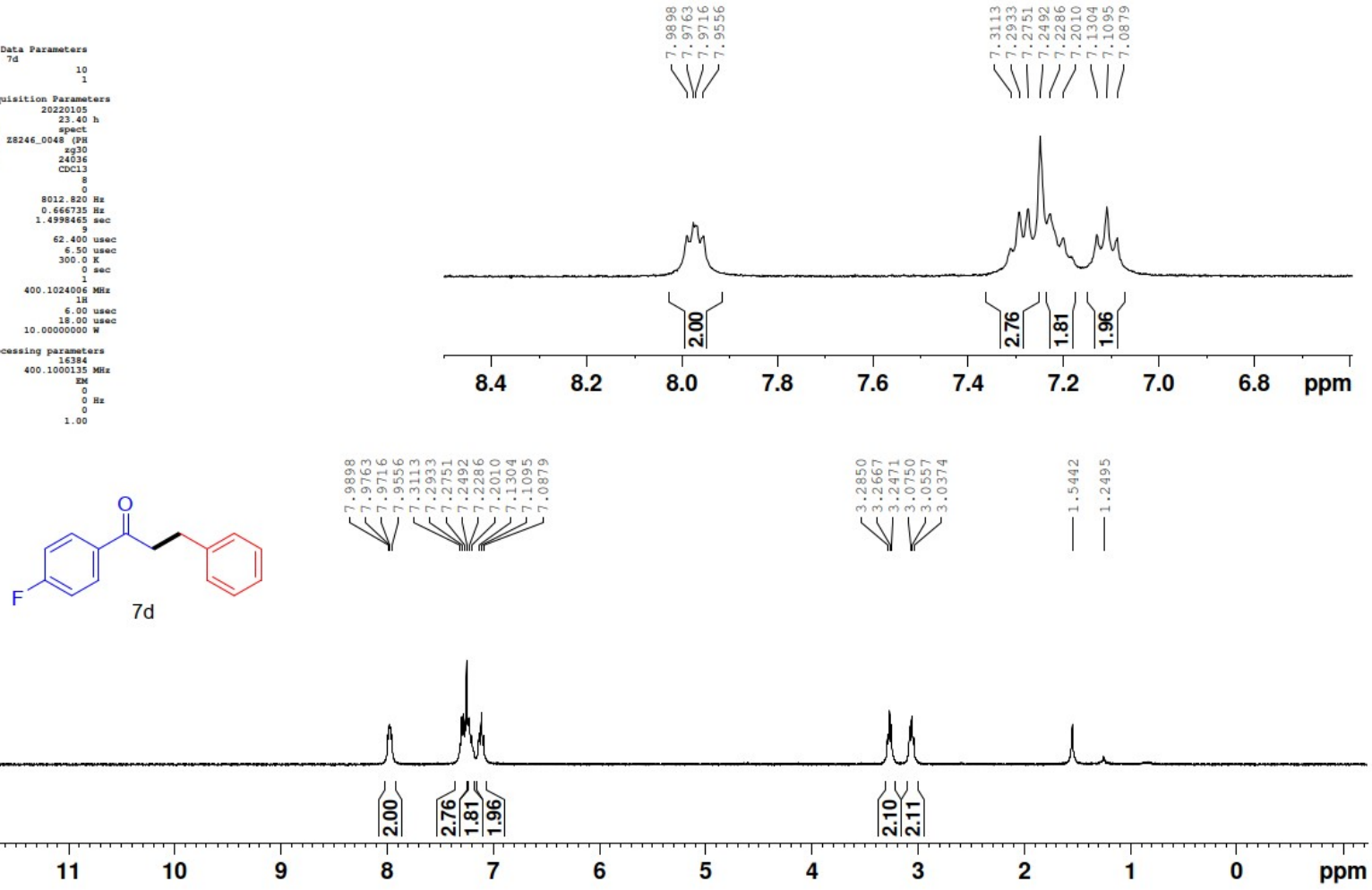
NUC1	1H
P1	17.00 usec
PL1	0.00 dB
SFO1	400.2024714 MHz
SI	16384
SF	400.2000163 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00



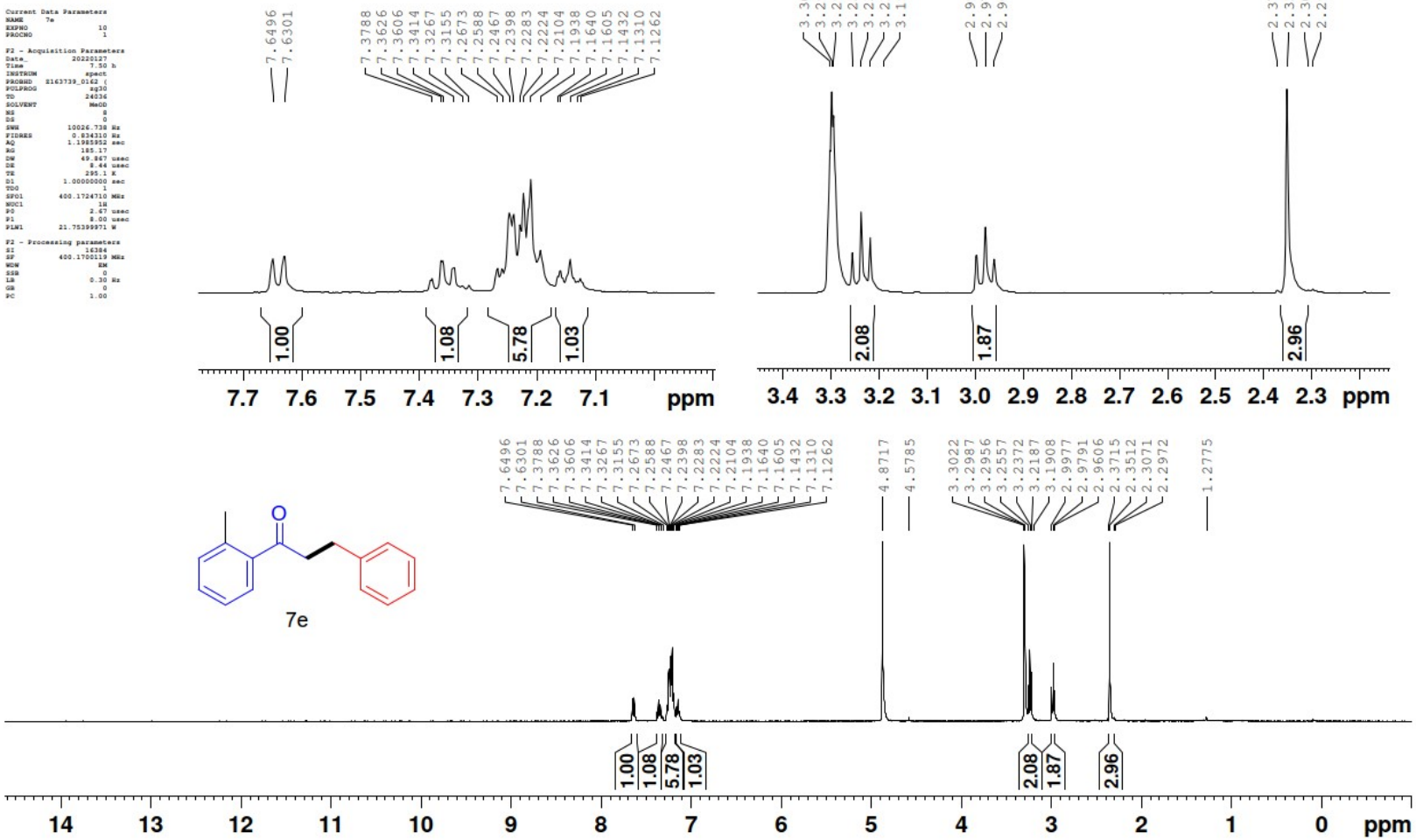


7d IN CDC13

```
Current Data Parameters
NAME      7d
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20220105
Time              23.40 h
INSTRUM             spect
PROBHD   Z8246_0048 (PH
PULPROG             zg30
TD                 24036
SOLVENT             CDC13
NS                     8
DS                     0
SWH             8012.820 Hz
FIDRES          0.666735 Hz
AQ              1.4998465 sec
RG                     9
DW                62.400 usec
DE                 6.50 usec
TE                300.0 K
D1                     0 sec
TD0                    1
SFO1        400.1024006 MHz
NUC1                  1H
P0                 6.00 usec
P1                18.00 usec
PLW1         10.00000000 W

F2 - Processing parameters
SI                 16384
SF          400.1000135 MHz
WDW                   EM
SSB                    0
LB                     0 Hz
GB                     0
PC                  1.00
```

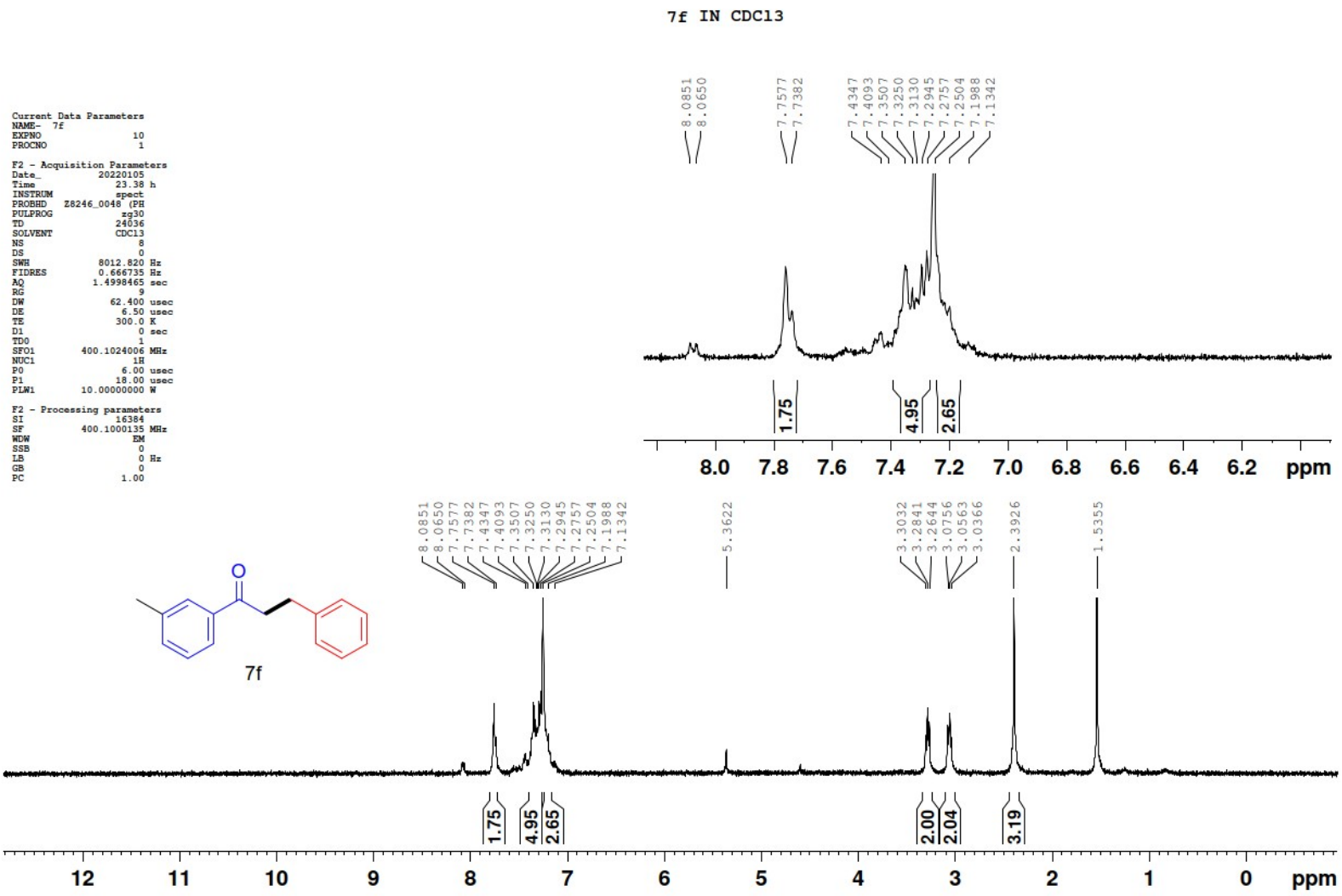


7e IN MeOD

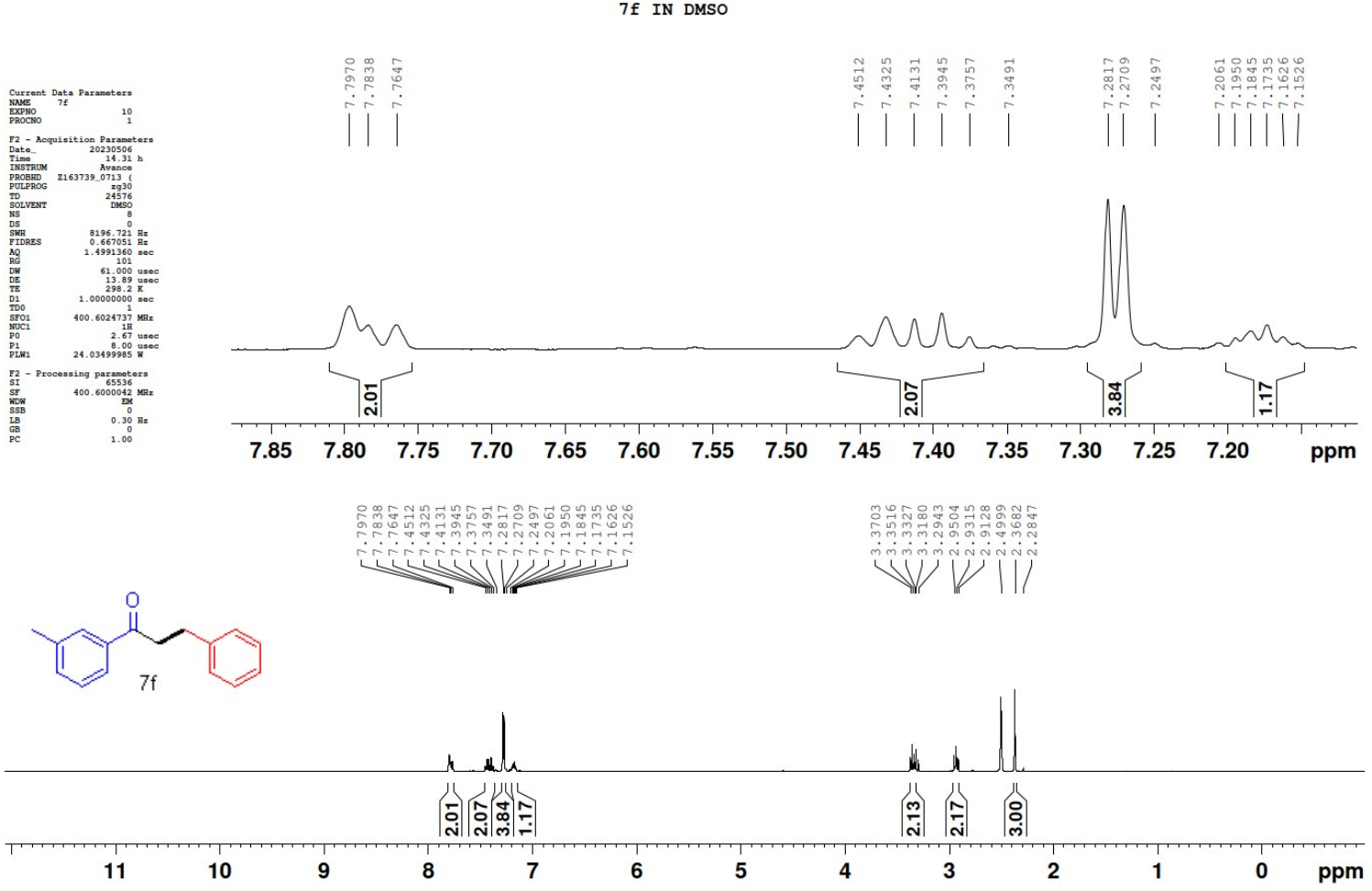

Current Data Parameters
NAME 7e
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220127
Time 7.50 h
INSTRUM spect
PROBHD Z163739_0162 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 10026.738 Hz
FIDRES 0.834310 Hz
AQ 1.1985952 sec
RG 185.17
DW 49.867 usec
DE 8.44 usec
TE 295.1 K
D1 1.00000000 sec
TD0 1
SFO1 400.1724710 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 21.75399971 W
F2 - Processing parameters
SI 16384
SF 400.1700119 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.6496
7.6301
7.3788
7.3626
7.3606
7.3414
7.3267
7.3155
7.2673
7.2588
7.2467
7.2398
7.2283
7.2224
7.2104
7.1938
7.1640
7.1605
7.1432
7.1310
7.1262
3.3022
3.2987
3.2956
3.2557
3.2372
3.2187
3.1908
2.9977
2.9791
2.9606
2.3715
2.3512
2.3071
2.2972
1.00
1.08
5.78
1.03
2.08
1.87
2.96
7.7 7.6 7.5 7.4 7.3 7.2 7.1 ppm
3.4 3.3 3.2 3.1 3.0 2.9 2.8 2.7 2.6 2.5 2.4 2.3 ppm
4.8717
4.5785
1.2775
14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 ppm

7e

7f IN CDC13

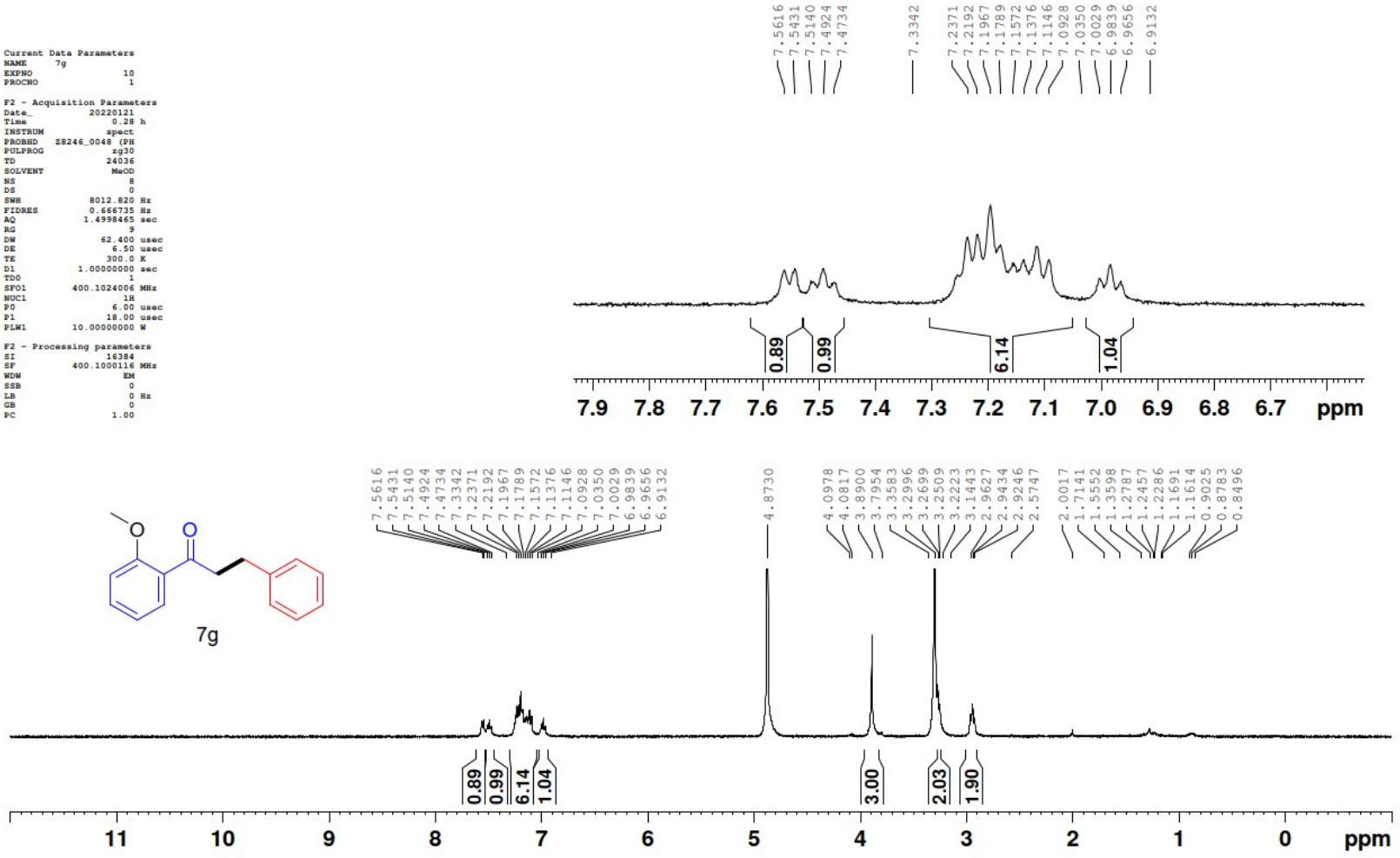

Current Data Parameters
NAME- 7f
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220105
Time 23.38 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDC13
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 9
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 0 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000135 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
8.0851
8.0650
7.7577
7.7382
7.4347
7.4093
7.3507
7.3250
7.3130
7.2945
7.2757
7.2504
7.1988
7.1342
1.75
4.95
2.65
8.0 7.8 7.6 7.4 7.2 7.0 6.8 6.6 6.4 6.2 ppm
5.3622
3.3032
3.2841
3.2644
3.0756
3.0563
3.0366
2.3926
1.5355
2.00
2.04
3.19
12 11 10 9 8 7 6 5 4 3 2 1 0 ppm
7f

7f IN DMSO

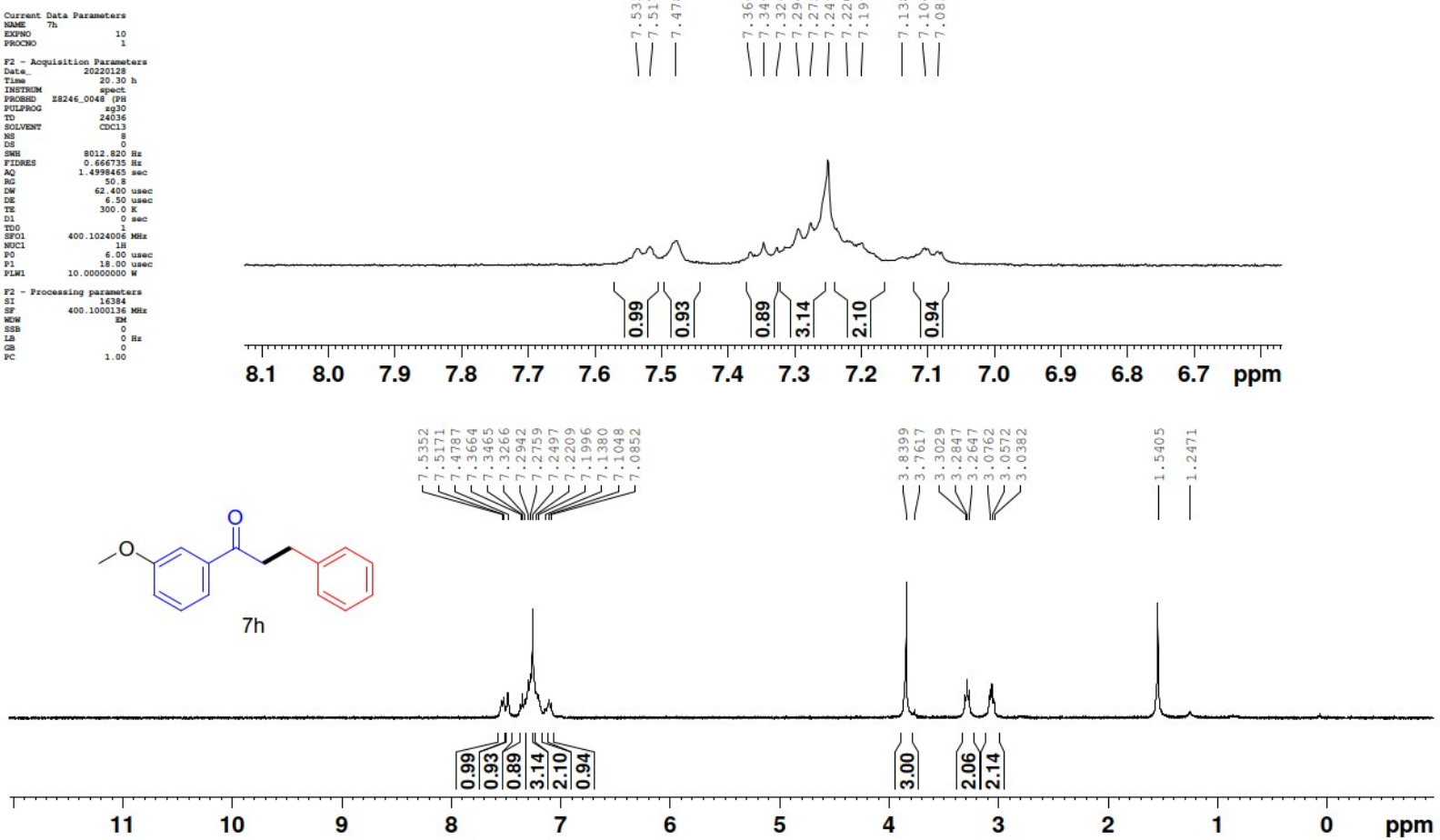

Current Data Parameters
NAME 7f
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230506
Time 14.31 h
INSTRUM Avance
PROBHD Z163739_0713 (
PULPROG zg30
TD 24576
SOLVENT DMSO
NS 8
DS 0
SWH 8196.721 Hz
FIDRES 0.667051 Hz
AQ 1.4991360 sec
RG 101
DW 61.000 usec
DE 13.89 usec
TE 298.2 K
D1 1.00000000 sec
TD0 1
SFO1 400.6024737 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 24.03499985 W
F2 - Processing parameters
SI 65536
SF 400.6000042 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.7970
7.7838
7.7647
7.4512
7.4325
7.4131
7.3945
7.3757
7.3491
7.2817
7.2709
7.2497
7.2061
7.1950
7.1845
7.1735
7.1626
7.1526
2.01
2.07
3.84
1.17
7.85 7.80 7.75 7.70 7.65 7.60 7.55 7.50 7.45 7.40 7.35 7.30 7.25 7.20 ppm
3.3703
3.3516
3.3327
3.3180
3.2943
2.9504
2.9315
2.9128
2.4999
2.3682
2.2847
O
7f
2.01
2.07
3.84
1.17
2.13
2.17
3.00
11 10 9 8 7 6 5 4 3 2 1 0 ppm

7g IN MeOD

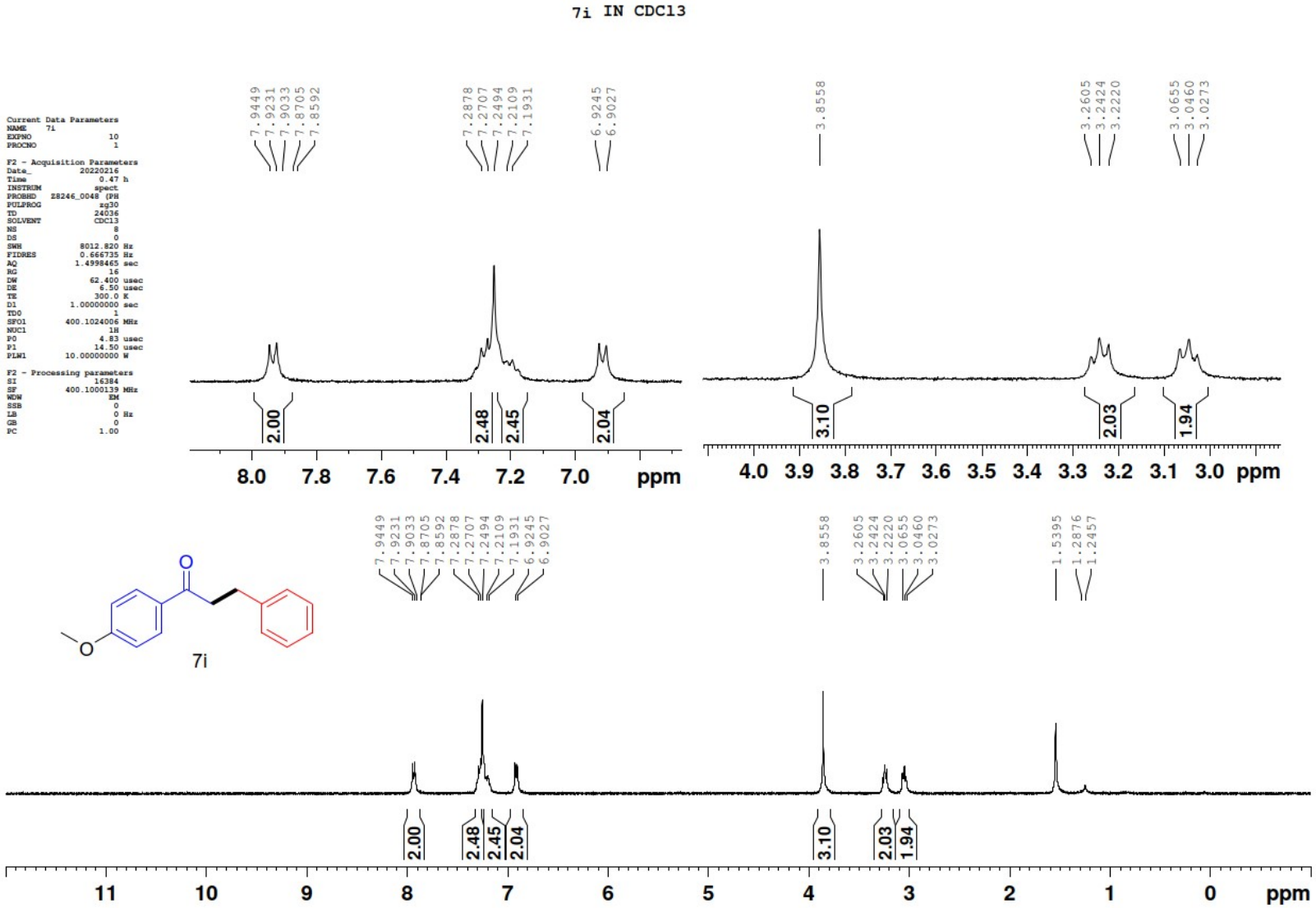
```
Current Data Parameters
NAME      7g
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20220121
Time                0.28 h
INSTRUM             spect
PROBHD    Z8246_0048 (PH
PULPROG             zg30
TD                 24036
SOLVENT             MeOD
NS                     8
DS                     0
SWH              8012.820 Hz
FIDRES           0.666735 Hz
AQ               1.4998465 sec
RG                     9
DW                62.400 usec
DE                 6.50 usec
TE                300.0 K
D1             1.00000000 sec
TD0                    1
SFO1           400.1024006 MHz
NUC1                  1H
P0                 6.00 usec
P1                18.00 usec
PLW1          10.00000000 W

F2 - Processing parameters
SI                 16384
SF            400.1000116 MHz
WDW                   EM
SSB                    0
LB                     0 Hz
GB                     0
PC                  1.00
```



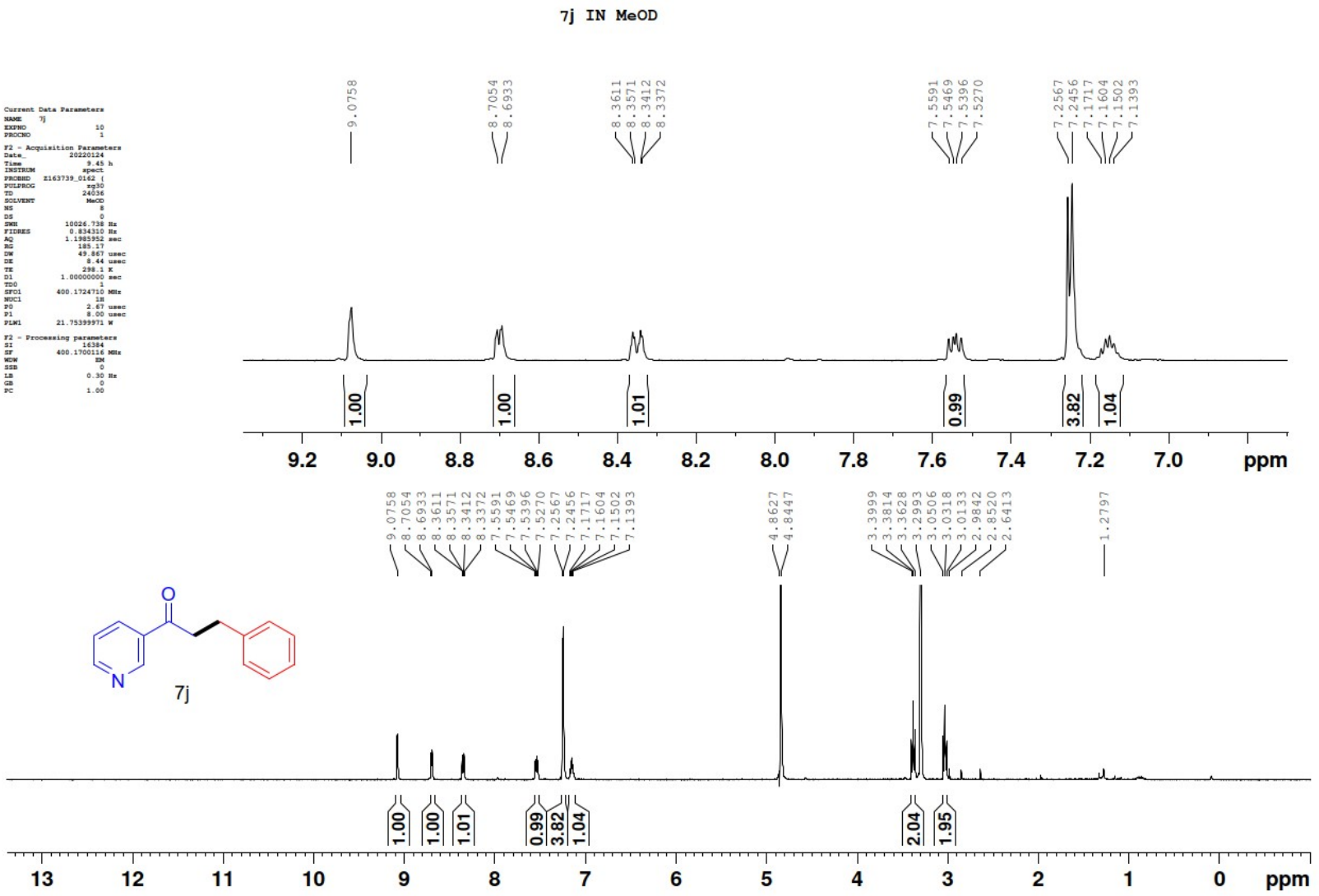
7h IN CDCl3


Current Data Parameters
NAME 7h
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220128
Time 20.30 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 50.8
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 0 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000136 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
7.5352
7.5171
7.4787
7.3664
7.3465
7.3266
7.2942
7.2759
7.2497
7.2209
7.1996
7.1380
7.1048
7.0852
0.99
0.93
0.89
3.14
2.10
0.94
8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 6.7 ppm
3.8399
3.7617
3.3029
3.2847
3.2647
3.0762
3.0572
3.0382
1.5405
1.2471
O
O
7h
0.99
0.93
0.89
3.14
2.10
0.94
3.00
2.06
2.14
11 10 9 8 7 6 5 4 3 2 1 0 ppm

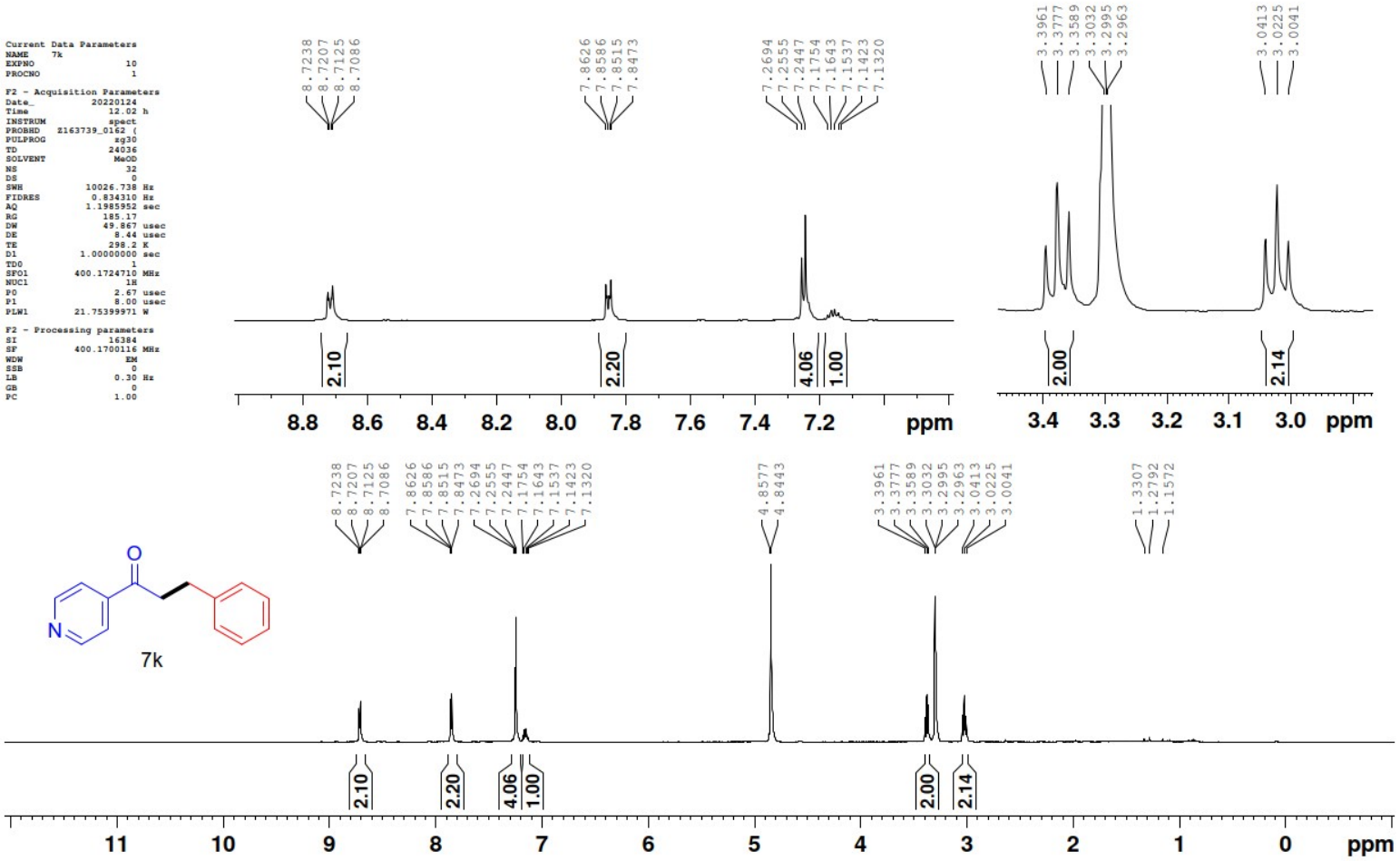
7i IN CDC13


Current Data Parameters
NAME 7i
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220216
Time 0.47 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 16
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 4.83 usec
P1 14.50 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000139 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
7.9449
7.9231
7.9033
7.8705
7.8592
7.2878
7.2707
7.2494
7.2109
7.1931
6.9245
6.9027
3.8558
3.2605
3.2424
3.2220
3.0655
3.0460
3.0273
1.5395
1.2876
1.2457
2.00
2.48
2.45
2.04
3.10
2.03
1.94
8.0 7.8 7.6 7.4 7.2 7.0 ppm
4.0 3.9 3.8 3.7 3.6 3.5 3.4 3.3 3.2 3.1 3.0 ppm
11 10 9 8 7 6 5 4 3 2 1 0 ppm
O
O
7i

7j IN MeOD

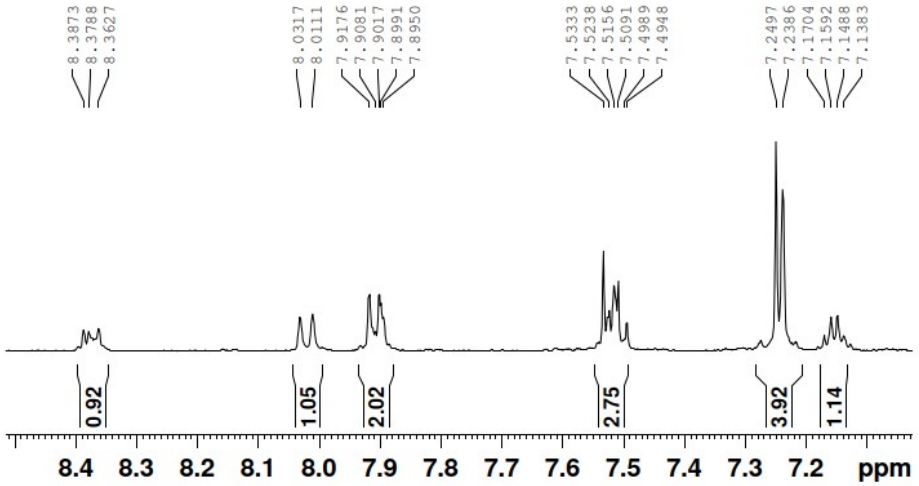

Current Data Parameters
NAME 7j
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220124
Time 9.45 h
INSTRUM spect
PROBHD Z163739_0162 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 10026.738 Hz
FIDRES 0.834310 Hz
AQ 1.1985952 sec
RG 185.17
DW 49.867 usec
DE 8.44 usec
TE 298.1 K
D1 1.00000000 sec
TD0 1
SFO1 400.1724710 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 21.75399971 W
F2 - Processing parameters
SI 16384
SF 400.1700116 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
9.0758
8.7054
8.6933
8.3611
8.3571
8.3412
8.3372
7.5591
7.5469
7.5396
7.5270
7.2567
7.2456
7.1717
7.1604
7.1502
7.1393
1.00
1.00
1.01
0.99
3.82
1.04
9.2
9.0
8.8
8.6
8.4
8.2
8.0
7.8
7.6
7.4
7.2
7.0
ppm
4.8627
4.8447
3.3999
3.3814
3.3628
3.2993
3.0506
3.0318
3.0133
2.9842
2.8520
2.6413
1.2797
2.04
1.95
13
12
11
10
9
8
7
6
5
4
3
2
1
0
O
N
7j

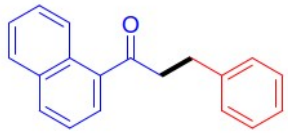
7k IN MeOD


Current Data Parameters
NAME 7k
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220124
Time 12.02 h
INSTRUM spect
PROBHD Z163739_0162 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 32
DS 0
SWH 10026.738 Hz
FIDRES 0.834310 Hz
AQ 1.1985952 sec
RG 185.17
DW 49.867 usec
DE 8.44 usec
TE 298.2 K
D1 1.00000000 sec
TD0 1
SFO1 400.1724710 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 21.75399971 W
F2 - Processing parameters
SI 16384
SF 400.1700116 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.7238
8.7207
8.7125
8.7086
7.8626
7.8586
7.8515
7.8473
7.2694
7.2555
7.2447
7.1754
7.1643
7.1537
7.1423
7.1320
3.3961
3.3777
3.3589
3.3032
3.2995
3.2963
3.0413
3.0225
3.0041
2.10
2.20
4.06
1.00
2.00
2.14
8.8
8.6
8.4
8.2
8.0
7.8
7.6
7.4
7.2
ppm
3.4
3.3
3.2
3.1
3.0
ppm
4.8577
4.8443
1.3307
1.2792
1.1572
O
N
7k
11
10
9
8
7
6
5
4
3
2
1
0
ppm

71 IN MeOD

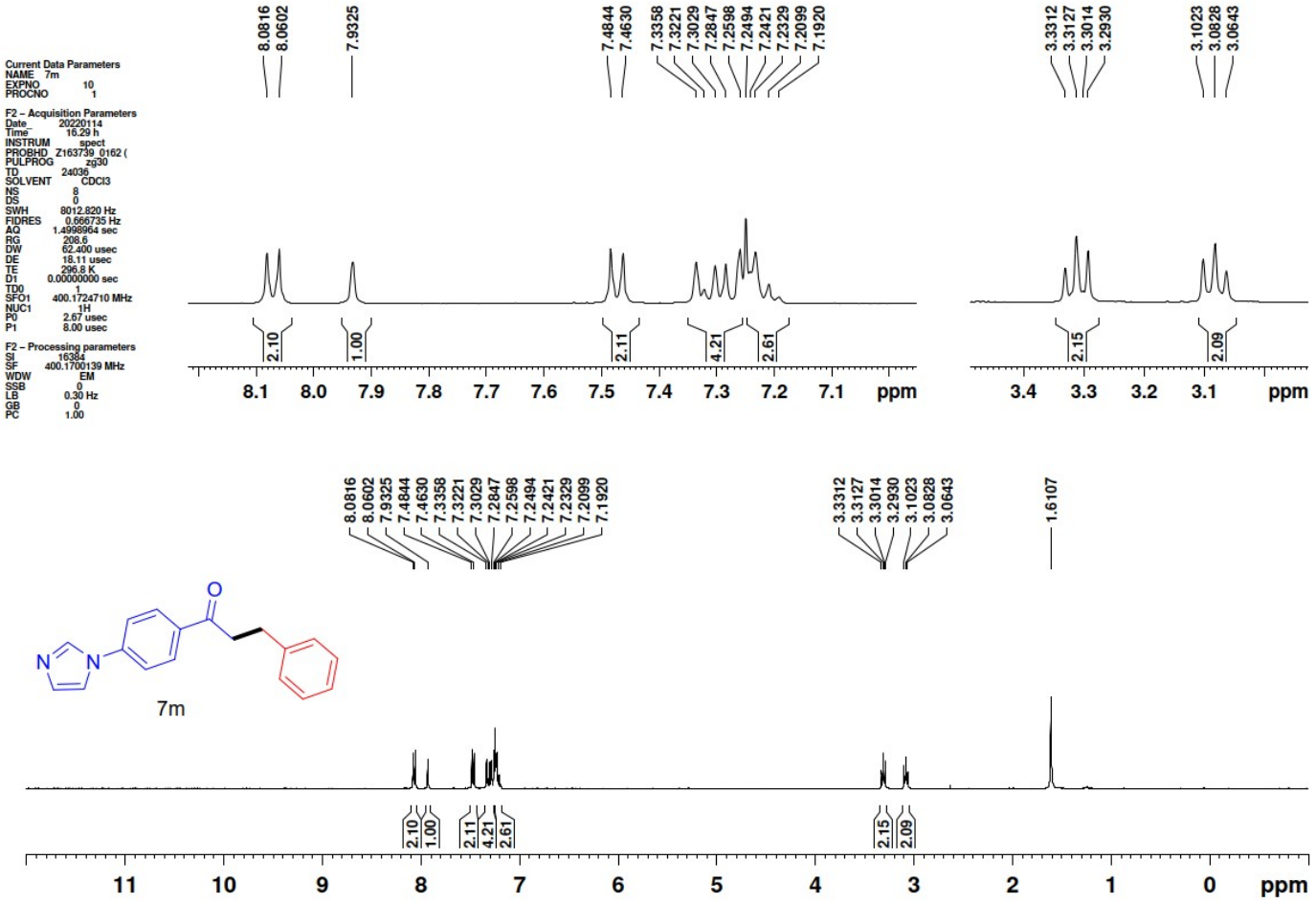
```
Current Data Parameters
NAME      71
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20220121
Time                8.31 h
INSTRUM            spect
PROBHD   Z163739_0162 (
PULPROG             zg30
TD                 24036
SOLVENT             MeOD
NS                     8
DS                     0
SWH              8012.820 Hz
FIDRES           0.666735 Hz
AQ               1.4998465 sec
RG                141.96
DW                62.400 usec
DE                18.11 usec
TE                296.7 K
D1               1.00000000 sec
TD0                    1
SFO1          400.1724710 MHz
NUC1                  1H
P0                 2.67 usec
P1                 8.00 usec
PLW1          21.75399971 W

F2 - Processing parameters
SI                 16384
SF            400.1700118 MHz
WDW                   EM
SSB                    0
LB                 0.30 Hz
GB                     0
PC                  1.00
```



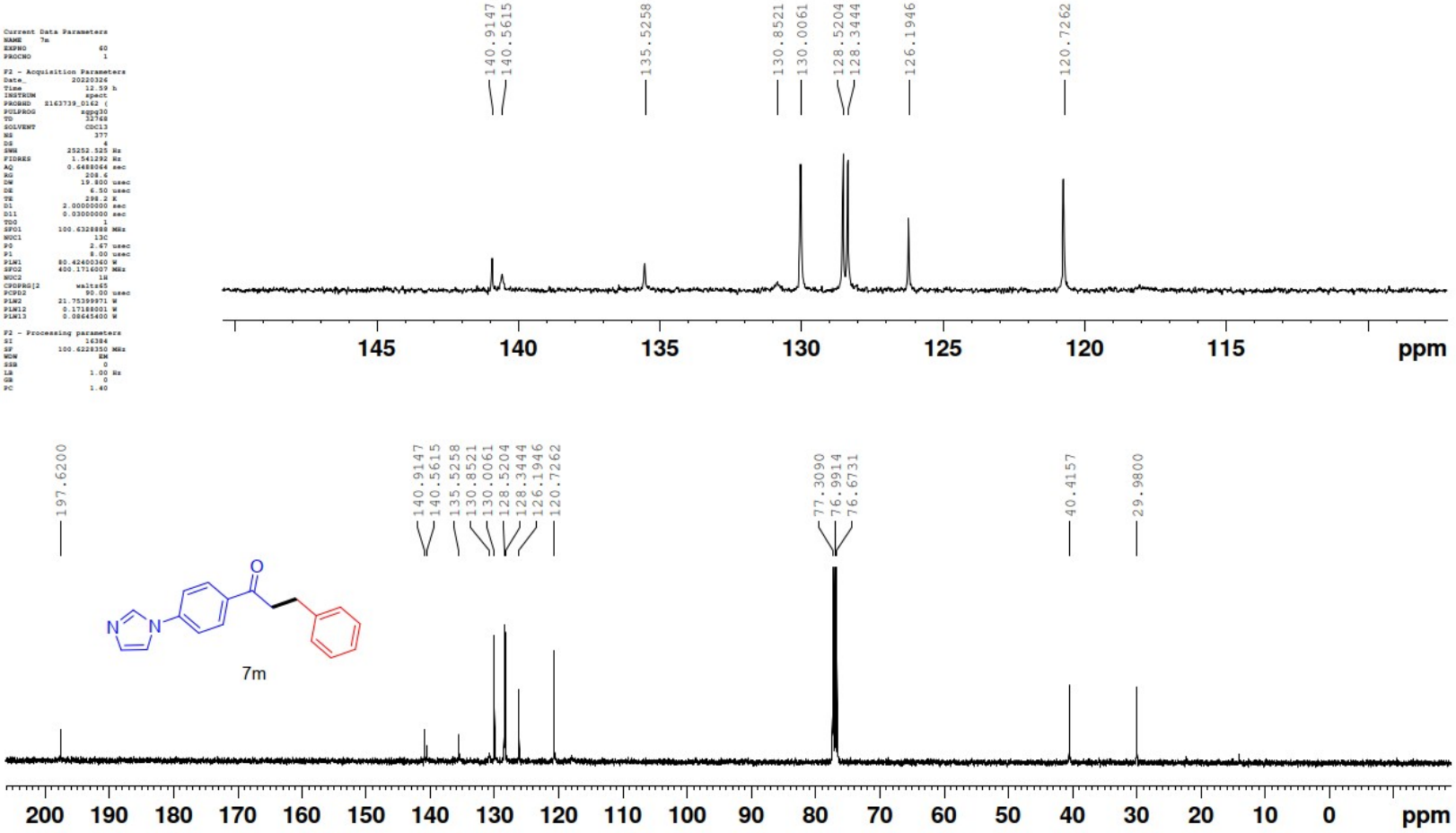


7l

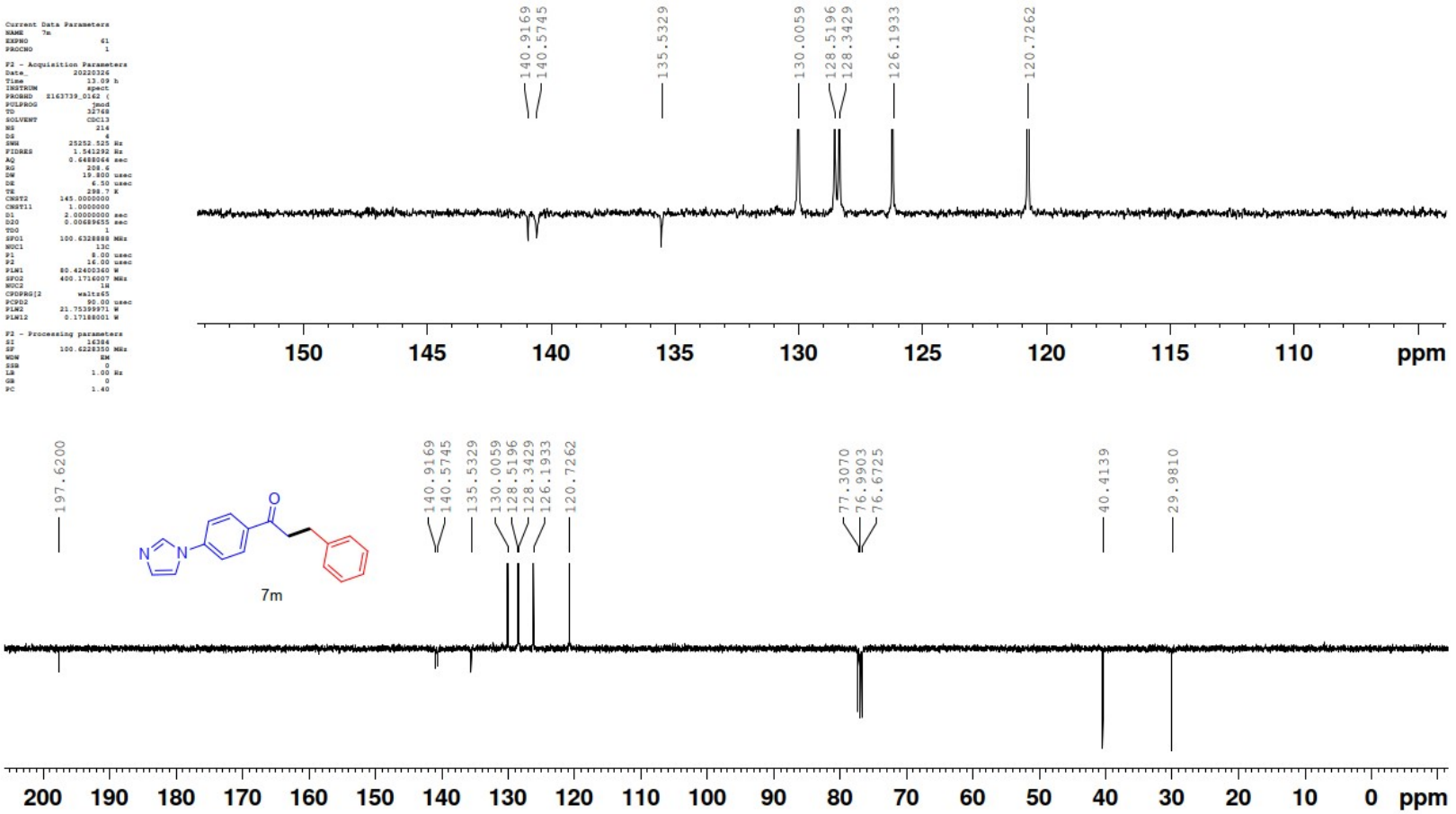
7m IN CDCl3


Current Data Parameters
NAME 7m
EXPNO 10
PROCNO 1
F2 – Acquisition Parameters
Date 20220114
Time 16.29 h
INSTRUM spect
PROBHD Z163739_0162 (
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998964 sec
RG 206.6
DW 62.400 usec
DE 18.11 usec
TE 296.8 K
D1 0.00000000 sec
TD0 1
SFO1 400.1724710 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
F2 – Processing parameters
SI 16384
SF 400.1700139 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.0816
8.0602
7.9325
7.4844
7.4630
7.3358
7.3221
7.3029
7.2847
7.2598
7.2494
7.2421
7.2329
7.2099
7.1920
3.3312
3.3127
3.3014
3.2930
3.1023
3.0828
3.0643
2.10
1.00
2.11
4.21
2.61
2.15
2.09
8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 ppm
3.4 3.3 3.2 3.1 ppm
1.6107
O
N
N
7m
11 10 9 8 7 6 5 4 3 2 1 0 ppm

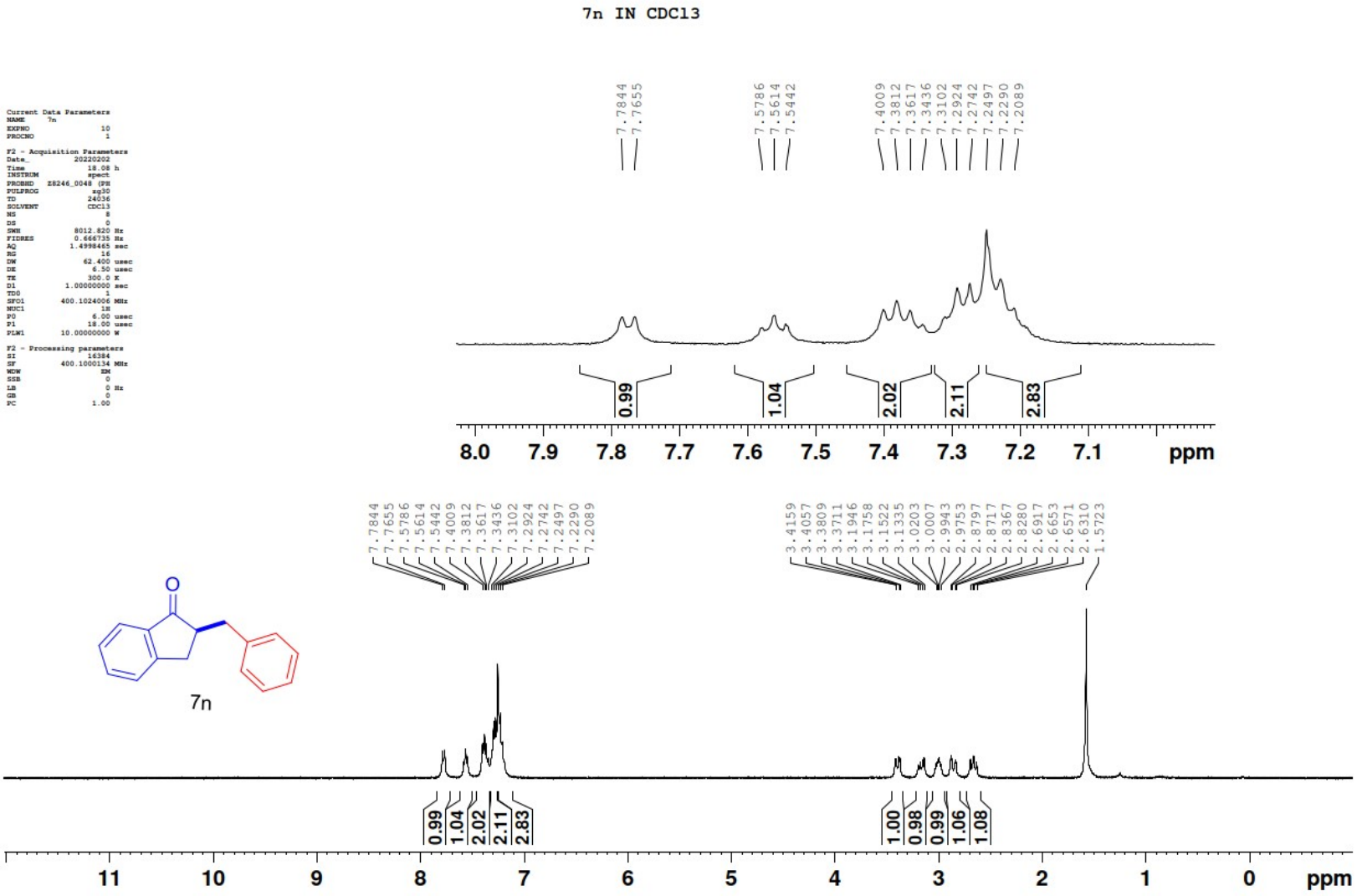
7m IN CDCl3-13C



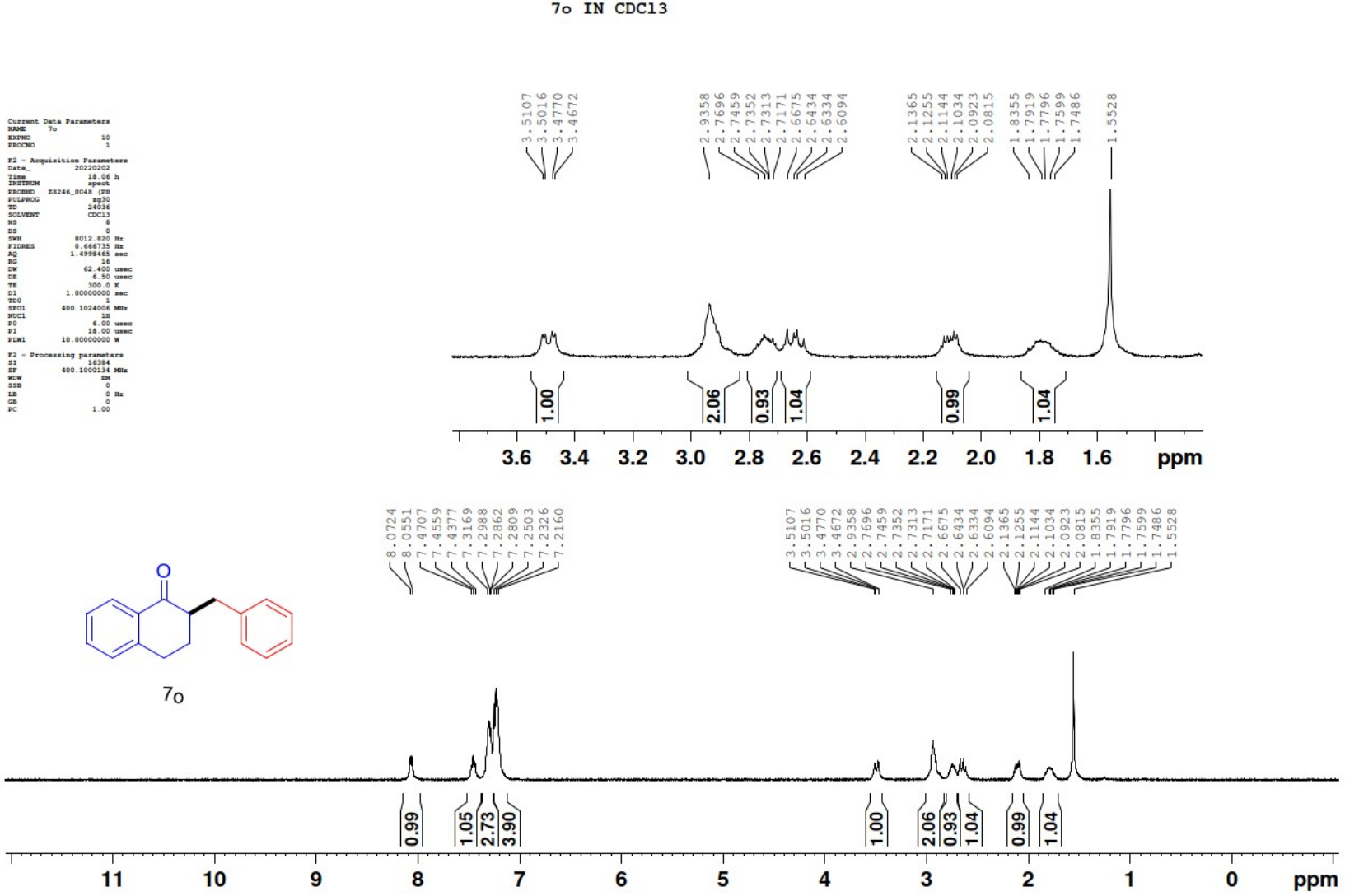
7m IN CDC13-APT



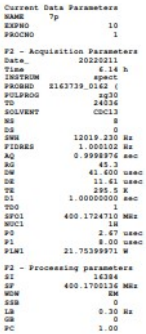
7n IN CDC13

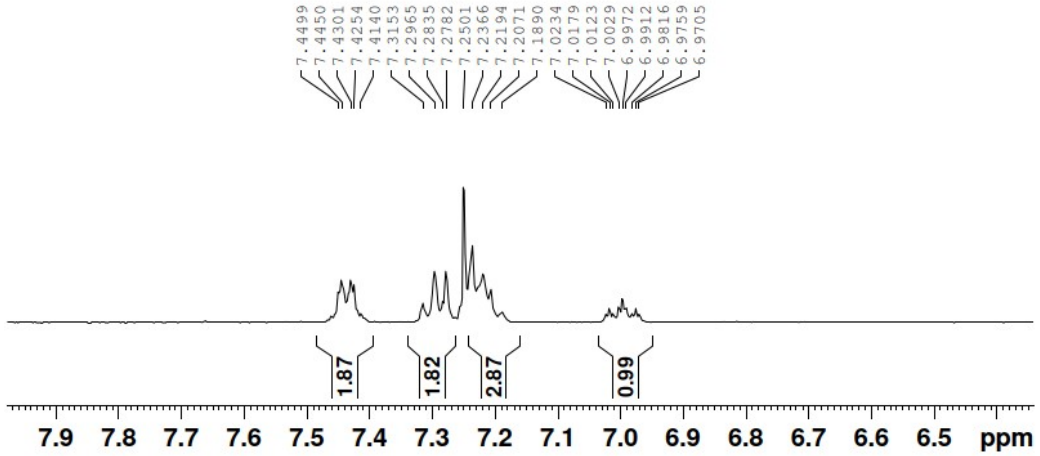

Current Data Parameters
NAME 7n
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220202
Time 18.08 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 16
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000134 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
7.7844
7.7655
7.5786
7.5614
7.5442
7.4009
7.3812
7.3617
7.3436
7.3102
7.2924
7.2742
7.2497
7.2290
7.2089
0.99
1.04
2.02
2.11
2.83
8.0
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
7.1
ppm
3.4159
3.4057
3.3809
3.3711
3.1946
3.1758
3.1522
3.1335
3.0203
3.0007
2.9943
2.9753
2.8797
2.8717
2.8367
2.8280
2.6917
2.6653
2.6571
2.6310
1.5723
1.00
0.98
0.99
1.06
1.08
11
10
9
8
7
6
5
4
3
2
1
0
ppm
O
7n

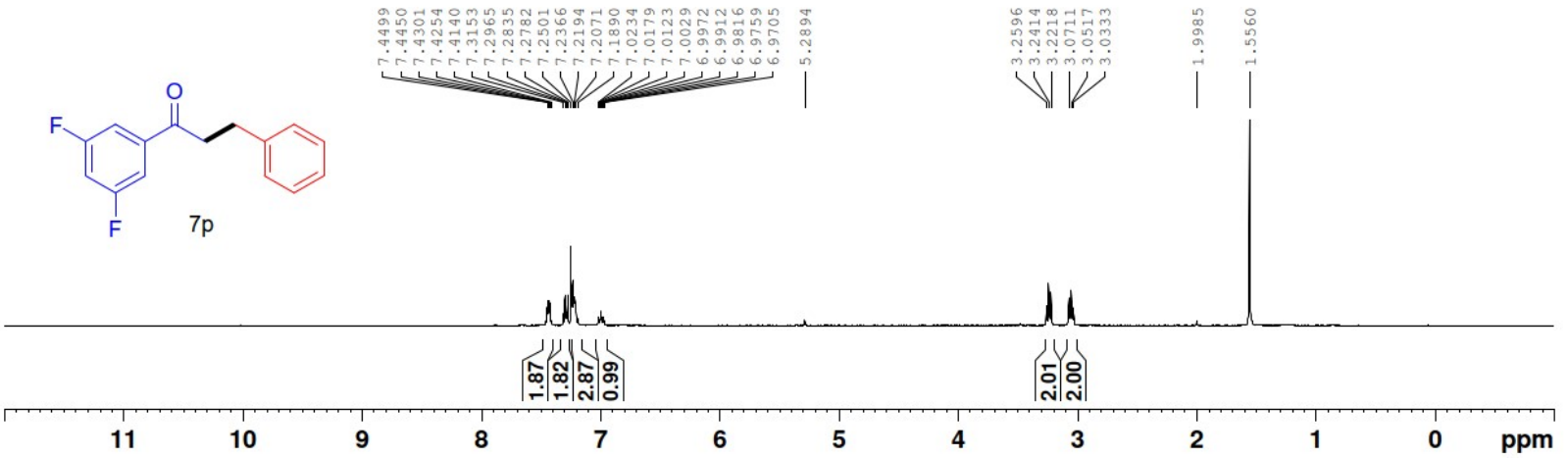
7o IN CDC13


Current Data Parameters
NAME 7o
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220202
Time 18.06 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDC13
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 16
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000134 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
3.5107
3.5016
3.4770
3.4672
2.9358
2.7696
2.7459
2.7352
2.7313
2.7171
2.6675
2.6434
2.6334
2.6094
2.1365
2.1255
2.1144
2.1034
2.0923
2.0815
1.8355
1.7919
1.7796
1.7599
1.7486
1.5528
1.00
2.06
0.93
1.04
0.99
1.04
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
ppm
8.0724
8.0551
7.4707
7.4559
7.4377
7.3169
7.2988
7.2862
7.2809
7.2503
7.2326
7.2160
O
7o
0.99
1.05
2.73
3.90
1.00
2.06
0.93
1.04
0.99
1.04
11
10
9
8
7
6
5
4
3
2
1
0
ppm

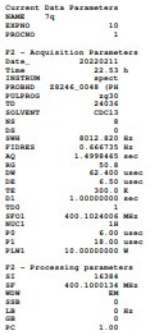
7p IN CDCl3

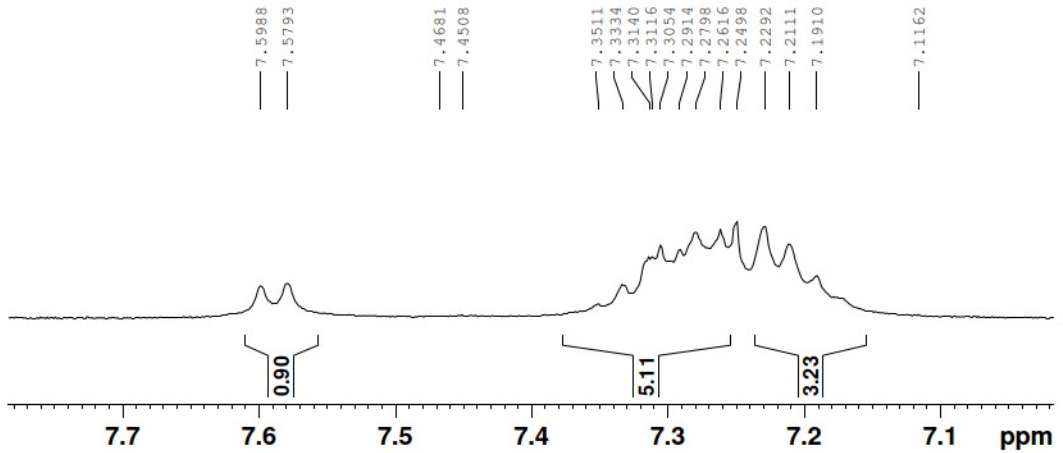

Current Data Parameters
NAME 7p
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220211
Time 6.14 h
INSTRUM spect
PROBHD Z163739_0162 (
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 12019.230 Hz
FIDRES 1.000102 Hz
AQ 0.9998976 sec
RG 45.3
DW 41.600 usec
DE 11.61 usec
TE 295.5 K
D1 1.00000000 sec
TD0 1
SFO1 400.1724710 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 21.75399971 W
F2 - Processing parameters
SI 16384
SF 400.1700136 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

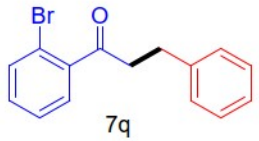

7.4499
7.4450
7.4301
7.4254
7.4140
7.3153
7.2965
7.2835
7.2782
7.2501
7.2366
7.2194
7.2071
7.1890
7.0234
7.0179
7.0123
7.0029
6.9972
6.9912
6.9816
6.9759
6.9705
1.87
1.82
2.87
0.99
7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 6.7 6.6 6.5 ppm


7.4499
7.4450
7.4301
7.4254
7.4140
7.3153
7.2965
7.2835
7.2782
7.2501
7.2366
7.2194
7.2071
7.1890
7.0234
7.0179
7.0123
7.0029
6.9972
6.9912
6.9816
6.9759
6.9705
5.2894
3.2596
3.2414
3.2218
3.0711
3.0517
3.0333
1.9985
1.5560
O
F
F
7p
1.87
1.82
2.87
0.99
2.01
2.00
11 10 9 8 7 6 5 4 3 2 1 0 ppm

7q IN CDC13

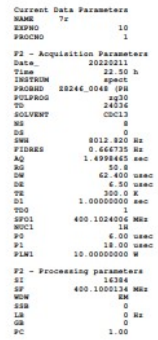

Current Data Parameters
NAME 7q
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220211
Time 22.53 h
INSTRUM spect
PROBHD Z88246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4996445 sec
RG 50.8
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000134 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00

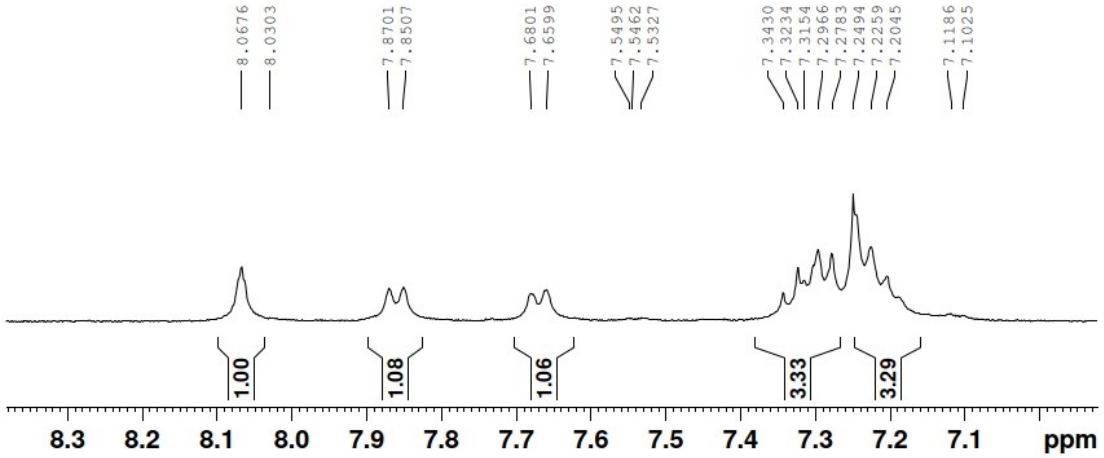

7.5988
7.5793
7.4681
7.4508
7.3511
7.3334
7.3140
7.3116
7.3054
7.2914
7.2798
7.2616
7.2498
7.2292
7.2111
7.1910
7.1162
0.90
5.11
3.23
7.7
7.6
7.5
7.4
7.3
7.2
7.1
ppm

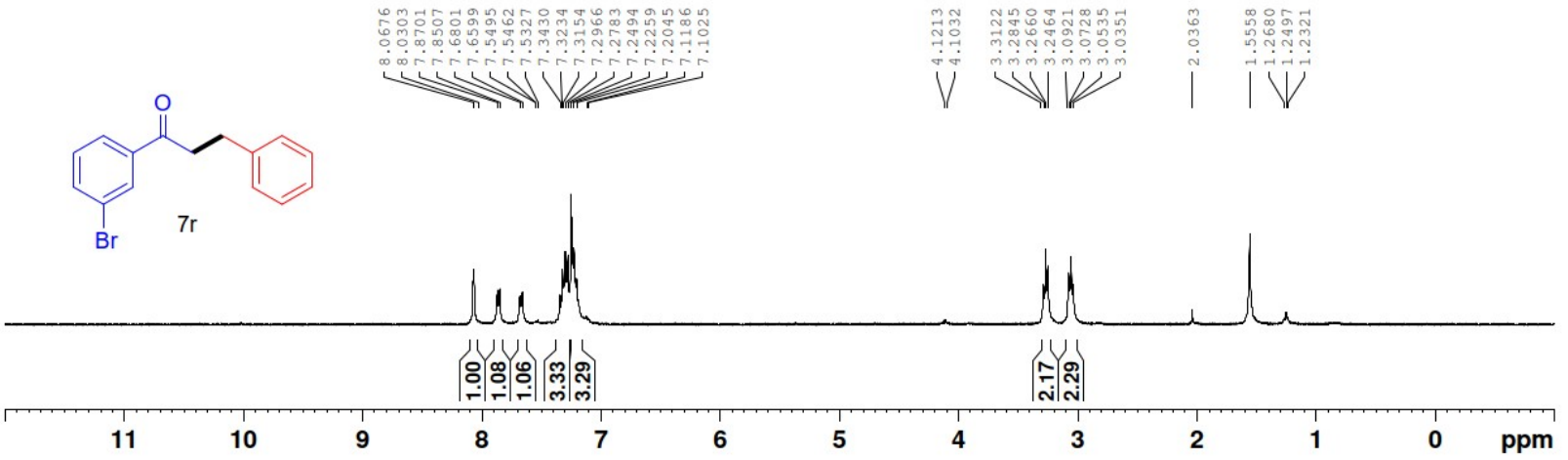

Br
O
7q

7.5988
7.5793
7.4681
7.4508
7.3511
7.3334
7.3140
7.3116
7.3054
7.2914
7.2798
7.2616
7.2498
7.2292
7.2111
7.1910
7.1162
3.3037
3.2594
3.2407
3.2213
3.0706
3.0512
3.0328
2.6294
1.5427
1.2472
0.90
5.11
3.23
2.21
2.14
11
10
9
8
7
6
5
4
3
2
1
0
ppm

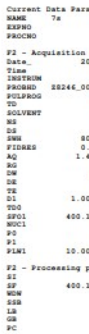
7r IN CDCl3

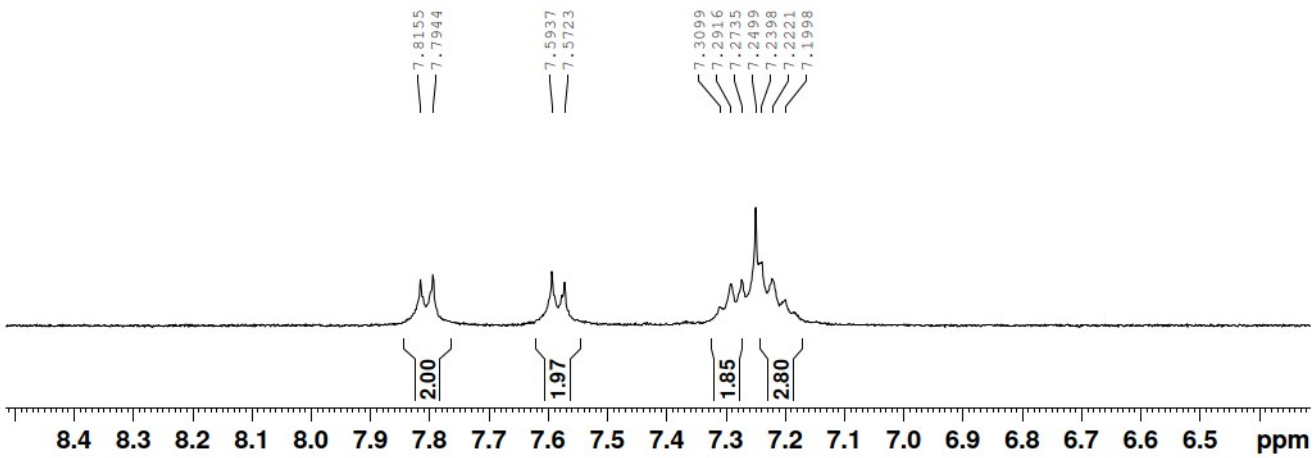

Current Data Parameters
NAME 7r
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220211
Time 22.50 h
INSTRUM spect
PROBHD 28246_0048 (PH
PULPROG zg30
TD 24034
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 50.8
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1324006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000134 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00

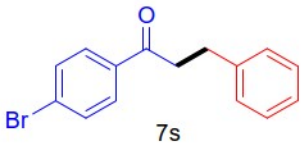

8.0676
8.0303
7.8701
7.8507
7.6801
7.6599
7.5495
7.5462
7.5327
7.3430
7.3234
7.3154
7.2966
7.2783
7.2494
7.2259
7.2045
7.1186
7.1025
1.00
1.08
1.06
3.33
3.29
8.3
8.2
8.1
8.0
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
7.1
ppm


O
Br
7r
8.0676
8.0303
7.8701
7.8507
7.6801
7.6599
7.5495
7.5462
7.5327
7.3430
7.3234
7.3154
7.2966
7.2783
7.2494
7.2259
7.2045
7.1186
7.1025
4.1213
4.1032
3.3122
3.2845
3.2660
3.2464
3.0921
3.0728
3.0535
3.0351
2.0363
1.5558
1.2680
1.2497
1.2321
1.00
1.08
1.06
3.33
3.29
2.17
2.29
11
10
9
8
7
6
5
4
3
2
1
0
ppm

7s IN CDCl3

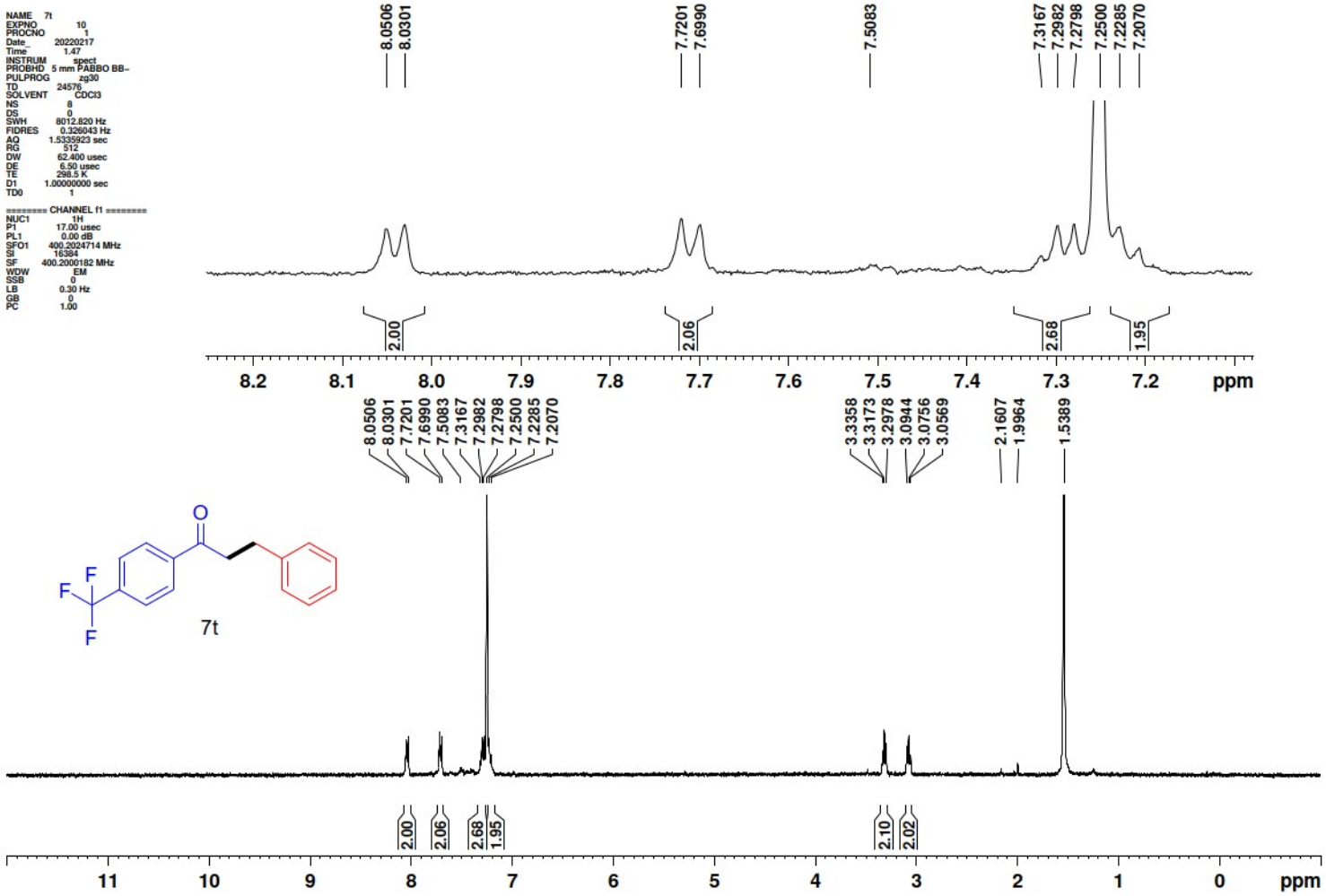






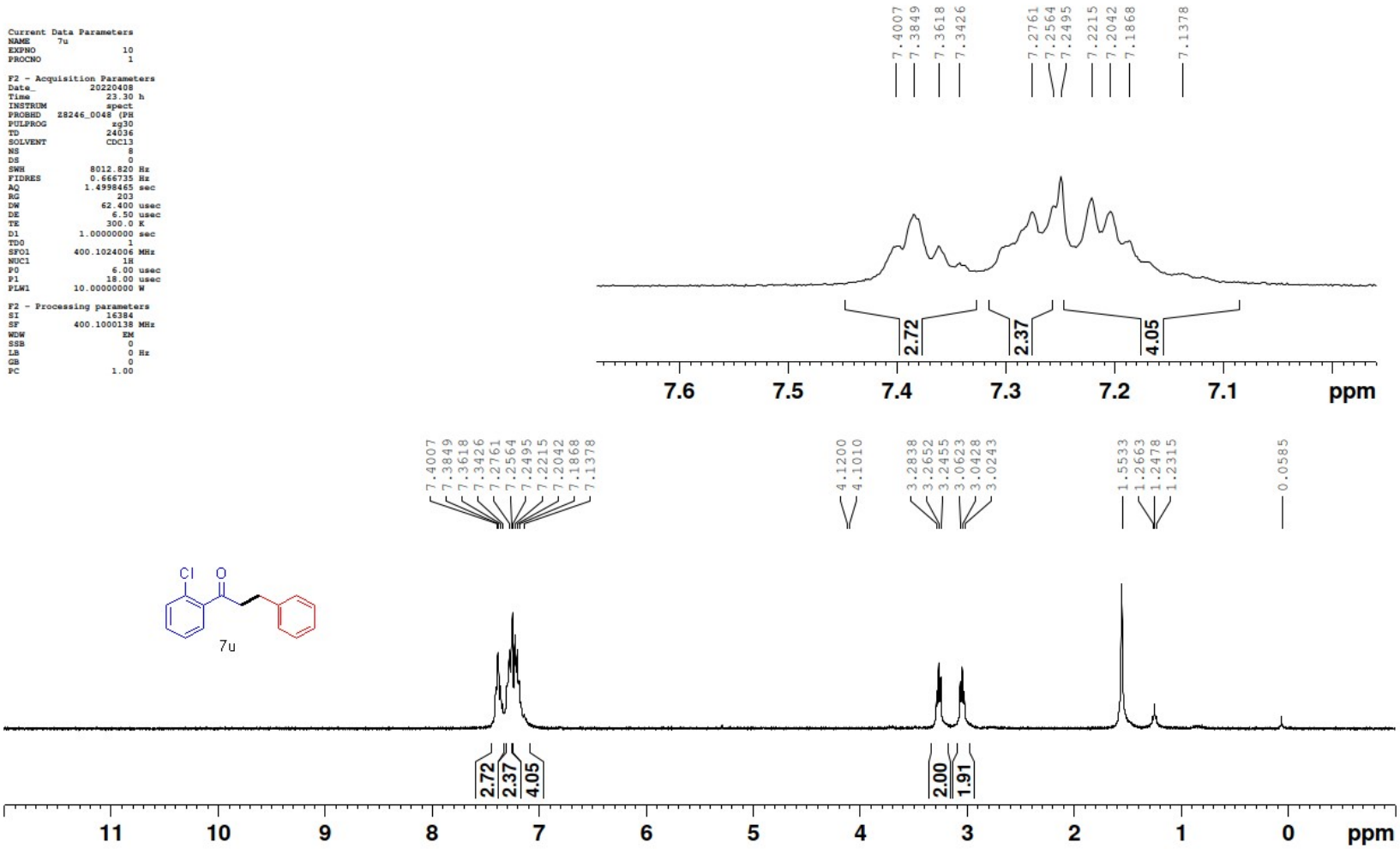
7s

7t IN CDCl3

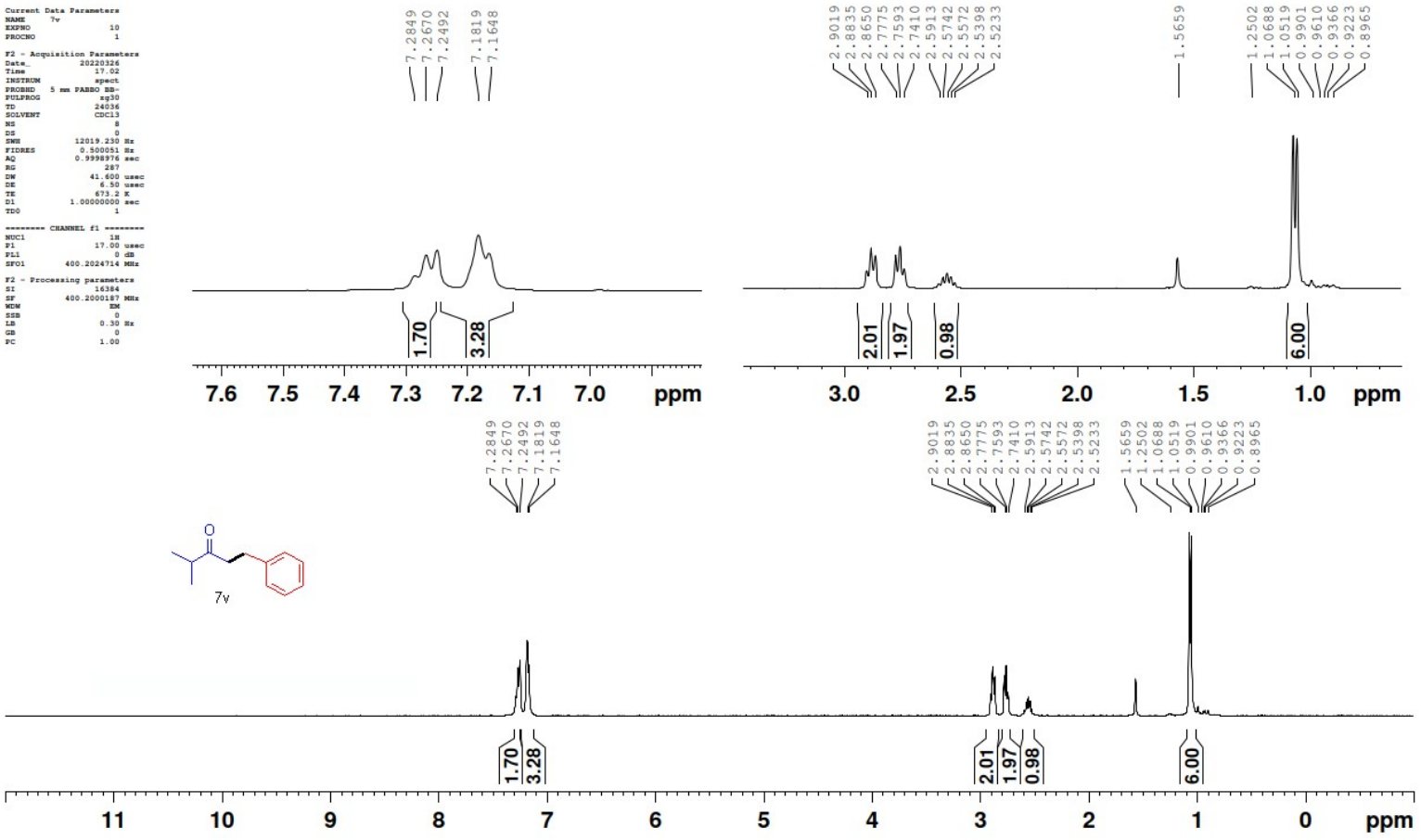

NAME 7t
EXPNO 10
PROCNO 1
Date_ 20220217
Time 1.47
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 24576
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.326043 Hz
AQ 1.5335923 sec
RG 512
DW 62.400 usec
DE 6.50 usec
TE 298.5 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 17.00 usec
PL1 0.00 dB
SFO1 400.2024714 MHz
SI 16384
SF 400.2000182 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.0506
8.0301
7.7201
7.6990
7.5083
7.3167
7.2982
7.2798
7.2500
7.2285
7.2070
2.00
2.06
2.68
1.95
8.2
8.1
8.0
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
ppm
3.3358
3.3173
3.2978
3.0944
3.0756
3.0569
2.1607
1.9964
1.5389
2.10
2.02
11
10
9
8
7
6
5
4
3
2
1
0
O
F
F
F
7t

7u IN CDC13

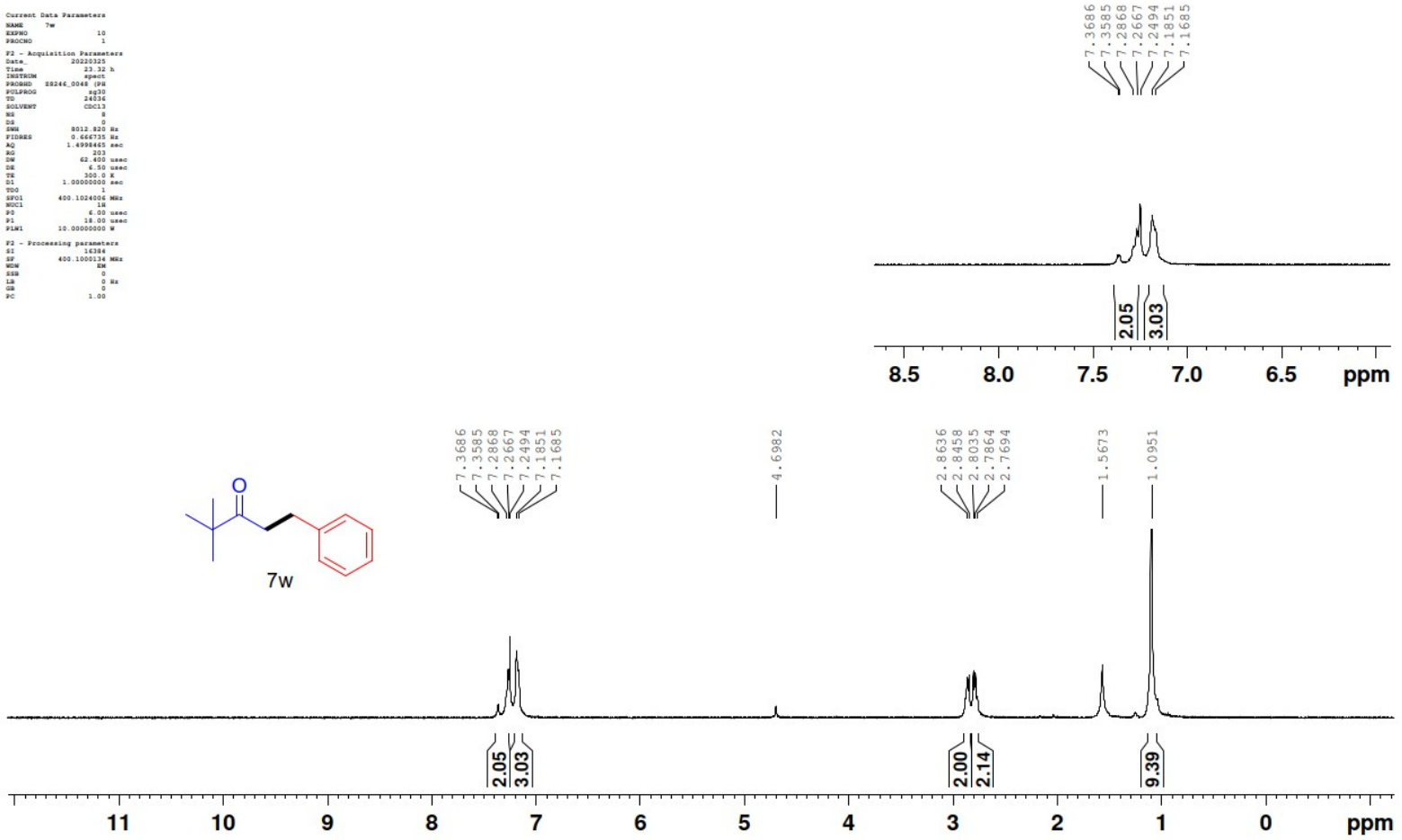
```
Current Data Parameters
NAME      7u
EXPNO             10
PROCNO             1

F2 - Acquisition Parameters
Date_         20220408
Time             23.30 h
INSTRUM           spect
PROBHD    Z8246_0048 (PH
PULPROG           zg30
TD               24036
SOLVENT          CDCl3
NS                   8
DS                   0
SWH           8012.820 Hz
FIDRES        0.666735 Hz
AQ            1.4998465 sec
RG                 203
DW              62.400 usec
DE               6.50 usec
TE              300.0 K
D1            1.00000000 sec
TD0                  1
SFO1        400.1024006 MHz
NUC1                1H
P0                6.00 usec
P1               18.00 usec
PLW1       10.00000000 W

F2 - Processing parameters
SI               16384
SF          400.1000138 MHz
WDW                 EM
SSB                  0
LB                   0 Hz
GB                   0
PC                1.00
```



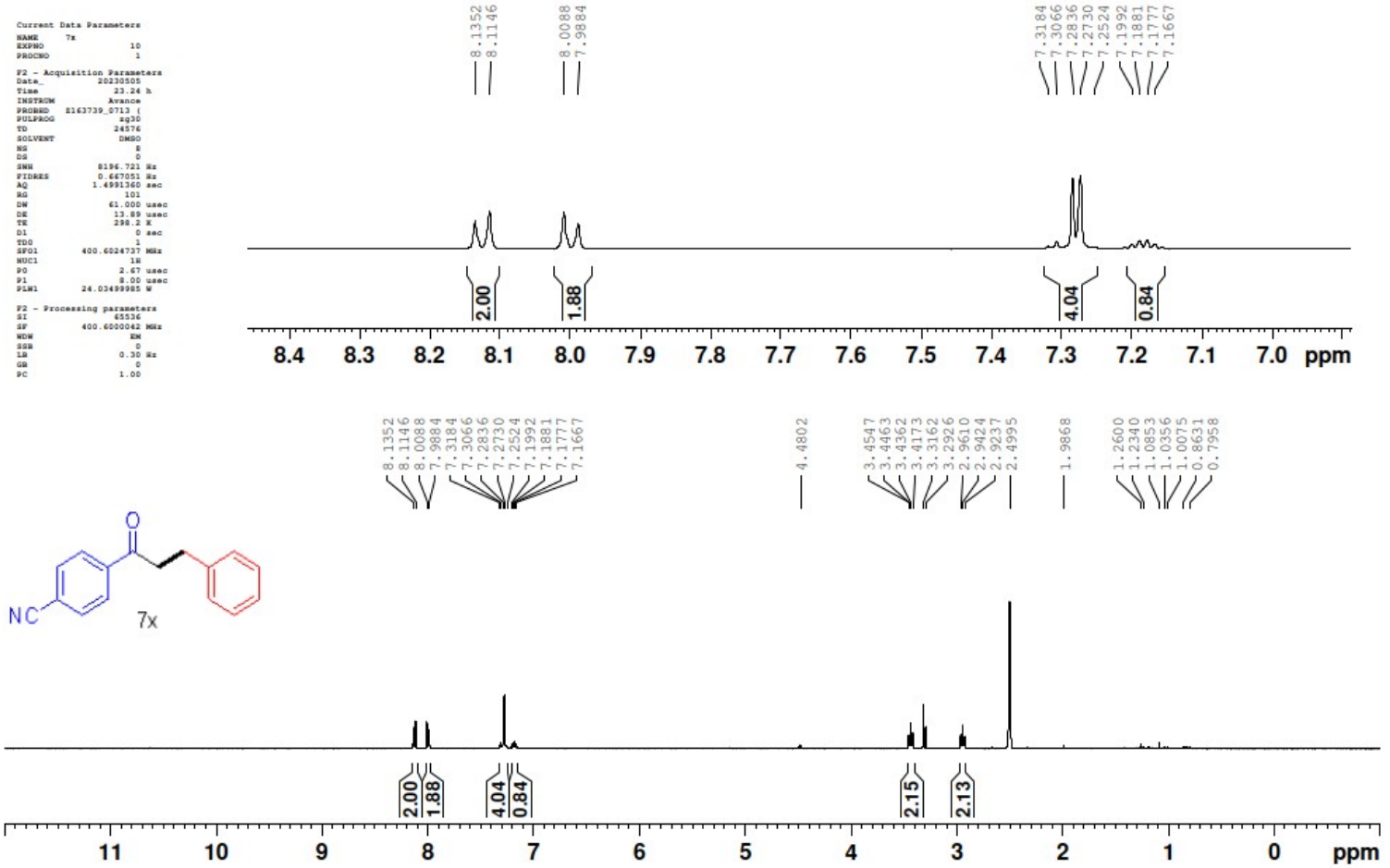
7v IN CDC13

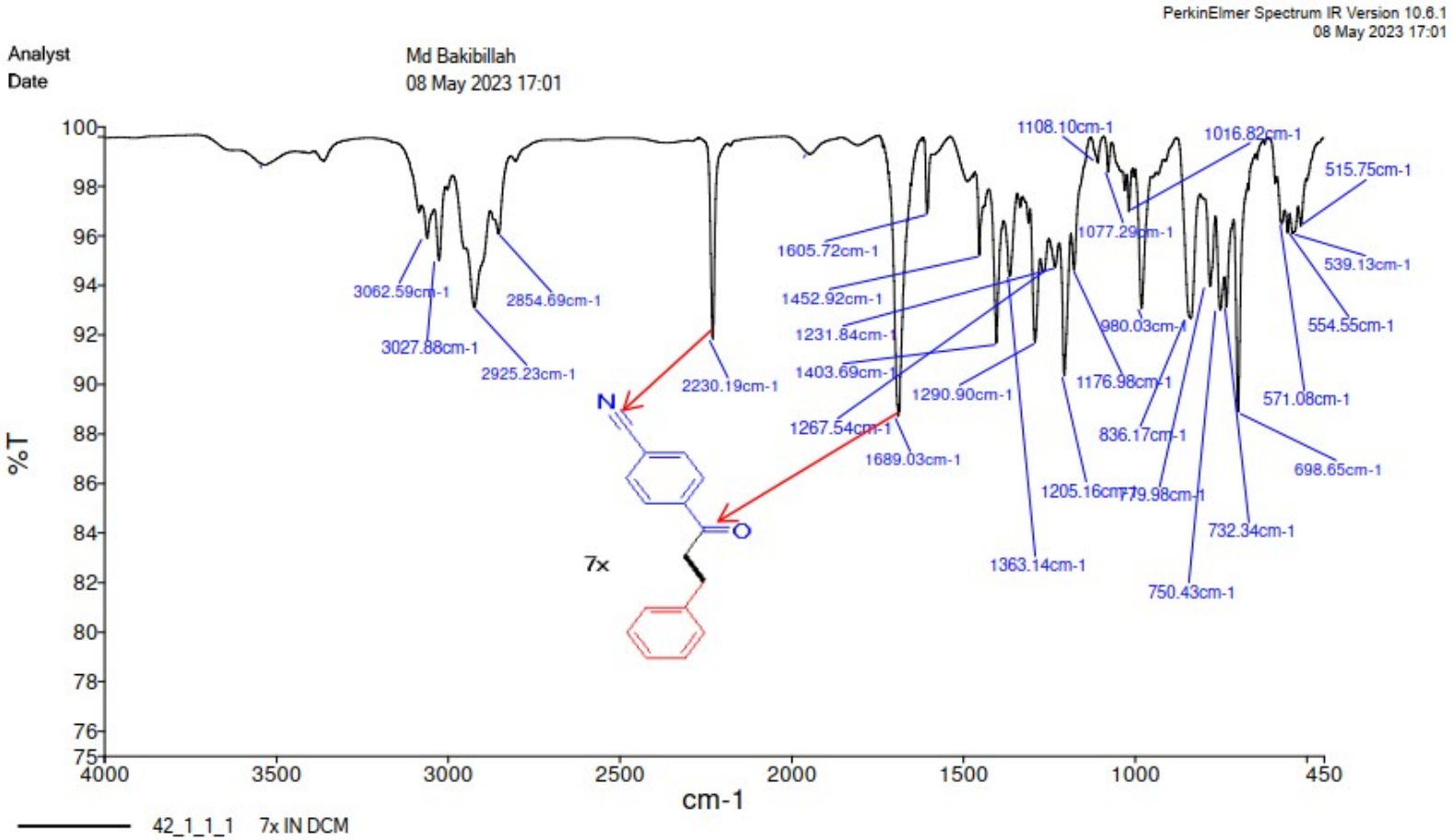

Current Data Parameters
NAME 7v
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220326
Time 17.02
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 12019.230 Hz
FIDRES 0.500051 Hz
AQ 0.9998976 sec
RG 287
DW 41.600 usec
DE 6.50 usec
TE 673.2 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 17.00 usec
PL1 0 dB
SFO1 400.2024714 MHz
F2 - Processing parameters
SI 16384
SF 400.2000187 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.2849
7.2670
7.2492
7.1819
7.1648
2.9019
2.8835
2.8650
2.7775
2.7593
2.7410
2.5913
2.5742
2.5572
2.5398
2.5233
1.5659
1.2502
1.0688
1.0519
0.9901
0.9610
0.9366
0.9223
0.8965
1.70
3.28
2.01
1.97
0.98
6.00
7.6 7.5 7.4 7.3 7.2 7.1 7.0 ppm
3.0 2.5 2.0 1.5 1.0 ppm
7v
11 10 9 8 7 6 5 4 3 2 1 0 ppm

7w IN CDC13

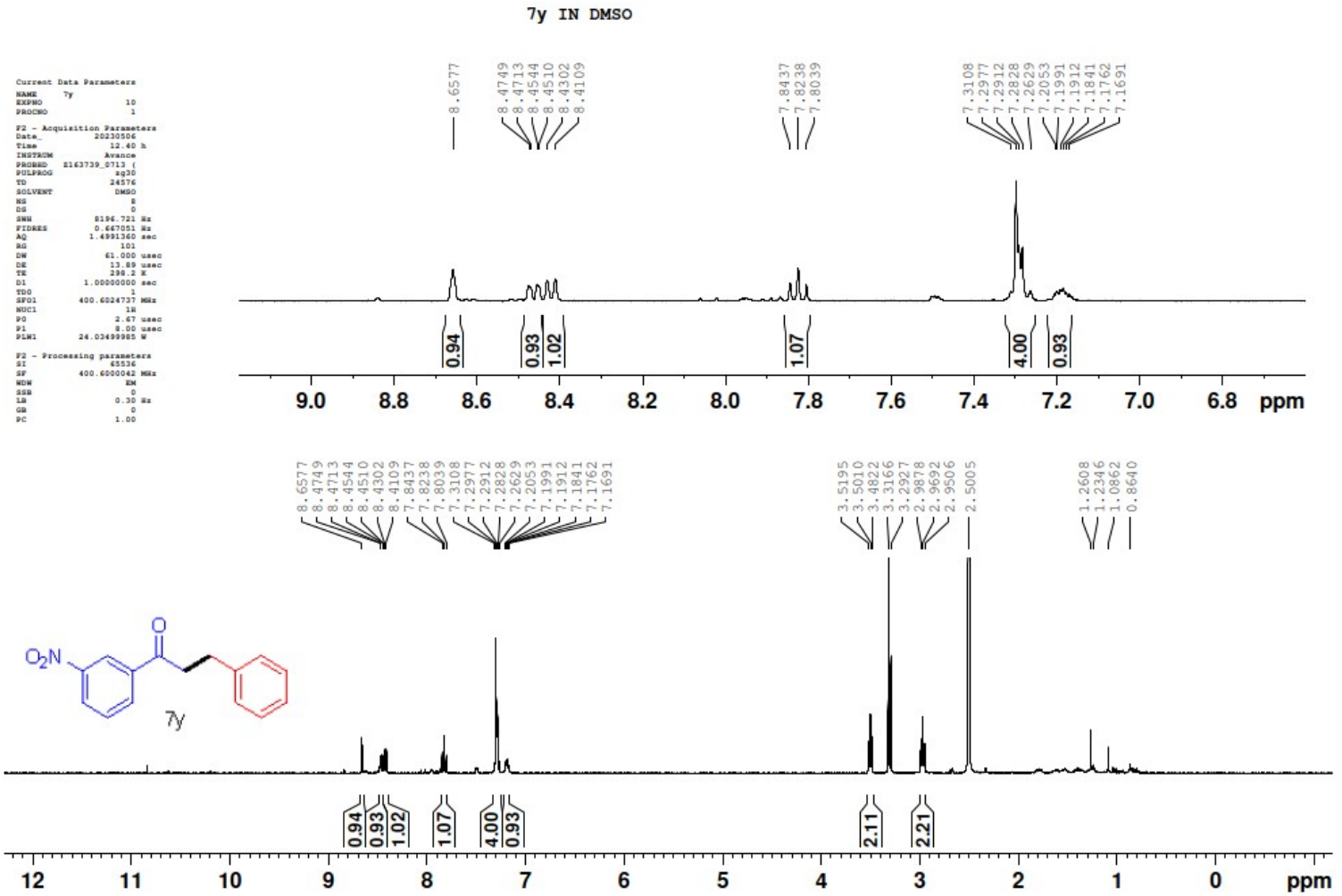

Current Data Parameters
NAME 7w
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220325
Time 23.32 h
INSTRUM spect
PROBHD 22246_0048 (PR
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 203
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000134 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
7.3686
7.3585
7.2868
7.2667
7.2494
7.1851
7.1685
2.05
3.03
8.5
8.0
7.5
7.0
6.5
ppm
4.6982
2.8636
2.8458
2.8035
2.7864
2.7694
1.5673
1.0951
2.00
2.14
9.39
11
10
9
8
7
6
5
4
3
2
1
0
O
7w

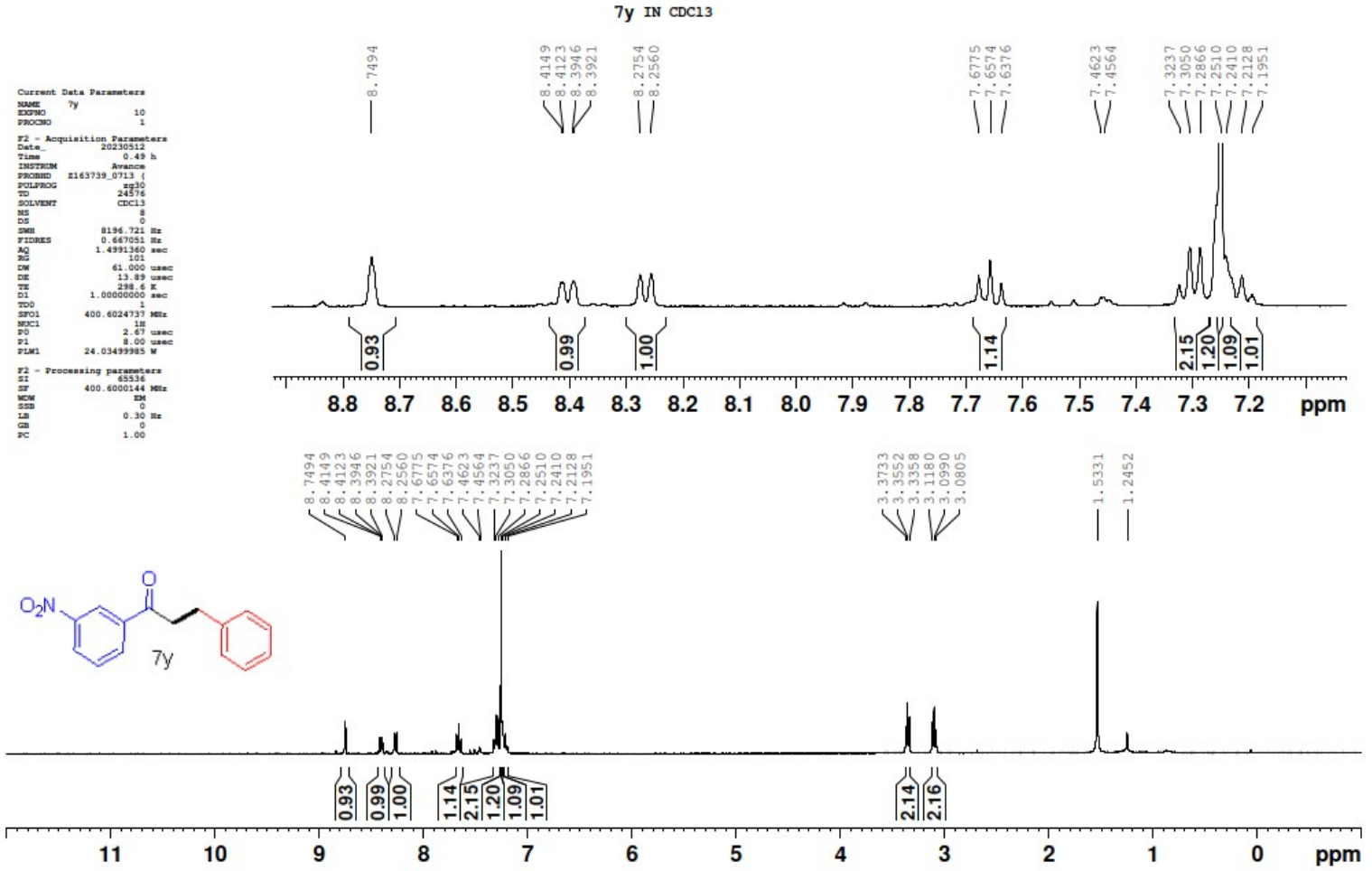
7x IN DMSO


Current Data Parameters
NAME 7x
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230505
Time 23.24 h
INSTRUM Avance
PROBHD B163739_0713 (
PULPROG zg30
TD 24576
SOLVENT DMSO
NS 8
DS 0
SWH 8196.721 Hz
FIDRES 0.667051 Hz
AQ 1.4991360 sec
RG 101
DW 61.000 usec
DE 13.89 usec
TE 298.2 K
D1 0 sec
TD0 1
SFO1 400.6024737 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 24.03499985 W
F2 - Processing parameters
SI 65536
SF 400.6000042 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.1352
8.1146
8.0088
7.9884
7.3184
7.3066
7.2836
7.2730
7.2524
7.1992
7.1881
7.1777
7.1667
2.00
1.88
4.04
0.84
8.4 8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 ppm
4.4802
3.4547
3.4463
3.4362
3.4173
3.3162
3.2926
2.9610
2.9424
2.9237
2.4995
1.9868
1.2600
1.2340
1.0853
1.0356
1.0075
0.8631
0.7958
2.15
2.13
11 10 9 8 7 6 5 4 3 2 1 0 ppm
O
NC
7x

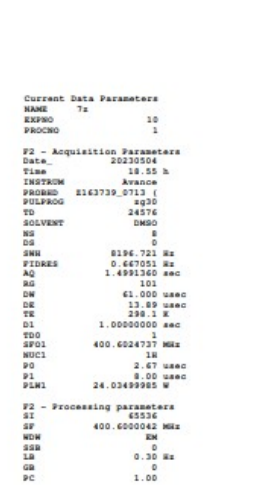

PerkinElmer Spectrum IR Version 10.6.1
08 May 2023 17:01
Analyst
Md Bakibillah
Date
08 May 2023 17:01
%T
cm-1
3062.59cm-1
3027.88cm-1
2925.23cm-1
2854.69cm-1
2230.19cm-1
1689.03cm-1
1605.72cm-1
1452.92cm-1
1403.69cm-1
1363.14cm-1
1267.54cm-1
1231.84cm-1
1205.16cm-1
1290.90cm-1
1176.98cm-1
1108.10cm-1
1077.29cm-1
1016.82cm-1
980.03cm-1
836.17cm-1
779.98cm-1
750.43cm-1
732.34cm-1
698.65cm-1
571.08cm-1
554.55cm-1
539.13cm-1
515.75cm-1
N
O
7x
42_1_1_1 7x IN DCM

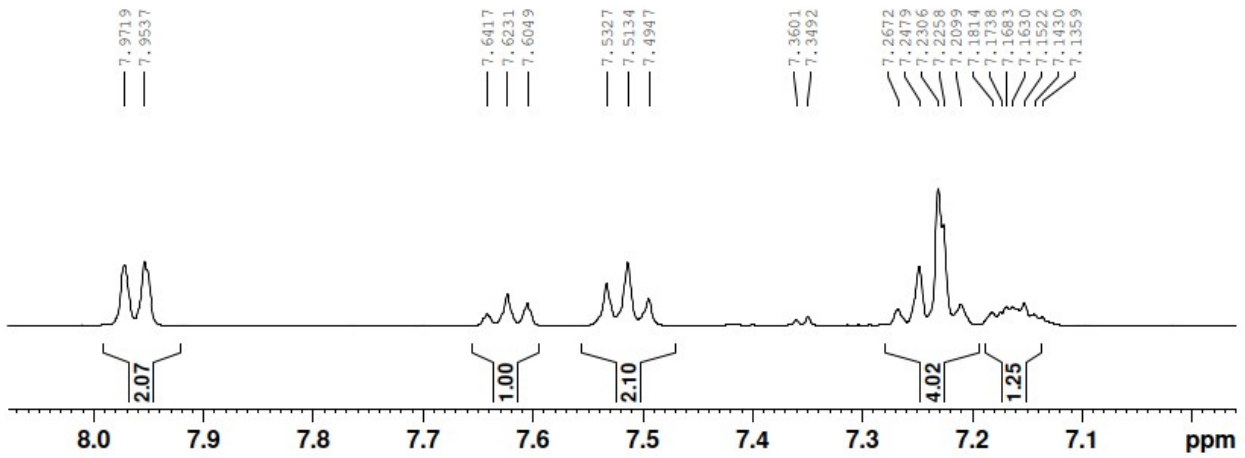
7y IN DMSO

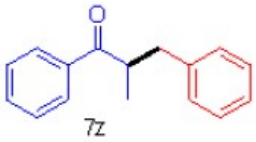

Current Data Parameters
NAME 7y
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230506
Time 12.40 h
INSTRUM Avance
PROBHD Z163739_0713 (
PULPROG zg30
TD 24576
SOLVENT DMSO
NS 8
DS 0
SWH 8196.721 Hz
FIDRES 0.667051 Hz
AQ 1.4991360 sec
RG 101
DW 61.000 usec
DE 13.89 usec
TE 298.2 K
D1 1.00000000 sec
TD0 1
SFO1 400.6024737 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 24.03499985 W
F2 - Processing parameters
SI 65536
SF 400.6000042 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.6577
8.4749
8.4713
8.4544
8.4510
8.4302
8.4109
7.8437
7.8238
7.8039
7.3108
7.2977
7.2912
7.2828
7.2629
7.2053
7.1991
7.1912
7.1841
7.1762
7.1691
0.94
0.93
1.02
1.07
4.00
0.93
9.0
8.8
8.6
8.4
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
ppm
3.5195
3.5010
3.4822
3.3166
3.2927
2.9878
2.9692
2.9506
2.5005
1.2608
1.2346
1.0862
0.8640
O2N
O
7y
0.94
0.93
1.02
1.07
4.00
0.93
2.11
2.21
12
11
10
9
8
7
6
5
4
3
2
1
0
ppm


7y IN CDCl3
Current Data Parameters
NAME 7y
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230512
Time 0.49 h
INSTRUM Avance
PROBHD Z163739_0713 (
PULPROG zg30
TD 24576
SOLVENT CDCl3
NS 8
DS 0
SWH 8196.721 Hz
FIDRES 0.667051 Hz
AQ 1.4991360 sec
RG 101
DW 61.000 usec
DE 13.89 usec
TE 298.6 K
D1 1.00000000 sec
TD0 1
SFO1 400.6024737 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 24.03499985 W
F2 - Processing parameters
SI 65536
SF 400.6000144 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.7494
8.4149
8.4123
8.3946
8.3921
8.2754
8.2560
7.6775
7.6574
7.6376
7.4623
7.4564
7.3237
7.3050
7.2866
7.2510
7.2410
7.2128
7.1951
0.93
0.99
1.00
1.14
2.15
1.20
1.09
1.01
8.8 8.7 8.6 8.5 8.4 8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 ppm
3.3733
3.3552
3.3358
3.1180
3.0990
3.0805
1.5331
1.2452
2.14
2.16
11 10 9 8 7 6 5 4 3 2 1 0 ppm
O2N
O
7y

7z IN DMSO

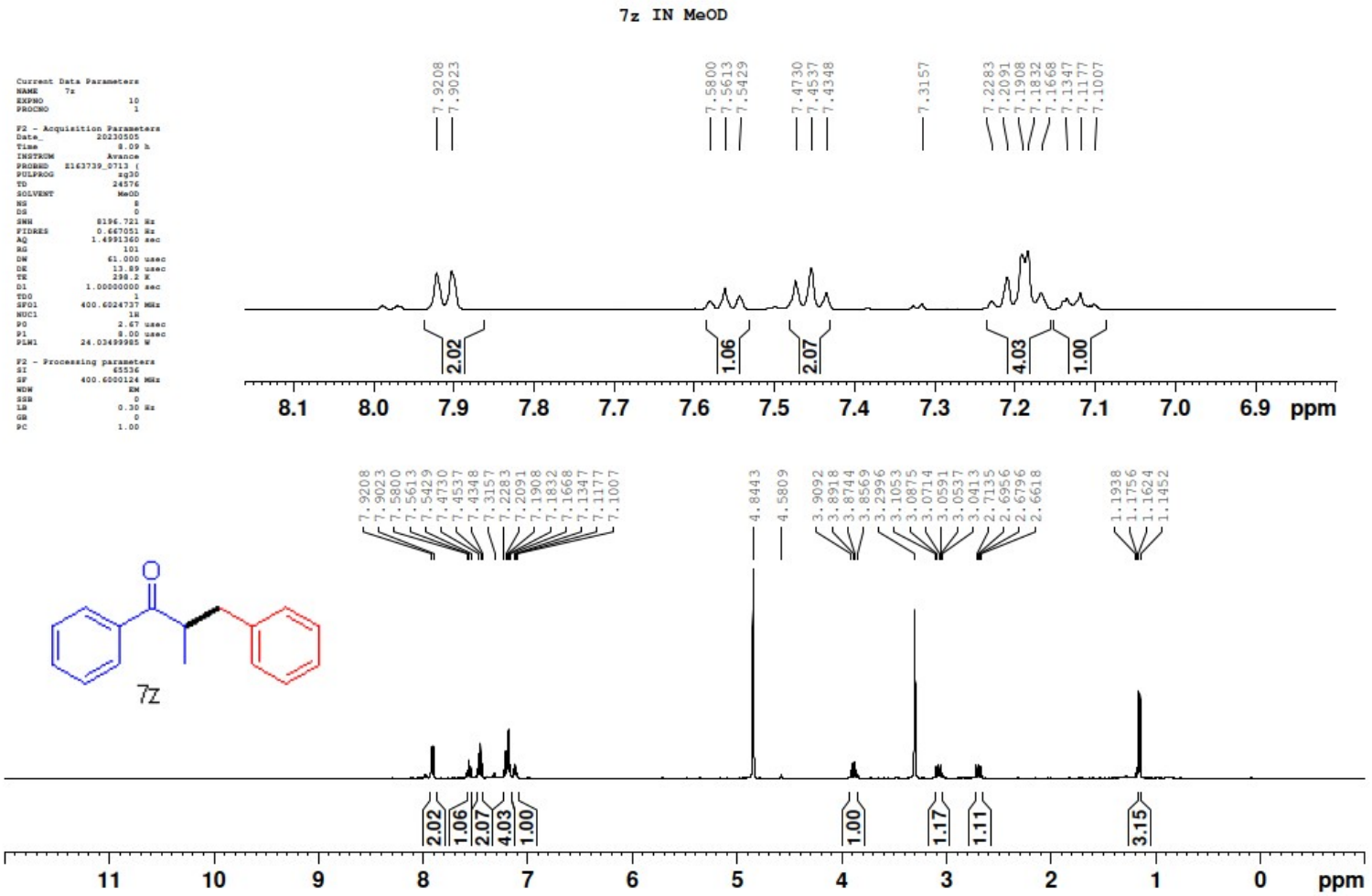

Current Data Parameters
NAME 7z
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230504
Time 18.55 h
INSTRUM Avance
PROBHD Z163739_0713 (
PULPROG zg30
TD 24576
SOLVENT DMSO
NS 8
DS 0
SWH 8196.721 Hz
FIDRES 0.667051 Hz
AQ 1.4991360 sec
RG 101
DW 61.000 usec
DE 13.89 usec
TE 298.1 K
D1 1.00000000 sec
TD0 1
SFO1 400.6024737 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 24.03499985 W
F2 - Processing parameters
SI 65536
SF 400.6000042 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

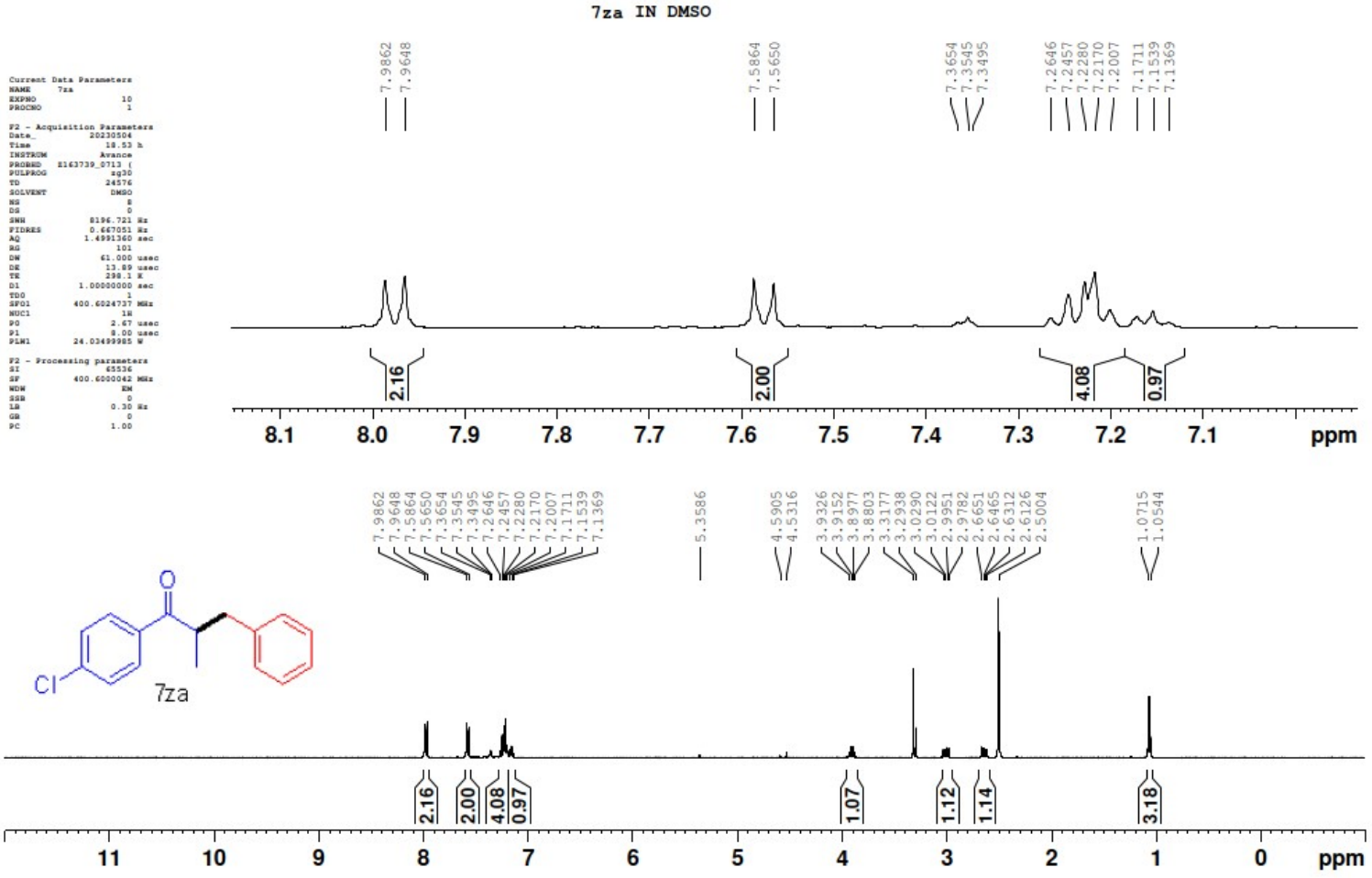

7.9719
7.9537
7.6417
7.6231
7.6049
7.5327
7.5134
7.4947
7.3601
7.3492
7.2672
7.2479
7.2306
7.2258
7.2099
7.1814
7.1738
7.1683
7.1630
7.1522
7.1430
7.1359
2.07
1.00
2.10
4.02
1.25
8.0
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
7.1
ppm


O
7z

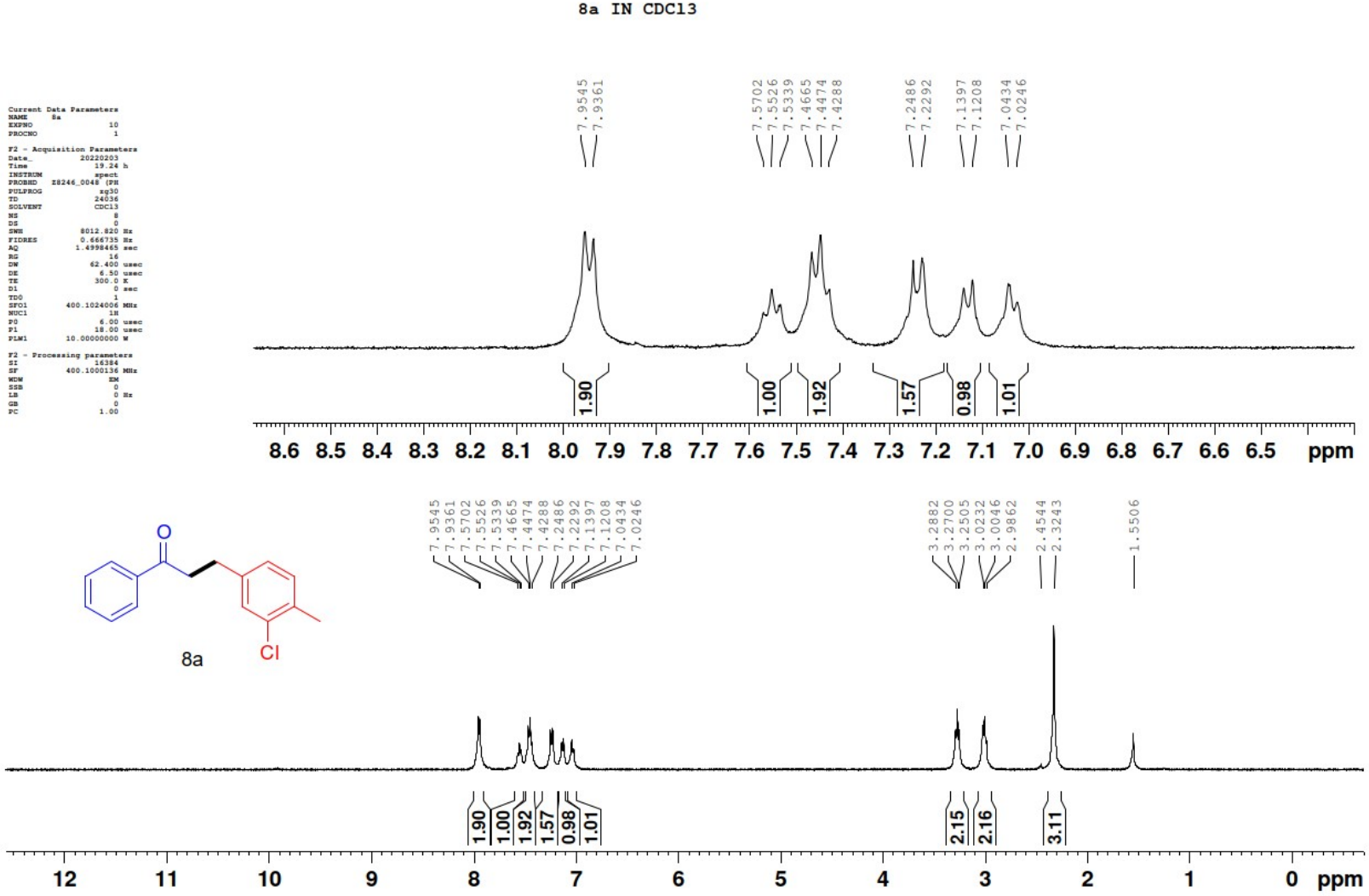
7.9719
7.9537
7.6417
7.6231
7.6049
7.5327
7.5134
7.4947
7.3601
7.3492
7.2672
7.2479
7.2306
7.2258
7.2099
7.1814
7.1738
7.1683
7.1630
7.1522
7.1430
7.1359
5.7554
4.5907
3.9499
3.9325
3.9150
3.8977
3.8804
3.3192
3.2953
3.0766
3.0588
3.0500
3.0409
3.0331
3.0161
2.9991
2.6662
2.6477
2.6323
2.6138
2.5045
2.5006
2.4966
2.2987
1.9876
1.3962
1.2396
1.1737
1.1036
1.0973
1.0821
1.0649
0.9536
0.9371
0.8591
0.8417
0.8321
2.07
1.00
2.10
4.02
1.25
0.95
1.22
1.02
3.28
11
10
9
8
7
6
5
4
3
2
1
0
ppm

7z IN MeOD

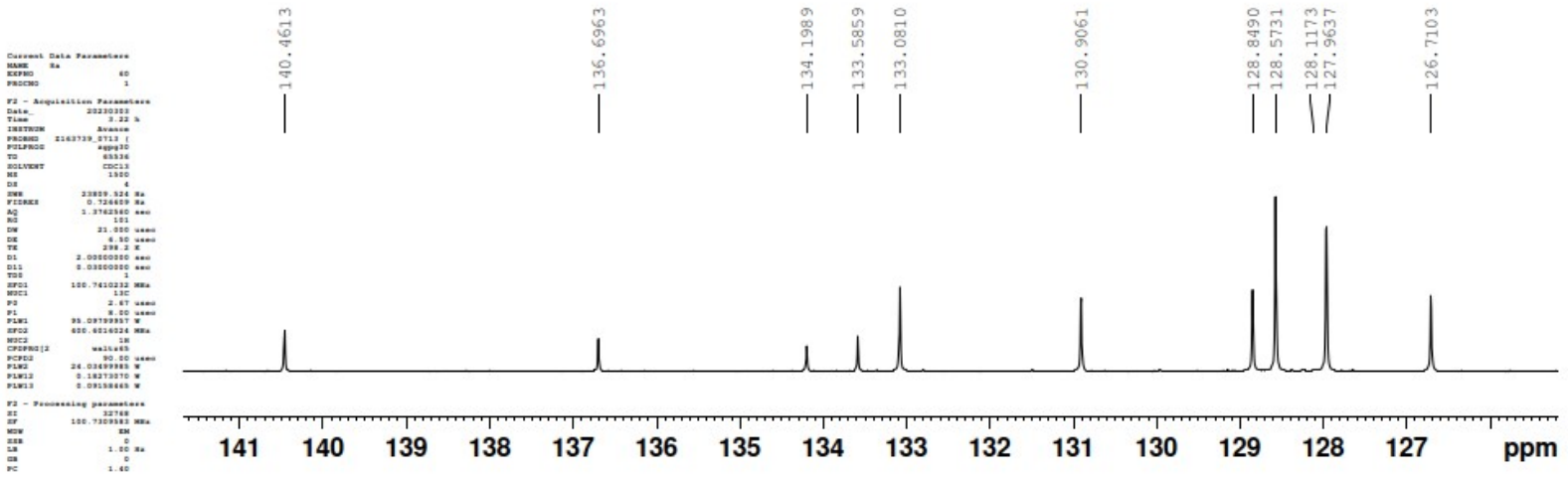

Current Data Parameters
NAME 7z
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230505
Time 8.09 h
INSTRUM Avance
PROBHD Z163739_0713 (
PULPROG zg30
TD 24576
SOLVENT MeOD
NS 8
DS 0
SWH 8196.721 Hz
FIDRES 0.667051 Hz
AQ 1.4991360 sec
RG 101
DW 61.000 usec
DE 13.89 usec
TE 298.2 K
D1 1.00000000 sec
TD0 1
SFO1 400.6024737 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 24.03499985 W
F2 - Processing parameters
SI 65536
SF 400.6000124 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.9208
7.9023
7.5800
7.5613
7.5429
7.4730
7.4537
7.4348
7.3157
7.2283
7.2091
7.1908
7.1832
7.1668
7.1347
7.1177
7.1007
2.02
1.06
2.07
4.03
1.00
8.1
8.0
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7.0
6.9
ppm
4.8443
4.5809
3.9092
3.8918
3.8744
3.8569
3.2996
3.1053
3.0875
3.0714
3.0591
3.0537
3.0413
2.7135
2.6956
2.6796
2.6618
1.1938
1.1756
1.1624
1.1452
1.00
1.17
1.11
3.15
11
10
9
8
7
6
5
4
3
2
1
0
ppm
7z

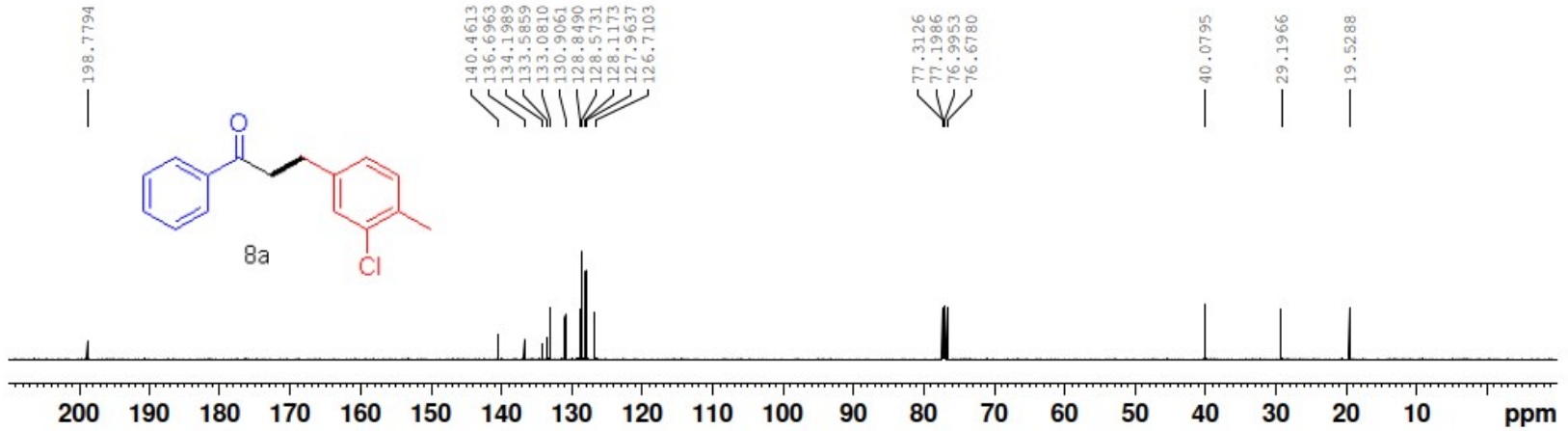

7za IN DMSO
Current Data Parameters
NAME 7za
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230504
Time 18.53 h
INSTRUM Avance
PROBHD B163739_0713 (
PULPROG zg30
TD 24576
SOLVENT DMSO
NS 8
DS 0
SWH 8196.721 Hz
FIDRES 0.667051 Hz
AQ 1.4991360 sec
RG 101
DW 61.000 usec
DE 13.89 usec
TE 298.1 K
D1 1.00000000 sec
TD0 1
SFO1 400.6024737 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 24.03499985 W
F2 - Processing parameters
SI 65536
SF 400.6000042 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.9862
7.9648
7.5864
7.5650
7.3654
7.3545
7.3495
7.2646
7.2457
7.2280
7.2170
7.2007
7.1711
7.1539
7.1369
2.16
2.00
4.08
0.97
8.1
8.0
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
7.1
ppm
5.3586
4.5905
4.5316
3.9326
3.9152
3.8977
3.8803
3.3177
3.2938
3.0290
3.0122
2.9951
2.9782
2.6651
2.6465
2.6312
2.6126
2.5004
1.0715
1.0544
1.07
1.12
1.14
3.18
11
10
9
8
7
6
5
4
3
2
1
0
ppm
O
Cl
7za

8a IN CDC13

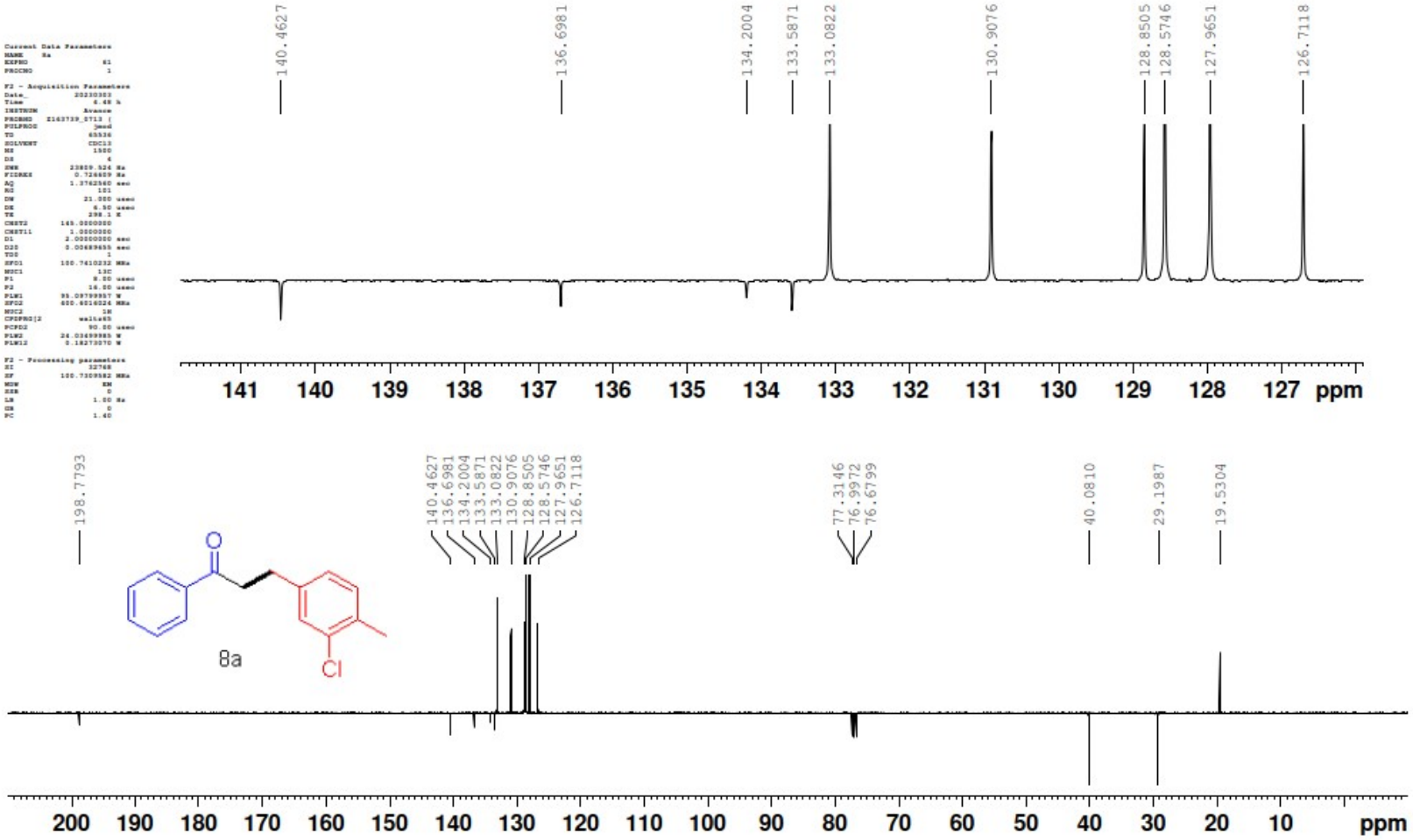

Current Data Parameters
NAME 8a
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220203
Time 19.24 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 16
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 0 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000136 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
7.9545
7.9361
7.5702
7.5526
7.5339
7.4665
7.4474
7.4288
7.2486
7.2292
7.1397
7.1208
7.0434
7.0246
1.90
1.00
1.92
1.57
0.98
1.01
8.6 8.5 8.4 8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 6.7 6.6 6.5 ppm
O
Cl
8a
3.2882
3.2700
3.2505
3.0232
3.0046
2.9862
2.4544
2.3243
1.5506
2.15
2.16
3.11
12 11 10 9 8 7 6 5 4 3 2 1 0 ppm

8a IN CDCl3-13C

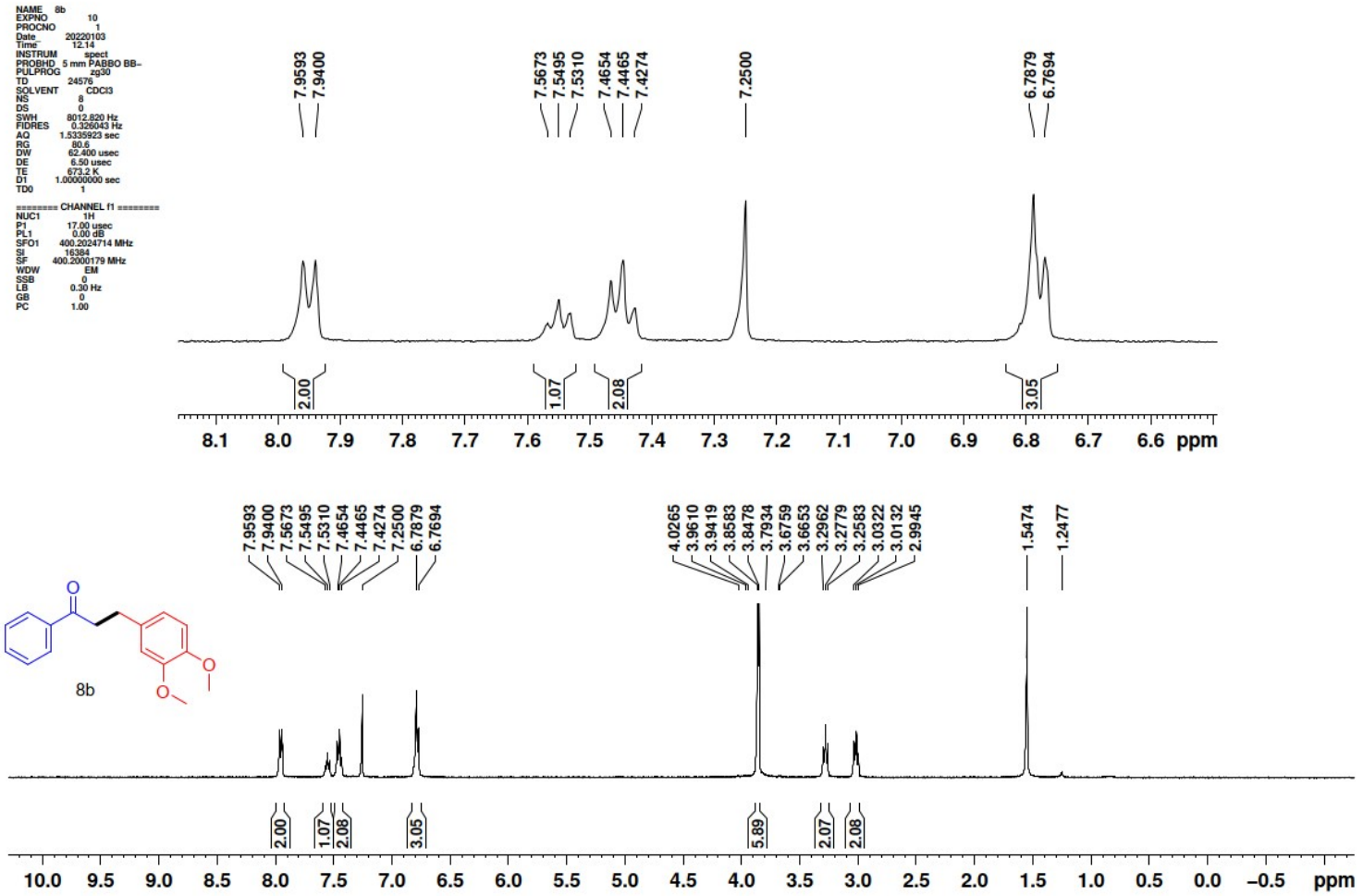




8a IN CDCl3-APT

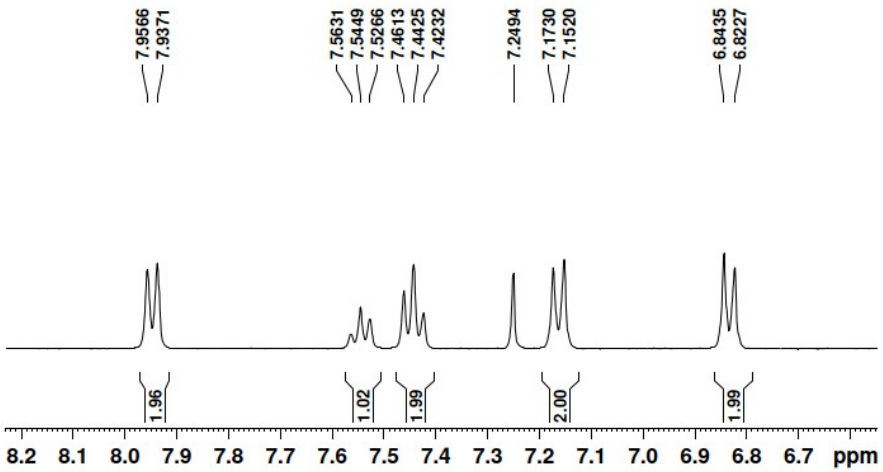


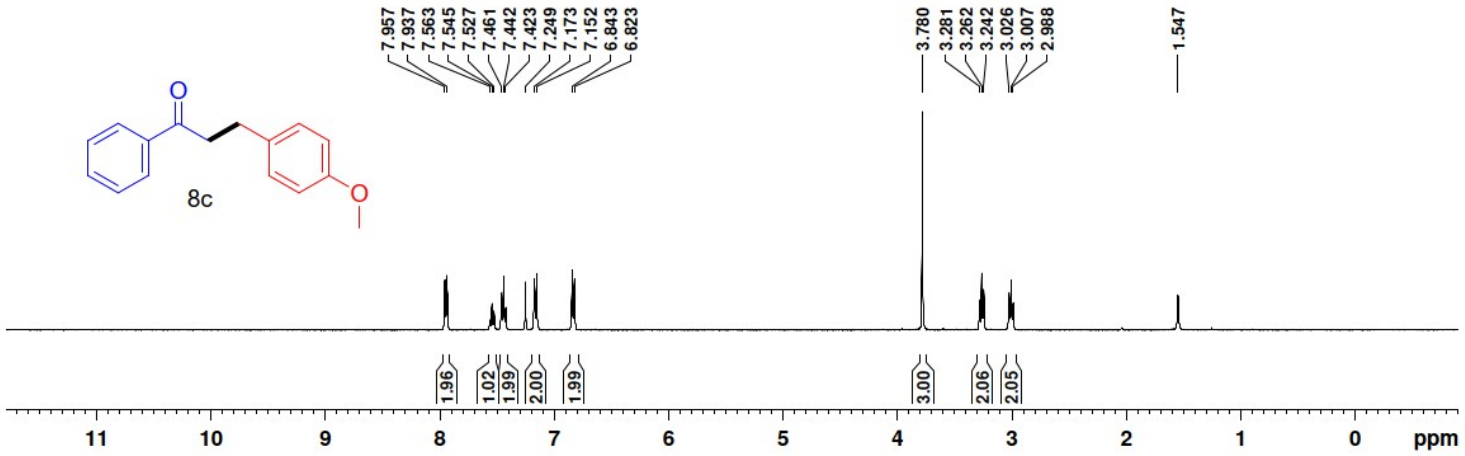
8b IN CDCl3


NAME 8b
EXPNO 10
PROCNO 1
Date_ 20220103
Time 12.14
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 24576
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.326043 Hz
AQ 1.5339923 sec
RG 80.6
DW 62.400 usec
DE 6.50 usec
TE 673.2 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 17.00 usec
PL1 0.00 dB
SFO1 400.2024714 MHz
SI 16384
SF 400.2000179 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.9593
7.9400
7.5673
7.5495
7.5310
7.4654
7.4465
7.4274
7.2500
6.7879
6.7694
2.00
1.07
2.08
3.05
8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 6.7 6.6 ppm
4.0265
3.9610
3.9419
3.8583
3.8478
3.7934
3.6759
3.6653
3.2962
3.2779
3.2583
3.0322
3.0132
2.9945
1.5474
1.2477
5.89
2.07
2.08
O
O
O
8b
10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 −0.5 ppm

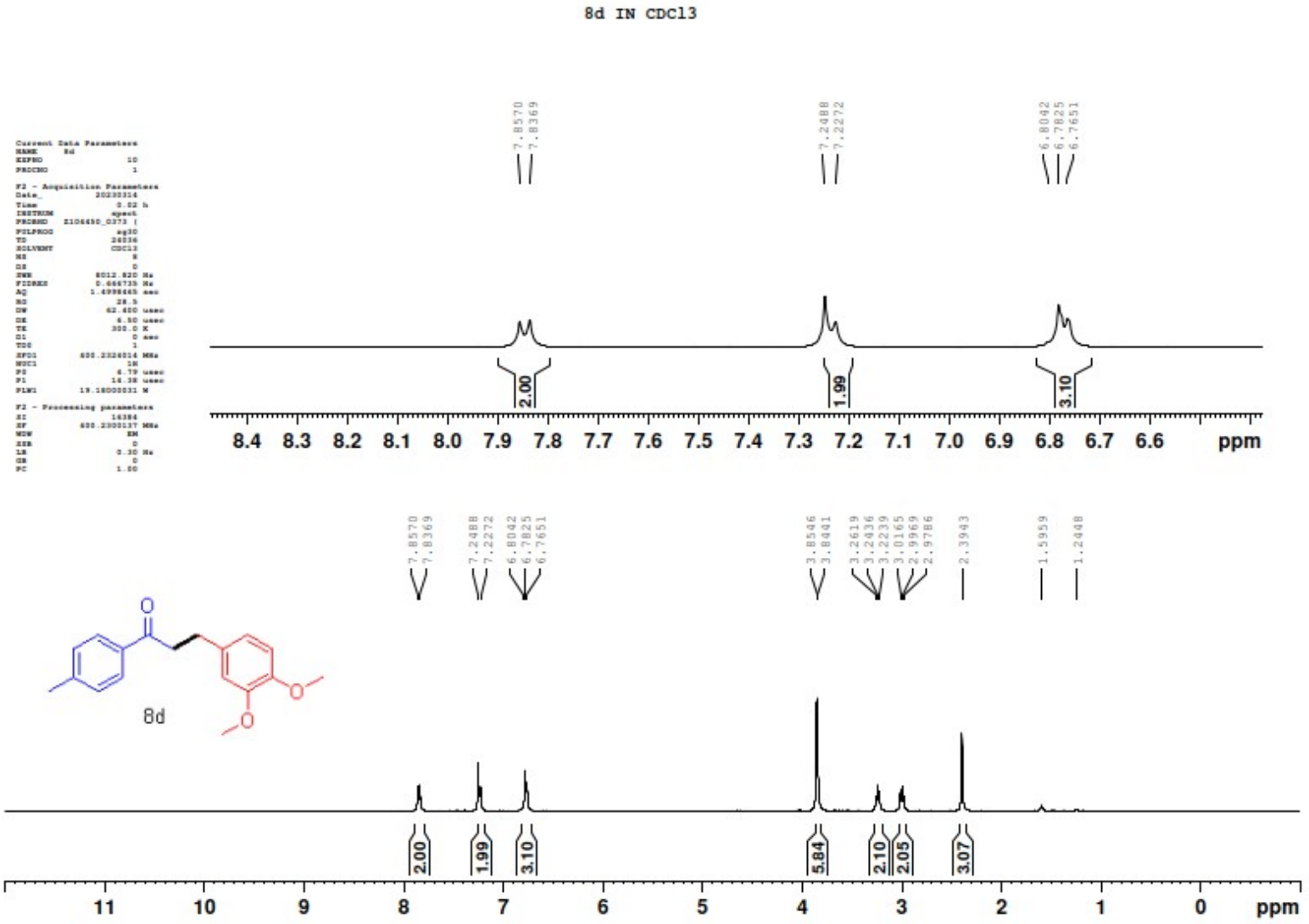
8c IN CDCl3

```
NAME        8c
EXPNO       10
PROCNO      1
Date        20220214
Time        20.39
INSTRUM     spect
PROBHD      5 mm PABBO BB-
PULPROG     zg30
TD          24576
SOLVENT     CDCl3
NS          8
DS          0
SWH         8012.820 Hz
FIDRES      0.326043 Hz
AQ          1.5335923 sec
RG          322
DW          62.400 usec
DE          6.50 usec
TE          298.9 K
D1          1.00000000 sec
TD0         1

======== CHANNEL f1 ========
NUC1        1H
P1          17.00 usec
PL1         0.00 dB
SFO1        400.2024714 MHz
SI          16384
SF          400.2000182 MHz
WDW         EM
SSB         0
LB          0.30 Hz
GB          0
PC          1.00
```

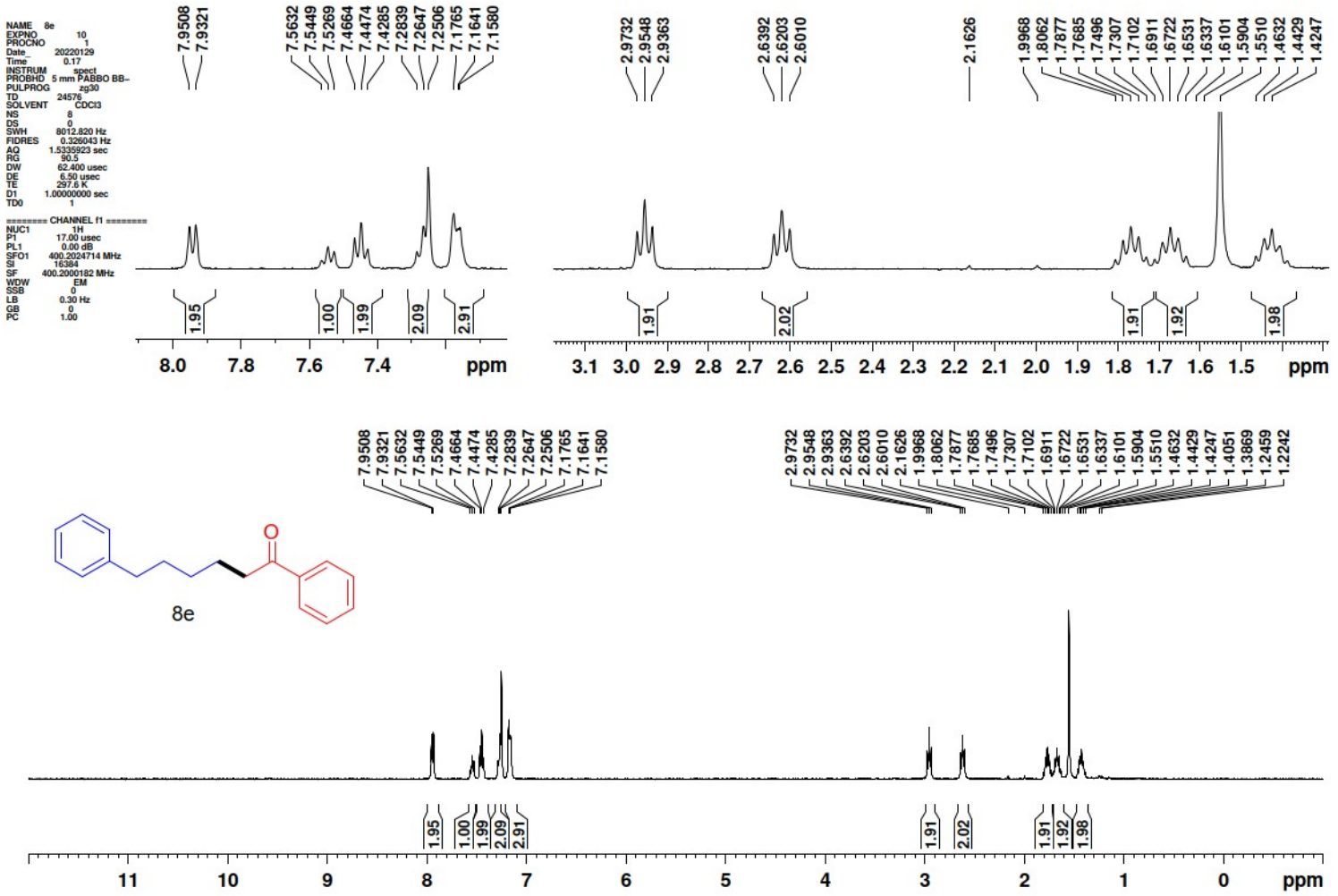




8d IN CDCl3

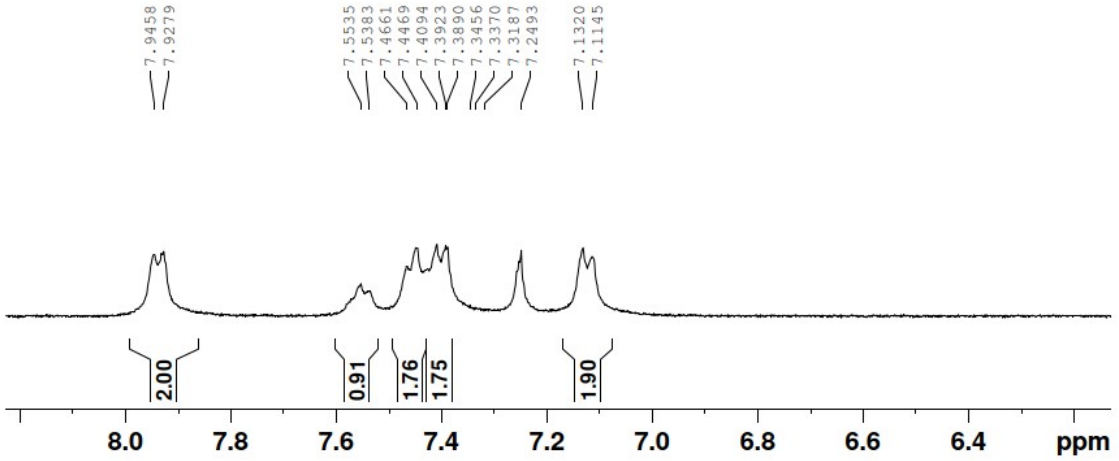

7.8570
7.8369
7.2488
7.2272
6.8042
6.7825
6.7651
2.00
1.99
3.10
8.4 8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 6.7 6.6 ppm
3.8546
3.8441
3.2619
3.2436
3.2239
3.0165
2.9969
2.9786
2.3943
1.5959
1.2448
O
O
O
8d
2.00
1.99
3.10
5.84
2.10
2.05
3.07
11 10 9 8 7 6 5 4 3 2 1 0 ppm

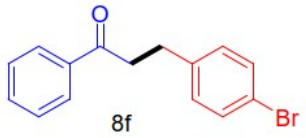
8e IN CDCl3


NAME 8e
EXPNO 10
PROCNO 1
Date_ 20220129
Time 0.17
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 24576
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.326043 Hz
AQ 1.5339923 sec
RG 90.5
DW 62.400 usec
DE 6.50 usec
TE 297.6 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 17.00 usec
PL1 0.00 dB
SFO1 400.2024714 MHz
SI 16384
SF 400.2000182 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.9508 7.9321 7.5632 7.5449 7.5269 7.4664 7.4474 7.4285 7.2839 7.2647 7.2506 7.1765 7.1641 7.1580
2.9732 2.9548 2.9363 2.6392 2.6203 2.6010 2.1626 1.9968 1.8062 1.7877 1.7685 1.7496 1.7307 1.7102 1.6911 1.6722 1.6531 1.6337 1.6101 1.5904 1.5510 1.4632 1.4429 1.4247
1.95 1.00 1.99 2.09 2.91
1.91 2.02 1.91 1.92 1.98
8.0 7.8 7.6 7.4 ppm
3.1 3.0 2.9 2.8 2.7 2.6 2.5 2.4 2.3 2.2 2.1 2.0 1.9 1.8 1.7 1.6 1.5 ppm
O
8e
7.9508 7.9321 7.5632 7.5449 7.5269 7.4664 7.4474 7.4285 7.2839 7.2647 7.2506 7.1765 7.1641 7.1580
2.9732 2.9548 2.9363 2.6392 2.6203 2.6010 2.1626 1.9968 1.8062 1.7877 1.7685 1.7496 1.7307 1.7102 1.6911 1.6722 1.6531 1.6337 1.6101 1.5904 1.5510 1.4632 1.4429 1.4247 1.4051 1.3869 1.2459 1.2242
1.95 1.00 1.99 2.09 2.91
1.91 2.02 1.91 1.92 1.98
11 10 9 8 7 6 5 4 3 2 1 0 ppm

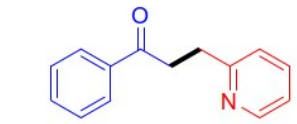
8f IN CDCl3

```
Current Data Parameters
NAME          8f
EXPNO         10
PROCNO        1

F2 - Acquisition Parameters
Date_         20220225
Time          23.48 h
INSTRUM       spect
PROBHD    Z8246_0048 (PH
PULPROG       zg30
TD            24036
SOLVENT       CDCl3
NS            8
DS            0
SWH           8012.820 Hz
FIDRES        0.666735 Hz
AQ            1.4998465 sec
RG            203
DW            62.400 usec
DE            6.50 usec
TE            300.0 K
D1            0 sec
TD0           1
SFO1          400.1024006 MHz
NUC1          1H
P0            6.00 usec
P1            18.00 usec
PLW1          10.00000000 W

F2 - Processing parameters
SI            16384
SF            400.1000130 MHz
WDW           EM
SSB           0
LB            0 Hz
GB            0
PC            1.00
```



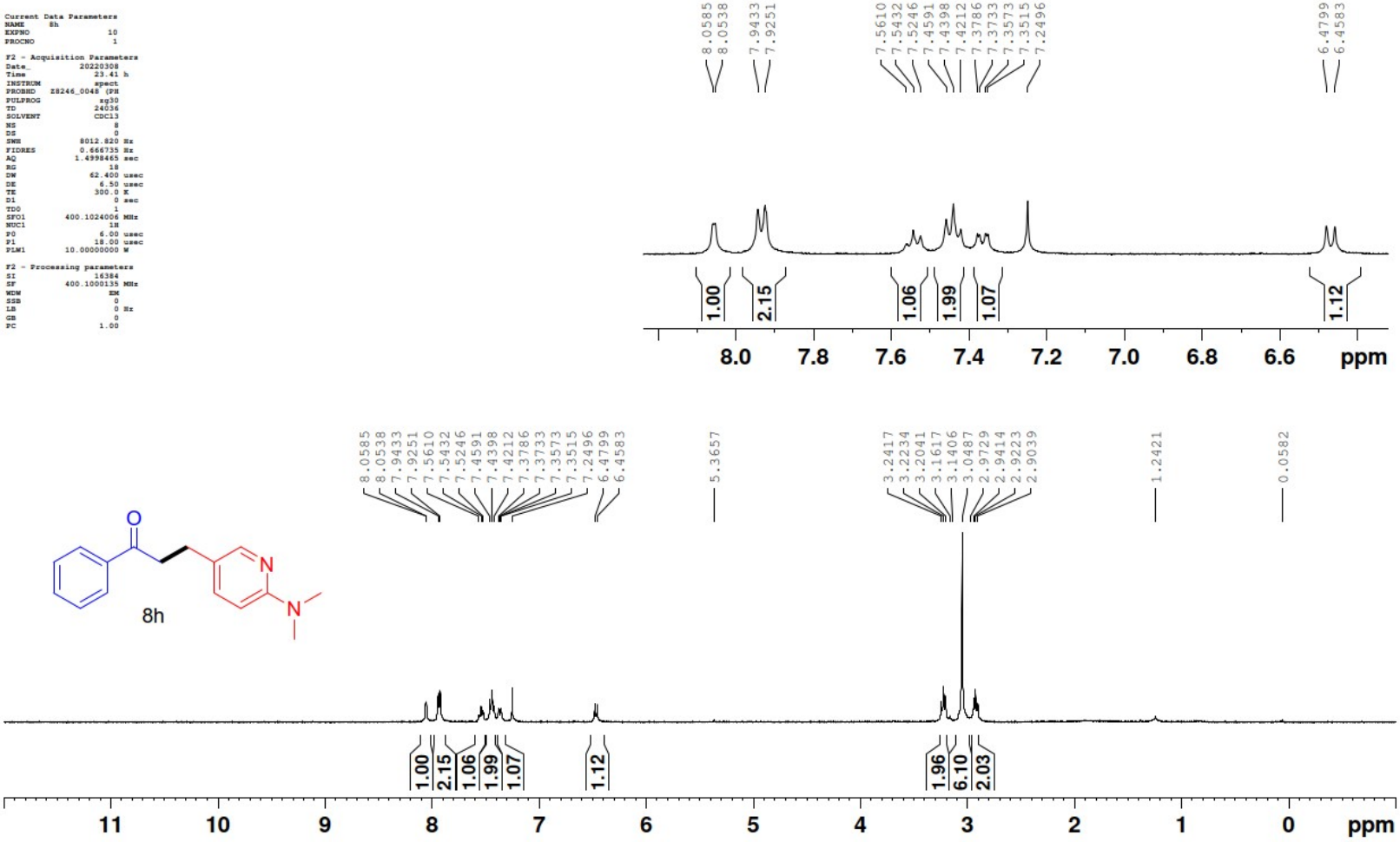


8g IN CDC13

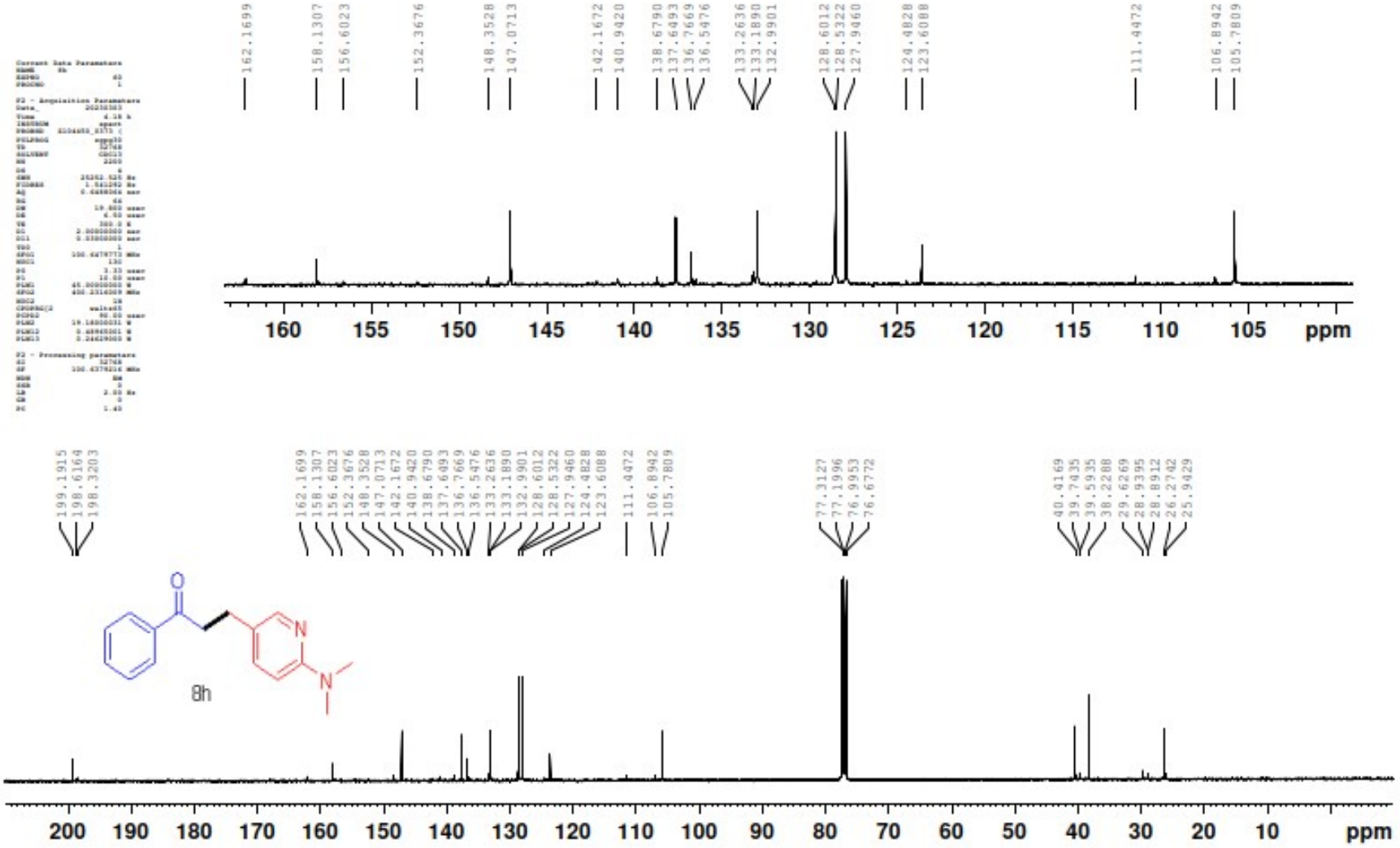


8g

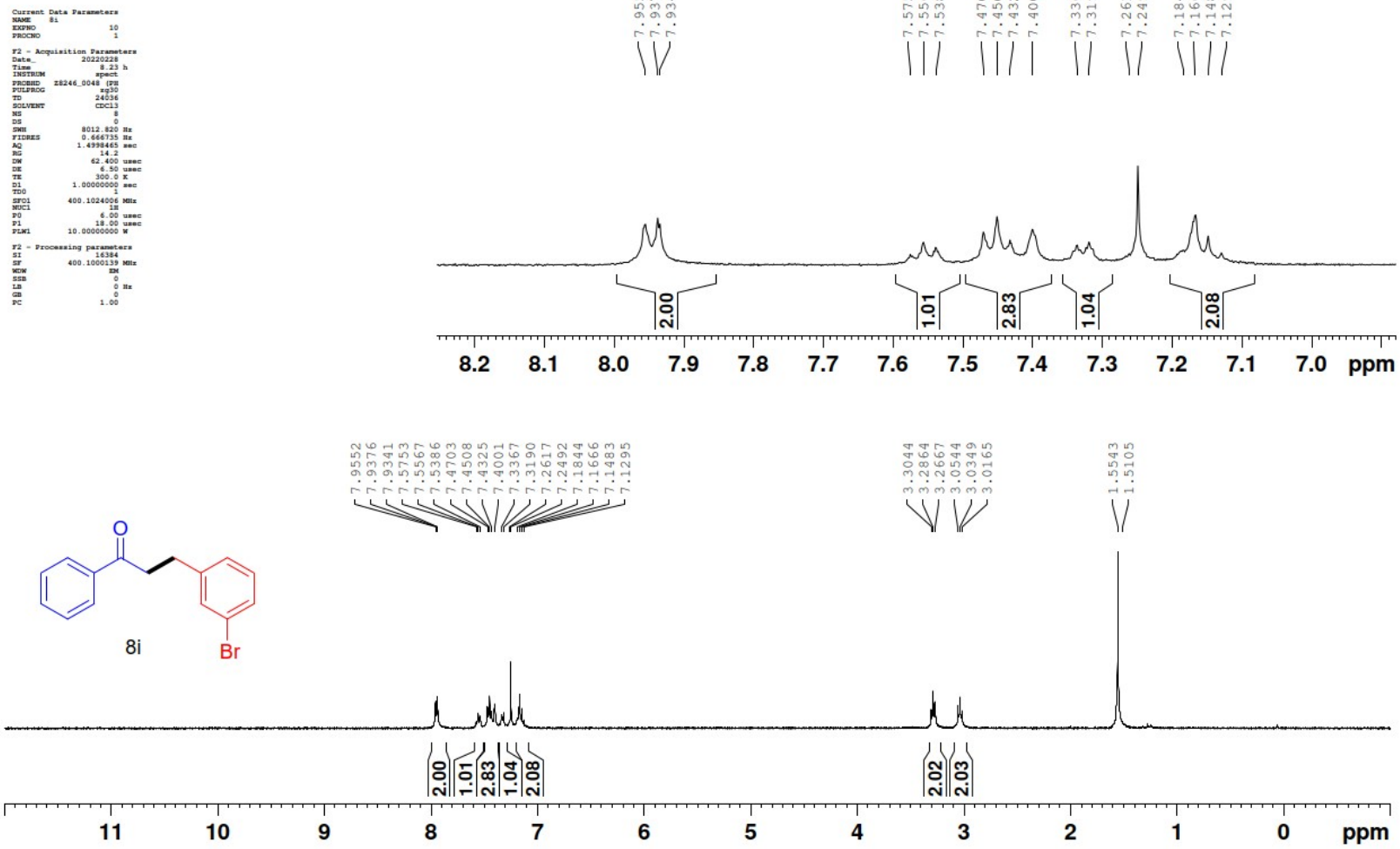
8h IN CDCl3


Current Data Parameters
NAME 8h
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220308
Time 23.41 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 18
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 0 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000135 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
8.0585
8.0538
7.9433
7.9251
7.5610
7.5432
7.5246
7.4591
7.4398
7.4212
7.3786
7.3733
7.3573
7.3515
7.2496
6.4799
6.4583
1.00
2.15
1.06
1.99
1.07
1.12
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
ppm
O
N
N
8h
5.3657
3.2417
3.2234
3.2041
3.1617
3.1406
3.0487
2.9729
2.9414
2.9223
2.9039
1.2421
0.0582
1.96
6.10
2.03
11
10
9
8
7
6
5
4
3
2
1
0
ppm

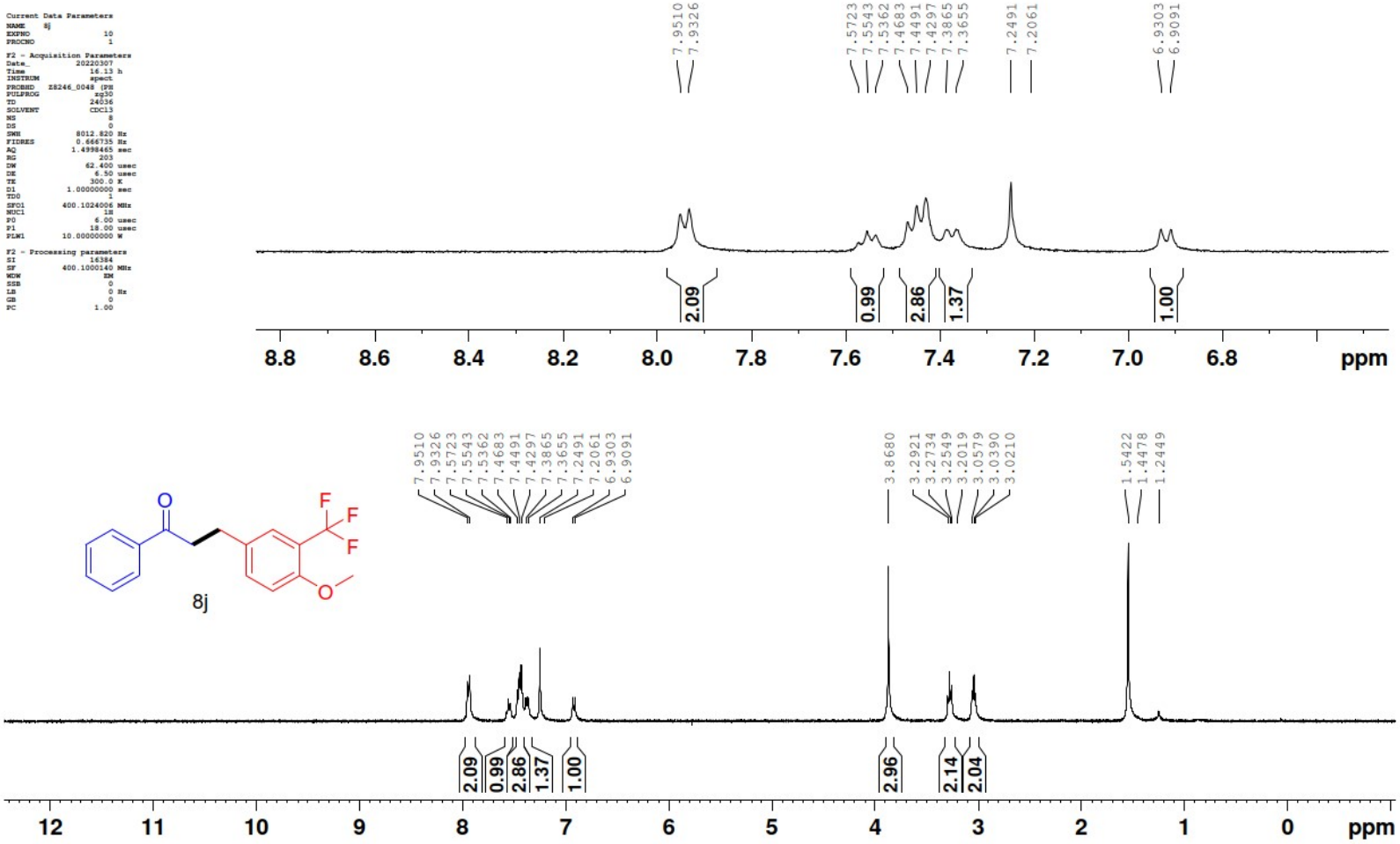
8h IN CDCl3-13C



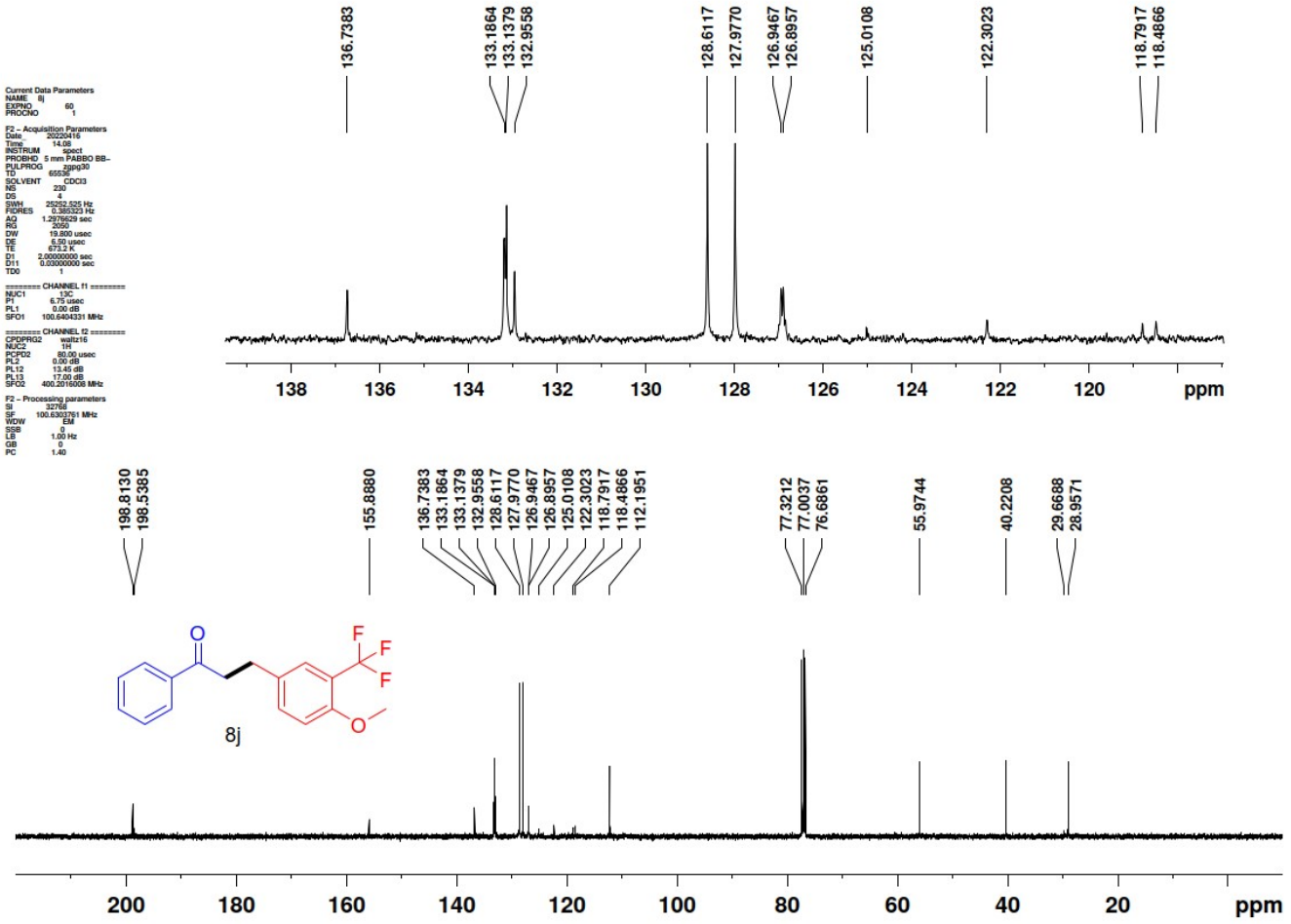
8i IN CDCl3


Current Data Parameters
NAME 8i
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220228
Time 8.23 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 14.2
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000139 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
7.9552
7.9376
7.9341
7.5753
7.5567
7.5386
7.4703
7.4508
7.4325
7.4001
7.3367
7.3190
7.2617
7.2492
7.1844
7.1666
7.1483
7.1295
2.00
1.01
2.83
1.04
2.08
8.2
8.1
8.0
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7.0
ppm
3.3044
3.2864
3.2667
3.0544
3.0349
3.0165
1.5543
1.5105
2.02
2.03
11
10
9
8
7
6
5
4
3
2
1
0
O
Br
8i

8j IN CDC13


Current Data Parameters
NAME 8j
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220307
Time 16.13 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 203
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000140 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
7.9510
7.9326
7.5723
7.5543
7.5362
7.4683
7.4491
7.4297
7.3865
7.3655
7.2491
7.2061
6.9303
6.9091
2.09
0.99
2.86
1.37
1.00
8.8
8.6
8.4
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
ppm
O
F
F
F
O
8j
3.8680
3.2921
3.2734
3.2549
3.2019
3.0579
3.0390
3.0210
1.5422
1.4478
1.2449
2.09
0.99
2.86
1.37
1.00
2.96
2.14
2.04
12
11
10
9
8
7
6
5
4
3
2
1
0
ppm

8j IN CDCl3–13C



Current Data Parameters
NAME 8j
EXPNO 60
PROCNO 1

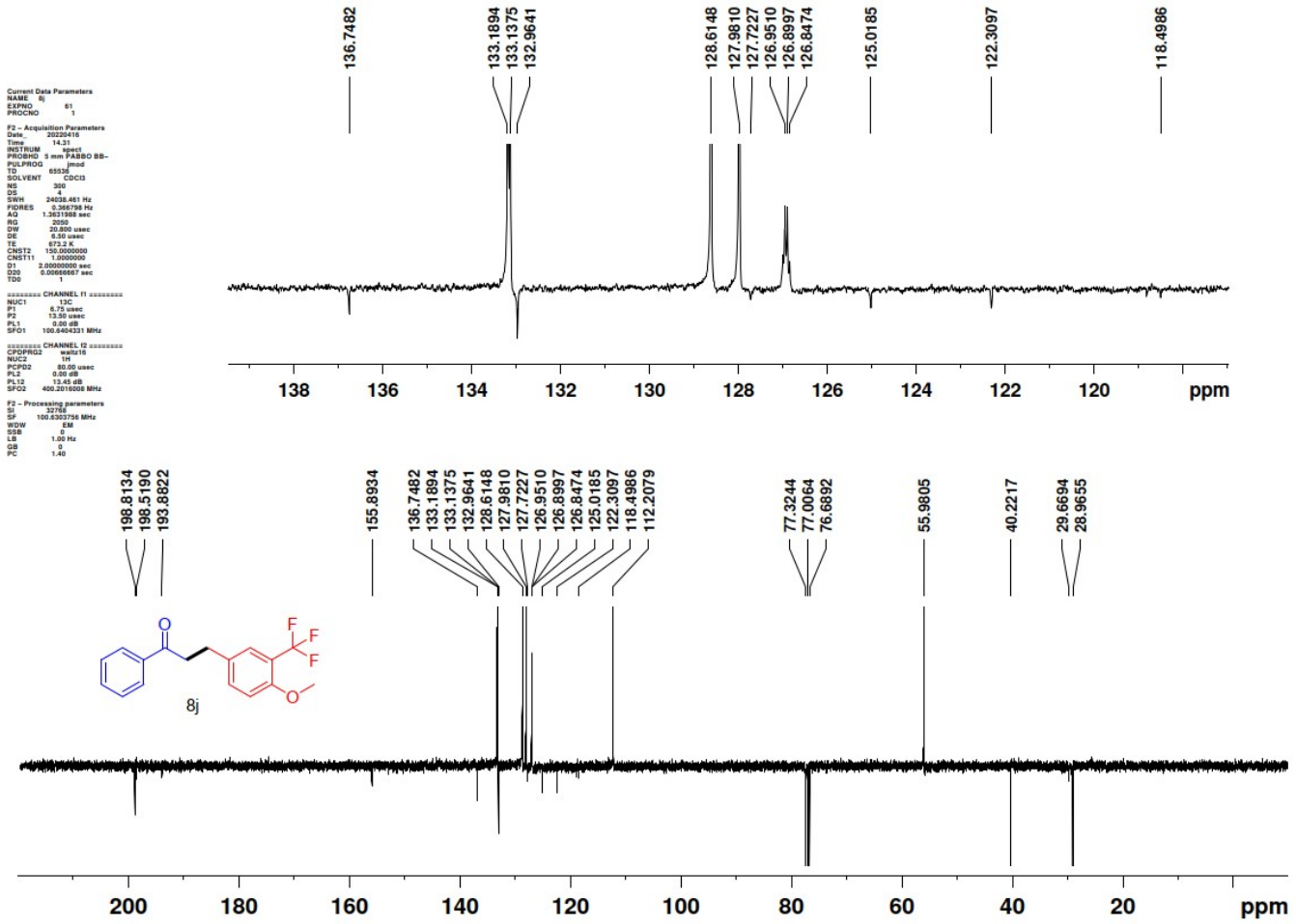
F2 – Acquisition Parameters
Date 20220416
Time 14.08
INSTRUM spect
PROBHD 5 mm PABBO BB–
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 230
DS 4
SWH 25252.525 Hz
FIDRES 0.385323 Hz
AQ 1.2979629 sec
RG 2050
DW 19.800 usec
DE 6.50 usec
TE 673.2 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 13C
P1 6.75 usec
PL1 0.00 dB
SFO1 100.6404331 MHz

======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 0.00 dB
PL12 12.45 dB
PL13 17.00 dB
SFO2 400.2016008 MHz

F2 – Processing parameters
SI 32768
SF 100.6303761 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

8j IN CDCl3–APT



Current Data Parameters
NAME 8j
EXPNO 61
PROCNO 1

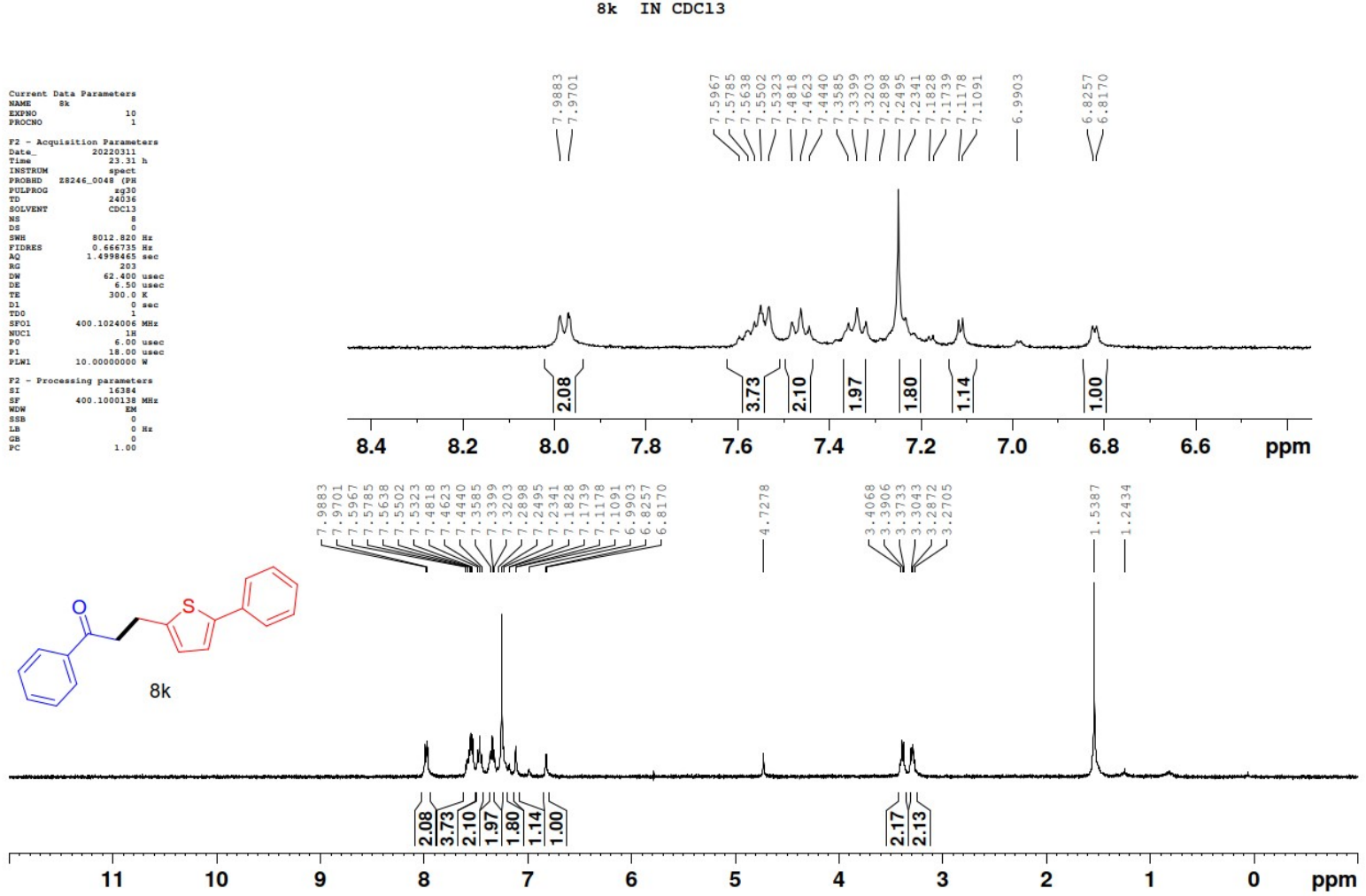
F2 – Acquisition Parameters
Date_ 20220416
Time 14.31
INSTRUM spect
PROBHD 5 mm PABBO BB–
PULPROG jmod
TD 65536
SOLVENT CDCl3
NS 300
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 2050
DW 20.800 usec
DE 6.50 usec
TE 673.2 K
CNST2 150.0000000
CNST11 1.0000000
D1 2.00000000 sec
D20 0.00666667 sec
TD0 1

======== CHANNEL f1 ========
NUC1 13C
P1 6.75 usec
P2 13.50 usec
PL1 0.00 dB
SFO1 100.6404331 MHz

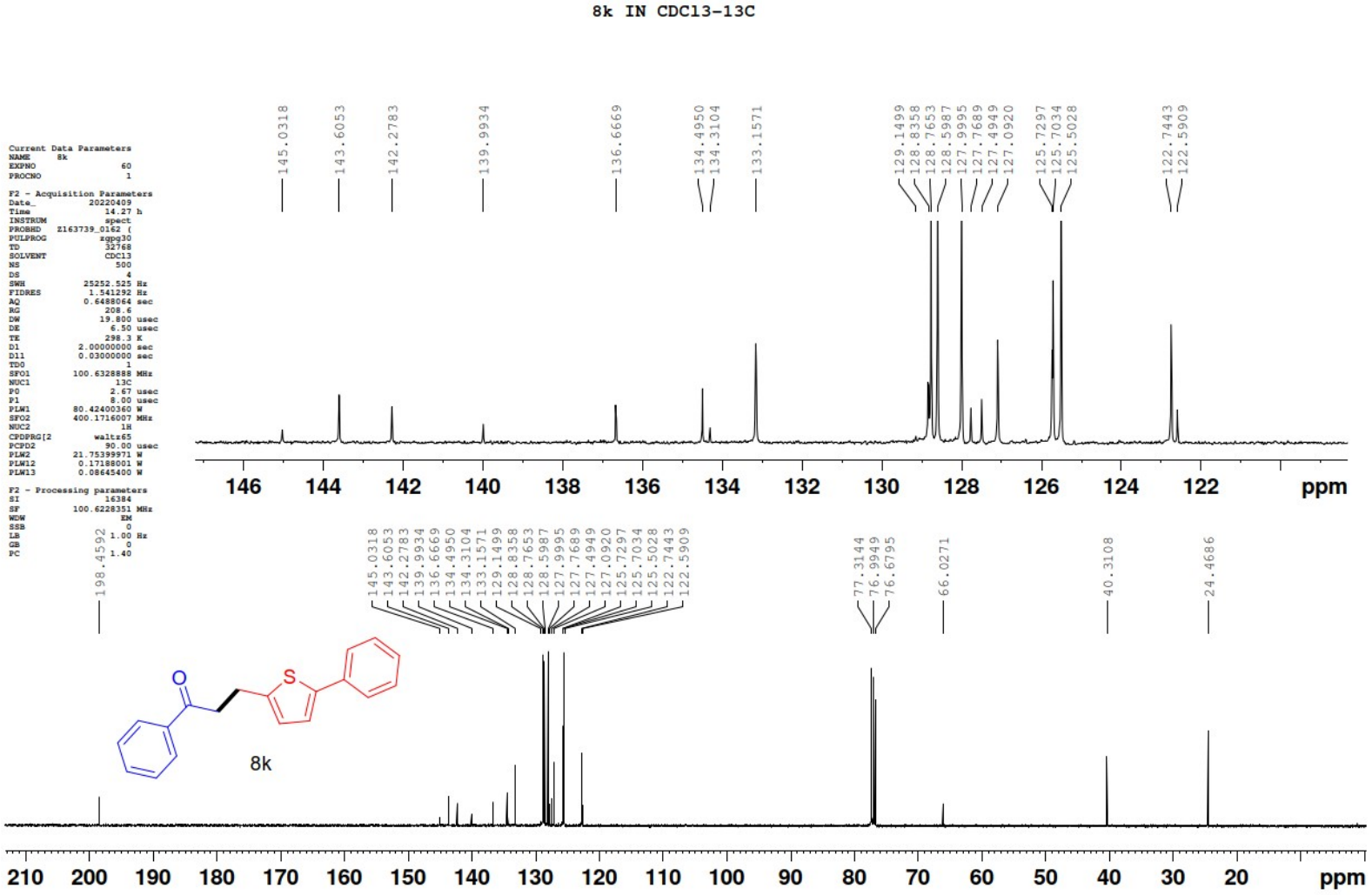
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 0.00 dB
PL12 13.45 dB
SFO2 400.2016008 MHz

F2 – Processing parameters
SI 32768
SF 100.6303756 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

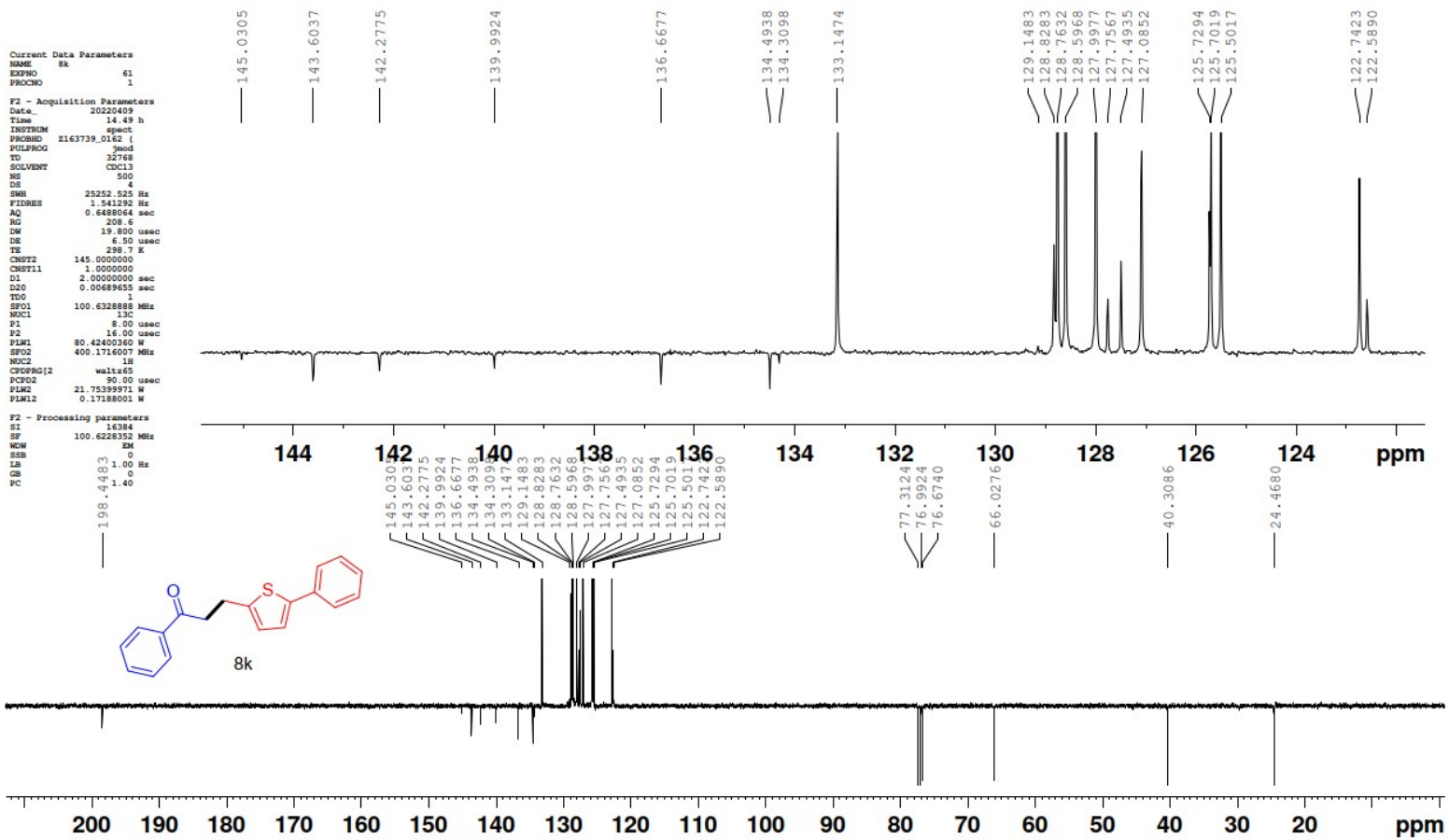
8k IN CDCl3


Current Data Parameters
NAME 8k
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220311
Time 23.31 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 203
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 0 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000138 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
7.9883
7.9701
7.5967
7.5785
7.5638
7.5502
7.5323
7.4818
7.4623
7.4440
7.3585
7.3399
7.3203
7.2898
7.2495
7.2341
7.1828
7.1739
7.1178
7.1091
6.9903
6.8257
6.8170
2.08
3.73
2.10
1.97
1.80
1.14
1.00
8.4
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
ppm
4.7278
3.4068
3.3906
3.3733
3.3043
3.2872
3.2705
1.5387
1.2434
2.17
2.13
O
S
8k
11
10
9
8
7
6
5
4
3
2
1
0
ppm

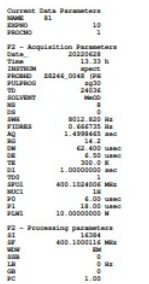
8k IN CDCl3-13C

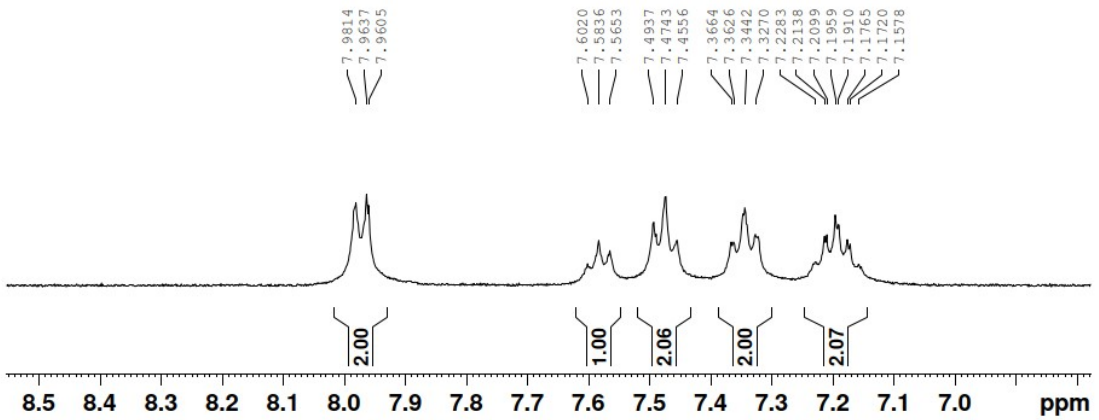


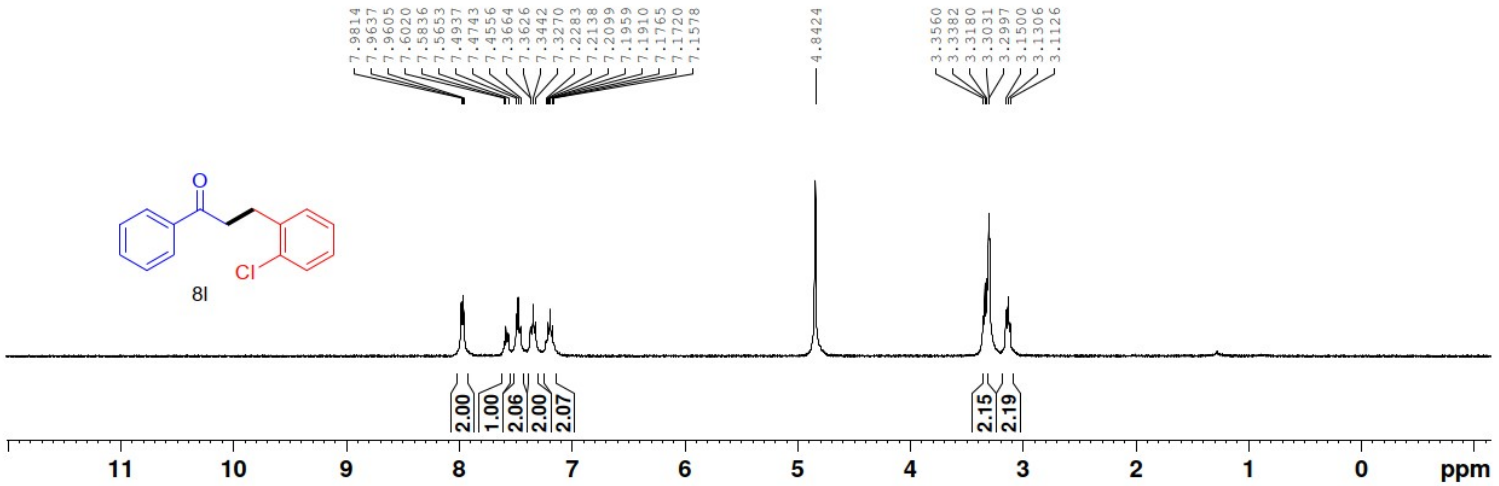
8k IN CDCL3-APT



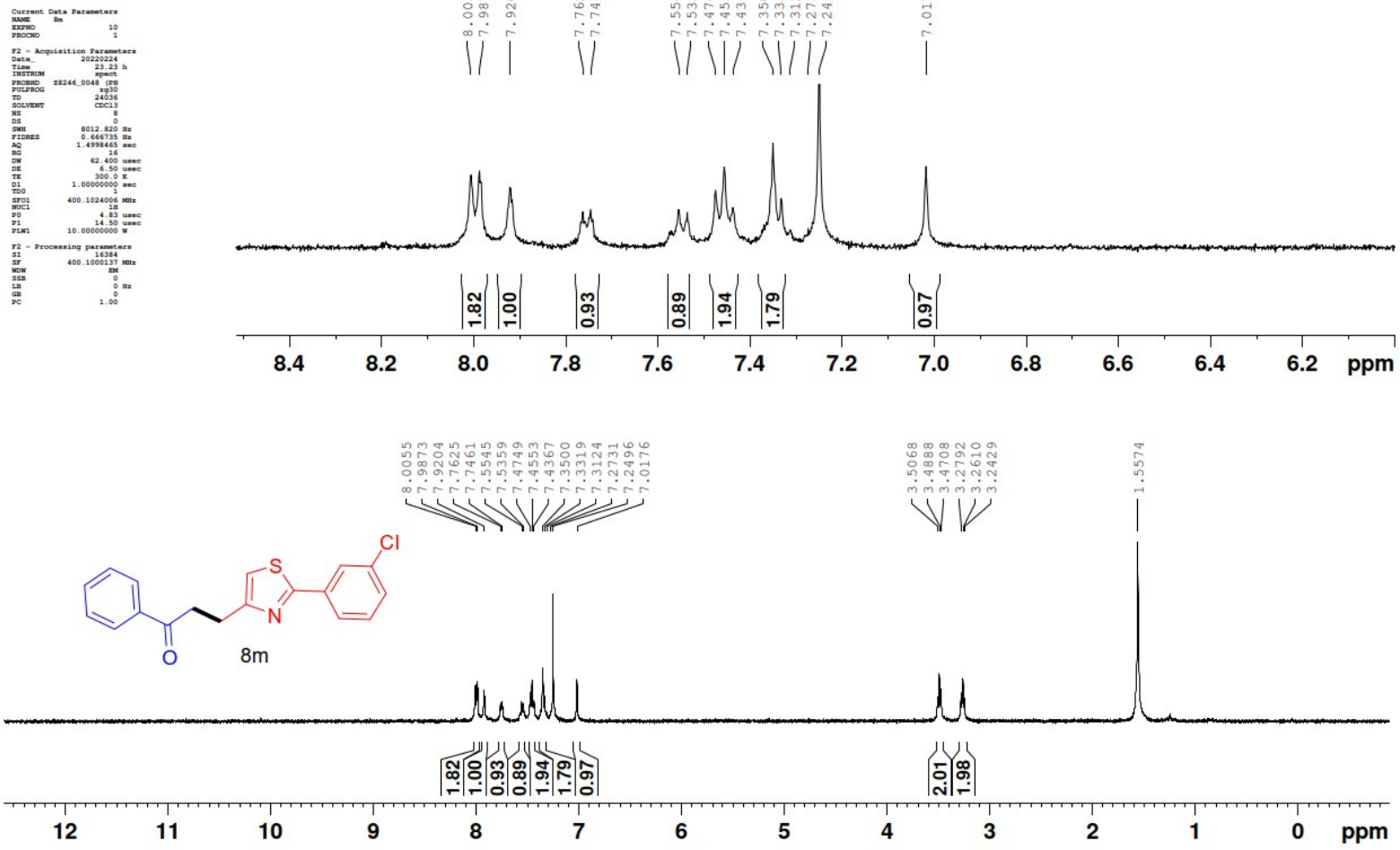
81 IN MeOD


Current Data Parameters
NAME 81
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220628
Time 13.33 h
INSTRUM spect
PROBHD 28246_0048 (PR
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 14.2
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1324004 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1300116 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00

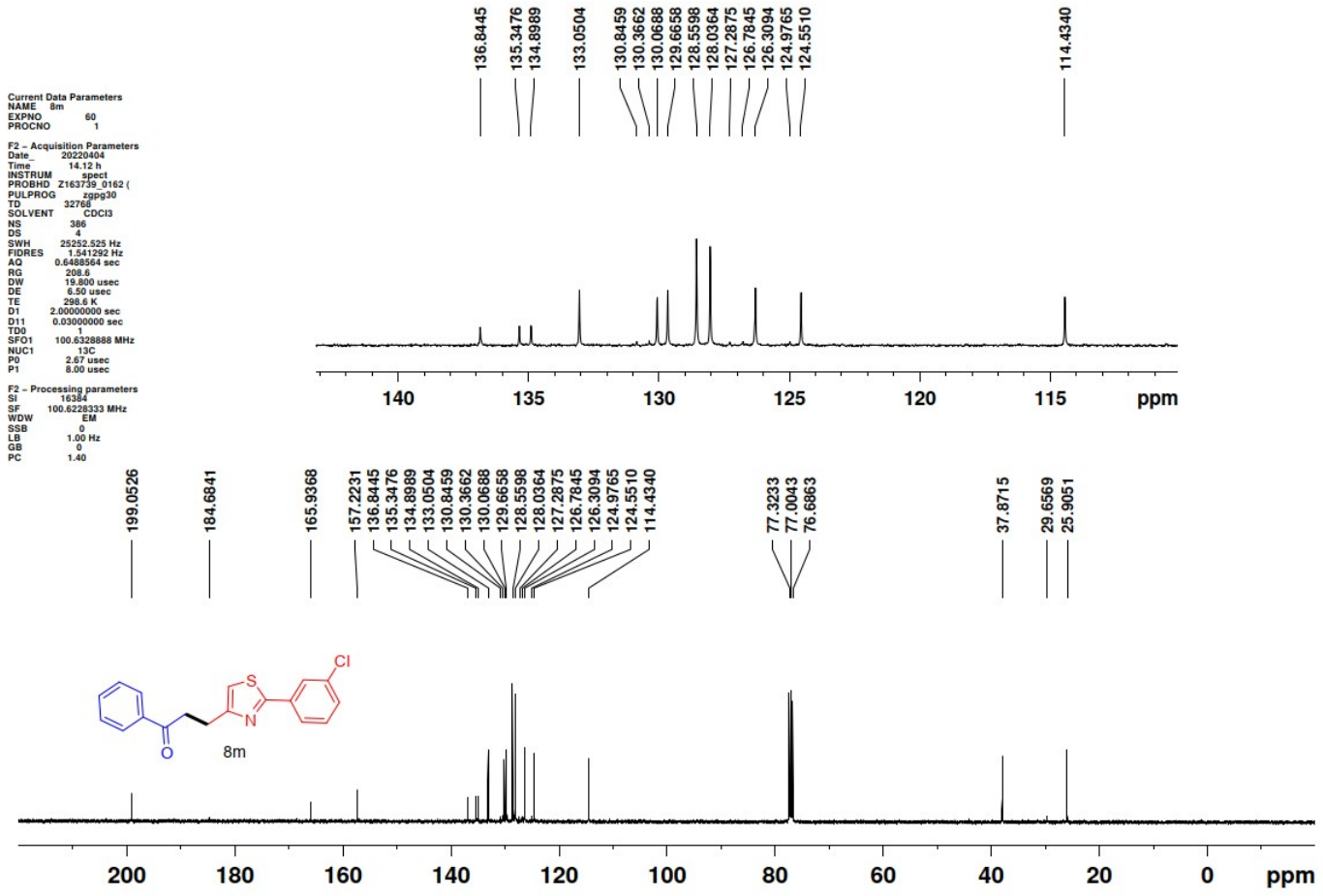

7.9814
7.9637
7.9605
7.6020
7.5836
7.5653
7.4937
7.4743
7.4556
7.3664
7.3626
7.3442
7.3270
7.2283
7.2138
7.2099
7.1959
7.1910
7.1765
7.1720
7.1578
2.00
1.00
2.06
2.00
2.07
8.5 8.4 8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 ppm

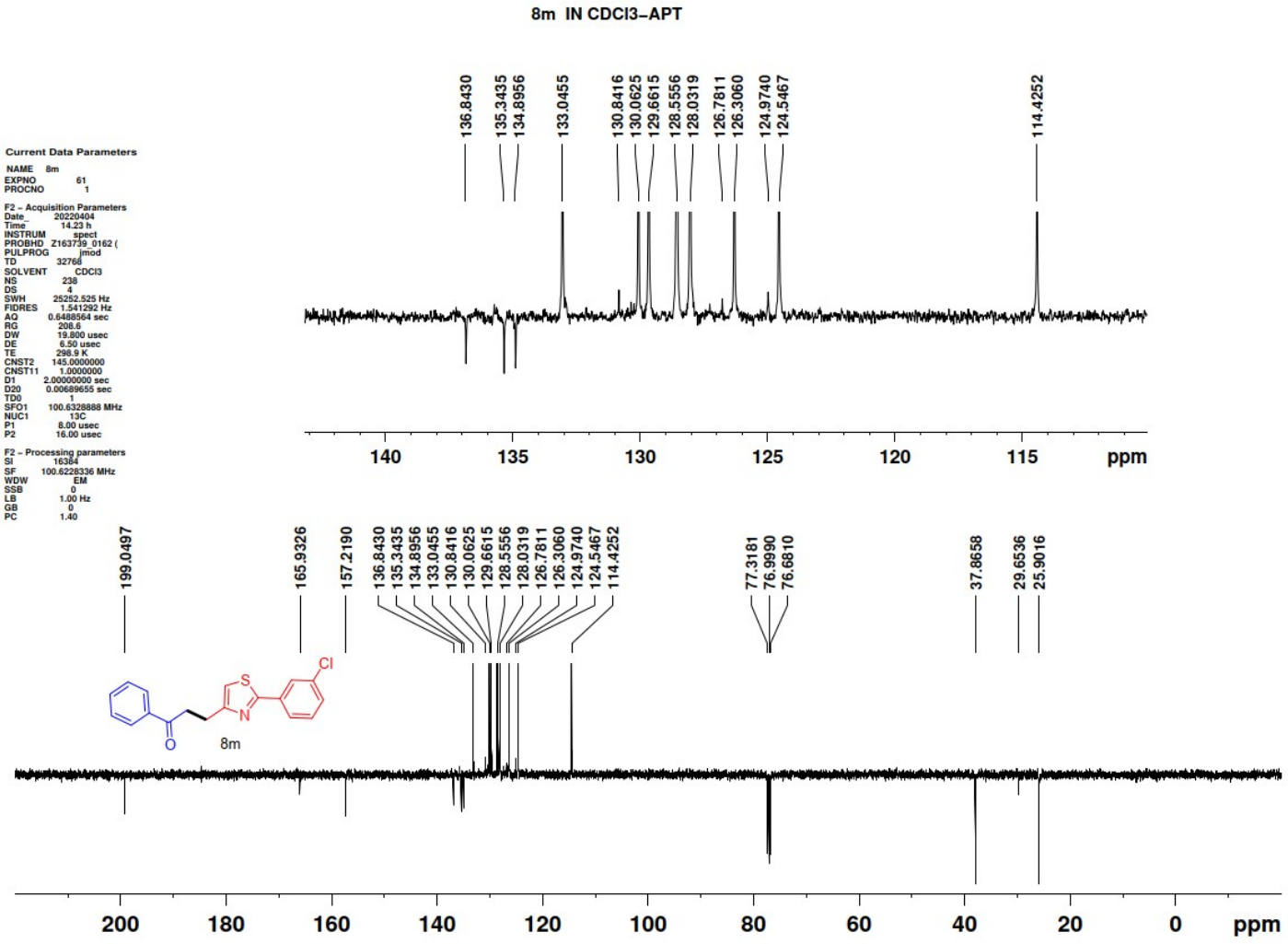

7.9814
7.9637
7.9605
7.6020
7.5836
7.5653
7.4937
7.4743
7.4556
7.3664
7.3626
7.3442
7.3270
7.2283
7.2138
7.2099
7.1959
7.1910
7.1765
7.1720
7.1578
4.8424
3.3560
3.3382
3.3180
3.3031
3.2997
3.1500
3.1306
3.1126
O
Cl
8l
2.00
1.00
2.06
2.00
2.07
2.15
2.19
11 10 9 8 7 6 5 4 3 2 1 0 ppm

8m IN CDCl3


Current Data Parameters
NAME 8m
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220224
Time 23.23 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 16
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 4.83 usec
P1 14.50 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000137 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
8.0055
7.9873
7.9204
7.7625
7.7461
7.5545
7.5359
7.4749
7.4553
7.4367
7.3500
7.3319
7.3124
7.2731
7.2496
7.0176
1.82
1.00
0.93
0.89
1.94
1.79
0.97
8.4
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
6.4
6.2
ppm
3.5068
3.4888
3.4708
3.2792
3.2610
3.2429
1.5574
2.01
1.98
12
11
10
9
8
7
6
5
4
3
2
1
0
Cl
S
N
O
8m

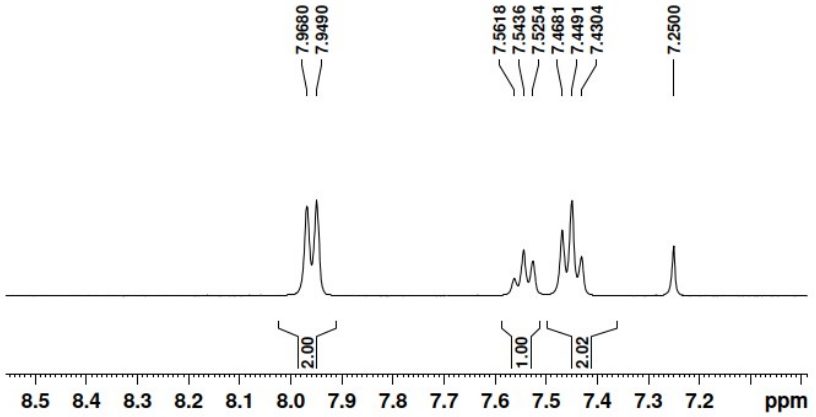
8m IN CDCl3–13C

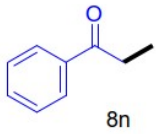



8m IN CDCl3–APT
Current Data Parameters
NAME 8m
EXPNO 61
PROCNO 1
F2 – Acquisition Parameters
Date_ 20220404
Time 14.23 h
INSTRUM spect
PROBHD Z163739_0162 (
PULPROG jmod
TD 32768
SOLVENT CDCl3
NS 238
DS 4
SWH 25252.525 Hz
FIDRES 1.541292 Hz
AQ 0.6488564 sec
RG 206.6
DW 19.800 usec
DE 6.50 usec
TE 298.9 K
CNST2 145.0000000
CNST11 1.0000000
D1 2.00000000 sec
D20 0.00689655 sec
TD0 1
SFO1 100.6328888 MHz
NUC1 13C
P1 8.00 usec
P2 16.00 usec
F2 – Processing parameters
SI 16384
SF 100.6228336 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
136.8430
135.3435
134.8956
133.0455
130.8416
130.0625
129.6615
128.5556
128.0319
126.7811
126.3060
124.9740
124.5467
114.4252
140
135
130
125
120
115
ppm
199.0497
165.9326
157.2190
77.3181
76.9990
76.6810
37.8658
29.6536
25.9016
S
N
Cl
O
8m
200
180
160
140
120
100
80
60
40
20
0
ppm

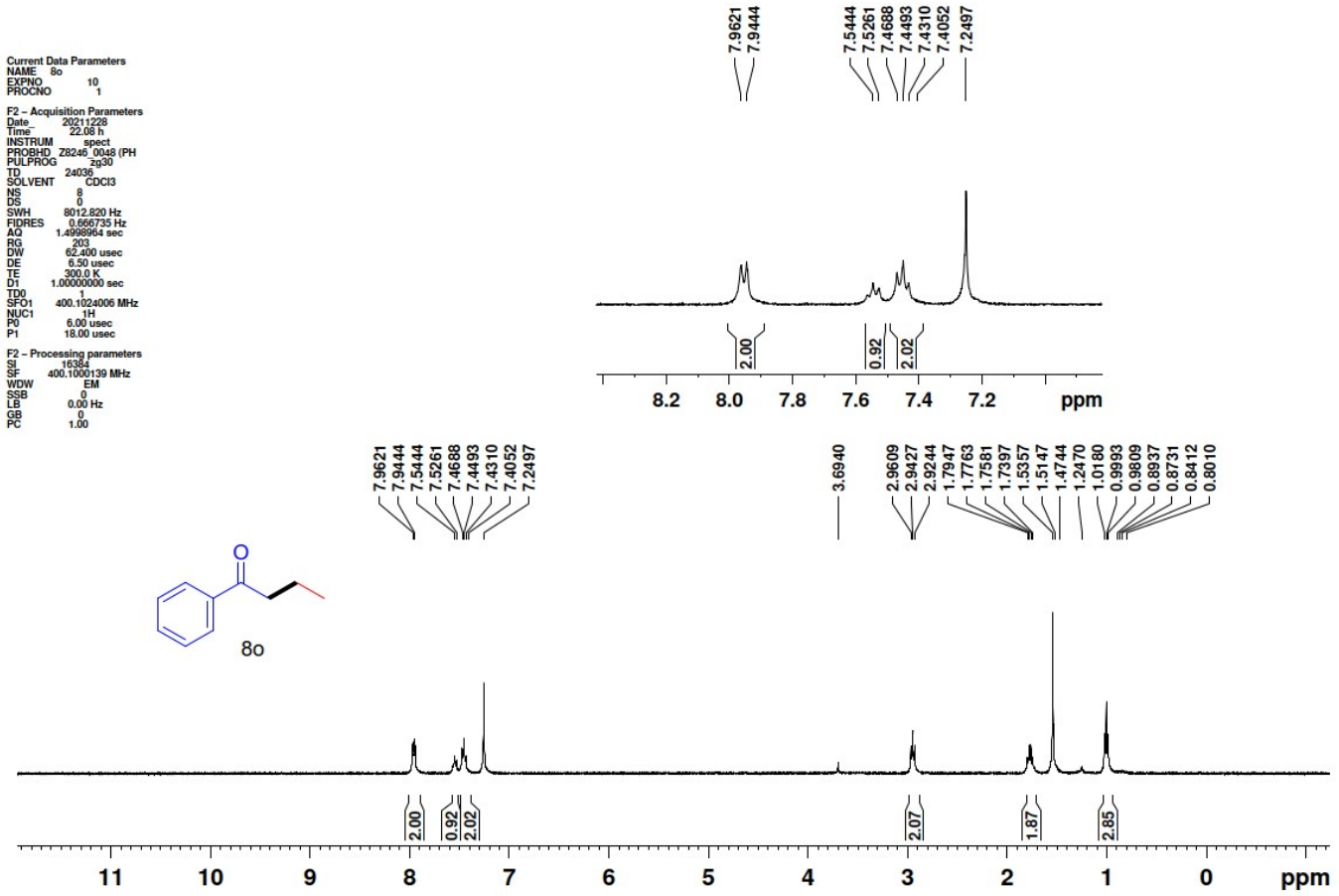
8n IN CDCl3

```
NAME    8n
EXPNO        10
PROCNO        1
Date_     20220122
Time         13.44
INSTRUM      spect
PROBHD  5 mm PABBO BB-
PULPROG      zg30
TD         24576
SOLVENT      CDCl3
NS             8
DS             0
SWH       8012.820 Hz
FIDRES       0.326043 Hz
AQ        1.5339923 sec
RG           101
DW          62.400 usec
DE           6.50 usec
TE          298.5 K
D1        1.00000000 sec
TD0            1

======== CHANNEL f1 ========
NUC1         1H
P1          17.00 usec
PL1          0.00 dB
SFO1    400.2024714 MHz
SI           16384
SF      400.2000182 MHz
WDW          EM
SSB            0
LB           0.30 Hz
GB             0
PC          1.00
```



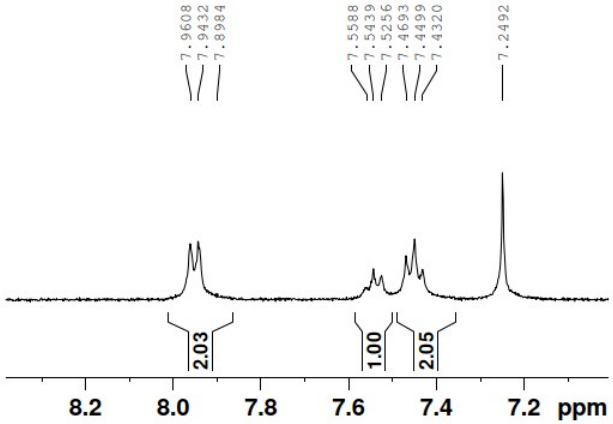


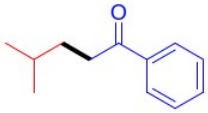
8o IN CDCl3


Current Data Parameters
NAME 8o
EXPNO 10
PROCNO 1
F2 – Acquisition Parameters
Date 20211228
Time 22.08 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998964 sec
RG 203
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
F2 – Processing parameters
SI 16384
SF 400.1000139 MHz
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
7.9621
7.9444
7.5444
7.5261
7.4688
7.4493
7.4310
7.4052
7.2497
2.00
0.92
2.02
8.2
8.0
7.8
7.6
7.4
7.2
ppm
3.6940
2.9609
2.9427
2.9244
1.7947
1.7763
1.7581
1.7397
1.5357
1.5147
1.4744
1.2470
1.0180
0.9993
0.9809
0.8937
0.8731
0.8412
0.8010
O
8o
2.00
0.92
2.02
2.07
1.87
2.85
11
10
9
8
7
6
5
4
3
2
1
0
ppm

8p IN CDCl3

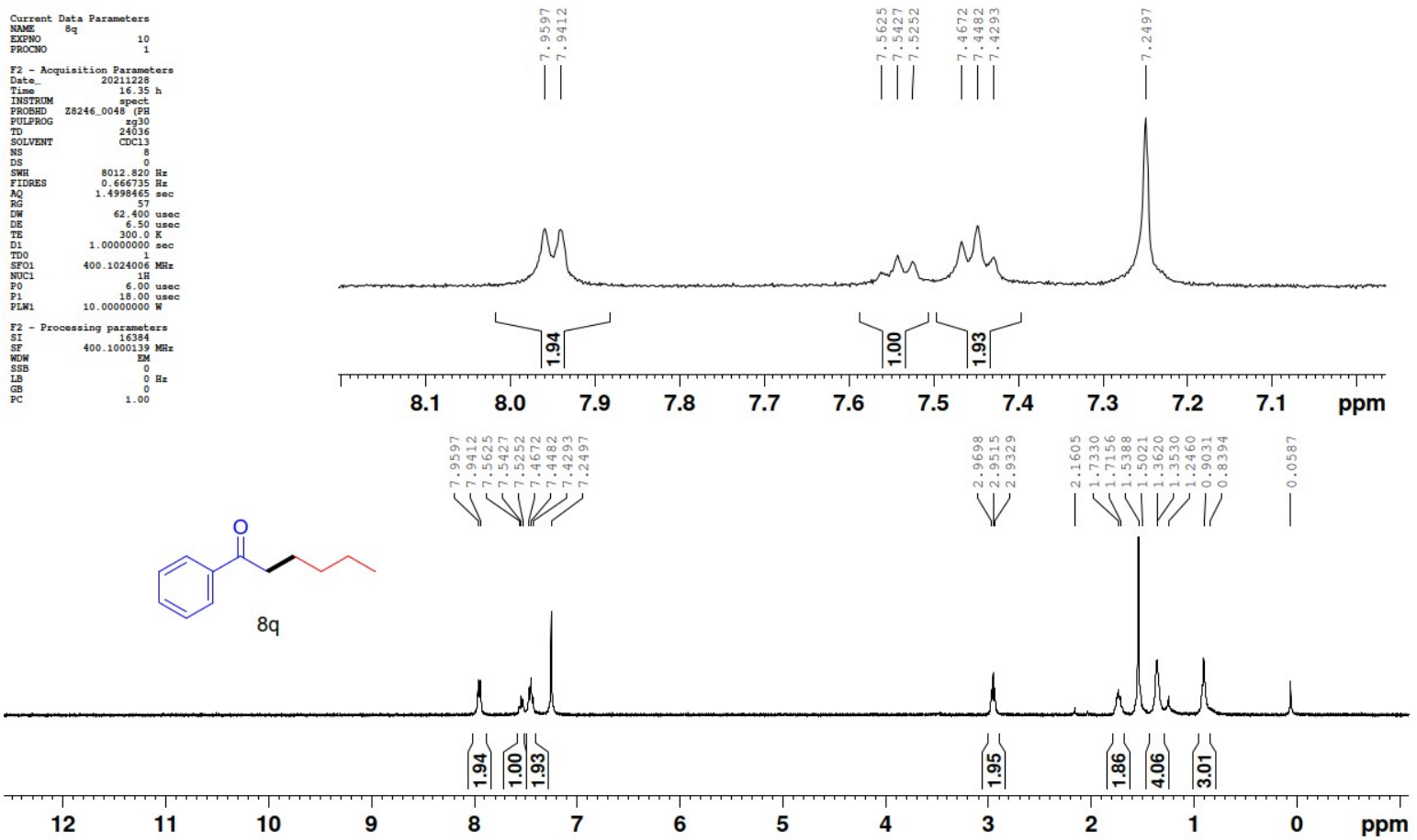

```
Current Data Parameters
NAME      8p EXPNO
10
PROCNO                1

F2 - Acquisition Parameters
Date_              20220215
Time                 15.11 h
INSTRUM                spect
PROBHD    Z8246_0048 (PH
PULPROG                zg30
TD                    24036
SOLVENT               CDCl3
NS                        8
DS                        0
SWH                8012.820 Hz
FIDRES             0.666735 Hz
AQ                 1.4998465 sec
RG                      203
DW                   62.400 usec
DE                    6.50 usec
TE                   300.0 K
D1                        0 sec
TD0                       1
SFO1          400.1024006 MHz
NUC1                    1H
P0                    4.83 usec
P1                   14.50 usec
PLW1          10.00000000 W

F2 - Processing parameters
SI                    16384
SF            400.1000139 MHz
WDW                     EM
SSB                       0
LB                        0 Hz
GB                        0
PC                     1.00
```

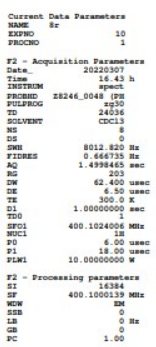


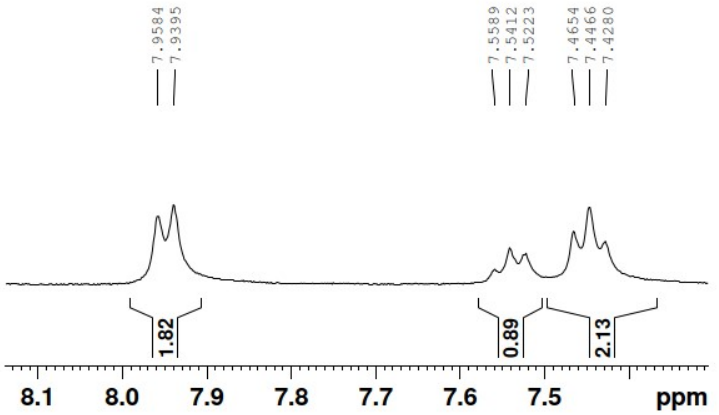
8p

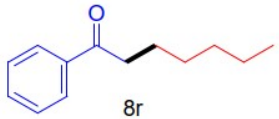
8q IN CDC13


Current Data Parameters
NAME 8q
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20211228
Time 16.35 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDC13
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 57
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000139 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
7.9597
7.9412
7.5625
7.5427
7.5252
7.4672
7.4482
7.4293
7.2497
1.94
1.00
1.93
8.1
8.0
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
7.1
ppm
2.9698
2.9515
2.9329
2.1605
1.7330
1.7156
1.5388
1.5021
1.3620
1.3530
1.2460
0.9031
0.8394
0.0587
O
8q
1.95
1.86
4.06
3.01
12
11
10
9
8
7
6
5
4
3
2
1
0

8r IN CDCl3

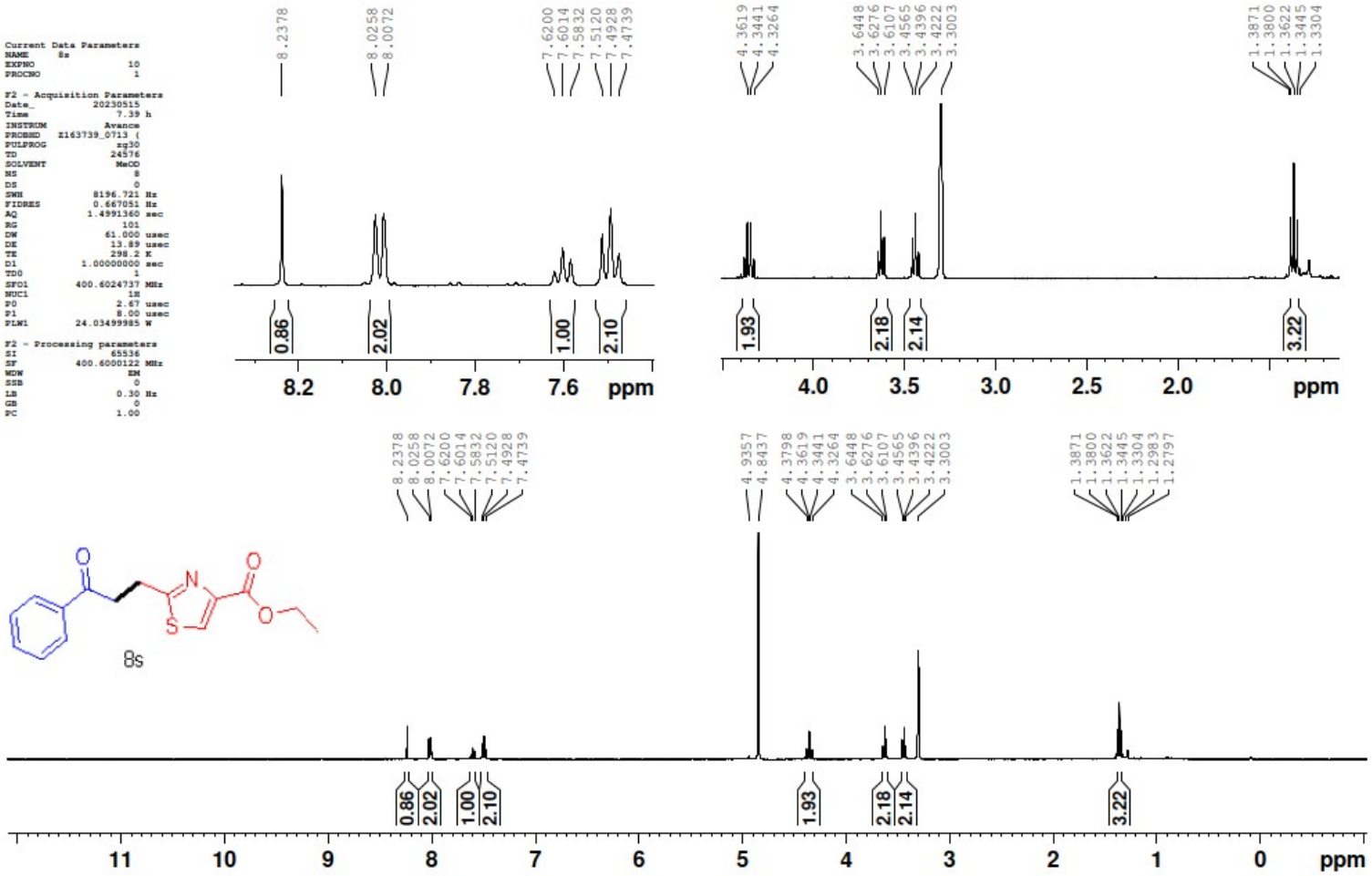

Current Data Parameters
NAME 8r
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220307
Time 16.43 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 203
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000139 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00

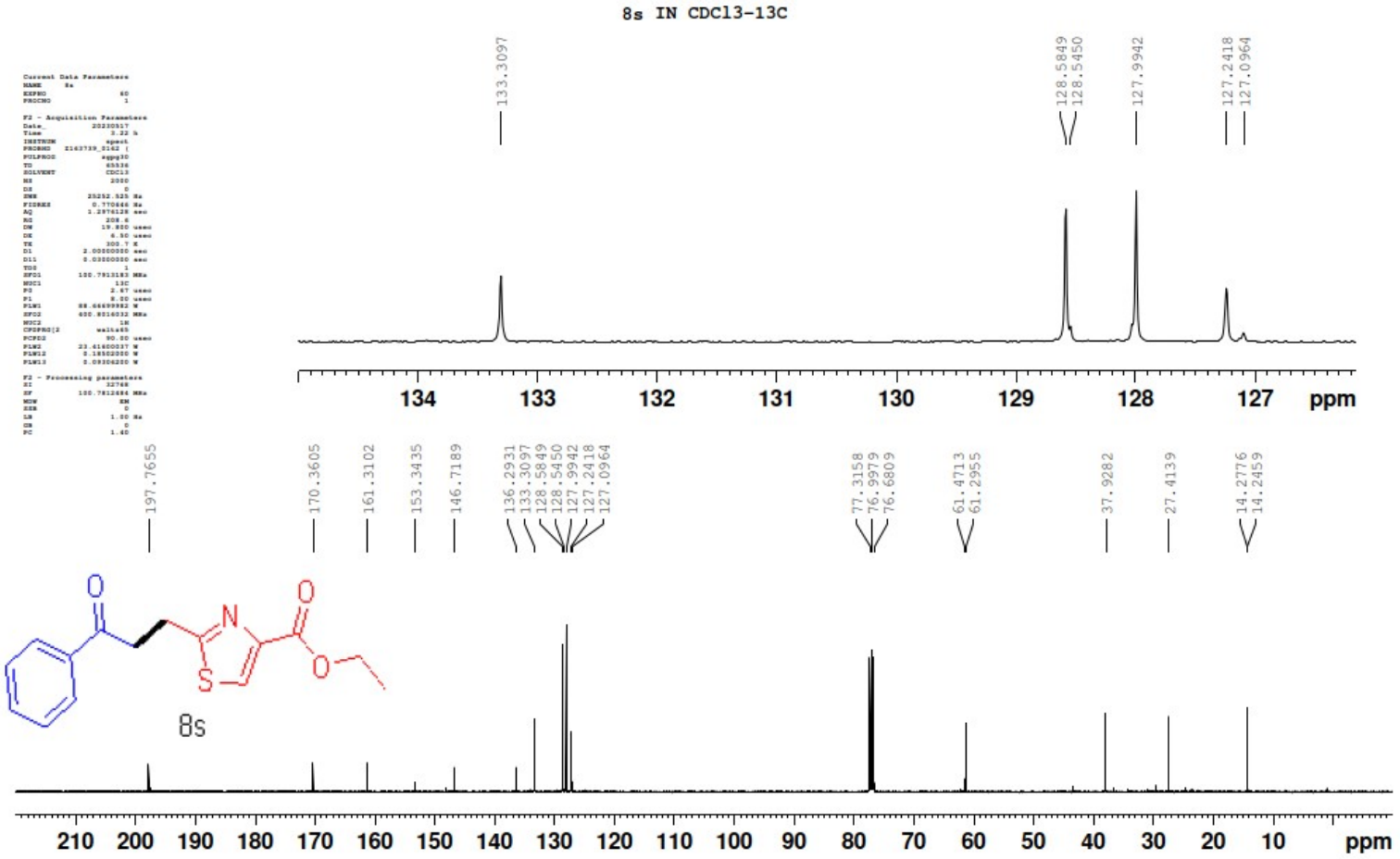

7.9584
7.9395
7.5589
7.5412
7.5223
7.4654
7.4466
7.4280
1.82
0.89
2.13
8.1
8.0
7.9
7.8
7.7
7.6
7.5
ppm


O
8r

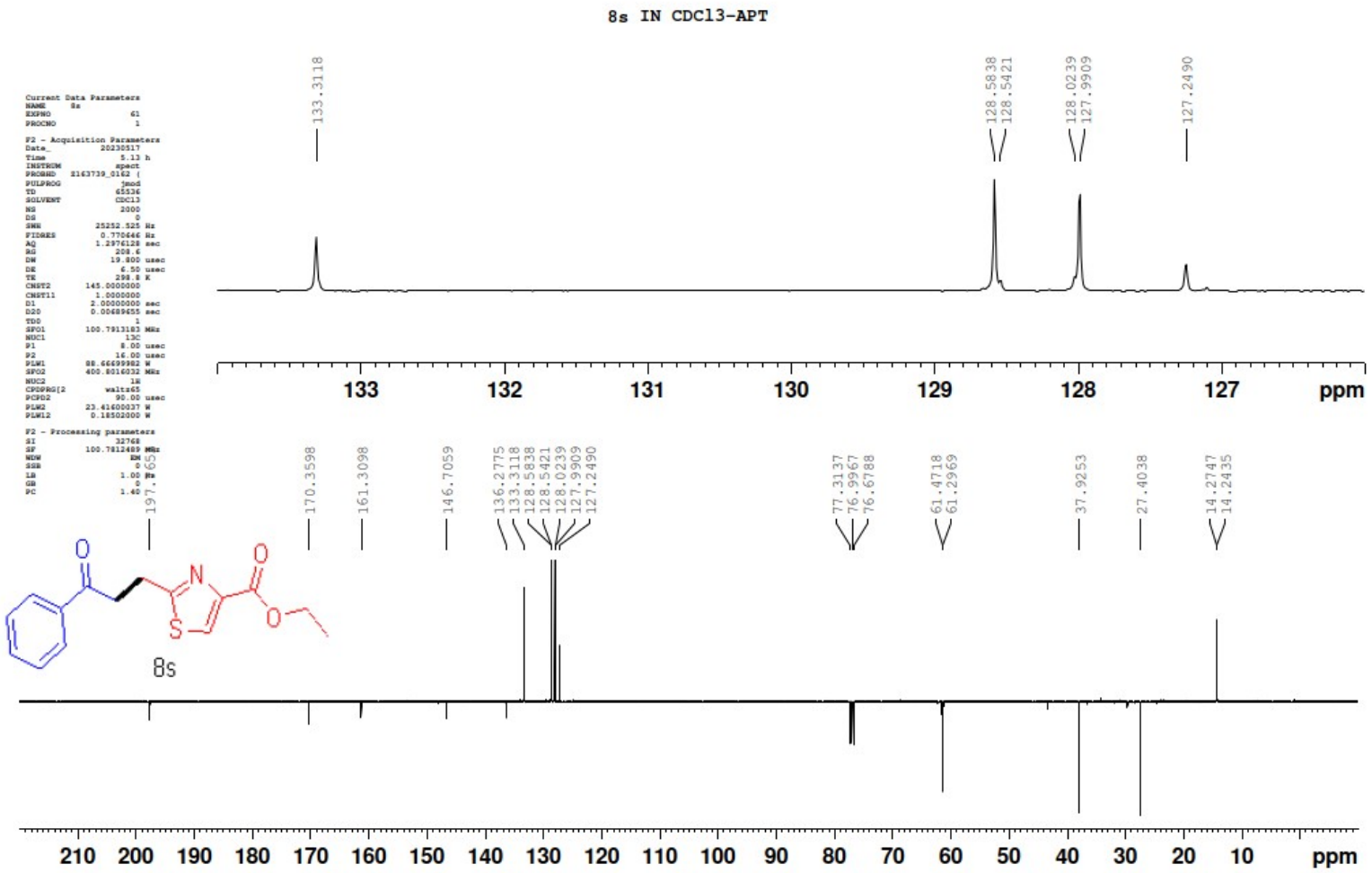
7.9584
7.9395
7.5589
7.5412
7.5223
7.4654
7.4466
7.4280
7.2489
2.9702
2.9520
2.9334
1.7417
1.7239
1.7060
1.6884
1.5612
1.3714
1.3526
1.3223
1.3155
1.3066
0.8809
1.82
0.89
2.13
1.90
1.91
6.25
3.00
11
10
9
8
7
6
5
4
3
2
1
0
ppm

8s IN MeOD

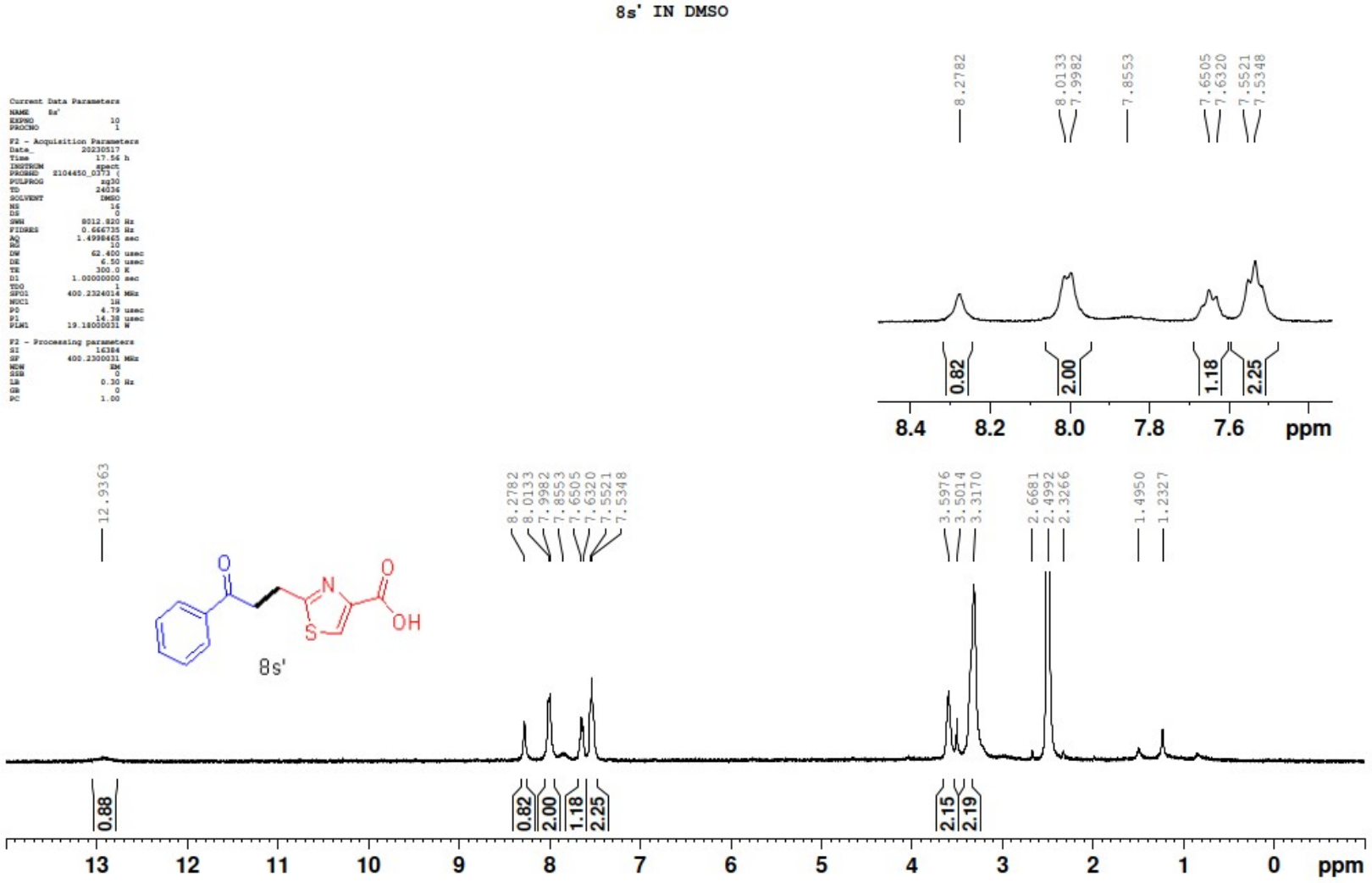

Current Data Parameters
NAME 8s
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230515
Time 7.39 h
INSTRUM Avance
PROBHD Z163739_0713 (
PULPROG zg30
TD 24576
SOLVENT MeOD
NS 8
DS 0
SWH 8196.721 Hz
FIDRES 0.667051 Hz
AQ 1.4991360 sec
RG 101
DW 61.000 usec
DE 13.89 usec
TE 298.2 K
D1 1.00000000 sec
TD0 1
SFO1 400.6024737 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 24.03499985 W
F2 - Processing parameters
SI 65536
SF 400.6000122 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.2378
8.0258
8.0072
7.6200
7.6014
7.5832
7.5120
7.4928
7.4739
4.3619
4.3441
4.3264
3.6448
3.6276
3.6107
3.4565
3.4396
3.4222
3.3003
1.3871
1.3800
1.3622
1.3445
1.3304
0.86
2.02
1.00
2.10
1.93
2.18
2.14
3.22
8.2
8.0
7.8
7.6
4.0
3.5
3.0
2.5
2.0
ppm
4.9357
4.8437
4.3798
1.2983
1.2797
11
10
9
8
7
6
5
4
3
2
1
0
8s


8s IN CDCl3-13C
133.3097
128.5849
128.5450
127.9942
127.2418
127.0964
134
133
132
131
130
129
128
127
ppm
197.7655
170.3605
161.3102
153.3435
146.7189
136.2931
133.3097
128.5849
128.5450
127.9942
127.2418
127.0964
77.3158
76.9979
76.6809
61.4713
61.2955
37.9282
27.4139
14.2776
14.2459
O
N
S
O
O
8s
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

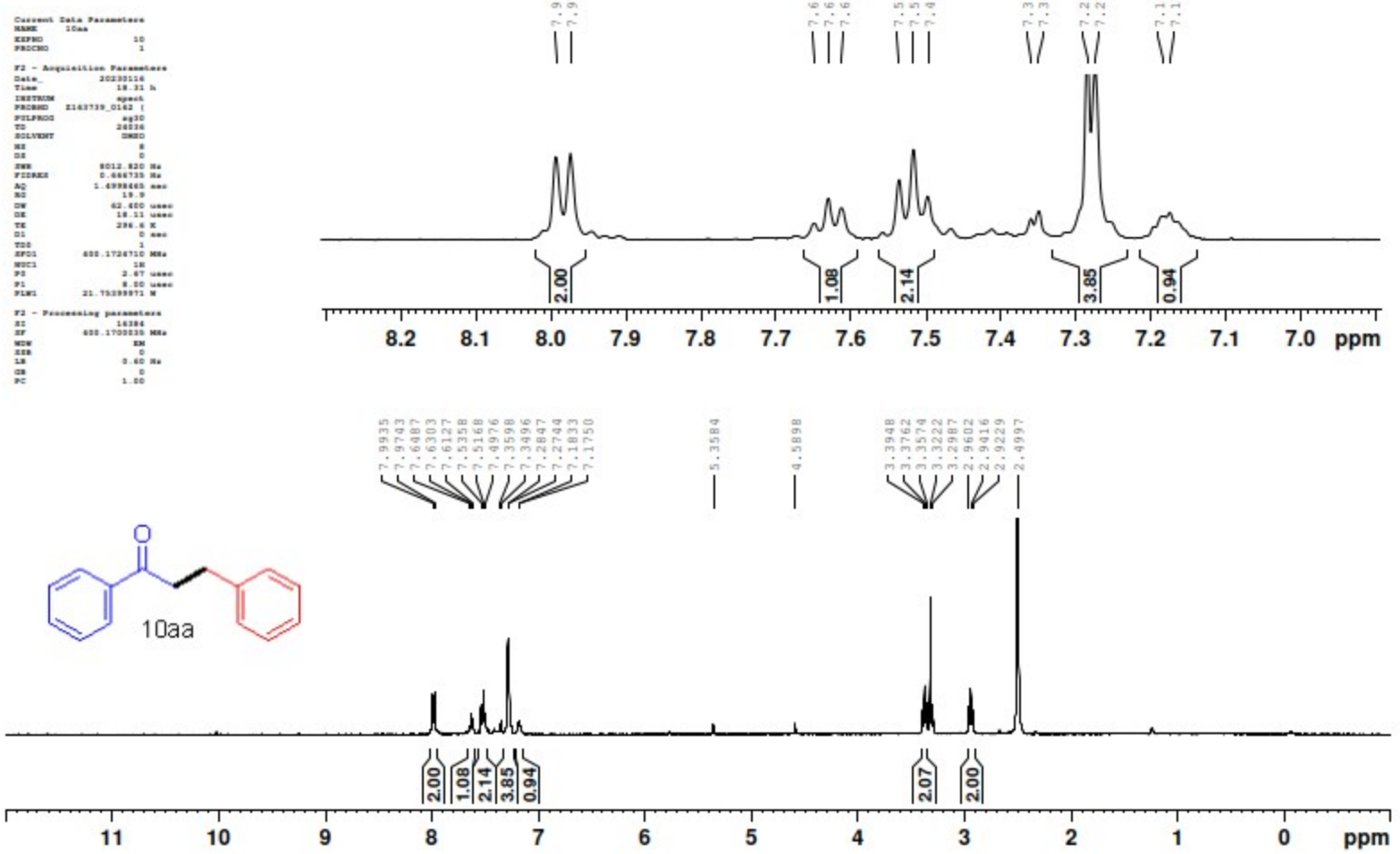
8s IN CDCl3-APT



8s' IN DMSO

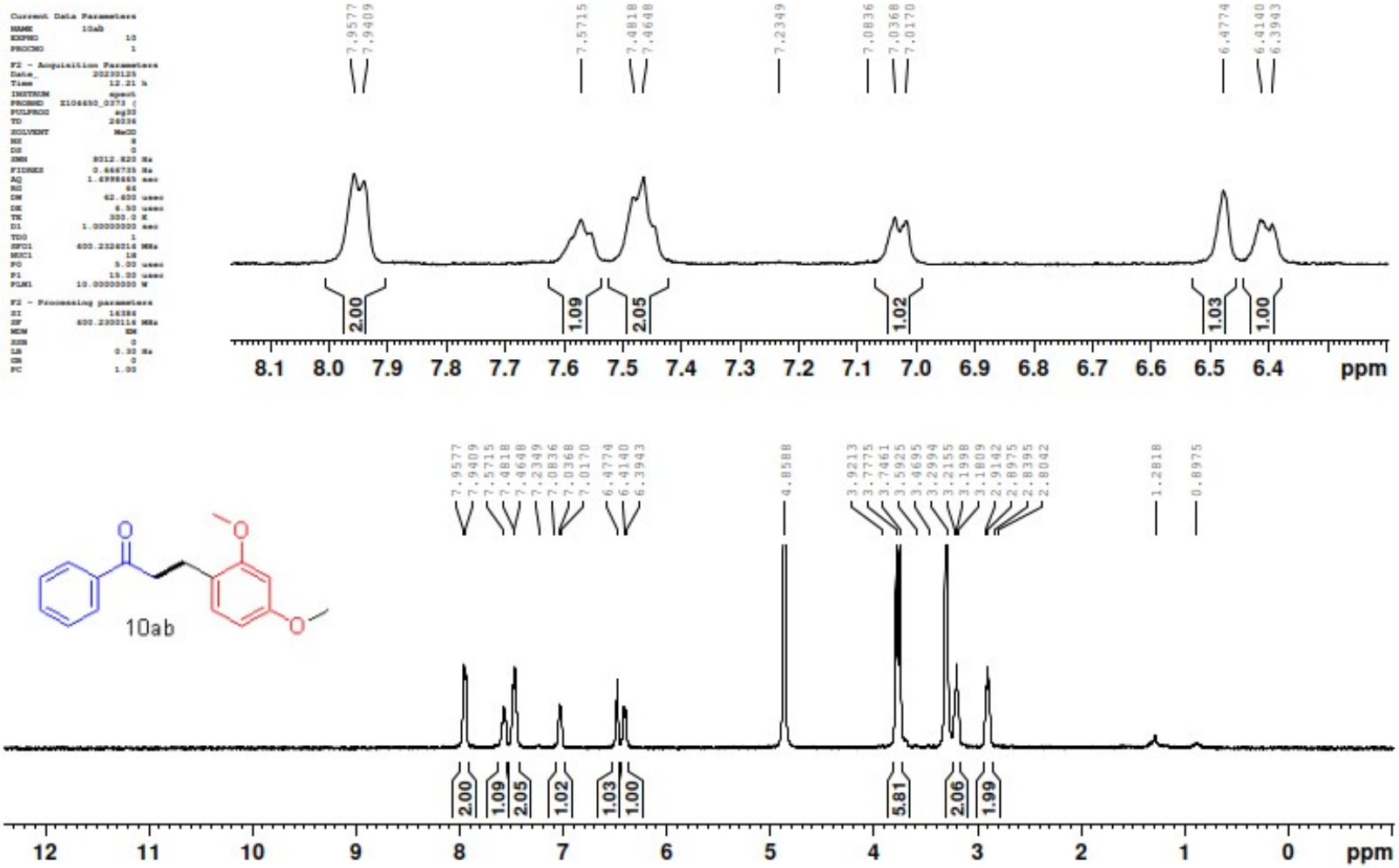

Current Data Parameters
NAME 8s'
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230517
Time 17.56 h
INSTRUM spect
PROBHD 2104450_0373 (
PULPROG zg30
TD 24036
SOLVENT DMSO
NS 16
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 10
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 4.79 usec
P1 14.38 usec
PLW1 19.18000031 W
F2 - Processing parameters
SI 16384
SF 400.2300031 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.2782
8.0133
7.9982
7.8553
7.6505
7.6320
7.5521
7.5348
0.82
2.00
1.18
2.25
8.4
8.2
8.0
7.8
7.6
ppm
12.9363
3.5976
3.5014
3.3170
2.6681
2.4992
2.3266
1.4950
1.2327
O
N
O
OH
S
8s'
0.88
2.15
2.19
13
12
11
10
9
8
7
6
5
4
3
2
1
0
ppm

10aa IN DMSO

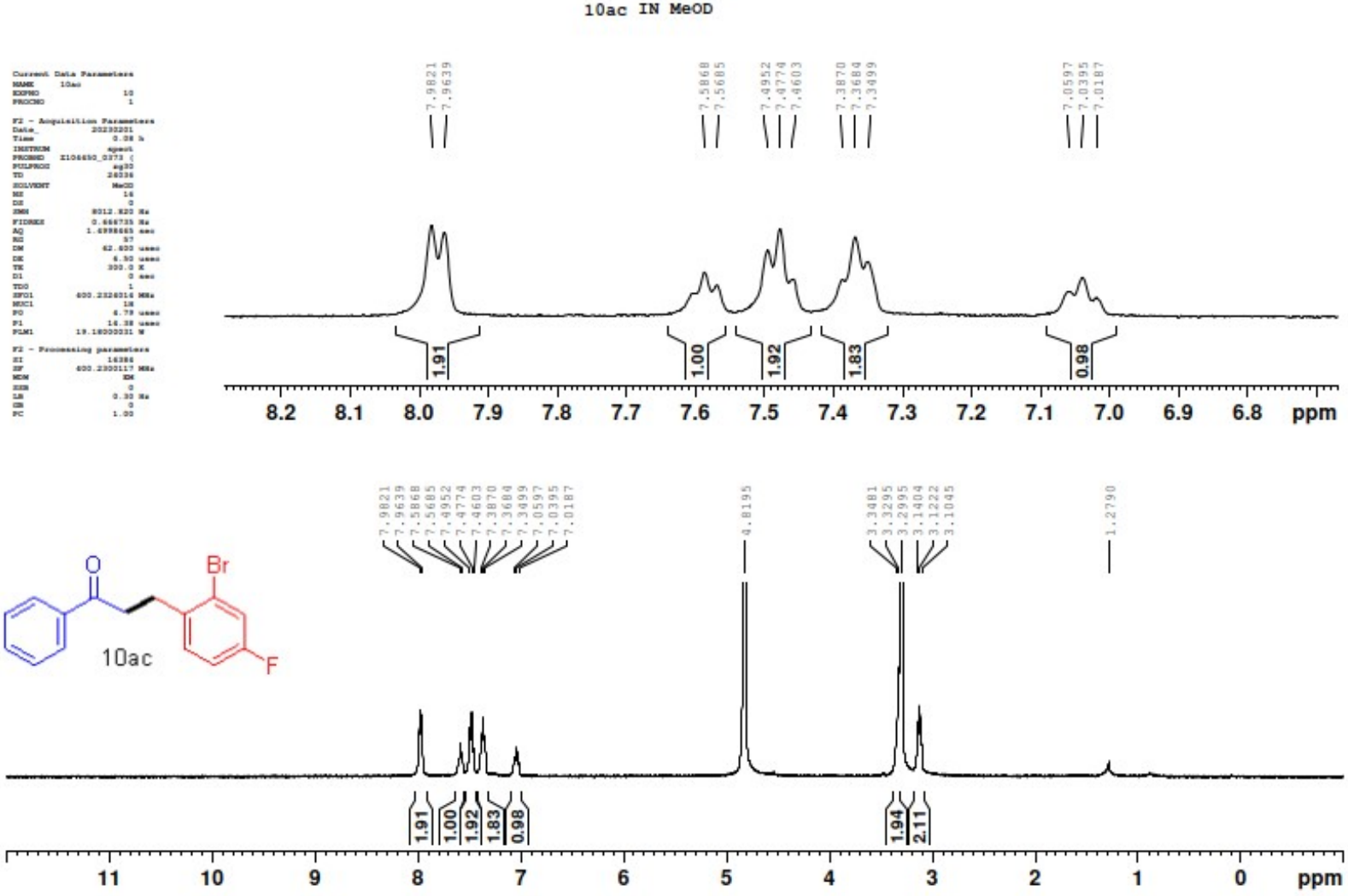

Current Data Parameters
NAME 10aa
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230116
Time 18.31 h
INSTRUM spect
PROBHD Z163739_0162 (
PULPROG zg30
TD 26036
SOLVENT DMSO
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.646735 Hz
AQ 1.6998465 sec
RG 18.9
DW 62.400 usec
DE 18.11 usec
TE 296.6 K
D1 0 sec
TD0 1
SFO1 600.1726710 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 21.75399971 W
F2 - Processing parameters
SI 16384
SF 600.1700035 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.00
7.9935
7.9743
7.6487
7.6303
7.6127
7.5358
7.5168
7.4976
7.3598
7.3496
7.2847
7.2744
7.1833
7.1750
2.00
1.08
2.14
3.85
0.94
8.2
8.1
8.0
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7.0
ppm
5.3584
4.5898
3.3948
3.3762
3.3574
3.3222
3.2987
2.9602
2.9416
2.9229
2.4997
2.07
11
10
9
8
7
6
5
4
3
2
1
0

O
10aa

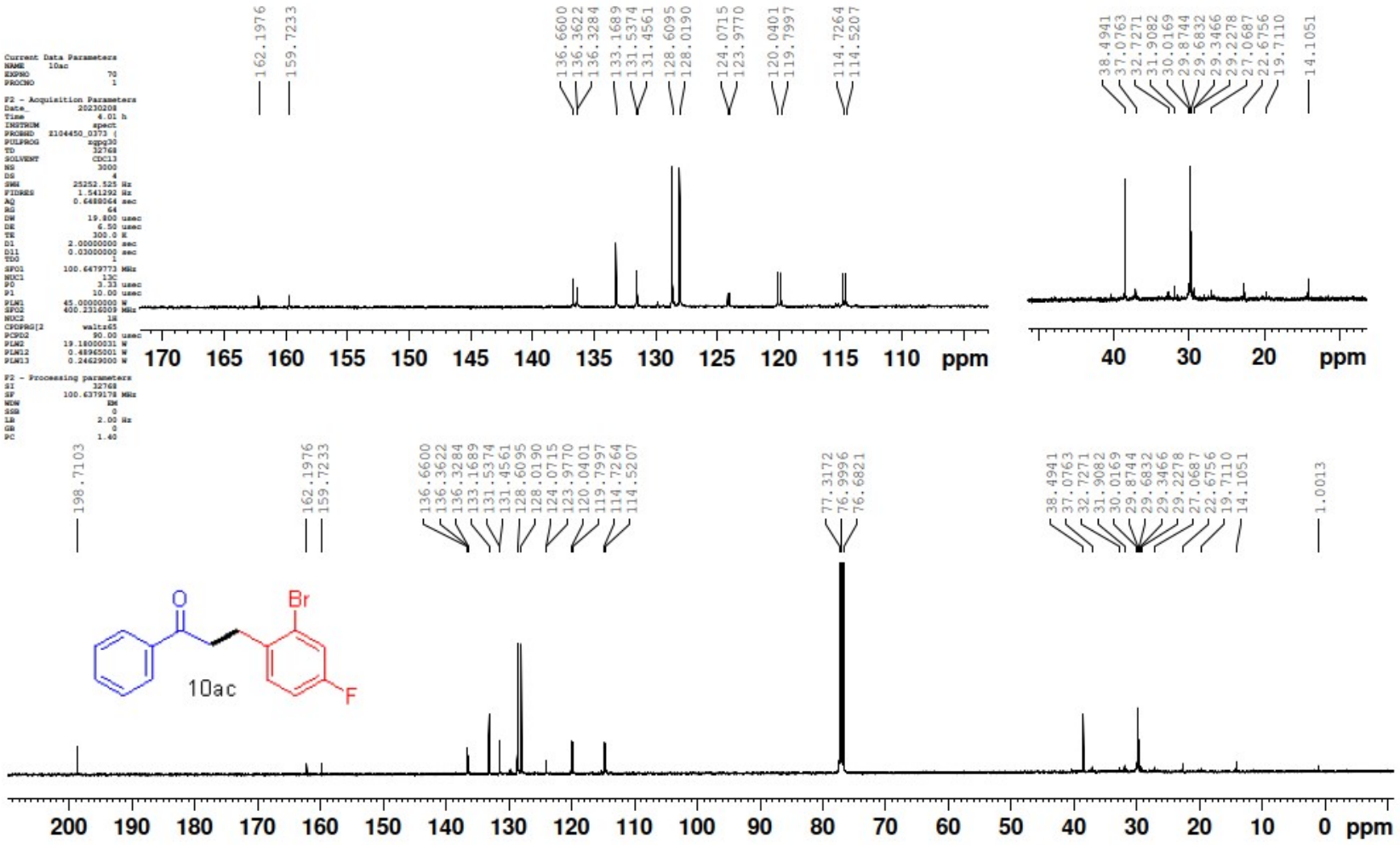
10ab IN MeOD


Current Data Parameters
NAME 10ab
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230125
Time 12.21 h
INSTRUM spect
PROBHD Z104650_0373 (
PULPROG zg30
TD 26036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.6998665 sec
RG 64
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 600.2326016 MHz
NUC1 1H
P0 9.00 usec
P1 13.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 600.2300116 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.9577
7.9409
7.5715
7.4818
7.4648
7.2349
7.0836
7.0368
7.0170
6.4774
6.4140
6.3943
2.00
1.09
2.05
1.02
1.03
1.00
8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 6.7 6.6 6.5 6.4 ppm
10ab
4.8588
3.9213
3.7775
3.7461
3.5925
3.4695
3.2994
3.2155
3.1998
3.1809
2.9142
2.8975
2.8395
2.8042
1.2818
0.8975
2.00
1.09
2.05
1.02
1.03
1.00
5.81
2.06
1.99
12 11 10 9 8 7 6 5 4 3 2 1 0 ppm

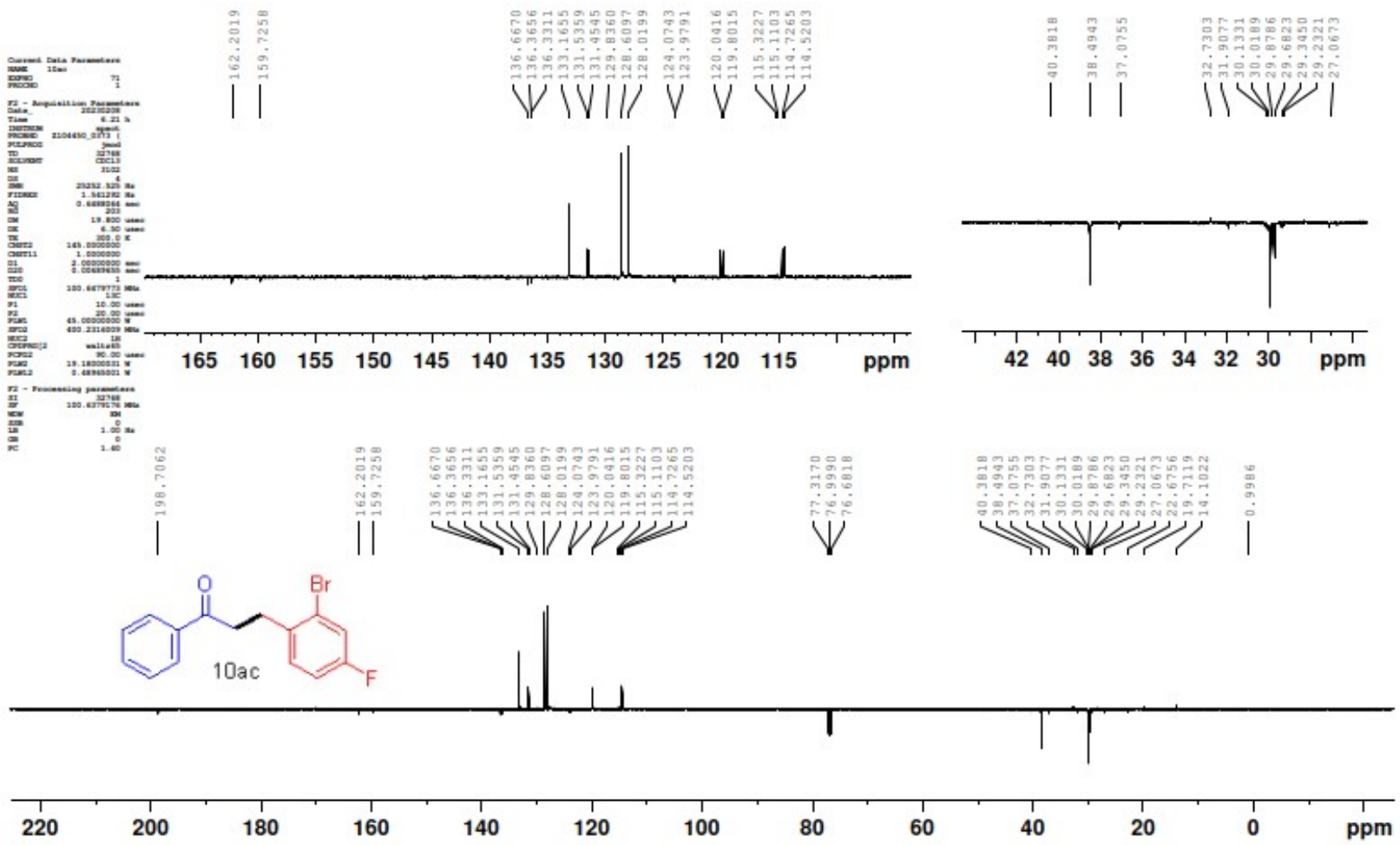
10ac IN MeOD

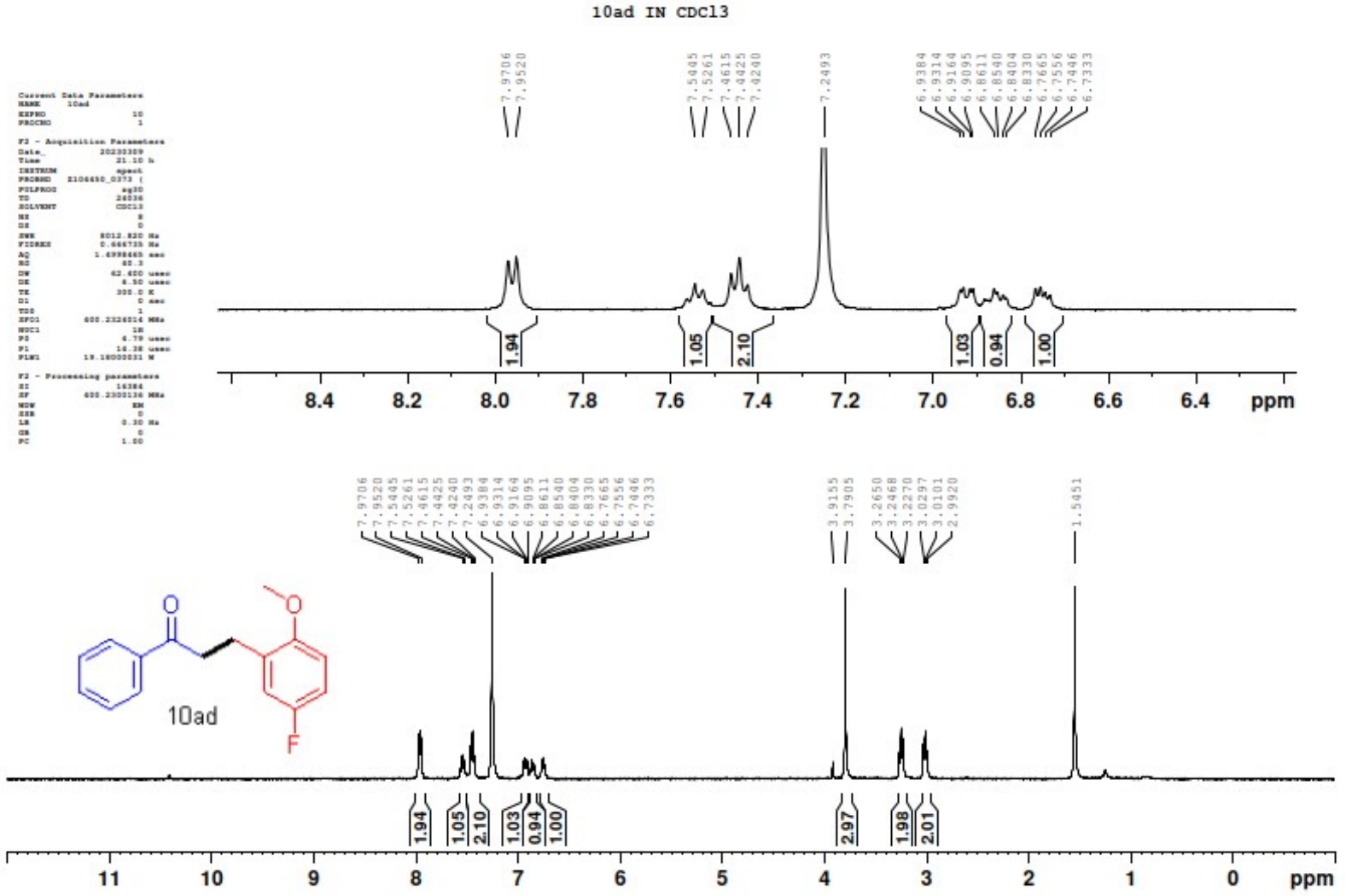

7.9821
7.9639
7.5868
7.5685
7.4952
7.4774
7.4603
7.3870
7.3684
7.3499
7.0597
7.0395
7.0187
4.8195
3.3481
3.3295
3.2995
3.1404
3.1222
3.1045
1.2790
1.91
1.00
1.92
1.83
0.98
1.94
2.11
ppm
10ac
O
Br
F

10ac IN CDCI3-13C

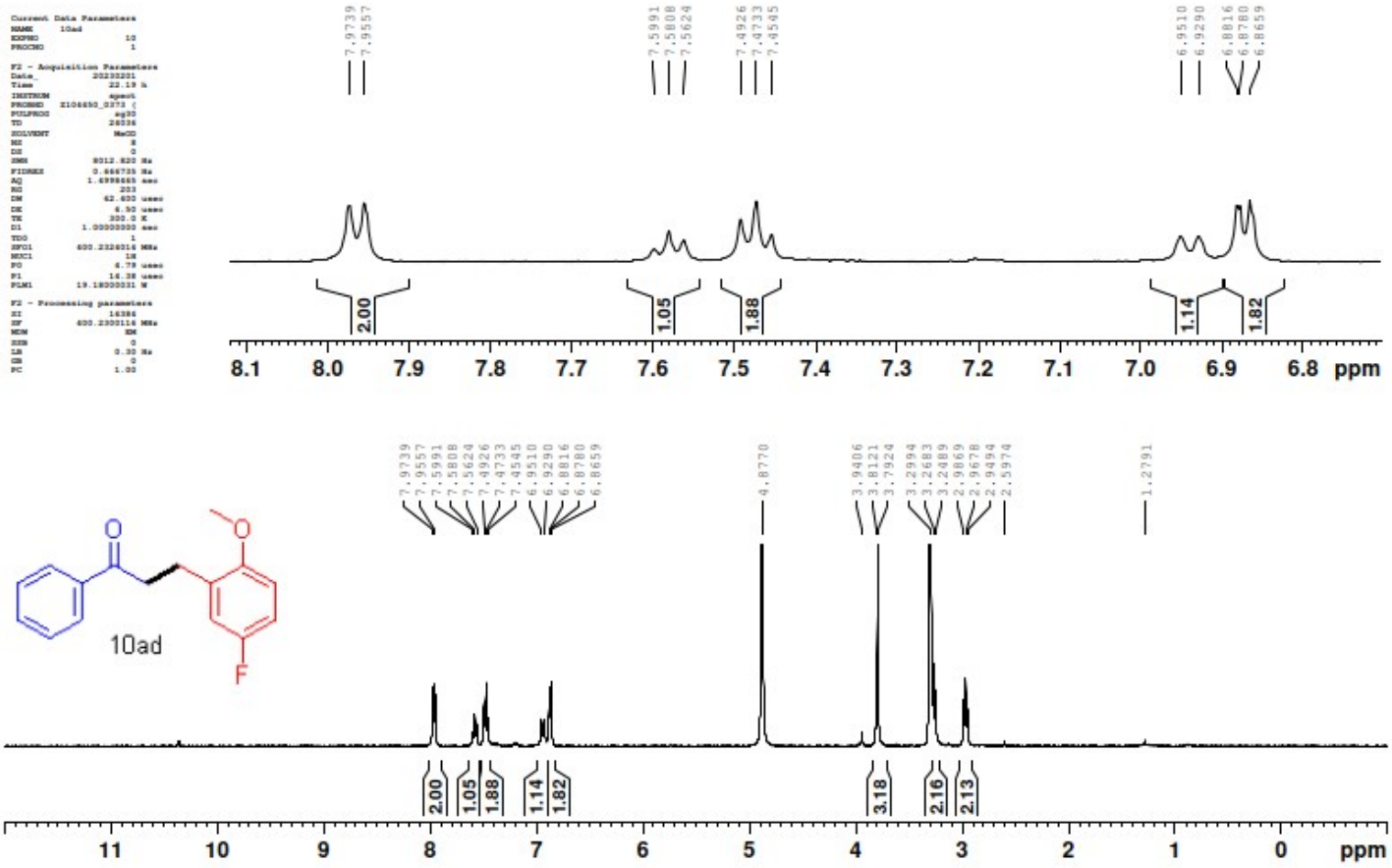


10ac IN CDCI3-APT

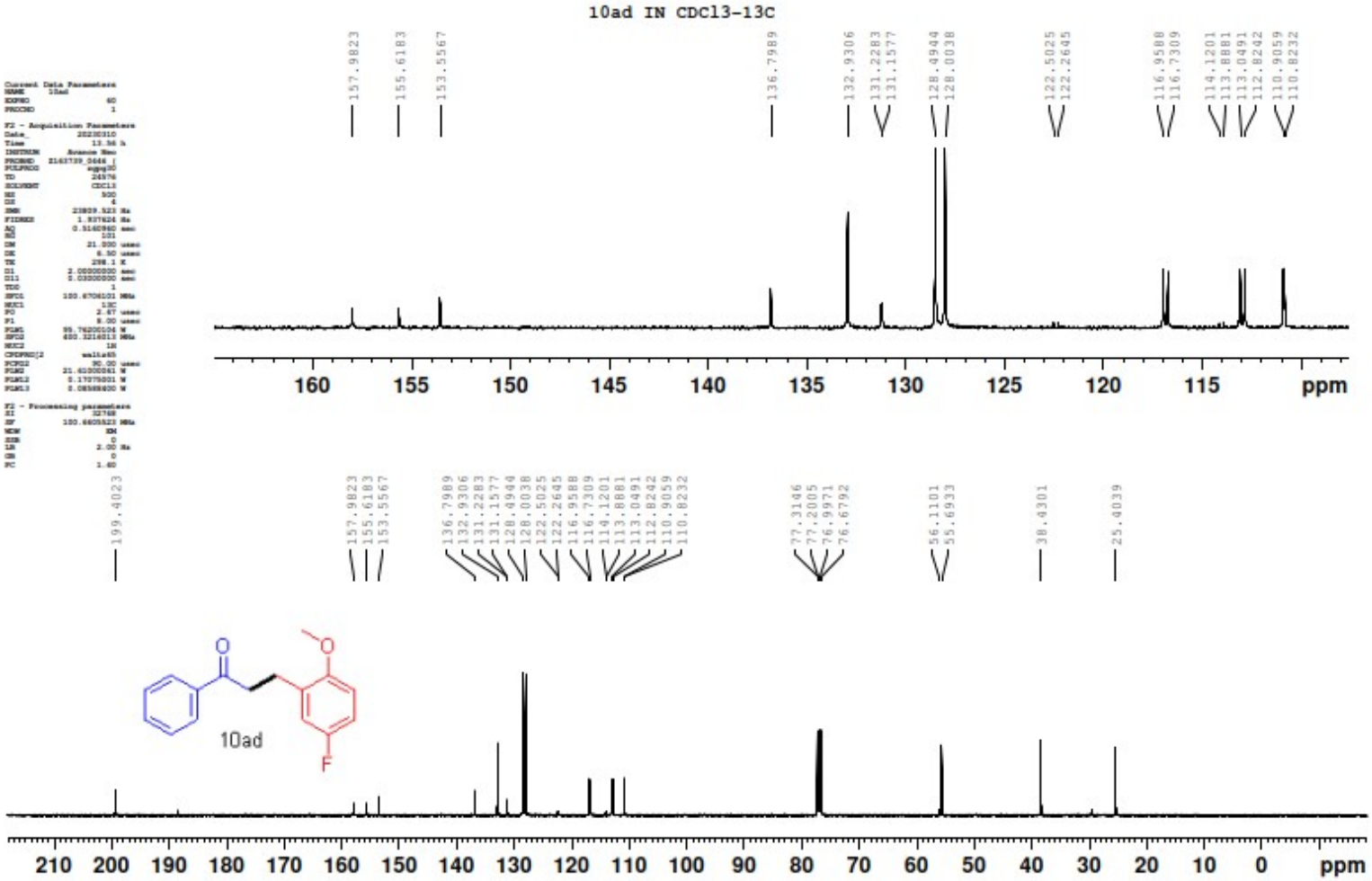


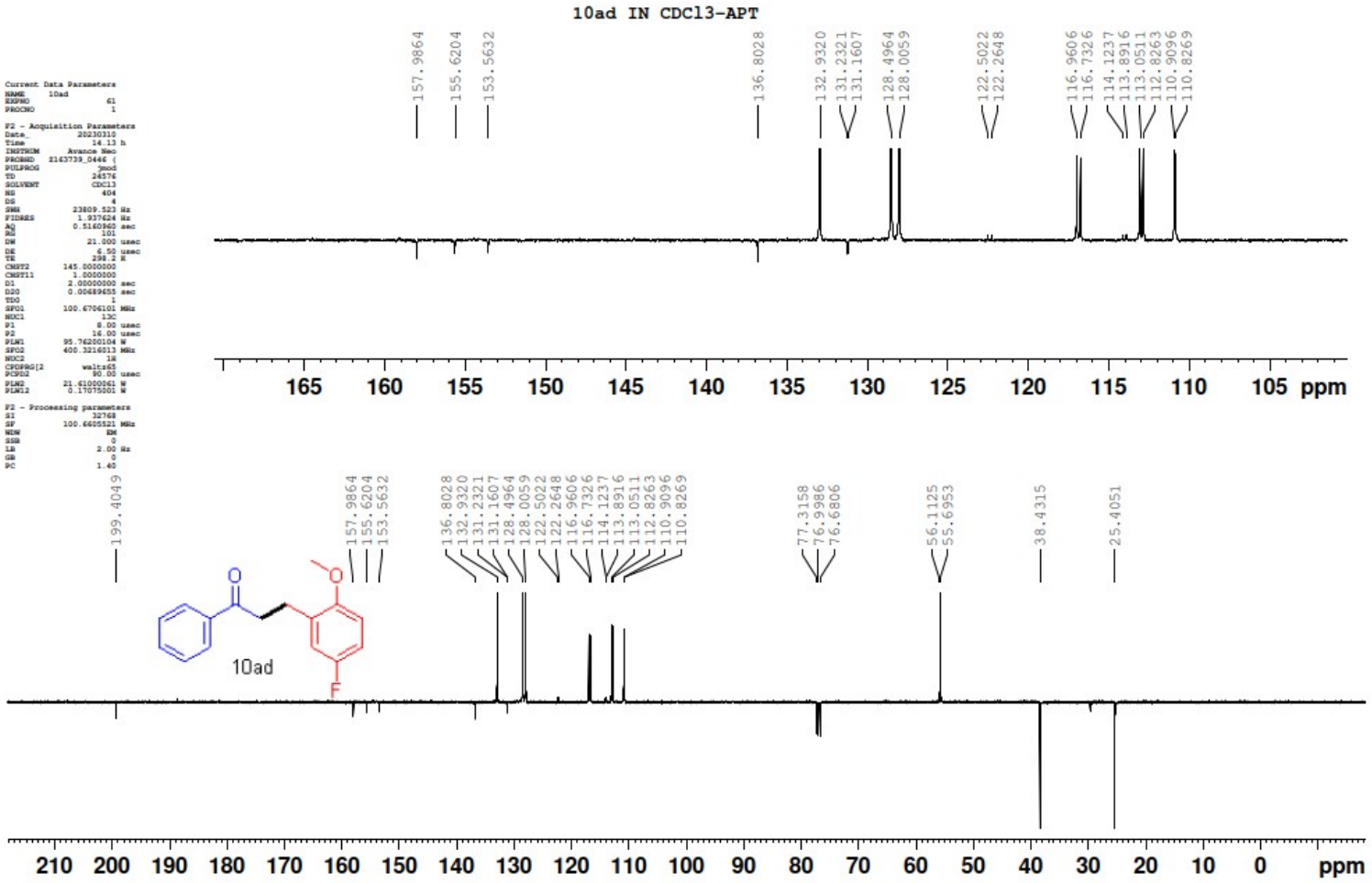

10ad IN CDCl3
7.9706
7.9520
7.5445
7.5261
7.4615
7.4425
7.4240
7.2493
6.9384
6.9314
6.9164
6.9095
6.8611
6.8540
6.8404
6.8330
6.7665
6.7556
6.7446
6.7333
1.94
1.05
2.10
1.03
0.94
1.00
8.4
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
6.4
ppm
3.9155
3.7905
3.2650
3.2468
3.2270
3.0297
3.0101
2.9920
1.5451
2.97
1.98
2.01
O
O
F
10ad
11
10
9
8
7
6
5
4
3
2
1
0
ppm

10ad IN MeOD

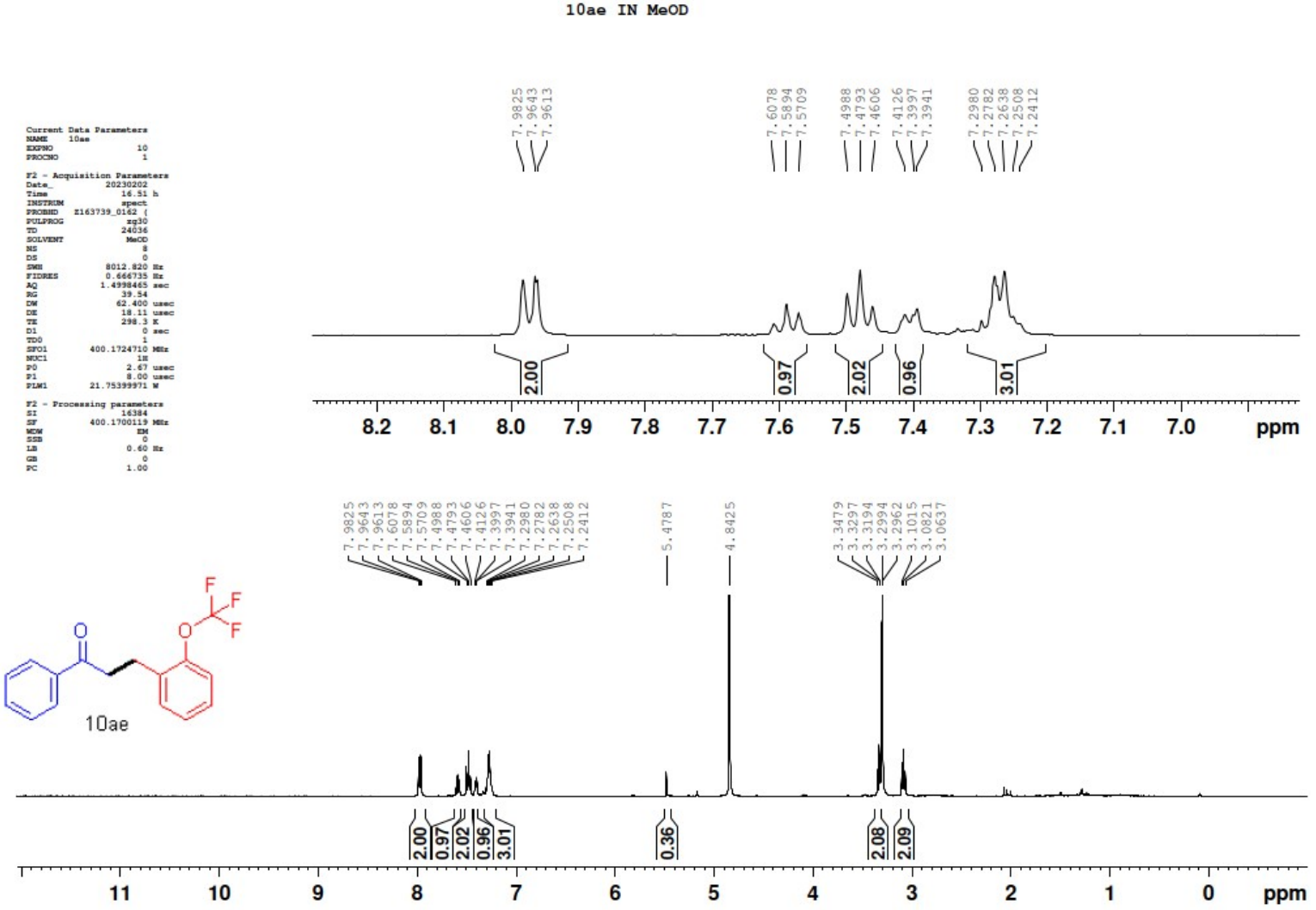

7.9739
7.9557
7.5991
7.5808
7.5624
7.4926
7.4733
7.4545
6.9510
6.9290
6.8816
6.8780
6.8659
2.00
1.05
1.88
1.14
1.82
8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 ppm
4.8770
3.9406
3.8121
3.7924
3.2994
3.2683
3.2489
2.9869
2.9678
2.9494
2.5974
1.2791
3.18
2.16
2.13
11 10 9 8 7 6 5 4 3 2 1 0 ppm

O
O
F
10ad

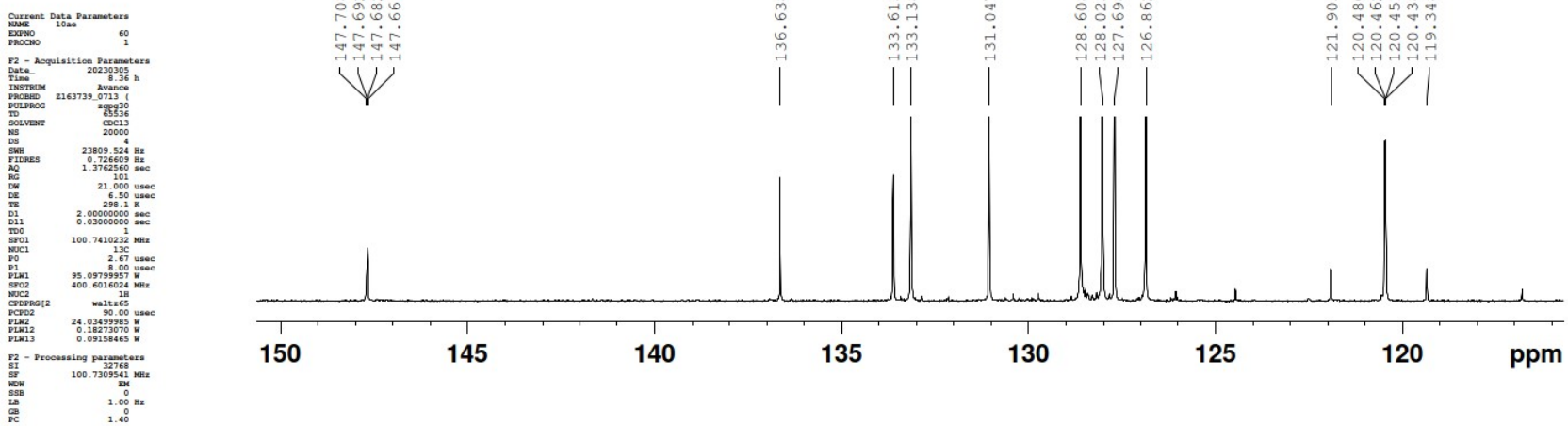

10ad IN CDCl3-13C
157.9823
155.6183
153.5567
136.7989
132.9306
131.2283
131.1577
128.4944
128.0038
122.5025
122.2645
116.9588
116.7309
114.1201
113.8881
113.0491
112.8242
110.9059
110.8232
160
155
150
145
140
135
130
125
120
115
ppm
199.4023
157.9823
155.6183
153.5567
136.7989
132.9306
131.2283
131.1577
128.4944
128.0038
122.5025
122.2645
116.9588
116.7309
114.1201
113.8881
113.0491
112.8242
110.9059
110.8232
77.3146
77.2005
76.9971
76.6792
56.1101
55.6933
38.4301
25.4039
O
O
F
10ad
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
ppm

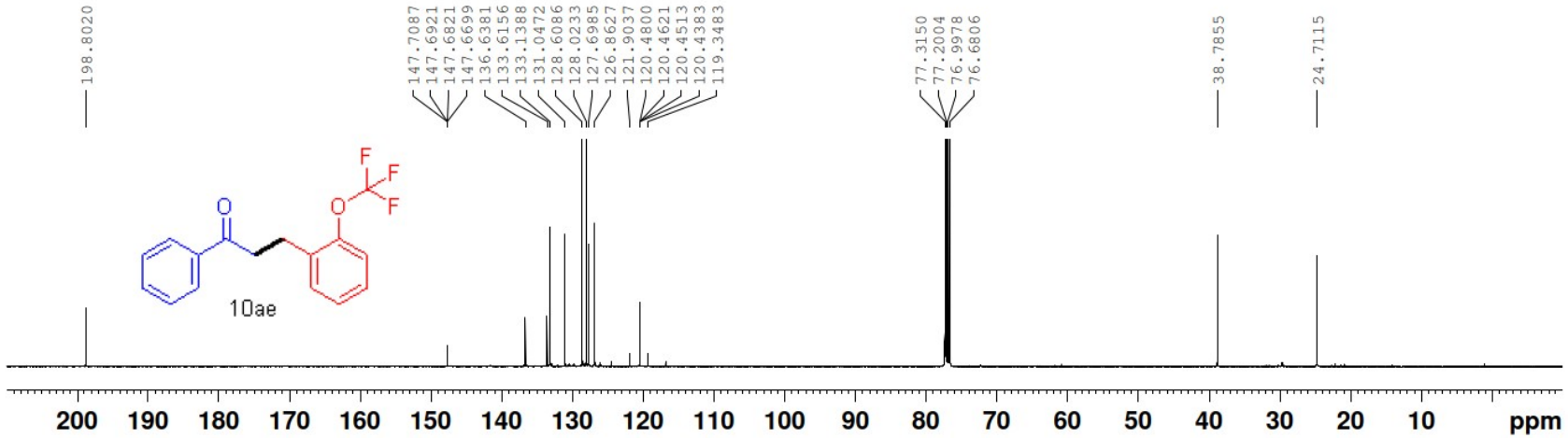

10ad IN CDCl3-APT
Current Data Parameters
NAME 10ad
EXPNO 61
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230310
Time 14.13 h
INSTRUM Avance Neo
PROBHD 2163739_0446 (
PULPROG zgpg
TD 24576
SOLVENT CDCl3
NS 404
DS 4
SWH 23809.523 Hz
FIDRES 1.937624 Hz
AQ 0.5160960 sec
RG 101
DW 21.000 usec
DE 6.50 usec
TE 298.2 K
CNST2 145.0000000
CNST11 1.0000000
D1 2.00000000 sec
D20 0.00689655 sec
TD0 1
SFO1 100.6706101 MHz
NUC1 13C
P1 8.00 usec
P2 16.00 usec
PLW1 95.76200104 W
SFO2 400.3216013 MHz
NUC2 1H
CPDPRG[2 waltz65
PCPD2 90.00 usec
PLW2 21.61000061 W
PLW12 0.17075001 W
F2 - Processing parameters
SI 32768
SF 100.6605521 MHz
WDW EM
SSB 0
LB 2.00 Hz
GB 0
PC 1.40
157.9864
155.6204
153.5632
136.8028
132.9320
131.2321
131.1607
128.4964
128.0059
122.5022
122.2648
116.9606
116.7326
114.1237
113.8916
113.0511
112.8263
110.9096
110.8269
165 160 155 150 145 140 135 130 125 120 115 110 105 ppm
199.4049
157.9864
155.6204
153.5632
136.8028
132.9320
131.2321
131.1607
128.4964
128.0059
122.5022
122.2648
116.9606
116.7326
114.1237
113.8916
113.0511
112.8263
110.9096
110.8269
77.3158
76.9986
76.6806
56.1125
55.6953
38.4315
25.4051
O
O
F
10ad
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm

10ae IN MeOD

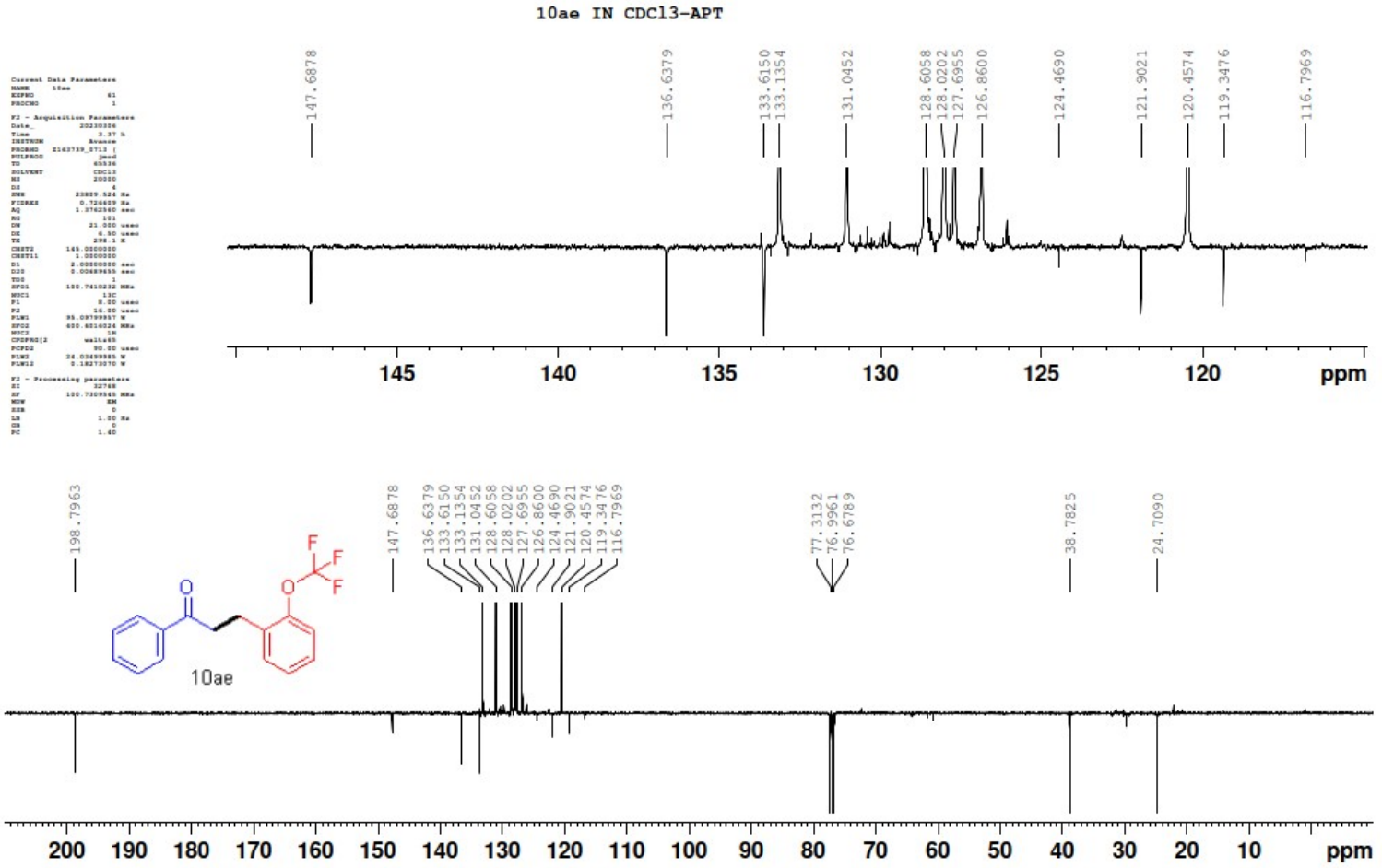

Current Data Parameters
NAME 10ae
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230202
Time 16.51 h
INSTRUM spect
PROBHD Z163739_0162 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 39.54
DW 62.400 usec
DE 18.11 usec
TE 298.3 K
D1 0 sec
TD0 1
SFO1 400.1724710 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 21.75399971 W
F2 - Processing parameters
SI 16384
SF 400.1700119 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.00
7.9825
7.9643
7.9613
7.6078
7.5894
7.5709
7.4988
7.4793
7.4606
7.4126
7.3997
7.3941
7.2980
7.2782
7.2638
7.2508
7.2412
2.00
0.97
2.02
0.96
3.01
8.2
8.1
8.0
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7.0
ppm
5.4787
4.8425
3.3479
3.3297
3.3194
3.2994
3.2962
3.1015
3.0821
3.0637
0.36
2.08
2.09
11
10
9
8
7
6
5
4
3
2
1
0
F
F
F
O
O
10ae

10ae IN CDCl3-13C



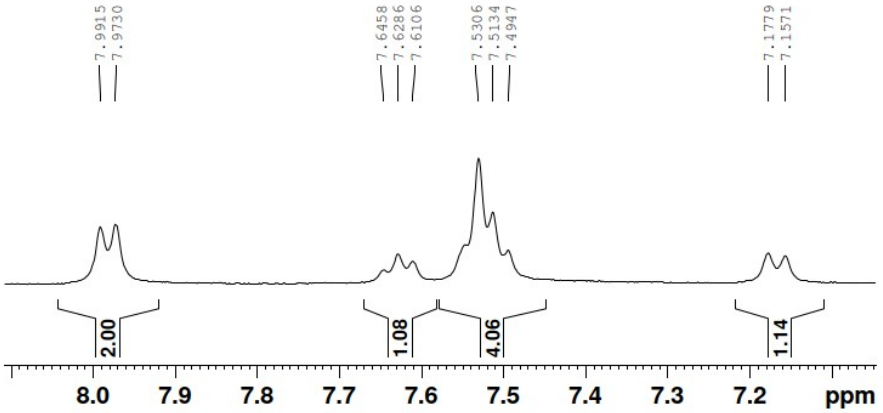


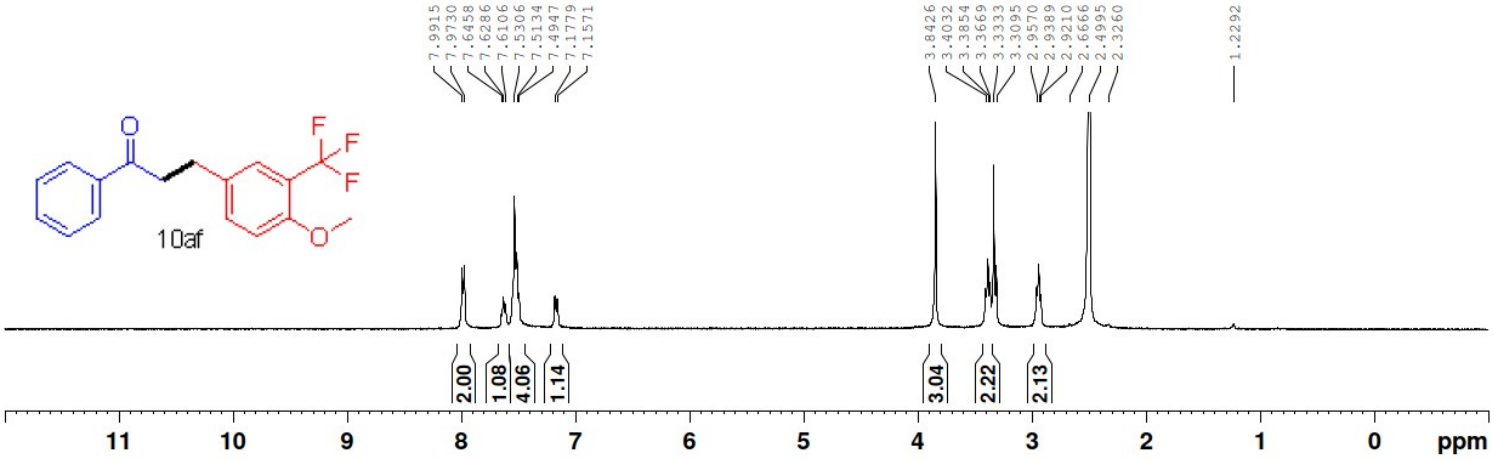
10ae IN CDCl3-APT



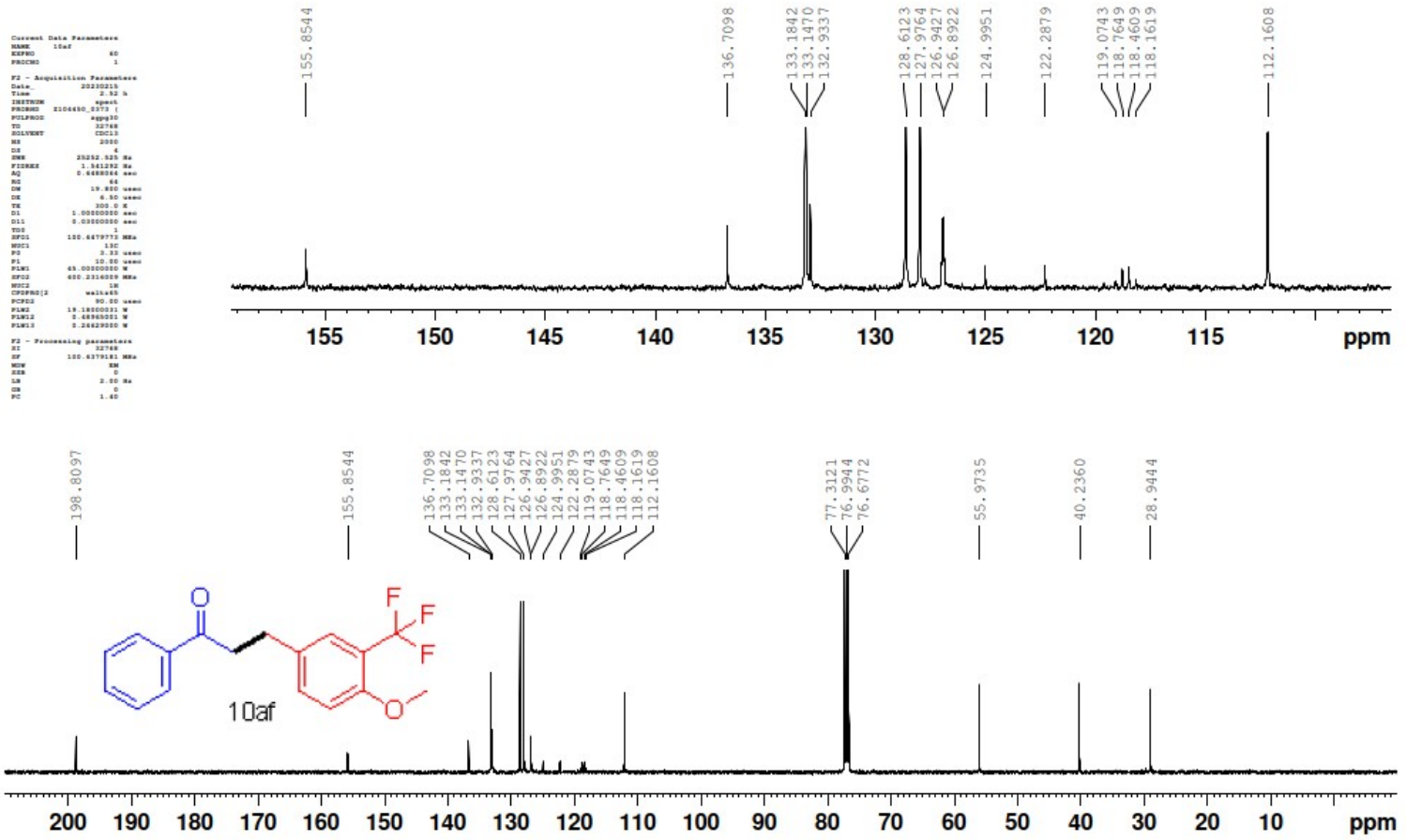
10af IN DMSO

```
Current Data Parameters
NAME      10af
EXPNO       10
PROCNO       1

F2 - Acquisition Parameters
Date_     20230202
Time         1.09 h
INSTRUM      spect
PROBHD   Z104450_0373 (
PULPROG      zg30
TD          24036
SOLVENT      DMSO
NS              8
DS              0
SWH       8012.820 Hz
FIDRES    0.666735 Hz
AQ        1.4998465 sec
RG            203
DW         62.400 usec
DE          6.50 usec
TE          300.0 K
D1        1.00000000 sec
TD0             1
SFO1    400.2324014 MHz
NUC1           1H
P0          4.79 usec
P1         14.38 usec
PLW1    19.18000031 W

F2 - Processing parameters
SI          16384
SF      400.2300028 MHz
WDW            EM
SSB             0
LB           0.30 Hz
GB              0
PC           1.00
```

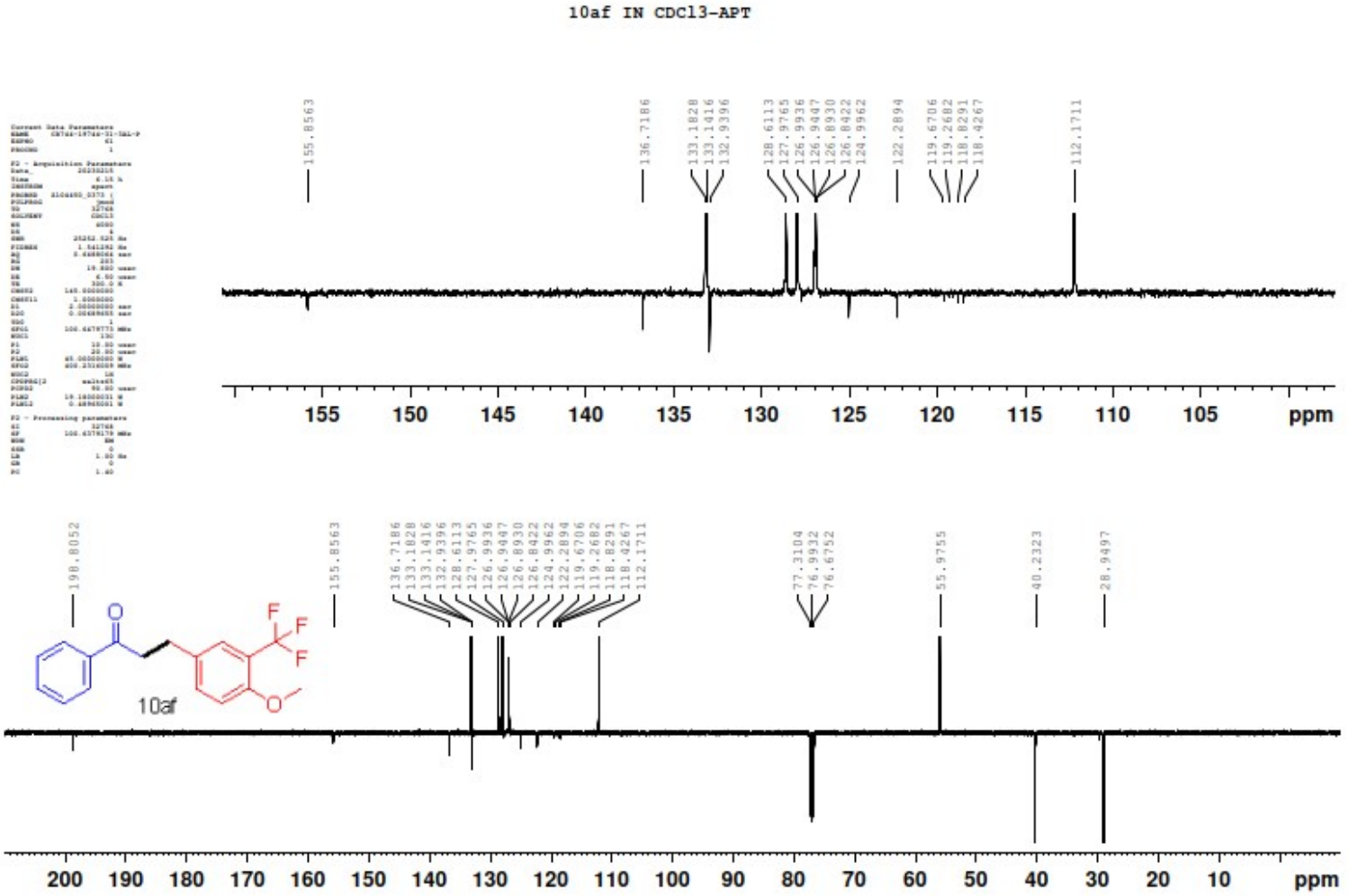




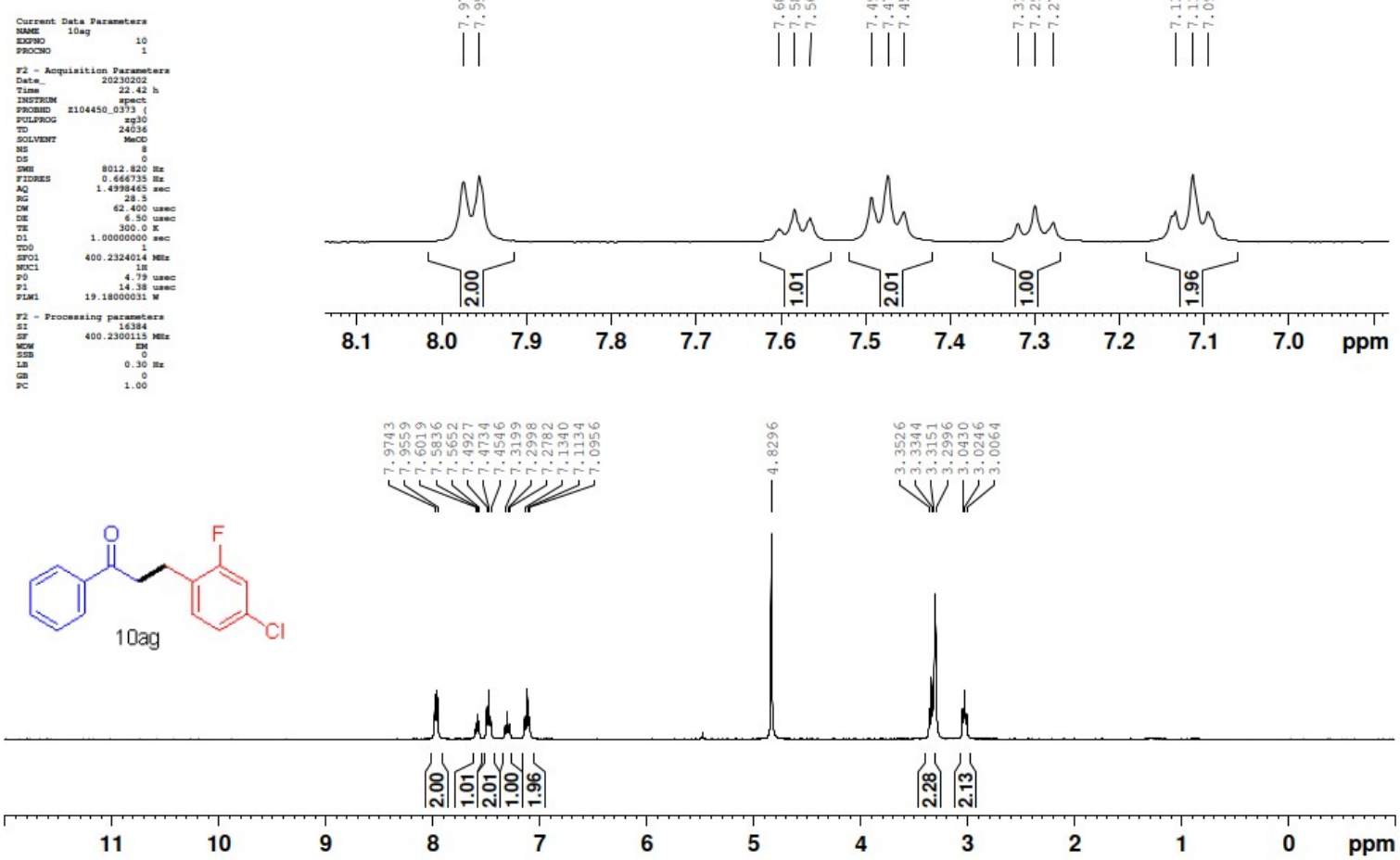
10af IN CDCl3-13C



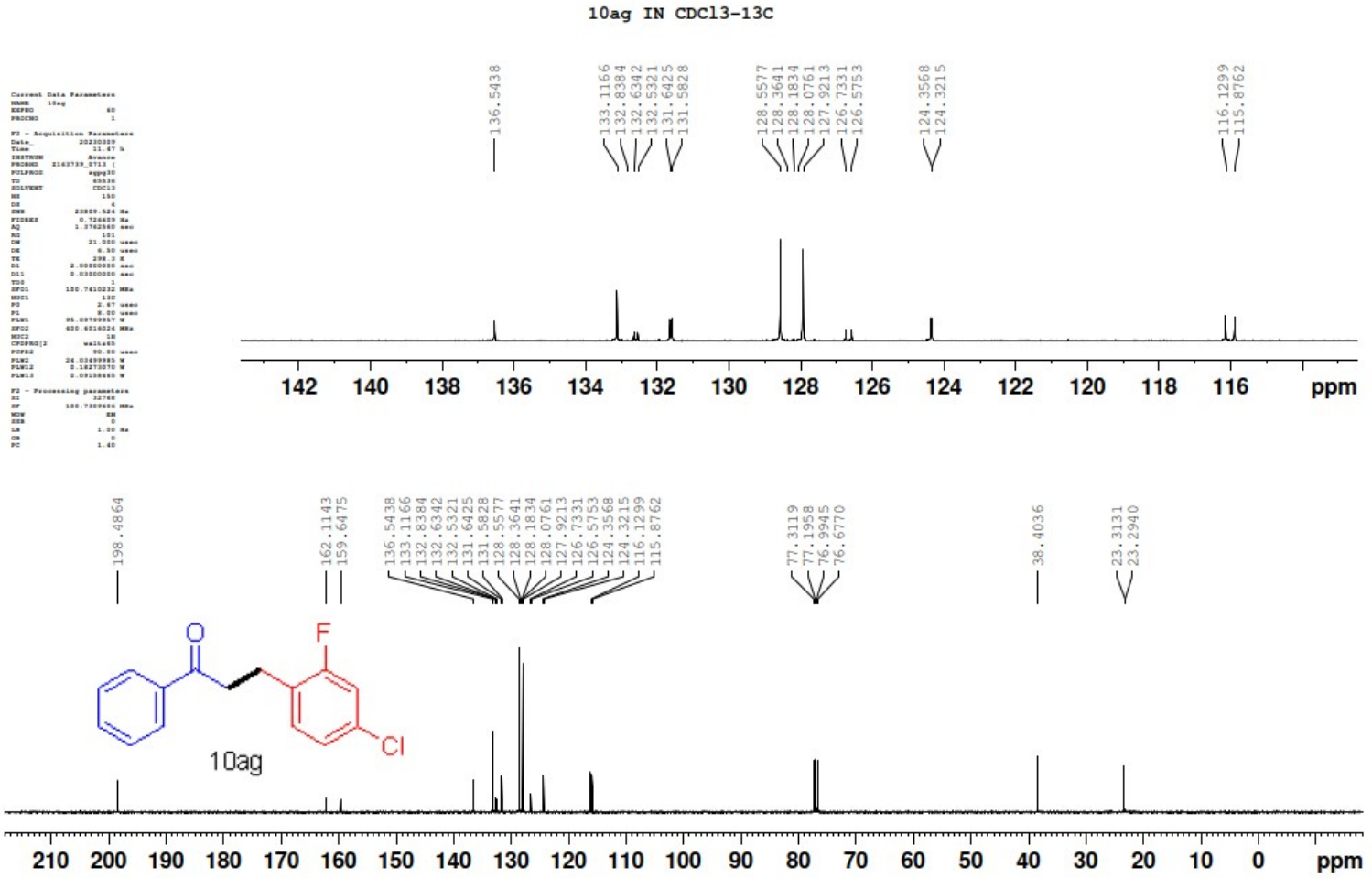
10af IN CDCl3-APT



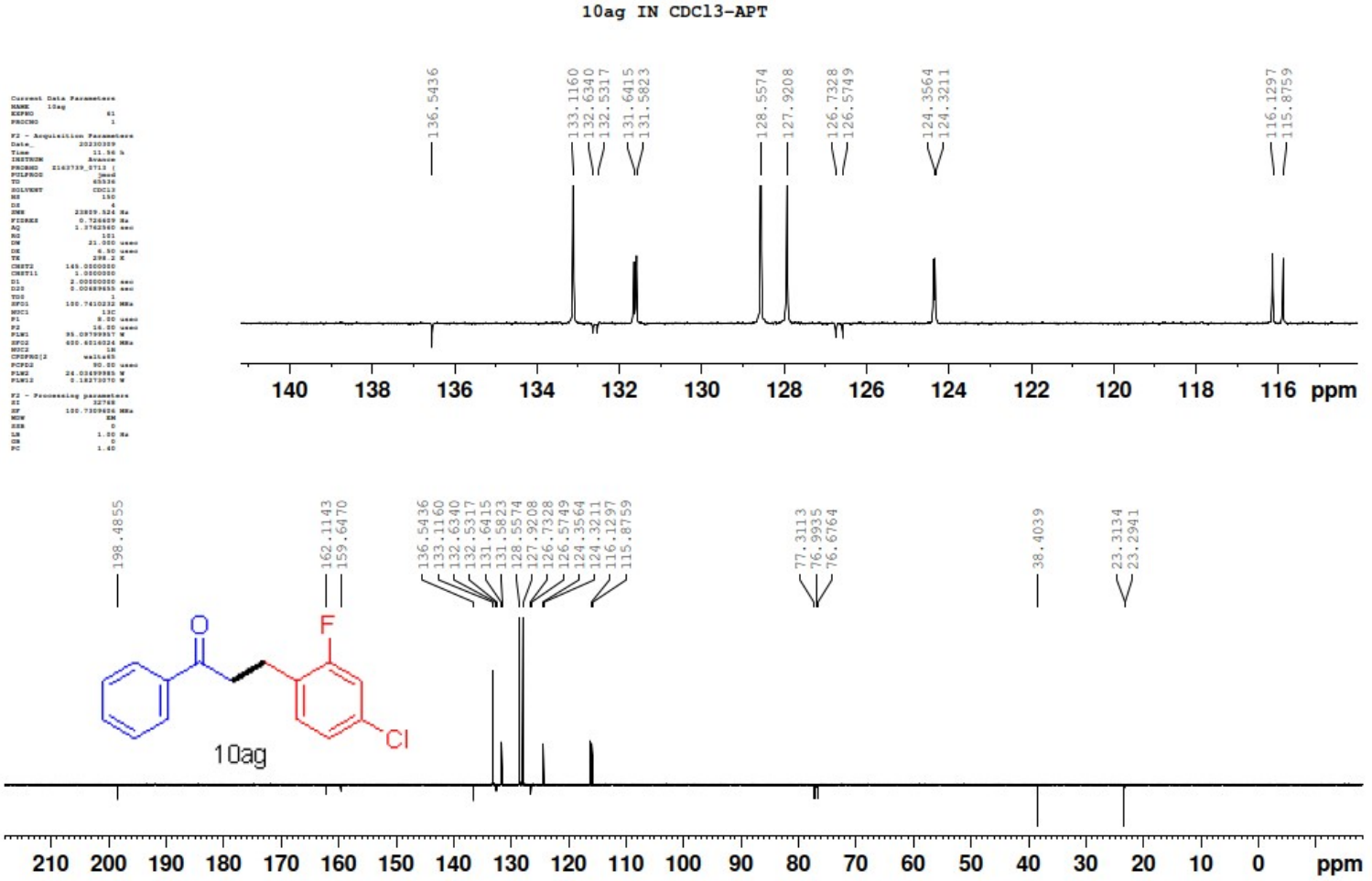
10ag IN MeOD


Current Data Parameters
NAME 10ag
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230202
Time 22.42 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 28.5
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 4.79 usec
P1 14.38 usec
PLW1 19.18000031 W
F2 - Processing parameters
SI 16384
SF 400.2300115 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.9743
7.9559
7.6019
7.5836
7.5652
7.4927
7.4734
7.4546
7.3199
7.2998
7.2782
7.1340
7.1134
7.0956
2.00
1.01
2.01
1.00
1.96
8.1
8.0
7.9
7.8
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7.0
ppm
4.8296
3.3526
3.3344
3.3151
3.2996
3.0430
3.0246
3.0064
2.28
2.13
O
F
Cl
10ag
11
10
9
8
7
6
5
4
3
2
1
0

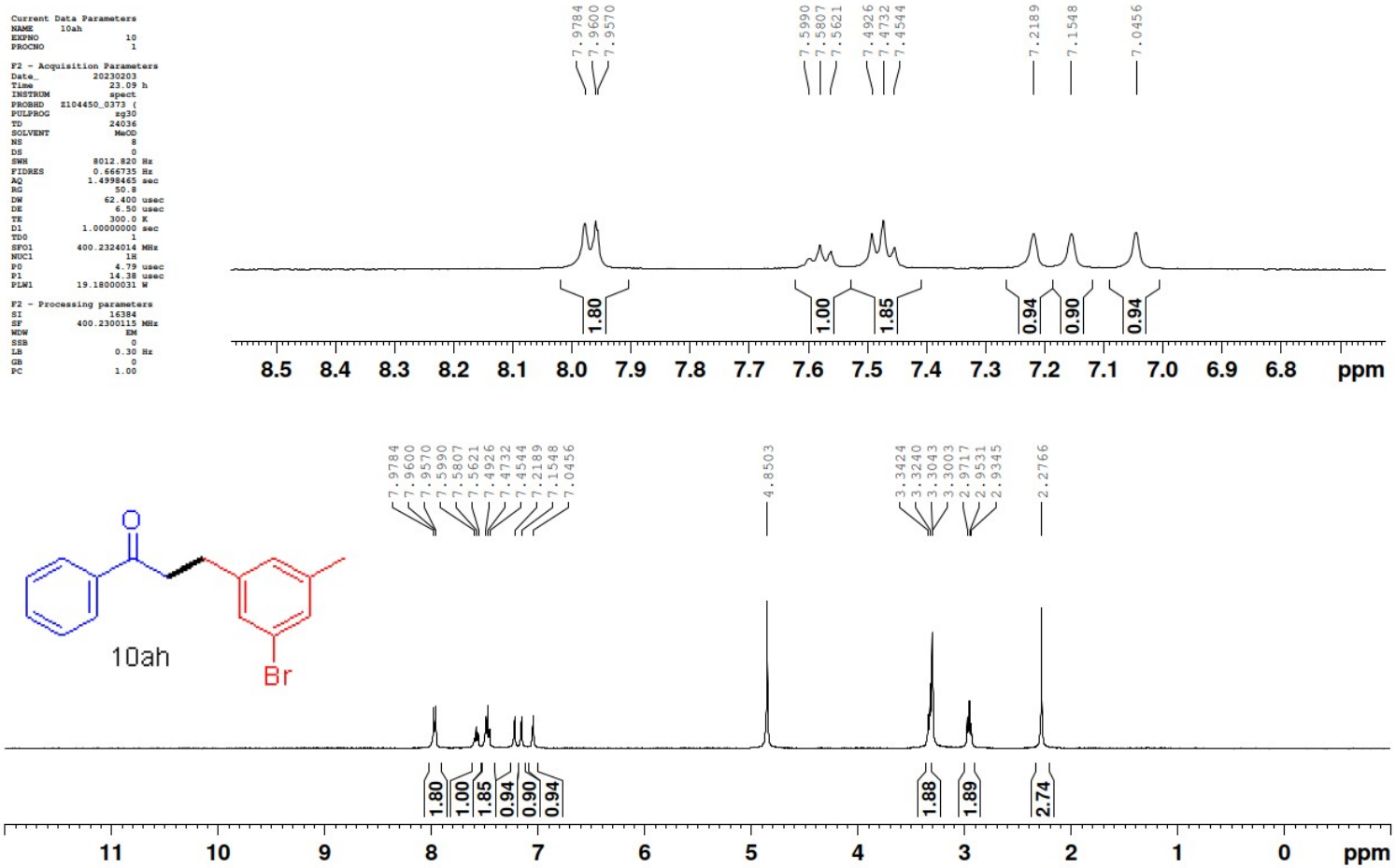
10ag IN CDCl3-13C



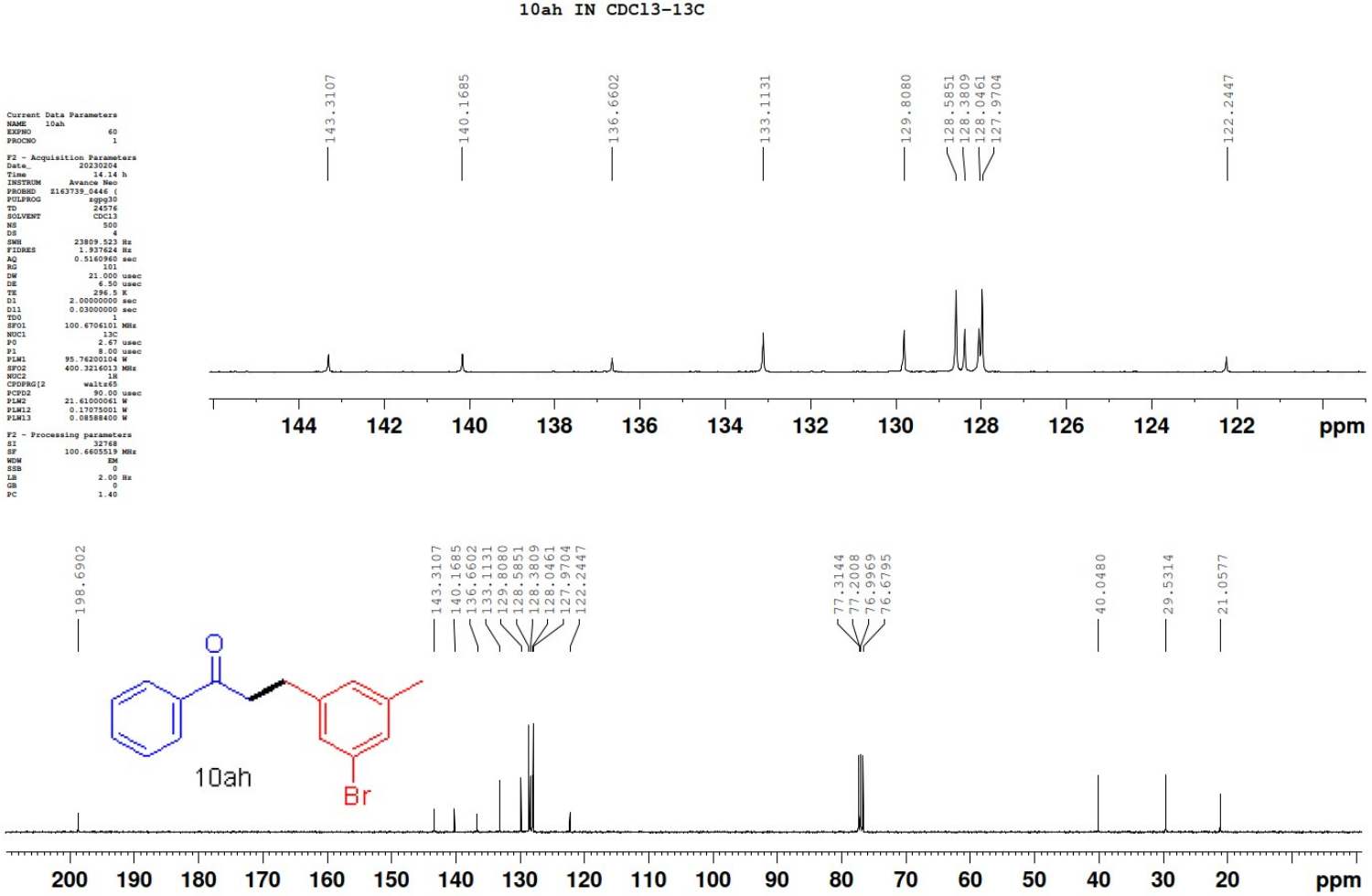
10ag IN CDCl3-APT



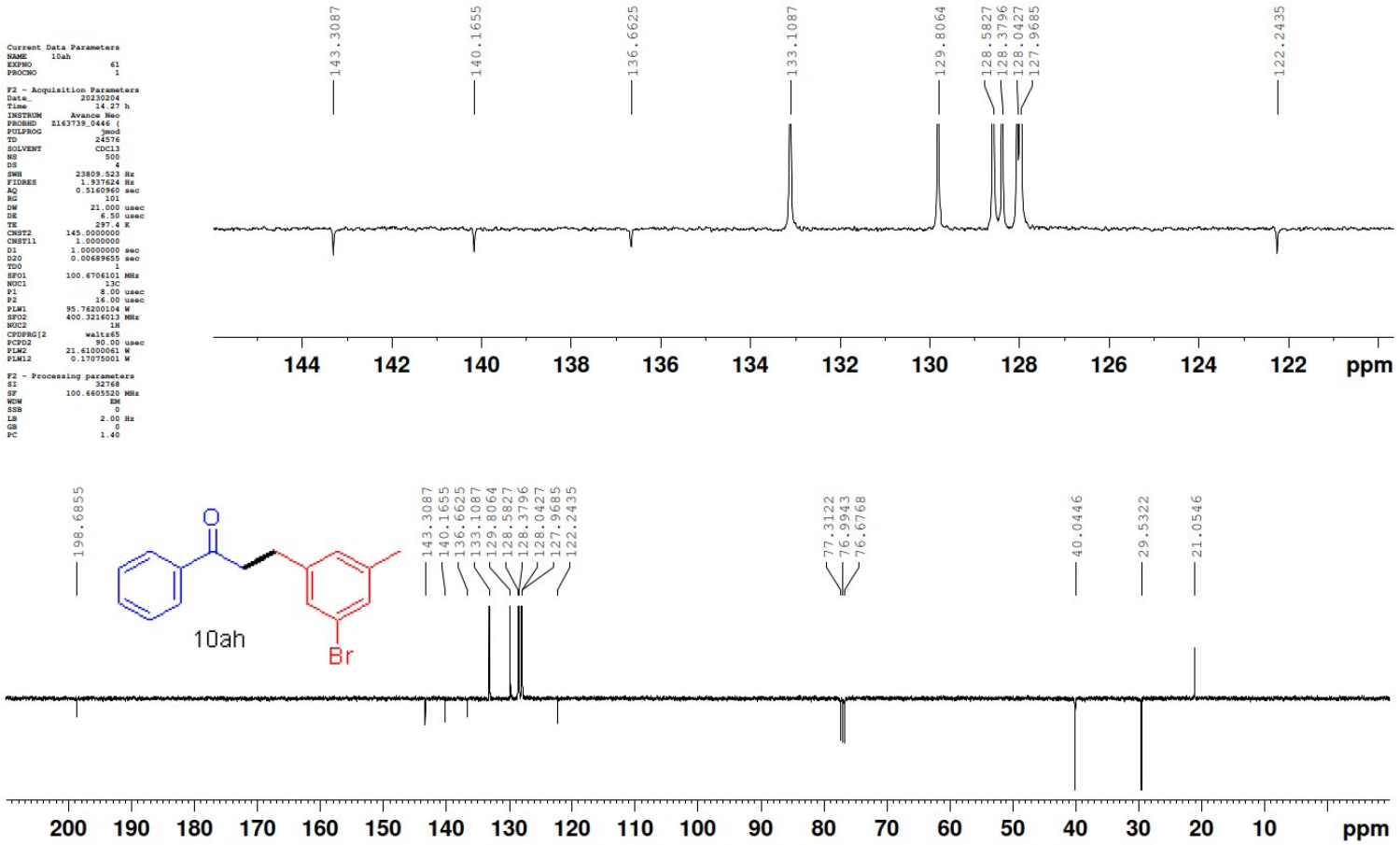
10ah IN MeOD


Current Data Parameters
NAME 10ah
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230203
Time 23.09 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 50.8
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 4.79 usec
P1 14.38 usec
PLW1 19.18000031 W
F2 - Processing parameters
SI 16384
SF 400.2300115 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.9784
7.9600
7.9570
7.5990
7.5807
7.5621
7.4926
7.4732
7.4544
7.2189
7.1548
7.0456
1.80
1.00
1.85
0.94
0.90
0.94
8.5 8.4 8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 ppm
10ah
Br
4.8503
3.3424
3.3240
3.3043
3.3003
2.9717
2.9531
2.9345
2.2766
1.88
1.89
2.74
11 10 9 8 7 6 5 4 3 2 1 0 ppm

10ah IN CDCl3-13C

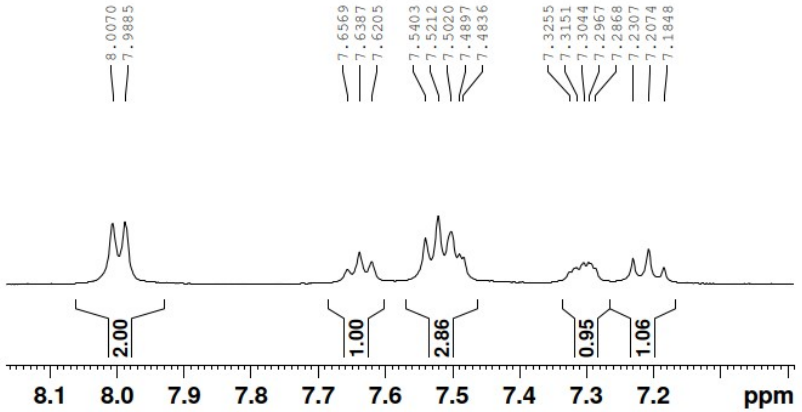


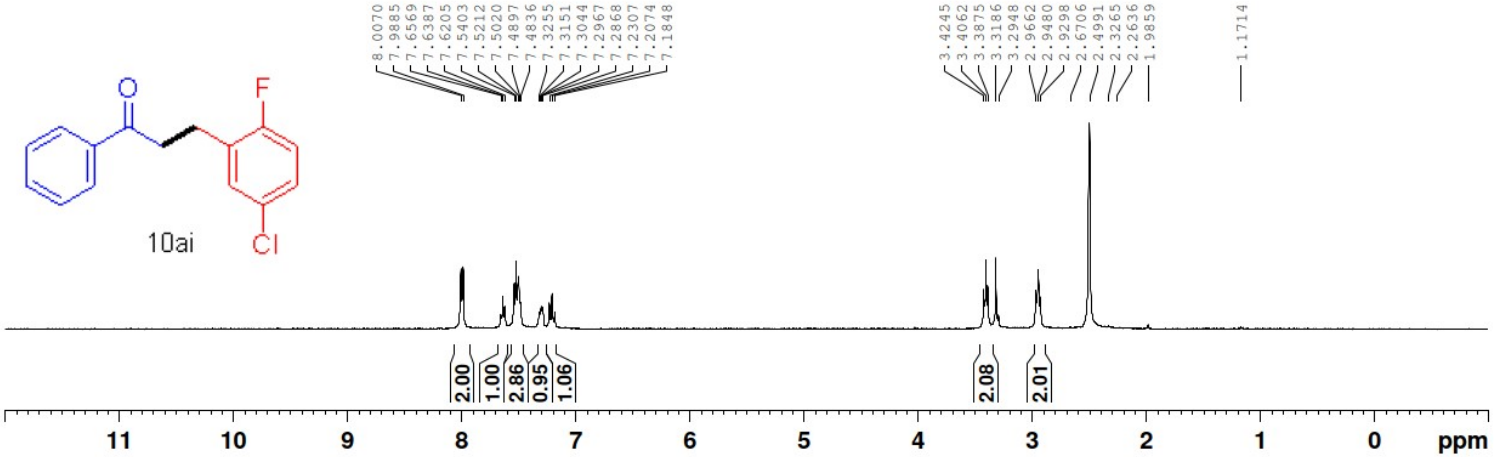
10ah IN CDCl3-APT



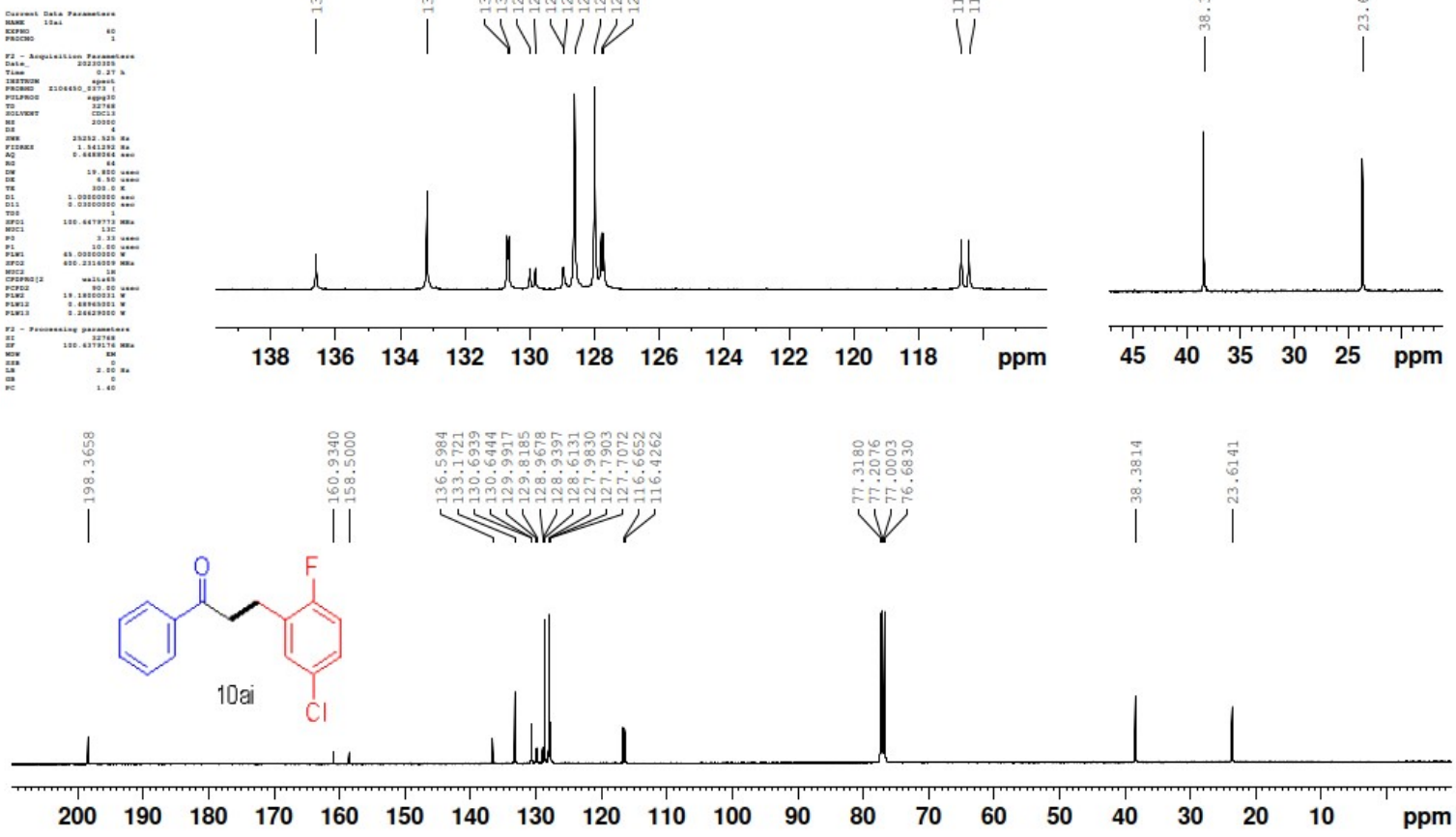
10ai IN DMSO

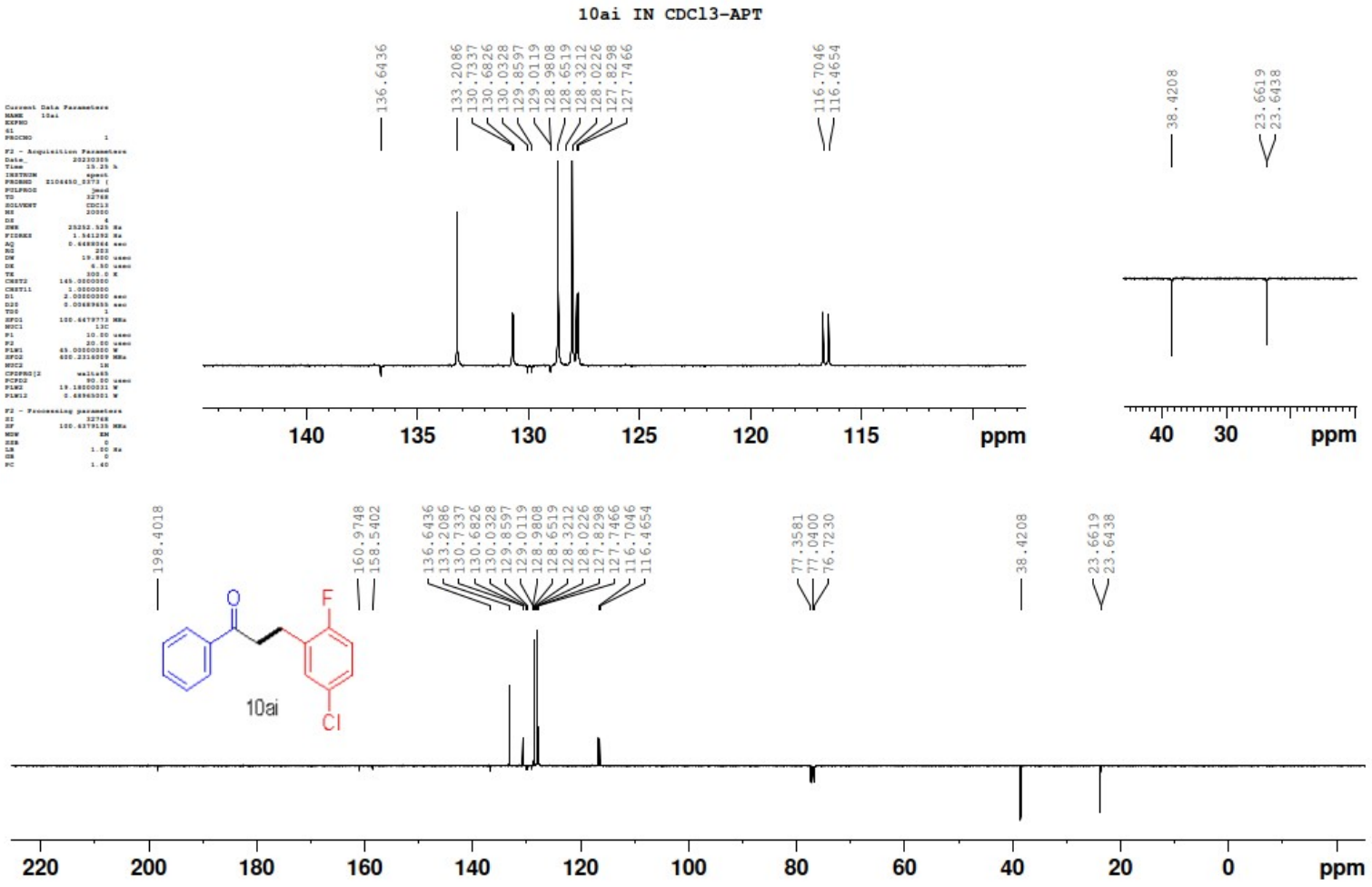
```
Current Data Parameters
NAME      10ai
EXPNO           10
PROCNO           1

F2 - Acquisition Parameters
Date_      20230204
Time           0.21 h
INSTRUM       spect
PROBHD   Z104450_0373 (
PULPROG         zg30
TD             24036
SOLVENT         DMSO
NS                 8
DS                 0
SWH         8012.820 Hz
FIDRES      0.666735 Hz
AQ          1.4998465 sec
RG              50.8
DW             62.400 usec
DE              6.50 usec
TE             300.0 K
D1          1.00000000 sec
TD0                1
SFO1       400.2324014 MHz
NUC1              1H
P0              4.79 usec
P1             14.38 usec
PLW1       19.18000031 W

F2 - Processing parameters
SI             16384
SF         400.2300031 MHz
WDW               EM
SSB                0
LB              0.30 Hz
GB                 0
PC              1.00
```



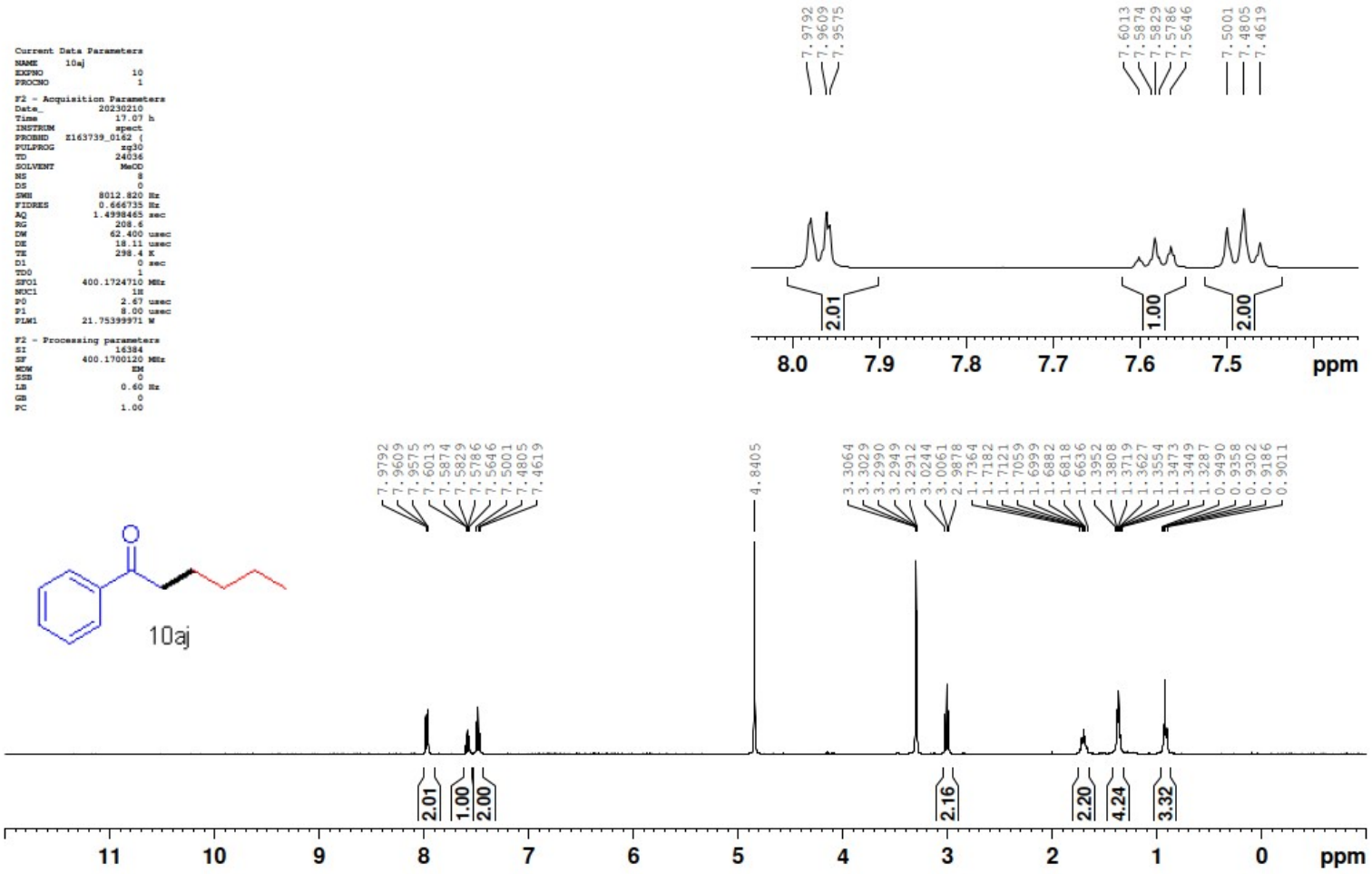


10ai IN CDCl3-13C

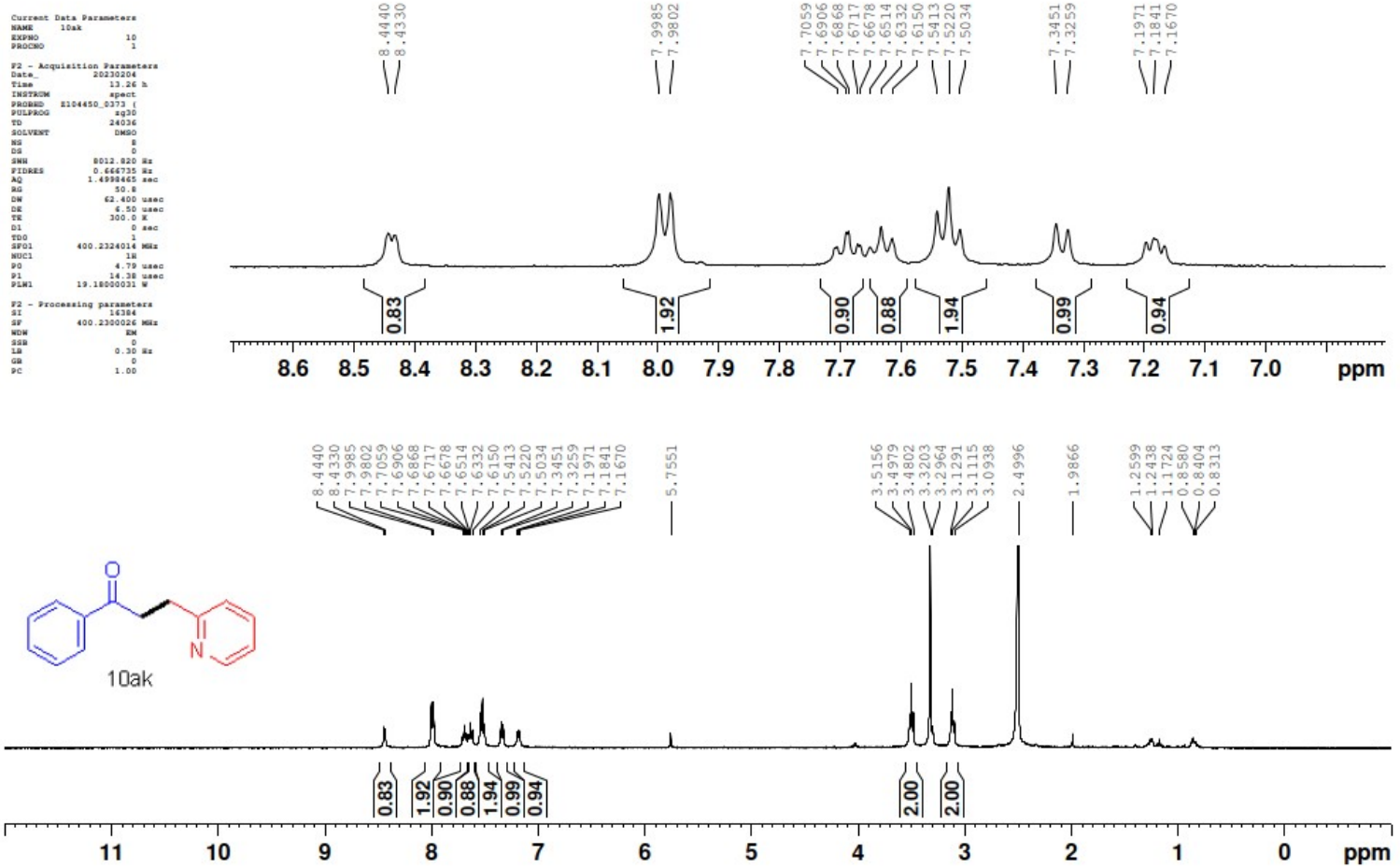



10ai IN CDCl3-APT
136.6436
133.2086
130.7337
130.6826
130.0328
129.8597
129.0119
128.9808
128.6519
128.3212
128.0226
127.8298
127.7466
116.7046
116.4654
38.4208
23.6619
23.6438
140
135
130
125
120
115
ppm
40
30
ppm
198.4018
160.9748
158.5402
136.6436
133.2086
130.7337
130.6826
130.0328
129.8597
129.0119
128.9808
128.6519
128.3212
128.0226
127.8298
127.7466
116.7046
116.4654
77.3581
77.0400
76.7230
38.4208
23.6619
23.6438
O
F
Cl
10ai
220
200
180
160
140
120
100
80
60
40
20
0
ppm

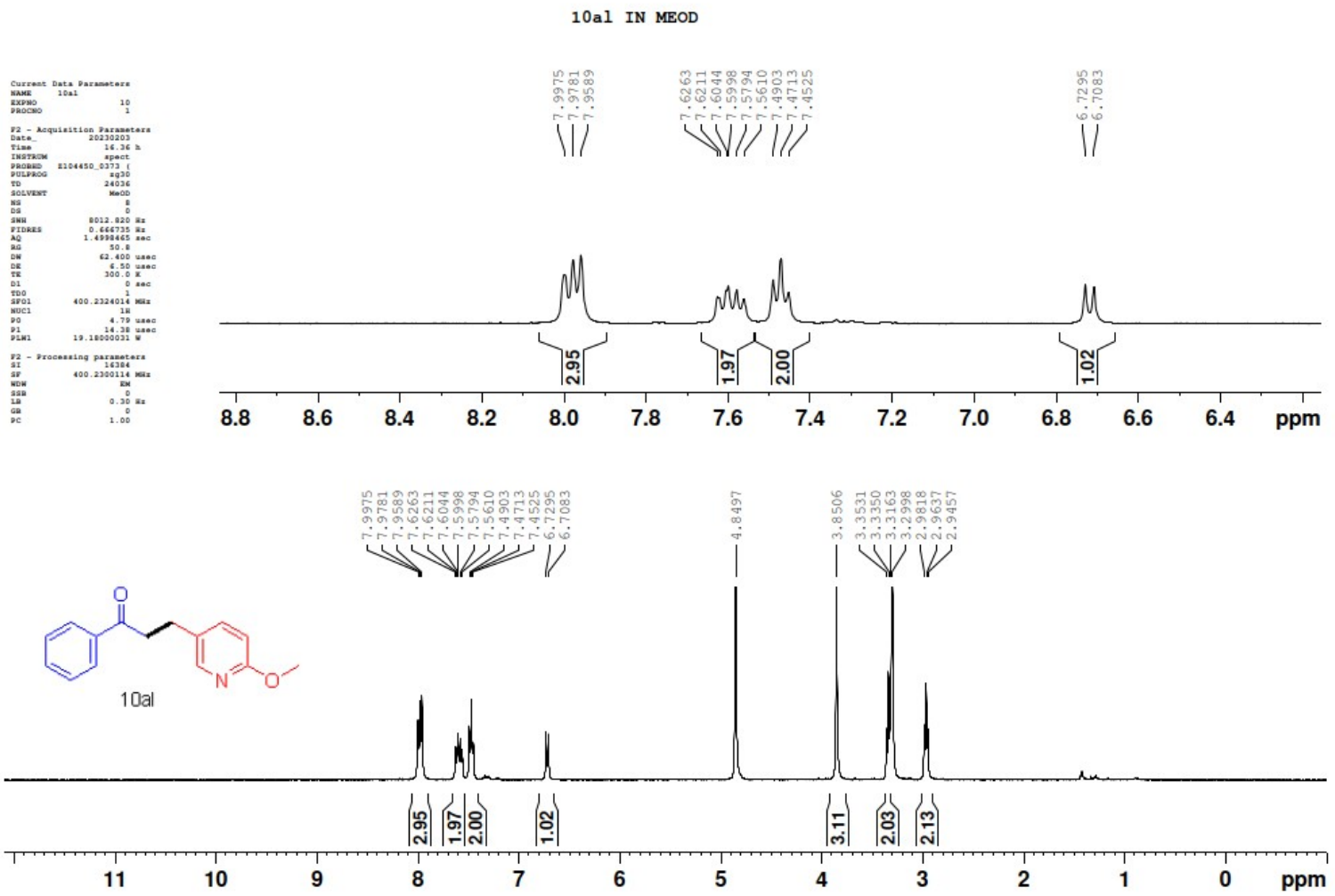
10aj IN MeOD


Current Data Parameters
NAME 10aj
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230210
Time 17.07 h
INSTRUM spect
PROBHD Z163739_0162 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 208.6
DW 62.400 usec
DE 18.11 usec
TE 298.4 K
D1 0 sec
TD0 1
SFO1 400.1724710 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 21.75399971 W
F2 - Processing parameters
SI 16384
SF 400.1700120 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.00
7.9792
7.9609
7.9575
7.6013
7.5874
7.5829
7.5786
7.5646
7.5001
7.4805
7.4619
2.01
1.00
2.00
8.0
7.9
7.8
7.7
7.6
7.5
ppm
4.8405
3.3064
3.3029
3.2990
3.2949
3.2912
3.0244
3.0061
2.9878
1.7364
1.7182
1.7121
1.7059
1.6999
1.6882
1.6818
1.6636
1.3952
1.3808
1.3719
1.3627
1.3554
1.3473
1.3449
1.3287
0.9490
0.9358
0.9302
0.9186
0.9011
10aj
2.01
1.00
2.00
2.16
2.20
4.24
3.32
11
10
9
8
7
6
5
4
3
2
1
0
ppm

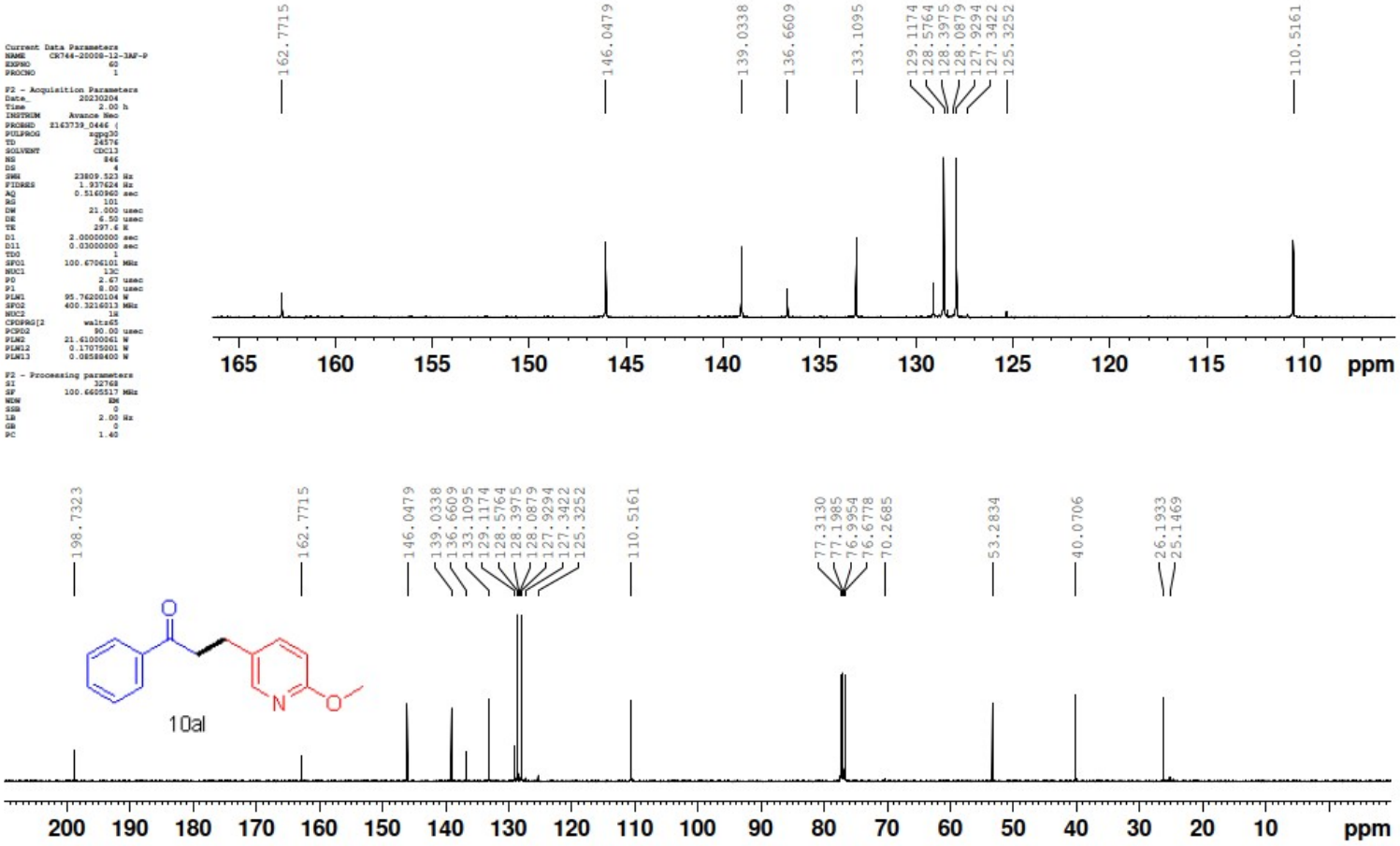
10ak IN DMSO


Current Data Parameters
NAME 10ak
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230204
Time 13.26 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24036
SOLVENT DMSO
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 50.8
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 0 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 4.79 usec
P1 14.38 usec
PLW1 19.18000031 W
F2 - Processing parameters
SI 16384
SF 400.2300026 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.4440
8.4330
7.9985
7.9802
7.7059
7.6906
7.6868
7.6717
7.6678
7.6514
7.6332
7.6150
7.5413
7.5220
7.5034
7.3451
7.3259
7.1971
7.1841
7.1670
0.83
1.92
0.90
0.88
1.94
0.99
0.94
ppm
5.7551
3.5156
3.4979
3.4802
3.3203
3.2964
3.1291
3.1115
3.0938
2.4996
1.9866
1.2599
1.2438
1.1724
0.8580
0.8404
0.8313
2.00
2.00
O
N
10ak

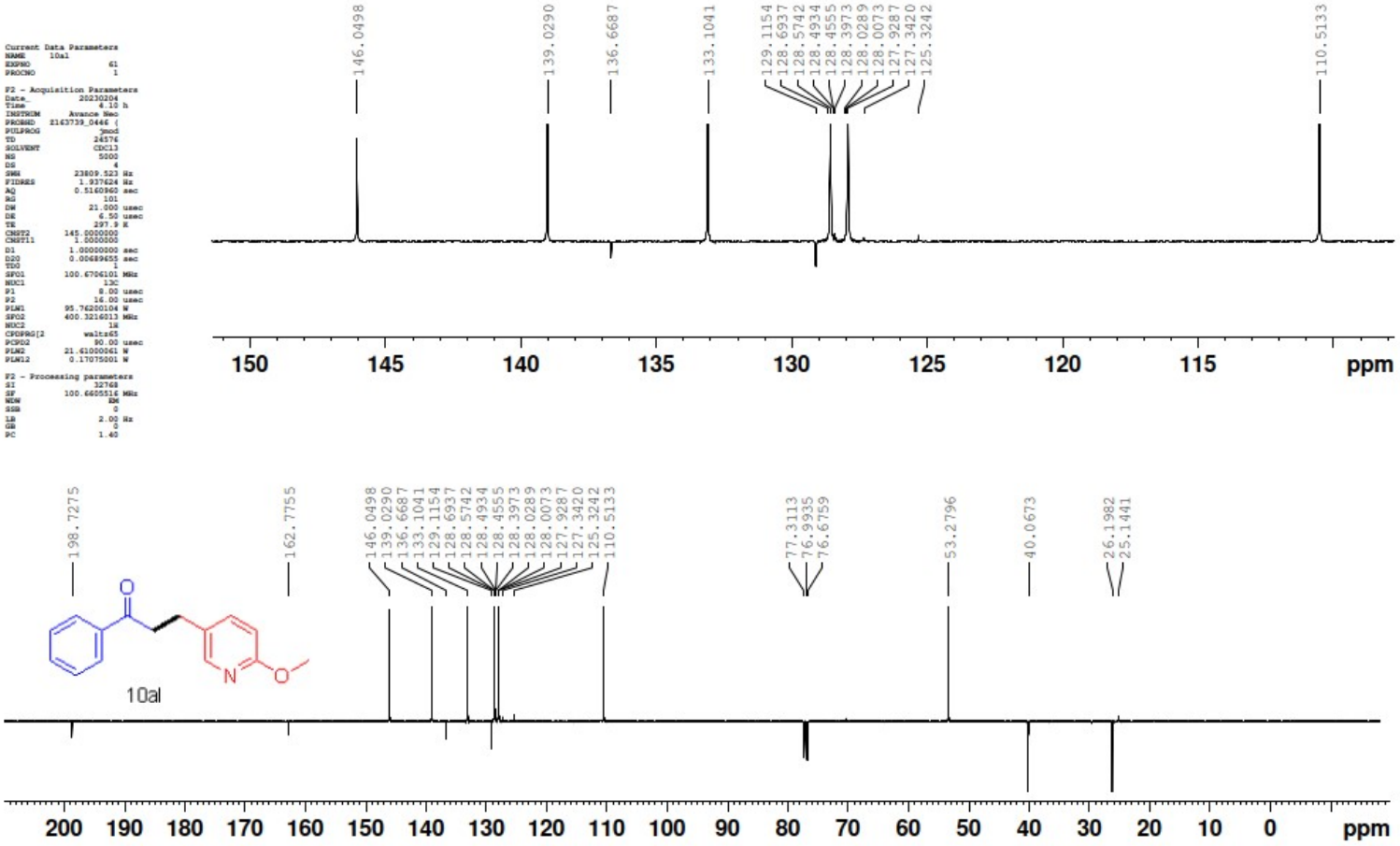
10al IN MEOD


Current Data Parameters
NAME 10al
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230203
Time 16.36 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 50.8
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 0 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 4.79 usec
P1 14.38 usec
PLW1 19.18000031 W
F2 - Processing parameters
SI 16384
SF 400.2300114 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.9975
7.9781
7.9589
7.6263
7.6211
7.6044
7.5998
7.5794
7.5610
7.4903
7.4713
7.4525
6.7295
6.7083
2.95
1.97
2.00
1.02
8.8
8.6
8.4
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
6.4
ppm
O
N
O
10al
4.8497
3.8506
3.3531
3.3350
3.3163
3.2998
2.9818
2.9637
2.9457
3.11
2.03
2.13
11
10
9
8
7
6
5
4
3
2
1
0

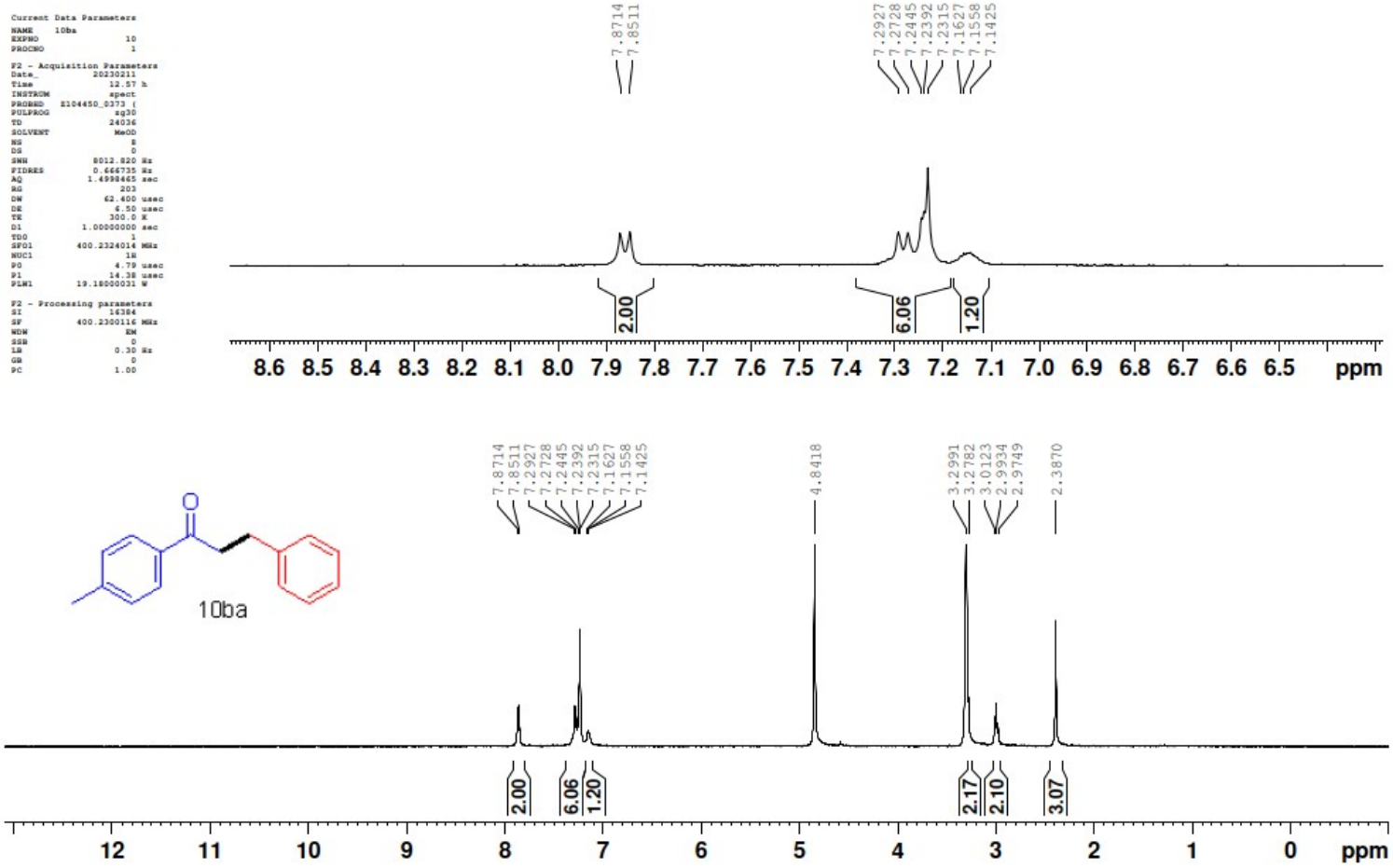
10al IN CDCl3-13C



10al IN CDCl3-APT

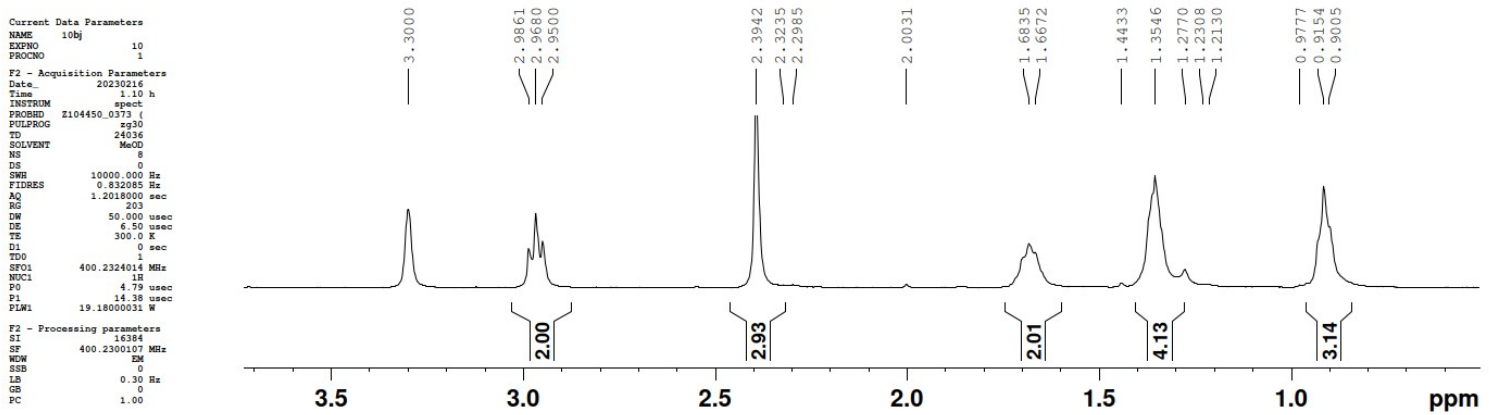


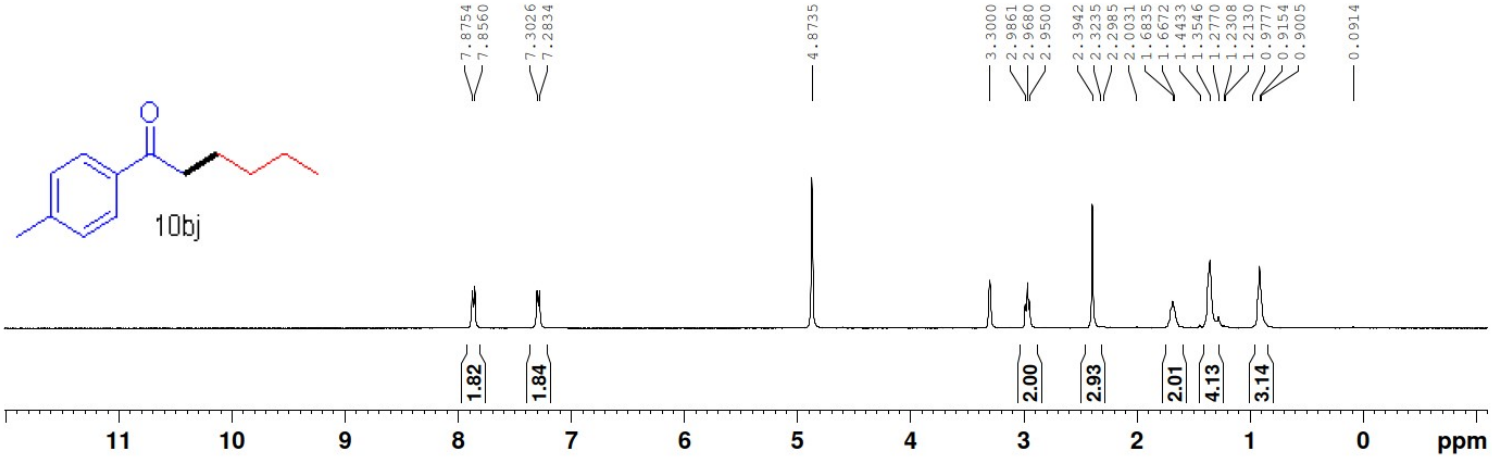
10ba IN MeOD


Current Data Parameters
NAME 10ba
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230211
Time 12.57 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 203
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 4.79 usec
P1 14.38 usec
PLW1 19.18000031 W
F2 - Processing parameters
SI 16384
SF 400.2300116 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.8714
7.8511
7.2927
7.2728
7.2445
7.2392
7.2315
7.1627
7.1558
7.1425
2.00
6.06
1.20
8.6 8.5 8.4 8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 6.7 6.6 6.5 ppm
10ba
4.8418
3.2991
3.2782
3.0123
2.9934
2.9749
2.3870
2.17
2.10
3.07
12 11 10 9 8 7 6 5 4 3 2 1 0 ppm

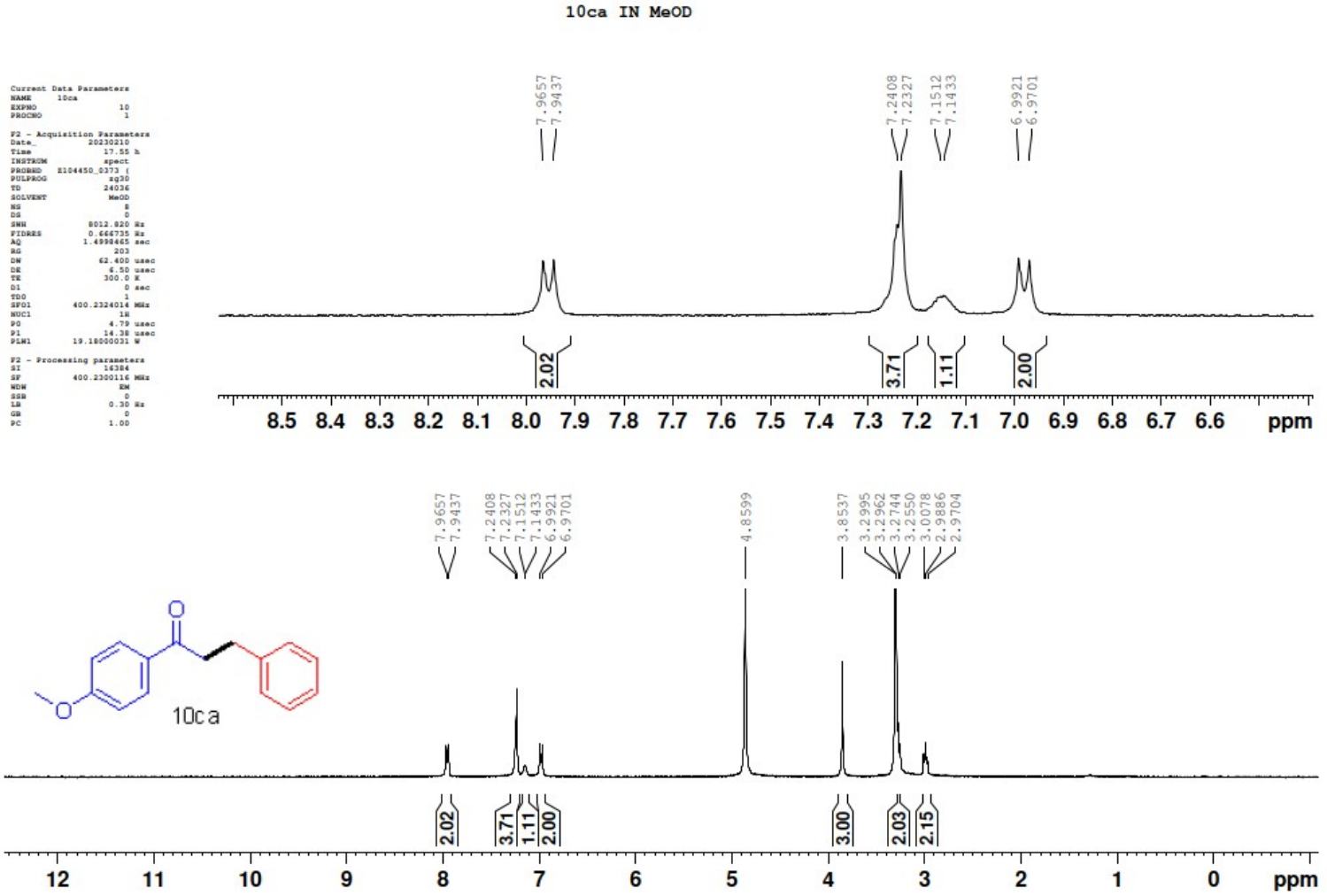
10bj IN MeOD

```
Current Data Parameters
NAME      10bj
EXPNO       10
PROCNO      1

F2 - Acquisition Parameters
Date_     20230216
Time      1.10 h
INSTRUM   spect
PROBHD    Z104450_0373 (
PULPROG   zg30
TD        24036
SOLVENT   MeOD
NS        8
DS        0
SWH       10000.000 Hz
FIDRES    0.832085 Hz
AQ        1.2018000 sec
RG        203
DW        50.000 usec
DE        6.50 usec
TE        300.0 K
D1        0 sec
TD0       1
SFO1      400.2324014 MHz
NUC1      1H
P0        4.79 usec
P1        14.38 usec
PLW1      19.18000031 W

F2 - Processing parameters
SI        16384
SF        400.2300107 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
```

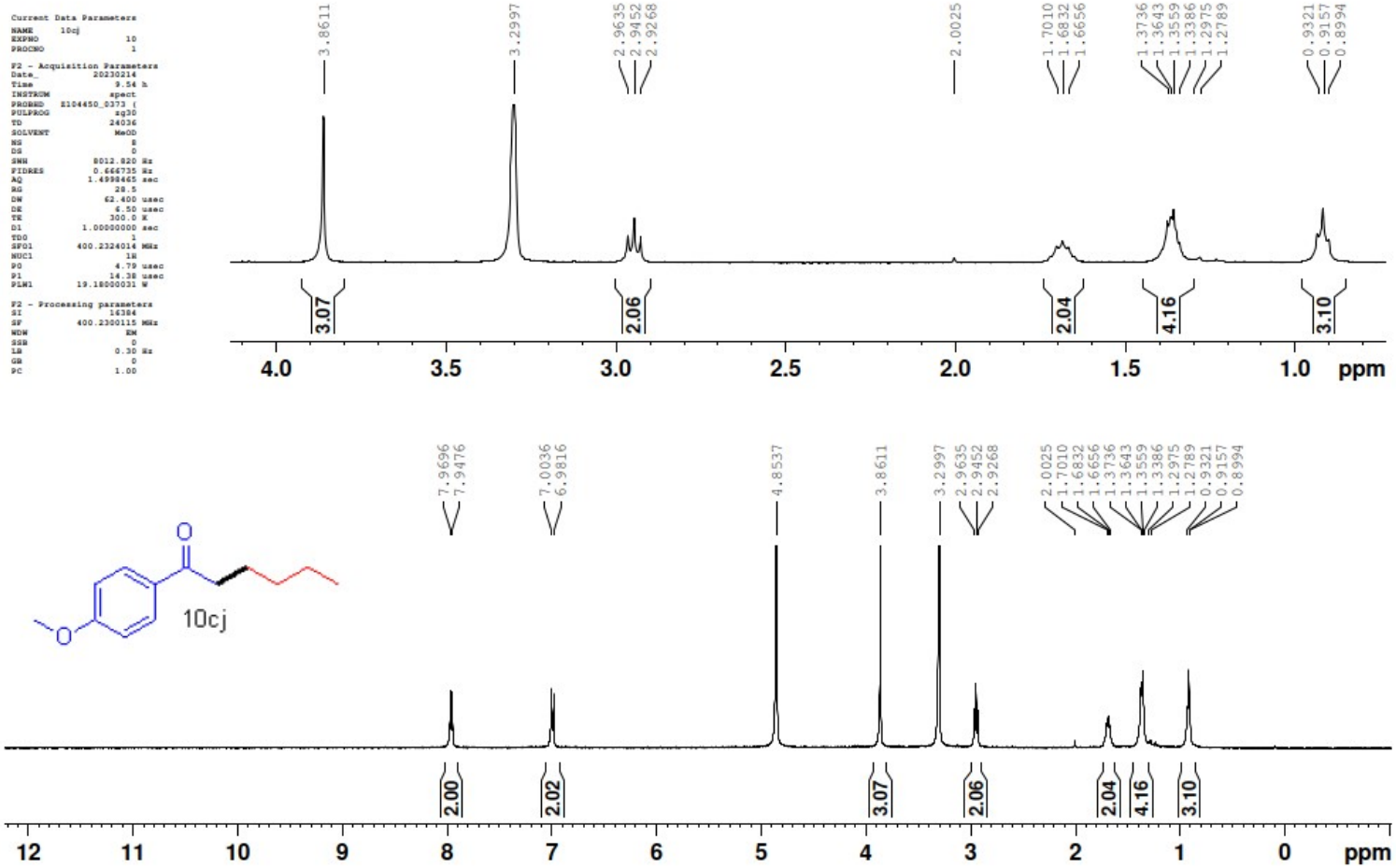




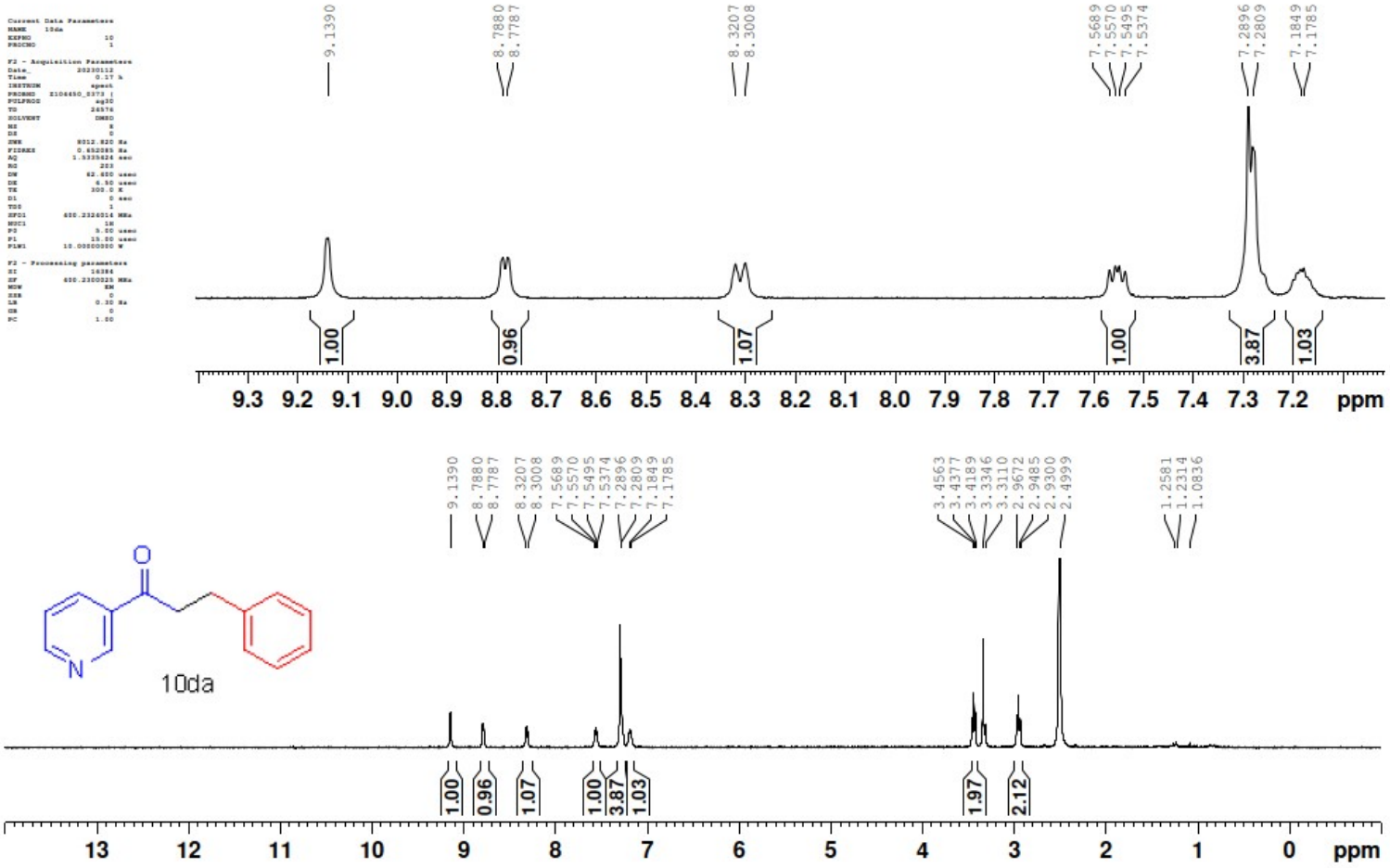
10ca IN MeOD


Current Data Parameters
NAME 10ca
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230210
Time 17.55 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 203
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 0 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 4.79 usec
P1 14.38 usec
PLW1 19.18000031 W
F2 - Processing parameters
SI 16384
SF 400.2300116 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.9657
7.9437
7.2408
7.2327
7.1512
7.1433
6.9921
6.9701
2.02
3.71
1.11
2.00
8.5 8.4 8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 6.7 6.6 ppm
7.9657
7.9437
7.2408
7.2327
7.1512
7.1433
6.9921
6.9701
4.8599
3.8537
3.2995
3.2962
3.2744
3.2550
3.0078
2.9886
2.9704
O
O
10ca
2.02
3.71
1.11
2.00
3.00
2.03
2.15
12 11 10 9 8 7 6 5 4 3 2 1 0 ppm

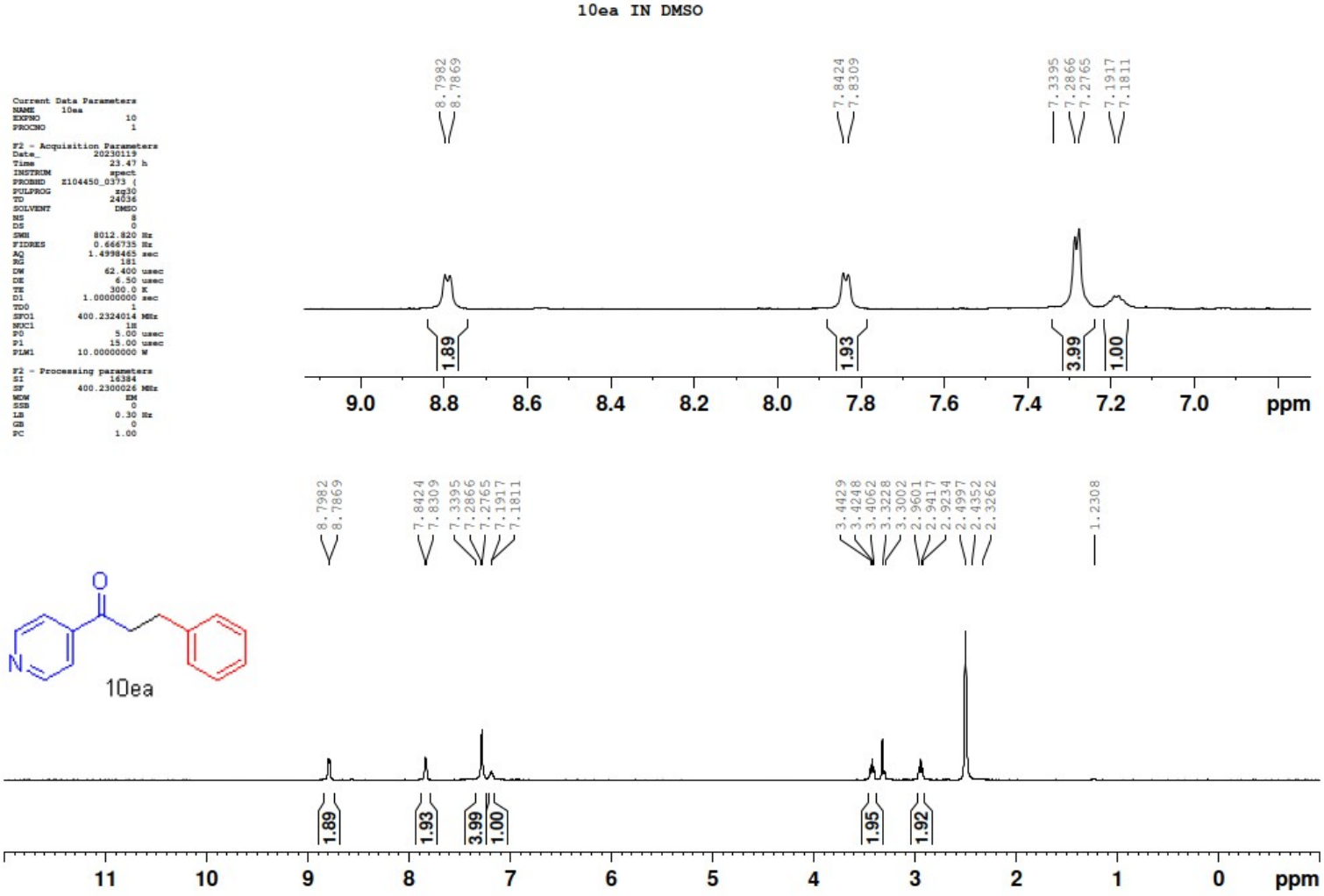
10cj IN MeOD


Current Data Parameters
NAME 10cj
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230214
Time 9.54 h
INSTRUM spect
PROBHD 5104450_0373 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 28.5
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 4.79 usec
P1 14.38 usec
PLW1 19.18000031 W
F2 - Processing parameters
SI 16384
SF 400.2300115 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
3.8611
3.2997
2.9635
2.9452
2.9268
2.0025
1.7010
1.6832
1.6656
1.3736
1.3643
1.3559
1.3386
1.2975
1.2789
0.9321
0.9157
0.8994
3.07
2.06
2.04
4.16
3.10
4.0
3.5
3.0
2.5
2.0
1.5
1.0
ppm
7.9696
7.9476
7.0036
6.9816
4.8537
3.8611
3.2997
2.9635
2.9452
2.9268
2.0025
1.7010
1.6832
1.6656
1.3736
1.3643
1.3559
1.3386
1.2975
1.2789
0.9321
0.9157
0.8994
10cj
2.00
2.02
3.07
2.06
2.04
4.16
3.10
12
11
10
9
8
7
6
5
4
3
2
1
0
ppm

10da IN DMSO

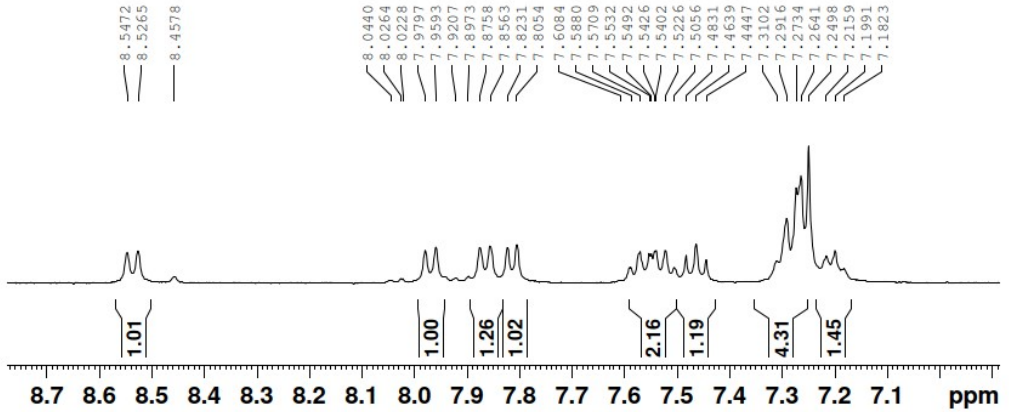

9.1390
8.7880
8.7787
8.3207
8.3008
7.5689
7.5570
7.5495
7.5374
7.2896
7.2809
7.1849
7.1785
1.00
0.96
1.07
1.00
3.87
1.03
9.3 9.2 9.1 9.0 8.9 8.8 8.7 8.6 8.5 8.4 8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 ppm
3.4563
3.4377
3.4189
3.3346
3.3110
2.9672
2.9485
2.9300
2.4999
1.2581
1.2314
1.0836
1.97
2.12
13 12 11 10 9 8 7 6 5 4 3 2 1 0 ppm
O
N
10da

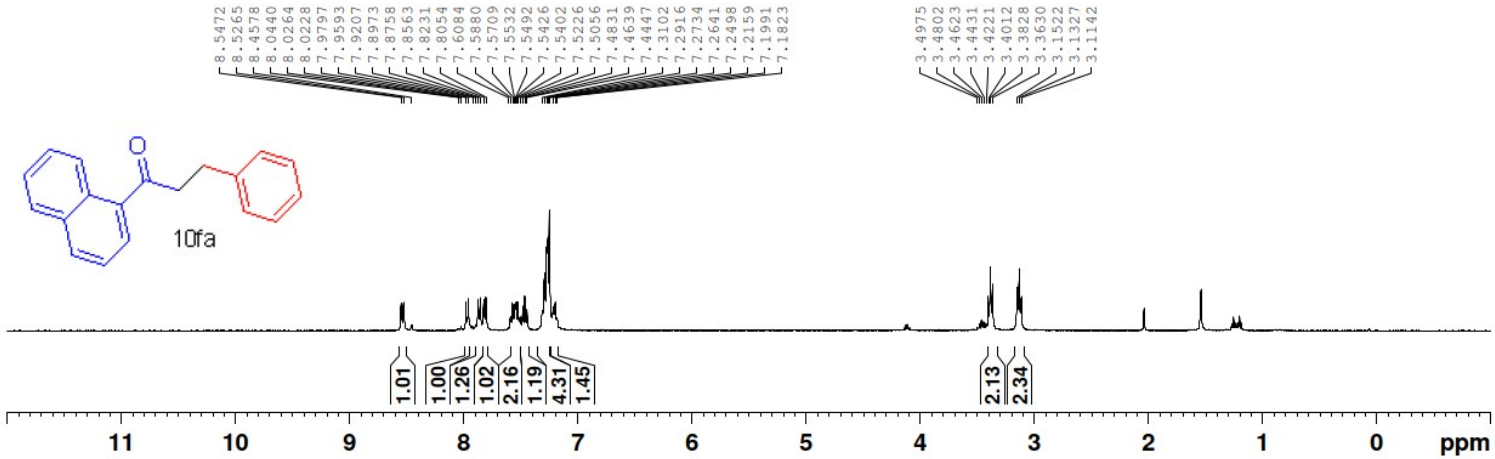
10ea IN DMSO


Current Data Parameters
NAME 10ea
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230119
Time 23.47 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24036
SOLVENT DMSO
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 181
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 5.00 usec
P1 15.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.2300026 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.7982
8.7869
7.8424
7.8309
7.3395
7.2866
7.2765
7.1917
7.1811
1.89
1.93
3.99
1.00
9.0
8.8
8.6
8.4
8.2
8.0
7.8
7.6
7.4
7.2
7.0
ppm
3.4429
3.4248
3.4062
3.3228
3.3002
2.9601
2.9417
2.9234
2.4997
2.4352
2.3262
1.2308
1.95
1.92
O
N
10ea
11
10
9
8
7
6
5
4
3
2
1
0
ppm

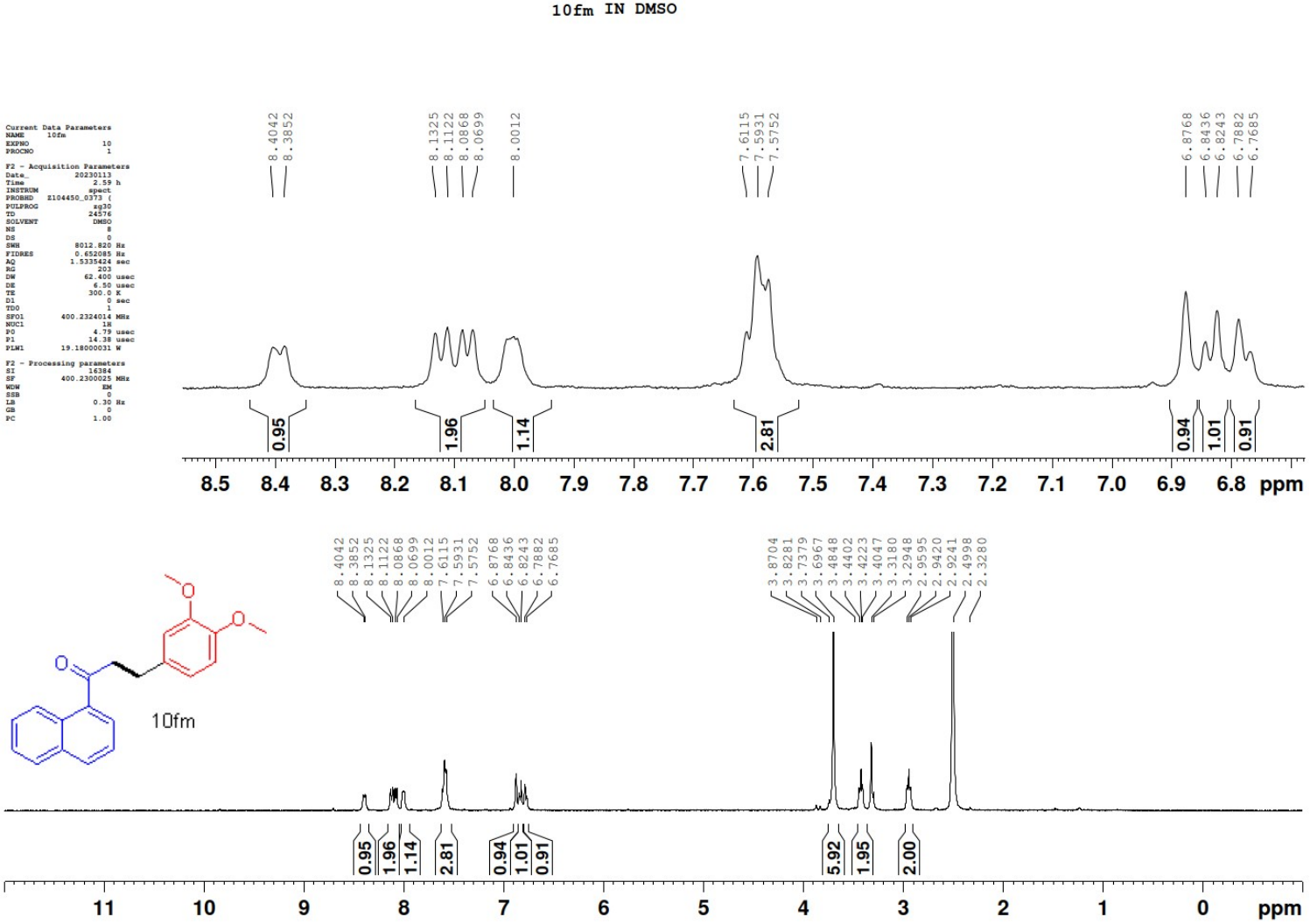
10fa IN CDC13

```
Current Data Parameters
NAME      10fa
EXPNO           10
PROCNO           1

F2 - Acquisition Parameters
Date_        20230112
Time             18.23 h
INSTRUM          spect
PROBHD    Z104450_0373 (
PULPROG          zg30
TD              24576
SOLVENT          CDCl3
NS                  8
DS                  0
SWH           8012.820 Hz
FIDRES        0.652085 Hz
AQ            1.5335424 sec
RG                203
DW             62.400 usec
DE              6.50 usec
TE             300.0 K
D1          1.00000000 sec
TD0                 1
SFO1       400.2324014 MHz
NUC1               1H
P0              5.00 usec
P1             15.00 usec
PLW1       10.00000000 W

F2 - Processing parameters
SI              16384
SF         400.2300132 MHz
WDW                EM
SSB                 0
LB              0.30 Hz
GB                  0
PC              1.00
```

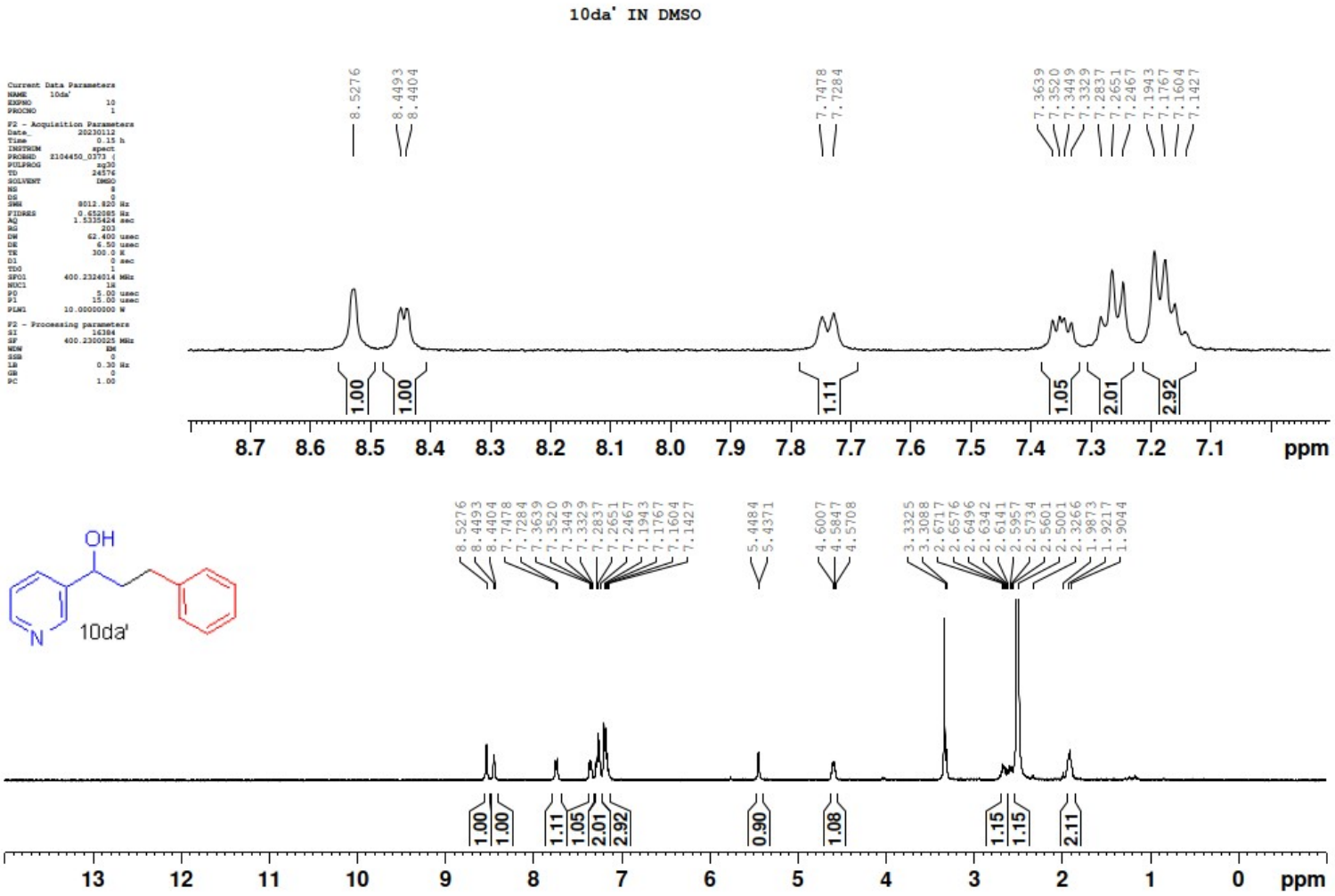




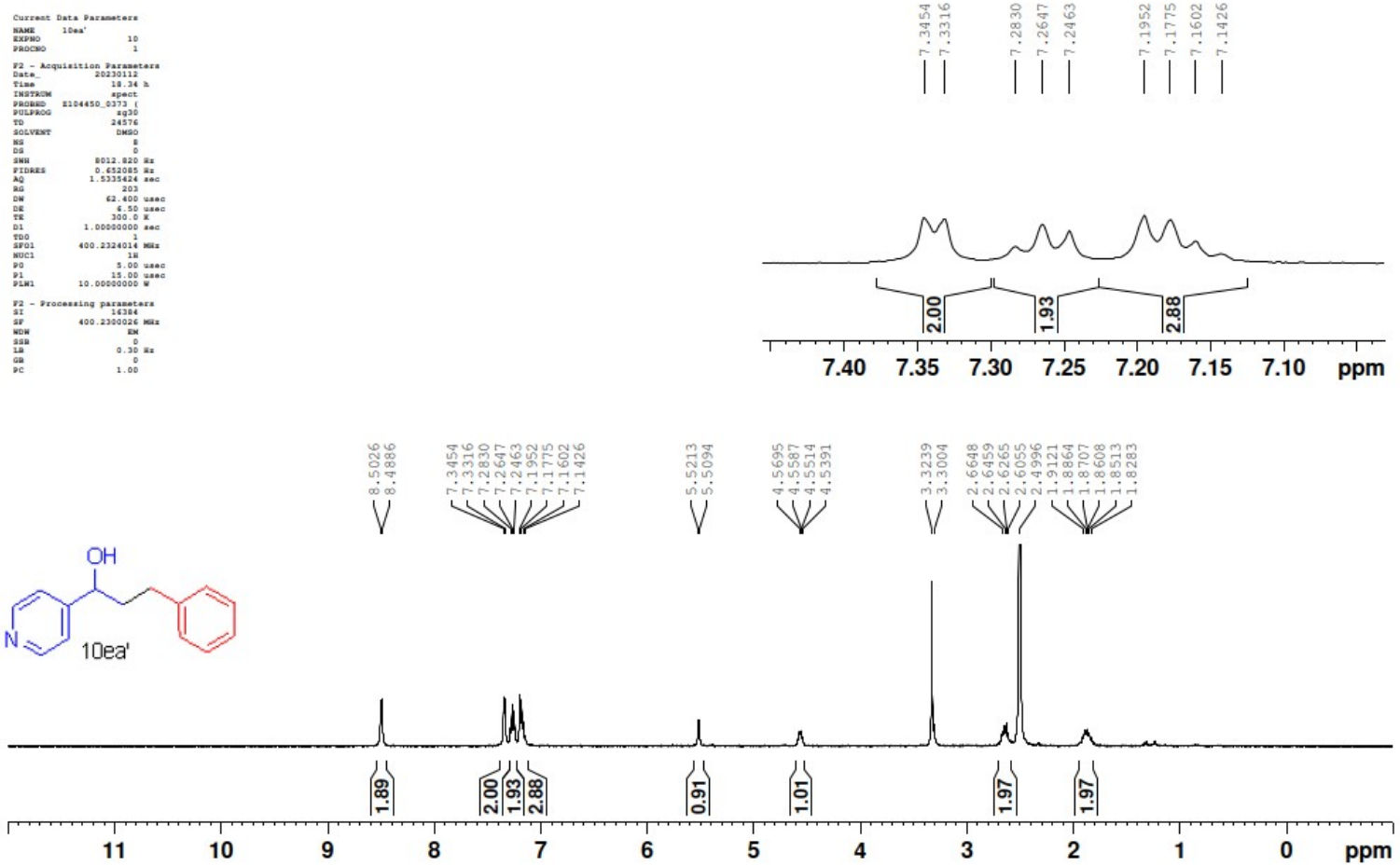
10fm IN DMSO


Current Data Parameters
NAME 10fm
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230113
Time 2.59 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24576
SOLVENT DMSO
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.652085 Hz
AQ 1.5335424 sec
RG 203
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 0 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 4.79 usec
P1 14.38 usec
PLW1 19.18000031 W
F2 - Processing parameters
SI 16384
SF 400.2300025 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.4042
8.3852
8.1325
8.1122
8.0868
8.0699
8.0012
7.6115
7.5931
7.5752
6.8768
6.8436
6.8243
6.7882
6.7685
0.95
1.96
1.14
2.81
0.94
1.01
0.91
8.5 8.4 8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 ppm
10fm
3.8704
3.8281
3.7379
3.6967
3.4848
3.4402
3.4223
3.4047
3.3180
3.2948
2.9595
2.9420
2.9241
2.4998
2.3280
5.92
1.95
2.00
11 10 9 8 7 6 5 4 3 2 1 0 ppm

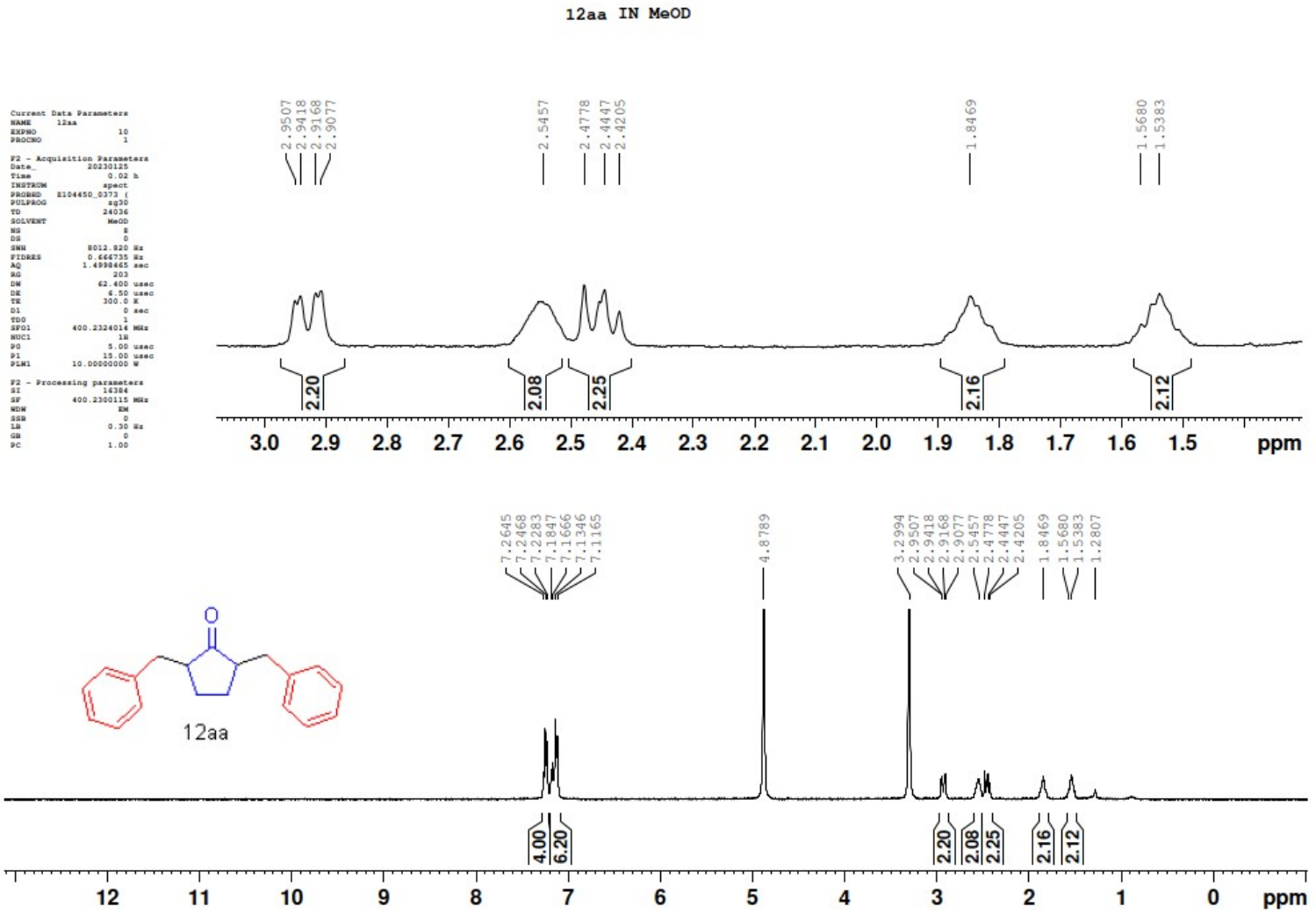
10da' IN DMSO


Current Data Parameters
NAME 10da'
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230112
Time 0.15 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24576
SOLVENT DMSO
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.652085 Hz
AQ 1.5335424 sec
RG 203
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 0 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 5.00 usec
P1 15.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.2300025 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8.5276
8.4493
8.4404
7.7478
7.7284
7.3639
7.3520
7.3449
7.3329
7.2837
7.2651
7.2467
7.1943
7.1767
7.1604
7.1427
1.00
1.00
1.11
1.05
2.01
2.92
8.7 8.6 8.5 8.4 8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 ppm
OH
N
10da'
5.4484
5.4371
4.6007
4.5847
4.5708
3.3325
3.3088
2.6717
2.6576
2.6496
2.6342
2.6141
2.5957
2.5734
2.5601
2.5001
2.3266
1.9873
1.9217
1.9044
1.00
1.00
1.11
1.05
2.01
2.92
0.90
1.08
1.15
1.15
2.11
13 12 11 10 9 8 7 6 5 4 3 2 1 0 ppm

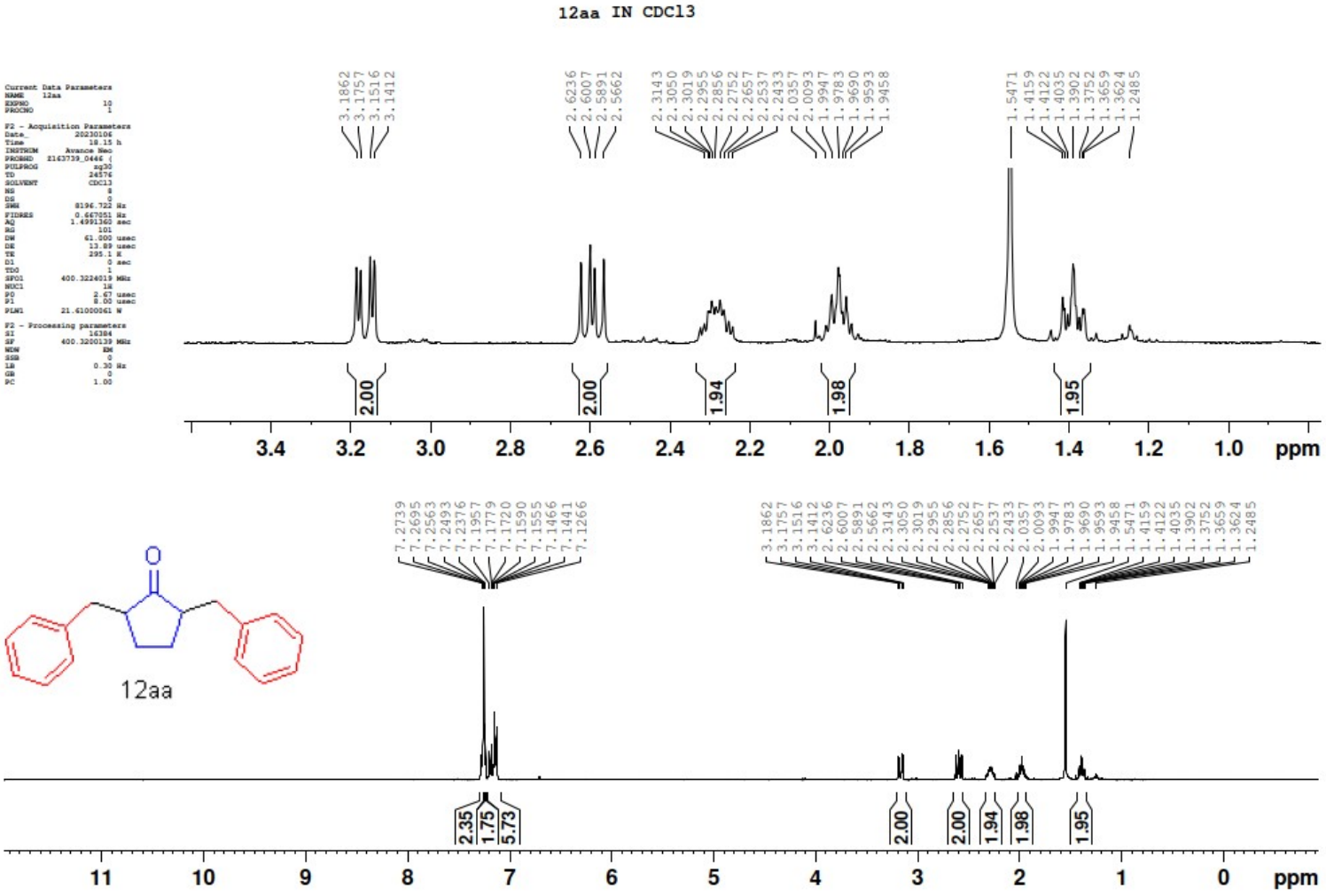
10ea' IN DMSO


Current Data Parameters
NAME 10ea'
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230112
Time 18.34 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24576
SOLVENT DMSO
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.652085 Hz
AQ 1.5335424 sec
RG 203
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 5.00 usec
P1 15.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.2300026 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.3454
7.3316
7.2830
7.2647
7.2463
7.1952
7.1775
7.1602
7.1426
2.00
1.93
2.88
7.40 7.35 7.30 7.25 7.20 7.15 7.10 ppm
8.5026
8.4886
5.5213
5.5094
4.5695
4.5587
4.5514
4.5391
3.3239
3.3004
2.6648
2.6459
2.6265
2.6055
2.4996
1.9121
1.8864
1.8707
1.8608
1.8513
1.8283
OH
N
10ea'
1.89
0.91
1.01
1.97
1.97
11 10 9 8 7 6 5 4 3 2 1 0 ppm

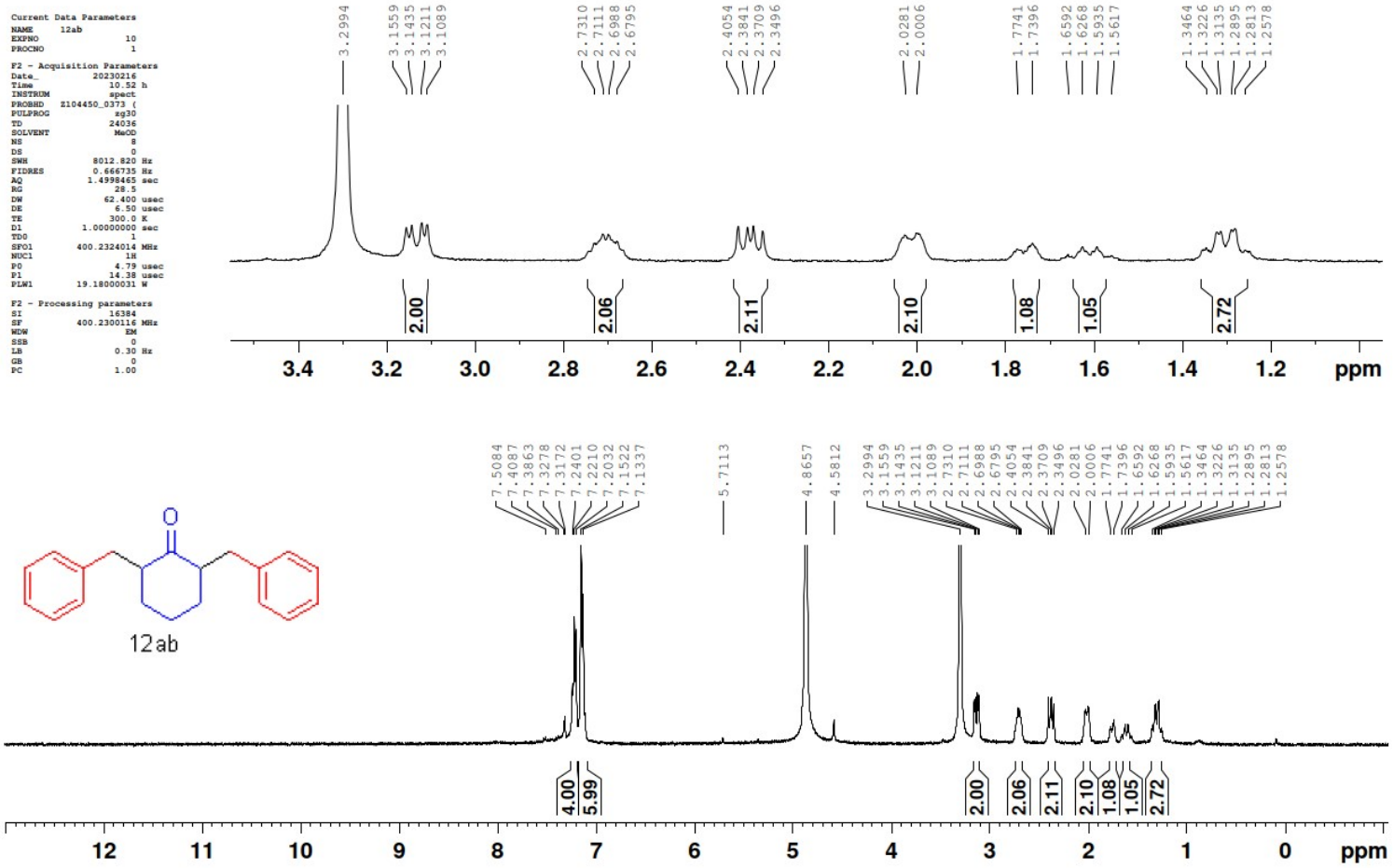
12aa IN MeOD


Current Data Parameters
NAME 12aa
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230125
Time 0.02 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 203
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 0 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 5.00 usec
P1 15.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.2300115 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
2.9507
2.9418
2.9168
2.9077
2.5457
2.4778
2.4447
2.4205
1.8469
1.5680
1.5383
2.20
2.08
2.25
2.16
2.12
3.0 2.9 2.8 2.7 2.6 2.5 2.4 2.3 2.2 2.1 2.0 1.9 1.8 1.7 1.6 1.5 ppm
7.2645
7.2468
7.2283
7.1847
7.1666
7.1346
7.1165
4.8789
3.2994
2.9507
2.9418
2.9168
2.9077
2.5457
2.4778
2.4447
2.4205
1.8469
1.5680
1.5383
1.2807
O
12aa
4.00
6.20
2.20
2.08
2.25
2.16
2.12
12 11 10 9 8 7 6 5 4 3 2 1 0 ppm

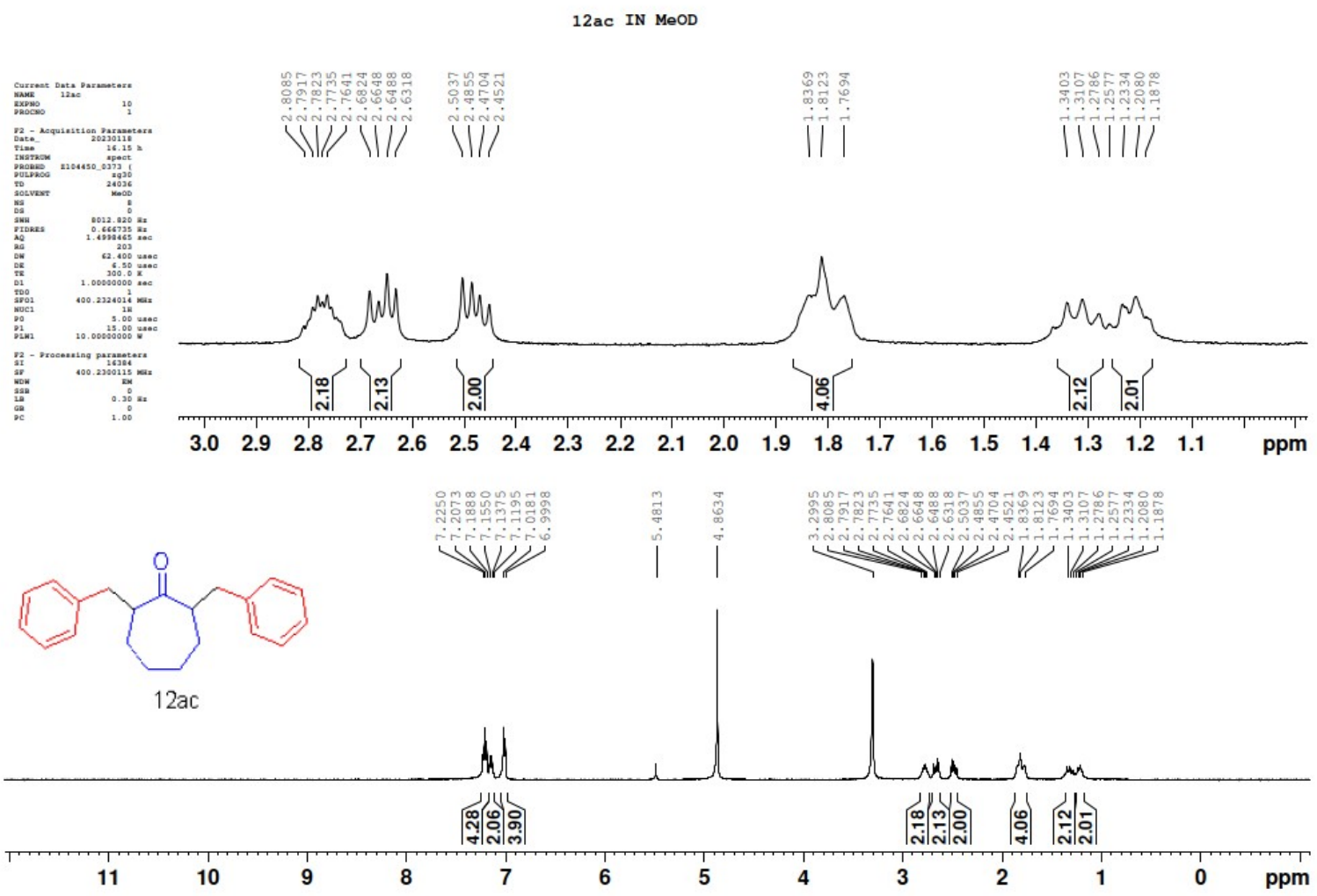
12aa IN CDCl3



12ab IN MeOD

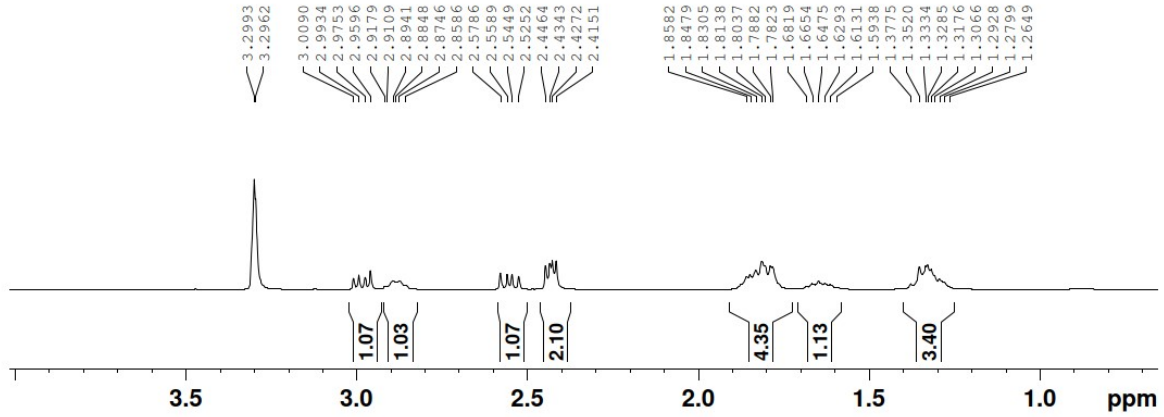

Current Data Parameters
NAME 12ab
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230216
Time 10.52 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 28.5
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 4.79 usec
P1 14.38 usec
PLW1 19.18000031 W
F2 - Processing parameters
SI 16384
SF 400.2300116 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
3.2994
3.1559
3.1435
3.1211
3.1089
2.7310
2.7111
2.6988
2.6795
2.4054
2.3841
2.3709
2.3496
2.0281
2.0006
1.7741
1.7396
1.6592
1.6268
1.5935
1.5617
1.3464
1.3226
1.3135
1.2895
1.2813
1.2578
2.00
2.06
2.11
2.10
1.08
1.05
2.72
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
ppm
O
12ab
7.5084
7.4087
7.3863
7.3278
7.3172
7.2401
7.2210
7.2032
7.1522
7.1337
5.7113
4.8657
4.5812
4.00
5.99
12
11
10
9
8
7
6
5
4
3
2
1
0
ppm

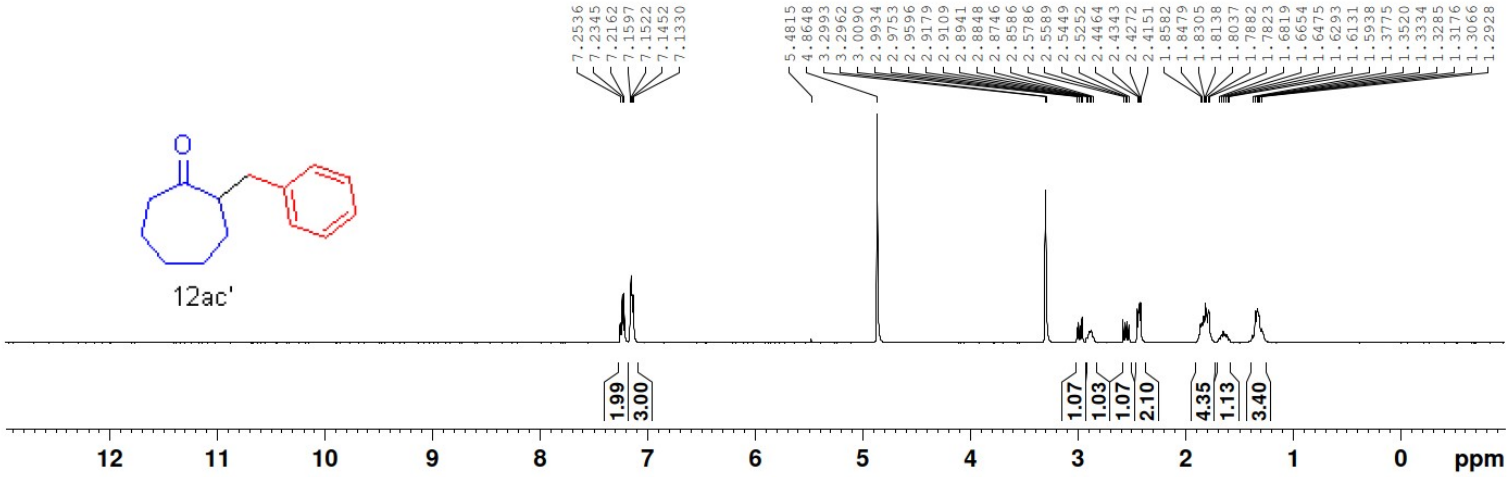
12ac IN MeOD


Current Data Parameters
NAME 12ac
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230118
Time 16.15 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 203
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 5.00 usec
P1 15.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.2300115 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
2.8085
2.7917
2.7823
2.7735
2.7641
2.6824
2.6648
2.6488
2.6318
2.5037
2.4855
2.4704
2.4521
1.8369
1.8123
1.7694
1.3403
1.3107
1.2786
1.2577
1.2334
1.2080
1.1878
2.18
2.13
2.00
4.06
2.12
2.01
3.0 2.9 2.8 2.7 2.6 2.5 2.4 2.3 2.2 2.1 2.0 1.9 1.8 1.7 1.6 1.5 1.4 1.3 1.2 1.1 ppm
O
12ac
7.2250
7.2073
7.1888
7.1550
7.1375
7.1195
7.0181
6.9998
5.4813
4.8634
3.2995
2.8085
2.7917
2.7823
2.7735
2.7641
2.6824
2.6648
2.6488
2.6318
2.5037
2.4855
2.4704
2.4521
1.8369
1.8123
1.7694
1.3403
1.3107
1.2786
1.2577
1.2334
1.2080
1.1878
4.28
2.06
3.90
2.18
2.13
2.00
4.06
2.12
2.01
11 10 9 8 7 6 5 4 3 2 1 0 ppm

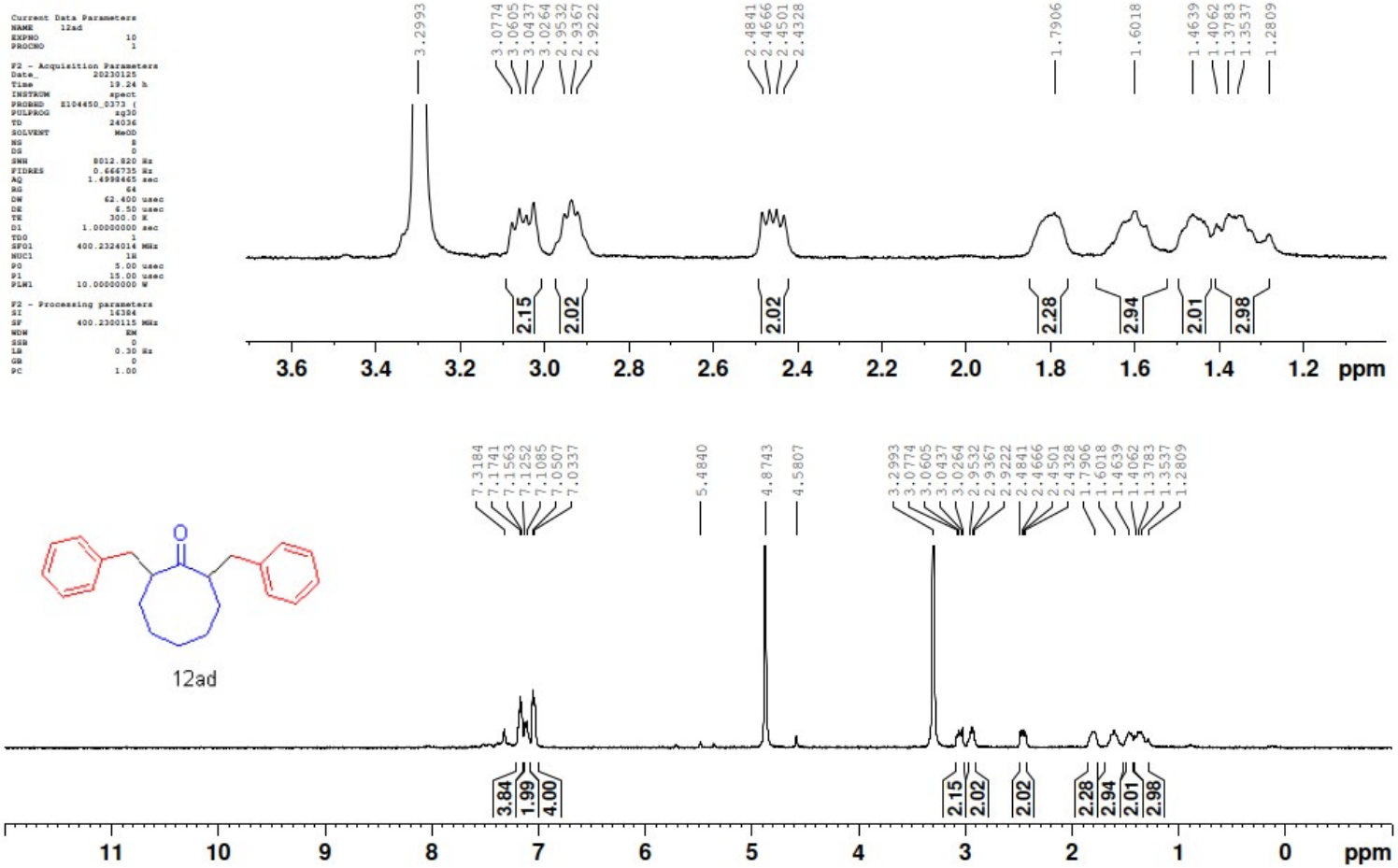
12ac' IN MeOD

```
Current Data Parameters
NAME      12ac'
EXPNO             10
PROCNO             1

F2 - Acquisition Parameters
Date_         20230128
Time              7.26 h
INSTRUM       Avance Neo
PROBHD   2163739_0446 (
PULPROG          zg30
TD              24576
SOLVENT          MeOD
NS                 8
DS                 0
SWH          8196.722 Hz
FIDRES       0.667051 Hz
AQ           1.4991360 sec
RG               101
DW              61.000 usec
DE              13.89 usec
TE              295.8 K
D1           1.00000000 sec
TD0                1
SFO1       400.3224019 MHz
NUC1               1H
P0              2.67 usec
P1              8.00 usec
PLW1       21.61000061 W

F2 - Processing parameters
SI             16384
SF         400.3200117 MHz
WDW               EM
SSB                0
LB              0.30 Hz
GB                 0
PC              1.00
```

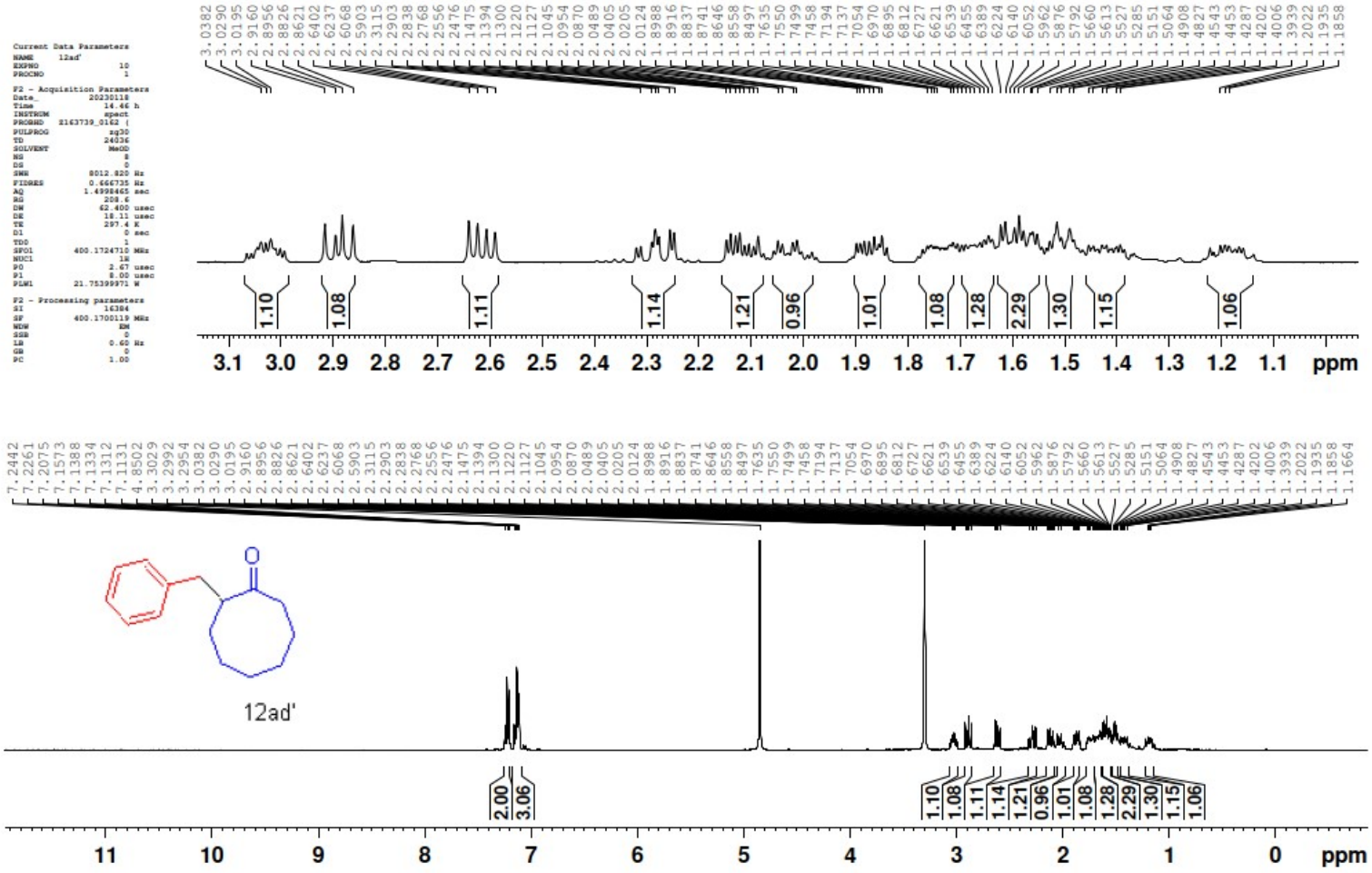




12ad IN MeOD


Current Data Parameters
NAME 12ad
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230125
Time 19.24 h
INSTRUM spect
PROBHD Z104450_0373 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 64
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.2324014 MHz
NUC1 1H
P0 5.00 usec
P1 15.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.2300115 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
3.2993
3.0774
3.0605
3.0437
3.0264
2.9532
2.9367
2.9222
2.4841
2.4666
2.4501
2.4328
1.7906
1.6018
1.4639
1.4062
1.3783
1.3537
1.2809
2.15
2.02
2.02
2.28
2.94
2.01
2.98
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
ppm
O
12ad
7.3184
7.1741
7.1563
7.1252
7.1085
7.0507
7.0337
5.4840
4.8743
4.5807
3.84
1.99
4.00
11
10
9
8
7
6
5
4
3
2
1
0
ppm

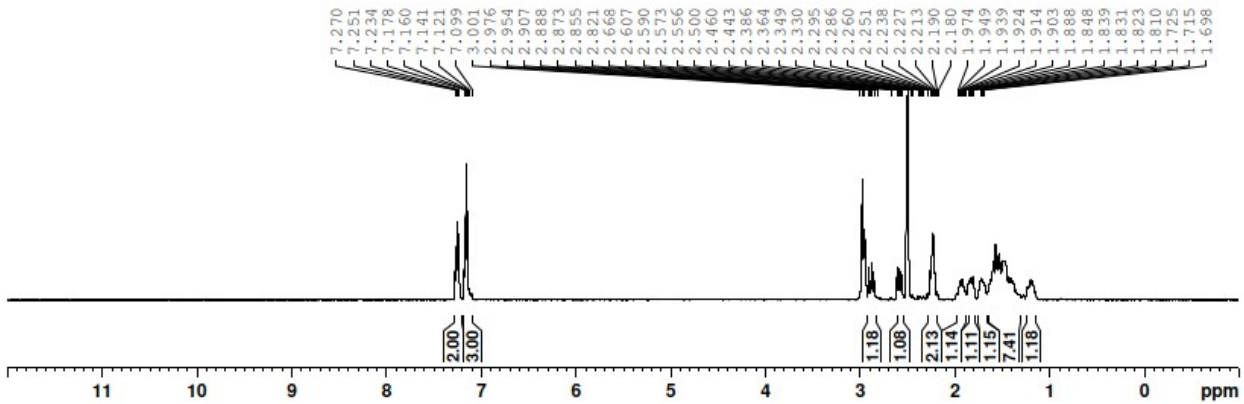
12ad' IN MeOD


Current Data Parameters
NAME 12ad'
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20230118
Time 14.46 h
INSTRUM spect
PROBHD 2163739_0162 (
PULPROG zg30
TD 24036
SOLVENT MeOD
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 208.6
DW 62.400 usec
DE 18.11 usec
TE 297.4 K
D1 0 sec
TD0 1
SFO1 400.1724710 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 21.75399971 W
F2 - Processing parameters
SI 16384
SF 400.1700119 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.00
1.10
1.08
1.11
1.14
1.21
0.96
1.01
1.08
1.28
2.29
1.30
1.15
1.06
ppm

12ad'
2.00
3.06
1.10
1.08
1.11
1.14
1.21
0.96
1.01
1.08
1.28
2.29
1.30
1.15
1.06
ppm

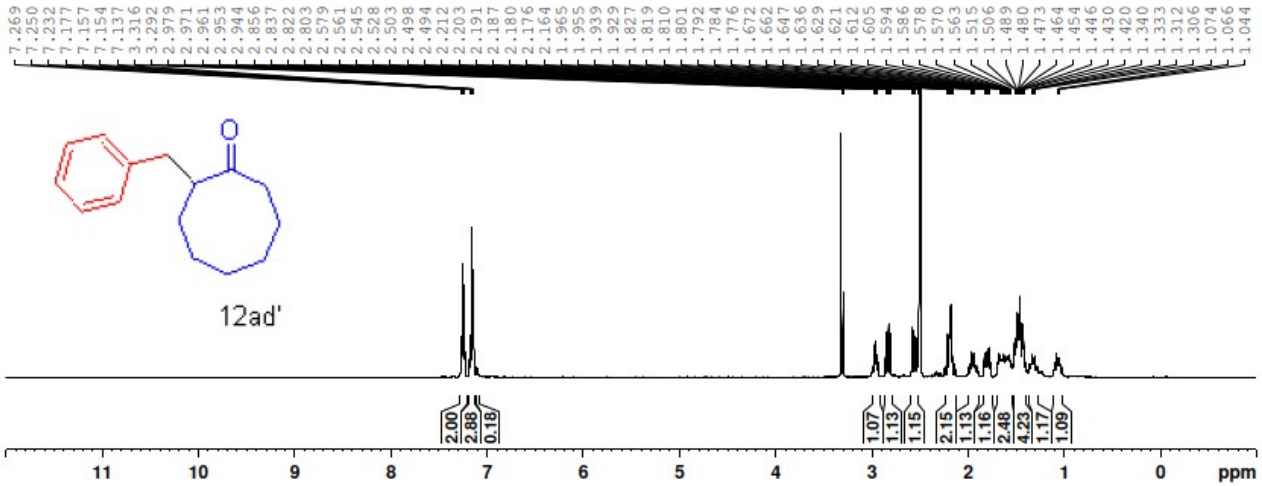
12da' IN DMSO AT 100 DEG C

```
Current Data Parameters
NAME      12da'
EXPNO            11
PROCNO            1

F2 - Acquisition Parameters
Date_        20230309
Time           21.07 h
INSTRUM         Avance
PROBHD   Z163739_0713 (
PULPROG          zg30
TD              24576
SOLVENT          DMSO
NS                 16
DS                  0
SWH         10000.000 Hz
FIDRES          0.813802 Hz
AQ              1.2288001 sec
RG                101
DW             50.000 usec
DE             11.14 usec
TE             373.2 K
D1                  0 sec
TD0                 1
SFO1       400.6024737 MHz
NUC1               1H
P0              2.67 usec
P1              8.00 usec
PLW1       24.03499985 W

F2 - Processing parameters
SI              65536
SF         400.6000048 MHz
WDW                EM
SSB                 0
LB              0.30 Hz
GB                  0
PC                1.00
```



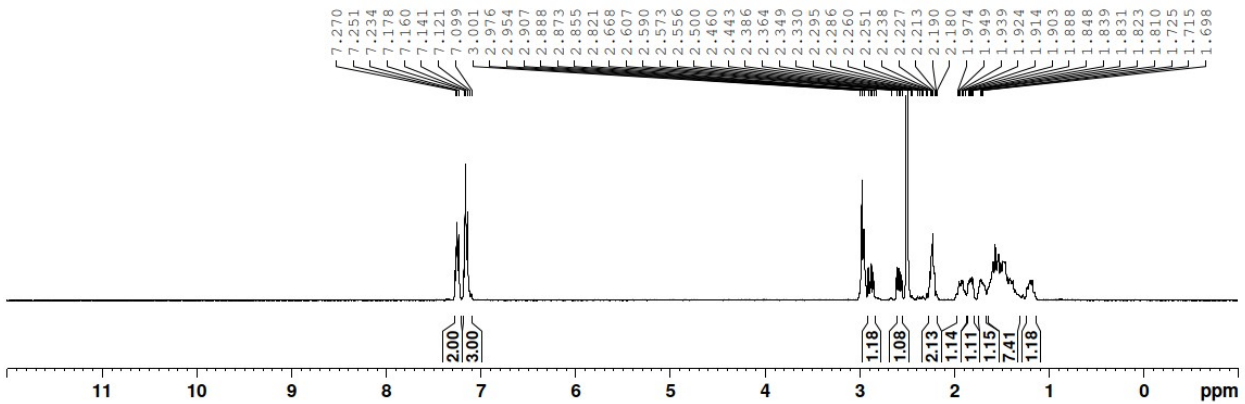
12da' IN DMSO AT 20 DEG C

```
Current Data Parameters
NAME      12da'
EXPNO            10
PROCNO            1

F2 - Acquisition Parameters
Date_        20230309
Time           11.35 h
INSTRUM         Avance
PROBHD   Z163739_0713 (
PULPROG          zg30
TD              24576
SOLVENT          DMSO
NS                 16
DS                  0
SWH         10000.000 Hz
FIDRES          0.813802 Hz
AQ              1.2288001 sec
RG                101
DW             50.000 usec
DE             11.14 usec
TE             298.1 K
D1                  0 sec
TD0                 1
SFO1       400.6024737 MHz
NUC1               1H
P0              2.67 usec
P1              8.00 usec
PLW1       24.03499985 W

F2 - Processing parameters
SI              65536
SF         400.6000048 MHz
WDW                EM
SSB                 0
LB              0.30 Hz
GB                  0
PC                1.00
```



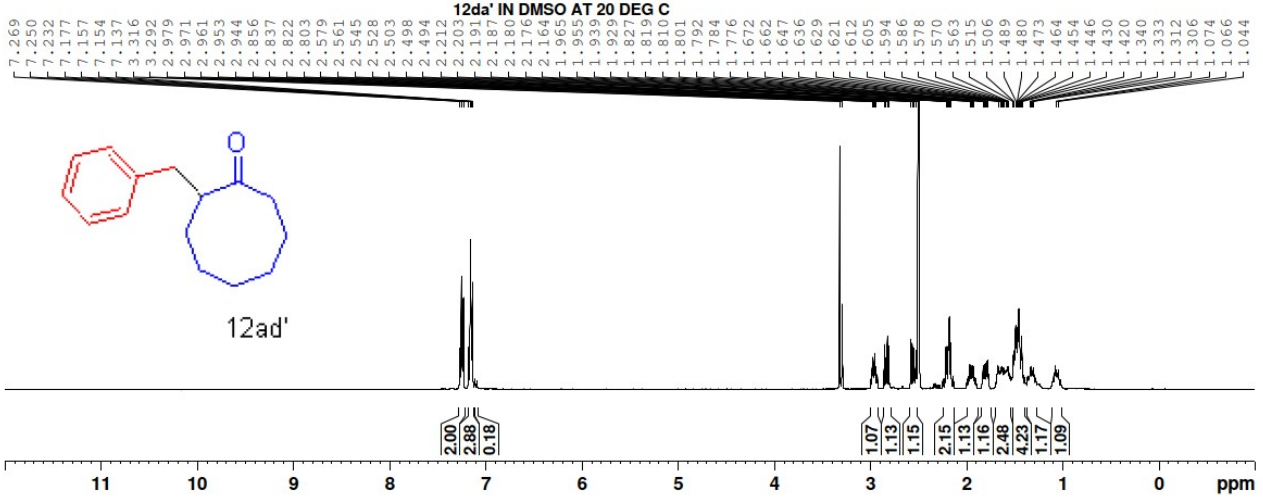
12da' IN DMSO AT 100 DEG C

```
Current Data Parameters
NAME      12da'
EXPNO            11
PROCNO            1

F2 - Acquisition Parameters
Date_      20230309
Time         21.07 h
INSTRUM       Avance
PROBHD   Z163739_0713 (
PULPROG         zg30
TD             24576
SOLVENT         DMSO
NS                16
DS                 0
SWH        10000.000 Hz
FIDRES         0.813802 Hz
AQ          1.2288001 sec
RG               101
DW            50.000 usec
DE            11.14 usec
TE            373.2 K
D1                 0 sec
TD0                1
SFO1     400.6024737 MHz
NUC1             1H
P0            2.67 usec
P1            8.00 usec
PLW1    24.03499985 W

F2 - Processing parameters
SI             65536
SF        400.6000048 MHz
WDW              EM
SSB               0
LB             0.30 Hz
GB                0
PC             1.00
```



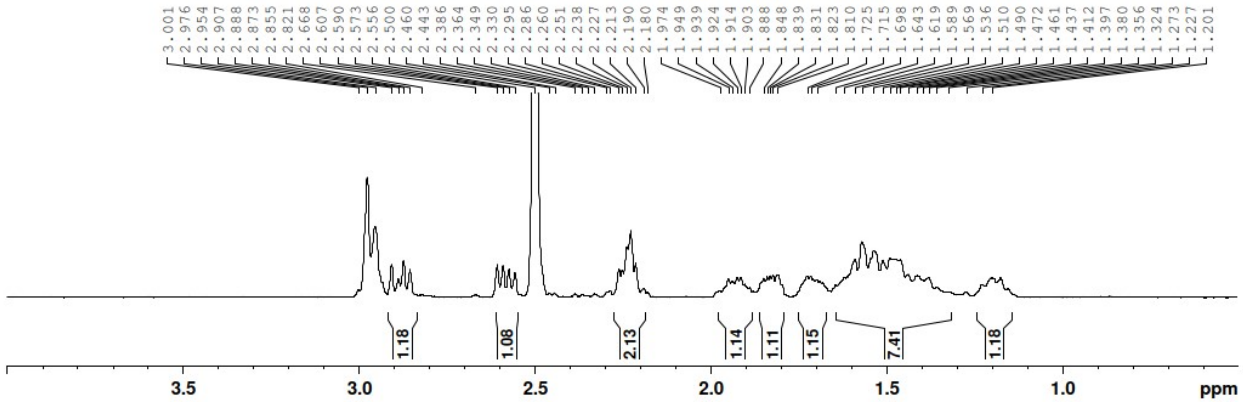
12da' IN DMSO AT 20 DEG C

```
Current Data Parameters
NAME      12da'
EXPNO            10
PROCNO            1

F2 - Acquisition Parameters
Date_      20230309
Time         11.35 h
INSTRUM       Avance
PROBHD   Z163739_0713 (
PULPROG         zg30
TD             24576
SOLVENT         DMSO
NS                16
DS                 0
SWH        10000.000 Hz
FIDRES         0.813802 Hz
AQ          1.2288001 sec
RG               101
DW            50.000 usec
DE            11.14 usec
TE            298.1 K
D1                 0 sec
TD0                1
SFO1     400.6024737 MHz
NUC1             1H
P0            2.67 usec
P1            8.00 usec
PLW1    24.03499985 W

F2 - Processing parameters
SI             65536
SF        400.6000048 MHz
WDW              EM
SSB               0
LB             0.30 Hz
GB                0
PC             1.00
```



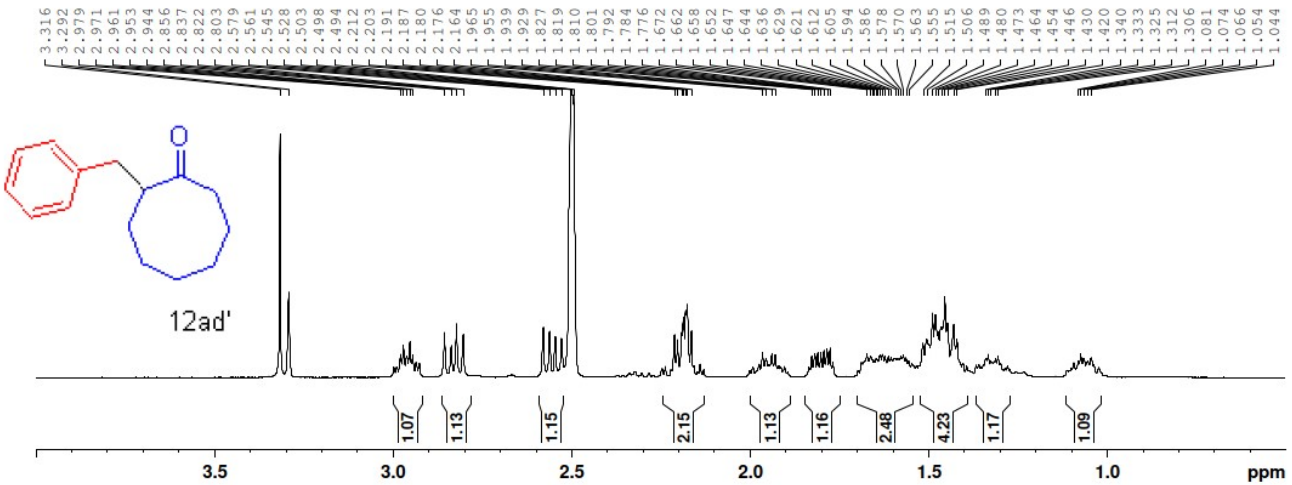
12da' IN DMSO AT 100 DEG C

```
Current Data Parameters
NAME      12da'
EXPNO            11
PROCNO            1

F2 - Acquisition Parameters
Date_      20230309
Time         21.07 h
INSTRUM       Avance
PROBHD   Z163739_0713 (
PULPROG         zg30
TD             24576
SOLVENT         DMSO
NS                16
DS                 0
SWH        10000.000 Hz
FIDRES         0.813802 Hz
AQ          1.2288001 sec
RG               101
DW            50.000 usec
DE            11.14 usec
TE            373.2 K
D1                 0 sec
TD0                1
SFO1     400.6024737 MHz
NUC1             1H
P0            2.67 usec
P1            8.00 usec
PLW1    24.03499985 W

F2 - Processing parameters
SI             65536
SF     400.6000048 MHz
WDW              EM
SSB               0
LB             0.30 Hz
GB                0
PC             1.00
```

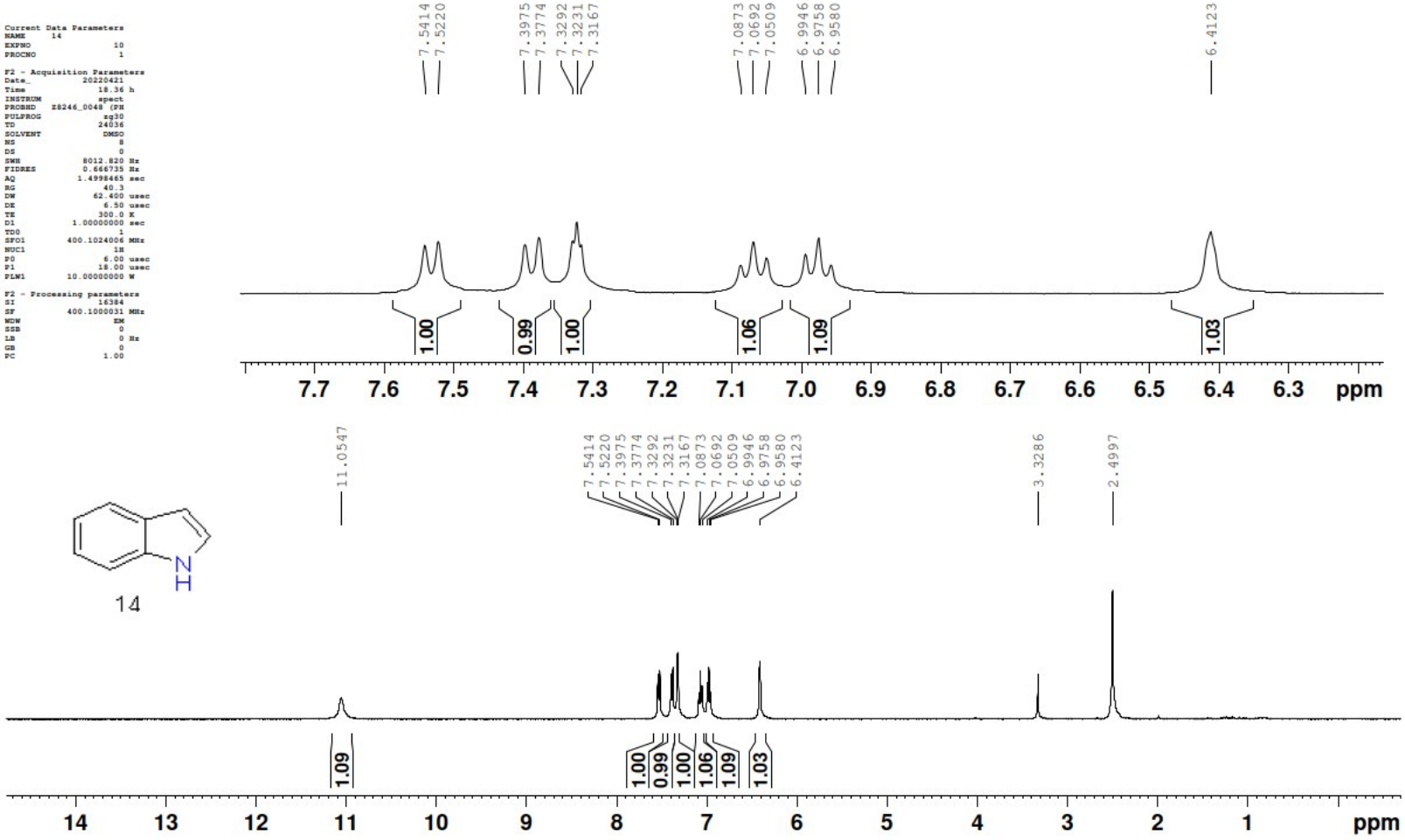


12da' IN DMSO AT 20 DEG C

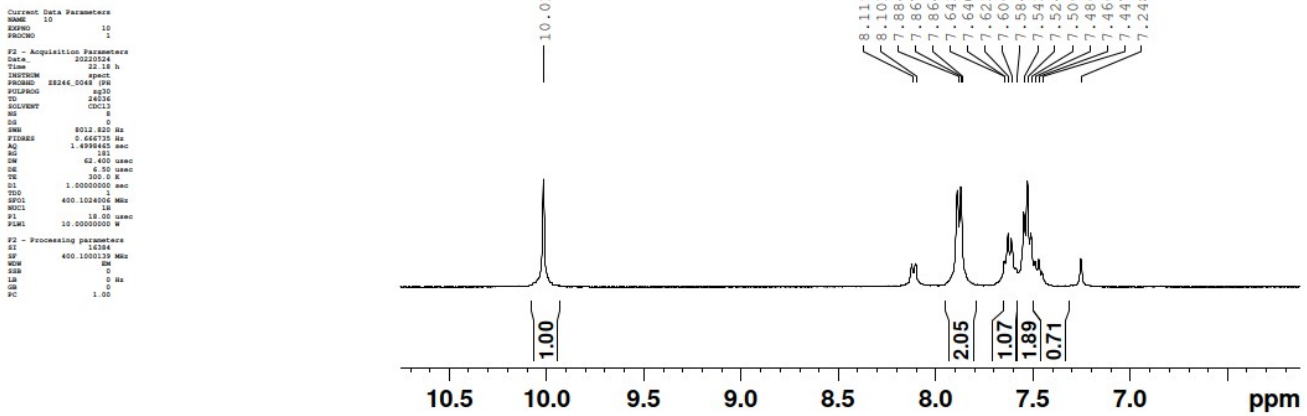
```
Current Data Parameters
NAME      12da'
EXPNO            10
PROCNO            1

F2 - Acquisition Parameters
Date_      20230309
Time         11.35 h
INSTRUM       Avance
PROBHD   Z163739_0713 (
PULPROG         zg30
TD             24576
SOLVENT         DMSO
NS                16
DS                 0
SWH        10000.000 Hz
FIDRES         0.813802 Hz
AQ          1.2288001 sec
RG               101
DW            50.000 usec
DE            11.14 usec
TE            298.1 K
D1                 0 sec
TD0                1
SFO1     400.6024737 MHz
NUC1             1H
P0            2.67 usec
P1            8.00 usec
PLW1    24.03499985 W

F2 - Processing parameters
SI             65536
SF     400.6000048 MHz
WDW              EM
SSB               0
LB             0.30 Hz
GB                0
PC             1.00
```

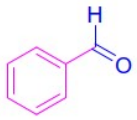


14 IN DMSO

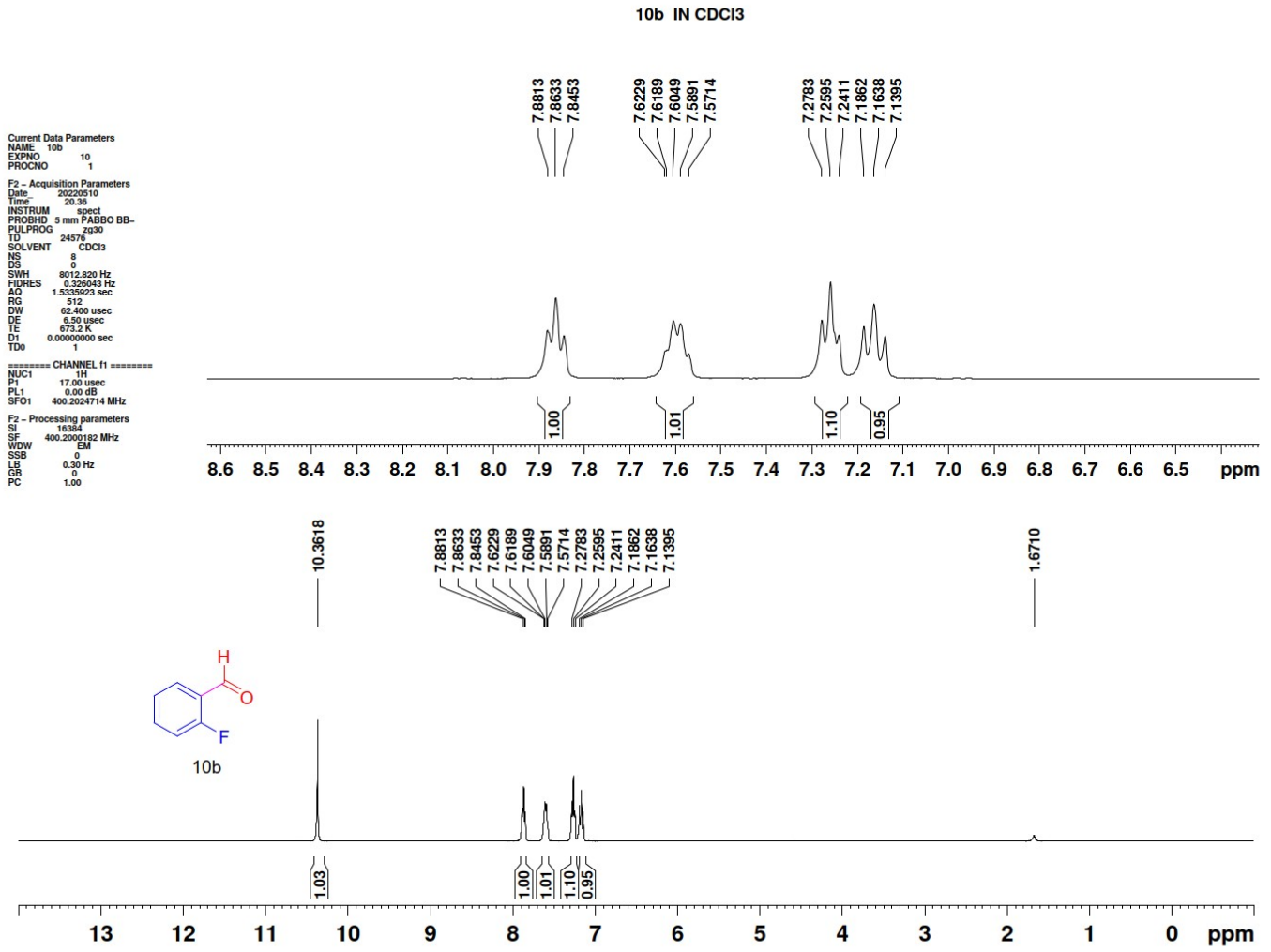

Current Data Parameters
NAME 14
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220421
Time 18.36 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT DMSO
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 40.3
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000031 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
7.5414
7.5220
7.3975
7.3774
7.3292
7.3231
7.3167
7.0873
7.0692
7.0509
6.9946
6.9758
6.9580
6.4123
1.00
0.99
1.00
1.06
1.09
1.03
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7.0
6.9
6.8
6.7
6.6
6.5
6.4
6.3
ppm
11.0547
3.3286
2.4997
1.09
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm

10 IN CDC13

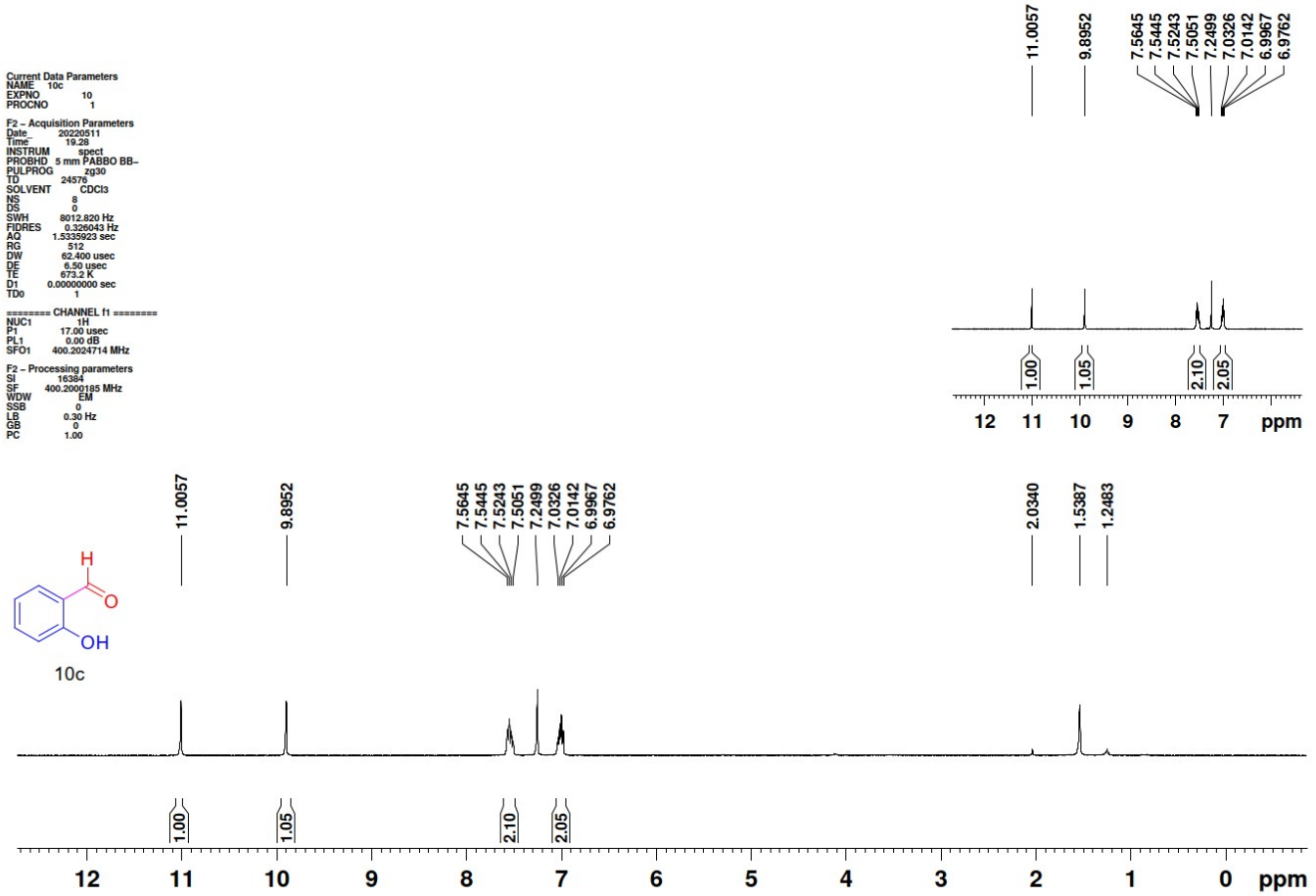




10

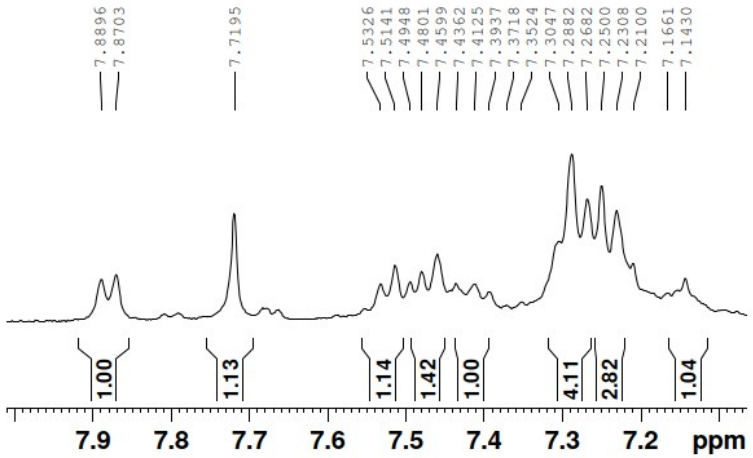

10b IN CDCl3
Current Data Parameters
NAME 10b
EXPNO 10
PROCNO 1
F2 – Acquisition Parameters
Date 20220510
Time 20.36
INSTRUM spect
PROBHD 5 mm PABBO BB–
PULPROG zg30
TD 24576
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.326043 Hz
AQ 1.5335923 sec
RG 512
DW 62.400 usec
DE 6.50 usec
TE 673.2 K
D1 0.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 17.00 usec
PL1 0.00 dB
SFO1 400.2024714 MHz
F2 – Processing parameters
SI 16384
SF 400.2000182 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.8813
7.8633
7.8453
7.6229
7.6189
7.6049
7.5891
7.5714
7.2783
7.2595
7.2411
7.1862
7.1638
7.1395
1.00
1.01
1.10
0.95
8.6 8.5 8.4 8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1 7.0 6.9 6.8 6.7 6.6 6.5 ppm
10.3618
7.8813
7.8633
7.8453
7.6229
7.6189
7.6049
7.5891
7.5714
7.2783
7.2595
7.2411
7.1862
7.1638
7.1395
1.6710
H
O
F
10b
1.03
1.00
1.01
1.10
0.95
13 12 11 10 9 8 7 6 5 4 3 2 1 0 ppm

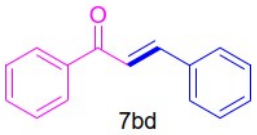
10c IN CDCl3


Current Data Parameters
NAME 10c
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date 20220511
Time 19.28
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 24576
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.326043 Hz
AQ 1.5335923 sec
RG 512
DW 62.400 usec
DE 6.50 usec
TE 673.2 K
D1 0.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 17.00 usec
PL1 0.00 dB
SFO1 400.2024714 MHz
F2 - Processing parameters
SI 16384
SF 400.2000185 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
11.0057
9.8952
7.5645
7.5445
7.5243
7.5051
7.2499
7.0326
7.0142
6.9967
6.9762
1.00
1.05
2.10
2.05
12 11 10 9 8 7 ppm
2.0340
1.5387
1.2483
H
O
OH
10c
12 11 10 9 8 7 6 5 4 3 2 1 0 ppm

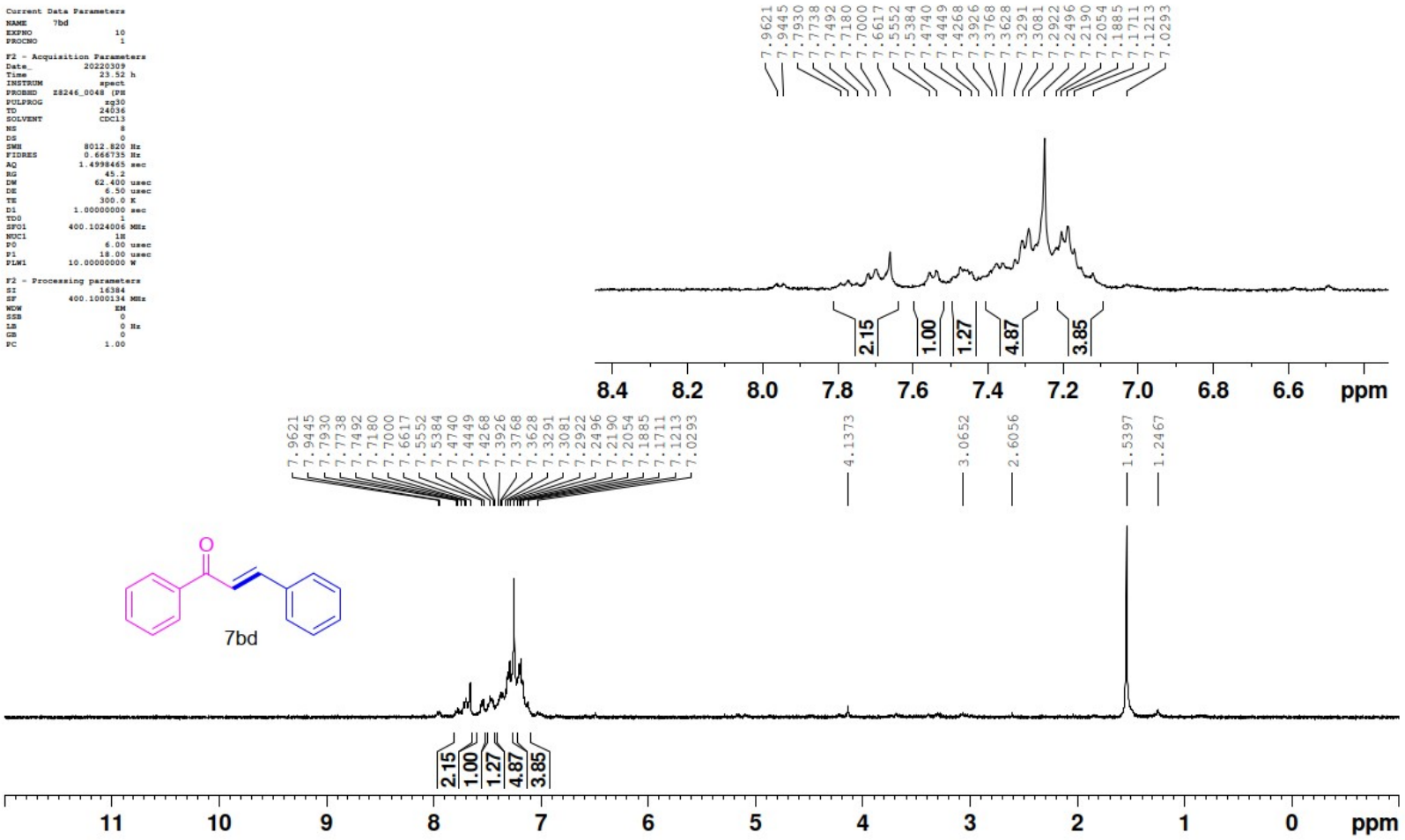
7bd IN DMSO

```
Current Data Parameters
NAME      7bd
EXPNO          10
PROCNO          1

F2 - Acquisition Parameters
Date_      20220514
Time           12.19
INSTRUM         spect
PROBHD   5 mm PABBO BB-
PULPROG         zg30
TD             24036
SOLVENT         DMSO
NS                 8
DS                 0
SWH         8012.820 Hz
FIDRES      0.333367 Hz
AQ          1.4998465 sec
RG               128
DW            62.400 usec
DE             6.50 usec
TE            673.2 K
D1          1.00000000 sec
TD0                1

======== CHANNEL f1 ========
NUC1              1H
P1             17.00 usec
PL1               0 dB
SFO1      400.2024714 MHz

F2 - Processing parameters
SI             16384
SF        400.2000086 MHz
WDW               EM
SSB               0
LB             0.30 Hz
GB                0
PC             1.00
```





7bd IN CDC13


Current Data Parameters
NAME 7bd
EXPNO 10
PROCNO 1
F2 - Acquisition Parameters
Date_ 20220309
Time 23.52 h
INSTRUM spect
PROBHD Z8246_0048 (PH
PULPROG zg30
TD 24036
SOLVENT CDCl3
NS 8
DS 0
SWH 8012.820 Hz
FIDRES 0.666735 Hz
AQ 1.4998465 sec
RG 45.2
DW 62.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
SFO1 400.1024006 MHz
NUC1 1H
P0 6.00 usec
P1 18.00 usec
PLW1 10.00000000 W
F2 - Processing parameters
SI 16384
SF 400.1000134 MHz
WDW EM
SSB 0
LB 0 Hz
GB 0
PC 1.00
7.9621
7.9445
7.7930
7.7738
7.7492
7.7180
7.7000
7.6617
7.5552
7.5384
7.4740
7.4449
7.4268
7.3926
7.3768
7.3628
7.3291
7.3081
7.2922
7.2496
7.2190
7.2054
7.1885
7.1711
7.1213
7.0293
2.15
1.00
1.27
4.87
3.85
8.4
8.2
8.0
7.8
7.6
7.4
7.2
7.0
6.8
6.6
ppm
4.1373
3.0652
2.6056
1.5397
1.2467
7bd
11
10
9
8
7
6
5
4
3
2
1
0
ppm

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