

Supporting Information

Highly Efficient One-pot Access to Functionalised Arylboronic Acids via Non-cryogenic Bromine/Magnesium Exchanges

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General

All NMR spectra were recorded on a Bruker ARX 400 (400 MHz) spectrometer. Beside ^1H and ^{13}C experiments, ^{11}B and ^{19}F spectra were recorded. The chemical shifts are given in ppm downfield of TMS, although the solvents actually served as internal standard. The multiplicity is given by the following symbols: s (singlet), d (doublet), t (triplet), q (quartet) and m (multiplet). The coupling constant J is given in Hz.

General Procedure A

A dry and argon-flushed Schlenk-flask, equipped with a magnetic stirrer and a septum, is charged with magnesium turnings (122.0 mg, 5.0 mmol). LiCl (5.0 ml, 0.5 M in THF, 2.5 mmol) is added and the magnesium is activated with DIBAL-H (20.0 μl , 1M in toluene, 0.02 mmol). After 5 min of stirring the aryl bromide (2.0 mmol) is added in one portion at room temperature. The reaction mixture is stirred for the indicated time before trimethylborate (448.0 μl , 4.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na_2SO_4 and concentrated. The residue is purified by crystallisation.

General Procedure B

A dry and argon-flushed Schlenk-flask, equipped with a magnetic stirrer and a septum, is charged with the aryl bromide (5.0 mmol) and THF (5 ml). The solution is cooled to 0 °C and *i*-PrMgCl-LiCl (6.0 ml, 1M in THF, 6.0 mmol) is added drop-wise. The reaction mixture is stirred for the indicated time before trimethylborate (1.12 ml, 10.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na_2SO_4 and concentrated. The residue is purified by crystallisation.

4-Methoxyphenylboronic acid (1)

4-Methoxyphenylboronic acid is prepared using Procedure A. After the addition of 4-bromoanisole the reaction mixture is stirred at room temperature for 15 h before trimethylborate (448.0 μl , 4.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na_2SO_4 and concentrated. The residue is recrystallised from H_2O . ^1H -NMR (DMSO- d_6 , 400 MHz): δ [ppm] = 3.76 (s, 3H), 6.89 (d, J = 8.6 Hz, 2H), 7.75 (d, J = 8.6 Hz, 2H), 7.83 (bs, 2H); ^{13}C -NMR (DMSO- d_6 , 100 MHz): δ [ppm] = 54.8, 112.9, 135.9, 160.95; ^{11}B -NMR (DMSO- d_6 , 128 MHz): δ [ppm] = 26.3.

4-(Dimethylamino)phenylboronic acid (2)

4-(Dimethylamino)phenylboronic acid is prepared using Procedure A. After the addition of 4-bromo-*N,N*-dimethylaniline the reaction mixture is stirred at room temperature for 15 h before trimethylborate (448.0 μl , 4.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na_2SO_4 and concentrated. The residue is recrystallised from $\text{H}_2\text{O}/\text{CH}_3\text{CN}$. ^1H -NMR (DMSO- d_6 , 400 MHz): δ [ppm] = 2.91 (s, 6H), 6.65 (d, J = 8.9 Hz, 2H), 7.57 (s, 2H), 7.63 (d, J = 8.9 Hz, 2H); ^{13}C -NMR (DMSO- d_6 , 100 MHz): δ [ppm] = 39.7, 111.0, 135.4, 151.7; ^{11}B -NMR (DMSO- d_6 , 128 MHz): δ [ppm] = 27.1.

4-Trifluoromethylboronic acid (3)

4-Trifluoromethylboronic acid is prepared using Procedure A. After the addition of 4-(trifluoromethyl)bromobenzene the reaction mixture is stirred at 0 °C for 30 min. before trimethylborate (448.0 μl , 4.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na_2SO_4 and concentrated. The residue is recrystallised from H_2O . ^1H -NMR (DMSO- d_6 , 400 MHz): δ [ppm] = 7.68 (d, J = 8.1 Hz, 2H), 8.00 (d, J = 8.1 Hz, 2H), 8.31 (bs, 2H); ^{13}C -NMR (DMSO- d_6 , 100 MHz): δ [ppm] = 123.9 (q, J = 3.7 Hz), 124.4 (q, J = 269.6 Hz), 130.2 (q, J = 30.9 Hz), 134.7; ^{11}B -NMR (DMSO- d_6 , 128 MHz): δ [ppm] = 26.3; ^{19}F -NMR (DMSO- d_6 , 376 MHz): δ [ppm] = -61.80.

4-Chlorophenylboronic acid (4)

4-Chlorophenylboronic acid is prepared using Procedure A. After the addition of 1-bromo-4-chlorobenzene the reaction mixture is stirred at room temperature for 10 min. before trimethylborate (448.0 μ l, 4.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na₂SO₄ and concentrated. The residue is recrystallised from H₂O/CH₃CN. ¹H-NMR (DMSO-*d*₆, 400 MHz): δ [ppm] = 7.39 (d, *J* = 8.6 Hz, 2H), 7.80 (d, *J* = 8.6 Hz, 2H), 8.14 (bs, 2H); ¹³C-NMR (DMSO-*d*₆, 100 MHz): δ [ppm] = 127.4, 135.1, 136.0; ¹¹B-NMR (DMSO-*d*₆, 128 MHz): δ [ppm] = 26.6.

4-Cyanophenylboronic acid (5)

4-Cynaophenylboronic acid is prepared using Procedure B. After the addition of *i*-PrMgCl-LiCl the reaction mixture is stirred at 0 °C for 2 h before trimethylborate (1.12 ml, 10.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na₂SO₄ and concentrated. The residue is recrystallised from H₂O. ¹H-NMR (DMSO-*d*₆, 400 MHz): δ [ppm] = 7.78 (d, *J* = 8.1 Hz, 2H), 7.93 (d, *J* = 8.1 Hz, 2H), 8.35 (bs, 2H); ¹³C-NMR (DMSO-*d*₆, 100 MHz): δ [ppm] = 112.4, 119.0, 131.0, 134.6; ¹¹B-NMR (DMSO-*d*₆, 128 MHz): δ [ppm] = 26.4.

3-Fluorophenylboronic acid (6)

3-Fluorophenylboronic acid is prepared using Procedure A. After the addition of 3-bromofluorobenzene the reaction mixture is stirred at room temperature for 15 h before trimethylborate (448.0 μ l, 4.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na₂SO₄ and concentrated. The residue is recrystallised from H₂O. ¹H-NMR (DMSO-*d*₆, 400 MHz): δ [ppm] = 7.20 (m, 1H), 7.38 (m, 1H), 7.63 (m, 2H), 8.21 (bs, 2H); ¹³C-NMR (DMSO-*d*₆, 100 MHz): δ [ppm] = 116.8 (d, *J* = 21.7 Hz), 120.0 (d, *J* = 19.2 Hz), 129.6 (d, *J* = 7.2 Hz), 130.1 (d, *J* = 2.6 Hz), 162.1 (d, *J* = 242.0 Hz); ¹¹B-NMR (DMSO-*d*₆, 128 MHz): δ [ppm] = 28.0; ¹⁹F-NMR (DMSO-*d*₆, 376 MHz): δ [ppm] = -114.91;

3-Trifluoromethoxyphenylboronic acid (7)

3-Trifluoromethoxyphenylboronic acid is prepared using Procedure A. After the addition of 3-bromo-(trifluoromethoxy)benzene the reaction mixture is stirred at room temperature for 15 h before trimethylborate (448.0 μ l, 4.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na₂SO₄ and concentrated. The residue is recrystallised from H₂O. ¹H-NMR (DMSO-*d*₆, 400 MHz): δ [ppm] = 7.37 (d, *J* = 8.1 Hz, 1H), 7.50 (m, 1H), 7.71 (bs, 1H), 7.82 (m, *J* = 7.1 Hz, 1H), 8.27 (bs, 2H); ¹³C-NMR (DMSO-*d*₆, 100 MHz): δ [ppm] = 120.2 (q, *J* = 255.9 Hz), 122.6, 125.8, 129.5, 133.1, 148.2; ¹¹B-NMR (DMSO-*d*₆, 128 MHz): δ [ppm] = 28.4; ¹⁹F-NMR (DMSO-*d*₆, 376 MHz): δ [ppm] = -57.09.

2-Biphenylboronic acid (8)

2-Biphenylboronic acid is prepared using Procedure A. After the addition of 2-bromobiphenyl the reaction mixture is stirred at room temperature for 1 h before trimethylborate (448.0 μ l, 4.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na₂SO₄ and concentrated. The residue is recrystallised from H₂O/CH₃CN. ¹H-NMR (DMSO-*d*₆, 400 MHz): δ [ppm] = 7.35 (m, 2H), 7.44 (m, 4H), 7.49 (m, 3H), 7.96 (s, 2H); ¹³C-NMR (DMSO-*d*₆, 100 MHz): δ [ppm] = 126.1, 126.8, 128.2, 128.3, 128.3, 132.3, 143.3, 144.2; ¹¹B-NMR (DMSO-*d*₆, 128 MHz): δ [ppm] = 29.9.

1-Naphthaleneboronic acid (9)

1-Naphthaleneboronic acid is prepared using Procedure A. After the addition of 1-bromonaphthalene the reaction mixture is stirred at room temperature for 15 h before trimethylborate (448.0 μ l, 4.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na₂SO₄ and concentrated. The residue is recrystallised from H₂O. ¹H-NMR (DMSO-*d*₆, 400 MHz): δ [ppm] = 7.48 (m, 3H), 7.75 (d, *J* = 6.6 Hz, 1H), 7.88 (vt, *J* = 8.3 Hz, 2H), 8.39 (d, *J* = 8.1 Hz, 1H), 8.43 (bs, 2H); ¹³C-NMR (DMSO-*d*₆, 100 MHz): δ [ppm] = 125.6, 125.9, 126.1, 128.7, 129.0, 129.7, 132.6, 133.3, 136.0; ¹¹B-NMR (DMSO-*d*₆, 128 MHz): δ [ppm] = 28.6.

2,4,6-Trimethylphenylboronic acid (10)

2,4,6-Trimethylphenylboronic acid is prepared using Procedure A. After the addition of 2,4,6-trimethylbromobenzene the reaction mixture is stirred at room temperature for 15 h before trimethylborate (448.0 μ l, 4.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na₂SO₄ and concentrated. The residue is recrystallised from H₂O/CH₃CN. ¹H-NMR (DMSO-*d*₆, 400 MHz): δ [ppm] = 2.21 (s, 3H), 2.24 (s, 6H), 6.75 (s, 2H), 8.03 (s, 2H); ¹³C-NMR (DMSO-*d*₆, 100 MHz): δ [ppm] = 20.8, 21.9, 126.4, 136.1, 138.5; ¹¹B-NMR (DMSO-*d*₆, 128 MHz): δ [ppm] = 30.3.

(4-[(4-Methylphenyl)sulfonyl]oxy)phenylboronic acid (11)

(4-[(4-methylphenyl)sulfonyl]oxy)phenylboronic acid is prepared using Procedure A. After the addition of 4-bromophenyl 4-methylbenzenesulfonate the reaction mixture is stirred at 0 °C for 2 h before trimethylborate (448.0 μ l, 4.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na₂SO₄ and concentrated. The residue is recrystallised from H₂O/CH₃CN. ¹H-NMR (DMSO-*d*₆, 400 MHz): δ [ppm] = 2.41 (s, 3H), 7.00 (d, *J* = 8.6 Hz, 2H), 7.46 (d, *J* = 8.2 Hz, 2H), 7.73 (d, *J* = 8.2 Hz, 2H), 7.78 (d, *J* = 8.6 Hz, 2H), 8.15 (bs, 2H); ¹³C-NMR (DMSO-*d*₆, 100 MHz): δ [ppm] = 21.2, 120.9, 128.2, 130.2, 131.5, 135.8, 145.7, 150.6; ¹¹B-NMR (DMSO-*d*₆, 128 MHz): δ [ppm] = 25.0.

3-Thienylboronic acid (12)

3-thienylboronic acid is prepared using Procedure B. After the addition of *i*-PrMgCl·LiCl the reaction mixture is stirred at room temperature for 30 min. before trimethylborate (1.12 ml, 10.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na₂SO₄ and concentrated. The residue is recrystallised from H₂O/CH₃CN. ¹H-NMR (DMSO-*d*₆, 400 MHz): δ [ppm] = 7.42 (dd, *J* = 1.0 and 4.8 Hz, 1H), 7.45 (dd, *J* = 2.7 and 4.8 Hz, 1H), 7.96 (dd, *J* = 1.0 and 2.7 Hz, 1H), 8.07 (bs, 2H); ¹³C-NMR (DMSO-*d*₆, 100 MHz): δ [ppm] = 125.5, 132.8, 135.3; ¹¹B-NMR (DMSO-*d*₆, 128 MHz): δ [ppm] = 25.6.

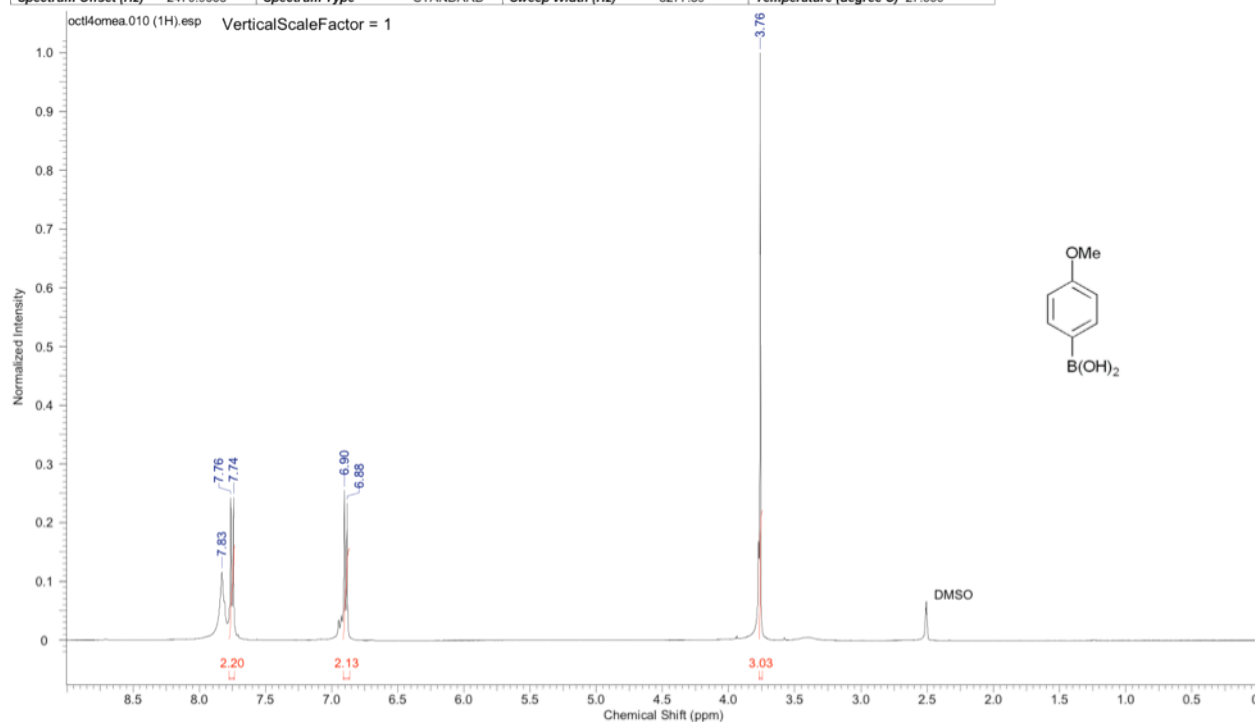
(2-Methoxypyridin-3-yl)boronic acid (13)

(2-methoxypyridin-3-yl)boronic acid is prepared using Procedure A. After the addition of 3-bromo-2-methoxypyridine the reaction mixture is stirred at room temperature for 30 min. before trimethylborate (448.0 μ l, 4.0 mmol) is added at 0 °C. The mixture is then quenched with 0.1 N HCl and extracted with EtOAc. The extract is dried over Na₂SO₄ and concentrated. The residue is recrystallised from H₂O/CH₃CN. ¹H-NMR (DMSO-*d*₆, 400 MHz): δ [ppm] = 3.88 (s, 3H), 6.97 (dd, *J* = 5.0 and 7.1 Hz, 1H), 7.86 (bs, 2H), 7.89 (dd, *J* = 2.2 and 7.1 Hz, 1H), 8.19 (dd, *J* = 2.2 and 5.0 Hz, 1H); ¹³C-NMR (DMSO-*d*₆, 100 MHz): δ [ppm] = 53.0, 116.9, 144.7, 148.3, 166.3; ¹¹B-NMR (DMSO-*d*₆, 128 MHz): δ [ppm] = 27.9.

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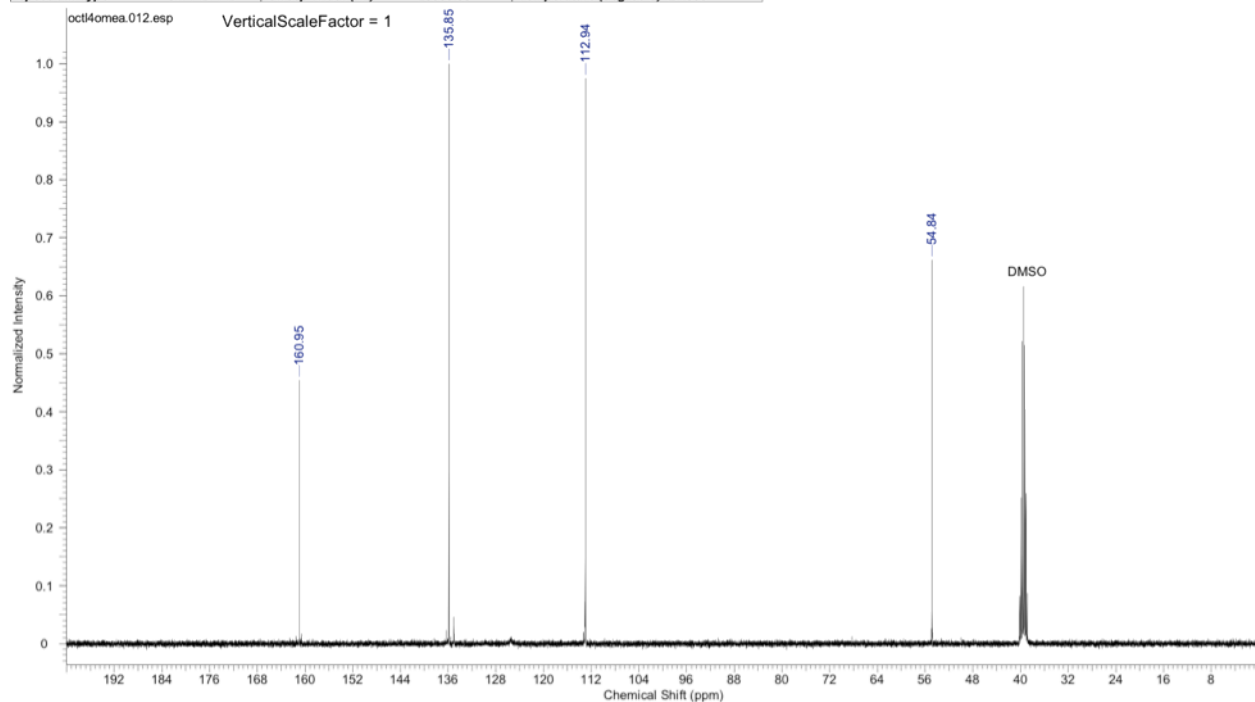
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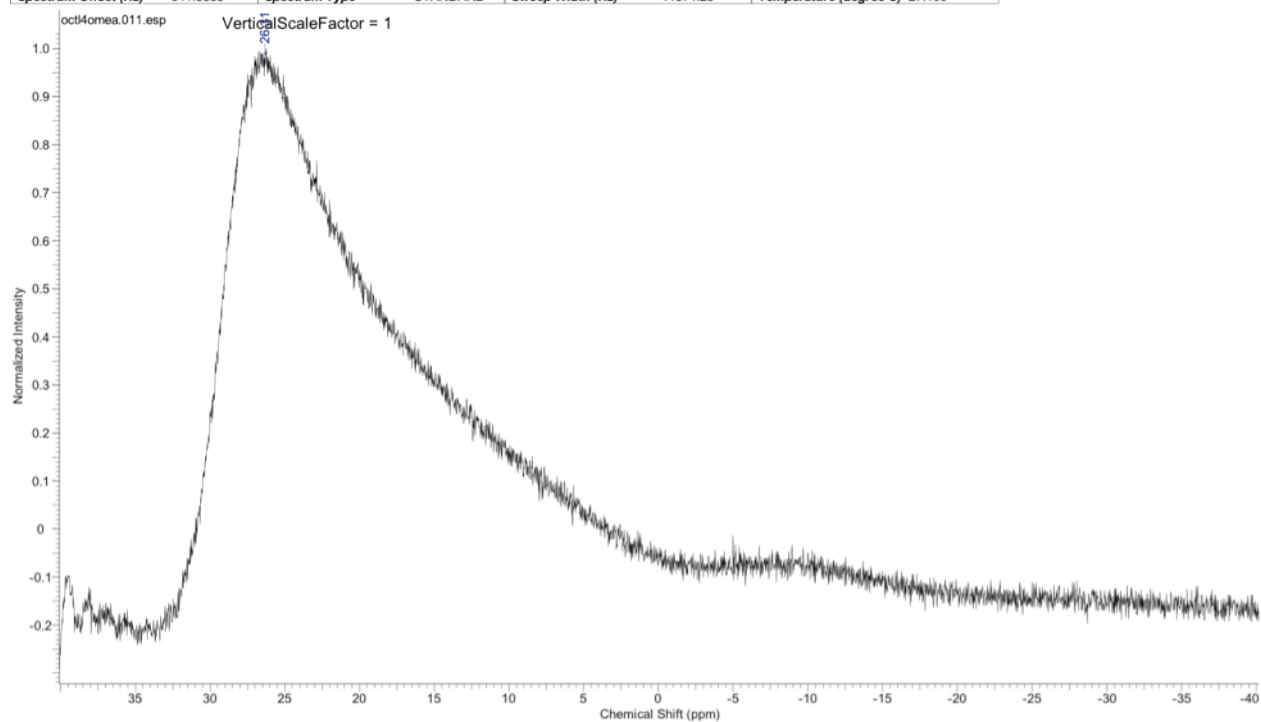


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Spectrum Type	STANDARD	Temperature (degree C)	27.000				



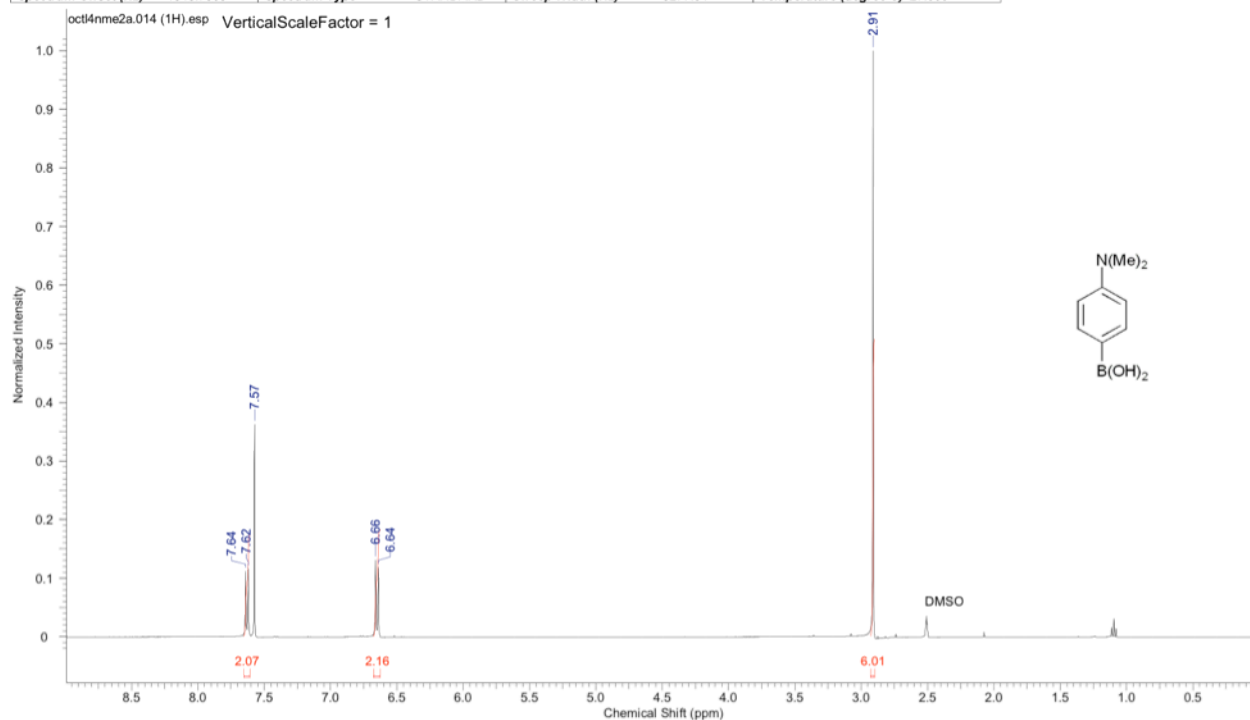
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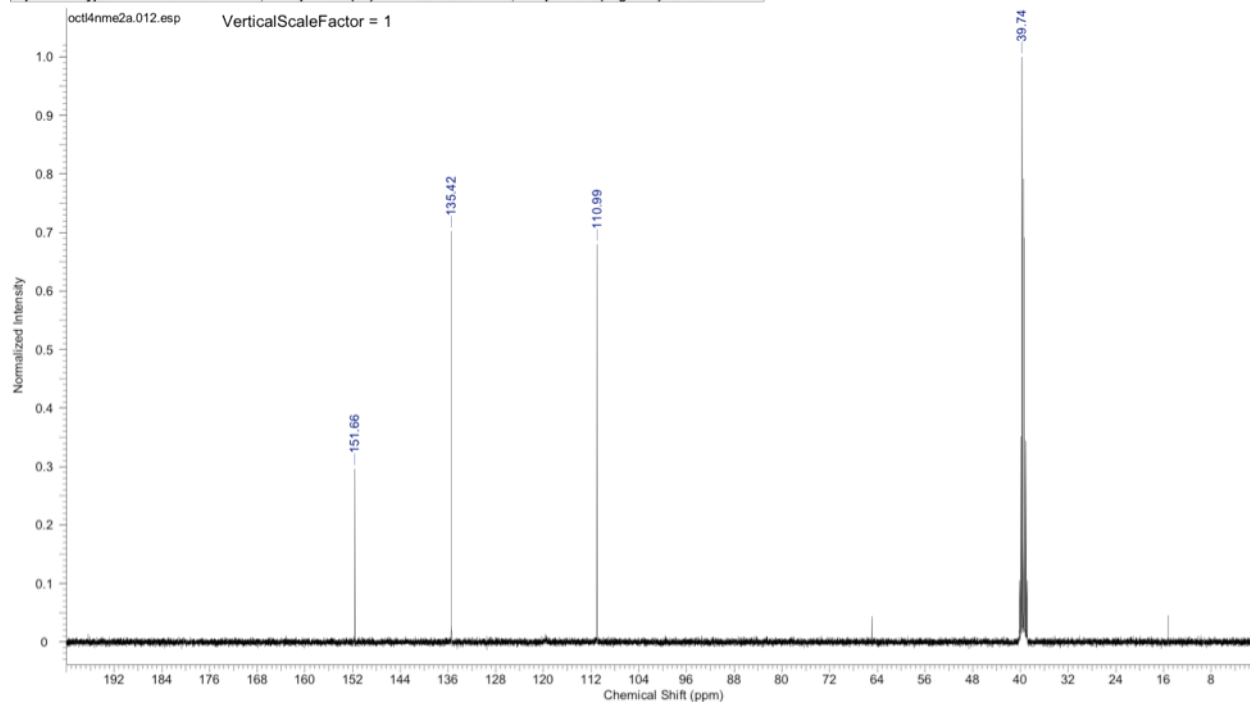
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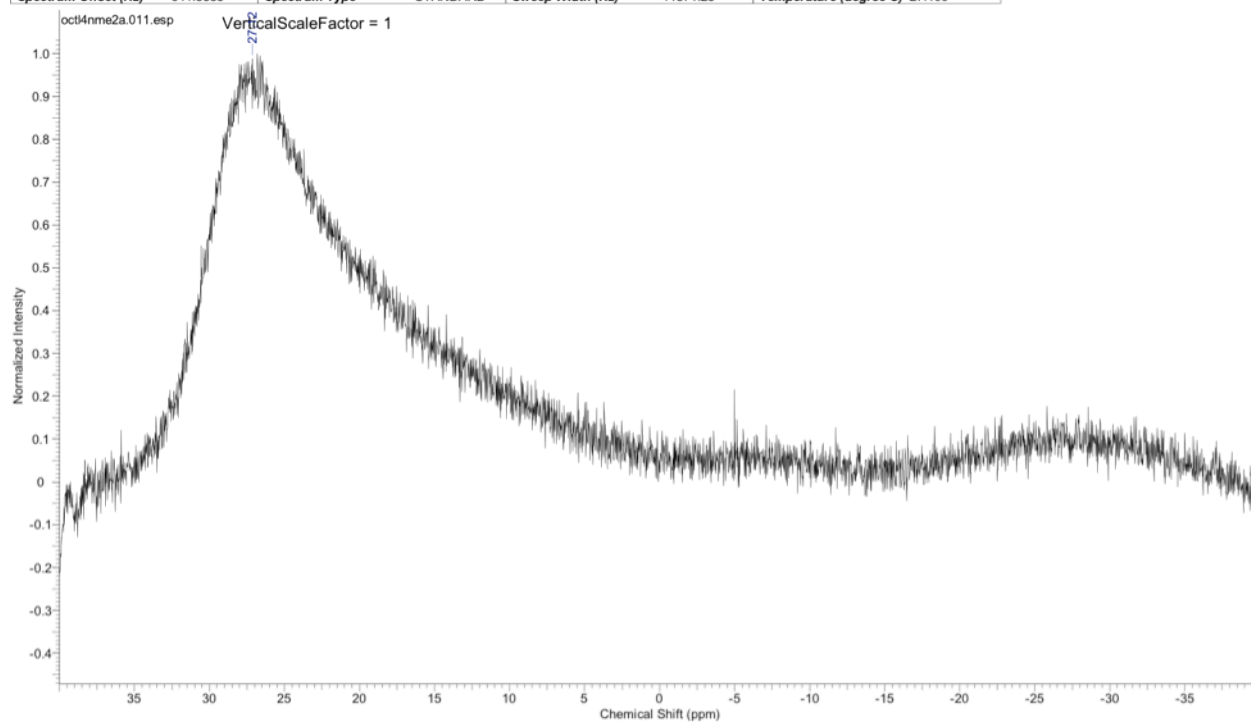


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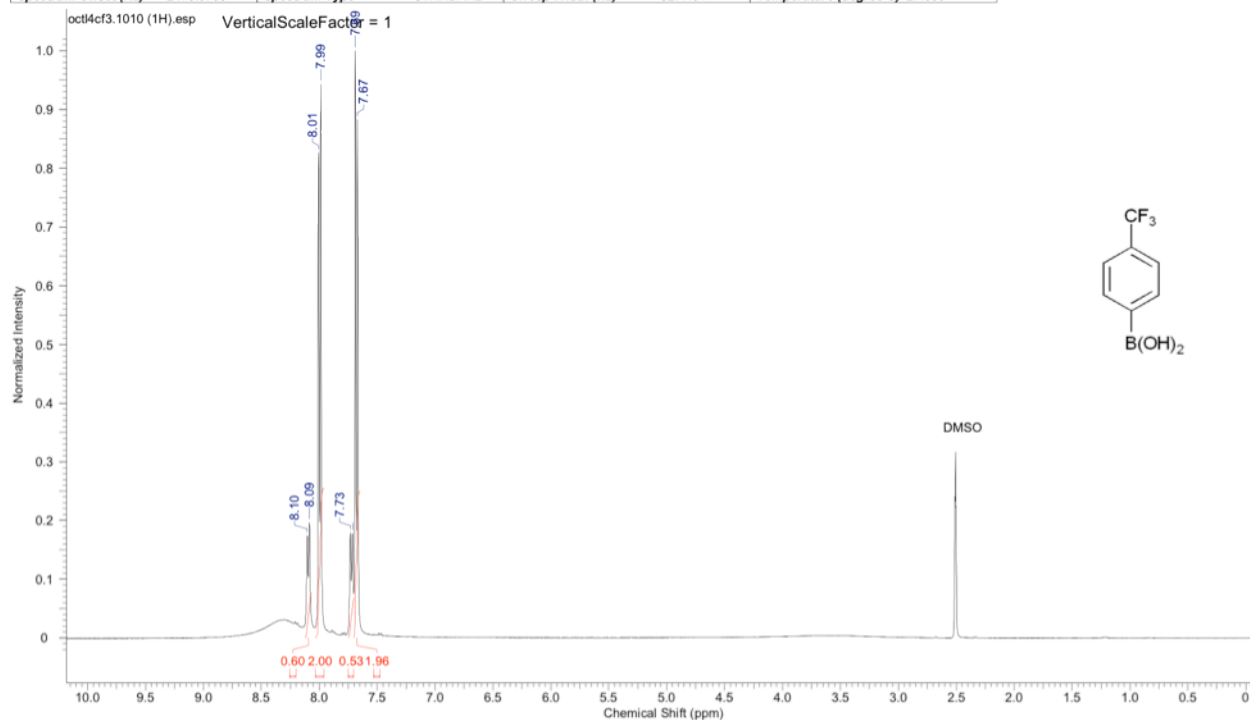
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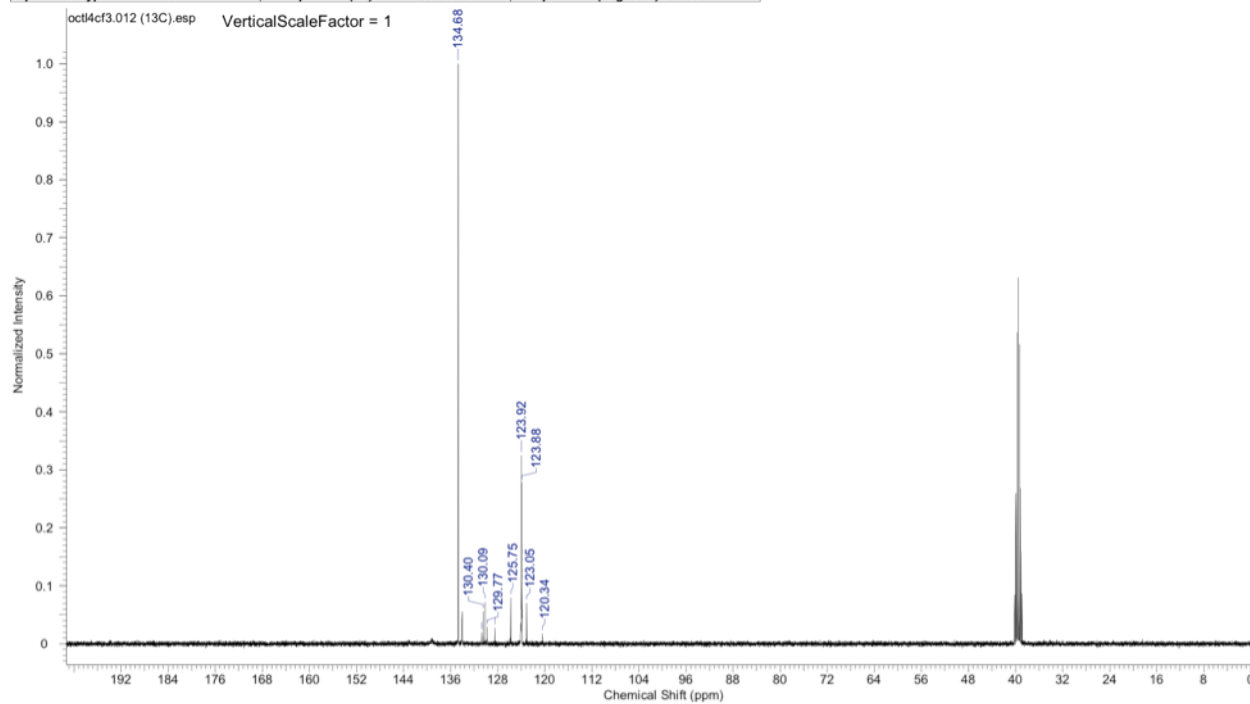
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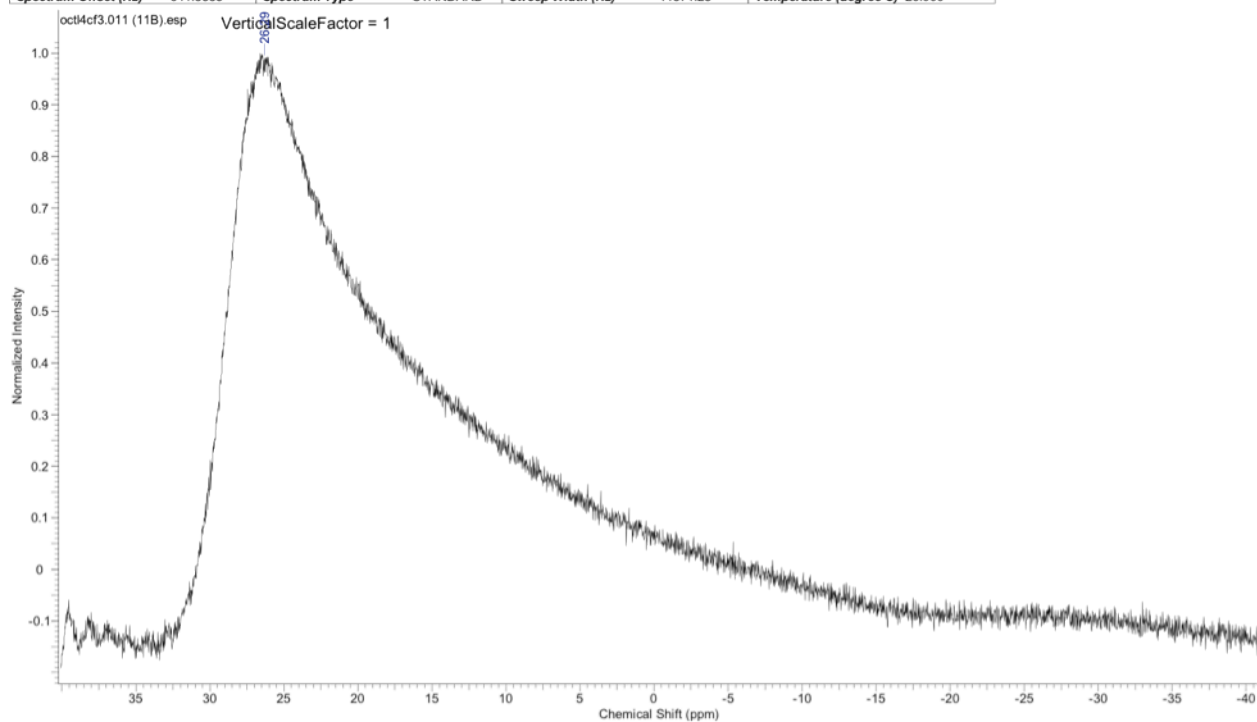


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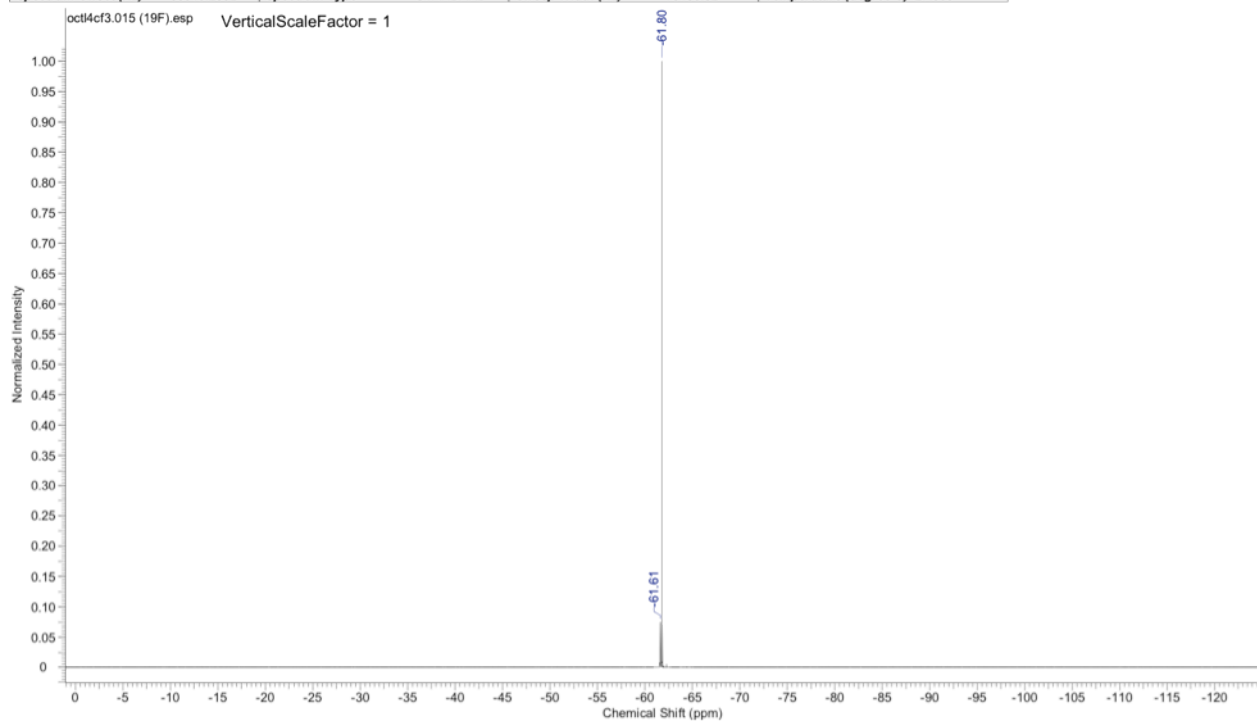
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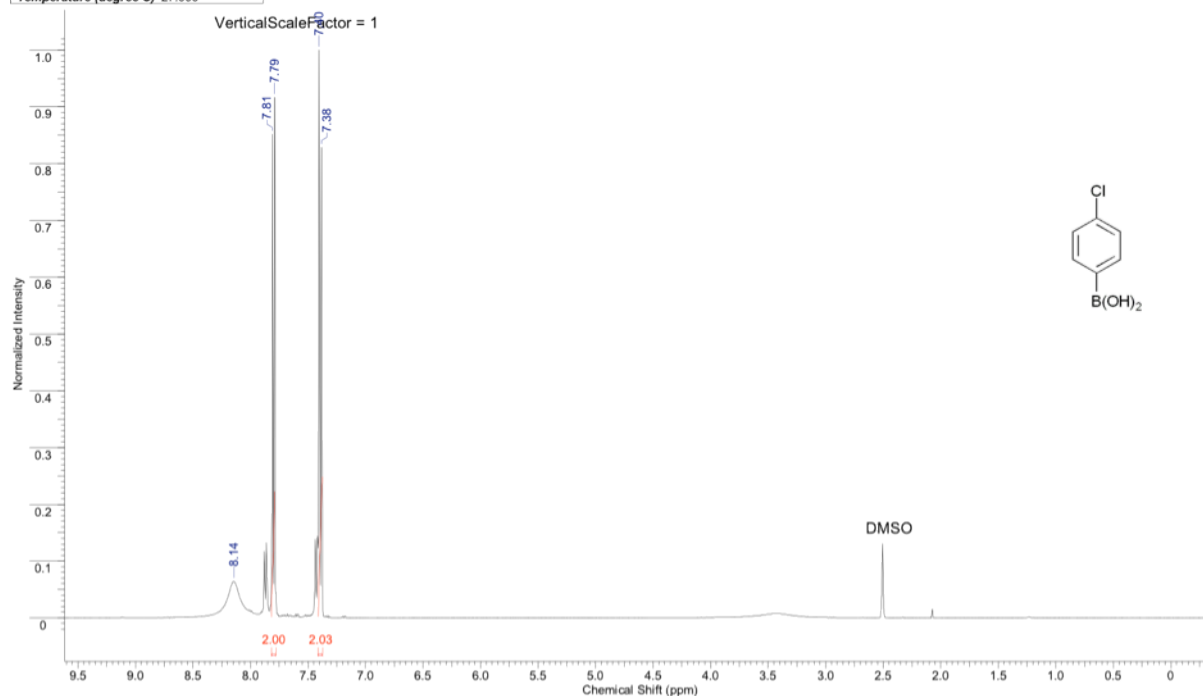
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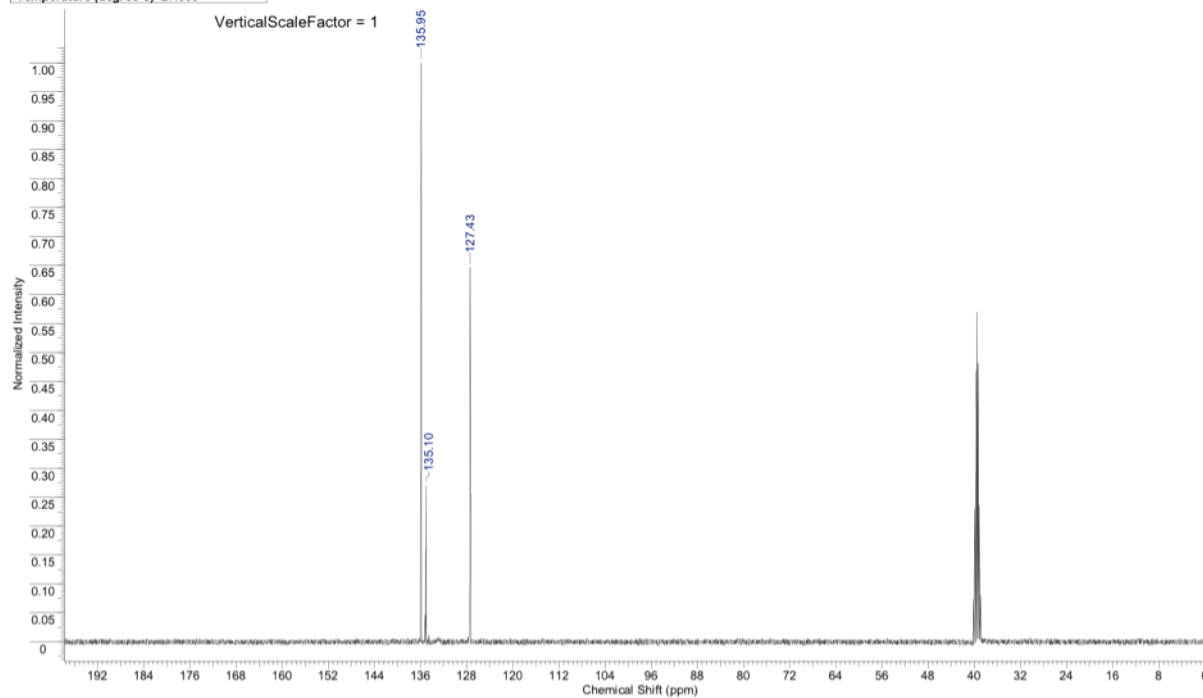
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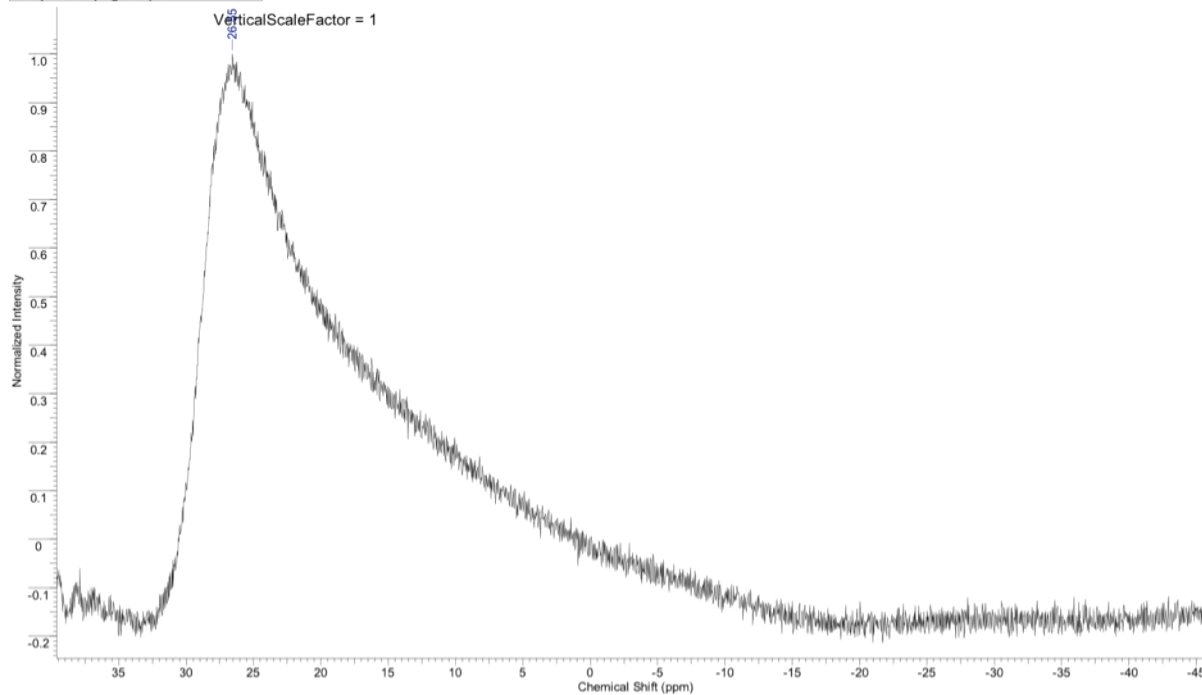


09.05.2011 11:43

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File Name	\\VBOXSVR\vbshare\ECPM Strasbourg\Boronic acids - Strasbourg\oct4cl1\oct4cl1_020000fid			Frequency (MHz)	100.62
Nucleus	13C	Number of Transients	1024	Origin	spect
Owner	nmr400	Points Count	32768	Pulse Sequence	zgpg30
SW(cyclical) (Hz)	23980.81	Solvent	DMSO-D6	Spectrum Offset (Hz)	10015.1631
Temperature (degree C)	27.000			Receiver Gain	16384.00
				Sweep Width (Hz)	23980.08



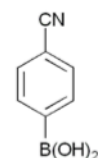
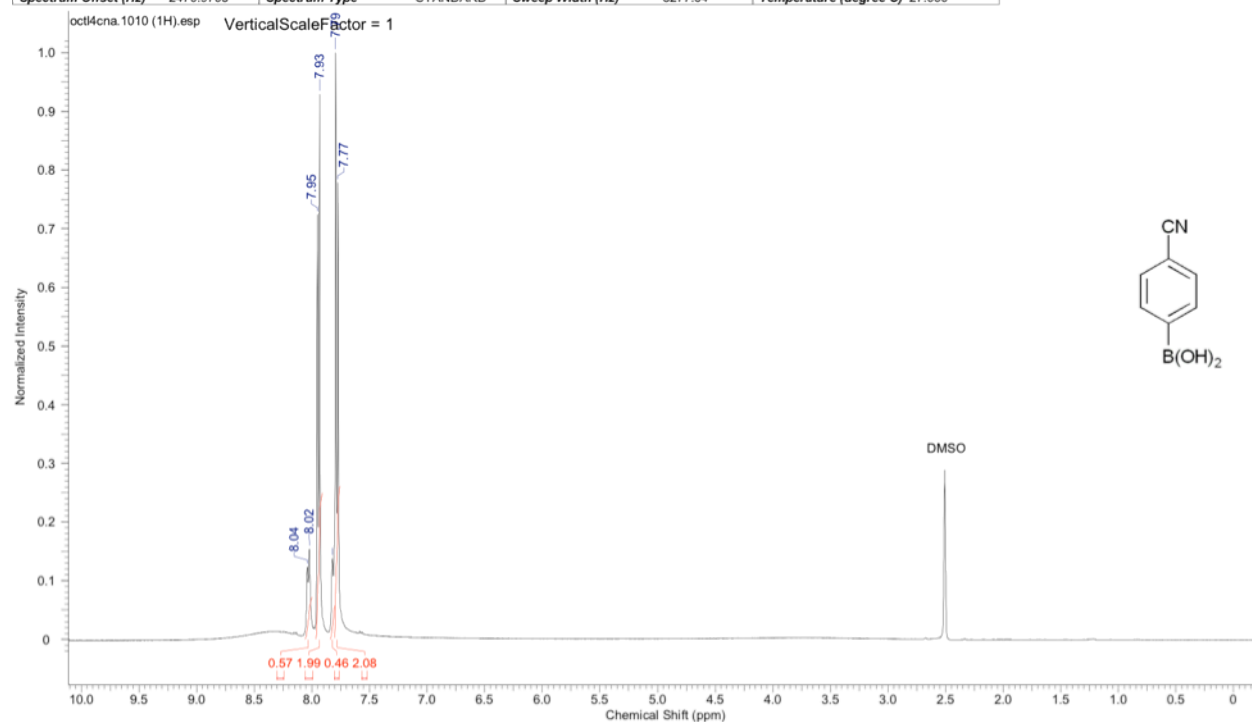
Acquisition Time (sec) 0.3479	Comment 5 mm PABBO BB-1H/D Z-GRD Z963001/0017	Date 27 Apr 2011 20:01:04	
File Name \\WBOXSVR\vbshare\ECPM Strasbourg\Boronic acids - Strasbourg\oct14cl1\oct14cl1_011000.fid		Frequency (MHz) 128.38	
Nucleus 11B	Number of Transients 128	Origin spect	Original Points Count 4026
Owner nmr400	Points Count 4096	Pulse Sequence zgpg	Receiver Gain 574.70
SW(cyclical) (Hz) 11574.07	Solvent DMSO-D6	Spectrum Offset (Hz) -641.9142	Sweep Width (Hz) 11571.25
Temperature (degree C) 27.100			



Compound 5:

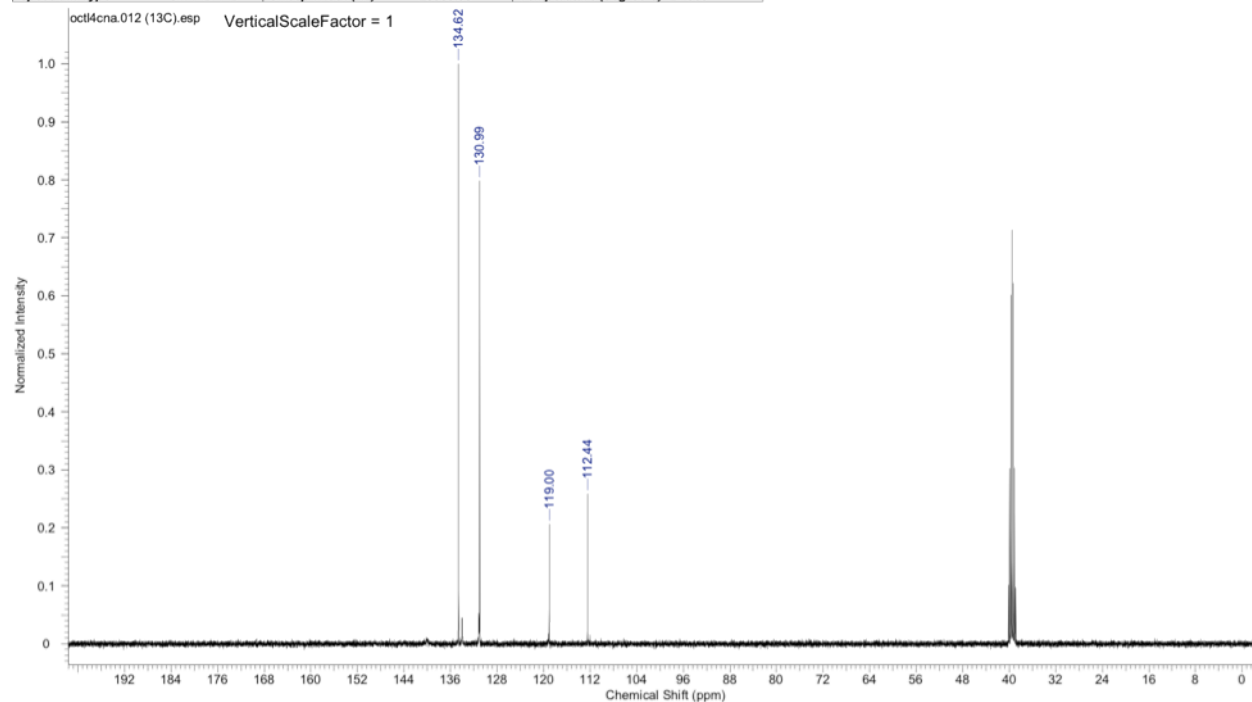
01.03.2011 17:27:25

Acquisition Time (sec)	1.9792	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	18 Feb 2011 17:32:00	
Date Stamp	18 Feb 2011 17:32:00	File Name	\\VBOXSVR\VBShare\Tim\oct4cna1010.fid		Frequency (MHz)	400.13	
Nucleus	1H	Number of Transients	16	Origin	spect	Original Points Count	16384
Points Count	16384	Pulse Sequence	zg30	Receiver Gain	161.30	SW(cyclical) (Hz)	8278.15
Spectrum Offset (Hz)	2470.9705	Spectrum Type	STANDARD	Sweep Width (Hz)	8277.64	Temperature (degree C)	27.000

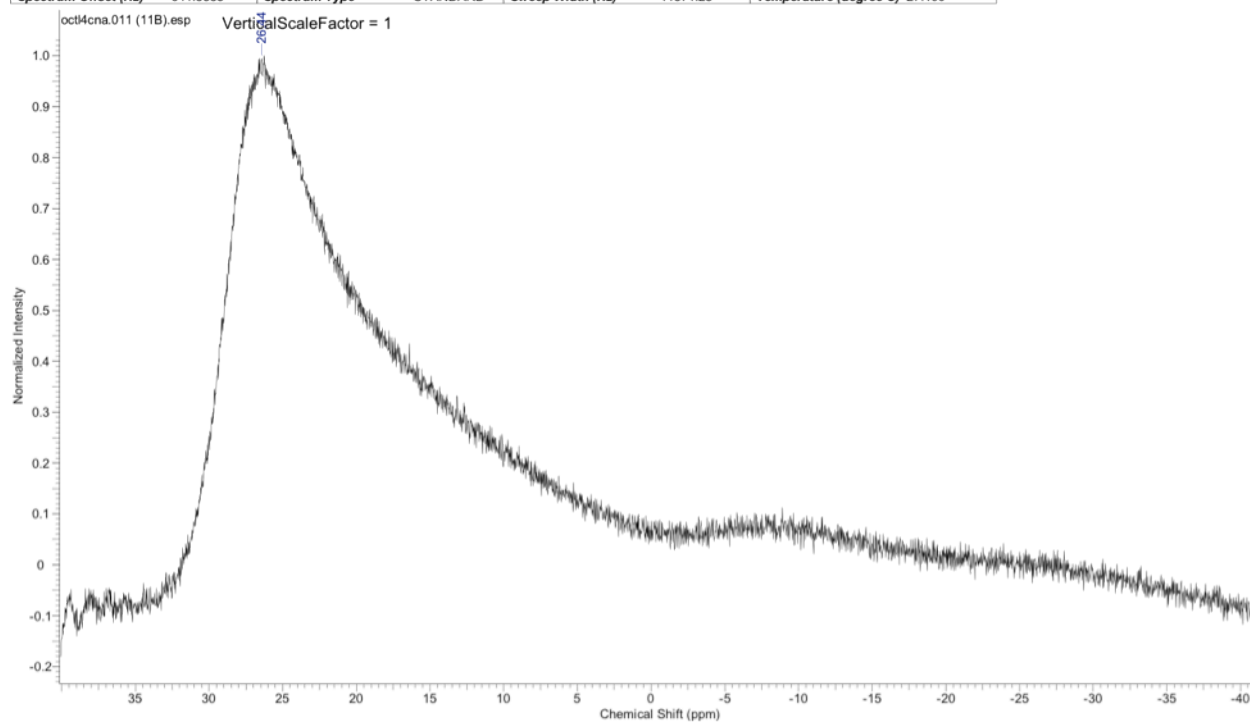


01.03.2011 17:29:21

Acquisition Time (sec)	1.3664	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	18 Feb 2011 18:21:04	
Date Stamp	18 Feb 2011 18:21:04	File Name	\\VBOXSVR\VBShare\Tim\oct4cna12.fid		Frequency (MHz)	100.61	
Frequency (MHz)	100.61	Nucleus	13C	Number of Transients	1024	Origin	spect
Original Points Count	32768	Owner	nmr400	Points Count	32768	Pulse Sequence	zpgg30
Receiver Gain	16384.00	SW(cyclical) (Hz)	23980.81	Solvent	DMSO-d6	Spectrum Offset (Hz)	10014.6221
Spectrum Type	STANDARD	Sweep Width (Hz)	23980.08	Temperature (degree C)	27.000		



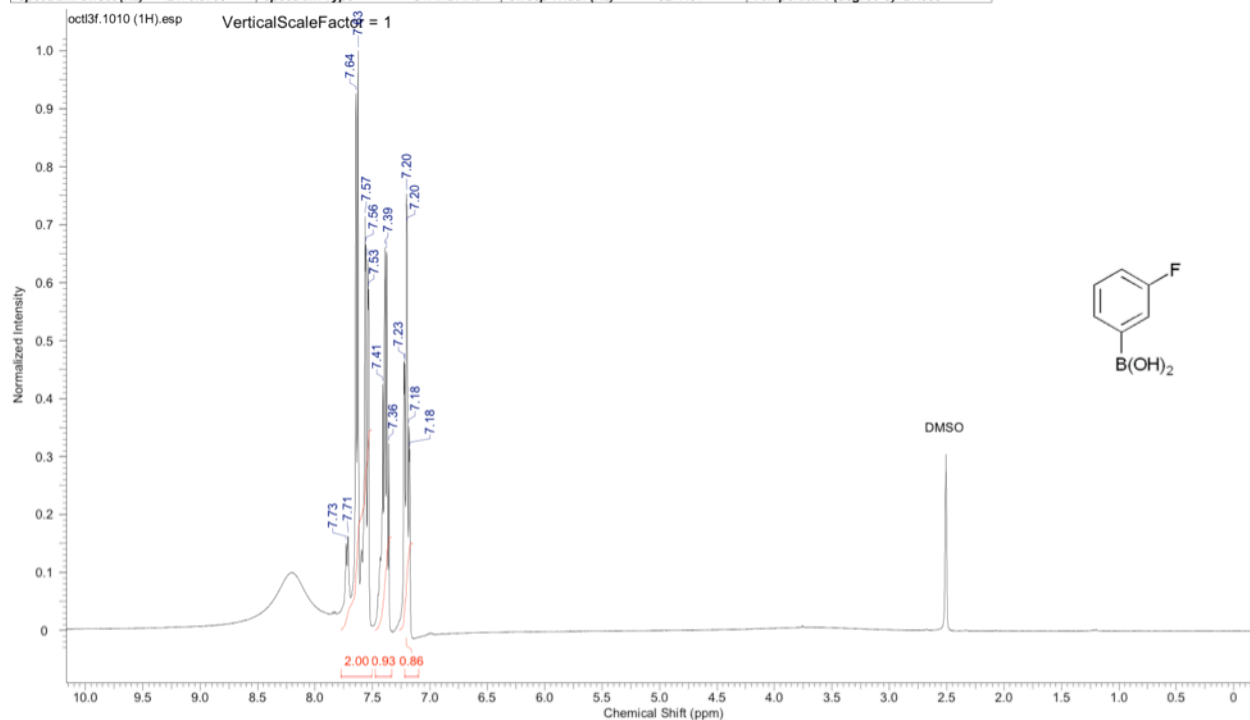
Acquisition Time (sec)	0.3478	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	18 Feb 2011 17:38:24			
Date Stamp	18 Feb 2011 17:38:24	File Name	\\VBOXSVR\1BShare\Time\oct4cna\11\fid		Frequency (MHz)	128.38			
Nucleus	11B	Number of Transients	128	Origin	spect	Original Points Count	4026	Owner	nmr400
Points Count	4096	Pulse Sequence	zpgpg	Receiver Gain	574.70	SW(cyclical) (Hz)	11574.07	Solvent	DMSO-d6
Spectrum Offset (Hz)	-641.8885	Spectrum Type	STANDARD	Sweep Width (Hz)	11571.25	Temperature (degree C)	27.100		



Compound 6:

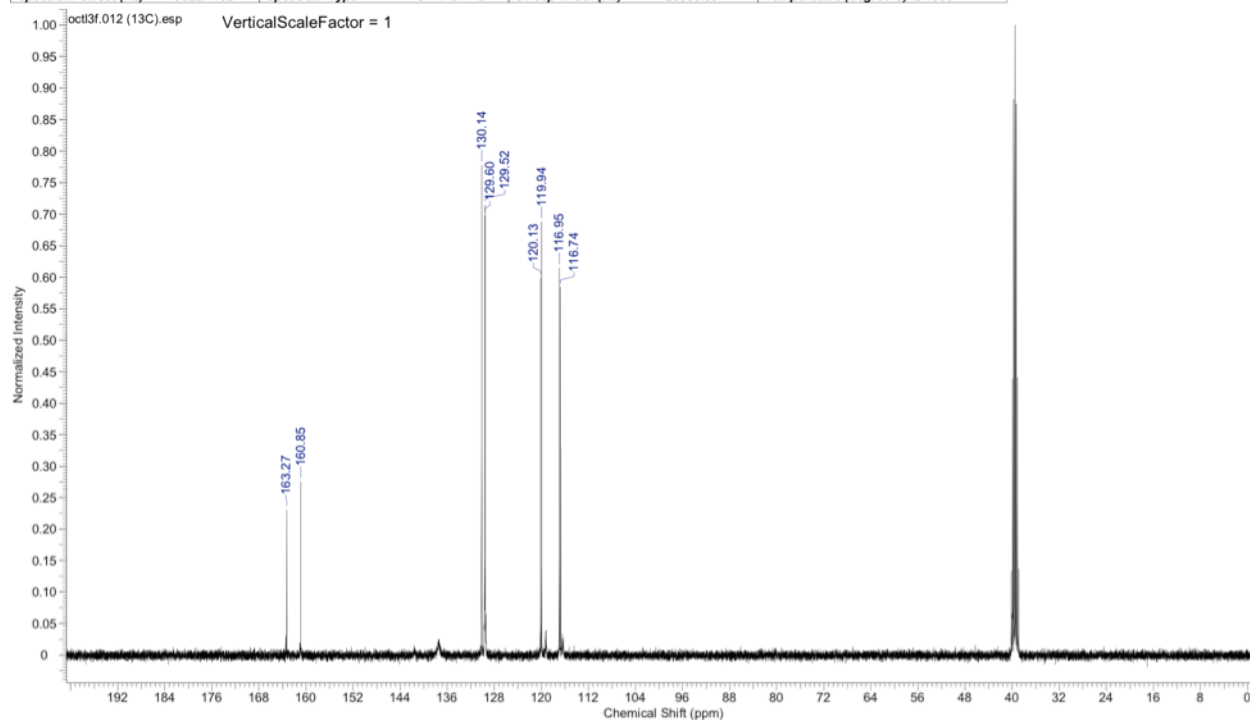
01.03.2011 17:32:15

Acquisition Time (sec)	1.9792	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	17 Feb 2011 00:40:48	
Date Stamp	17 Feb 2011 00:40:48	File Name	\\VBOXSVR\VBShare\Tim\oct13f11010\fid		Frequency (MHz)	400.13	
Nucleus	1H	Number of Transients	16	Origin	spect	Original Points Count	16384
Points Count	16384	Pulse Sequence	zgpg30	Receiver Gain	71.80	SW(cyclical) (Hz)	8278.15
Spectrum Offset (Hz)	2470.9705	Spectrum Type	STANDARD	Sweep Width (Hz)	8277.64	Temperature (degree C)	27.000
Solvent	DMSO-d6						

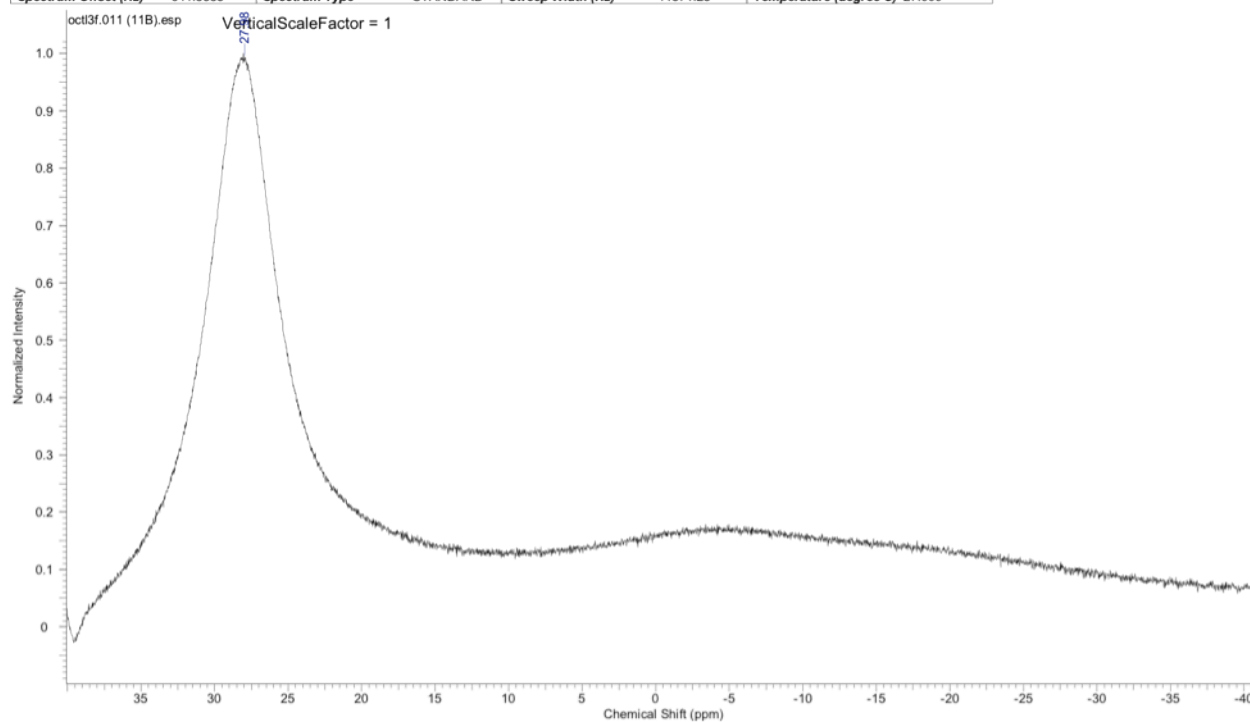


01.03.2011 17:33:46

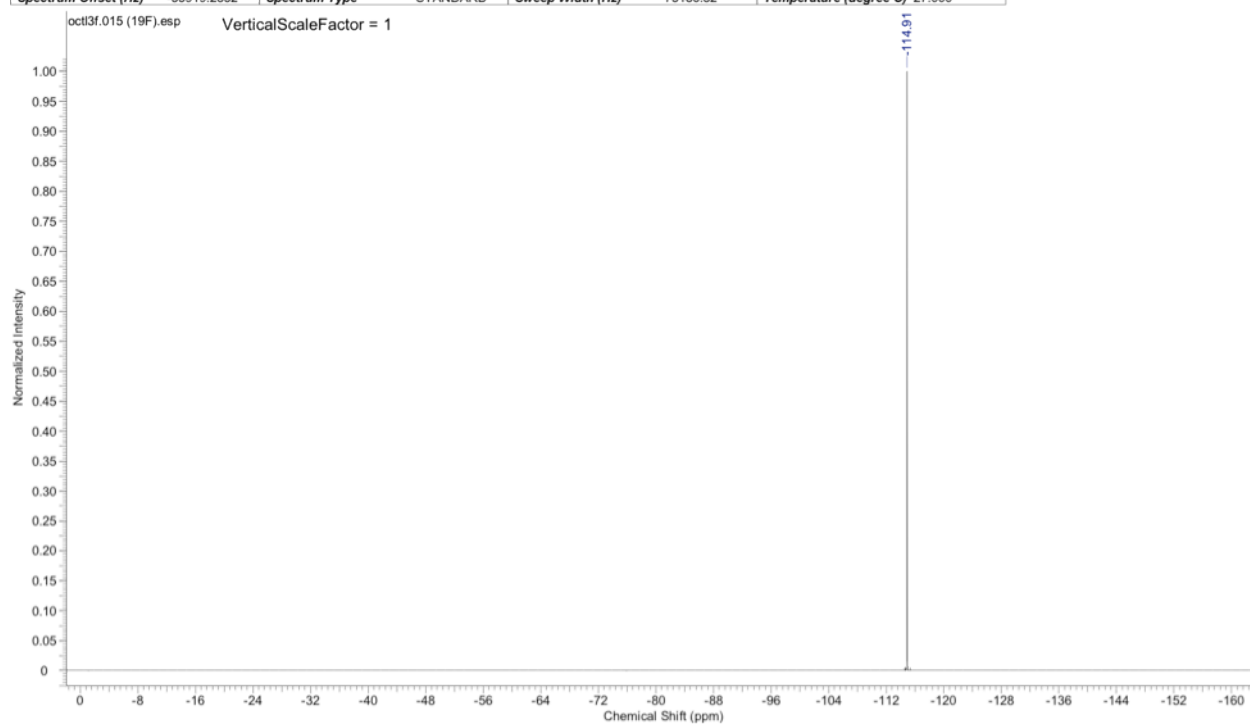
Acquisition Time (sec)	1.3664	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	17 Feb 2011 01:32:00	
Date Stamp	17 Feb 2011 01:32:00	File Name	\\VBOXSVR\VBShare\Tim\oct13f112\fid		Frequency (MHz)	100.61	
Nucleus	13C	Number of Transients	1024	Origin	spect	Original Points Count	32768
Points Count	32768	Pulse Sequence	zgpg30	Receiver Gain	16384.00	SW(cyclical) (Hz)	23980.81
Spectrum Offset (Hz)	10022.1162	Spectrum Type	STANDARD	Sweep Width (Hz)	23980.08	Temperature (degree C)	27.000
Solvent	DMSO-d6						



Acquisition Time (sec)	0.3478	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	17 Feb 2011 00:47:12			
Date Stamp	17 Feb 2011 00:47:12	File Name	\\VBOXSVR\IVBShare\Tim\oct13f111.fid		Frequency (MHz)	128.38			
Nucleus	11B	Number of Transients	128	Origin	spect	Original Points Count	4026	Owner	nmr400
Points Count	4096	Pulse Sequence	zpgp	Receiver Gain	362.00	SW(cyclical) (Hz)	11574.07	Solvent	DMSO-d6
Spectrum Offset (Hz)	-641.8885	Spectrum Type	STANDARD	Sweep Width (Hz)	11571.25	Temperature (degree C)	27.000		



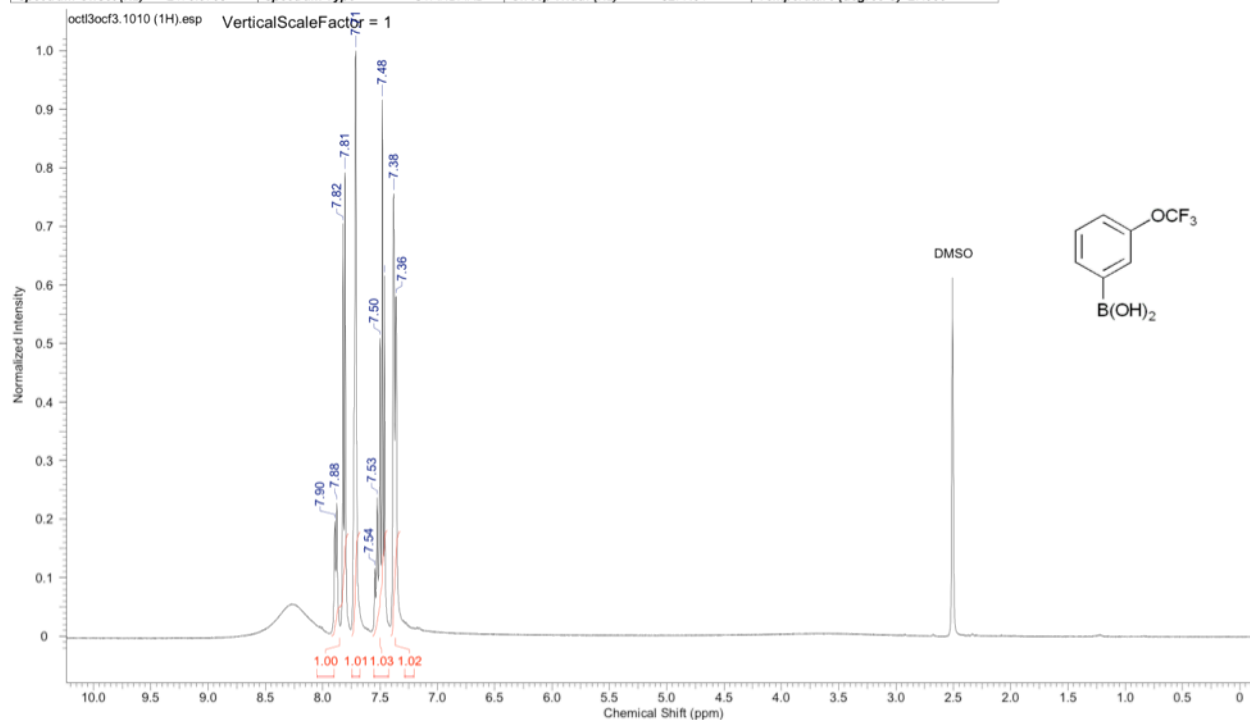
Acquisition Time (sec)	0.8710	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	17 Feb 2011 01:42:40			
Date Stamp	17 Feb 2011 01:42:40	File Name	\\VBOXSVR\IVBShare\Tim\oct13f15f1.fid		Frequency (MHz)	376.50			
Nucleus	19F	Number of Transients	32	Origin	spect	Original Points Count	65491	Owner	nmr400
Points Count	65536	Pulse Sequence	zgfhighn30	Receiver Gain	645.10	SW(cyclical) (Hz)	75187.97	Solvent	DMSO-d6
Spectrum Offset (Hz)	-35919.2852	Spectrum Type	STANDARD	Sweep Width (Hz)	75186.82	Temperature (degree C)	27.000		



Compound 7:

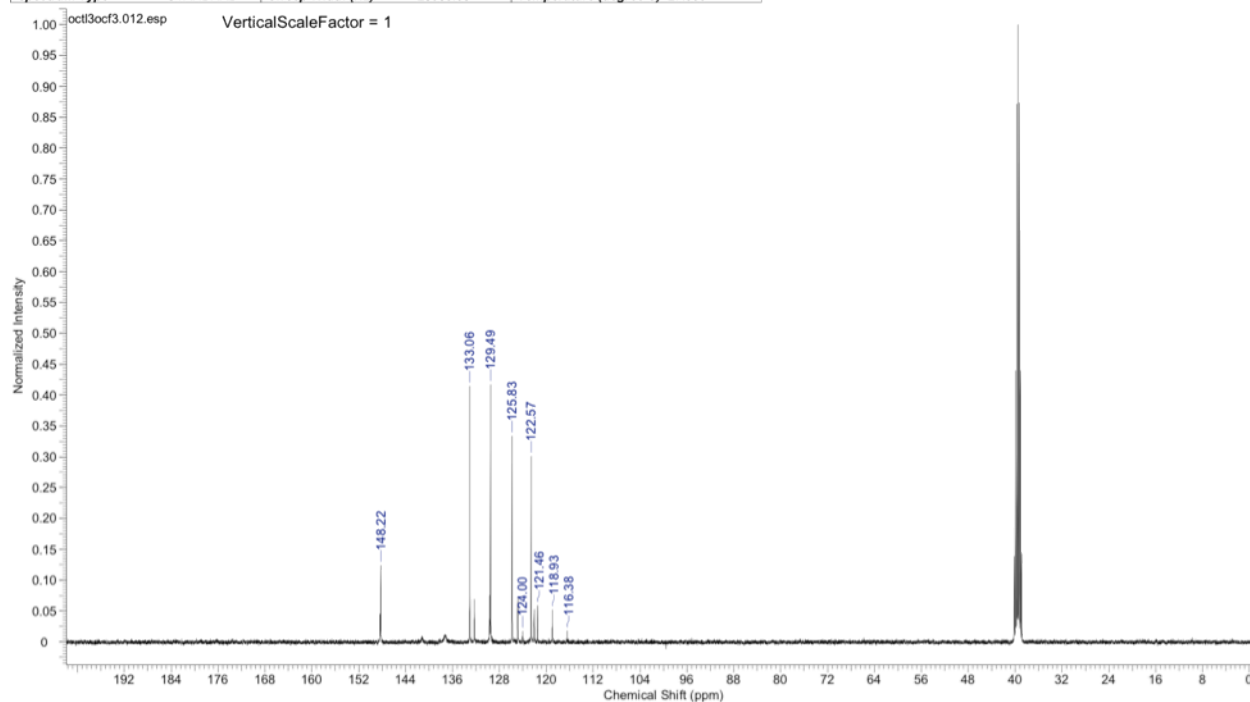
01.03.2011 17:37:21

Acquisition Time (sec)	1.9792	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	16 Feb 2011 23:32:32	
Date Stamp	16 Feb 2011 23:32:32	File Name	\VBOXSVR\VBShare\Tim\oct3ocf3\1010\fid		Frequency (MHz)	400.13	
Nucleus	1H	Number of Transients	16		Origin	spect	
Points Count	16384	Pulse Sequence	zg30		Receiver Gain	161.30	
Spectrum Offset (Hz)	2470.9705	Spectrum Type	STANDARD		SW(cyclical) (Hz)	8278.15	
					Solvent	DMSO-d6	
					Sweep Width (Hz)	8277.64	
					Temperature (degree C)	27.000	

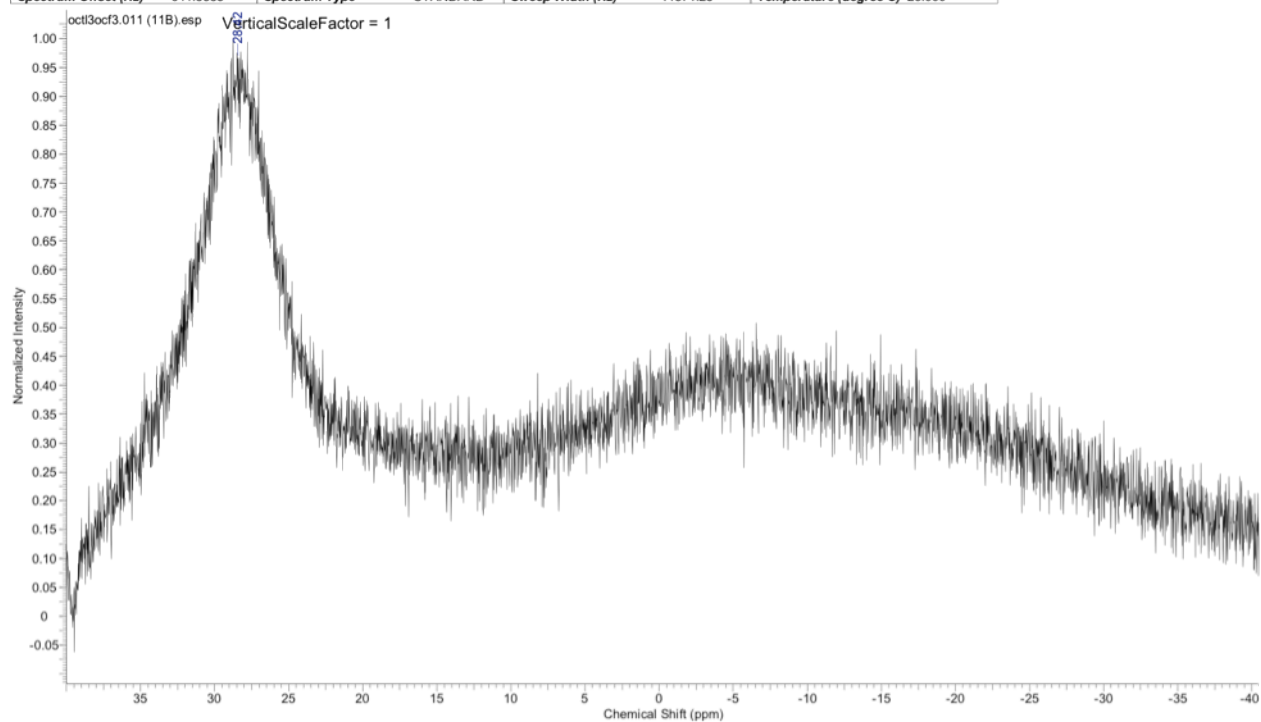


01.03.2011 17:41:57

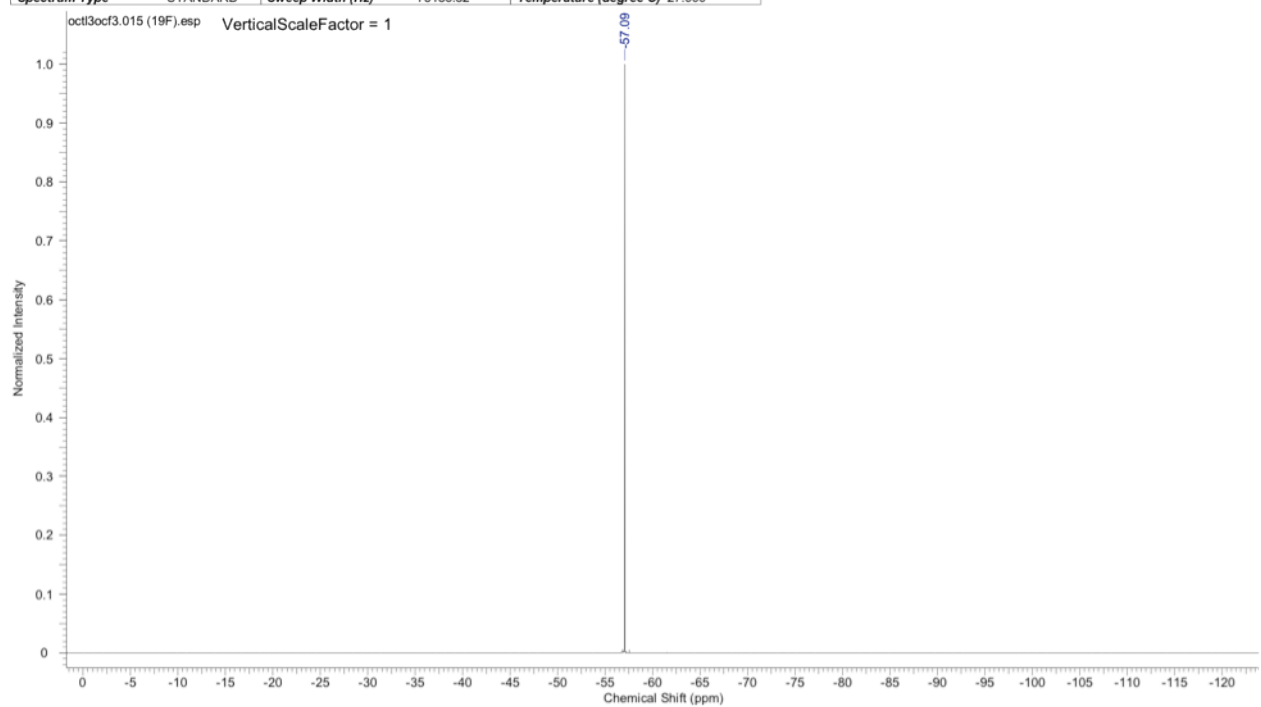
Acquisition Time (sec)	1.3664	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	17 Feb 2011 00:23:44	
Date Stamp	17 Feb 2011 00:23:44	File Name	\VBOXSVR\VBShare\Tim\oct3ocf3\12\fid		Frequency (MHz)	100.61	
Frequency (MHz)	100.61	Nucleus	13C		Number of Transients	1024	
Original Points Count	32768	Owner	nmr400		Points Count	32768	
Receiver Gain	16384.00	SW(cyclical) (Hz)	23980.81		Solvent	DMSO-d6	
Spectrum Type	STANDARD	Sweep Width (Hz)	23980.08		Temperature (degree C)	27.000	
					Spectrum Offset (Hz)	10016.2422	



Acquisition Time (sec)	0.3478	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	16 Feb 2011 23:38:56	
Date Stamp	16 Feb 2011 23:38:56	File Name	\\VBOXSVR\IVBShare\Tim\oct13ocf3\11\fid		Frequency (MHz)	128.38	
Nucleus	11B	Number of Transients	128	Origin	spect	Original Points Count	4026
Points Count	4096	Pulse Sequence	zpgpg	Receiver Gain	574.70	SW(cyclical) (Hz)	11574.07
Spectrum Offset (Hz)	-641.8885	Spectrum Type	STANDARD	Sweep Width (Hz)	11571.25	Temperature (degree C)	26.900



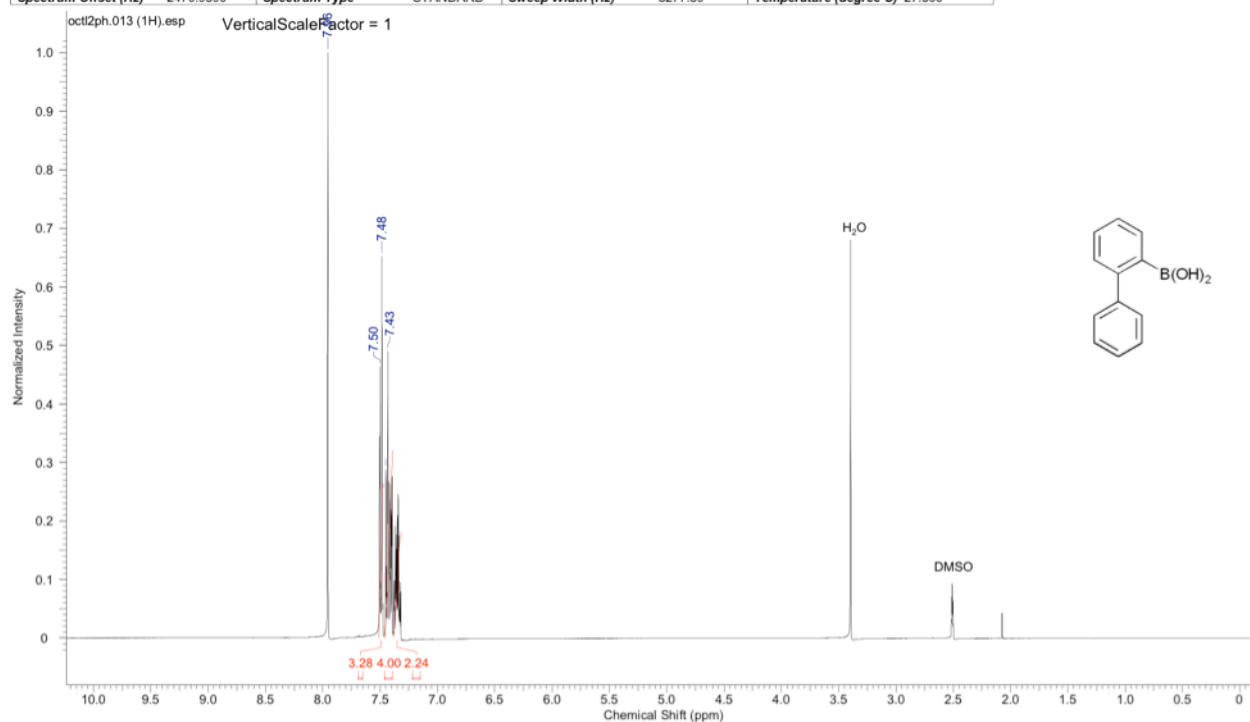
Acquisition Time (sec)	0.8710	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	17 Feb 2011 00:34:24	
Date Stamp	17 Feb 2011 00:34:24	File Name	\\VBOXSVR\IVBShare\Tim\oct13ocf3\15\fid		Frequency (MHz)	376.50	
Frequency (MHz)	376.50	Nucleus	19F	Number of Transients	32	Origin	spect
Original Points Count	65491	Owner	nmr400	Points Count	65536	Pulse Sequence	zgfhighn30
Receiver Gain	574.70	SW(cyclical) (Hz)	75187.97	Solvent	DMSO-d6	Spectrum Offset (Hz)	-35919.2852
Spectrum Type	STANDARD	Sweep Width (Hz)	75186.82	Temperature (degree C)	27.000		



Compound 8:

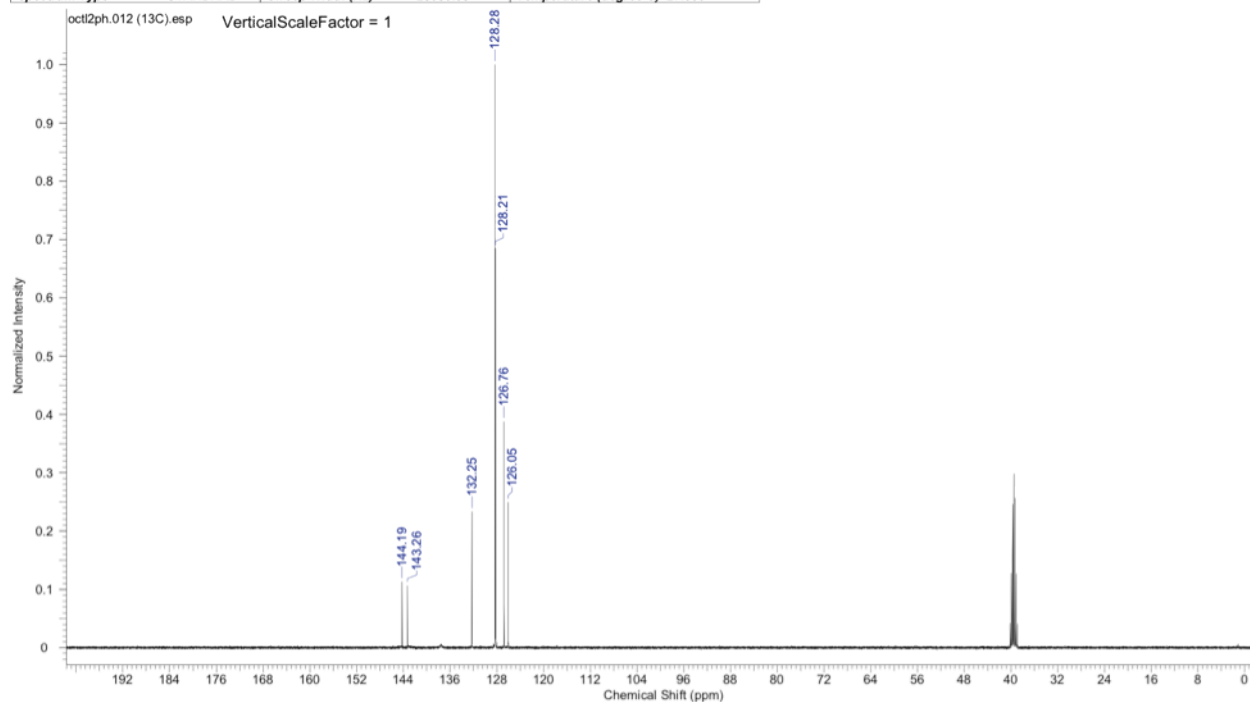
01.03.2011 17:46:23

Acquisition Time (sec)	3.9584	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	17 Feb 2011 22:17:52	
Date Stamp	17 Feb 2011 22:17:52	File Name	\\VBOXSVR\VBShare\Tim\oct2ph13.fid		Frequency (MHz)	400.13	
Nucleus	1H	Number of Transients	16	Origin	spect	Original Points Count	32768
Points Count	32768	Pulse Sequence	zgpg30	Receiver Gain	71.80	SW(cyclical) (Hz)	8278.15
Spectrum Offset (Hz)	2470.9590	Spectrum Type	STANDARD	Sweep Width (Hz)	8277.89	Temperature (degree C)	27.300
Owner	nmr400						
Solvent	DMSO-d6						

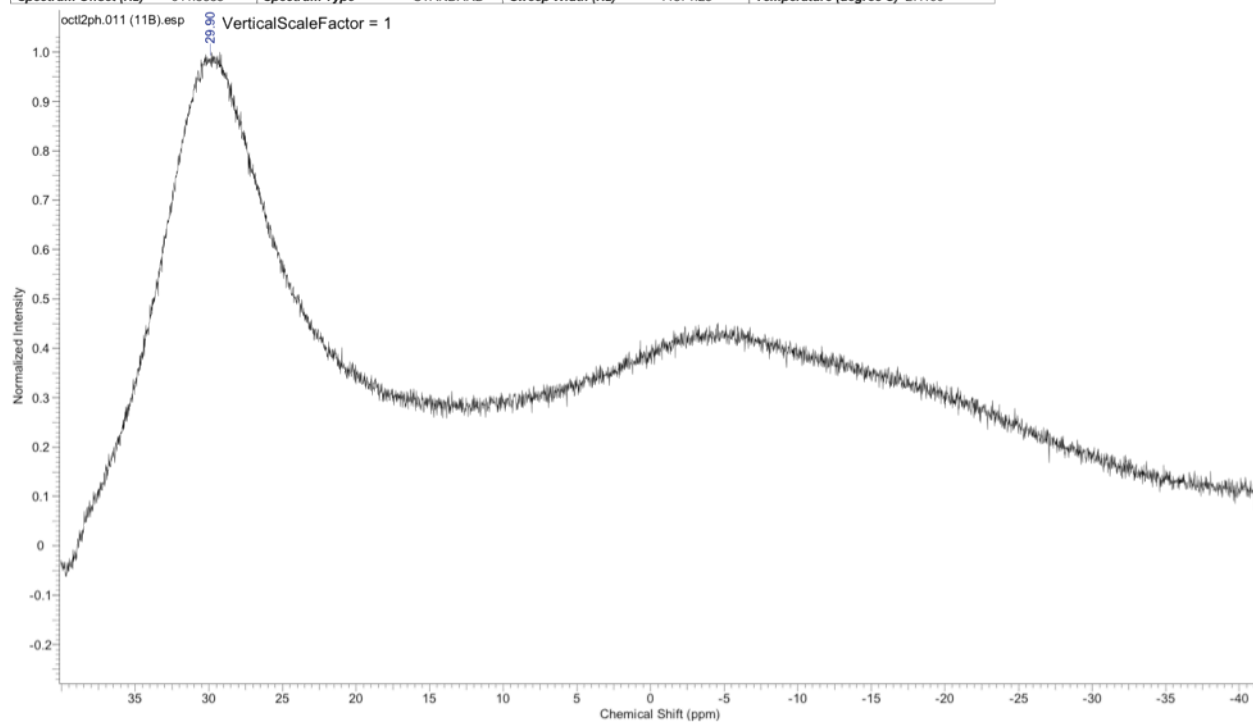


01.03.2011 17:49:01

Acquisition Time (sec)	1.3664	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	17 Feb 2011 22:13:36	
Date Stamp	17 Feb 2011 22:13:36	File Name	\\VBOXSVR\VBShare\Tim\oct2ph12.fid		Frequency (MHz)	100.61	
Nucleus	13C	Number of Transients	1024	Origin	spect	Original Points Count	32768
Points Count	32768	Owner	nmr400	Pulse Sequence	zgpg30	Receiver Gain	16384.00
SW(cyclical) (Hz)	23980.81	Solvent	DMSO-d6		Spectrum Offset (Hz)	10014.6113	
Spectrum Type	STANDARD	Sweep Width (Hz)	23980.08		Temperature (degree C)	27.000	



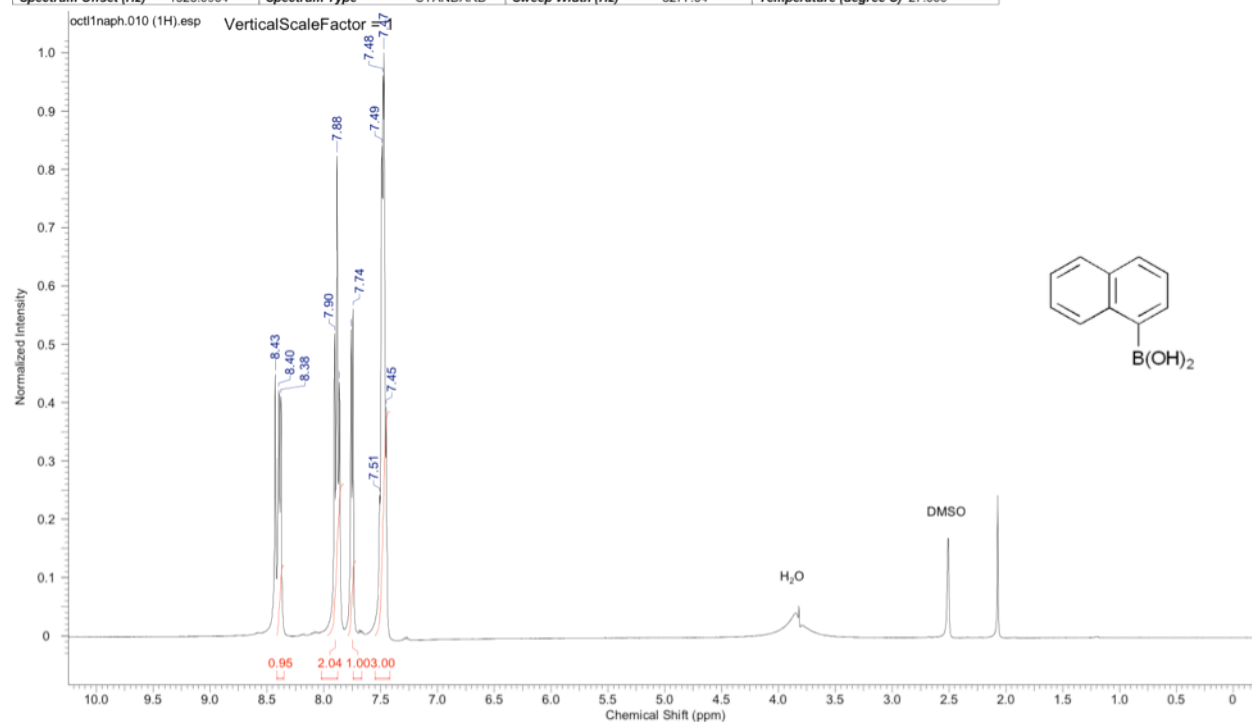
Acquisition Time (sec)	0.3478	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	17 Feb 2011 21:28:48	
Date Stamp	17 Feb 2011 21:28:48	File Name	\\VBOXSVR\VBShare\Tim\oct12ph\11\fid		Frequency (MHz)	128.38	
Nucleus	11B	Number of Transients	128	Origin	spect	Original Points Count	4026
Points Count	4096	Pulse Sequence	zgpg	Receiver Gain	574.70	SW(cyclical) (Hz)	11574.07
Spectrum Offset (Hz)	-641.8885	Spectrum Type	STANDARD	Sweep Width (Hz)	11571.25	Temperature (degree C)	27.100
						Owner	nmr400
						Solvent	DMSO-d6



Compound 9:

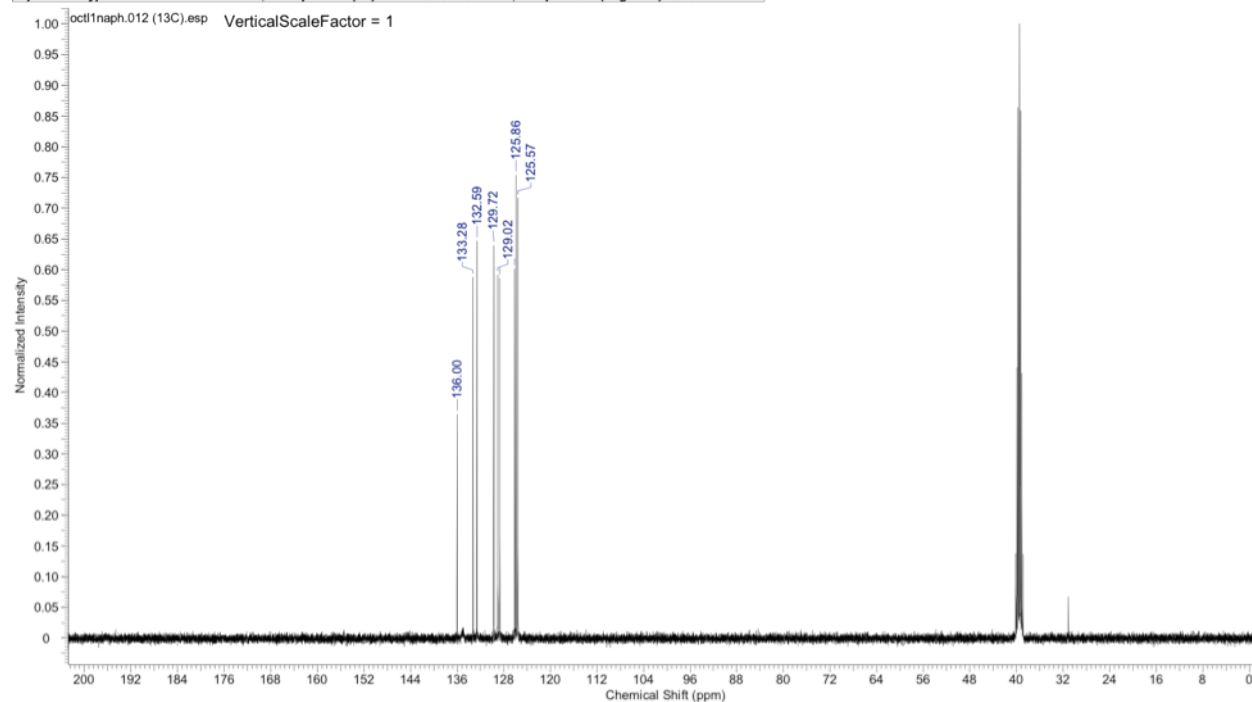
01.03.2011 17:51:29

Acquisition Time (sec)	1.9792	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	18 Feb 2011 16:32:16	
Date Stamp	18 Feb 2011 16:32:16	File Name	\\VBOXSVR\VBShare\Time\oct11naph10\fid		Frequency (MHz)	400.13	
Nucleus	1H	Number of Transients	16		Origin	spect	
Points Count	16384	Pulse Sequence	zgpcppr		Receiver Gain	90.50	
Spectrum Offset (Hz)	1528.0964	Spectrum Type	STANDARD		SW(cyclical) (Hz)	8278.15	
					Solvent	DMSO-d6	
					Sweep Width (Hz)	8277.64	
					Temperature (degree C)	27.000	

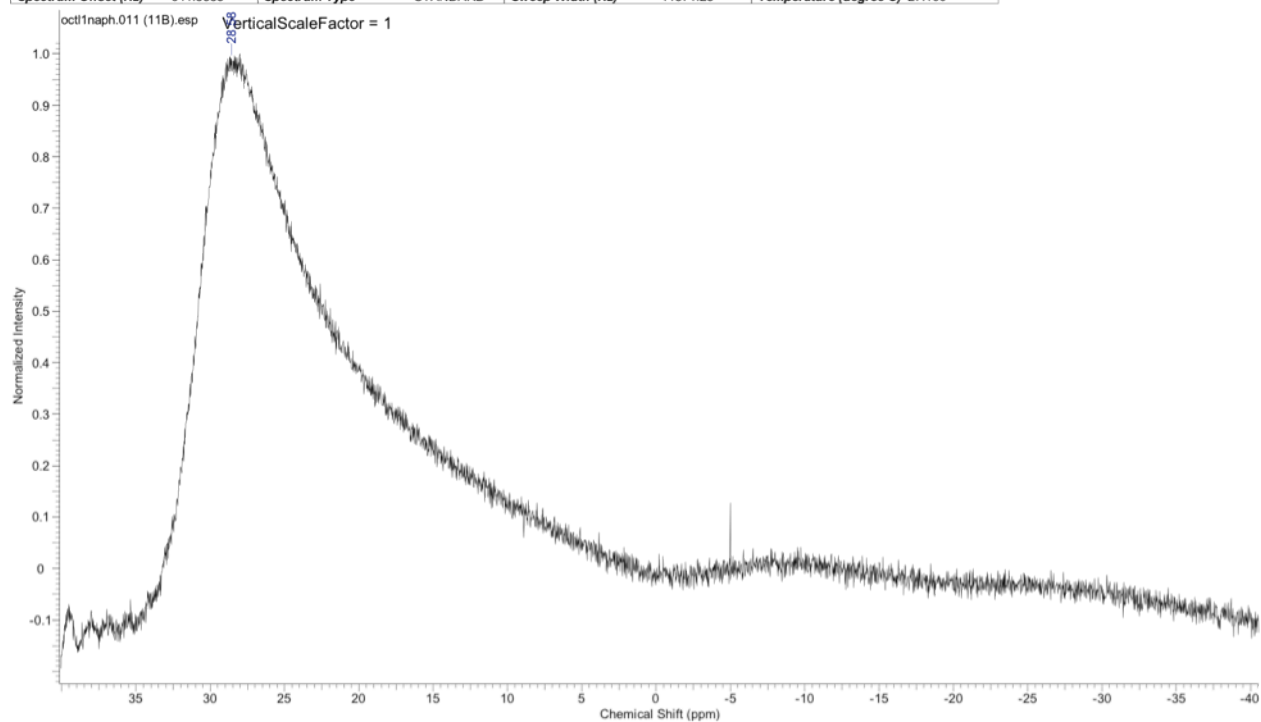


01.03.2011 17:53:56

Acquisition Time (sec)	1.3664	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	18 Feb 2011 17:21:20	
Date Stamp	18 Feb 2011 17:21:20	File Name	\\VBOXSVR\VBShare\Time\oct11naph12\fid		Frequency (MHz)	100.61	
Frequency (MHz)	100.61	Nucleus	13C		Number of Transients	1024	
Original Points Count	32768	Owner	nmr400		Points Count	32768	
Receiver Gain	16384.00	SW(cyclical) (Hz)	23980.81		Solvent	DMSO-d6	
Spectrum Type	STANDARD	Sweep Width (Hz)	23980.08		Temperature (degree C)	27.000	
					Spectrum Offset (Hz)	10061.6484	



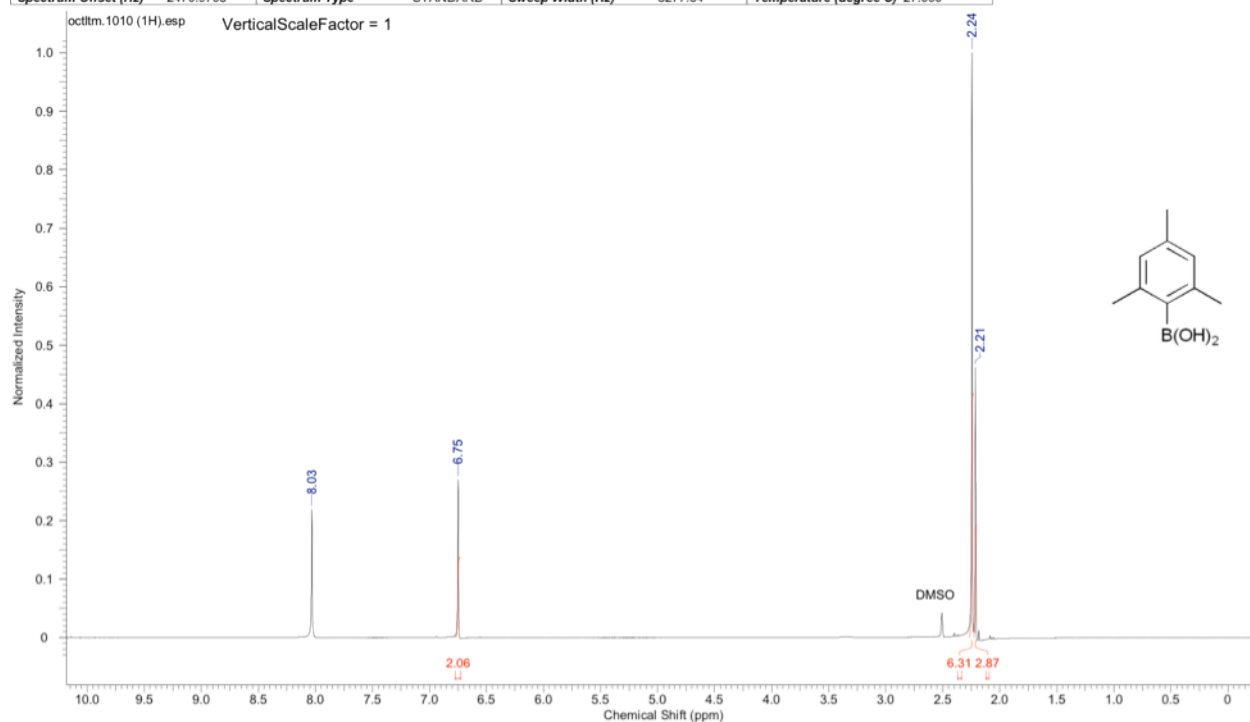
Acquisition Time (sec)	0.3478	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	18 Feb 2011 16:36:32			
Date Stamp	18 Feb 2011 16:36:32	File Name	\\VBOXSVR\IVBShare\Tim\octf1naph\11fid		Frequency (MHz)	128.38			
Nucleus	11B	Number of Transients	128	Origin	spect	Original Points Count	4026	Owner	nmr400
Points Count	4096	Pulse Sequence	zpgq	Receiver Gain	574.70	SW(cyclical) (Hz)	11574.07	Solvent	DMSO-d6
Spectrum Offset (Hz)	-641.8885	Spectrum Type	STANDARD	Sweep Width (Hz)	11571.25	Temperature (degree C)	27.100		



Compound 10:

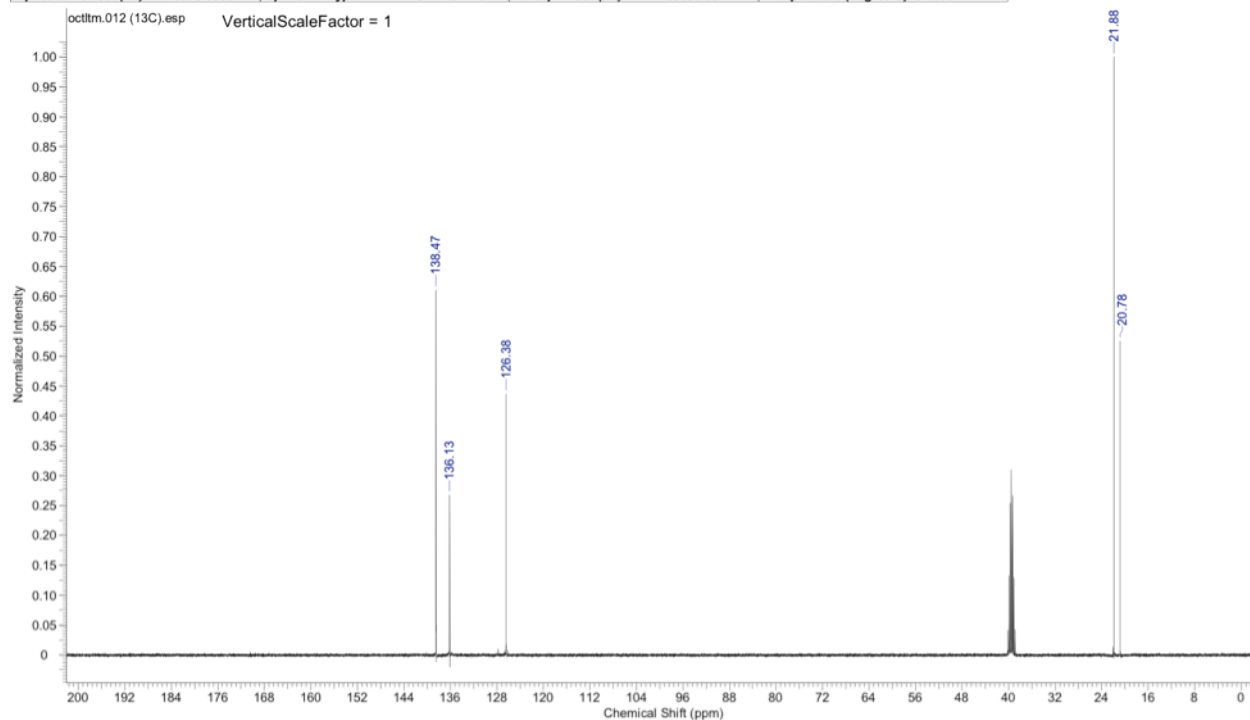
01.03.2011 17:56:12

Acquisition Time (sec)	1.9792	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	17 Feb 2011 23:24:00	
Date Stamp	17 Feb 2011 23:24:00	File Name	\\VBOXSVR\WBShare\Tim\ocltm\1010\fid		Frequency (MHz)	400.13	
Nucleus	1H	Number of Transients	16	Origin	spect	Original Points Count	16384
Points Count	16384	Pulse Sequence	zg30	Receiver Gain	90.50	SW(cyclical) (Hz)	8278.15
Spectrum Offset (Hz)	2470.9705	Spectrum Type	STANDARD	Sweep Width (Hz)	8277.64	Temperature (degree C)	27.000
		Solvent	DMSO-d6				

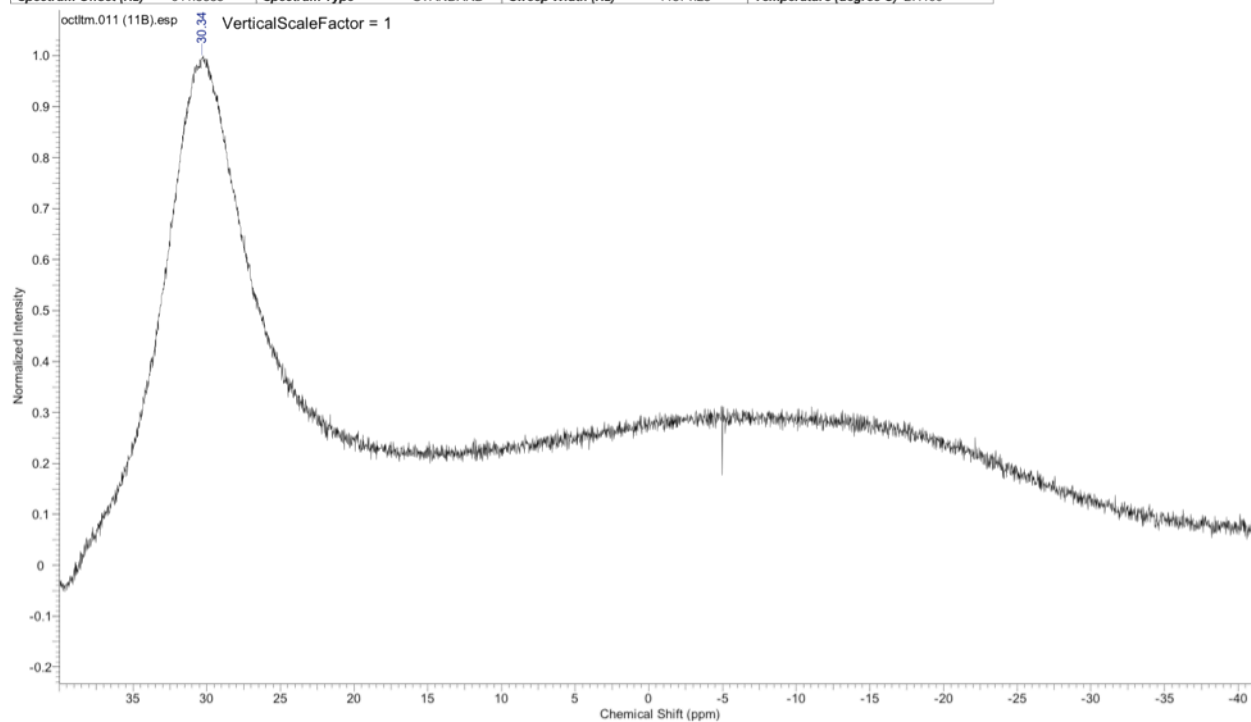


01.03.2011 17:57:59

Acquisition Time (sec)	1.3664	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	18 Feb 2011 00:15:12	
Date Stamp	18 Feb 2011 00:15:12	File Name	\\VBOXSVR\WBShare\Tim\ocltm\12\fid		Frequency (MHz)	100.61	
Nucleus	13C	Number of Transients	1024	Origin	spect	Original Points Count	32768
Points Count	32768	Pulse Sequence	zgpg30	Receiver Gain	16384.00	SW(cyclical) (Hz)	23980.81
Spectrum Offset (Hz)	10013.0830	Spectrum Type	STANDARD	Sweep Width (Hz)	23980.08	Temperature (degree C)	27.000
		Solvent	DMSO-d6				



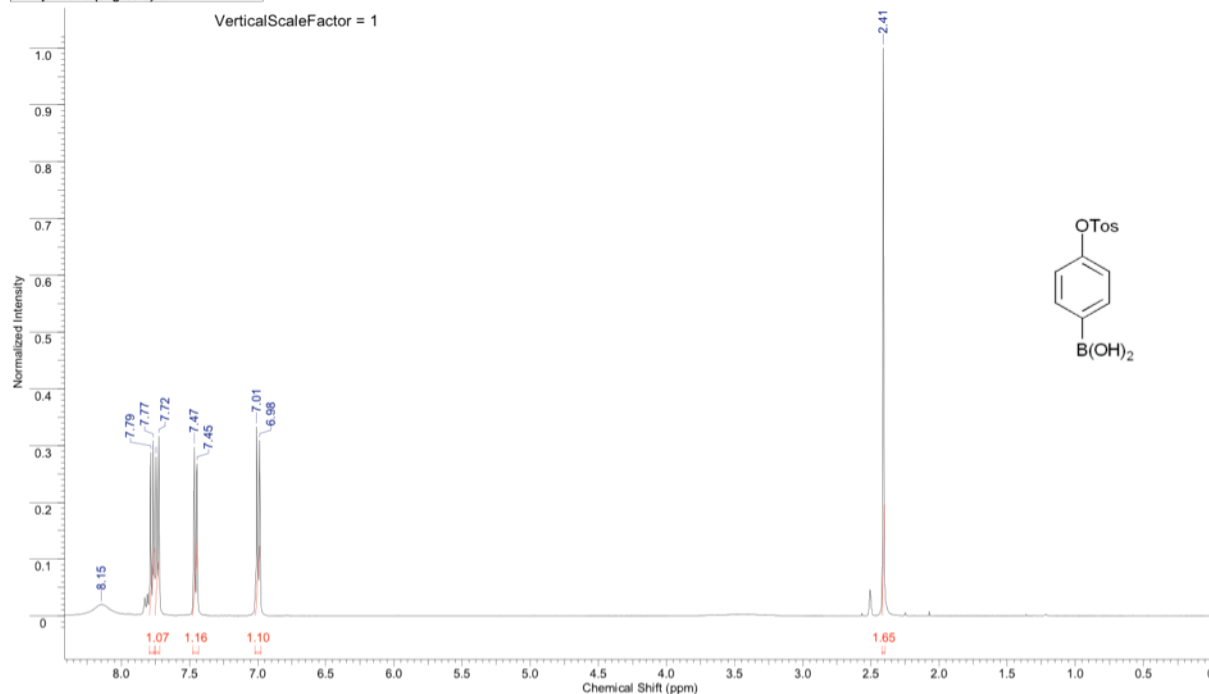
Acquisition Time (sec)	0.3478	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	17 Feb 2011 23:30:24	
Date Stamp	17 Feb 2011 23:30:24	File Name	\\VBOXSVR\VBShare\Timol\octlm111.fid		Frequency (MHz)	128.38	
Nucleus	11B	Number of Transients	128	Origin	spect	Original Points Count	4026
Points Count	4096	Pulse Sequence	zgpg	Receiver Gain	574.70	SW(cyclical) (Hz)	11574.07
Spectrum Offset (Hz)	-641.8885	Spectrum Type	STANDARD	Sweep Width (Hz)	11571.25	Temperature (degree C)	27.100
Solvent	DMSO-d6						



Compound 11:

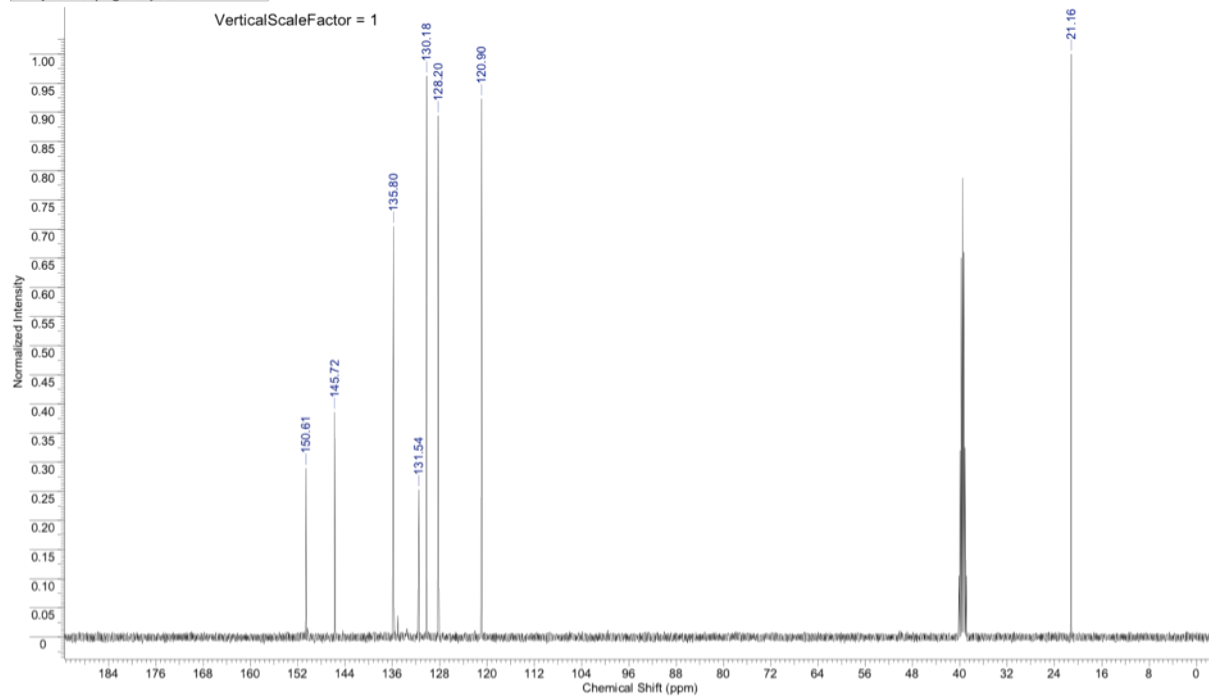
09.05.2011 11:47

Acquisition Time (sec)	3.9585	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	28 Apr 2011 16:23:28	
File Name	\\VBOXSVR\vbshare\ECPM Strasbourg\Boronic acids - Strasbourg\oct4otos\oct4otos_010000fid				Frequency (MHz)	400.13	
Nucleus	1H	Number of Transients	16	Origin	spect	Original Points Count	32768
Owner	nmr400	Points Count	32768	Pulse Sequence	zg30	Receiver Gain	71.80
SW(cyclical) (Hz)	8278.15	Solvent	DMSO-D6	Spectrum Offset (Hz)	2471.0076	Sweep Width (Hz)	8277.89
Temperature (degree C)	27.000						

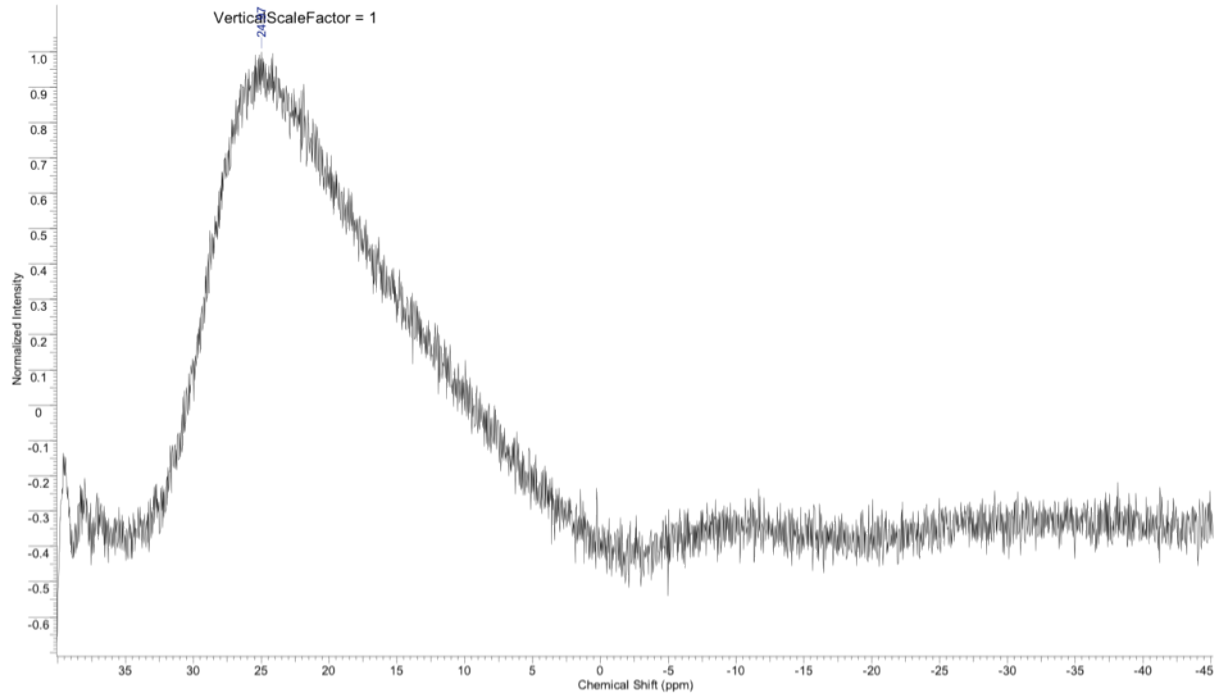


09.05.2011 11:49

Acquisition Time (sec)	1.3665	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017		Date	28 Apr 2011 17:18:56	
File Name	\\VBOXSVR\vbshare\ECPM Strasbourg\Boronic acids - Strasbourg\oct4otos\oct4otos_014000fid				Frequency (MHz)	100.62	
Nucleus	13C	Number of Transients	1024	Origin	spect	Original Points Count	32768
Owner	nmr400	Points Count	32768	Pulse Sequence	zgpg30	Receiver Gain	16384.00
SW(cyclical) (Hz)	23980.81	Solvent	DMSO-D6	Spectrum Offset (Hz)	10015.1523	Sweep Width (Hz)	23980.08
Temperature (degree C)	27.000						



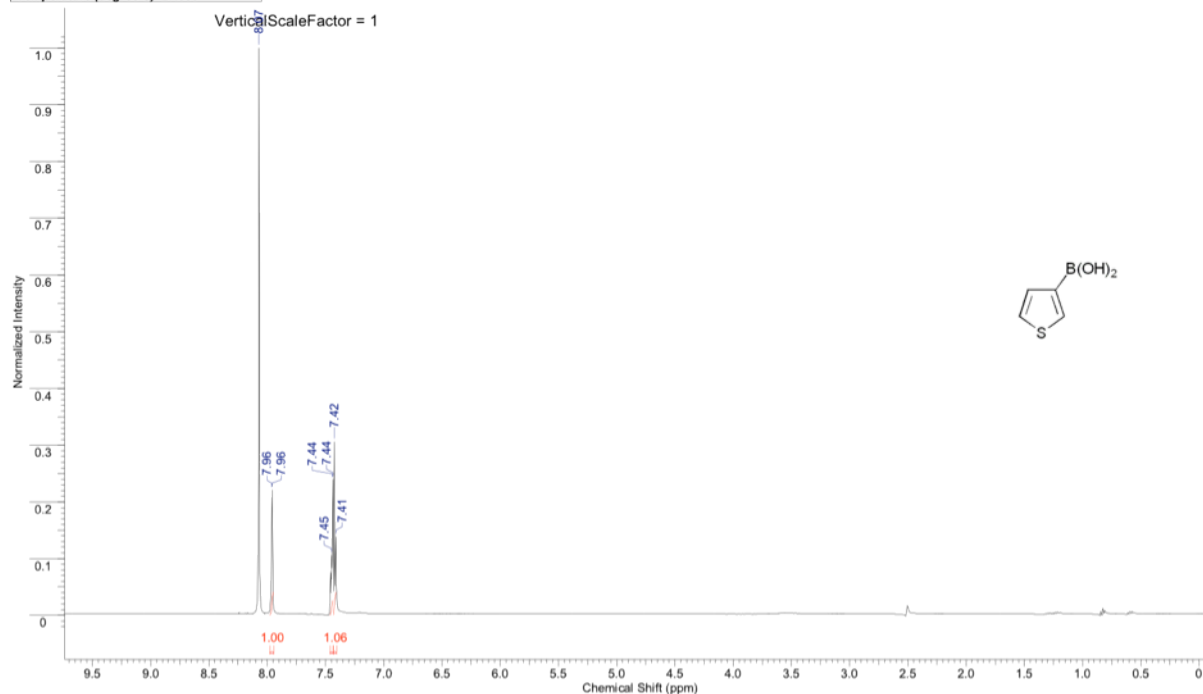
Acquisition Time (sec) 0.3479	Comment 5 mm PABBO BB-1H/D Z-GRD Z863001.0017	Date 28 Apr 2011 16:27:44	
File Name \\WBOXSVR\vbshare\ECPM Strasbourg\Boronic acids - Strasbourg\oct4otos\oct4otos_011000fid		Frequency (MHz) 128.38	
Nucleus 11B	Number of Transients 128	Origin spect	Original Points Count 4026
Owner nmr400	Points Count 4096	Pulse Sequence zgpg	Receiver Gain 574.70
SW(cyclical) (Hz) 11574.07	Solvent DMSO-D6	Spectrum Offset (Hz) -641.9142	Sweep Width (Hz) 11571.25
Temperature (degree C) 27.100			



Compound 12:

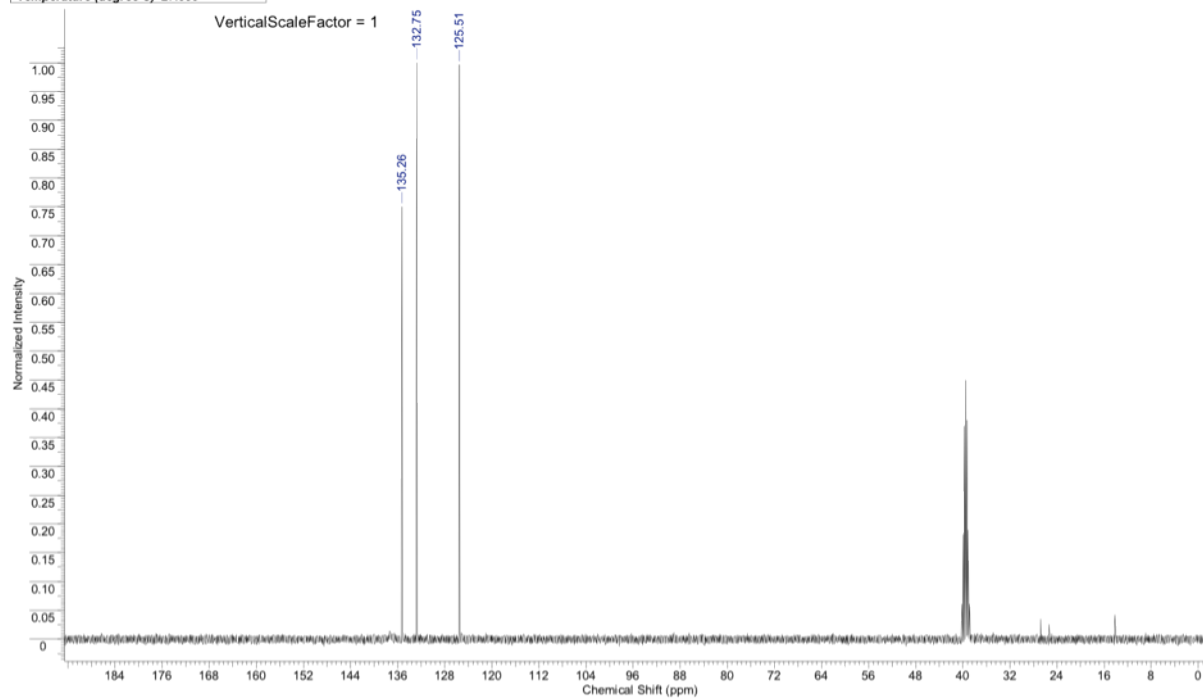
09.05.2011 11:52

Acquisition Time (sec)	3.9585	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017	Date	19 Apr 2011 10:05:52
File Name	\\VBOXSVR\vbshare\ECPM Strasbourg\Boronic acids - Strasbourg\oct1h3\oct1h3_010000fid			Frequency (MHz)	400.13
Nucleus	1H	Number of Transients	16	Origin	spect
Owner	nmr400	Points Count	32768	Pulse Sequence	zg30
SW(cyclical) (Hz)	8278.15	Solvent	DMSO-D6	Spectrum Offset (Hz)	2471.0076
Temperature (degree C)	27.000			Sweep Width (Hz)	8277.89

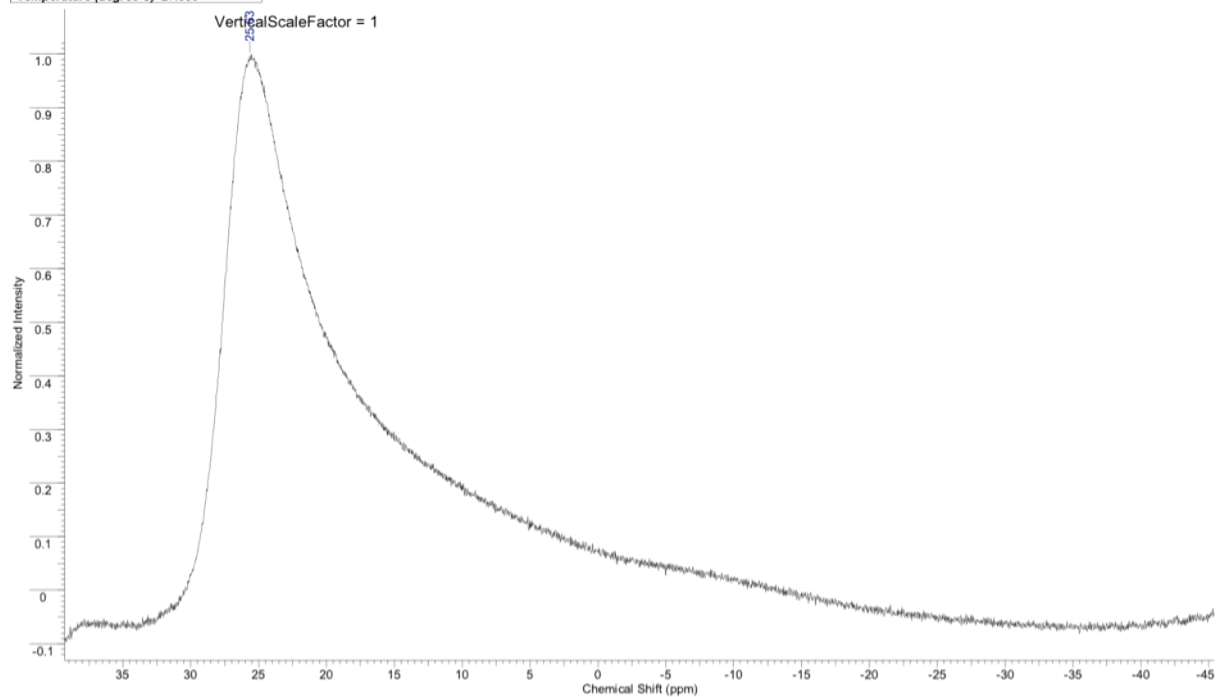


09.05.2011 11:56

Acquisition Time (sec)	1.3665	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017	Date	19 Apr 2011 10:31:28
File Name	\\VBOXSVR\vbshare\ECPM Strasbourg\Boronic acids - Strasbourg\oct1h3\oct1h3_014000fid			Frequency (MHz)	100.62
Nucleus	13C	Number of Transients	256	Origin	spect
Owner	nmr400	Points Count	32768	Pulse Sequence	zgpg30
SW(cyclical) (Hz)	23980.81	Solvent	DMSO-D6	Spectrum Offset (Hz)	10048.0771
Temperature (degree C)	27.000			Sweep Width (Hz)	23980.08



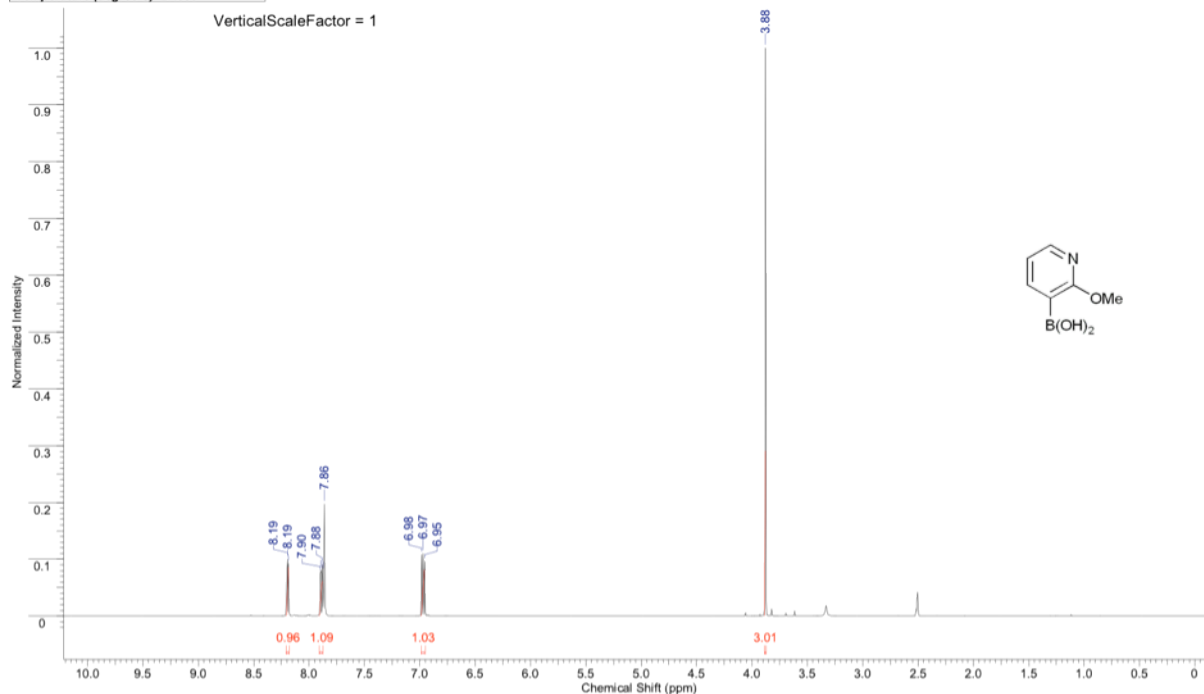
Acquisition Time (sec) 0.3488	Comment 5 mm PABBO BB-1H/D Z-GRD Z863001/0017	Date 19 Apr 2011 10:14:24	
File Name \\VBOXSVR\vbshare\ECPM Strasbourg\Boronic acids - Strasbourg\oct1th3\oct1th3_012000fid		Frequency (MHz) 128.38	
Nucleus 11B	Number of Transients 128	Origin spect	Original Points Count 4036
Owner nmr400	Points Count 4096	Pulse Sequence zg	Receiver Gain 362.00
SW(cyclical) (Hz) 11574.07	Solvent DMSO-D6	Spectrum Offset (Hz) -641.9142	Sweep Width (Hz) 11571.25
Temperature (degree C) 27.000			



Compound 13:

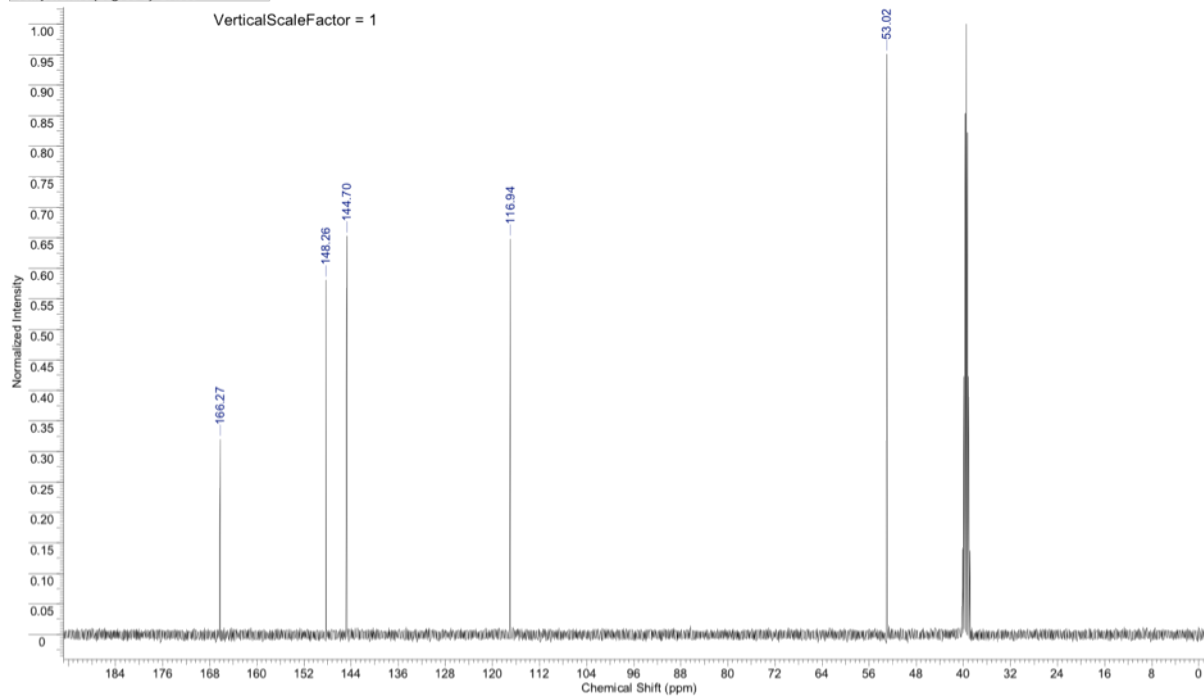
09.05.2011 11:59

Acquisition Time (sec)	3.9585	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017	Date	28 Apr 2011 17:27:28
File Name	\\VBOXSVR\vbshare\ECPM Strasbourg\Boronic acids - Strasbourg\oct12ome3py\oct12ome3py_010000fid			Frequency (MHz)	400.13
Nucleus	1H	Number of Transients	16	Origin	spect
Owner	nmr400	Points Count	32768	Pulse Sequence	zg30
SW(cyclical) (Hz)	8278.15	Solvent	DMSO-D6	Spectrum Offset (Hz)	2471.0076
Temperature (degree C)	27.000			Receiver Gain	256.00
				Sweep Width (Hz)	8277.89



09.05.2011 12:00

Acquisition Time (sec)	1.3665	Comment	5 mm PABBO BB-1H/D Z-GRD Z863001/0017	Date	28 Apr 2011 18:22:56
File Name	\\VBOXSVR\vbshare\ECPM Strasbourg\Boronic acids - Strasbourg\oct12ome3py\oct12ome3py_014000fid			Frequency (MHz)	100.62
Nucleus	13C	Number of Transients	1024	Origin	spect
Owner	nmr400	Points Count	32768	Pulse Sequence	zgpg30
SW(cyclical) (Hz)	23980.81	Solvent	DMSO-D6	Spectrum Offset (Hz)	10012.8271
Temperature (degree C)	27.000			Receiver Gain	16384.00
				Sweep Width (Hz)	23980.08



Acquisition Time (sec) 0.3488	Comment 5 mm PABBO BB-1H/D Z-GRD Z863001/0017	Date 28 Apr 2011 17:33:52	
File Name \\WBOXSVR\vbshare\ECPM Strasbourg\Boronic acids - Strasbourg\oct12ome3py\oct12ome3py_012000f1d		Frequency (MHz) 128.38	
Nucleus 11B	Number of Transients 128	Origin spect	Original Points Count 4036
Owner nmr400	Points Count 4096	Pulse Sequence zg	Receiver Gain 574.70
SW(cyclical) (Hz) 11574.07	Solvent DMSO-D6	Spectrum Offset (Hz) -641.9142	Sweep Width (Hz) 11571.25
Temperature (degree C) 27.000			

