Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

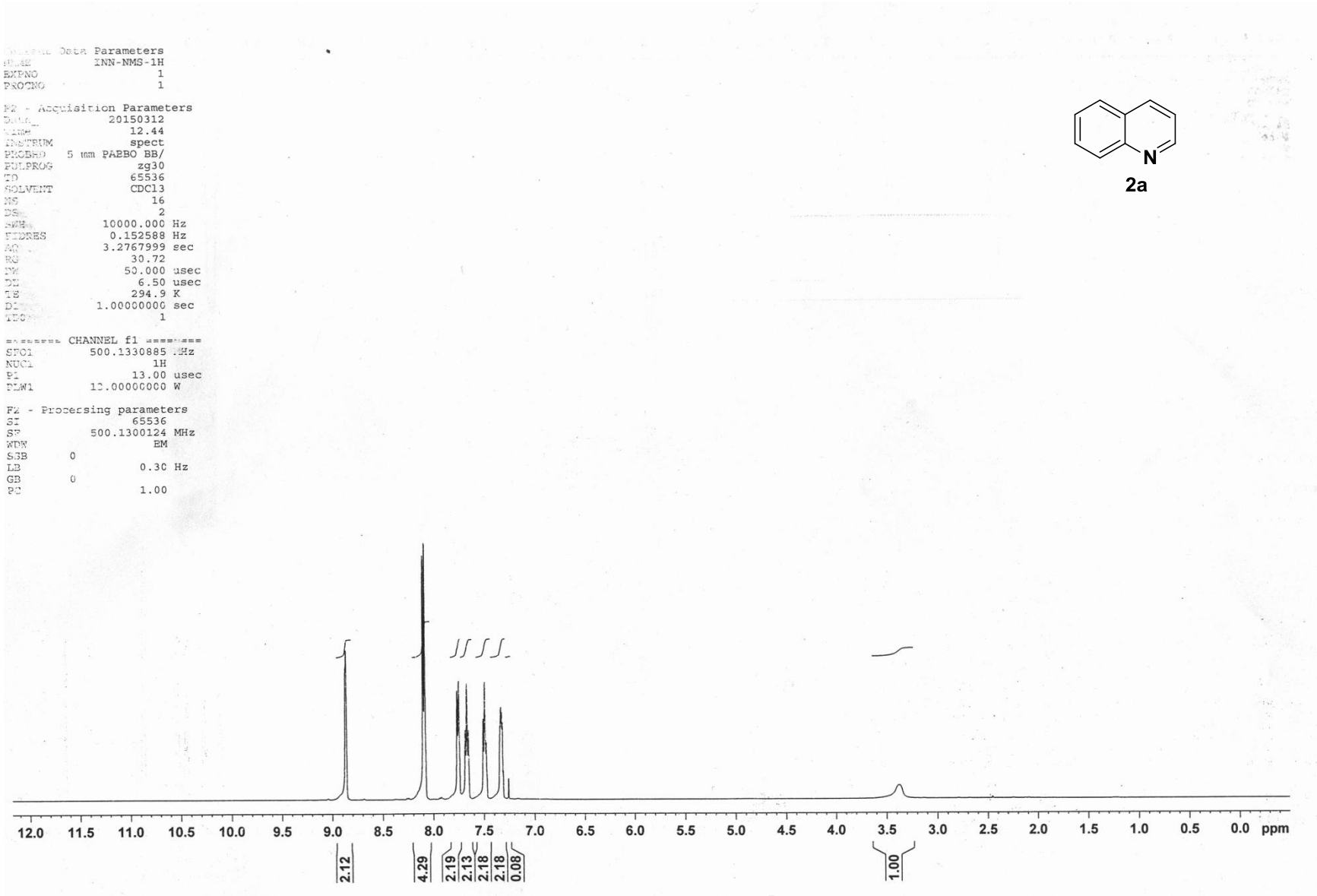

Figure S1. ^{1}H NMR Spectrum of 2a

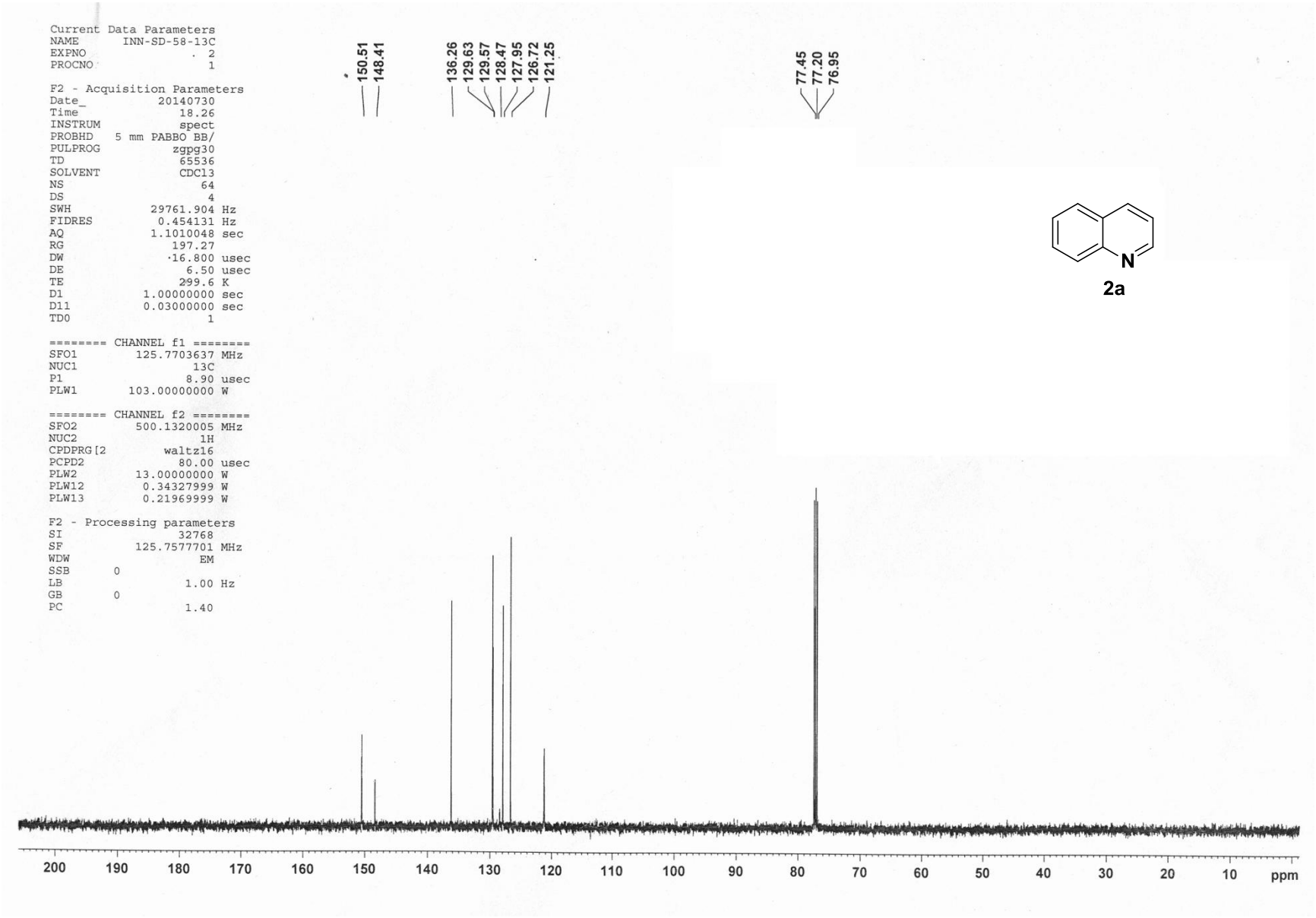

Figure S2. ^{13}C NMR Spectrum of 2a

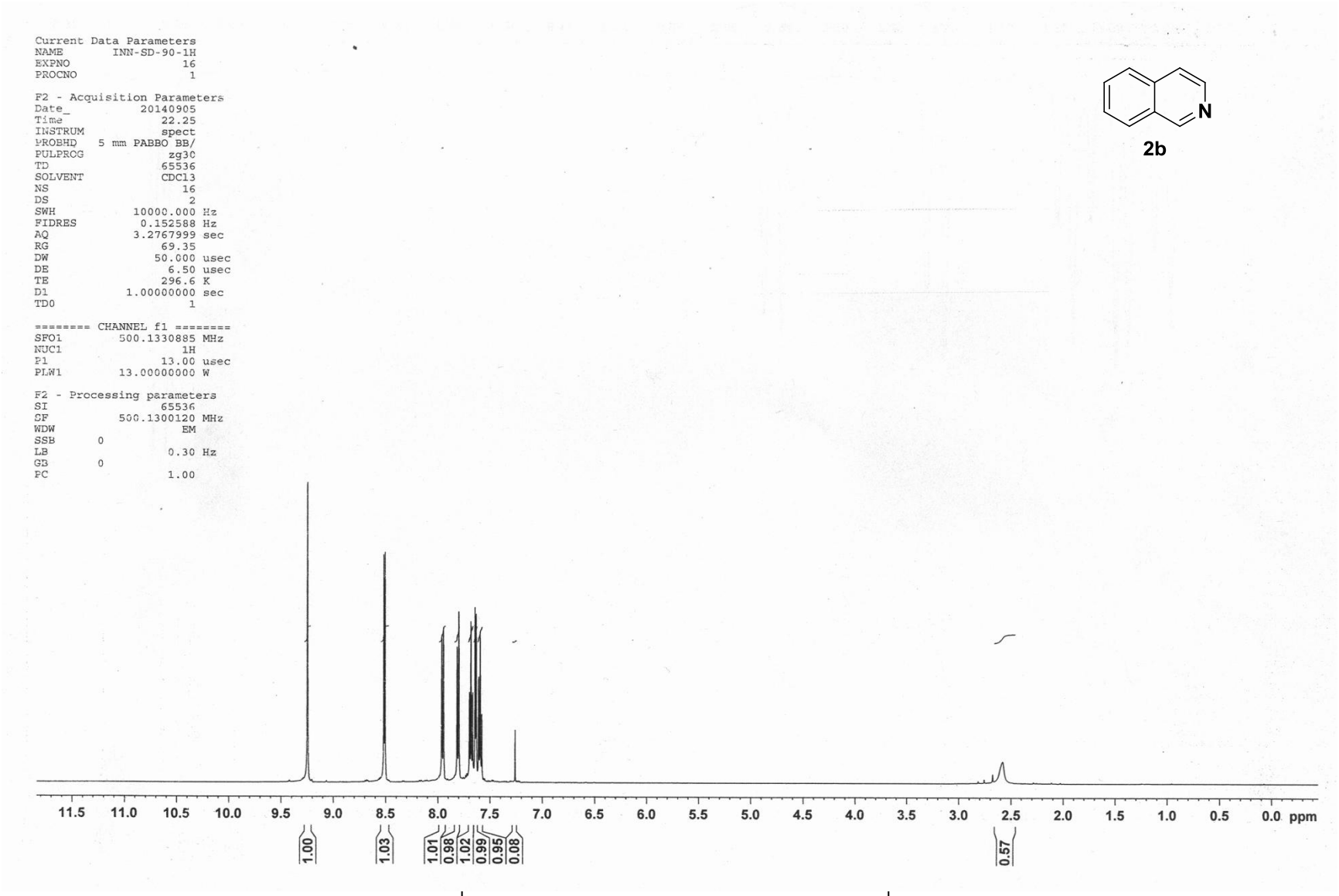

Figure S3. ^{1}H NMR Spectrum of 2b

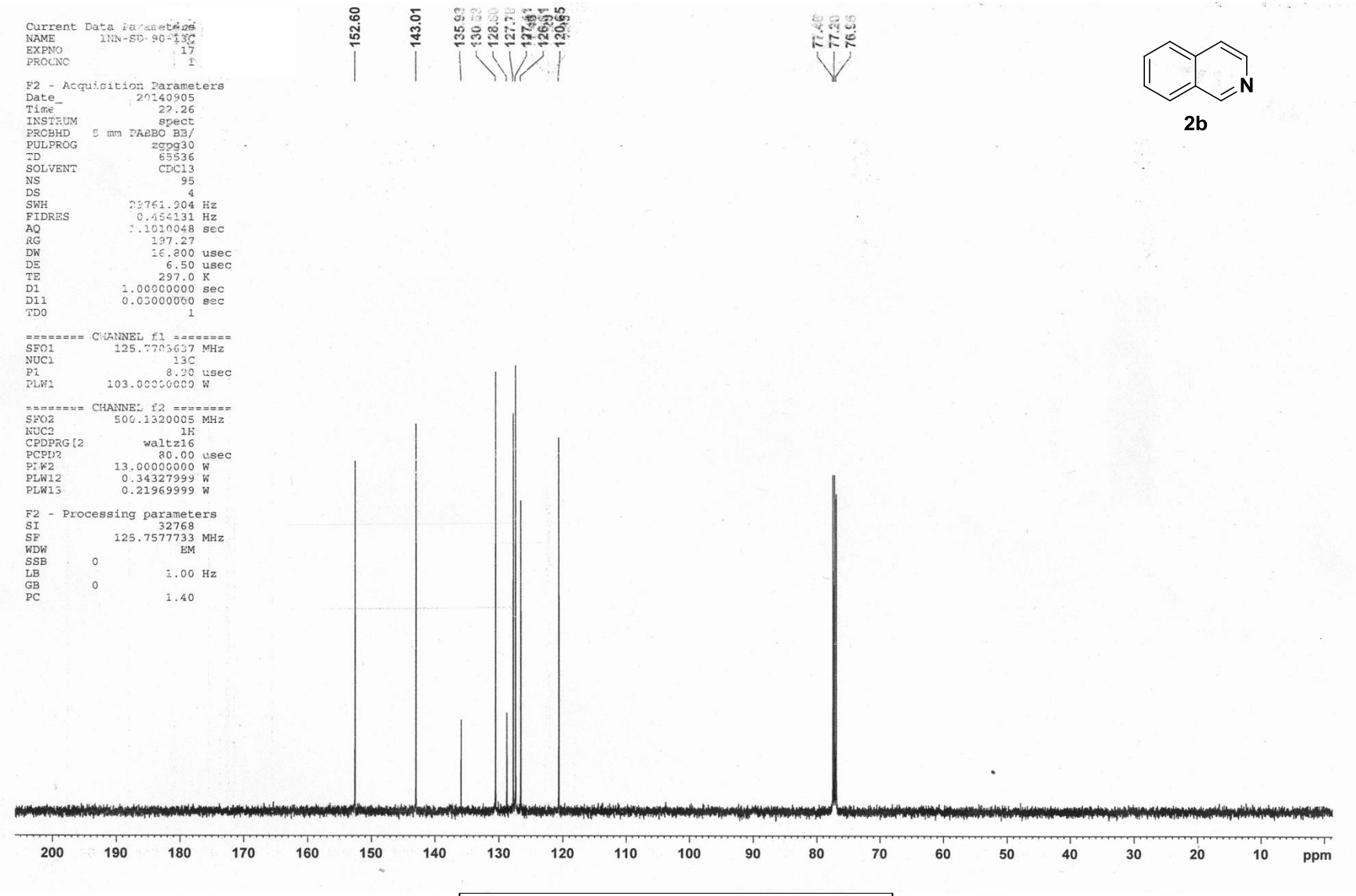

Figure S4. ^{13}C NMR Spectrum of 2b

13/03/2015 12:56:52

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Date Stamp	16 Oct 2014 16:26:08			*File Name*	\\abies\iBitec-s\partages\scbm\SMMCB_RMN\Tritium\data\tritium\nmr\SD-py\10\fid		
Frequency (MHz)	400.13	*Nucleus*	1H	*Number of Transients*	8	*Origin*	spect
Original Points Count	32768	*Owner*	BRUKER	*Points Count*	32768	*Pulse Sequence*	zg45
Receiver Gain	114.00	*SW(cyclical) (Hz)*	5995.20	*Solvent*	CHLOROFORM-d		
Spectrum Offset (Hz)	2400.0000	*Spectrum Type*	STANDARD	*Sweep Width (Hz)*	5995.02	*Temperature (degree C)*	25.400

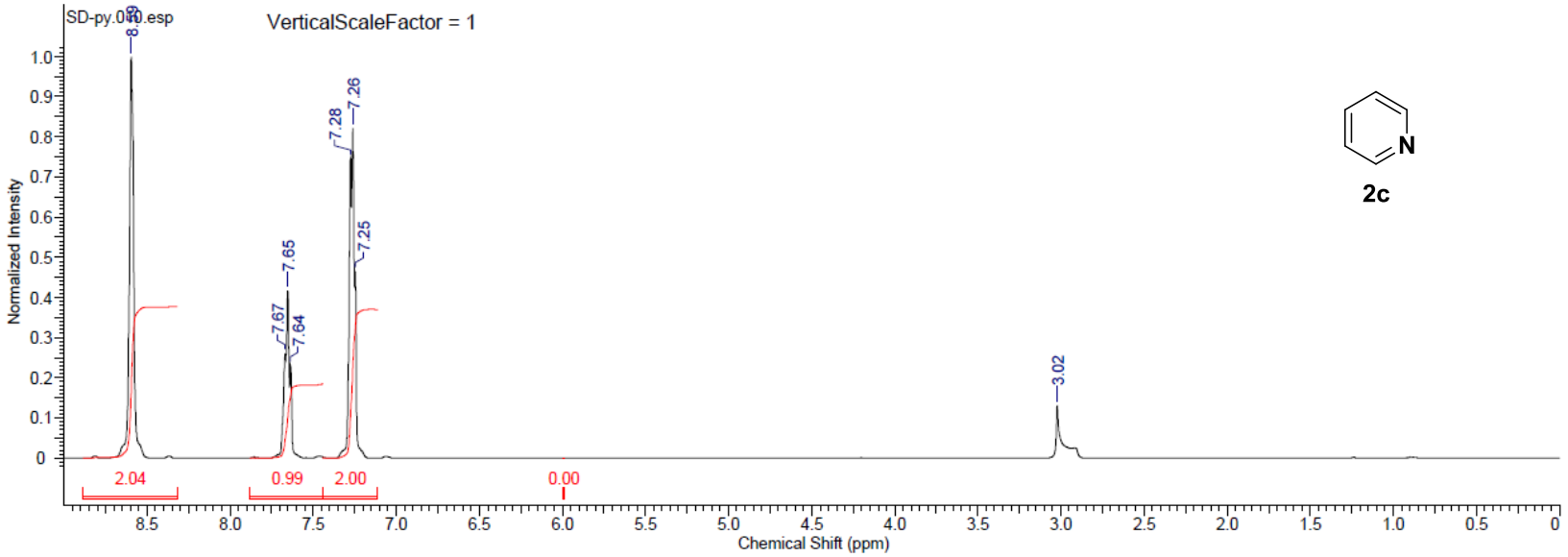

Figure S5. ^{1}H NMR Spectrum of 2c

13/03/2015 12:57:57

Acquisition Time (sec)	0.6521	*Comment*	5 mm PABBO BB-1H Z-GRD Z824801/0109			*Date*	16 Oct 2014 16:43:12
Date Stamp	16 Oct 2014 16:43:12			*File Name*	\\abies\iBitec-s\partages\scbm\SMMCB_RMN\Tritium\data\tritium\nmr\SD-py\11\fid		
Frequency (MHz)	100.62	*Nucleus*	13C	*Number of Transients*	512	*Origin*	spect
Original Points Count	16384	*Owner*	BRUKER	*Points Count*	16384	*Pulse Sequence*	zgpg30
Receiver Gain	2896.30	*SW(cyclical) (Hz)*	25125.63	*Solvent*	CHLOROFORM-d		
Spectrum Offset (Hz)	11570.4688	*Spectrum Type*	STANDARD	*Sweep Width (Hz)*	25124.09	*Temperature (degree C)*	25.800

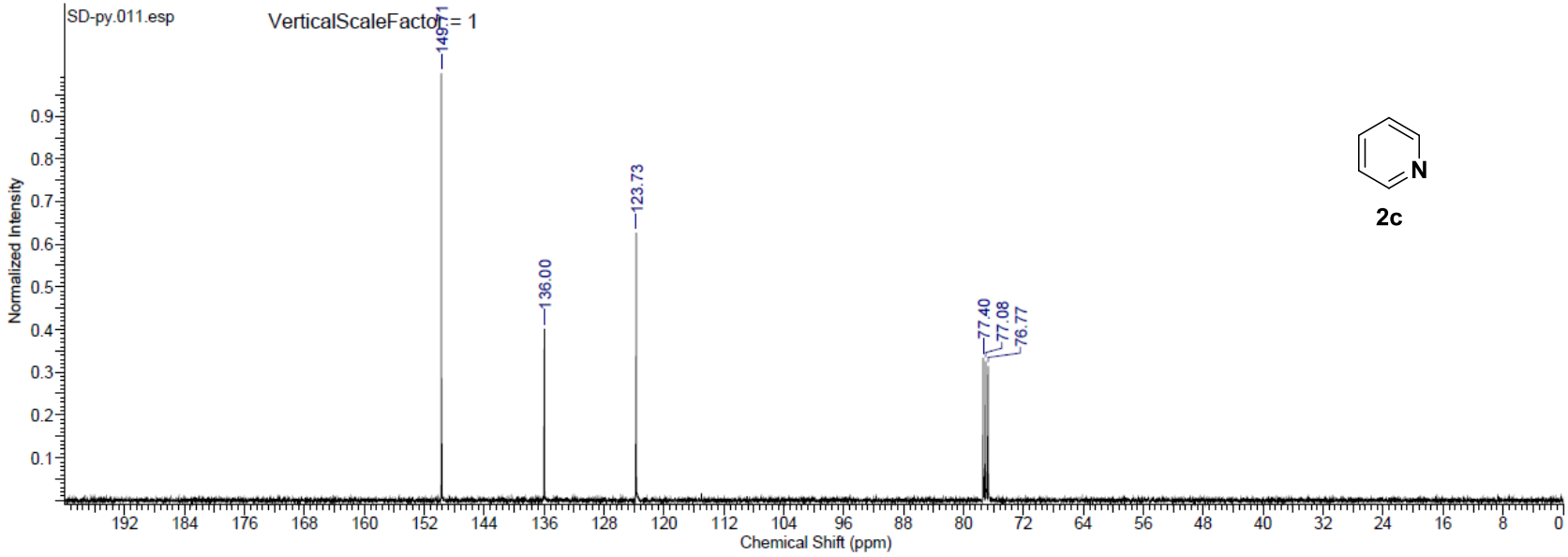

Figure S6. ^{13}C NMR Spectrum of 2c

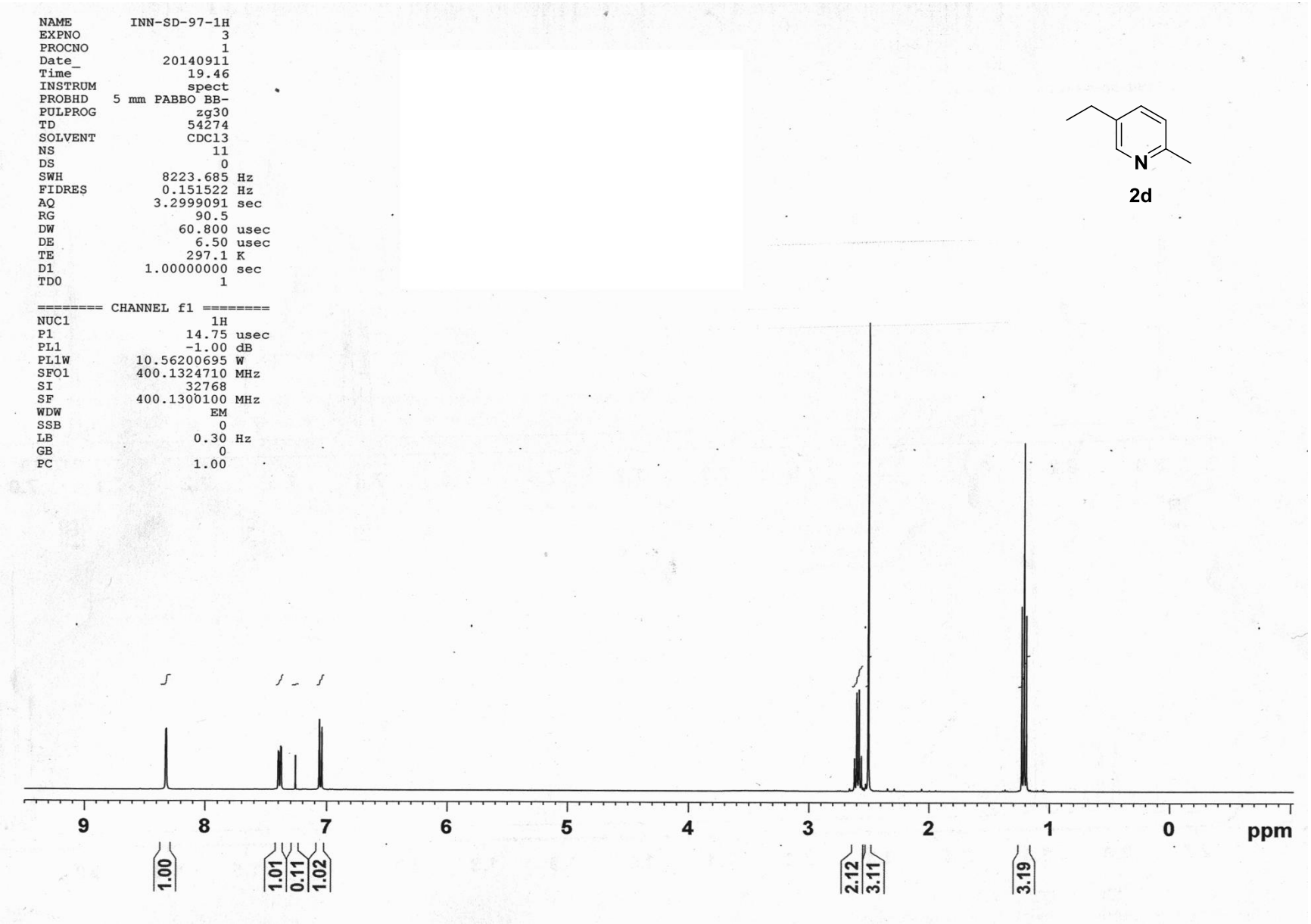

Figure S7. ^{1}H NMR Spectrum of 2d

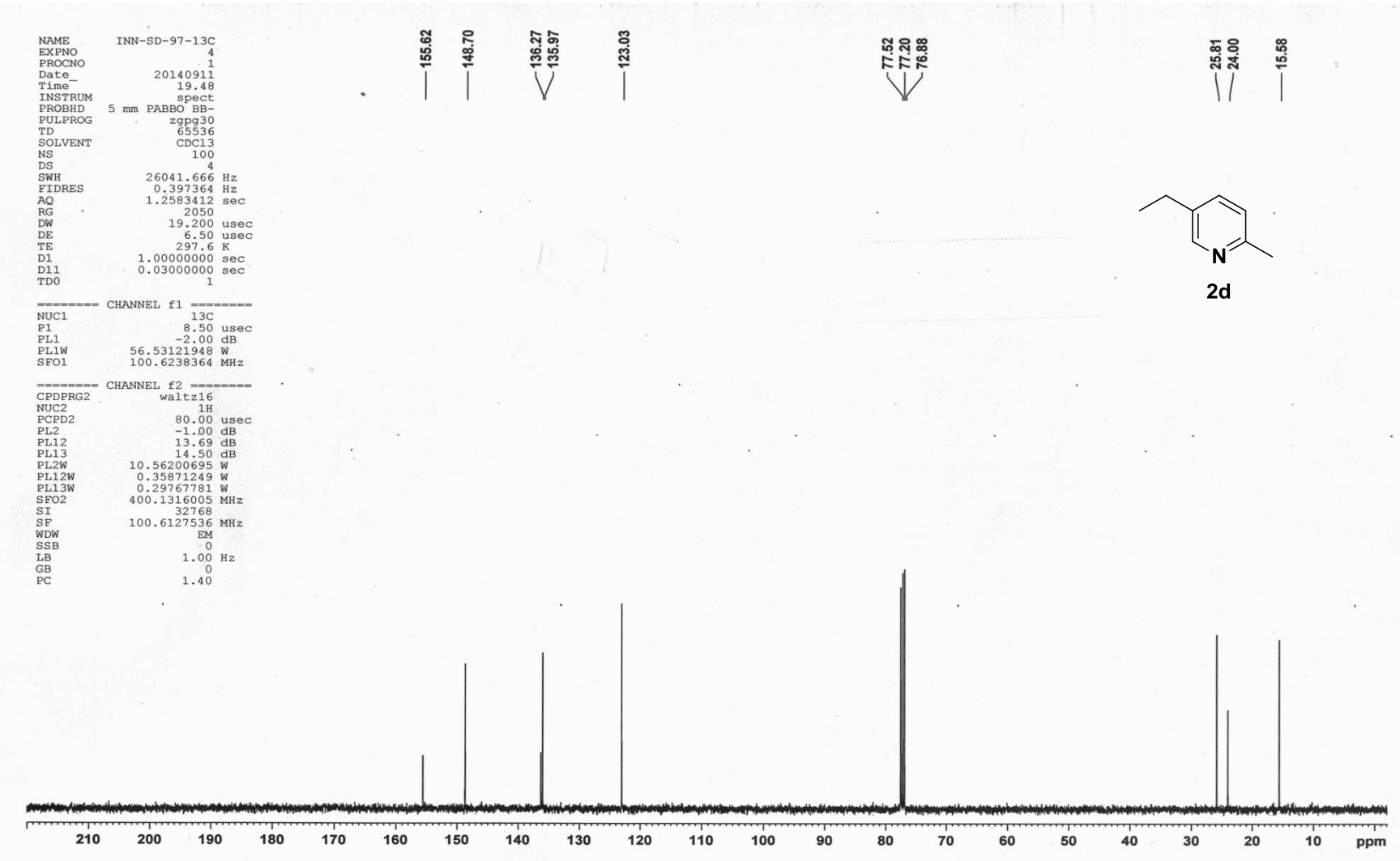

Figure S8. ^{13}C NMR Spectrum of 2d

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Date Stamp	08 Oct 2014 11:36:00			*File Name*	\\abies\iBitec-s\partages\scbm\SMMCB_RMN\Tritium\data\tritium\nmr\SD-361\20\fid		
Frequency (MHz)	400.13	*Nucleus*	1H	*Number of Transients*	16	*Origin*	spect
Original Points Count	32768	*Owner*	BRUKER	*Points Count*	32768	*Pulse Sequence*	zg45
Receiver Gain	228.10	*SW(cyclical) (Hz)*	5995.20	*Solvent*	CHLOROFORM-d		
Spectrum Offset (Hz)	2400.0000	*Spectrum Type*	STANDARD	*Sweep Width (Hz)*	5995.02	*Temperature (degree C)*	23.500

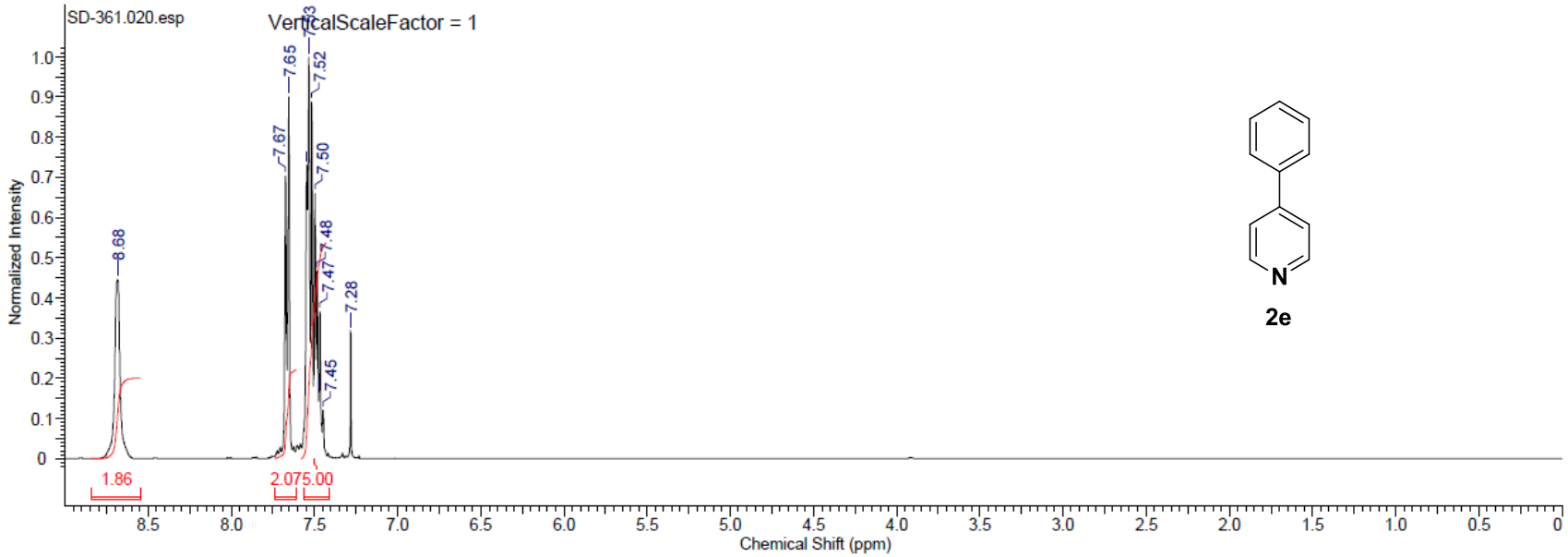

Figure S9. ^{1}H NMR Spectrum of 2e

Acquisition Time (sec)	0.6521	*Comment*	SD-361	*Date*	09 Oct 2014 07:30:40		
Date Stamp	09 Oct 2014 07:30:40			*File Name*	\\abies\iBitec-s\partages\scbm\SMMCB_RMN\Tritium\data\tritium\nmr\SD-361\10\fid		
Frequency (MHz)	100.62	*Nucleus*	13C	*Number of Transients*	750	*Origin*	spect
Original Points Count	16384	*Owner*	BRUKER	*Points Count*	16384	*Pulse Sequence*	zgpg30
Receiver Gain	2896.30	*SW(cyclical) (Hz)*	25125.63	*Solvent*	CHLOROFORM-d		
Spectrum Offset (Hz)	11570.4688	*Spectrum Type*	STANDARD	*Sweep Width (Hz)*	25124.09	*Temperature (degree C)*	24.700

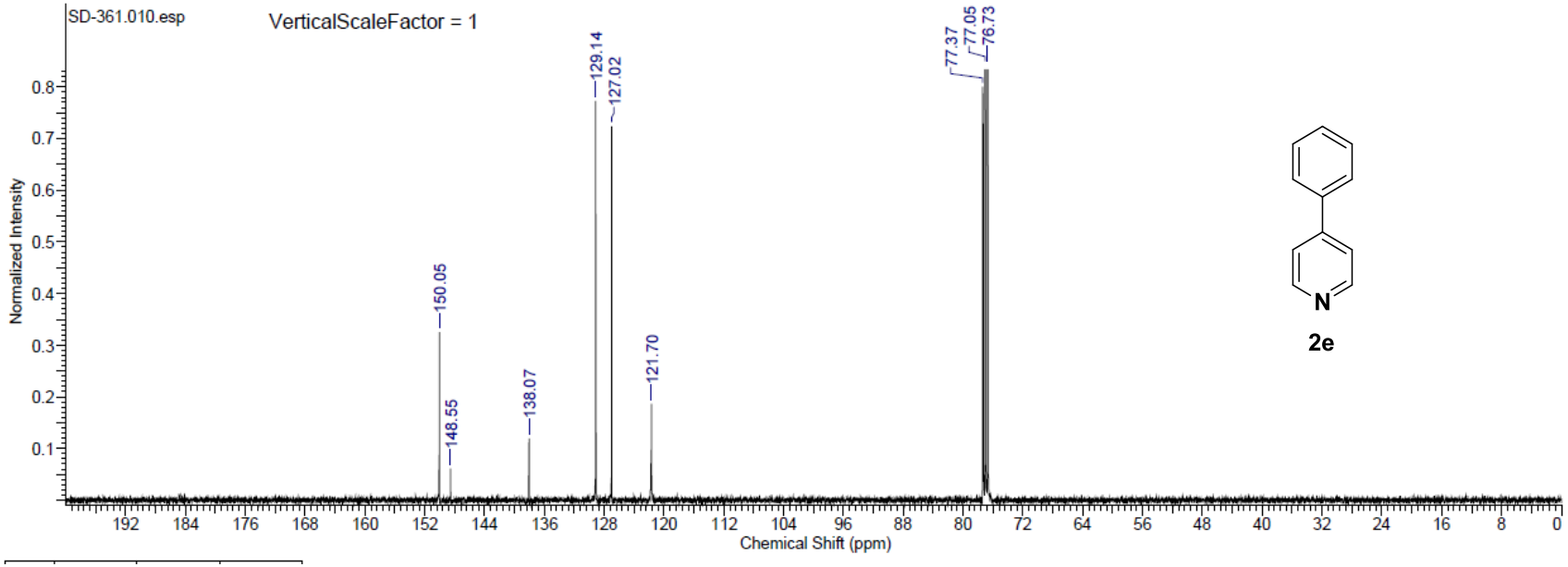

Figure S10. ^{13}C NMR Spectrum of 2e

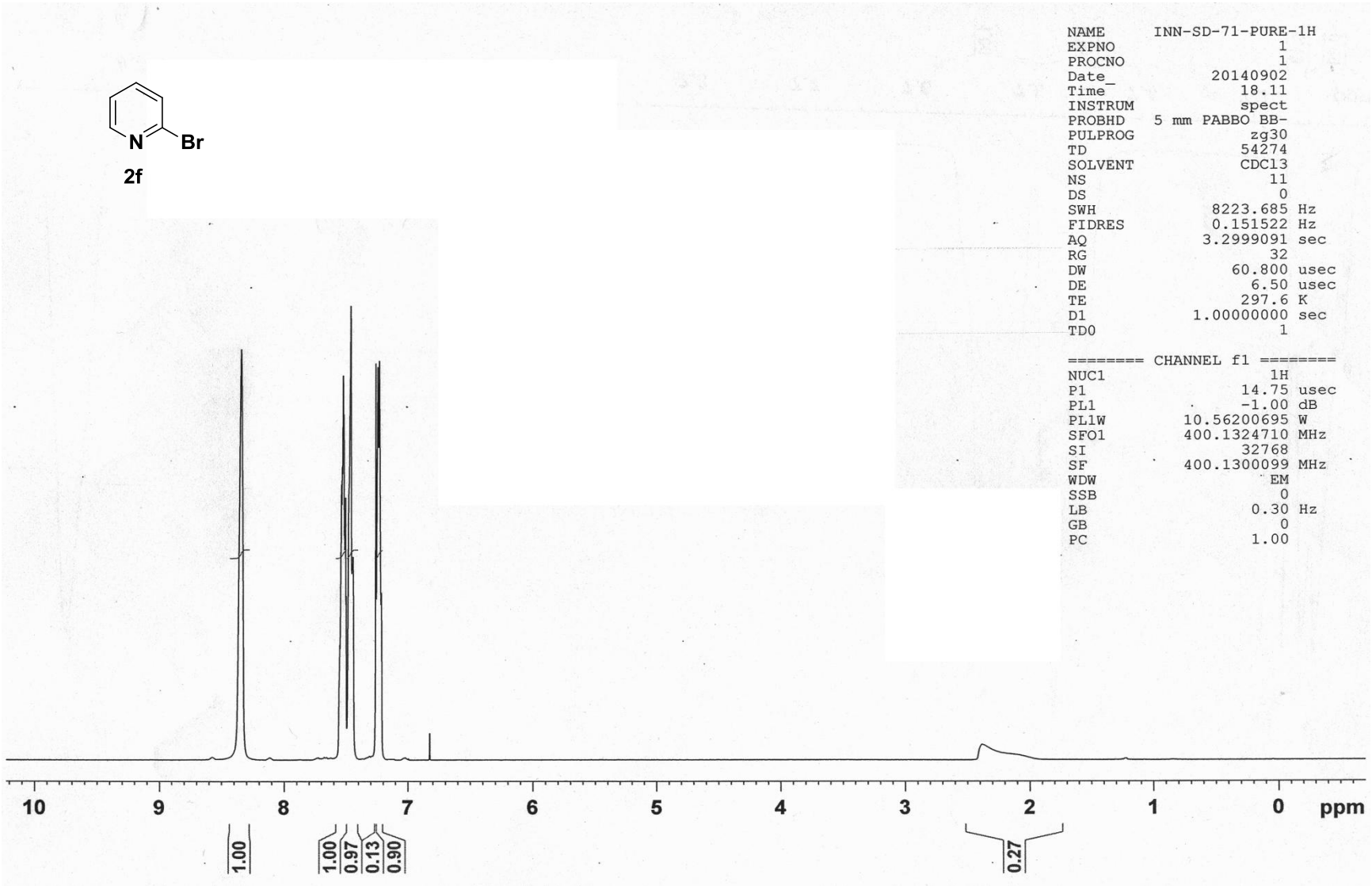

Figure S11. ^{1}H NMR Spectrum of 2f

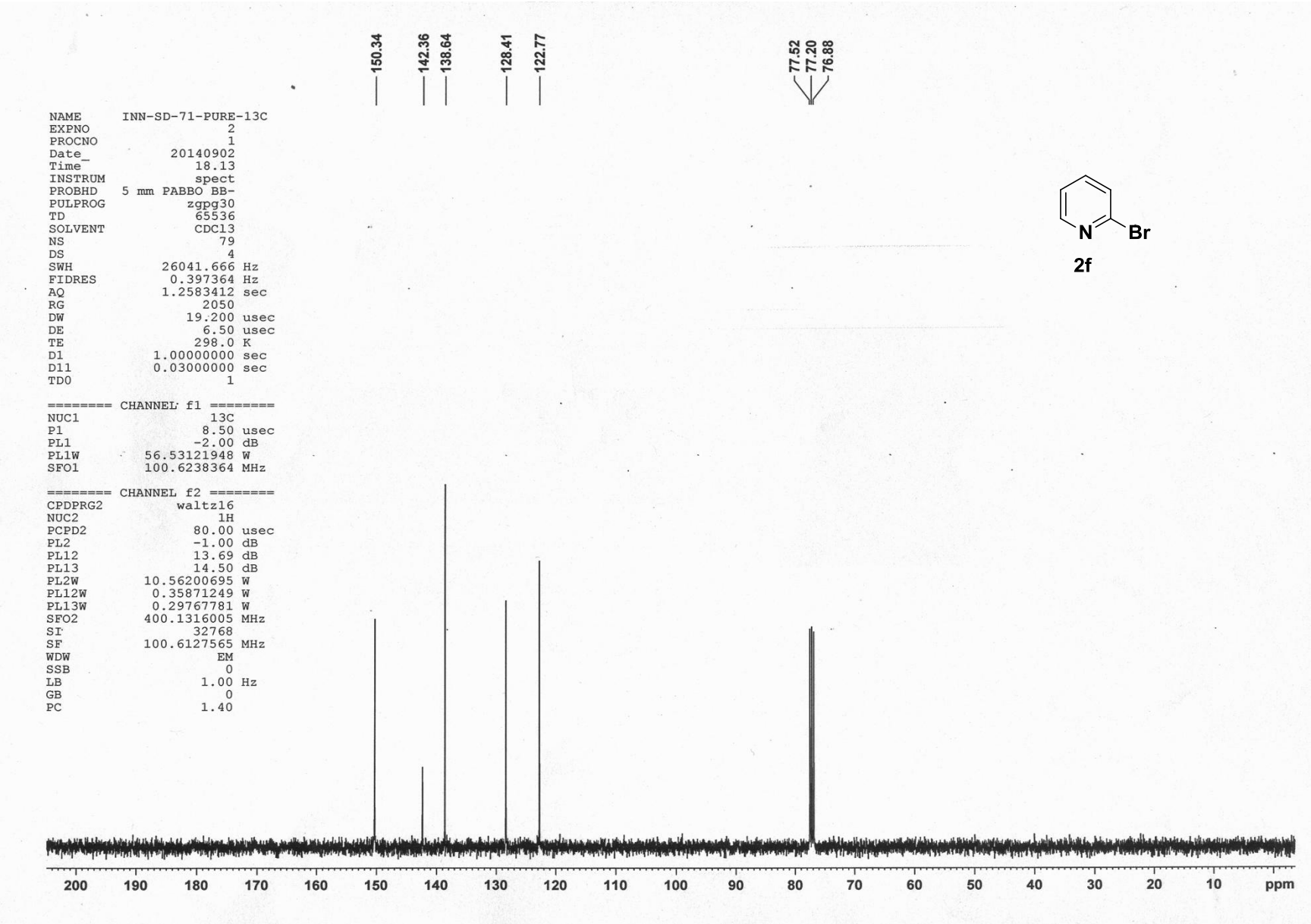

Figure S12. ^{13}C NMR Spectrum of 2f

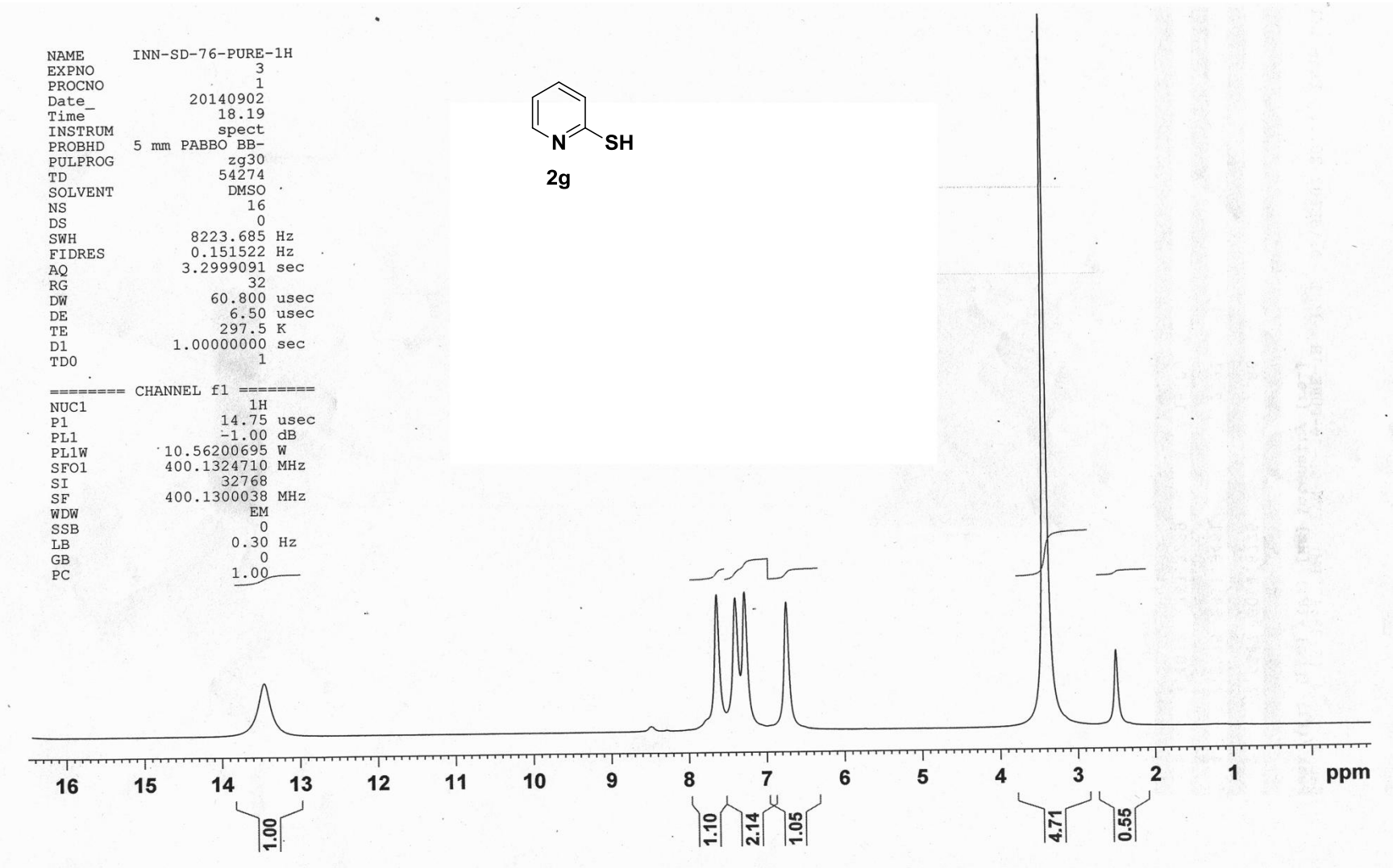

Figure S13. ^{1}H NMR Spectrum of 2g

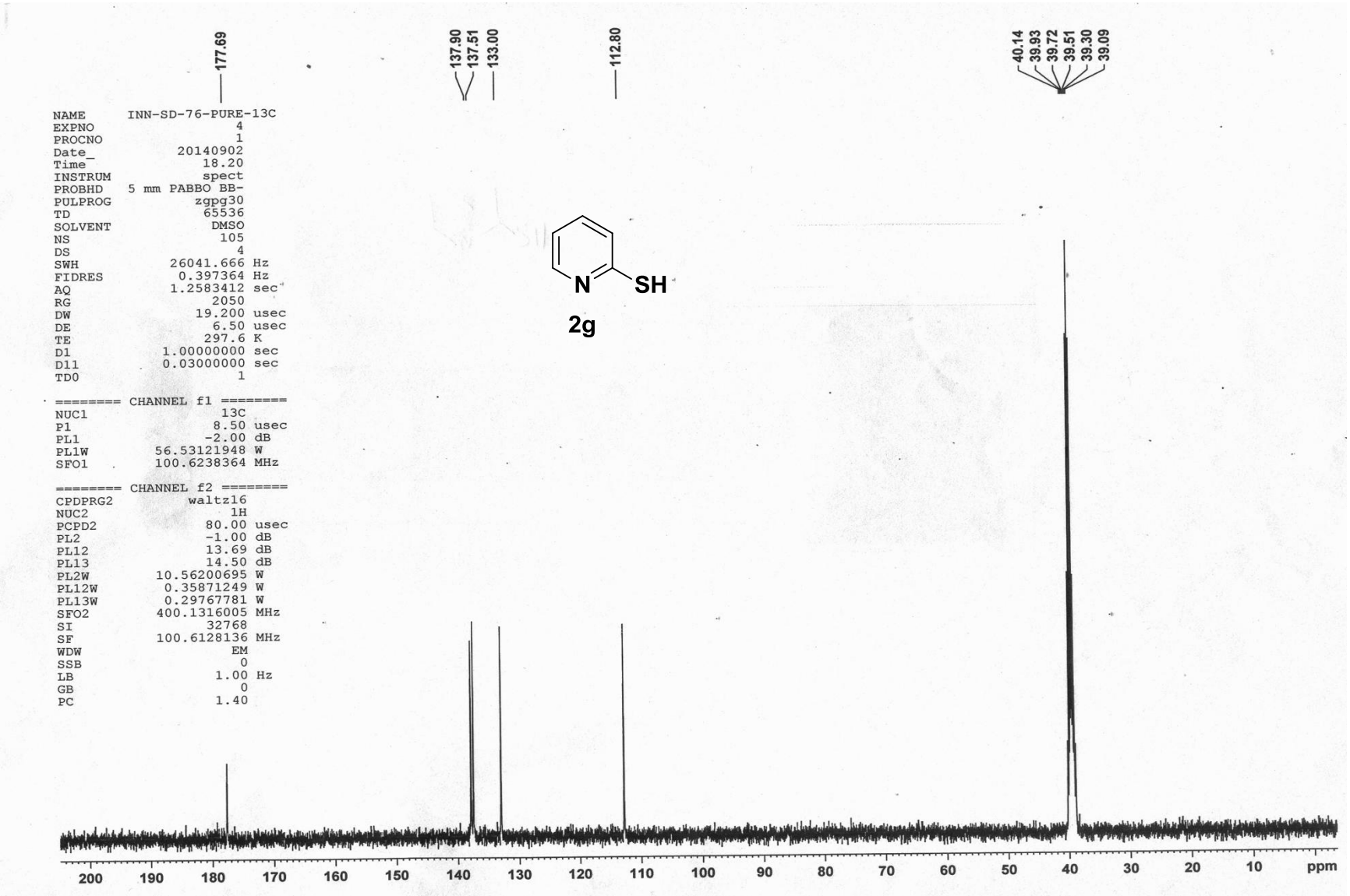

Figure S14. ^{13}C NMR Spectrum of 2g

Acquisition Time (sec)	5.4657	*Comment*	SD-159	*Date*	08 Oct 2014 11:25:20				
Date Stamp	08 Oct 2014 11:25:20			*File Name*	\\abies\iBitec-s\partages\scbm\SMMCB RMN\Tritium\data\tritium\nmr\SD-159\10\fid				
Frequency (MHz)	400.13	*Nucleus*	1H	*Number of Transients*	16	*Origin*	spect	*Original Points Count*	32768
Owner	BRUKER	*Points Count*	32768	*Pulse Sequence*	zg45	*Receiver Gain*	228.10	*SW(cyclical) (Hz)*	5995.20
Solvent	DMSO-d6	*Spectrum Offset (Hz)*	2400.0000	*Spectrum Type*	STANDARD	*Sweep Width (Hz)*	5995.02	*Temperature (degree C)*	27.000

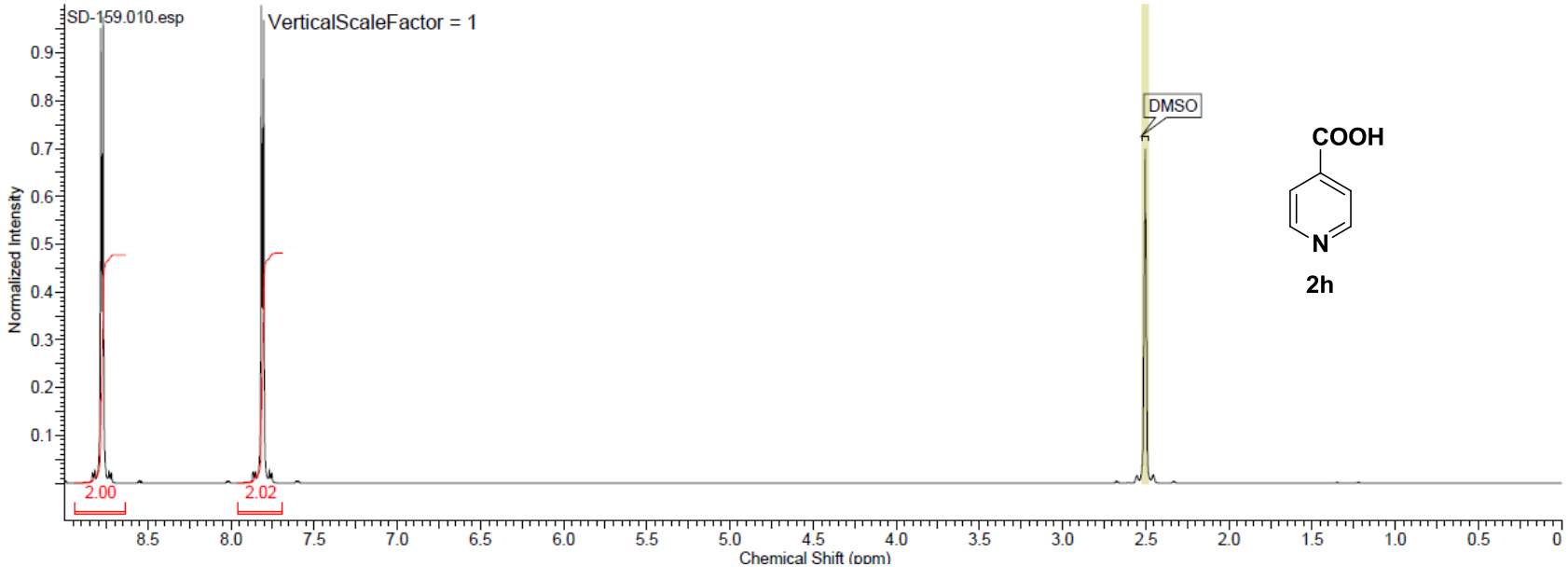

Figure S15. ^{1}H NMR Spectrum of 2h

Acquisition Time (sec)	0.6521	*Comment*	SD-359	*Date*	09 Oct 2014 06:33:04		
Date Stamp	09 Oct 2014 06:33:04			*File Name*	\\abies\iBitec-s\partages\scbm\SMMCB_RMN\Tritium\data\tritium\nmr\SD-359\10\fid		
Frequency (MHz)	100.62	*Nucleus*	13C	*Number of Transients*	750	*Origin*	spect
Original Points Count	16384	*Owner*	BRUKER	*Points Count*	16384	*Pulse Sequence*	zgpg30
Receiver Gain	2896.30	*SW(cyclical) (Hz)*	25125.63	*Solvent*	DMSO-d6	*Spectrum Offset (Hz)*	11570.4688
Spectrum Type	STANDARD	*Sweep Width (Hz)*	25124.09	*Temperature (degree C)*	27.000		

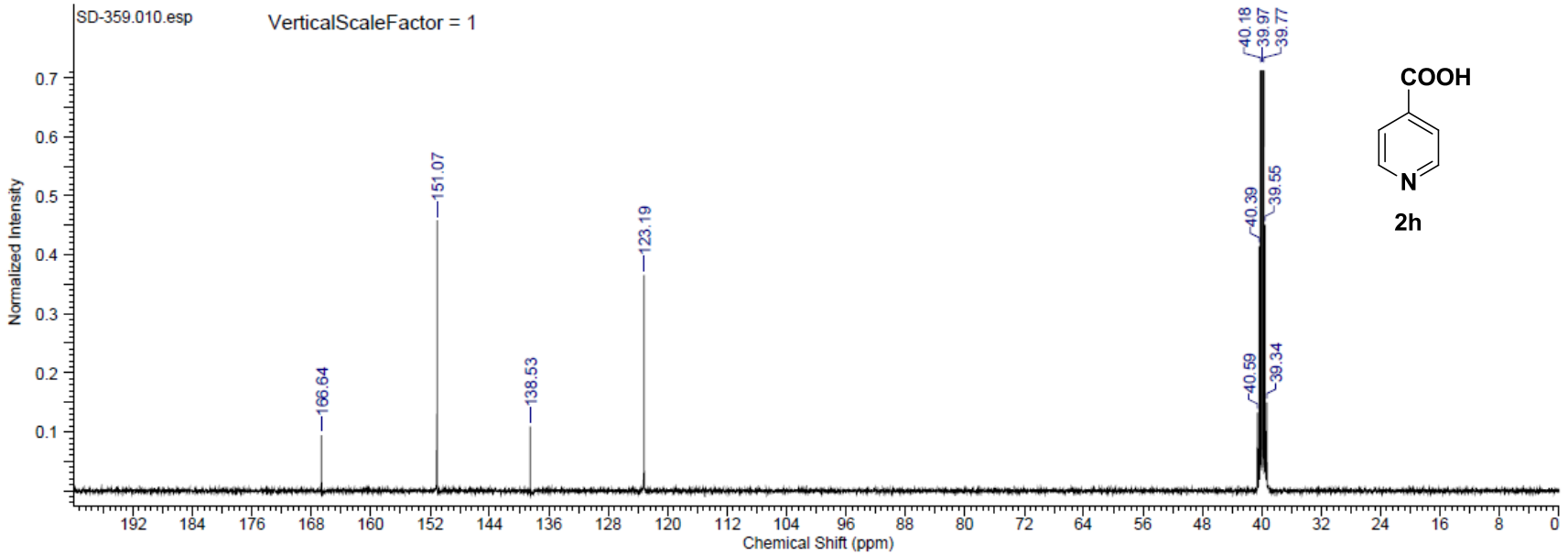

Figure S16. ^{13}C NMR Spectrum of 2h

13/03/2015 12:42:14

Acquisition Time (sec)	5.4657	*Comment*	SD-360a	*Date*	09 Oct 2014 11:23:12				
Date Stamp	09 Oct 2014 11:23:12			*File Name*	\\abies\iBitec-s\partages\scbm\SMMCB_RMN\Tritium\data\tritium\nmr\SD-360a\10\fid				
Frequency (MHz)	400.13	*Nucleus*	1H	*Number of Transients*	16	*Origin*	spect	*Original Points Count*	32768
Owner	BRUKER	*Points Count*	32768	*Pulse Sequence*	zg45	*Receiver Gain*	228.10	*SW(cyclical) (Hz)*	5995.20
Solvent	DMSO-d6	*Spectrum Offset (Hz)*	2400.0000	*Spectrum Type*	STANDARD	*Sweep Width (Hz)*	5995.02	*Temperature (degree C)*	23.900

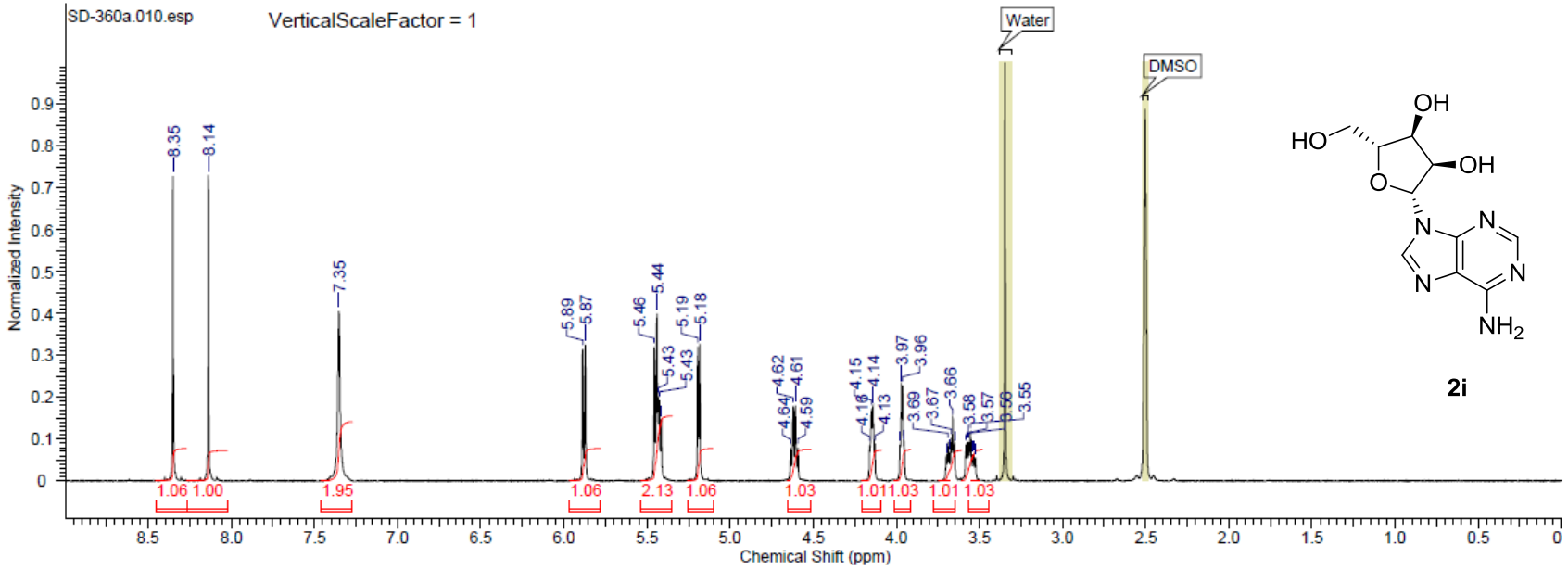

Figure S17. ^{1}H NMR Spectrum of 2i

13/03/2015 12:43:52

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Date Stamp	09 Oct 2014 21:58:56			*File Name*	\\abies\iBitec-s\partages\scbm\SMMCB_RMN\Tritium\data\tritium\nmr\SD-360a\11\fid		
Frequency (MHz)	100.62	*Nucleus*	13C	*Number of Transients*	700	*Origin*	spect
Original Points Count	16384	*Owner*	BRUKER	*Points Count*	16384	*Pulse Sequence*	zgpg30
Receiver Gain	2896.30	*SW(cyclical) (Hz)*	25125.63	*Solvent*	DMSO-d6	*Spectrum Offset (Hz)*	11570.4688
Spectrum Type	STANDARD	*Sweep Width (Hz)*	25124.09	*Temperature (degree C)*	25.200		

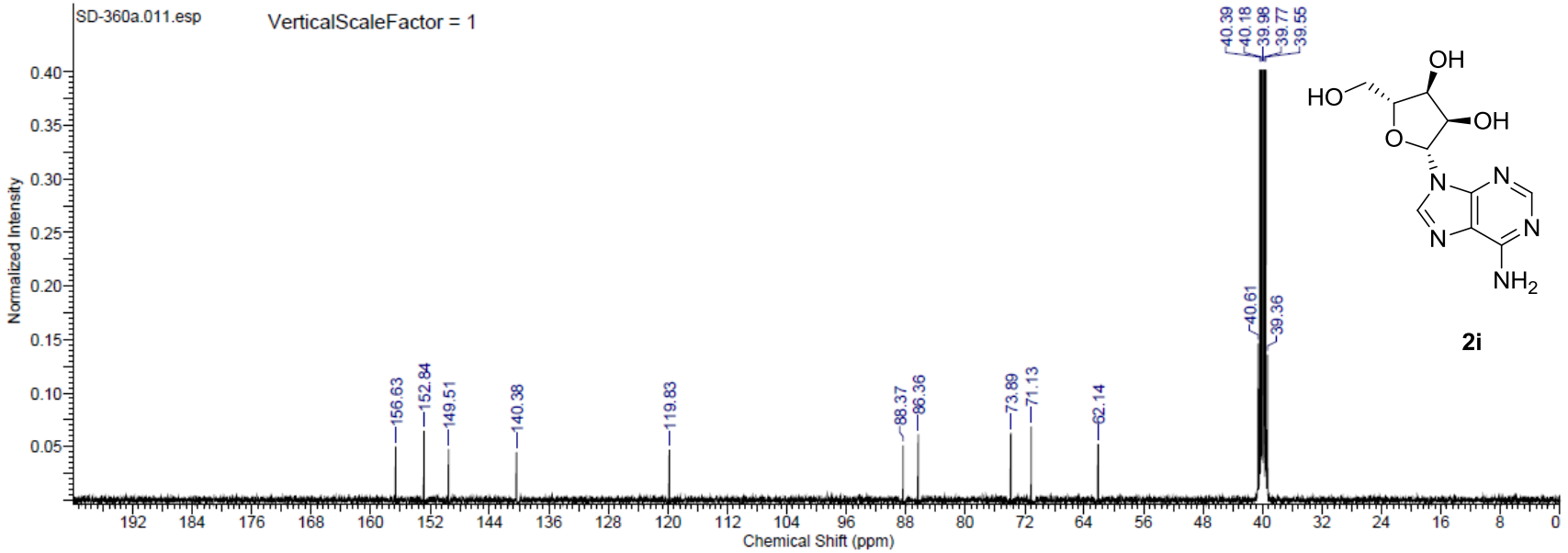

Figure S18. ^{13}C NMR Spectrum of 2i

13/03/2015 12:53:40

Acquisition Time (sec)	5.4657	*Comment*	SD-370	*Date*	15 Oct 2014 14:41:36		
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Frequency (MHz)	400.13	*Nucleus*	1H	*Number of Transients*	16	*Origin*	spect
Original Points Count	32768	*Owner*	BRUKER	*Points Count*	32768	*Pulse Sequence*	zg45
Receiver Gain	101.60	*SW(cyclical) (Hz)*	5995.20	*Solvent*	CHLOROFORM-d		
Spectrum Offset (Hz)	2400.0000	*Spectrum Type*	STANDARD	*Sweep Width (Hz)*	5995.02	*Temperature (degree C)*	25.300

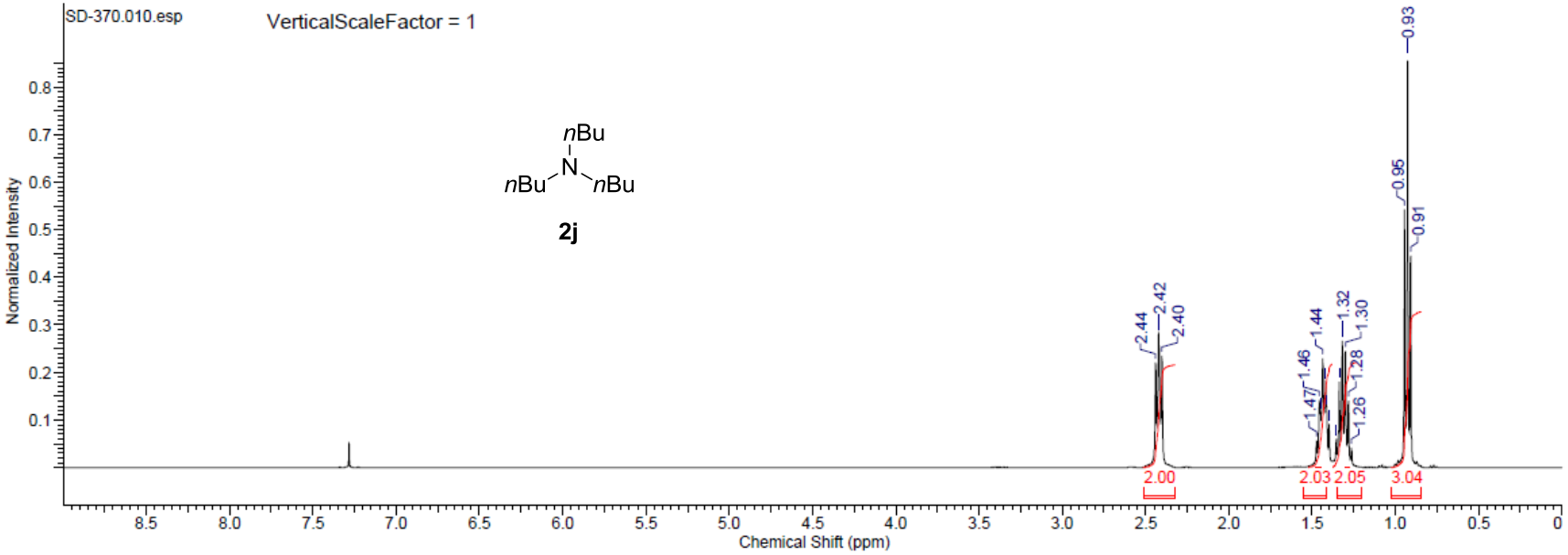

Figure S19. ^{1}H NMR Spectrum of 2j

13/03/2015 12:54:41

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Frequency (MHz)	100.62	*Nucleus*	13C	*Number of Transients*	400	*Origin*	spect
Original Points Count	16384	*Owner*	BRUKER	*Points Count*	16384	*Pulse Sequence*	zgpg30
Receiver Gain	2896.30	*SW(cyclical) (Hz)*	25125.63	*Solvent*	CHLOROFORM-d		
Spectrum Offset (Hz)	11570.4688	*Spectrum Type*	STANDARD	*Sweep Width (Hz)*	25124.09	*Temperature (degree C)*	27.000

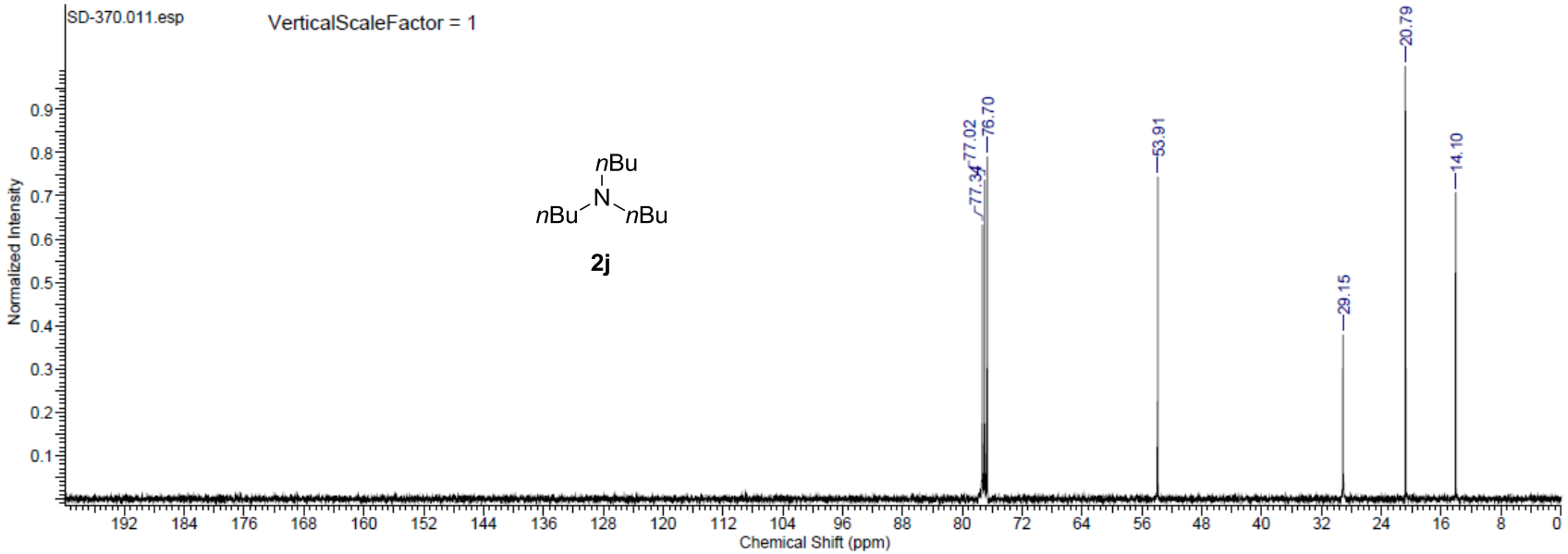

Figure S20. ^{13}C NMR Spectrum of 2j

Acquisition Time (sec)	5.4657	*Comment*	5 mm PABBO BB-1H Z-GRD Z824801/0109			*Date*	23 Mar 2015 08:49:20
Date Stamp	23 Mar 2015 08:49:20			*File Name*	\\abies\iBiTec-S\PARTAGES\SCBM\SMMCB_RMN\Tritium\data\tritium\nmr\sd-nmM\10\fid		
Frequency (MHz)	400.13	*Nucleus*	1H	*Number of Transients*	8	*Origin*	spect
Original Points Count	32768	*Owner*	BRUKER	*Points Count*	32768	*Pulse Sequence*	zg45
Receiver Gain	14.30	*SW(cyclical) (Hz)*	5995.20	*Solvent*	CHLOROFORM-d		
Spectrum Offset (Hz)	2400.0000	*Spectrum Type*	STANDARD	*Sweep Width (Hz)*	5995.02	*Temperature (degree C)*	22.600

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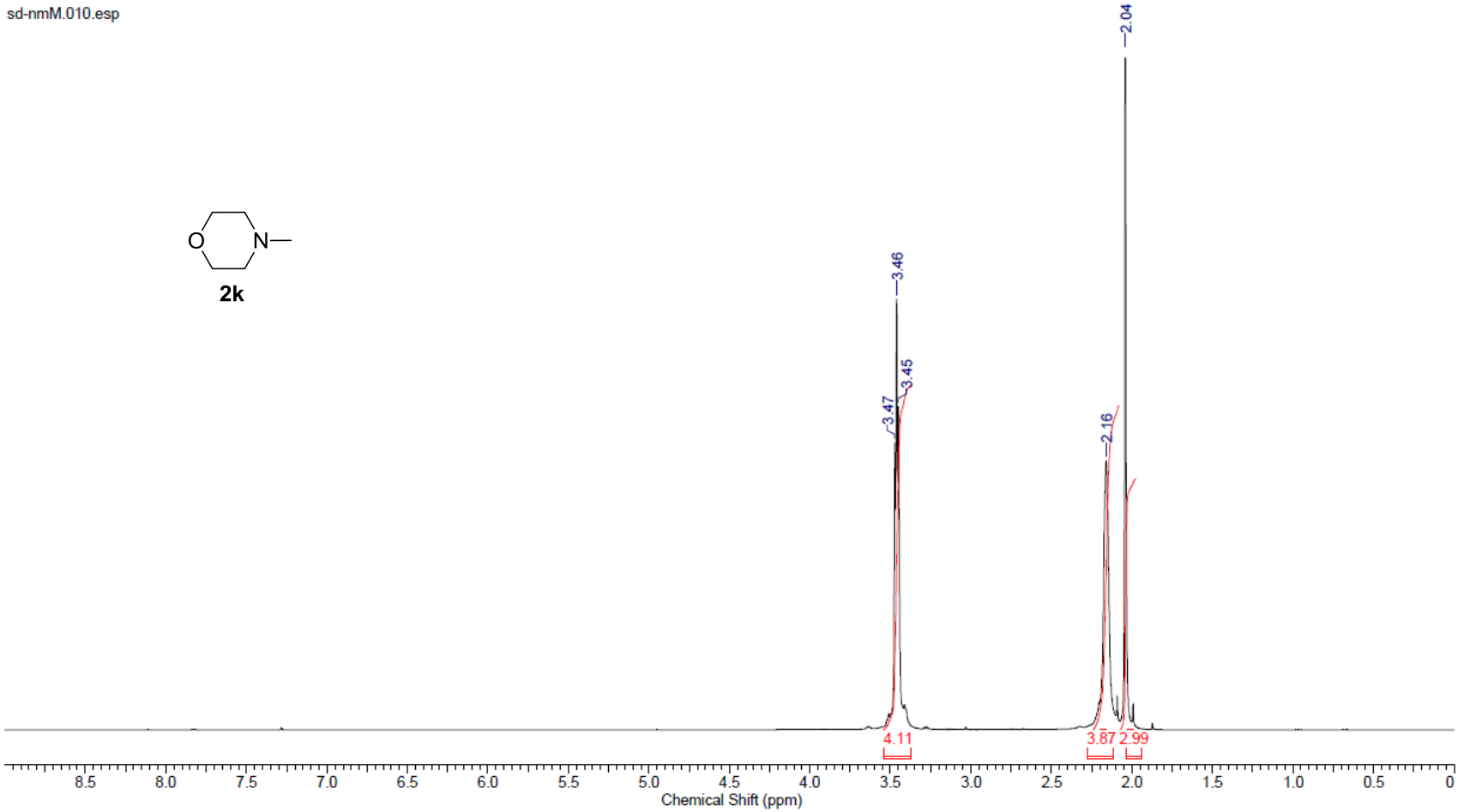
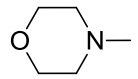


Figure S21. ^{1}H NMR Spectrum of 2k

Acquisition Time (sec)	0.6521	*Comment*	5 mm PABBO BB-1H Z-GRD Z824801/0109			*Date*	23 Mar 2015 09:00:00
Date Stamp	23 Mar 2015 09:00:00			*File Name*	\\abies\iBiTec-S\PARTAGES\SCBM\SMMCB_RMN\Tritium\data\tritium\nmr\sd-nmM\11\fid		
Frequency (MHz)	100.62	*Nucleus*	13C	*Number of Transients*	126	*Origin*	spect
Original Points Count	16384	*Owner*	BRUKER	*Points Count*	16384	*Pulse Sequence*	zgpg30
Receiver Gain	2896.30	*SW(cyclical) (Hz)*	25125.63	*Solvent*	CHLOROFORM-d	*Spectrum Offset (Hz)*	11570.4688
Spectrum Type	STANDARD	*Sweep Width (Hz)*	25124.09	*Temperature (degree C)*	27.000		

sd-nmM.011.esp



2k

Figure S22. ^{13}C NMR Spectrum of 2k

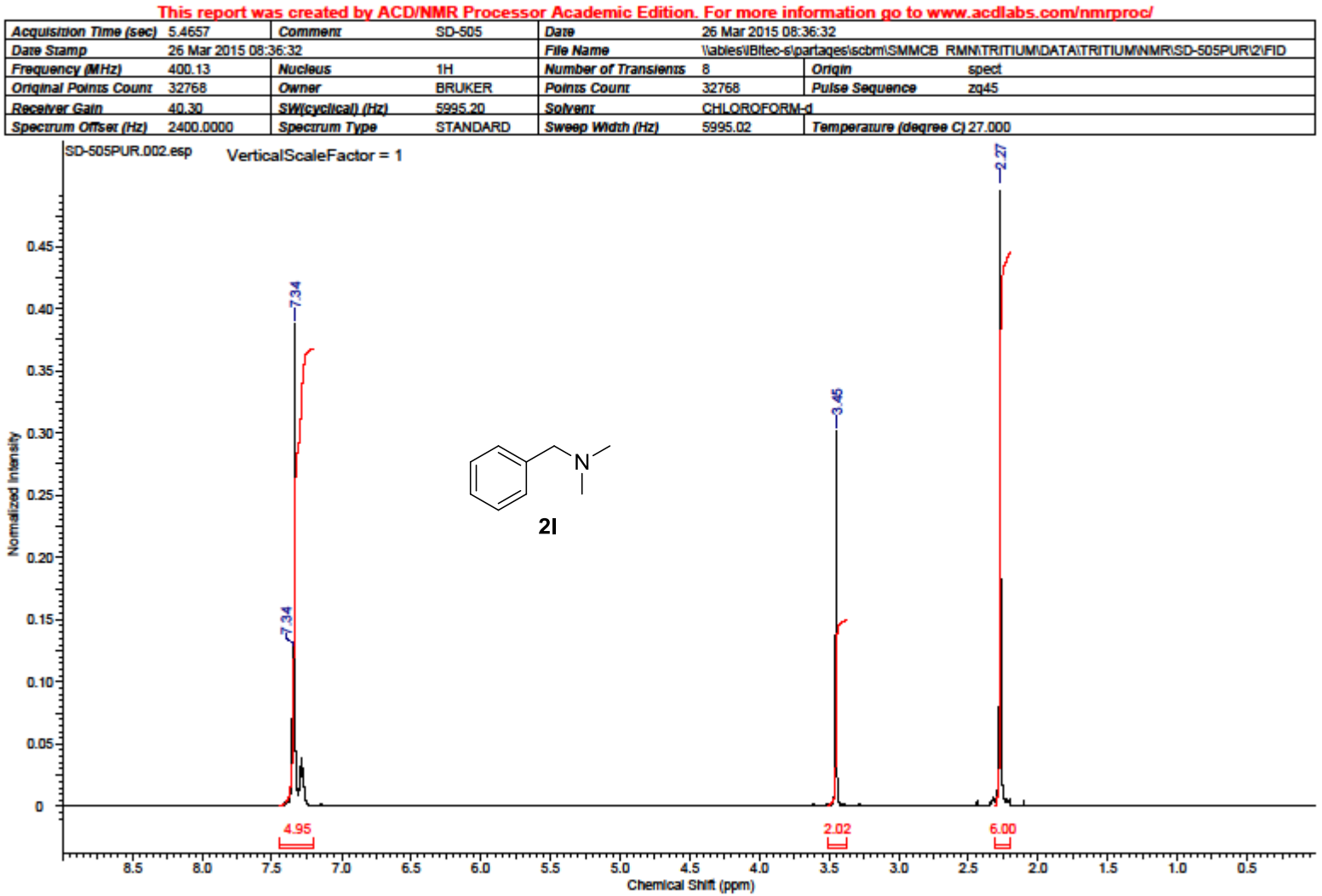


Figure S23. ^{1}H NMR Spectrum of 2l

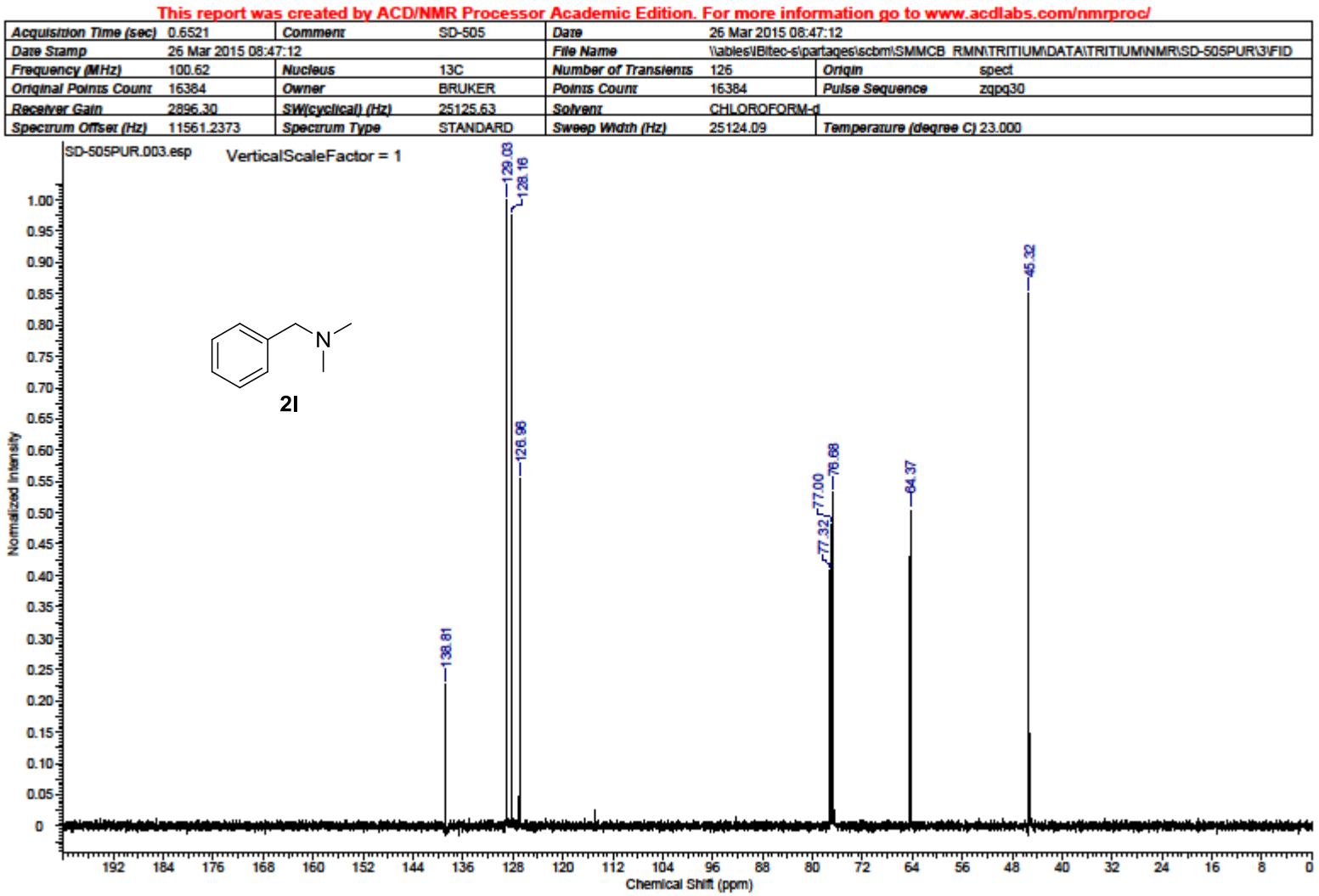


Figure S24. ^{13}C NMR Spectrum of 2l

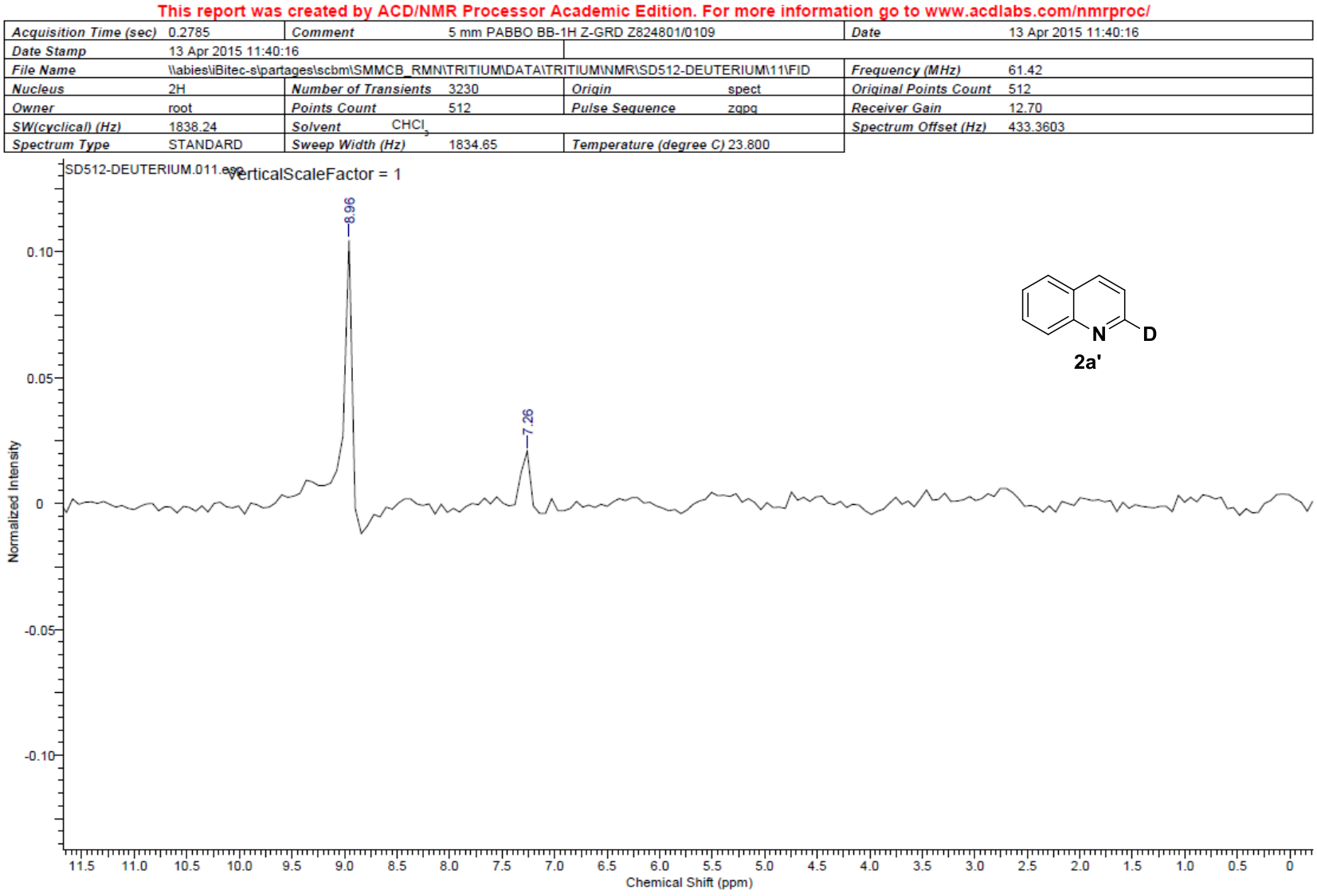
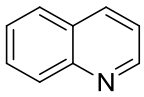


Figure S25. ^{2}H NMR Spectrum of 2a'

A typical procedure for the deoxygenation of amine *N*-oxides is given for quinoline *N*-oxide:

The AuCNT catalyst (0.4 mol%) aqueous uspension was centrifuged and washed three times with dry THF prior to use. Under N_2, to a solution of quinoline *N*-oxide (0.1 mmol) in dry THF (1 mL) was added the AuCNT catalyst and dimethylphenylsilane (0.11 mmol). The resulting mixture was stirred at room temperature and the progress of the reaction was monitored by TLC. After completion, water (2 mL) was added and the aqueous phase was extracted with dichloromethane (3 × 5 mL). The combined organic layers were dried over anhydrous Na_2SO_4, filtered, and concentrated under vacuum. The crude material was then purified by silica gel column chromatography (cyclohexane/EtOAc, 95:5) to afford quinoline as colorless oil (84% yield).

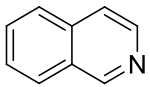
Quinoline (2a)



^{1}H NMR (500 MHz, $CDCl_3$) δ 8.95-8.90 (m, 1H), 8.15 (d, J = 8.3 Hz, 1H), 8.11 (d, J = 8.1 Hz, 1H), 7.81 (d, J = 7.9 Hz, 1H), 7.71 (td, J = 8.1, 1.3 Hz, 1H), 7.54 (td, J = 7.9, 1.3 Hz, 1H), 7.38 (dd, J = 8.3 Hz, J = 4.2 Hz, 1H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 150.5, 148.4, 136.3, 129.6, 129.6, 128.5, 128.0, 126.7, 121.3.

Isoquinoline (2b)



^{1}H NMR (500 MHz, $CDCl_3$) δ 9.25 (s, 1H), 8.51 (d, J = 5.8 Hz, 1H), 7.95 (d, J = 7.8 Hz, 1H), 7.81 (d, J = 7.9 Hz, 1H), 7.68 (t, J = 7.9 Hz, 1H), 7.64 (d, J = 5.8 Hz, 1H), 7.59 (t, J = 7.8 Hz, 1H).

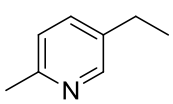
^{13}C NMR (125 MHz, $CDCl_3$) δ 152.6, 143.0, 135.9, 130.5, 128.8, 127.8, 127.4, 126.6, 120.7.

Pyridine (2c)

^{1}H NMR (400 MHz, $CDCl_3$) δ 8.56 (s, 2H), 7.65-7.62 (m, 1H), 7.26-7.23 (m, 2H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 149.6 (2C), 135.9, 123.7 (2C).

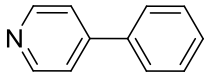
5-Ethyl-2-methyl pyridine (2d)



^{1}H NMR (400 MHz, $CDCl_3$) δ 8.32 (d, J = 2.1 Hz, 1H), 7.38 (dd, J = 7.9 Hz, J = 2.1 Hz, 1H), 7.05 (d, J = 7.9 Hz, 1H), 2.58 (q, J = 7.6 Hz, 2H), 2.50 (s, 3H), 1.21 (t, J = 7.6 Hz, 3H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 155.6, 148.7, 136.3, 136.0, 123.0, 25.8, 24.0, 15.6.

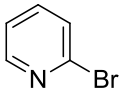
4-Phenylpyridine (2e)



^{1}H NMR (400 MHz, $CDCl_3$) δ 8.67 (s, 2H), 7.64 (d, J = 8.0 Hz, 2H), 7.53-7.45 (m, 5H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 150.0 (2C), 148.5, 138.0, 129.1 (3C), 127.0 (2C), 121.6 (2C).

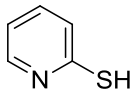
2-Bromopyridine (2f)



^{1}H NMR (400 MHz, $CDCl_3$) δ 8.30-8.40 (m, 1H), 7.55-7.50 (m, 1H), 7.46-7.44 (m, 1H), 7.26-7.21 (m, 1H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 150.3, 142.4, 138.6, 128.4, 122.8.

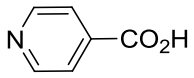
Mercaptopyridine (2g)



^{1}H NMR (400 MHz, DMSO-d_6) δ 13.46 (br s, 1H), 7.60-7.65 (m, 1H), 7.38-7.42 (m, 1H), 7.25-7.30 (m, 1H), 6.72-6.76 (m, 1H).

^{13}C NMR (100 MHz, DMSO- d_6) δ 177.7, 137.9, 137.5, 133.0, 112.8.

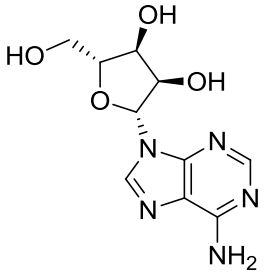
Isonicotinic acid (2h)



^{1}H NMR (400 MHz, DMSO-d_6) δ 8.75 (d, J = 6.0 Hz, 2H), 7.79 (d, J = 6.0 Hz, 2H).

^{13}C NMR (100 MHz, DMSO-d_6) δ 166.6, 151.0, 138.5, 123.1.

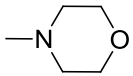
Adenosine (2i)



^{1}H NMR (400 MHz, DMSO-d_6) δ 8.33 (s, 1H), 8.12 (s 1H), 7.33 (s, 2H), 5.86 (d, J = 6 Hz, 1H), 5.44-5.39 (m, 2H), 5.17 (d, J = 4.4 Hz, 1H), 4.59 (q, J = 5.9 Hz, 1H), 4.12 (q, 4.1 Hz, 1H), 3.94 (q, J = 3.2 Hz, 1H), 3.67 (m, 1H), 3.53 (m, 1H).

^{13}C NMR (100 MHz, DMSO-d_6) δ 156.6, 152.8, 149.5, 140.3, 119.8, 88.3, 86.3, 73.8, 71.1, 62.1.

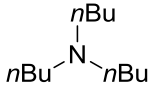
***N*-Methyl morpholine (2j)**



^{1}H NMR (400 MHz, $CDCl_3$) δ 3.58 (s, 4H), 2.28 (s, 4H), 2.16 (s, 3H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 66.9 (2C), 55.4 (2C), 46.4.

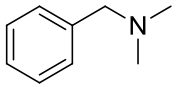
Tri-*n*-butylamine (2k)



^{1}H NMR (400 MHz, $CDCl_3$) δ 2.40 (t, J = 7.6 Hz, 6H), 1.45-1.38 (m, 6H), 1.28 (m, 6H), 0.91 (t, J = 7.4 Hz, 9H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 53.8 (3C), 29.1 (3C), 20.7 (3C), 14.0 (3C).

***N,N*-dimethyl-1-phenylmethanamine (2l)**



^{1}H NMR (400 MHz, $CDCl_3$) δ 7.35-7.24 (m, 5H), 3.43 (s, 2H), 2.52 (s, 6H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 138.8, 129.1 (2C), 128.2 (2C), 127.0, 64.4, 45.3 (2C).