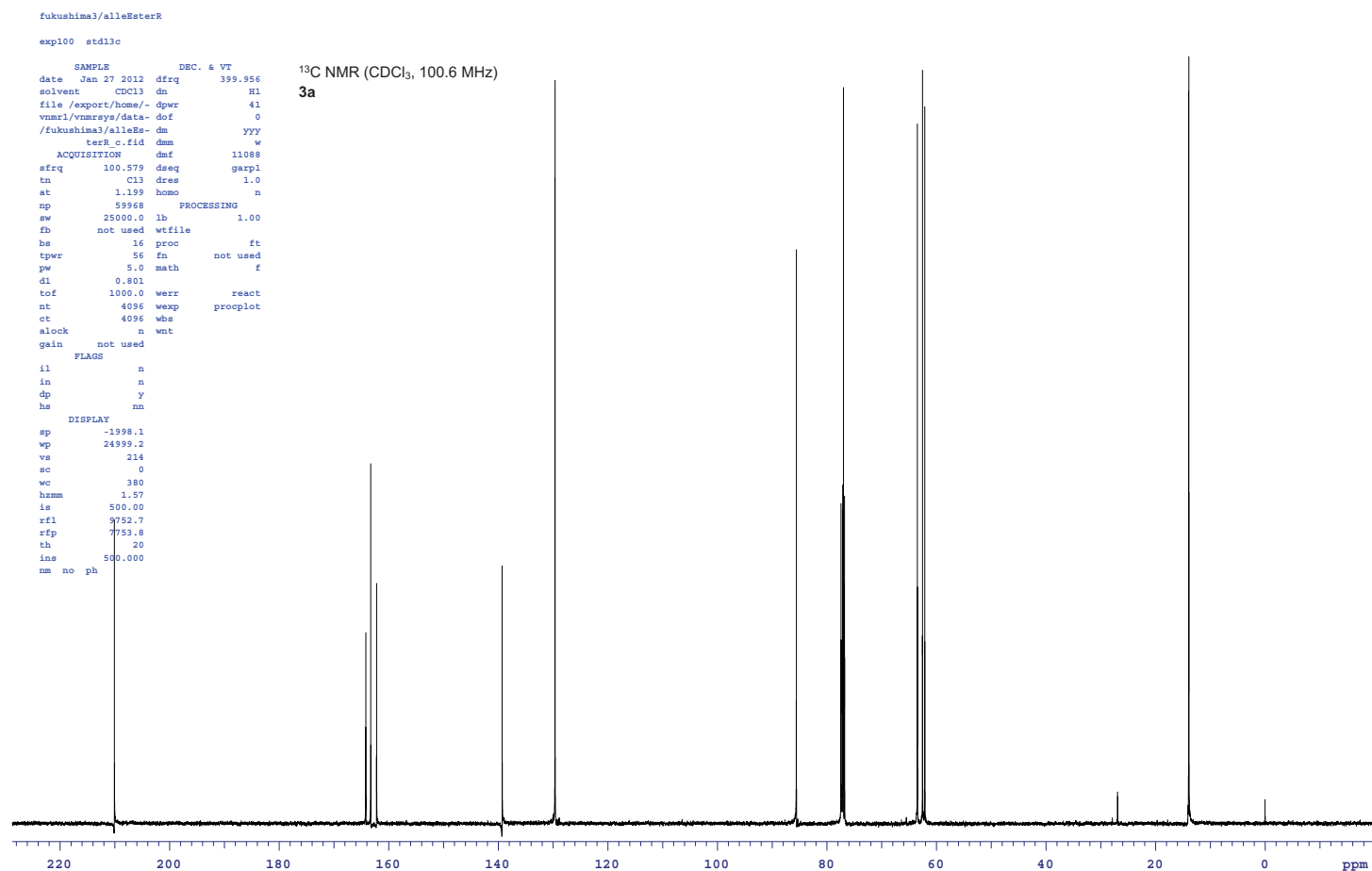
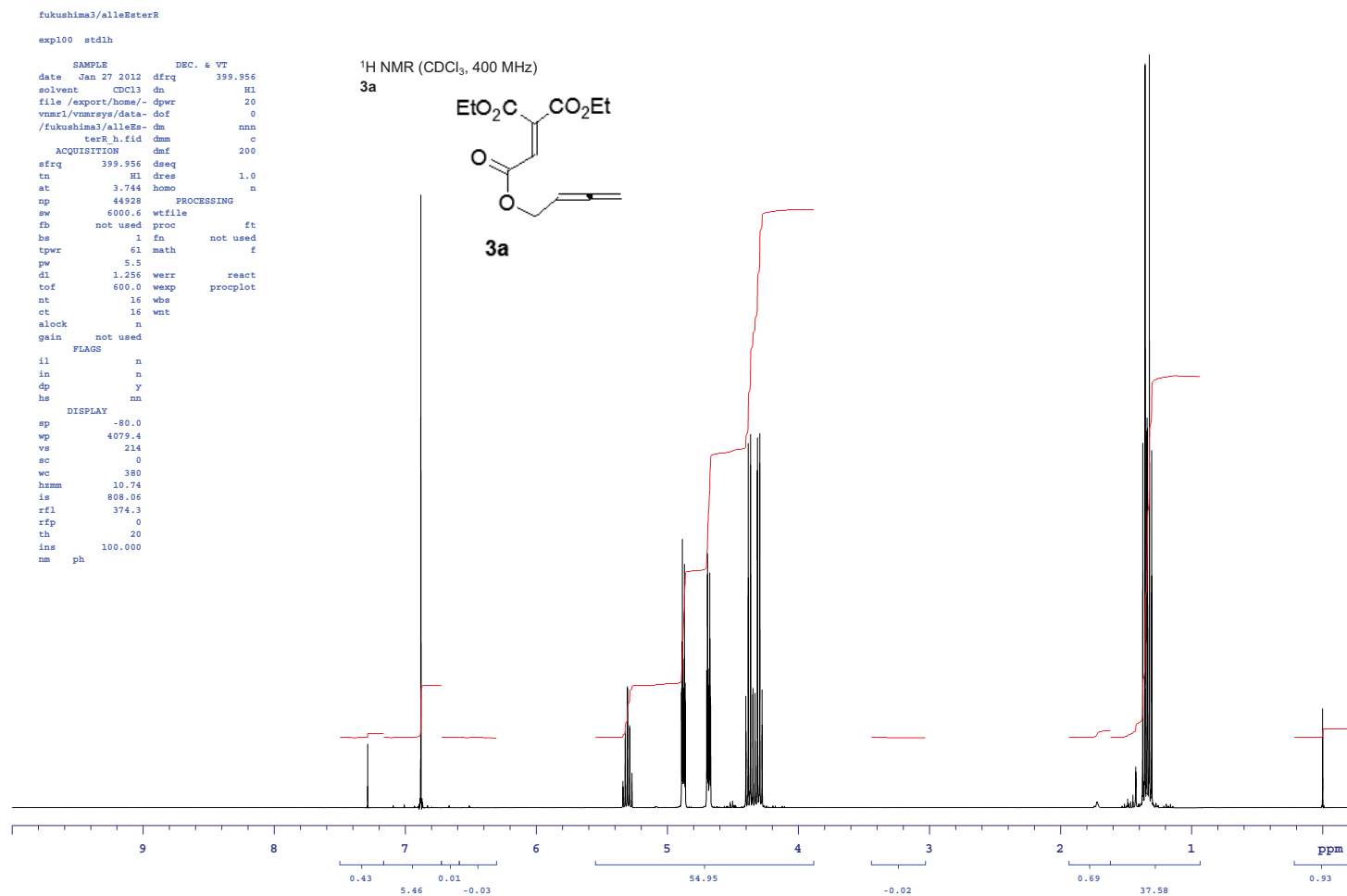




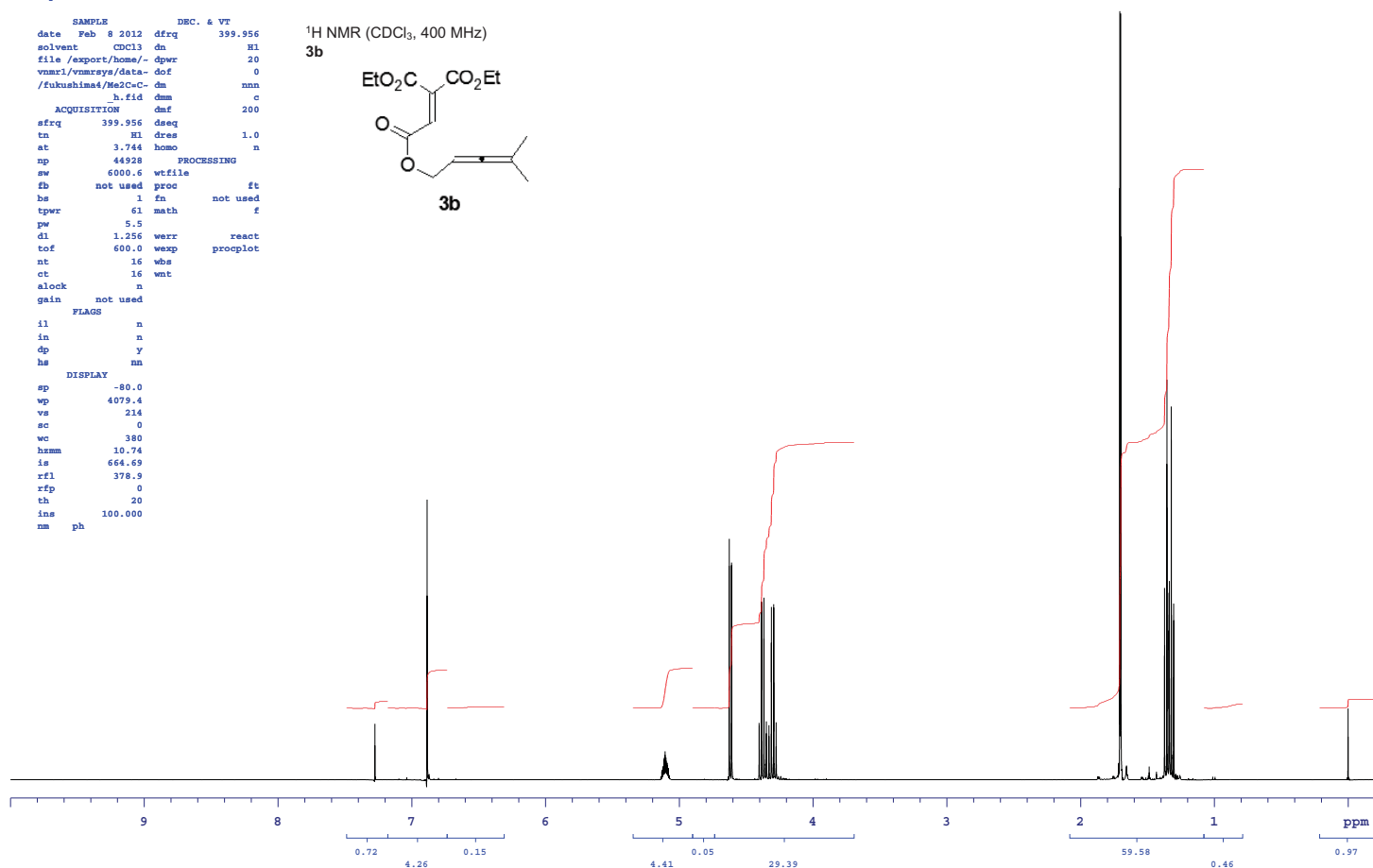
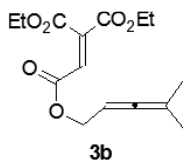
fukushima4/Me2C=C

exp100 std1h

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date	Feb 8 2012	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		20
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	h.fid	dms	c
ACQUISITION		dms	
sfrq	399.956	dseq	200
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.356	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wmt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hnm	10.74		
is	664.69		
rfl	378.9		
rpf	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

3b



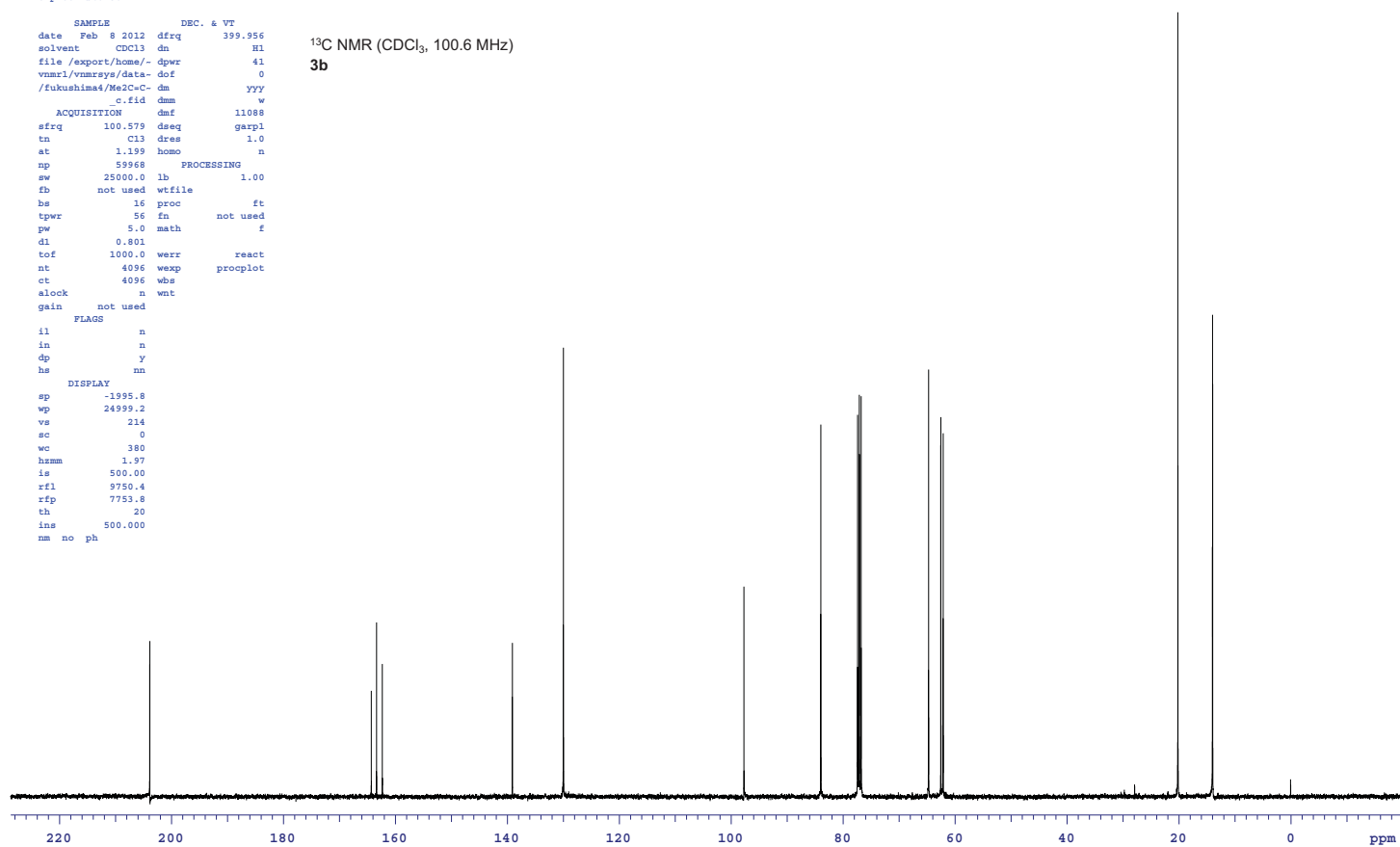
fukushima4/Me2C=C

exp100 std13c

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date	Feb 8 2012	dfreq	399.956
solvent	CDCl3	dn	H1
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	c.fid	dms	w
ACQUISITION		dms	
sfrq	100.579	dseq	garpl
tn	Cl3	dres	1.0
at	1.139	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	4096	wexp	procplot
ct	4096	wbs	
alock	n	wmt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
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wp	24999.2		
vs	214		
sc	0		
wc	380		
hnm	1.97		
is	500.00		
rfl	9750.4		
rpf	7753.8		
th	20		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

3b



fukushima4/CCallene

exp100 std1h

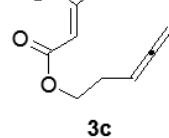
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solvent   CDCl3      dn      H1
file   /export/home/~ dpwr    20
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/fukushima4/CCalle- dm      nm
ne h.fid dmm          c
ACQUISITION      dmf      200
sfrq   399.956   dseq     1.0
tn      H1      dres     1.0
at      3.744   homo     n
np      44928   PROCESSING
sw      6000.6   wfile
fb      not used   proc     ft
bs      1        fn      not used
tpwr    61       math     f
pw      5.5
d1      1.256   werr     react
tof     600.0   wexp     procplot
nt      16     wbs
ct      16     wnt
alock   n
gain    not used
FLAG    n
il      n
in      n
dp      y
hs      nm
DISPLAY
sp      -80.0
wp      4079.4
vs      214
sc      0
wc      380
hnm     10.74
is      1584.08
rfl     381.4
rfp      0
th      20
ins     100.000
nm      ph

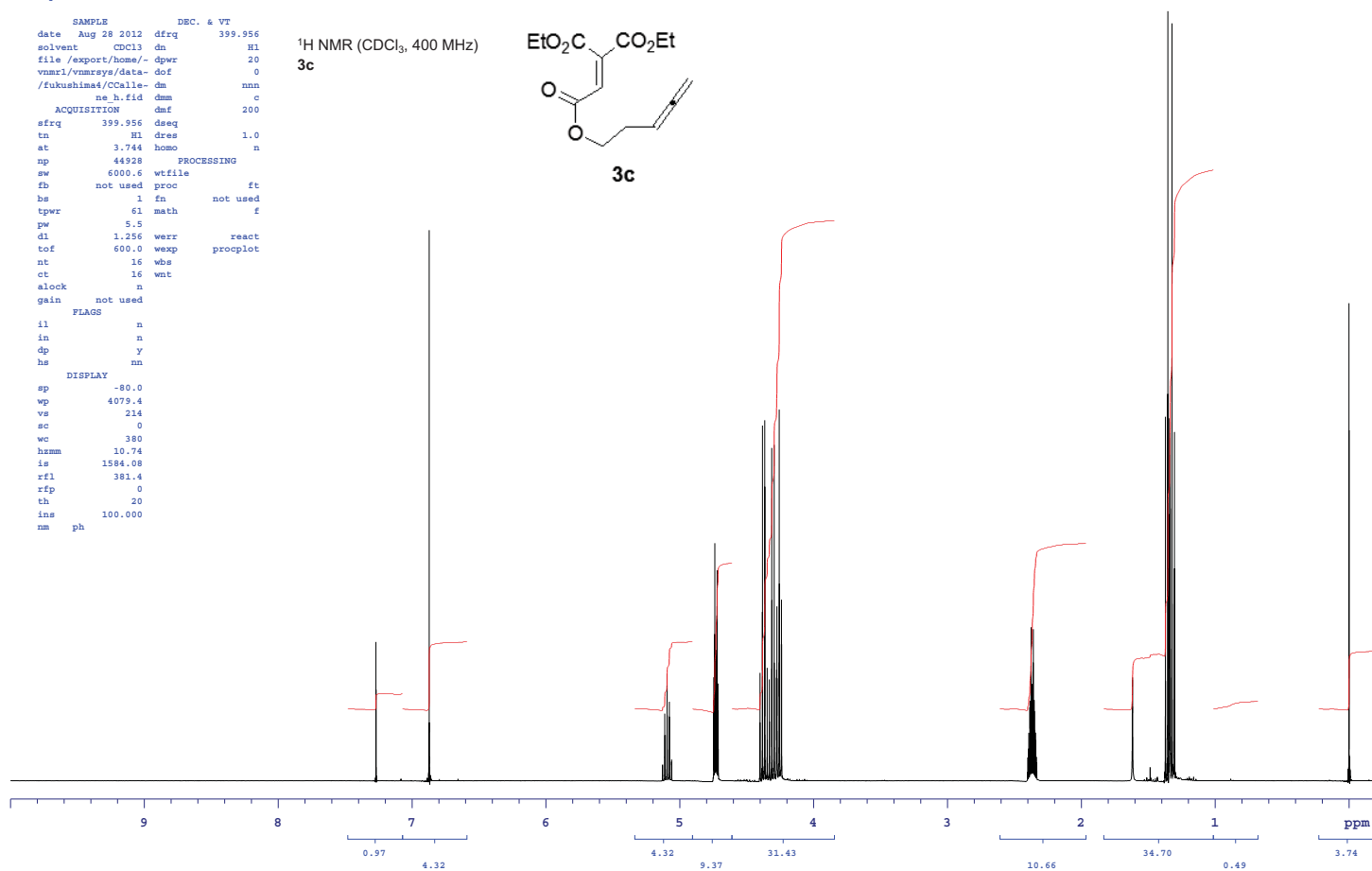
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¹H NMR (CDCl₃, 400 MHz)

3c

EtO₂C CO₂Et

3c



fukushima4/CCallene

exp100 std13c

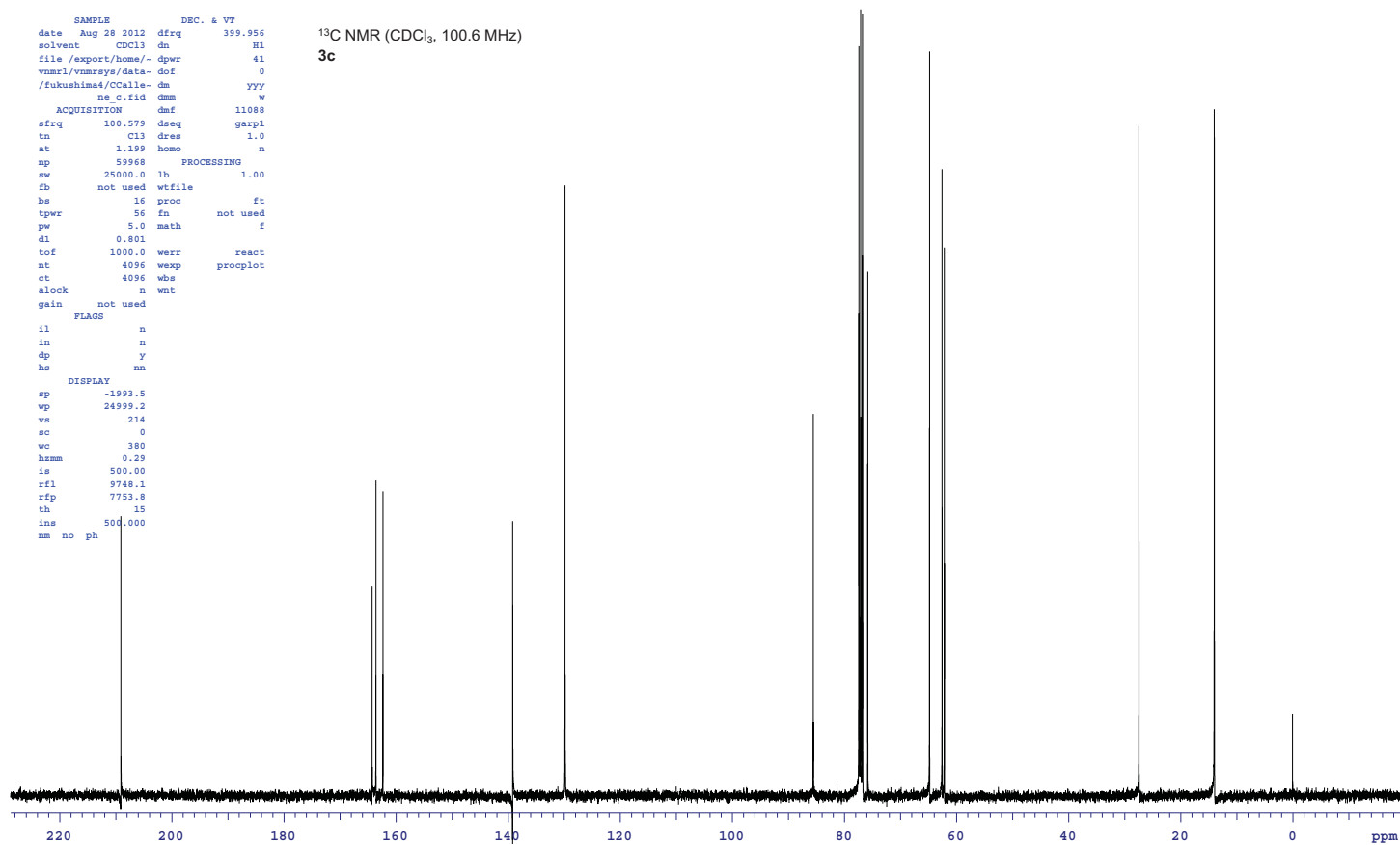
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solvent   CDCl3      dn      H1
file   /export/home/~ dpwr    41
vnmr1/vnmrsva/data- dof     0
/fukushima4/CCalle- dm      nm
ne c.fid dmm          w
ACQUISITION      dmf      11088
sfrq   100.579   dseq     garpl
tn      C13      dres     1.0
at      1.139   homo     n
np      59968   PROCESSING
sw      25000.0   lb      1.00
fb      not used   wfile
bs      16       proc     ft
tpwr    56       fn      not used
pw      5.0      math     f
d1      0.801
tof     1000.0   werr     react
nt      4096   wexp     procplot
ct      4096   wbs
alock   n
gain    not used
FLAG    n
il      n
in      n
dp      y
hs      nm
DISPLAY
sp      -1993.5
wp      24999.2
vs      214
sc      0
wc      380
hnm     0.29
is      500.00
rfl     9748.1
rfp     7753.8
th      15
ins     500.000
nm      no ph

```

¹³C NMR (CDCl₃, 100.6 MHz)

3c



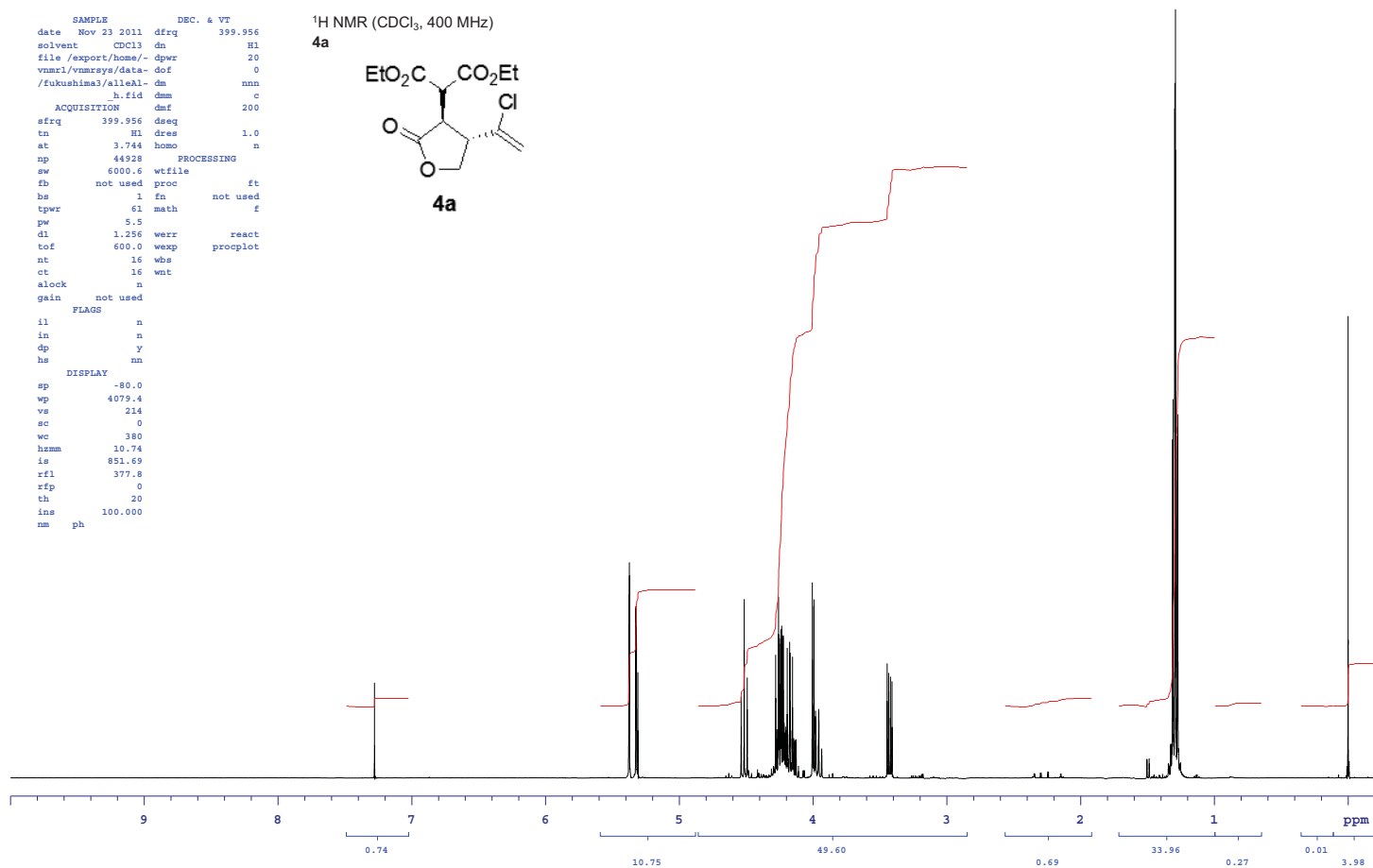
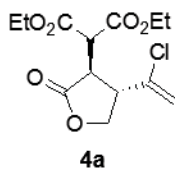
fukushima3/alleA1

exp100 std1h

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solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		20
nmr1/vnmrsvs/data-	dof		0
/fukushima3/alleA1-	dm	nmn	c
	h.fid	dms	c
ACQUISITION		dmf	
sfrq	399.956	dseq	200
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wtfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hnm	10.74		
is	851.69		
rfl	377.8		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

4a



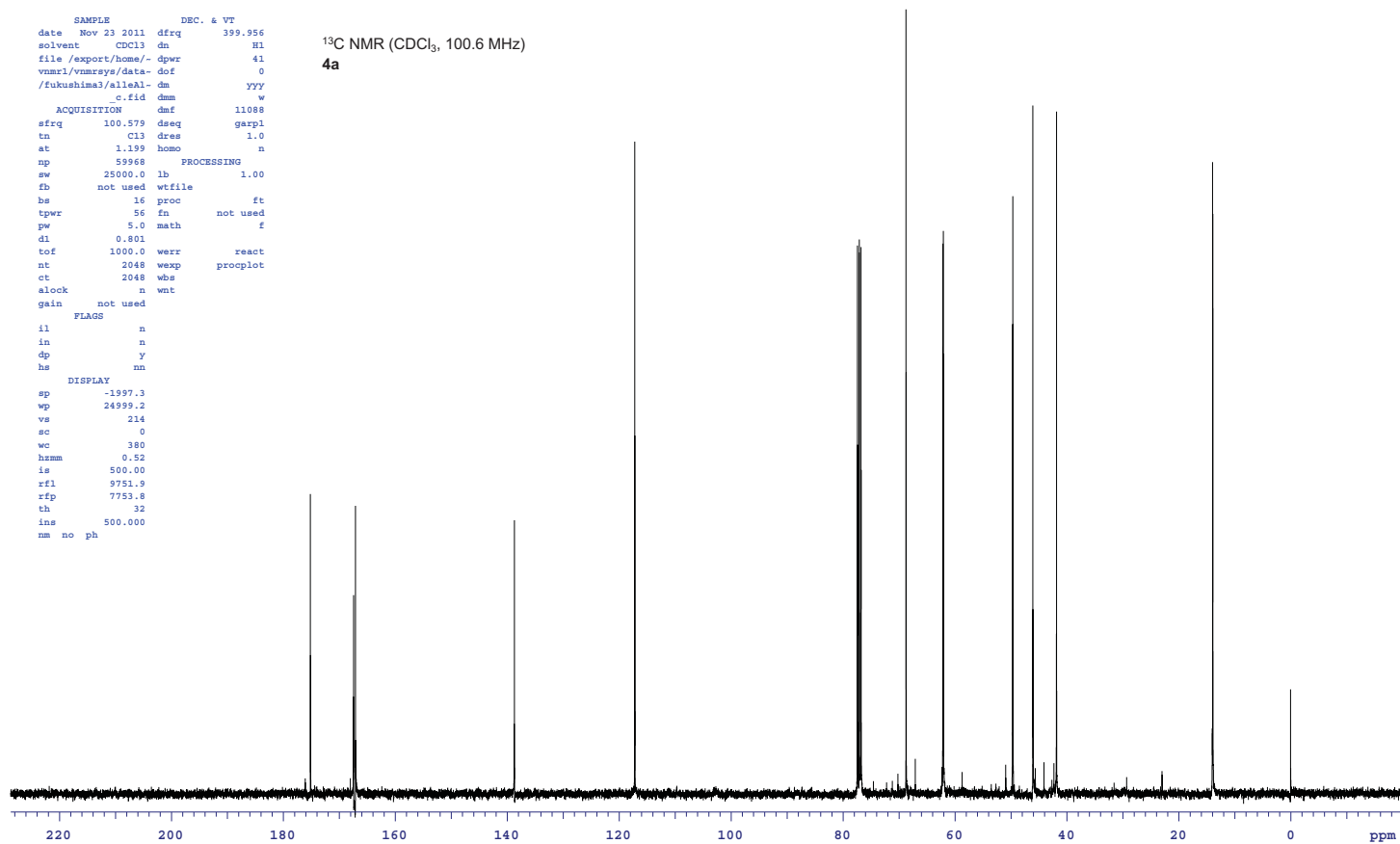
fukushima3/alleA1

exp100 std13c

SAMPLE		DEC. & VT	
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solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		41
nmr1/vnmrsvs/data-	dof		0
/fukushima3/alleA1-	dm	yyy	w
	c.fid	dms	w
ACQUISITION		dmf	
sfrq	100.579	dseq	garpl
tn	Cl3	dres	1.0
at	1.299	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wtfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	2048	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1997.3		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hnm	0.52		
is	500.00		
rfl	9751.9		
rfp	7753.8		
th	32		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

4a



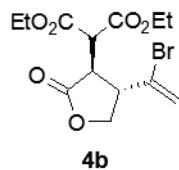
fukushima4/BrIac

exp100 std1h

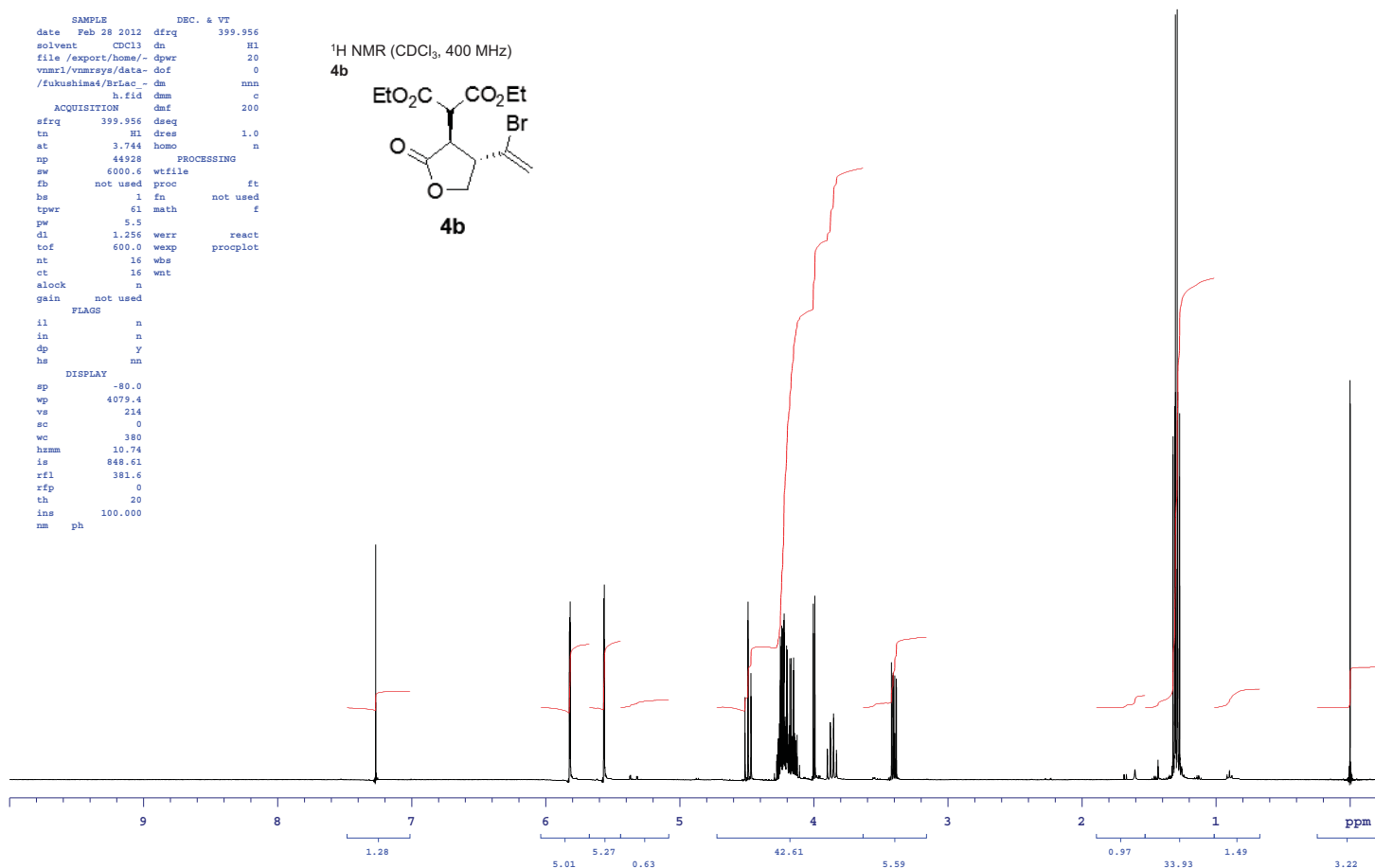
SAMPLE		DEC. & VT	
date	Feb 28 2012	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		20
nmr1/vnmrsvs/data-	dof		0
/fukushima4/BrIac-	dm	nmn	c
	h.fid	dmm	c
ACQUISITION		dmf	200
sfrq	399.956	dseq	
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wtfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hnm	10.74		
is	848.61		
rfl	381.6		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

4b



4b



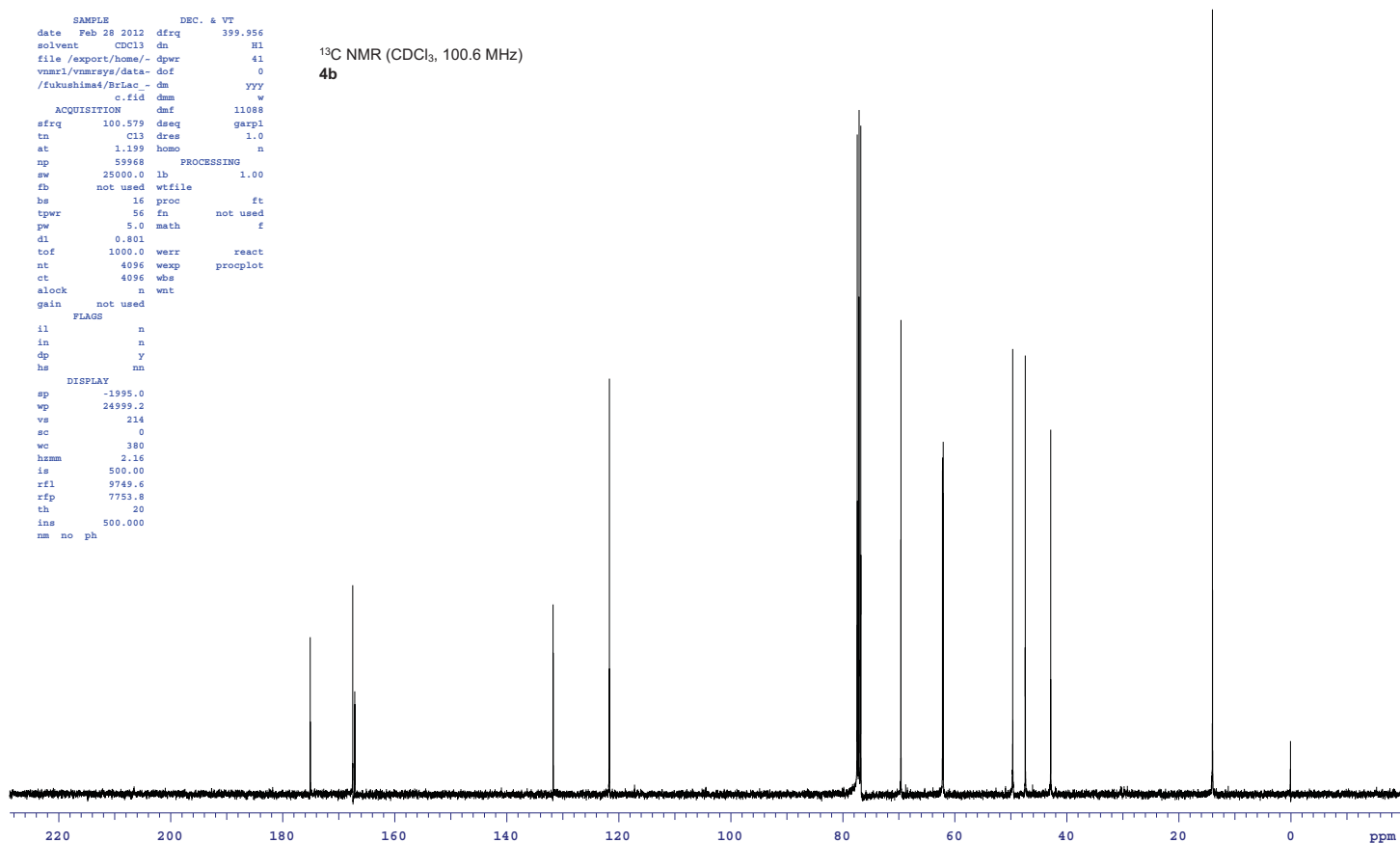
fukushima4/BrIac

exp100 std13c

SAMPLE		DEC. & VT	
date	Feb 28 2012	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		41
nmr1/vnmrsvs/data-	dof		0
/fukushima4/BrIac-	dm	yyy	w
	c.fid	dmm	w
ACQUISITION		dmf	11088
sfrq	100.579	dseq	garpl
tn	C13	dres	1.0
at	1.299	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wtfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	4096	wexp	procplot
ct	4096	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-1995.0		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hnm	2.16		
is	500.00		
rfl	9749.6		
rfp	7753.8		
th	20		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

4b



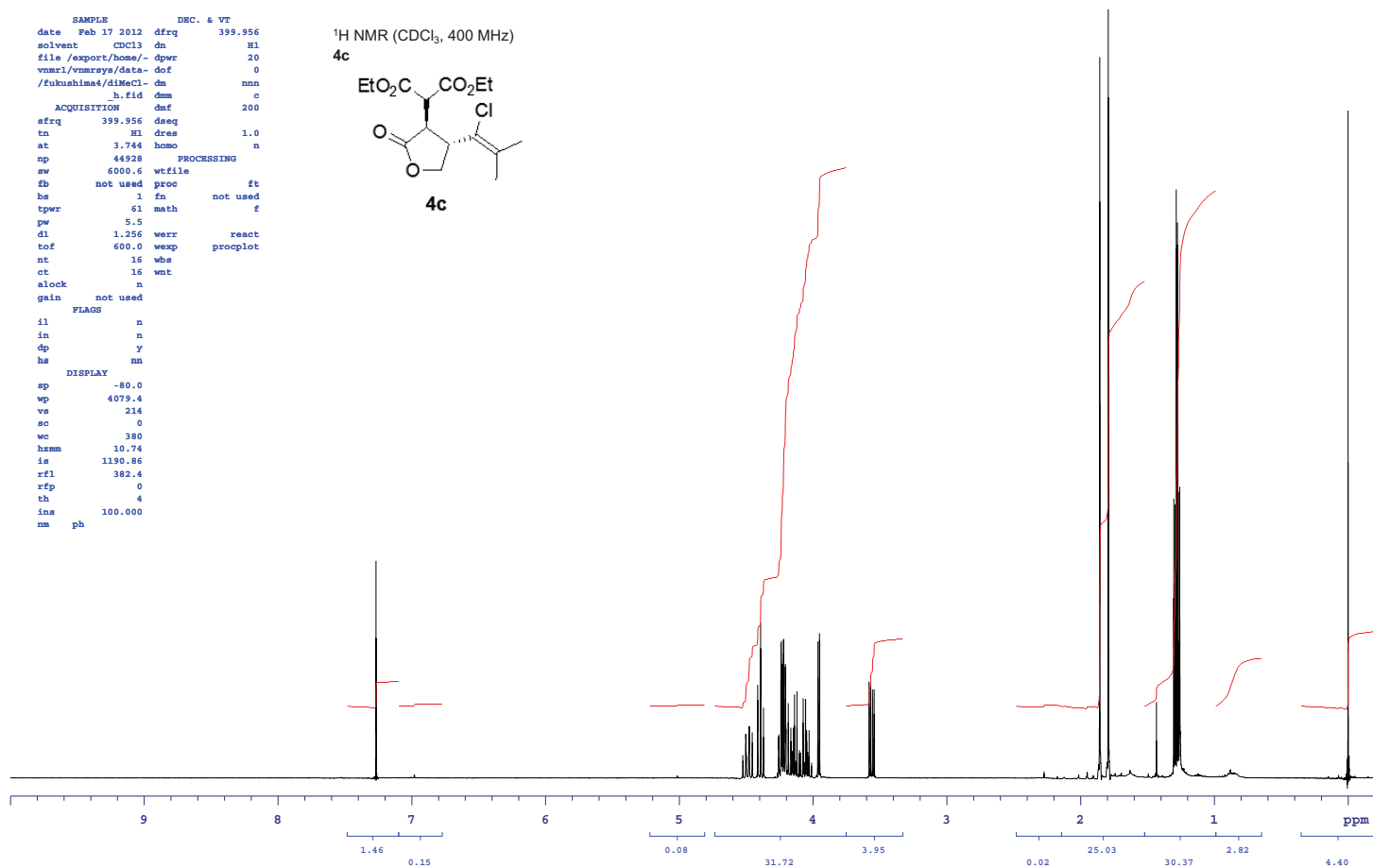
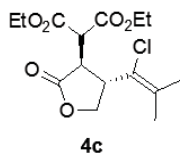
fukushima4/diMeCl

exp100 std1h

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solvent	CDCl3	dn	H1
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/fukushima4/diMeCl-	dm	nm	c
	h.fid	dms	
ACQUISITION		dms	200
sfrq	399.956	dseq	
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wmt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hnm	10.74		
is	1190.86		
rfl	382.4		
rfp	0		
th	4		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

4c



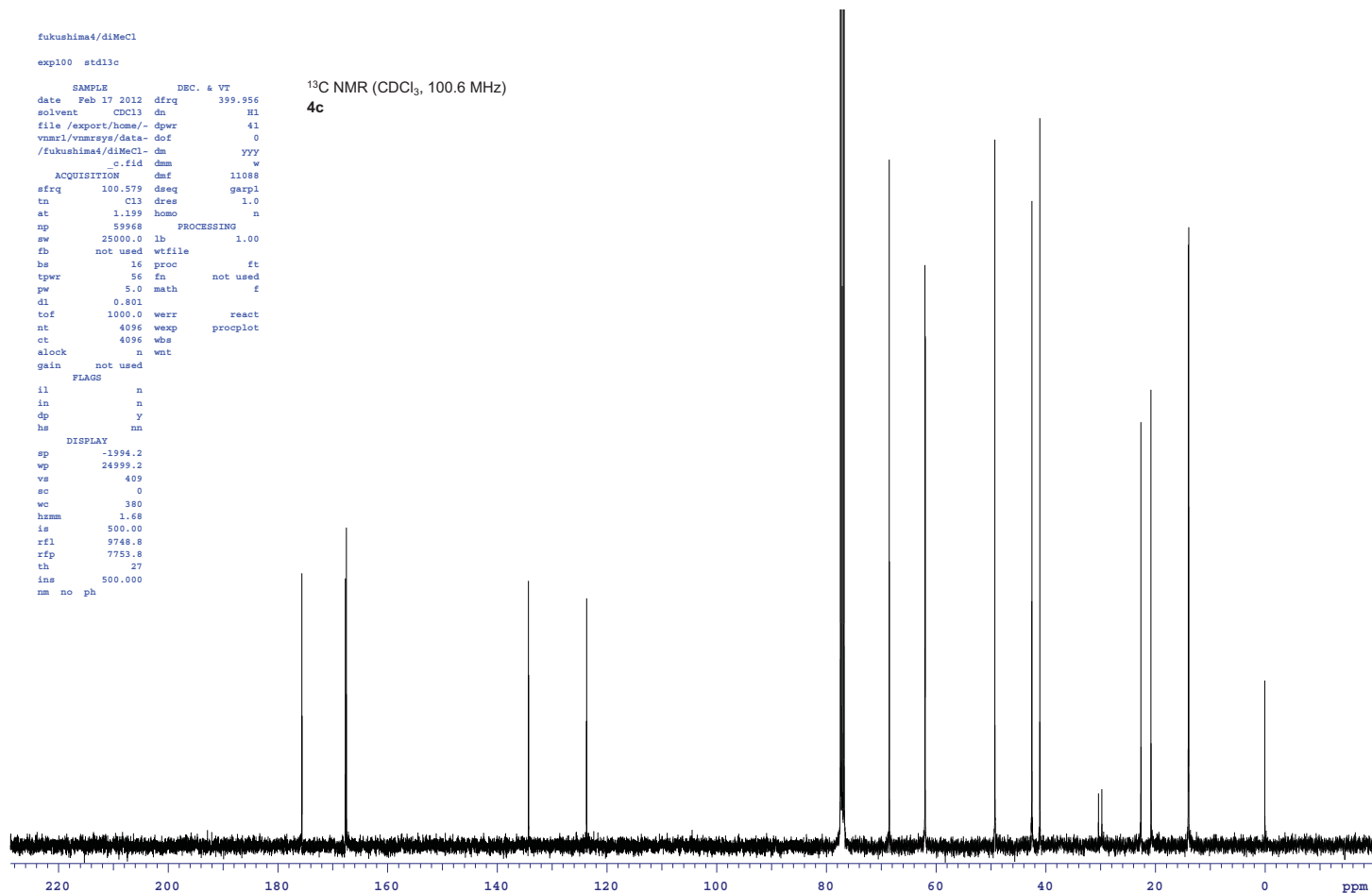
fukushima4/diMeCl

exp100 std13c

SAMPLE		DEC. & VT	
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solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		41
nmr1/vnmrsva/data-	do		0
/fukushima4/diMeCl-	dm	yyy	w
	c.fid	dms	
ACQUISITION		dms	11088
sfrq	100.579	dseq	garpl
tn	Cl3	dres	1.0
at	1.299	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	4096	wexp	procplot
ct	4096	wbs	
alock	n	wmt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-1994.2		
wp	24999.2		
vs	409		
sc	0		
wc	380		
hnm	1.68		
is	500.00		
rfl	9748.8		
rfp	7753.8		
th	27		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

4c



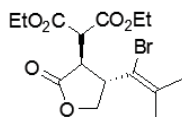
fukushima4/diMeBr

exp100 std1h

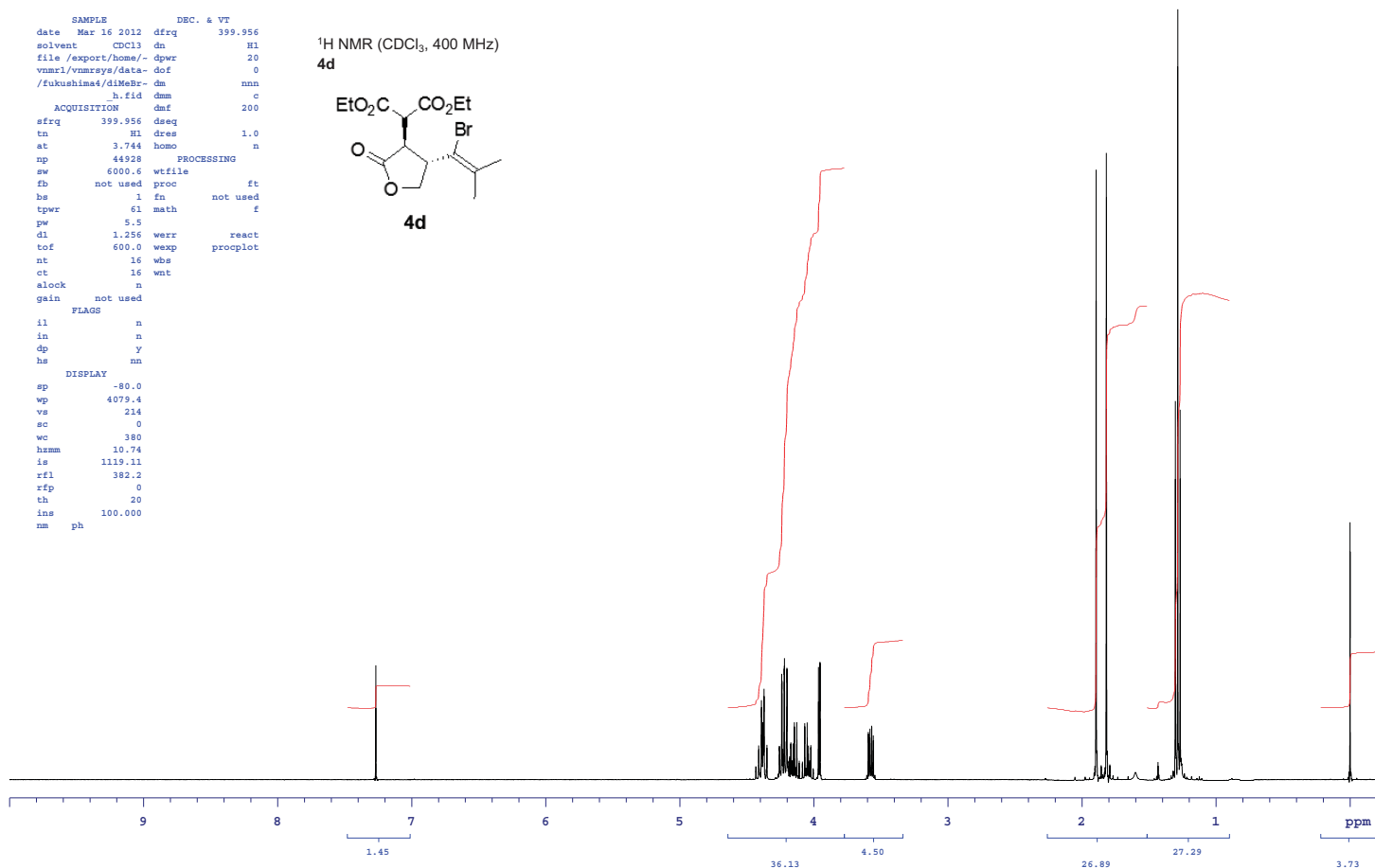
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solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		20
nmr1/vnmrsva/data-	dof		0
/fukushima4/diMeBr-	dm	nmn	c
	h.fid	dmm	200
ACQUISITION		dmf	
sfrq	399.956	dseq	
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.356	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
	FLAGS		
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hnm	10.74		
is	1119.11		
rfl	382.2		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

4d



4d



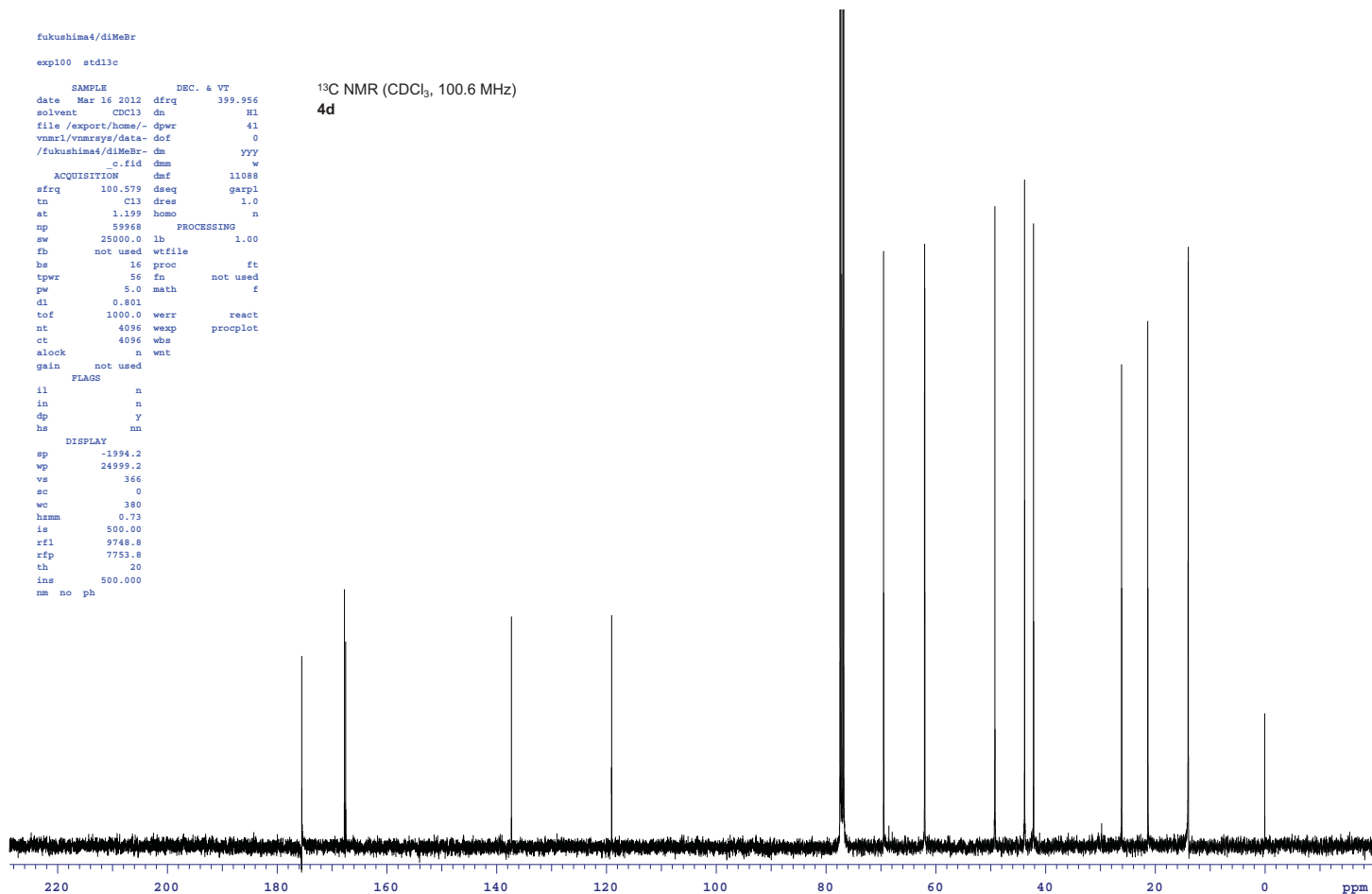
fukushima4/diMeBr

exp100 std13c

SAMPLE		DEC. & VT	
date	Mar 16 2012	dfrq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		41
nmr1/vnmrsva/data-	dof		0
/fukushima4/diMeBr-	dm	yyy	w
	c.fid	dmm	
ACQUISITION		dmf	
sfrq	100.579	dseq	garpl
tn	Cl3	dres	1.0
at	1.399	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	4096	wexp	procplot
ct	4096	wbs	
alock	n	wnt	
gain	not used		
	FLAGS		
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-1994.2		
wp	24999.2		
vs	366		
sc	0		
wc	380		
hnm	0.73		
is	500.00		
rfl	9748.8		
rfp	7753.8		
th	20		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

4d



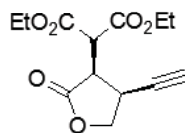
fukushima4/LacCCH

exp100 std1h

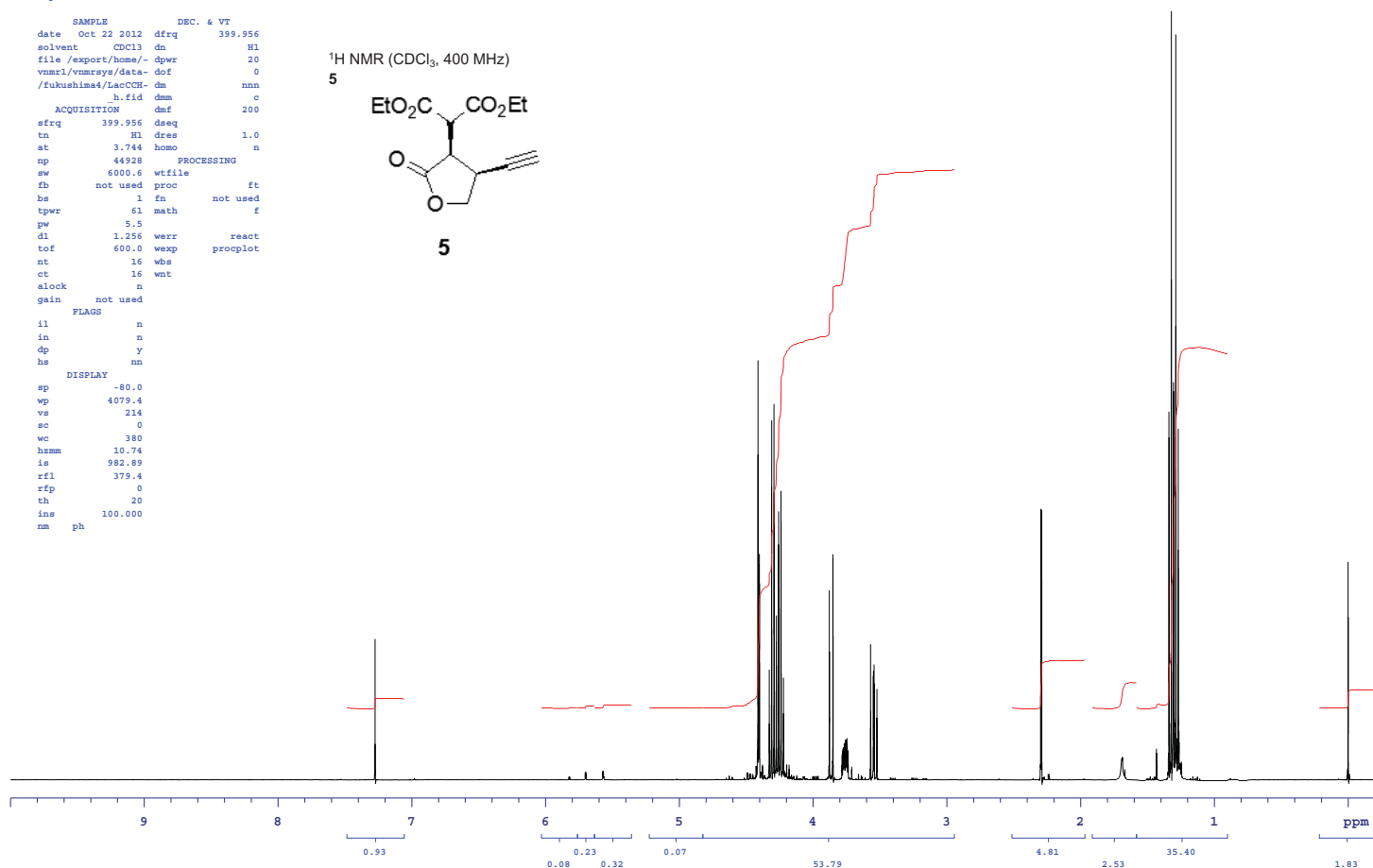
SAMPLE		DEC. & VT	
date	Oct 22 2012	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		20
nmr1/vnmrsys/data-	dof		0
/fukushima4/LacCCH-	dm	nmn	c
h.fid	dmm		200
ACQUISITION		dmf	
sfrq	399.956	dseq	
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hnm	10.74		
is	982.89		
rfl	379.4		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

5



5



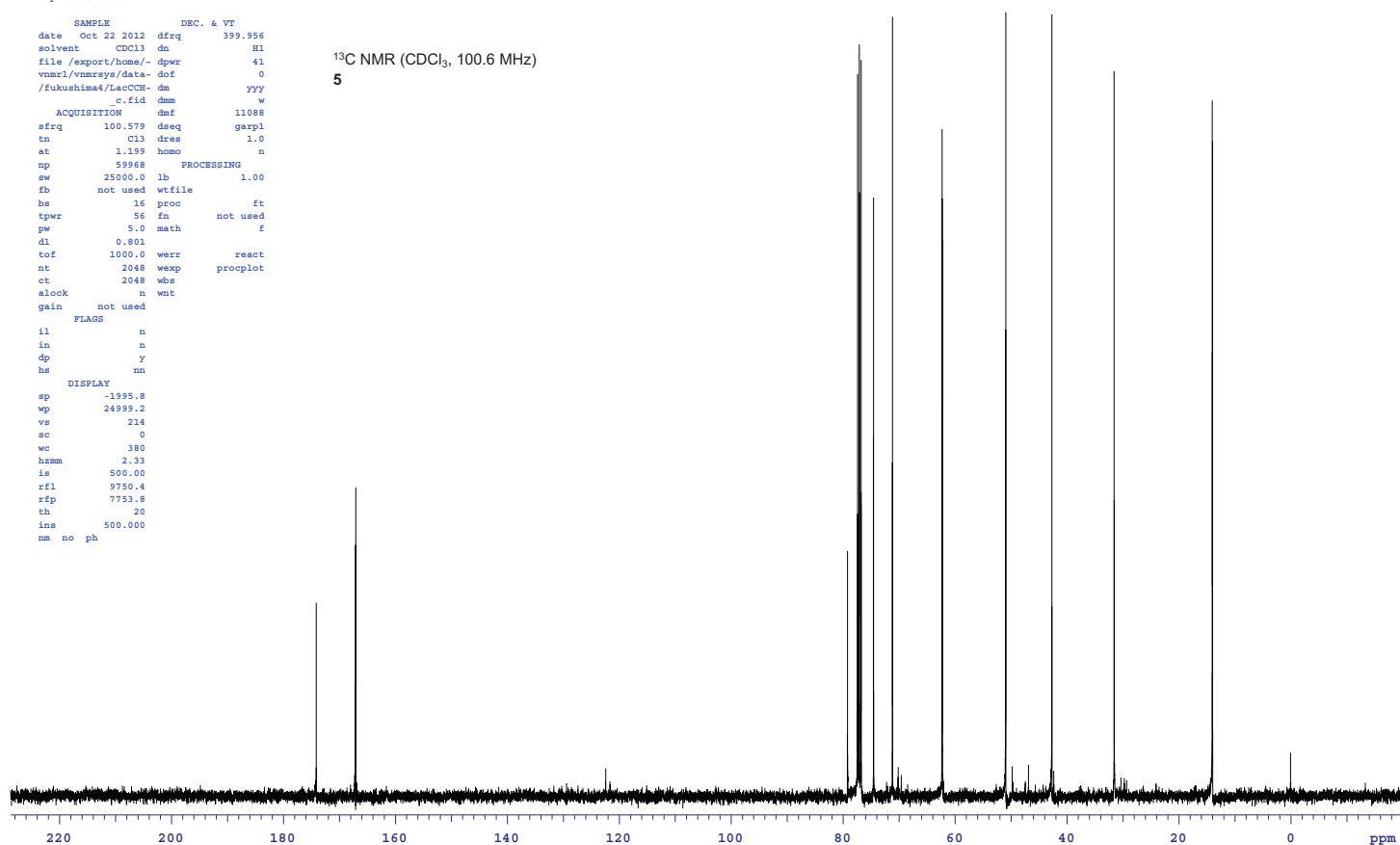
fukushima4/LacCCH

exp100 std13c

SAMPLE		DEC. & VT	
date	Oct 22 2012	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		41
nmr1/vnmrsys/data-	dof		0
/fukushima4/LacCCH-	dm	yyy	w
c.fid	dmm		11088
ACQUISITION		dmf	
sfrq	100.579	dseq	garpl
tn	C13	dres	1.0
at	1.299	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	2048	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1995.8		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hnm	2.33		
is	500.00		
rfl	9750.4		
rfp	7753.8		
th	20		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

5



fukushima4/InBr3by

exp100 std1h

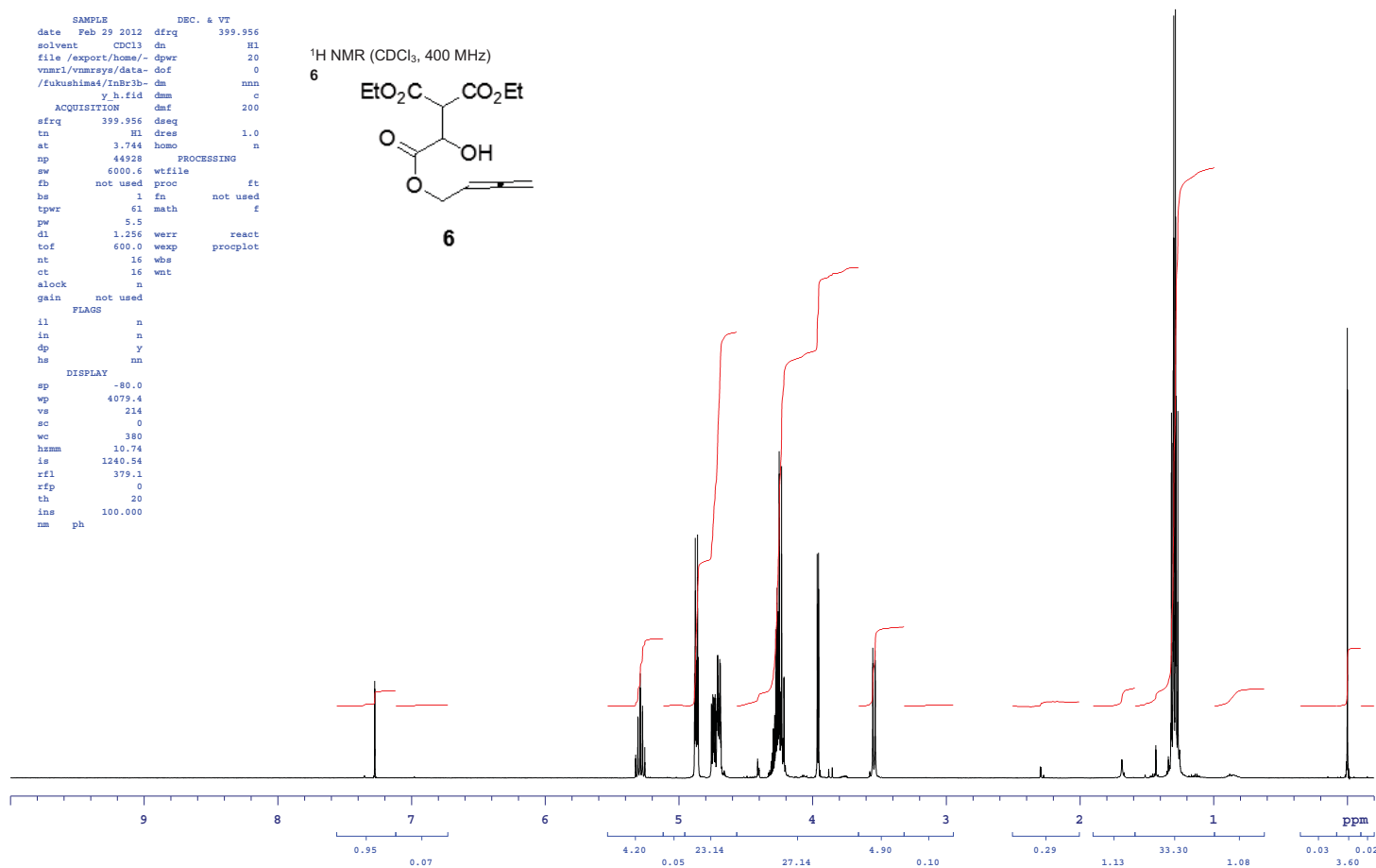
SAMPLE		DEC. & VT	
date	Feb 29 2012	dfrq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		20
nmr1/vnmrsvs/data-	dof		0
/fukushima4/InBr3b-	dm	nmn	c
y.h.fid	dmm		200
ACQUISITION		dmf	
sfrq	399.956	dseq	
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wtfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hism	10.74		
is	1240.54		
rfl	379.1		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

6



6



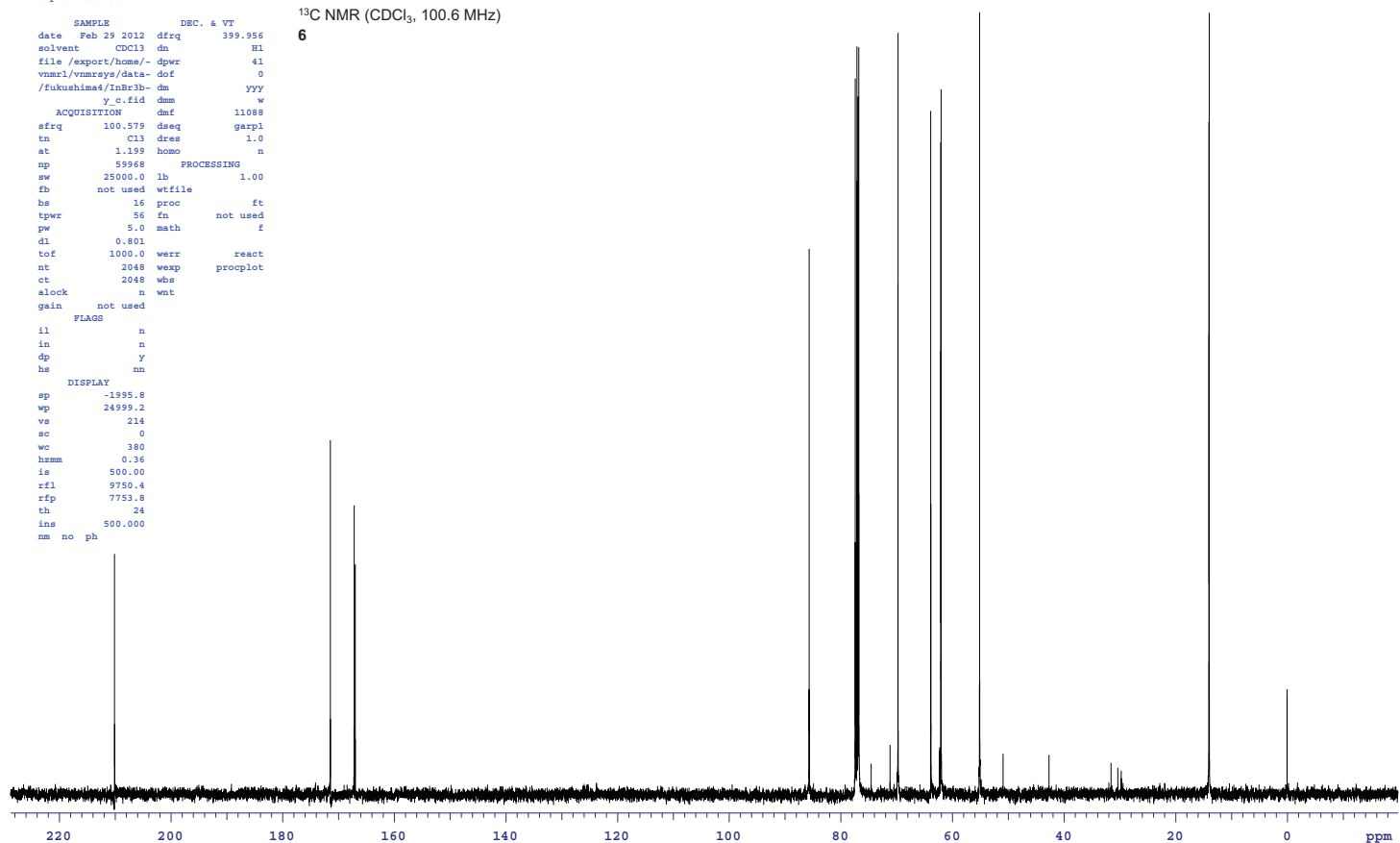
fukushima4/InBr3by

exp100 std13c

SAMPLE		DEC. & VT	
date	Feb 29 2012	dfrq	399.956
solvent	CDCl3	dn	H1
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y.c.fid	dmm		11088
ACQUISITION		dmf	
sfrq	100.579	dseq	garpl
tn	Cl3	dres	1.0
at	1.199	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wtfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	2048	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-1995.8		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hism	0.36		
is	500.00		
rfl	9750.4		
rfp	7753.8		
th	24		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

6



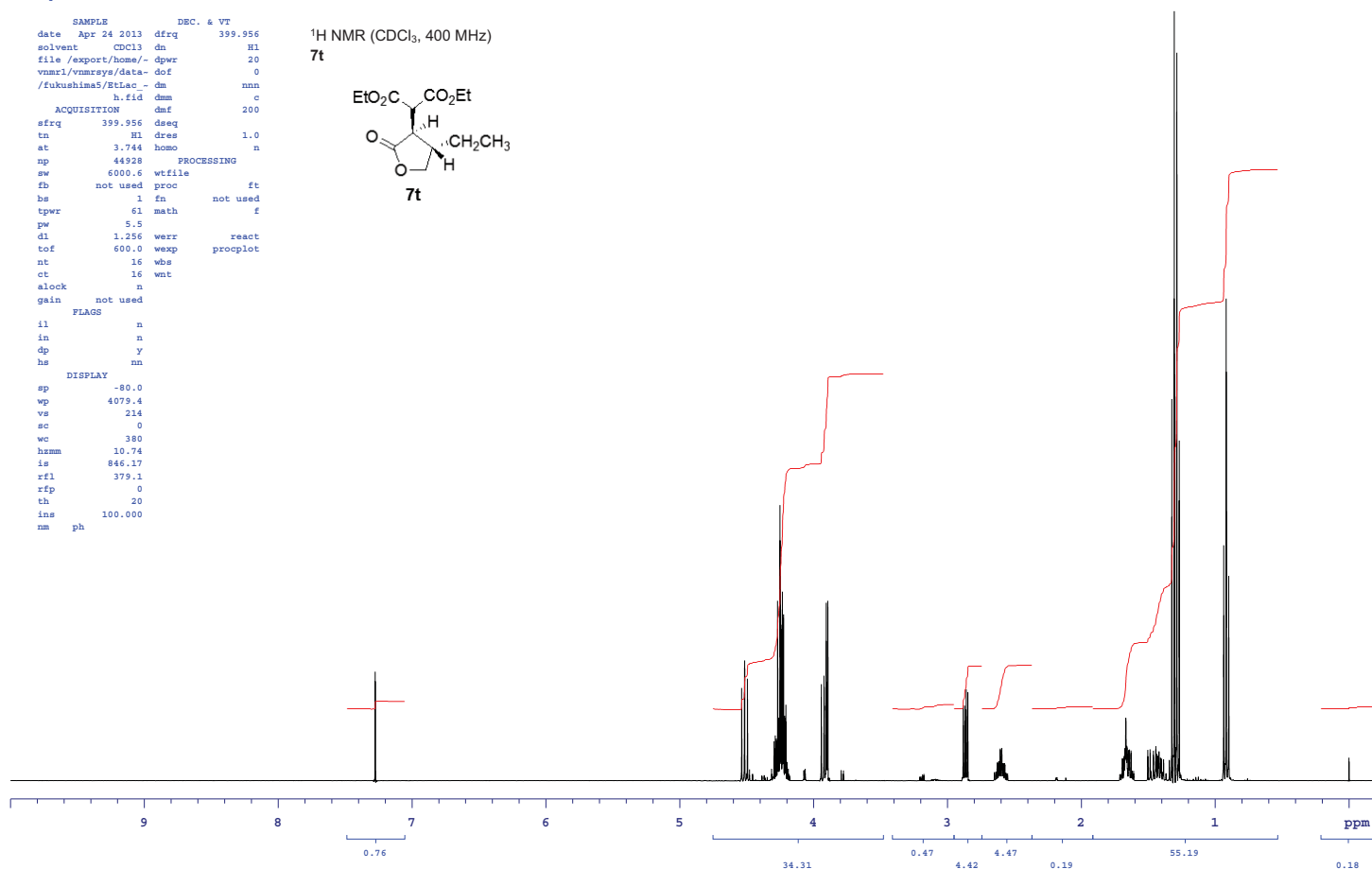
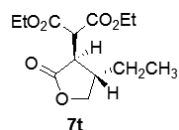
fukushima5/EtLac

exp100 std1h

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solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		20
nmr1/vnmrsvs/data-	dof		0
/fukushima5/EtLac -	dm	nmn	c
	h.fid	dms	c
ACQUISITION		dms	
sfrq	399.956	dseq	200
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
	FLAGS		
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hnm	10.74		
is	846.17		
rfl	379.1		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

7t



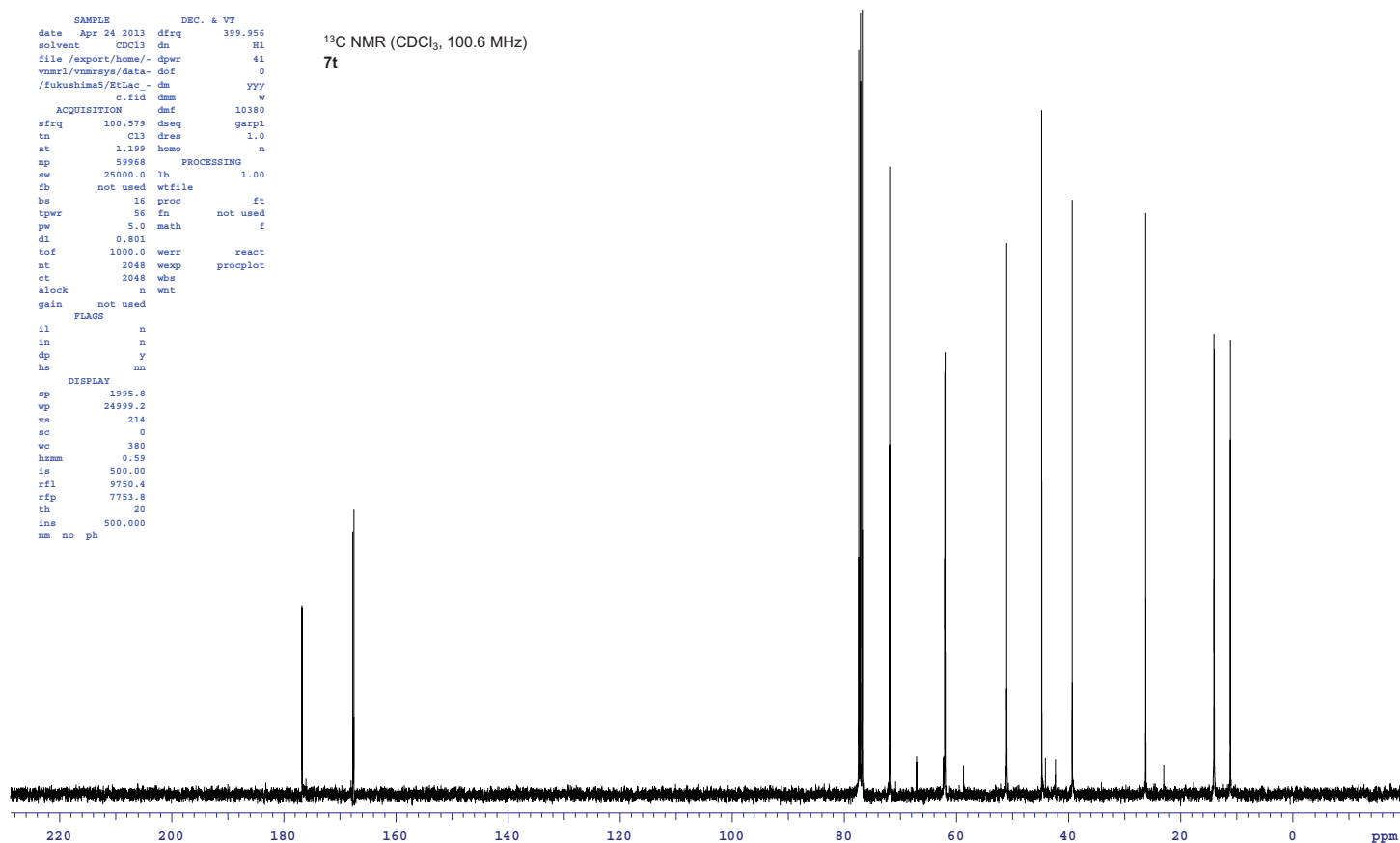
fukushima5/EtLac

exp100 std13c

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/fukushima5/EtLac -	dm	yyy	w
	c.fid	dms	w
ACQUISITION		dms	
sfrq	100.579	dseq	garpl
tn	C13	dres	1.0
at	1.139	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	2048	wbs	
alock	n	wnt	
gain	not used		
	FLAGS		
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1995.8		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hnm	0.59		
is	500.00		
rfl	9750.4		
rfp	7753.8		
th	20		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

7t



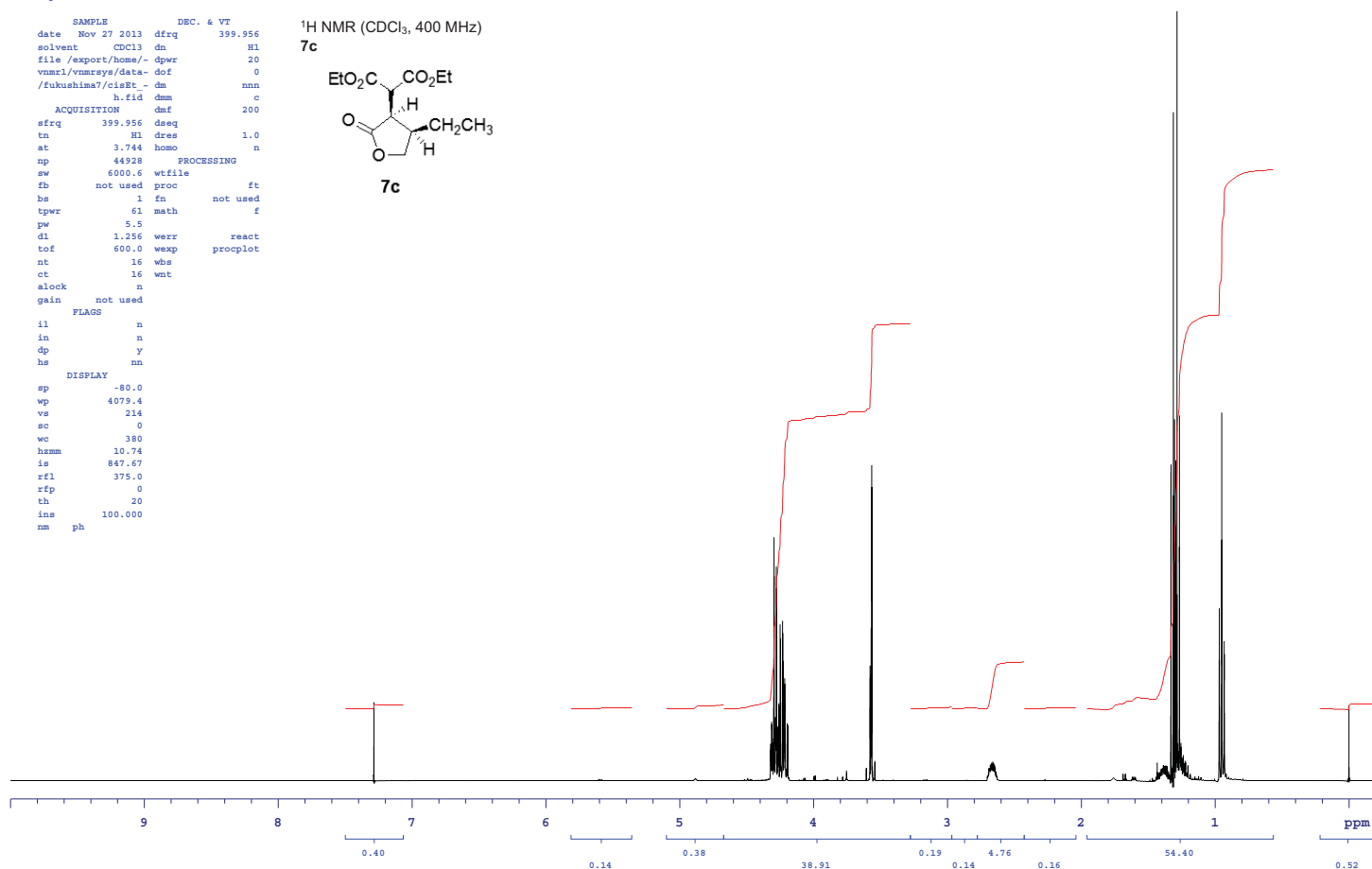
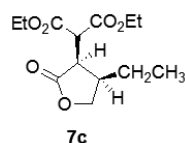
fukushima7/cisEt

exp100 std1h

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file	/export/home/~dpwr		20
nmr1/vnmrsvy/data-	dof		0
/fukushima7/cisEt-	dm	nmn	
	h.fid	dms	c
ACQUISITION		dmf	
sfrq	399.956	dseq	200
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wtfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hnm	10.74		
is	847.67		
rfl	375.0		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

7c



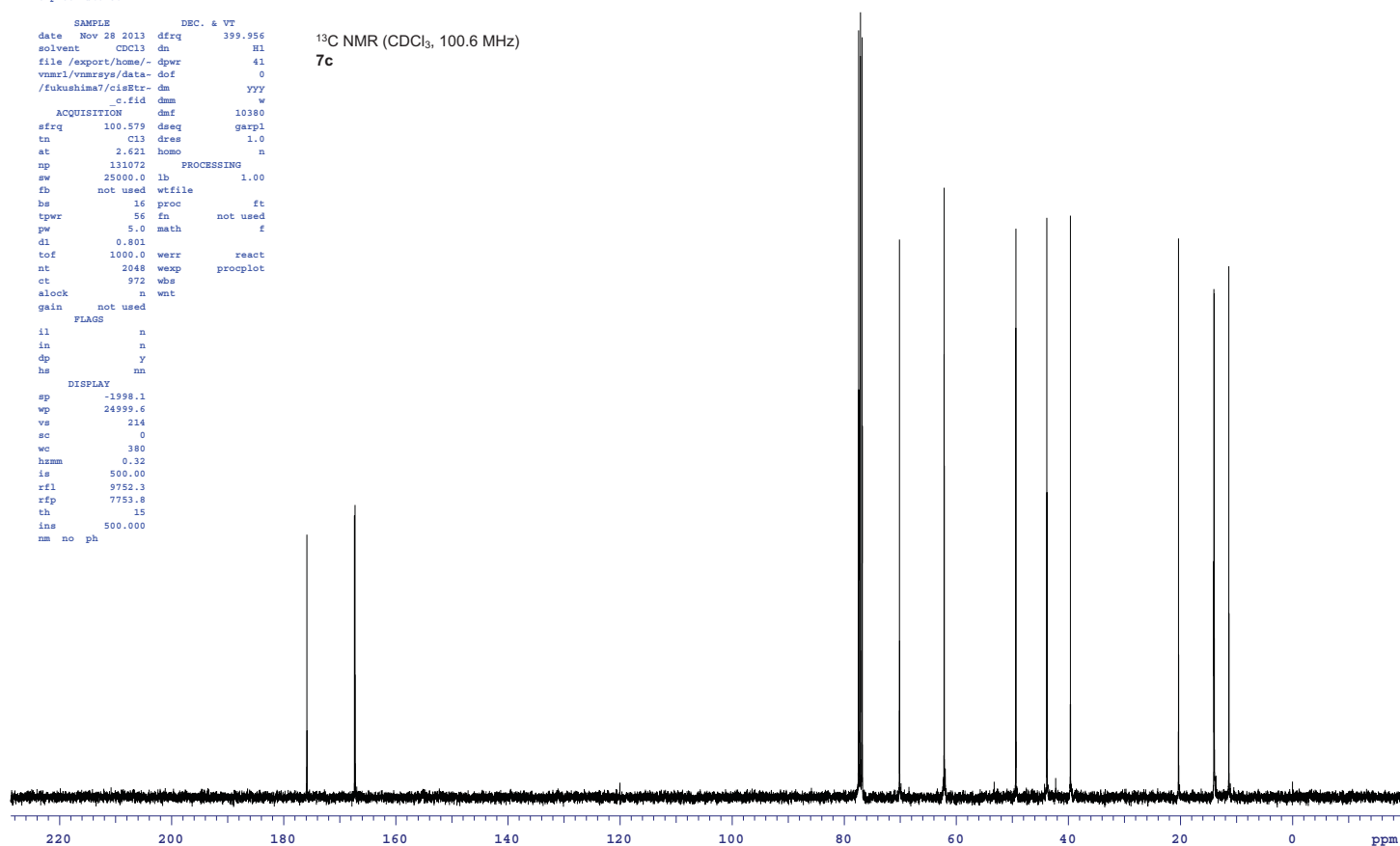
fukushima7/cisEt

exp100 std13c

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solvent	CDCl3	dn	H1
file	/export/home/~dpwr		41
nmr1/vnmrsvy/data-	dof		0
/fukushima7/cisEt-	dm	yyy	
	c.fid	dms	w
ACQUISITION		dmf	
sfrq	100.579	dseq	garpl
tn	C13	dres	1.0
at	2.621	homo	n
np	131072	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wtfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	972	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1998.1		
wp	24999.6		
vs	214		
sc	0		
wc	380		
hnm	0.32		
is	500.00		
rfl	9752.3		
rfp	7753.8		
th	15		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

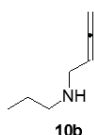
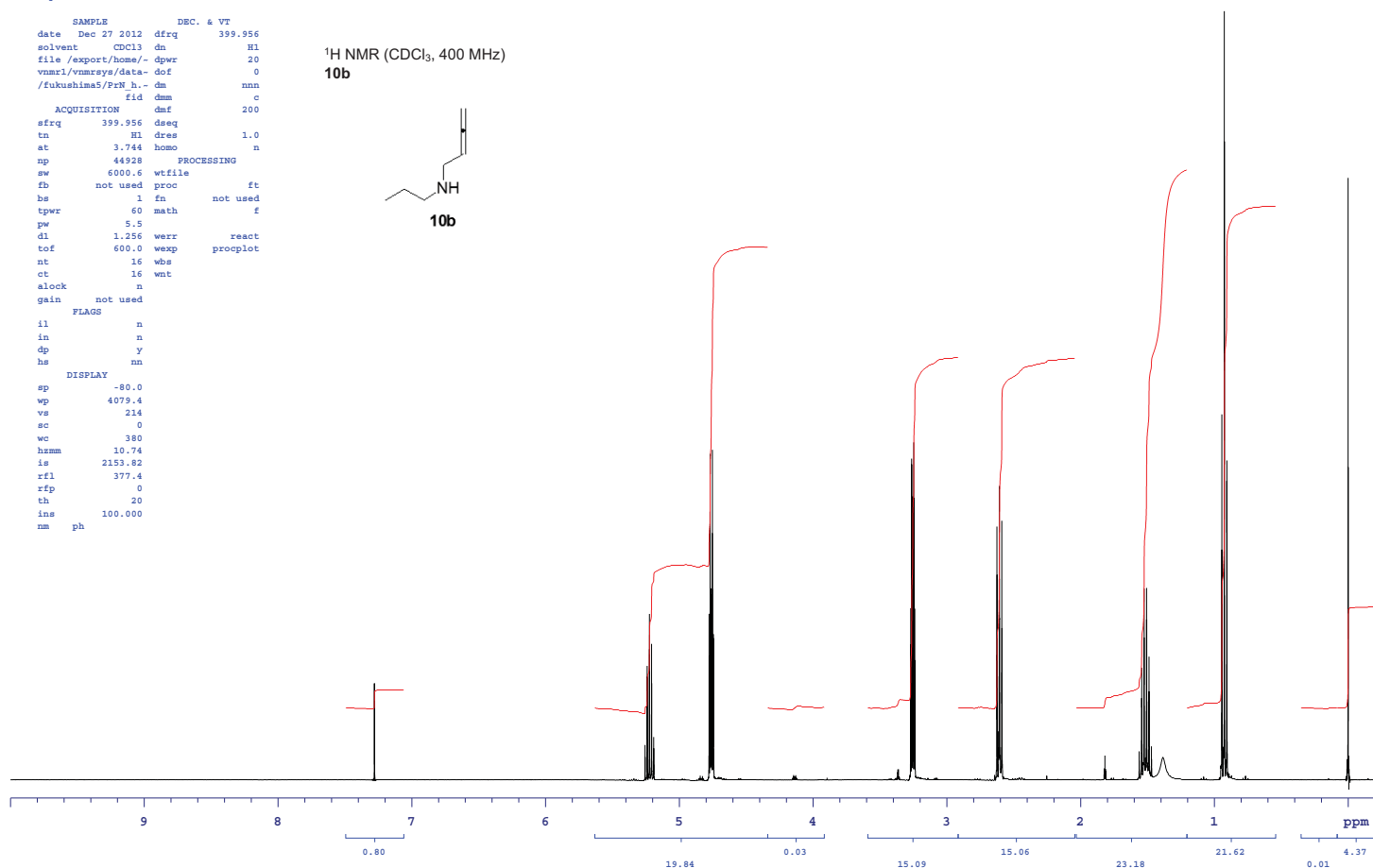
7c



fukushima5/PrN

exp100 std1h

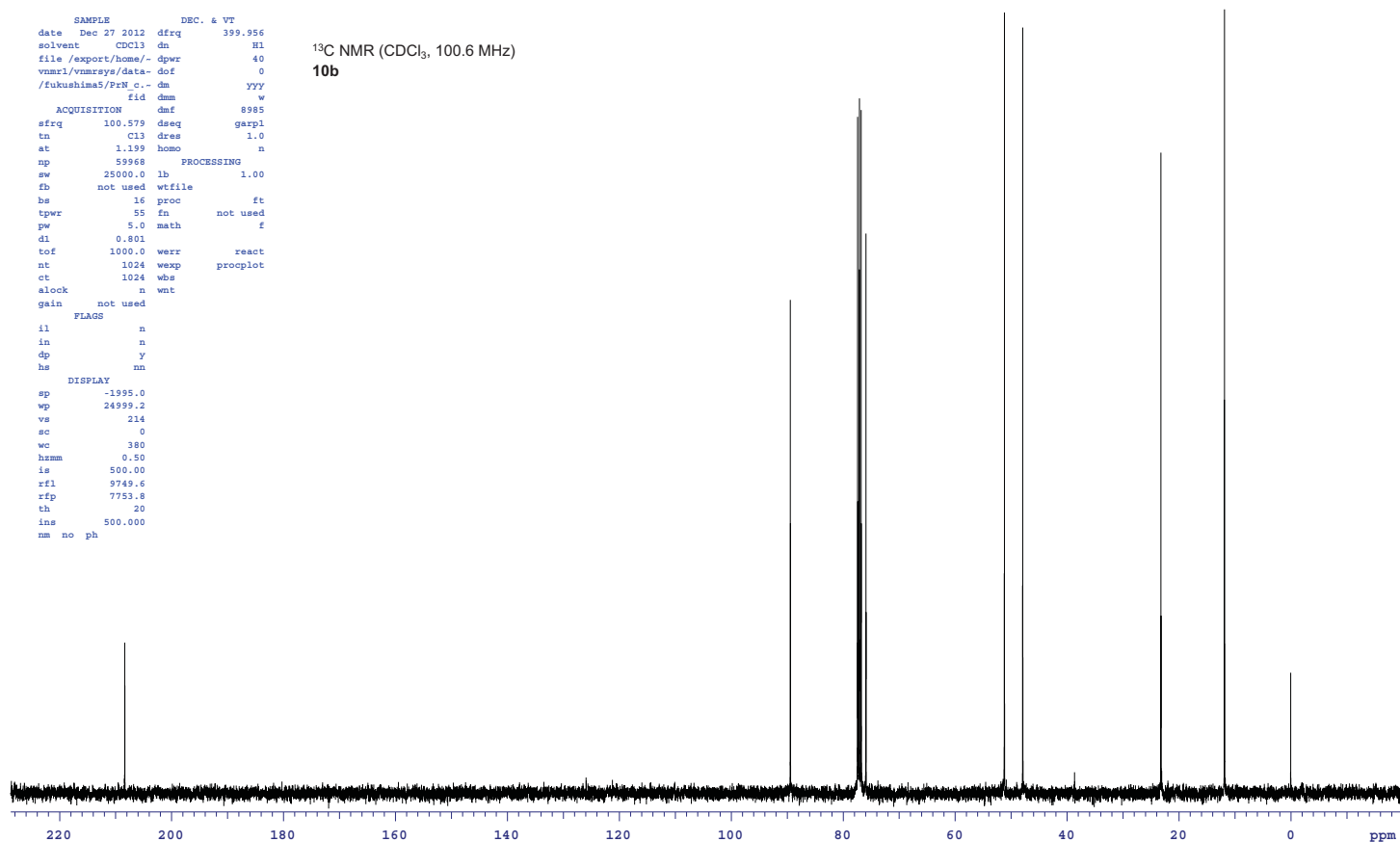
SAMPLE		DEC. & VT	
date	Dec 27 2012	dfreq	399.956
solvent	CDCl ₃	dn	H1
file	/export/home/~dpwr		20
nmr1/vnmrsys/data-	dof		0
/fukushima5/PrN.h-	dm	nmn	
	fid	dmm	c
ACQUISITION			
sfrq	399.956	dseq	200
tn	H1	dres	1.0
st	3.744	homo	n
PROCESSING			
np	44928		
sw	6000.6	wtfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	60	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hism	10.74		
is	2153.82		
rfl	377.4		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)
10b**10b**

fukushima5/PrN

exp100 std13c

SAMPLE		DEC. & VT	
date	Dec 27 2012	dfreq	399.956
solvent	CDCl ₃	dn	H1
file	/export/home/~dpwr		40
nmr1/vnmrsys/data-	dof		0
/fukushima5/PrN.c-	dm	yyy	w
	fid	dmm	
ACQUISITION			
sfrq	100.579	dseq	garpl
tn	Cl3	dres	1.0
st	1.199	homo	n
PROCESSING			
np	59968		
sw	25000.0	lb	1.00
fb	not used	wtfile	
bs	16	proc	ft
tpwr	55	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	1024	wexp	procplot
ct	1024	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1995.0		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hism	0.50		
is	500.00		
rfl	9749.6		
rfp	7753.8		
th	20		
ins	500.000		
nm	no ph		

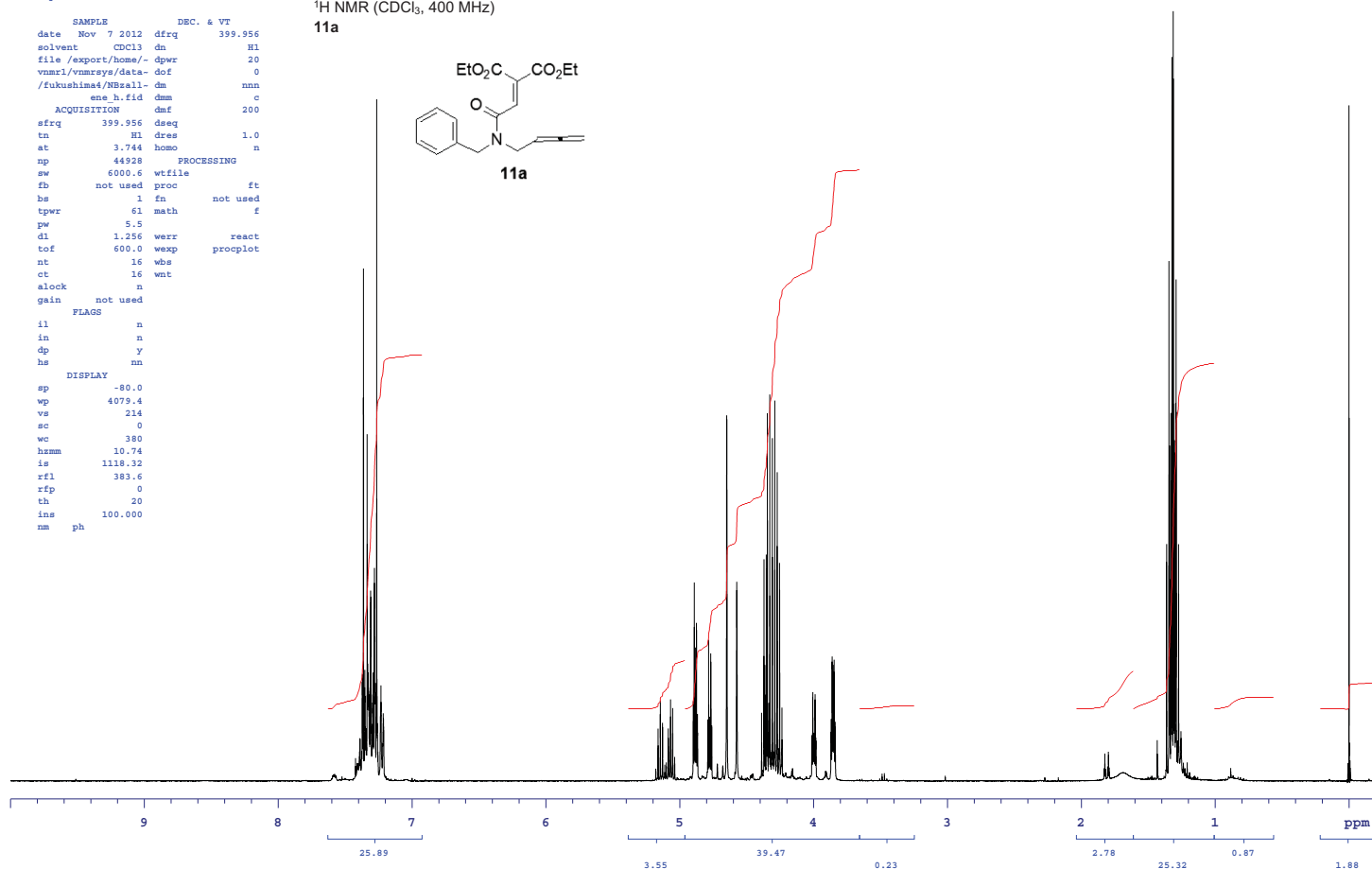
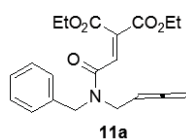
¹³C NMR (CDCl₃, 100.6 MHz)
10b

fukushima4/NBzallene

exp100 std1h

¹H NMR (CDCl₃, 400 MHz)

11a

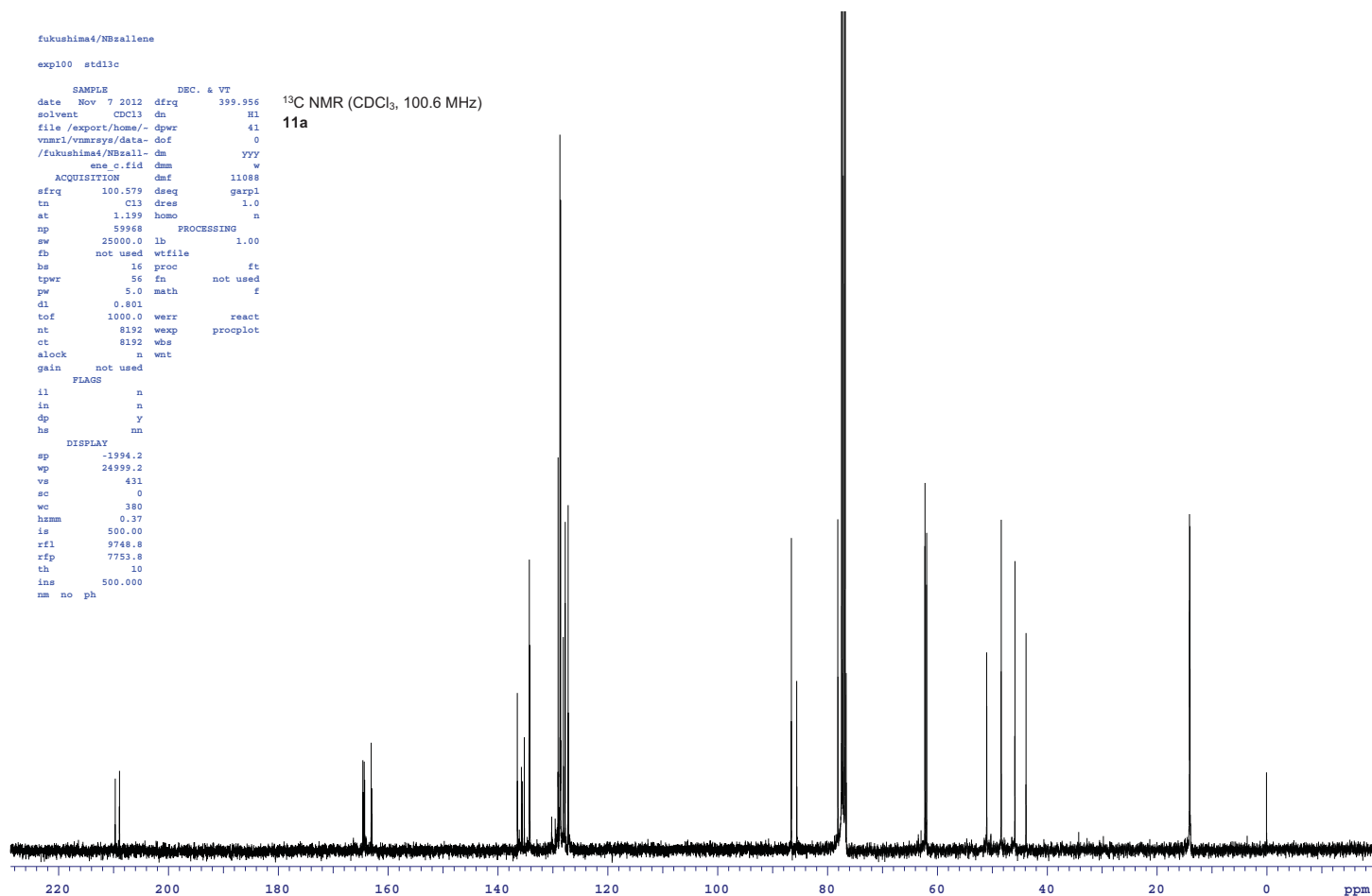


fukushima4/NBzallene

exp100 std13c

¹³C NMR (CDCl₃, 100.6 MHz)

11a



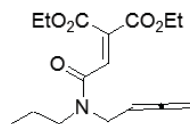
fukushima5/PrNCCC

exp100 std1h

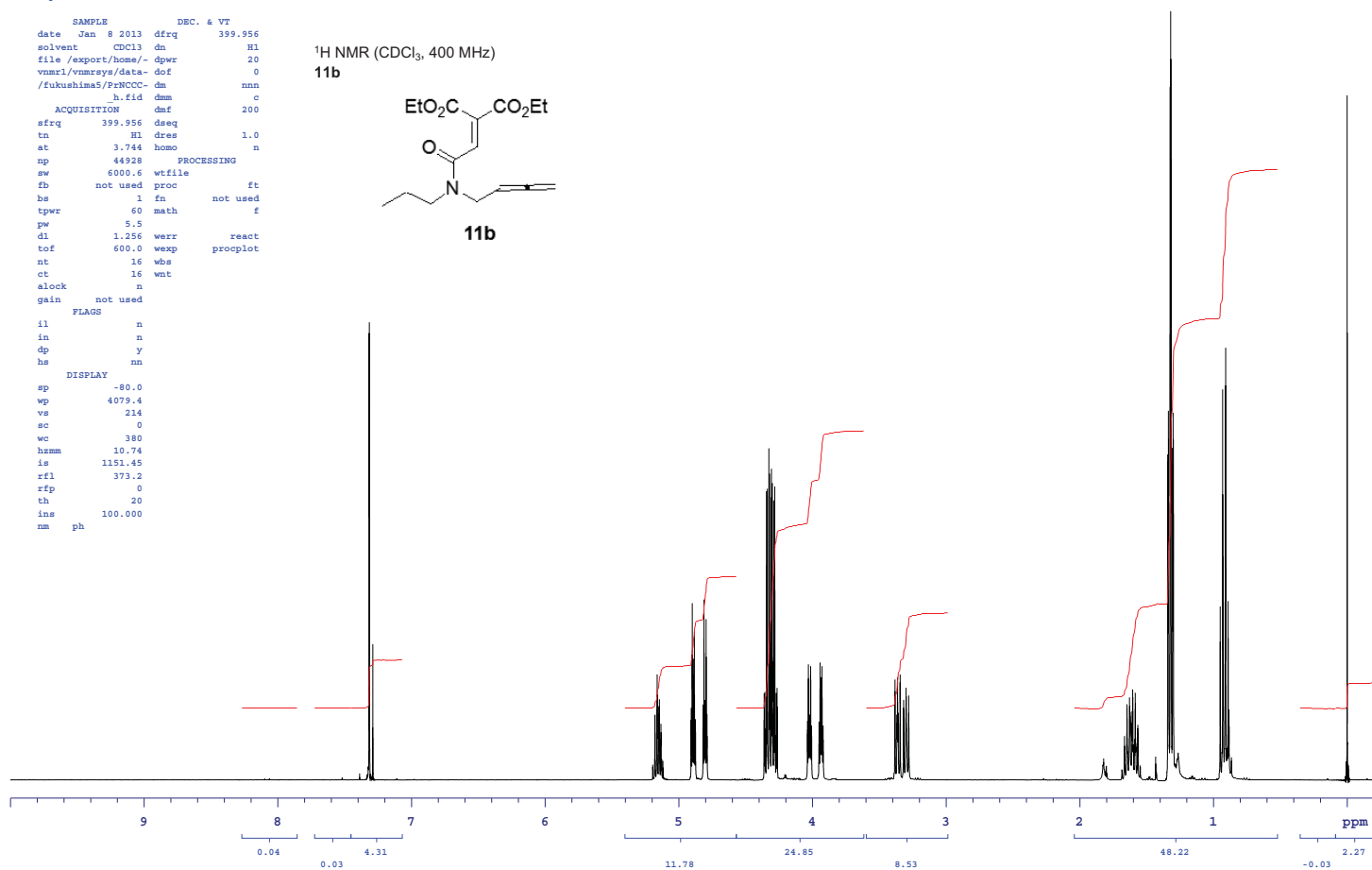
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date	Jan 8 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~dpwr		20
nmr1/vnmrsys/data-	dof		0
/fukushima5/PrNCCC-	dm	nmn	c
	h.fid	dmm	
ACQUISITION		dmf	200
sfrq	399.956	dseq	
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	60	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hnm	10.74		
is	1151.45		
rfl	373.2		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

11b



11b



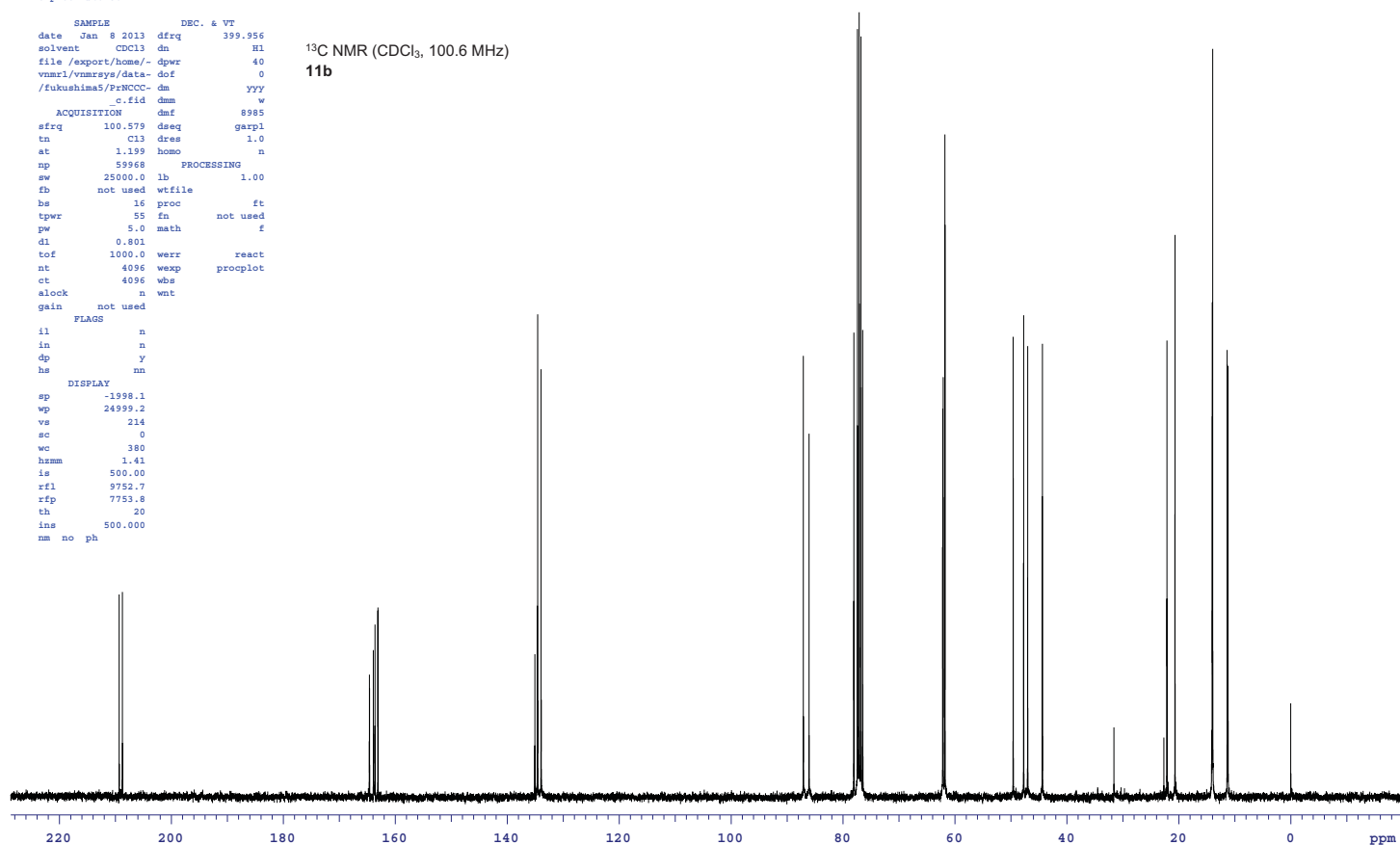
fukushima5/PrNCCC

exp100 std13c

SAMPLE		DEC. & VT	
date	Jan 8 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~dpwr		40
nmr1/vnmrsys/data-	dof		0
/fukushima5/PrNCCC-	dm	yyy	w
	c.fid	dmm	
ACQUISITION		dmf	8985
sfrq	100.579	dseq	garpl
tn	Cl3	dres	1.0
at	1.139	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wfile	
bs	16	proc	ft
tpwr	55	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	4096	wexp	procplot
ct	4096	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1998.1		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hnm	1.41		
is	500.00		
rfl	9752.7		
rfp	7753.8		
th	20		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

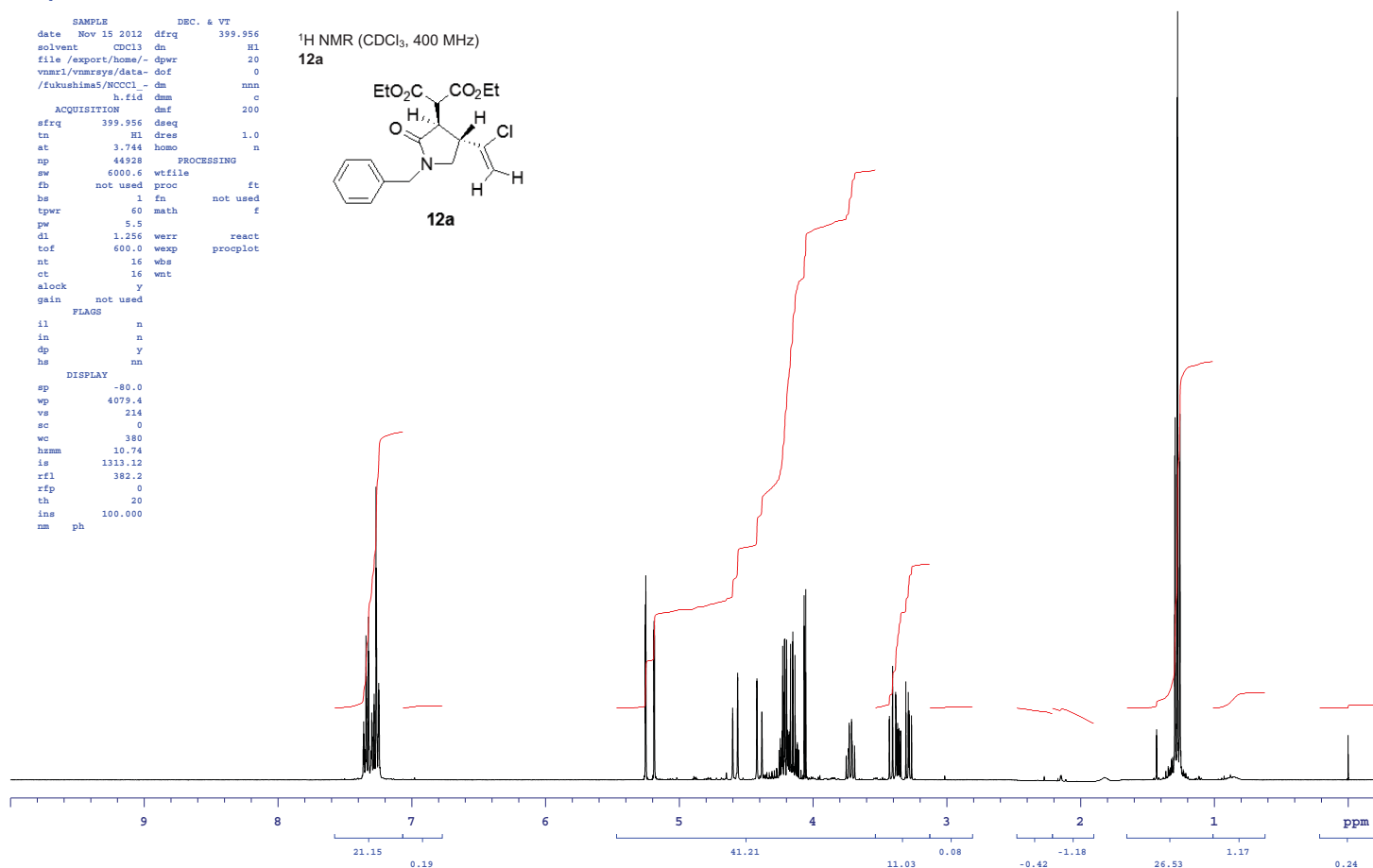
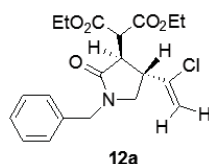
11b



fukushima5/NOCC1

exp100 std1h

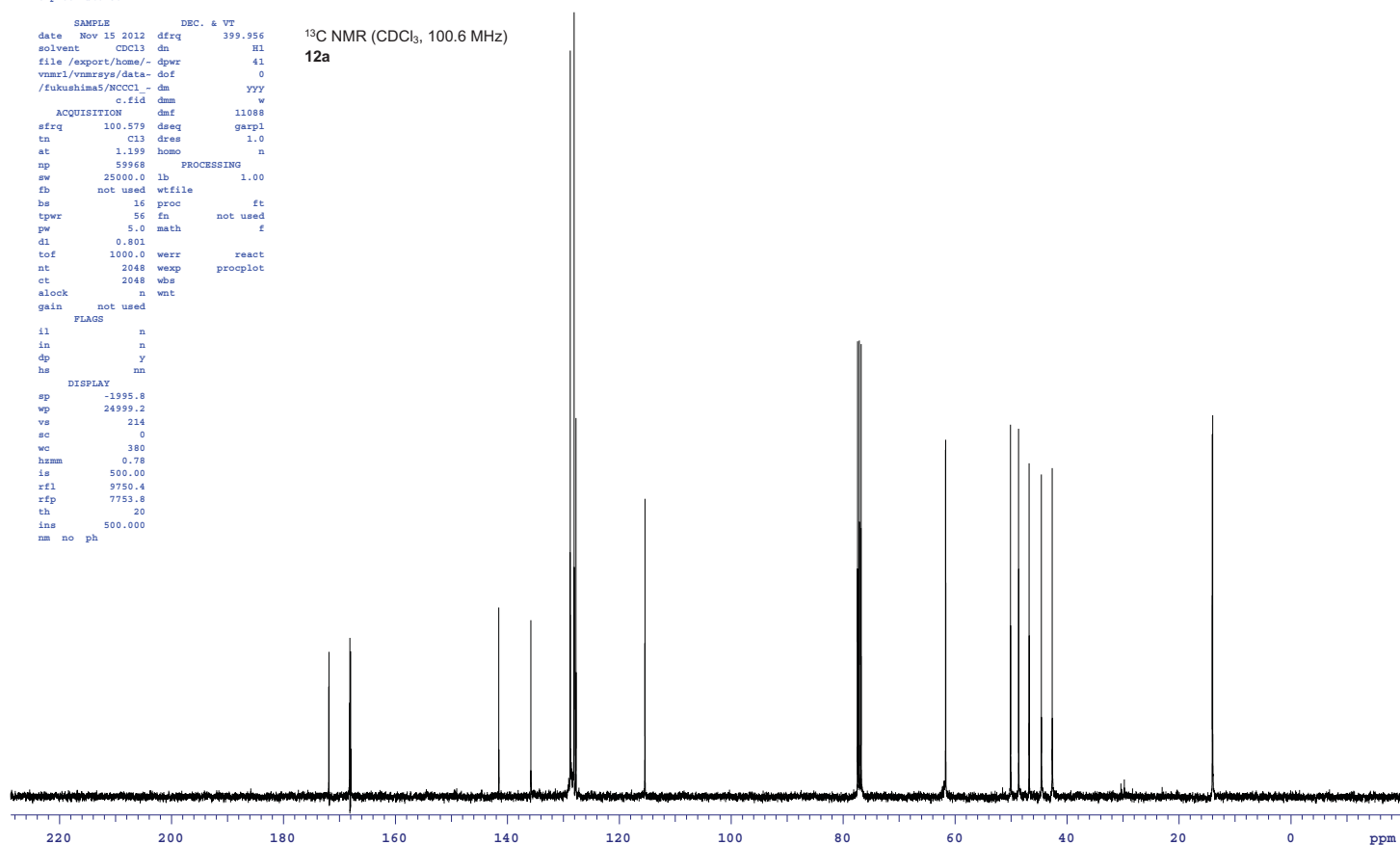
SAMPLE		DEC. & VT	
date	Nov 15 2012	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		20
nmr1/vnmrsvs/data-	dof		0
/fukushima5/NOCC1-	dm	nmn	c
	h.fid	dms	200
ACQUISITION		dms	
sfrq	399.956	dseq	
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wtfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	60	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	y		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hnm	10.74		
is	1313.12		
rfl	382.2		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)**12a**

fukushima5/NOCC1

exp100 std13c

SAMPLE		DEC. & VT	
date	Nov 15 2012	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		41
nmr1/vnmrsvs/data-	dof		0
/fukushima5/NOCC1-	dm	yyy	w
	c.fid	dms	
ACQUISITION		dms	
sfrq	100.579	dseq	garpl
tn	C13	dres	1.0
at	1.199	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wtfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	2048	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1995.8		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hnm	0.78		
is	500.00		
rfl	9750.4		
rfp	7753.8		
th	20		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)**12a**

fukushima5/NCCBr

exp100 std1h

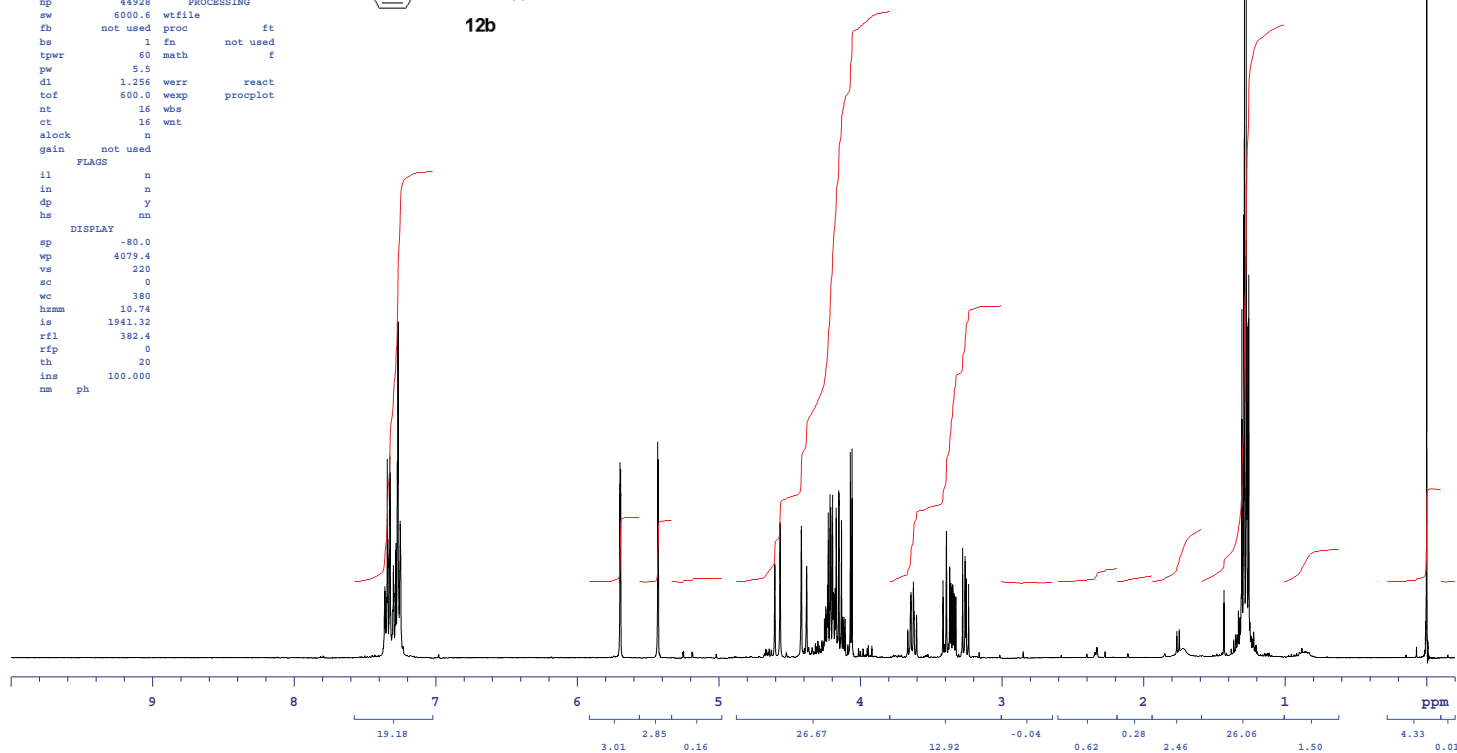
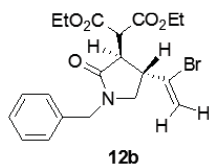
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SAMPLE          DEC. & VT
date  Nov 22 2012  dfreq  399.956
solvent  CDCl3  dn      H1
file  /export/home/~ dpwr  20
vnmr1/vnmrsys/data/~ dof  0
/fukushima5/NCCBr - dm    nn
                      h.fid dnm  c
ACQUISITION      dmf      200
sfrq  399.956  dseq      1.0
tn     H1      dres      n
at     3.744  homo
np     44928  PROCESSING
sw     6000.6  wfile
fb     not used  proc      ft
bs     1      fn      not used
tpwr    60  math      f
pw     5.5
d1     1.256  werr      react
tof     600.0  wexp      procplot
nt     16  wbs
ct     16  wnt
alock  n
gain  not used
      FLAGS
il     n
in     n
dp     y
hs     nm

DISPLAY
sp     -80.0
wp     4079.4
vs     220
sc     0
wc     380
hnm  10.74
is     1941.32
rfl     382.4
rfp     0
th     20
ins     100.000
nm  ph
  
```

¹H NMR (CDCl₃, 400 MHz)

12b



fukushima5/NCCBr

exp100 std13c

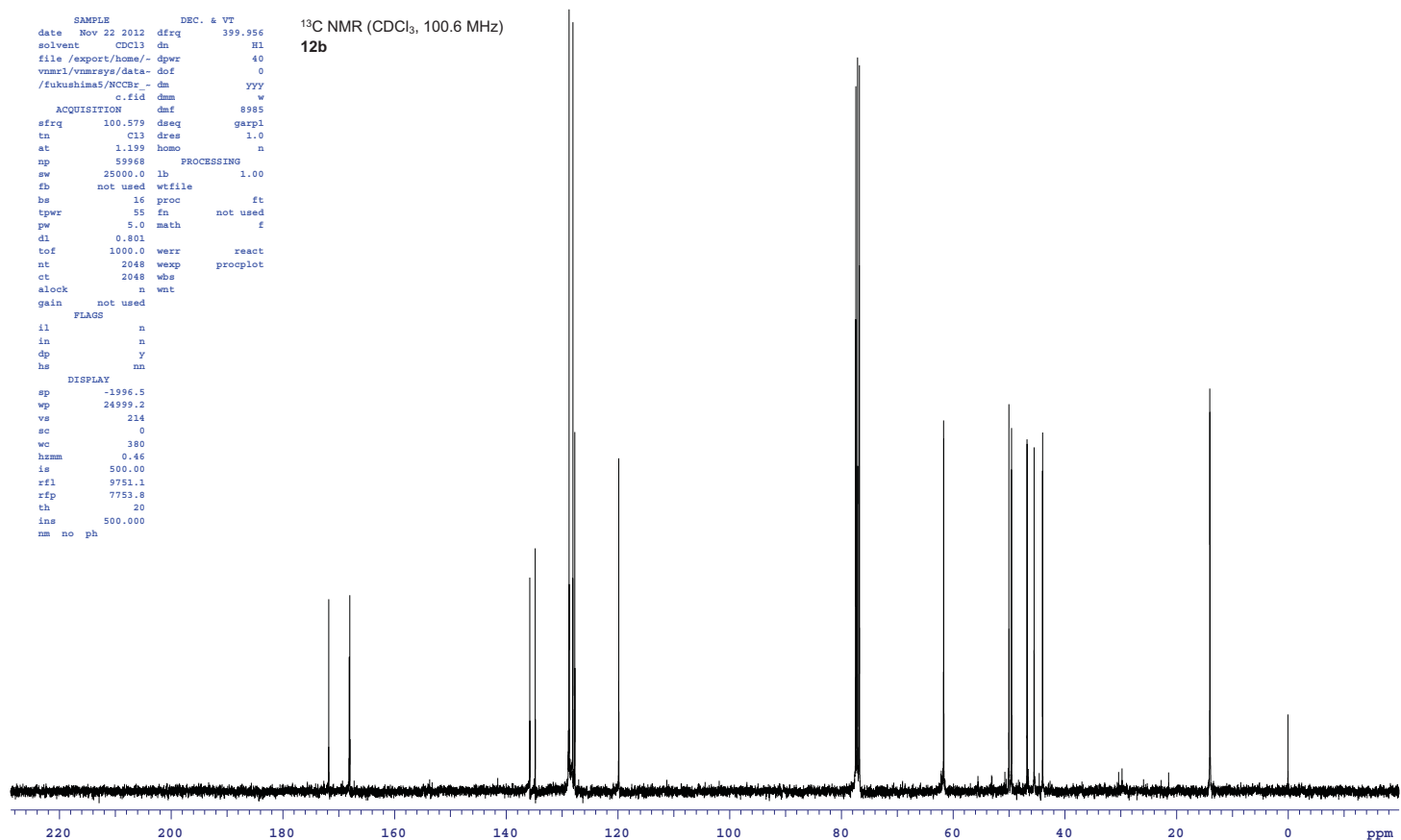
```

SAMPLE          DEC. & VT
date  Nov 22 2012  dfreq  399.956
solvent  CDCl3  dn      H1
file  /export/home/~ dpwr  40
vnmr1/vnmrsys/data/~ dof  0
/fukushima5/NCCBr - dm    yy
                      c.fid dnm  w
ACQUISITION      dmf      8985
sfrq  100.579  dseq      garpl
tn     C13      dres      1.0
at     1.299  homo
np     59968  PROCESSING
sw     25000.0  lb      1.00
fb     not used  wfile
bs     16  proc      ft
tpwr    55  fn      not used
pw     5.0  math      f
d1     0.801
tof     1000.0  werr      react
nt     2048  wexp      procplot
ct     2048  wbs
alock  n
gain  not used
      FLAGS
il     n
in     n
dp     y
hs     nm

DISPLAY
sp     -1996.5
wp     24999.2
vs     214
sc     0
wc     380
hnm  0.46
is     500.00
rfl     9751.1
rfp     7753.8
th     20
ins     500.000
nm  no ph
  
```

¹³C NMR (CDCl₃, 100.6 MHz)

12b



fukushima6/BaNI

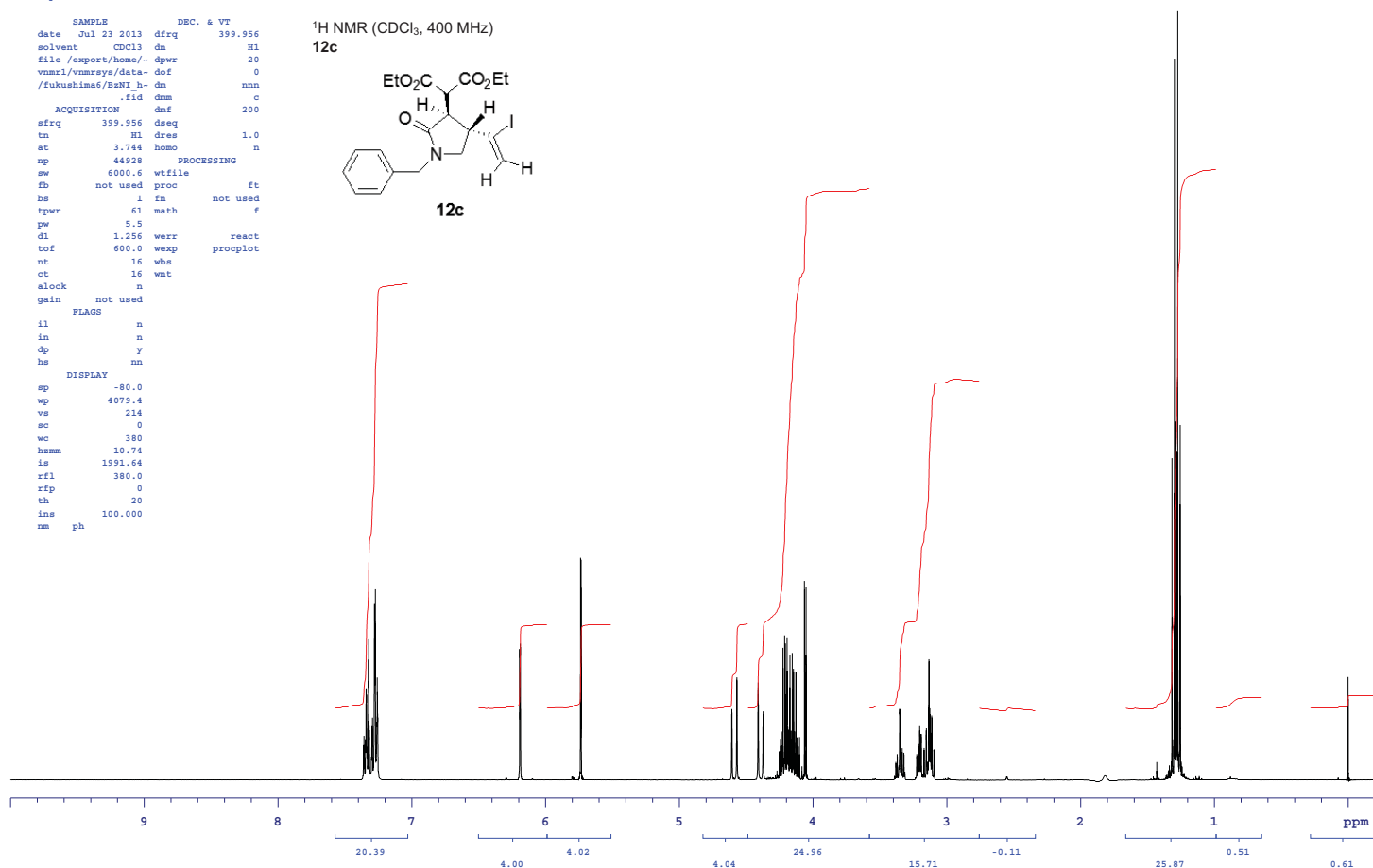
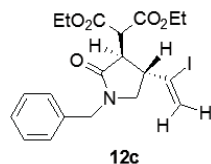
exp100 std1h

```

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date  Jul 23 2013  dfreq  399.956
solvent  CDCl3  dn      H1
file  /export/home/~ dpwr    20
vnmr1/vnmrsys/data- dof     0
/fukushima6/BaNI_h- dm      nn
                      .fid  dmm  c
ACQUISITION      dmf      200
sfrq  399.956  dseq      1.0
tn     H1      dres      n
at     3.744  homo
np     44928  PROCESSING
sw     6000.6  wfile
fb     not used  proc      ft
bs       1     fn      not used
tpwr     61    math      f
pw       5.5
d1     1.256  werr      react
tof     600.0  wexp      procplot
nt       16   wbs
ct       16   wnt
alock    n
gain     not used
          FLAGS
il       n
in       n
dp       y
hs       nn

DISPLAY
sp      -80.0
wp     4079.4
vs      214
sc       0
wc      380
hismm   10.74
is     1991.64
rfl     380.0
rfp      0
th       20
ins     100.000
nm      ph

```

¹H NMR (CDCl₃, 400 MHz)**12c**

fukushima6/BaNI

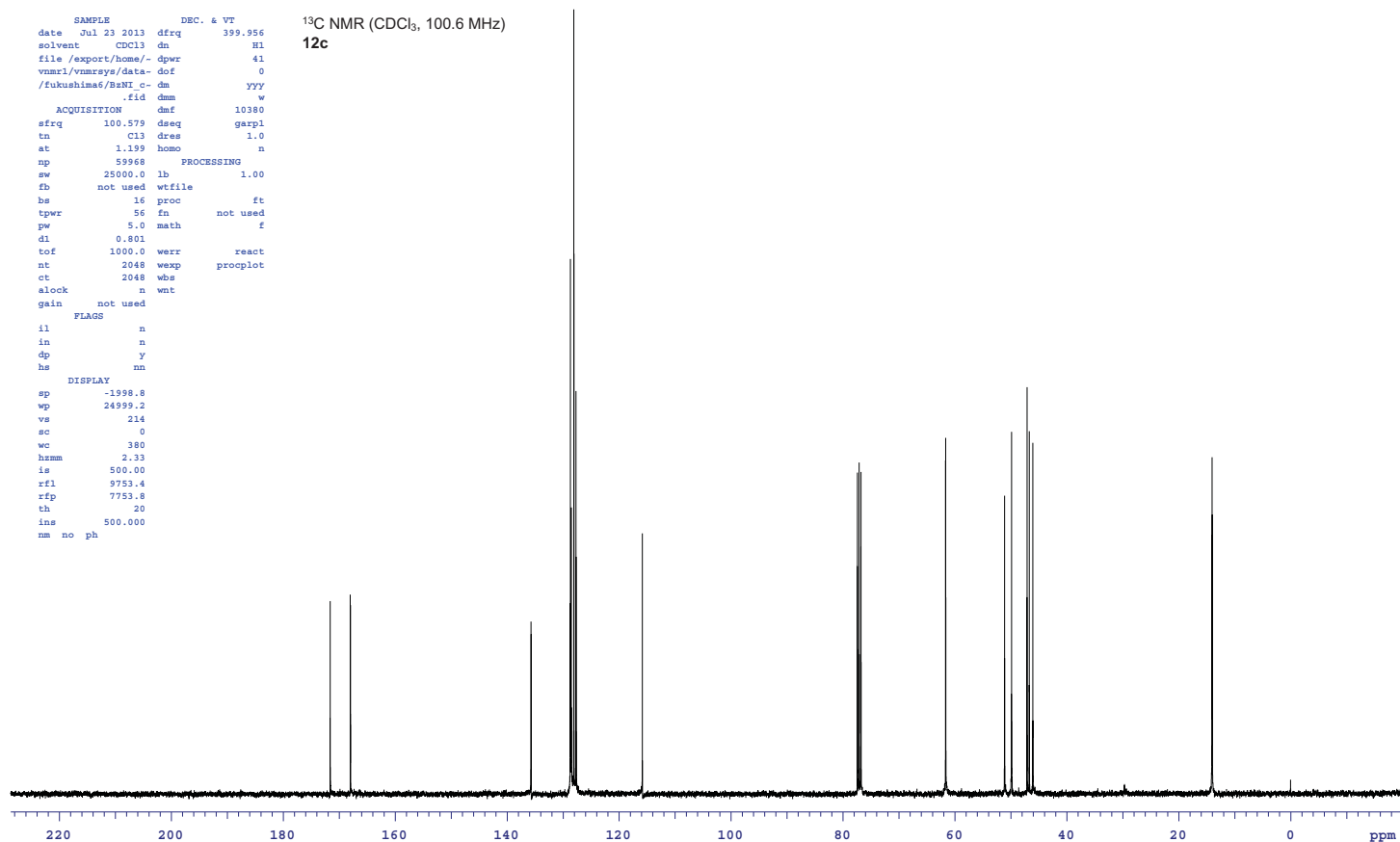
exp100 std13c

```

SAMPLE          DEC. & VT
date  Jul 23 2013  dfreq  399.956
solvent  CDCl3  dn      H1
file  /export/home/~ dpwr    41
vnmr1/vnmrsys/data- dof     0
/fukushima6/BaNI_c- dm      yy
                      .fid  dmm  w
ACQUISITION      dmf      10380
sfrq  100.579  dseq      garpl
tn     C13      dres      1.0
at     1.299  homo
np     59968  PROCESSING
sw     25000.0  lb      1.00
fb     not used  wfile
bs     16      proc      ft
tpwr     56    fn      not used
pw       5.0    math      f
d1     0.801
tof     1000.0  werr      react
nt     2048  wexp      procplot
ct     2048  wbs
alock    n
gain     not used
          FLAGS
il       n
in       n
dp       y
hs       nn

DISPLAY
sp     -1998.8
wp    24999.2
vs      214
sc       0
wc      380
hismm   2.33
is     500.00
rfl    9753.4
rfp    7753.8
th       20
ins     500.000
nm      no ph

```

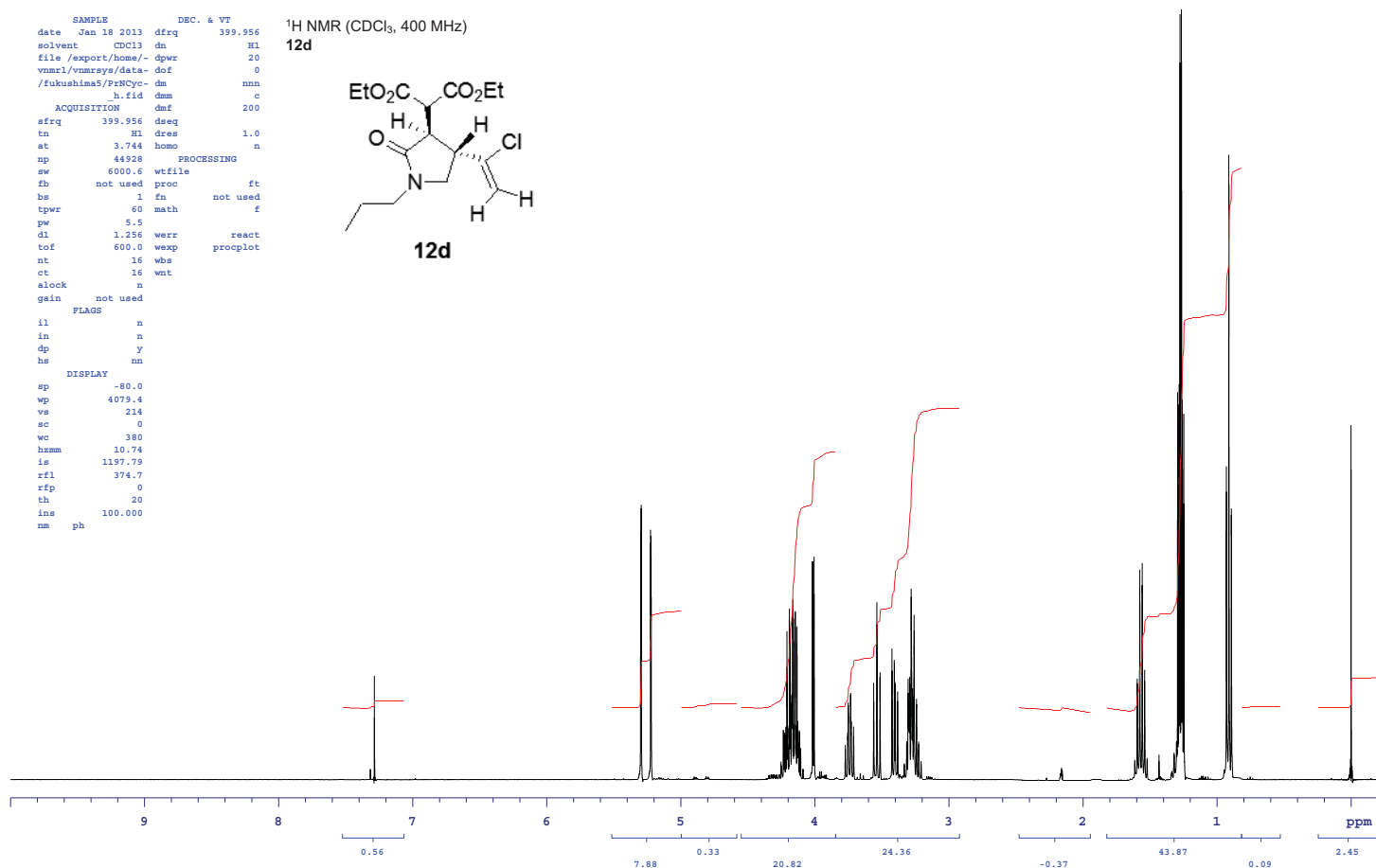
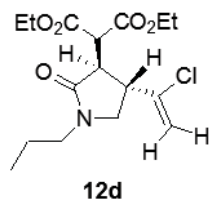
¹³C NMR (CDCl₃, 100.6 MHz)**12c**

fukushima5/PrNCyc

exp100 std1h

SAMPLE		DEC. & VT	
date	Jan 18 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		20
nmr1/vnmrsvs/data-	do		0
/fukushima5/PrNCyc-	dm	nmn	c
h.fid	dms		200
ACQUISITION		dmf	
sfrq	399.956	dseq	
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wtfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	60	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hsmm	10.74		
is	1197.79		
rfl	374.7		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)
12d

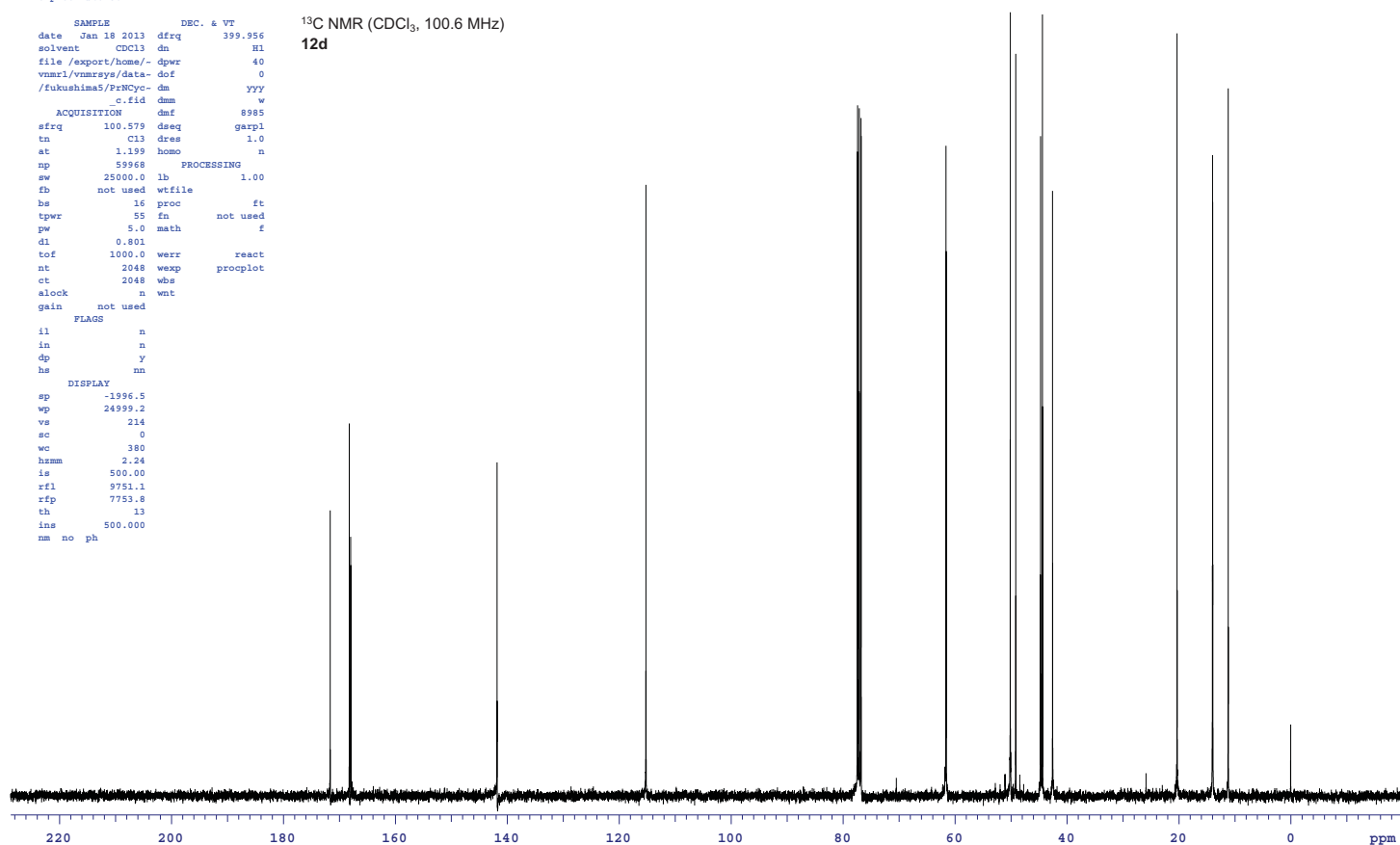


fukushima5/PrNCyc

exp100 std13c

SAMPLE		DEC. & VT	
date	Jan 18 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		40
nmr1/vnmrsvs/data-	do		0
/fukushima5/PrNCyc-	dm	yyy	w
c.fid	dms		8985
ACQUISITION		dmf	
sfrq	100.579	dseq	garpl
tn	C13	dres	1.0
at	1.139	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wtfile	
bs	16	proc	ft
tpwr	55	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	2048	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-1996.5		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hsmm	2.24		
is	500.00		
rfl	9751.1		
rfp	7753.8		
th	13		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)
12d



fukushima6/BrNPr

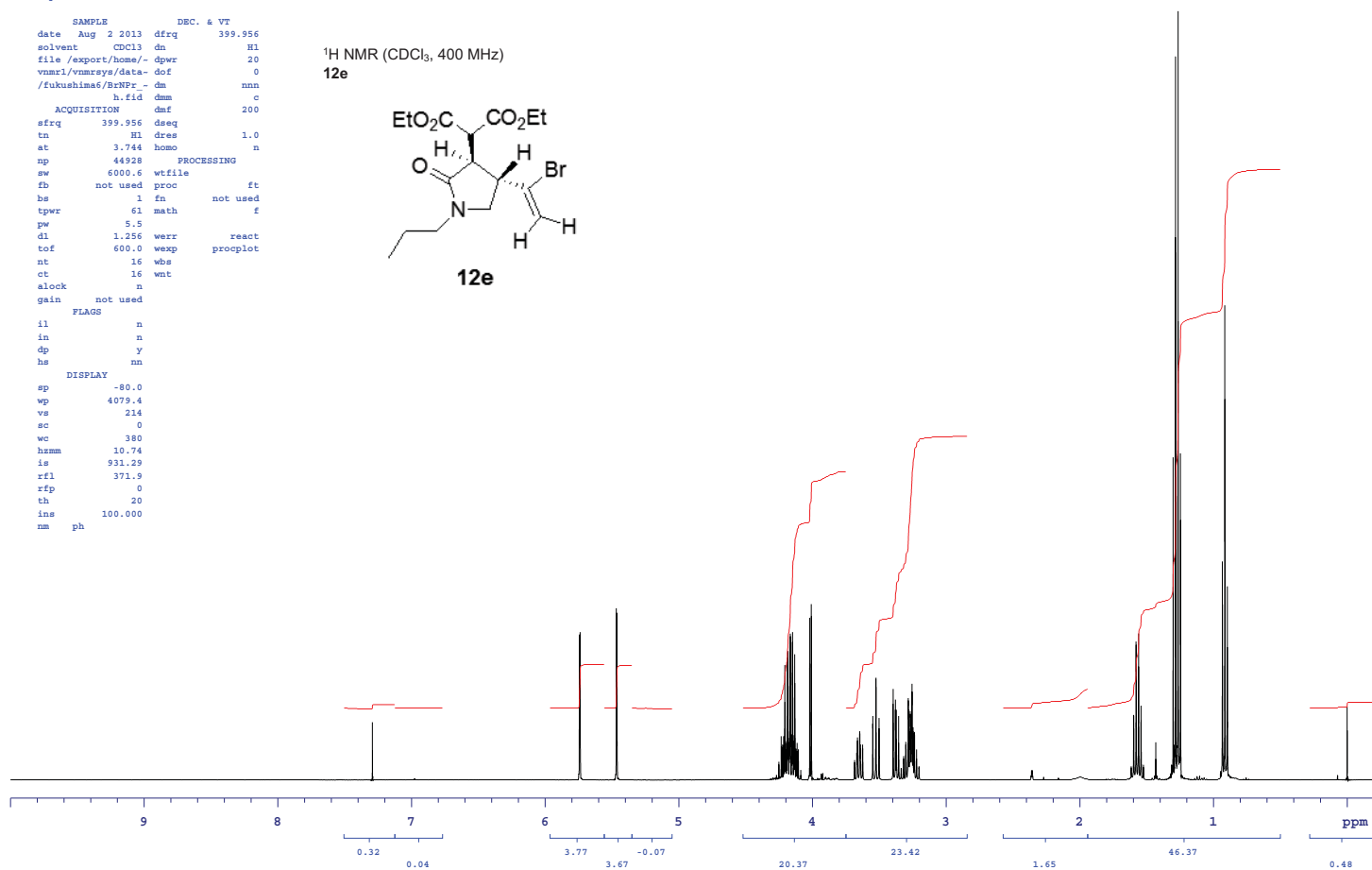
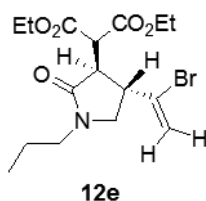
exp100 std1h

```

SAMPLE          DEC. & VT
date   Aug 2 2013   dfreq   399.956
solvent   CDCl3     dn      H1
file /export/home/~ dpwr    20
nmr1/vmrsvy/data- dof      0
/fukushima6/BrNPr- dm      nm
               h.fid      dmm      c
ACQUISITION    dmf      200
sfrq   399.956   dseq      1.0
tn      H1      dres      n
at      3.744   homo
np      44928   PROCESSING
sw      6000.6   wfile
fb      not used   proc      ft
bs      1       fn      not used
tpwr    61      math      f
pw      5.5
d1      1.256   werr      react
tof     600.0   wexp      procplot
nt      16     wbs
ct      16     wnt
alock    n
gain     not used
        FLAGS
il        n
in        n
dp        y
hs        nm
        DISPLAY
sp      -80.0
wp      4079.4
vs      214
sc      0
wc      380
hnm      10.74
is      931.29
rfl      371.9
rfp      0
th      20
ins      100.000
nm      ph

```

¹H NMR (CDCl₃, 400 MHz)
12e



fukushima6/BrNPr

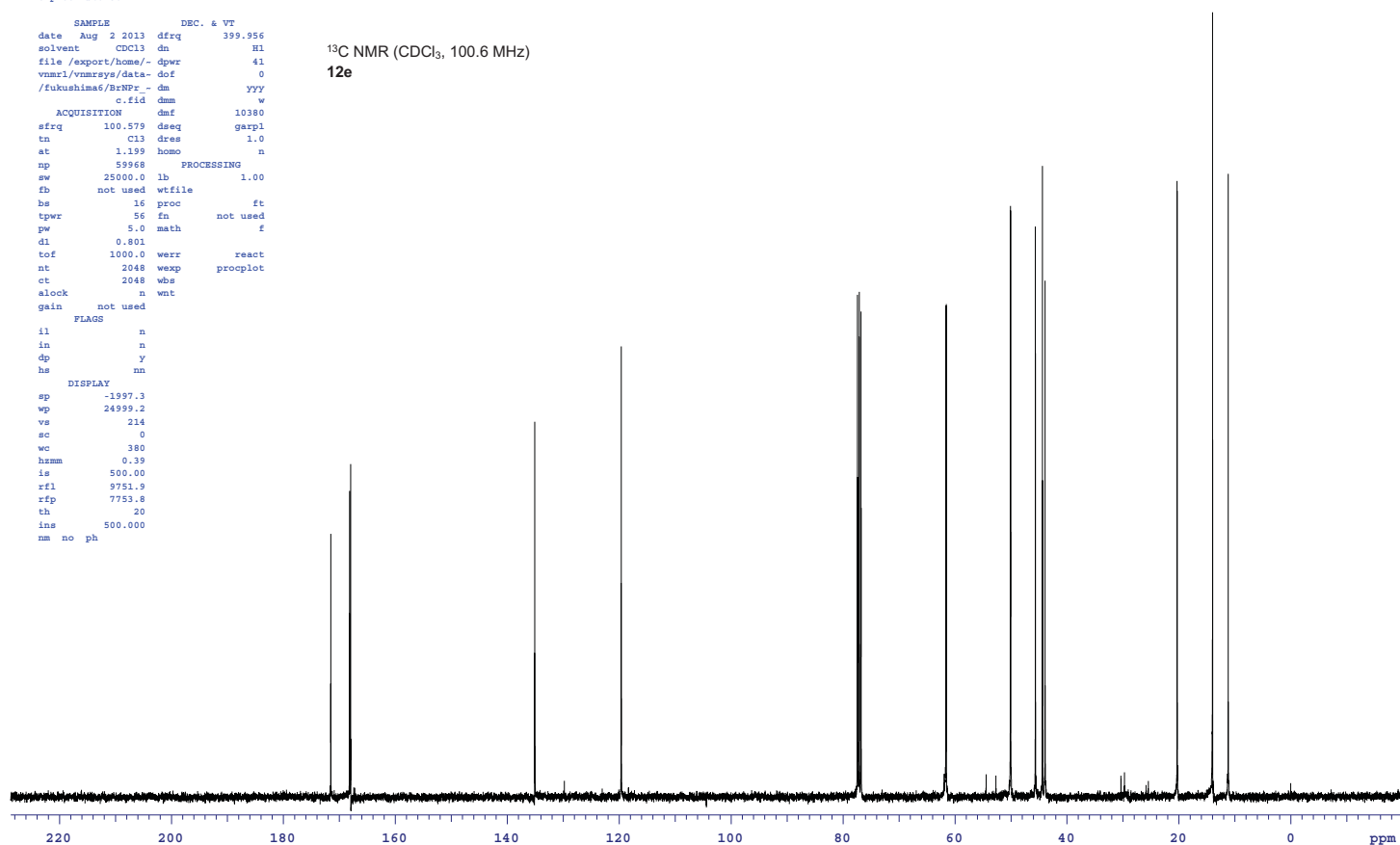
exp100 std13c

```

SAMPLE          DEC. & VT
date   Aug 2 2013   dfreq   399.956
solvent   CDCl3     dn      H1
file /export/home/~ dpwr    41
nmr1/vmrsvy/data- dof      0
/fukushima6/BrNPr- dm      yyy
               c.fid      dmm      w
ACQUISITION    dmf      10380
sfrq   100.579   dseq      garpl
tn      C13      dres      1.0
at      1.299   homo
np      59968   PROCESSING
sw      25000.0   lb      1.00
fb      not used   wfile
bs      16       proc      ft
tpwr    56       fn      not used
pw      5.0      math      f
d1      0.801
tof     1000.0   werr      react
nt      2048    wexp      procplot
ct      2048    wbs
alock    n
gain     not used
        FLAGS
il        n
in        n
dp        y
hs        nm
        DISPLAY
sp      -1997.3
wp      24999.2
vs      214
sc      0
wc      380
hnm      0.39
is      500.00
rfl      9751.9
rfp      7753.8
th      20
ins      500.000
nm      no ph

```

¹³C NMR (CDCl₃, 100.6 MHz)
12e

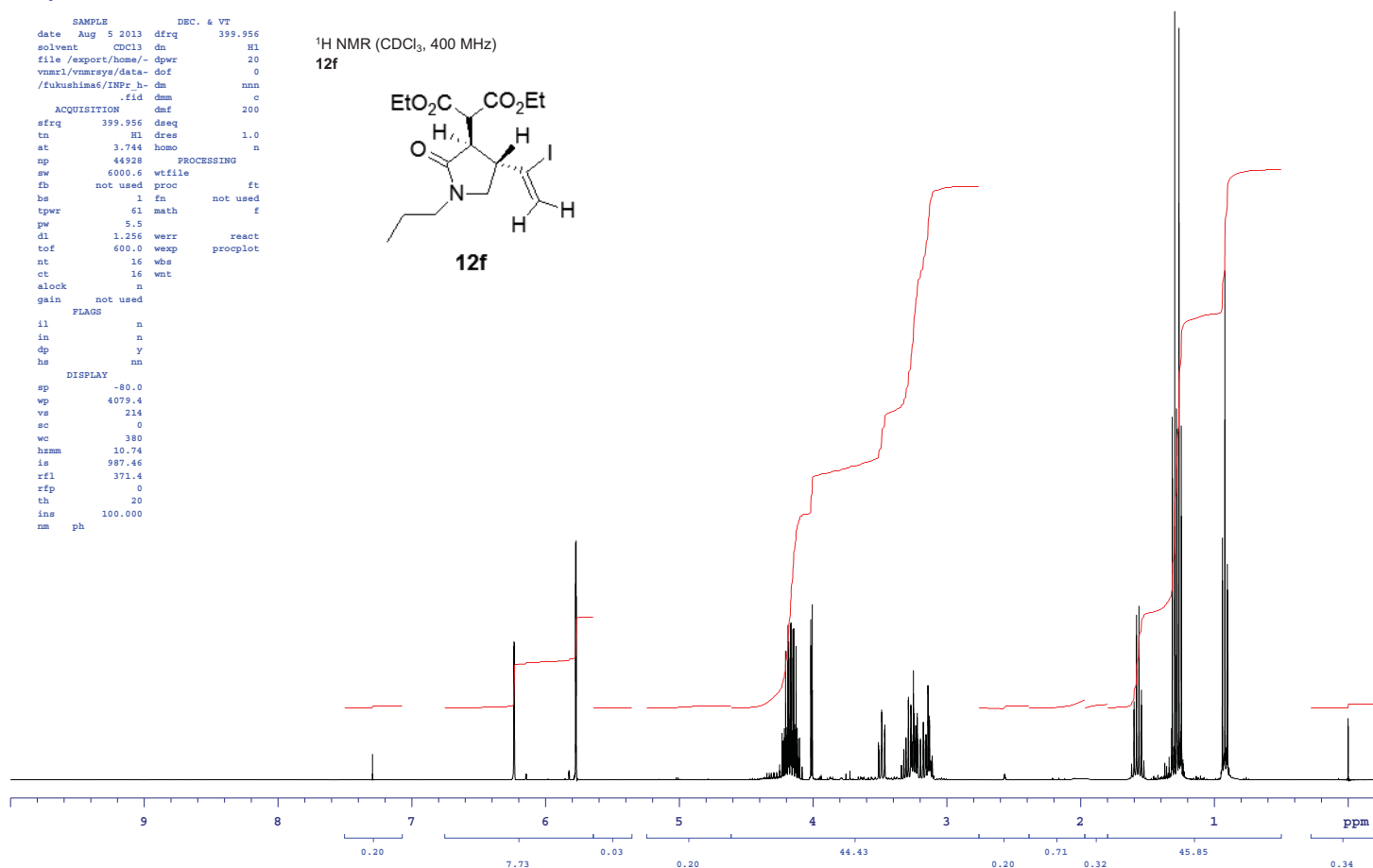
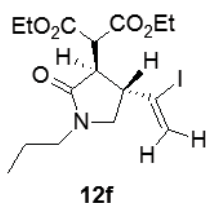


fukushima6/INPr

exp100 std1h

SAMPLE		DEC. & VT	
date	Aug 5 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~dpwr		20
nmr1/vnmrsys/data-	dof		0
/fukushima6/INPr_h-	dm	nmn	c
	.fid	dmm	c
ACQUISITION		dmm	
sfrq	399.956	dseq	200
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hsmm	10.74		
is	987.46		
rfl	371.4		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)
12f

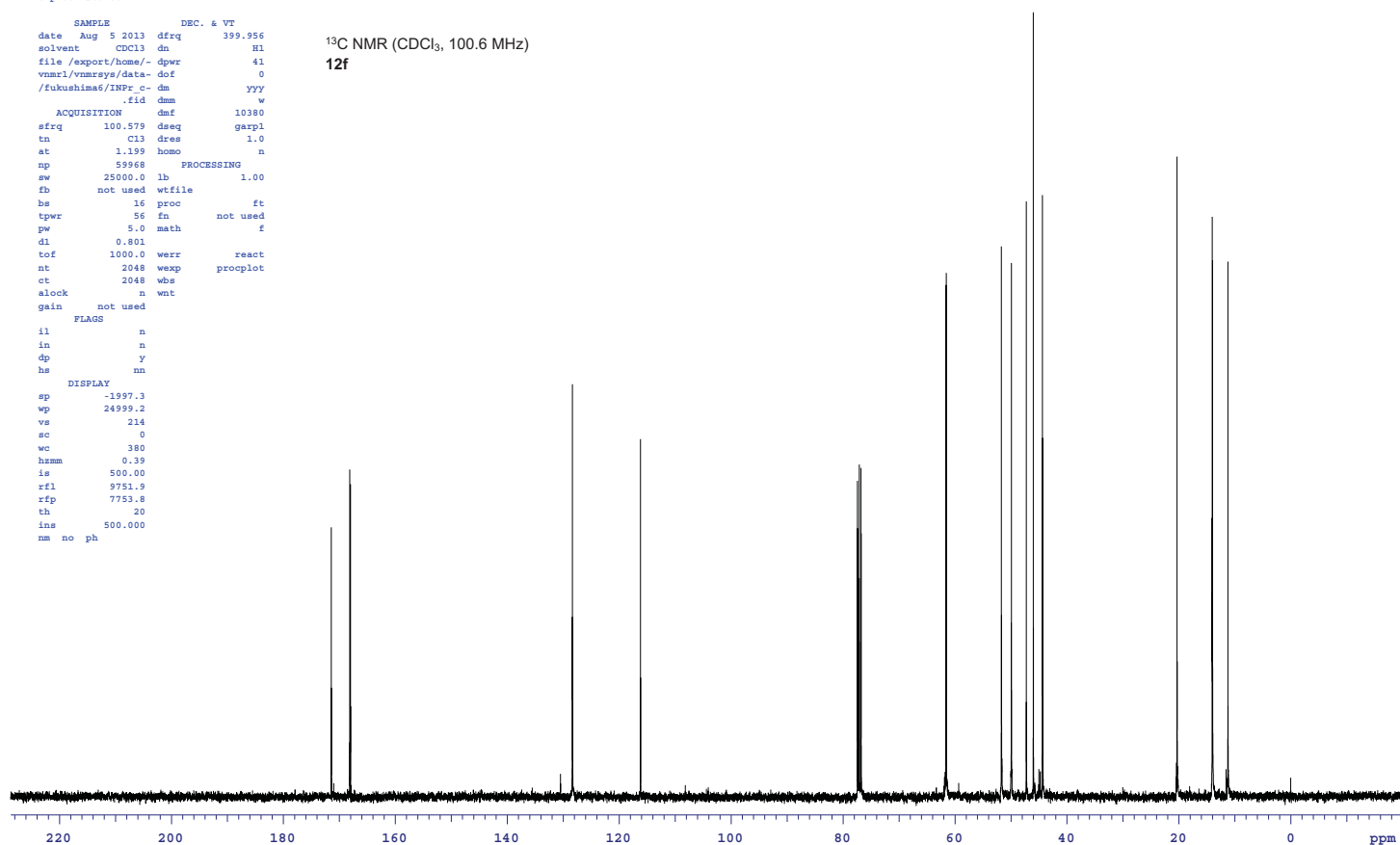


fukushima6/INPr

exp100 std13c

SAMPLE		DEC. & VT	
date	Aug 5 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~dpwr		41
nmr1/vnmrsys/data-	dof		0
/fukushima6/INPr_c-	dm	yyy	w
	.fid	dmm	w
ACQUISITION		dmm	
sfrq	100.579	dseq	garpl
tn	C13	dres	1.0
at	1.199	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	2048	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1997.3		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hsmm	0.39		
is	500.00		
rfl	9751.9		
rfp	7753.8		
th	20		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)
12f



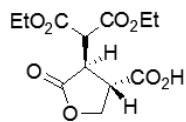
fukushima6/CO2Hr

exp100 std1h

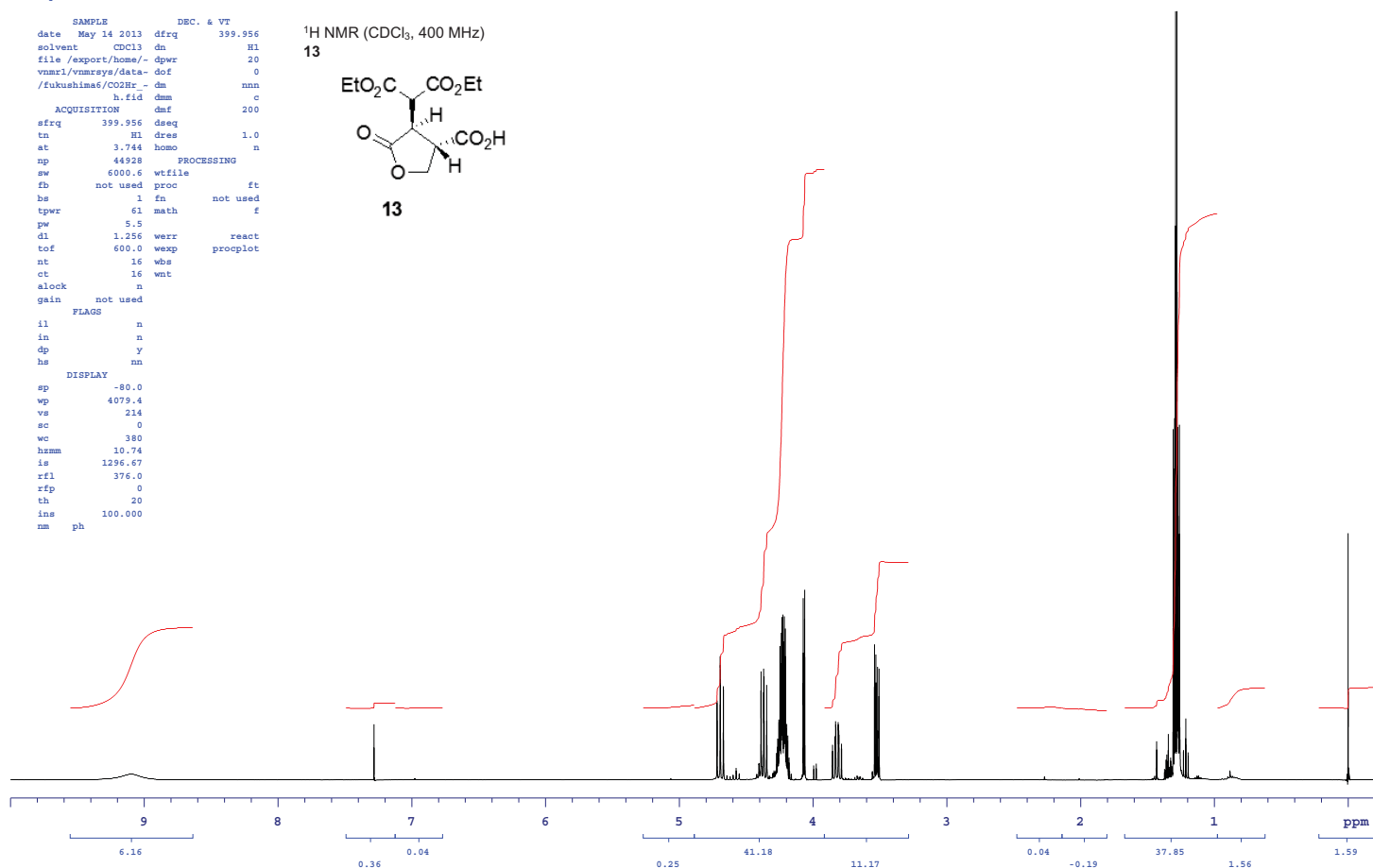
SAMPLE		DEC. & VT	
date	May 14 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~dpwr		20
nmr1/vnmrsva/data/~dof			0
/fukushima6/CO2Hr - dm		nmn	c
h.fid	dmm		200
ACQUISITION		dmf	
sfrq	399.956	dseq	
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hism	10.74		
is	1296.67		
rfl	376.0		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

13



13



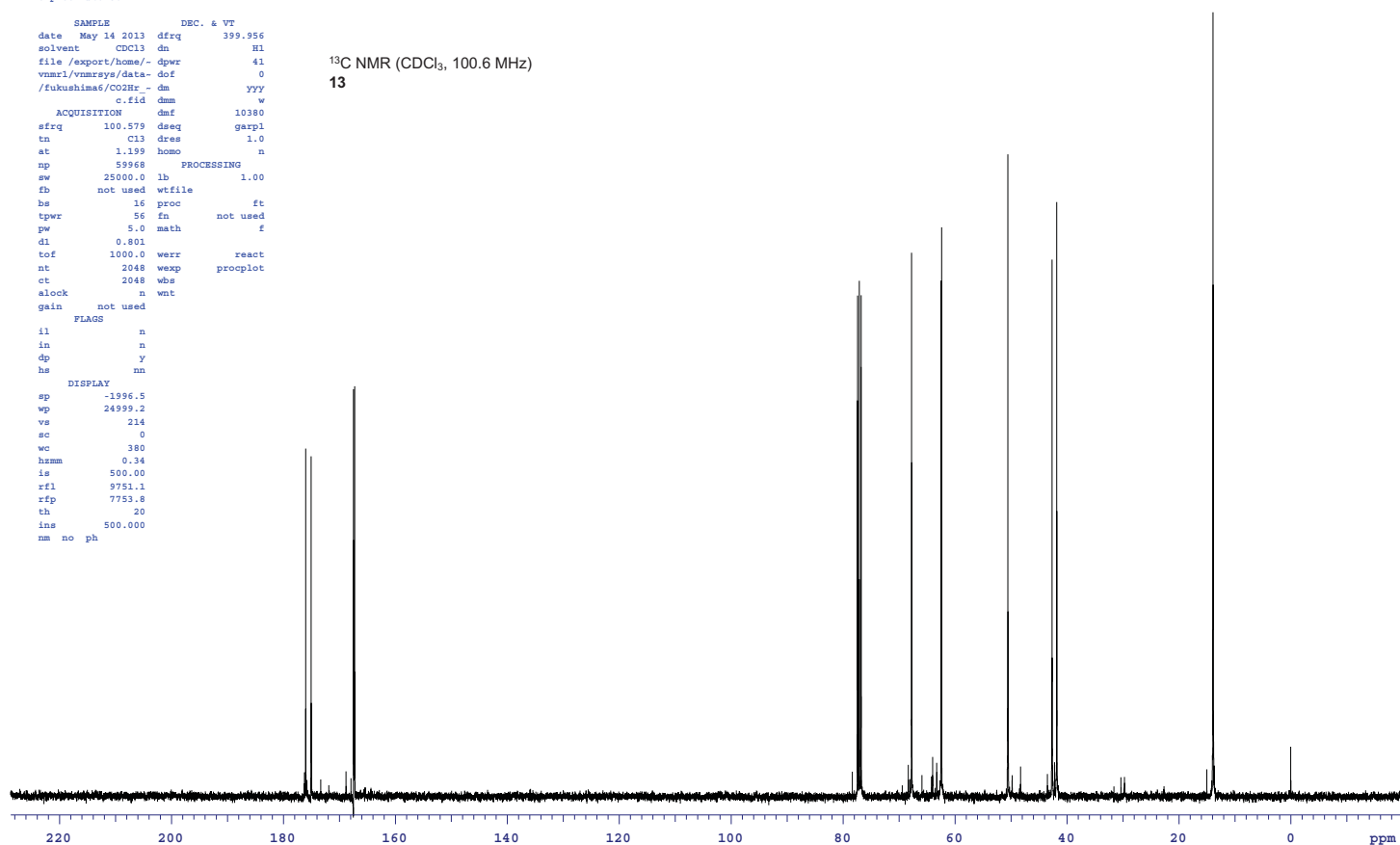
fukushima6/CO2Hr

exp100 std13c

SAMPLE		DEC. & VT	
date	May 14 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~dpwr		41
nmr1/vnmrsva/data/~dof			0
/fukushima6/CO2Hr - dm		yyy	w
c.fid	dmm		10380
ACQUISITION		dmf	
sfrq	100.579	dseq	garpl
tn	C13	dres	1.0
at	1.299	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	2048	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1996.5		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hism	0.34		
is	500.00		
rfl	9751.1		
rfp	7753.8		
th	20		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

13



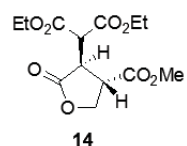
fukushima6/CO2Me

exp100 std1h

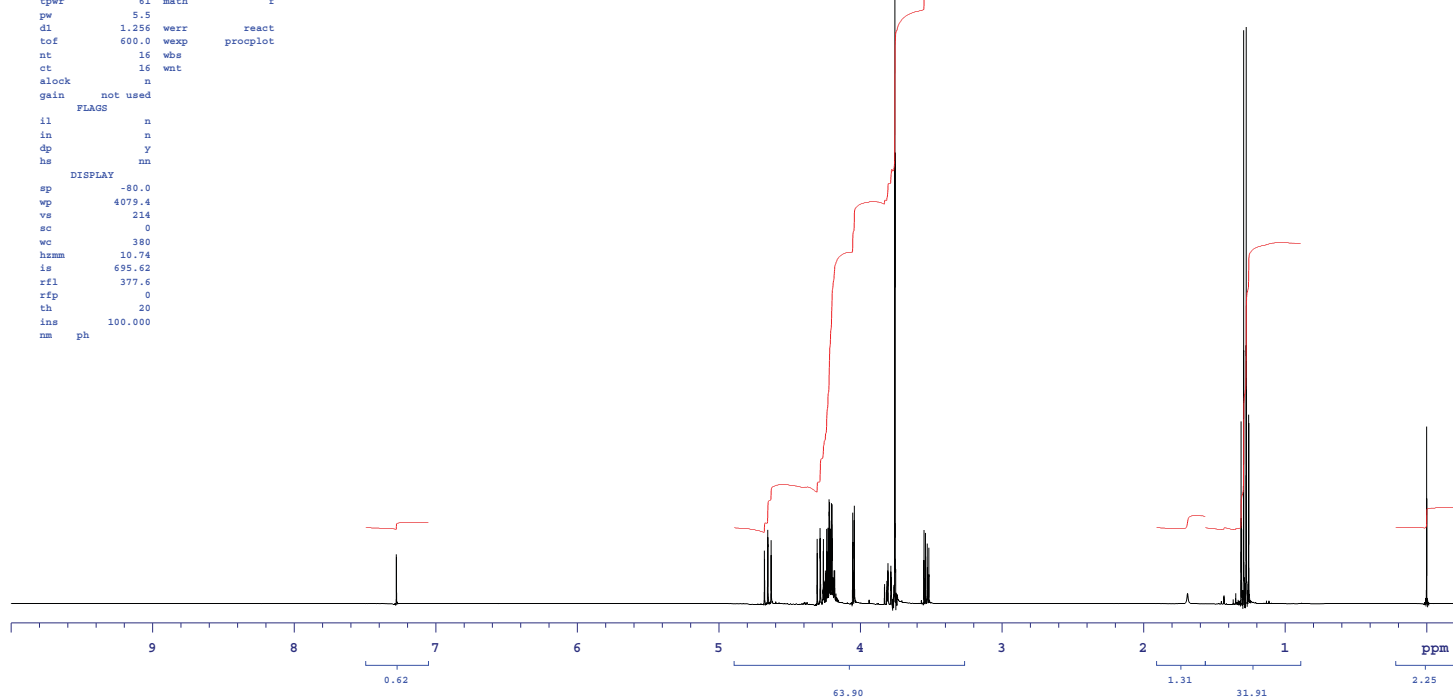
SAMPLE		DEC. & VT	
date	May 29 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		20
nmr1/vnmrsva/data-	dof		0
/fukushima6/CO2Me-	dm	nmn	
	h.fid	dmm	c
ACQUISITION		dmm	
sfrq	399.956	dseq	200
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hnm	10.74		
is	695.62		
rfl	377.6		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

14



14



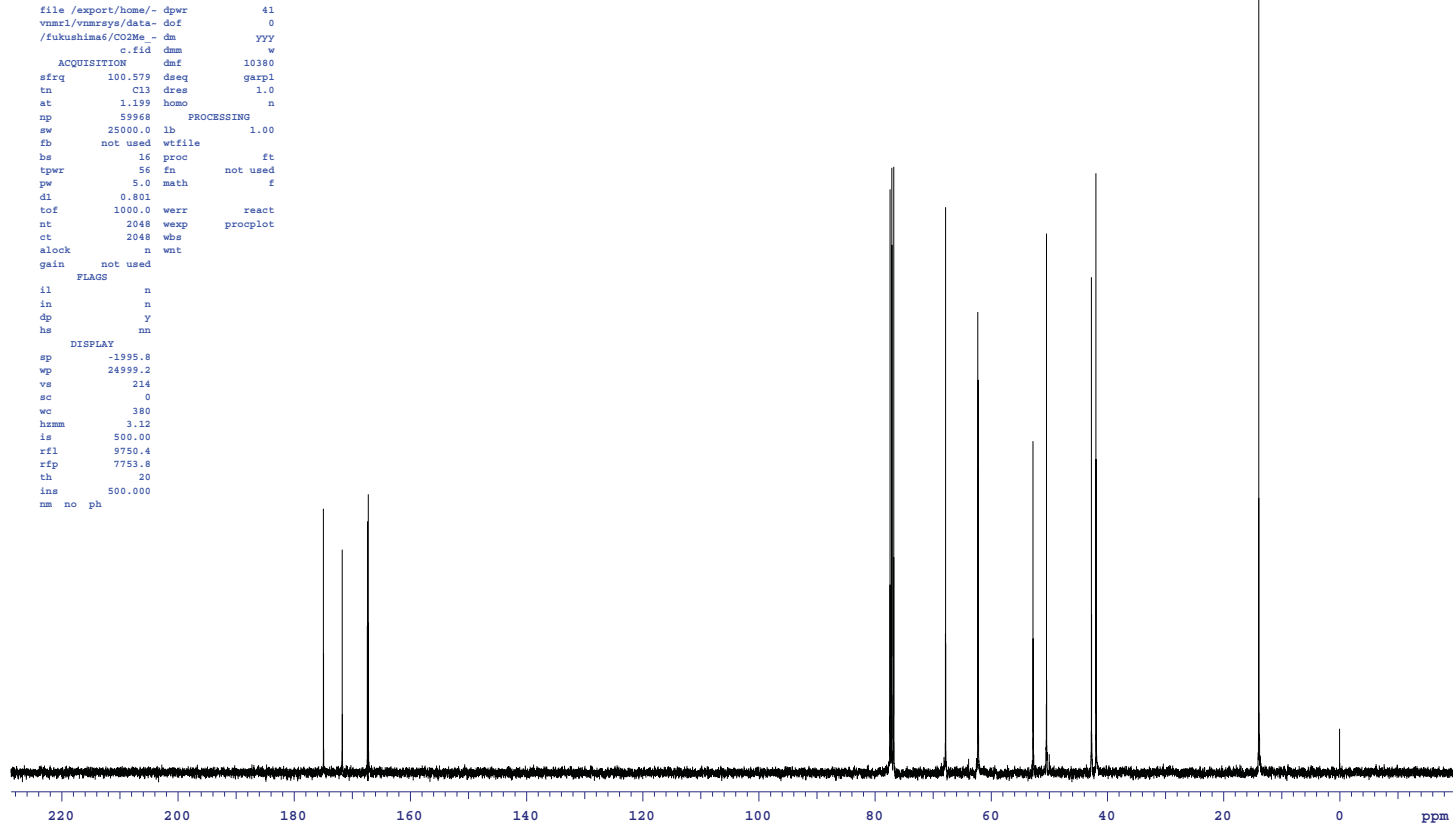
fukushima6/CO2Me

exp100 std13c

SAMPLE		DEC. & VT	
date	May 29 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		41
nmr1/vnmrsva/data-	dof		0
/fukushima6/CO2Me-	dm	yyy	
	c.fid	dmm	w
ACQUISITION		dmm	
sfrq	100.579	dseq	garpl
tn	C13	dres	1.0
at	1.299	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	2048	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1995.8		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hnm	3.12		
is	500.00		
rfl	9750.4		
rfp	7753.8		
th	20		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

14



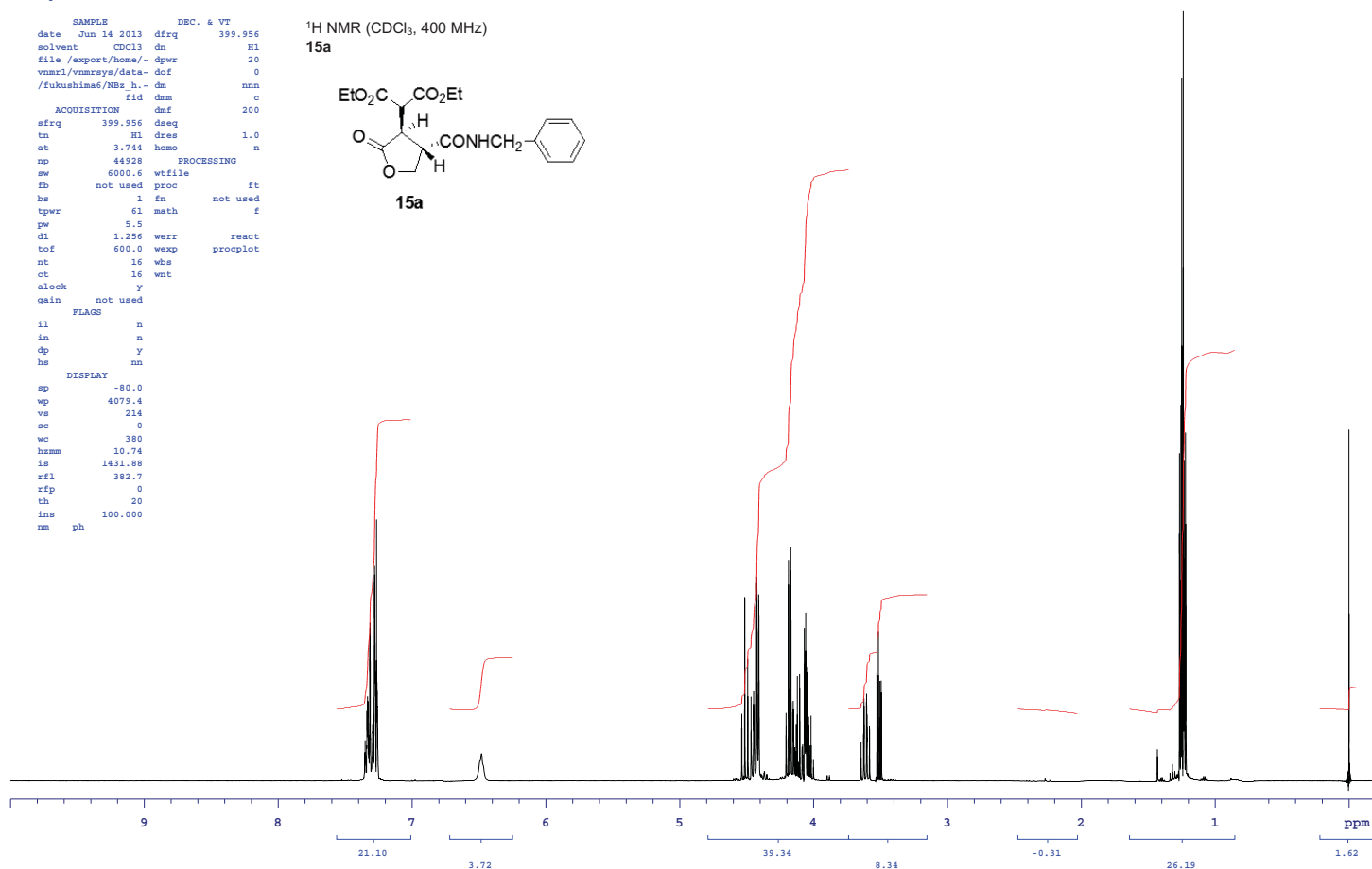
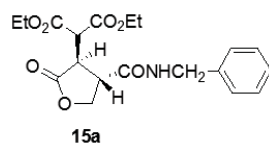
fukushima6/NBz

exp100 std1h

SAMPLE		DEC. & VT	
date	Jun 14 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~dpwr		20
nmr1/vnmrsys/data-	doe		0
/fukushima6/NBz	h-	dm	nmn
	f1d	dmm	c
ACQUISITION		dmf	200
sfrq	399.956	dseq	
tn	H1	dres	1.0
st	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	y		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hnm	10.74		
is	1431.88		
rfl	382.7		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

15a



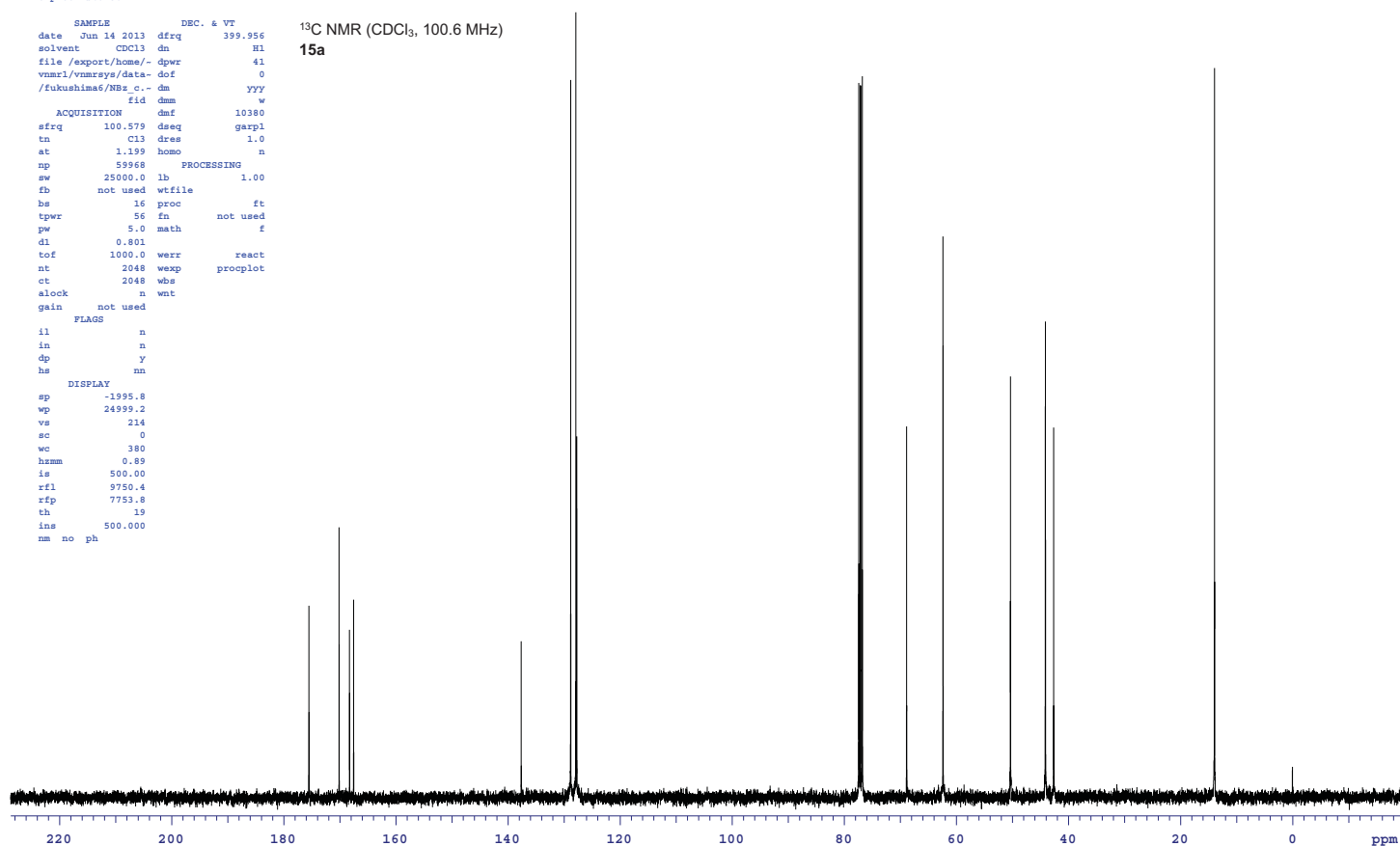
fukushima6/NBz

exp100 std13c

SAMPLE		DEC. & VT	
date	Jun 14 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~dpwr		41
nmr1/vnmrsys/data-	doe		0
/fukushima6/NBz	c-	dm	yyy
	f1d	dmm	w
ACQUISITION		dmf	10380
sfrq	100.579	dseq	garpl
tn	C13	dres	1.0
st	1.299	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	2048	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1995.8		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hnm	0.89		
is	500.00		
rfl	9750.4		
rfp	7753.8		
th	19		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

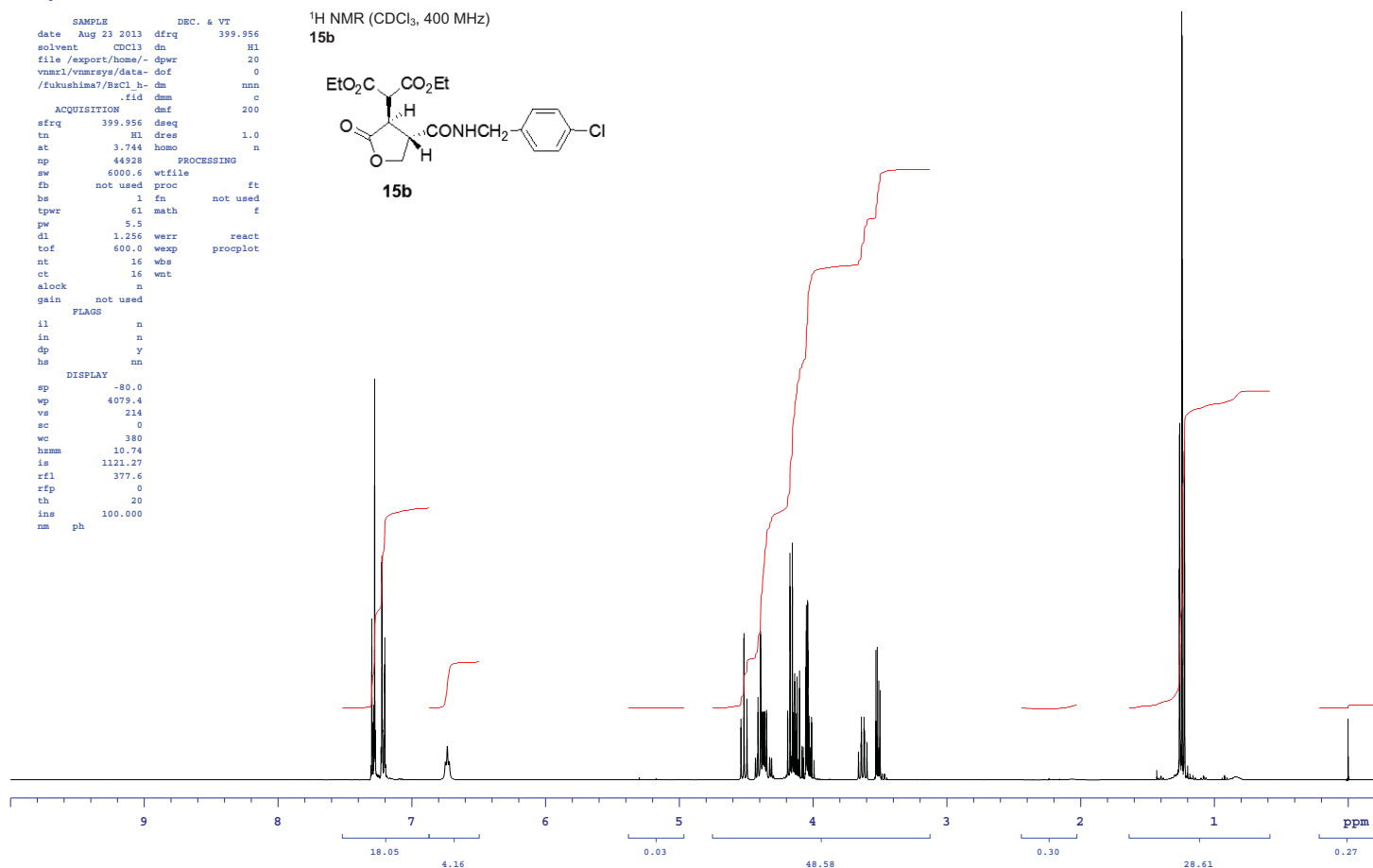
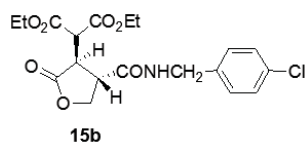
15a



fukushima7/BaCl

exp100 std1h

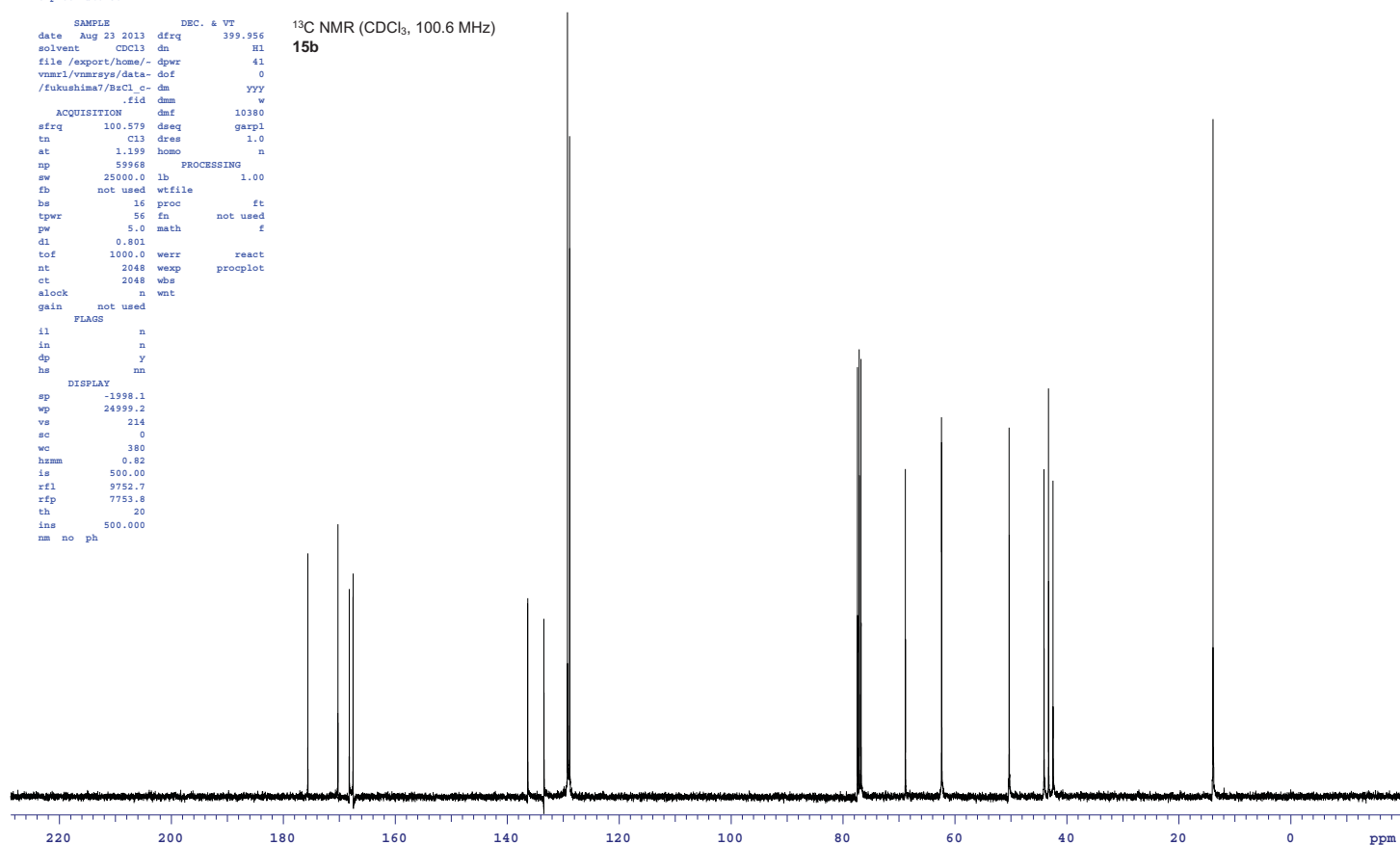
SAMPLE		DEC. & VT	
date	Aug 23 2013	dfreq	399.956
solvent	CDCl ₃	dn	H1
file	/export/home/~ dpwr		20
vmr1/vmrsys/data-	do		0
/fukushima7/BaCl_h-	dm	nmn	c
.fid	dmm		200
ACQUISITION		dmm	
sfrq	399.956	dseq	1.0
tn	H1	dres	n
at	3.744	homo	
np	44928	PROCESSING	
sw	6000.6	wfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.256	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
hism	10.74		
is	1121.27		
rfl	377.6		
rpf	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)**15b**

fukushima7/BaCl

exp100 std13c

SAMPLE		DEC. & VT	
date	Aug 23 2013	dfreq	399.956
solvent	CDCl ₃	dn	H1
file	/export/home/~ dpwr		41
vmr1/vmrsys/data-	do		0
/fukushima7/BaCl_c-	dm	yyy	w
.fid	dmm		10380
ACQUISITION		dmm	
sfrq	100.579	dseq	garpl
tn	Cl3	dres	1.0
at	1.139	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	2048	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1998.1		
wp	24999.2		
vs	214		
sc	0		
wc	380		
hism	0.82		
is	500.00		
rfl	9752.7		
rpf	7753.8		
th	20		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)**15b**

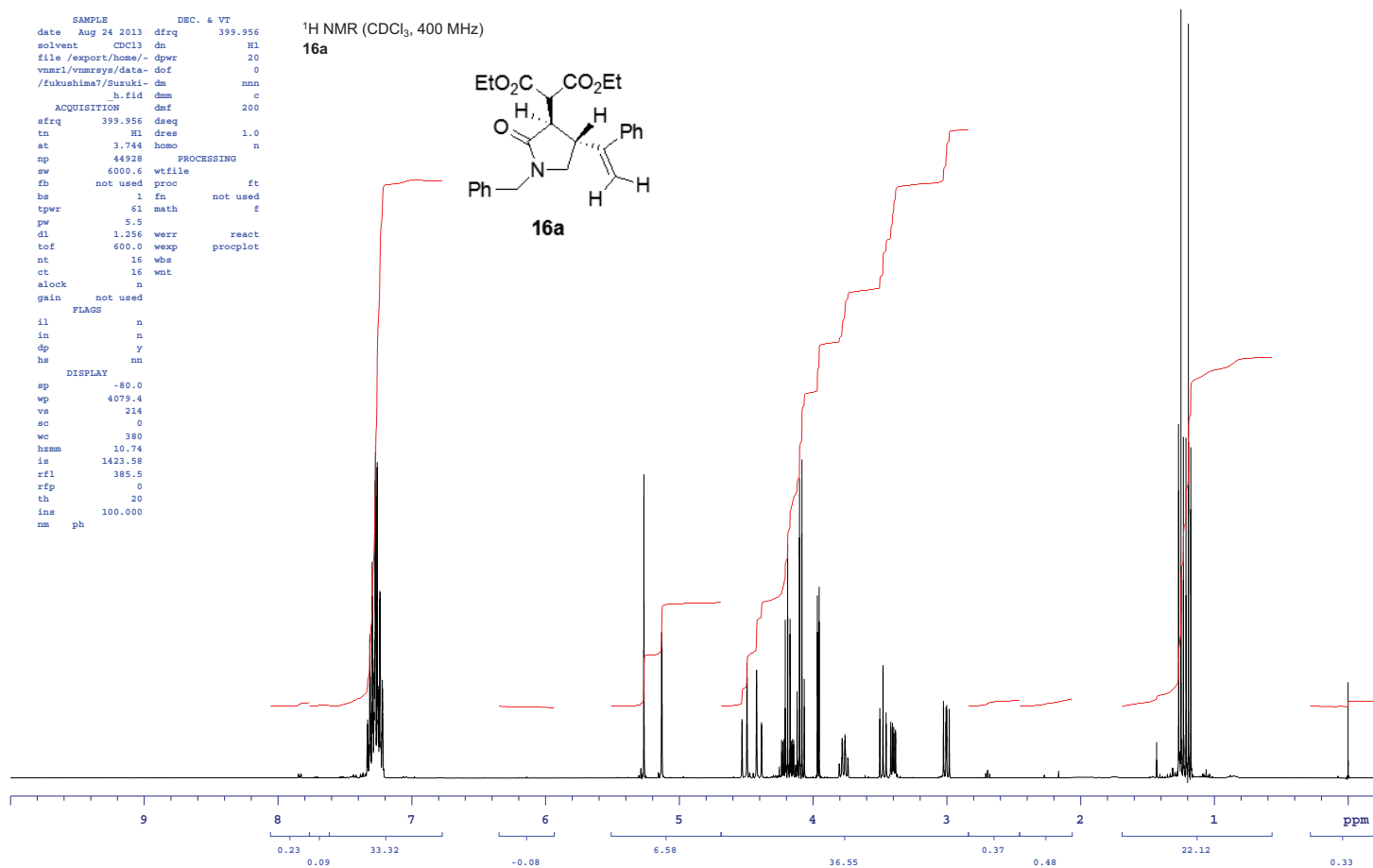
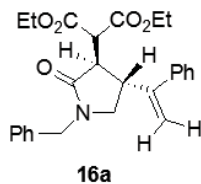
fukushima7/Suzuki

exp100 std1h

SAMPLE		DEC. & VT	
date	Aug 24 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		20
nmr1/vnmrsys/data-	dof		0
/fukushima7/Suzuki-	dm	nmn	
	h.fid	dmm	c
ACQUISITION		dmf	200
sfrq	399.956	dseq	
tn	H1	dres	1.0
at	3.744	homo	n
np	44928	PROCESSING	
sw	6000.6	wtfile	
fb	not used	proc	ft
bs	1	fn	not used
tpwr	61	math	f
pw	5.5		
d1	1.356	werr	react
tof	600.0	wexp	procplot
nt	16	wbs	
ct	16	wnt	
alock	n		
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-80.0		
wp	4079.4		
vs	214		
sc	0		
wc	380		
himm	10.74		
is	1423.58		
rfl	385.5		
rfp	0		
th	20		
ins	100.000		
nm	ph		

¹H NMR (CDCl₃, 400 MHz)

16a



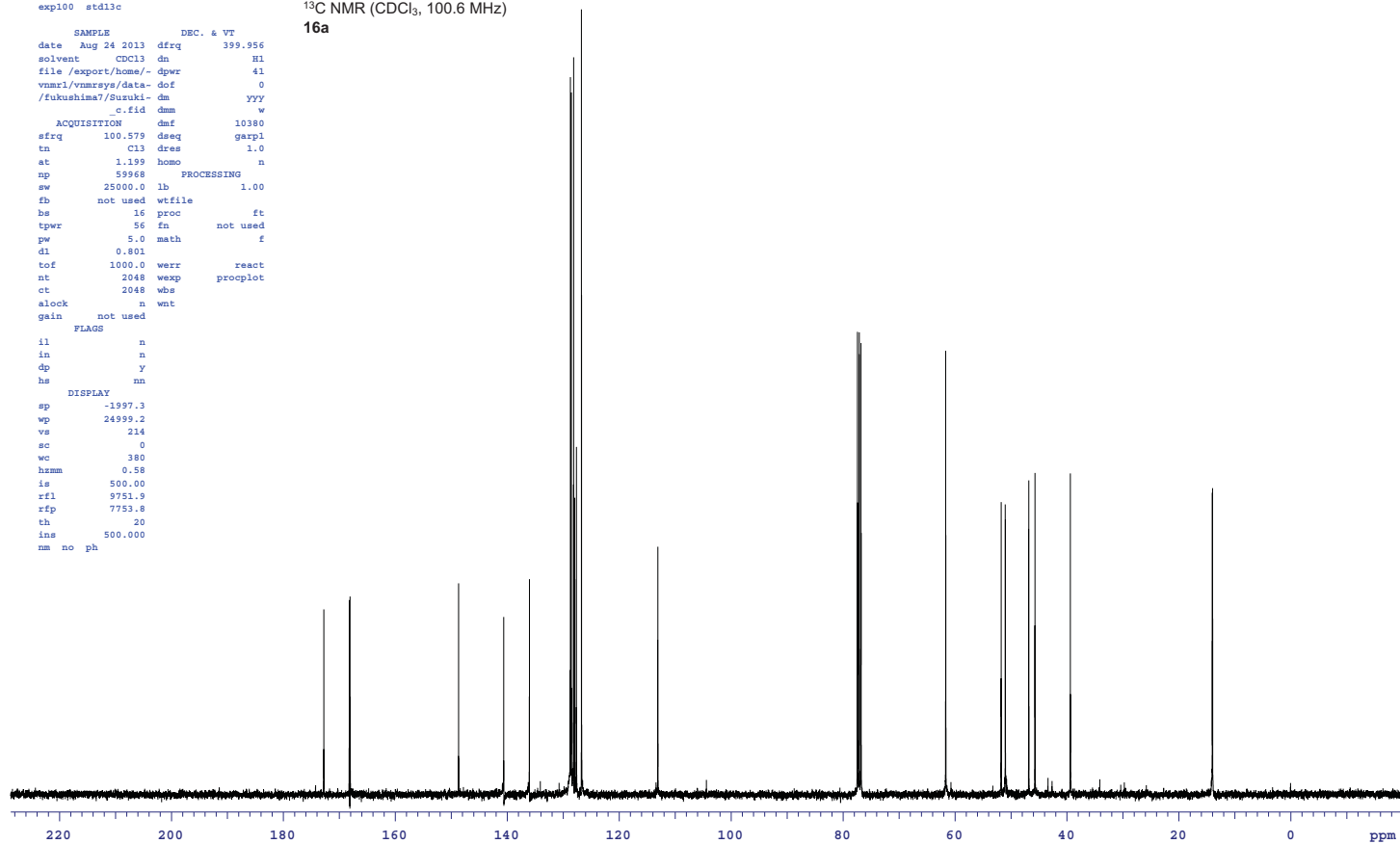
¹³C OBSERVE

exp100 std13c

SAMPLE		DEC. & VT	
date	Aug 24 2013	dfreq	399.956
solvent	CDCl3	dn	H1
file	/export/home/~ dpwr		41
nmr1/vnmrsys/data-	dof		0
/fukushima7/Suzuki-	dm	yyy	
	c.fid	dmm	w
ACQUISITION		dmf	10380
sfrq	100.579	dseq	gaspl
tn	Cl3	dres	1.0
at	1.199	homo	n
np	59968	PROCESSING	
sw	25000.0	lb	1.00
fb	not used	wtfile	
bs	16	proc	ft
tpwr	56	fn	not used
pw	5.0	math	f
d1	0.801		
tof	1000.0	werr	react
nt	2048	wexp	procplot
ct	2048	wbs	
alock	n	wnt	
gain	not used		
FLAGS			
il	n		
in	n		
dp	y		
hs	nm		
DISPLAY			
sp	-1997.3		
wp	24999.2		
vs	214		
sc	0		
wc	380		
himm	0.58		
is	500.00		
rfl	9751.9		
rfp	7753.8		
th	20		
ins	500.000		
nm	no ph		

¹³C NMR (CDCl₃, 100.6 MHz)

16a



fukushima7/SuzukiPr

exp100 std1h

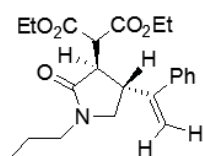
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SAMPLE          DEC. & VT
date Sep 13 2013 dfrq 399.956
solvent CDCl3 dn H1
file /export/home/~ dpwr 20
vnmr1/vnmrsys/data- dof 0
/fukushima7/Suzuki- dm nn
Pr h.fid dms c
ACQUISITION dmf 200
sfrq 399.956 dseq
tn H1 dres 1.0
at 3.744 homo n
np 44928 PROCESSING
sw 6000.6 wfile
fb not used proc ft
bs 1 fn not used
tpwr 61 math f
pw 5.5
d1 1.256 werr react
tof 600.0 wexp procplot
nt 16 wbs
ct 16 wnt
alock n
gain not used
FLAGS
il n
in n
dp y
hs nn
DISPLAY
sp -80.0
wp 4079.4
vs 214
sc 0
wc 380
hnm 10.74
is 1323.53
rfl 380.7
rfp 0
th 20
ins 100.000
nm ph

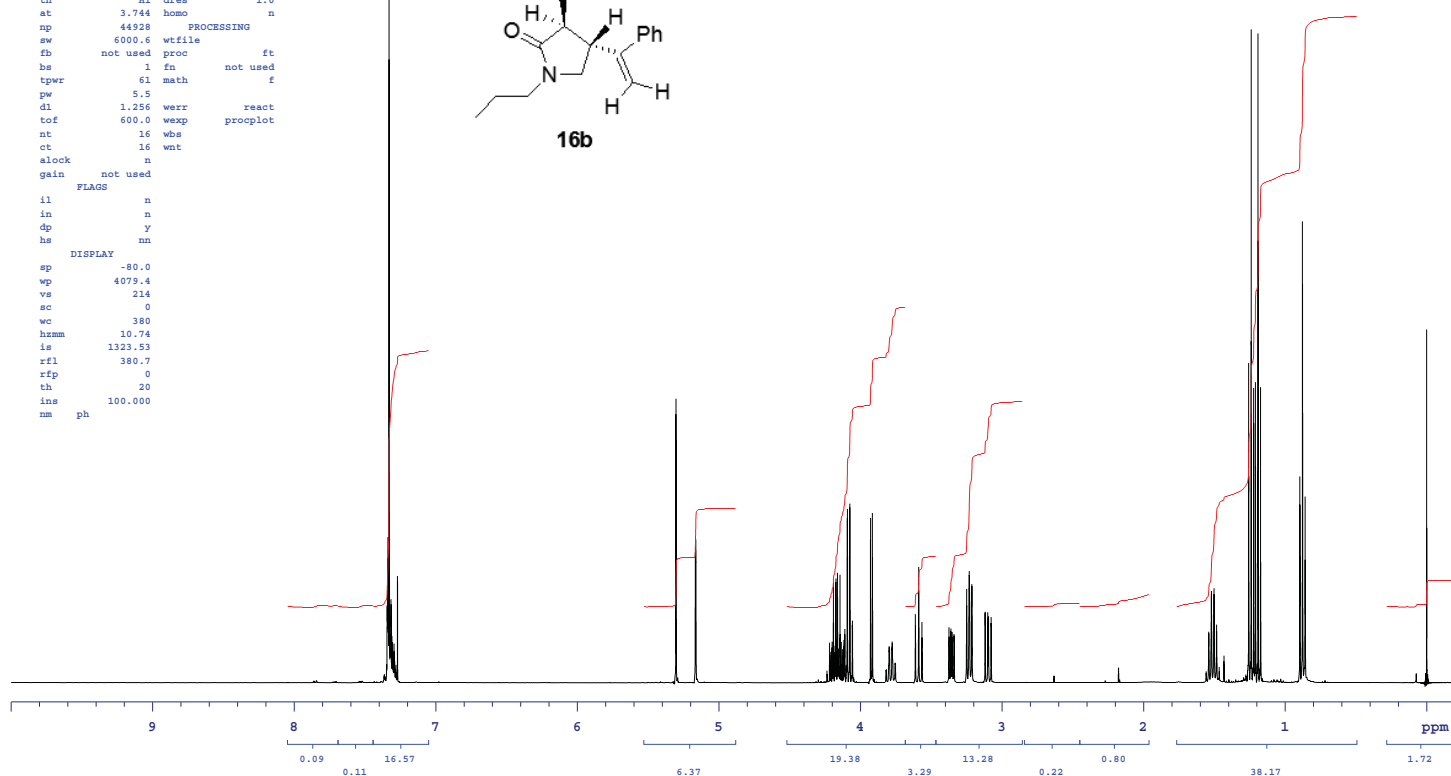
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¹H NMR (CDCl₃, 400 MHz)

16b



16b



fukushima7/SuzukiPr

exp100 std13c

```

SAMPLE          DEC. & VT
date Sep 13 2013 dfrq 399.956
solvent CDCl3 dn H1
file /export/home/~ dpwr 41
vnmr1/vnmrsys/data- dof 0
/fukushima7/Suzuki- dm yyy
Pr c.fid dms w
ACQUISITION dmf 10380
sfrq 100.579 dseq garpl
tn C13 dres 1.0
at 1.299 homo n
np 59968 PROCESSING
sw 25000.0 lb 1.00
fb not used wfile
bs 16 proc ft
tpwr 56 fn not used
pw 5.0 math f
d1 0.801
tof 1000.0 werr react
nt 2048 wexp procplot
ct 2048 wbs
alock n
gain not used
FLAGS
il n
in n
dp y
hs nn
DISPLAY
sp -1996.5
wp 24999.2
vs 214
sc 0
wc 380
hnm 0.63
is 500.00
rfl 9751.1
rfp 7753.8
th 20
ins 500.000
nm no ph

```

¹³C NMR (CDCl₃, 100.6 MHz)

16b

