Enantioselective Synthesis of Highly Functionalized Octahydro-6-oxo-1-phenylnaphthalene-2-carbaldehydes via Organocatalytic Domino Reactions.

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SUPPORTING INFORMATION:

Contents: (1) ORTEP plots for X-ray crystal structures of **5a** and **5j**.

(2) Spectra copies for compounds **3a**-**8**.

(3) *Ee* analysis by HPLC with chiral column, in Table 1-2.

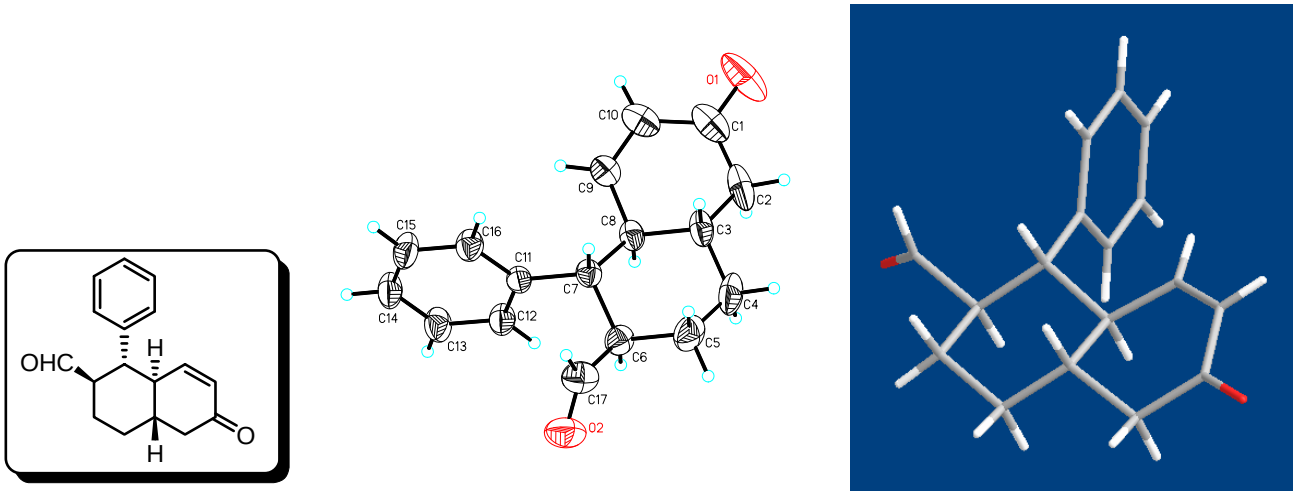


Figure S1. ORTEP plots for X-ray crystal structures of **5a**.

CCDC 716016 contains the supplementary crystallographic data for **5a**. These data can be obtained free of charge from the Cambridge Crystallographic Data Centre via www.ccdc.cam.ac.uk/data_request/cif. Crystallographic data for **5a**: $C_{17}H_{18}O_2$, M = 254.31, monoclinic, space group P 21, T = 294(2)K, a = 6.1387(7), b = 11.0076(13), c = 10.7760(13) Å, β = 103.653(2)°, V= 707.58(14) Å^3, Z = 2, D = 1.194 g/cm^3, λ (Mo-K_α) = 0.71073 Å, 7023 reflections collected, 2596 unique reflections, 173 parameters refined on F^2, R = 0.0435, $wR2[F^2]$ = 0.1224 [2392 data with $F^2>2\sigma(F^2)$].

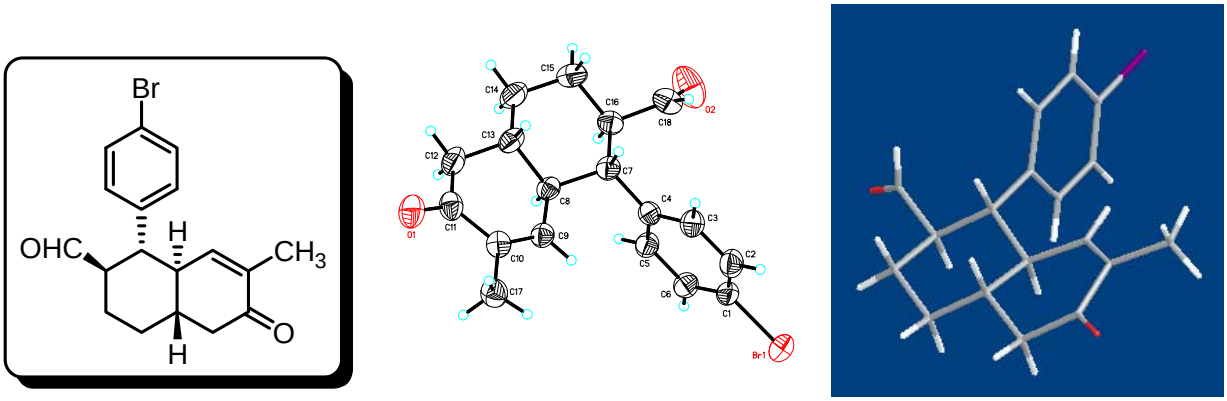
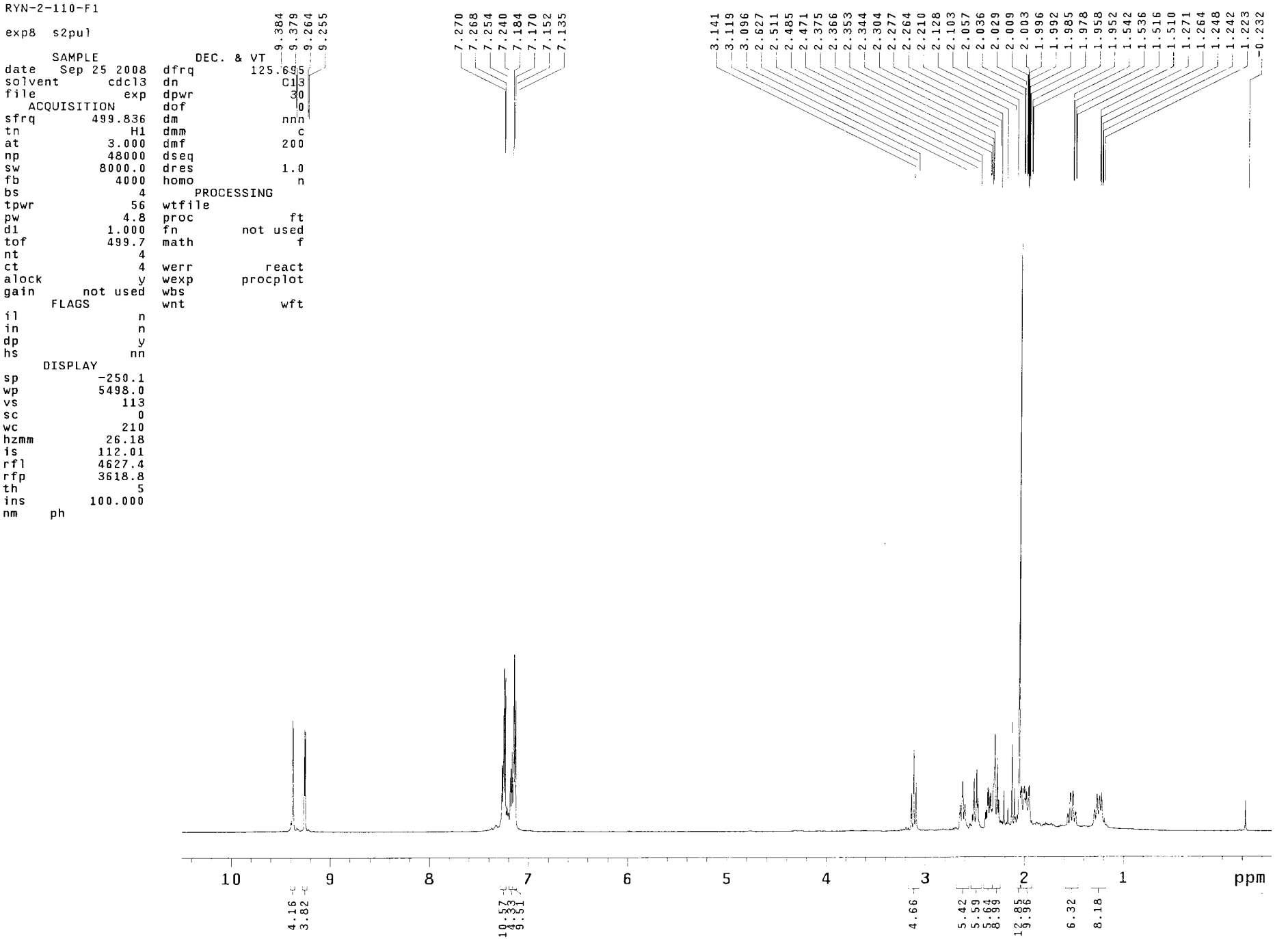


Figure S2. ORTEP plots for X-ray crystal structures of **5j**.

CCDC 716017 contains the supplementary crystallographic data for **5j**. These data can be obtained free of charge from the Cambridge Crystallographic Data Centre via www.ccdc.cam.ac.uk/data_request/cif. Crystallographic data for **5j**: $C_{18}H_{19}BrO_2$, M = 347.24, monoclinic, space group P 21, T = 292(2)K, a = 7.063(3), b = 10.733(5), c = 10.436(5) Å, β = 91.248(8)°, V= 791.0(6) Å^3, Z = 2, D = 1.458 g/cm^3, λ (Mo-K_α) = 0.71073 Å, 6951 reflections collected, 3652 unique reflections, 191 parameters refined on F^2, R = 0.0415, $wR2[F^2]$ = 0.0976 [2717 data with $F^2>2\sigma(F^2)$].

Fig S3. 1H NMR of 3a (500 MHz, CDCl3).



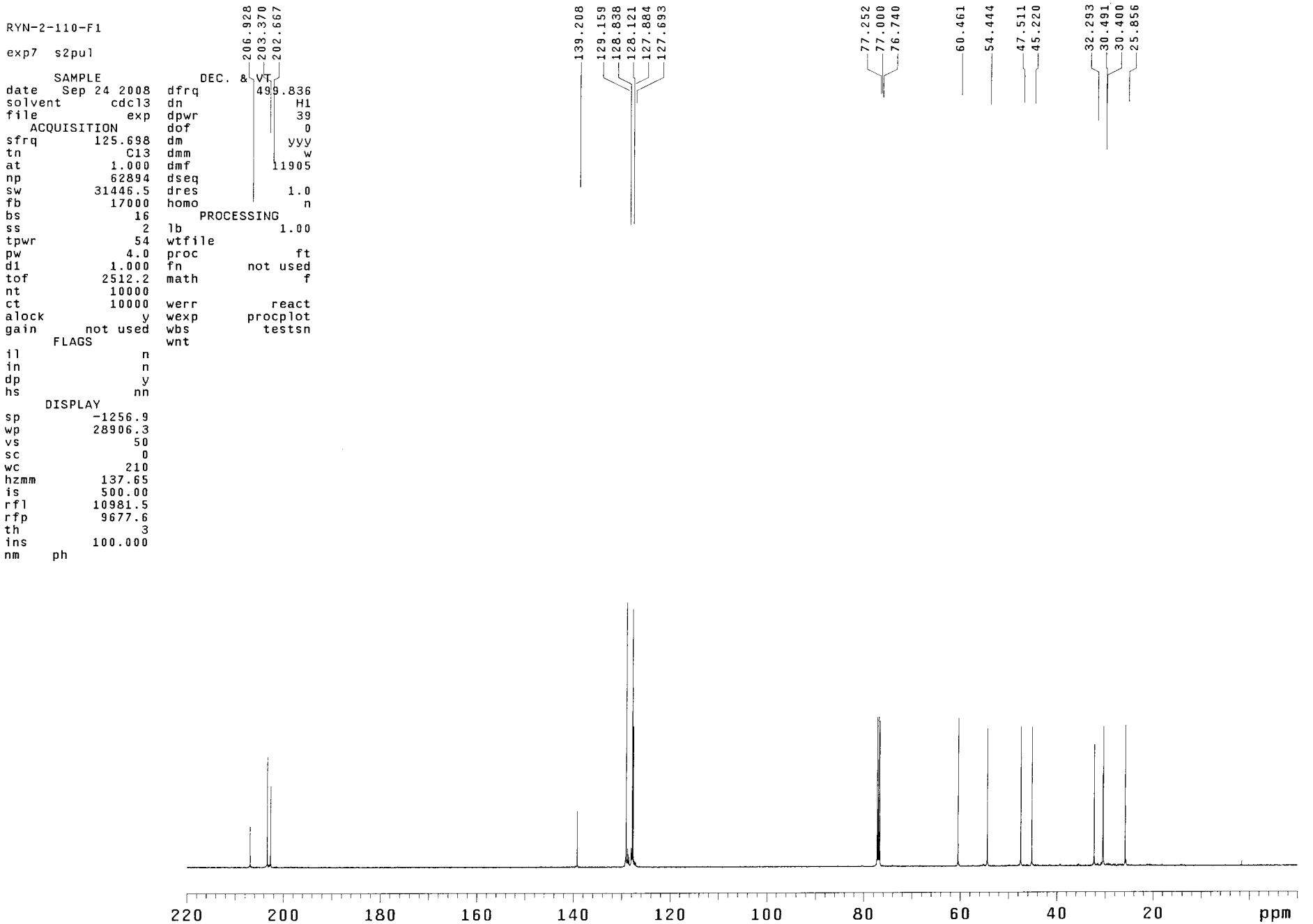
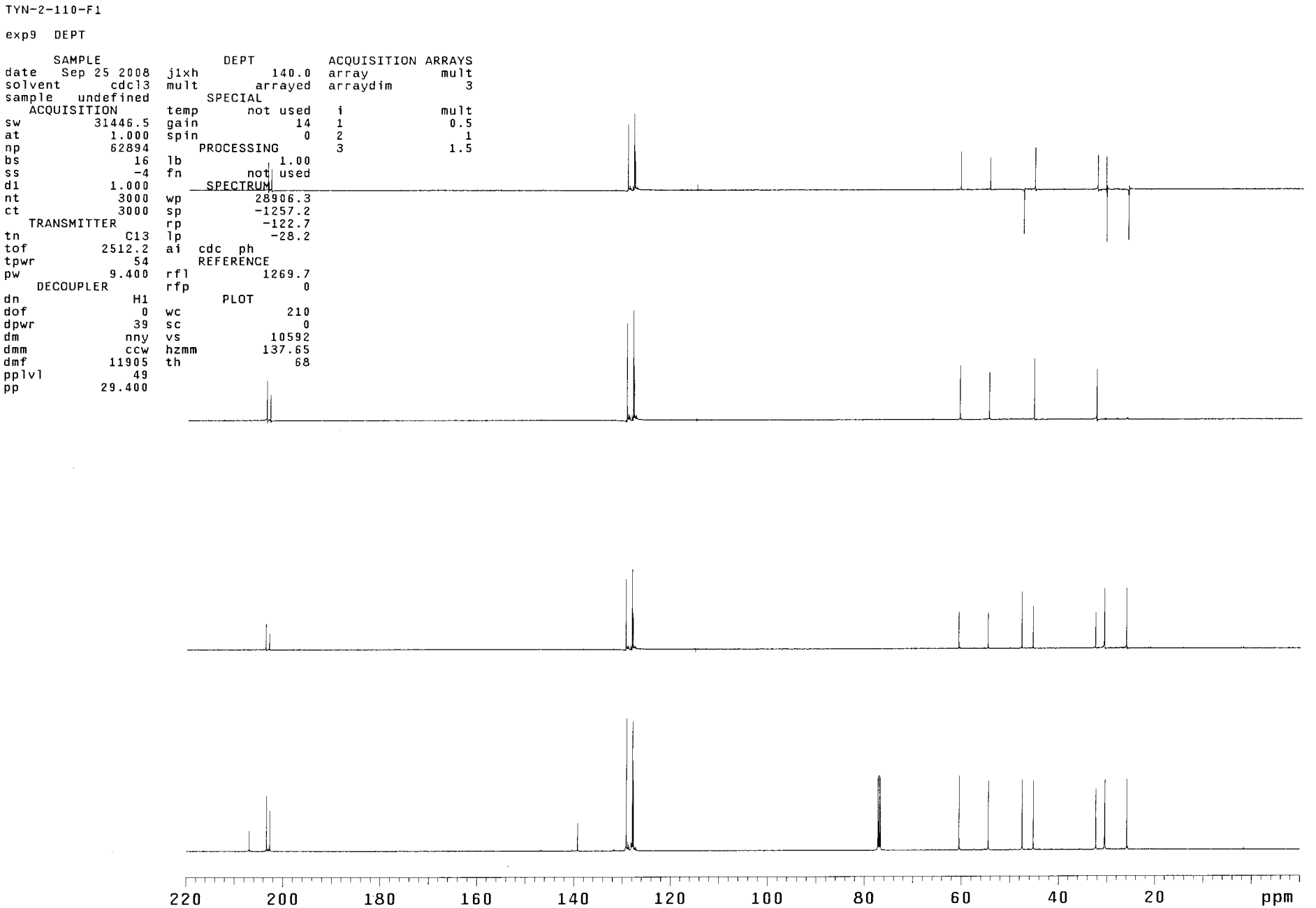


Fig S4. 13C NMR of 3a (500 MHz, CDCl3).

Fig S5. DEPT of 3a (CDCl3).



RYN-2-110-F1

exp3 gCOSY

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ACQUISITION		SPECIAL	
sw	4498.4	temp	not used
at	0.228	gain	28
np	2048	spin	0
fb	3000	F2 PROCESSING	
ss	16	sb	-0.114
d1	1.000	sbs	not used
nt	32	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4498.4	sb1	-0.028
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	2048
sfrq	499.836	DISPLAY	
tof	249.8	sp	504.2
tpwr	56	wp	4494.0
pw	12.000	sp1	504.2
GRADIENTS		wp1	4494.0
gzlvl1	1026	rfl	-499.8
gt1	0.001000	rfp	0
gstab	0.000500	rfl1	-499.8
DECOUPLER		rfp1	0
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	57
		th	5
		ai cdc av	

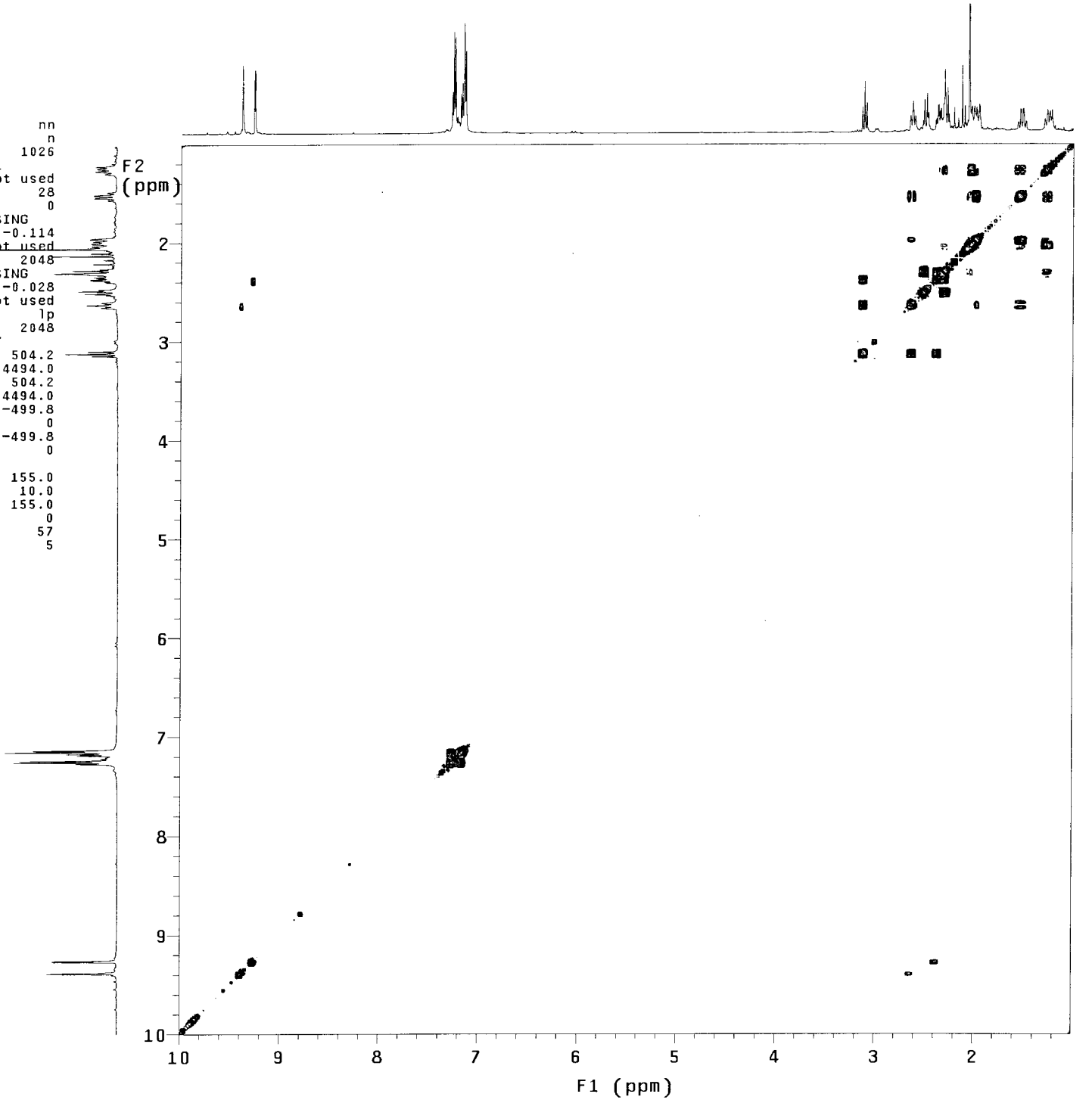

Fig S6. COSY of 3a (CDCl3).

RYN-2-110-F1

exp4 gHMQC

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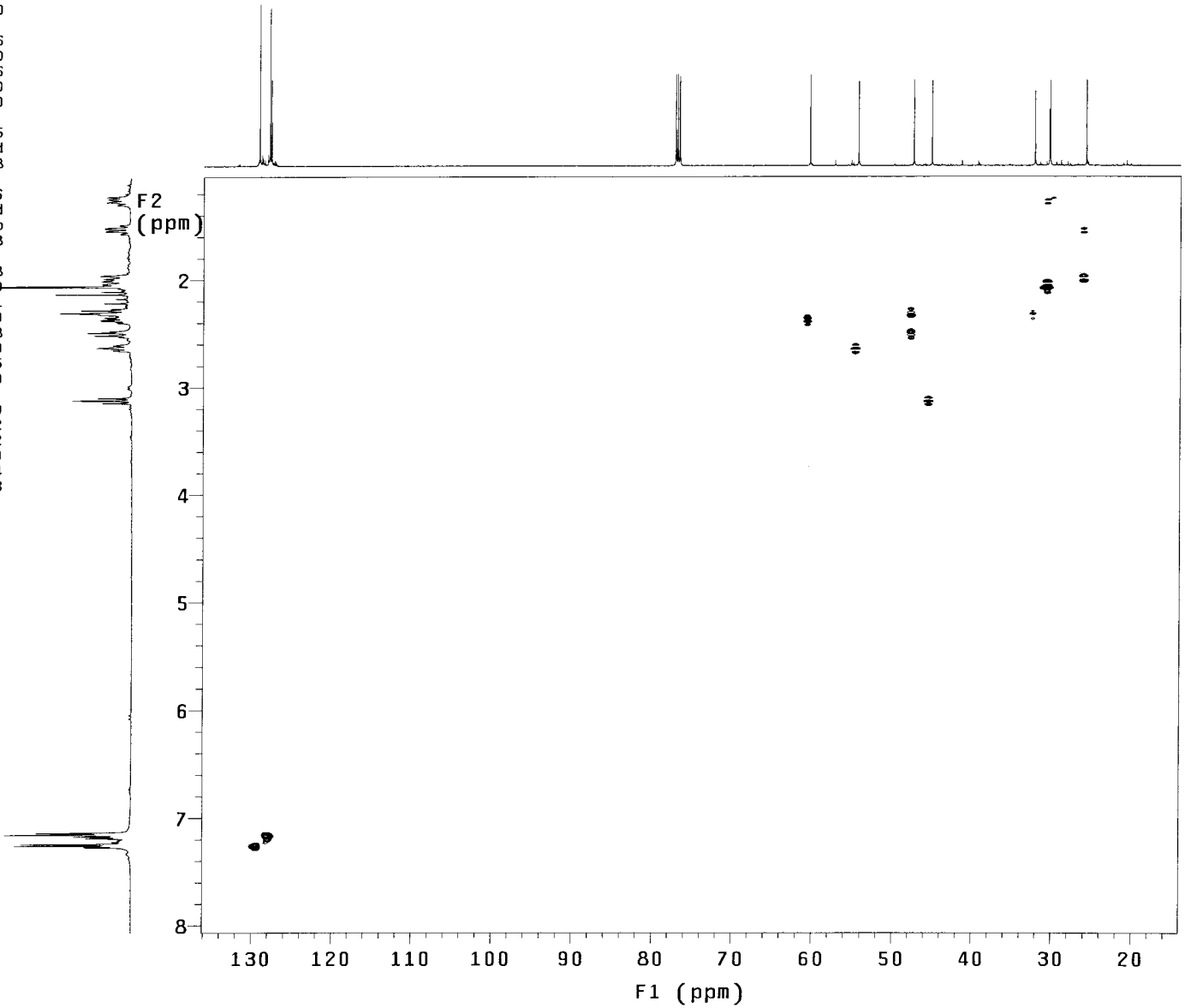
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4498.4
at	0.228
np	2048
fb	3000
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.836
tof	249.8
tpwr	56
pw	12.000
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	35
pwxlvl	51
pwx	14.700
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	28
spin	0
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gzlvl3	516
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.105
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.006
gfs1	not used
proci	1p
fn1	2048
DISPLAY	
sp	521.8
wp	3510.0
sp1	1768.1
wp1	15337.0
rfl	-499.8
rfp	0
rfl1	1257.5
rfp1	0
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	1814
th	3
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256
i	phase
1	1
2	2

Fig S7. HMQC of 3a (CDCl3).



RYN-2-110-F1

exp6 NOESY

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sample	undefined
ACQUISITION	
sw	4498.4
at	0.228
np	2048
fb	3000
ss	32
d1	1.000
nt	8
2D ACQUISITION	
sw1	4498.4
ni	200
TRANSMITTER	
tn	H1
sfrq	499.836
tof	249.8
tpwr	56
pw	12.000
NOESY	
mix	0.400
PRESATURATION	
satmode	nnnn
satpwr	0
satdly	0
satfrq	0
DECOUPLER	
dn	C13
dm	nnn

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	20
spin	0
F2 PROCESSING	
gf	0.105
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.041
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	504.2
wp	4494.0
sp1	504.2
wp1	4494.0
rfl	-499.8
rfp	0
rfl1	-499.8
rfp1	0
PLOT	
wc	155.0
sc	10.0
wc2	155.0
sc2	0
vs	1814
th	1
ai ph	

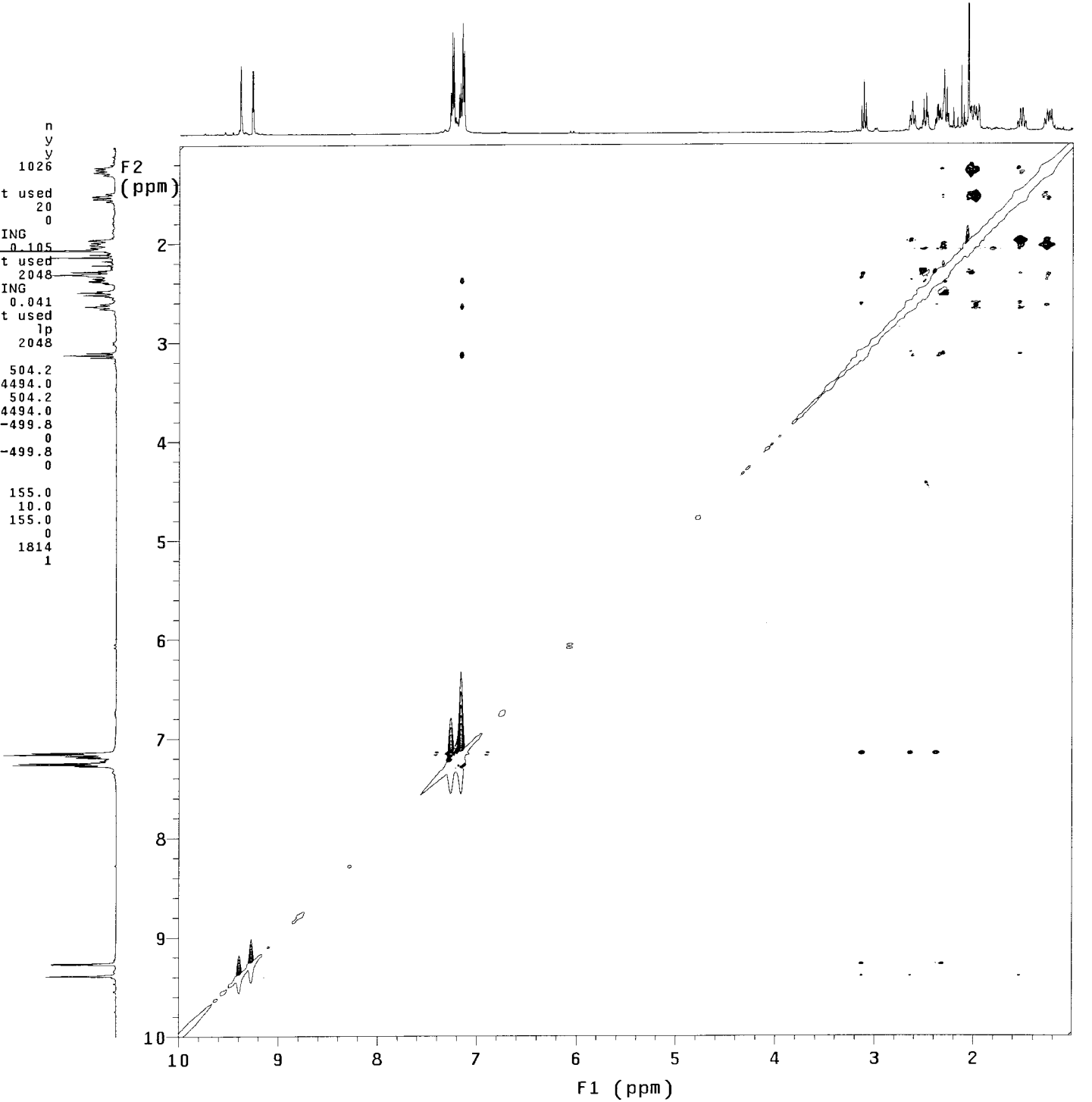


Fig S8. NOESY of 3a (CDCl3).

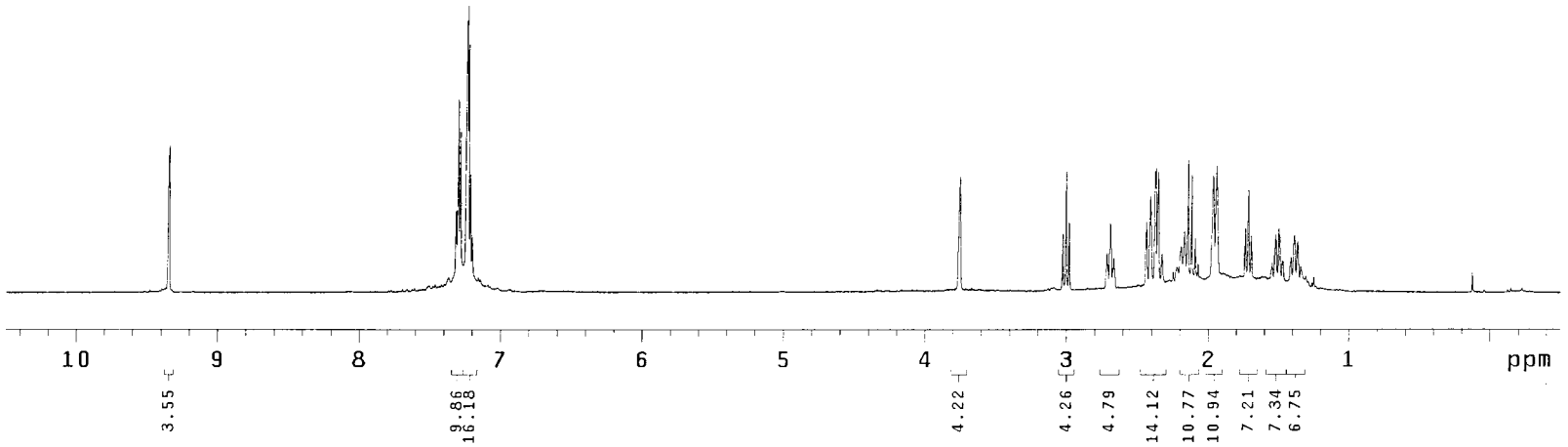
Fig S9. 1H NMR of 4a (500 MHz, CDCl3).

RYN-2-113-D-F2

exp21 s2pul

SAMPLE		DEC. & VT	
date	Jan 15 2009	dfrq	125.695
solvent	cdcl3	dn	C13
file	exp	dpwr	30
ACQUISITION		dof	0
sfrq	499.836	dm	nnn
tn	H1	dmm	c
at	3.000	dmf	200
np	48000	dseq	
sw	8000.0	dres	1.0
fb	4000	homo	n
bs	4	PROCESSING	
tpwr	57	wtfile	
pw	4.8	proc	ft
d1	1.000	fn	not used
tof	499.7	math	f
nt	4		
ct	4	werr	react
alock	y	wexp	procplot
gain	not used	wbs	
FLAGS		wnt	wft
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-250.1		
wp	5498.0		
vs	39		
sc	0		
wc	210		
hzmm	26.18		
is	135.97		
rfl	4631.1		
rfp	3618.8		
th	5		
ins	100.000		
nm	ph		

9.352, 9.346, 7.318, 7.303, 7.288, 7.246, 7.240, 7.231, 7.217, 7.202, 3.757, 3.028, 3.005, 2.982, 2.717, 2.694, 2.441, 2.413, 2.382, 2.376, 2.359, 2.195, 2.171, 2.147, 2.121, 2.095, 1.971, 1.945, 1.740, 1.718, 1.697, 1.523, 1.502, 1.391, 1.367



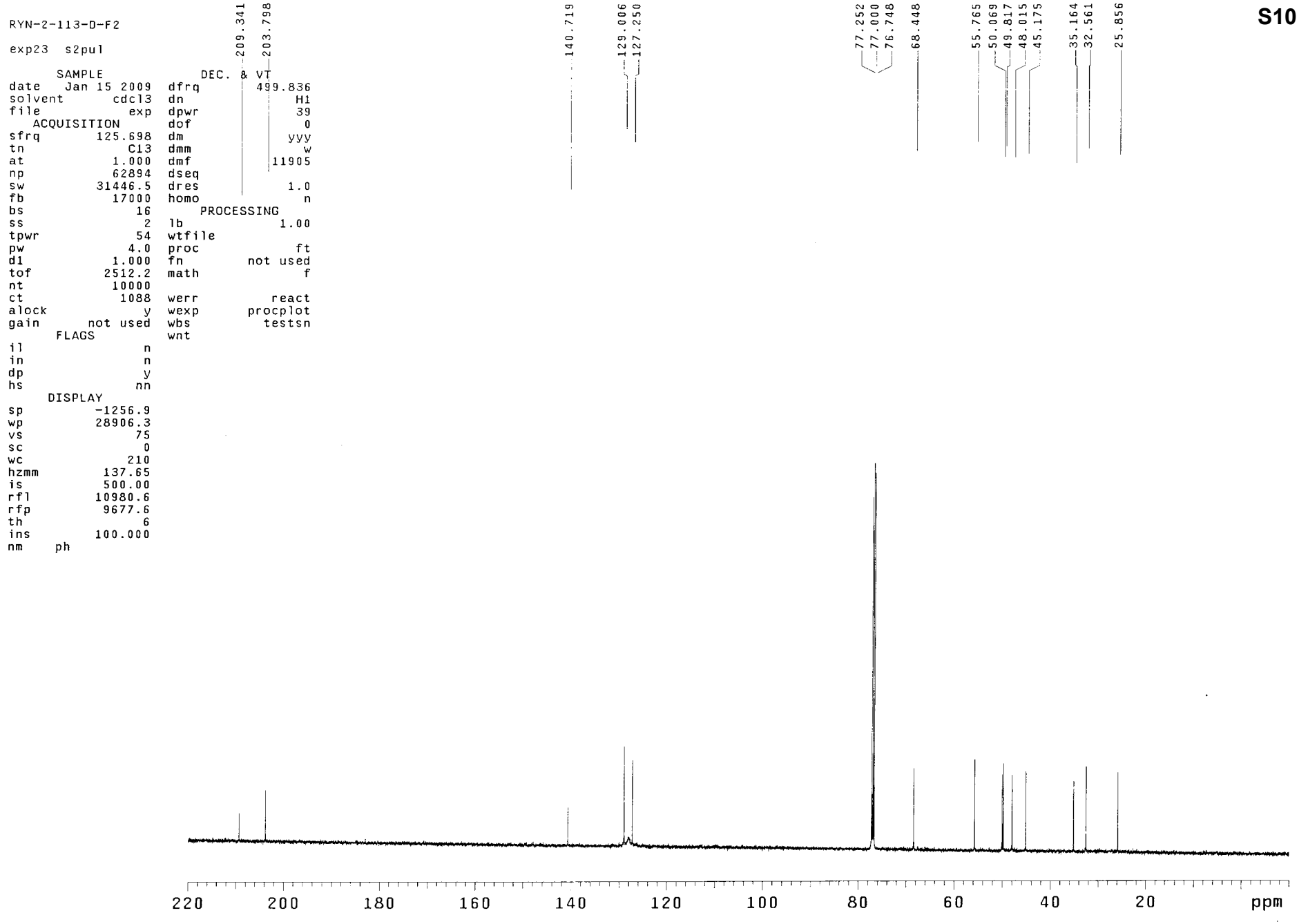


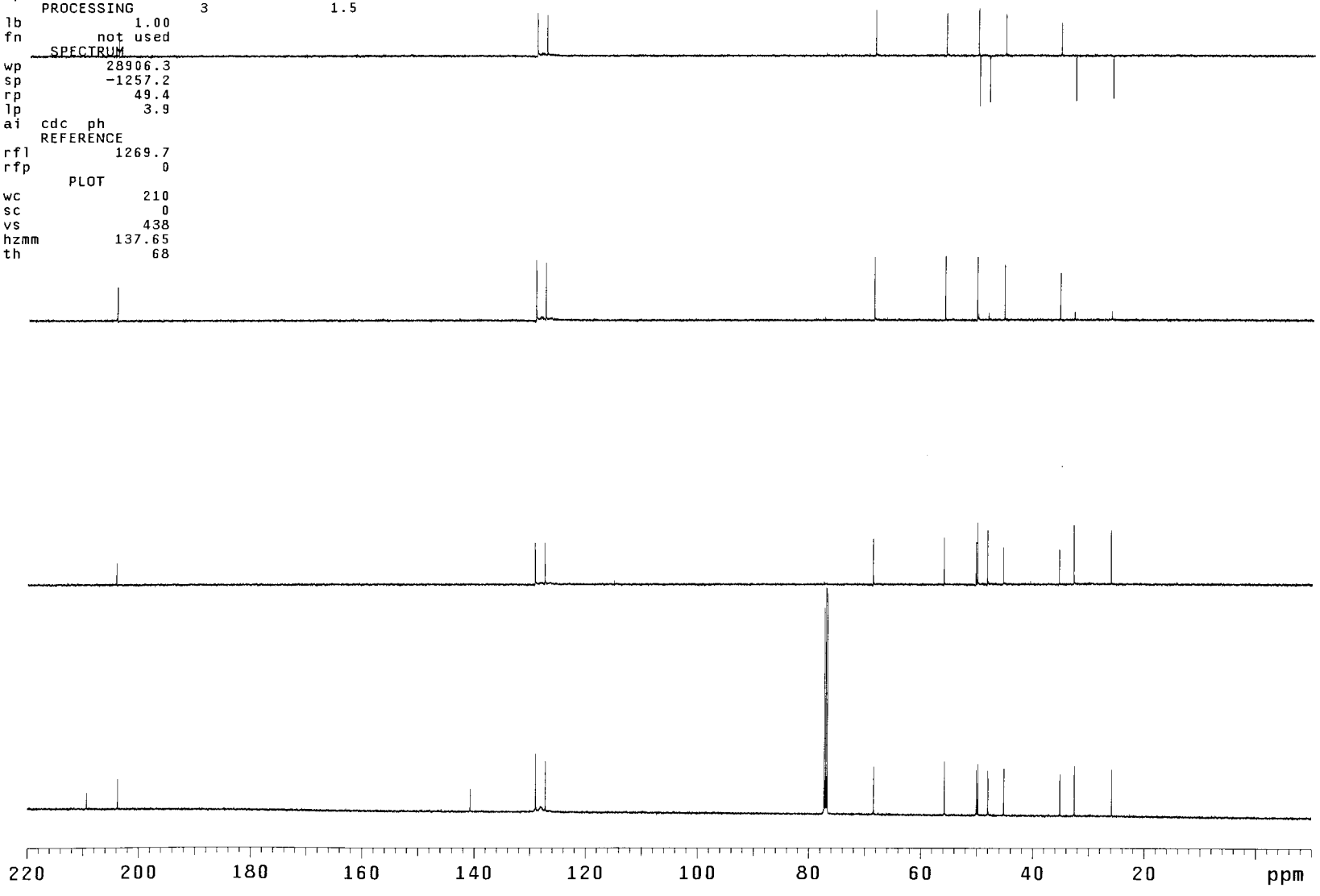
Fig S10. 13 NMR of 4a (125 MHz, CDCl3).

Fig S11. DEPT of 4a (CDCl3).

RYN-2-113-D-F2

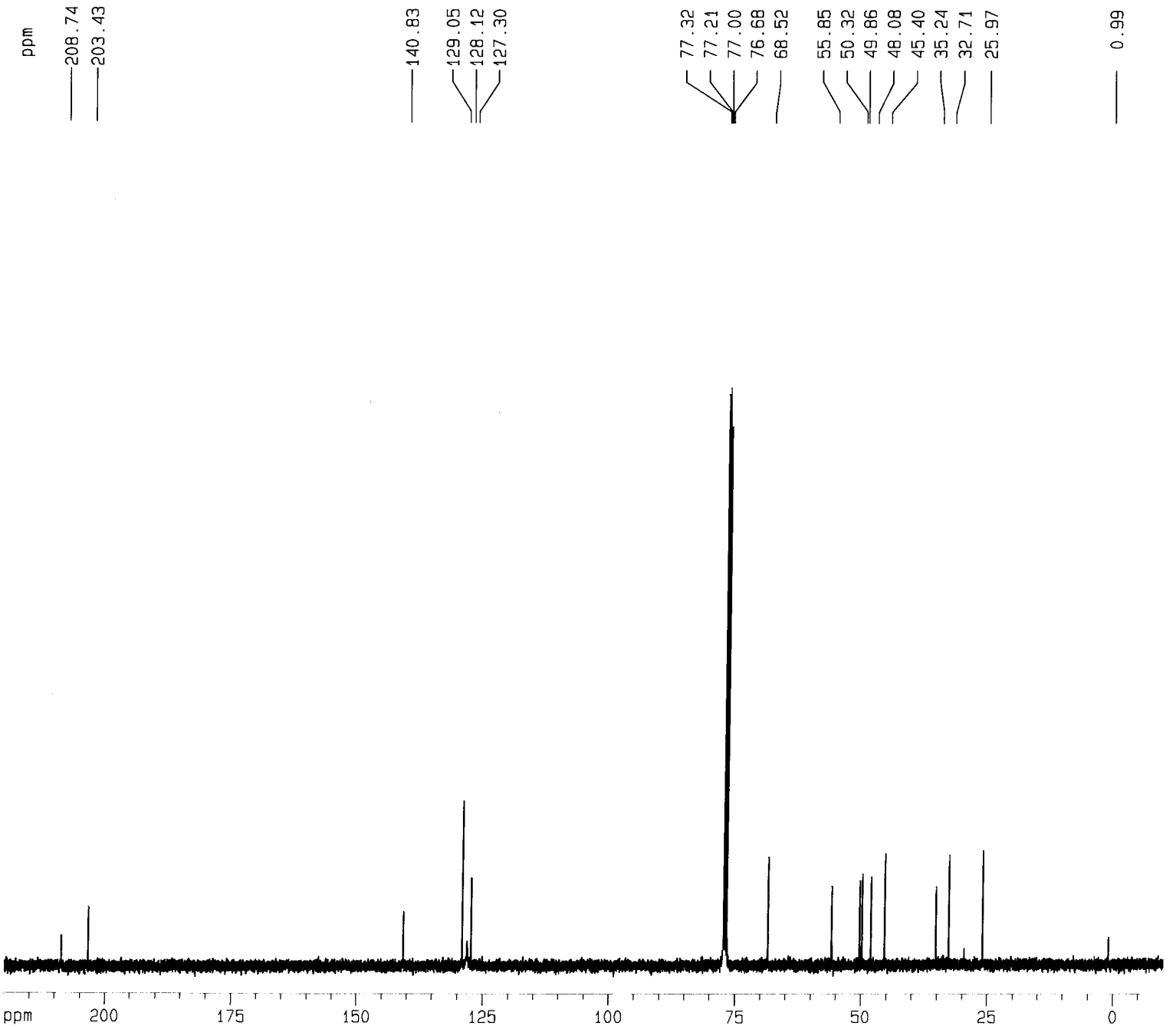
exp22 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Jan 15 2009	j1xh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	34	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	1000	wp	28906.3		
ct	1000	sp	-1257.2		
TRANSMITTER		rp	49.4		
tn	C13	lp	3.9		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	438		
dmm	ccw	hzmm	137.65		
dmf	11905	th	68		
pplvl	49				
pp	29.400				



C13 spectrum of

Fig S12. 13 NMR of 4a (100 MHz, CDCl3, 42 centidegree).



Current Data Parameters

NAME	RYN-501
EXPNO	6
PROCNO	1

F2 - Acquisition Parameters

Date_	20090122
Time	16.24
INSTRUM	spect
PROBHD	5 mm QNP 1H
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	1907
DS	4
SWH	25125.629 Hz
FIDRES	0.383387 Hz
AQ	1.3042164 sec
RG	5792.6
DW	19.900 usec
DE	6.50 usec
TE	300.0 K
D1	2.00000000 sec
d11	0.03000000 sec
d12	0.00002000 sec

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

NUC1	13C
P1	10.80 usec
PL1	0.00 dB
SFO1	100.6237959 MHz

========== CHANNEL f2 ==========

CPDPRG2	waltz16
NUC2	1H
PCPD2	90.00 usec
PL2	-3.00 dB
PL12	15.70 dB
PL13	18.70 dB
SFO2	400.1326008 MHz

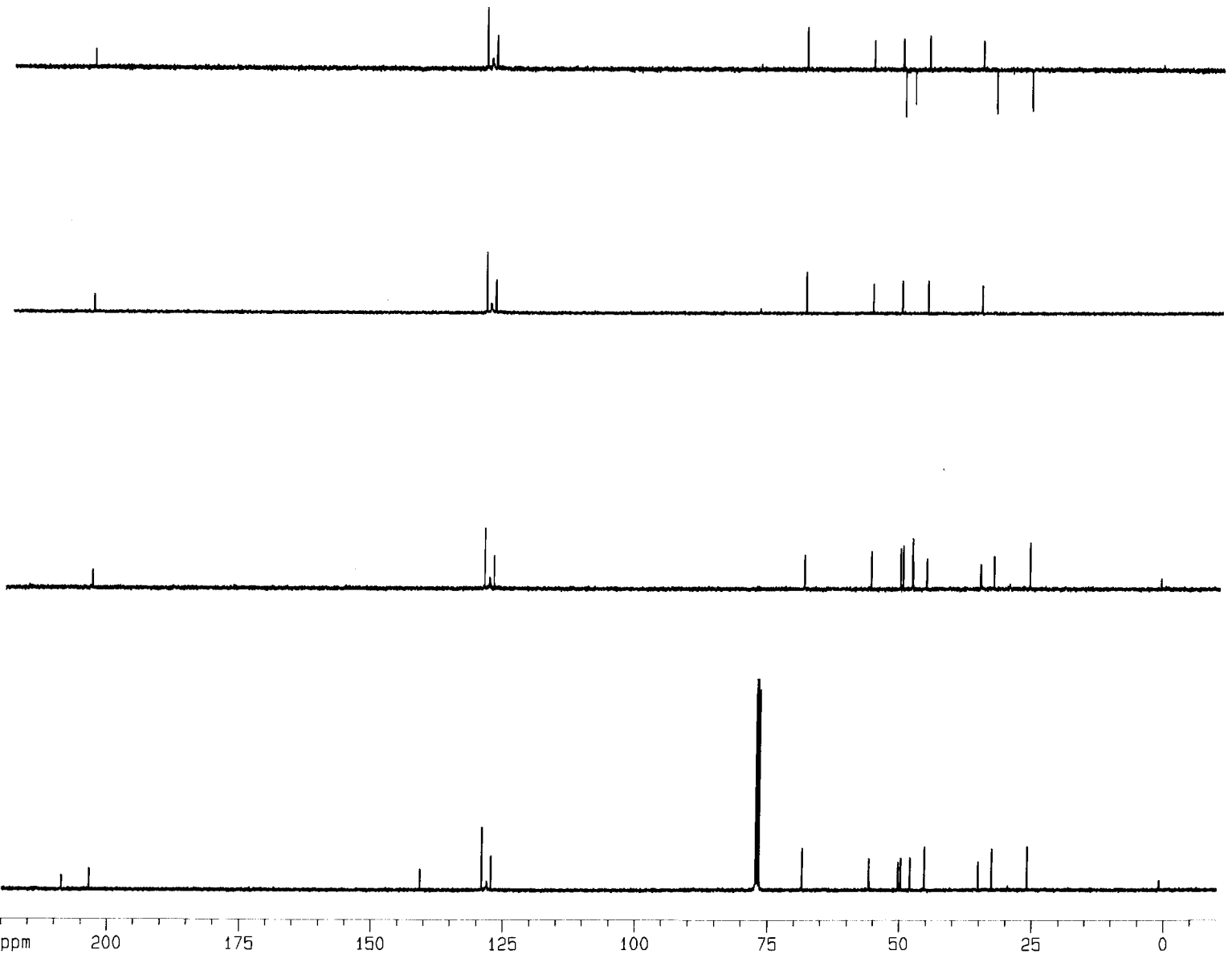
F2 - Processing parameters

SI	32768
SF	100.6127646 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.40

1D NMR plot parameters

CX	20.00 cm
F1P	220.000 ppm
F1	22134.81 Hz
F2P	-10.000 ppm
F2	-1006.13 Hz
PPMCM	11.50000 ppm/cm
HZCM	1157.04675 Hz/cm

Fig S13. DEPT of 4a (100 MHz, CDCl3, 42 centidegree).



Current Data Parameters

NAME	AYN-501
EXPNO	6
PROCNO	1

F2 - Acquisition Parameters

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Time	18.14
INSTRUM	spect
PROBHD	5 mm QNP 1H
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	3956
DS	4
SWH	25125.629 Hz
FIDRES	0.383387 Hz
AQ	1.3042164 sec
RG	5792.6
DW	19.900 usec
DE	6.50 usec
TE	300.0 K
D1	2.00000000 sec
d11	0.03000000 sec
d12	0.00002000 sec

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

NUC1	13C
P1	10.80 usec
PL1	0.00 dB
SFO1	100.6237959 MHz

========== CHANNEL f2 ==========

CPDPRG2	waltz16
NUC2	1H
PCPD2	90.00 usec
PL2	-3.00 dB
PL12	15.70 dB
PL13	18.70 dB
SFO2	400.1326008 MHz

F2 - Processing parameters

SI	32768
SF	100.6127646 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.40

1D NMR plot parameters

CX	20.00 cm
F1P	220.000 ppm
F1	22134.81 Hz
F2P	-10.000 ppm
F2	-1006.13 Hz
PPMCM	11.50000 ppm/cm
HZCM	1157.04700 Hz/cm

Fig S14. HMQC of 4a (CDCl3).

RYN-2-113-D-F2

exp25 gHMQC

SAMPLE	
date	Jan 15 2009
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4498.4
at	0.228
np	2048
fb	3000
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.836
tof	249.8
tpwr	57
pw	13.000
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	35
pwxlvl	51
pwx	14.700
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	34
spin	0
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gzlvl3	516
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.105
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.006
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	511.4
wp	3461.7
sp1	2526.0
wp1	14606.7
rf1	1392.8
rfp	1877.9
rfl1	9895.4
rfp1	8602.8
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	28
th	6
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256
i	phase
1	1
2	2

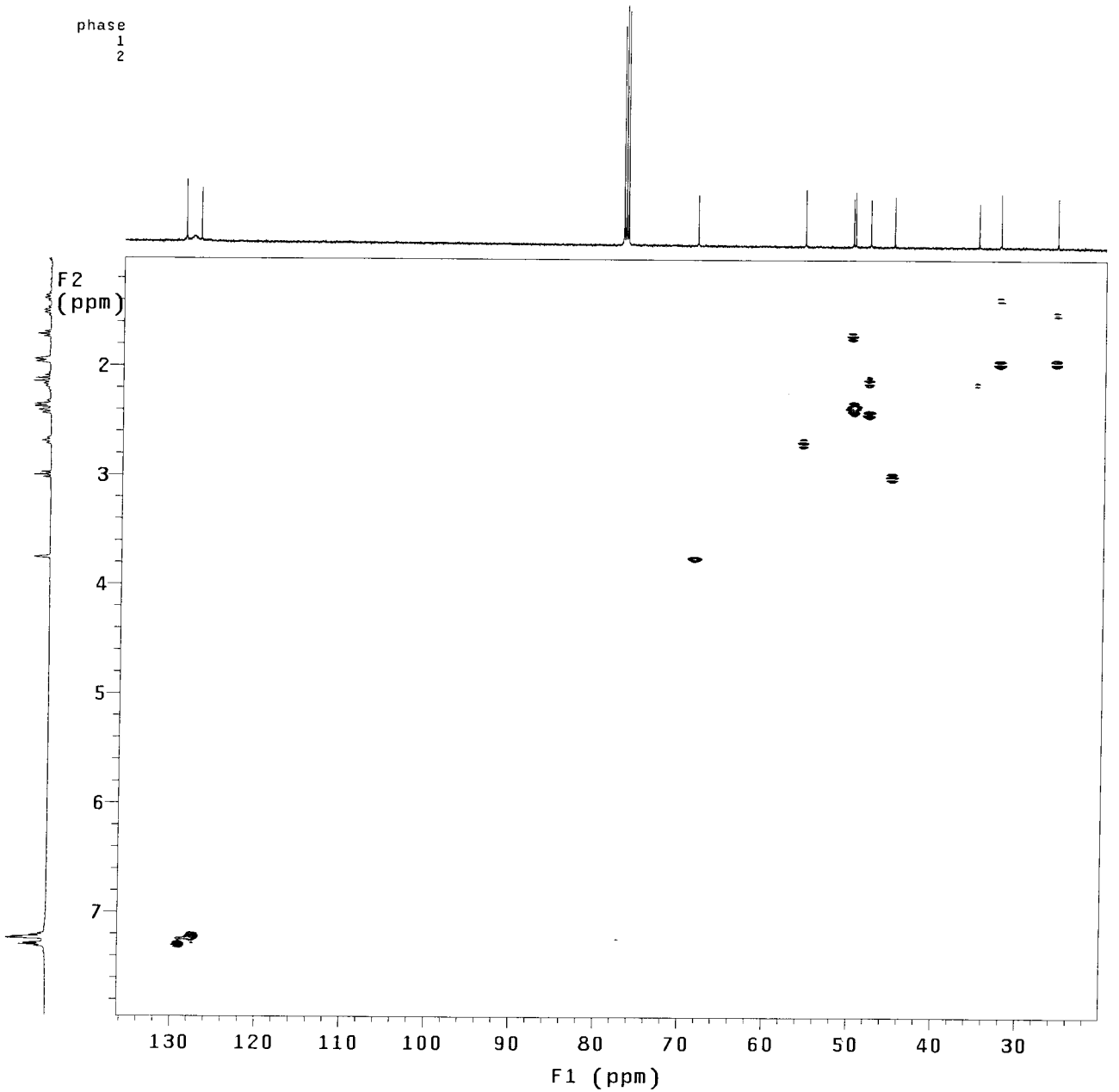

Fig S15. COSY of 4a (CDCl3).

RYN-2-113-D-F2

exp10 gCOSY

SAMPLE		FLAGS	
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solvent	cdcl3	sspul	n
sample	undefined	hsglvl	1026
ACQUISITION		SPECIAL	
sw	4498.4	temp	not used
at	0.228	gain	30
np	2048	spin	0
fb	3000	F2 PROCESSING	
ss	16	sb	-0.114
d1	1.000	sbs	not used
nt	16	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4498.4	sb1	-0.028
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	2048
sfrq	499.836	DISPLAY	
tof	249.8	sp	495.7
tpwr	57	wp	4494.0
pw	13.000	sp1	496.7
GRADIENTS		wp1	4494.0
gzlvl1	1026	rfl	1386.6
gt1	0.001000	rfp	1877.9
gstab	0.000500	rfl1	1385.5
DECOUPLER		rfp1	1877.9
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	1814
		th	9
		ai cdc av	

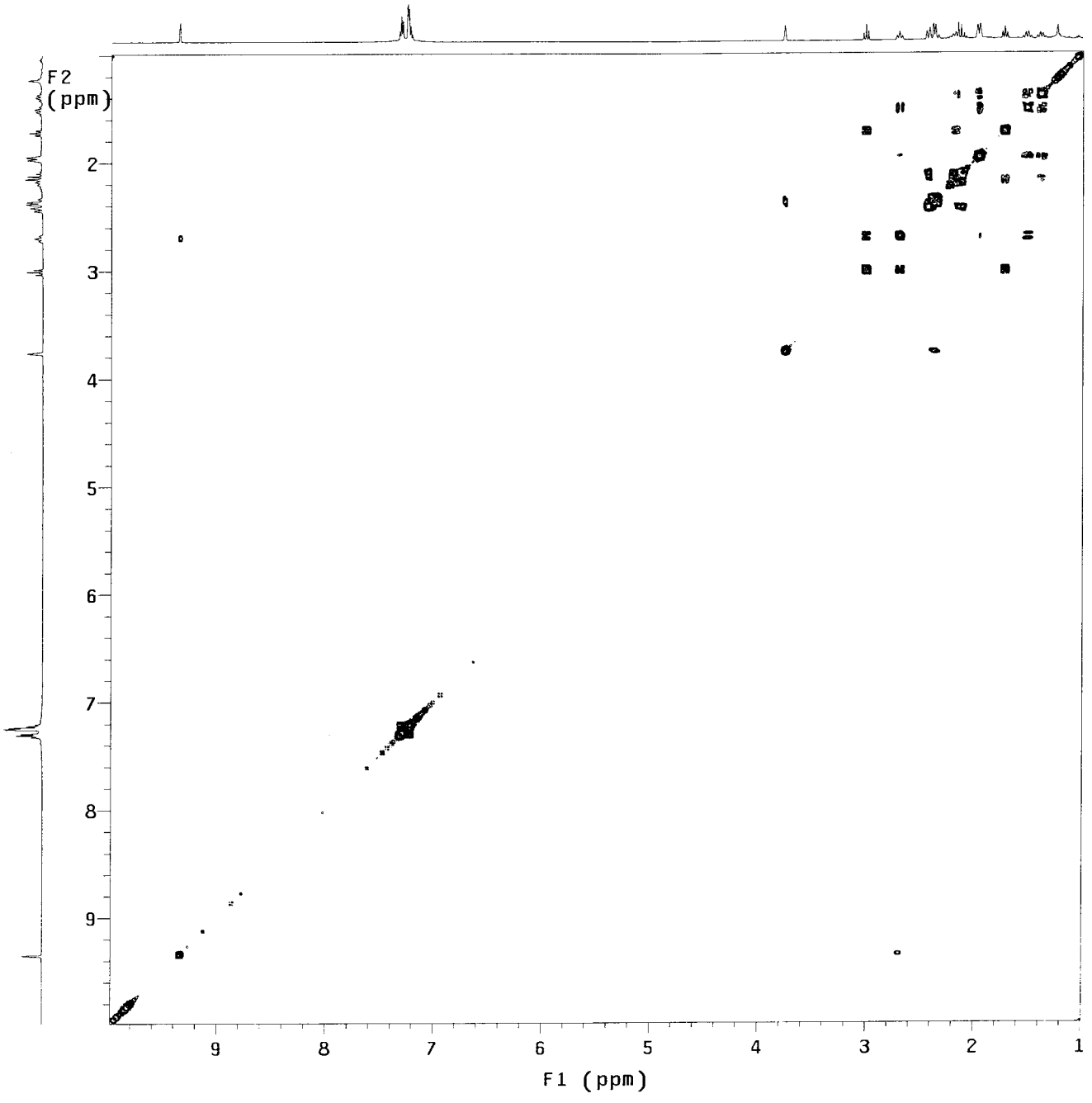


Fig S16. NOESY of 4a (CDCl3).

RYN-2-113-D-F2

exp11 NOESY

SAMPLE	
date	Jan 16 2009
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4498.4
at	0.228
np	2048
fb	3000
ss	32
d1	1.000
nt	8
2D ACQUISITION	
sw1	4498.4
ni	200
TRANSMITTER	
tn	H1
sfrq	499.836
tof	249.8
tpwr	57
pw	13.000
NOESY	
mix	0.600
PRESATURATION	
satmode	nnnn
satpwr	0
satdly	0
satfrq	0
DECOUPLER	
dn	C13
dm	nnn

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	30
spin	0
F2 PROCESSING	
gf	0.105
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.041
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	497.7
wp	4494.0
sp1	500.0
wp1	4494.0
rfl	1384.6
rfp	1877.9
rfl1	1382.3
rfp1	1877.9
PLOT	
wc	155.0
sc	10.0
wc2	155.0
sc2	0
vs	1814
th	4
ai ph	

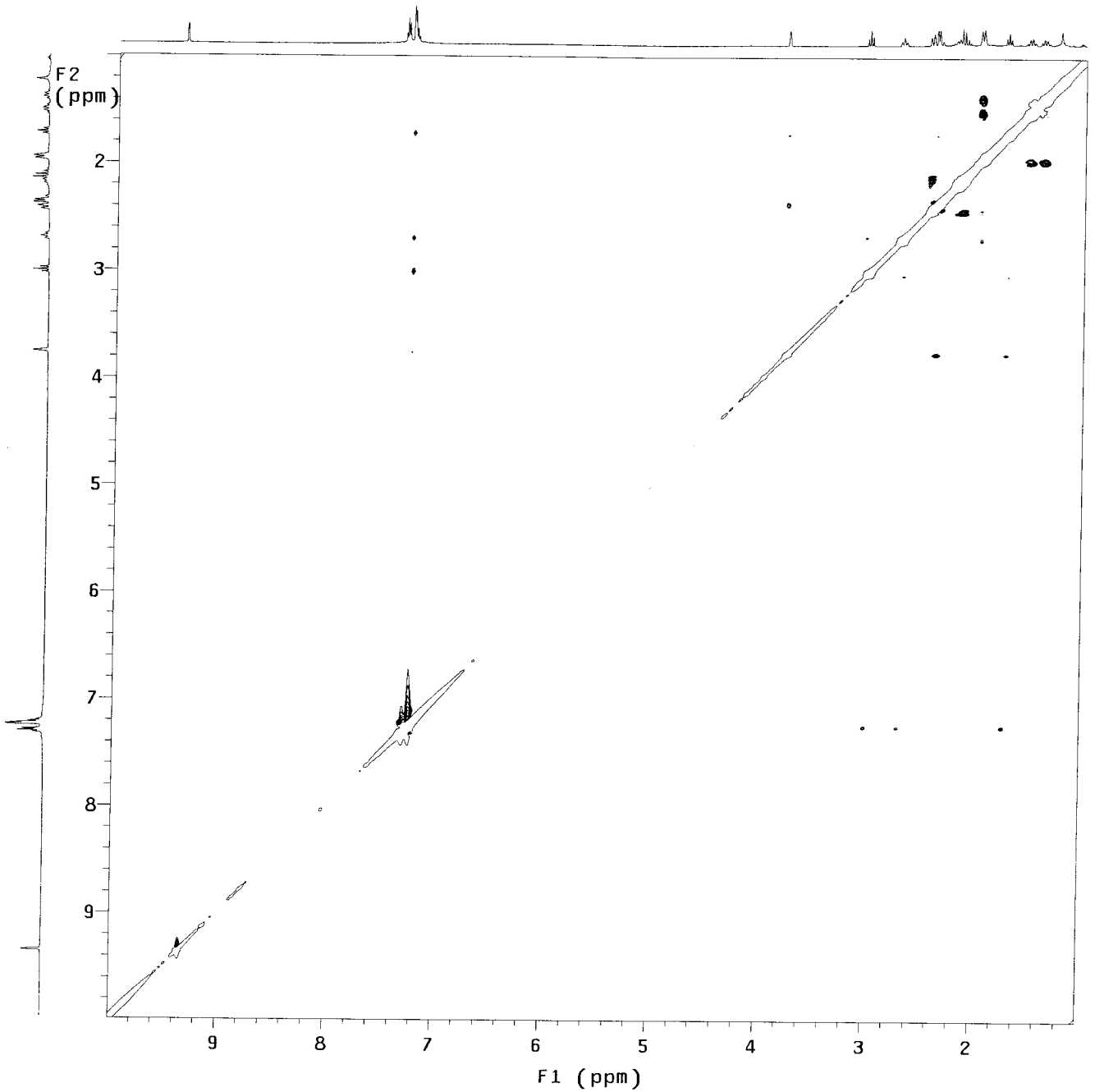


Fig S17. 1H NMR of 5a (500 MHz, CDCl3).

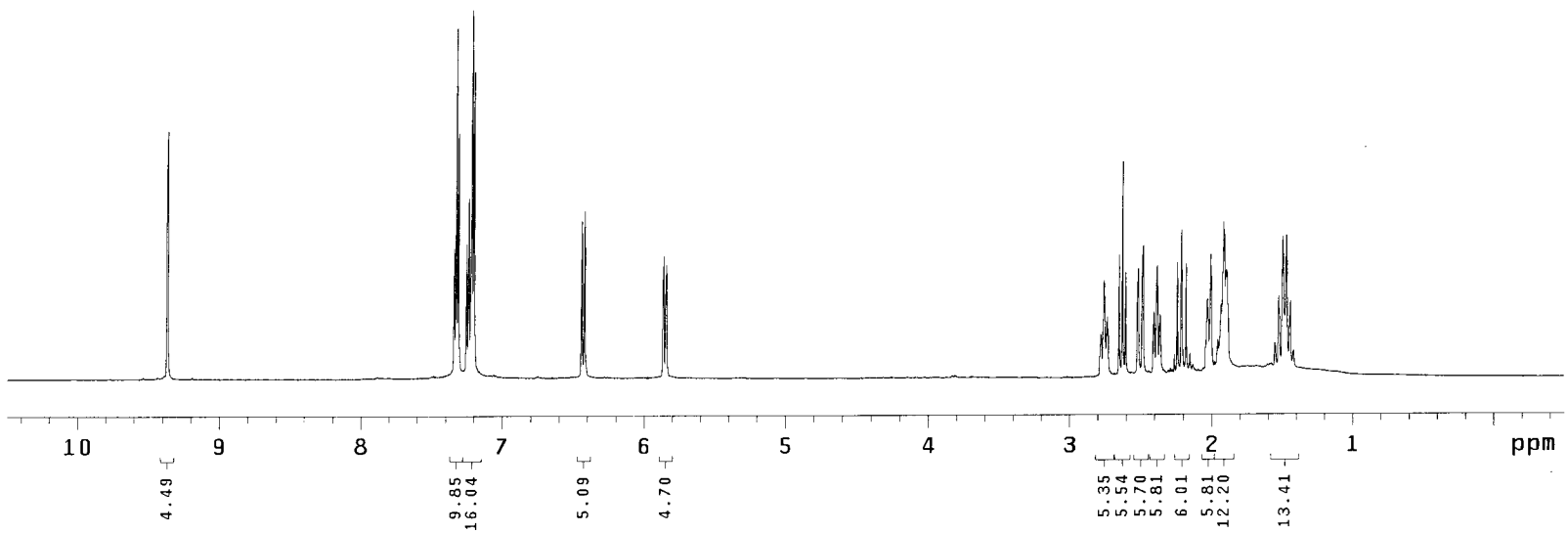
RYN-2-115

exp21 s2pul

	SAMPLE		DEC. & VT
date	Oct 14 2008	dfrq	125.695
solvent	cdcl3	dn	C13
file	exp	dpwr	30
	ACQUISITION	dof	0
sfrq	499.836	dm	nnn
tn	H1	dmm	c
at	3.000	dmf	200
np	48000	dseq	
sw	8000.0	dres	1.0
fb	4000	homo	n
bs	4		PROCESSING
tpwr	57	wtfile	
pw	4.8	proc	ft
d1	1.000	fn	not used
tof	499.7	math	f
nt	4		
ct	4	werr	react
alock	y	wexp	procplot
gain	not used	wbs	
	FLAGS	wnt	wft
il	n		
in	n		
dp	y		
hs	nn		
	DISPLAY		
sp	-250.1		
wp	5498.0		
vs	50		
sc	0		
wc	210		
hzmm	26.18		
is	137.78		
rfl	4632.8		
rfp	3618.8		
th	5		
ins	100.000		
nm	ph		

9.370 9.365

7.344 7.328 7.314 7.258 7.255 7.240 7.237 7.228 7.219 7.203 6.444 6.424 5.869 5.867 5.864 5.849 5.847 5.844 2.781 2.759 2.754 2.742 2.737 2.732 2.654 2.631 2.608 2.525 2.518 2.491 2.485 2.409 2.386 2.365 2.244 2.217 2.211 2.184 2.037 2.033 2.026 2.017 2.011 2.006 1.939 1.932 1.920 1.915 1.907 1.900 1.895 1.529 1.524 1.501 1.488 1.475 1.452 1.446



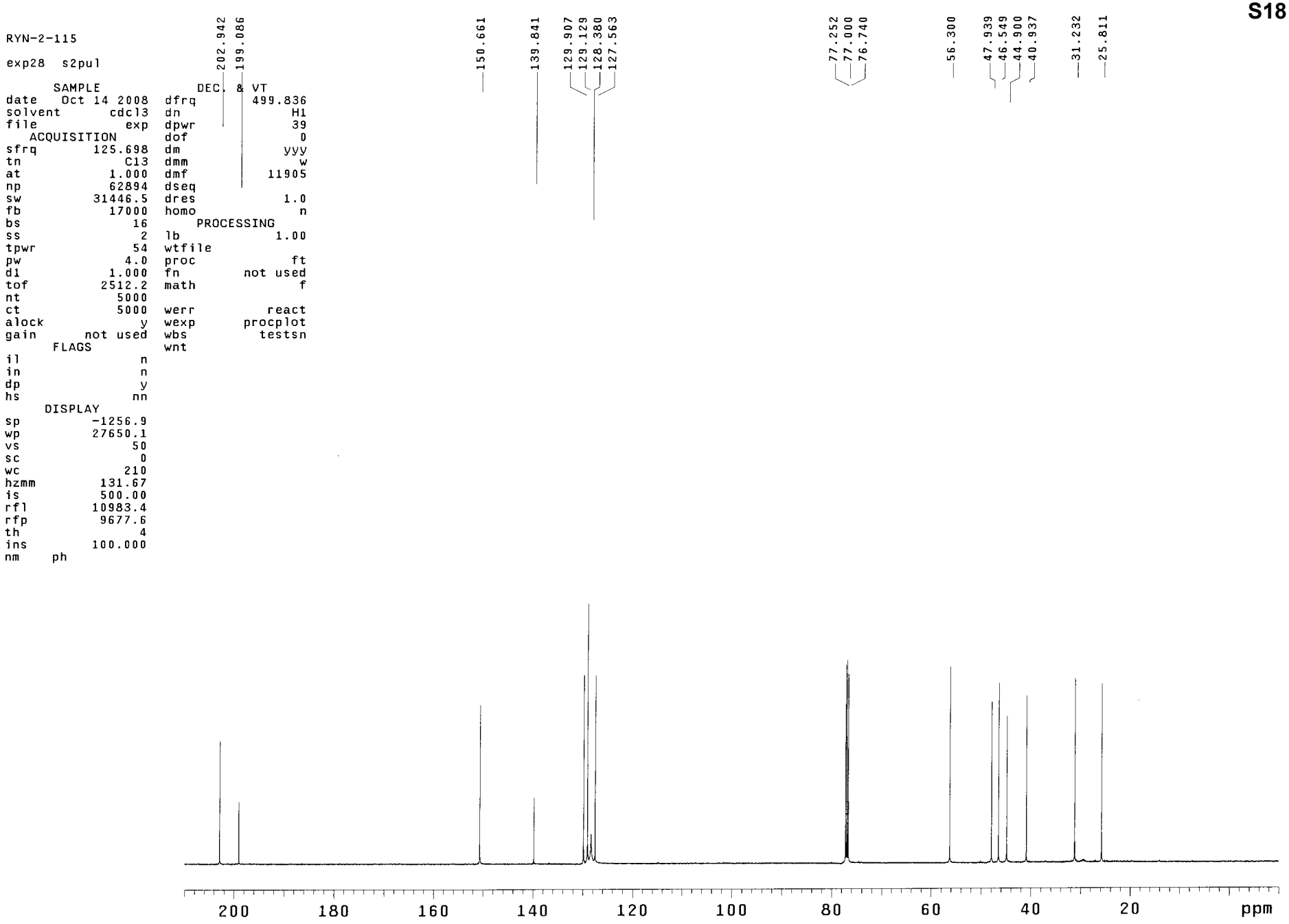


Fig S18. 13C NMR of 5a (125 MHz, CDCl3).

Fig S19. DEPT of 5a (CDCl3).

RYN-2-115

exp23 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Oct 14 2008	j1xh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	50	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	1000	wp	27650.1		
ct	1000	sp	-1257.2		
TRANSMITTER		rp	34.1		
tn	C13	lp	37.1		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	250		
dmm	ccw	hzmm	131.67		
dmf	11905	th	68		
pplvl	49				
pp	29.400				

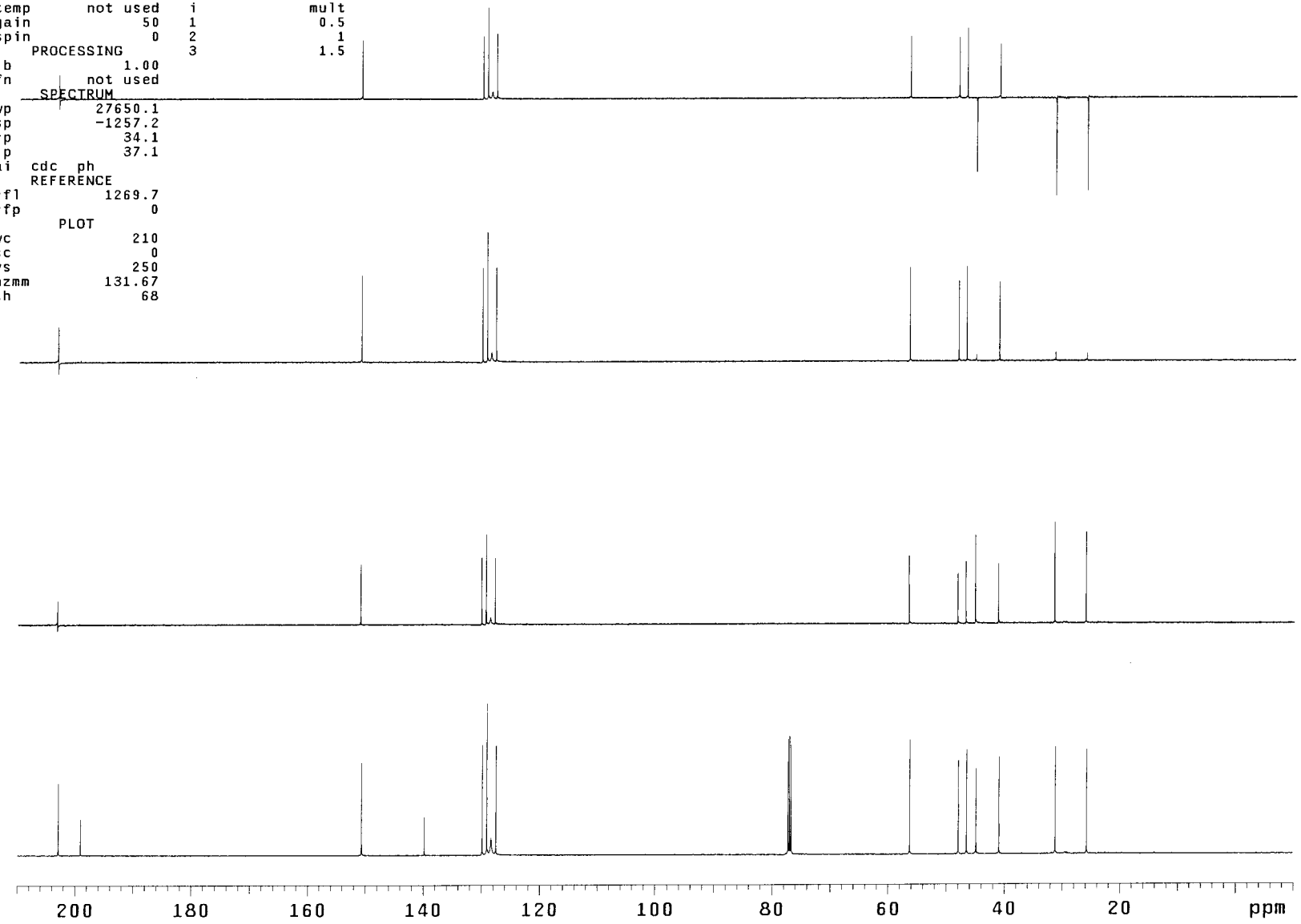


Fig S20. COSY of 5a (CDCl3).

RYN-2-115

exp24 gCOSY

SAMPLE		FLAGS	
date	Oct 14 2008	hs	nn
solvent	cdcl3	sspul	n
sample	undefined	hsglvl	1026
ACQUISITION		SPECIAL	
sw	4298.5	temp	not used
at	0.238	gain	50
np	2048	spin	0
fb	2000	F2 PROCESSING	
ss	16	sb	-0.119
d1	1.000	sbs	not used
nt	16	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4298.5	sb1	-0.030
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	2048
sfrq	499.836	DISPLAY	
tof	349.8	sp	689.6
tpwr	57	wp	4294.3
pw	13.000	sp1	690.2
GRADIENTS		wp1	4294.3
gzlvl1	1026	rfl	2528.5
gt1	0.001000	rfp	3213.9
gstab	0.000500	rfl1	2527.9
DECOUPLER		rfp1	3213.9
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	28
		th	7
		ai cdc av	

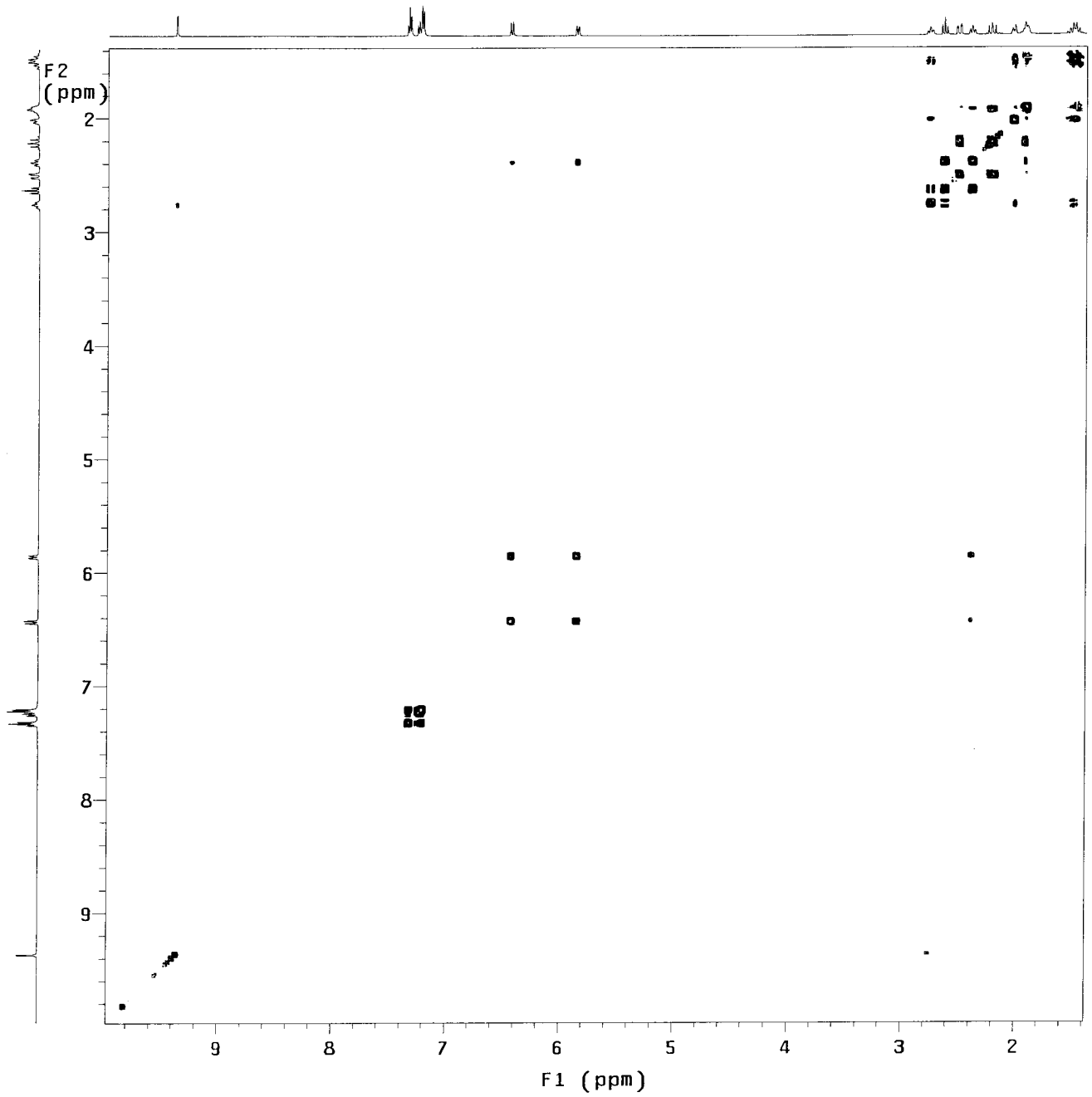


Fig S21. HMQC of 5a (CDCl3).

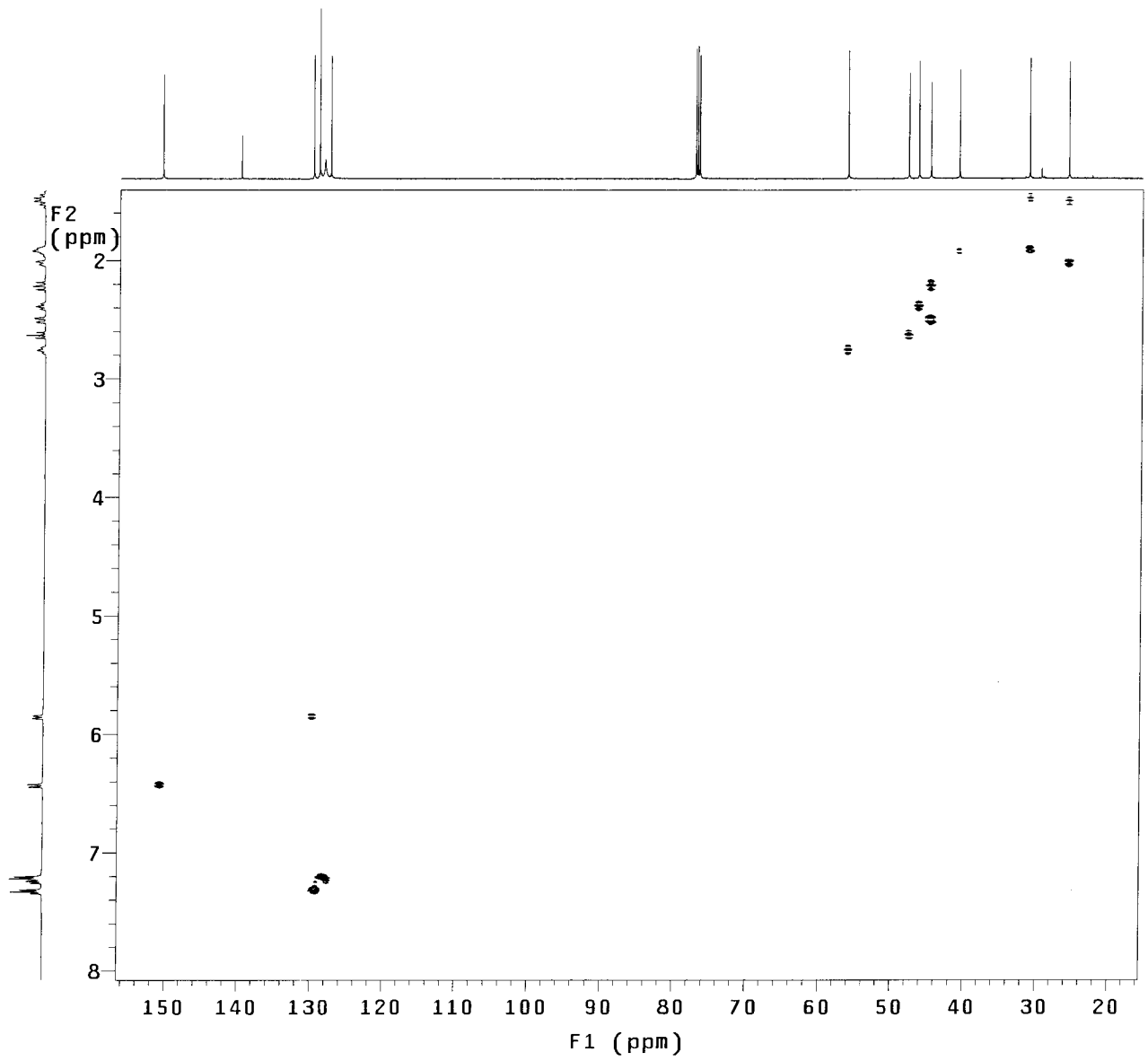
RYN-2-115

exp25 gHMQC

SAMPLE	
date	Oct 14 2008
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4298.5
at	0.238
np	2048
fb	2000
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.836
tof	349.8
tpwr	57
pw	13.000
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	35
pwxlvl	51
pwx	14.700
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	50
spin	0
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gzlvl3	516
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.110
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.006
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	703.9
wp	3333.0
sp1	1961.4
wp1	17715.8
rf1	2531.0
rfp	3213.9
rfl1	20229.2
rfp1	18935.4
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	28
th	5
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256
i	phase
1	1
2	2



RYN-2-115

exp30 NOESY

SAMPLE	
date	Oct 16 2008
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4298.5
at	0.238
np	2048
fb	2000
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	4298.5
ni	200
TRANSMITTER	
tn	H1
sfrq	499.836
tof	349.8
tpwr	57
pw	13.000
NOESY	
mix	0.400
PRESATURATION	
satmode	nnnn
satpwr	0
satdly	0
satfrq	0
DECOUPLER	
dn	C13
dm	nnn

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	24
spin	0
F2 PROCESSING	
gf	0.110
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.043
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	688.0
wp	4294.3
sp1	688.2
wp1	4294.3
rfl	2530.1
rfp	3213.9
rfl1	2529.9
rfp1	3213.9
PLOT	
wc	155.0
sc	10.0
wc2	155.0
sc2	0
vs	28
th	4
ai	ph

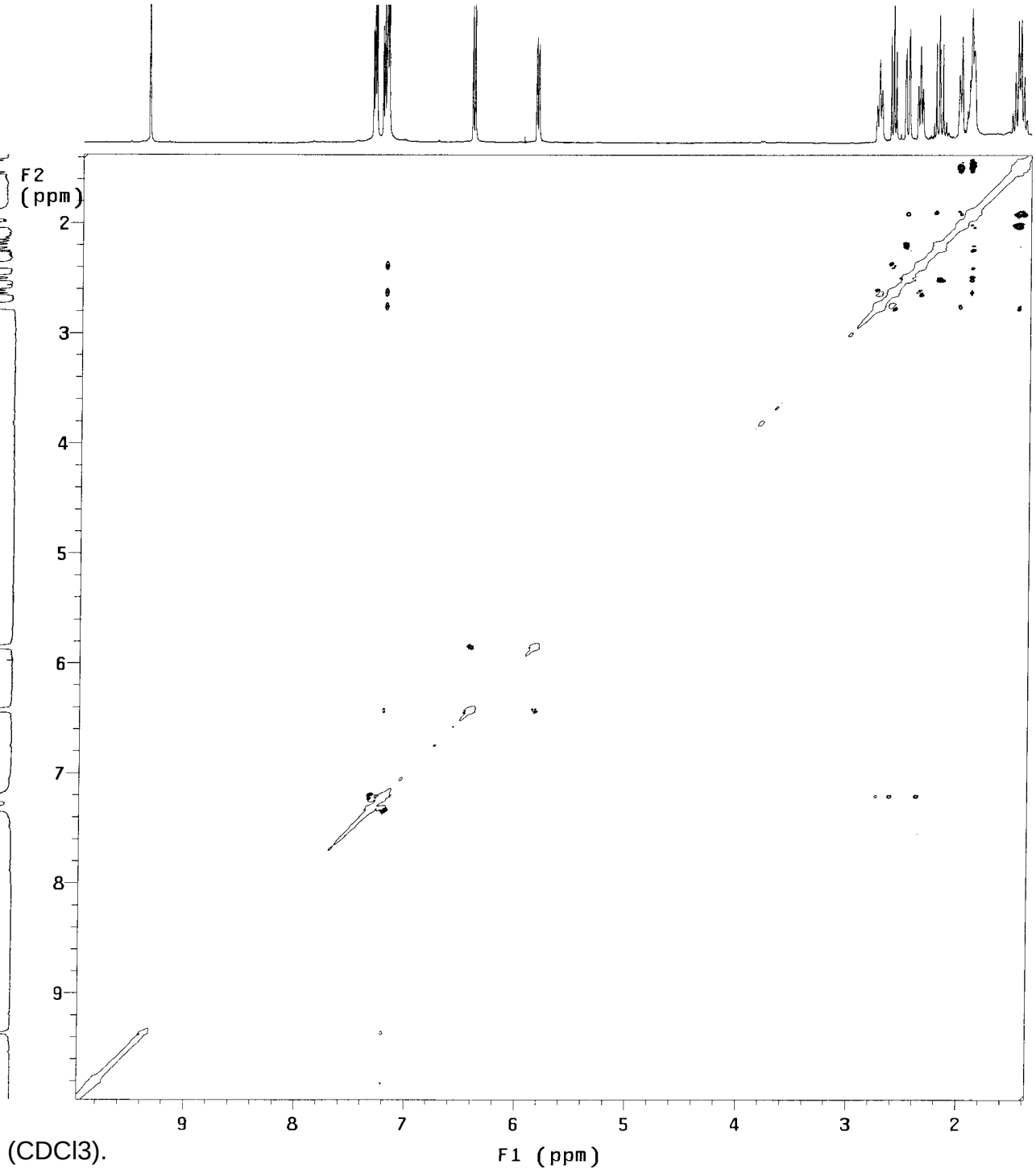


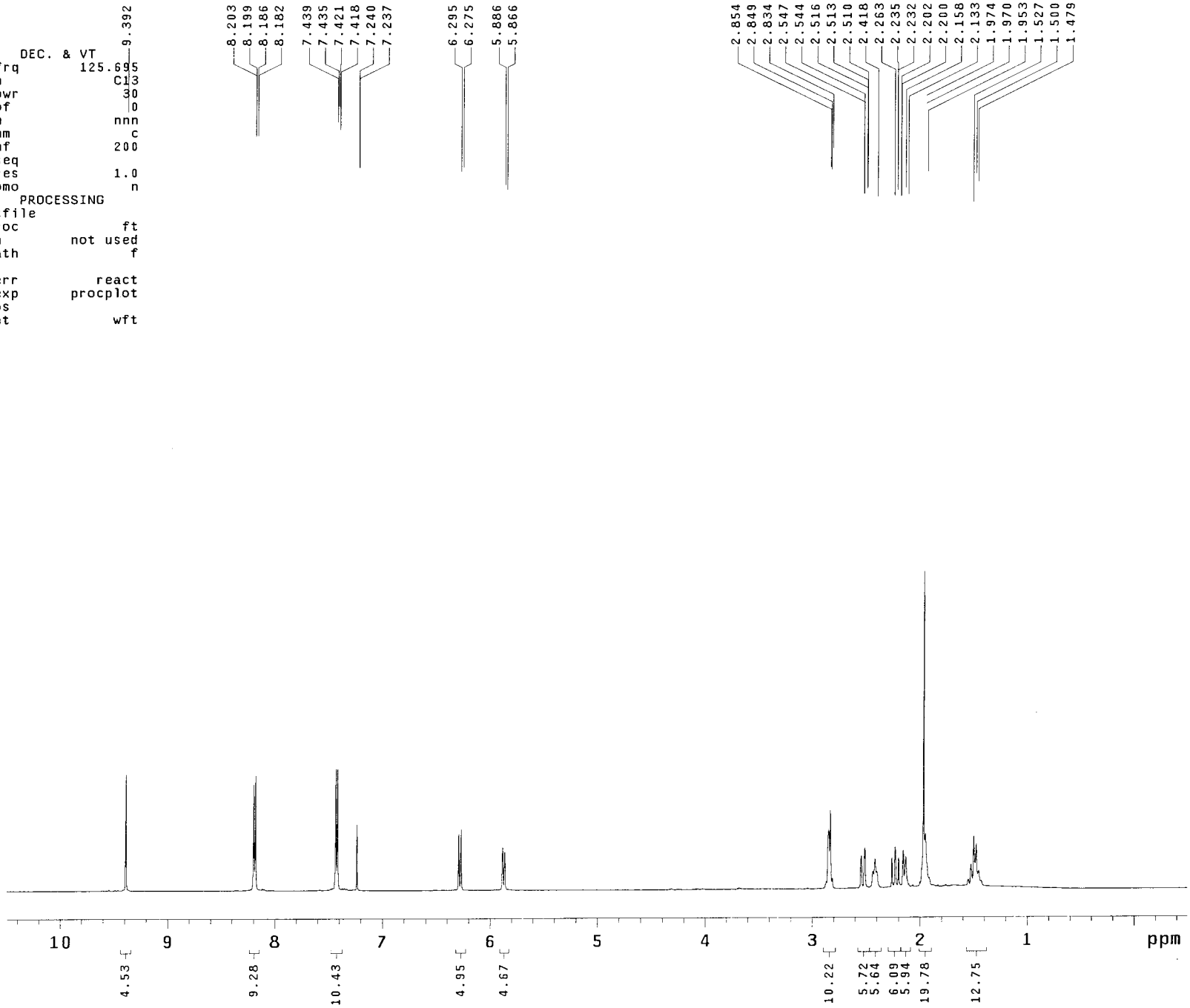
Fig S22. NOESY of 5a (CDCl3).

Fig S23. 1H NMR of 5b (500 MHz, CDCl3).

EYN-2-122

exp38 s2pul

SAMPLE		DEC. & VT	
date	Oct 22 2008	dfrq	125.695
solvent	cdcl3	dn	C13
file	exp	dpwr	30
ACQUISITION		dof	0
sfrq	499.836	dm	nnn
tn	H1	dmm	c
at	3.000	dmf	200
np	48000	dseq	
sw	8000.0	dres	1.0
fb	4000	homo	n
bs	4	PROCESSING	
tpwr	57	wtfile	
pw	4.8	proc	ft
d1	1.000	fn	not used
tof	499.7	math	f
nt	4		
ct	4	werr	react
alock	y	wexp	procplot
gain	not used	wbs	
FLAGS		wnt	wft
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-250.1		
wp	5498.0		
vs	57		
sc	0		
wc	210		
hzmm	26.18		
is	124.04		
rfl	4632.1		
rfp	3618.8		
th	4		
ins	100.000		
nm	ph		



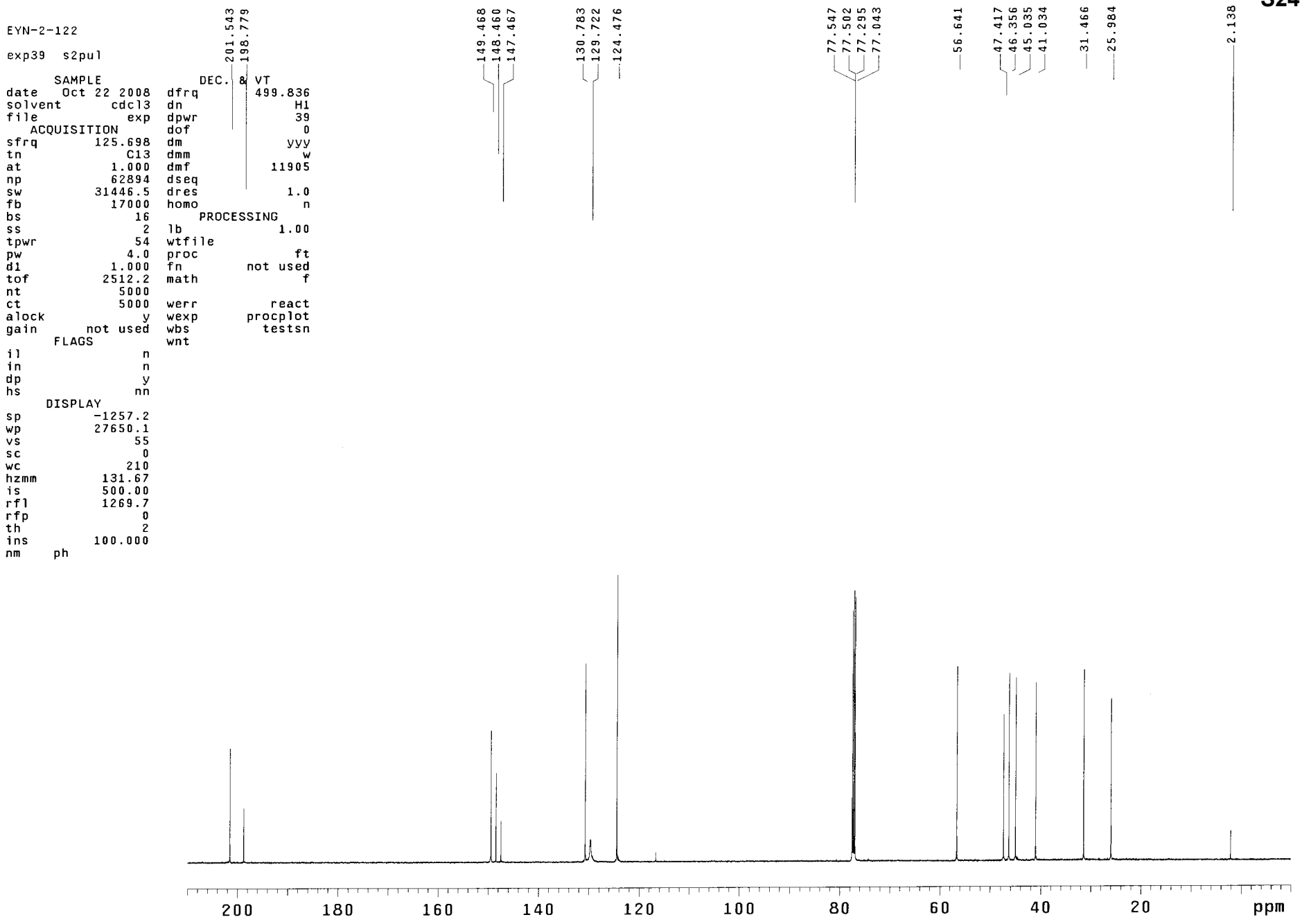


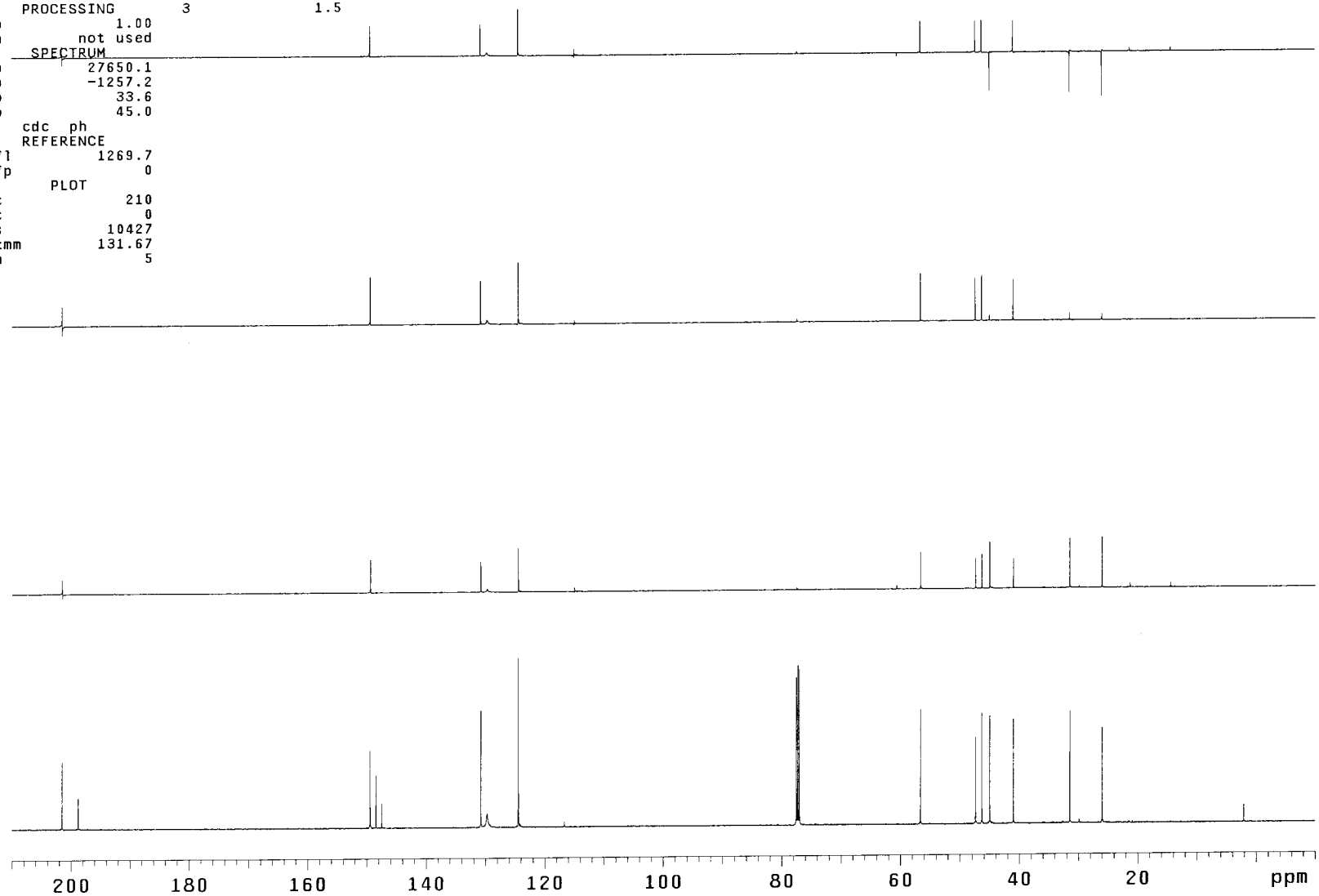
Fig S24. 13C NMR of 5b (125 MHz, CDCl3).

Fig S25. DEPT of 5b (CDCl3).

RYN-2-122

exp34 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Oct 21 2008	j1xh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	14	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	3000	wp	27650.1		
ct	3000	sp	-1257.2		
TRANSMITTER		rp	33.6		
tn	C13	lp	45.0		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	10427		
dmm	ccw	hzmm	131.67		
dmf	11905	th	5		
pplvl	49				
pp	29.400				



RYN-2-122

exp31 gCOSY

SAMPLE		FLAGS	
date	Oct 22 2008	hs	nn
solvent	cdcl3	sspul	n
sample	undefined	hsglvl	1026
ACQUISITION		SPECIAL	
sw	4498.4	temp	not used
at	0.228	gain	28
np	2048	spin	0
fb	3000	F2 PROCESSING	
ss	16	sb	-0.114
d1	1.000	sbs	not used
nt	16	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4498.4	sb1	-0.028
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	2048
sfrq	499.836	DISPLAY	
tof	249.8	sp	487.8
tpwr	57	wp	4494.0
pw	13.000	sp1	504.2
GRADIENTS		wp1	4494.0
gzlvl1	1026	rfl	2450.6
gt1	0.001000	rfp	2934.0
gstab	0.000500	rfl1	-499.8
DECOUPLER		rfp1	0
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	227
		th	6
		ai cdc av	

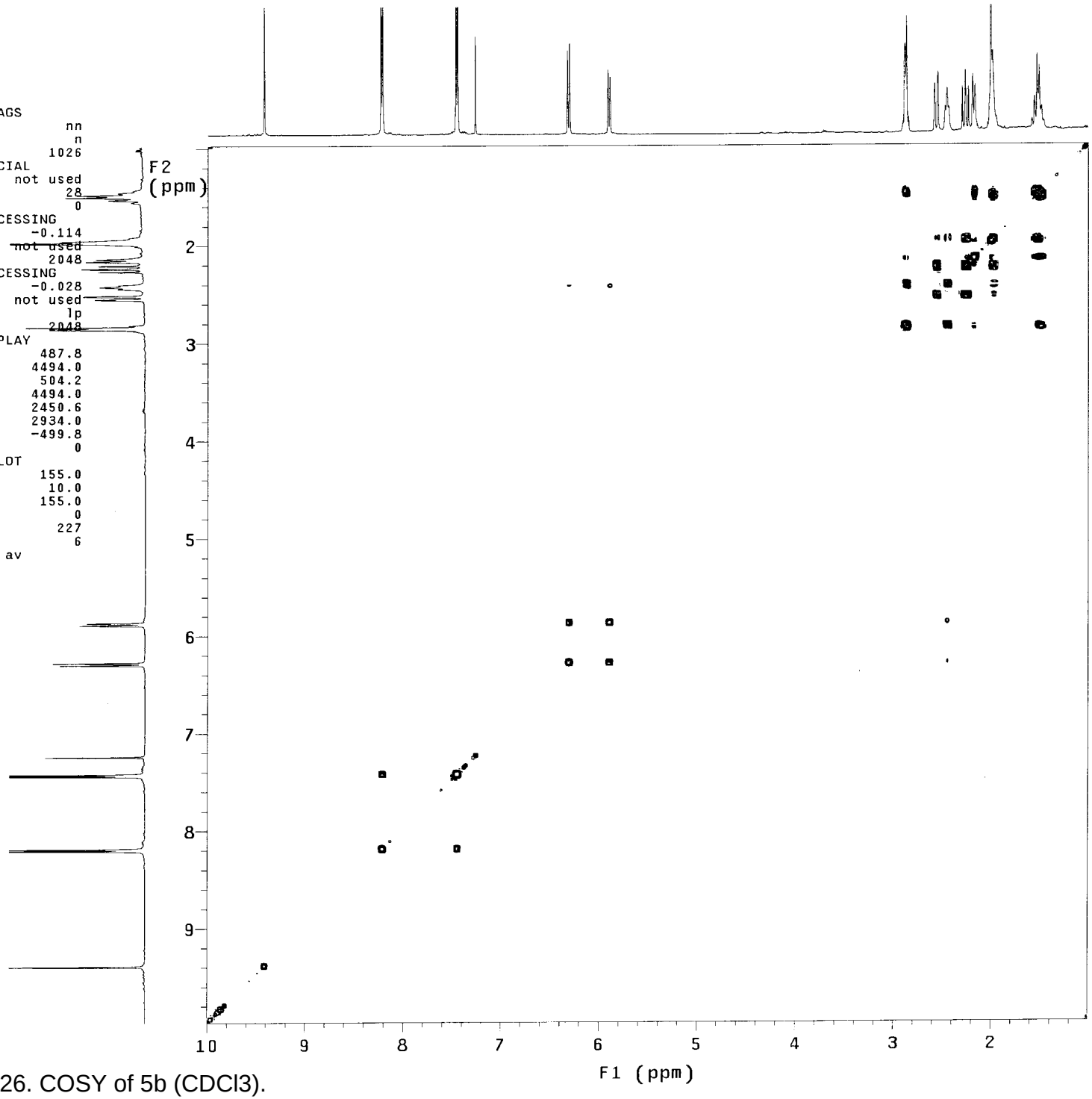


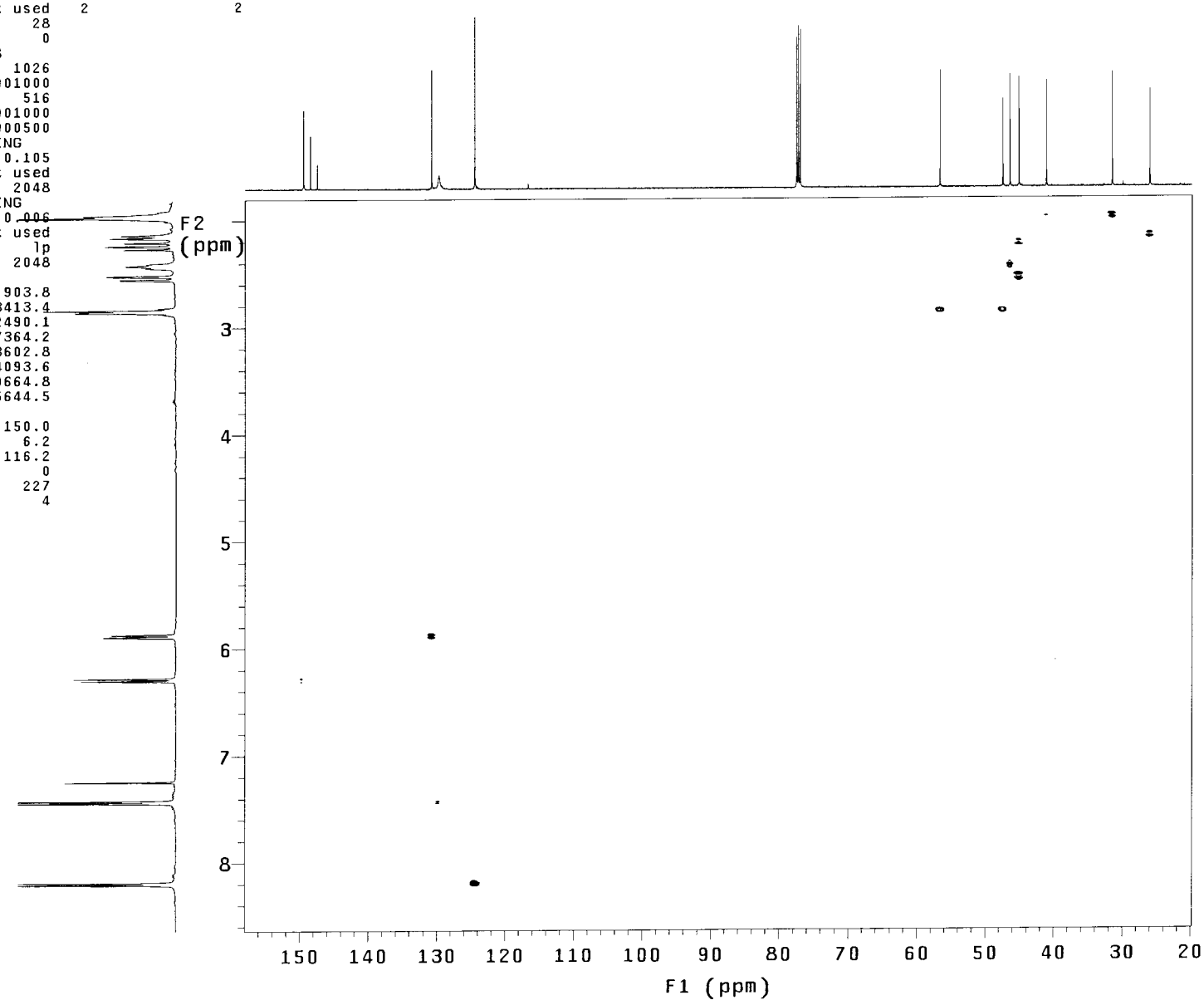
Fig S26. COSY of 5b (CDCl3).

Fig S27. HMQC of 5b (CDCl3).

RYN-2-122

exp32 gHMQC

SAMPLE		FLAGS		ACQUISITION ARRAYS	
date	Oct 22 2008	hs	n	array	phase
solvent	cdcl3	sspul	y	arraydim	256
sample	undefined	PFGflg	y		
ACQUISITION		hsglvl	1026	i	phase
sw	4498.4	SPECIAL		1	1
at	0.228	temp	not used	2	2
np	2048	gain	28		
fb	3000	spin	0		
ss	32	GRADIENTS			
d1	1.000	gzlvl1	1026		
nt	16	gt1	0.001000		
2D ACQUISITION		gzlvl3	516		
sw1	28912.2	gt3	0.001000		
ni	128	gstab	0.000500		
phase	arrayed	F2 PROCESSING			
TRANSMITTER		gf	0.105		
tn	H1	gfs	not used		
sfrq	499.836	fn	2048		
tof	249.8	F1 PROCESSING			
tpwr	57	gf1	0.006		
pw	13.000	gfs1	not used		
DECOUPLER		proc1	lp		
dn	C13	fn1	2048		
dof	-2515.1	DISPLAY			
dm	nny	sp	903.8		
dmm	ccp	wp	3413.4		
dmf	32258	sp1	2490.1		
dpwr	35	wp1	17364.2		
pwxlvl	51	rf1	3602.8		
pwx	14.700	rfp	4093.6		
HMQC		rf11	20664.8		
j1xh	140.0	rfp1	15644.5		
nullflg	y	PLOT			
		wc	150.0		
		sc	6.2		
		wc2	116.2		
		sc2	0		
		vs	227		
		th	4		
		ai cdc ph			



RYN-2-122

exp33 NOESY

SAMPLE		FLAGS	
date	Oct 22 2008	hs	n
solvent	cdcl3	sspul	y
sample	undefined	PFGflg	y
ACQUISITION		hsglvl	1026
sw	4498.4	SPECIAL	
at	0.228	temp	not used
np	2048	gain	28
fb	3000	spin	0
ss	32	F2 PROCESSING	
d1	1.000	gf	0.105
nt	8	gfs	not used
2D ACQUISITION		fn	2048
sw1	4498.4	F1 PROCESSING	
ni	200	gf1	0.041
TRANSMITTER		gfs1	not used
tn	H1	proc1	lp
sfrq	499.836	fn1	2048
tof	249.8	DISPLAY	
tpwr	57	sp	504.2
pw	13.000	wp	4494.0
NOESY		sp1	504.2
mix	0.600	wp1	4494.0
PRESATURATION		rfl	-499.8
satmode	nnnn	rfp	0
satpwr	0	rfl1	-499.8
satdly	0	rfp1	0
satfrq	0	PLOT	
DECOUPLER		wc	155.0
dn	C13	sc	10.0
dm	nnn	wc2	155.0
		sc2	0
		vs	227
		th	3
		ai	ph

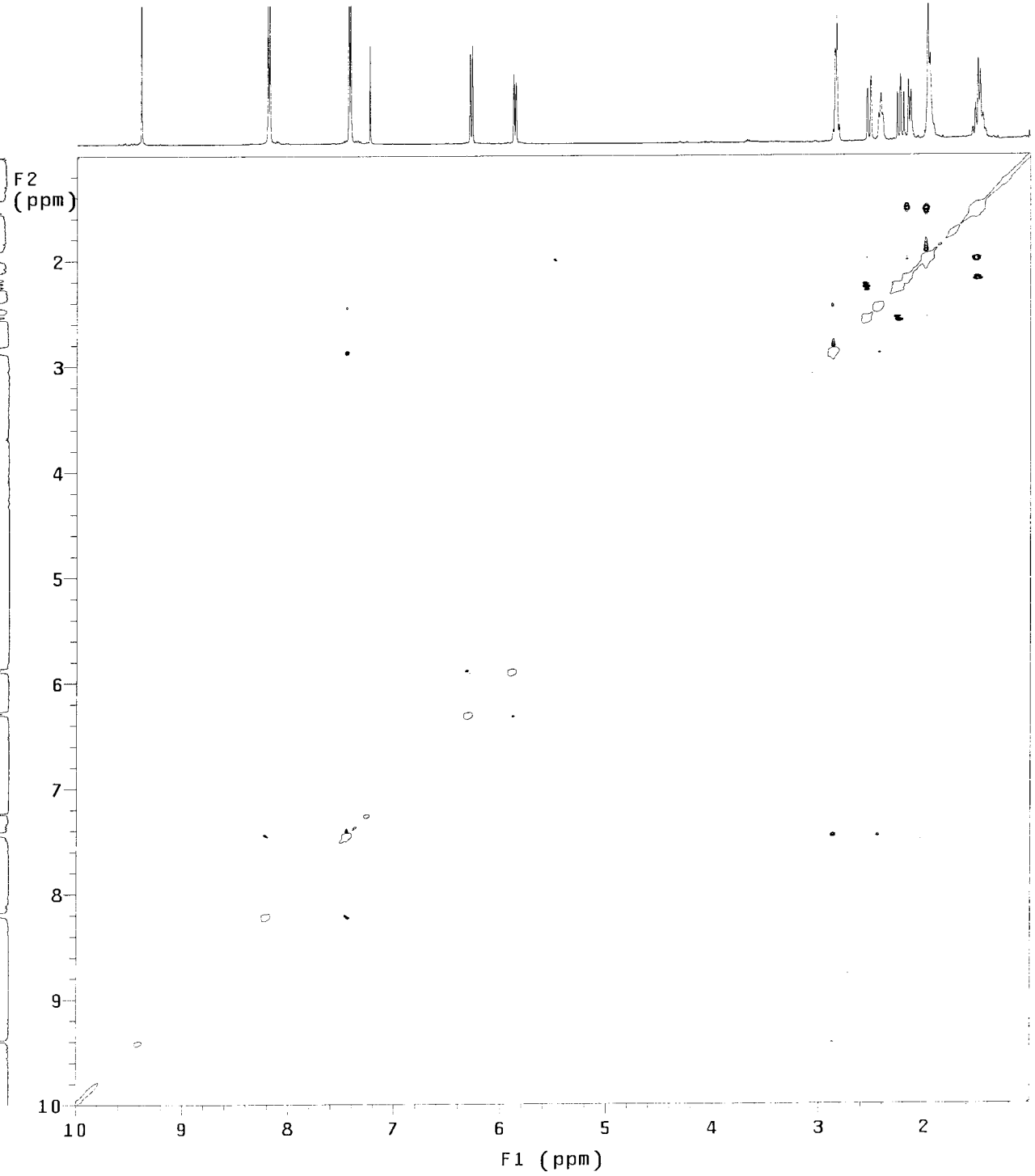


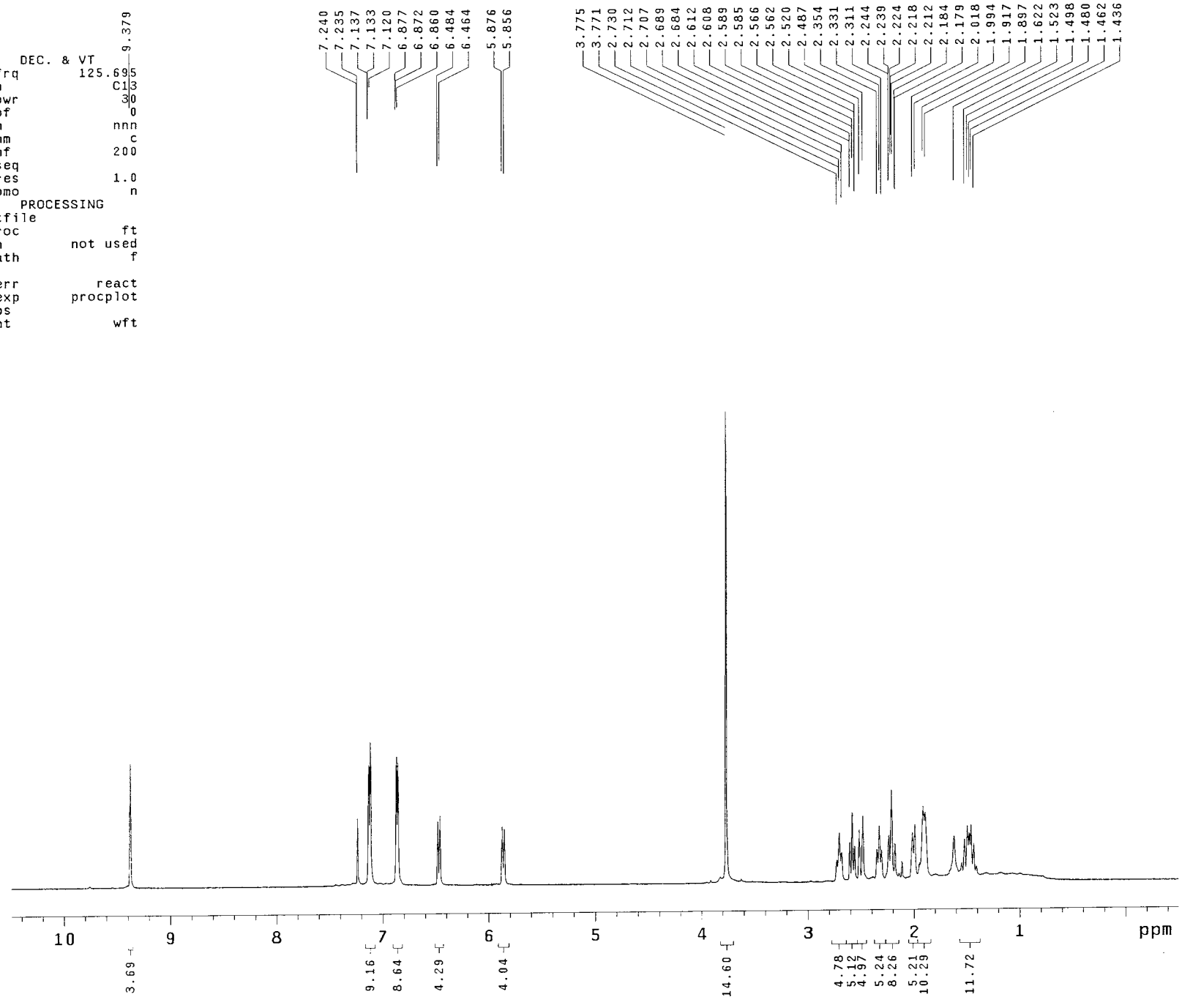
Fig S28. NOESY of 5b (CDCl3).

Fig S29. 1H NMR of 5c (500 MHz, CDCl3).

RYN-2-127

exp22 s2pul

SAMPLE		DEC. & VT	
date	Oct 30 2008	dfrq	125.695
solvent	cdcl3	dn	C13
file	exp	dpwr	30
ACQUISITION		dof	0
sfrq	499.836	dm	nnn
tn	H1	dmm	c
at	3.000	dmf	200
np	48000	dseq	
sw	8000.0	dres	1.0
fb	4000	homo	n
bs	4	PROCESSING	
tpwr	57	wtfile	
pw	4.8	proc	ft
d1	1.000	fn	not used
tof	499.7	math	f
nt	4		
ct	4	werr	react
alock	y	wexp	procplot
gain	not used	wbs	
FLAGS		wnt	wft
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-250.1		
wp	5498.0		
vs	85		
sc	0		
wc	210		
hzmm	26.18		
is	147.35		
rfl	4632.6		
rfp	3618.8		
th	4		
ins	100.000		
nm	ph		



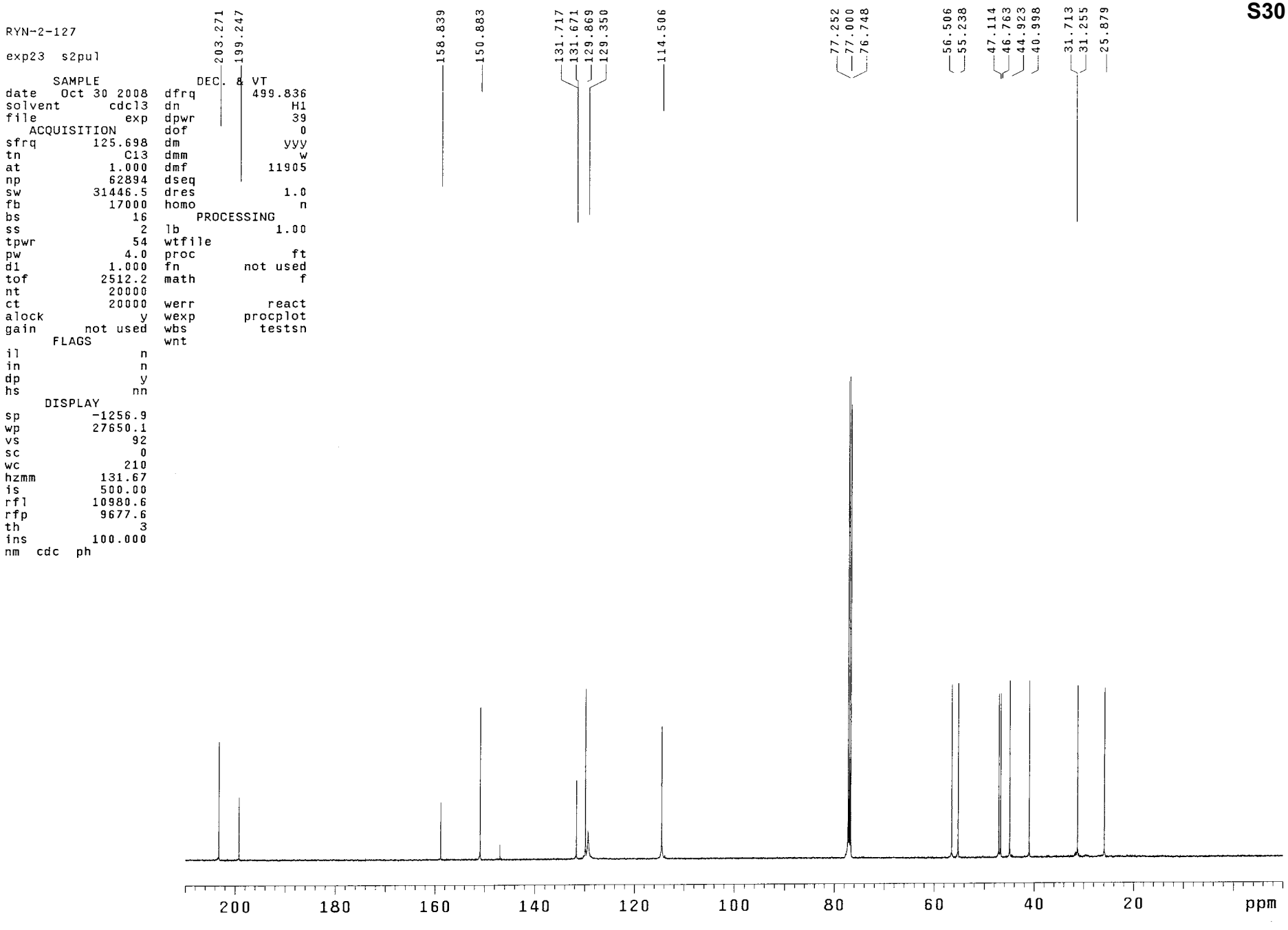


Fig S30. 13C NMR of 5c (125 MHz, CDCl3).

Fig S31. DEPT of 5c (CDCl3).

RYN-2-127

exp24 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Oct 31 2008	j1xh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	28	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	1500	wp	27650.1		
ct	1500	sp	-1257.2		
TRANSMITTER		rp	32.3		
tn	C13	lp	53.3		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	229		
dmm	ccw	hzmm	131.67		
dmf	11905	th	68		
pplvl	49				
pp	29.400				

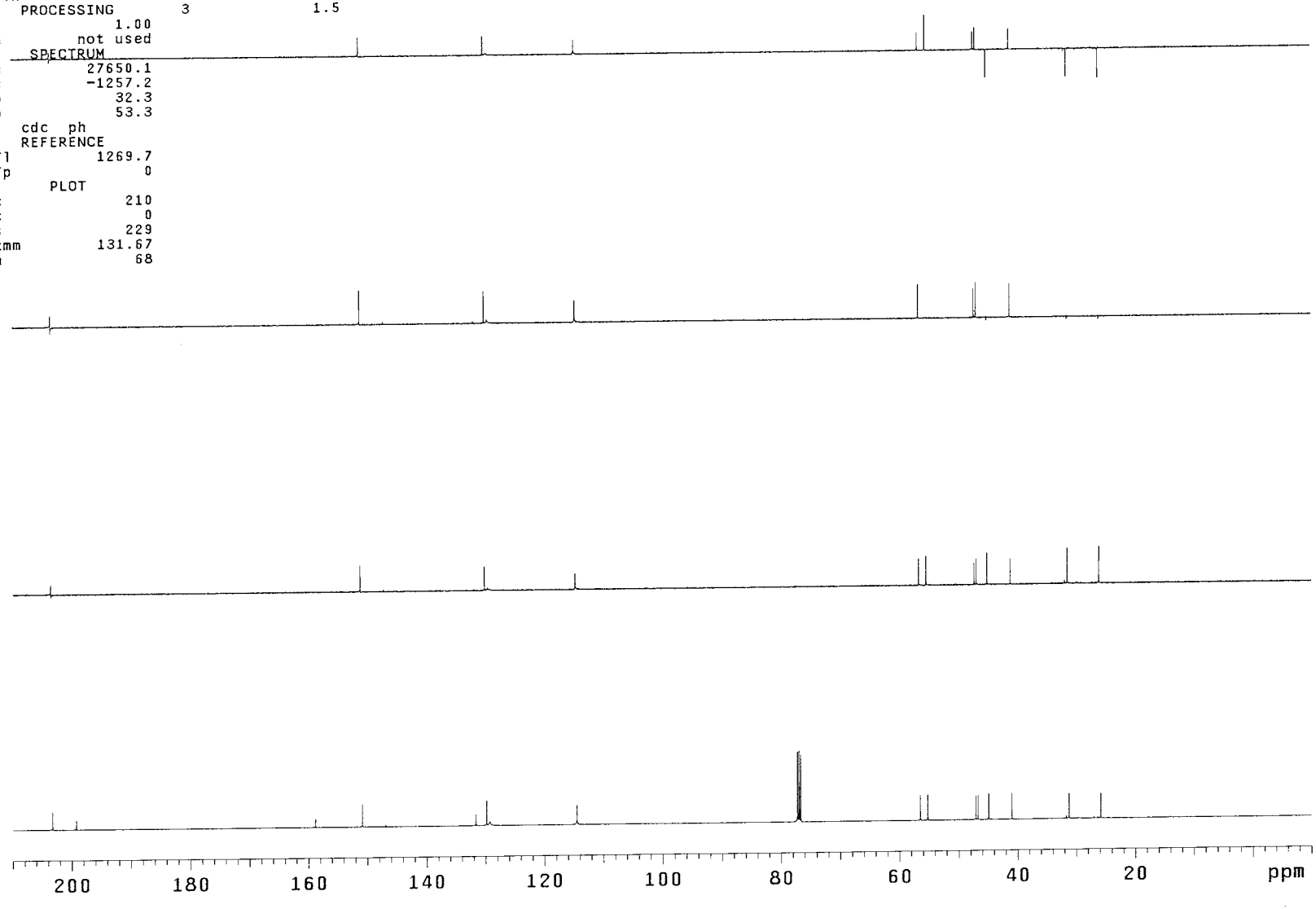
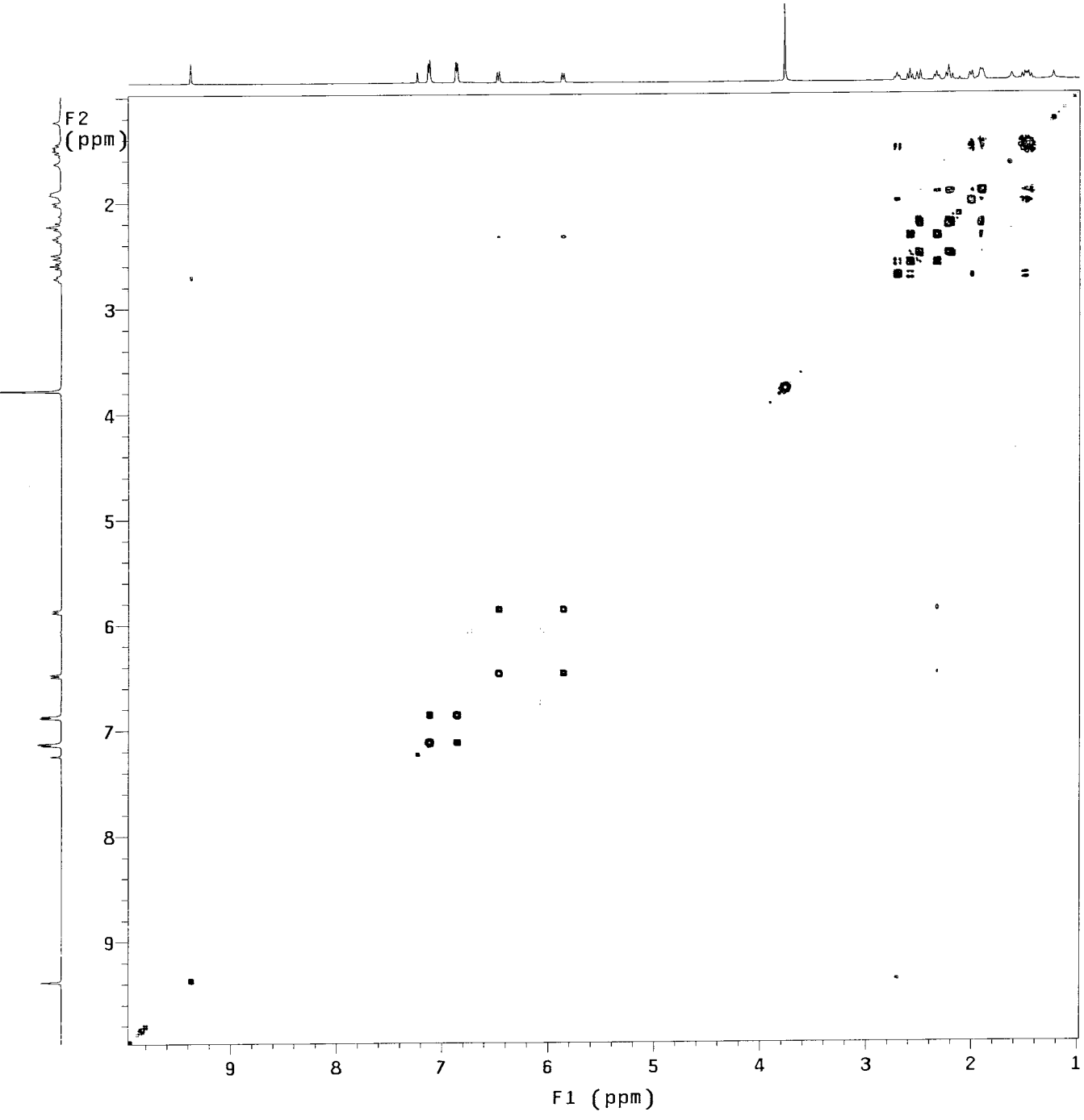


Fig S32. COSY of 5c (CDCl3).

RYN--2-127

exp14 gCOSY

SAMPLE		FLAGS	
date	Nov 5 2008	hs	nn
solvent	cdcl3	sspul	n
sample	undefined	hsglvl	1026
ACQUISITION		SPECIAL	
sw	4498.4	temp	not used
at	0.228	gain	28
np	2048	spin	0
fb	3000	F2 PROCESSING	
ss	16	sb	-0.114
d1	1.000	sbs	not used
nt	32	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4498.4	sb1	-0.028
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	2048
sfrq	499.836	DISPLAY	
tof	249.8	sp	489.0
tpwr	57	wp	4494.0
pw	13.000	sp1	488.3
GRADIENTS		wp1	4494.0
gzlvl1	1026	rfl	2444.4
gt1	0.001000	rfp	2929.0
gstab	0.000500	rfl1	2445.1
DECOUPLER		rfp1	2929.0
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	227
		th	4
		ai cdc av	



RYN-127

exp15 gHMQC

SAMPLE	
date	Nov 5 2008
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4498.4
at	0.228
np	2048
fb	3000
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.836
tof	249.8
tpwr	57
pw	13.000
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	35
pwxlvl	51
pwx	14.700
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	28
spin	0
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gzlvl3	516
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.105
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.006
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	546.5
wp	3505.6
sp1	2601.1
wp1	16943.8
rfl	2753.3
rfp	3233.9
rfl1	20264.4
rfp1	18963.5
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	1814
th	4
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256
i	phase
1	1
2	2

Fig S33. HMQC of 5c (CDCl3).

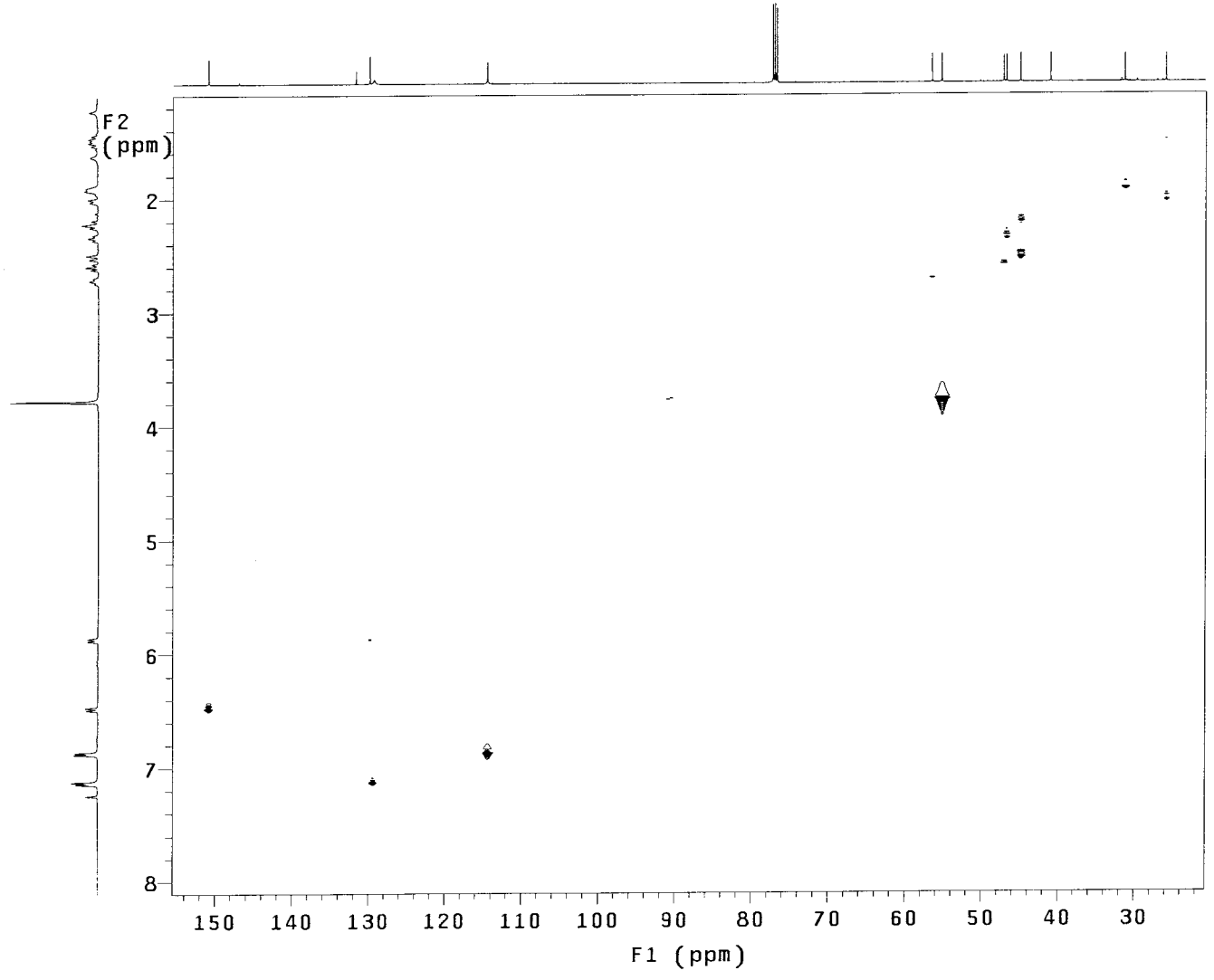


Fig S34. NOESY of 5c (CDCl3).

RYN-127

exp16 NOESY

SAMPLE		FLAGS	
date	Nov 5 2008	hs	n
solvent	cdcl3	sspul	y
sample	undefined	PFGflg	y
ACQUISITION		hsglvl	1026
sw	4498.4	SPECIAL	
at	0.228	temp	not used
np	2048	gain	28
fb	3000	spin	0
ss	32	F2 PROCESSING	
d1	1.000	gf	0.105
nt	8	gfs	not used
2D ACQUISITION		fn	2048
sw1	4498.4	F1 PROCESSING	
ni	200	gf1	0.041
TRANSMITTER		gfs1	not used
tn	H1	proc1	lp
sfrq	499.836	fn1	2048
tof	249.8	DISPLAY	
tpwr	57	sp	487.7
pw	13.000	wp	4494.0
NOESY		sp1	488.1
mix	0.600	wp1	4494.0
PRESATURATION		rfl	2445.7
satmode	nnnn	rfp	2929.0
satpwr	0	rfl1	2445.3
satdly	0	rfp1	2929.0
satfrq	0	PLOT	
DECOUPLER		wc	155.0
dn	C13	sc	10.0
dm	nnn	wc2	155.0
		sc2	0
		vs	1814
		th	2
		ai ph	

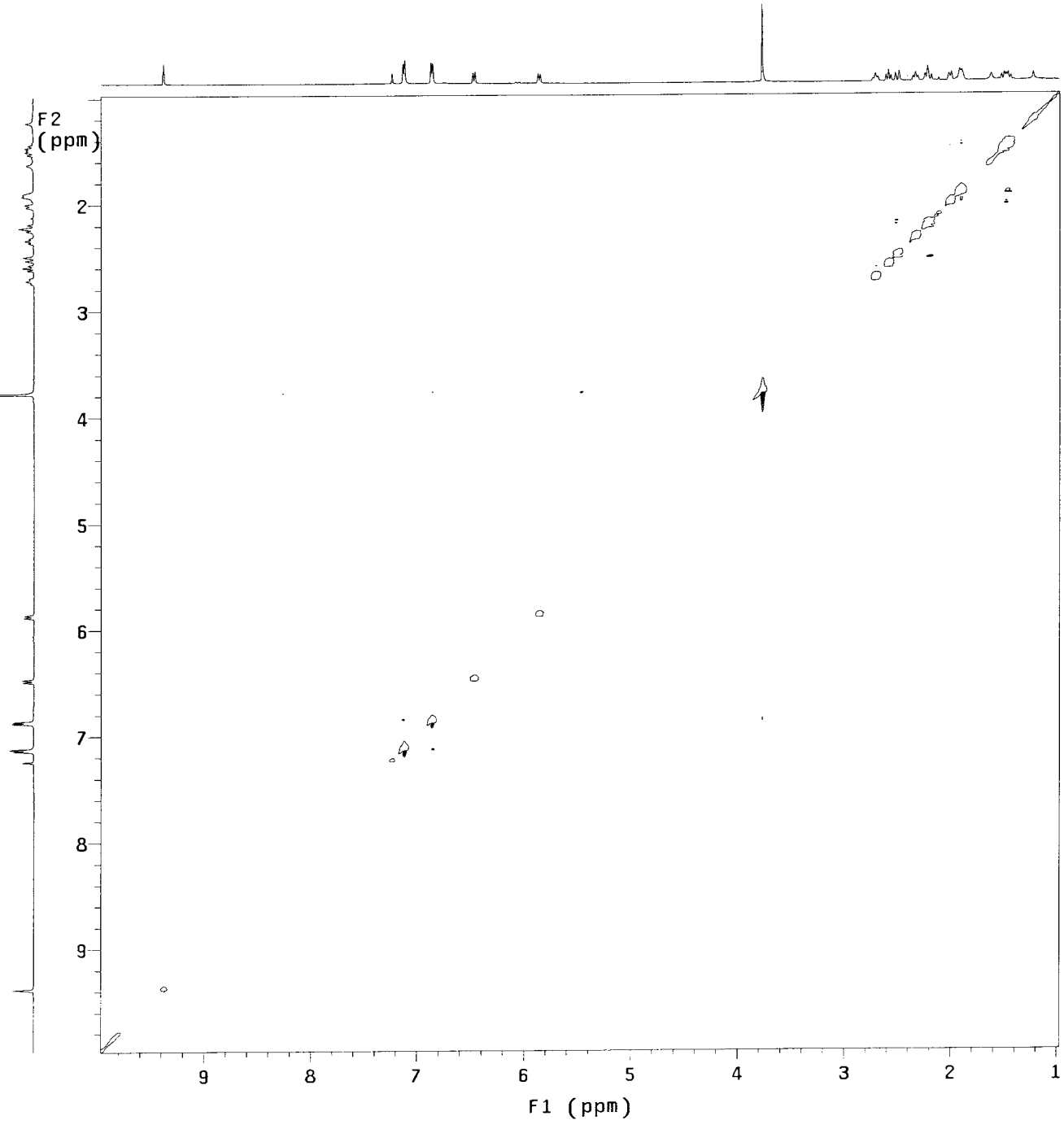
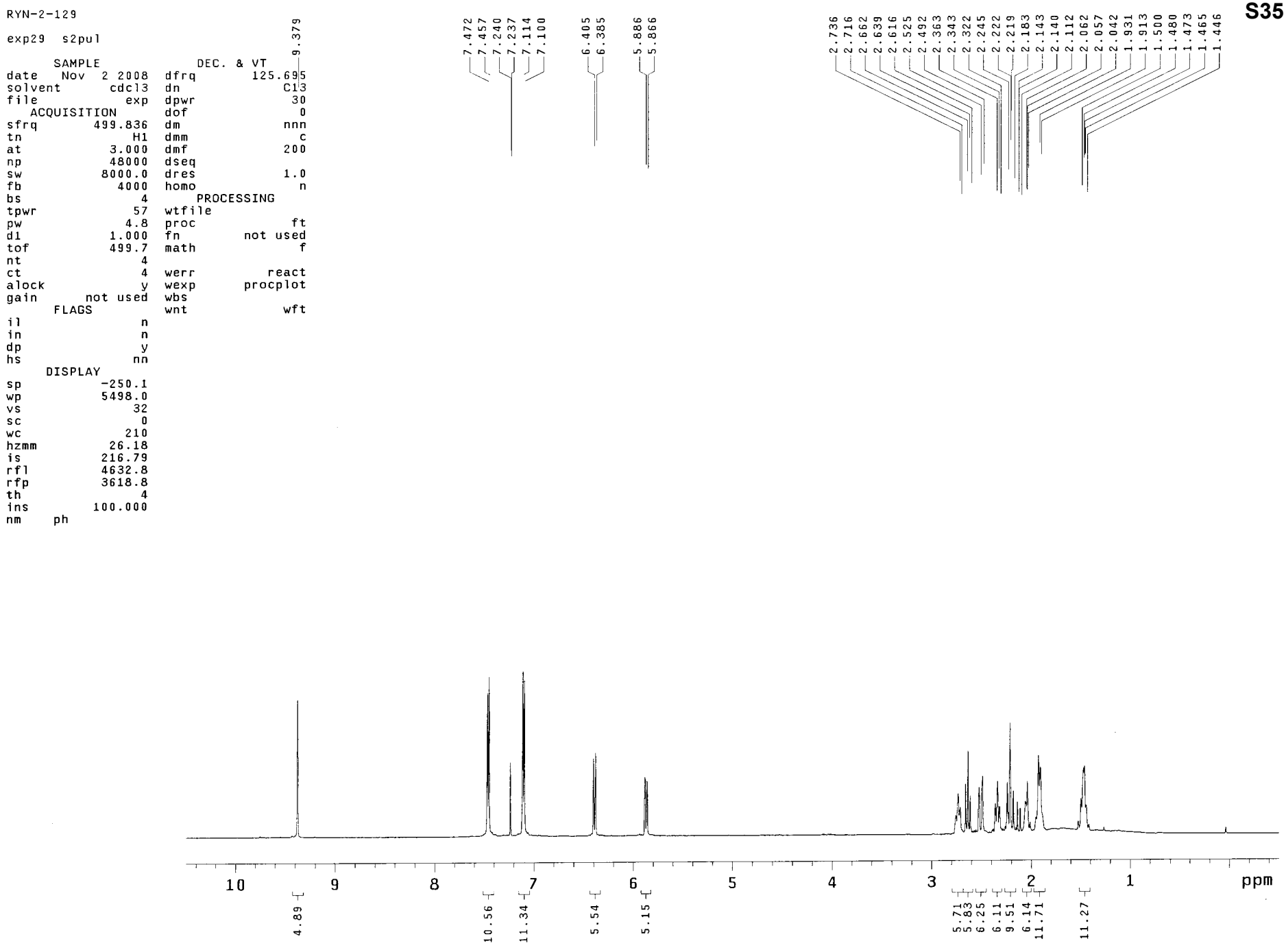


Fig S35. 1H NMR of 5d (500 MHz, CDCl3).



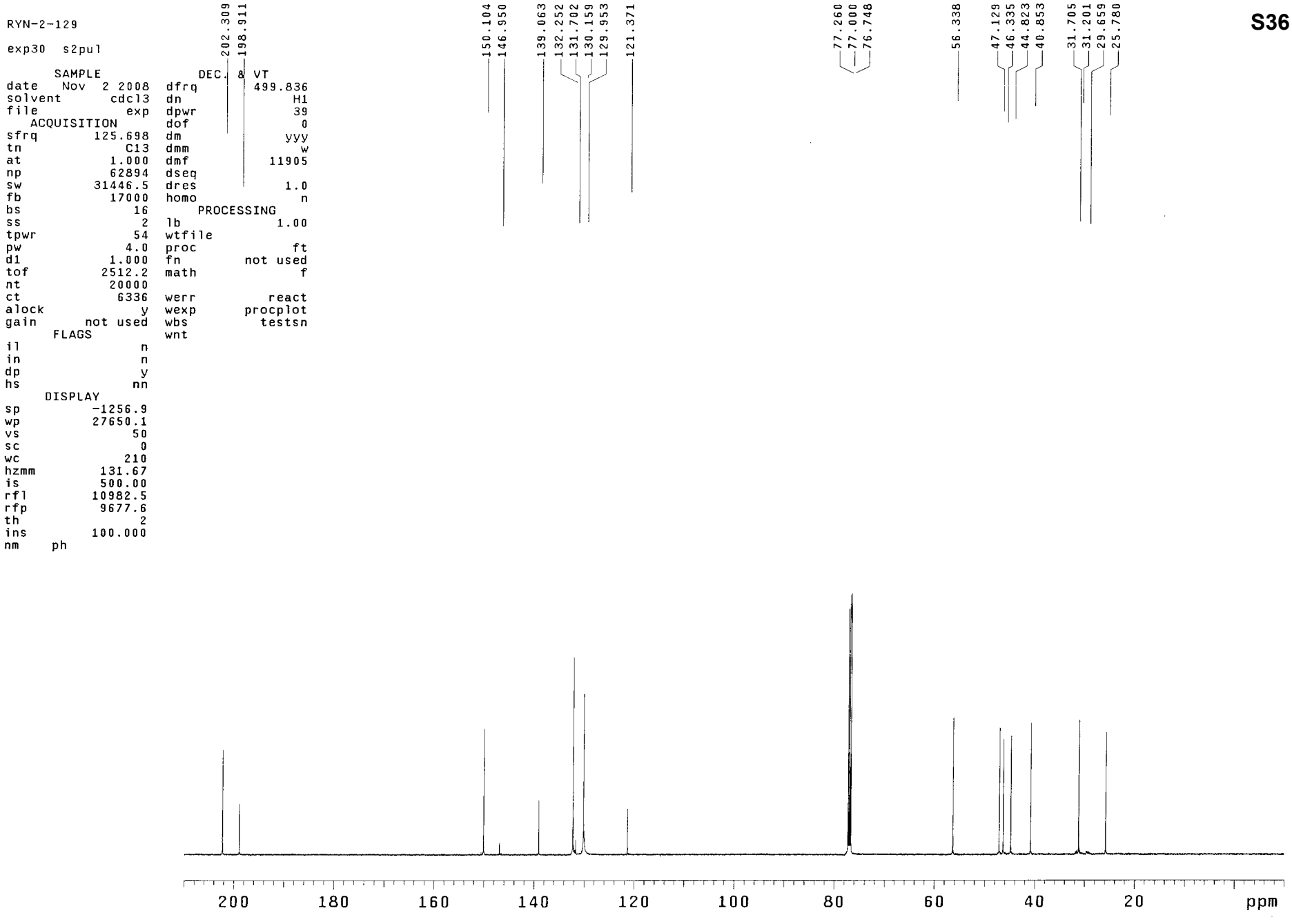


Fig S36. 13C NMR of 5d (125 MHz, CDCl3).

RYN-2-129

Fig S37. DEPT of 5d (CDCl3).

exp31 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Nov 2 2008	jlxh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	20	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	2000	wp	27650.1		
ct	2000	sp	-1257.2		
TRANSMITTER		rp	39.5		
tn	C13	lp	33.7		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	370		
dmm	ccw	hzmm	131.67		
dmf	11905	th	68		
pplvl	49				
pp	29.400				

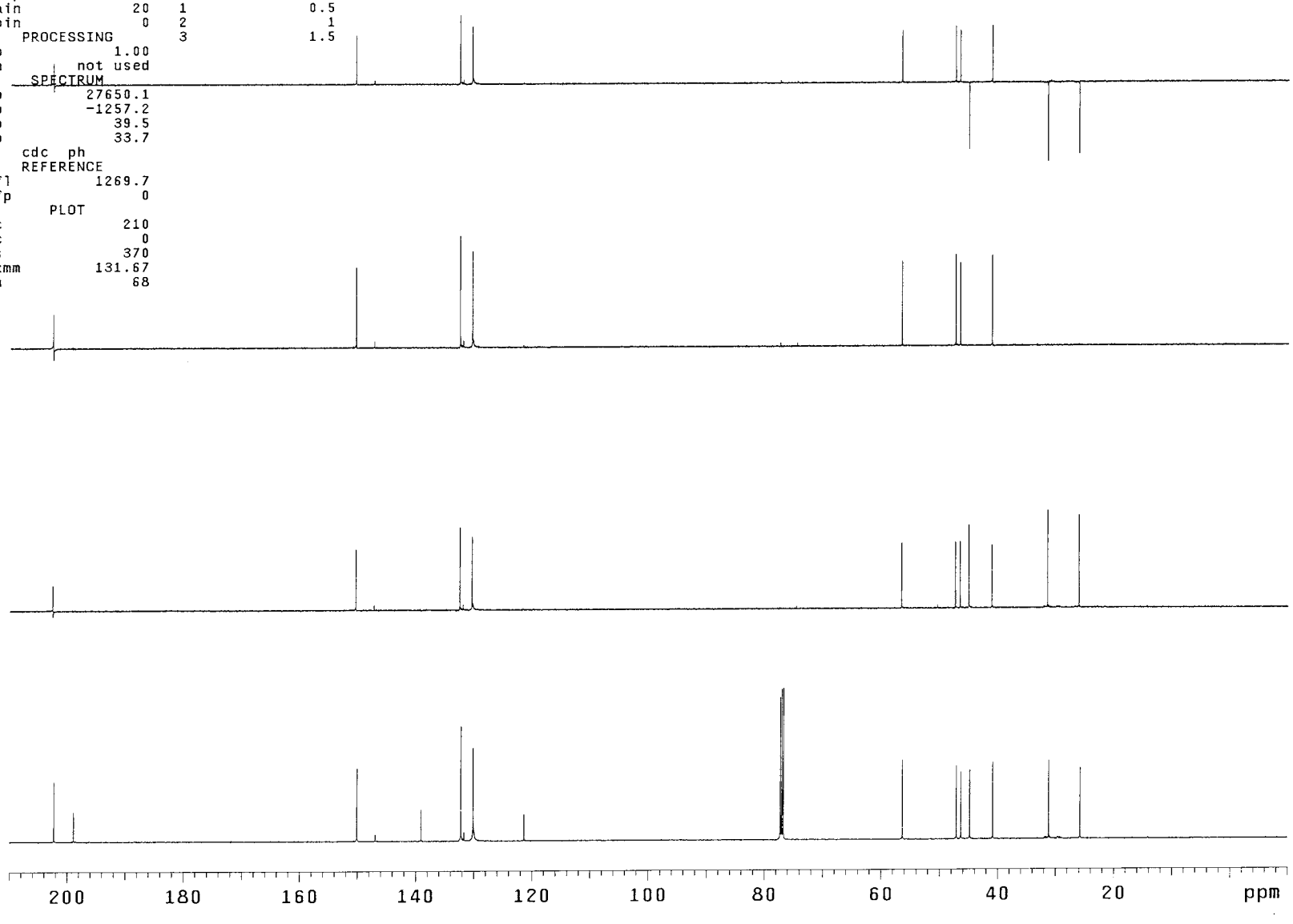


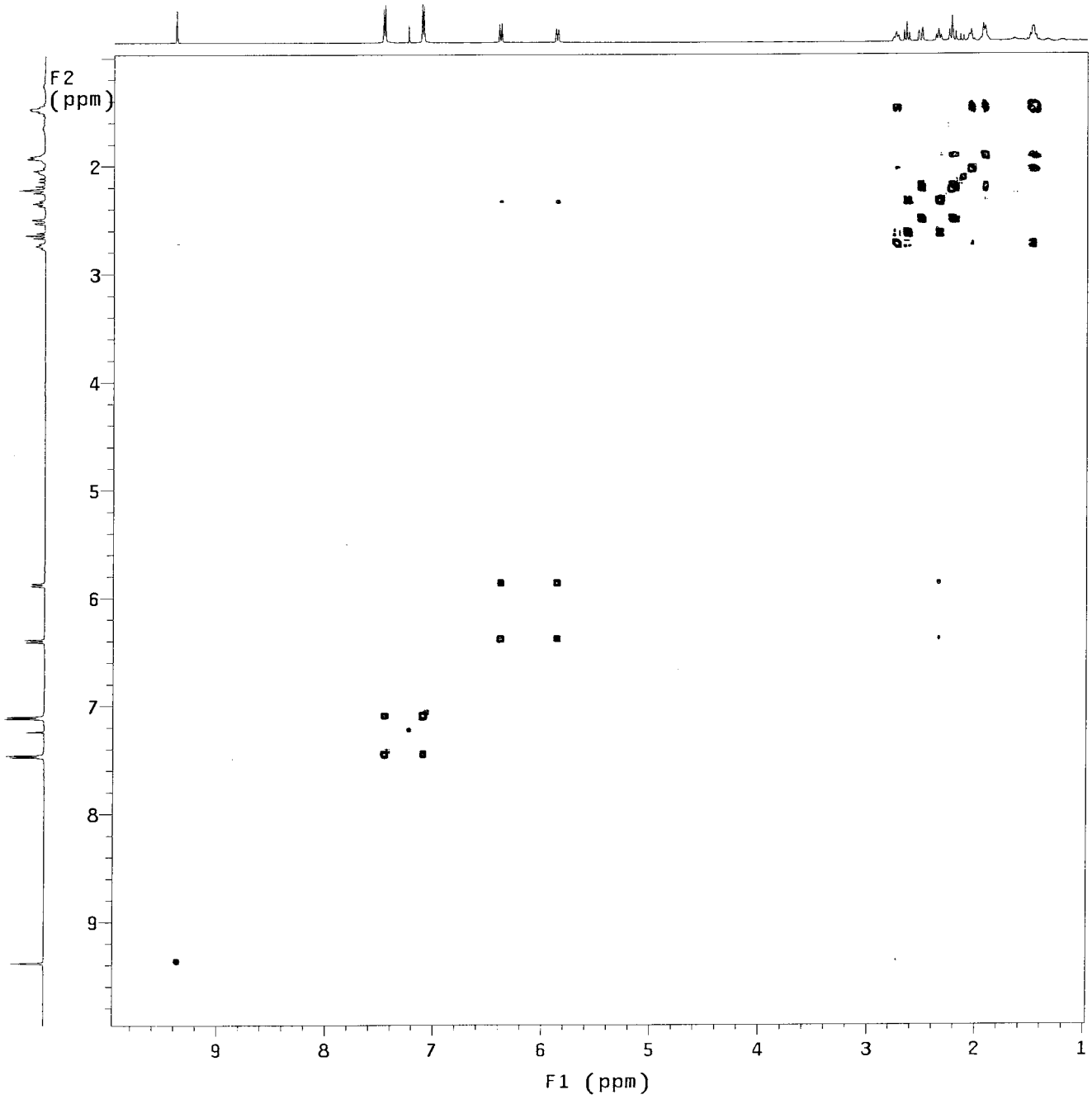
Fig S38. COSY of 5d (CDCl3).

RYN-2-129

exp32 gCOSY

SAMPLE	
date	Nov 2 2008
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4498.4
at	0.228
np	2048
fb	3000
ss	16
d1	1.000
nt	32
2D ACQUISITION	
sw1	4498.4
ni	128
TRANSMITTER	
tn	H1
sfrq	499.836
tof	249.8
tpwr	57
pw	13.000
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gstab	0.000500
DECOUPLER	
dn	C13
dm	nnn

FLAGS	
hs	nn
sspul	n
hsglvl	1026
SPECIAL	
temp	not used
gain	20
spin	0
F2 PROCESSING	
sb	-0.114
sbs	not used
fn	2048
F1 PROCESSING	
sb1	-0.028
sbs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	485.0
wp	4494.0
sp1	487.5
wp1	4494.0
rfl	2453.4
rfp	2934.0
rfl1	2450.9
rfp1	2934.0
PLOT	
wc	155.0
sc	10.0
wc2	155.0
sc2	0
vs	28
th	6
ai cdc av	



RYN-2-129

exp33 gHMQC

SAMPLE	
date	Nov 2 2008
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4498.4
at	0.228
np	2048
fb	3000
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.836
tof	249.8
tpwr	57
pw	13.000
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	35
pwxlvl	51
pwx	14.700
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	20
spin	0
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gzlvl3	516
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.105
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.006
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	687.4
wp	3527.6
sp1	2862.4
wp1	16609.9
rfl	2708.6
rfp	3193.9
rfl1	20134.8
rfp1	18865.5
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	28
th	6
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256
i	phase
1	1
2	2

Fig S39. HMQC of 5d (CDCl3).

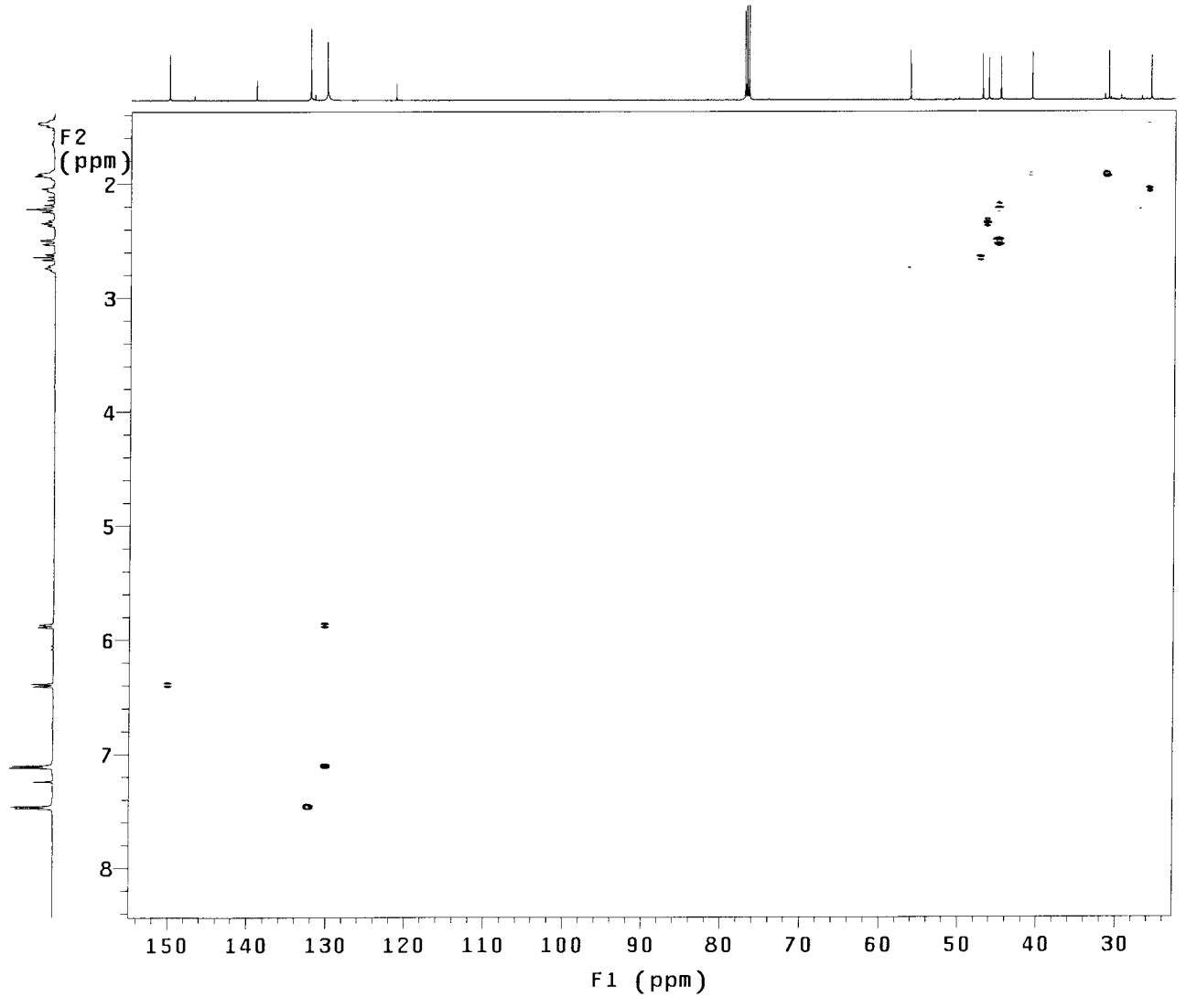


Fig S40. NOESY of 5d (CDCl3).

RYN-2-129

exp35 NOESY

SAMPLE		FLAGS	
date	Nov 3 2008	hs	n
solvent	cdcl3	sspul	y
sample	undefined	PFGflg	y
ACQUISITION		hsglvl	1026
sw	4498.4	SPECIAL	
at	0.228	temp	not used
np	2048	gain	28
fb	3000	spin	0
ss	32	F2 PROCESSING	
d1	1.000	gf	0.105
nt	8	gfs	not used
2D ACQUISITION		fn	2048
sw1	4498.4	F1 PROCESSING	
ni	200	gf1	0.041
TRANSMITTER		gfs1	not used
tn	H1	proc1	lp
sfrq	499.836	fn1	2048
tof	249.8	DISPLAY	
tpwr	57	sp	485.9
pw	13.000	wp	4494.0
NOESY		sp1	487.5
mix	0.400	wp1	4494.0
PRESATURATION		rfl	2452.5
satmode	nnnn	rfp	2934.0
satpwr	0	rfl1	2450.9
satdly	0	rfp1	2934.0
satfrq	0	PLOT	
DECOUPLER		wc	155.0
dn	C13	sc	10.0
dm	nnn	wc2	155.0
		sc2	0
		vs	28
		th	3
		ai ph	

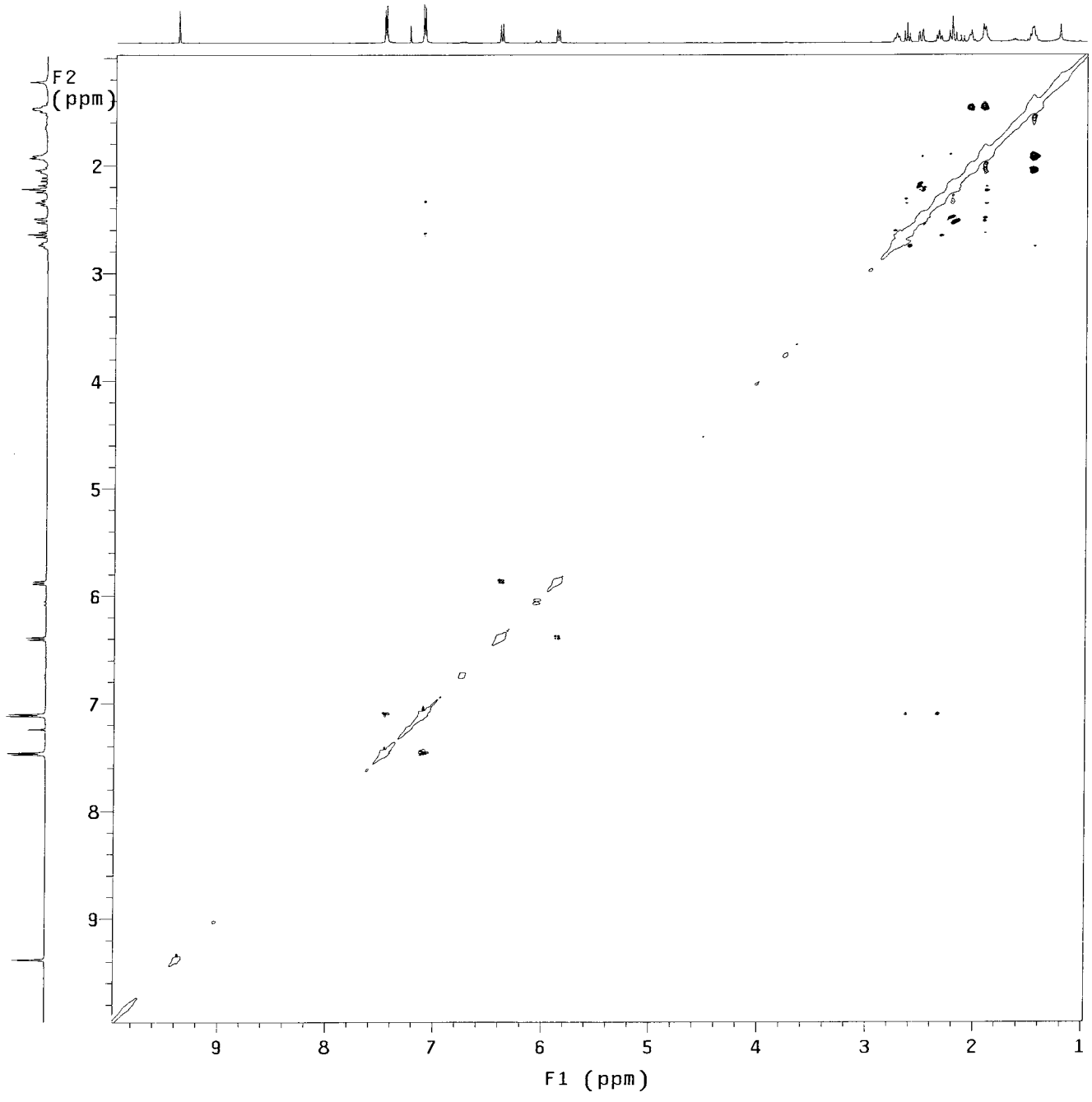
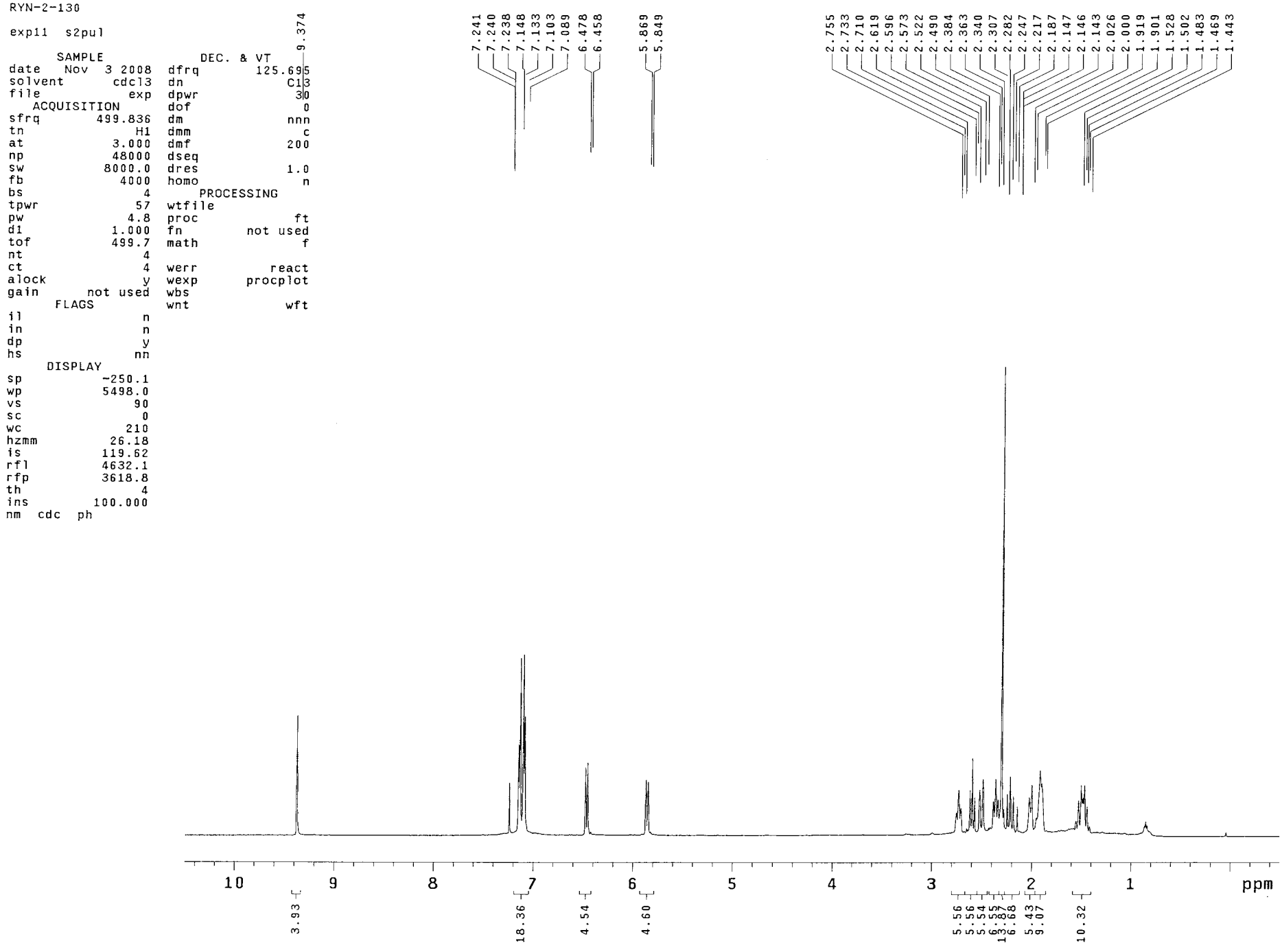


Fig S41. 1H NMR of 5e (500 MHz, CDCl3).



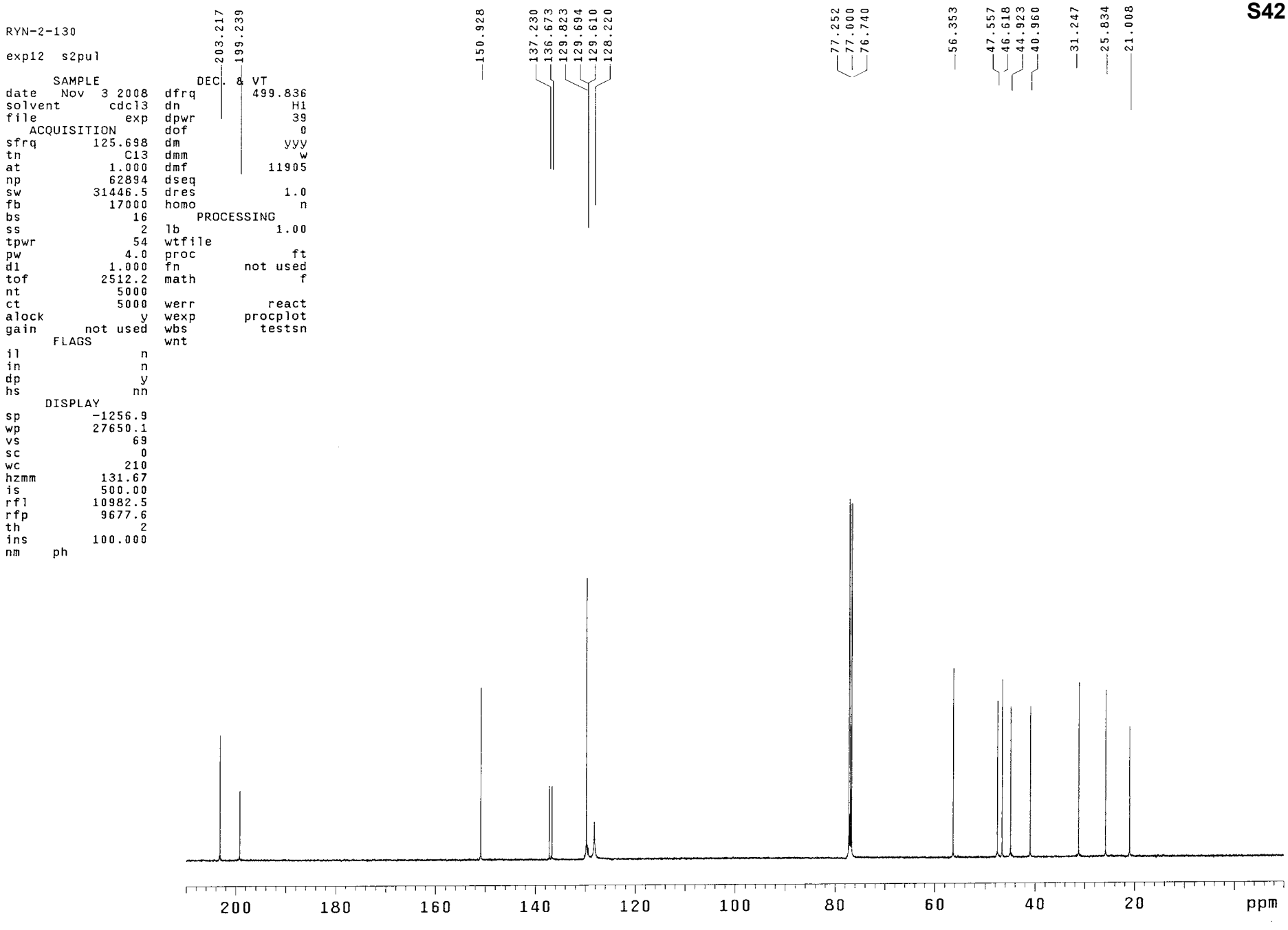


Fig S42. 13C NMR of 5e (125 MHz, CDCl3).

RYN-2-130

Fig S43. DEPT of 5e (CDCl3).

exp13 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Nov 3 2008	j1xh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	28	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	1000	wp	27650.1		
ct	1000	sp	-1257.2		
TRANSMITTER		rp	32.8		
tn	C13	lp	56.3		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	312		
dmm	ccw	hzmm	131.67		
dmf	11905	th	68		
pplvl	49				
pp	29.400				

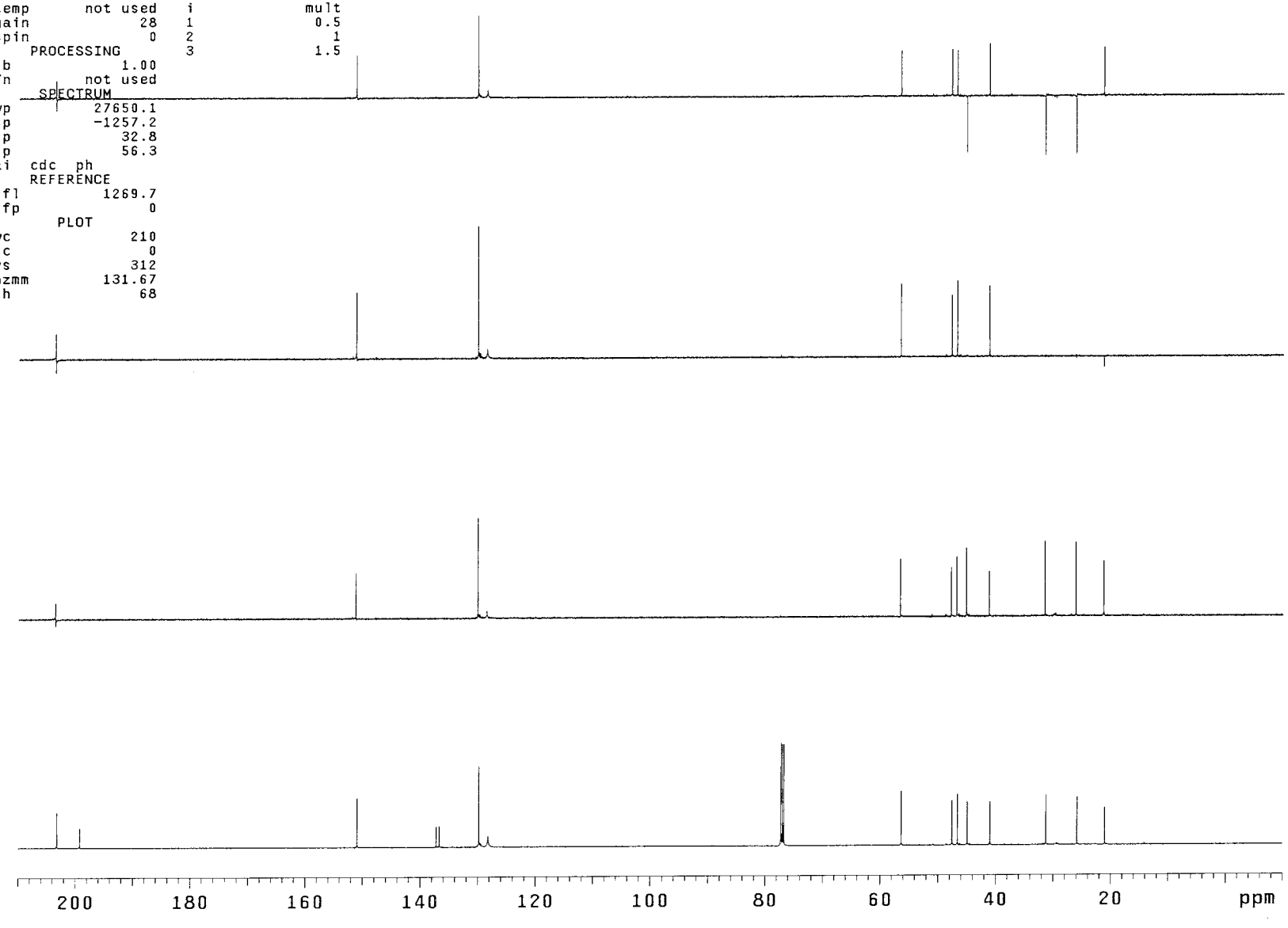
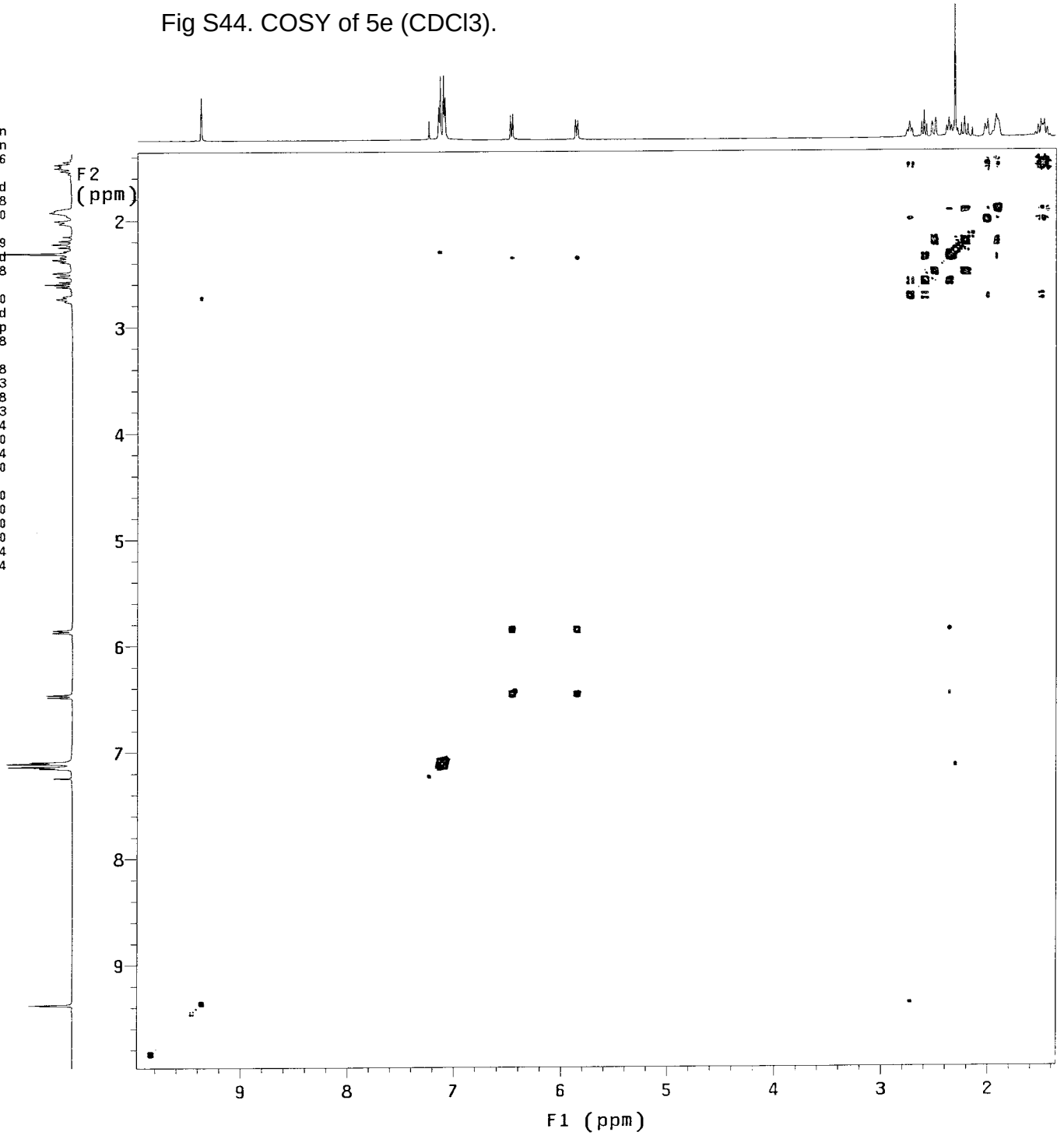


Fig S44. COSY of 5e (CDCl3).

RYN-2-130

exp14 gCOSY

SAMPLE		FLAGS	
date	Nov 3 2008	hs	nn
solvent	cdcl3	sspul	n
sample	undefined	hsglvl	1026
ACQUISITION		SPECIAL	
sw	4308.5	temp	not used
at	0.238	gain	28
np	2048	spin	0
fb	2000	F2 PROCESSING	
ss	16	sb	-0.119
d1	1.000	sbs	not used
nt	16	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4308.5	sb1	-0.030
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	2048
sfrq	499.836	DISPLAY	
tof	344.8	sp	678.8
tpwr	57	wp	4304.3
pw	13.000	sp1	678.8
GRADIENTS		wp1	4304.3
gzlvl1	1026	rfl	2249.4
gt1	0.001000	rfp	2924.0
gstab	0.000500	rfl1	2249.4
DECOUPLER		rfp1	2924.0
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	1814
		th	4
		ai cdc av	



RYN-2-130

exp15 gHMQC

SAMPLE		FLAGS		ACQUISITION ARRAYS	
date	Nov 3 2008	hs	n	array	phase
solvent	cdcl3	sspul	y	arraydim	256
sample	undefined	PFGflg	y		
ACQUISITION		hsglvl	1026	i	phase
sw	4308.5	SPECIAL		1	1
at	0.238	temp	not used	2	2
np	2048	gain	28		
fb	2000	spin	0		
ss	32	GRADIENTS			
d1	1.000	gzlvl1	1026		
nt	16	gt1	0.001000		
2D ACQUISITION		gzlvl3	516		
sw1	21367.5	gt3	0.001000		
ni	128	gstab	0.000500		
phase	arrayed	F2 PROCESSING			
TRANSMITTER		gf	0.110		
tn	H1	gfs	not used		
sfrq	499.836	fn	2048		
tof	344.8	F1 PROCESSING			
tpwr	57	gf1	0.006		
pw	13.000	gfs1	not used		
DECOUPLER		proc1	lp		
dn	C13	fn1	2048		
dof	-2515.1	DISPLAY			
dm	nny	sp	856.6		
dmm	ccp	wp	3159.8		
dmf	32258	sp1	2102.1		
dpwr	35	wp1	17632.4		
pwxlvl	51	rf1	2553.2		
pwx	14.700	rfp	3228.9		
HMQC		rfl1	20289.1		
j1xh	140.0	rfp1	18969.1		
nullflg	y	PLOT			
		wc	150.0		
		sc	6.2		
		wc2	116.2		
		sc2	0		
		vs	1814		
		th	4		
		ai cdc ph			

Fig S45. HMQC of 5e (CDCl3).

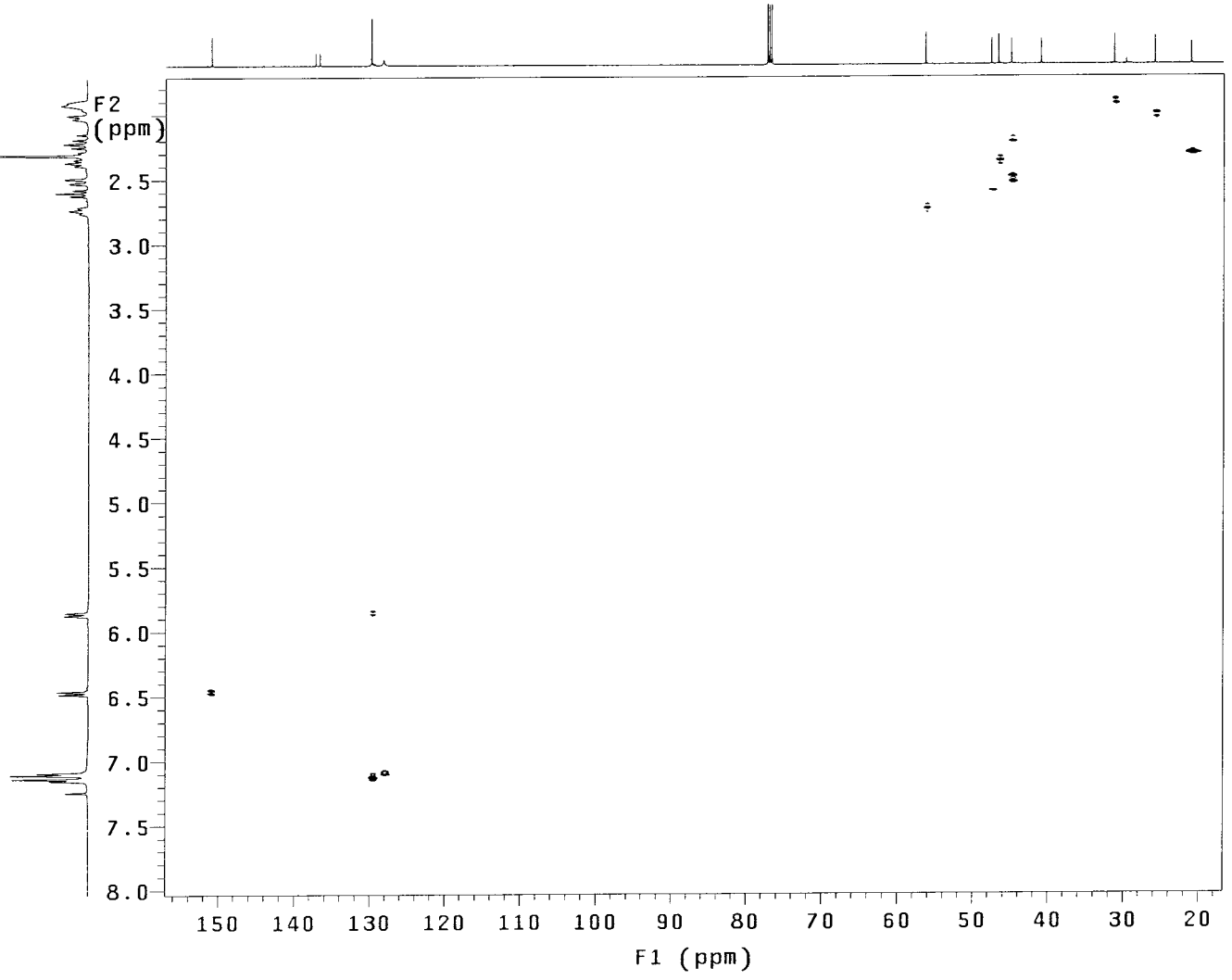


Fig S46. NOESY of 5e (CDCl3).

RYN-2-130

exp16 NOESY

SAMPLE		FLAGS	
date	Nov 3 2008	hs	n
solvent	cdcl3	sspul	y
sample	undefined	PFGflg	y
ACQUISITION		hsglvl	1026
sw	4308.5	SPECIAL	
at	0.238	temp	not used
np	2048	gain	20
fb	2000	spin	0
ss	32	F2 PROCESSING	
d1	1.000	gf	0.110
nt	8	gfs	not used
2D ACQUISITION		fn	2048
sw1	4308.5	F1 PROCESSING	
ni	200	gf1	0.043
TRANSMITTER		gfs1	not used
tn	H1	proc1	lp
sfrq	499.836	fn1	2048
tof	344.8	DISPLAY	
tpwr	57	sp	680.6
pw	13.000	wp	4304.3
NOESY		sp1	677.0
mix	0.600	wp1	4304.3
PRESATURATION		rf1	2247.7
satmode	nnnn	rfp	2924.0
satpwr	0	rf11	2251.2
satdly	0	rfp1	2924.0
satfrq	0	PLOT	
DECOUPLER		wc	155.0
dn	C13	sc	10.0
dm	nnn	wc2	155.0
		sc2	0
		vs	113
		th	2
		ai ph	

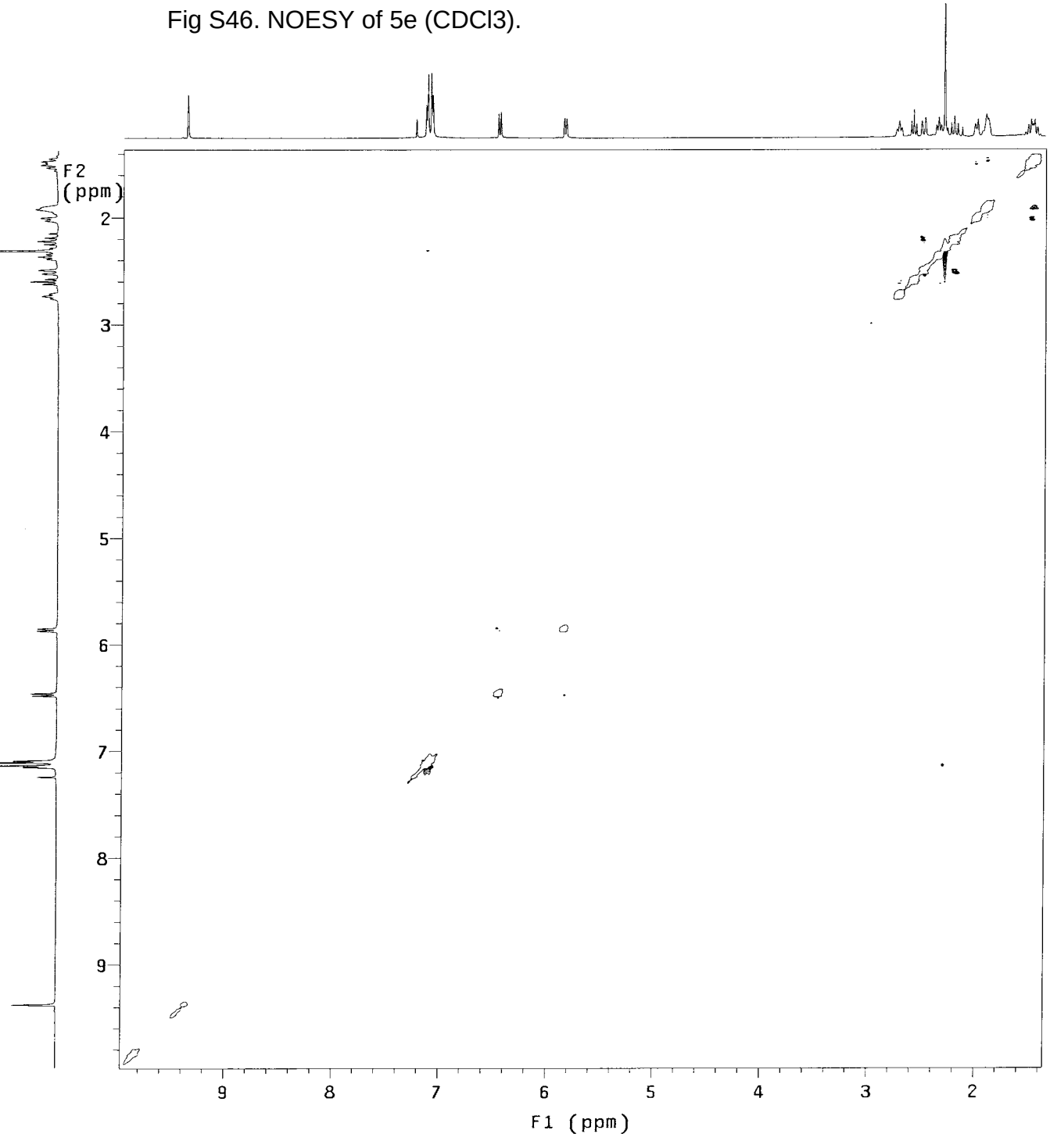
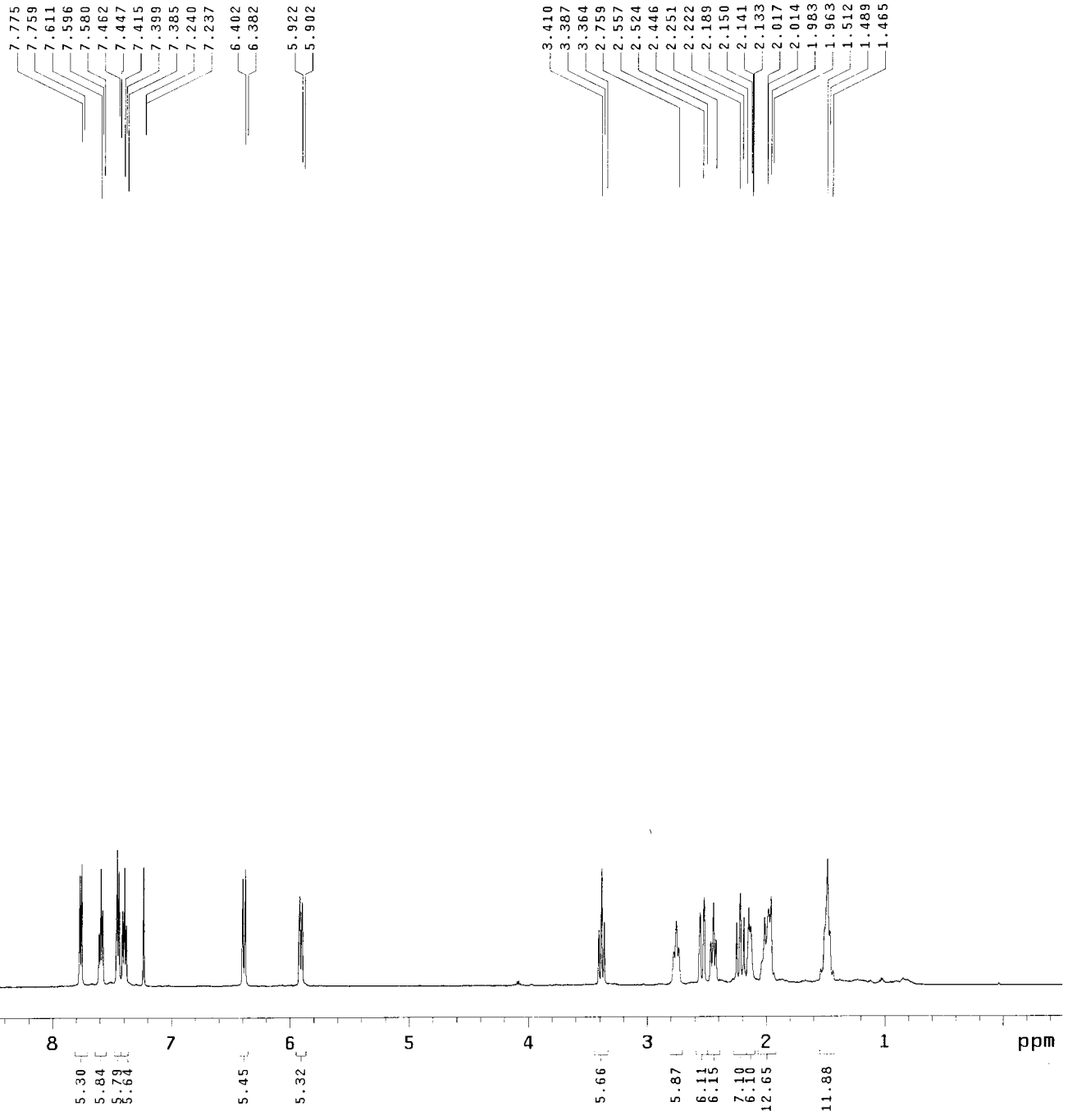


Fig S47. 1H NMR of 5f (500 MHz, CDCl3).

RYN-2-133

exp3 s2pul

SAMPLE		DEC. & VT	
date	Jan 6 2009	dfrq	125.695
solvent	cdcl3	dn	C13
file	exp	dpwr	30
ACQUISITION		dof	0
sfrq	499.836	dm	nnn
tn	H1	dmm	c
at	3.000	dmf	200
np	48000	dseq	
sw	8000.0	dres	1.0
fb	4000	homo	n
bs	4	PROCESSING	
tpwr	57	wtfile	
pw	4.8	proc	ft
d1	1.000	fn	not used
tof	499.7	math	f
nt	4		
ct	4	werr	react
alock	y	wexp	procplot
gain	not used	wbs	
FLAGS		wnt	wft
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-250.1		
wp	5498.0		
vs	34		
sc	0		
wc	210		
hzmm	26.18		
is	110.59		
rfl	4631.3		
rfp	3618.8		
th	8		
ins	100.000		
nm	ph		



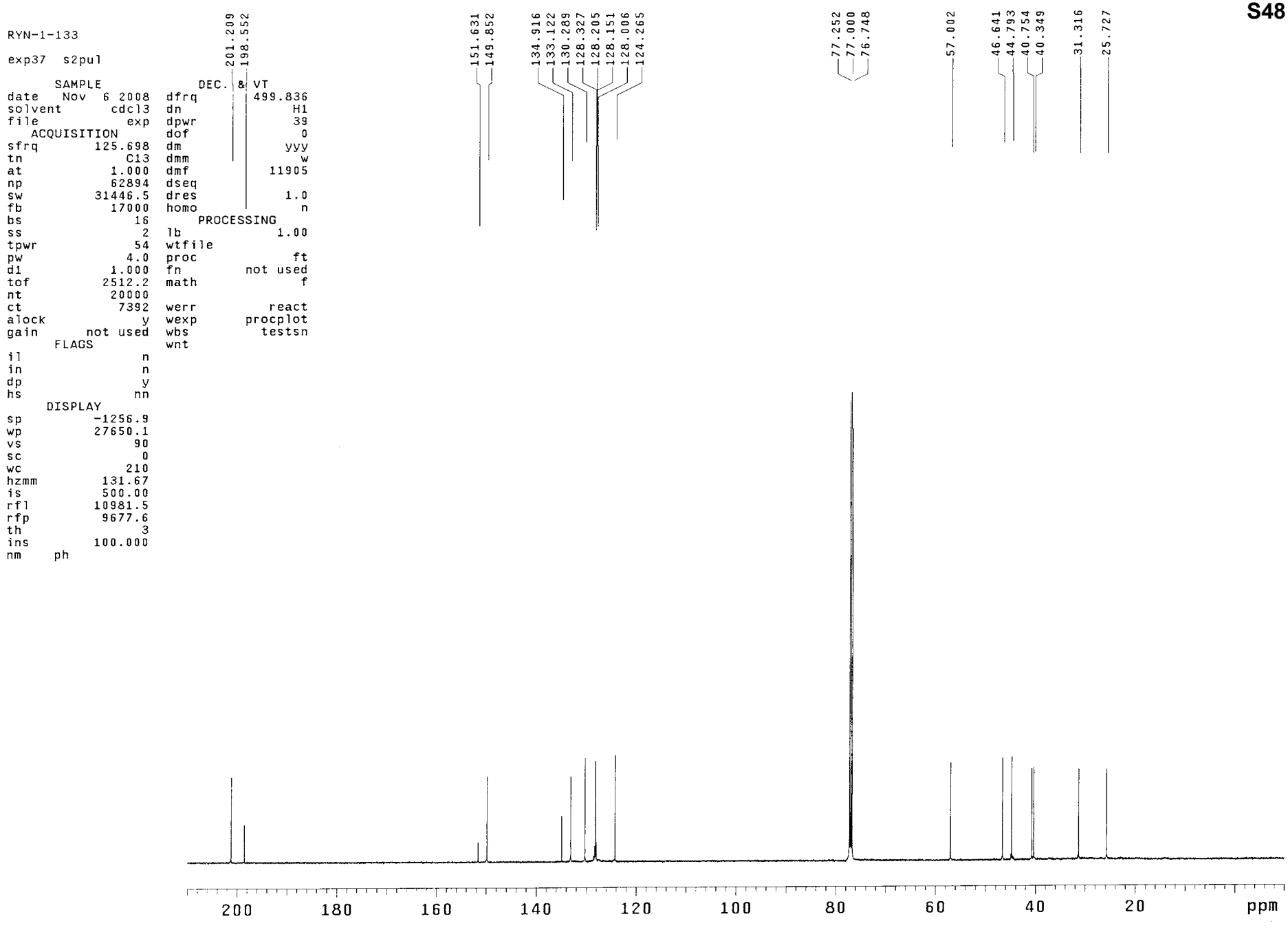


Fig S48. 13C NMR of 5f (125 MHz, CDCl3).

Fig S49. DEPT of 5f (CDCl3).

RYN-2-133

exp32 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Nov 6 2008	jlxh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	28	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	1500	wp	27650.1		
ct	1500	sp	-1257.2		
TRANSMITTER		rp	32.3		
tn	C13	lp	63.1		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	550		
dmm	ccw	hzmm	131.67		
dmf	11905	th	68		
pplvl	49				
pp	29.400				

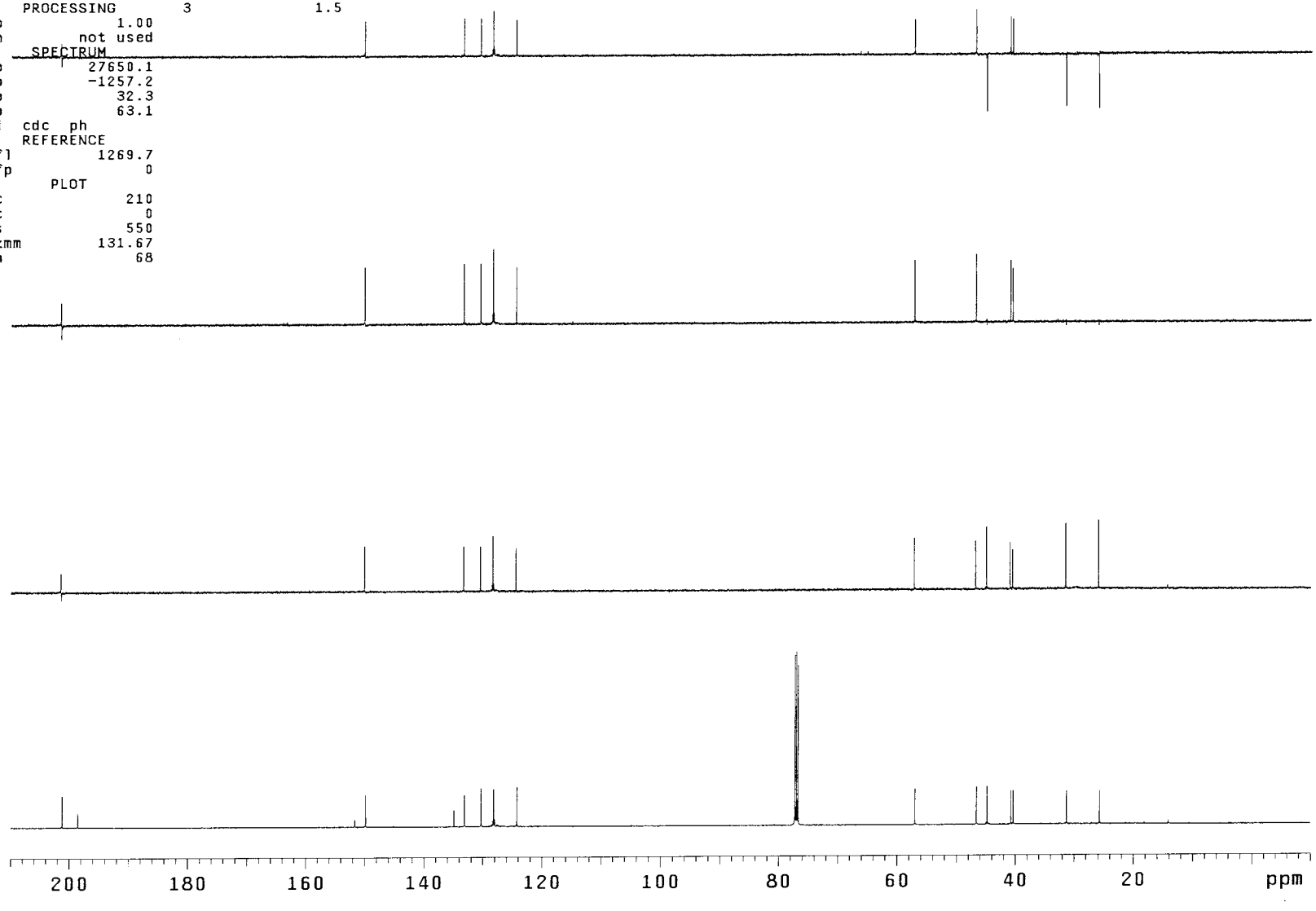


Fig S50. COSY of 5f (CDCl3).

RYN-2-133

exp33 gCOSY

SAMPLE		FLAGS	
date	Nov 6 2008	hs	nn
solvent	cdcl3	sspul	n
sample	undefined	hsglvl	1026
ACQUISITION		SPECIAL	
sw	4498.4	temp	not used
at	0.228	gain	28
np	2048	spin	0
fb	3000	F2 PROCESSING	
ss	16	sb	-0.114
d1	1.000	sbs	not used
nt	16	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4498.4	sb1	-0.028
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	2048
sfrq	499.836	DISPLAY	
tof	249.8	sp	504.2
tpwr	57	wp	4494.0
pw	13.000	sp1	504.2
GRADIENTS		wp1	4494.0
gzlvl1	1026	rfl	-499.8
gt1	0.001000	rfp	0
gstab	0.000500	rfl1	-499.8
DECOUPLER		rfp1	0
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	57
		th	7
		ai cdc av	

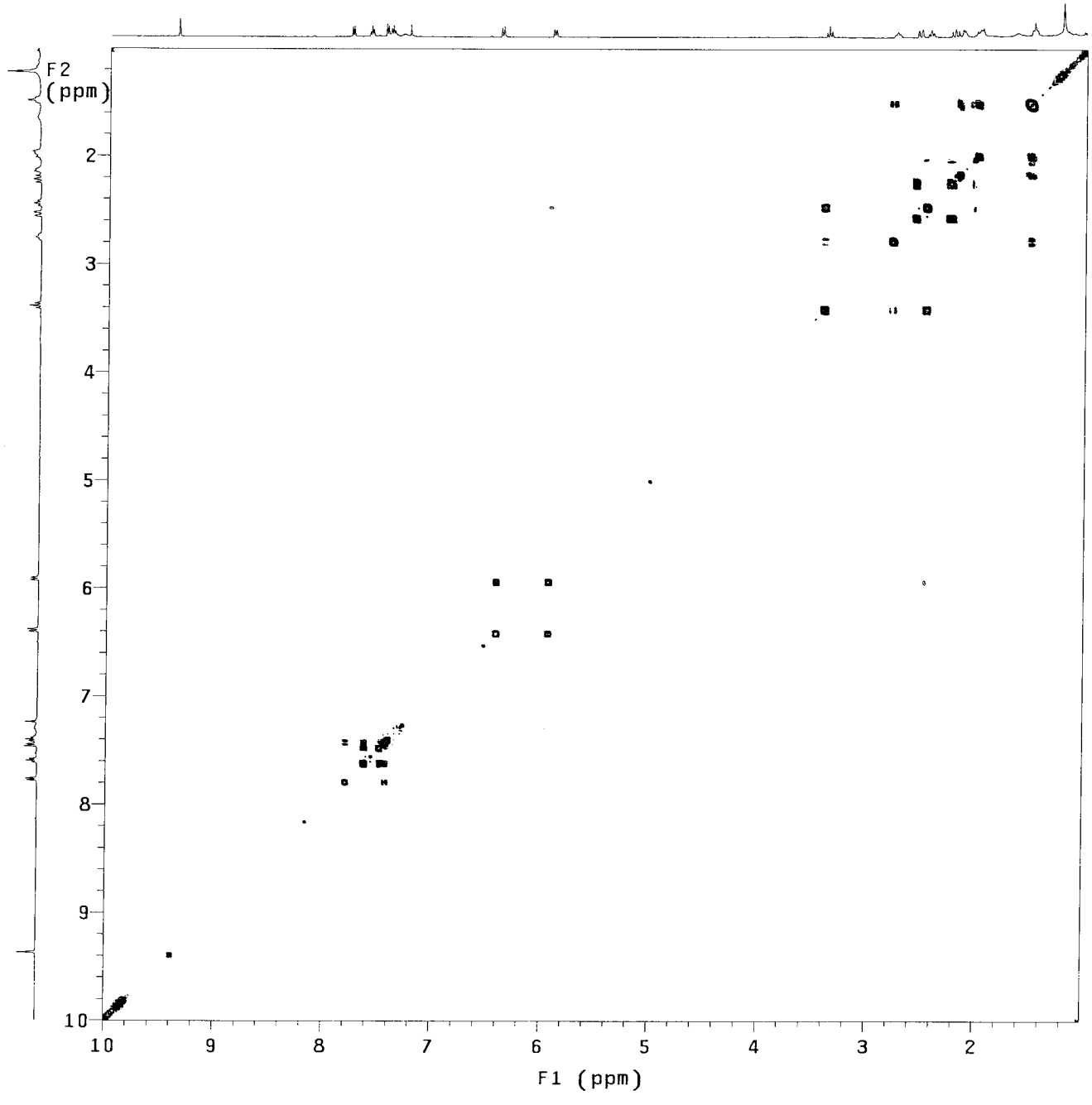


Fig S51. HMQC of 5f (CDCl3).

RYN-2-133

exp34 gHMQC

SAMPLE	
date	Nov 6 2008
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4498.4
at	0.228
np	2048
fb	3000
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.836
tof	249.8
tpwr	57
pw	13.000
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	35
pwxlvl	51
pwx	14.700
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	28
spin	0
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gzlvl3	516
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.105
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.006
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	785.4
wp	3395.8
sp1	2832.4
wp1	15420.5
rfl	-499.8
rfp	0
rfl1	1257.5
rfp1	0
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	1814
th	6
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256
i	phase
1	1
2	2

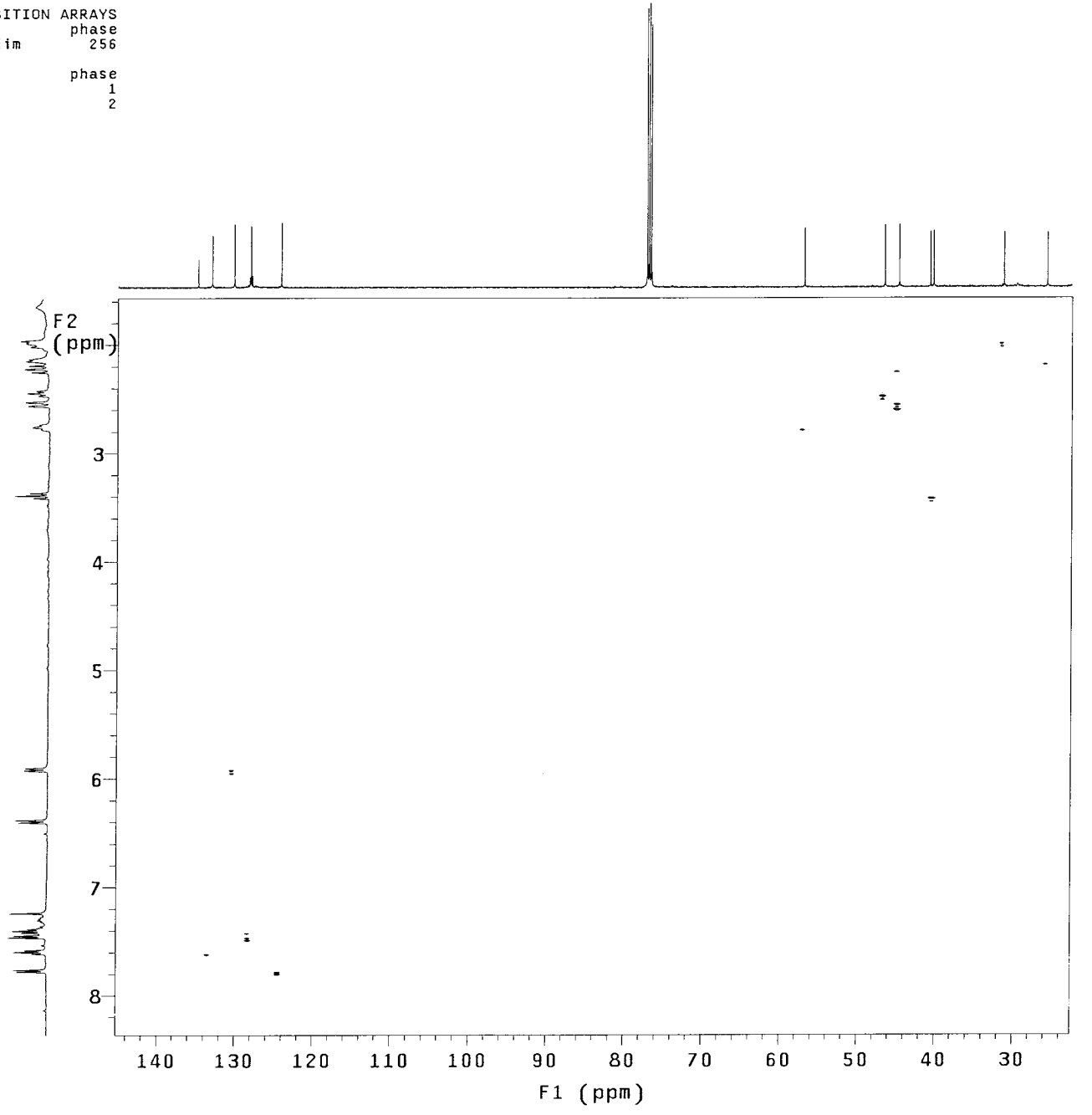


Fig S52. NOESY of 5f (CDCl3).

RYN-2-133

exp35 NOESY

SAMPLE		FLAGS	
date	Nov 6 2008	hs	n
solvent	cdcl3	sspul	y
sample	undefined	PFGflg	y
ACQUISITION		hsglvl	1026
sw	4498.4	SPECIAL	
at	0.228	temp	not used
np	2048	gain	20
fb	3000	spin	0
ss	32	F2 PROCESSING	
d1	1.000	gf	0.105
nt	8	gfs	not used
2D ACQUISITION		fn	2048
sw1	4498.4	F1 PROCESSING	
ni	200	gf1	0.041
TRANSMITTER		gfs1	not used
tn	H1	proc1	lp
sfrq	499.836	fn1	2048
tof	249.8	DISPLAY	
tpwr	57	sp	504.2
pw	13.000	wp	4494.0
NOESY		sp1	504.2
mix	0.600	wp1	4494.0
PRESATURATION		rf1	-499.8
satmode	nnnn	rfp	0
satpwr	0	rf11	-499.8
satdly	0	rfp1	0
satfrq	0	PLOT	
DECOUPLER		wc	155.0
dn	C13	sc	10.0
dm	nnn	wc2	155.0
		sc2	0
		vs	1814
		th	4
		ai ph	

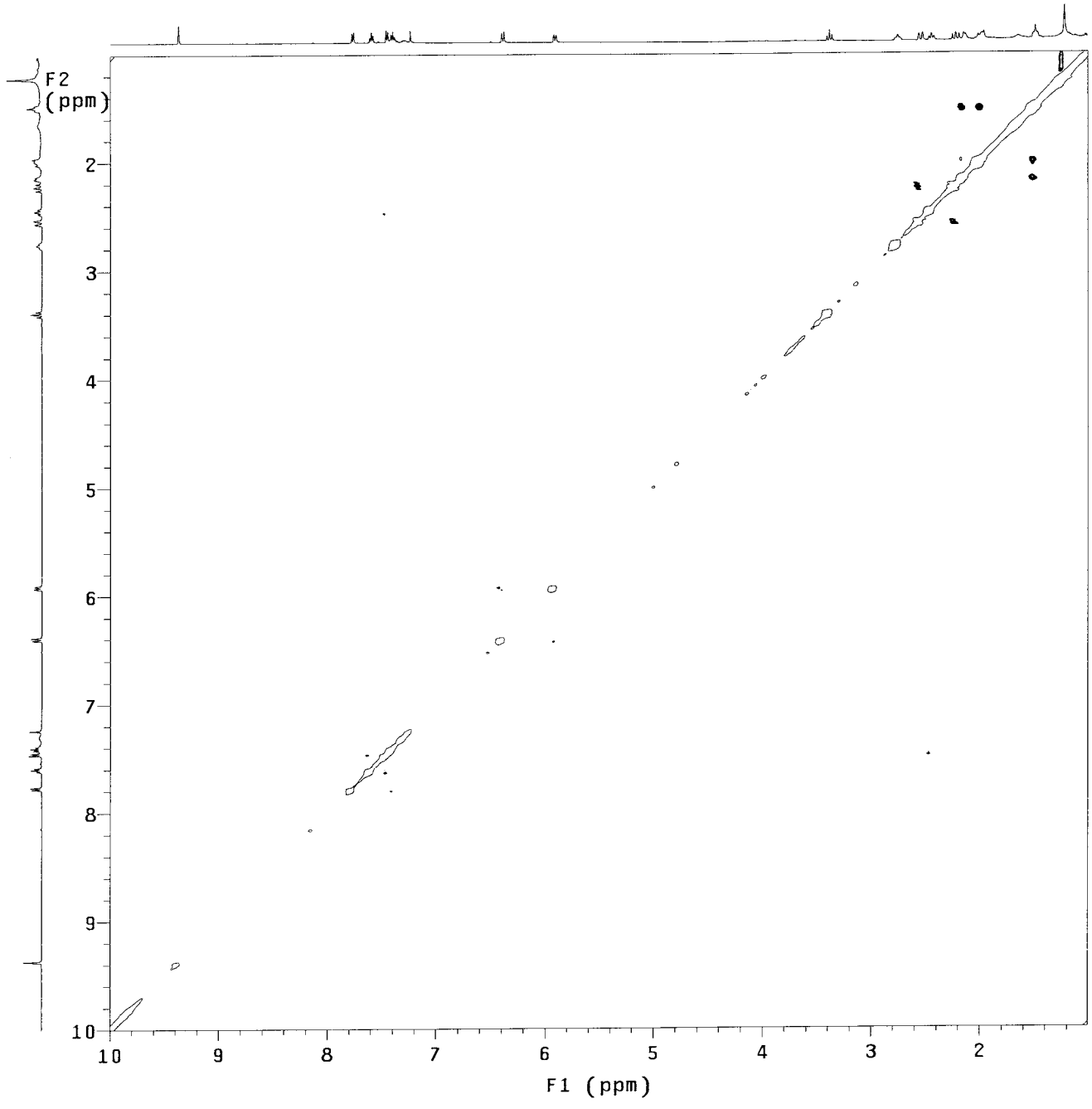
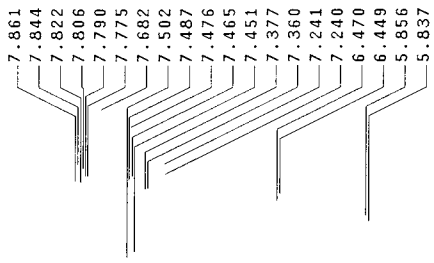


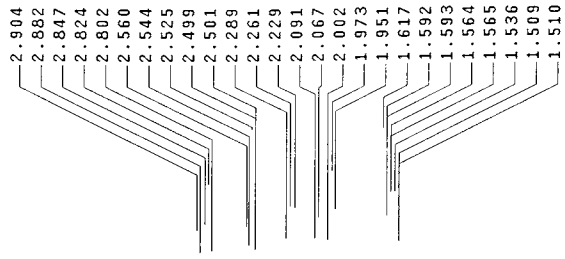
Fig S53. 1H NMR of 5g (500 MHz, CDCl3).

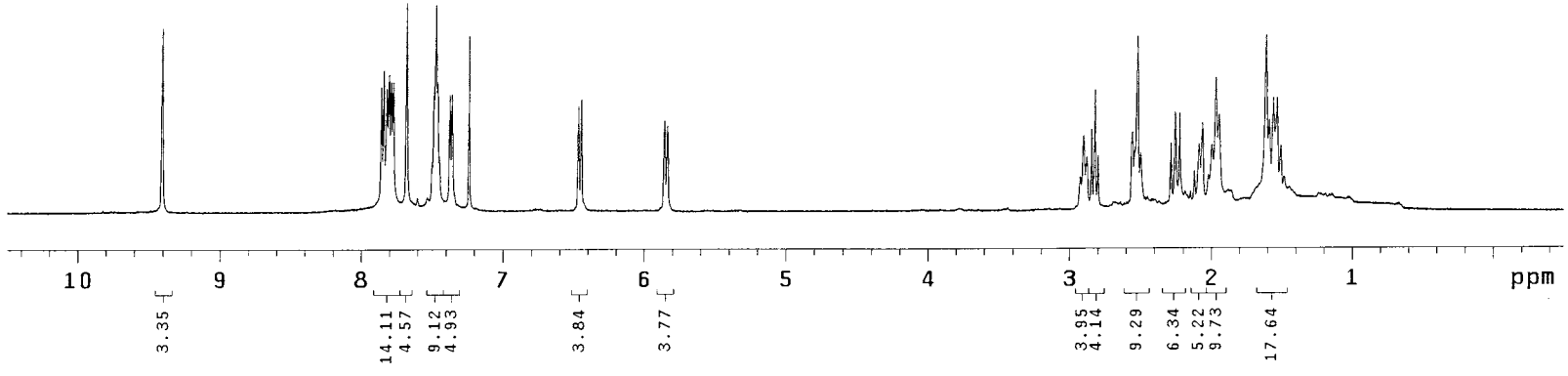
RYN-2-138

exp21 s2pul

SAMPLE		DEC. & VT	
date	Nov 15 2008	dfrq	125.695
solvent	cdcl3	dn	C13
file	exp	dpwr	30
ACQUISITION		dof	0
sfrq	499.836	dm	nnn
tn	H1	dmm	c
at	3.000	dmf	200
np	48000	dseq	
sw	8000.0	dres	1.0
fb	4000	homo	n
bs	4	PROCESSING	
tpwr	57	wtfile	
pw	4.8	proc	ft
d1	1.000	fn	not used
tof	499.7	math	f
nt	4		
ct	4	werr	react
alock	y	wexp	procplot
gain	not used	wbs	
FLAGS		wnt	wft
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-250.1		
wp	5498.0		
vs	28		
sc	0		
wc	210		
hzmm	26.18		
is	119.13		
rfl	4631.8		
rfp	3618.8		
th	6		
ins	100.000		
nm	ph		







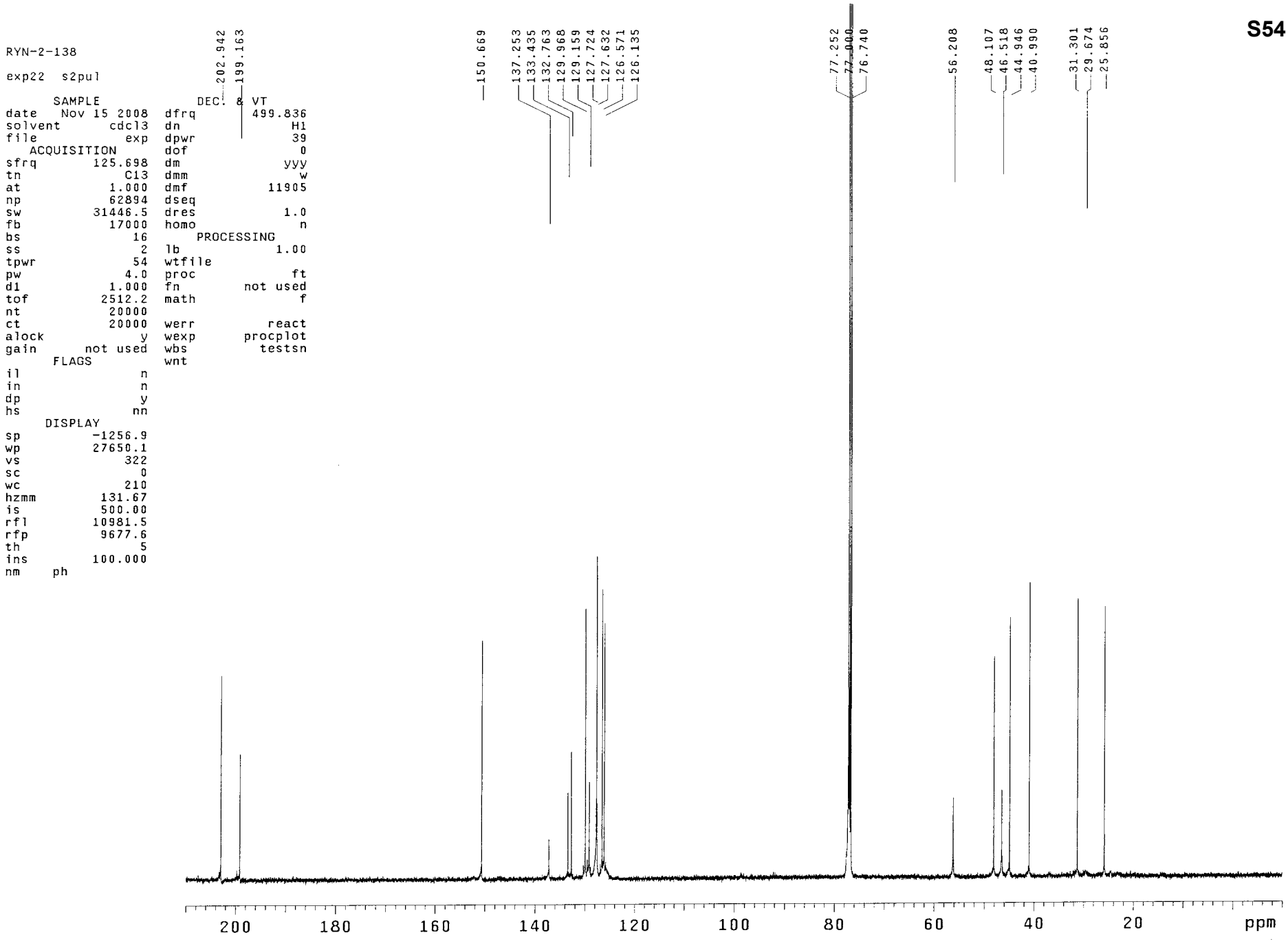


Fig S54. 13C NMR of 5g (125 MHz, CDCl3).

Fig S55. DEPT of 5g (CDCl3).

RYN-2-138

exp23 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Nov 15 2008	j1xh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	56	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	3000	wp	27650.1		
ct	3000	sp	-1257.2		
TRANSMITTER		rp	31.7		
tn	C13	lp	25.8		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	532		
dmm	ccw	hzmm	131.67		
dmf	11905	th	68		
pplvl	49				
pp	29.400				

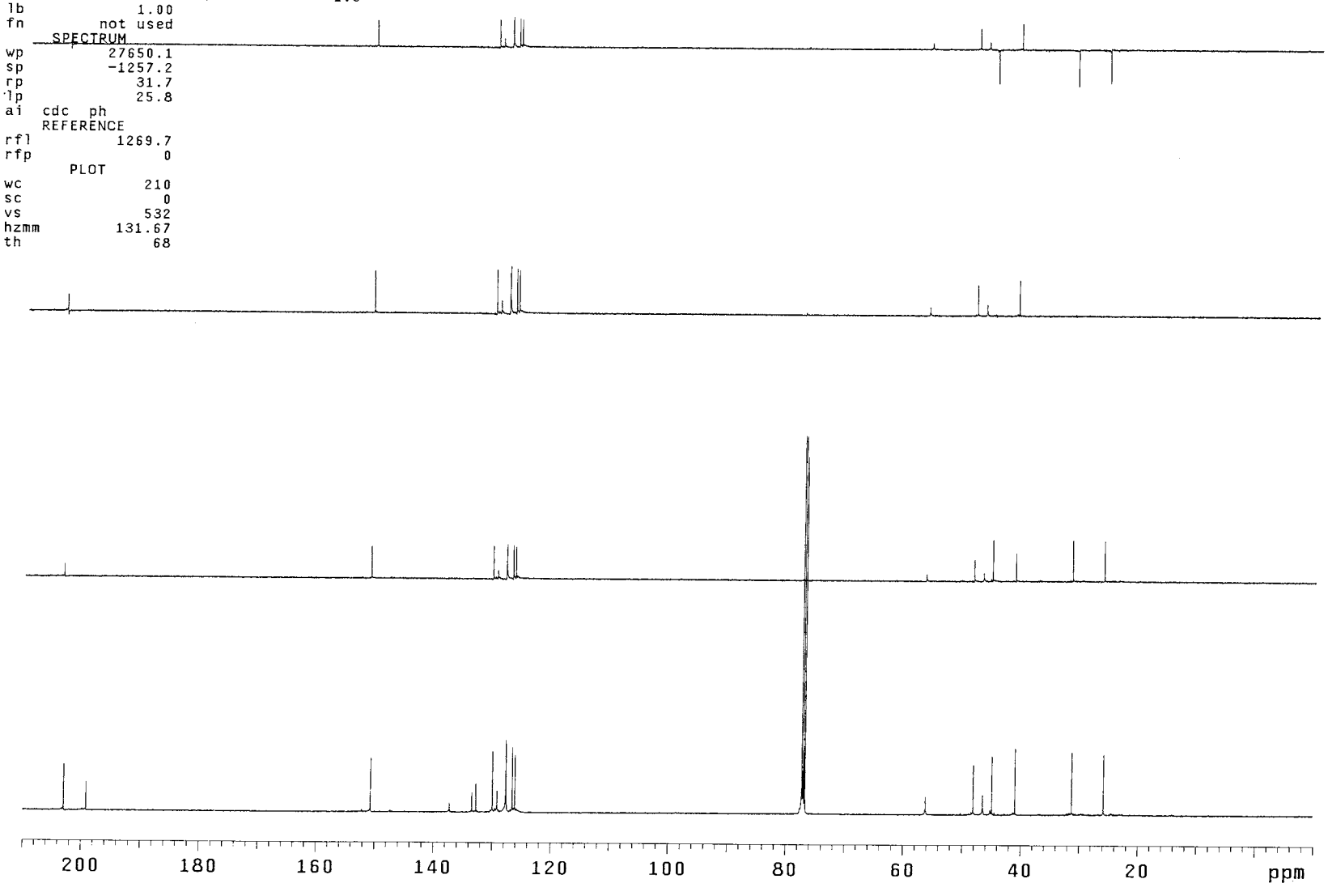
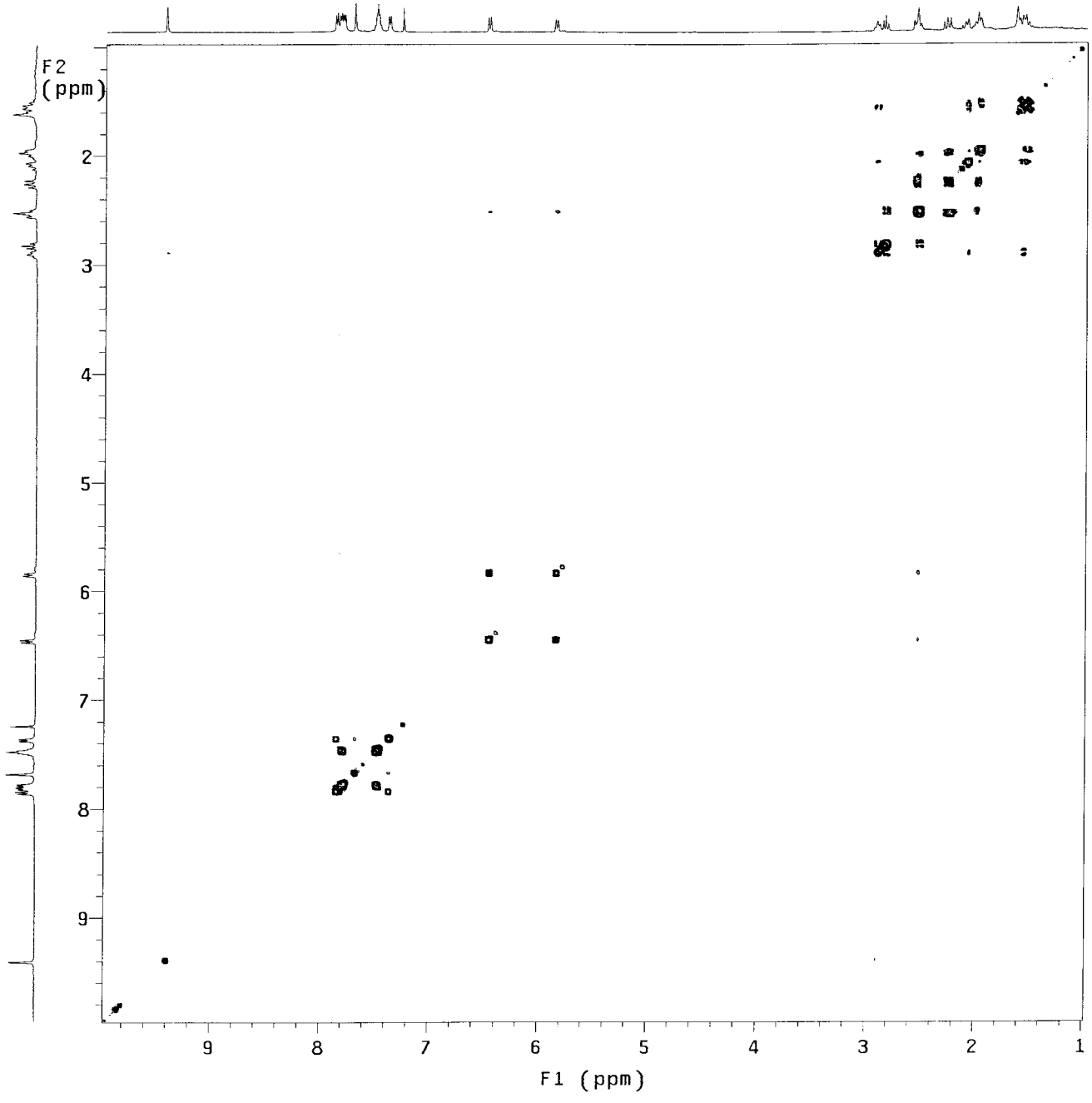


Fig S56. COSY of 5g (CDCl3).

RYN-2-138

exp27 gCOSY

SAMPLE		FLAGS	
date	Nov 17 2008	hs	nn
solvent	cdcl3	sspul	n
sample	undefined	hsglvl	1026
ACQUISITION		SPECIAL	
sw	4498.4	temp	not used
at	0.228	gain	30
np	2048	spin	0
fb	3000	F2 PROCESSING	
ss	16	sb	-0.114
d1	1.000	sbs	not used
nt	16	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4498.4	sb1	-0.028
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	2048
sfrq	499.836	DISPLAY	
tof	249.8	sp	486.0
tpwr	57	wp	4494.0
pw	13.000	sp1	489.2
GRADIENTS		wp1	4494.0
gzlvl1	1026	rfl	2437.4
gt1	0.001000	rfp	2919.0
gstab	0.000500	rfl1	2434.2
DECOUPLER		rfp1	2919.0
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	18
		th	8
		ai cdc av	



RYN-2-138

exp26 gHMQC

SAMPLE	
date	Nov 15 2008
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4498.4
at	0.228
np	2048
fb	3000
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.836
tof	249.8
tpwr	57
pw	13.000
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	35
pwxlvl	51
pwx	14.700
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	30
spin	0
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gzlvl3	516
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.105
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.006
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	512.9
wp	3769.2
sp1	2149.6
wp1	17173.3
rf1	2742.4
rfp	3228.9
rfl1	20230.0
rfp1	18936.6
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	113
th	6
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256
i	phase
1	1
2	2

Fig S57. HMQC of 5g (CDCl3).

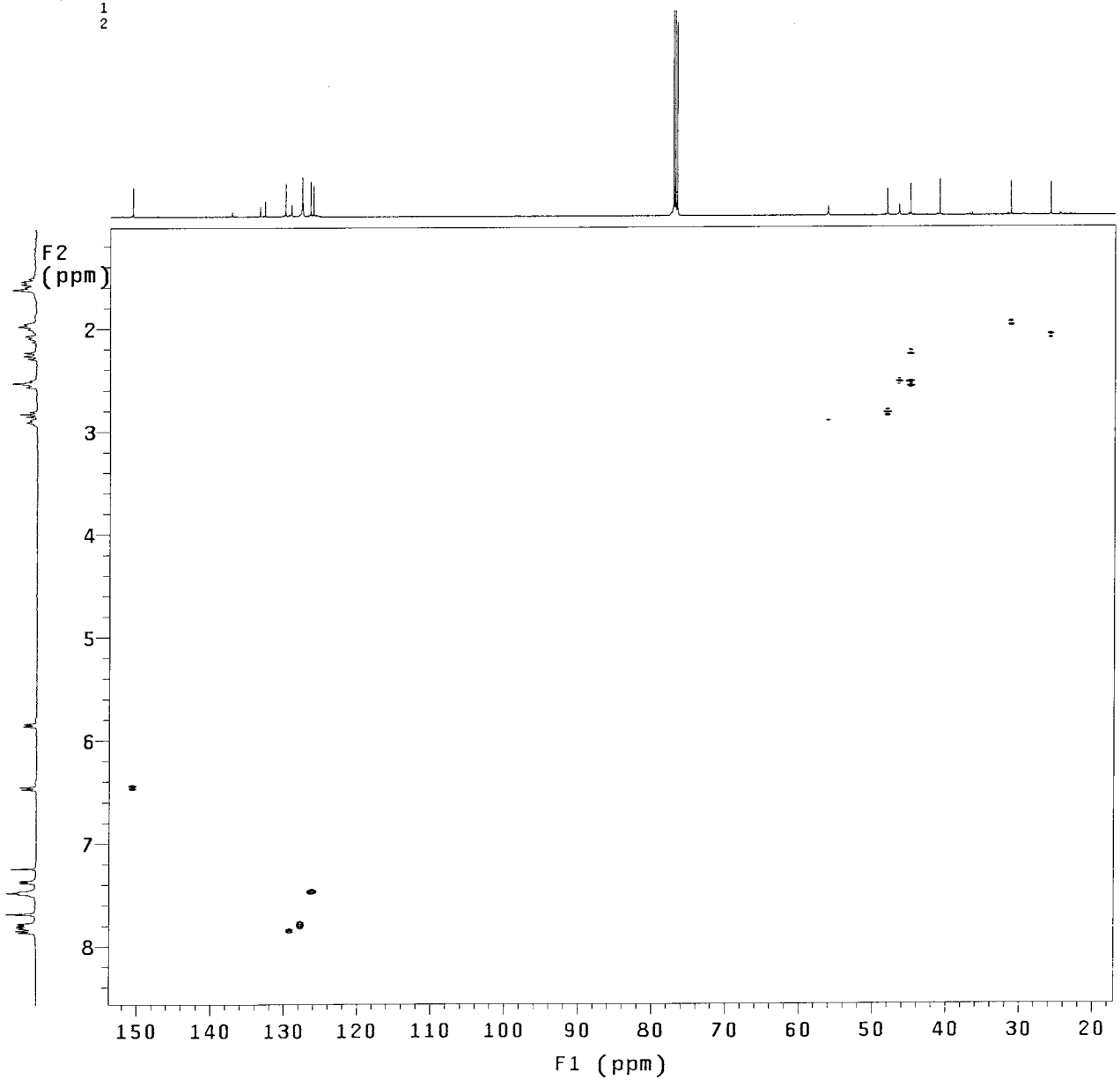


Fig S58. NOESY of 5g (CDCl3).

RYN-2-138

exp24 NOESY

SAMPLE		FLAGS	
date	Nov 15 2008	hs	n
solvent	cdcl3	sspul	y
sample	undefined	PFGflg	y
ACQUISITION		hsglvl	1026
sw	4498.4	SPECIAL	
at	0.228	temp	not used
np	2048	gain	50
fb	3000	spin	0
ss	32	F2 PROCESSING	
d1	1.000	gf	0.105
nt	8	gfs	not used
2D ACQUISITION		fn	2048
sw1	4498.4	F1 PROCESSING	
ni	200	gf1	0.041
TRANSMITTER		gfs1	not used
tn	H1	proc1	lp
sfrq	499.836	fn1	2048
tof	249.8	DISPLAY	
tpwr	57	sp	489.7
pw	13.000	wp	4494.0
NOESY		sp1	504.2
mix	0.200	wp1	4494.0
PRESATURATION		rfl	2433.7
satmode	nnnn	rfp	2919.0
satpwr	0	rfl1	-499.8
satdly	0	rfp1	0
satfrq	0	PLOT	
DECOUPLER		wc	155.0
dn	C13	sc	10.0
dm	nnn	wc2	155.0
		sc2	0
		vs	1814
		th	4
		ai ph	

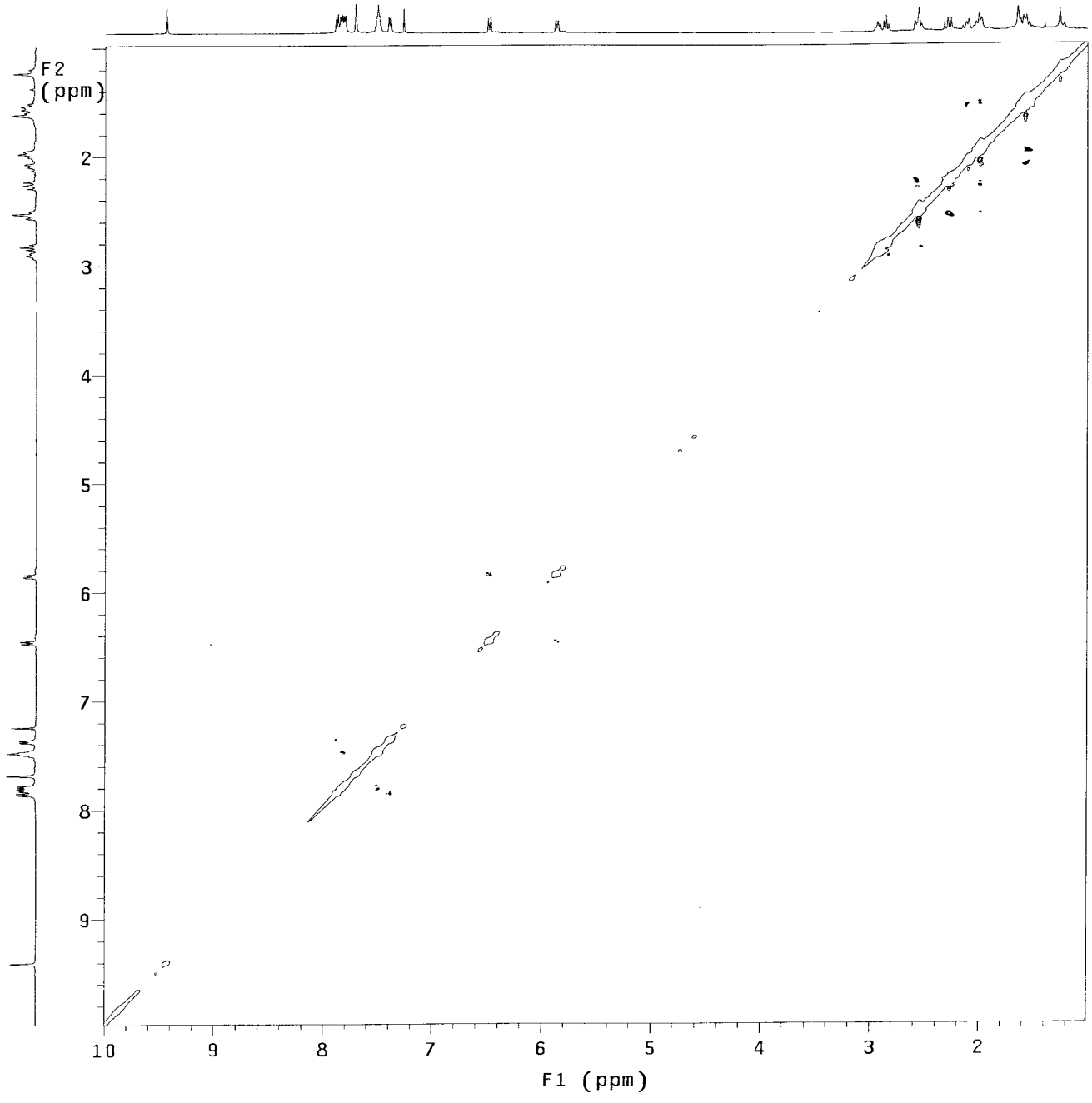
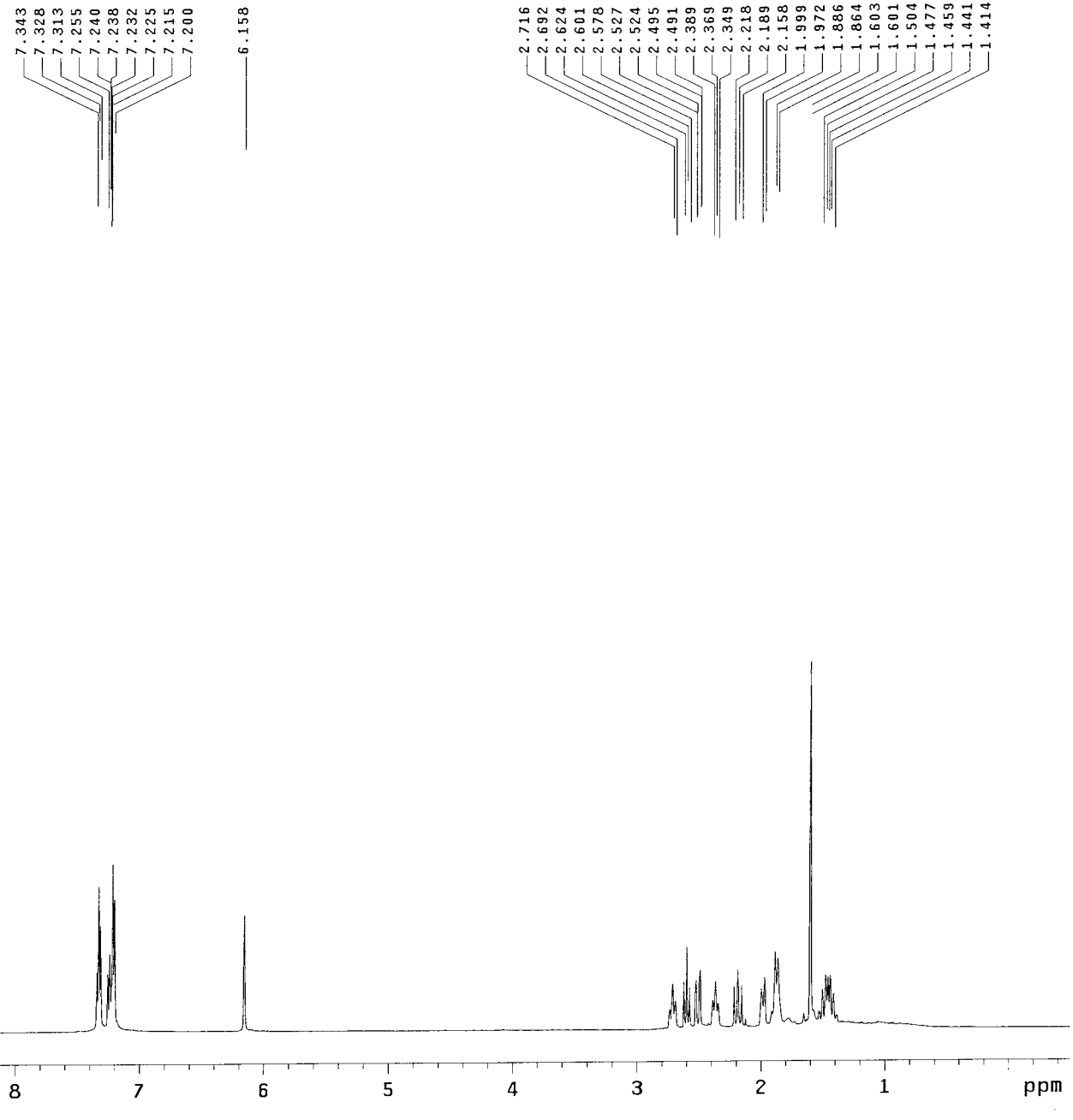


Fig S59. 1H NMR of 5h (500 MHz, CDCl3).

RYN-2-140

exp12 s2pul

SAMPLE		DEC. & VT	
date	Nov 15 2008	dfrq	125.695
solvent	cdcl3	dn	C13
file	exp	dpwr	30
ACQUISITION		dof	0
sfrq	499.836	dm	nnn
tn	H1	dmm	c
at	3.000	dmf	200
np	48000	dseq	
sw	8000.0	dres	1.0
fb	4000	homo	n
bs	4	PROCESSING	
tpwr	57	wtfile	
pw	4.8	proc	ft
d1	1.000	fn	not used
tof	499.7	math	f
nt	4		
ct	4	werr	react
alock	y	wexp	procplot
gain	not used	wbs	
FLAGS		wnt	wft
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-250.1		
wp	5498.0		
vs	57		
sc	0		
wc	210		
hzmm	26.18		
is	99.82		
rfl	4634.8		
rfp	3618.8		
th	3		
ins	100.000		
nm	ph		



STANDARD CARBON PARAMETERS

exp17 s2pul

SAMPLE		DEC. & VT	
date	Nov 15 2008	dfrq	499.836
solvent	cdcl3	dn	H1
file	exp	dpwr	39
ACQUISITION		dof	0
sfrq	125.698	dm	yyy
tn	C13	dmm	w
at	1.000	dmf	11905
np	62894	dseq	
sw	31446.5	dres	1.0
fb	17000	homo	n
bs	16	PROCESSING	
ss	2	lb	1.00
tpwr	54	wtfile	
pw	4.0	proc	ft
d1	1.000	fn	not used
tof	2512.2	math	f
nt	5000		
ct	5000	werr	react
alock	y	wexp	procplot
gain	not used	wbs	testsn
FLAGS		wnt	
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-1256.9		
wp	27650.1		
vs	53		
sc	0		
wc	210		
hzmm	131.67		
is	500.00		
rfl	10987.3		
rfp	9677.6		
th	8		
ins	100.000		
nm	ph		

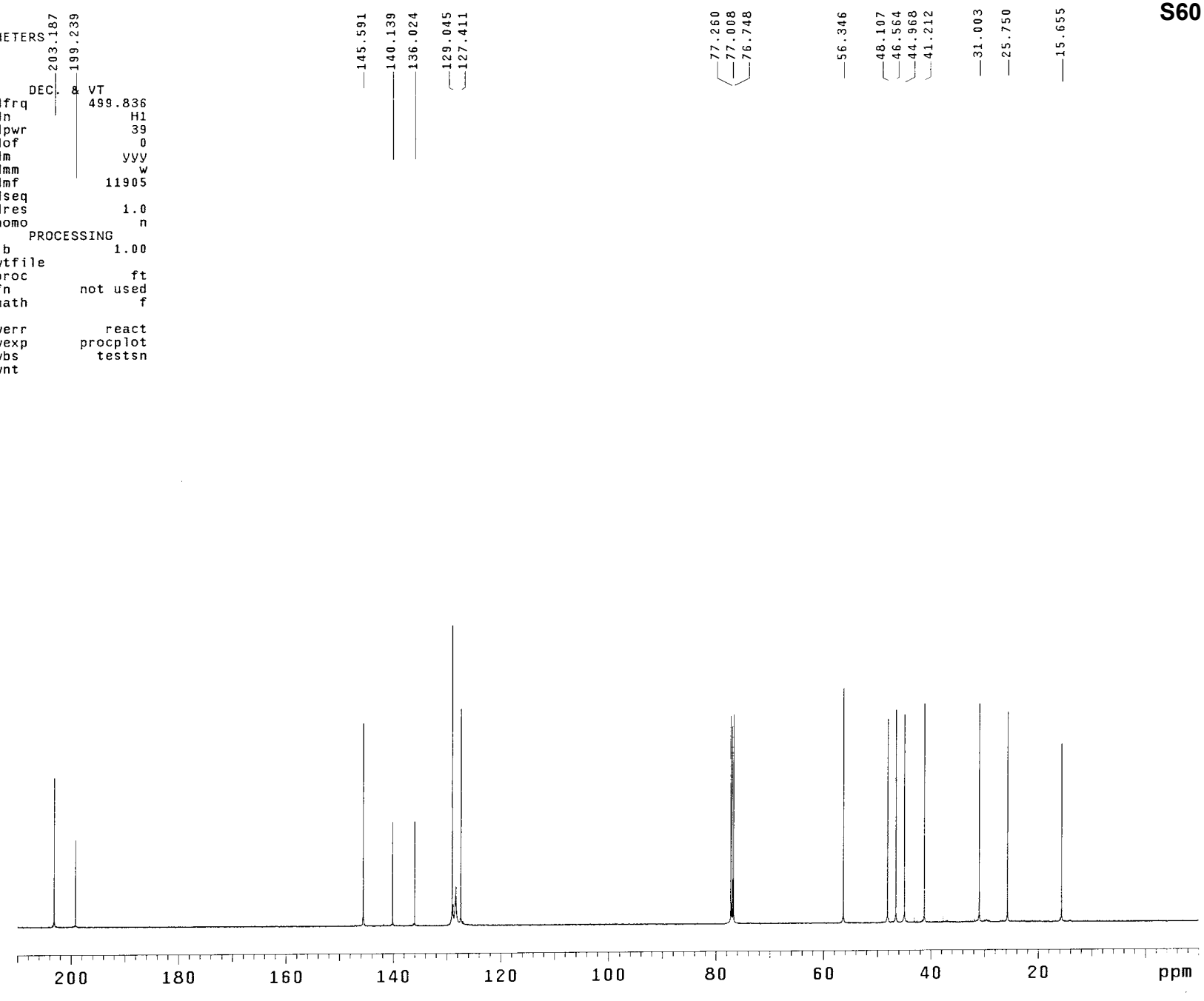


Fig S60. 13C NMR of 5h (125 MHz, CDCl3).

Fig S61. DEPT of 5h (CDCl3).

RYN-2-140

exp13 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Nov 15 2008	j1xh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	22	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	600	wp	27650.1		
ct	600	sp	-1257.2		
TRANSMITTER		rp	16.2		
tn	C13	lp	67.9		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	8703		
dmm	ccw	hzmm	131.67		
dmf	11905	th	68		
pplvl	49				
pp	29.400				

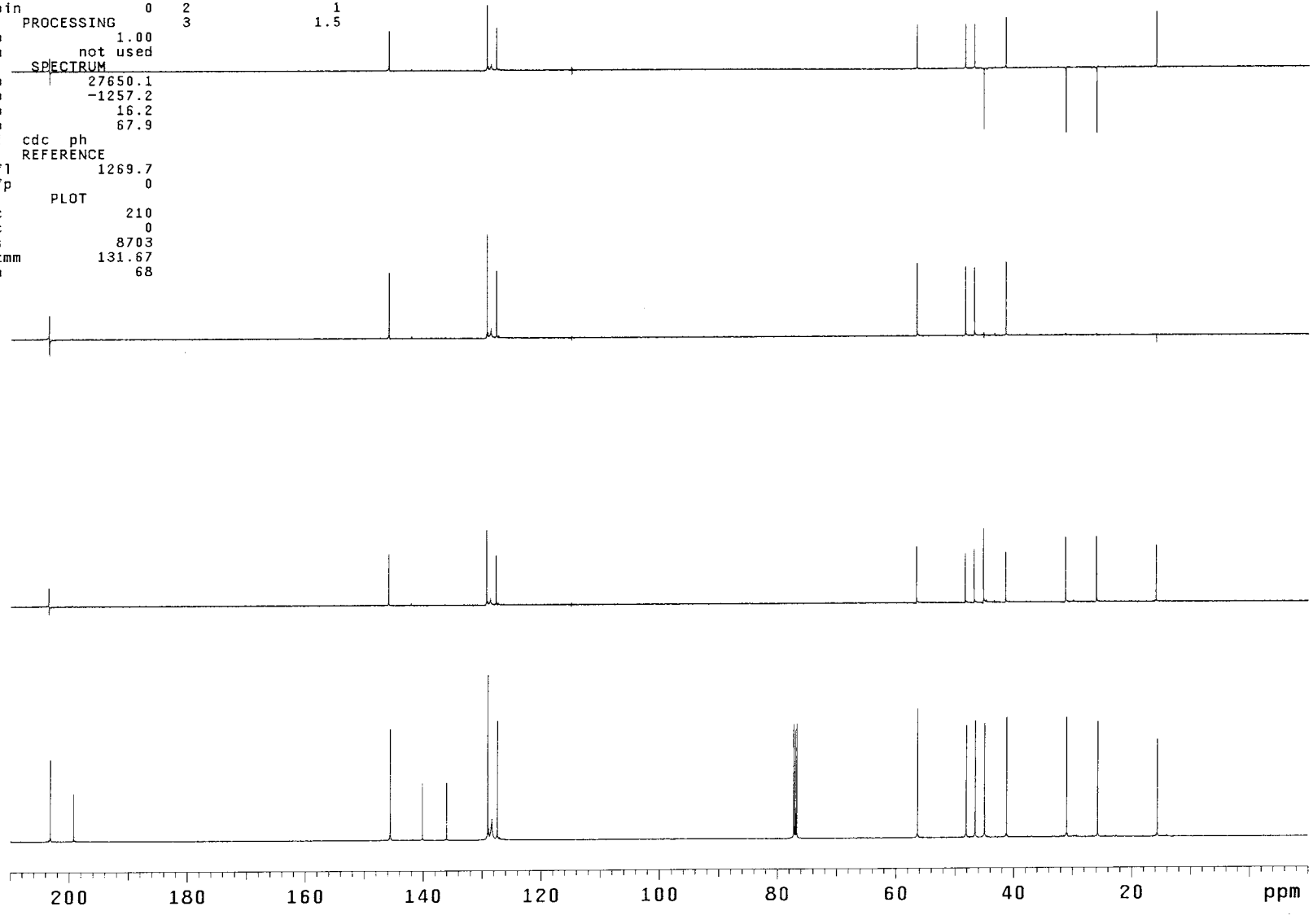
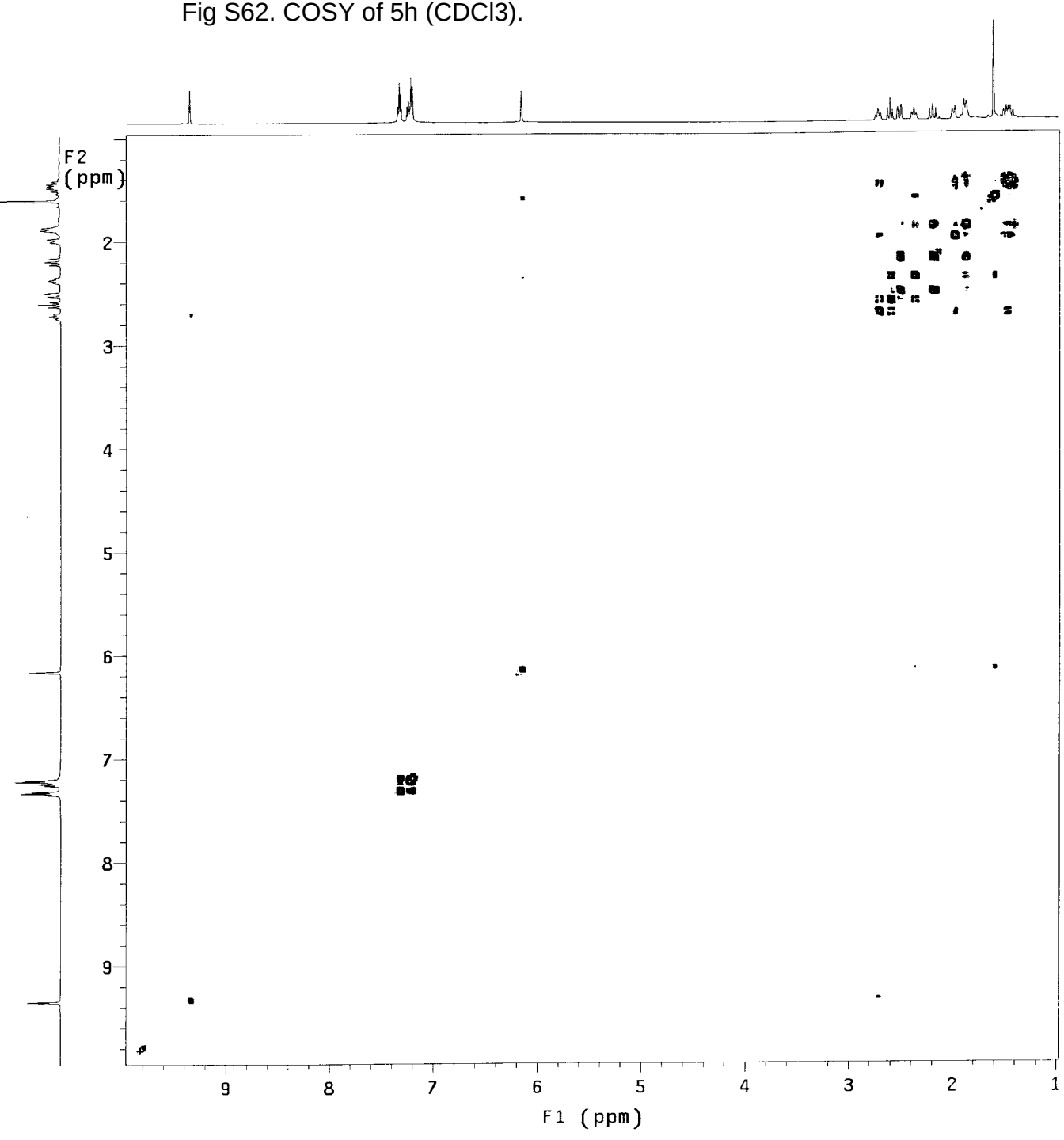


Fig S62. COSY of 5h (CDCl3).

RYN-2-140

exp14 gCOSY

SAMPLE		FLAGS	
date	Nov 15 2008	hs	nn
solvent	cdcl3	sspul	n
sample	undefined	hsglvl	1026
ACQUISITION		SPECIAL	
sw	4498.4	temp	not used
at	0.228	gain	22
np	2048	spin	0
fb	3000	F2 PROCESSING	
ss	16	sb	-0.114
d1	1.000	sbs	not used
nt	16	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4498.4	sb1	-0.028
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	2048
sfrq	499.836	DISPLAY	
tof	249.8	sp	482.8
tpwr	57	wp	4494.0
pw	13.000	sp1	485.3
GRADIENTS		wp1	4494.0
gzlvl1	1026	rf1	2595.6
gt1	0.001000	rfp	3074.0
gstab	0.000500	rf11	2593.1
DECOUPLER		rfp1	3074.0
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	113
		th	4
		ai cdc av	



RYN-2-140

exp15 gHMQC

SAMPLE	
date	Nov 15 2008
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4498.4
at	0.228
np	2048
fb	3000
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.836
tof	249.8
tpwr	57
pw	13.000
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	35
pwxlvl	51
pwx	14.700
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	22
spin	0
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gzlvl3	516
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.105
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.006
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	504.1
wp	3483.6
sp1	1282.1
wp1	17861.9
rfl	2596.2
rfp	3074.0
rfl1	19603.8
rfp1	18298.3
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	1814
th	3
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256
i	phase
1	1
2	2

Fig S63. HMQC of 5h (CDCl3).

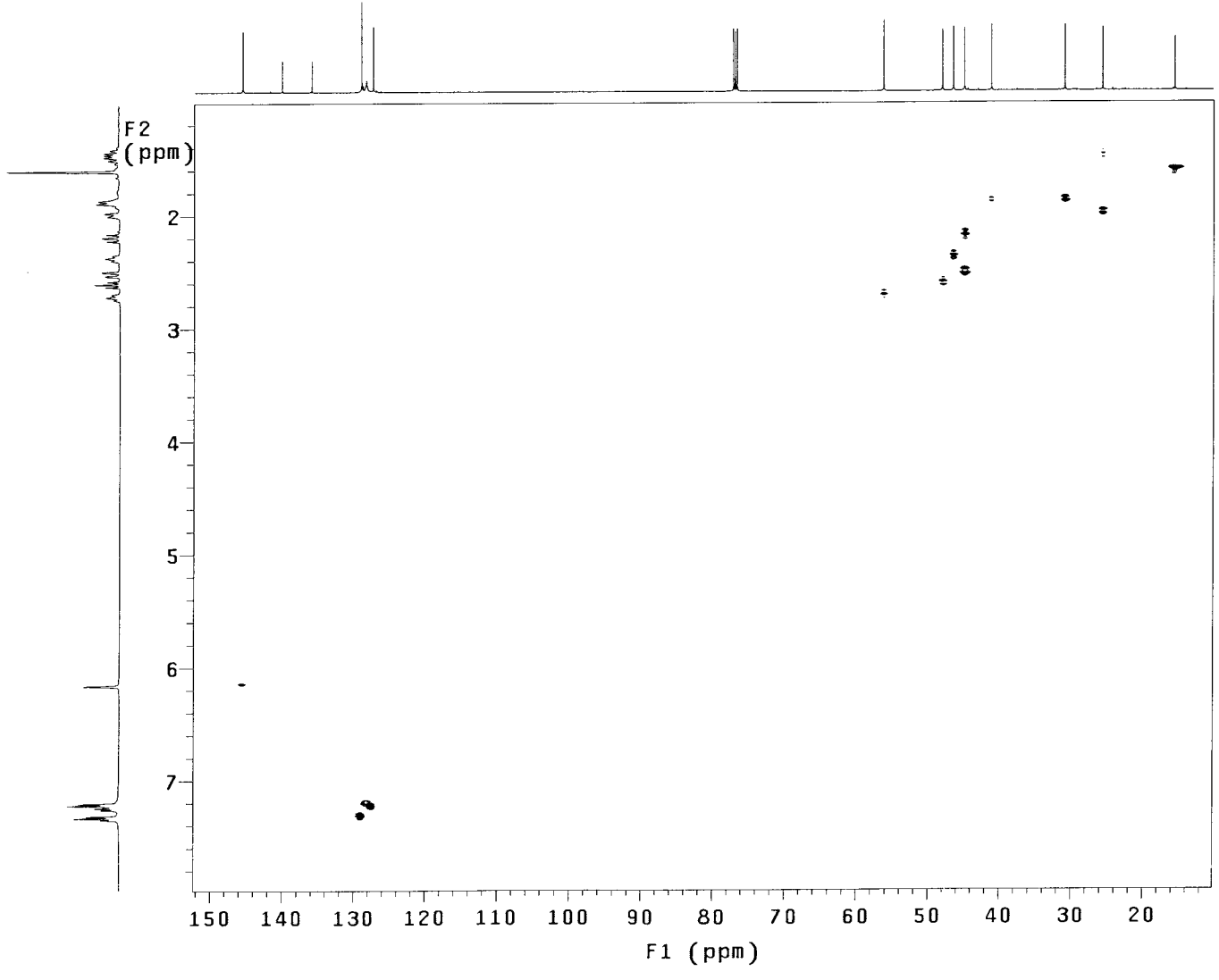


Fig S64. NOESY of 5h (CDCl3).

RYN-2-140

exp16 NOESY

SAMPLE		FLAGS	
date	Nov 15 2008	hs	n
solvent	cdcl3	sspul	y
sample	undefined	PFGflg	y
ACQUISITION		hsglvl	1026
sw	4498.4	SPECIAL	
at	0.228	temp	not used
np	2048	gain	20
fb	3000	spin	0
ss	32	F2 PROCESSING	
d1	1.000	gf	0.105
nt	8	gfs	not used
2D ACQUISITION		fn	2048
sw1	4498.4	F1 PROCESSING	
ni	200	gf1	0.041
TRANSMITTER		gfs1	not used
tn	H1	proc1	lp
sfrq	499.836	fn1	2048
tof	249.8	DISPLAY	
tpwr	57	sp	480.2
pw	13.000	wp	4494.0
NOESY		sp1	485.2
mix	0.200	wp1	4494.0
PRESATURATION		rfl	2598.1
satmode	nnnn	rfp	3074.0
satpwr	0	rfl1	2593.1
satdly	0	rfp1	3074.0
satfrq	0	PLOT	
DECOUPLER		wc	155.0
dn	C13	sc	10.0
dm	nnn	wc2	155.0
		sc2	0
		vs	1814
		th	1
		ai ph	

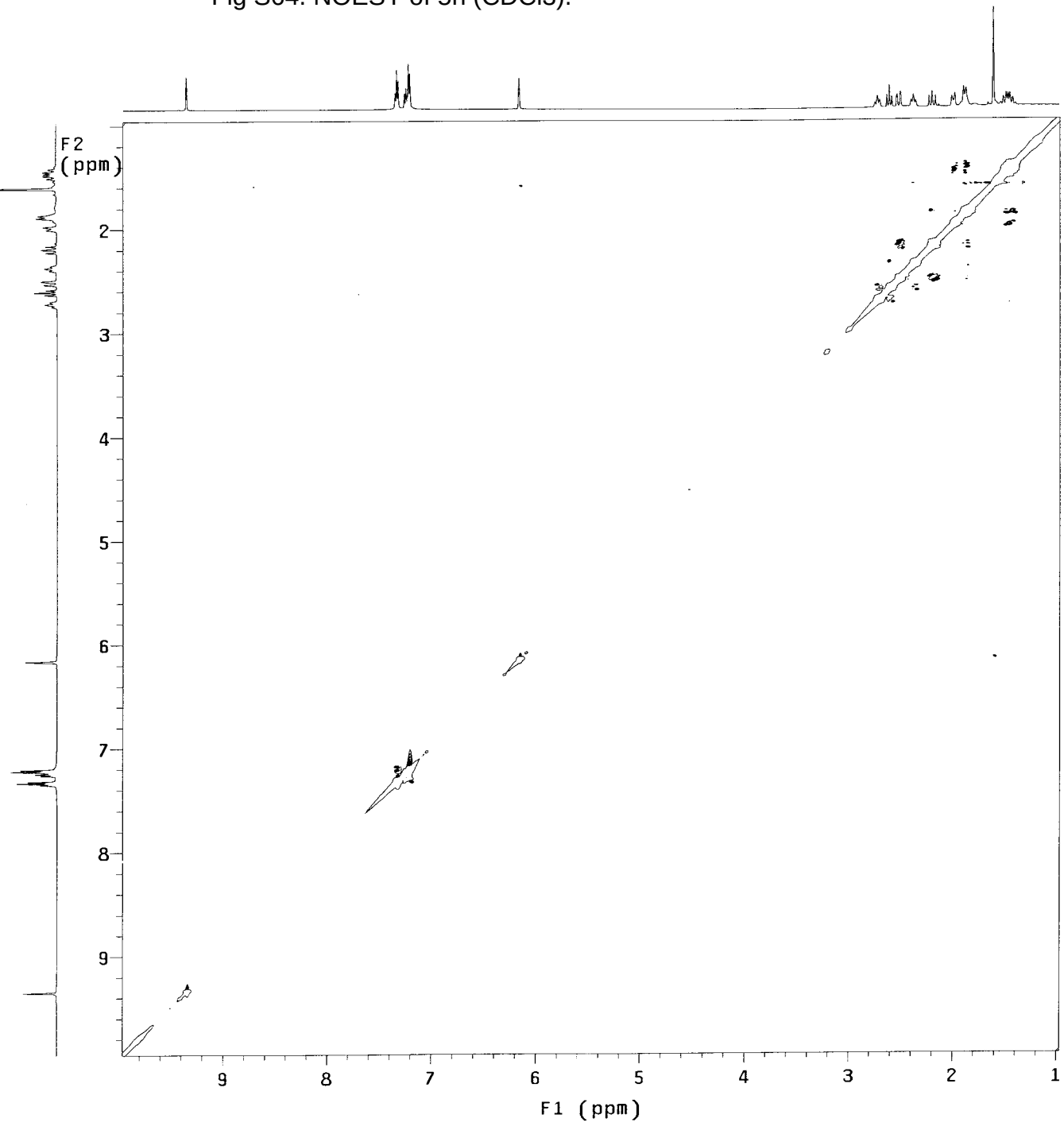
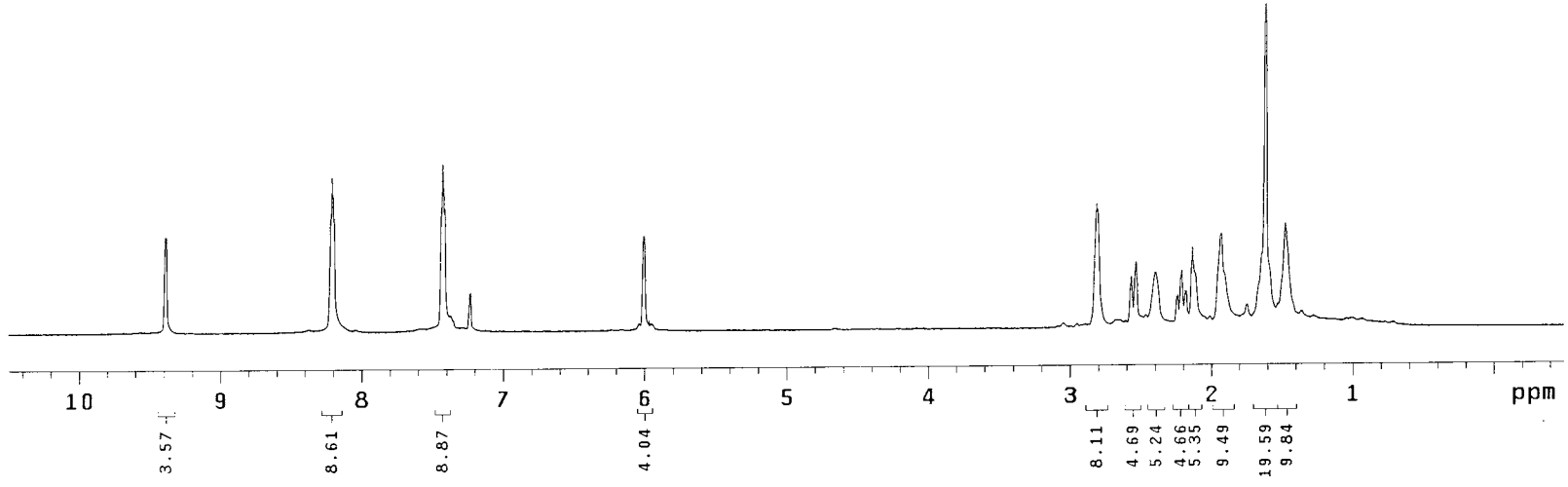


Fig S65. 1H NMR of 5i (500 MHz, CDCl3).

RYN-2-141

exp11 s2pul

SAMPLE		DEC. & VT	
date	Nov 17 2008	dfrq	125.695
solvent	cdcl3	dn	C13
file	exp	dpwr	30
ACQUISITION		dof	0
sfrq	499.836	dm	nnn
tn	H1	dmm	c
at	3.000	dmf	200
np	48000	dseq	
sw	8000.0	dres	1.0
fb	4000	homo	n
bs	4	PROCESSING	
tpwr	57	wtfile	
pw	4.8	proc	ft
d1	1.000	fn	not used
tof	499.7	math	f
nt	4		
ct	4	werr	react
alock	y	wexp	procplot
gain	not used	wbs	
FLAGS		wnt	wft
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-250.1		
wp	5498.0		
vs	44		
sc	0		
wc	210		
hzmm	26.18		
is	192.00		
rfl	4636.2		
rfp	3618.8		
th	5		
ins	100.000		
nm	ph		



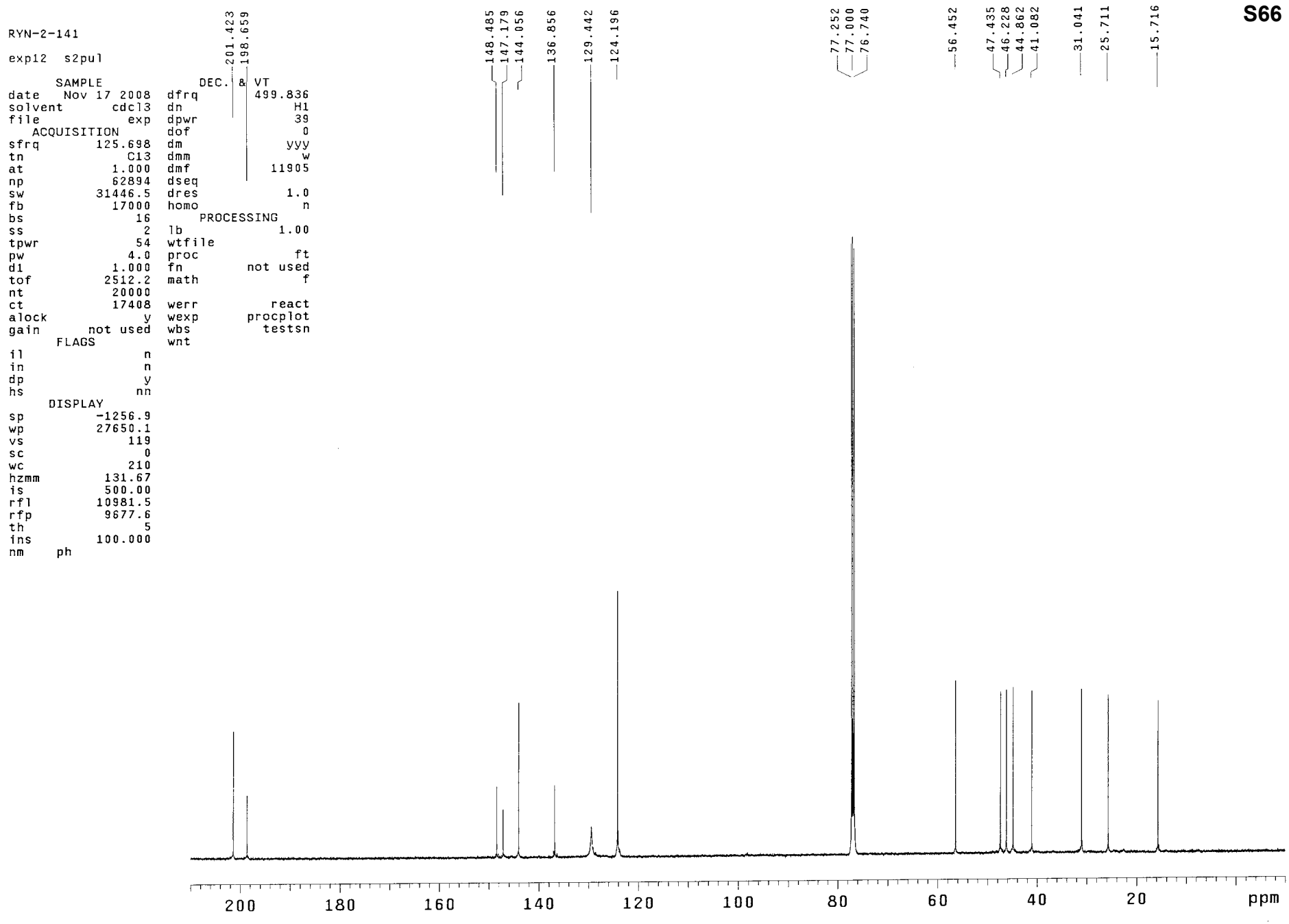


Fig S66. 13C NMR of 5i (125 MHz, CDCl3).

RYN-2-141

Fig S67. DEPT of 5i (CDCl3).

exp13 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Nov 17 2008	j1xh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	20	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	2000	wp	27650.1		
ct	2000	sp	-1257.2		
TRANSMITTER		rp	11.5		
tn	C13	lp	102.9		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	419		
dmm	ccw	hzmm	131.67		
dmf	11905	th	68		
pplvl	49				
pp	29.400				

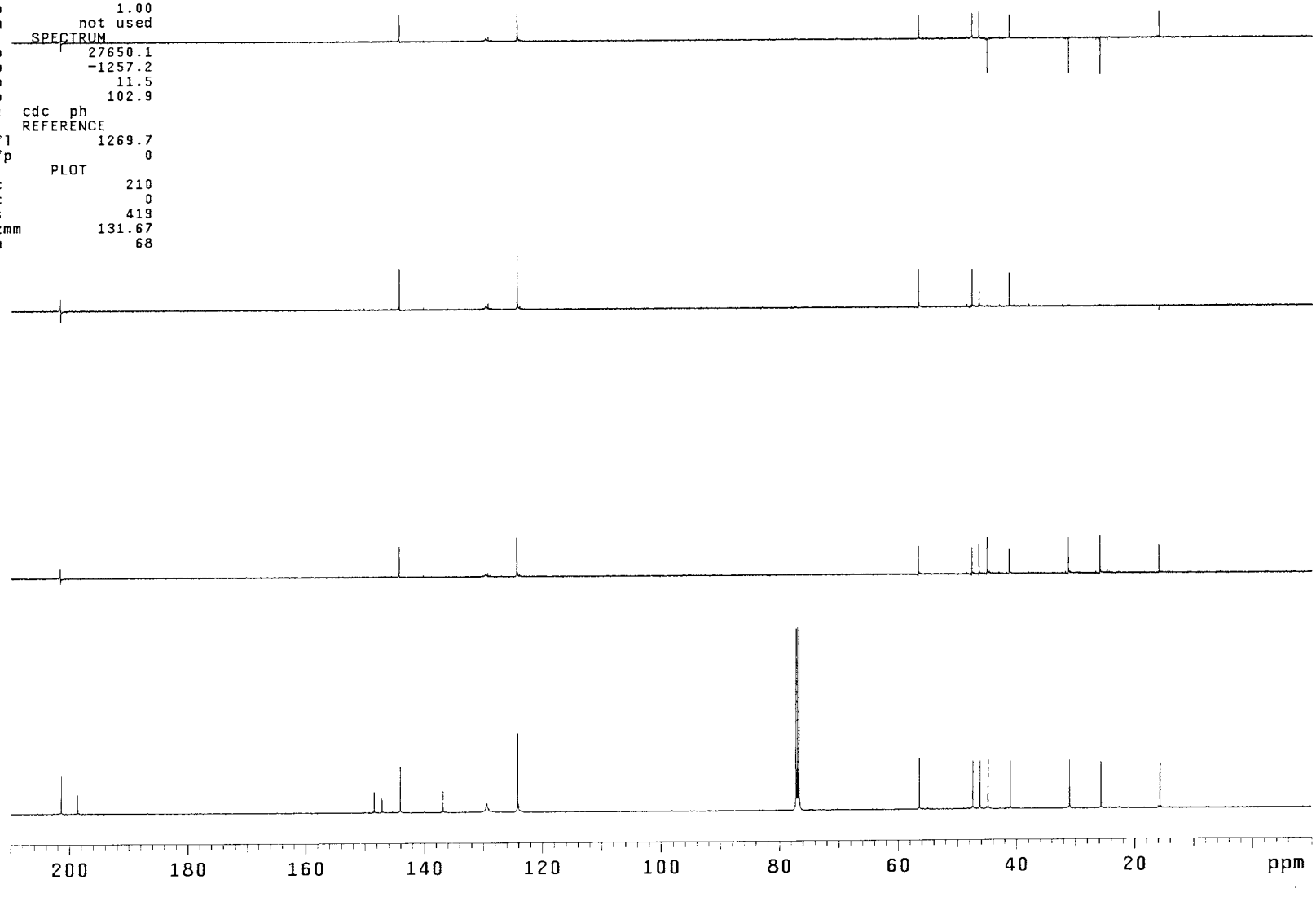
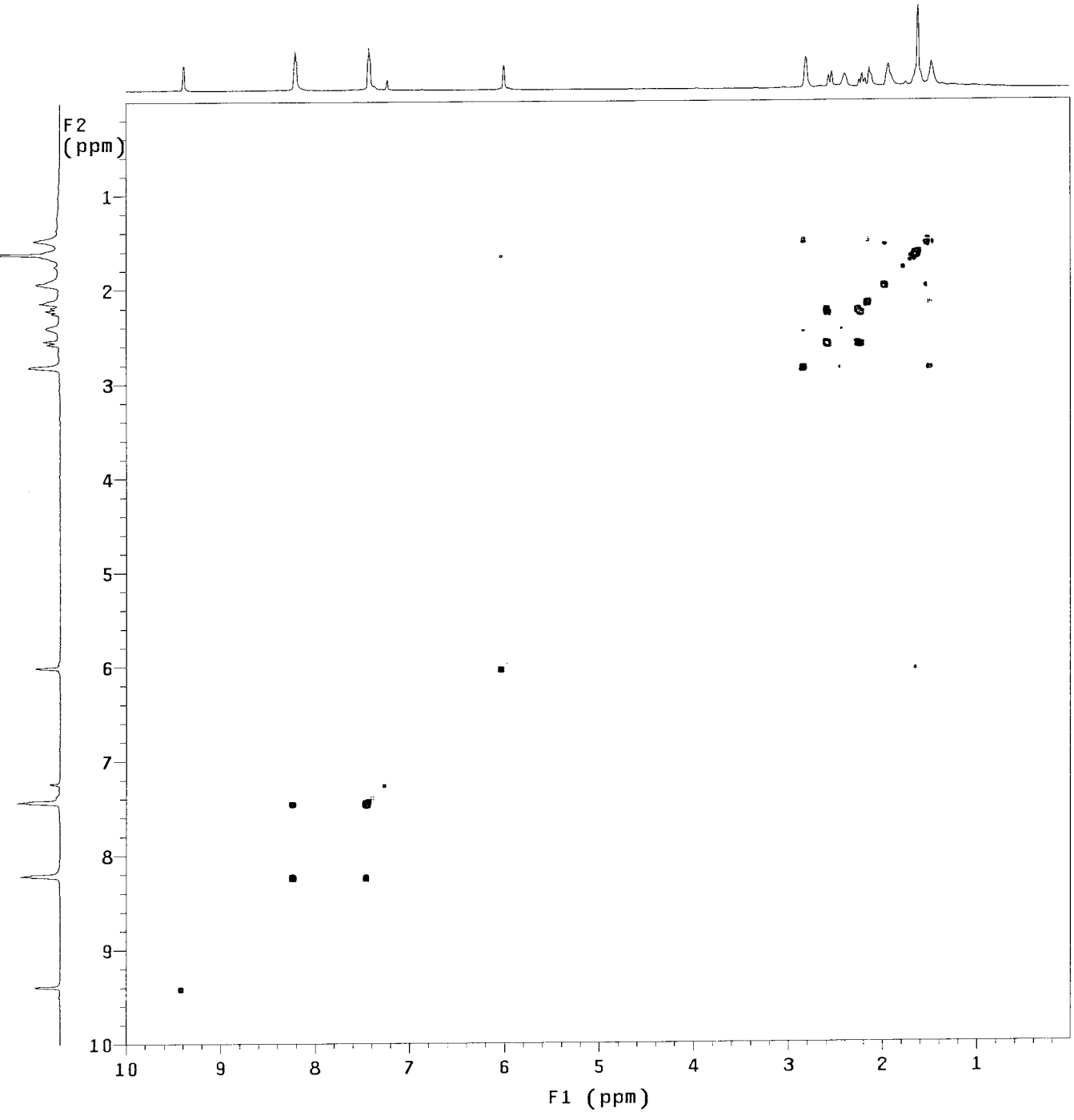


Fig S68. COSY of 5i (CDCl3).

RYN-2-141

exp14 gCOSY

SAMPLE		FLAGS	
date	Nov 17 2008	hs	nn
solvent	cdcl3	sspul	n
sample	undefined	hsglvl	1026
ACQUISITION		SPECIAL	
sw	4998.4	temp	not used
at	0.205	gain	30
np	2048	spin	0
fb	3000	F2 PROCESSING	
ss	16	sb	-0.102
d1	1.000	sbs	not used
nt	16	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4998.4	sb1	-0.026
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	2048
sfrq	499.836	DISPLAY	
tof	-0.1	sp	4.8
tpwr	57	wp	4993.6
pw	13.000	sp1	4.8
GRADIENTS		wp1	4993.6
gzlvl1	1026	rfl	0.1
gt1	0.001000	rfp	0
gstab	0.000500	rfl1	0.1
DECOUPLER		rfp1	0
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	1814
		th	7
		ai cdc av	



RYN-2-141

exp15 gHMQC

SAMPLE	
date	Nov 17 2008
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4998.4
at	0.205
np	2048
fb	3000
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.836
tof	-0.1
tpwr	57
pw	13.000
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	35
pwxlvl	51
pwx	14.700
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	30
spin	0
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gzlvl3	516
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.095
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.006
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	420.4
wp	4090.5
sp1	1465.6
wp1	17215.0
rfl	3019.9
rfp	3001.0
rfl1	19373.3
rfp1	18105.4
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	1814
th	6
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256

i	phase
1	1
2	2

Fig S69. HMQC of 5i (CDCl3).

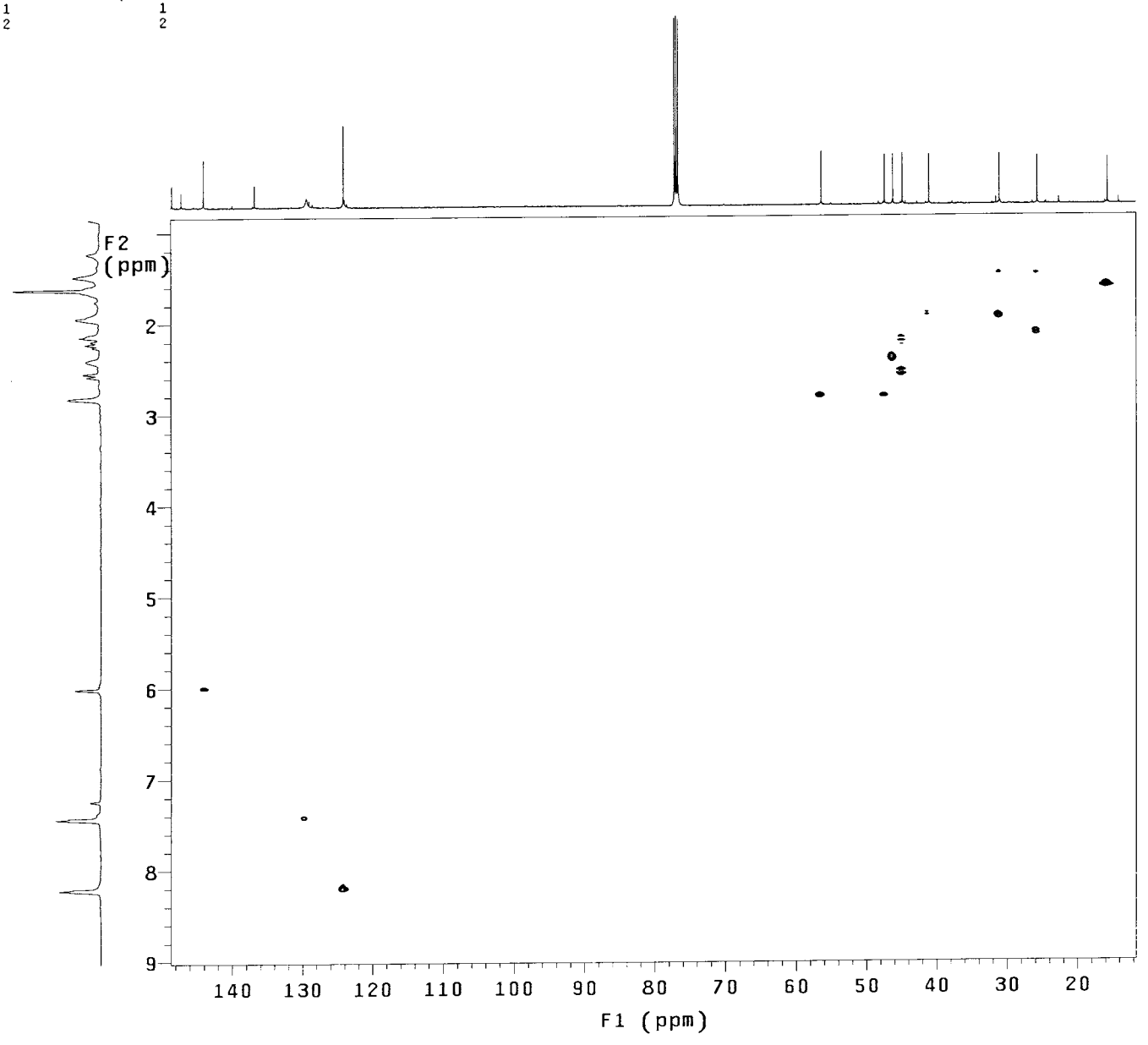


Fig S70. NOESY of 5i (CDCl3).

RYN-2-141

exp16 NOESY

SAMPLE		FLAGS	
date	Nov 17 2008	hs	n
solvent	cdcl3	sspul	y
sample	undefined	PFGflg	y
ACQUISITION		hsglvl	1026
sw	4998.4	SPECIAL	
at	0.205	temp	not used
np	2048	gain	50
fb	3000	spin	0
ss	32	F2 PROCESSING	
d1	1.000	gf	0.095
nt	8	gfs	not used
2D ACQUISITION		fn	2048
sw1	4998.4	F1 PROCESSING	
ni	200	gf1	0.037
TRANSMITTER		gfs1	not used
tn	H1	proc1	lp
sfrq	499.836	fn1	2048
tof	-0.1	DISPLAY	
tpwr	57	sp	-18.6
pw	13.000	wp	4993.6
NOESY		sp1	-11.9
mix	0.200	wp1	4993.6
PRESATURATION		rf1	3024.5
satmode	nnnn	rfp	3001.0
satpwr	0	rfl1	3017.7
satdly	0	rfp1	3001.0
satfrq	0	PLOT	
DECOUPLER		wc	155.0
dn	C13	sc	10.0
dm	nnn	wc2	155.0
		sc2	0
		vs	1814
		th	1
		ai ph	

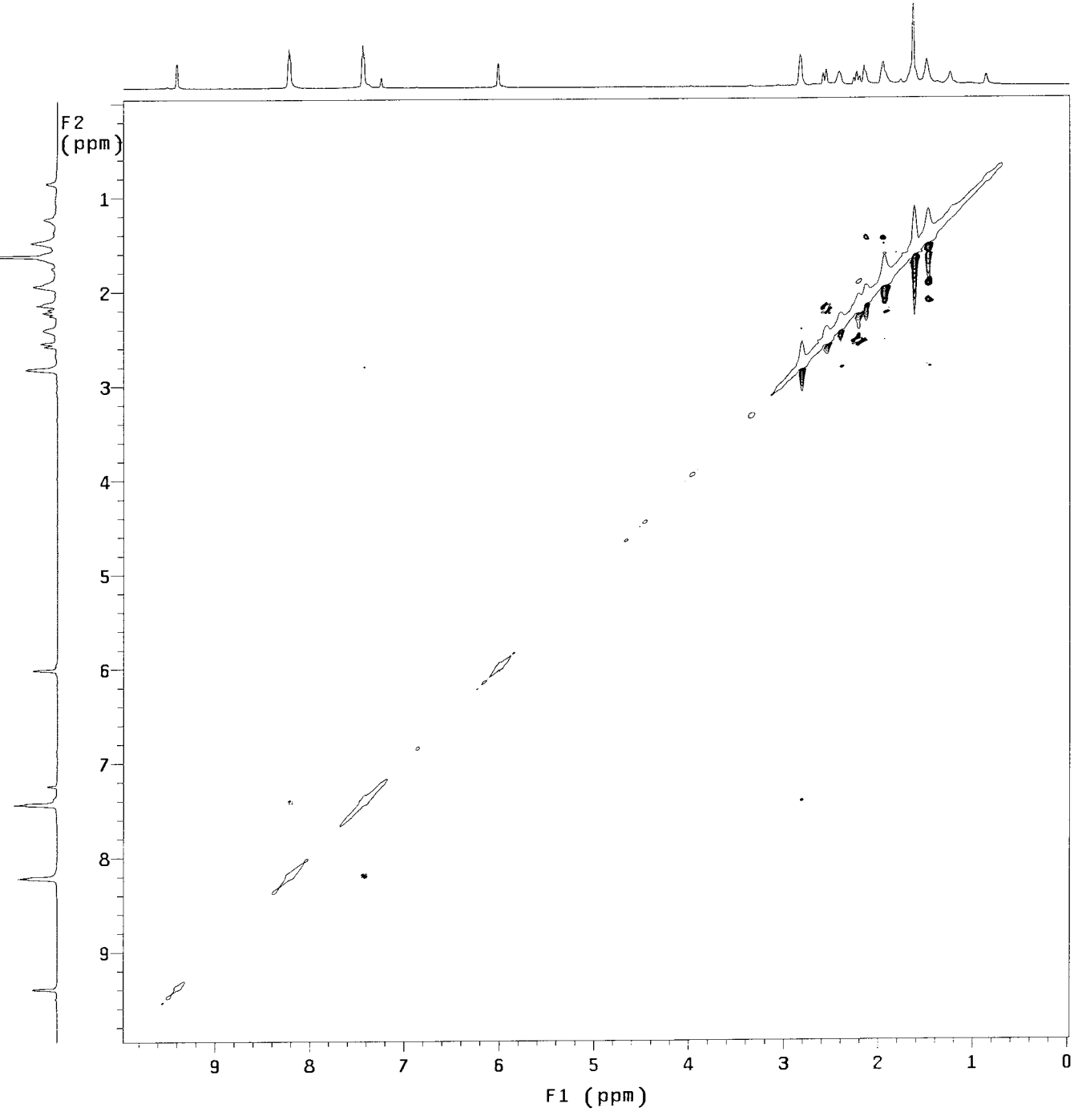
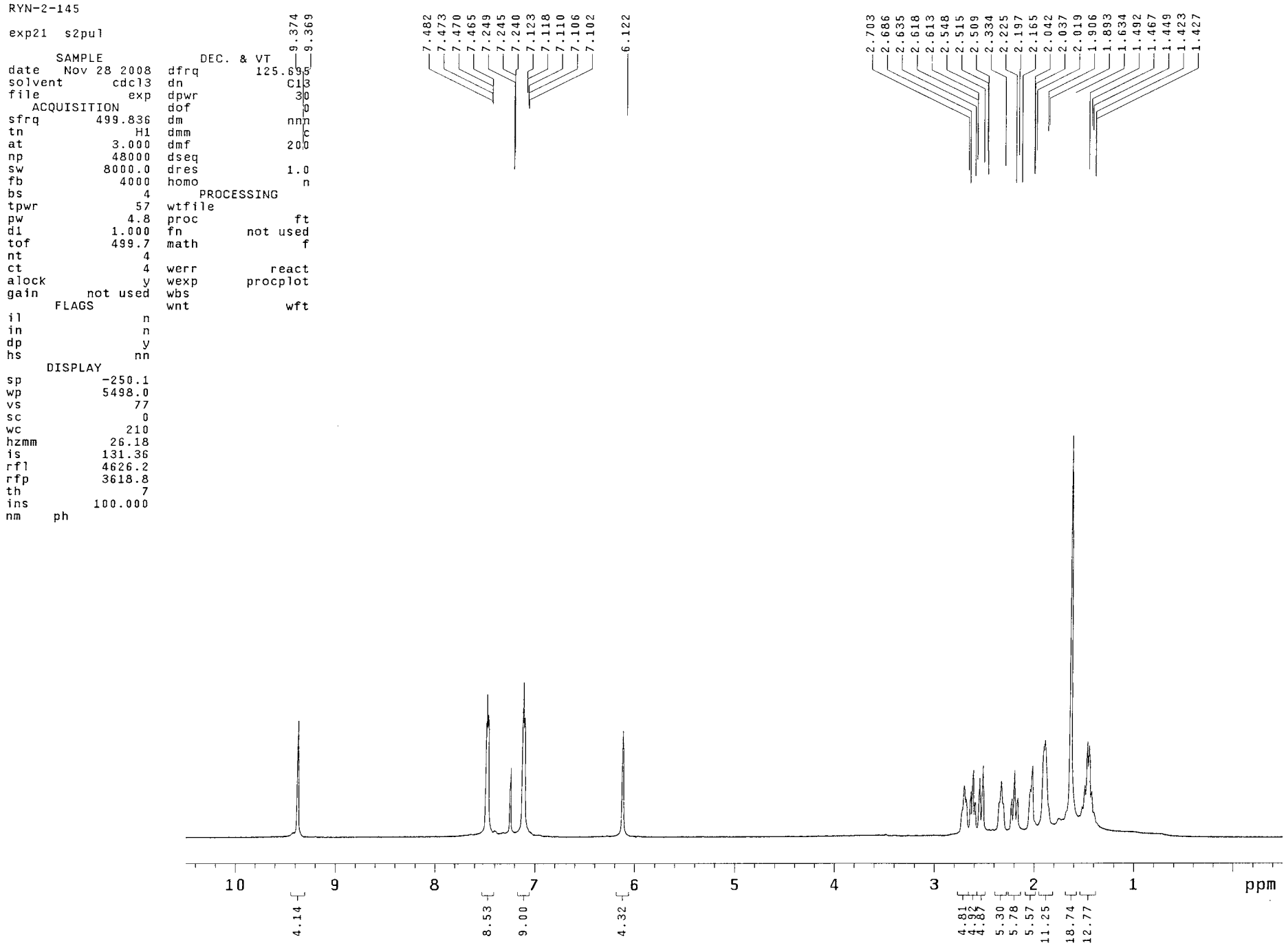


Fig S71. 1H NMR of 5j (500 MHz, CDCl3).



RYN-2-145

exp23 s2pul

SAMPLE		DEC. & VT	
date	Nov 28 2008	dfrq	499.836
solvent	cdcl3	dn	H1
file	exp	dpwr	39
ACQUISITION		dof	0
sfrq	125.698	dm	yyy
tn	C13	dmm	w
at	1.000	dmf	11905
np	62894	dseq	
sw	31446.5	dres	1.0
fb	17000	homo	n
bs	16	PROCESSING	
ss	2	lb	1.00
tpwr	54	wtfile	
pw	4.0	proc	ft
d1	1.000	fn	not used
tof	2512.2	math	f
nt	10000		
ct	10000	werr	react
alock	y	wexp	procplot
gain	not used	wbs	testsn
FLAGS		wnt	
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-1256.9		
wp	27650.1		
vs	94		
sc	0		
wc	210		
hzmm	131.67		
is	500.00		
rfl	10979.6		
rfp	9677.6		
th	4		
ins	100.000		
nm	ph		

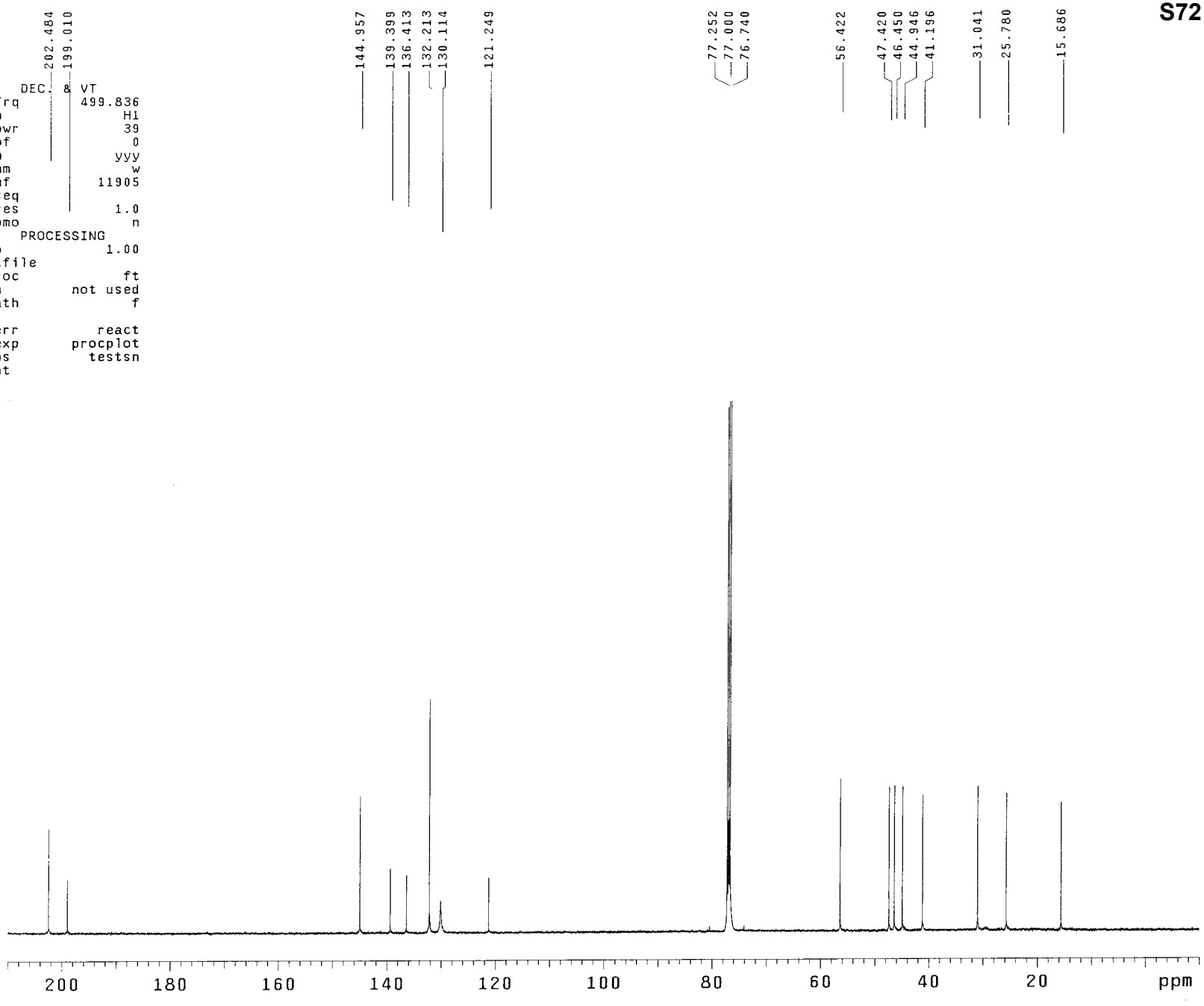


Fig S72. 13C NMR of 5j (125 MHz, CDCl3).

RYN-2-145

Fig S73. DEPT of 5j (CDCl3).

exp22 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Nov 28 2008	jlxh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	28	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	1200	wp	27650.1		
ct	1200	sp	-1257.2		
TRANSMITTER		rp	15.9		
tn	C13	lp	83.1		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	21817		
dmm	ccw	hzmm	131.67		
dmf	11905	th	68		
pplvl	49				
pp	29.400				

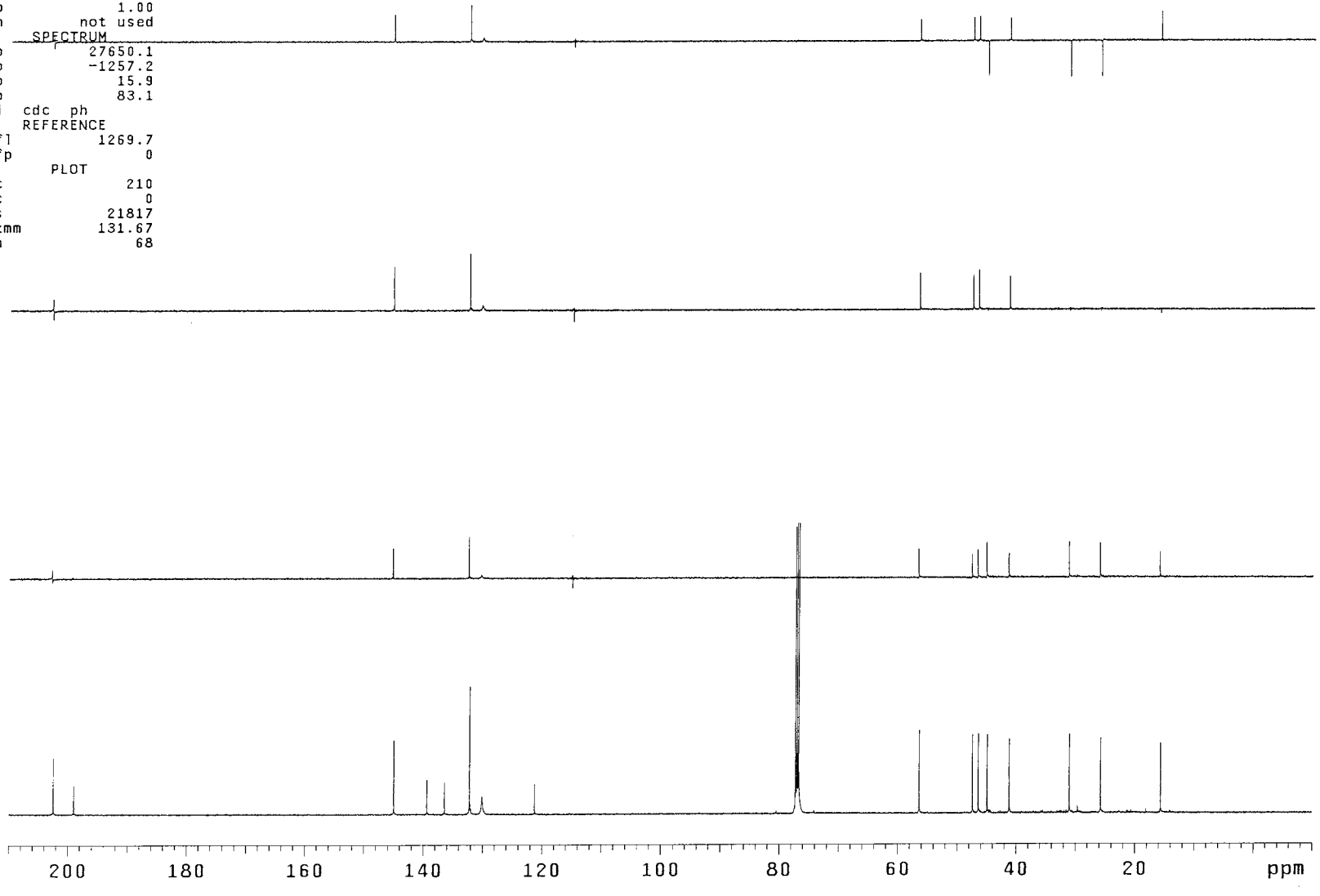
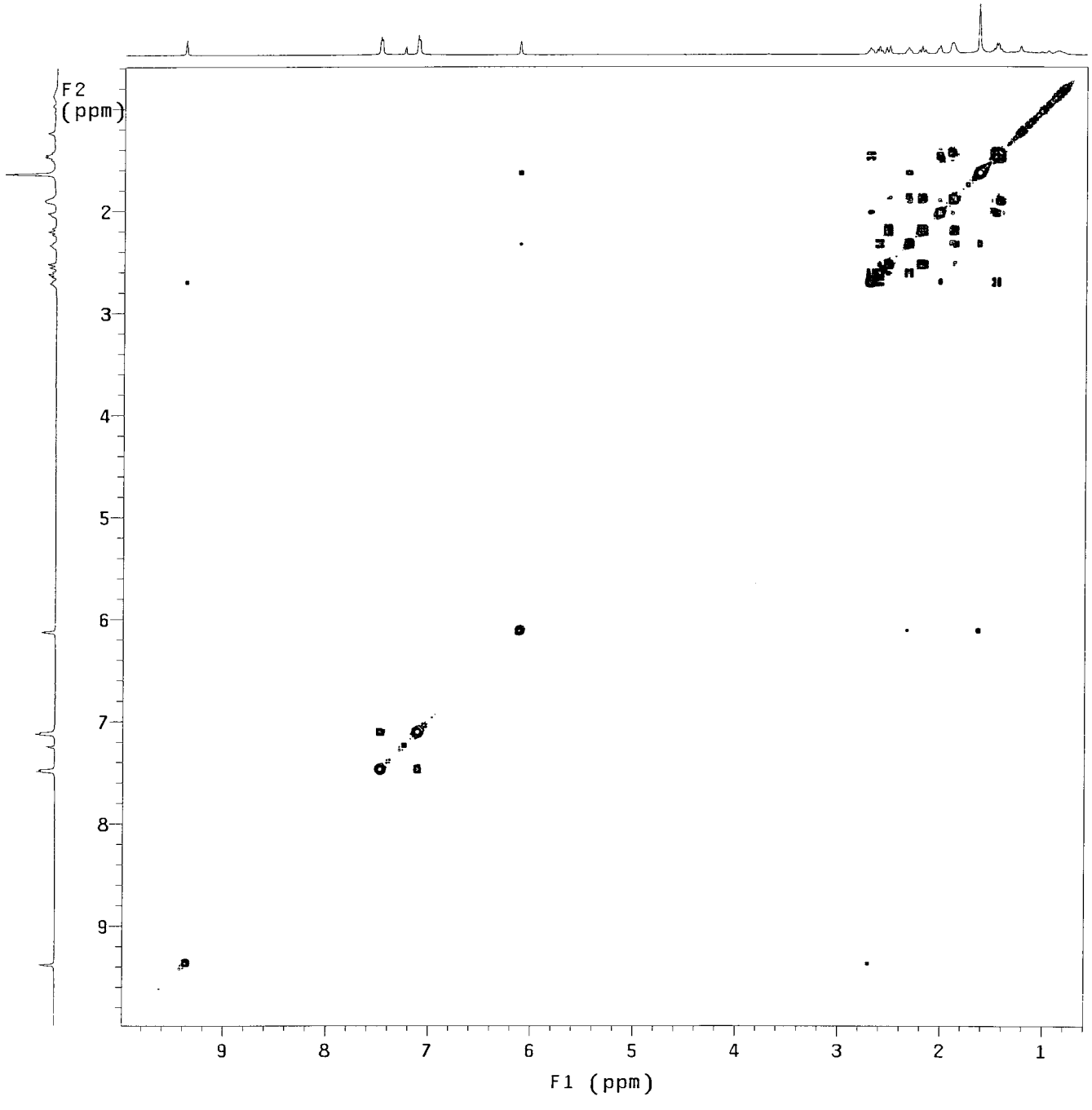


Fig S74. COSY of 5j (CDCl3).

RYN-2-145

exp24 gCOSY

SAMPLE		FLAGS	
date	Nov 28 2008	hs	nn
solvent	cdcl3	sspul	n
sample	undefined	hsglvl	1026
ACQUISITION		SPECIAL	
sw	4698.4	temp	not used
at	0.218	gain	28
np	2048	spin	0
fb	3000	F2 PROCESSING	
ss	16	sb	-0.109
d1	1.000	sbs	not used
nt	16	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4698.4	sb1	-0.027
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	2048
sfrq	499.836	DISPLAY	
tof	149.9	sp	294.1
tpwr	57	wp	4693.8
pw	13.000	sp1	298.0
GRADIENTS		wp1	4693.8
gzlvl1	1026	rfl	2770.4
gt1	0.001000	rfp	3060.0
gstab	0.000500	rfl1	2766.5
DECOUPLER		rfp1	3060.0
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	57
		th	6
		ai cdc av	



RYN-2-145

exp25 gHMQC

Fig S75. HMQC of 5j (CDCl3).

SAMPLE	
date	Nov 28 2008
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4698.4
at	0.218
np	2048
fb	3000
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.836
tof	149.9
tpwr	57
pw	13.000
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	35
pwxlvl	51
pwx	14.700
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	28
spin	0
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gzlvl3	516
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.101
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.006
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	457.9
wp	3546.8
sp1	1637.1
wp1	16943.8
rfl	2762.6
rfp	3060.0
rfl1	19523.7
rfp1	18218.7
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	57
th	5
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256
i	phase
1	1
2	2

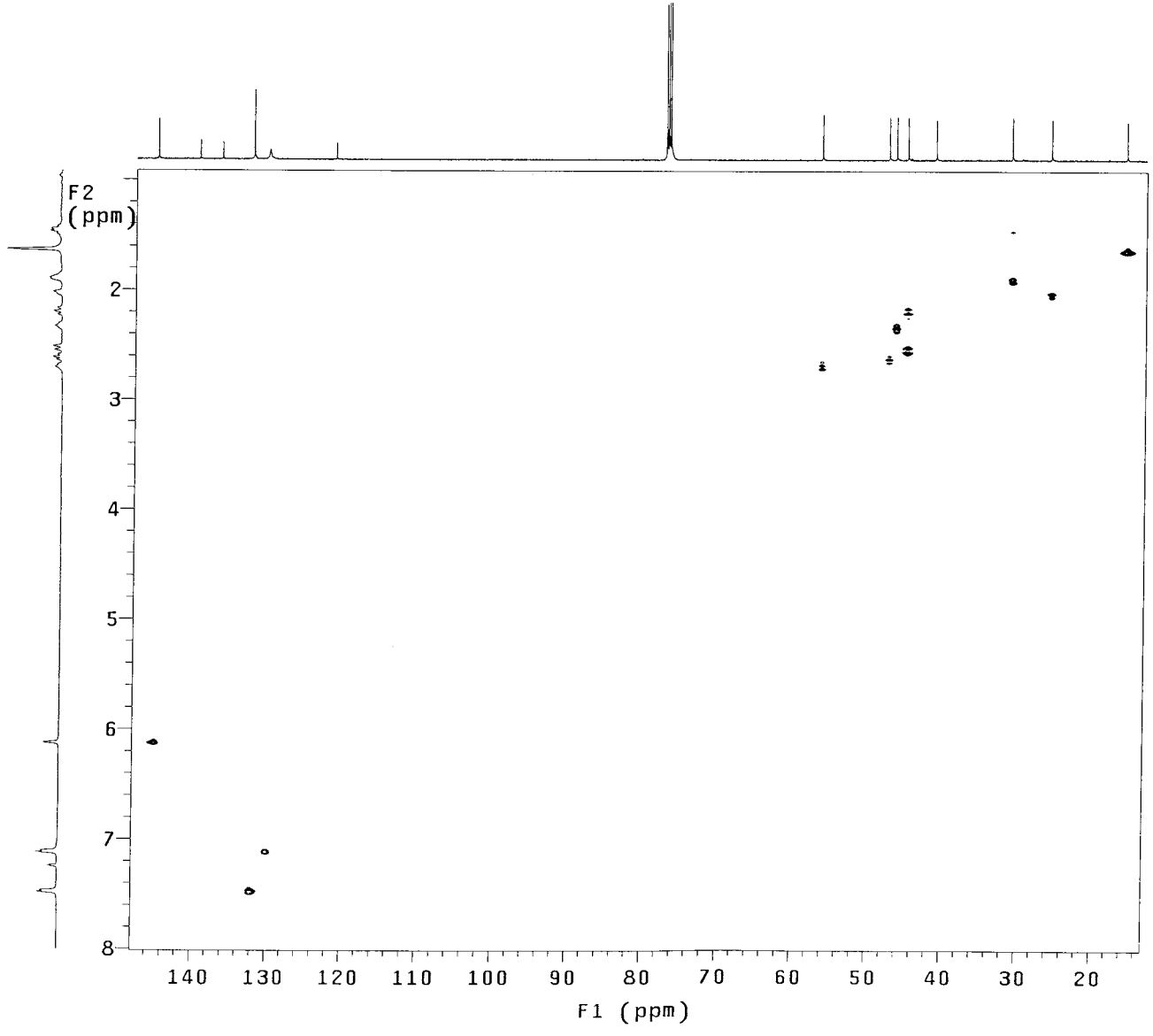


Fig S76. NOESY of 5j (CDCl3).

RYN-2-145

exp26 NOESY

SAMPLE		FLAGS	
date	Nov 28 2008	hs	n
solvent	cdcl3	sspul	y
sample	undefined	PFGflg	y
ACQUISITION		hsglvl	1026
sw	4698.4	SPECIAL	
at	0.218	temp	not used
np	2048	gain	20
fb	3000	spin	0
ss	32	F2 PROCESSING	
d1	1.000	gf	0.101
nt	8	gfs	not used
2D ACQUISITION		fn	2048
sw1	4698.4	F1 PROCESSING	
ni	200	gf1	0.039
TRANSMITTER		gfs1	not used
tn	H1	proc1	lp
sfrq	499.836	fn1	2048
tof	149.9	DISPLAY	
tpwr	57	sp	294.0
pw	13.000	wp	4693.8
NOESY		sp1	297.9
mix	0.200	wp1	4693.8
PRESATURATION		rfl	2770.5
satmode	nnnn	rfp	3060.0
satpwr	0	rfl1	2766.6
satdly	0	rfp1	3060.0
satfrq	0	PLOT	
DECOUPLER		wc	155.0
dn	C13	sc	10.0
dm	nnn	wc2	155.0
		sc2	0
		vs	57
		th	1
		ai ph	

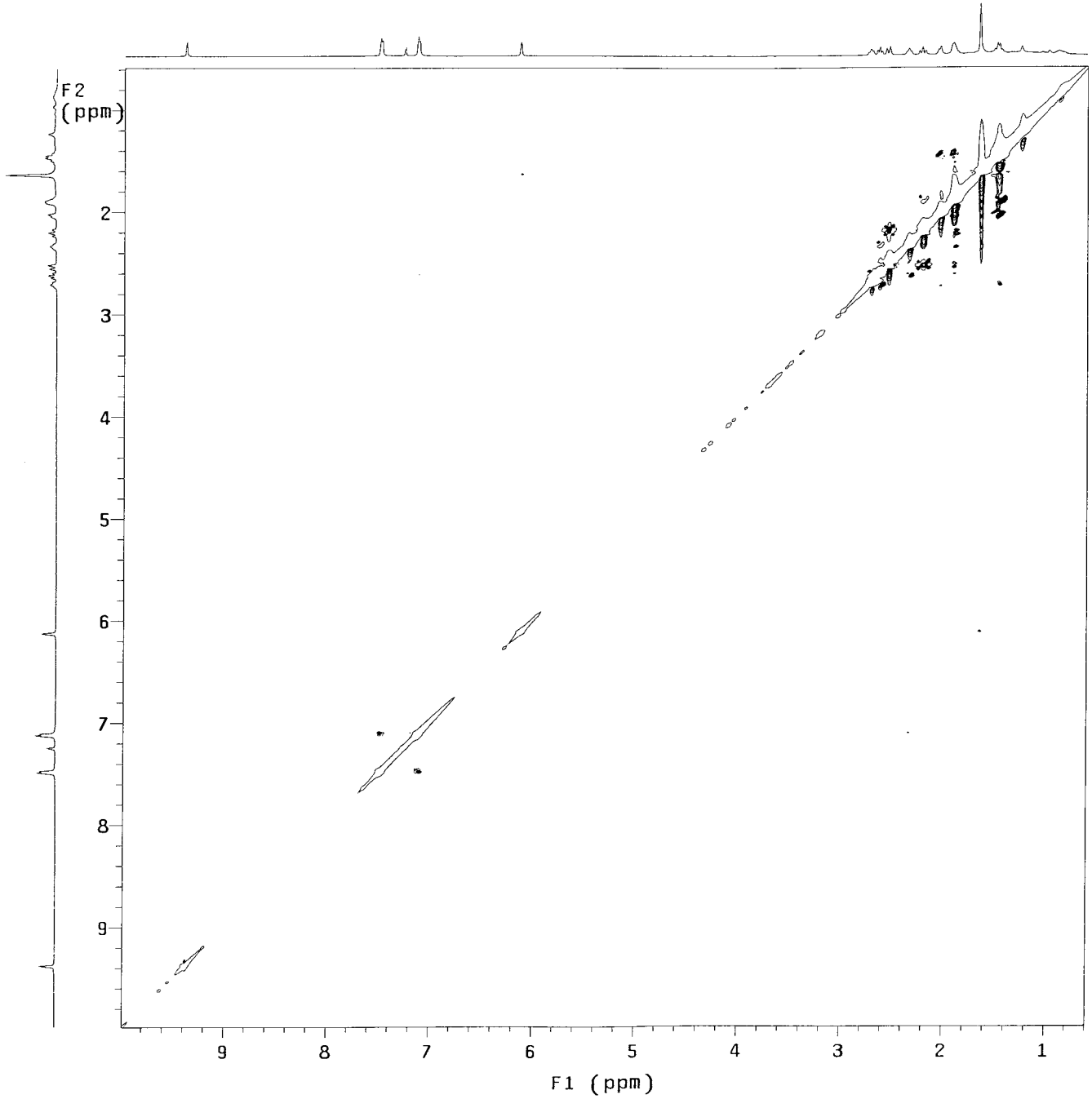
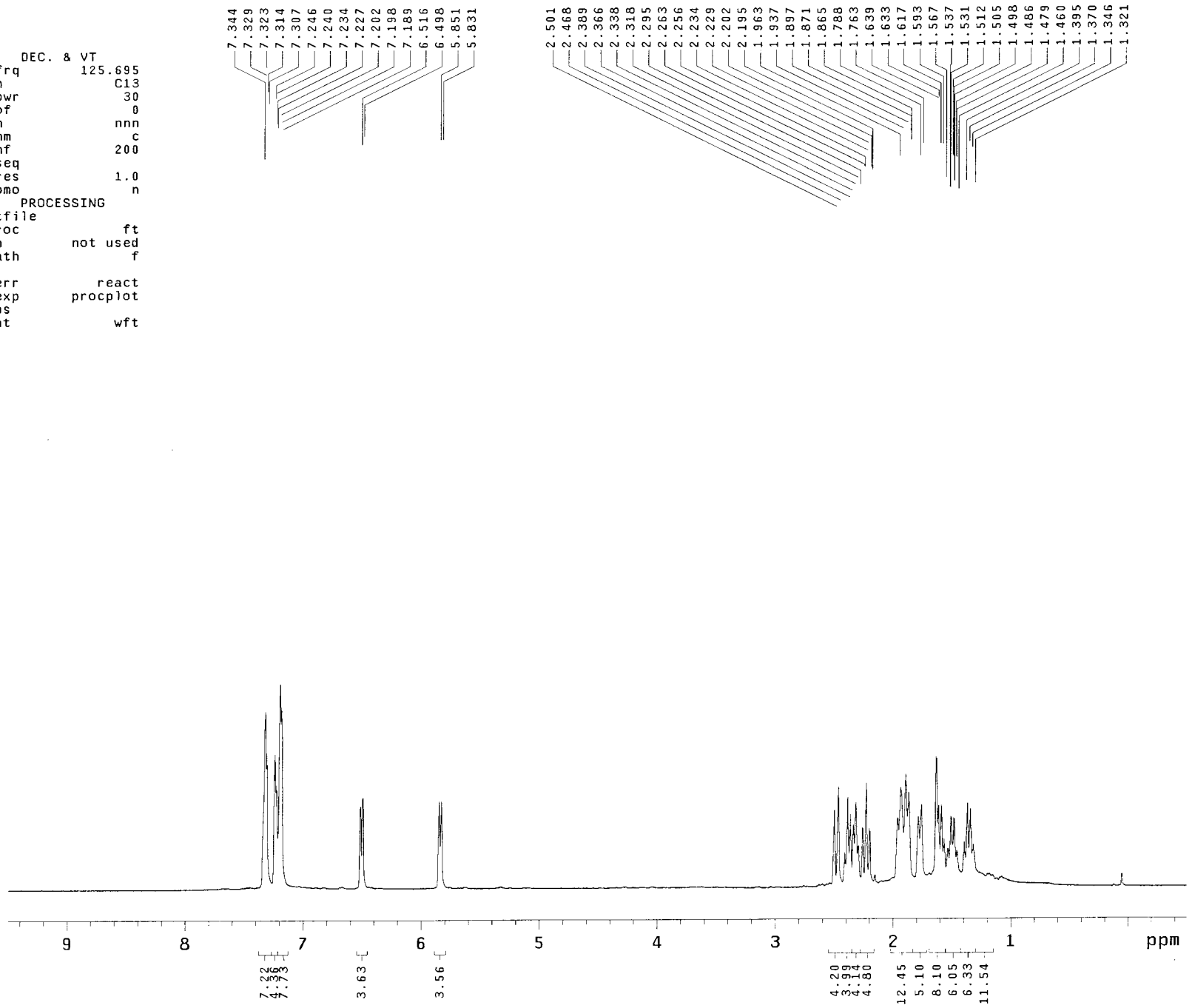


Fig S77. 1H NMR of compound 6 (500 MHz, CDCl3).

RYN-2-148

exp24 s2pul

SAMPLE		DEC. & VT	
date	Dec 3 2008	dfrq	125.695
solvent	cdcl3	dn	C13
file	exp	dpwr	30
ACQUISITION		dof	0
sfrq	499.836	dm	nnn
tn	H1	dmm	c
at	3.000	dmf	200
np	48000	dseq	
sw	8000.0	dres	1.0
fb	4000	homo	n
bs	4	PROCESSING	
tpwr	57	wtfile	
pw	4.8	proc	ft
d1	1.000	fn	not used
tof	499.7	math	f
nt	4		
ct	4	werr	react
alock	y	wexp	procplot
gain	not used	wbs	
FLAGS		wnt	wft
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-250.1		
wp	4998.3		
vs	38		
sc	0		
wc	210		
hzmm	23.80		
is	92.02		
rfl	4626.0		
rfp	3618.8		
th	7		
ins	100.000		
nm	ph		



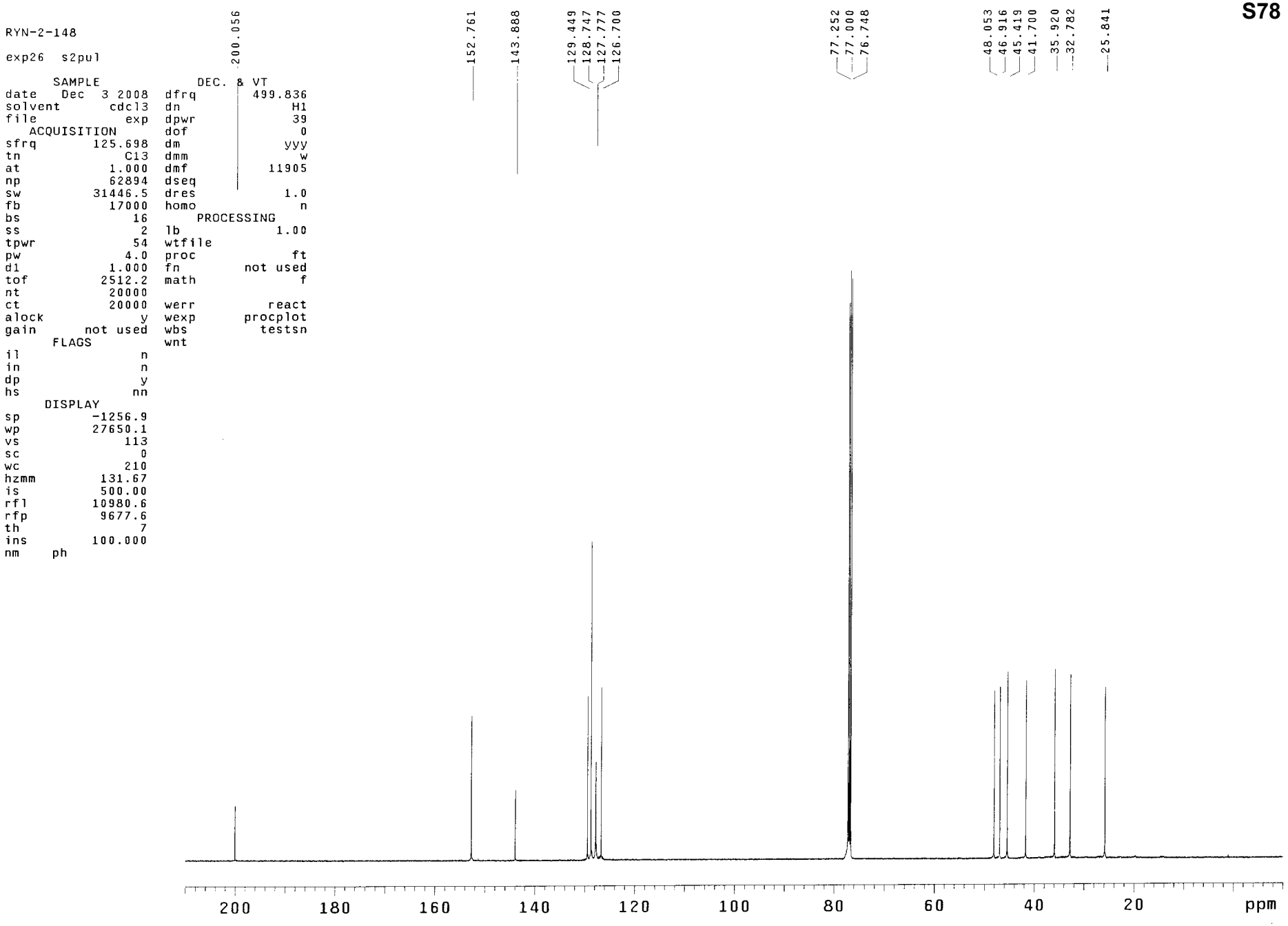


Fig S78. 13C NMR of compound 6 (125 MHz, CDCl3).

Fig S79. DEPT of compound 6 (CDCl3).

RYN-2-148

exp25 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Dec 3 2008	j1xh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	28	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	750	wp	27650.1		
ct	750	sp	-1257.2		
TRANSMITTER		rp	34.7		
tn	C13	lp	73.2		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	225		
dmm	ccw	hzmm	131.67		
dmf	11905	th	68		
pplvl	49				
pp	29.400				

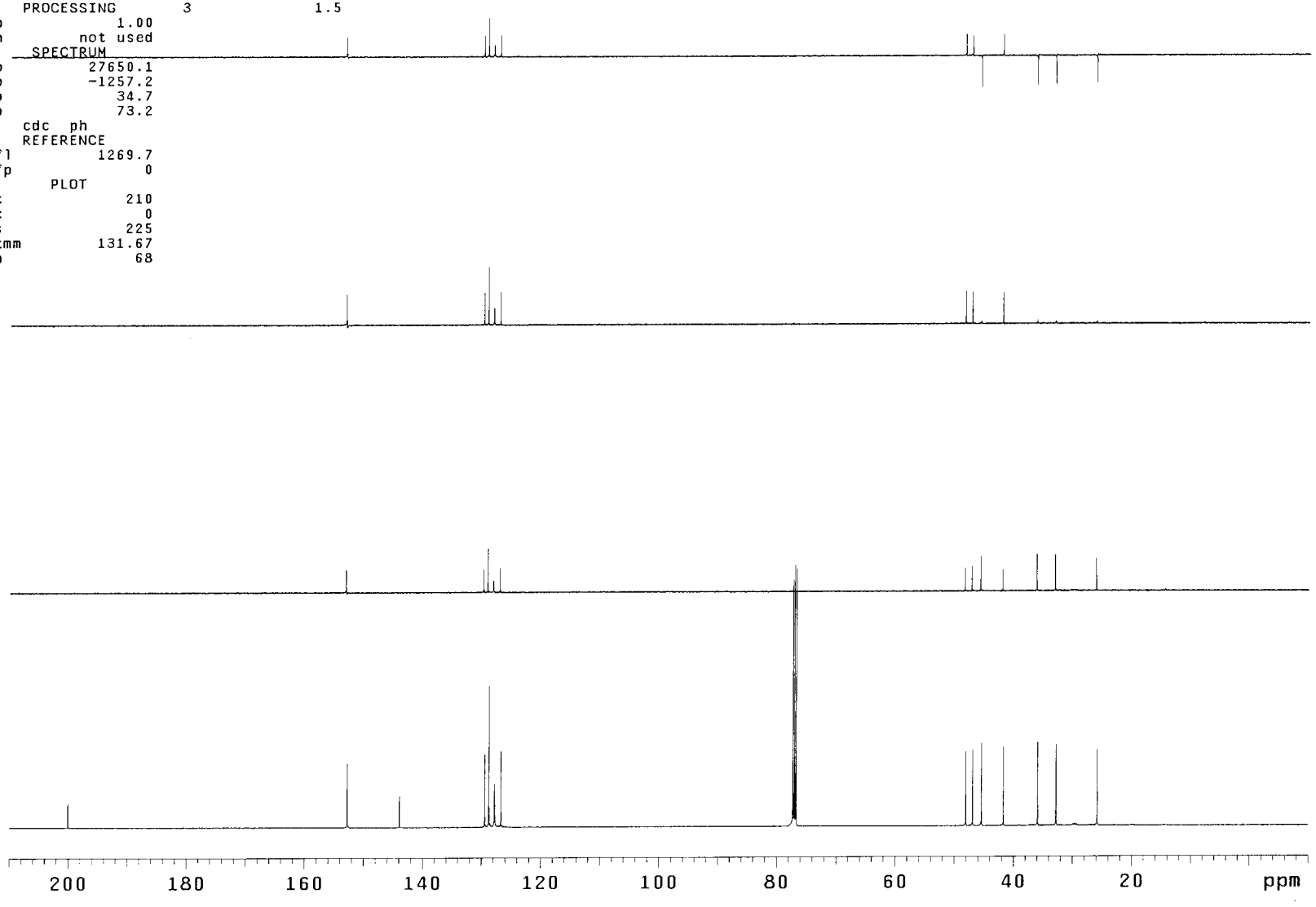
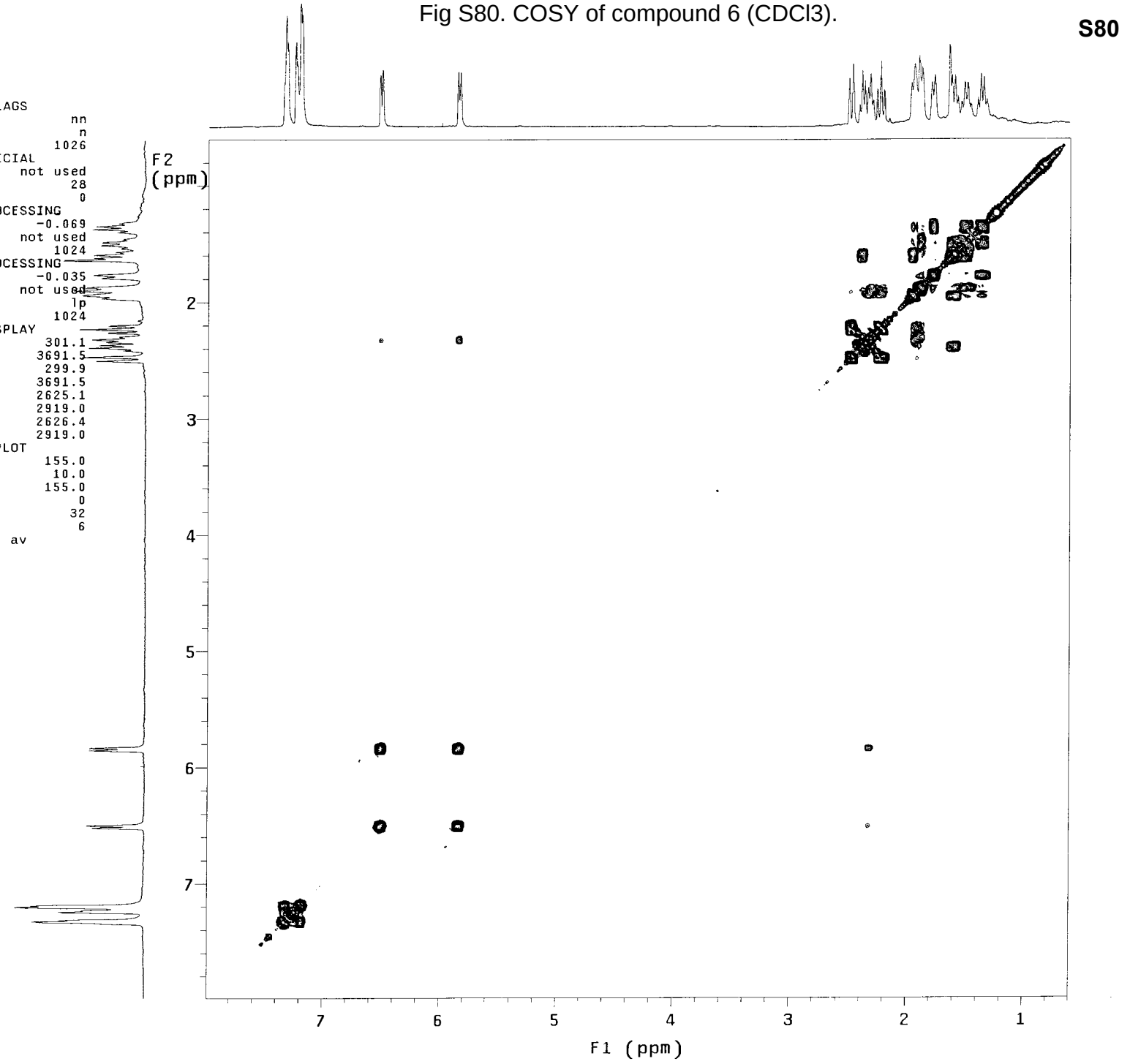


Fig S80. COSY of compound 6 (CDCl3).

RYN-2-148

exp27 gCOSY

SAMPLE		FLAGS	
date	Dec 3 2008	hs	nn
solvent	cdcl3	sspul	n
sample	undefined	hsglvl	1026
ACQUISITION		SPECIAL	
sw	3698.7	temp	not used
at	0.138	gain	28
np	1024	spin	0
fb	2000	F2 PROCESSING	
ss	16	sb	-0.069
d1	1.000	sbs	not used
nt	16	fn	1024
2D ACQUISITION		F1 PROCESSING	
sw1	3698.7	sb1	-0.035
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	1024
sfrq	499.835	DISPLAY	
tof	-350.0	sp	301.1
tpwr	57	wp	3691.5
pw	13.000	sp1	299.9
GRADIENTS		wp1	3691.5
gzlvl1	1026	rfl	2625.1
gt1	0.001000	rfp	2919.0
gstab	0.000500	rfl1	2626.4
DECOUPLER		rfp1	2919.0
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	32
		th	6
		ai cdc av	



RYN-2-148

exp28 gHMQC

Fig S81. HMQC of compound 6 (CDCl3).

SAMPLE	
date	Dec 3 2008
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	3698.7
at	0.138
np	1024
fb	2000
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.835
tof	-350.0
tpwr	57
pw	13.000
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	35
pwxlvl	51
pwx	14.700
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1026
SPECIAL	
temp	not used
gain	28
spin	0
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gzlvl3	516
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.064
gfs	not used
fn	1024
F1 PROCESSING	
gf1	0.006
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	439.0
wp	3438.7
sp1	2674.2
wp1	17131.6
rfl	2960.4
rfp	3254.9
rfl1	20510.9
rfp1	19199.5
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	32
th	6
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256
i	phase
1	1
2	2

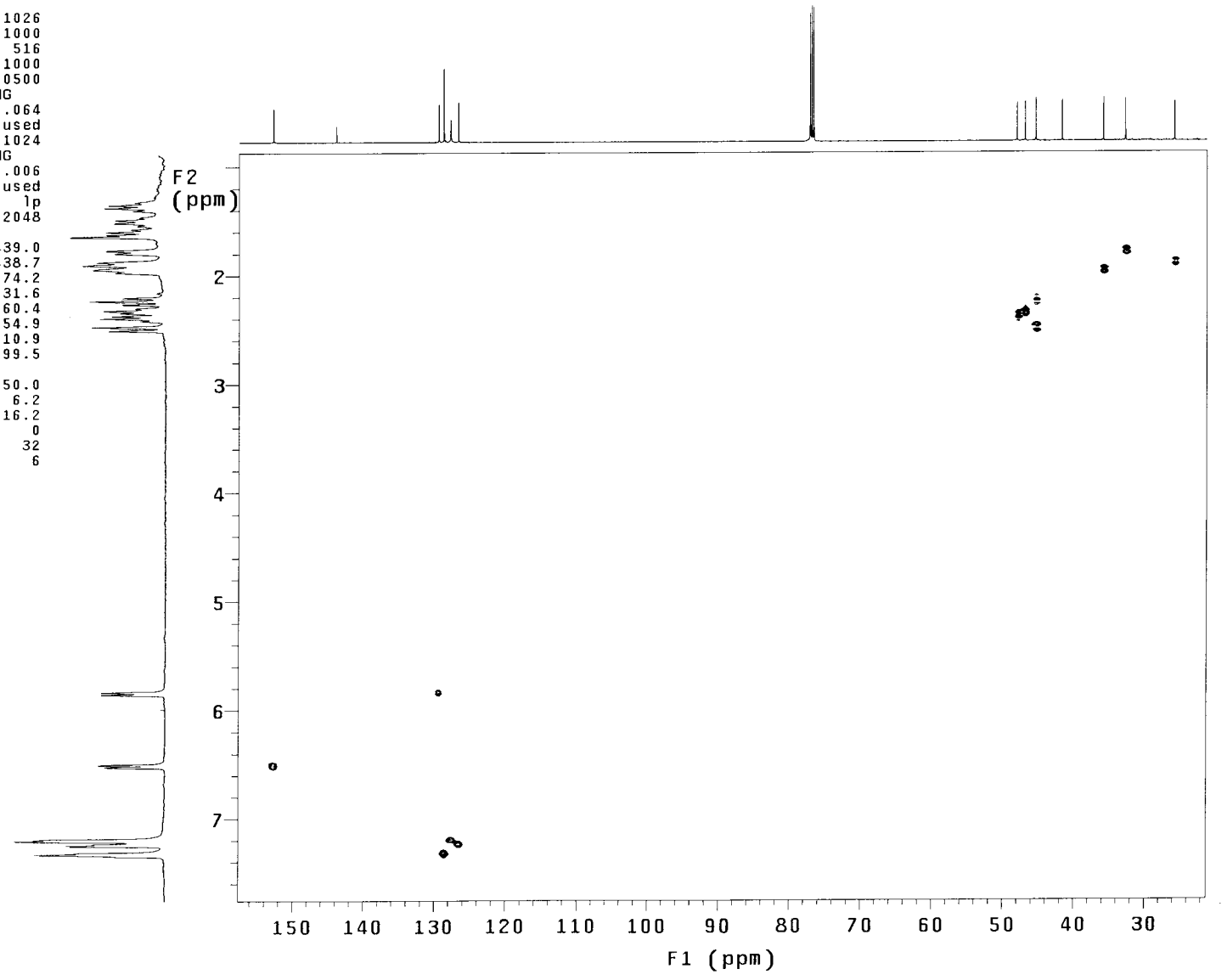


Fig S82. NOESY of compound 6 (CDCl3).

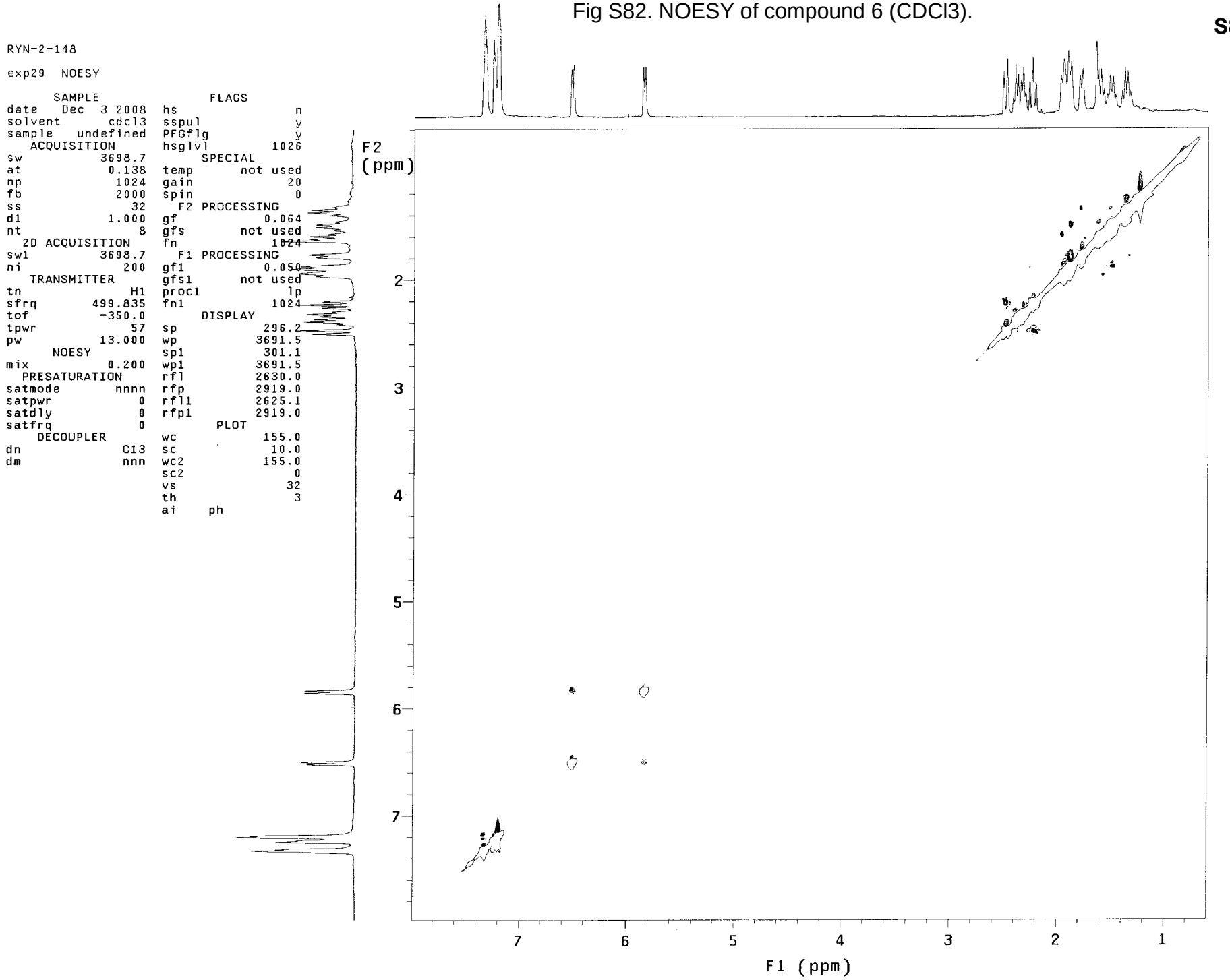
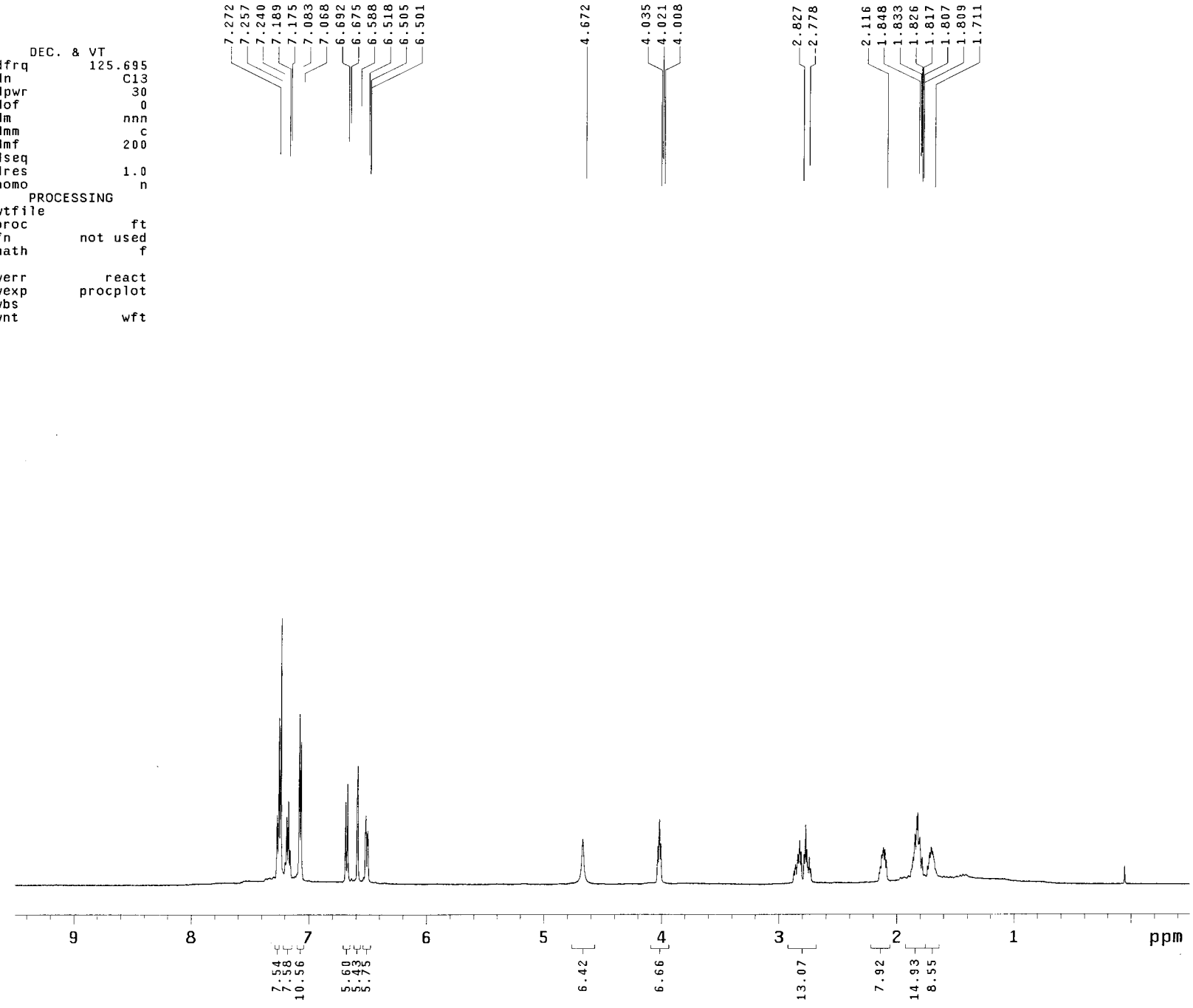


Fig S83. 1H NMR of compound 7 (500 MHz, CDCl3).

RYN-2-153

exp2 s2pul

SAMPLE		DEC. & VT	
date	Dec 31 2008	dfrq	125.695
solvent	cdcl3	dn	C13
file	exp	dpwr	30
ACQUISITION		dof	0
sfrq	499.836	dm	nnn
tn	H1	dmm	c
at	3.000	dmf	200
np	48000	dseq	
sw	8000.0	dres	1.0
fb	4000	homo	n
bs	4	PROCESSING	
tpwr	57	wtfile	
pw	4.8	proc	ft
d1	1.000	fn	not used
tof	499.7	math	f
nt	4		
ct	4	werr	react
alock	y	wexp	procplot
gain	not used	wbs	
FLAGS		wnt	wft
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-250.1		
wp	4998.3		
vs	48		
sc	0		
wc	210		
hzmm	23.80		
is	67.22		
rfl	4630.6		
rfp	3618.8		
th	7		
ins	100.000		
nm cdc ph			



RYN-2-153

exp3 s2pul

SAMPLE		DEC. & VT	
date	Dec 31 2008	dfrq	499.836
solvent	cdcl3	dn	H1
file	exp	dpwr	39
ACQUISITION		dof	0
sfrq	125.698	dm	yyy
tn	C13	dmm	w
at	1.000	dmf	11905
np	62894	dseq	
sw	31446.5	dres	1.0
fb	17000	homo	n
bs	16	PROCESSING	
ss	2	lb	1.00
tpwr	54	wtfile	
pw	4.0	proc	ft
d1	1.000	fn	not used
tof	2512.2	math	f
nt	20000		
ct	11600	werr	react
alock	y	wexp	procplot
gain	not used	wbs	testsn
FLAGS		wnt	
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	1256.5		
wp	27650.1		
vs	197		
sc	0		
wc	210		
hzmm	131.67		
is	500.00		
rfl	10980.6		
rfp	9677.6		
th	8		
ins	100.000		
nm	ph		

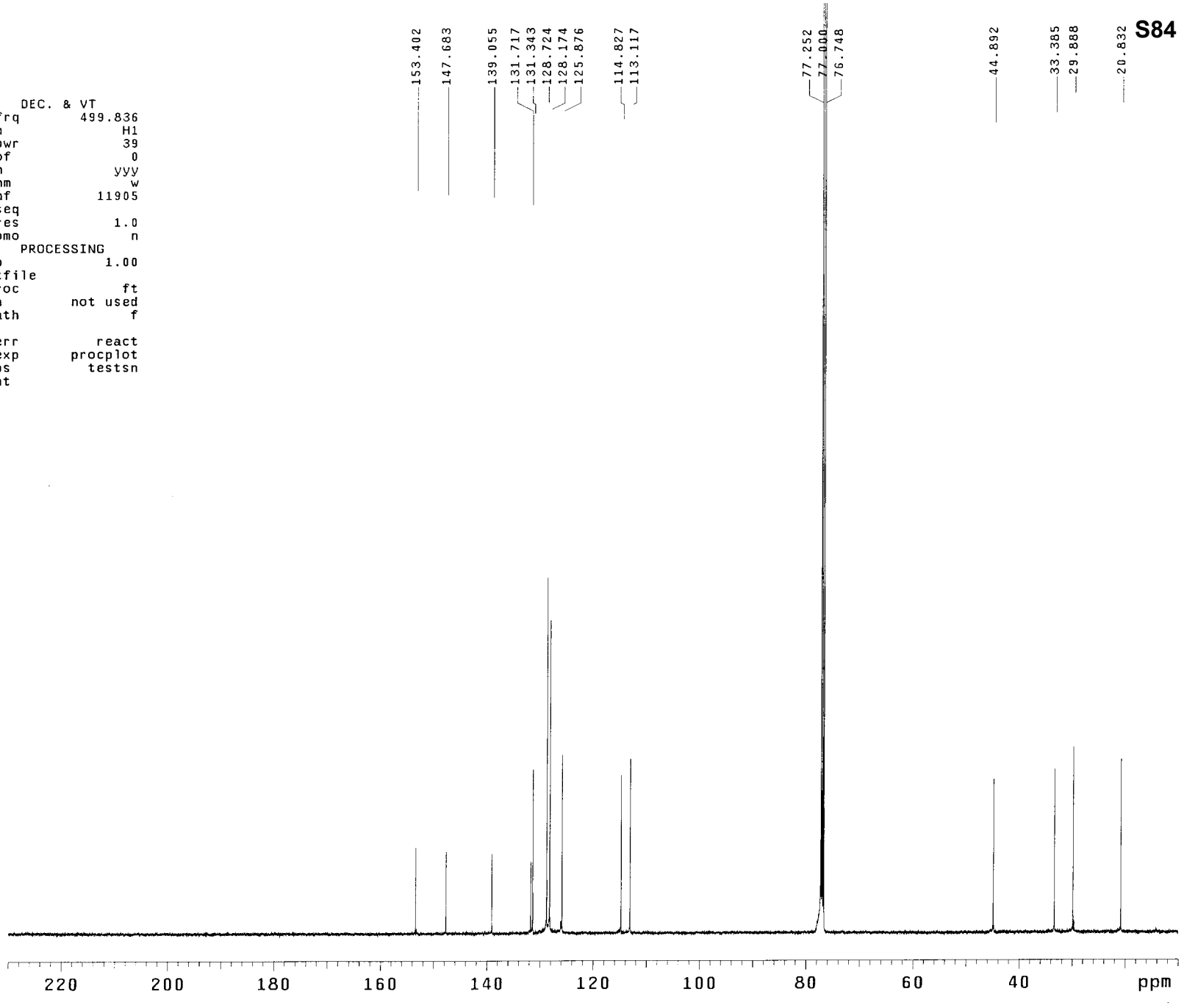


Fig S84. 13C NMR of compound 7 (125 MHz, CDCl3).

RYN-2-153

Fig S85. DEPT of compound 7 (CDCl3).

exp4 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Dec 31 2008	j1xh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	34	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	1800	wp	27650.1		
ct	1800	sp	1256.2		
TRANSMITTER		rp	28.4		
tn	C13	lp	77.4		
tof	2512.2	ai	cdc ph		
tpwr	54	REFERENCE			
pw	9.400	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	39	sc	0		
dm	nny	vs	656		
dmm	ccw	hzmm	131.67		
dmf	i1905	th	68		
pplvl	49				
pp	29.400				

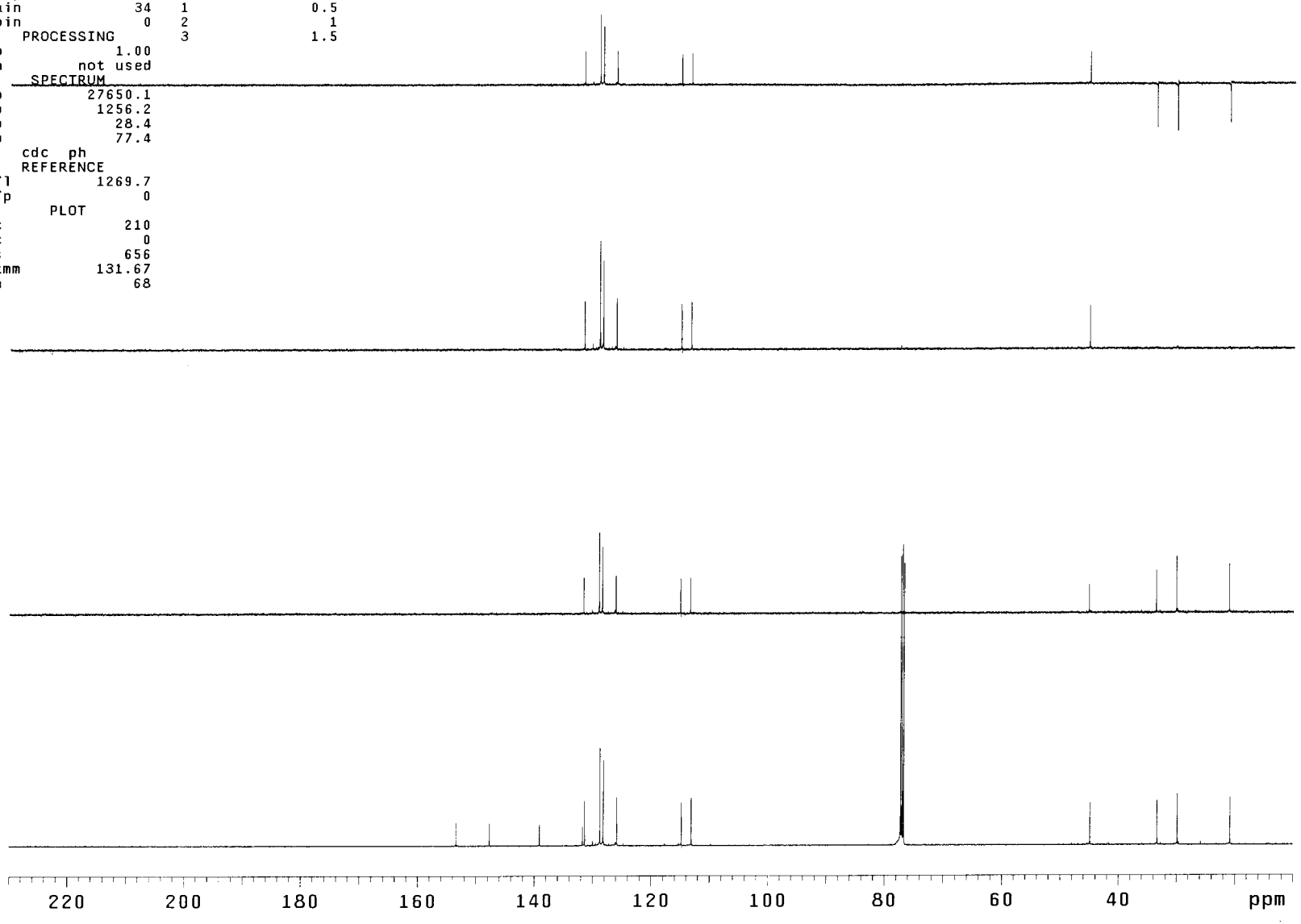


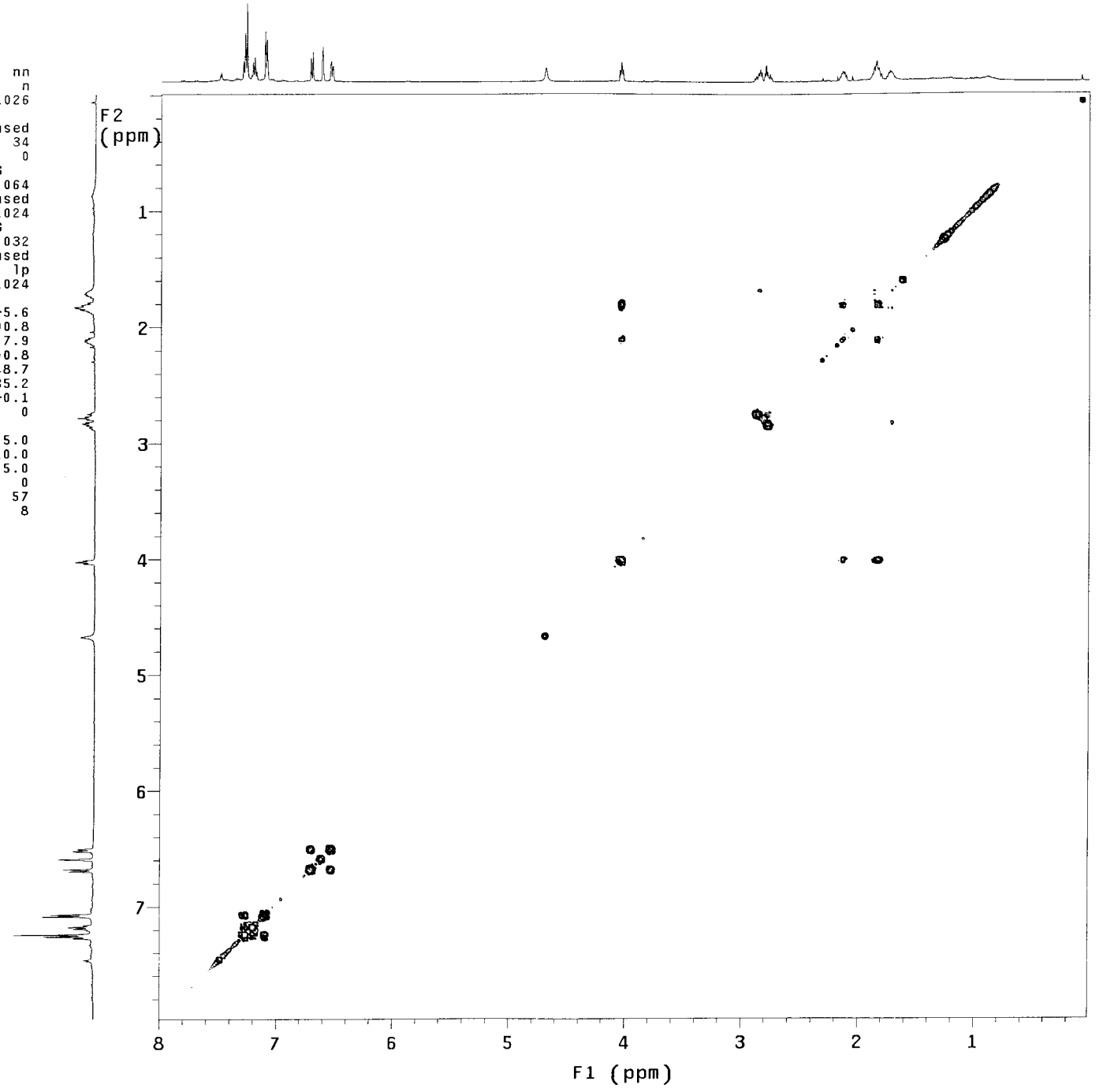
Fig S86. COSY of compound 7 (CDCl3).

RYN-2-153

exp5 gCOSY

SAMPLE	
date	Dec 31 2008
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	3998.6
at	0.128
np	1024
fb	2000
ss	16
d1	1.000
nt	32
2D ACQUISITION	
sw1	3998.6
ni	128
TRANSMITTER	
tn	H1
sfrq	499.835
tof	-499.9
tpwr	57
pw	13.000
GRADIENTS	
gzlvl1	1026
gt1	0.001000
gstab	0.000500
DECOUPLER	
dn	C13
dm	nnn

FLAGS	
hs	nn
sspul	n
hsglvl	1026
SPECIAL	
temp	not used
gain	34
spin	0
F2 PROCESSING	
sb	-0.064
sbs	not used
fn	1024
F1 PROCESSING	
sb1	-0.032
sbs1	not used
proc1	lp
fn1	1024
DISPLAY	
sp	-5.6
wp	3990.8
sp1	7.9
wp1	3990.8
rfl	2348.7
rfp	2335.2
rfl1	-0.1
rfp1	0
PLOT	
wc	155.0
sc	10.0
wc2	155.0
sc2	0
vs	57
th	8
ai cdc av	



RYN-2-153

exp6 gHMQC

SAMPLE		FLAGS		ACQUISITION ARRAYS	
date	Dec 31 2008	hs	n	array	phase
solvent	cdcl3	sspul	y	arraydim	256
sample	undefined	PFGflg	y		
ACQUISITION		hsglvl	1026	i	phase
sw	3998.6	SPECIAL		1	1
at	0.128	temp	not used	2	2
np	1024	gain	34		
fb	2000	spin	0		
ss	32	GRADIENTS			
d1	1.000	gzlvl1	1026		
nt	16	gt1	0.001000		
2D ACQUISITION		gzlvl3	516		
sw1	21367.5	gt3	0.001000		
ni	128	gstab	0.000500		
phase	arrayed	F2 PROCESSING			
TRANSMITTER		gf	0.059		
tn	H1	gfs	not used		
sfrq	499.835	fn	1024		
tof	-499.9	F1 PROCESSING			
tpwr	57	gf1	0.006		
pw	13.000	gfs1	not used		
DECOUPLER		proc1	lp		
dn	C13	fn1	2048		
dof	-2515.1	DISPLAY			
dm	nny	sp	676.4		
dmm	ccp	wp	3264.5		
dmf	32258	sp1	1766.3		
dpwr	35	wp1	15691.8		
pwxlvl	51	rfl	2020.7		
pwx	14.700	rfp	2009.8		
HMQC		rfl1	6943.3		
j1xh	140.0	rfp1	5642.2		
nullflg	y	PLOT			
		wc	150.0		
		sc	6.2		
		wc2	116.2		
		sc2	0		
		vs	57		
		th	6		
		ai cdc ph			

Fig S87. HMQC of compound 7 (CDCl3).

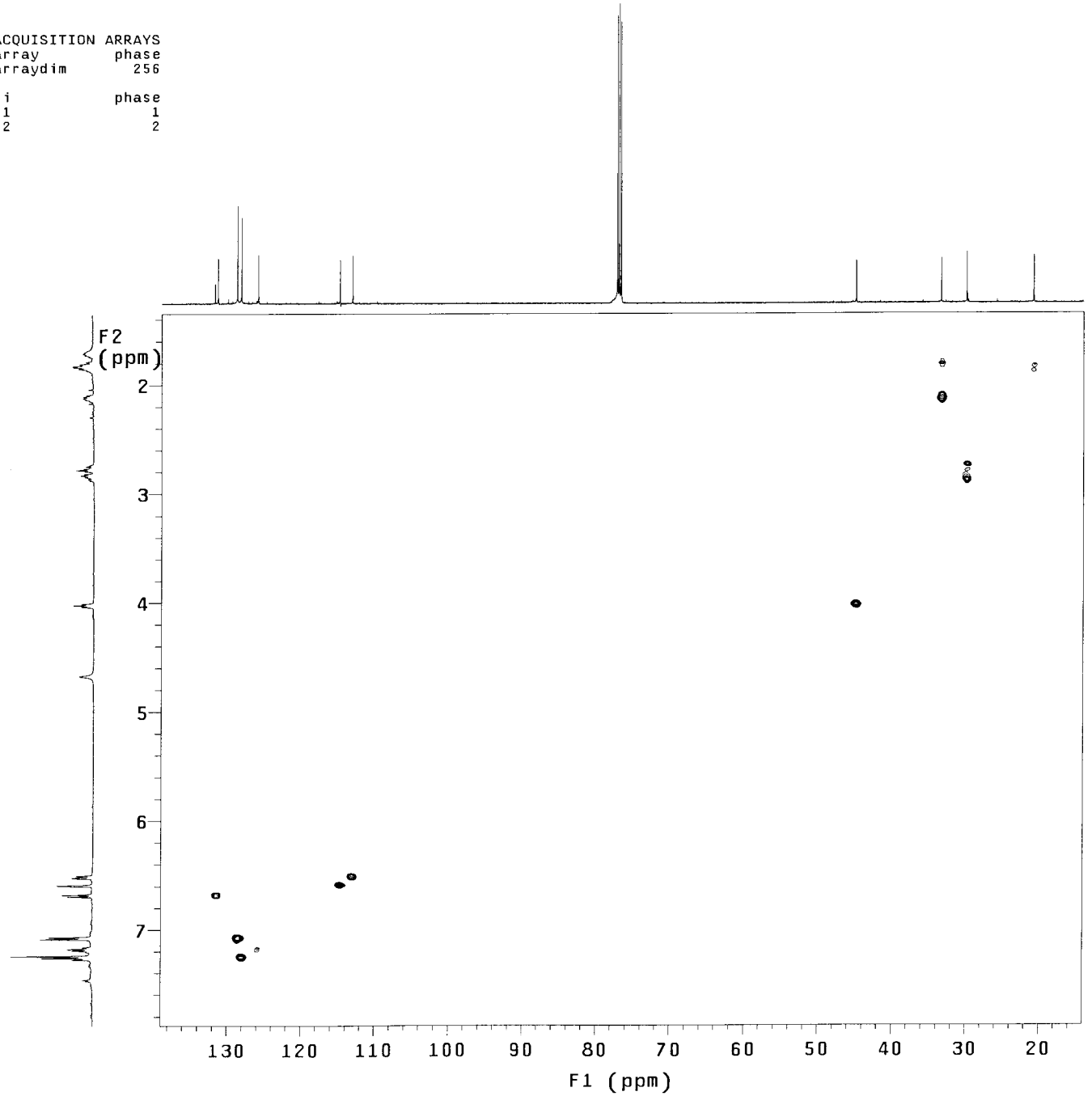


Fig S88. NOESY of compound 7 (CDCl3).

RYN-2-153

exp16 NOESY

SAMPLE		FLAGS	
date	Dec 31 2008	hs	n
solvent	cdcl3	sspul	y
sample	undefined	PFGflg	y
ACQUISITION		hsglvl	1026
sw	3998.6	SPECIAL	
at	0.128	temp	not used
np	1024	gain	34
fb	2000	spin	0
ss	32	F2 PROCESSING	
d1	1.000	gf	0.059
nt	8	gfs	not used
2D ACQUISITION		fn	1024
sw1	3998.6	F1 PROCESSING	
ni	200	gf1	0.046
TRANSMITTER		gfs1	not used
tn	H1	proc1	lp
sfrq	499.835	fn1	1024
tof	-499.9	DISPLAY	
tpwr	57	sp	-10.1
pw	13.000	wp	3990.8
NOESY		sp1	7.9
mix	0.400	wp1	3990.8
PRESATURATION		rfl	2353.2
satmode	nnnn	rfp	2335.2
satpwr	0	rfl1	-0.1
satdly	0	rfp1	0
satfrq	0	PLOT	
DECOUPLER		wc	155.0
dn	C13	sc	10.0
dm	nnn	wc2	155.0
		sc2	0
		vs	57
		th	3
		ai ph	

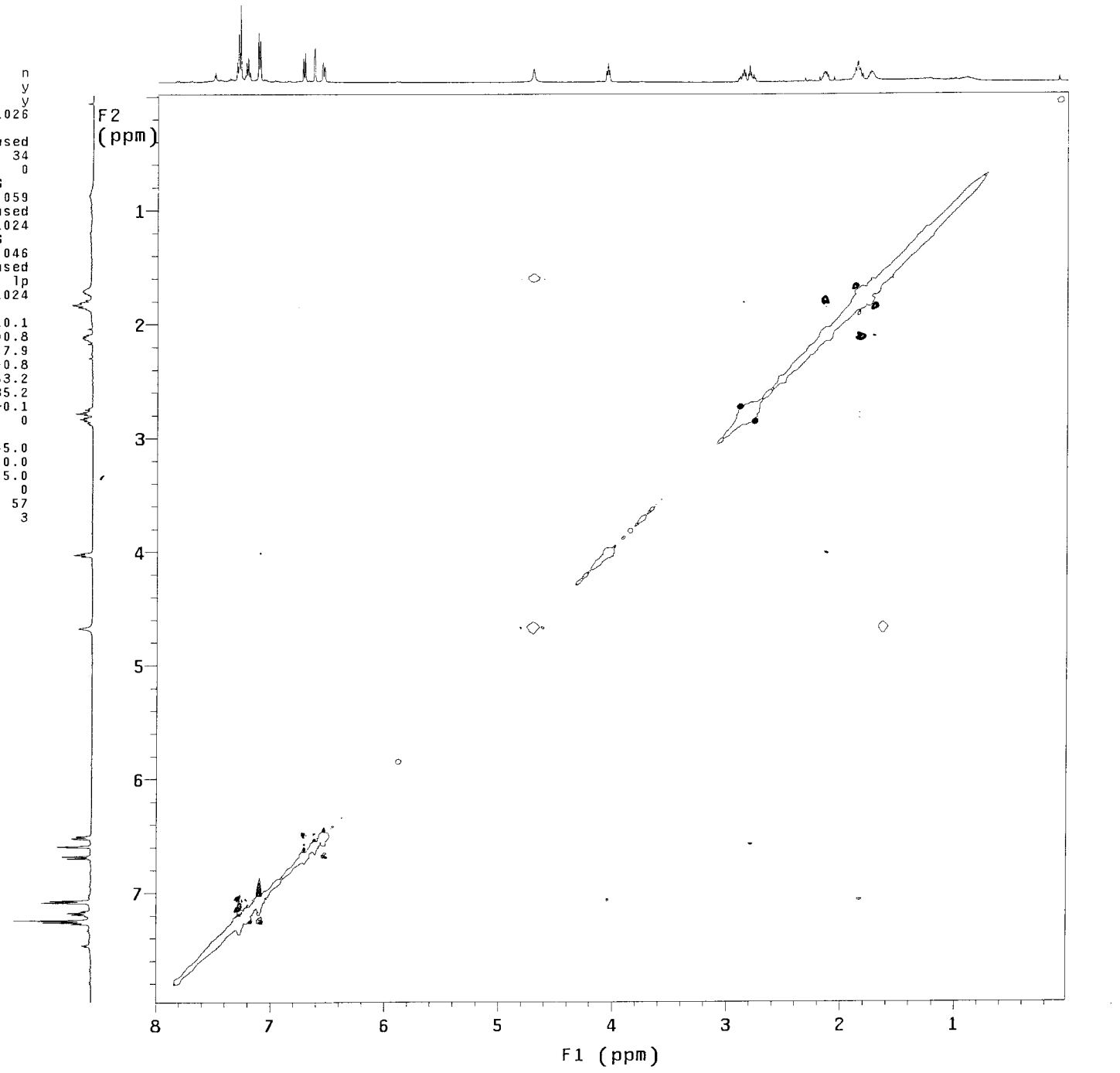
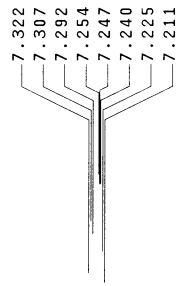


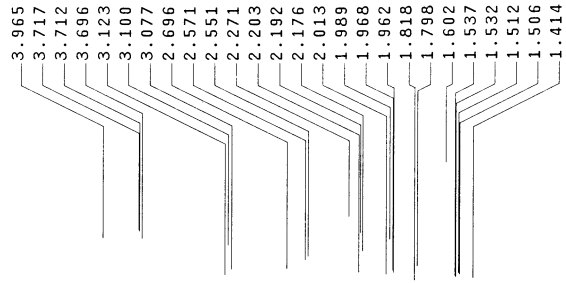
Fig S89. 1H NMR of compound 8 (CDCl3).

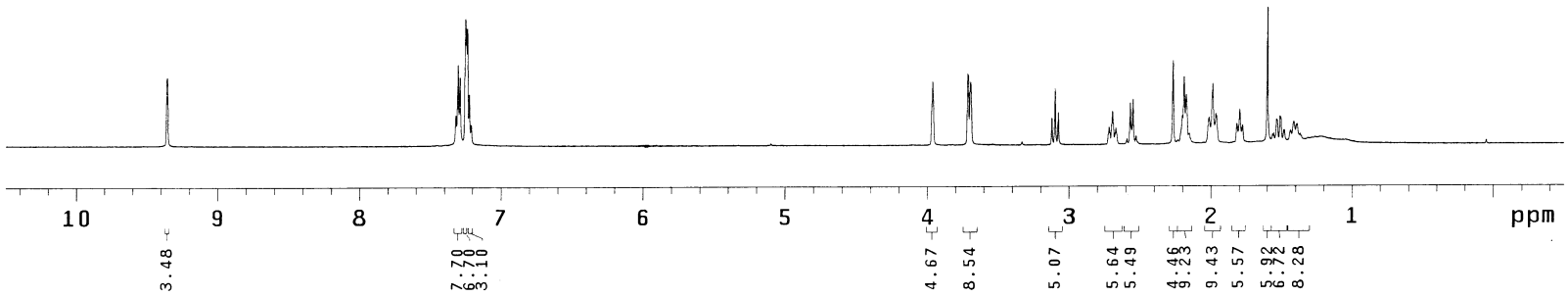
RYN-2-166

exp2 s2pul

SAMPLE		DEC. & VT	
date	Feb 26 2009	dfrq	125.695
solvent	cdcl3	dn	C13
file	exp	dpwr	30
ACQUISITION		dof	0
sfrq	499.836	dm	nnn
tn	H1	dmm	c
at	3.000	dmf	200
np	48000	dseq	
sw	8000.0	dres	1.0
fb	not used	homo	n
bs	4	PROCESSING	
tpwr	57	wtfile	
pw	4.8	proc	ft
d1	1.000	fn	not used
tof	499.7	math	f
nt	4		
ct	4	werr	react
alock	y	wexp	procplot
gain	not used	wbs	
FLAGS		wnt	wft
il	n		
in	n		
dp	y		
hs	nn		
DISPLAY			
sp	-250.1		
wp	5498.0		
vs	19		
sc	0		
wc	210		
hzmm	26.18		
is	193.87		
rfl	4630.6		
rfp	3618.8		
th	3		
ins	100.000		
nm	cdc ph		







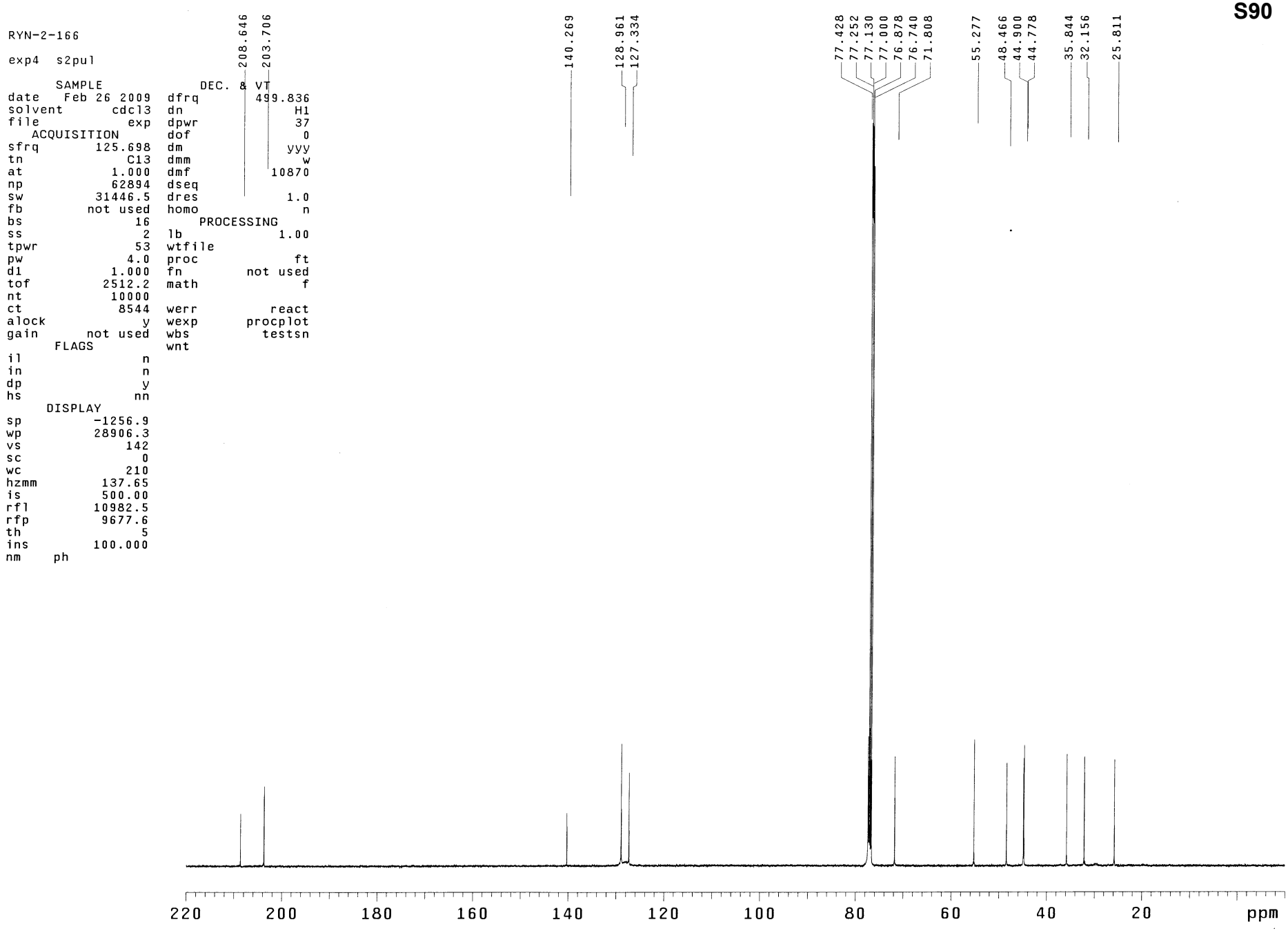


Fig S90. 13C NMR of compound 8 (CDCl3).

Fig S91. DEPT of compound 8 (CDCl3).

RYN-2-166

exp3 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Feb 26 2009	j1xh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	20	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	1500	wp	28906.3		
ct	1500	sp	-1257.2		
TRANSMITTER		rp	-58.0		
tn	C13	lp	148.7		
tof	2512.2	ai	cdc ph		
tpwr	53	REFERENCE			
pw	8.600	rfl	1269.7		
DECOUPLER		rfp	0		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	37	sc	0		
dm	nny	vs	216		
dmm	ccw	hzmm	137.65		
dmf	10870	th	68		
pplvl	51				
pp	21.300				

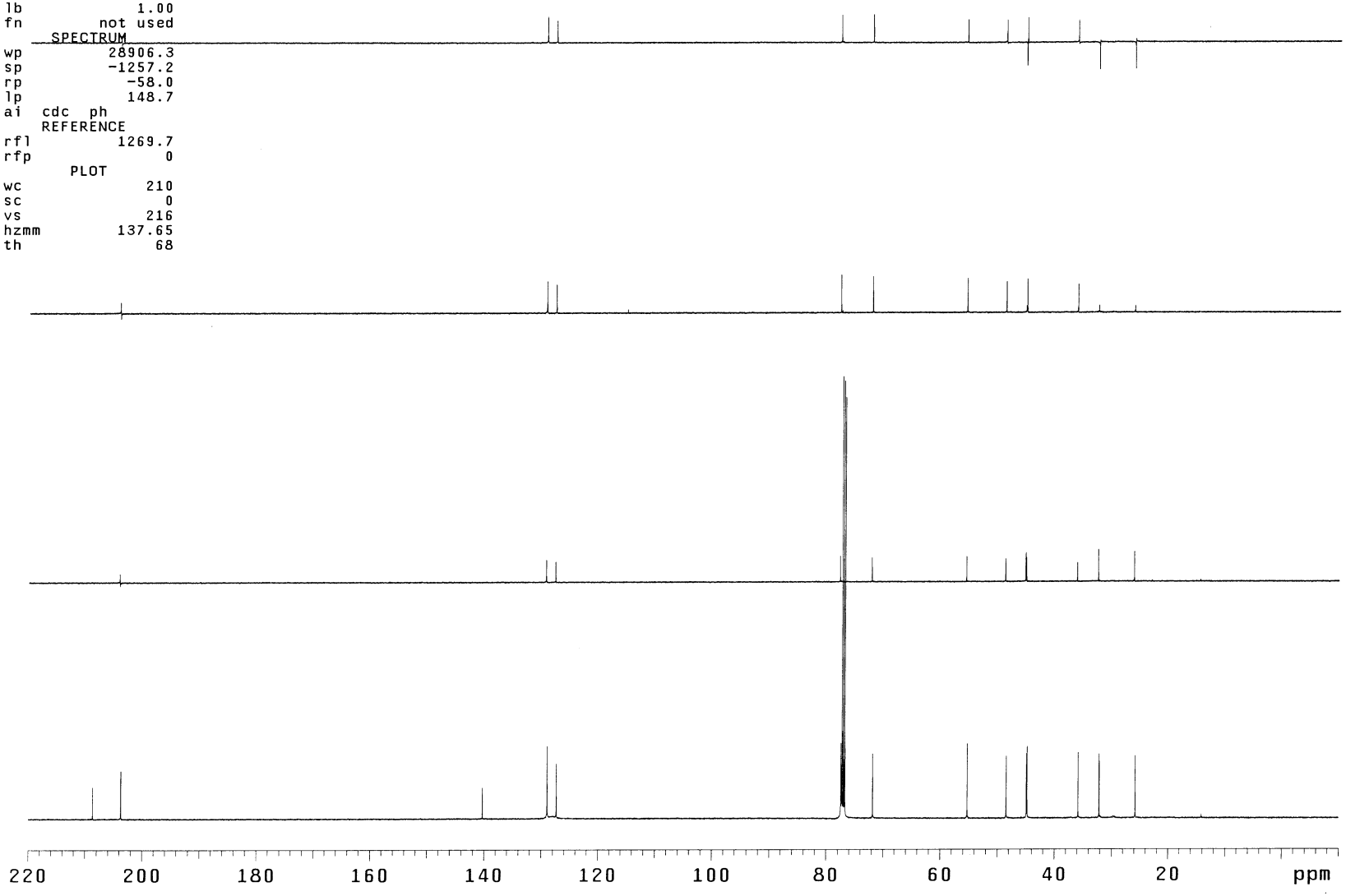


Fig S92. DEPT of compound 8 (CDCl3), Expanded.

RYN-2-166

exp13 DEPT

SAMPLE		DEPT		ACQUISITION ARRAYS	
date	Feb 26 2009	j1xh	140.0	array	mult
solvent	cdcl3	mult	arrayed	arraydim	3
sample	undefined	SPECIAL			
ACQUISITION		temp	not used	i	mult
sw	31446.5	gain	20	1	0.5
at	1.000	spin	0	2	1
np	62894	PROCESSING		3	1.5
bs	16	lb	1.00		
ss	-4	fn	not used		
d1	1.000	SPECTRUM			
nt	1500	wp	1256.2		
ct	1500	sp	5027.1		
TRANSMITTER		rp	-39.6		
tn	C13	lp	52.2		
tof	2512.2	ai	cdc ph		
tpwr	53	REFERENCE			
pw	8.600	rfl	8252.2		
DECOUPLER		rfp	6947.4		
dn	H1	PLOT			
dof	0	wc	210		
dpwr	37	sc	0		
dm	nny	vs	694		
dmm	ccw	hzmm	5.98		
dmf	10870	th	68		
pplvl	51				
pp	21.300				

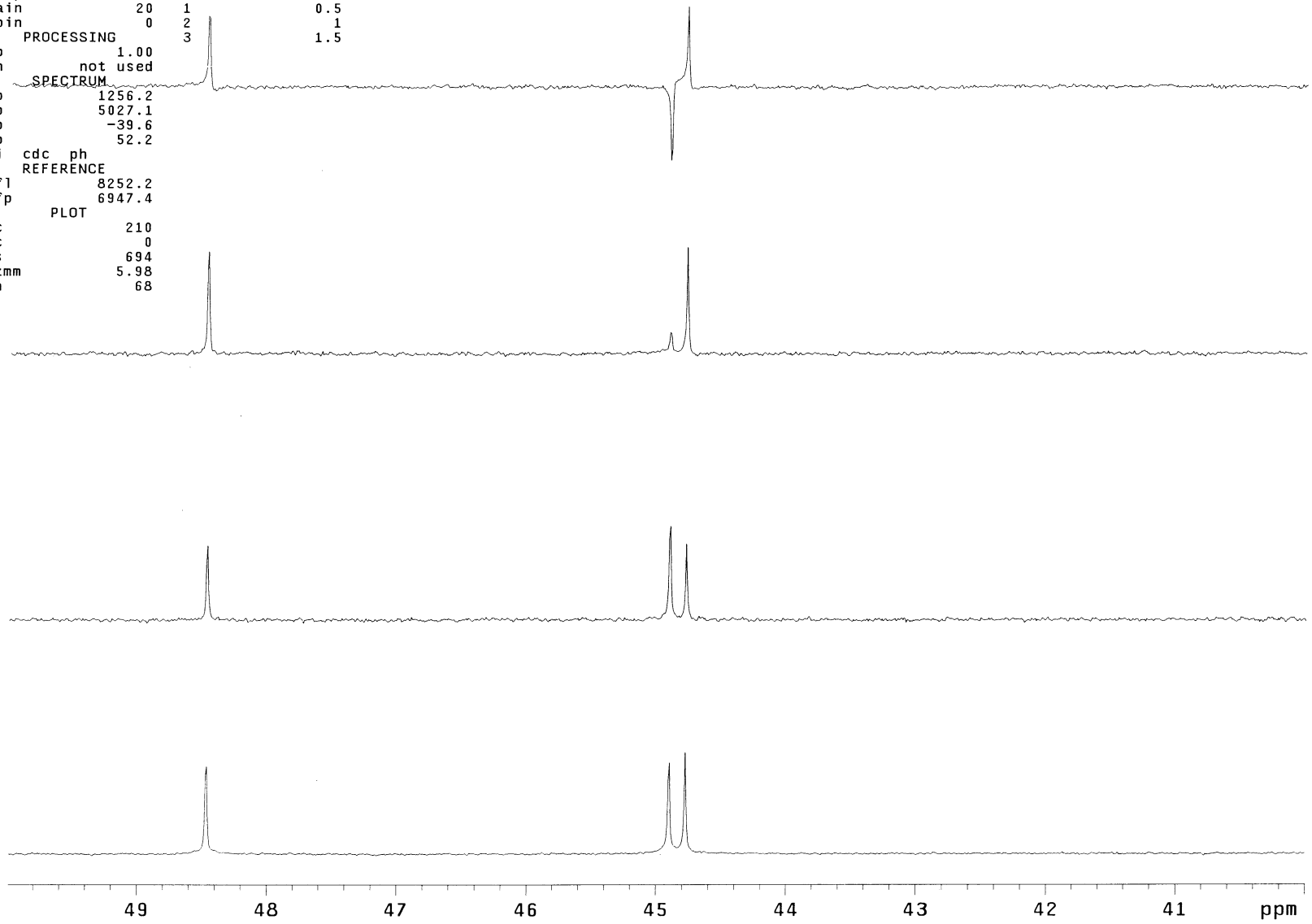


Fig S93. HMQC of compound 8 (CDCl3).

RYN-2-166

exp14 gHMQC

SAMPLE	
date	Feb 26 2009
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4490.3
at	0.228
np	2048
fb	not used
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.836
tof	249.8
tpwr	57
pw	9.600
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	33
pwxlvl	49
pwx	14.000
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1006
SPECIAL	
temp	not used
gain	50
spin	0
GRADIENTS	
gzlvl1	1006
gt1	0.001000
gzlvl3	506
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.105
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.006
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	645.0
wp	3205.5
sp1	2829.6
wp1	14022.4
rfl	1499.1
rfp	1981.8
rfl1	11012.5
rfp1	9731.4
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	31
th	6
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256
i	phase
1	1
2	2

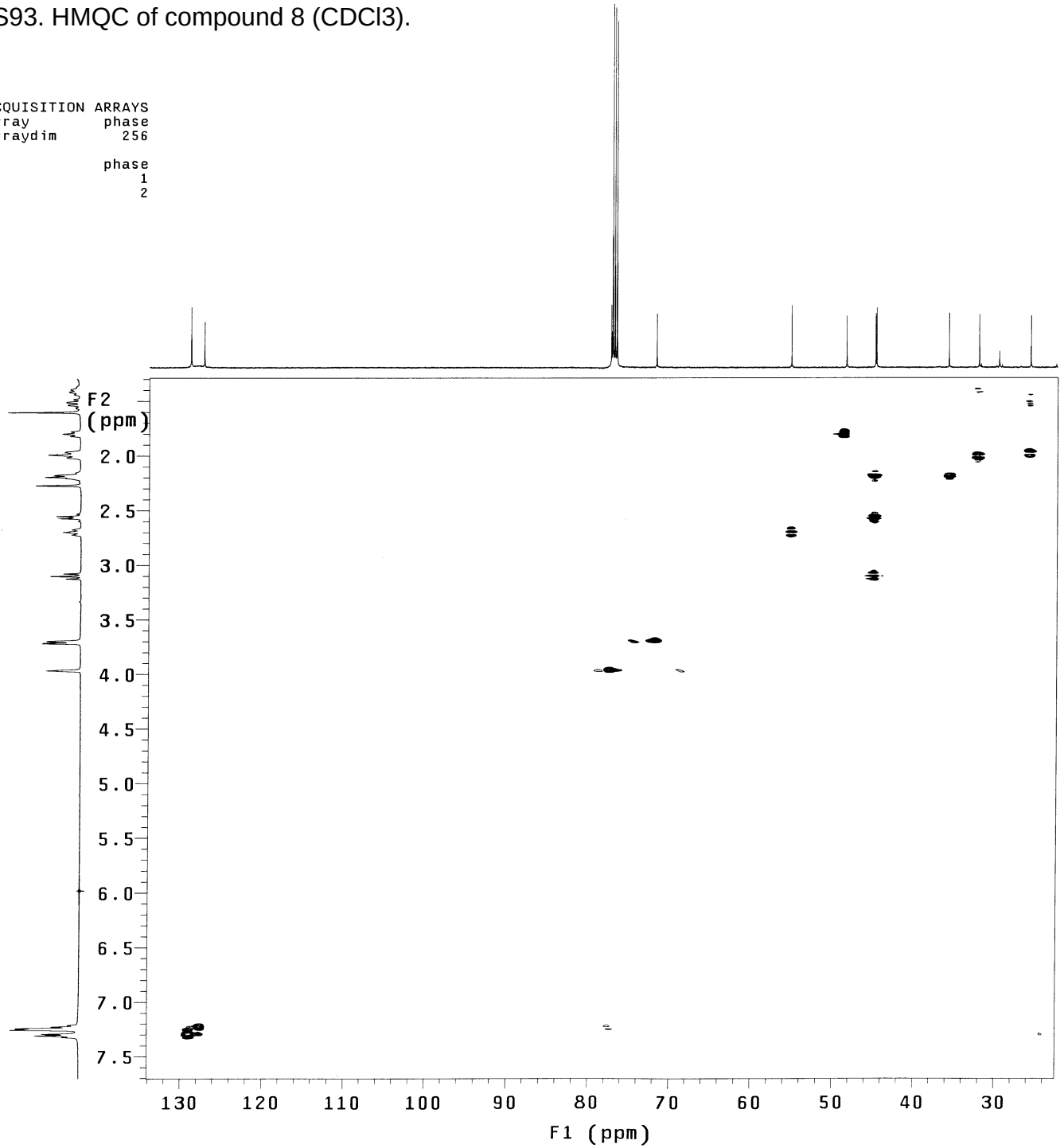


Fig S94. HMQC of compound 8 (CDCl3), expanded.

RYN-2-166

exp14 gHMQC

SAMPLE	
date	Feb 26 2009
solvent	cdcl3
sample	undefined
ACQUISITION	
sw	4490.3
at	0.228
np	2048
fb	not used
ss	32
d1	1.000
nt	16
2D ACQUISITION	
sw1	21367.5
ni	128
phase	arrayed
TRANSMITTER	
tn	H1
sfrq	499.836
tof	249.8
tpwr	57
pw	9.600
DECOUPLER	
dn	C13
dof	-2515.1
dm	nny
dmm	ccp
dmf	32258
dpwr	33
pwxlvl	49
pwx	14.000
HMQC	
j1xh	140.0
nullflg	y

FLAGS	
hs	n
sspul	y
PFGflg	y
hsglvl	1006
SPECIAL	
temp	not used
gain	50
spin	0
GRADIENTS	
gzlvl1	1006
gt1	0.001000
gzlvl3	506
gt3	0.001000
gstab	0.000500
F2 PROCESSING	
gf	0.105
gfs	not used
fn	2048
F1 PROCESSING	
gf1	0.006
gfs1	not used
proc1	lp
fn1	2048
DISPLAY	
sp	509.1
wp	1784.7
sp1	2412.3
wp1	5049.7
rfl	1499.1
rfp	1981.8
rfl1	11012.5
rfp1	9731.4
PLOT	
wc	150.0
sc	6.2
wc2	116.2
sc2	0
vs	31
th	6
ai cdc ph	

ACQUISITION ARRAYS	
array	phase
arraydim	256
i	phase
1	1
2	2

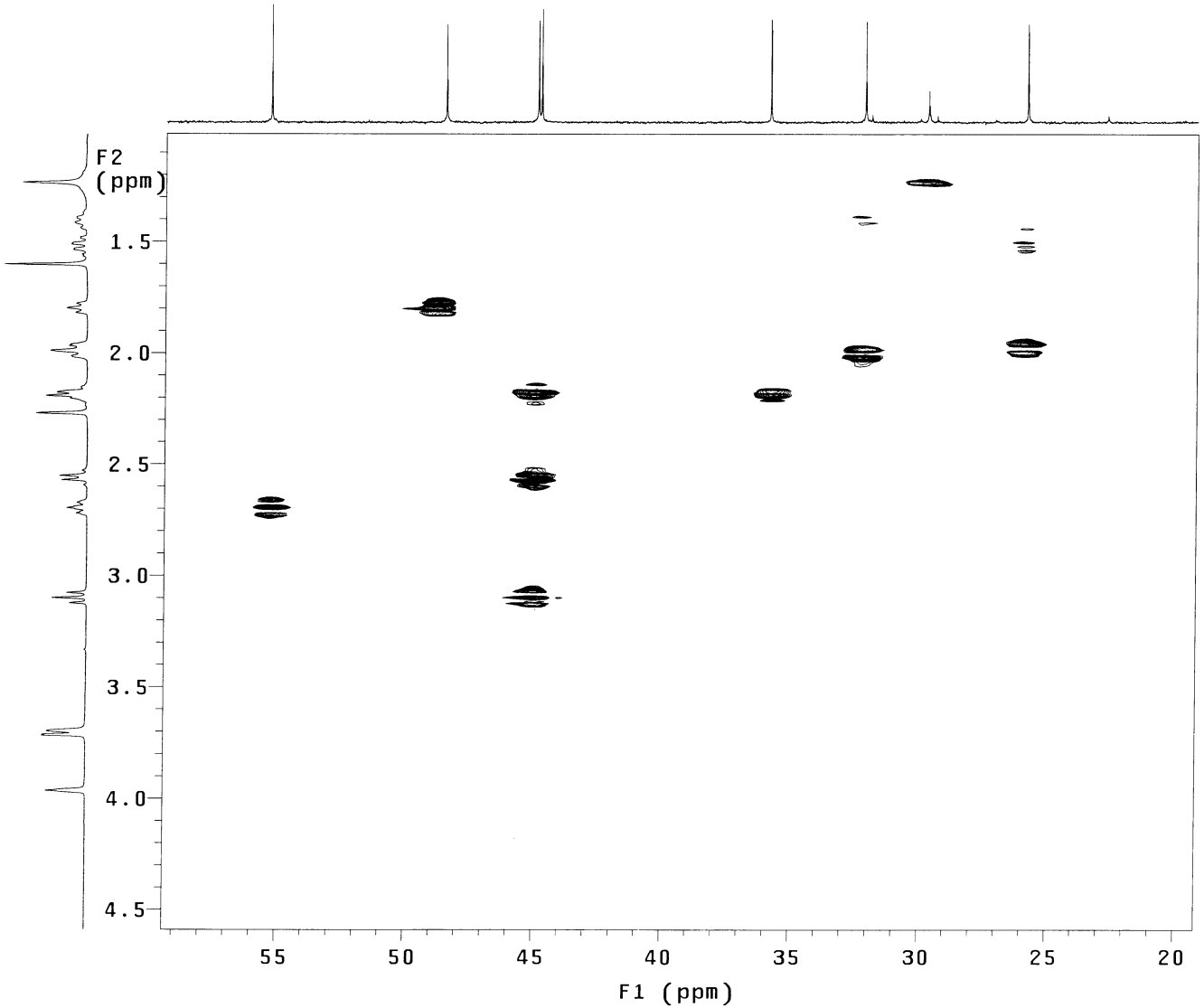


Fig S95. COSY of compound 8 (CDCl3).

RYN-2-166

exp5 gCOSY

SAMPLE		FLAGS	
date	Feb 26 2009	hs	nn
solvent	cdcl3	sspul	n
sample	undefined	hsglvl	1006
ACQUISITION		SPECIAL	
sw	4490.3	temp	not used
at	0.228	gain	30
np	2048	spin	0
fb	not used	F2 PROCESSING	
ss	16	sb	-0.114
d1	1.000	sbs	not used
nt	16	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4490.3	sb1	-0.029
ni	128	sbs1	not used
TRANSMITTER		proc1	lp
tn	H1	fn1	2048
sfrq	499.836	DISPLAY	
tof	249.8	sp	490.4
tpwr	57	wp	4486.0
pw	9.600	sp1	493.5
GRADIENTS		wp1	4486.0
gzlvl1	1006	rfl	1495.8
gt1	0.001000	rfp	1981.8
gstab	0.000500	rfl1	1492.7
DECOUPLER		rfp1	1981.8
dn	C13	PLOT	
dm	nnn	wc	155.0
		sc	10.0
		wc2	155.0
		sc2	0
		vs	31
		th	8
		ai cdc av	

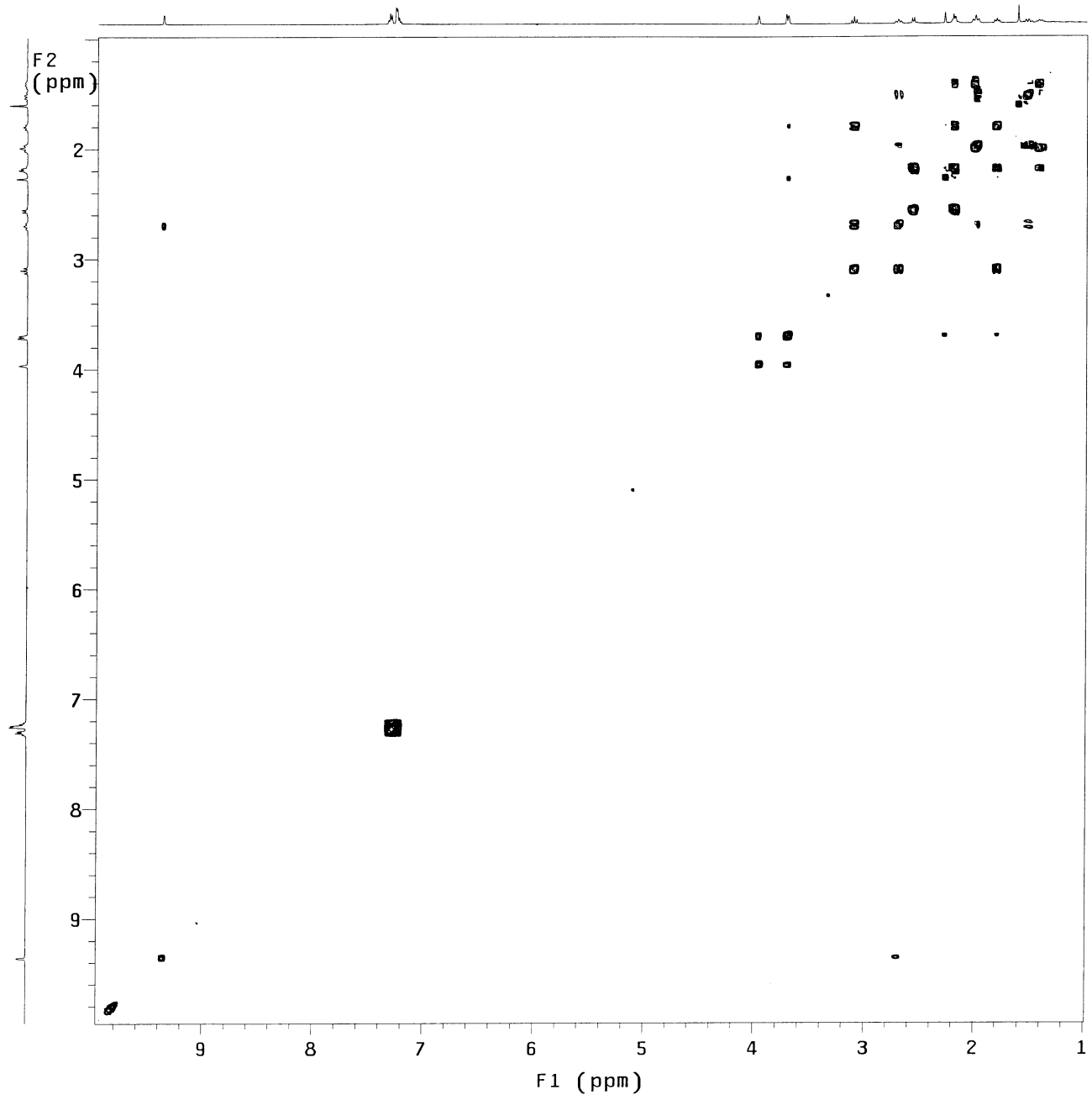


Fig S96. NOESY of compound 8 (CDCl3).

RYN-2-166

exp15 NOESY

SAMPLE		FLAGS	
date	Feb 26 2009	hs	n
solvent	cdcl3	sspul	y
sample	undefined	PFGflg	y
ACQUISITION		hsglvl	1006
sw	4490.3	SPECIAL	
at	0.228	temp	not used
np	2048	gain	30
fb	not used	spin	0
ss	32	F2 PROCESSING	
d1	1.000	gf	0.105
nt	8	gfs	not used
2D ACQUISITION		fn	2048
sw1	4490.3	F1 PROCESSING	
ni	200	gf1	0.041
TRANSMITTER		gfs1	not used
tn	H1	proc1	lp
sfrq	499.836	fn1	2048
tof	249.8	DISPLAY	
tpwr	57	sp	494.8
pw	9.600	wp	4486.0
NOESY		sp1	492.8
mix	0.600	wp1	4486.0
PRESATURATION		rfl	1491.4
satmode	nnnn	rfp	1981.8
satpwr	0	rfl1	1493.4
satdly	0	rfp1	1981.8
satfrq	0	PLOT	
DECOUPLER		wc	155.0
dn	C13	sc	10.0
dm	nnn	wc2	155.0
		sc2	0
		vs	31
		th	3
		ai ph	

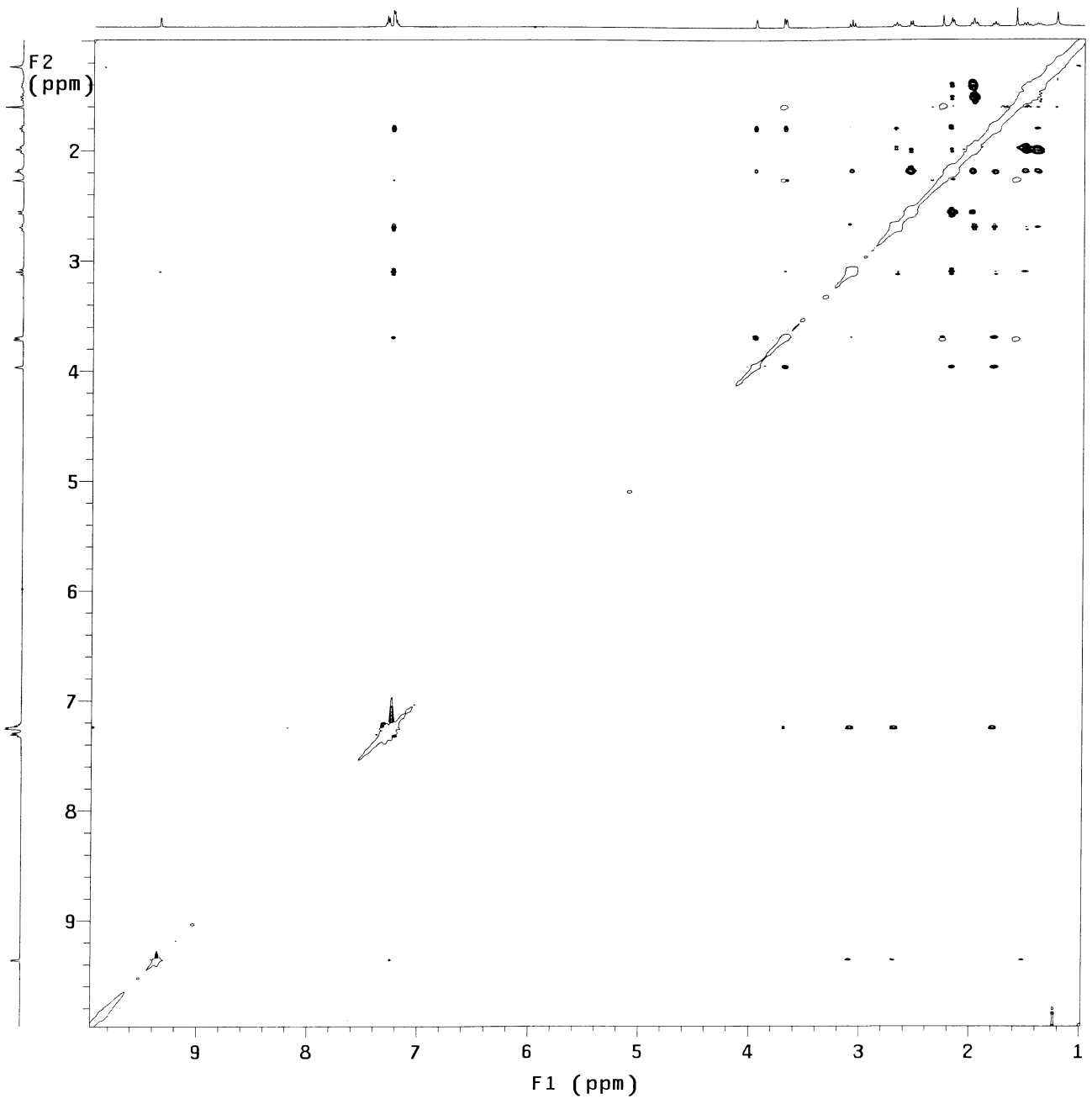


Fig S97. HPLC analysis of the racemic 5a (Table 1, entry 19).

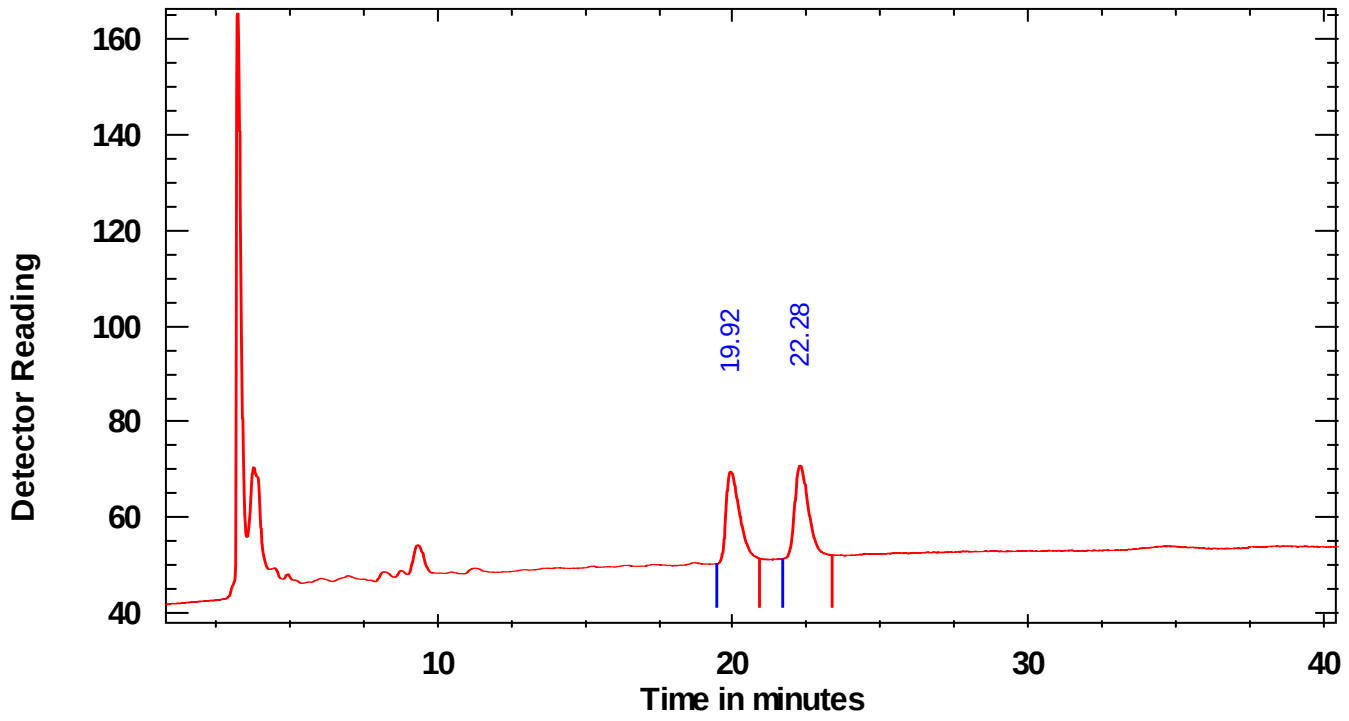
(For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

ryn-2-117 racemate col IA 20% EA/Hex

Report produced on 2008/10/18 at 下午 02:21:29 by Put your name here



2008/10/18 ¤U¤È 12:01:06 Flow set to 1.00 at 0.01 minutes

2008/10/18 ¤U¤È 12:49:52 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	19.46	20.90	601	49.2	69.47	19.92	Baseline	
2	21.69	23.36	620	50.8	70.80	22.28	Baseline	

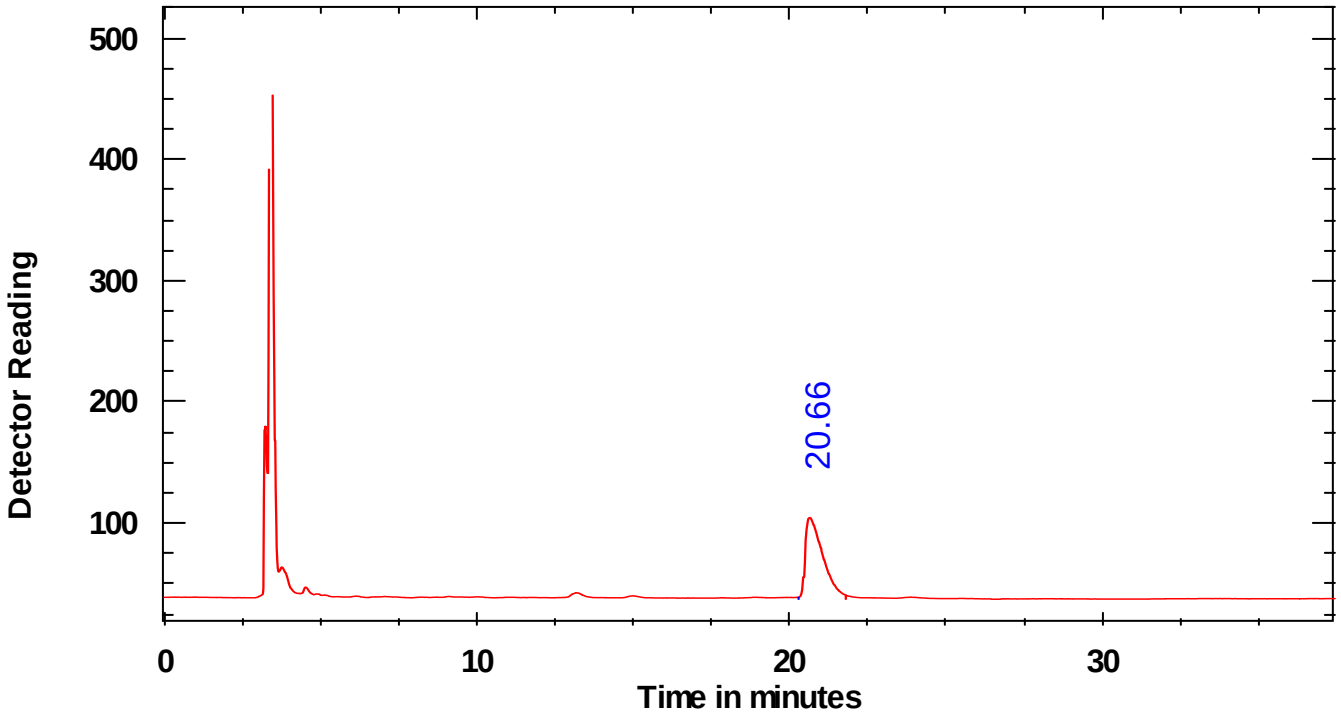
Fig S98. HPLC analysis of 5a obtained (Table 1, entry 9).

Chromatogram Report

First line of organization's address
Second line of organization's address

ryn-2-121 - col IA 20% EA/Hex

Report produced on 2008/11/16 at 上午 12:22:48 by Put your name here



2008/10/18 ¤U¤È 03:45:29 Flow set to 1.00 at 0.00 minutes
2008/10/18 ¤U¤È 04:23:23 Run stopped by operator

PEAK REPORT

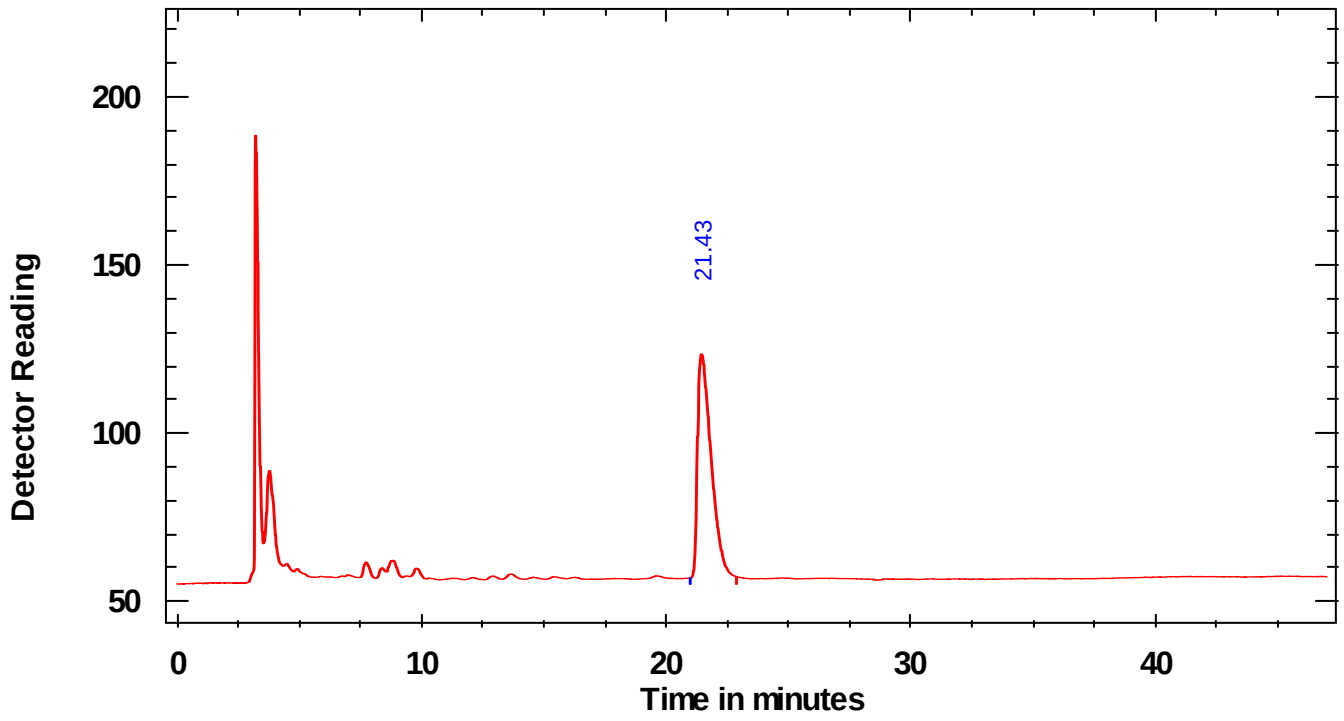
#	begin	end	area	percent	maximum	time	begins as	name
1	20.29	21.80	2429	100.0	104.17	20.66	Baseline	

Chromatogram Report

First line of organization's address
Second line of organization's address

ryn-2-115 chiral col IA 20% EA/Hex

Report produced on 2008/10/18 at 下午 02:24:56 by Put your name here



2008/10/18 ¤U¤È 12:52:19 Flow set to 1.00 at 0.00 minutes
2008/10/18 ¤U¤È 01:39:23 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	20.98	22.87	2565	100.0	123.54	21.43	Baseline	

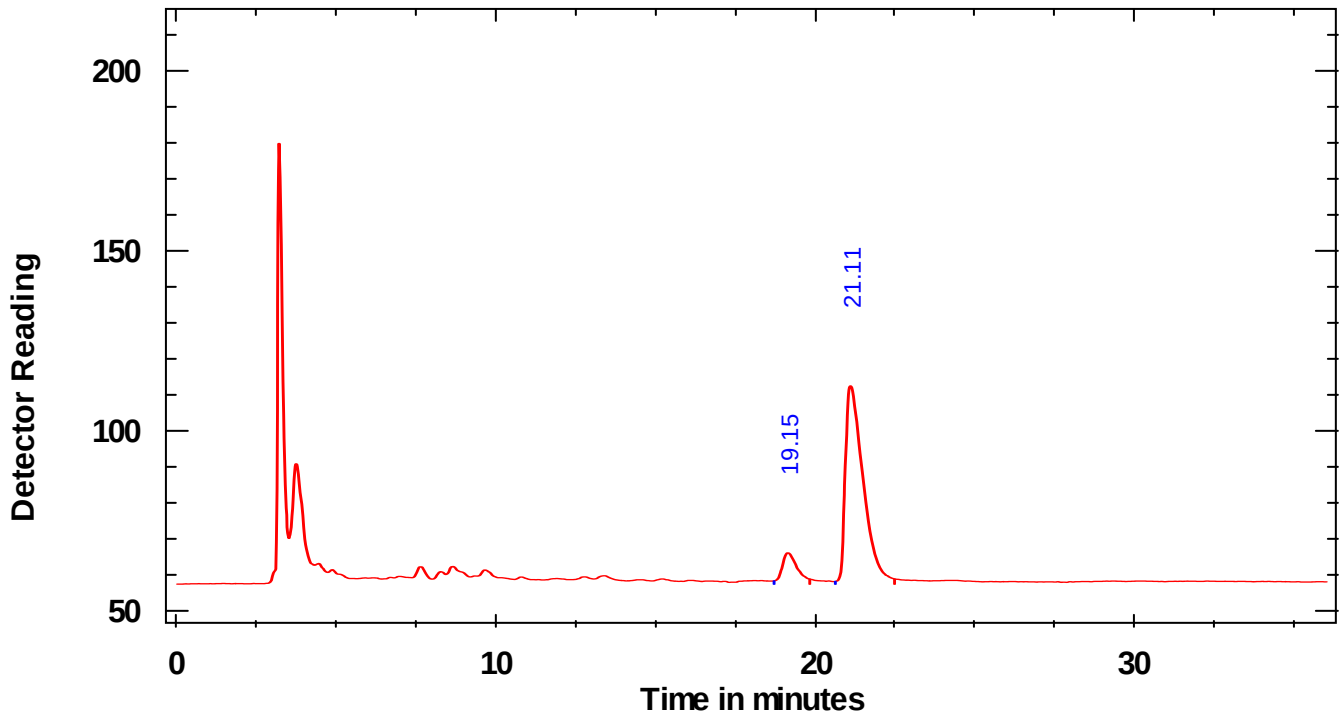
Fig S100. HPLC analysis of the mixture of racemic and chiral 5a obtained (Table 1, entry 10 and Table 2, entry 1). (For comparison)

First line of organization's address
Second line of organization's address

Chromatogram Report

ryn-2-115 - co- col IA 20% EA/Hex

Report produced on 2008/10/18 at 下午 02:26:07 by Put your name here



2008/10/18 ¤U¤È 01:42:02 Flow set to 1.00 at 0.01 minutes

2008/10/18 ¤U¤È 02:18:07 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	18.72	19.84	215	9.5	66.08	19.15	Baseline	
2	20.64	22.49	2045	90.5	112.50	21.11	Baseline	

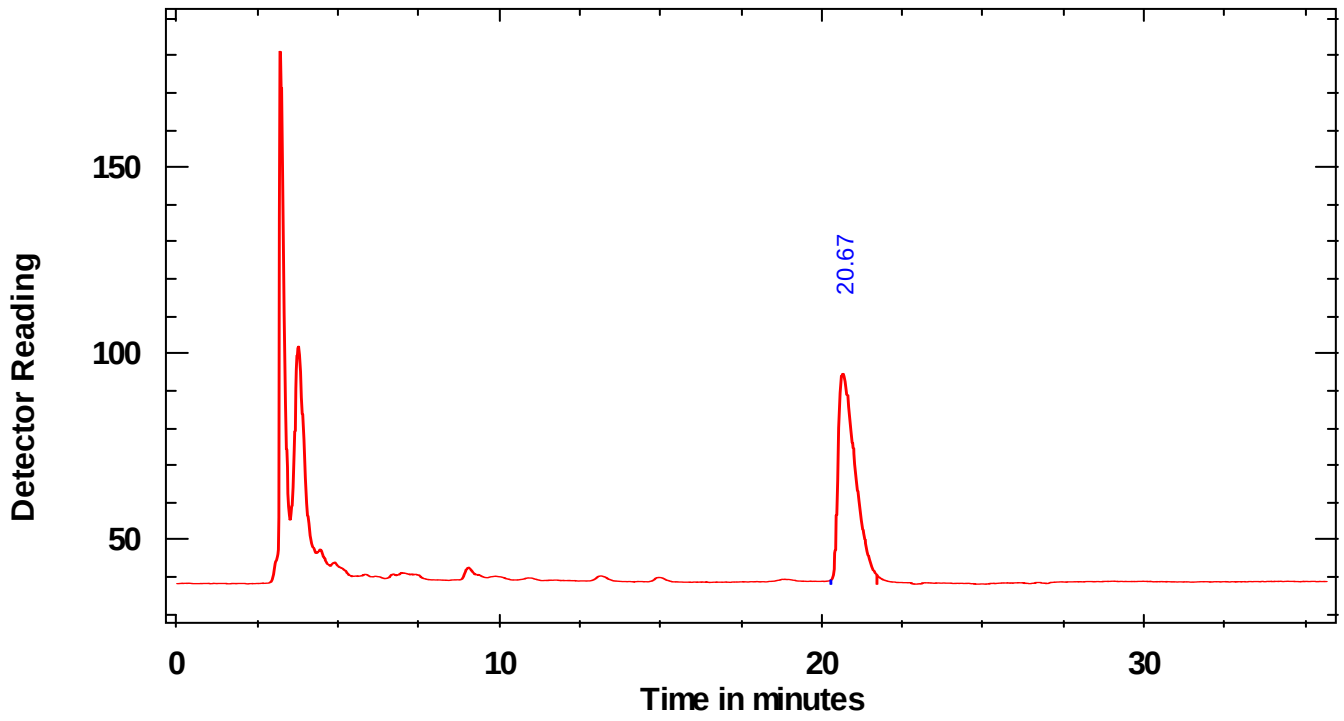
Fig S101. HPLC analysis of 5a obtained (Table 1, entry 11).

Chromatogram Report

First line of organization's address
Second line of organization's address

ryn-2-119 - col IA 20% EA/Hex

Report produced on 2008/11/16 at 上午 12:21:30 by Put your name here



2008/10/18 ¤U¤È 03:07:12 Flow set to 1.00 at 0.00 minutes
2008/10/18 ¤U¤È 03:42:57 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	20.29	21.72	1975	100.0	94.23	20.67	Baseline	

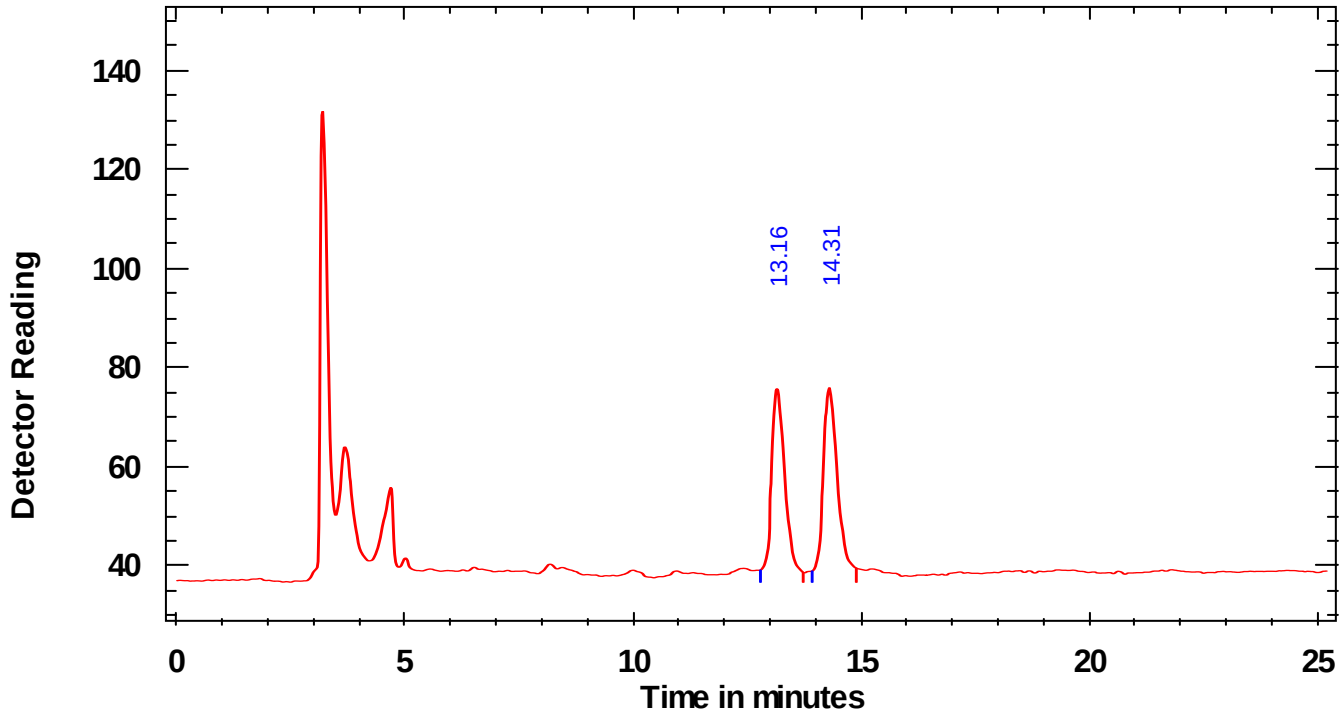
Fig S102. HPLC analysis of the racemic 5a (Table 1, entry 18).
(For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

ryn-2-117 racemate 3 col-IA 22% EA/ Hex blank

Report produced on 2008/11/16 at 上午 12:00:38 by Put your name here



2008/11/15 ¤U¤È 02:37:55 Flow set to 1.00 at 0.00 minutes
2008/11/15 ¤U¤È 03:03:12 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	12.80	13.73	718	48.7	75.66	13.16	Baseline	
2	13.93	14.90	756	51.3	75.87	14.31	Baseline	

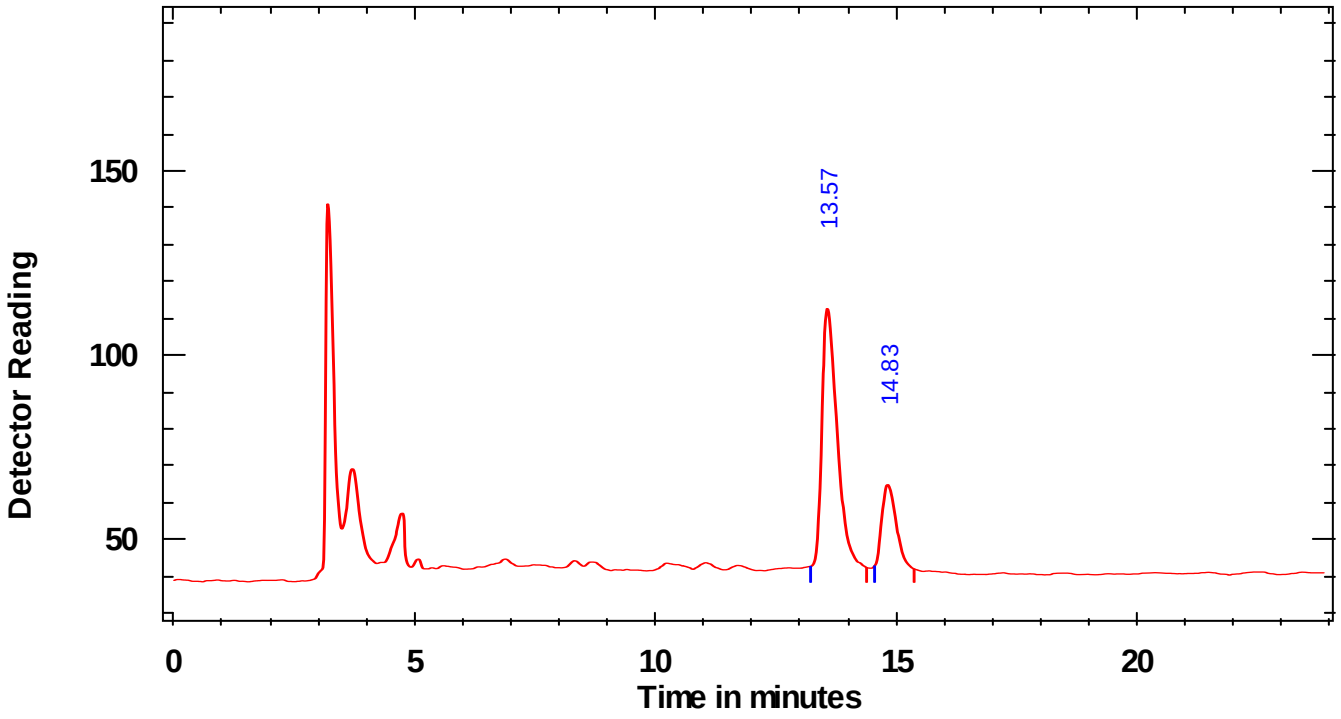
Fig S103. HPLC analysis of 5a obtained (Table 1, entry 18).

Chromatogram Report

First line of organization's address
Second line of organization's address

ryn-2-125-D chiral col-IA 22% EA/ Hex blank

Report produced on 2008/11/16 at 上午 12:02:16 by Put your name here



2008/11/15 ¤U¤È 03:05:19 Flow set to 1.00 at 0.03 minutes
2008/11/15 ¤U¤È 03:29:12 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	13.22	14.39	1534	77.0	112.60	13.57	Baseline	
2	14.55	15.37	458	23.0	64.82	14.83	Baseline	

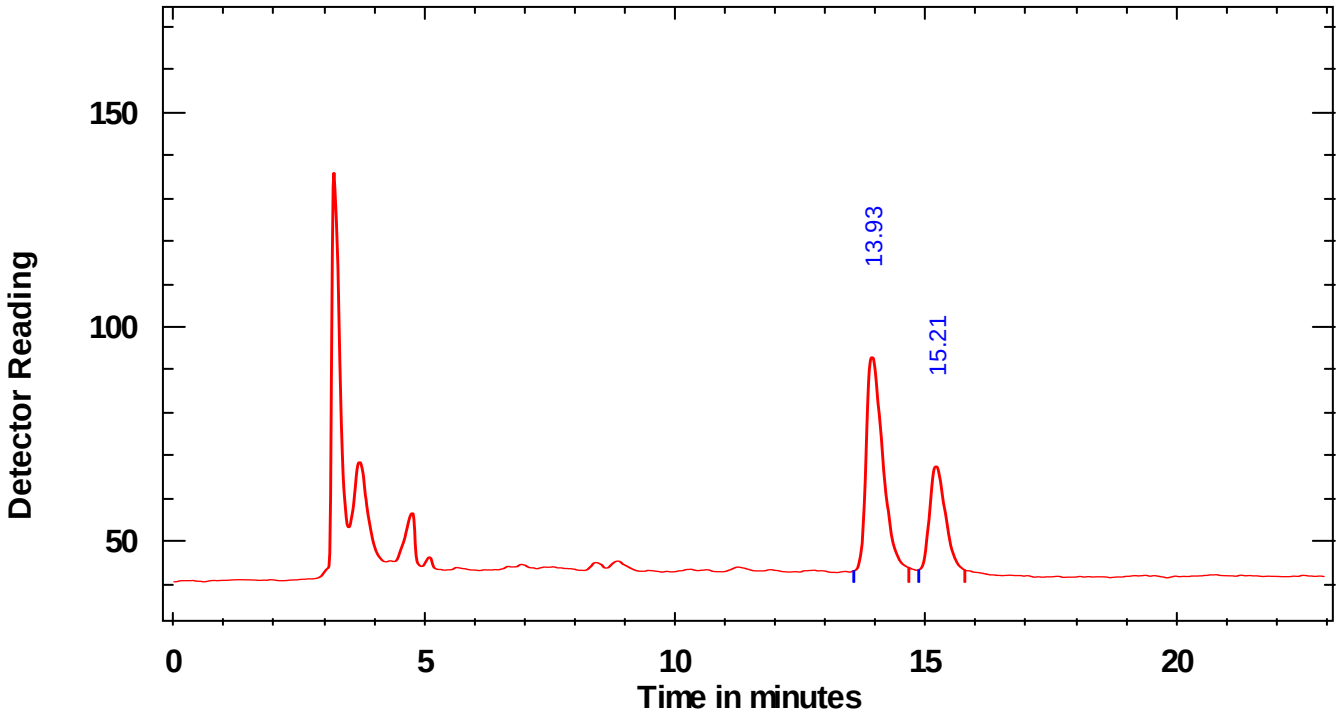
Fig S104. HPLC analysis of the mixture of racemic and chiral 5a obtained (Table 1, entry 18). (For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

ryn-2-117+ryn-2-125-D co-inj col-IA 22% EA/ Hex

Report produced on 2008/11/16 at 上午 12:04:15 by Put your name here



2008/11/15 ¤U¤È 03:31:13 Flow set to 1.00 at 0.00 minutes
2008/11/15 ¤U¤È 03:54:13 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	13.57	14.67	1123	68.2	92.99	13.93	Baseline	
2	14.86	15.78	523	31.8	67.52	15.21	Baseline	

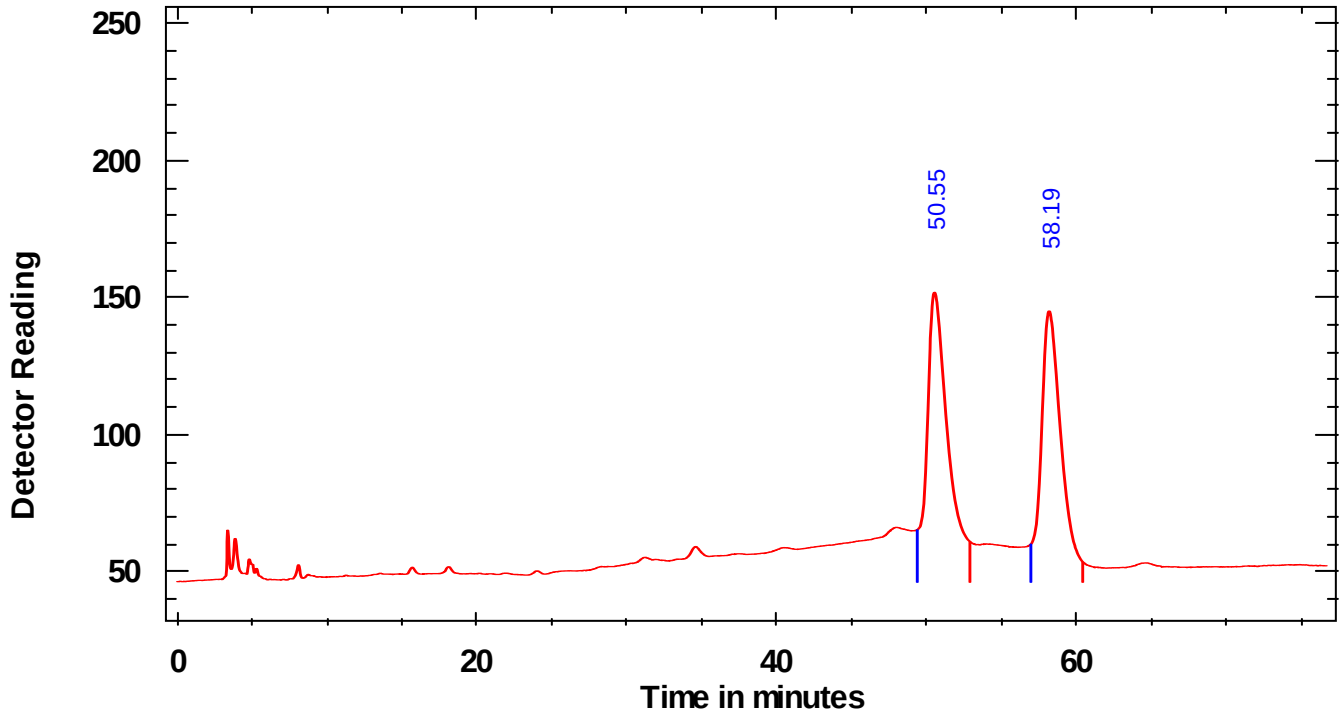
Fig S105. HPLC analysis of the racemic 5b (Table 2, entry 2).
(For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

ryn-126 racemate IA 20% ea/hex 1ml/min

Report produced on 2009/1/22 at 下午 04:22:36 by Put your name here



2009/1/22 ¤U¤È 01:37:08 Flow set to 1.00 at 0.00 minutes
2009/1/22 ¤U¤È 02:53:53 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	49.38	52.89	6875	49.2	151.90	50.55	Baseline	
2	56.96	60.42	7098	50.8	145.08	58.19	Baseline	

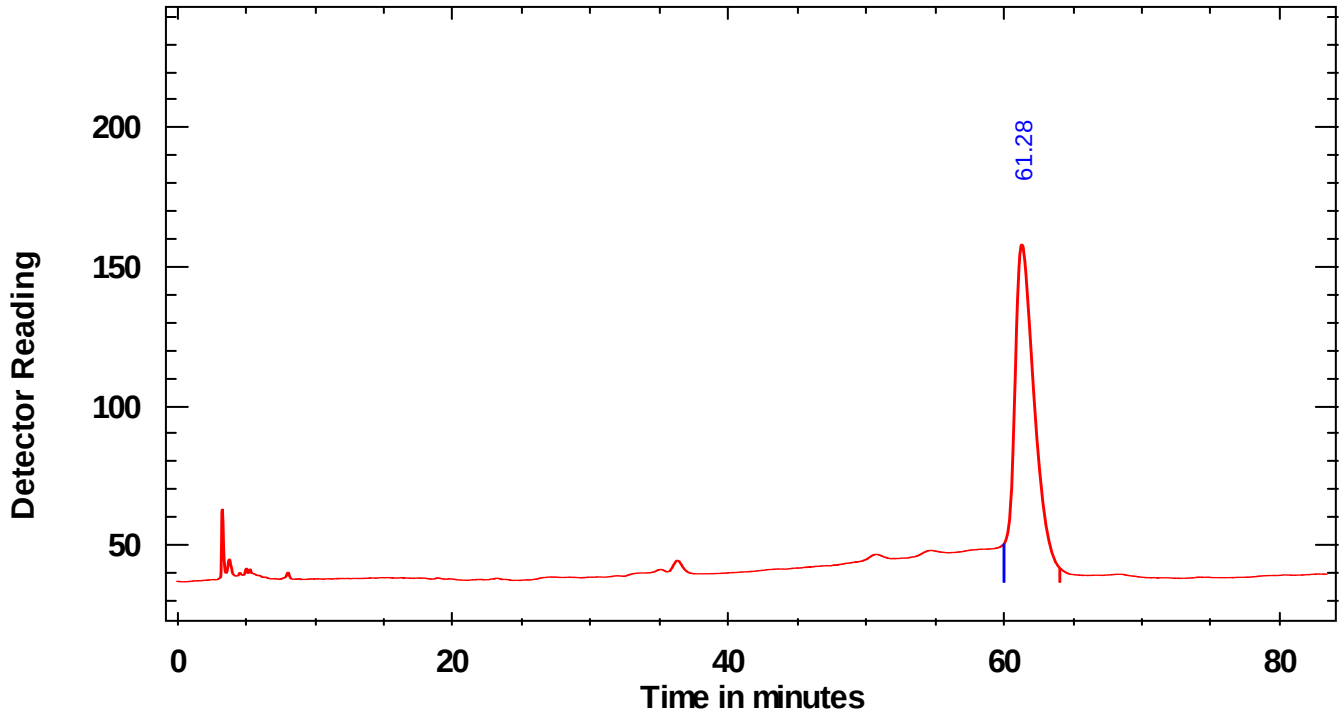
Fig S106. HPLC analysis of 5b obtained (Table 2, entry 2).

Chromatogram Report

First line of organization's address
Second line of organization's address

ryn-122 chiral IA 20% ea/hex 1ml/min

Report produced on 2009/1/22 at 下午 04:24:18 by Put your name here



2009/1/22 ¤U¤È 02:56:22 Flow set to 1.00 at 0.01 minutes
2009/1/22 ¤U¤È 04:19:49 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	59.98	64.03	10203	100.0	158.08	61.28	Baseline	

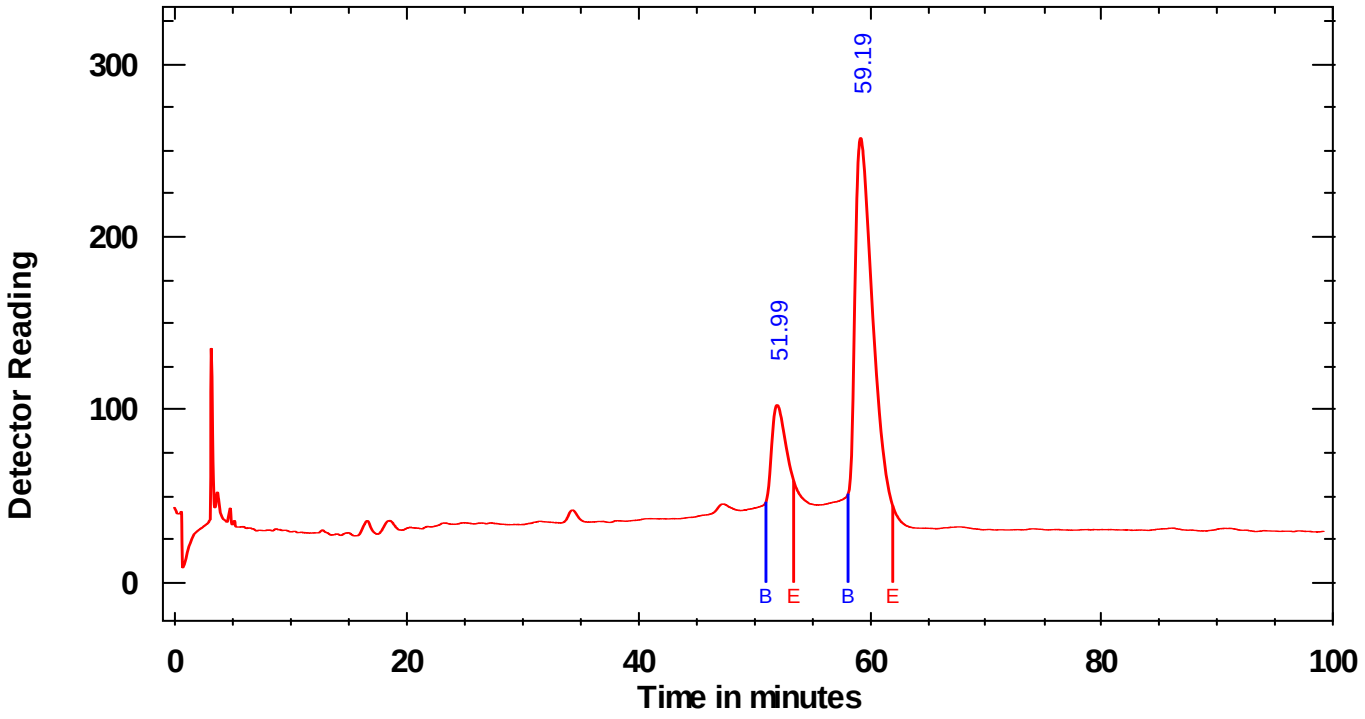
Fig S107. HPLC analysis of the mixture of racemic and chiral 5b obtained (Table 2, entry 2) (For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

ryn-2-122 +ryn-2-126 co inj col-IA 20% EA/ Hex

Report produced on 2008/11/16 at 上午 12:14:56 by Put your name here



2008/11/15 ¤U¤È 07:17:54 Flow set to 1.00 at 0.01 minutes

2008/11/15 ¤U¤È 08:57:04 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	51.02	53.42	3863	15.5	102.75	51.99	Baseline	
2	58.11	61.95	21082	84.5	257.49	59.19	Baseline	

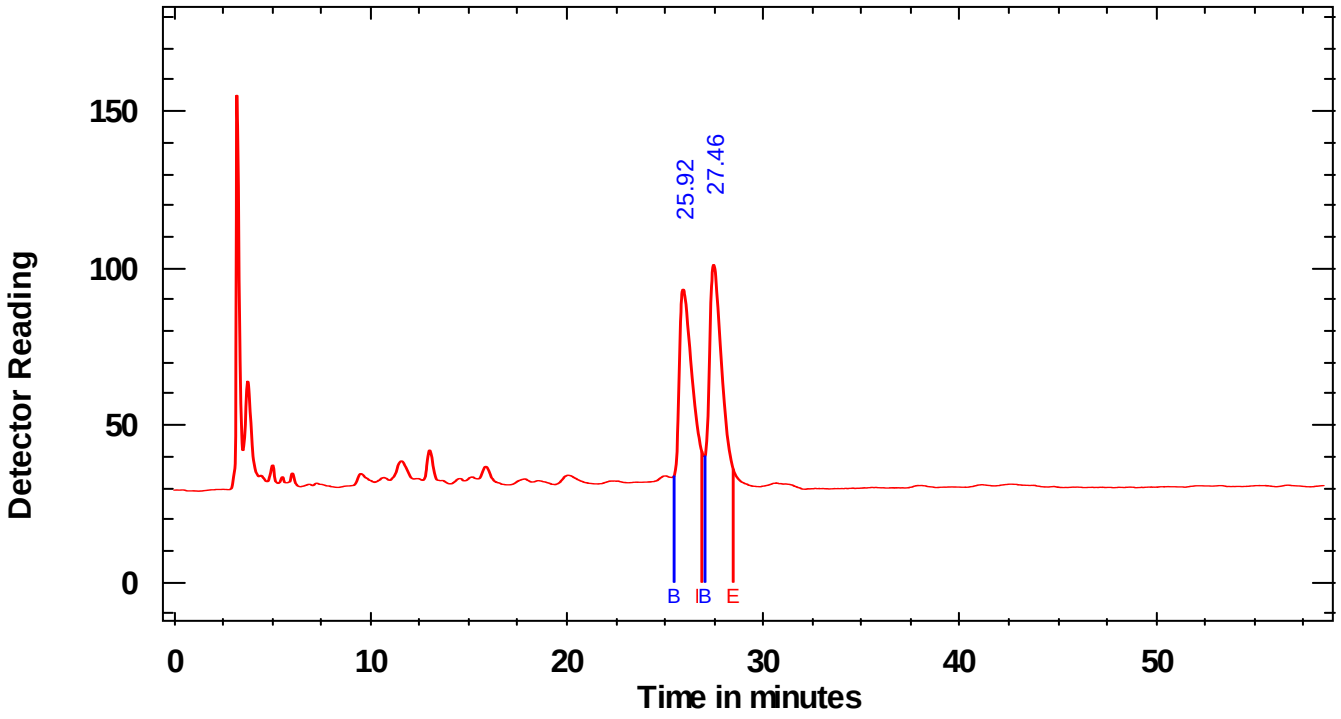
Fig S108. HPLC analysis of the racemic 5c (Table 2, entry 3).
(For comparison)

First line of organization's address
Second line of organization's address

Chromatogram Report

ryn-2-128 racemate col-IA 20% EA/ Hex

Report produced on 2008/11/16 at 上午 12:16:03 by Put your name here



2008/11/15 ¤U¤È 08:59:15 Flow set to 1.00 at 0.00 minutes
2008/11/15 ¤U¤È 09:57:51 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	25.46	26.87	2266	48.2	93.31	25.92	Baseline	
2	27.04	28.46	2436	51.8	101.15	27.46	Baseline	

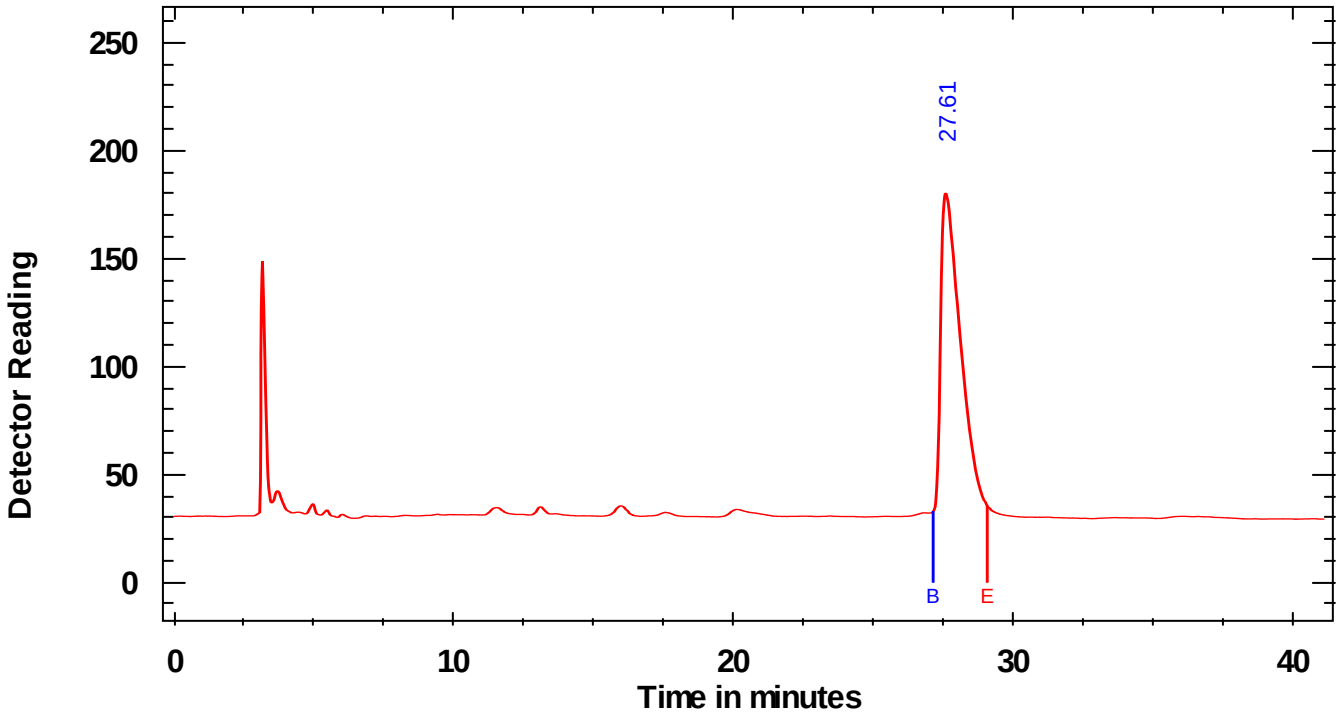
Fig S109. HPLC analysis of 5c obtained (Table 2, entry 3).

Chromatogram Report

First line of organization's address
Second line of organization's address

ryn-2-127 chiral col-IA 20% EA/ Hex

Report produced on 2008/11/16 at 上午 12:17:23 by Put your name here



2008/11/15 ¤U¤È 09:59:46 Flow set to 1.00 at 0.01 minutes
2008/11/15 ¤U¤È 10:40:57 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	27.17	29.10	7089	100.0	180.17	27.61	Baseline	

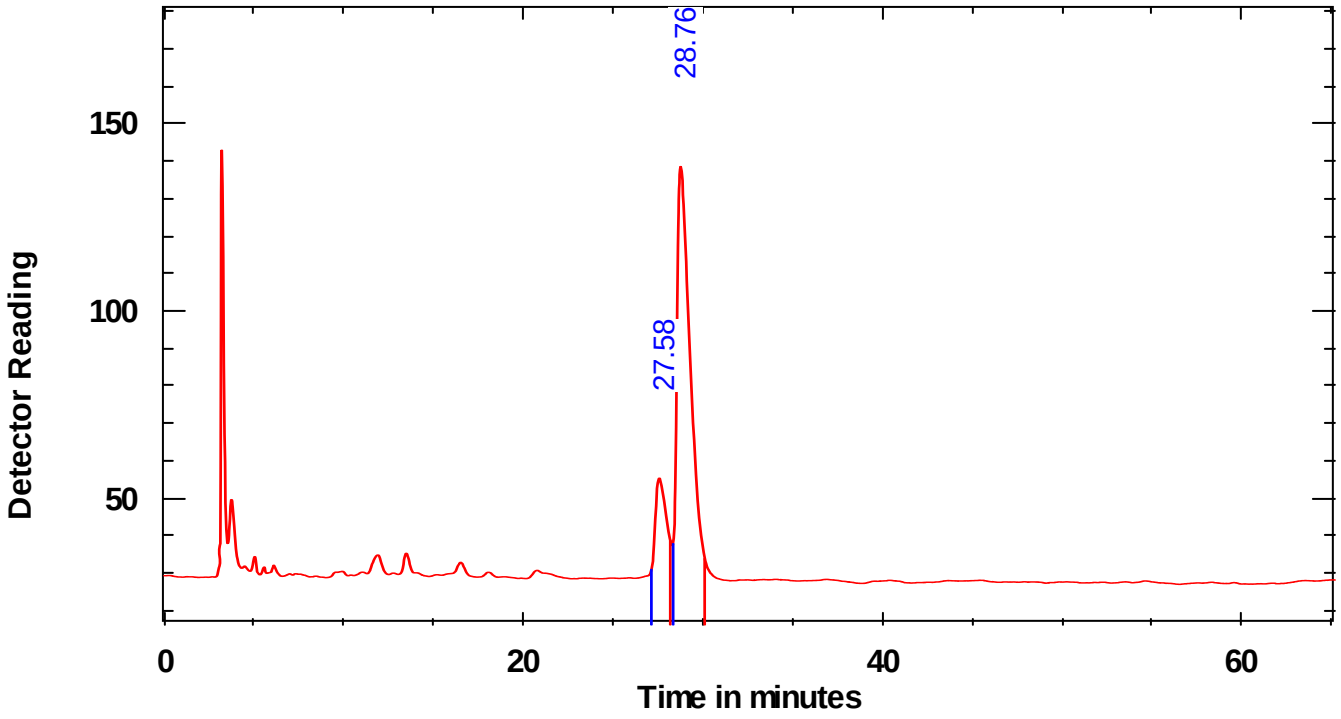
Fig S110. HPLC analysis of the mixture of racemic and chiral 5c obtained (Table 2, entry 3) (For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

ryn-2-127+ryn-2-128 co inj col-IA 20% EA/ Hex

Report produced on 2008/11/16 at 上午 12:18:31 by Put your name here



2008/11/15 ¤U¤È 10:43:29 Flow set to 1.00 at 0.03 minutes
2008/11/15 ¤U¤È 11:49:51 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	27.14	28.19	710	12.9	55.31	27.58	Baseline	
2	28.35	30.11	4777	87.1	138.56	28.76	Baseline	

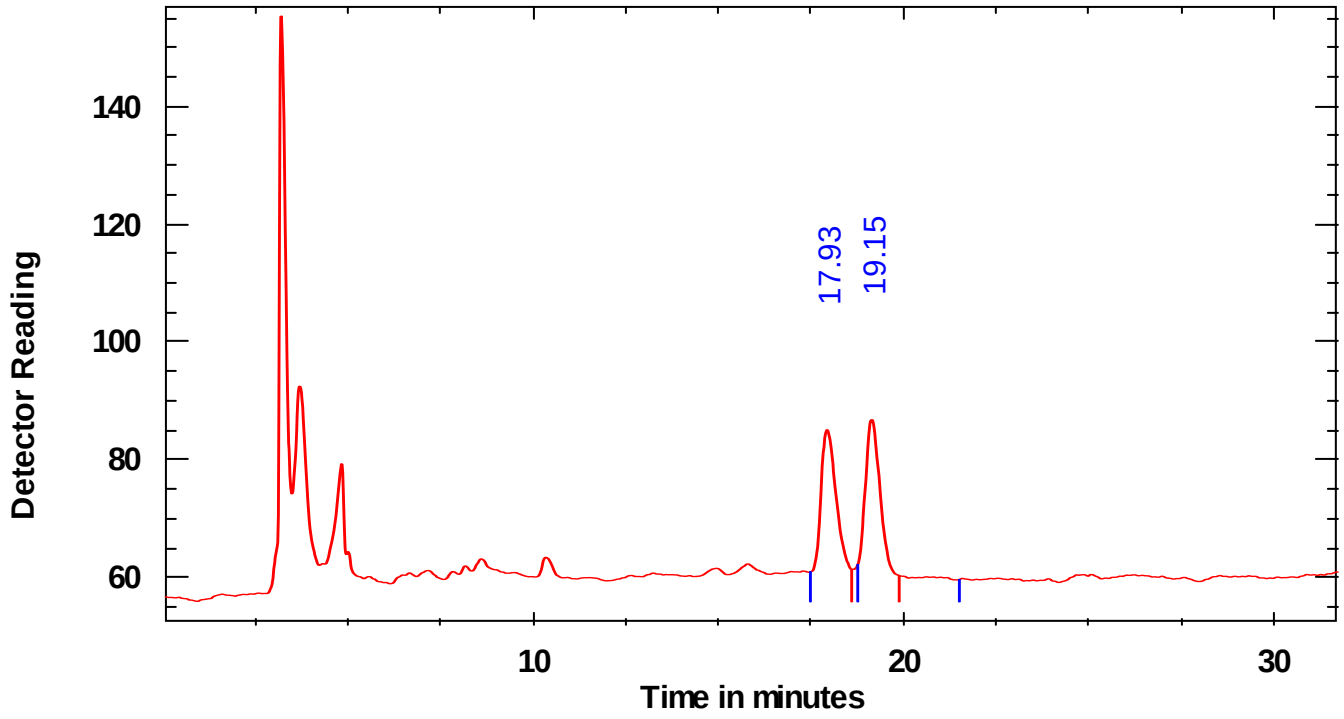
Fig S111. HPLC analysis of the racemic 5d (Table 2, entry 4).
(For comparison)

First line of organization's address
Second line of organization's address

Chromatogram Report

RYN-2-131 racemate col IA 20% Ea/Hex

Report produced on 2008/11/17 at 下午 11:34:12 by Put your name here



2008/11/17 ¤U¤È 12:10:18 Flow set to 1.00 at 0.00 minutes
2008/11/17 ¤U¤È 12:49:18 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	17.49	18.60	657	49.7	85.06	17.93	Baseline	
2	18.77	19.88	666	50.3	86.75	19.15	Baseline	

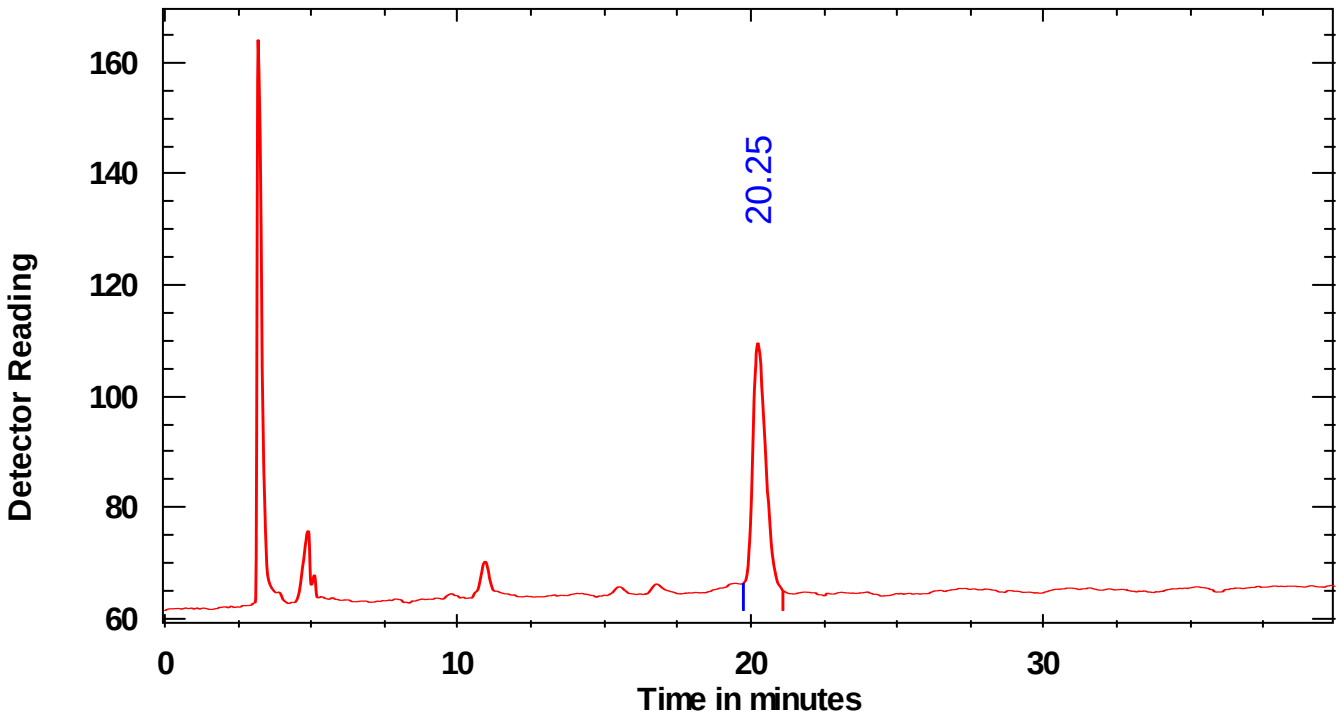
Fig S112. HPLC analysis of 5d obtained (Table 2, entry 4).

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-129 chiral col IA 20% Ea/Hex

Report produced on 2008/11/17 at 下午 11:35:58 by Put your name here



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2008/11/17 ¤U¤È 01:57:19 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	19.75	21.10	1316	100.0	109.57	20.25	Baseline	

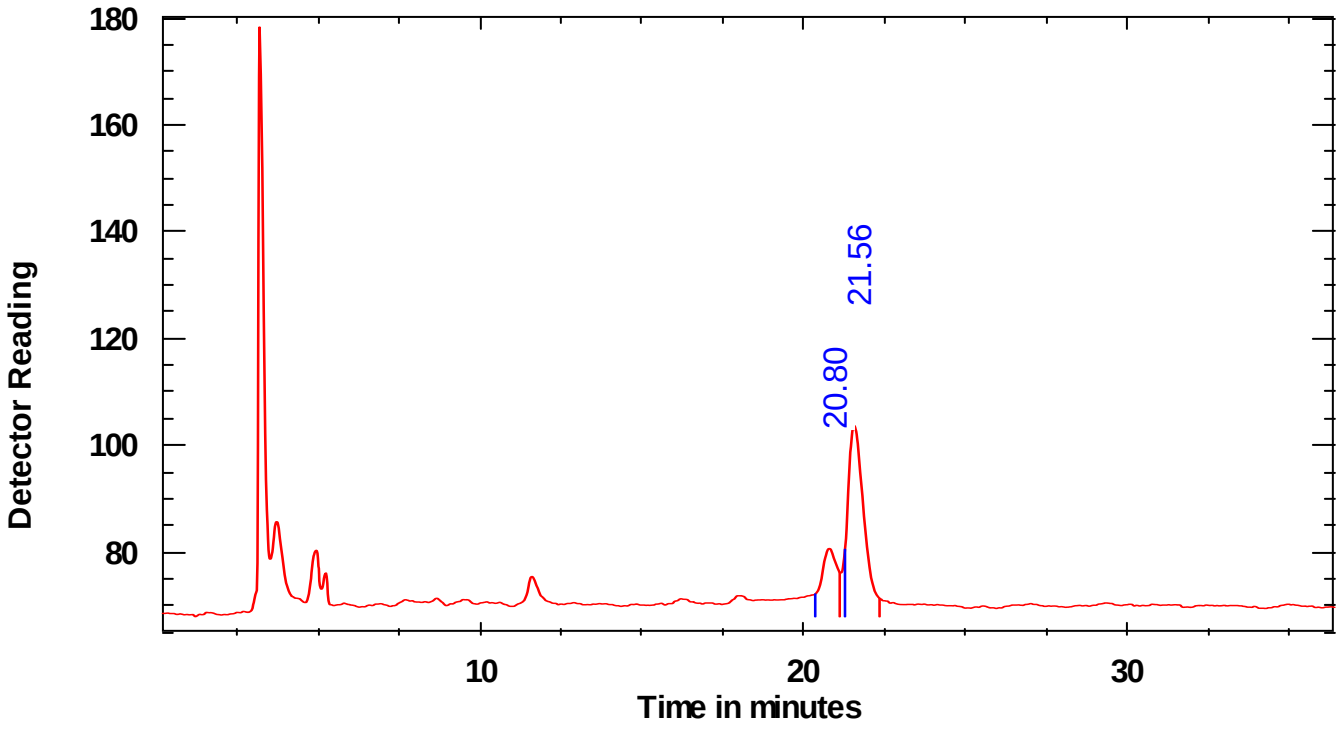
Fig S113. HPLC analysis of the mixture of racemic and chiral 5d obtained (Table 2, entry 4) (For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-129 + RYN-2-131 co inj col IA 20% Ea/Hex

Report produced on 2008/11/17 at 下午 11:37:35 by Put your name here



2008/11/17 ¤U¤È 02:00:51 Flow set to 1.00 at 0.00 minutes
2008/11/17 ¤U¤È 02:40:20 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	20.36	21.11	138	16.3	80.64	20.80	Baseline	
2	21.28	22.35	708	83.7	103.68	21.56	Baseline	

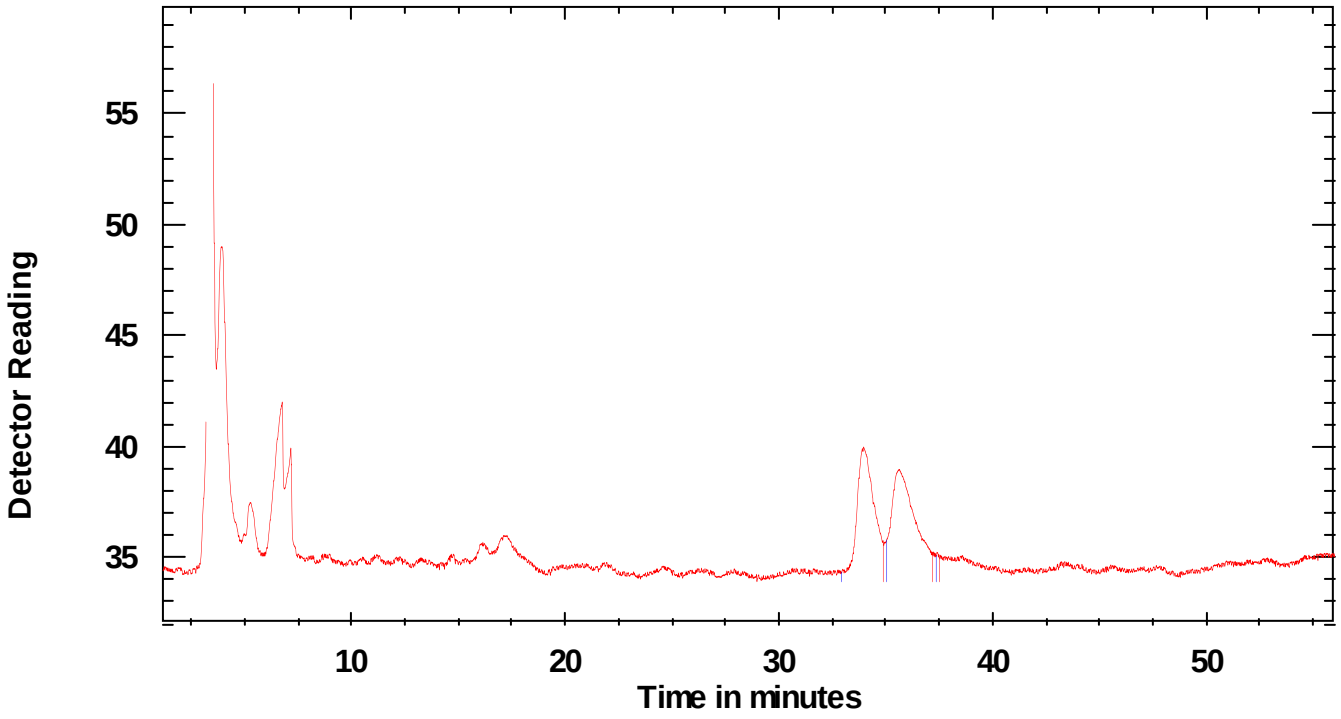
Fig S114. HPLC analysis of the racemic 5e (Table 2, entry 5).
(For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-132 racemate col IA 10% Ea/Hex

Report produced on 2008/11/20 at 下午 02:09:27 by Put your name here



2008/11/19 ¤U¤È 04:14:53 Flow set to 1.00 at 0.01 minutes
2008/11/19 ¤U¤È 05:12:27 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	32.93	34.88	221	52.6	39.89	33.98	Baseline	
2	35.04	37.18	198	47.2	38.95	35.63	Baseline	

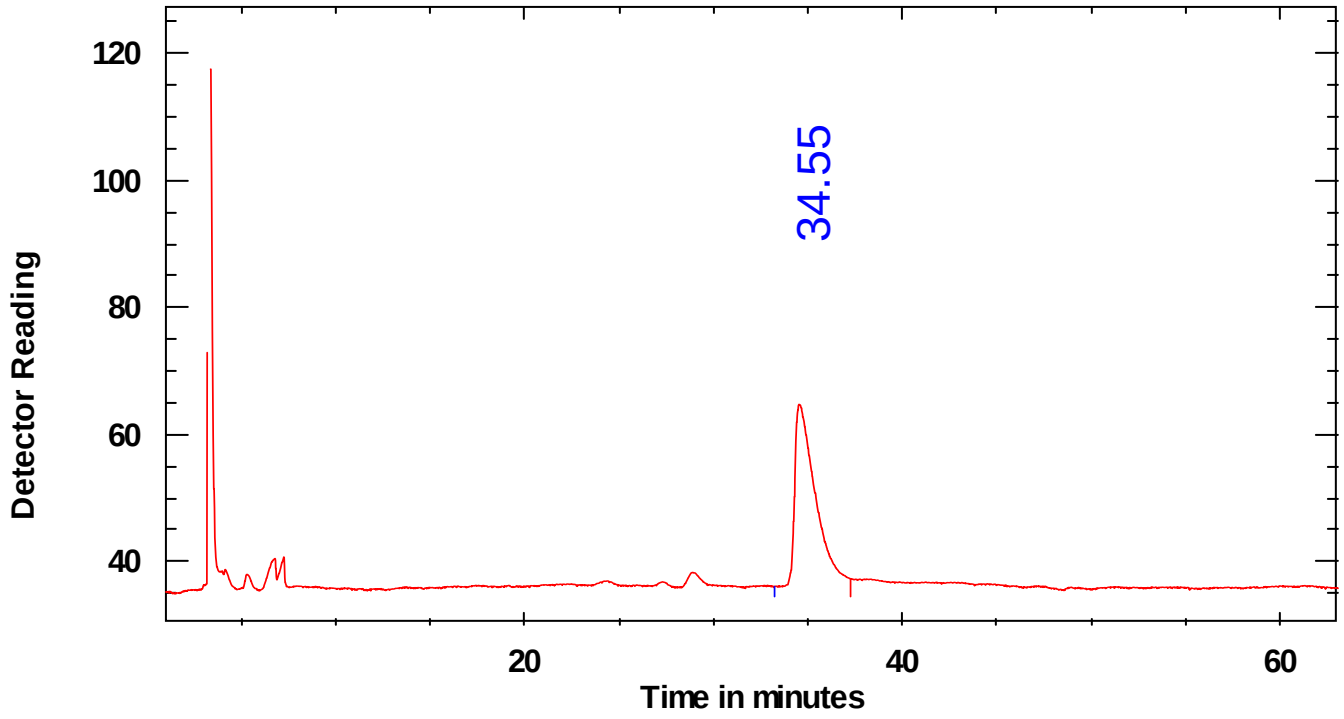
Fig S115. HPLC analysis of the chiral 5e obtained (Table 2, entry 5).

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-130 chiral col IA 10% Ea/Hex

Report produced on 2008/11/20 at 下午 02:10:37 by Put your name here



2008/11/19 ¤U¤È 05:14:50 Flow set to 1.00 at 0.01 minutes
2008/11/19 ¤U¤È 06:18:47 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	33.24	37.26	2035	100.0	64.69	34.55	Baseline	

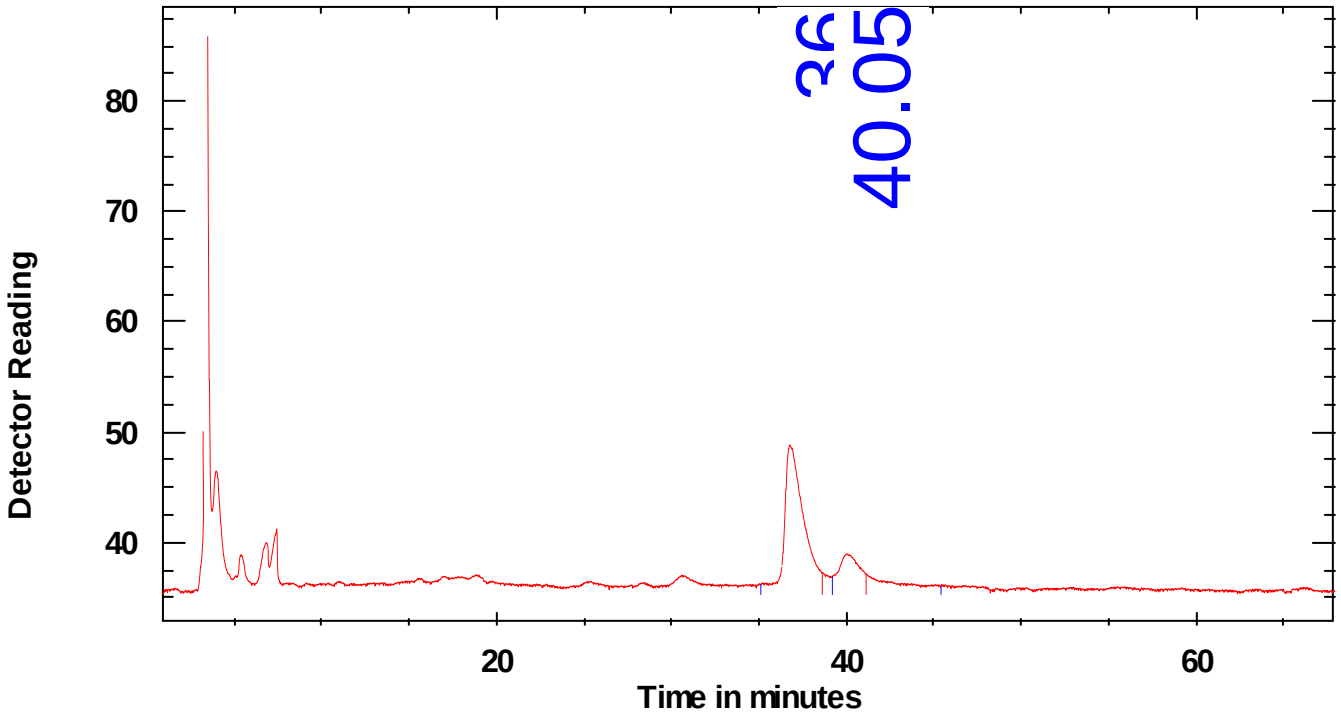
Fig S116. HPLC analysis of the mixture of racemic and chiral 5e obtained, (Table 2, entry 5) (For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-130 + 132 co injection col IA 10% Ea/Hex

Report produced on 2008/11/20 at 下午 02:12:44 by Put your name here



2008/11/19 ¤U¤È 06:20:31 Flow set to 1.00 at 0.00 minutes
2008/11/19 ¤U¤È 07:29:38 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	35.11	38.62	766	87.0	48.78	36.78	Baseline	
2	39.19	41.13	114	13.0	38.94	40.05	Baseline	

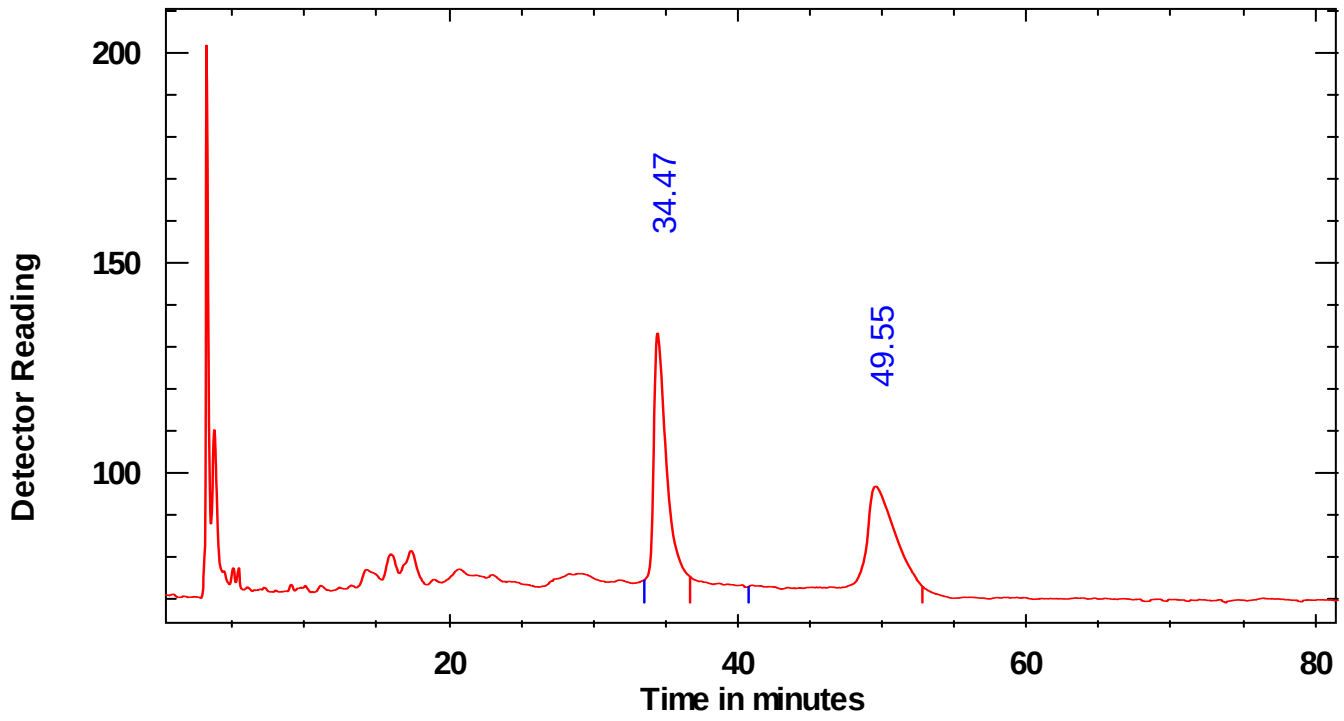
Fig S117. HPLC analysis of racemic 5f (Table 2, entry 6)
(For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-136 racemate 2 col IA 20% Ea/Hex

Report produced on 2008/11/17 at 下午 11:45:00 by Put your name here



2008/11/17 ¤U¤È 04:43:12 Flow set to 1.00 at 0.00 minutes
2008/11/17 ¤U¤È 06:05:21 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	33.53	36.70	3423	53.1	133.20	34.47	Baseline	
2	40.75	52.80	3026	46.9	96.82	49.55	Baseline	

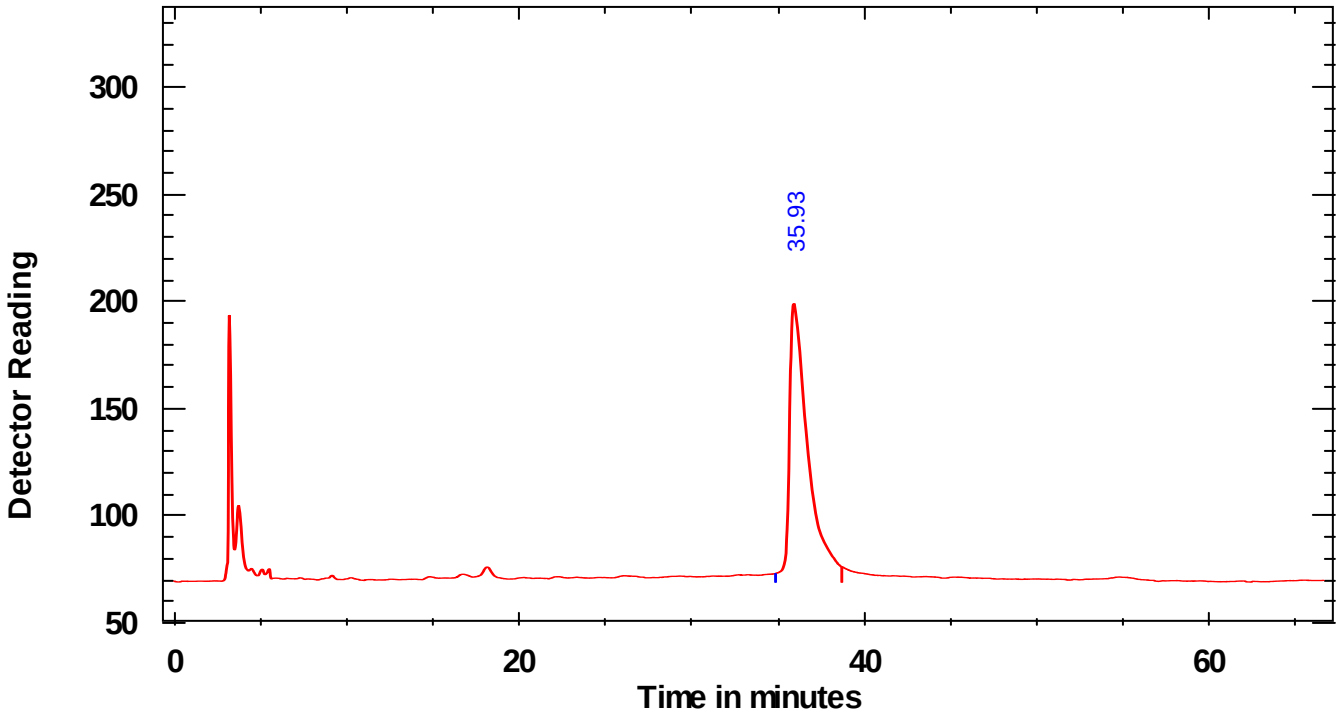
Fig S118. HPLC analysis of chiral 5f obtained (Table 2, entry 6)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-133 chiral 2 col IA 20% Ea/Hex

Report produced on 2008/11/17 at 下午 11:46:39 by Put your name here



2008/11/17 ¤U¤È 06:08:00 Flow set to 1.00 at 0.01 minutes
2008/11/17 ¤U¤È 07:14:40 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	34.85	38.69	8587	100.0	198.94	35.93	Baseline	

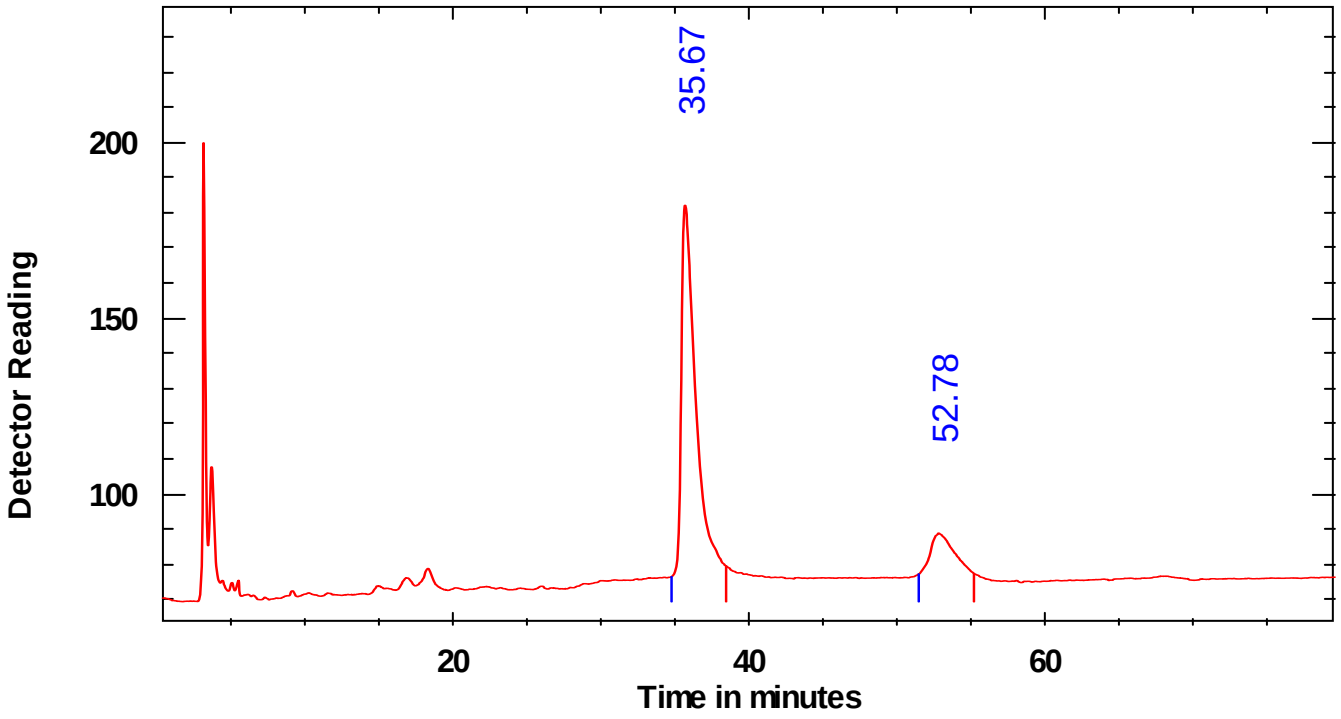
Fig S119. HPLC analysis of the mixture of racemic and chiral 5f obtained (Table 2, entry 6) (For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-133 + RYN-2-136 co inj col IA 20% Ea/Hex

Report produced on 2008/11/17 at 下午 11:50:27 by Put your name here



2008/11/17 ¤U¤È 07:16:45 Flow set to 1.00 at 0.01 minutes
2008/11/17 ¤U¤È 08:46:06 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	34.76	38.44	6831	84.7	182.09	35.67	Baseline	
2	51.45	55.17	1238	15.3	88.84	52.78	Baseline	

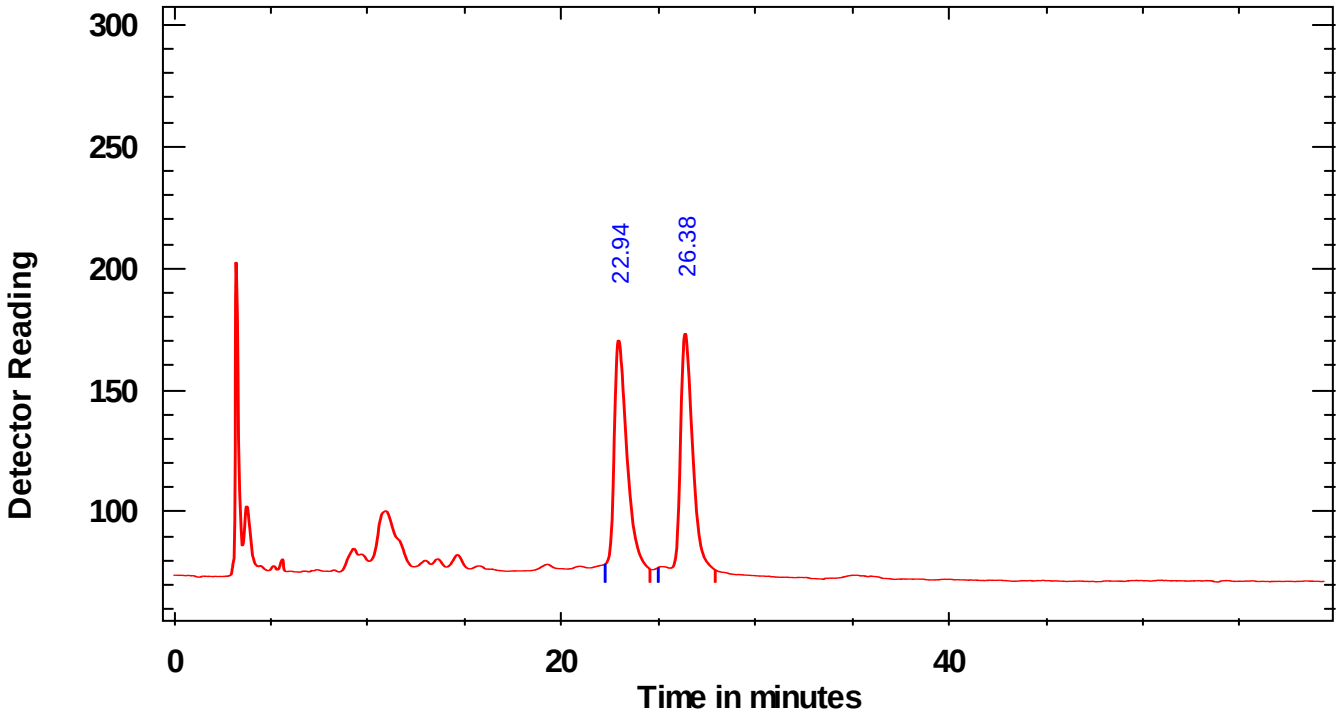
Fig S120. HPLC analysis of racemic 5g (Table 2, entry 7)
(For comparison)

First line of organization's address
Second line of organization's address

Chromatogram Report

RYN-2-139 racemate col IA 20% Ea/Hex

Report produced on 2008/11/20 at 下午 02:49:39 by Put your name here



2008/11/17 ¤U¤È 08:48:14 Flow set to 1.00 at 0.00 minutes
2008/11/17 ¤U¤È 09:47:36 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	22.25	24.56	4155	50.3	170.42	22.94	Baseline	
2	24.99	27.92	4111	49.7	173.18	26.38	Baseline	

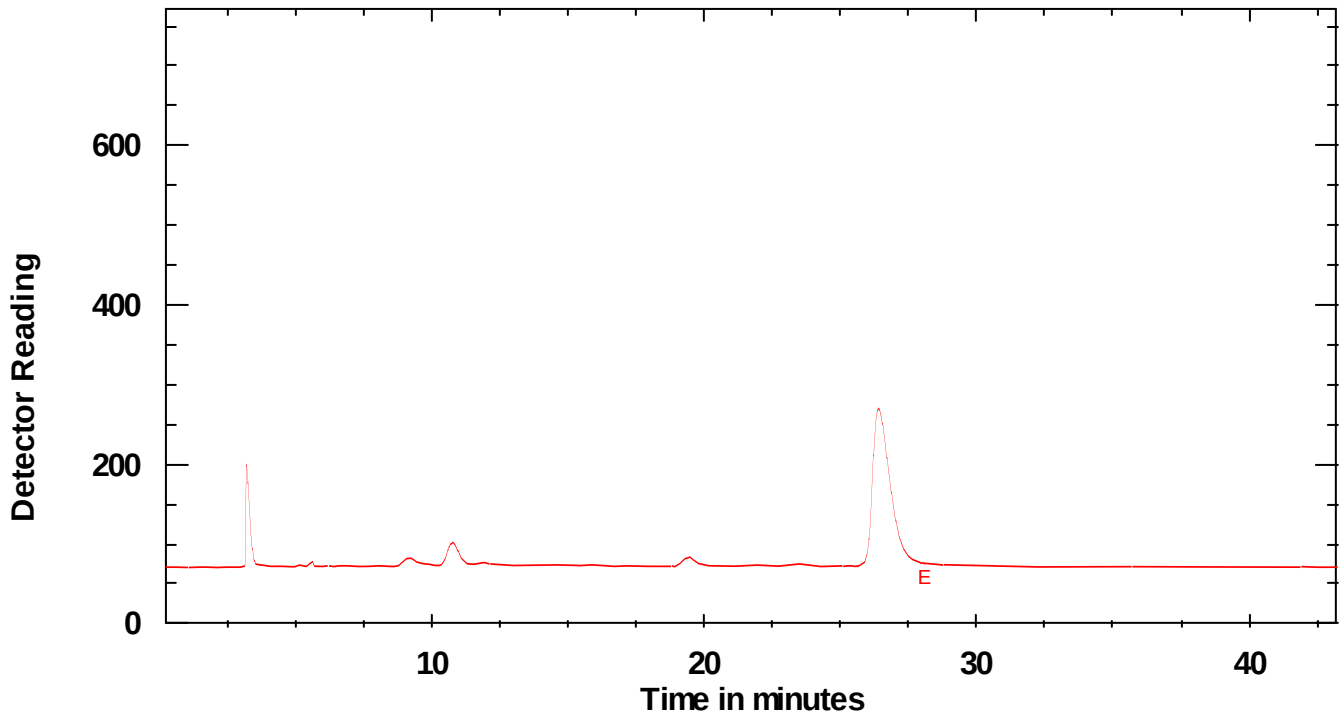
Fig S121. HPLC analysis of chiral 5g obtained (Table 2, entry 7)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-138 chiral col IA 20% Ea/Hex

Report produced on 2008/11/17 at 下午 10:35:07 by Put your name here



2008/11/17 ¤U¤È 09:50:39 Flow set to 1.00 at 0.00 minutes
2008/11/17 ¤U¤È 10:33:58 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	25.63	28.09	8798	100.0	269.31	26.40	Baseline	

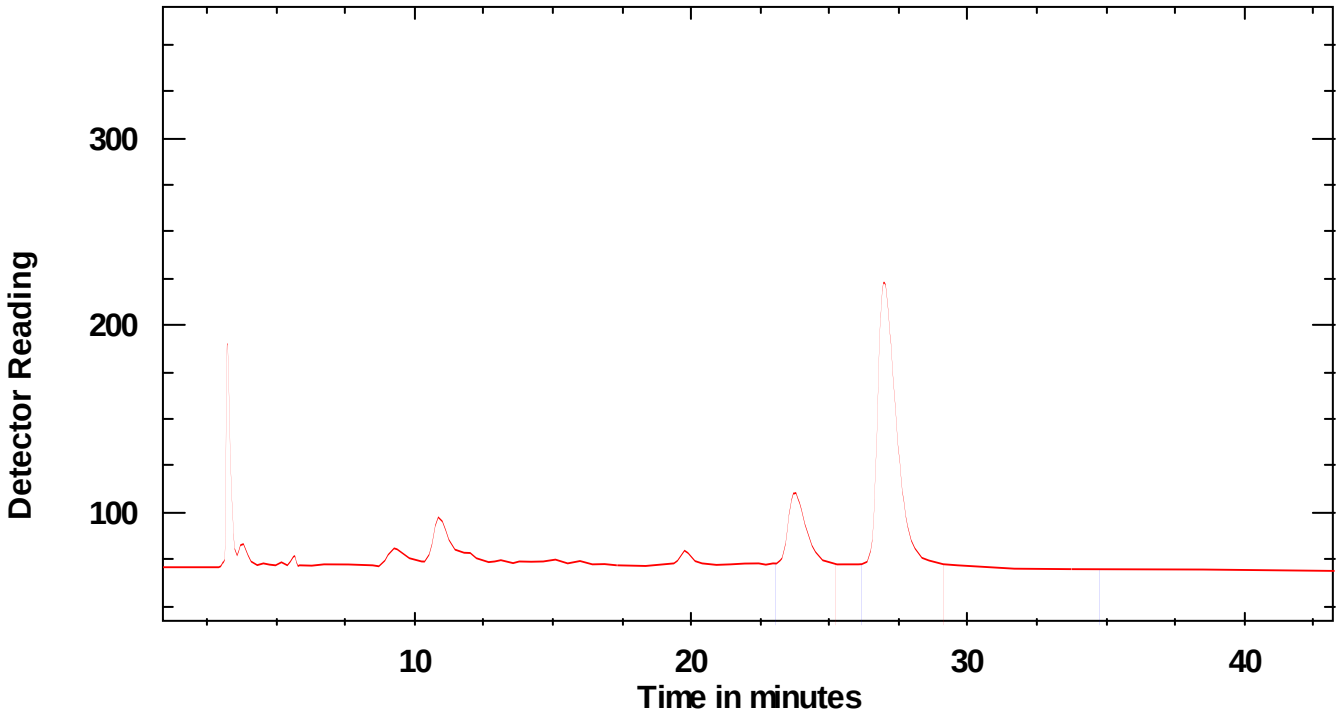
Fig S122. HPLC analysis of the mixture of racemic and chiral 5g obtained (Table 2, entry 7) (For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-138 + RYN-2-139 co inj col IA 20% Ea/Hex

Report produced on 2008/11/17 at 下午 11:25:31 by Put your name here



2008/11/17 ¤U¤È 10:40:01 Flow set to 1.00 at 0.00 minutes
2008/11/17 ¤U¤È 11:24:03 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	23.03	25.20	1699	19.5	110.35	23.74	Baseline	
2	26.15	29.12	7006	80.5	222.86	26.97	Baseline	

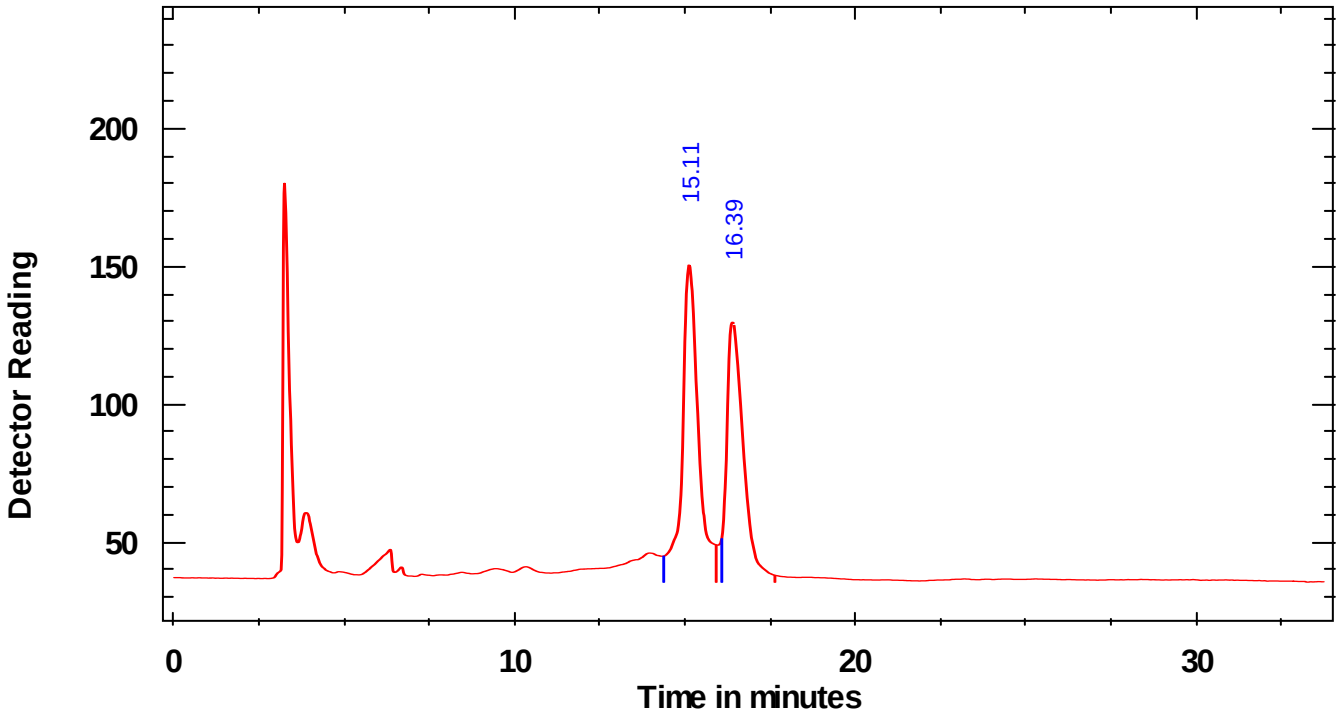
Fig S123. HPLC analysis of racemic 5h (Table 2, entry 8)
(For comparison)

First line of organization's address
Second line of organization's address

Chromatogram Report

RYN-2-143 racemate col IA 10% Ea/Hex

Report produced on 2008/11/20 at 下午 02:01:44 by Put your name here



2008/11/19 ¤U¤È 02:29:54 Flow set to 1.00 at 0.00 minutes
2008/11/19 ¤U¤È 03:03:42 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	14.37	15.91	2761	53.9	150.47	15.11	Baseline	
2	16.08	17.64	2362	46.1	129.75	16.39	Baseline	

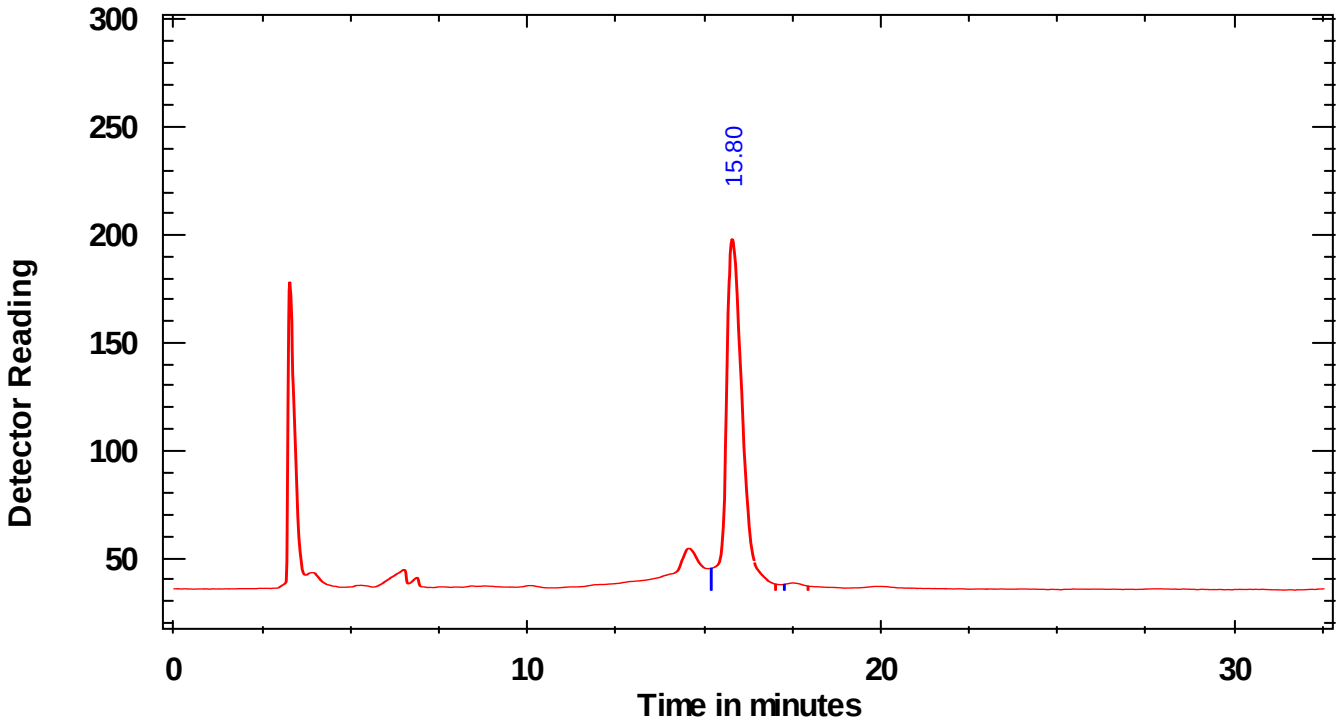
Chromatogram Report

First line of organization's address

Second line of organization's address

RYN-2-140 chiral col IA 10% Ea/Hex

Report produced on 2008/11/20 at 下午 02:03:47 by Put your name here



2008/11/19 ¤U¤È 03:05:33 Flow set to 1.00 at 0.03 minutes

2008/11/19 ¤U¤È 03:38:06 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	15.21	17.03	4515	99.5	198.15	15.80	Baseline	

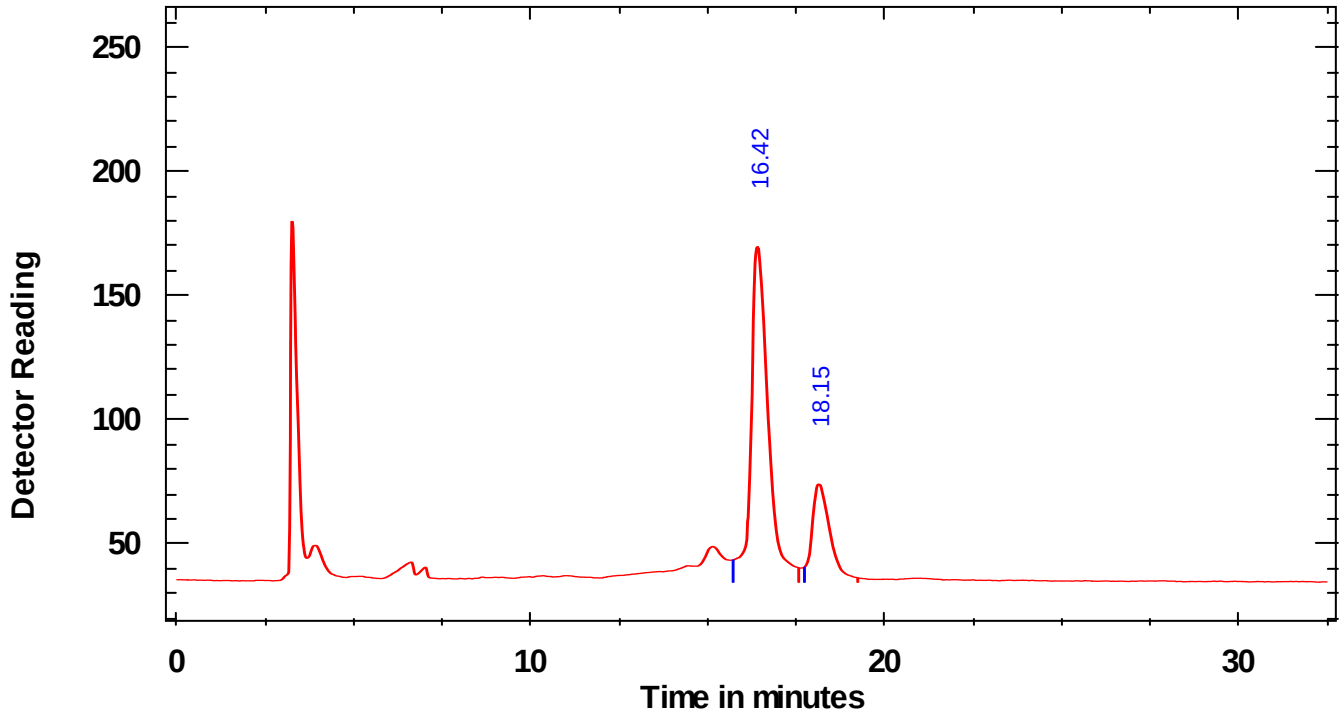
Fig S125. HPLC analysis of the mixture of racemic and chiral 5h obtained (Table 2, entry 8) (For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-140 + RYN-2-143 co inj col IA 10% Ea/Hex

Report produced on 2008/11/20 at 下午 02:05:01 by Put your name here



2008/11/19 ¤U¤È 03:40:05 Flow set to 1.00 at 0.00 minutes
2008/11/19 ¤U¤È 04:12:38 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	15.72	17.57	3768	77.9	169.61	16.42	Baseline	
2	17.74	19.24	1068	22.1	73.93	18.15	Baseline	

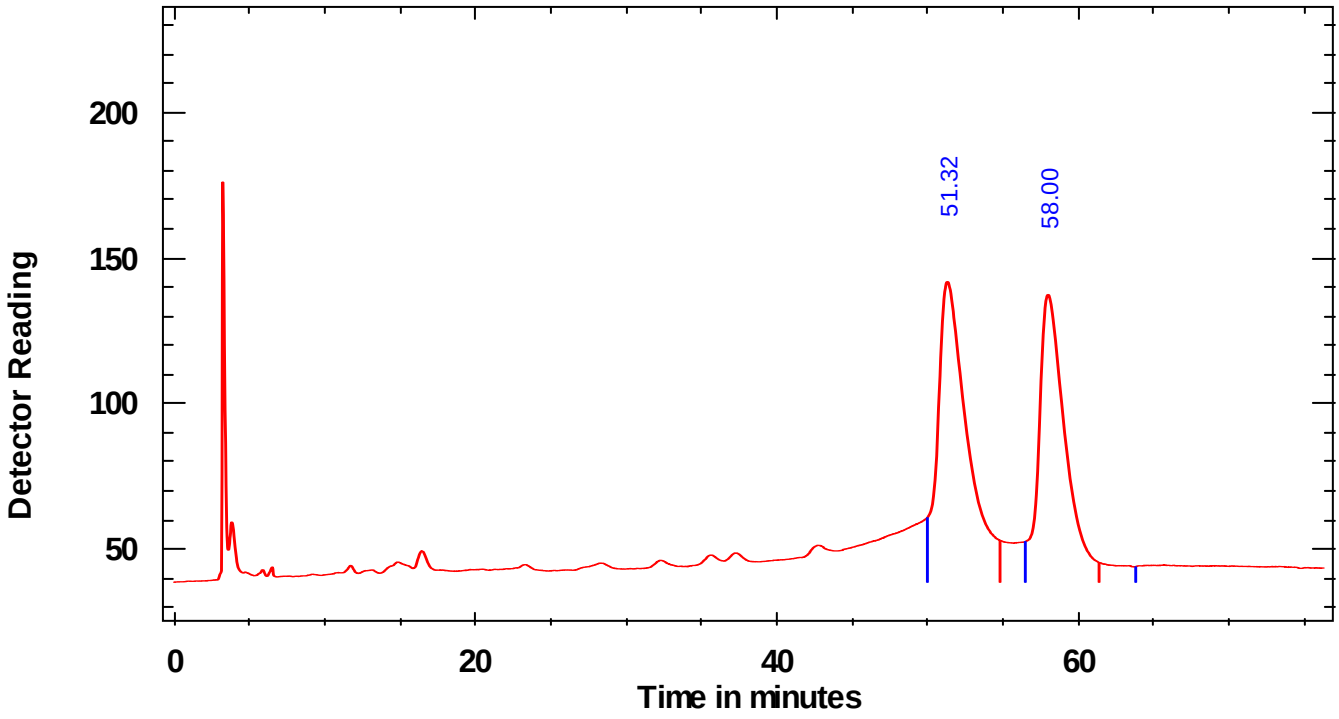
Fig S126. HPLC analysis of racemic 5i (Table 2, entry 9)
(For comparison)

First line of organization's address
Second line of organization's address

Chromatogram Report

RYN-2-144 racemate Col IA 15% Ea/Hex

Report produced on 2008/11/24 at 下午 05:56:34 by Put your name here



2008/11/24 ¤W¤È 11:29:28 Flow set to 1.00 at 0.01 minutes

2008/11/24 ¤U¤È 12:45:49 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	49.99	54.81	8855	49.4	141.88	51.32	Baseline	
2	56.49	61.39	9061	50.6	137.44	58.00	Baseline	

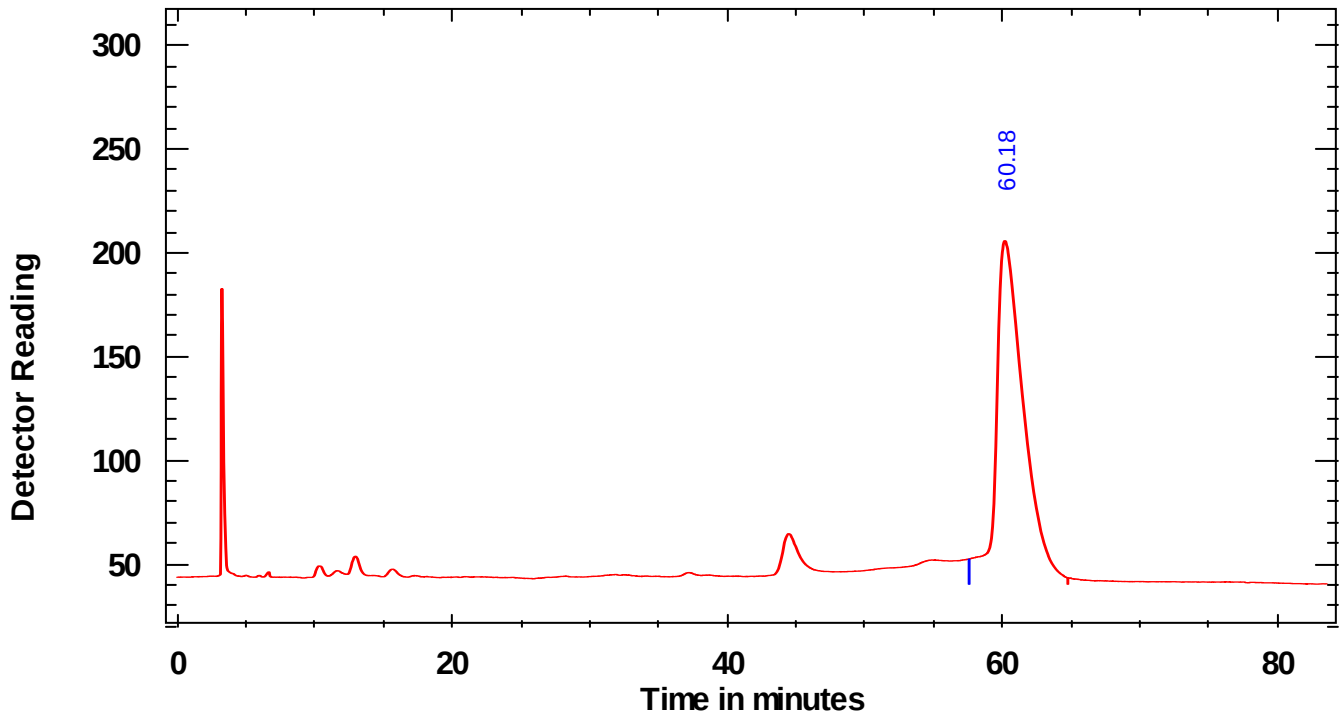
Fig S127. HPLC analysis of the chiral 5i obtained (Table 2, entry 9)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-141 chiral Col IA 15% Ea/Hex

Report produced on 2008/11/24 at 下午 05:59:34 by Put your name here



2008/11/24 ¤U¤È 12:47:01 Flow set to 1.00 at 0.00 minutes
2008/11/24 ¤U¤È 02:10:39 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	57.59	64.76	19950	100.0	205.82	60.18	Baseline	

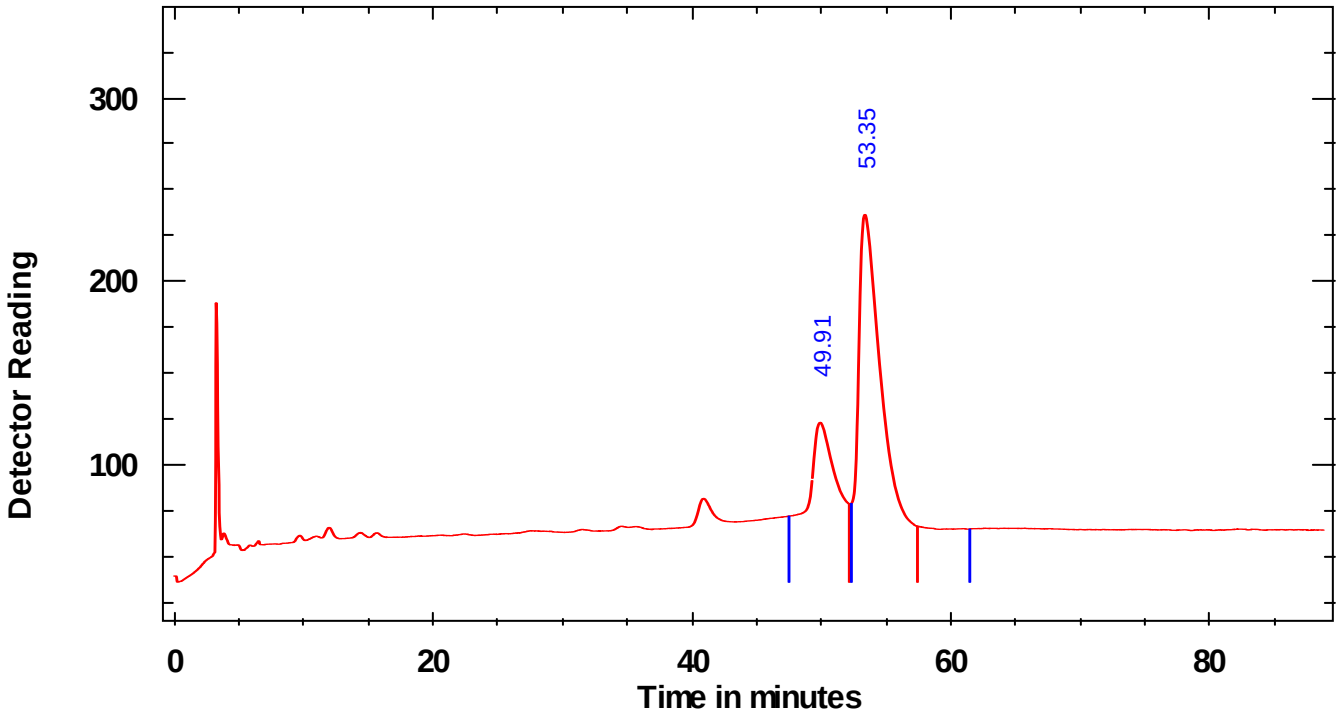
Fig S128. HPLC analysis of the mixture of racemic and chiral 5i obtained (Table 2, entry 9) (For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-141 RYN-2-144 co inj Col IA 15% Ea/Hex

Report produced on 2008/11/24 at 下午 06:00:40 by Put your name here



2008/11/24 ¤U¤È 02:18:50 Flow set to 1.00 at 0.03 minutes
2008/11/24 ¤U¤È 03:47:36 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	47.48	52.14	4336	20.4	123.18	49.91	Baseline	
2	52.30	57.41	16920	79.6	236.47	53.35	Baseline	

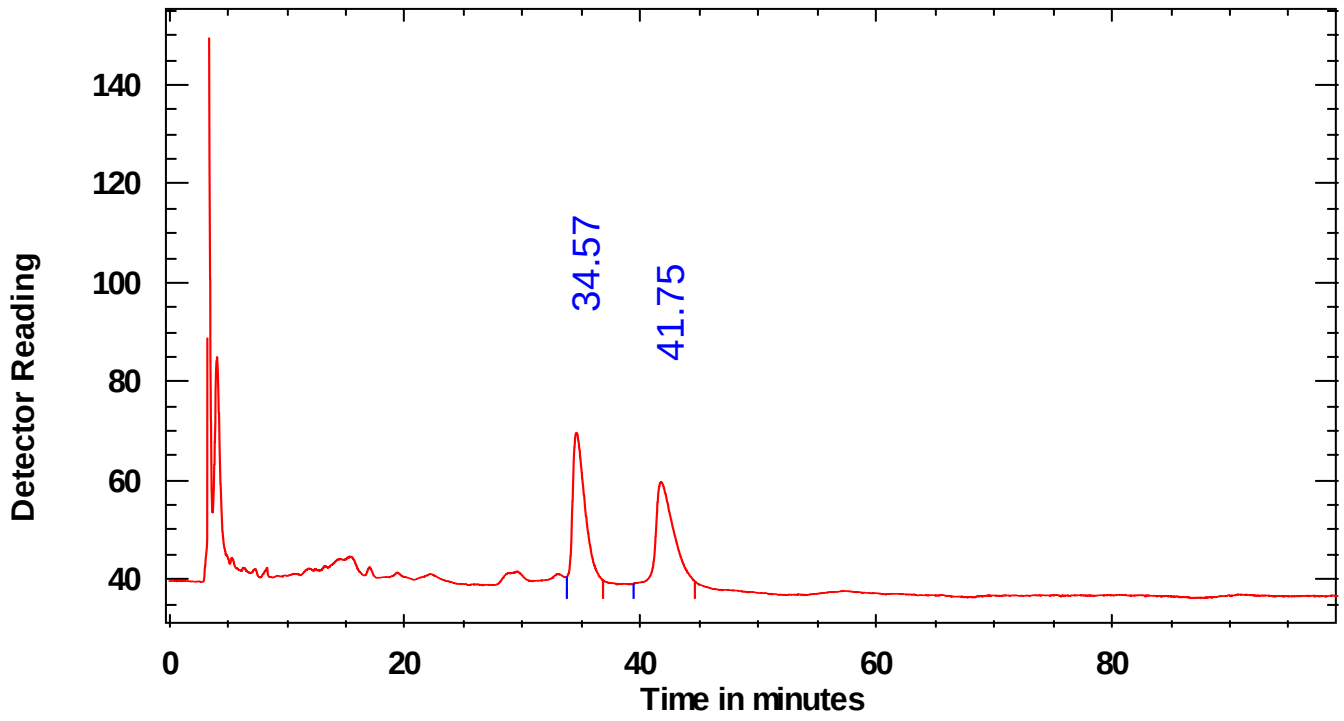
Fig S129. HPLC analysis of the racemic 5j obtained (For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-146 Racemate col IA 10% ea /hex

Report produced on 2008/11/28 at 下午 04:06:12 by Put your name here



2008/11/28 ¤U¤È 12:23:44 Flow set to 1.00 at 0.00 minutes

2008/11/28 ¤U¤È 02:09:07 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	33.75	36.82	2042	49.7	69.63	34.57	Baseline	
2	39.41	44.61	2069	50.3	59.61	41.75	Baseline	

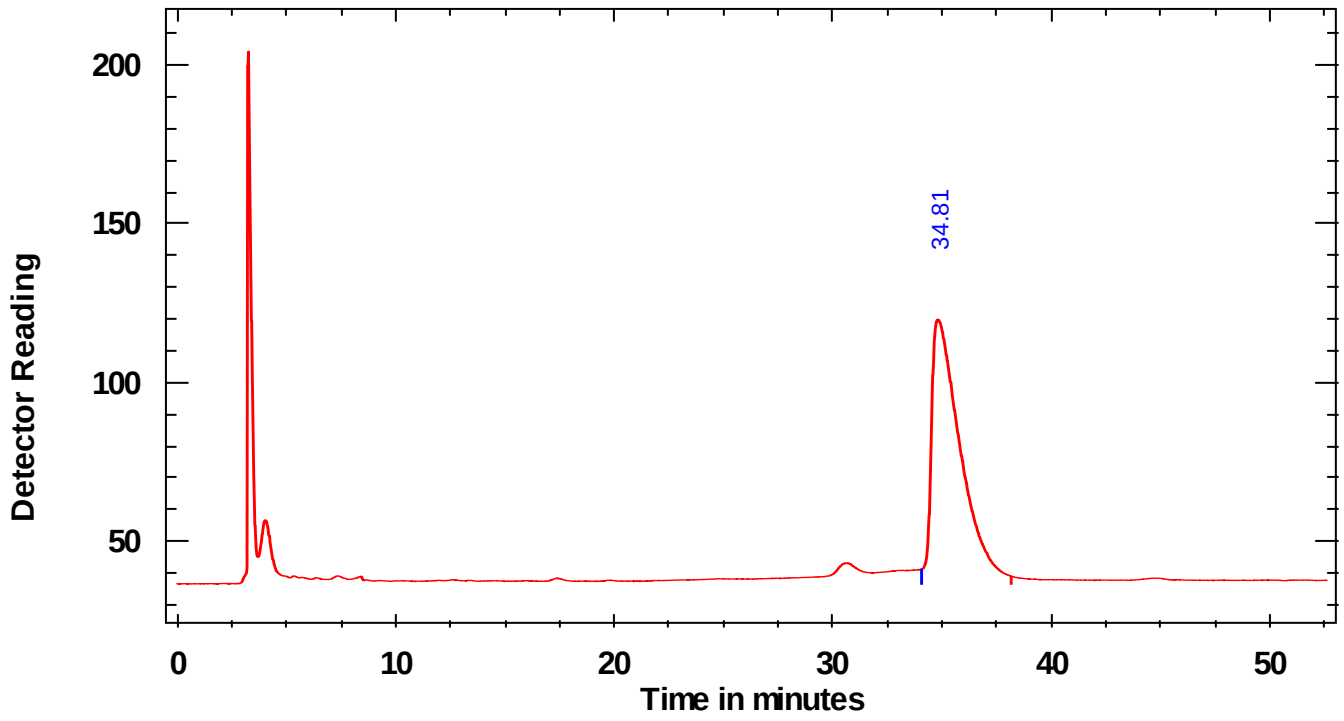
Chromatogram Report

First line of organization's address

Second line of organization's address

RYN-2-145 chiral col IA 10% ea /hex

Report produced on 2008/11/28 at 下午 04:07:24 by Put your name here



2008/11/28 ¤U¤È 02:11:15 Flow set to 1.00 at 0.01 minutes

2008/11/28 ¤U¤È 03:03:54 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	34.06	38.16	6861	100.0	119.79	34.81	Baseline	

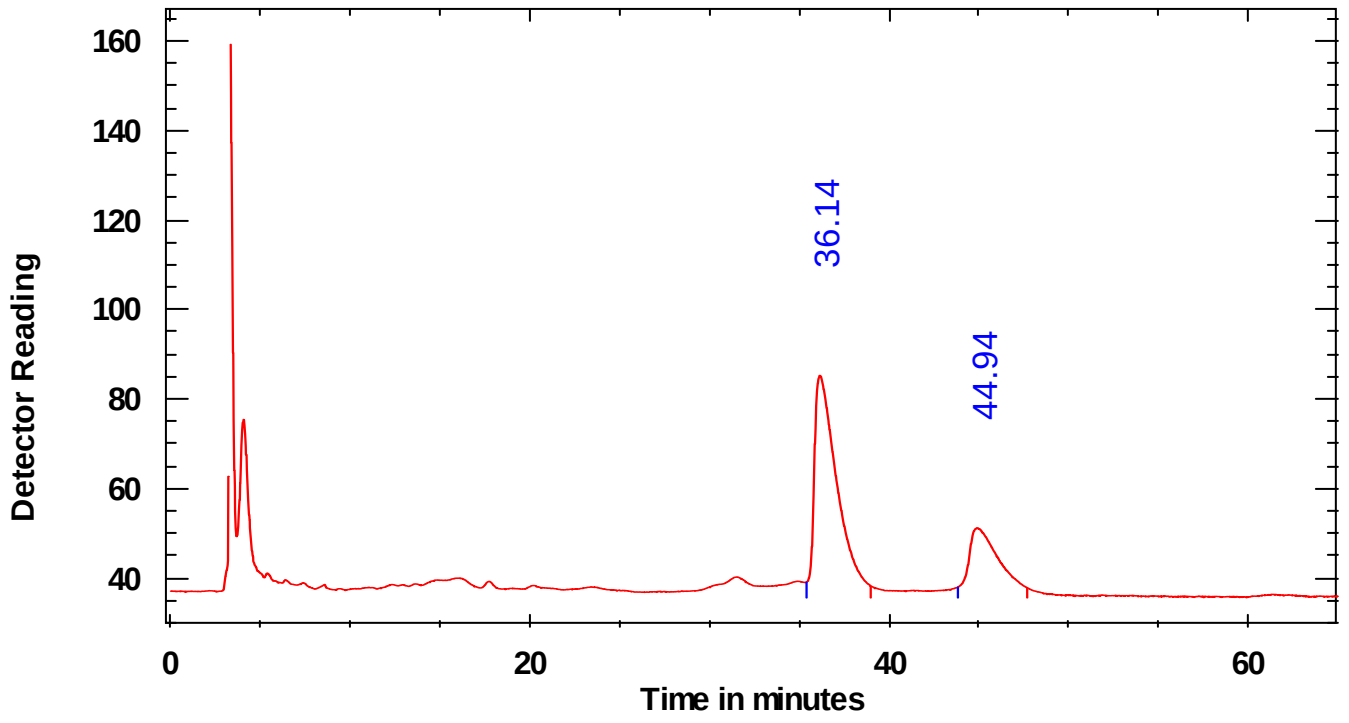
Fig S131. HPLC analysis of the mixture of racemic and chiral 5j obtained (Table 2, entry 10) (For comparison)

Chromatogram Report

First line of organization's address
Second line of organization's address

RYN-2-145 + RYN-2-146 co inj 2 col IA 10% ea /hex

Report produced on 2008/11/28 at 下午 05:39:50 by Put your name here



2008/11/28 ¤U¤È 04:10:25 Flow set to 1.00 at 0.00 minutes

2008/11/28 ¤U¤È 05:16:03 Run stopped by operator

PEAK REPORT

#	begin	end	area	percent	maximum	time	begins as	name
1	35.40	38.98	3792	73.5	85.15	36.14	Baseline	
2	43.84	47.69	1364	26.5	51.16	44.94	Baseline	