Supporting Information for Publication

Synthesis of 2,3,5,6-Tetrasubstituted Tetrahydropyrans via (3,5)-Oxonium-Ene Reaction

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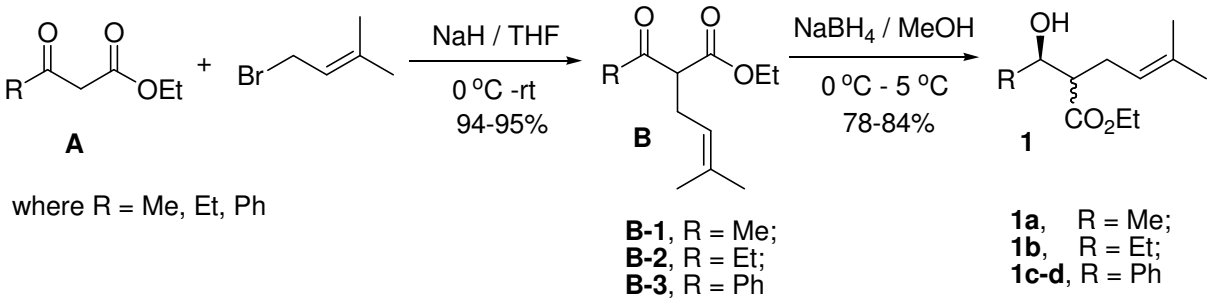
General Information: All reagents are commercially obtained. $BF_3{\cdot}Et_2O$ was distilled over CaH_2 prior to use. ^1H NMR spectra were recorded in $CDCl_3$ on 400 MHz NMR spectrometer using TMS as internal standard. The ^{13}C and ^{19}F NMR spectra were recorded at 100 MHz and 376 MHz, respectively. For ^{13}C and ^{19}F NMR $CDCl_3$ and C_6F_6 were used as internal standard. IR spectra were recorded on FT-IR spectrometer. Melting points were measured in open capillary tubes and are uncorrected.

Preparation of ethyl 2-(1-hydroxyalkyl/hydroxy(phenyl)methyl)-5-methylhex-4-enoate 1: The ethyl 2-(1-hydroxyalkyl/hydroxy(phenyl)methyl)-5-methylhex-4-enoate **1** was synthesized starting from β-keto ester **A** and 1-bromo-3-methylbut-2-ene as shown in Scheme 1.[1] Thus the reaction of β-keto ester **A** with 1-bromo-3-methylbut-2-ene in presence



Scheme 1: Synthesis of ethyl 2-(1-hydroxyalkyl/hydroxy(phenyl)methyl)-5-methylhex-4-enoate

of sodium hydride in THF afforded α-substituted β-keto ester **B**, which after reduction with sodium borohydride in methanol gives alcohol **1** in 78-84% yields.

The methyl and ethyl substituted β-keto esters **B-1** and **B-2** afforded two inseparable diastereomers[2] **1a,b** whereas phenyl substituted β-ketoester **B-3** gave two separable *anti*- and *syn*-diastereomers **1c** and **1d,** respectively. The structures of all compounds are determined

from IR, ^{1}H, ^{13}C NMR and mass spectroscopy. The stereochemistry of compounds **1c** and **1d** are determined from coupling constants values.[2b,3]

References:

1. M. Peña-López, M. M. Martinez, L. A. Sarandeses and J. S. Sestelo, *J. Org. Chem.* 2010, **75**, 5337-5339.
2. (a) V. A. Kramer and H. Pfander, *Helv. Chim. Acta* 1982, **65**, 293-301; (b) P. Galatsis, S. D. Millan, P. Nechala and G. Ferguson, *J. Org. Chem*. 1994, **59**, 6643-6651.
3. E. Marcantoni, S. Alessaandrini, M. Malavolta, G. Bartoli, M. C. Bellucci and L. Sambri, *J. Org. Chem*. 1999, **64**, 1986-1992.

General procedure for the synthesis of α-alkyl-β-keto esters (B-1-3): To a suspension of sodium hydride (15.69 mmol, 1 equiv.) in THF (15 mL) at 0 ^{o}C was added β-keto ester (15.69 mmol, 1 equiv.) dropwise via syringe. After 20 min, a solution of 3,3-dimethylallyl bromide (17.26 mmol, 1.1 equiv.) in THF (5 mL) was added and the mixture was left at room temperature overnight. The solvent was removed under reduced pressure, and the residue was dissolved in Et_2O (10 mL) and washed with brine (25 ml). The organic layer was dried and filtered, and the filtrate was concentrated under reduced pressure. The residue was purified by column chromatography over silica gel to afford the title compounds as colourless oil.

Synthesis of Ethyl 2-acetyl-5-methylhex-4-enoate (B-1): To a suspension of sodium hydride (0.378 g, 15.69 mmol) in THF (15 mL) at 0 ^{o}C was added ethyl acetoacetate (2 mL, 15.69 mmol) dropwise via syringe. After 20 min, a solution of 3,3-dimethylallyl bromide (2 mL, 17.26 mmol) in THF (5 mL) was added and the mixture was left at room temperature overnight. The solvent was removed under reduced pressure, and the residue was dissolved in Et_2O (10 mL) and washed with brine (25 mL). The organic layer was dried and filtered, and

chromatography over silica gel (10% EtOAc/hexane) to afford ethyl 2-acetyl-5-methylhex-4-enoate **B-1** (2.97 g, 95%) as a colourless oil; ^{1}H NMR (400 MHz, $CDCl_3$): δ 1.27 (t, *J* = 7.2 Hz, 3 H), 1.63 (s, 3 H), 1.68 (s, 3 H), 2.22 (s, 3 H), 2.54 (t, *J* = 7.2 Hz, 2 H), 3.43 (t, *J* = 7.6 Hz, 1 H), 4.19 (q, *J* = 7.2 Hz, 2 H), 5.03 (dt, *J* = 7.6 and 1.6 Hz, 1 H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 14.1, 17.8, 25.8, 27.0, 29.1, 59.8, 61.3, 119.9, 134.7, 169.7, 203.2; IR (KBr, Neat): 2981, 2930, 1739, 1718, 1205, 1150 cm^{-1}. HRMS (APCI) cald. for $C_{11}H_{18}O_3$ $(M+H)^+$ requires 199.1334; found 199.1337. APCI-MS: m/z (relative intensity): 199.2 ($(M+H)^+$, 43%), 181.1 (100), 169.1 (55), 143.1 (17), 124.1 (43), 107.1 (73).

Ethyl 5-methyl-2-propionylhex-4-enoate (B-2): Colourless oil (3.13 g, 94%); ^{1}H NMR (400 MHz, $CDCl_3$): δ 1.06 (t, *J* = 7.2 Hz, 3 H), 1.26 (t, *J* = 7.2, 3 H), 1.62 (s, 3 H), 1.67 (s, 3 H), 2.47-2.60 (m, 4 H), 3.45 (t, *J* = 7.2 Hz, 1 H), 4.17 (q, *J* = 7.2 Hz, 2 H), 5.02 (dt, *J* =7.6 and 1.6 Hz, 1 H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 7.8, 14.2, 17.9, 25.9, 27.2, 35.6, 58.9, 61.4, 120.1, 134.8, 169.9, 206.0; IR (KBr, Neat): 2980, 2937, 1741, 1716, 1198, 1156 cm^{-1}. HRMS (APCI) cald. for $C_{12}H_{20}O_3$ (M^+) requires 212.1412; found 212.1408. APCI-MS: m/z (relative intensity): 212.2 ($(M+H)^+$, 100%), 194.7 (65), 168.7 (27), 123.8 (22).

Ethyl 2-benzoyl-5-methylhex-4-enoate (B-3): Colourless oil (3.88 g, 95%); ^{1}H NMR (400 MHz, $CDCl_3$): δ 1.67 (t, *J* = 7.2 Hz, 3 H), 1.62 (s, 3 H), 1.65 (s, 3 H), 2.61-2.78 (m, 2 H), 4.14 (q, *J* = 7.2 Hz, 2 H), 4.30 (t, *J* = 7.2 Hz, 1 H), 5.11 (dt, *J* = 7.2 and 1.6 Hz, 1 H), 7.44-7.50 (m, 2 H), 7.55-7.61 (m, 1 H), 7.97-8.00 (m, 2 H) ; ^{13}C NMR (100 MHz, $CDCl_3$): δ 14.1, 17.9, 25.8, 27.8, 54.6, 61.4, 120.3, 128.7, 128.8, 133.5, 134.7, 136.4, 169.9, 195.2; IR (KBr, Neat): 2979, 2929, 1737, 1688, 1448, 1379, 1241, 1153 cm^{-1}. HRMS (APCI) cald. for $C_{16}H_{20}O_3$ $(M+H)^+$ requires 261.1490; found 261.1494. APCI-MS: m/z (relative intensity): 261.2 ($(M+H)^+$, 57%), 215.1 (21), 193.1 (23), 169.1 (12), 124.1 (100).

General procedure for the synthesis of Ethyl 2-(1-hydroxyalkyl/hydroxy(phenyl)methyl)-5-methylhex-4-enoate (1a-d): To a solution of α-alkyl-β-keto esters (14.98 mmol, 1 equiv.) in dry MeOH (15 mL) at 0 ^{o}C, was added sodium borohydride (39.25 mmol, 2.62 equiv.) in small portions. The reaction mixture was stirred in between 0 ^{o}C to 5 ^{o}C for 1.5 h. The progress of the reaction was monitored by TLC with ethyl acetate and hexane as eluents. After completion of the reaction, the product was extracted with ethyl acetate (30 mL) and then washed with water (15 mL) and brine (15 mL). The organic layer was dried (Na_2SO_4) and evaporated to leave the crude product, which was purified by column chromatography over silica gel to give the title compounds.

Synthesis of Ethyl 2-(1-hydroxyethyl)-5-methylhex-4-enoate (1a): To a solution of ethyl 2-acetyl-5-methylhex-4-enoate (2.97 g, 14.98 mmol) in dry MeOH (15mL) at 0 ^{o}C, was added sodium borohydride (1.485 g, 39.25 mmol) in small portions. The reaction mixture was stirred in between 0 ^{o}C to 5 ^{o}C for 1.5 h. The progress of the reaction was monitored by TLC with ethyl acetate and hexane (3:22) as eluents. After completion of the reaction, the product was extracted with ethyl acetate (30 mL) and then washed with water (15 mL) and brine (15 mL). The organic layer was dried (Na_2SO_4) and evaporated to leave the crude products, which were purified by column chromatography over silica gel to give an inseparable mixture of two diastereomers **1a** (2.40 g, 80% overall yield) as a colourless oil; ^{1}H NMR (400 MHz, $CDCl_3$): δ 1.19-1.29 (m, 6 H), 1.62 (s, 3 H), 1.69 (s, 3 H), 2.29-2.47 (m, 3 H), 2.51 (brs 0.5 H), 2.69 (brs, 0.5 H), 3.86-3.96 (m, 0.5 H), 3.98-4.06 (m, 0.5 H), 4.08-4.24 (m, 2 H), 5.04-5.14 (m, 1 H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 14.1(2C), 17.5(2C), 20.5, 21.1, 25.6(2C), 26.7, 27.7, 53.0, 53.1, 60.2, 60.3, 67.8, 67.9, 120.5, 121.1, 133.3, 133.6, 174.7, 175.0; IR (KBr, Neat): 3441, 2972, 2929, 1732, 1640, 1182, 1155 cm^{-1}. HRMS (APCI) cald. for $C_{11}H_{20}O_3$ $(M+H)^+$ requires 201.1490; found 201.1498. APCI-MS: m/z (relative intensity):

201.2 ($(M+H)^+$, 30%), 137.1 (4), 125.1 (11), 124.1 (100), 123.1 (14), 82.0 (24).

Ethyl 2-(1-hydroxypropyl)-5-methylhex-4-enoate (1b): Colourless oil (2.50 g, 78%); ^{1}H NMR (400 MHz, $CDCl_3$): δ 0.98 (t, *J* = 7.6 Hz, 3 H), 1.25 (t, *J* = 7.2 Hz, 1.5 H), 1.26 (t, *J* = 7.2 Hz, 1.5 H), 1.45-1.54 (m, 2H), 1.61 (s, 1.5 H), 1.62 (s, 1.5 H), 1.69 (s, 3 H), 2.28-2.50 (m, 3 H), 2.67 (brs, 1 H), 3.56-3.64 (m, 0.5 H), 3.70-3.78 (m,0.5 H), 4.08-4.22 (m, 2 H), 5.04-5.16 (m, 1 H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 10.2, 10.3, 14.3(2C), 17.8(2C), 25.8, 26.1, 27.4(2C), 28.3, 28.6, 50.7, 51.2, 60.5(2C), 73.3, 73.4, 120.7, 121.3, 133.6, 134.1, 175.3, 175.5; IR (KBr, Neat): 3456, 2968, 2932, 1731, 1642, 1183, 1159 cm^{-1}. HRMS (APCI) cald. for $C_{12}H_{22}O_3$ $(M+H)^+$ requires 215.1647; found 215.1653. APCI-MS: m/z (relative intensity): 215.2 ($(M+H)^+$, 100%), 197.2 (6), 169.1 (8), 151.1 (7), 124.1 (35), 123.1 (14), 82.0 (7).

Synthesis of *anti*/*syn*-Ethyl 2-(hydroxy(phenyl)methyl)-5-methylhex-4-enoate (1c & 1d): To a solution of ethyl 2-benzoyl-5-methylhex-4-enoate (3.90 g, 14.98 mmol) in dry MeOH (15 mL) at 0 ^{o}C, was added sodium borohydride (1.485 g, 39.25 mmol) in small portions. The reaction mixture was stirred in between 0 ^{o}C to 5 ^{o}C for 1.5 h. The progress of the reaction was monitored by TLC with ethyl acetate and hexane (7:43) as eluents. After completion of the reaction, the product was extracted with ethyl acetate (30 mL) and then washed with water (15 mL) and brine (15 mL). The organic layer was dried (Na_2SO_4) and evaporated to leave the crude products, which were separated by column chromatography over silica gel to give **1c** (1.73 g, 44%) and **1d** (1.58 g, 40%) as a colourless oil.

***anti*-Ethyl 2-(hydroxy(phenyl)methyl)-5-methylhex-4-enoate (1c):** Colourless oil (1.73 g, 44%); ^{1}H NMR (400 MHz, $CDCl_3$): δ 1.18 (t, *J* = 7.2 Hz, 3 H), 1.50 (s, 3 H), 1.65 (s, 3 H), 2.05 (ddd, *J* = 13.2, 7.6 and 5.6 Hz, 1 H), 2.25 (ddd, *J* = 14.8, 8.0 and 6.8 Hz, 1 H), 2.75 (ddd, *J* = 12.8, 8.8, 5.2 Hz, 1 H), 3.16 (d, *J* = 5.2 Hz, 1H), 4.11 (q, *J* = 7.2 Hz, 2 H), 4.80 (dd,

J = 6.4 and 4.4 Hz, 1H), 5.03 (dt, *J* = 6.8 and 1.2 Hz, 1H), 7.26-7.37 (m, 5H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 14.3, 17.8, 25.9, 28.4, 53.3, 60.7, 74.8, 120.2, 126.6, 128.0, 128.6, 134.3, 142.2, 175.2; IR (KBr, Neat): 3461, 2978, 2929, 1729, 1452, 1377, 1180, 1037, 766, 702 cm^{-1}. HRMS (APCI) cald. for $C_{16}H_{22}O_3$ (M^+) requires 262.1569; found 262.1573. APCI-MS: m/z (relative intensity): 262.2 (M^+, 3%), 244.6 (15), 177.7 (15), 176.7 (100), 123.8 (22).

***syn*-Ethyl 2-(hydroxy(phenyl)methyl)-5-methylhex-4-enoate (1d):** Colourless oil (1.58 g, 40%); ^{1}H NMR (400 MHz, $CDCl_3$): δ 1.11 (t, *J* = 7.2 Hz, 3 H), 1.54 (s, 3 H), 1.64 (s, 3 H), 2.29 (ddd, *J* = 14.4, 8.8 and 5.8 Hz, 1 H), 2.46 (ddd, *J* = 14.4, 8.8 and 5.6 Hz, 1 H), 2.72 (ddd, *J* = 10.4, 5.6 and 4.4 Hz, 1 H), 3.03 (brs, 1H), 4.02 (q, *J* = 7.2 Hz, 2 H), 4.95 (d, *J* = 5.6 Hz, 1H), 5.04 (t, *J* = 6.8 Hz, 1H), 7.24-7.39 (m, 5H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 14.2, 17.8, 25.9, 26.1, 53.3, 60.7, 74.2, 121.1, 126.4, 127.8, 128.4, 134.0, 141.7, 175.0; IR (KBr, Neat): 3460, 2979, 2930, 1728, 1453, 1375, 1180, 1026, 767, 701 cm^{-1}. HRMS (APCI) cald. for $C_{16}H_{22}O_3$ $(M+H)^+$ requires 263.1647; found 263.1652. APCI-MS: m/z (relative intensity): 263.2 ($(M+H)^+$, 19%), 192.1 (5), 178.1 (15), 177.1 (100), 171.1 (21), 131.1 (13), 124.1 (75).

^{1}H NMR spectra of B-1

PS_457_K

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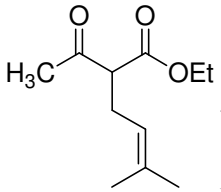
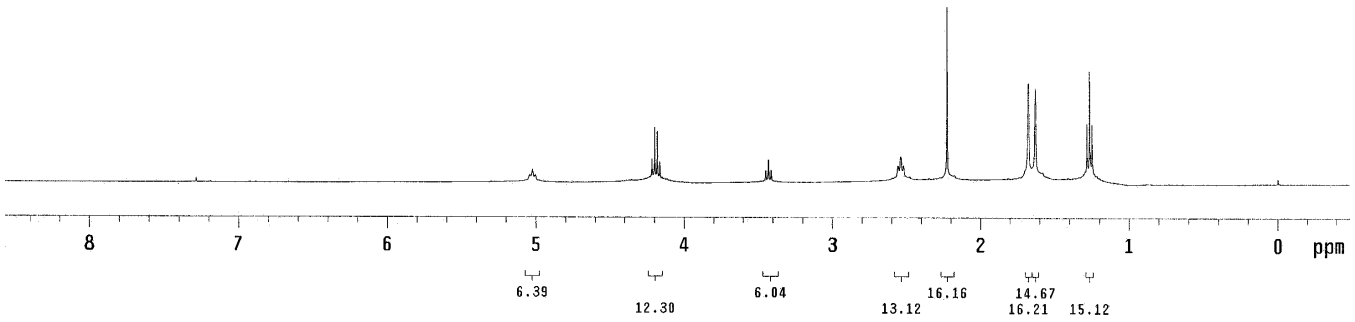
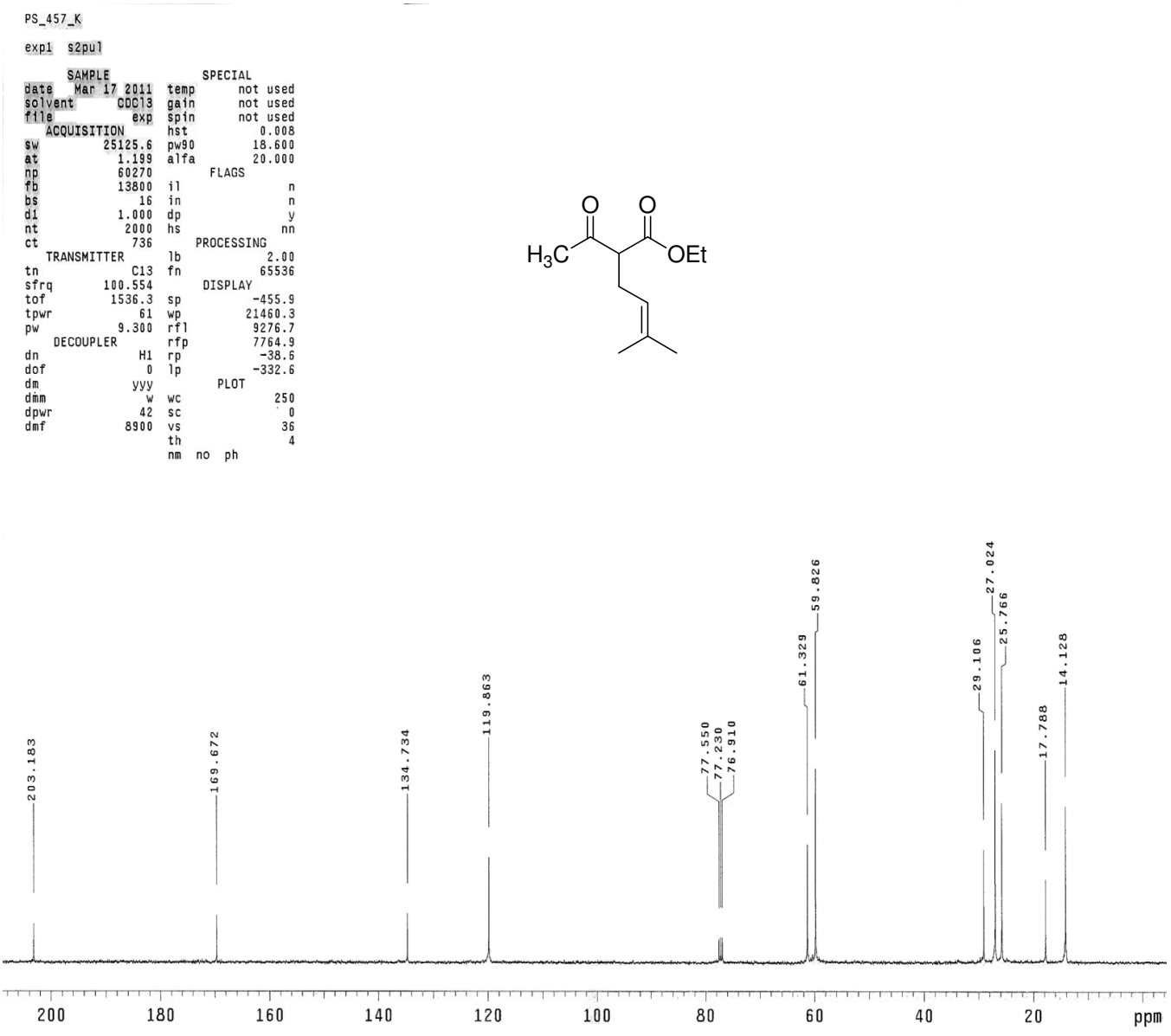




^{13}C NMR spectra of B-1



^{1}H NMR spectra of B-2

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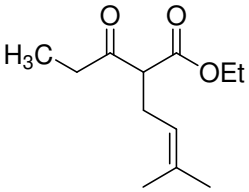

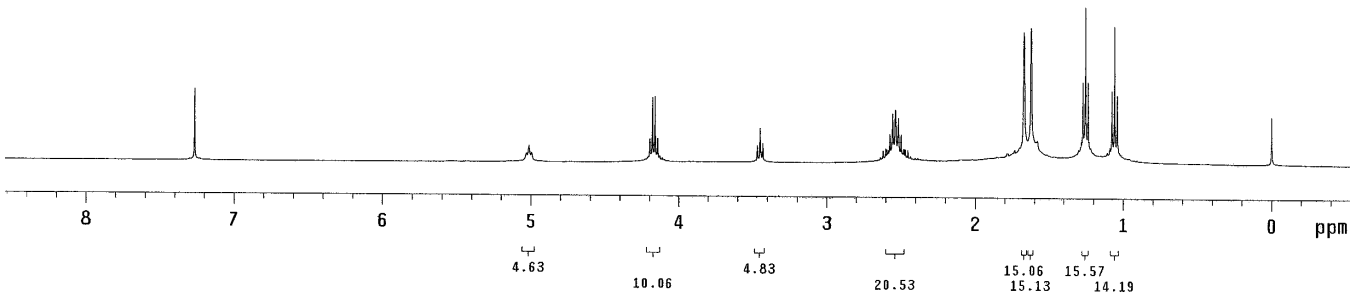

^{13}C NMR spectra of B-2

PS_449_Ketone

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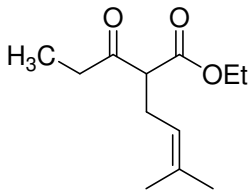

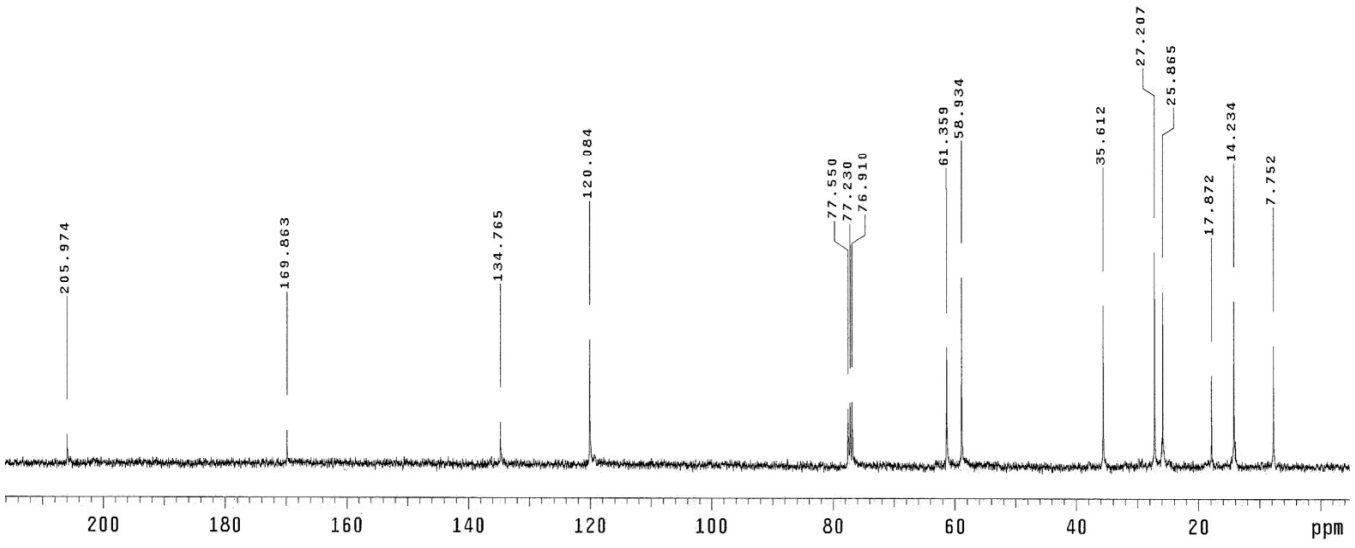

^{1}H NMR spectra of B-3

PS_447M_Ketone

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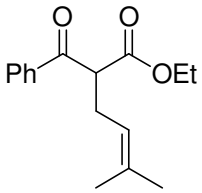

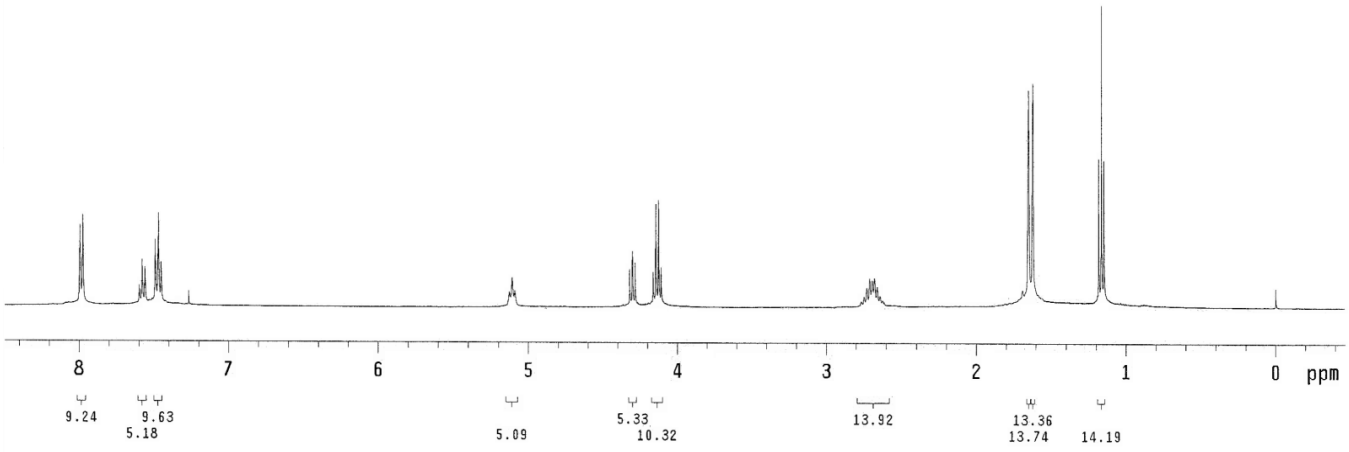

^{13}C NMR spectra of B-3

PS_447M_Ketone

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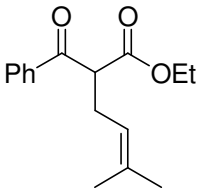

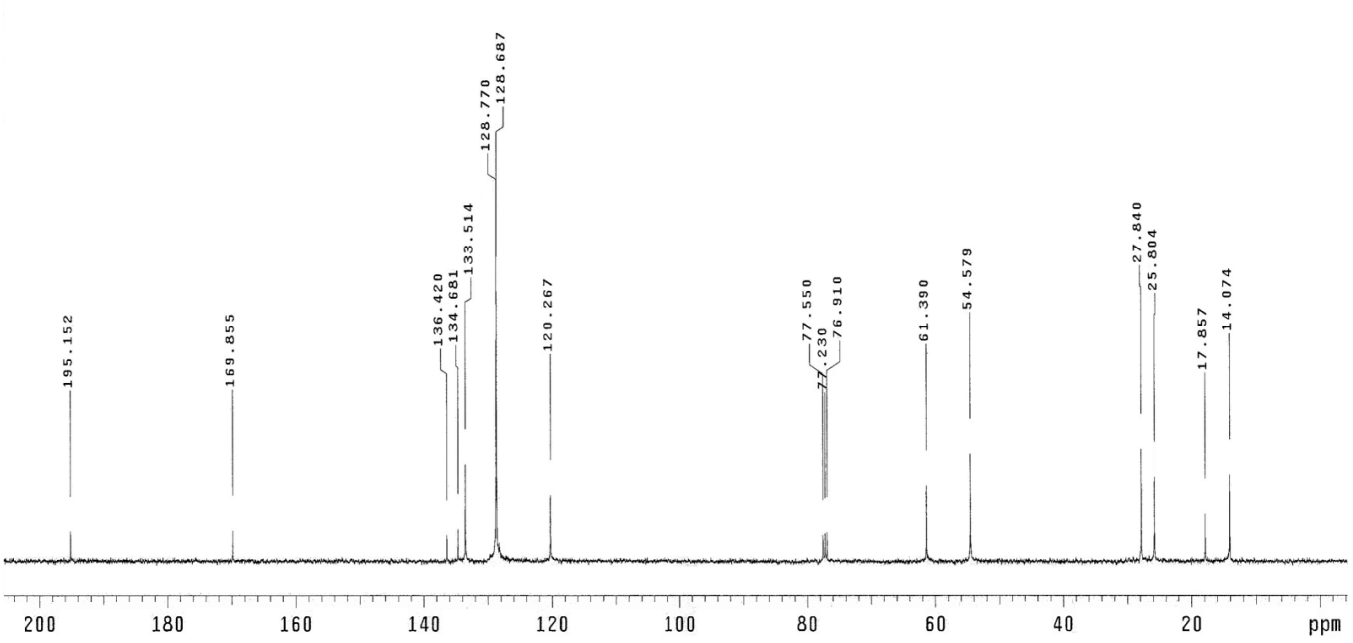

^{1}H NMR spectra of 1a

PS_457_L

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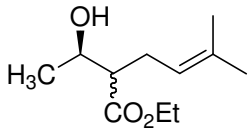
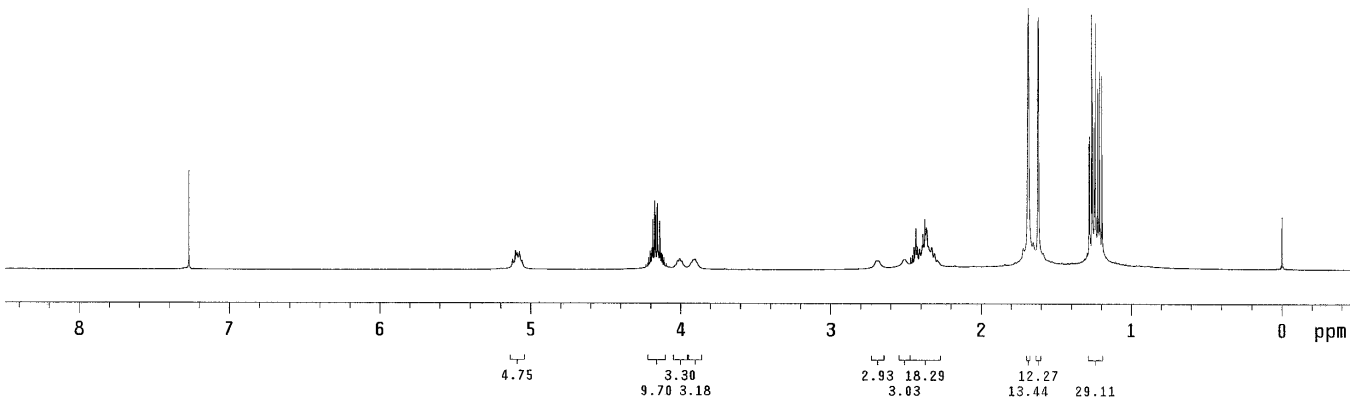
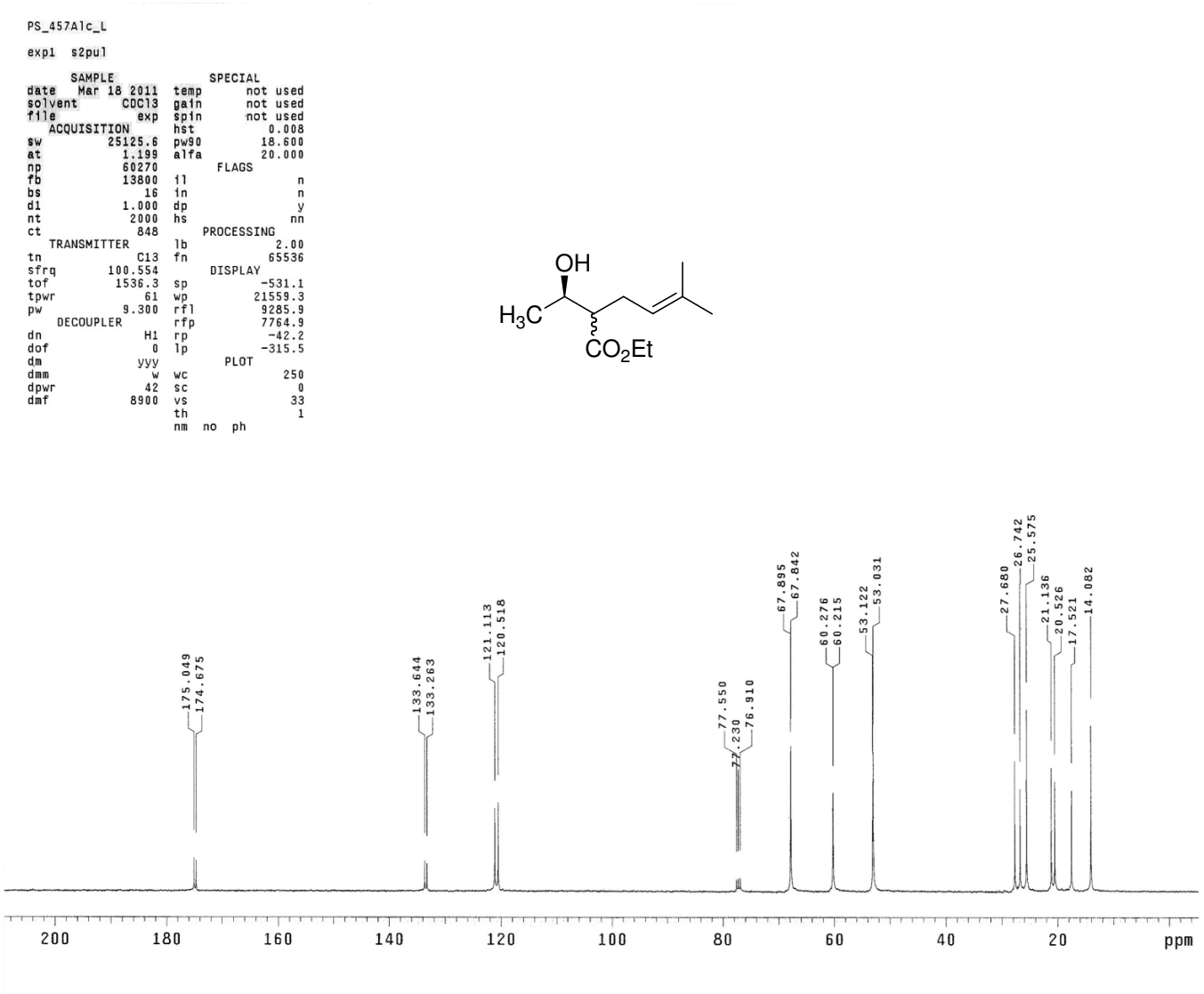
sw	6006.0	pw90	19.700
at	1.995	alfa	20.000
np	23964	FLAGS	
fb	not used	il	n
bs	8	in	n
d1	1.000	dp	y
nt	200	hs	nn
ct	200	PROCESSING	
TRANSMITTER		fn	not used
tn	H1	DISPLAY	
sfrq	399.853	sp	-189.2
tof	0	wp	3590.8
tpwr	57	rf1	962.3
pw	7.000	rfp	0
DECOUPLER		rp	109.0
dn	C13	lp	-71.1
dof	0	PLOT	
dm	nnn	wc	250
dmm	c	sc	0
dpwr	50	vs	41
dmf	15900	th	7
		nm	cdc ph





^{13}C NMR spectra of 1a

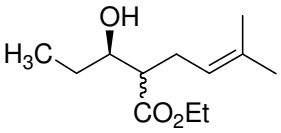


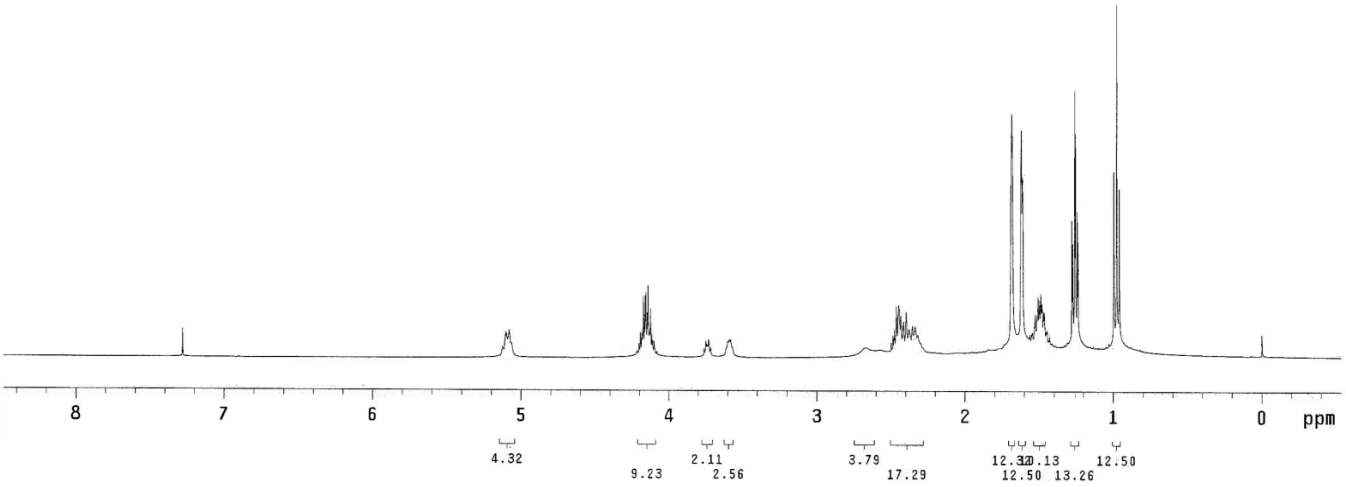
^{1}H NMR spectra of 1b

```
PS_449Alc_L

exp1  s2pul

      SAMPLE            SPECIAL
date   Feb 28 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_449~ hst          0.008
         Alc_L.fid  pw90        19.700
   ACQUISITION      alfa        20.000
sw           6389.8          FLAGS
at            1.998  il              n
np           25528  in              n
fb       not used   dp              y
bs              8   hs             nn
d1            1.000       PROCESSING
nt              100  lb           0.10
ct              100  fn          65536
   TRANSMITTER           DISPLAY
tn               H1  sp         -215.5
sfrq        399.853  wp         3610.3
tof           362.8  rfl         786.3
tpwr             57  rfp            0
pw            9.850  rp          107.1
    DECOUPLER       lp          -74.2
dn              C13         PLOT
dof               0  wc          250
dm              nnn  sc            0
dmm               c  vs           57
dpwr             50  th           20
dmf           15900  nm  cdc  ph
```



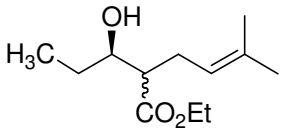


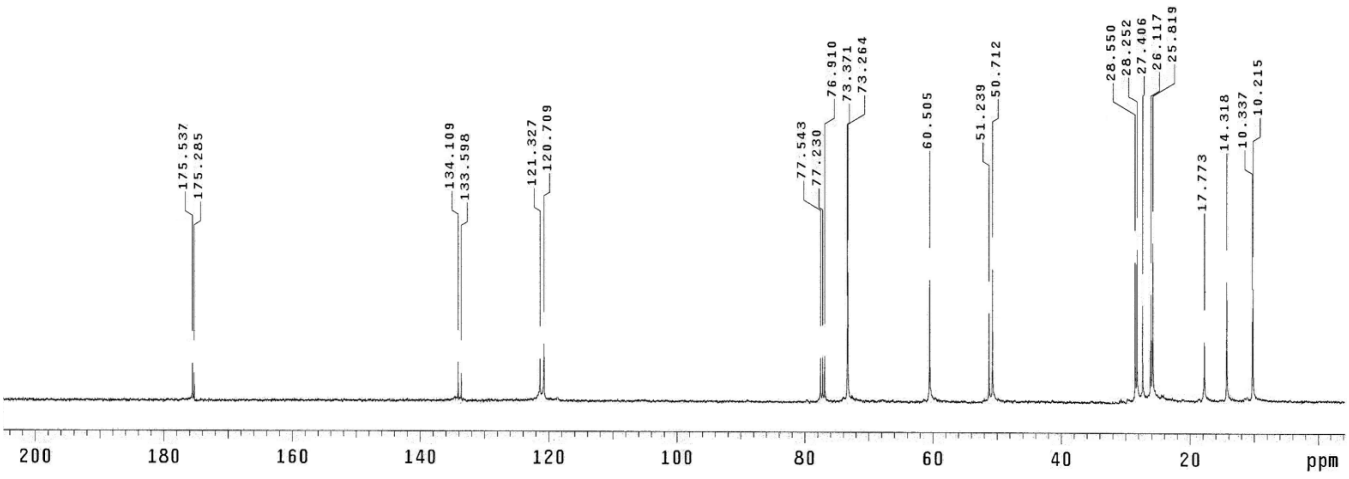
^{13}C NMR spectra of 1b

PS_449_L

exp1 s2pul

SAMPLE		SPECIAL	
date	Feb 25 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_449~		hst	0.008
	L_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	4000	lb	2.00
ct	3232	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-422.2
sfrq	100.554	wp	21030.9
tof	1536.3	rfl	9275.9
tpwr	61	rfp	7764.9
pw	9.300	rp	-62.6
DECOUPLER		lp	-285.1
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	25
dpwr	42	th	3
dmf	8900	nm no ph	



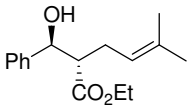


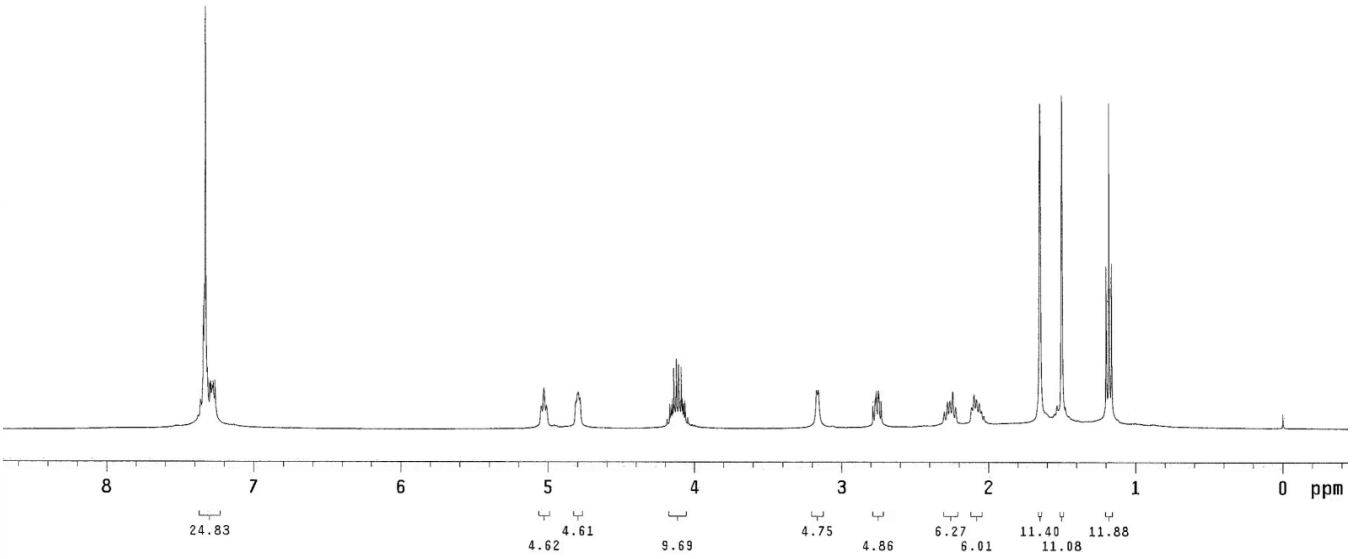
^{1}H NMR spectra of 1c

PS_447_L

exp1 s2pul

SAMPLE		SPECIAL	
date	Feb 19 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_447~		hst	0.008
	_L.fid	pw90	19.700
ACQUISITION		alfa	20.000
sw	6389.8	FLAGS	
at	1.998	il	n
np	25528	in	n
fb	not used	dp	y
bs	4	hs	nn
d1	1.000	PROCESSING	
nt	32	lb	0.10
ct	32	fn	65536
TRANSMITTER		DISPLAY	
tn	H1	sp	-180.6
sfrq	399.853	wp	3660.9
tof	362.8	rfl	793.5
tpwr	57	rfp	0
pw	9.850	rp	114.9
DECOUPLER		lp	-93.0
dn	C13	PLOT	
dof	0	wc	250
dm	nnn	sc	0
dmm	c	vs	68
dpwr	50	th	20
dmf	15900	nm	cdc ph



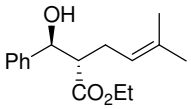


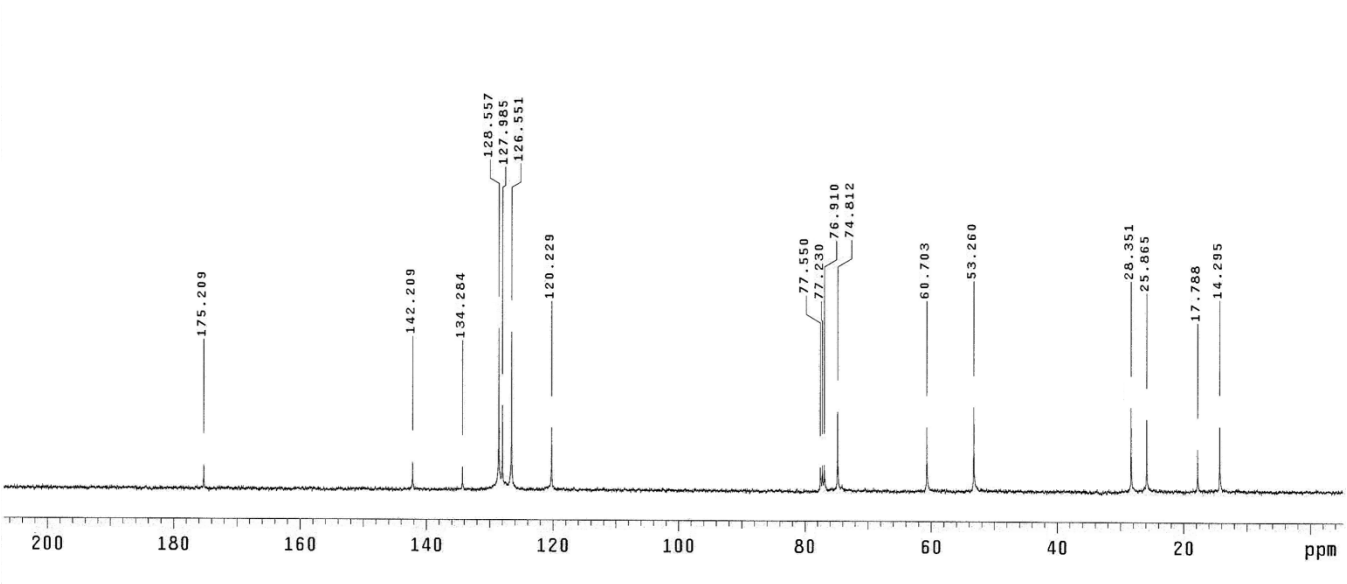
^{13}C NMR spectra of 1c

PS_447_L

expl s2pul

SAMPLE		SPECIAL	
date	Feb 19 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_447~		hst	0.008
	L_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	2000	lb	2.00
ct	0	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-521.9
sfrq	100.554	wp	21328.5
tof	1536.3	rfl	9276.7
tpwr	61	rfp	7764.9
pw	9.300	rp	-63.7
DECOUPLER		lp	-312.0
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	26
dpwr	42	th	2
dmf	8900	nm no ph	





^{1}H NMR spectra of 1d

```
PS_447_M

exp1  s2pul

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date   Feb 18 2011  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_447~  hst          0.008
            _M1.fid  pw90        19.700
   ACQUISITION       alfa       20.000
sw          6389.8         FLAGS
at           1.998  il              n
np           25528  in              n
fb       not used   dp              y
bs              4   hs             nn
d1          1.000       PROCESSING
nt             32   lb           0.10
ct             32   fn          65536
   TRANSMITTER           DISPLAY
tn              H1   sp         -183.3
sfrq       399.853   wp         3610.3
tof          362.8   rfl         796.2
tpwr            57   rfp             0
pw           9.850   rp          110.6
    DECOUPLER        lp         -84.9
dn             C13          PLOT
dof              0   wc           250
dm             nnn   sc             0
dmm              c   vs            39
dpwr            50   th            20
dmf          15900   nm  cdc  ph
```
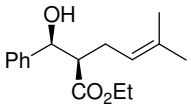
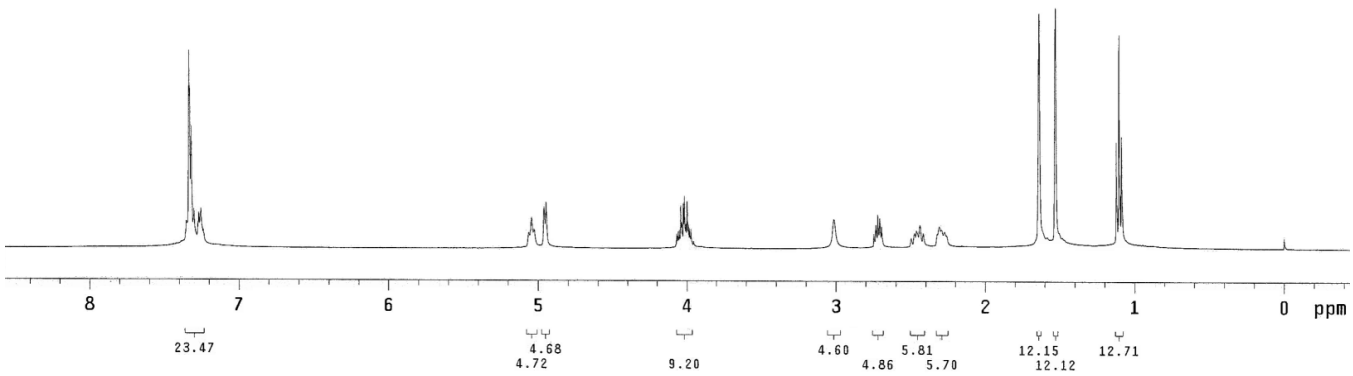



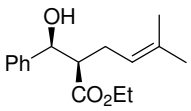


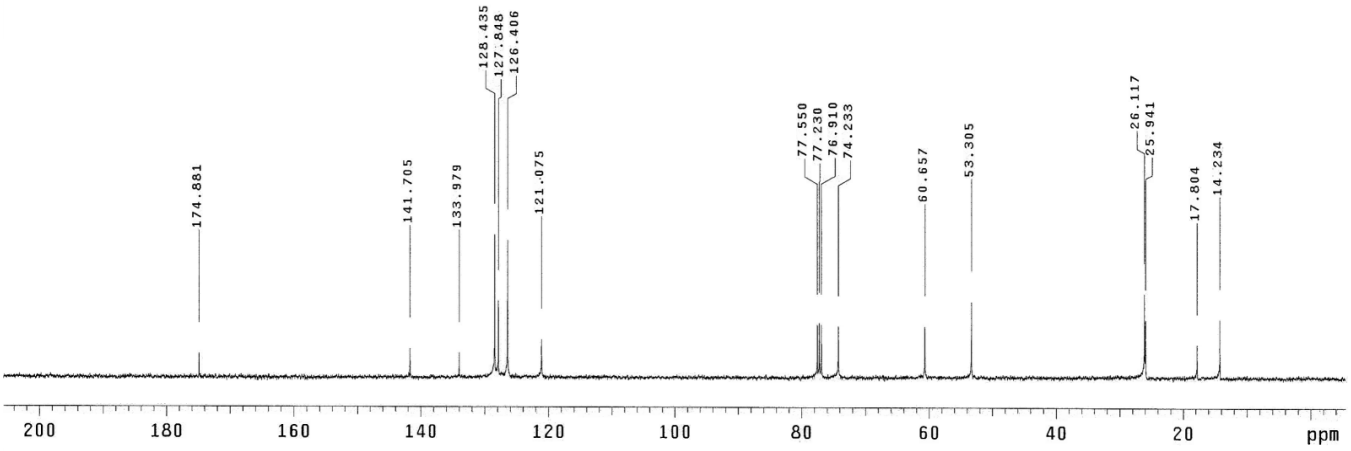
^{13}C NMR spectra of 1d

PS_447_M

exp1 s2pul

SAMPLE		SPECIAL	
date	Feb 18 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_447~		hst	0.008
	M_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	8000	lb	2.00
ct	1504	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-551.8
sfrq	100.554	wp	21229.5
tof	1536.3	rfl	9272.9
tpwr	61	rfp	7764.9
pw	9.300	rp	-26.3
DECOUPLER		lp	-358.9
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	23
dpwr	42	th	2
dmf	8900	nm	no ph



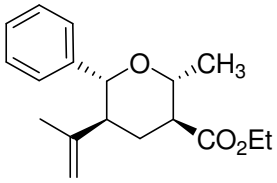


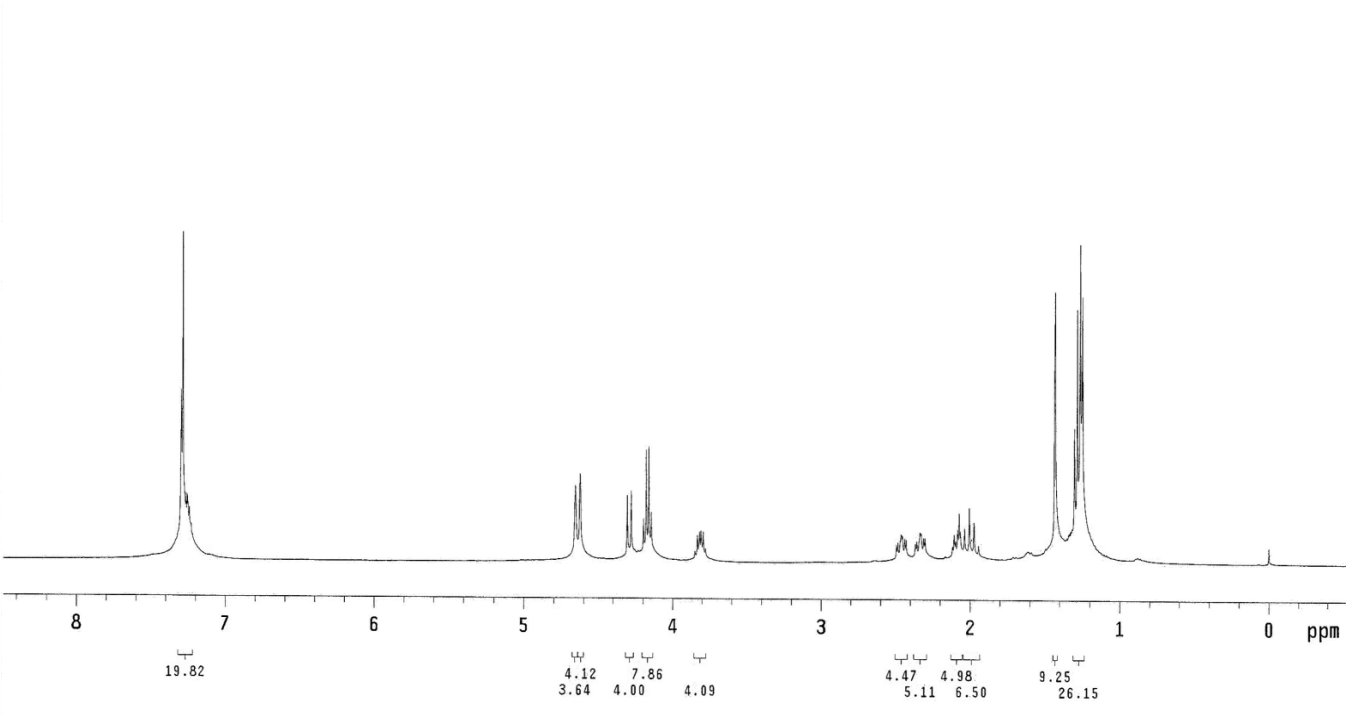
^{1}H NMR spectra of 3a

PS_392_U

exp1 s2pul

SAMPLE		SPECIAL	
date	Nov 26 2010	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_392~		hst	0.008
	_U.fid	pw90	19.700
ACQUISITION		alfa	20.000
sw	6389.8	FLAGS	
at	1.998	il	n
np	25528	in	n
fb	not used	dp	y
bs	4	hs	nn
d1	1.000	PROCESSING	
nt	32	lb	0.10
ct	32	fn	65536
TRANSMITTER		DISPLAY	
tn	H1	sp	-208.5
sfrq	399.853	wp	3602.0
tof	362.8	rfl	796.2
tpwr	57	rfp	0
pw	9.850	rp	106.1
DECOUPLER		lp	-85.7
dn	C13	PLOT	
dof	0	wc	250
dm	nnn	sc	0
dmm	c	vs	48
dpwr	50	th	39
dmf	15900	nm cdc ph	



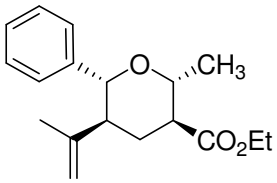


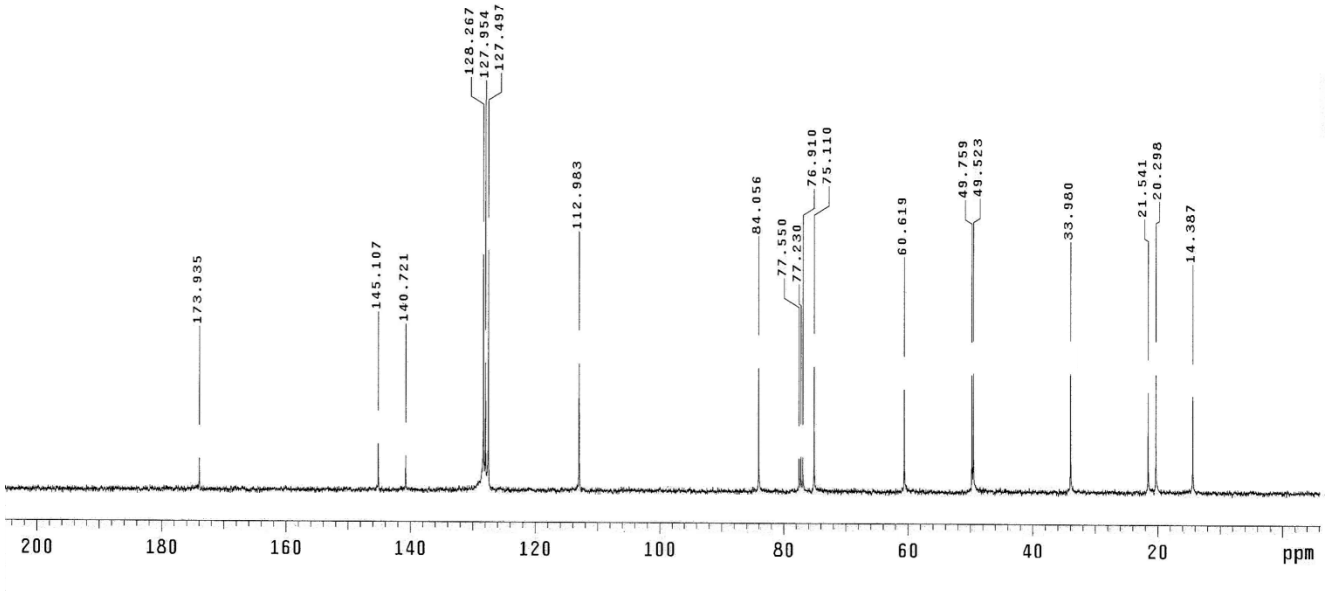
^{13}C NMR spectra of 3a

PS_392_U

exp1 s2pul

SAMPLE		SPECIAL	
date	Nov 26 2010	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_392~		hst	0.008
	U_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	3000	lb	2.00
ct	528	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-620.8
sfrq	100.554	wp	21262.5
tof	1536.3	rfl	9276.7
tpwr	61	rfp	7764.9
pw	9.300	rp	-52.1
DECOUPLER		lp	-305.8
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	36
dpwr	42	th	3
dmf	8900	nm no ph	



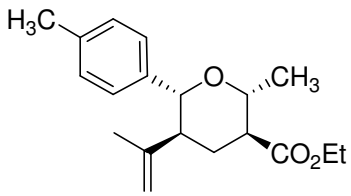


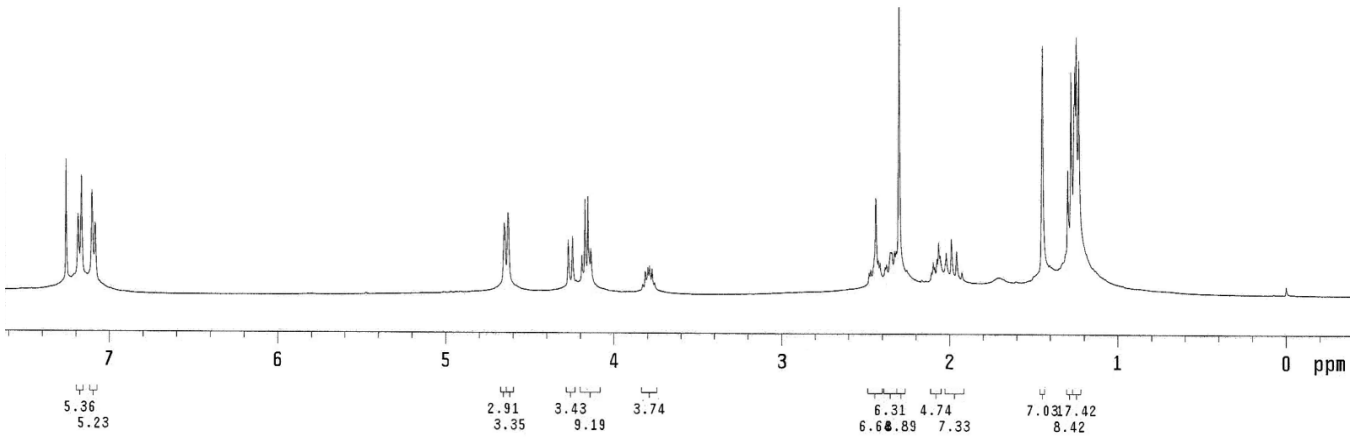
^{1}H NMR spectra of 3b

PS_343 MU

exp1 s2pul

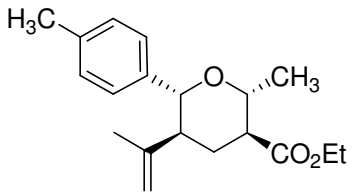
SAMPLE		SPECIAL	
date	Sep 2 2010	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
guest123/AKS_PS_34~		hst	0.008
	3_U.fid	pw90	19.700
ACQUISITION		alfa	20.000
sw	6389.8	FLAGS	
at	1.998	il	n
np	25528	in	n
fb	not used	dp	y
bs	4	hs	nn
d1	1.000	PROCESSING	
nt	32	lb	0.10
ct	32	fn	65536
TRANSMITTER		DISPLAY	
tn	H1	sp	-157.4
sfrq	399.853	wp	3207.5
tof	362.8	rfl	795.4
tpwr	57	rfp	0
pw	9.850	rp	118.1
DECOUPLER		lp	-67.4
dn	C13	PLOT	
dof	0	wc	250
dm	nnn	sc	0
dmm	c	vs	43
dpwr	50	th	39
dmf	15900	nm	cdc ph

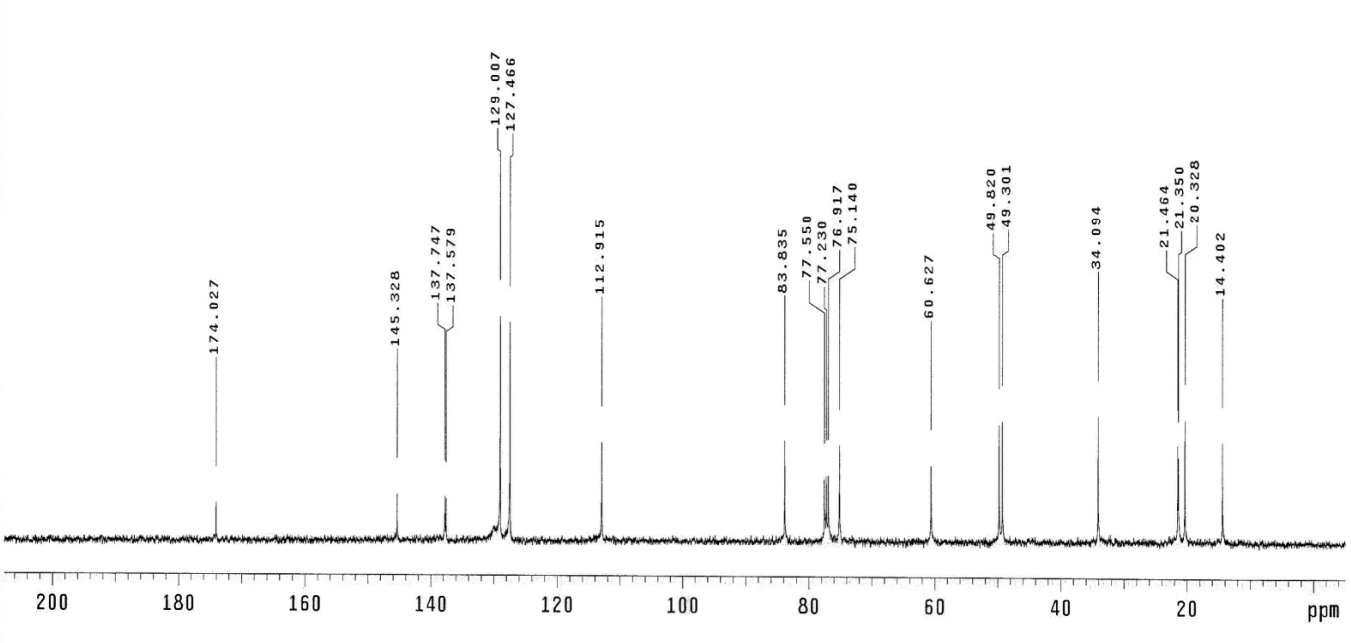




^{13}C NMR spectra of 3b

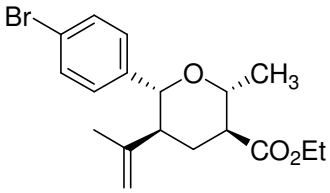
```
PS_343_U

exp1  s2pul

      SAMPLE              SPECIAL
date   Sep  3 2010  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
guest123/AKS_PS_34~ hst          0.008
         3U_C13.fid  pw90        18.600
   ACQUISITION       alfa        20.000
sw          25125.6        FLAGS
at            1.199  il             n
np            60270  in             n
fb            13800  dp             y
bs               16  hs            nn
d1            1.000      PROCESSING
nt             4000  lb          2.00
ct             1632  fn         65536
   TRANSMITTER            DISPLAY
tn               C13  sp        -518.0
sfrq         100.554  wp       21394.4
tof           1536.3  rfl       9272.9
tpwr              61  rfp       7764.9
pw             9.300  rp         -52.1
    DECOUPLER        lp        -305.8
dn                H1         PLOT
dof                0  wc          250
dm               yyy  sc            0
dmm                w  vs           31
dpwr              42  th            4
dmf             8900  nm  no  ph
```

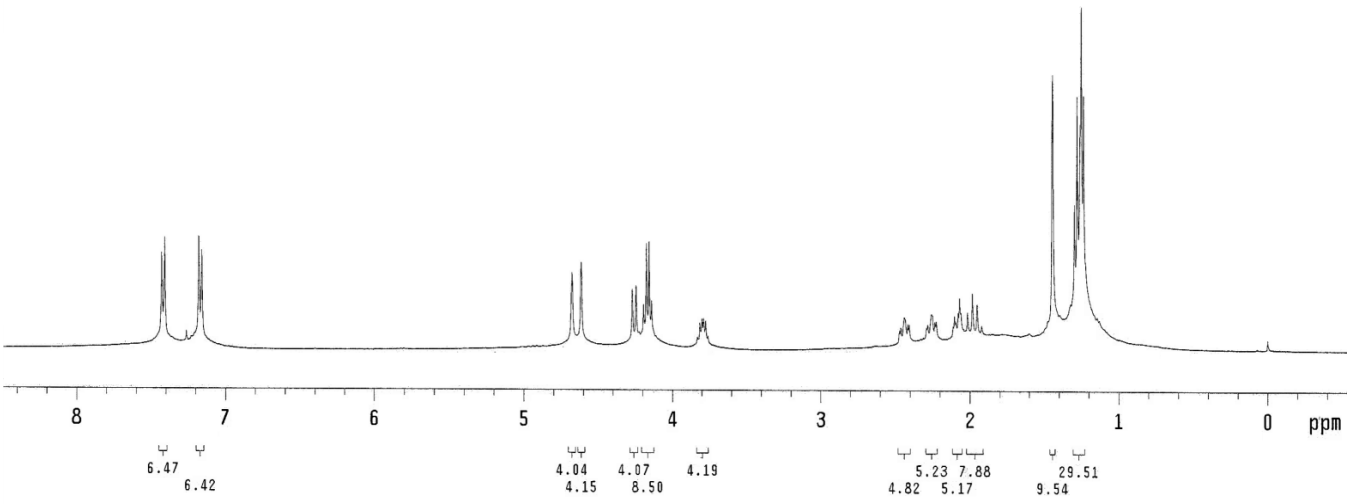




^{1}H NMR spectra of 3c

```
PS_341_U

exp1  s2pul

      SAMPLE            SPECIAL
date   Sep  1 2010  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
guest123/AKS_PS_34~ hst           0.008
          1_U.fid  pw90         19.700
   ACQUISITION     alfa         20.000
sw          6389.8         FLAGS
at            1.998  il                n
np            25528  in                n
fb        not used  dp                y
bs               4  hs               nn
d1           1.000       PROCESSING
nt              32  lb             0.10
ct              32  fn            65536
   TRANSMITTER           DISPLAY
tn              H1  sp          -214.5
sfrq       399.853  wp          3610.3
tof          362.8  rfl          793.7
tpwr            57  rfp              0
pw           9.850  rp           120.1
    DECOUPLER       lp           -69.1
dn             C13          PLOT
dof              0  wc             250
dm             nnn  sc               0
dmm              c  vs              48
dpwr            50  th              30
dmf          15900  nm  cdc  ph
```



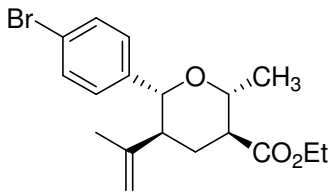


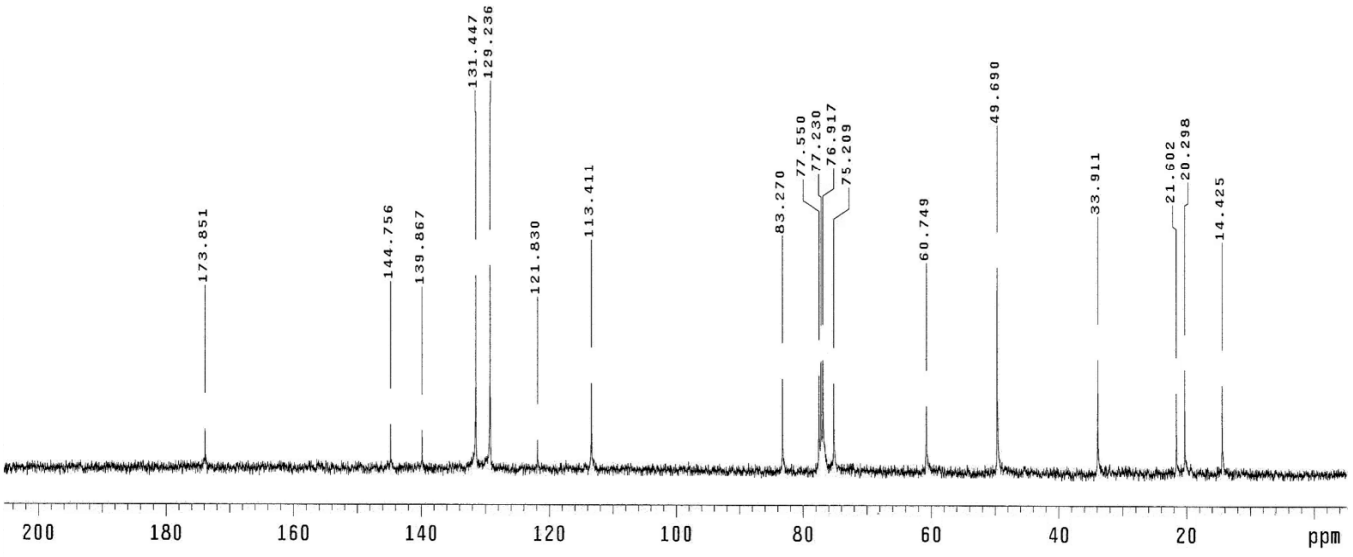
^{13}C NMR spectra of 3c

PS_341_U

exp1 s2pul

SAMPLE		SPECIAL	
date	Sep 1 2010	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
guest123/AKS_PS_34~		hst	0.008
	1M_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	4000	lb	2.00
ct	3024	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-514.2
sfrq	100.554	wp	21163.6
tof	1536.3	rfl	9269.0
tpwr	61	rfp	7764.9
pw	9.300	rp	-67.1
DECOUPLER		lp	-288.0
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	29
dpwr	42	th	4
dmf	8900	nm no ph	



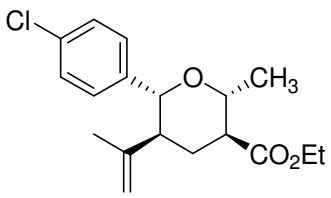


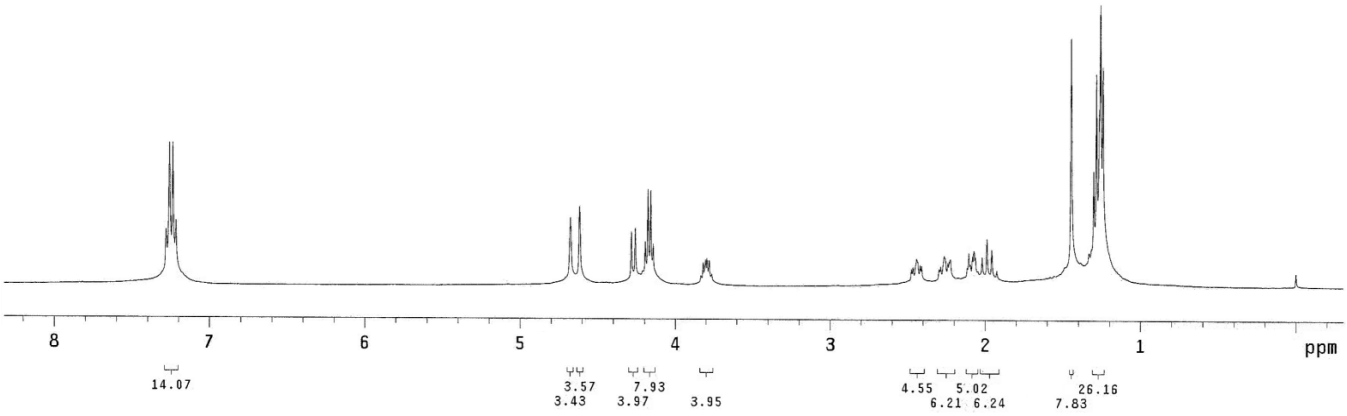
^{1}H NMR spectra of 3d

PS_395_U

expl s2pul

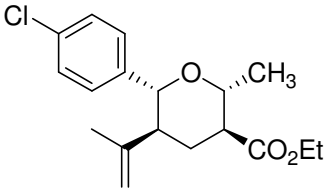
SAMPLE		SPECIAL	
date	Nov 29 2010	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_395~	U.fid	hst	0.008
		pw90	19.700
ACQUISITION		alfa	20.000
sw	6389.8	FLAGS	
at	1.998	il	n
np	25528	in	n
fb	not used	dp	y
bs	4	hs	nn
d1	1.000	PROCESSING	
nt	32	lb	0.10
ct	32	fn	65536
TRANSMITTER		DISPLAY	
tn	H1	sp	-122.7
sfrq	399.853	wp	3450.8
tof	362.8	rfl	794.3
tpwr	57	rfp	0
pw	9.850	rp	113.5
DECOUPLER		lp	-82.6
dn	C13	PLOT	
dof	0	wc	250
dm	nnn	sc	0
dmm	c	vs	46
dpwr	50	th	37
dmf	15900	nm	cdc ph

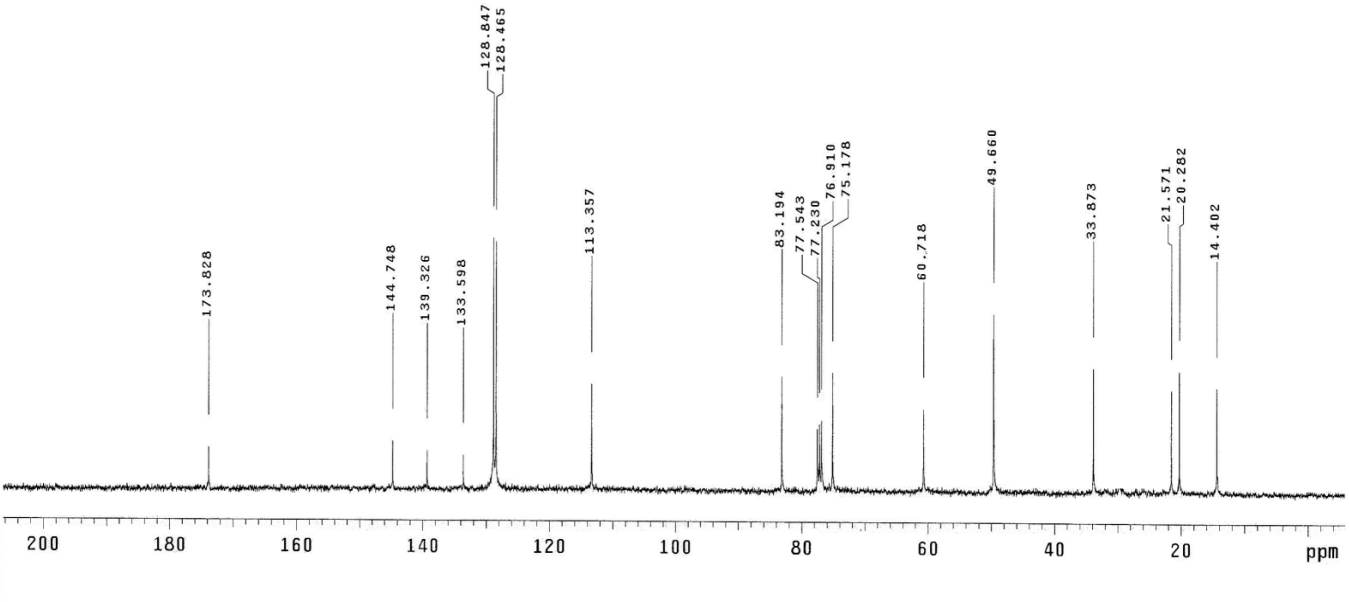




^{13}C NMR spectra of 3d

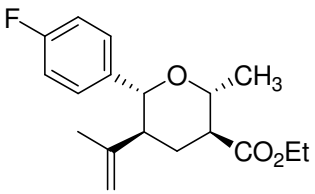
```
PS_395_U

exp1  s2pul

      SAMPLE            SPECIAL
date   Nov 29 2010  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_395~  hst           0.008
         U_C13.fid   pw90         18.600
   ACQUISITION       alfa         20.000
sw          25125.6        FLAGS
at            1.199  il                n
np            60270  in                n
fb            13800  dp                y
bs               16  hs               nn
d1            1.000      PROCESSING
nt             4000  lb             2.00
ct             1520  fn            65536
   TRANSMITTER             DISPLAY
tn              C13  sp          -584.0
sfrq        100.554  wp         21328.5
tof          1536.3  rfl         9272.9
tpwr             61  rfp         7764.9
pw            9.300  rp           -47.2
    DECOUPLER        lp          -326.0
dn               H1          PLOT
dof               0  wc             250
dm              yyy  sc               0
dmm               w  vs              39
dpwr             42  th               5
dmf            8900  nm  no  ph
```

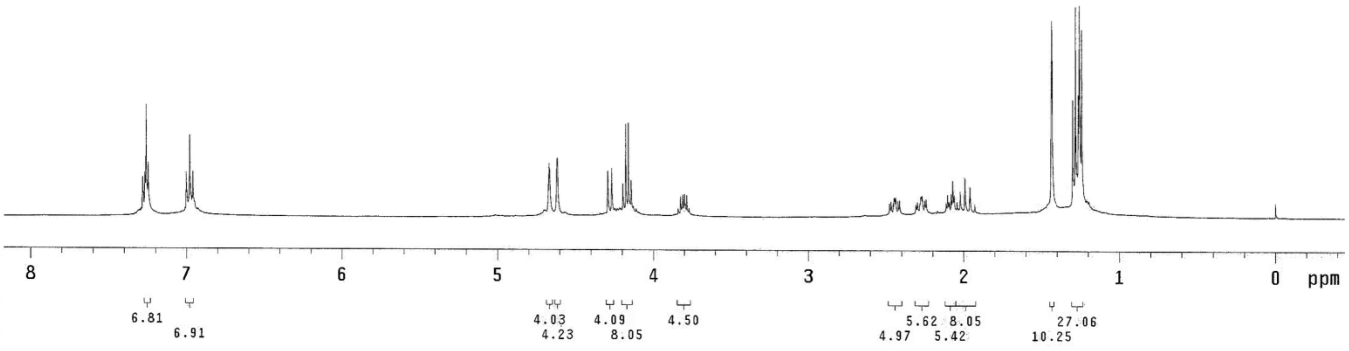




^{1}H NMR spectra of 3e

```
PS_396_U

exp1  s2pul

      SAMPLE            SPECIAL
date   Dec  1 2010  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_396~ hst          0.008
          _U.fid   pw90        19.700
   ACQUISITION      alfa       20.000
sw          6389.8        FLAGS
at           1.998  il             n
np           25528  in             n
fb       not used   dp             y
bs              4   hs            nn
d1          1.000      PROCESSING
nt             32   lb          0.10
ct             32   fn         65536
   TRANSMITTER           DISPLAY
tn              H1   sp       -182.9
sfrq       399.853   wp       3450.8
tof          362.8   rfl       795.8
tpwr            57   rfp           0
pw           9.850   rp        109.5
    DECOUPLER        lp       -107.9
dn             C13         PLOT
dof              0   wc          250
dm             nnn   sc            0
dmm              c   vs           34
dpwr            50   th           34
dmf          15900   nm  cdc  ph
```



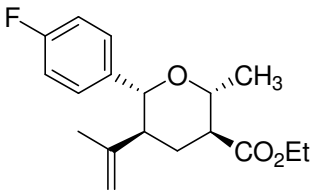


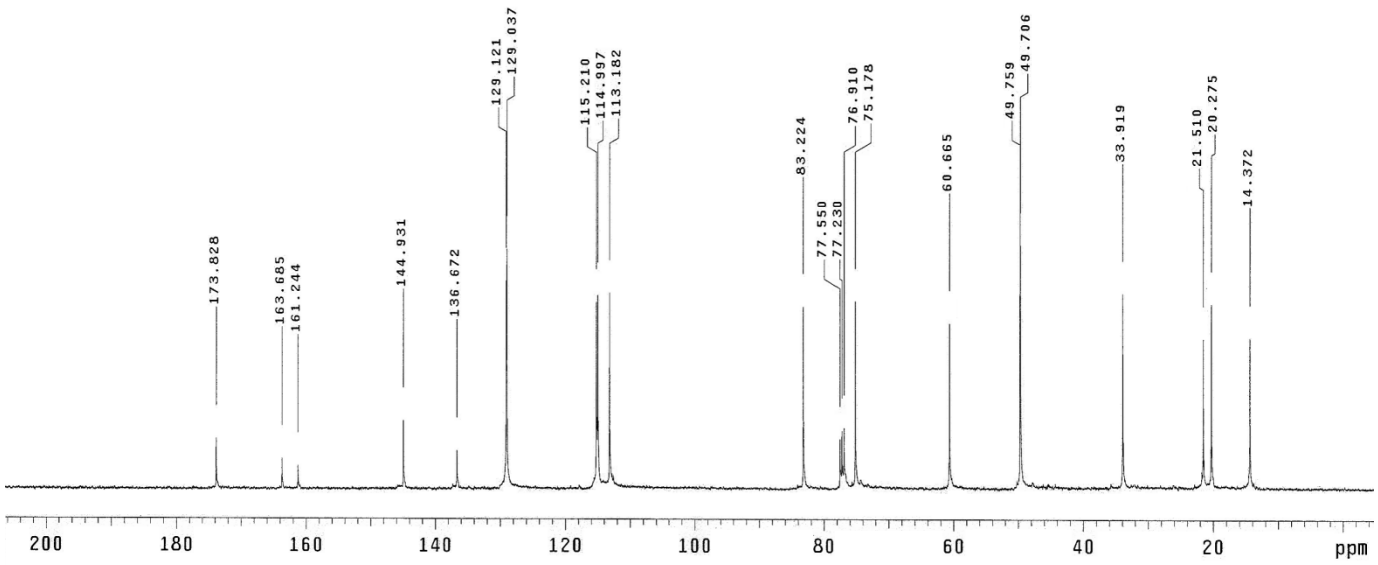
^{13}C NMR spectra of 3e

PS_396_U

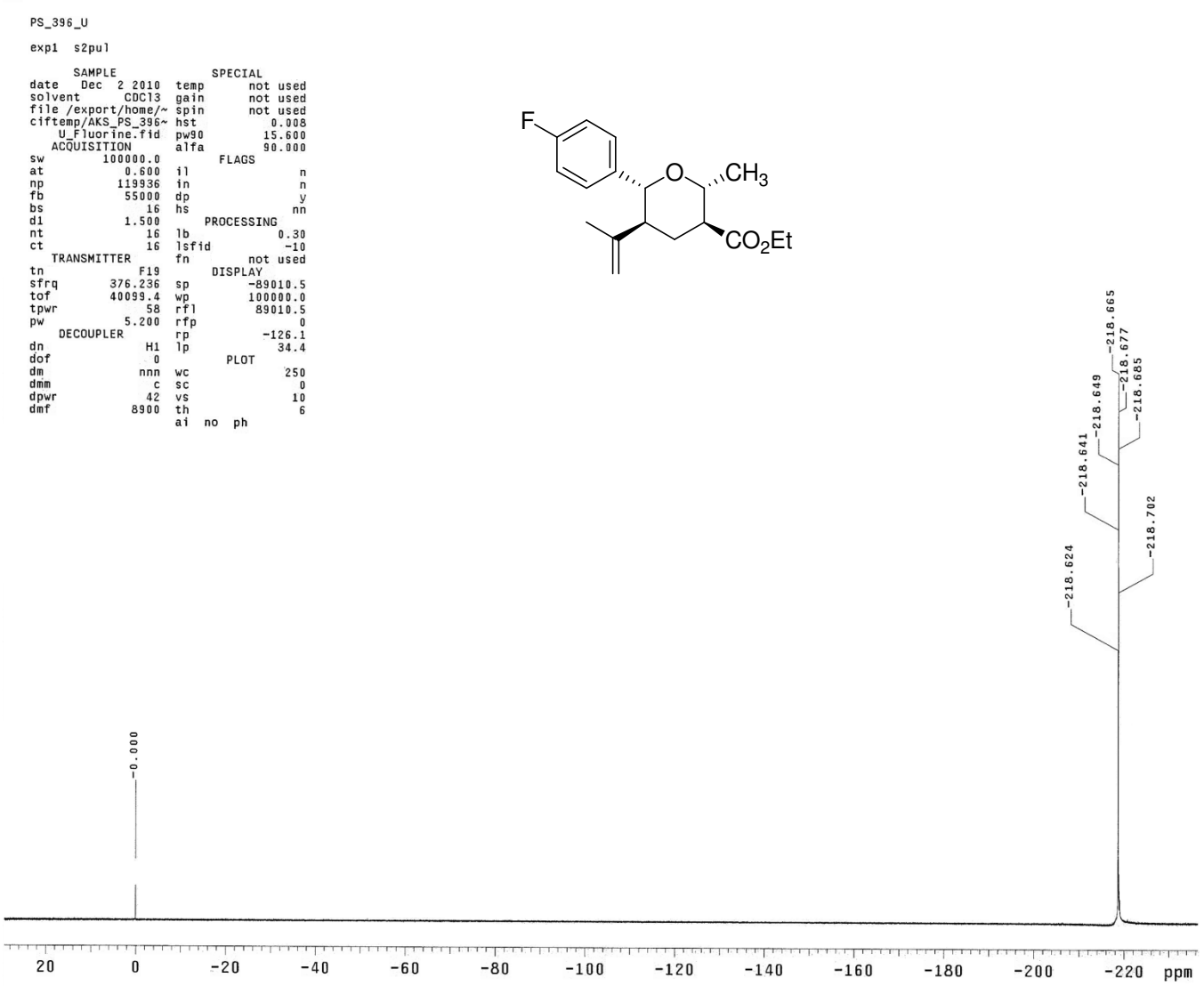
exp1 s2pul

SAMPLE		SPECIAL	
date	Dec 1 2010	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_396~		hst	0.008
	U_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	10000	lb	2.00
ct	10000	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-485.8
sfrq	100.554	wp	21229.5
tof	1536.3	rfl	9273.6
tpwr	61	rfp	7764.9
pw	9.300	rp	-43.2
DECOUPLER		lp	-343.0
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	37
dpwr	42	th	3
dmf	8900	nm no ph	



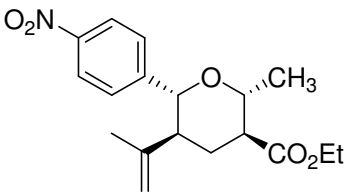


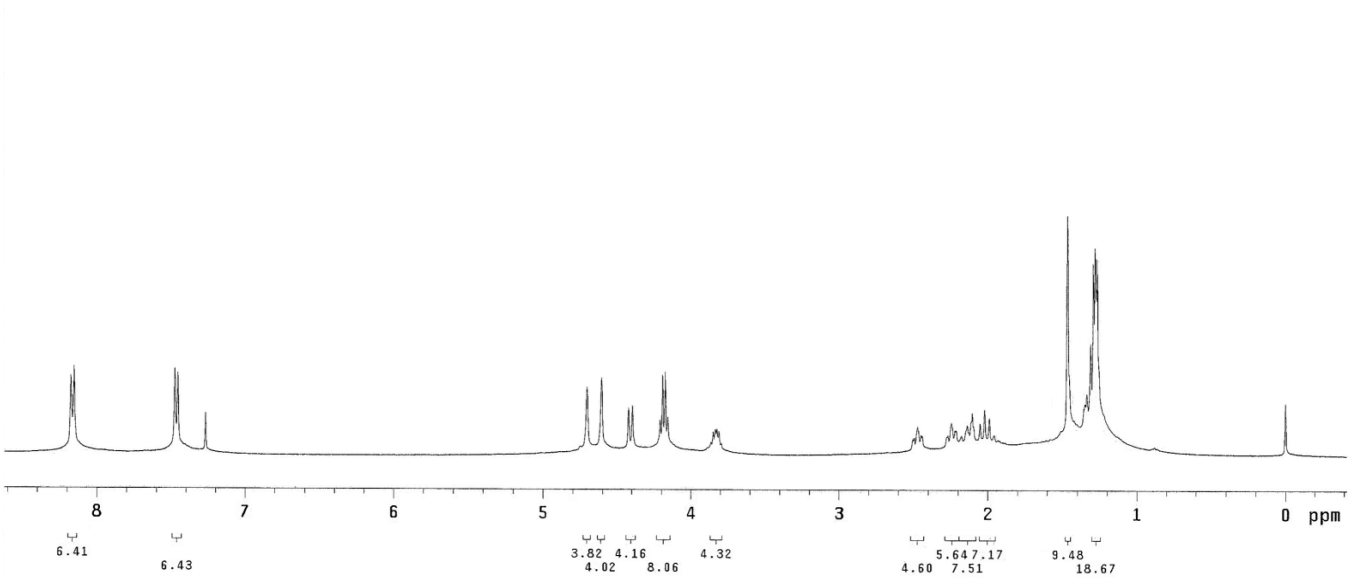
^{19}F NMR spectra of 3e



^{1}H NMR spectra of 3f

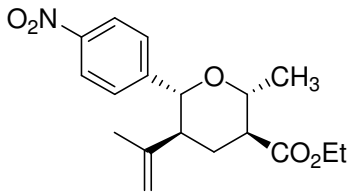
```
PS_391_U

exp1  std1h

      SAMPLE            SPECIAL
date   Nov 16 2010  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_391~ hst           0.008
          _U.fid    pw90         19.700
   ACQUISITION      alfa         20.000
sw          6006.0         FLAGS
at             1.995  il             n
np           23964    in             n
fb         not used   dp             y
bs               16   hs            nn
d1             1.000       PROCESSING
nt               100  fn         not used
ct               100        DISPLAY
   TRANSMITTER          sp          -167.2
tn                H1    wp          3614.3
sfrq         399.853    rfl          963.1
tof                0    rfp            0
tpwr              57    rp           110.1
pw             7.000    lp           -77.9
    DECOUPLER               PLOT
dn               C13    wc             250
dof                0    sc               0
dm               nnn    vs              44
dmm                c    th              65
dpwr              50    nm  cdc  ph
dmf            15900
```

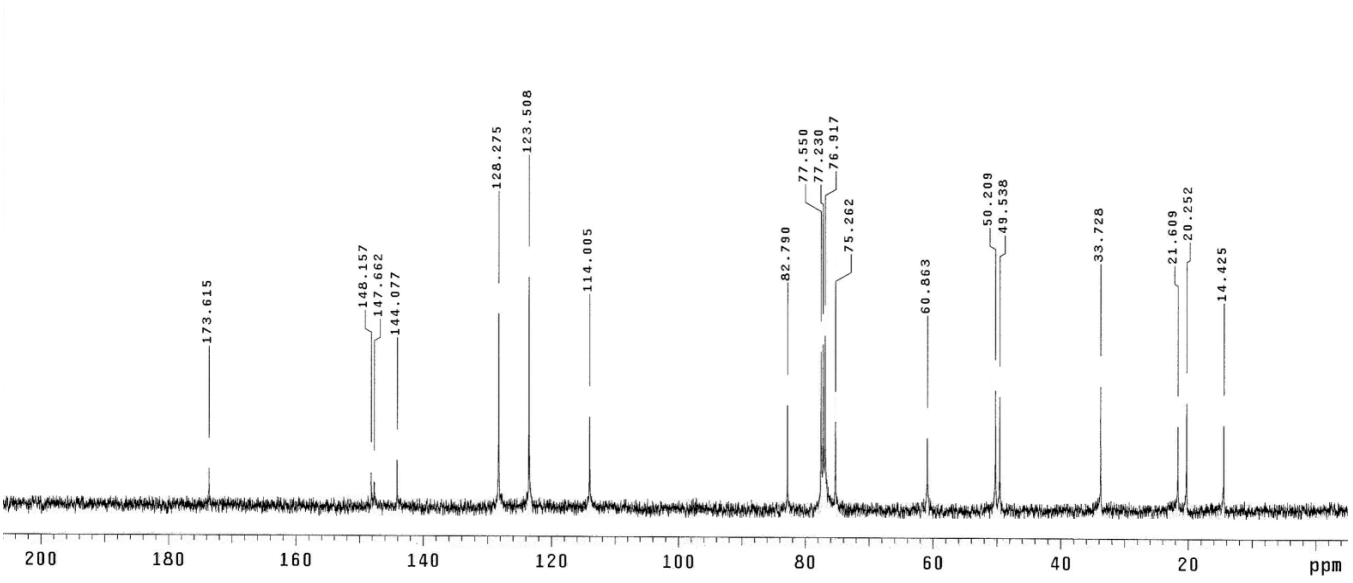




^{13}C NMR spectra of 3f

```
PS_340_U

exp1  s2pul

      SAMPLE              SPECIAL
date   Aug 27 2010  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
guest123/AKS_PS_34~ hst           0.008
        0U_C13.fid  pw90         18.600
   ACQUISITION      alfa         20.000
sw          25125.6        FLAGS
at            1.199  il              n
np            60270  in              n
fb            13800  dp              y
bs               16  hs             nn
d1            1.000      PROCESSING
nt             4000  lb            2.00
ct             4000  fn           65536
   TRANSMITTER          DISPLAY
tn              C13  sp          -513.4
sfrq        100.554  wp         21229.5
tof          1536.3  rfl         9268.3
tpwr             61  rfp         7764.9
pw            9.300  rp           -18.6
    DECOUPLER        lp          -390.3
dn               H1          PLOT
dof               0  wc             250
dm              yyy  sc               0
dmm               w  vs              37
dpwr             42  th               3
dmf            8900  nm  no  ph
```



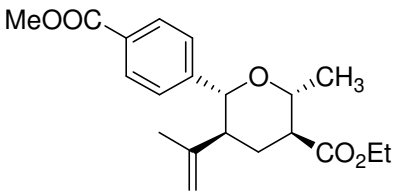


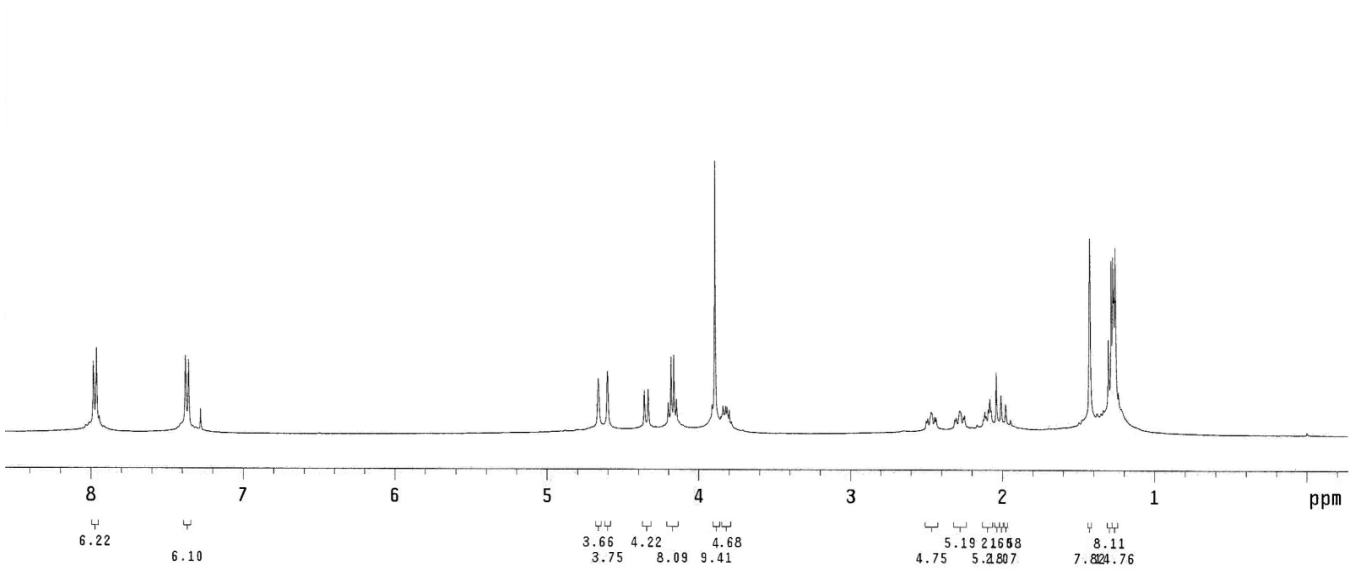
^{1}H NMR spectra of 3g

PS_338_U

exp1 s2pul

SAMPLE		SPECIAL	
date	Aug 6 2010	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
guest123/AKS_PS_33~	8_U.fid	hst	0.008
		pw90	19.700
ACQUISITION		alfa	20.000
sw	6389.8	FLAGS	
at	1.998	il	n
np	25528	in	n
fb	not used	dp	y
bs	4	hs	nn
d1	1.000	PROCESSING	
nt	32	lb	0.10
ct	32	fn	65536
TRANSMITTER		DISPLAY	
tn	H1	sp	-108.0
sfrq	399.853	wp	3531.4
tof	362.8	rfl	786.9
tpwr	57	rfp	0
pw	9.850	rp	125.8
DECOUPLER		lp	-81.9
dn	C13	PLOT	
dof	0	wc	250
dm	nnn	sc	0
dmm	c	vs	42
dpwr	50	th	50
dmf	15900	nm	cdc ph



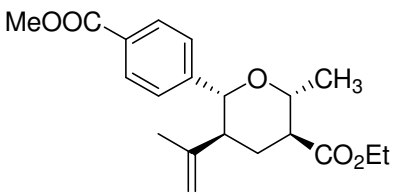


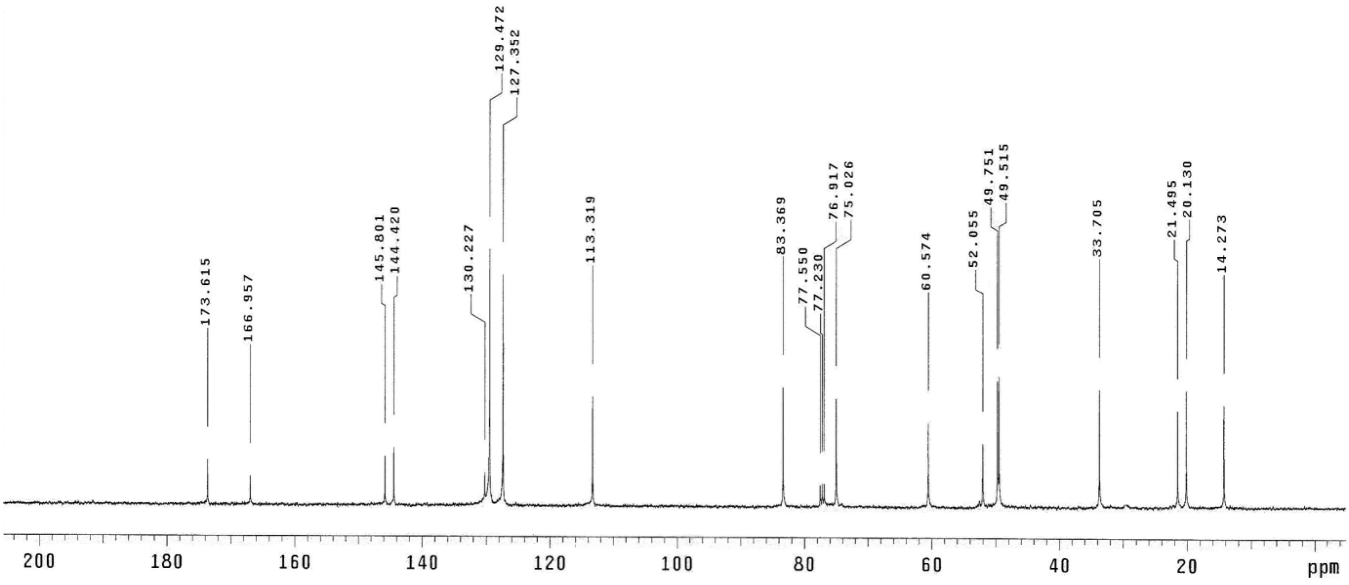
^{13}C NMR spectra of 3g

PS_338_U

exp1 s2pul

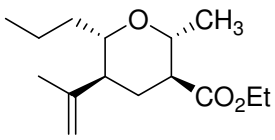
SAMPLE		SPECIAL	
date	Aug 6 2010	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
guest123/AKS_PS_33~		hst	0.008
	8U_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	3000	lb	2.00
ct	992	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-492.7
sfrq	100.554	wp	21163.6
tof	1536.3	rfl	9280.5
tpwr	61	rfp	7764.9
pw	9.300	rp	-45.6
DECOUPLER		lp	-314.3
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	39
dpwr	42	th	3
dmf	8900	nm no ph	

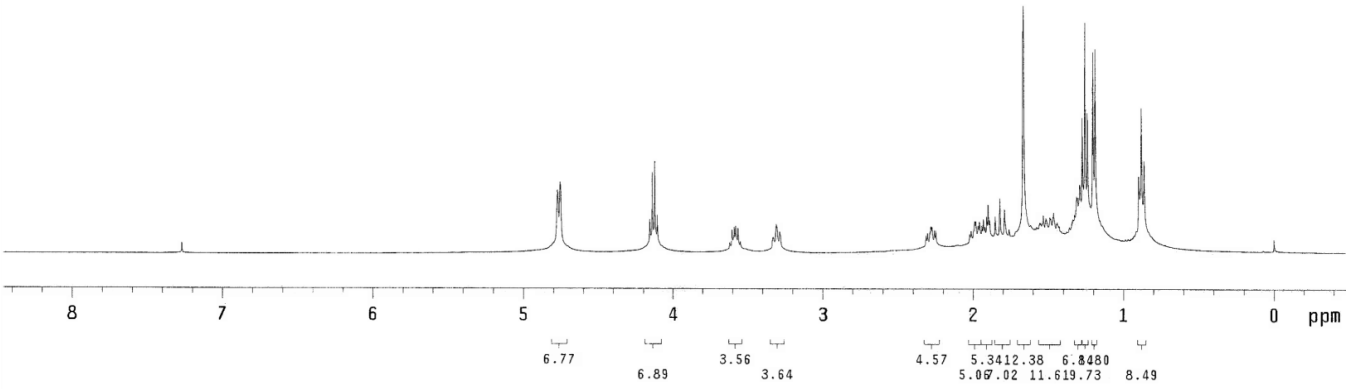




^{1}H NMR spectra of 3h

```
PS_468_U

exp1  s2pul

      SAMPLE            SPECIAL
date   Mar 23 2011  temp       not used
solvent      CDCl3  gain       not used
file           exp  spin       not used
   ACQUISITION      hst           0.008
sw          6389.8  pw90         19.700
at           1.998  alfa         20.000
np           25528        FLAGS
fb       not used  il                 n
bs              8  in                 n
d1          1.000  dp                 y
nt            100  hs                nn
ct            100      PROCESSING
   TRANSMITTER     lb             0.10
tn             H1  fn            65536
sfrq       399.853      DISPLAY
tof          362.8  sp           -194.2
tpwr            57  wp           3576.8
pw           9.850  rfl           790.4
    DECOUPLER      rfp               0
dn             C13  rp            105.1
dof              0  lp            -55.9
dm             nnn         PLOT
dmm              c  wc              250
dpwr            50  sc                0
dmf         15900  vs               40
                   th               20
                   nm  cdc  ph
```



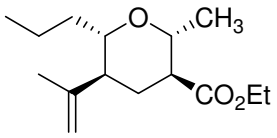


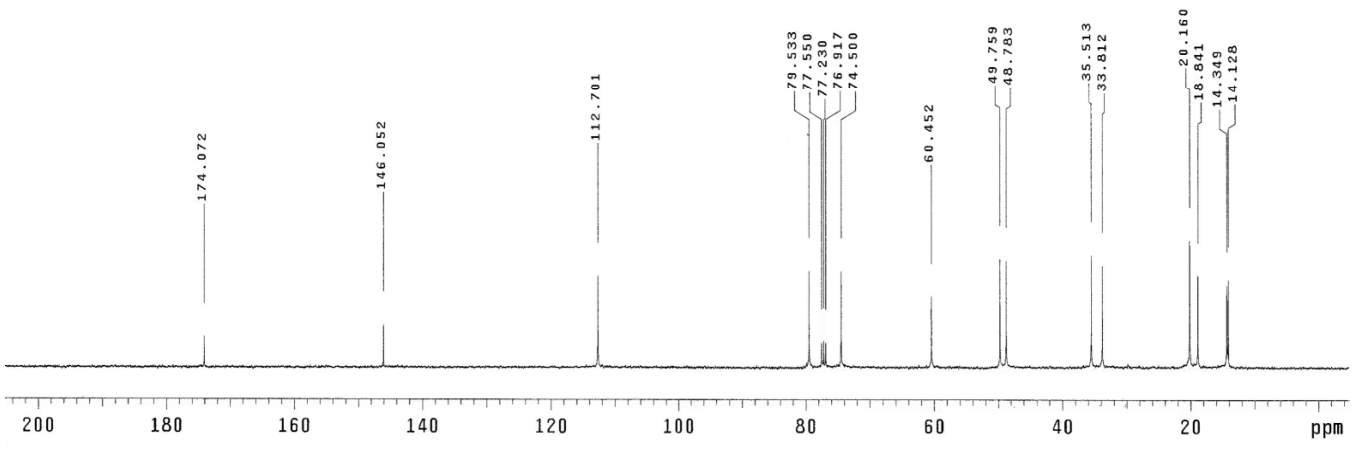
^{13}C NMR spectra of 3h

PS_468

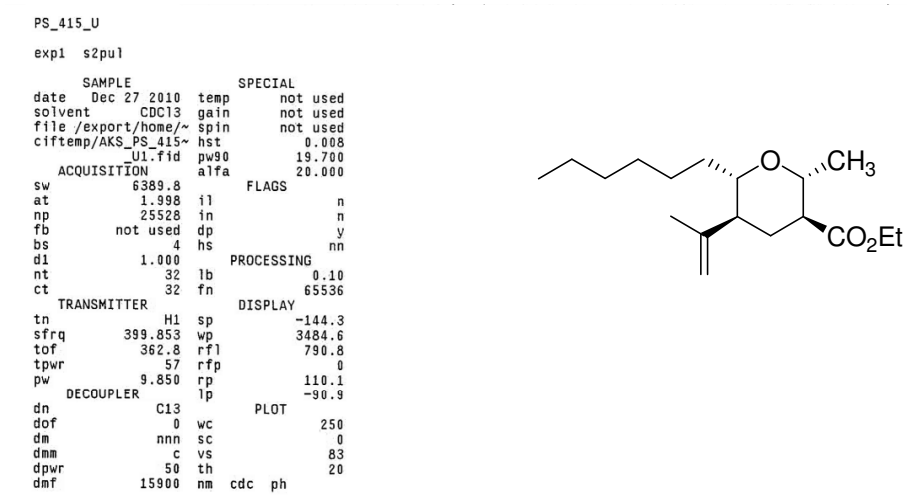
exp1 s2pul

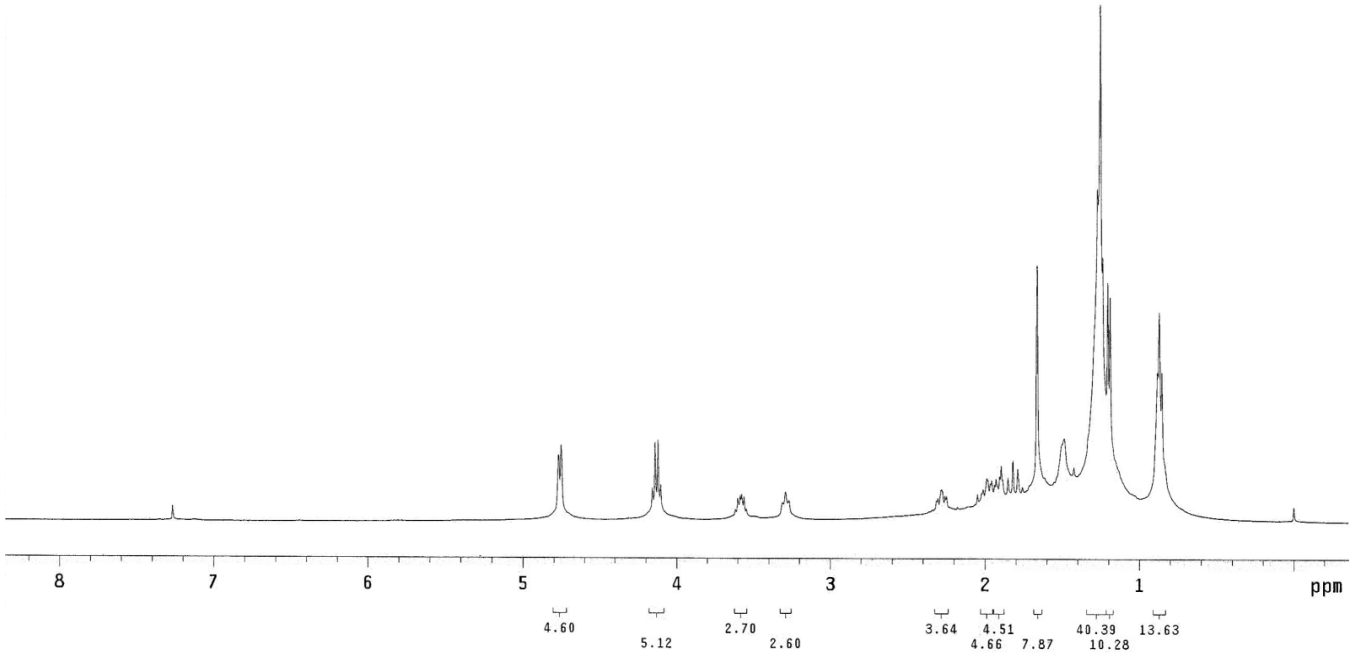
SAMPLE		SPECIAL	
date	Mar 24 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	25125.6	pw90	18.600
at	1.199	alfa	20.000
np	60270	FLAGS	
fb	13800	il	n
bs	16	in	n
d1	1.000	dp	y
nt	2000	hs	nn
ct	1008	PROCESSING	
TRANSMITTER		lb	2.00
tn	C13	fn	65536
sfrq	100.554	DISPLAY	
tof	1536.3	sp	-482.8
tpwr	61	wp	21130.6
pw	9.300	rfl	9270.6
DECOUPLER		rfp	7764.9
dn	H1	rp	-47.6
dof	0	lp	-338.3
dm	yyy	PLOT	
dmm	w	wc	250
dpwr	42	sc	0
dmf	8900	vs	19
		th	2
		nm	no ph





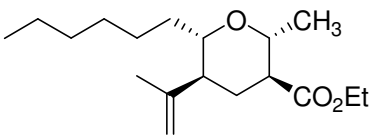
^{1}H NMR spectra of 3i

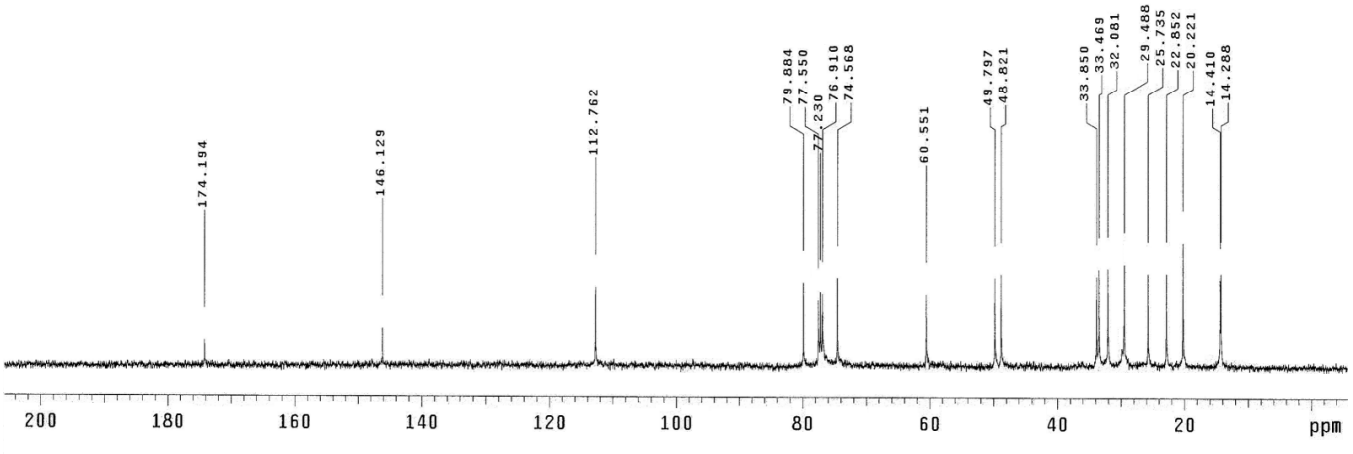




^{13}C NMR spectra of 3i

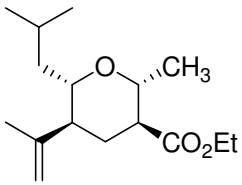
```
PS_417_U

exp1  s2pul

      SAMPLE            SPECIAL
date   Dec 29 2010  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_417~ hst           0.008
         U_C13.fid  pw90         18.600
   ACQUISITION      alfa         20.000
sw          25125.6       FLAGS
at            1.199  il                n
np            60270  in                n
fb            13800  dp                y
bs               16  hs               nn
d1            1.000      PROCESSING
nt             3000  lb             2.00
ct             2672  fn            65536
   TRANSMITTER           DISPLAY
tn              C13  sp           -579.4
sfrq        100.554  wp         21262.5
tof          1536.3  rfl         9268.3
tpwr             61  rfp         7764.9
pw            9.300  rp           -47.5
    DECOUPLER        lp          -334.5
dn               H1           PLOT
dof               0  wc             250
dm              yyy  sc               0
dmm               w  vs              19
dpwr             42  th               2
dmf            8900  nm  no  ph
```

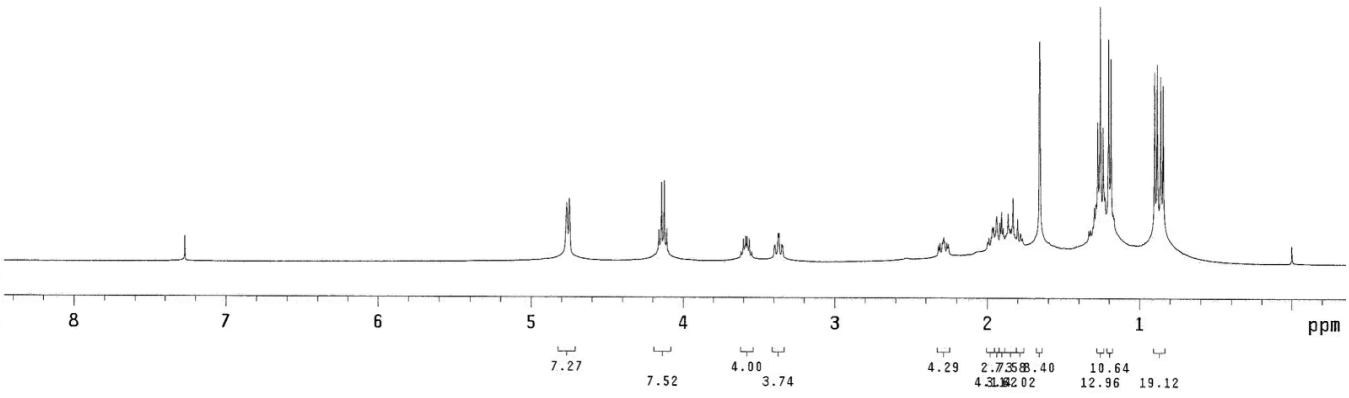




^{1}H NMR spectra of 3j

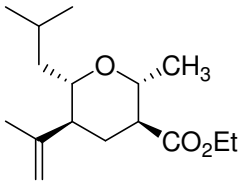
```
PS_413_U

exp1  s2pul

      SAMPLE            SPECIAL
date    Dec 24 2010  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_413~  hst           0.008
              _U.fid  pw90         19.700
   ACQUISITION       alfa         20.000
sw            6389.8         FLAGS
at             1.998  il                n
np            25528   in                n
fb          not used  dp                y
bs                4   hs               nn
d1            1.000         PROCESSING
nt               32   lb             0.10
ct               32   fn            65536
   TRANSMITTER              DISPLAY
tn                H1  sp           -144.3
sfrq         399.853  wp           3526.5
tof            362.8  rfl           790.8
tpwr              57  rfp               0
pw             9.850  rp            123.4
    DECOUPLER        lp            -62.6
dn                C13          PLOT
dof                0  wc             250
dm               nnn  sc               0
dmm                c  vs              42
dpwr              50  th              20
dmf            15900  nm  cdc  ph
```

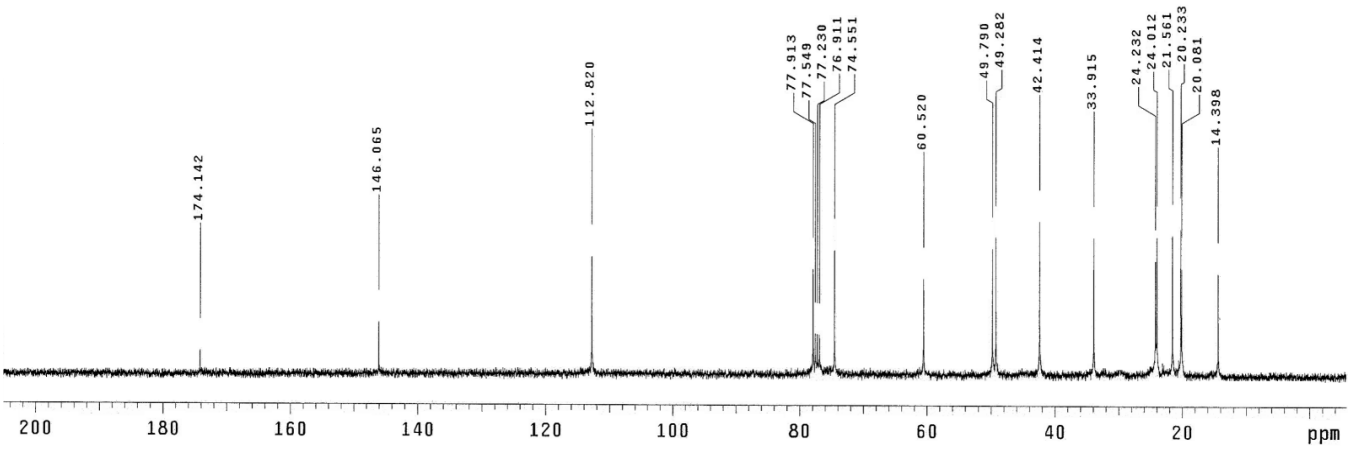




^{13}C NMR spectra of 3j

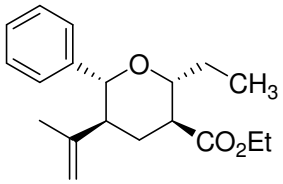
```
PS_413_U

exp1  std13c

      SAMPLE            SPECIAL
date   Dec 24 2010  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_413~  hst          0.008
         U_C13.fid   pw90        18.600
    ACQUISITION      alfa       20.000
sw          25000.0        FLAGS
at            1.199  il              n
np            59968  in              n
fb            13800  dp              y
bs               16  hs             nn
d1                0      PROCESSING
nt             3000  lb           1.00
ct             2544  fn       not used
   TRANSMITTER           DISPLAY
tn               C13  sp         -578.1
sfrq         100.552  wp        21189.0
tof                0  rfl       10741.0
tpwr              61  rfp        7764.9
pw             8.667  rp          -31.3
     DECOUPLER        lp         -354.1
dn                H1         PLOT
dof                0  wc            250
dm               yyy  sc              0
dmm                w  vs             24
dpwr              42  th              3
dmf             8900  nm  no  ph
```

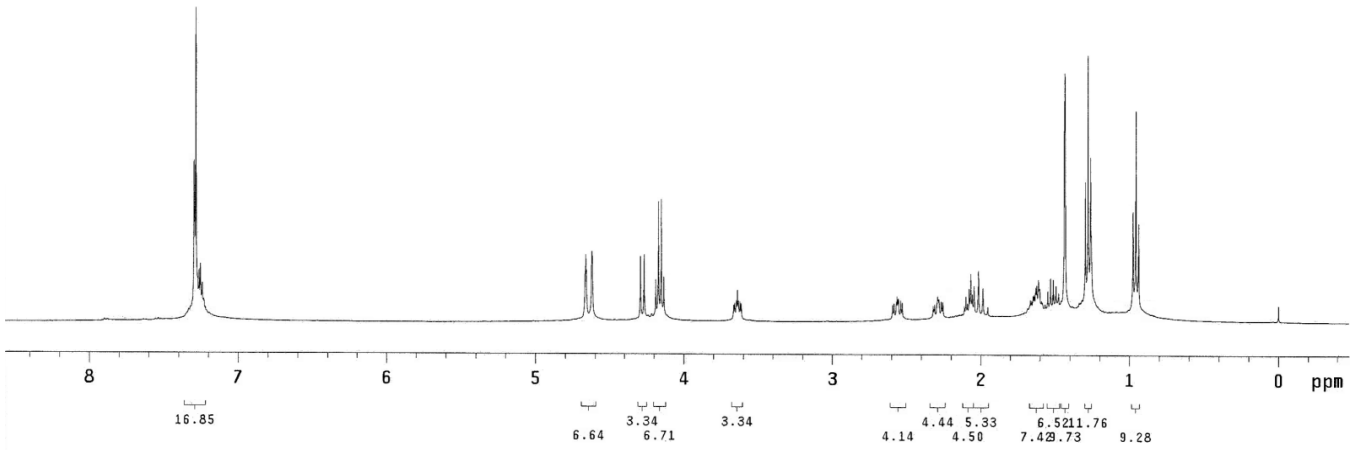




^{1}H NMR spectra of 3k

```
PS_456_U

exp1  s2pul

      SAMPLE              SPECIAL
date   Feb 28 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_456~ hst           0.008
              _U.fid  pw90        19.700
   ACQUISITION       alfa        20.000
sw            6389.8         FLAGS
at             1.998  il              n
np           25528    in              n
fb         not used   dp              y
bs                8   hs             nn
d1            1.000        PROCESSING
nt              100   lb           0.10
ct              100   fn          65536
   TRANSMITTER            DISPLAY
tn                H1  sp          -192.9
sfrq         399.853  wp          3618.7
tof            362.8  rfl          797.4
tpwr              57  rfp              0
pw             9.850  rp           116.8
    DECOUPLER         lp          -103.9
dn                C13          PLOT
dof                 0  wc            250
dm                nnn  sc              0
dmm                 c  vs             52
dpwr               50  th              8
dmf            15900  nm  cdc  ph
```



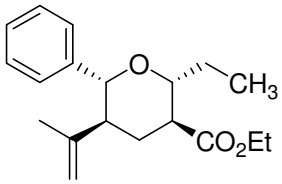


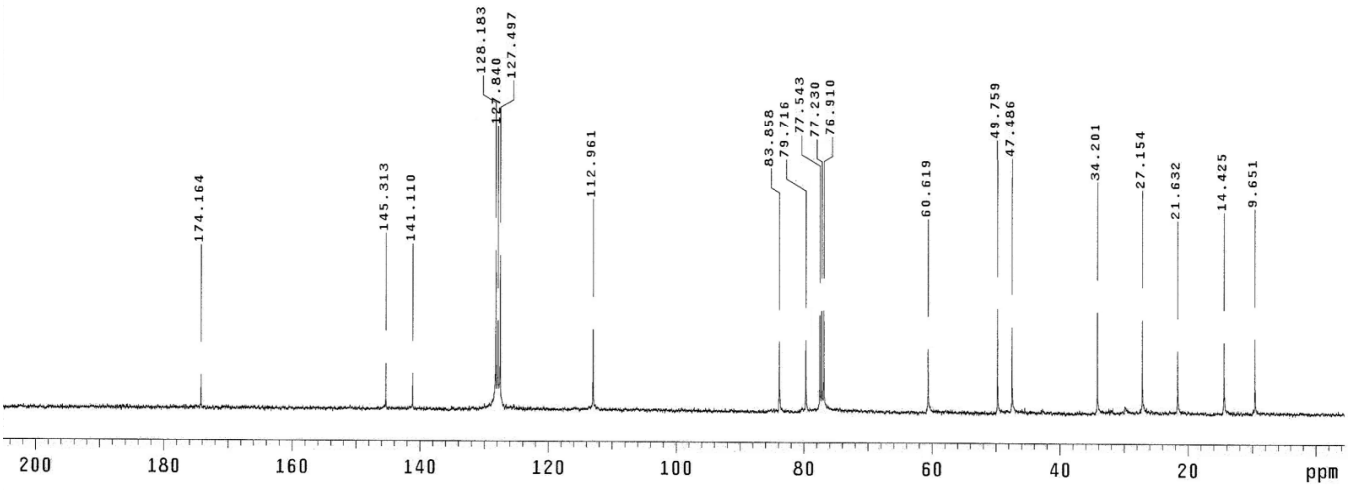
^{13}C NMR spectra of 3k

PS_456_U

exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 1 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_456~		hst	0.008
	U_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	8000	lb	2.00
ct	8000	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-449.0
sfrq	100.554	wp	21096.9
tof	1536.3	rfl	9269.8
tpwr	61	rfp	7764.9
pw	9.300	rp	-69.1
DECOUPLER		lp	-290.8
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	25
dpwr	42	th	4
dmf	8900	nm	no ph



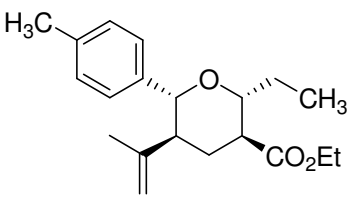


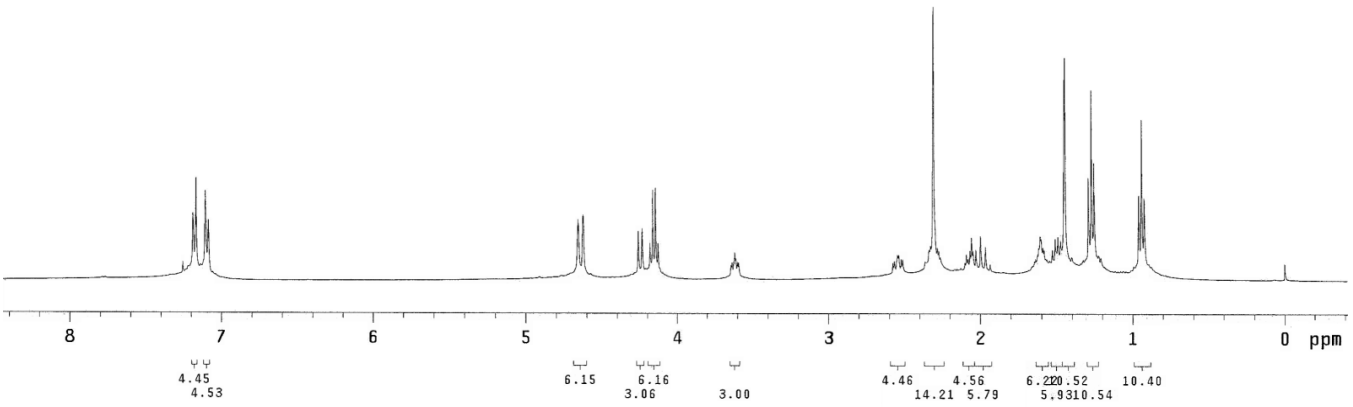
^{1}H NMR spectra of 3l

PS_464_U

exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 14 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	6389.8	pw90	19.700
at	1.998	alfa	20.000
np	25528	FLAGS	
fb	not used	il	n
bs	8	in	n
d1	1.000	dp	y
nt	100	hs	nn
ct	100	PROCESSING	
TRANSMITTER		lb	0.10
tn	H1	fn	65536
sfrq	399.853	DISPLAY	
tof	362.8	sp	-166.7
tpwr	57	wp	3543.3
pw	9.850	rfl	796.4
DECOUPLER		rfp	0
dn	C13	rp	115.3
dof	0	lp	-71.1
dm	nnn	PLOT	
dmm	c	wc	250
dpwr	50	sc	0
dmf	15900	vs	46
		th	15
		nm	cdc ph



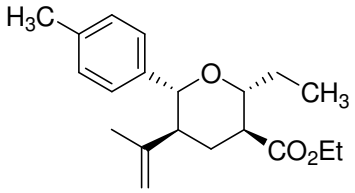


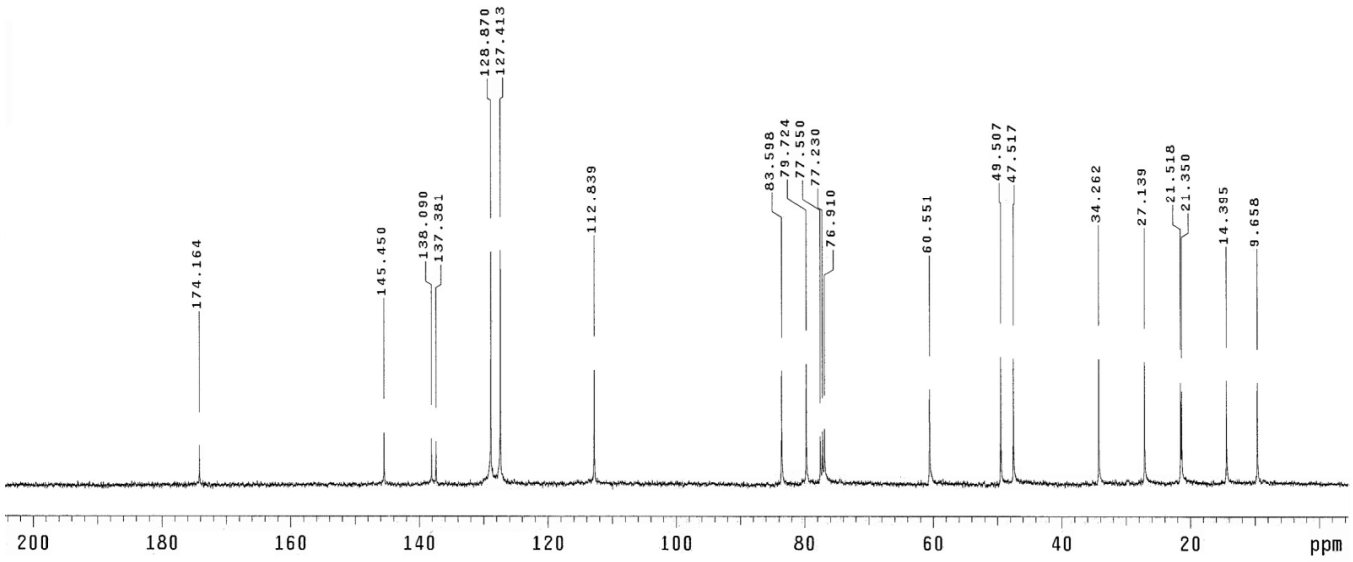
^{13}C NMR spectra of 3l

PS_464_U

exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 14 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	25125.6	pw90	18.600
at	1.199	alfa	20.000
np	60270	FLAGS	
fb	13800	il	n
bs	16	in	n
d1	1.000	dp	y
nt	4000	hs	nn
ct	3024	PROCESSING	
TRANSMITTER		lb	2.00
tn	C13	fn	65536
sfrq	100.554	DISPLAY	
tof	1536.3	sp	-452.9
tpwr	61	wp	21030.9
pw	9.300	rfl	9273.6
DECOUPLER		rfp	7764.9
dn	H1	rp	-71.2
dof	0	lp	-301.8
dm	yyy	PLOT	
dmm	w	wc	250
dpwr	42	sc	0
dmf	8900	vs	35
		th	4
		nm	no ph





^{1}H NMR spectra of 3m

```
PS_458_U

exp1  s2pul

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date   Mar  2 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_458~ hst           0.008
              _U.fid  pw90        19.700
   ACQUISITION       alfa        20.000
sw           6389.8         FLAGS
at            1.998  il             n
np            25528  in             n
fb        not used   dp             y
bs               8   hs            nn
d1           1.000     PROCESSING
nt             100   lb          0.10
ct             100   fn         65536
   TRANSMITTER           DISPLAY
tn              H1   sp         -236.5
sfrq       399.853   wp         3694.4
tof          362.8   rfl         790.6
tpwr            57   rfp             0
pw           9.850   rp          111.7
    DECOUPLER        lp         -95.9
dn             C13          PLOT
dof              0   wc           250
dm             nnn   sc             0
dmm              c   vs            57
dpwr            50   th            62
dmf          15900   nm  cdc  ph
```

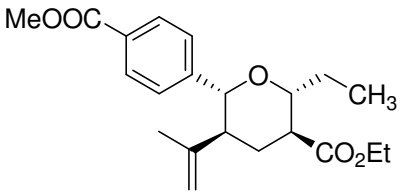

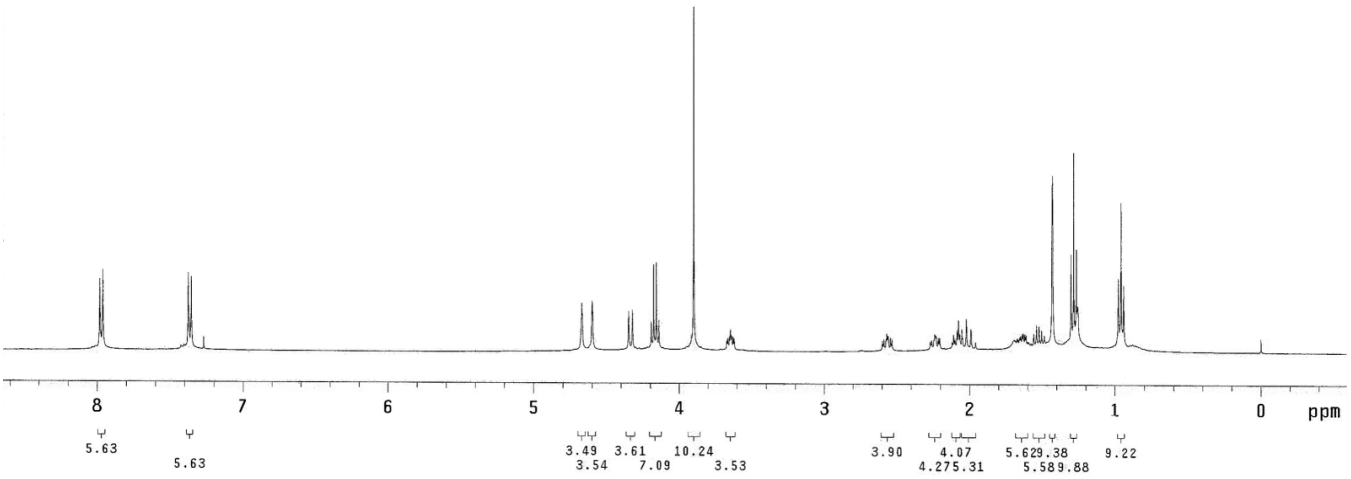

^{13}C NMR spectra of 3m

PS_458_U

exp1 s2pul

SAMPLE		SPECIAL	
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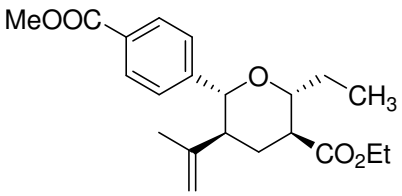
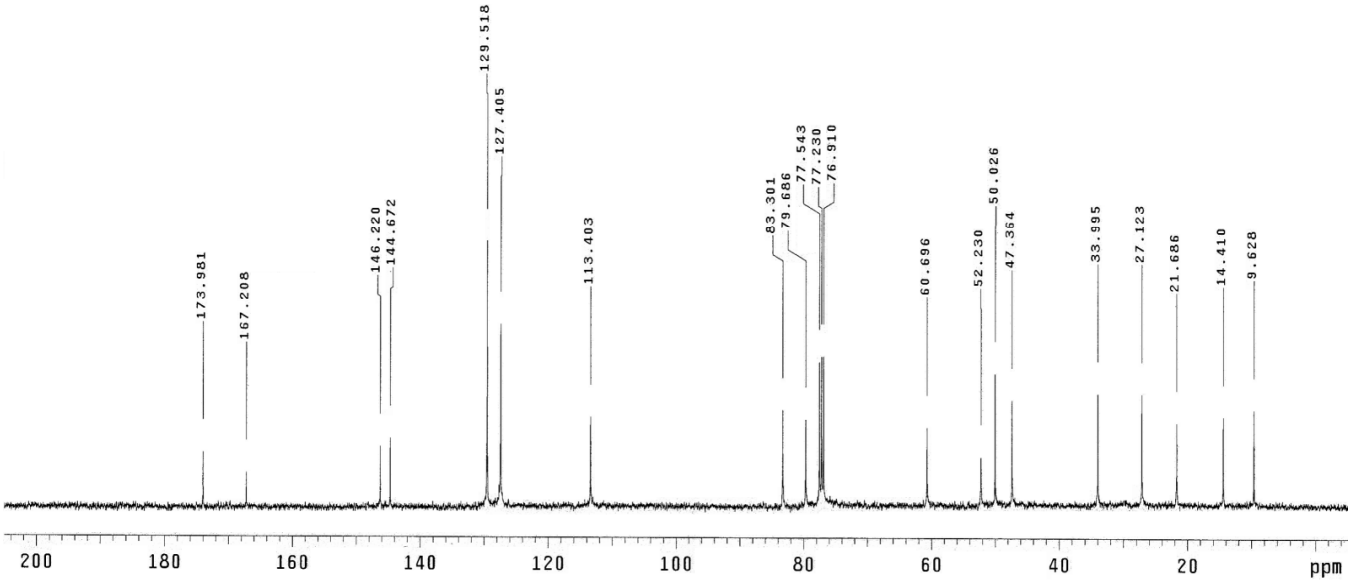
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_458~		hst	0.008
	U_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	5000	lb	2.00
ct	4640	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-515.7
sfrq	100.554	wp	21130.6
tof	1536.3	rfl	9270.6
tpwr	61	rfp	7764.9
pw	9.300	rp	-58.4
DECOUPLER		lp	-332.0
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	41
dpwr	42	th	4
dmf	8900	nm no ph	





^{1}H NMR spectra of 3n

PS_463_U

exp1 s2pul

SAMPLE		SPECIAL	
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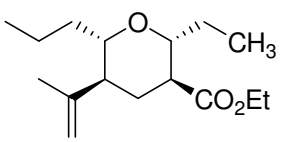
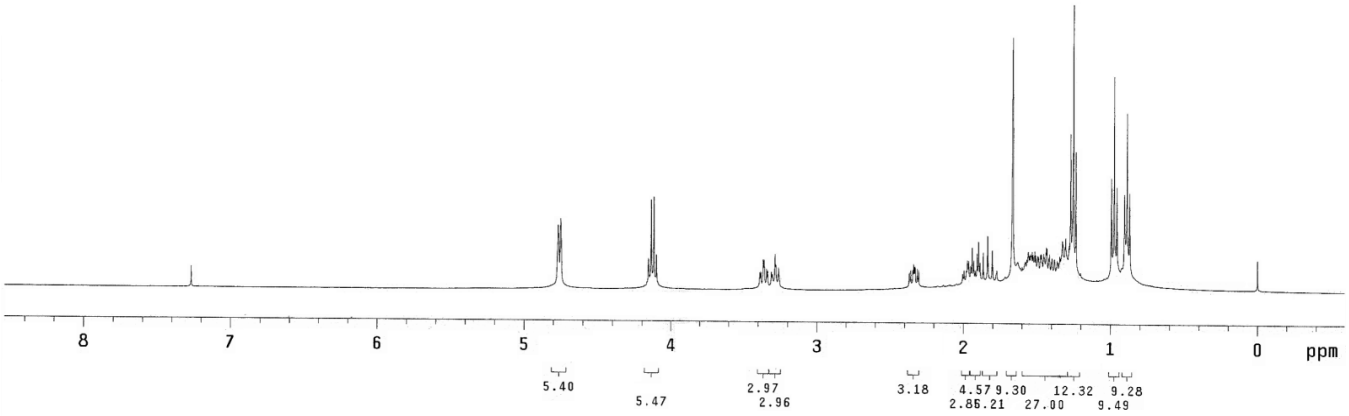
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	6389.8	pw90	19.700
at	1.998	alfa	20.000
np	25528	FLAGS	
fb	not used	il	n
bs	8	in	n
dl	1.000	dp	y
nt	100	hs	nn
ct	100	PROCESSING	
TRANSMITTER		lb	0.10
tn	H1	fn	65536
sfrq	399.853	DISPLAY	
tof	362.8	sp	-238.1
tpwr	57	wp	3652.5
pw	9.850	rfl	792.1
DECOUPLER		rfp	0
dn	C13	rp	111.9
dof	0	lp	-86.1
dm	nnn	PLOT	
dmm	c	wc	250
dpwr	50	sc	0
dmf	15900	vs	48
		th	20
		nm	cdc ph



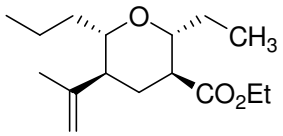


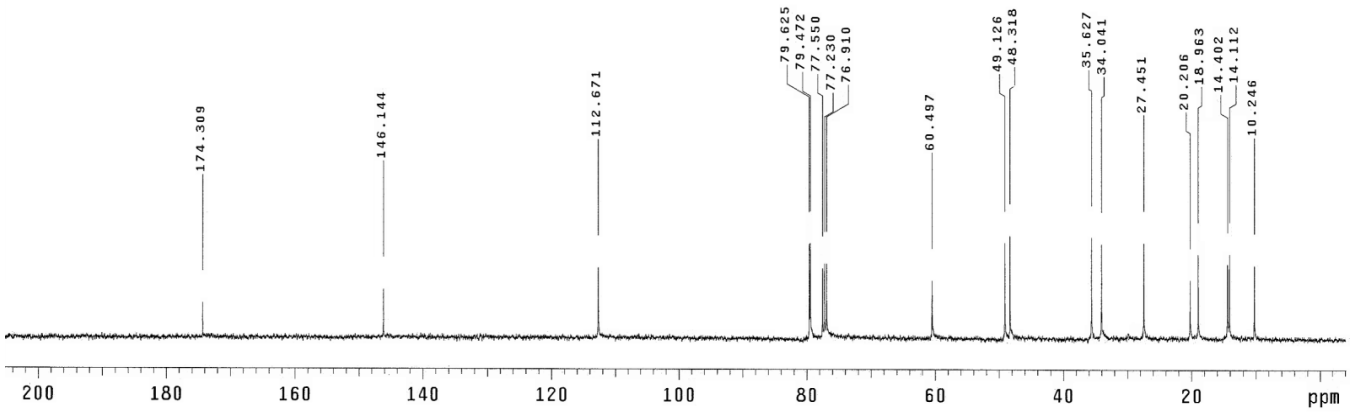
^{13}C NMR spectra of 3n

PS_463_U

exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 12 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	25125.6	pw90	18.600
at	1.199	alfa	20.000
np	60270	FLAGS	
fb	13800	il	n
bs	16	in	n
d1	1.000	dp	y
nt	5000	hs	nn
ct	2272	PROCESSING	
TRANSMITTER		lb	2.00
tn	C13	fn	65536
sfrq	100.554	DISPLAY	
tof	1536.3	sp	-414.5
tpwr	61	wp	21063.9
pw	9.300	rfl	9268.3
DECOUPLER		rfp	7764.9
dn	H1	rp	-62.8
dof	0	lp	-346.1
dm	yyy	PLOT	
dmm	w	wc	250
dpwr	42	sc	0
dmf	8900	vs	16
		th	5
		nm no ph	



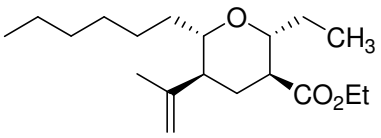


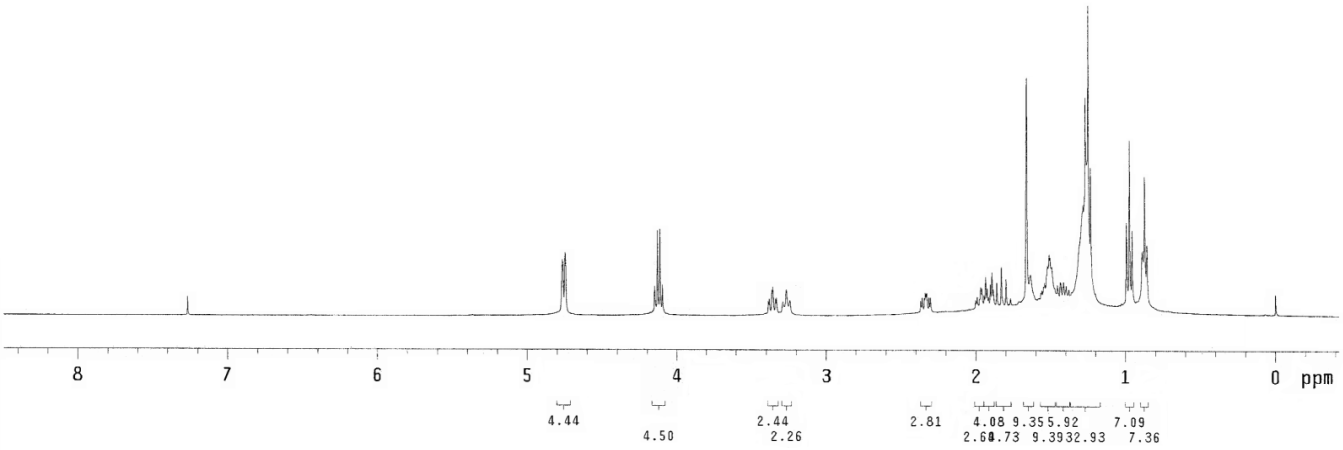
^{1}H NMR spectra of 3o

PS_469_U

exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 27 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	6389.8	pw90	19.700
at	1.998	alfa	20.000
np	25528	FLAGS	
fb	not used	il	n
bs	8	in	n
d1	1.000	dp	y
nt	100	hs	nn
ct	100	PROCESSING	
TRANSMITTER		lb	0.10
tn	H1	fn	65536
sfrq	399.853	DISPLAY	
tof	362.8	sp	-171.0
tpwr	57	wp	3568.4
pw	9.850	rfl	792.3
DECOUPLER		rfp	0
dn	C13	rp	112.2
dof	0	lp	-82.4
dm	nnn	PLOT	
dmm	c	wc	250
dpwr	50	sc	0
dmf	15900	vs	49
		th	16
		nm	cdc ph



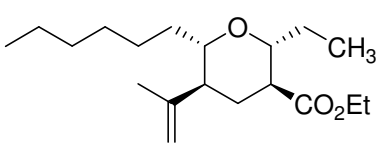


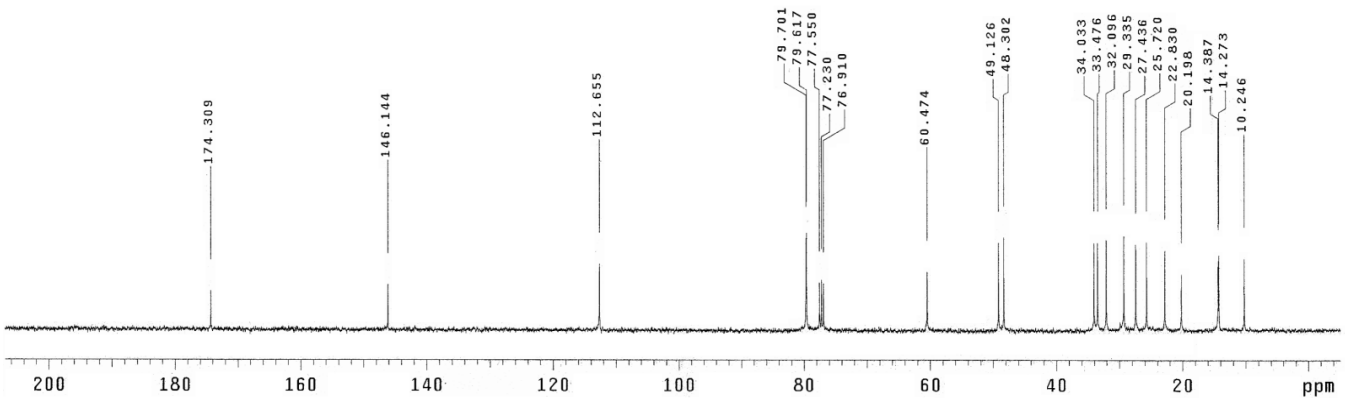
^{13}C NMR spectra of 3o

PS_469_U

exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 27 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	25125.6	pw90	18.600
at	1.199	alfa	20.000
np	60270	FLAGS	
fb	13800	il	n
bs	16	in	n
d1	1.000	dp	y
nt	4000	hs	nn
ct	880	PROCESSING	
TRANSMITTER		lb	2.00
tn	C13	fn	65536
sfrq	100.554	DISPLAY	
tof	1536.3	sp	-515.0
tpwr	61	wp	21328.5
pw	9.300	rf1	9269.8
DECOUPLER		rfp	7764.9
dn	H1	rp	-55.3
dof	0	lp	-314.1
dm	yyy	PLOT	
dmm	w	wc	250
dpwr	42	sc	0
dmf	8900	vs	16
		th	2
		nm no ph	



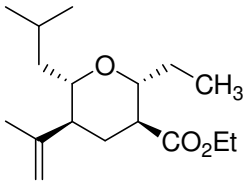


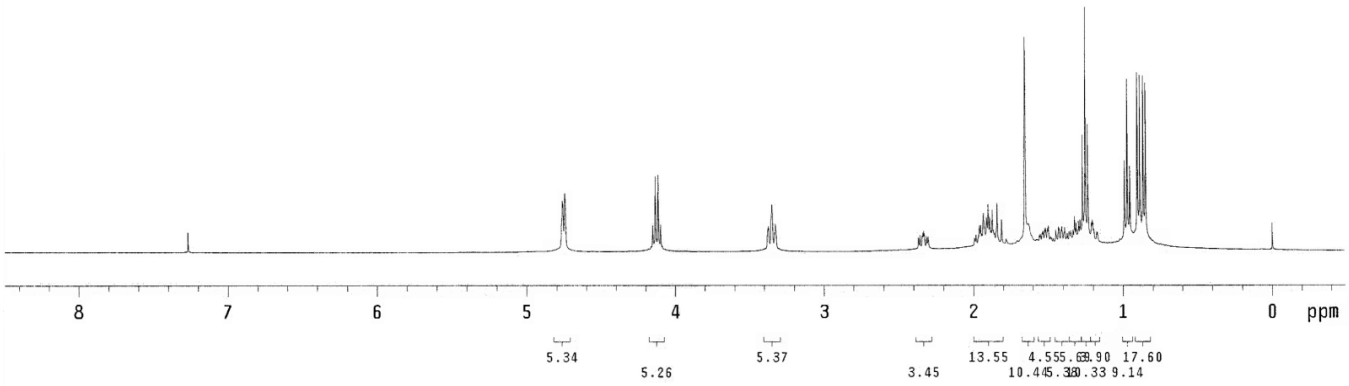
^{1}H NMR spectra of 3p

PS_467_U

exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 22 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_467~		hst	0.008
	U.fid	pw90	19.700
ACQUISITION		alfa	20.000
sw	6389.8	FLAGS	
at	1.998	il	n
np	25528	in	n
fb	not used	dp	y
bs	8	hs	nn
d1	1.000	PROCESSING	
nt	100	lb	0.10
ct	100	fn	65536
TRANSMITTER		DISPLAY	
tn	H1	sp	-196.0
sfrq	399.853	wp	3593.6
tof	362.8	rfl	792.1
tpwr	57	rfp	0
pw	9.850	rp	109.1
DECOUPLER		lp	-84.0
dn	C13	PLOT	
dof	0	wc	250
dm	nnn	sc	0
dmm	c	vs	38
dpwr	50	th	20
dmf	15900	nm	cdc ph



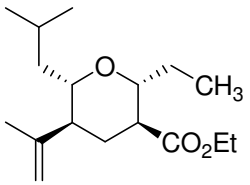


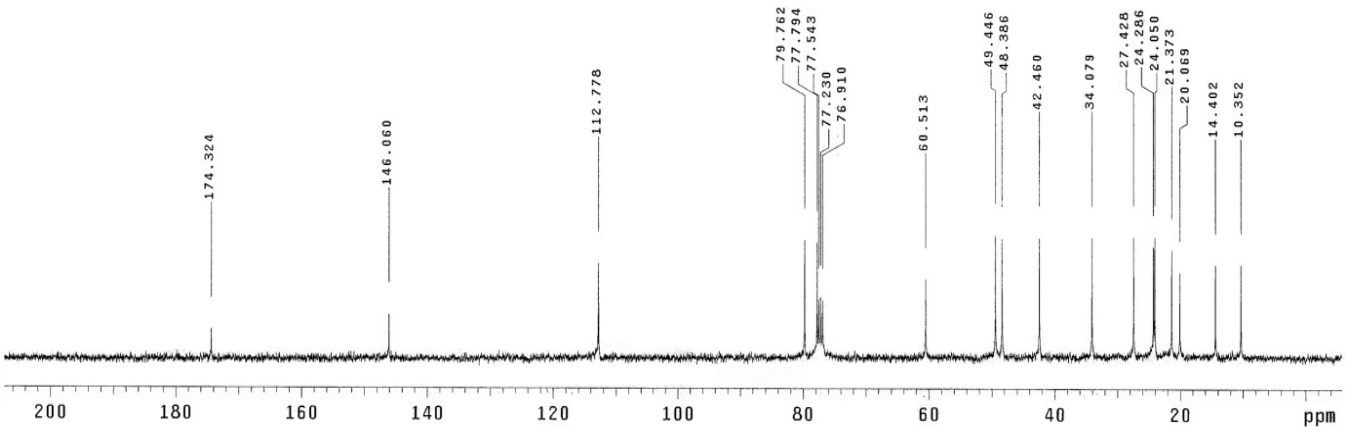
^{13}C NMR spectra of 3p

PS_467_U

exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 23 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	25125.6	pw90	18.600
at	1.199	alfa	20.000
np	60270	FLAGS	
fb	13800	il	n
bs	16	in	n
d1	1.000	dp	y
nt	8000	hs	nn
ct	1552	PROCESSING	
TRANSMITTER		lb	2.00
tn	C13	fn	65536
sfrq	100.554	DISPLAY	
tof	1536.3	sp	-579.4
tpwr	61	wp	21427.4
pw	9.300	rfl	9268.3
DECOUPLER		rfp	7764.9
dn	H1	rp	-49.4
dof	0	lp	-298.6
dm	yyy	PLOT	
dmm	w	wc	250
dpwr	42	sc	0
dmf	8900	vs	20
		th	3
		nm	no ph





^{1}H NMR spectra of 4a

```
PS_425_M

exp1  s2pul

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date   Jan  7 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_425~ hst          0.008
              _M.fid  pw90        19.700
   ACQUISITION       alfa        20.000
sw           6389.8         FLAGS
at             1.998  il                n
np            25528  in                n
fb        not used  dp                y
bs                8  hs               nn
d1            1.000      PROCESSING
nt              100  lb             0.10
ct              100  fn            65536
   TRANSMITTER            DISPLAY
tn                H1  sp          -193.8
sfrq         399.853  wp          3585.2
tof            362.8  rfl          798.4
tpwr              57  rfp              0
pw             9.850  rp           118.5
    DECOUPLER         lp           -98.5
dn                C13          PLOT
dof                0  wc             250
dm               nnn  sc               0
dmm                c  vs              43
dpwr              50  th              31
dmf            15900  nm  cdc  ph
```
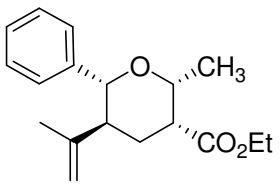
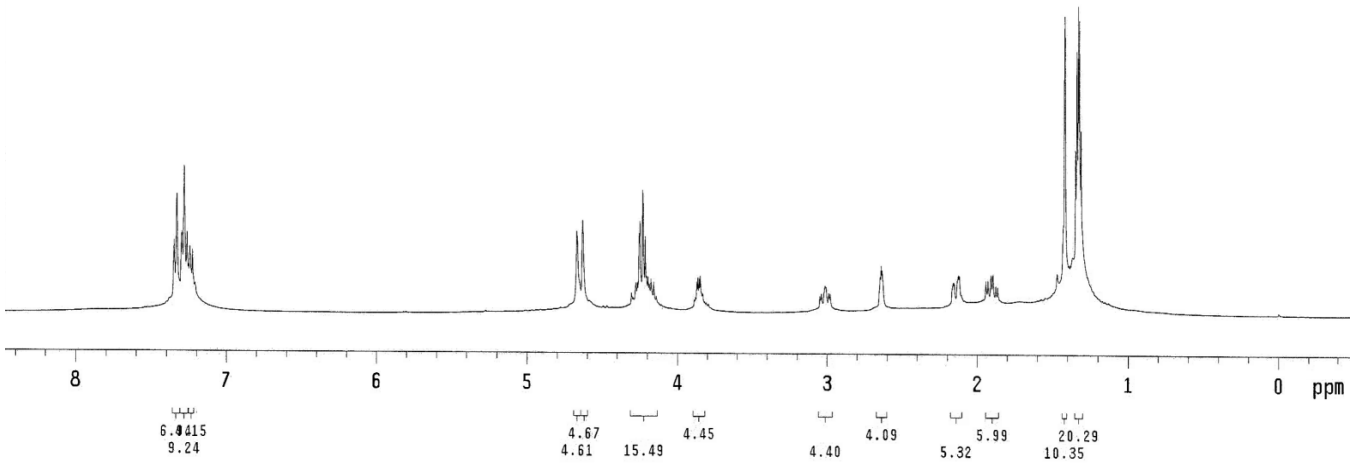



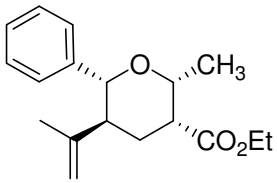


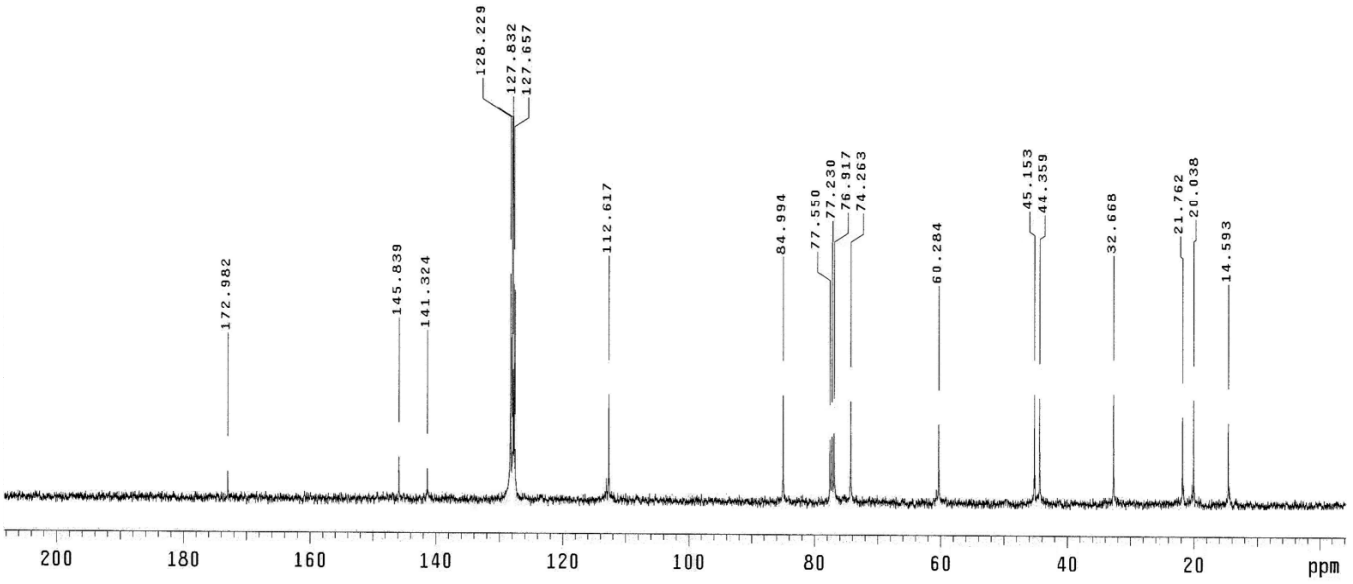
^{13}C NMR spectra of 4a

PS_425_M

exp1 s2pul

SAMPLE		SPECIAL	
date	Jan 7 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_425~		hst	0.008
	M_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	4000	lb	2.00
ct	1152	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-420.7
sfrq	100.554	wp	21361.4
tof	1536.3	rfl	9274.4
tpwr	61	rfp	7764.9
pw	9.300	rp	-48.1
DECOUPLER		lp	-335.6
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	33
dpwr	42	th	3
dmf	8900	nm no ph	



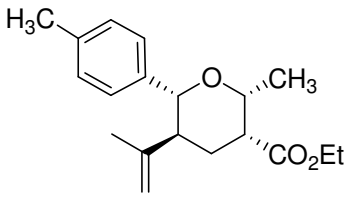


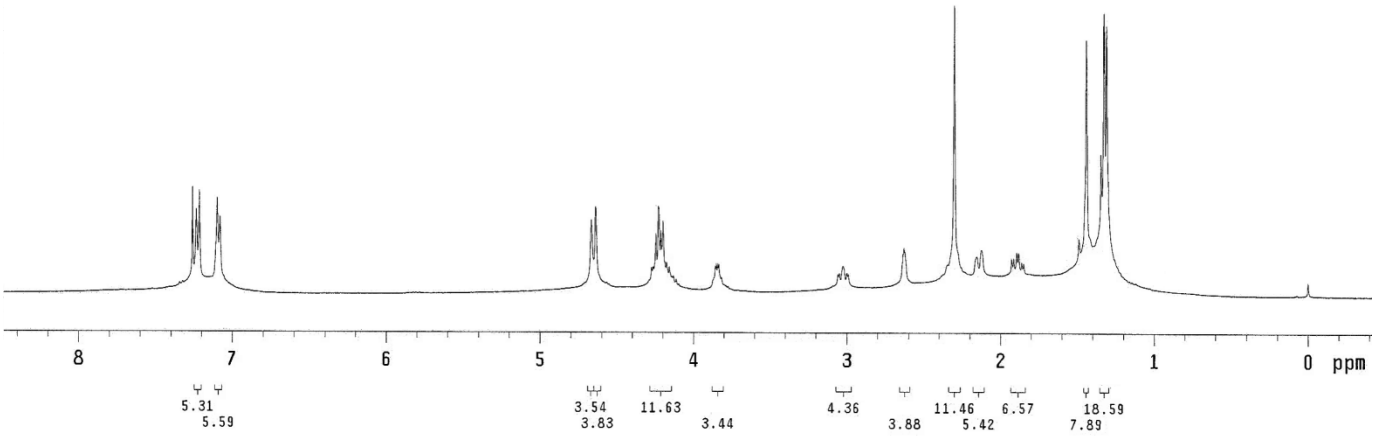
^{1}H NMR spectra of 4b

PS_343 ✗M

exp1 s2pul

SAMPLE		SPECIAL	
date	Sep 2 2010	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
guest123/AKS_PS_34~		hst	0.008
	3_M.fid	pw90	19.700
ACQUISITION		alfa	20.000
sw	6389.8	FLAGS	
at	1.998	il	n
np	25528	in	n
fb	not used	dp	y
bs	4	hs	nn
d1	1.000	PROCESSING	
nt	32	lb	0.10
ct	32	fn	65536
TRANSMITTER		DISPLAY	
tn	H1	sp	-166.3
sfrq	399.853	wp	3560.0
tof	362.8	rfl	796.0
tpwr	57	rfp	0
pw	9.850	rp	133.1
DECOUPLER		lp	-95.1
dn	C13	PLOT	
dof	0	wc	250
dm	nnn	sc	0
dmm	c	vs	44
dpwr	50	th	37
dmf	15900	nm cdc ph	



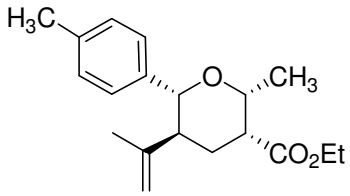


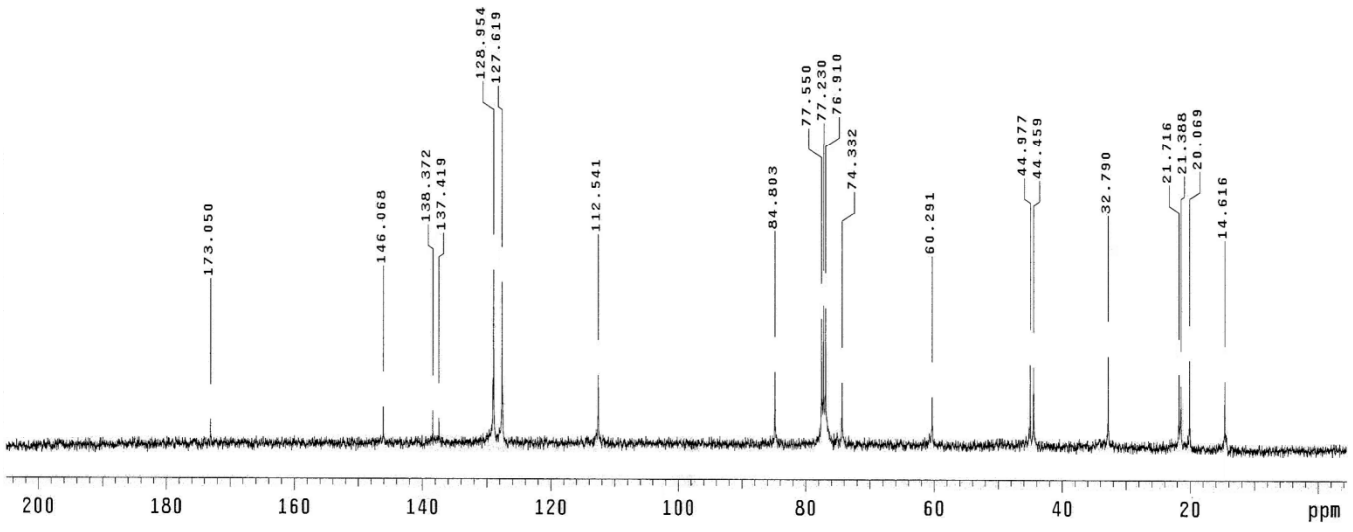
^{13}C NMR spectra of 4b

PS_343_M

exp1 s2pul

SAMPLE		SPECIAL	
date	Sep 3 2010	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
guest123/AKS_PS_34~		hst	0.008
	3M1_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	4000	lb	2.00
ct	3728	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-449.0
sfrq	100.554	wp	21063.9
tof	1536.3	rfl	9269.8
tpwr	61	rfp	7764.9
pw	9.300	rp	-27.3
DECOUPLER		lp	-357.1
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	25
dpwr	42	th	3
dmf	8900	nm no ph	



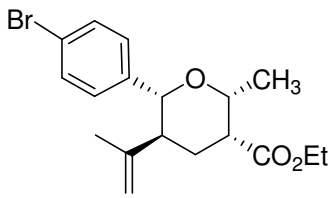


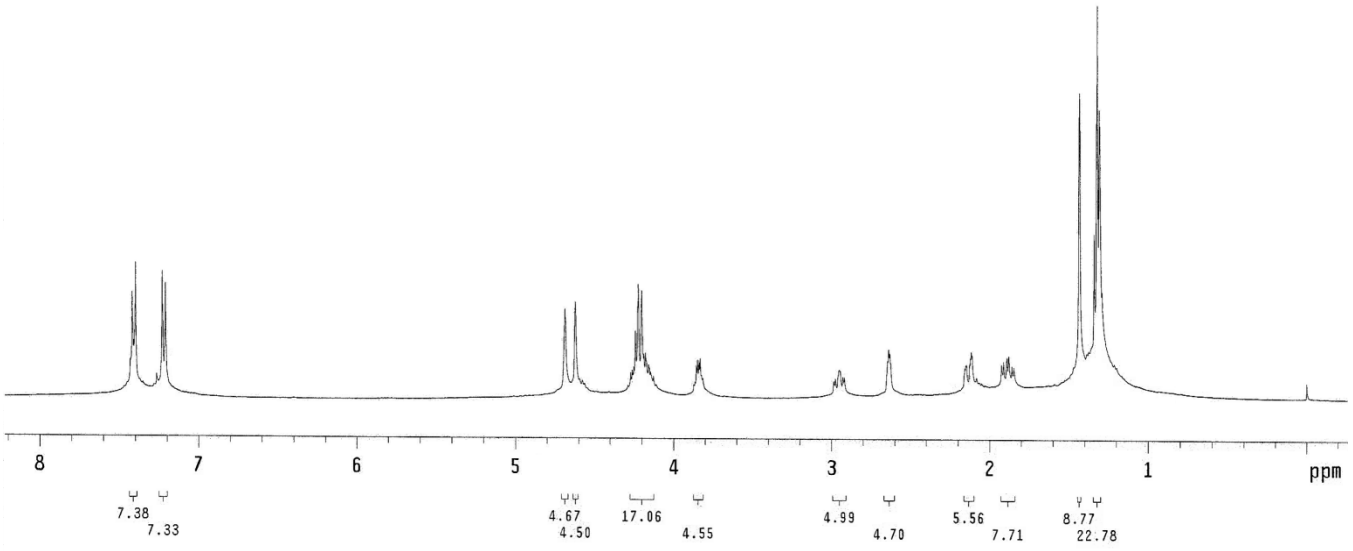
^{1}H NMR spectra of 4c

PS_341M

exp1 s2pul

SAMPLE		SPECIAL	
date	Jan 18 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_341~		hst	0.008
	M.fid	pw90	19.700
ACQUISITION		alfa	20.000
sw	6389.8	FLAGS	
at	1.998	il	n
np	25528	in	n
fb	not used	dp	y
bs	8	hs	nn
d1	1.000	PROCESSING	
nt	100	lb	0.10
ct	100	fn	65536
TRANSMITTER		DISPLAY	
tn	H1	sp	-104.5
sfrq	399.853	wp	3392.1
tof	362.8	rfl	792.9
tpwr	57	rfp	0
pw	9.850	rp	99.8
DECOUPLER		lp	-80.9
dn	C13	PLOT	
dof	0	wc	250
dm	nnn	sc	0
dmm	c	vs	57
dpwr	50	th	20
dmf	15900	nm cdc ph	



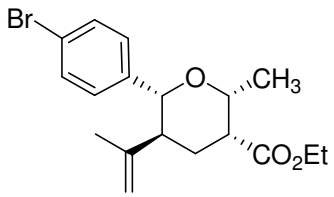


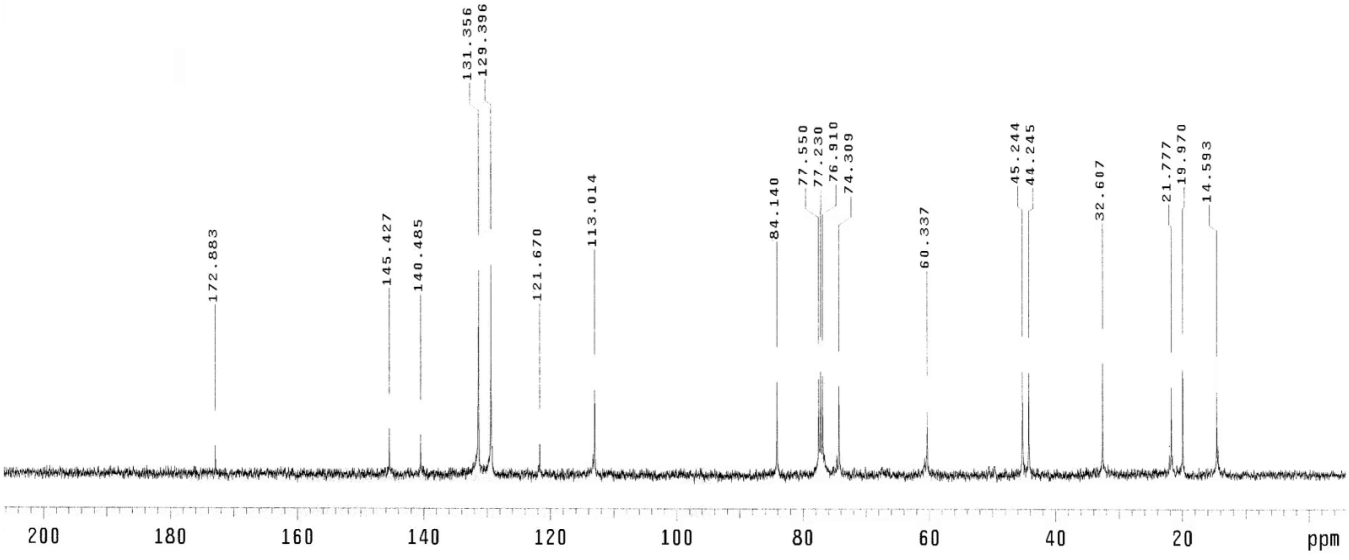
^{13}C NMR spectra of 4c

PS_341_M

expl s2pul

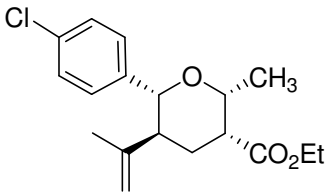
SAMPLE		SPECIAL	
date	Sep 2 2010	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	25125.6	pw90	18.600
at	1.199	alfa	20.000
np	60270	FLAGS	
fb	13800	il	n
bs	16	in	n
d1	1.000	dp	y
nt	4000	hs	nn
ct	2736	PROCESSING	
TRANSMITTER		lb	2.00
tn	C13	fn	65536
sfrq	100.554	DISPLAY	
tof	1536.3	sp	-586.3
tpwr	61	wp	21323.9
pw	9.300	rfl	9270.6
DECOUPLER		rfp	7764.9
dn	H1	rp	-40.7
dof	0	lp	-332.0
dm	yyy	PLOT	
dmm	w	wc	250
dpwr	42	sc	0
dmf	8900	vs	30
		th	3
		nm	no ph

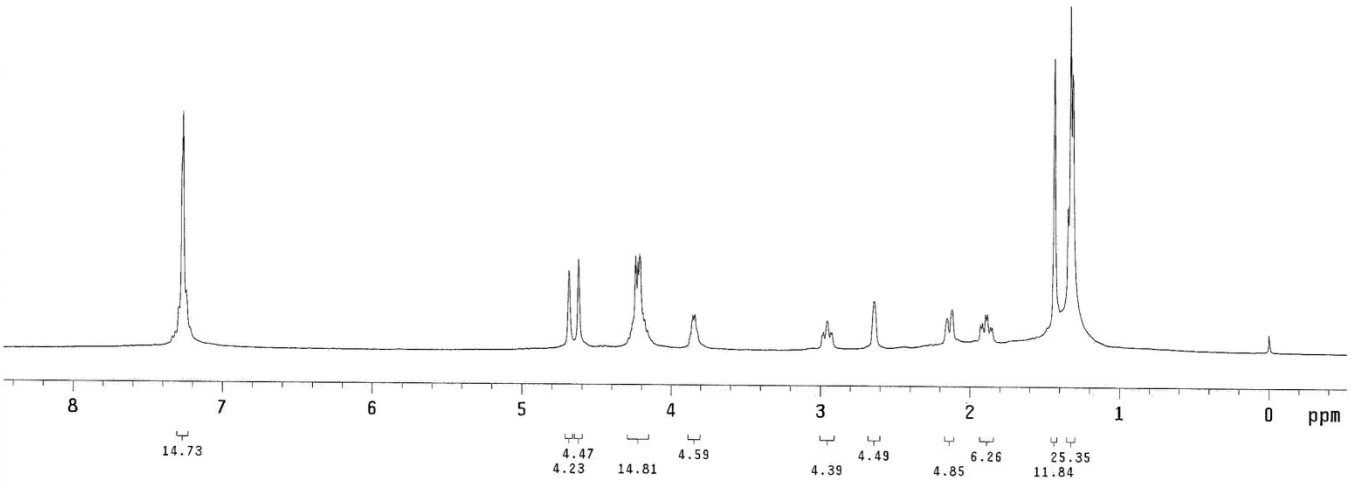




^{1}H NMR spectra of 4d

```
PS_395_M

exp1  s2pul

      SAMPLE              SPECIAL
date   Feb  4 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_395~ hst          0.008
              M1.fid  pw90        19.700
   ACQUISITION        alfa       20.000
sw           6389.8          FLAGS
at            1.998  il             n
np           25528   in             n
fb        not used   dp             y
bs               4   hs            nn
d1           1.000       PROCESSING
nt              32   lb          0.10
ct              32   fn         65536
   TRANSMITTER             DISPLAY
tn               H1  sp         -208.5
sfrq        399.853  wp         3593.6
tof           362.8  rfl         796.2
tpwr             57  rfp             0
pw            9.850  rp          113.0
     DECOUPLER       lp         -103.1
dn              C13          PLOT
dof               0  wc           250
dm              nnn  sc             0
dmm               c  vs            56
dpwr             50  th            36
dmf           15900  nm  cdc  ph
```



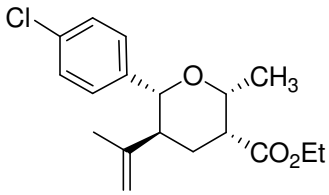


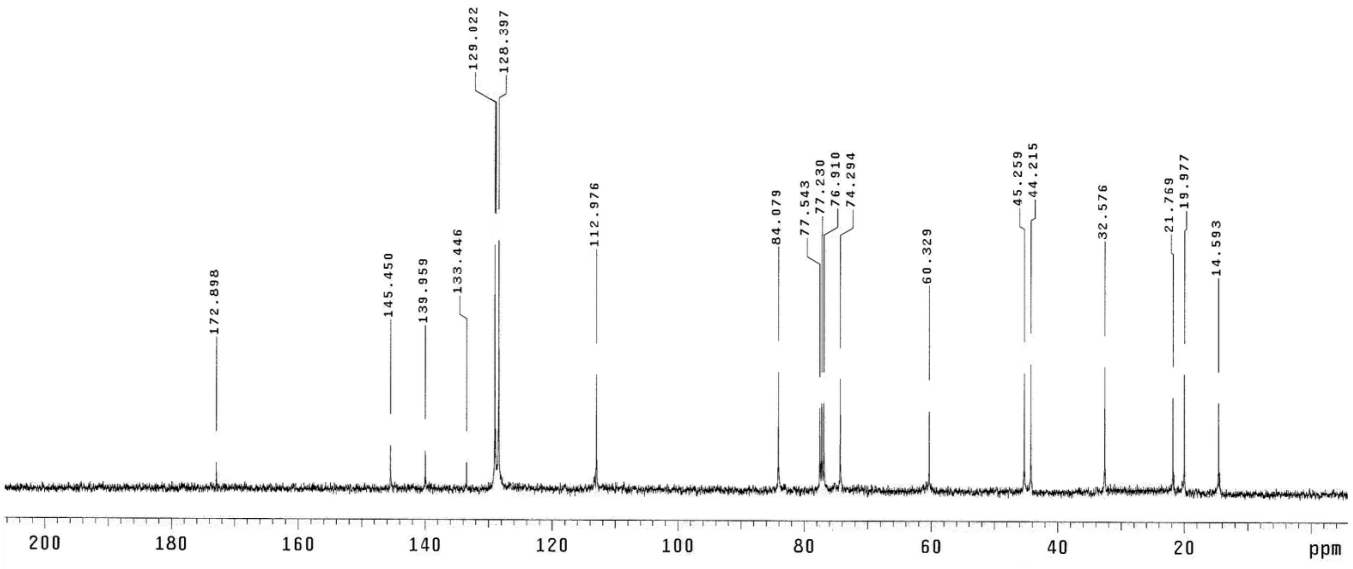
^{13}C NMR spectra of 4d

PS_395_M

expl s2pul

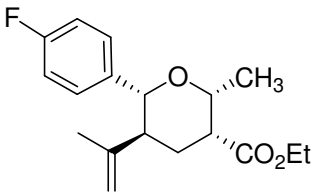
SAMPLE		SPECIAL	
date	Nov 30 2010	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_395~		hst	0.008
	M_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	4000	lb	2.00
ct	1600	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-582.4
sfrq	100.554	wp	21328.5
tof	1536.3	rfl	9271.3
tpwr	61	rfp	7764.9
pw	9.300	rp	-28.0
DECOUPLER		lp	-367.4
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	40
dpwr	42	th	4
dmf	8900	nm no ph	

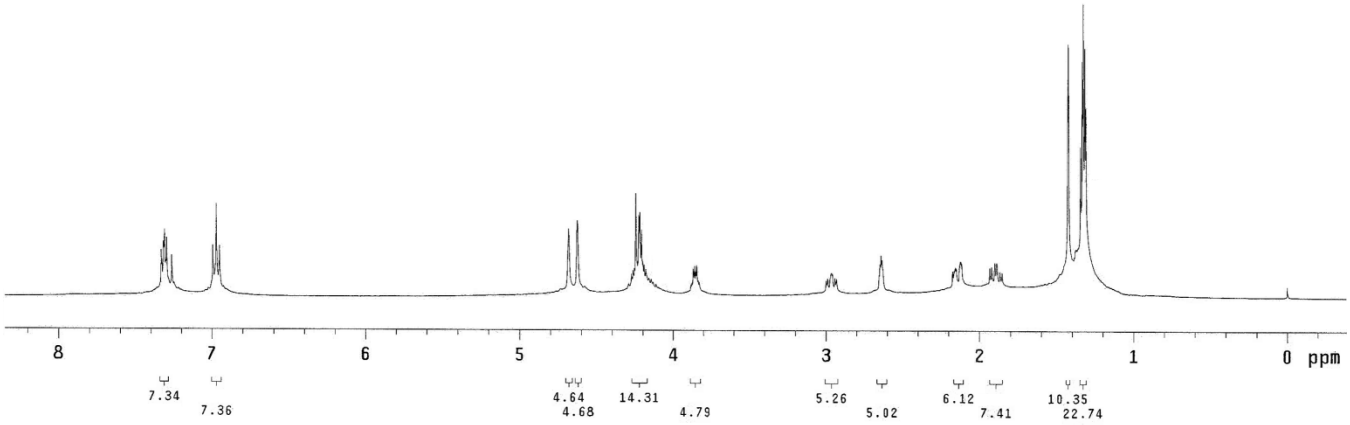




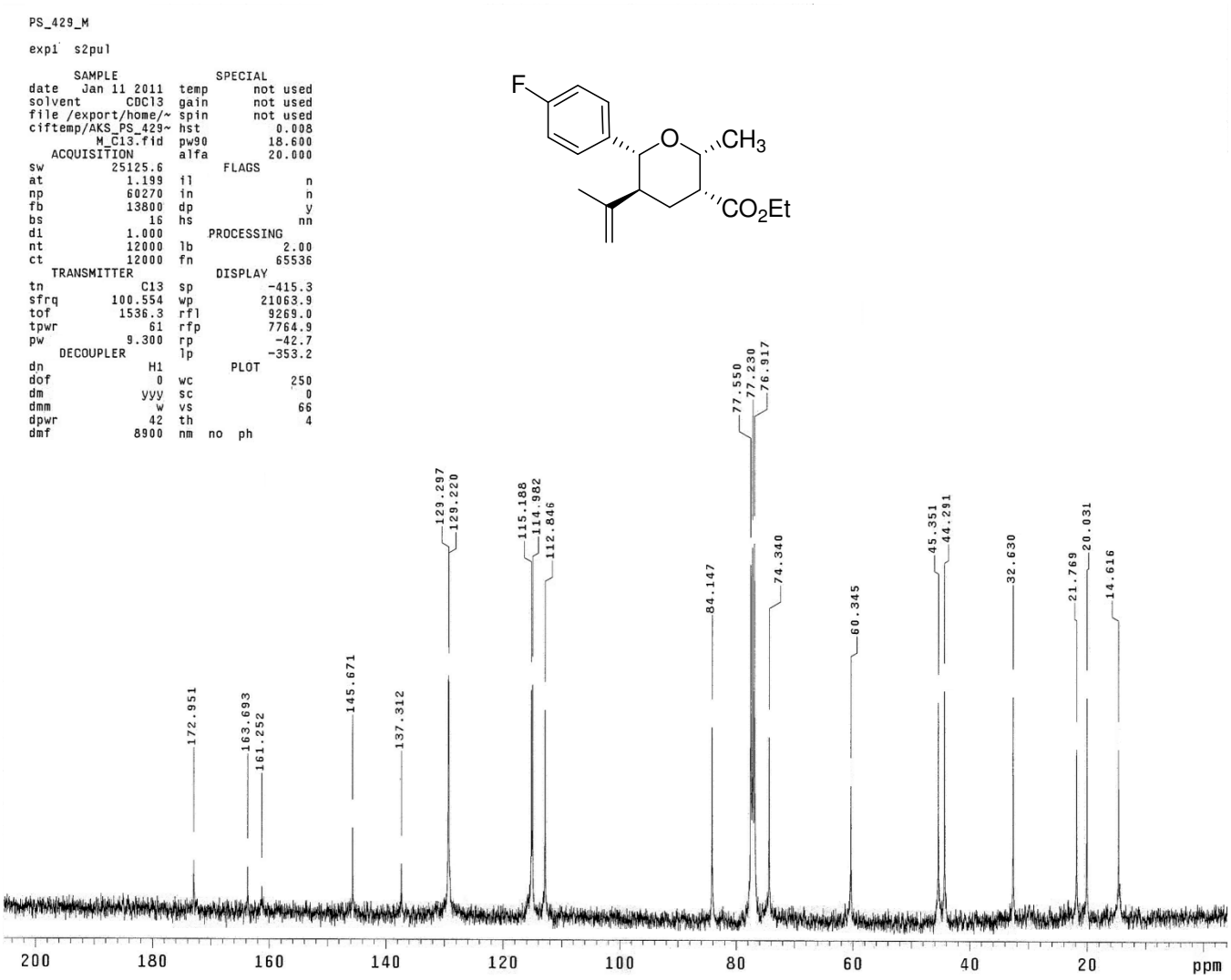
^{1}H NMR spectra of 4e

```
PS_4529_M

exp1  s2pul

      SAMPLE            SPECIAL
date   Jan 11 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_429~ hst           0.008
             _M.fid  pw90        19.700
   ACQUISITION       alfa        20.000
sw           6389.8        FLAGS
at            1.998  il             n
np            25528  in             n
fb        not used   dp             y
bs               8   hs            nn
d1           1.000       PROCESSING
nt             200   lb          0.10
ct             200   fn         65536
   TRANSMITTER            DISPLAY
tn              H1   sp        -154.6
sfrq       399.853   wp        3493.0
tof          362.8   rfl        792.7
tpwr            57   rfp            0
pw           9.850   rp         119.3
    DECOUPLER        lp        -103.2
dn             C13          PLOT
dof              0   wc           250
dm             nnn   sc             0
dmm              c   vs            49
dpwr            50   th            39
dmf         15900   nm  cdc  ph
```



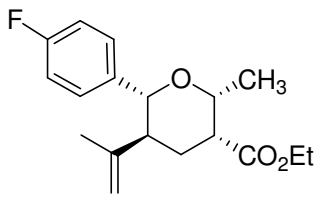


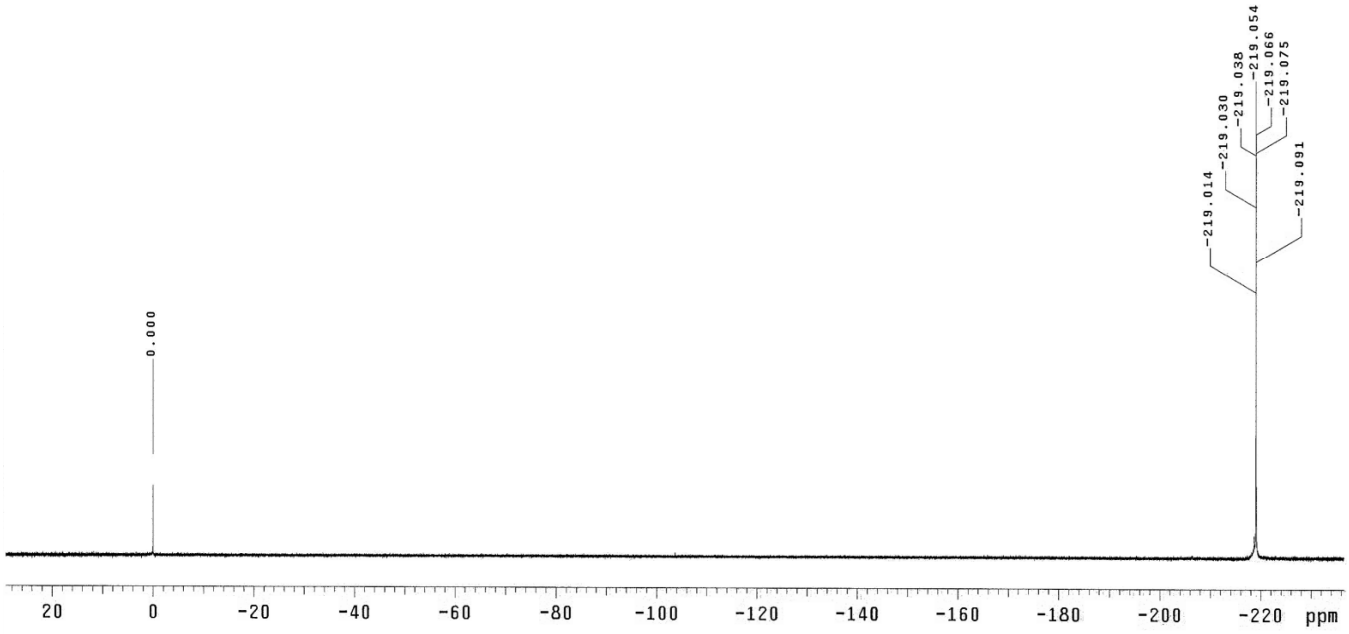
^{13}C NMR spectra of 4e



^{19}F NMR spectra of 4e

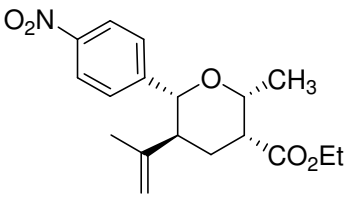
```
PS_429_M

exp1  s2pul

      SAMPLE            SPECIAL
date   Jan 11 2011  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_429~  hst          0.008
    M_Fluorine.fid   pw90        15.600
   ACQUISITION       alfa       90.000
sw         100000.0        FLAGS
at             0.600  il               n
np            119936  in               n
fb             55000  dp               y
bs                16  hs              nn
d1             1.500      PROCESSING
nt                64  lb            0.30
ct                64  lsfid          -10
   TRANSMITTER       fn         not used
tn               F19       DISPLAY
sfrq         376.236  sp        -89016.6
tof          40099.4  wp         100000.0
tpwr              58  rfl         89016.6
pw             5.200  rfp               0
    DECOUPLER         rp          -124.8
dn                H1  lp            22.3
dof                0         PLOT
dm               nnn  wc             250
dmm                c  sc               0
dpwr              42  vs              29
dmf             8900  th              10
                      ai  no  ph
```

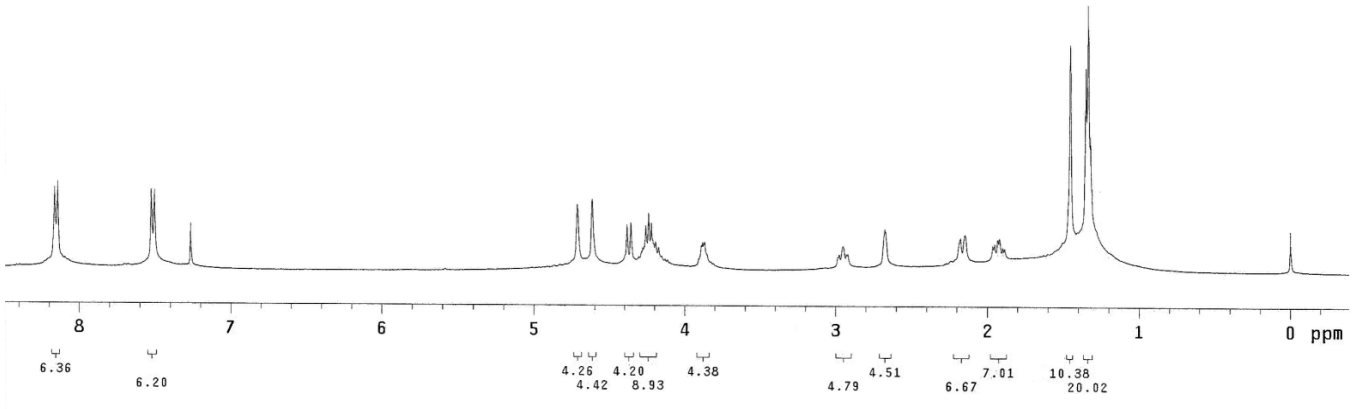




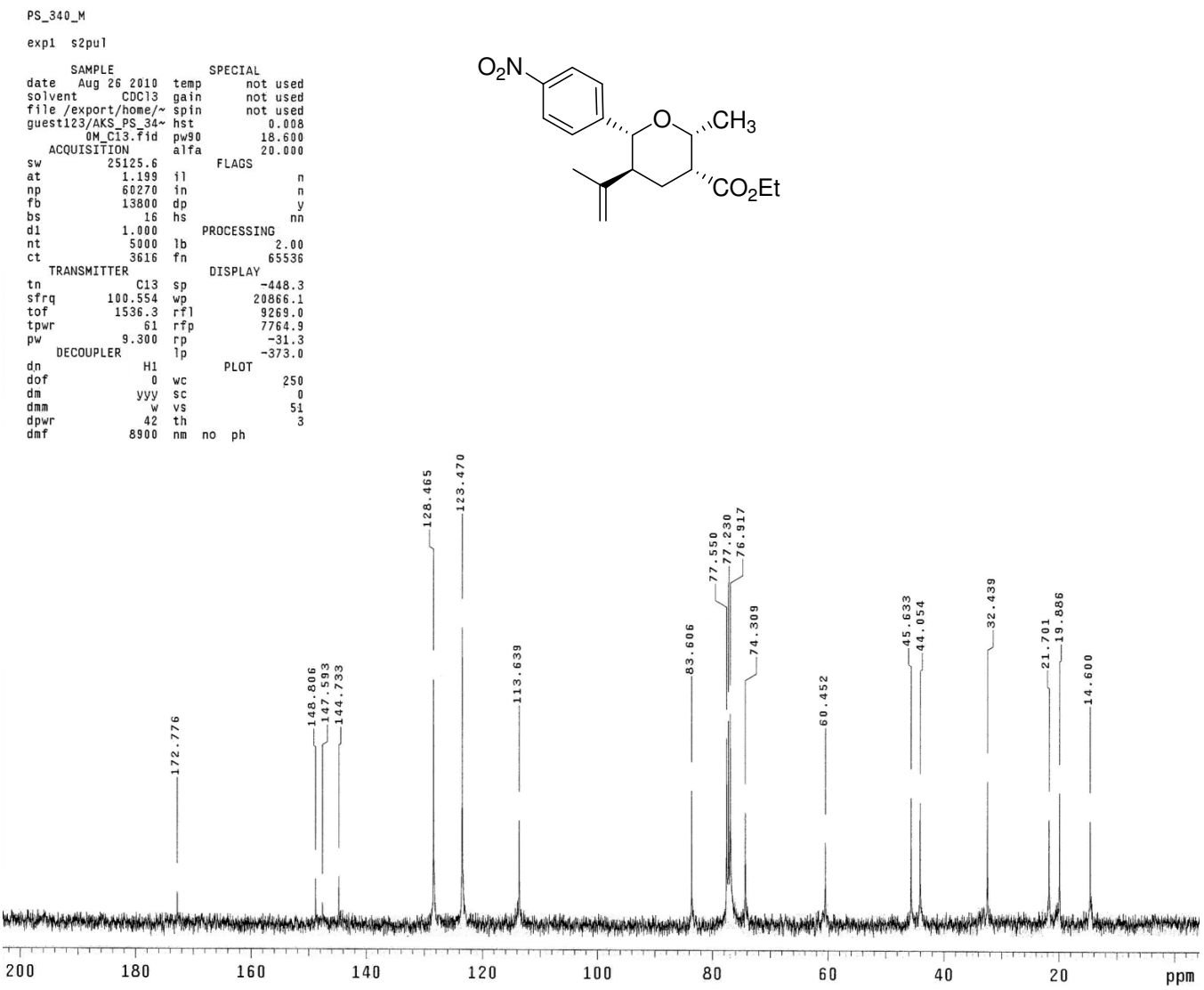
^{1}H NMR spectra of 4f

```
PS_391_M

exp1  std1h

      SAMPLE                SPECIAL
date   Nov 16 2010  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_391~ hst           0.008
             _M.fid  pw90        19.700
   ACQUISITION       alfa        20.000
sw           6006.0         FLAGS
at            1.995  il              n
np           23964   in              n
fb       not used    dp              y
bs              16   hs             nn
d1           1.000       PROCESSING
nt             200   fn       not used
ct             128        DISPLAY
   TRANSMITTER        sp          -156.2
tn              H1    wp          3551.3
sfrq       399.853   rfl          963.8
tof               0  rfp             0
tpwr             57  rp           116.5
pw            7.000  lp           -88.5
    DECOUPLER                PLOT
dn              C13   wc           250
dof               0   sc             0
dm              nnn   vs            46
dmm               c   th            30
dpwr             50   nm  cdc  ph
dmf           15900
```

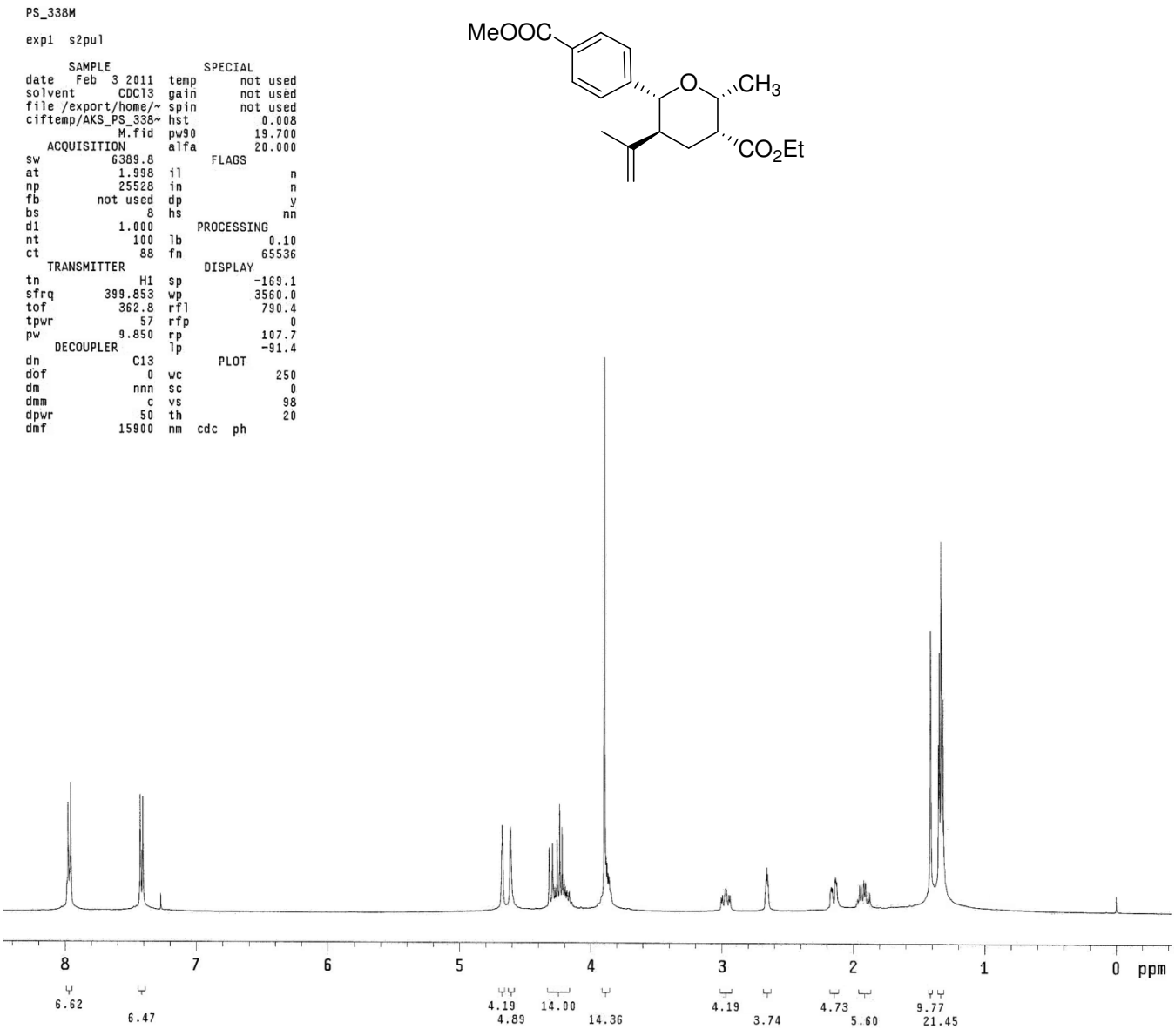




^{13}C NMR spectra of 4f



^{1}H NMR spectra of 4g

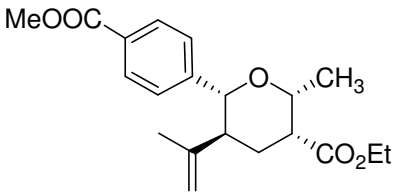


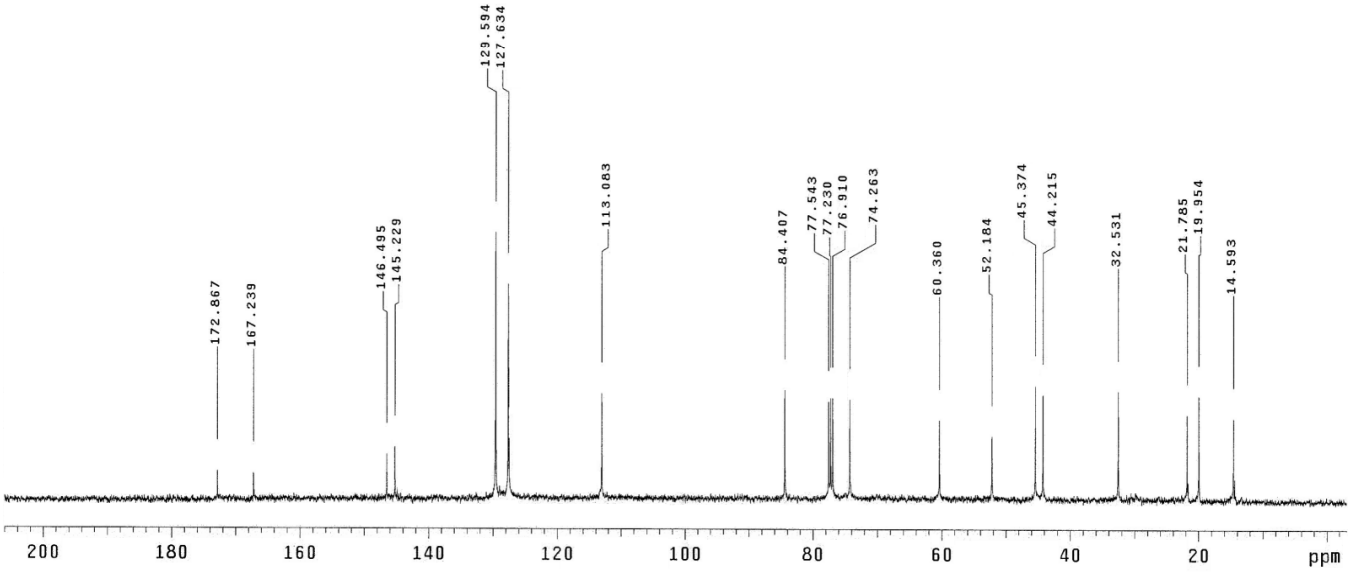
^{13}C NMR spectra of 4g

PS_338M

expl s2pul

SAMPLE		SPECIAL	
date	Feb 6 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_338~		hst	0.008
	M1_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	5000	lb	2.00
ct	2048	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-317.9
sfrq	100.554	wp	21030.9
tof	1536.3	rfl	9271.3
tpwr	61	rfp	7764.9
pw	9.300	rp	-29.5
DECOUPLER		lp	-367.6
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	43
dpwr	42	th	4
dmf	8900	nm no ph	





^{1}H NMR spectra of 4h

```
PS_468_M

exp1  s2pul

      SAMPLE            SPECIAL
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solvent      CDCl3  gain       not used
file           exp  spin       not used
   ACQUISITION      hst           0.008
sw          6389.8  pw90         19.700
at           1.998  alfa         20.000
np           25528        FLAGS
fb       not used  il                 n
bs              8  in                 n
d1          1.000  dp                 y
nt            100  hs                nn
ct            100       PROCESSING
   TRANSMITTER     lb             0.10
tn             H1  fn            65536
sfrq       399.853      DISPLAY
tof          362.8  sp           -188.0
tpwr            57  wp           3585.2
pw           9.850  rfl           792.5
    DECOUPLER      rfp               0
dn             C13  rp            103.4
dof              0  lp            -53.0
dm             nnn        PLOT
dmm              c  wc              250
dpwr            50  sc                0
dmf          15900  vs               59
                    th               20
                    nm  cdc  ph
```

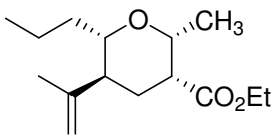

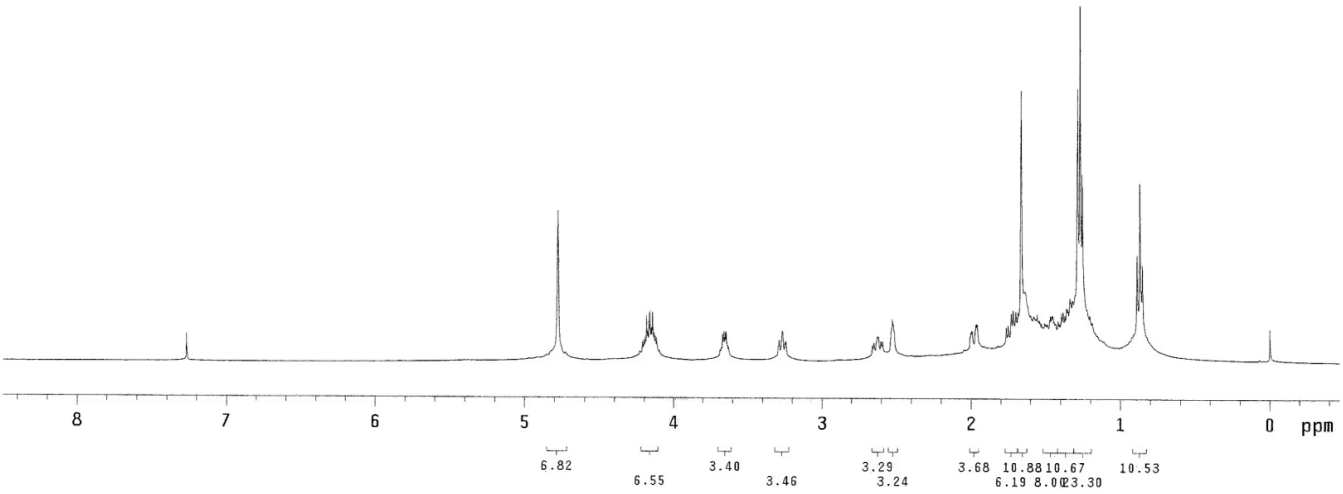

^{13}C NMR spectra of 4h

PS_468_M

exp1 s2pul

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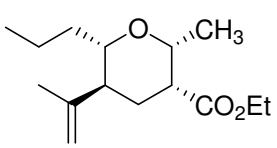
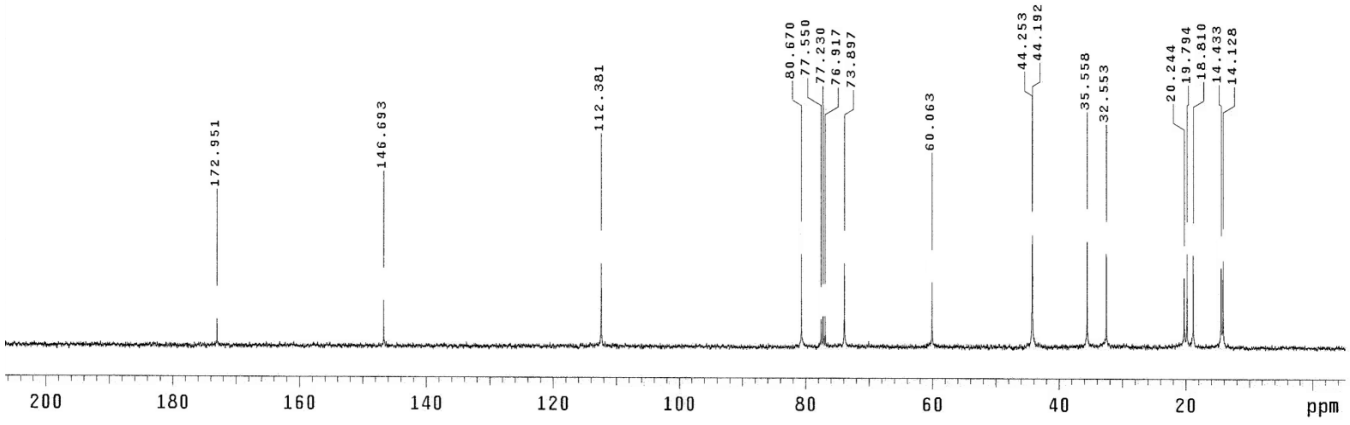
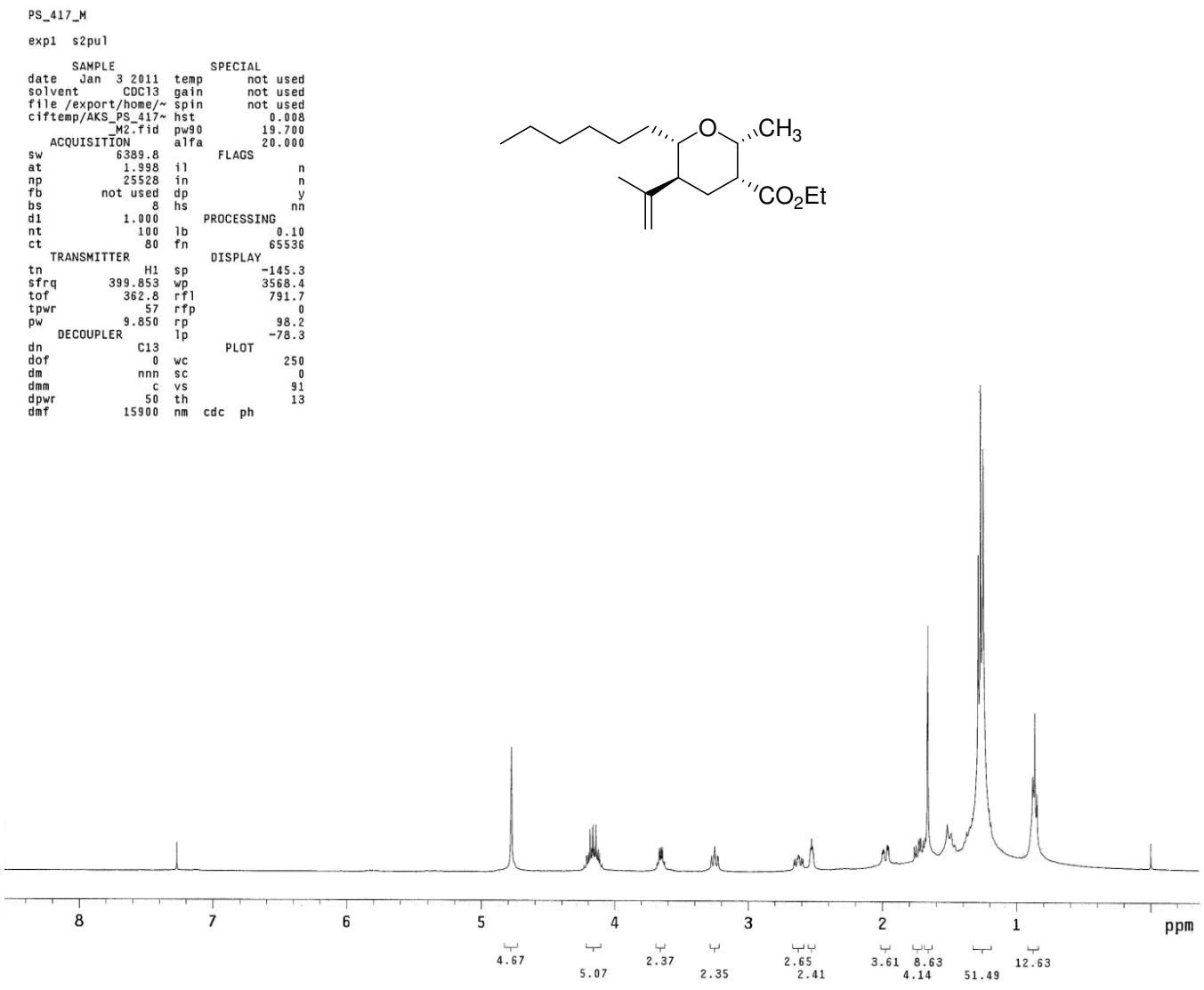
date	Mar 24 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	25125.6	pw90	18.600
at	1.199	alfa	20.000
np	60270	FLAGS	
fb	13800	il	n
bs	16	in	n
d1	1.000	dp	y
nt	4000	hs	nn
ct	448	PROCESSING	
TRANSMITTER		lb	2.00
tn	C13	fn	65536
sfrq	100.554	DISPLAY	
tof	1536.3	sp	-518.8
tpwr	61	wp	21295.5
pw	9.300	rfl	9273.6
DECOUPLER		rfp	7764.9
dn	H1	rp	-47.0
dof	0	lp	-348.6
dm	yyy	PLOT	
dmm	w	wc	250
dpwr	42	sc	0
dmf	8900	vs	17
		th	2
		nm no ph	





^{1}H NMR spectra of 4i



^{13}C NMR spectra of 4i

PS_417_M

exp1 s2pul

SAMPLE		SPECIAL	
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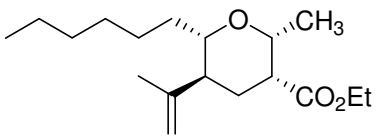
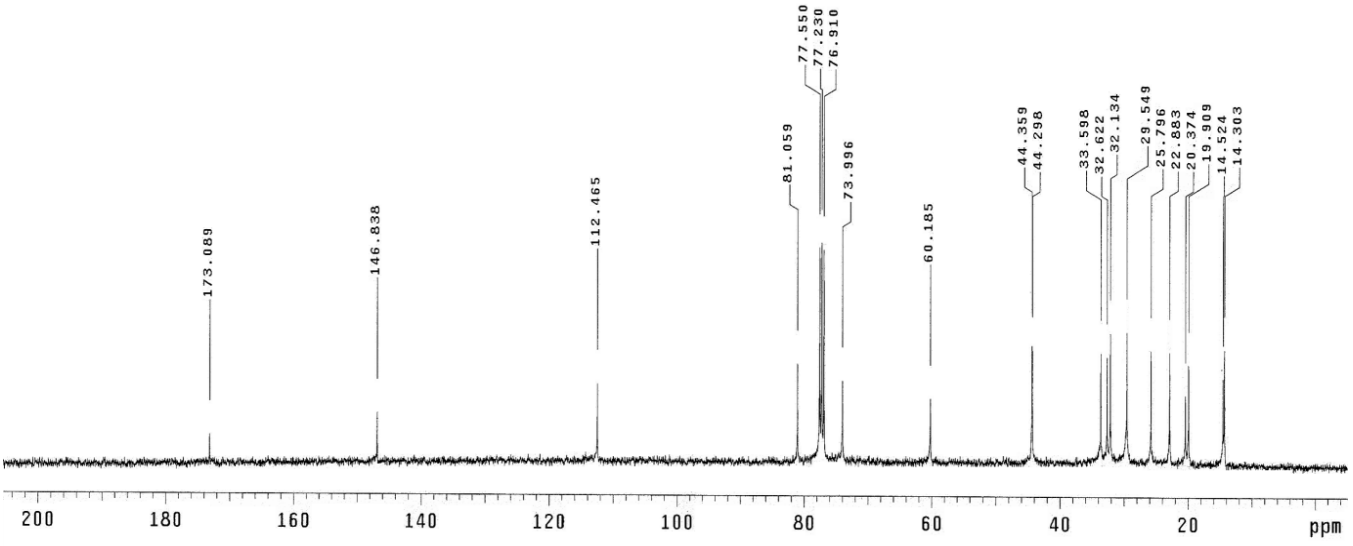
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_417~		hst	0.008
	M_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	12000	lb	2.00
ct	12000	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-515.0
sfrq	100.554	wp	21163.6
tof	1536.3	rfl	9269.8
tpwr	61	rfp	7764.9
pw	9.300	rp	-42.2
DECOUPLER		lp	-329.2
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	33
dpwr	42	th	3
dmf	8900	nm no ph	



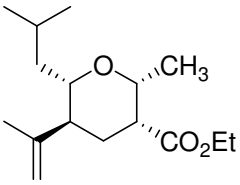


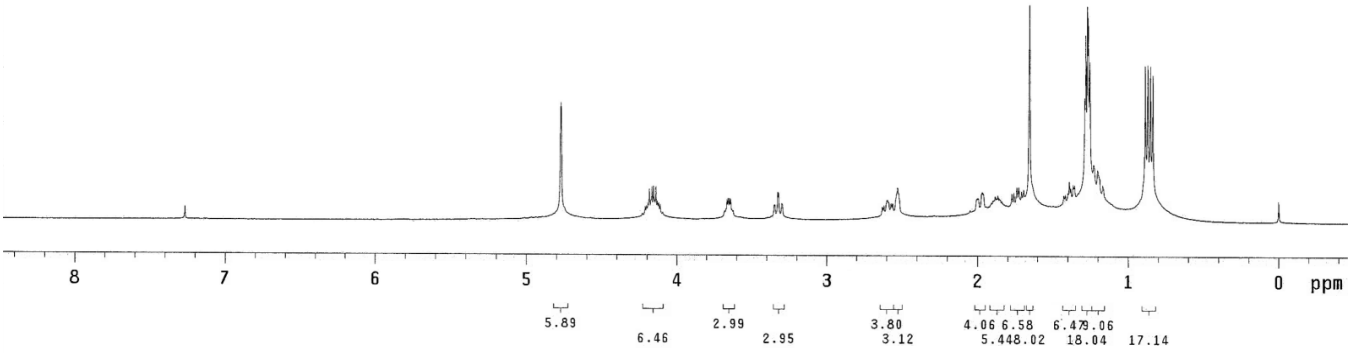
^{1}H NMR spectra of 4j

```
PS_413_M

exp1  s2pul

      SAMPLE              SPECIAL
date    Dec 25 2010  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_413~  hst           0.008
            _M1.fid  pw90         19.700
   ACQUISITION       alfa         20.000
sw            6389.8        FLAGS
at             1.998  il              n
np             25528  in              n
fb         not used   dp              y
bs                4   hs             nn
d1            1.000       PROCESSING
nt               32   lb           0.10
ct               12   fn          65536
   TRANSMITTER             DISPLAY
tn               H1   sp         -187.8
sfrq        399.853   wp         3576.8
tof            362.8  rfl         792.3
tpwr              57  rfp             0
pw             9.850  rp          118.4
     DECOUPLER        lp         -77.4
dn              C13         PLOT
dof               0   wc           250
dm              nnn   sc             0
dmm               c   vs            36
dpwr             50   th            20
dmf           15900   nm  cdc  ph
```



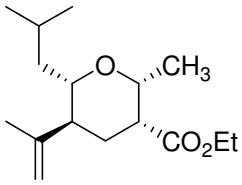


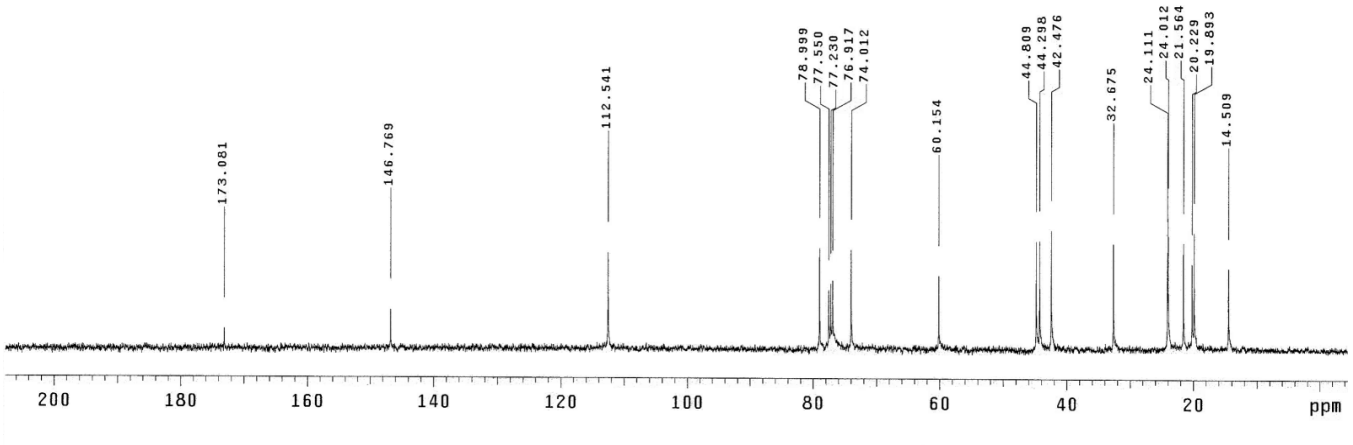
^{13}C NMR spectra of 4j

```
PS_413_M

exp1  s2pul

      SAMPLE              SPECIAL
date    Dec 25 2010  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_413~  hst           0.008
          M_C13.fid  pw90         18.600
   ACQUISITION       alfa        20.000
sw          25125.6          FLAGS
at            1.199  il                n
np            60270  in                n
fb            13800  dp                y
bs               16  hs               nn
d1            1.000      PROCESSING
nt             4000  lb             2.00
ct             2288  fn            65536
   TRANSMITTER             DISPLAY
tn               C13  sp          -447.5
sfrq         100.554  wp         21328.5
tof           1536.3  rfl         9268.3
tpwr              61  rfp         7764.9
pw             9.300  rp           -57.5
    DECOUPLER        lp          -304.2
dn                H1          PLOT
dof                0  wc             250
dm               yyy  sc               0
dmm                w  vs              22
dpwr              42  th               3
dmf             8900  nm  no  ph
```



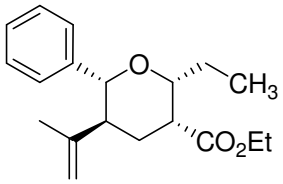


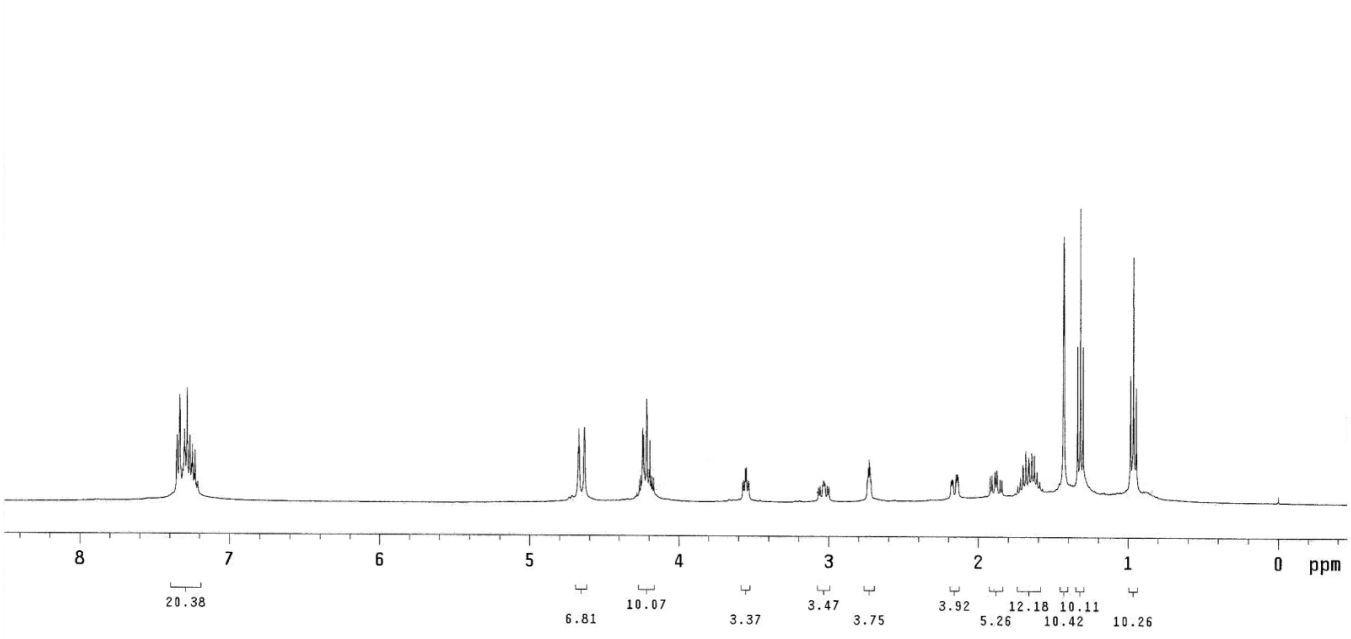
^{1}H NMR spectra of 4k

PS_456_L

expl s2pul

SAMPLE		SPECIAL	
date	Feb 27 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_456~	L.fid	hst	0.008
		pw90	19.700
ACQUISITION		alfa	20.000
sw	6389.8	FLAGS	
at	1.998	il	n
np	25528	in	n
fb	not used	dp	y
bs	8	hs	nn
d1	1.000	PROCESSING	
nt	100	lb	0.10
ct	100	fn	65536
TRANSMITTER		DISPLAY	
tn	H1	sp	-184.9
sfrq	399.853	wp	3585.2
tof	362.8	rfl	797.8
tpwr	57	rfp	0
pw	9.850	rp	112.6
DECOUPLER		lp	-93.9
dn	C13	PLOT	
dof	0	wc	250
dm	nnn	sc	0
dmm	c	vs	48
dpwr	50	th	20
dmf	15900	nm cdc ph	



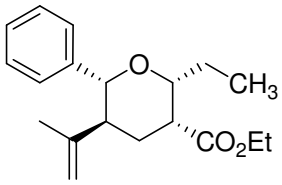


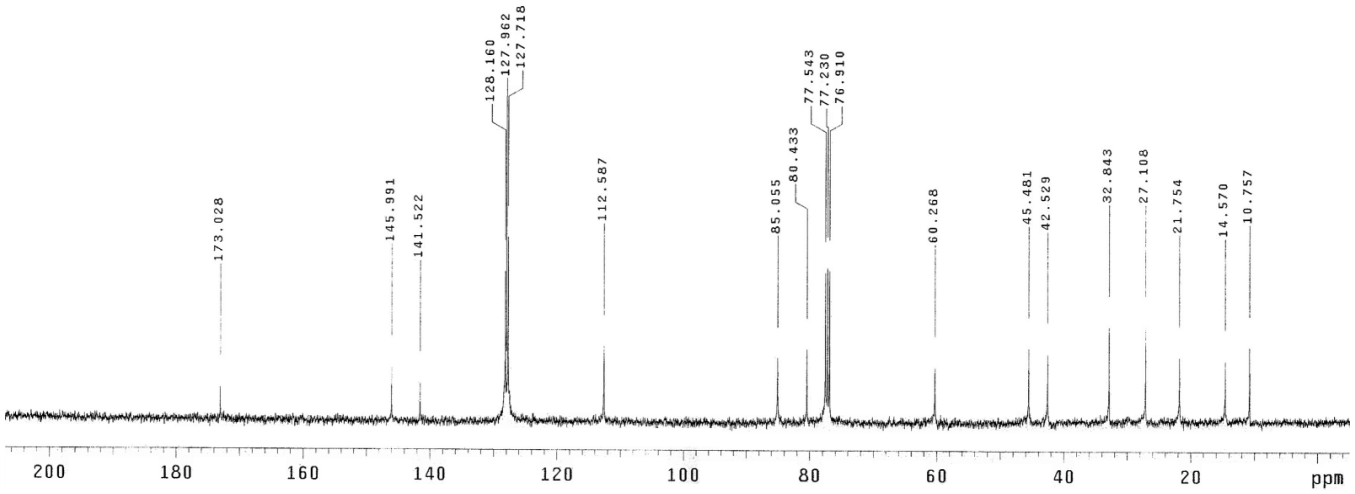
^{13}C NMR spectra of 4k

PS_456_L

expl s2pul

SAMPLE		SPECIAL	
date	Feb 27 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	25125.6	pw90	18.600
at	1.199	alfa	20.000
np	60270	FLAGS	
fb	13800	il	n
bs	16	in	n
d1	1.000	dp	y
nt	8000	hs	nn
ct	4000	PROCESSING	
TRANSMITTER		lb	2.00
tn	C13	fn	65536
sfrq	100.554	DISPLAY	
tof	1536.3	sp	-516.5
tpwr	61	wp	21328.5
pw	9.300	rfl	9271.3
DECOUPLER		rfp	7764.9
dn	H1	rp	-30.4
dof	0	lp	-376.7
dm	yyy	PLOT	
dmm	w	wc	250
dpwr	42	sc	0
dmf	8900	vs	30
		th	4
		nm	no ph



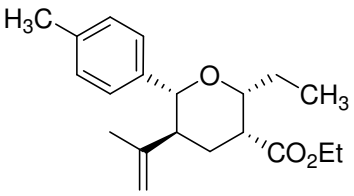


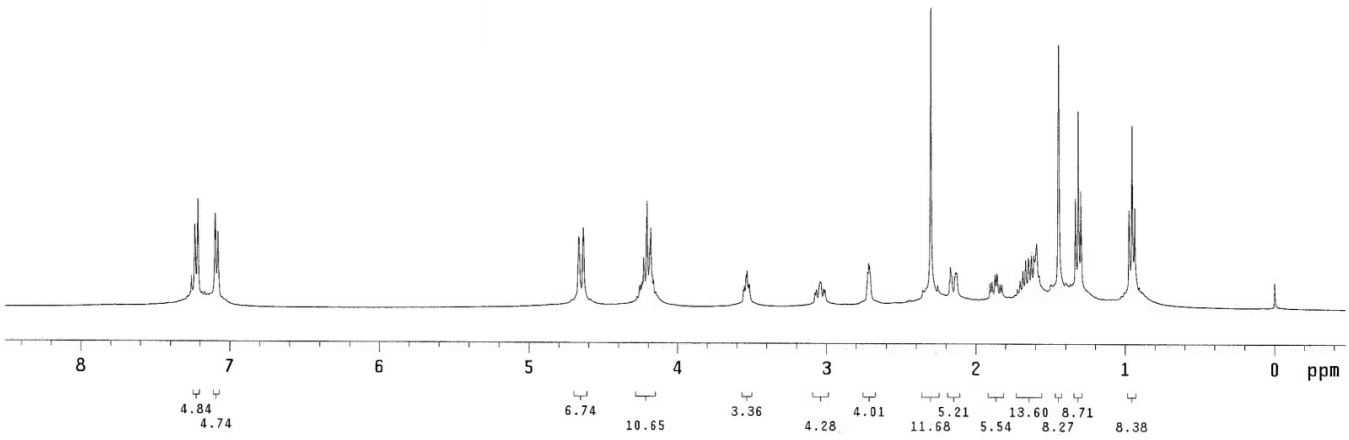
^{1}H NMR spectra of 4l

```
PS_464_M

exp1  s2pul

      SAMPLE              SPECIAL
date   Mar 14 2011  temp       not used
solvent       CDCl3  gain       not used
file            exp  spin       not used
   ACQUISITION       hst          0.008
sw            6389.8  pw90        19.700
at             1.998  alfa        20.000
np             25528        FLAGS
fb         not used  il               n
bs                8  in               n
di            1.000  dp               y
nt              100  hs              nn
ct              100      PROCESSING
   TRANSMITTER       lb            0.10
tn               H1  fn           65536
sfrq        399.853      DISPLAY
tof           362.8  sp          -191.1
tpwr             57  wp          3593.6
pw            9.850  rfl          795.6
    DECOUPLER       rfp              0
dn               C13  rp           114.9
dof                0  lp           -75.0
dm               nnn        PLOT
dmm                c  wc             250
dpwr              50  sc               0
dmf            15900  vs              50
                      th              14
                      nm  cdc  ph
```



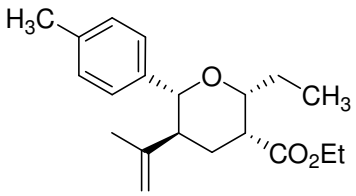


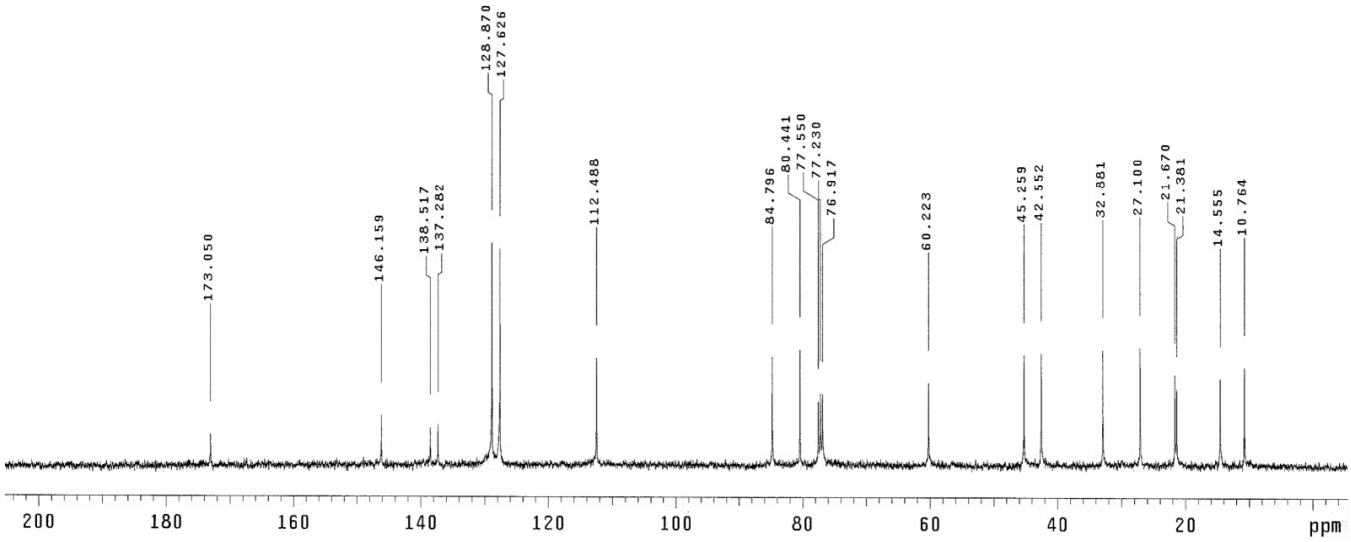
^{13}C NMR spectra of 4l

PS_464_M

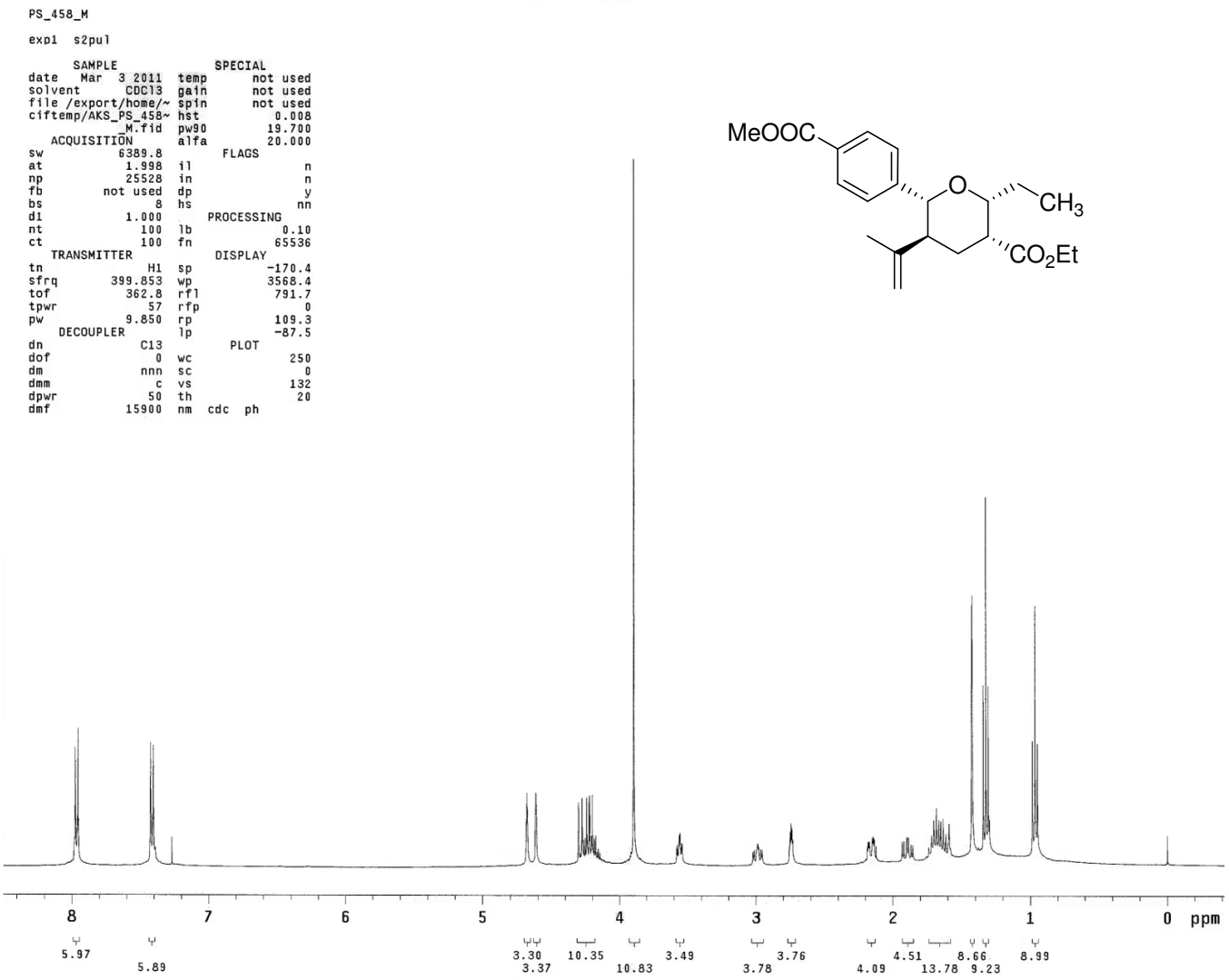
exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 14 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	25125.6	pw90	18.600
at	1.199	alfa	20.000
np	60270	FLAGS	
fb	13800	il	n
bs	16	in	n
d1	1.000	dp	y
nt	4000	hs	nn
ct	2544	PROCESSING	
TRANSMITTER		lb	2.00
tn	C13	fn	65536
sfrq	100.554	DISPLAY	
tof	1536.3	sp	-551.0
tpwr	61	wp	21196.6
pw	9.300	rfl	9272.9
DECOUPLER		rfp	7764.9
dn	H1	rp	-64.5
dof	0	lp	-297.0
dm	yyy	PLOT	
dmm	w	wc	250
dpwr	42	sc	0
dmf	8900	vs	34
		th	3
		nm no ph	





^{1}H NMR spectra of 4m

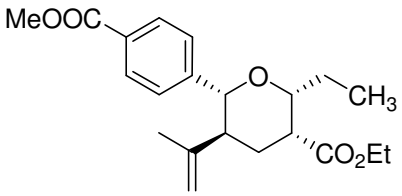


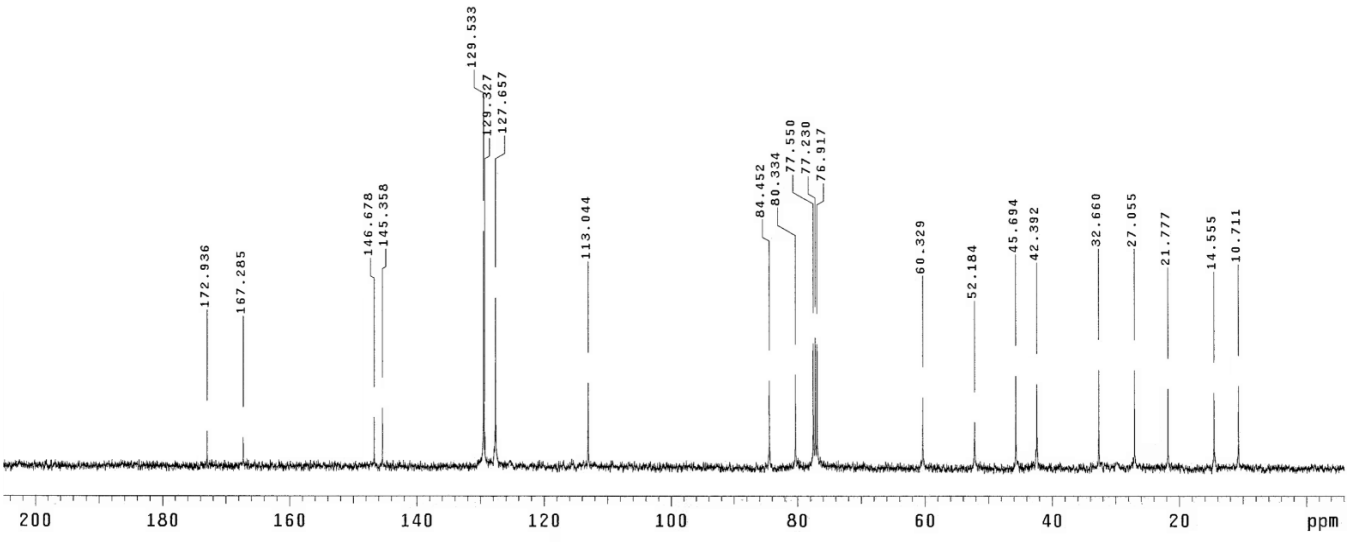
^{13}C NMR spectra of 4m

PS_458_M

exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 4 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	25125.6	pw90	18.600
at	1.199	alfa	20.000
np	60270	FLAGS	
fb	13800	il	n
bs	16	in	n
d1	1.000	dp	y
nt	5000	hs	nn
ct	3056	PROCESSING	
TRANSMITTER		lb	2.00
tn	C13	fn	65536
sfrq	100.554	DISPLAY	
tof	1536.3	sp	-615.4
tpwr	61	wp	21229.5
pw	9.300	rfl	9271.3
DECOUPLER		rfp	7764.9
dn	H1	rp	-51.1
dof	0	lp	-334.6
dm	yyy	PLOT	
dmm	w	wc	250
dpwr	42	sc	0
dmf	8900	vs	39
		th	4
		nm	no ph



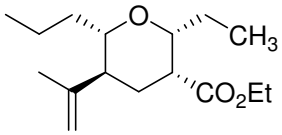


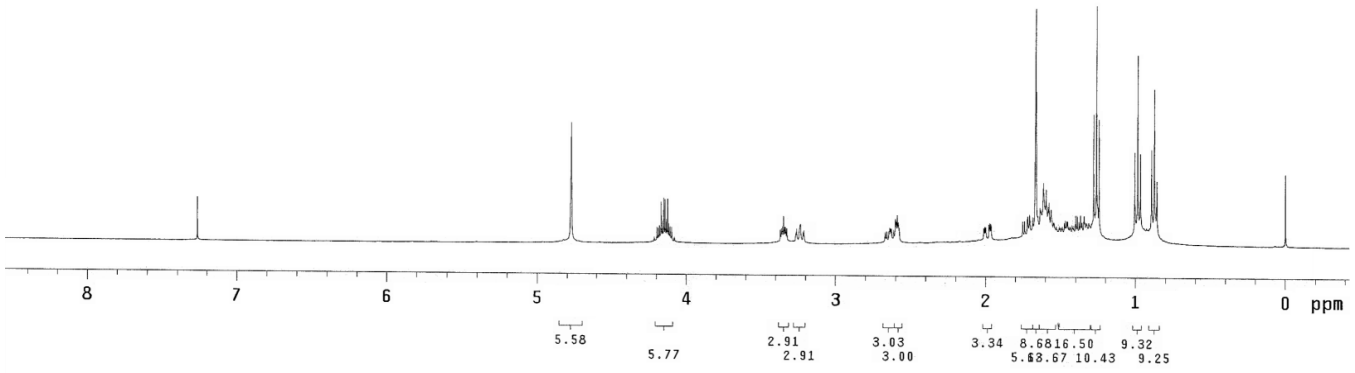
^{1}H NMR spectra of 4n

PS_463_L

exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 12 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	6389.8	pw90	19.700
at	1.998	alfa	20.000
np	25528	FLAGS	
fb	not used	il	n
bs	8	in	n
d1	1.000	dp	y
nt	200	hs	nn
ct	192	PROCESSING	
TRANSMITTER		lb	0.10
tn	H1	fn	65536
sfrq	399.853	DISPLAY	
tof	362.8	sp	-172.2
tpwr	57	wp	3593.6
pw	9.850	rfl	793.5
DECOUPLER		rfp	0
dn	C13	rp	117.4
dof	0	lp	-94.6
dm	nnn	PLOT	
dmm	c	wc	250
dpwr	50	sc	0
dmf	15900	vs	40
		th	33
		nm	cdc ph



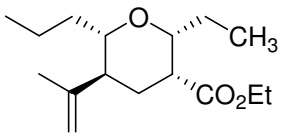


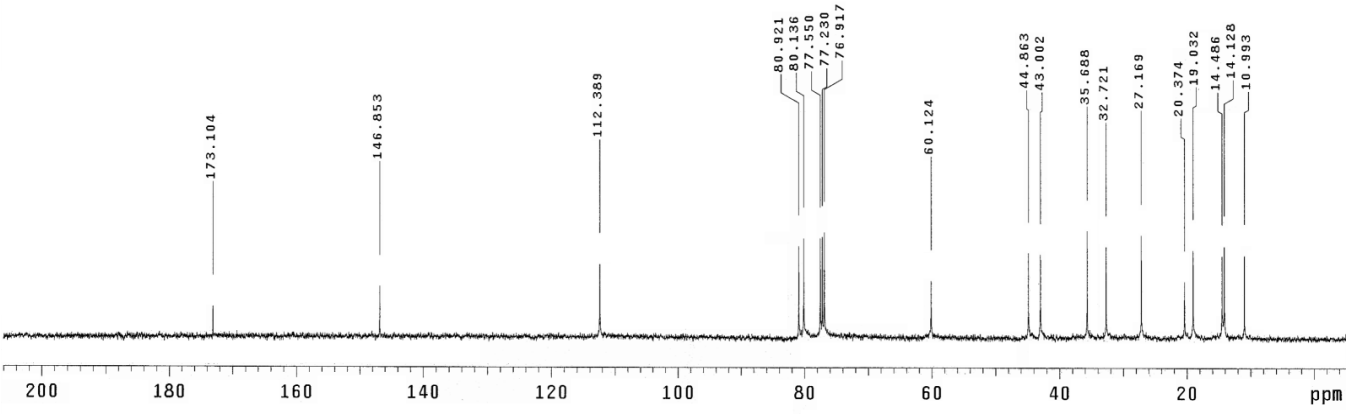
^{13}C NMR spectra of 4n

PS_463_L

exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 12 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	25125.6	pw90	18.600
at	1.199	alfa	20.000
np	60270	FLAGS	
fb	13800	il	n
bs	16	in	n
d1	1.000	dp	y
nt	5000	hs	nn
ct	3216	PROCESSING	
TRANSMITTER		lb	2.00
tn	C13	fn	65536
sfrq	100.554	DISPLAY	
tof	1536.3	sp	-547.2
tpwr	61	wp	21262.5
pw	9.300	rfl	9269.0
DECOUPLER		rfp	7764.9
dn	H1	rp	-54.9
dof	0	lp	-339.8
dm	yyy	PLOT	
dmm	w	wc	250
dpwr	42	sc	0
dmf	8900	vs	17
		th	3
		nm	no ph



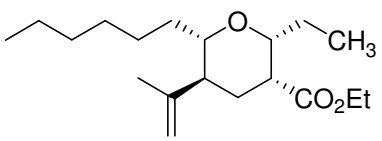


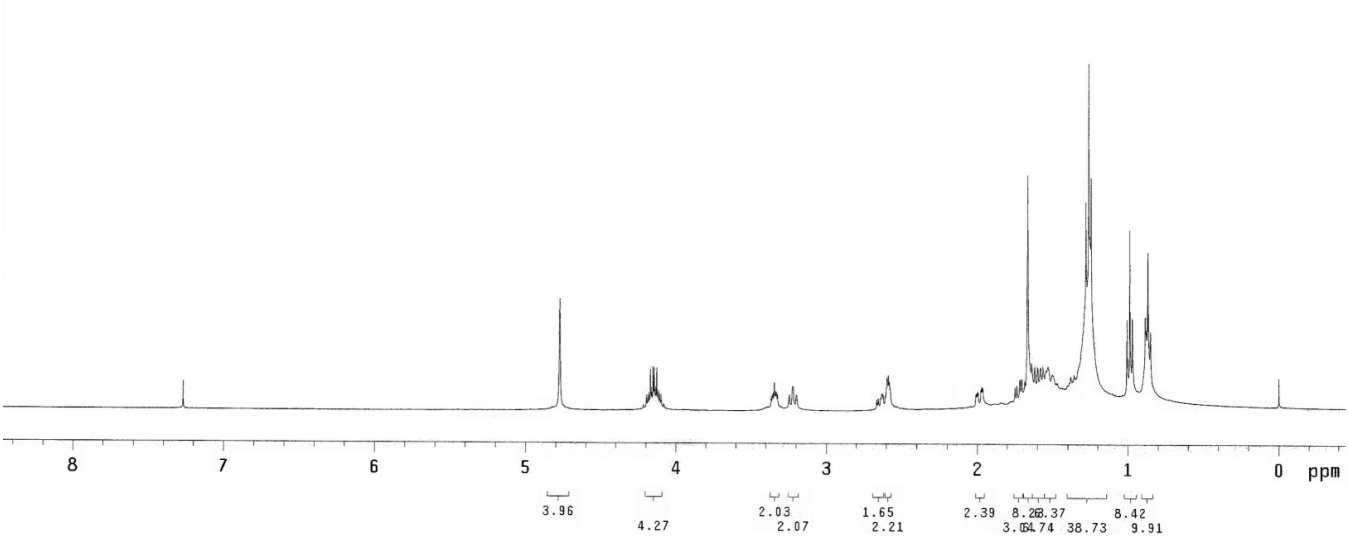
^{1}H NMR spectra of 4o

```
PS_469_M

exp1  s2pul

      SAMPLE              SPECIAL
date   Mar 27 2011  temp       not used
solvent      CDCl3  gain       not used
file           exp  spin       not used
   ACQUISITION      hst          0.008
sw          6389.8  pw90        19.700
at           1.998  alfa        20.000
np           25528        FLAGS
fb       not used  il                n
bs              8  in                n
d1          1.000  dp                y
nt            100  hs               nn
ct            100      PROCESSING
    TRANSMITTER     lb           0.10
tn             H1  fn          65536
sfrq      399.853       DISPLAY
tof         362.8  sp         -180.4
tpwr           57  wp         3568.4
pw          9.850  rfl         793.3
    DECOUPLER      rfp             0
dn            C13  rp           97.7
dof             0  lp          -58.8
dm            nnn        PLOT
dmm             c  wc           250
dpwr           50  sc             0
dmf         15900  vs            57
                   th            20
                   nm  cdc  ph
```





^{13}C NMR spectra of 4o

```
PS_469_M

exp1  s2pul

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solvent      CDCl3  gain       not used
file           exp  spin       not used
   ACQUISITION      hst           0.008
sw         25125.6  pw90         18.600
at           1.199  alfa         20.000
np           60270       FLAGS
fb           13800  il                n
bs              16  in                n
d1           1.000  dp                y
nt            4000  hs               nn
ct             672     PROCESSING
   TRANSMITTER      lb             2.00
tn             C13  fn            65536
sfrq       100.554      DISPLAY
tof         1536.3  sp            -551.0
tpwr            61  wp           21262.5
pw           9.300  rfl           9272.9
    DECOUPLER      rfp           7764.9
dn              H1  rp             -51.7
dof              0  lp            -331.1
dm             yyy       PLOT
dmm              w  wc              250
dpwr            42  sc                0
dmf           8900  vs               13
                    th                4
                    nm  no  ph
```

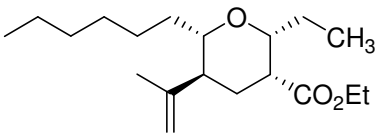

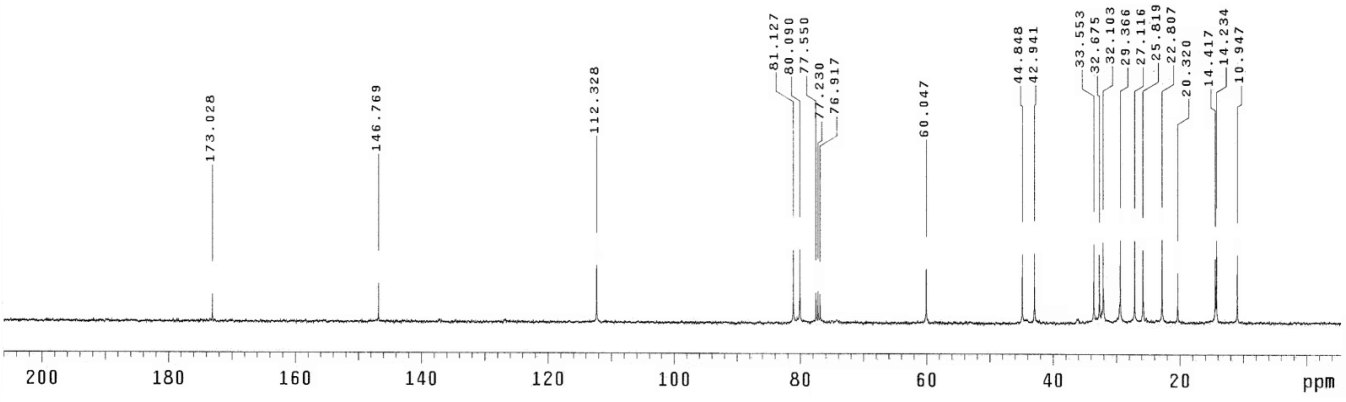

^{1}H NMR spectra of 4p

PS_467_M

exp1 s2pul

SAMPLE		SPECIAL	
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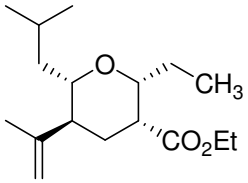
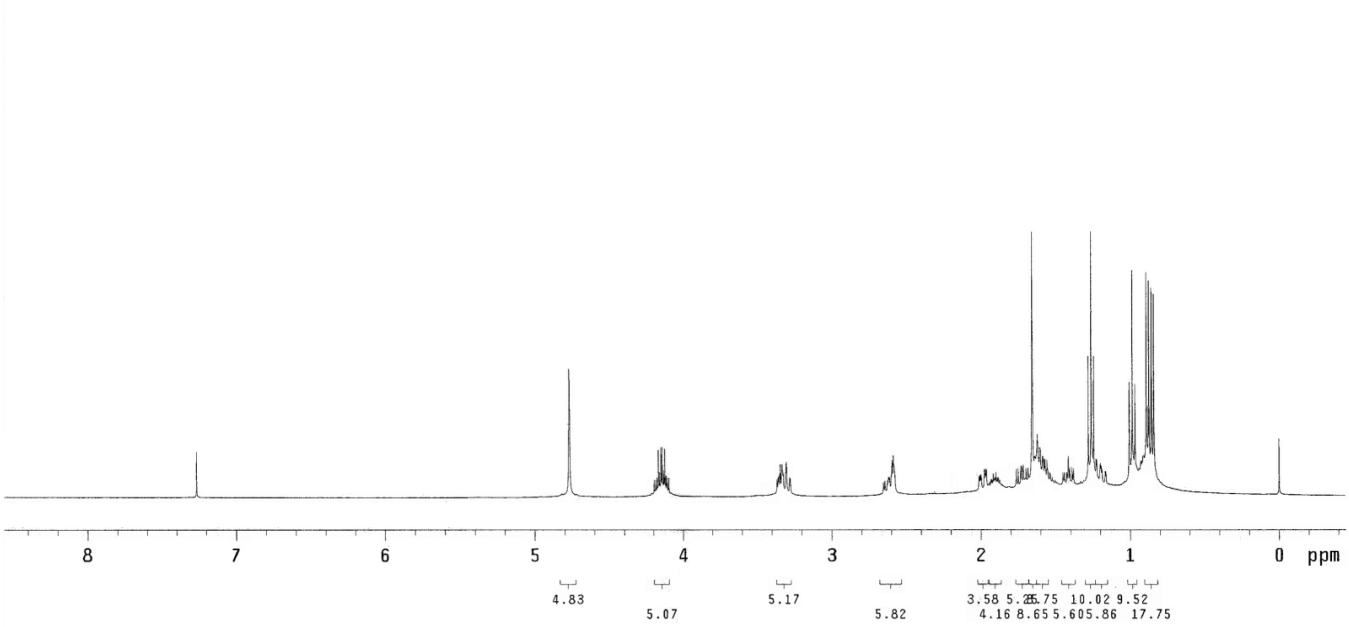
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_467~		hst	0.008
	M.fid	pw90	19.700
ACQUISITION		alfa	20.000
sw	6389.8	FLAGS	
at	1.998	il	n
np	25528	in	n
fb	not used	dp	y
bs	8	hs	nn
d1	1.000	PROCESSING	
nt	100	lb	0.10
ct	100	fn	65536
TRANSMITTER		DISPLAY	
tn	H1	sp	-179.4
sfrq	399.853	wp	3602.0
tof	362.8	rfl	792.3
tpwr	57	rfp	0
pw	9.850	rp	106.8
DECOUPLER		lp	-85.7
dn	C13	PLOT	
dof	0	wc	250
dm	nnn	sc	0
dmm	c	vs	43
dpwr	50	th	27
dmf	15900	nm	cdc ph



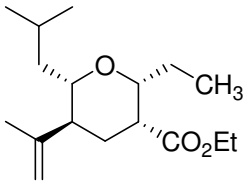


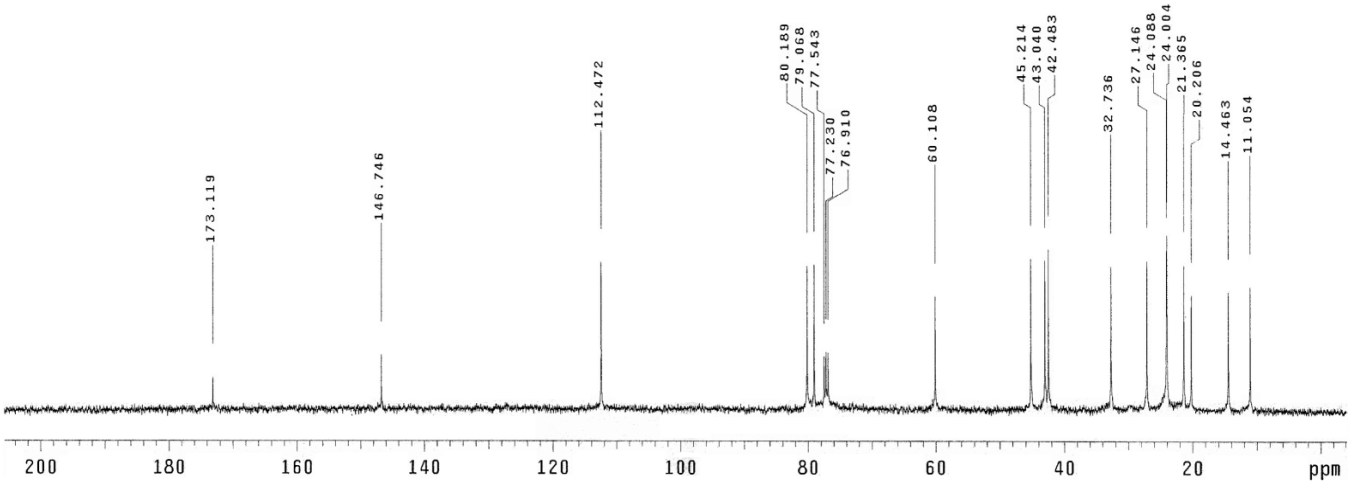
^{13}C NMR spectra of 4p

PS_467_M

exp1 s2pul

SAMPLE		SPECIAL	
date	Mar 22 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	25125.6	pw90	18.600
at	1.199	alfa	20.000
np	60270	FLAGS	
fb	13800	il	n
bs	16	in	n
d1	1.000	dp	y
nt	5000	hs	nn
ct	2528	PROCESSING	
TRANSMITTER		lb	2.00
tn	C13	fn	65536
sfrq	100.554	DISPLAY	
tof	1536.3	sp	-416.1
tpwr	61	wp	21096.9
pw	9.300	rfl	9269.8
DECOUPLER		rfp	7764.9
dn	H1	rp	-46.5
dof	0	lp	-338.2
dm	yyy	PLOT	
dmm	w	wc	250
dpwr	42	sc	0
dmf	8900	vs	27
		th	4
		nm no ph	

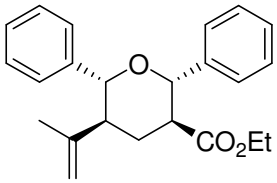


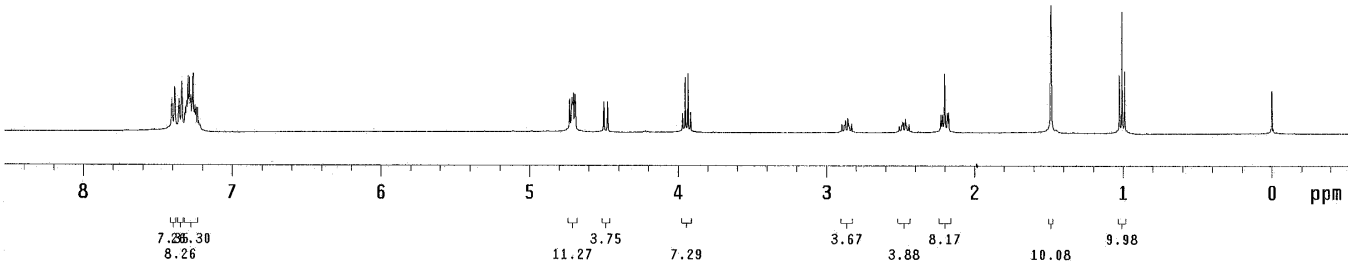


^{1}H NMR spectra of 11a

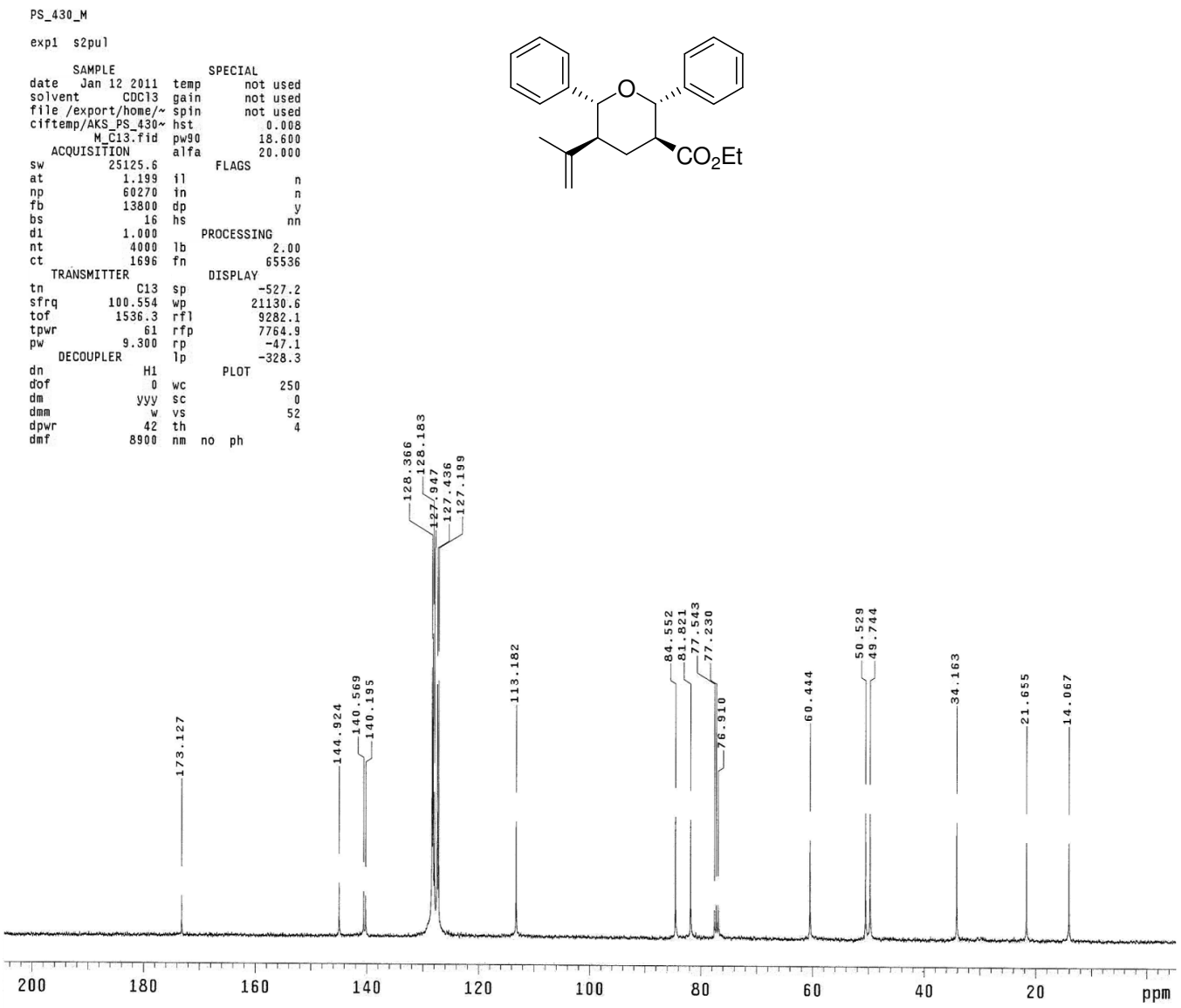
```
exp1  s2pul

      SAMPLE            SPECIAL
date   Sep  7 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_430~ hst           0.008
         M_Pdt.fid  pw90         19.700
   ACQUISITION      alfa         20.000
sw            6389.8       FLAGS
at             1.998  il                n
np            25528   in                n
fb        not used    dp                y
bs                4   hs               nn
d1            1.000       PROCESSING
nt              200   fn        not used
ct              164       DISPLAY
   TRANSMITTER        sp           -207.1
tn               H1   wp           3618.7
sfrq       399.853    rfl           794.5
tof          362.8    rfp               0
tpwr            57    rp            135.4
pw           9.850    lp            -84.7
    DECOUPLER             PLOT
dn              C13   wc              250
dof               0   sc                0
dm              nnn   vs               61
dmm               c   th                8
dpwr             50   nm    ph
dmf           15900
```





^{13}C NMR spectra of 11a

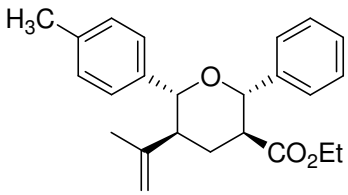


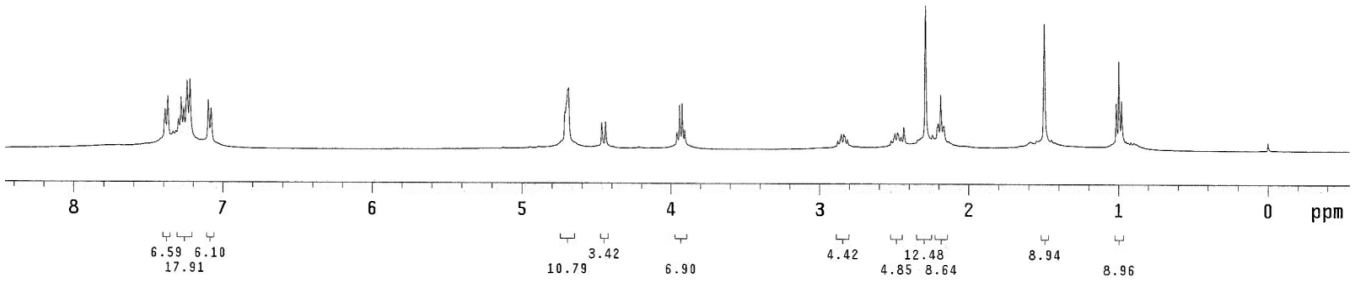
^{1}H NMR spectra of 11b

PS_431_M

exp1 s2pul

SAMPLE		SPECIAL	
date	Jan 12 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_431~		hst	0.008
	_M.fid	pw90	19.700
ACQUISITION		alfa	20.000
sw	6389.8	FLAGS	
at	1.998	il	n
np	25528	in	n
fb	not used	dp	y
bs	8	hs	nn
d1	1.000	PROCESSING	
nt	100	lb	0.10
ct	100	fn	65536
TRANSMITTER		DISPLAY	
tn	H1	sp	-219.4
sfrq	399.853	wp	3602.0
tof	362.8	rfl	798.6
tpwr	57	rfp	0
pw	9.850	rp	109.2
DECOUPLER		lp	-82.3
dn	C13	PLOT	
dof	0	wc	250
dm	nnn	sc	0
dmm	c	vs	23
dpwr	50	th	24
dmf	15900	nm	cdc ph



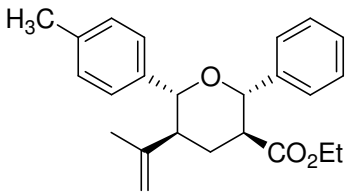


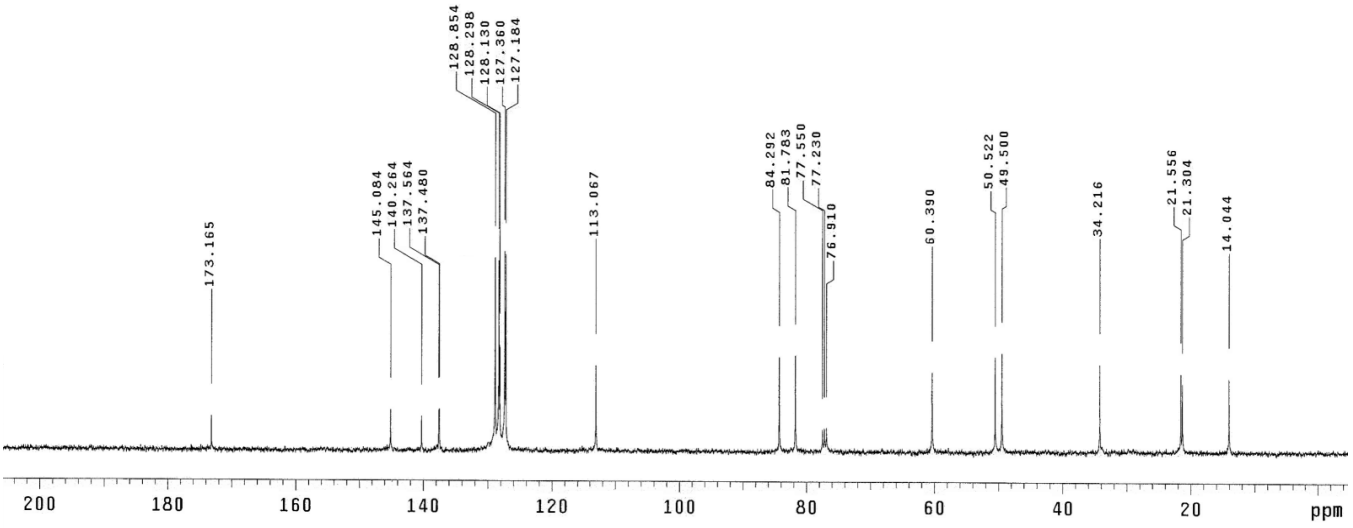
^{13}C NMR spectra of 11b

PS_431_M

exp1 s2pul

SAMPLE		SPECIAL	
date	Jan 12 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_431~		hst	0.008
	M_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	2000	lb	2.00
ct	512	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-495.8
sfrq	100.554	wp	21196.6
tof	1536.3	rfl	9283.6
tpwr	61	rfp	7764.9
pw	9.300	rp	-48.7
DECOUPLER		lp	-324.1
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	31
dpwr	42	th	3
dmf	8900	nm no ph	

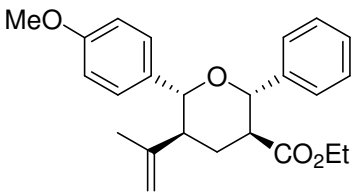


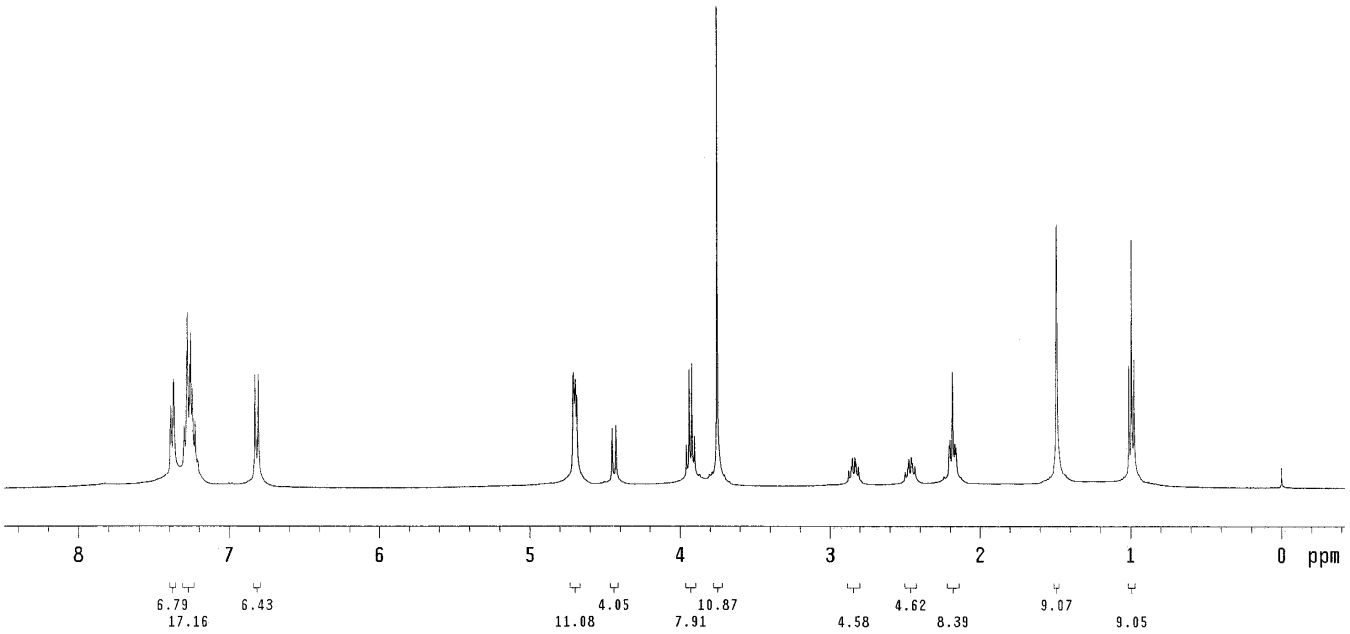


^{1}H NMR spectrta of 11c

```
exp1  s2pul

      SAMPLE            SPECIAL
date   Jun  9 2011  temp      not used
solvent      CDCl3  gain      not used
file /export/home/~ spin      not used
ciftemp/AKS_PS_494~ hst          0.008
         M_Pdt.fid  pw90        19.700
   ACQUISITION      alfa        20.000
sw          6389.8        FLAGS
at           1.998  il              n
np           25528  in              n
fb       not used   dp              y
bs              4   hs             nn
d1           1.000      PROCESSING
nt              32  lb           0.10
ct              32  fn          65536
   TRANSMITTER           DISPLAY
tn              H1  sp         -171.8
sfrq       399.853  wp         3568.4
tof          362.8  rfl         801.5
tpwr            57  rfp             0
pw           9.850  rp          119.8
     DECOUPLER      lp         -91.4
dn             C13          PLOT
dof              0  wc           250
dm             nnn  sc             0
dmm              c  vs            69
dpwr            50  th            42
dmf          15900  nm  cdc  ph
```



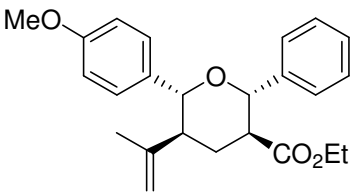


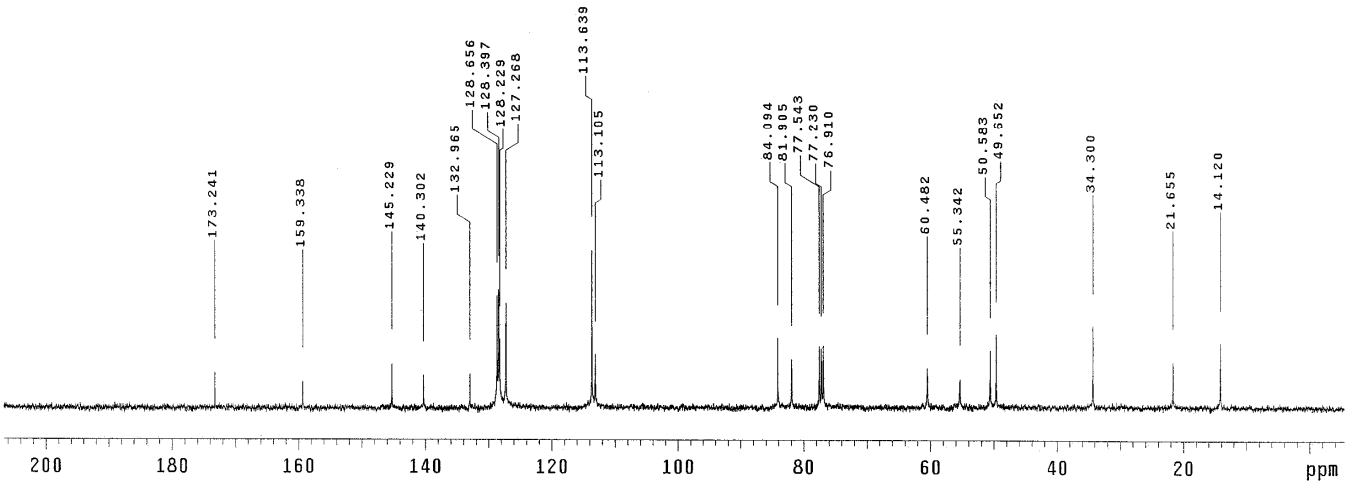
^{13}C NMR spectra of 11c

```
PS_494_M

exp1  s2pul

      SAMPLE            SPECIAL
date   Jun  9 2011  temp       not used
solvent      CDCl3  gain       not used
file           exp  spin       not used
   ACQUISITION      hst          0.008
sw          25125.6 pw90         18.600
at            1.199 alfa         20.000
np            60270       FLAGS
fb            13800  il                n
bs               16  in                n
d1            1.000  dp                y
nt             4000  hs               nn
ct             1552      PROCESSING
   TRANSMITTER      lb            2.00
tn              C13  fn           65536
sfrq        100.554      DISPLAY
tof          1536.3  sp          -551.8
tpwr             61  wp         21328.5
pw            9.300  rfl         9273.6
    DECOUPLER       rfp         7764.9
dn               Hi  rp           -47.4
dof               0  lp          -349.1
dm              yyy       PLOT
dmm               w  wc             250
dpwr             42  sc               0
dmf            8900  vs              24
                     th               3
                     nm  no  ph
```



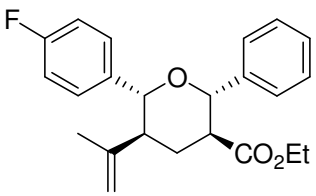


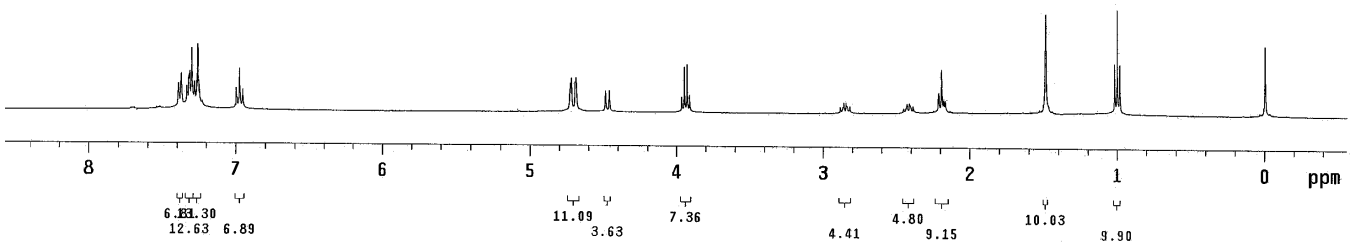
^{1}H NMR spectra of 11d

PS_435_M

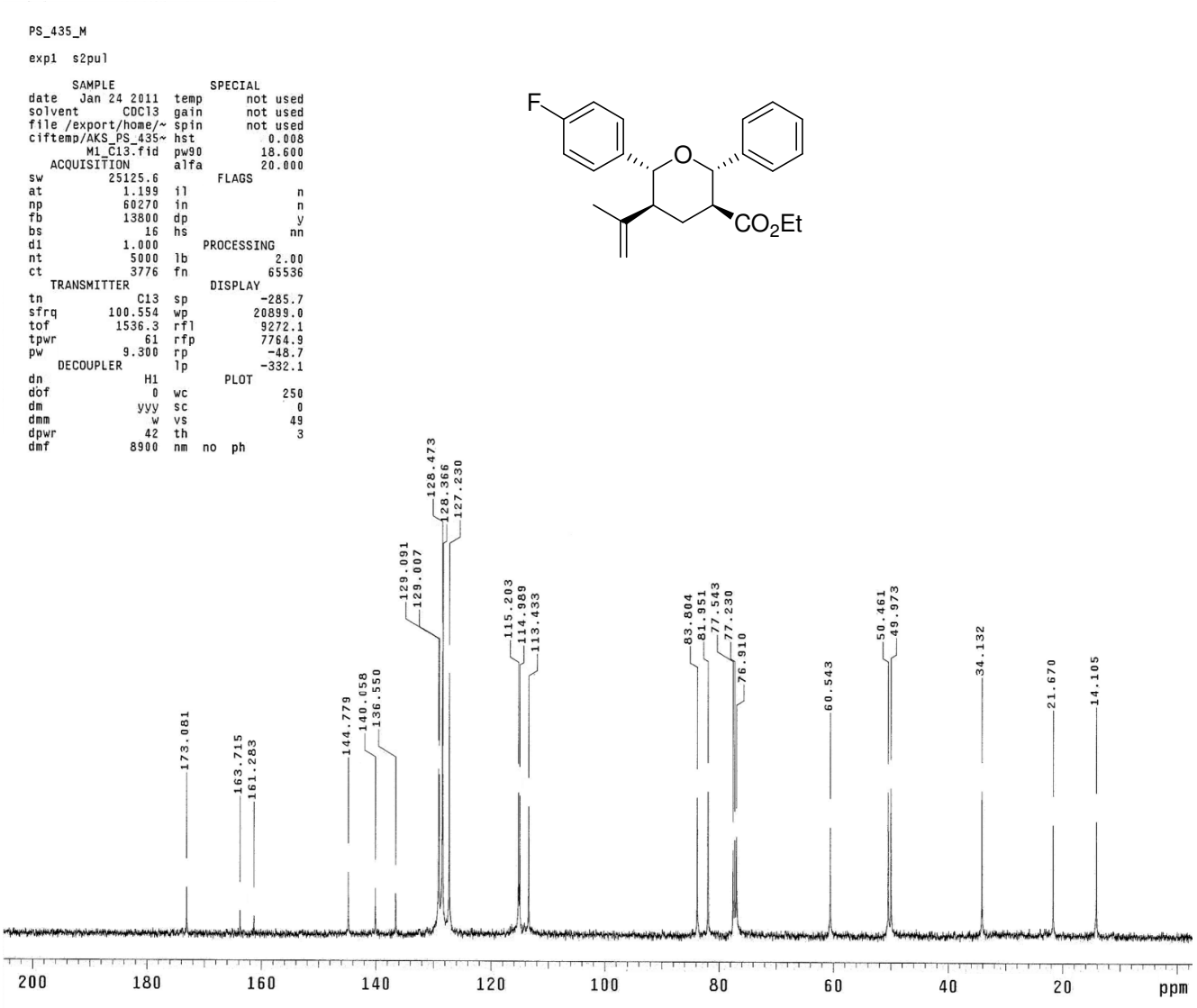
exp1 s2pul

SAMPLE		SPECIAL	
date	Sep 12 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_435~		hst	0.008
	M1_Pdt.fid	pw90	19.700
ACQUISITION		alfa	20.000
sw	6389.8	FLAGS	
at	1.998	il	n
np	25528	in	n
fb	not used	dp	y
bs	8	hs	nn
d1	1.000	PROCESSING	
nt	300	lb	0.10
ct	256	fn	65536
TRANSMITTER		DISPLAY	
tn	H1	sp	-224.5
sfrq	399.853	wp	3652.5
tof	362.8	rfl	795.2
tpwr	57	rfp	0
pw	9.850	rp	119.0
DECOUPLER		lp	-88.5
dn	C13	PLOT	
dof	0	wc	250
dm	nnn	sc	0
dmm	c	vs	49
dpwr	50	th	11
dmf	15900	nm cdc ph	





^{13}C NMR spectra of 11d

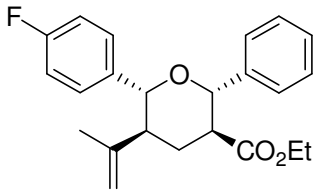


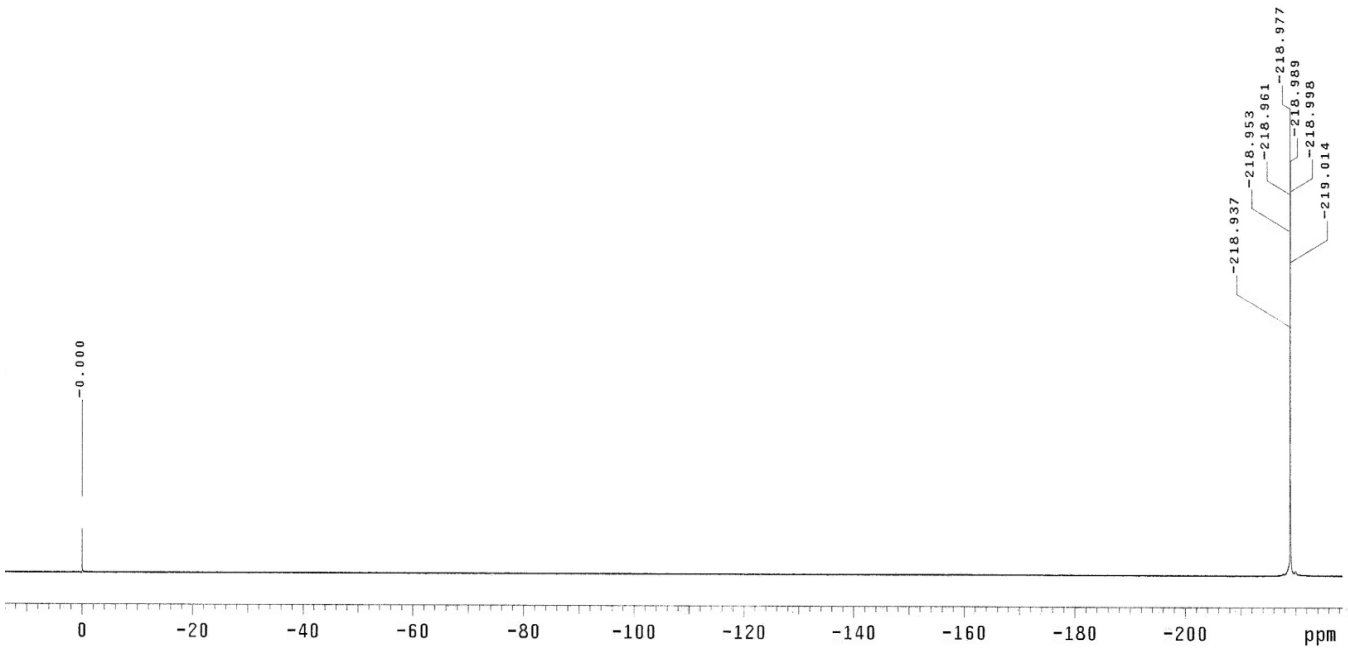
^{19}F NMR spectra of 11d

PS_453M_Fluprine

exp1 s2pul

SAMPLE		SPECIAL	
date	Apr 4 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	100000.0	pw90	15.600
at	0.600	alfa	90.000
np	119936	FLAGS	
fb	55000	il	n
bs	16	in	n
d1	1.500	dp	y
nt	64	hs	nn
ct	64	PROCESSING	
TRANSMITTER		lb	0.30
tn	F19	lsfid	-10
sfrq	376.236	fn	not used
tof	40099.4	DISPLAY	
tpwr	58	sp	-85986.1
pw	5.200	wp	91326.8
DECOUPLER		rfl	89007.4
dn	H1	rfp	0
dof	0	rp	-119.6
dm	nnn	lp	-9.0
dmm	c	PLOT	
dpwr	42	wc	250
dmf	8900	sc	0
		vs	11
		th	5
		ai no ph	



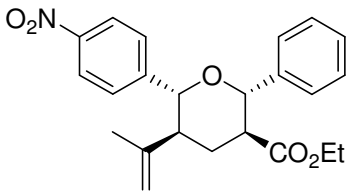


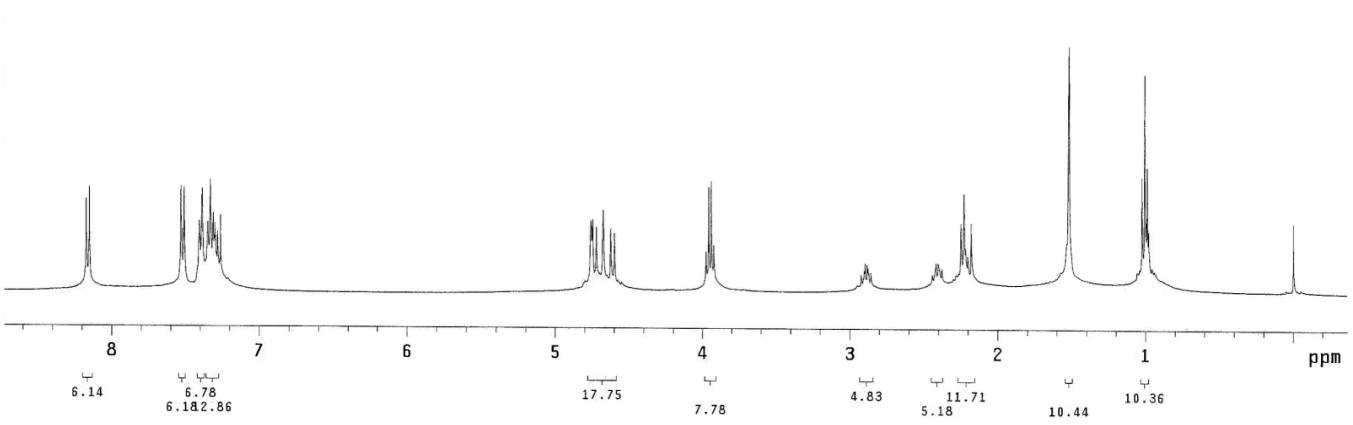
^{1}H NMR spectra of 11e

```
PS_450_M

exp1  s2pul

      SAMPLE              SPECIAL
date   Feb 20 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_450~ hst          0.008
              _M.fid  pw90        19.700
   ACQUISITION       alfa       20.000
sw           6389.8          FLAGS
at            1.998  il             n
np            25528  in             n
fb        not used   dp             y
bs               8   hs            nn
d1           1.000        PROCESSING
nt             200   lb          0.10
ct               0   fn         65536
   TRANSMITTER              DISPLAY
tn               H1   sp        -146.6
sfrq        399.853   wp        3635.7
tof           362.8   rfl        793.1
tpwr             57   rfp            0
pw            9.850   rp         109.0
    DECOUPLER        lp         -81.3
dn               C13          PLOT
dof                0  wc          250
dm               nnn  sc            0
dmm                c  vs           42
dpwr              50  th           20
dmf            15900  nm  cdc  ph
```



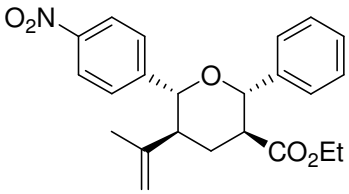


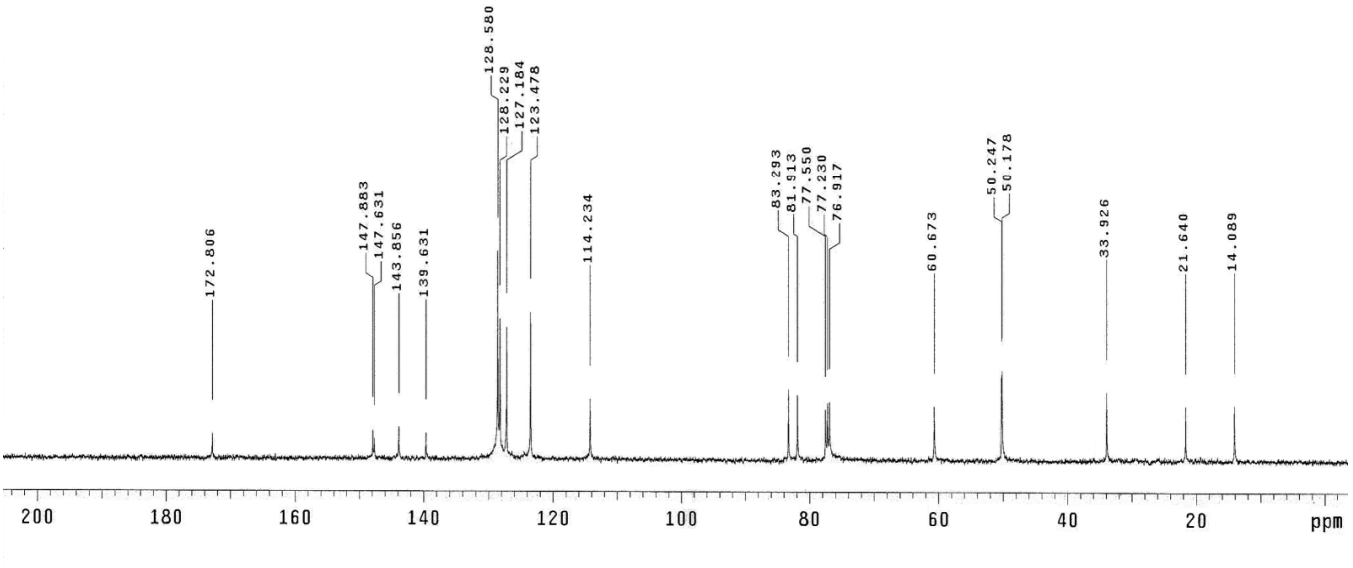
^{13}C NMR spectra of 11e

PS_450_M

exp1 s2pul

SAMPLE		SPECIAL	
date	Feb 20 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_450~		hst	0.008
	M_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	5000	lb	2.00
ct	0	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-384.6
sfrq	100.554	wp	21030.9
tof	1536.3	rfl	9271.3
tpwr	61	rfp	7764.9
pw	9.300	rp	-57.6
DECOUPLER		lp	-312.0
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	31
dpwr	42	th	2
dmf	8900	nm no ph	





^{1}H NMR spectra of 11f

PS_418_U

exp1 s2pul

SAMPLE		SPECIAL	
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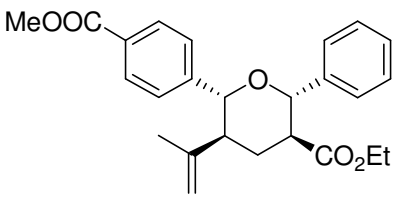
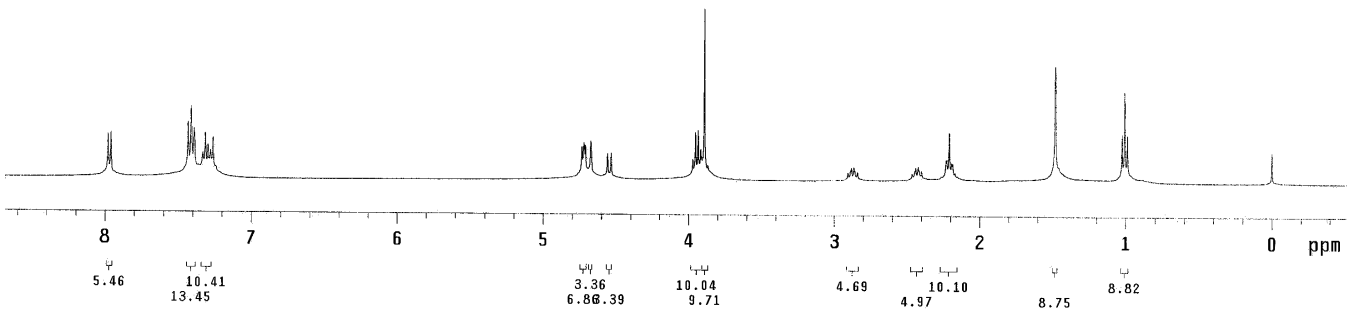
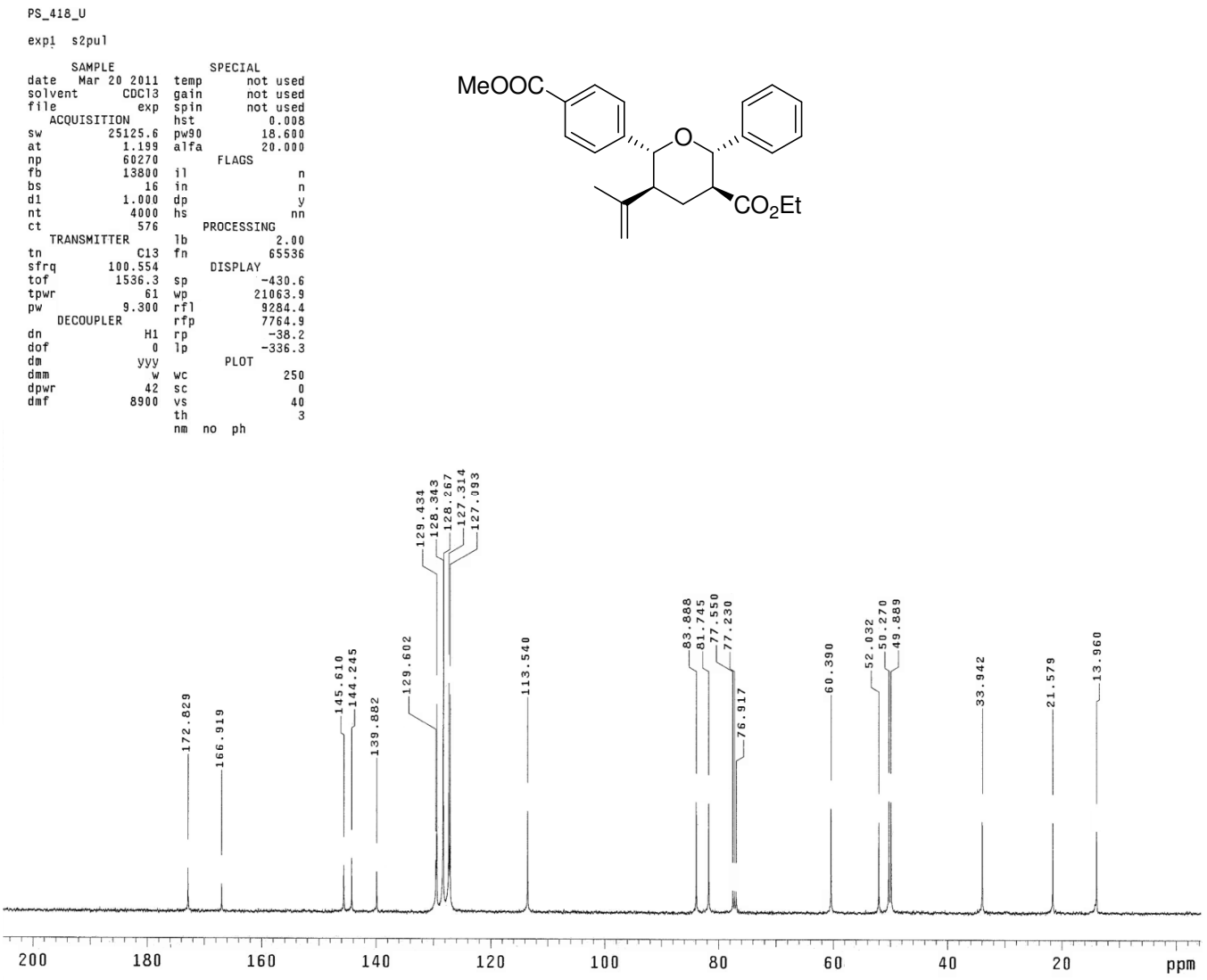
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	6389.8	pw90	19.700
at	1.998	alfa	20.000
np	25528	FLAGS	
fb	not used	il	n
bs	8	in	n
d1	1.000	dp	y
nt	200	hs	nn
ct	144	PROCESSING	
TRANSMITTER		lb	0.10
tn	H1	fn	65536
sfrq	399.853	DISPLAY	
tof	362.8	sp	-206.9
tpwr	57	wp	3686.0
pw	9.850	rfl	794.7
DECOUPLER		rfp	0
dn	C13	rp	124.3
dof	0	lp	-82.2
dm	nnn	PLOT	
dmm	c	wc	250
dpwr	50	sc	0
dmf	15900	vs	28
		th	20
		nm	cdc ph





^{13}C NMR spectra of 11f

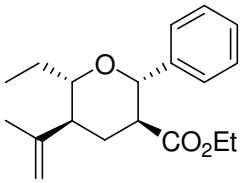


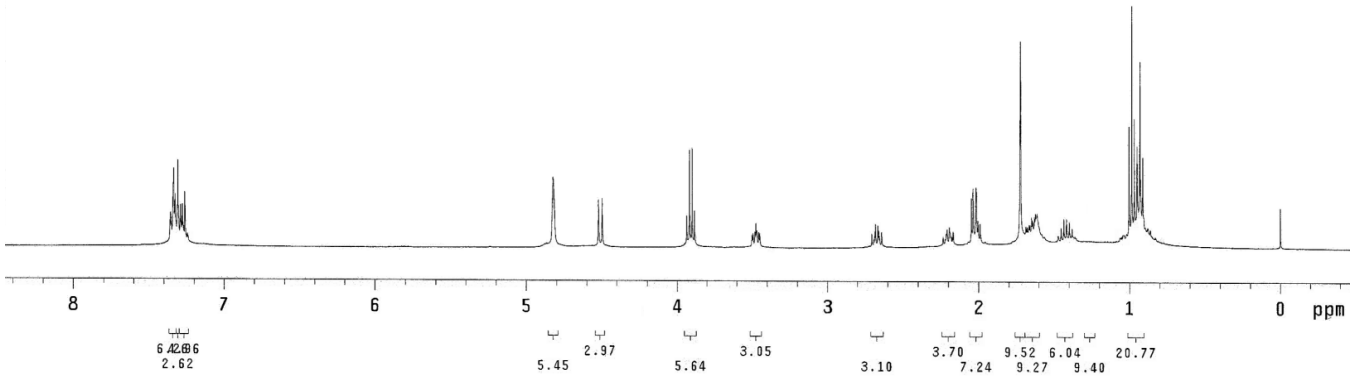
^{1}H NMR spectra of 11g

```
PS_424_M

exp1  s2pul

      SAMPLE              SPECIAL
date   Jan  5 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_424~ hst           0.008
            _M.fid  pw90         19.700
   ACQUISITION      alfa         20.000
sw           6389.8         FLAGS
at             1.998  il             n
np           25528    in             n
fb         not used   dp             y
bs                8   hs            nn
d1             1.000       PROCESSING
nt               100   lb           0.10
ct               100   fn          65536
   TRANSMITTER            DISPLAY
tn                H1   sp         -188.6
sfrq         399.853   wp         3568.4
tof            362.8   rfl         793.1
tpwr              57   rfp             0
pw             9.850   rp          103.0
    DECOUPLER          lp         -90.3
dn               C13          PLOT
dof                0   wc           250
dm               nnn   sc             0
dmm                c   vs            39
dpwr              50   th            20
dmf            15900   nm  cdc  ph
```



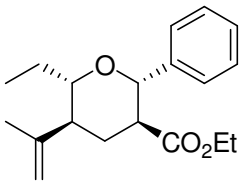


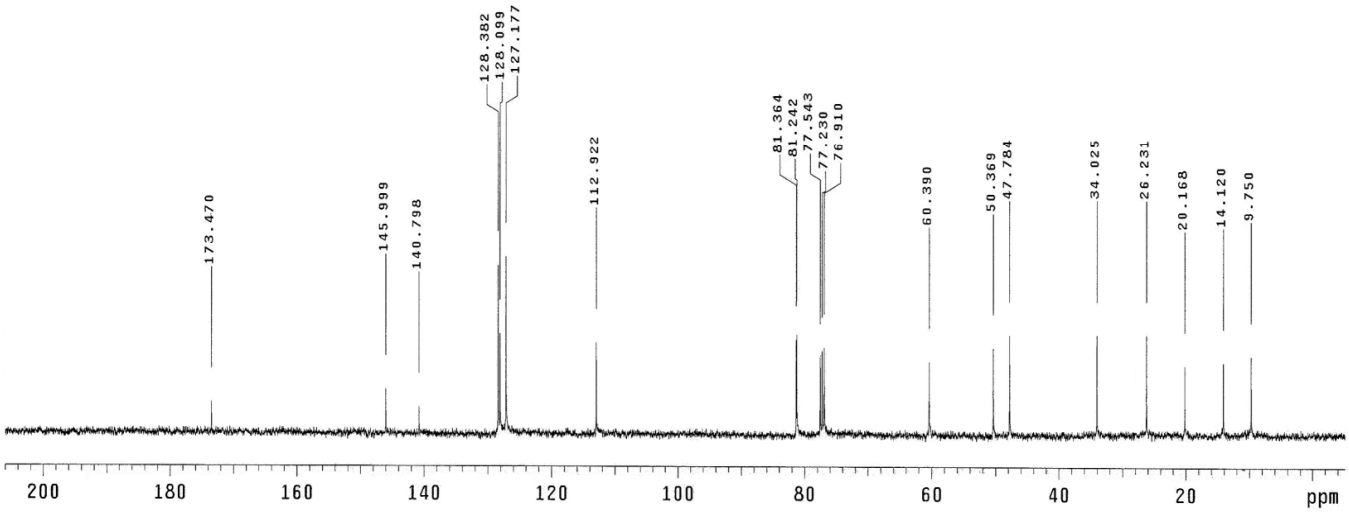
^{13}C NMR spectra of 11g

PS_424_M

exp1 s2pul

SAMPLE		SPECIAL	
date	Jan 5 2011	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	not used
ciftemp/AKS_PS_424~		hst	0.008
	M_C13.fid	pw90	18.600
ACQUISITION		alfa	20.000
sw	25125.6	FLAGS	
at	1.199	il	n
np	60270	in	n
fb	13800	dp	y
bs	16	hs	nn
d1	1.000	PROCESSING	
nt	4000	lb	2.00
ct	1120	fn	65536
TRANSMITTER		DISPLAY	
tn	C13	sp	-516.5
sfrq	100.554	wp	21229.5
tof	1536.3	rfl	9271.3
tpwr	61	rfp	7764.9
pw	9.300	rp	-49.7
DECOUPLER		lp	-351.0
dn	H1	PLOT	
dof	0	wc	250
dm	yyy	sc	0
dmm	w	vs	26
dpwr	42	th	3
dmf	8900	nm no ph	



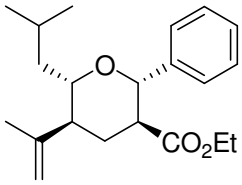


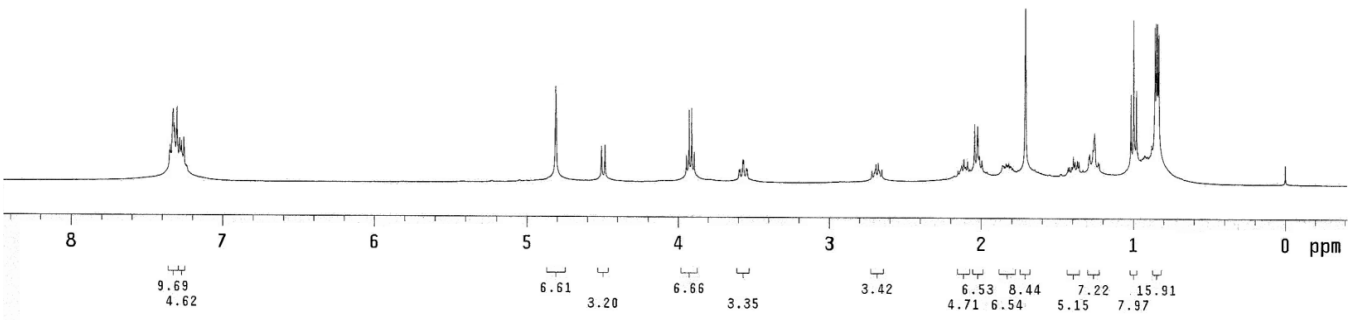
^{1}H NMR spectra of 11h

```
PS_409_M

exp1  s2pul

      SAMPLE            SPECIAL
date    Dec 22 2010  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_409~  hst           0.008
            _M1.fid  pw90         19.700
   ACQUISITION       alfa         20.000
sw           6389.8        FLAGS
at            1.998  il                n
np            25528  in                n
fb        not used   dp                y
bs               8   hs               nn
d1           1.000       PROCESSING
nt             100   lb             0.10
ct             100   fn            65536
   TRANSMITTER             DISPLAY
tn              H1   sp           -166.3
sfrq       399.853   wp           3543.3
tof          362.8   rfl           796.0
tpwr            57   rfp             0
pw           9.850   rp            124.9
    DECOUPLER        lp           -87.5
dn             C13          PLOT
dof              0   wc             250
dm             nnn   sc               0
dmm              c   vs              28
dpwr            50   th              42
dmf          15900   nm  cdc  ph
```



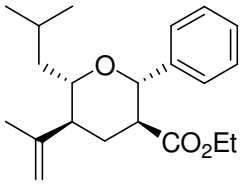


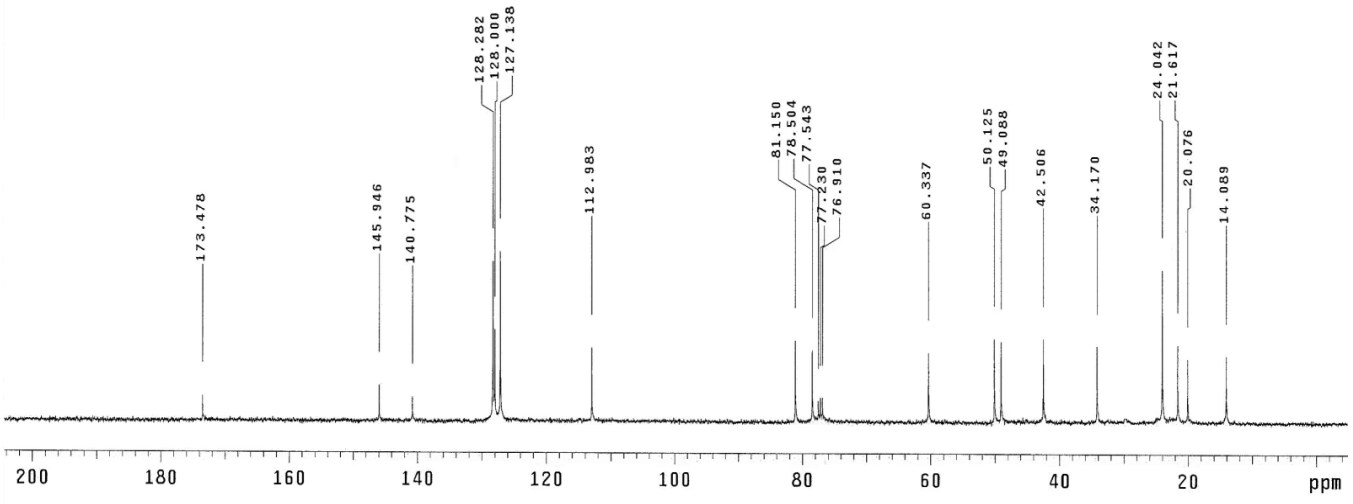
^{13}C NMR spectra of 11h

```
PS_409_M

exp1  s2pul

      SAMPLE            SPECIAL
date   Dec 21 2010  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_409~ hst          0.008
          M_C13.fid  pw90        18.600
   ACQUISITION       alfa        20.000
sw          25125.6        FLAGS
at            1.199  il             n
np            60270  in             n
fb            13800  dp             y
bs               16  hs            nn
d1            1.000      PROCESSING
nt             2000  lb          2.00
ct              560  fn         65536
   TRANSMITTER            DISPLAY
tn               C13  sp        -487.4
sfrq         100.554  wp       21030.9
tof           1536.3  rfl       9275.2
tpwr              61  rfp       7764.9
pw             9.300  rp         -47.4
    DECOUPLER        lp        -341.6
dn                H1         PLOT
dof                0  wc          250
dm               yyy  sc            0
dmm                w  vs           26
dpwr              42  th            3
dmf             8900  nm  no  ph
```



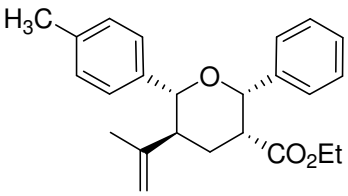


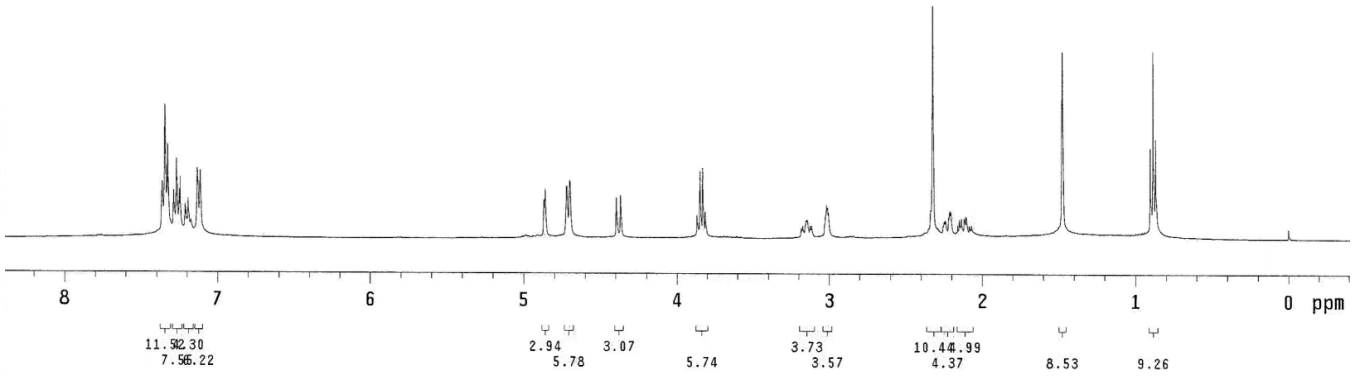
^{1}H NMR spectra of 12a

```
PS_421_M

exp1  s2pul

      SAMPLE              SPECIAL
date    Jan  3 2011  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_421~  hst           0.008
              _M.fid  pw90         19.700
   ACQUISITION       alfa         20.000
sw           6389.8         FLAGS
at             1.998  il                n
np             25528  in                n
fb         not used   dp                y
bs                8   hs               nn
d1            1.000       PROCESSING
nt              100   lb             0.10
ct              100   fn            65536
   TRANSMITTER             DISPLAY
tn               H1   sp          -162.8
sfrq        399.853   wp          3518.1
tof           362.8   rfl          800.9
tpwr             57   rfp              0
pw            9.850   rp           109.8
    DECOUPLER        lp           -94.8
dn              C13          PLOT
dof               0   wc            250
dm              nnn   sc              0
dmm               c   vs             36
dpwr             50   th             20
dmf           15900   nm  cdc  ph
```



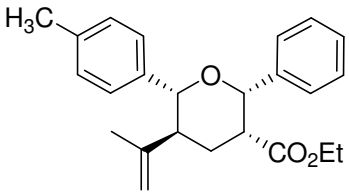


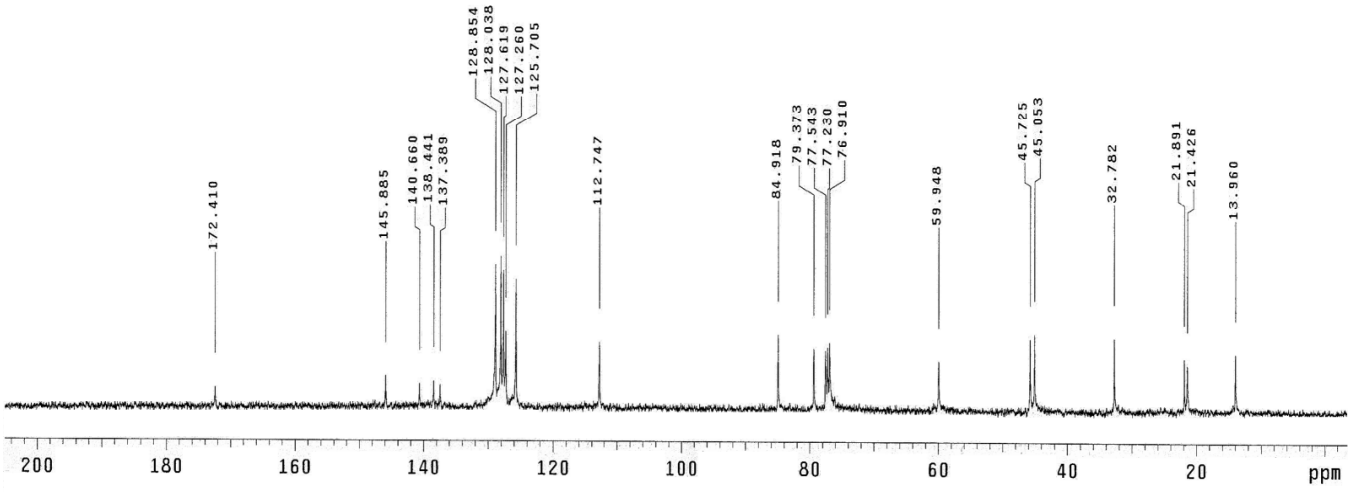
^{13}C NMR spectra of 12a

```
PS_421_M

exp1  s2pul

      SAMPLE            SPECIAL
date   Jan  2 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_421~ hst           0.008
         M_C13.fid  pw90         18.600
   ACQUISITION      alfa         20.000
sw          25125.6       FLAGS
at            1.199  il                n
np            60270  in                n
fb            13800  dp                y
bs               16  hs               nn
d1            1.000      PROCESSING
nt             3000  lb             2.00
ct             3000  fn            65536
   TRANSMITTER           DISPLAY
tn               C13  sp           -353.2
sfrq         100.554  wp          20965.0
tof           1536.3  rfl          9273.6
tpwr              61  rfp          7764.9
pw             9.300  rp            -64.5
    DECOUPLER         lp           -286.4
dn                H1          PLOT
dof                0  wc             250
dm               yyy  sc               0
dmm                w  vs              23
dpwr              42  th               2
dmf             8900  nm  no  ph
```



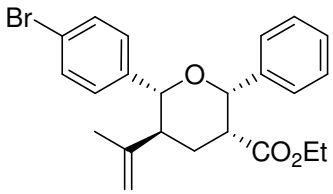


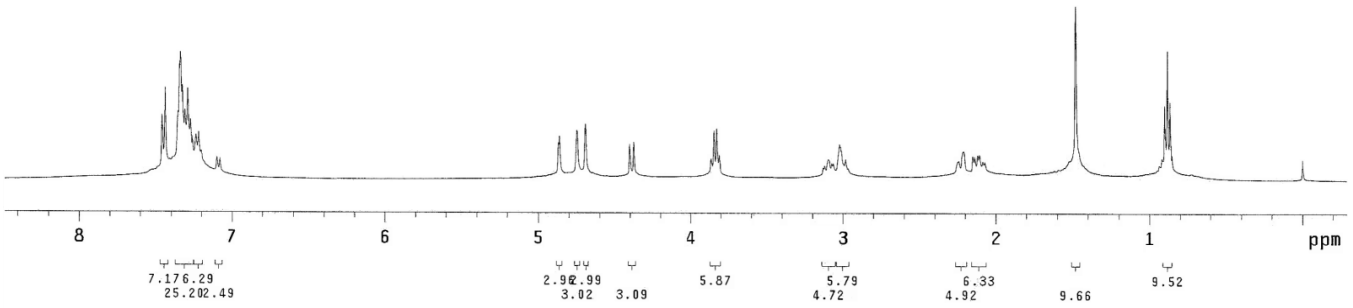
^{1}H NMR spectra of 12b

```
PS_432_M

exp1  s2pul

      SAMPLE              SPECIAL
date   Jan 14 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_432~ hst           0.008
              _M.fid  pw90         19.700
   ACQUISITION       alfa         20.000
sw           6389.8        FLAGS
at            1.998  il                n
np            25528  in                n
fb        not used   dp                y
bs               8   hs               nn
d1           1.000       PROCESSING
nt             100   lb             0.10
ct             100   fn            65536
   TRANSMITTER             DISPLAY
tn              H1   sp           -116.8
sfrq       399.853   wp           3509.7
tof          362.8   rfl           796.8
tpwr            57   rfp               0
pw           9.850   rp            109.7
    DECOUPLER        lp           -99.5
dn             C13           PLOT
dof              0   wc             250
dm             nnn   sc               0
dmm              c   vs              29
dpwr            50   th              18
dmf          15900   nm  cdc  ph
```



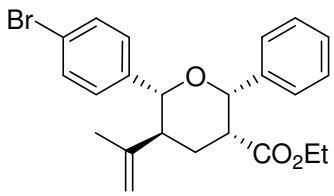


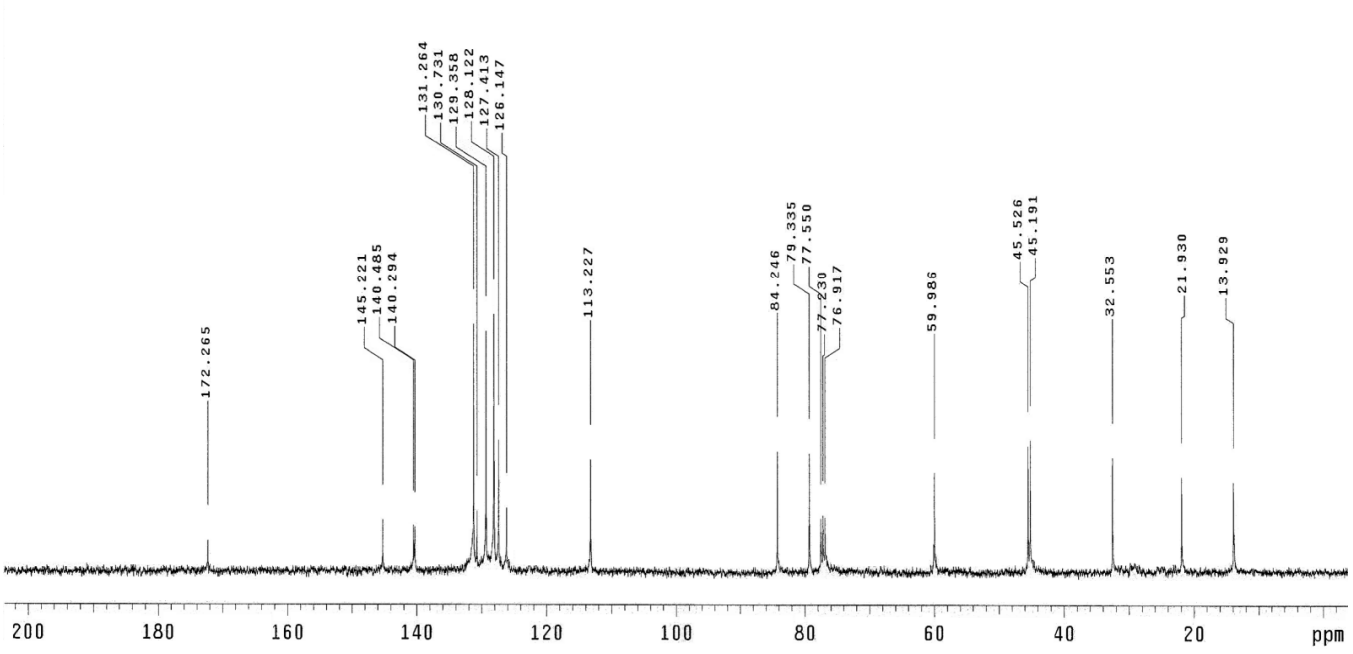
^{13}C NMR spectra of 12b

```
PS_432_M

exp1  s2pul

      SAMPLE            SPECIAL
date   Jan 14 2011  temp      not used
solvent      CDCl3  gain      not used
file /export/home/~ spin      not used
ciftemp/AKS_PS_432~ hst          0.008
         M_C13.fid  pw90        18.600
   ACQUISITION      alfa        20.000
sw         25125.6        FLAGS
at           1.199  il              n
np           60270  in              n
fb           13800  dp              y
bs              16  hs             nn
d1           1.000      PROCESSING
nt            4000  lb           2.00
ct            1168  fn          65536
   TRANSMITTER           DISPLAY
tn             C13  sp         -423.0
sfrq       100.554  wp        20899.0
tof         1536.3  rfl        9276.7
tpwr            61  rfp        7764.9
pw           9.300  rp          -56.2
    DECOUPLER       lp         -292.1
dn              H1         PLOT
dof              0  wc           250
dm             yyy  sc             0
dmm              w  vs            37
dpwr            42  th             4
dmf           8900  nm  no  ph
```



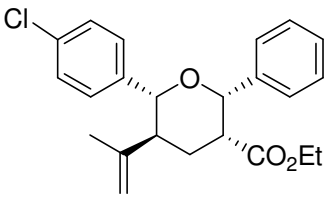


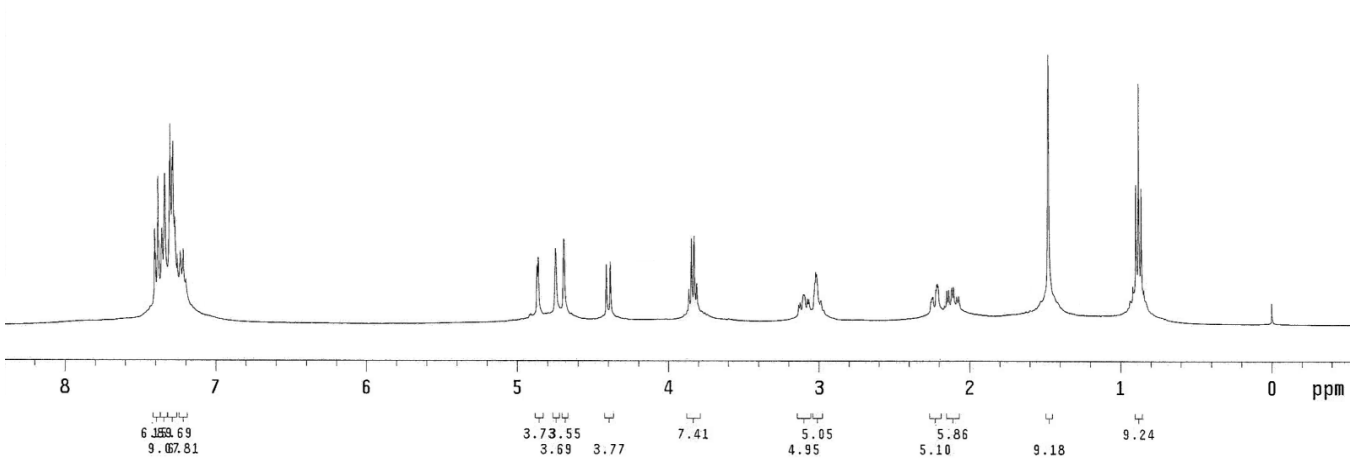
^{1}H NMR spectra of 12c

```
PS_434_M

exp1  s2pul

      SAMPLE              SPECIAL
date   Jan 15 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_434~ hst           0.008
            _M.fid  pw90         19.700
   ACQUISITION      alfa         20.000
sw          6389.8         FLAGS
at           1.998  il                n
np           25528  in                n
fb       not used   dp                y
bs              8   hs               nn
d1          1.000       PROCESSING
nt            100   lb             0.10
ct            100   fn            65536
   TRANSMITTER             DISPLAY
tn             H1   sp           -209.6
sfrq       399.853  wp           3568.4
tof          362.8  rfl           797.4
tpwr            57  rfp               0
pw           9.850  rp            115.2
    DECOUPLER       lp           -109.8
dn             C13          PLOT
dof              0  wc             250
dm             nnn  sc               0
dmm              c  vs              42
dpwr            50  th              20
dmf          15900  nm  cdc  ph
```



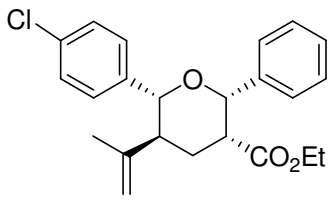


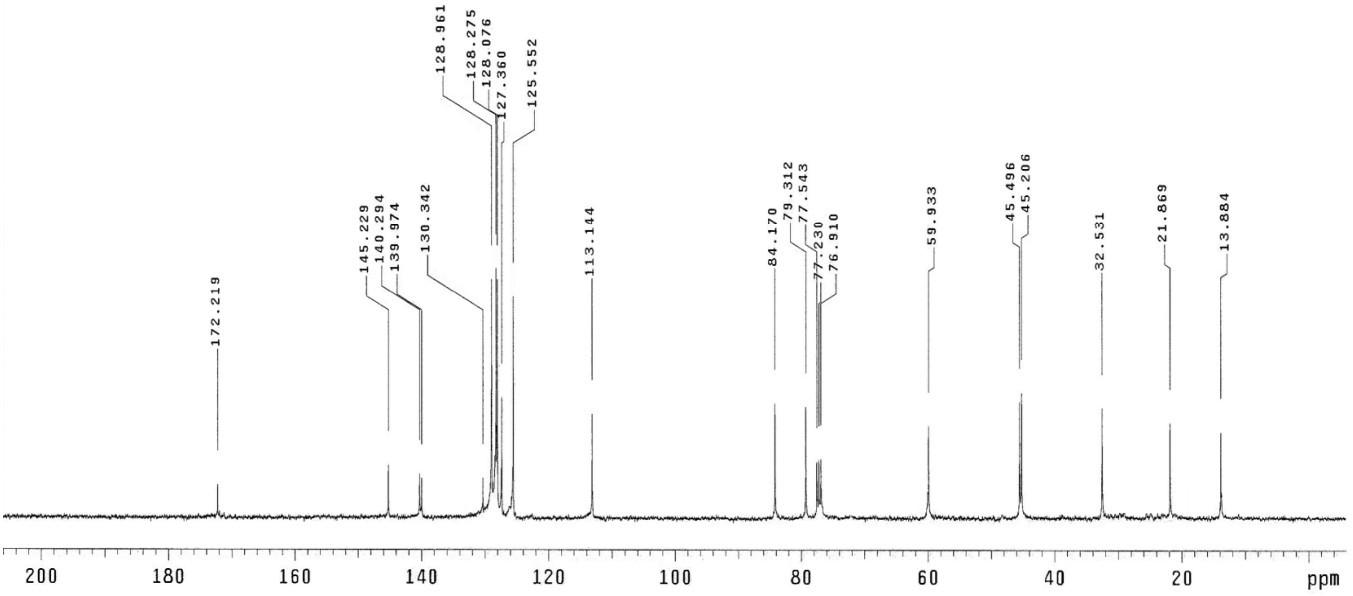
^{13}C NMR spectra of 12c

```
PS_434_M

exp1  s2pul

      SAMPLE            SPECIAL
date   Jan 15 2011  temp       not used
solvent      CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_434~ hst          0.008
         M_C13.fid  pw90        18.600
   ACQUISITION      alfa        20.000
sw          25125.6        FLAGS
at            1.199  il               n
np            60270  in               n
fb            13800  dp               y
bs               16  hs              nn
d1            1.000      PROCESSING
nt             8000  lb            2.00
ct             2592  fn           65536
   TRANSMITTER            DISPLAY
tn              C13  sp          -590.1
sfrq        100.554  wp         21328.5
tof          1536.3  rfl         9279.0
tpwr             61  rfp         7764.9
pw            9.300  rp           -50.9
    DECOUPLER        lp          -302.4
dn               H1          PLOT
dof               0  wc            250
dm              yyy  sc              0
dmm               w  vs             37
dpwr             42  th              4
dmf            8900  nm  no  ph
```



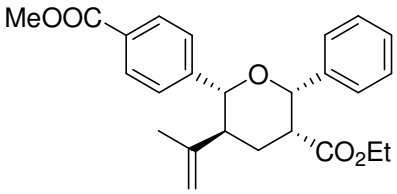


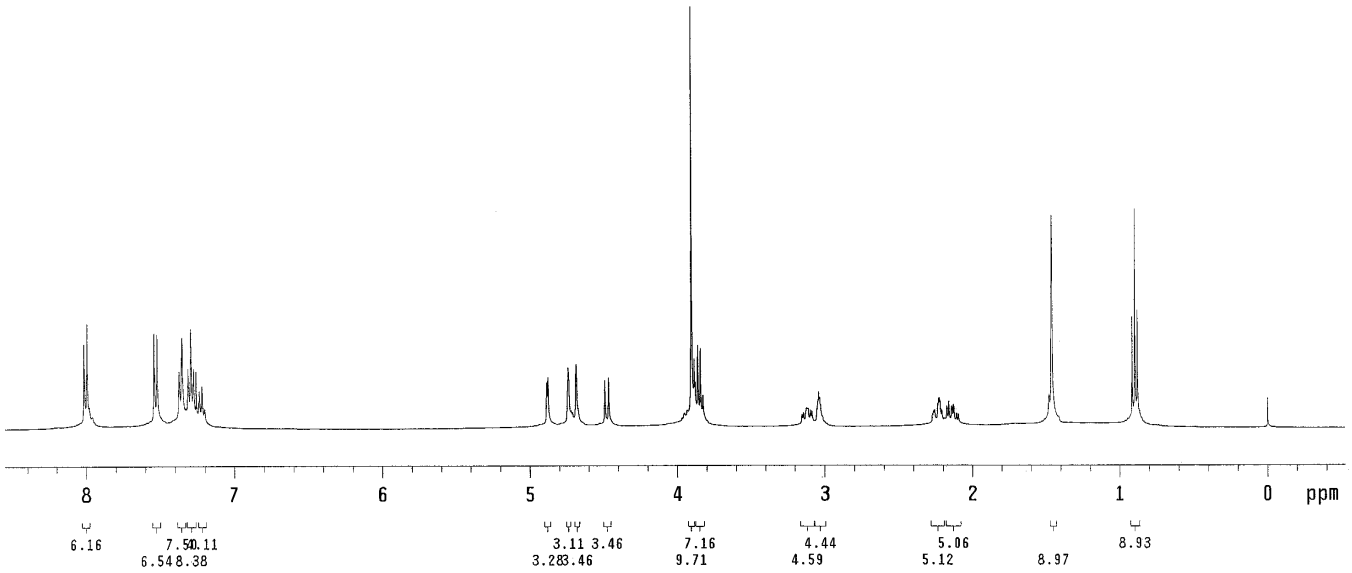
^{1}H NMR spectra of 12d

PS_493_M

exp1 s2pul

SAMPLE		SPECIAL	
date	Jun 6 2011	temp	not used
solvent	CDCl3	gain	not used
file	exp	spin	not used
ACQUISITION		hst	0.008
sw	6389.8	pw90	19.700
at	1.998	alfa	20.000
np	25528	FLAGS	
fb	not used	il	n
bs	8	in	n
d1	1.000	dp	y
nt	100	hs	nn
ct	100	PROCESSING	
TRANSMITTER		lb	0.10
tn	H1	fn	65536
sfrq	399.853	DISPLAY	
tof	362.8	sp	-208.5
tpwr	57	wp	3635.7
pw	9.850	rfl	796.2
DECOUPLER		rfp	0
dn	C13	rp	122.7
dof	0	lp	-95.2
dm	nnn	PLOT	
dmm	c	wc	250
dpwr	50	sc	0
dmf	15900	vs	62
		th	14
		nm	cdc ph



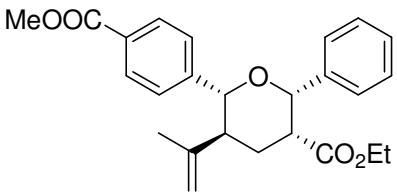


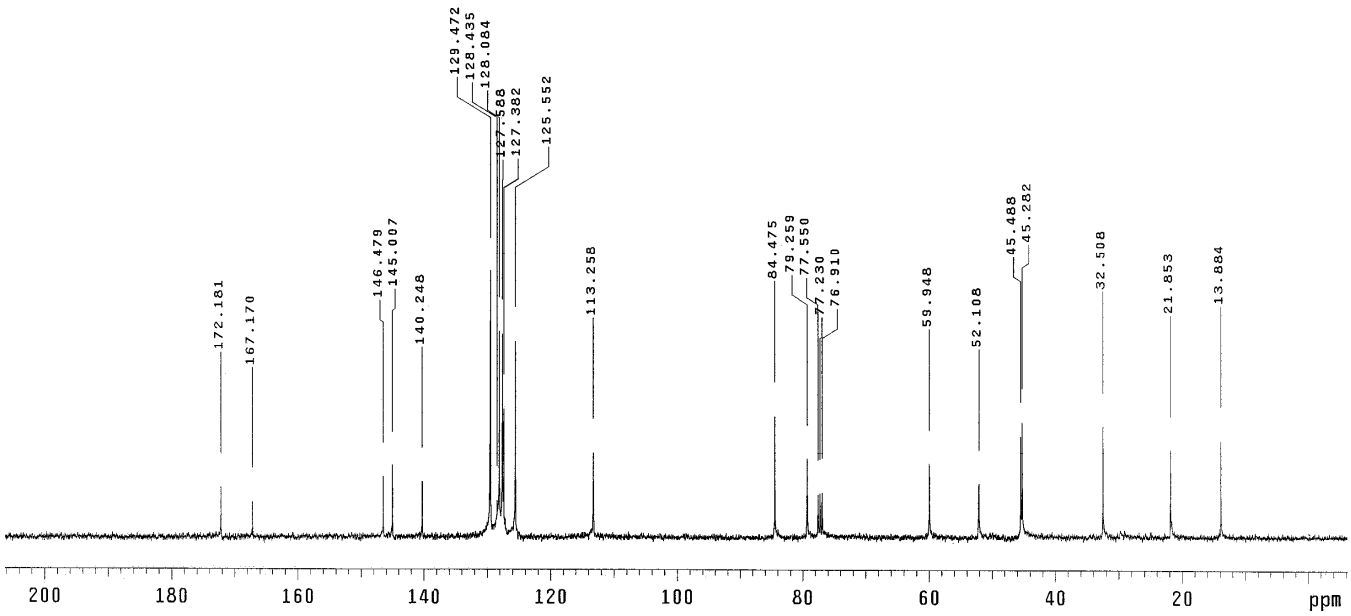
^{13}C NMR spectra of 12d

```
PS_493_M

exp1  s2pul

      SAMPLE            SPECIAL
date   Jun  7 2011  temp       not used
solvent      CDCl3  gain       not used
file           exp  spin       not used
   ACQUISITION      hst          0.008
sw          25125.6 pw90        18.600
at            1.199 alfa        20.000
np            60270       FLAGS
fb            13800  il                n
bs               16  in                n
d1            1.000  dp                y
nt             4000  hs               nn
ct              864     PROCESSING
   TRANSMITTER       lb            2.00
tn               C13  fn           65536
sfrq       100.554       DISPLAY
tof         1536.3  sp          -623.1
tpwr            61  wp         21361.4
pw           9.300  rfl         9279.0
    DECOUPLER      rfp         7764.9
dn               H1  rp           -71.4
dof               0  lp          -277.0
dm              yyy        PLOT
dmm               w  wc             250
dpwr             42  sc               0
dmf            8900  vs              39
                     th               4
                     nm  no  ph
```





^{1}H NMR spectra of 12e

```
PS_411_M

exp1  s2pul

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solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_411~  hst           0.008
              _M.fid  pw90         19.700
   ACQUISITION       alfa         20.000
sw           6389.8          FLAGS
at             1.998  il                n
np           25528    in                n
fb         not used   dp                y
bs                8   hs               nn
d1             1.000       PROCESSING
nt               100   lb            0.10
ct               100   fn           65536
   TRANSMITTER             DISPLAY
tn                 H1   sp          -175.1
sfrq         399.853    wp          3568.4
tof            362.8    rfl          796.4
tpwr              57    rfp              0
pw             9.850    rp           119.8
    DECOUPLER           lp           -83.9
dn                C13          PLOT
dof                 0   wc             250
dm                nnn   sc               0
dmm                 c   vs              37
dpwr               50   th              20
dmf            15900    nm  cdc  ph
```
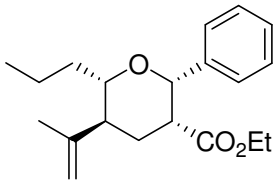
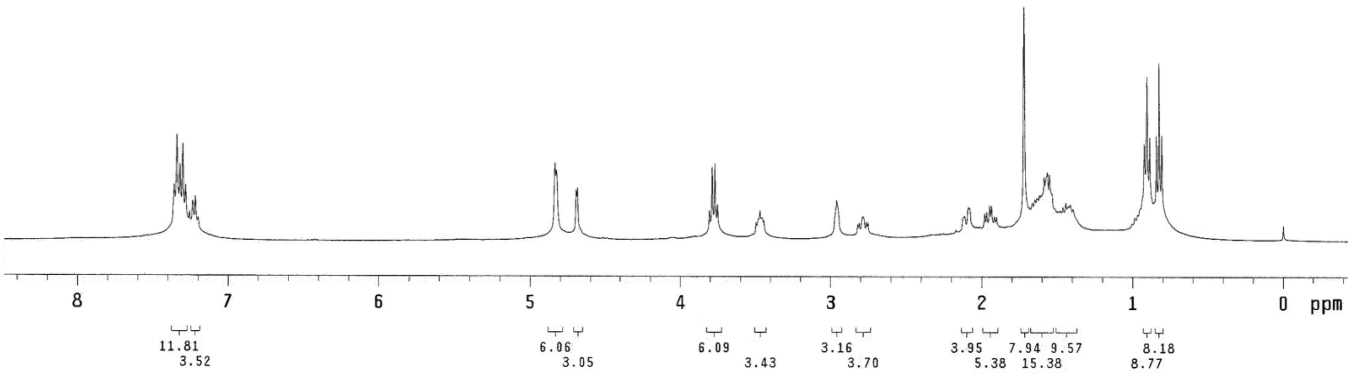
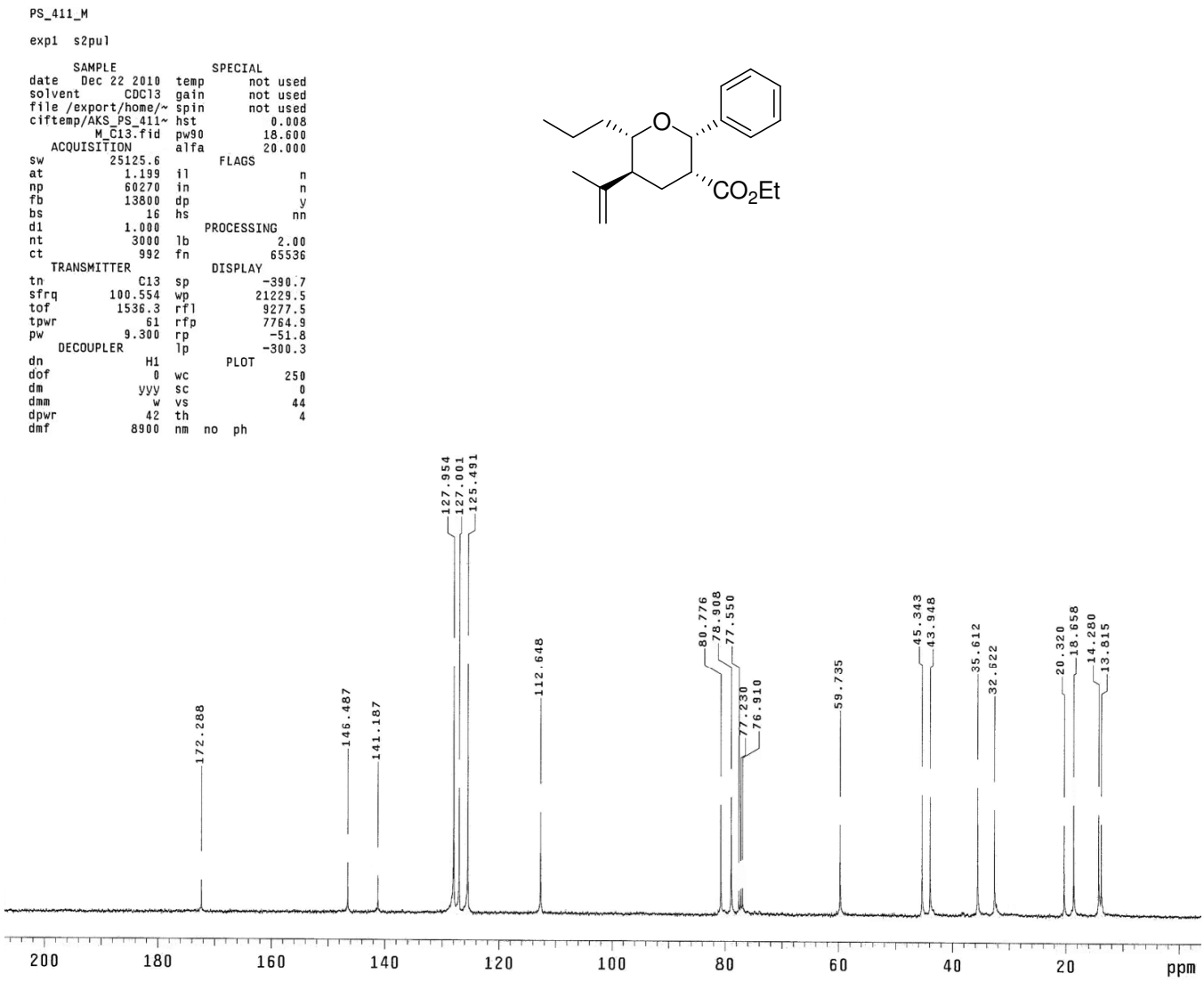
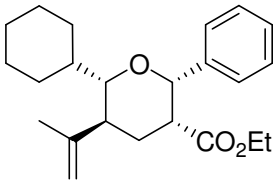





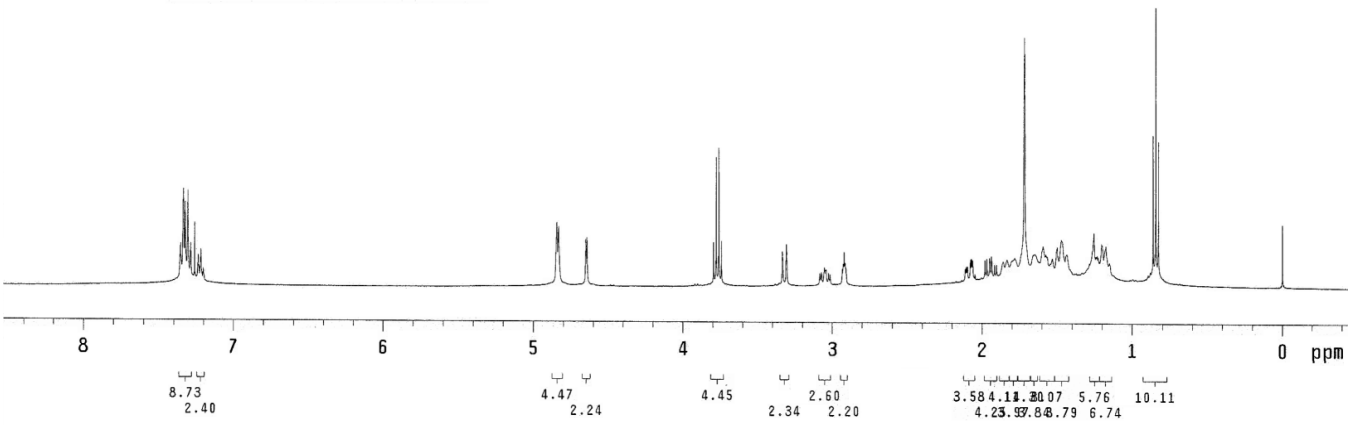
^{13}C NMR spectra of 12e



^{1}H NMR spectra of 12f

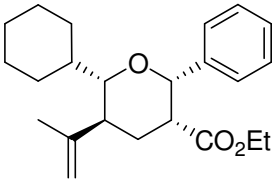


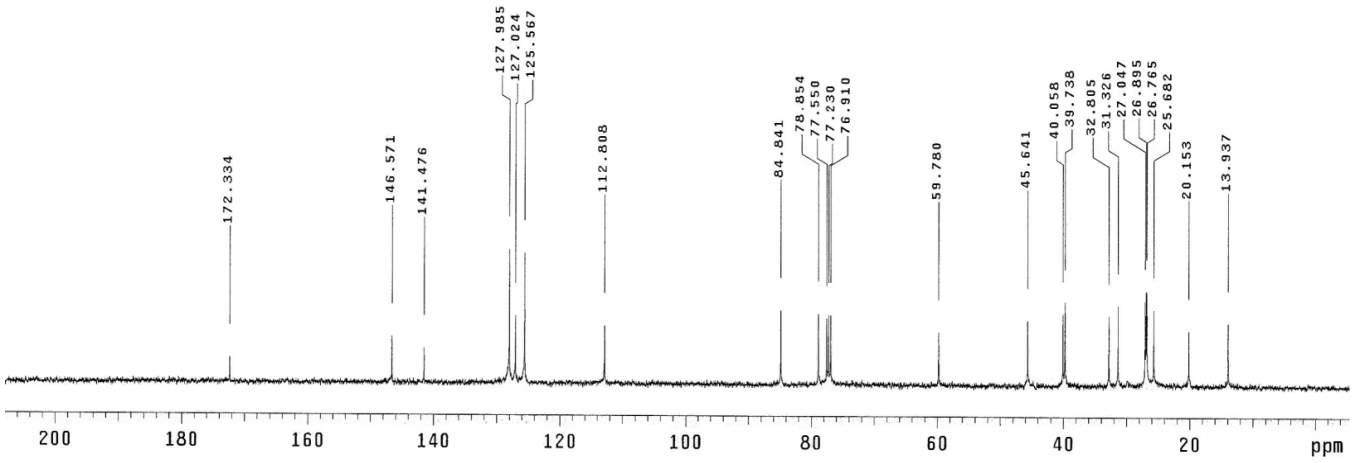

```
PS_452_M

exp1  s2pul

      SAMPLE            SPECIAL
date    Feb 23 2011  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_452~  hst           0.008
             _M.fid  pw90         19.700
   ACQUISITION       alfa        20.000
sw            6389.8       FLAGS
at             1.998  il                n
np             25528  in                n
fb         not used   dp                y
bs                8   hs               nn
d1            1.000       PROCESSING
nt              100   lb             0.10
ct              100   fn            65536
   TRANSMITTER             DISPLAY
tn               H1   sp           -181.4
sfrq        399.853   wp           3593.6
tof           362.8   rfl           794.3
tpwr             57   rfp               0
pw            9.850   rp            114.1
    DECOUPLER         lp            -91.7
dn              C13          PLOT
dof               0   wc              250
dm              nnn   sc                0
dmm               c   vs               43
dpwr             50   th               20
dmf           15900   nm  cdc  ph
```



^{13}C NMR spectra of 12f

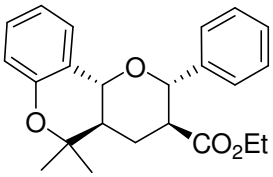
```
PS_452_M

exp1  s2pul

      SAMPLE              SPECIAL
date    Feb 23 2011  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_452~  hst           0.008
         M_C13.fid   pw90         18.600
   ACQUISITION       alfa         20.000
sw          25125.6        FLAGS
at            1.199  il                n
np            60270  in                n
fb            13800  dp                y
bs               16  hs               nn
d1            1.000      PROCESSING
nt             5000  lb             2.00
ct             2080  fn            65536
   TRANSMITTER            DISPLAY
tn               C13  sp           -549.5
sfrq         100.554  wp         21460.3
tof           1536.3  rfl         9271.3
tpwr              61  rfp         7764.9
pw             9.300  rp           -61.1
     DECOUPLER        lp          -302.7
dn                H1          PLOT
dof                0  wc             250
dm               yyy  sc               0
dmm                w  vs              21
dpwr              42  th               3
dmf             8900  nm  no  ph
```

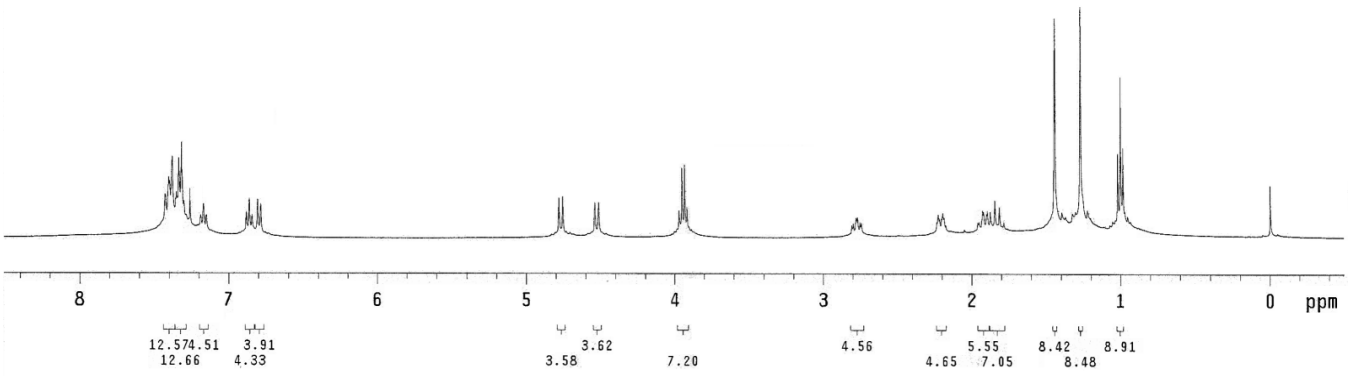




^{1}H NMR spectra of 13

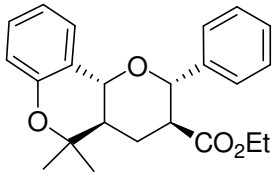
```
PS_451_L

exp1  s2pul

      SAMPLE            SPECIAL
date    Feb 19 2011  temp       not used
solvent      CDCl3   gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_451~  hst           0.008
              _L.fid  pw90         19.700
   ACQUISITION       alfa         20.000
sw          6389.8         FLAGS
at           1.998  il               n
np           25528  in               n
fb       not used   dp               y
bs              8   hs              nn
d1          1.000         PROCESSING
nt            200   lb            0.10
ct              0   fn           65536
   TRANSMITTER              DISPLAY
tn               H1  sp         -199.5
sfrq        399.853  wp         3602.0
tof           362.8  rfl         795.6
tpwr             57  rfp             0
pw           9.850  rp          106.5
    DECOUPLER       lp         -67.6
dn              C13          PLOT
dof               0  wc           250
dm              nnn  sc             0
dmm               c  vs            36
dpwr             50  th            25
dmf           15900  nm  cdc  ph
```

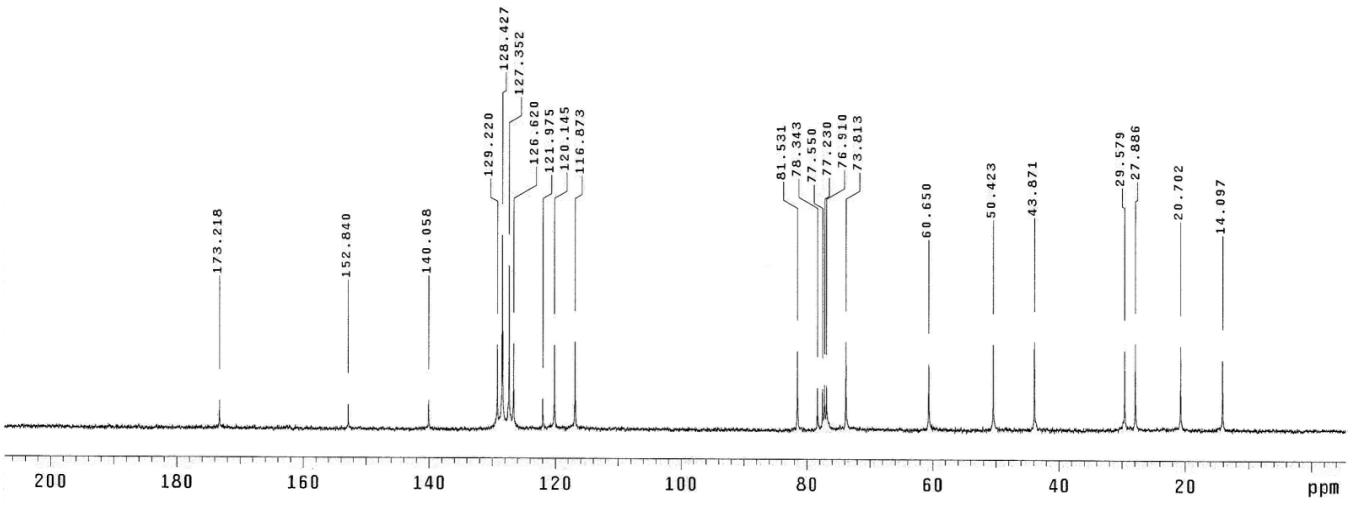




^{13}C NMR spectra of 13

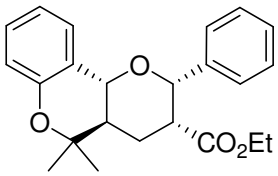
```
PS_451_L

exp1  s2pul

      SAMPLE            SPECIAL
date   Feb 19 2011  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_451~  hst          0.008
         L_C13.fid   pw90        18.600
   ACQUISITION       alfa       20.000
sw          25125.6        FLAGS
at            1.199  il             n
np            60270  in             n
fb            13800  dp             y
bs               16  hs            nn
d1            1.000      PROCESSING
nt             5000  lb          2.00
ct                0  fn         65536
   TRANSMITTER           DISPLAY
tn               C13  sp         -554.1
sfrq         100.554  wp        21394.4
tof           1536.3  rfl        9275.9
tpwr              61  rfp        7764.9
pw             9.300  rp          -49.0
     DECOUPLER        lp         -333.6
dn                H1         PLOT
dof                0  wc          250
dm               yyy  sc            0
dmm                w  vs           31
dpwr              42  th            3
dmf             8900  nm  no  ph
```

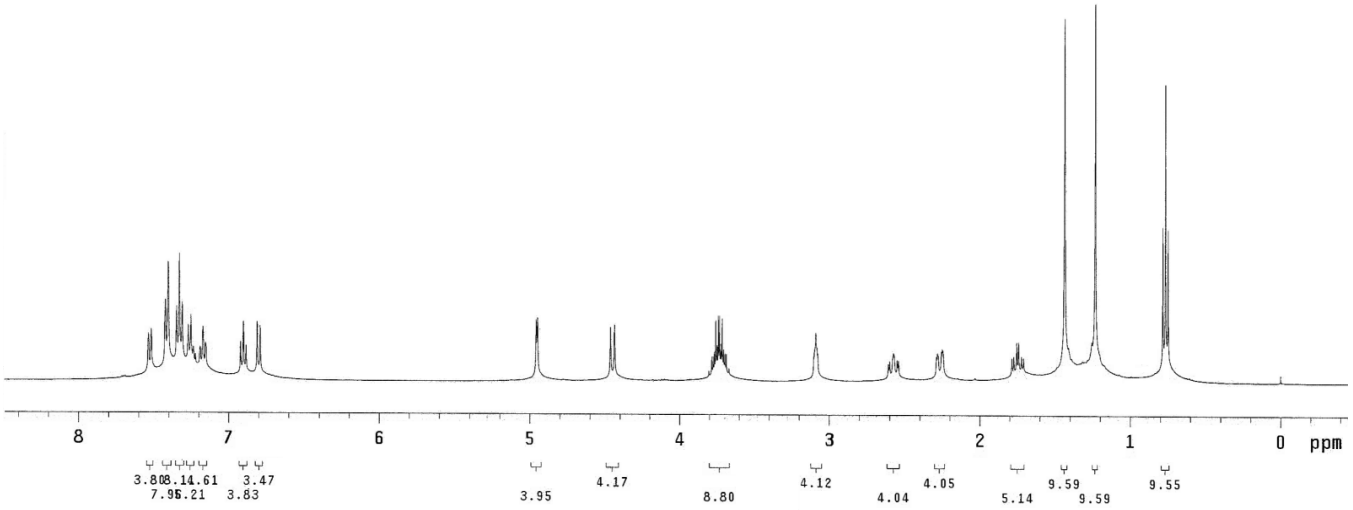




^{1}H NMR spectra of 14

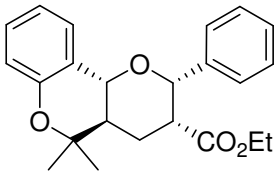
```
PS_433_L

exp1  s2pul

      SAMPLE            SPECIAL
date    Feb 14 2011  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~  spin       not used
ciftemp/AKS_PS_433~  hst           0.008
           _L1.fid   pw90         19.700
   ACQUISITION       alfa         20.000
sw            6389.8        FLAGS
at             1.998  il             n
np           25528    in             n
fb         not used   dp             y
bs                4   hs            nn
d1             1.000      PROCESSING
nt                32   lb          0.10
ct                32   fn         65536
   TRANSMITTER             DISPLAY
tn                H1   sp        -180.8
sfrq         399.853   wp        3576.8
tof            362.8   rfl        810.4
tpwr              57   rfp            0
pw             9.850   rp         129.6
     DECOUPLER         lp         -97.3
dn               C13          PLOT
dof                0   wc          250
dm               nnn   sc            0
dmm                c   vs           62
dpwr              50   th           20
dmf            15900   nm  cdc  ph
```

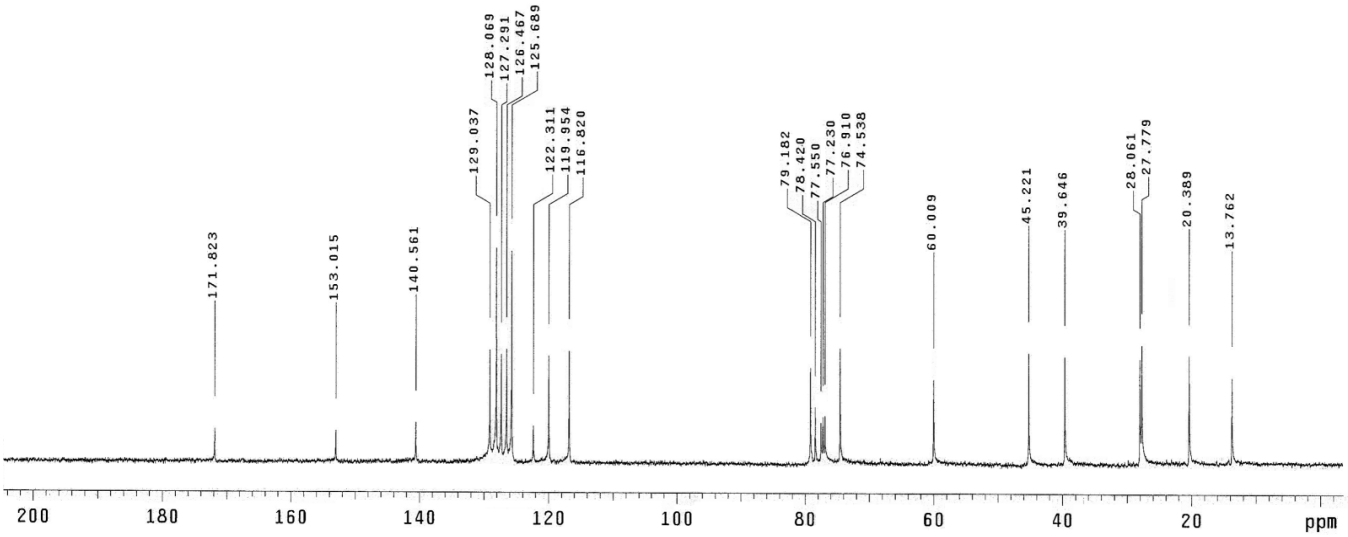




^{13}C NMR spectra of 14

```
PS_433_L1

exp1  s2pul

      SAMPLE            SPECIAL
date   Feb 21 2011  temp       not used
solvent       CDCl3  gain       not used
file /export/home/~ spin       not used
ciftemp/AKS_PS_433~ hst          0.008
        L1_C13.fid  pw90        18.600
   ACQUISITION      alfa        20.000
sw          25125.6        FLAGS
at            1.199  il             n
np            60270  in             n
fb            13800  dp             y
bs               16  hs            nn
d1            1.000      PROCESSING
nt             3000  lb          2.00
ct             3000  fn         65536
   TRANSMITTER            DISPLAY
tn              C13  sp       -358.5
sfrq        100.554  wp      20932.0
tof          1536.3  rfl      9279.0
tpwr             61  rfp      7764.9
pw            9.300  rp        -77.9
    DECOUPLER        lp       -269.1
dn               H1          PLOT
dof               0  wc          250
dm              yyy  sc            0
dmm               w  vs           34
dpwr             42  th            4
dmf            8900  nm  no  ph
```





The crystal parameters of compound 4g

	4g-CCDC 819363
Formula	$C_{20}H_{26}O_5$
Formula weight	346.41
T/K	296(2)
Crystal system	Orthorhombic
Space group	P n a 21
a/Å	19.8370(10)
b/Å	15.2026(8)
c/Å	6.3744(4)
α/°	90.00
β/°	90.00
γ/°	90.00
V/Å^3	1922.35(18)
Z	4
Abs. Coeff./mm^{-1}	0.085
Abs. Correction	multi-scan
GOF on F^2	0.943
Final *R* indices [$I > 2\sigma(I)$]	*R1* = 0.0677
	wR2 = 0.1644
R indices [all data]	*R1* = 0.0856
	wR2 = 0.1735

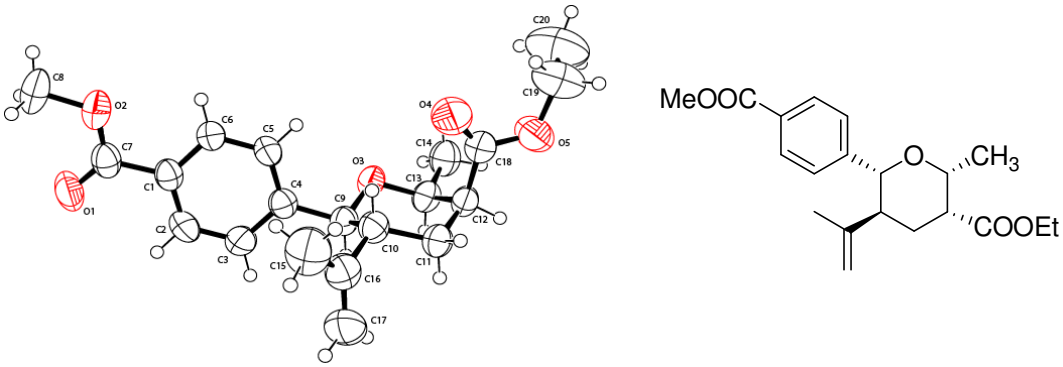
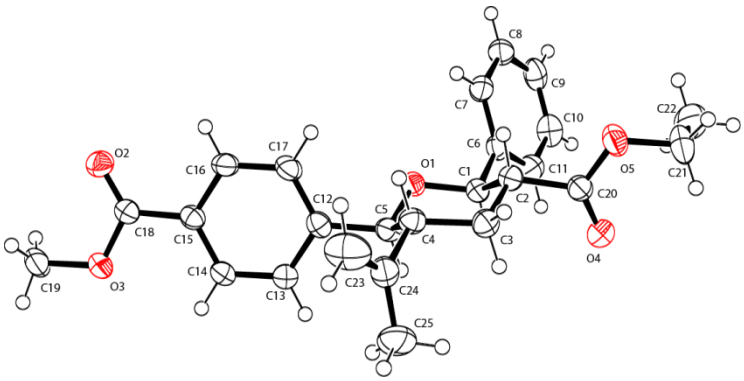


Figure 1: ORTEP diagram of **4g**

The crystal parameters of compound 11f

	11f-CCDC 819365
Formula	$C_{25}\ H_{28}\ O_5$
Formula weight	408.47
T/K	296(2)
Crystal system	Monoclinic
Space group	P 21/c
a/Å	12.0752(3)
b/Å	15.3970(4)
c/Å	12.4647(3)
α/°	90.00
β/°	104.3910(10)
γ/°	90.00
V/Å^3	2244.74(10)
Z	4
Abs. Coeff./mm^{-1}	0.083
Abs. Correction	multi-scan
GOF on F^2	1.070
Final *R* indices [$I > 2\sigma(I)$]	*R1* =0.0615
	wR2 = 0.1806
R indices [all data]	*R1* = 0.0759
	wR2 = 0.2203



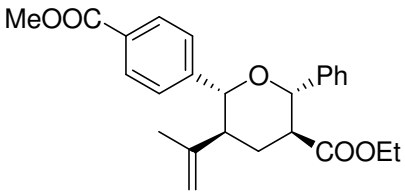
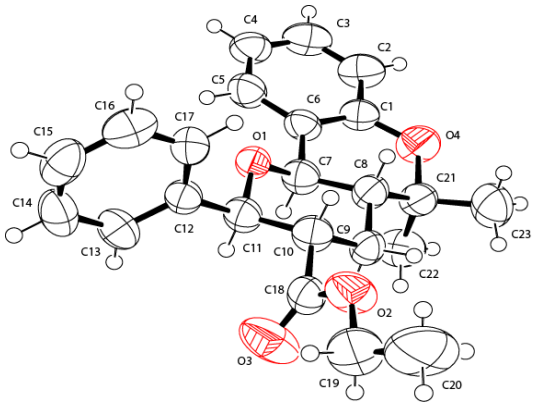


Figure 2: ORTEP diagram of **11f**

The crystal parameters of compound 13

	13-CCDC 819364
Formula	$C_{23}H_{26}O_4$
Formula weight	366.44
T/K	296(2)
Crystal system	Monoclinic
Space group	P 21/n
a/Å	8.9913(7)
b/Å	19.6654(14)
c/Å	11.4452(9)
α/°	90.00
β/°	103.239(4)
γ/°	90.00
V/Å^3	1969.9(3)
Z	4
Abs. Coeff./mm^{-1}	0.084
Abs. Correction	Multi-scan
GOF on F^2	1.064
Final *R* indices [$I > 2\sigma(I)$]	*R1* = 0.0667
	wR2 = 0.1815
R indices [all data]	*R1* = 0.0923
	wR2 = 0.1973



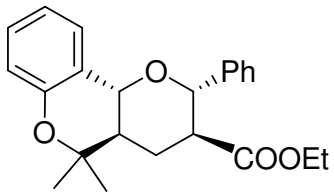
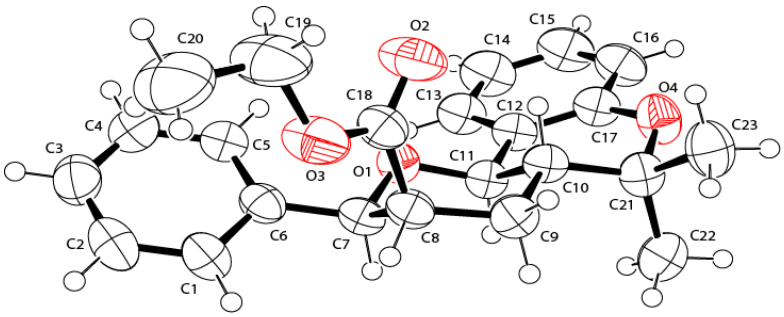


Figure 3: ORTEP diagram of **13**

The crystal parameters of compound 14

	14-CCDC 819366
Formula	$C_{23}H_{26}O_4$
Formula weight	366.44
T/K	296(2)
Crystal system	Monoclinic
Space group	P 21/c
a/Å	12.5282(8)
b/Å	8.7884(6)
c/Å	18.2013(12)
α/°	90.00
β/°	94.582(2)
γ/°	90.00
V/Å^3	1997.6(2)
Z	4
Abs. Coeff./mm^{-1}	0.082
Abs. Correction	Multi-scan
GOF on F^2	1.373
Final *R* indices [$I > 2\sigma(I)$]	*R1* = 0.0613
	wR2 = 0.1695
R indices [all data]	*R1* = 0.0967
	wR2 = 0.2108



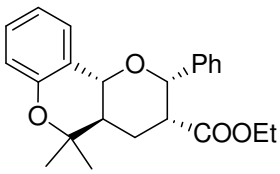


Figure 4: ORTEP diagram of **14**