Electronic Supplementary Material (ESI) for Chemical Communications

Supporting Information

Quinine-thiourea catalyzed enantioselective hydrophosphonylation of trifluoromethyl 2(*1H*)-quinazolinones

Hexin Xie,[a,b] Aiguo Song,[a] Xinshuai Zhang,[a] Xiaobei Chen,[a] Hao Li,[b] Chunquan Sheng,[c,*] and Wei Wang[a,b*]

[a] *Department of Chemistry & Chemical Biology, University of New Mexico, Albuquerque, New Mexico 87131-0001*

[b] *School of Pharmacy, East China University of Science & Technology, 130 Mei-Long Road, Shanghai, P. R. China*

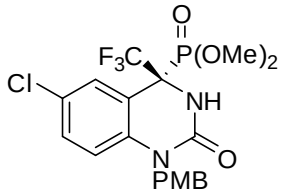
[c] *Department of Medicinal Chemistry, School of Pharmacy, Second Military Medical University, Shanghai 200433, P. R. China*

Contents

General Information: Commercial reagents were used as received, unless otherwise stated. Merck 60 silica gel was used for chromatography, and Whatman silica gel plates with fluorescence F_{254} were used for thin-layer chromatography (TLC) analysis. ^{1}H and ^{13}C NMR spectra were recorded on Bruker Avance 500, and tetramethylsilane (TMS) was used as a reference. Data for ^{1}H are reported as follows: chemical shift (ppm), and multiplicity (s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet). Data for ^{13}C NMR are reported as ppm. Trifluoromethyl quinazolin-2(*1H*)-ones were prepared with reported method[1] and the other quinazolin-2(*1H*)-ones were prepared with Grignard reagents.[2]

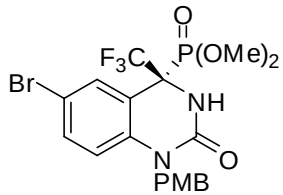
General procedure

Toa mixture of quinazolin-2(*1H*)-one **1** (0.06 mmol) and catalyst (0.006 mmol) in solvent (0.5 mL) at rt was added dimethyl phosphite (0.12 mmol or 0.3 mmol). The resulting mixture was then stirred at rt until reaction completed. The pure product was obtained after purification by column chromatography on silica gel.



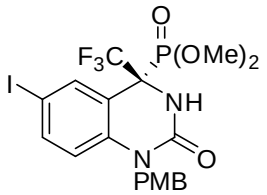
(*R*)-6-Chloro-1-(4-methoxybenzyl)-4-(dimethoxyphosphoryl)-4-(trifluoromethyl)-3,4-dihydroquinazolin-2(1H)-one (3a)

The title compound was prepared according to the general procedure, as described above in 91% yield. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.77 (s, 1H), 7.22 (d, *J* = 8.5 Hz, 1H), 7.15 (d, *J* = 8.5 Hz, 2H), 6.85 (d, *J* = 8.5 Hz, 2H), 6.80 (d, *J* = 8.5 Hz, 1H), 5.85 (s, 1H), 5.13 (d, *J* = 16.5 Hz, 1H), 5.05 (d, *J* = 16.5 Hz, 1H), 3.89 (d, *J* = 10.5 Hz, 3H), 3.77 (s, 3H), 3.73 (d, *J* = 10.5 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 158.9, 151.1 (d, *J* = 6 Hz), 136.7 (d, *J* = 7 Hz), 130.9, 128.3, 127.8, 127.5, 116.4, 114.3, 113.0 (d, *J* = 6 Hz), 55.4 (d, *J* = 7 Hz), 55.2, 54.8 (d, *J* = 7 Hz), 45.5; HPLC (Chiralcel OJ-H, *i*-PrOH/hexane = 40/60, flow rate = 0.6 mL/min, λ = 254 nm): t_{minor} = 12.07 min, t_{major} = 20.20 min, ee = 89%; $[\alpha]_D^{22}$ = - 30.0 (*c* = 2.0 in $CHCl_3$).



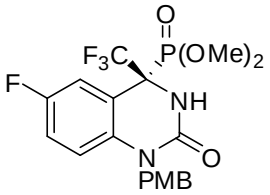
(*R*)-6-Bromo-1-(4-methoxybenzyl)-4-(dimethoxyphosphoryl)-4-(trifluoromethyl)-3,4-dihydroquinazolin-2(1H)-one (3b)

The title compound was prepared according to the general procedure, as described above in 62% yield. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.90 (s, 1H), 7.37 (d, *J* = 8.5 Hz, 1H), 7.14 (d, *J* = 8 Hz, 2H), 6.85 (d, *J* = 8 Hz, 2H), 6.74 (d, *J* = 8.5 Hz, 1H), 5.79 (s, 1H), 5.13 (d, *J* = 16 Hz, 1H), 5.04 (d, *J* = 16 Hz, 1H), 3.89 (d, *J* = 11 Hz, 3H), 3.77 (s, 3H), 3.73 (d, *J* = 11 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 159.0, 151.0 (d, *J* = 6 Hz), 137.3, 133.9, 131.1, 127.7, 127.5, 116.8, 115.0, 114.3, 113.4, 55.4 (d, *J* = 7 Hz), 55.3, 54.9 (d, *J* = 7 Hz), 45.5; HPLC (Chiralcel OJ-H, *i*-PrOH/hexane = 40/60, flow rate = 0.6 mL/min, λ = 254 nm): t_{minor} = 11.62 min, t_{major} = 19.45 min, ee = 90%; $[\alpha]_D^{22}$ = - 35.6 (*c* = 2.0 in $CHCl_3$).



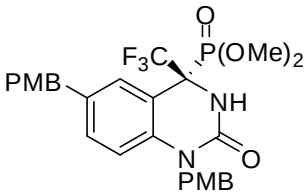
(*R*)-6-Iodo-1-(4-methoxybenzyl)-4-(dimethoxyphosphoryl)-4-(trifluoromethyl)-3,4-dihydroquinazolin-2(1H)-one (3c)

The title compound was prepared according to the general procedure, as described above in 62% yield. ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.05 (s, 1H), 7.55 (d, *J* = 8.5 Hz, 1H), 7.14 (d, *J* = 8.5 Hz, 2H), 6.84 (d, *J* = 8.5 Hz, 2H), 6.62 (d, *J* = 8.5 Hz, 1H), 5.85 (s, 1H), 5.12 (d, *J* = 16.5 Hz, 1H), 5.03 (d, *J* = 16.5 Hz, 1H), 3.88 (d, *J* = 10.5 Hz, 3H), 3.77 (s, 3H), 3.73 (d, *J* = 10.5 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 159.0, 151.0 (d, *J* = 6 Hz), 139.8, 137.9 (d, *J* = 7 Hz), 136.8, 127.7, 127.5, 117.1, 114.3, 113.7, 84.7, 55.4 (d, *J* = 7 Hz), 55.3, 54.8 (d, *J* = 7 Hz), 45.4; HPLC (Chiralcel OJ-H, *i*-PrOH/hexane = 40/60, flow rate = 0.6 mL/min, λ = 254 nm): t_{minor} = 12.84 min, t_{major} = 21.45 min, ee = 87%; $[\alpha]_D^{22}$ = - 37.6 (*c* = 2.0 in $CHCl_3$).



(*R*)-6-Fluoro-1-(4-methoxybenzyl)-4-(dimethoxyphosphoryl)-4-(trifluoromethyl)-3,4-dihydroquinazolin-2(1H)-one (3d)

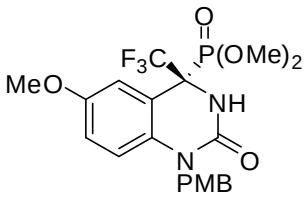
The title compound was prepared according to the general procedure, as described above in 75% yield. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.57 (d, *J* = 9 Hz, 1H), 7.16 (d, *J* = 8 Hz, 2H), 7.00-6.97 (m, 1H), 6.86-6.81 (m, 3H), 5.87 (s, 1H), 5.13 (d, *J* = 16.5 Hz, 1H), 5.06 (d, *J* = 16.5 Hz, 1H), 3.89 (d, *J* = 10.5 Hz, 3H), 3.77 (s, 3H), 3.71 (d, *J* = 10.5 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 158.9, 158.6, 156.6, 151.2, 134.4, 127.9, 127.5, 117.9, 117.7, 116.5, 116.4, 115.8, 115.6, 114.3, 112.8, 55.3 (d, *J* = 7 Hz), 55.2, 54.8 (d, *J* = 7 Hz), 45.6; HPLC (Chiralcel OJ-H, *i*-PrOH/hexane = 40/60, flow rate = 0.6 mL/min, λ = 254 nm): t_{minor} = 11.69 min, t_{major} = 16.47 min, ee = 92%; $[\alpha]_D^{22}$ = - 3.5 (*c* = 2.0 in $CHCl_3$).



(*R*)-1,6-bis(4-Methoxybenzyl)-4-(dimethoxyphosphoryl)-4-(trifluoromethyl)-3,4-dihydroquinazolin-2(1H)-one (3e)

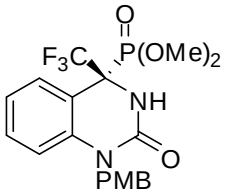
The title compound was prepared according to the general procedure, as described above in 85% yield. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.65 (s, 1H), 7.15 (d, *J* = 8.5 Hz, 2H), 7.06-7.03 (m, 3H), 6.84-6.76 (m, 5H), 5.78 (s, 1H), 5.11-5.02 (m, 2H), 3.85-3.82 (m, 5H), 3.76 (s, 6H), 3.50 (d, *J* = 10.5 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 158.8, 158.1, 151.4, 136.1 (d, *J* = 7 Hz), 135.9, 132.5, 131.0, 129.7, 128.8, 128.4, 127.6, 115.2, 114.2, 113.9, 111.2 (d, *J* = 6 Hz), 55.3, 55.2,

54.5 (d, *J* = 7 Hz), 45.4, 40.1; HPLC (ee was determined with the corresponding deprotection (PMB on the N) product. Chiralcel OJ-H, *i*-PrOH/hexane = 30/70, flow rate = 0.6 mL/min, λ = 254 nm): t_{minor} = 14.47 min, t_{major} = 18.01 min, ee = 93%; $[\alpha]_D^{22}$ = - 9.9 (*c* = 1.0 in $CHCl_3$).



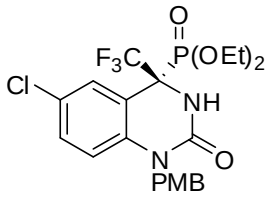
(*R*)-6-Methoxy-1-(4-methoxybenzyl)-4-(dimethoxyphosphoryl)-4-(trifluoromethyl)-3,4-dihydroquinazolin-2(1H)-one (3f)

The title compound was prepared according to the general procedure, as described above in 84% yield. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.40 (s, 1H), 7.16 (d, *J* = 9 Hz, 2H), 6.85-6.78 (m, 4H), 5.83 (s, 1H), 5.11 (d, *J* = 16.5 Hz, 1H), 5.05 (d, *J* = 16.5 Hz, 1H), 3.88 (d, *J* = 10.5 Hz, 3H), 3.77 (s, 3H), 3.76 (s, 3H), 3.66 (d, *J* = 10.5 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 158.8, 154.6, 151.3 (d, *J* = 6 Hz), 131.5 (d, *J* = 7 Hz), 128.4, 127.5, 116.4, 116.2, 114.2, 114.0, 112.2 (d, *J* = 6 Hz), 55.6, 55.3 (d, *J* = 7 Hz), 55.2, 54.6 (d, *J* = 7 Hz), 45.4; HPLC (Chiralcel OJ-H, *i*-PrOH/hexane = 40/60, flow rate = 0.6 mL/min, λ = 254 nm): t_{minor} = 13.18 min, t_{major} = 24.26 min, ee = 93%; $[\alpha]_D^{22}$ = - 34.0 (*c* = 2.0 in $CHCl_3$).



(*R*)-1-(4-Methoxybenzyl)-4-(dimethoxyphosphoryl)-4-(trifluoromethyl)-3,4-dihydroquinazolin-2(1H)-one (3g)

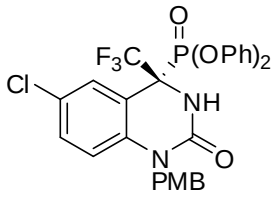
The title compound was prepared according to the general procedure, as described above in 88% yield. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.83 (d, *J* = 7.5 Hz, 1H), 7.27 (t, *J* = 7.5 Hz, 1H), 7.18 (d, *J* = 8 Hz, 2H), 7.05 (t, *J* = 7.5 Hz, 1H), 6.88 (d, *J* = 8 Hz, 1H), 6.85 (d, *J* = 8 Hz, 2H), 5.85 (s, 1H), 5.18-5.05 (m, 2H), 3.88 (d, *J* = 10.5 Hz, 3H), 3.77 (s, 3H), 3.63 (d, *J* = 10.5 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 158.8, 151.4 (d, *J* = 6 Hz), 138.0 (d, *J* = 7 Hz), 130.9, 128.6, 128.3, 127.5, 122.3, 115.2, 114.2, 111.2 (d, *J* = 6 Hz), 55.3 (d, *J* = 7 Hz), 55.2, 54.5 (d, *J* = 7 Hz), 45.3; HPLC (Chiralcel OJ-H, *i*-PrOH/hexane = 40/60, flow rate = 0.6 mL/min, λ = 254 nm): t_{minor} = 11.05 min, t_{major} = 16.80 min, ee = 93%; $[\alpha]_D^{22}$ = - 15.9 (*c* = 2.0 in $CHCl_3$).



(*R*)-6-Chloro-1-(4-methoxybenzyl)-4-(diethoxyphosphoryl)-4-(trifluoromethyl)-3,4-dihydroquinazolin-2(1H)-one (3h)

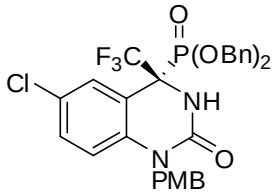
The title compound was prepared according to the general procedure, as described above in 84% yield. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.80 (s, 1H), 7.21 (d, *J* = 9 Hz, 1H), 7.14 (d, *J* = 8.5 Hz,

2H), 6.84 (d, *J* = 8.5 Hz, 2H), 6.78 (d, *J* = 9 Hz, 1H), 5.84 (s, 1H), 5.12 (d, *J* = 16 Hz, 1H), 5.05 (d, *J* = 16 Hz, 1H), 4.31-4.14 (m, 3H), 4.04-3.96 (m, 1H), 3.77 (s, 3H), 1.34 (t, *J* = 7 Hz, 3H), 1.20 (t, *J* = 7 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 158.9, 151.1, 136.8 (d, *J* = 6 Hz), 130.7, 128.4, 127.8, 127.7, 127.5, 116.3, 114.3, 113.3, 65.3 (d, *J* = 7 Hz), 64.8 (d, *J* = 7 Hz), 55.2, 45.5, 16.3 (d, *J* = 5 Hz), 16.2 (d, *J* = 5 Hz); HPLC (Chiralcel OJ-H, *i*-PrOH/hexane = 40/60, flow rate = 0.6 mL/min, λ = 254 nm): t_{minor} = 8.34 min, t_{major} = 13.32 min, ee = 88%; $[\alpha]_D^{22}$ = - 30.0 (*c* = 2.0 in $CHCl_3$).



(*R*)-6-Chloro-1-(4-methoxybenzyl)-4-(diphenoxyphosphoryl)-4-(trifluoromethyl)-3,4-dihydroquinazolin-2(1H)-one (3j)

The title compound was prepared according to the general procedure, as described above in 97% yield. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.86 (s, 1H), 7.30 (d, *J* = 8 Hz, 2H), 7.22-7.18 (m, 4H), 7.12-7.11 (m, 5H), 6.88 (d, *J* = 8 Hz, 2H), 6.80-6.77 (m, 3H), 6.37 (s, 1H), 5.10-5.02 (m, 2H), 3.75 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 158.9, 150.9 (d, *J* = 6 Hz), 150.1, 150.0, 149.7, 149.6, 136.9 (d, *J* = 7 Hz), 131.1, 130.0, 129.8, 128.7, 128.0, 127.6, 127.5, 126.0, 125.9, 120.3, 120.3, 120.0, 119.9, 116.5, 114.3, 112.1 (d, *J* = 6 Hz), 55.2, 45.7; HPLC (ee was determined with the corresponding deprotection (PMB) product. Chiralpak AS-H, *i*-PrOH/hexane = 40/60, flow rate = 0.6 mL/min, λ = 254 nm): t_{minor} = 10.28 min, t_{major} = 25.09 min, ee = 91%; $[\alpha]_D^{22}$ = - 32.8 (*c* = 2.0 in $CHCl_3$).

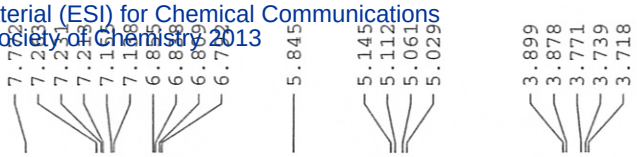


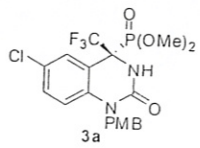
(*R*)-6-Chloro-1-(4-methoxybenzyl)-4-(dibenzyloxyphosphoryl)-4-(trifluoromethyl)-3,4-dihydroquinazolin-2(1H)-one (3j)

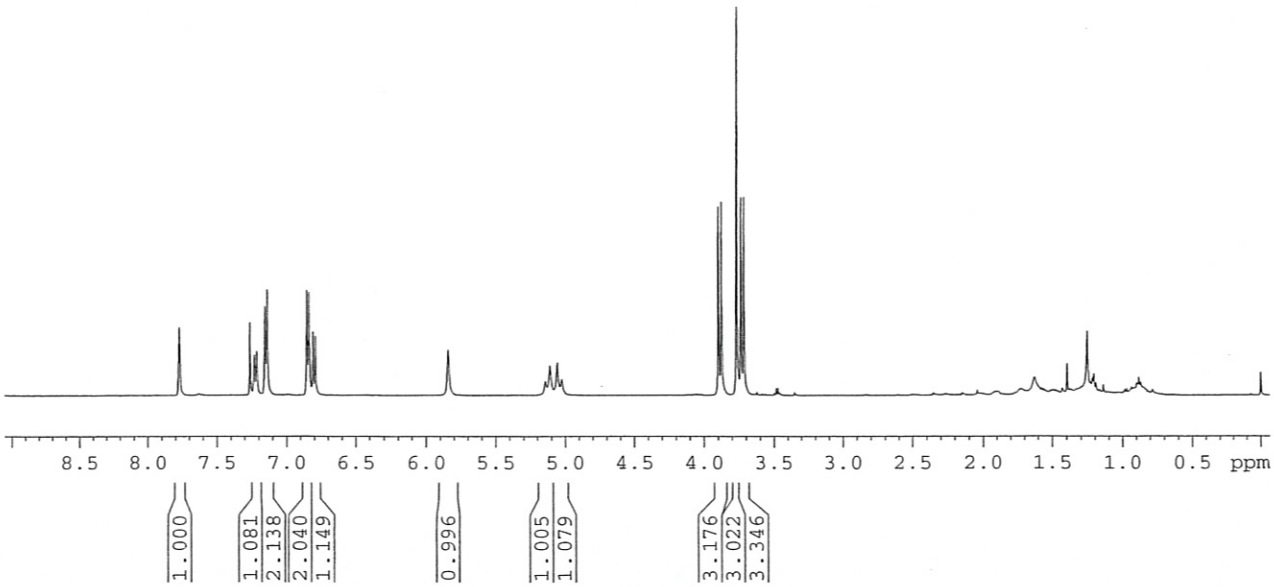
The title compound was prepared according to the general procedure, as described above in 84% yield. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.80 (s, 1H), 7.35-7.24 (m, 8H), 7.16-7.10 (m, 3H), 7.06 (d, *J* = 8.5 Hz, 2H), 6.78 (d, *J* = 8.5 Hz, 2H), 6.64 (d, *J* = 9 Hz, 1H), 5.86 (s, 1H), 5.16-4.76 (m, 6H), 3.75 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 158.8, 150.9 (d, *J* = 6 Hz), 136.7 (d, *J* = 7 Hz), 134.8, 134.8, 130.7, 129.0, 128.8, 128.7, 128.6, 128.4, 127.8, 127.7, 127.4, 116.3, 114.3, 113.0 (d, *J* = 6 Hz), 70.2, 70.1, 70.1, 55.2, 45.4; HPLC (Chiralcel OD-H, *i*-PrOH/hexane = 30/70, flow rate = 0.7 mL/min, λ = 254 nm): t_{minor} = 15.11 min, t_{major} = 17.86 min, ee = 81%; $[\alpha]_D^{22}$ = - 26.2 (*c* = 2.0 in $CHCl_3$).

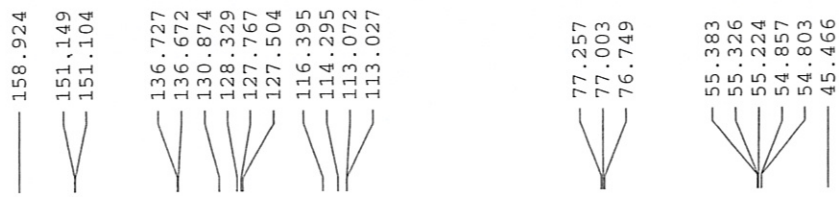
References.

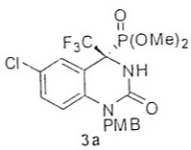
1. Magnus, N. A.; Confalone, P. N.; Storace, L.; Patel, M.; Wood, C. C.; Davis, W. P.; Parsons, Jr. R. L.; *J. Org. Chem.* **2003**, *68*, 754.
2. Bergman, J.; Brynolf, A.; Elman, B.; Vuorinen, E. *Tetrahedron*. **1986**, *42*, 3697.

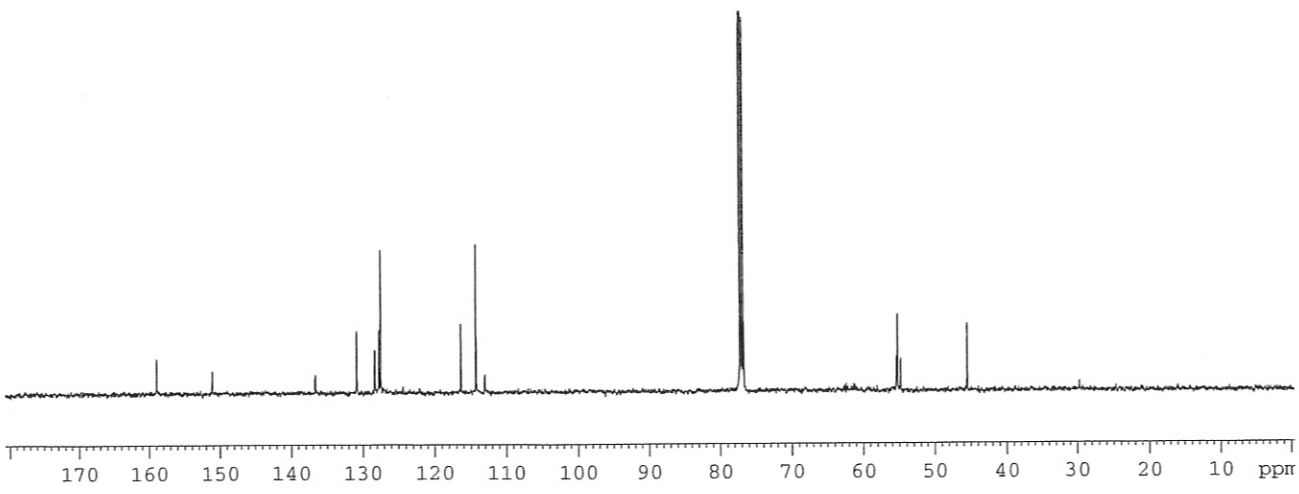


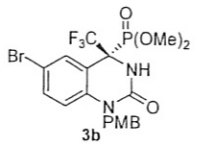




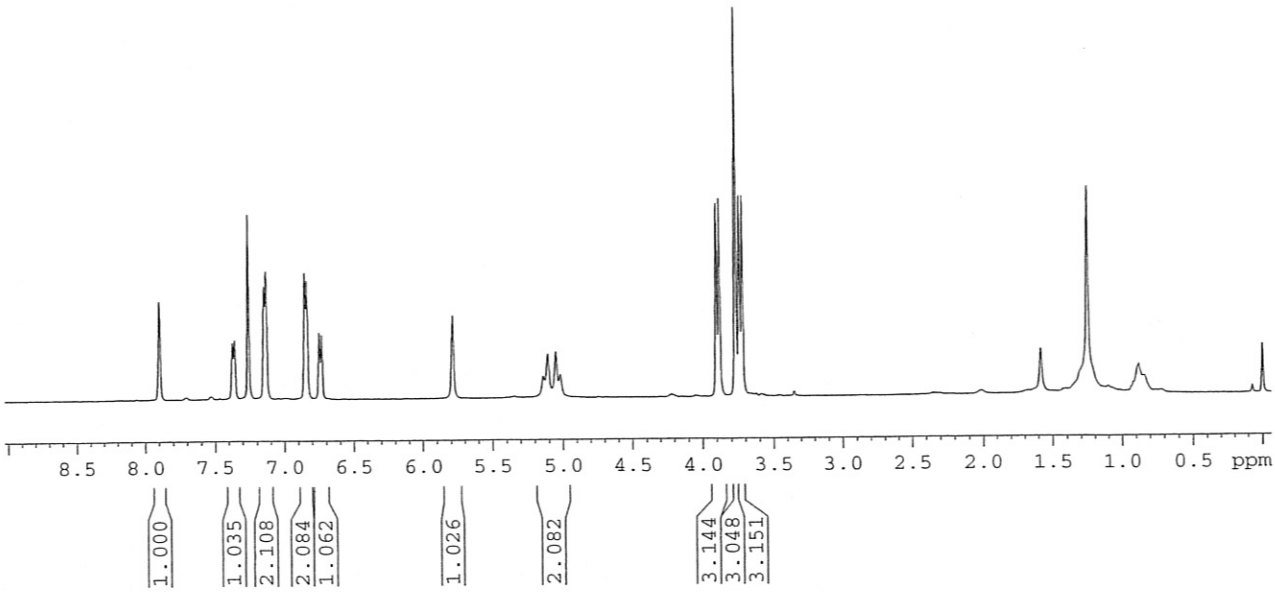


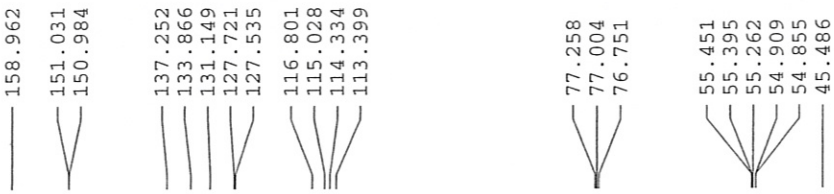




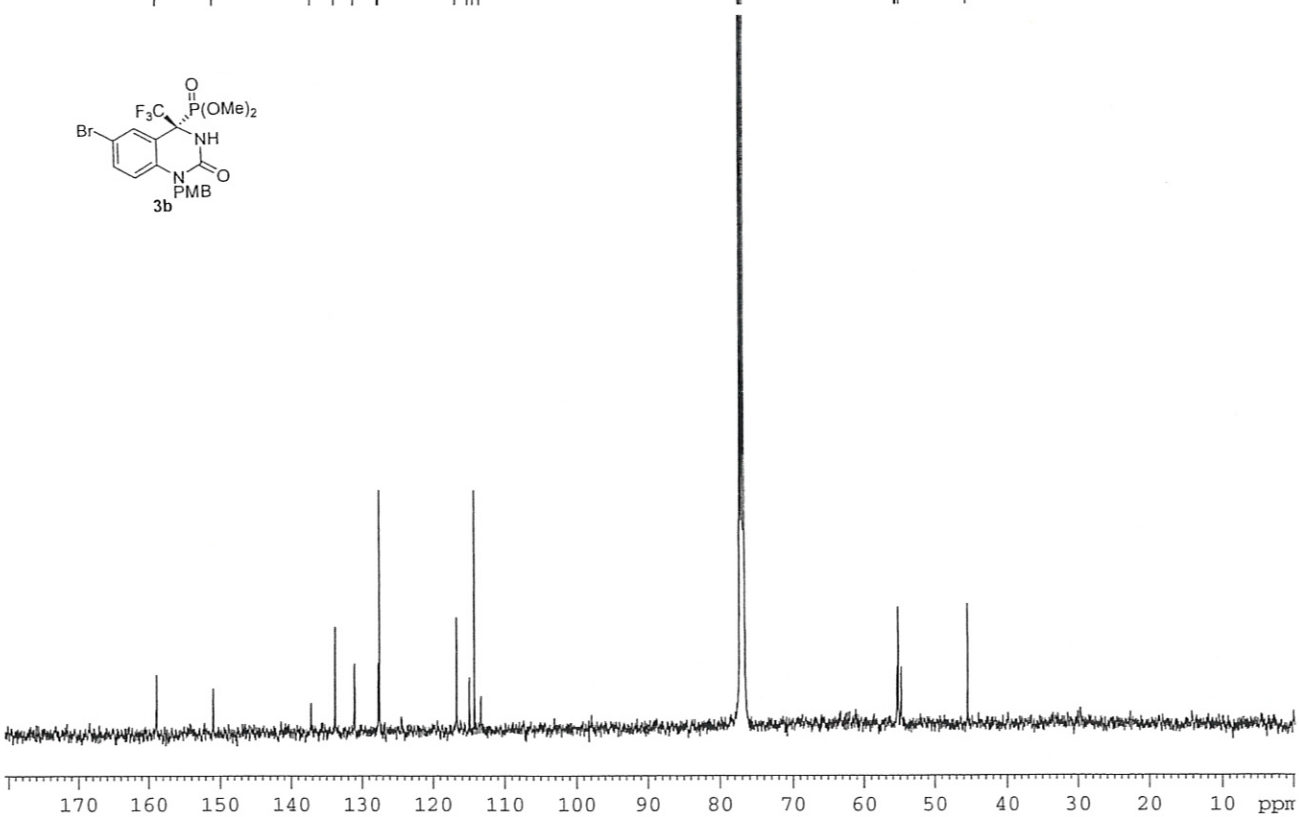


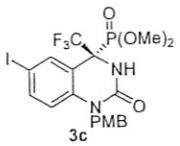
3b



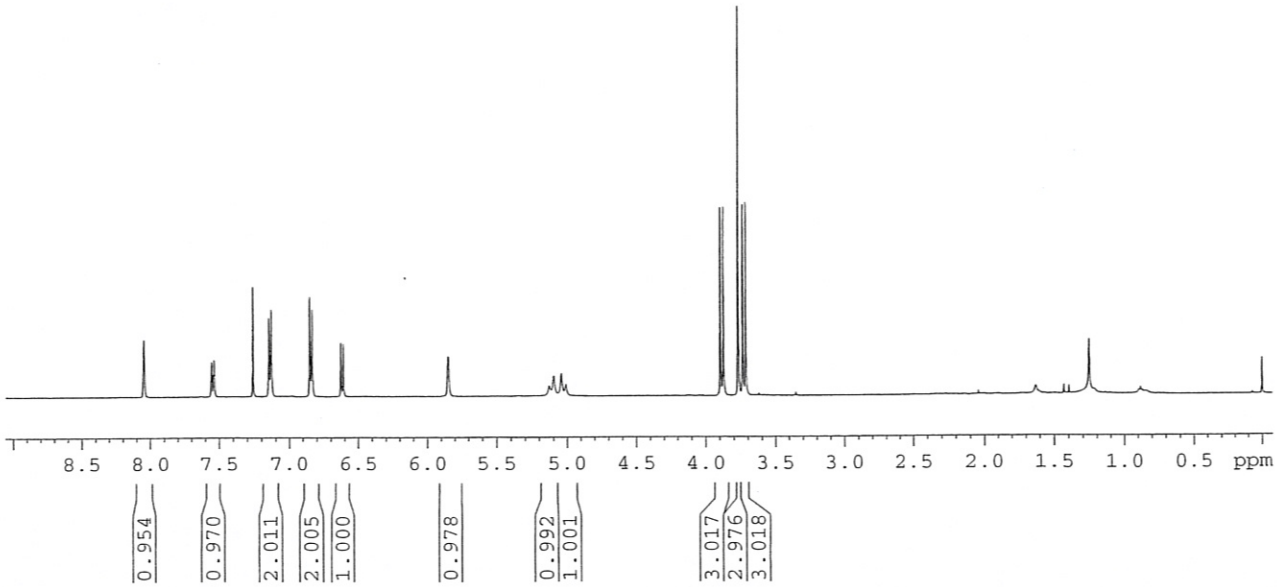


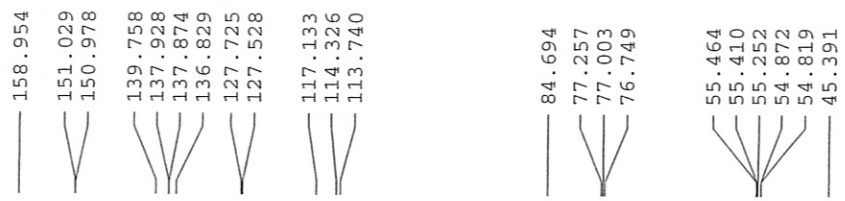
3b



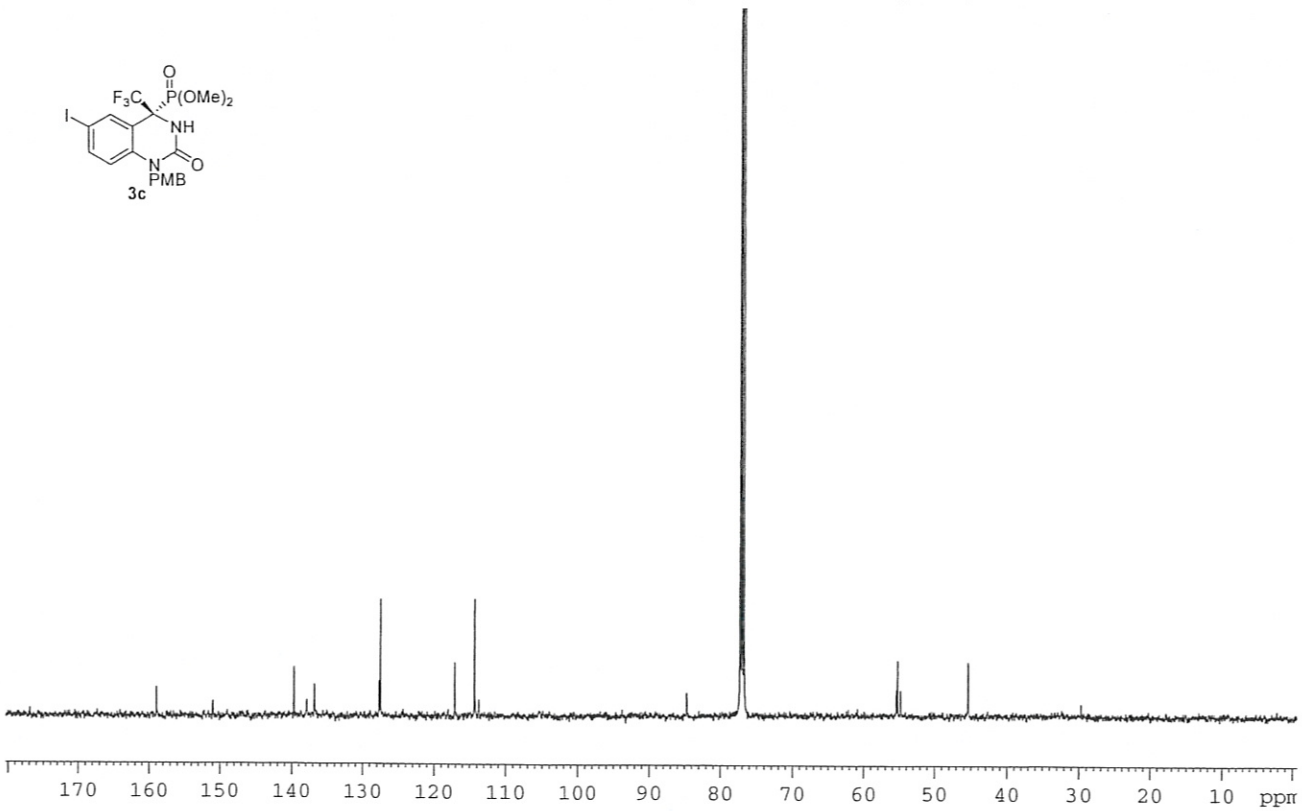


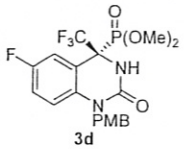
3c



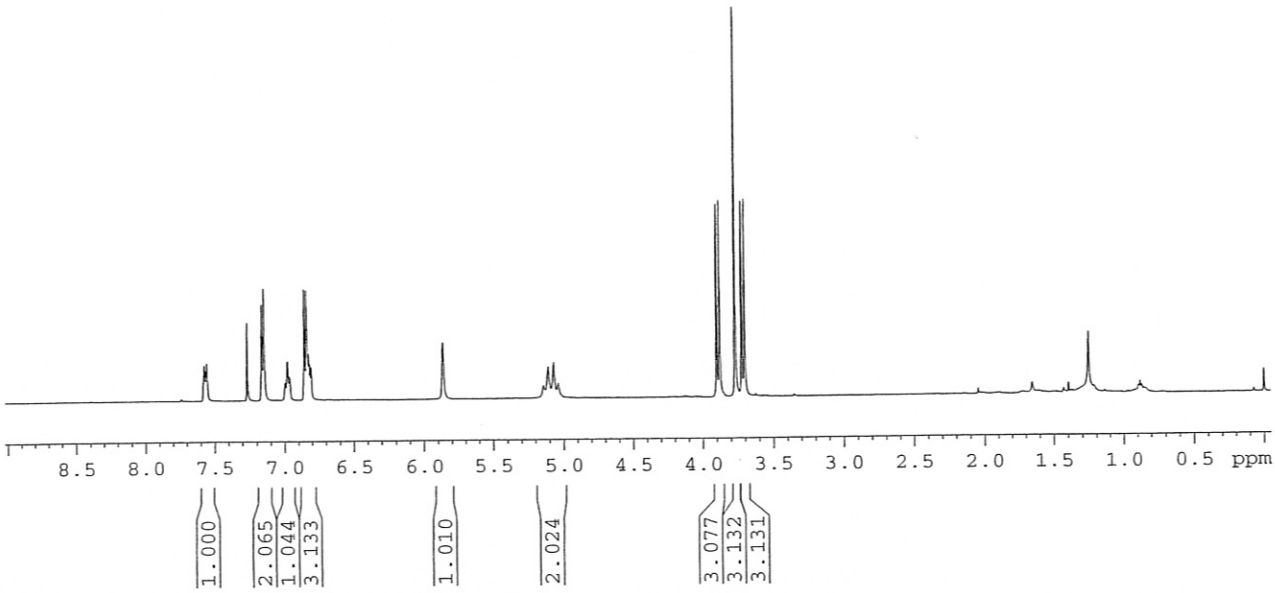


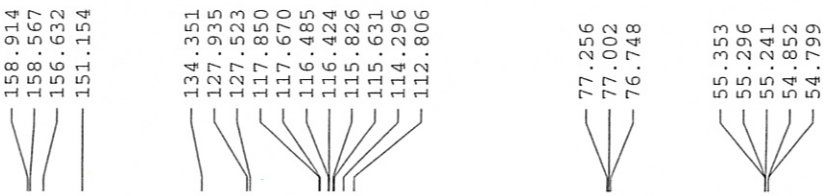
3c



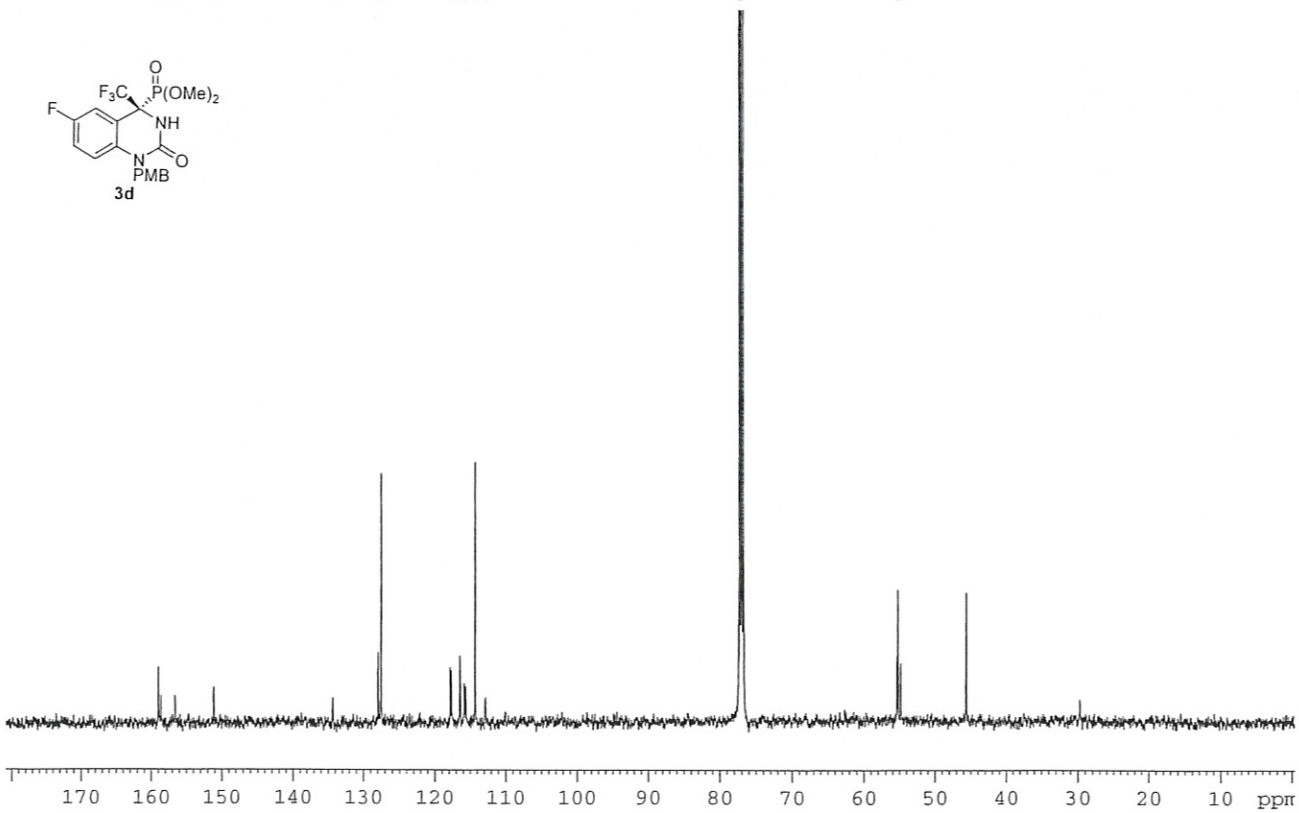


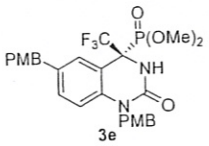
3d



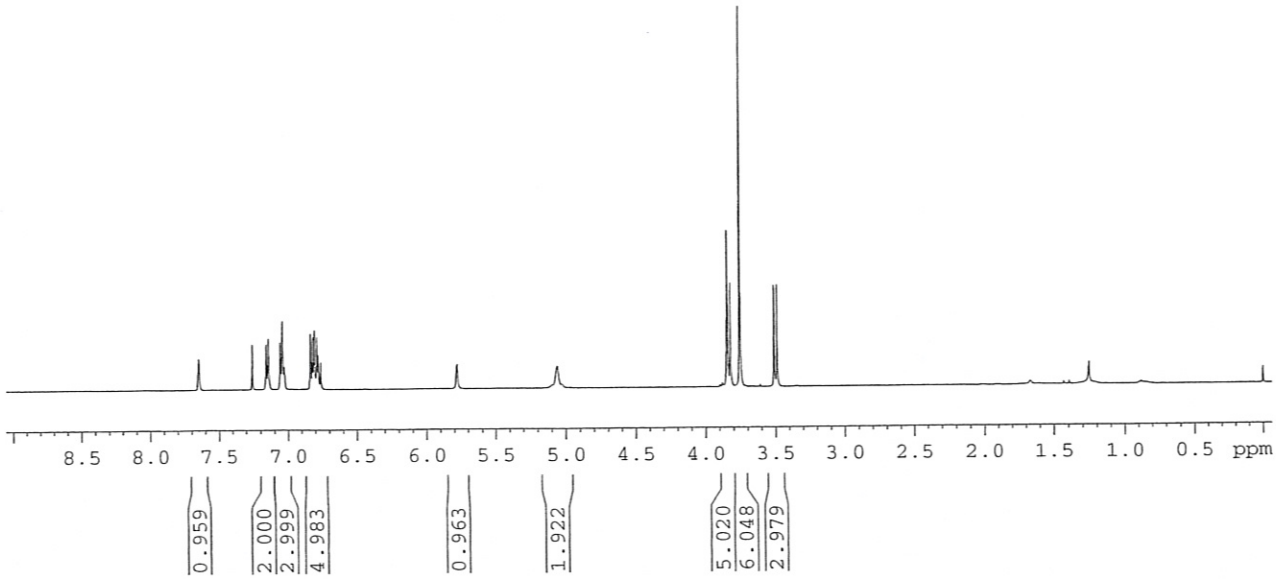


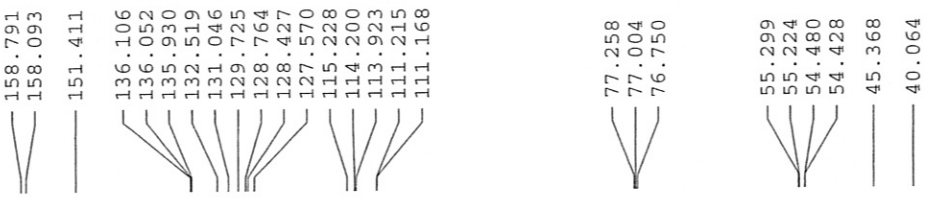
3d



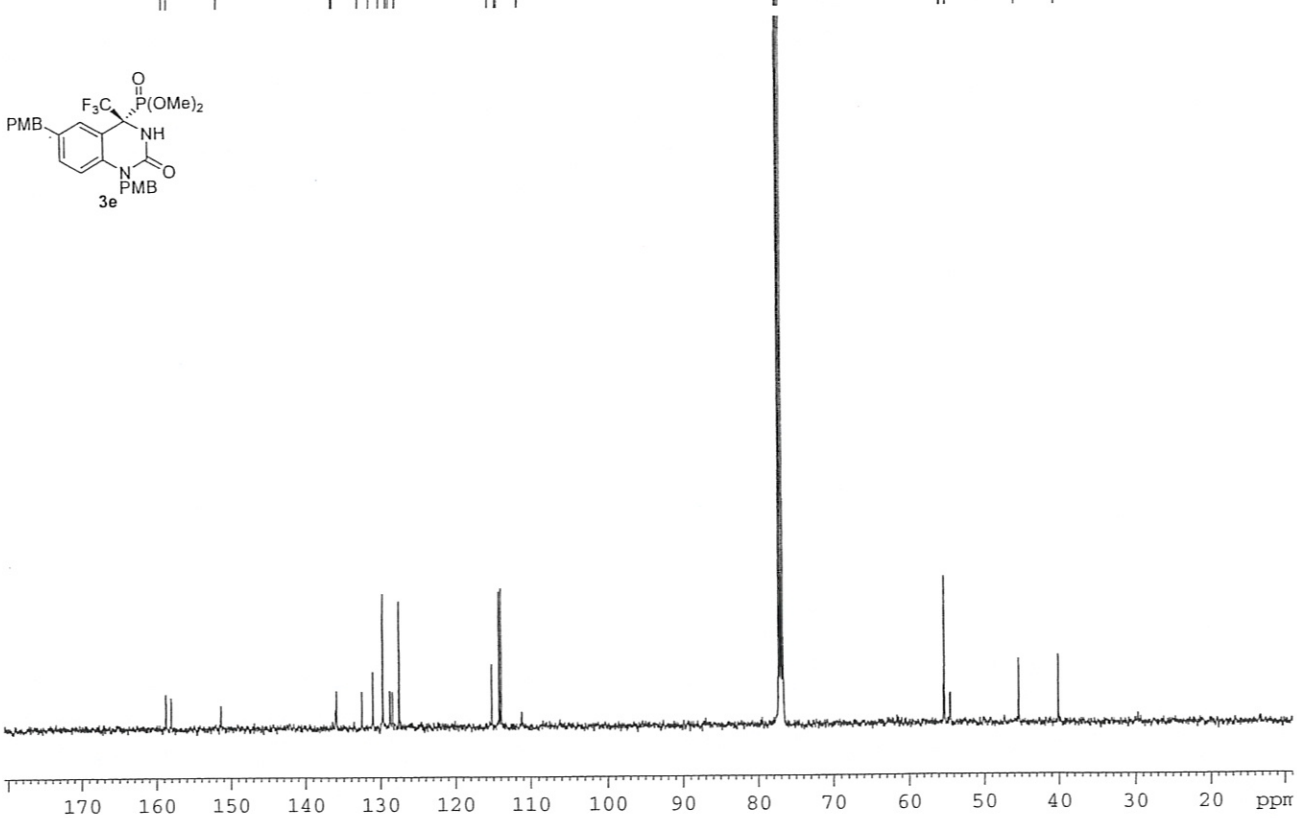


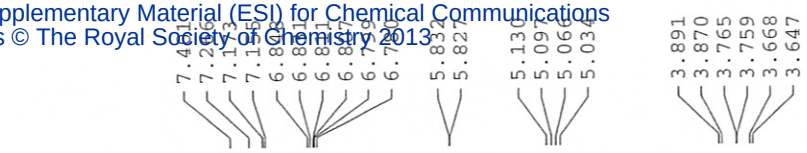
3e

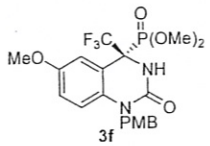




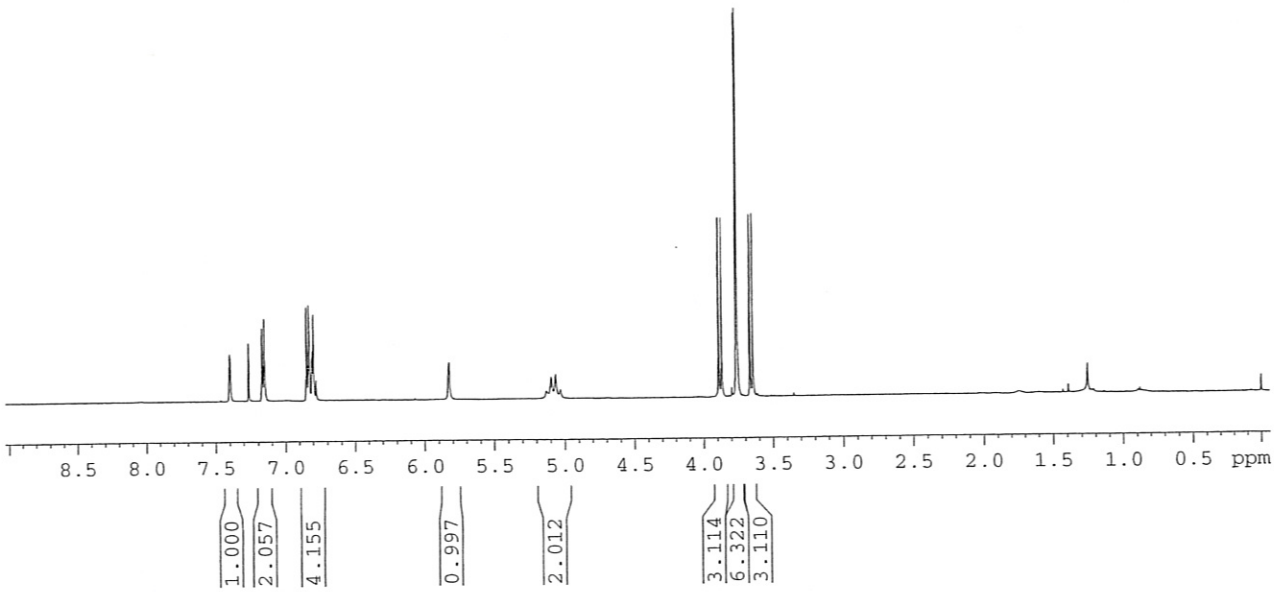
3e

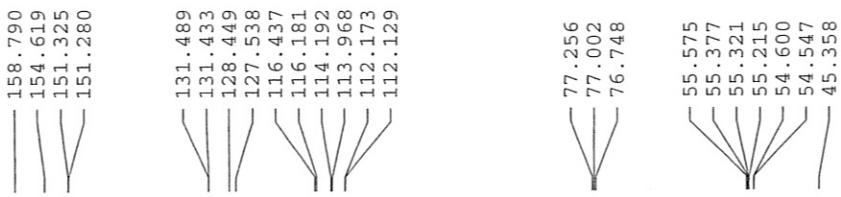




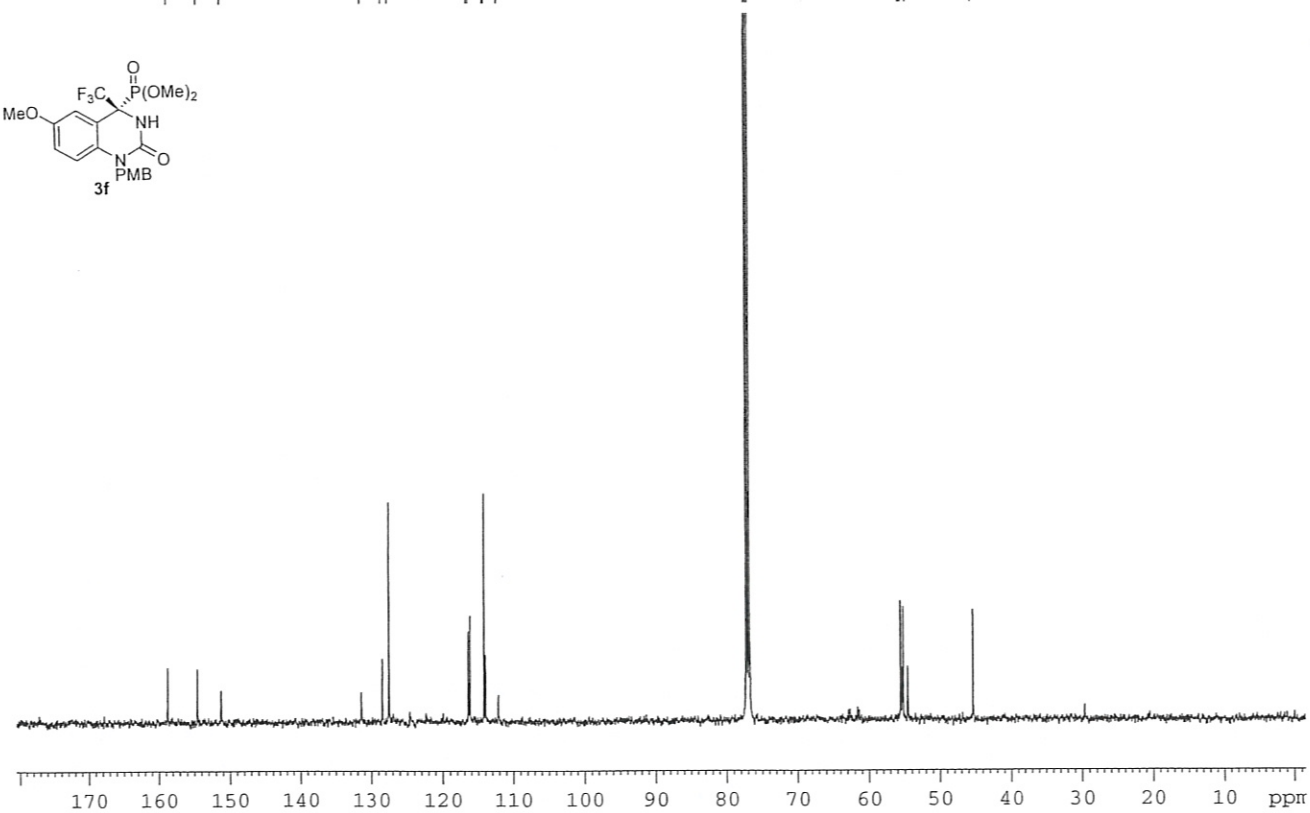


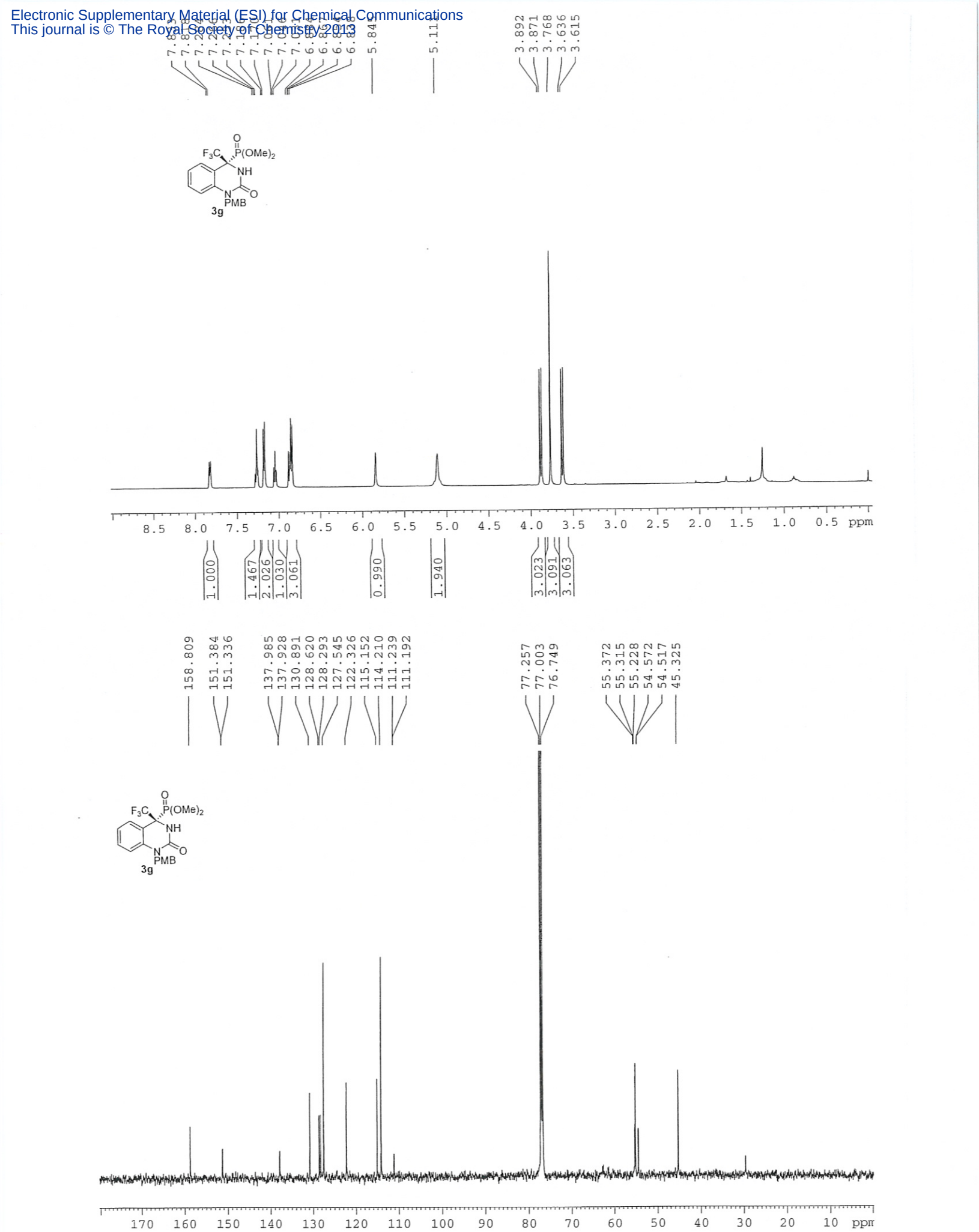
3f

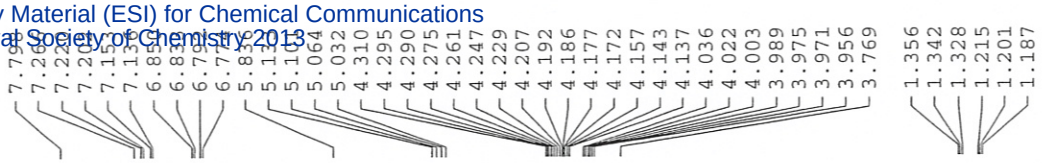


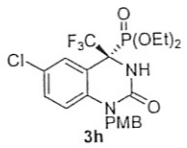


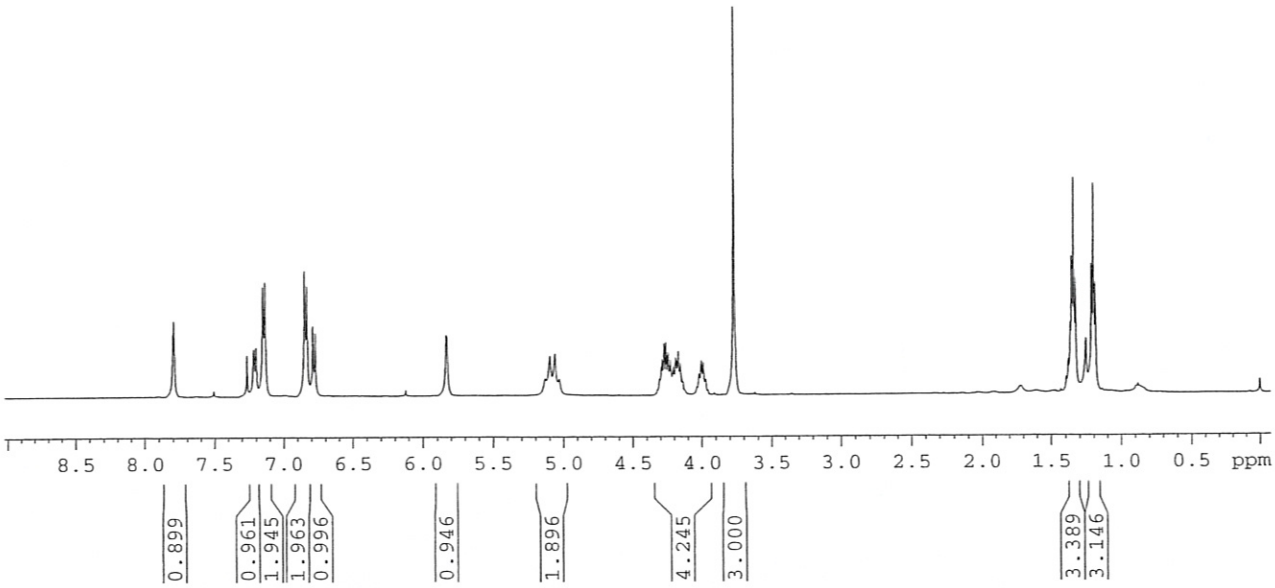
3f

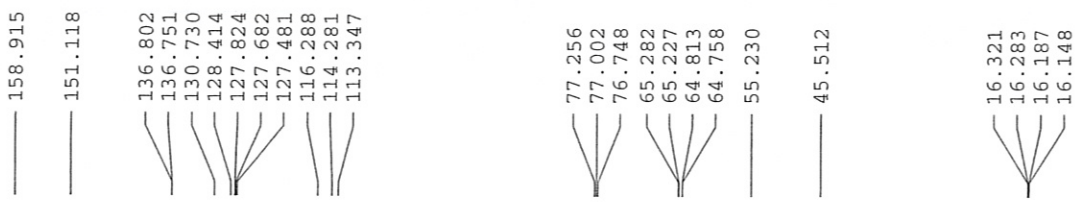


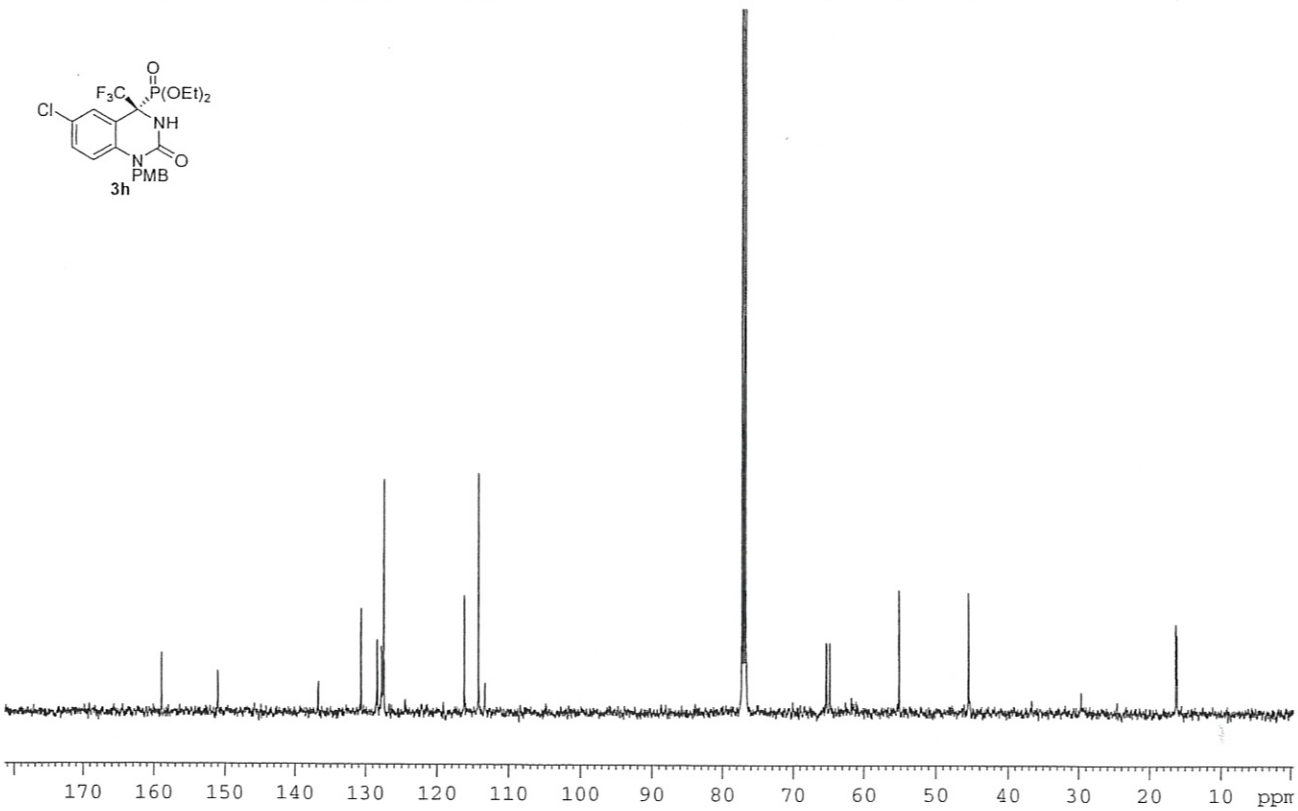


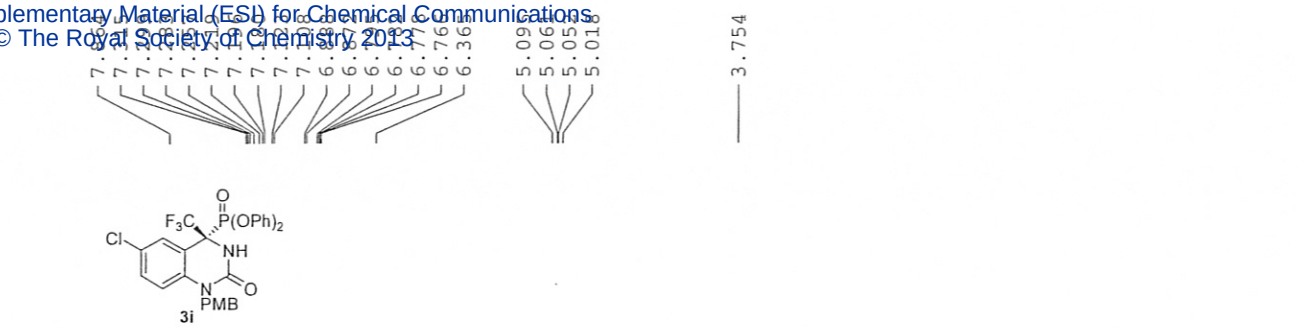




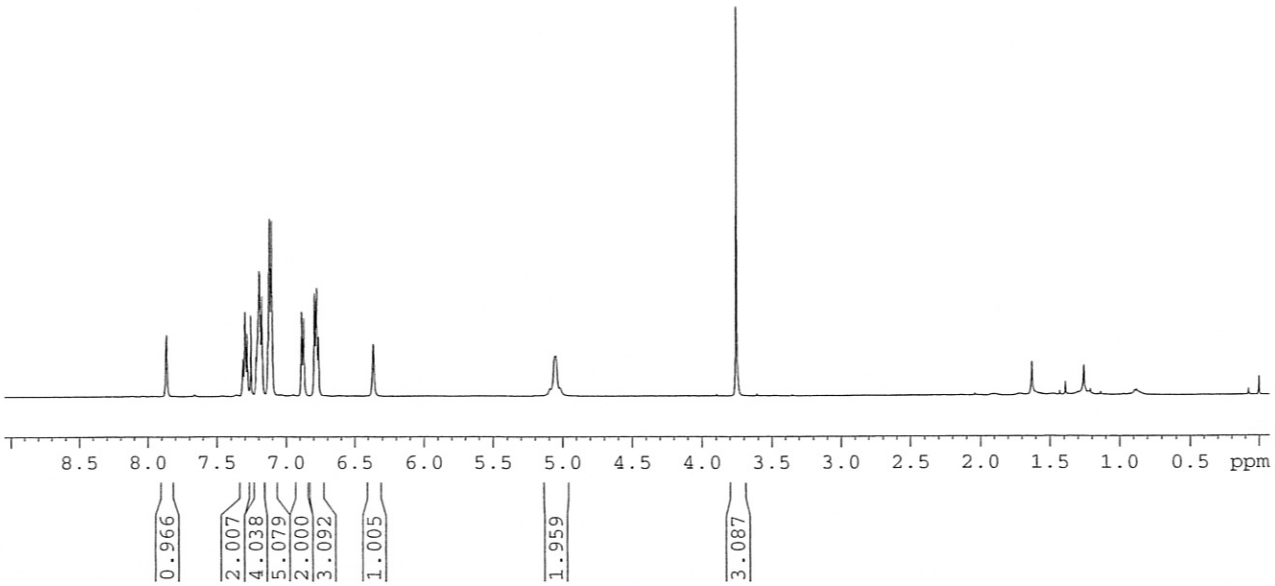


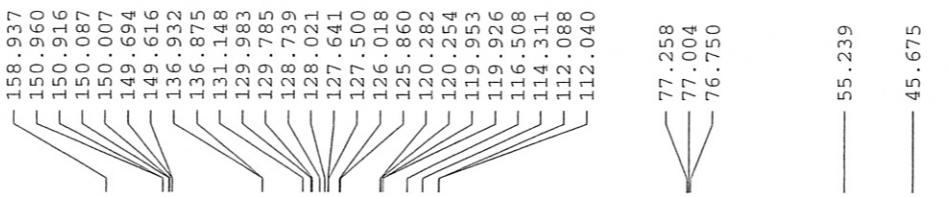




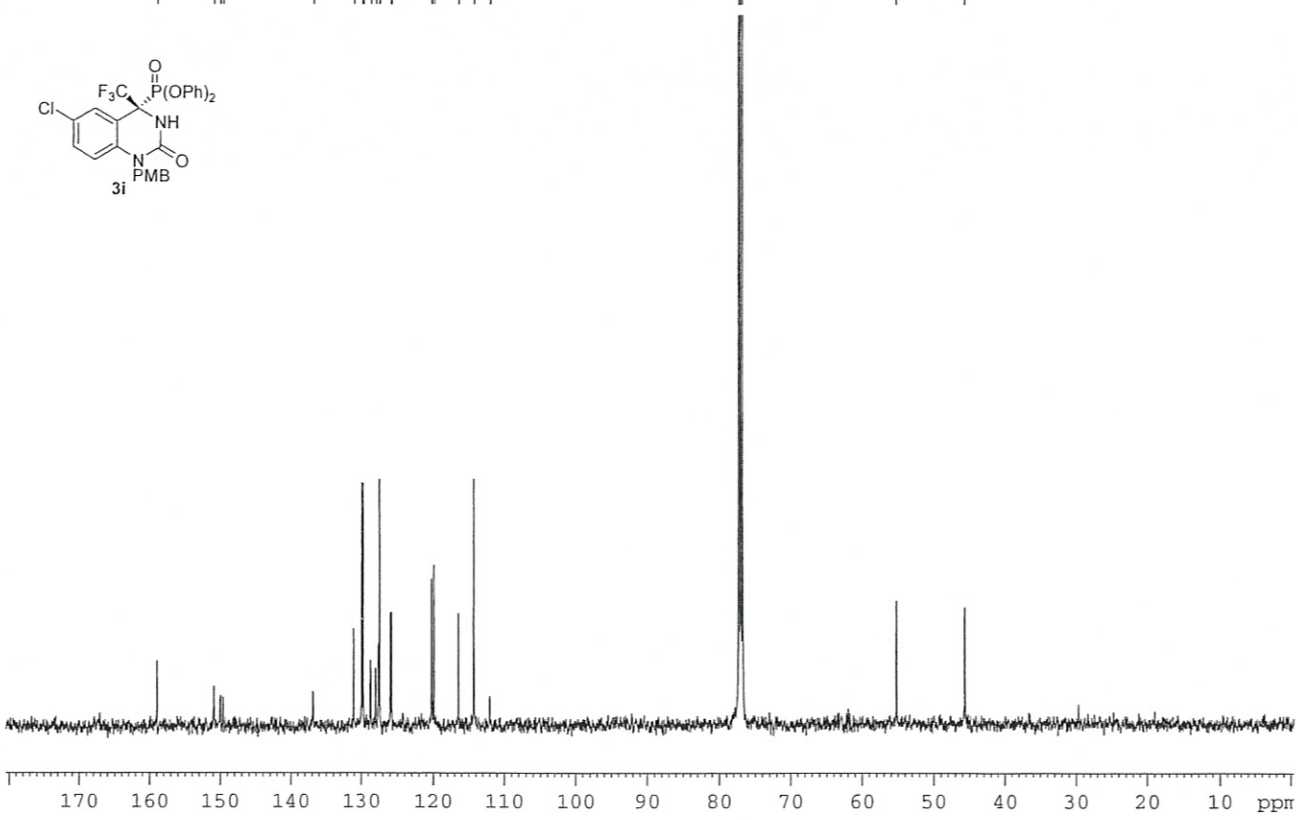


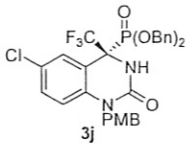
3i



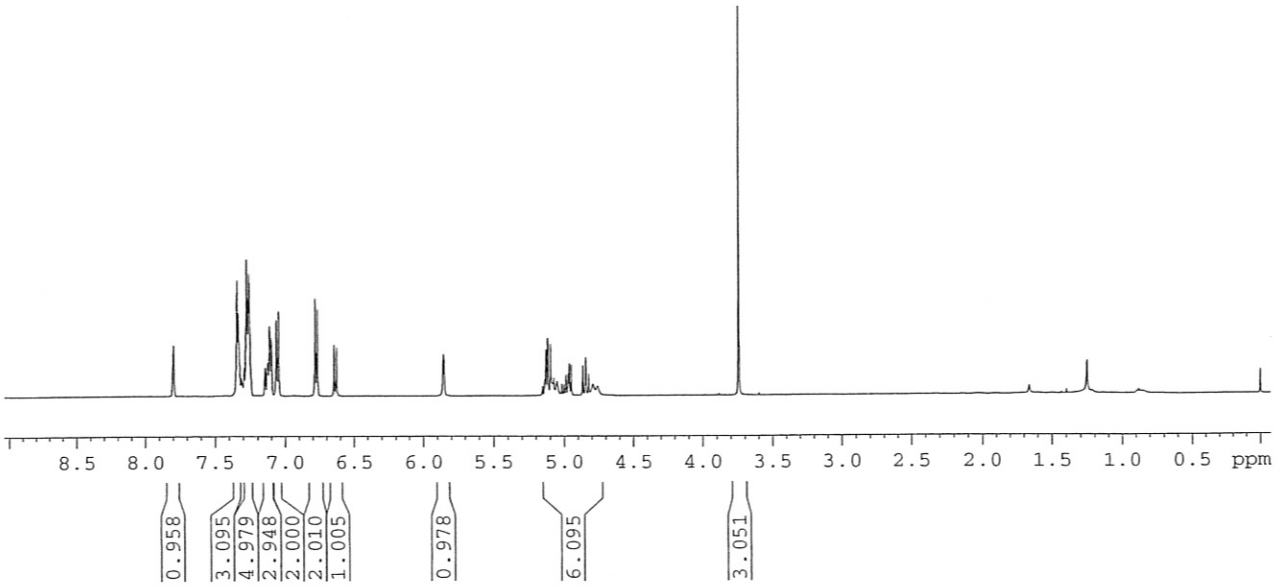


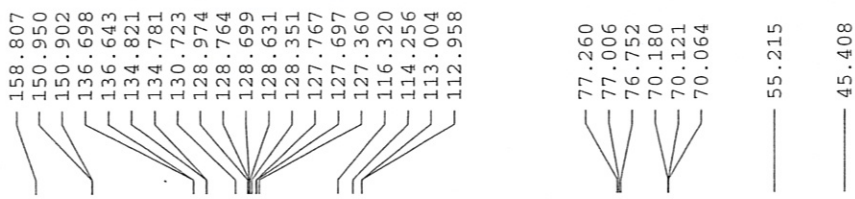
3i



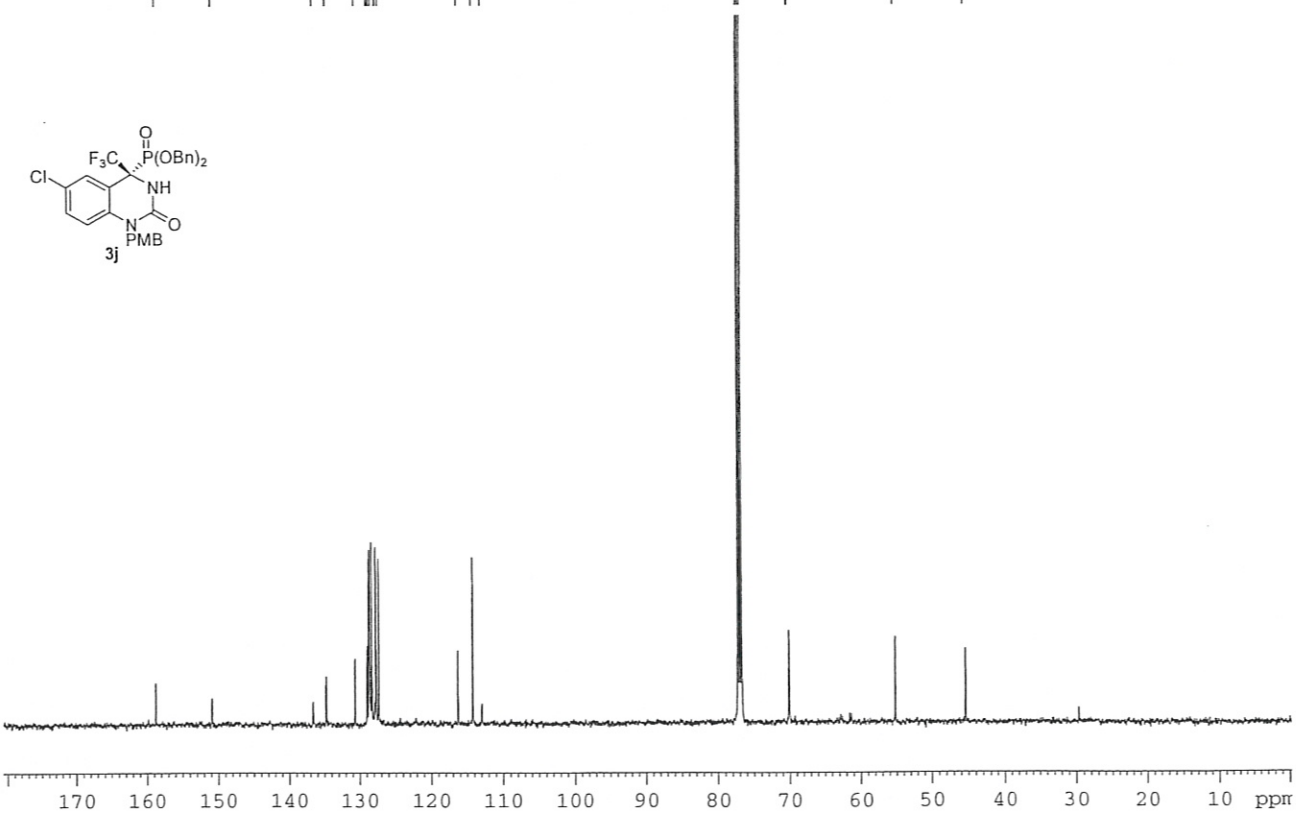


3j



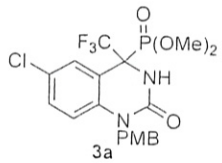


3j

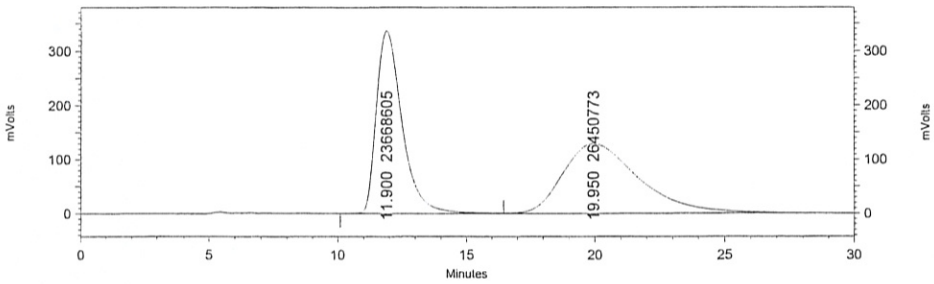


University Of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\WeiWang\zls1134.met
Data File: C:\EZStart\Projects\WeiWang\xhx-20-9-2.dat
Date Acquired: 11/27/2007 11:22:02 PM Date Printed: 06/14/2008 03:43:44 PM
Sample ID:



3a



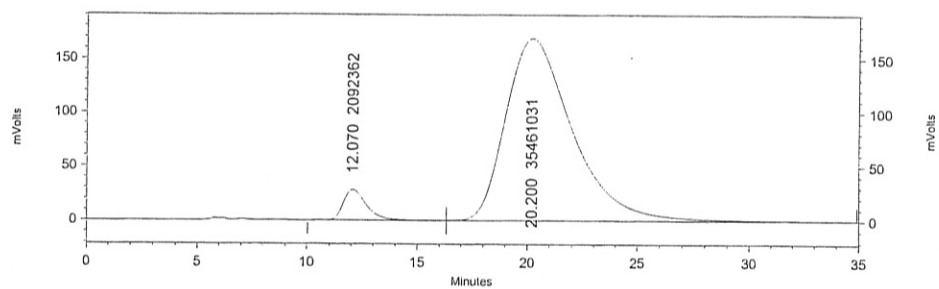
SPD-10Avp
Ch1-254nm Results

Pk #	RT	Area	Area %
1	11.900	23668605	47.224
2	19.950	26450773	52.776
Totals		50119378	100.000

University Of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\WeiWang\gjhg.met
Data File: C:\EZStart\Projects\WeiWang\xhx-20-58-1.dat
Date Acquired: 12/20/2007 1:53:12 PM Date Printed: 06/14/2008 03:45:51 PM
Sample ID:

3a

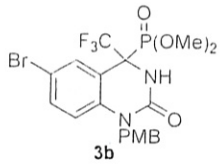


SPD-10Avp
Ch1-254nm Results

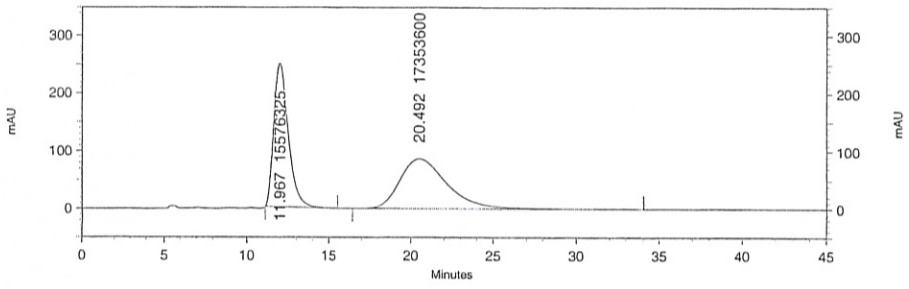
Pk #	RT	Area	Area %
1	12.070	2092362	5.572
2	20.200	35461031	94.428
Totals		37553393	100.000

University of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\Default\Method\zls1680.met
Data File: C:\EZStart\Projects\Default\Data\xhx-21-68-1.dat
Date Acquired: 6/14/2008 8:21:03 PM
Date Printed: 6/14/2008 8:21:15 PM
Sample ID:



3b

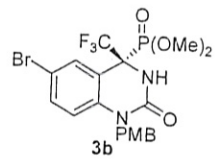


SPD-20A
Ch1-254nm Results

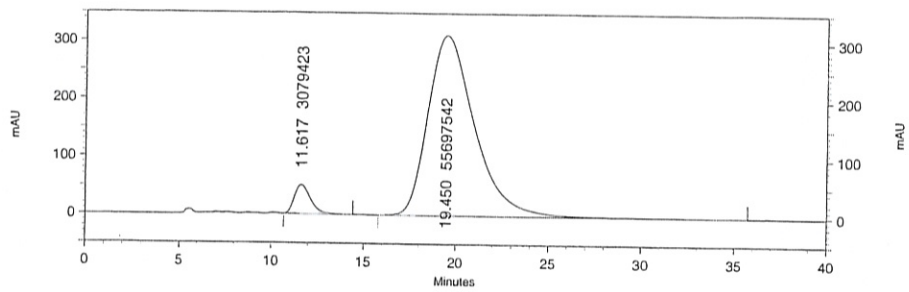
Pk #	Retention Time	Area	Area Percent
1	11.967	15576325	47.301
2	20.492	17353600	52.699
Totals		32929925	100.000

University of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\Default\Method\zls1680.met
Data File: C:\EZStart\Projects\Default\Data\xhx-21-69-1.dat
Date Acquired: 6/14/2008 8:26:05 PM
Date Printed: 6/14/2008 8:26:26 PM
Sample ID:



3b

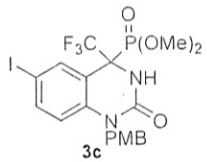


SPD-20A
Ch1-254nm Results

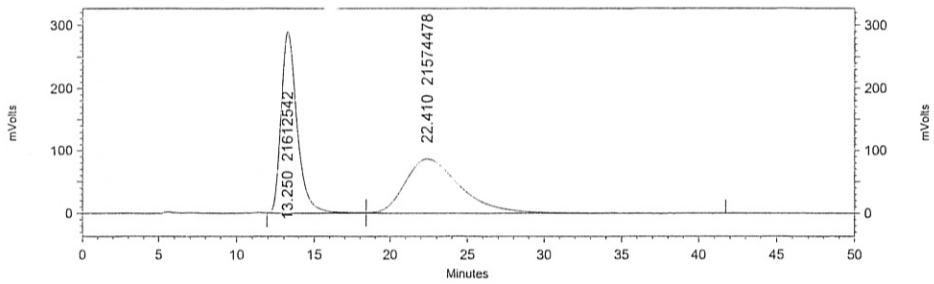
Pk #	Retention Time	Area	Area Percent
1	11.617	3079423	5.239
2	19.450	55697542	94.761
Totals		58776965	100.000

University Of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\WeiWang\aqeeq.met
Data File: C:\EZStart\Projects\WeiWang\xhx-21-33-1.dat
Date Acquired: 2/1/2008 1:27:40 PM Date Printed: 06/14/2008 03:57:44 PM
Sample ID:



3c

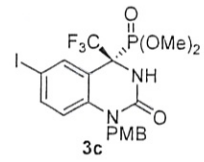


SPD-10Avp
Ch1-254nm Results

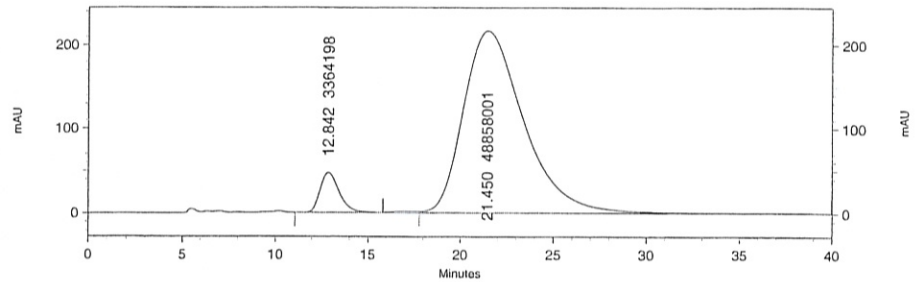
Pk #	RT	Area	Area %
1	13.250	21612542	50.044
2	22.410	21574478	49.956
Totals		43187020	100.000

University of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\Default\Method\zls1680.met
Data File: C:\EZStart\Projects\Default\Data\xhx-21-61-1.dat
Date Acquired: 6/14/2008 8:14:15 PM
Date Printed: 6/14/2008 8:14:38 PM
Sample ID:



3c

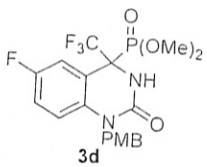


SPD-20A
Ch1-254nm Results

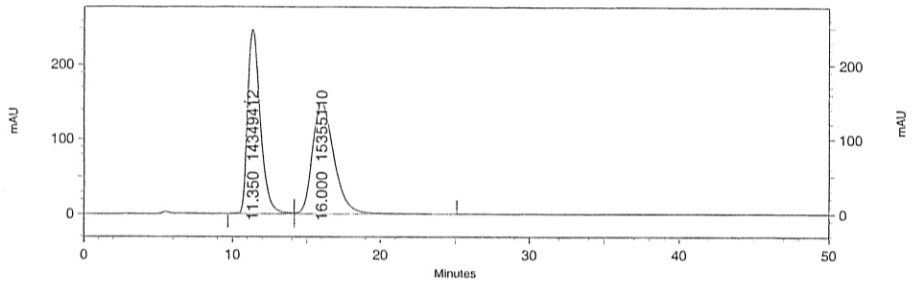
Pk #	Retention Time	Area	Area Percent
1	12.842	3364198	6.442
2	21.450	48858001	93.558
Totals		52222199	100.000

University of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\Default\Method\zls1680.met
Data File: C:\EZStart\Projects\Default\Data\xhx-21-56-1.dat
Date Acquired: 6/14/2008 8:07:50 PM
Date Printed: 6/14/2008 8:08:12 PM
Sample ID:



3d

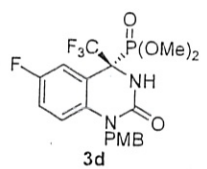


SPD-20A
Ch1-254nm Results

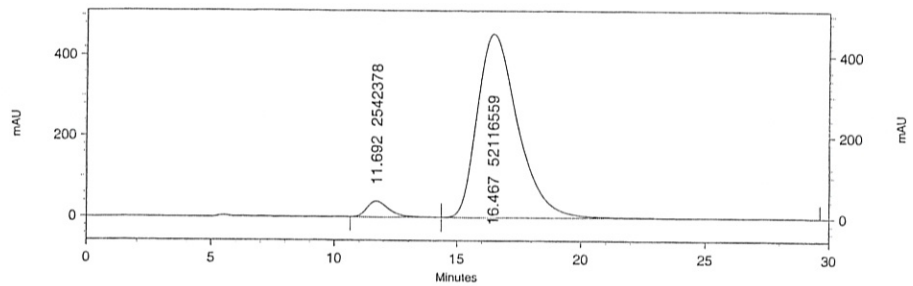
Pk #	Retention Time	Area	Area Percent
1	11.350	14349412	48.307
2	16.000	15355110	51.693
Totals		29704522	100.000

University of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\Default\Method\zls1680.met
Data File: C:\EZStart\Projects\Default\Data\xhx-21-59-1.dat
Date Acquired: 6/14/2008 8:11:41 PM
Date Printed: 6/14/2008 8:12:04 PM
Sample ID:



3d

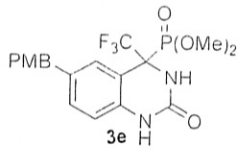


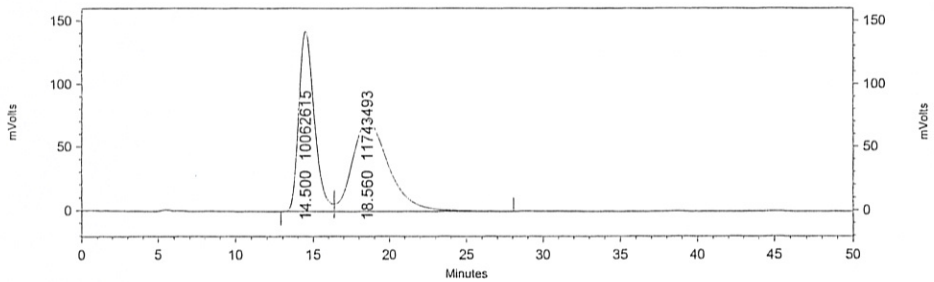
SPD-20A
Ch1-254nm Results

Pk #	Retention Time	Area	Area Percent
1	11.692	2542378	4.651
2	16.467	52116559	95.349
Totals		54658937	100.000

University Of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\WeiWang\n22w.met
Data File: C:\EZStart\Projects\WeiWang\xhx-21-45-2.dat
Date Acquired: 2/8/2008 10:46:46 AM Date Printed: 06/14/2008 04:01:12 PM
Sample ID:



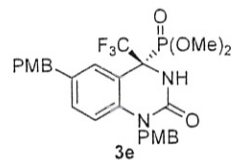


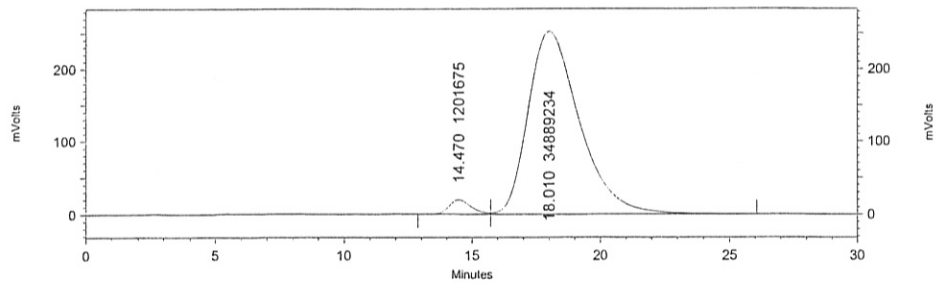
SPD-10Avp
Ch1-254nm Results

Pk #	RT	Area	Area %
1	14.500	10062615	46.146
2	18.560	11743493	53.854
Totals		21806108	100.000

University Of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\WeiWang\aa07.met
Data File: C:\EZStart\Projects\WeiWang\xhx-21-62-1.dat
Date Acquired: 3/9/2008 4:43:47 PM Date Printed: 06/14/2008 04:12:13 PM
Sample ID:



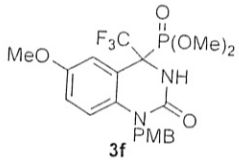


SPD-10Avp
Ch1-254nm Results

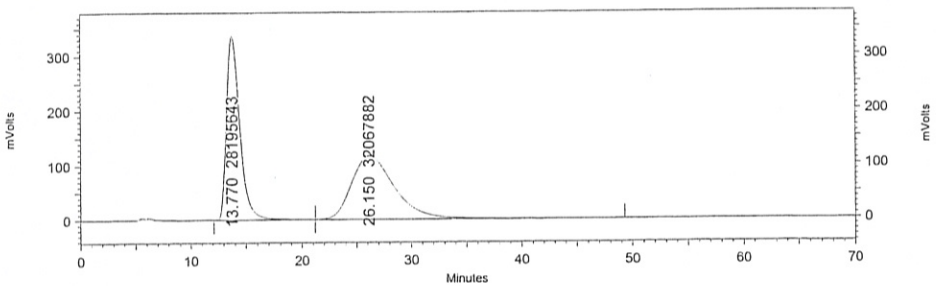
Pk #	RT	Area	Area %
1	14.470	1201675	3.330
2	18.010	34889234	96.670
Totals		36090909	100.000

University Of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\WeiWang\aqeeq.met
Data File: C:\EZStart\Projects\WeiWang\xhx-21-34-1.dat
Date Acquired: 2/1/2008 2:27:09 PM Date Printed: 06/14/2008 03:59:07 PM
Sample ID:



3f

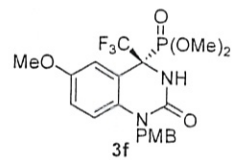


SPD-10Avp
Ch1-254nm Results

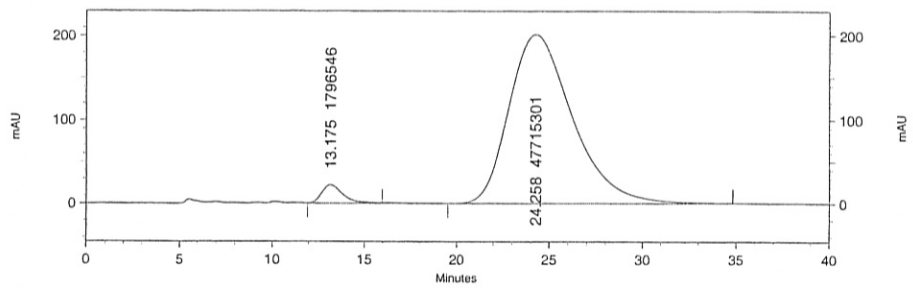
Pk #	RT	Area	Area %
1	13.770	28195643	46.787
2	26.150	32067882	53.213
Totals		60263525	100.000

University of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\Default\Method\z1s1680.met
Data File: C:\EZStart\Projects\Default\Data\xhx-21-52-1.dat
Date Acquired: 6/14/2008 8:04:52 PM
Date Printed: 6/14/2008 8:06:04 PM
Sample ID:



3f

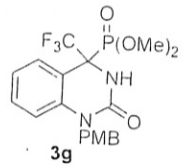


SPD-20A
Ch1-254nm Results

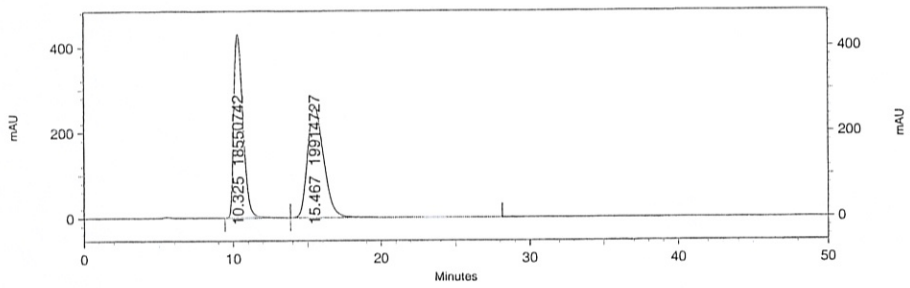
Pk #	Retention Time	Area	Area Percent
1	13.175	1796546	3.629
2	24.258	47715301	96.371
Totals		49511847	100.000

University of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\Default\Method\zls1680.met
Data File: C:\EZStart\Projects\Default\Data\xhx-21-57-1.dat
Date Acquired: 6/14/2008 8:09:14 PM
Date Printed: 6/14/2008 8:09:36 PM
Sample ID:



3g

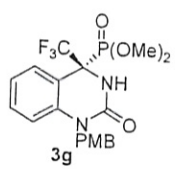


SPD-20A
Ch1-254nm Results

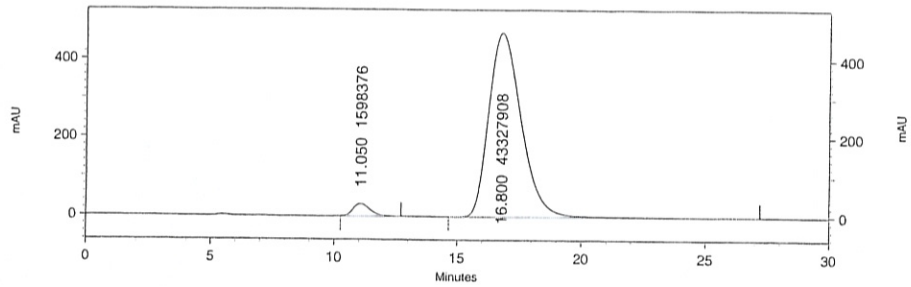
Pk #	Retention Time	Area	Area Percent
1	10.325	18550742	48.227
2	15.467	19914727	51.773
Totals		38465469	100.000

University of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\Default\Method\zls1680.met
Data File: C:\EZStart\Projects\Default\Data\xhx-21-58-1.dat
Date Acquired: 6/14/2008 8:10:51 PM
Date Printed: 6/14/2008 8:11:08 PM
Sample ID:



3g

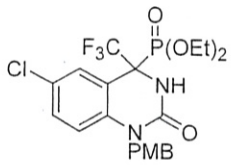


SPD-20A
Ch1-254nm Results

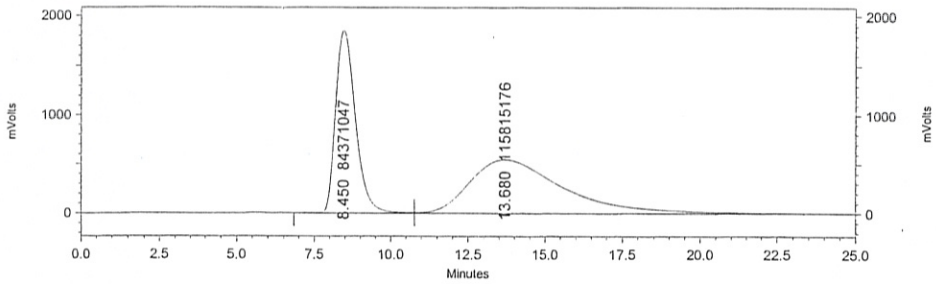
Pk #	Retention Time	Area	Area Percent
1	11.050	1598376	3.558
2	16.800	43327908	96.442
Totals		44926284	100.000

University Of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\WeiWang\zls1560.met
Data File: C:\EZStart\Projects\WeiWang\xhx-16-80-2-2.dat
Date Acquired: 12/19/2007 11:46:03 AM Date Printed: 06/14/2008 03:40:22 PM
Sample ID:



3h

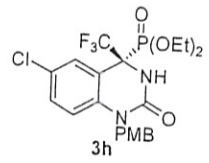


SPD-10Avp
Ch1-254nm Results

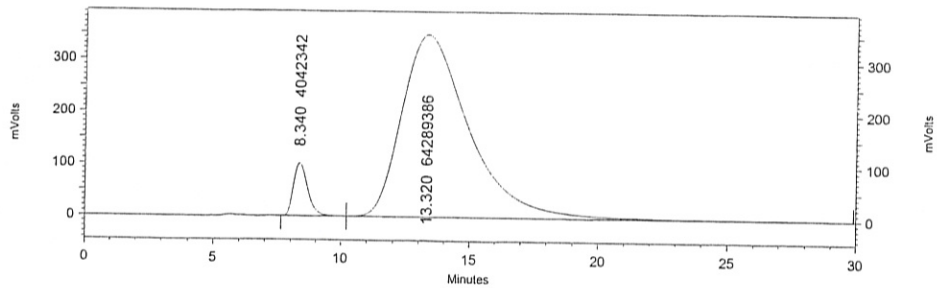
Pk #	RT	Area	Area %
1	8.450	84371047	42.146
2	13.680	115815176	57.854
Totals		200186223	100.000

University Of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\WeiWang\gjhg.met
Data File: C:\EZStart\Projects\WeiWang\xhx-20-65-1.dat
Date Acquired: 12/24/2007 12:01:16 AM Date Printed: 06/14/2008 03:47:10 PM
Sample ID:



3h

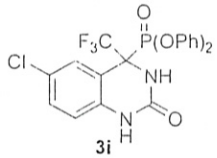


SPD-10Avp
Ch1-254nm Results

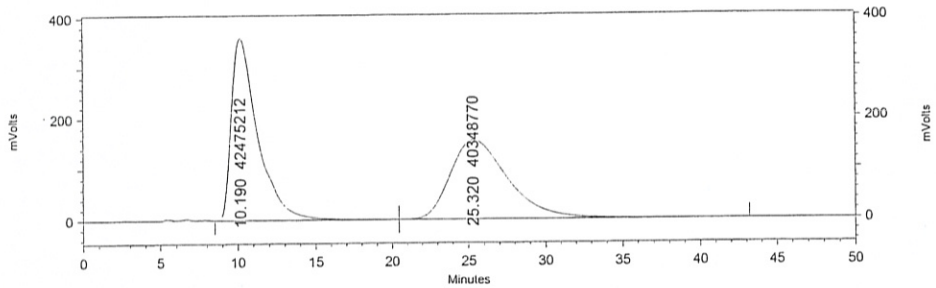
Pk #	RT	Area	Area %
1	8.340	4042342	5.916
2	13.320	64289386	94.084
Totals		68331728	100.000

University Of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\WeiWang\aa01.met
Data File: C:\EZStart\Projects\WeiWang\xhx-20-70-1.dat
Date Acquired: 12/31/2007 11:11:50 PM Date Printed: 06/14/2008 03:50:38 PM
Sample ID:



3i

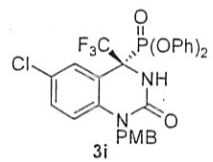


SPD-10Avp
Ch1-254nm Results

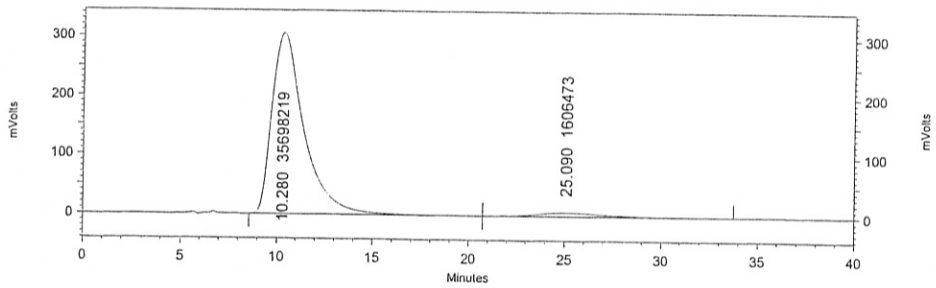
Pk #	RT	Area	Area %
1	10.190	42475212	51.284
2	25.320	40348770	48.716
Totals		82823982	100.000

University Of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\WeiWang\aa0004.met
Data File: C:\EZStart\Projects\WeiWang\xhx-20-93-1.dat
Date Acquired: 1/14/2008 9:10:04 PM Date Printed: 06/14/2008 07:39:47 PM
Sample ID:



3i

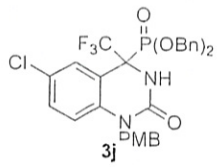


SPD-10Avp
Ch1-254nm Results

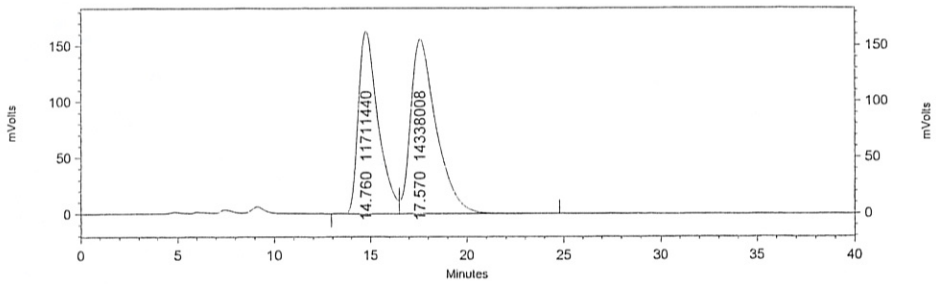
Pk #	RT	Area	Area %
1	10.280	35698219	95.694
2	25.090	1606473	4.306
Totals		37304692	100.000

University Of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\WeiWang\gjhg.met
Data File: C:\EZStart\Projects\WeiWang\xhx-20-66-3 OD-H.dat
Date Acquired: 12/26/2007 12:21:04 PM Date Printed: 06/14/2008 03:52:30 PM
Sample ID:



3j

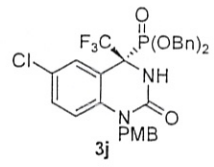


SPD-10Avp
Ch1-254nm Results

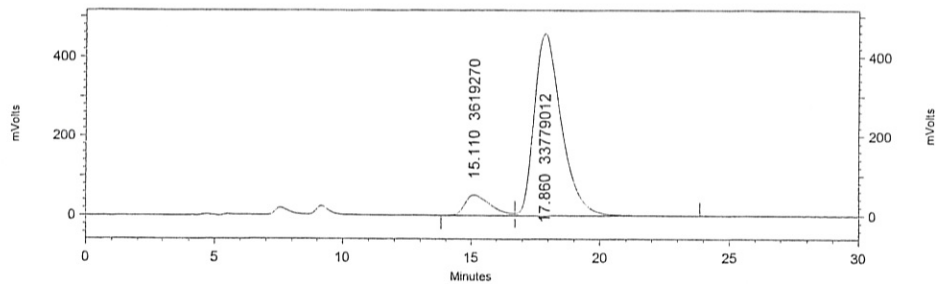
Pk #	RT	Area	Area %
1	14.760	11711440	44.958
2	17.570	14338008	55.042
Totals		26049448	100.000

University Of New Mexico
Department of Chemistry

Method Name: C:\EZStart\Projects\WeiWang\aa0004.met
Data File: C:\EZStart\Projects\WeiWang\xhx-20-92-1.dat
Date Acquired: 1/14/2008 10:32:34 PM Date Printed: 06/14/2008 03:54:48 PM
Sample ID:



3j



SPD-10Avp
Ch1-254nm Results

Pk #	RT	Area	Area %
1	15.110	3619270	9.678
2	17.860	33779012	90.322
Totals		37398282	100.000