Electronic Supplementary Material (ESI) for RSC Advances.

"One-pot" Access to α-D-Mannopyranosides from Glycals Employing Ruthenium Catalysis

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Supporting Information

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Experimental

General Synthesis Information. Reactions were run in screw capped glass vials (4 mL) stirred with Teflon®-coated magnetic stir bars. Moisture and air-sensitive reactions were performed in flame-dried round bottom flasks, fitted with rubber septa or glass gas adapters, under a positive pressure of nitrogen. Moisture and air-sensitive liquids or solutions were transferred via nitrogen-flushed syringe. Concentration of solvents was accomplished by rotary evaporation using a Büchi rotary evaporator at temperatures between 35 °C and 50 °C. Experiments were monitored by thin layer chromatography (TLC).

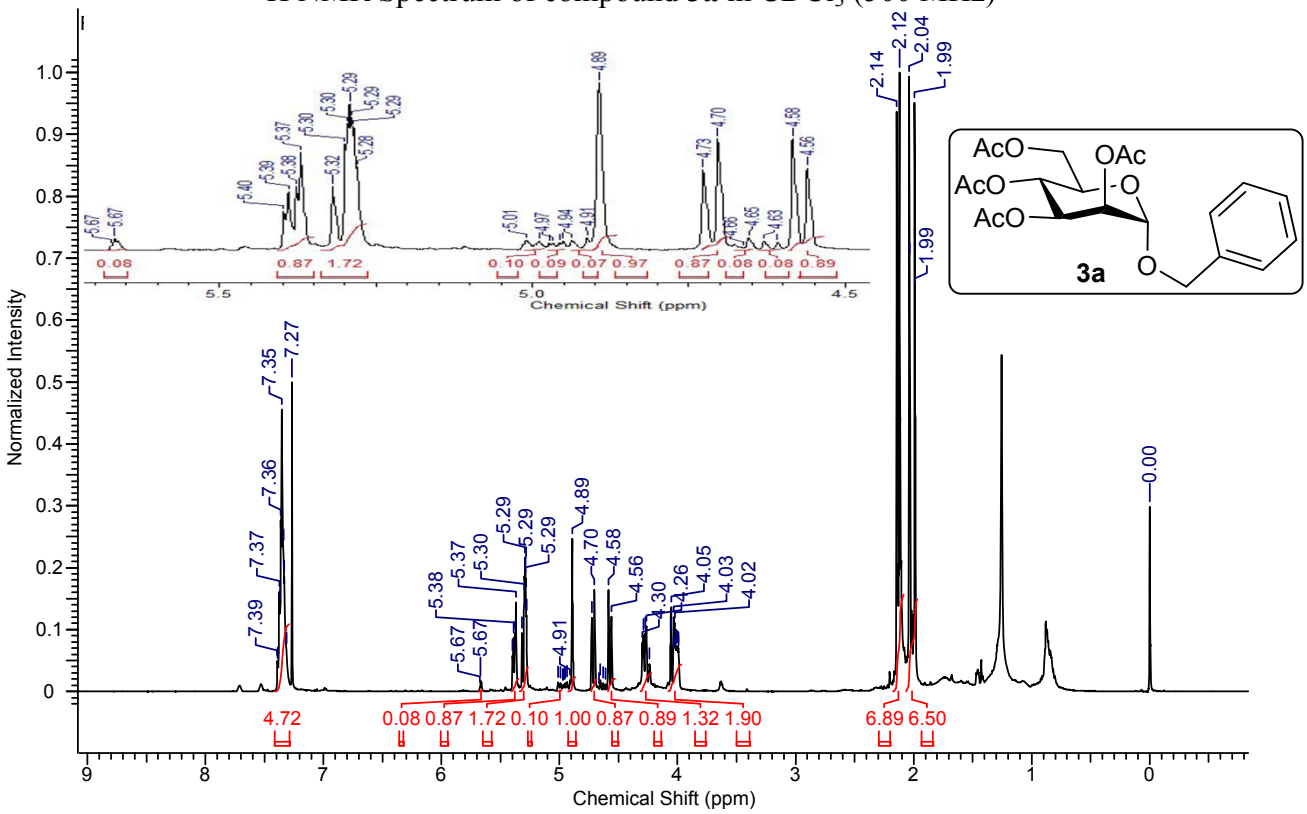
Materials. Unless otherwise noted, materials were obtained from commercial suppliers and used without purification. Removal of solvent under reduced pressure refers to distillation with a Büchi rotary evaporator attached to a vacuum pump (~3 mmHg). Products obtained as solids or high boiling oils were dried under vacuum (~1 mmHg).

Chromatography. Analytical TLC was performed using Whatman 250 micron aluminum backed UV F254 precoated silica gel flexible plates. Subsequent to elution, ultraviolet illumination at 254 nm allowed for visualization of UV active materials. Staining with p-anisaldehyde, basic potassium permanganate solution, or Molisch's reagents allowed for further visualization. The retardation factor (Rf) is the ratio of the distance traveled by the compound to the distance traveled by the eluent.

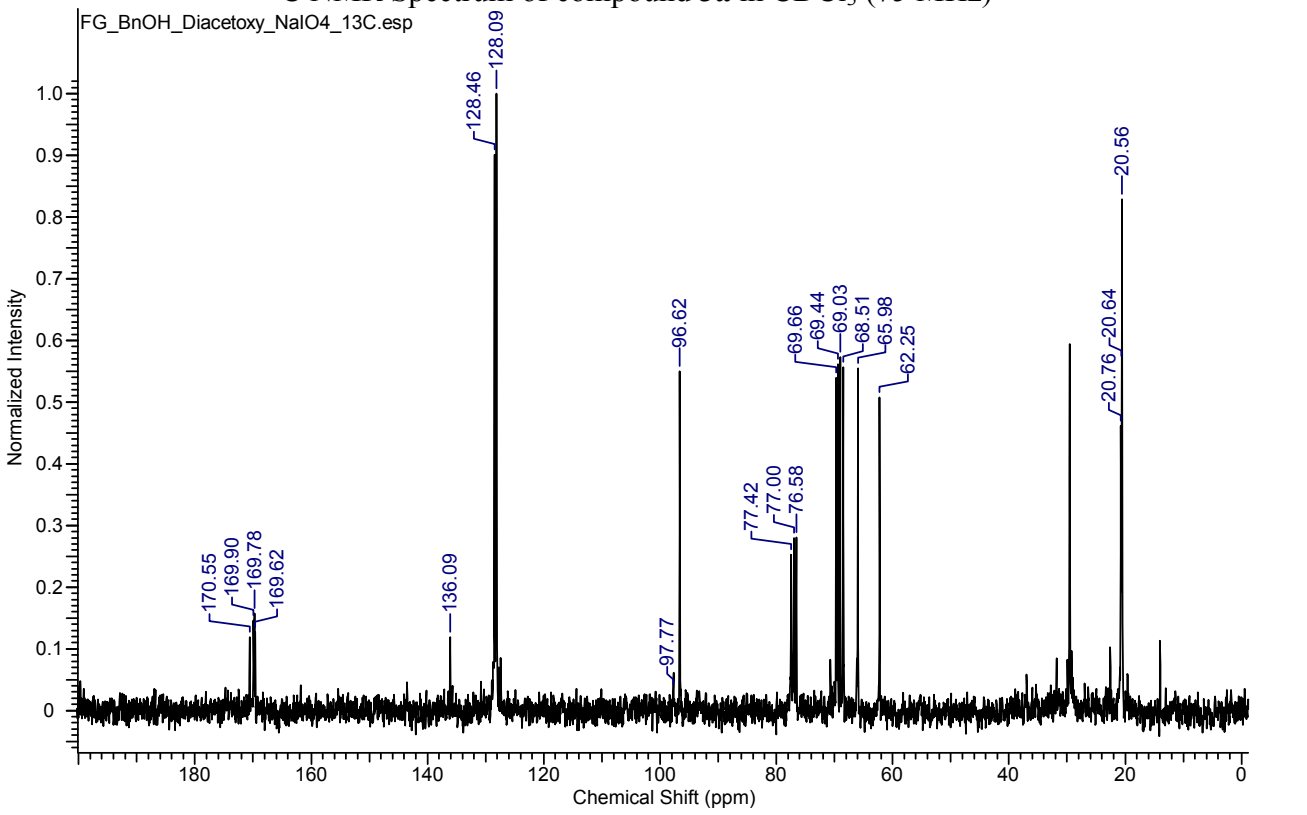
Physical Data. Proton nuclear magnetic resonance spectra (^{1}H NMR) were recorded on Avance 300 or Avance 500 MHz nuclear magnetic resonance spectrometers. Chemical shifts for ^{1}H NMR spectra are reported as δ in units of parts per million (ppm) relative to tetramethylsilane (δ 0.0) using the residual solvent signal as an internal standard or tetramethylsilane itself: chloroform-d (δ 7.26, singlet). The number of protons (n) for a given resonance is indicated by nH. IR spectra were recorded on Bruker Alpha spectrometer and mass analyses (ESI) were performed on Finnegan MAT 1020 mass spectrometer operating at 70 eV.

General experimental procedure for Ru-catalyzed one-pot glycosylation/dihydroxylation method: (1) To a stirred solution of 3,4,6-tri-*O*-acetyl-D-glucal **1** (1 equiv) and acceptor (1.2 equiv) in anhydrous acetonitrile (2 mL/mmol) under an atmosphere of argon was added $RuCl_3$ (5 mol%) at room temperature. The reaction mixture was stirred until the complete consumption of the starting material (glycal), adjudged by TLC. (2) The reaction mixture was cooled at 0 °C and diluted with EtOAc (2 mL). An aqueous solution of $NaIO_4$ (1.5 equiv) and $CeCl_3.7H_2O$ (5 mol%) in 1 mL H_2O was added to above mentioned reaction and stirred vigrously. The reaction deemed complete by TLC in utmost 10 min to obtain corresponding diols. The reaction was quenched with saturated $NaHCO_3$ (10 mL), diluted with EtOAc (10 mL), and extracted with EtOAC (3 X 30 mL). The combined organic layes were washed with brine solution, dried over anhydrous Na_2SO_4, concentrated *in vacuo* and purified by silica gel coloumn chromatography (Hexanes-EtOAc 2:1). Following acetylation of diol in CH_2Cl_2 (5 mL), pyridine (0.5 mL), and acetic anhydride (5 equiv) in the presence of catalytic amount of DMAP gave corresponding per-acetylated glycoside. Following usual work-up and purification by chromatography (silica gel, hexanes-EtOAc) afforded desired α-D-mannopyranosides (**3a-s**) as major product in good yields. All the compounds were confirmed by ^{1}H NMR, ^{13}C NMR and MS/HRMS spectroscopy and overall data were in complete agreement with the assigned structures.

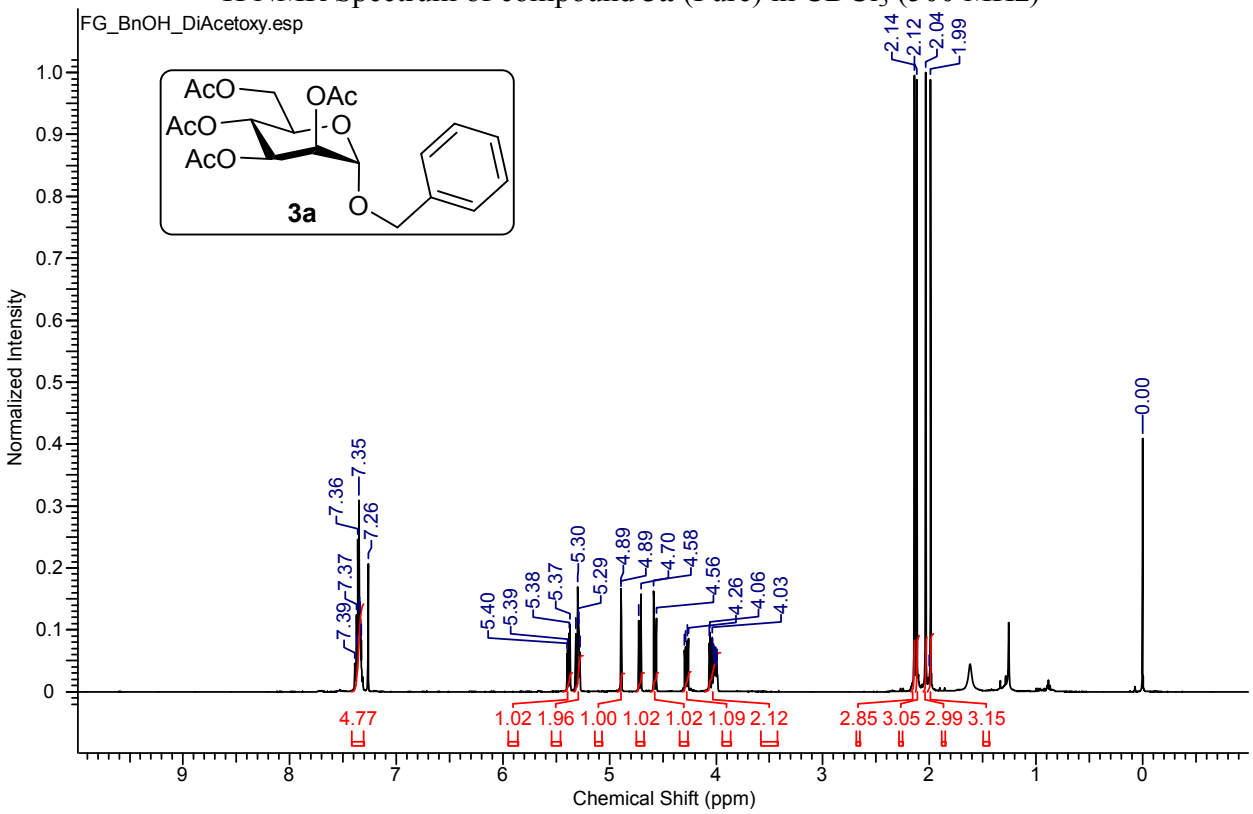
^{1}H NMR Spectrum of compound **3a** in $CDCl_3$ (500 MHz)



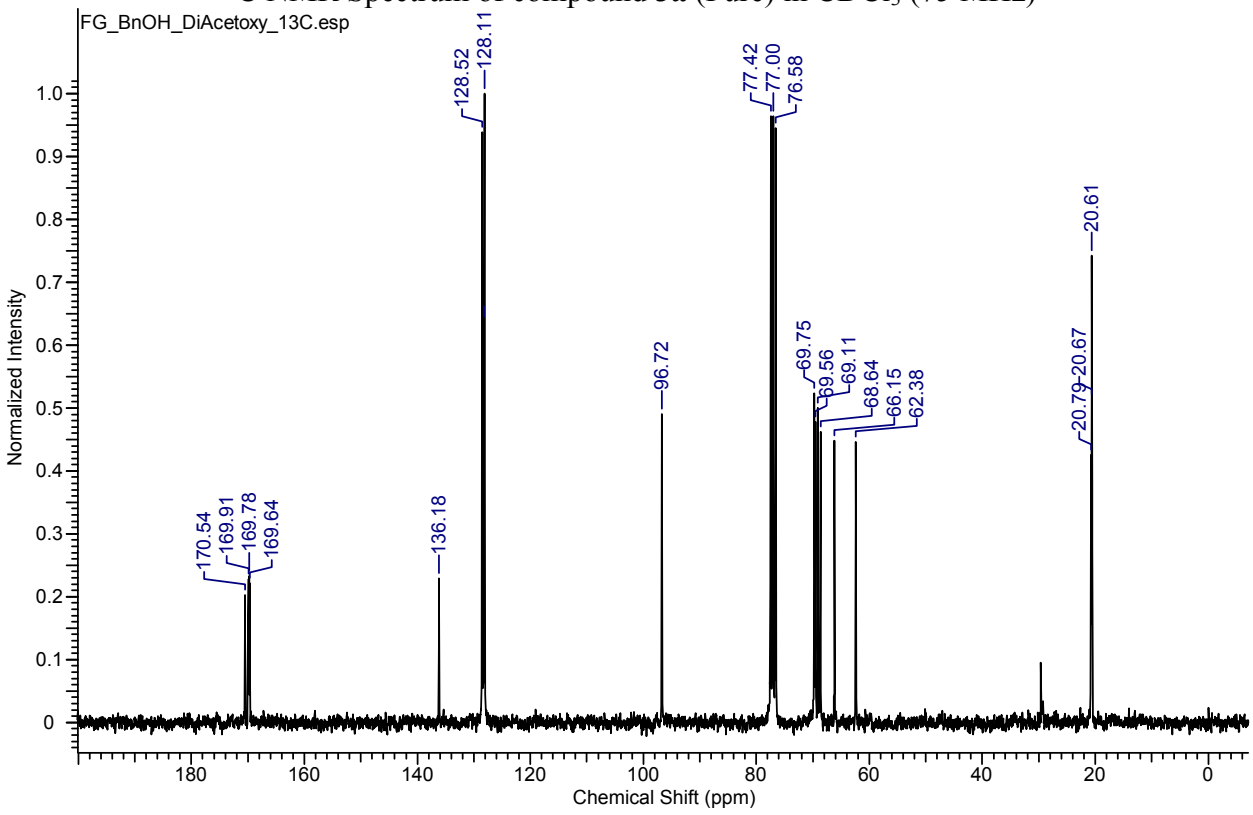
^{13}C NMR Spectrum of compound **3a** in $CDCl_3$ (75 MHz)



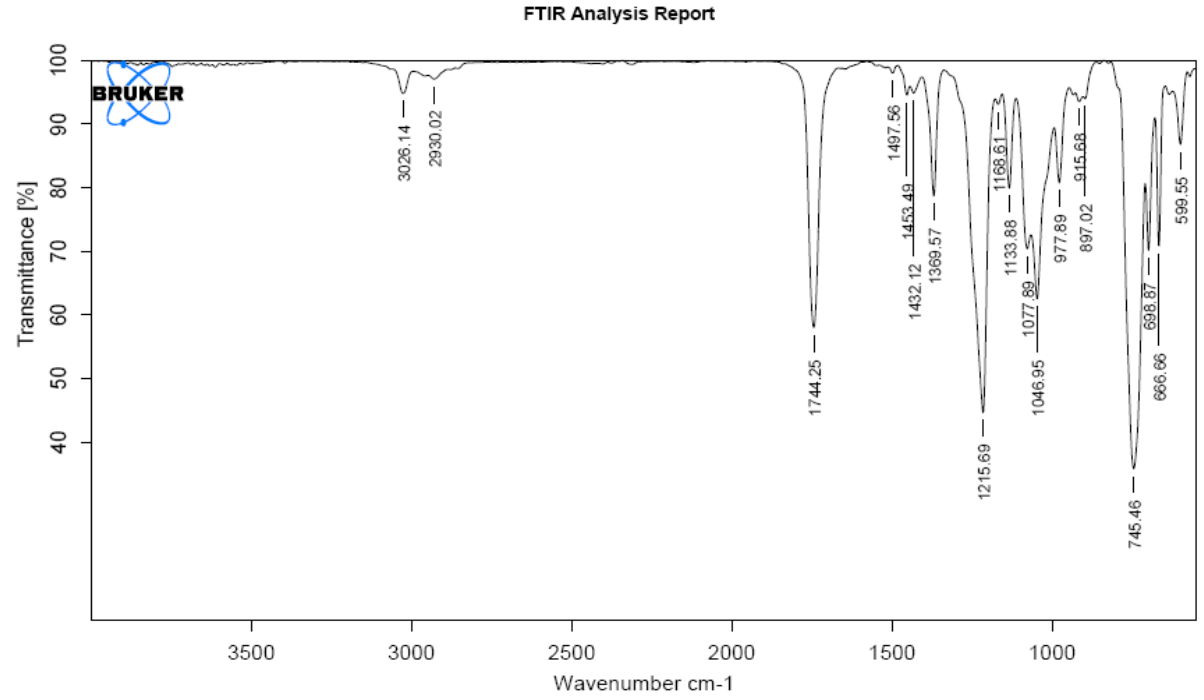
^{1}H NMR Spectrum of compound **3a** (Pure) in $CDCl_3$ (500 MHz)



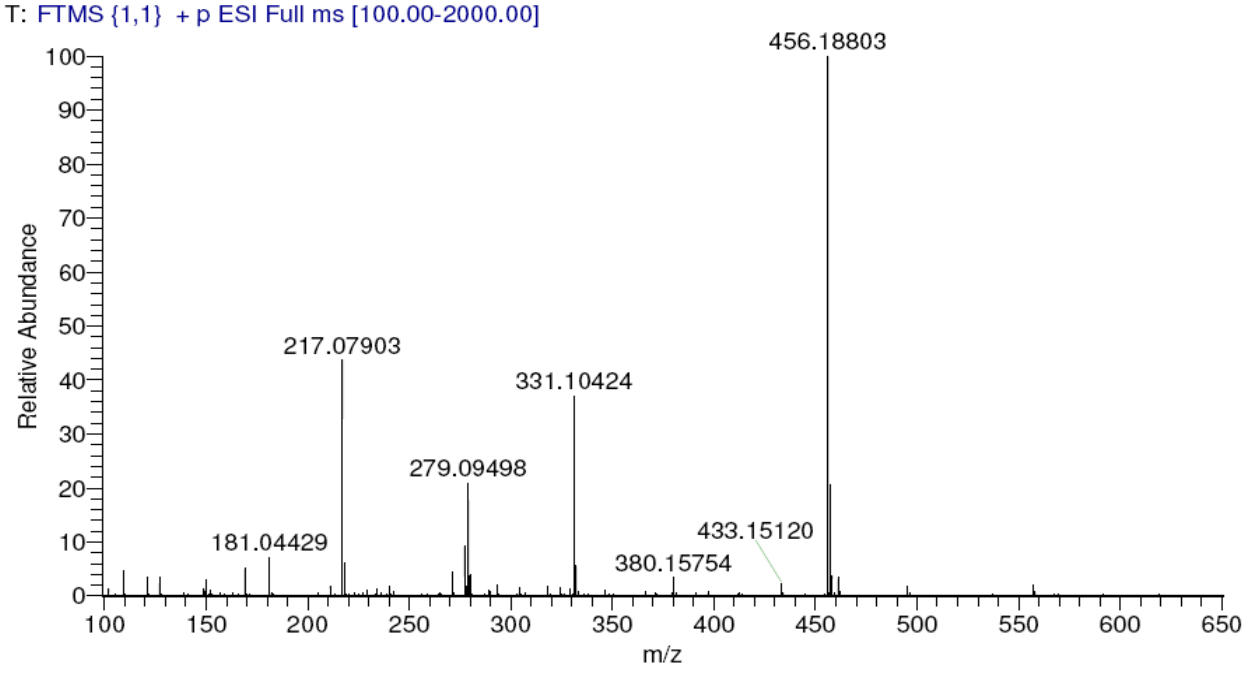
^{13}C NMR Spectrum of compound **3a** (Pure) in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3a** in $CHCl_3$



HRMS Spectrum of compound **3a**

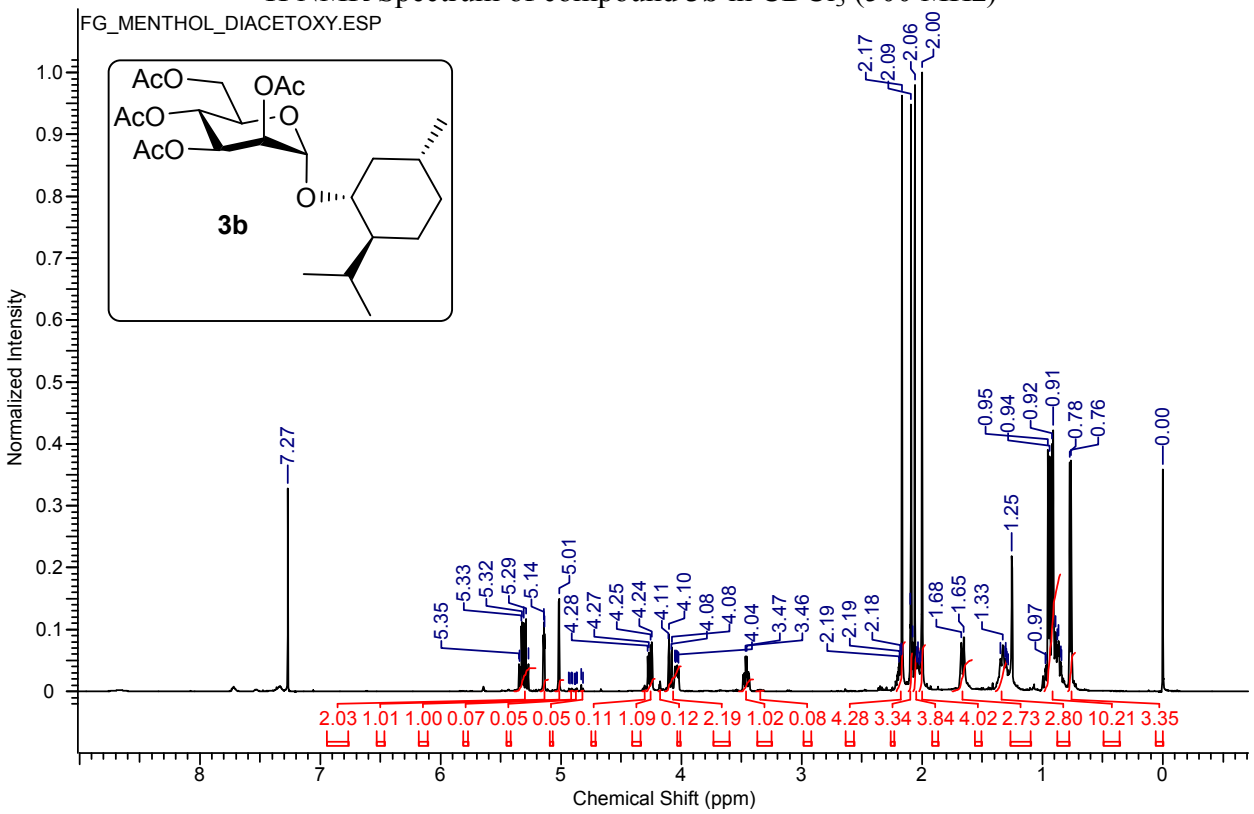


PRK-CH-2-28#8-30 RT: 0.04-0.11 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 428.51-471.68

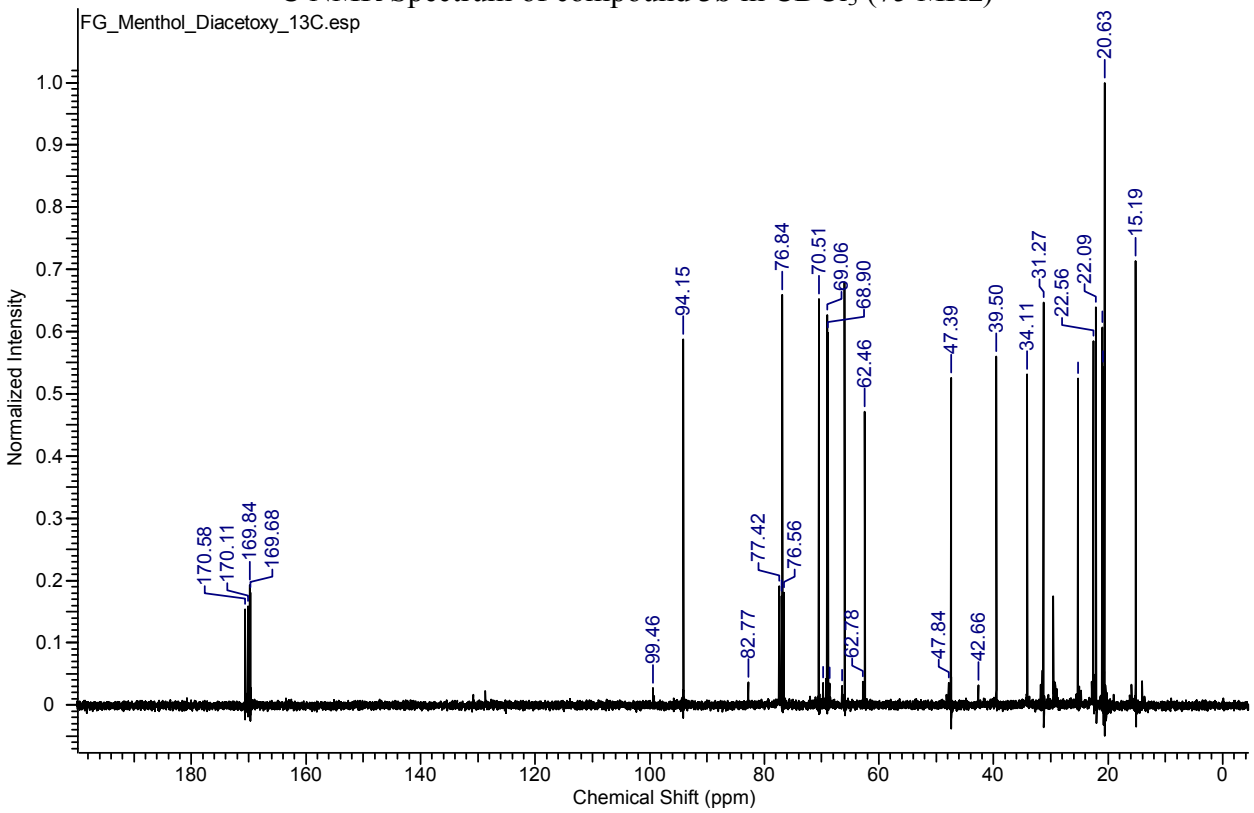
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
456.18882	4203744.5	100.00	456.18642	2.40	7.5	$C_{21}H_{30}O_{10}N$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{21}H_{30}NO_{10}^+$: 456.18642; found: 456.18803.

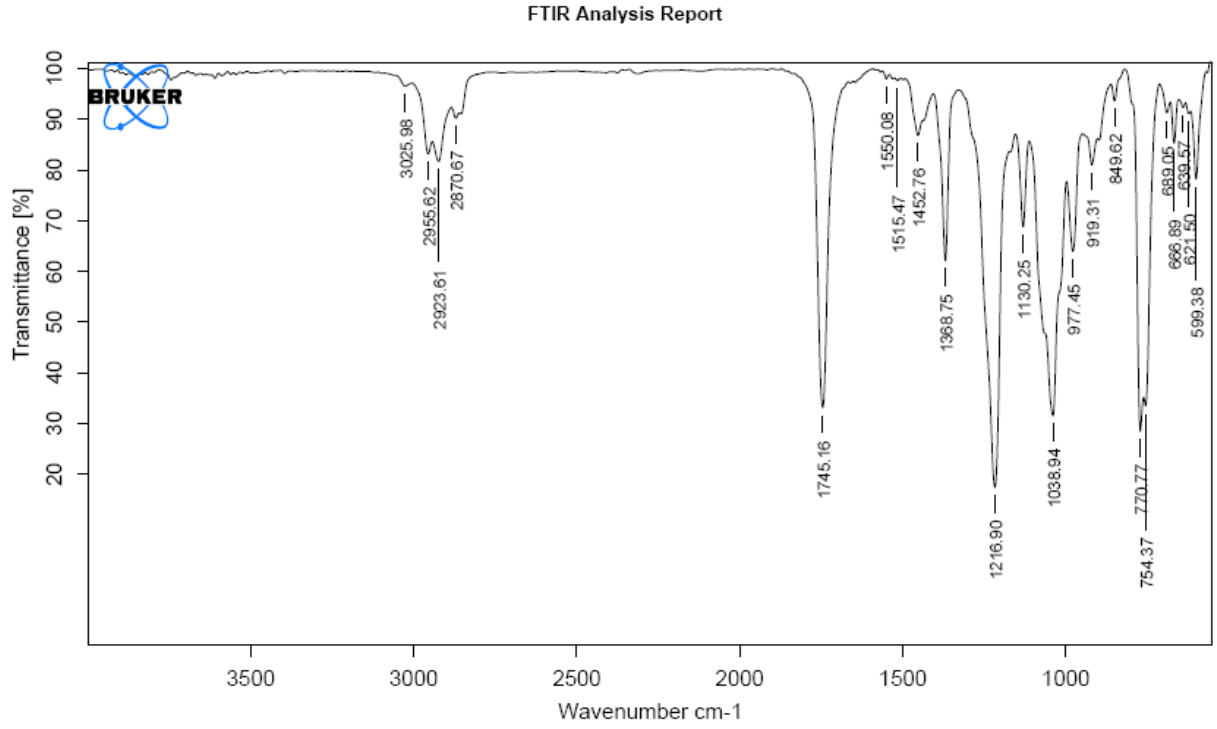
^{1}H NMR Spectrum of compound **3b** in $CDCl_3$ (500 MHz)



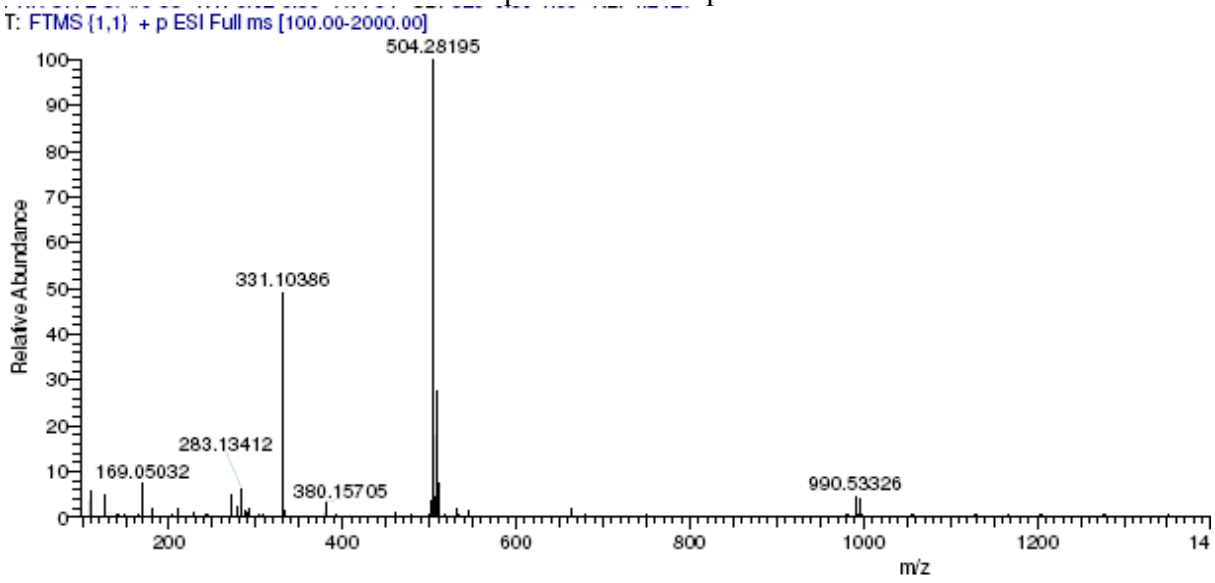
^{13}C NMR Spectrum of compound **3b** in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3b** in $CHCl_3$



HRMS Spectrum of compound **3b**

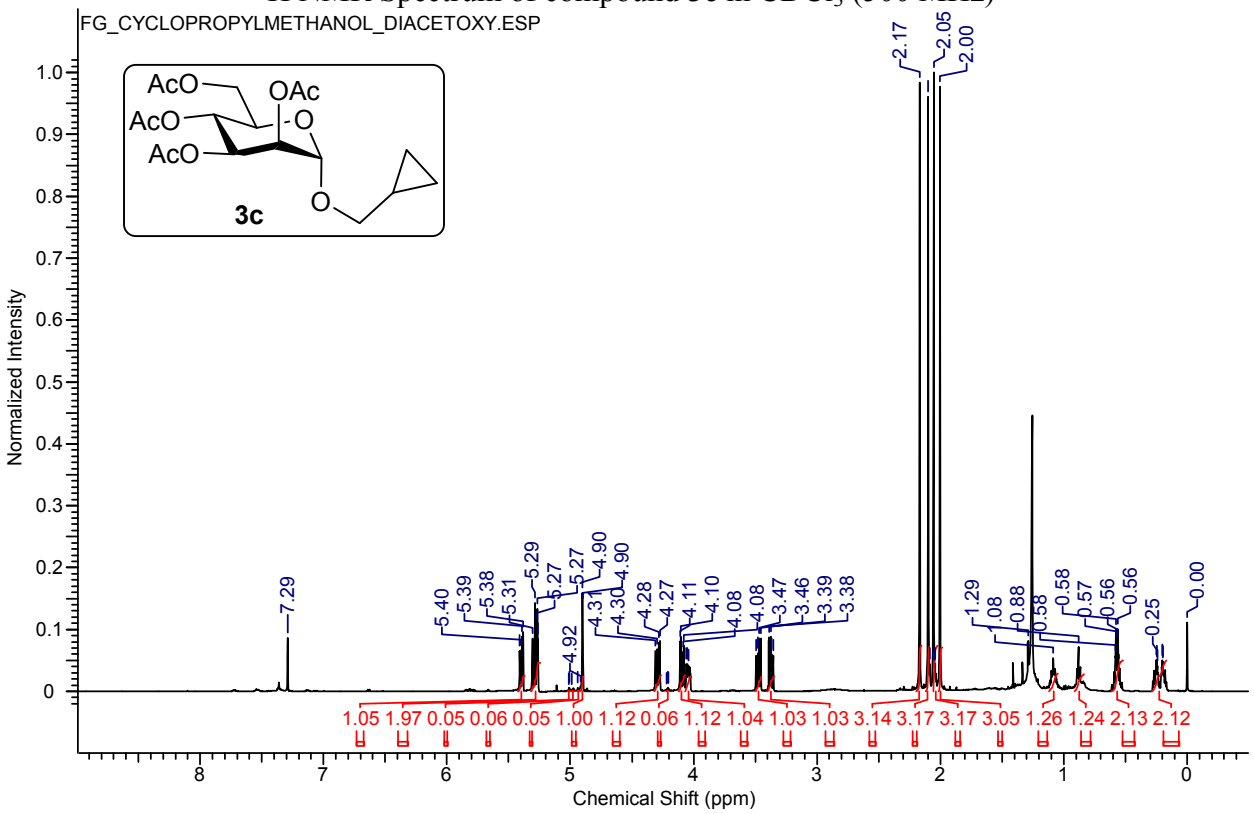


PRK-CH-2-37#8-30 RT: 0.03-0.10 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]

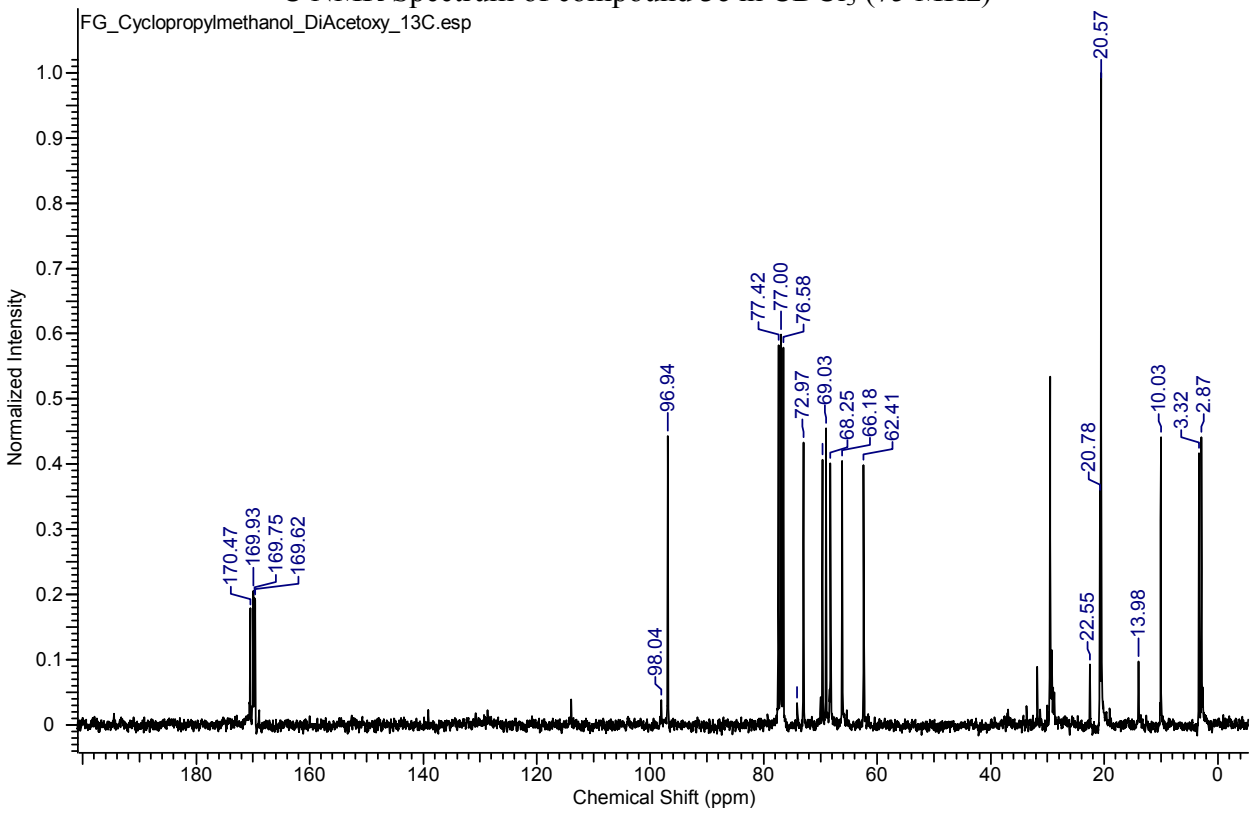
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
504.28187	63658160.0	100.00	504.28032	3.07	4.5	$C_{24}H_{42}O_{10}N$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{24}H_{42}NO_{10}^+$: 504.28195; found: 504.28032.

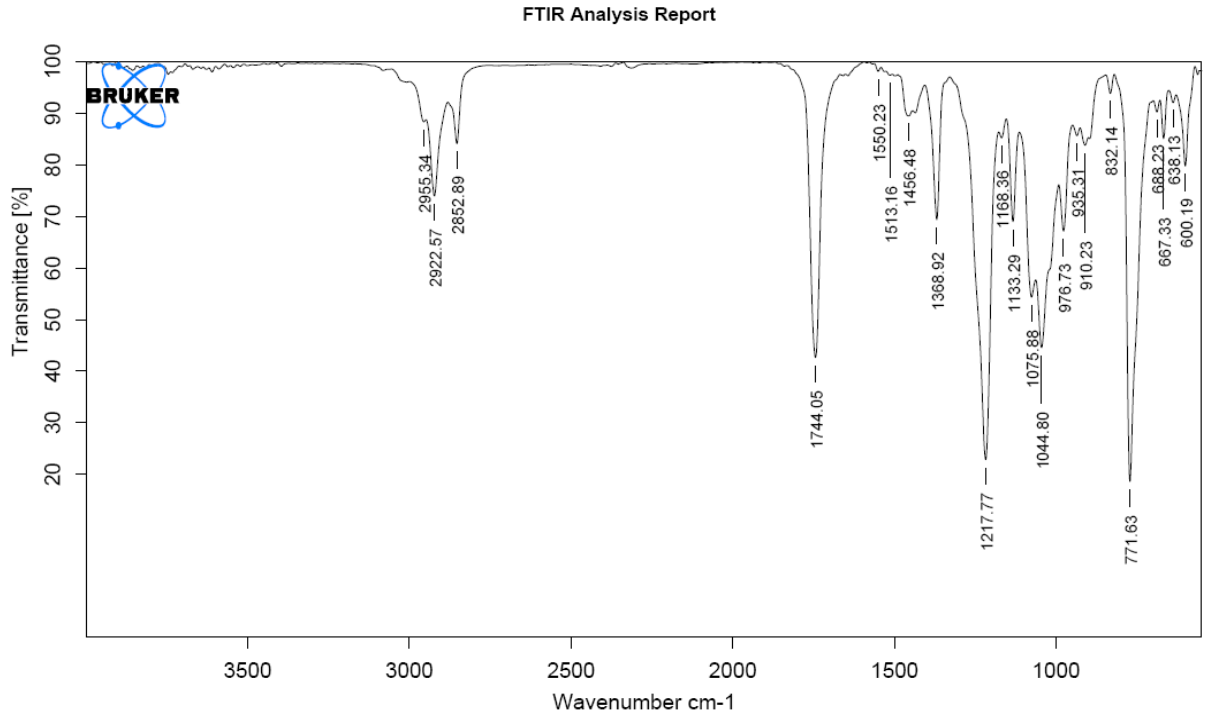
^{1}H NMR Spectrum of compound **3c** in $CDCl_3$ (500 MHz)



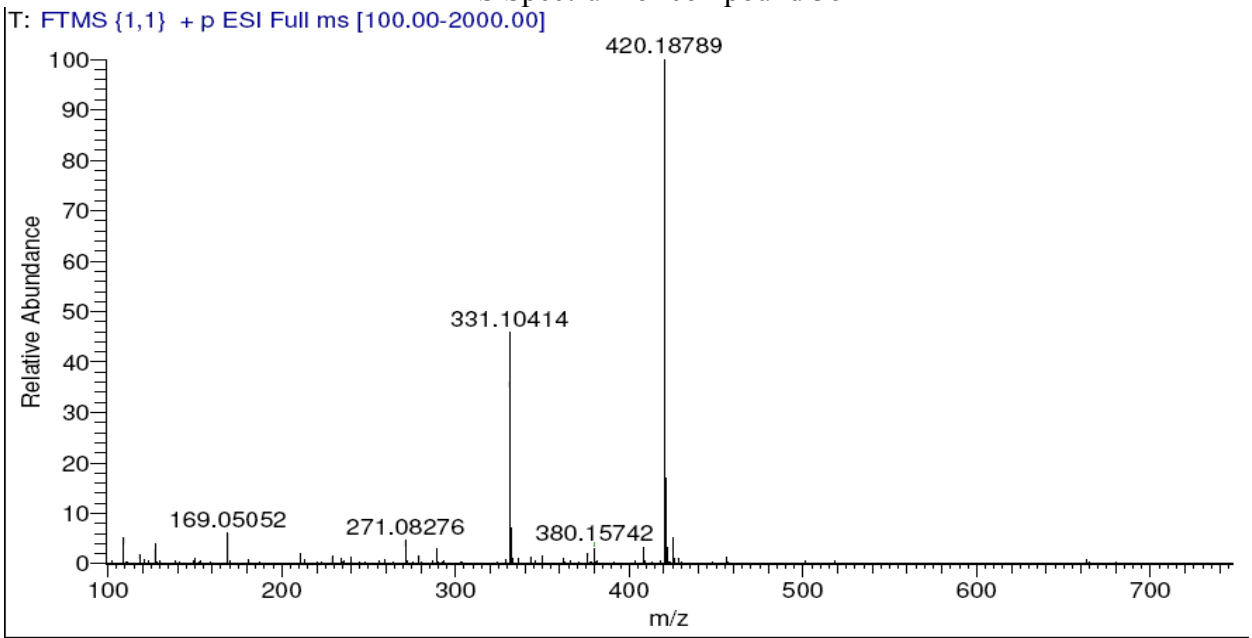
^{13}C NMR Spectrum of compound **3c** in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3c** in $CHCl_3$



HRMS Spectrum of compound **3c**

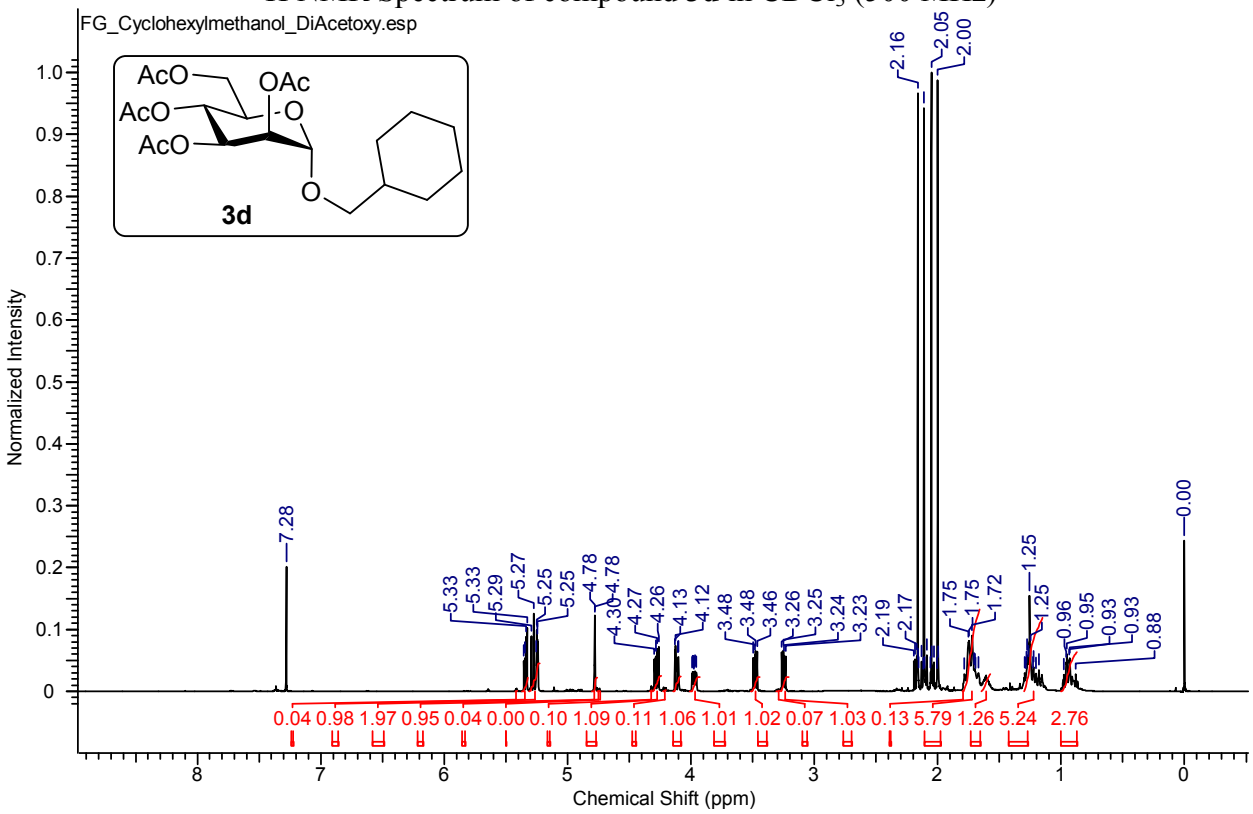


PRK-CH-2-30A#8-30 RT: 0.03-0.11 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]

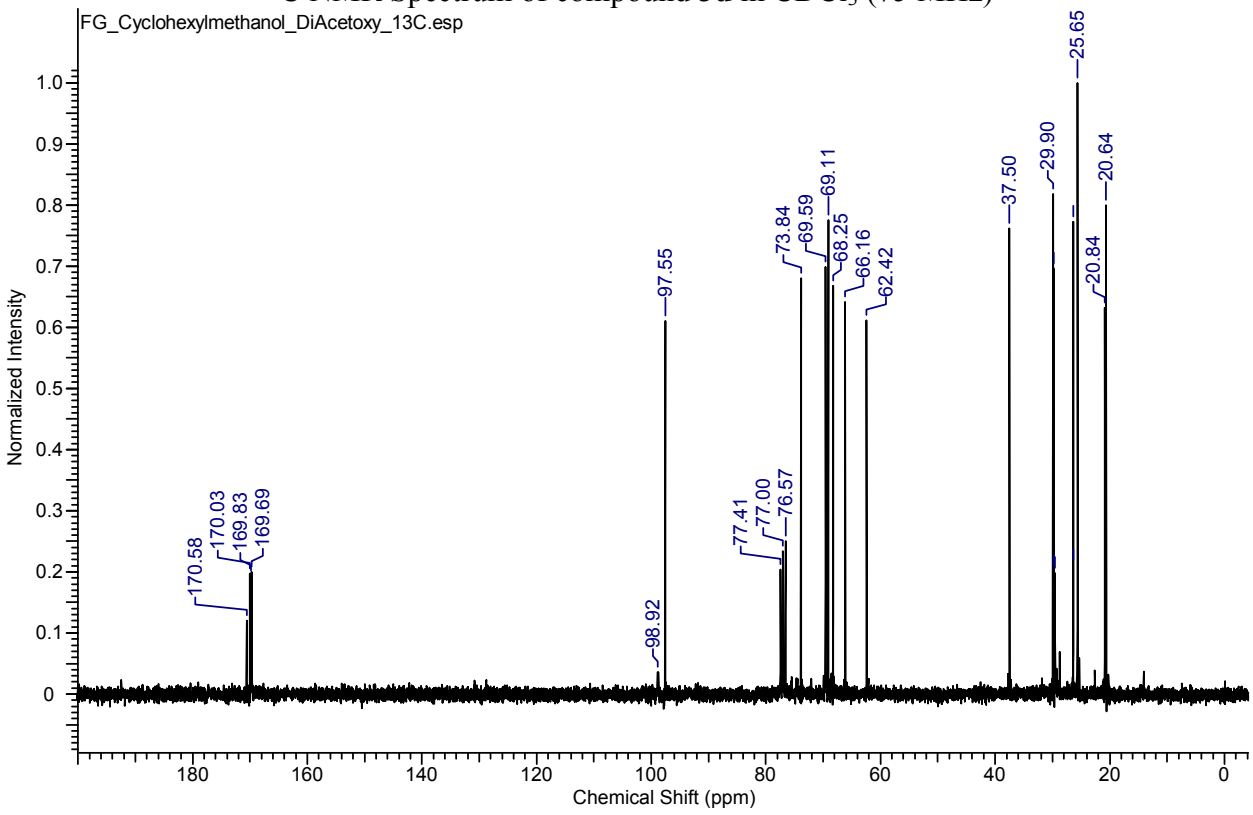
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
420.18804	13683607.0	100.00	420.18642	1.62	4.5	$C_{18}H_{30}O_{10}N$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{18}H_{30}NO_{10}^+$: 420.18642; found: 420.18789.

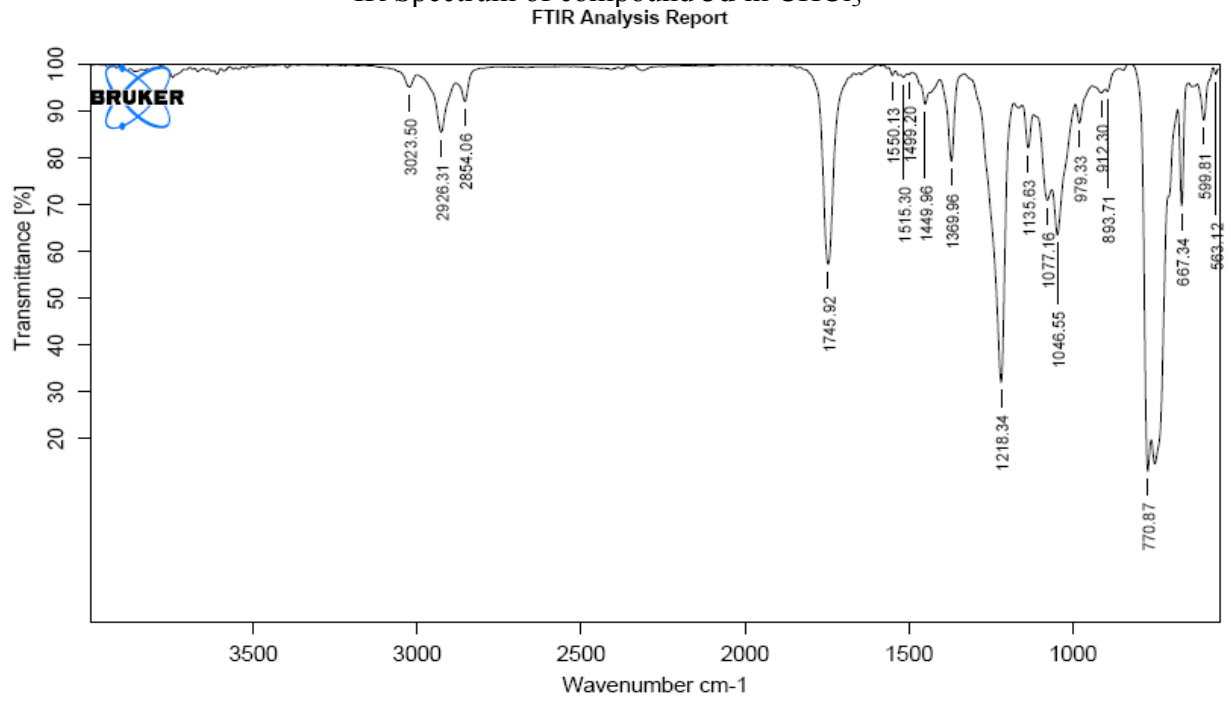
^{1}H NMR Spectrum of compound **3d** in $CDCl_3$ (500 MHz)



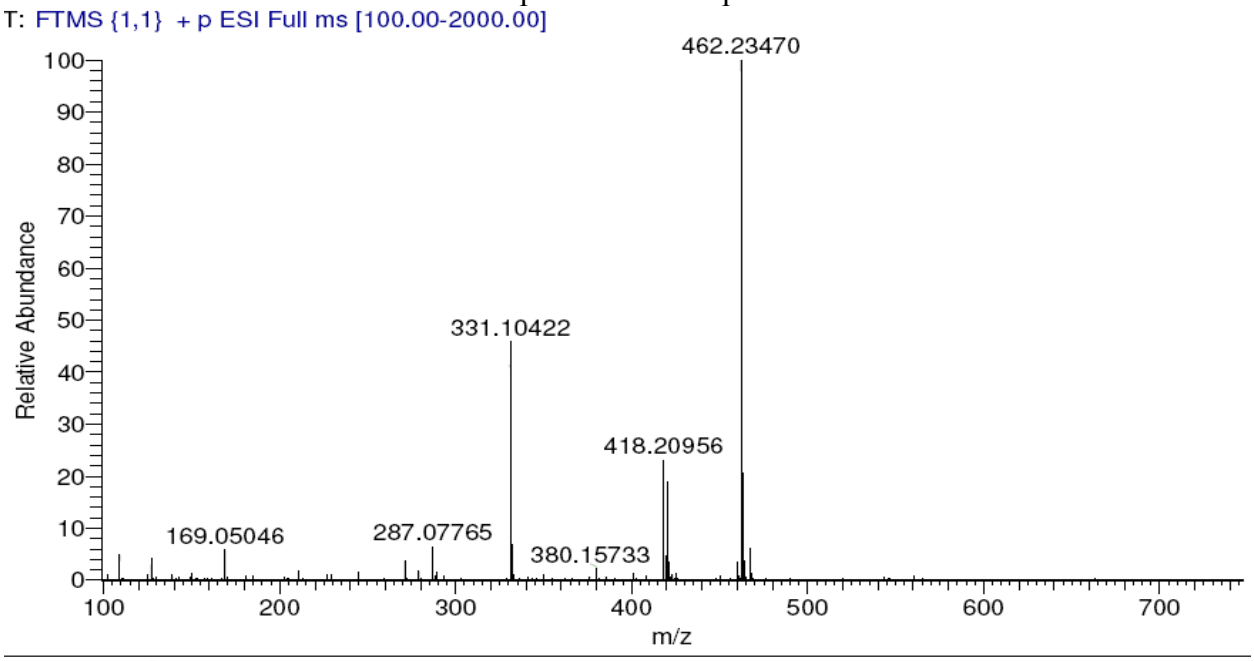
^{13}C NMR Spectrum of compound **3d** in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3d** in $CHCl_3$



HRMS Spectrum of compound **3d**

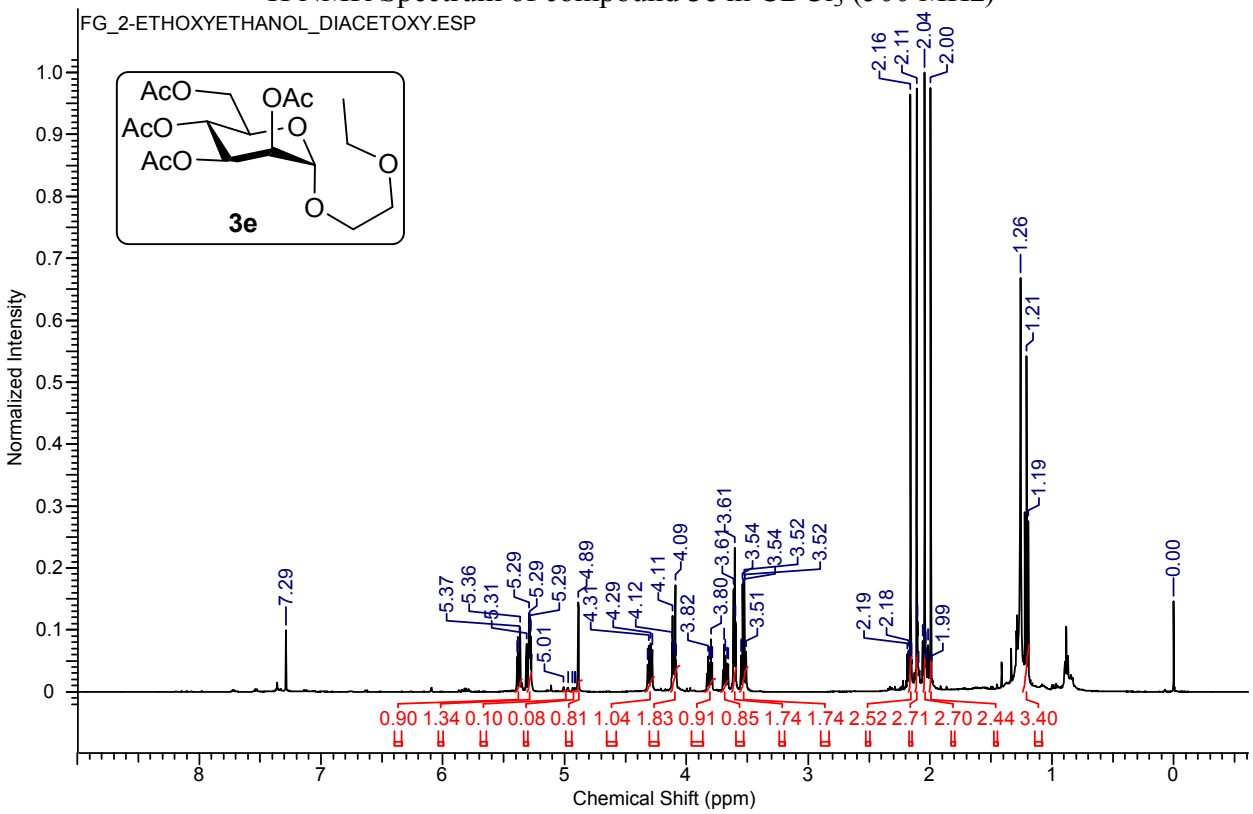


PRK-CH-30B#8-30 RT: 0.03-0.11 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]

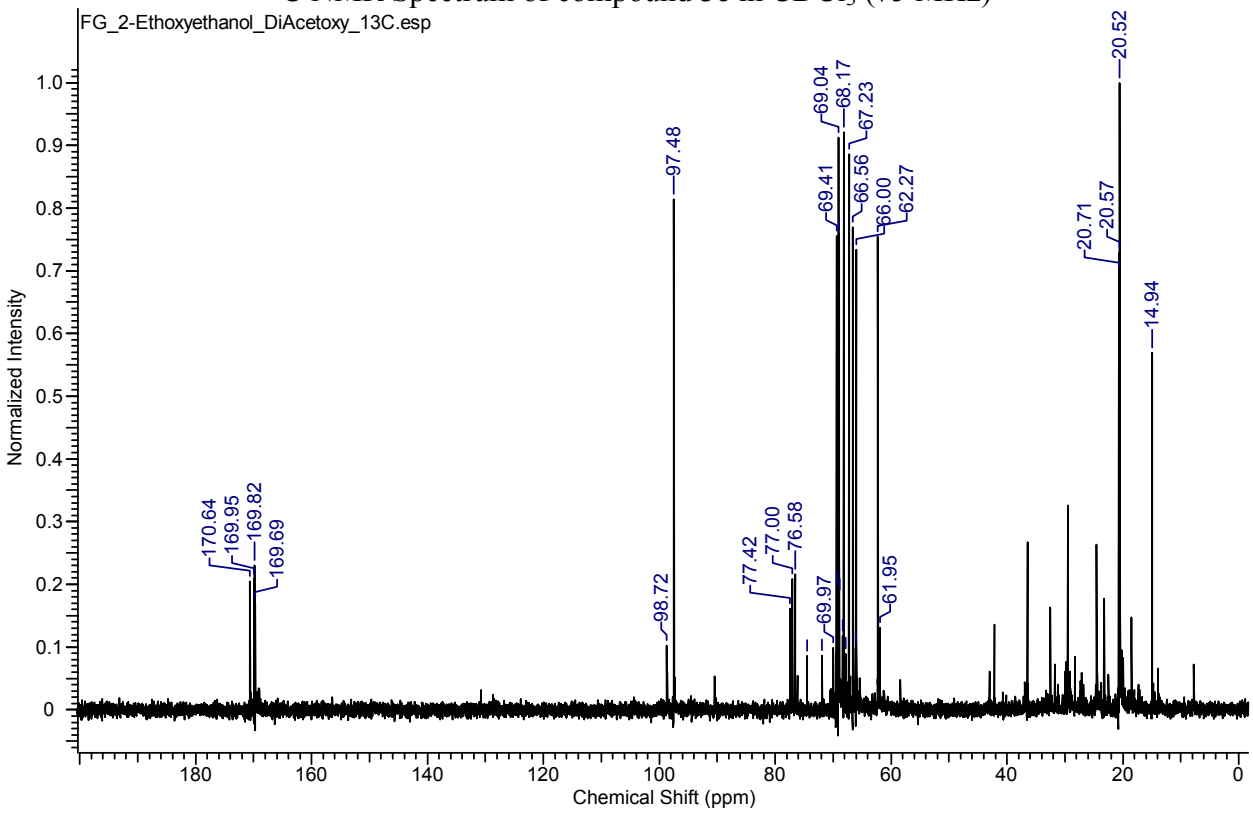
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
462.23470	33327008.0	100.00	462.23337	1.33	4.5	$C_{21}H_{36}O_{10}N$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{21}H_{36}NO_{10}^+$: 462.23337; found: 462.23470.

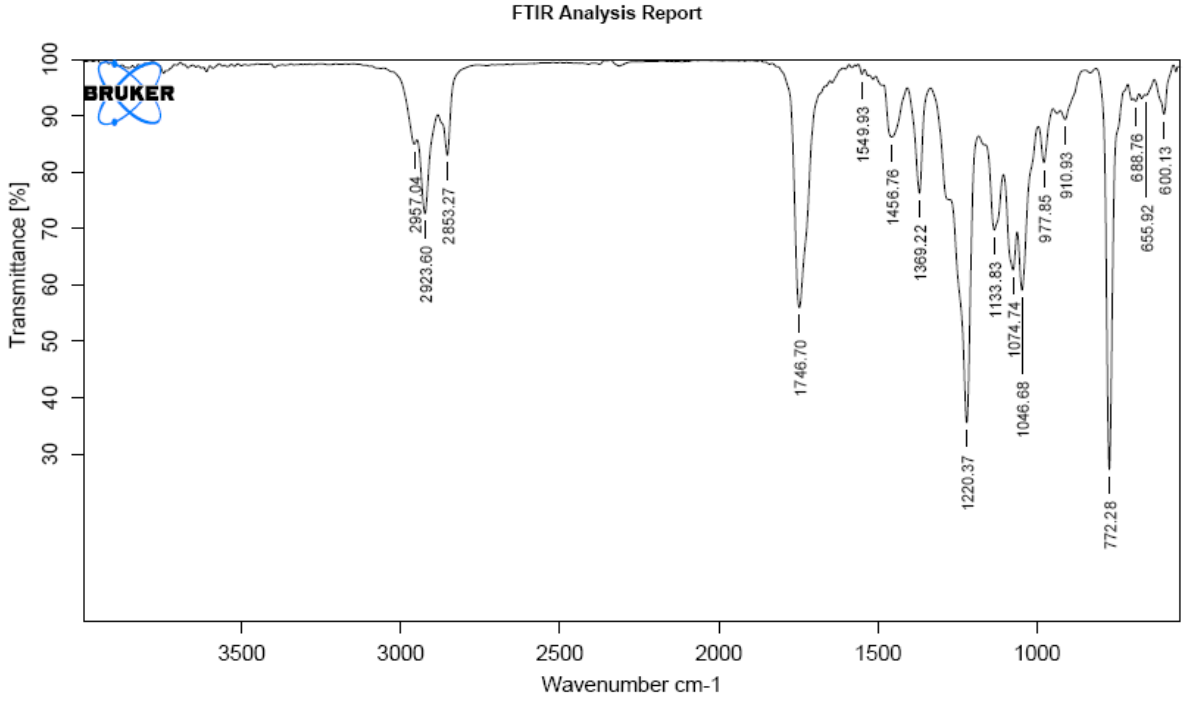
^{1}H NMR Spectrum of compound **3e** in $CDCl_3$ (500 MHz)



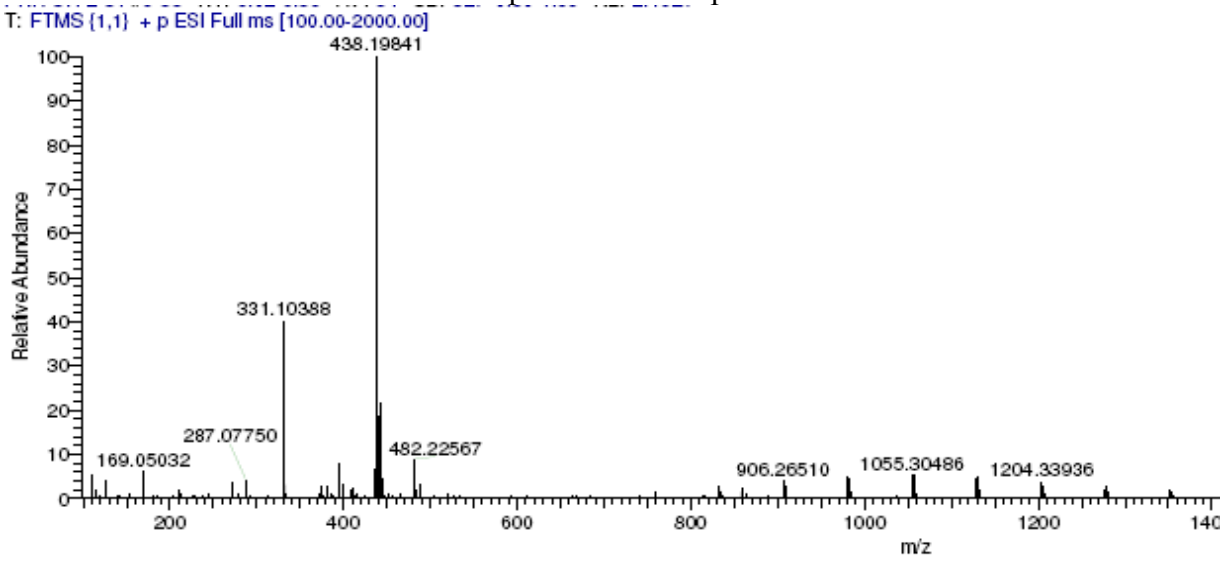
^{13}C NMR Spectrum of compound **3e** in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3e** in $CHCl_3$



HRMS Spectrum of compound **3e**

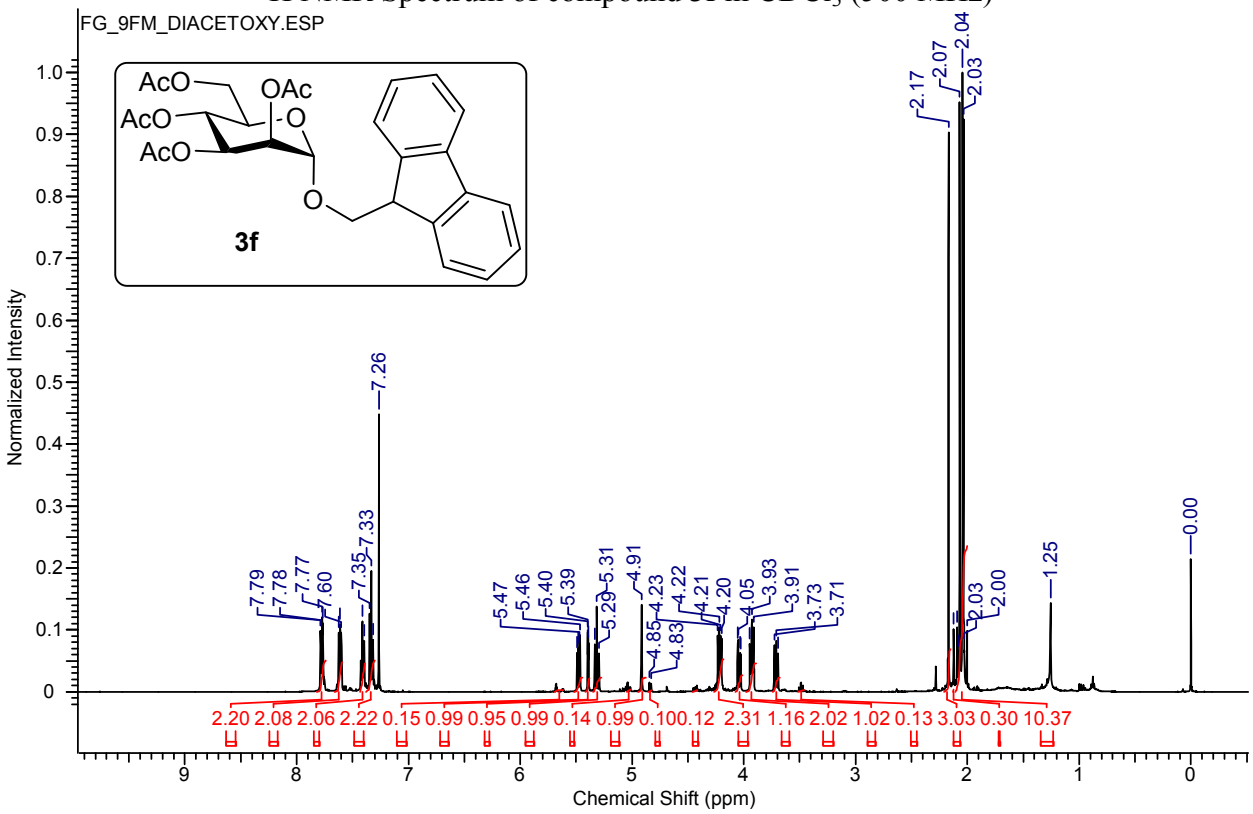


PRK-CH-2-31#8-30 RT: 0.03-0.11 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]

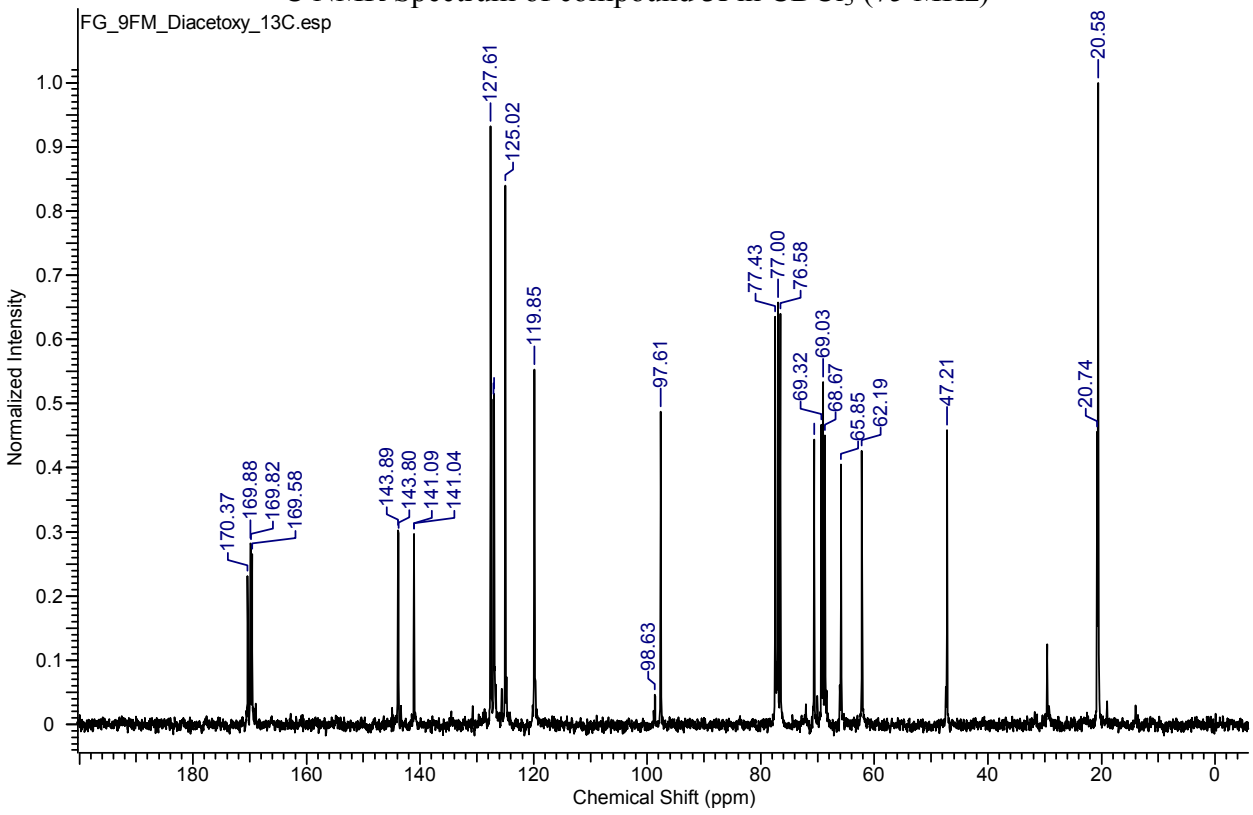
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
438.19834	51958316.0	100.00	438.19699	3.09	3.5	$C_{18}H_{32}O_{11}N$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{18}H_{32}NO_{11}^+$: 438.19699; found: 438.19841.

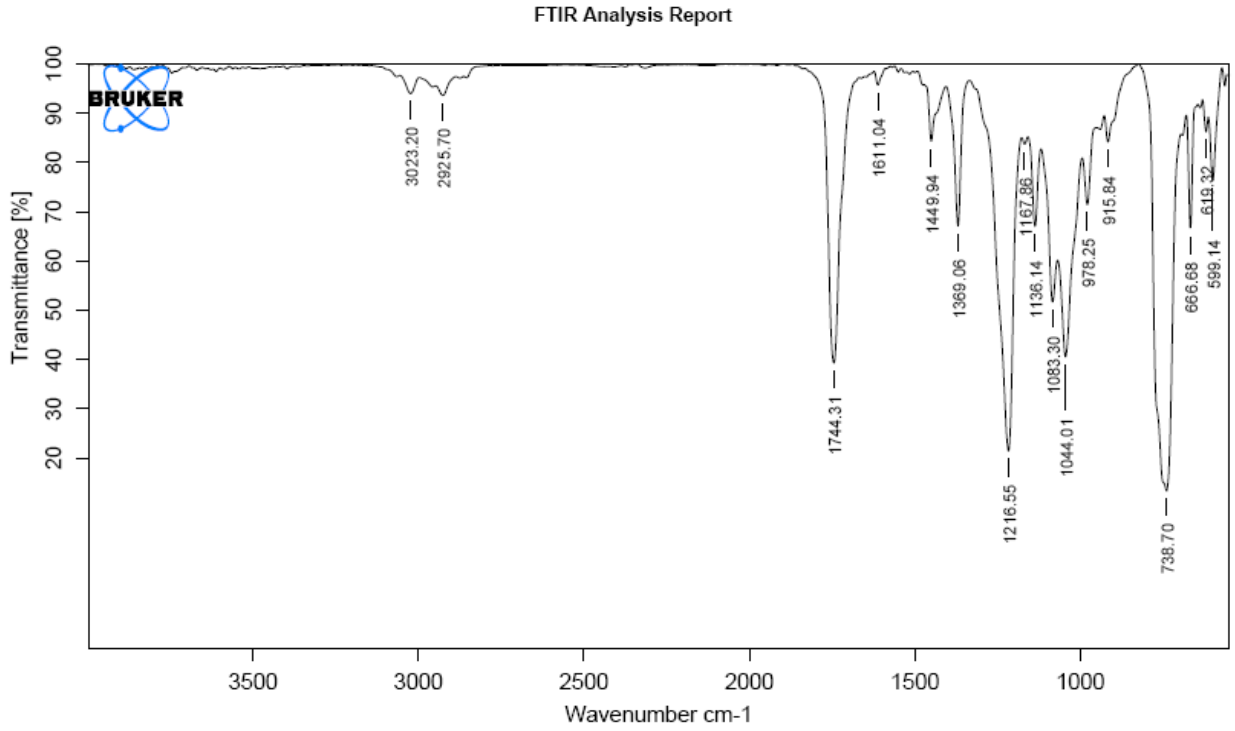
^{1}H NMR Spectrum of compound **3f** in $CDCl_3$ (500 MHz)



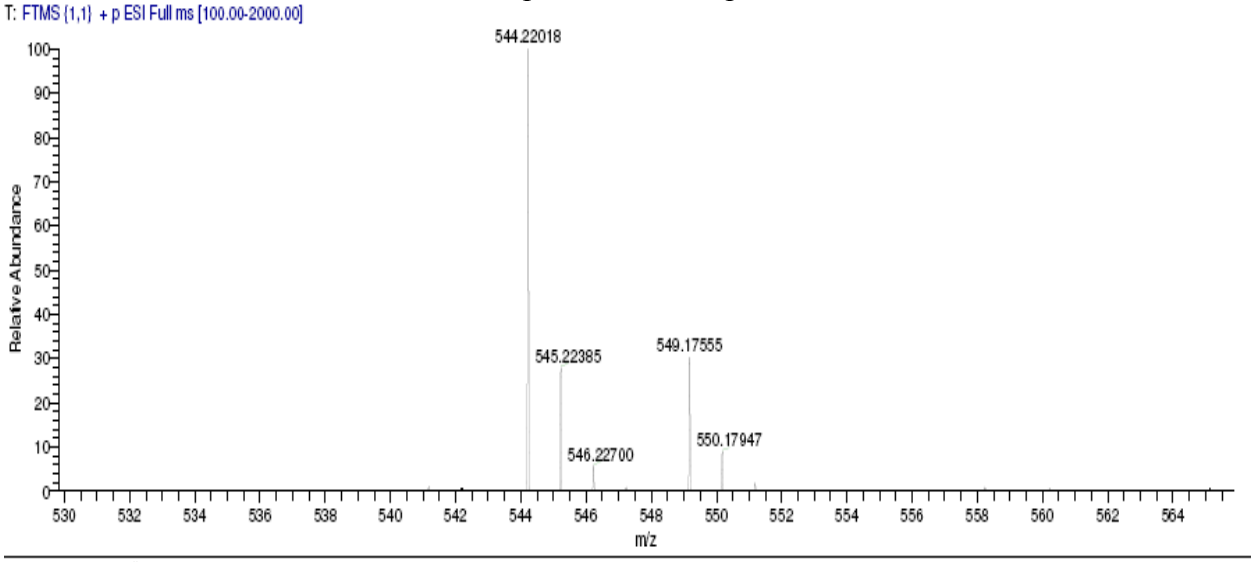
^{13}C NMR Spectrum of compound **3f** in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3f** in $CHCl_3$



HRMS Spectrum of compound **3f**

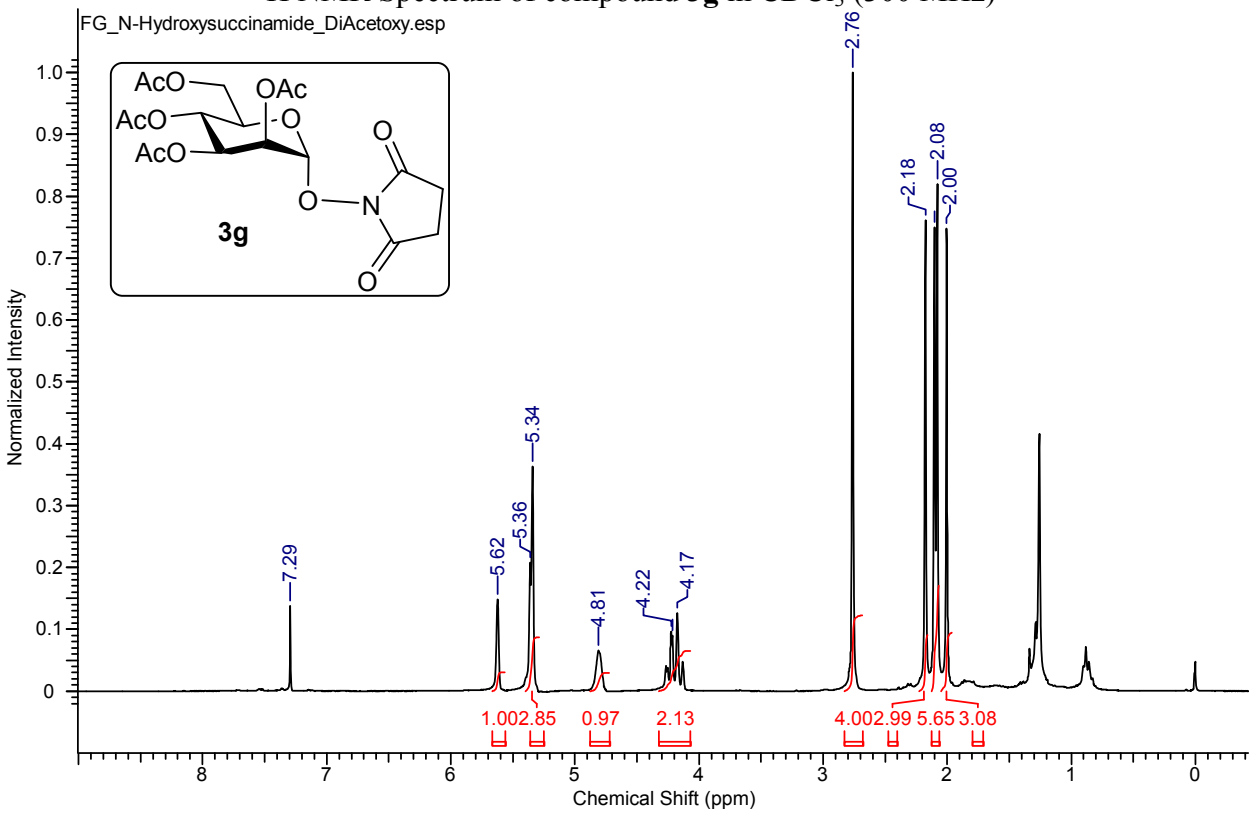


PRK-CH-2-38#8-30 RT: 0.04-0.11 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 547.47-553.47

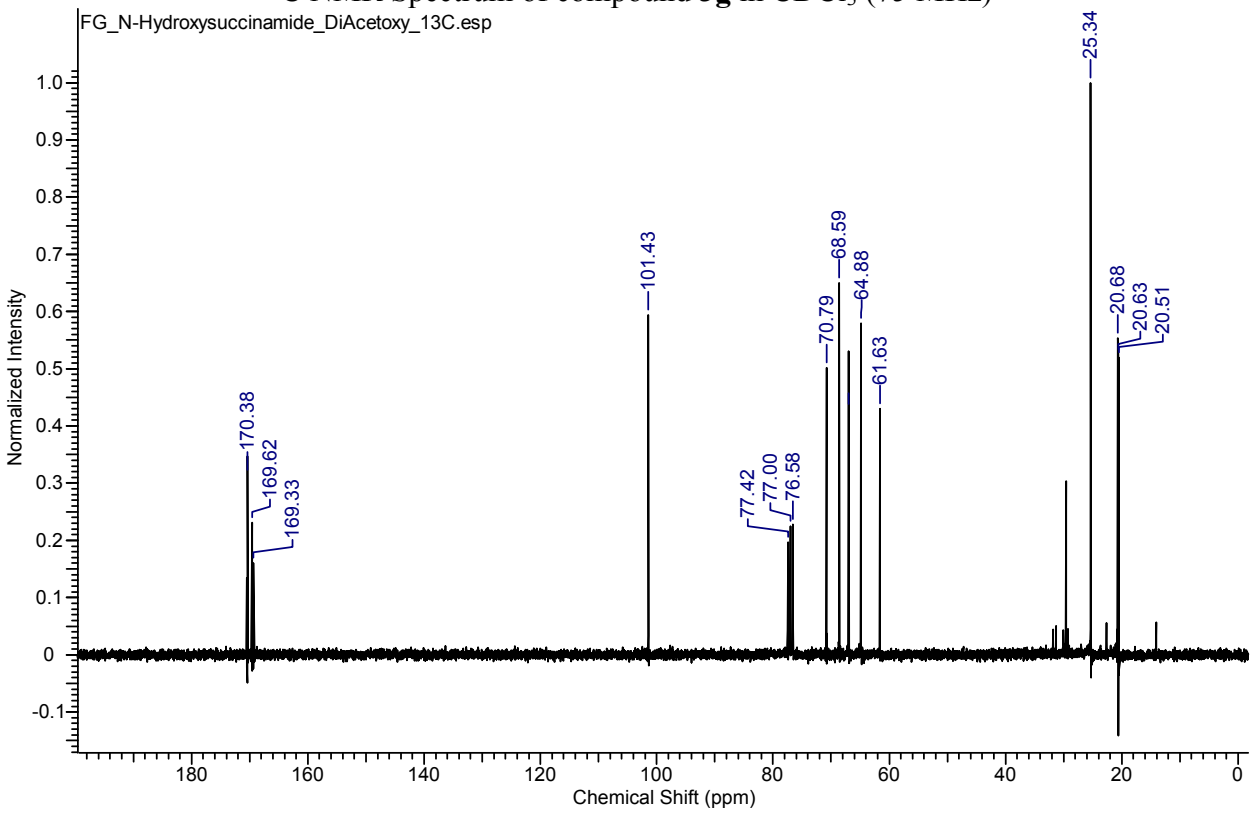
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
549.17534	17918188.0	100.00	549.17312	2.22	13.5	$C_{28}H_{30}O_{10}Na$

HRMS (ESI) *m/z* $[M + Na]^+$ calcd. for $C_{28}H_{30}O_{10}Na^+$: 549.17312; found: 549.17555.

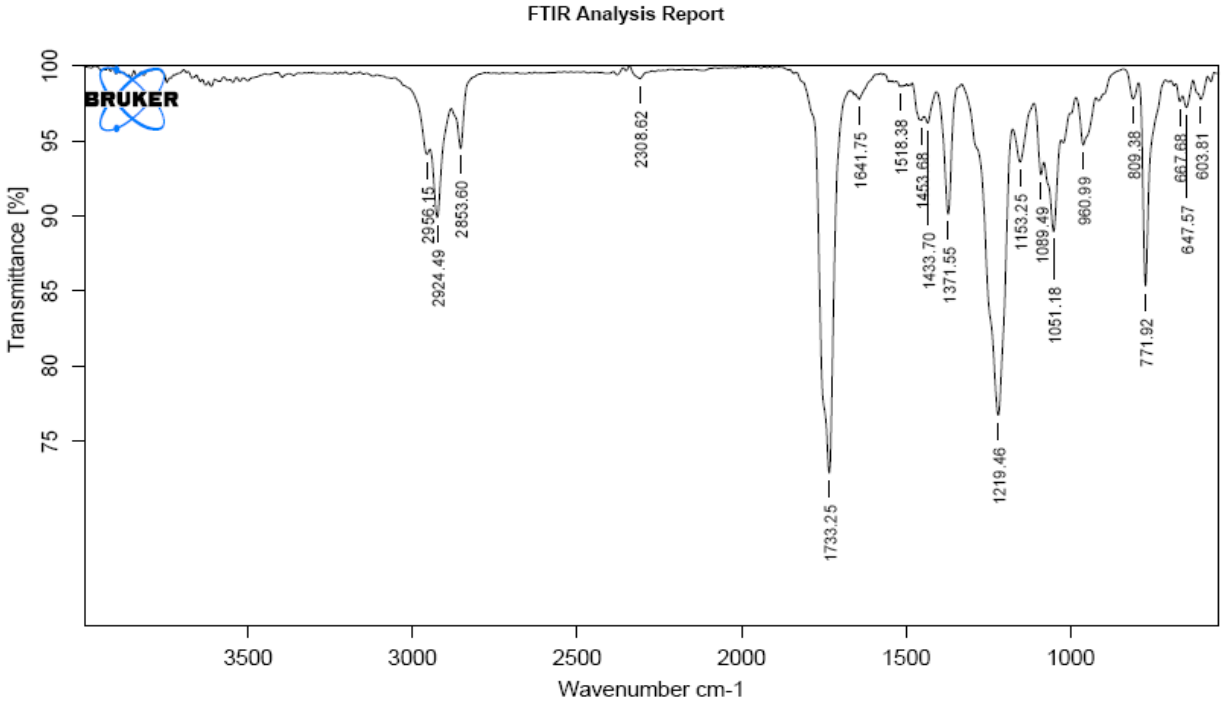
^{1}H NMR Spectrum of compound **3g** in $CDCl_3$ (300 MHz)



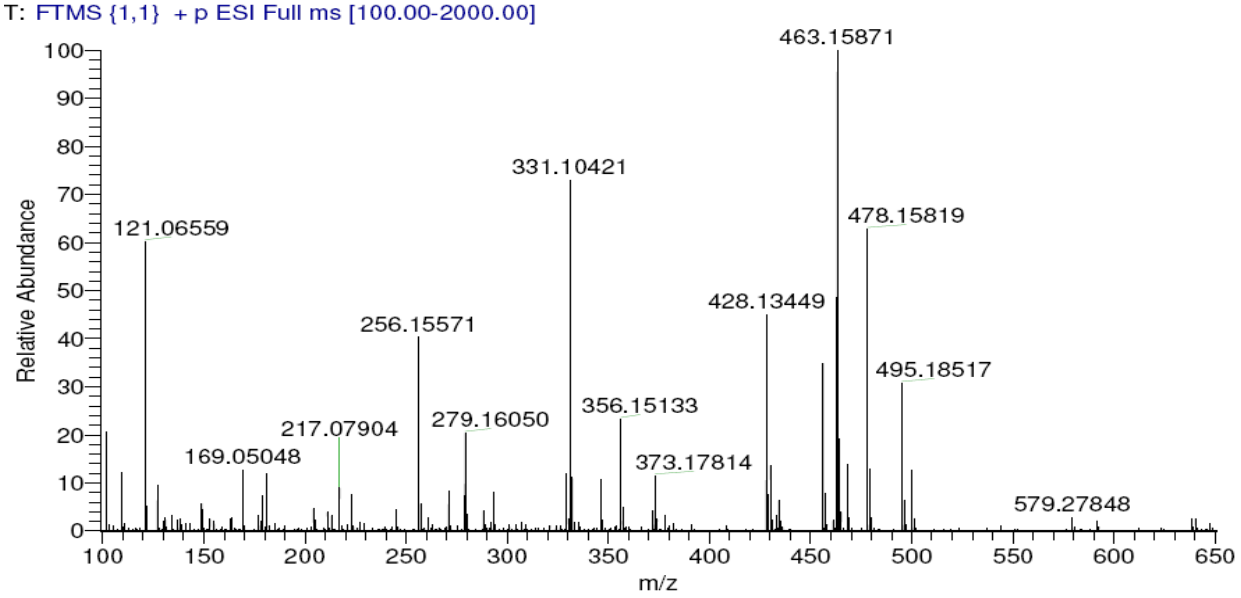
^{13}C NMR Spectrum of compound **3g** in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3g** in $CHCl_3$



HRMS Spectrum of compound **3g**

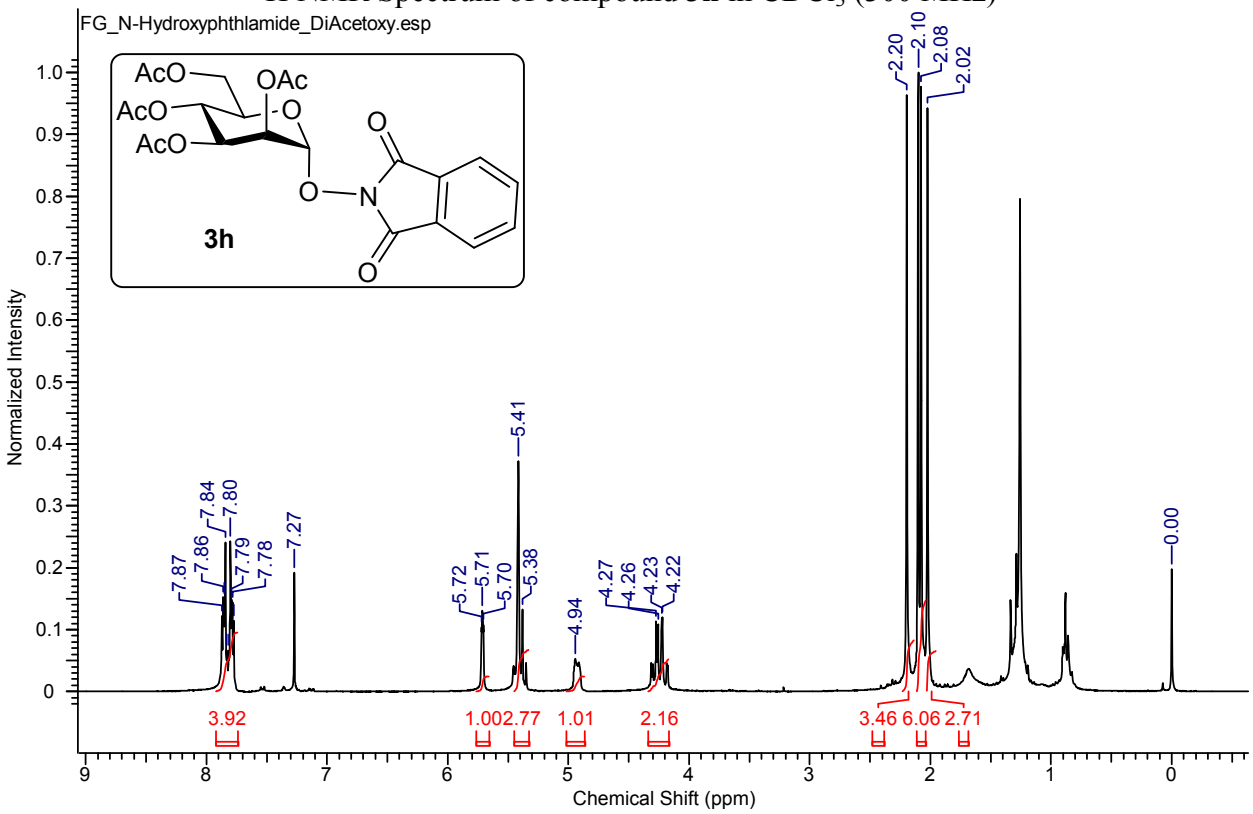


PRK-2-29C#8-30 RT: 0.03-0.11 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 415.92-435.70

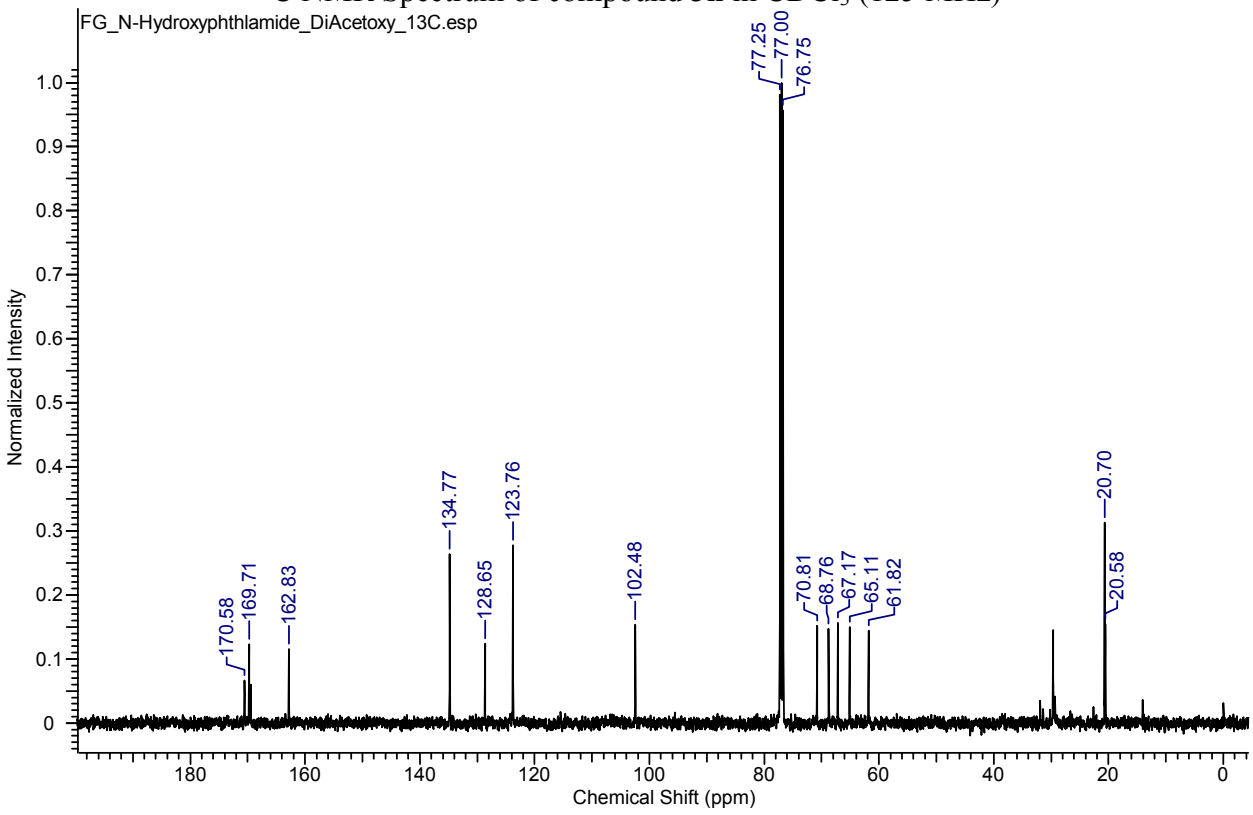
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
428.13453	1449608.5	100.00	428.13131	3.22	8.0	$C_{19}H_{24}O_{11}$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{18}H_{27}N_2O_{12}^+$: 463.15585; found: 463.15871.

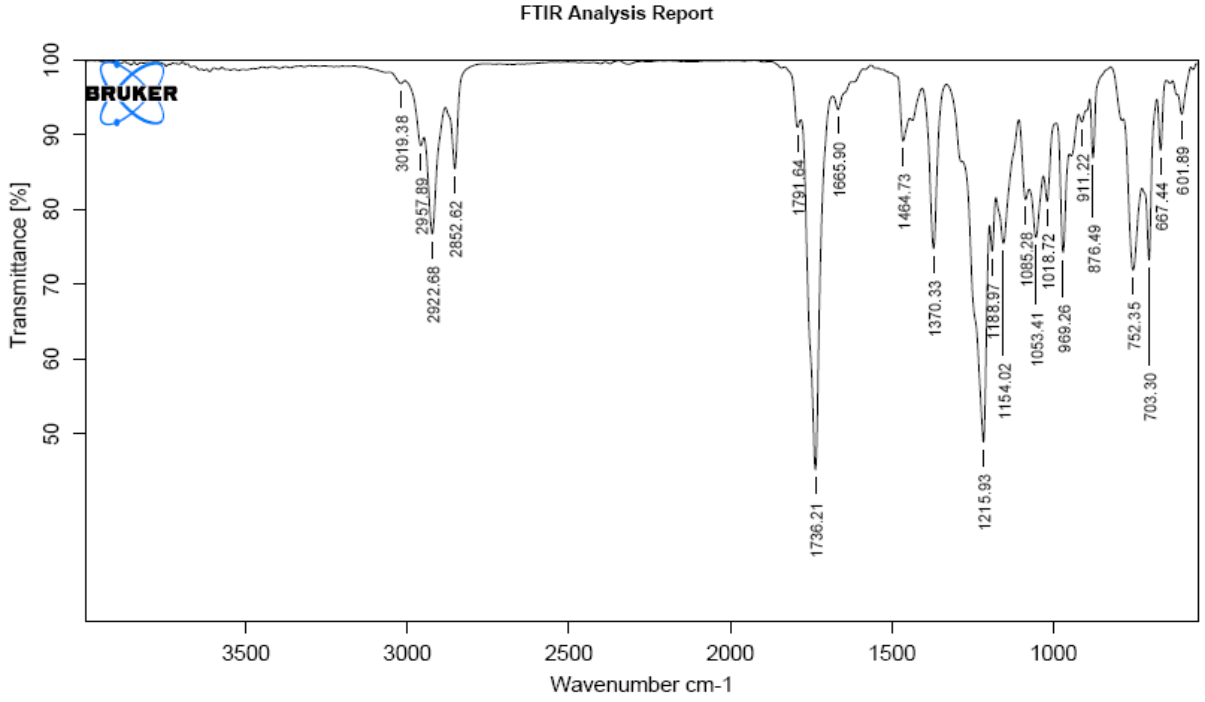
^{1}H NMR Spectrum of compound **3h** in $CDCl_3$ (300 MHz)



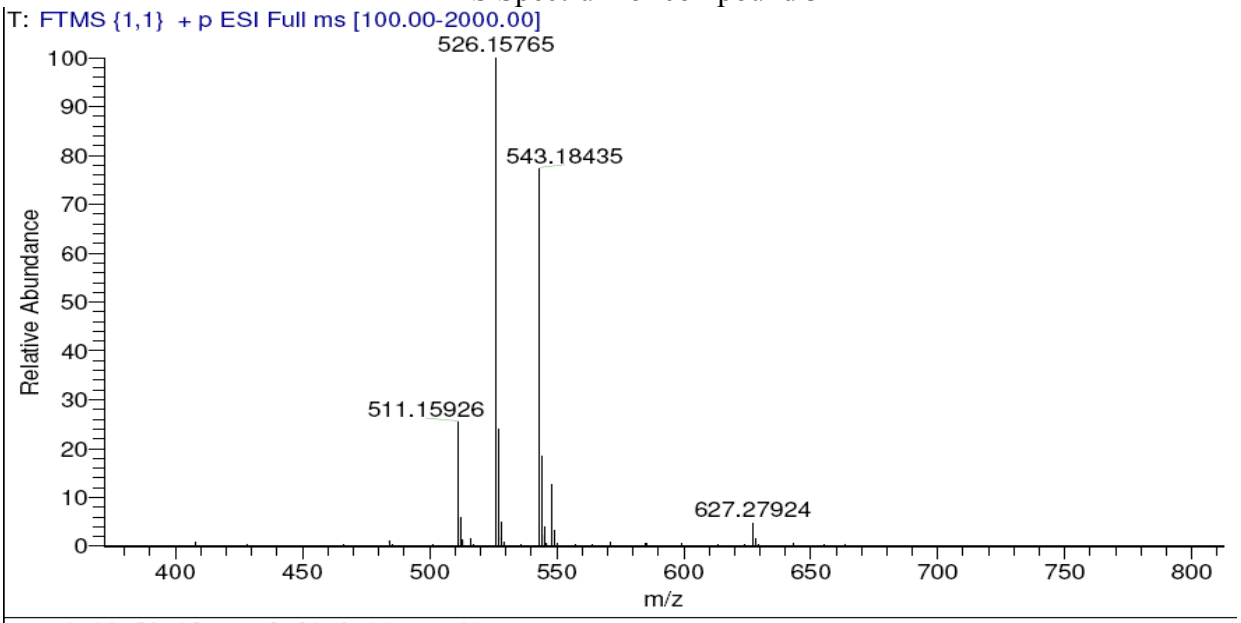
^{13}C NMR Spectrum of compound **3h** in $CDCl_3$ (125 MHz)



IR Spectrum of compound **3h** in $CHCl_3$



HRMS Spectrum of compound **3h**

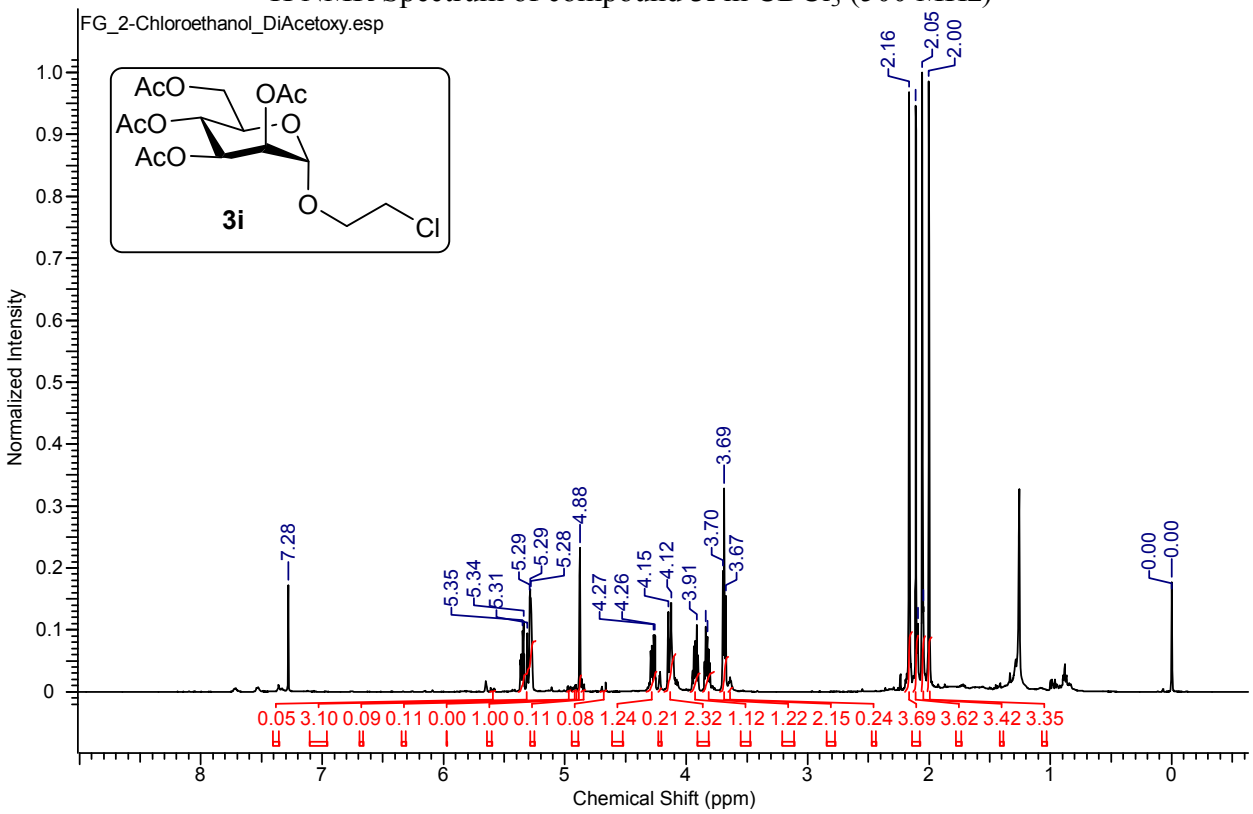


PRK-2-29D#8-30 RT: 0.03-0.11 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 522.02-532.93

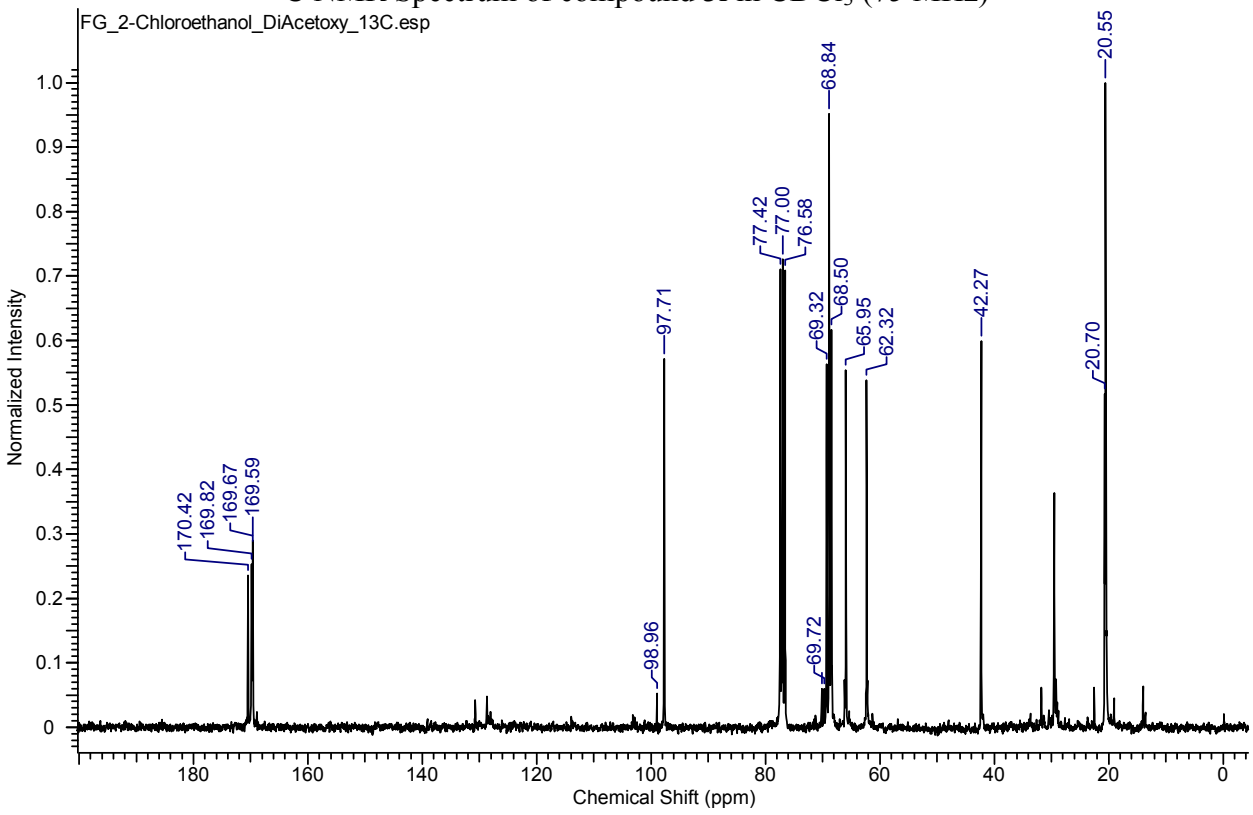
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
526.15762	27019928.0	100.00				

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{22}H_{27}N_2O_{12}^+$: 511.15585; found: 511.15926.

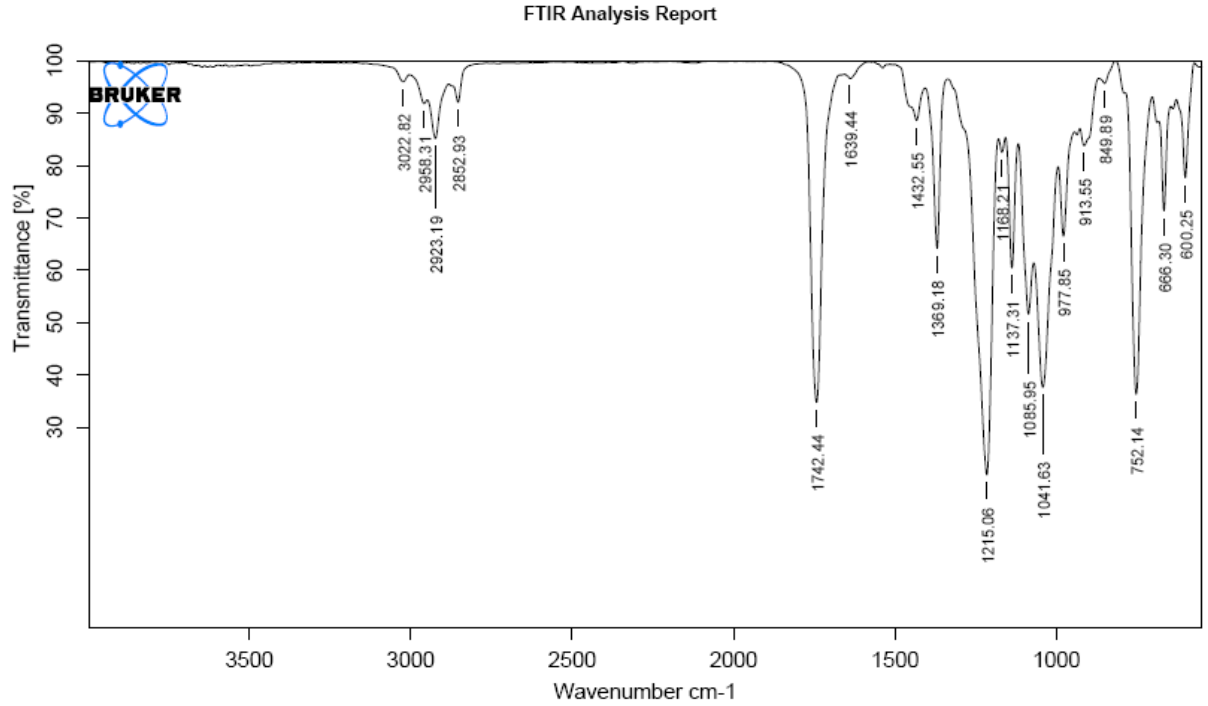
^{1}H NMR Spectrum of compound **3i** in $CDCl_3$ (500 MHz)



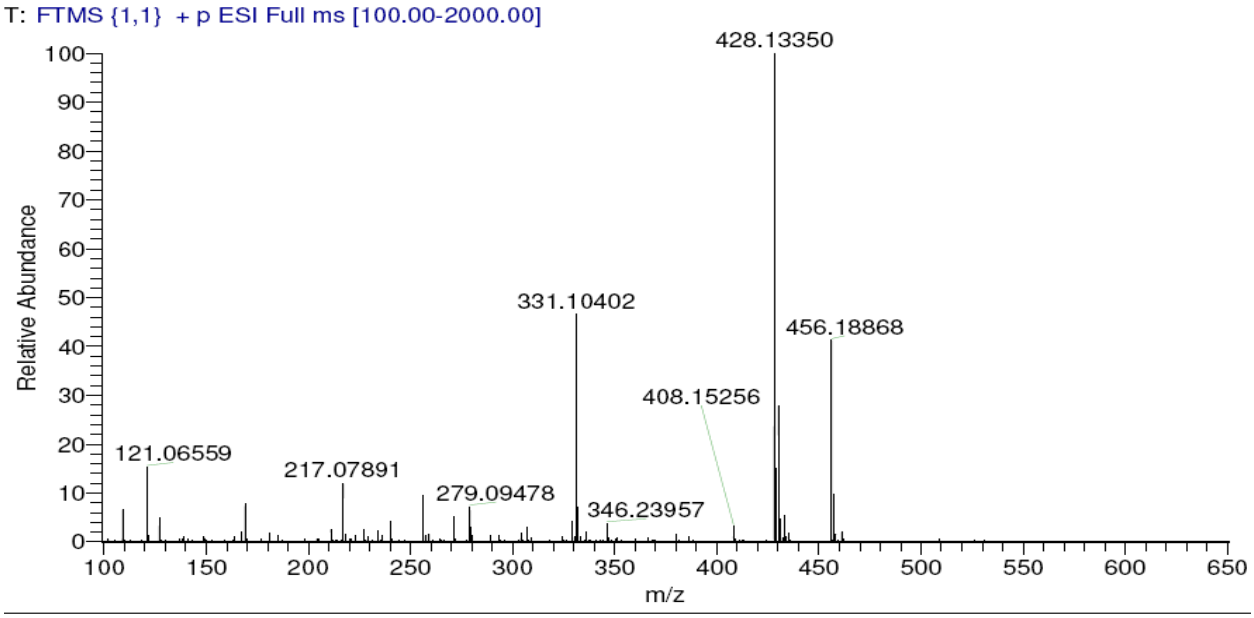
^{13}C NMR Spectrum of compound **3i** in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3i** in $CHCl_3$



HRMS Spectrum of compound **3i**

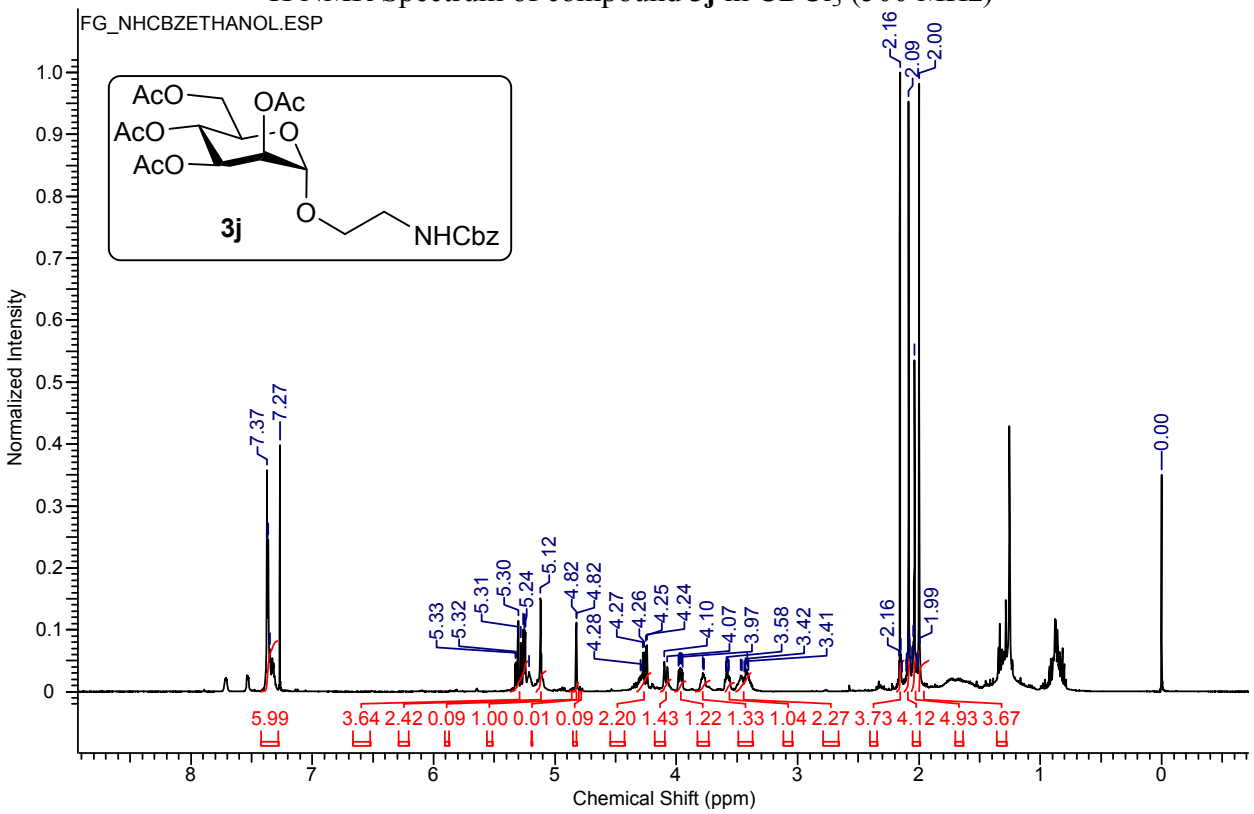


PRK-CH-2-29B#8-30 RT: 0.03-0.11 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 405.49-440.38

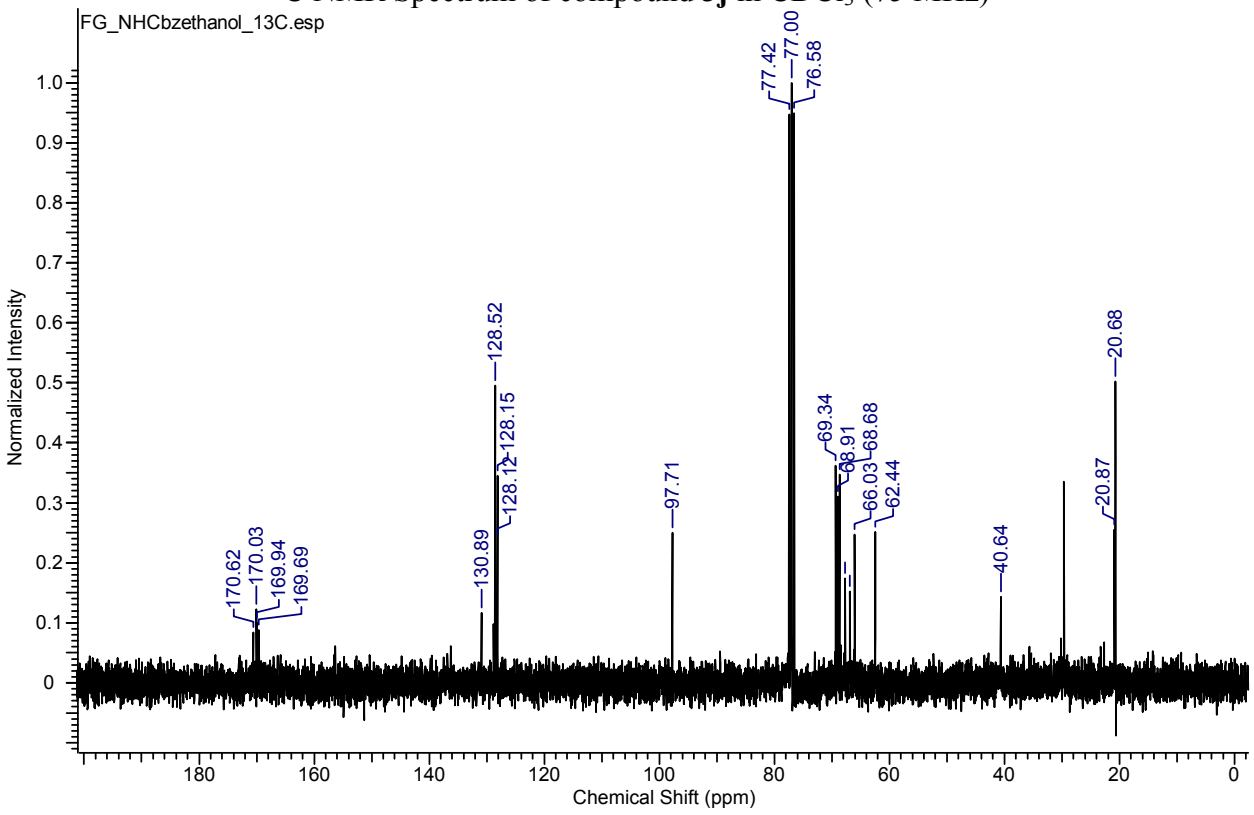
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
428.13393	4128260.3	100.00	428.13180	2.13	3.5	$C_{16}H_{27}O_{10}NCl$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{16}H_{27}ClNO_{10}^+$: 428.13180; found: 428.13350.

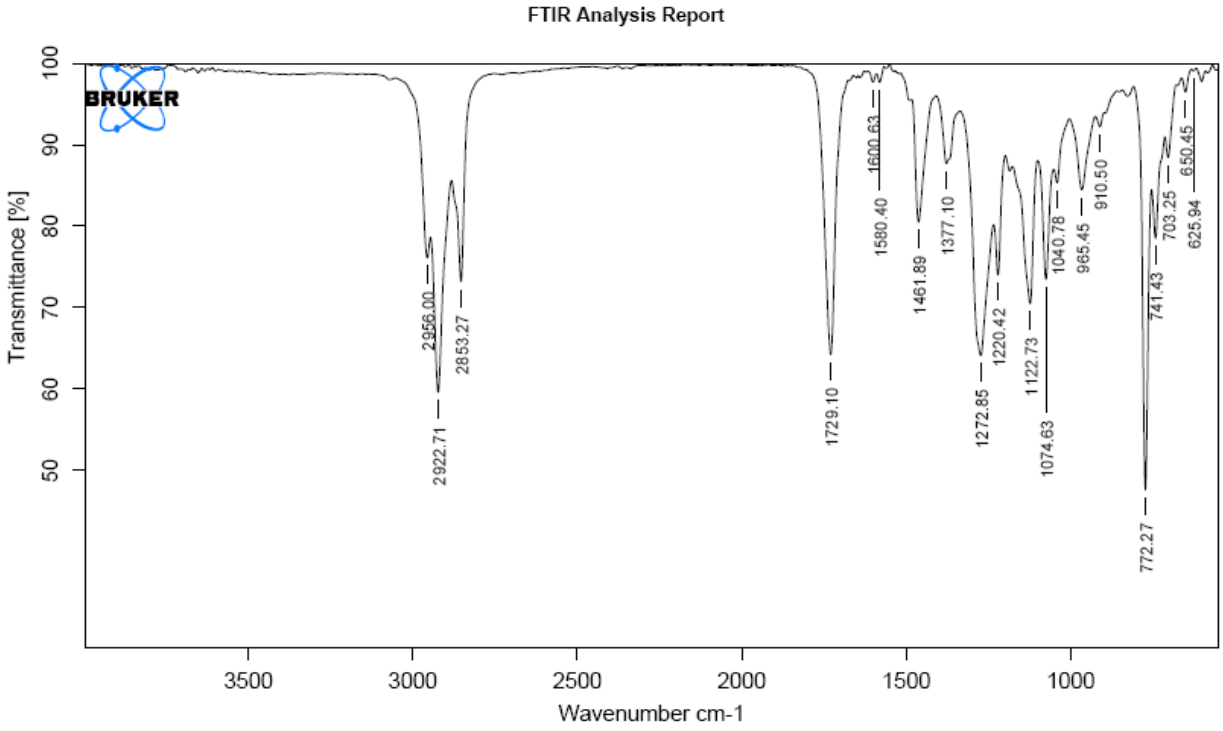
^{1}H NMR Spectrum of compound **3j** in $CDCl_3$ (500 MHz)



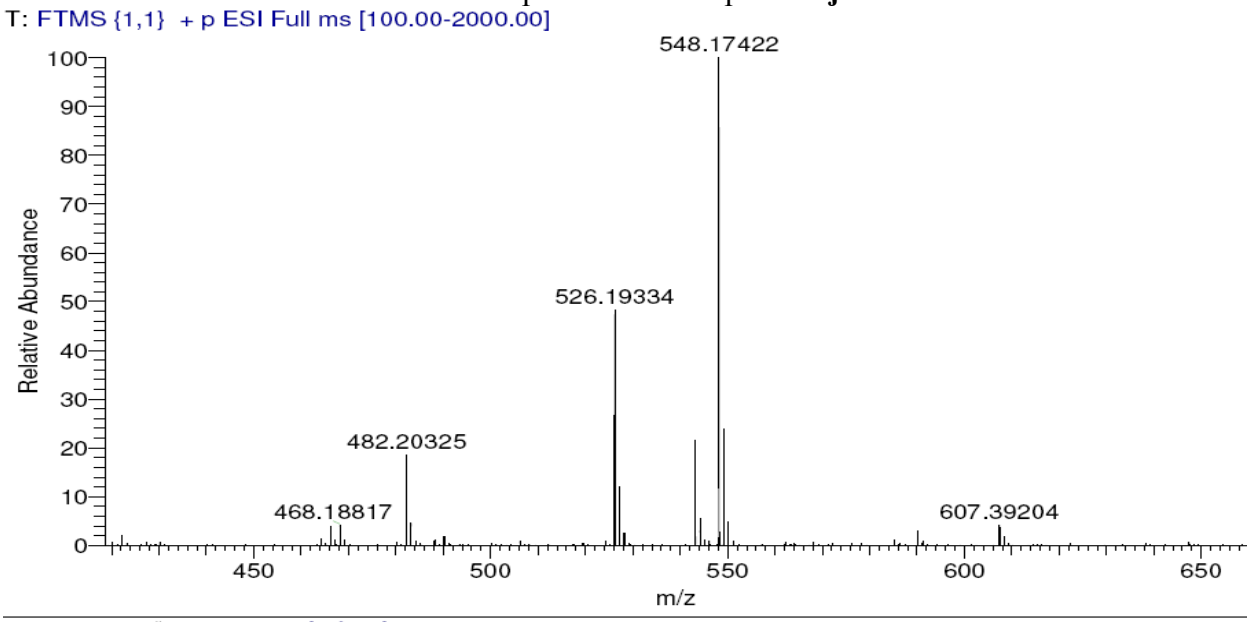
^{13}C NMR Spectrum of compound **3j** in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3j** in $CHCl_3$



HRMS Spectrum of compound **3j**

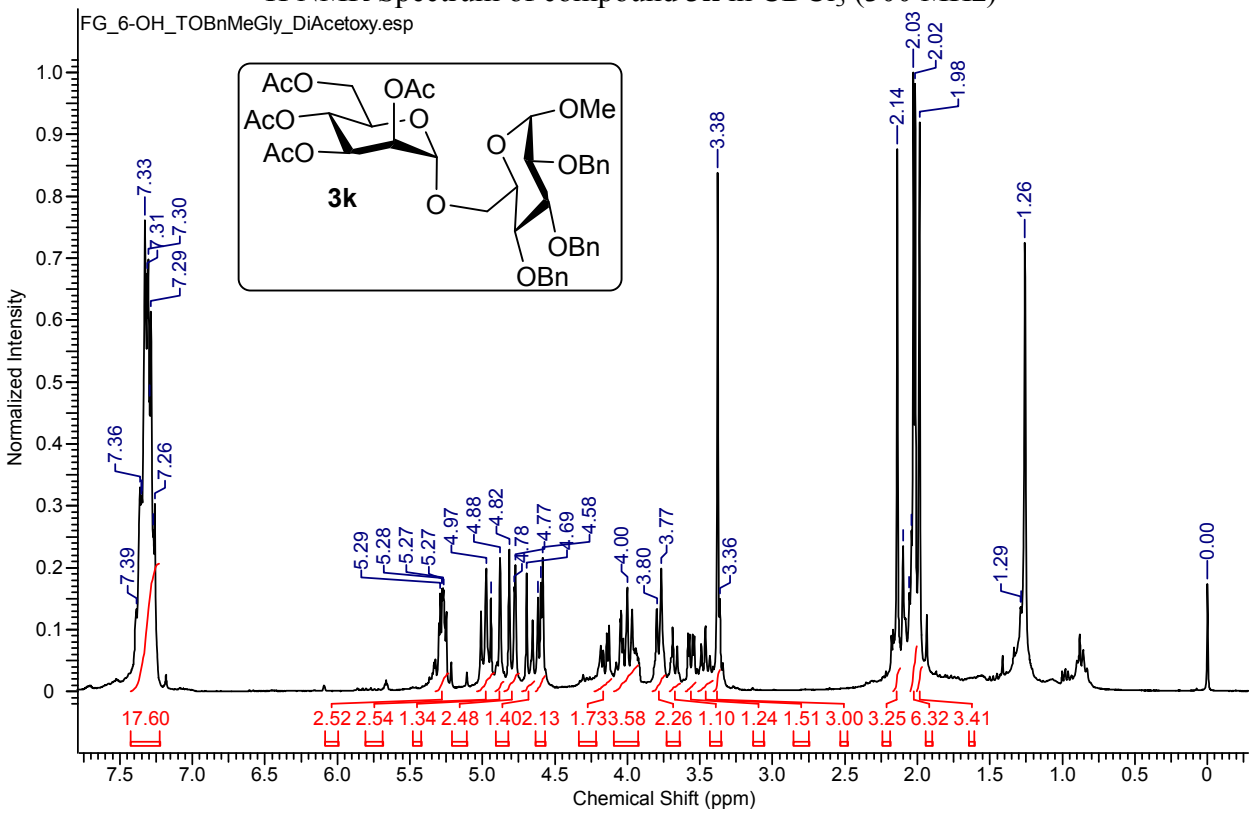


PRK-CH-292#13-35 RT: 0.05-0.12 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 547.43-552.27

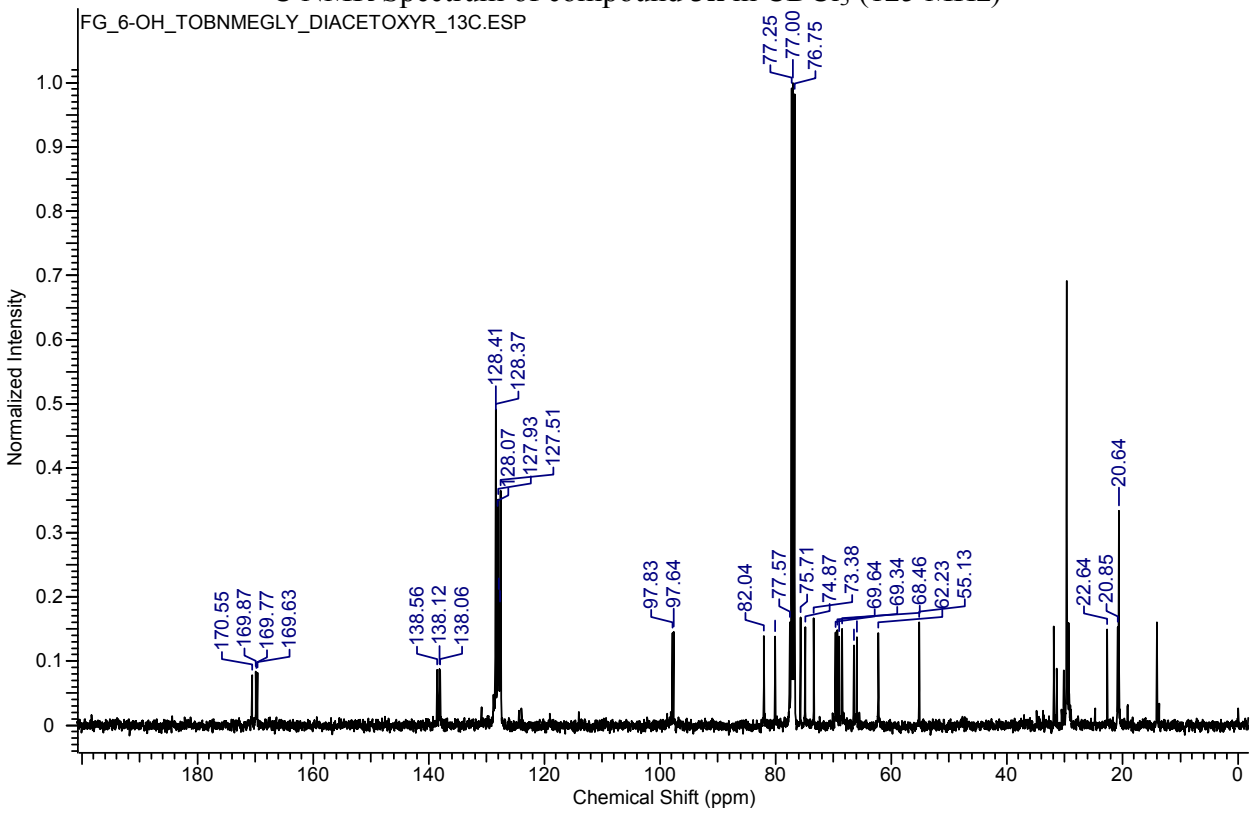
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
548.17461	3249907.5	100.00	548.17385	1.39	9.5	$C_{24}H_{31}O_{12}NNa$

HRMS (ESI) *m/z* $[M + Na]^+$ calcd. for $C_{24}H_{31}NO_{12}Na^+$: 548.17385; found: 548.17422.

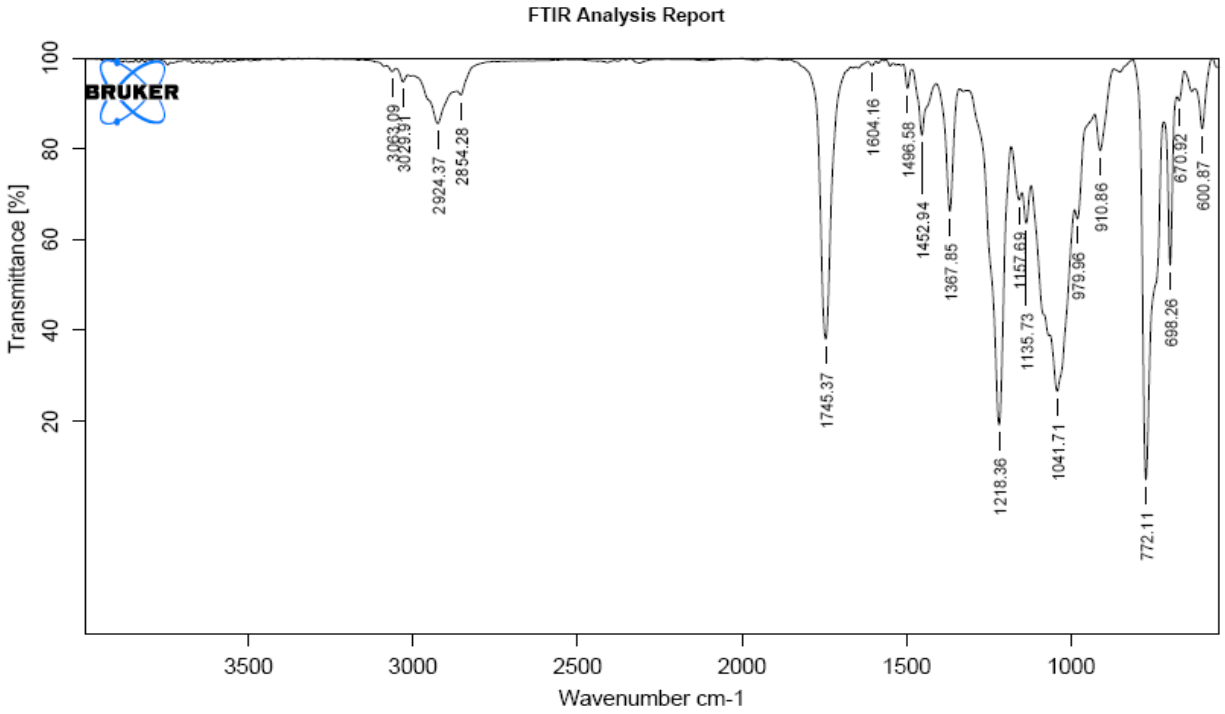
^{1}H NMR Spectrum of compound **3k** in $CDCl_3$ (300 MHz)



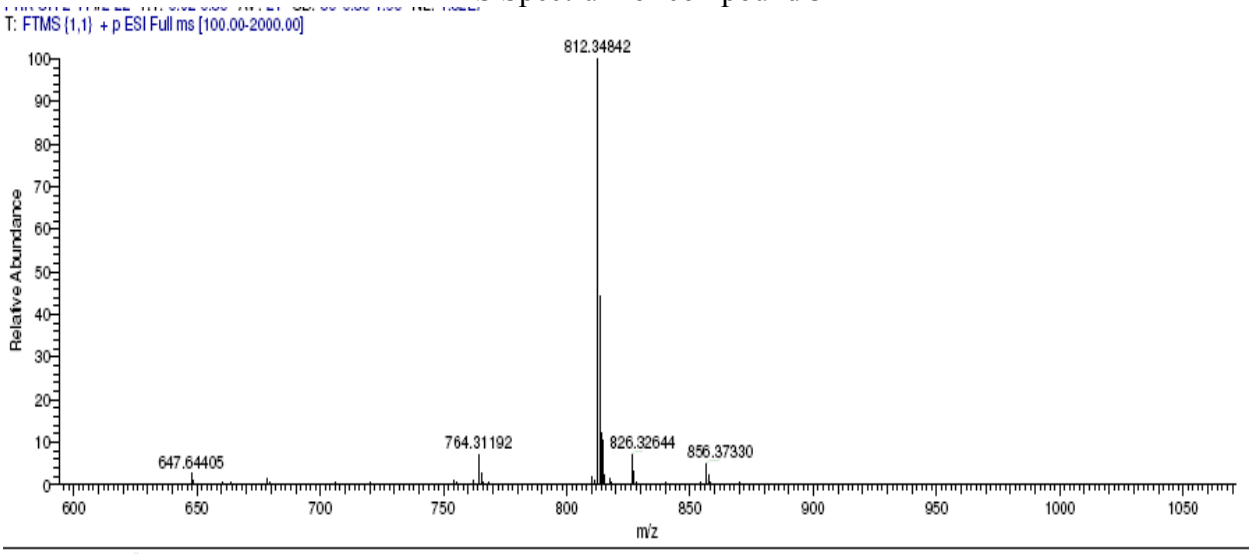
^{13}C NMR Spectrum of compound **3k** in $CDCl_3$ (125 MHz)



IR Spectrum of compound **3k** in $CHCl_3$



HRMS Spectrum of compound **3k**

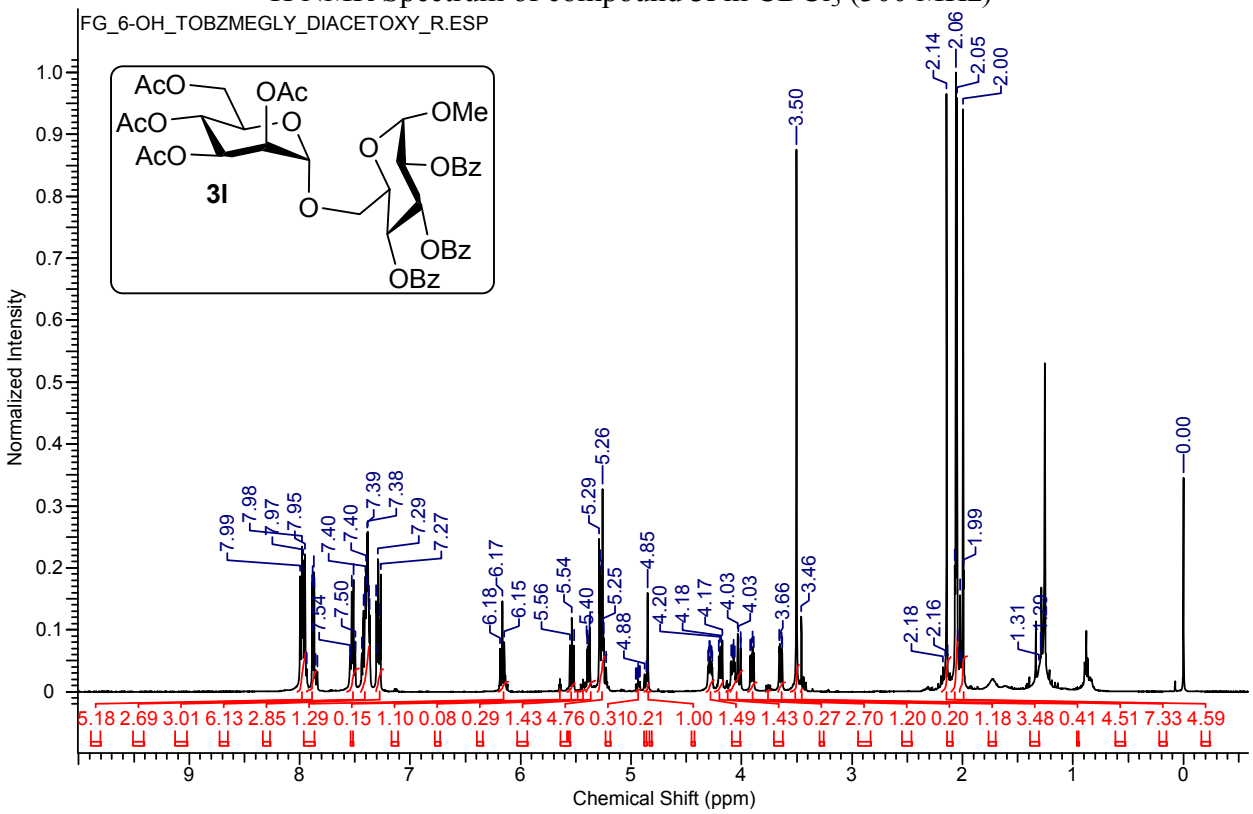


PRK-CH-2-44#8-30 RT: 0.10-0.40 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 793.13-832.73

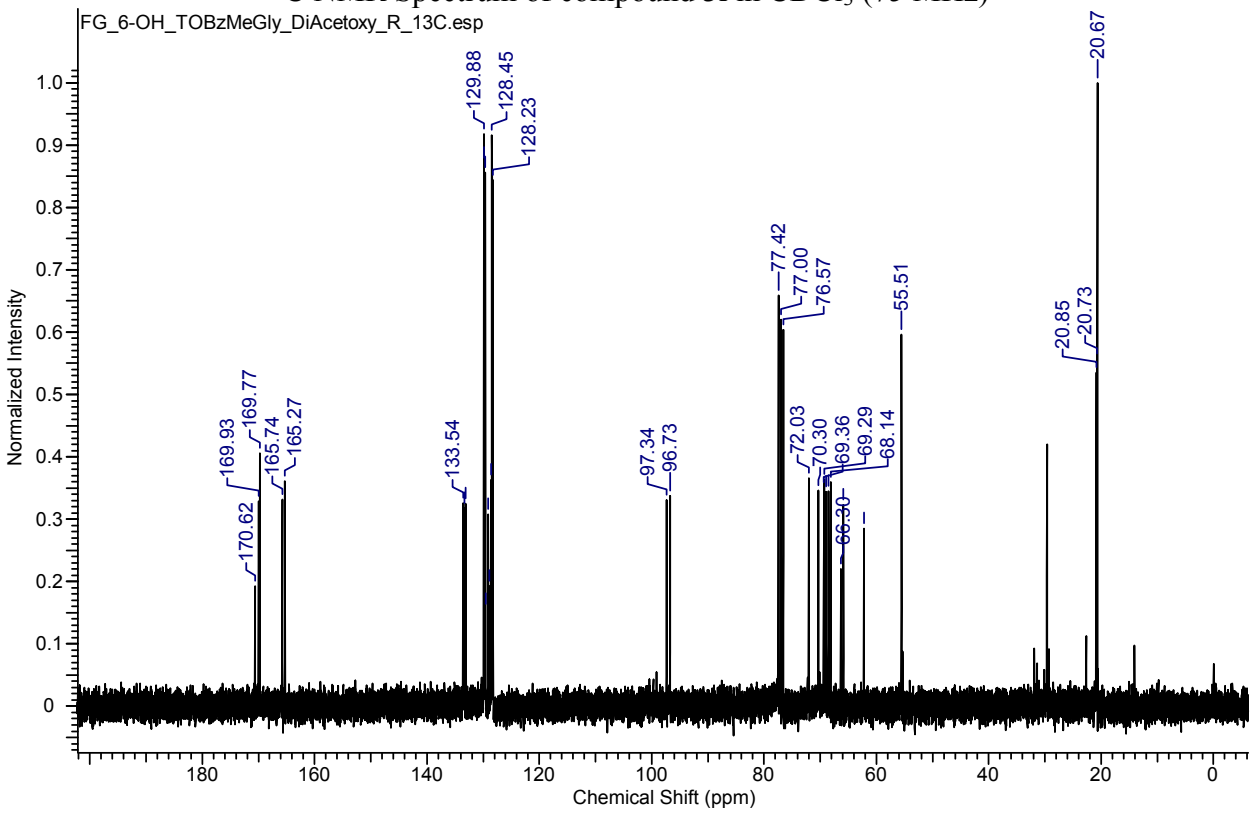
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
812.34835	36816216.0	100.00	812.34880	-0.44	16.5	$C_{42}H_{54}O_{15}N$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{42}H_{54}NO_{15}^+$: 812.34880; found: 812.34842.

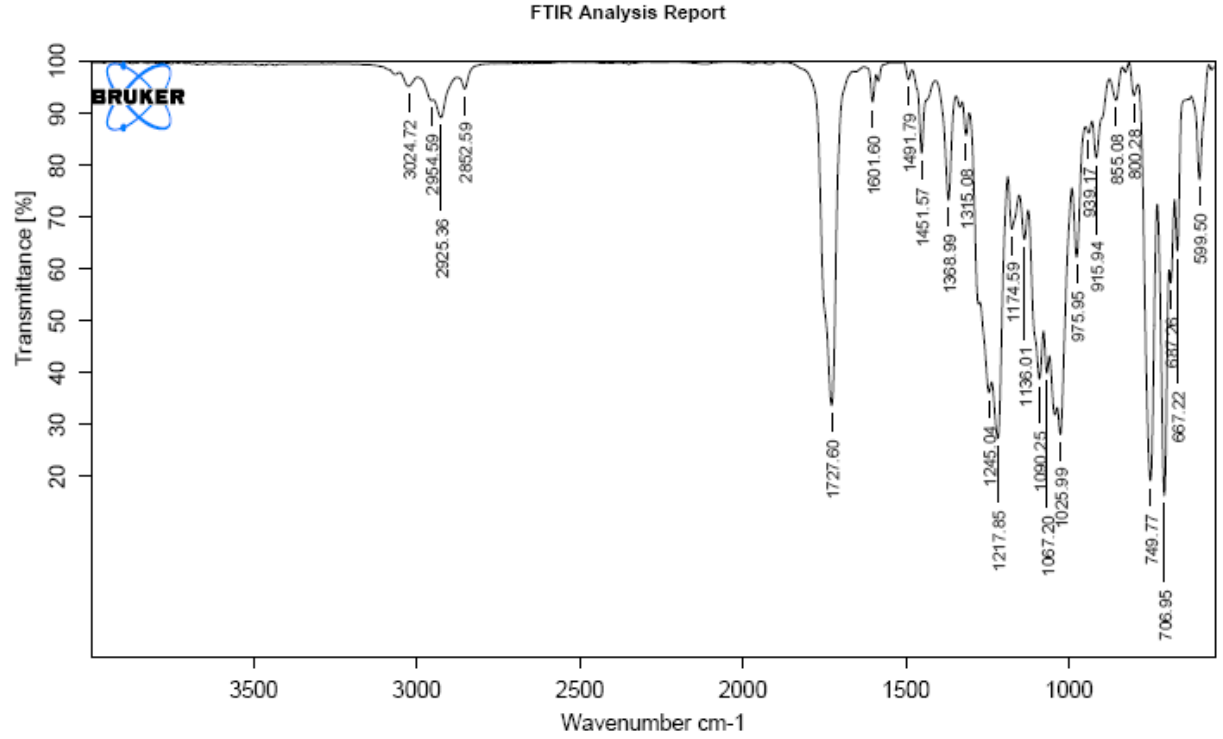
^{1}H NMR Spectrum of compound **3l** in $CDCl_3$ (300 MHz)



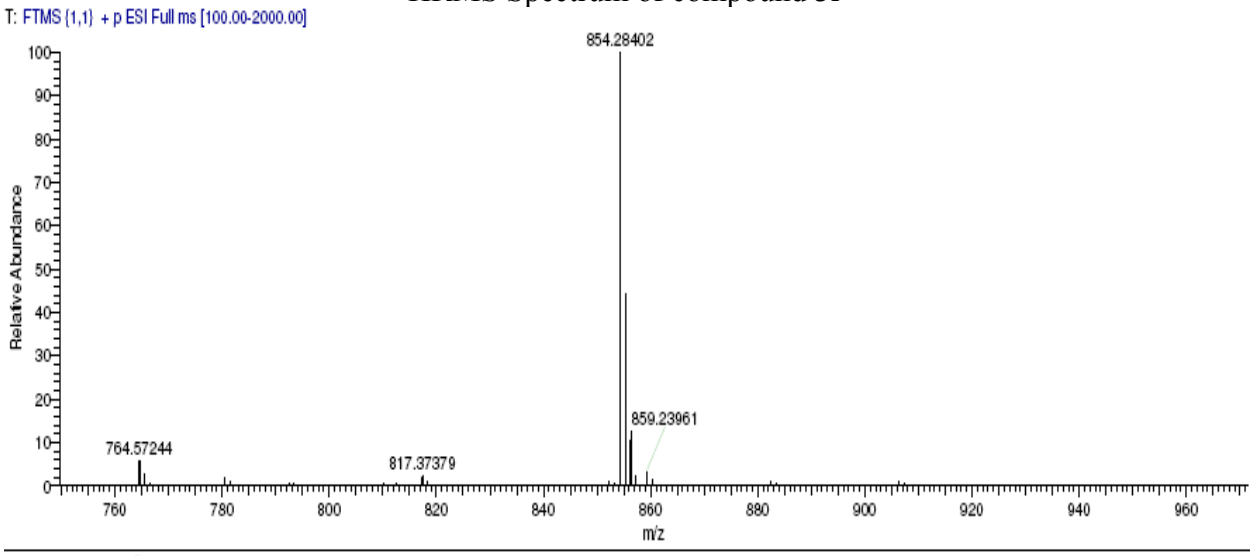
^{13}C NMR Spectrum of compound **3l** in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3l** in $CHCl_3$



HRMS Spectrum of compound **3l**

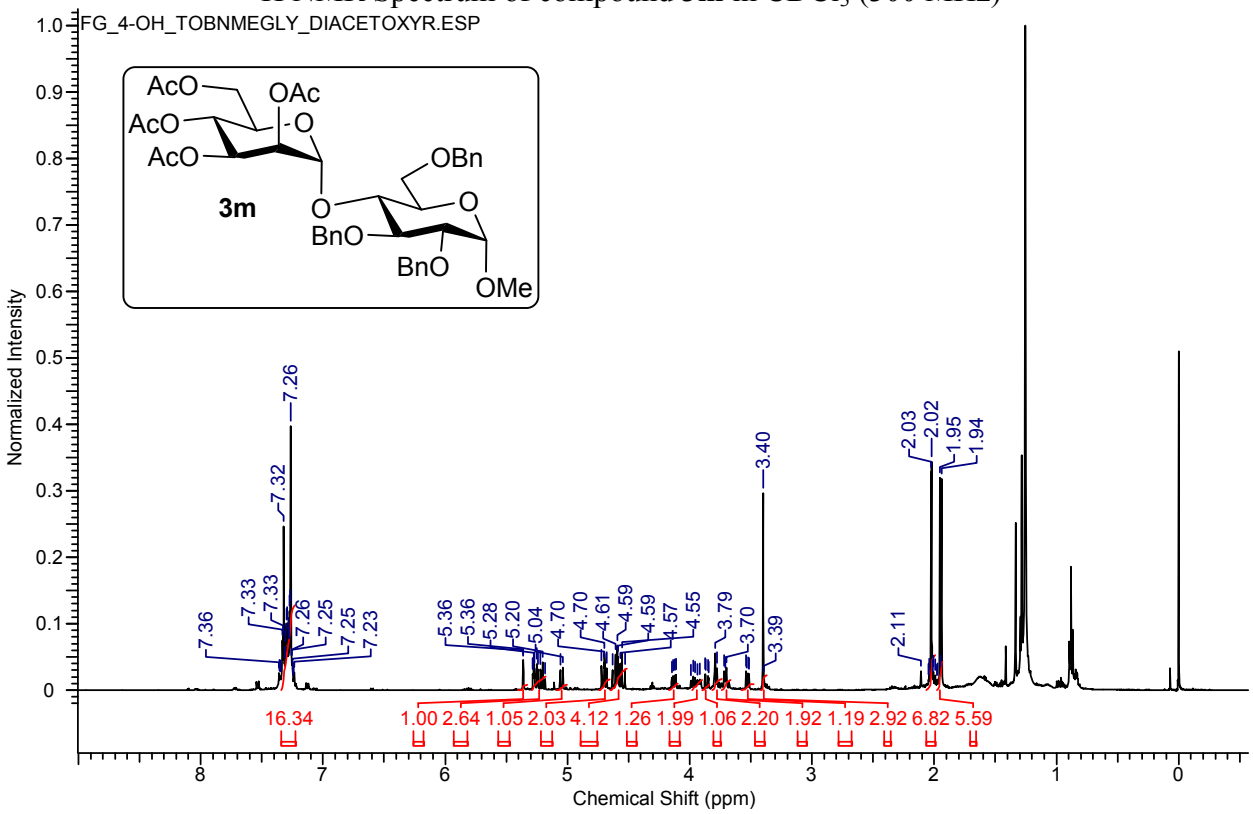


PRK-CH-2-52#8-30 RT: 0.11-0.42 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 834.12-880.04

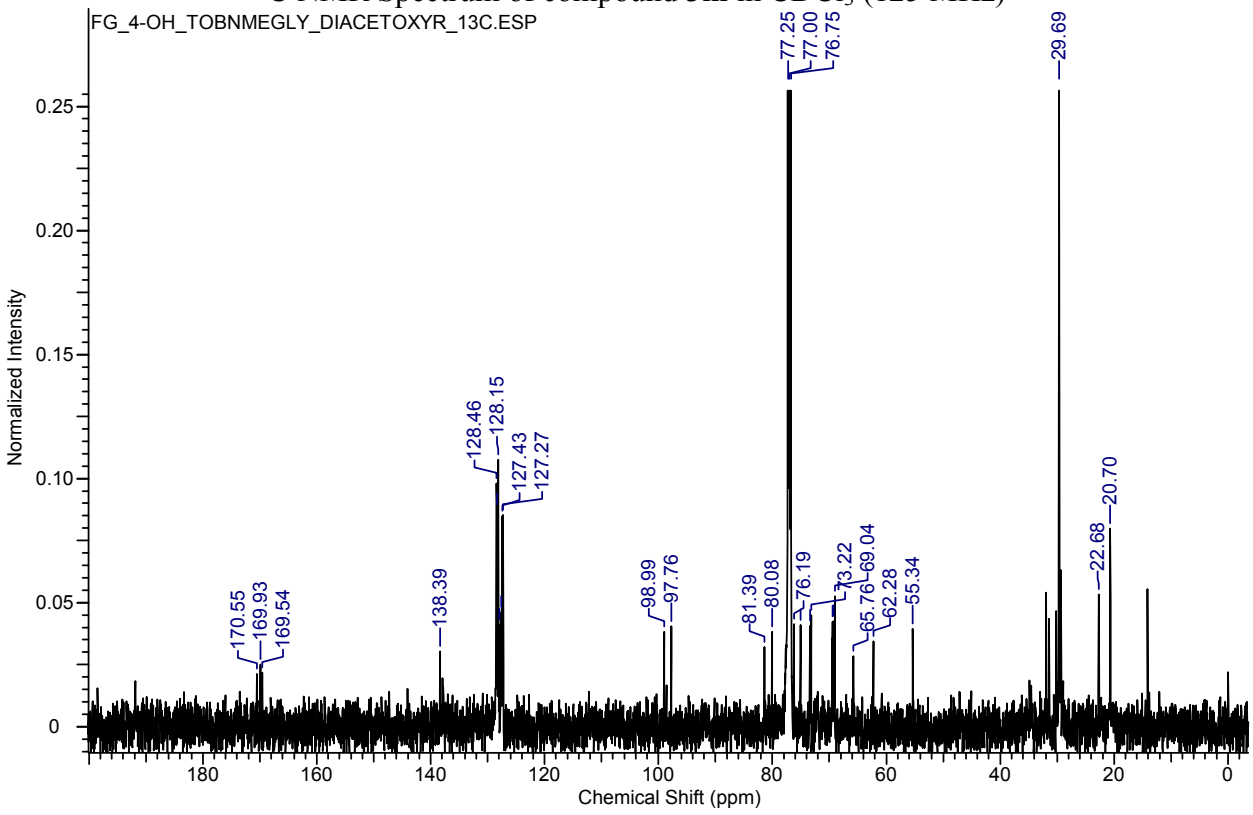
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
854.28444	12650024.0	100.00	854.28659	-2.15	19.5	$C_{42}H_{48}O_{18}N$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{42}H_{48}NO_{18}^+$: 854.28659; found: 854.28402.

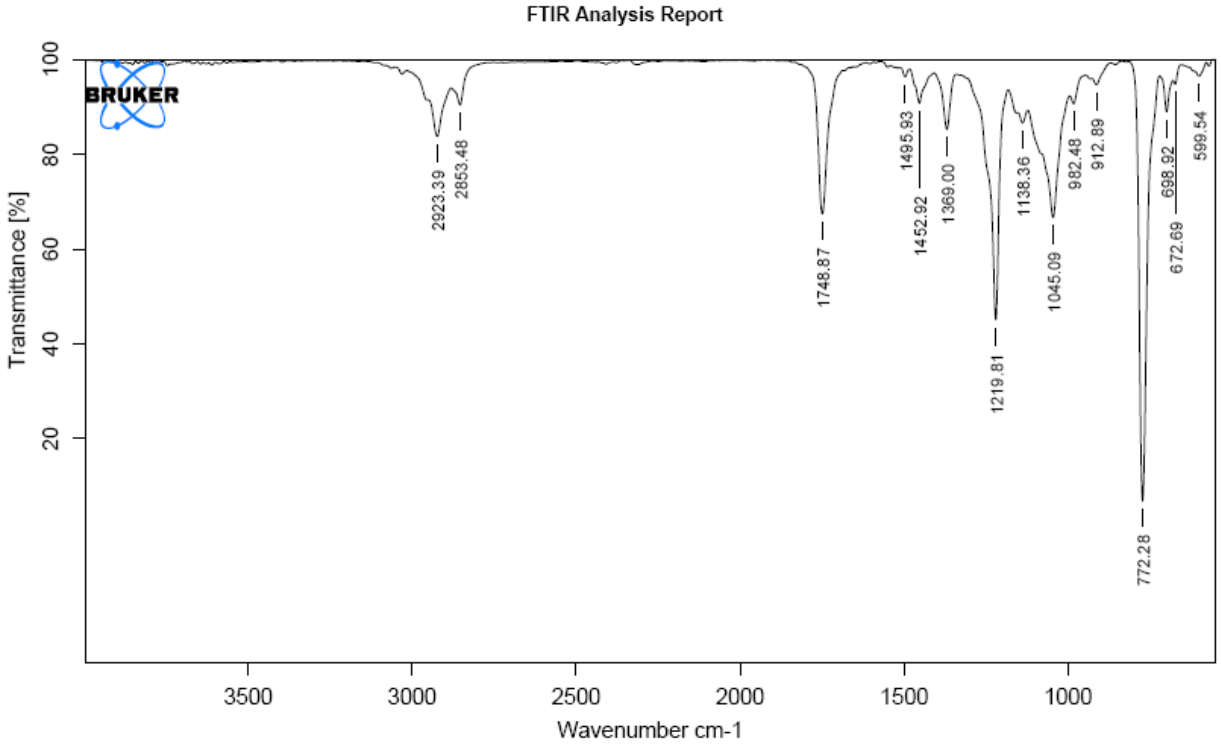
^{1}H NMR Spectrum of compound **3m** in $CDCl_3$ (300 MHz)



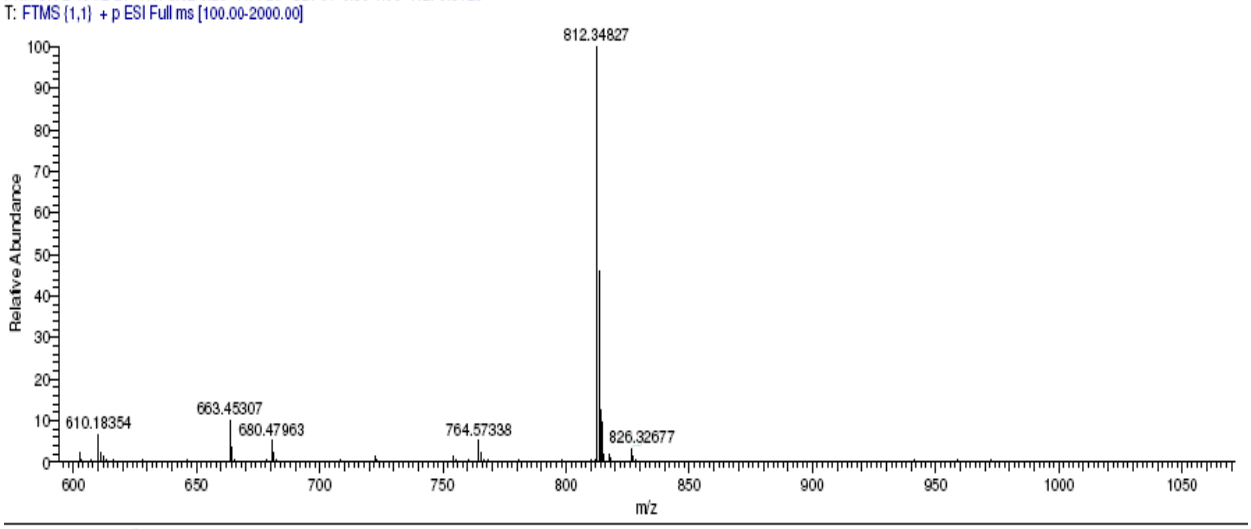
^{13}C NMR Spectrum of compound **3m** in $CDCl_3$ (125 MHz)



IR Spectrum of compound **3m** in $CHCl_3$



HRMS Spectrum of compound **3m**

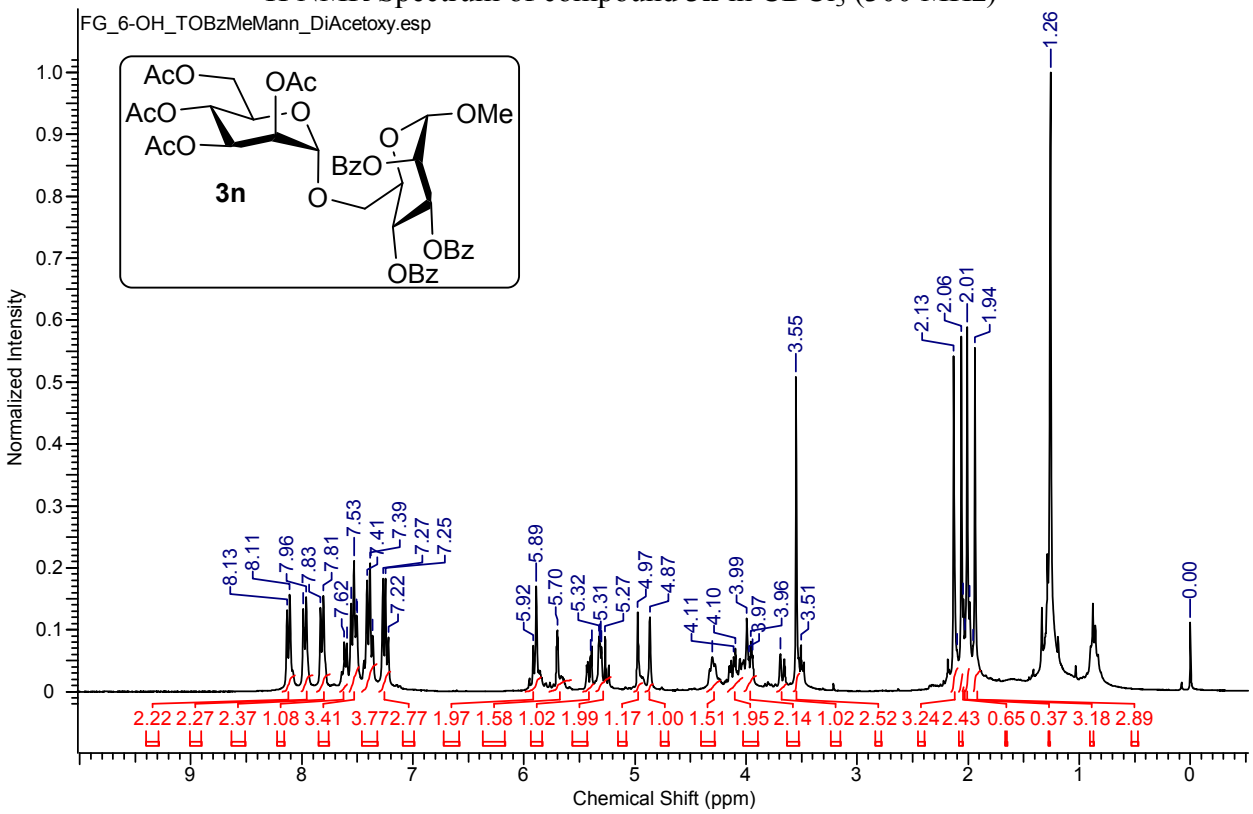


PRK-CH-2-45#8-30 RT: 0.11-0.42 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 782.19-834.01

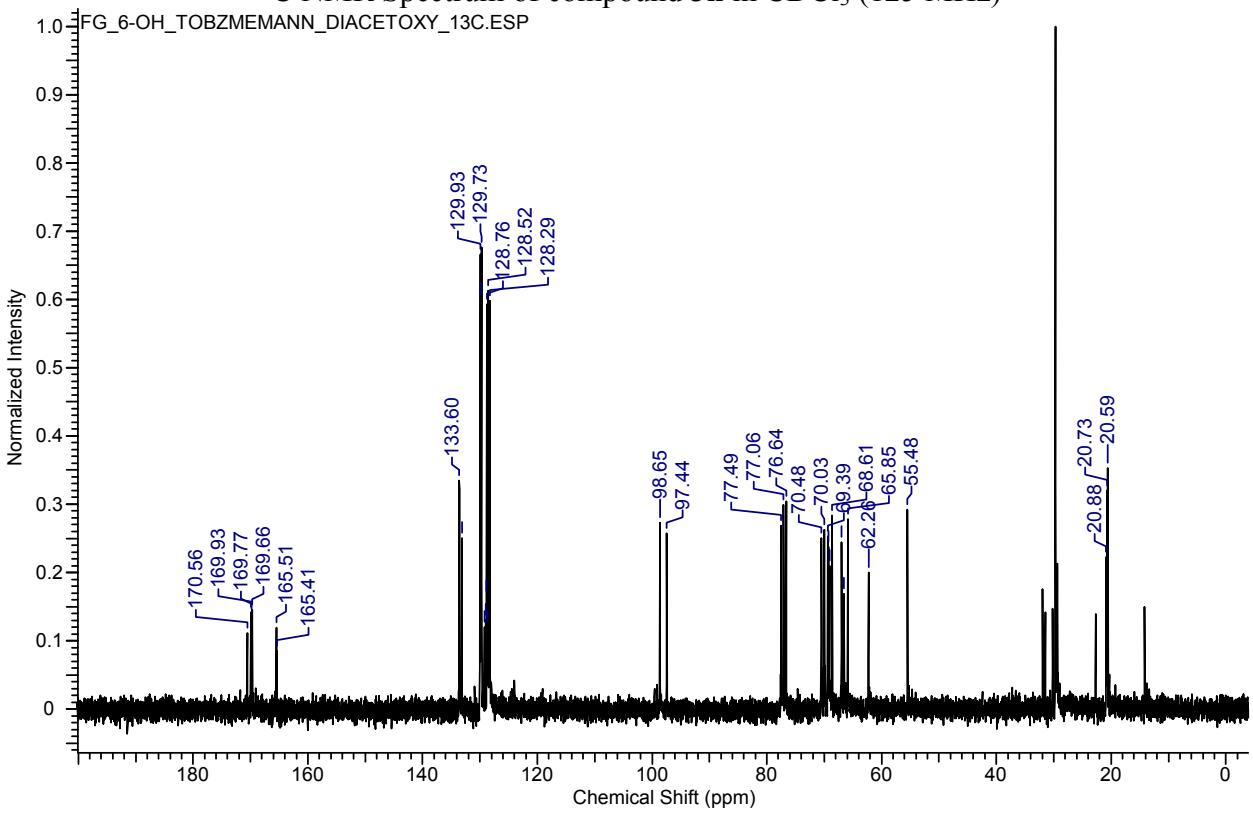
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
812.34821	10060147.0	100.00	812.34880	-0.58	16.5	$C_{42}H_{54}O_{15}N$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{42}H_{54}NO_{15}^+$: 812.34880; found: 812.34827.

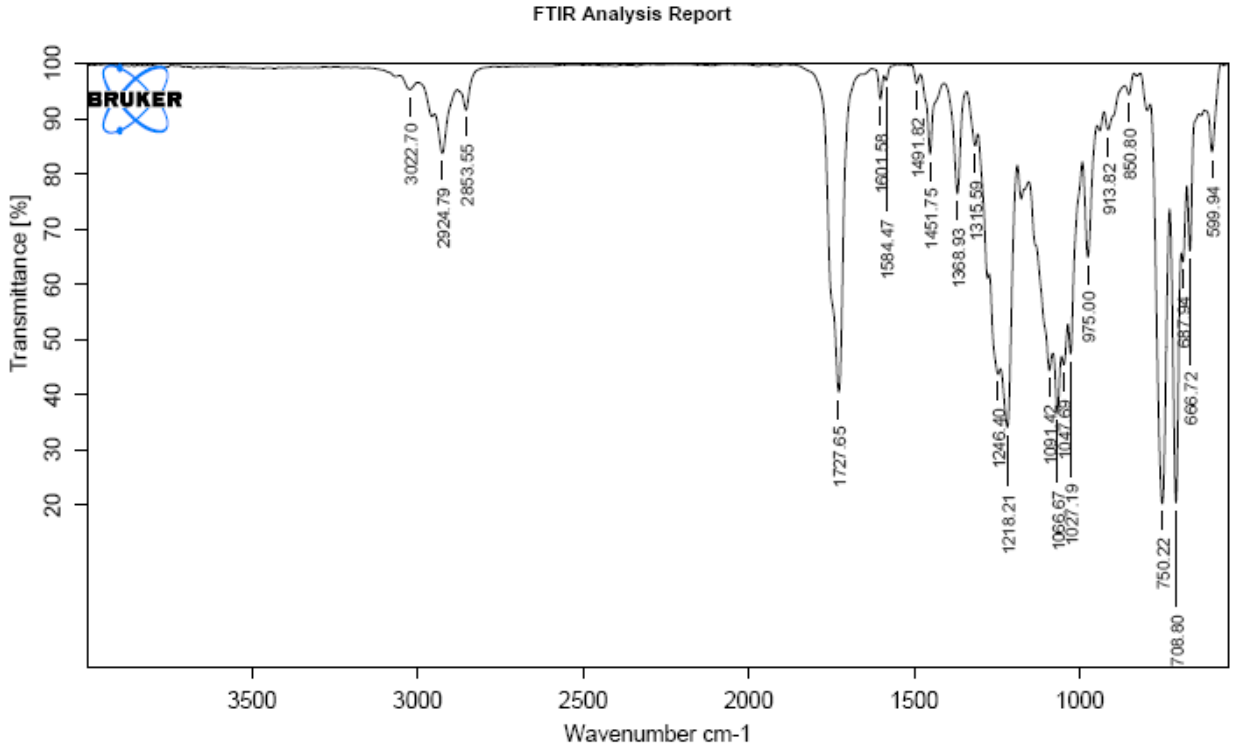
^{1}H NMR Spectrum of compound **3n** in $CDCl_3$ (300 MHz)



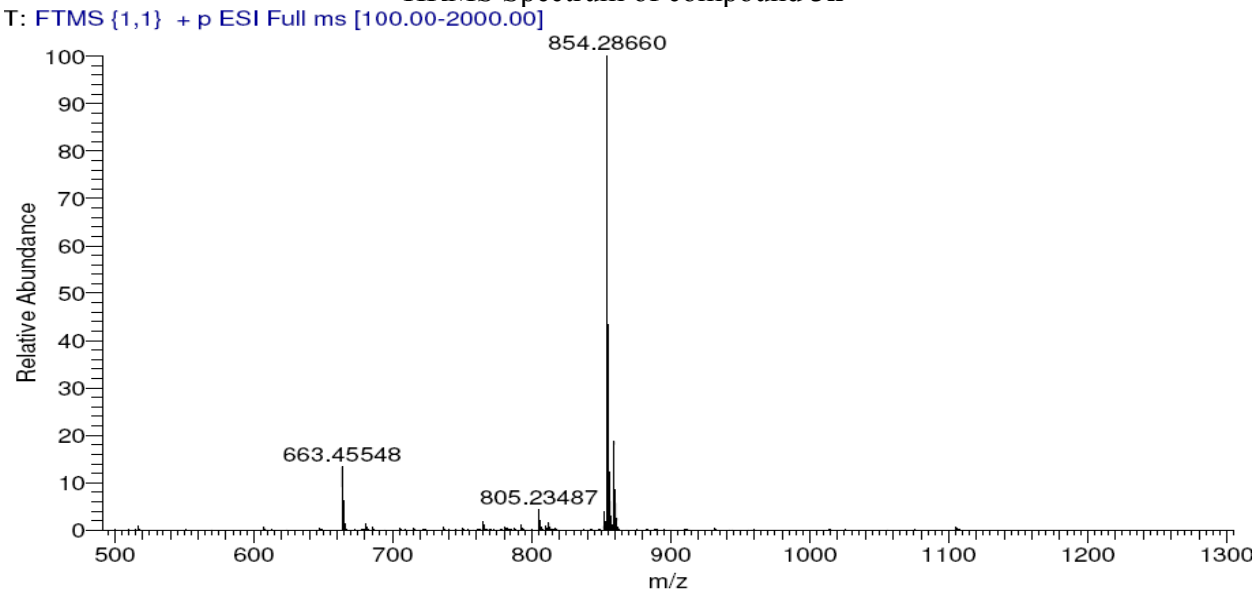
^{13}C NMR Spectrum of compound **3n** in $CDCl_3$ (125 MHz)



IR Spectrum of compound **3n** in $CHCl_3$



HRMS Spectrum of compound **3n**

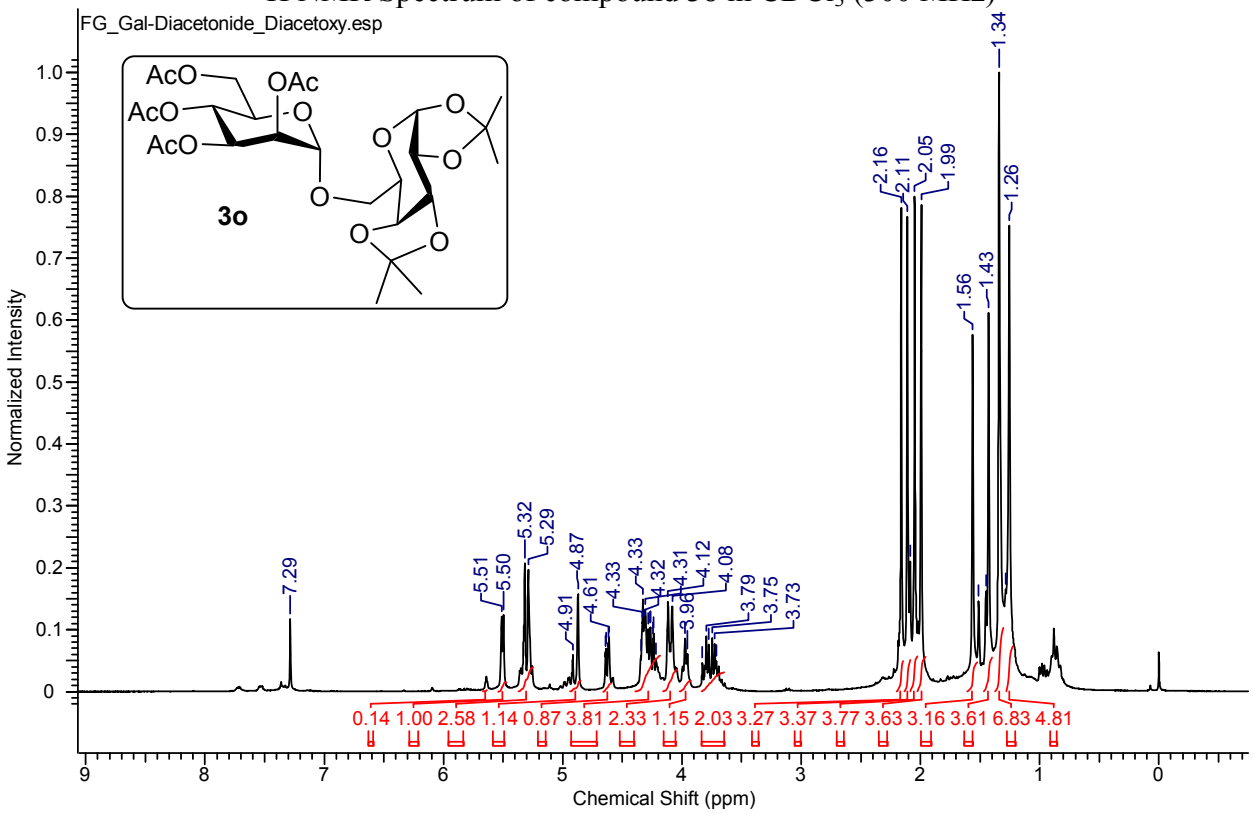


PRK-CH-2-57#13-35 RT: 0.05-0.12 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 805.85-885.48

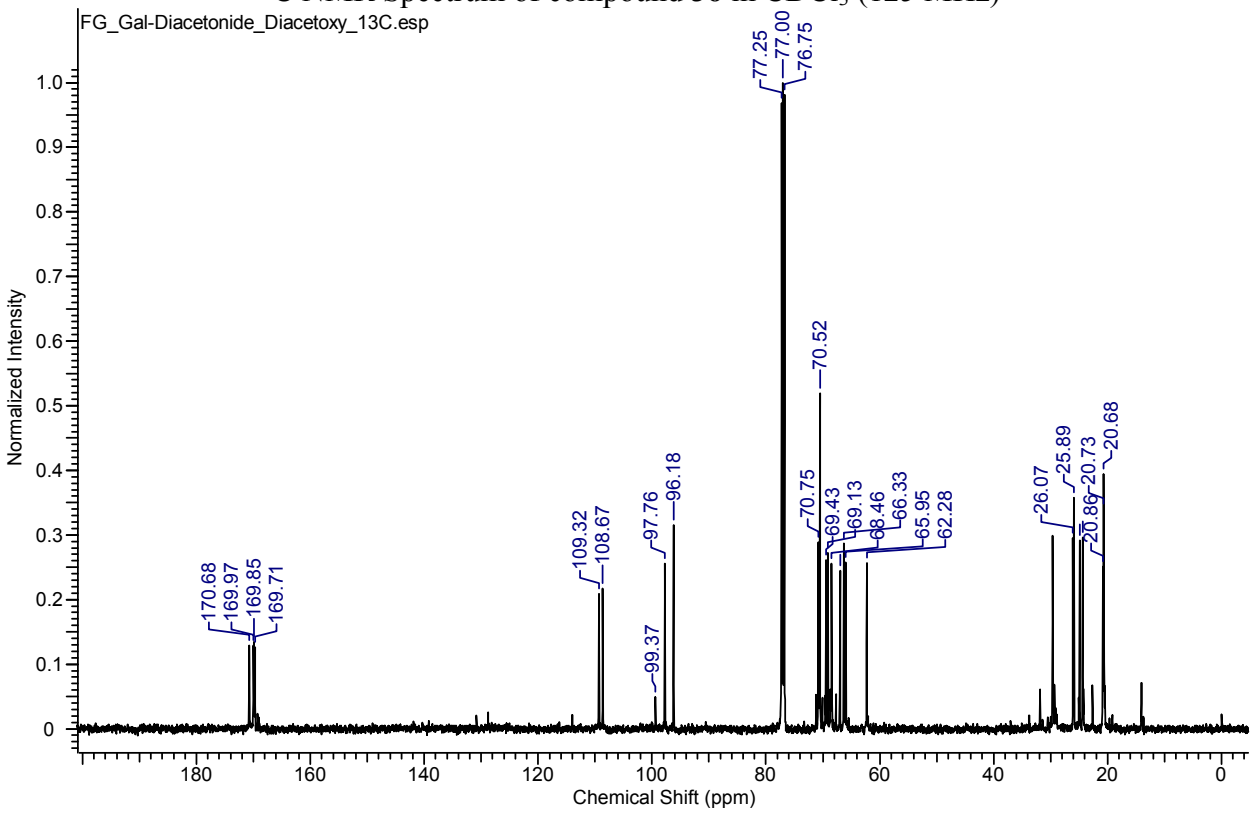
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
854.28653	34055788.0	100.00	854.28659	-0.07	19.5	$C_{42}H_{48}O_{18}N$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{42}H_{48}NO_{18}^+$: 854.28659; found: 854.28660.

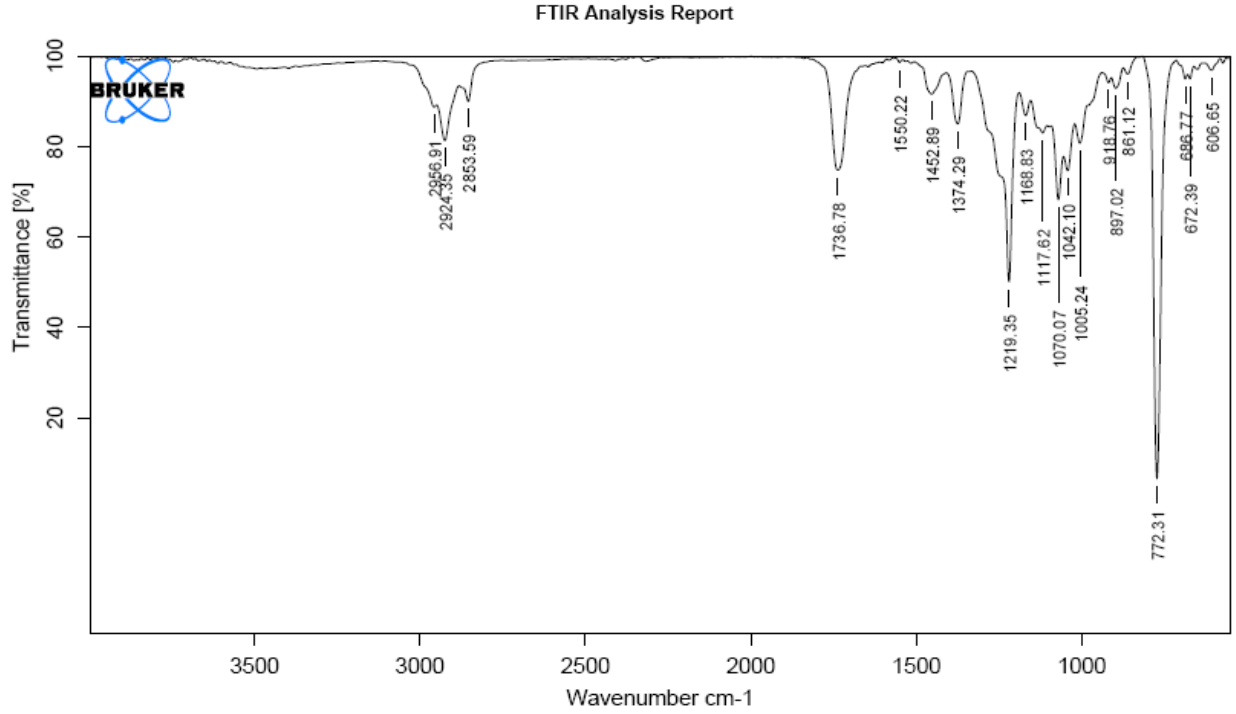
^{1}H NMR Spectrum of compound **3o** in $CDCl_3$ (300 MHz)



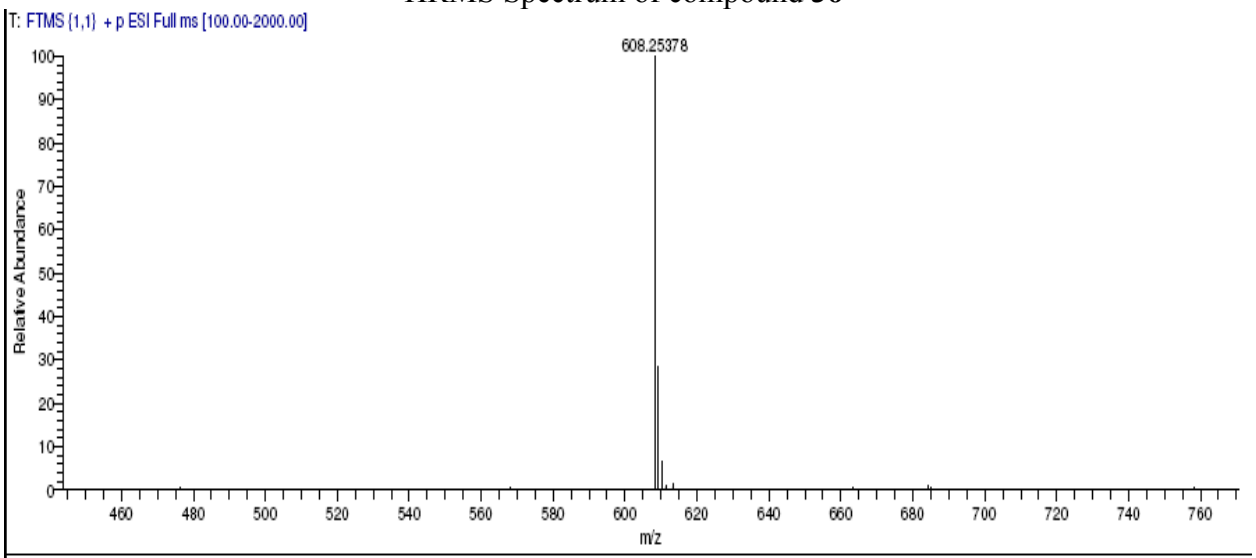
^{13}C NMR Spectrum of compound **3o** in $CDCl_3$ (125 MHz)



IR Spectrum of compound **3o** in $CHCl_3$



HRMS Spectrum of compound **3o**

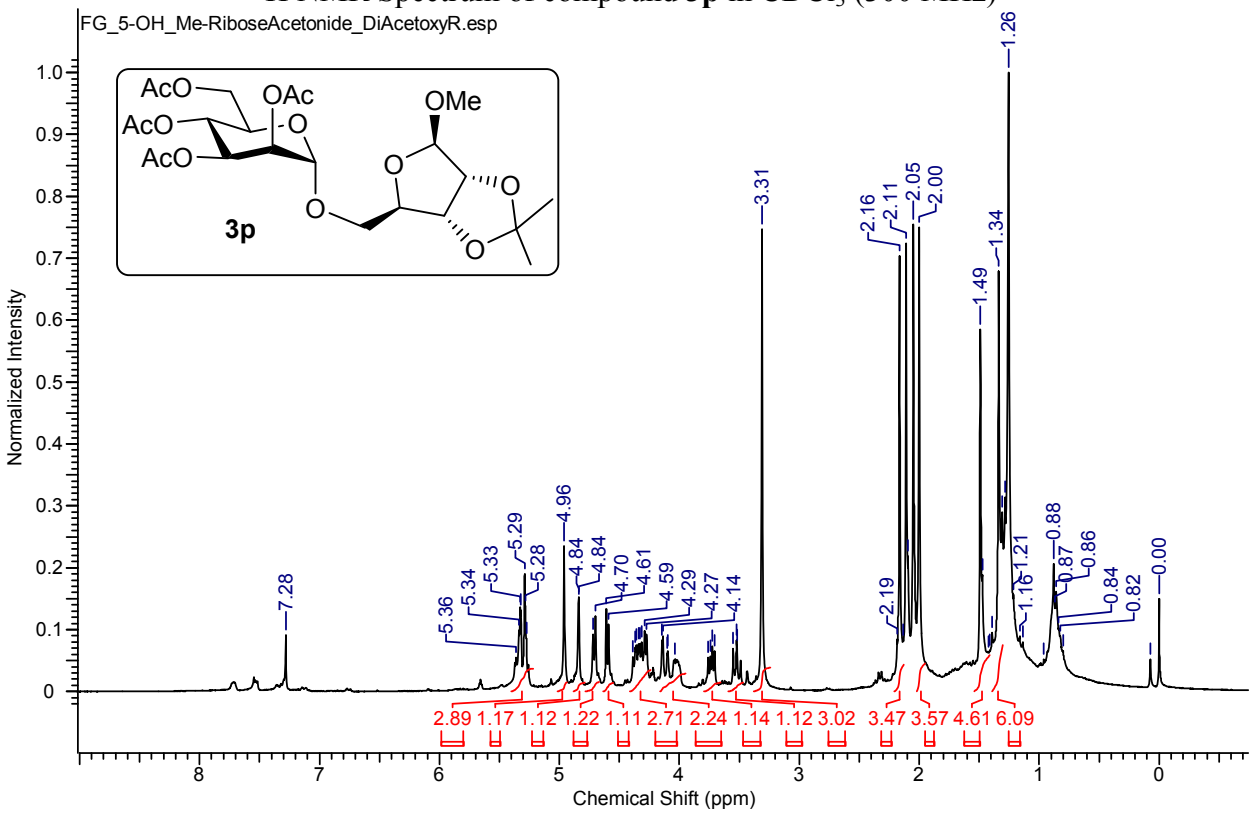


PRK-CH-2-41#8-30 RT: 0.11-0.41 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 583.58-628.99

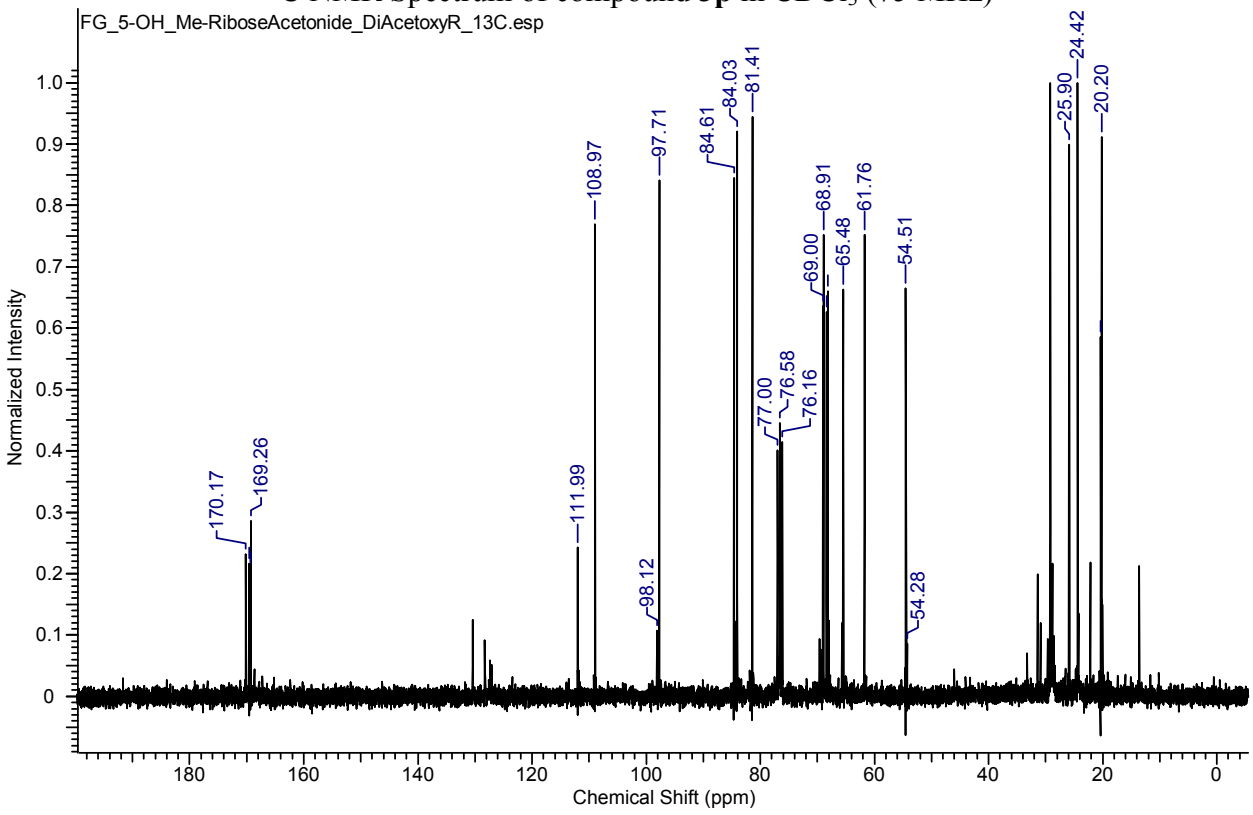
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
608.25393	81332368.0	100.00	608.25490	-0.97	6.5	$C_{26}H_{42}O_{15}N$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{26}H_{42}NO_{15}^+$: 608.25490; found: 608.25378.

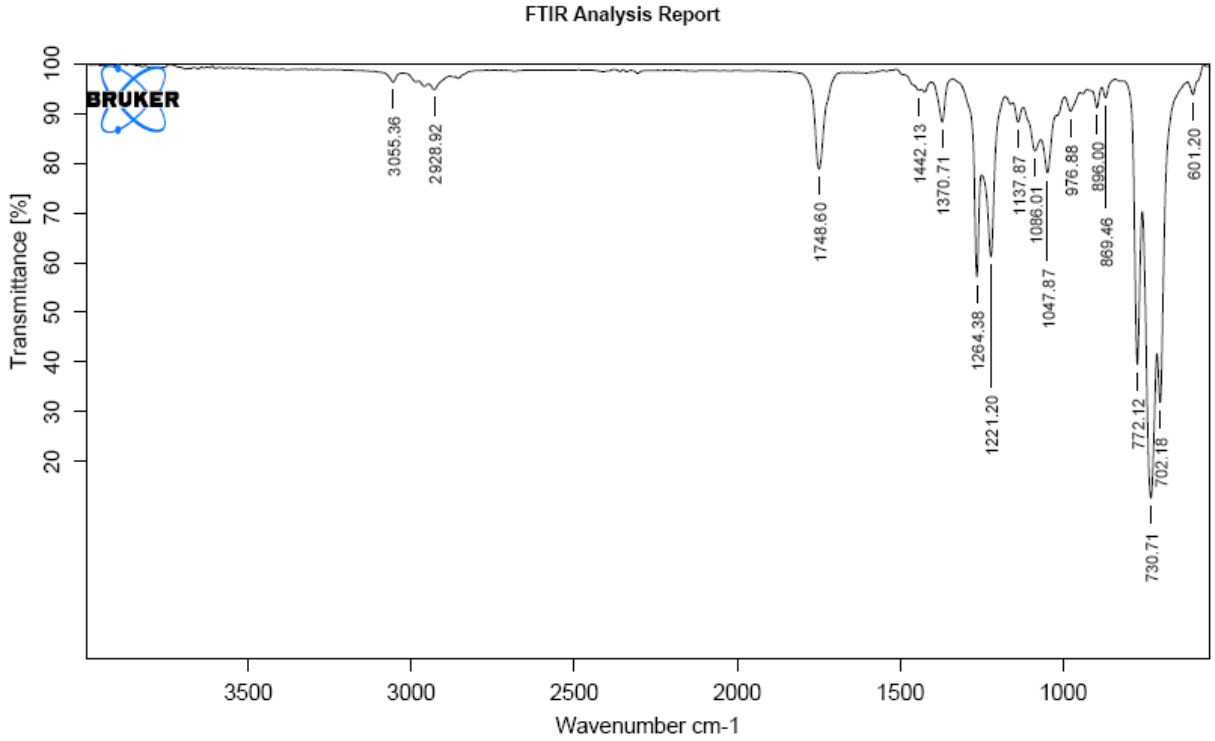
^{1}H NMR Spectrum of compound **3p** in $CDCl_3$ (300 MHz)



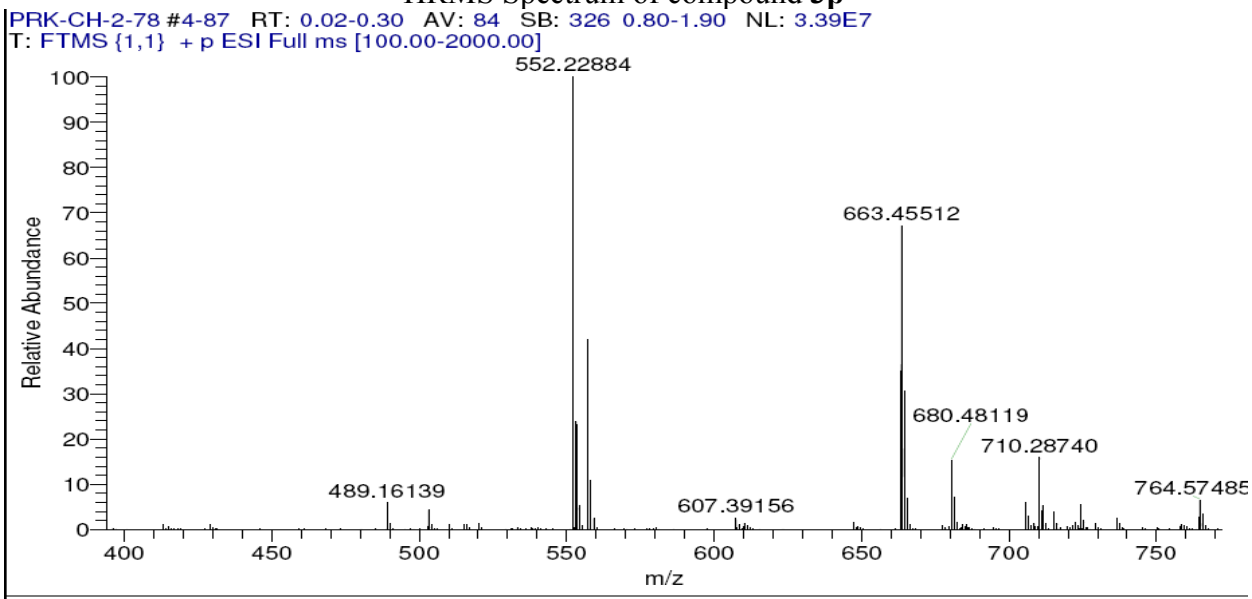
^{13}C NMR Spectrum of compound **3p** in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3p** in $CHCl_3$



HRMS Spectrum of compound **3p**

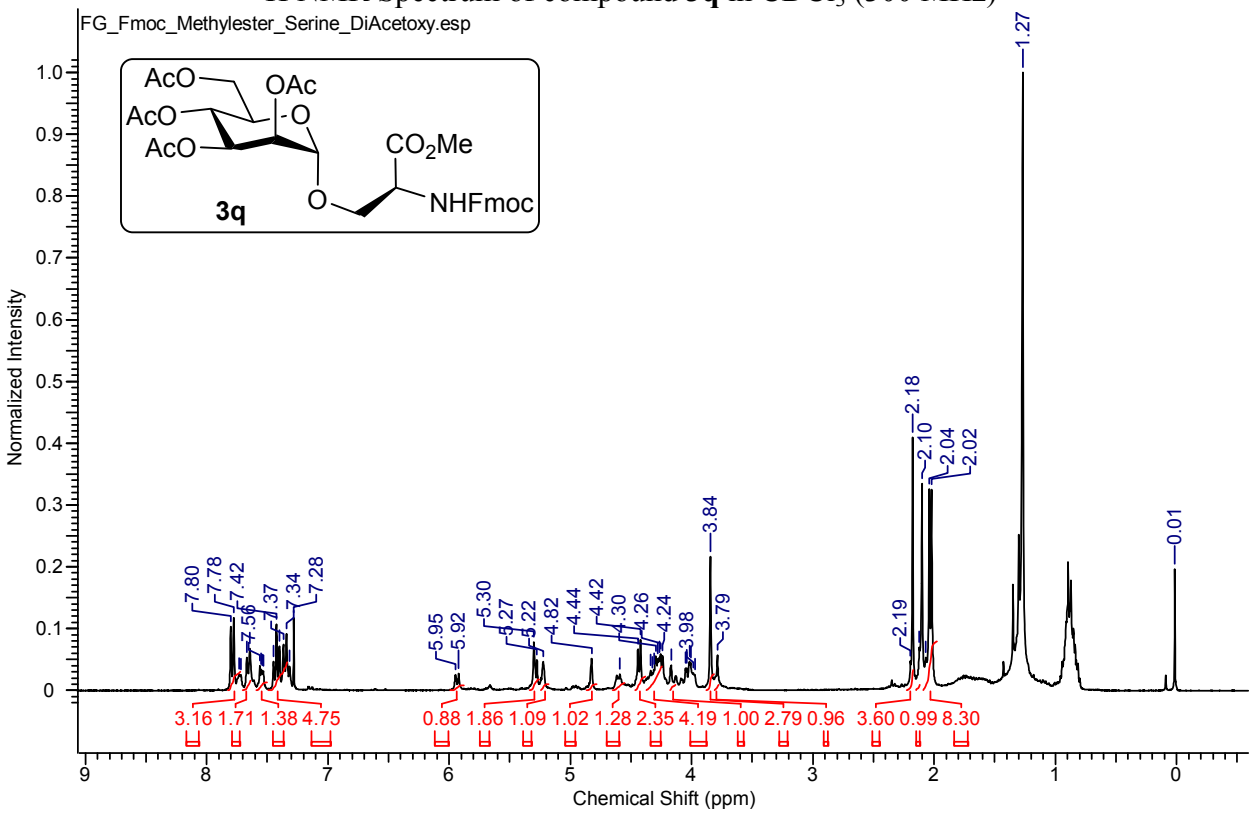


PRK-CH-2-78#13-35 RT: 0.05-0.12 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 724.45-725.43

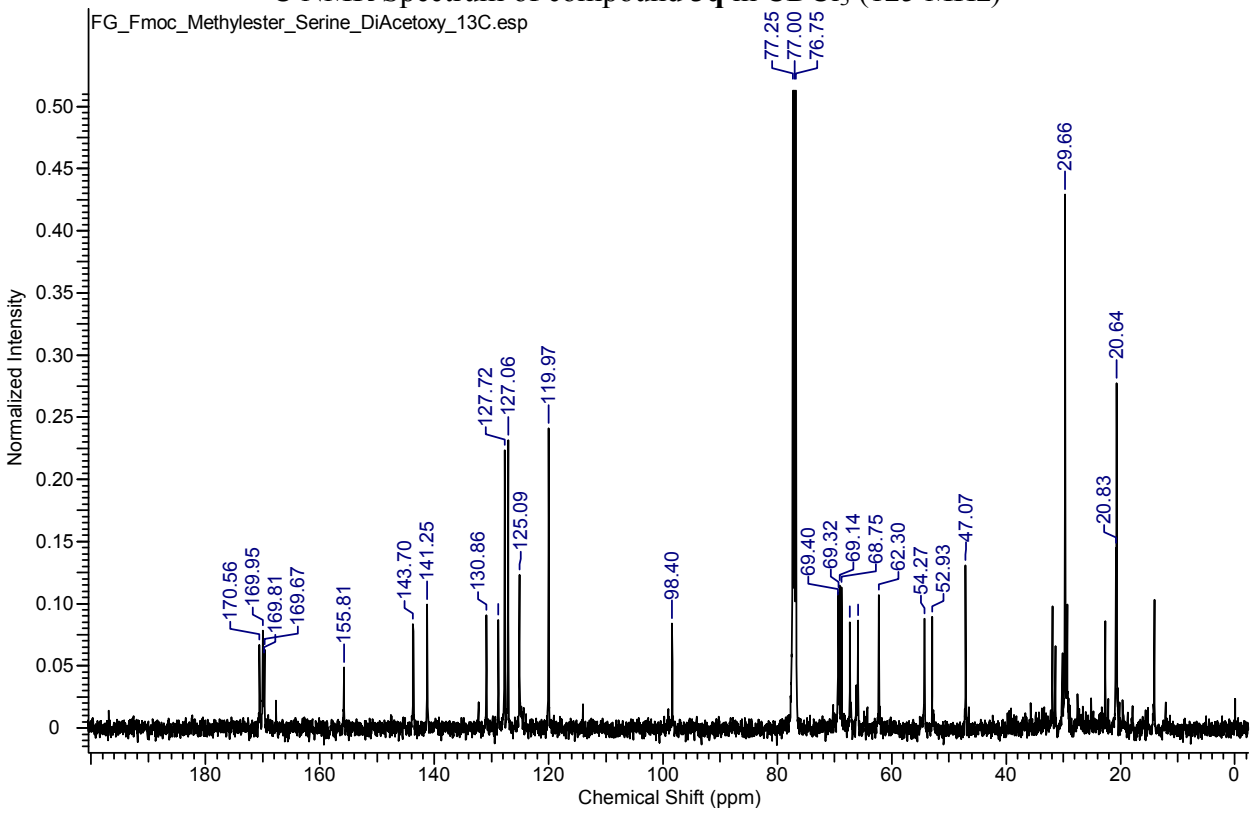
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
725.30687	53006.7	100.00				

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{23}H_{38}NO_5^+$:552.22868; found: 552.22884.

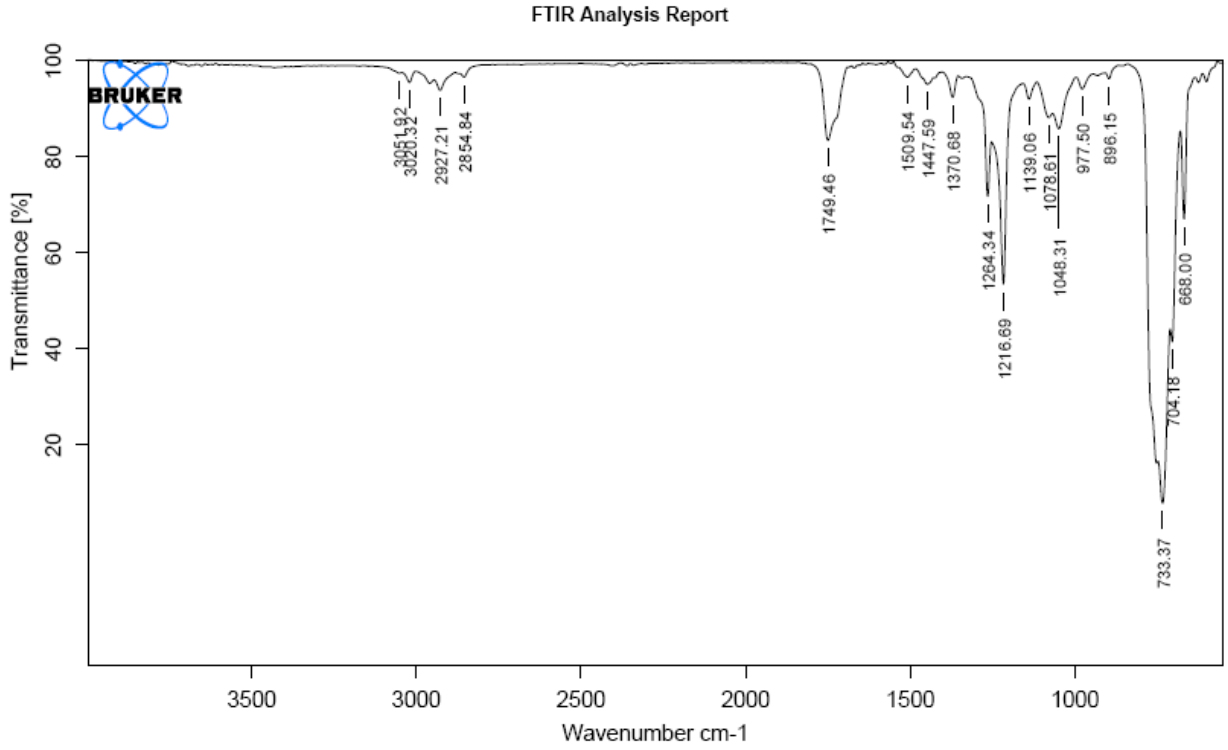
^{1}H NMR Spectrum of compound **3q** in $CDCl_3$ (300 MHz)



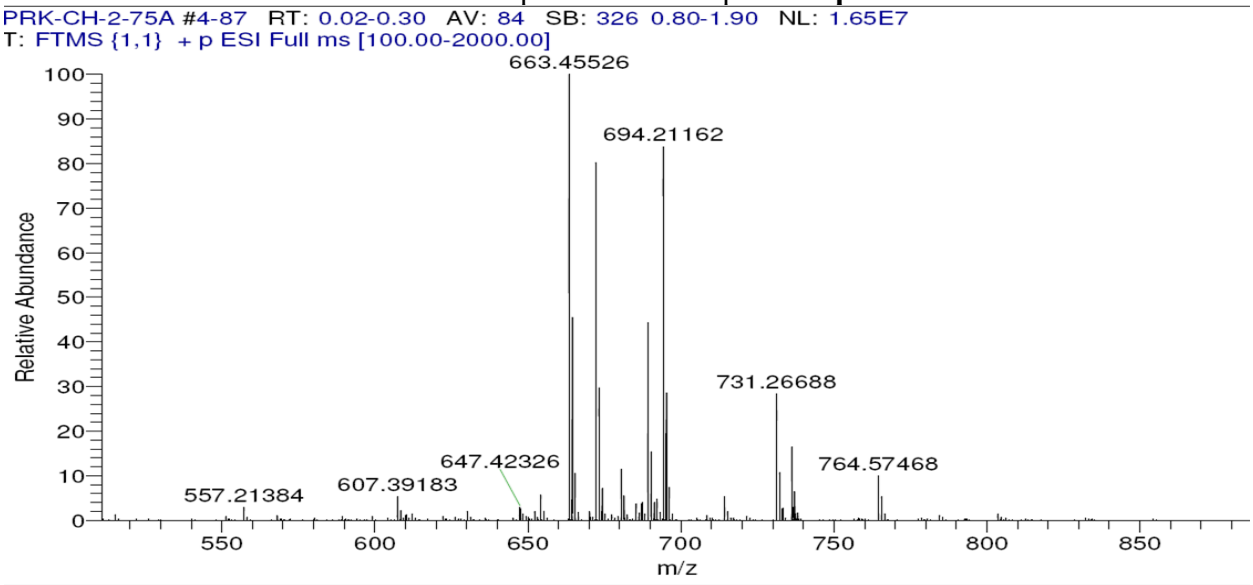
^{13}C NMR Spectrum of compound **3q** in $CDCl_3$ (125 MHz)



IR Spectrum of compound **3q** in $CHCl_3$



HRMS Spectrum of compound **3q**

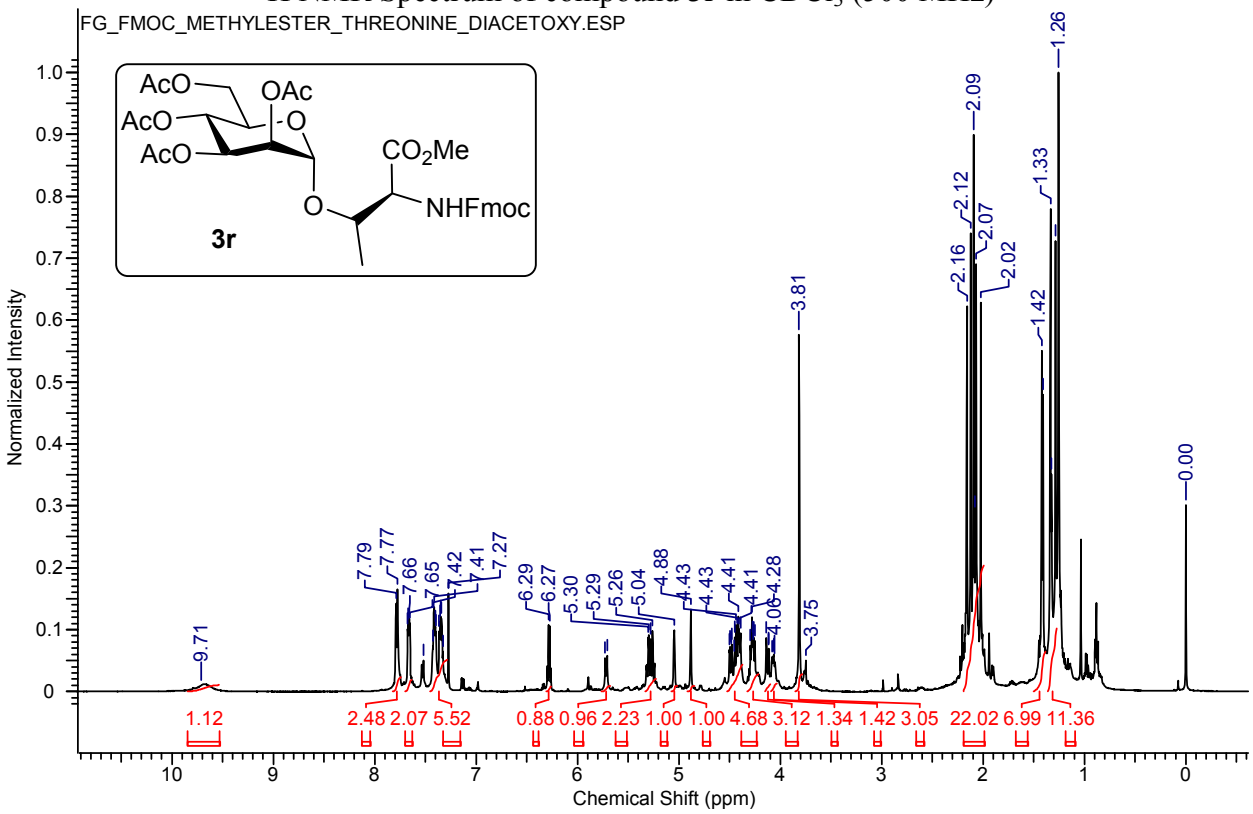


PRK-CH-2-75A#13-35 RT: 0.05-0.12 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 690.78-696.37

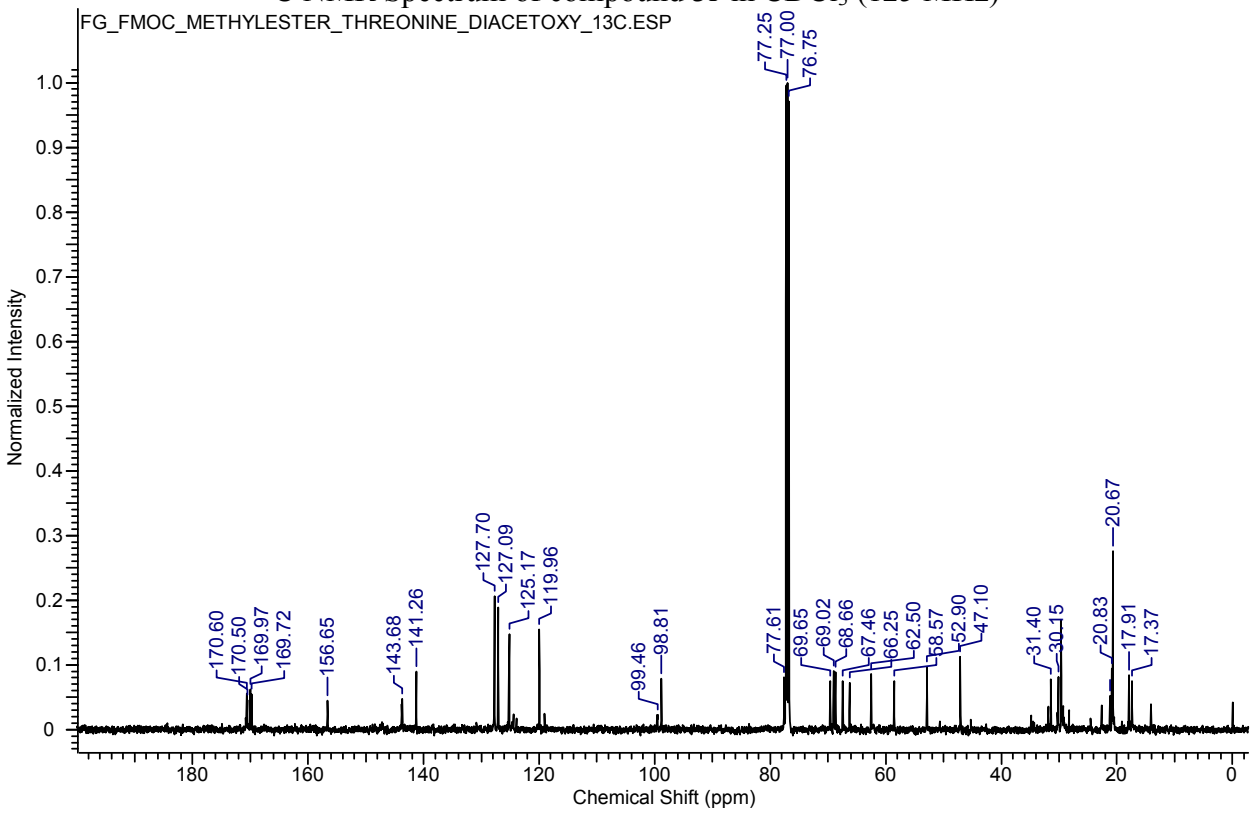
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
694.21132	2234673.3	100.00	694.21063	1.00	15.5	$C_{33}H_{37}O_{14}NNa$

HRMS (ESI) *m/z* $[M + Na]^+$ calcd. for $C_{33}H_{37}NO_{14}Na^+$: 694.21063; found: 694.21162.

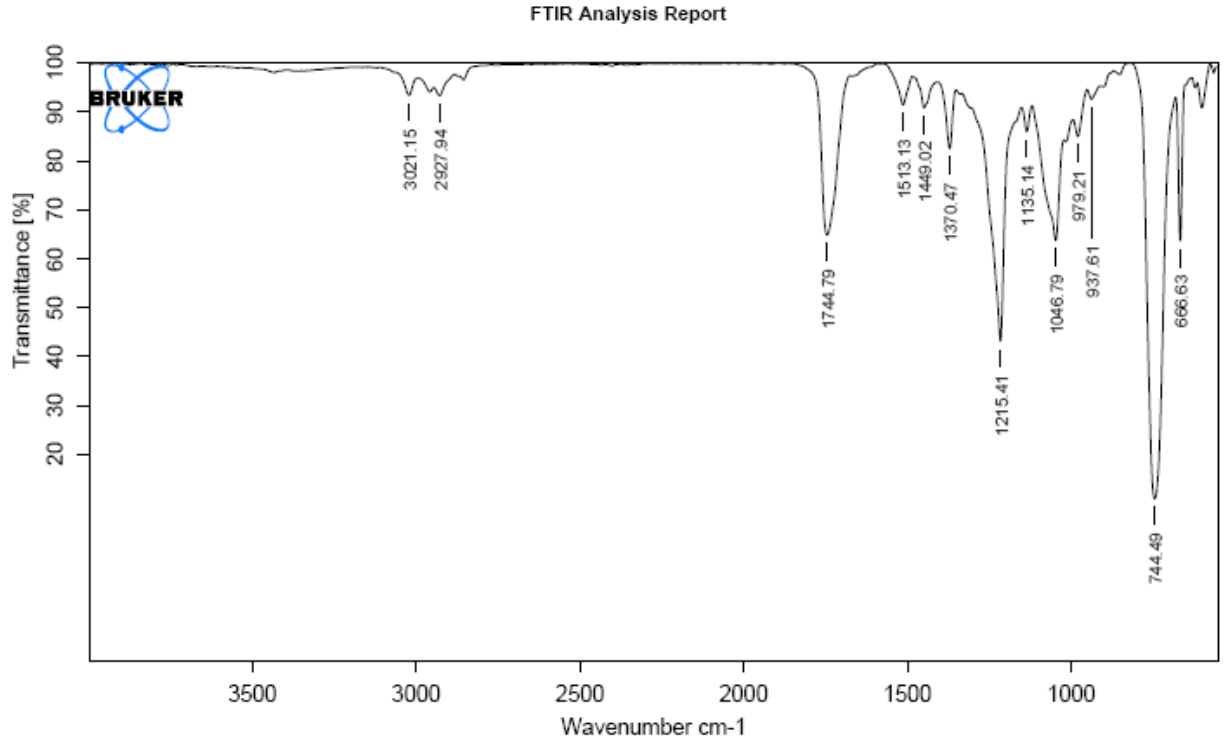
^{1}H NMR Spectrum of compound **3r** in $CDCl_3$ (500 MHz)



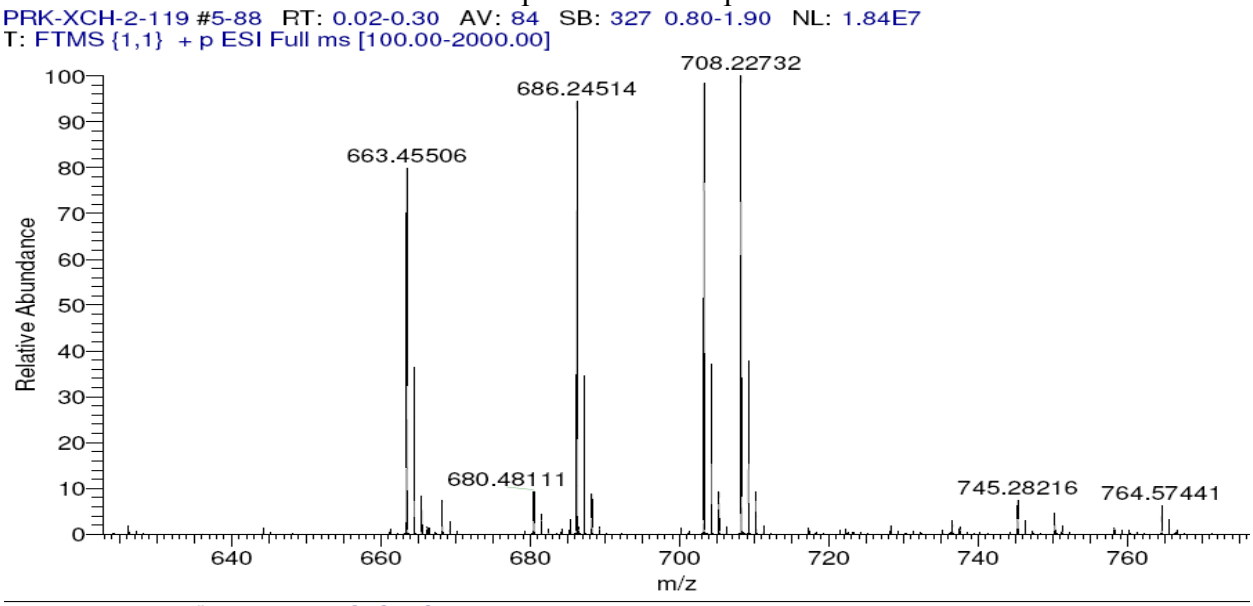
^{13}C NMR Spectrum of compound **3r** in $CDCl_3$ (125 MHz)



IR Spectrum of compound **3r** in $CHCl_3$



HRMS Spectrum of compound **3r**

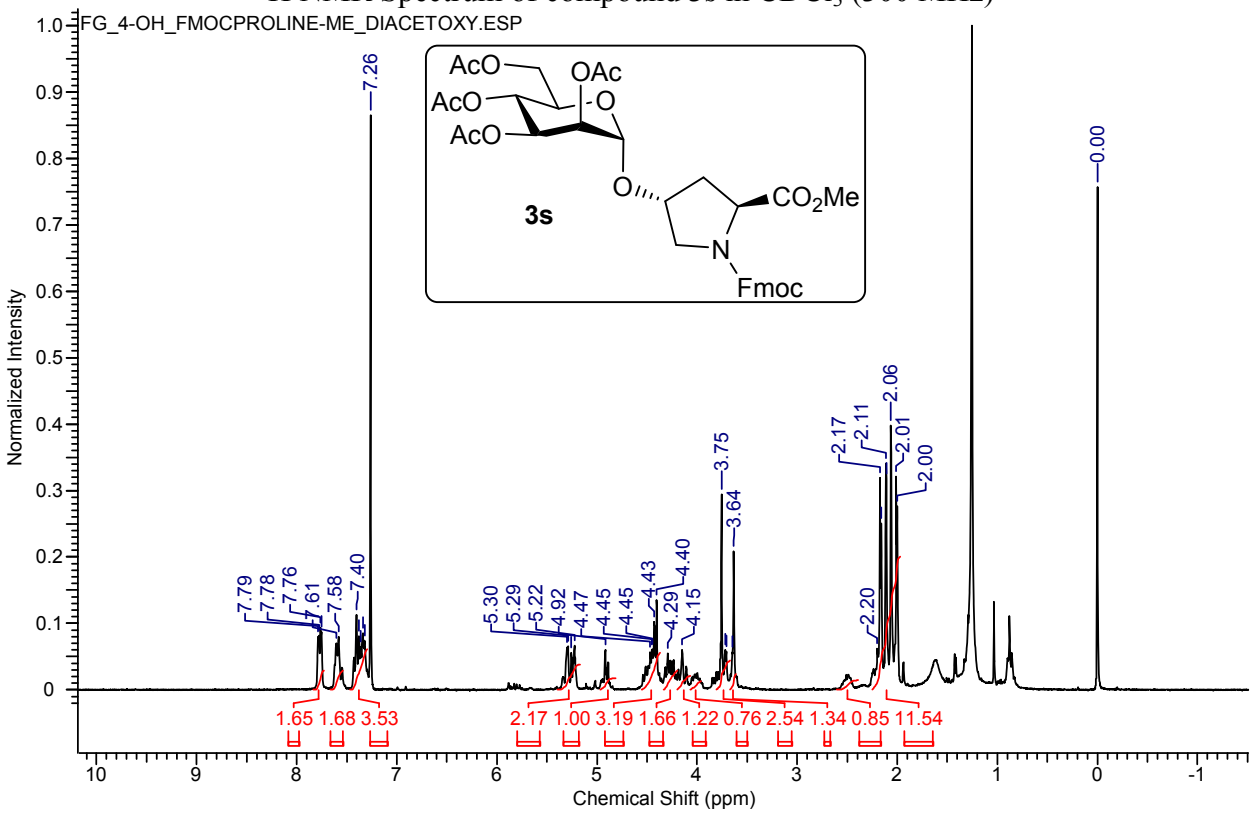


PRK-XCH-2-119#13-35 RT: 0.05-0.12 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 682.01-690.98

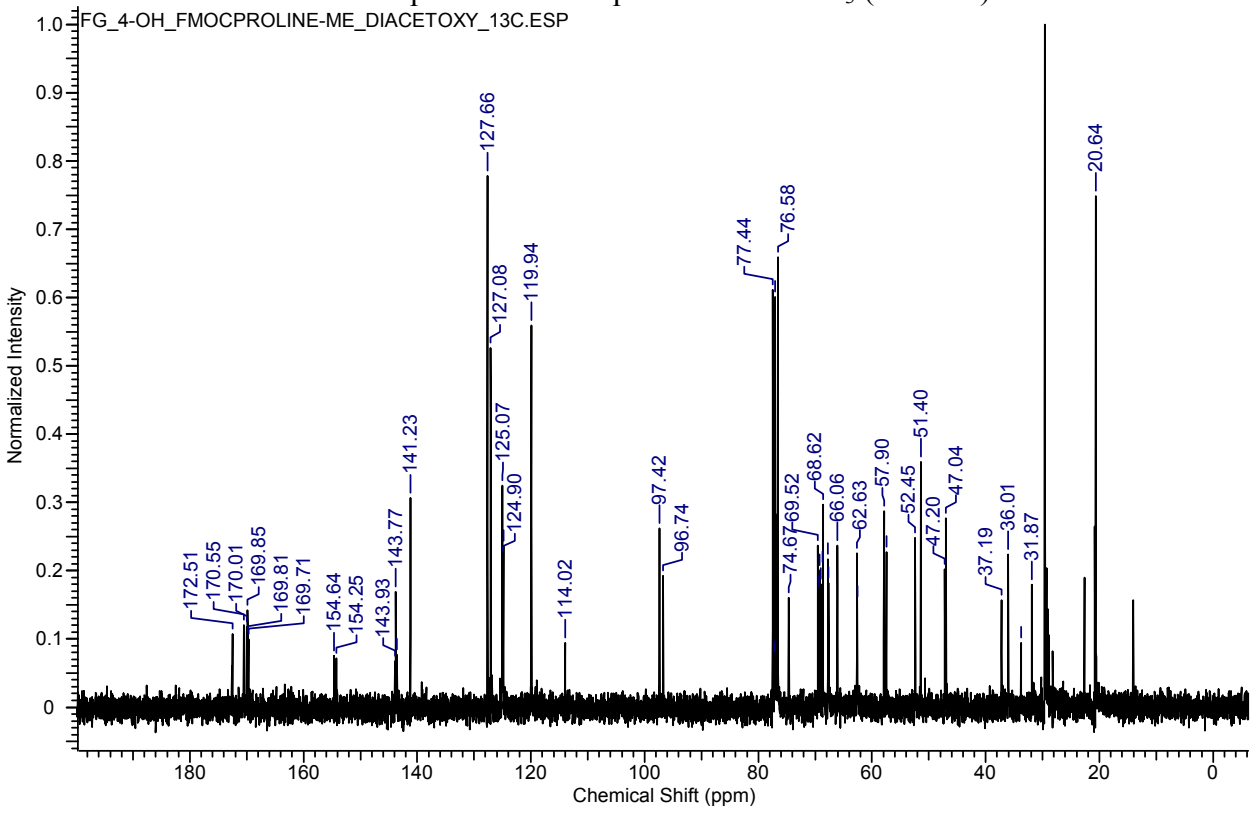
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
686.24504	6089523.0	100.00				

HRMS (ESI) *m/z* $[M + Na]^+$ calcd. for $C_{34}H_{39}NO_{14}Na^+$: 708.22628; found: 708.22732.

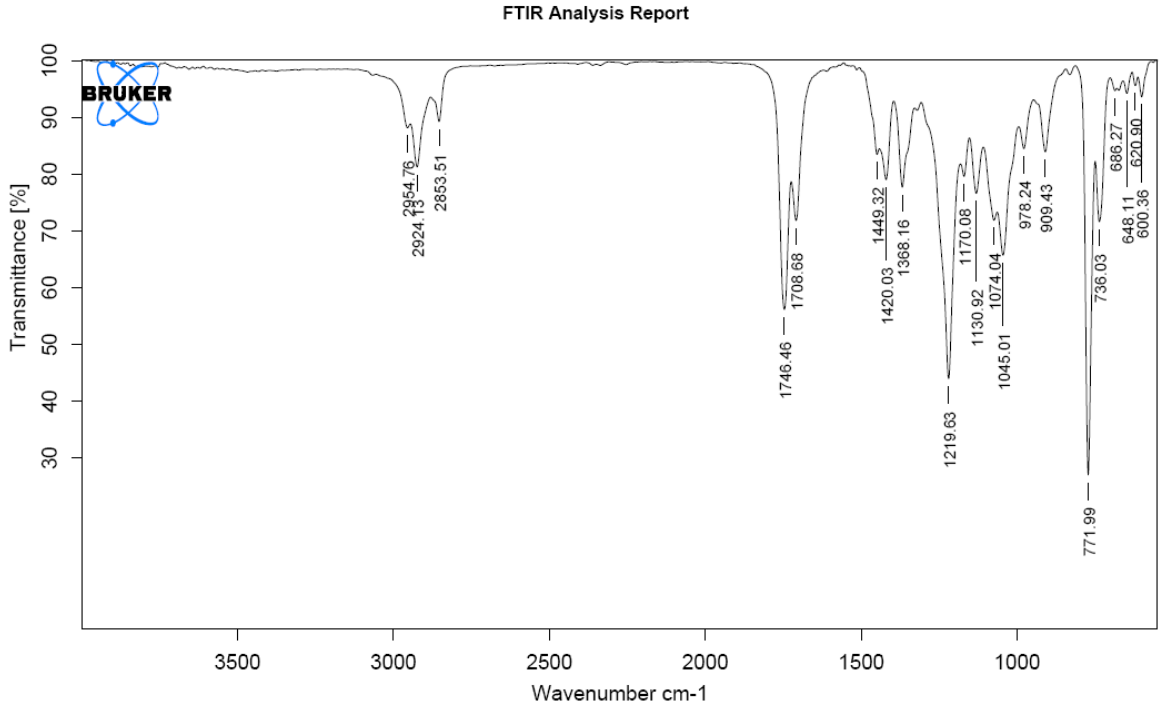
^{1}H NMR Spectrum of compound **3s** in $CDCl_3$ (300 MHz)



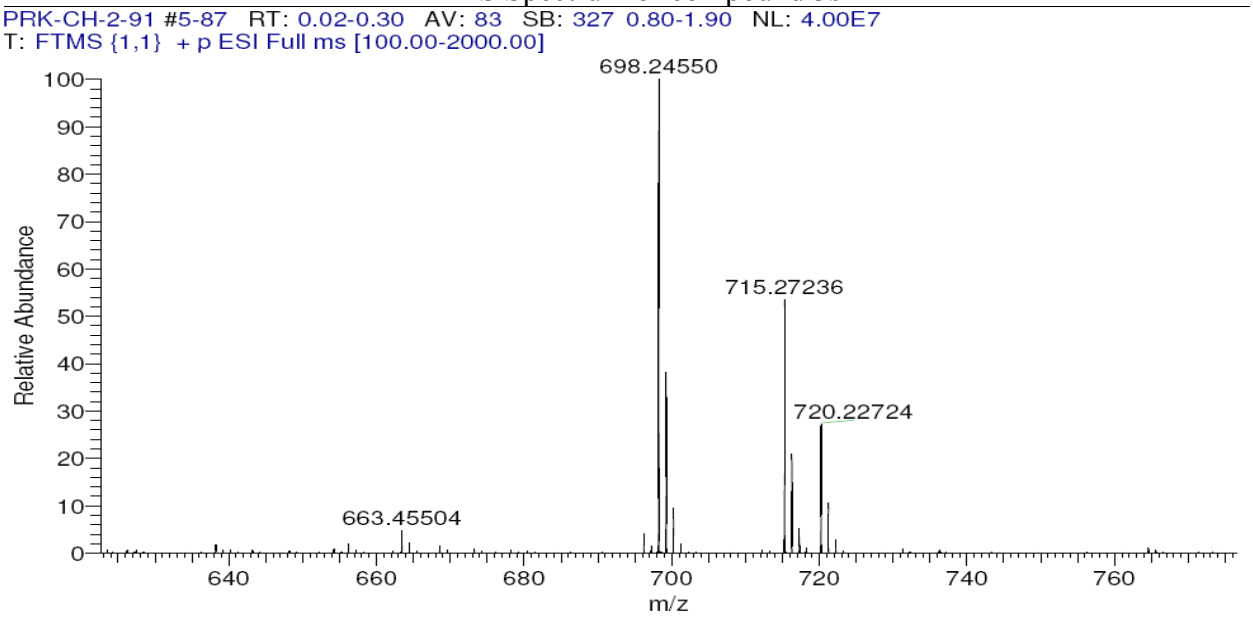
^{13}C NMR Spectrum of compound **3s** in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3s** in $CHCl_3$



HRMS Spectrum of compound **3s**

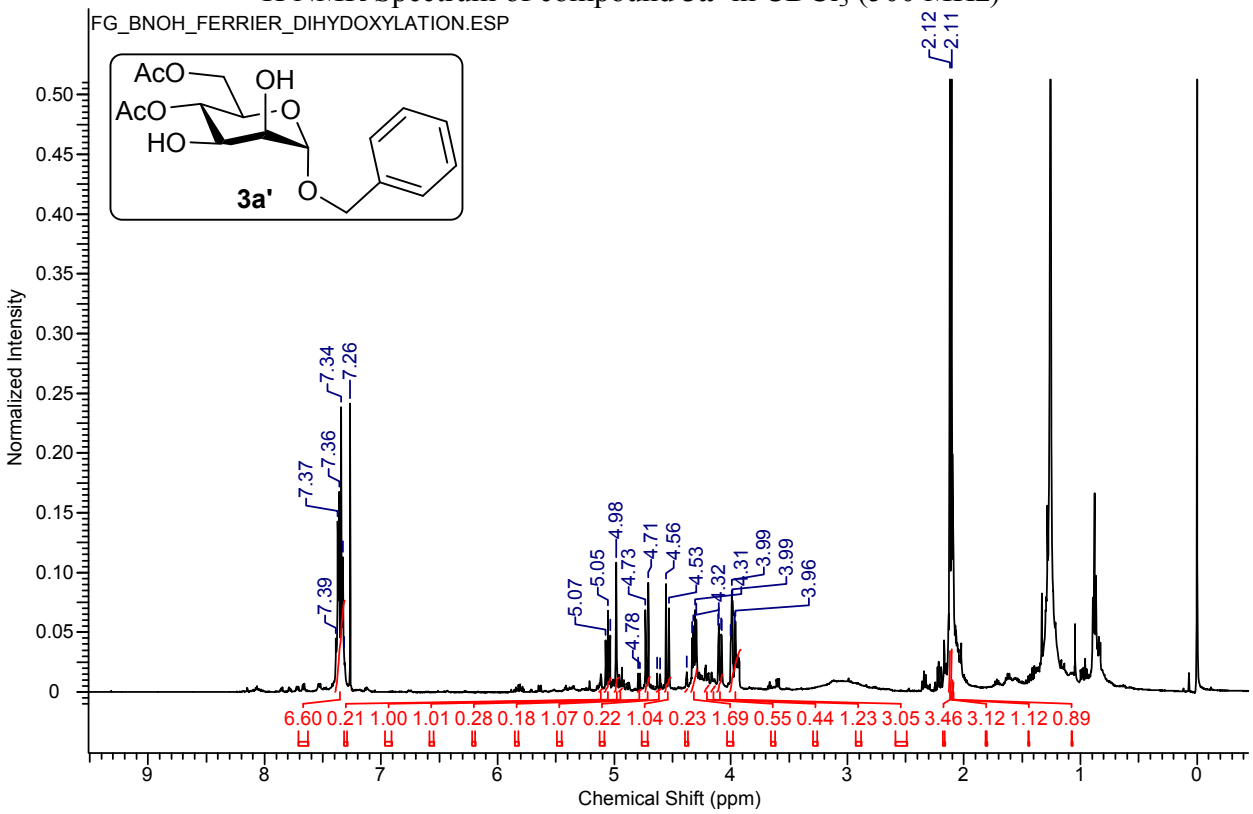


PRK-CH-2-91#13-35 RT: 0.05-0.12 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]
m/z= 720.56-723.95

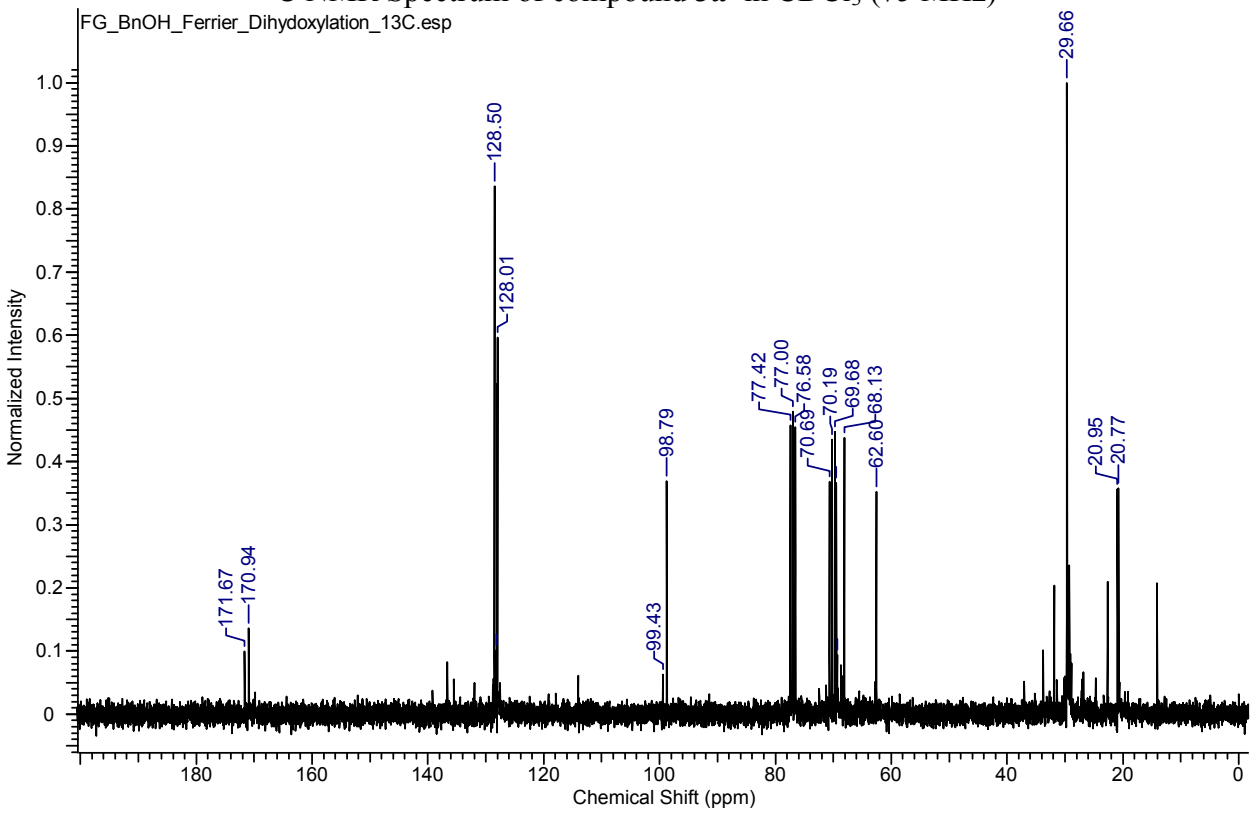
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
721.23040	839532.9	100.00	721.23410	-5.13	16.0	$C_{35}H_{40}O_{14}NNa$

HRMS (ESI) *m/z* $[M + Na]^+$ calcd. for $C_{35}H_{39}NO_{14}Na^+$: 720.22628; found: 720.22724.

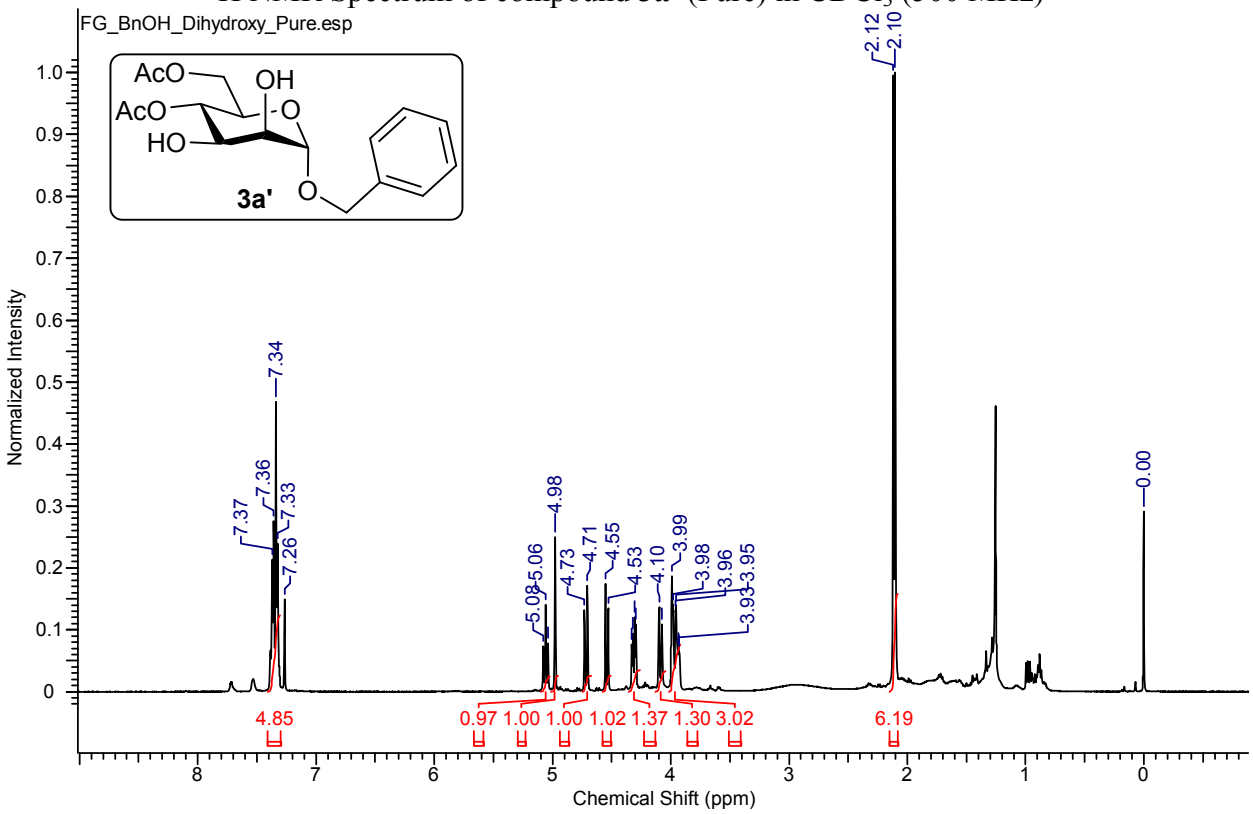
^{1}H NMR Spectrum of compound **3a'** in $CDCl_3$ (500 MHz)



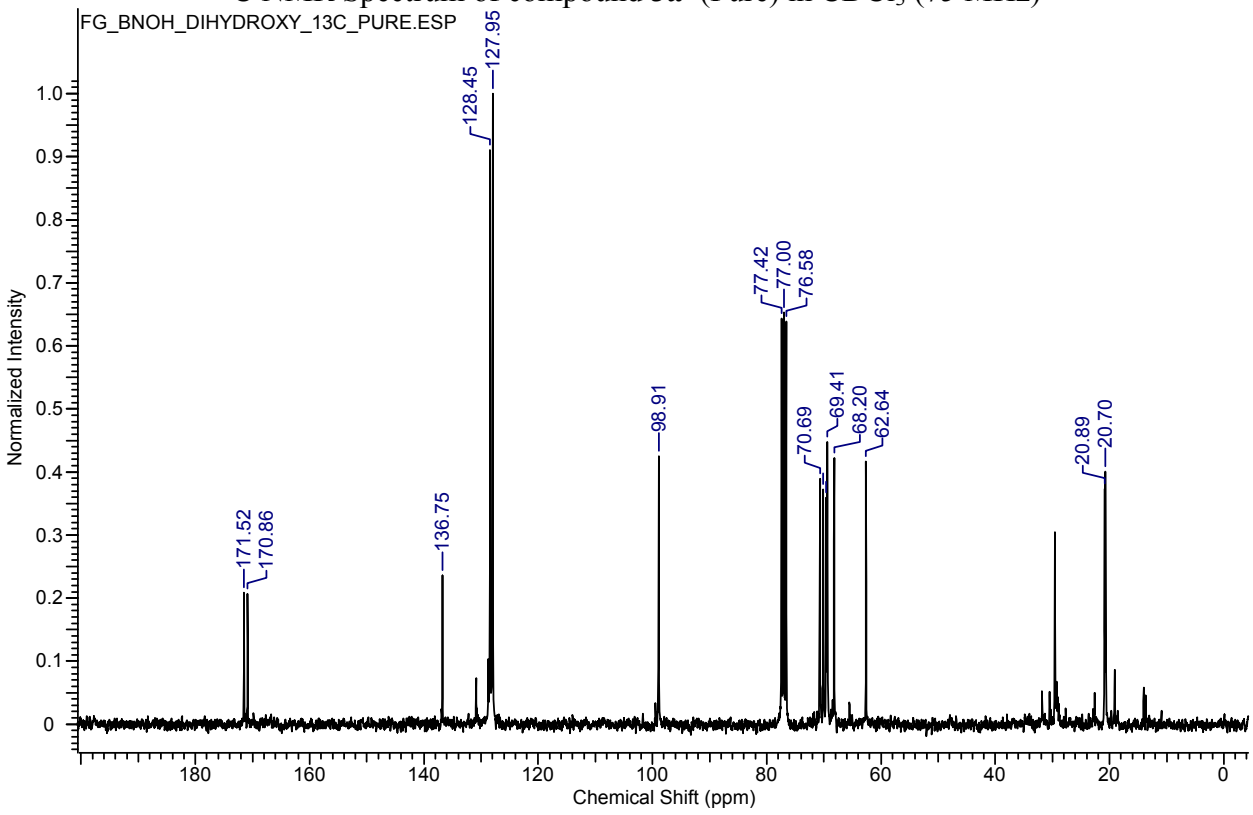
^{13}C NMR Spectrum of compound **3a'** in $CDCl_3$ (75 MHz)



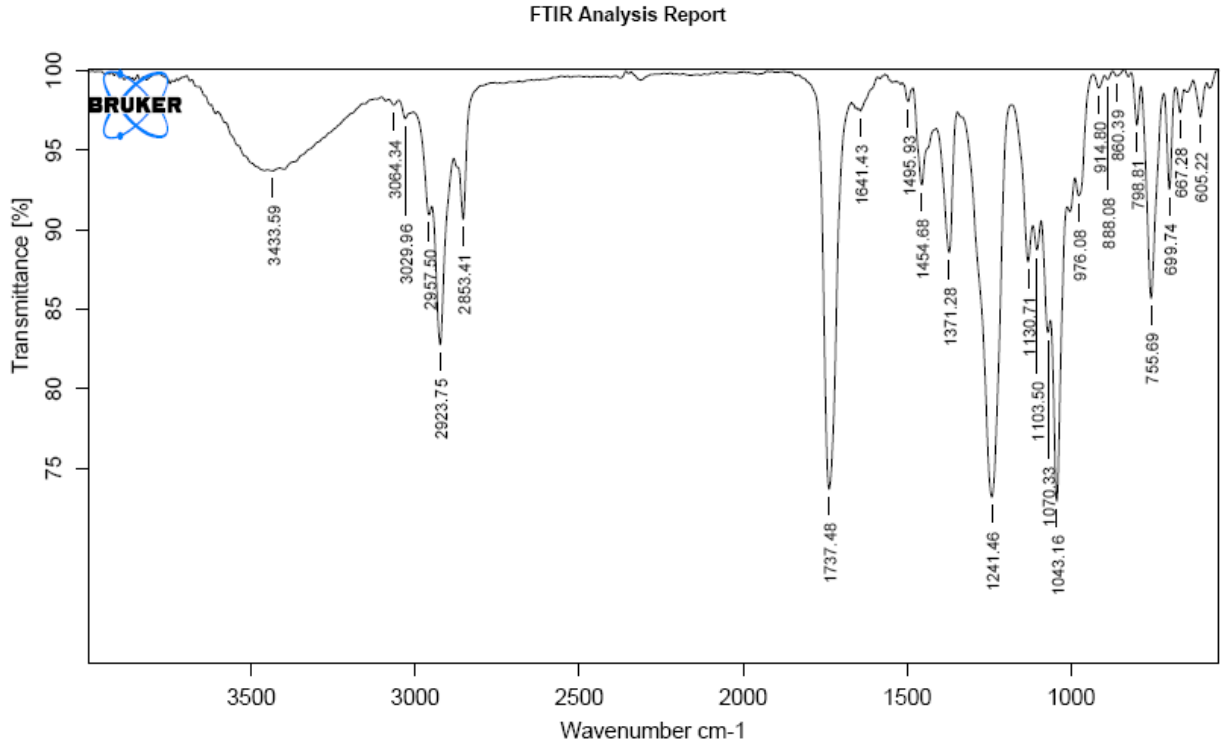
^{1}H NMR Spectrum of compound **3a'** (Pure) in $CDCl_3$ (500 MHz)



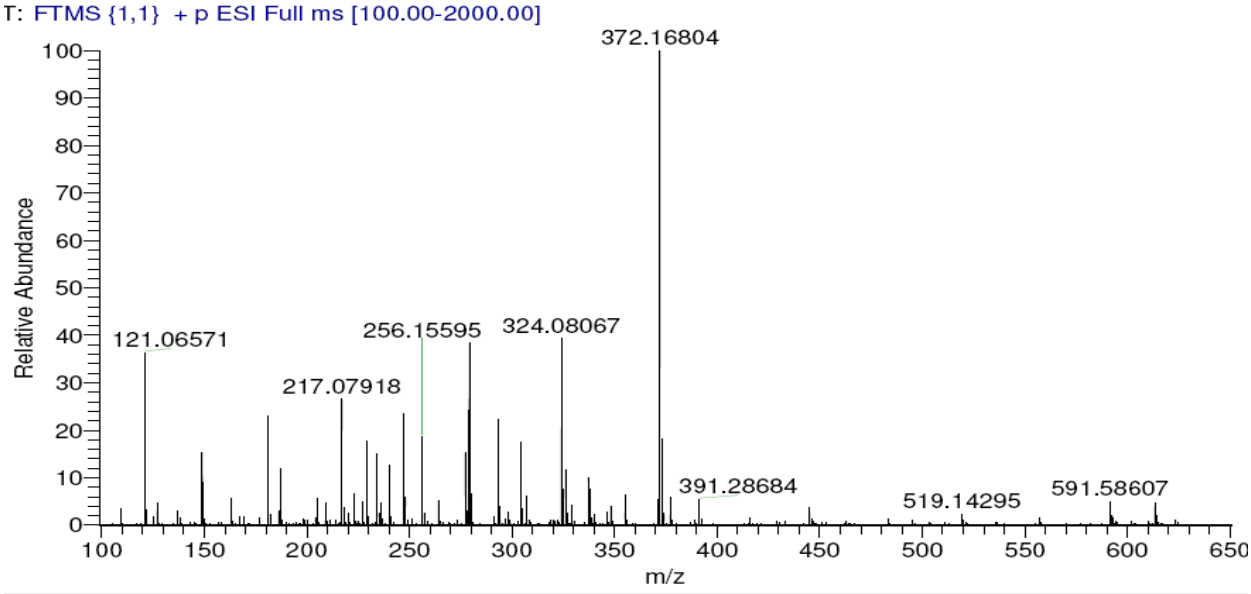
^{13}C NMR Spectrum of compound **3a'** (Pure) in $CDCl_3$ (75 MHz)



IR Spectrum of compound **3a'** in $CHCl_3$



HRMS Spectrum of compound **3a'**

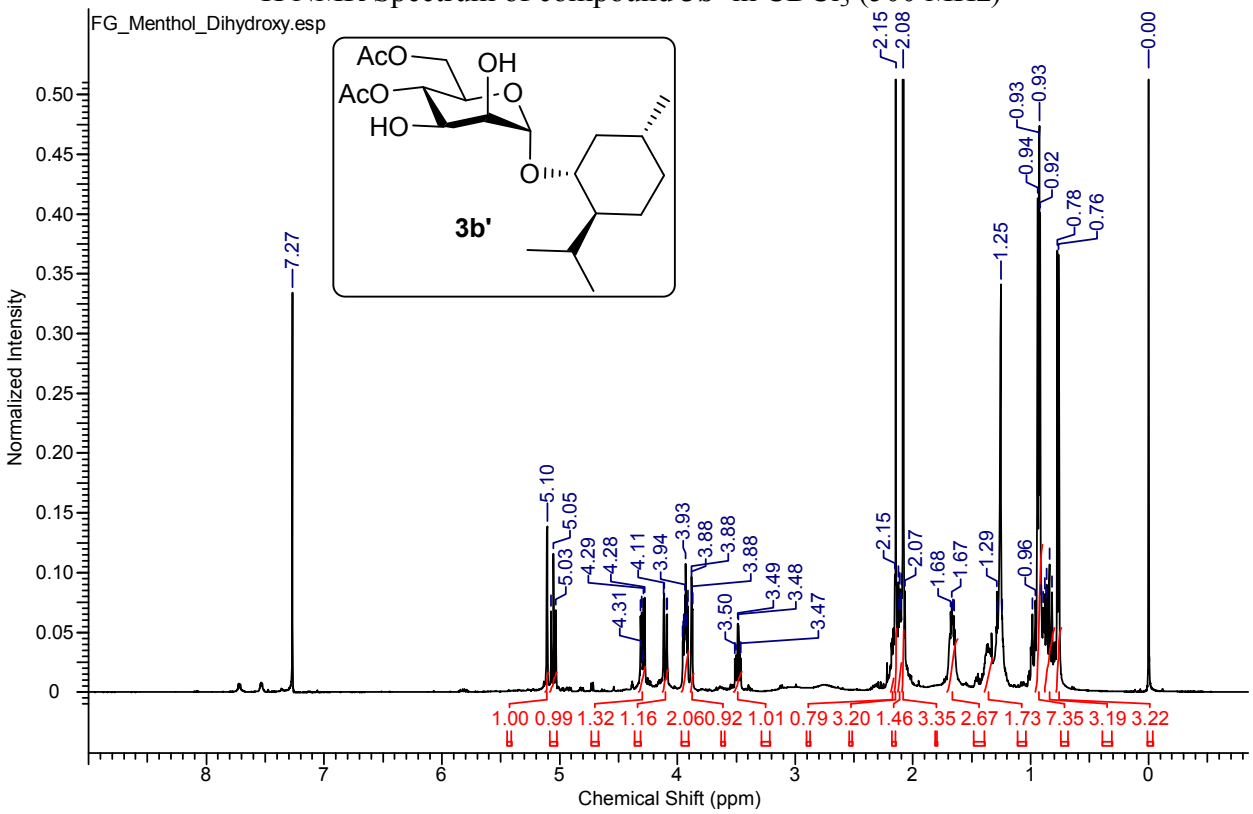


PRK-CM-2-27B#8-30 RT: 0.03-0.11 AV: 23
T: FTMS {1,1} + p ESI Full ms [100.00-2000.00]

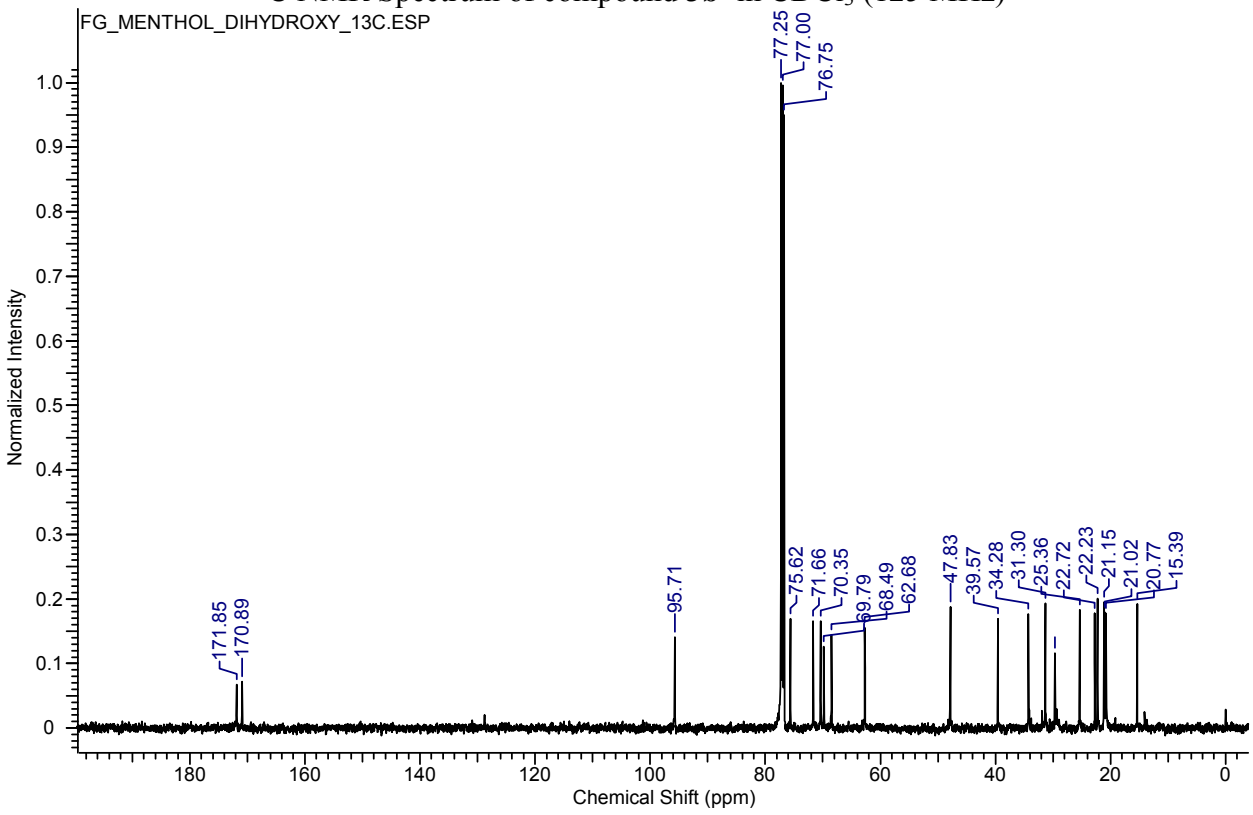
m/z	Intensity	Relative	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
372.16806	5882308.5	100.00	372.16529	2.77	5.5	$C_{17}H_{26}O_8N$

HRMS (ESI) *m/z* $[M + NH_4]^+$ calcd. for $C_{17}H_{26}NO_8^+$: 372.16529; found: 372.16804.

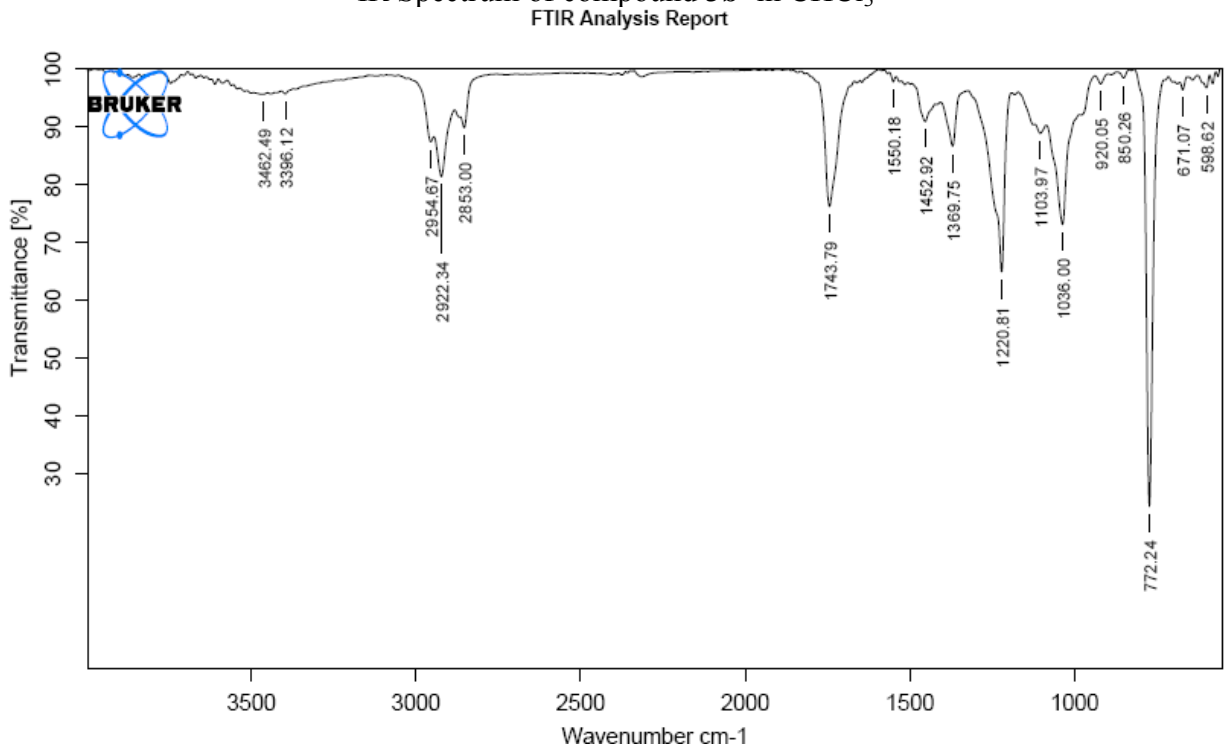
^{1}H NMR Spectrum of compound **3b'** in $CDCl_3$ (500 MHz)



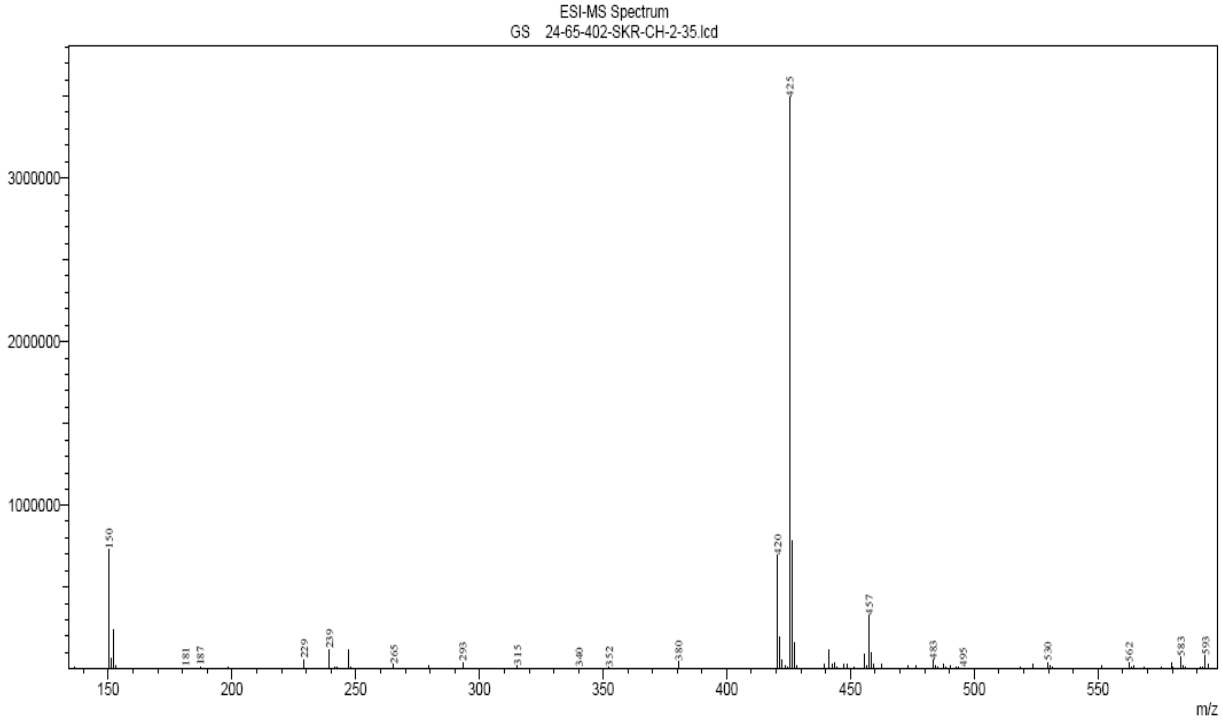
^{13}C NMR Spectrum of compound **3b'** in $CDCl_3$ (125 MHz)



IR Spectrum of compound **3b'** in $CHCl_3$

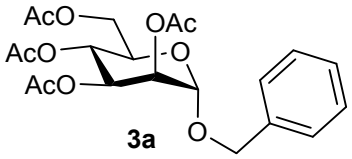
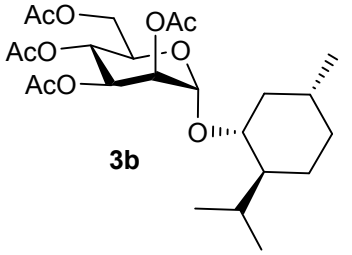
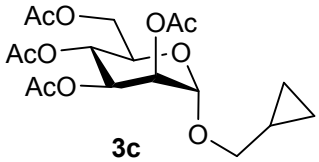
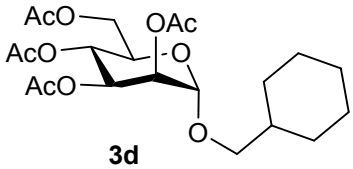
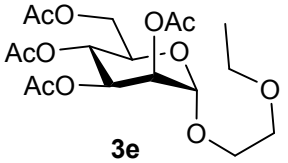
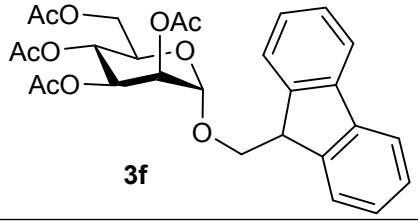
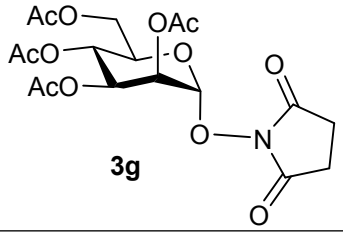


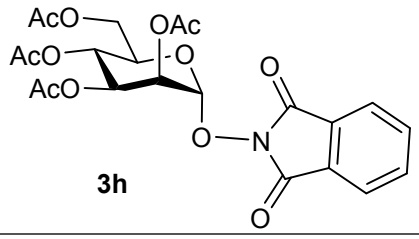
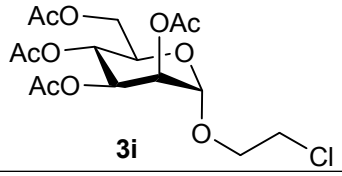
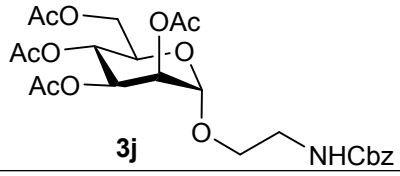
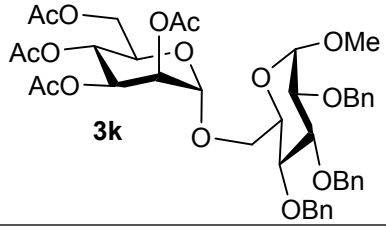
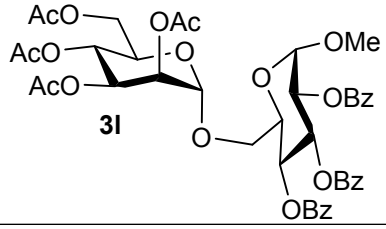
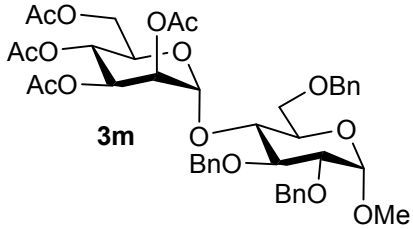
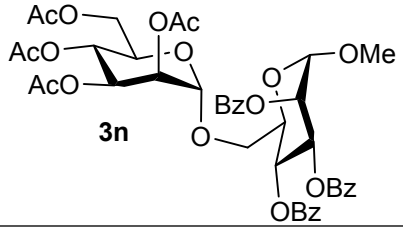
ESI Spectrum of compound **3b'**

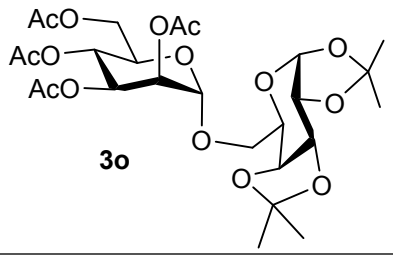
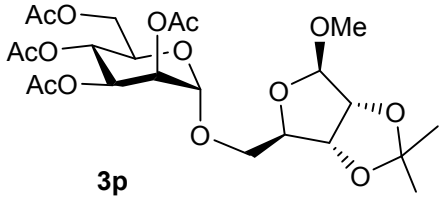
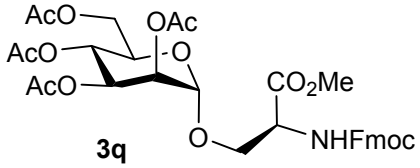
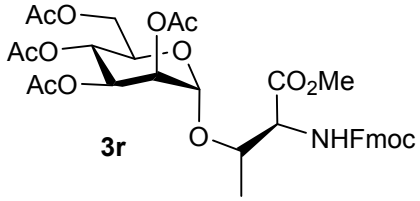
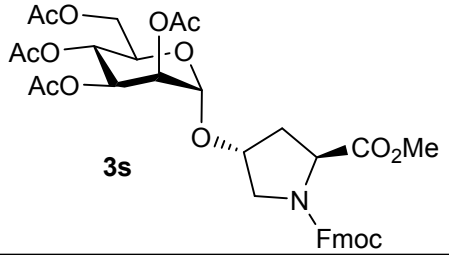
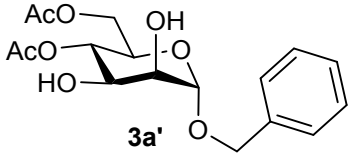
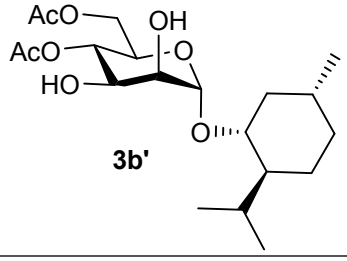


ESI *m/z* $[M + Na]^+$ calcd. for $C_{20}H_{34}O_8Na^+$: 425.21459; found: 425.

Optical Rotation data sheet:

Sr. No.	Compound	Conc. (c, $CHCl_3$)	Optical Rotation, $[\alpha]_D$
1	 **3a**	(c 3.8, $CHCl_3$)	+32.609
2	 **3b**	(c 3.9, $CHCl_3$)	+103.780
3	 **3c**	(c 4.8, $CHCl_3$)	+49.720
4	 **3d**	(c 2.6, $CHCl_3$)	+52.329
5	 **3e**	(c 5.2, $CHCl_3$)	+27.192
6	 **3f**	(c 4.1, $CHCl_3$)	+41.951
7	 **3g**	(c 4.5, $CHCl_3$)	+84.578

8	 **3h**	(c 3.3, $CHCl_3$)	+28.200
9	 **3i**	(c 3.5, $CHCl_3$)	+65.400
10	 **3j**	(c 1.5, $CHCl_3$)	+29.867
11	 **3k**	(c 3.9, $CHCl_3$)	+57.966
12	 **3l**	(c 4.4, $CHCl_3$)	+43.237
13	 **3m**	(c 0.7, $CHCl_3$)	+94.500
14	 **3n**	(c 2.1, $CHCl_3$)	-69.905

15	 **3o**	(c 1.8, $CHCl_3$)	+37.889
16	 **3p**	(c 4.9, $CHCl_3$)	+4.122
17	 **3q**	(c 4.7, $CHCl_3$)	+61.310
18	 **3r**	(c 1.7, $CHCl_3$)	+12.920
19	 **3s**	(c 2.2, $CHCl_3$)	-36.364
20	 **3a'**	(c 2.1, $CHCl_3$)	+23.810
21	 **3b'**	(c 1.4, $CHCl_3$)	+63.571