

Green ultrasound versus conventional synthesis and characterization of specific task pyridinium ionic liquid hydrazones tethering fluorinated counter anions: Novel inhibitors of fungal ergosterol biosynthesis

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Mousslim Messali¹, Mohamed R. Aouad^{1,2,*}

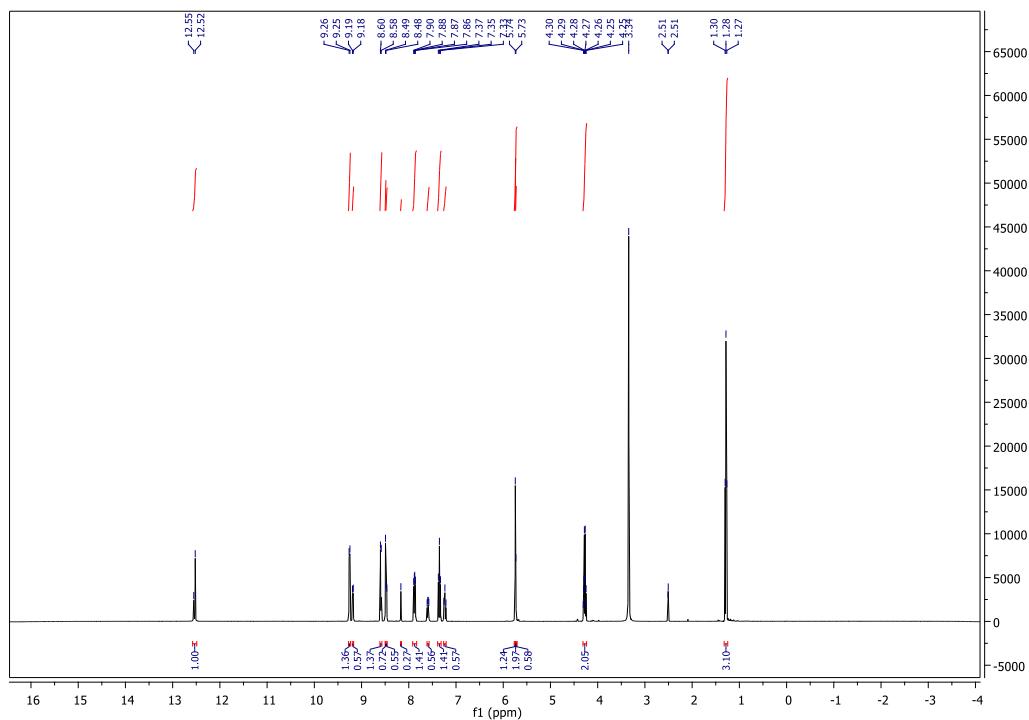


Figure S1. ¹H NMR of Compound 2.

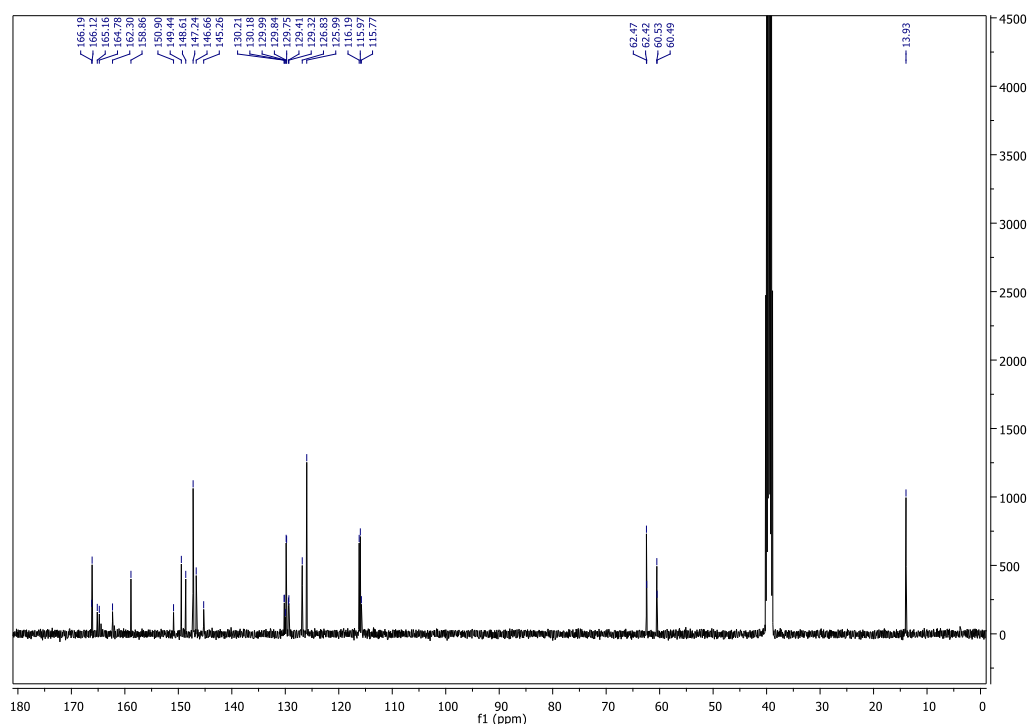


Figure S2. ¹³C NMR of Compound 2

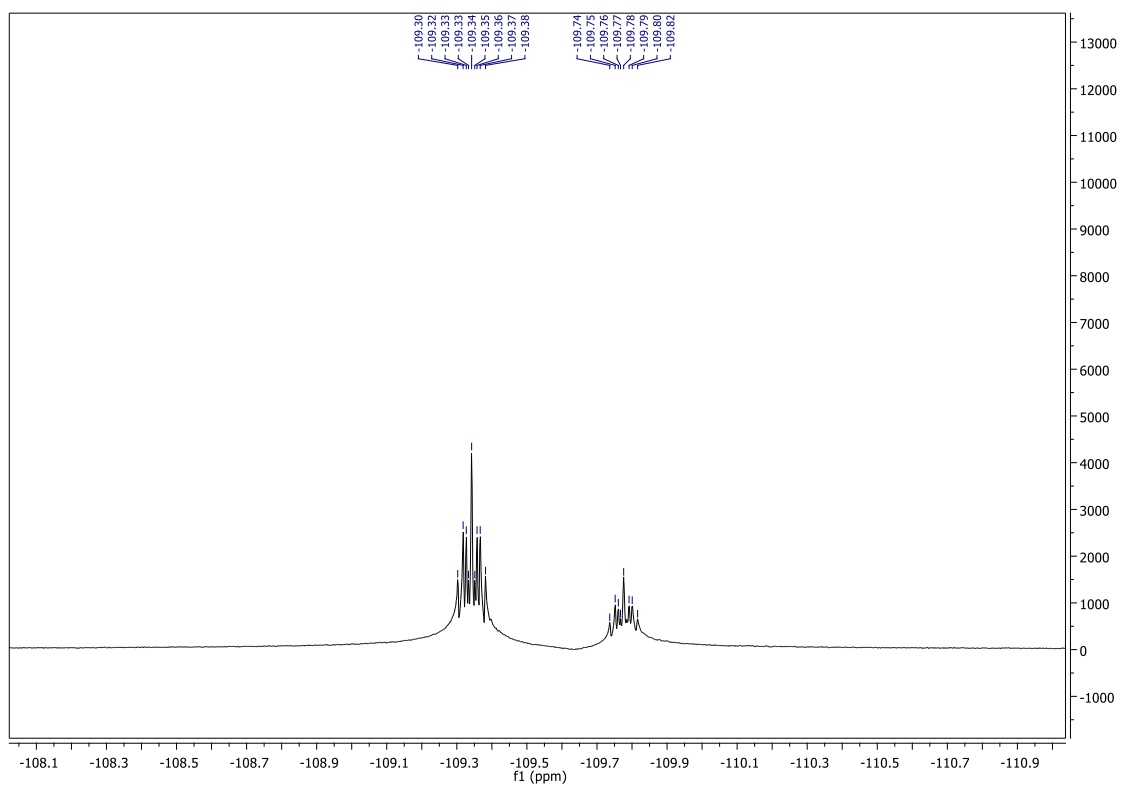


Figure S3. ^{19}F NMR of Compound 2

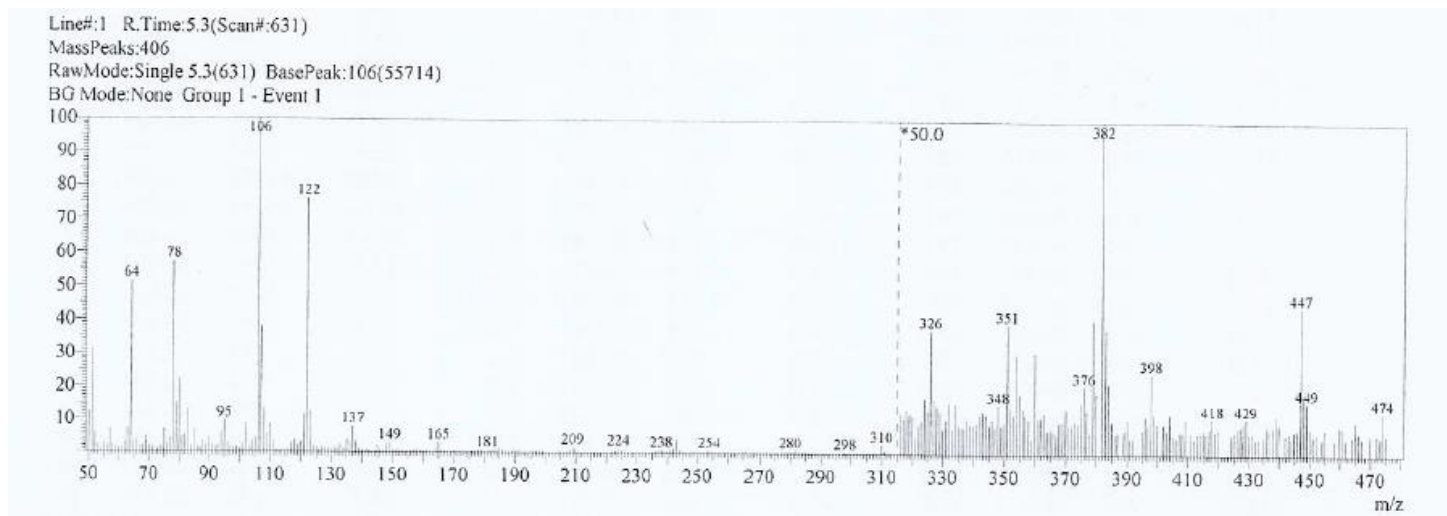


Figure S4. MS (ESI) of Compound 2

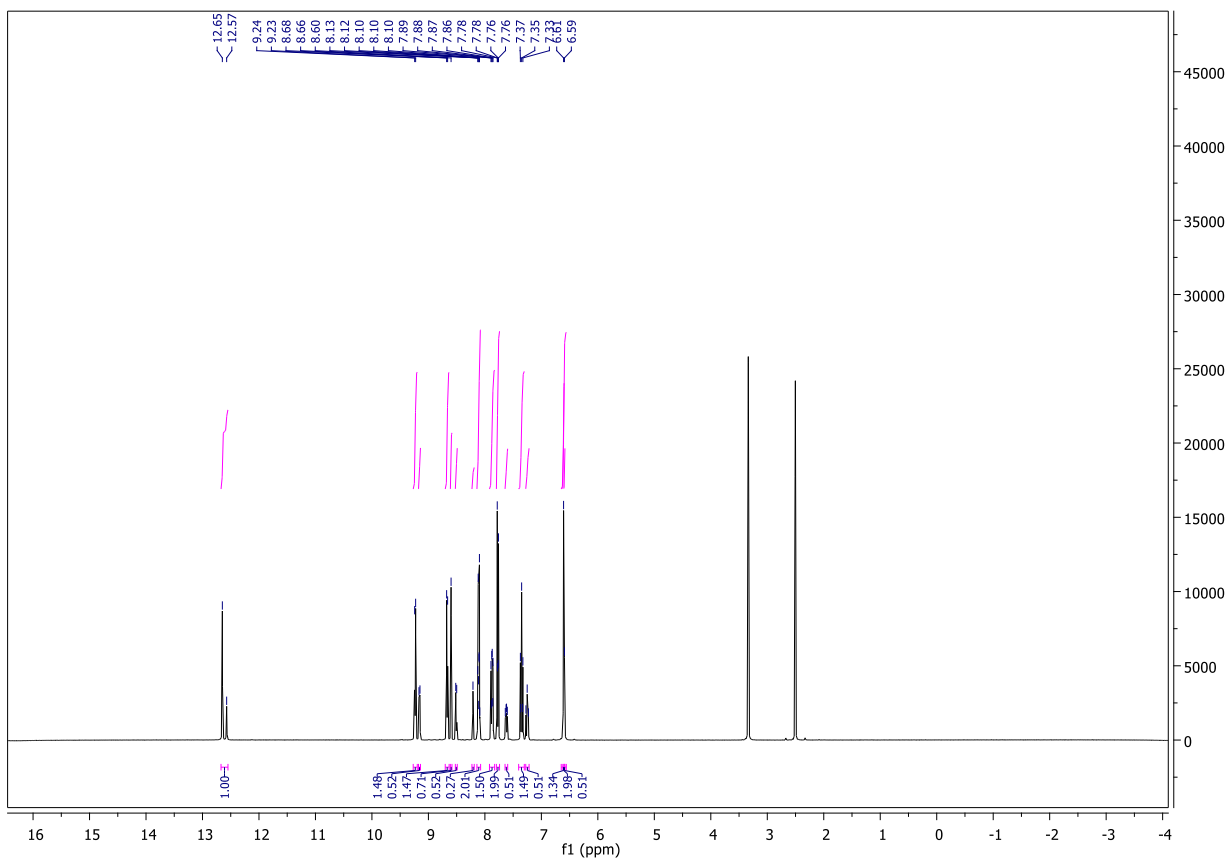


Figure S5. ¹H NMR of Compound 3

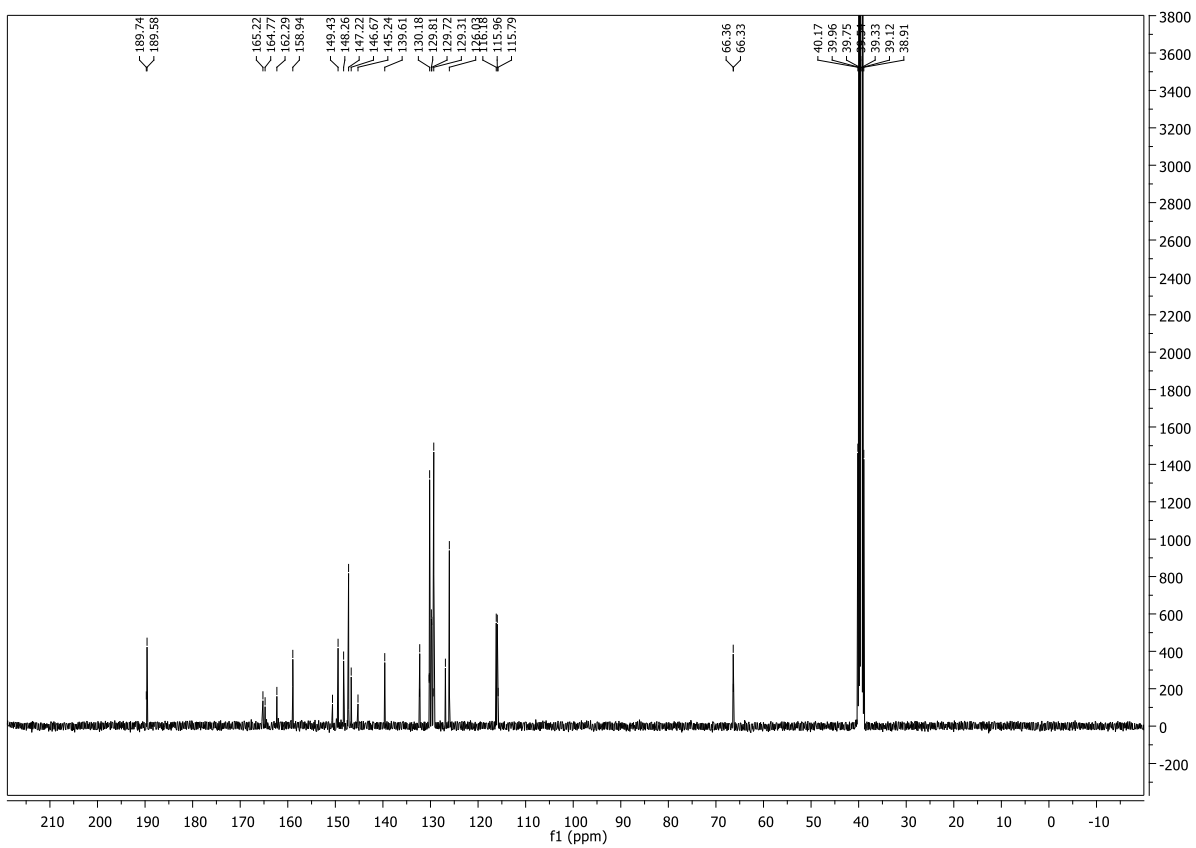


Figure S6. ¹³C NMR of Compound 3

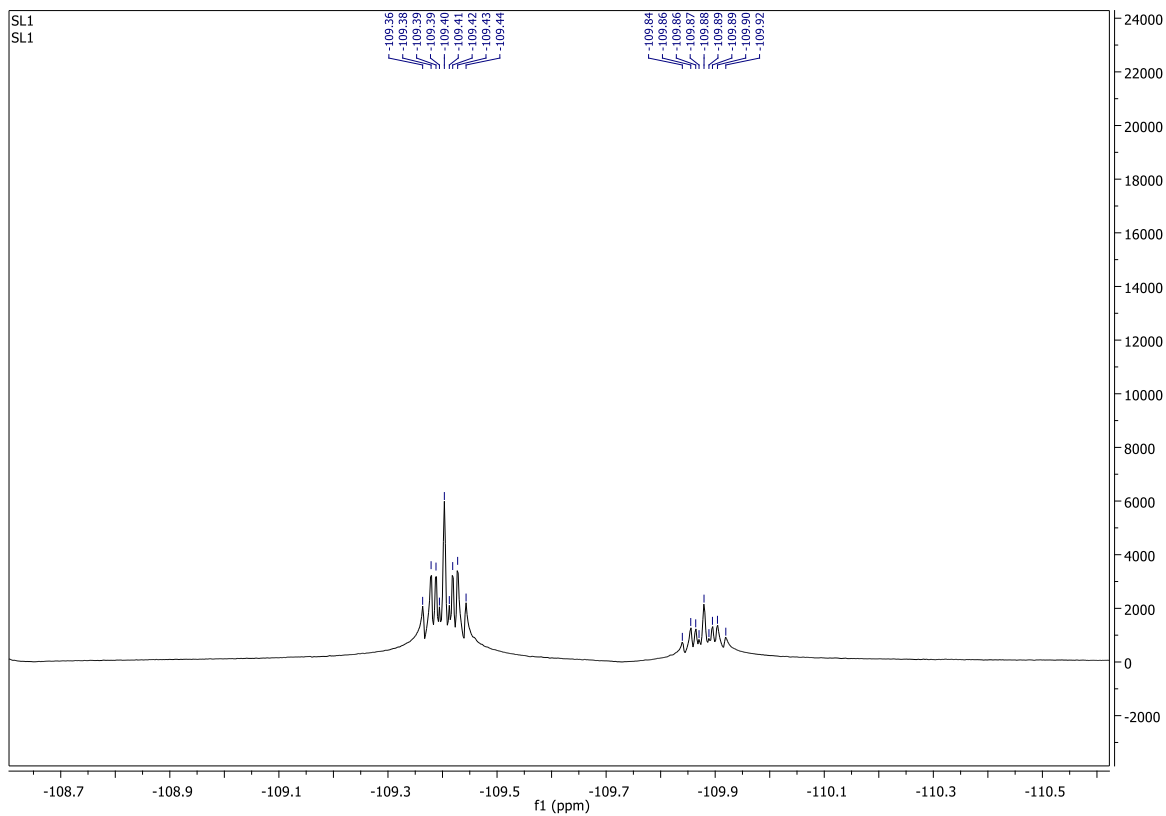


Figure S7. ^{19}F NMR of Compound 3

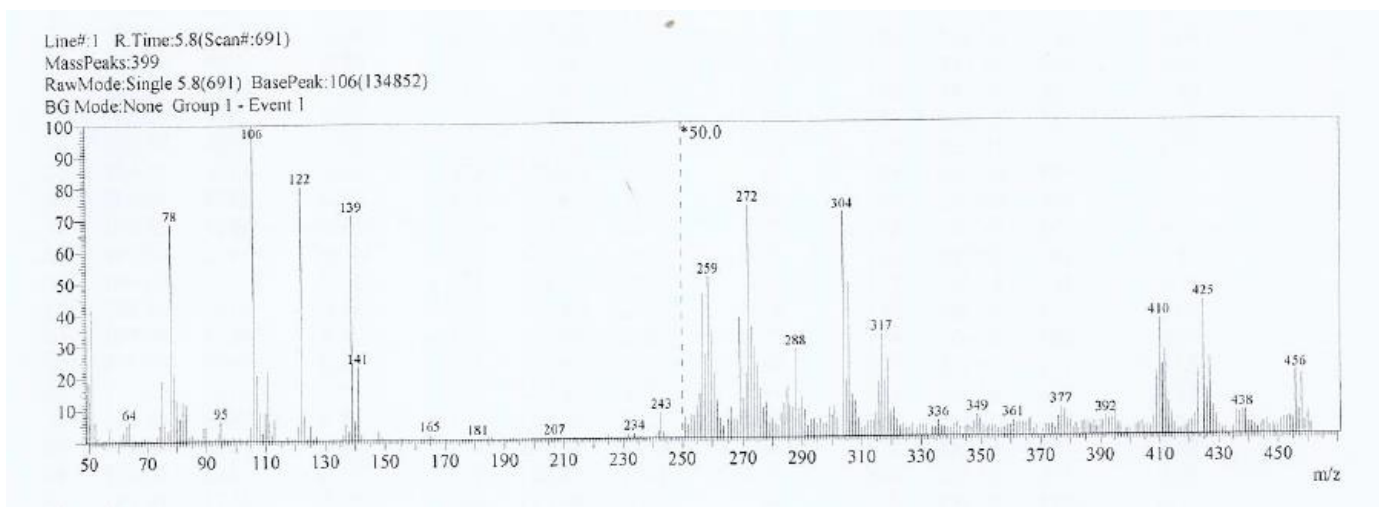


Figure S8. MS (ESI) of Compound 3

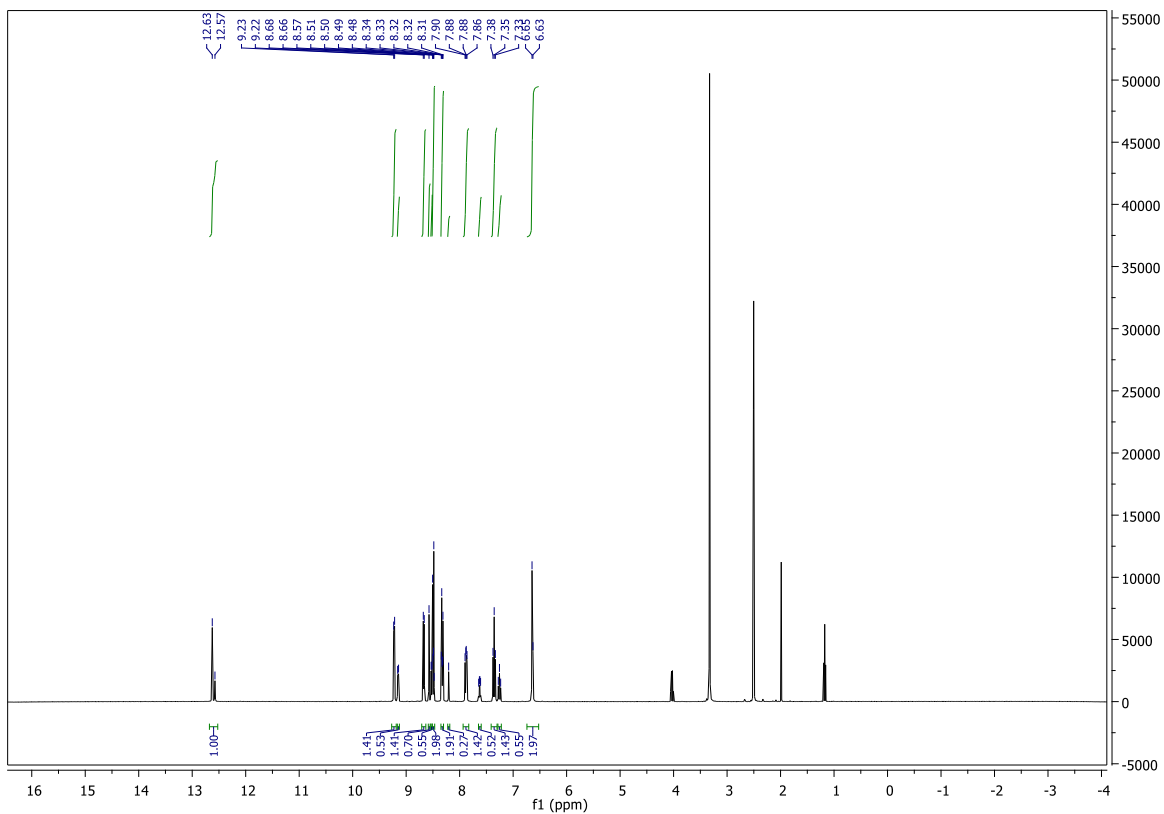


Figure S9. ^1H NMR of Compound 4

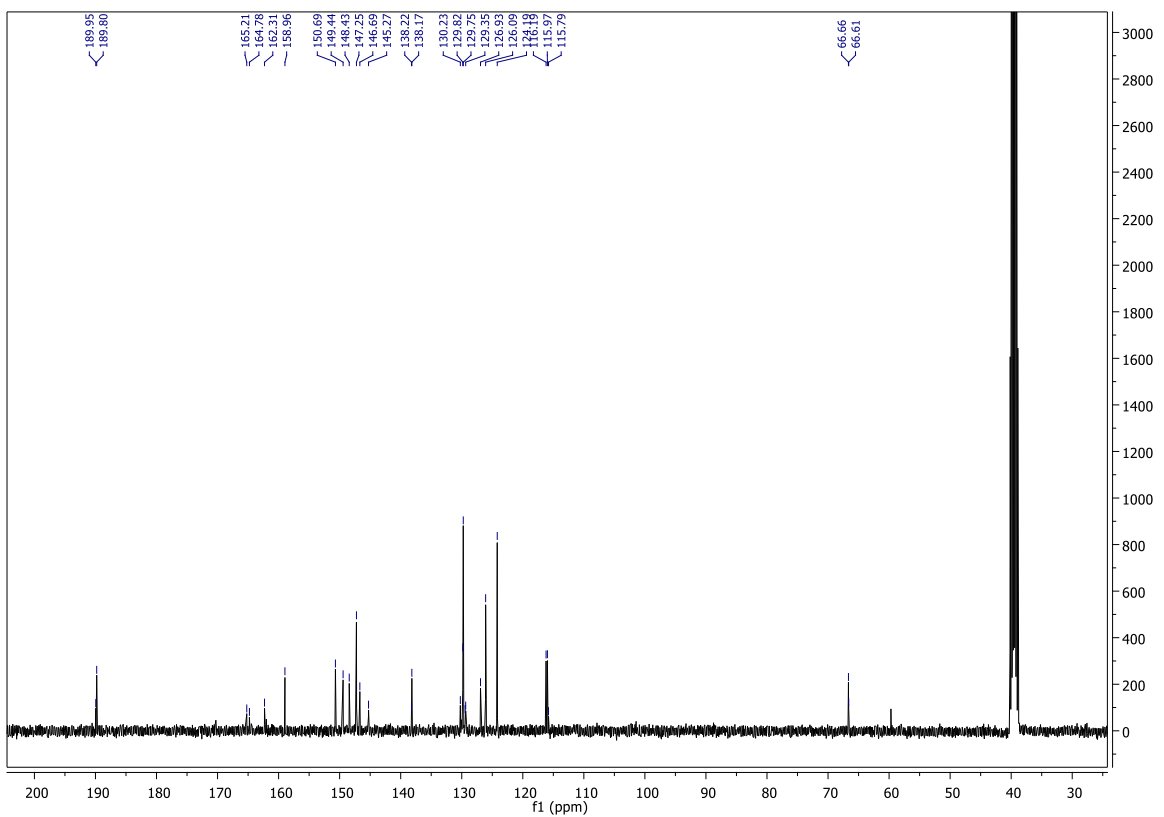


Figure S10. ^{13}C NMR of Compound 4

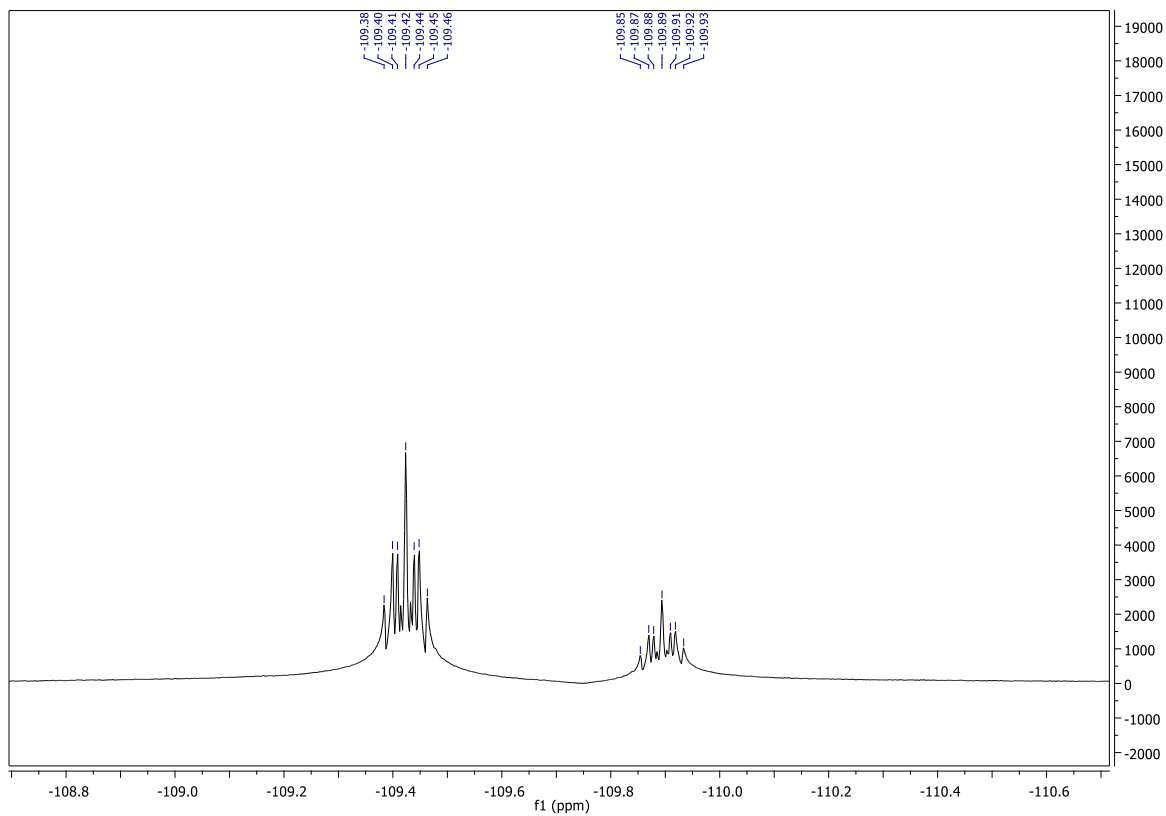


Figure S11. ^{19}F NMR of Compound 4

Line#:1 R.Time:5.1(Scan#:610)

MassPeaks:376

RawMode:Single 5.1(610) BasePeak:106(191702)

BG Mode:None Group 1 - Event 1

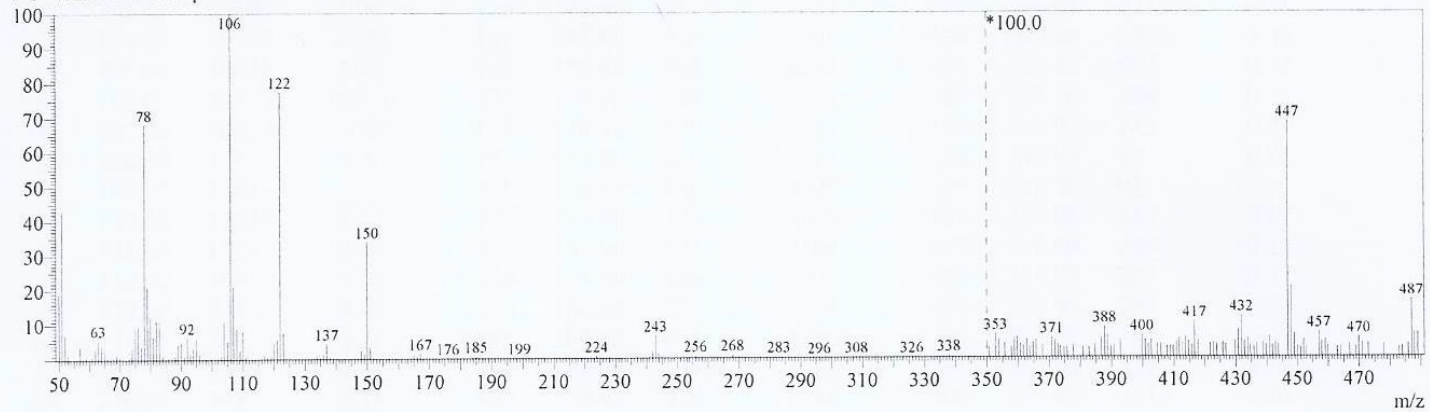


Figure S12. MS (ESI) of Compound 4

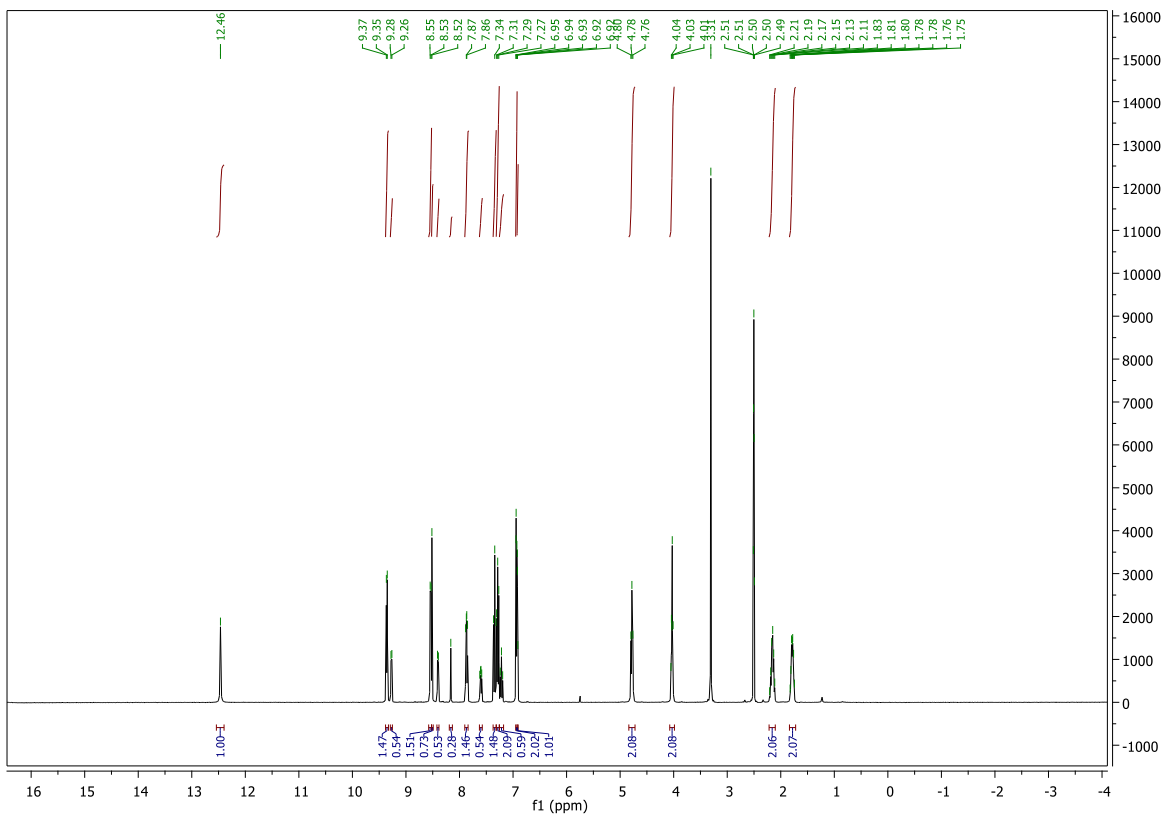


Figure S13. ^1H NMR of Compound 5

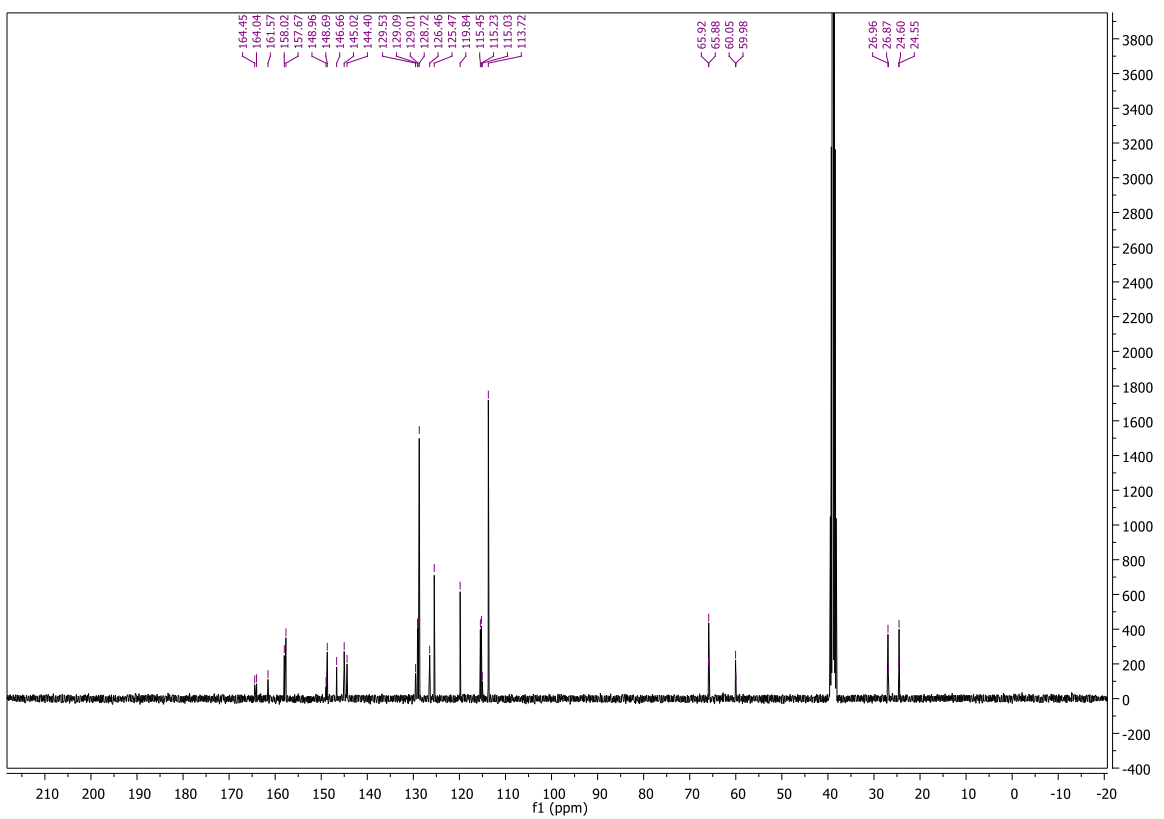


Figure S14. ^{13}C NMR of Compound 5

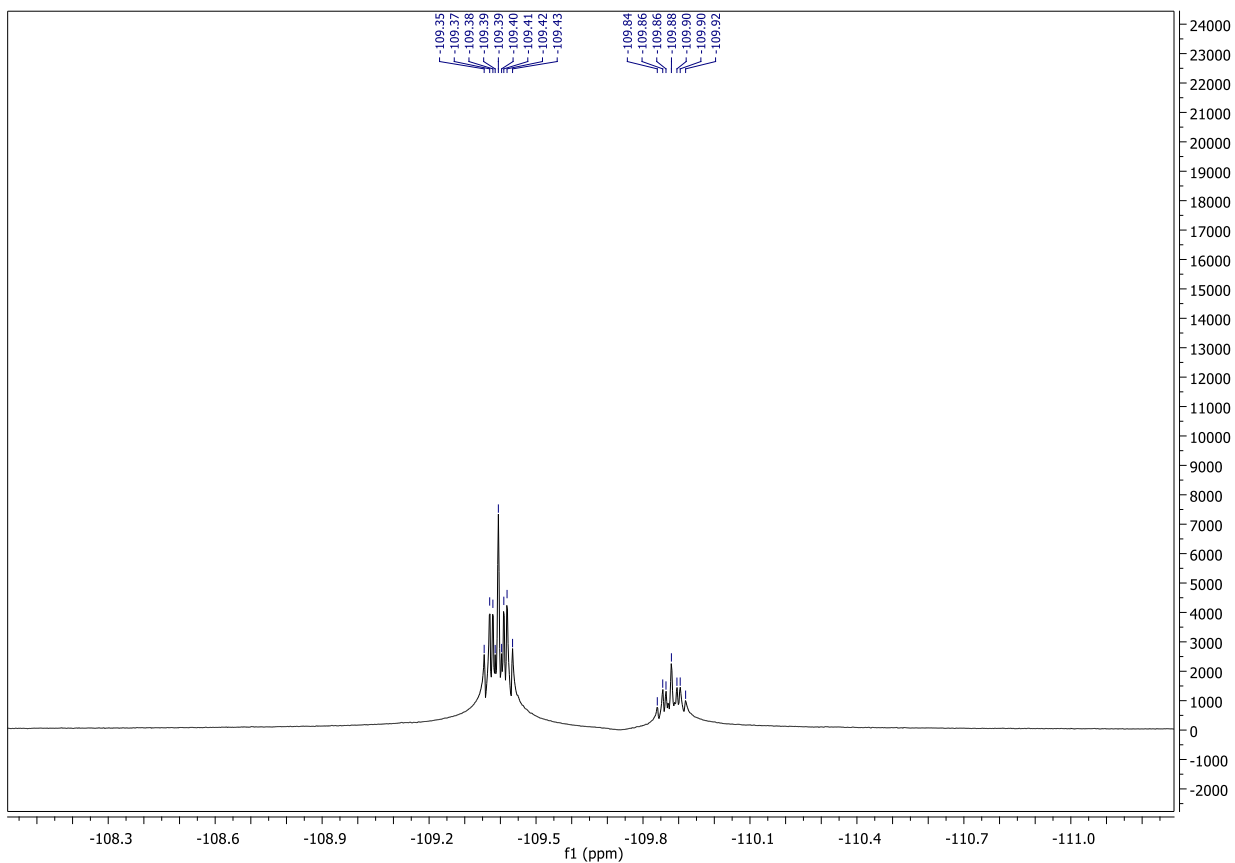


Figure S15. ^{19}F NMR of Compound 5

Line#:1 R.Time:6.7(Scan#:802)

MassPeaks:408

RawMode:Single 6.7(802) BasePeak:106(44343)

BG Mode:None Group 1 - Event 1

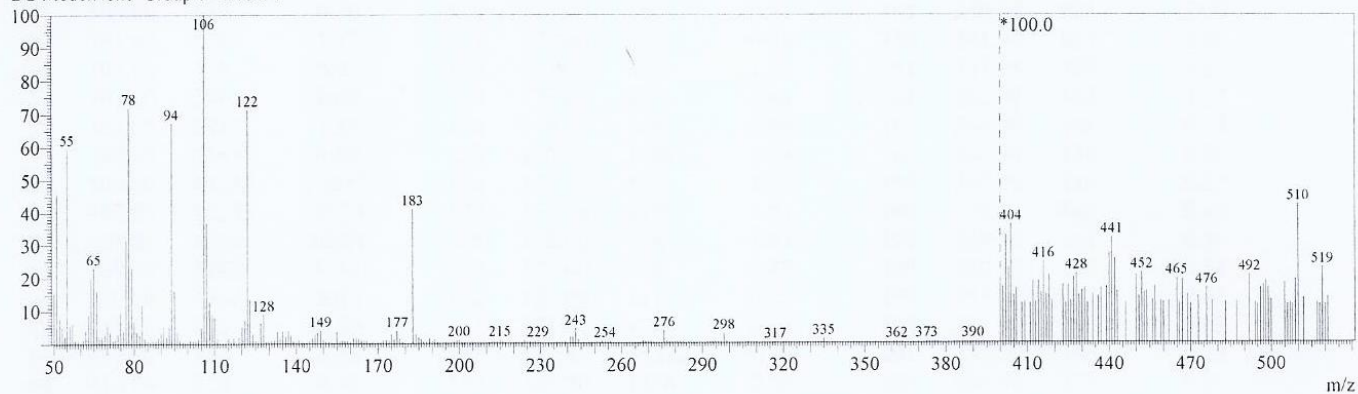


Figure S16. MS (ESI) of Compound 5

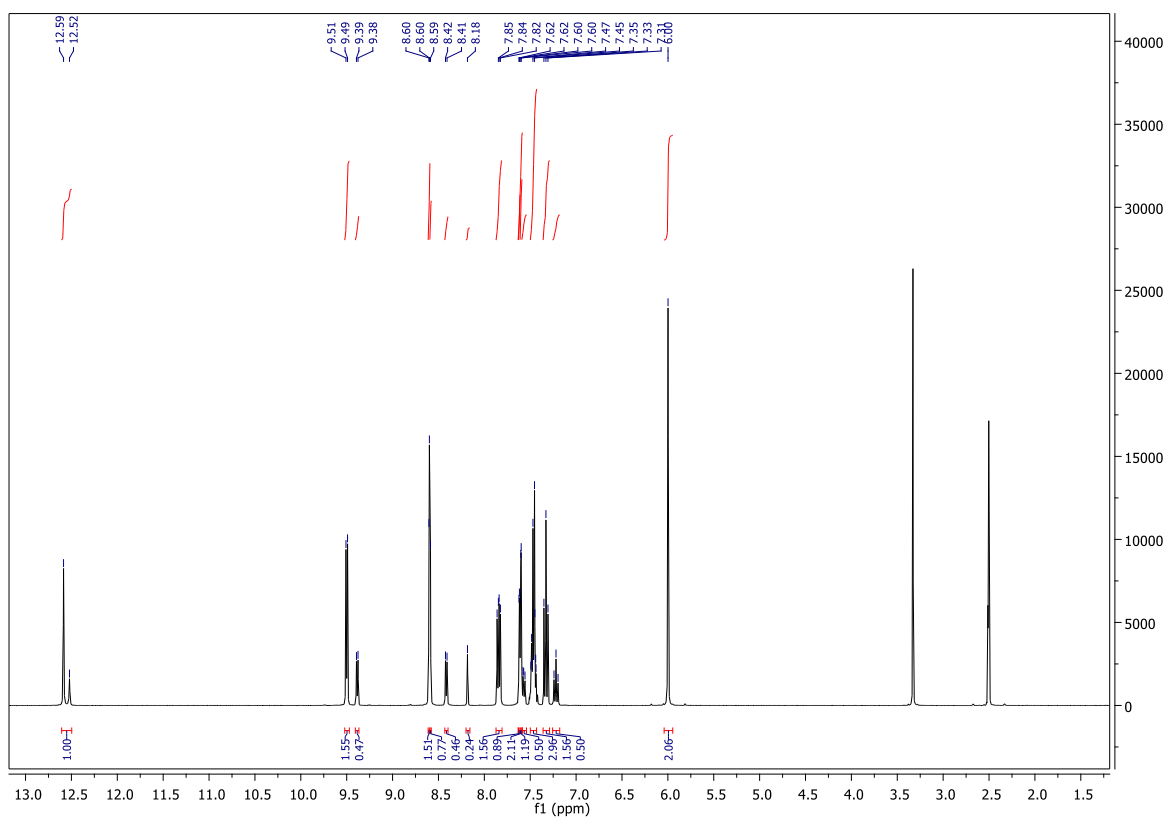


Figure S17. ¹H NMR of Compound 6

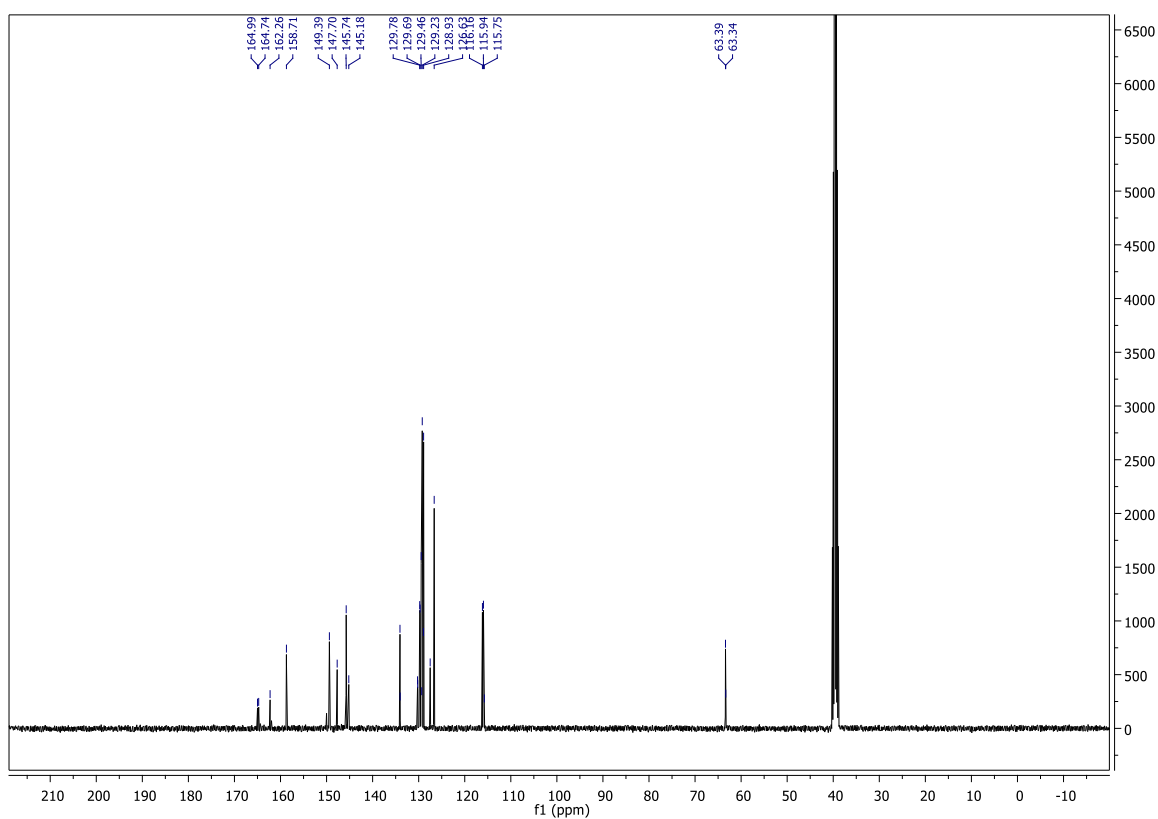
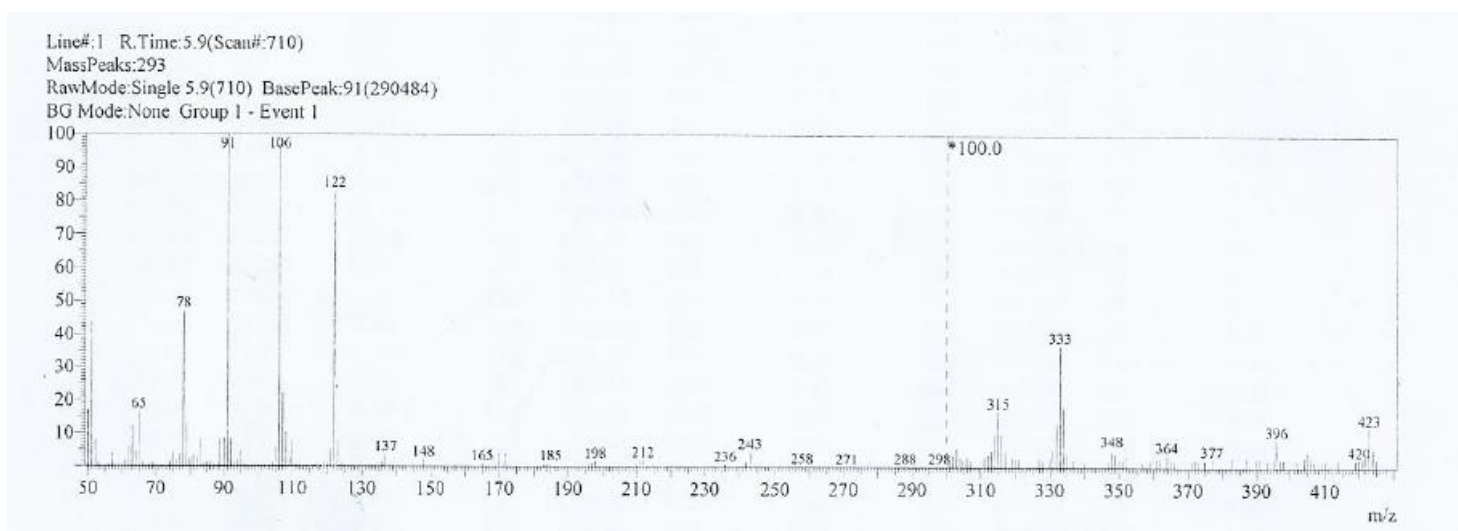
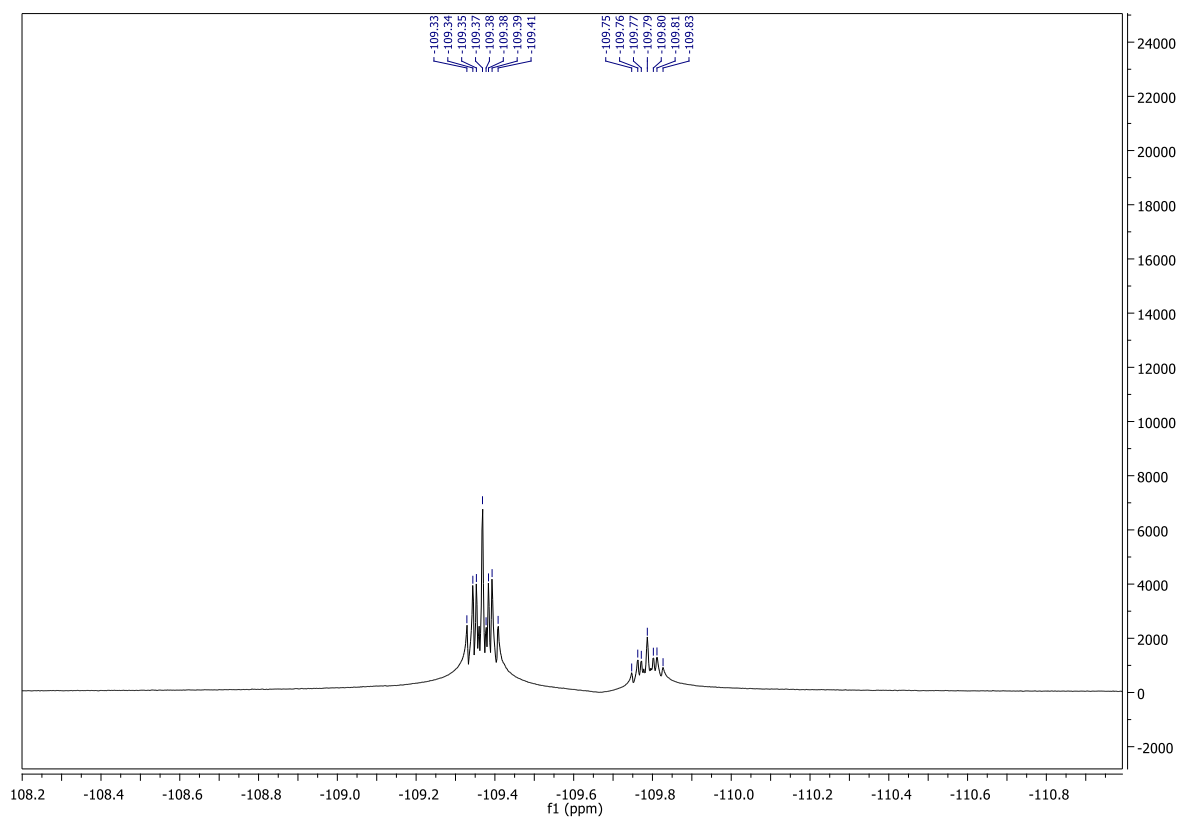


Figure S18. ¹³C NMR of Compound 6



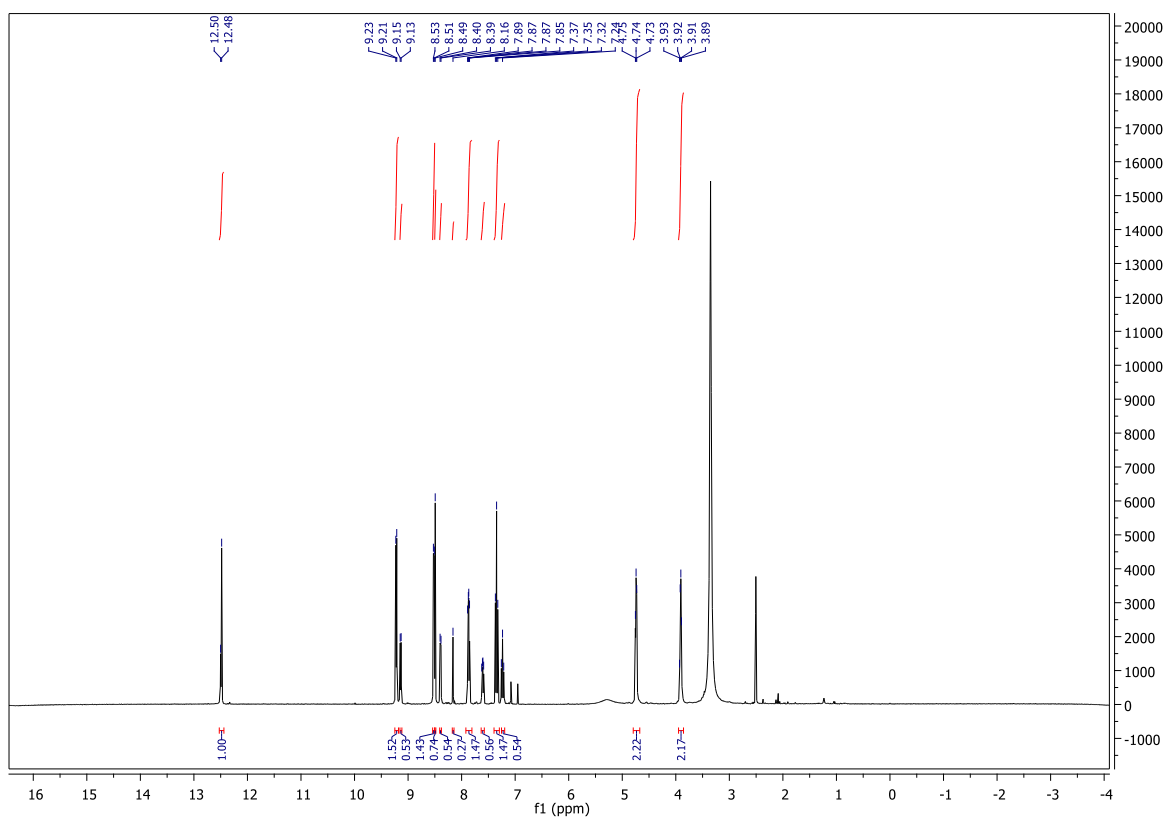


Figure S21. ¹H NMR of Compound 7

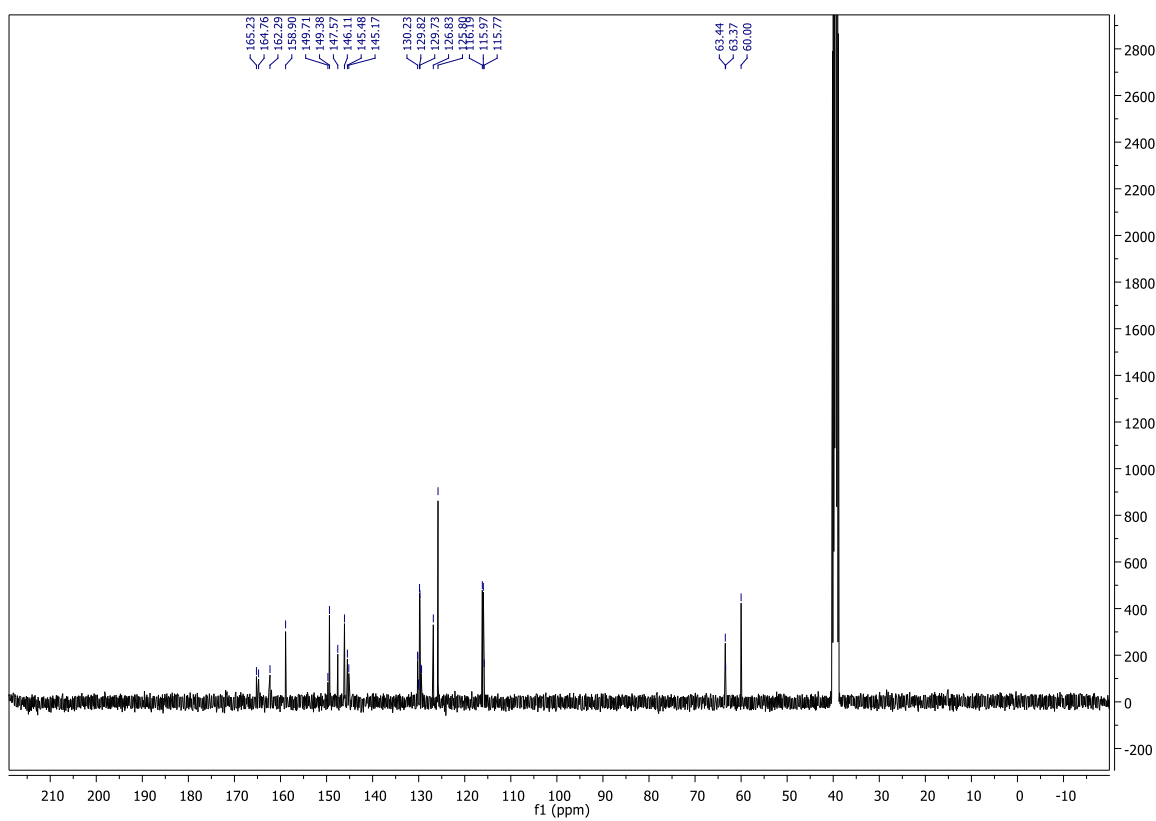


Figure S22. ¹³C NMR of Compound 7

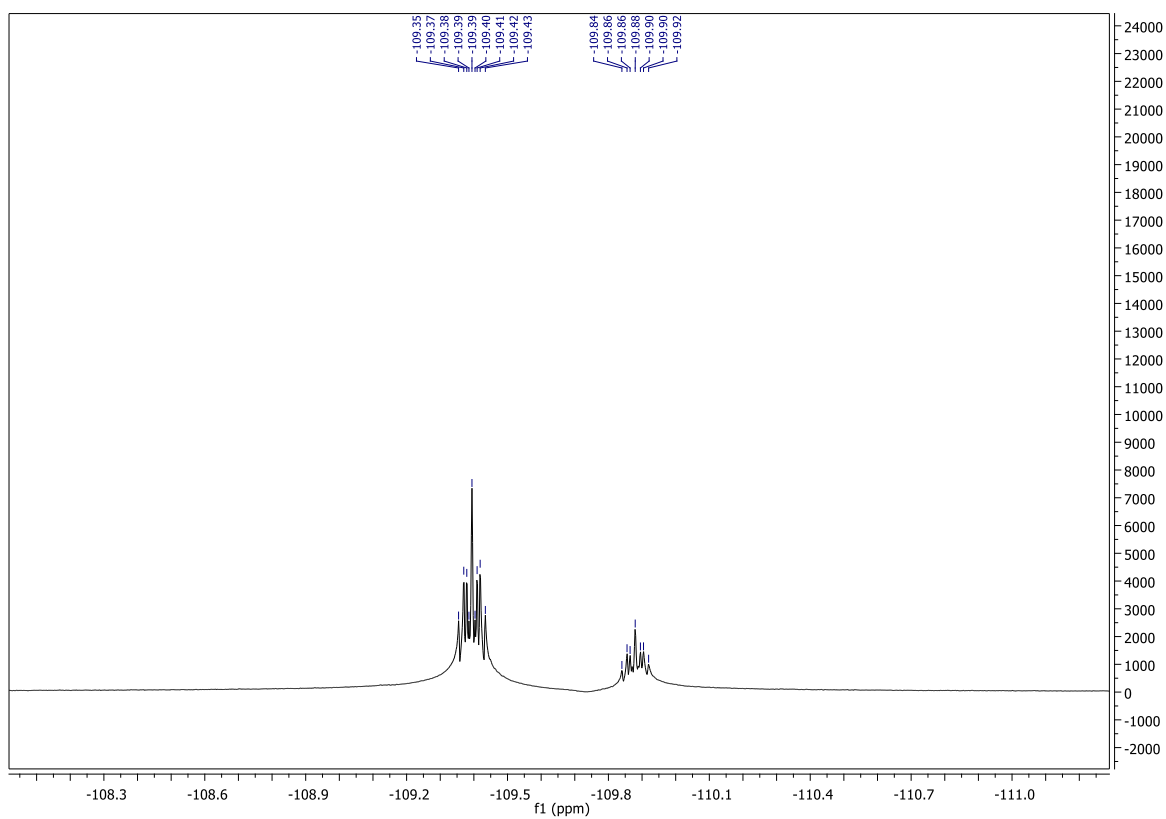


Figure S23. ^{19}F NMR of Compound 7

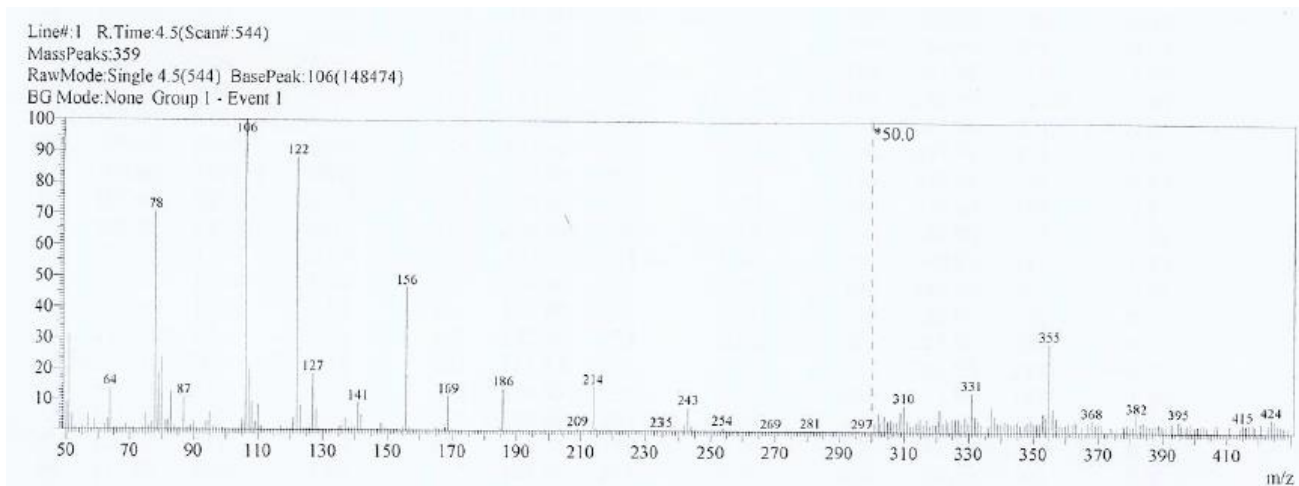


Figure S24. MS (ESI) of Compound 7

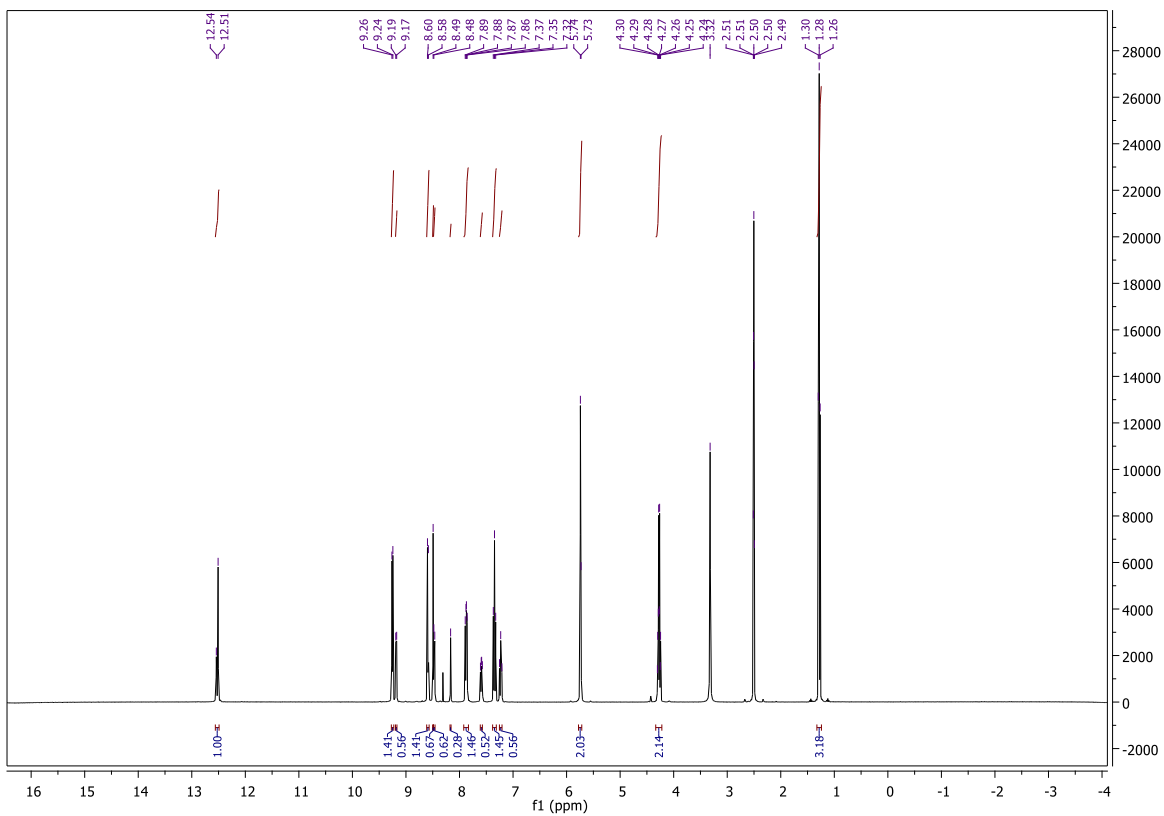


Figure S25. ^1H NMR of Compound 8

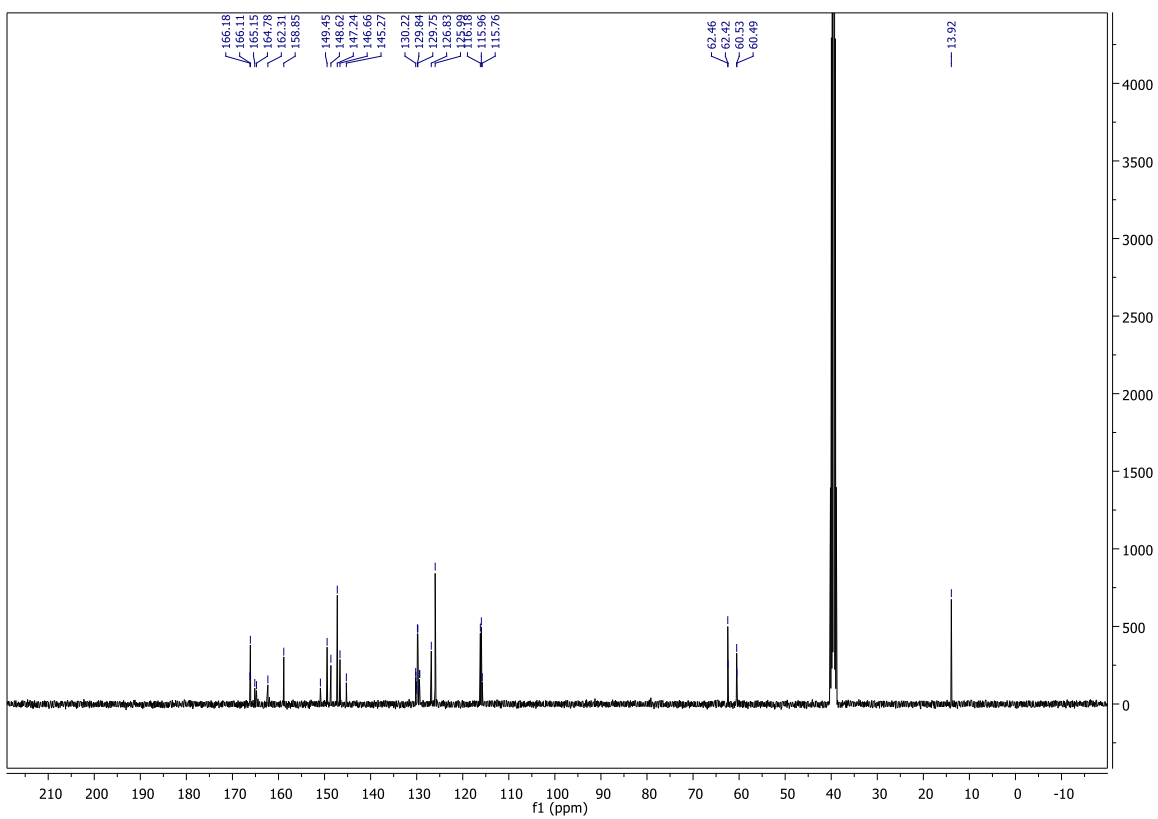


Figure S26. ^{13}C NMR of Compound 8

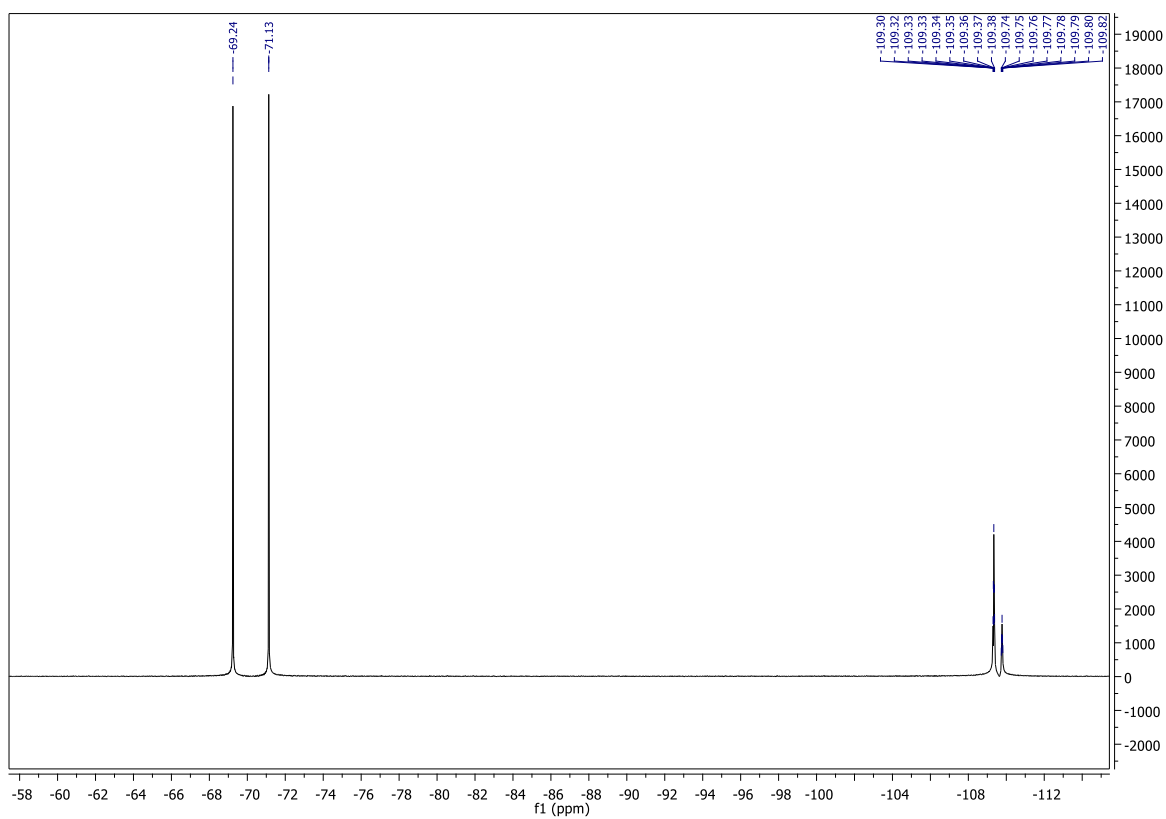


Figure S27. ^{19}F NMR of Compound 8

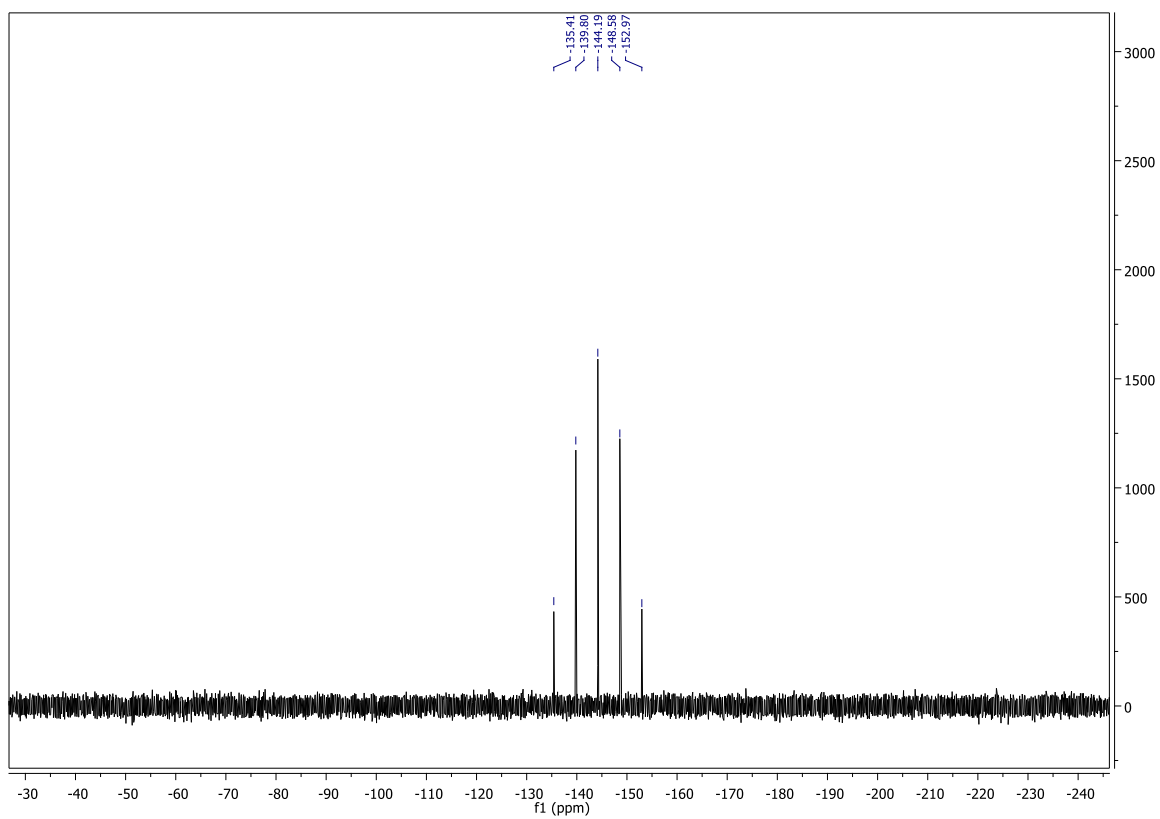


Figure S28. ^{31}P NMR of Compound 8

Line#:1 R.Time:5.3(Scan#:631)
MassPeaks:406
RawMode:Single 5.3(631) BasePeak:106(55714)
BG Mode:None Group 1 - Event 1

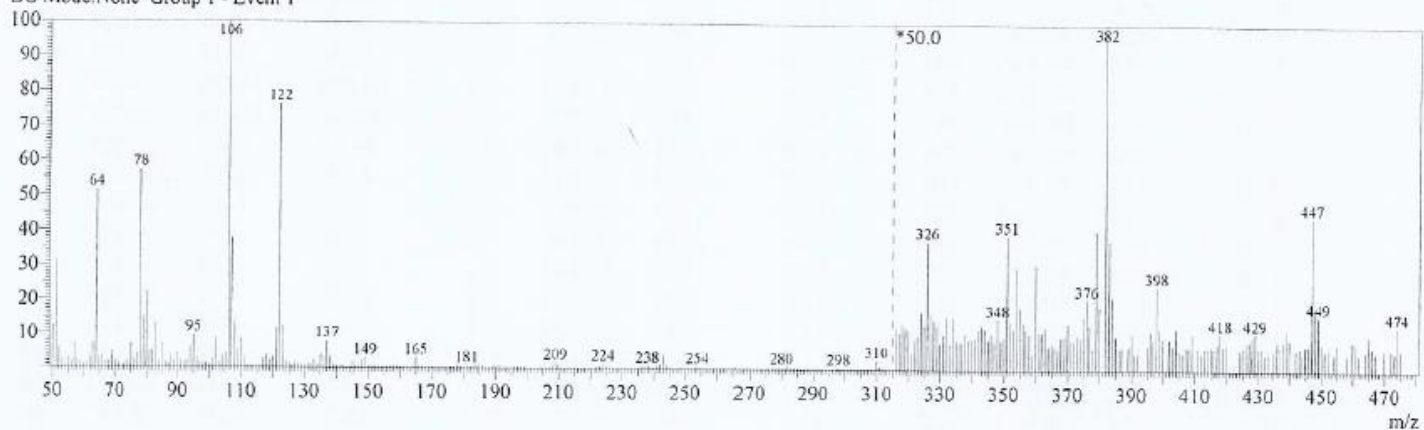


Figure S29. MS (ESI) of Compound 8

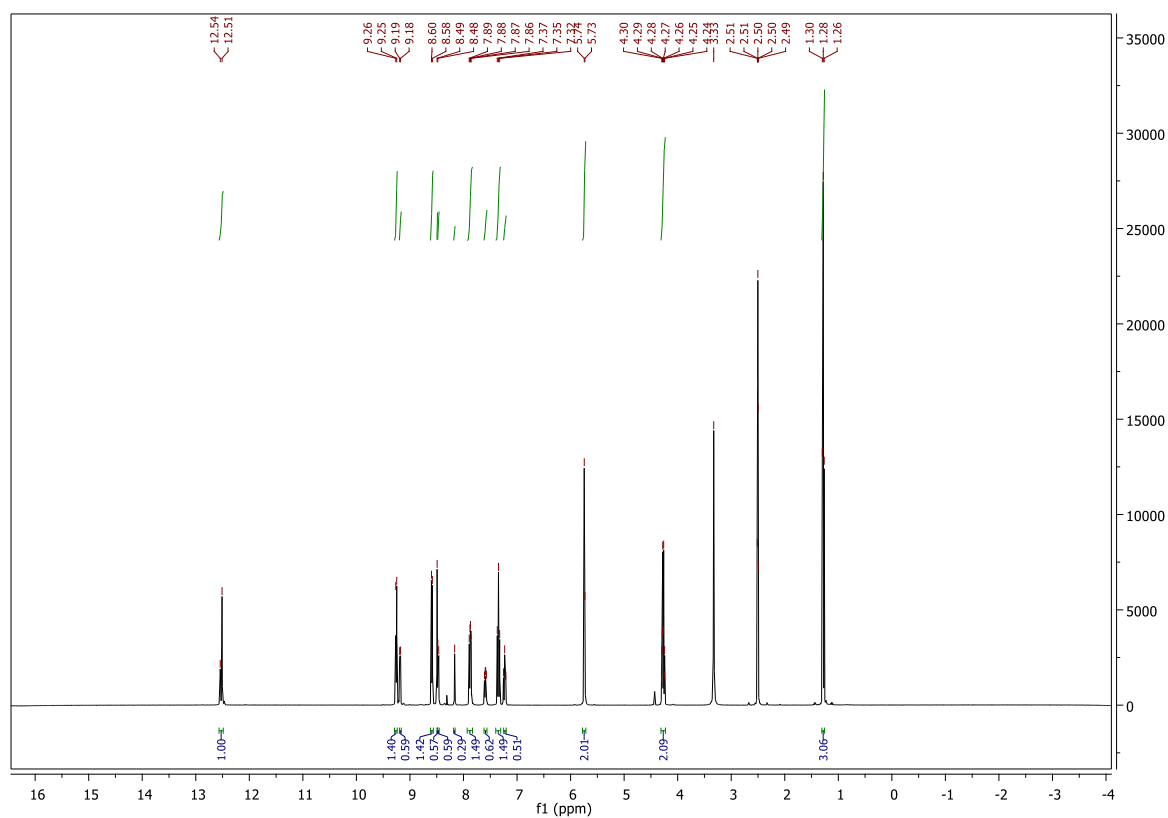


Figure S30. ^1H NMR of Compound 9

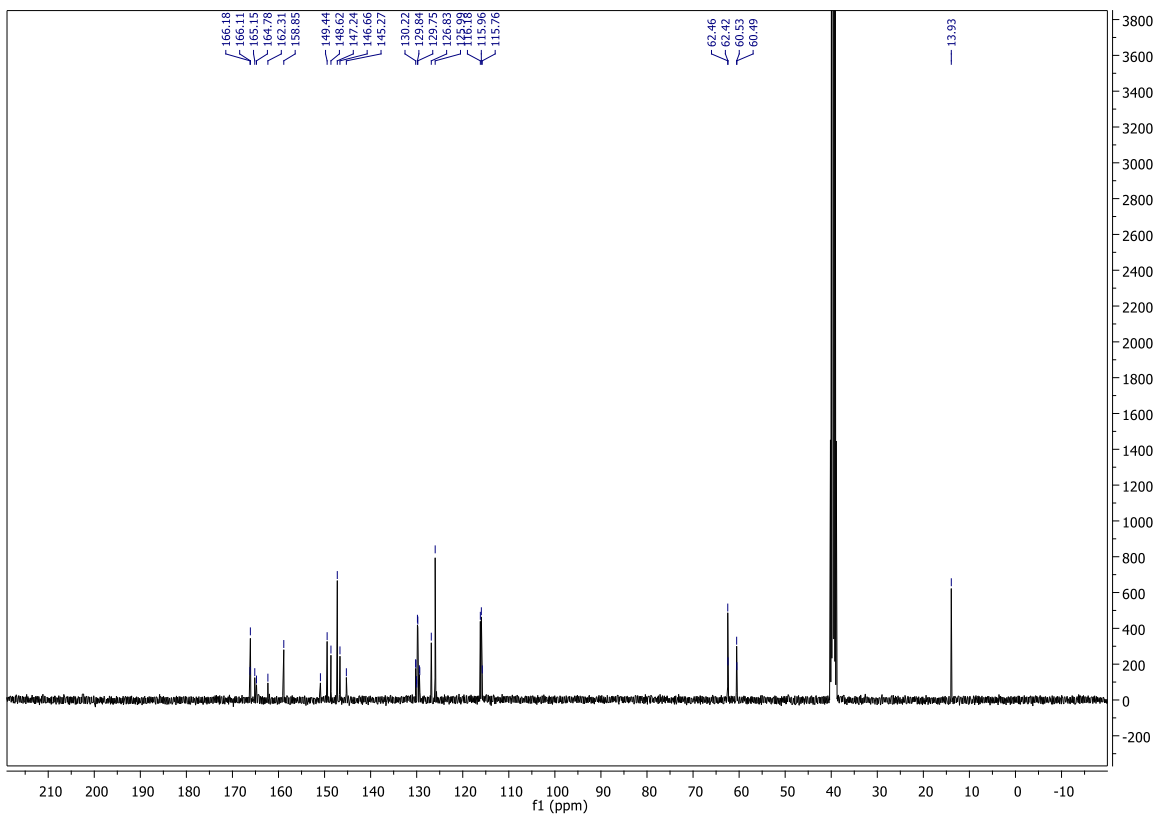


Figure S31. ^{13}C NMR of Compound 9

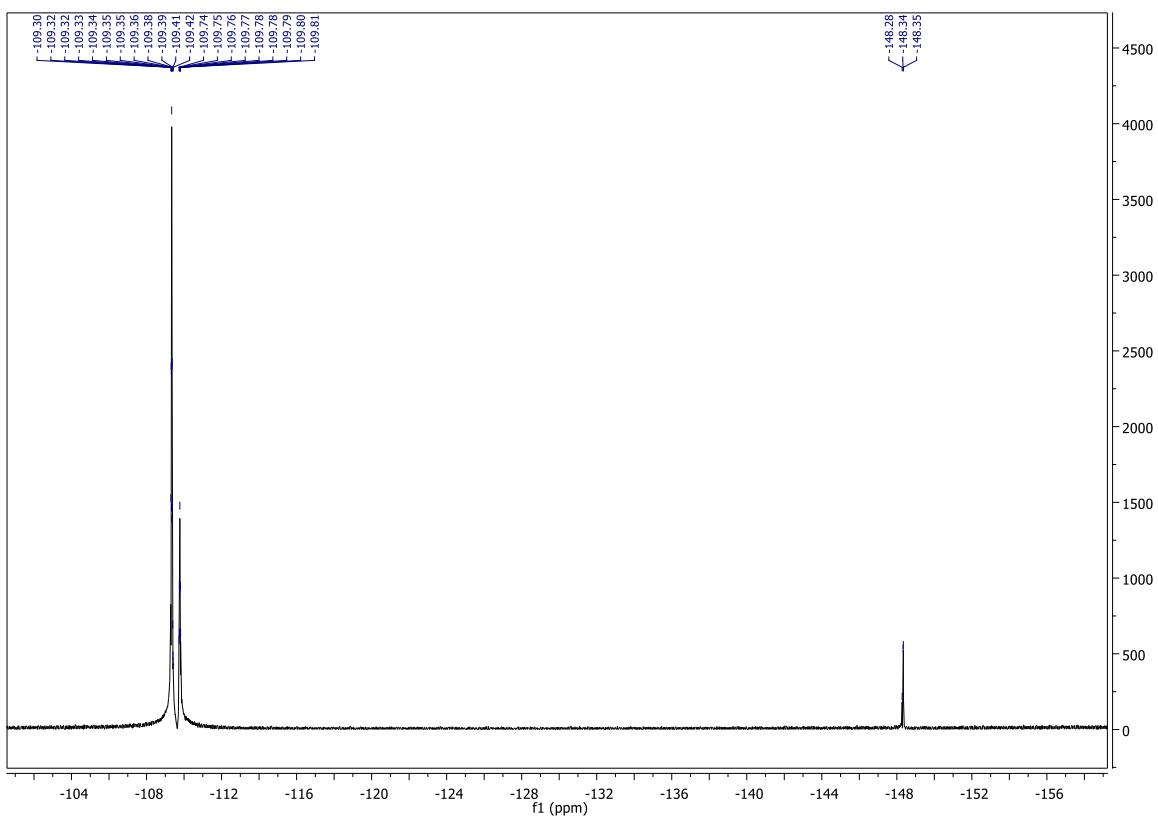


Figure S32. ^{19}F NMR of Compound 9

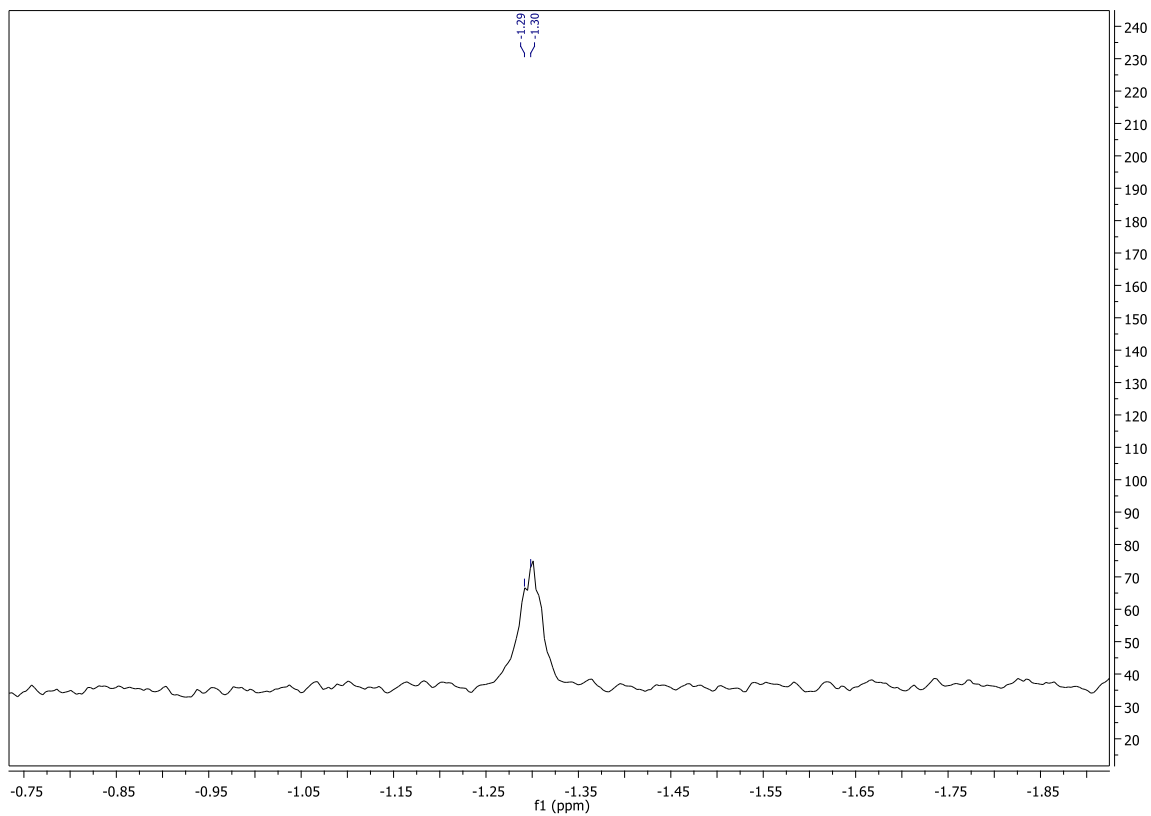


Figure S33. ^{11}B NMR of Compound 9

Line#: 1 R. Time: 4.5 (Scan#: 544)

MassPeaks: 359

RawMode: Single 4.5 (544) BasePeak: 106 (148474)

BG Mode: None Group 1 - Event 1

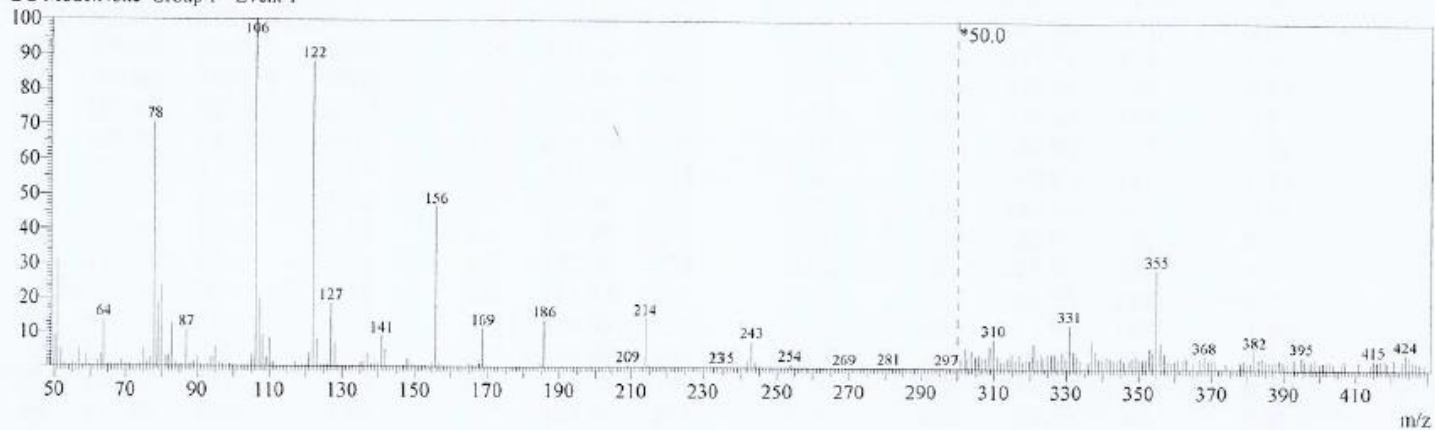


Figure S34. MS (ESI) of Compound 9

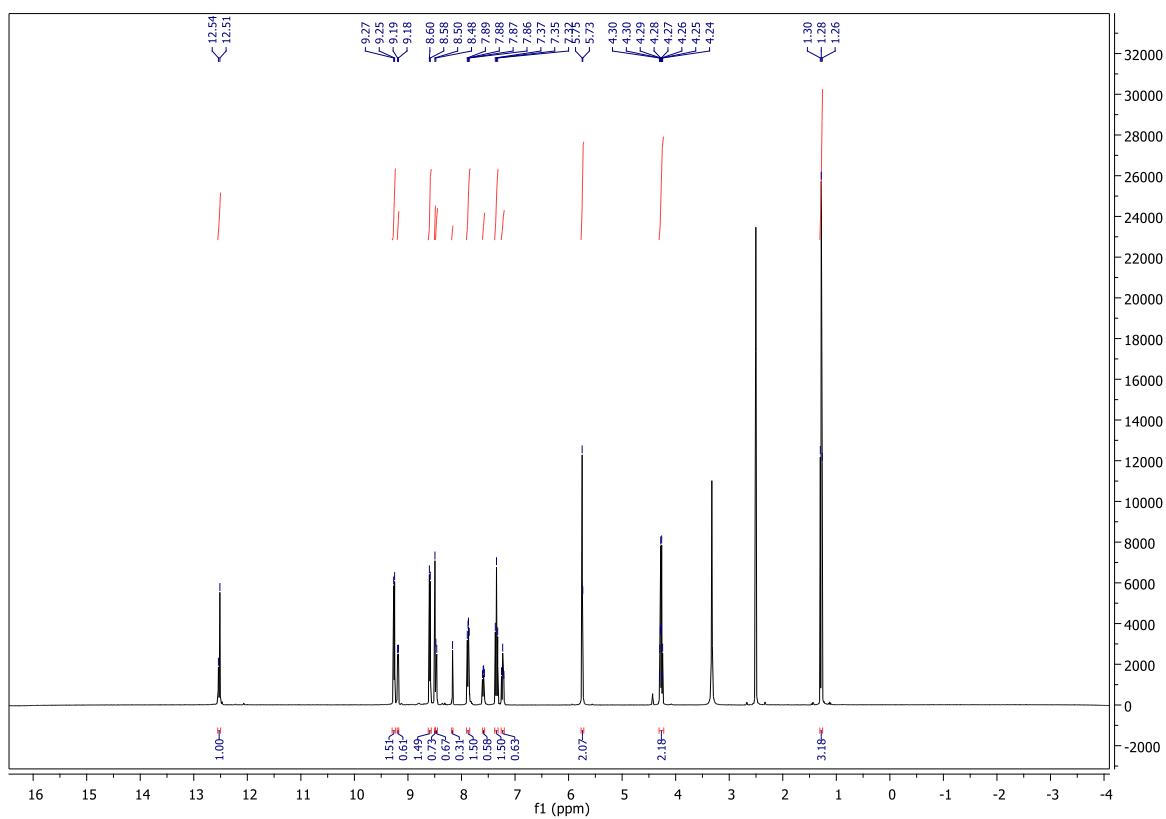


Figure S35. ^1H NMR of Compound 10

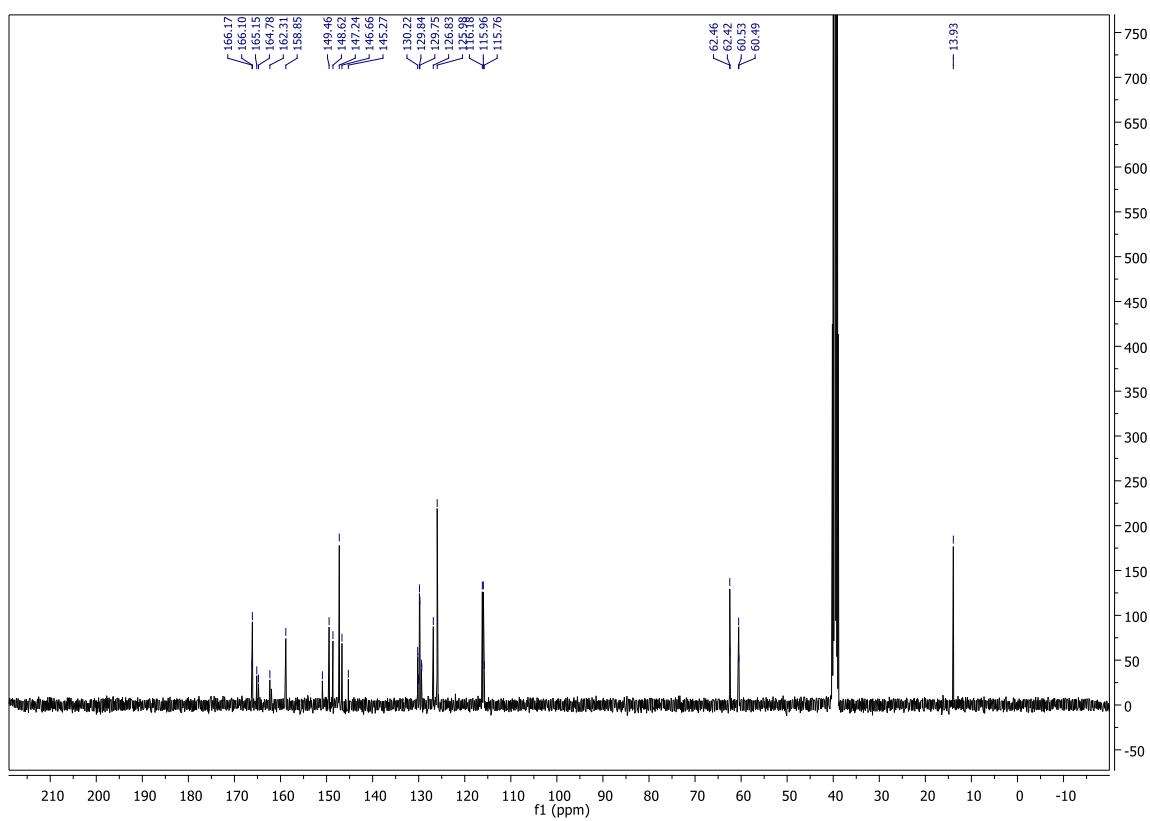


Figure S36. ^{13}C NMR of Compound 10

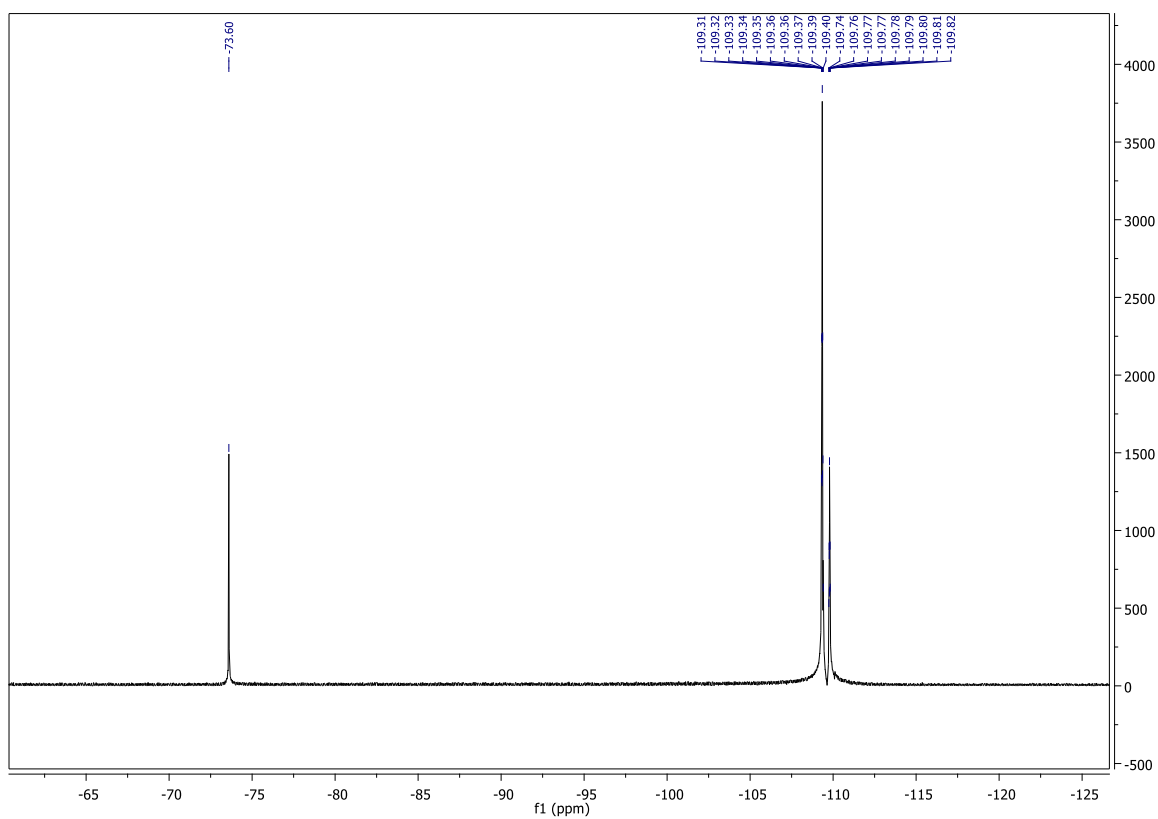


Figure S37. ^{19}F NMR of Compound 10

Line#:1 R.Time:3.7(Scan#:450)

MassPeaks:369

RawMode:Single 3.7(450) BasePeak:106(66897)

BG Mode:None Group 1 - Event 1

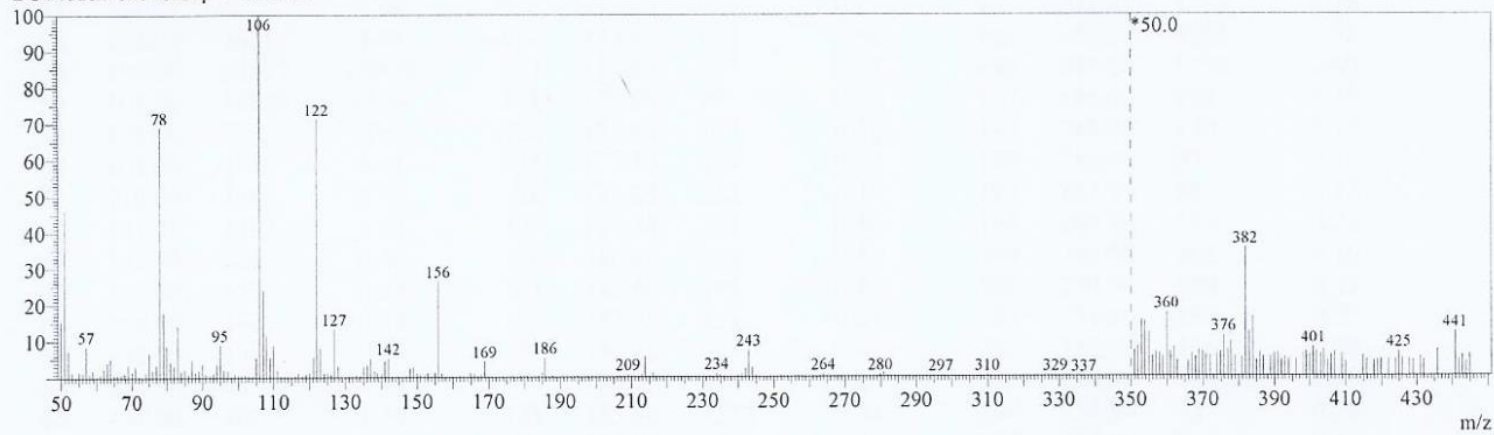


Figure S38. MS (ESI) of Compound 10

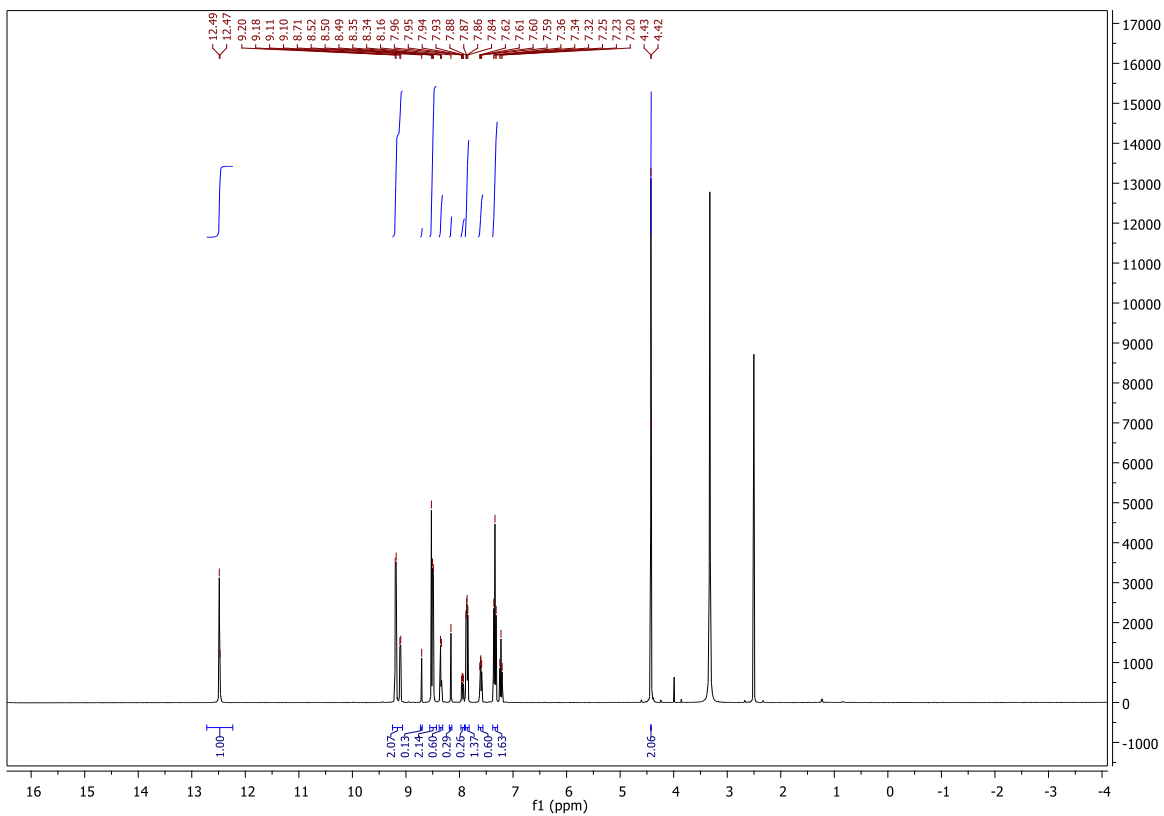


Figure S39. ^1H NMR of Compound 11

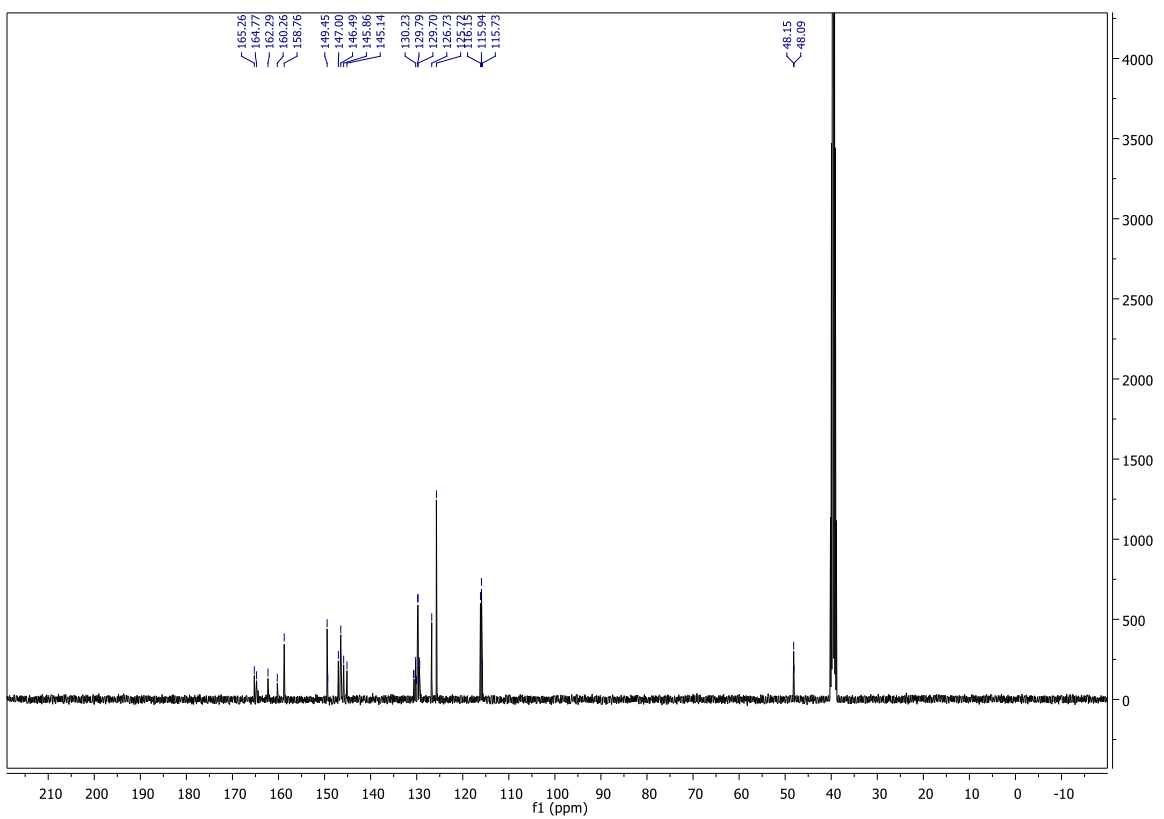


Figure S40. ^{13}C NMR of Compound 11

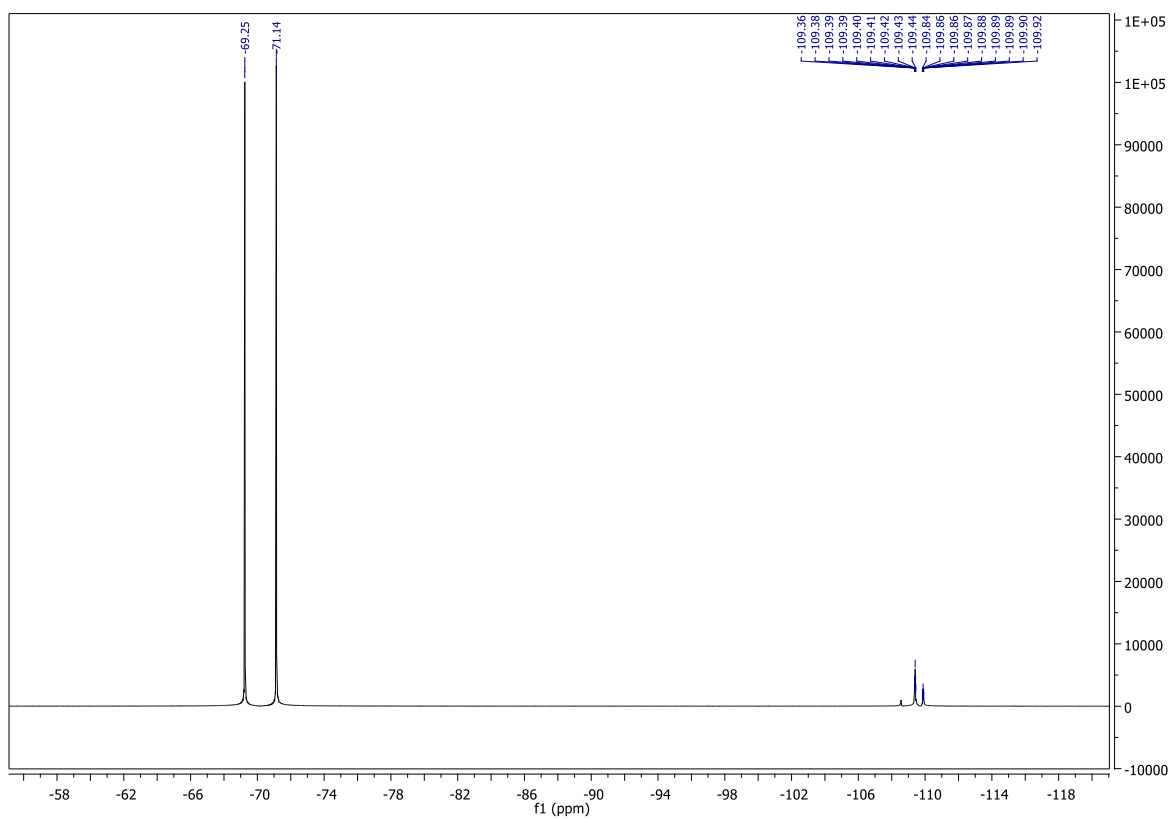


Figure S41. ^{19}F NMR of Compound 11

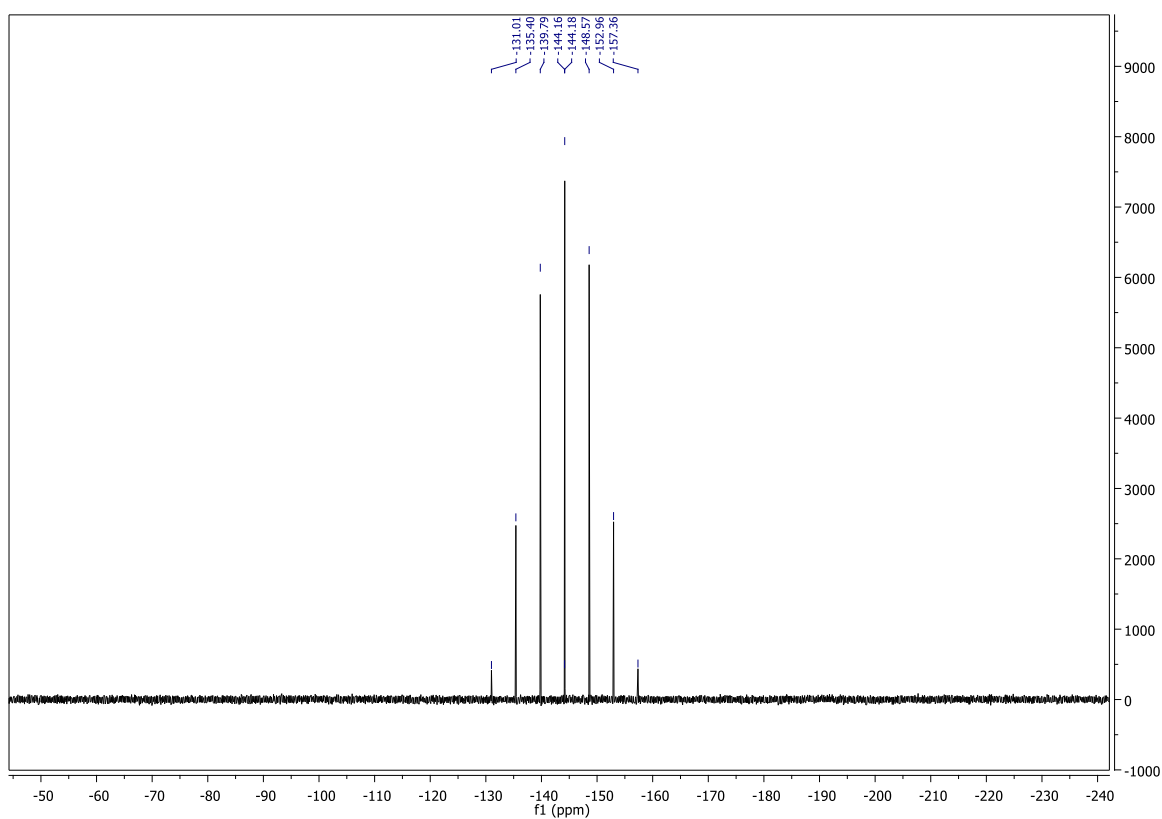


Figure S42. ^{31}P NMR of Compound 11

Line#:1 R.Time:5.8(Scan#:698)
MassPeaks:430
RawMode:Single 5.8(698) BasePeak:122(112408)
BG Mode:None Group 1 - Event 1

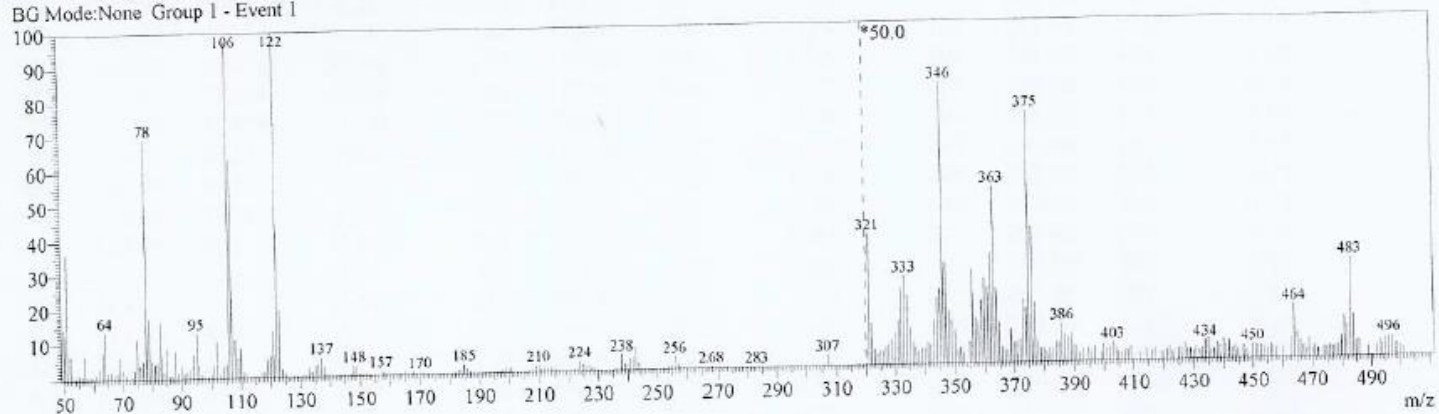


Figure S43. MS (ESI) of Compound 11

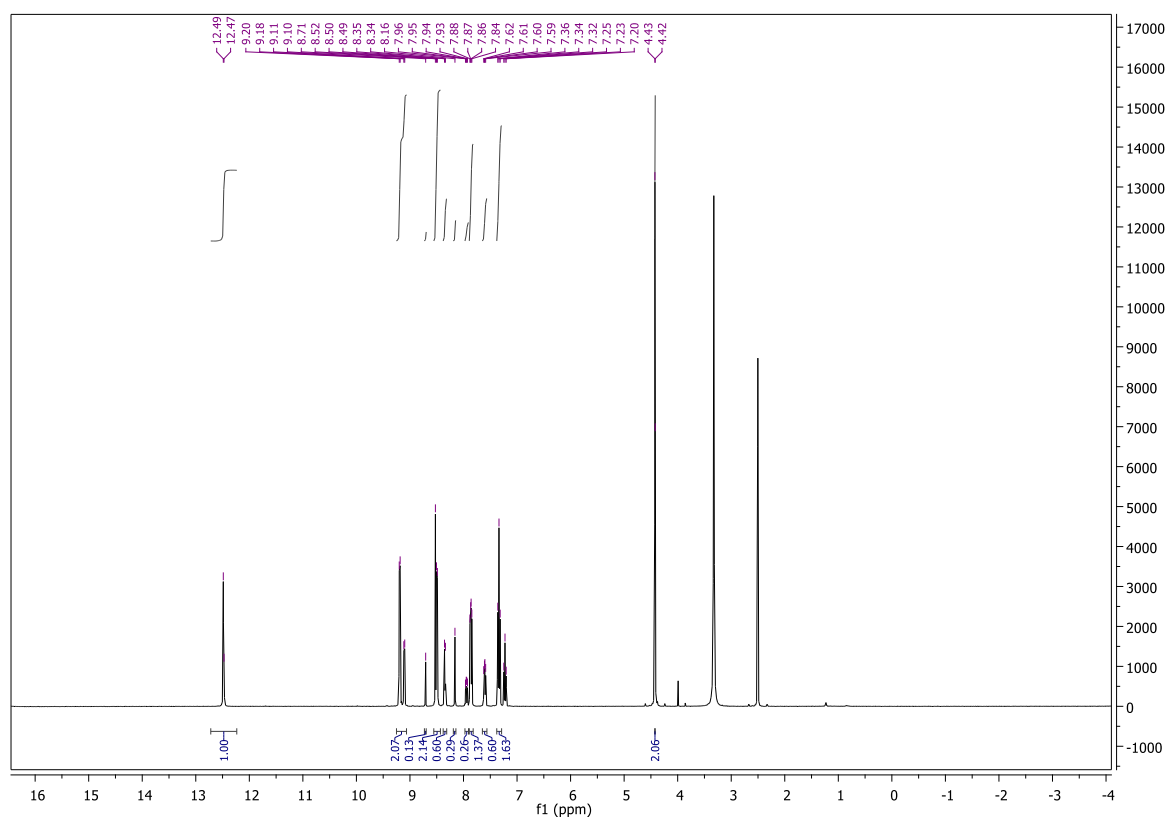


Figure S44. ¹H NMR of Compound 12

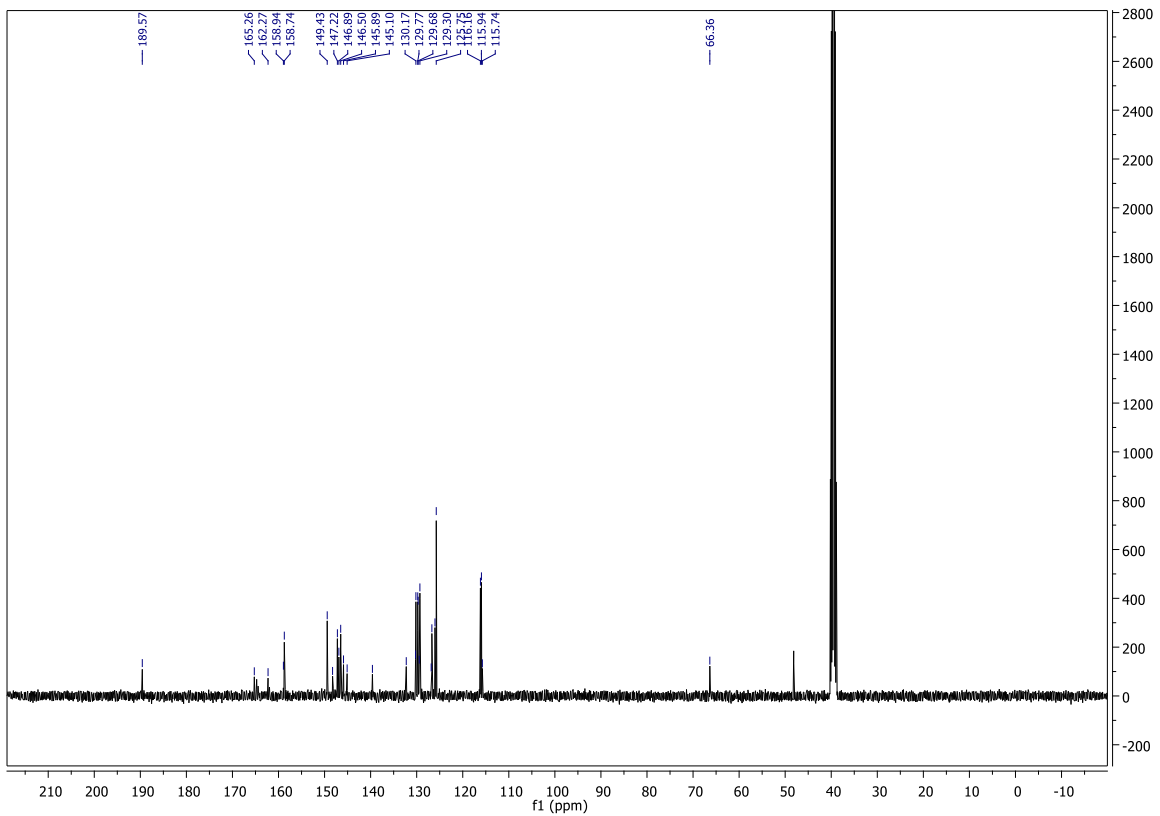


Figure S45. ^{13}C NMR of Compound 12

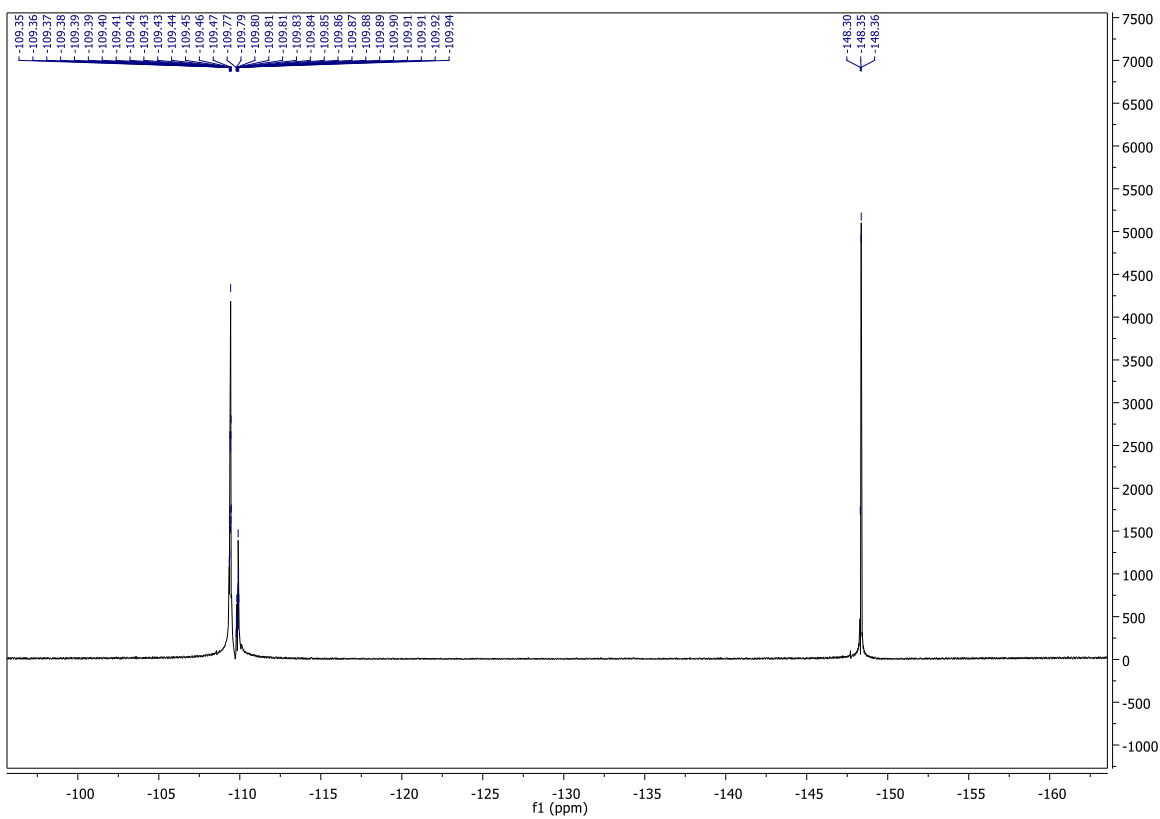


Figure S46. ^{19}F NMR of Compound 12

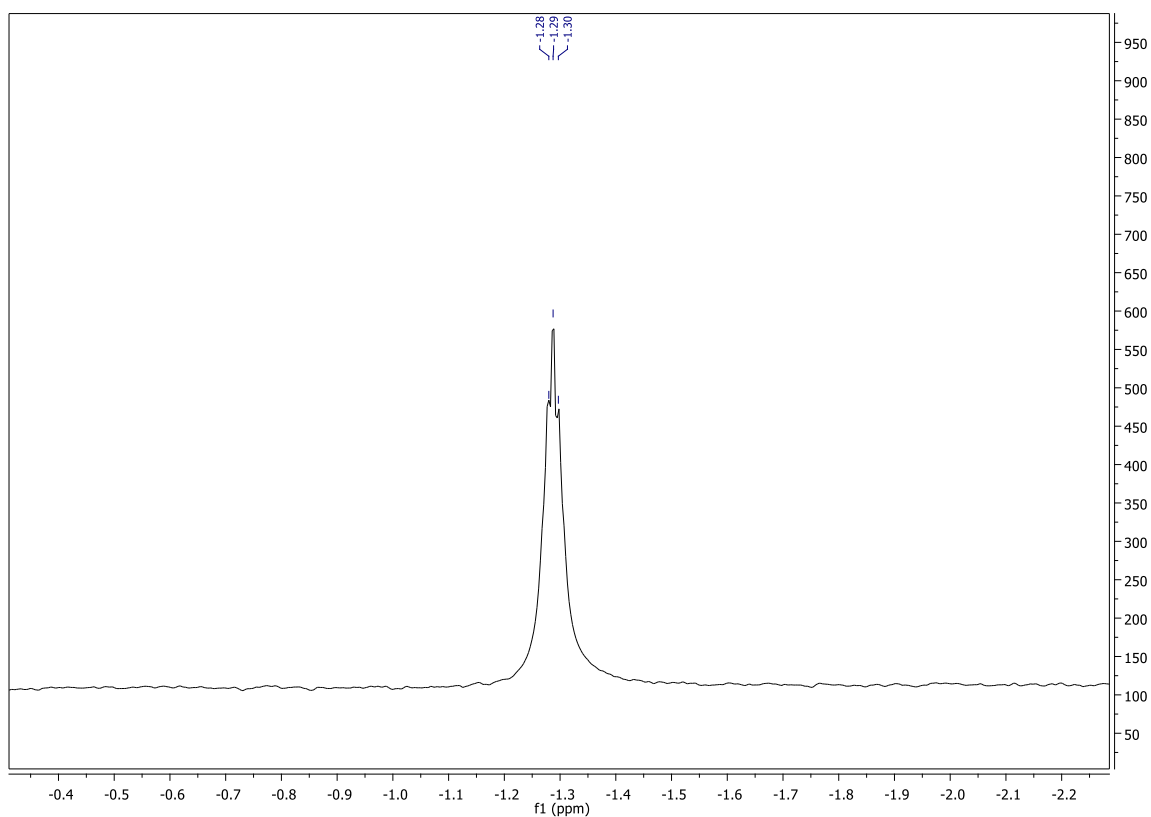


Figure S47. ^{11}B NMR of Compound 12

Line#: 1 R.Time: 3.1 (Scan#: 368)
 MassPeaks: 369
 RawMode: Single 3.1 (368) BasePeak: 80 (29190)
 BG Mode: None Group 1 - Event 1

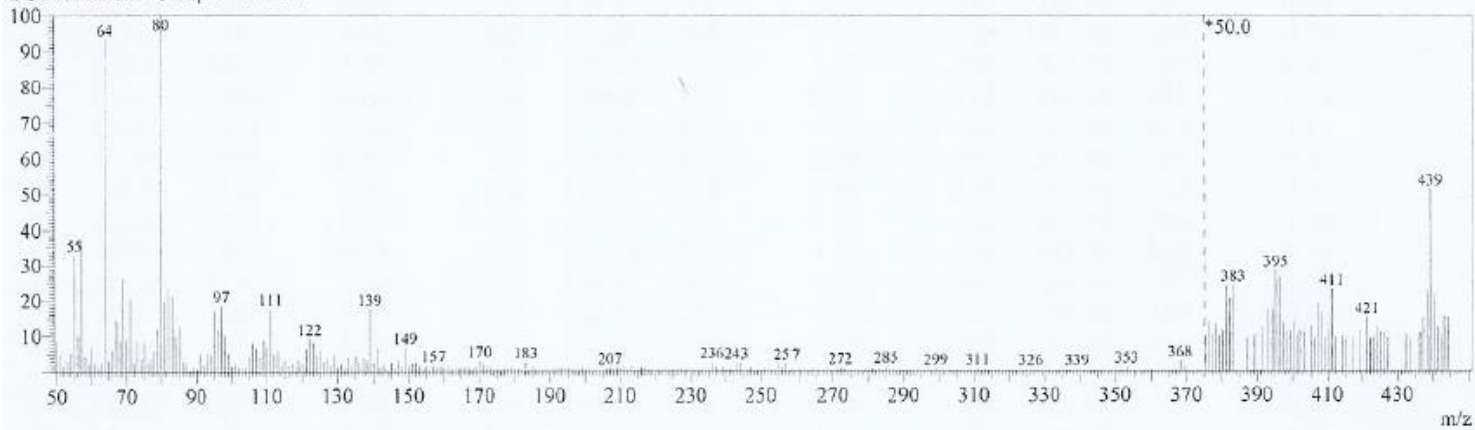


Figure S48. MS (ESI) of Compound 12

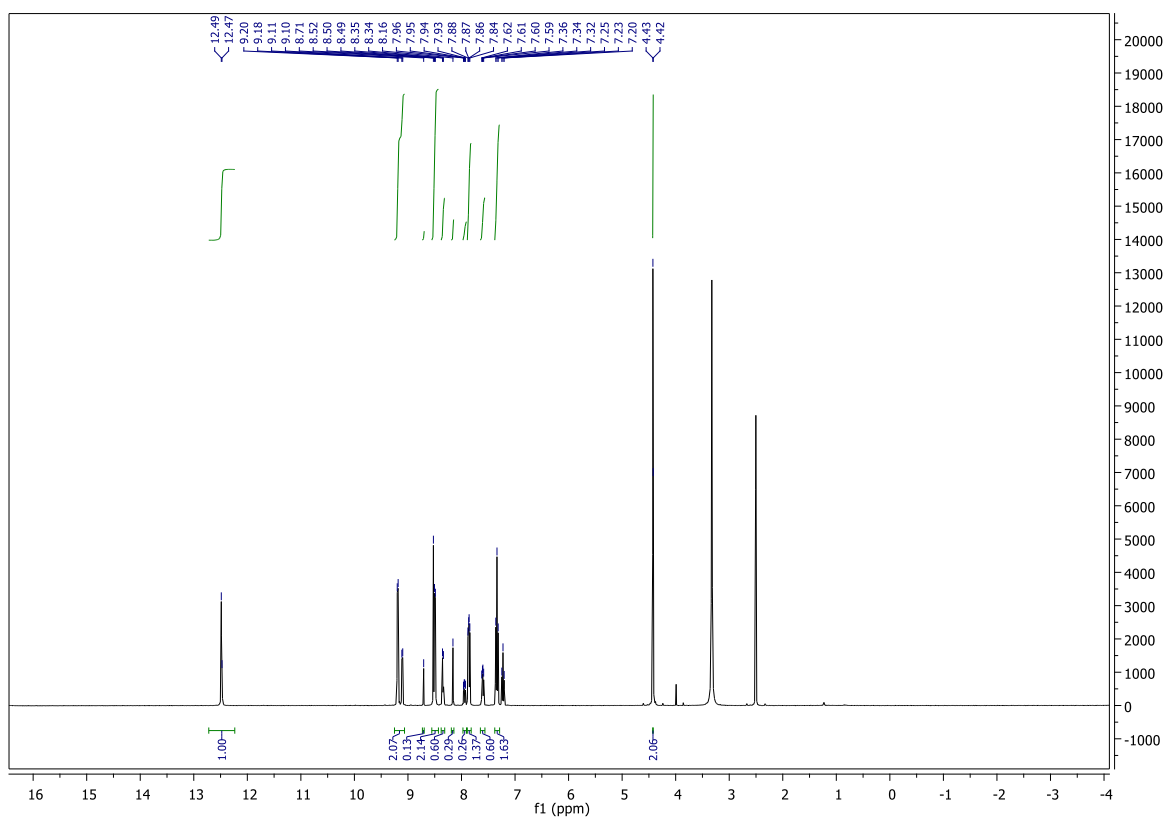


Figure S49. ^1H NMR of Compound 13

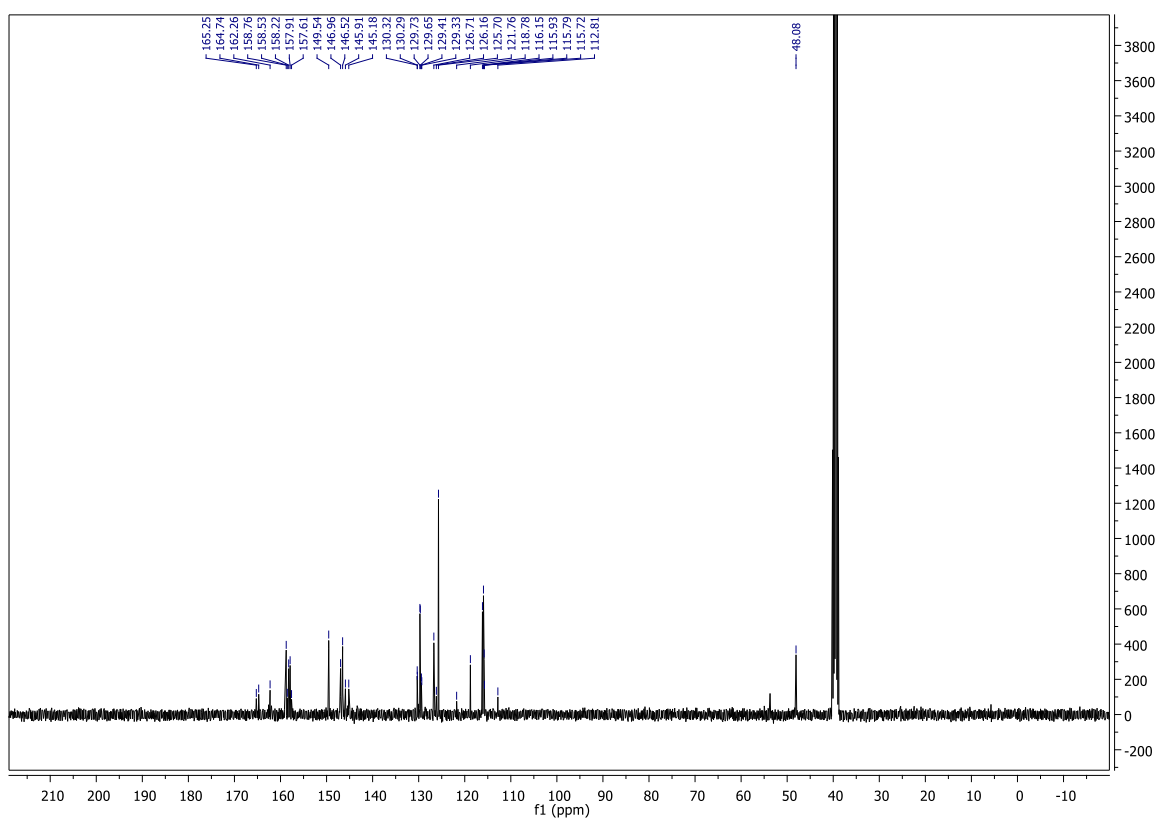


Figure S50. ^{13}C NMR of Compound 13

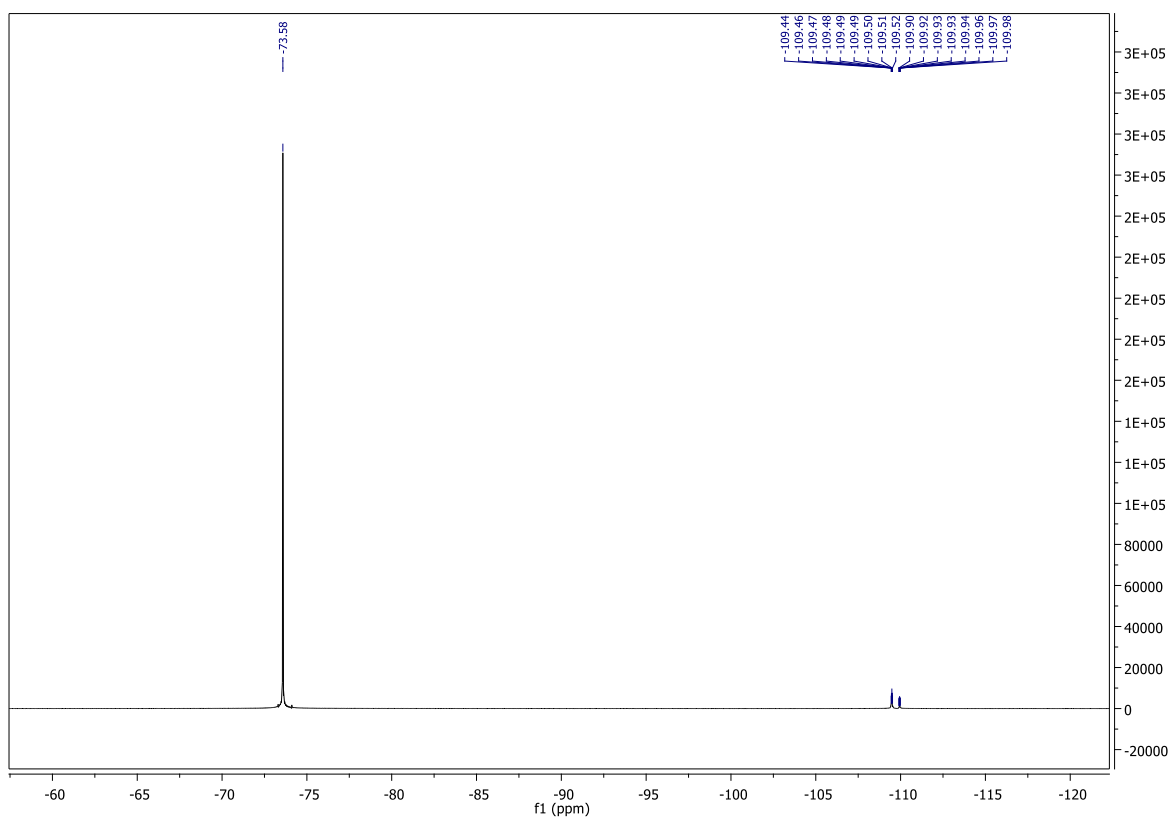


Figure S51. ^{19}F NMR of Compound 13

Line#:1 R.Time:4.7(Scan#:567)

MassPeaks:406

RawMode:Single 4.7(567) BasePeak:106(53359)

BG Mode:None Group 1 - Event 1

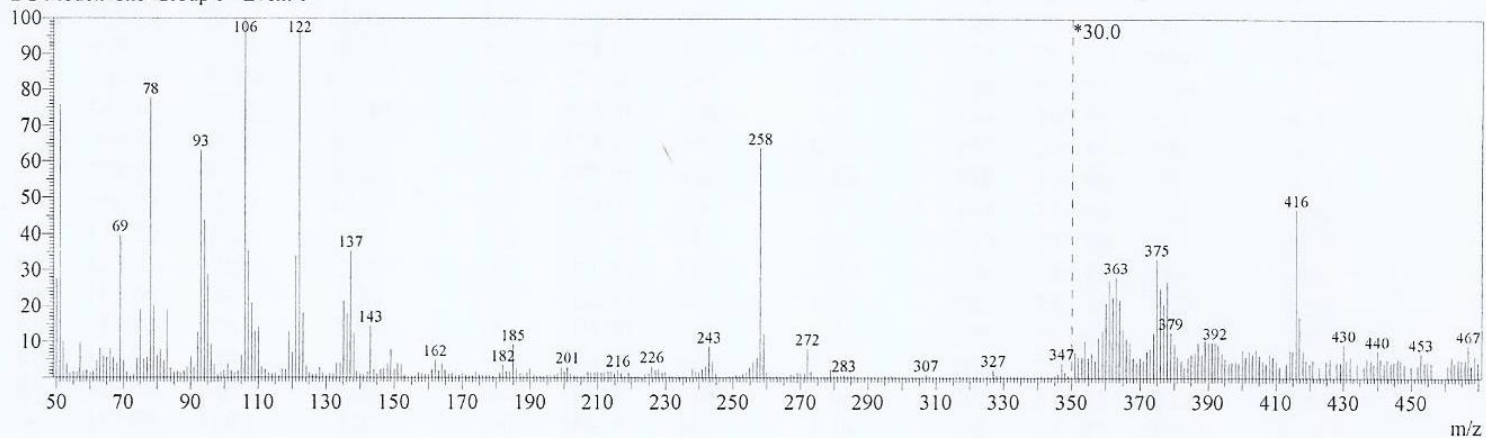


Figure S52. MS (ESI) of Compound 13

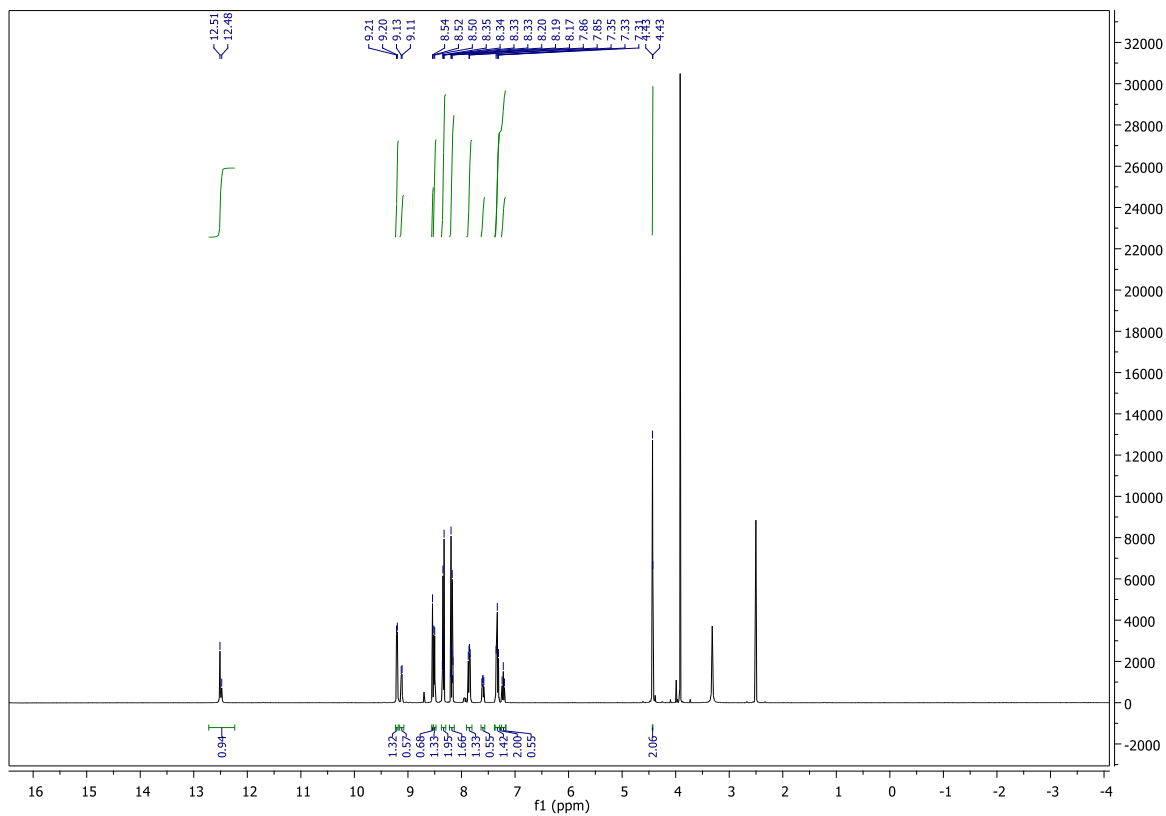


Figure S53. ^1H NMR of Compound 14

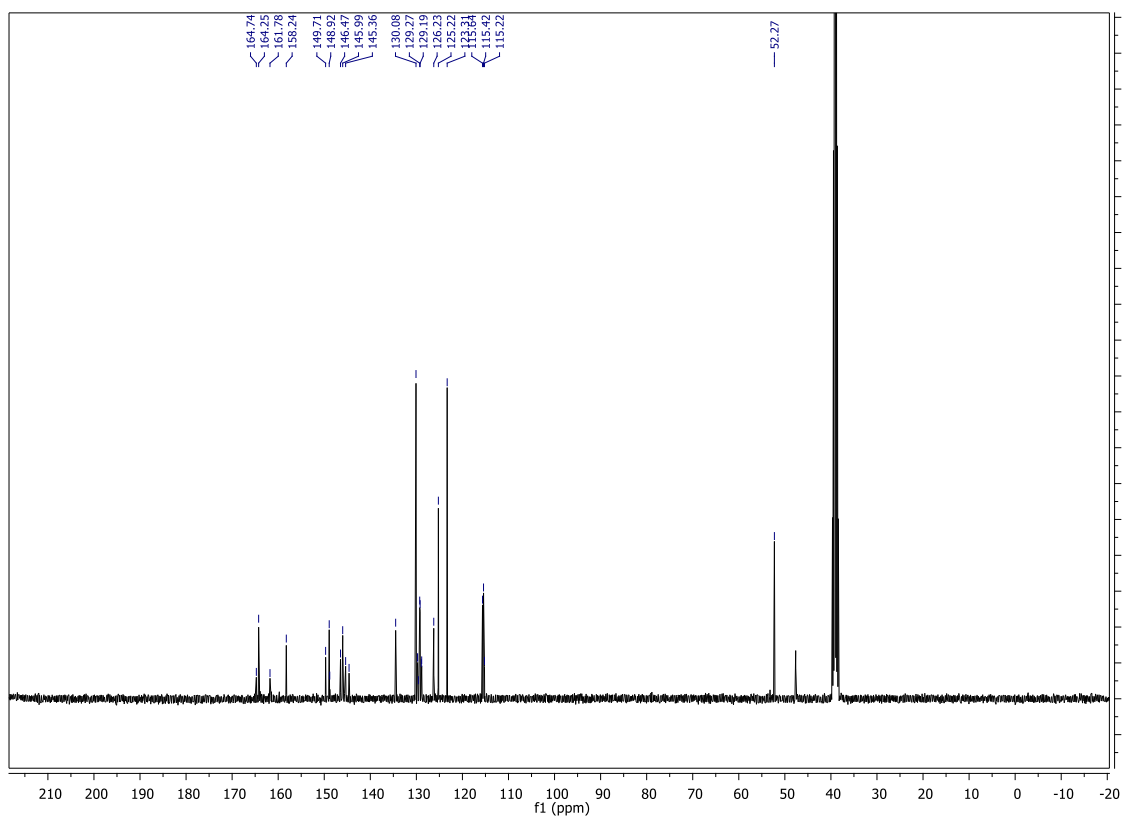


Figure S54. ^{13}C NMR of Compound 14

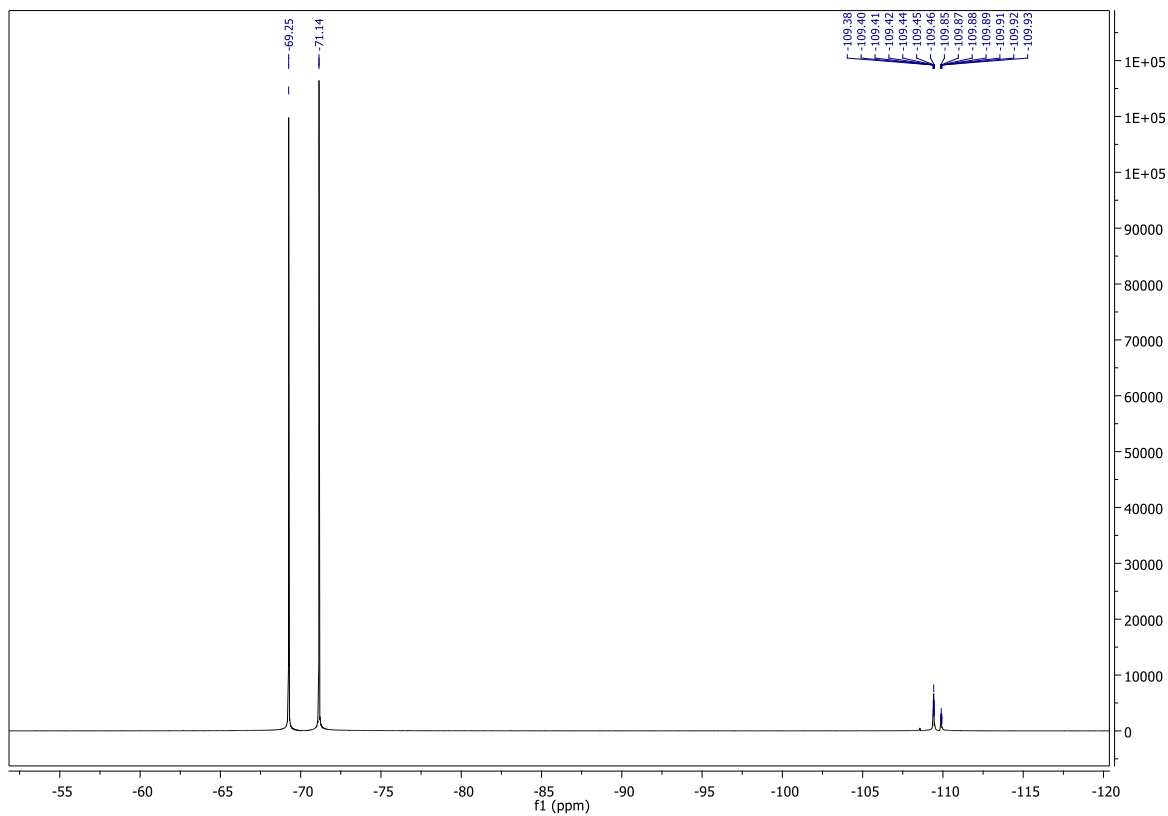


Figure S55. ^{19}F NMR of Compound 14

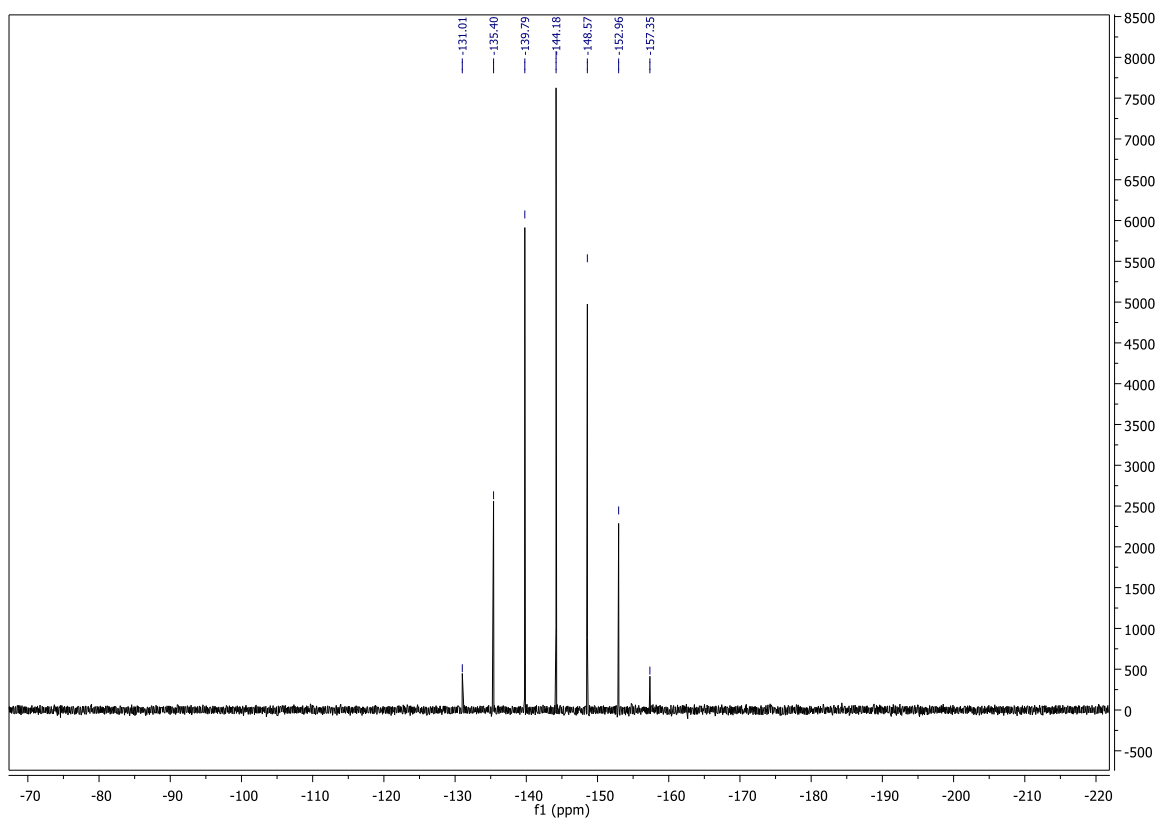


Figure S56. ^{31}P NMR of Compound 14

Line#:1 R.Time:7.9(Scan#:946)
MassPeaks:355
RawMode:Single 7.9(946) BasePeak:106(13114)
BG Mode:None Group 1 - Event 1

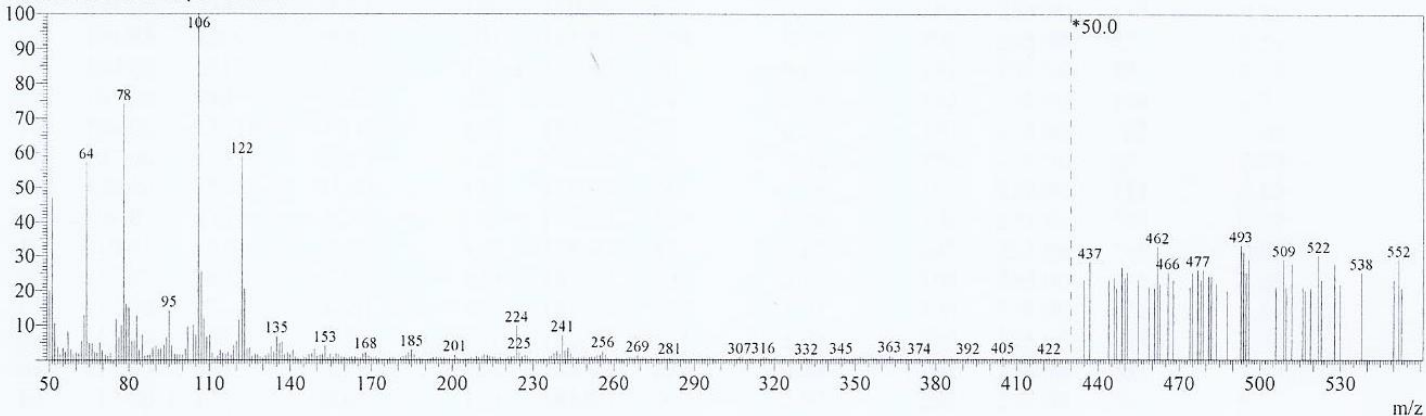


Figure S57. MS (ESI) of Compound 14

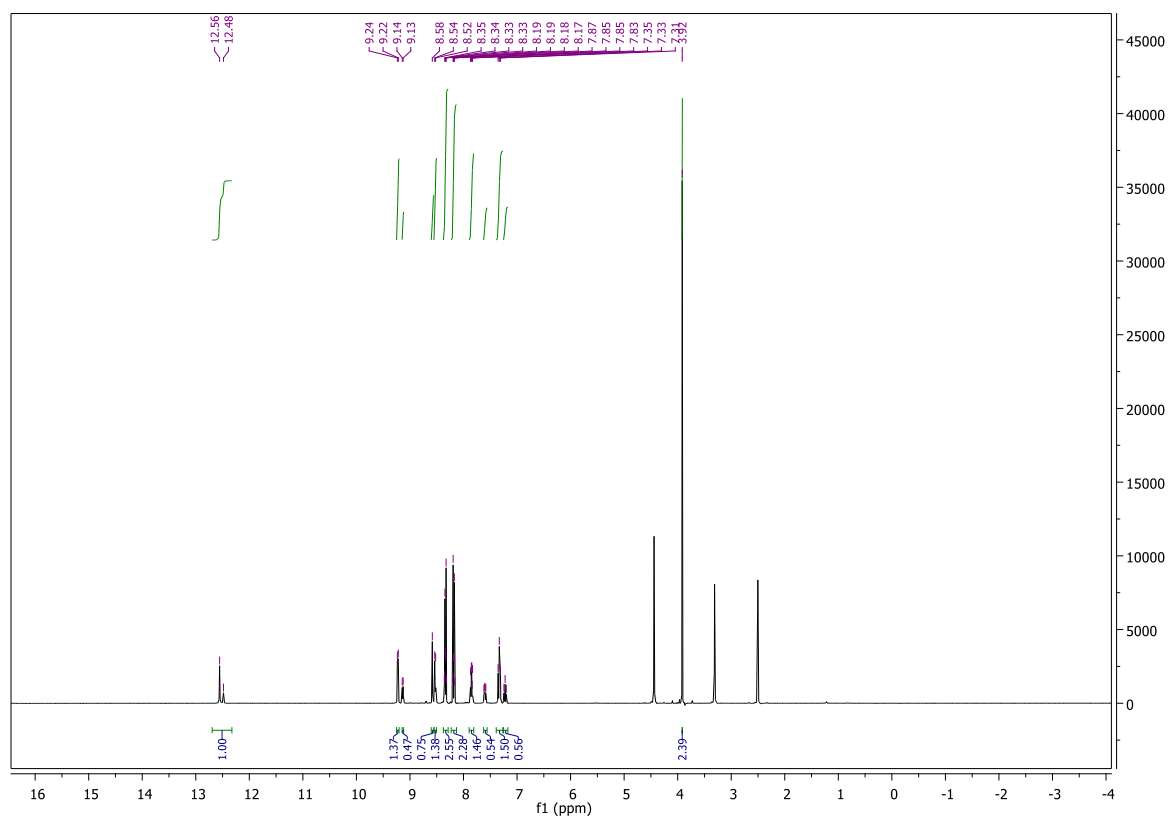


Figure S58. ¹H NMR of Compound 15

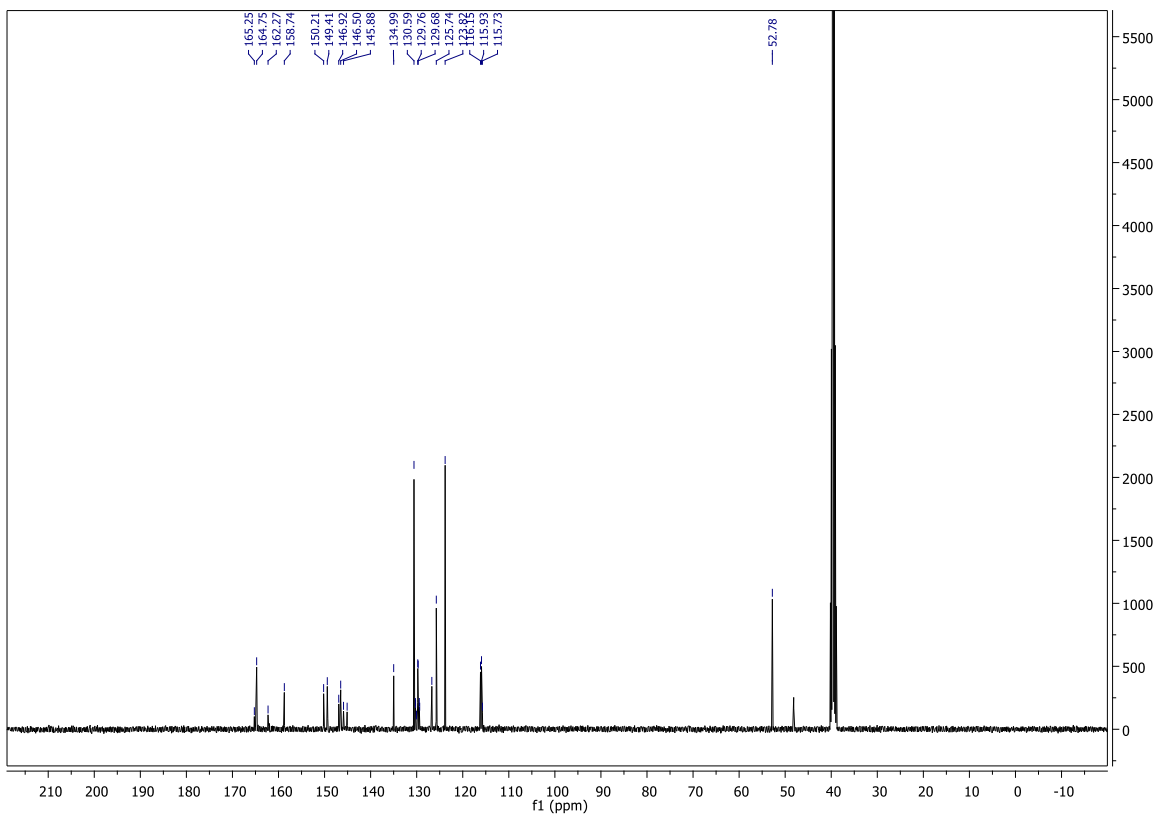


Figure S59. ^{13}C NMR of Compound 15

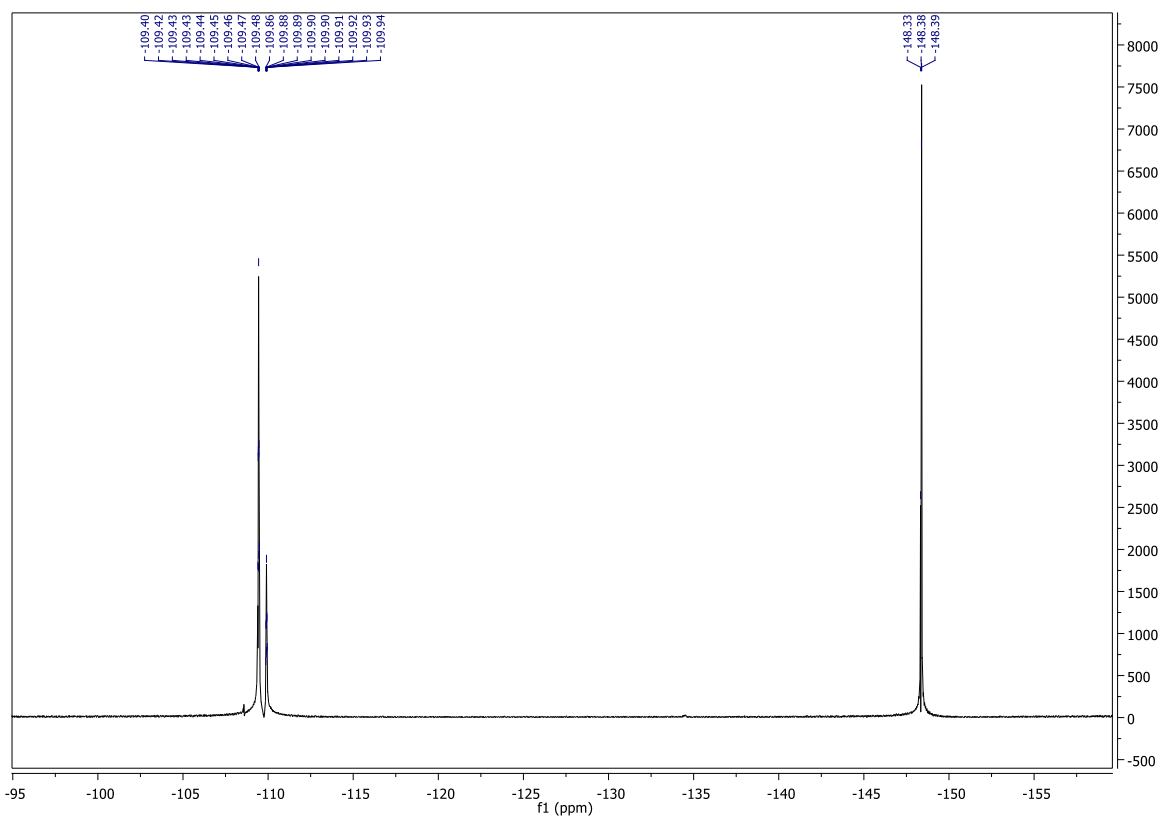


Figure S60. ^{19}F NMR of Compound 15

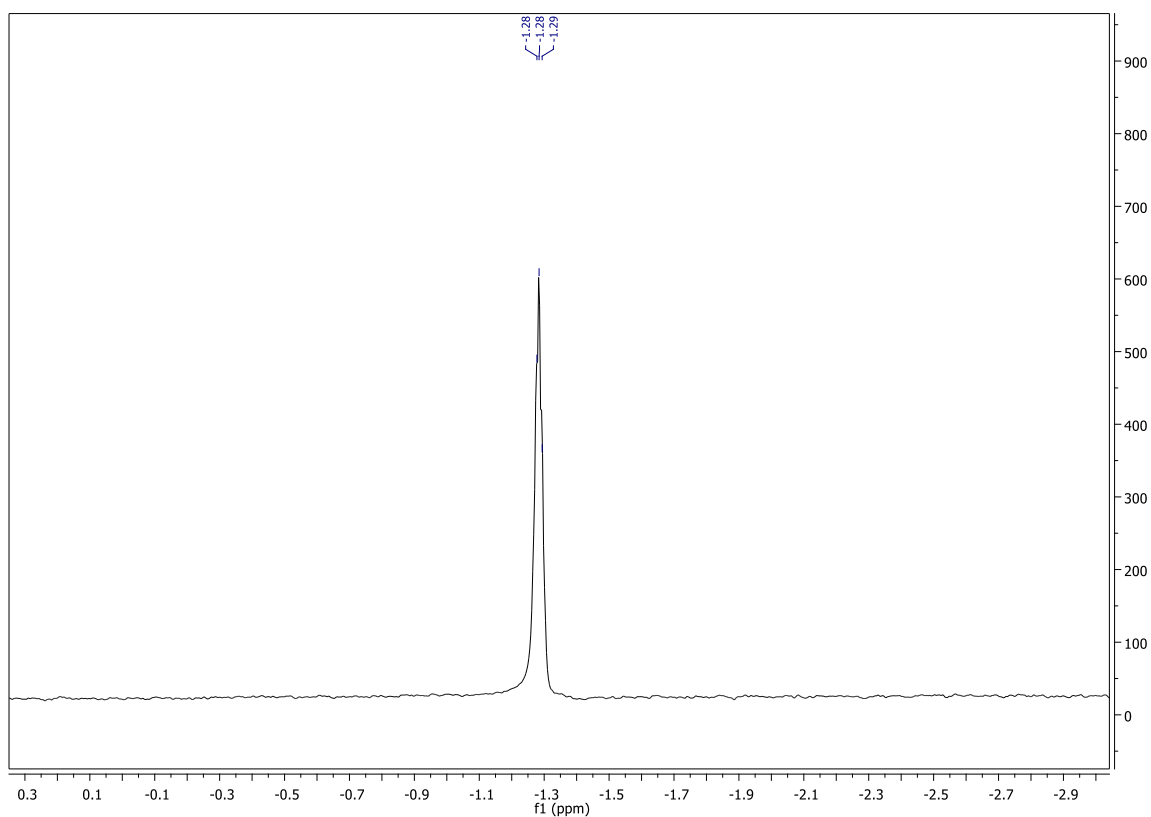


Figure S61. ^{11}B NMR of Compound 15

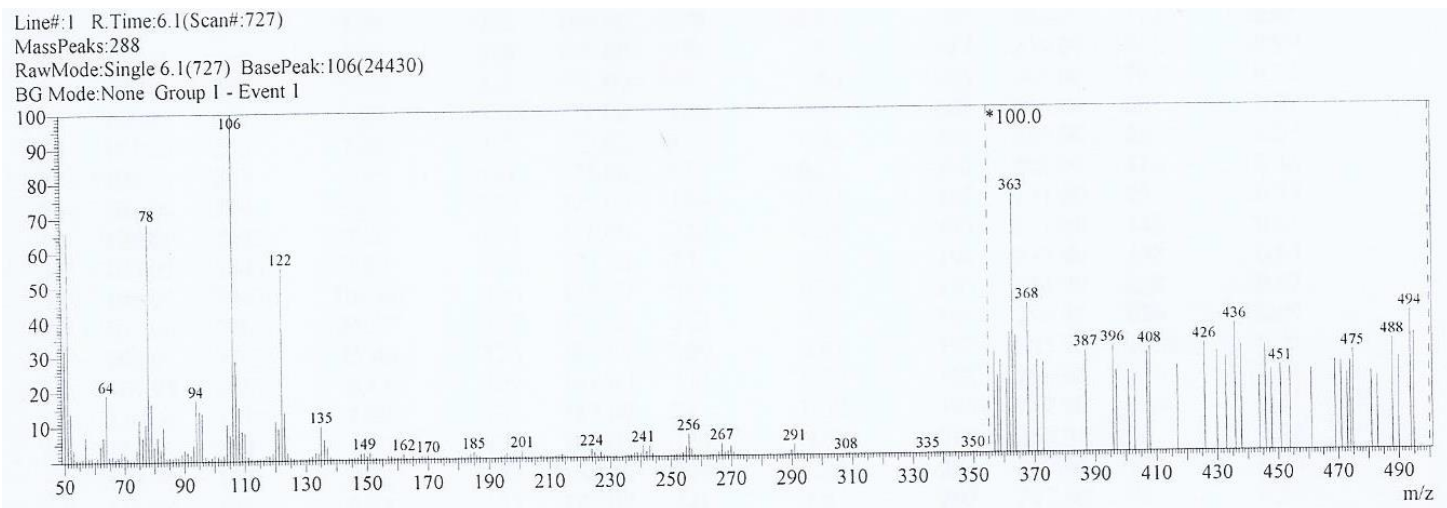


Figure S62. MS (ESI) of Compound 15

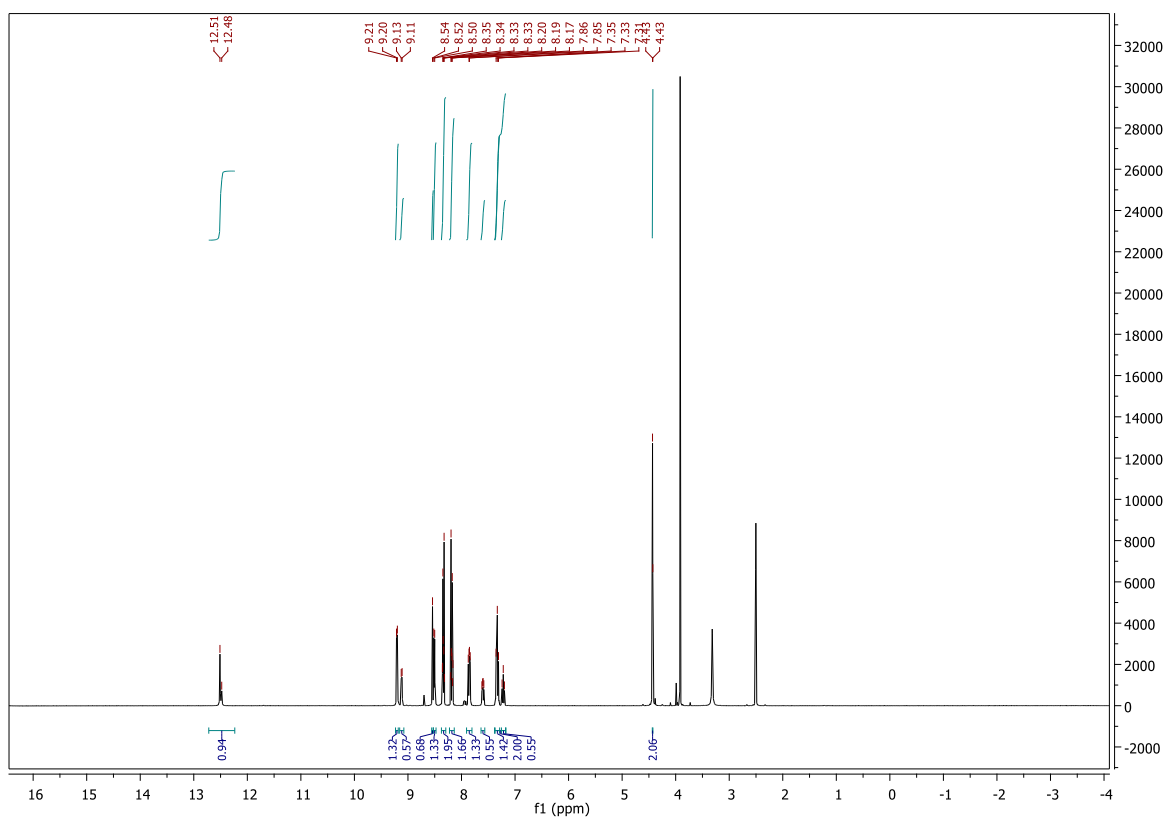


Figure S63. ^1H NMR of Compound 16

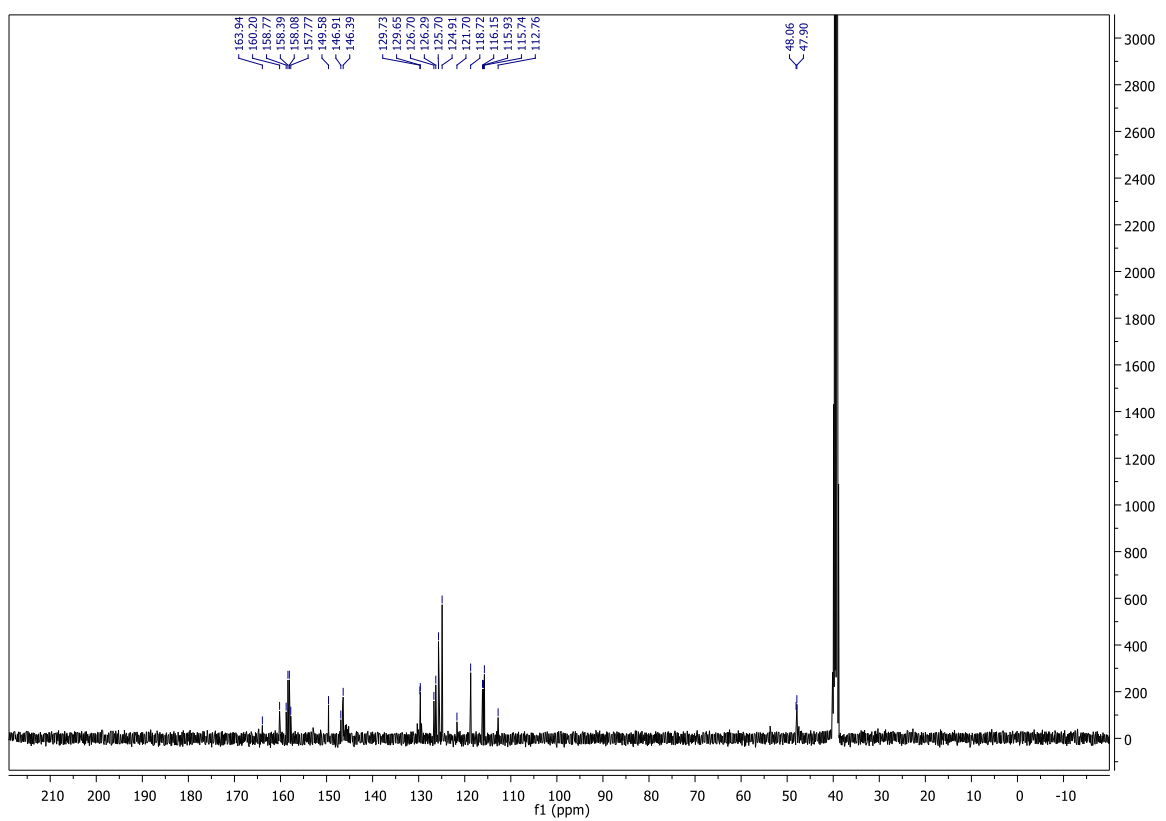
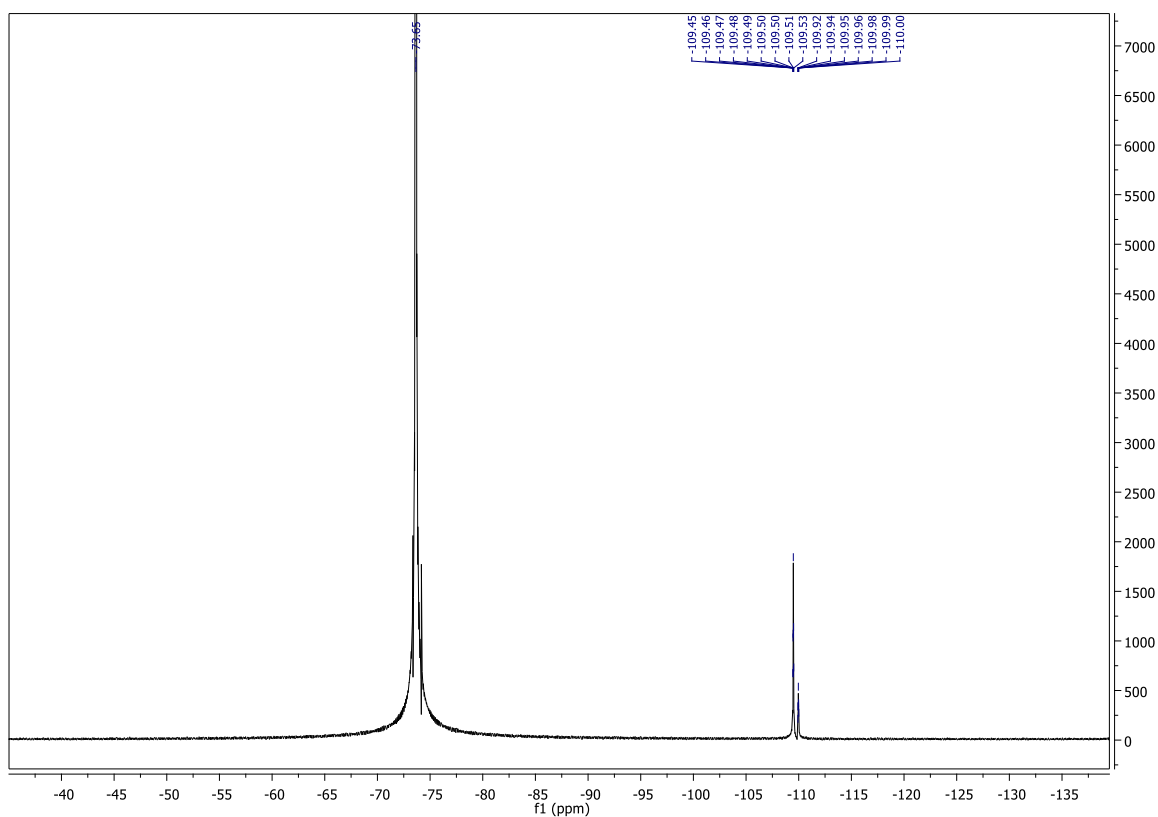


Figure S64. ^{13}C NMR of Compound 16

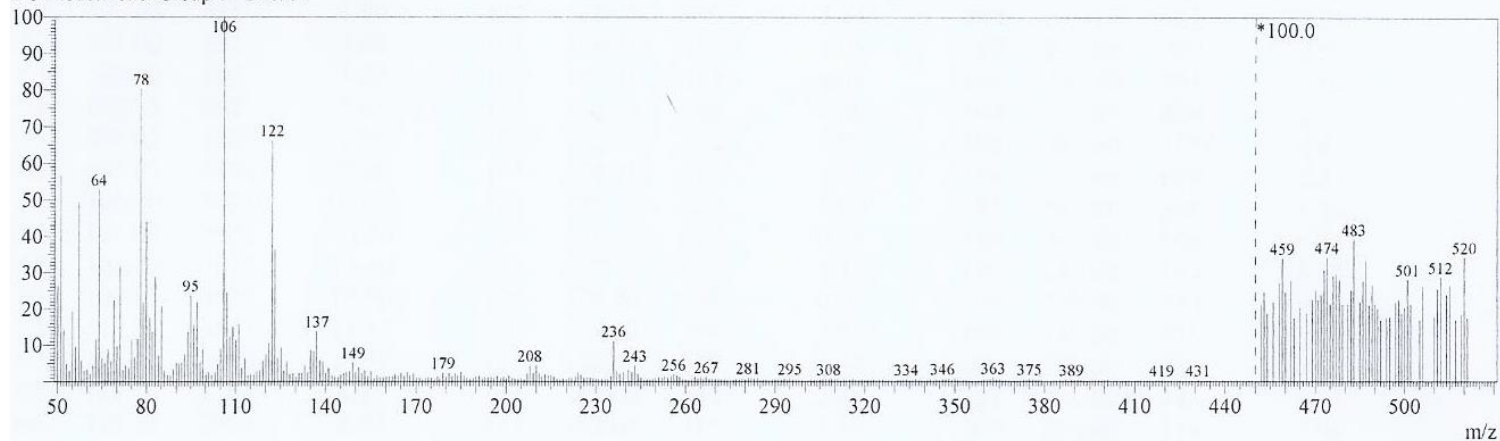


Line#:1 R.Time:5.4(Scan#:652)

MassPeaks:445

RawMode:Single 5.4(652) BasePeak:106(30770)

BG Mode:None Group 1 - Event 1



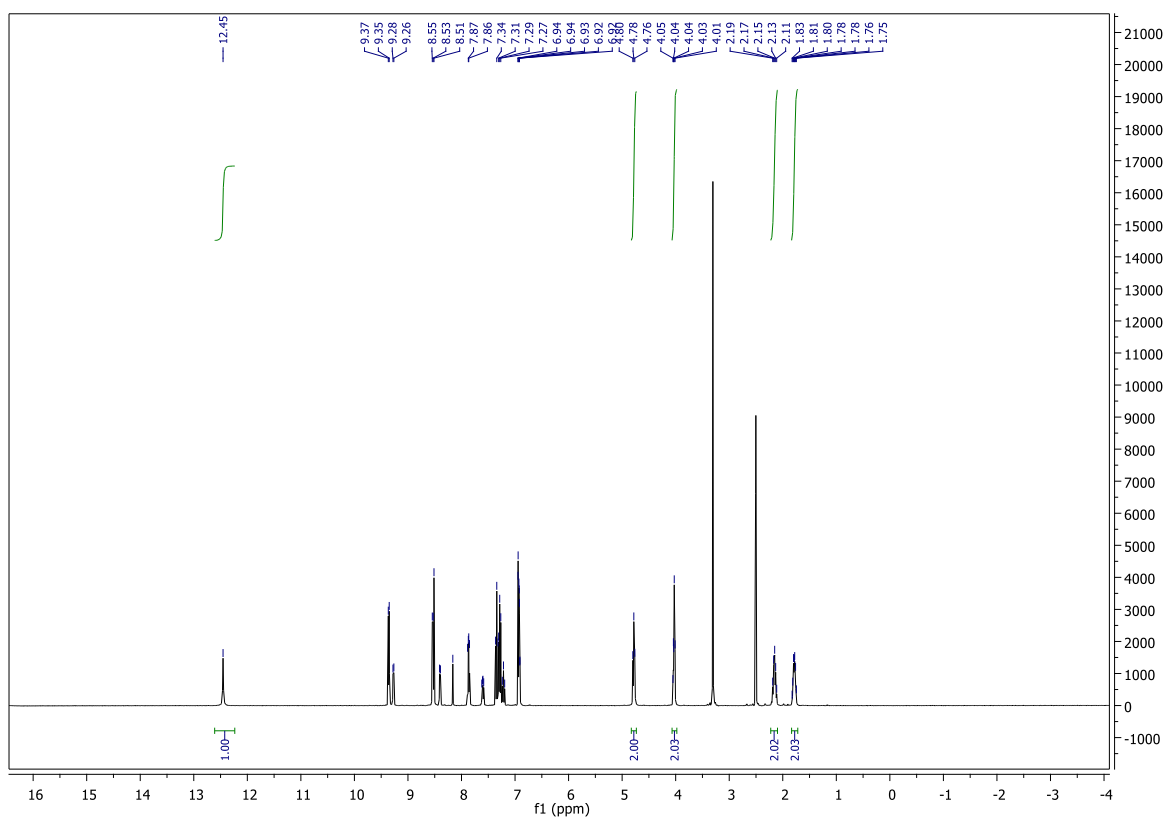


Figure S67. ¹H NMR of Compound 17

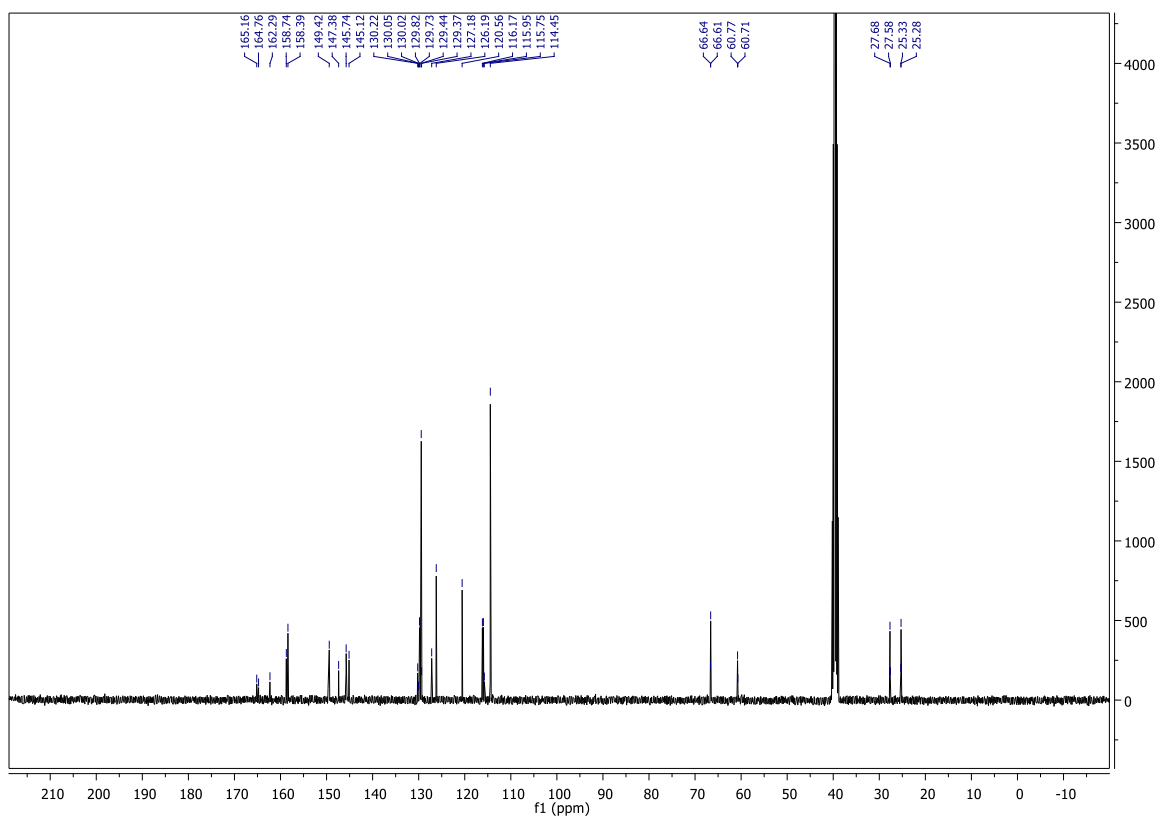


Figure S68. ¹³C NMR of Compound 17

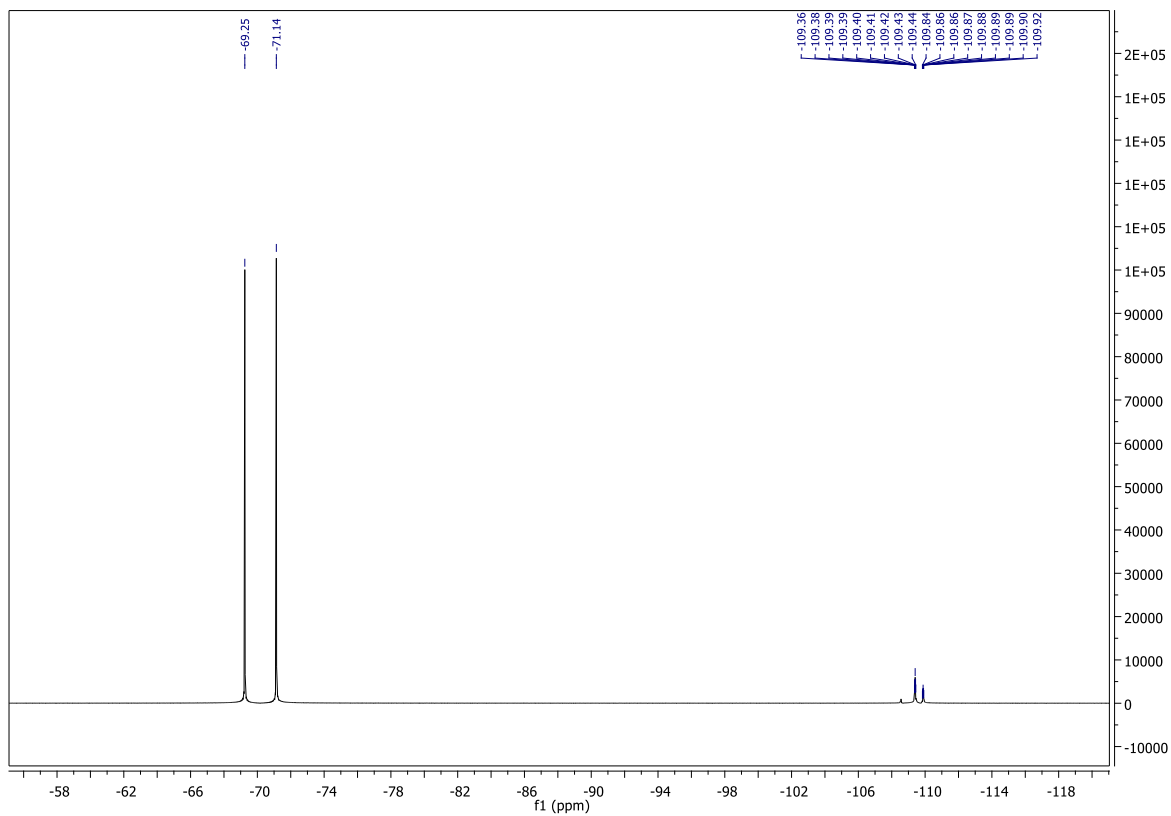


Figure S69. ^{19}F NMR of Compound 17

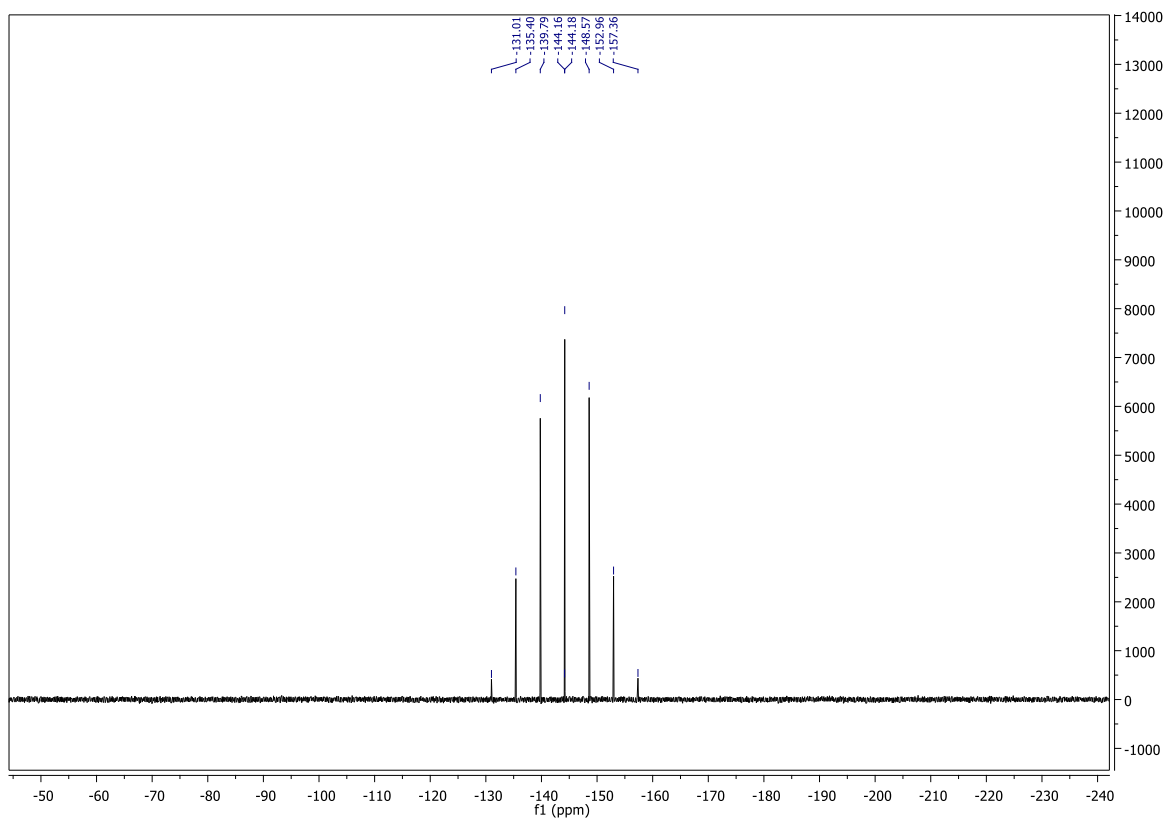


Figure S70. ^{31}P NMR of Compound 17

Line#:1 R.Time:5.1(Scan#:617)
MassPeaks:447
RawMode:Single 5.1(617) BasePeak:106(160343)
BG Mode:None Group 1 - Event 1

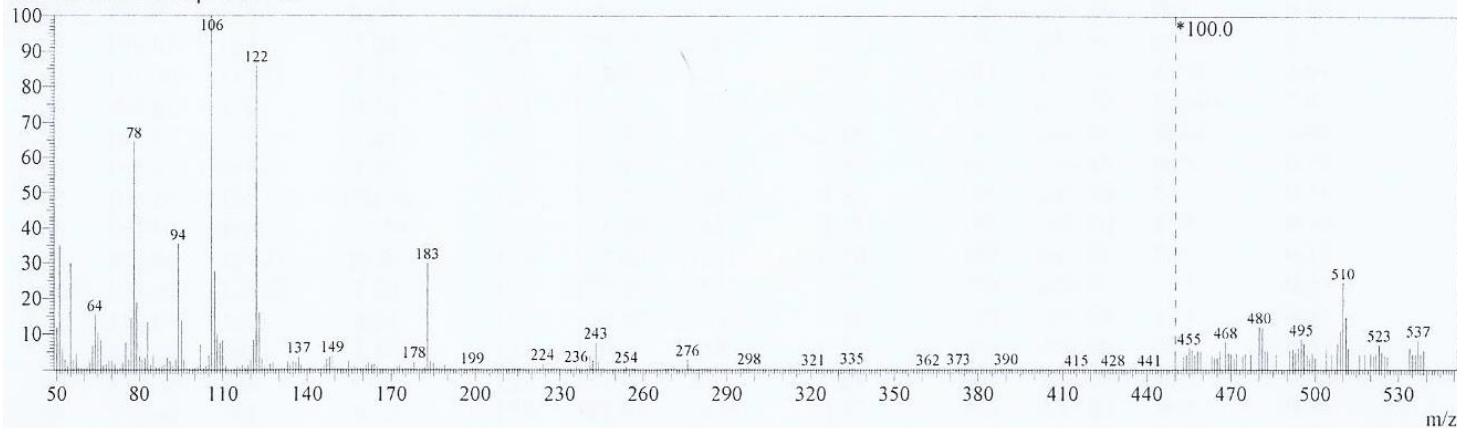


Figure S71. MS (ESI) of Compound 17

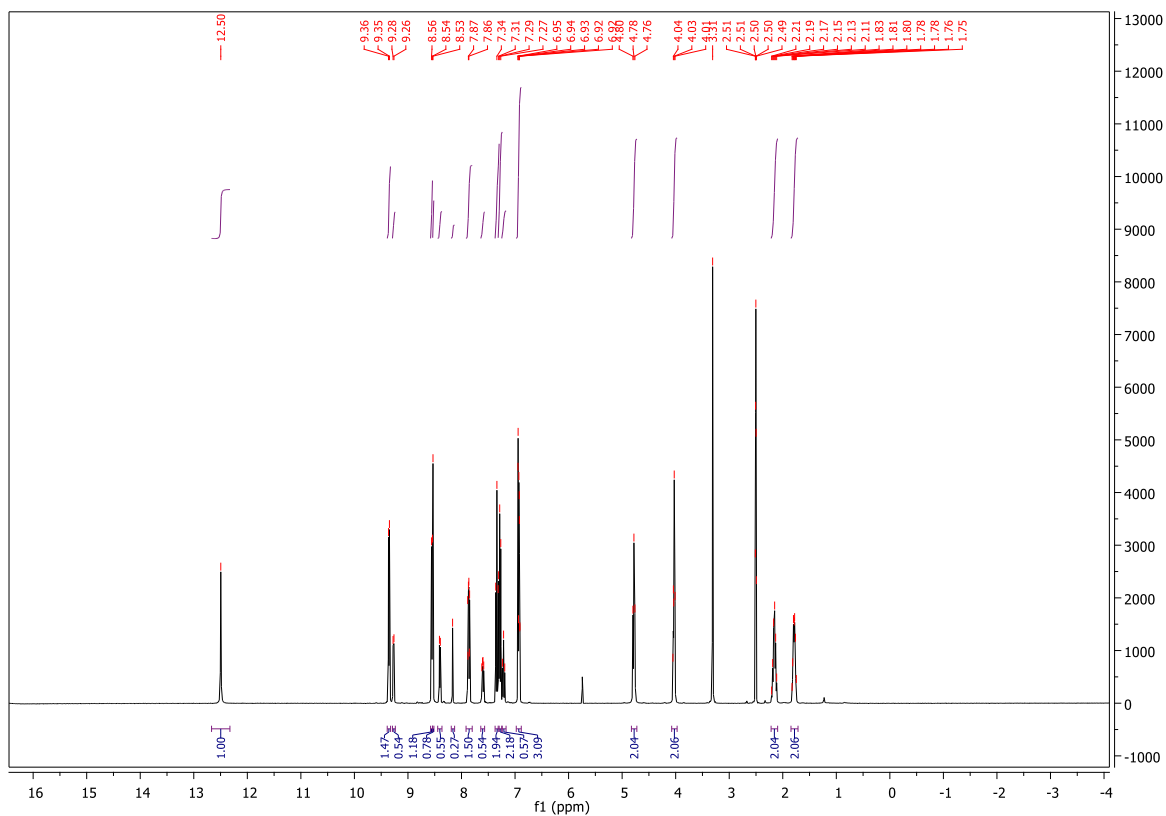


Figure S72. ¹H NMR of Compound 18

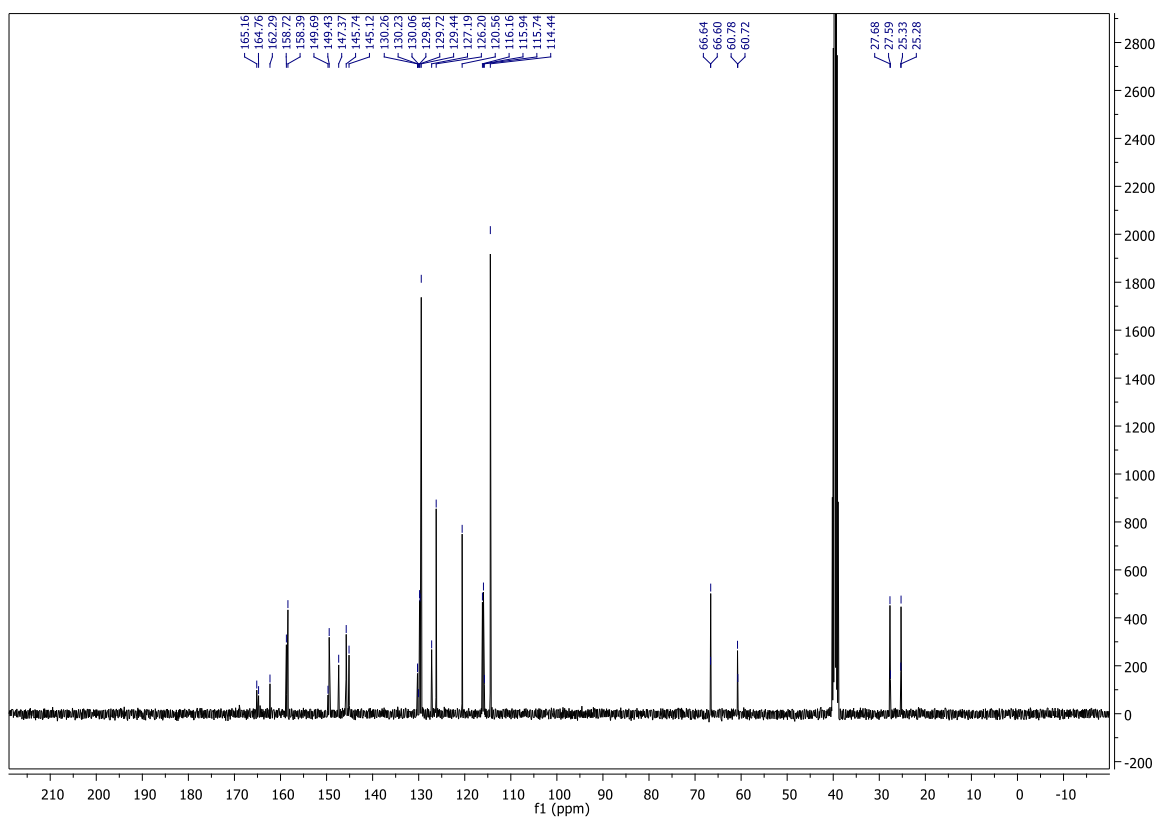


Figure S73. ^{13}C NMR of Compound 18

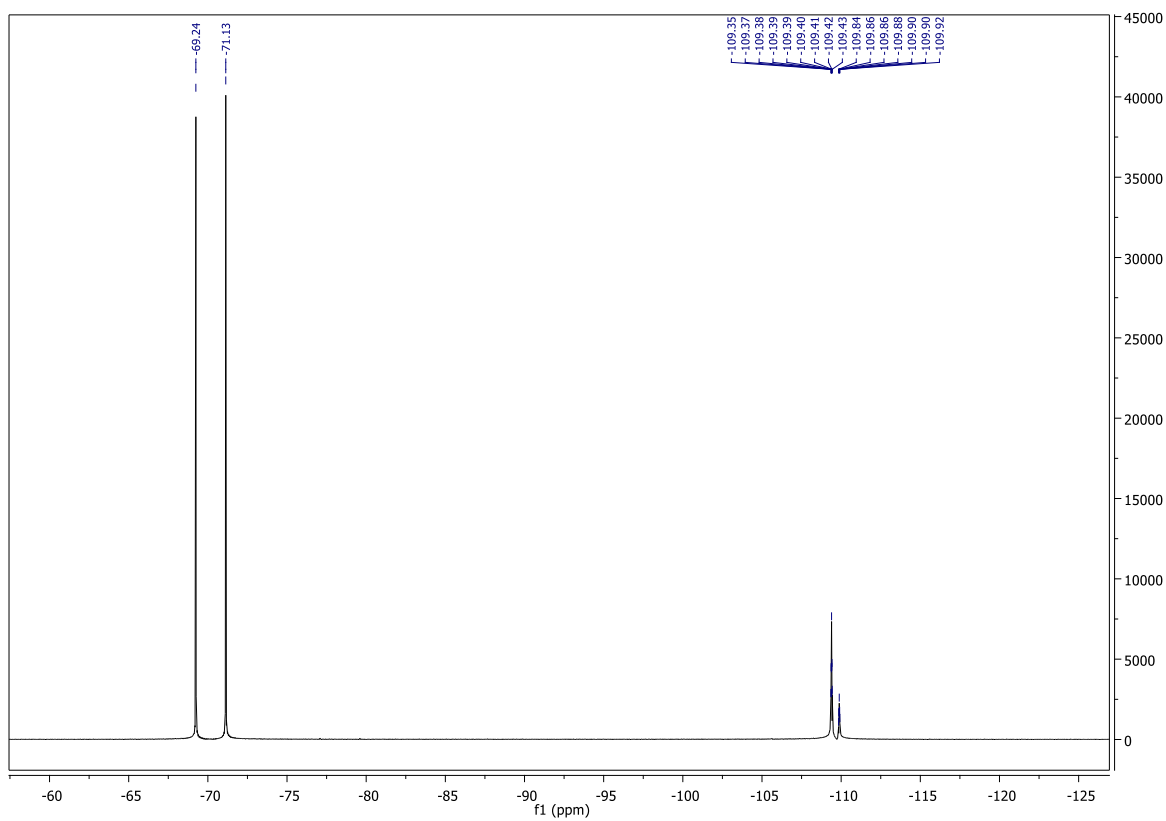


Figure S74. ^{19}F NMR of Compound 18

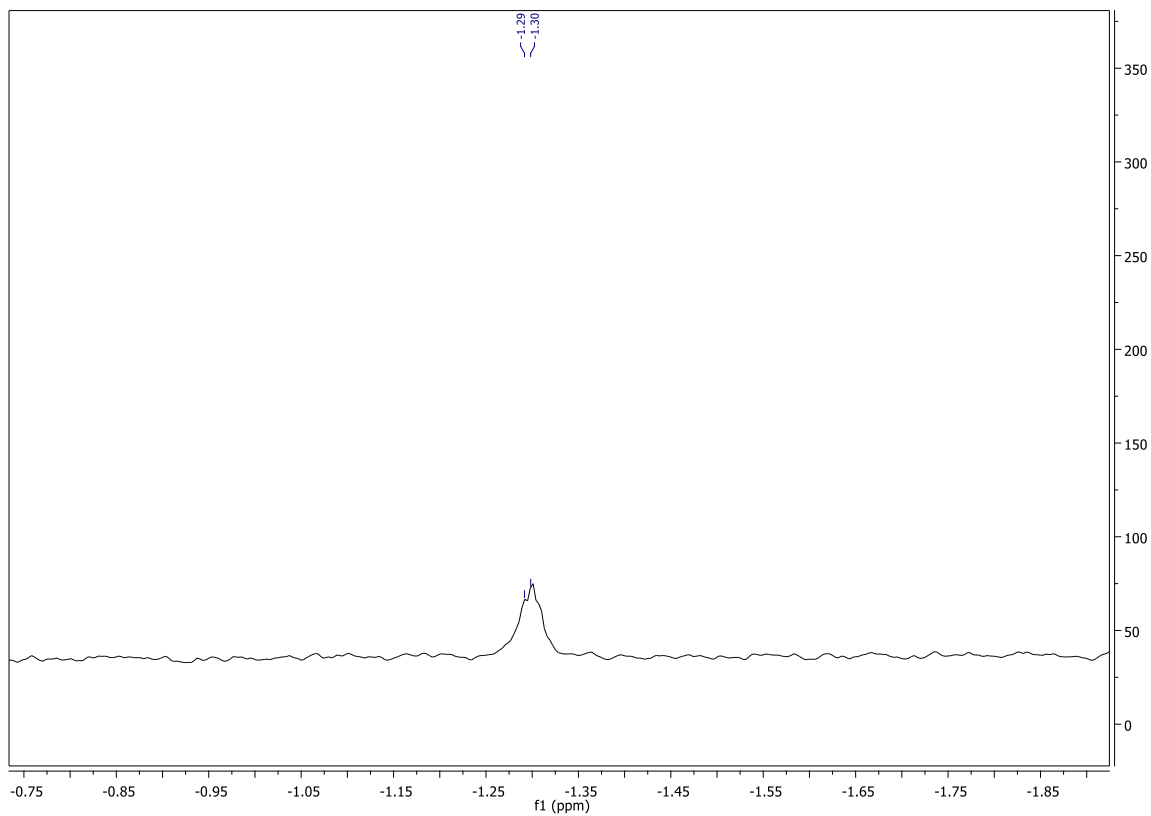


Figure S75. ^{11}B NMR of Compound 18

Line#:1 R.Time:5.2(Scan#:629)

MassPeaks:388

RawMode:Single 5.2(629) BasePeak:106(101711)

BG Mode:None Group 1 - Event 1

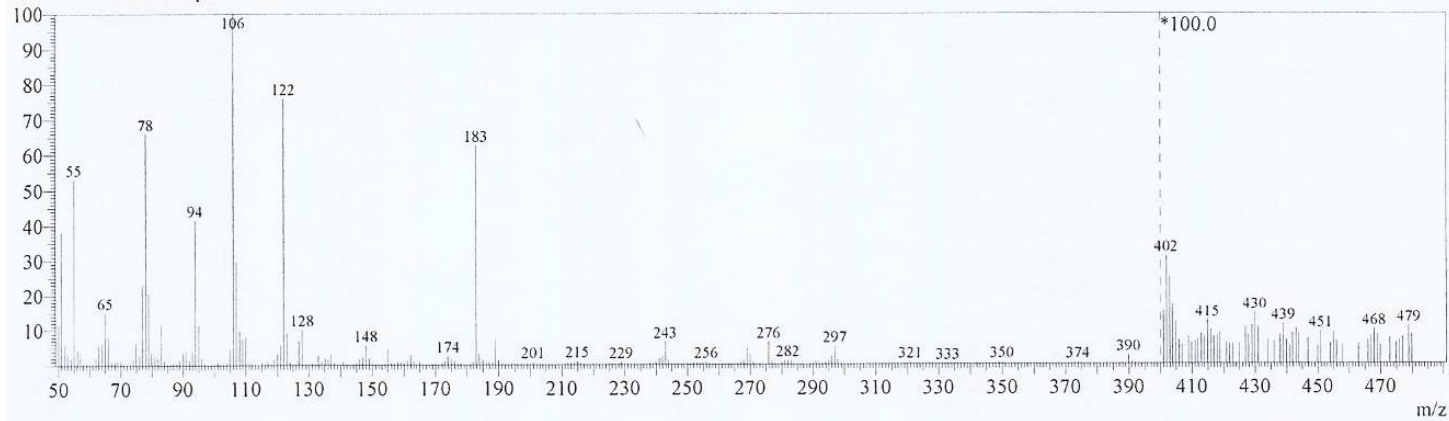


Figure S76. MS (ESI) of Compound 18

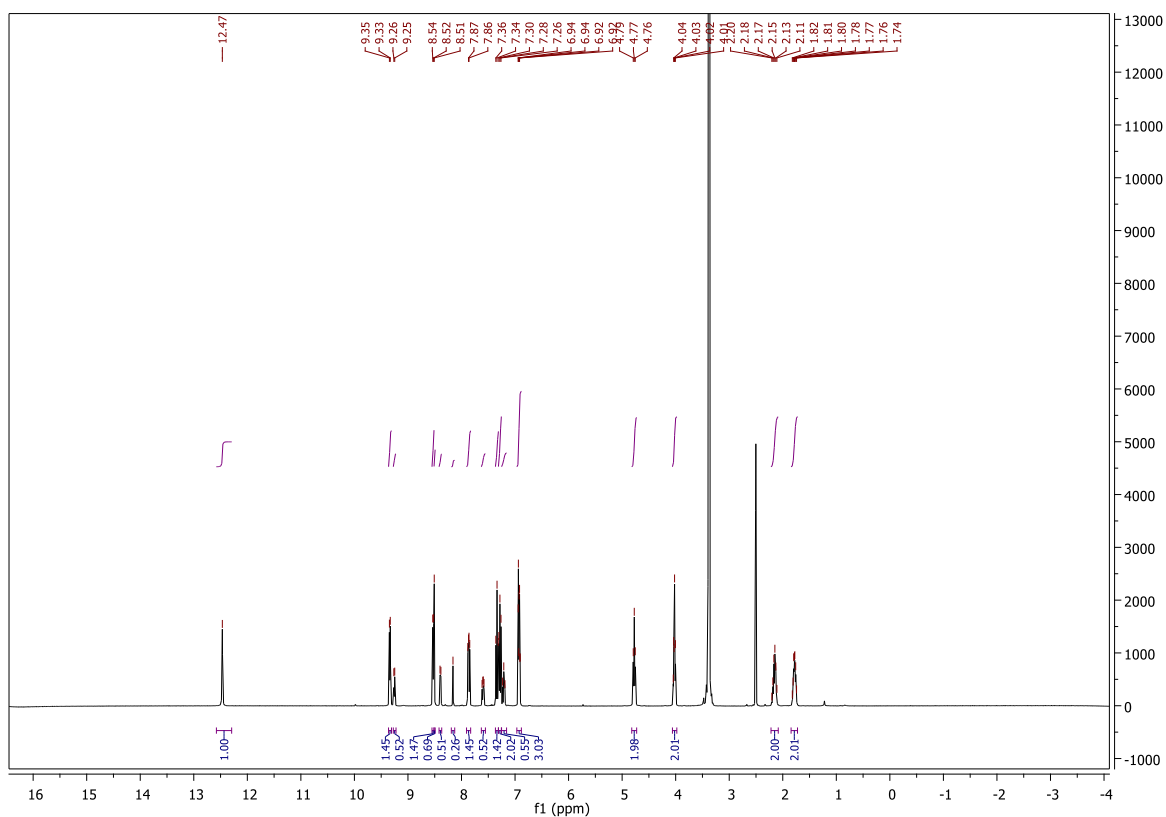


Figure S77. ¹H NMR of Compound 19

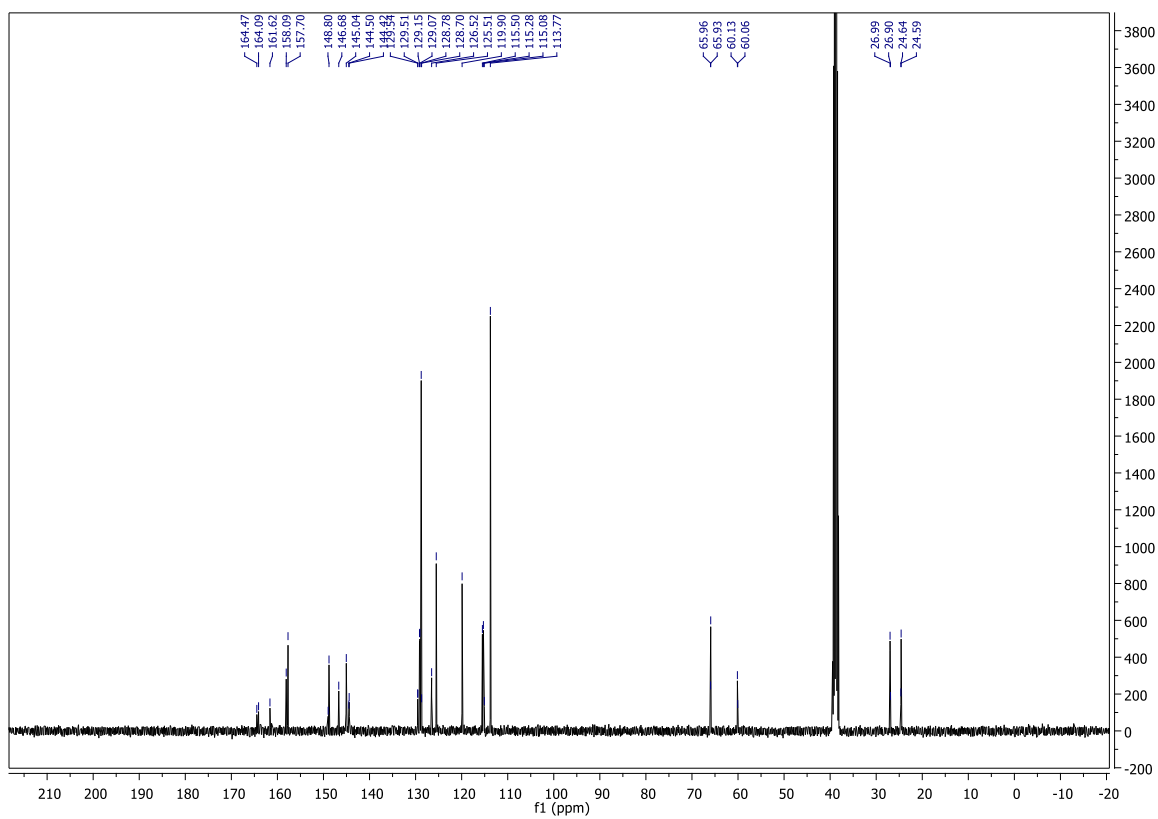
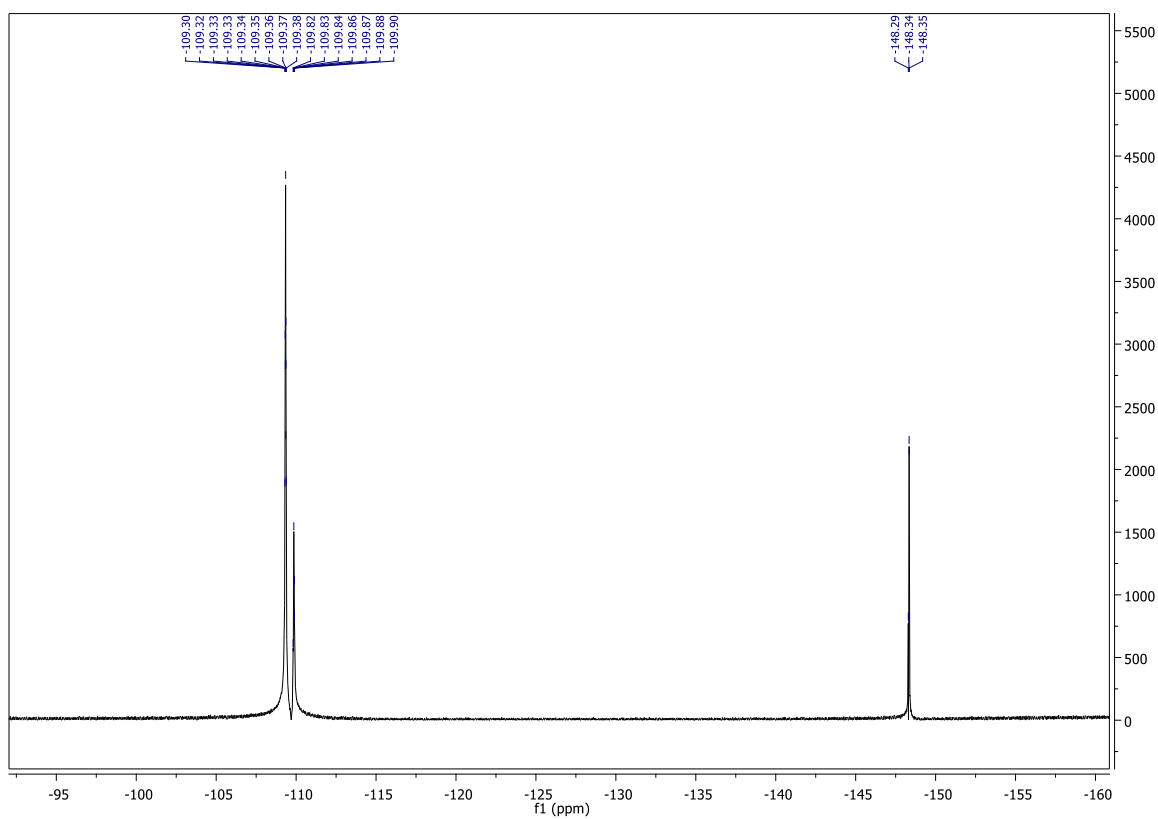
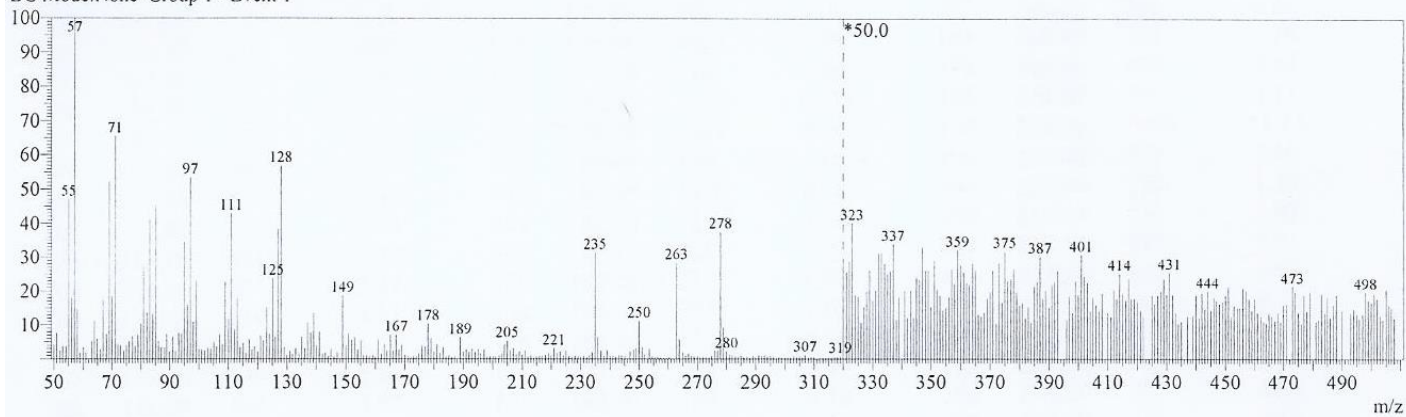


Figure S78. ¹³C NMR of Compound 19



Line#: 1 R.Time: 1.9(Scan#: 228)
 MassPeaks: 439
 RawMode: Single 1.9(228) BasePeak: 57(25829)
 BG Mode: None Group 1 - Event 1



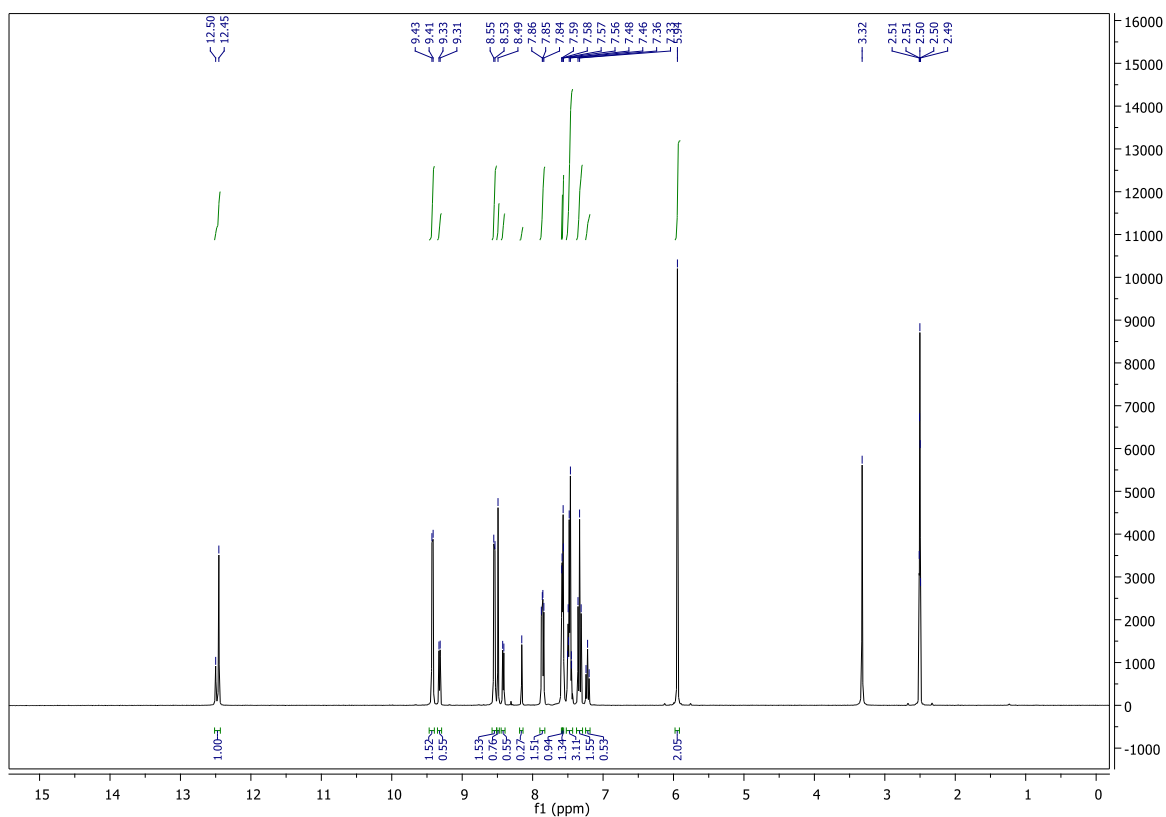


Figure S81. ¹H NMR of Compound 20

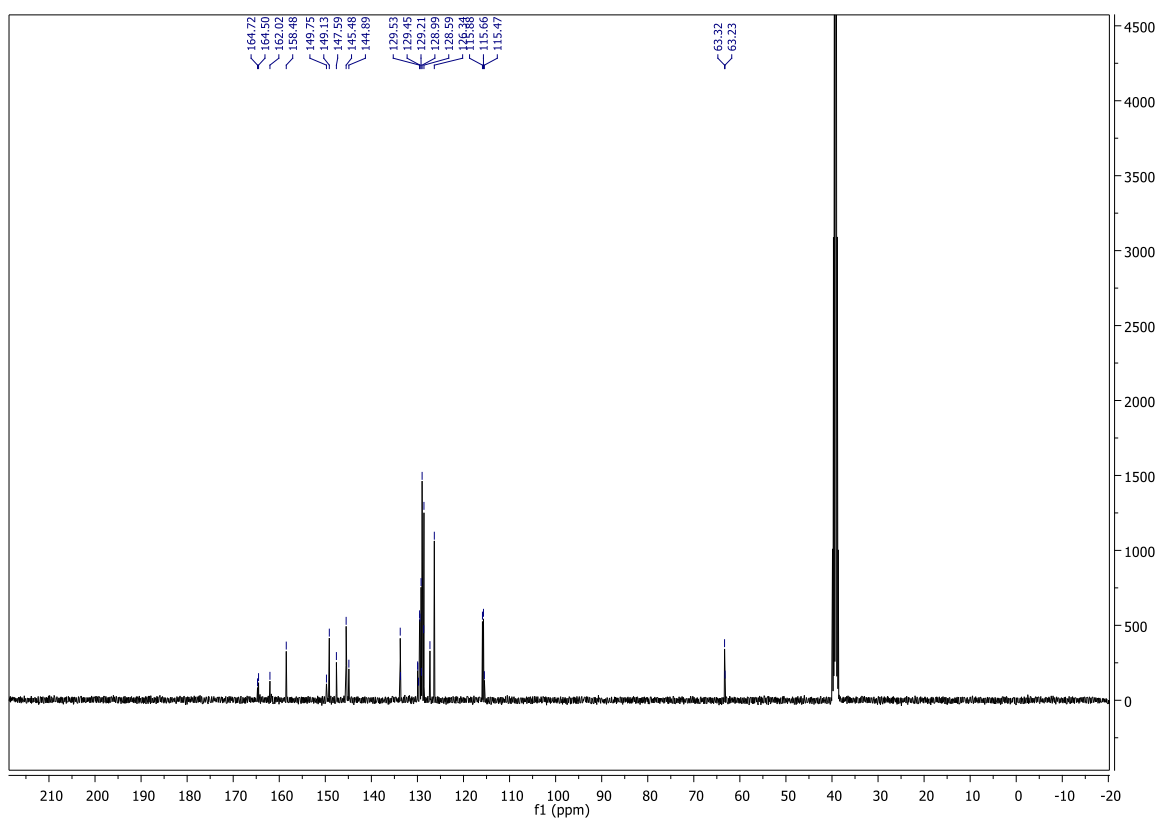


Figure S82. ¹³C NMR of Compound 20

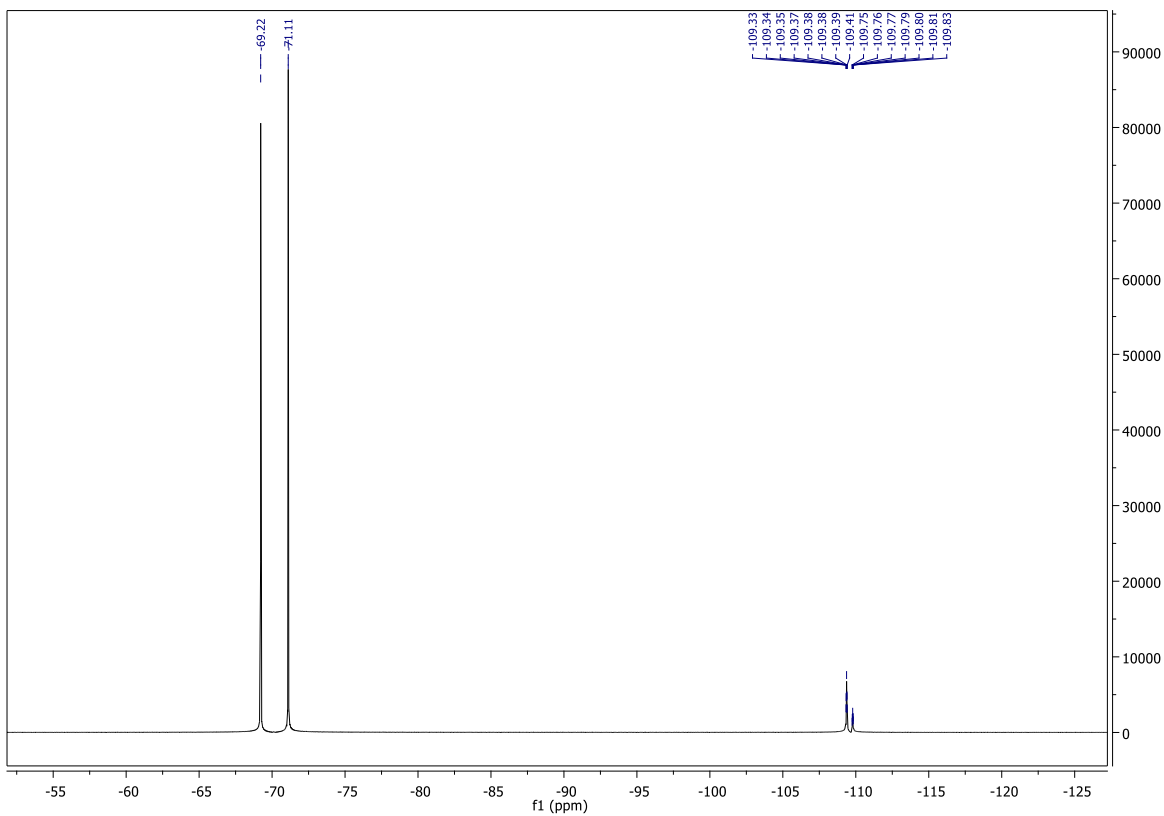


Figure S83. ^{19}F NMR of Compound 20

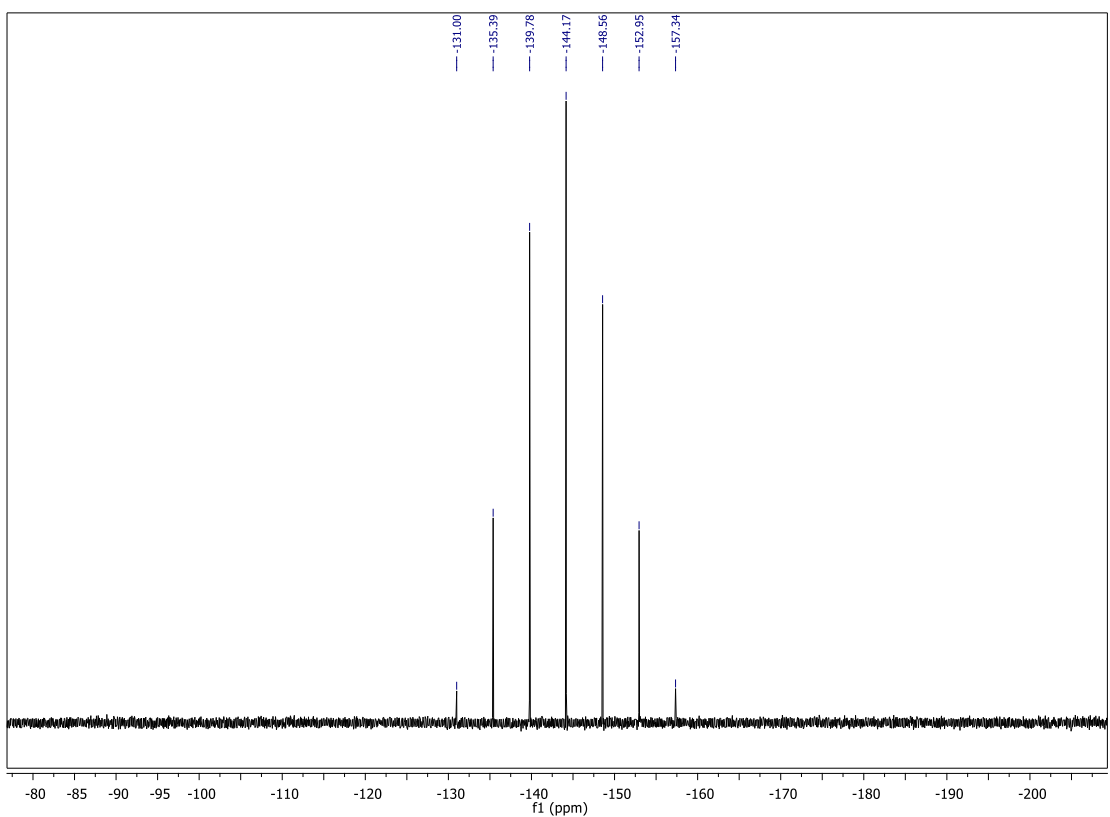


Figure S84. ^{31}P NMR of Compound 20

Line#:1 R.Time:6.8(Scan#:814)

MassPeaks:347

RawMode:Single 6.8(814) BasePeak:51(16604)

BG Mode:None Group 1 - Event 1

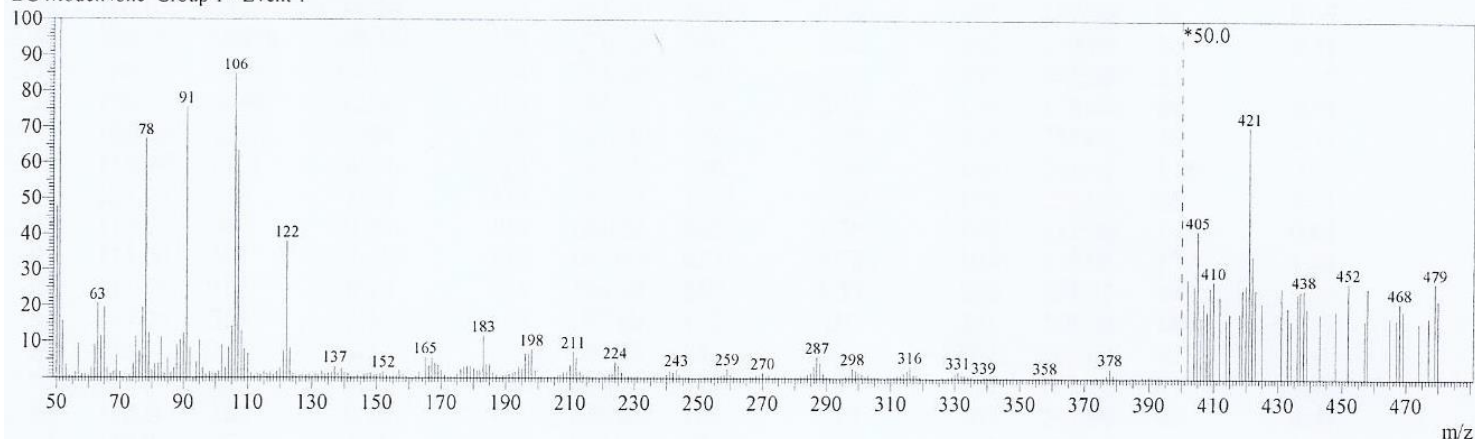


Figure S85. MS (ESI) of Compound 20

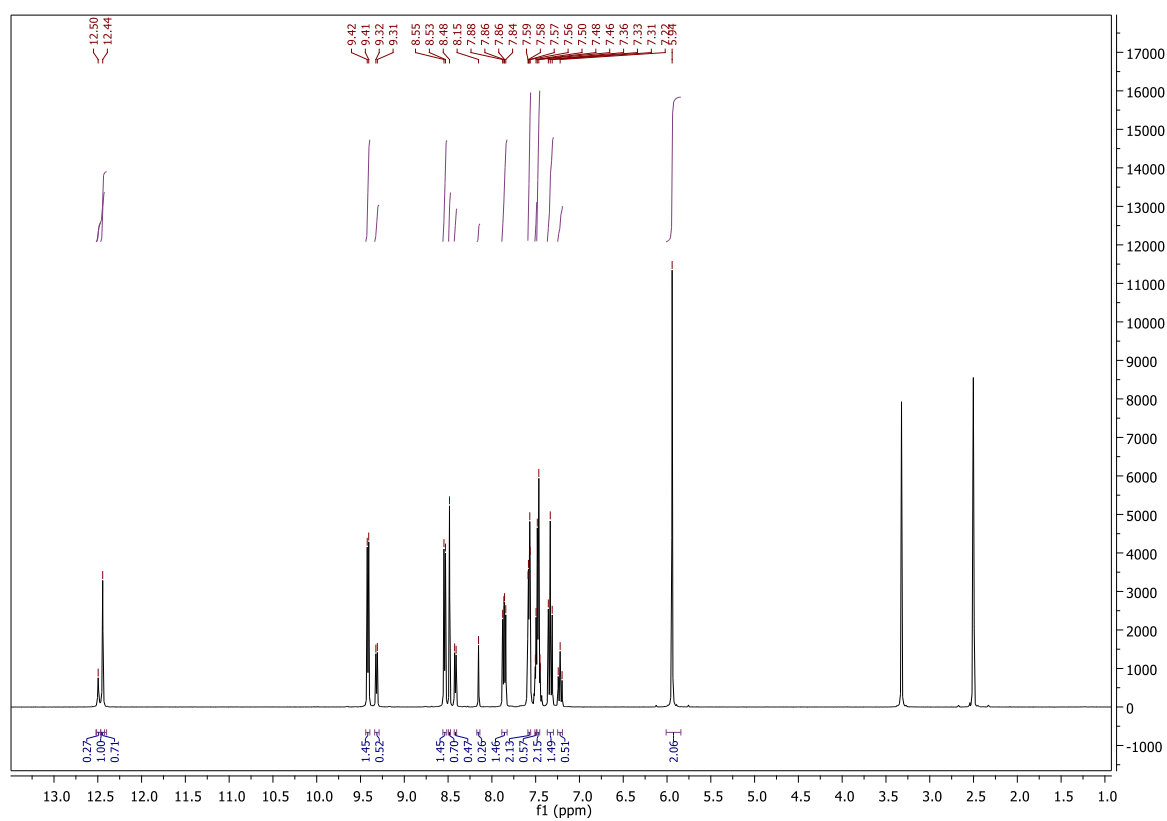


Figure S86. ^1H NMR of Compound 21

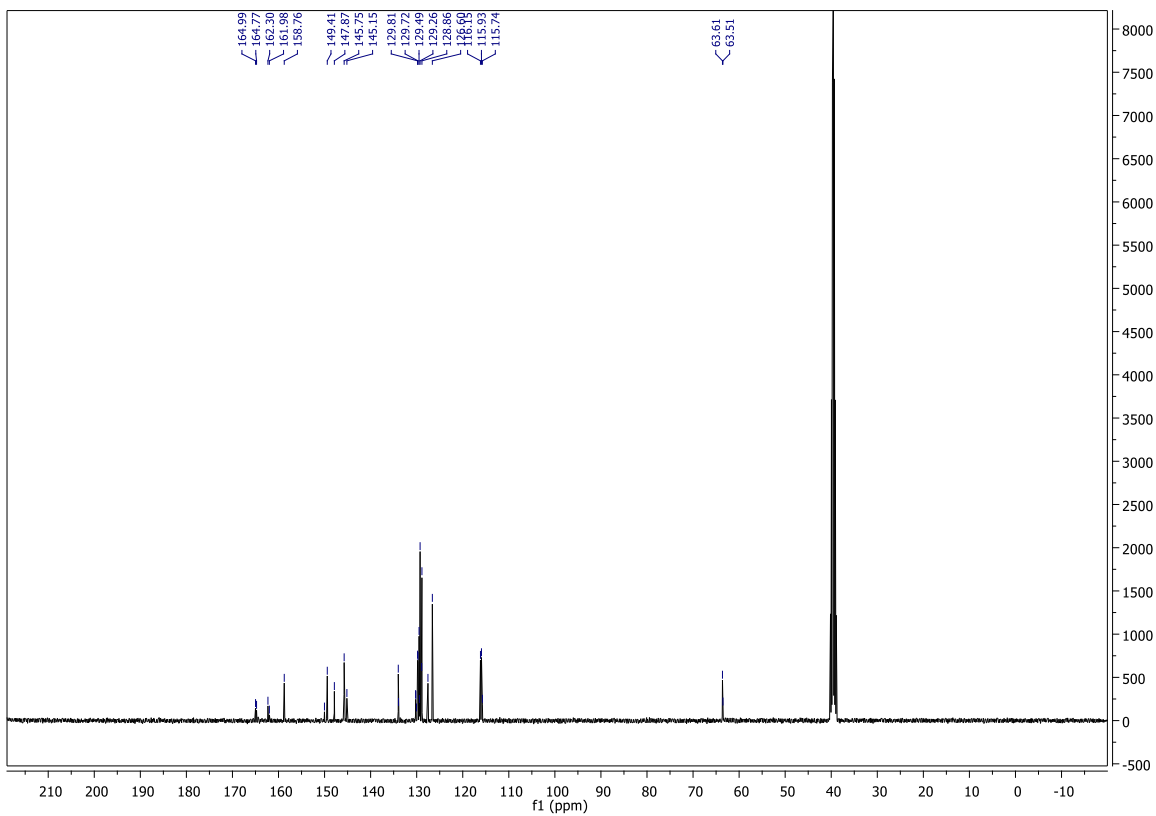


Figure S87. ¹³CNMR of Compound 21

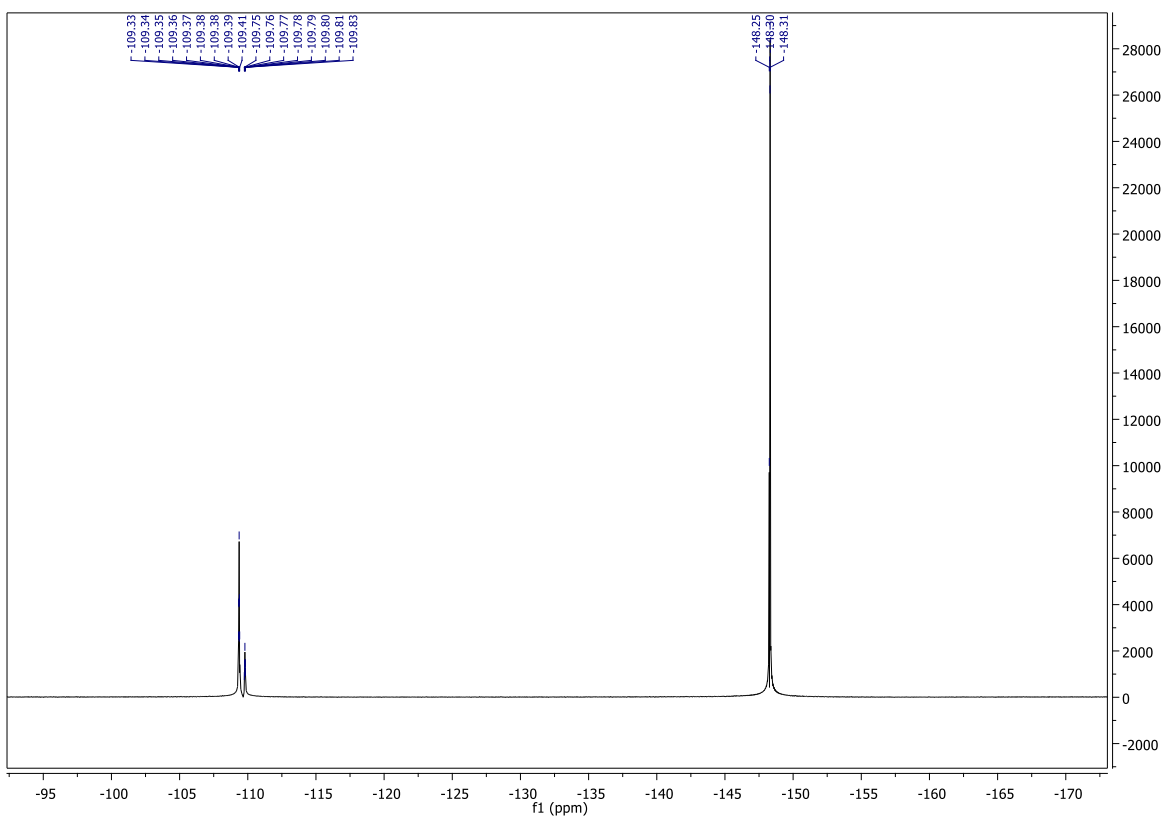


Figure S88. ¹⁹FNMR of Compound 21

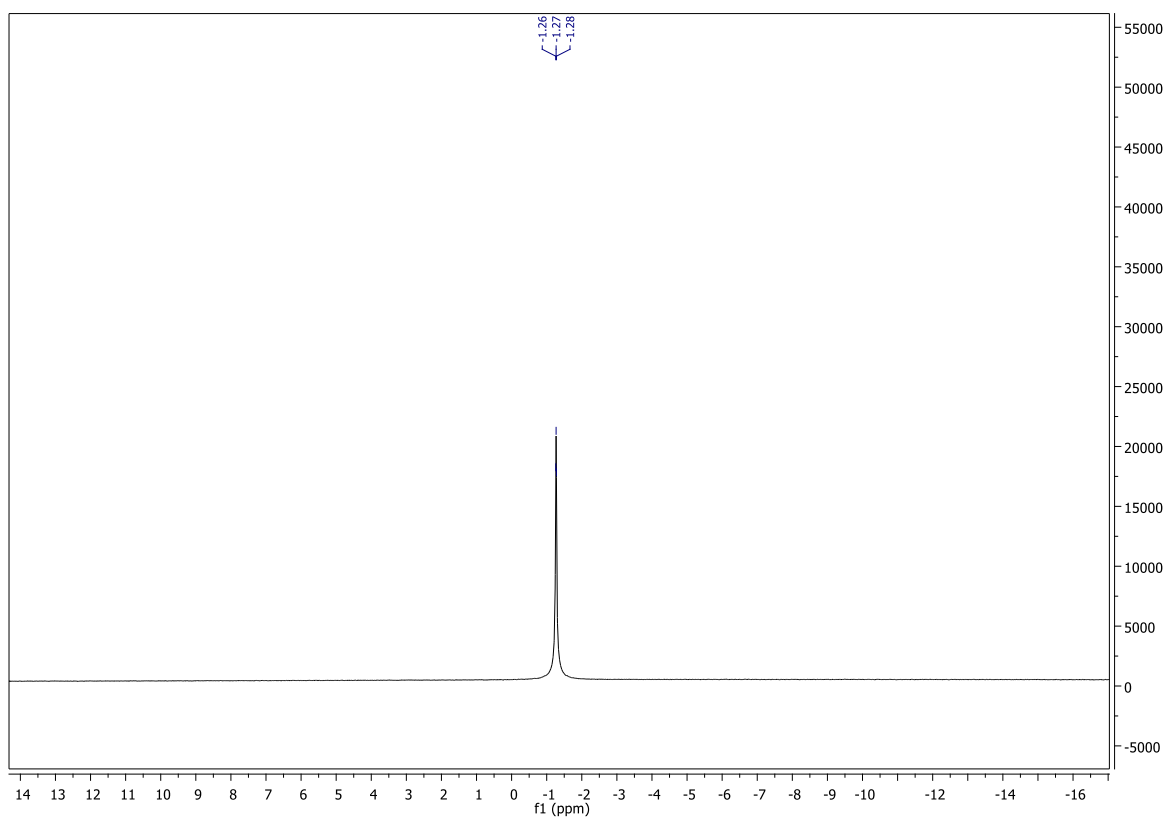


Figure S89. ^{11}B NMR of Compound 21

Line#:1 R.Time:5.3(Scan#:636)

MassPeaks:323

RawMode:Single 5.3(636) BasePeak:106(17508)

BG Mode:None Group 1 - Event 1

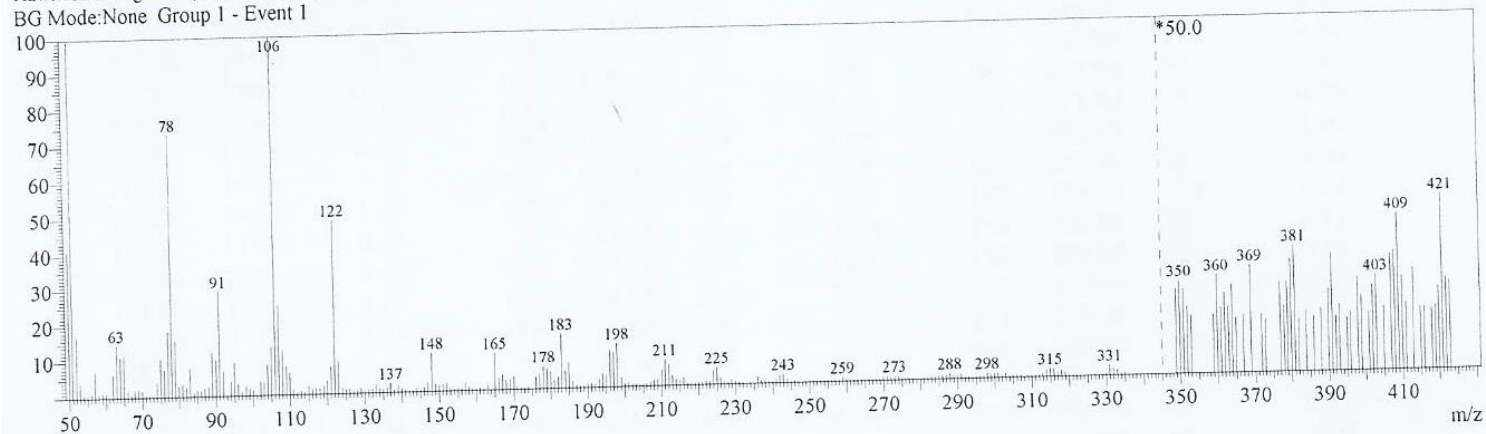


Figure S90. MS (ESI) of Compound 21

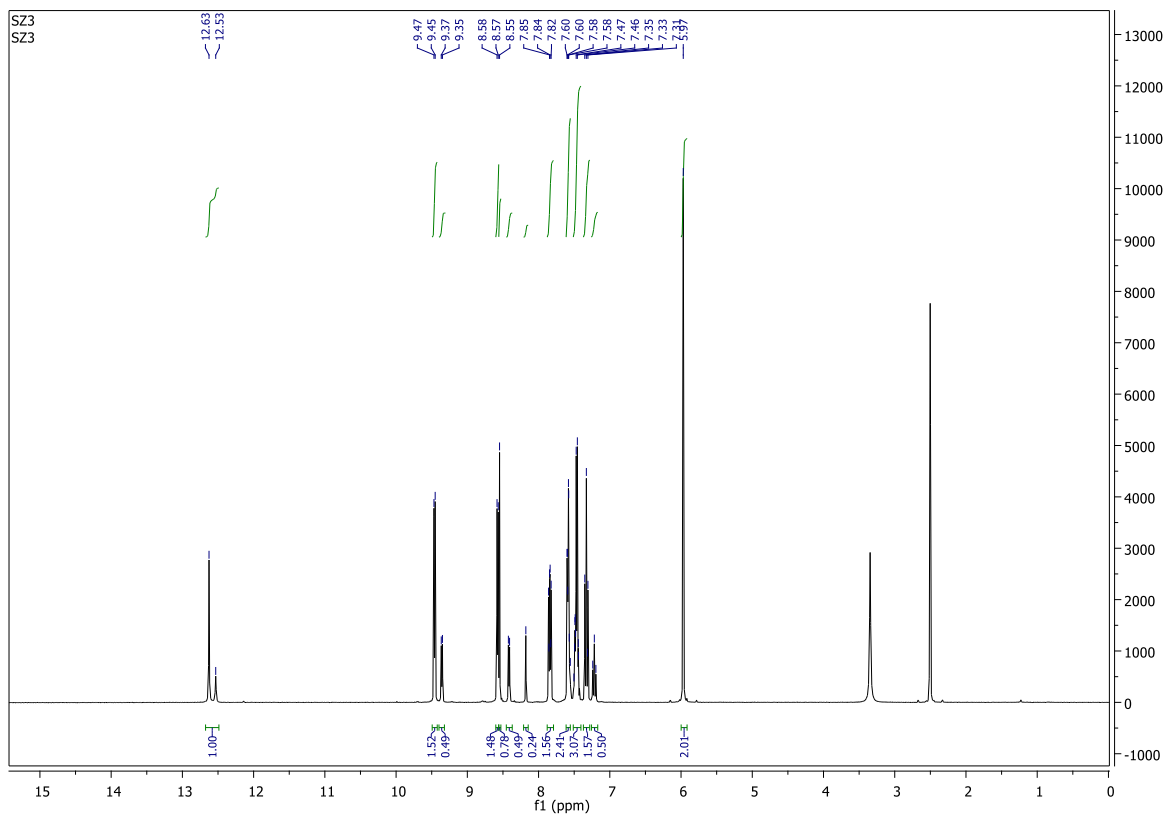


Figure S91. ^1H NMR of Compound 22

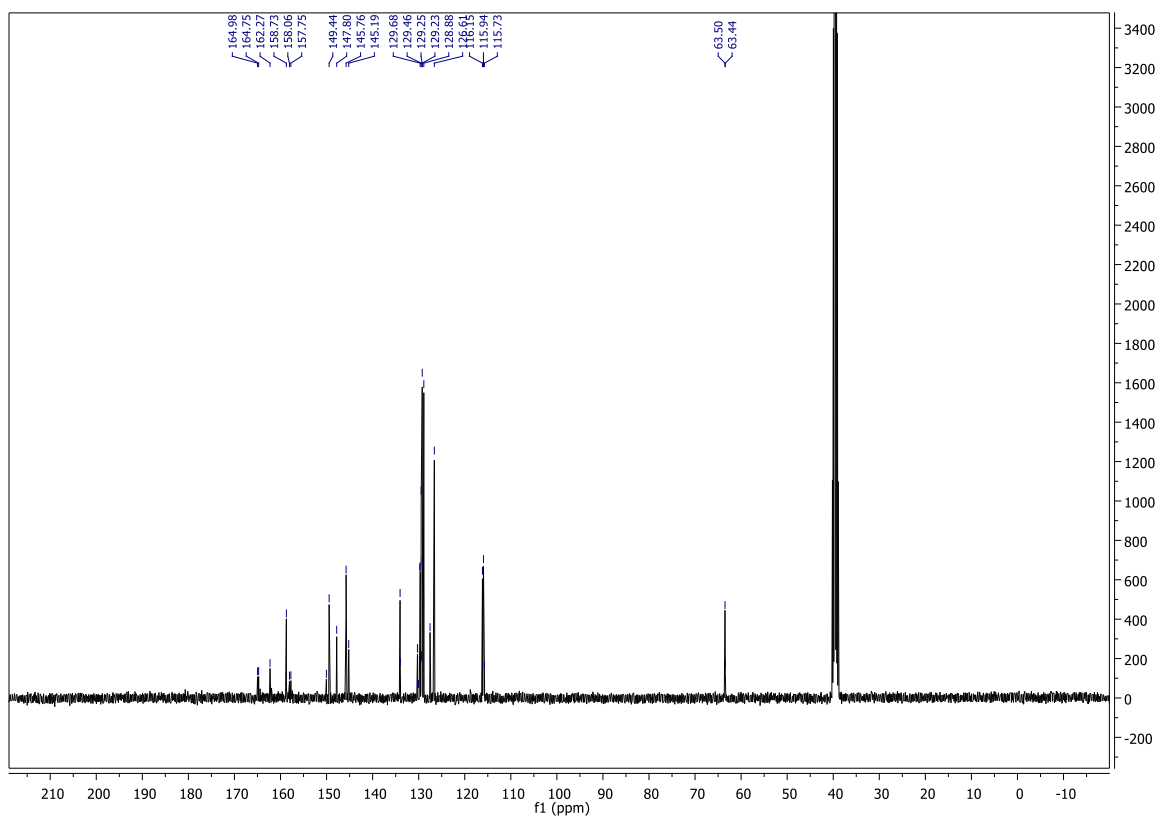
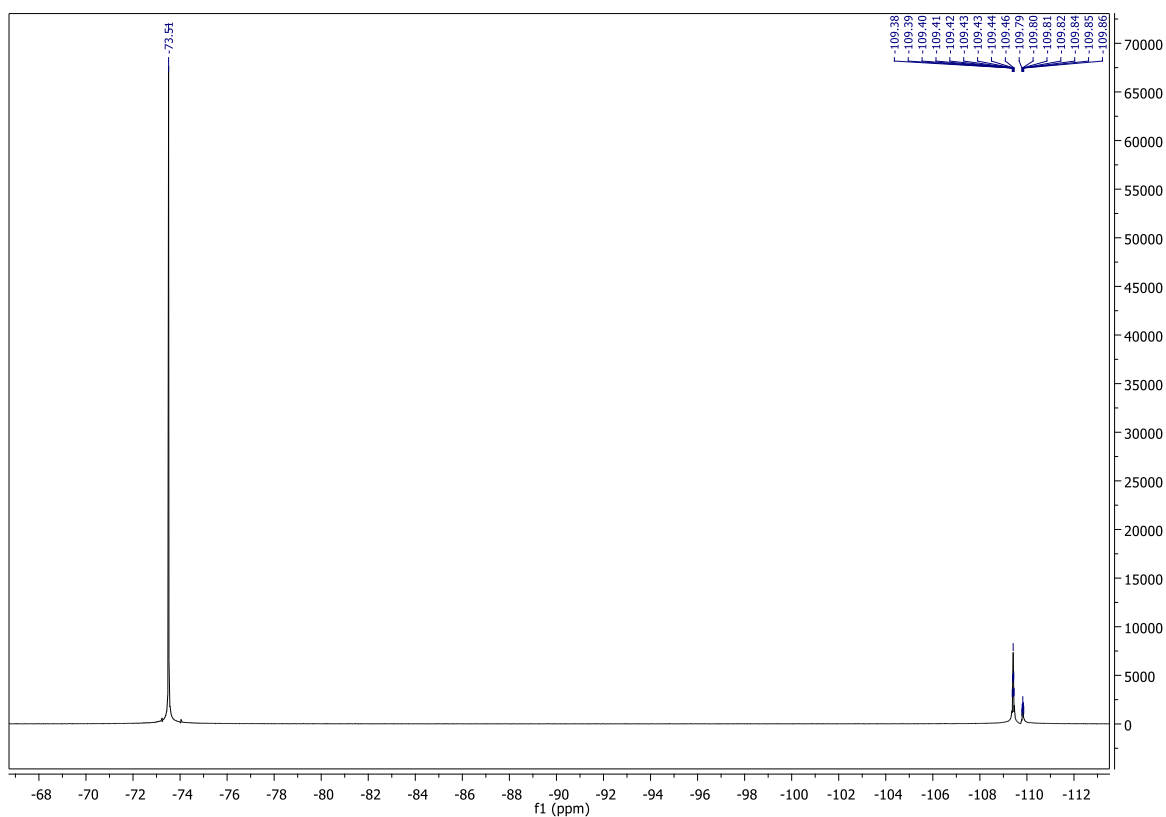
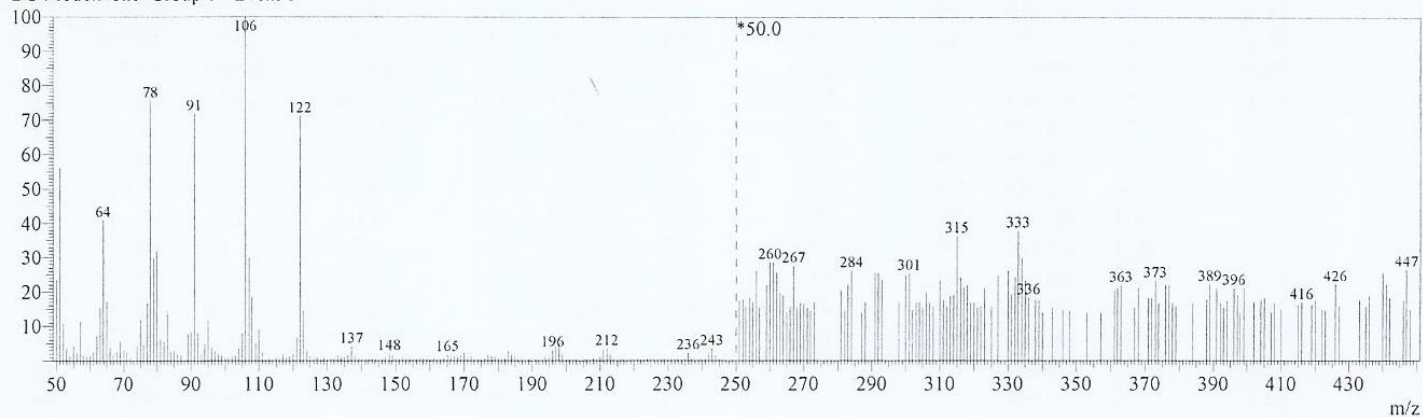


Figure S92. ^{13}C NMR of Compound 22



Line#:1 R.Time:4.8(Scan#:581)
 MassPeaks:308
 RawMode:Single 4.8(581) BasePeak:106(18532)
 BG Mode:None Group 1 - Event 1



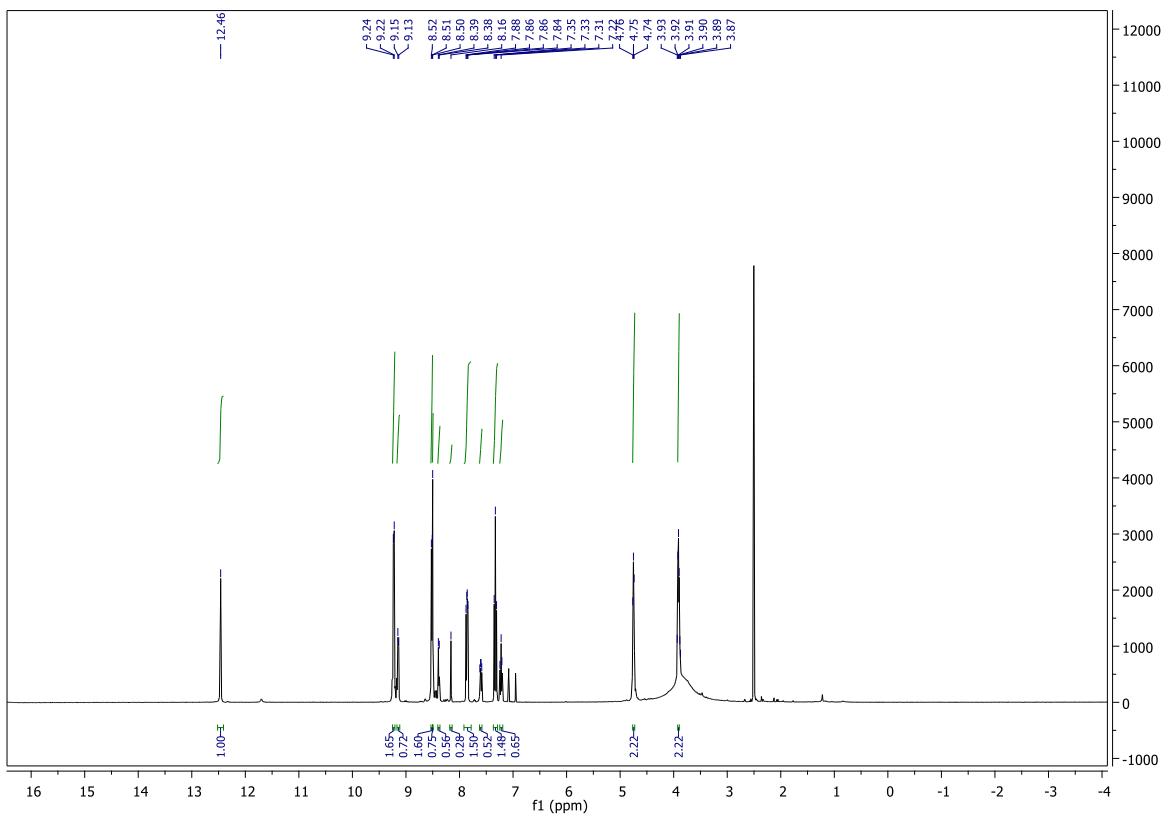


Figure S95. ^1H NMR of Compound 23

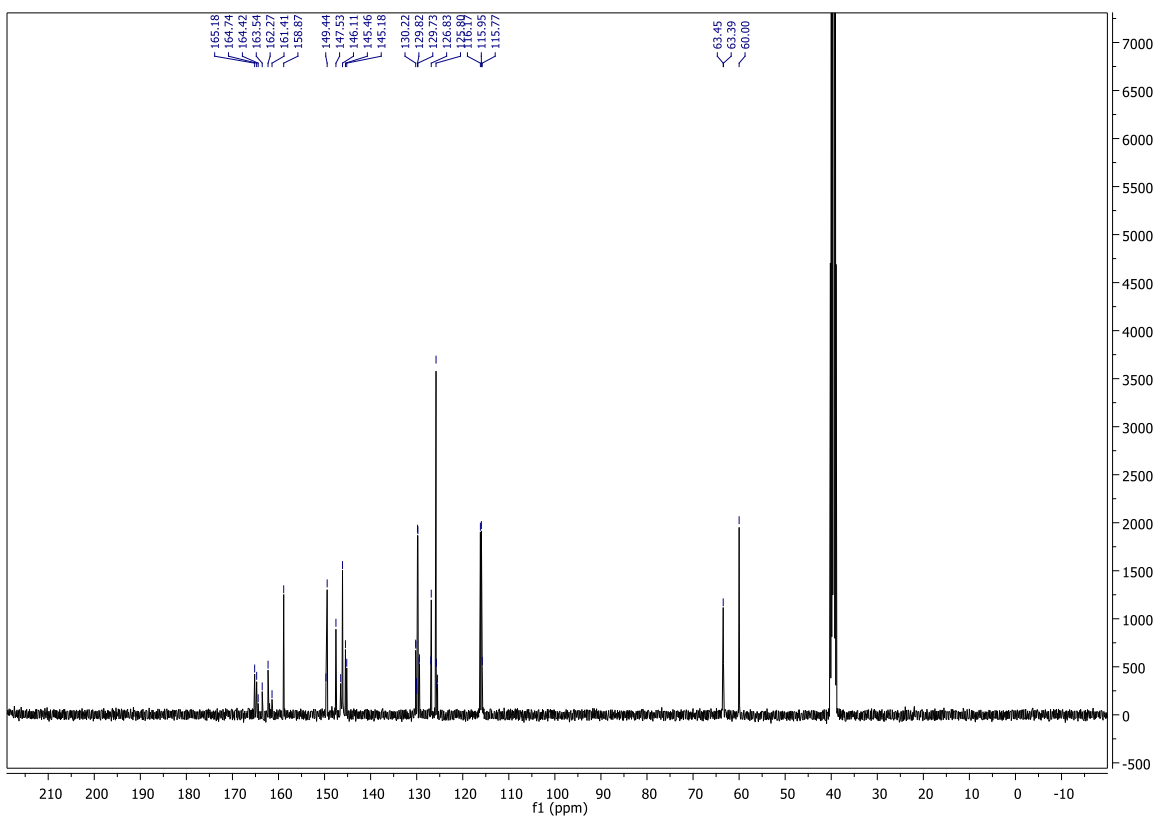


Figure S96. ^{13}C NMR of Compound 23

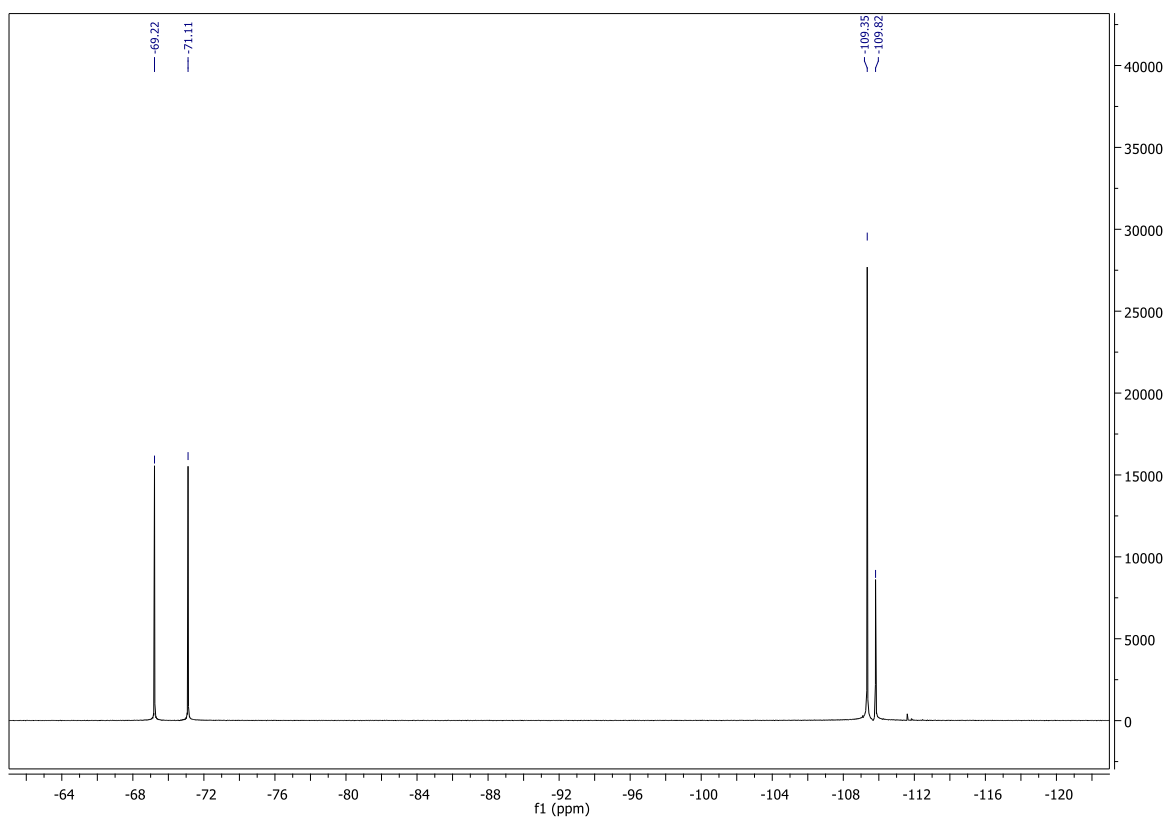


Figure S97. ^{19}F NMR of Compound 23

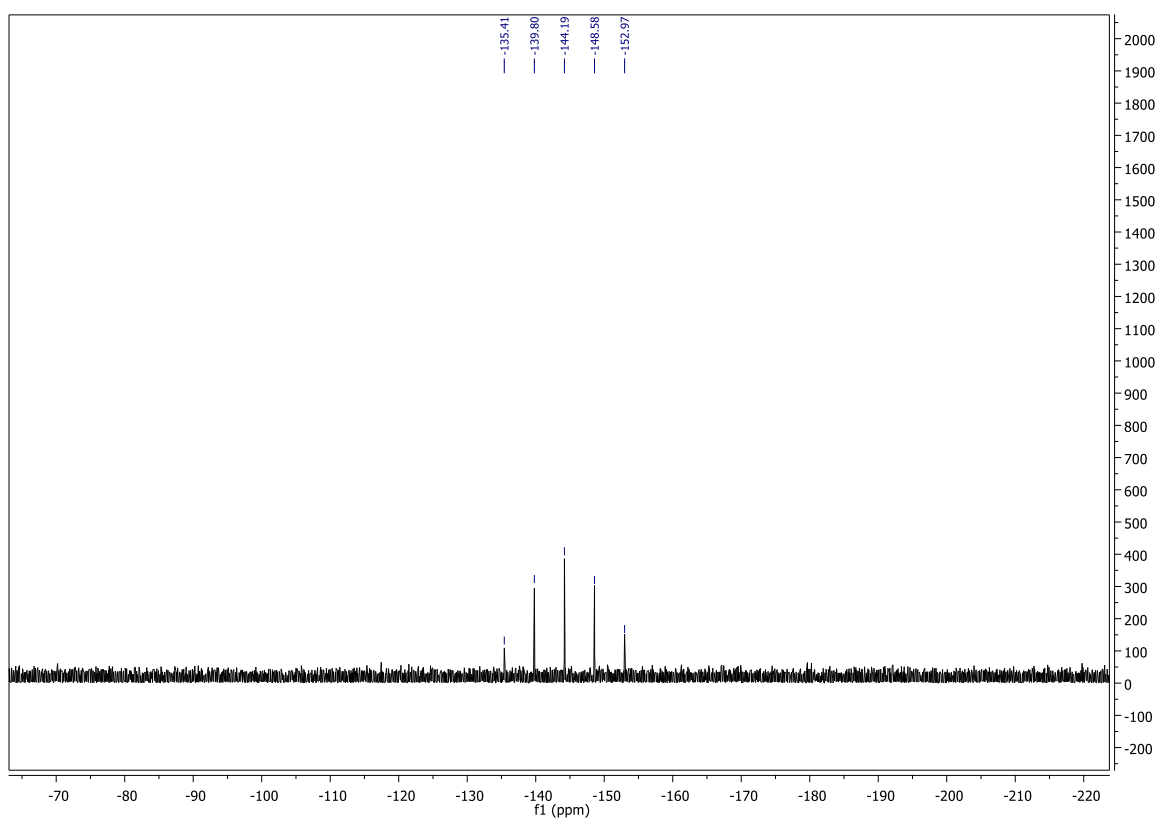


Figure S98. ^{31}P NMR of Compound 23

Salsabel-SM1 #332 RT: 5.57 AV: 1 SB: 181 4.60-5.94, 4.92-6.58 NL: 1.95E5
 T: (0,0) + c EI Full ms [40.00-1000.00]

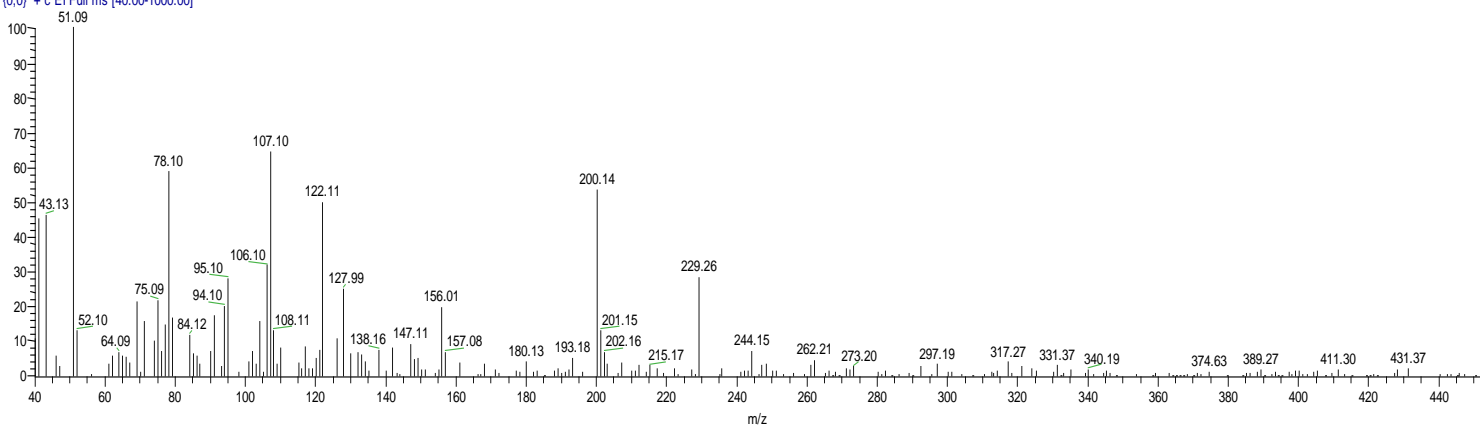


Figure S99. MS (ESI) of Compound 23

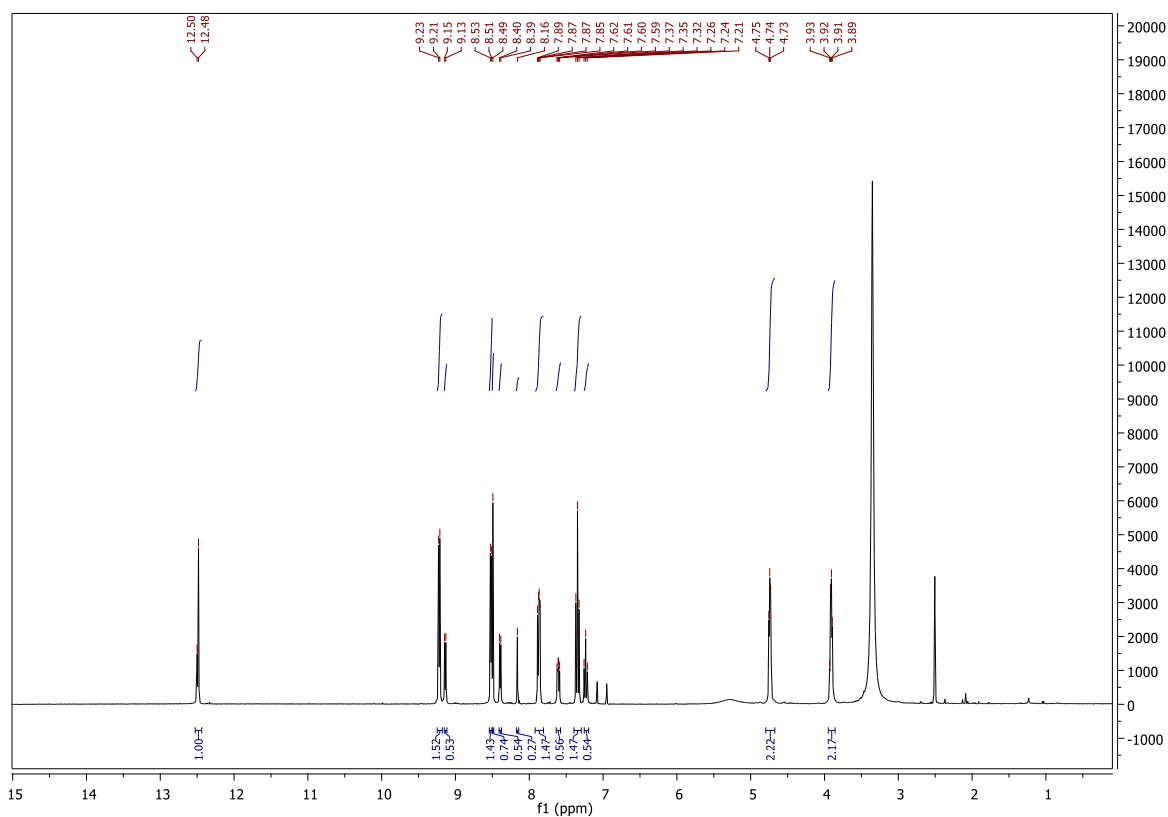


Figure S100. ¹H NMR of Compound 24

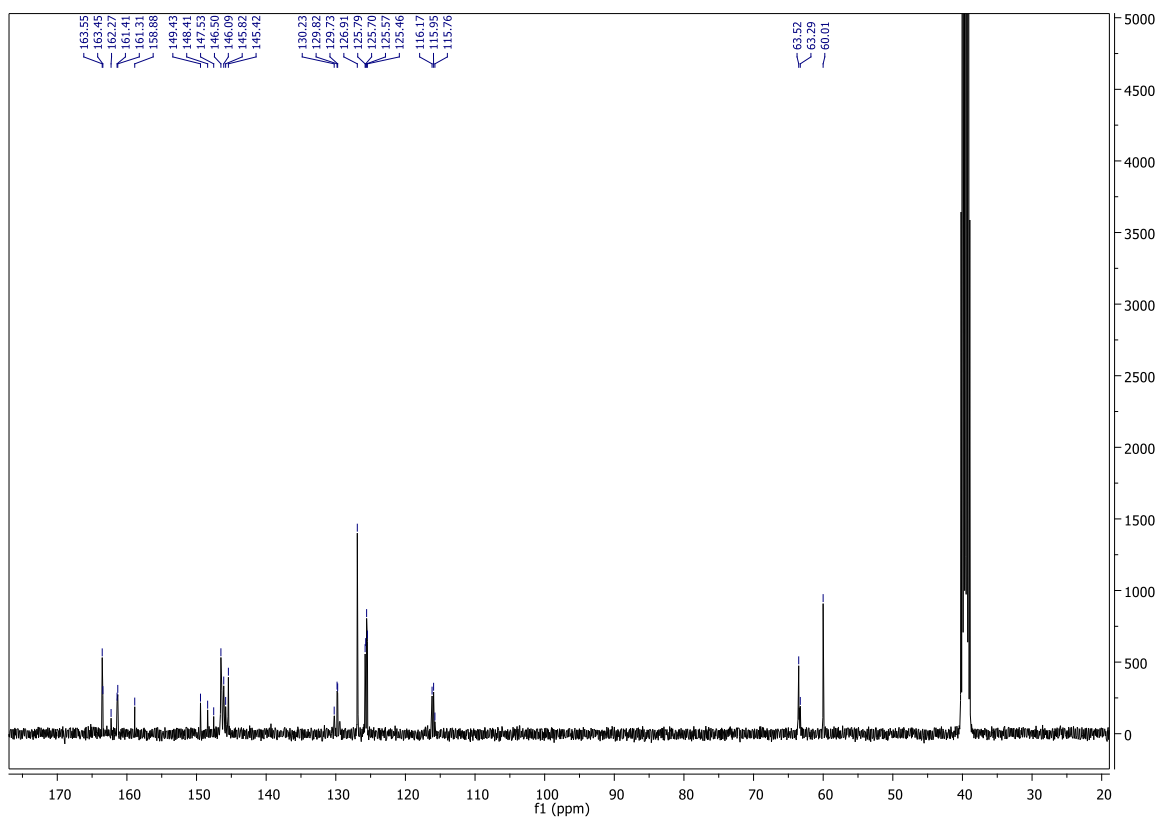


Figure S101. ^{13}C NMR of Compound 24

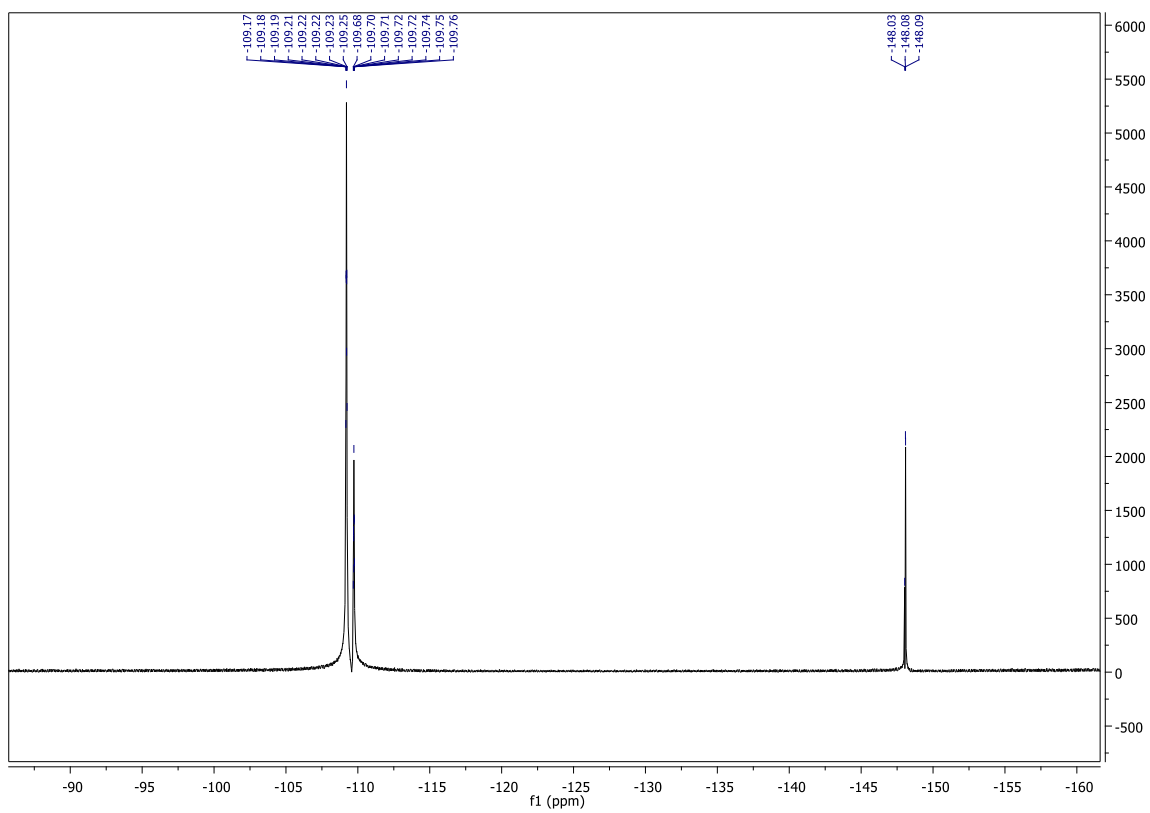


Figure S102. ^{19}F NMR of Compound 24

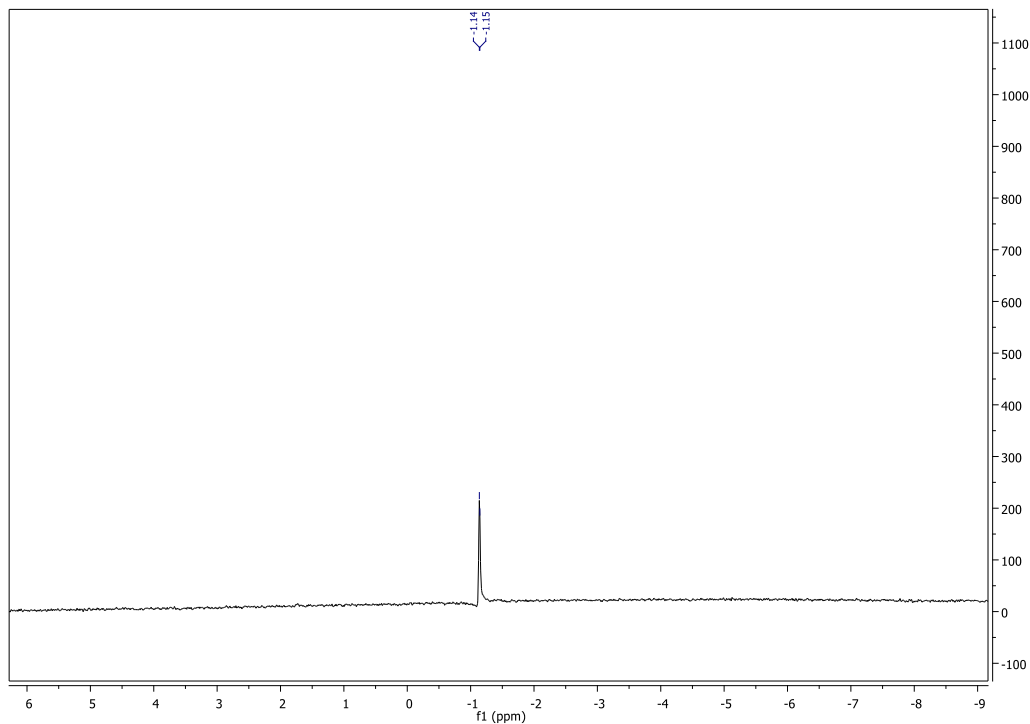


Figure S103. ^{11}B NMR of Compound 24

salsabil-Sp21 #256 RT: 4.30 AV: 1 SB: 63 3.43-4.17, 3.65-3.93 NL: 1.41E6
T: (0,0) +c EI Full ms [40.00-1000.00]

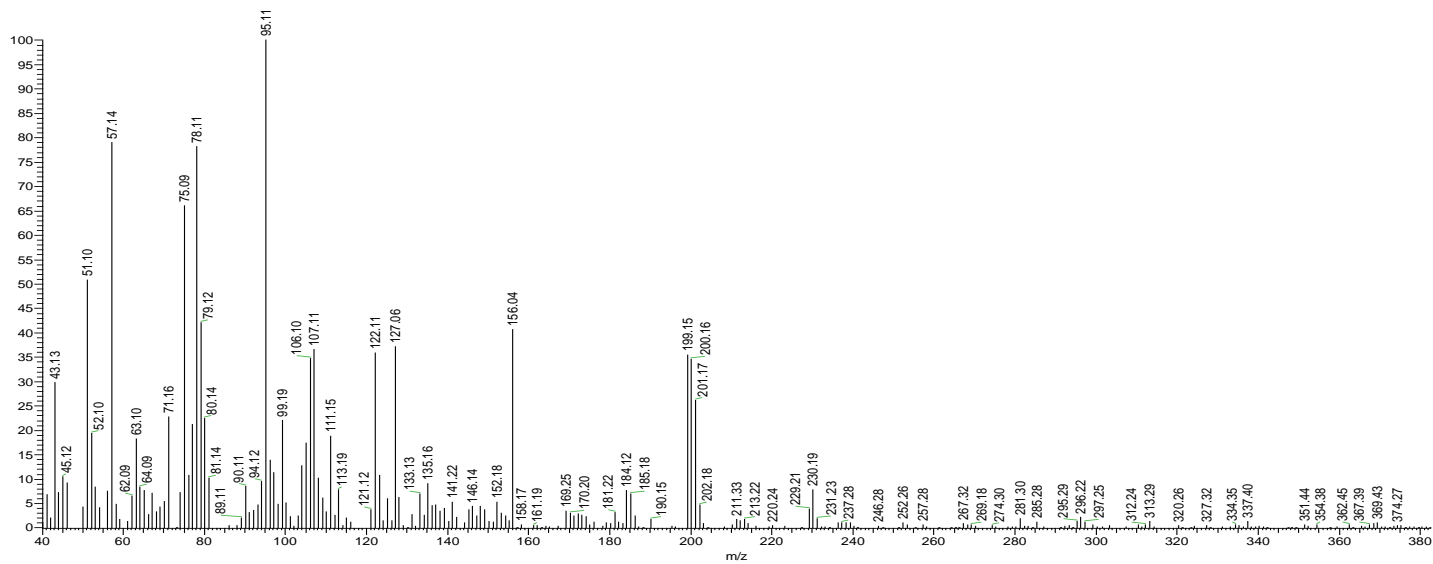


Figure S104. MS (ESI) of Compound 24

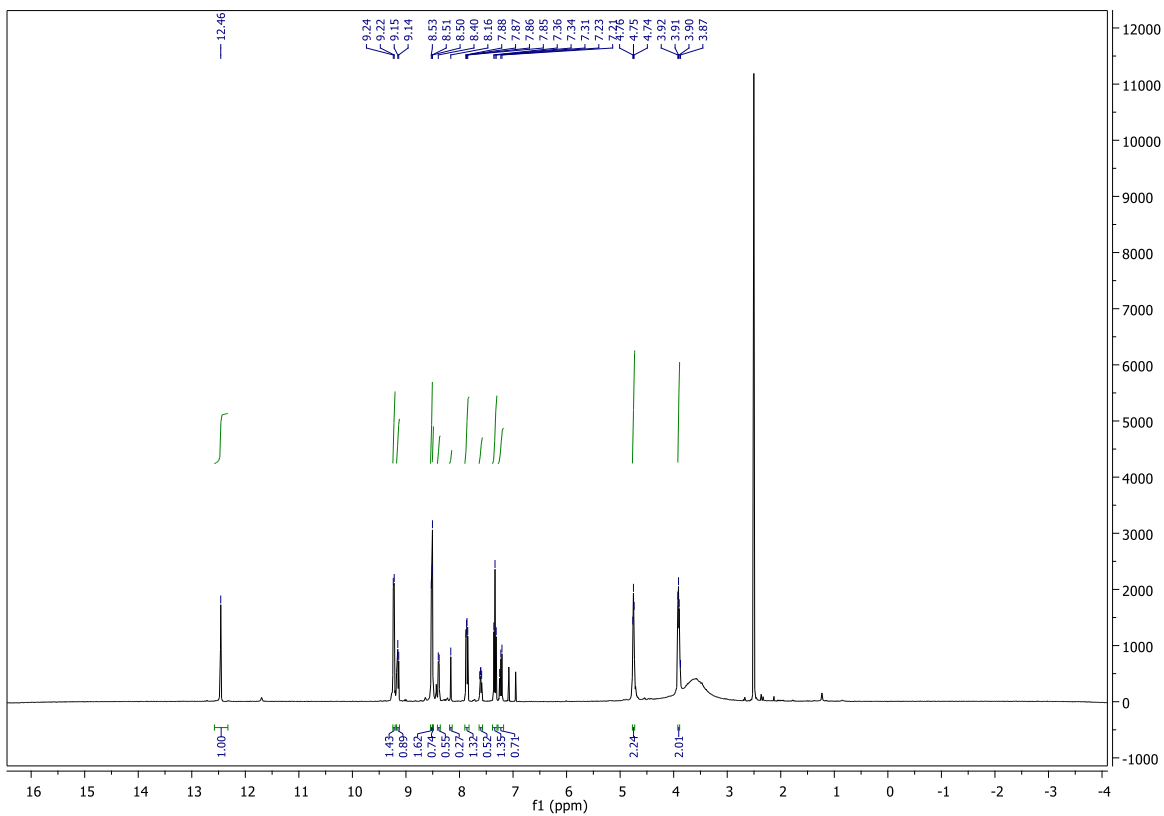


Figure S105. ^1H NMR of Compound 25

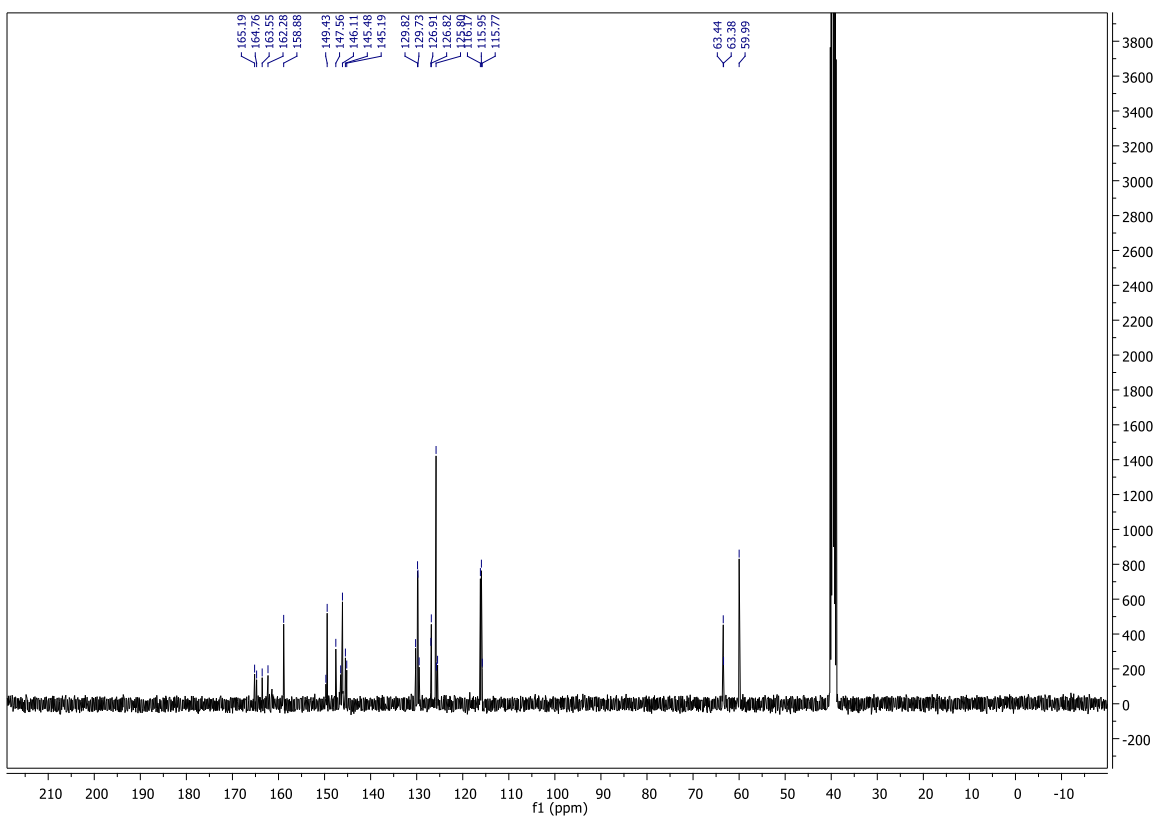


Figure S106. ^{13}C NMR of Compound 25

