

**A Cascade A³ Coupling Strategy towards Regioselective Synthesis of β -Carboline *N*-fused
Pyrrole Derivatives with Pyridine Tethers**

Vaishali,^a Chandni C. Malakar,^b and Virender Singh^{a,c}

^a Department of Chemistry, Dr B R Ambedkar National Institute of Technology, Jalandhar, Punjab, India-144027

^b Department of Chemistry, National Institute of Technology, Manipur, Imphal, India-795004

^c Department of Chemistry, Central University of Punjab, Bathinda, Punjab, India-151001

Email id: virender.singh@cup.edu.in

Supporting Information

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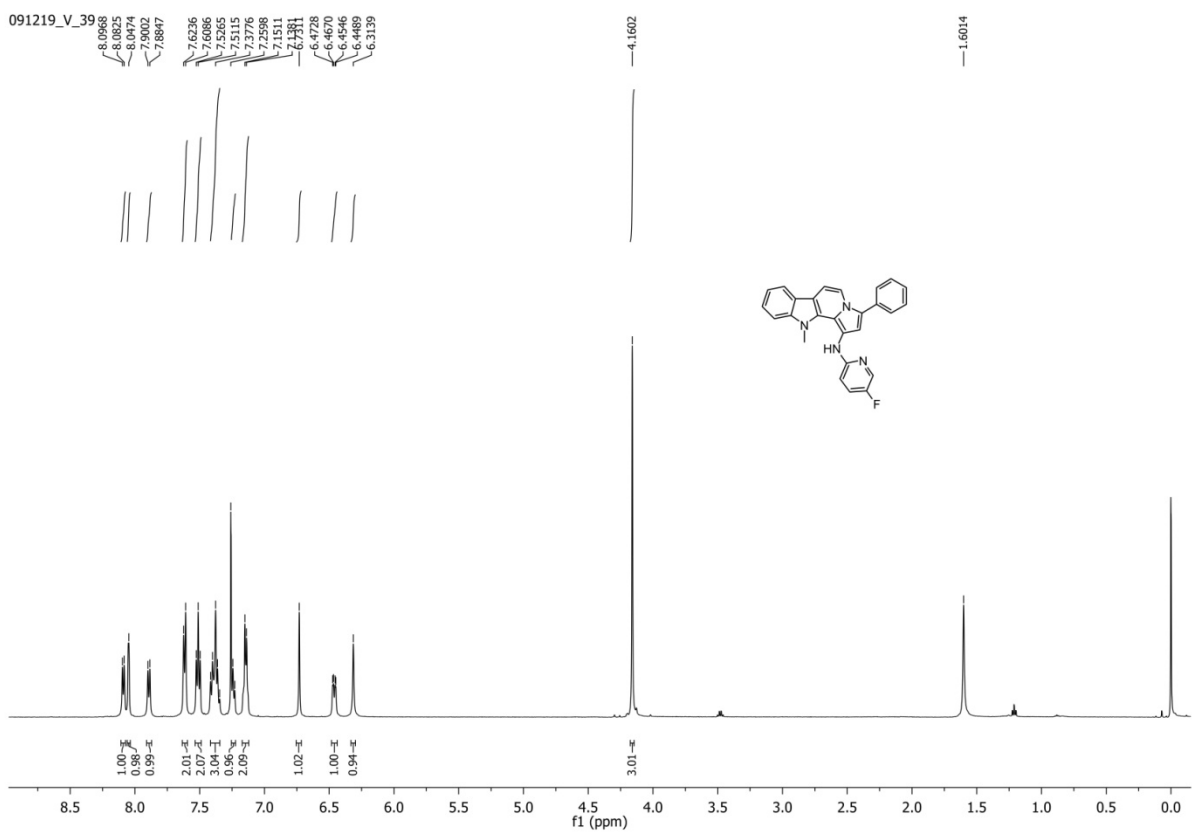


Figure S1. $^1\text{H-NMR}$ spectrum of **1aB**.

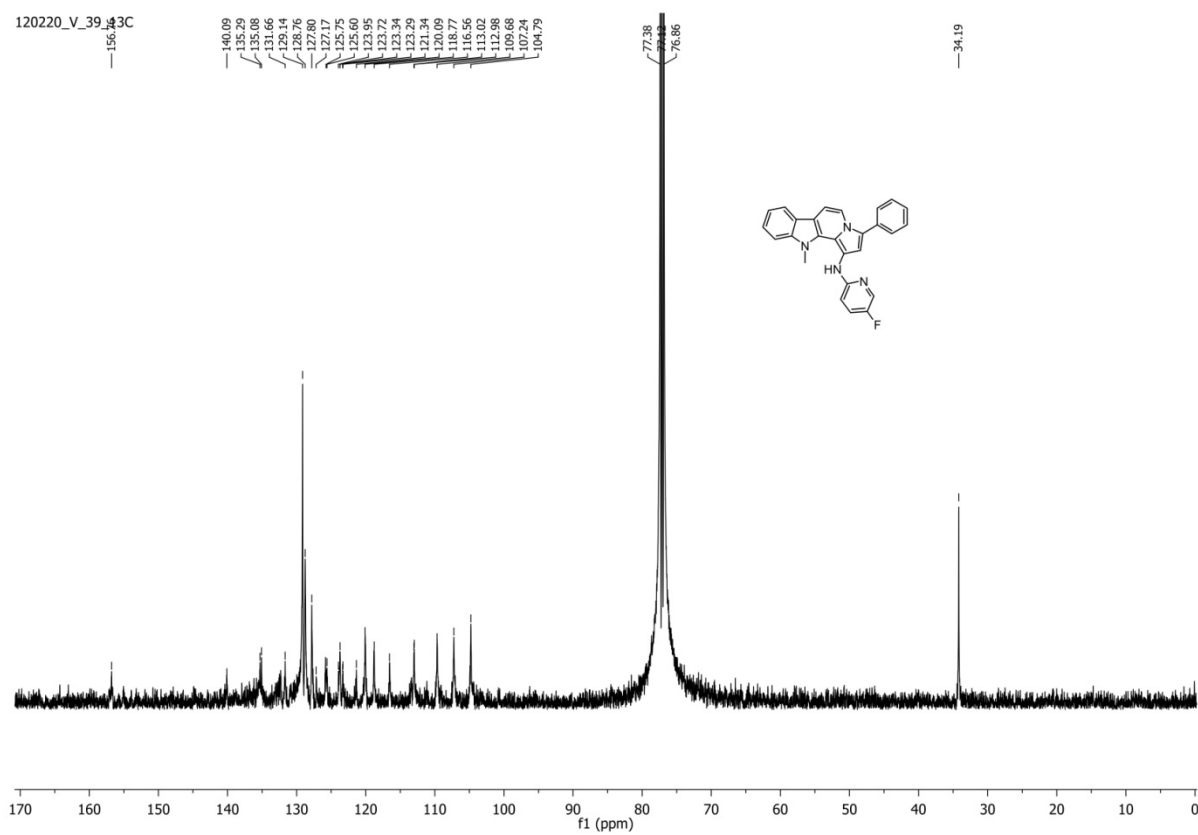


Figure S2. $^{13}\text{C-NMR}$ spectrum of **1aB** (Solubility issue).

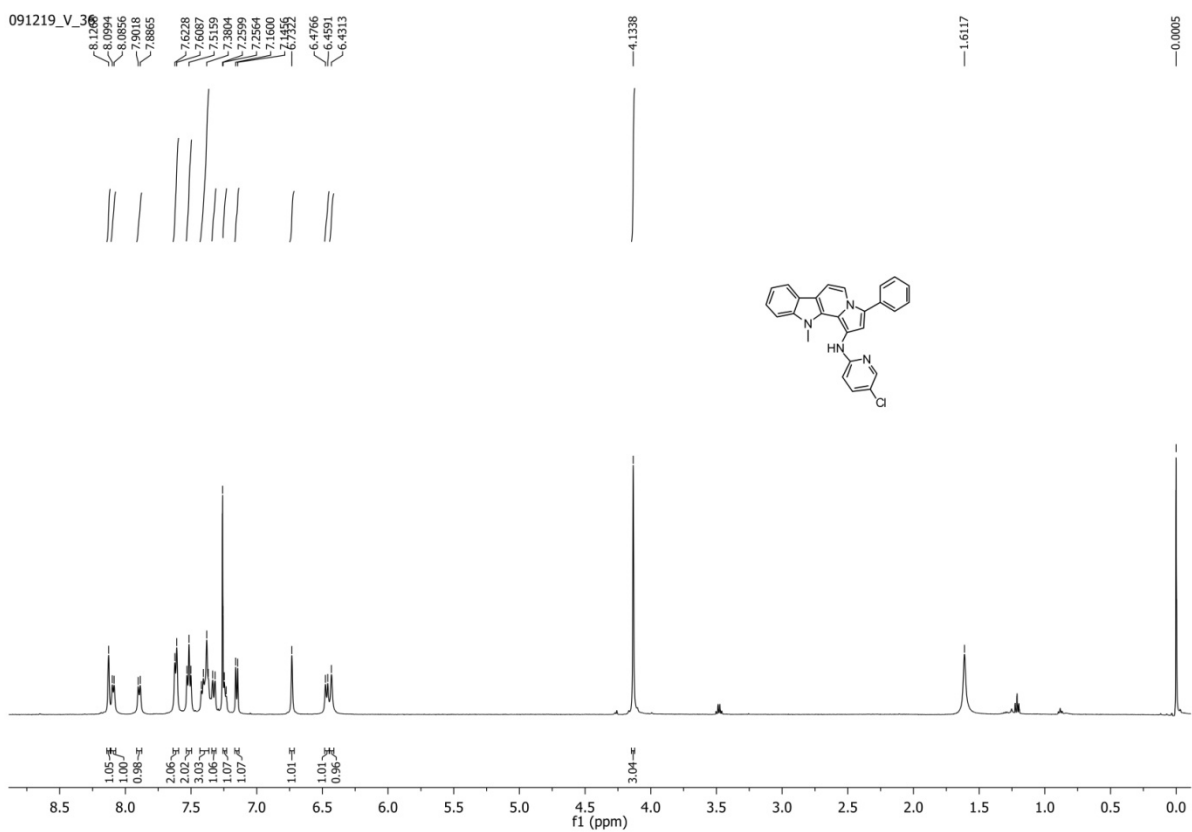


Figure S3. $^1\text{H-NMR}$ spectrum of **1aC**.

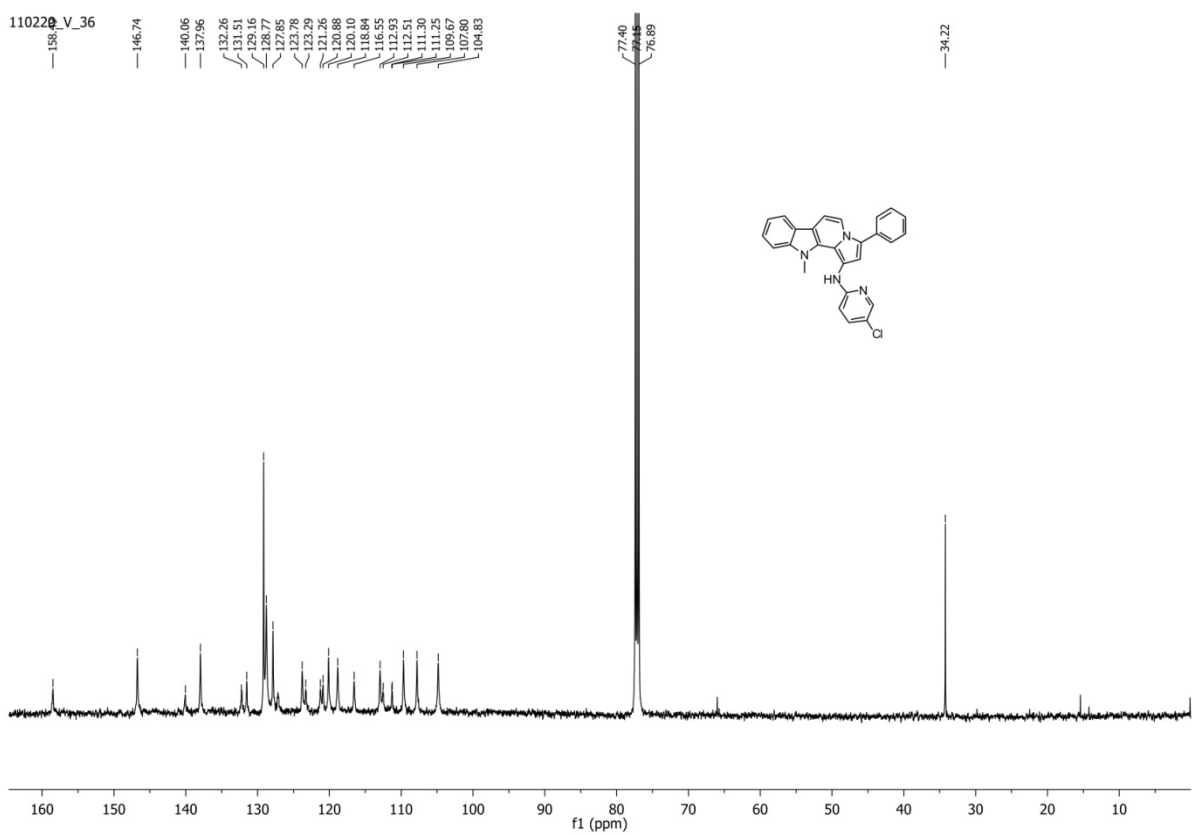


Figure S4. $^{13}\text{C-NMR}$ spectrum of **1aC**.

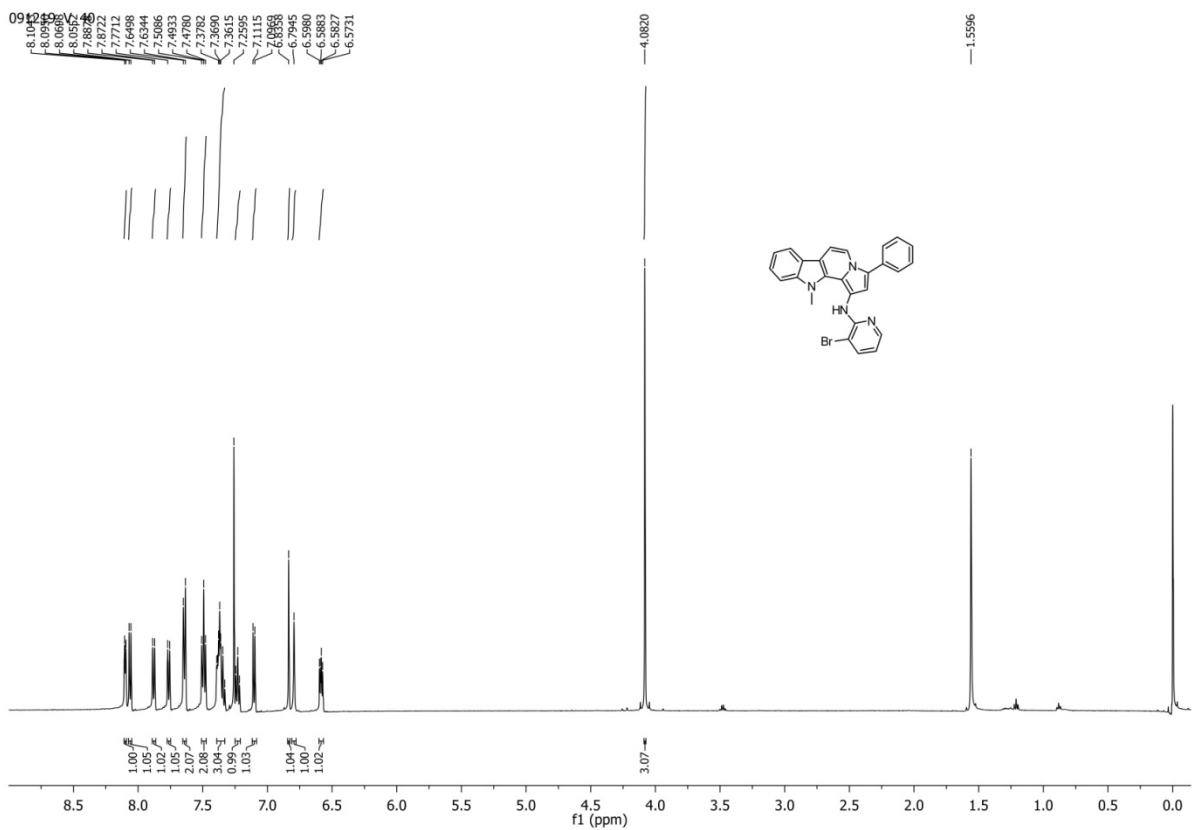


Figure S5. $^1\text{H-NMR}$ spectrum of 1aD.

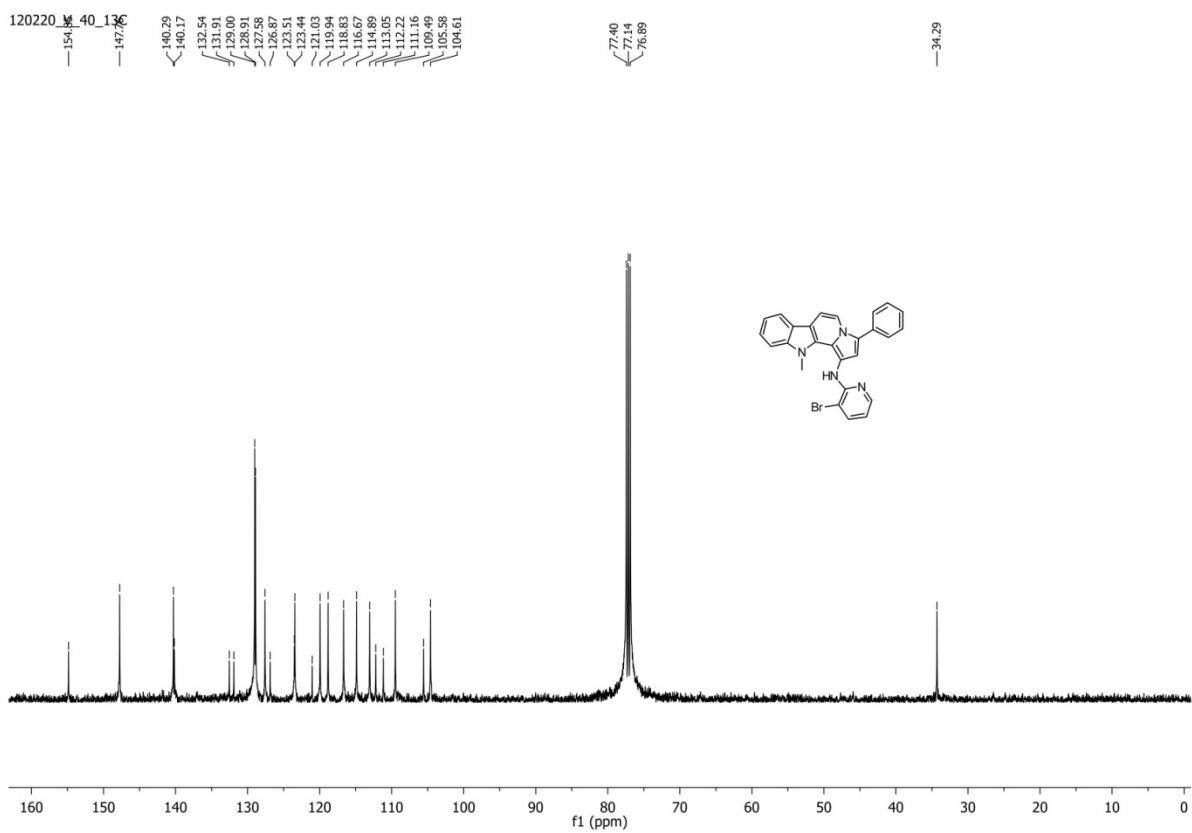


Figure S6. $^{13}\text{C-NMR}$ spectrum of 1aD.

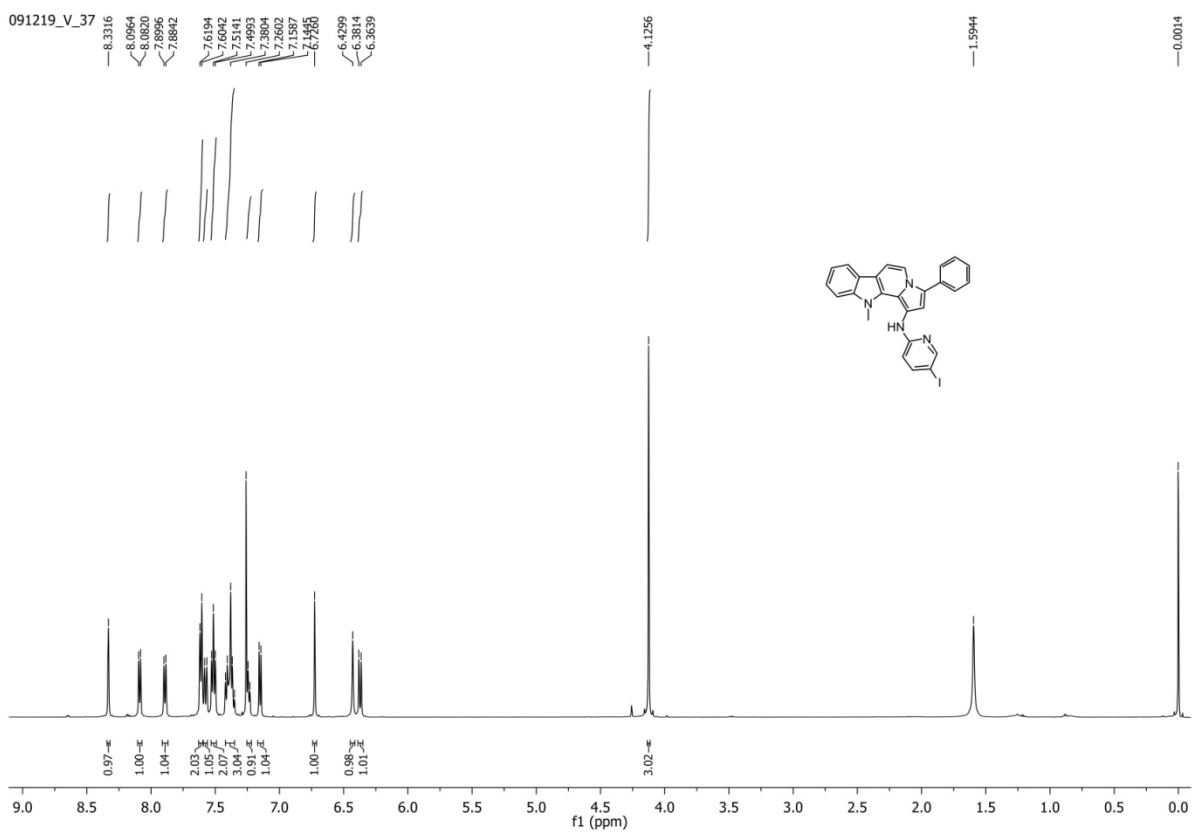


Figure S9. $^1\text{H-NMR}$ spectrum of **1aF**.

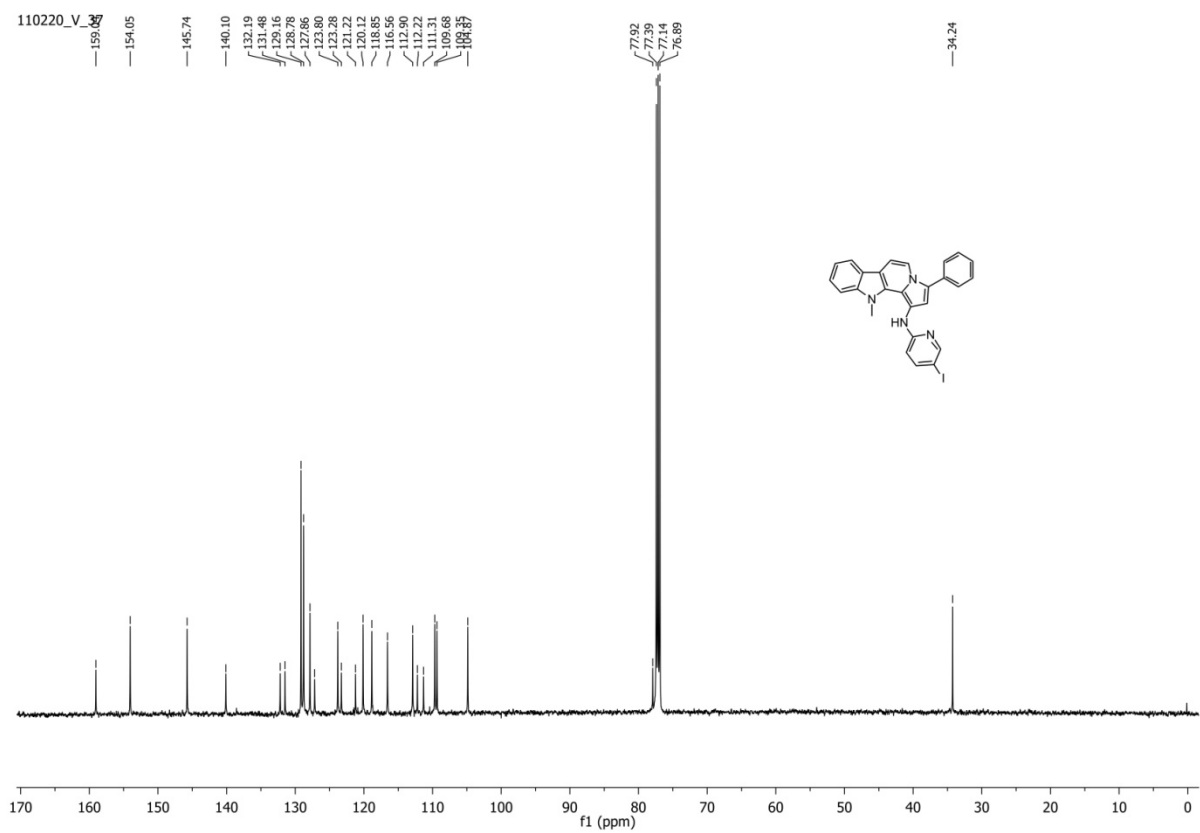


Figure S10. $^{13}\text{C-NMR}$ spectrum of **1aF**.

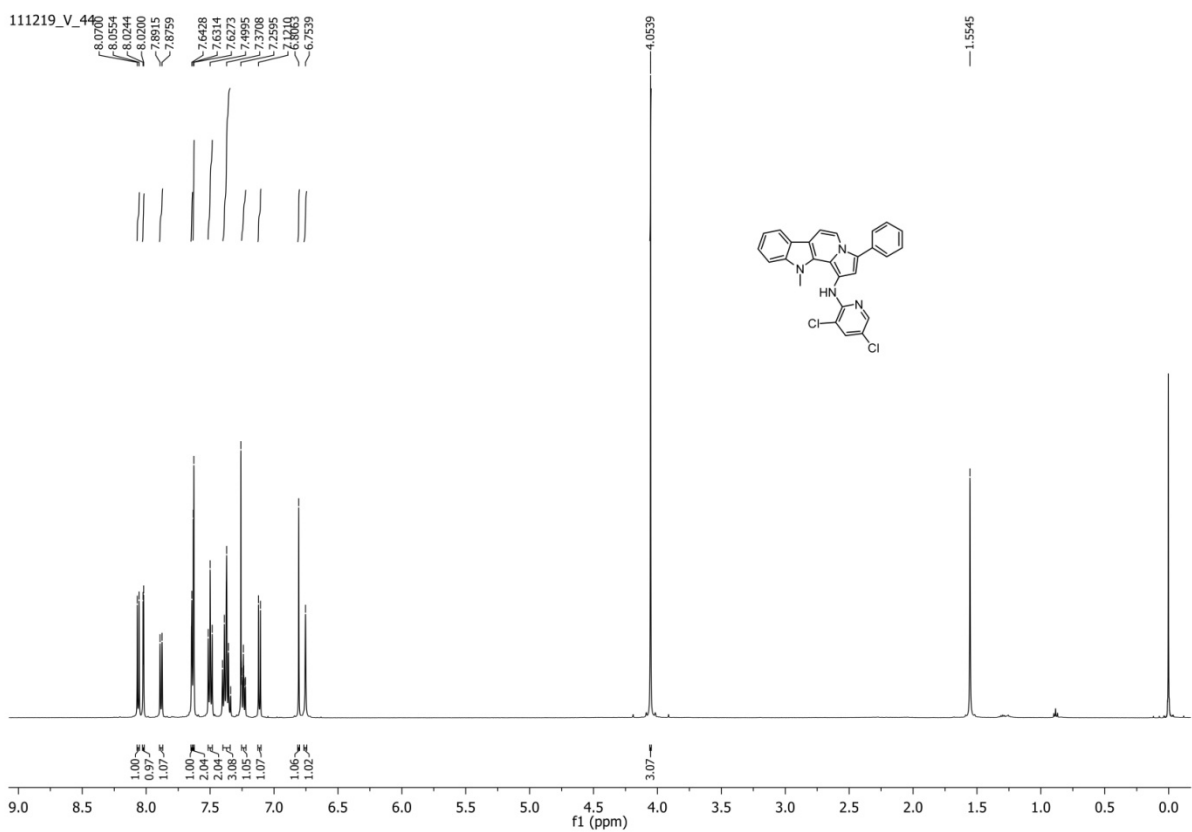


Figure S11. $^1\text{H-NMR}$ spectrum of **1aG**.

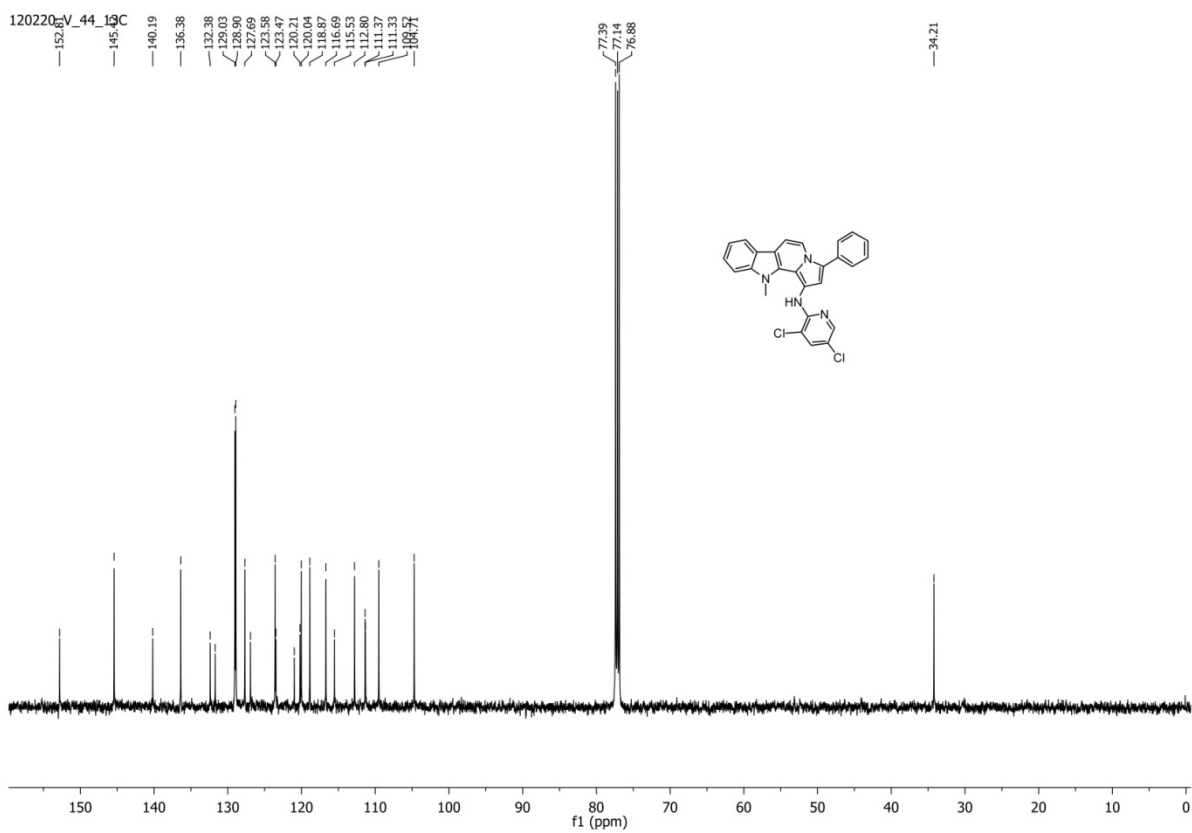


Figure S12. $^{13}\text{C-NMR}$ spectrum of **1aG**.

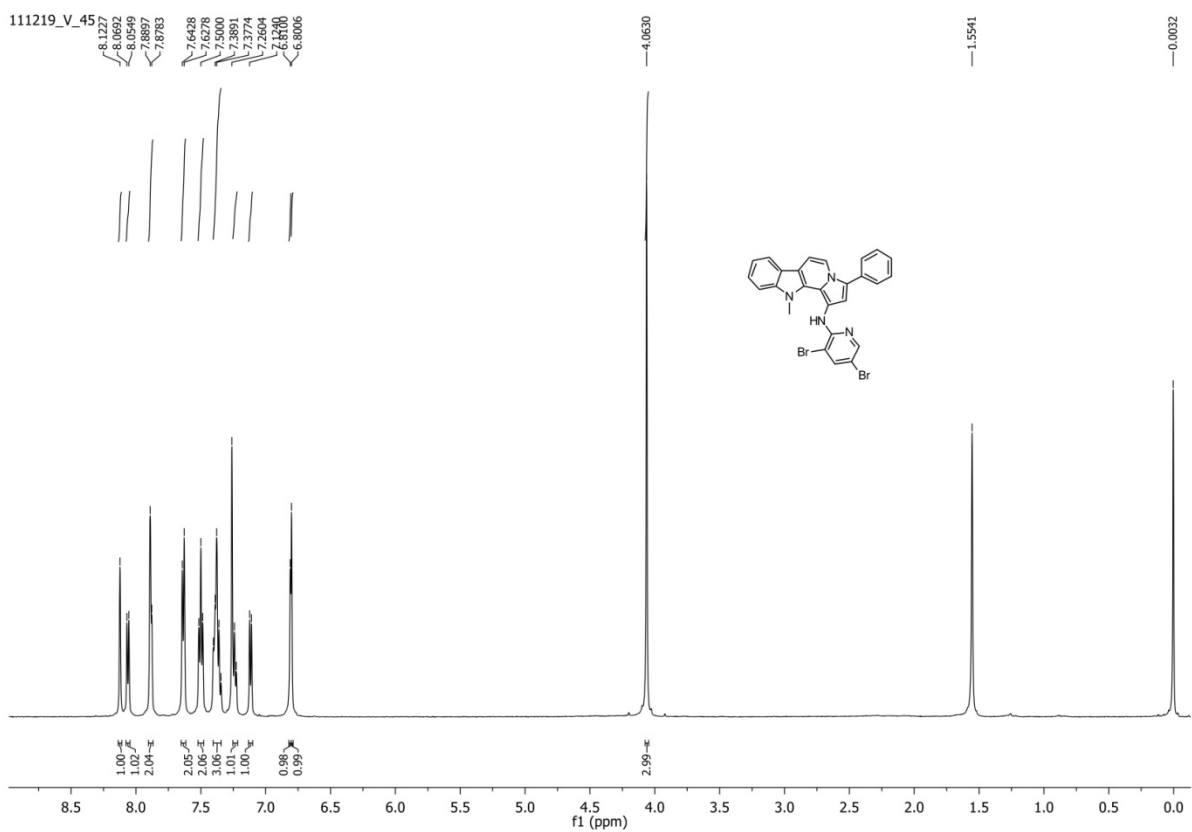


Figure S13. $^1\text{H-NMR}$ spectrum of **1aH**.

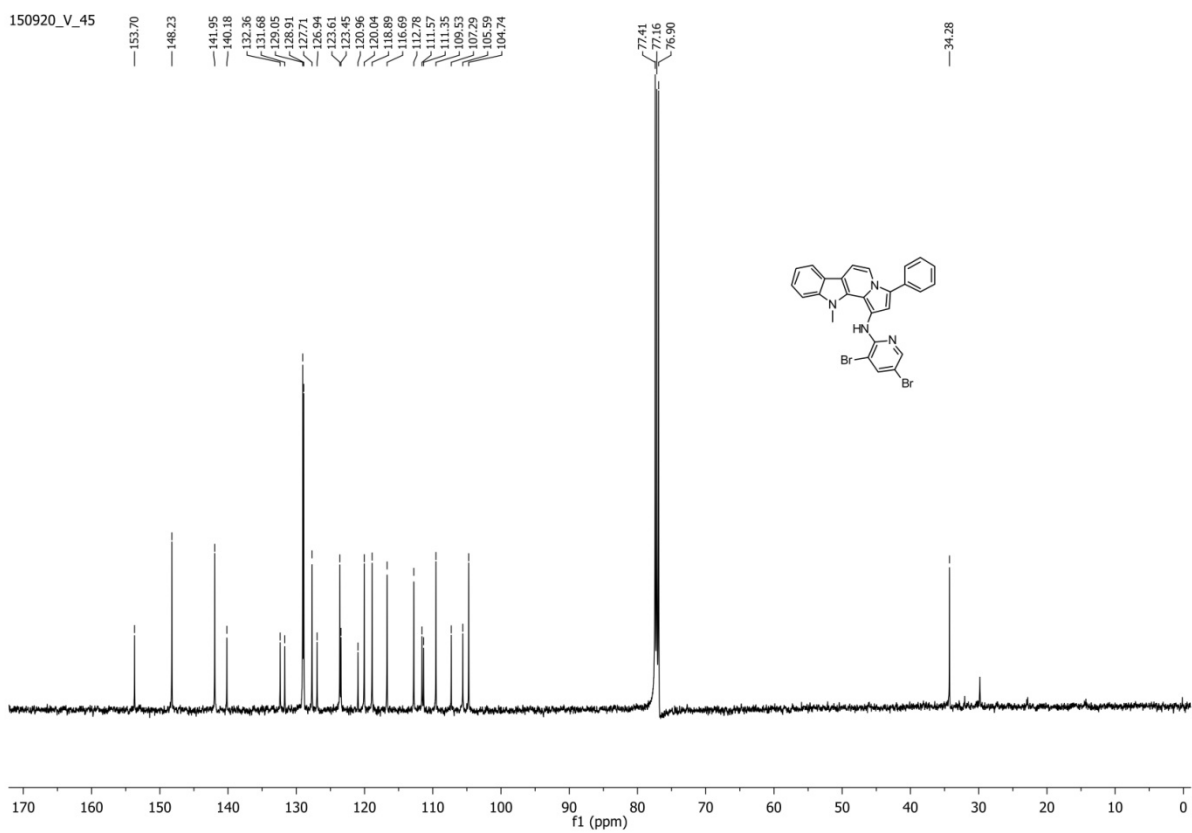


Figure S14. $^{13}\text{C-NMR}$ spectrum of **1aH**.

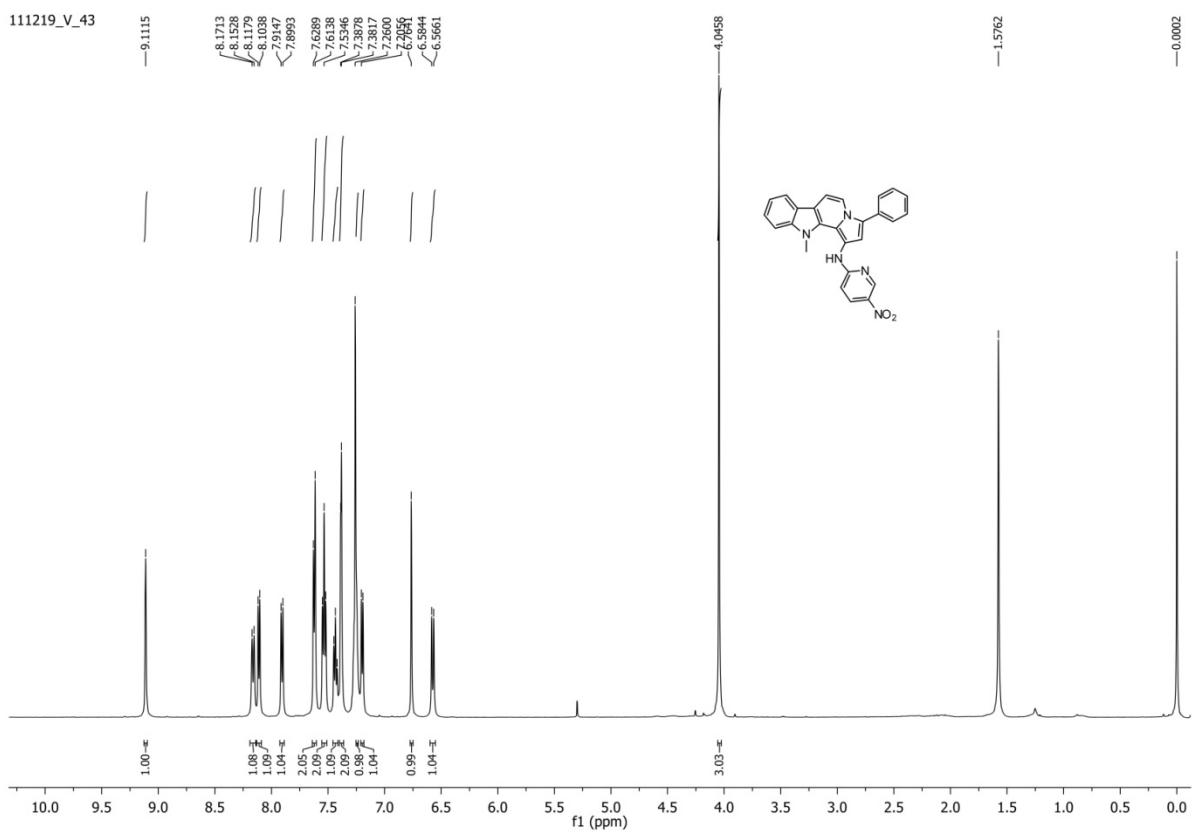


Figure S15. $^1\text{H-NMR}$ spectrum of **1a**.

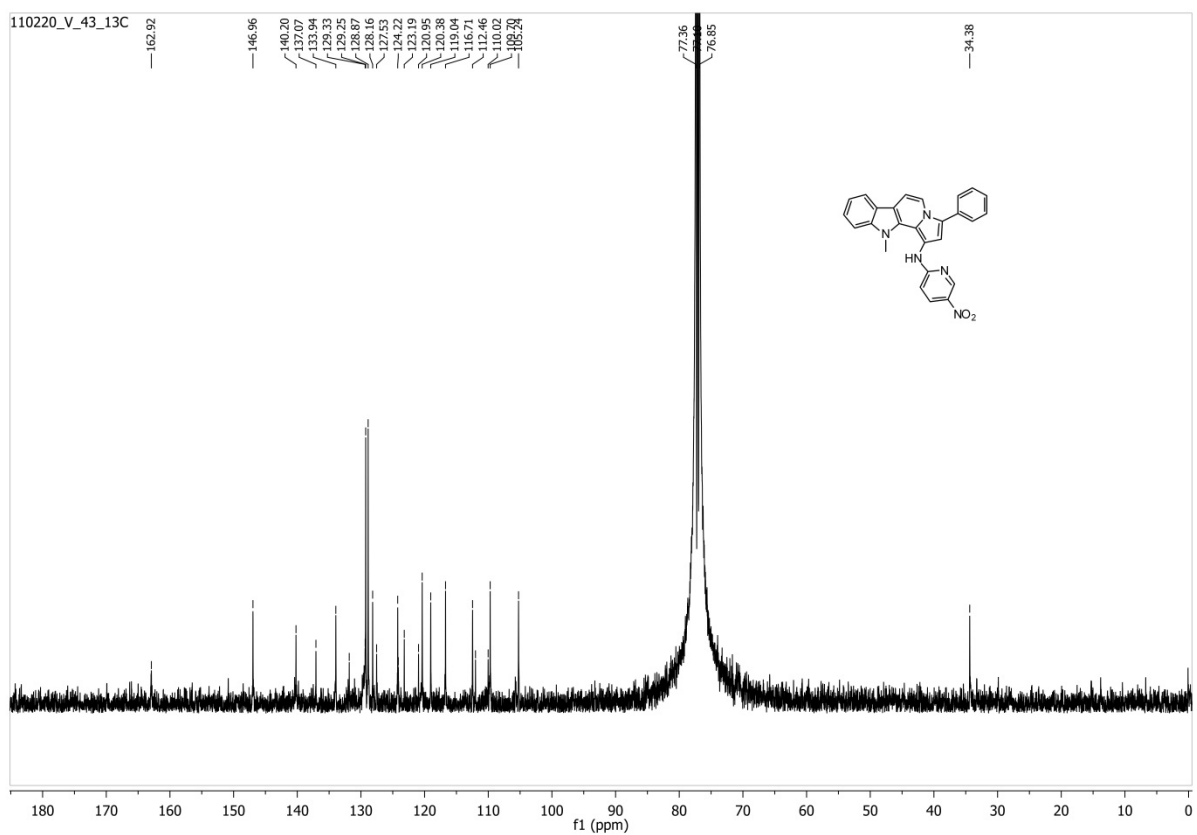


Figure S16. $^{13}\text{C-NMR}$ spectrum of **1a**.

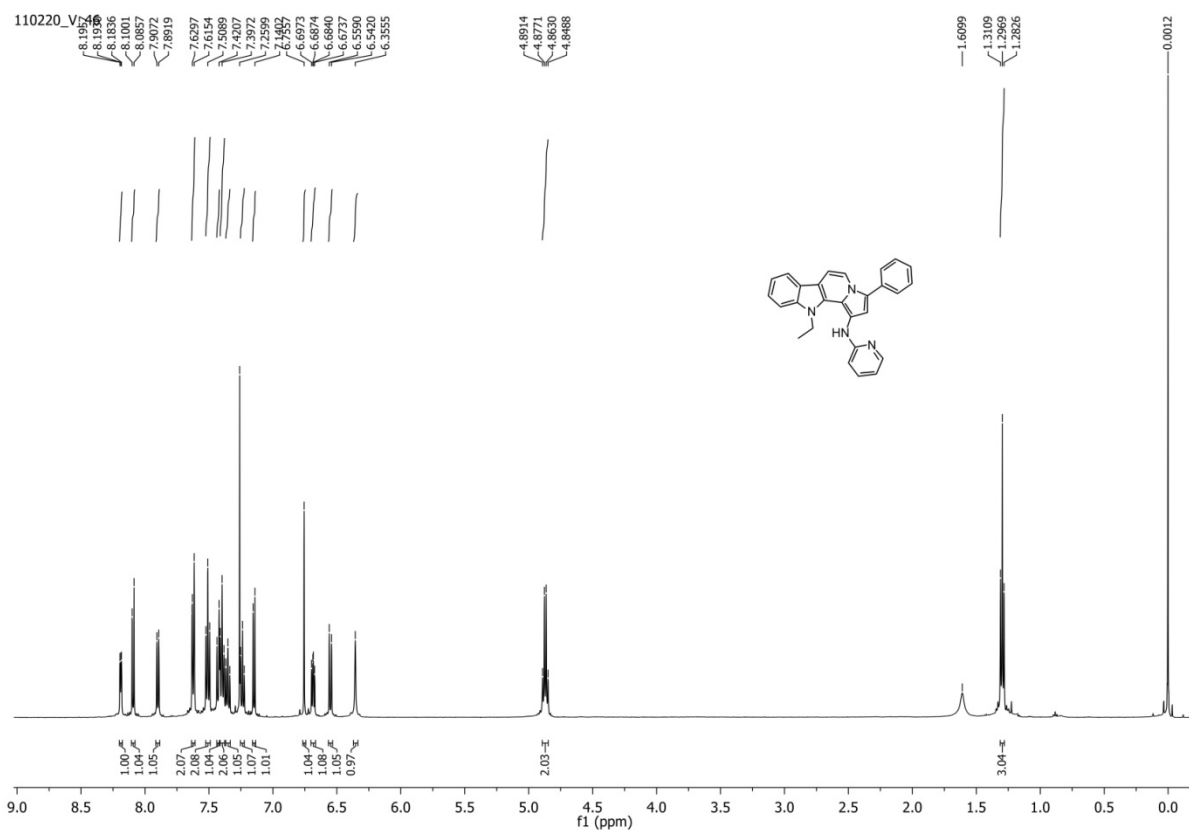


Figure S17. $^1\text{H-NMR}$ spectrum of **2aA**.

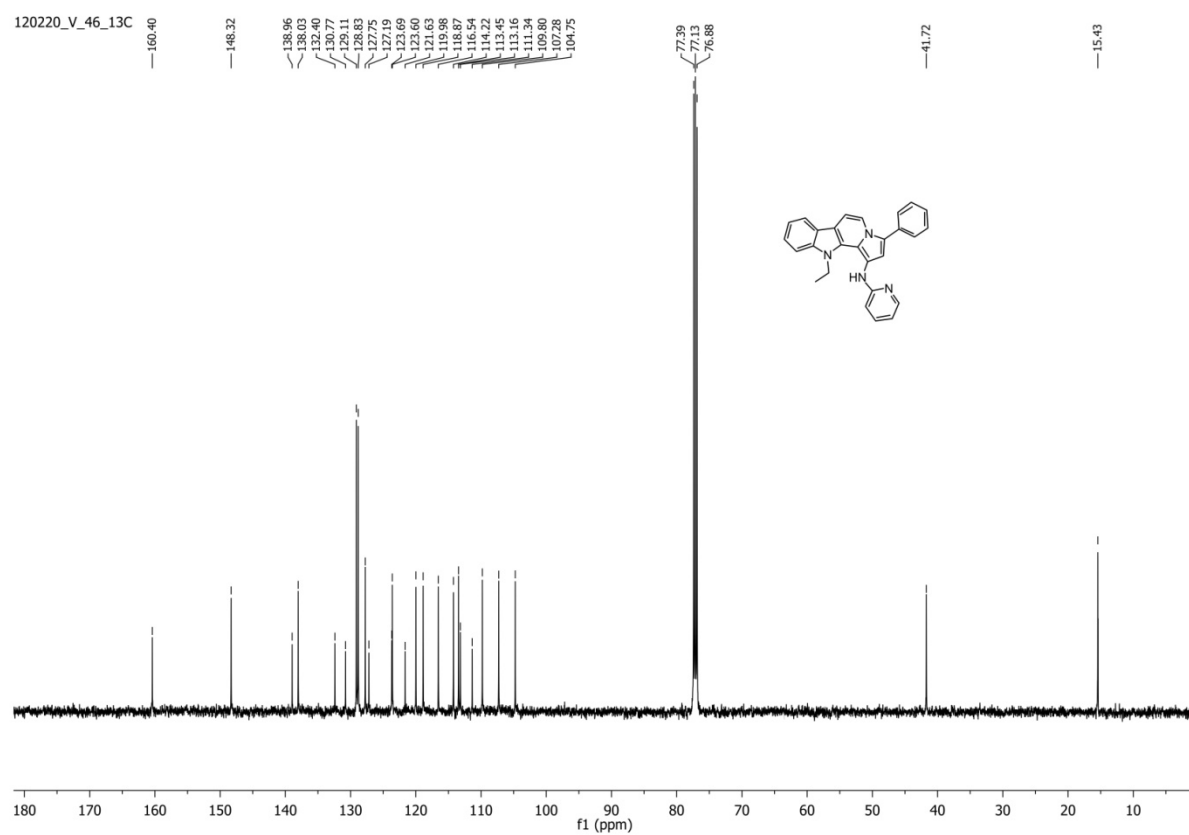


Figure S18. $^{13}\text{C-NMR}$ spectrum of **2aA**.

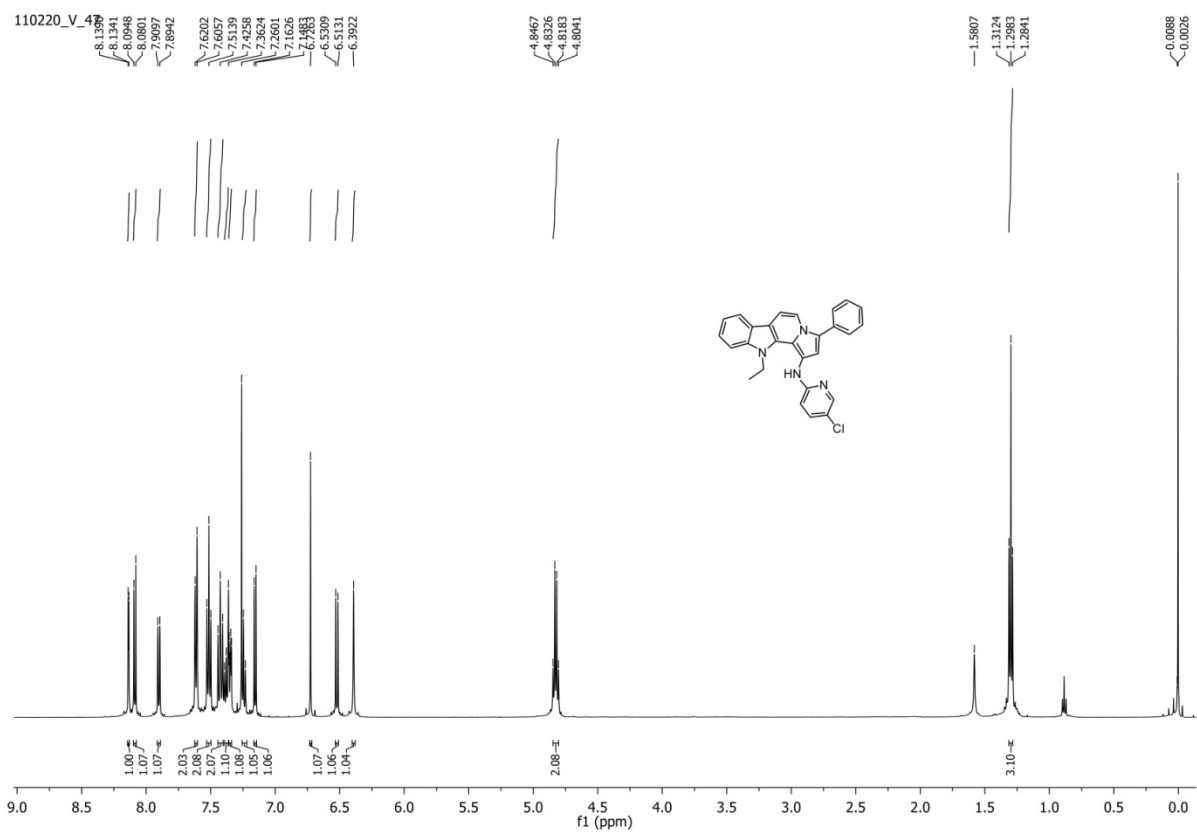


Figure S19. $^1\text{H-NMR}$ spectrum of 2aC.

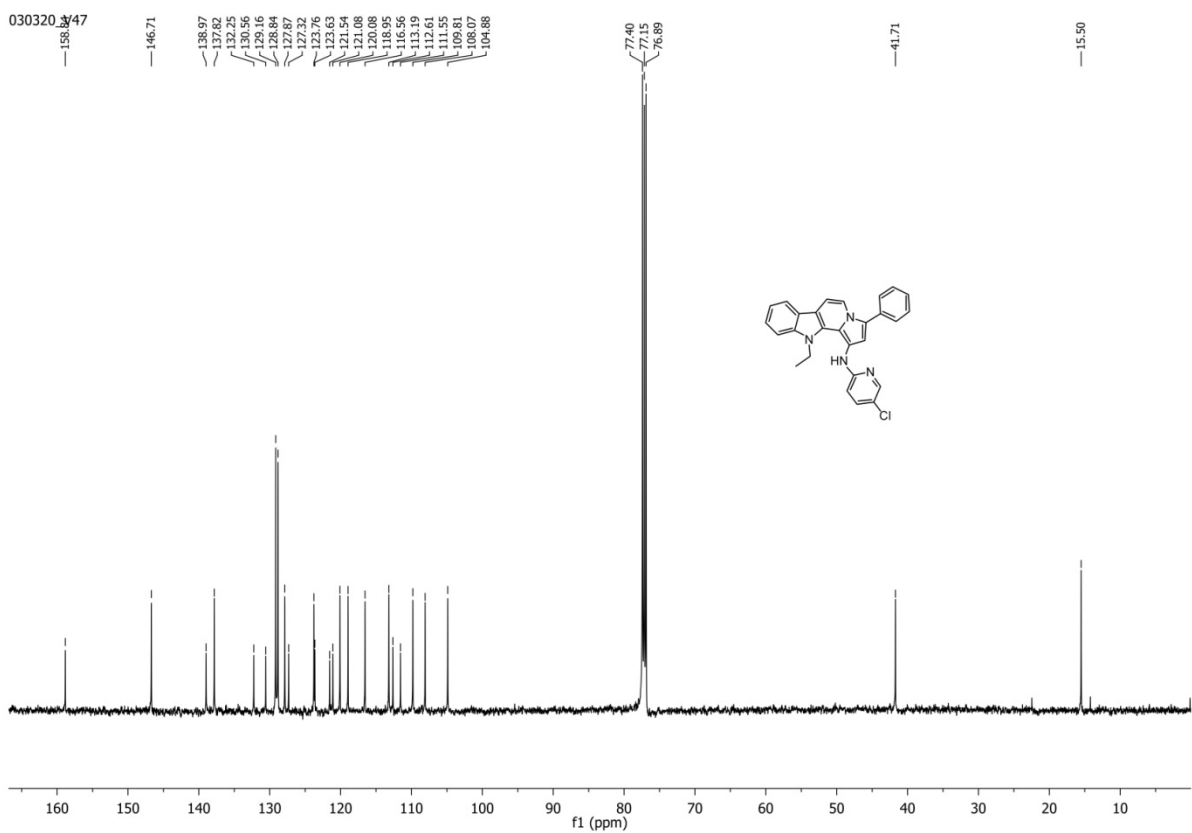


Figure S20. $^{13}\text{C-NMR}$ spectrum of 2aC.

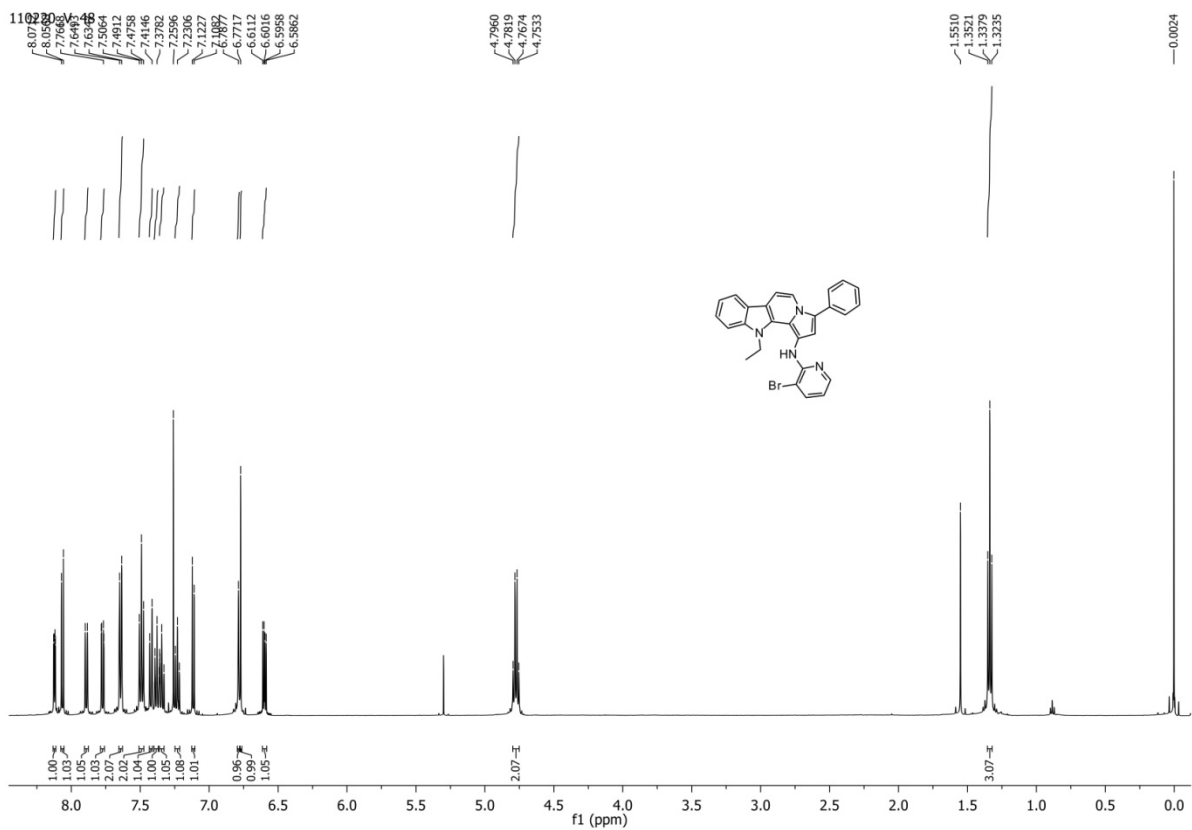


Figure S21. ¹H-NMR spectrum of 2aD.

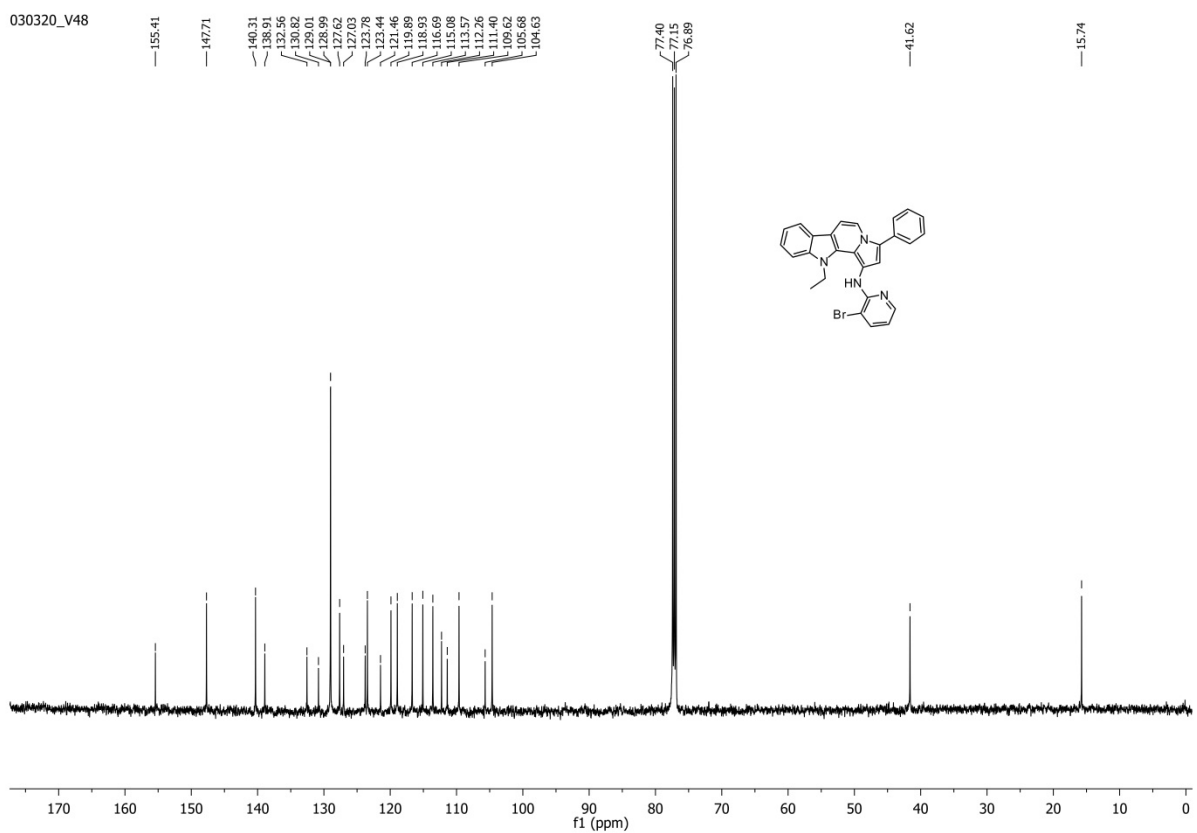


Figure S22. ¹³C-NMR spectrum of 2aD.

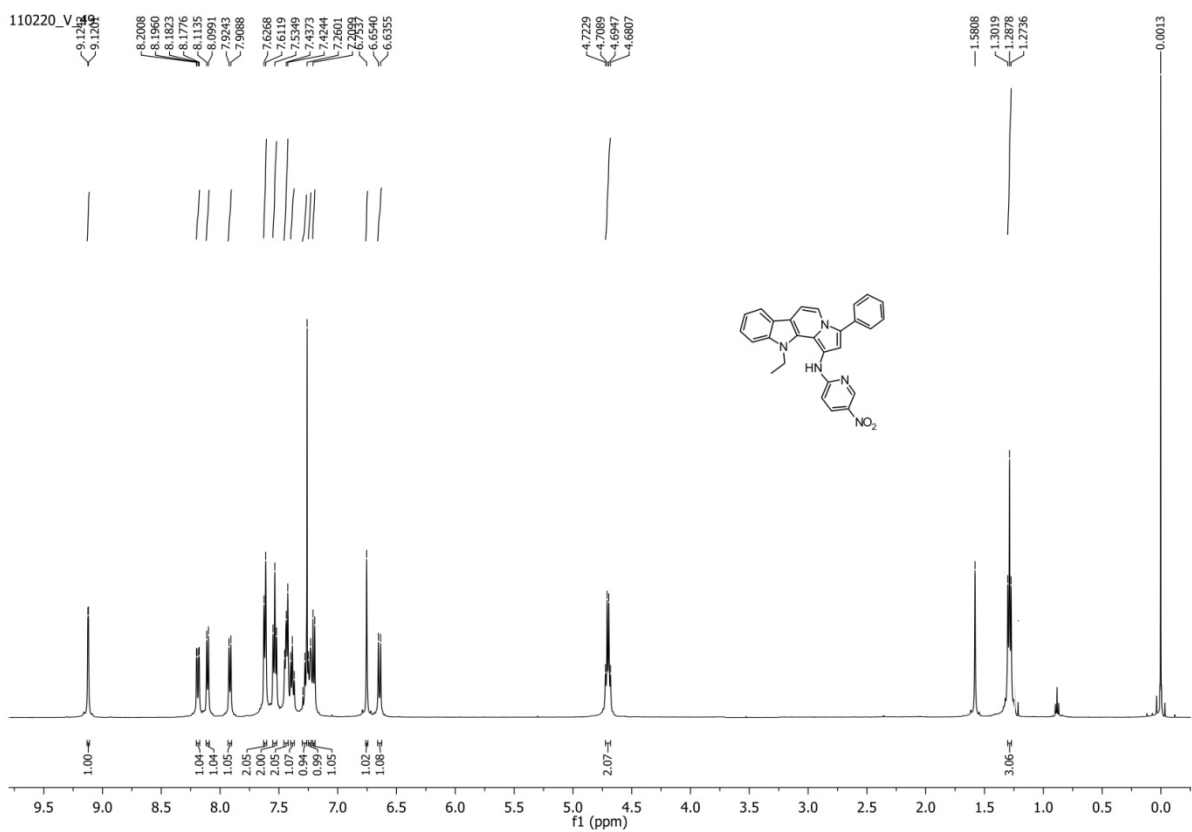


Figure S23. ¹H-NMR spectrum of 2aI.

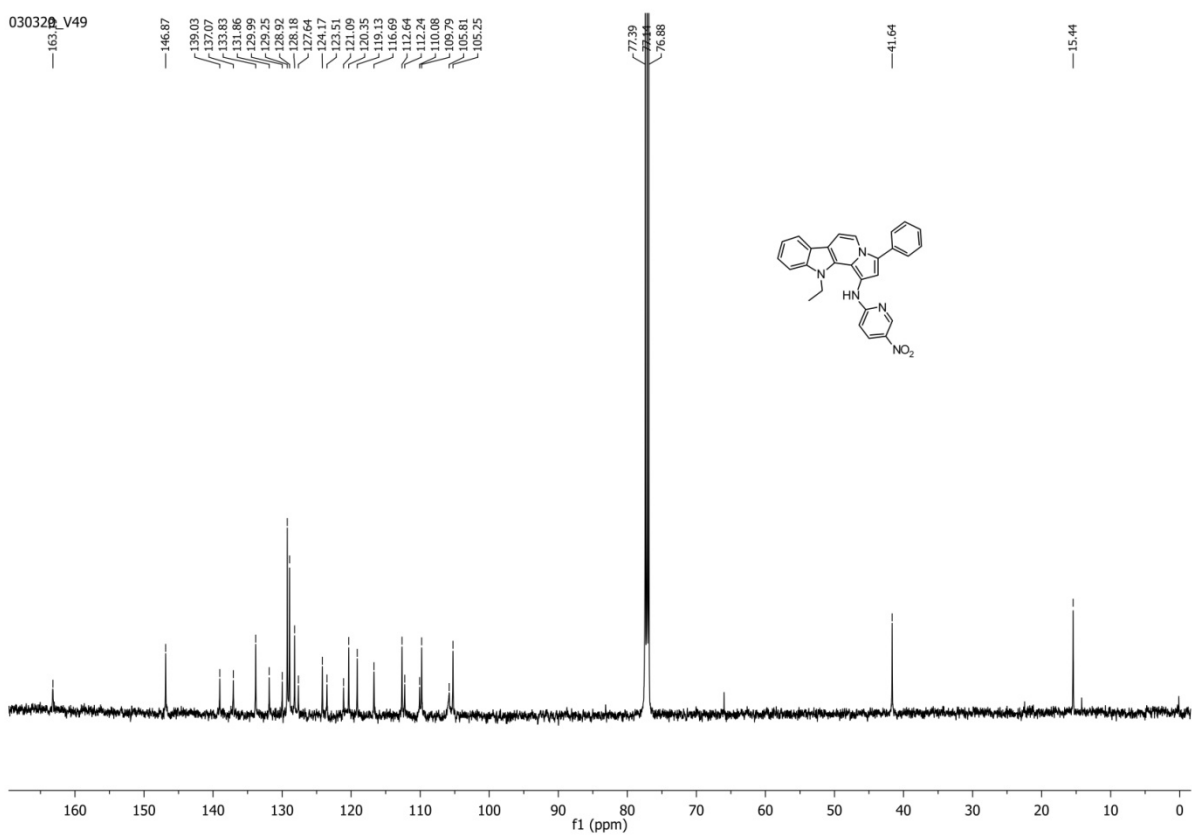


Figure S24. ¹³C-NMR spectrum of 2aI.

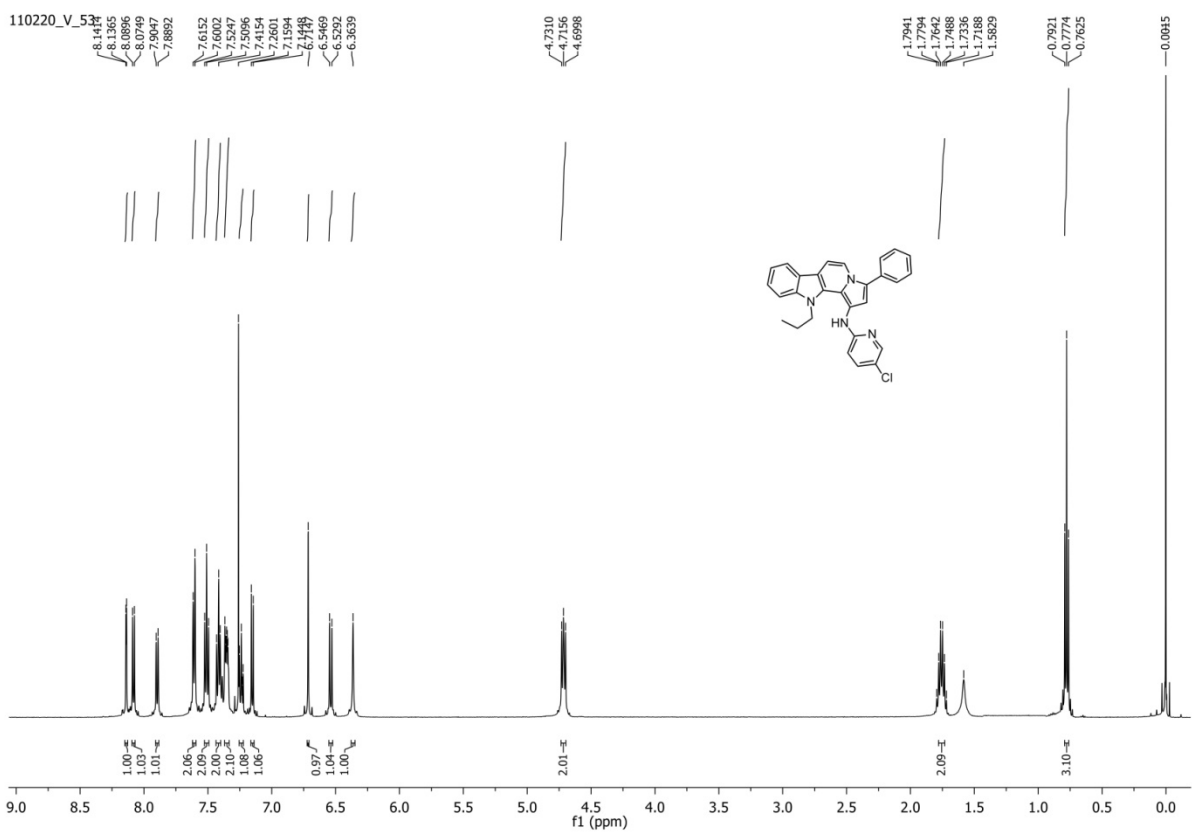


Figure S25. $^1\text{H-NMR}$ spectrum of **3aC**.

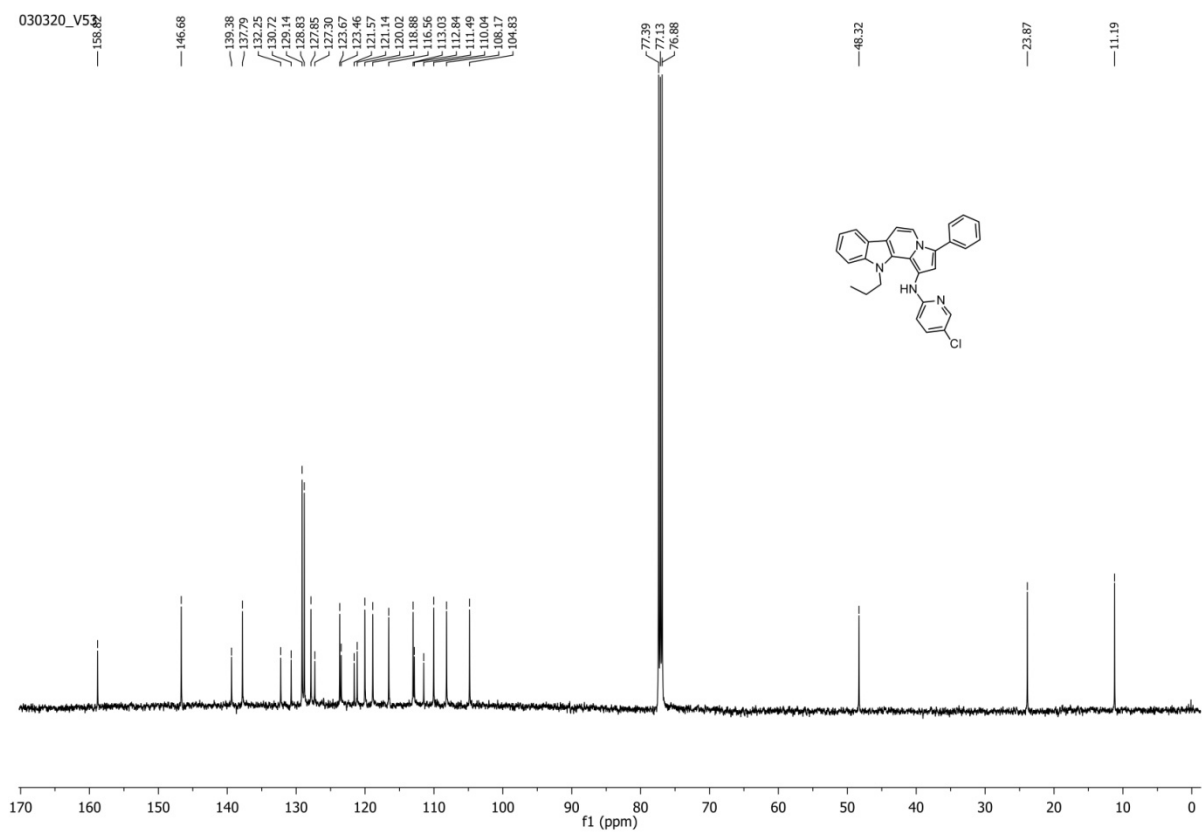


Figure S26. $^{13}\text{C-NMR}$ spectrum of **3aC**.

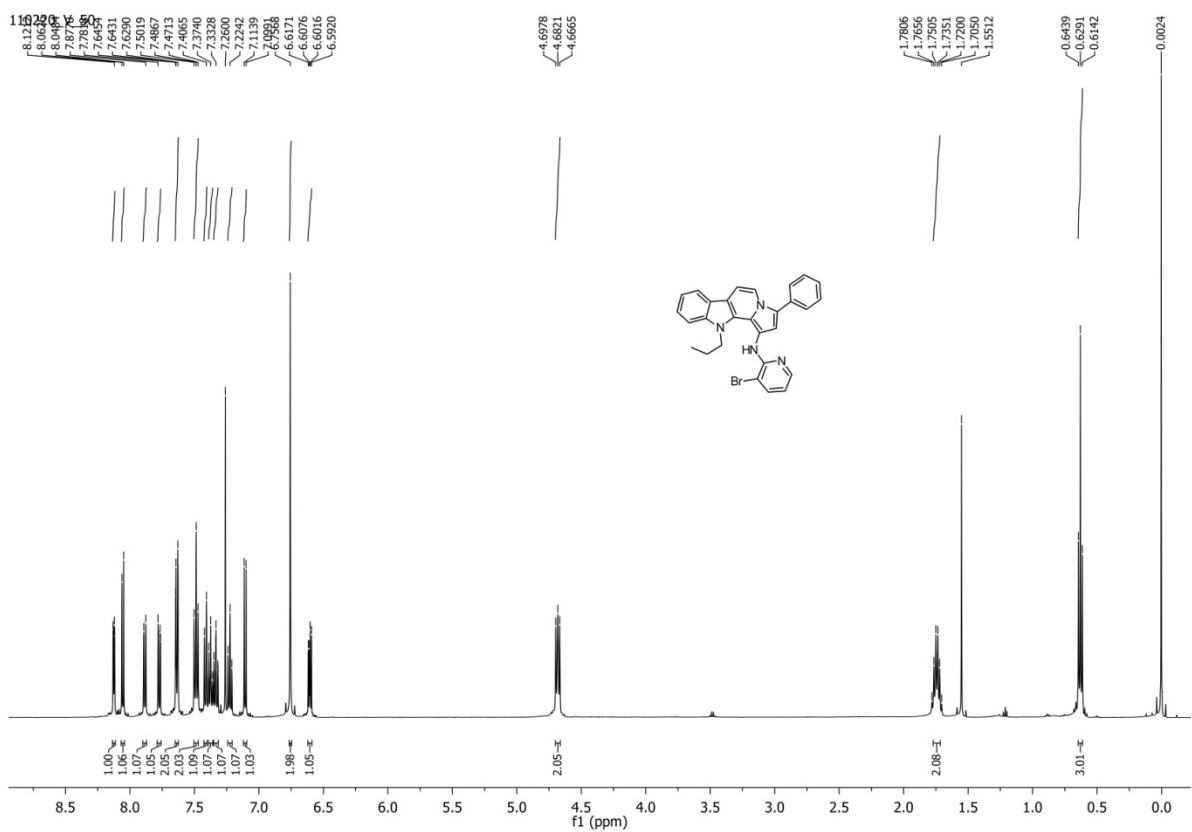


Figure S27. ¹H-NMR spectrum of 3aD.

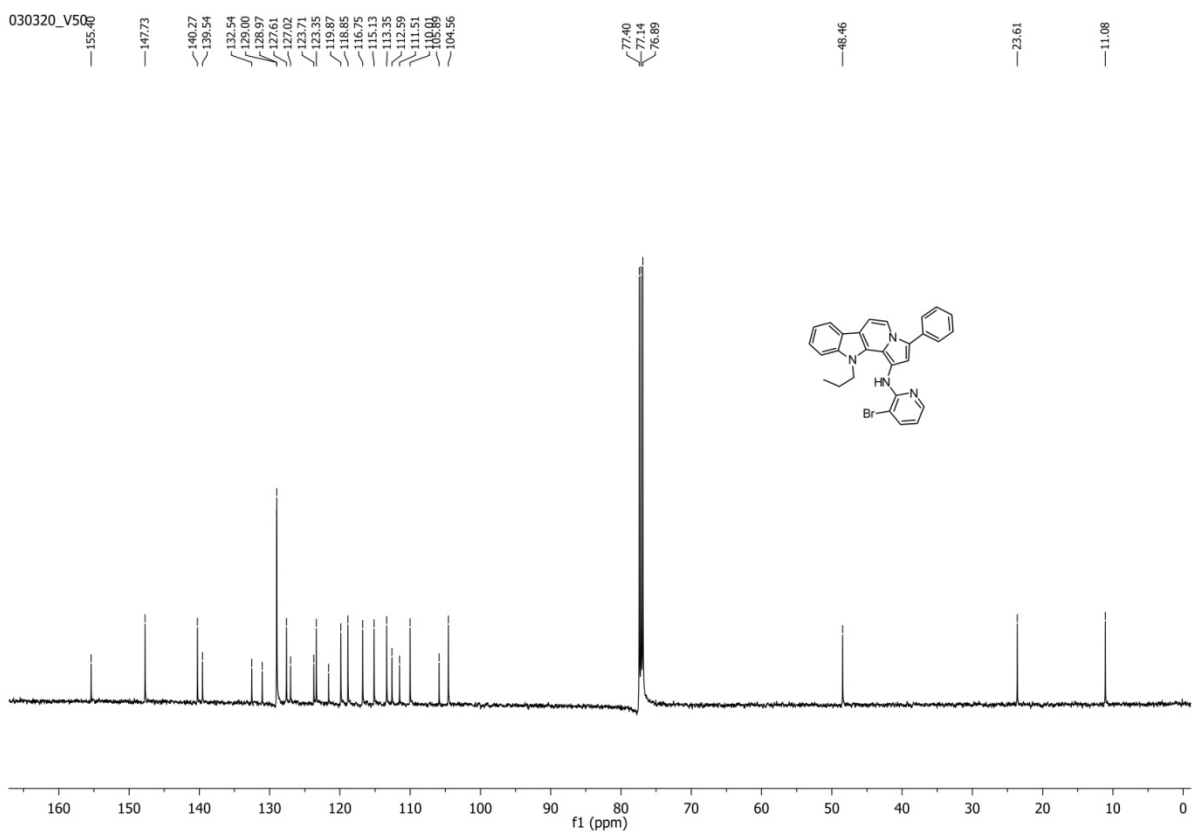


Figure S28. ¹³C-NMR spectrum of 3aD.

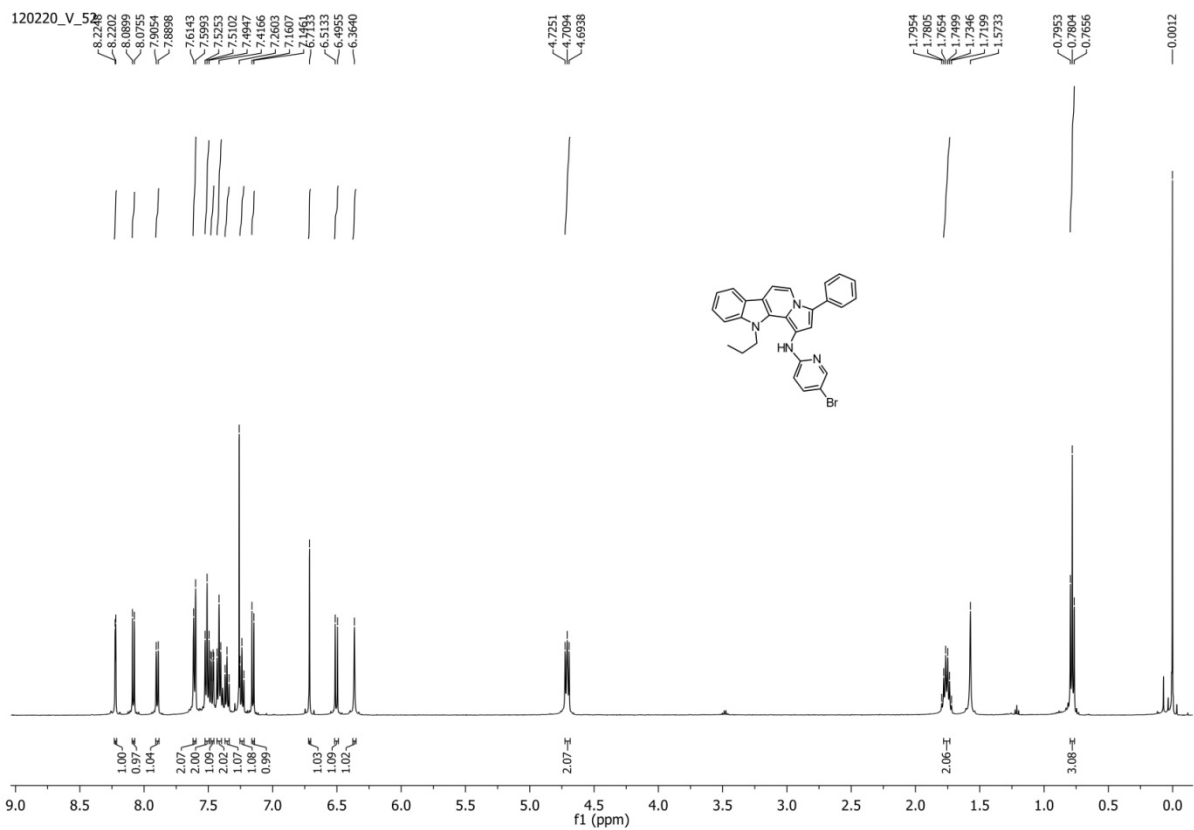


Figure S29. $^1\text{H-NMR}$ spectrum of **3aE**.

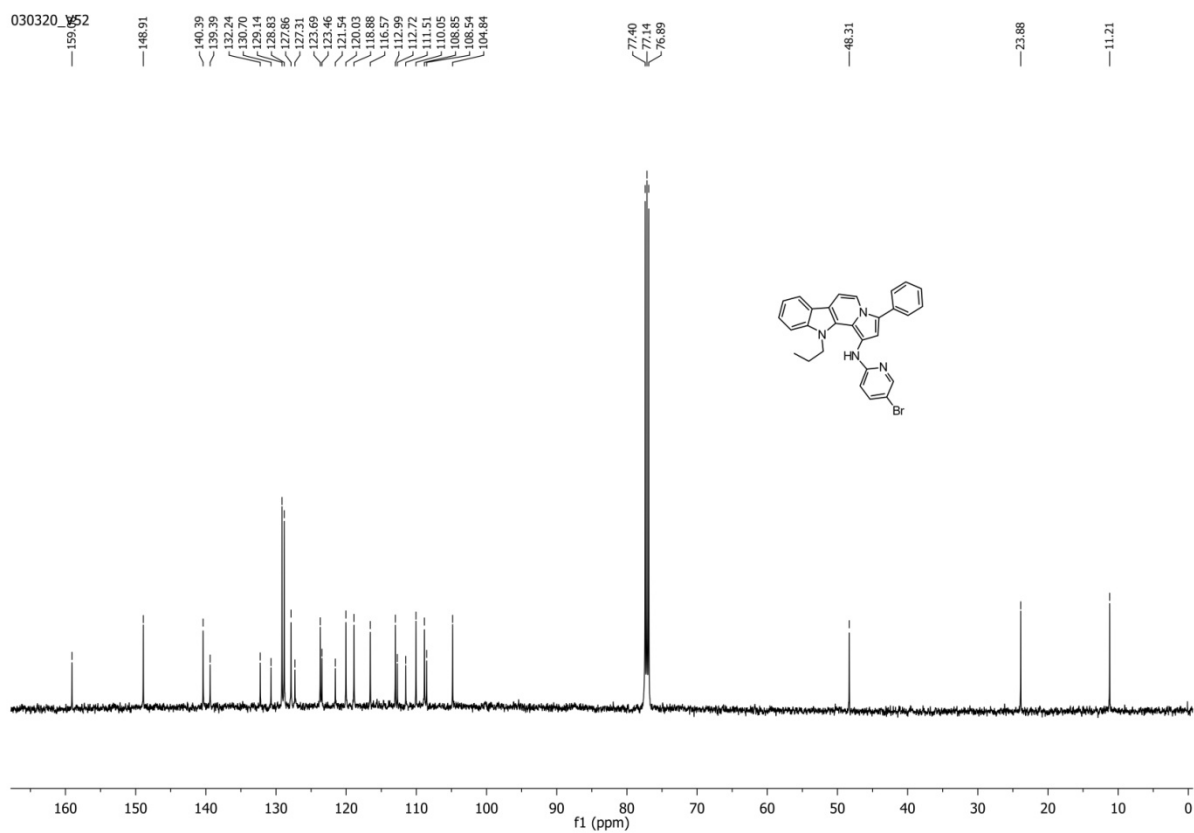


Figure S30. $^{13}\text{C-NMR}$ spectrum of **3aE**.

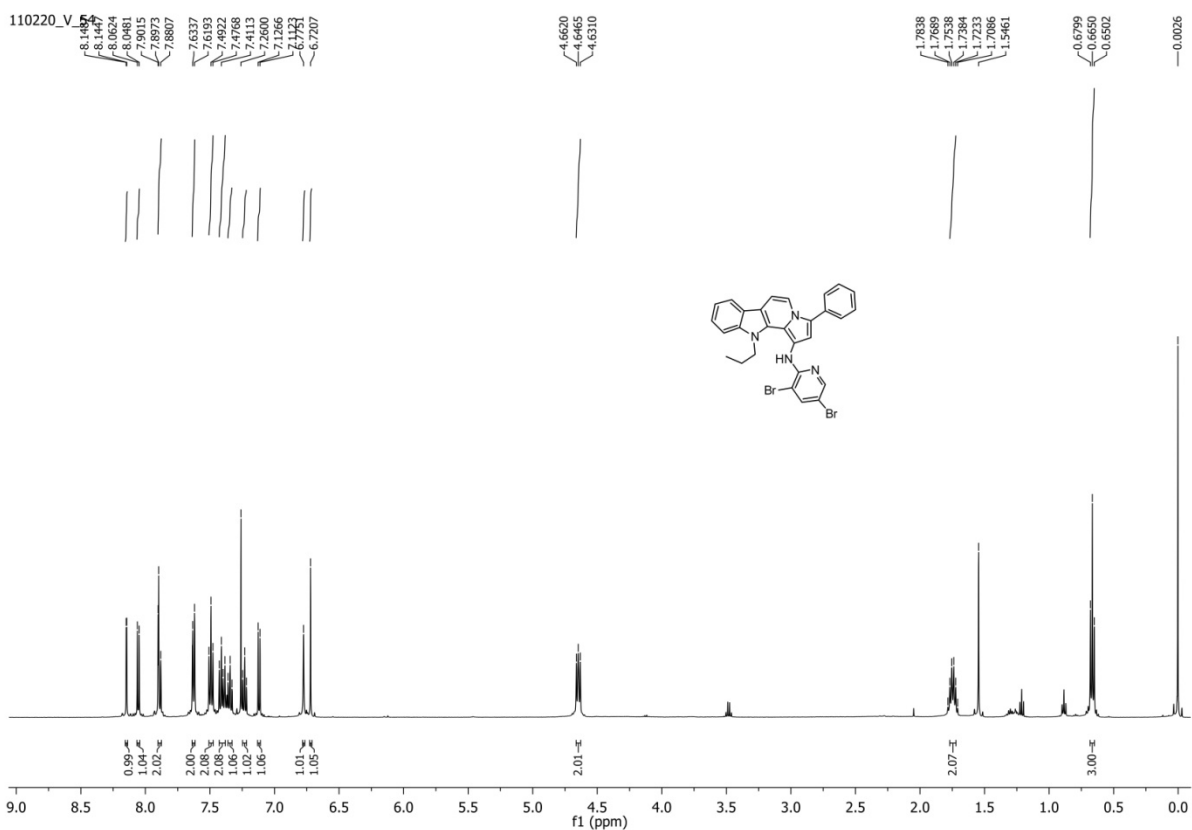


Figure S31. $^1\text{H-NMR}$ spectrum of **3aH**.

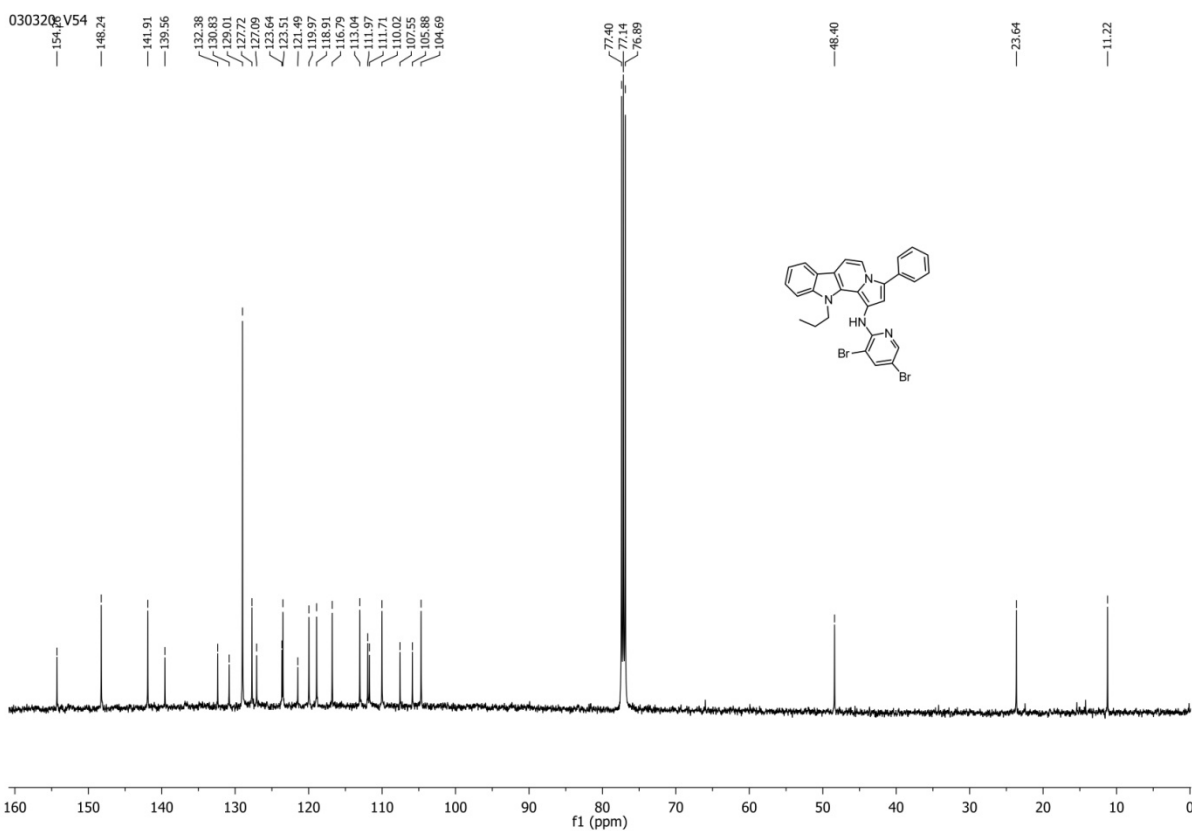


Figure S32. $^{13}\text{C-NMR}$ spectrum of **3aH**.

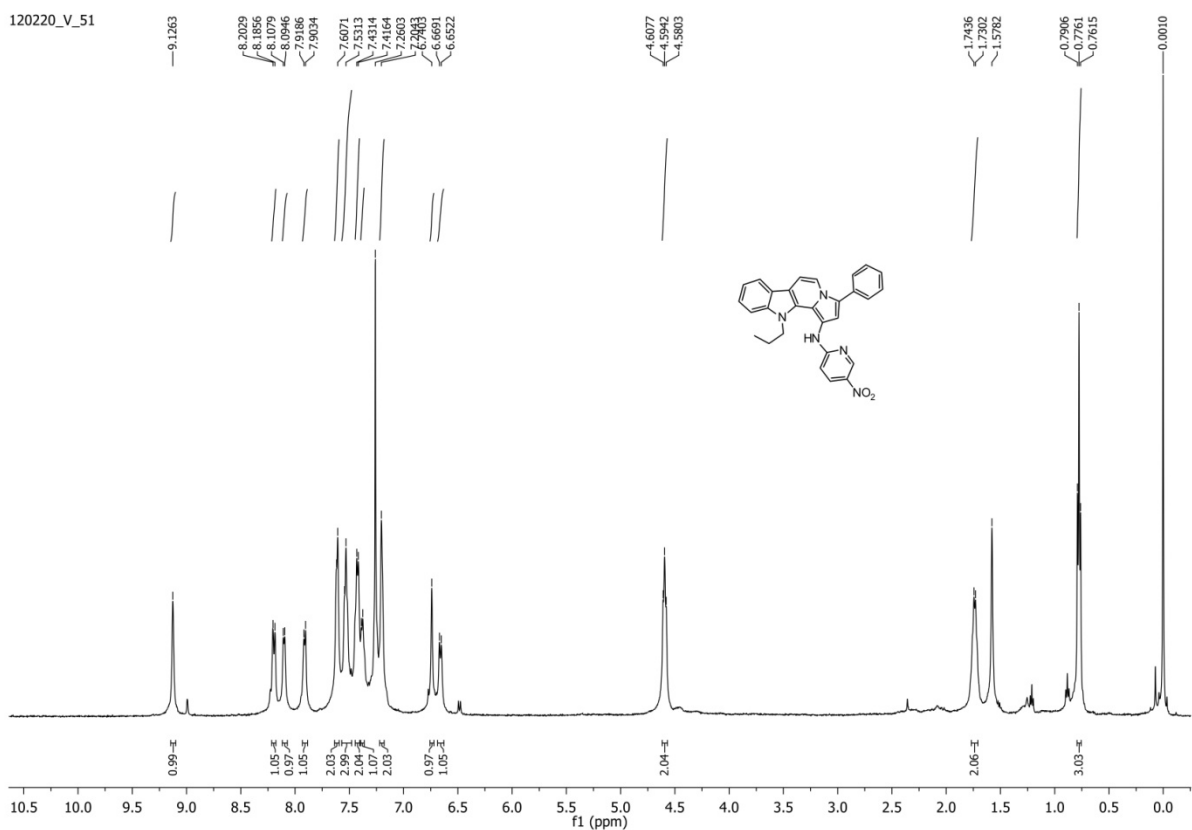


Figure S33. $^1\text{H-NMR}$ spectrum of **3aI**.

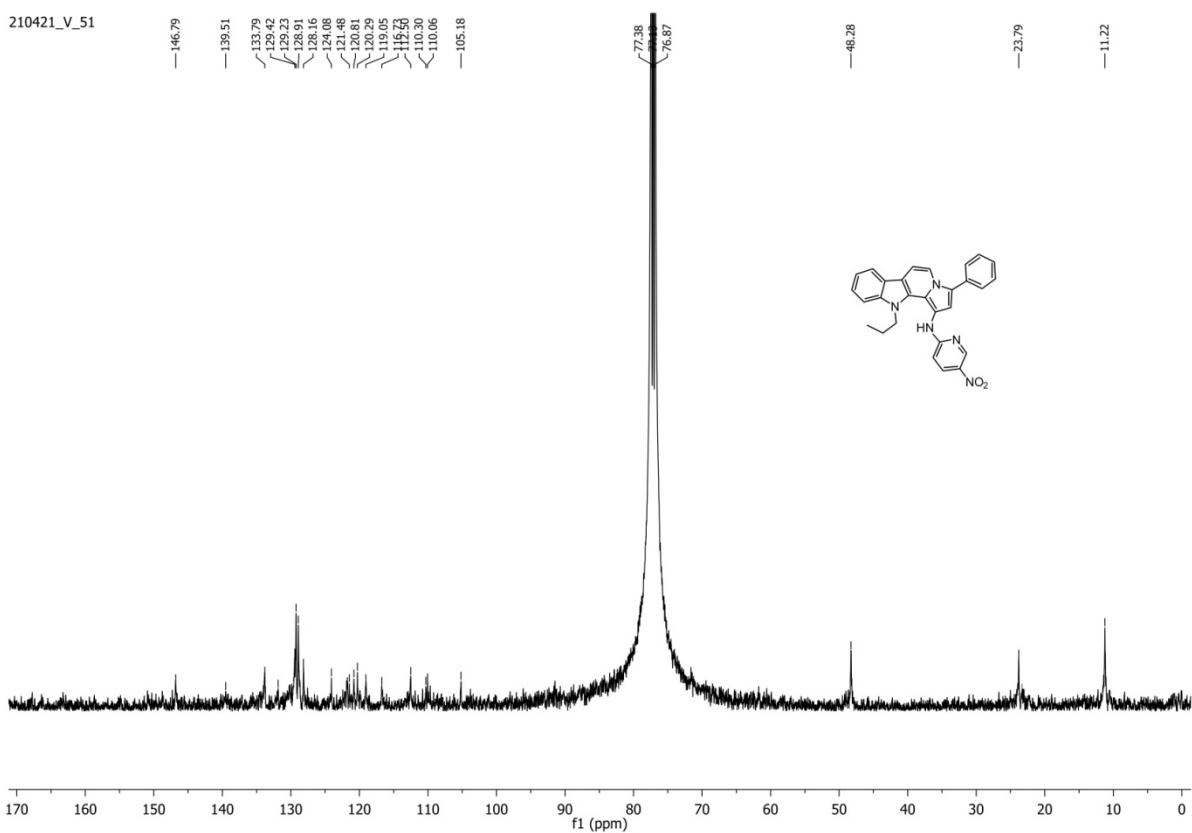


Figure S34. $^{13}\text{C-NMR}$ spectrum of **3aI**. (Solubility problem in CDCl_3 as well as DMSO-d_6)

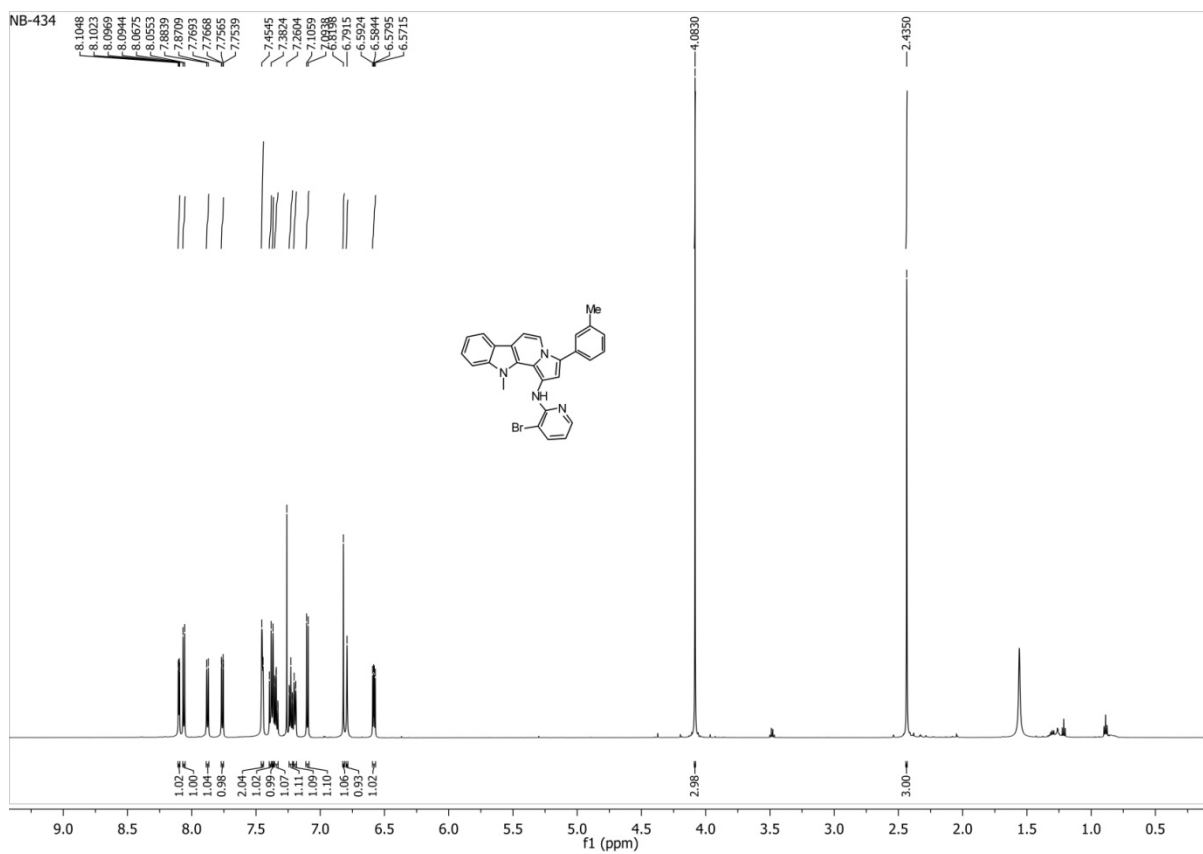


Figure S35. ^1H -NMR spectrum of **1bD**.

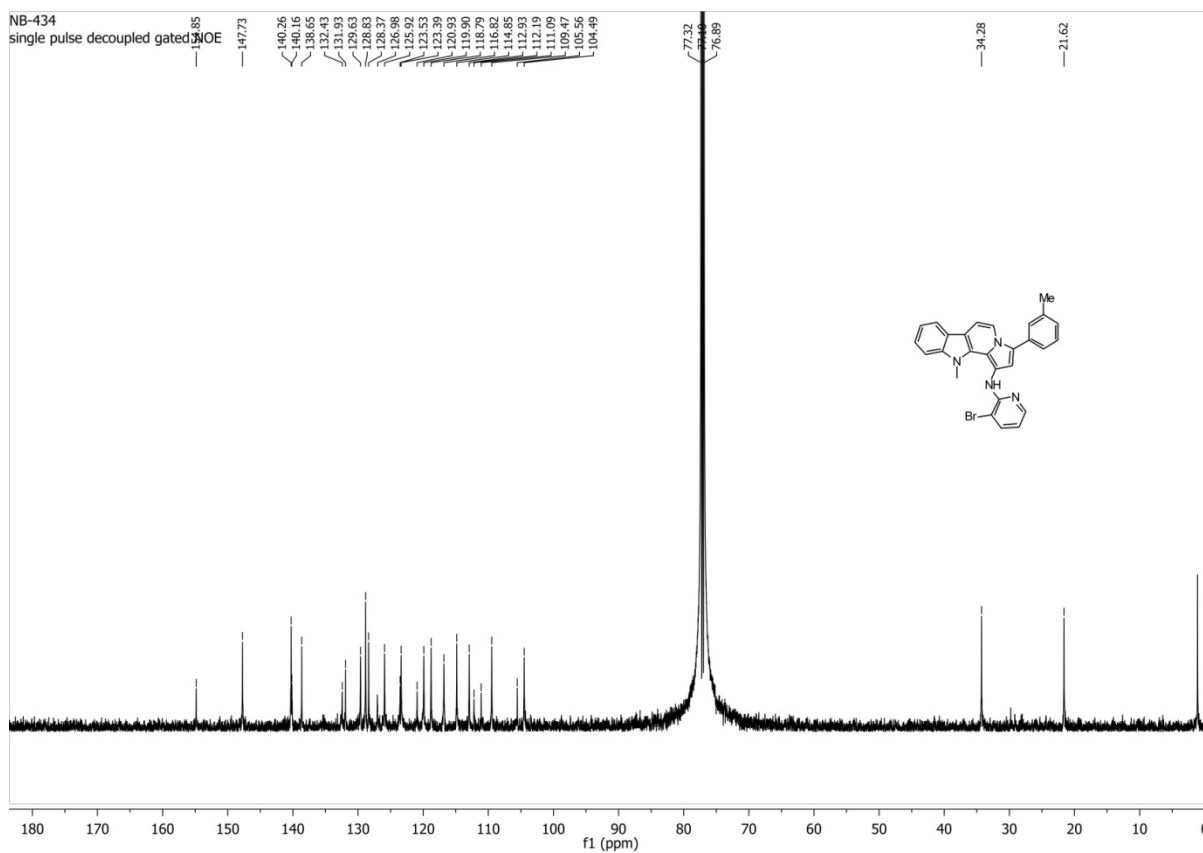


Figure S36. ^{13}C -NMR spectrum of **1bD**.

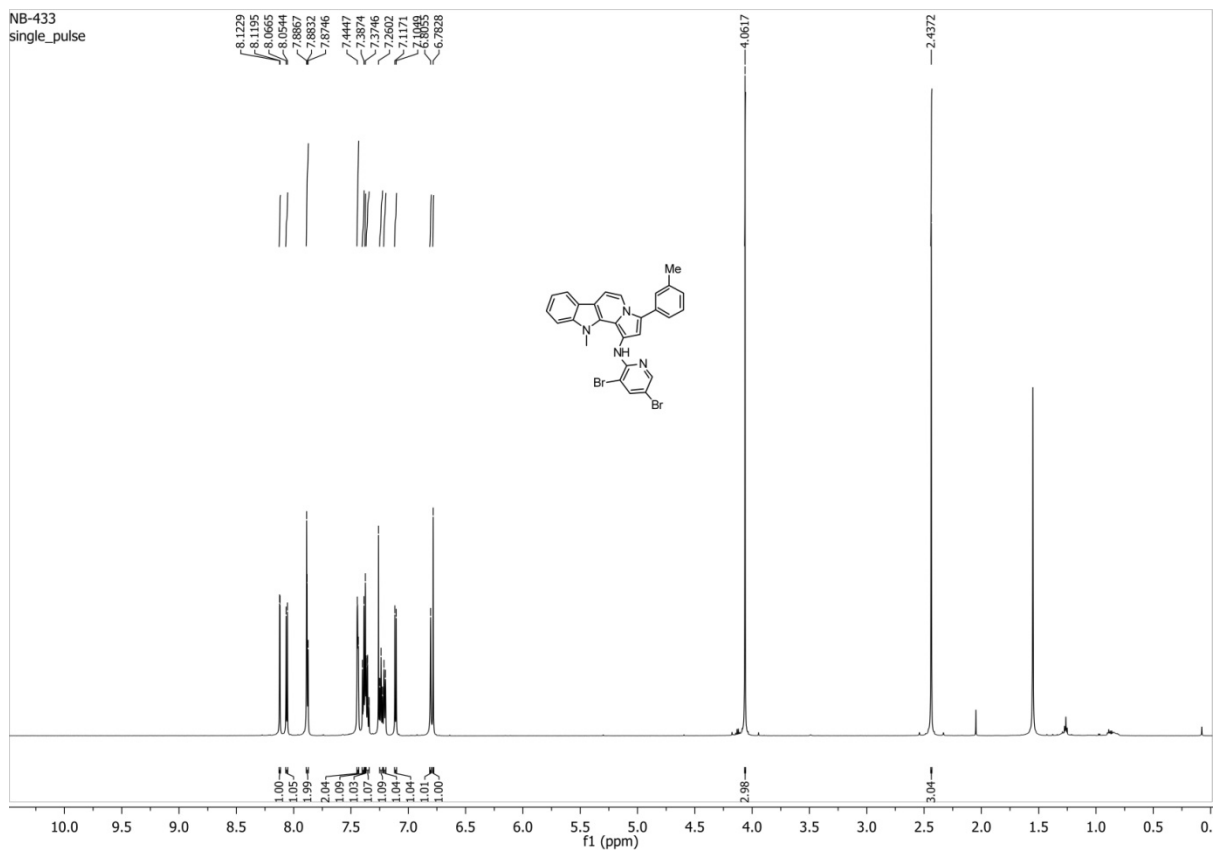


Figure S37. ^1H -NMR spectrum of **1bH**.

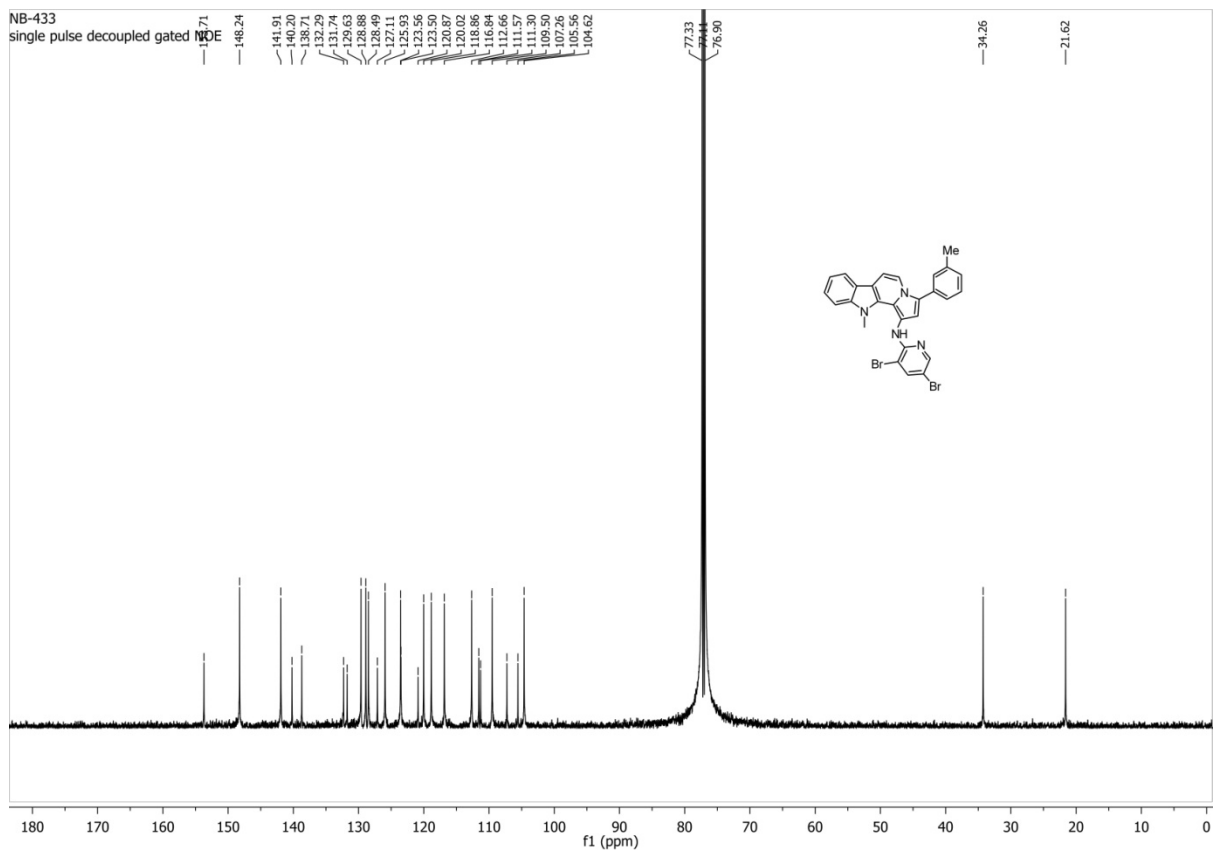


Figure S38. ^{13}C -NMR spectrum of **1bH**.

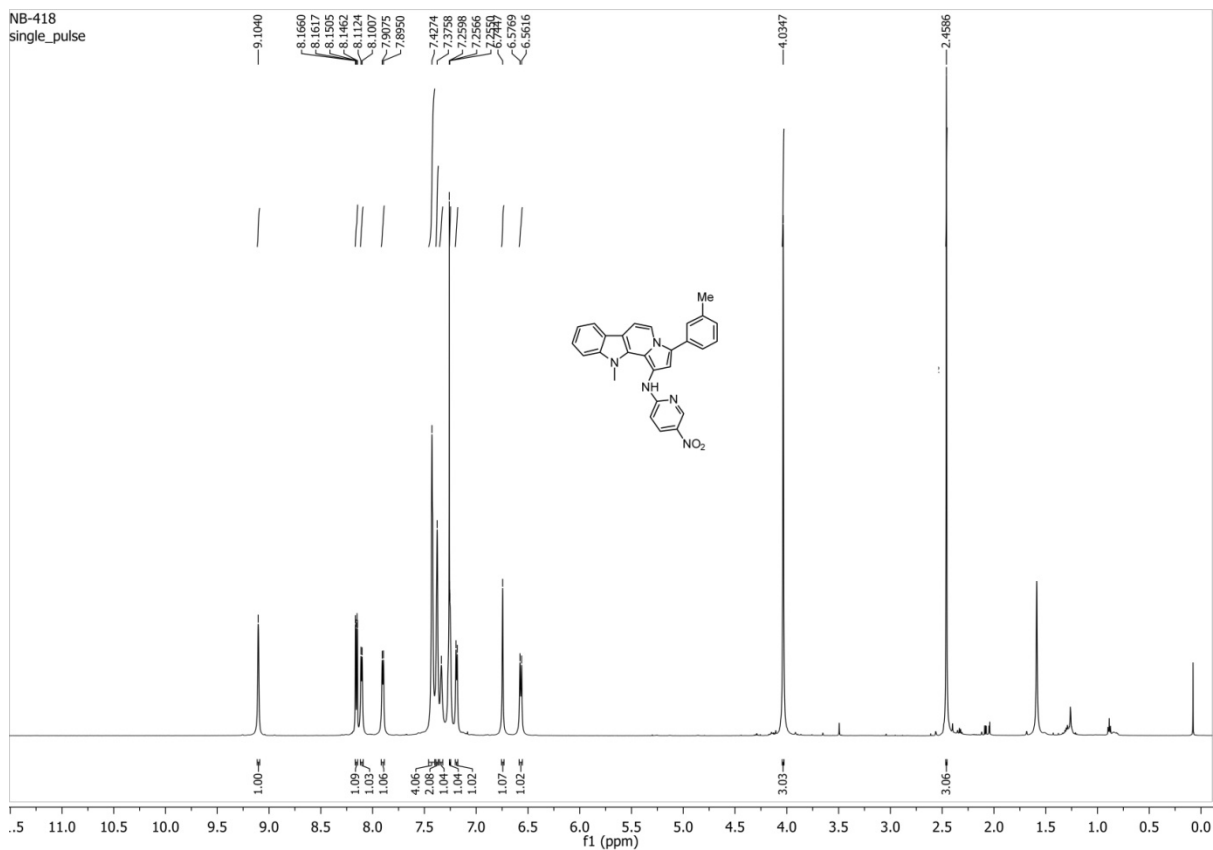


Figure S39. ^1H -NMR spectrum of **1bl**.

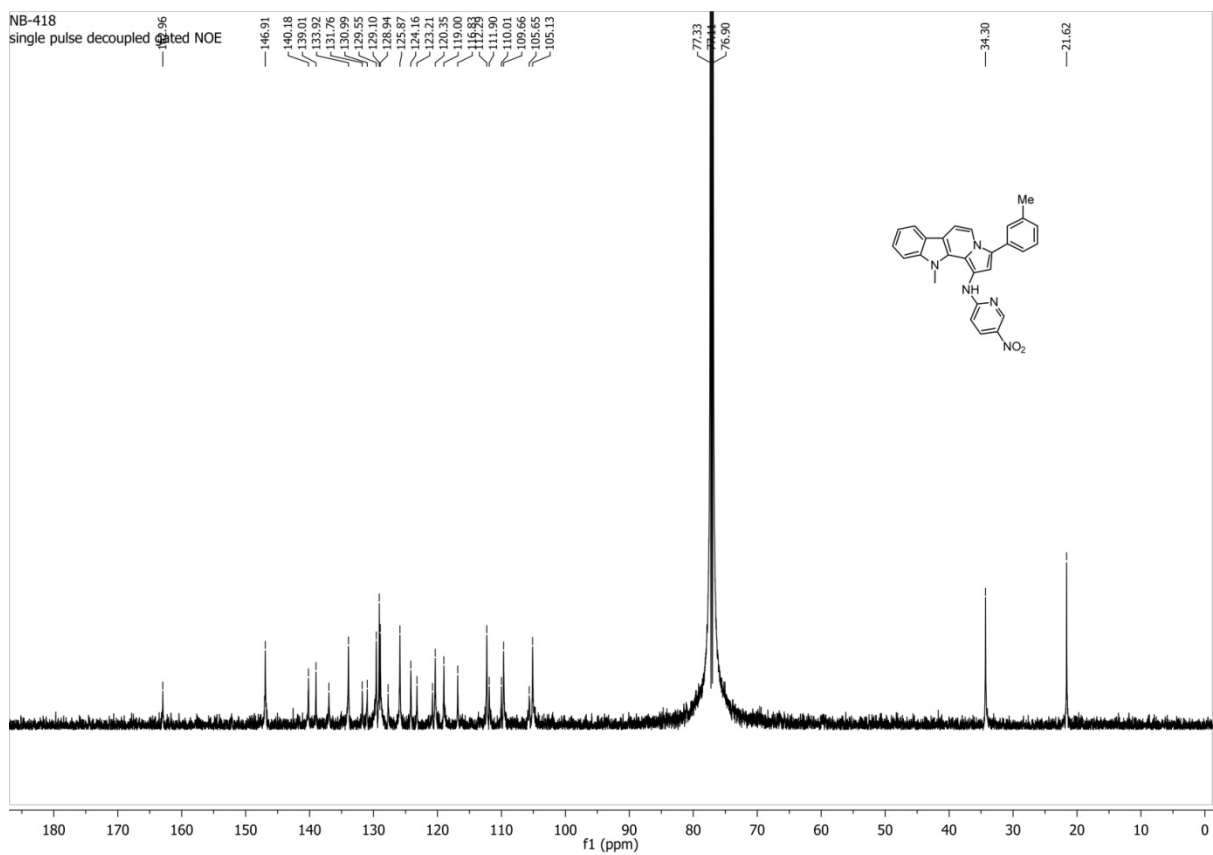


Figure S40. ^{13}C -NMR spectrum of **1bl**.

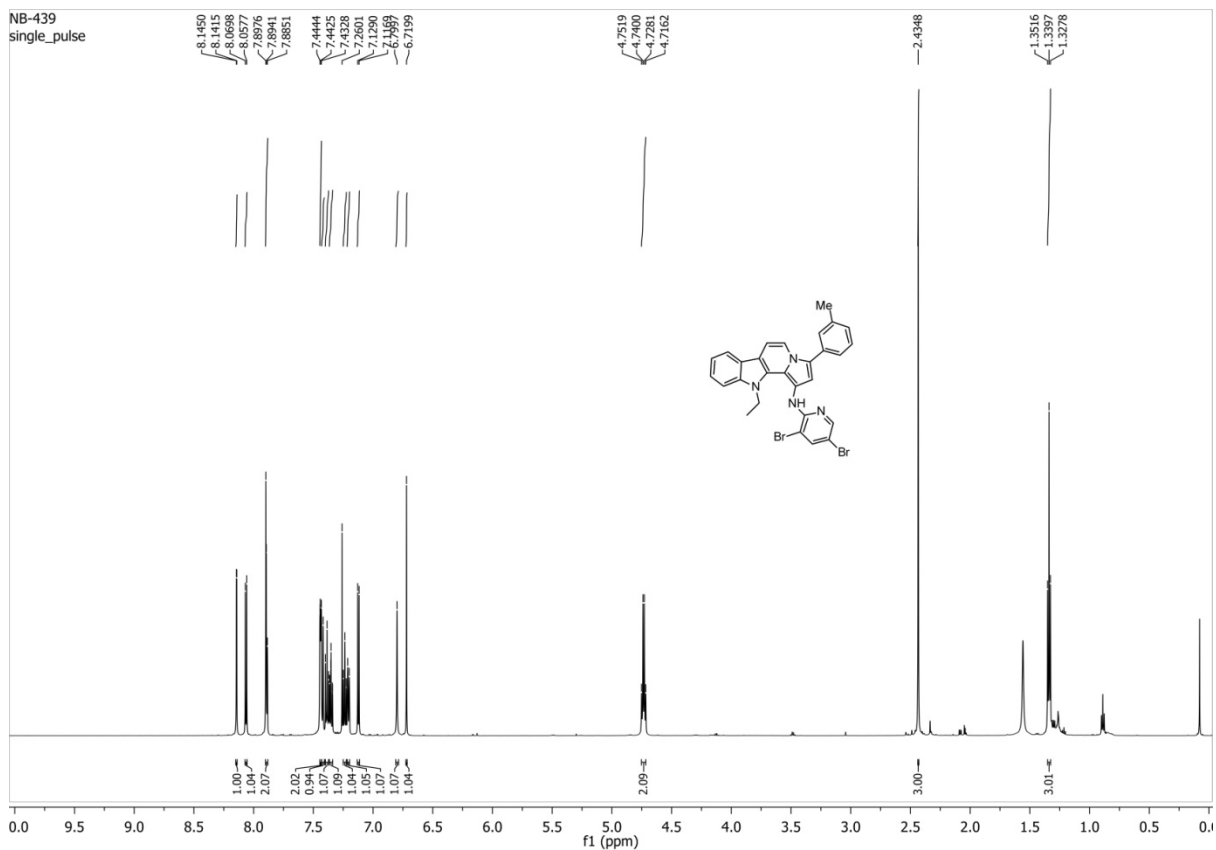


Figure S41. ^1H -NMR spectrum of 2bH.

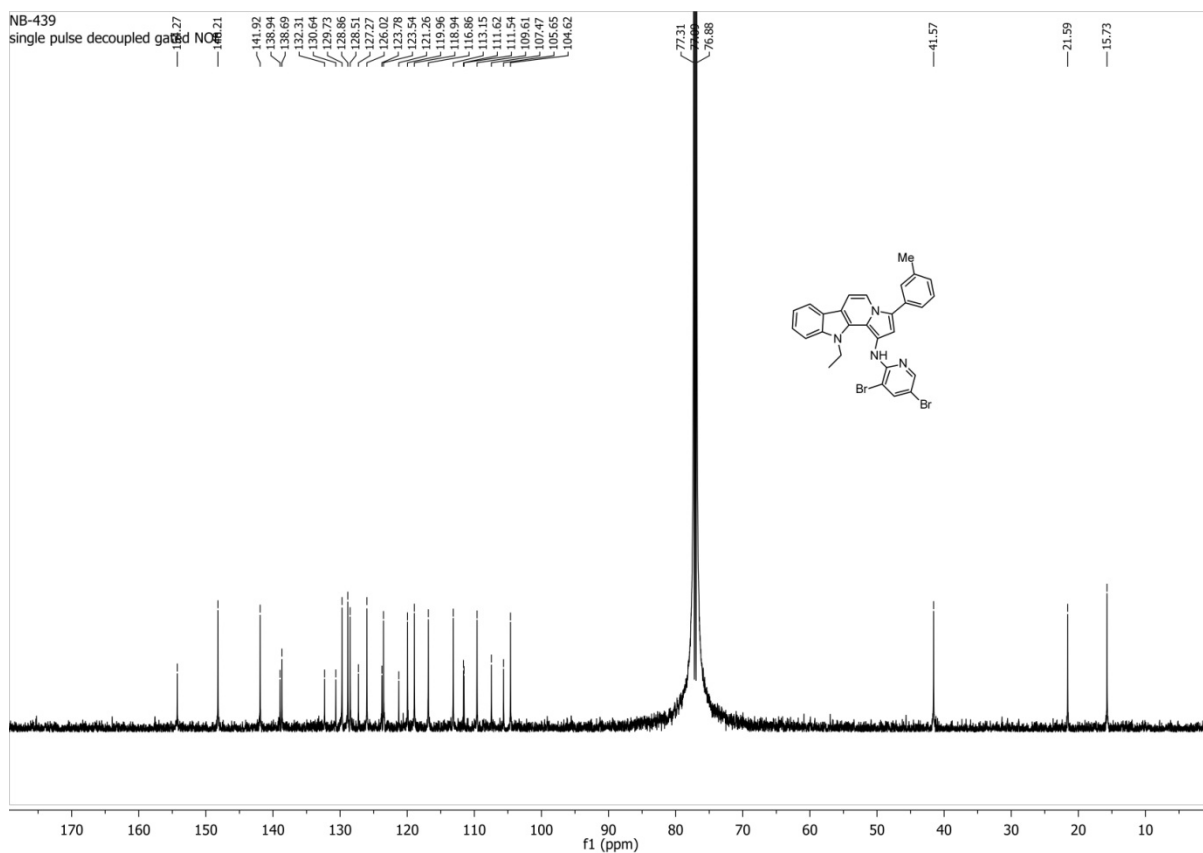


Figure S42. ^{13}C -NMR spectrum of 2bH.

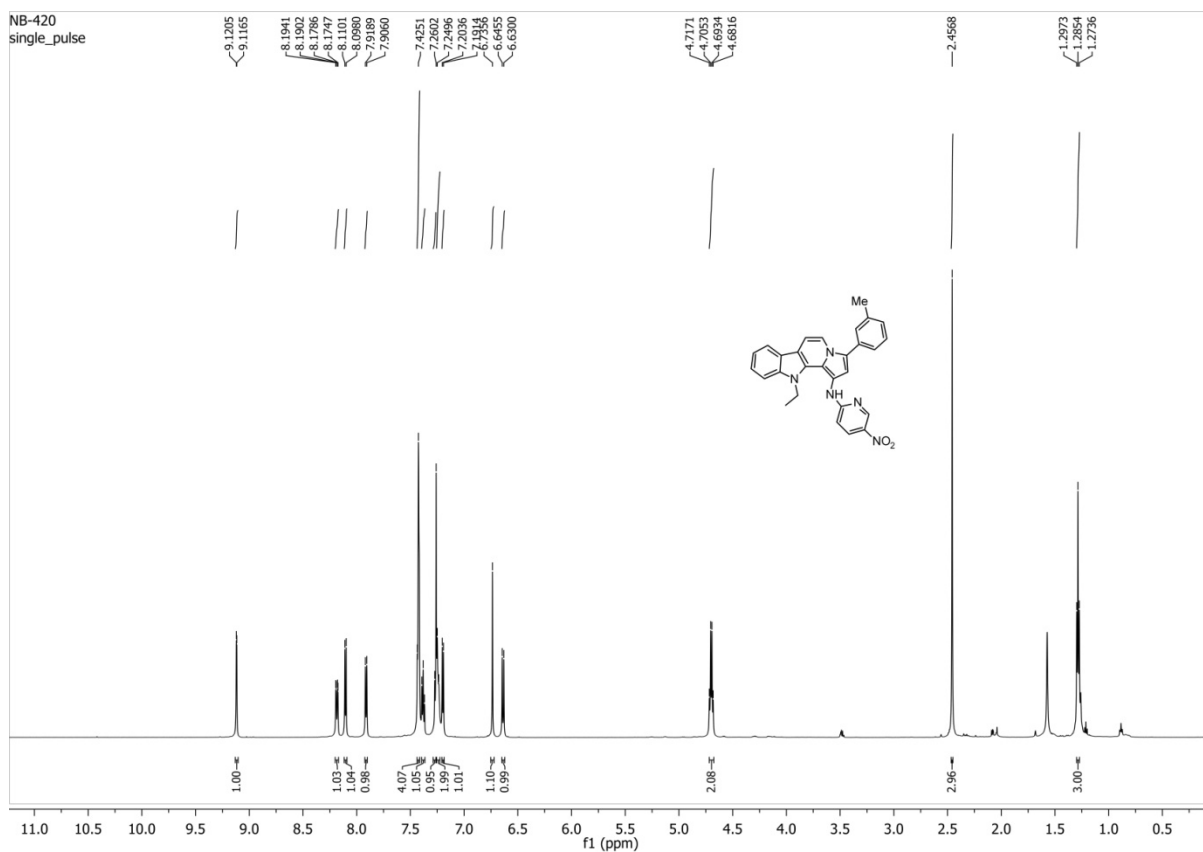


Figure S43. $^1\text{H-NMR}$ spectrum of **2bl**.

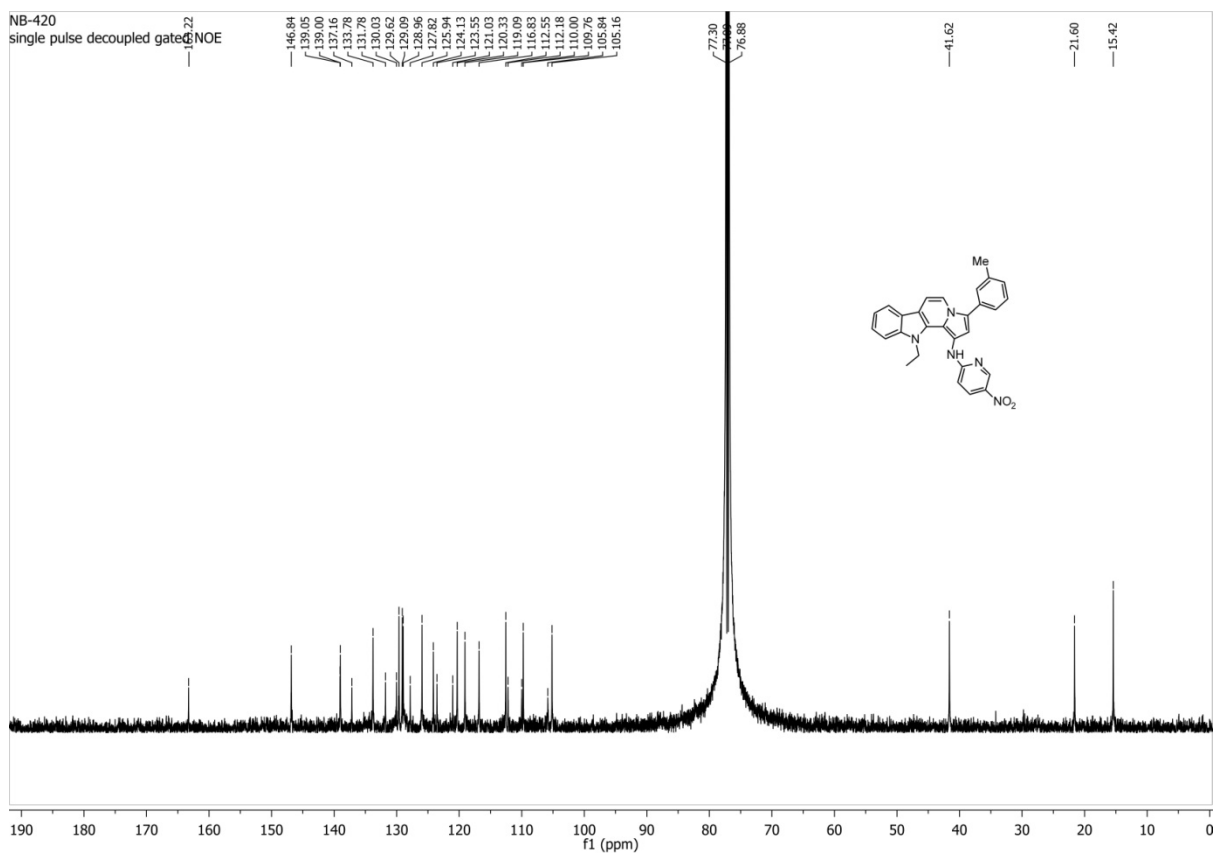


Figure S44. $^{13}\text{C-NMR}$ spectrum of **2bl**.

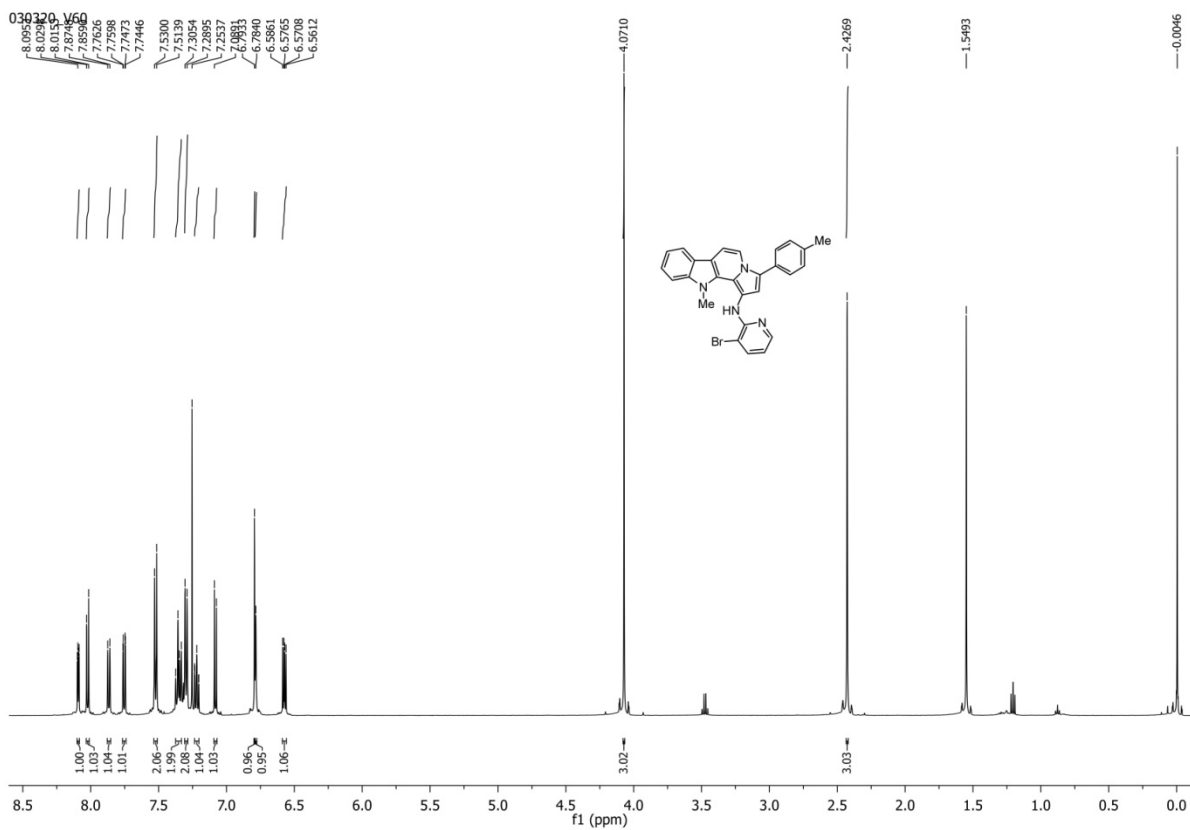


Figure S47. $^1\text{H-NMR}$ spectrum of **1cD**.

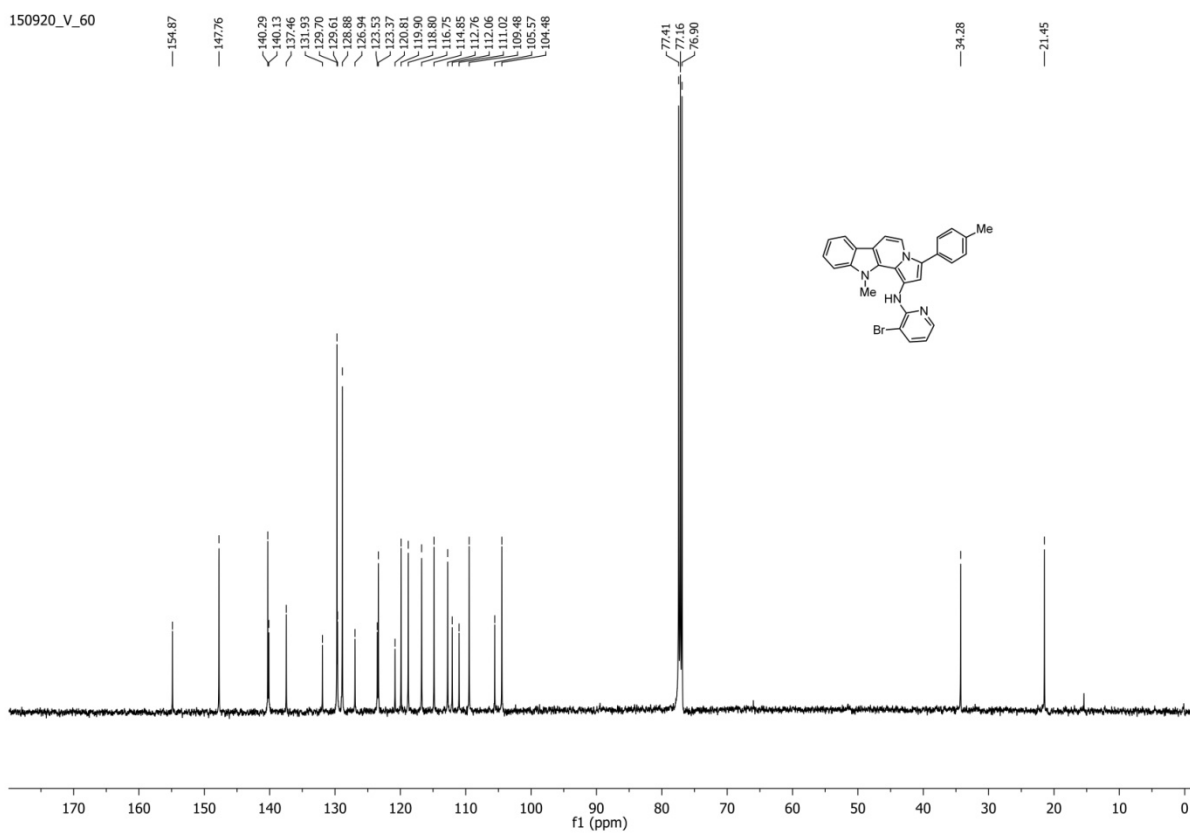


Figure S48. $^{13}\text{C-NMR}$ spectrum of **1cD**.

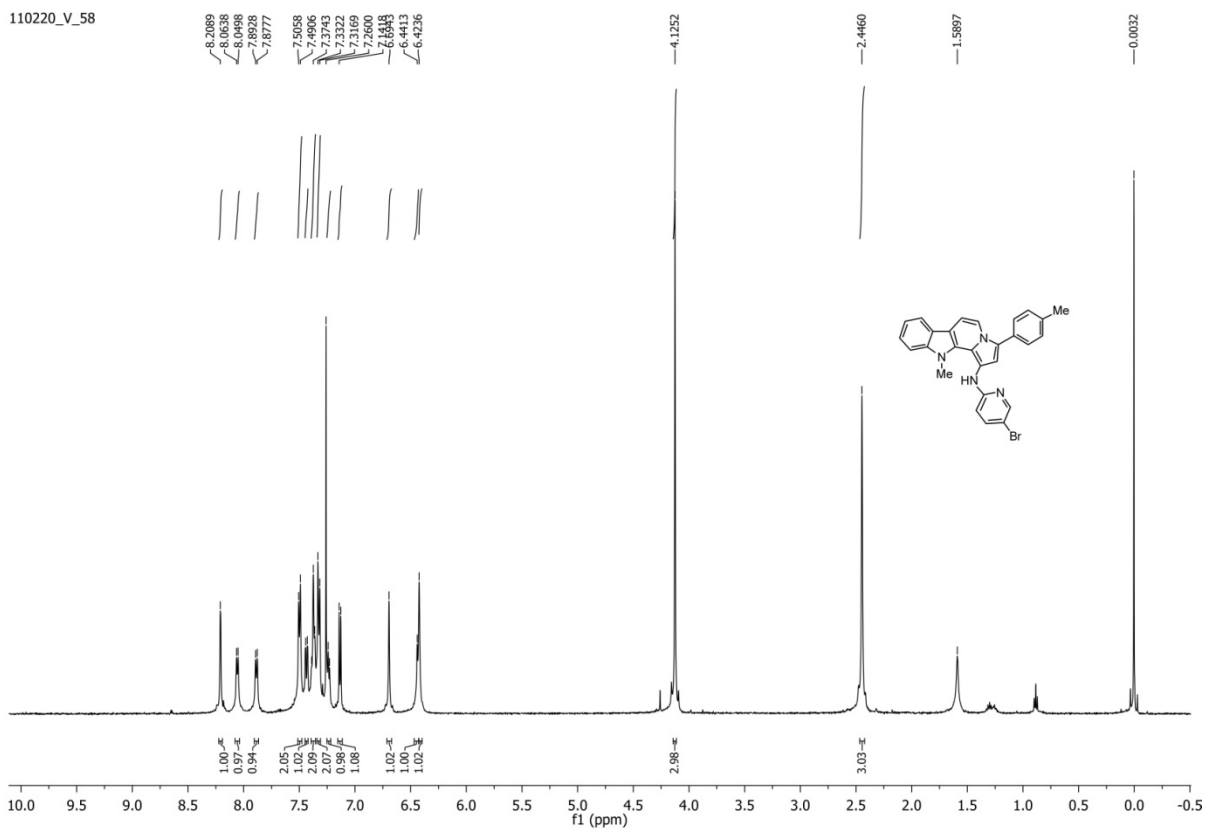


Figure S49. $^1\text{H-NMR}$ spectrum of **1cE**.

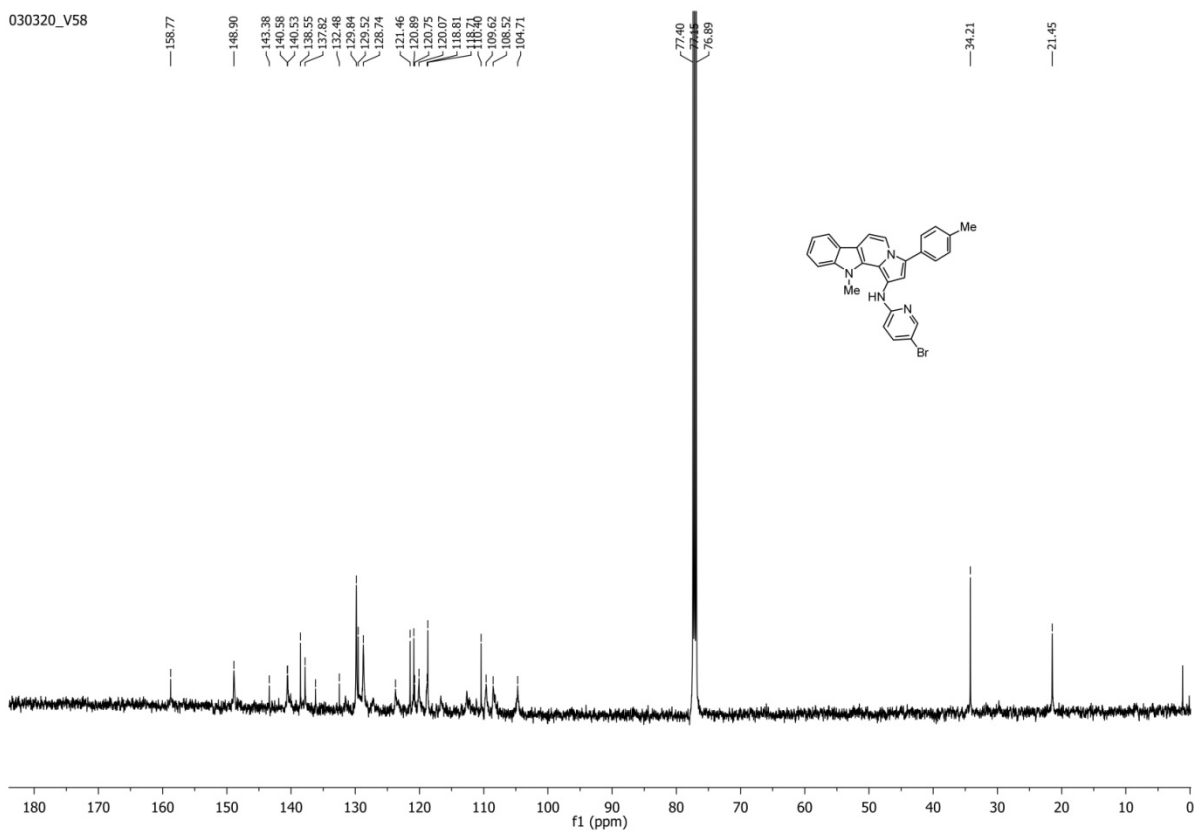


Figure S50. $^{13}\text{C-NMR}$ spectrum of **1cE**.

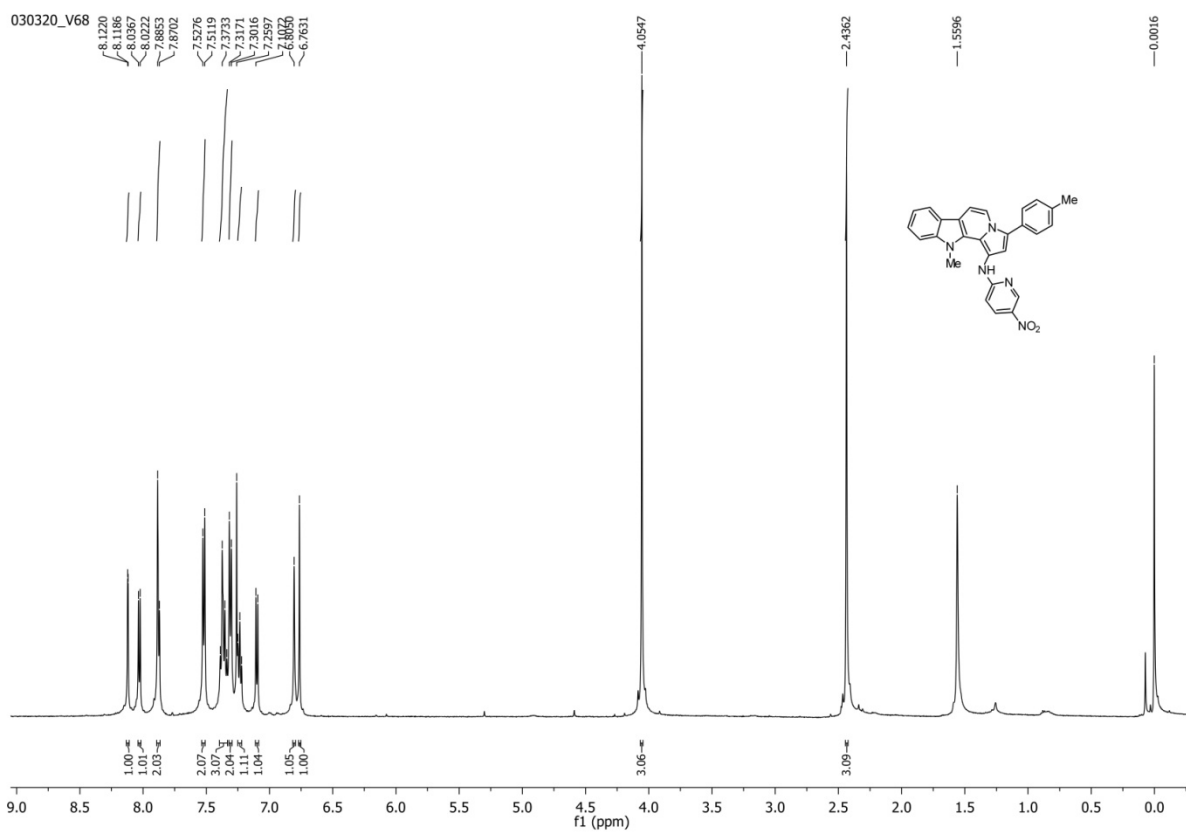


Figure S51. $^1\text{H-NMR}$ spectrum of **1c**.

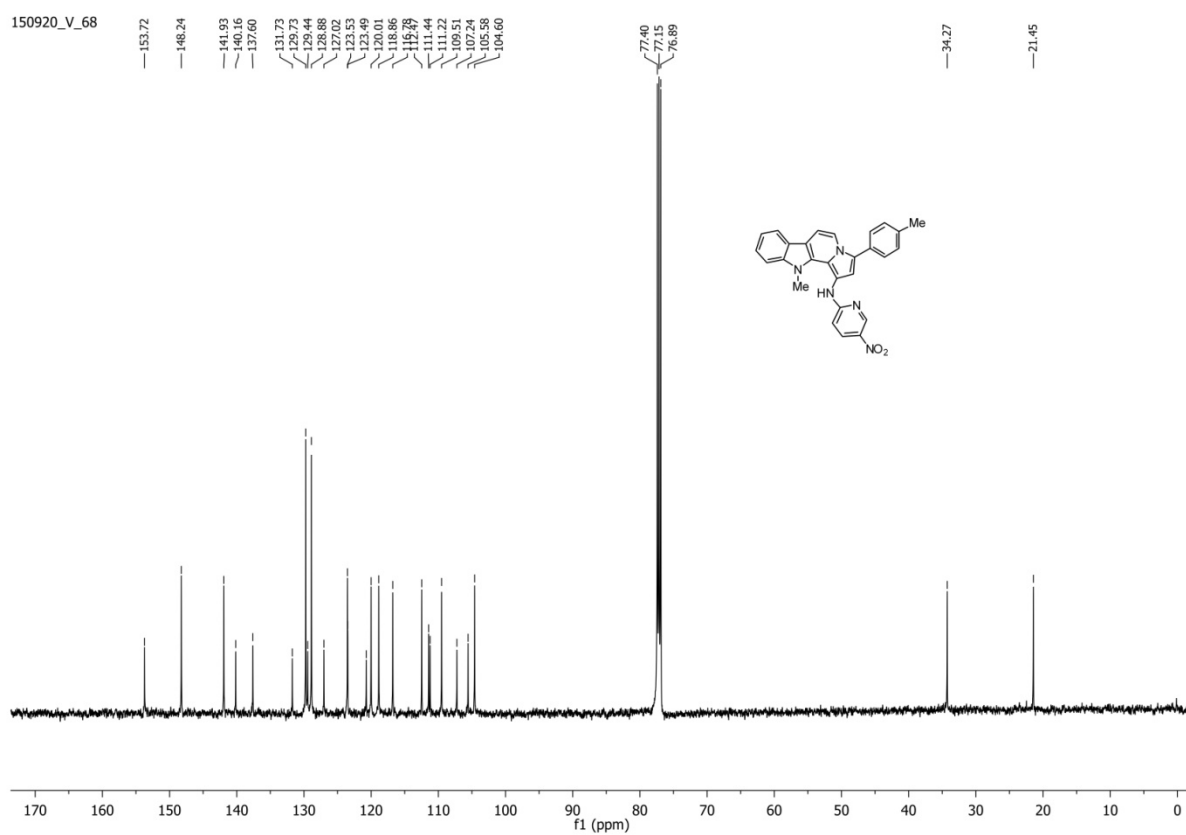


Figure S52. $^{13}\text{C-NMR}$ spectrum of **1c**.

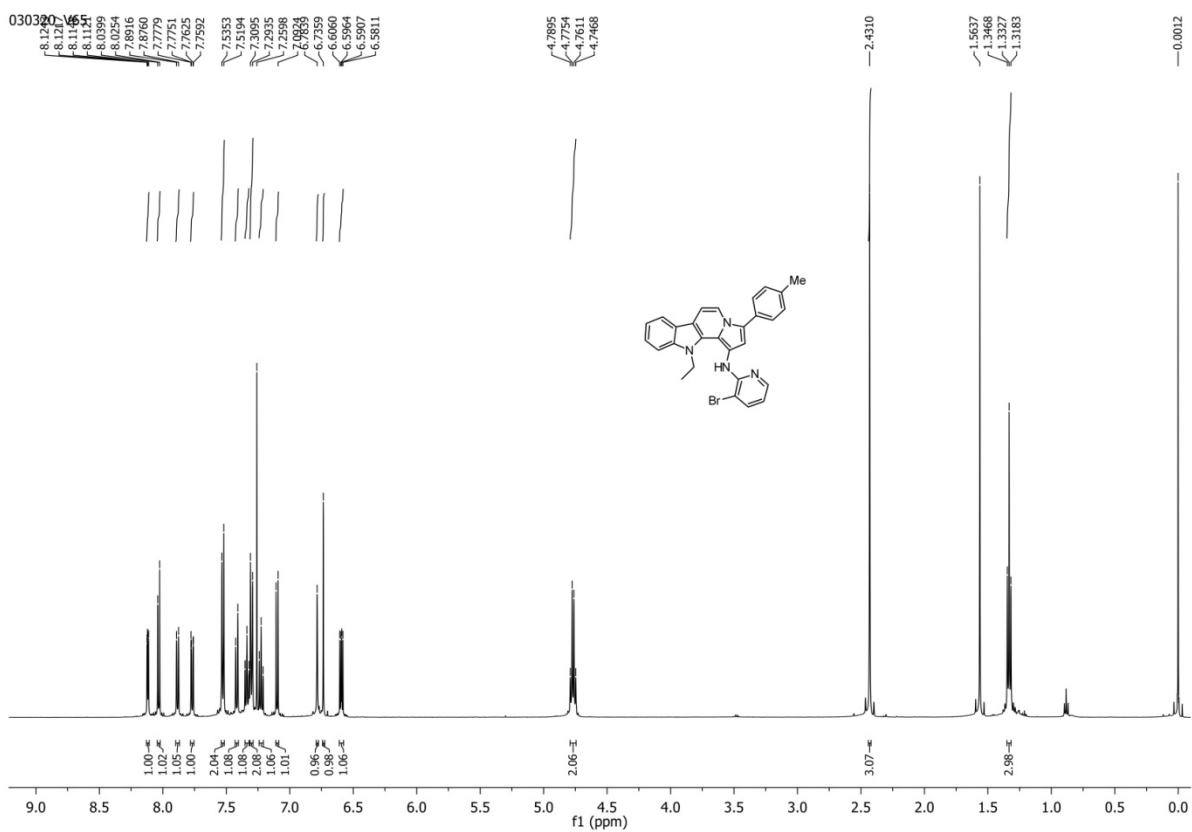


Figure S53. $^1\text{H-NMR}$ spectrum of 2cD.

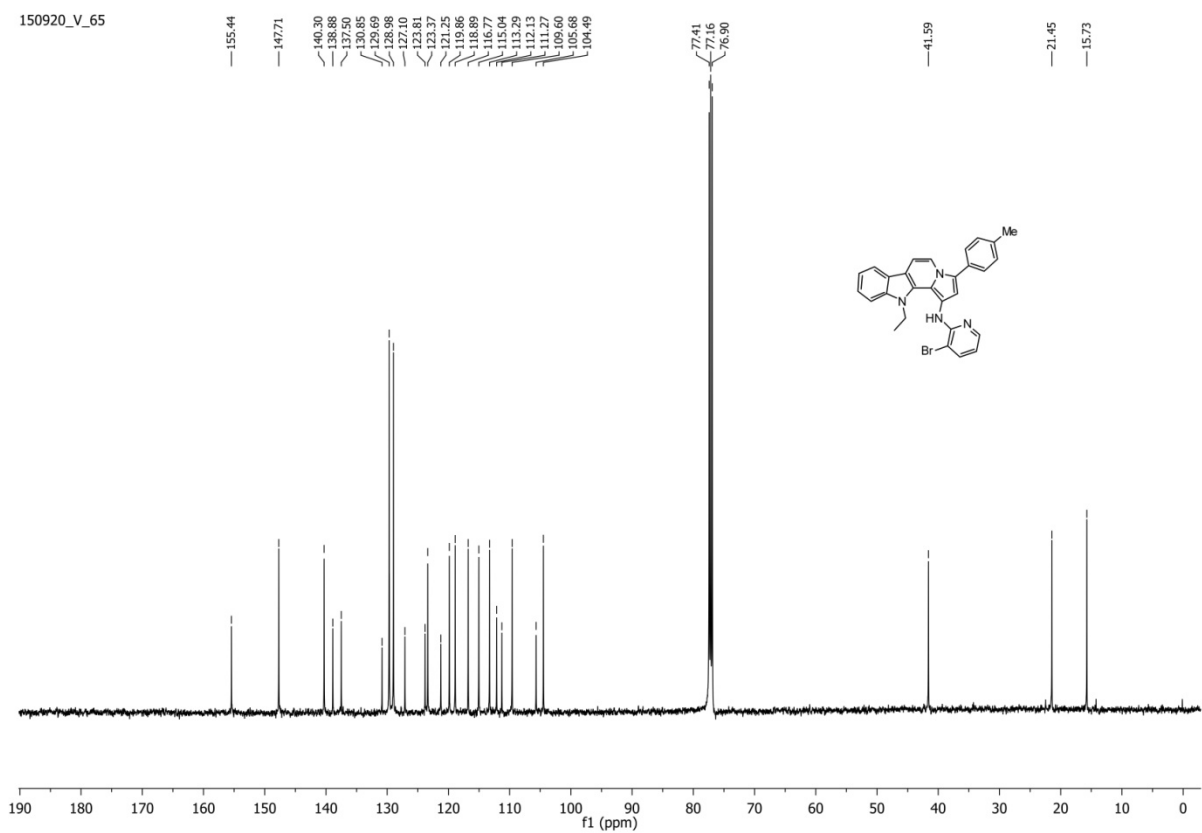


Figure S54. $^{13}\text{C-NMR}$ spectrum of 2cD.

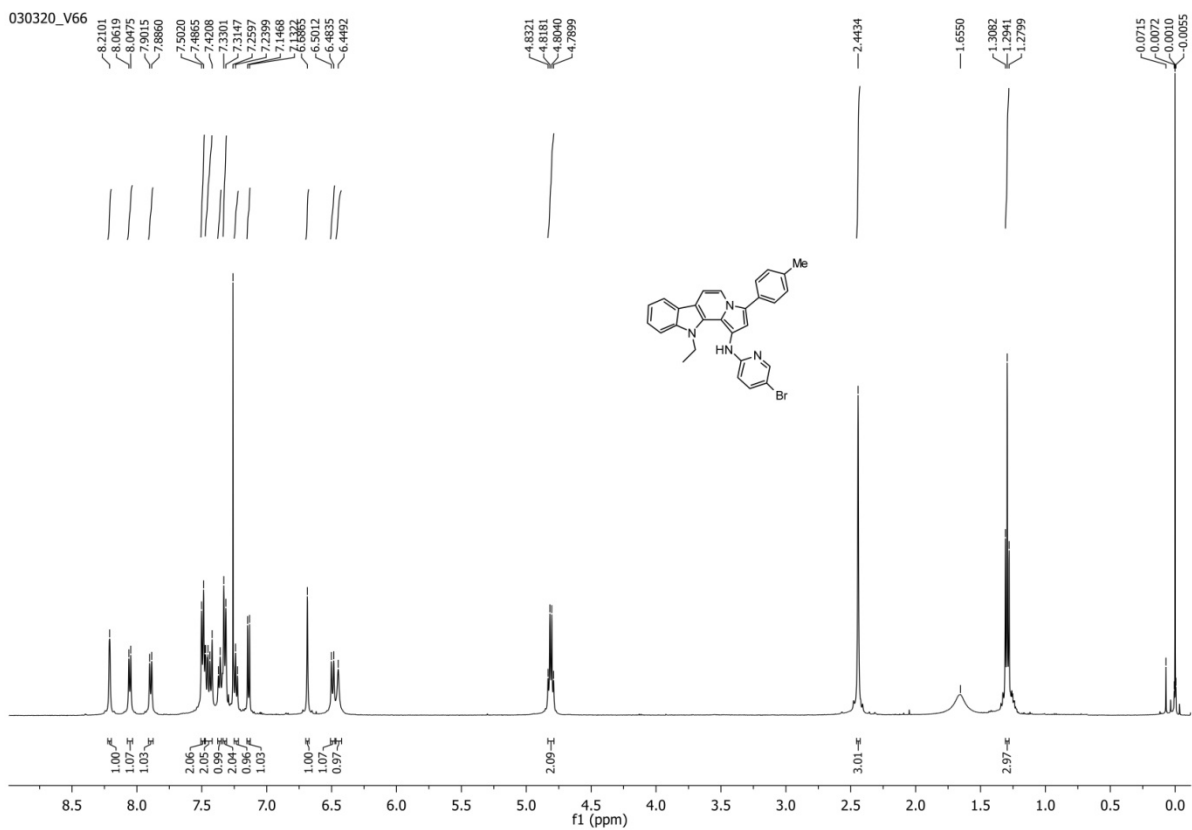


Figure S55. $^1\text{H-NMR}$ spectrum of **2cE**.

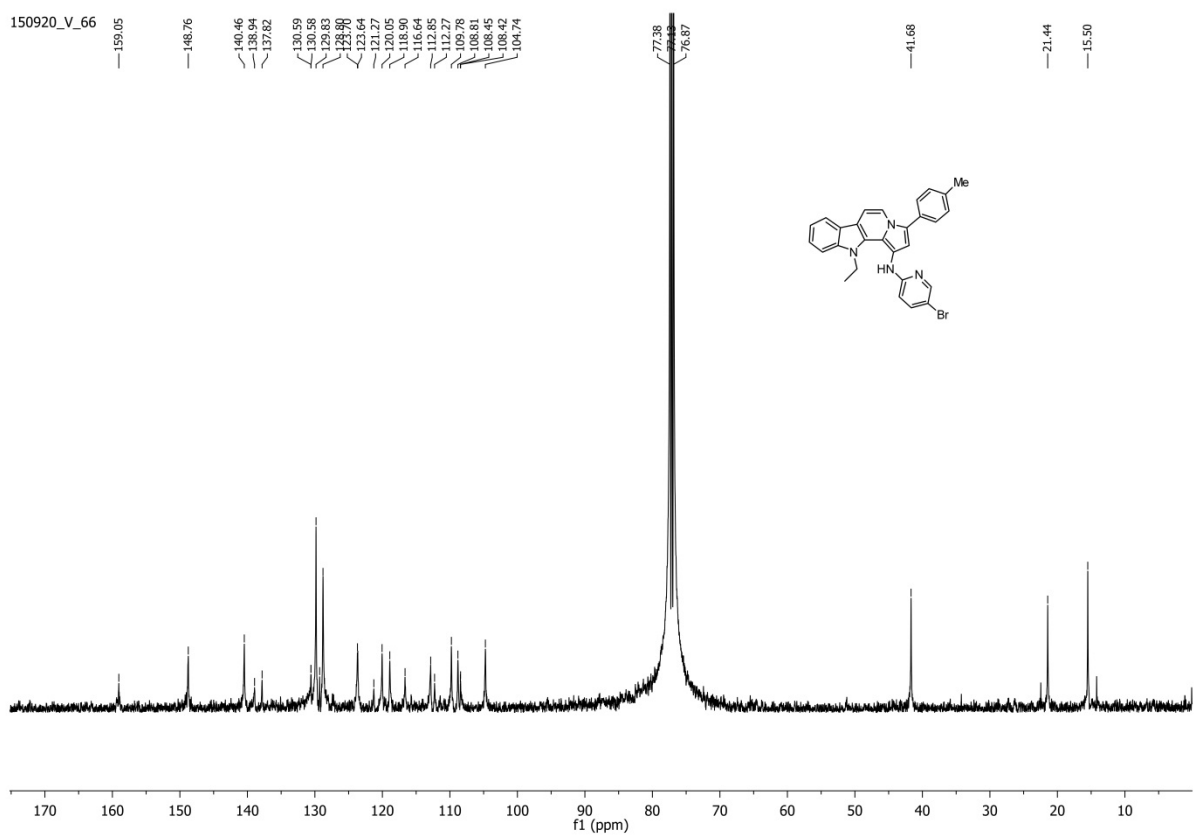


Figure S56. $^{13}\text{C-NMR}$ spectrum of **2cE**.

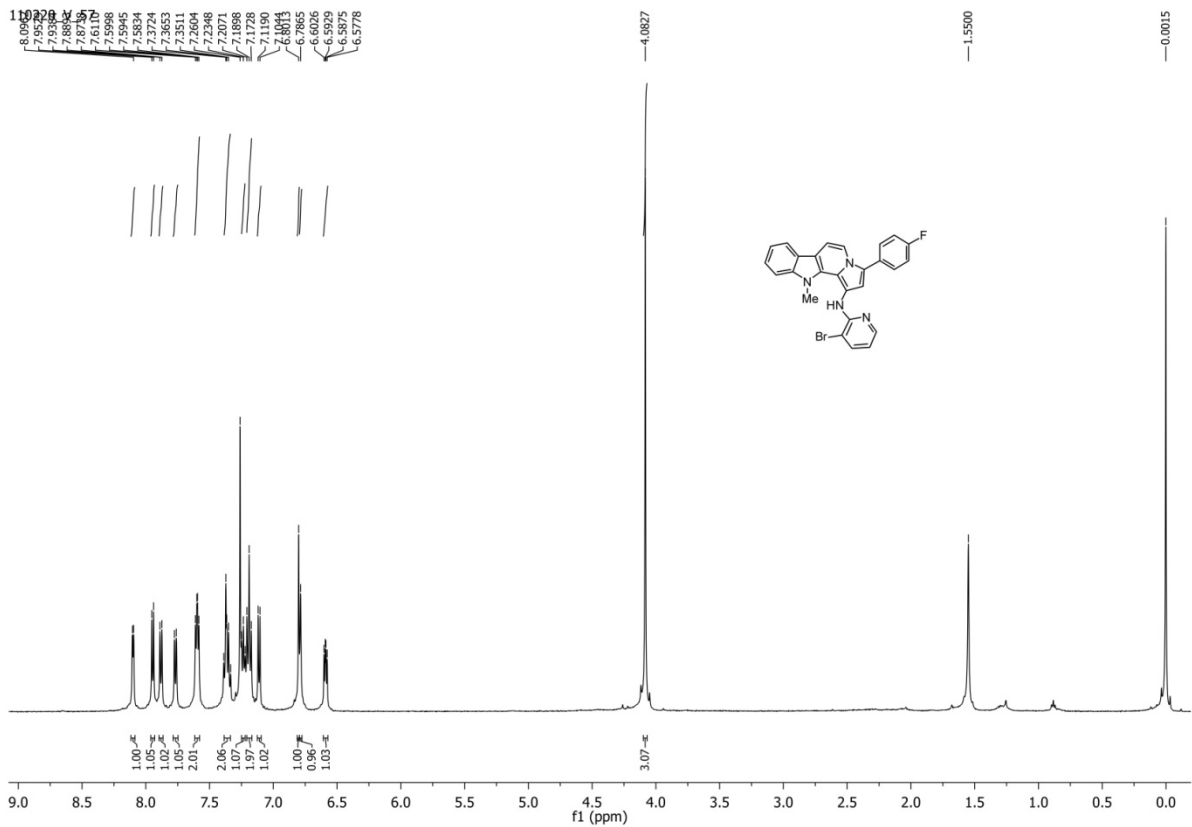


Figure S57. ¹H-NMR spectrum of 1dD.

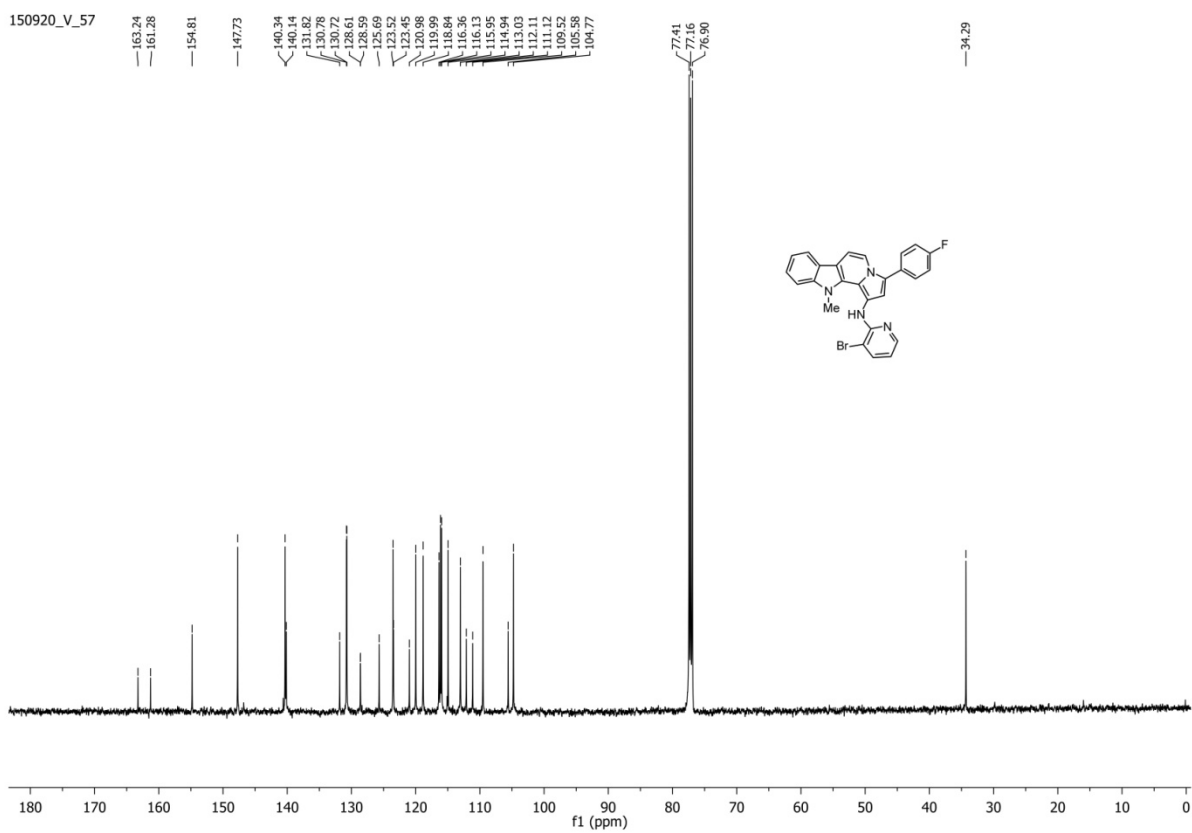


Figure S58. ¹³C-NMR spectrum of 1dD.

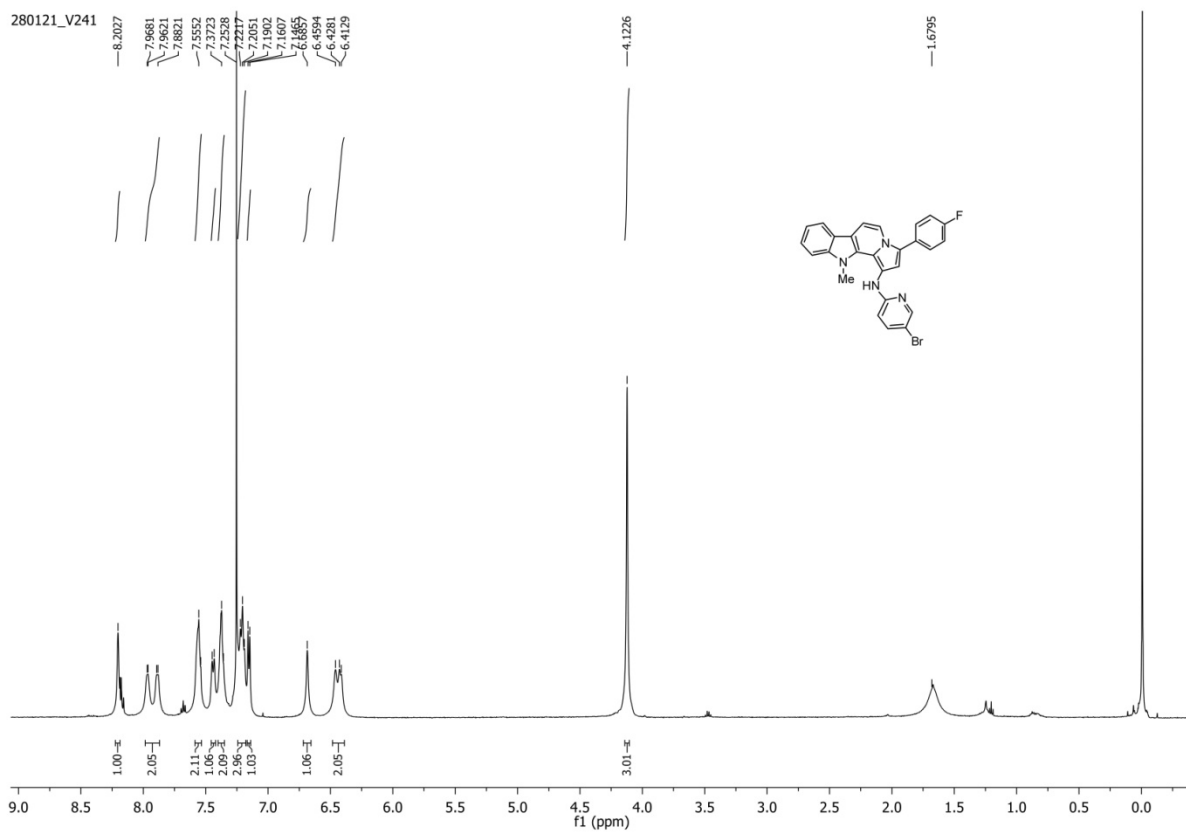


Figure S59. $^1\text{H-NMR}$ spectrum of **1dE**.

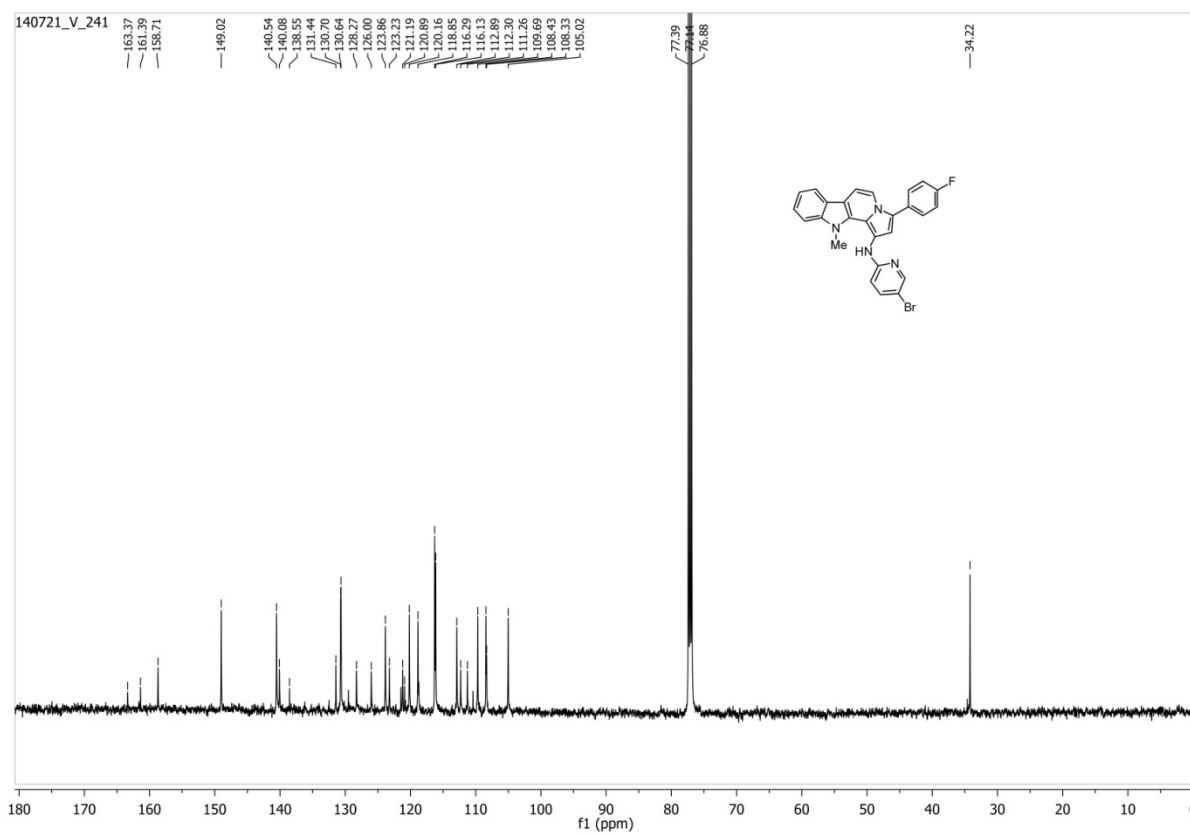


Figure S60. $^{13}\text{C-NMR}$ spectrum of **1dE**.

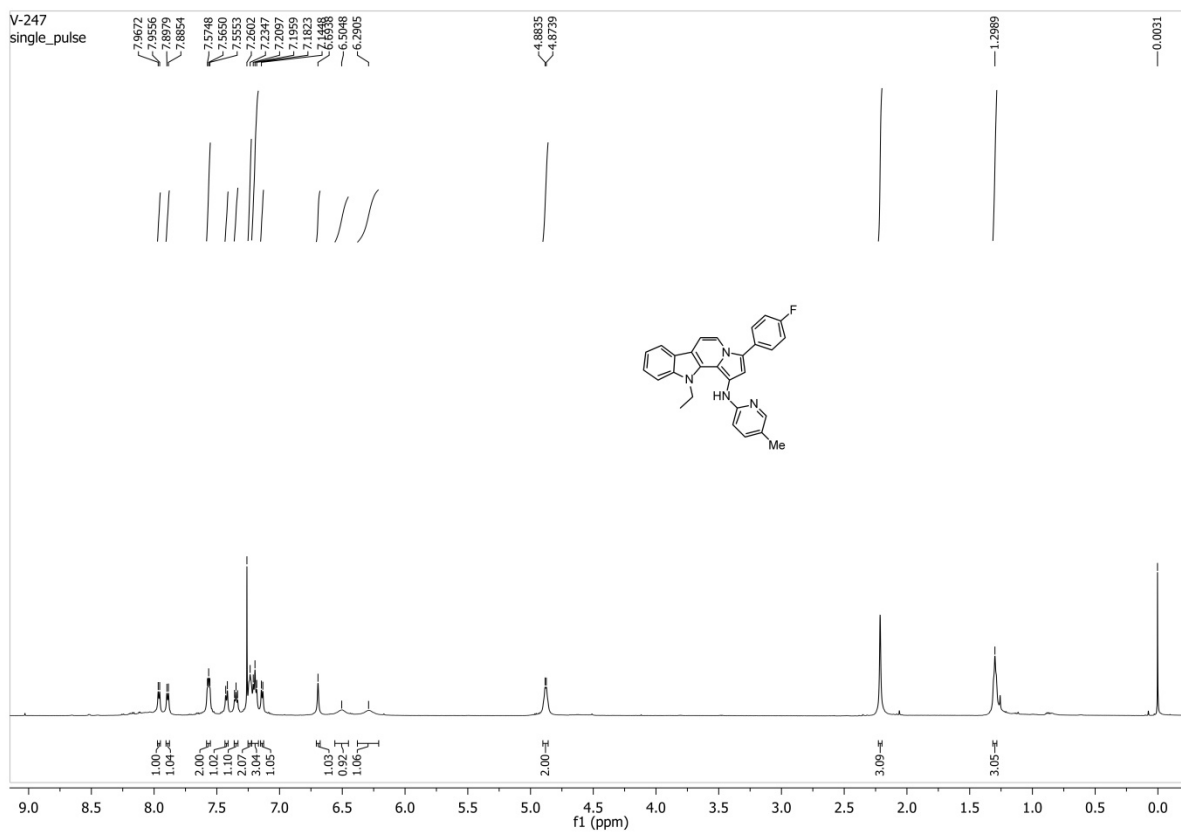


Figure S61. $^1\text{H-NMR}$ spectrum of **2dJ**.

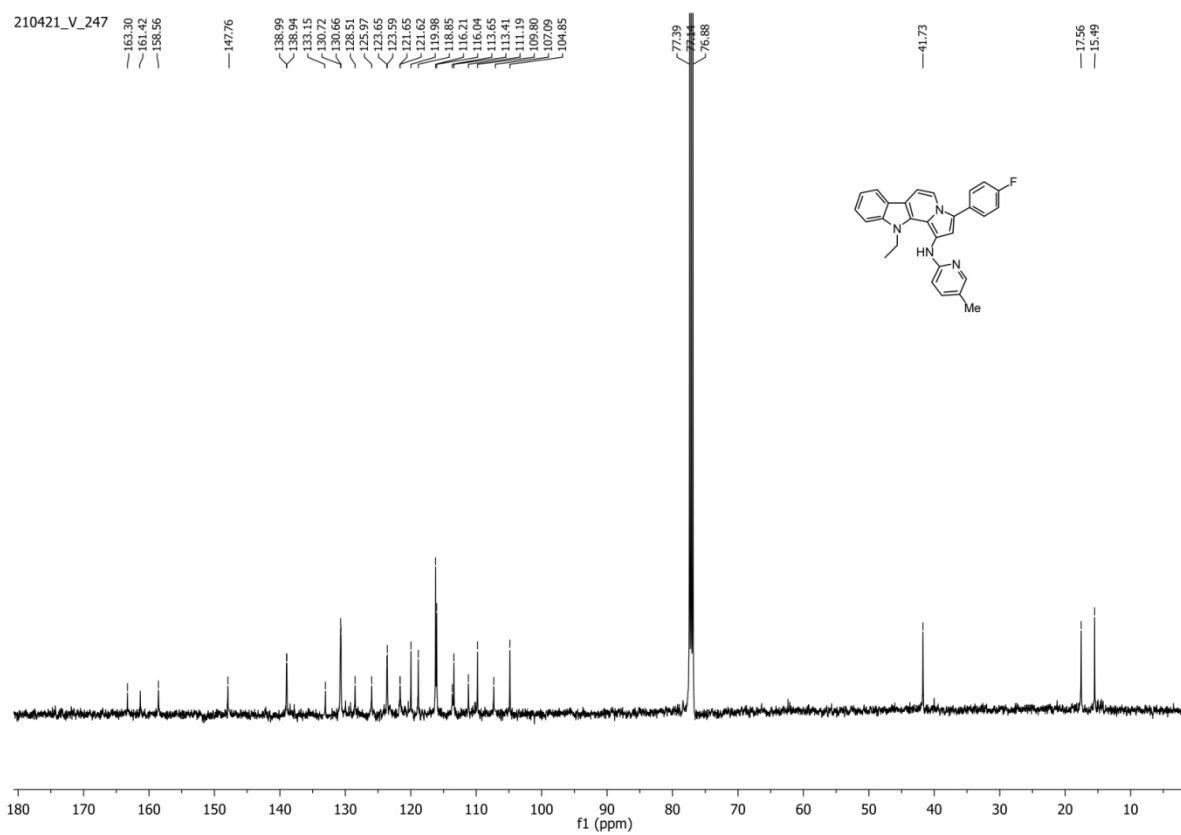


Figure S62. $^{13}\text{C-NMR}$ spectrum of **2dJ**.

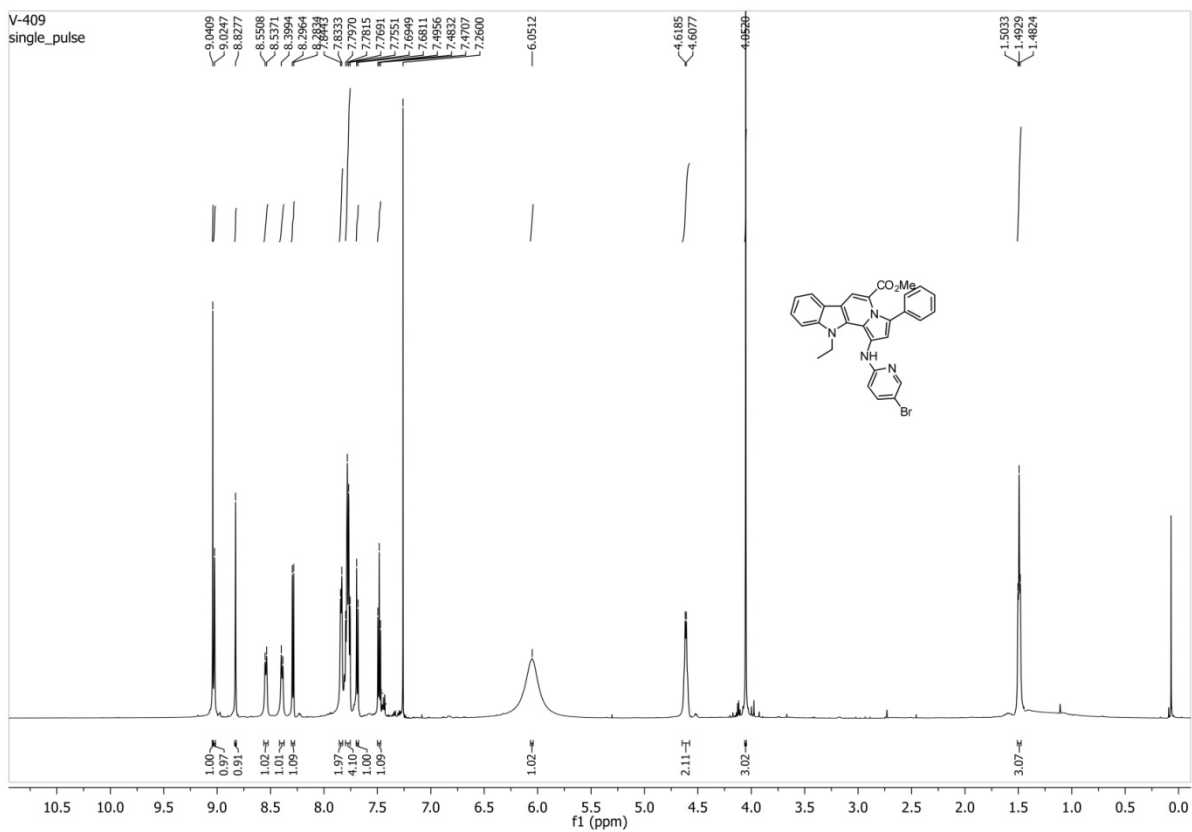


Figure S63. $^1\text{H-NMR}$ spectrum of **4aE**.

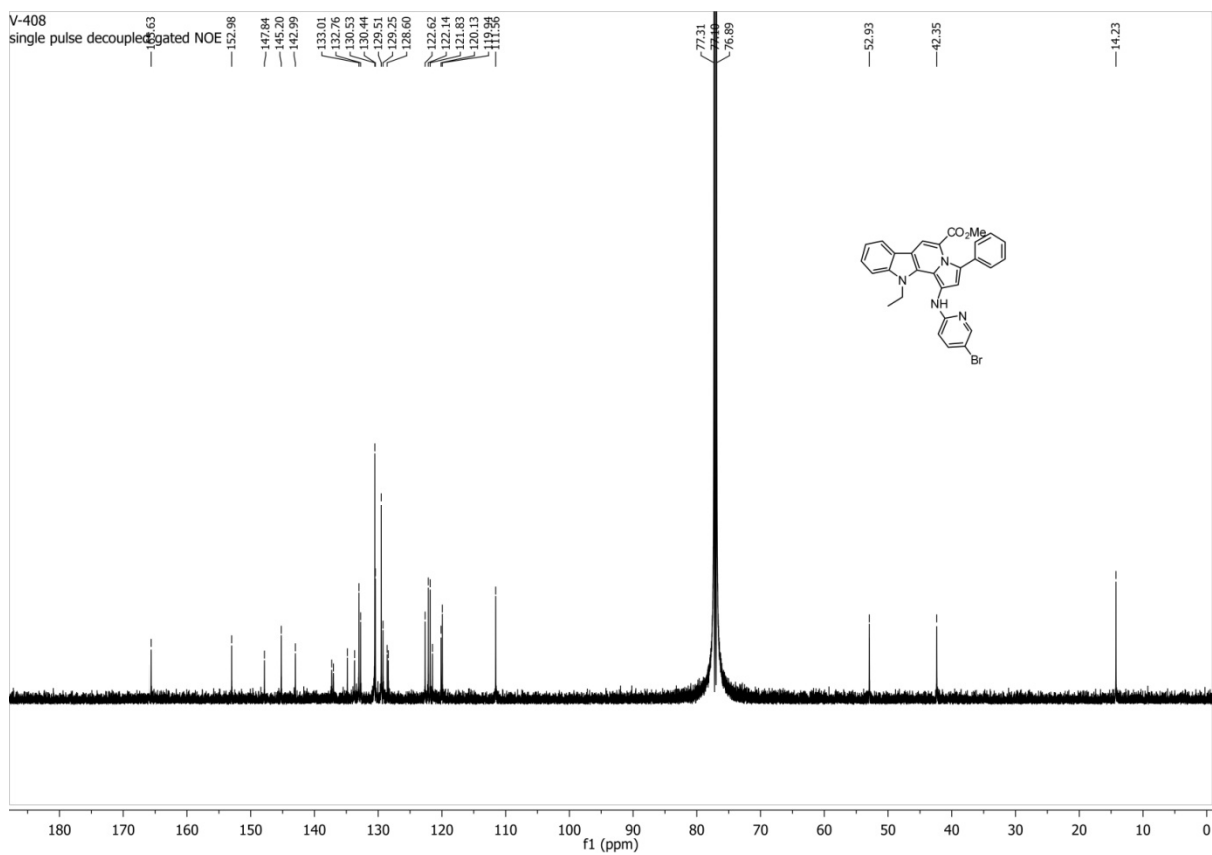


Figure S64. $^{13}\text{C-NMR}$ spectrum of **4aE**.

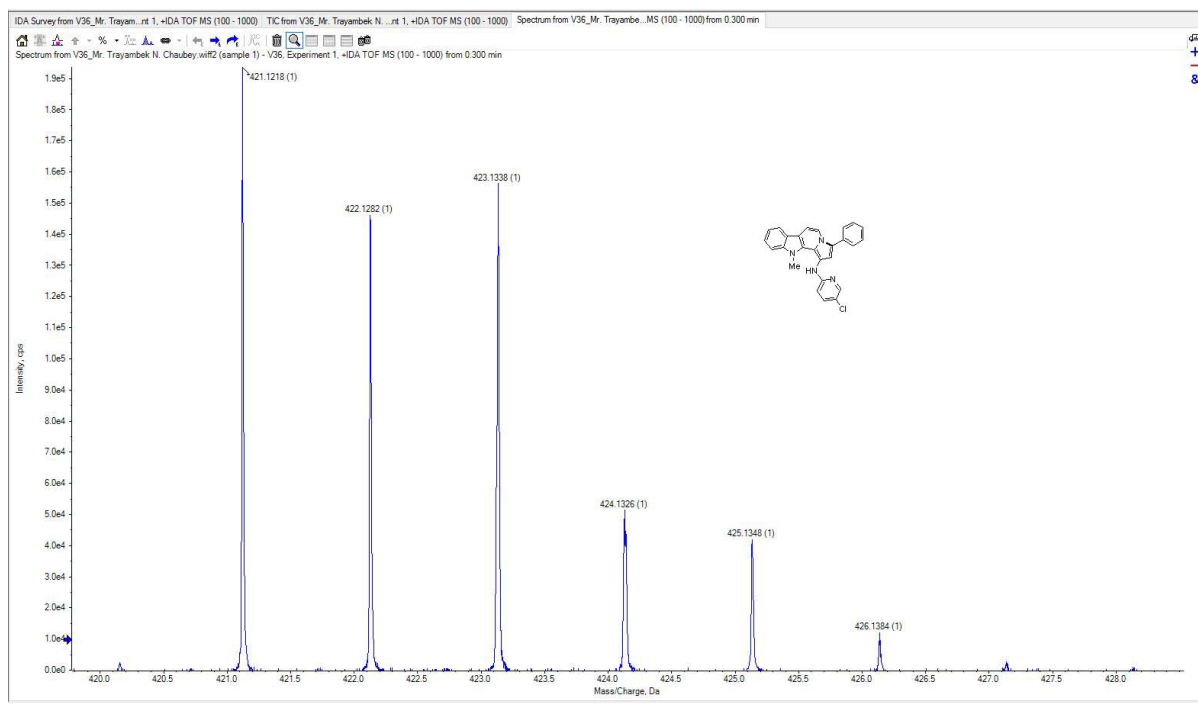


Figure S65. HRMS spectrum of **1aC**.

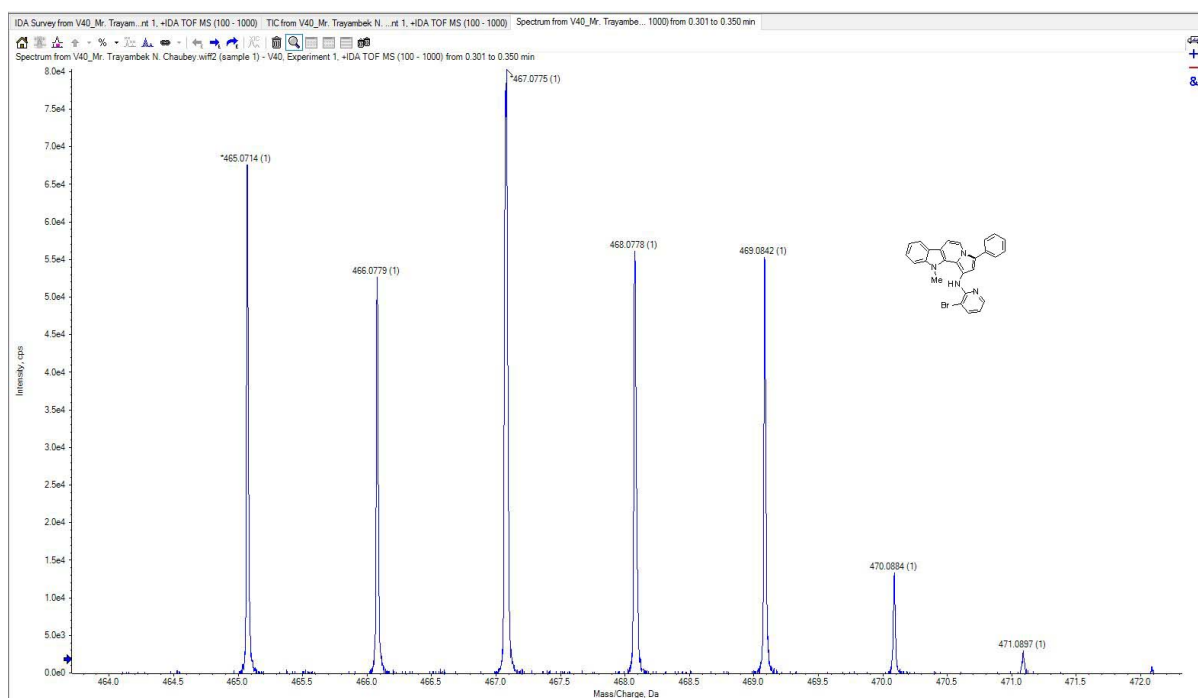


Figure S66. HRMS spectrum of **1aD**.

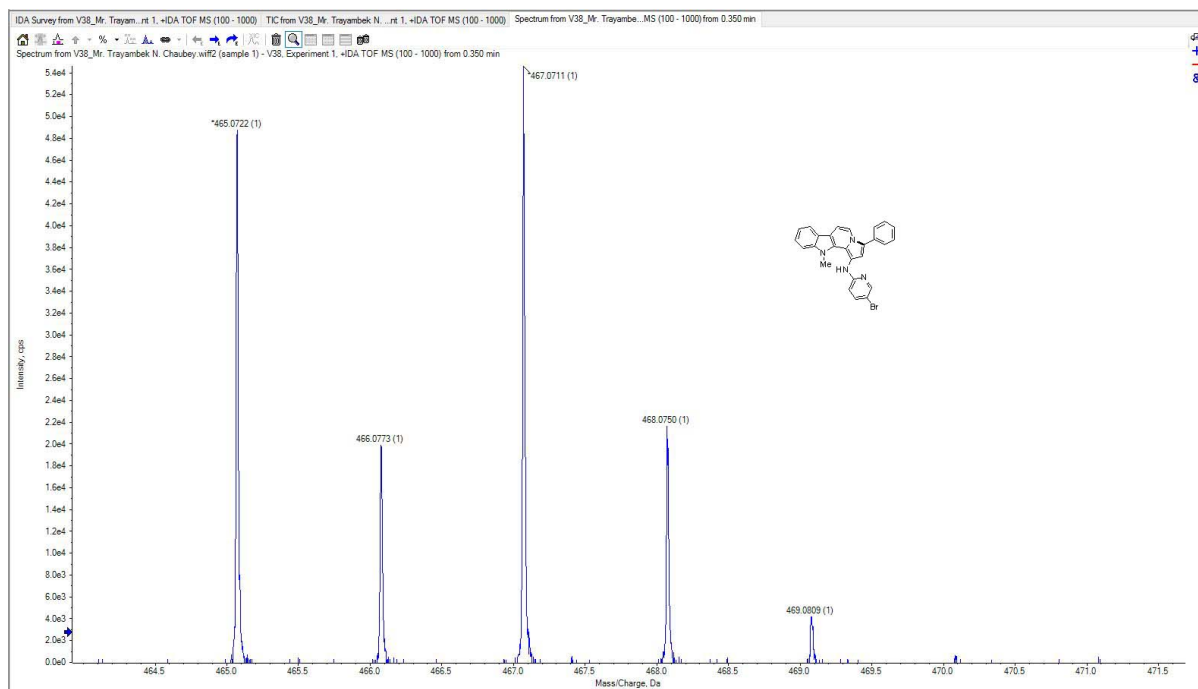


Figure S67. HRMS spectrum of **1aE**.

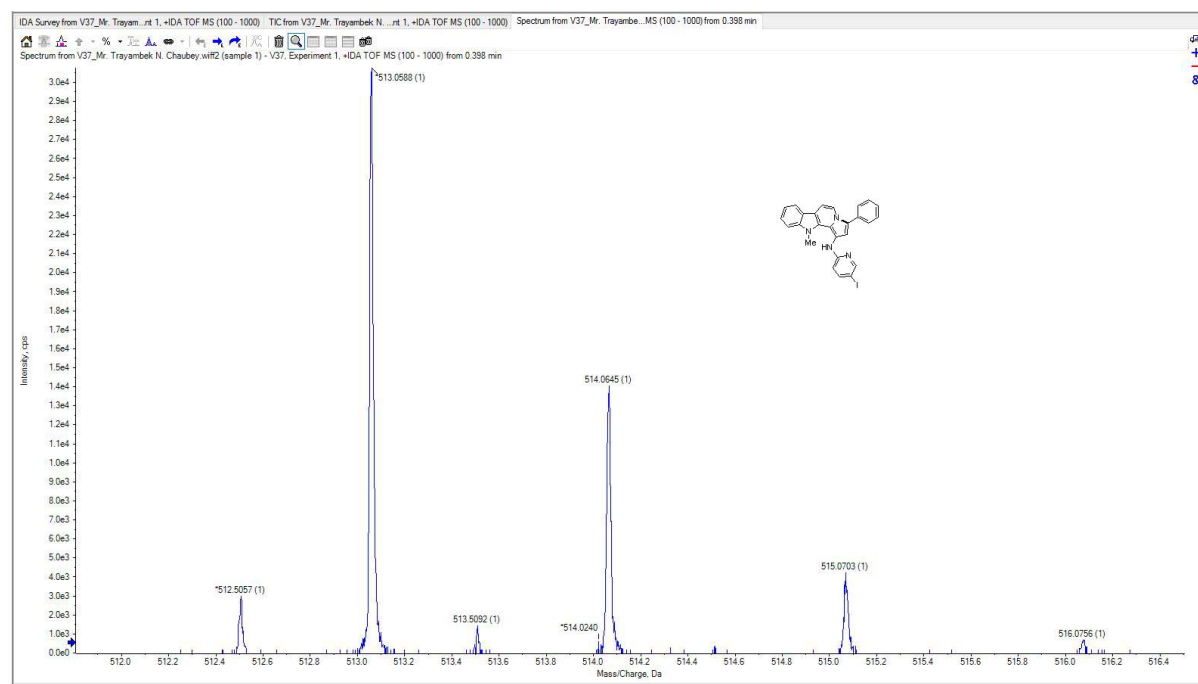


Figure S68. HRMS spectrum of **1aF**.

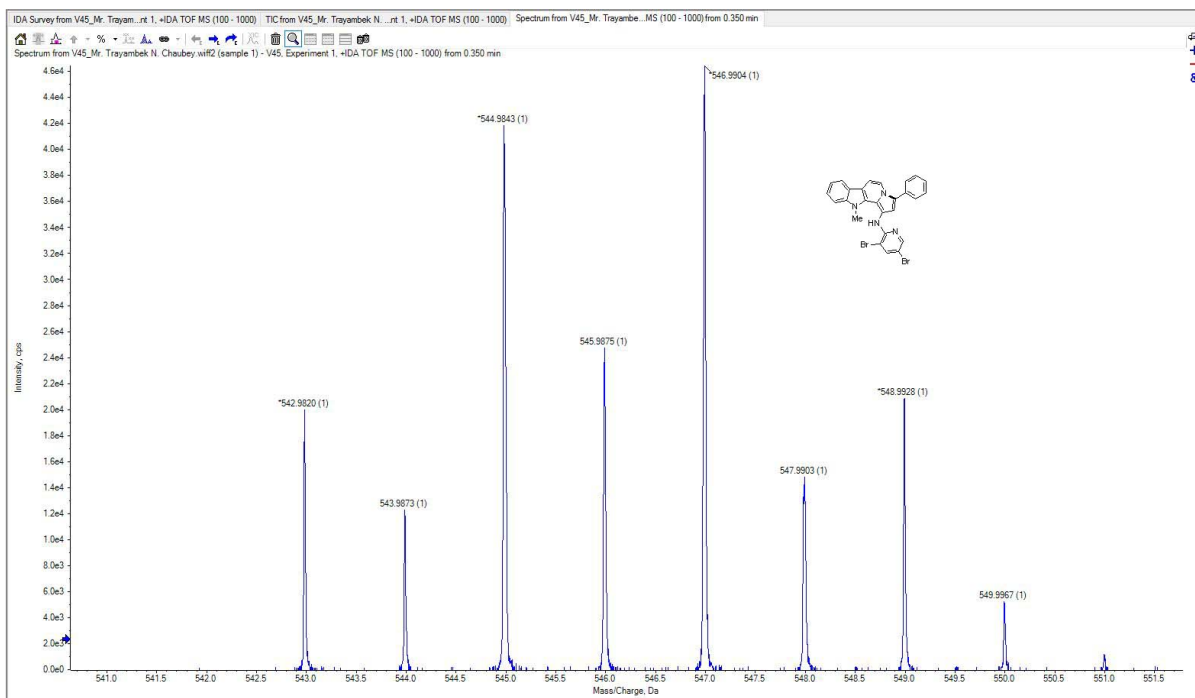


Figure S69. HRMS spectrum of **1aH**.

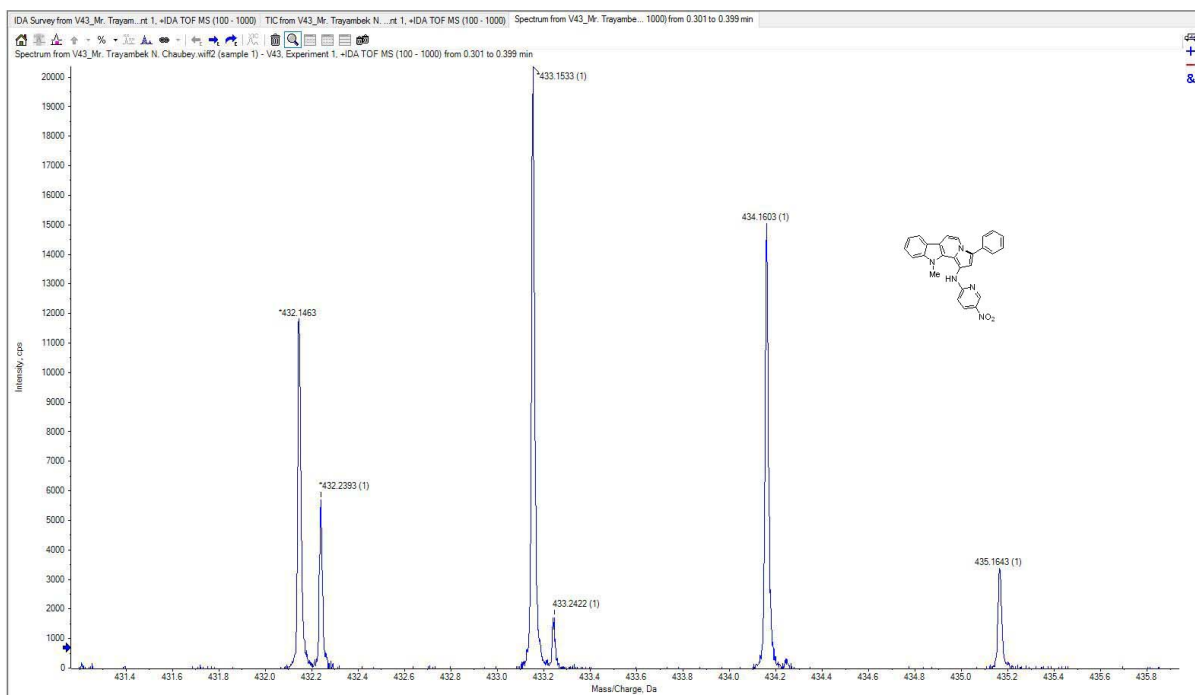


Figure S70. HRMS spectrum of **1aI**.

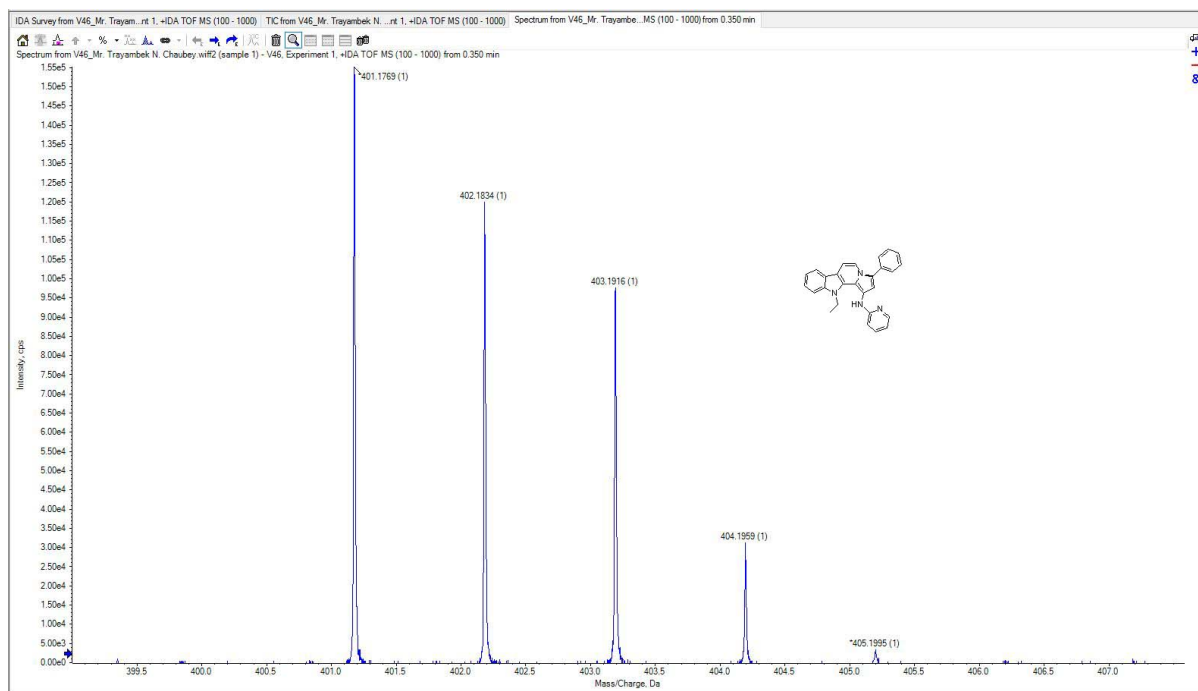


Figure S71. HRMS spectrum of 2aA.

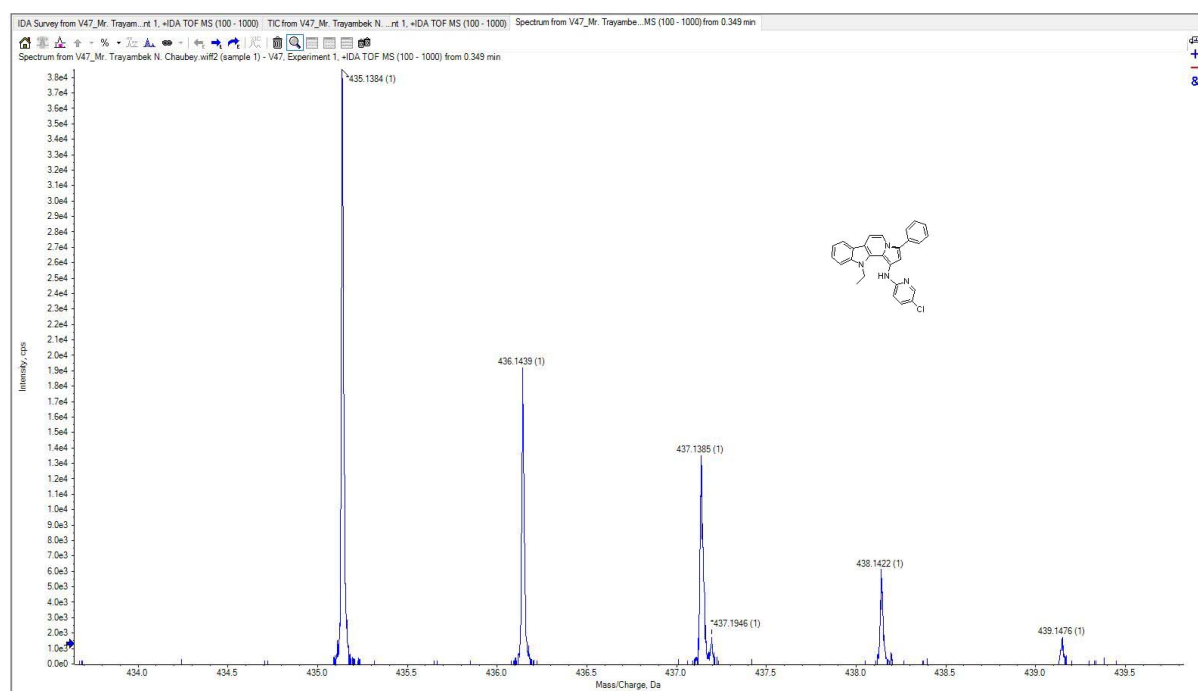


Figure S72. HRMS spectrum of 2aC.

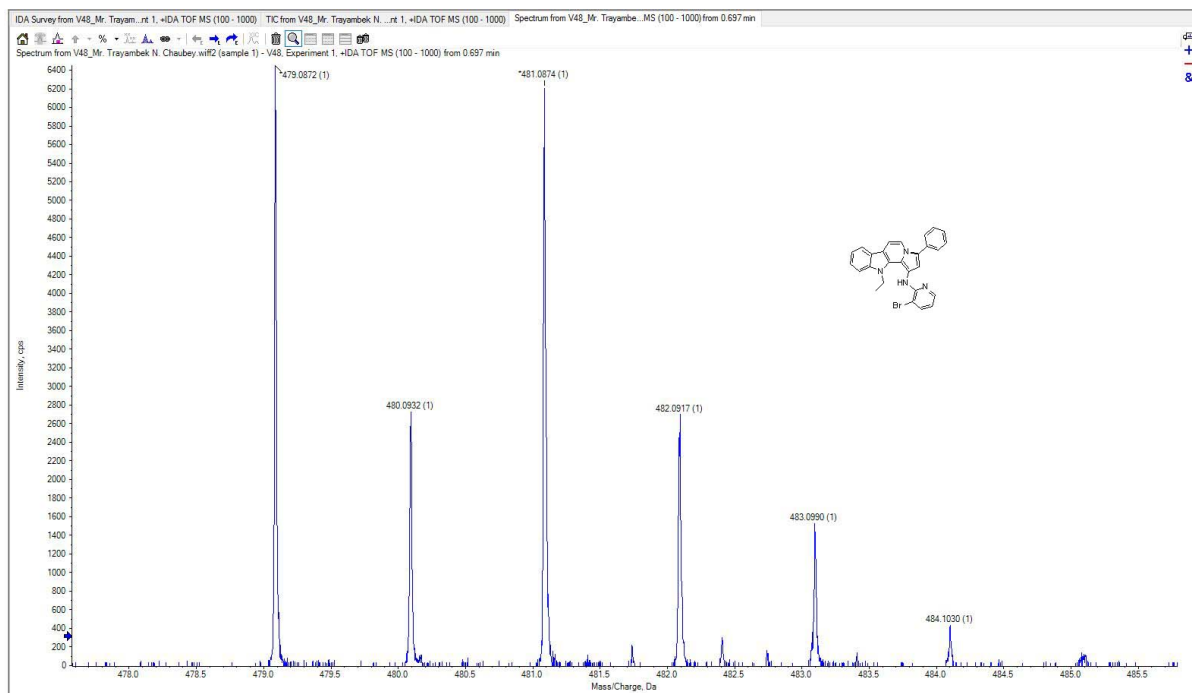


Figure S73. HRMS spectrum of **2aD**.

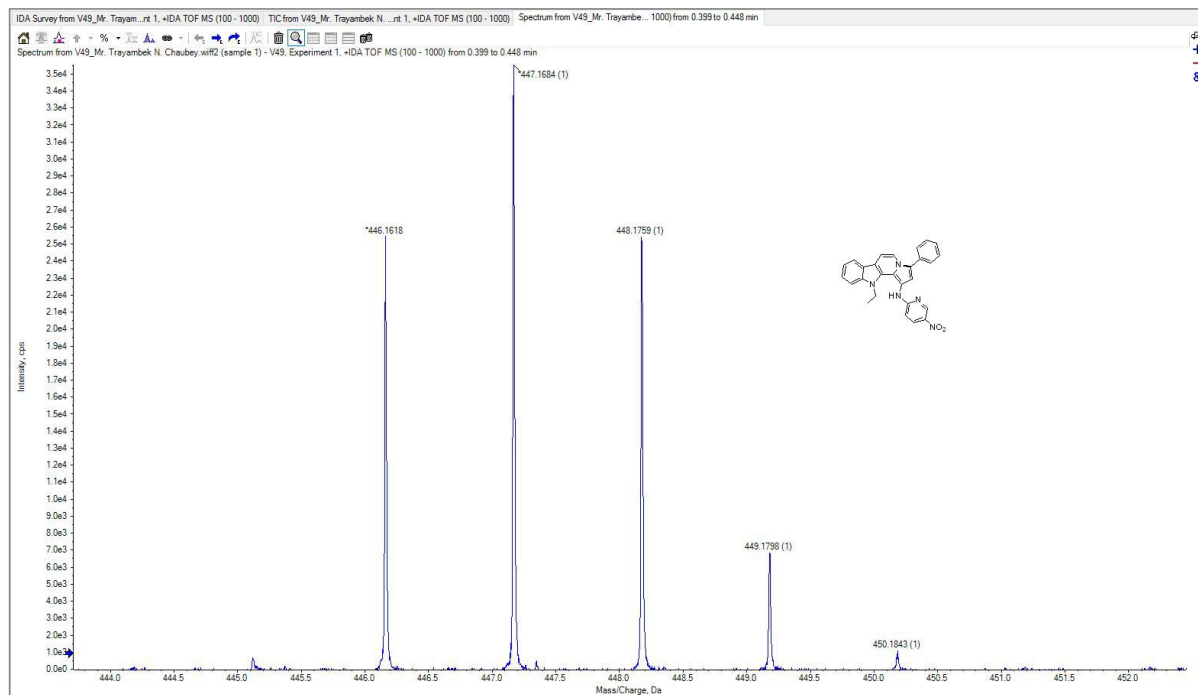


Figure S74. HRMS spectrum of **2aI**.

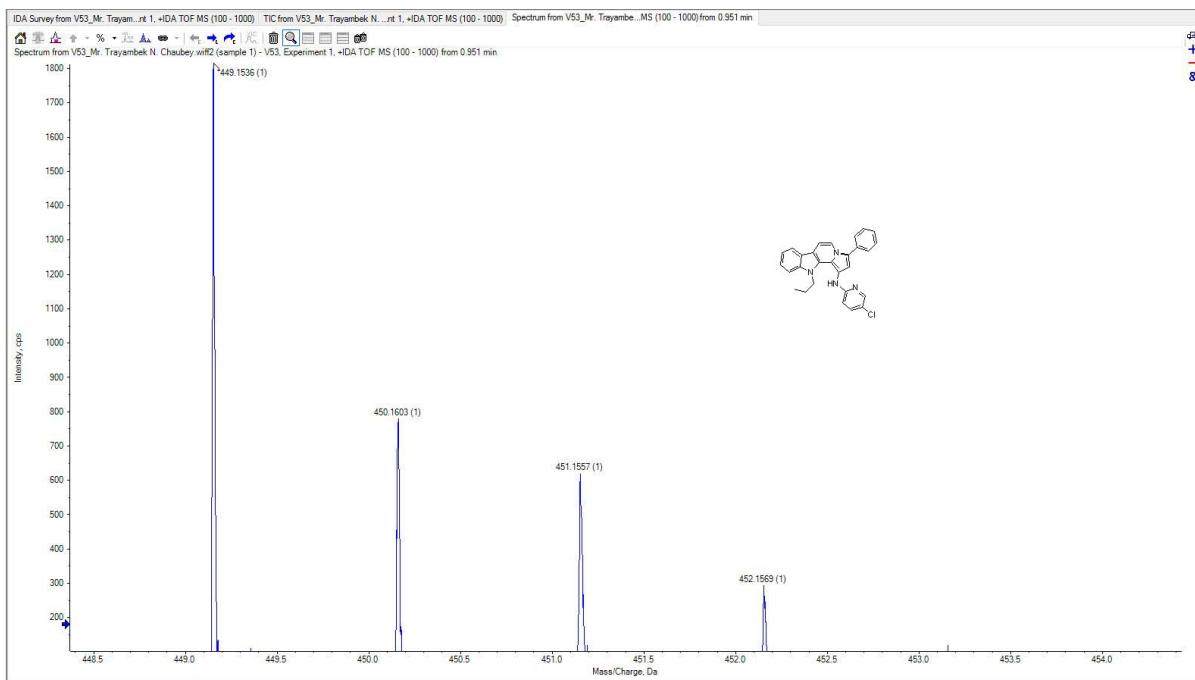


Figure S75. HRMS spectrum of **3aC**.

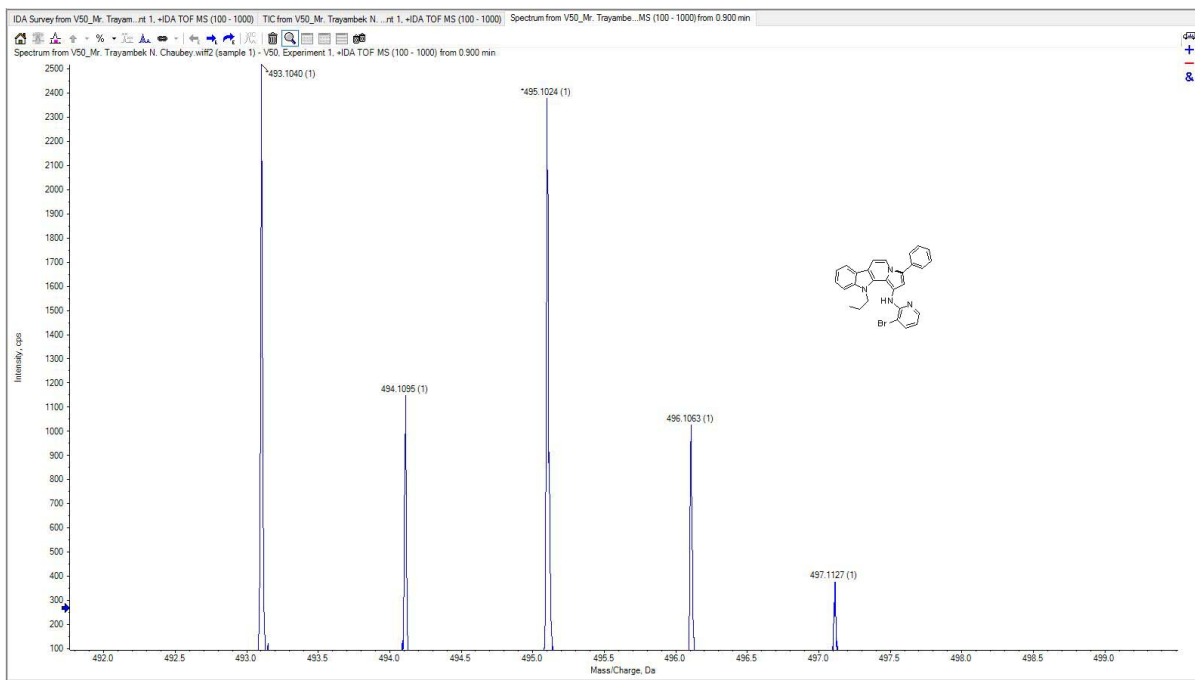


Figure S76. HRMS spectrum of **3aD**.

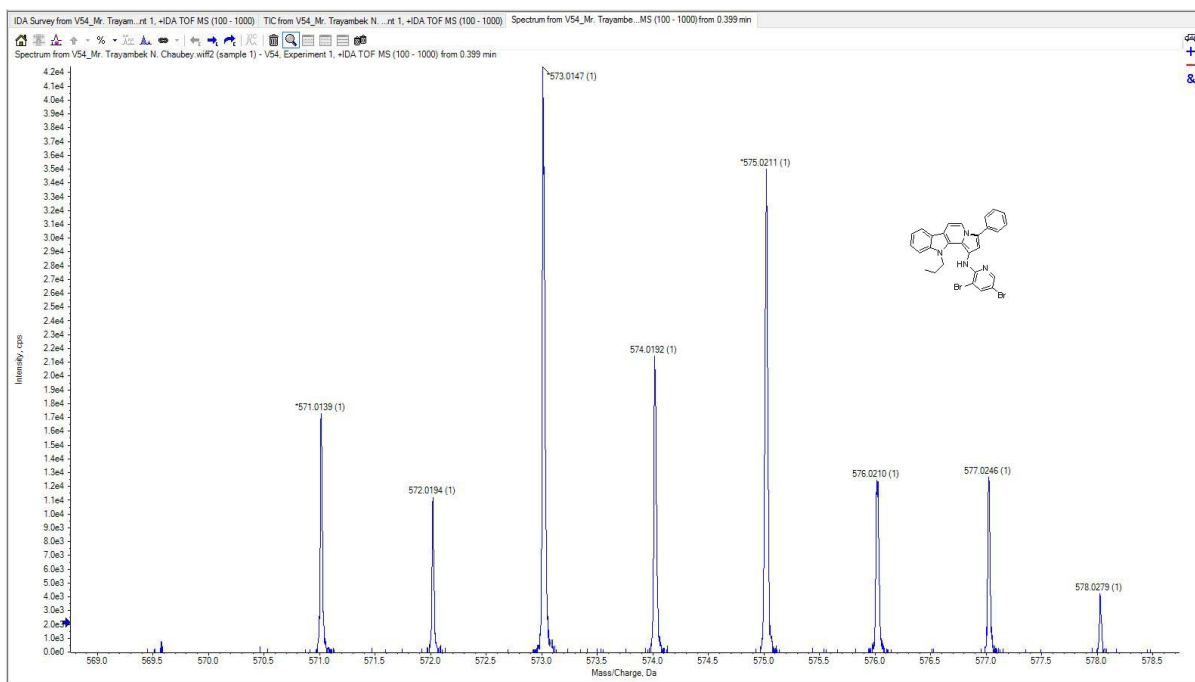


Figure S77. HRMS spectrum of **3aH**.

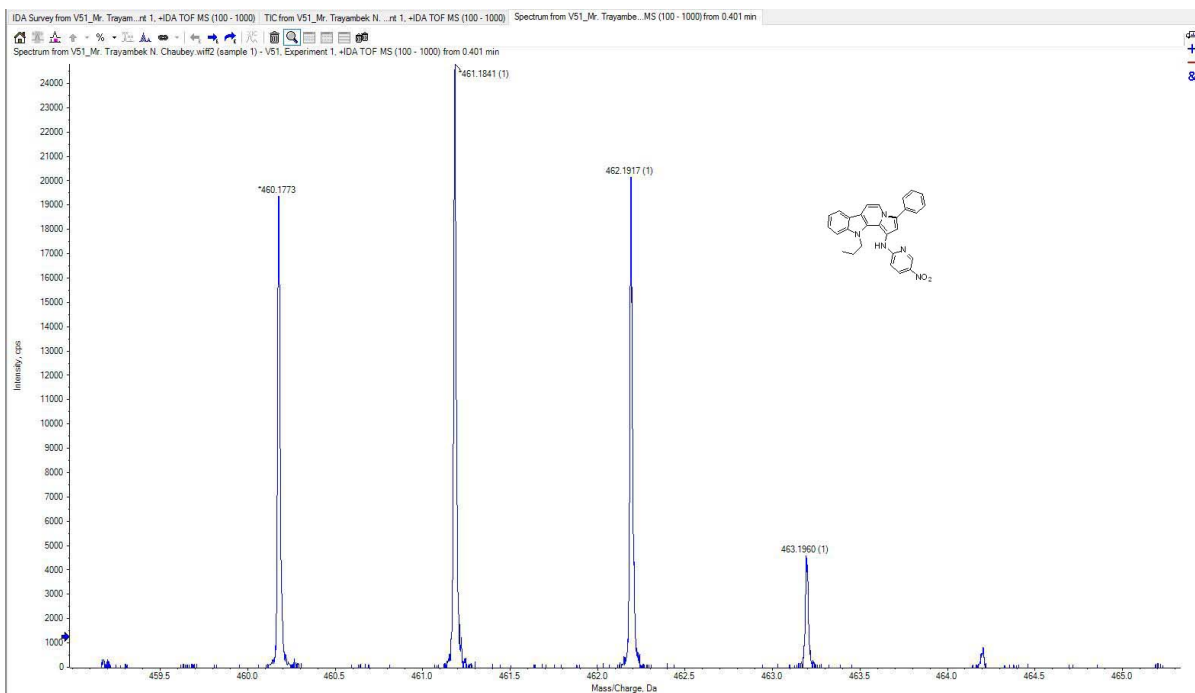


Figure S78. HRMS spectrum of **3aI**.

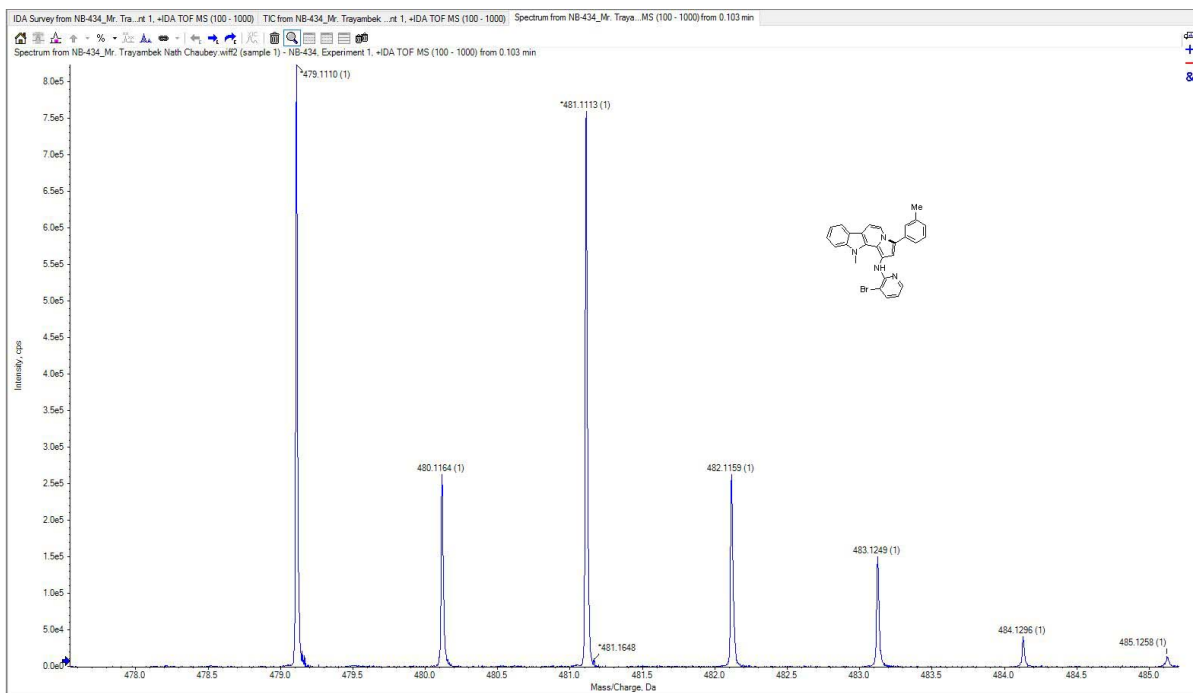


Figure S79. HRMS spectrum of **1bD**.

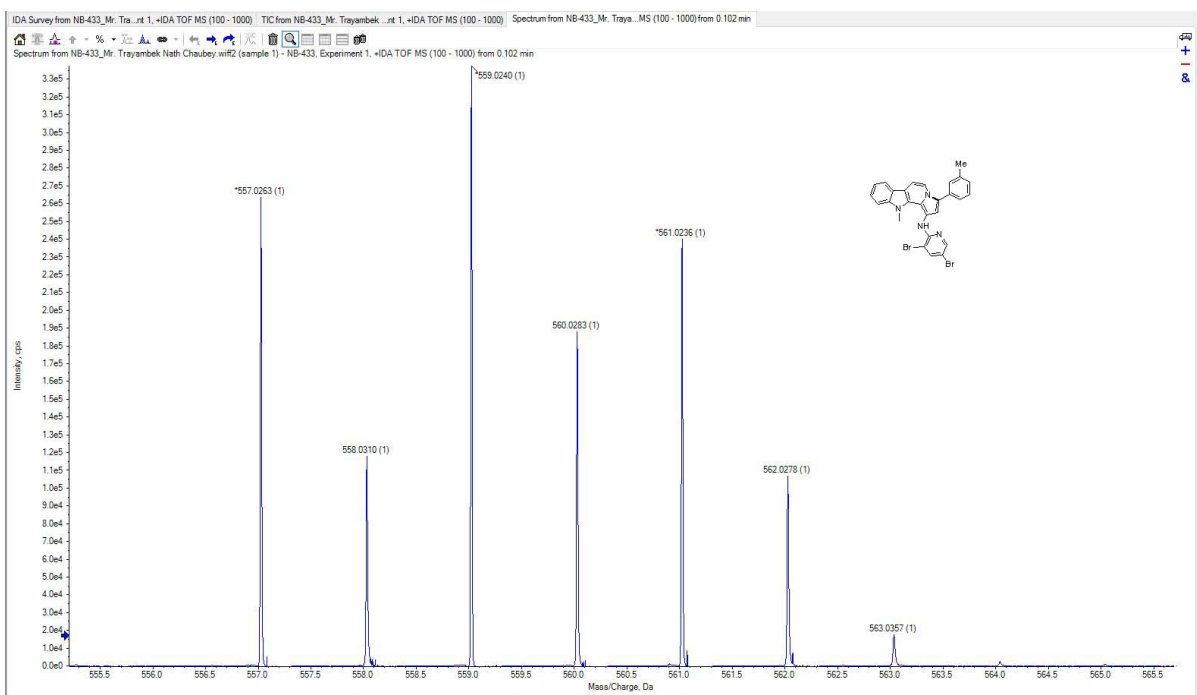


Figure S80. HRMS spectrum of **1bH**.

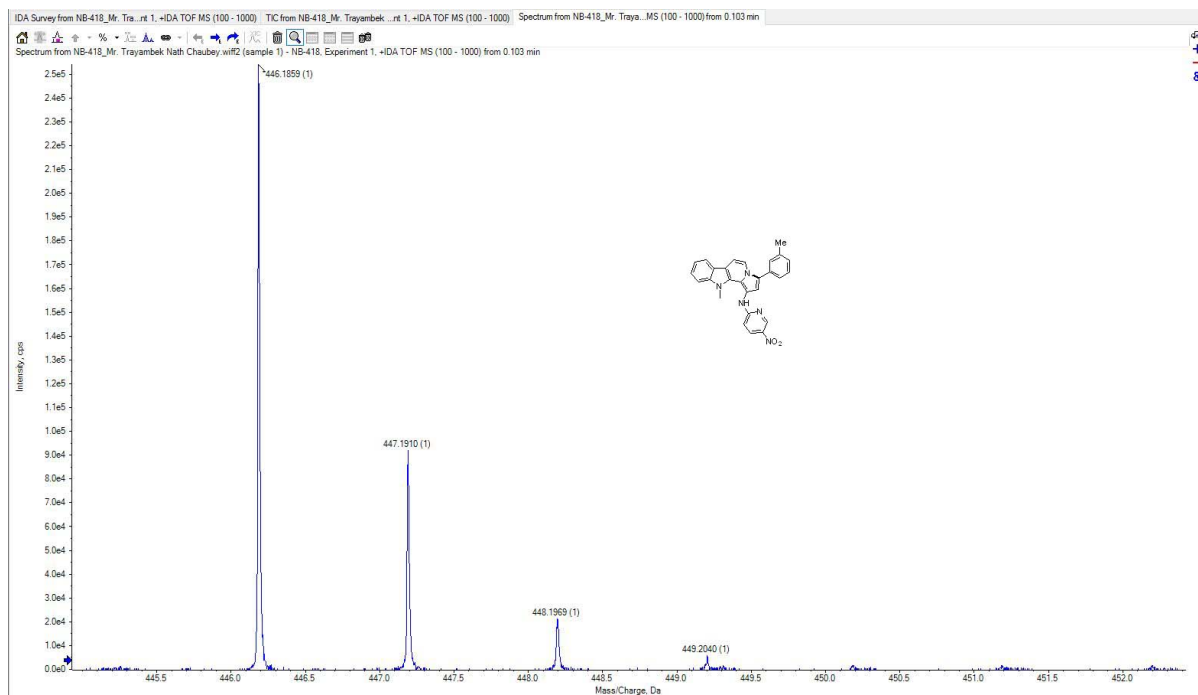


Figure S81. HRMS spectrum of **1b**.

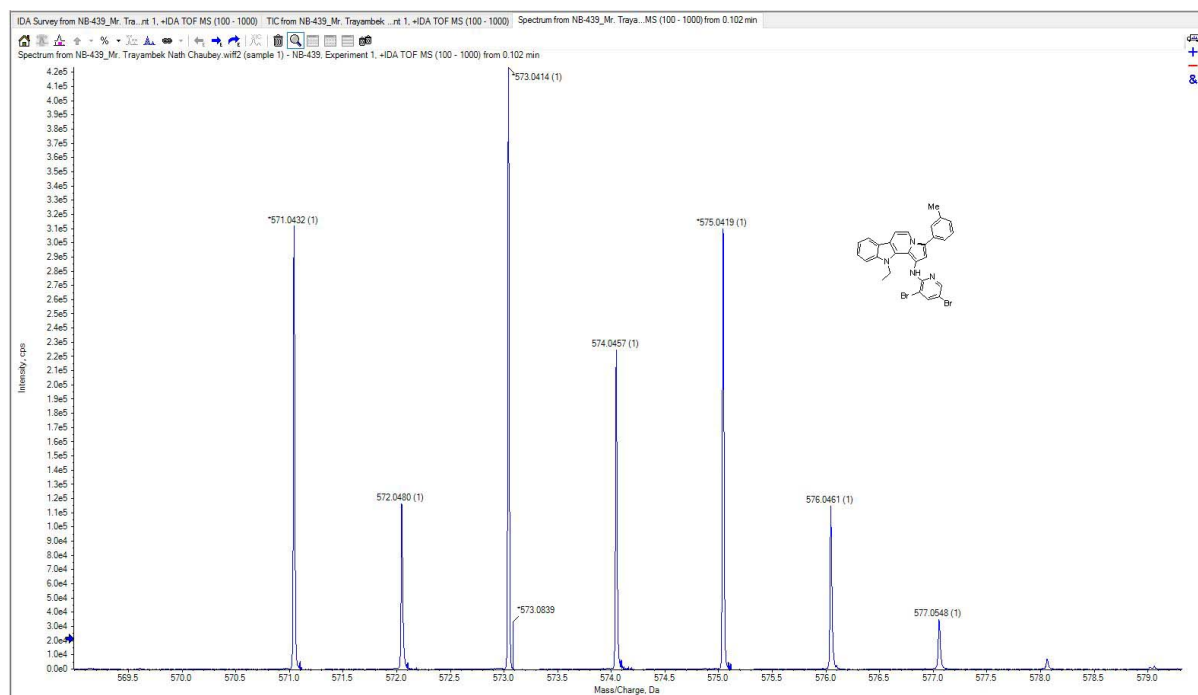


Figure S82. HRMS spectrum of **2bH**.

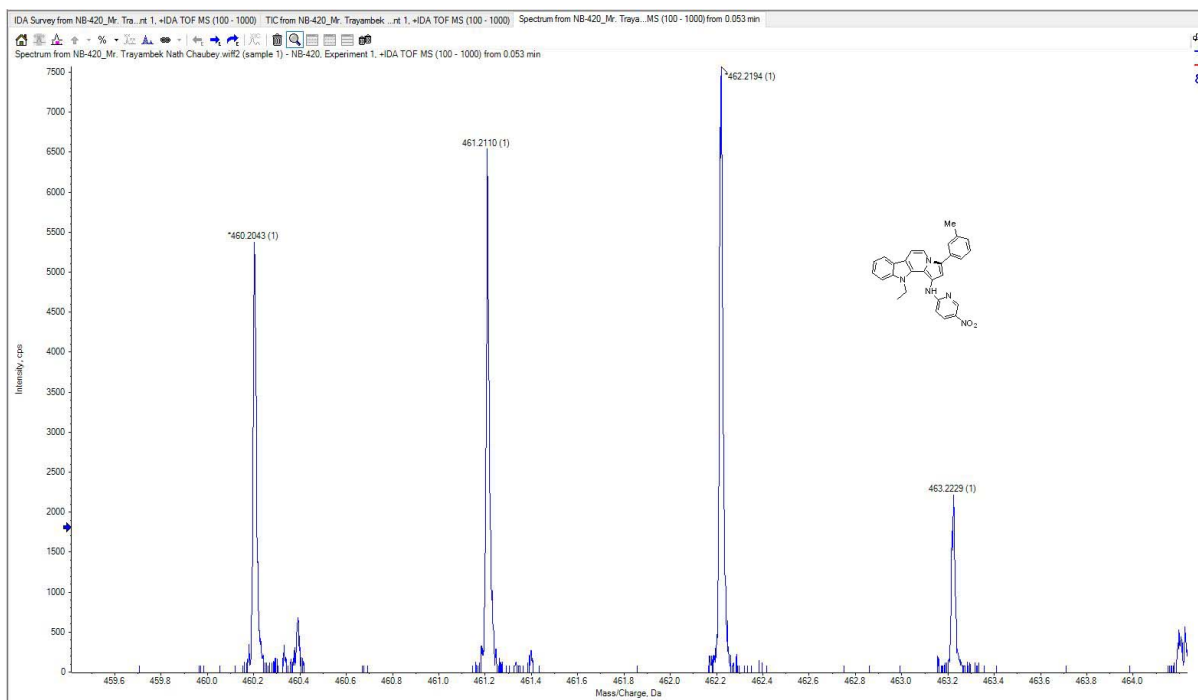


Figure S83. HRMS spectrum of **2bI**.

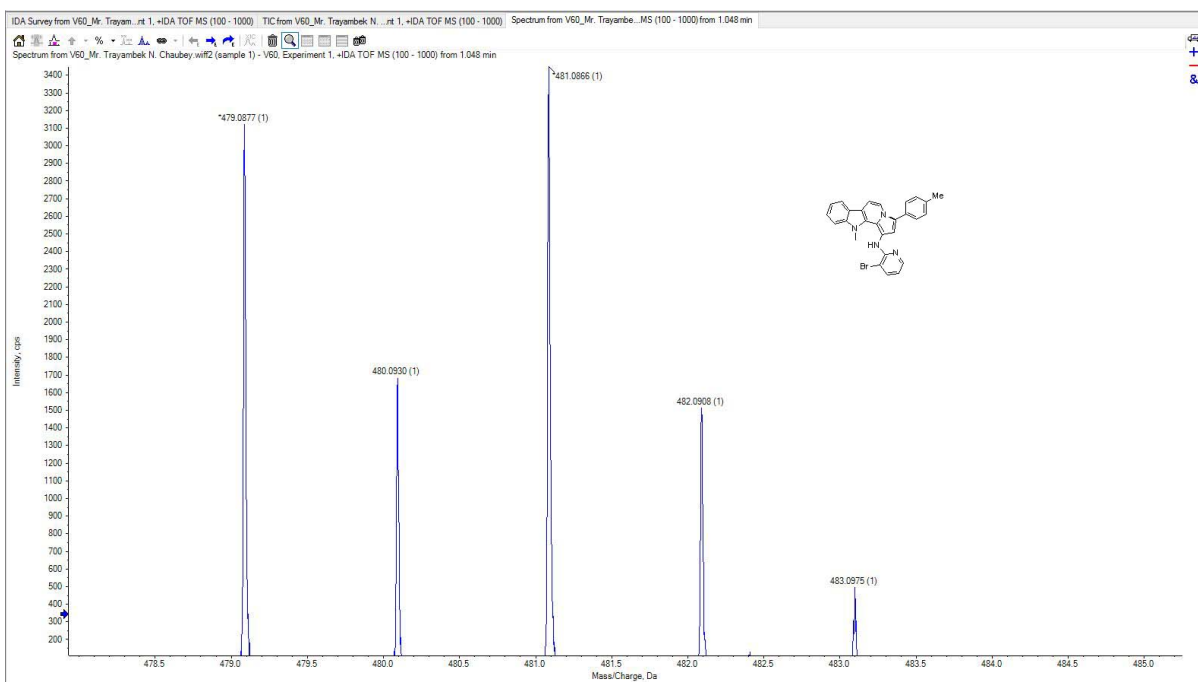


Figure S84. HRMS spectrum of **1cD**.

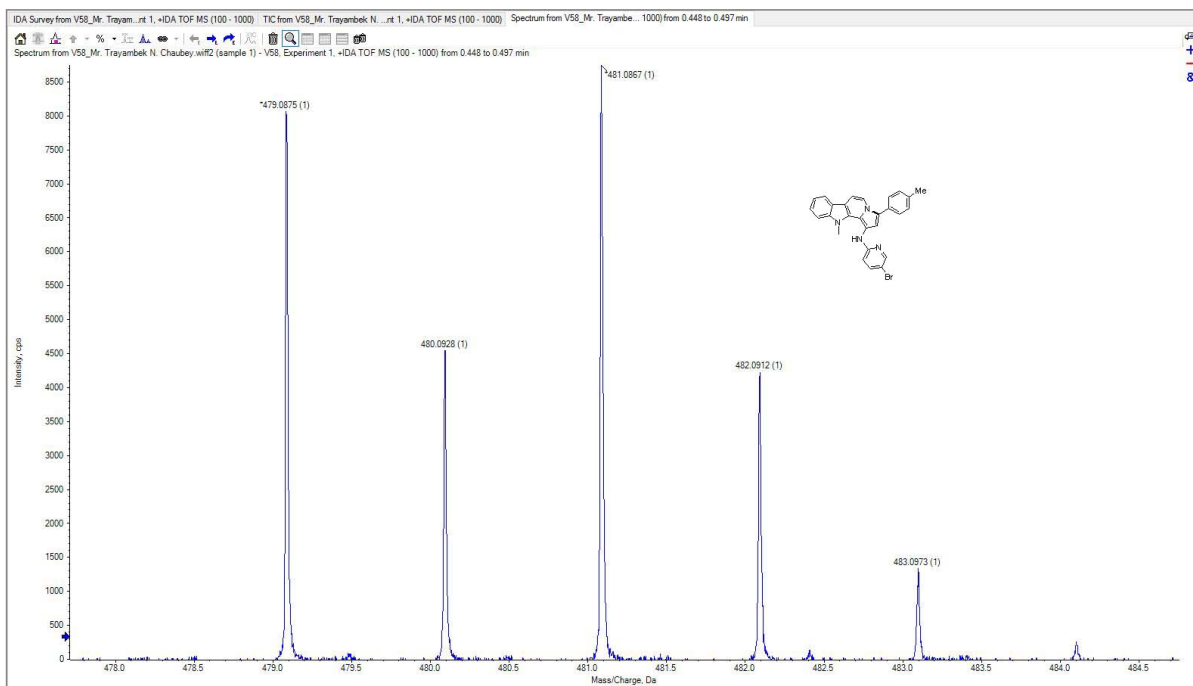


Figure S85. HRMS spectrum of 1cE.

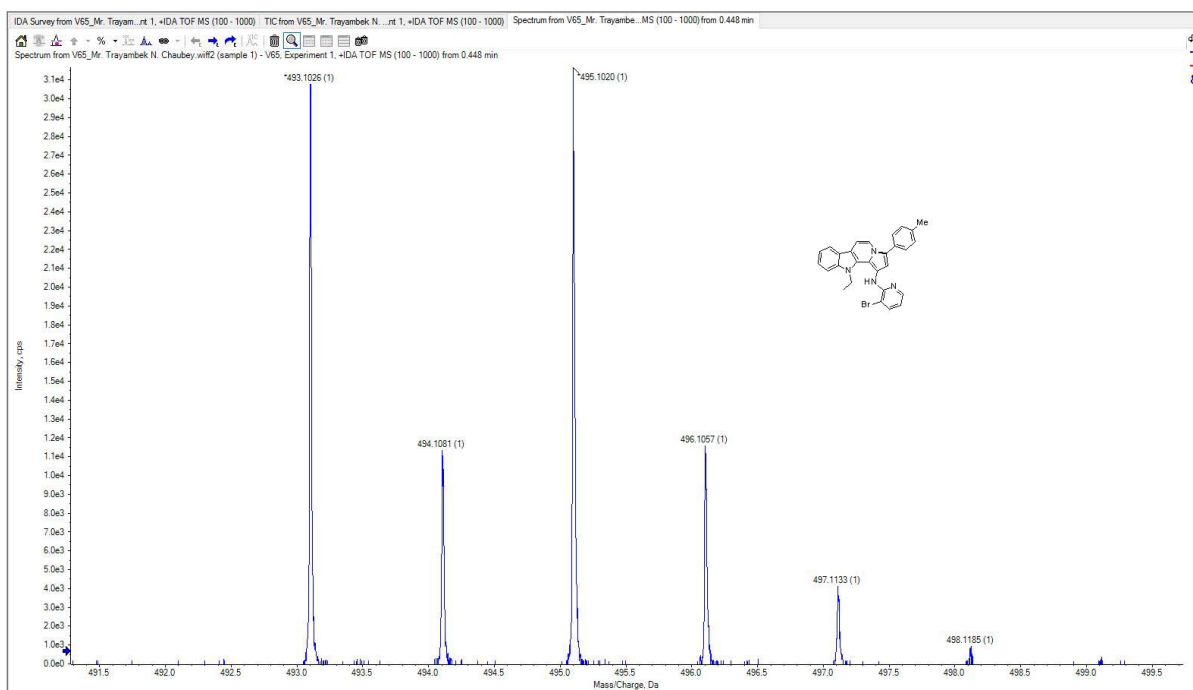


Figure S86. HRMS spectrum of 2cD.

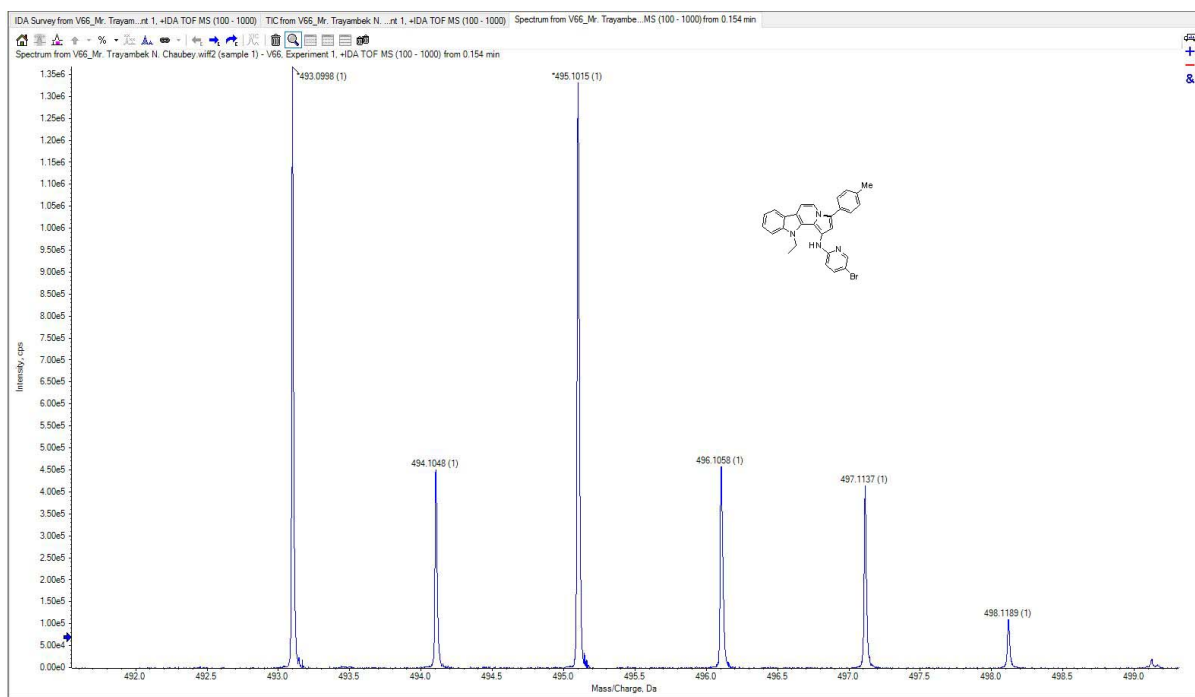


Figure S87. HRMS spectrum of **2cE**.

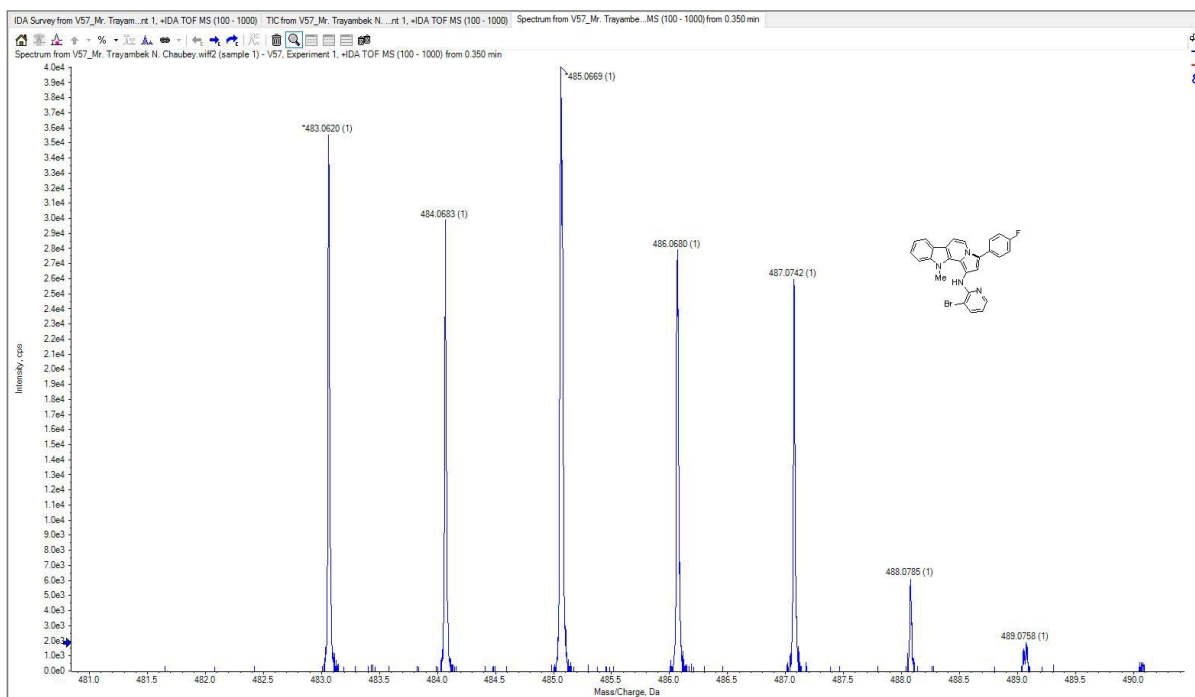


Figure S88. HRMS spectrum of **1dD**.

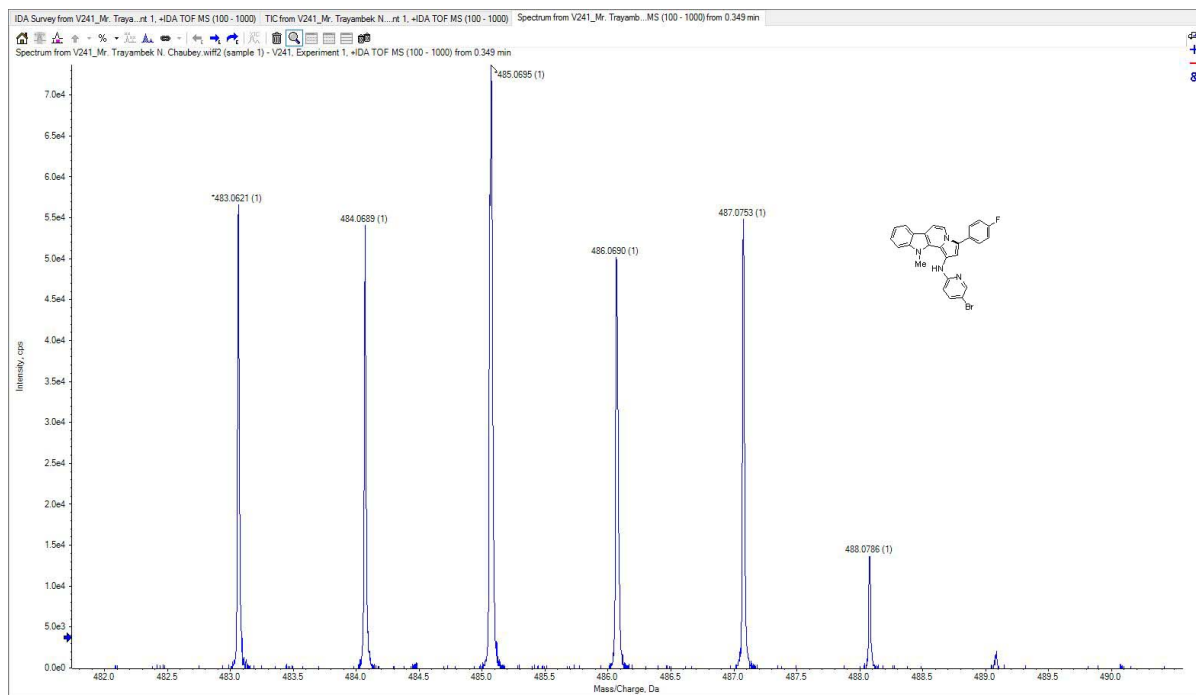


Figure S89. HRMS spectrum of **1dE**.