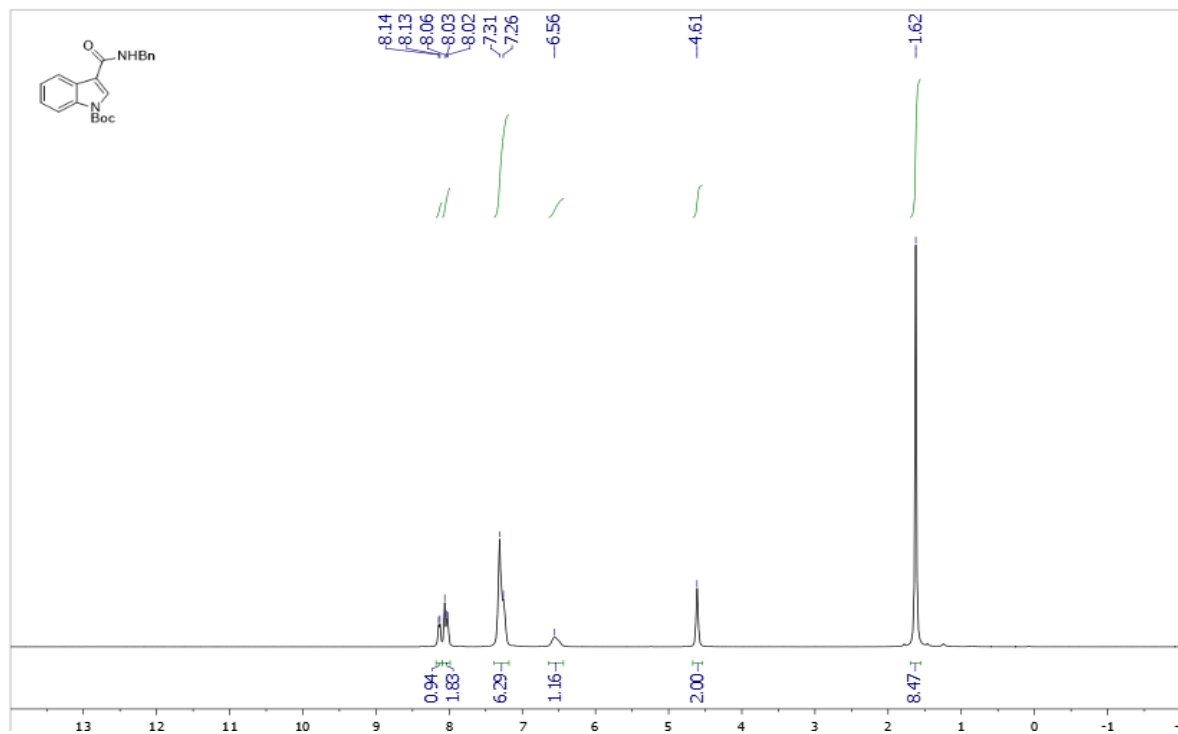
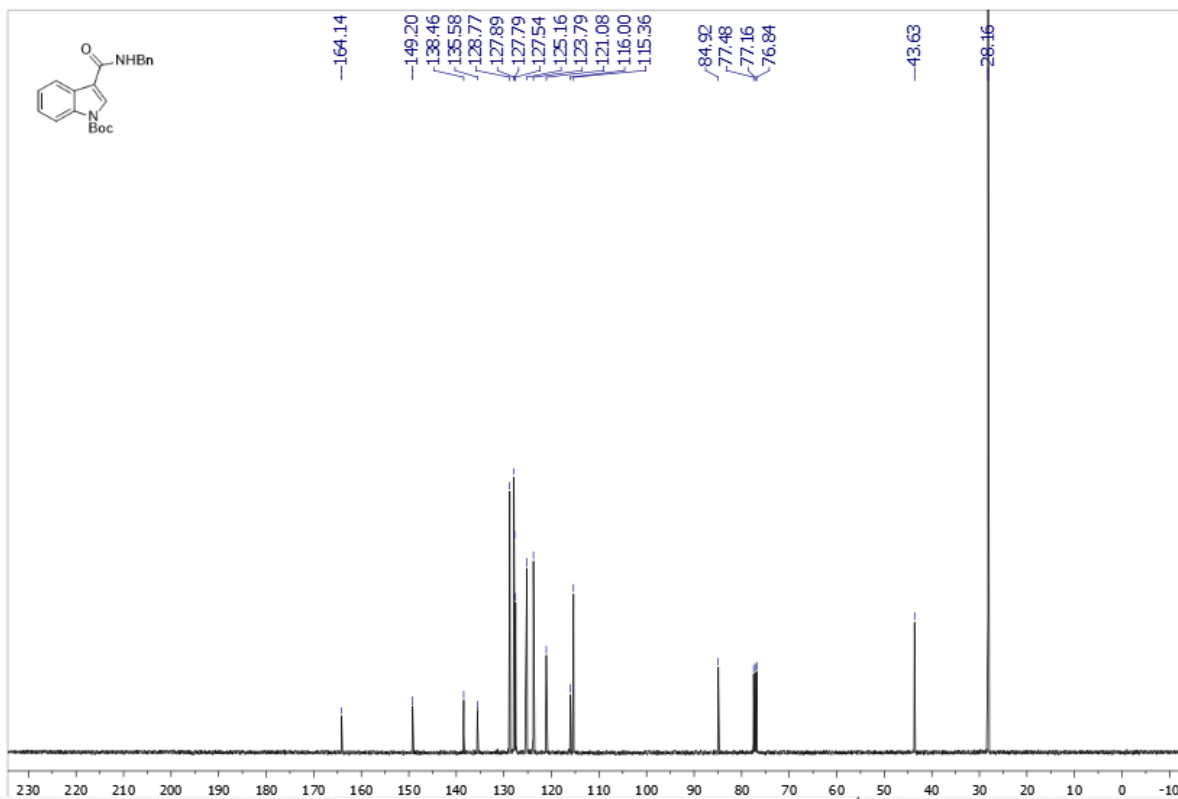


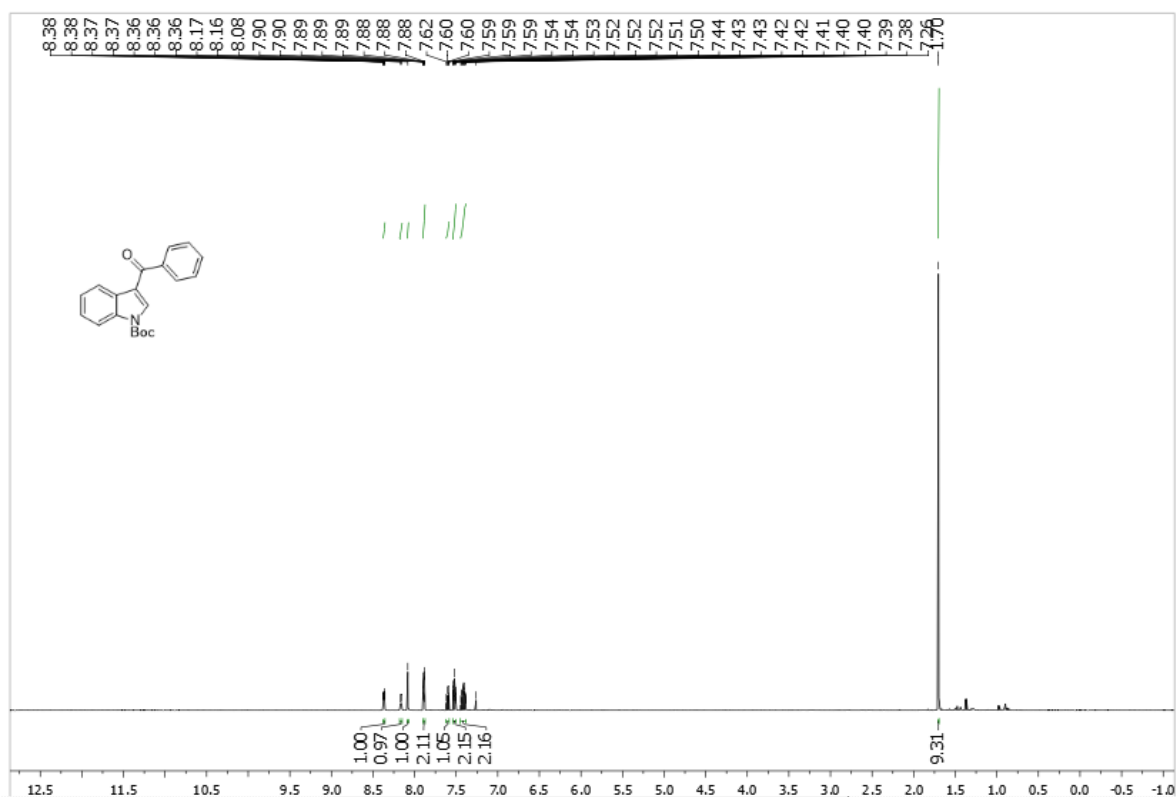
Supplementary Data 1: ^1H and ^{13}C NMR Spectra



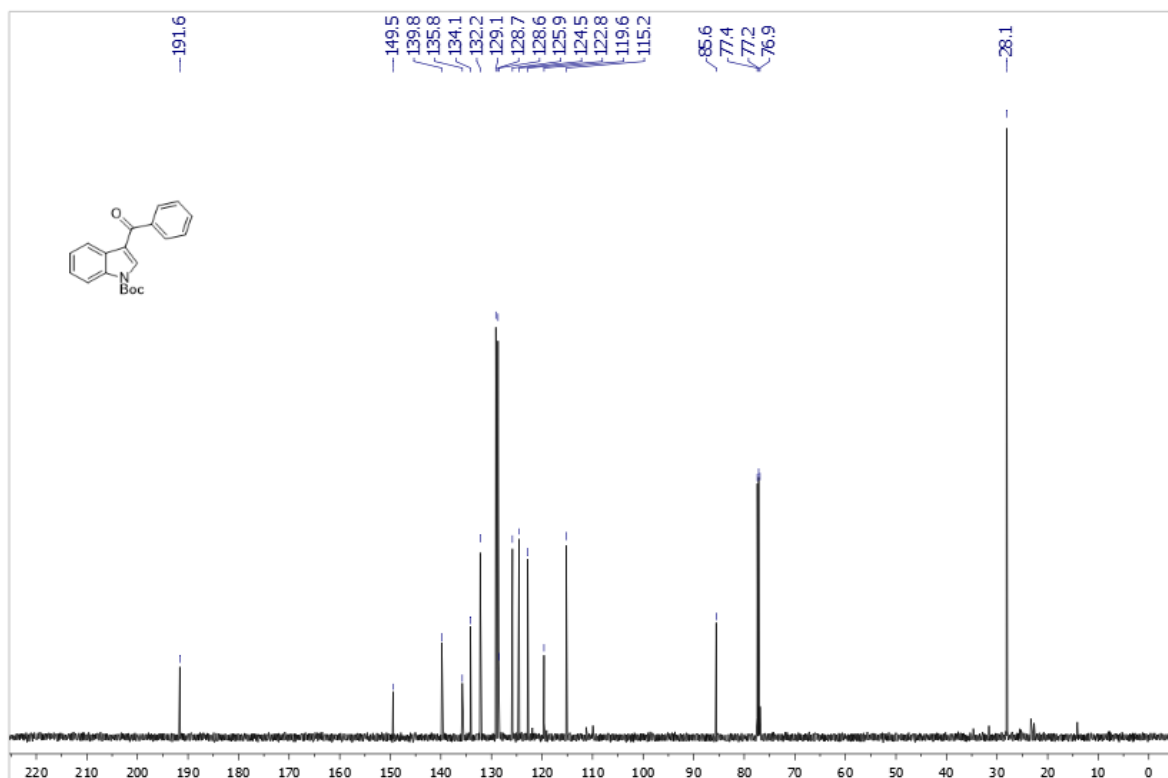
Supplementary Figure 3. ^1H NMR spectra of 1c



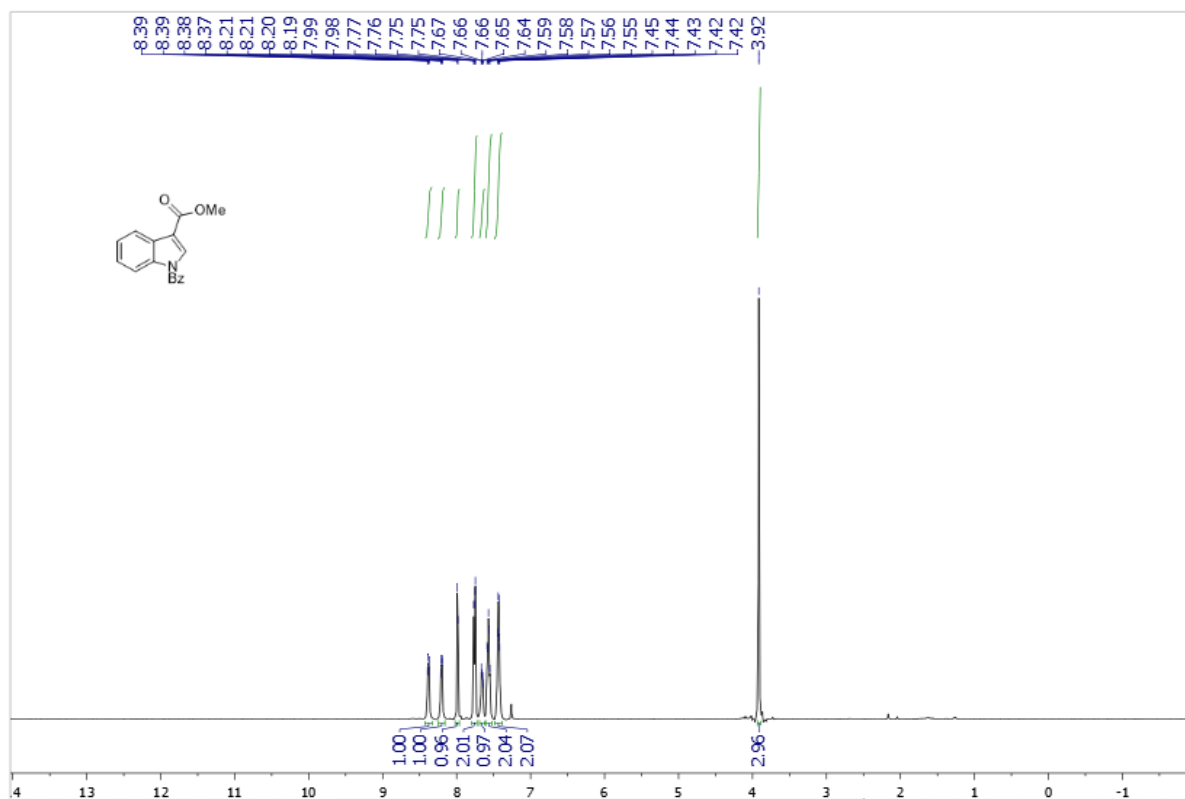
Supplementary Figure 4. ^{13}C NMR spectra of **1c**



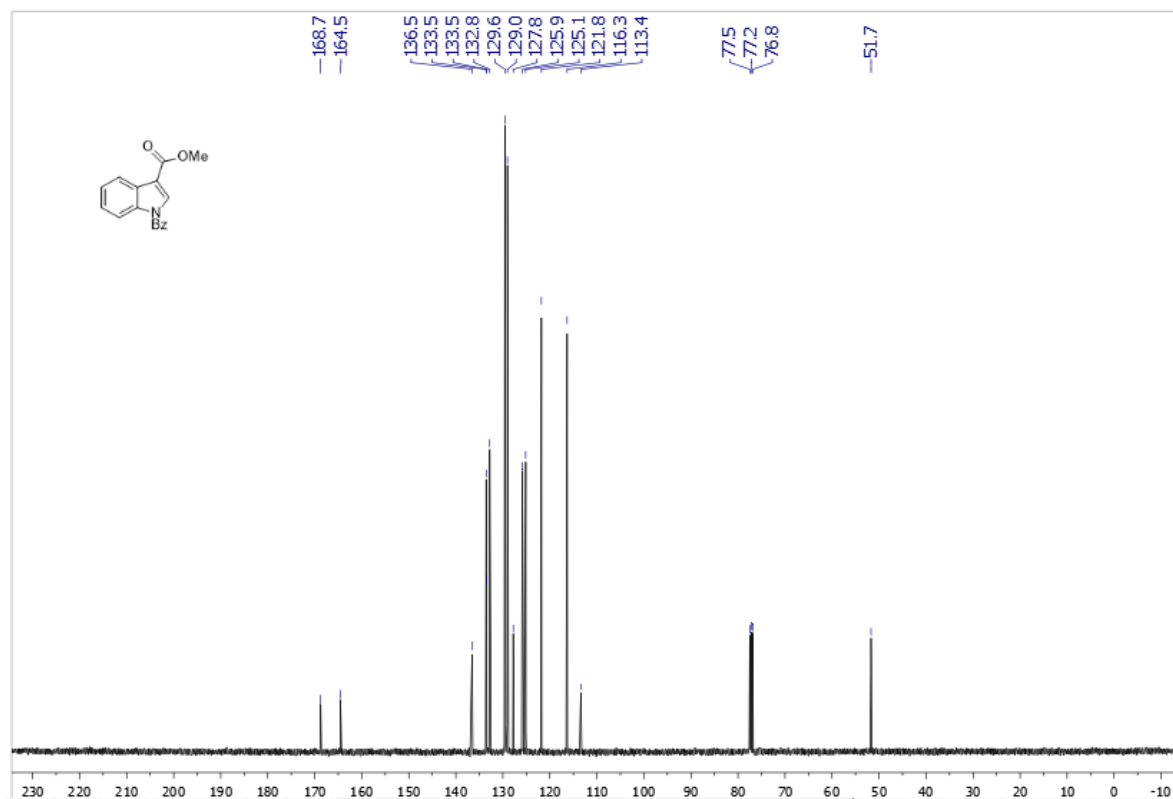
Supplementary Figure 5. ^1H NMR spectra of **1e**



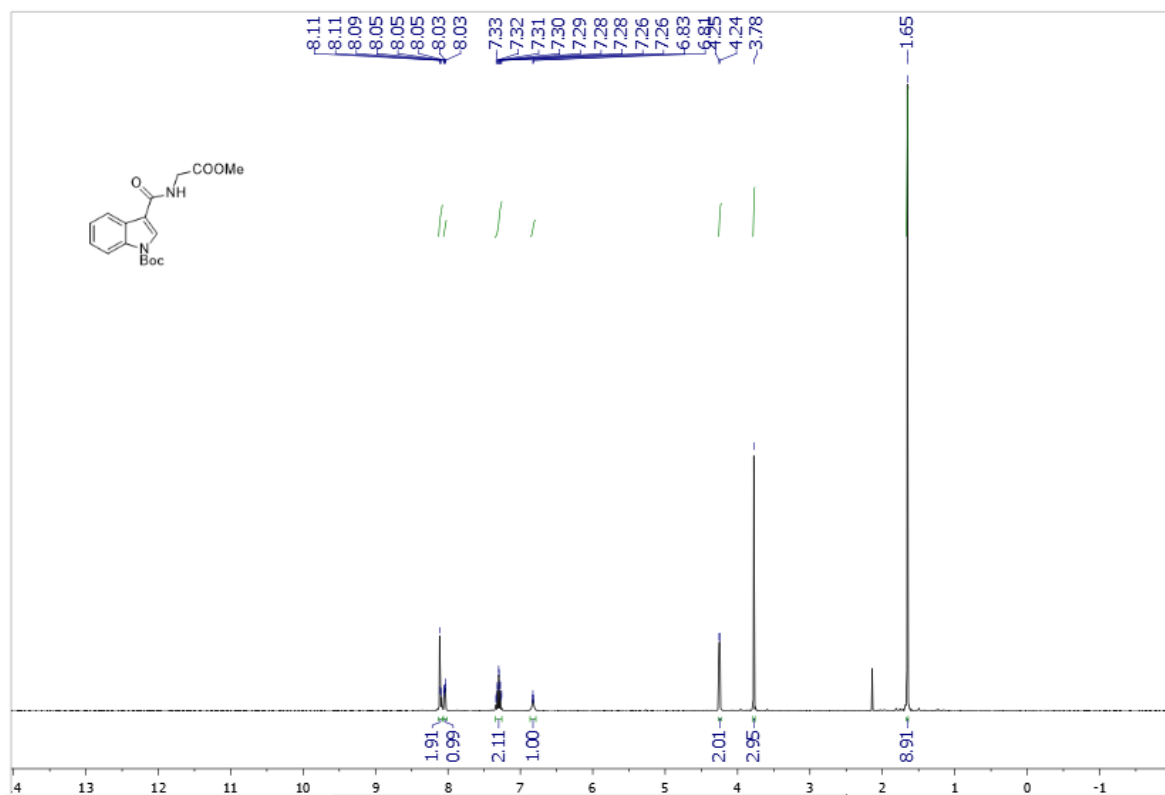
Supplementary Figure 6. ^{13}C NMR spectra of **1e**



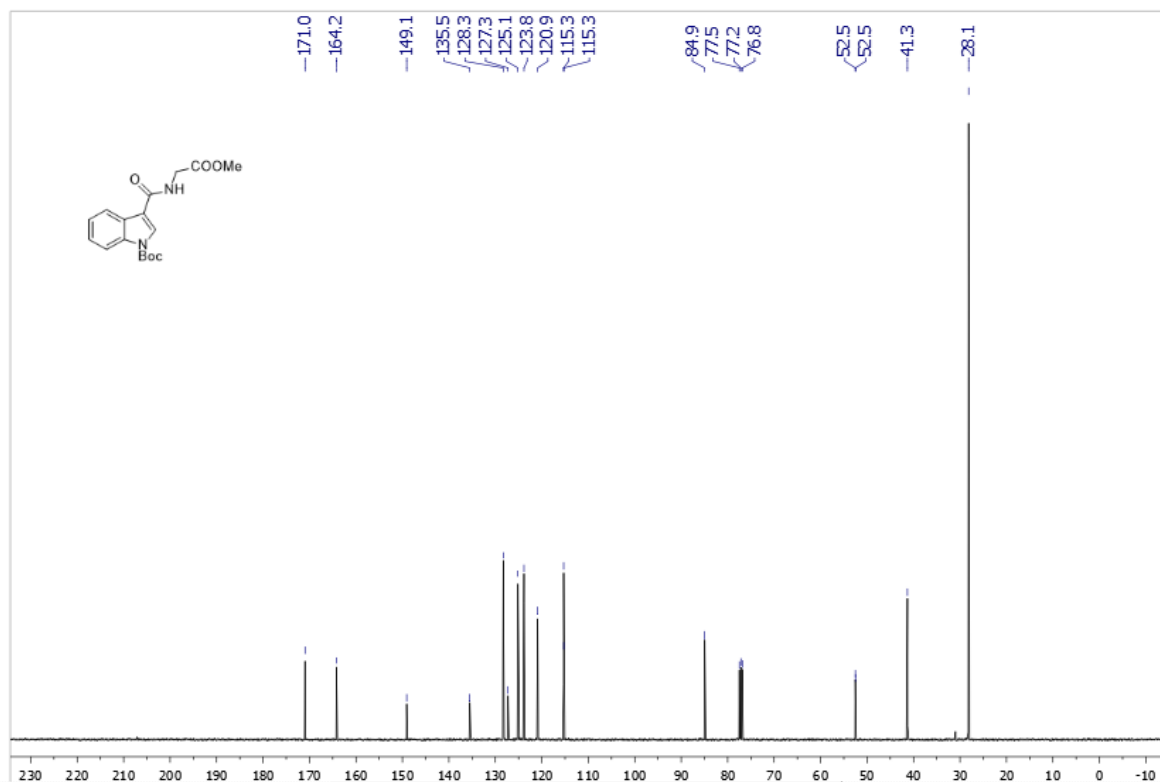
Supplementary Figure 7. ^1H NMR spectra of **1i**



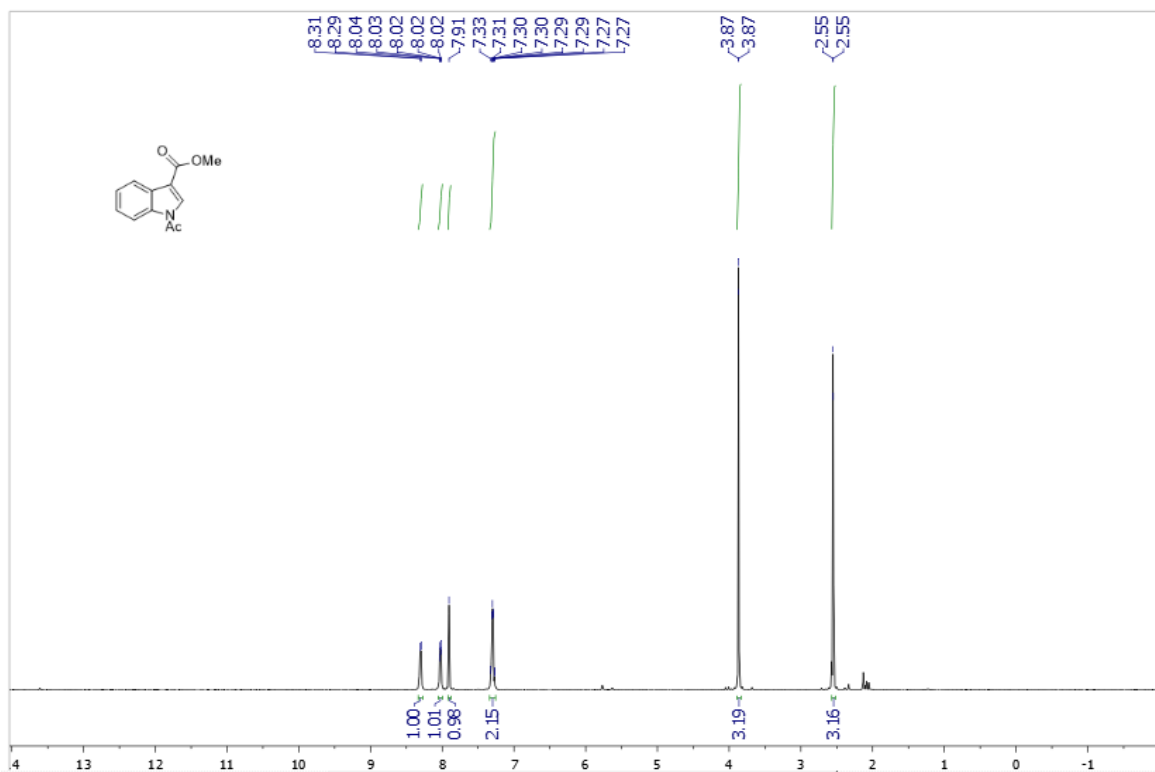
Supplementary Figure 8. ^{13}C NMR spectra of **1i**



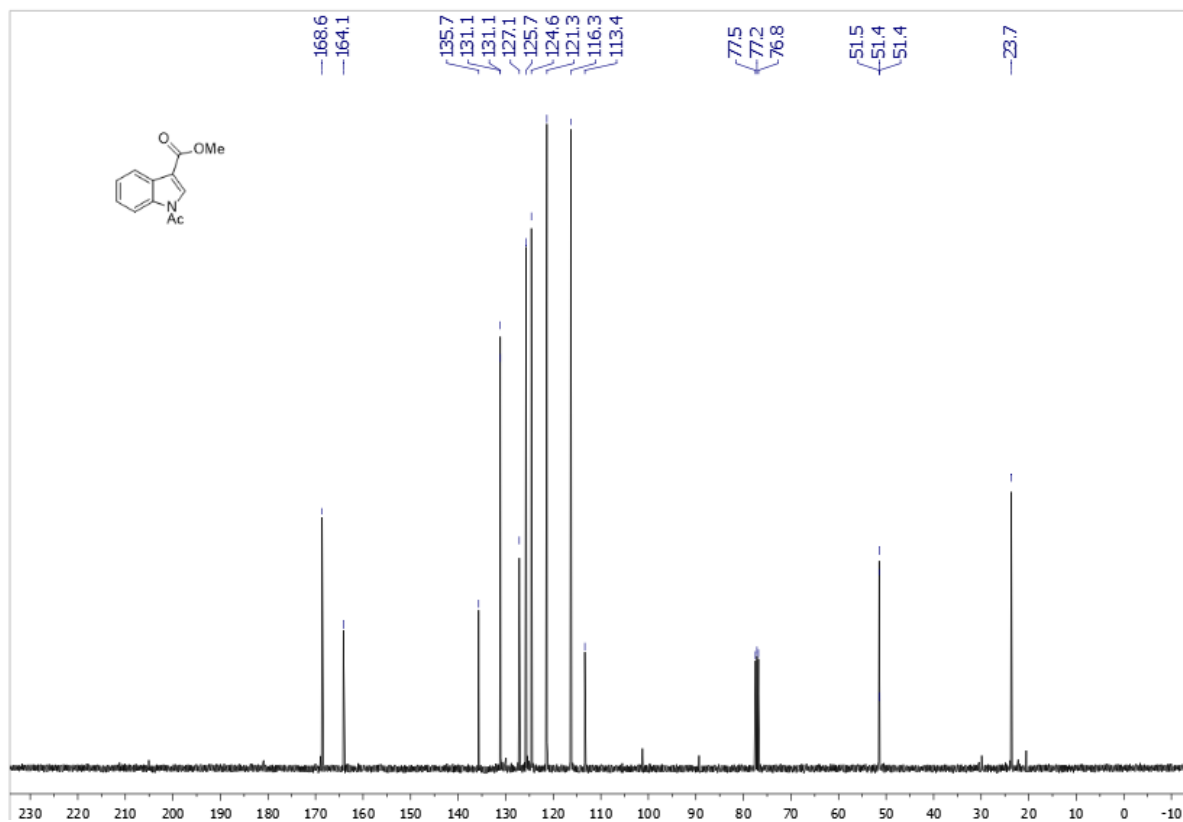
Supplementary Figure 9. ^1H NMR spectra of **1g**



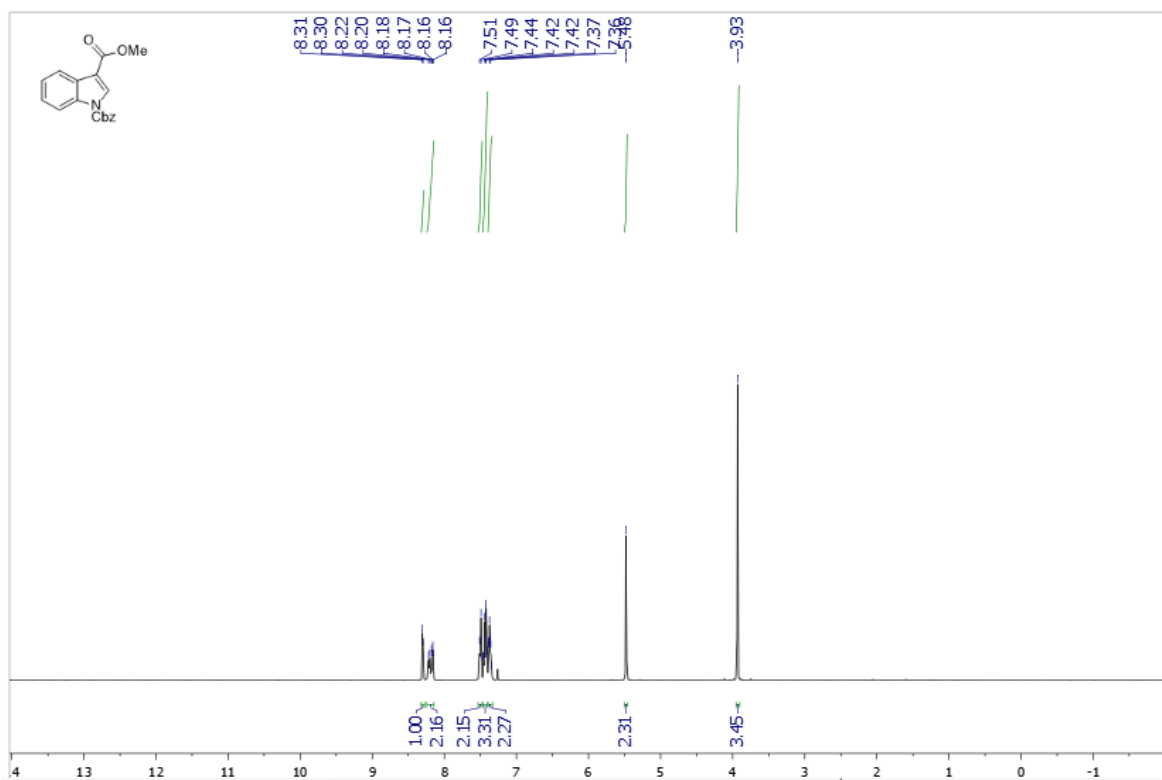
Supplementary Figure 10. ^{13}C NMR spectra of **1g**



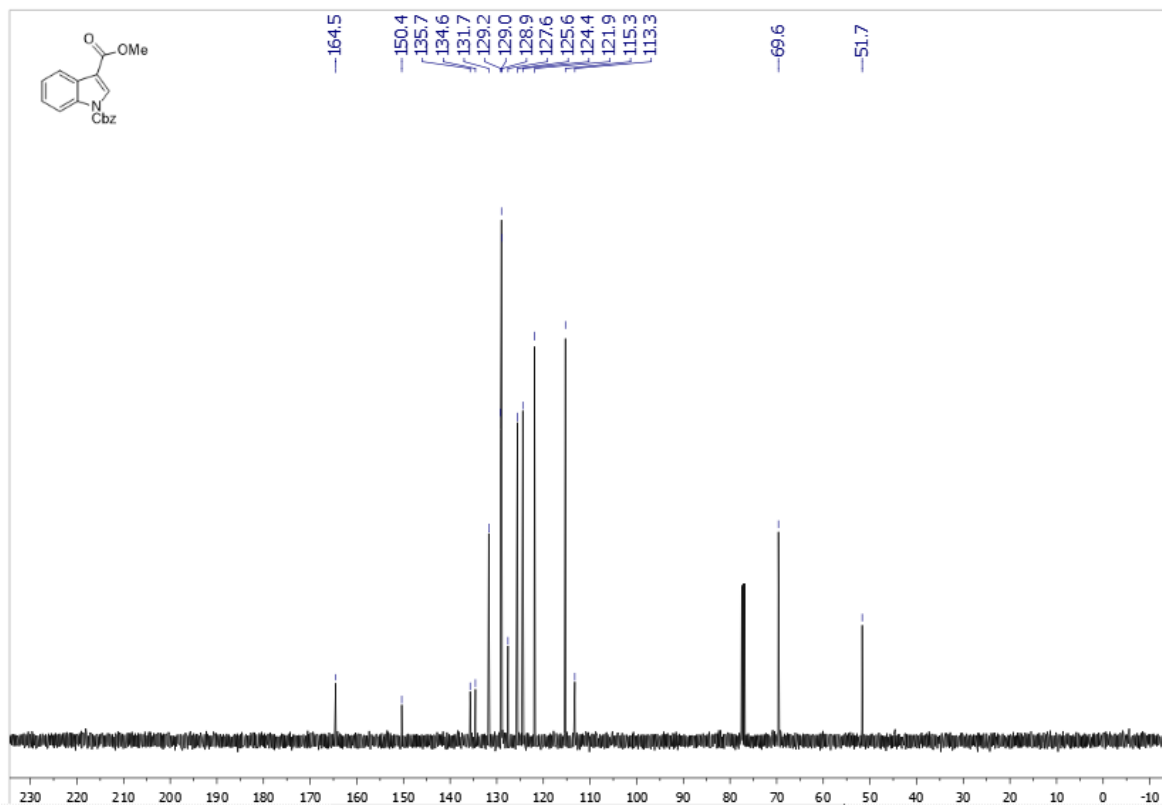
Supplementary Figure 11. ^1H NMR spectra of **1j**



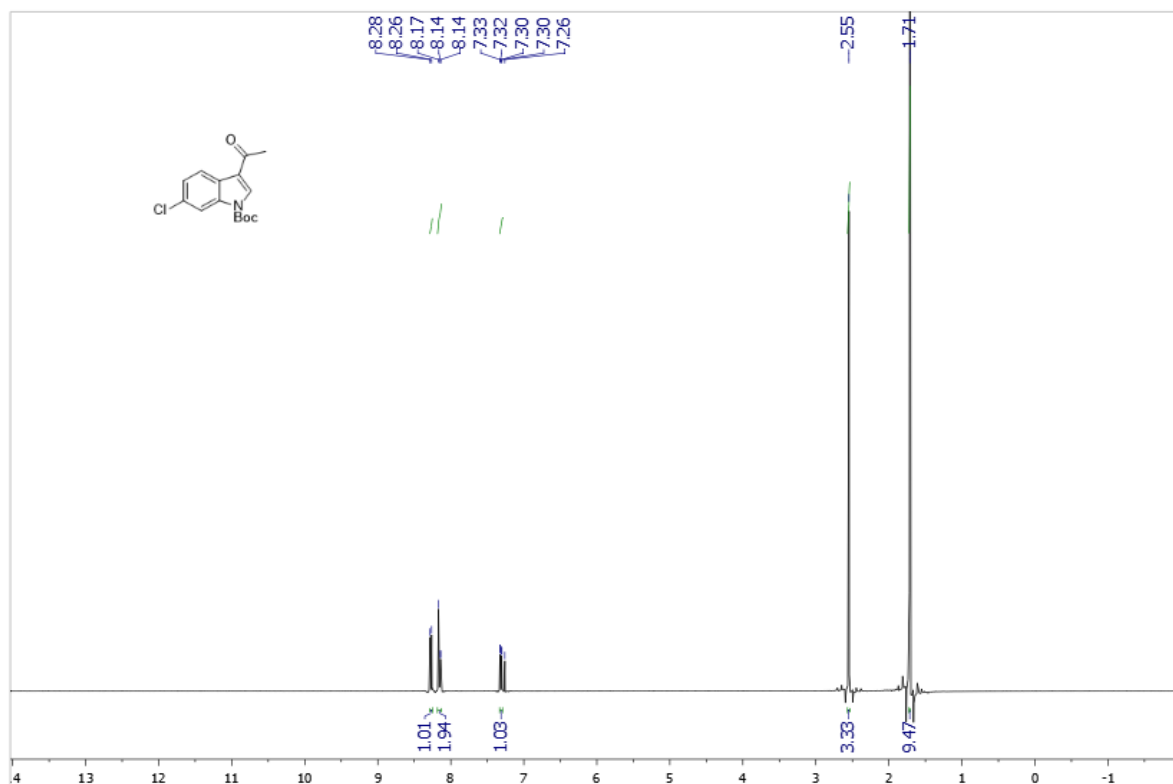
Supplementary Figure 12. ^{13}C NMR spectra of **1j**



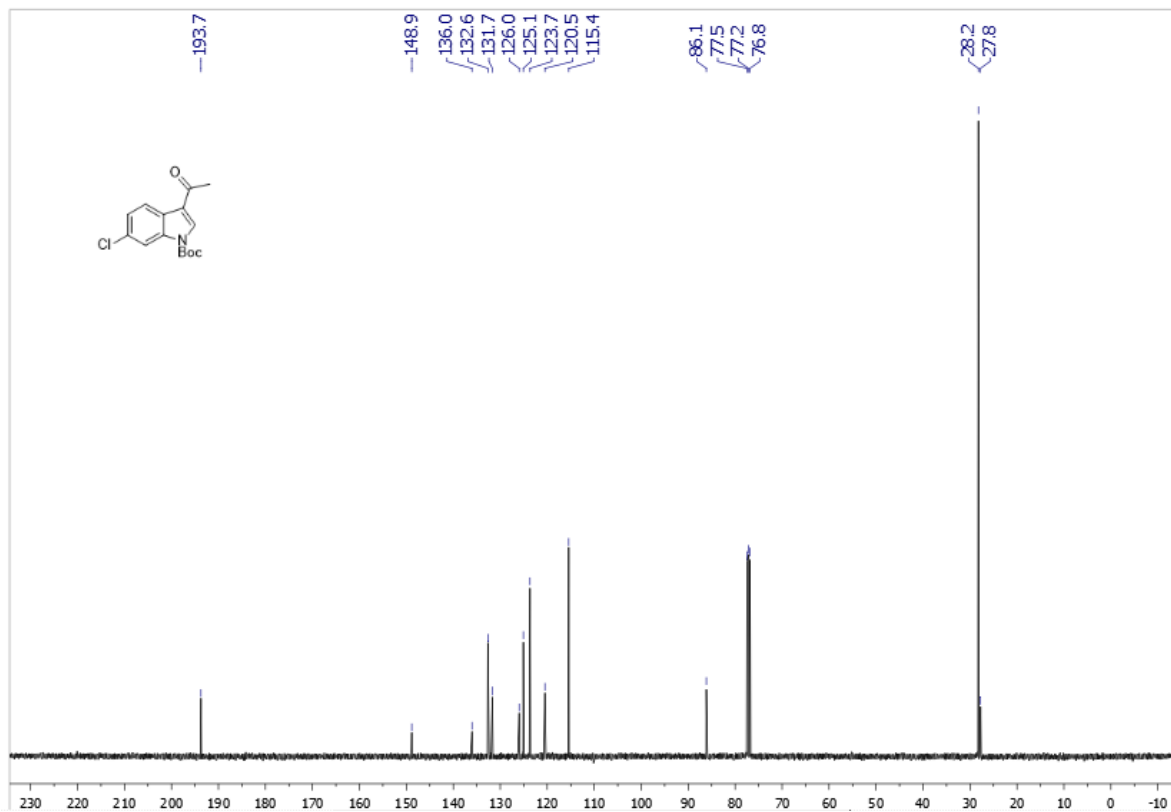
Supplementary Figure 13. ^1H NMR spectra of **1k**



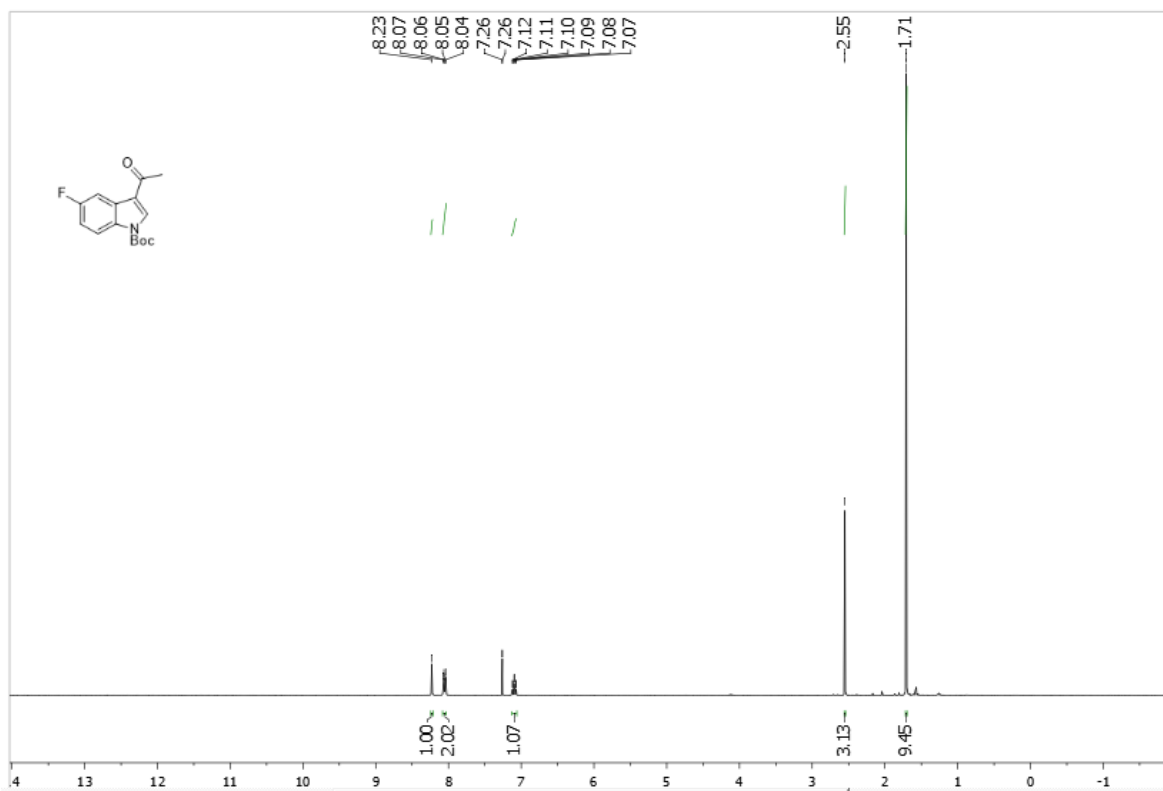
Supplementary Figure 14. ^{13}C NMR spectra of **1k**



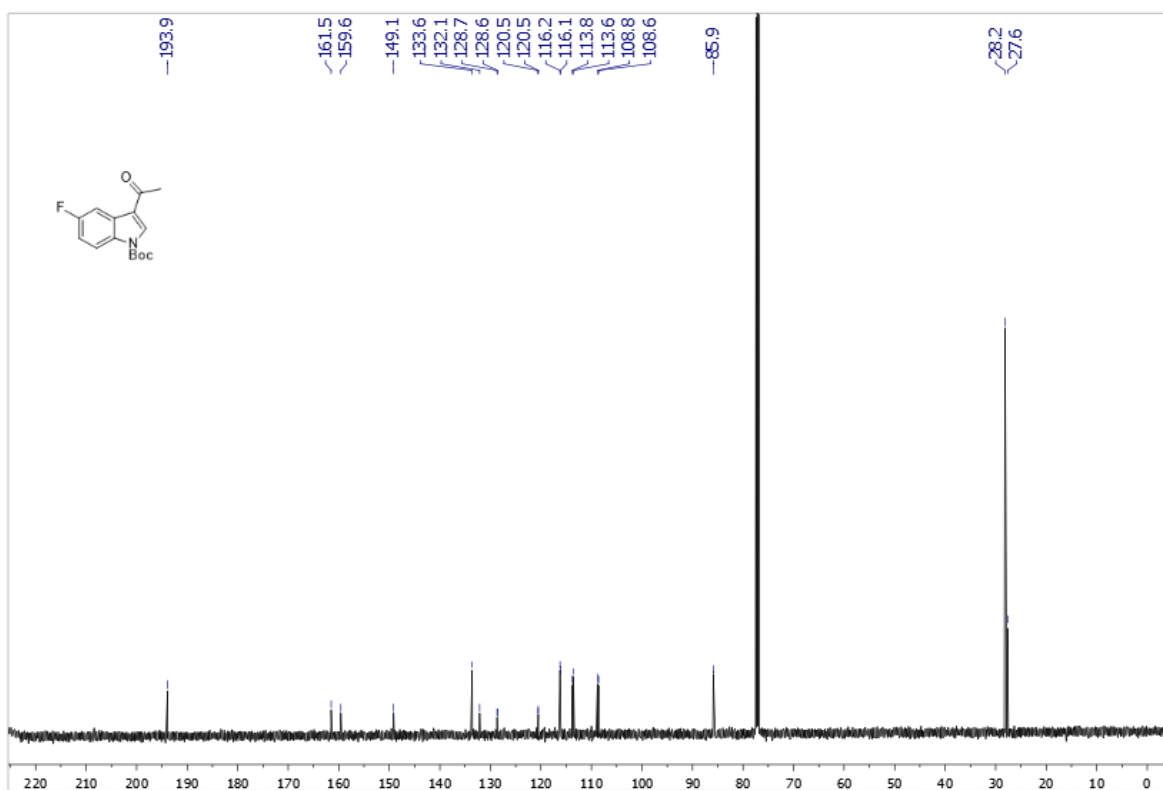
Supplementary Figure 15. ^1H NMR spectra of **1l**



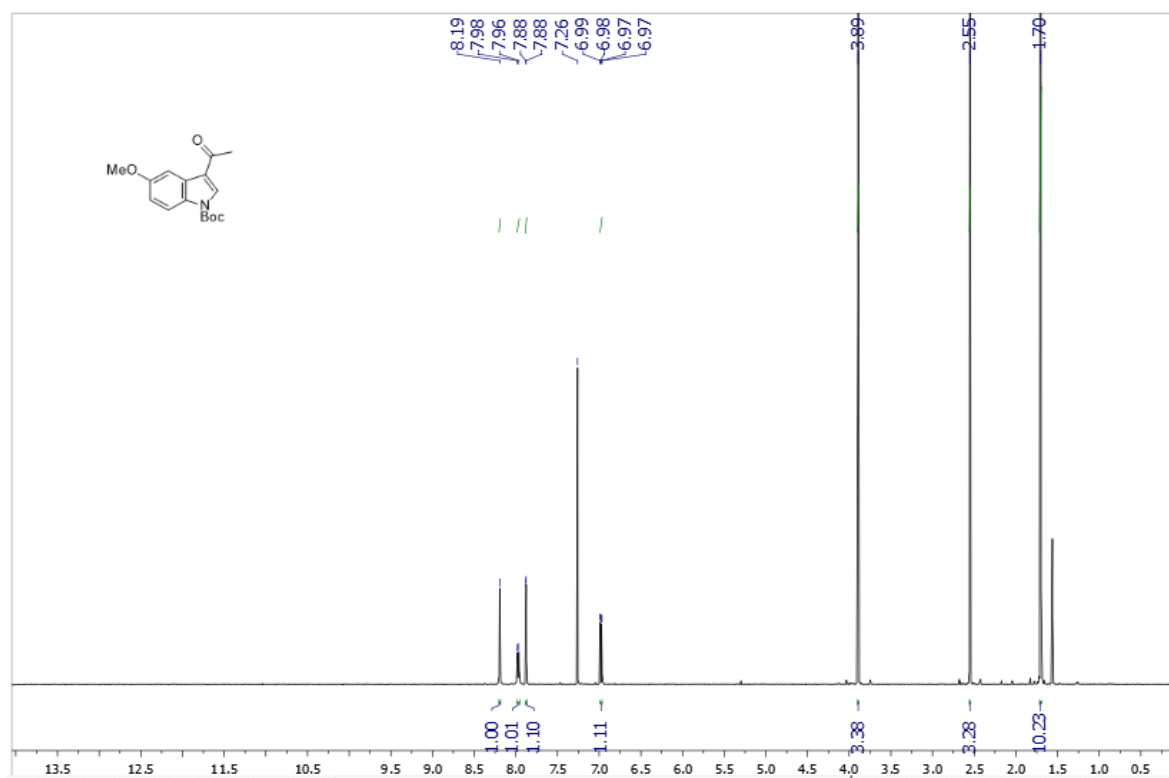
Supplementary Figure 16. ^{13}C NMR spectra of **1l**



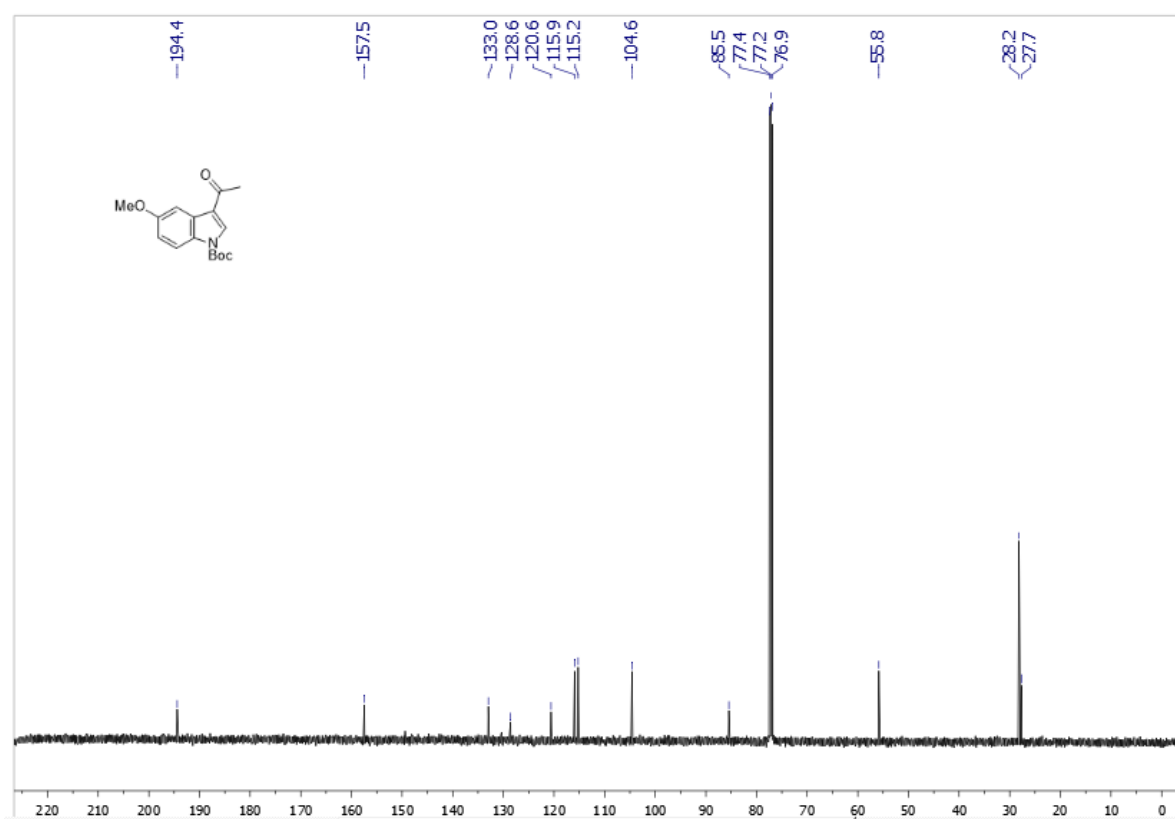
Supplementary Figure 17. ^1H NMR spectra of **1m**



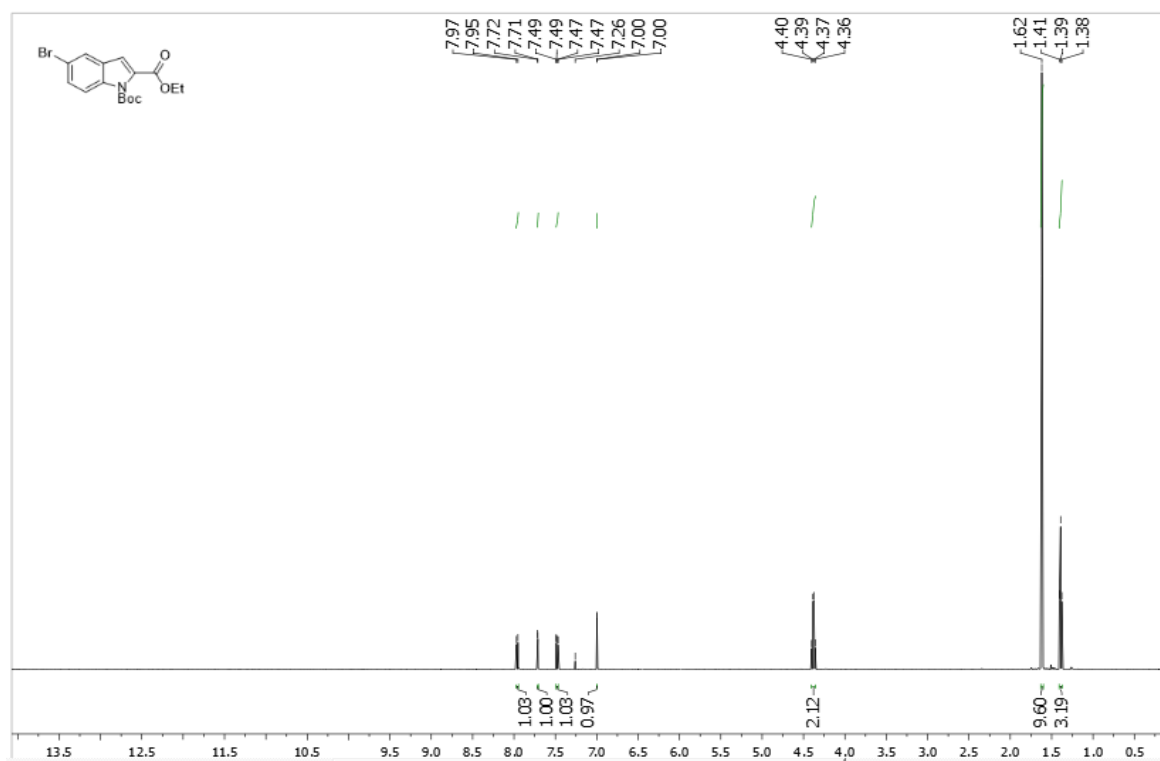
Supplementary Figure 18. ^{13}C NMR spectra of **1m**



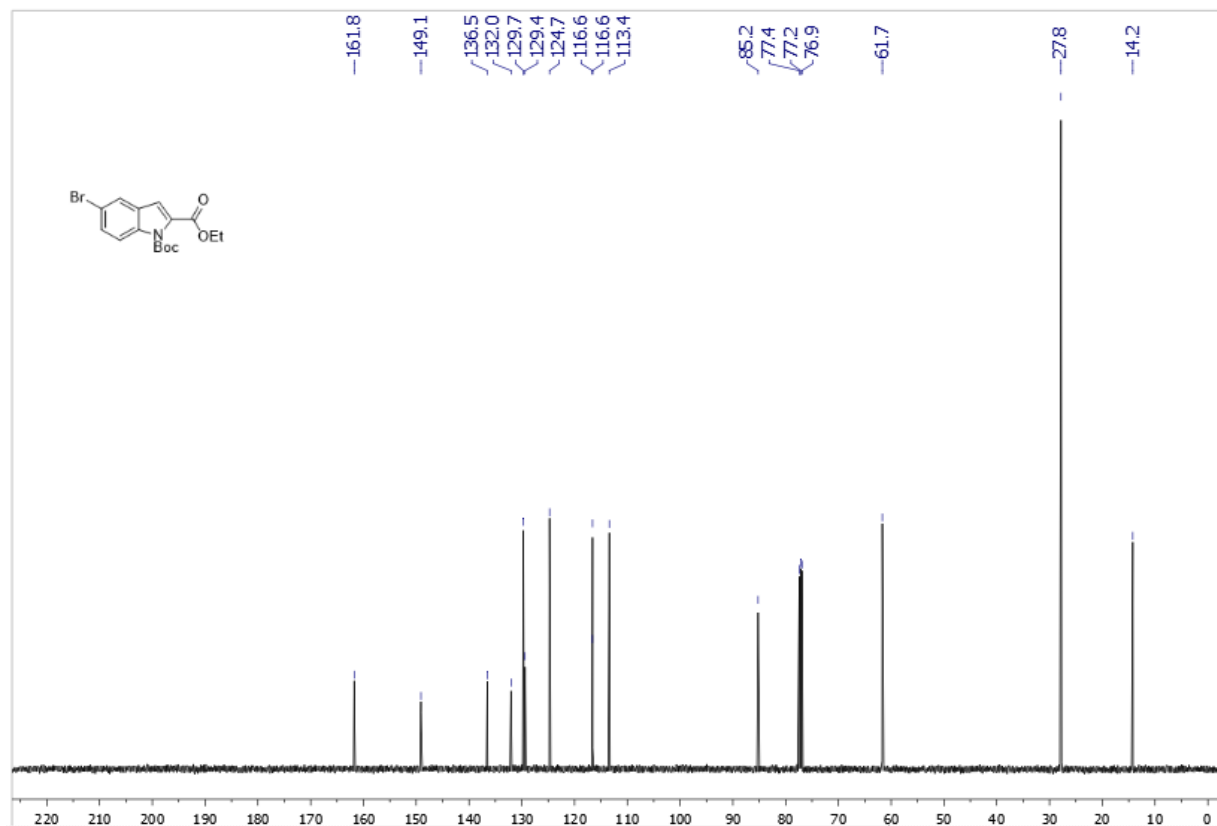
Supplementary Figure 19. ^1H NMR spectra of **1n**



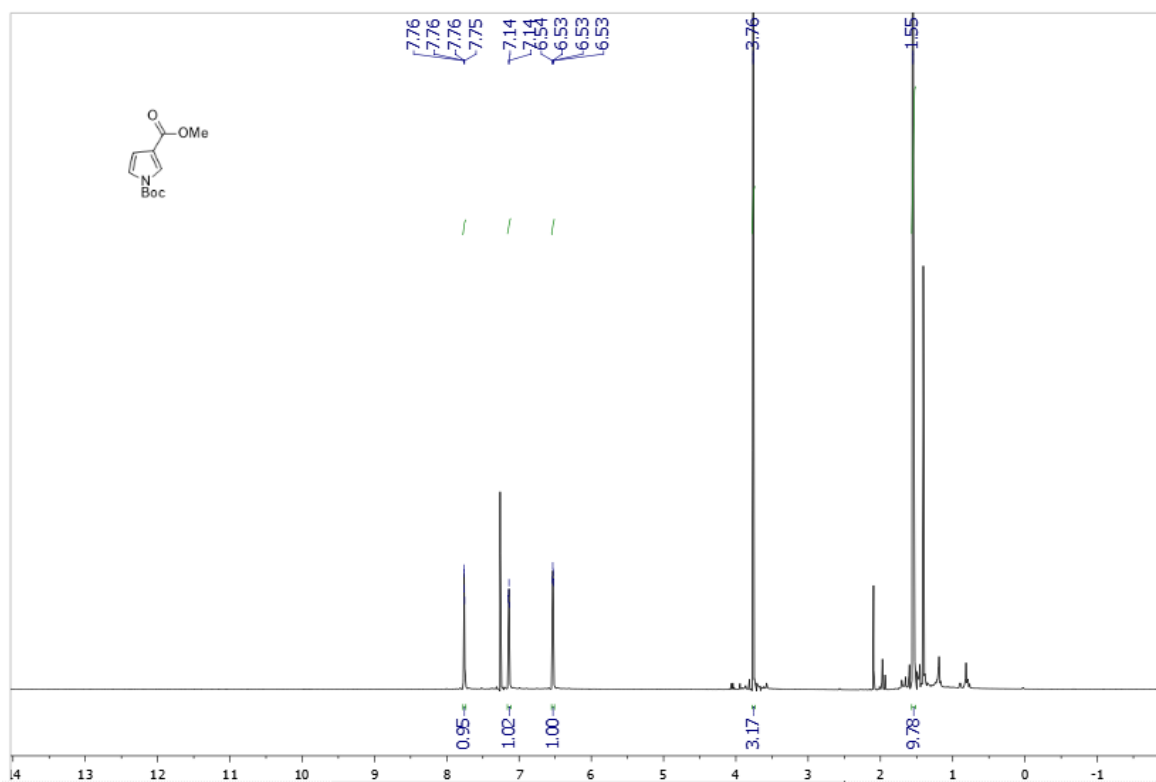
Supplementary Figure 20. ^{13}C NMR spectra of **1n**



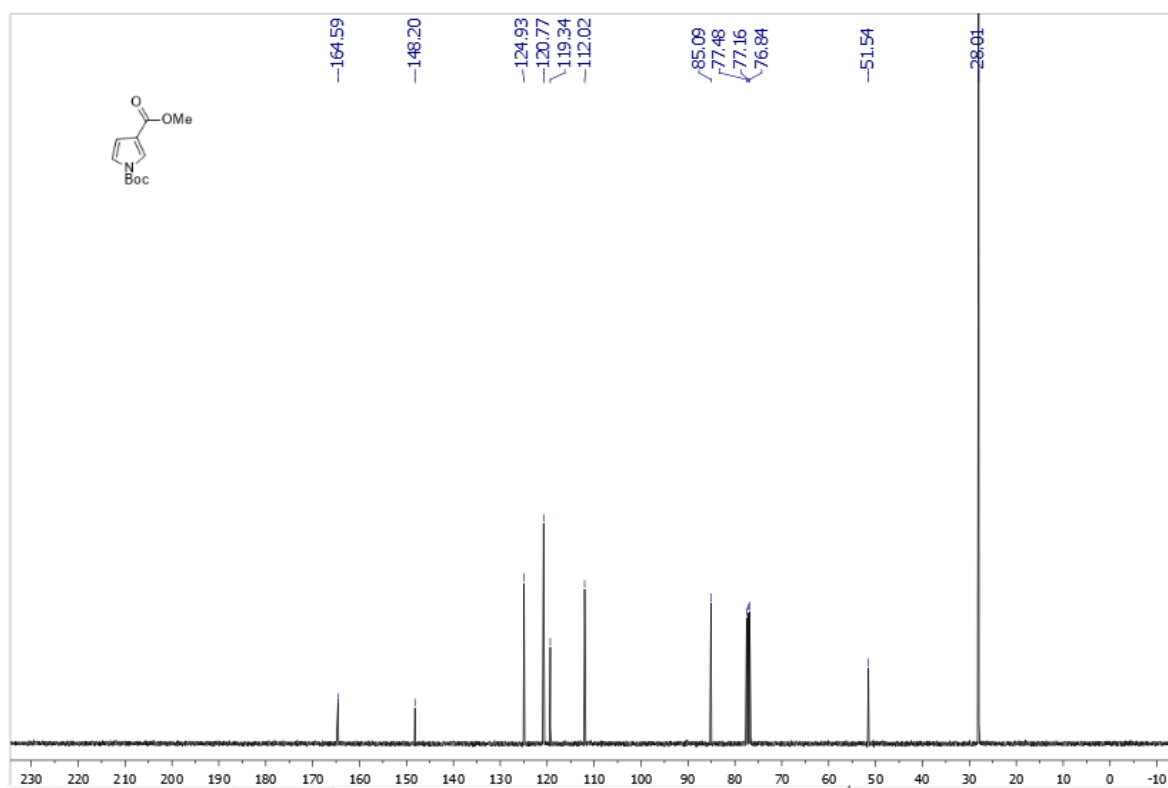
Supplementary Figure 21. ^1H NMR spectra of **1r**



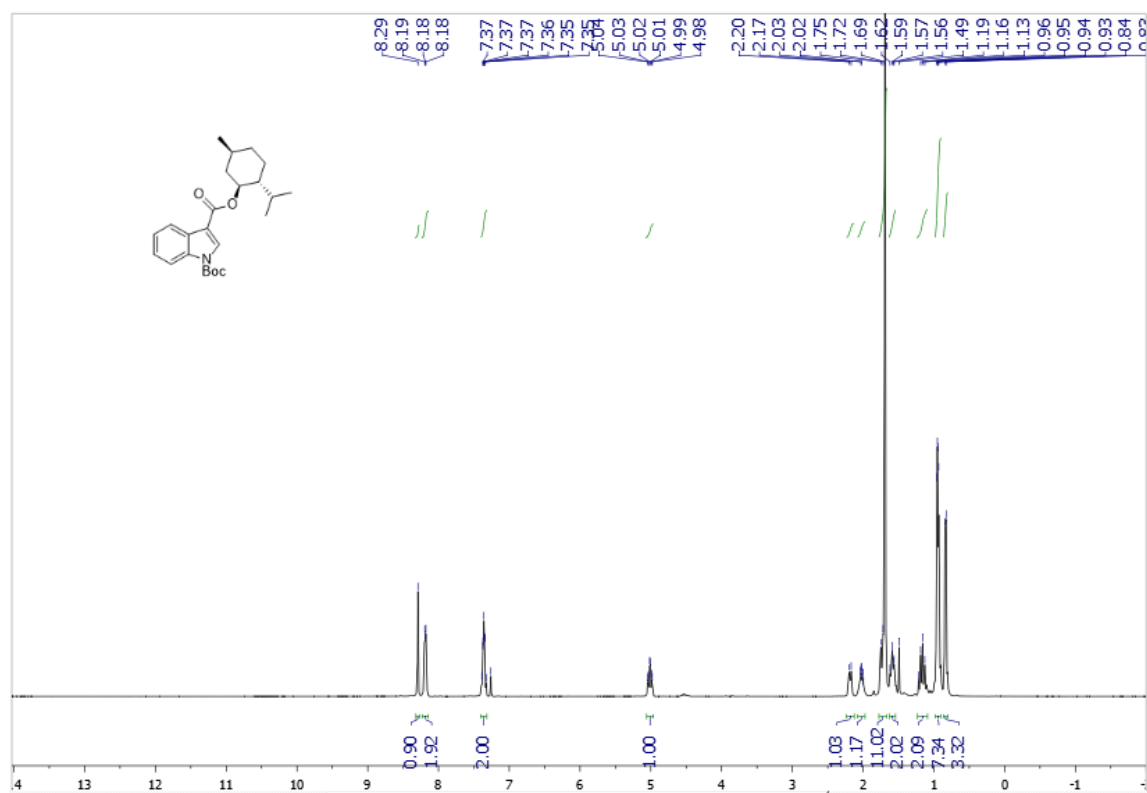
Supplementary Figure 22. ^{13}C NMR spectra of **1r**



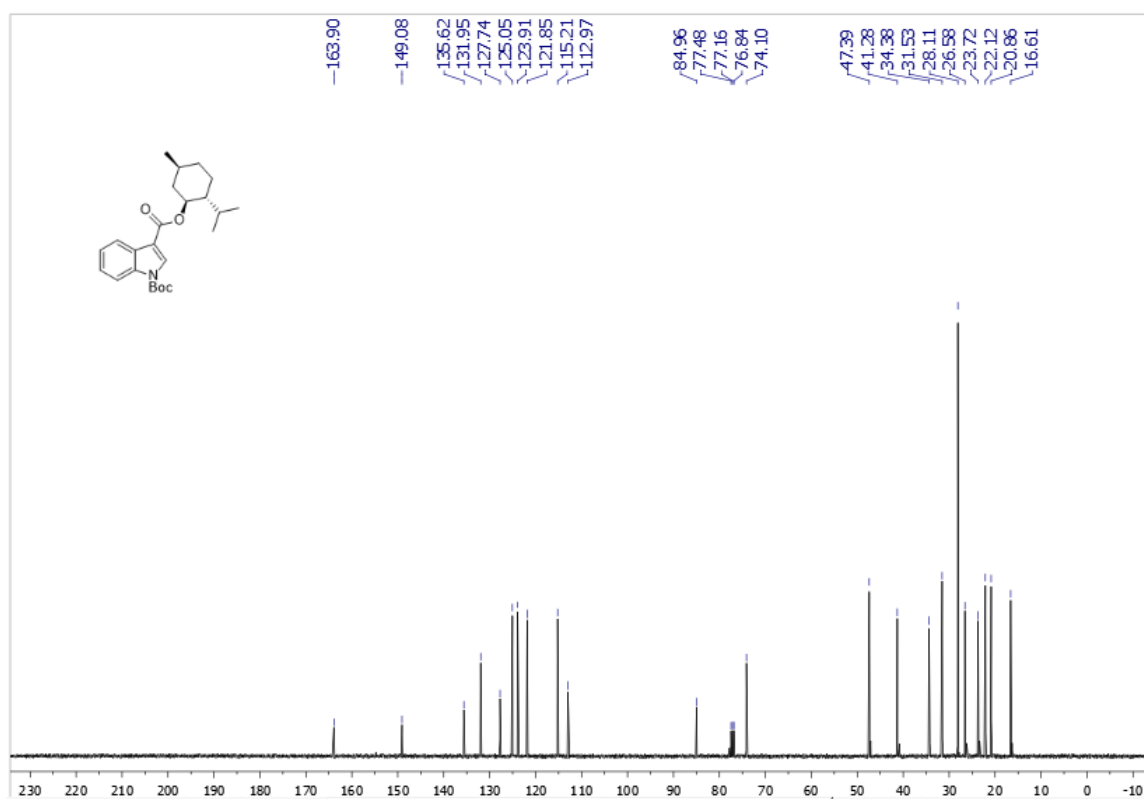
Supplementary Figure 23. ^1H NMR spectra of **1s**



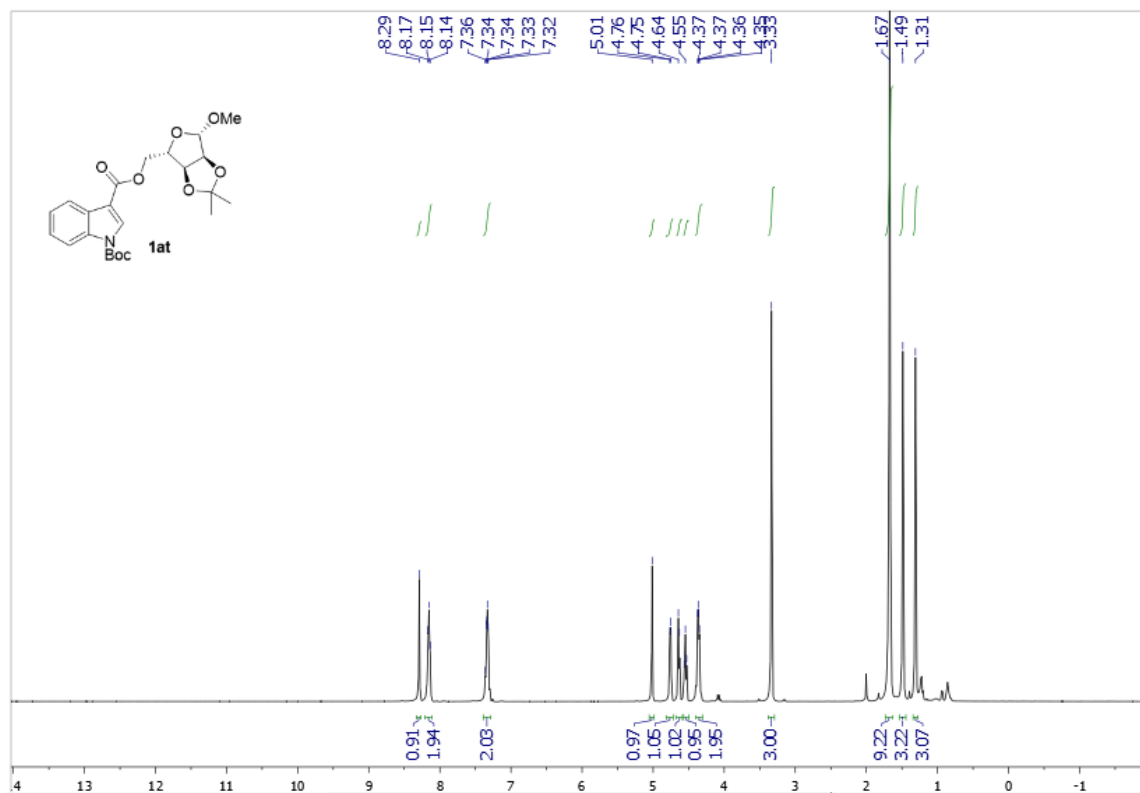
Supplementary Figure 24. ^{13}C NMR spectra of **1s**



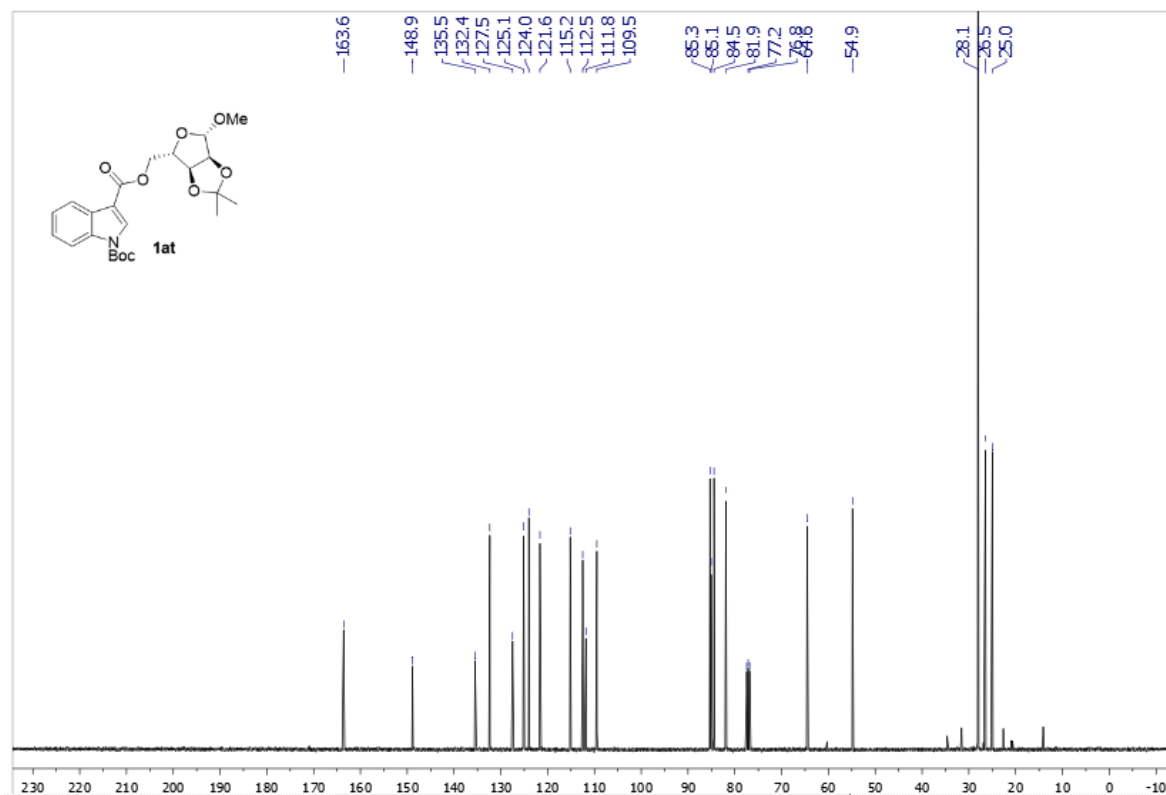
Supplementary Figure 25. ^1H NMR spectra of **1s**



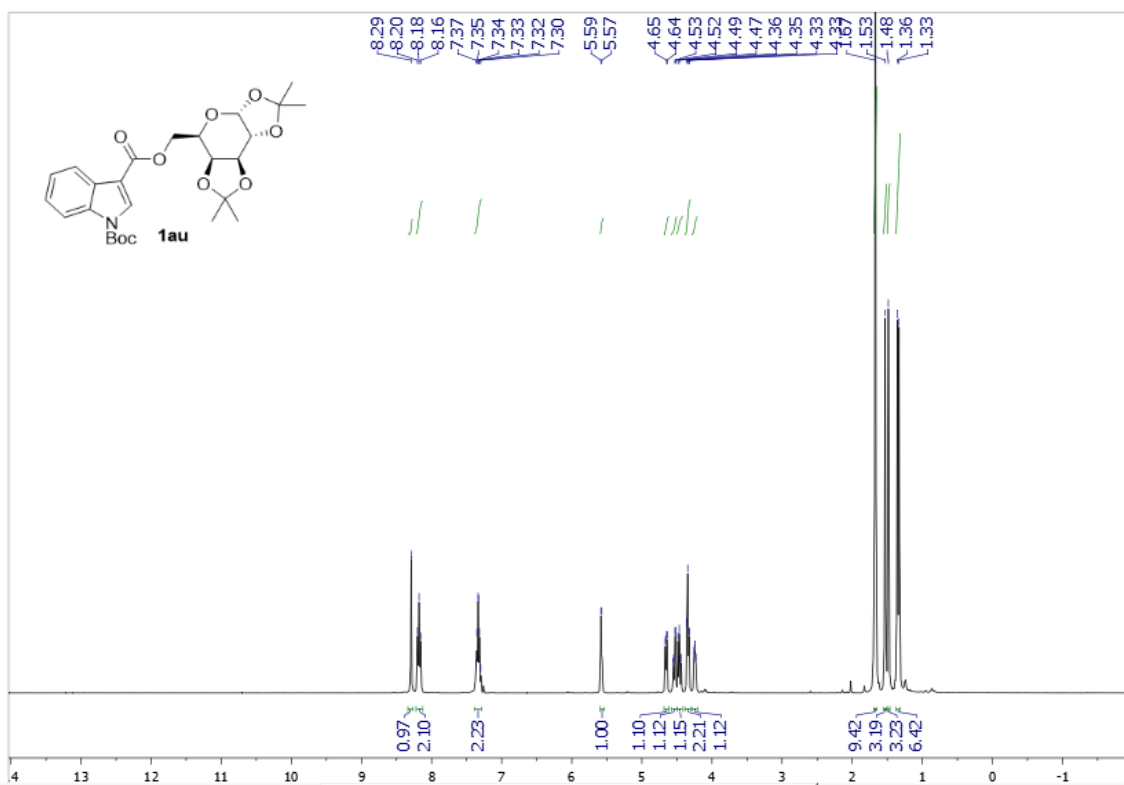
Supplementary Figure 26. ^{13}C NMR spectra of **1a**s



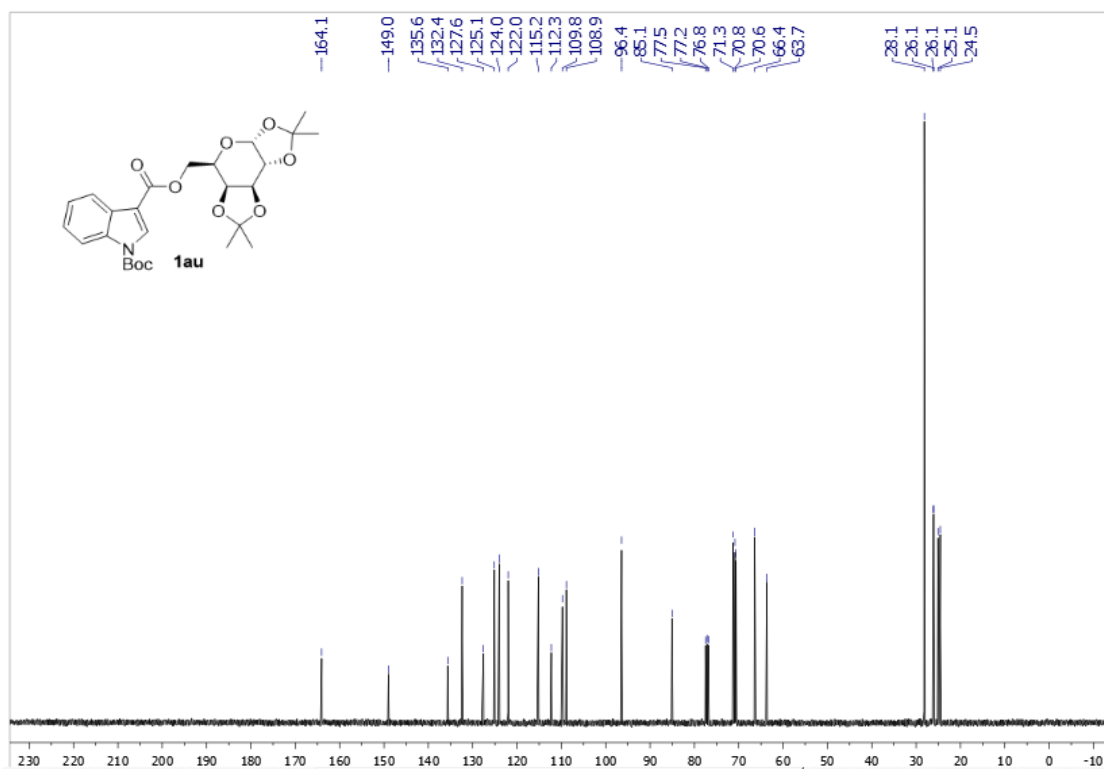
Supplementary Figure 27. ^1H NMR spectra of **1a**t



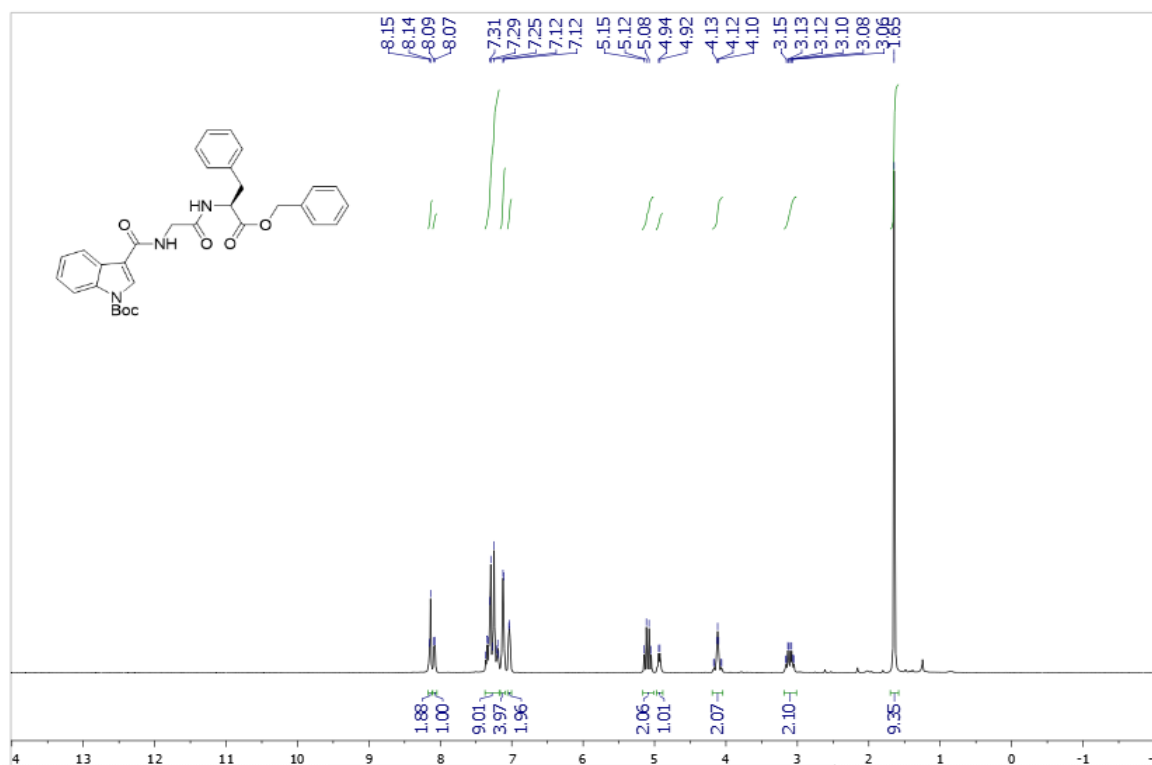
Supplementary Figure 28. ^{13}C NMR spectra of **1at**



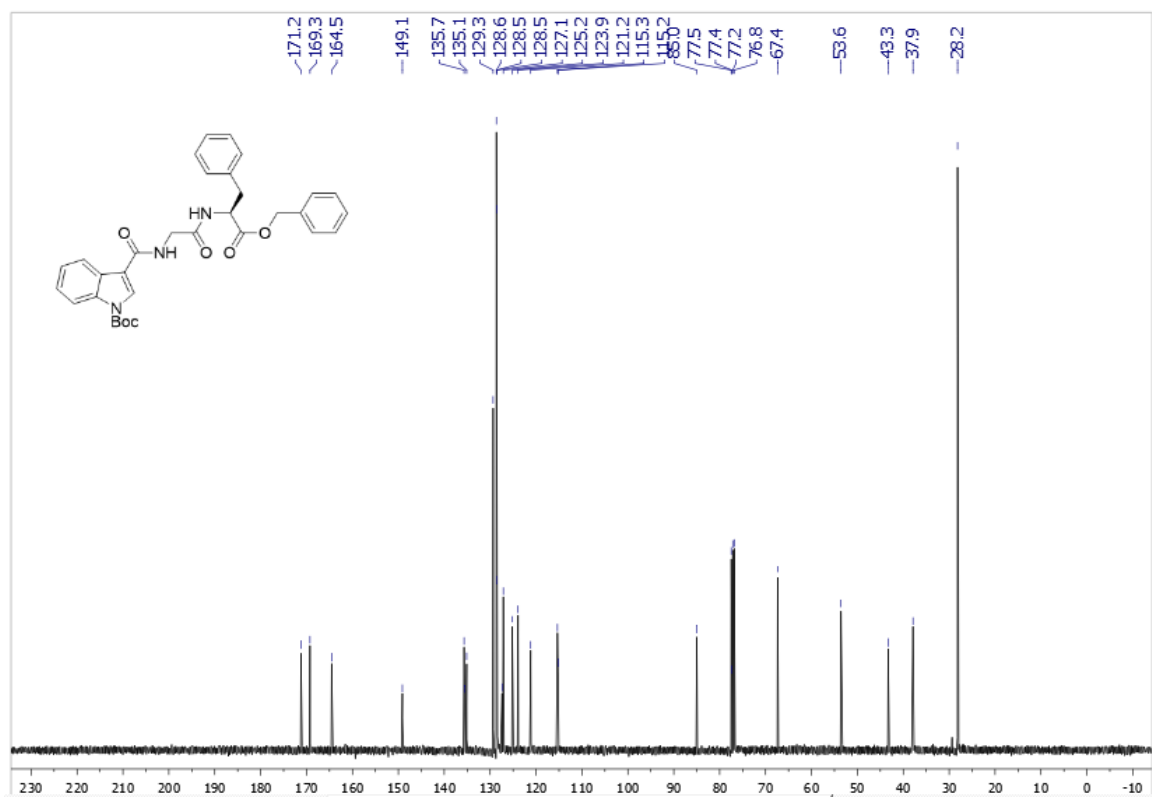
Supplementary Figure 29. ^1H NMR spectra of **1au**



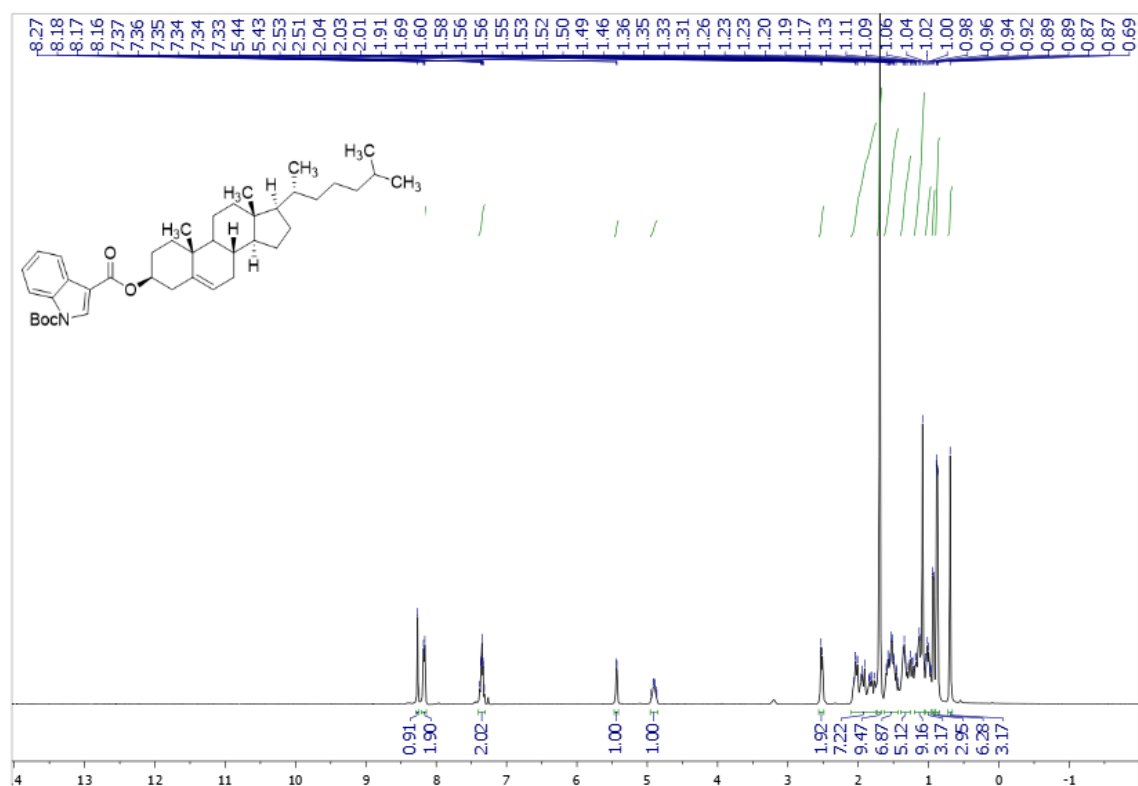
Supplementary Figure 30. ^{13}C NMR spectra of **1au**



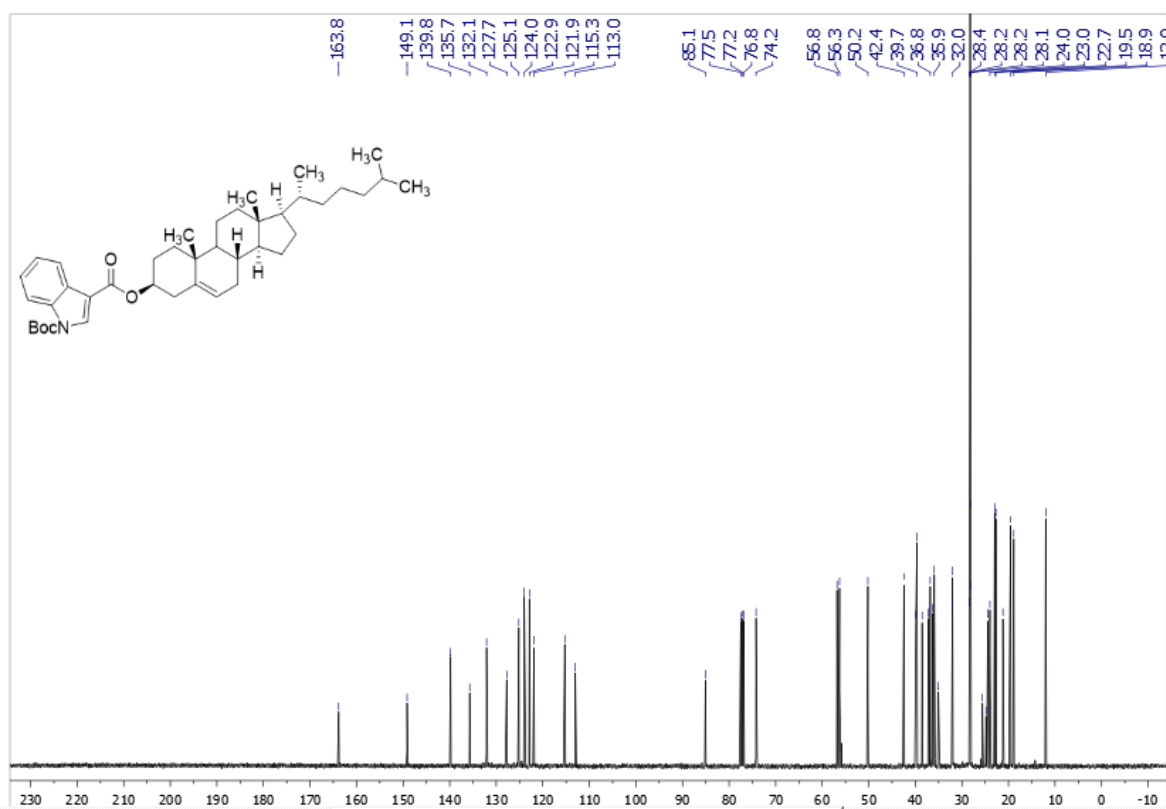
Supplementary Figure 31. ^1H NMR spectra of **1av**



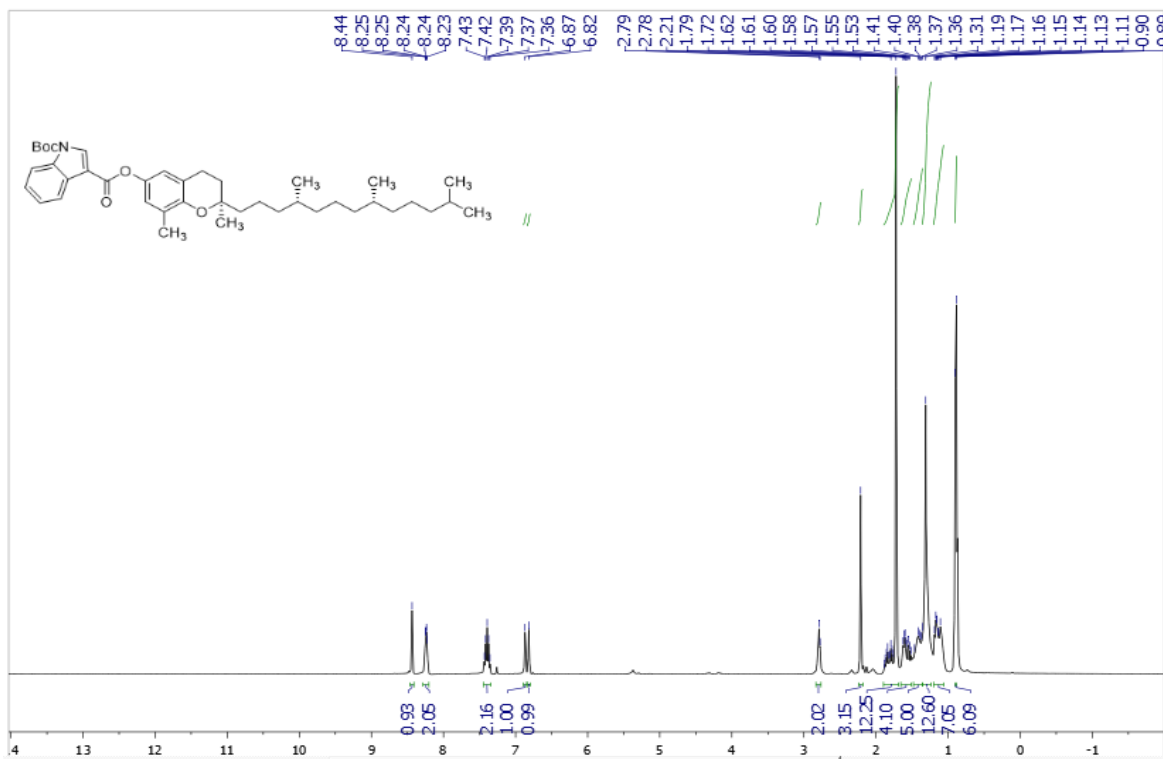
Supplementary Figure 32. ^{13}C NMR spectra of **1av**



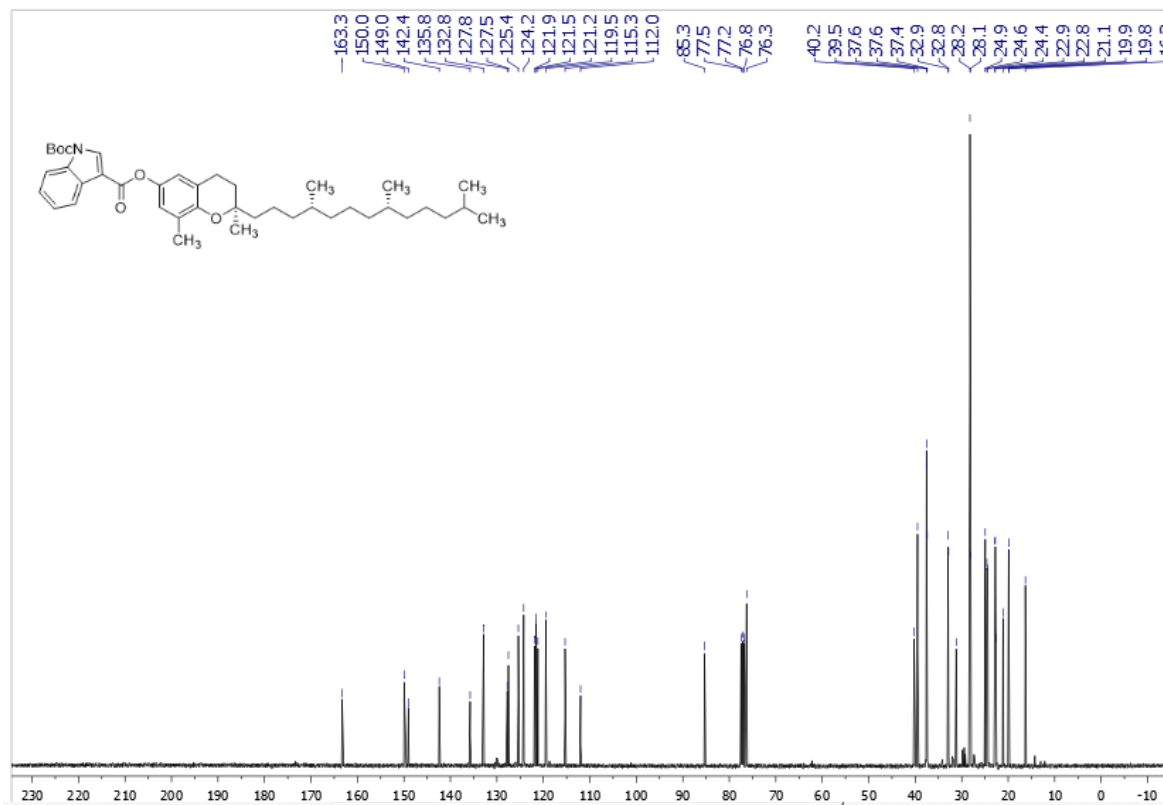
Supplementary Figure 33. ^1H NMR spectra of **1av**



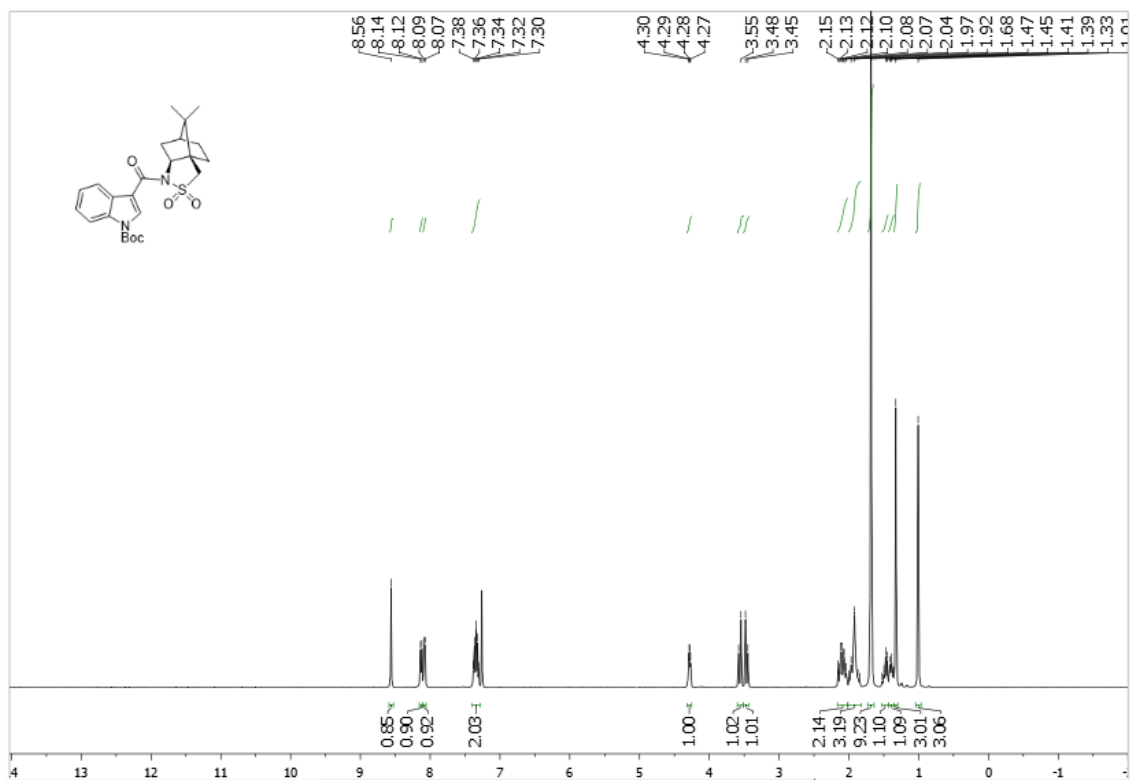
Supplementary Figure 34. ^{13}C NMR spectra of **1aw**



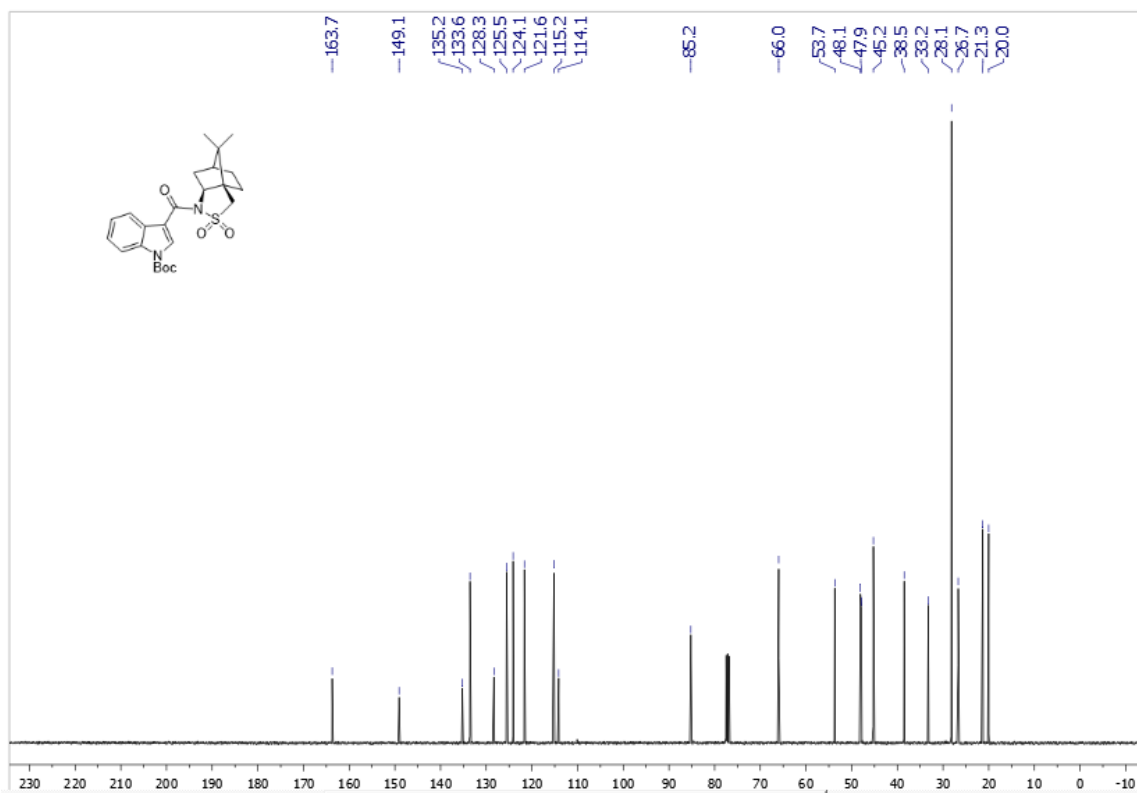
Supplementary Figure 35. ^1H NMR spectra of **1ax**



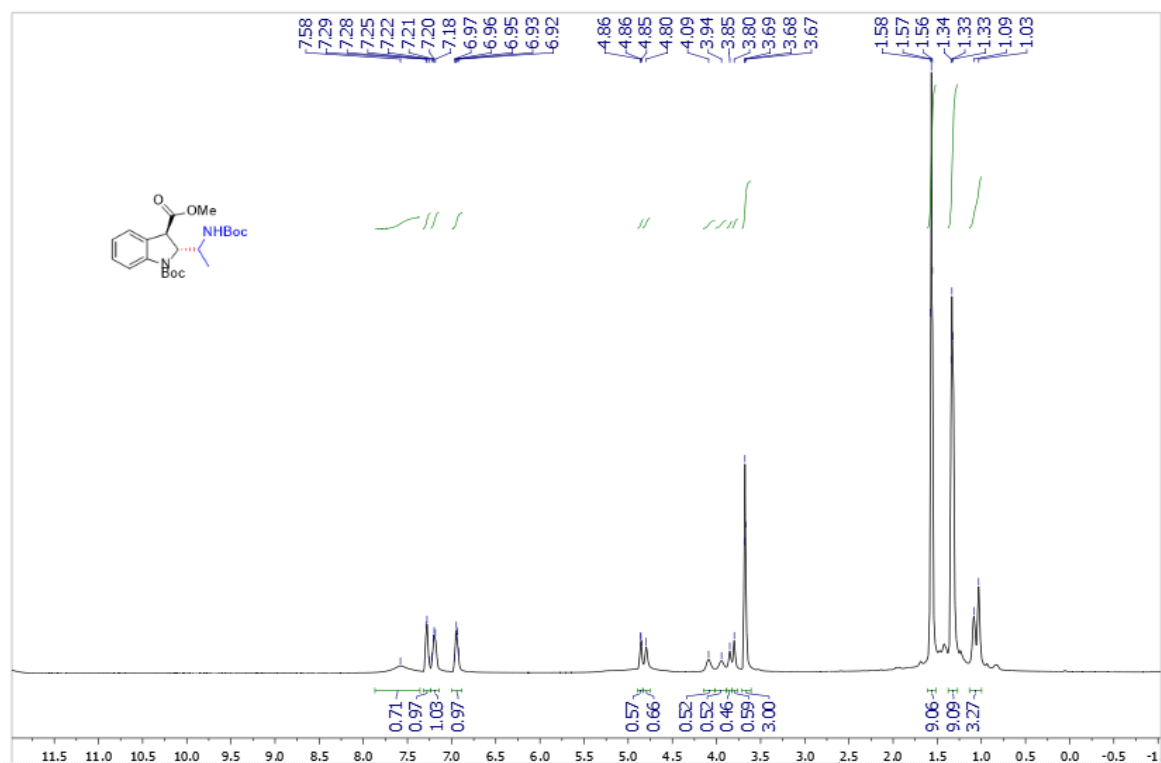
Supplementary Figure 36. ^{13}C NMR spectra of **1ax**



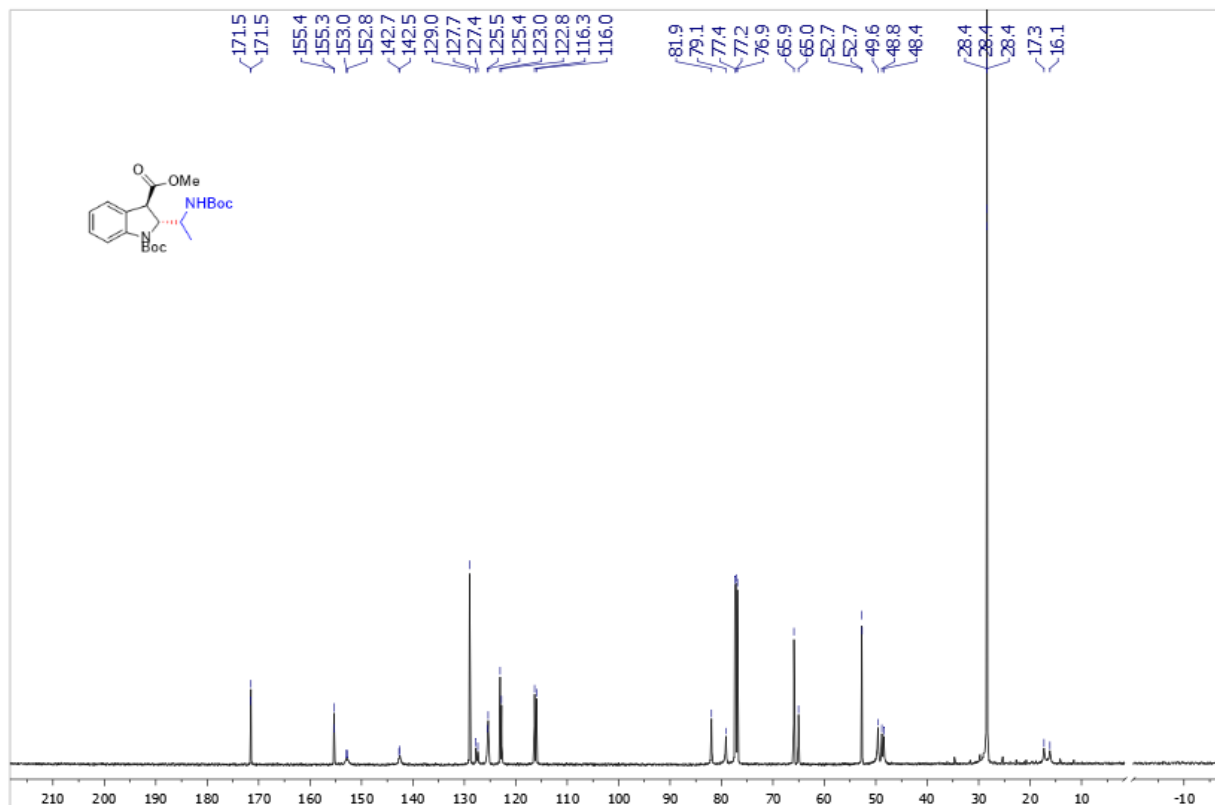
Supplementary Figure 37. ^1H NMR spectra of **5b**



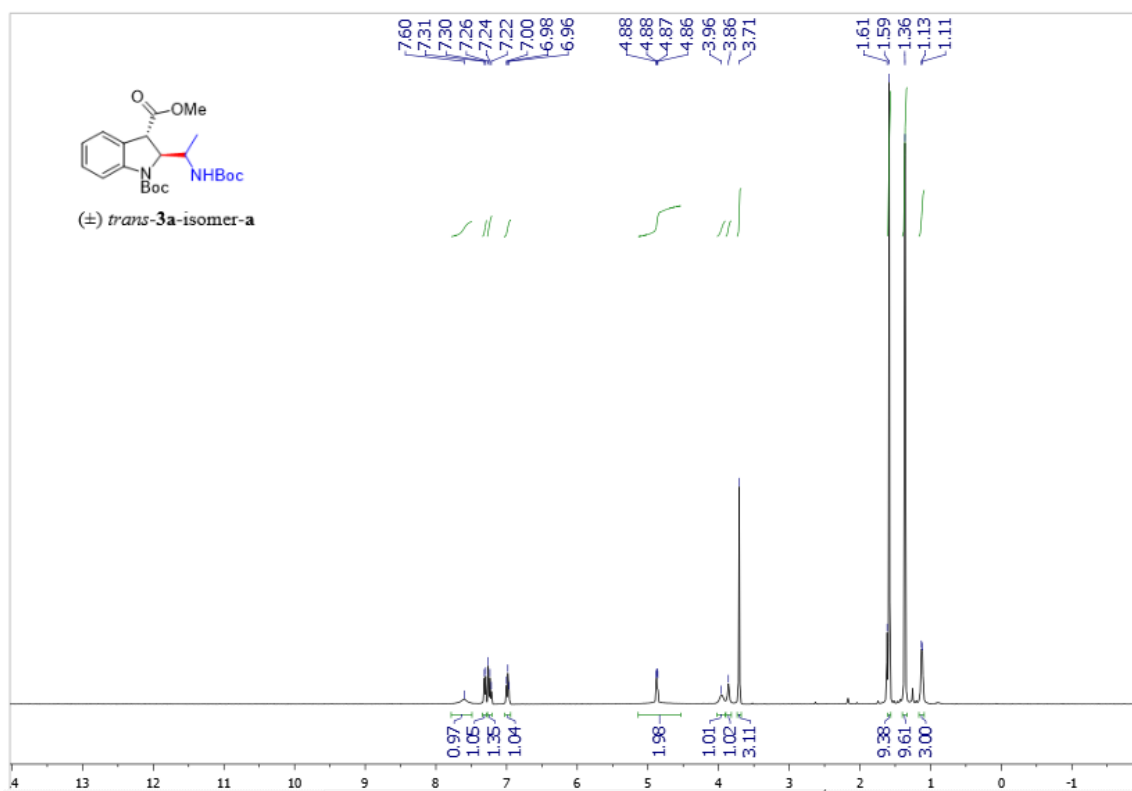
Supplementary Figure 38. ^{13}C NMR spectra of **5b**



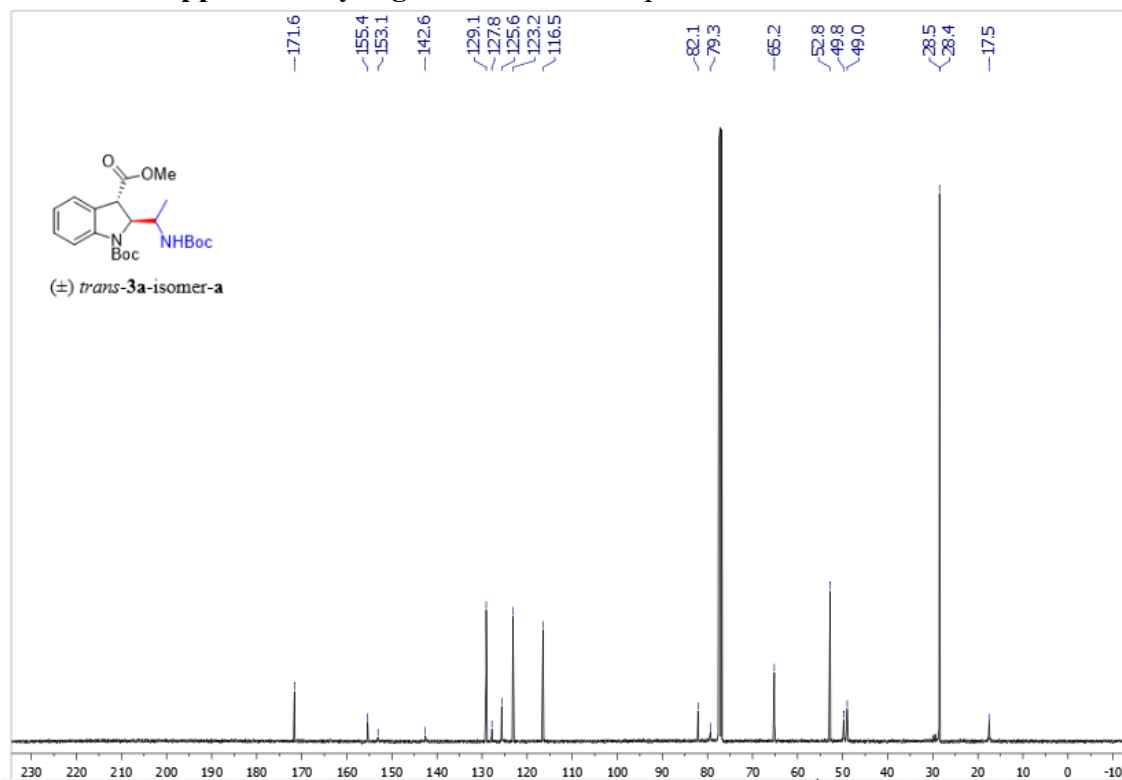
Supplementary Figure 39. ^1H NMR spectra of *trans*-**3a**



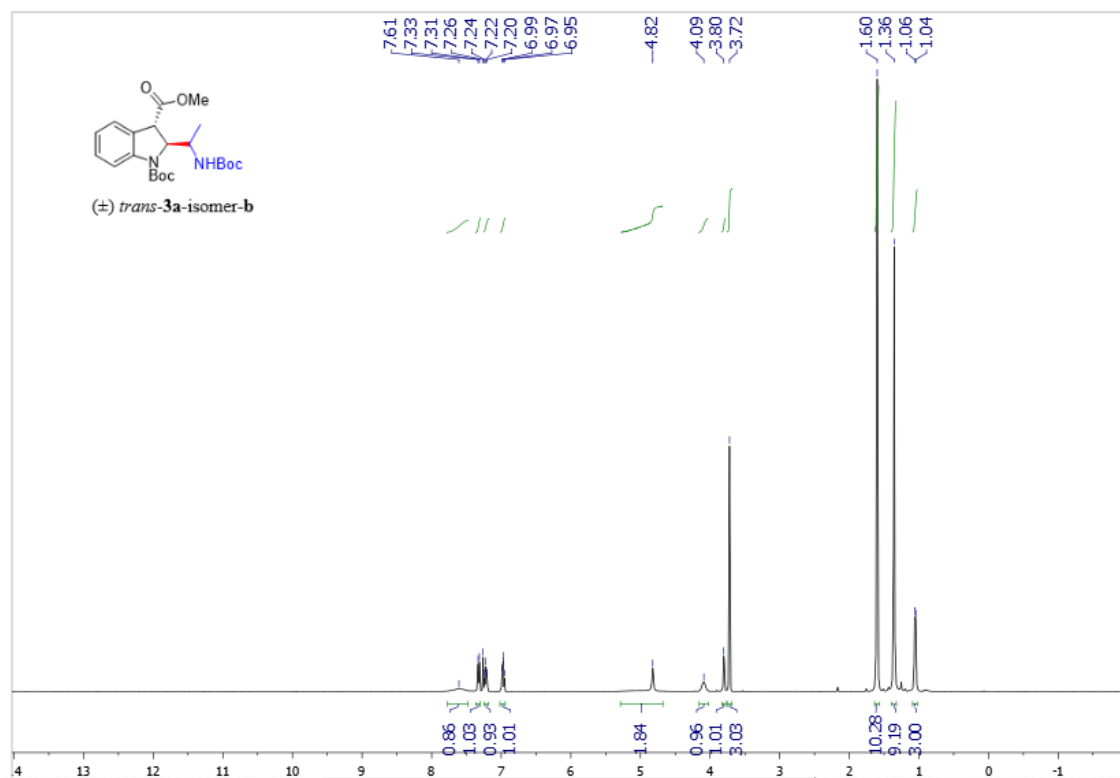
Supplementary Figure 40. ^{13}C NMR spectra of *trans*-3a



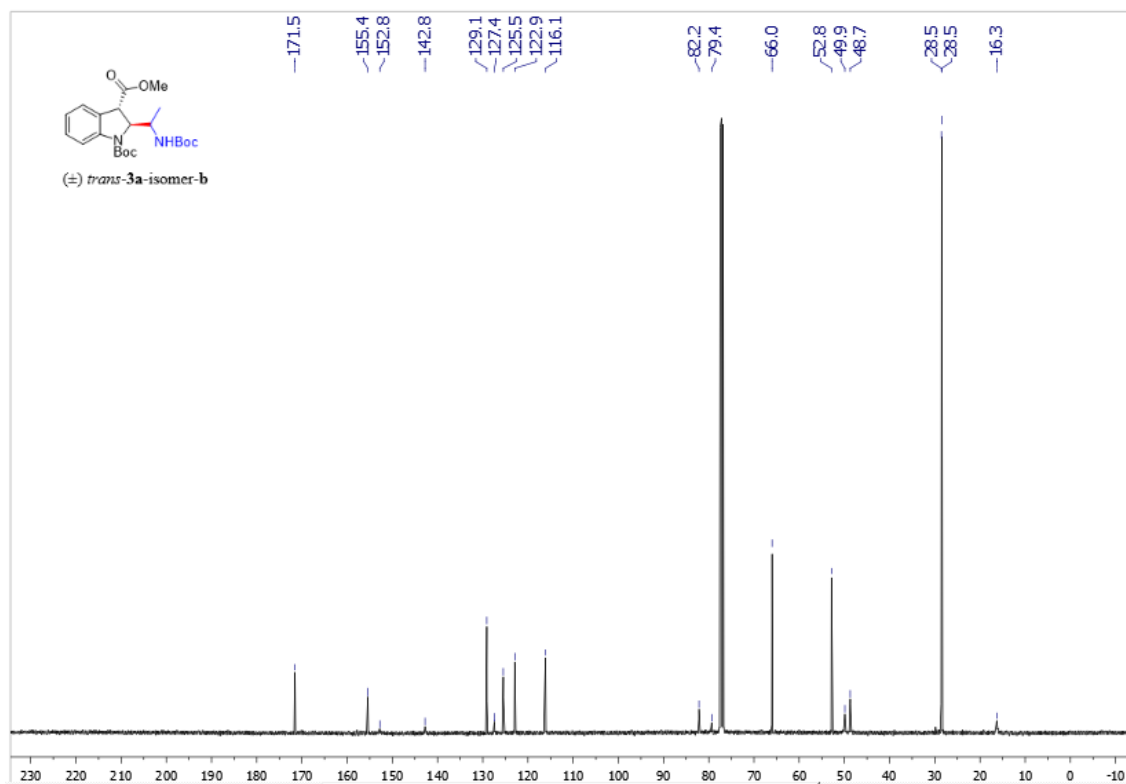
Supplementary Figure 41. ^1H NMR spectra of *trans*-3a-isomer-a



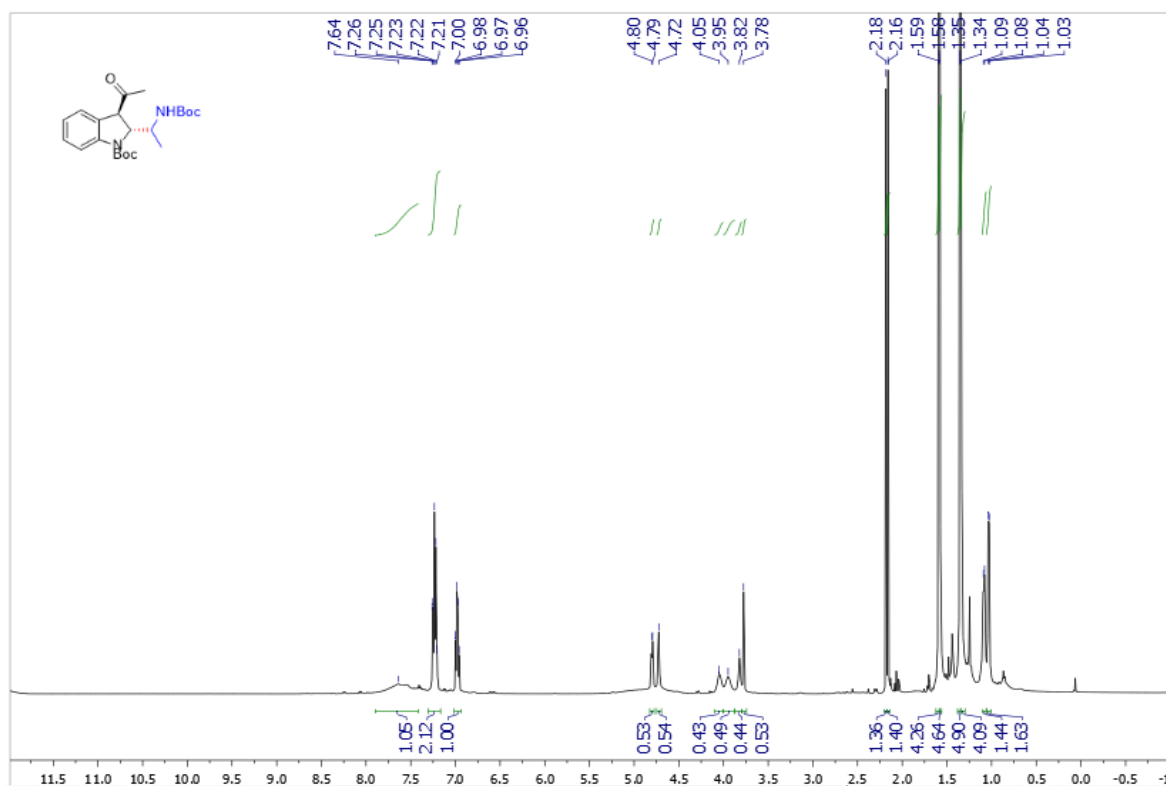
Supplementary Figure 42. ^{13}C NMR spectra of *trans*-3a-isomer-a



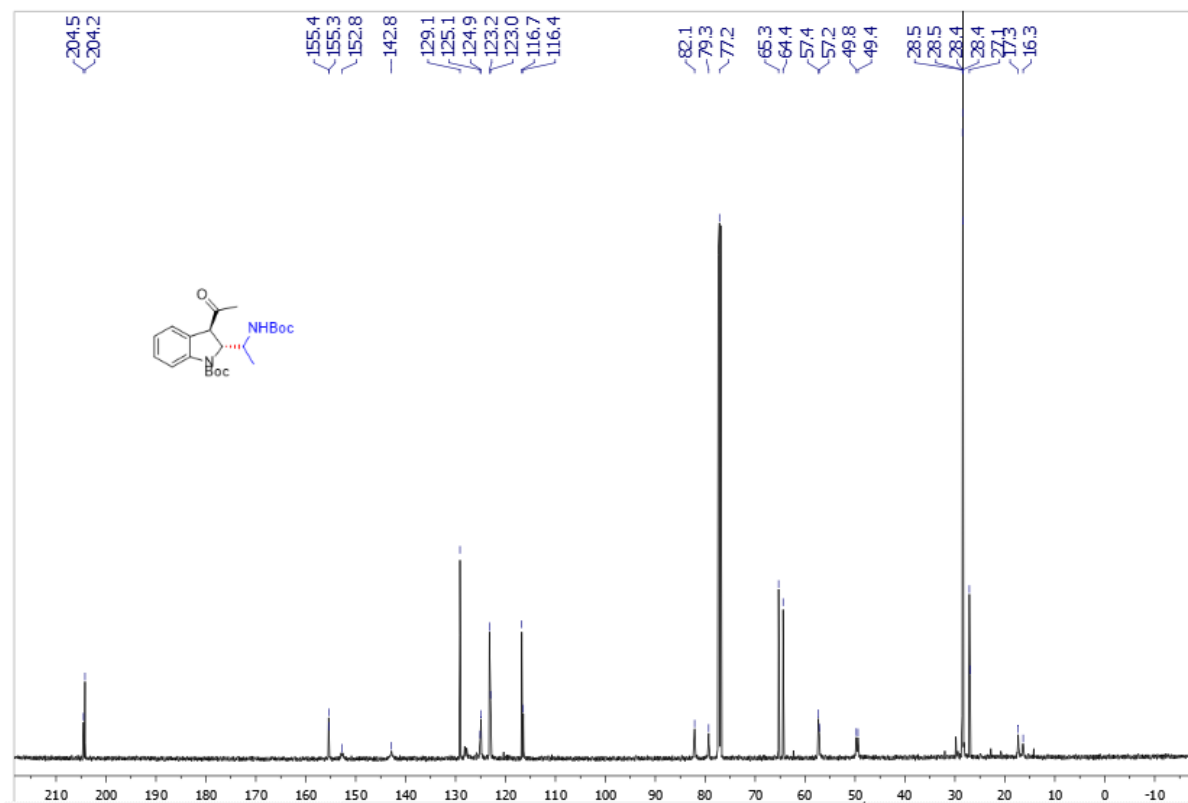
Supplementary Figure 43. ^1H NMR spectra of *trans*-3a-isomer-b



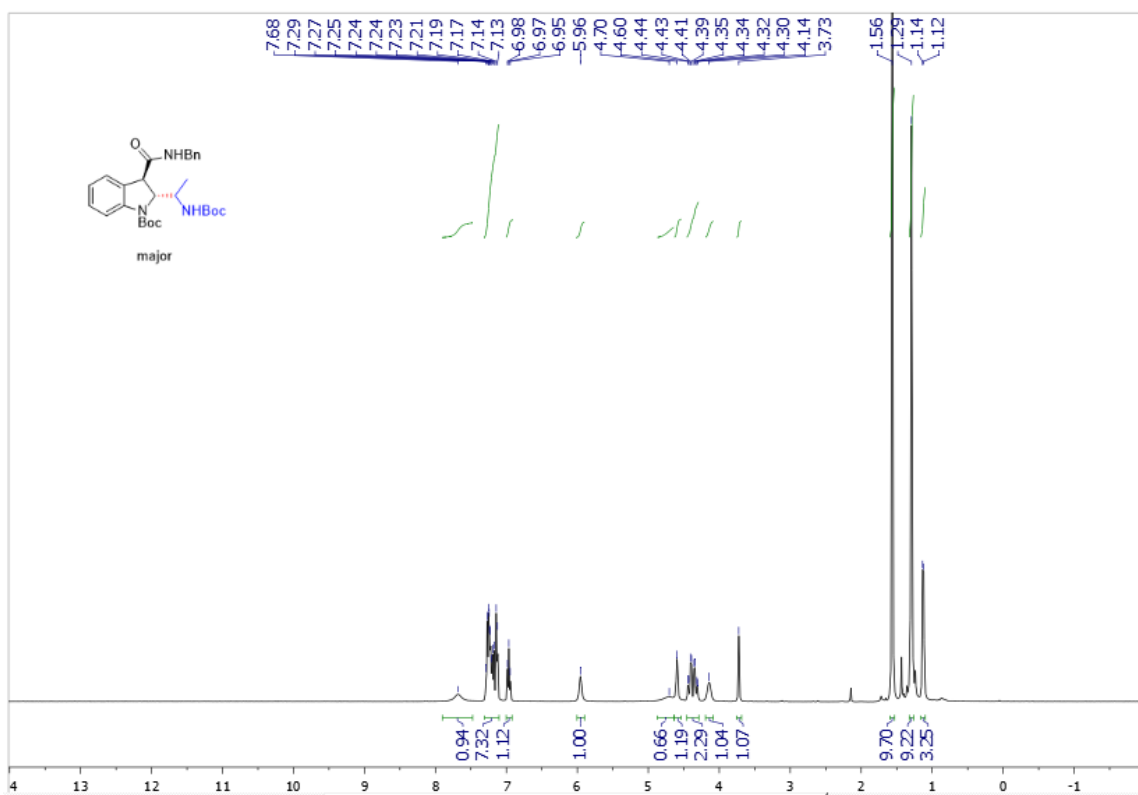
Supplementary Figure 44. ^{13}C NMR spectra of *trans*-3a-isomer-b



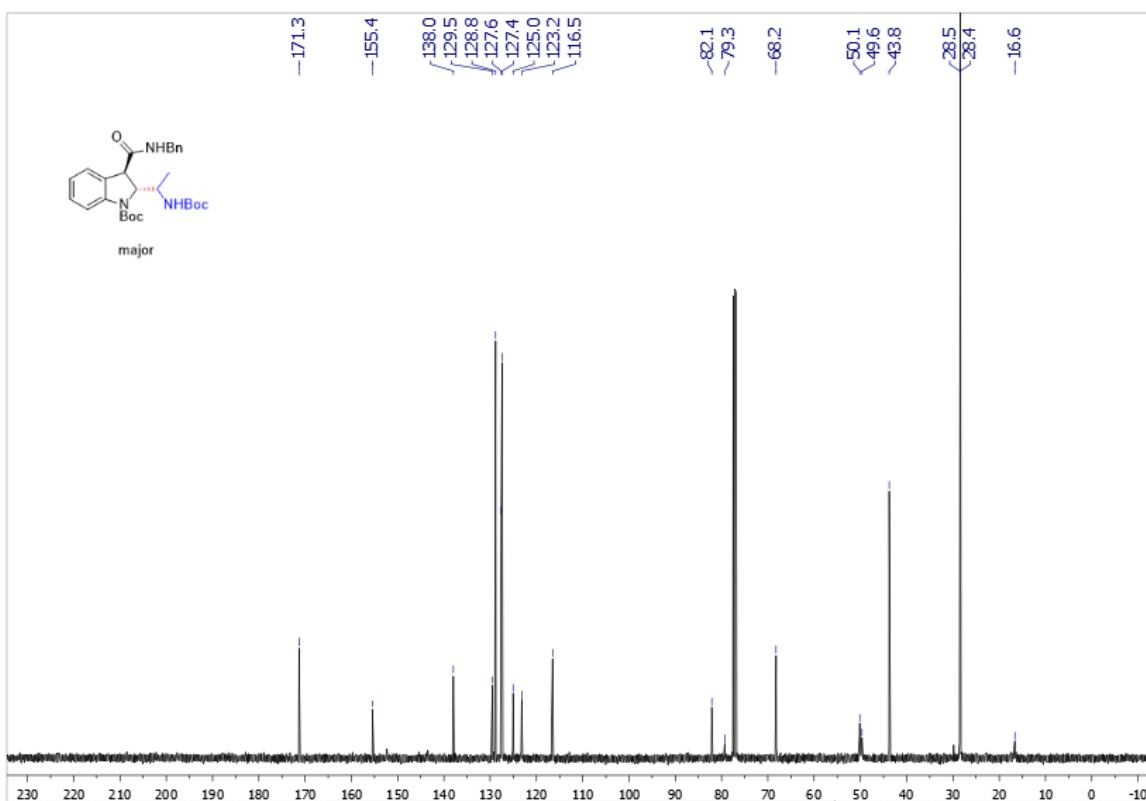
Supplementary Figure 45. ^1H NMR spectra of *trans*-3b



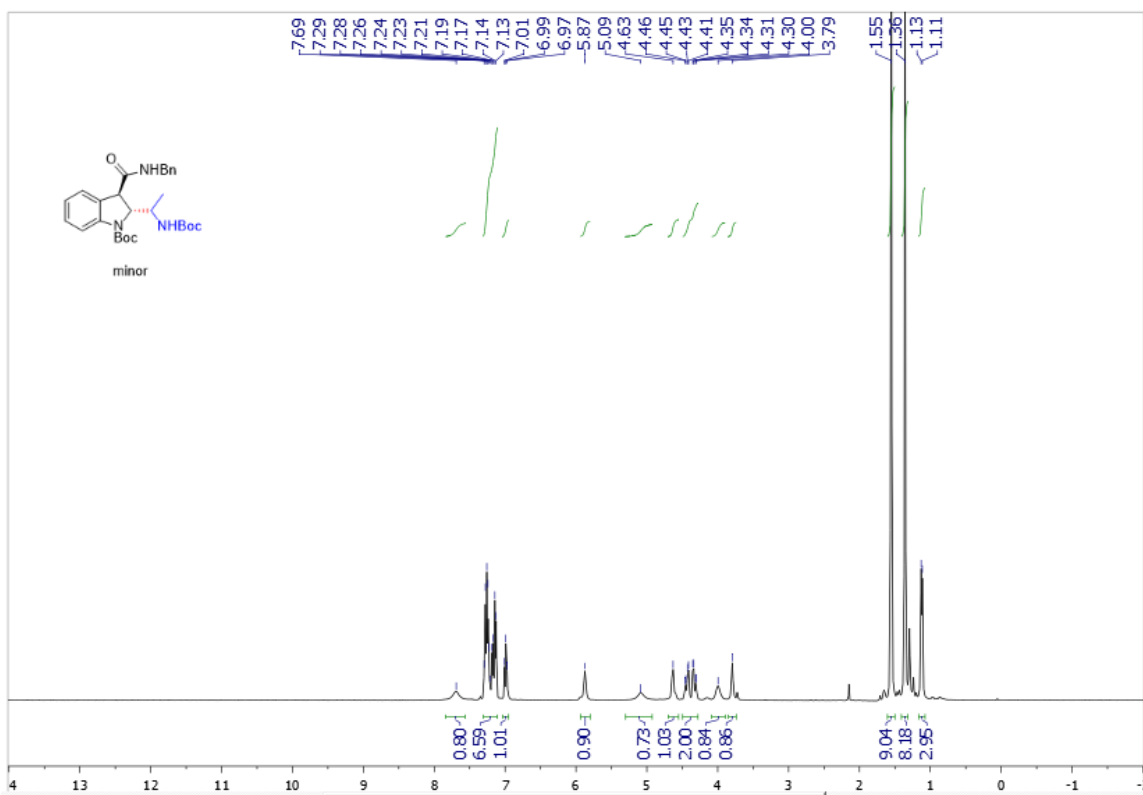
Supplementary Figure 46. ^{13}C NMR spectra of *trans*-3b



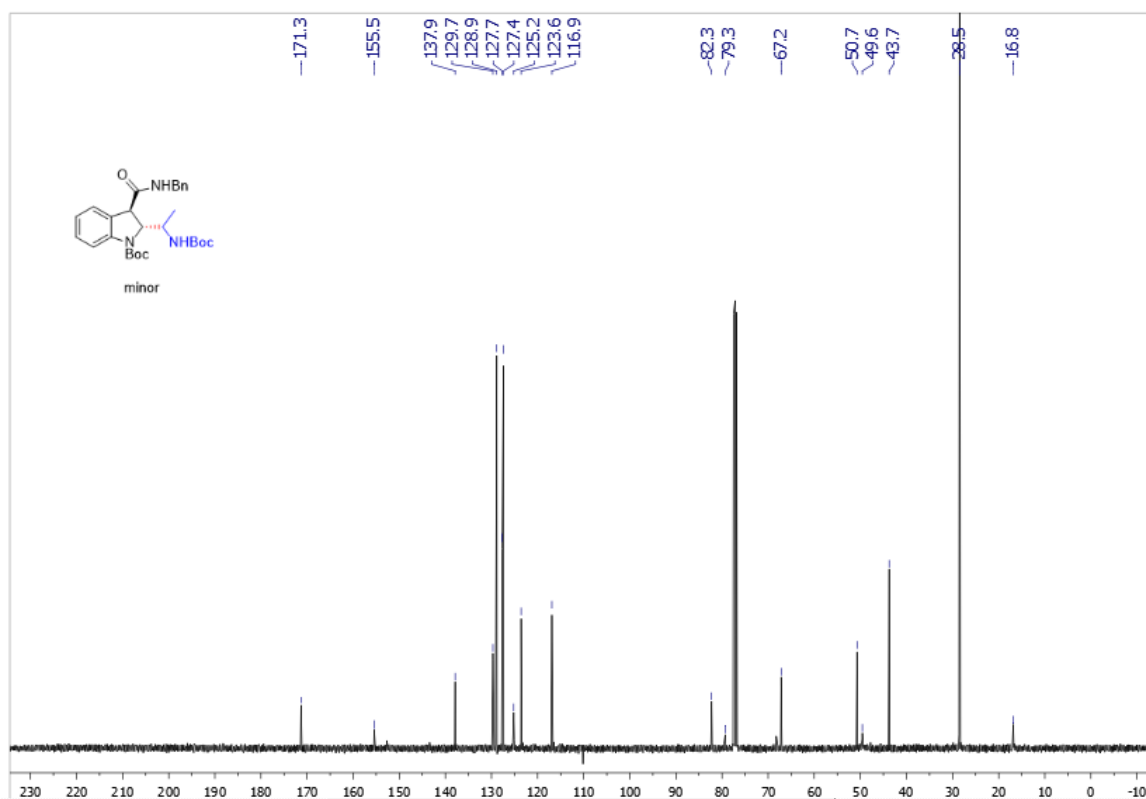
Supplementary Figure 47. ^1H NMR spectra of *trans*-3c-major



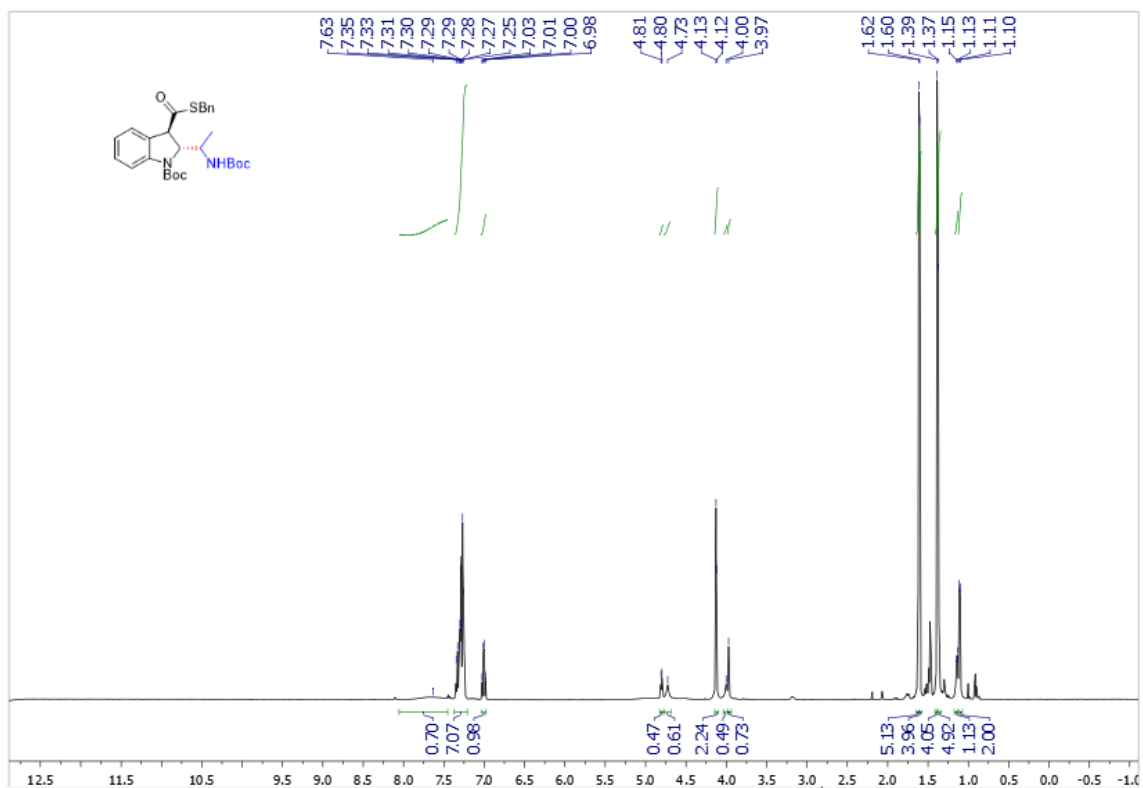
Supplementary Figure 48. ^{13}C NMR spectra of *trans*-3c-major



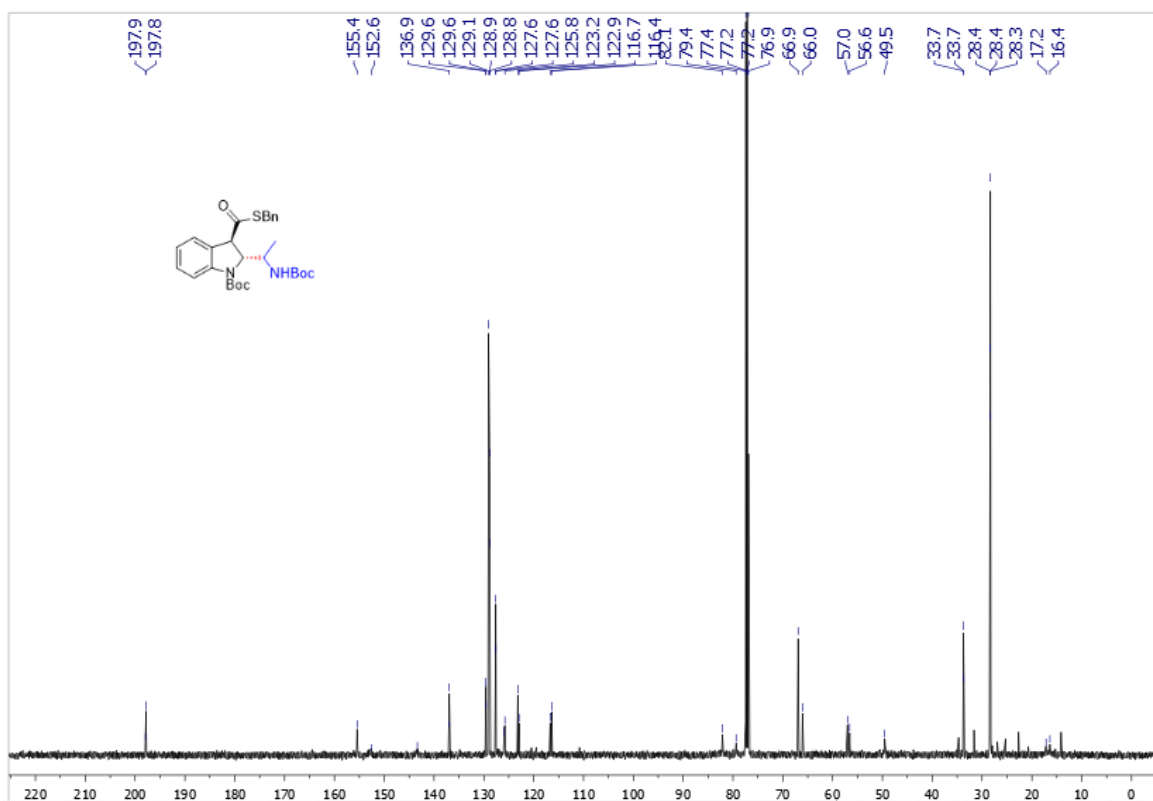
Supplementary Figure 49. ^1H NMR spectra of *trans*-3c-minor



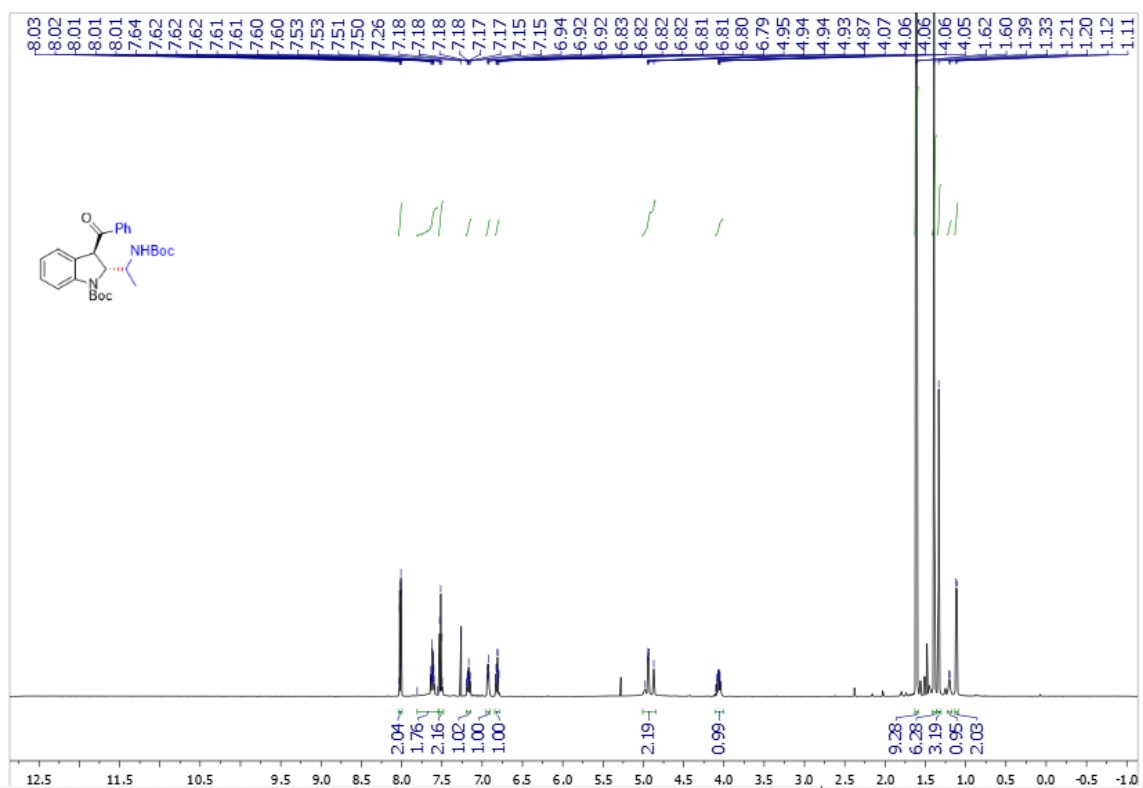
Supplementary Figure 50. ^{13}C NMR spectra of *trans*-3c-minor



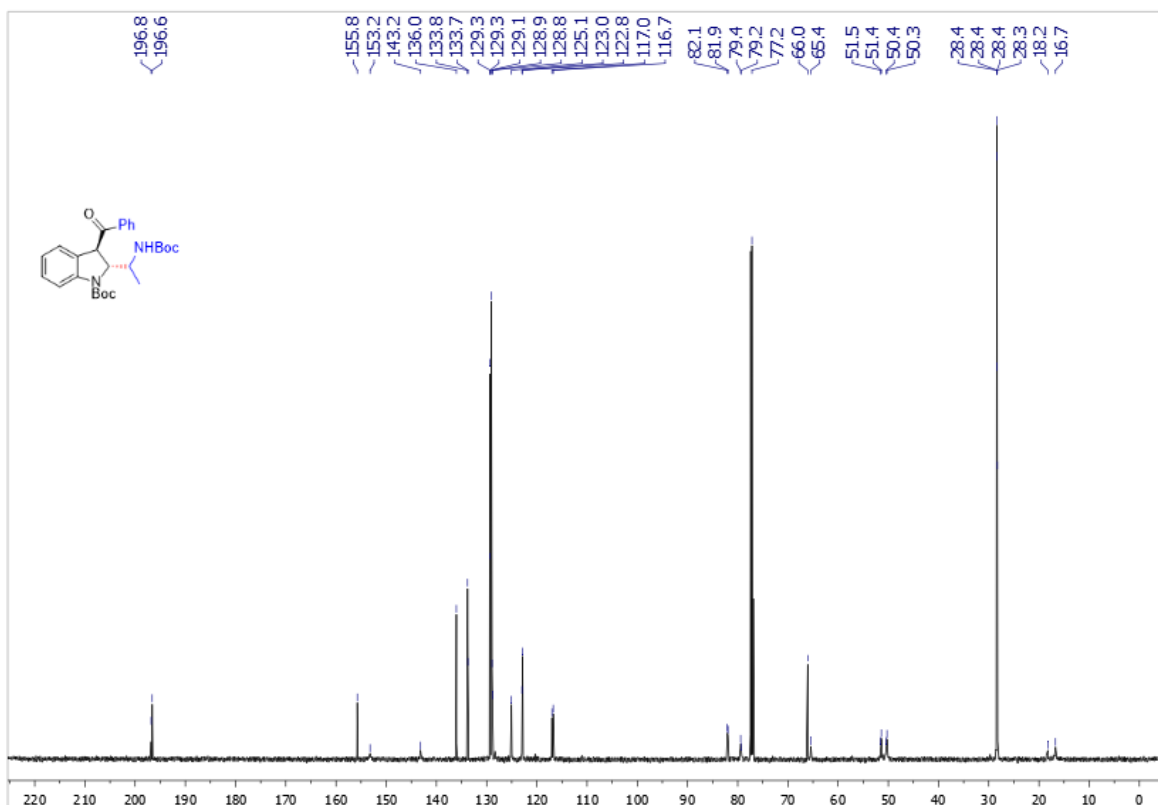
Supplementary Figure 51. ^1H NMR spectra of *trans*-3d



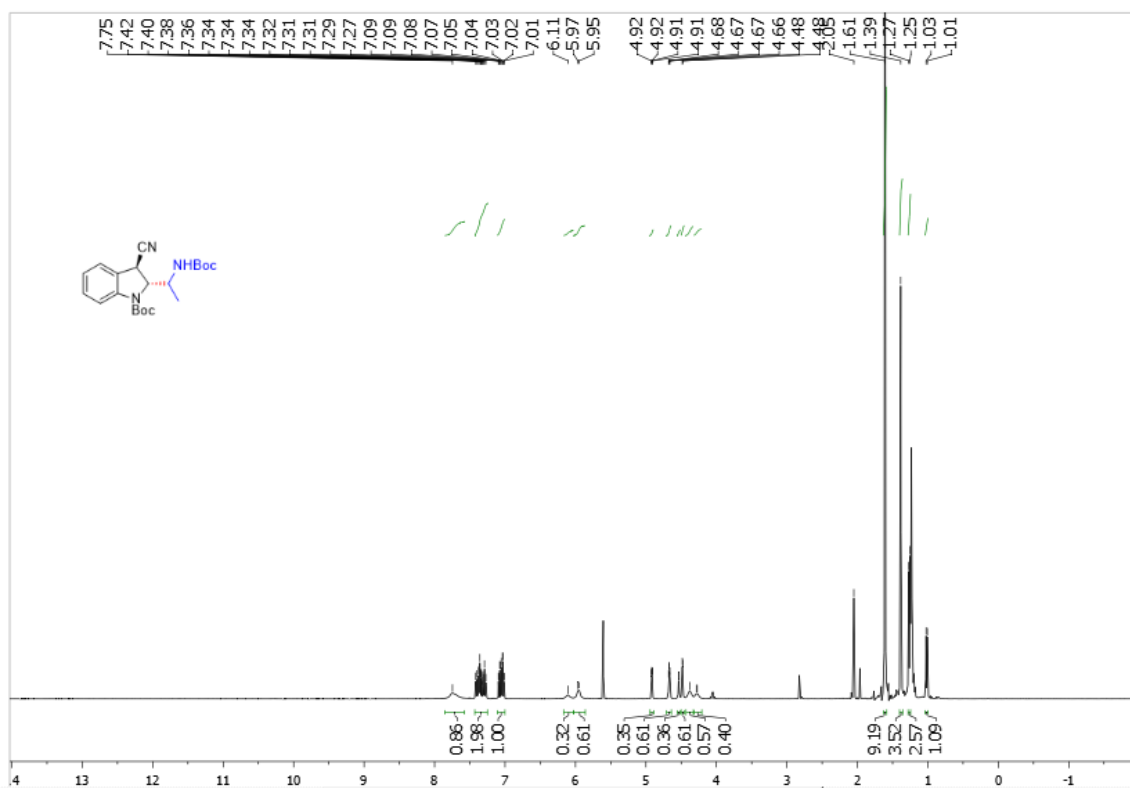
Supplementary Figure 52. ^{13}C NMR spectra of *trans*-3d



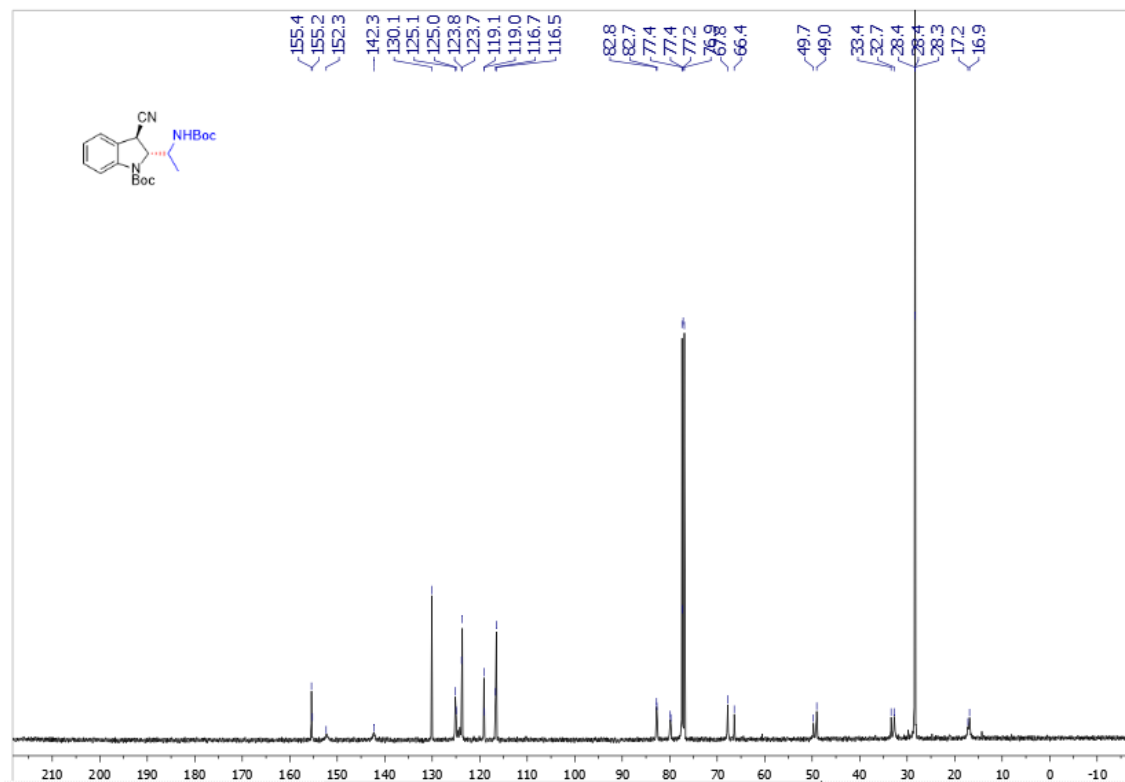
Supplementary Figure 53. ^1H NMR spectra of *trans*-3e



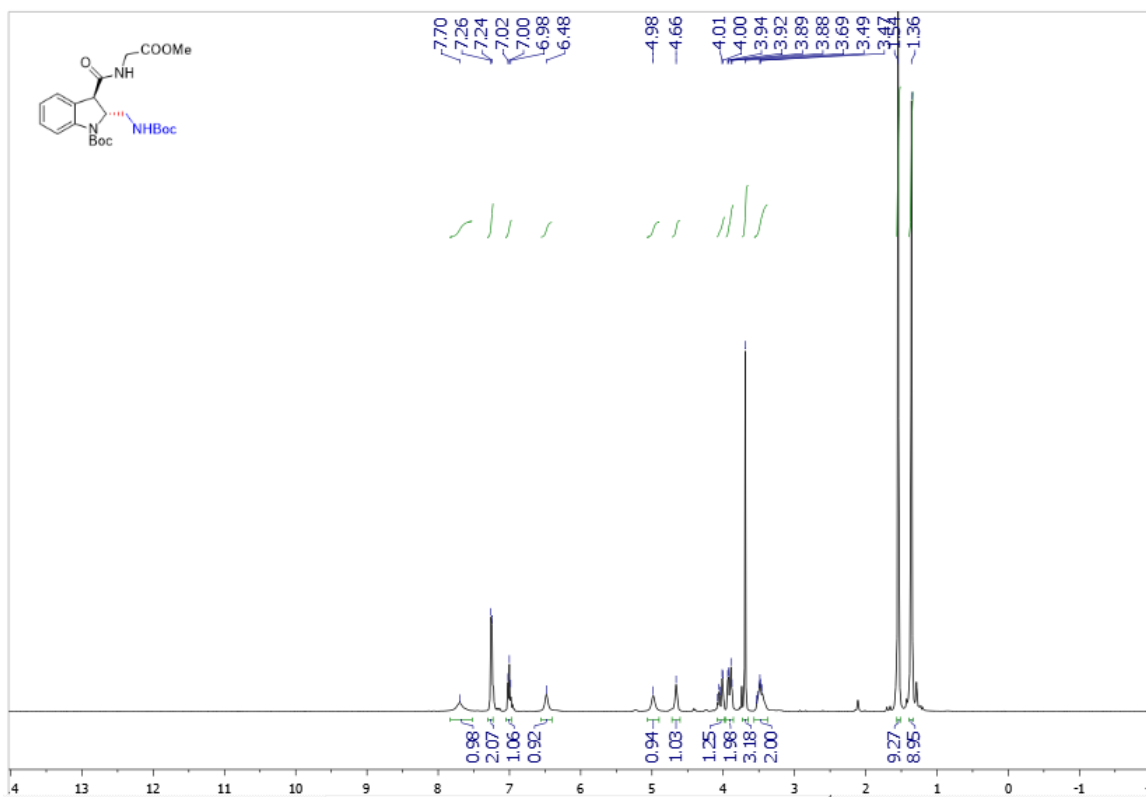
Supplementary Figure 54. ^{13}C NMR spectra of *trans*-3e



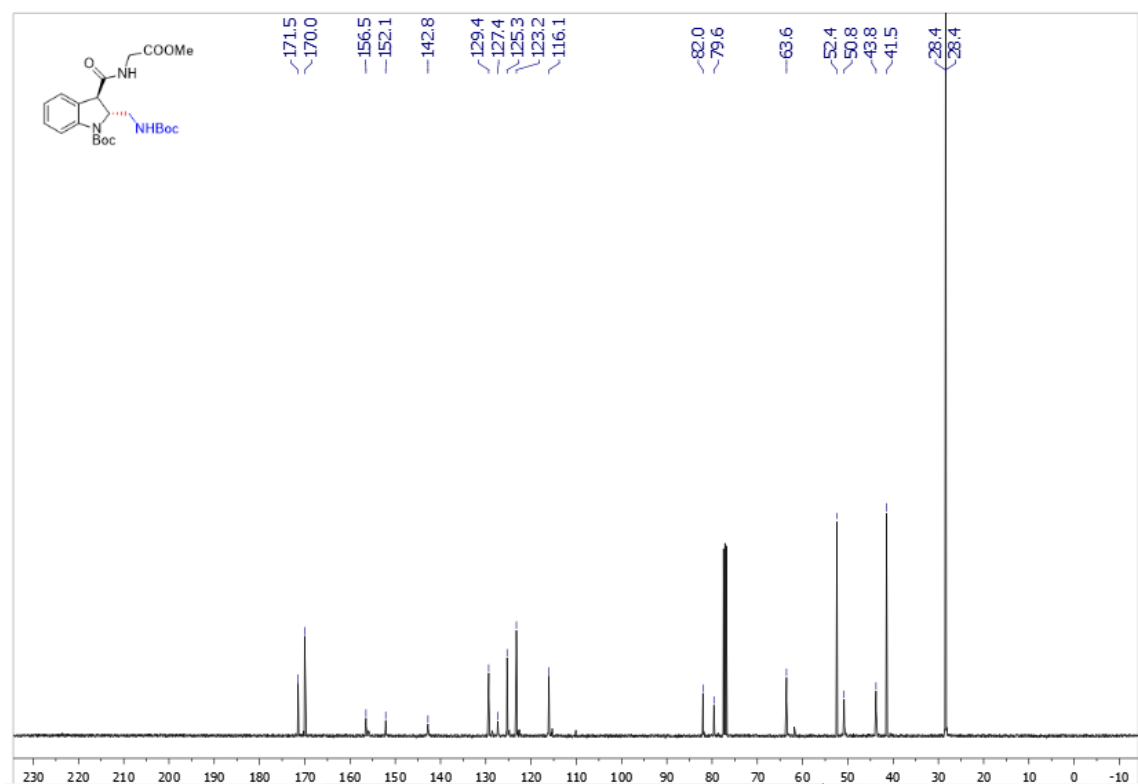
Supplementary Figure 55. ^1H NMR spectra of *trans*-3f



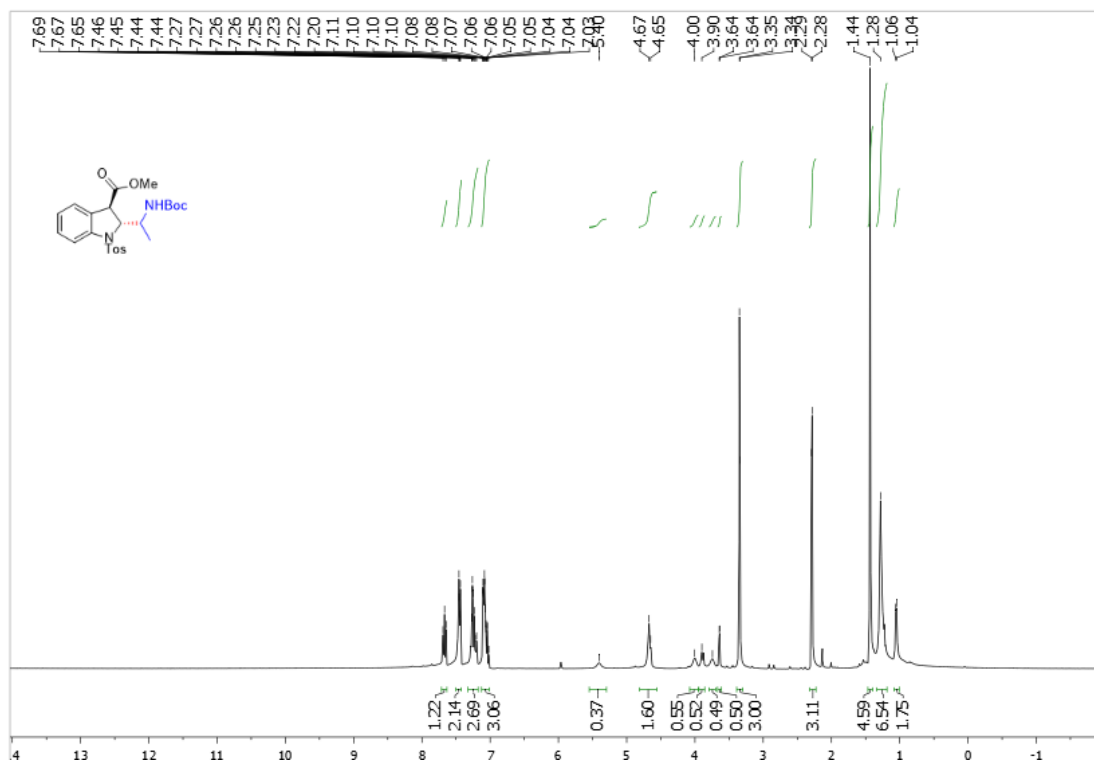
Supplementary Figure 56. ^{13}C NMR spectra of *trans*-3f



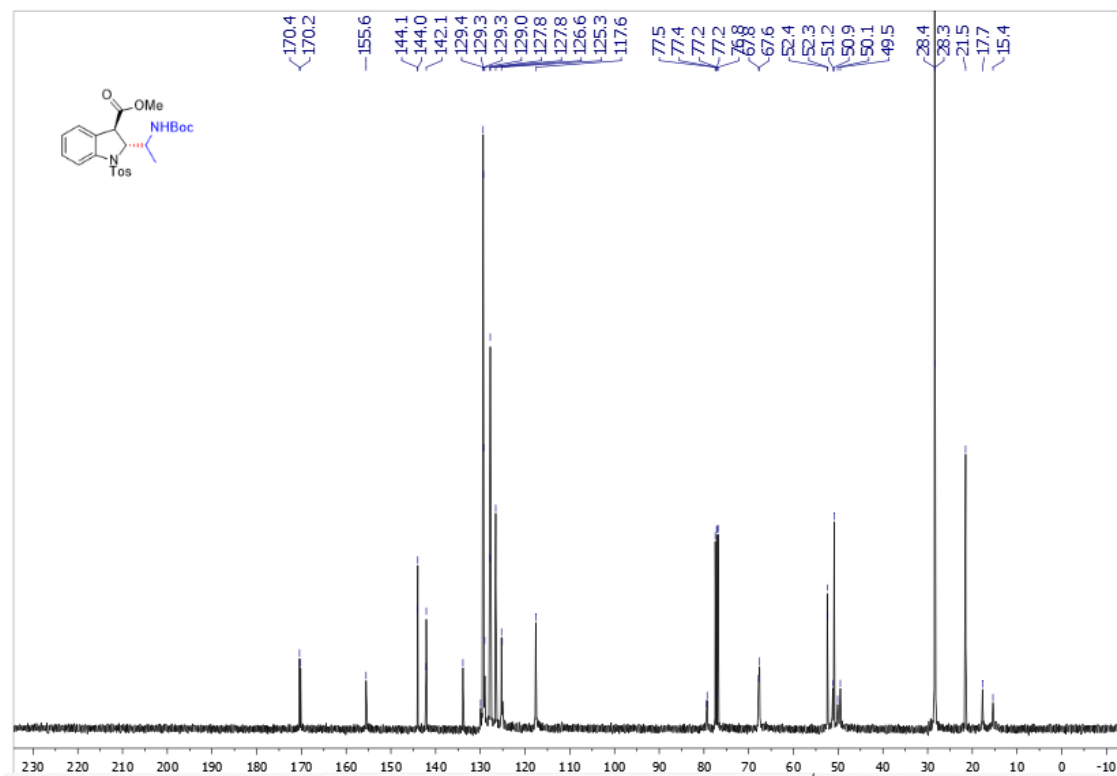
Supplementary Figure 57. ^1H NMR spectra of *trans*-3g



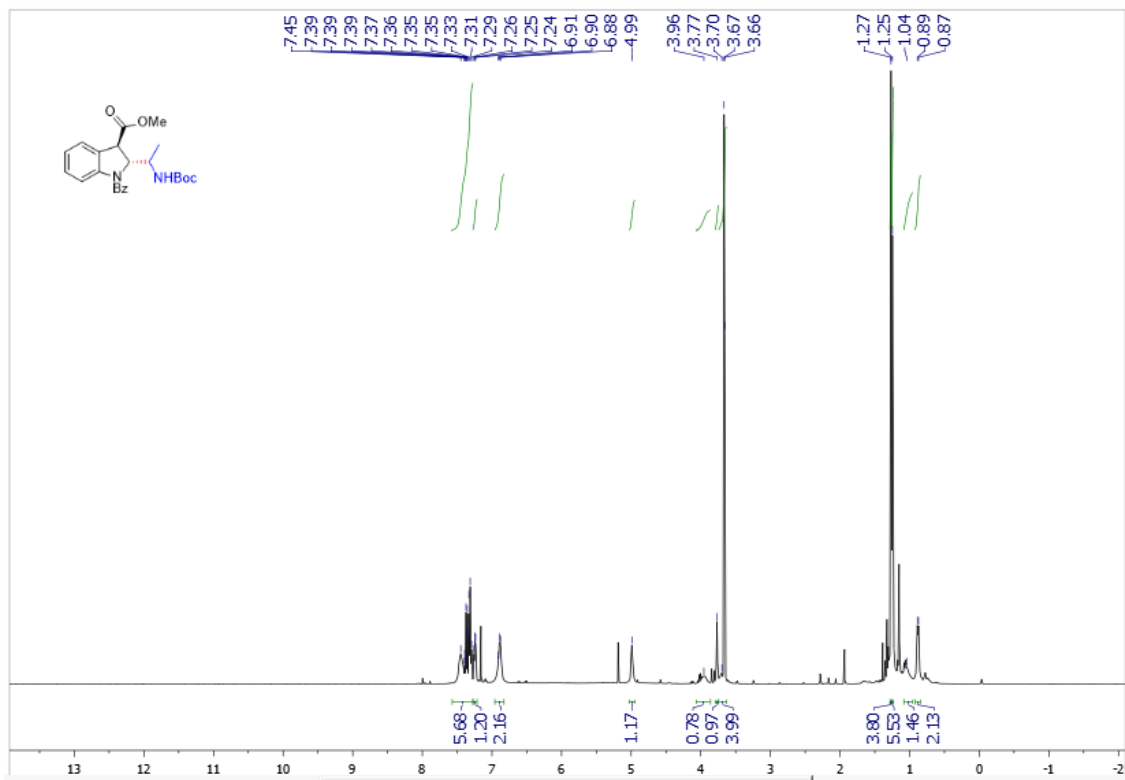
Supplementary Figure 58. ^{13}C NMR spectra of *trans*-3g



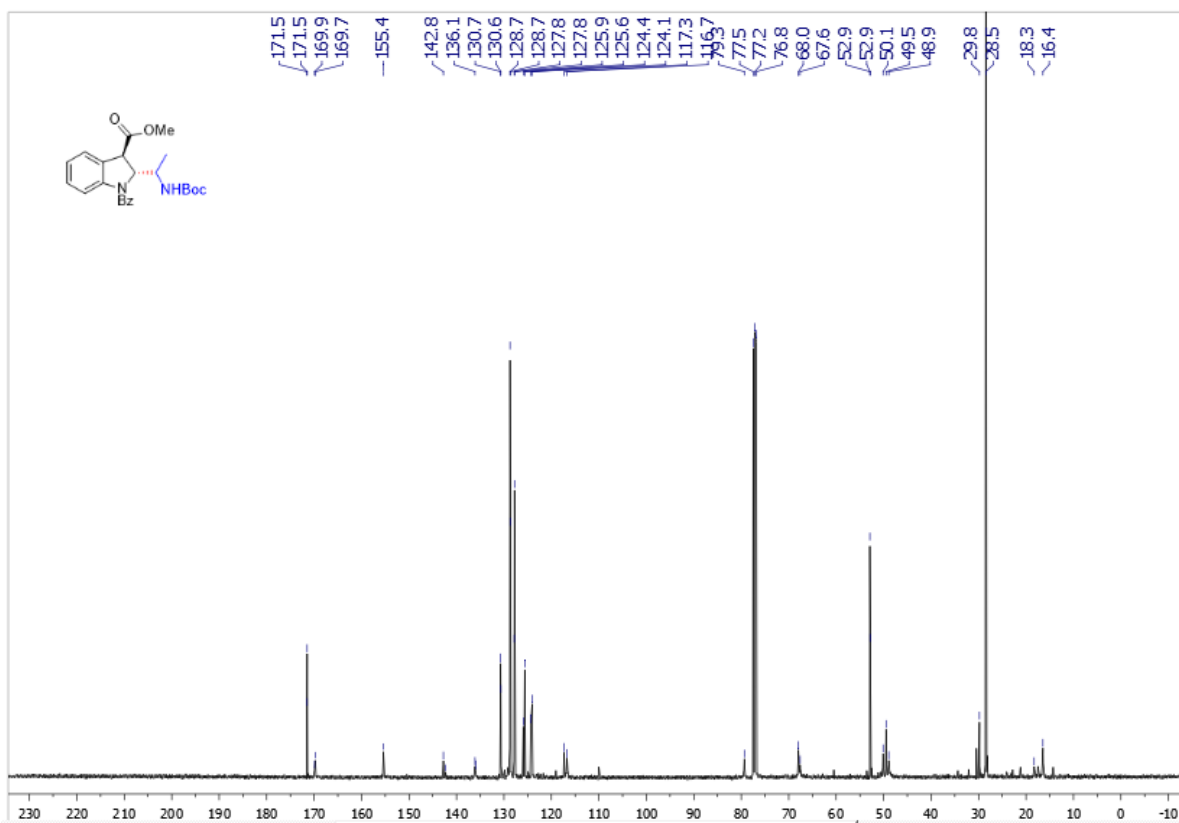
Supplementary Figure 59. ^1H NMR spectra of *trans*-3h



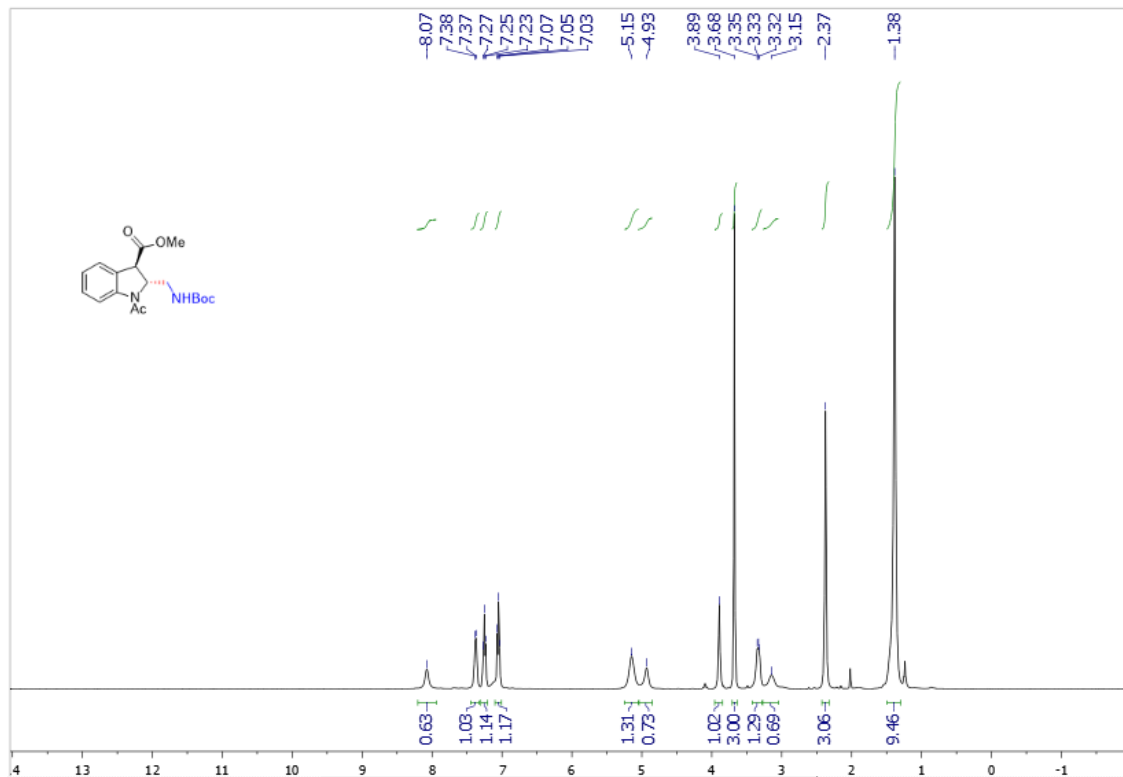
Supplementary Figure 60. ^{13}C NMR spectra of *trans*-3h



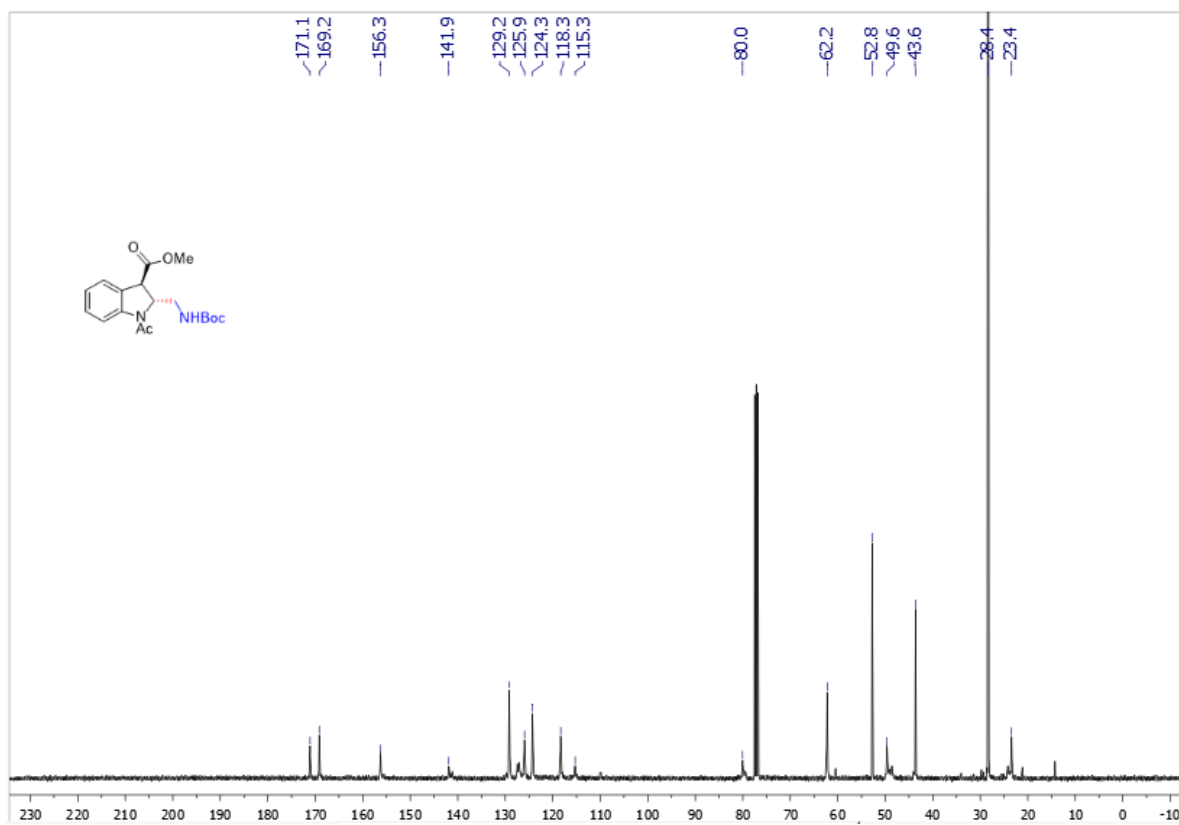
Supplementary Figure 61. ^1H NMR spectra of *trans*-3i



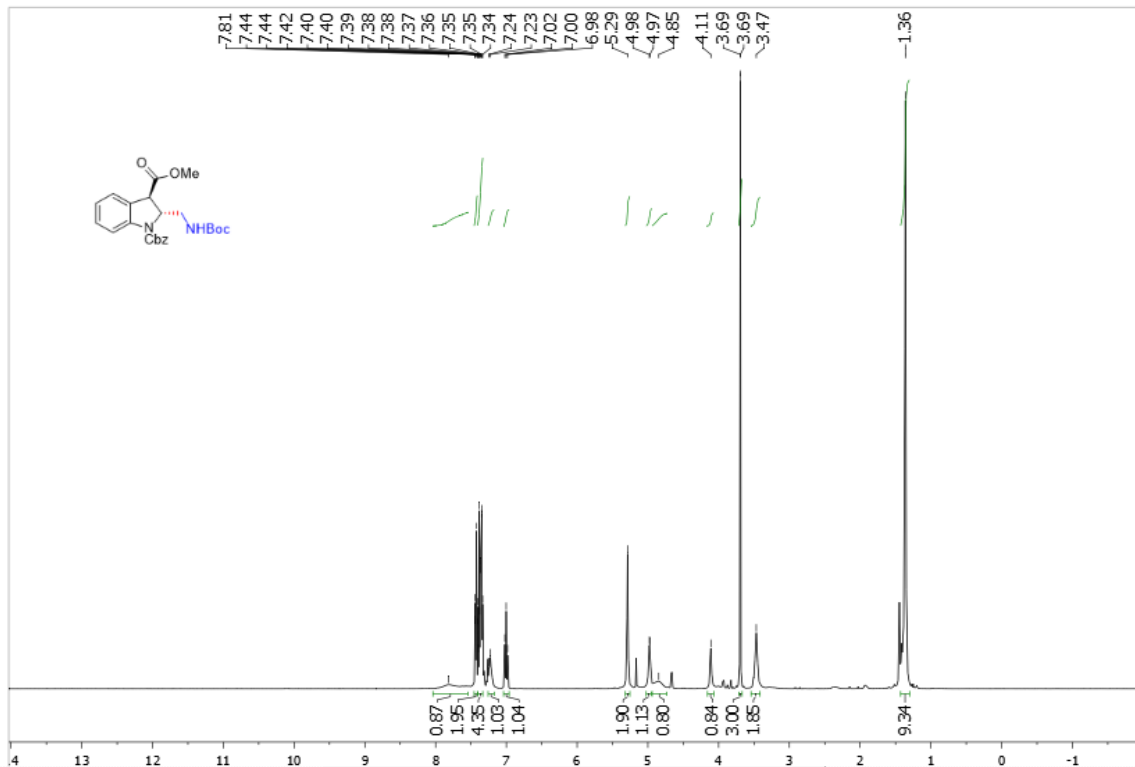
Supplementary Figure 62. ^{13}C NMR spectra of *trans*-3i



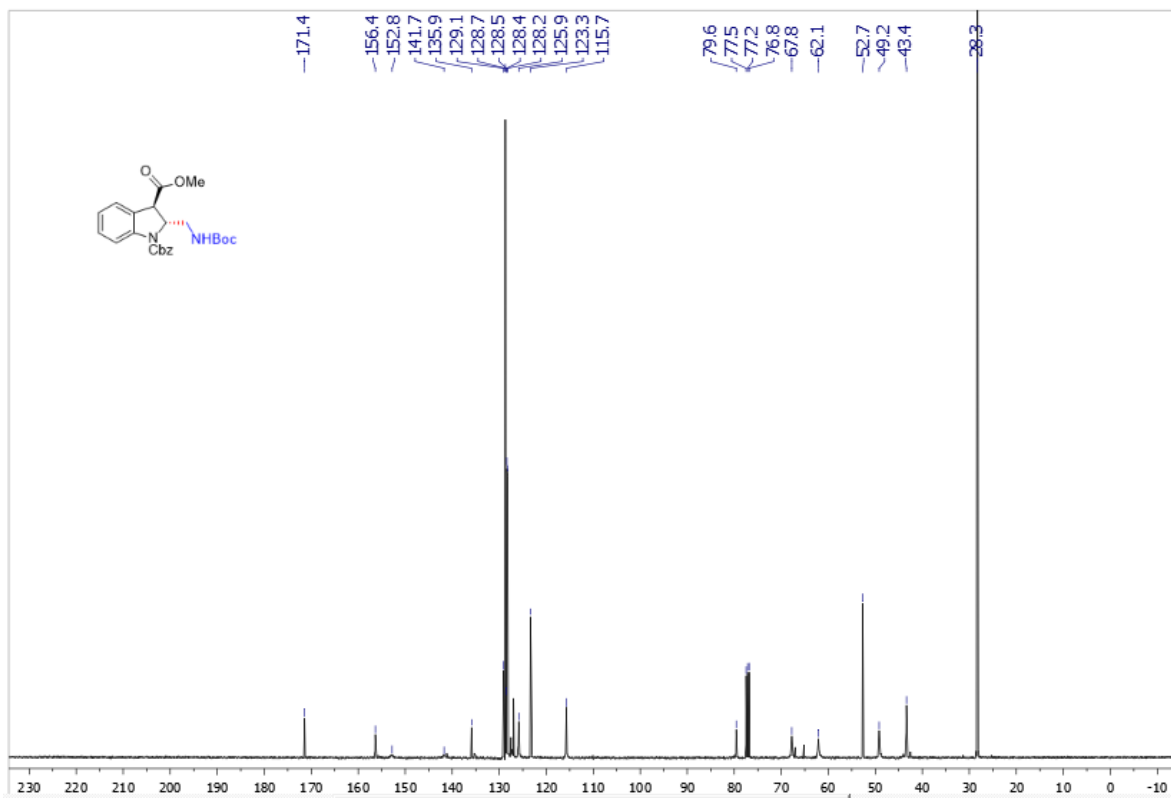
Supplementary Figure 63. ^1H NMR spectra of *trans*-3j



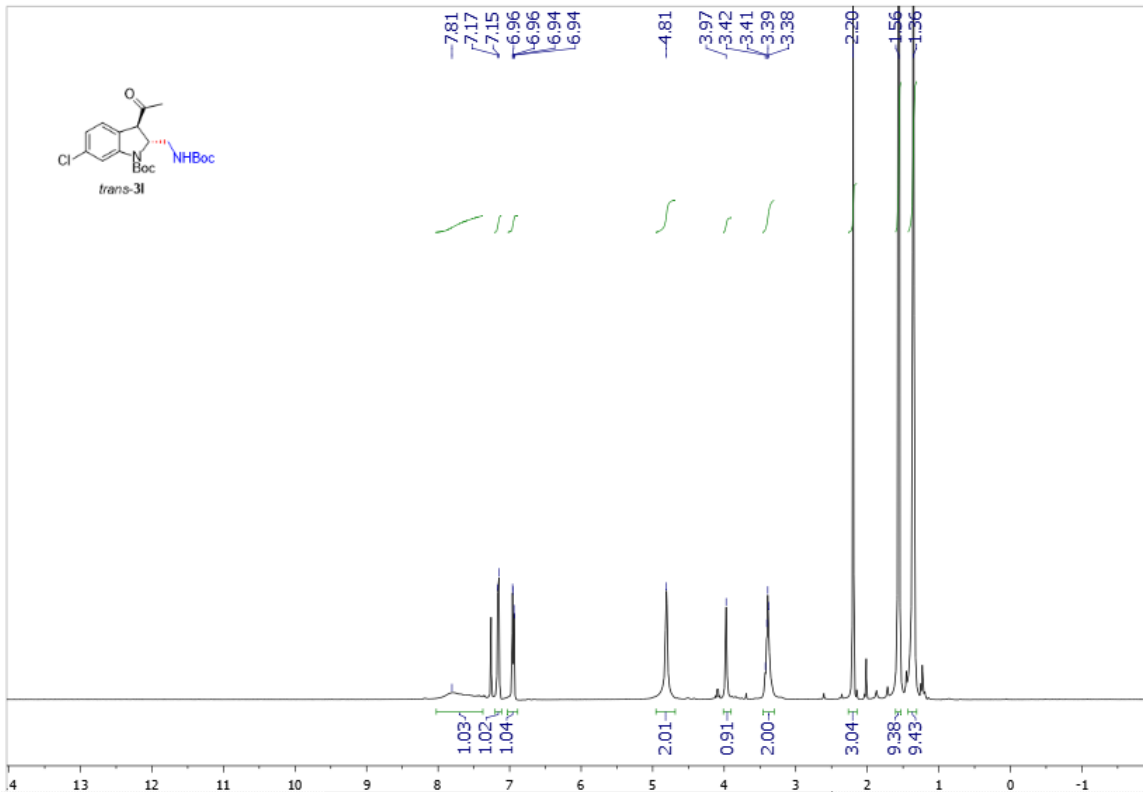
Supplementary Figure 64. ^{13}C NMR spectra of *trans*-3j



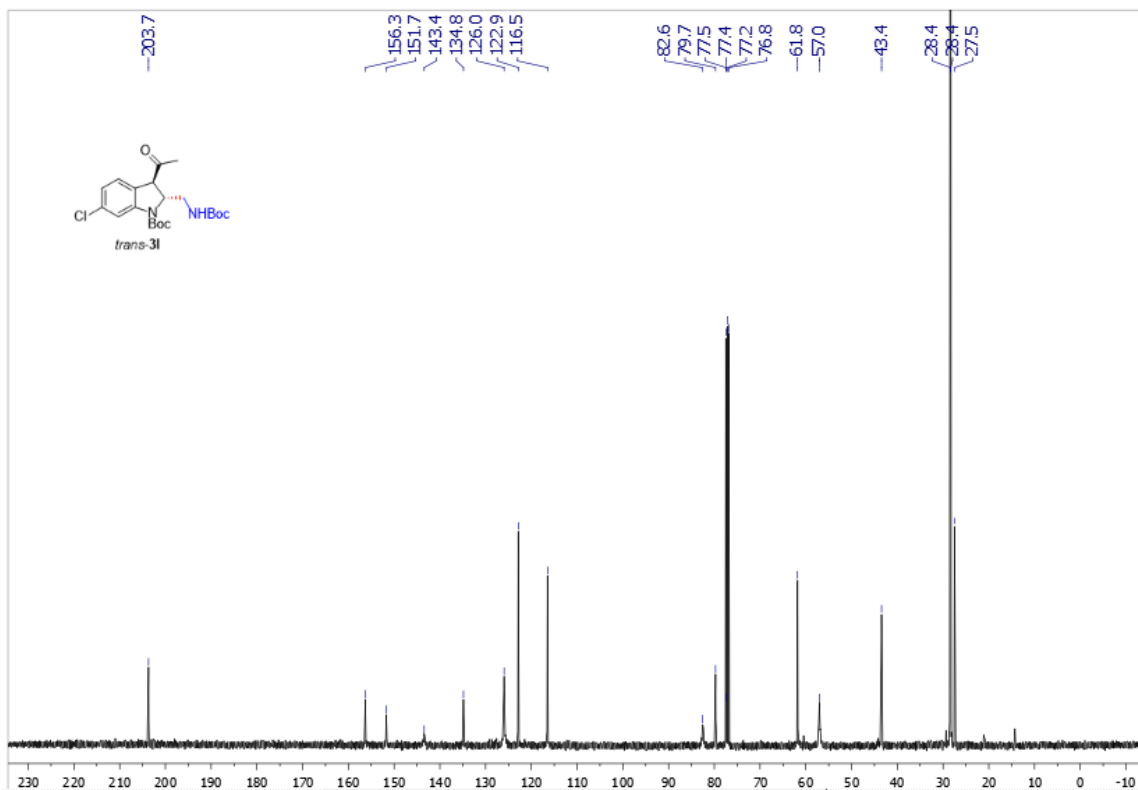
Supplementary Figure 65. ^1H NMR spectra of *trans*-3k



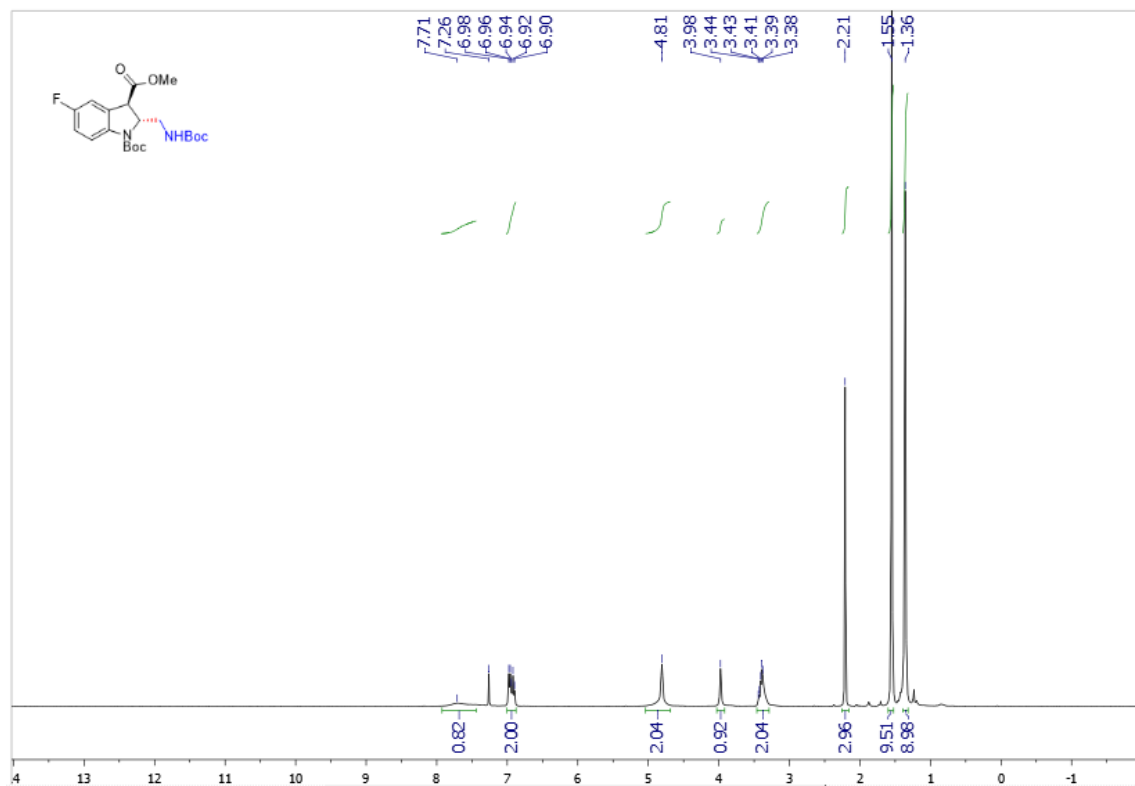
Supplementary Figure 66. ^{13}C NMR spectra of *trans*-3k



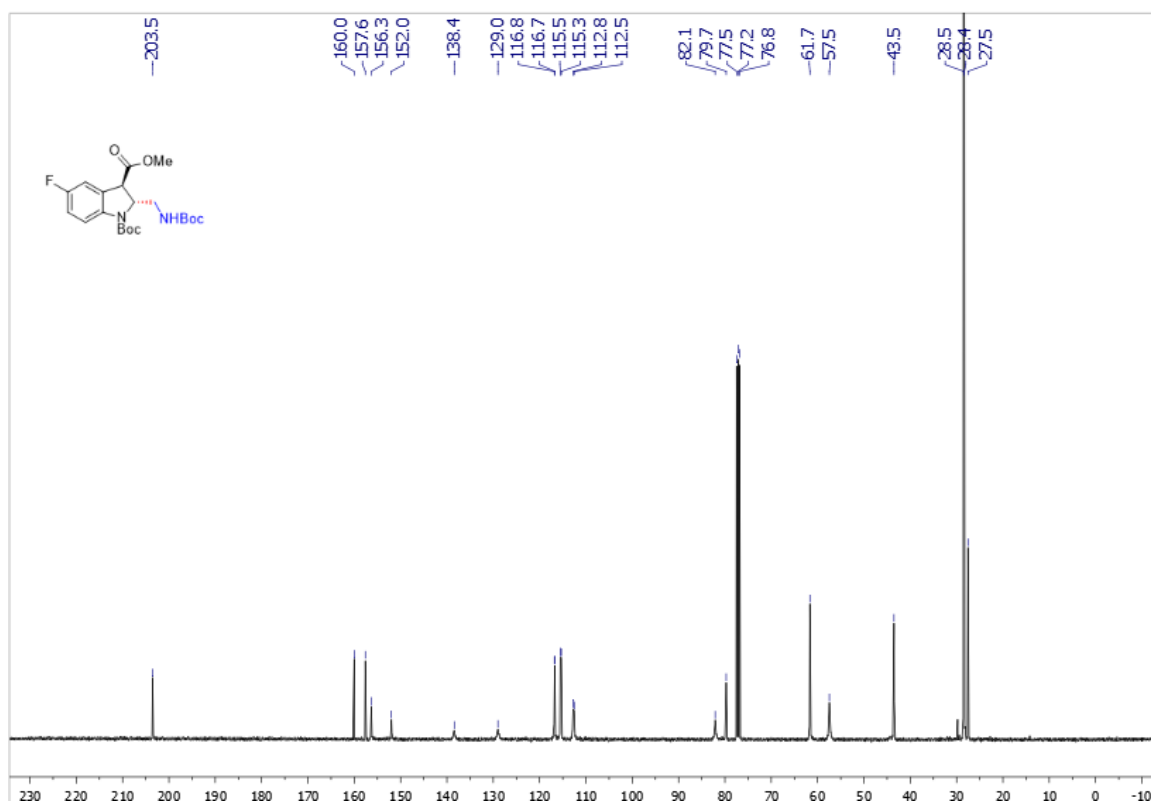
Supplementary Figure 67. ¹H NMR spectra of *trans*-31



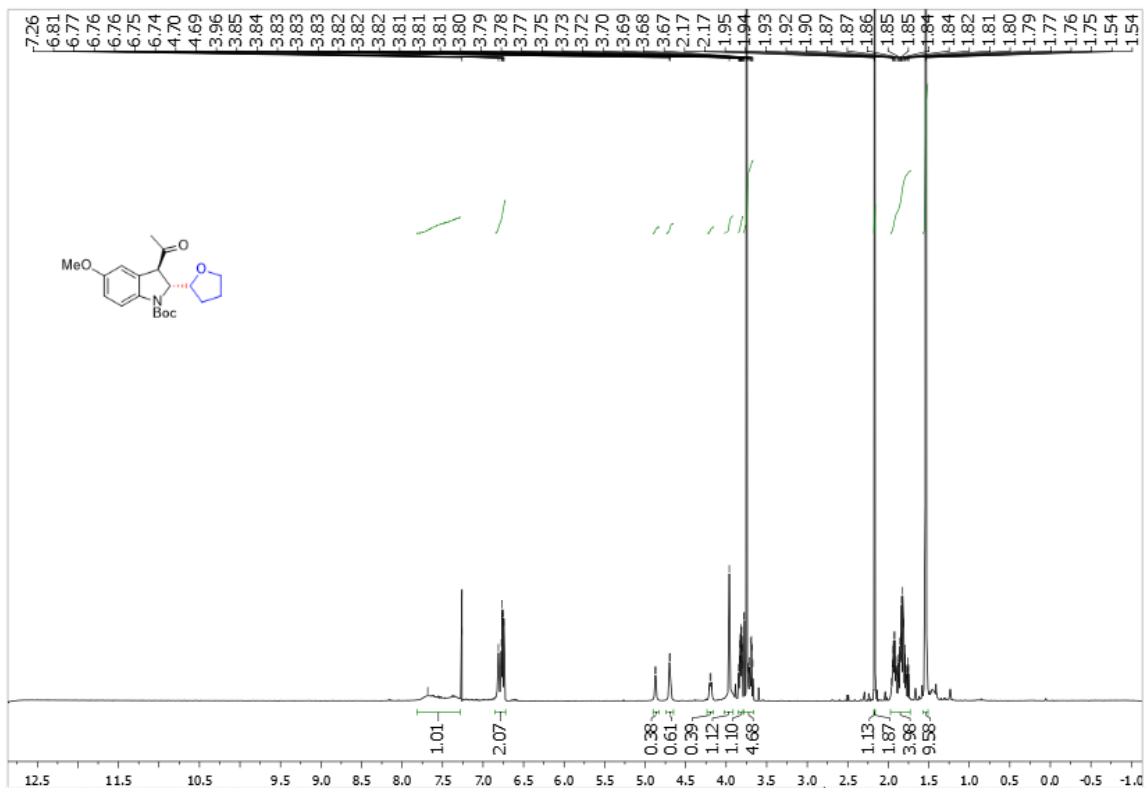
Supplementary Figure 68. ¹³C NMR spectra of *trans*-31



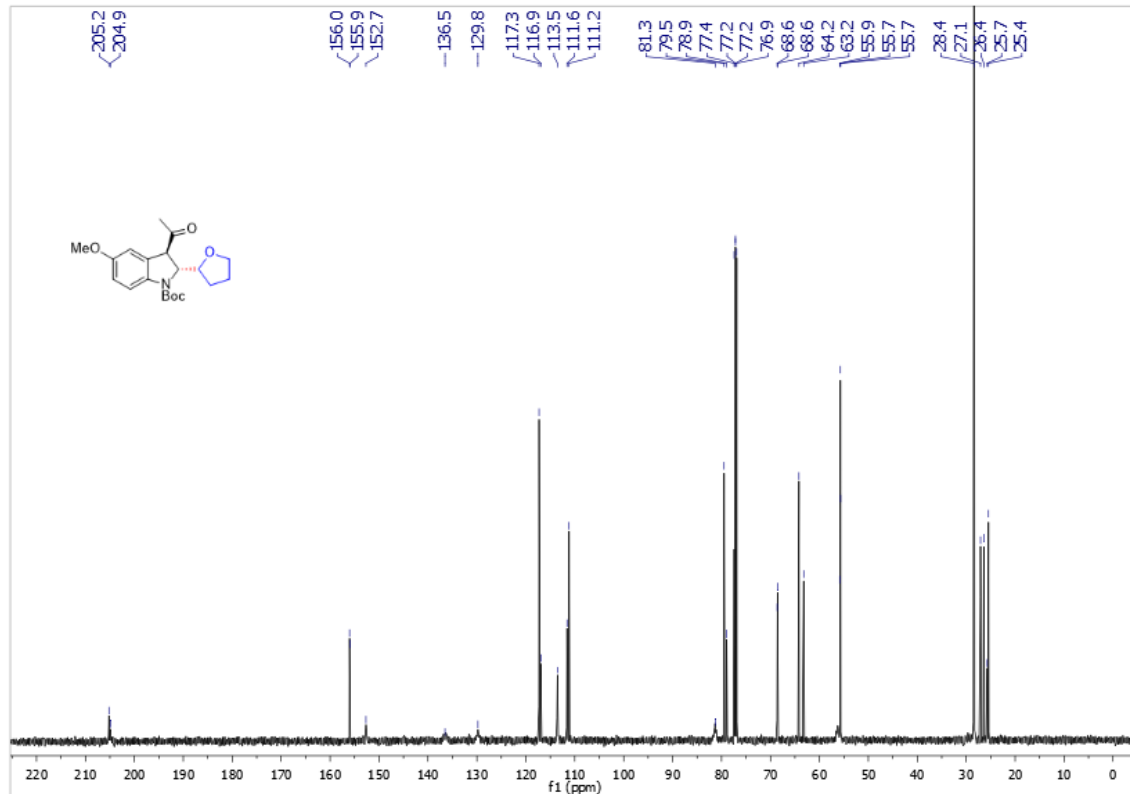
Supplementary Figure 69. ^1H NMR spectra of *trans*-3m



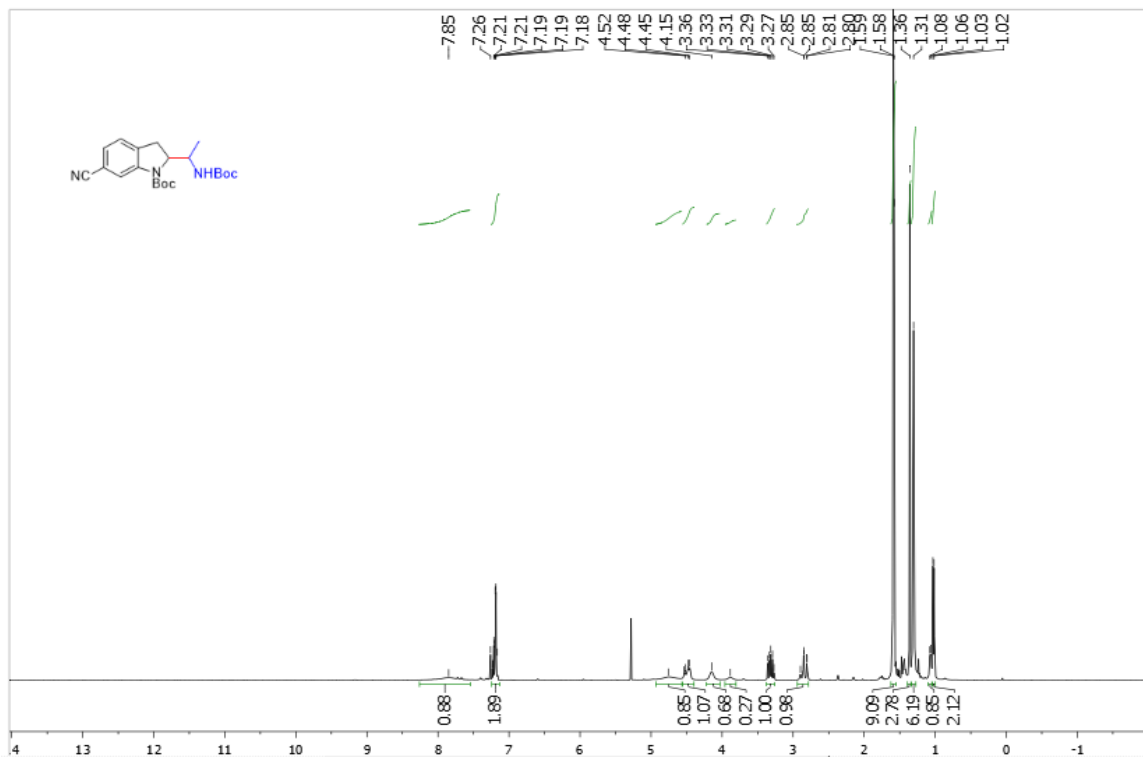
Supplementary Figure 70. ^{13}C NMR spectra of *trans*-3m



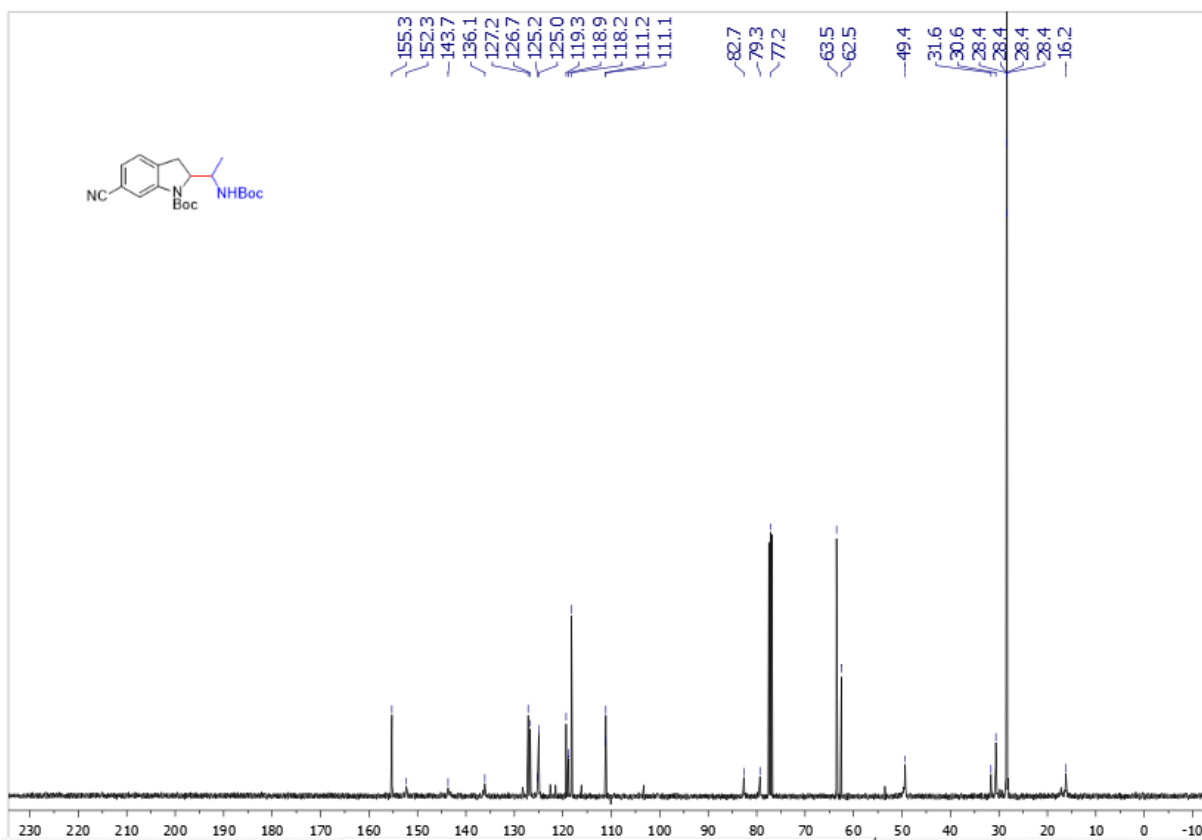
Supplementary Figure 71. ^1H NMR spectra of *trans*-3n



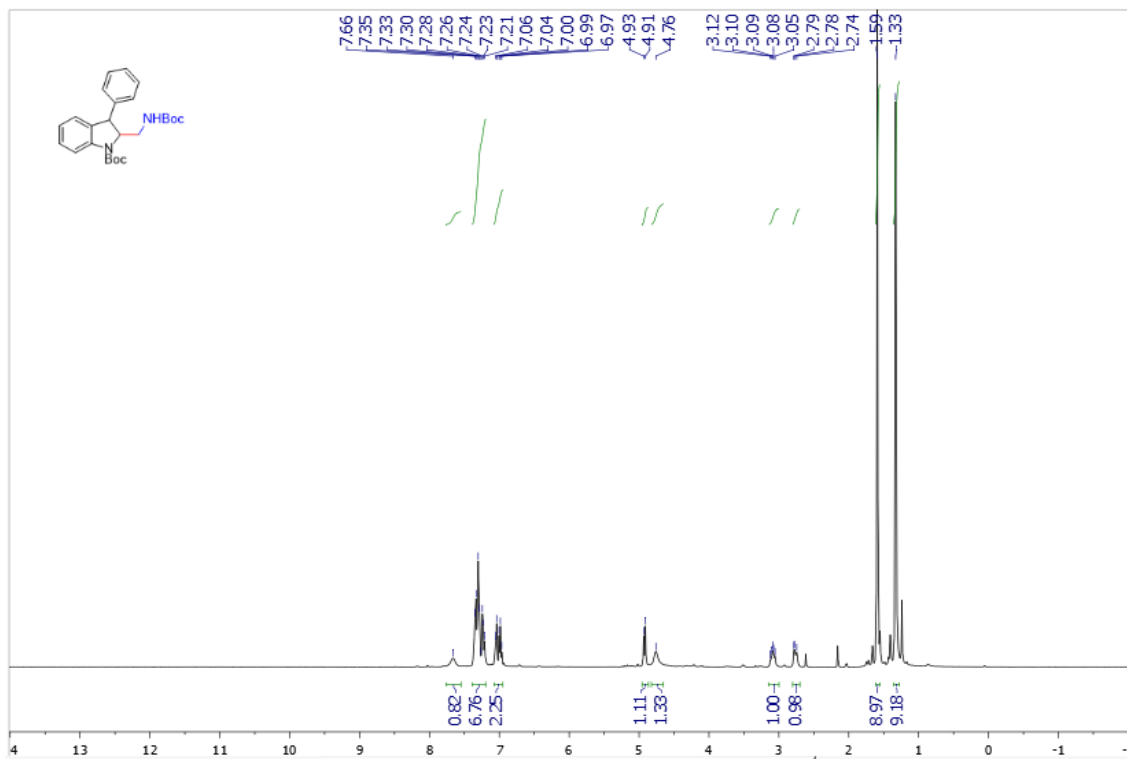
Supplementary Figure 72. ^{13}C NMR spectra of *trans*-3n



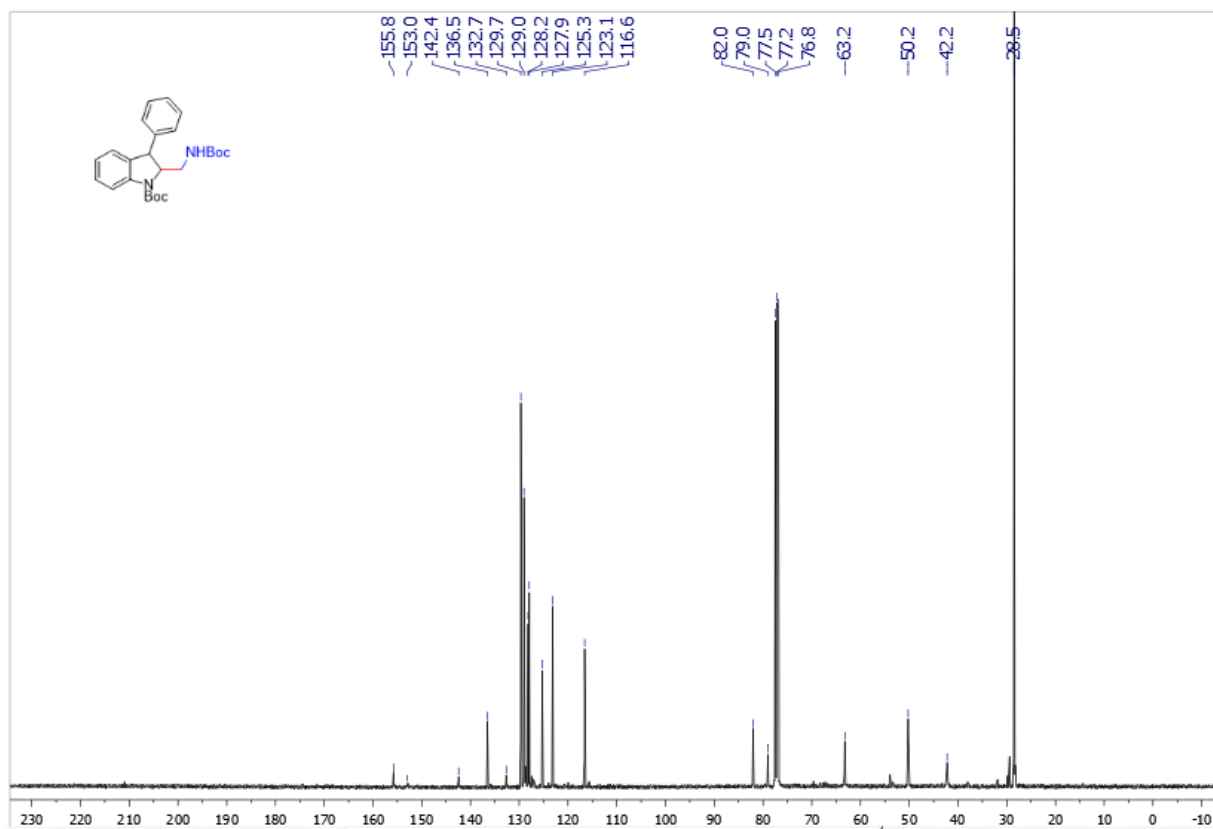
Supplementary Figure 73. ^1H NMR spectra of 30



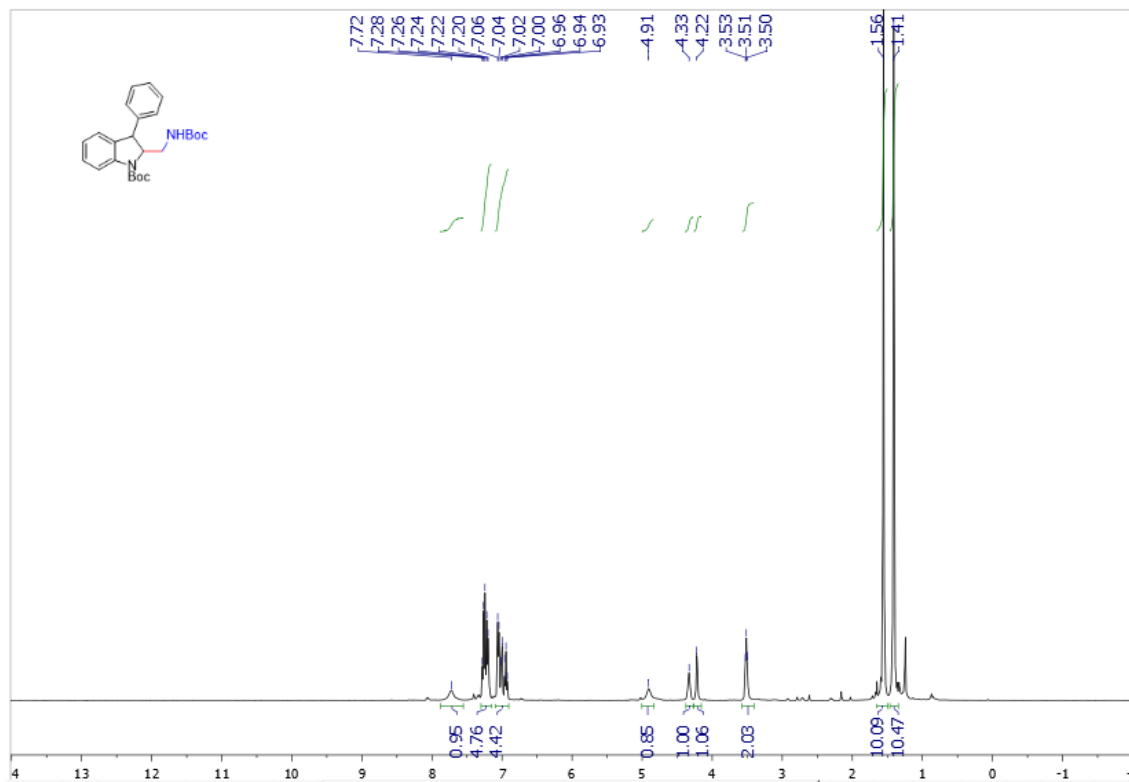
Supplementary Figure 74. ^{13}C NMR spectra of 30



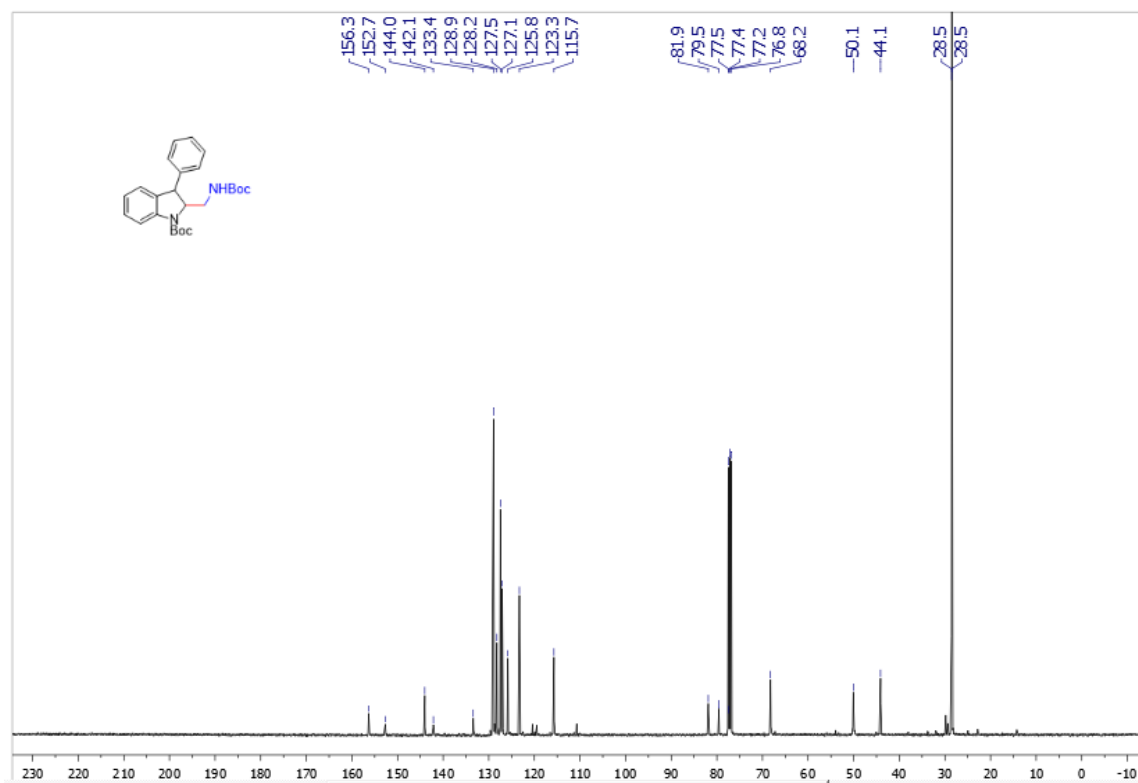
Supplementary Figure 75. ¹H NMR spectra of **3p-isomer-a**



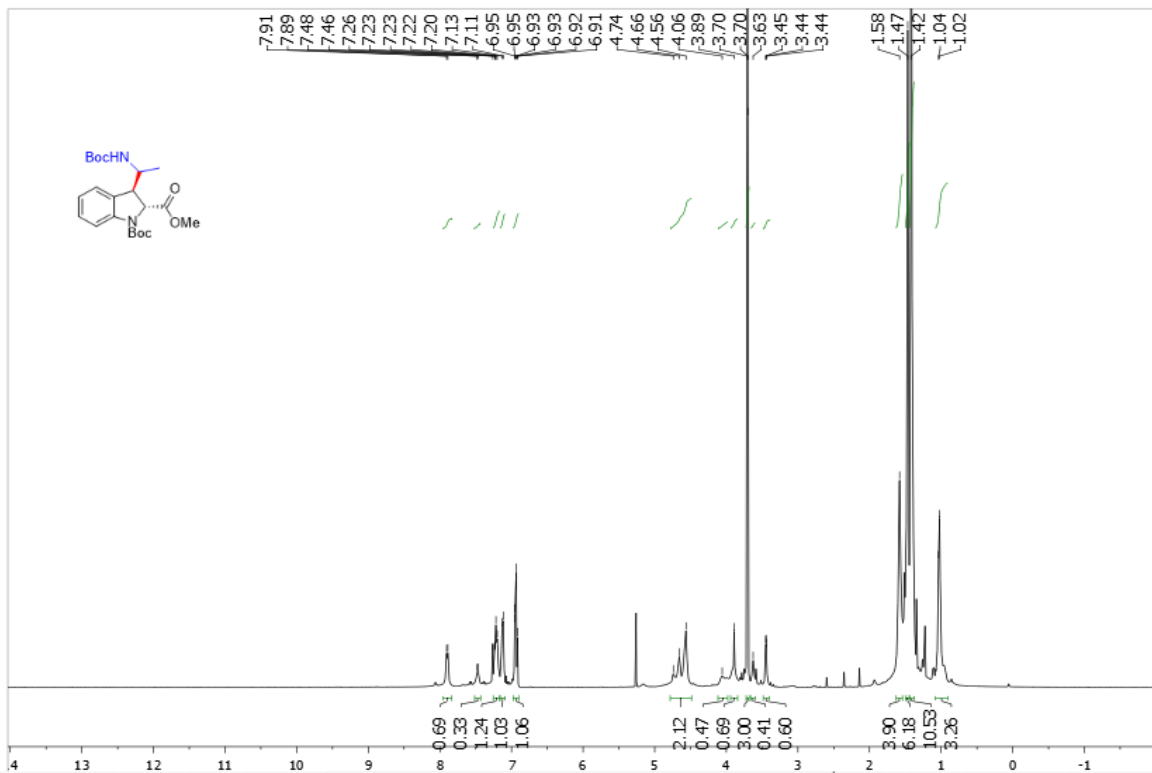
Supplementary Figure 76. ¹³C NMR spectra of **3p-isomer-a**



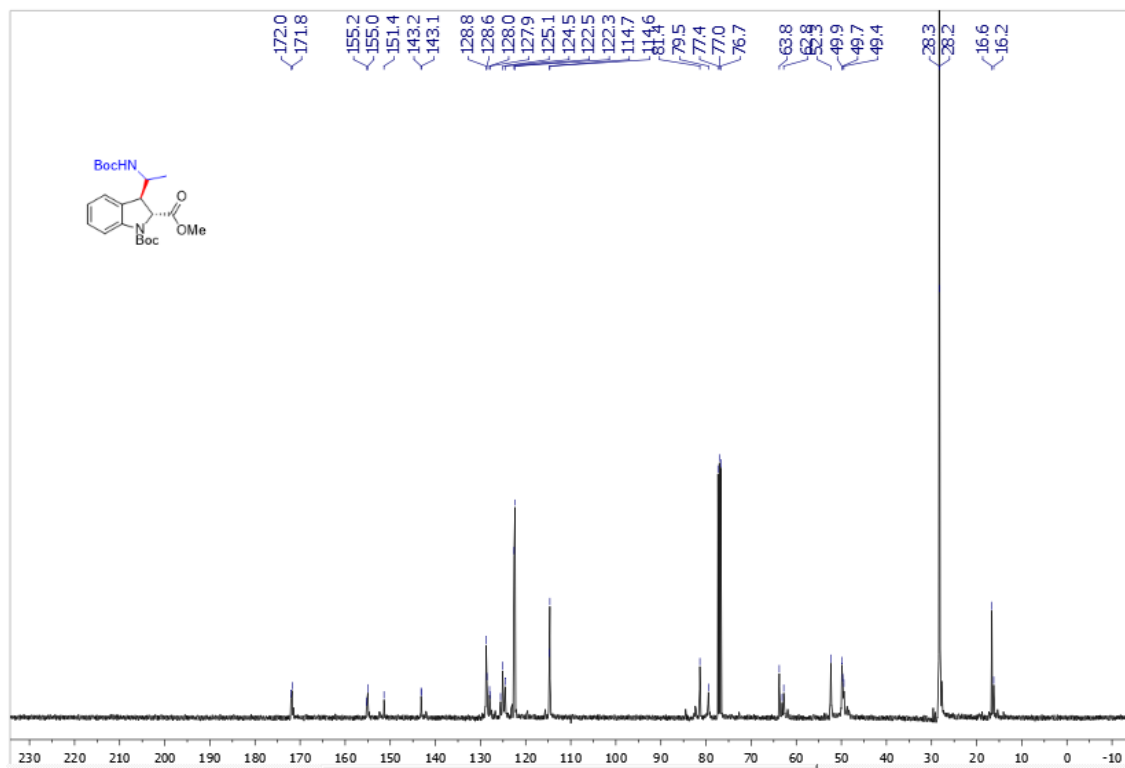
Supplementary Figure 77. ^1H NMR spectra of 3p-isomer-b



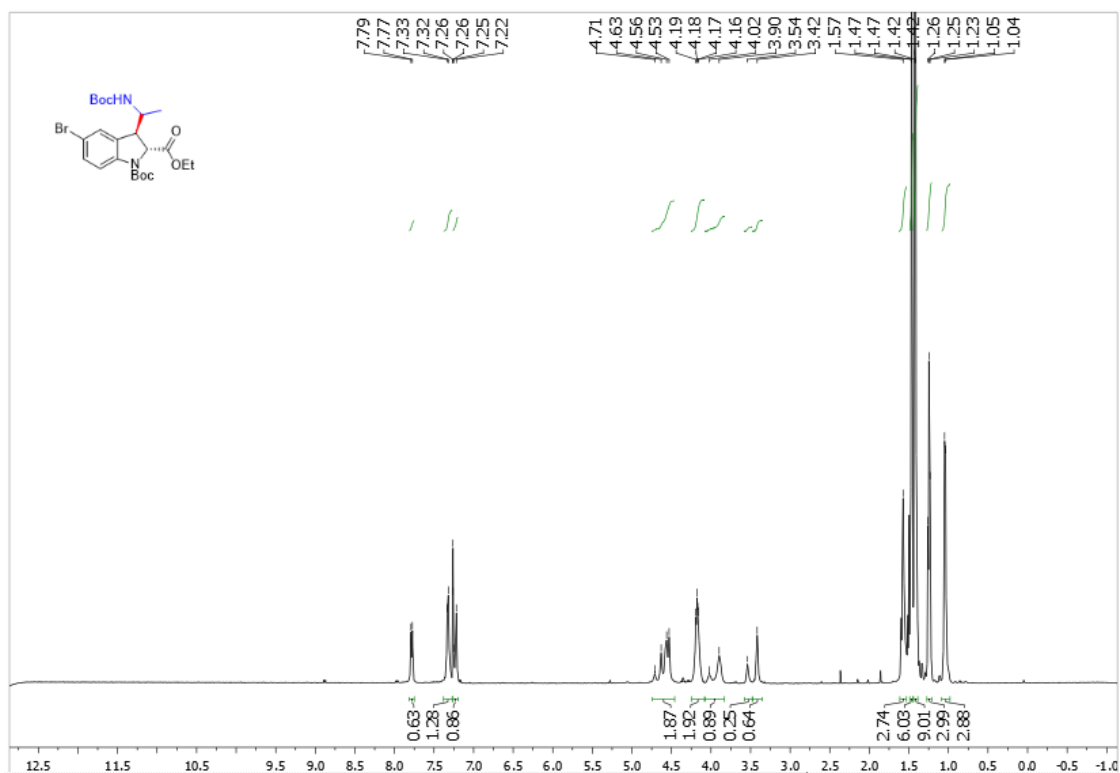
Supplementary Figure 78. ^{13}C NMR spectra of 3p-isomer-b



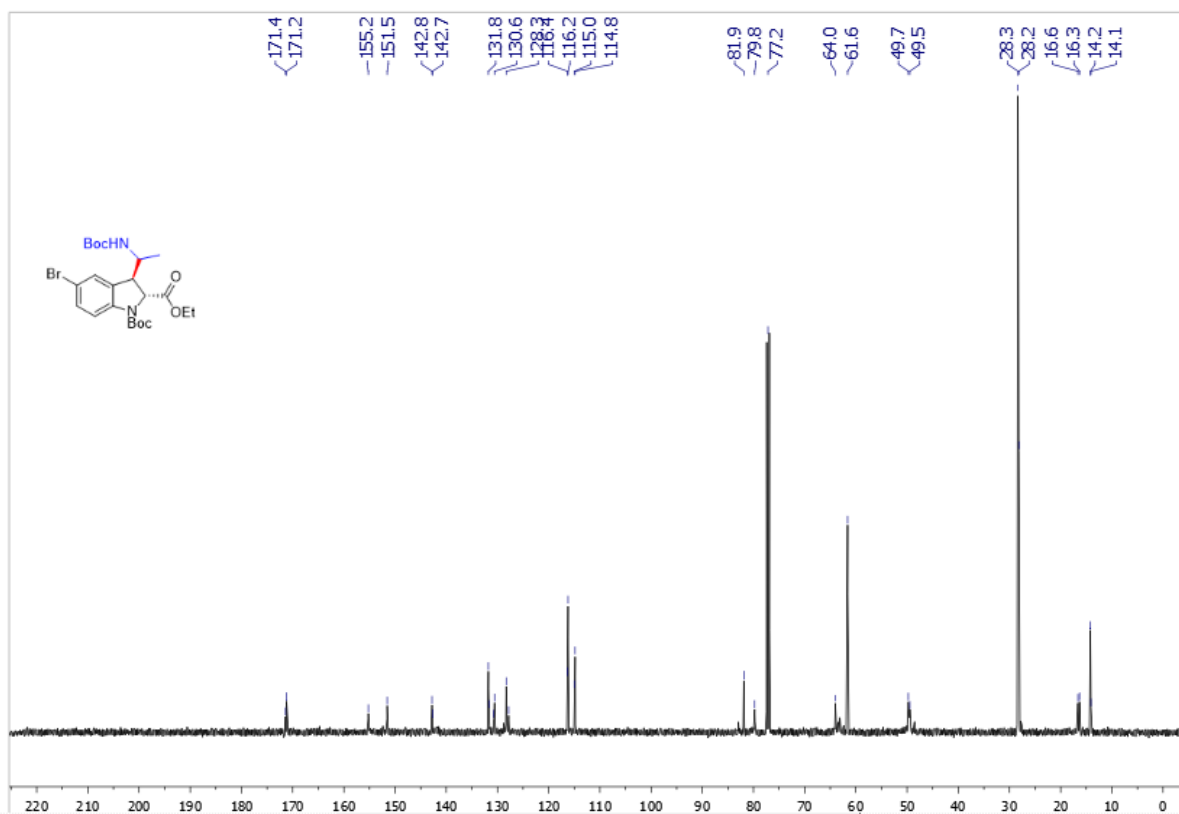
Supplementary Figure 79. ^1H NMR spectra of *trans*-3q



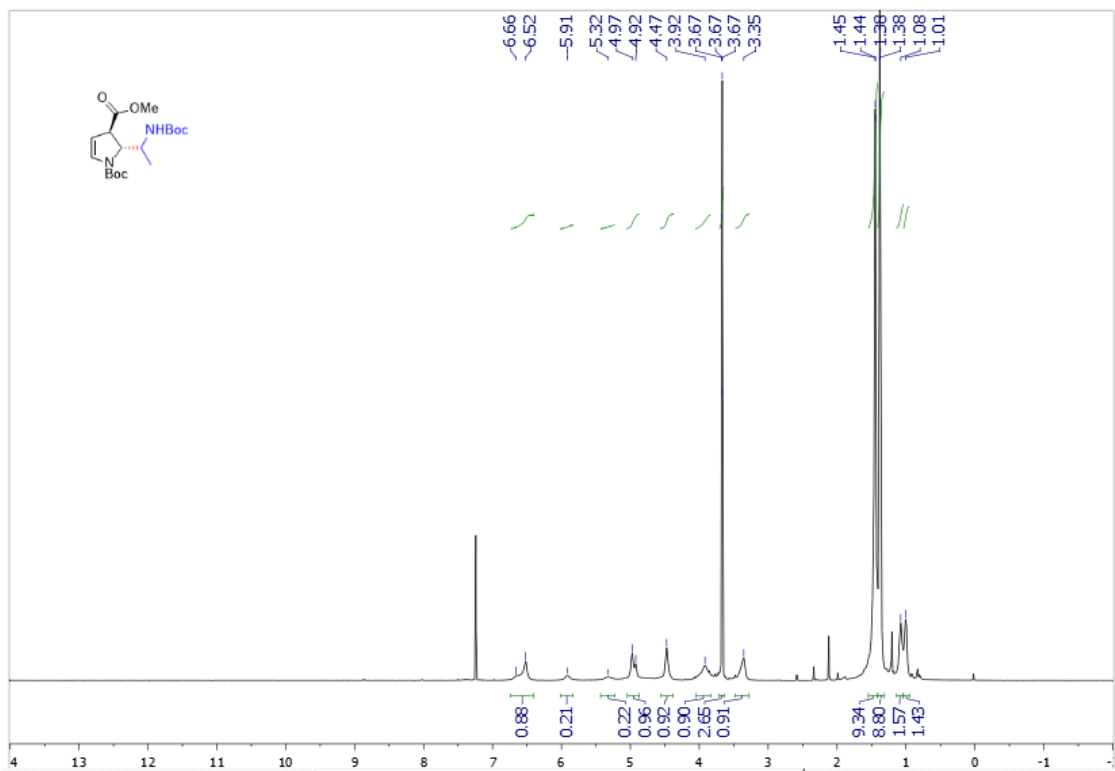
Supplementary Figure 80. ^{13}C NMR spectra of *trans*-3q



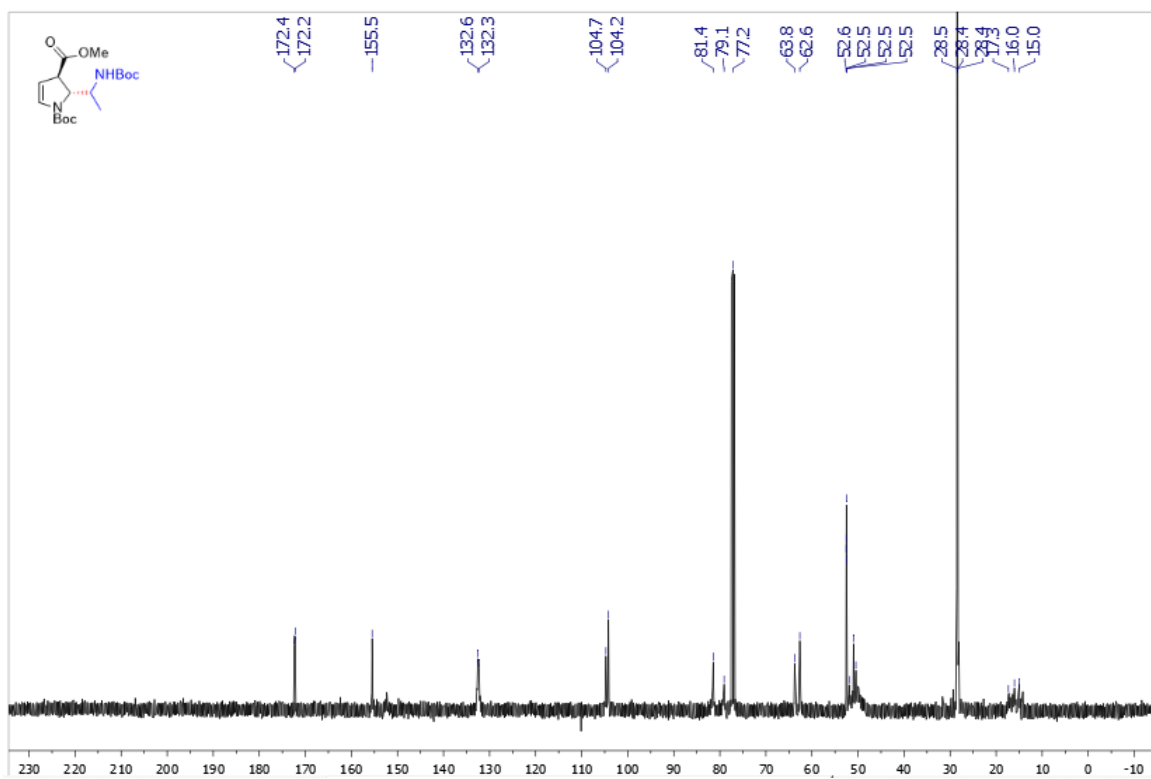
Supplementary Figure 81. ¹H NMR spectra of *trans*-3r



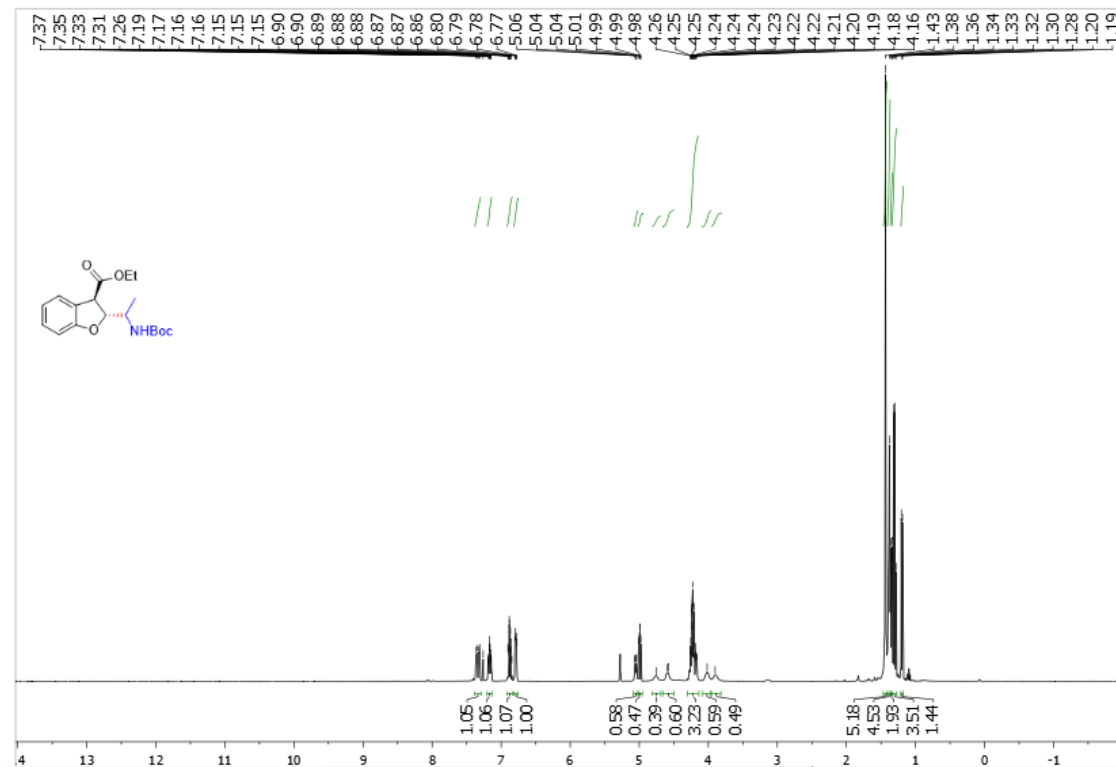
Supplementary Figure 82. ¹³C NMR spectra of *trans*-3r



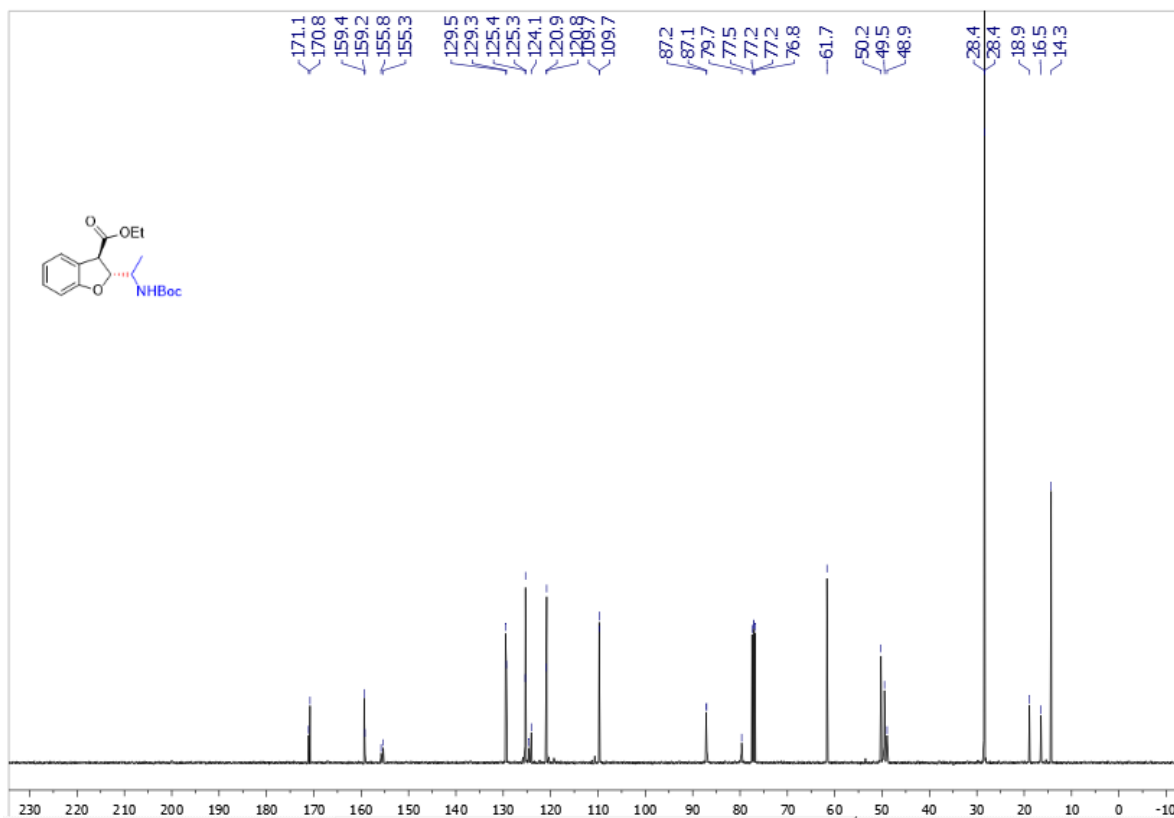
Supplementary Figure 83. ^1H NMR spectra of *trans*-3s



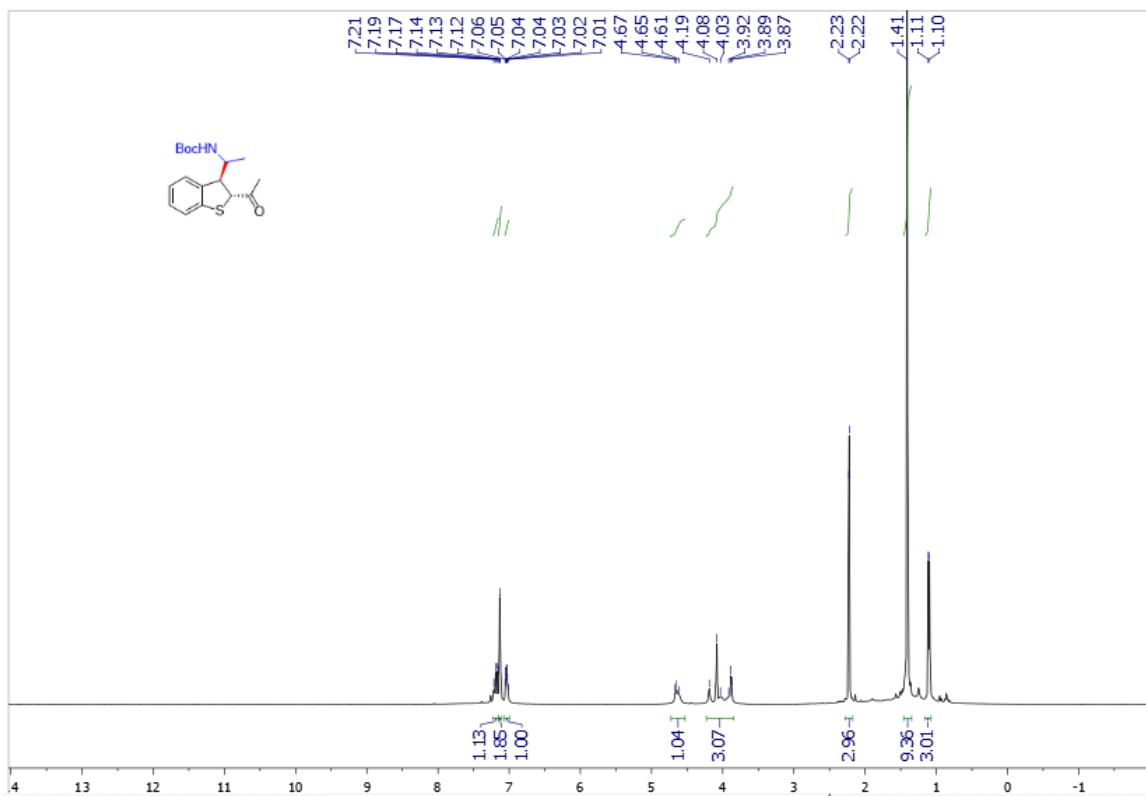
Supplementary Figure 84. ^{13}C NMR spectra of *trans*-3s



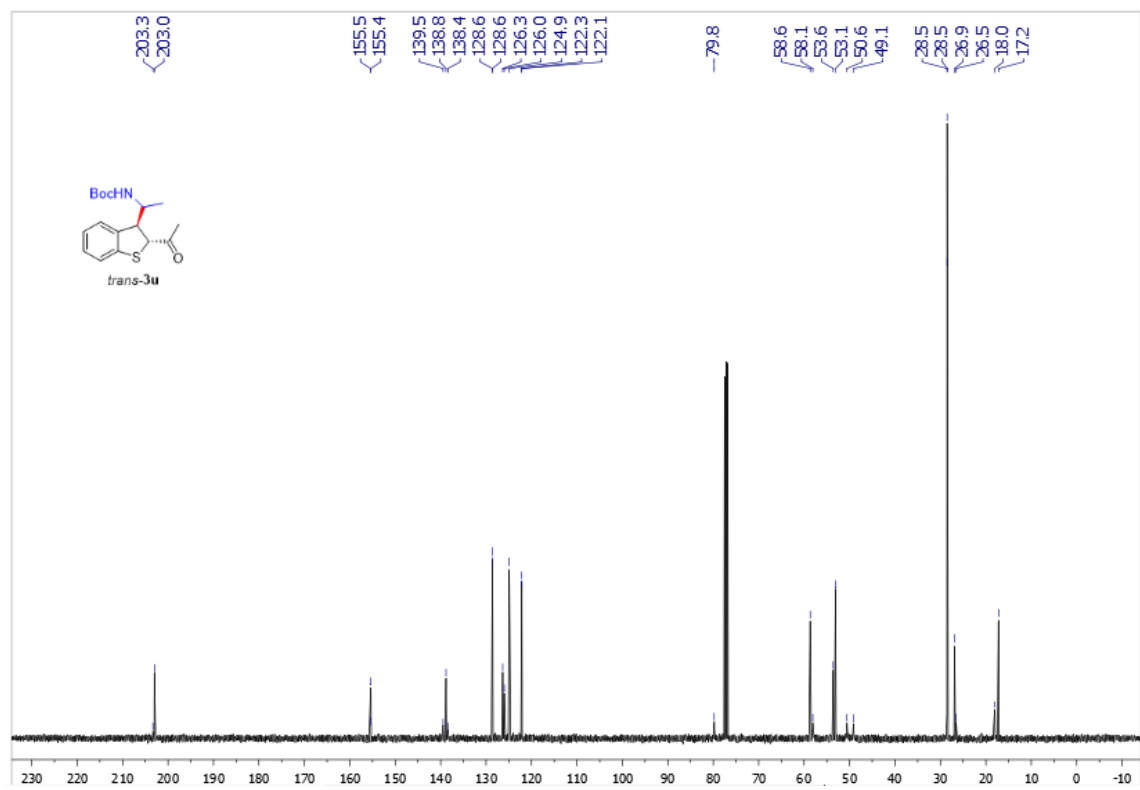
Supplementary Figure 85. ^1H NMR spectra of *trans*-3t



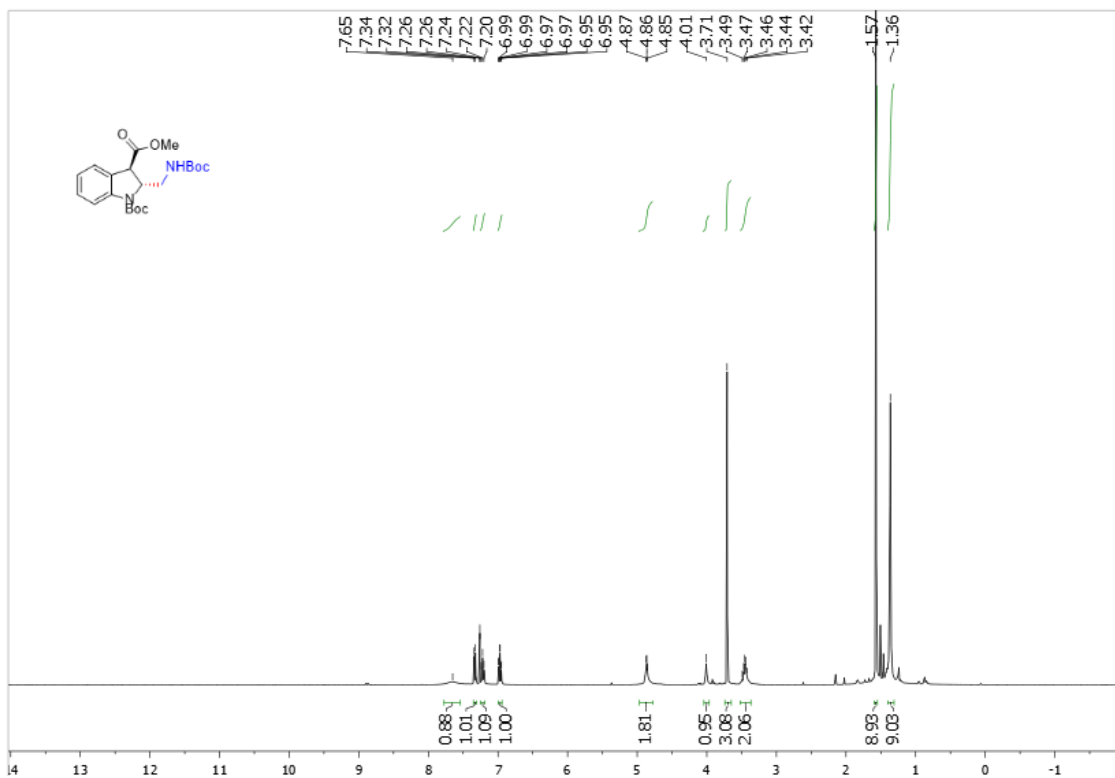
Supplementary Figure 86. ^{13}C NMR spectra of *trans*-3t



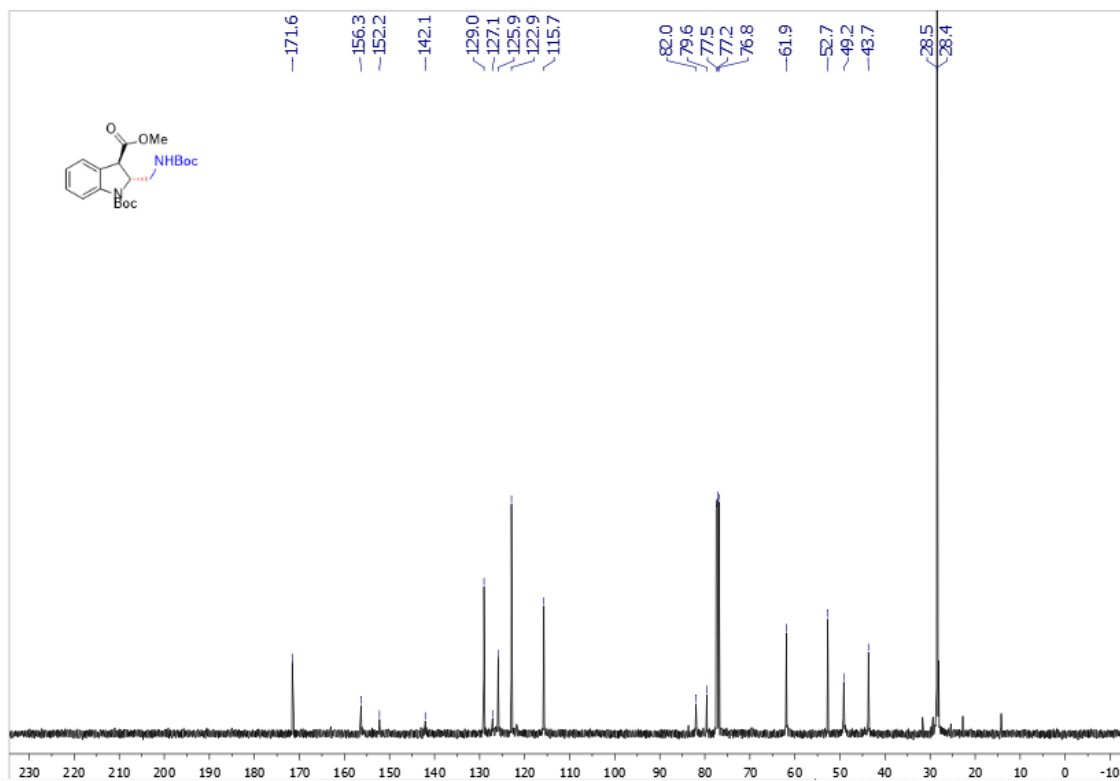
Supplementary Figure 87. ^1H NMR spectra of *trans*-3u



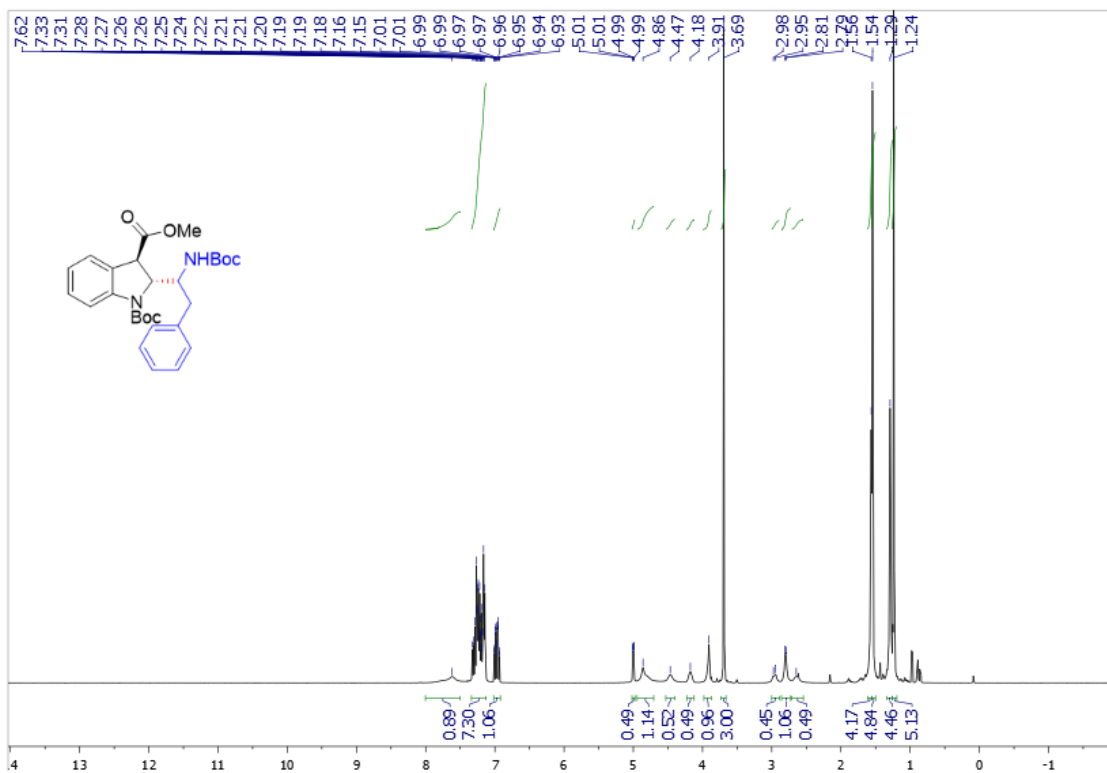
Supplementary Figure 88. ^{13}C NMR spectra of *trans*-3u



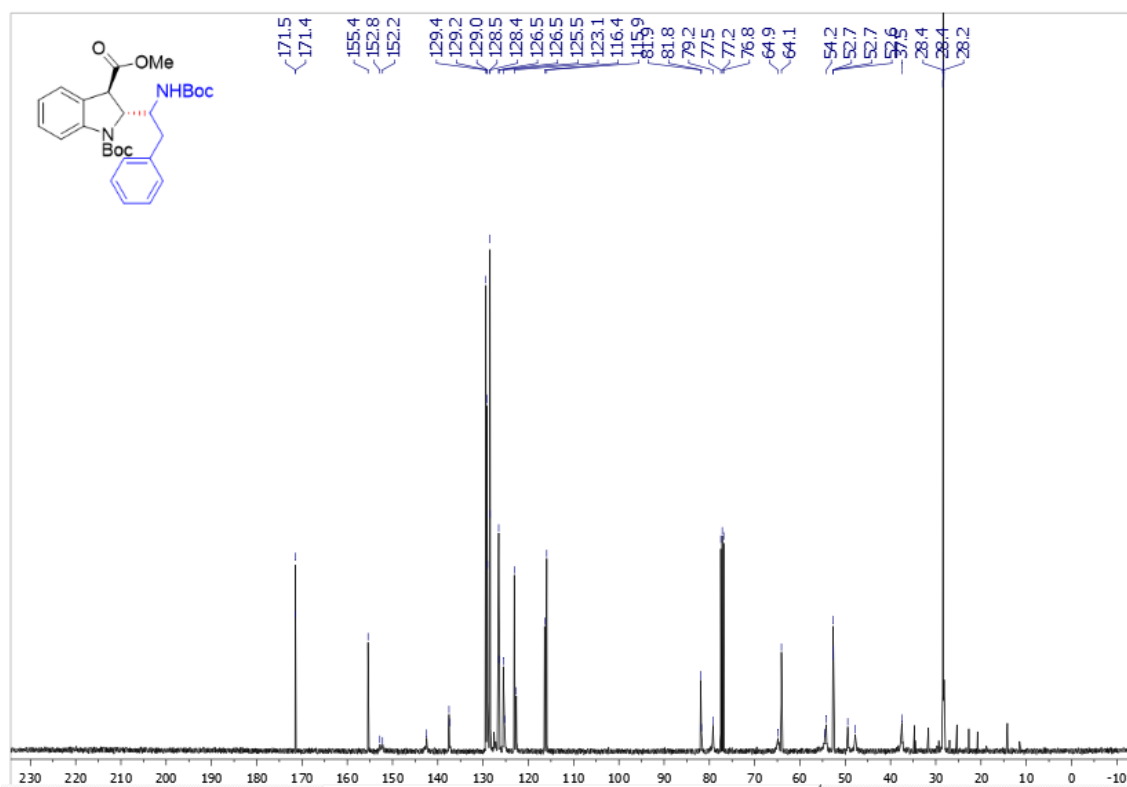
Supplementary Figure 89. ^1H NMR spectra of *trans*-3v



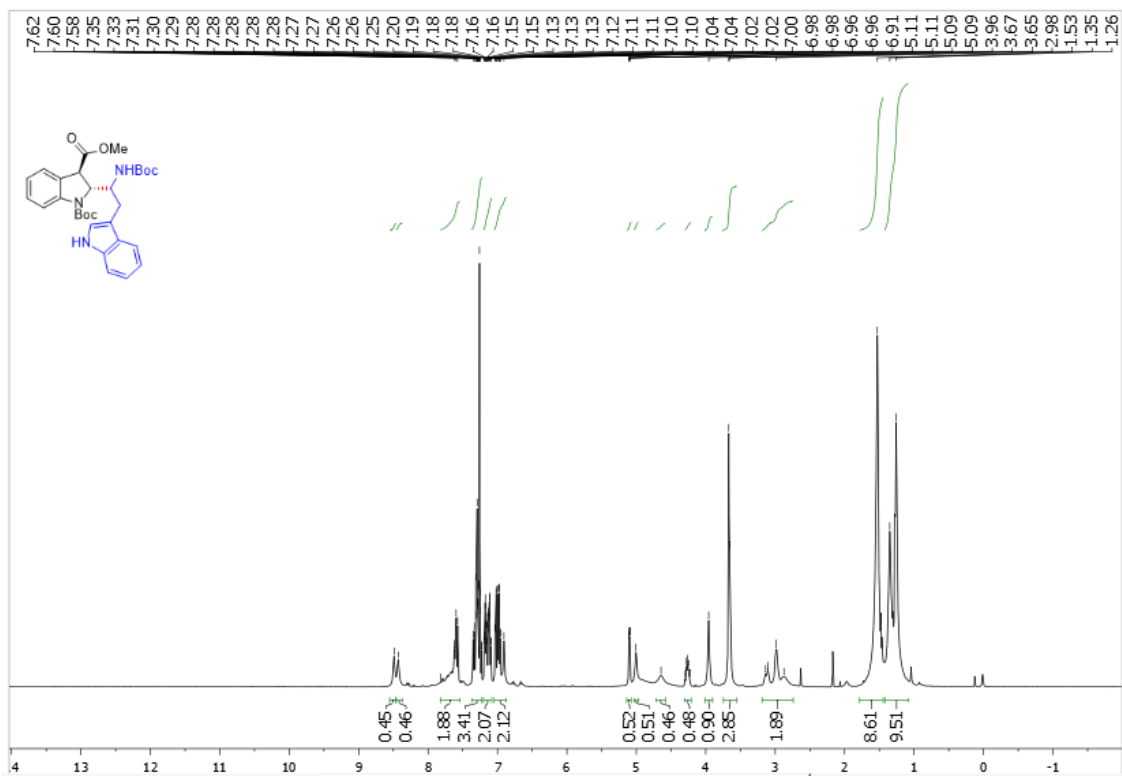
Supplementary Figure 90. ^{13}C NMR spectra of *trans*-3v



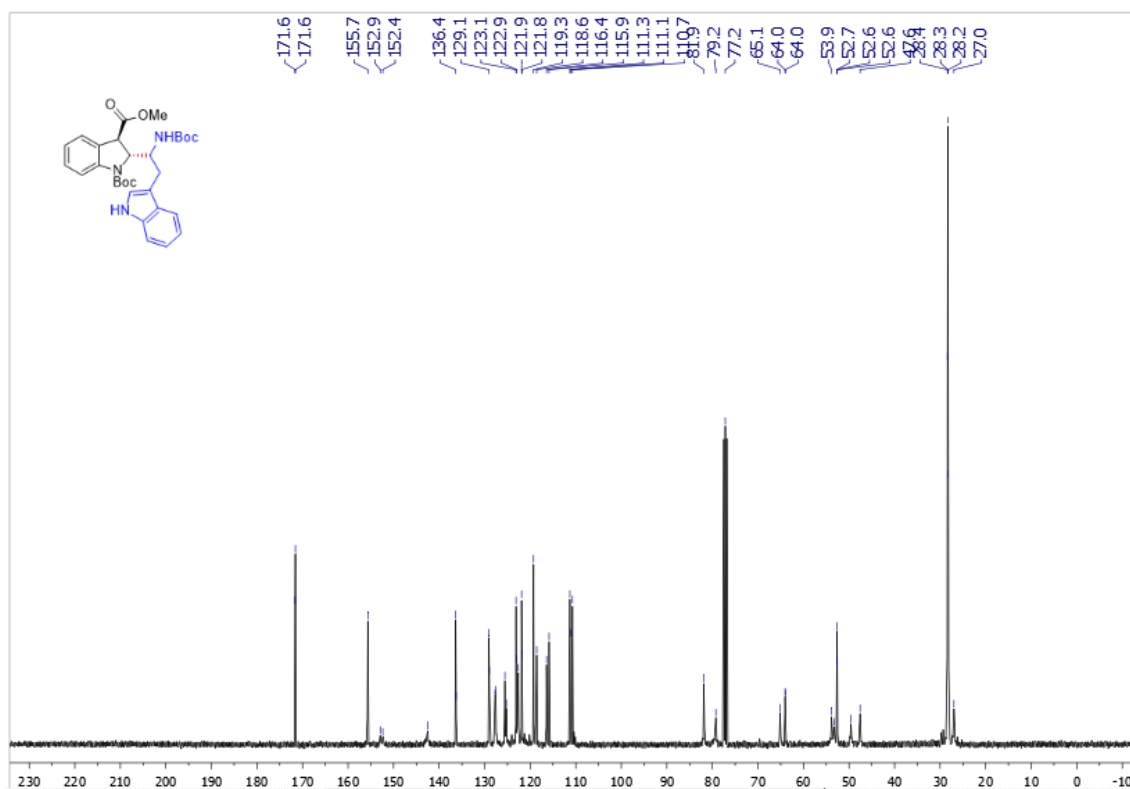
Supplementary Figure 91. ¹H NMR spectra of *trans*-3w



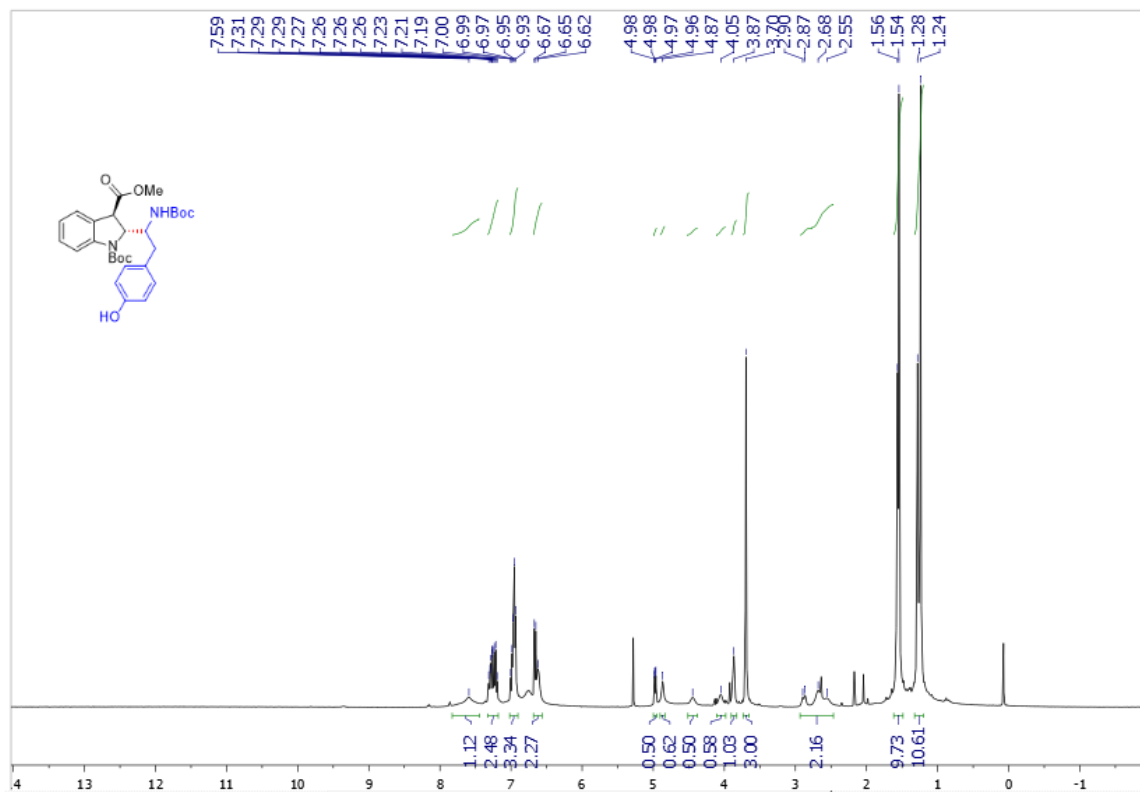
Supplementary Figure 92. ¹³C NMR spectra of *trans*-3w



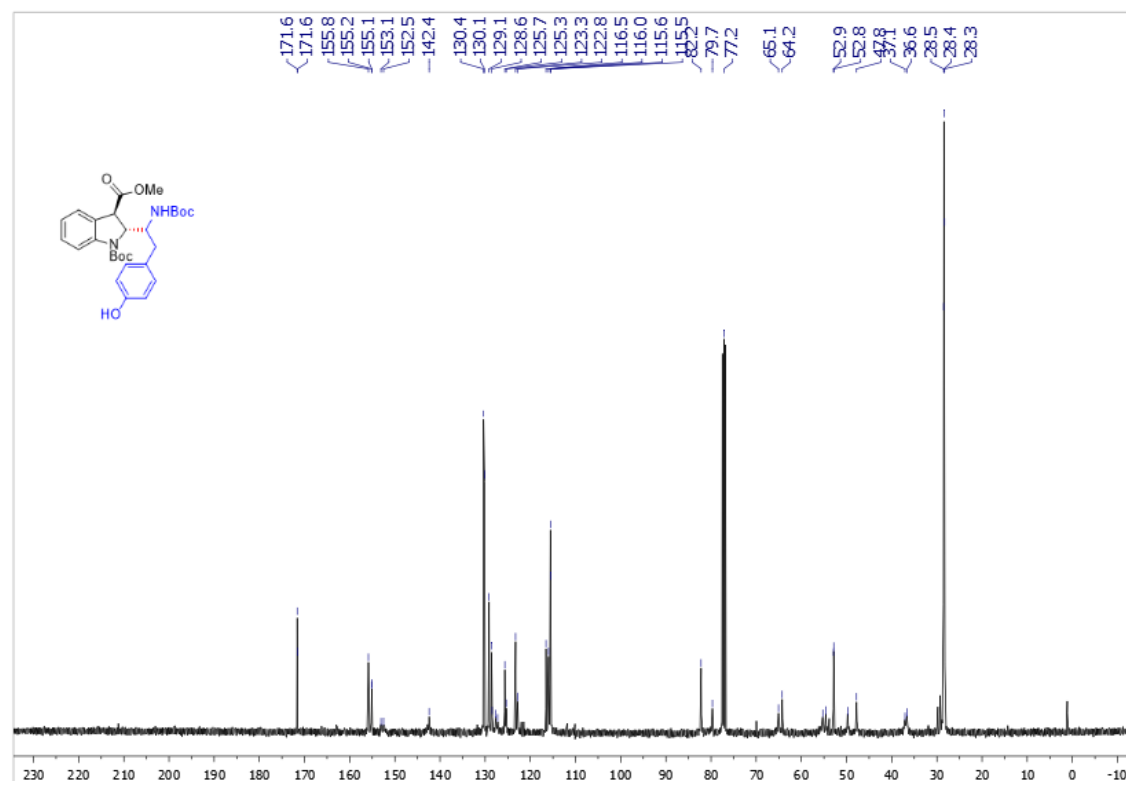
Supplementary Figure 93. ^1H NMR spectra of *trans*-3x



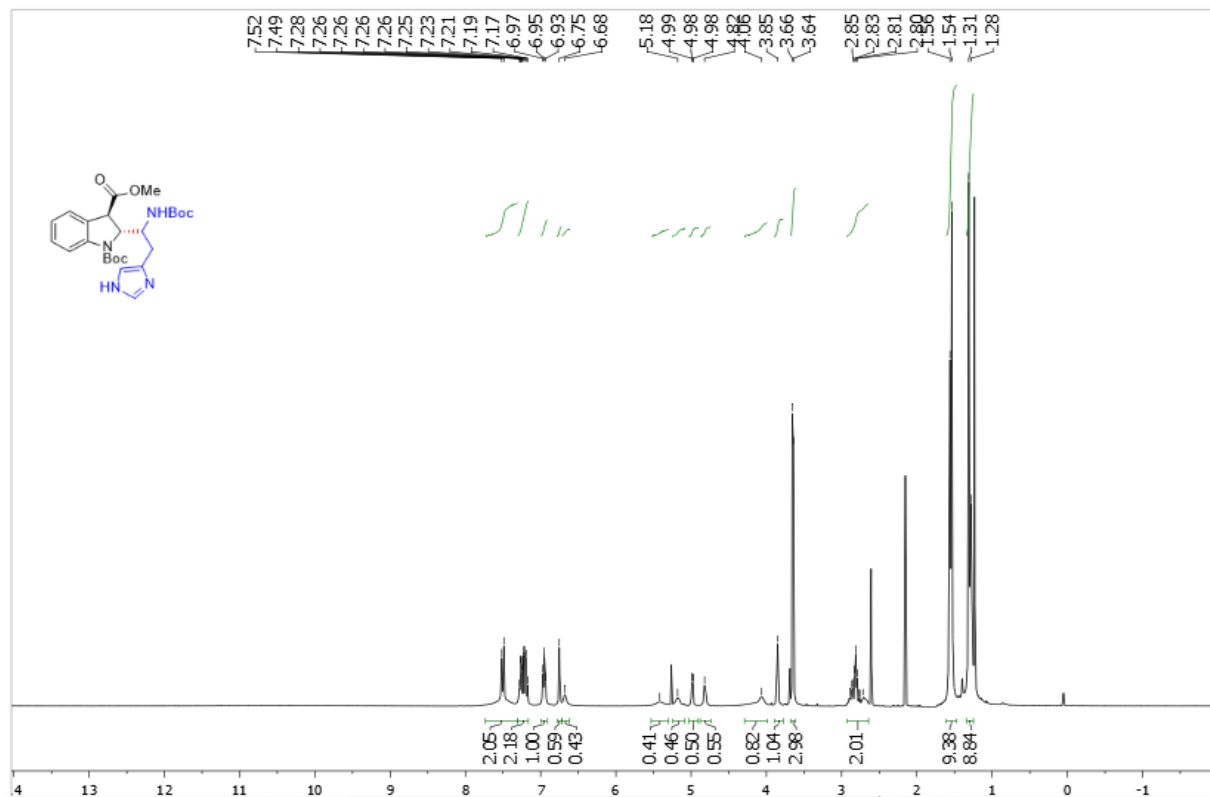
Supplementary Figure 94. ^{13}C NMR spectra of *trans*-3x



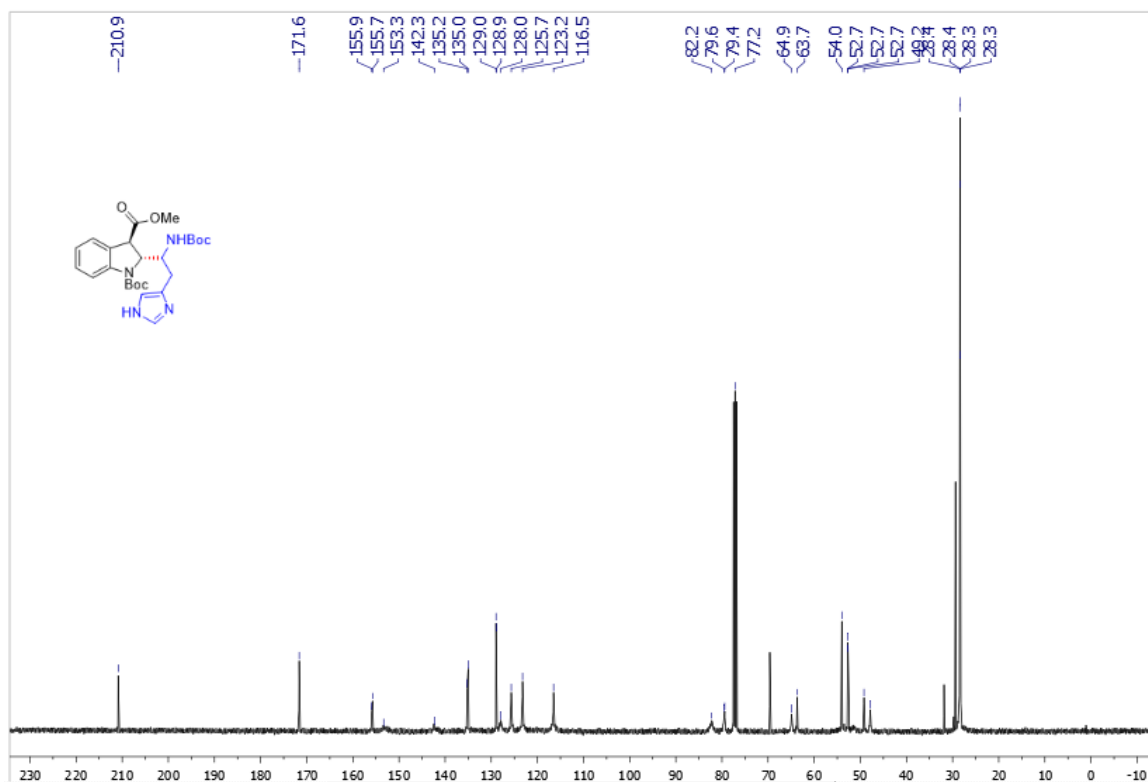
Supplementary Figure 95. ¹H NMR spectra of *trans*-3y



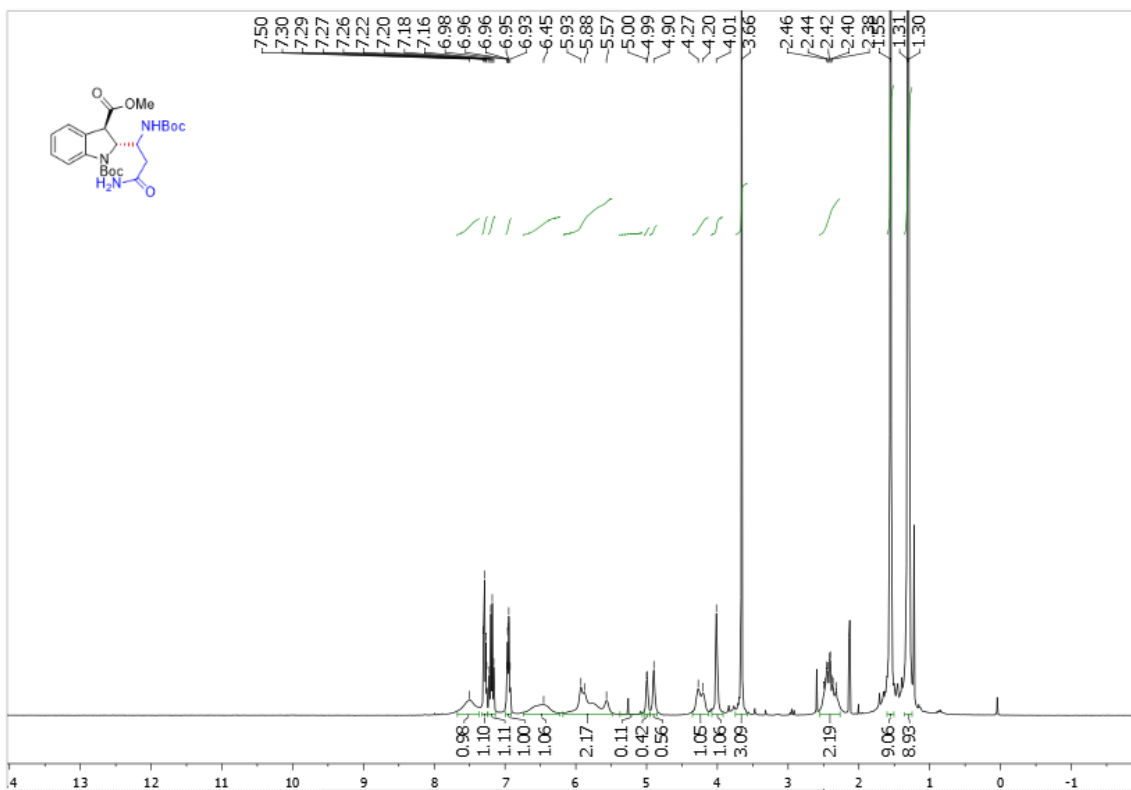
Supplementary Figure 96. ¹³C NMR spectra of *trans*-3y



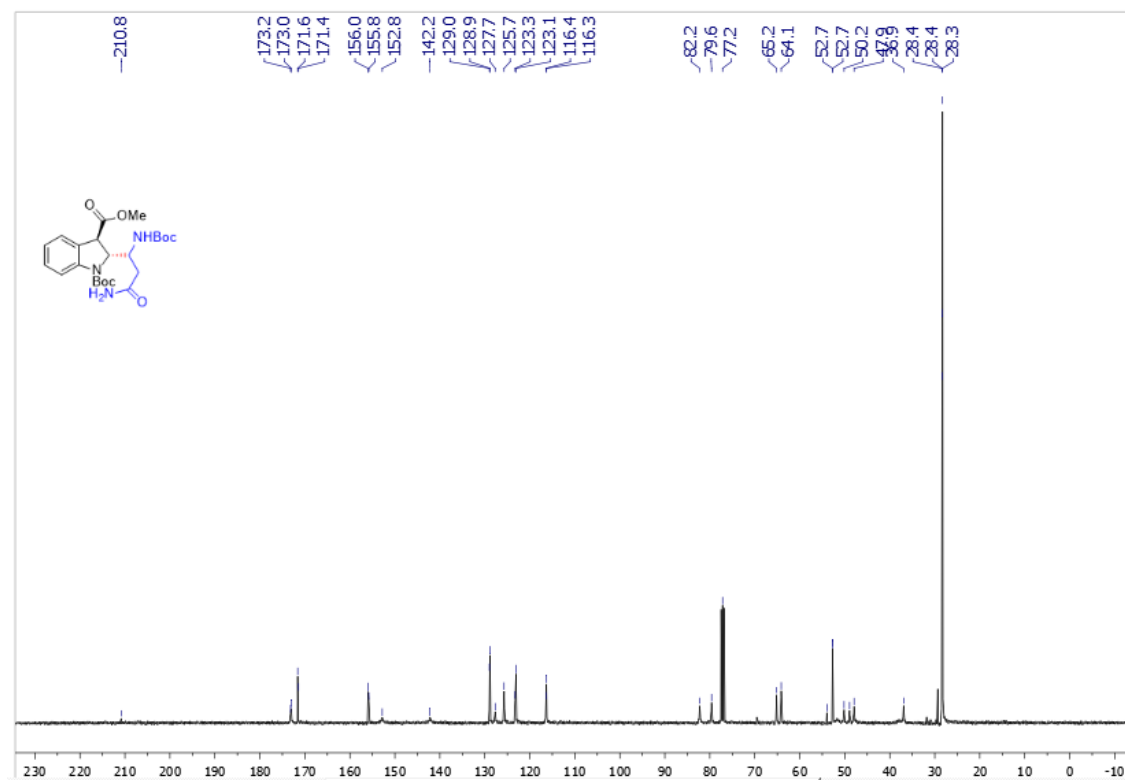
Supplementary Figure 97. ¹H NMR spectra of *trans*-3z



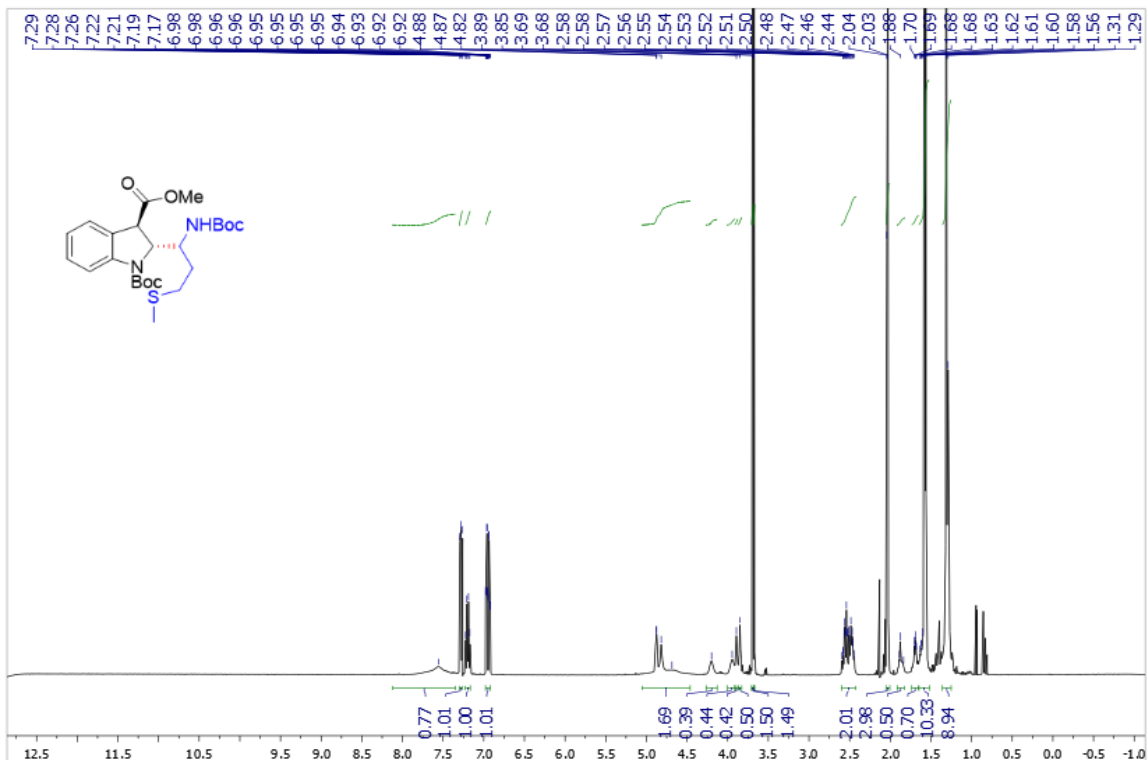
Supplementary Figure 98. ¹³C NMR spectra of *trans*-3z



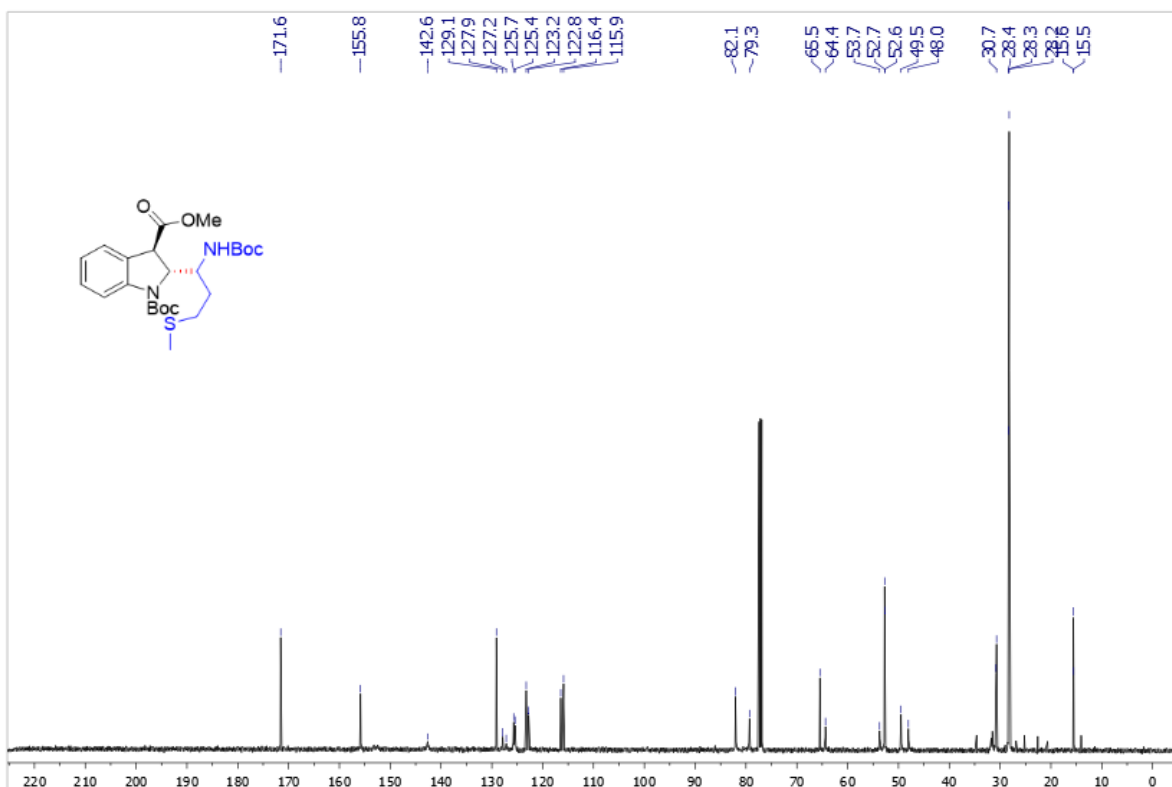
Supplementary Figure 99. ¹H NMR spectra of *trans*-3aa



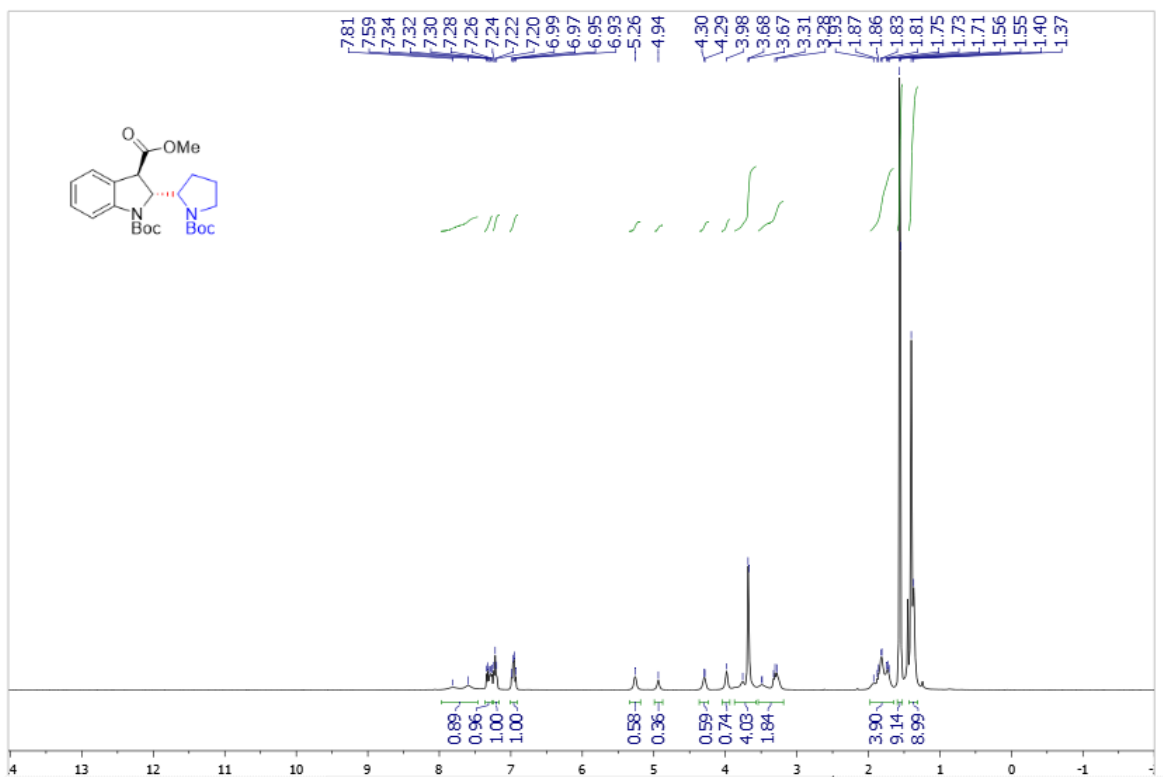
Supplementary Figure 100. ¹³C NMR spectra of *trans*-3aa



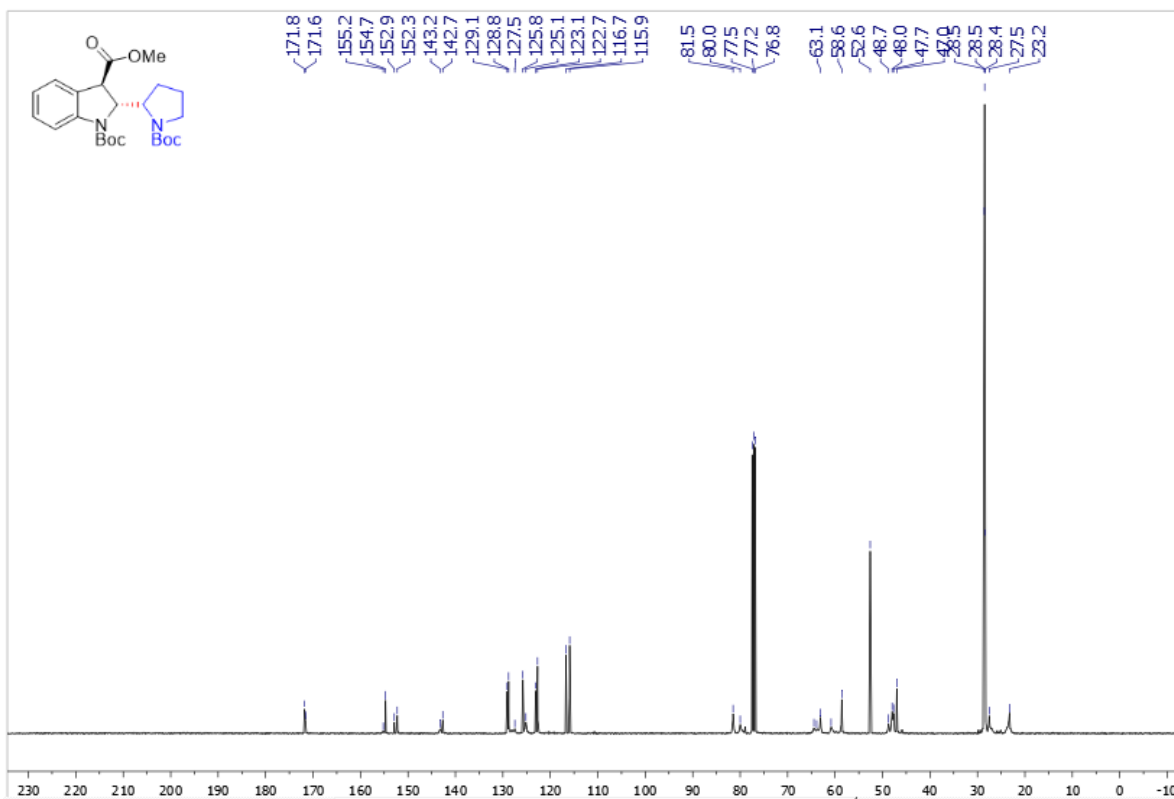
Supplementary Figure 101. ¹H NMR spectra of *trans*-3ab



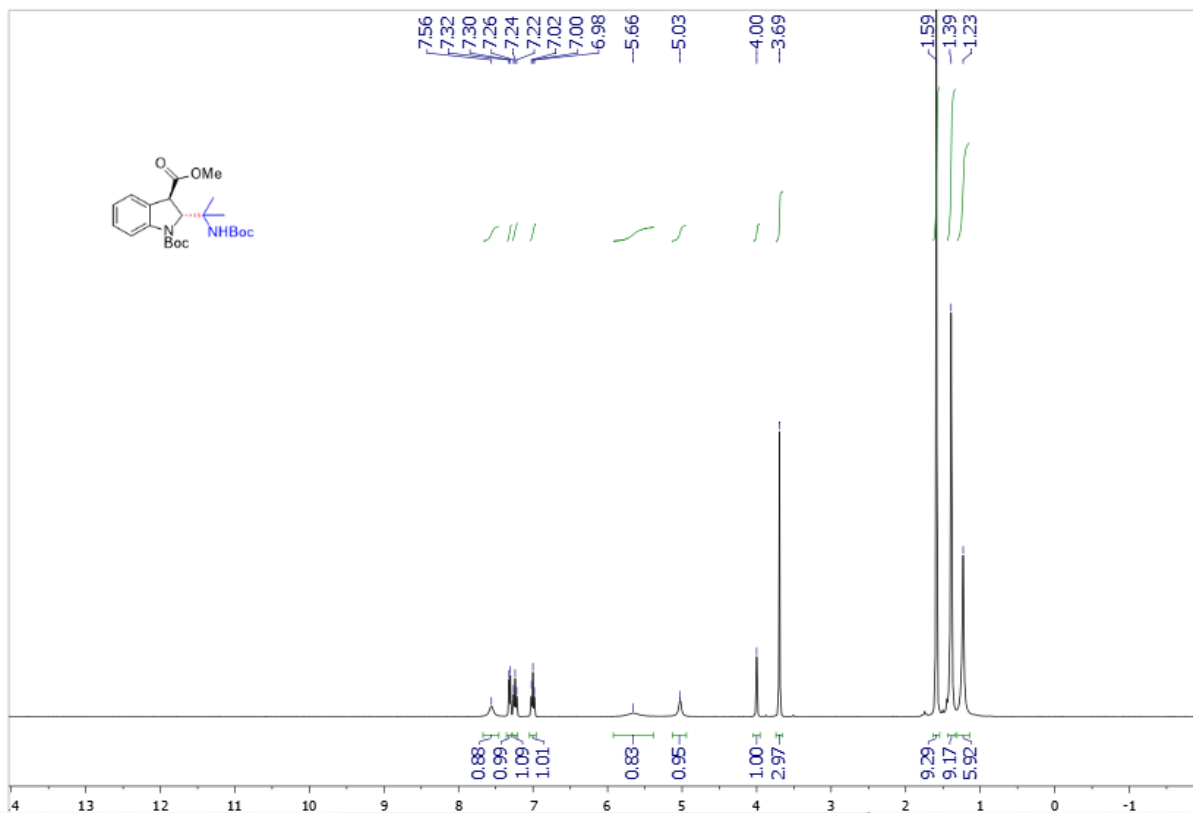
Supplementary Figure 102. ¹³C NMR spectra of *trans*-3ab



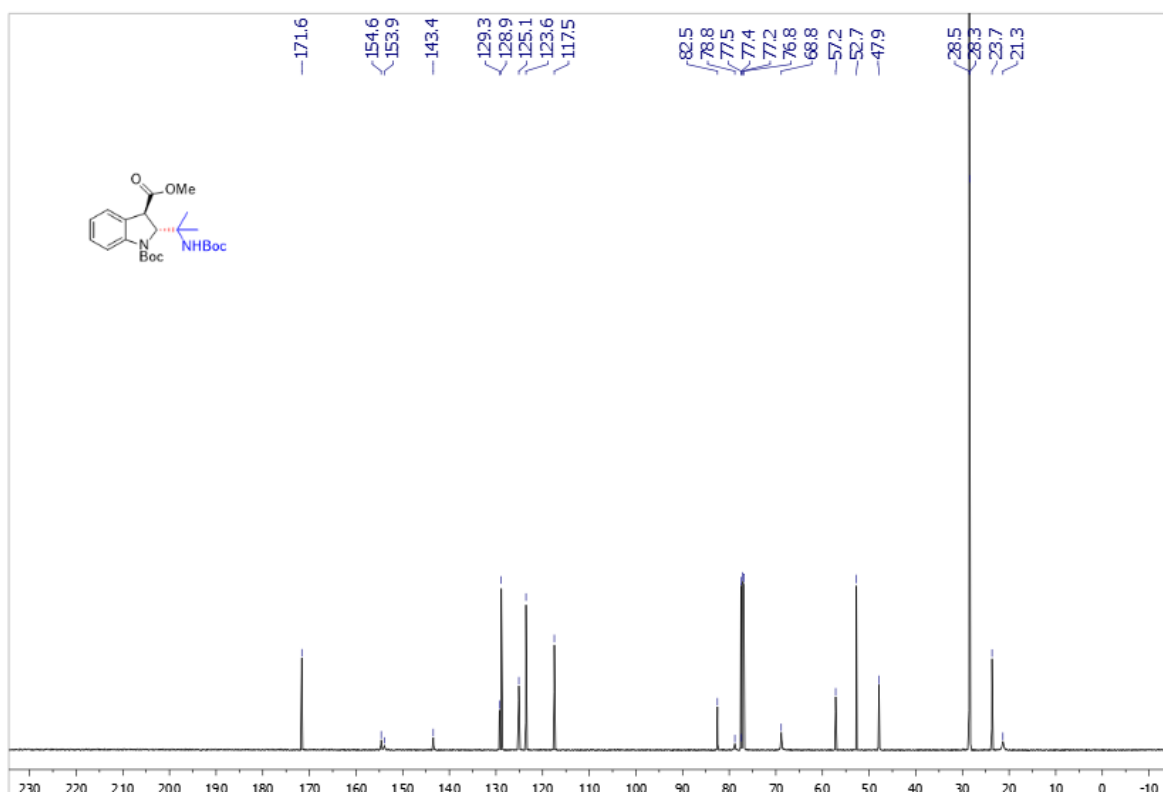
Supplementary Figure 103. ^1H NMR spectra of *trans*-3ac



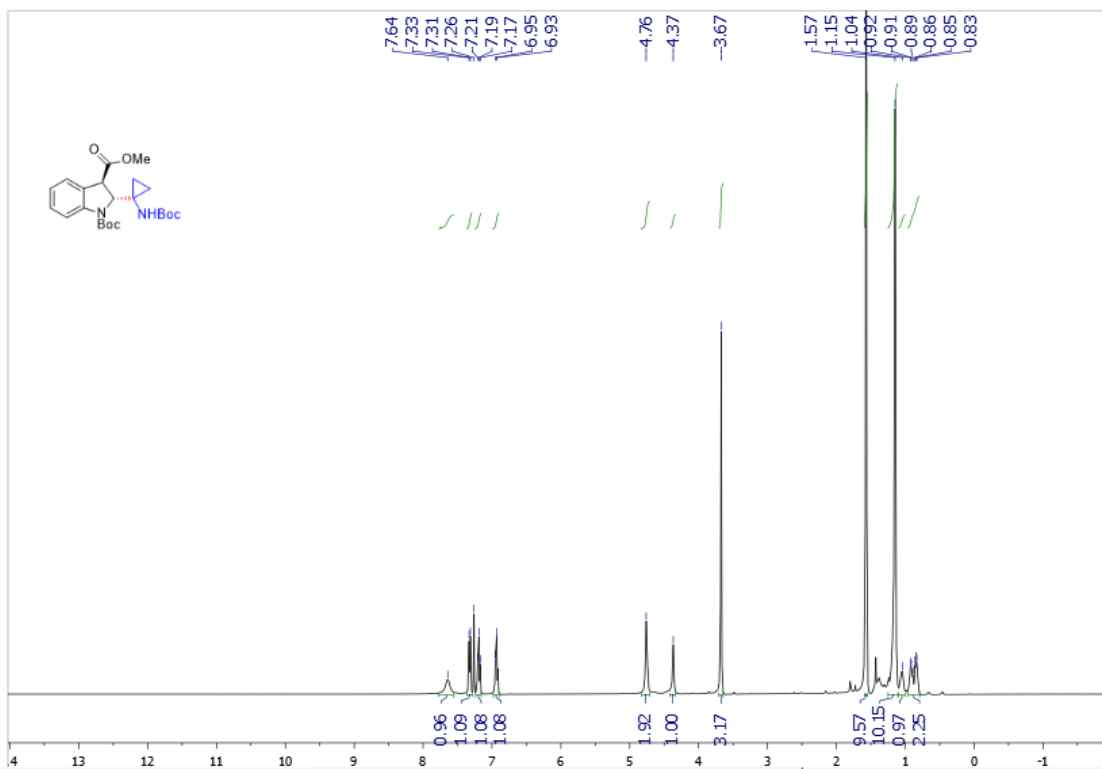
Supplementary Figure 104. ^{13}C NMR spectra of *trans*-3ac



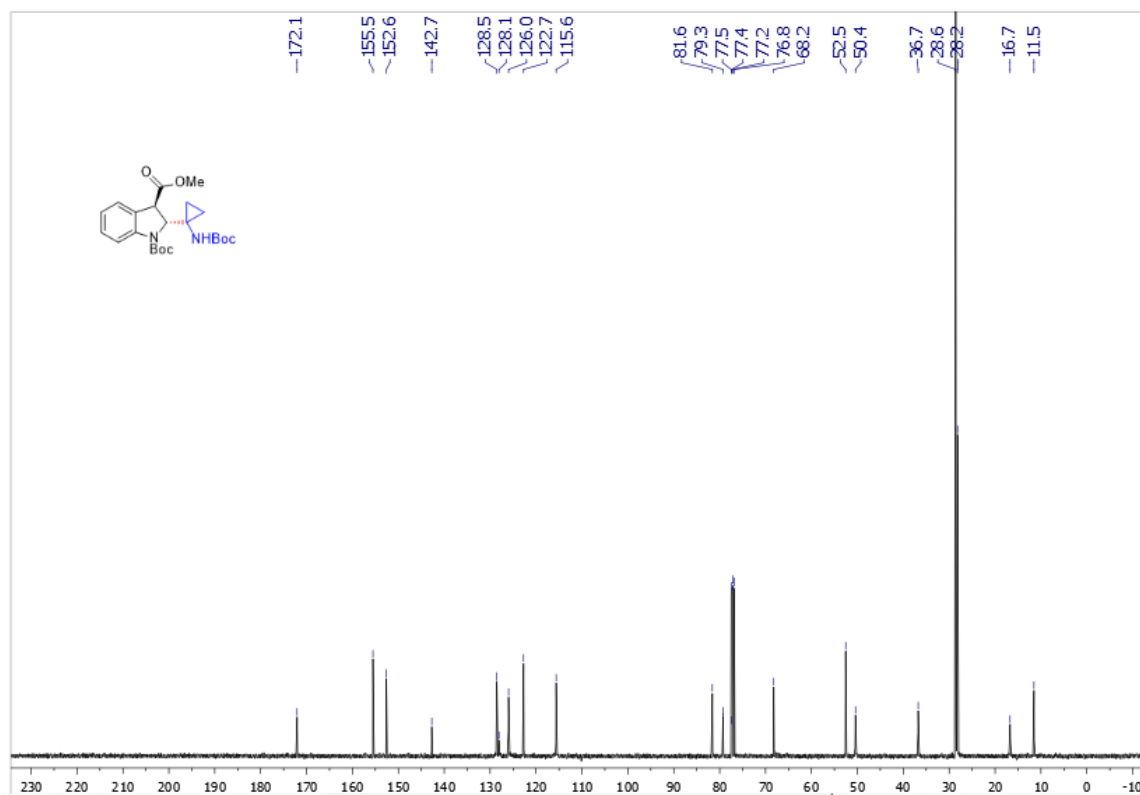
Supplementary Figure 105. ^1H NMR spectra of *trans*-3ad



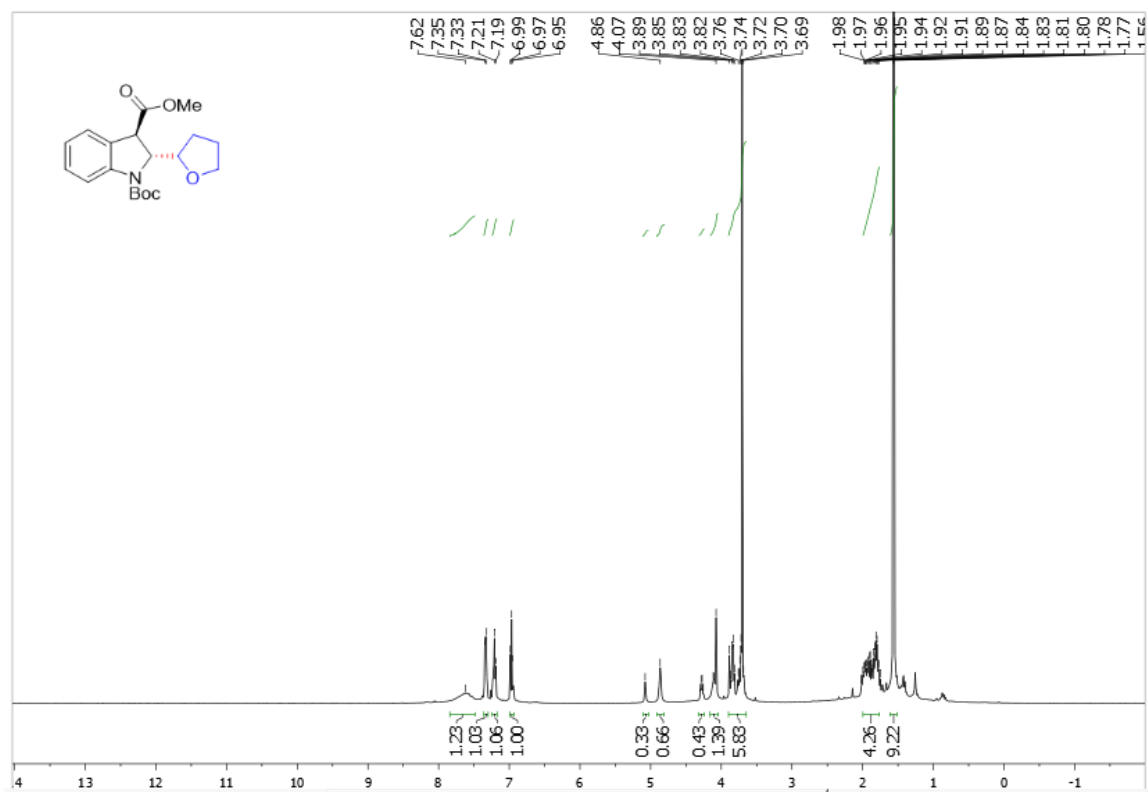
Supplementary Figure 106. ^{13}C NMR spectra of *trans*-3ad



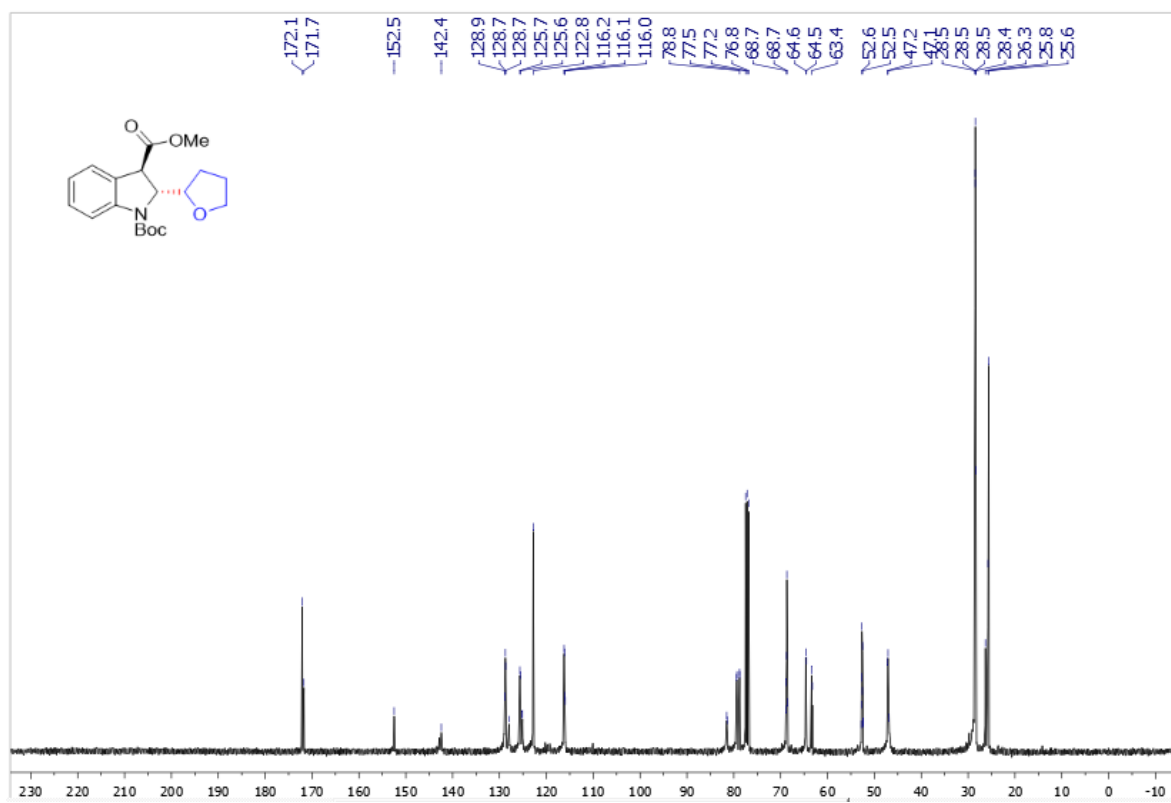
Supplementary Figure 107. ^1H NMR spectra of *trans*-3ae



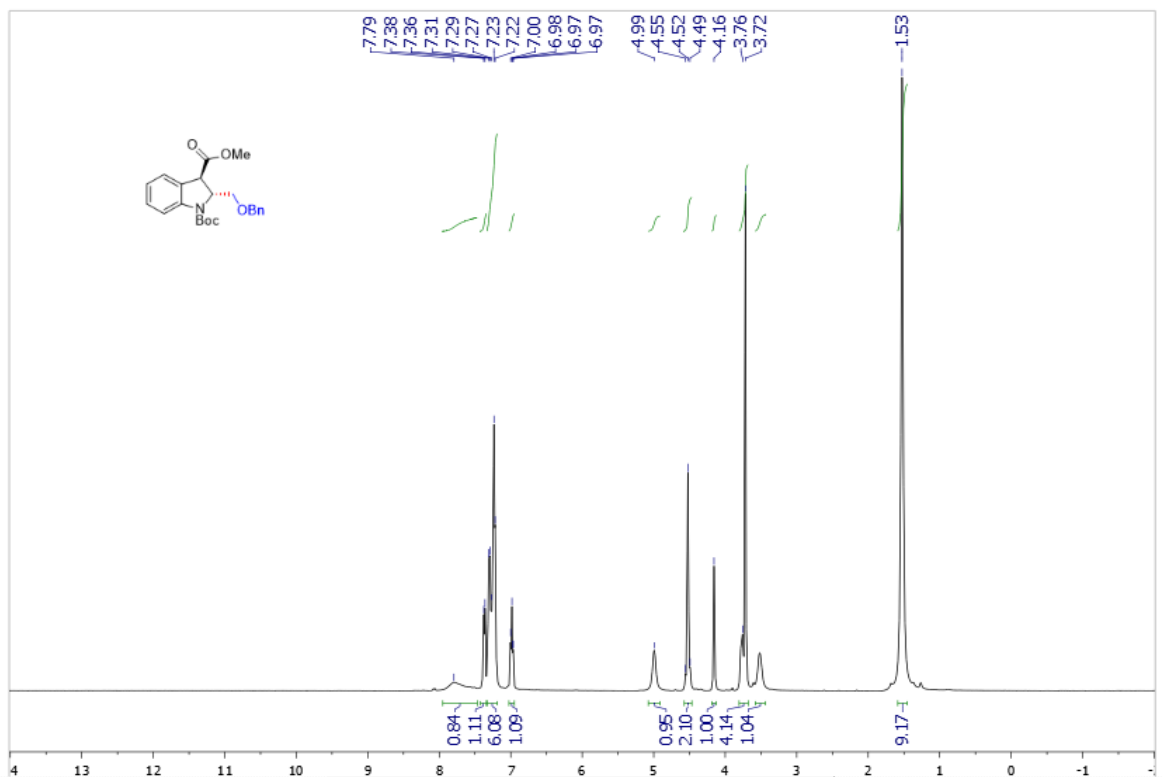
Supplementary Figure 108. ^{13}C NMR spectra of *trans*-3ae



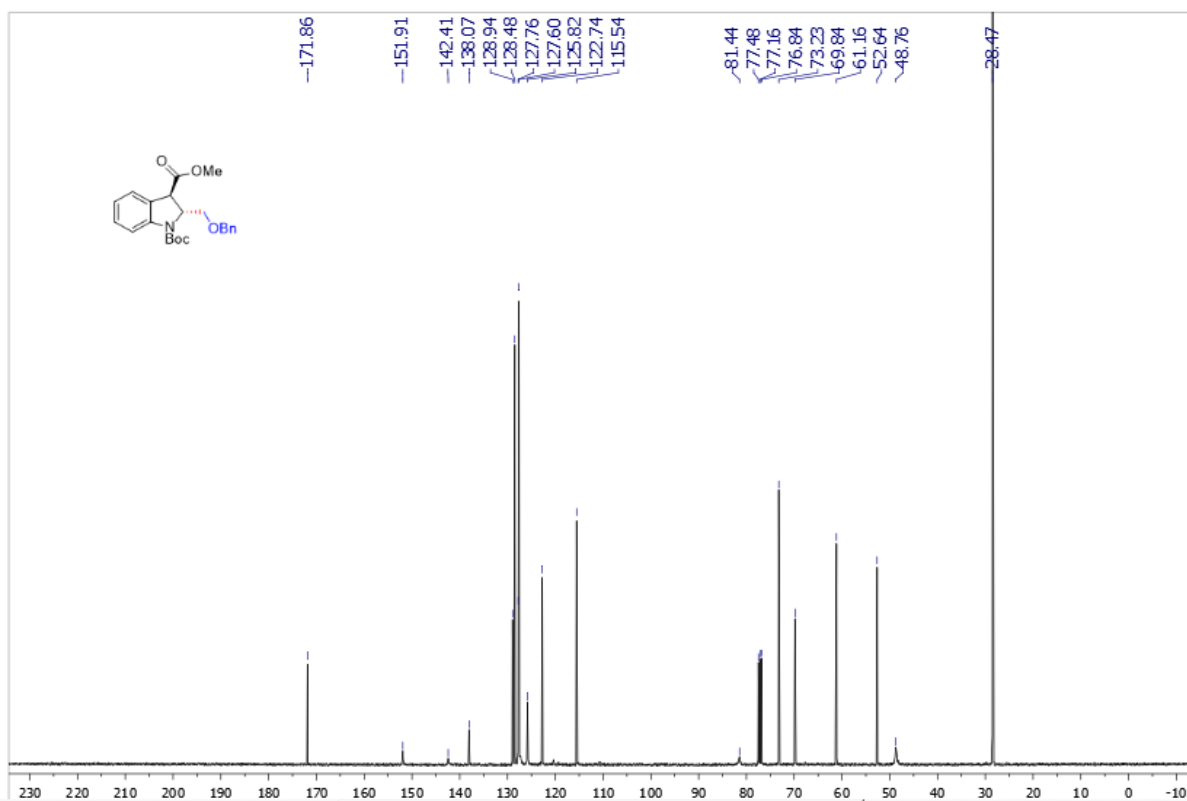
Supplementary Figure 109. ^1H NMR spectra of *trans*-3af



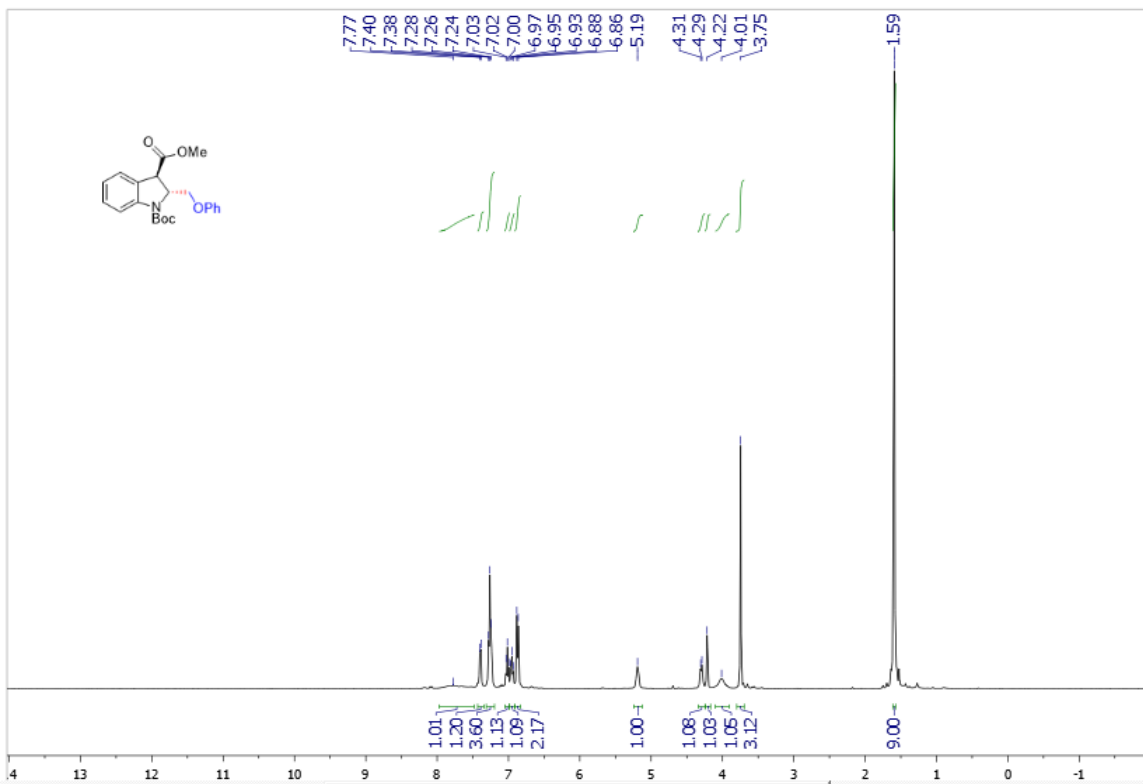
Supplementary Figure 110. ^{13}C NMR spectra of *trans*-3af



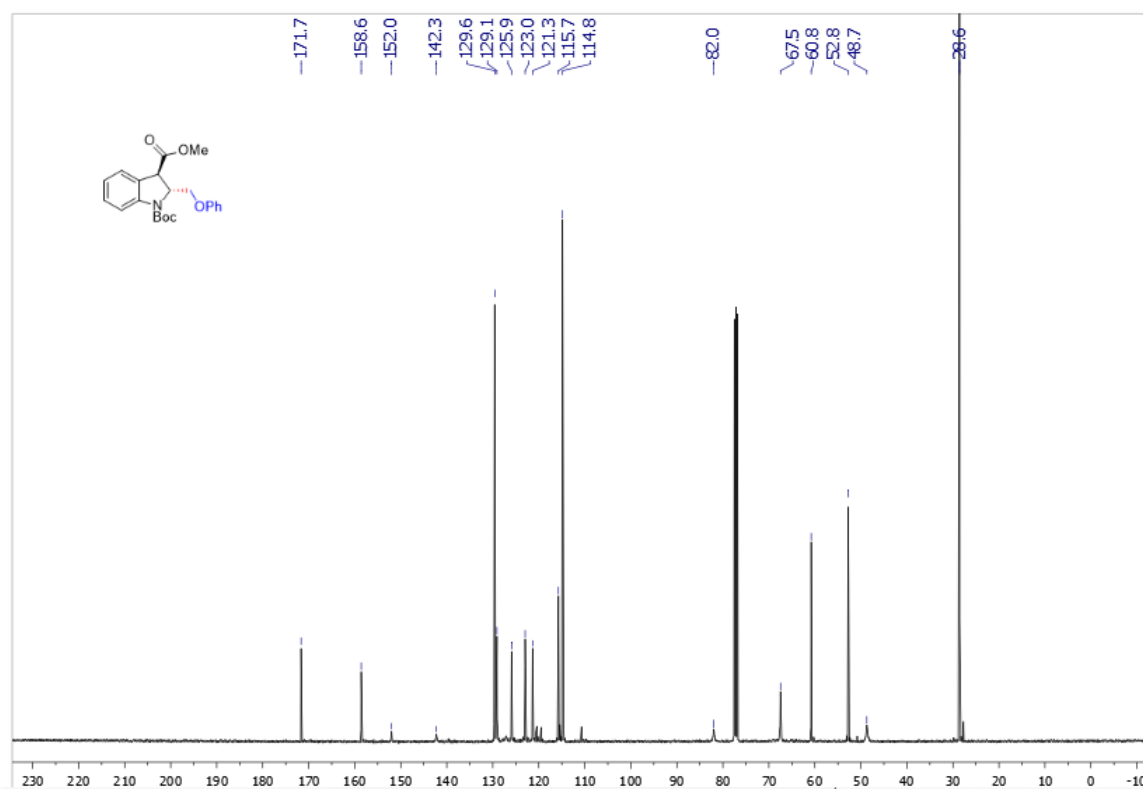
Supplementary Figure 111. ^1H NMR spectra of *trans*-3ag



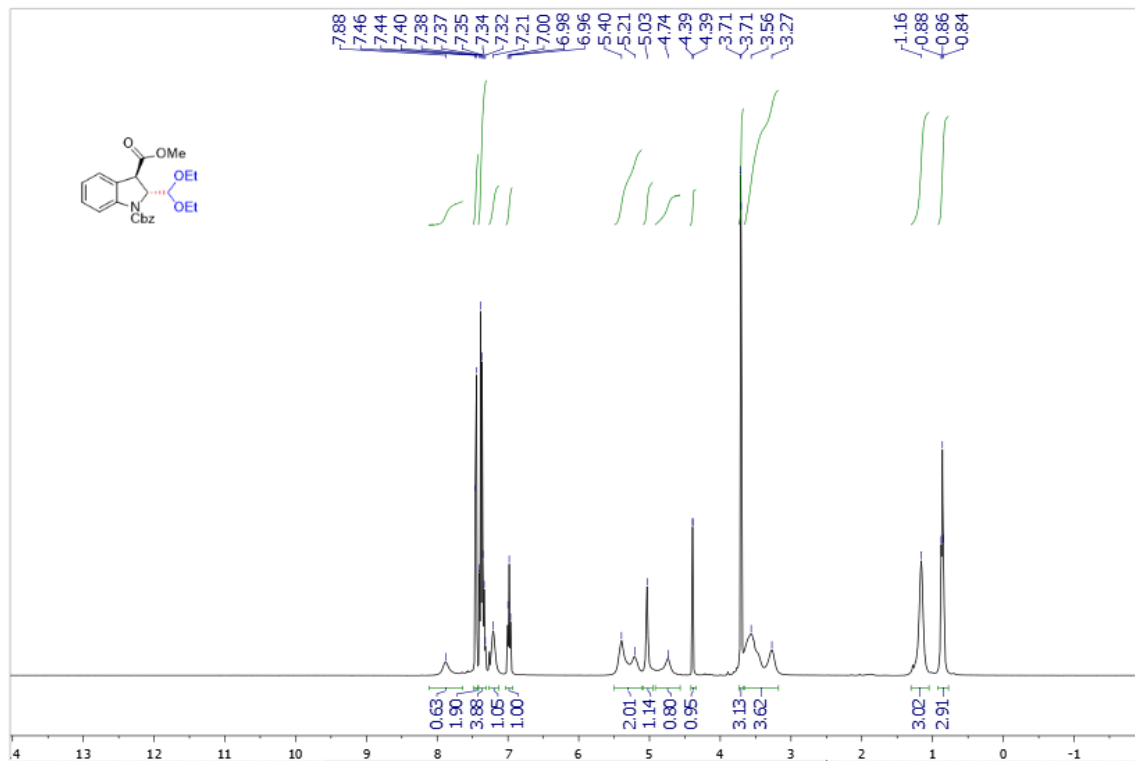
Supplementary Figure 112. ^{13}C NMR spectra of *trans*-3ag



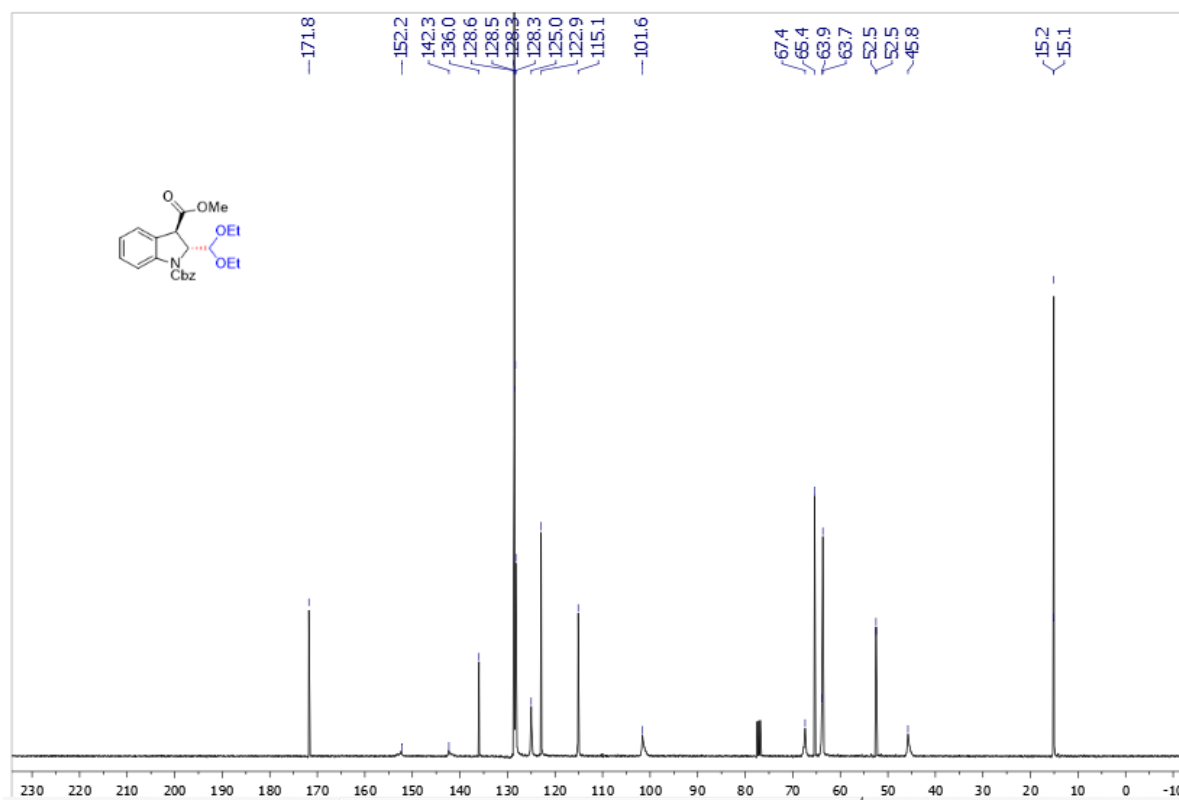
Supplementary Figure 113. ^1H NMR spectra of *trans*-3ah



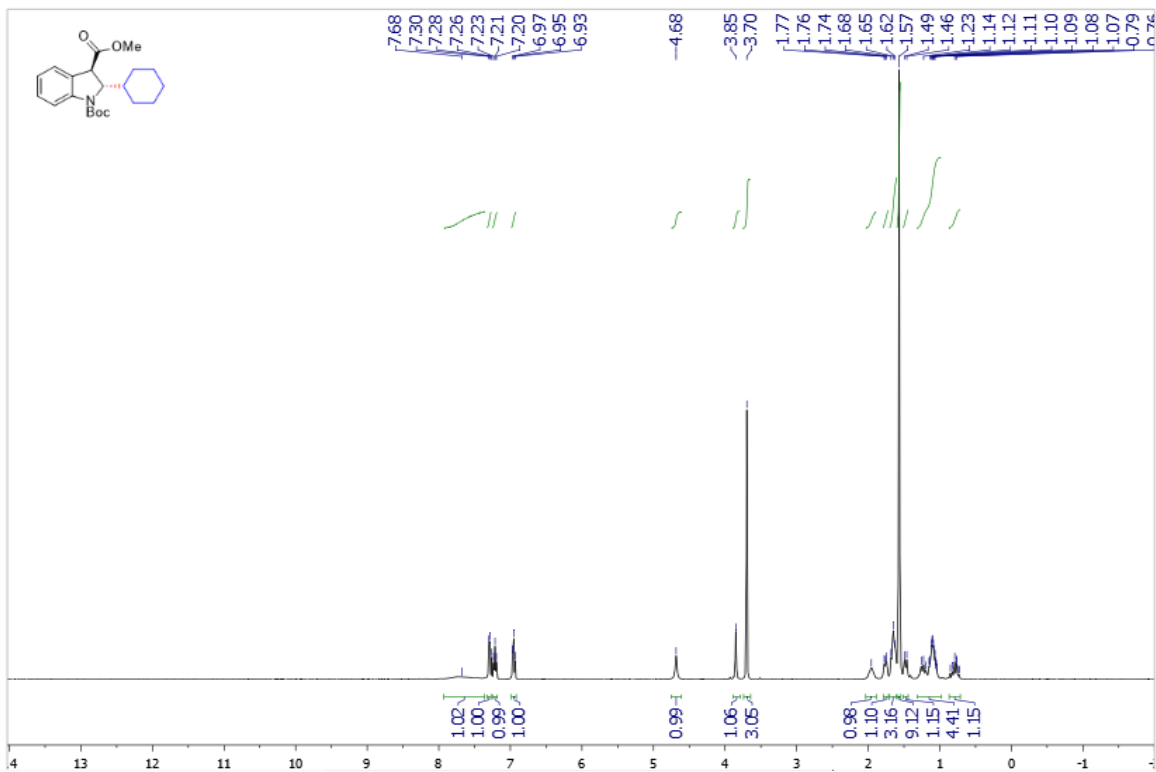
Supplementary Figure 114. ^{13}C NMR spectra of *trans*-3ah



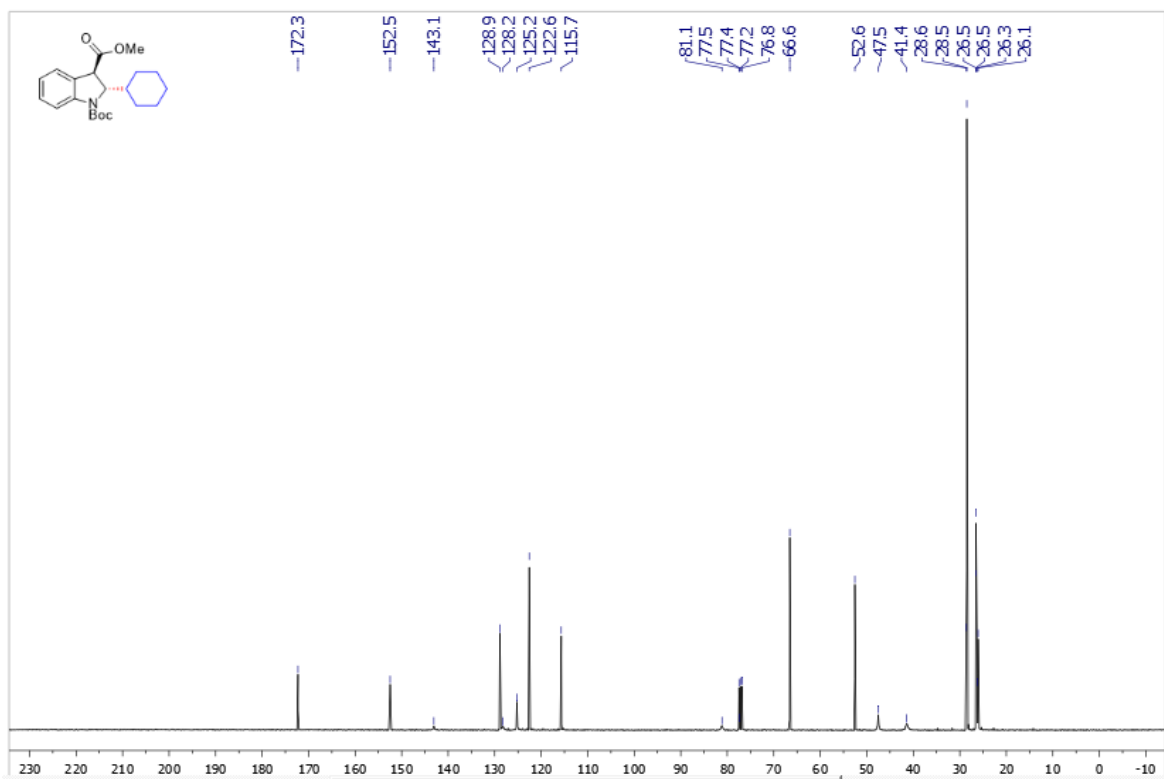
Supplementary Figure 115. ^1H NMR spectra of *trans*-3ai



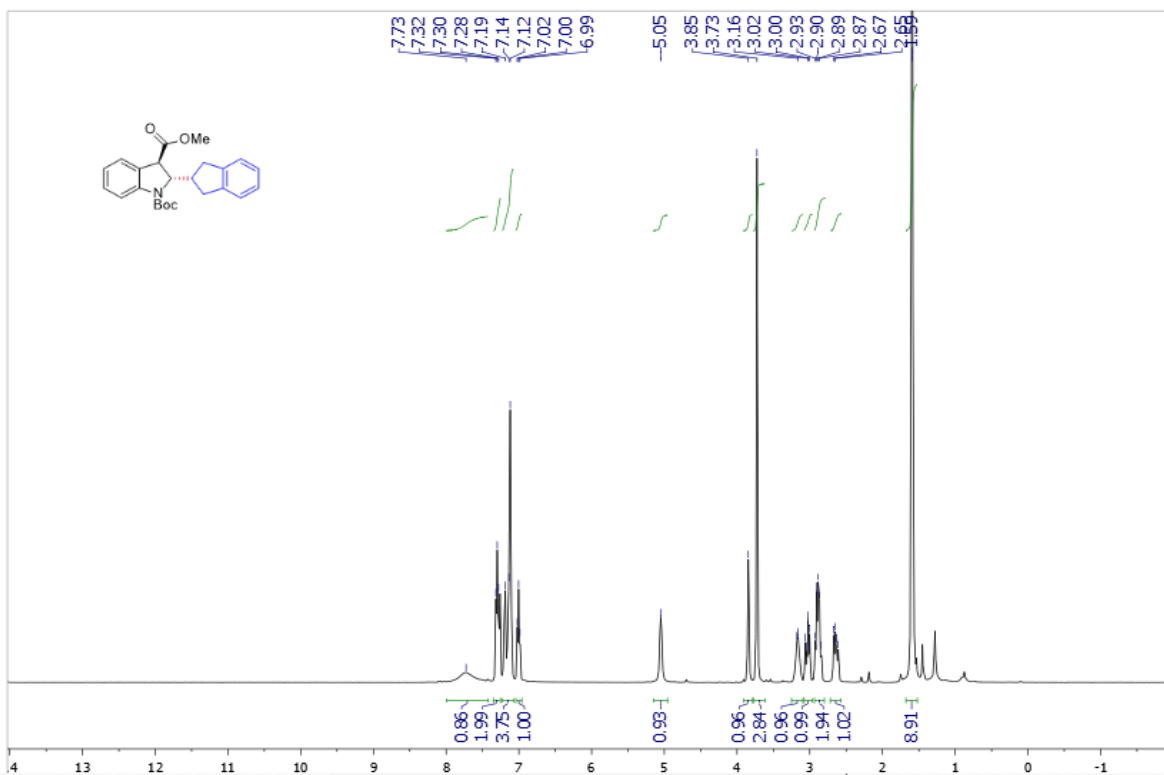
Supplementary Figure 116. ^{13}C NMR spectra of *trans*-3ai



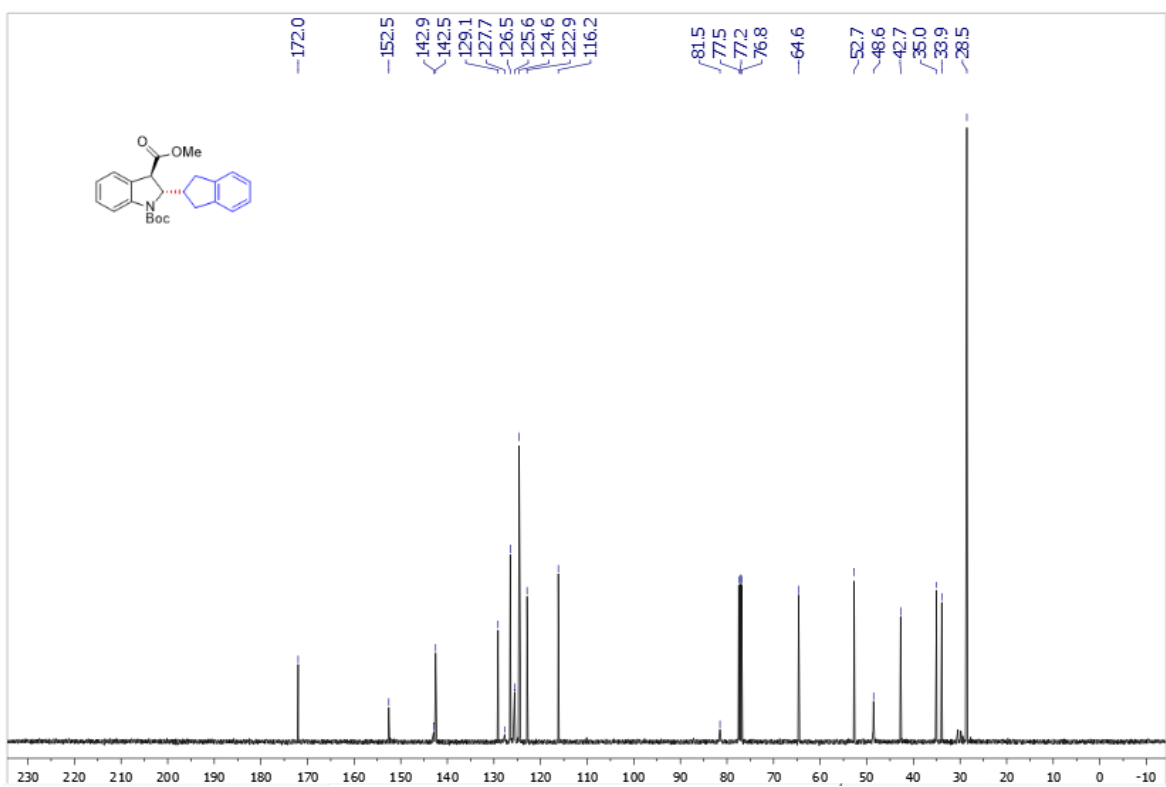
Supplementary Figure 117. ^1H NMR spectra of *trans*-3aj



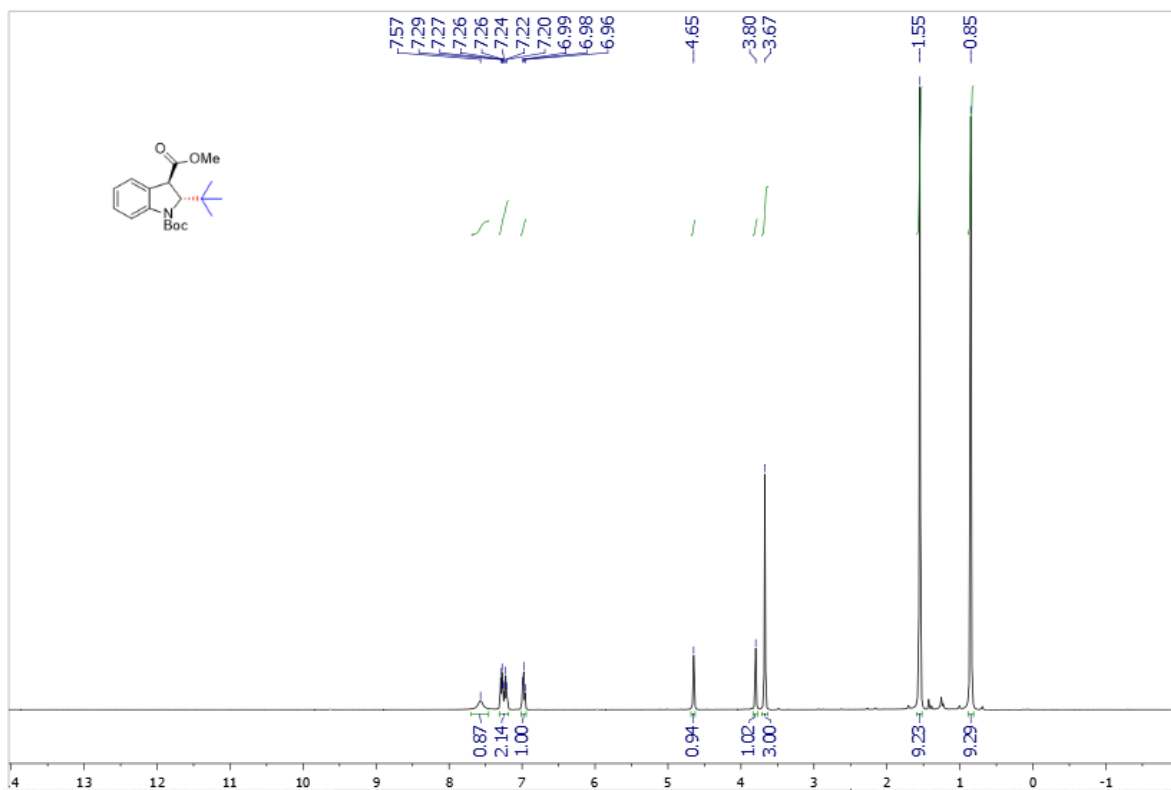
Supplementary Figure 118. ^{13}C NMR spectra of *trans*-3aj



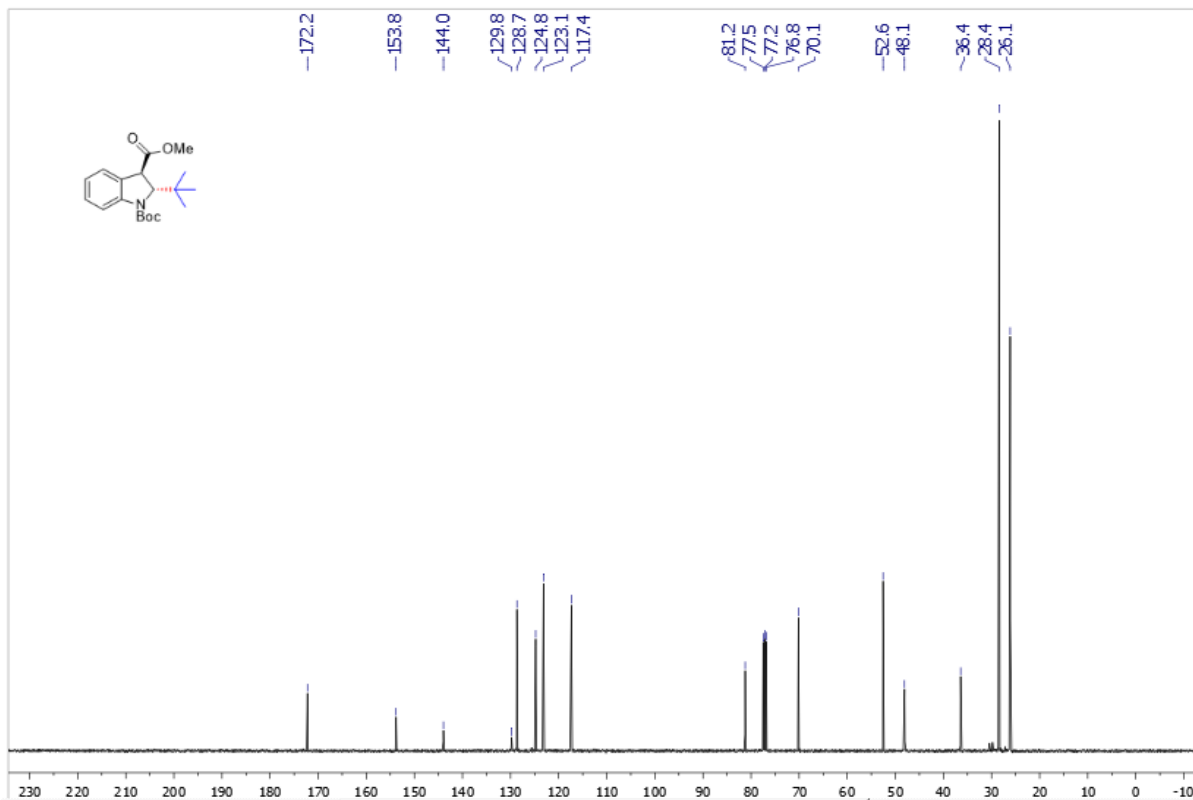
Supplementary Figure 119. ^1H NMR spectra of *trans*-3ak



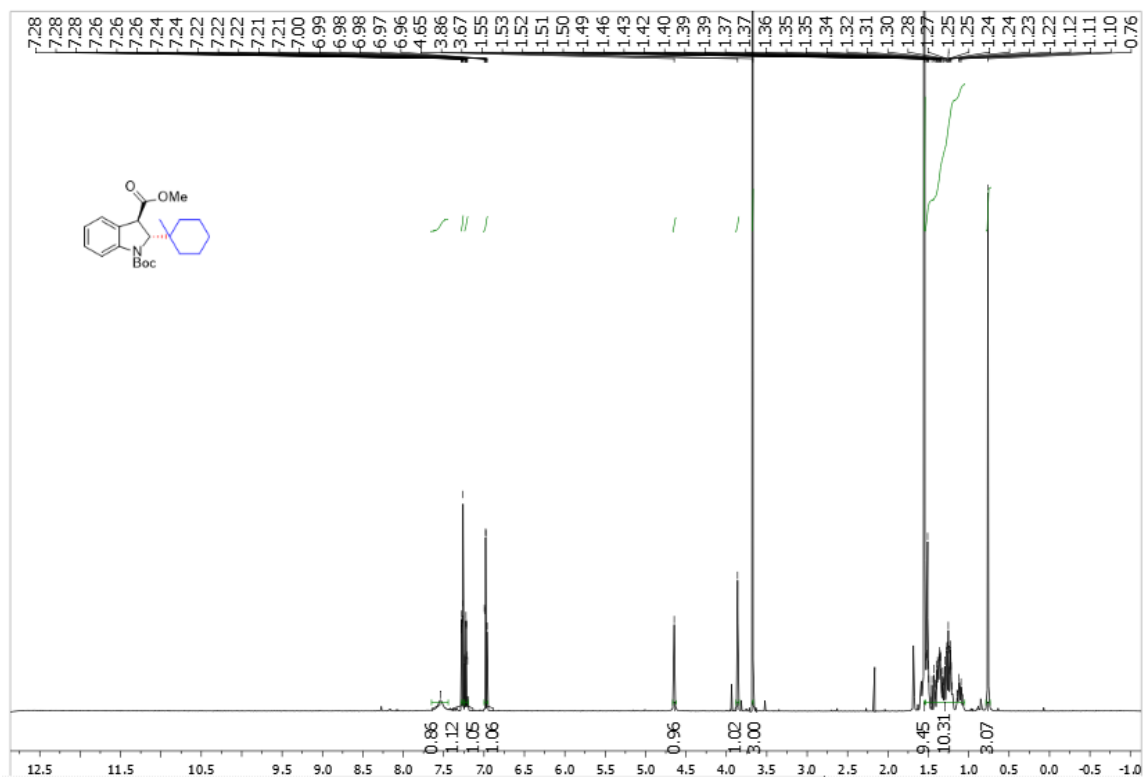
Supplementary Figure 120. ^{13}C NMR spectra of *trans*-3ak



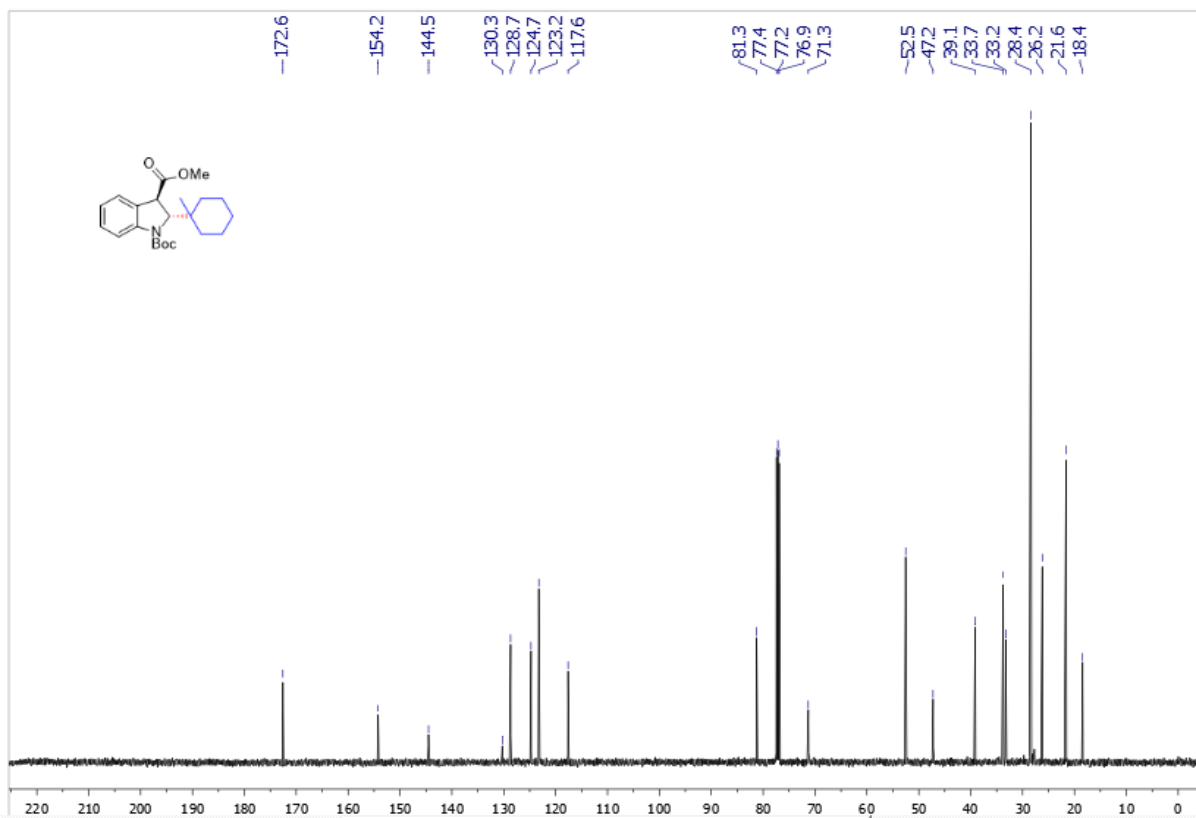
Supplementary Figure 121. ^1H NMR spectra of *trans*-3al



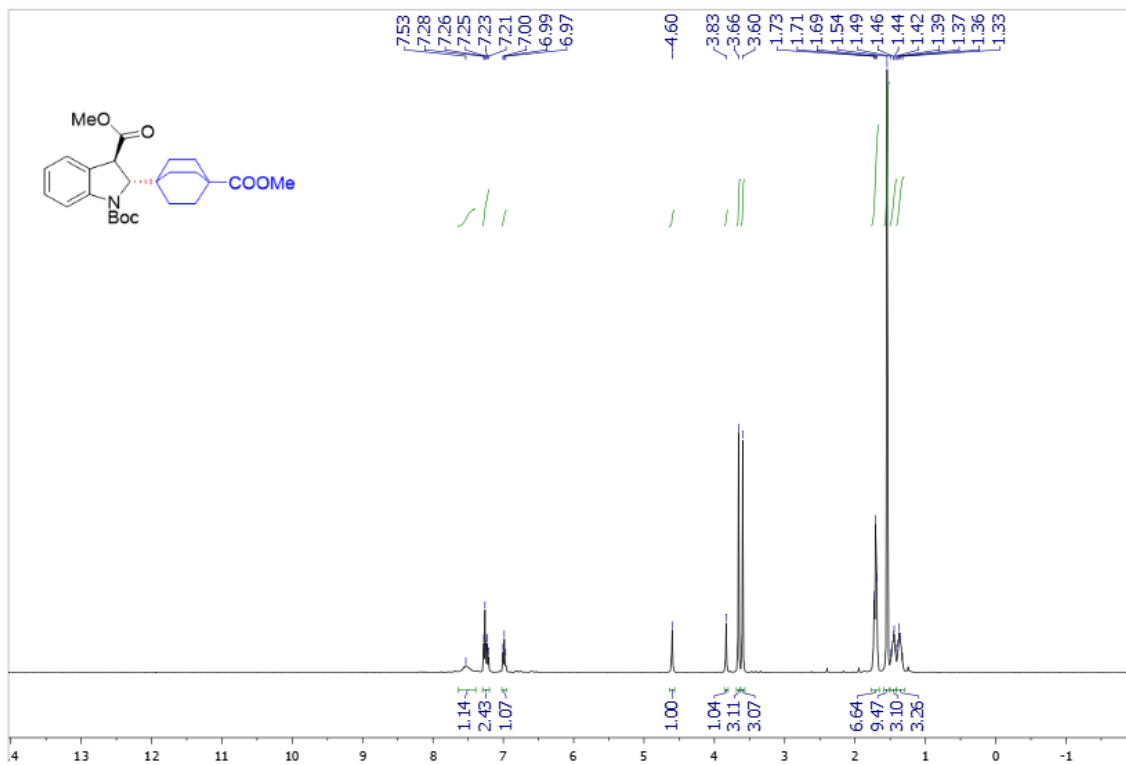
Supplementary Figure 122. ^{13}C NMR spectra of *trans*-3al



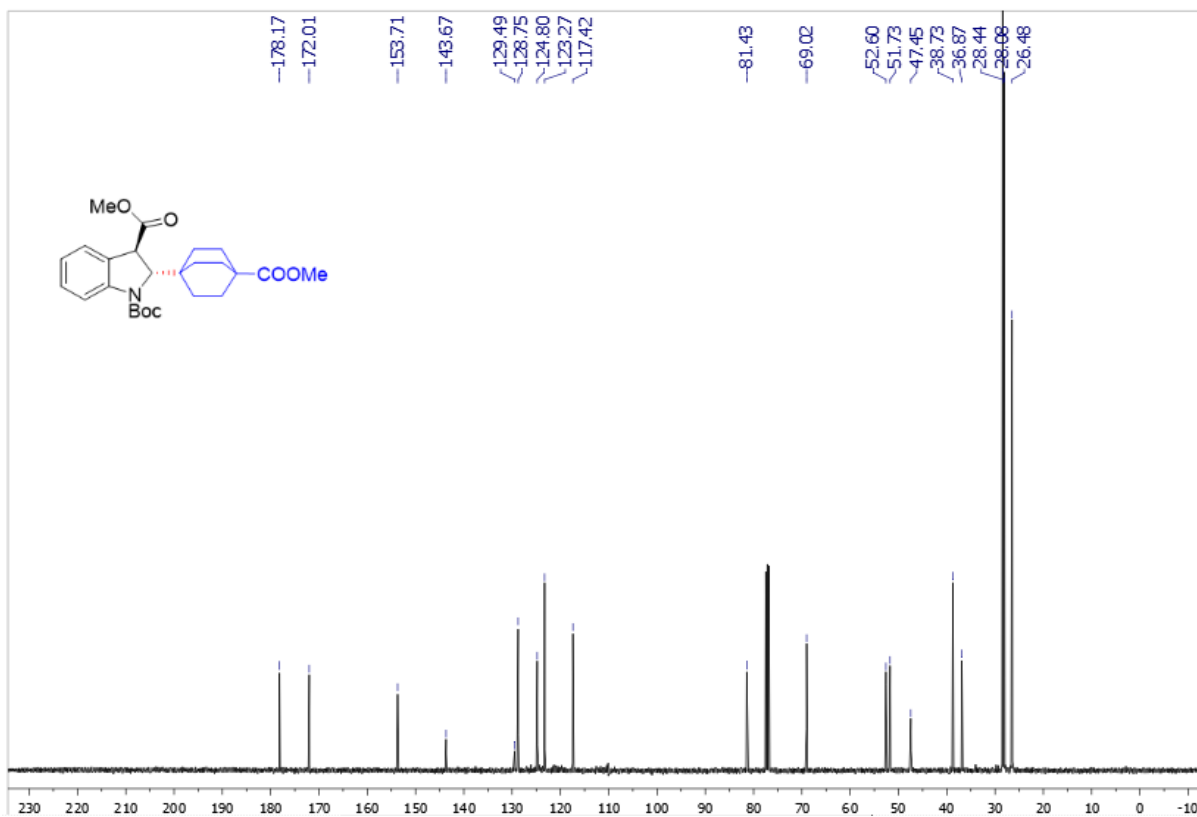
Supplementary Figure 123. ^1H NMR spectra of *trans*-3am



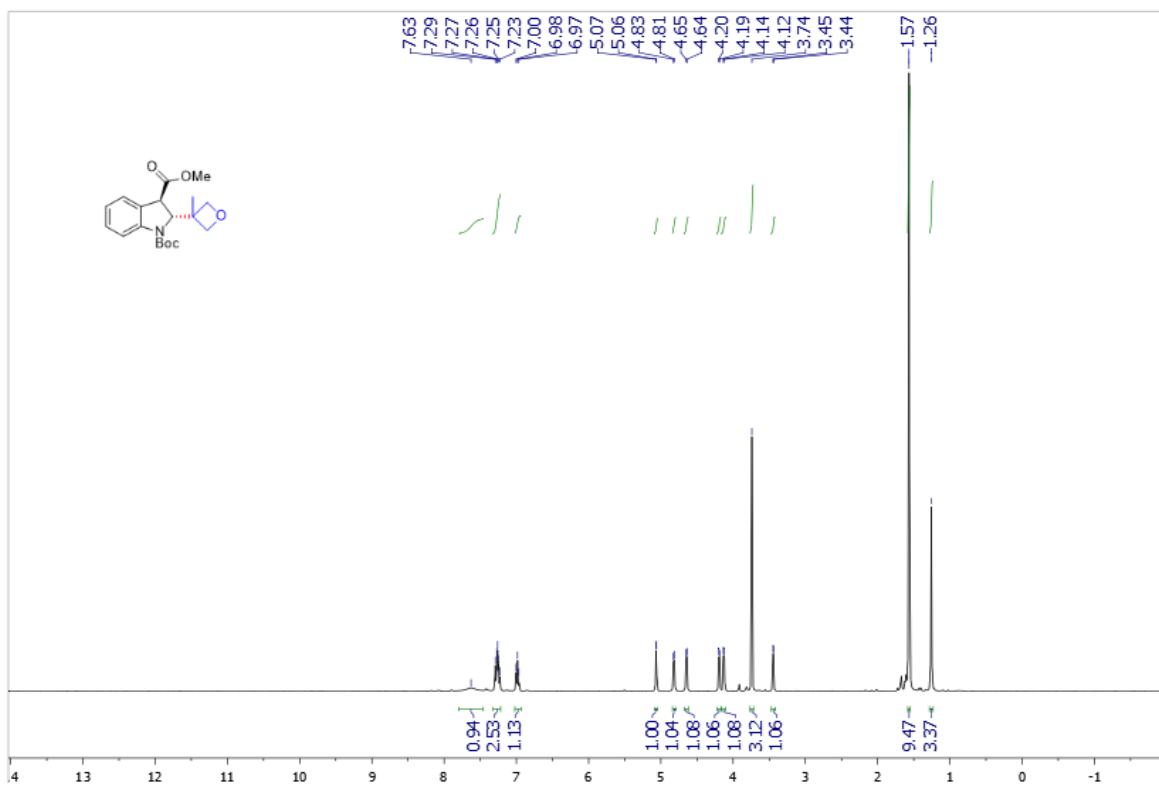
Supplementary Figure 124. ^{13}C NMR spectra of *trans*-3am



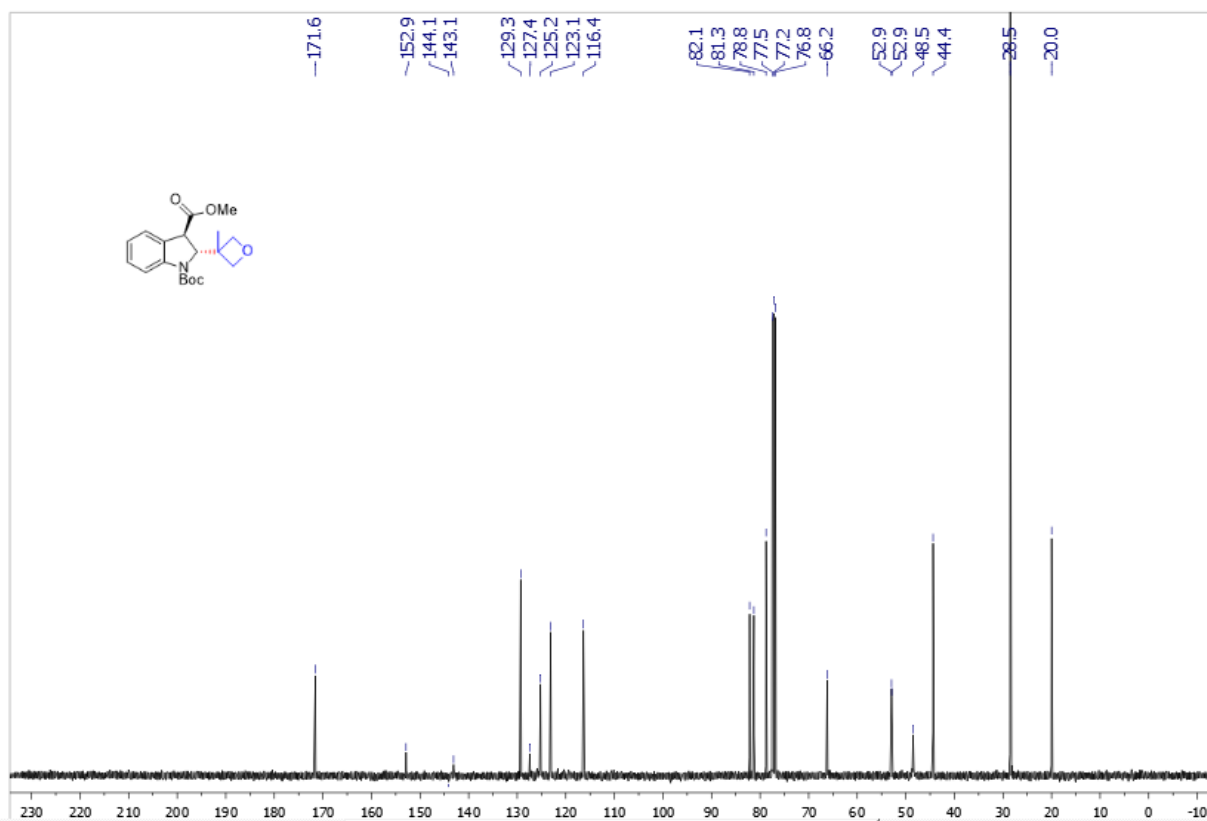
Supplementary Figure 125. ^1H NMR spectra of *trans*-3an



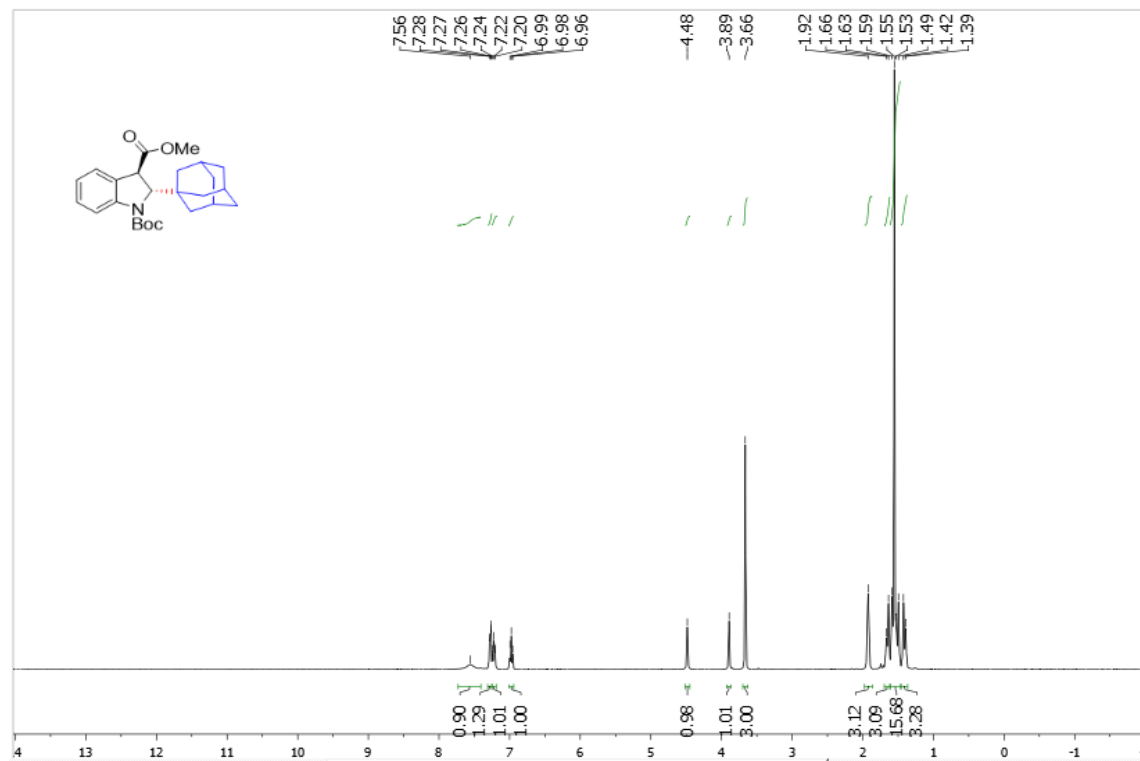
Supplementary Figure 126. ^{13}C NMR spectra of *trans*-3an



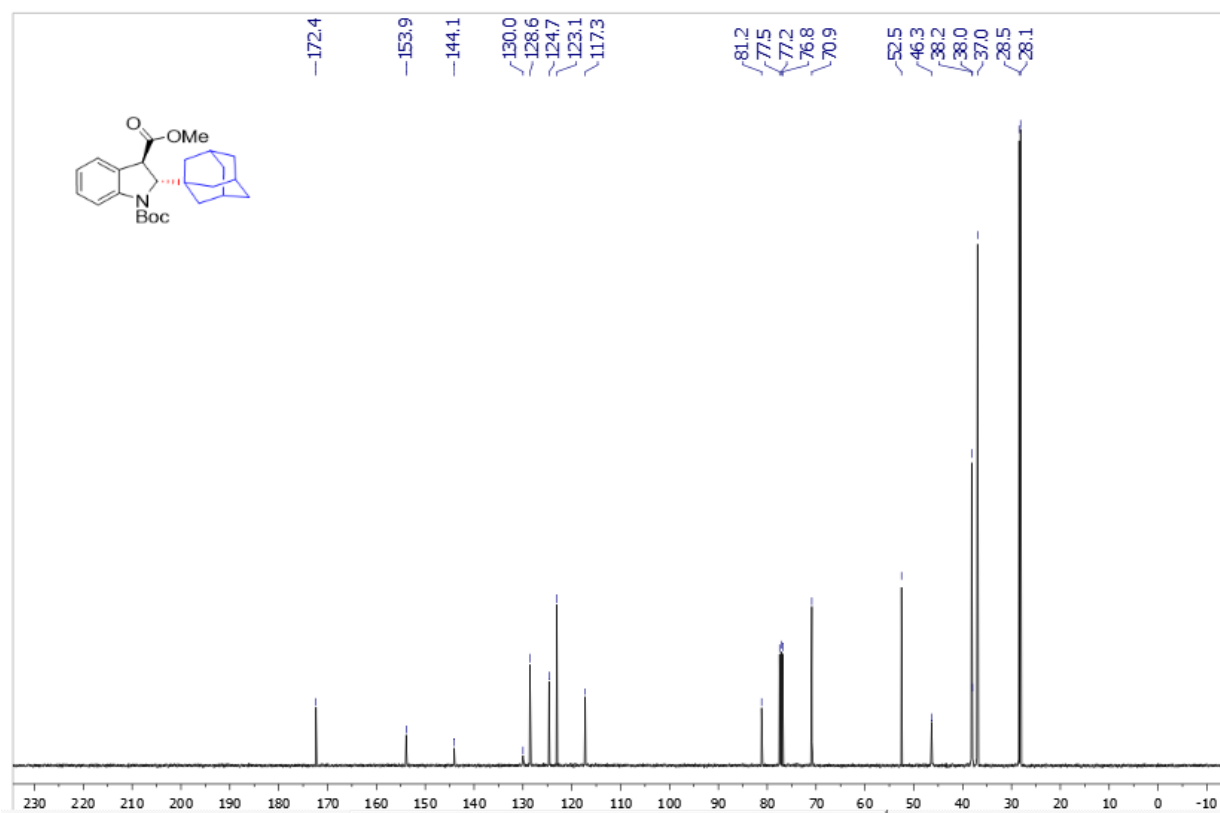
Supplementary Figure 127. ¹H NMR spectra of *trans*-3ao



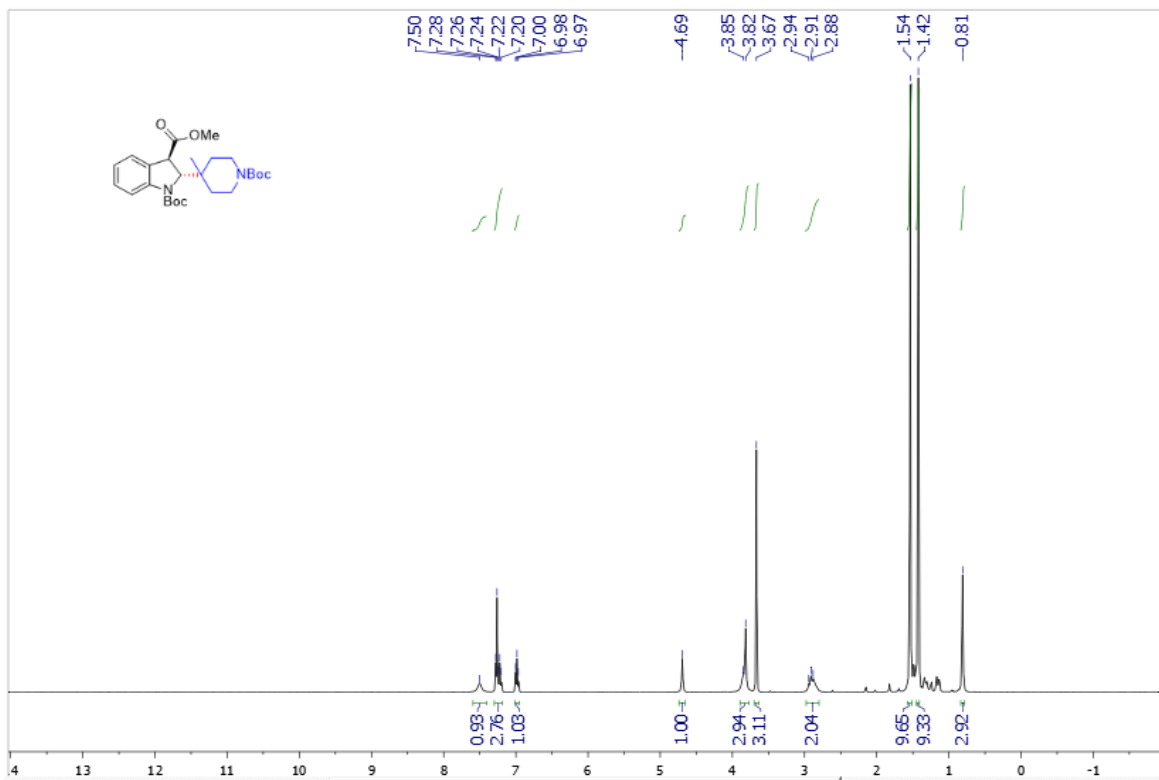
Supplementary Figure 128. ¹³C NMR spectra of *trans*-3ao



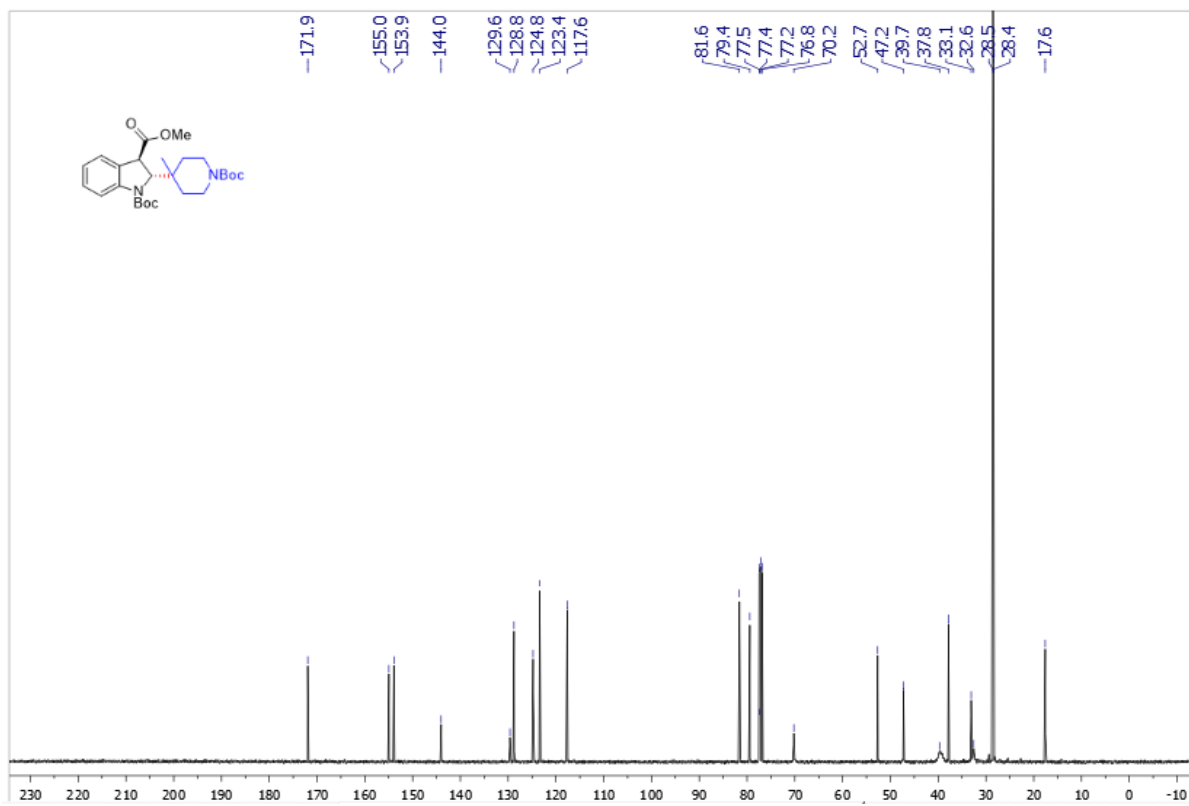
Supplementary Figure 129. ¹H NMR spectra of *trans*-3ap



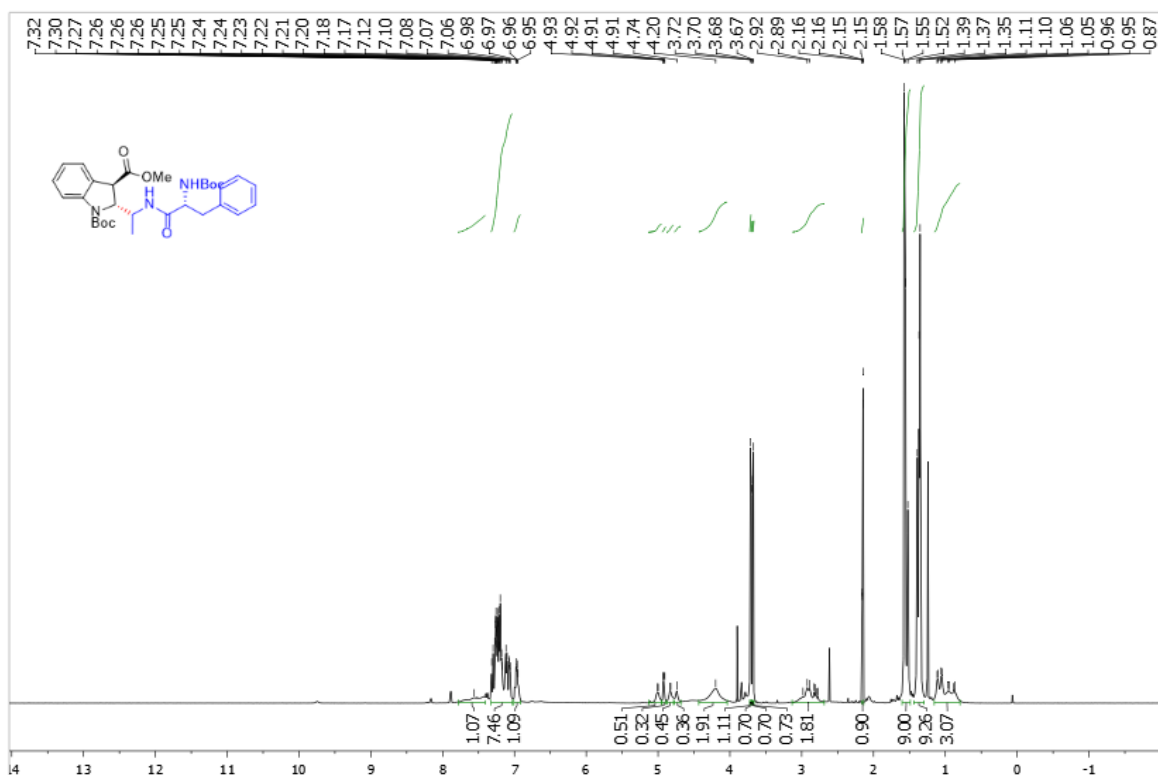
Supplementary Figure 130. ¹³C NMR spectra of *trans*-3ap



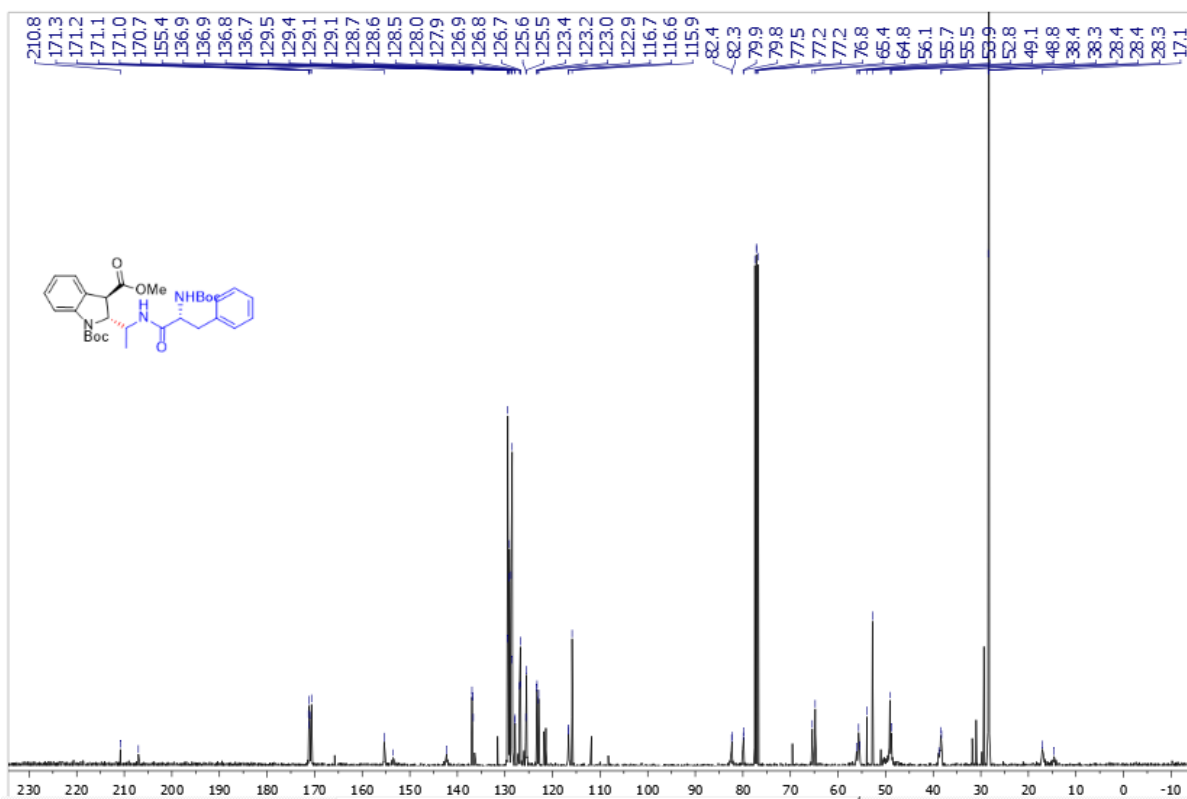
Supplementary Figure 131. ^1H NMR spectra of *trans*-3aq



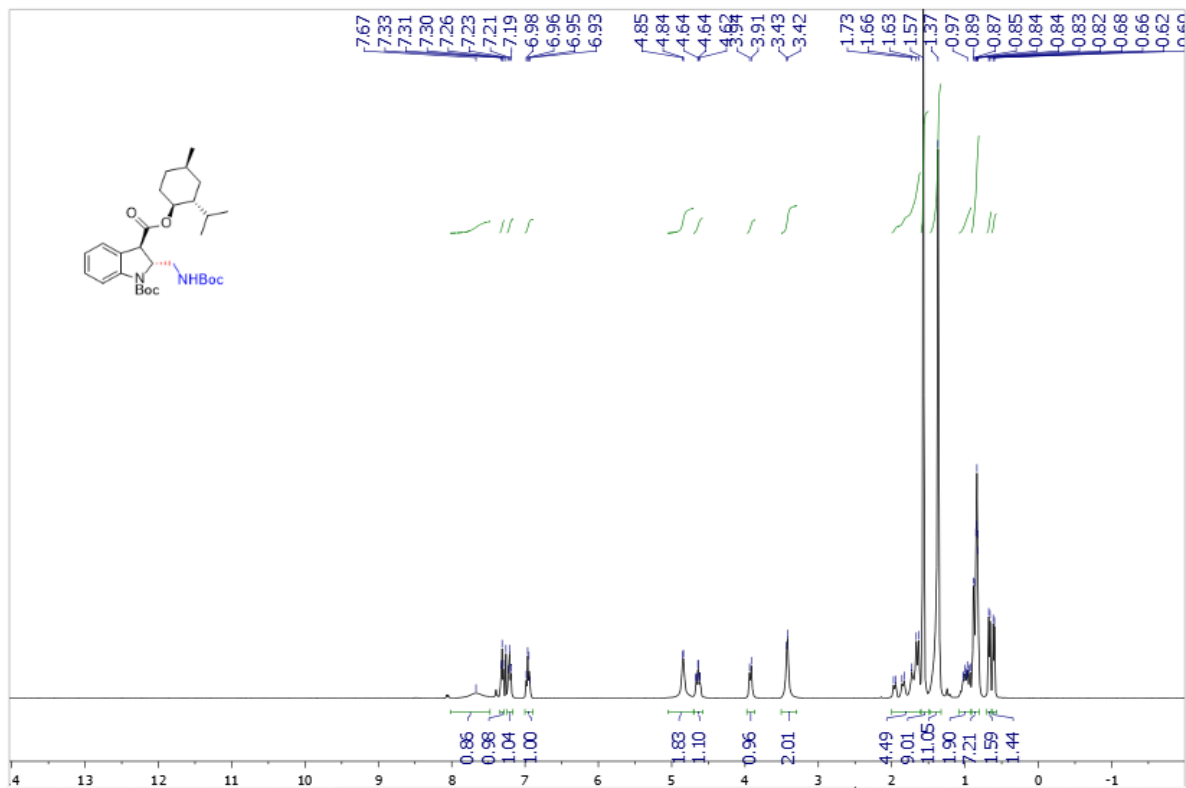
Supplementary Figure 132. ^{13}C NMR spectra of *trans*-3aq



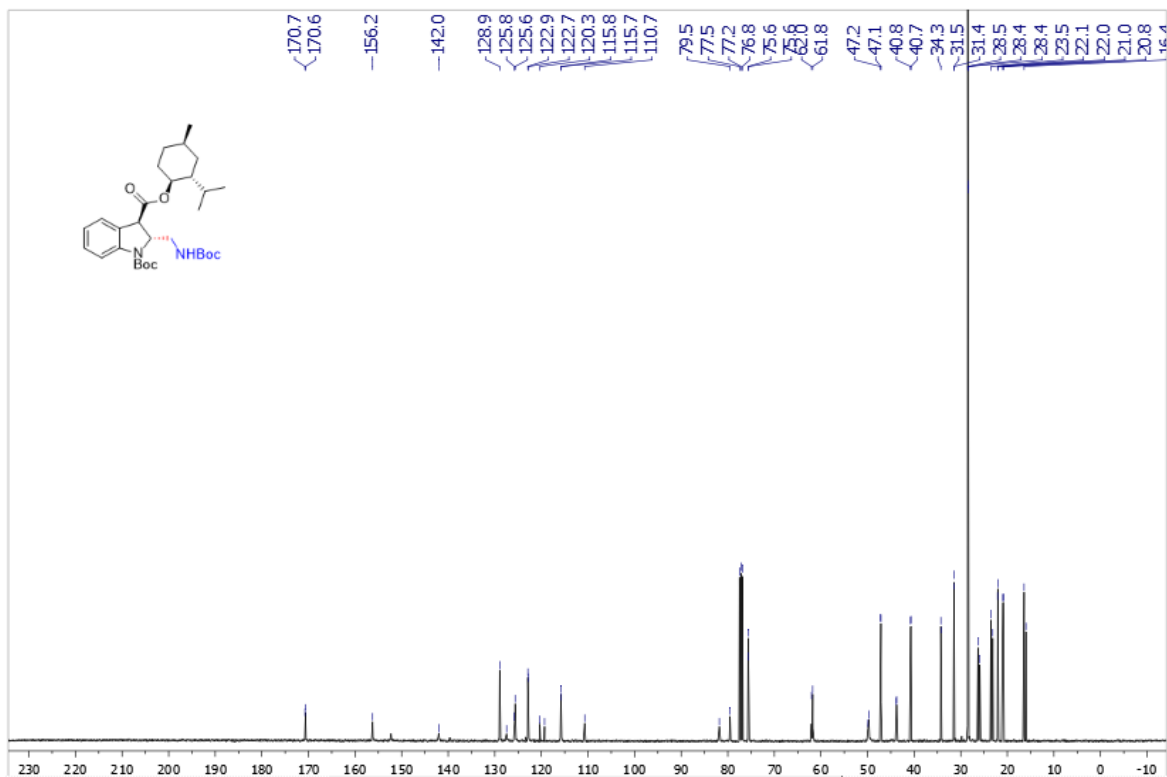
Supplementary Figure 133. ^1H NMR spectra of *trans*-3ar



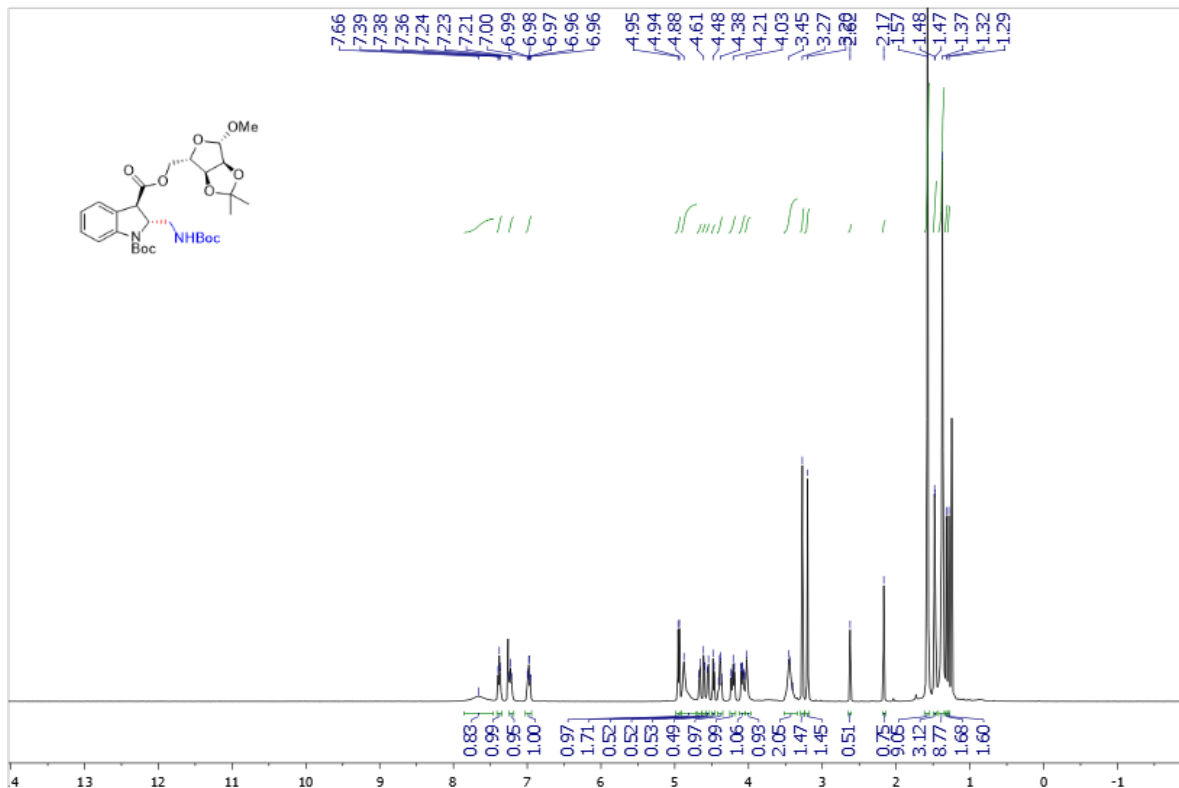
Supplementary Figure 134. ^{13}C NMR spectra of *trans*-3ar



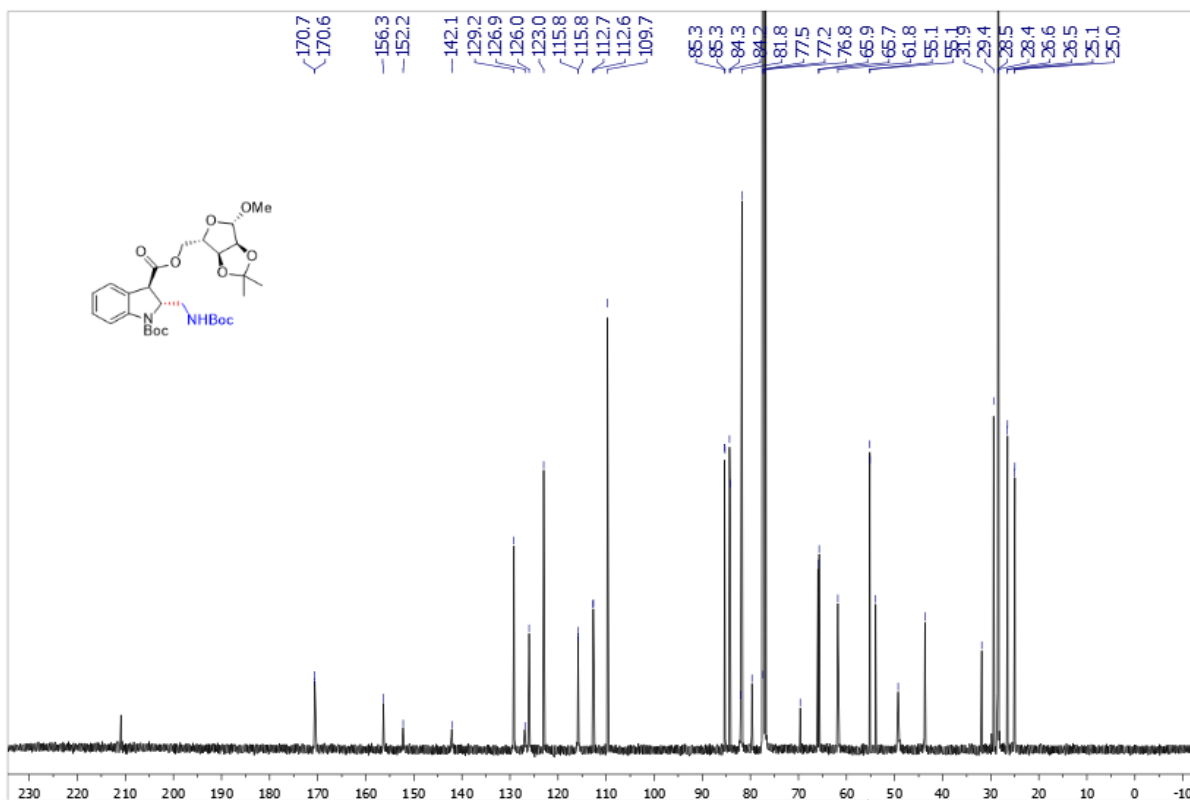
Supplementary Figure 135. ^1H NMR spectra of *trans*-3as



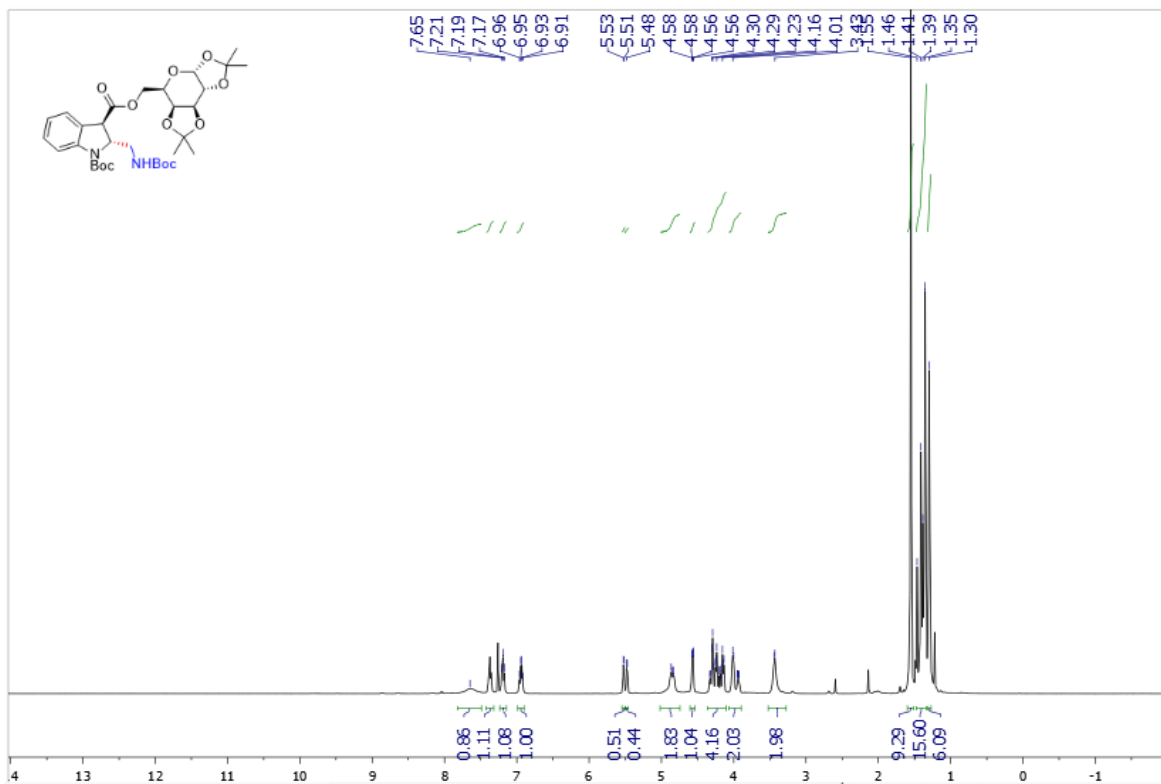
Supplementary Figure 136. ^{13}C NMR spectra of *trans*-3as



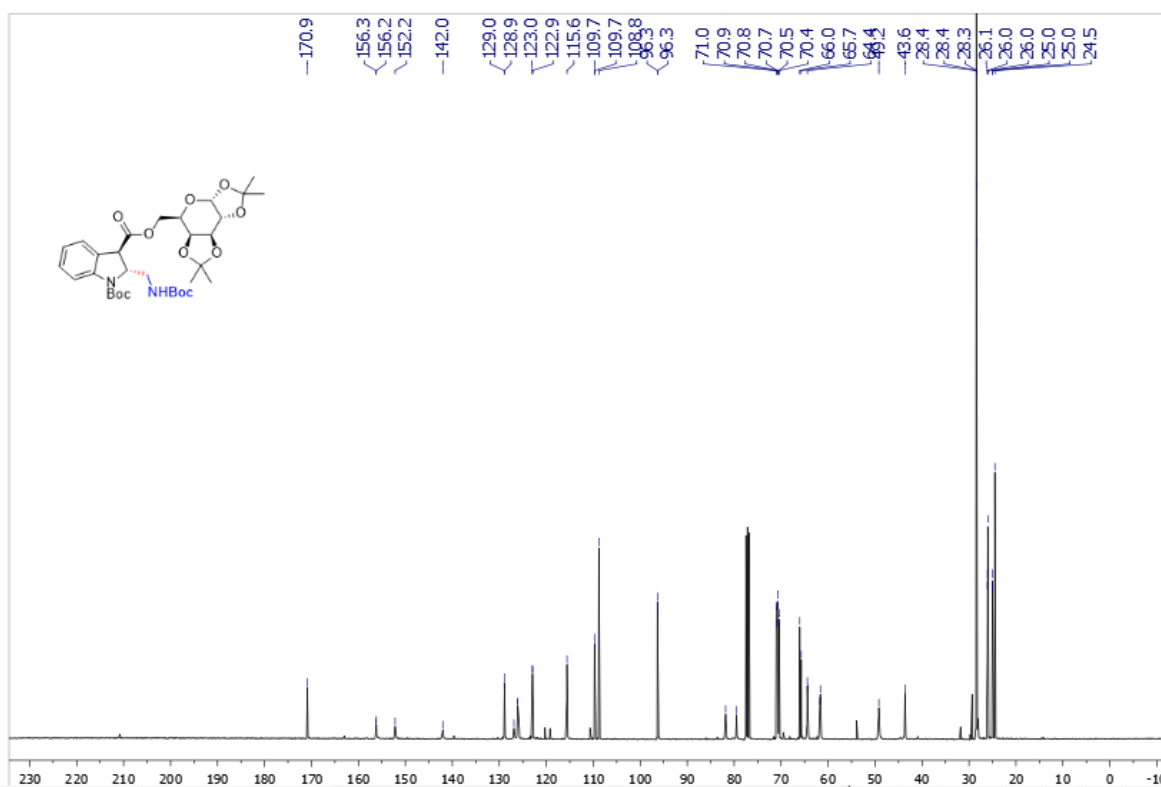
Supplementary Figure 137. ¹H NMR spectra of *trans*-3at



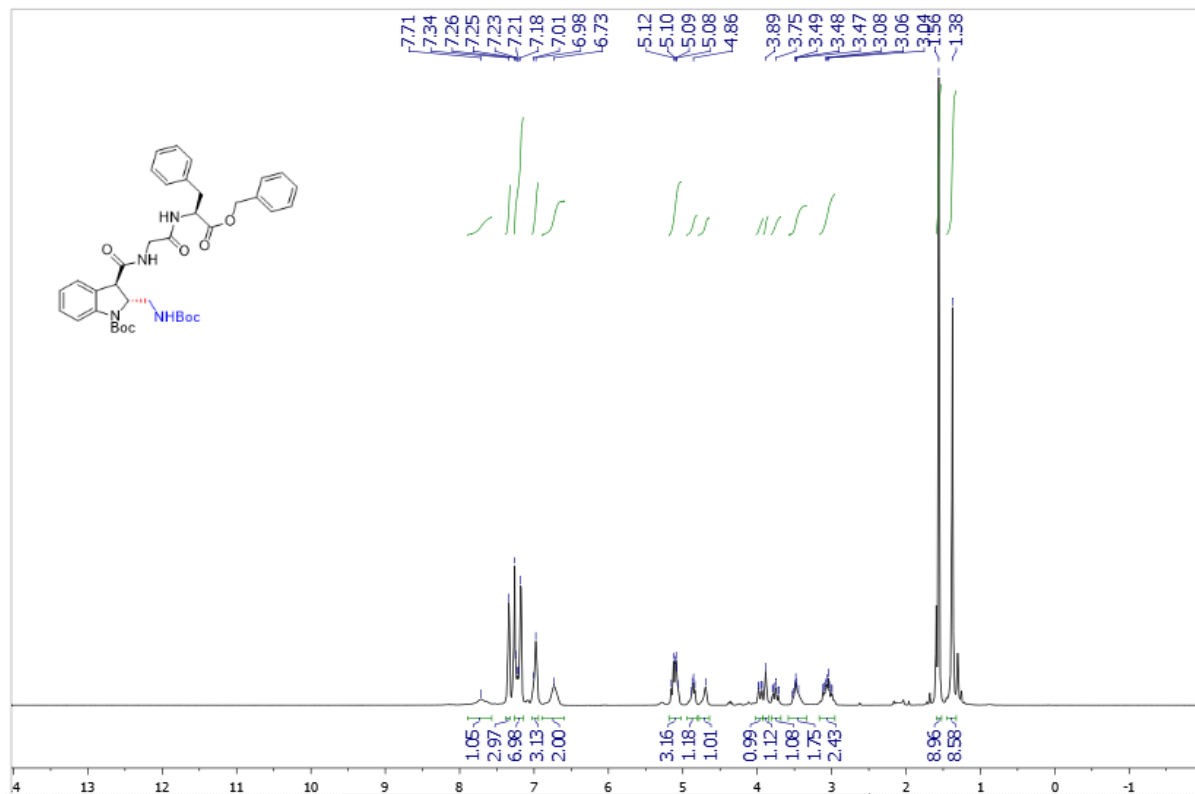
Supplementary Figure 138. ¹³C NMR spectra of *trans*-3at



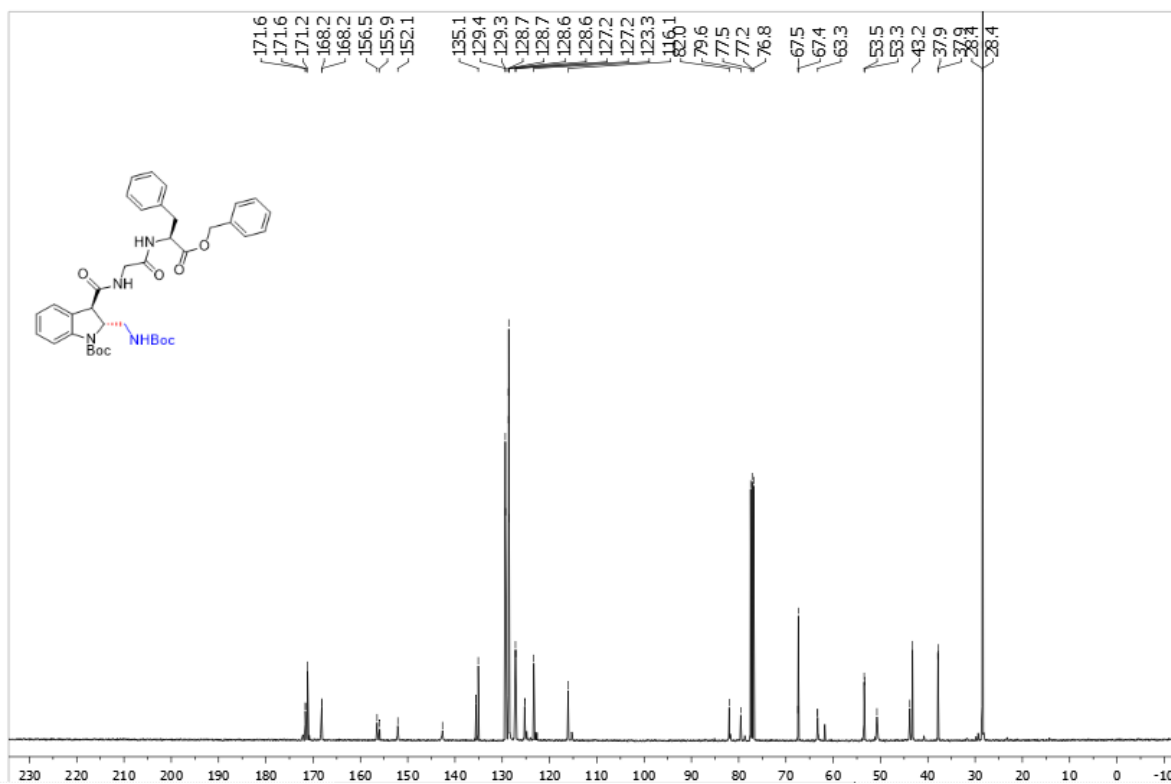
Supplementary Figure 139. ¹H NMR spectra of *trans*-3au



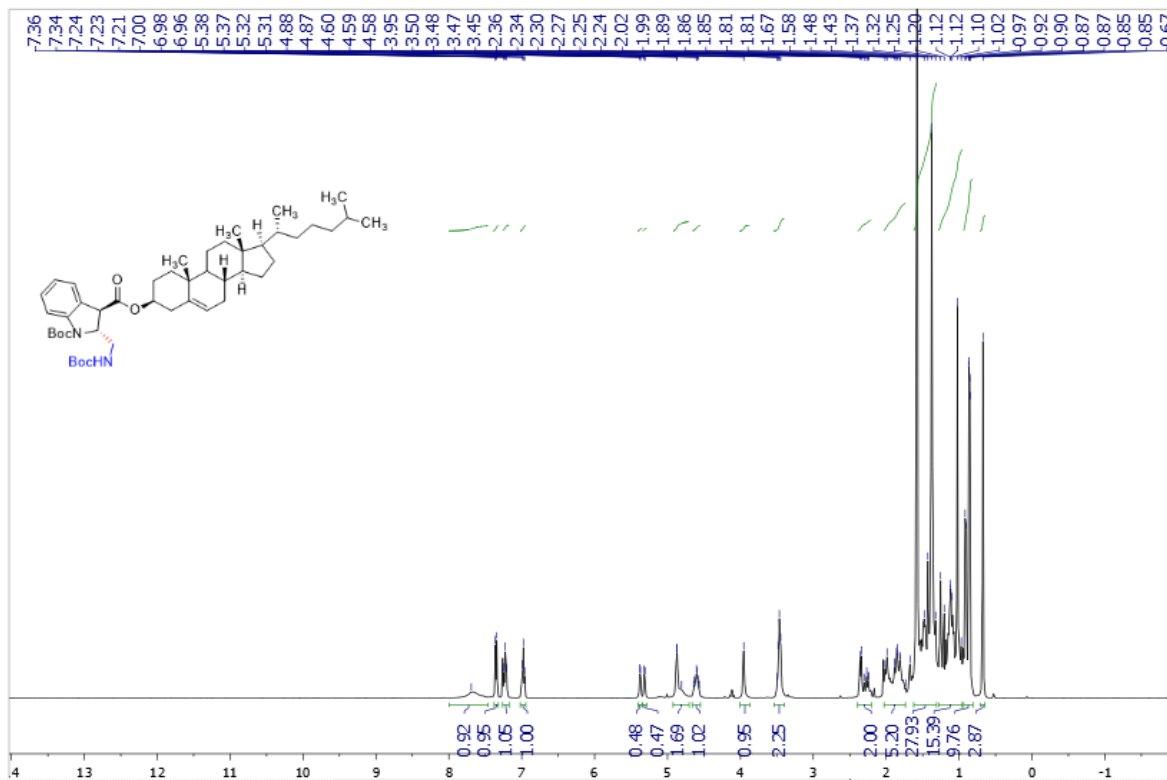
Supplementary Figure 140. ¹³C NMR spectra of *trans*-3au



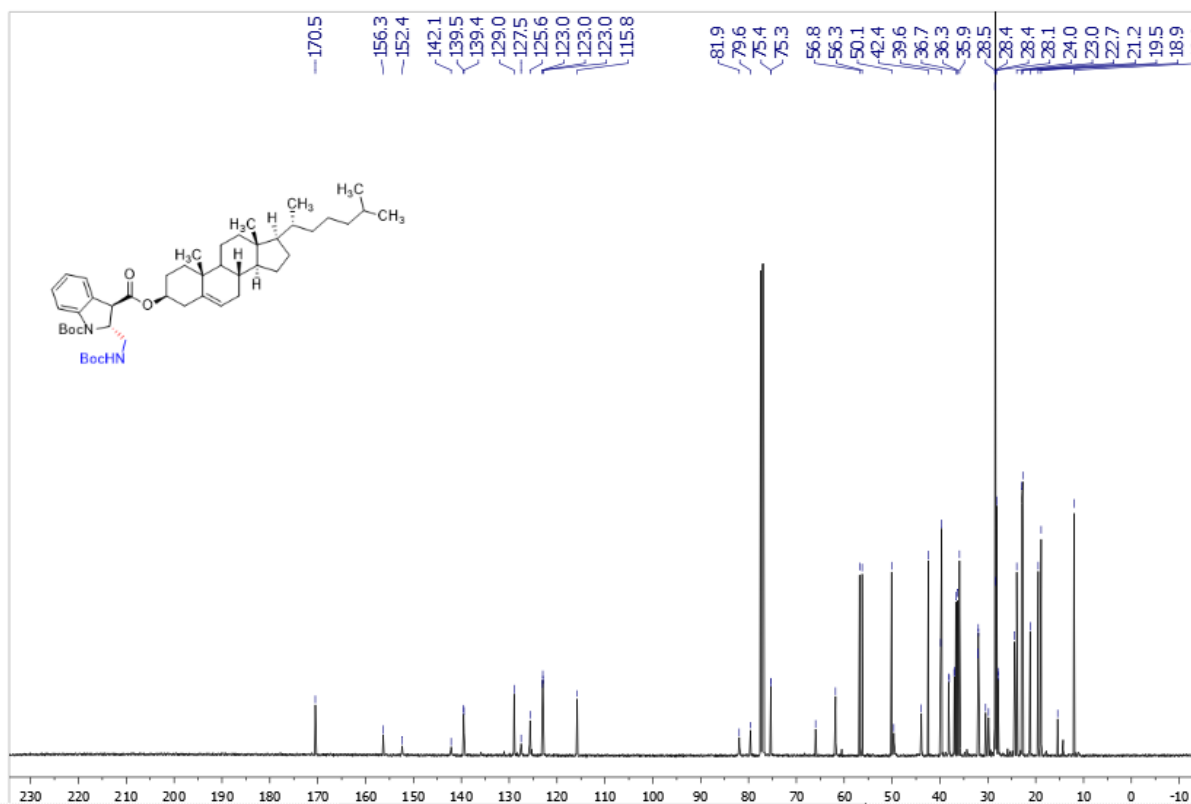
Supplementary Figure 141. ¹H NMR spectra of *trans*-3av



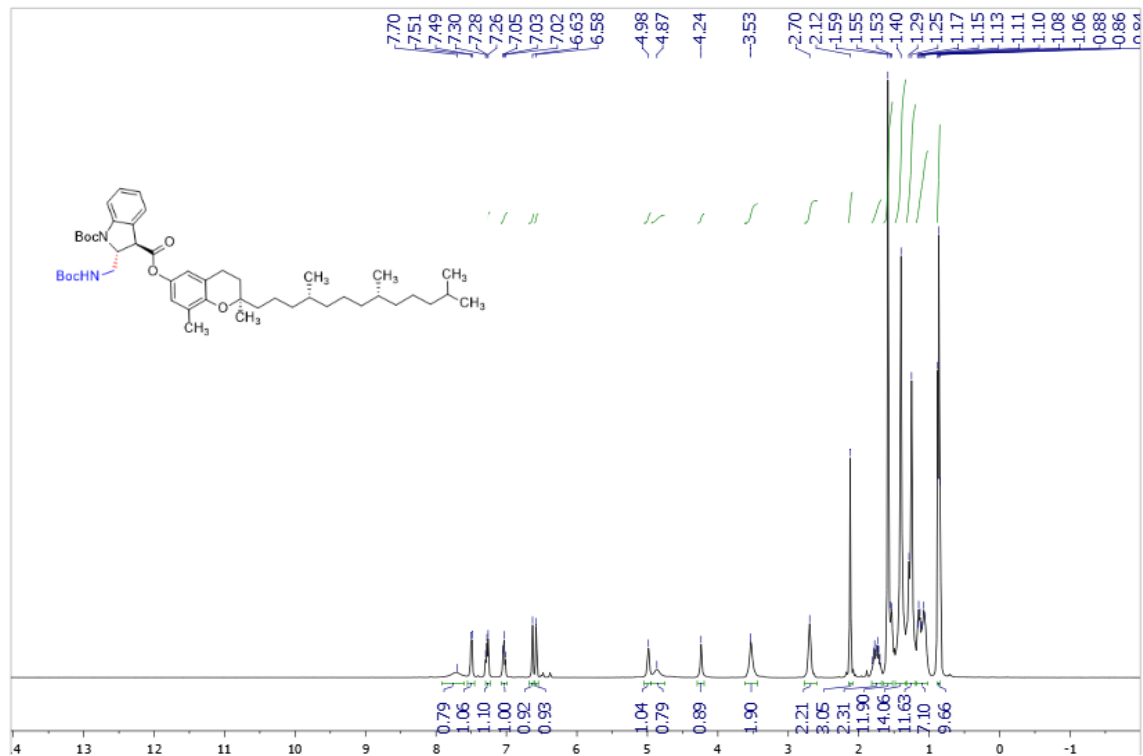
Supplementary Figure 142. ¹³C NMR spectra of *trans*-3av



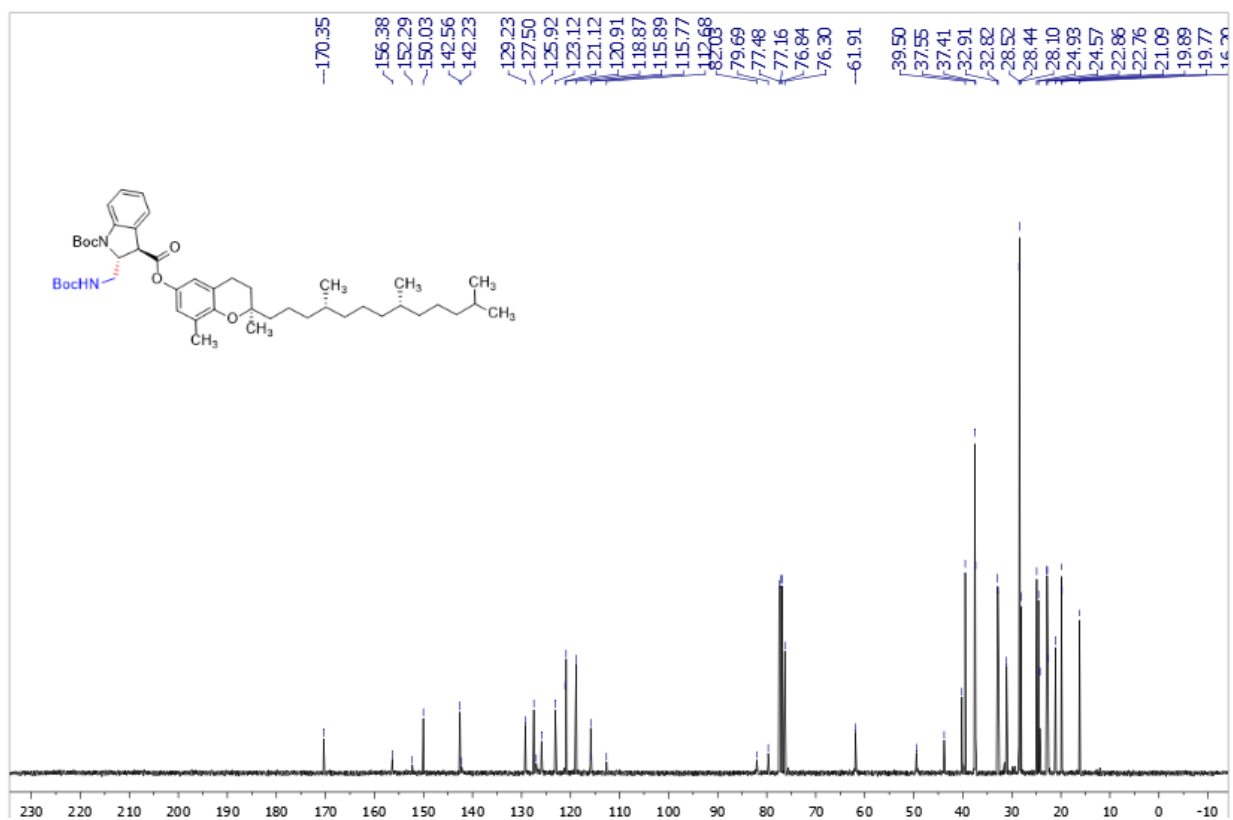
Supplementary Figure 143. ¹H NMR spectra of *trans*-3aw



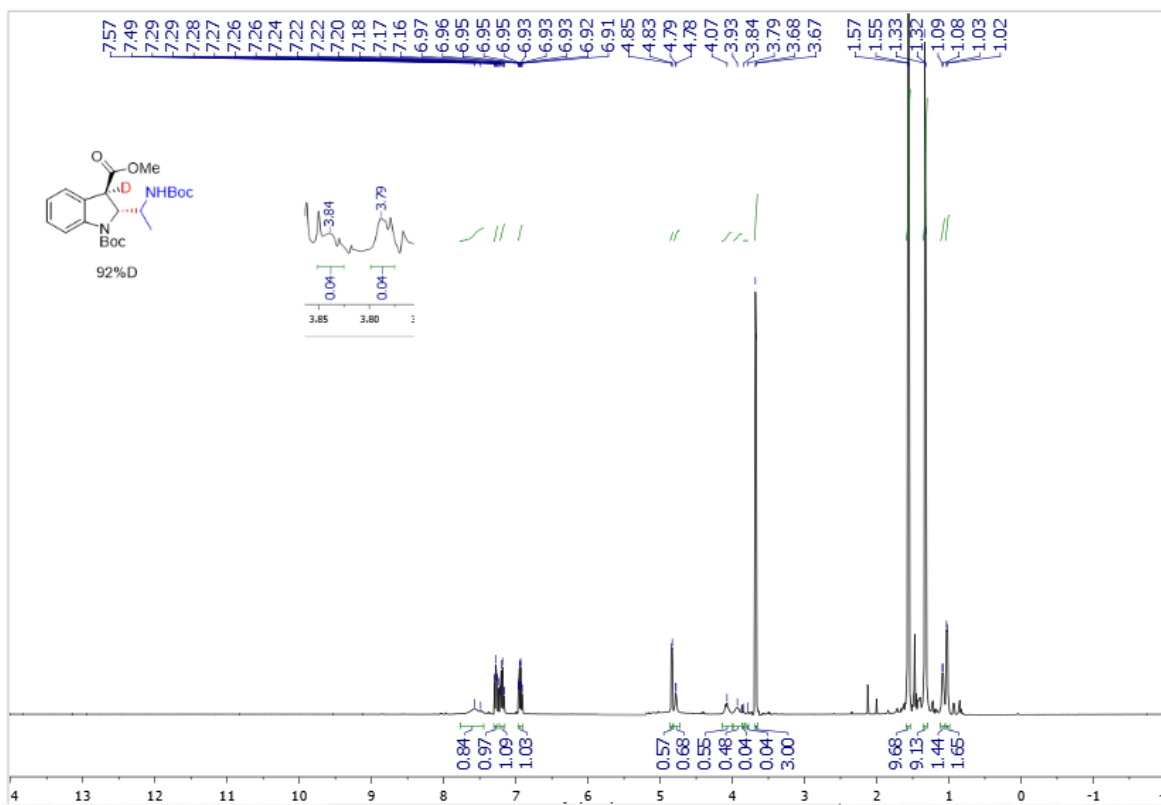
Supplementary Figure 144. ¹³C NMR spectra of *trans*-3aw



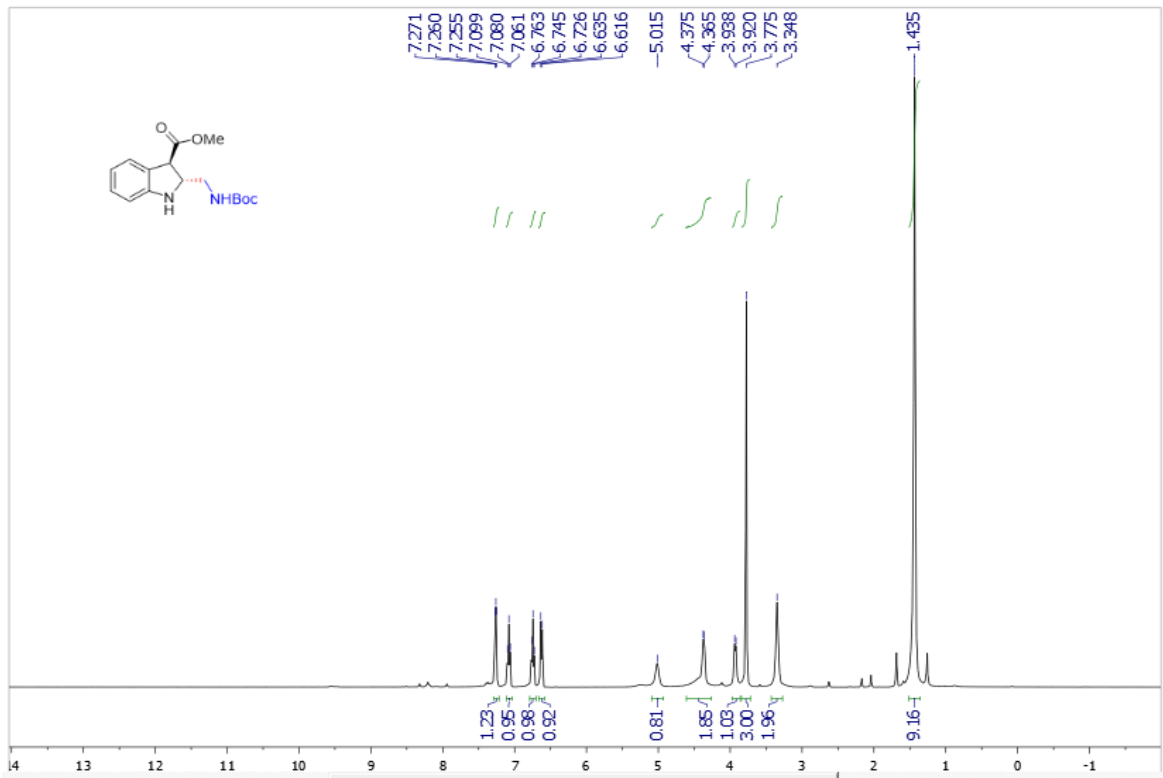
Supplementary Figure 145. ¹H NMR spectra of *trans*-3ax



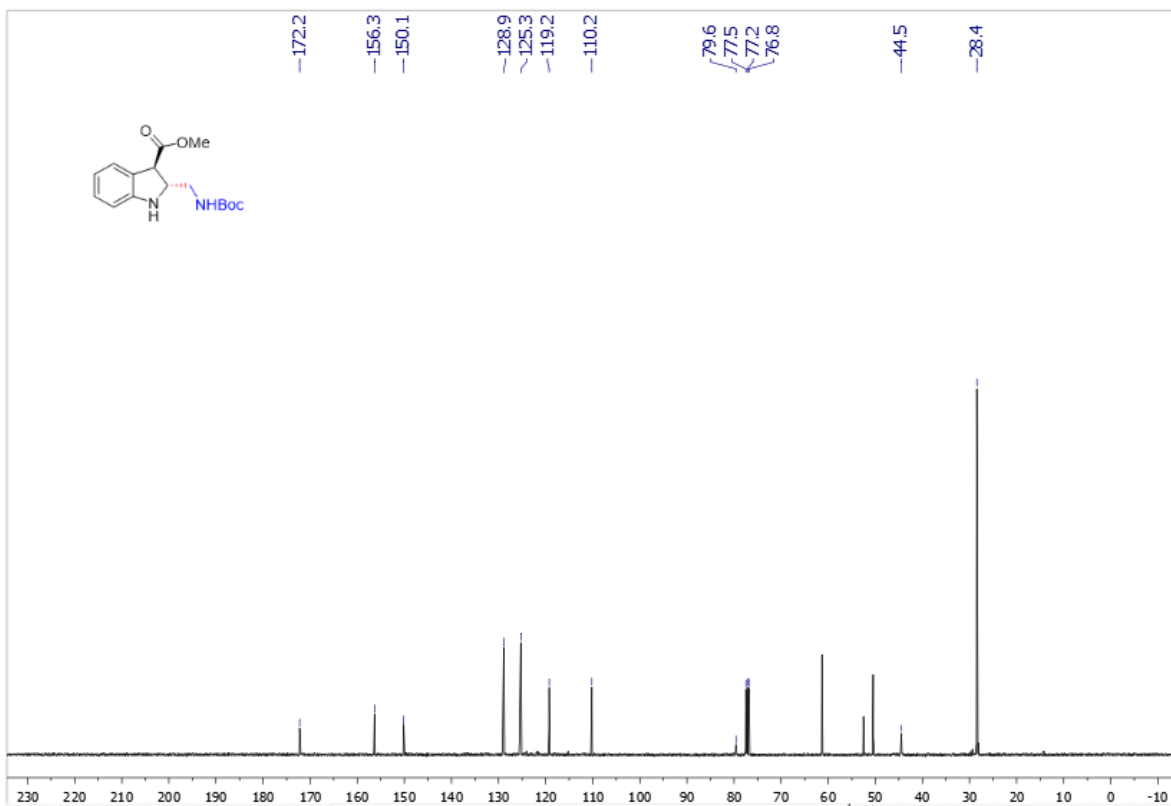
Supplementary Figure 146. ¹³C NMR spectra of *trans*-3ax



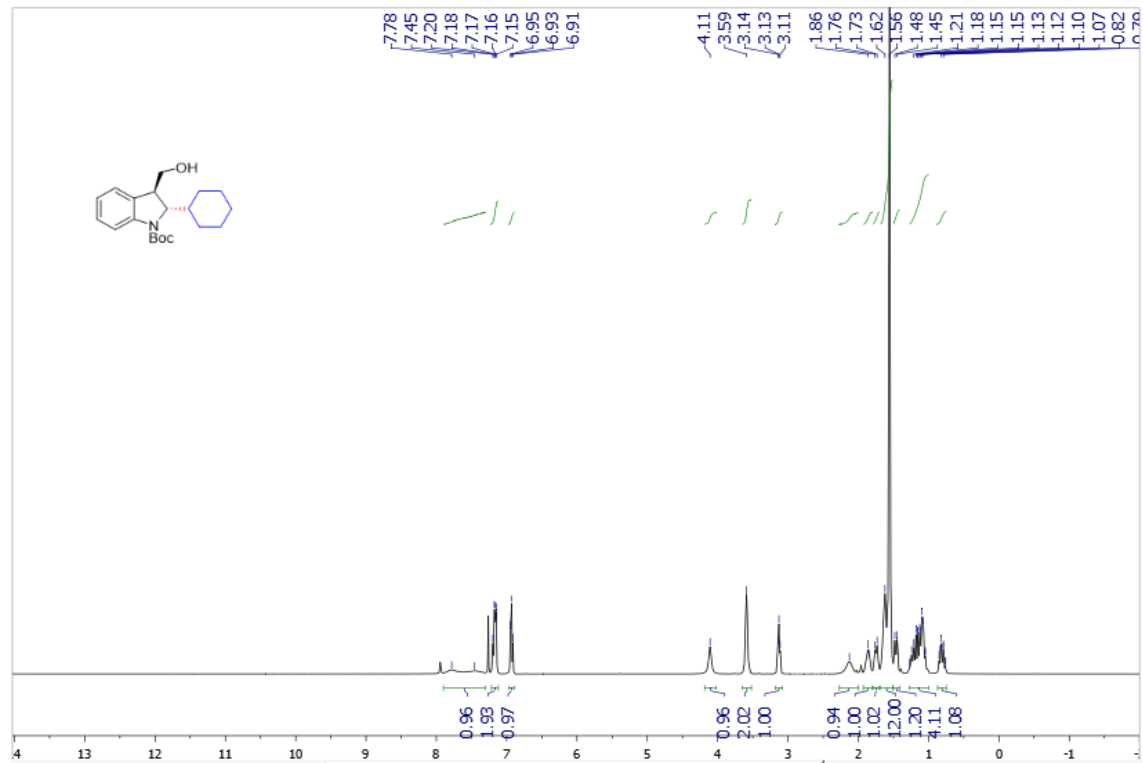
Supplementary Figure 147. ^1H NMR spectra of *trans*-3a-d



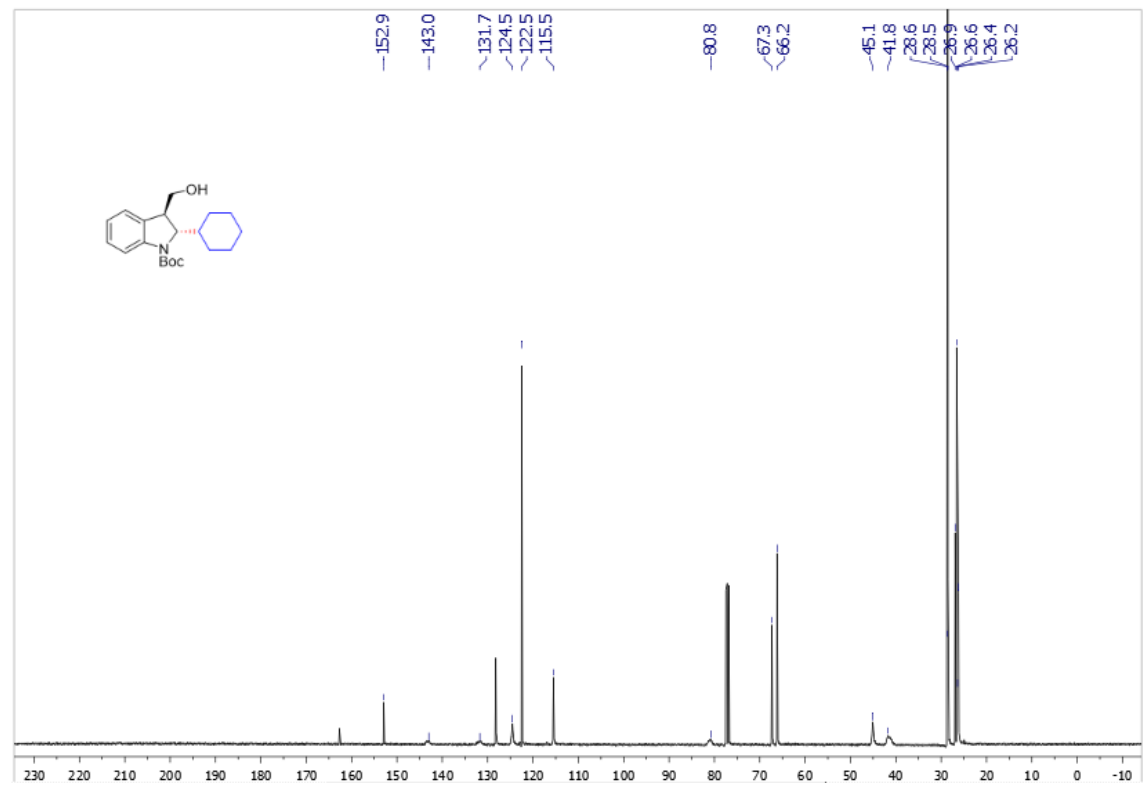
Supplementary Figure 148. ^1H NMR spectra of *trans*-4k



Supplementary Figure 149. ^{13}C NMR spectra of *trans*-4k

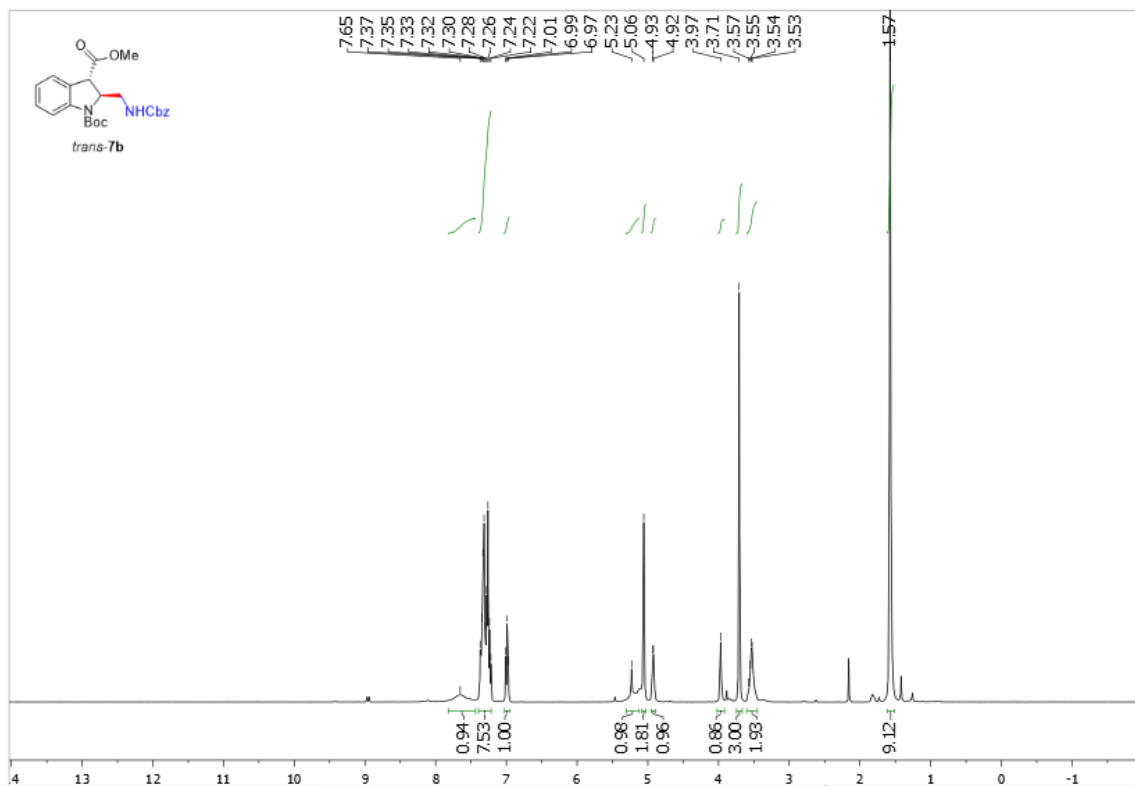


Supplementary Figure 150. ^1H NMR spectra of *trans*-4aj

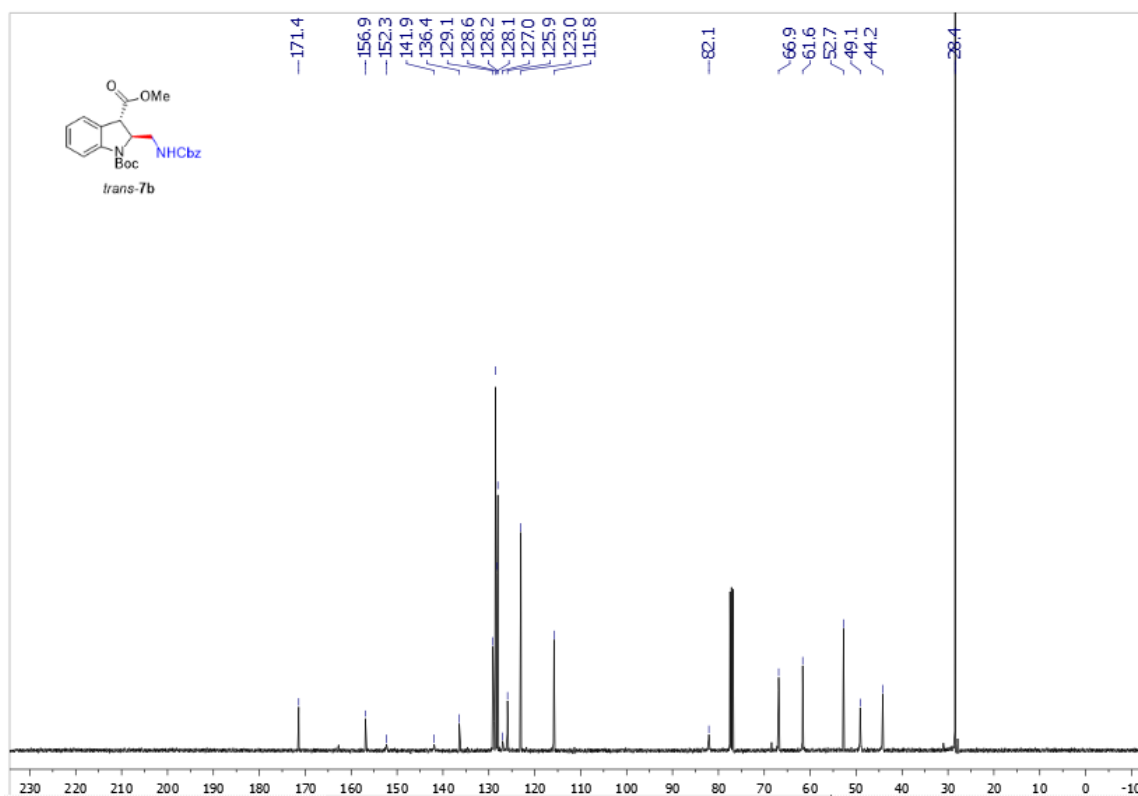


Supplementary Figure 151. ^{13}C NMR spectra of *trans*-4aj

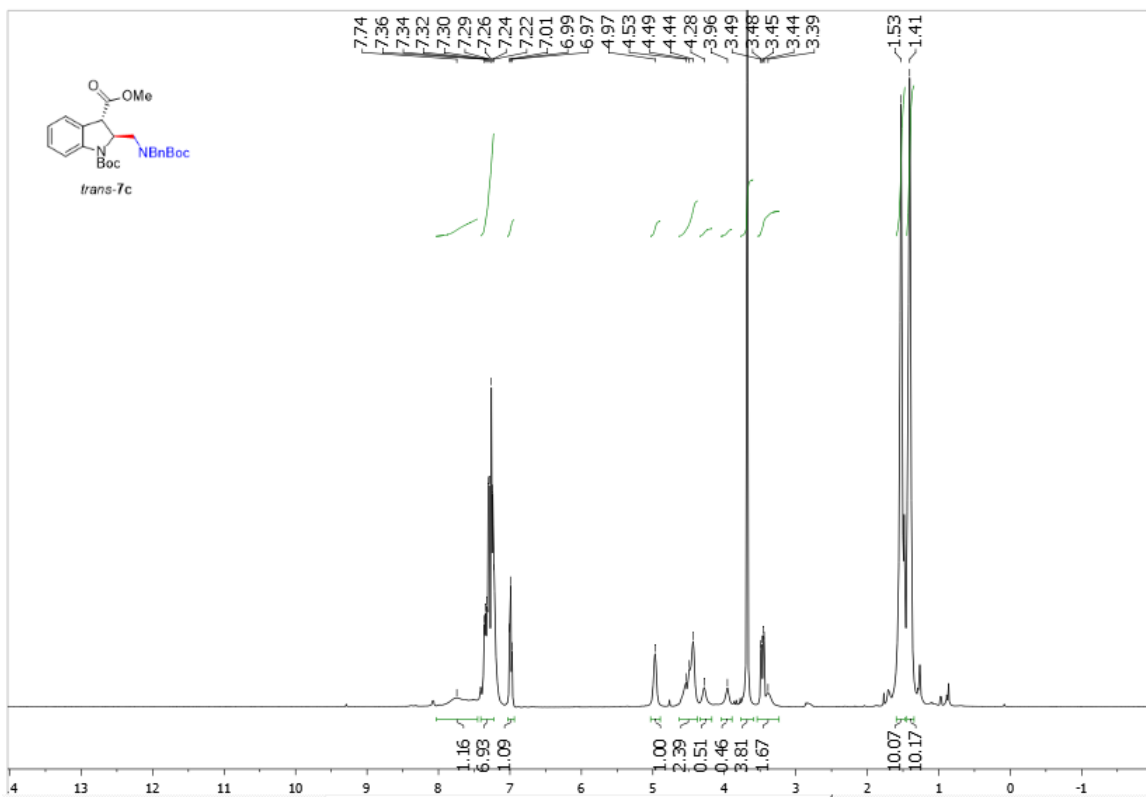
For original ^1H and ^{13}C NMR spectra of **7a**, **7g**, **7h**, **7p**, **7q**, **7r**, **7s**, **7t**, **7u**, **7v**, and **7w**, please see corresponding **3v**, **3ah**, **3ag**, **3aj**, **3al**, **3am**, **3aq**, **3ae**, **3ap**, **3an** and **3k**.



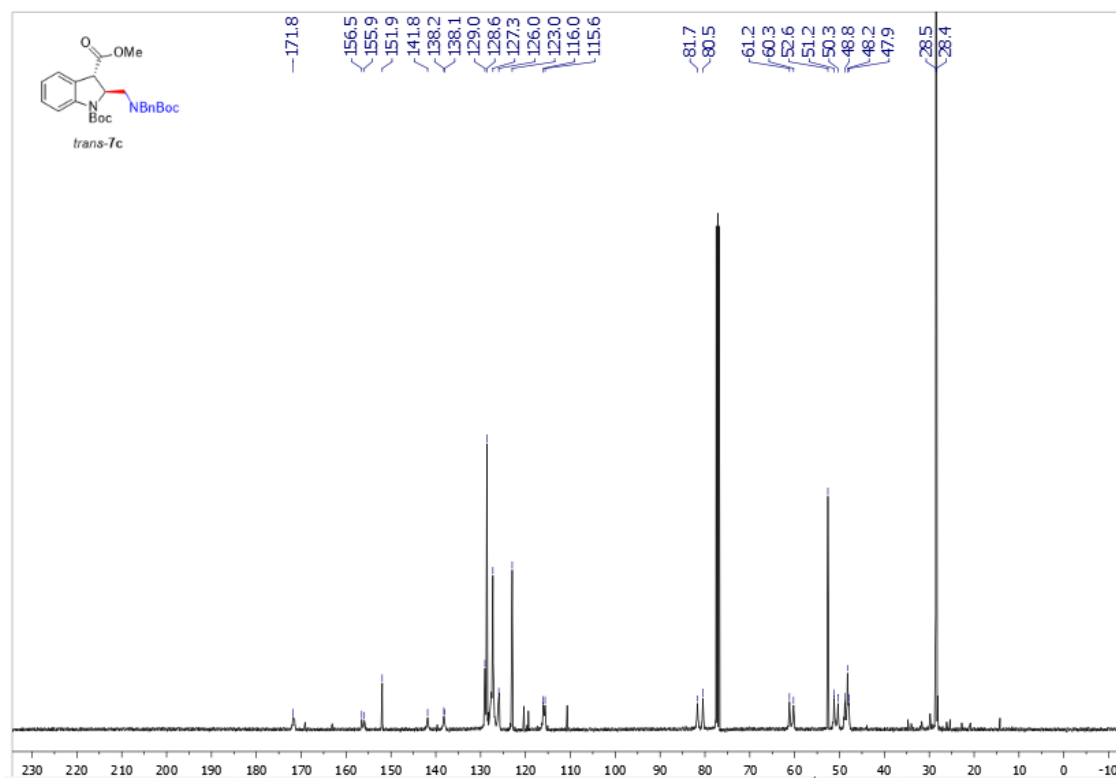
Supplementary Figure 152. ¹H NMR spectra of *trans*-7b



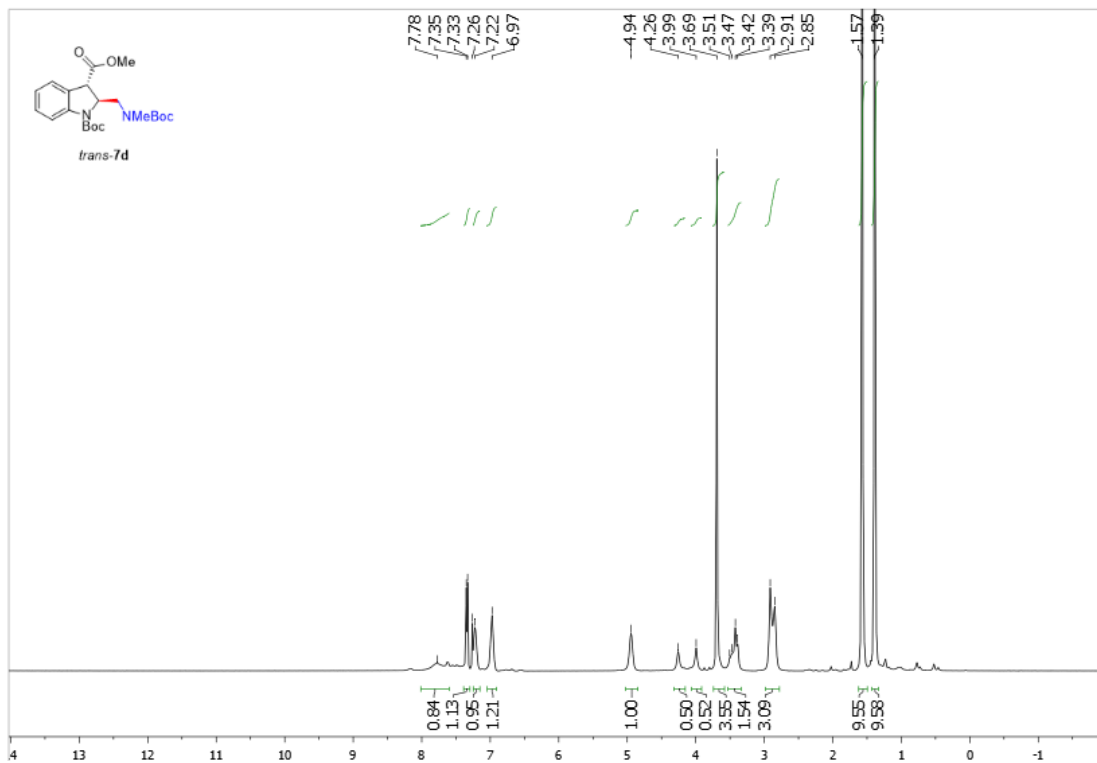
Supplementary Figure 153. ¹³C NMR spectra of *trans*-7b



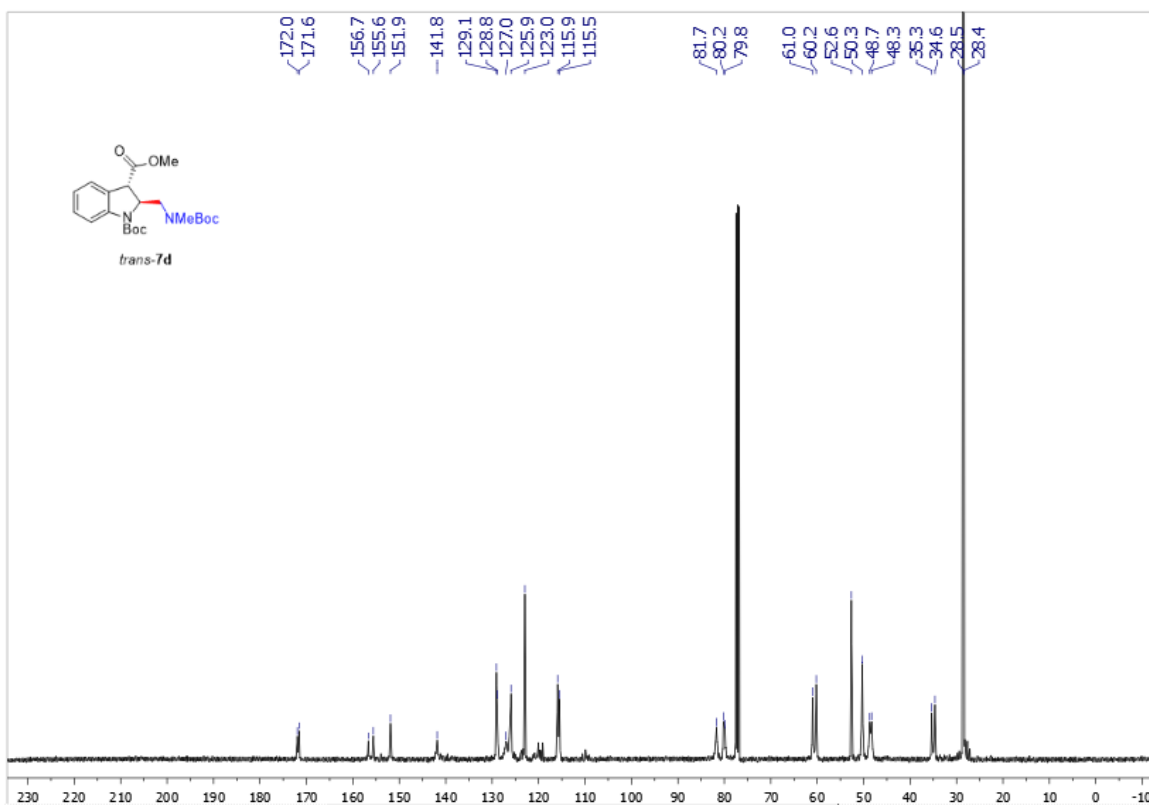
Supplementary Figure 154. ¹H NMR spectra of *trans*-7c



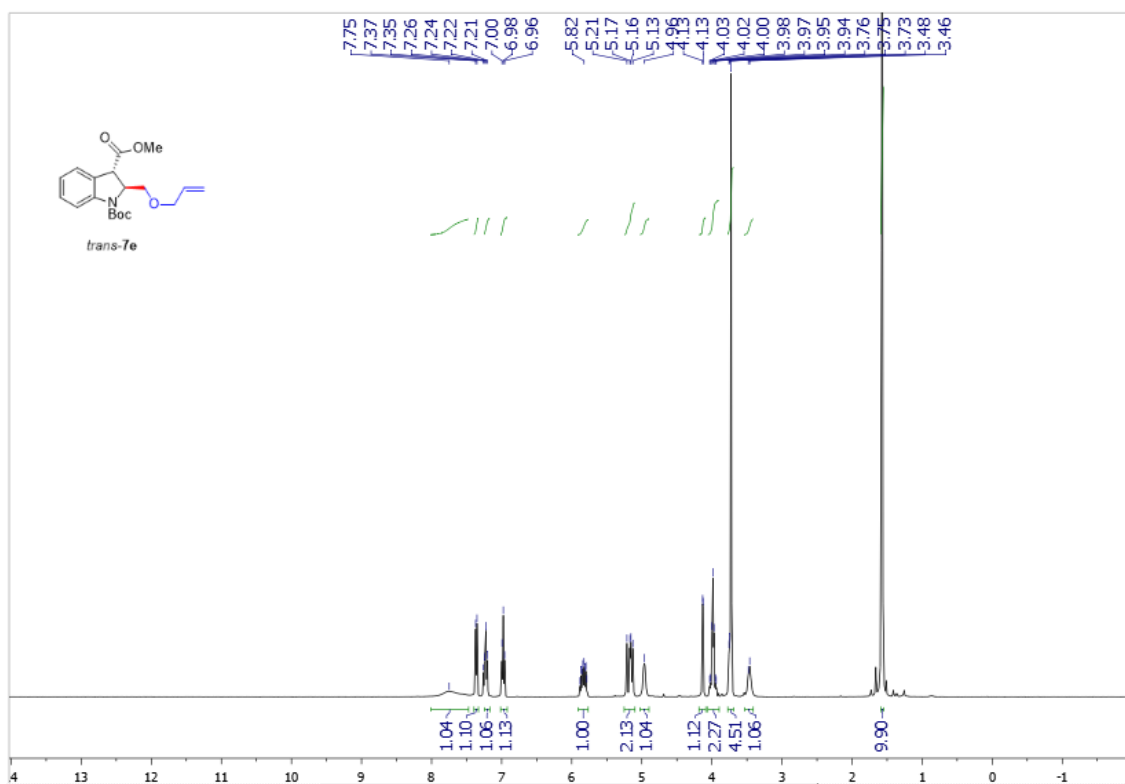
Supplementary Figure 155. ¹³C NMR spectra of *trans*-7c



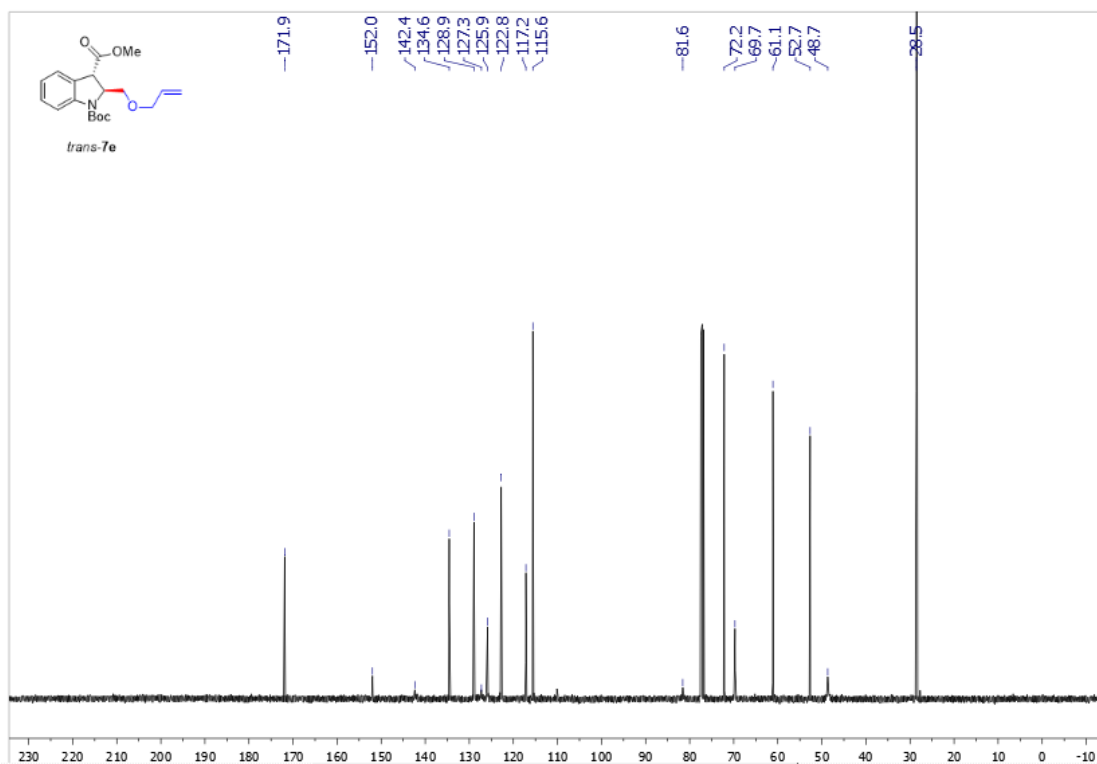
Supplementary Figure 156. ^1H NMR spectra of *trans*-7d



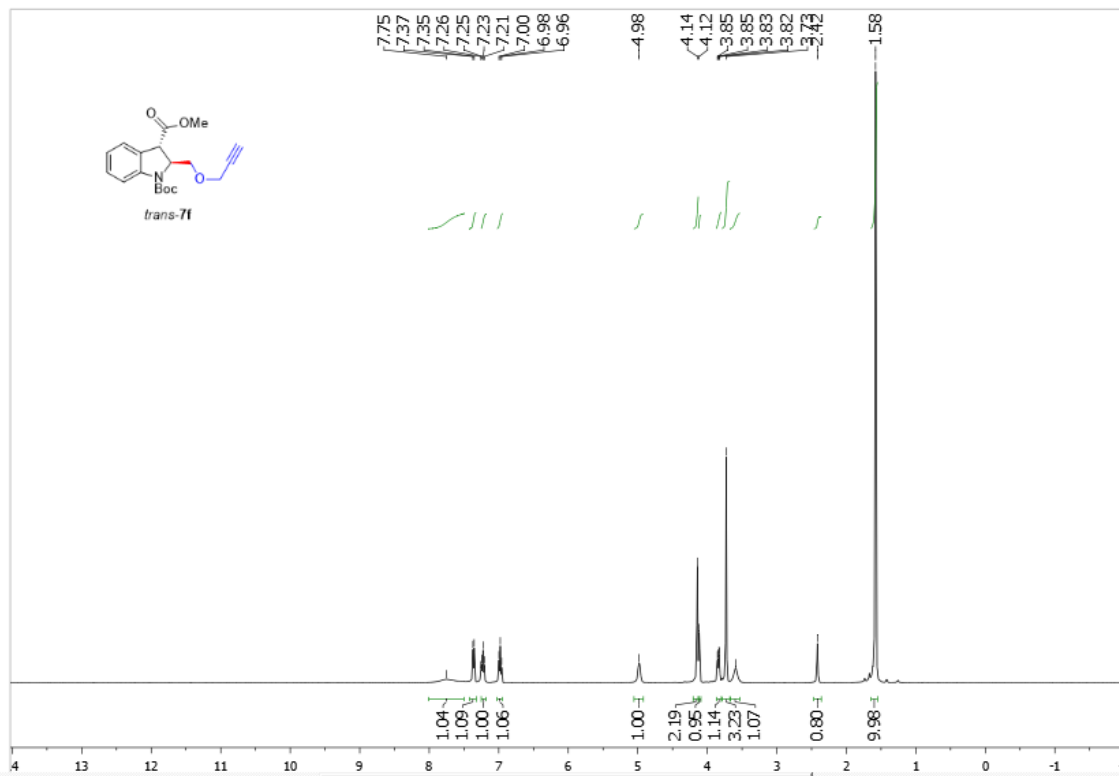
Supplementary Figure 157. ^{13}C NMR spectra of *trans*-7d



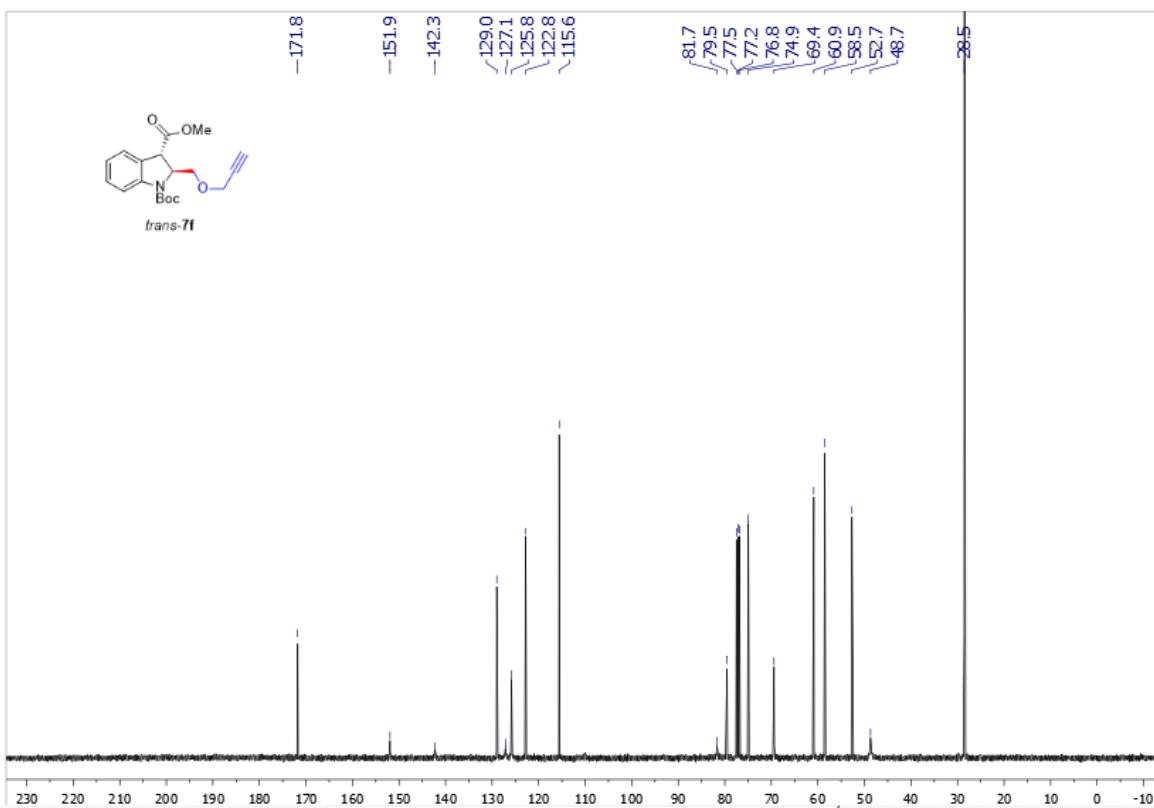
Supplementary Figure 158. ¹H NMR spectra of *trans-7e*



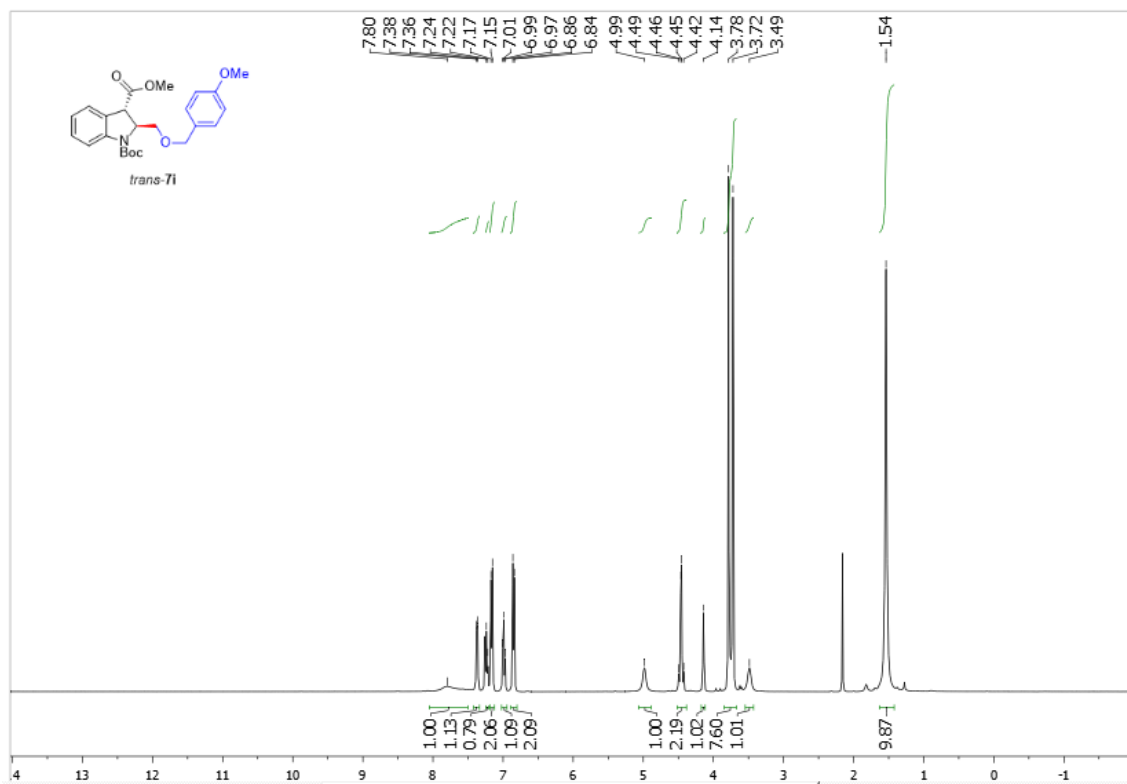
Supplementary Figure 159. ¹³C NMR spectra of *trans-7e*



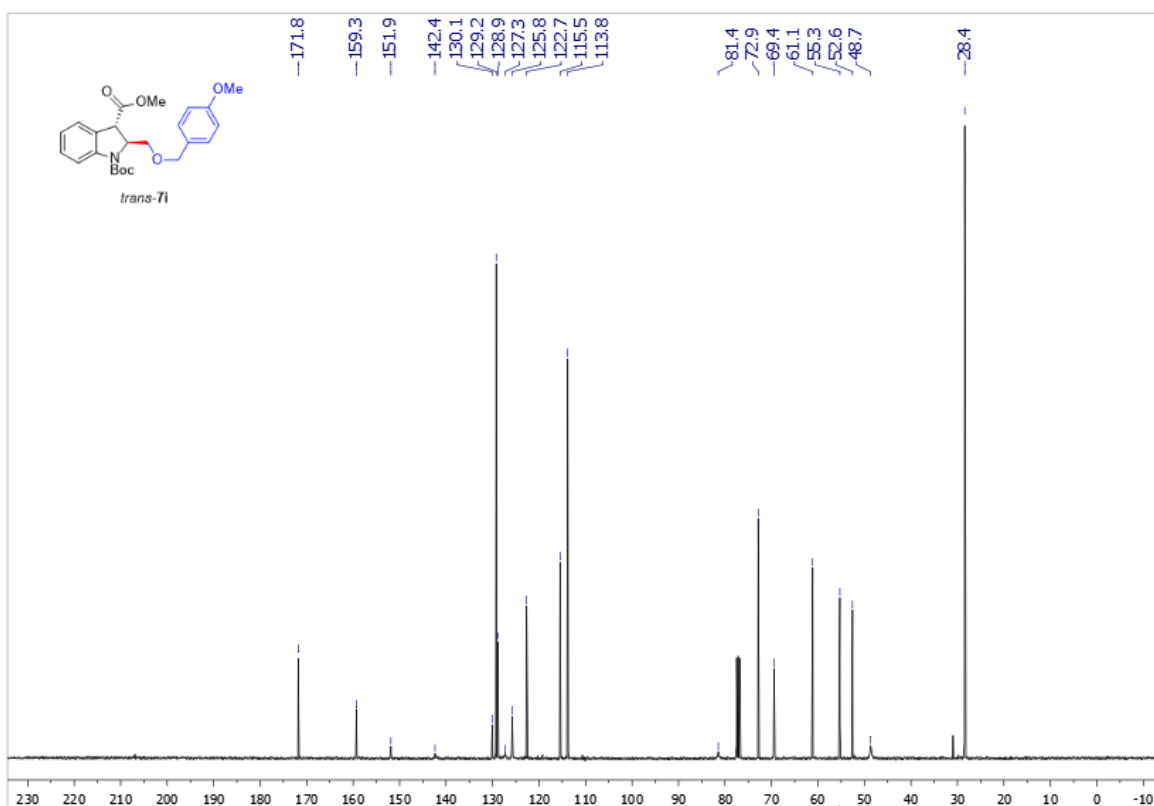
Supplementary Figure 160. ^1H NMR spectra of *trans*-7f



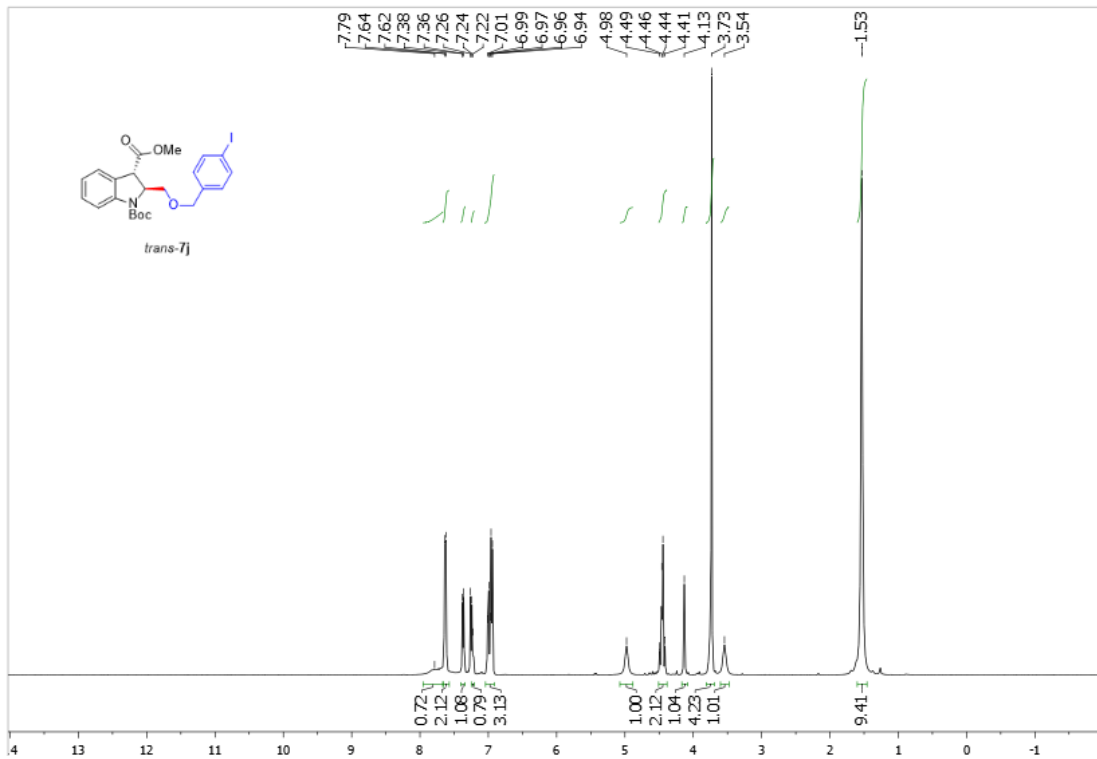
Supplementary Figure 161. ^{13}C NMR spectra of *trans*-7f



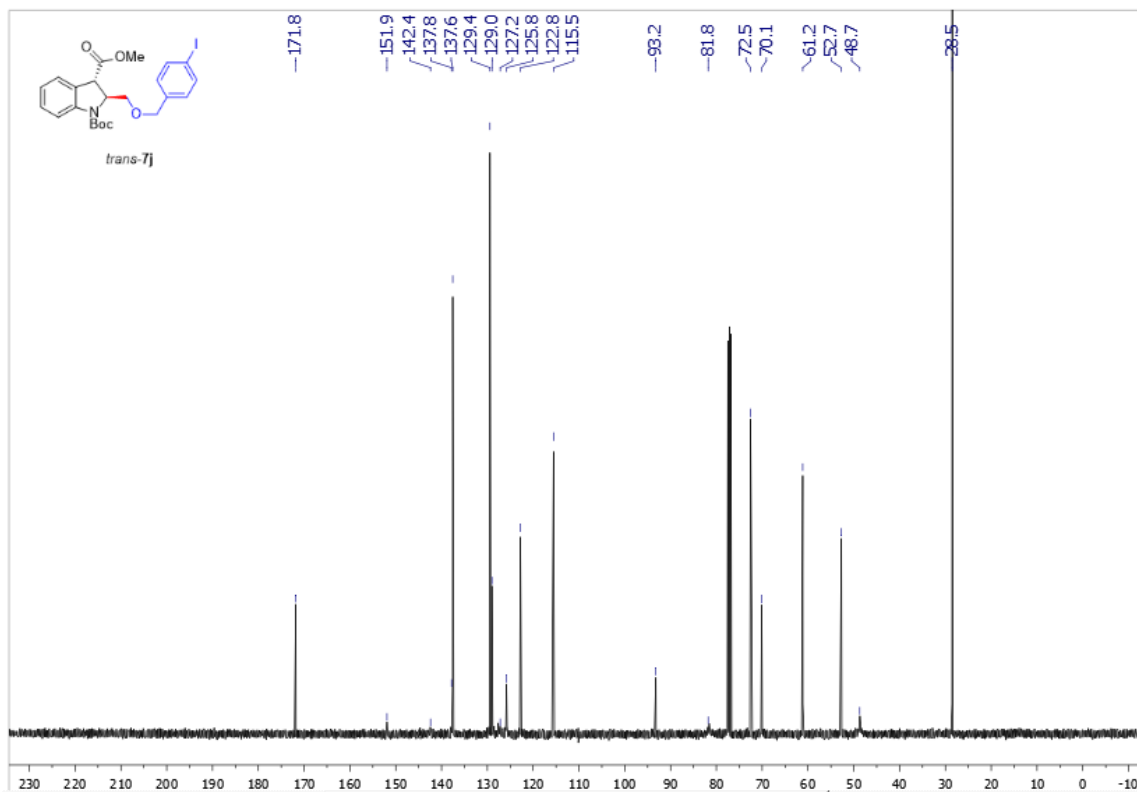
Supplementary Figure 162. ¹H NMR spectra of *trans*-7i



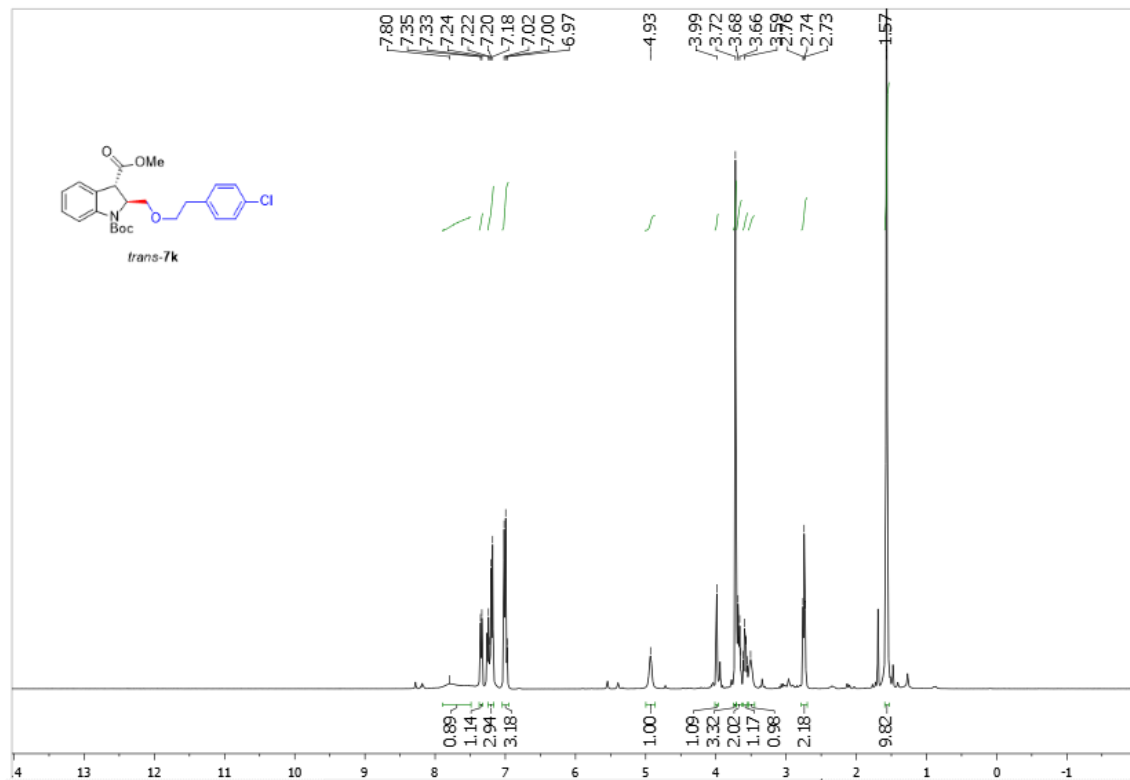
Supplementary Figure 163. ¹³C NMR spectra of *trans*-7i



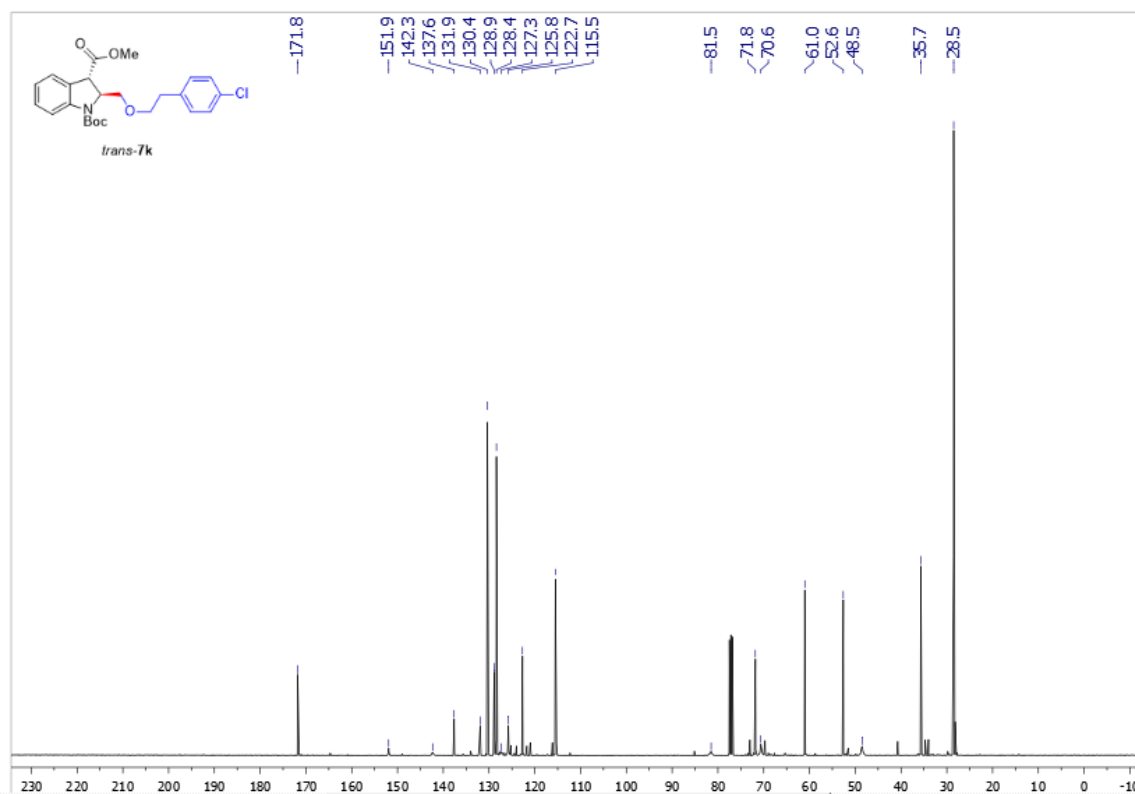
Supplementary Figure 164. ¹H NMR spectra of *trans*-7j



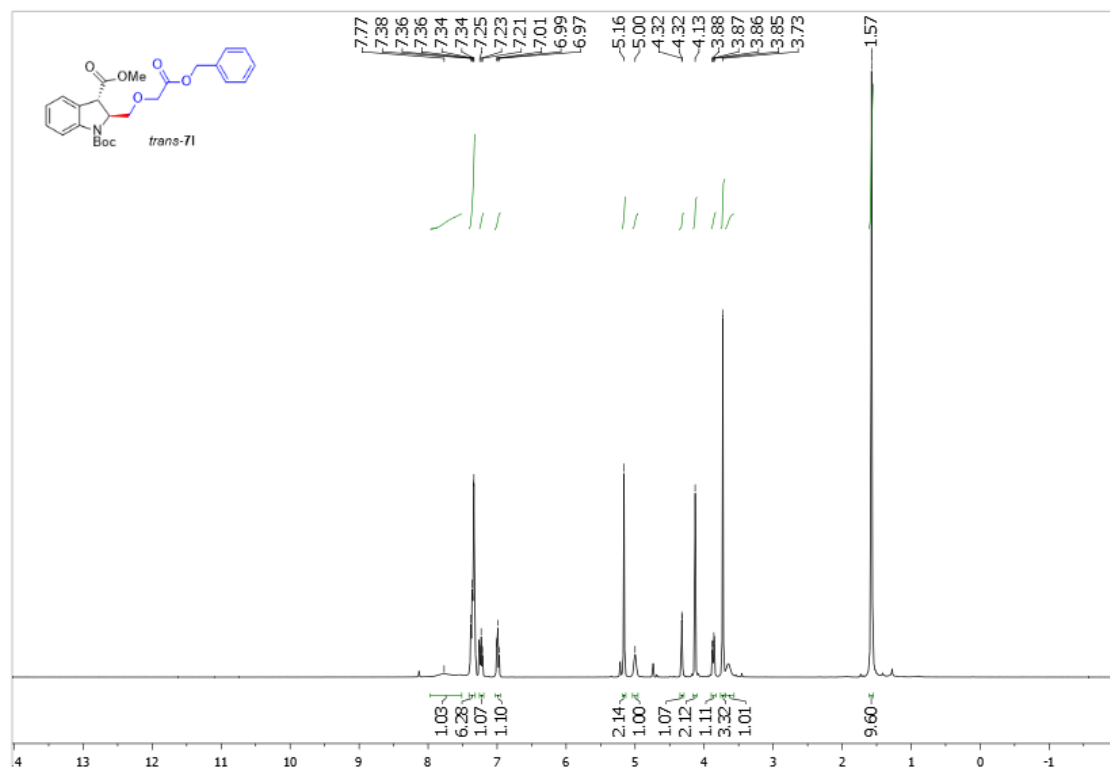
Supplementary Figure 165. ¹³C NMR spectra of *trans*-7j



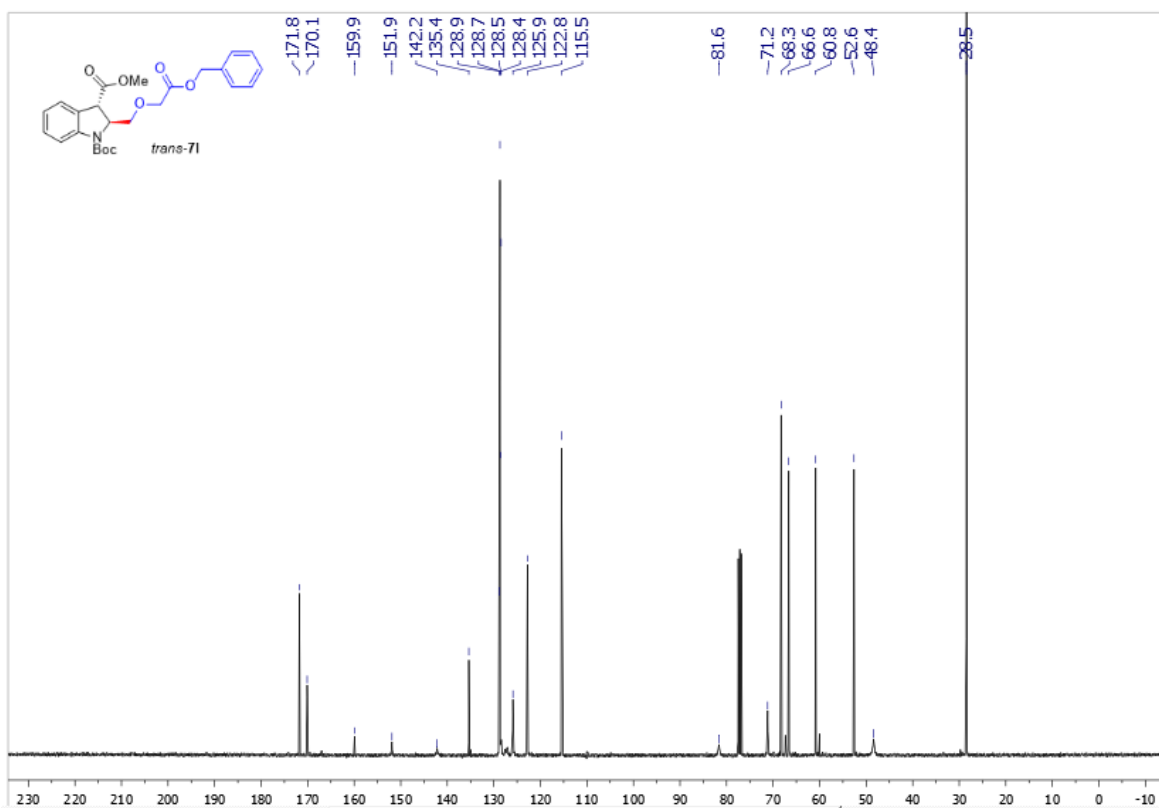
Supplementary Figure 166. ¹H NMR spectra of *trans*-7k



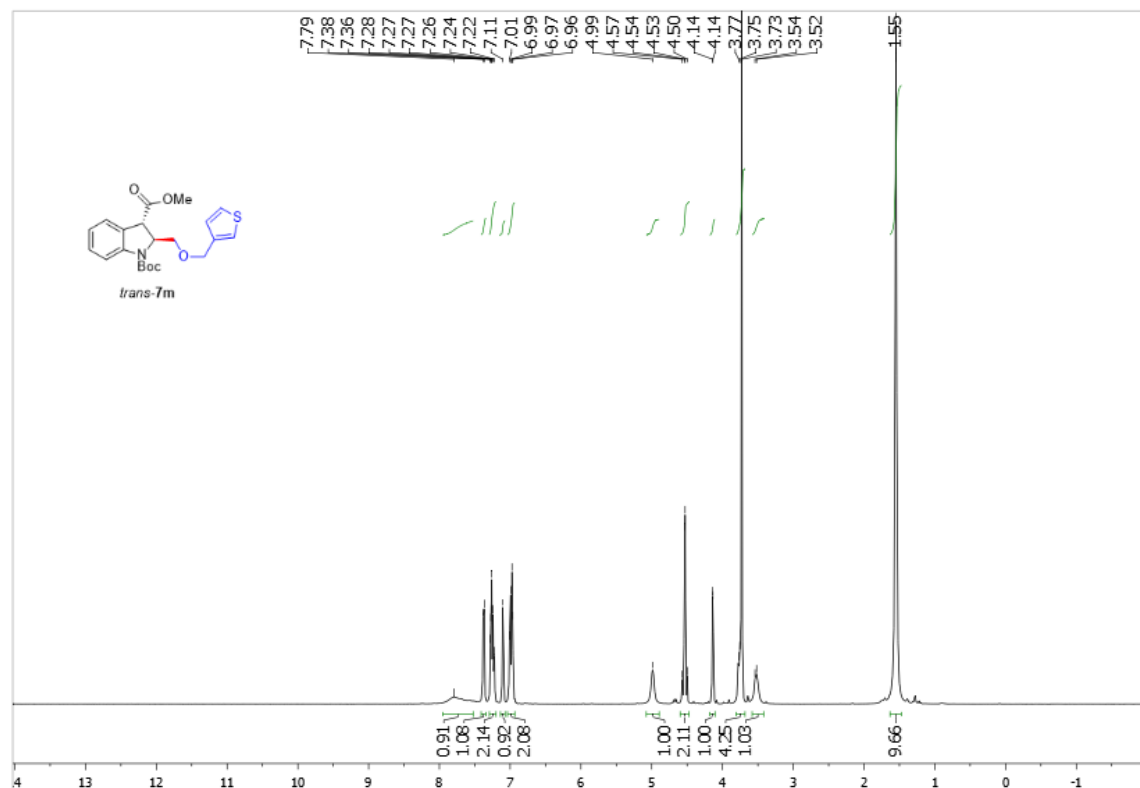
Supplementary Figure 167. ¹³C NMR spectra of *trans*-7k



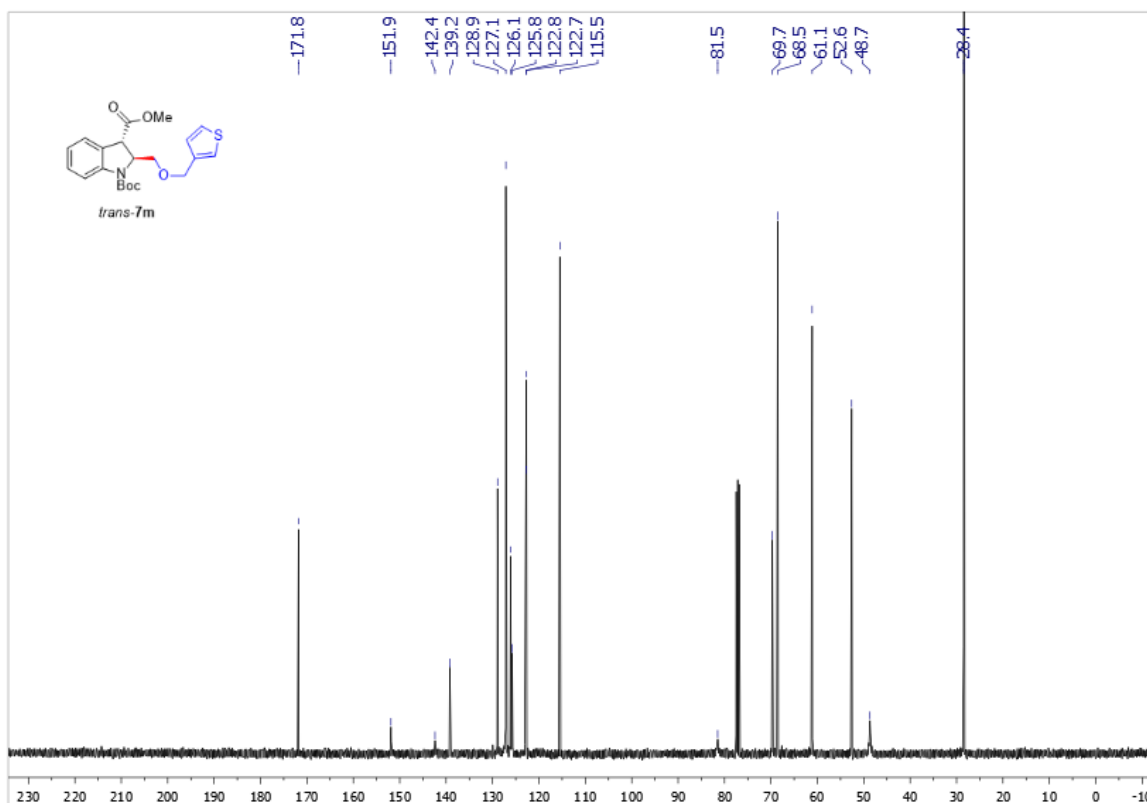
Supplementary Figure 168. ¹H NMR spectra of *trans*-71



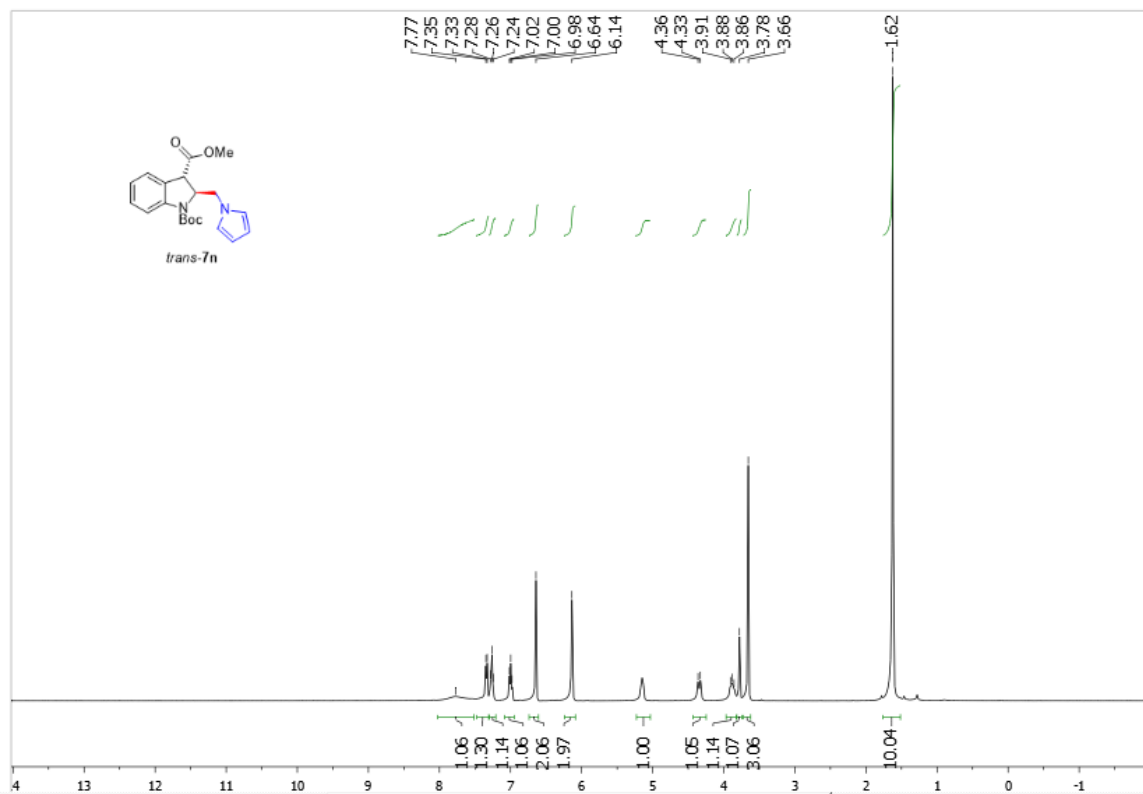
Supplementary Figure 169. ¹³C NMR spectra of *trans*-71



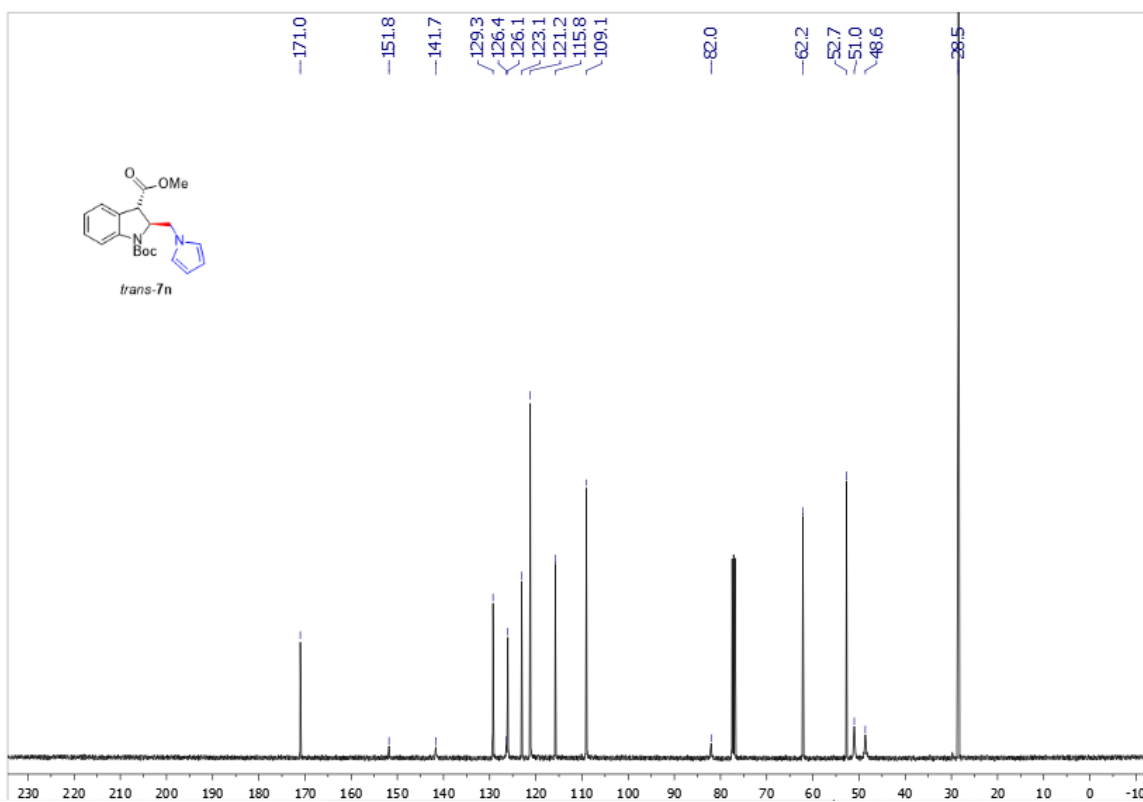
Supplementary Figure 170. ¹H NMR spectra of *trans*-7m



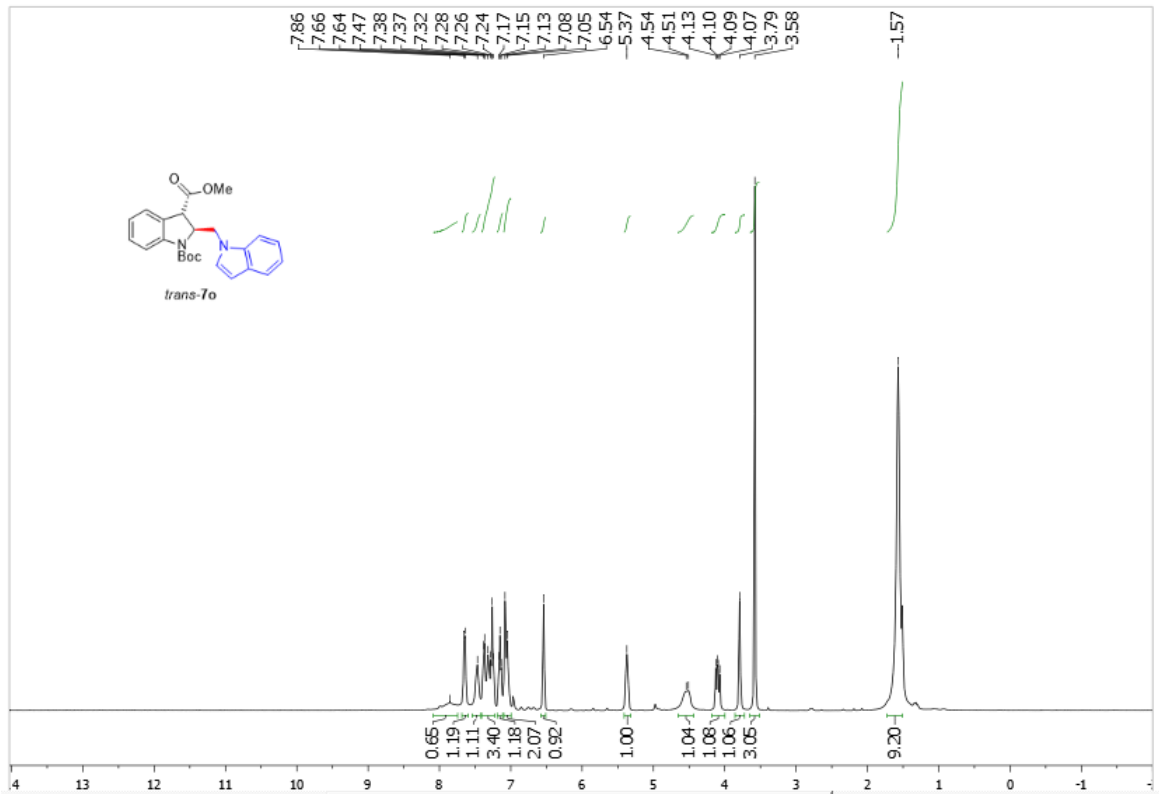
Supplementary Figure 171. ¹³C NMR spectra of *trans*-7m



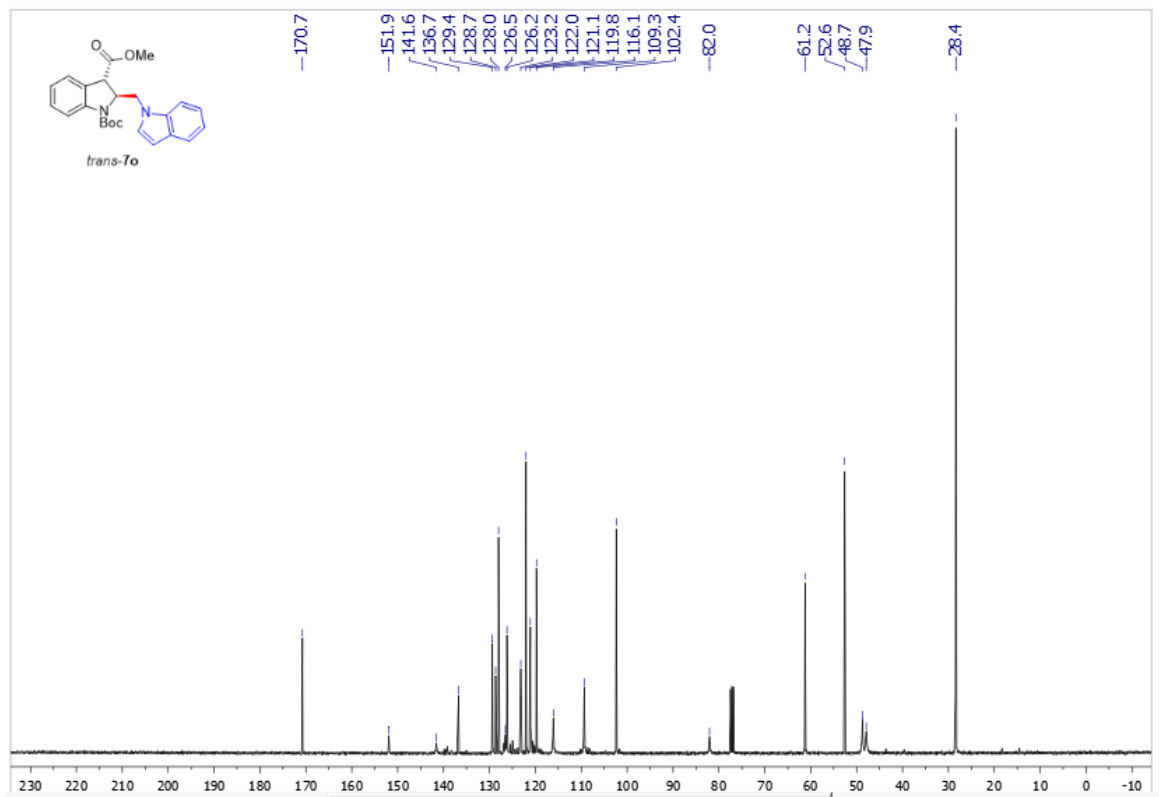
Supplementary Figure 172. ^1H NMR spectra of *trans-7n*



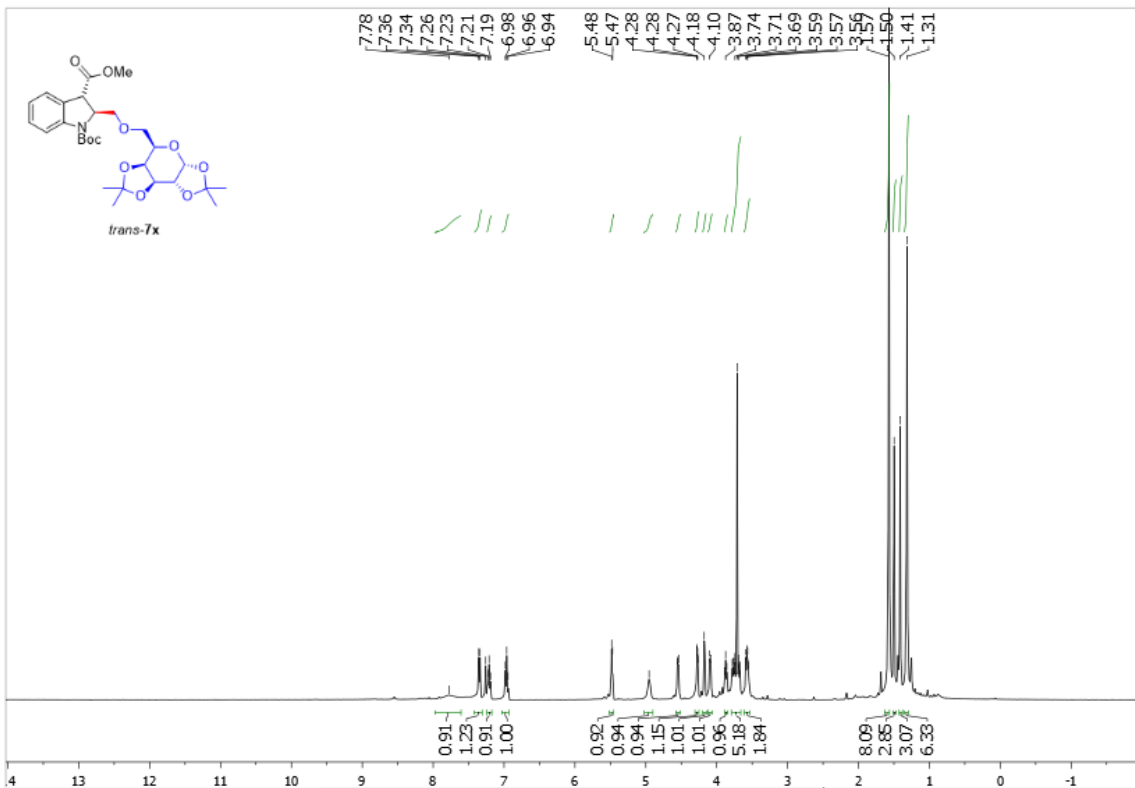
Supplementary Figure 173. ^{13}C NMR spectra of *trans-7n*



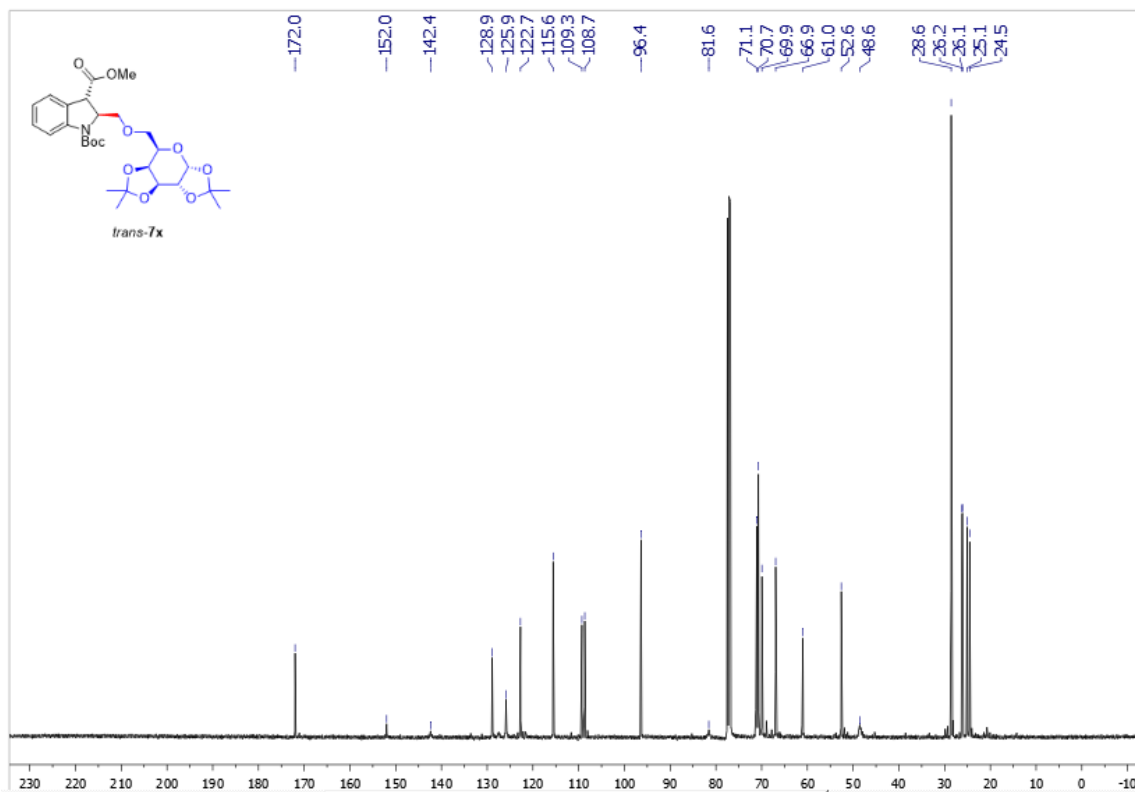
Supplementary Figure 174. ¹H NMR spectra of *trans*-7o



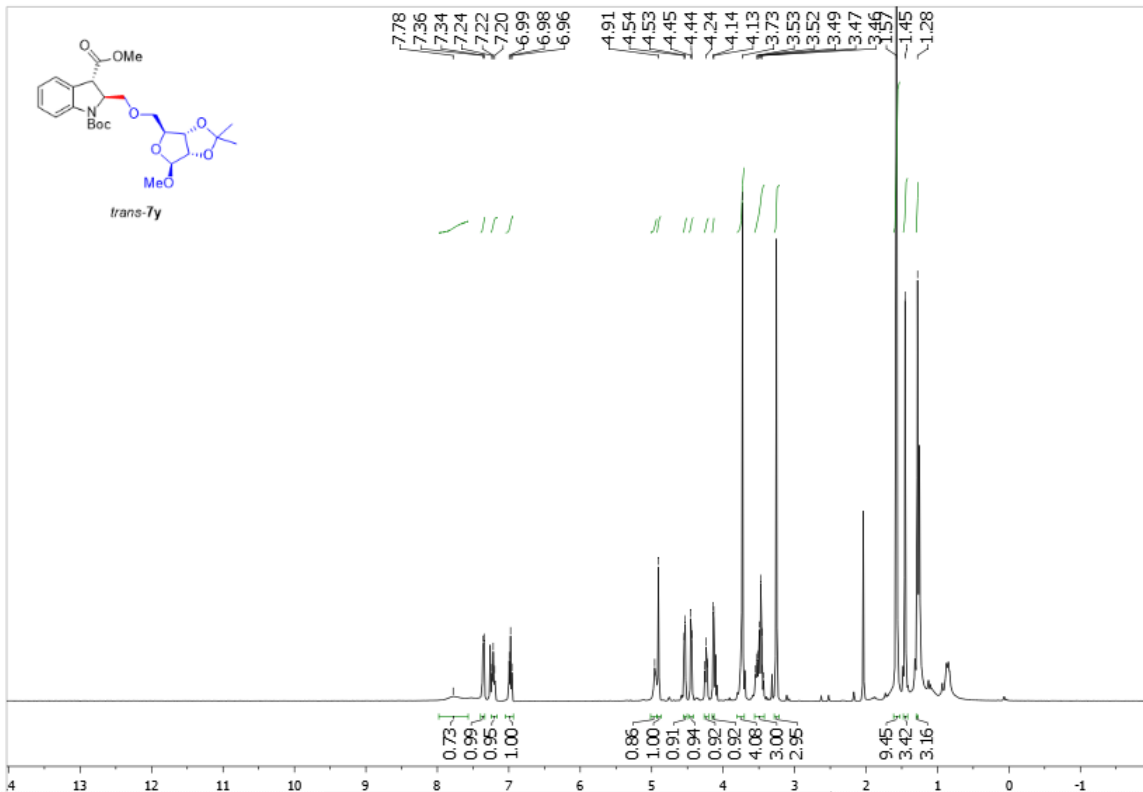
Supplementary Figure 175. ¹³C NMR spectra of *trans*-7o



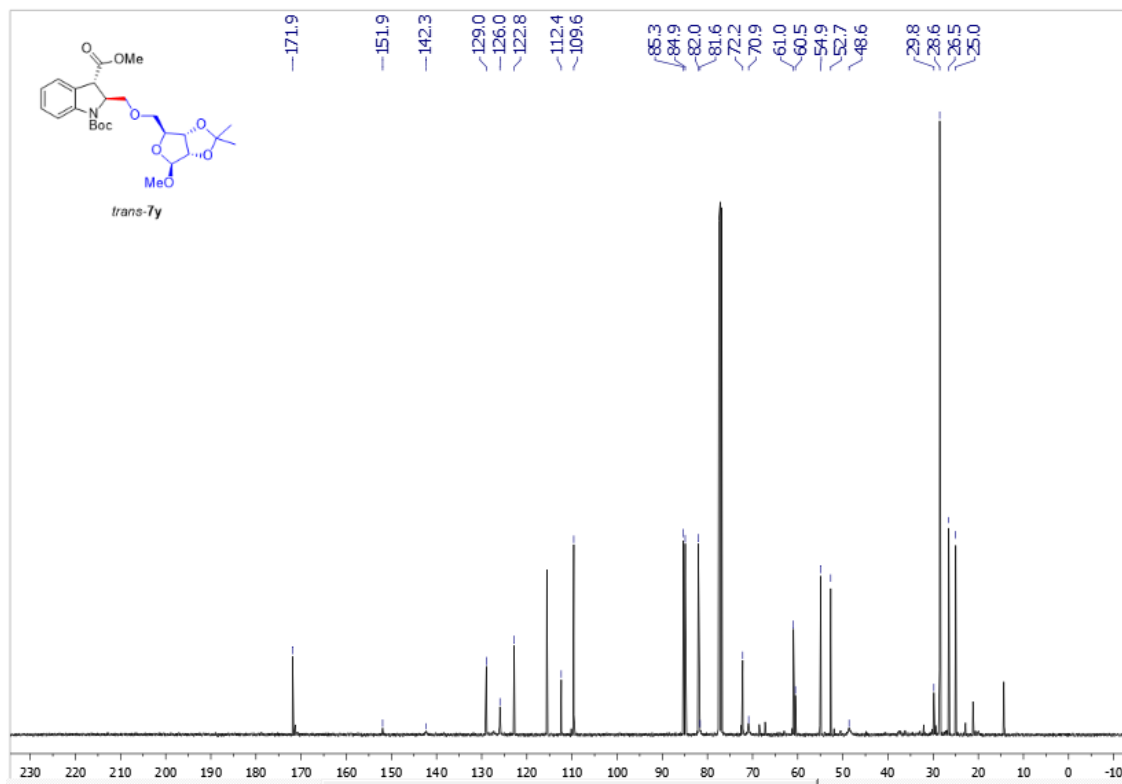
Supplementary Figure 176. ¹H NMR spectra of *trans-7x*



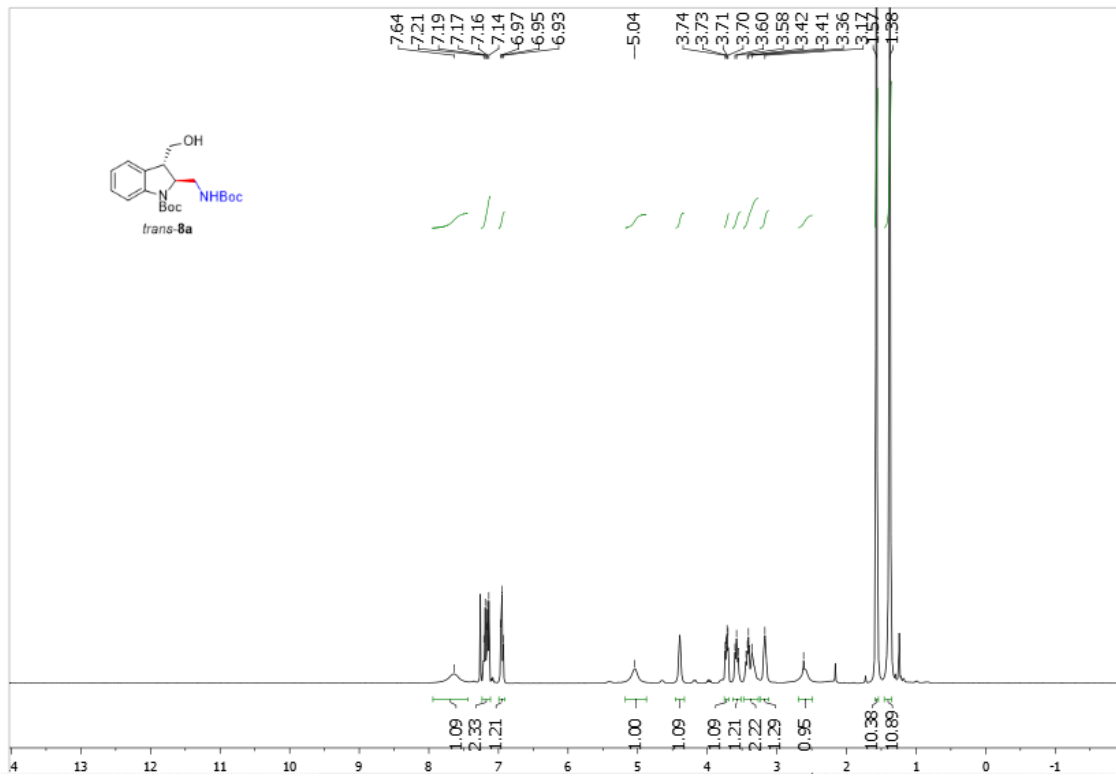
Supplementary Figure 177. ¹³C NMR spectra of *trans-7x*



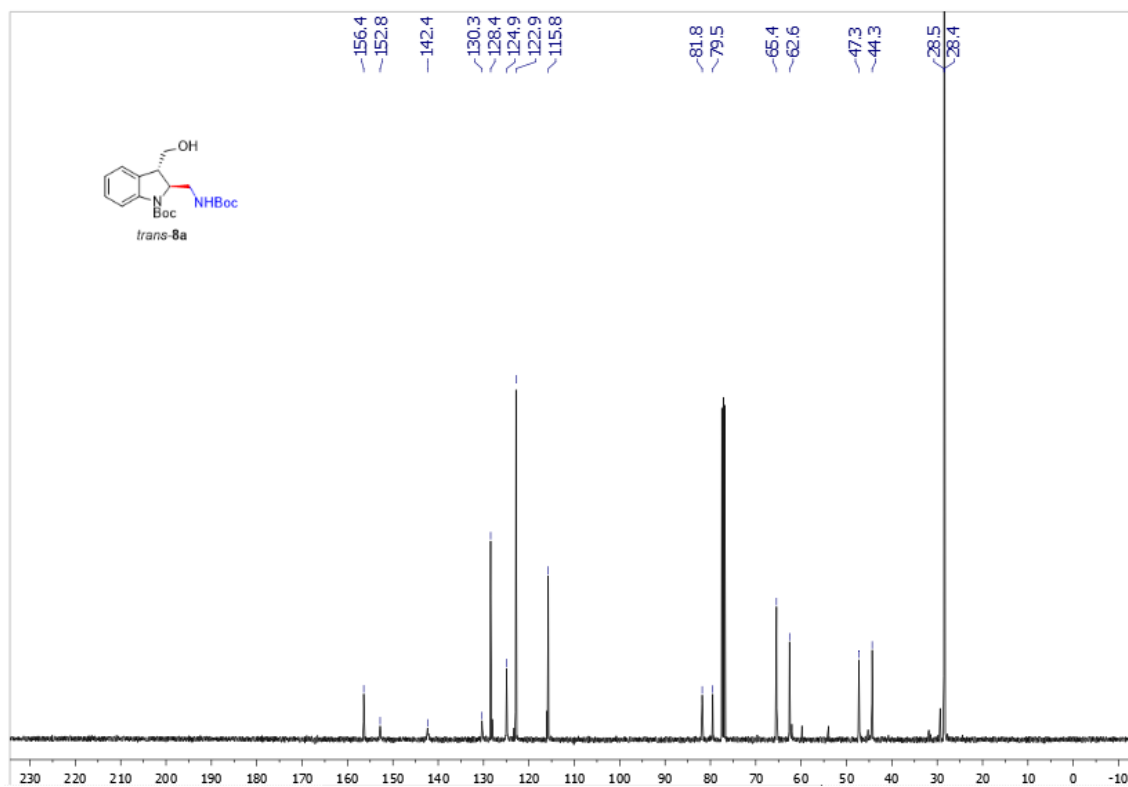
Supplementary Figure 178. ¹H NMR spectra of *trans*-7y



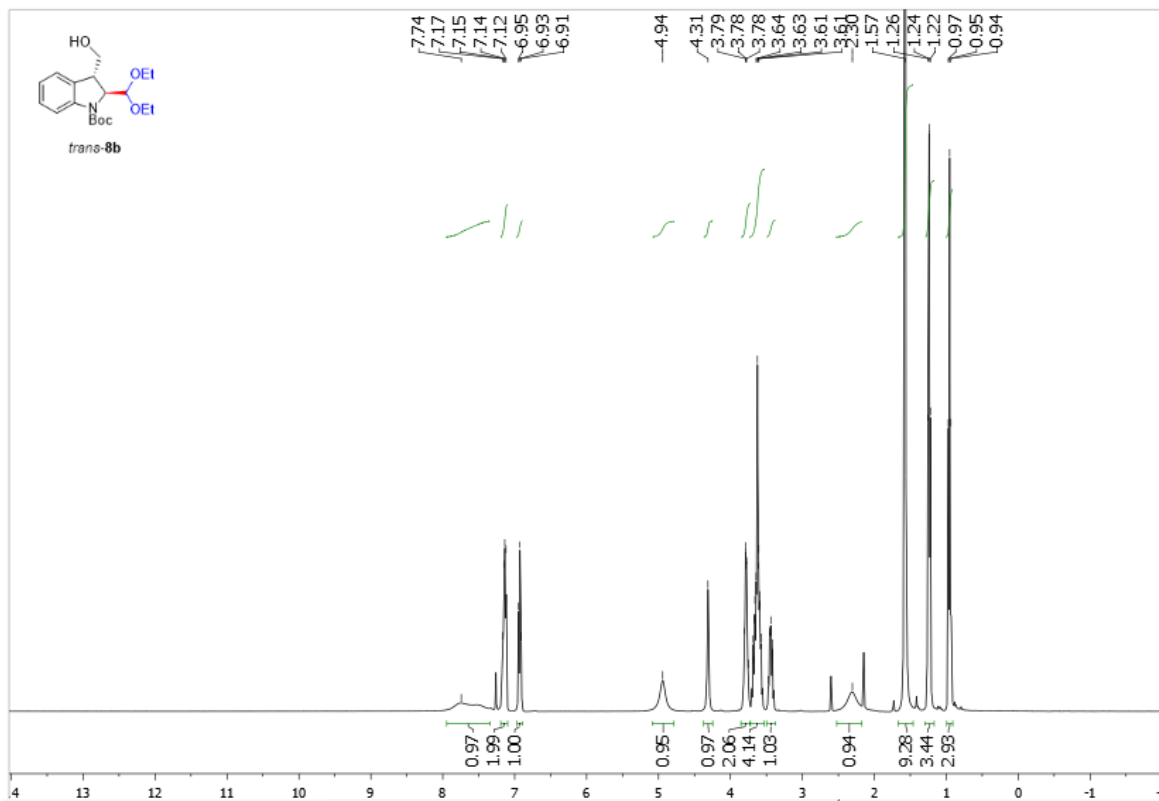
Supplementary Figure 179. ¹³C NMR spectra of *trans*-7y



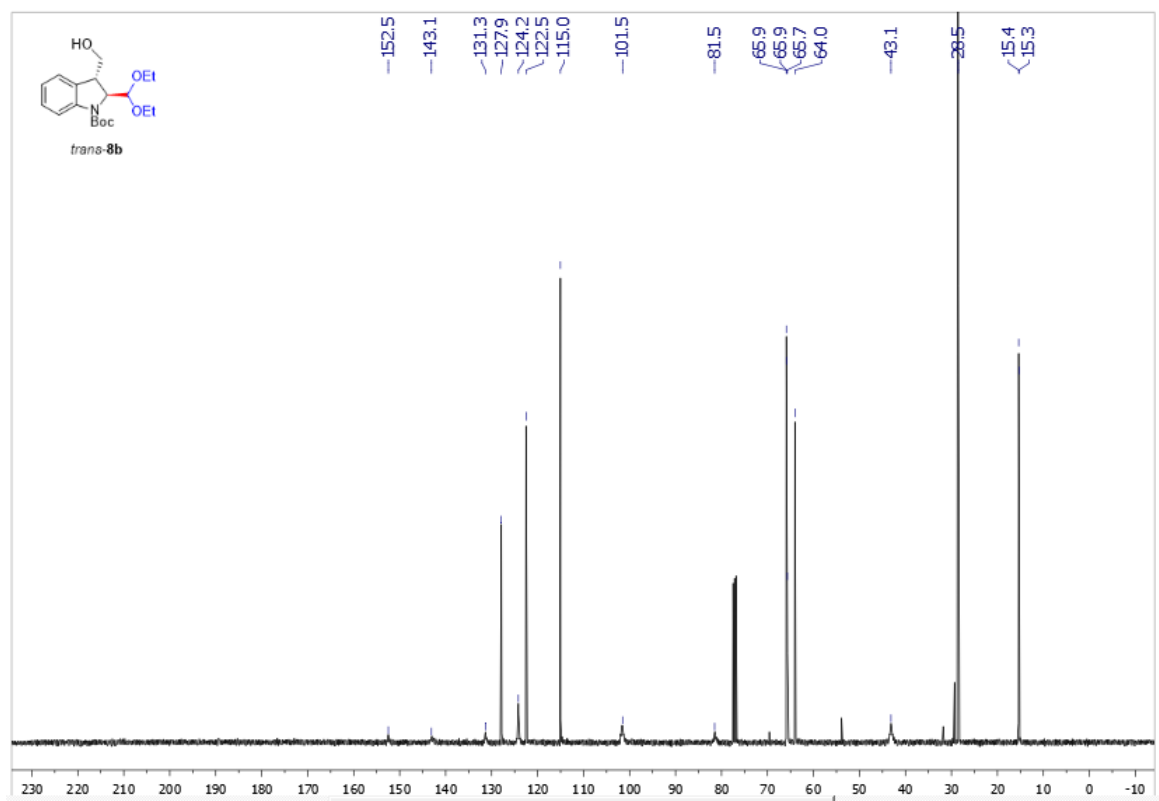
Supplementary Figure 181. ¹H NMR spectra of *trans*-8a



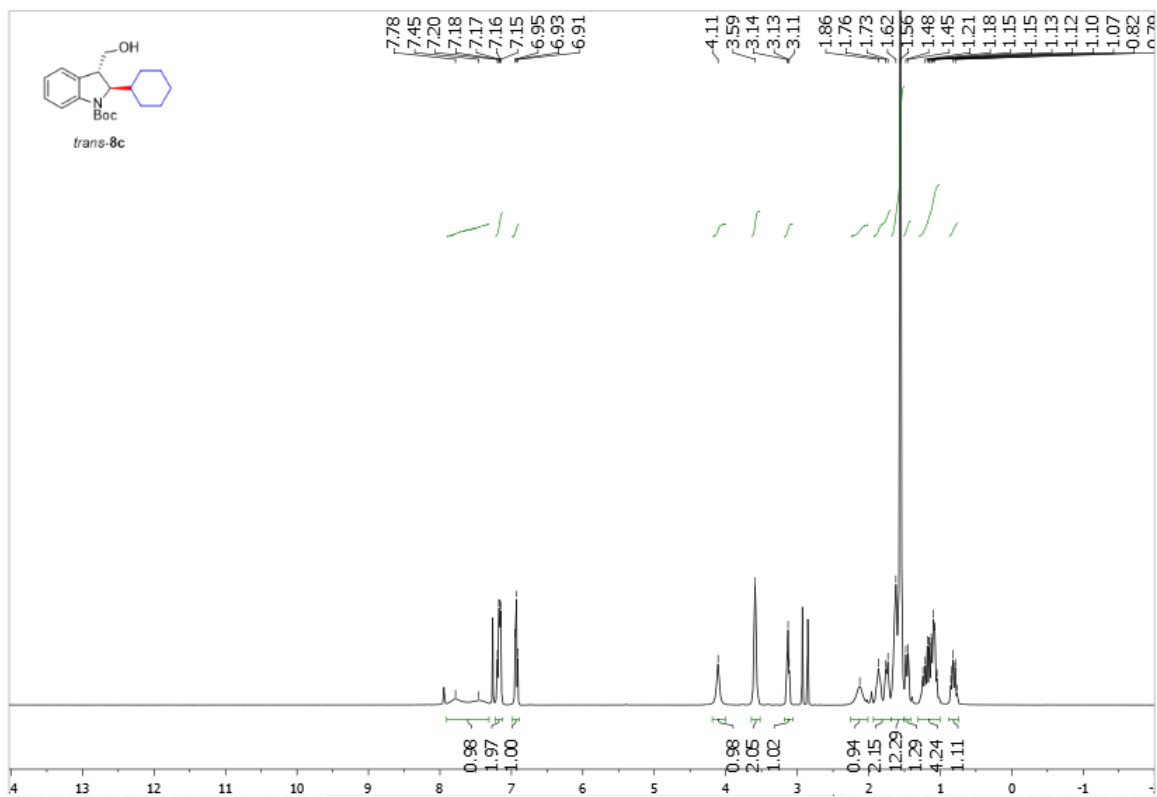
Supplementary Figure 182. ¹³C NMR spectra of *trans*-8a



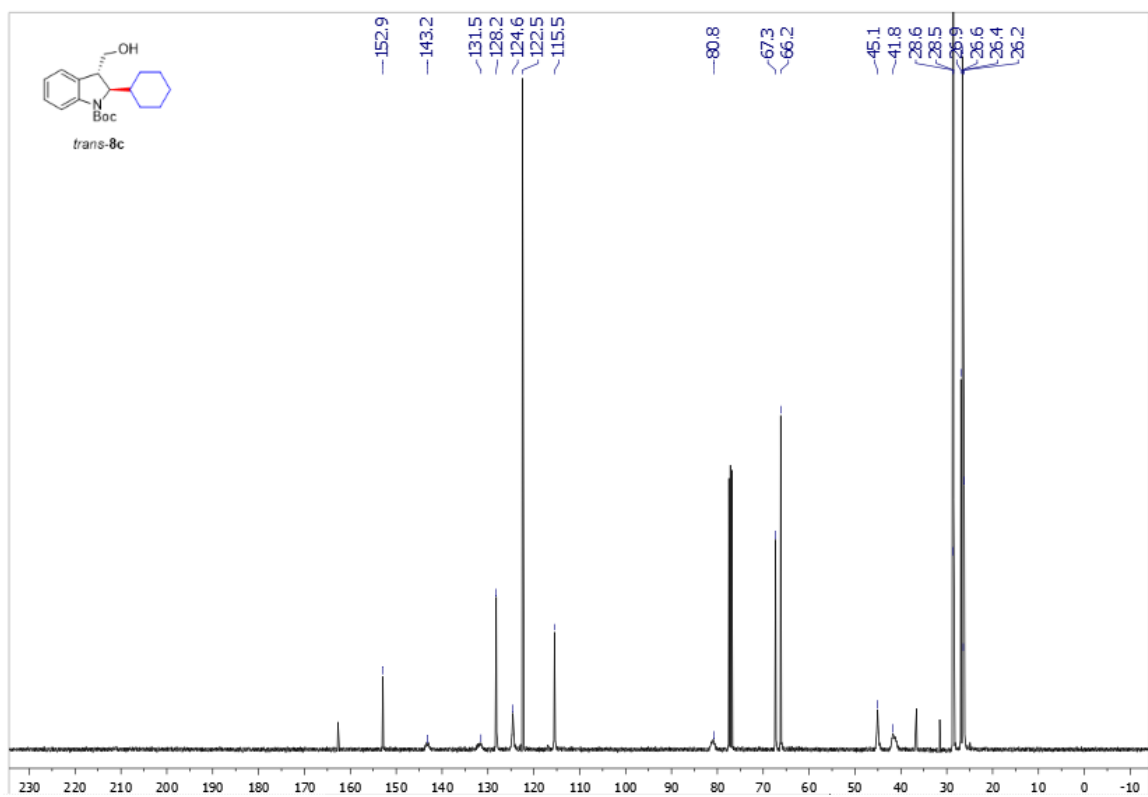
Supplementary Figure 183. ¹H NMR spectra of *trans-8b*



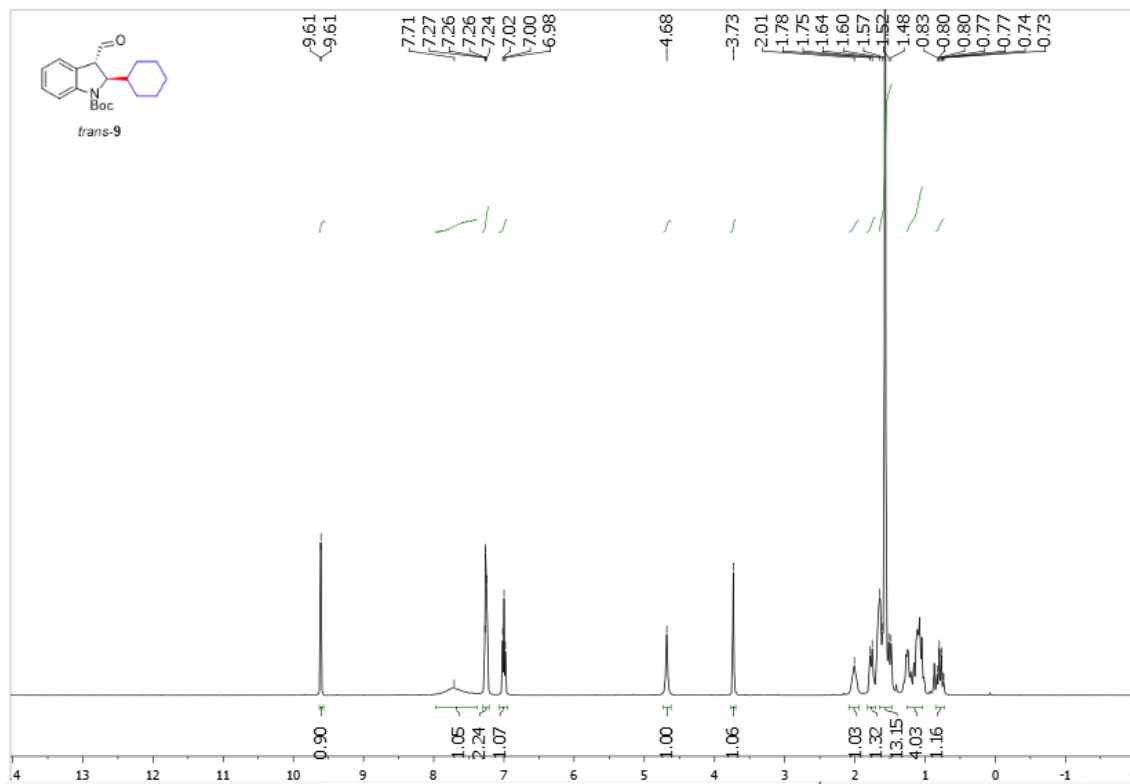
Supplementary Figure 184. ¹³C NMR spectra of *trans-8b*



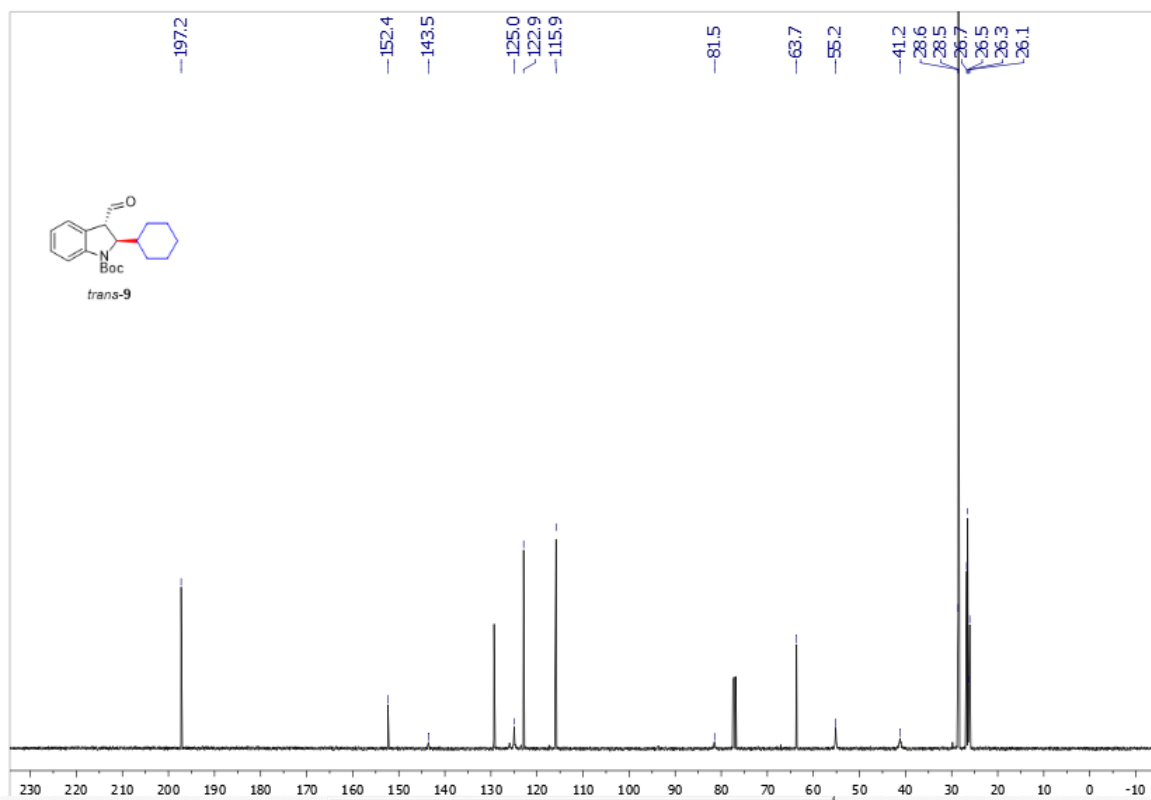
Supplementary Figure 185. ¹H NMR spectra of *trans-8c*



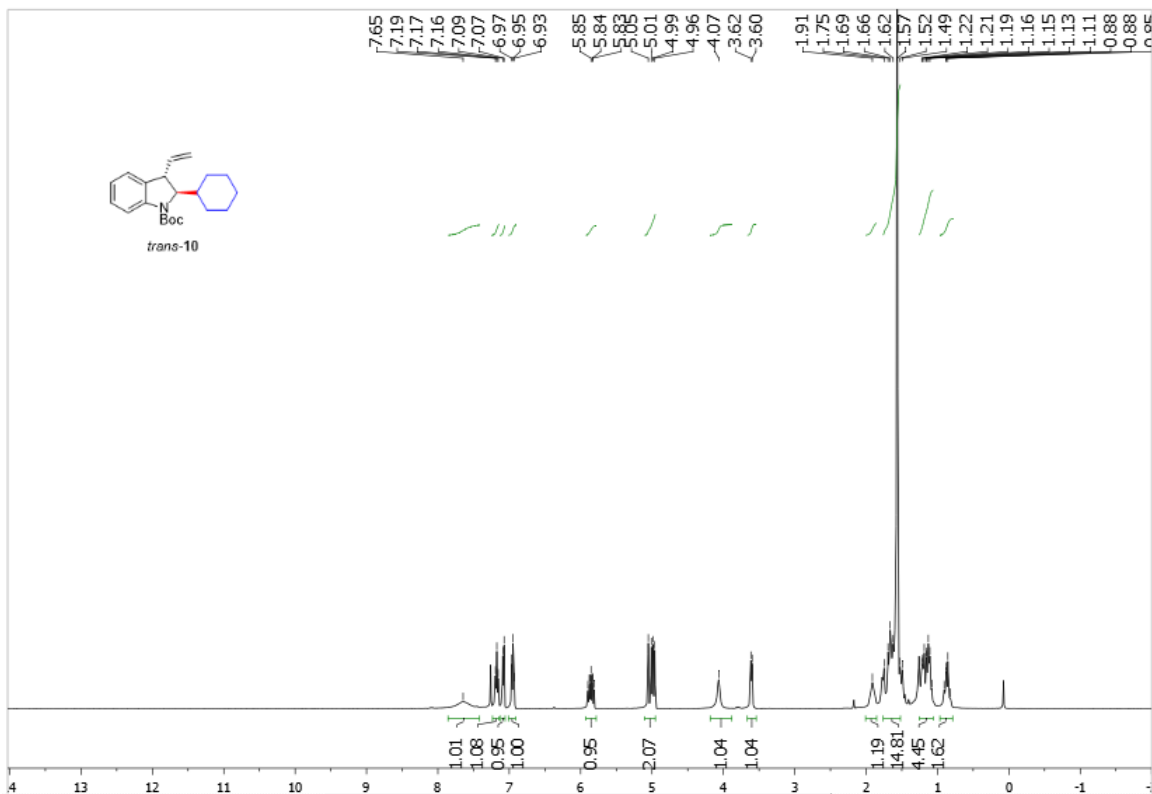
Supplementary Figure 186. ¹³C NMR spectra of *trans-8c*



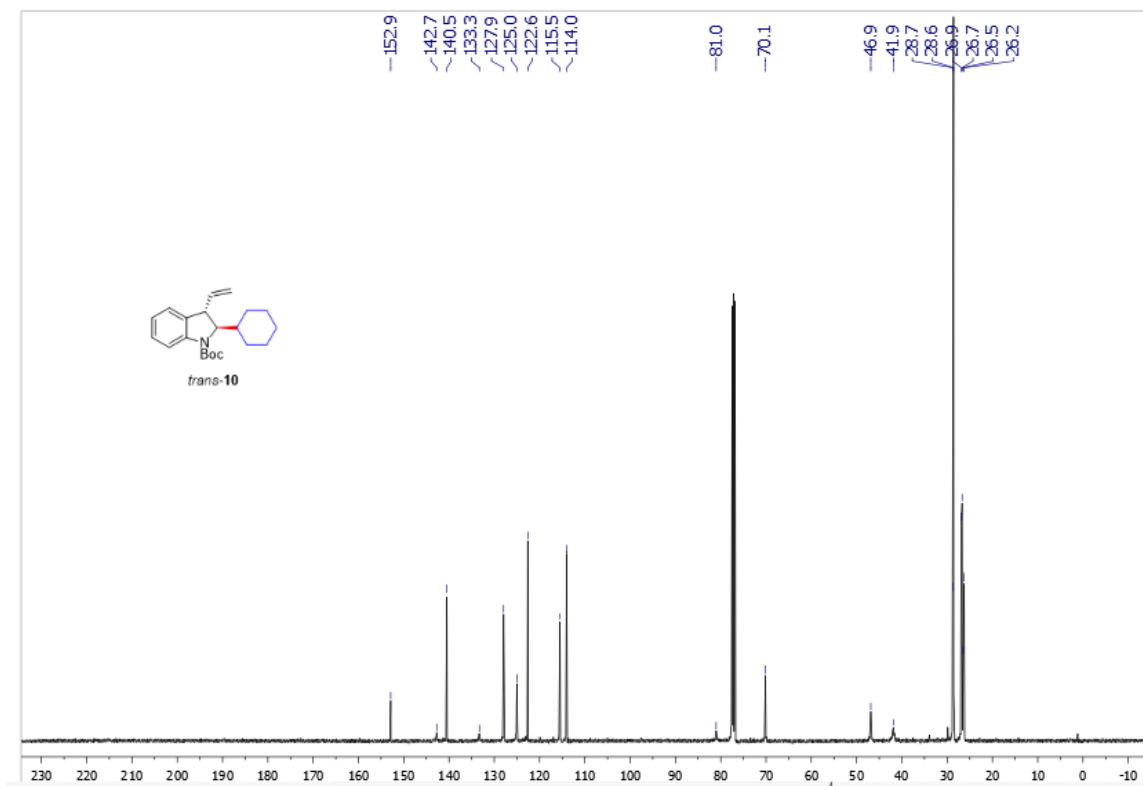
Supplementary Figure 187. ¹H NMR spectra of *trans-9*



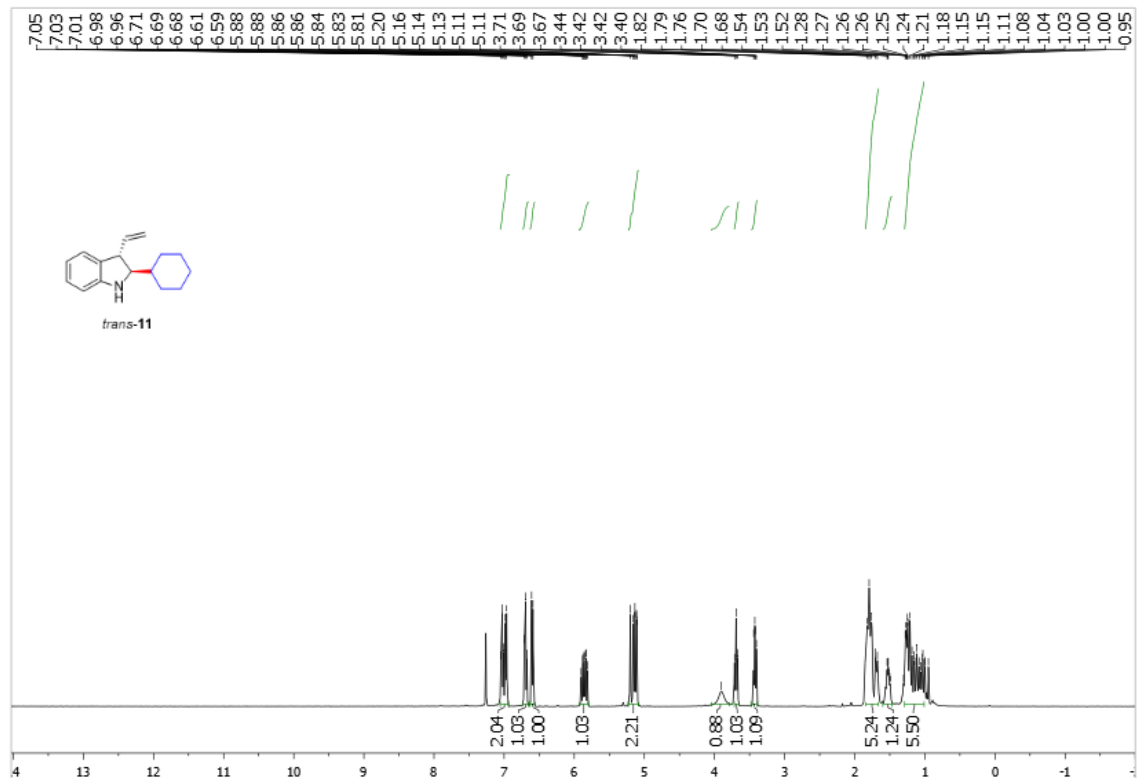
Supplementary Figure 188. ¹³C NMR spectra of *trans-9*



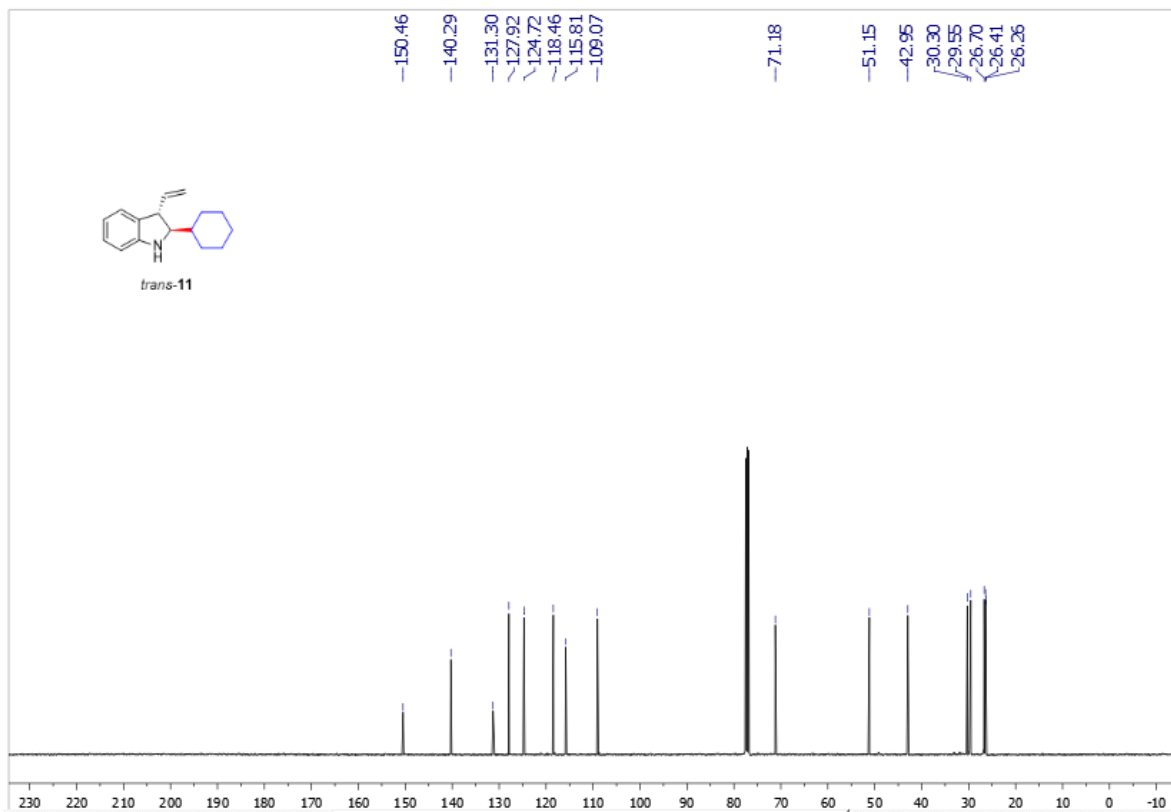
Supplementary Figure 189. ^1H NMR spectra of *trans*-10



Supplementary Figure 190. ^{13}C NMR spectra of *trans*-10



Supplementary Figure 191. ¹H NMR spectra of *trans*-11



Supplementary Figure 192. ¹³C NMR spectra of *trans*-11