

## Supporting Information For

NIS-mediated Regioselective Additions of Allenamides with Pyrazoles:

Synthesis of Iodine-substituted Allylic Pyrazoles.

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*of Chemistry and Environment, Southwest Minzu University, Chengdu*

*610041, PR China.*

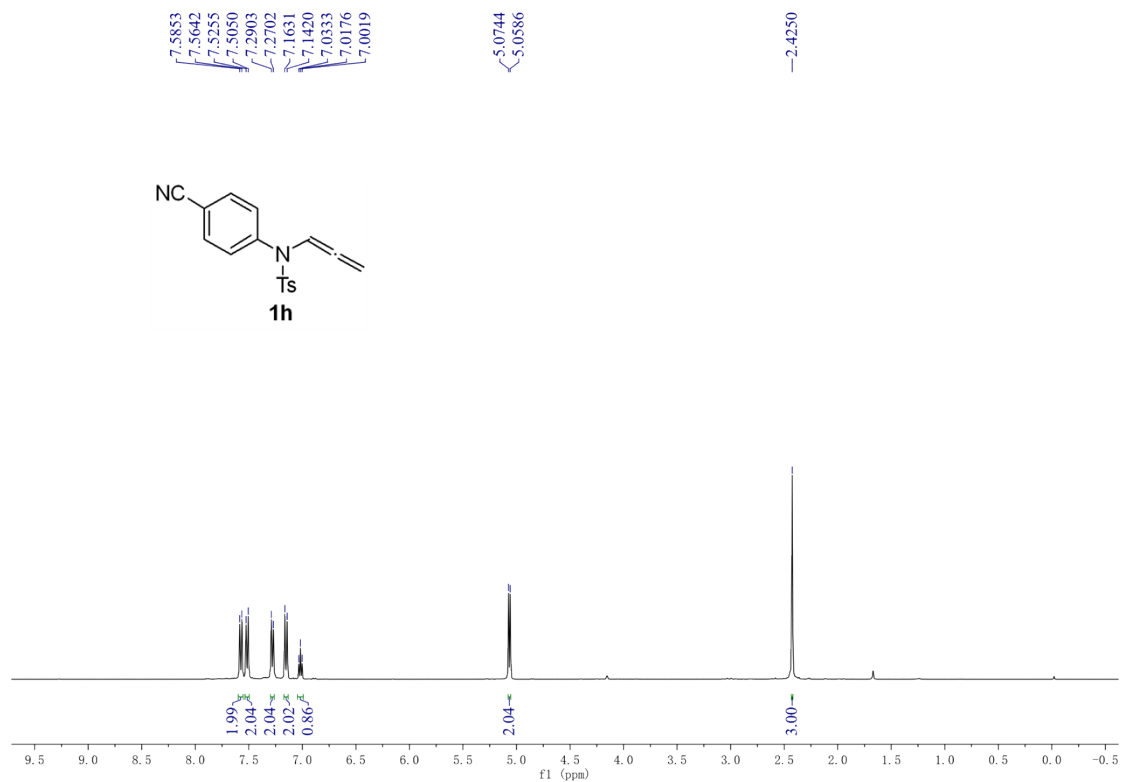
[lixiaoxiao.2005@163.com](mailto:lixiaoxiao.2005@163.com)   [zzg63129@163.com](mailto:zzg63129@163.com)

# Content

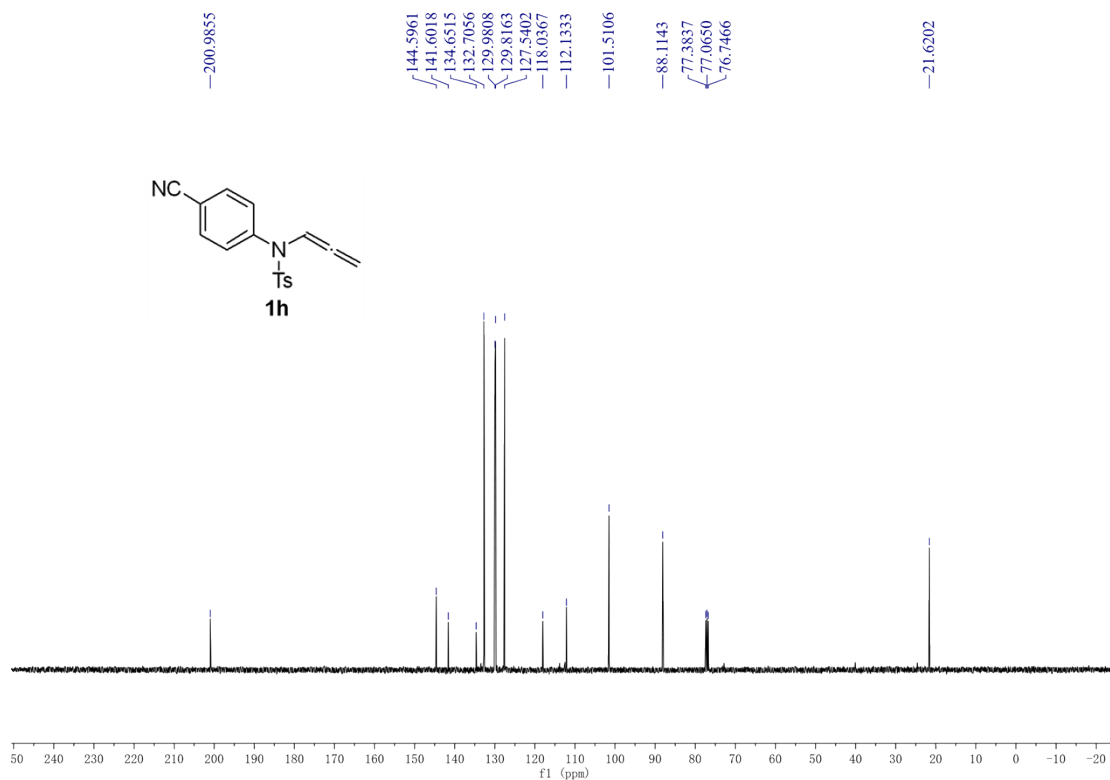
NMR Spectra for 1h,1k,1a-Cbz.....	3
NMR Spectra for 4b-4c .....	6
NMR Spectra for 4aa-4ya.....	7
NMR Spectra for 4ab-4av .....	39
NMR Spectra for 5 .....	61
NMR Spectra for 7 .....	62

# NMR Spectra for 1h,1k,1a-Cbz

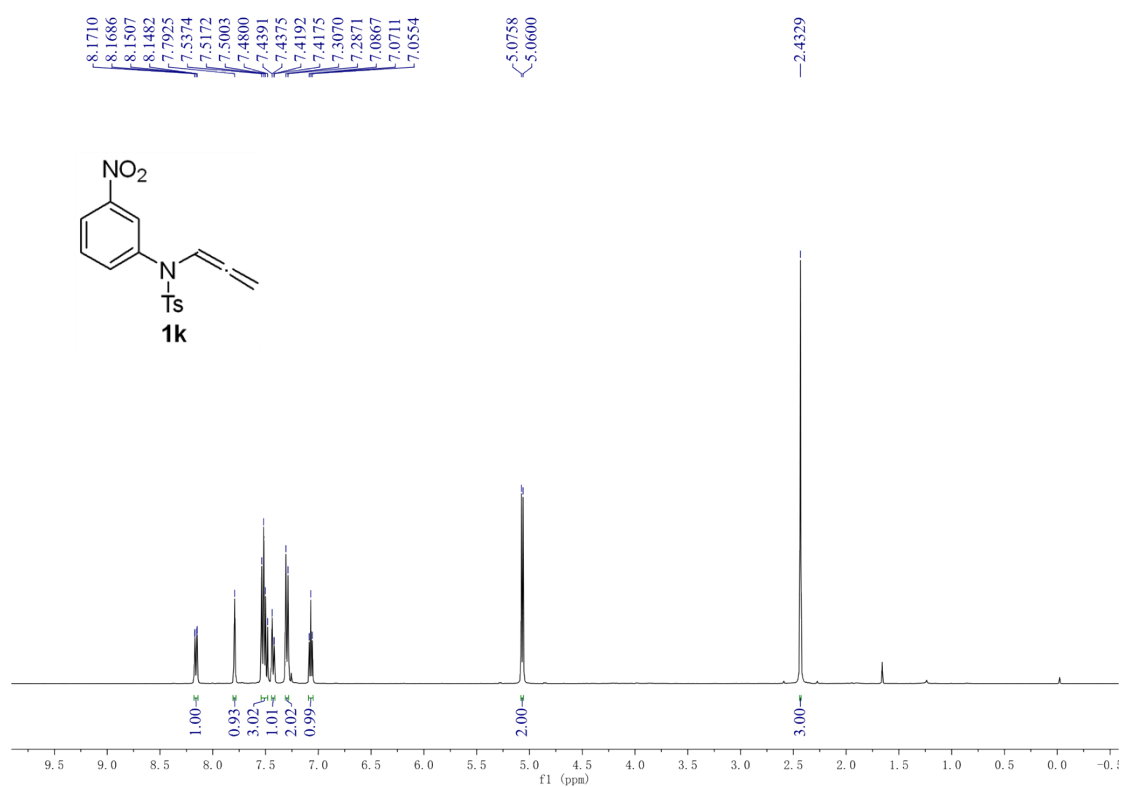
<sup>1</sup>H NMR of **1h** (400 MHz, CDCl<sub>3</sub>)



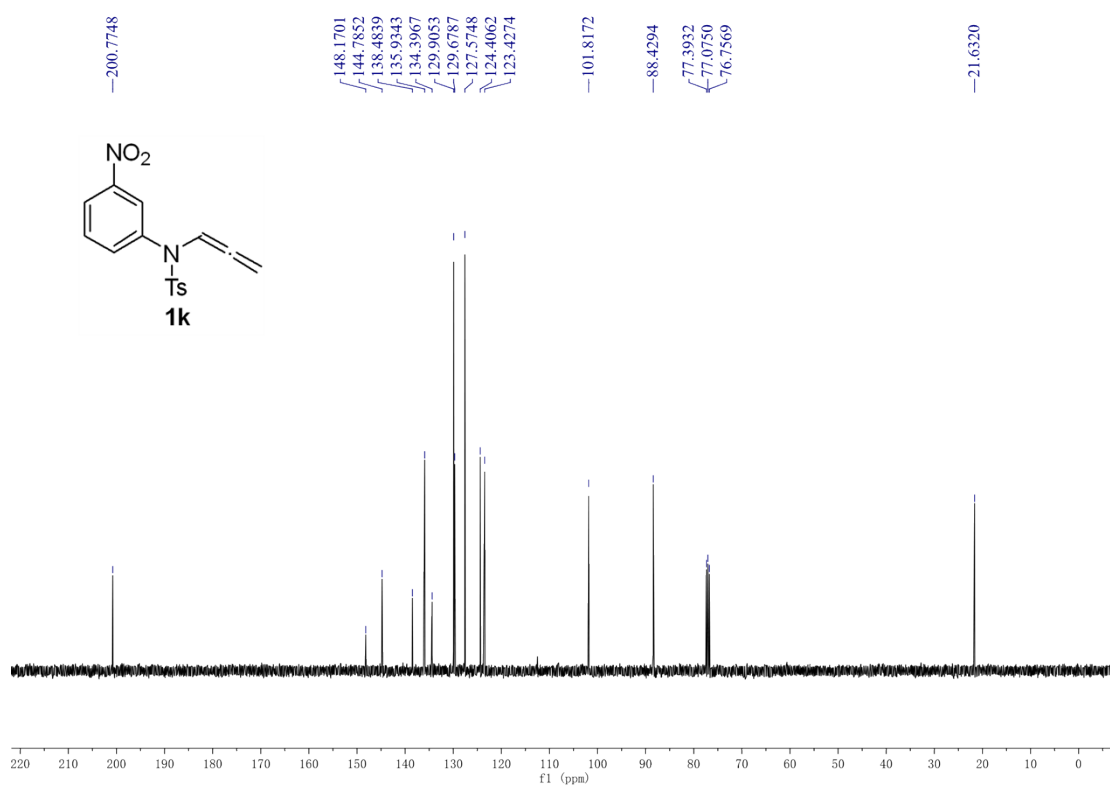
<sup>13</sup>C NMR of **1h** (101 MHz, CDCl<sub>3</sub>)



### <sup>1</sup>H NMR of **1k** (400 MHz, CDCl<sub>3</sub>)

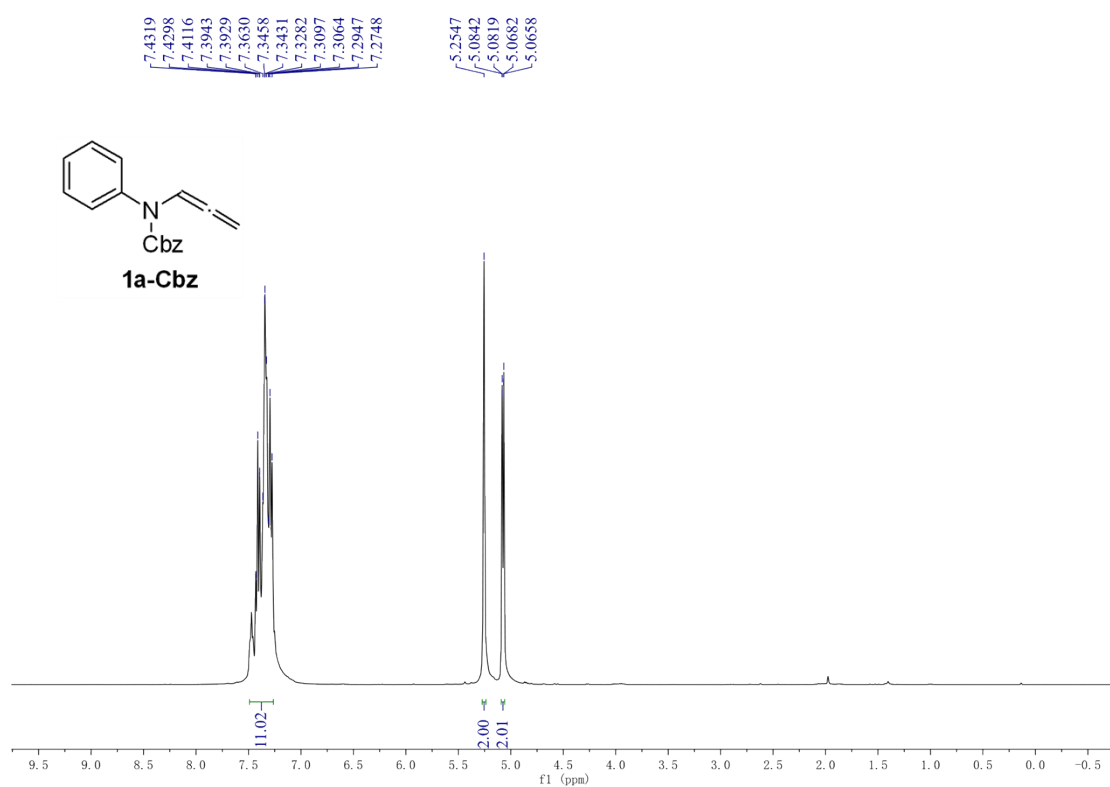


### <sup>13</sup>C NMR of **1k** (101 MHz, CDCl<sub>3</sub>)

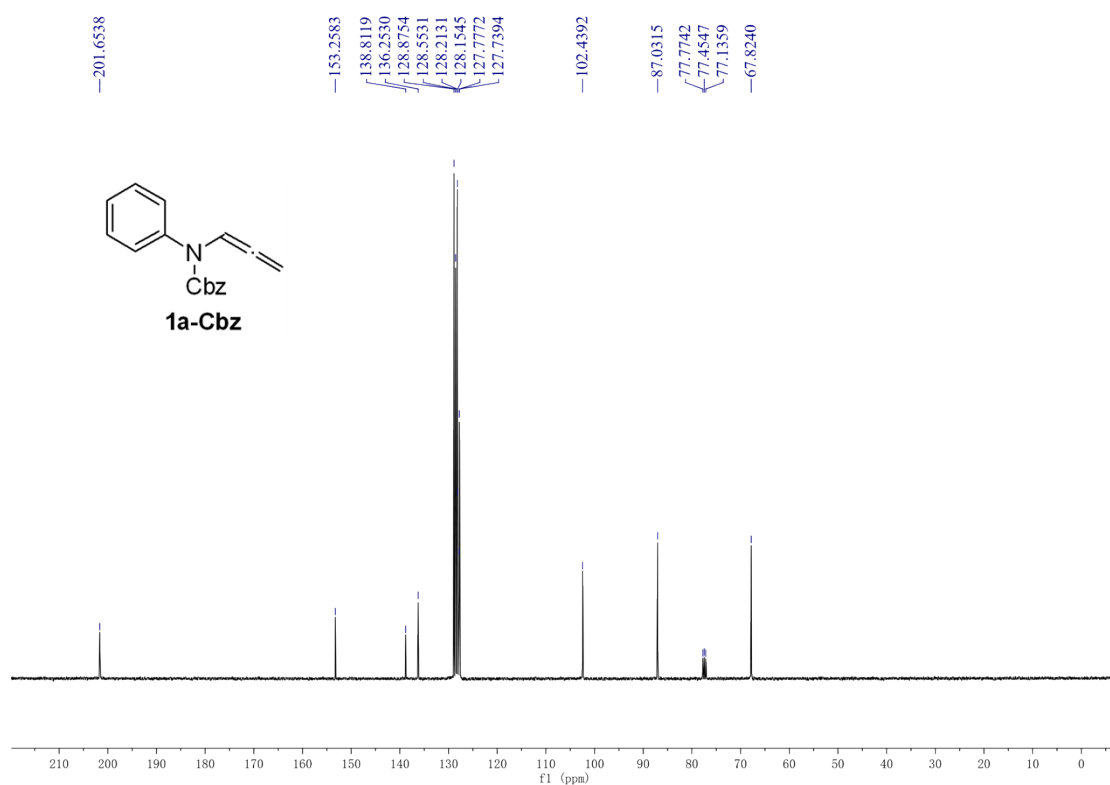




<sup>1</sup>H NMR of **1a-Cbz** (400 MHz, CDCl<sub>3</sub>)

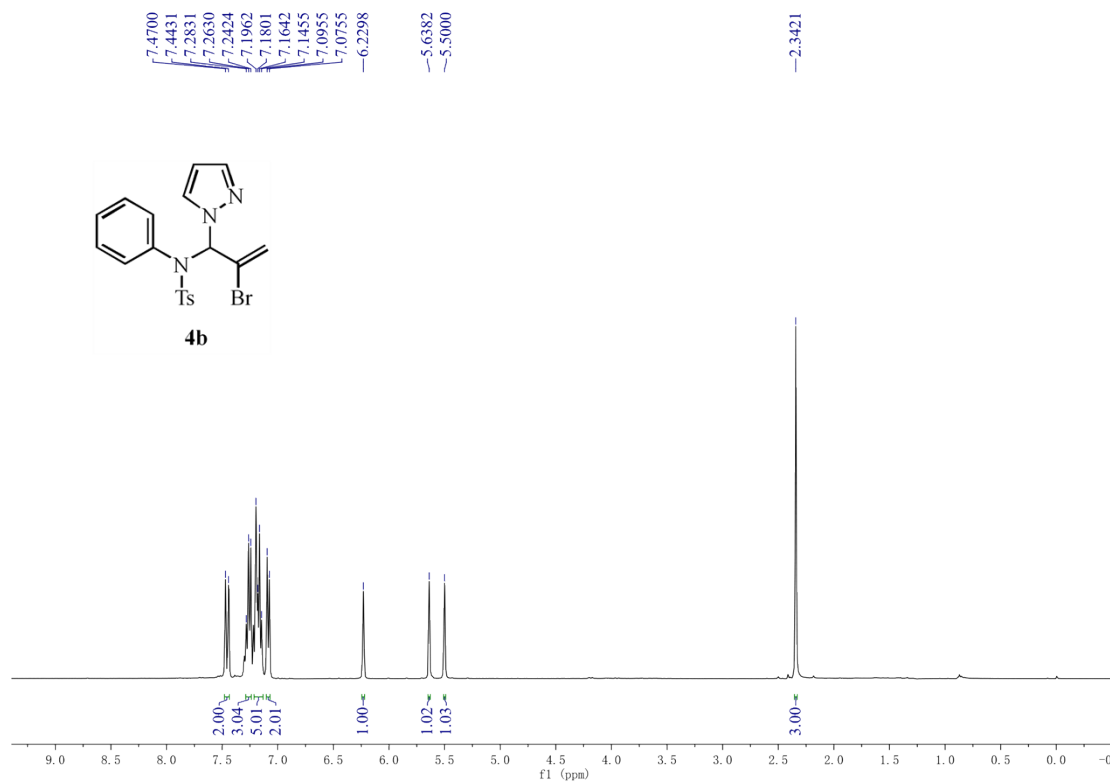


<sup>13</sup>C NMR of **1a-Cbz** (101 MHz, CDCl<sub>3</sub>)

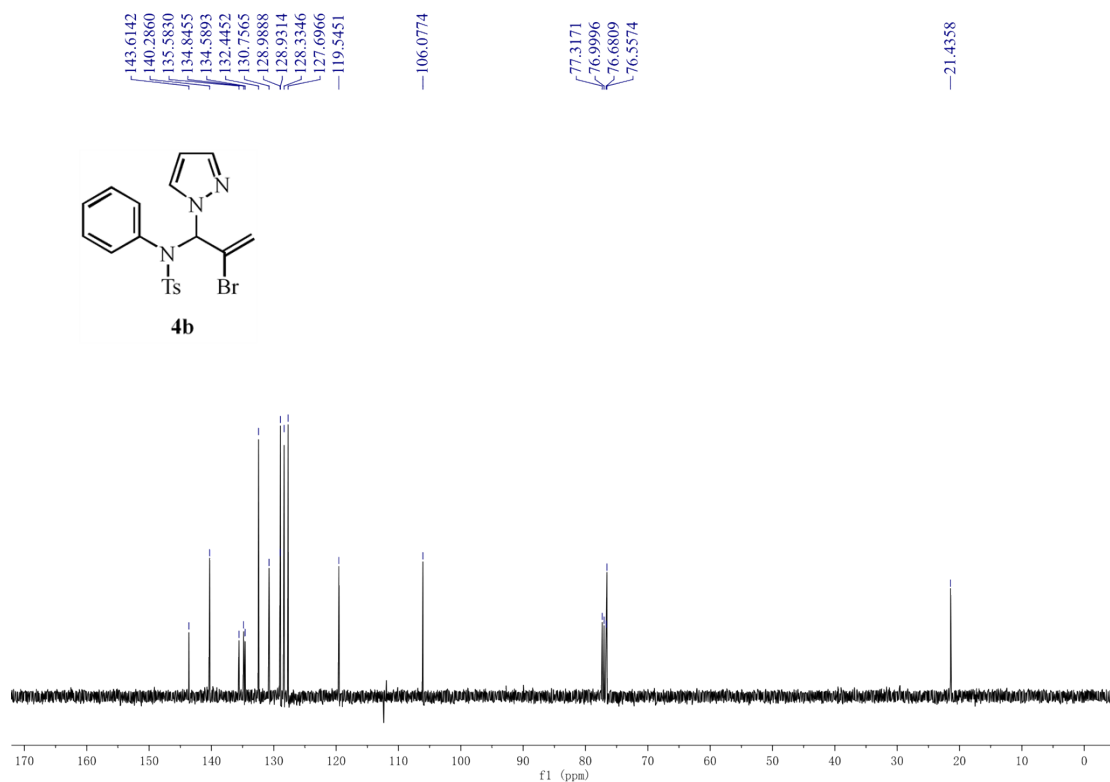


# NMR Spectra for 4b-4c

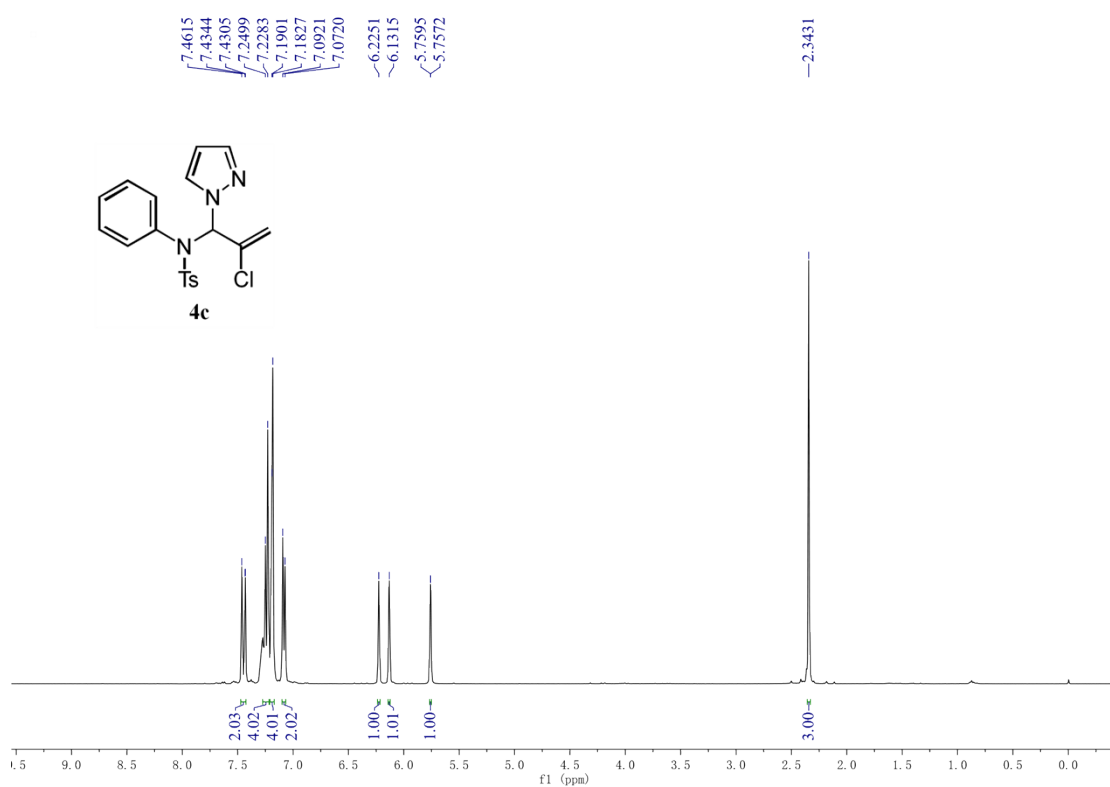
$^1\text{H}$  NMR of **4b** (400 MHz,  $\text{CDCl}_3$ )



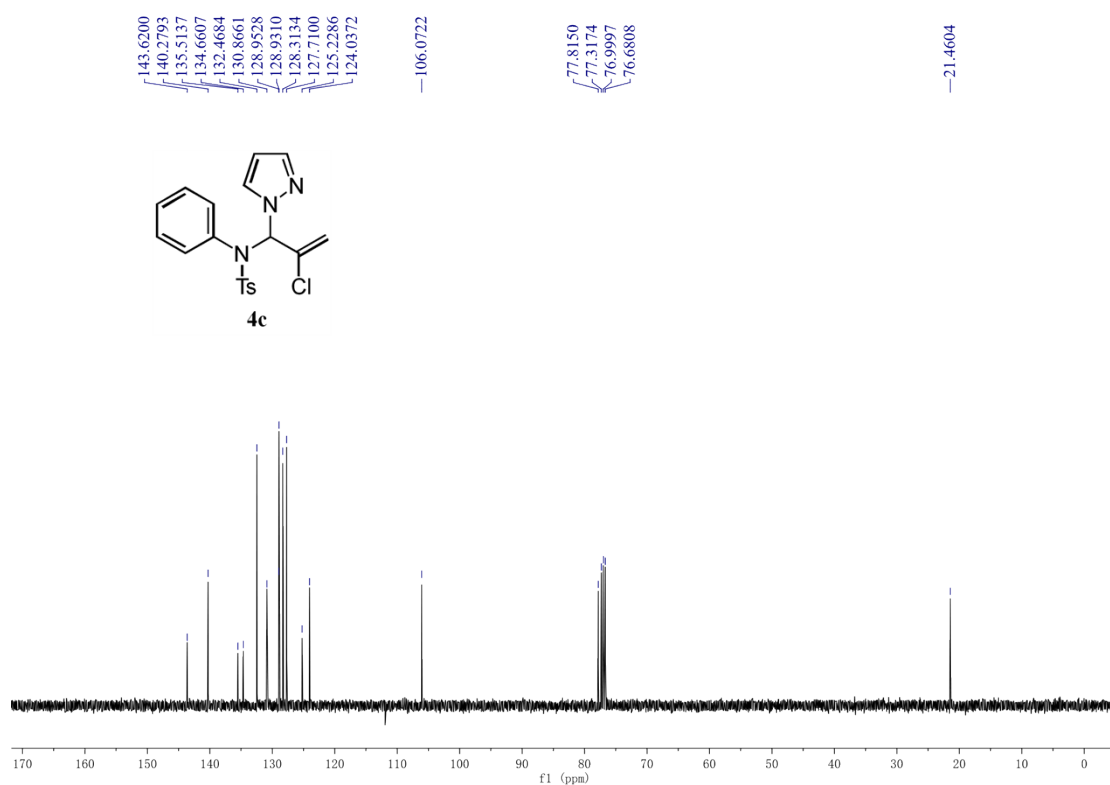
$^{13}\text{C}$  NMR of **4b** (101 MHz,  $\text{CDCl}_3$ )



<sup>1</sup>H NMR of **4c** (400 MHz, CDCl<sub>3</sub>)

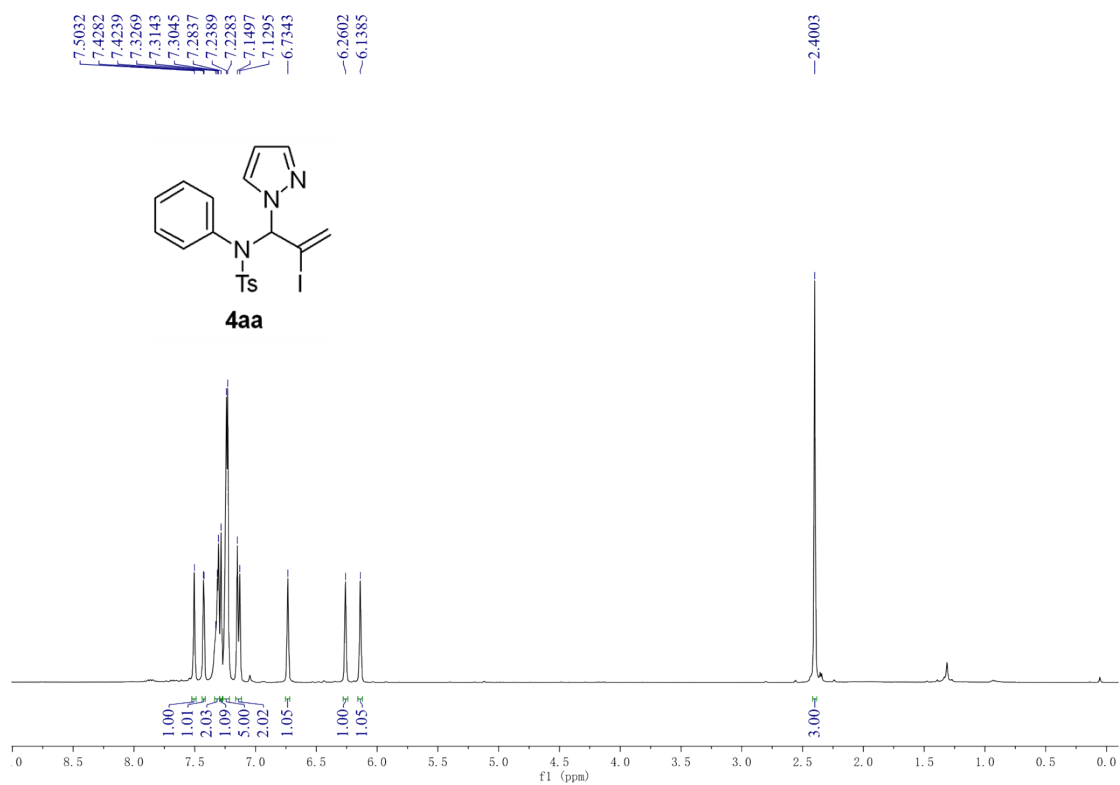


<sup>13</sup>C NMR of **4c** (101 MHz, CDCl<sub>3</sub>)

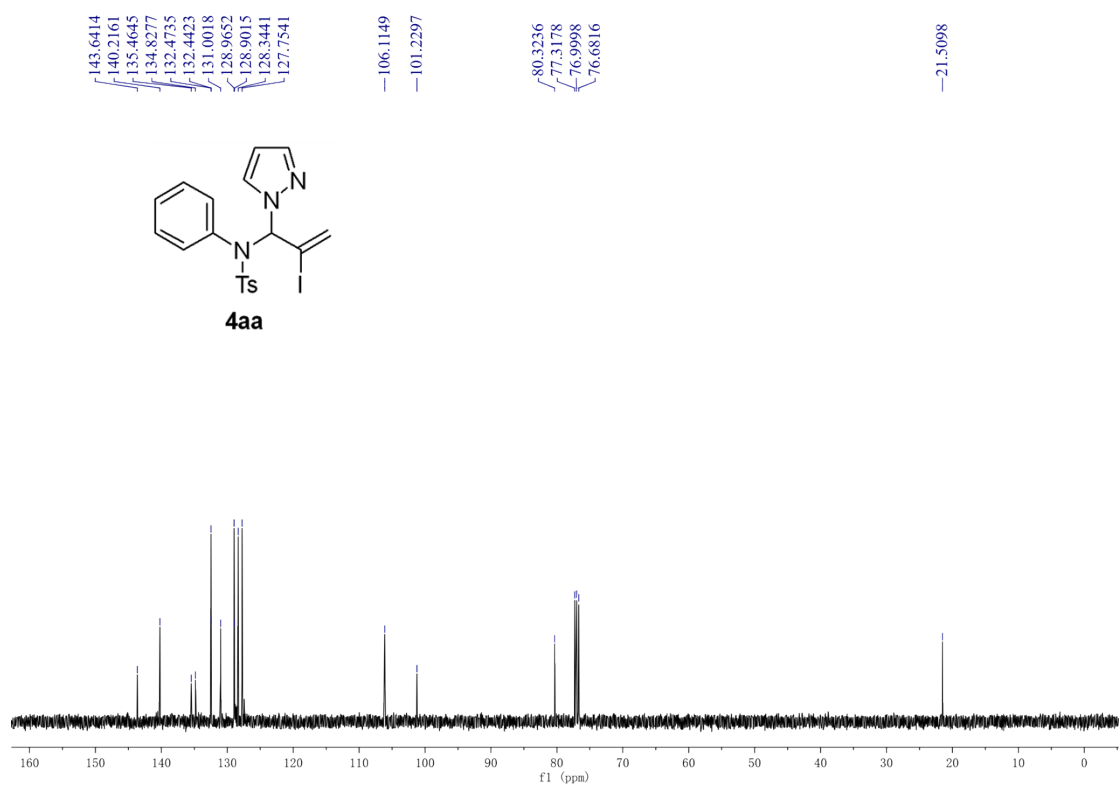


# NMR Spectra for 4aa-4ya

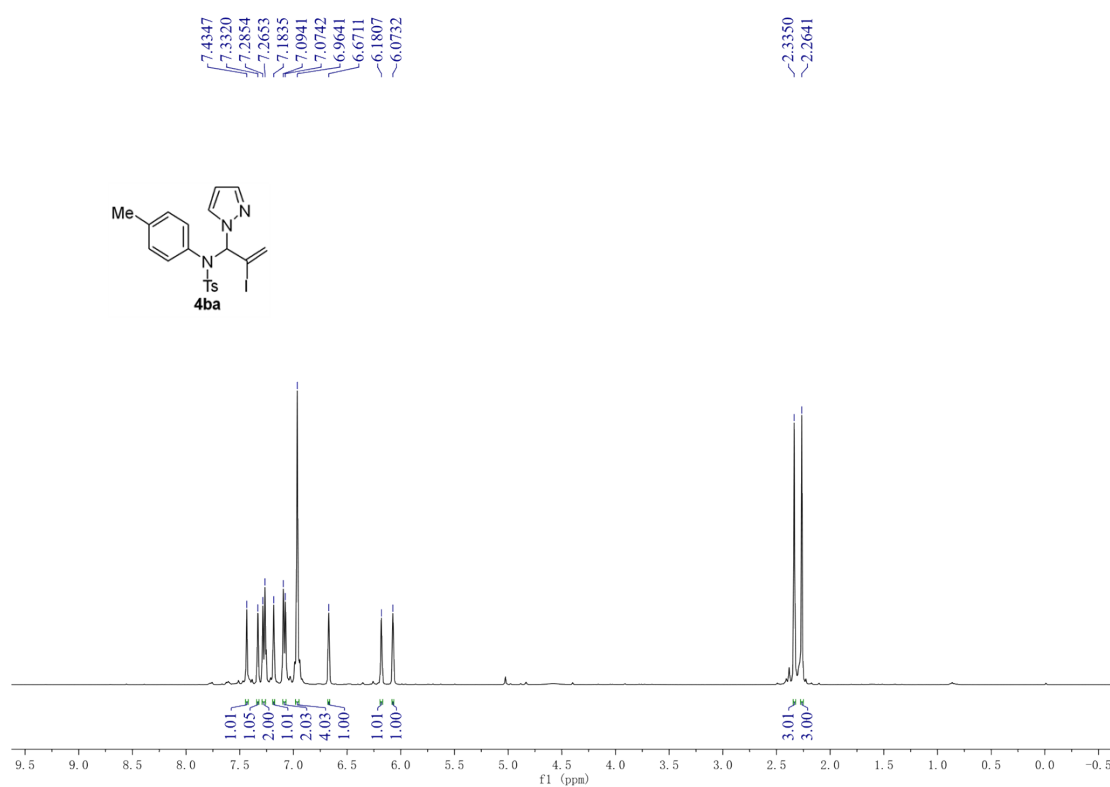
$^1\text{H}$  NMR of **4aa** (400 MHz,  $\text{CDCl}_3$ )



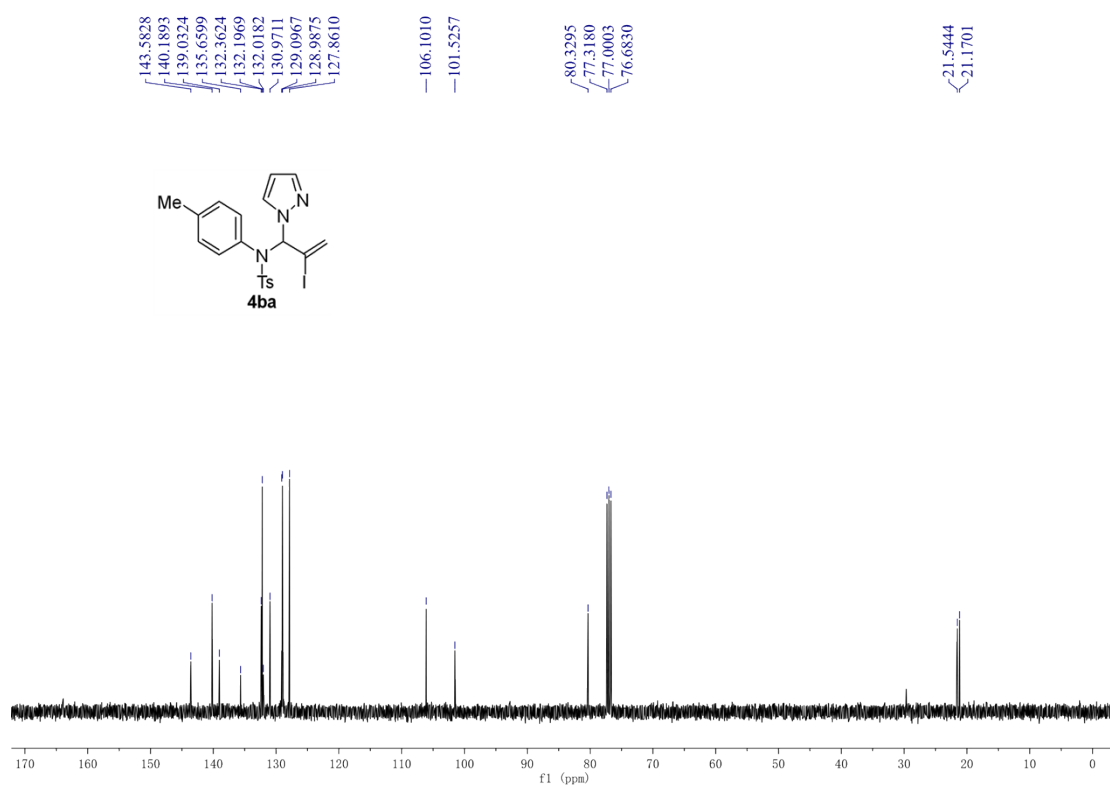
$^{13}\text{C}$  NMR of **4aa** (101 MHz,  $\text{CDCl}_3$ )



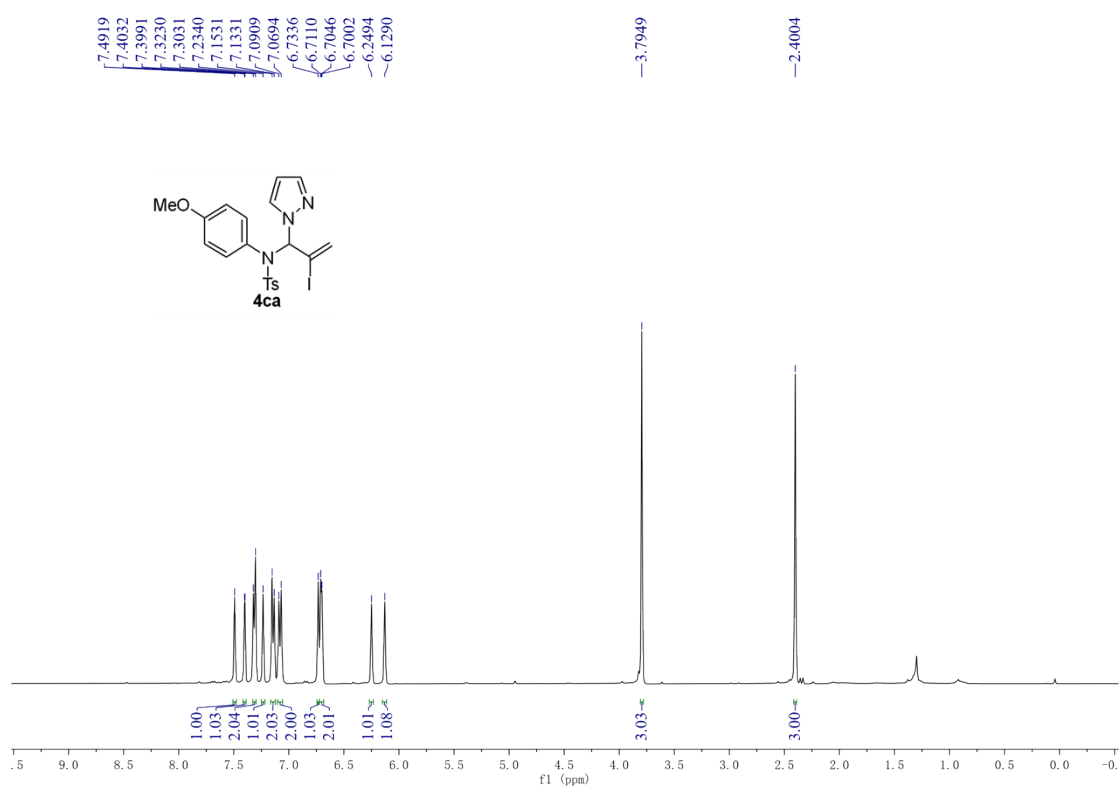
<sup>1</sup>H NMR of **4ba** (400 MHz, CDCl<sub>3</sub>)



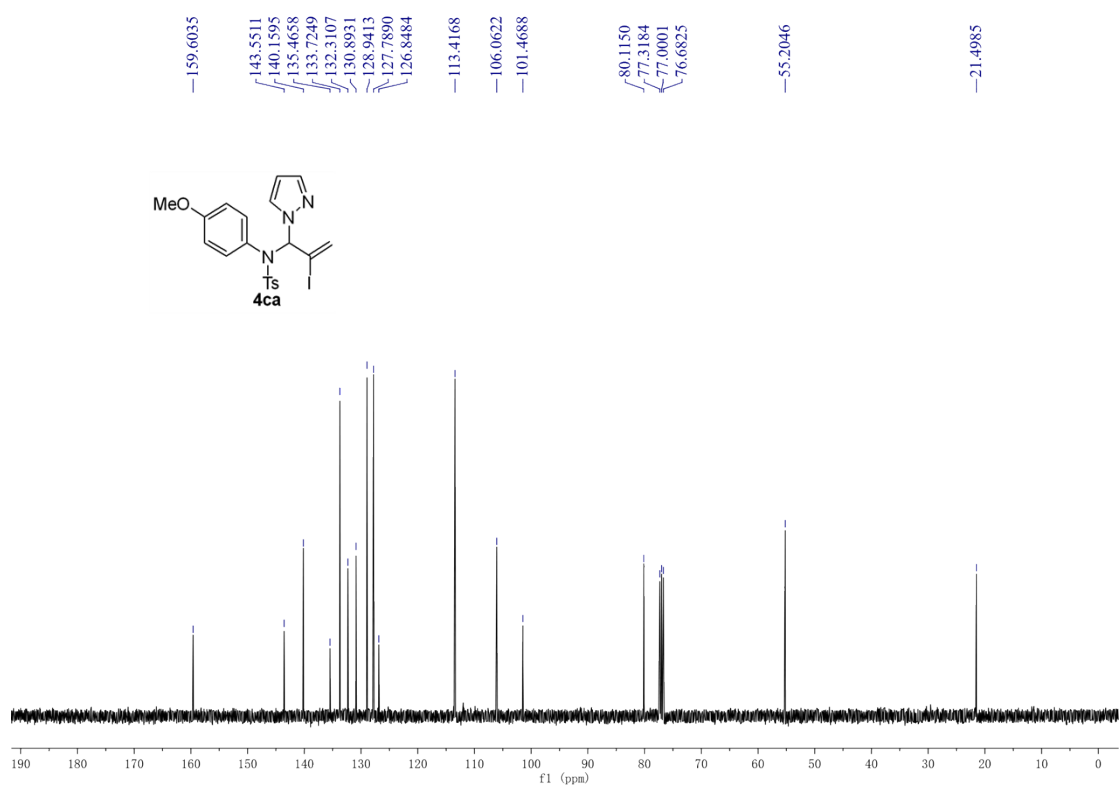
<sup>13</sup>C NMR of **4ba** (101 MHz, CDCl<sub>3</sub>)



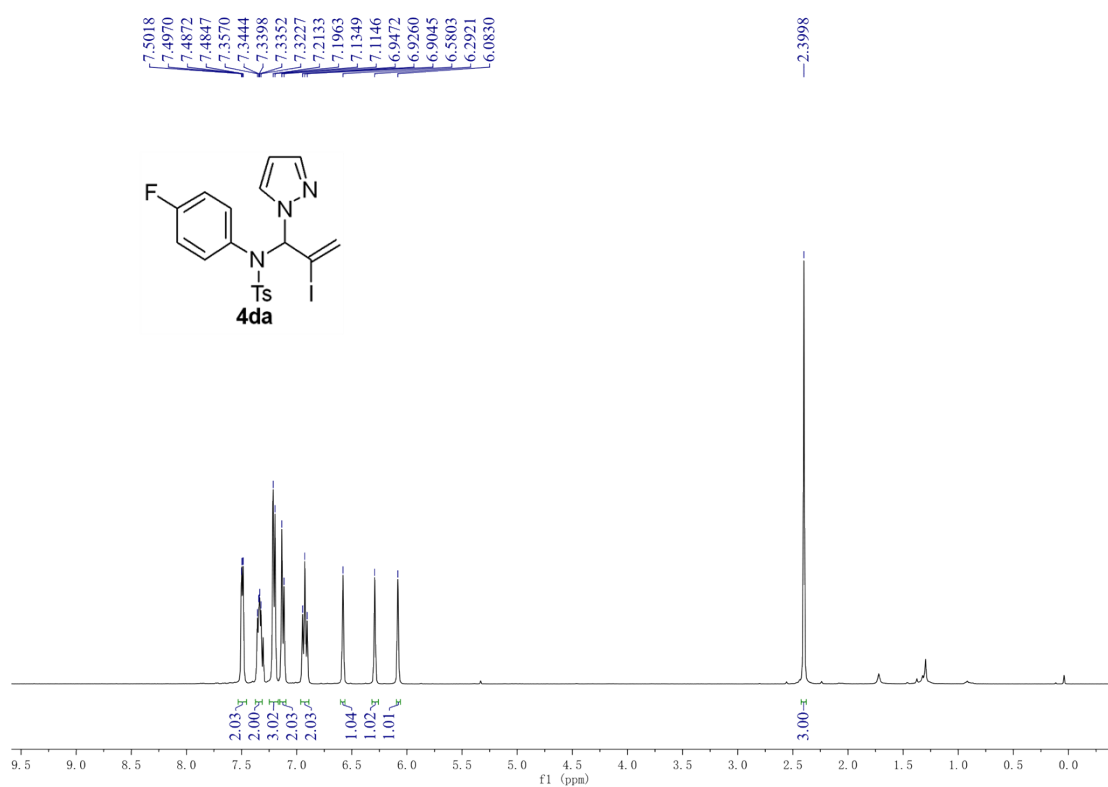
<sup>1</sup>H NMR of **4ca** (400 MHz, CDCl<sub>3</sub>)



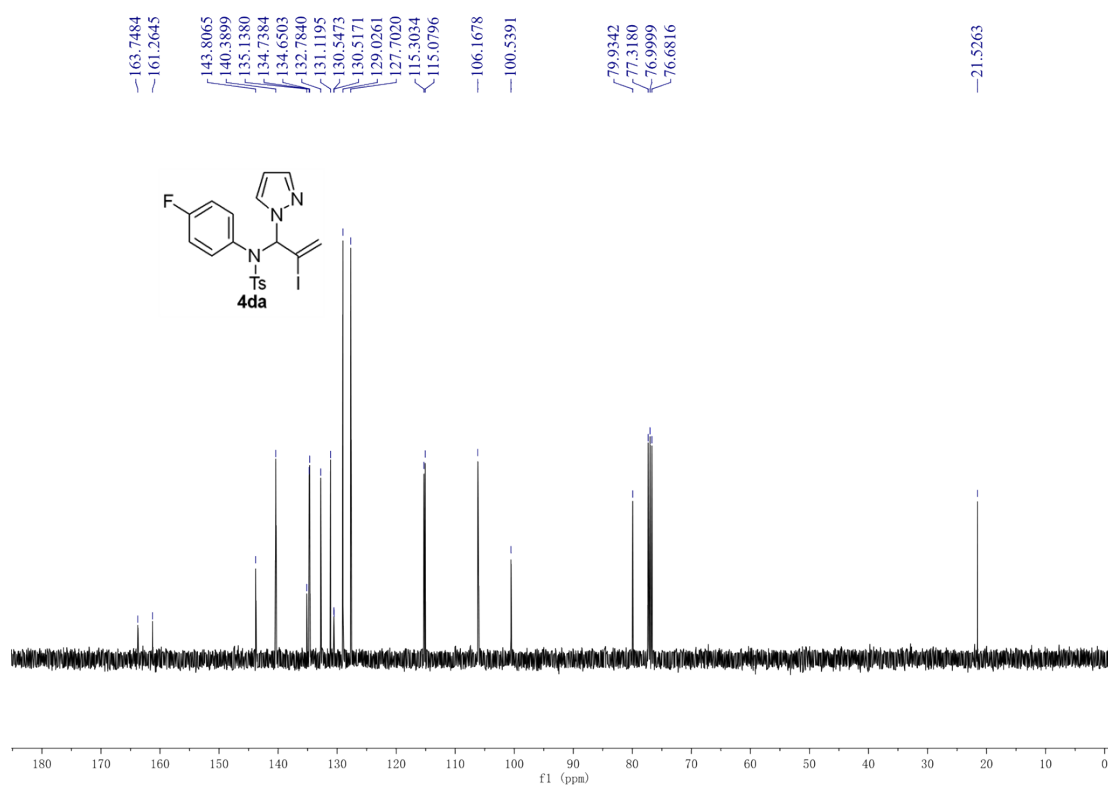
<sup>13</sup>C NMR of **4ca** (101 MHz, CDCl<sub>3</sub>)



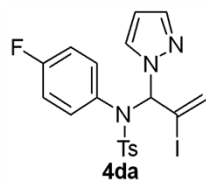
<sup>1</sup>H NMR of **4da** (400 MHz, CDCl<sub>3</sub>)



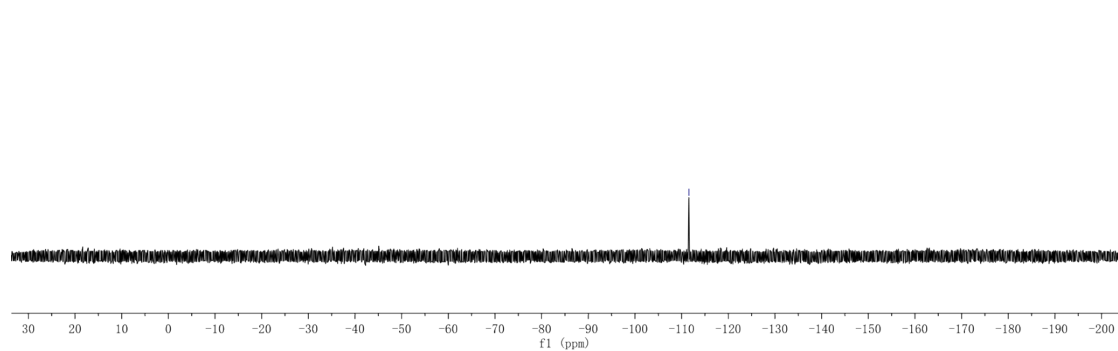
<sup>13</sup>C NMR of **4da** (101 MHz, CDCl<sub>3</sub>)



$^{19}\text{F}$  NMR of **4da** (376 MHz,  $\text{CDCl}_3$ )



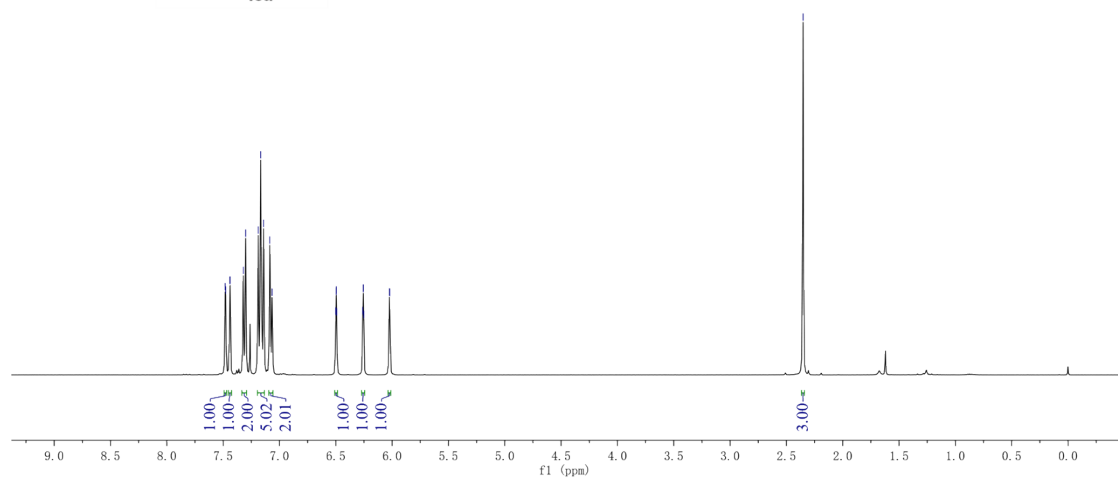
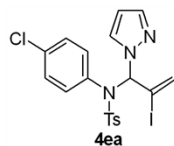
--111.5478



$^1\text{H}$  NMR of **4ea** (400 MHz,  $\text{CDCl}_3$ )

7.4822  
7.4774  
7.4403  
7.4384  
7.3223  
7.3003  
7.1893  
7.1671  
7.1401  
7.0854  
7.0652  
6.5009  
6.4967  
6.4953  
6.4914  
6.2613  
6.2567  
6.2556  
6.2512  
6.0244  
6.0218

--2.3516





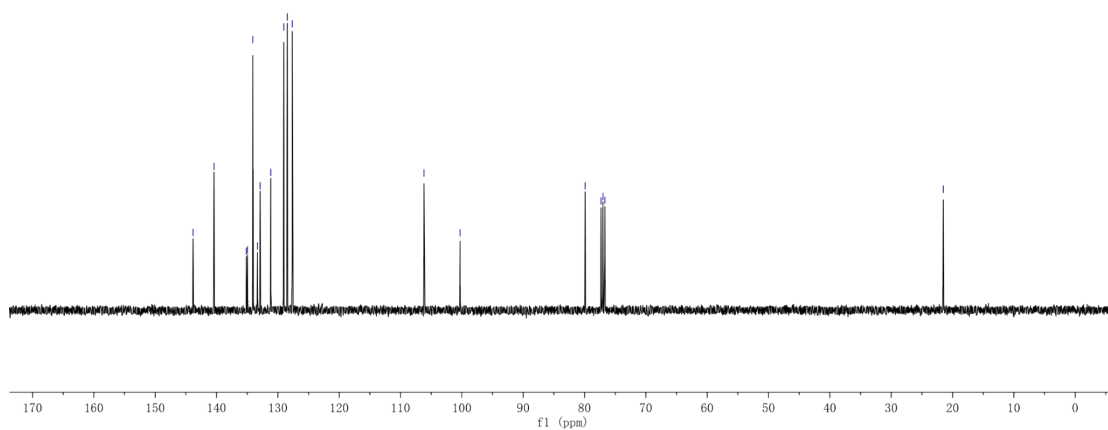
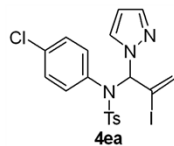
<sup>13</sup>C NMR of **4ea** (101 MHz, CDCl<sub>3</sub>)

143.8209  
140.4115  
135.1396  
134.9369  
134.0830  
133.3172  
132.8931  
131.1640  
129.0335  
128.4624  
127.6543

106.1814  
100.2765

79.8959  
77.3174  
76.9995  
76.6807

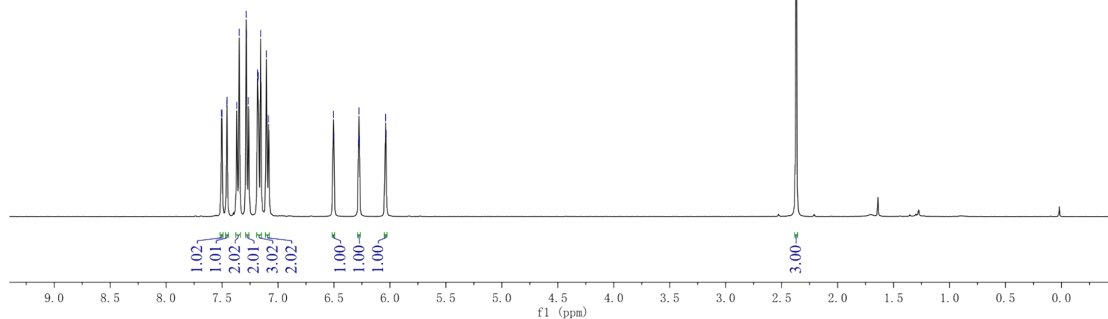
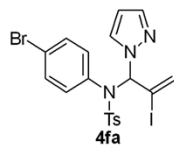
21.5088



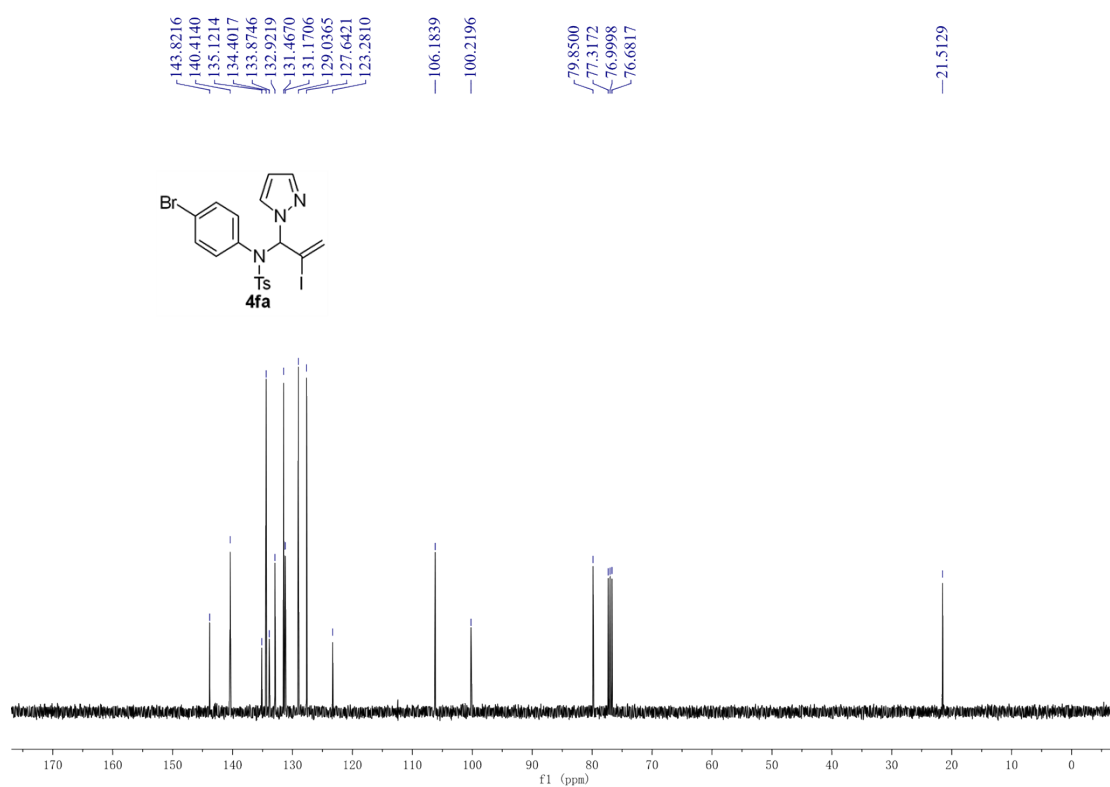
<sup>1</sup>H NMR of **4fa** (400 MHz, CDCl<sub>3</sub>)

7.5050  
7.5003  
7.4575  
7.4553  
7.3684  
7.3464  
7.2837  
7.2816  
7.2619  
7.1823  
7.1792  
7.1765  
7.1550  
7.1037  
7.0855  
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6.2764  
6.2720  
6.0403  
6.0378  
6.0347

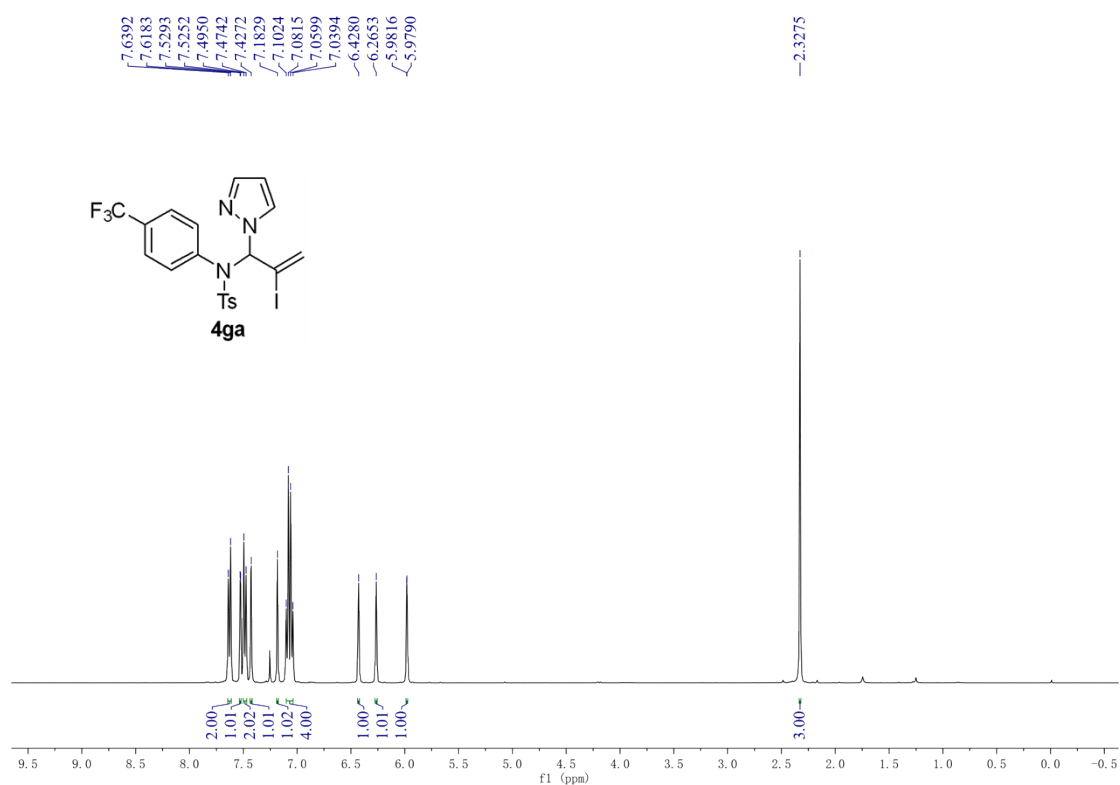
2.3705



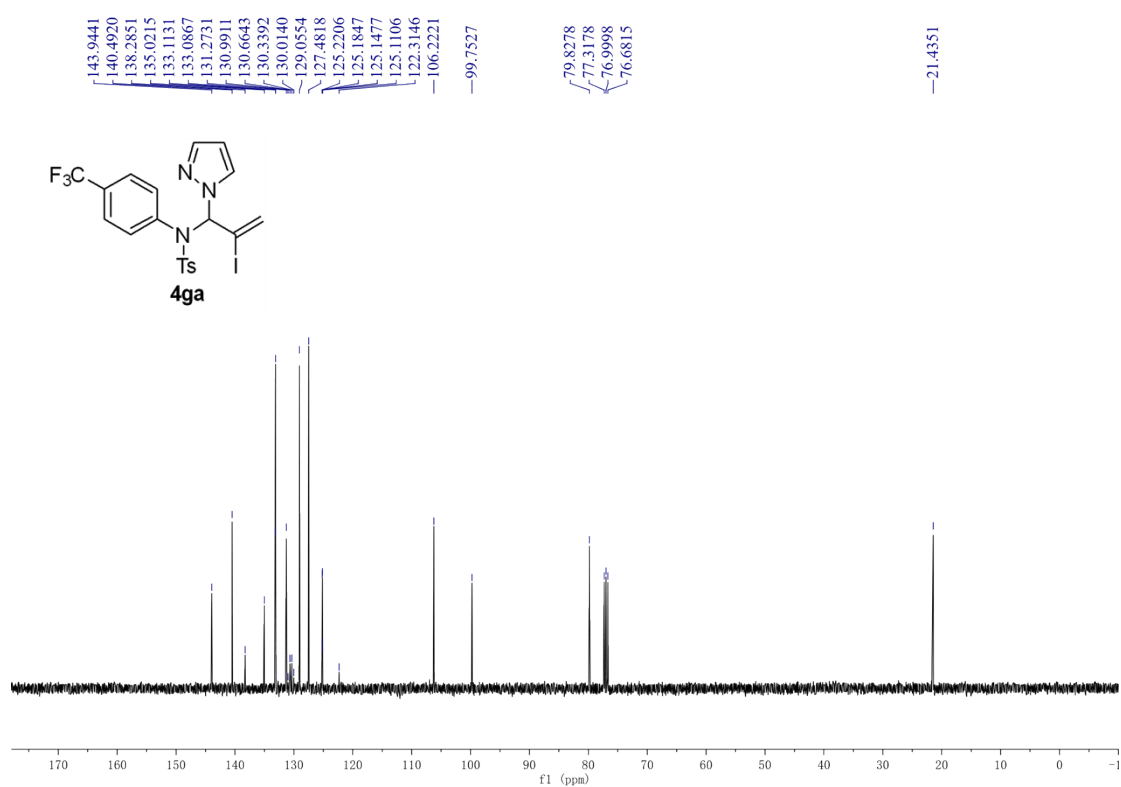
<sup>13</sup>C NMR of **4fa** (101 MHz, CDCl<sub>3</sub>)



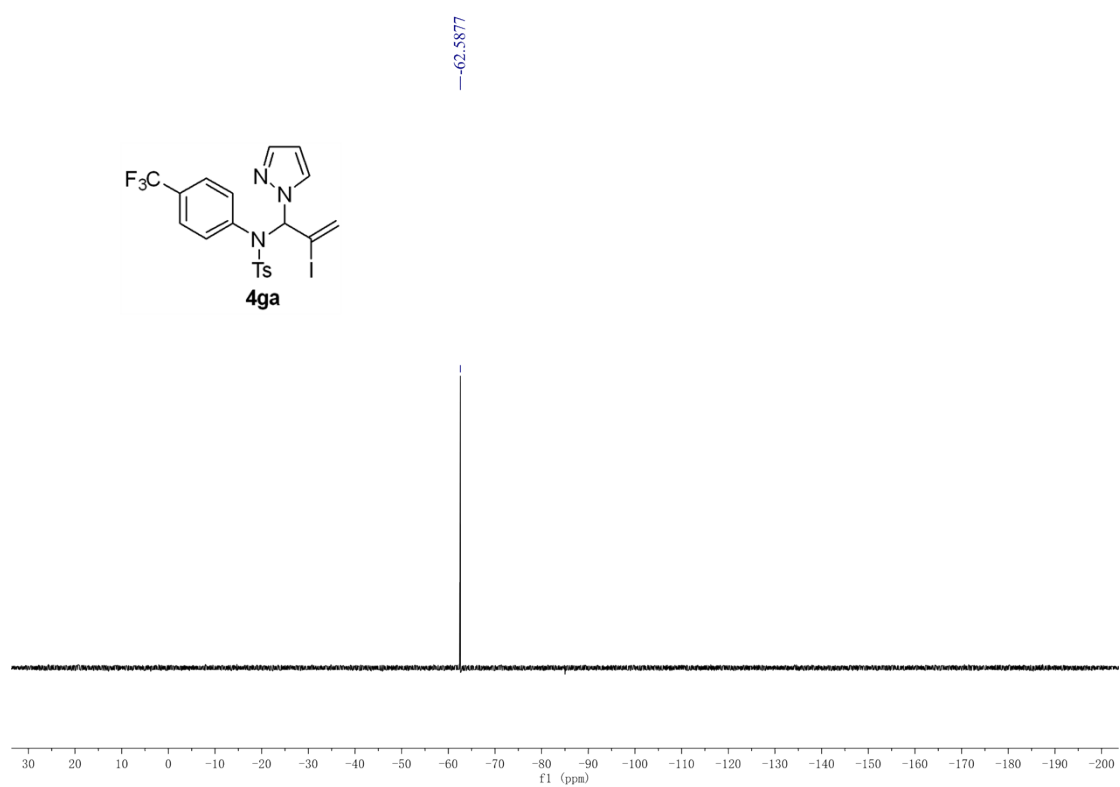
<sup>1</sup>H NMR of **4ga** (400 MHz, CDCl<sub>3</sub>)



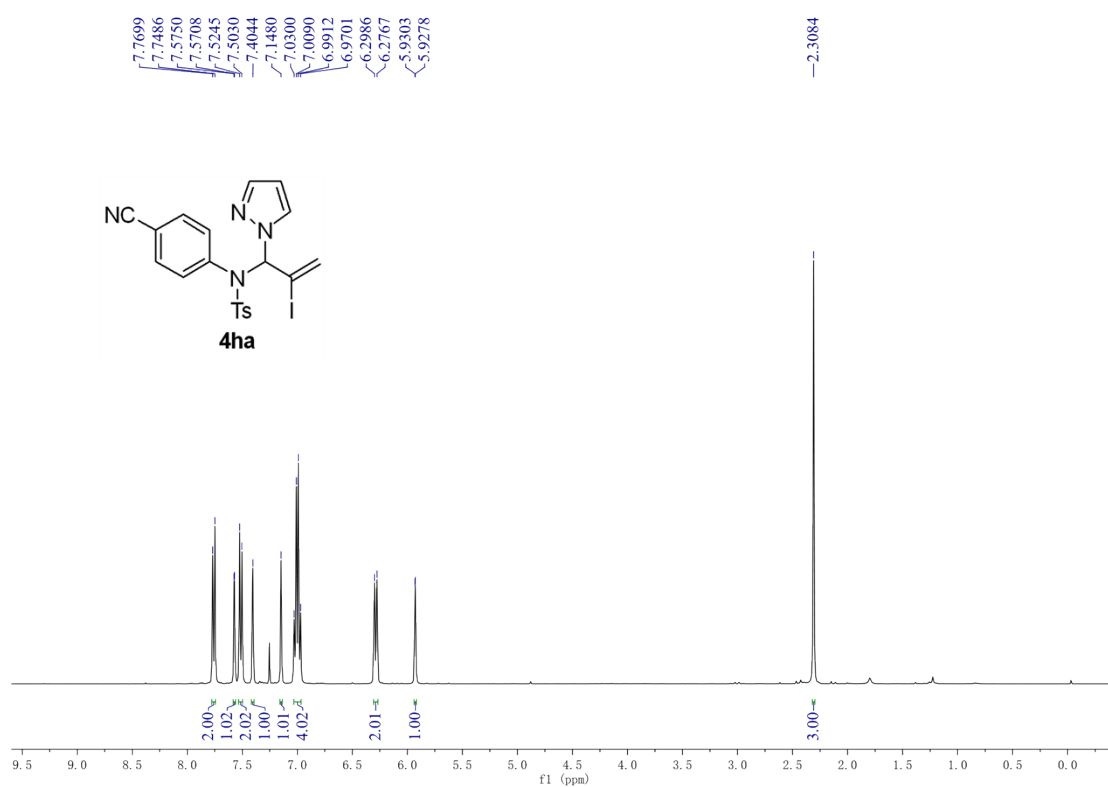
<sup>13</sup>C NMR of **4ga** (101 MHz, CDCl<sub>3</sub>)



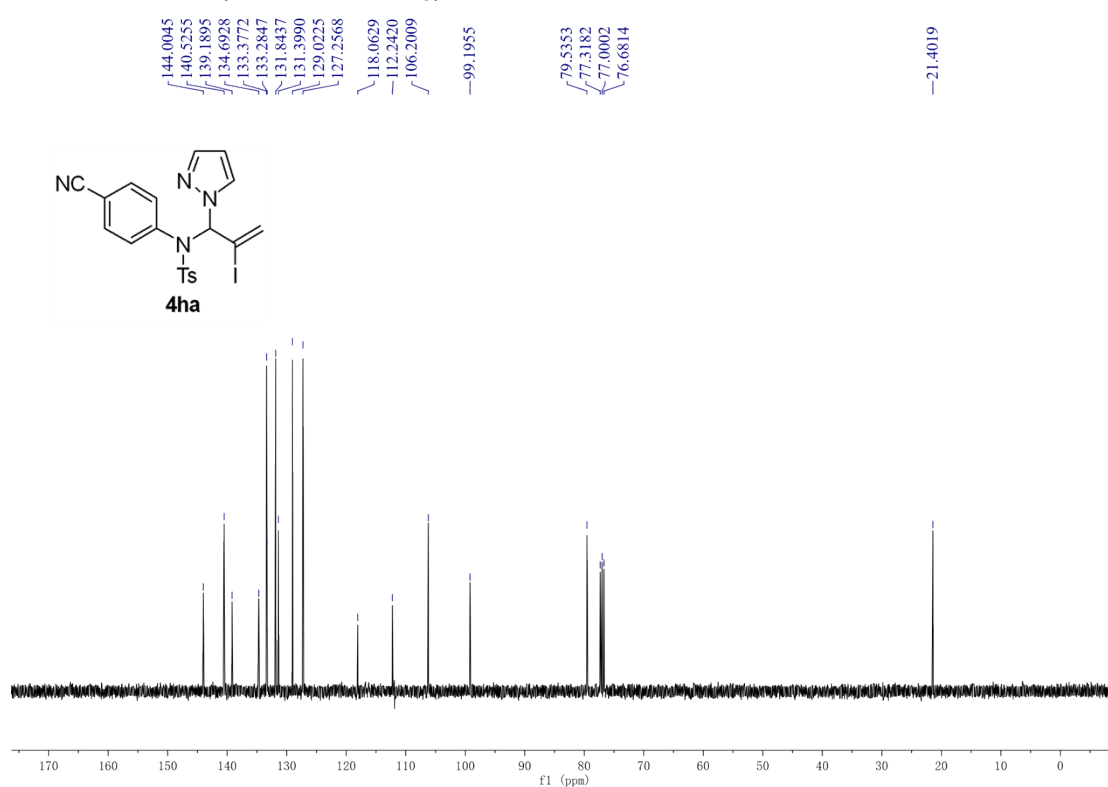
<sup>19</sup>F NMR of **4ga** (376 MHz, CDCl<sub>3</sub>)



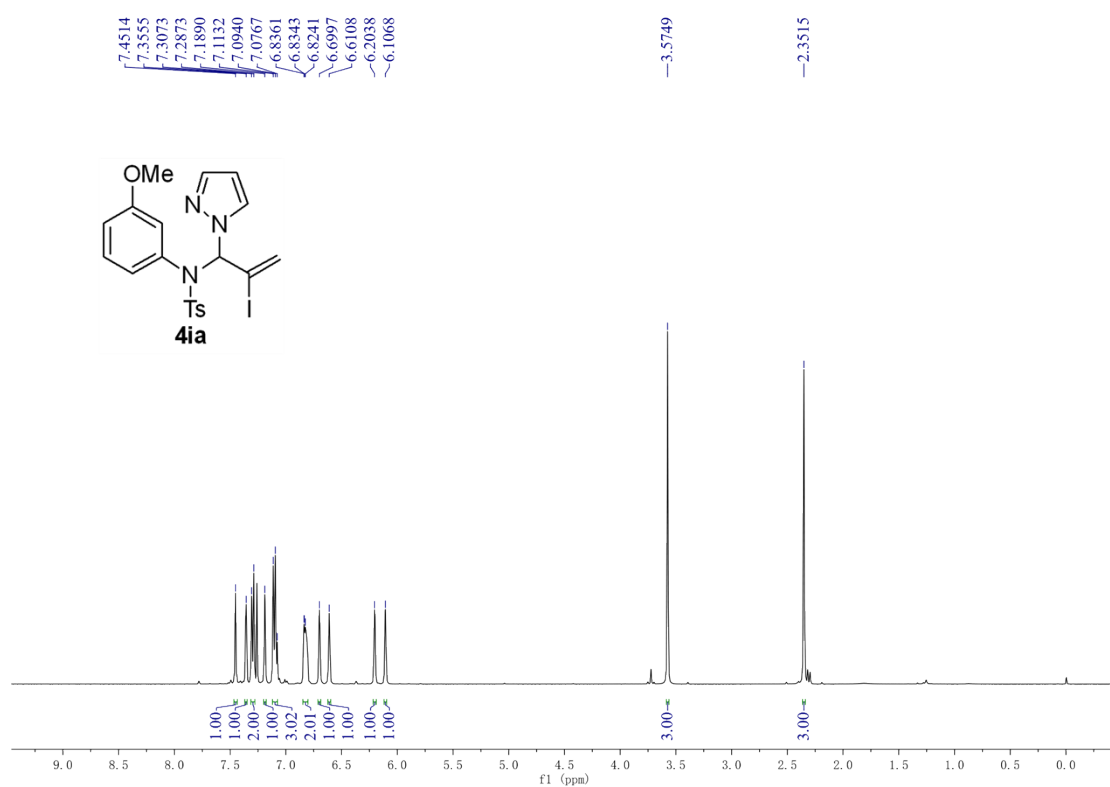
<sup>1</sup>H NMR of **4ha** (400 MHz, CDCl<sub>3</sub>)



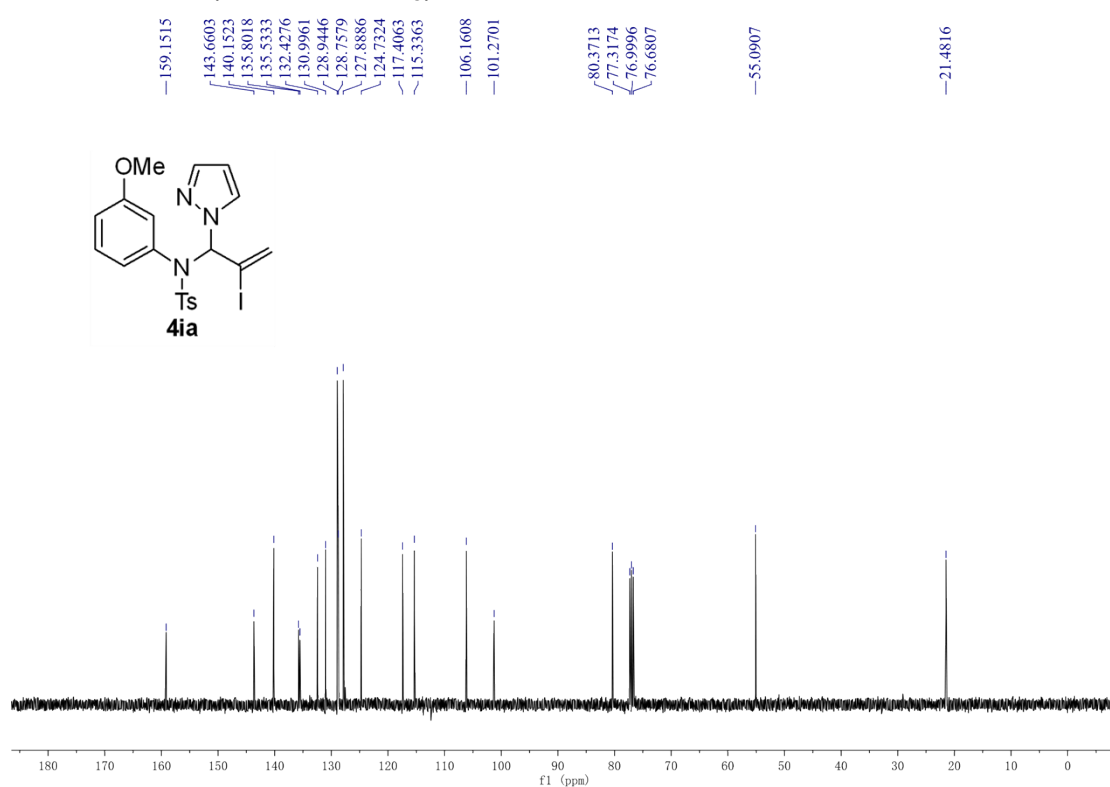
<sup>13</sup>C NMR of **4ha** (101 MHz, CDCl<sub>3</sub>)



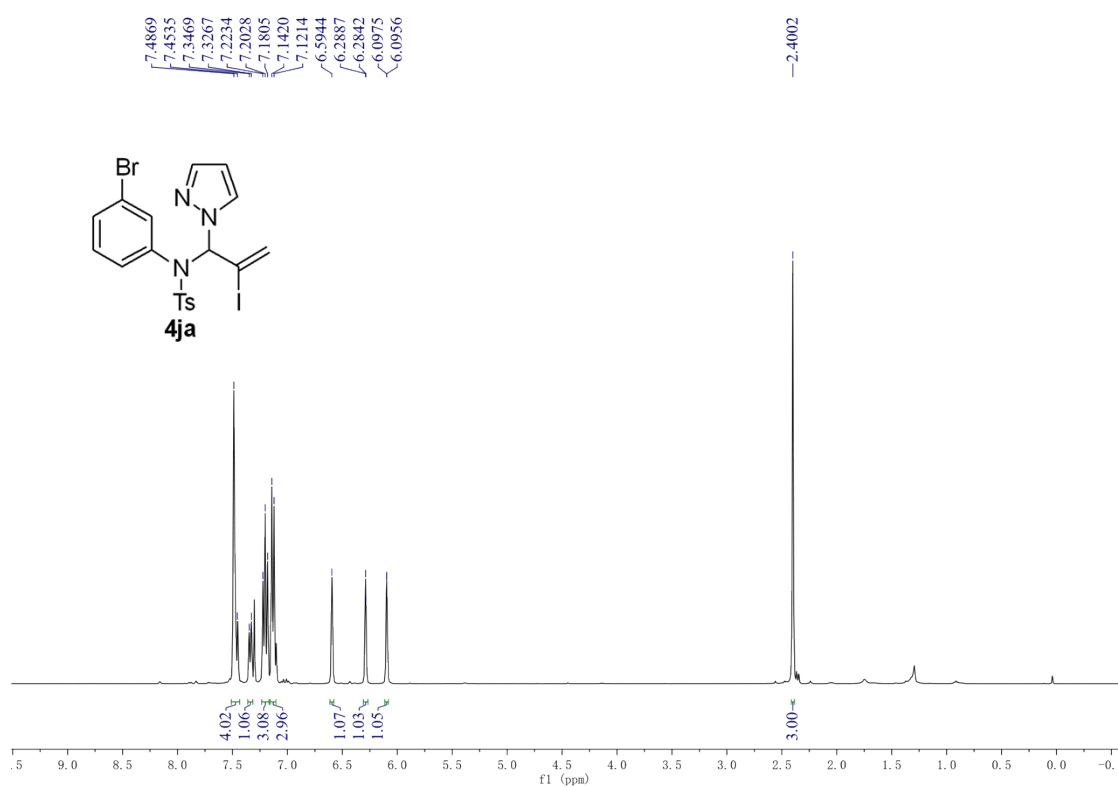
<sup>1</sup>H NMR of **4ia** (400 MHz, CDCl<sub>3</sub>)



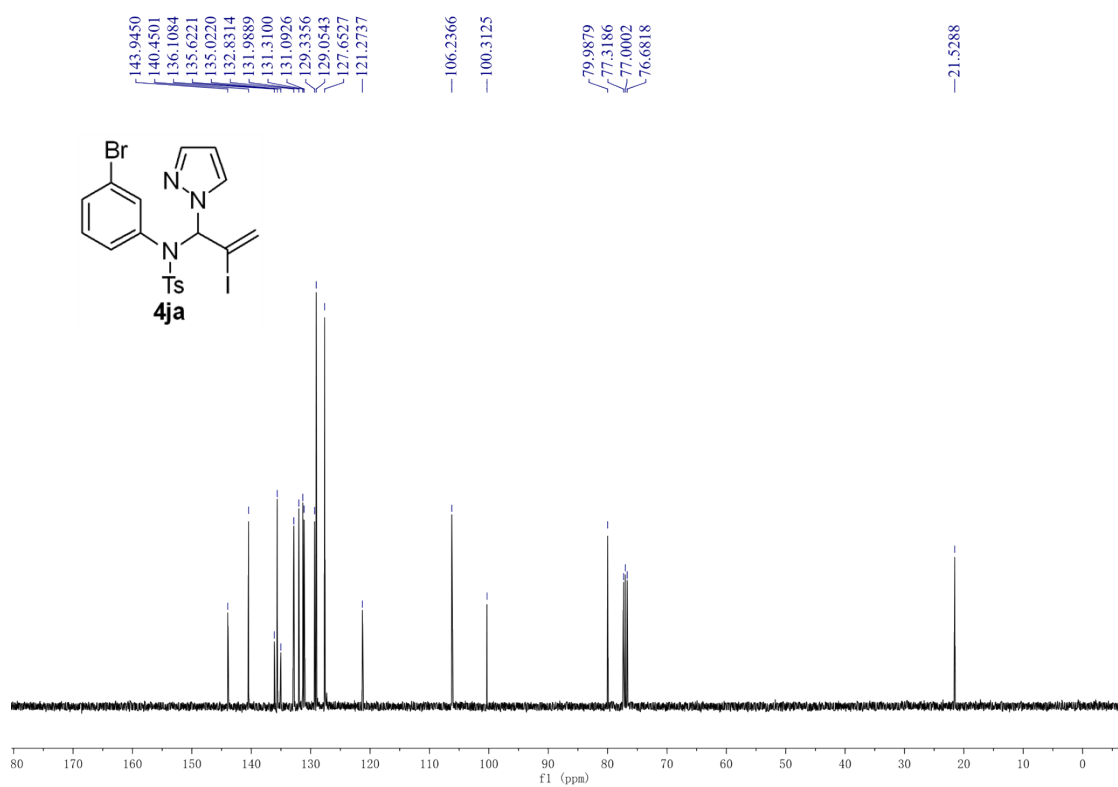
<sup>13</sup>C NMR of **4ia** (101 MHz, CDCl<sub>3</sub>)



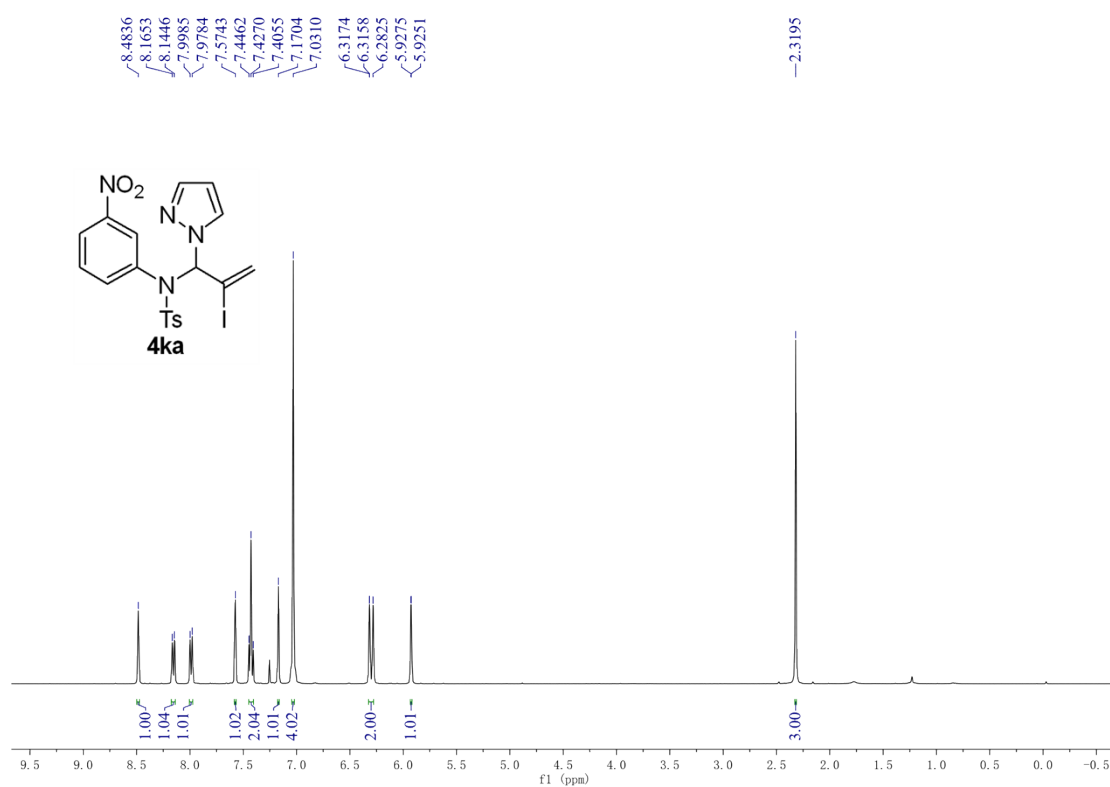
<sup>1</sup>H NMR of **4ja** (400 MHz, CDCl<sub>3</sub>)



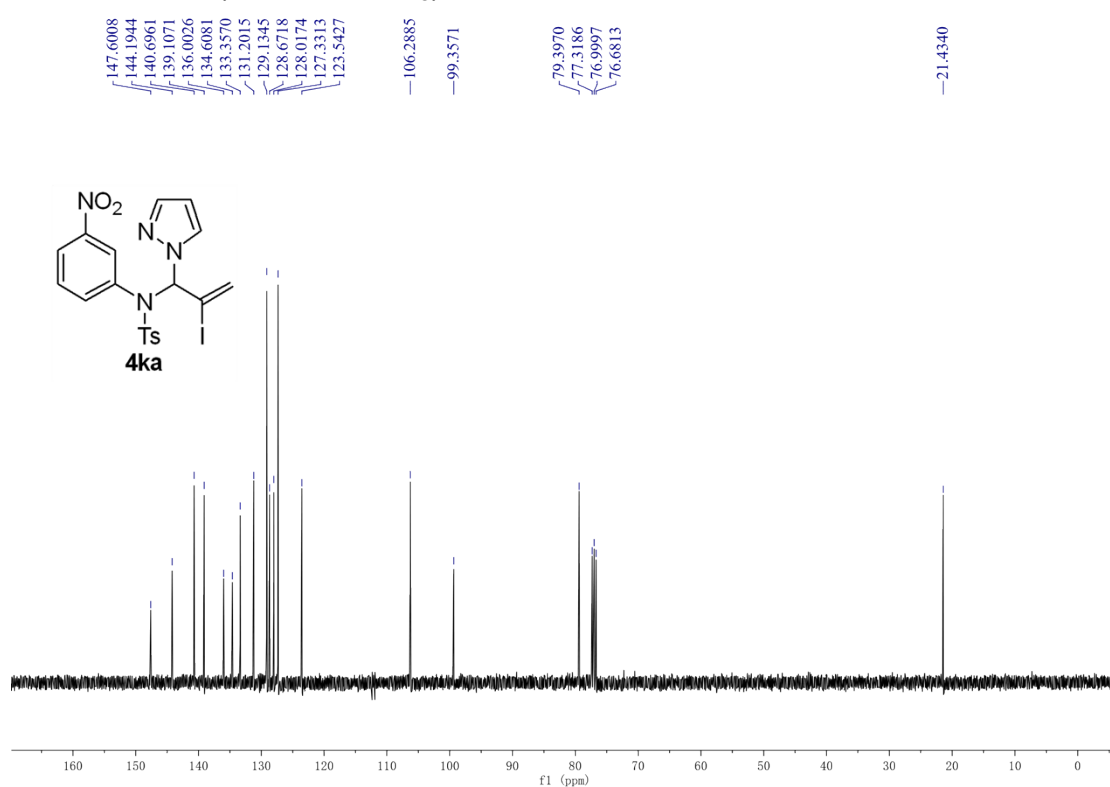
<sup>13</sup>C NMR of **4ja** (101 MHz, CDCl<sub>3</sub>)



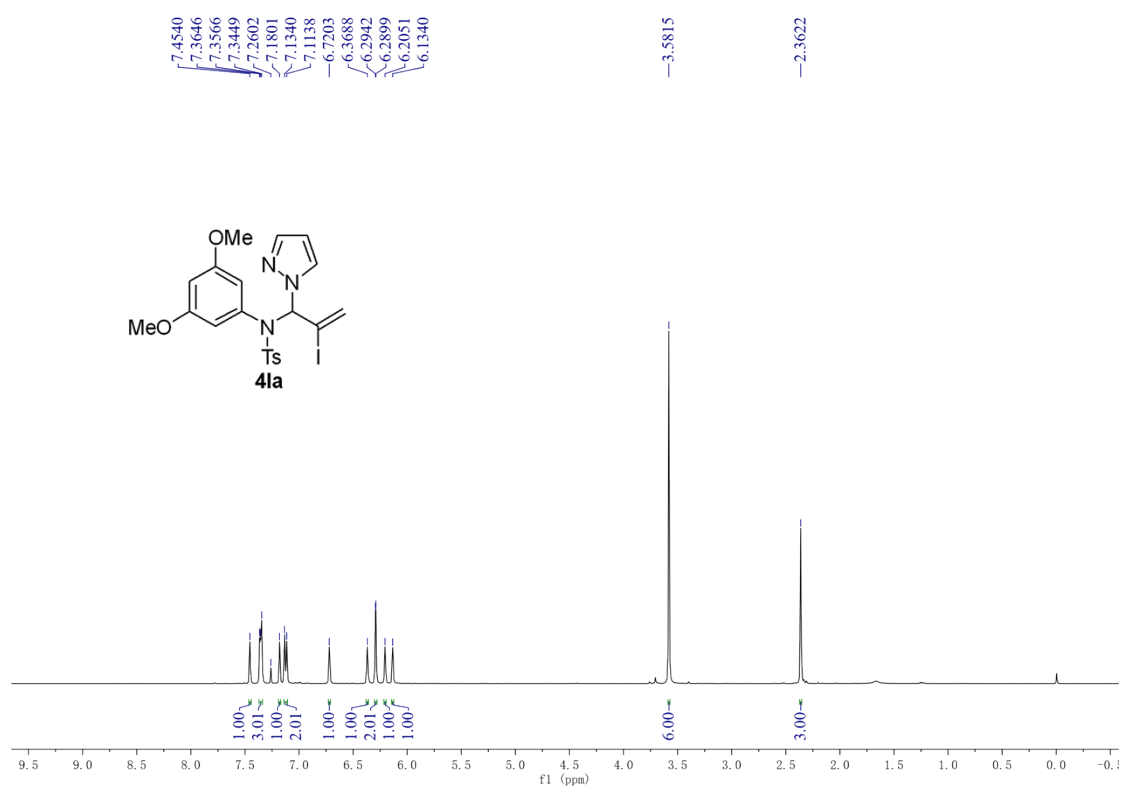
<sup>1</sup>H NMR of **4ka** (400 MHz, CDCl<sub>3</sub>)



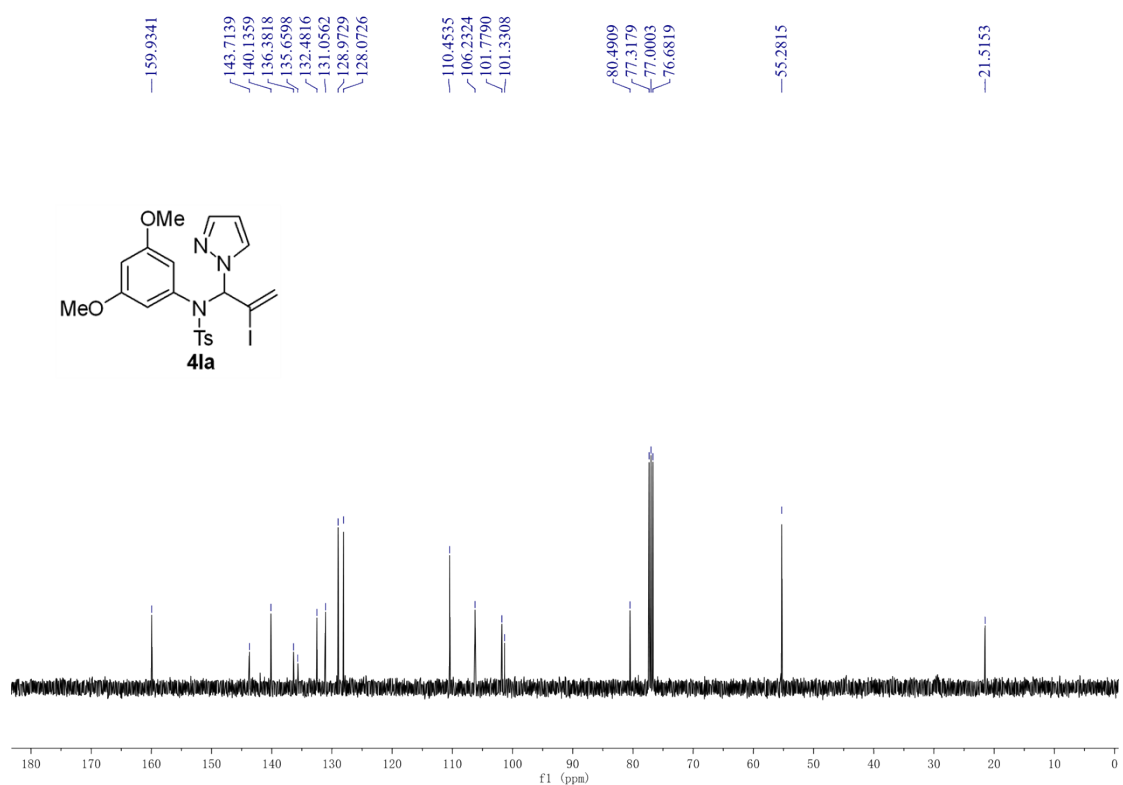
<sup>13</sup>C NMR of **4ka** (101 MHz, CDCl<sub>3</sub>)



<sup>1</sup>H NMR of **4la** (400 MHz, CDCl<sub>3</sub>)

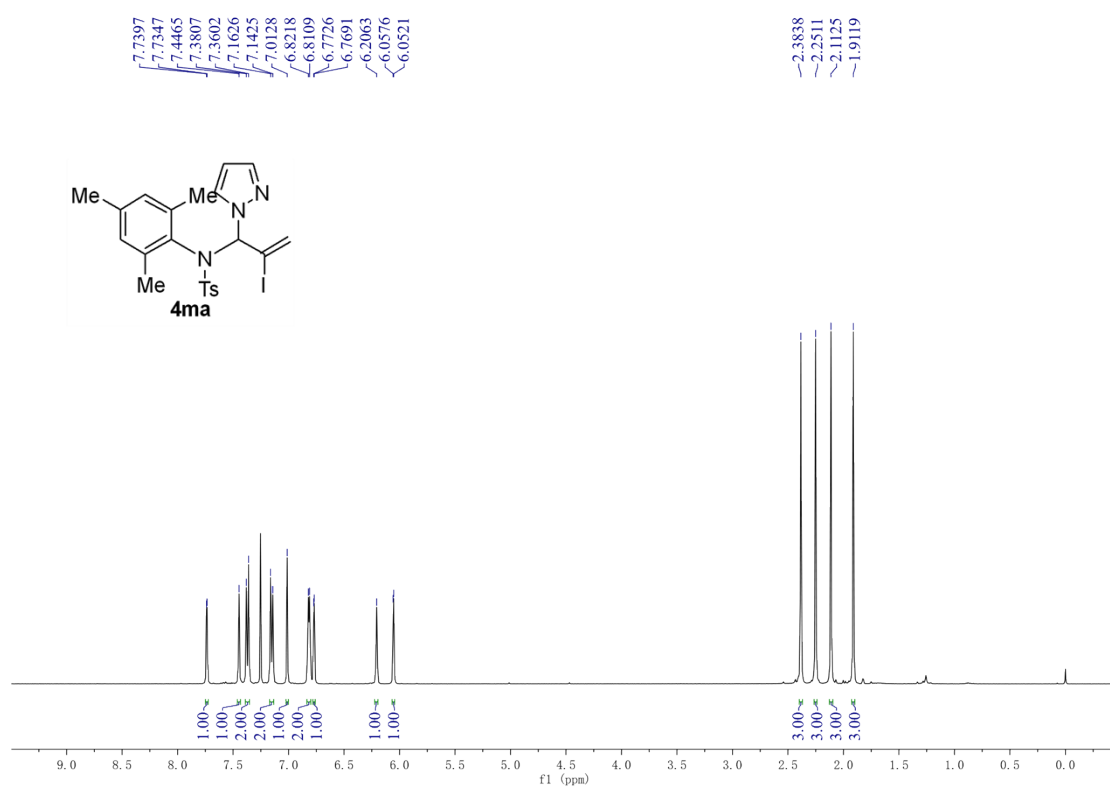


<sup>13</sup>C NMR of **4la** (101 MHz, CDCl<sub>3</sub>)

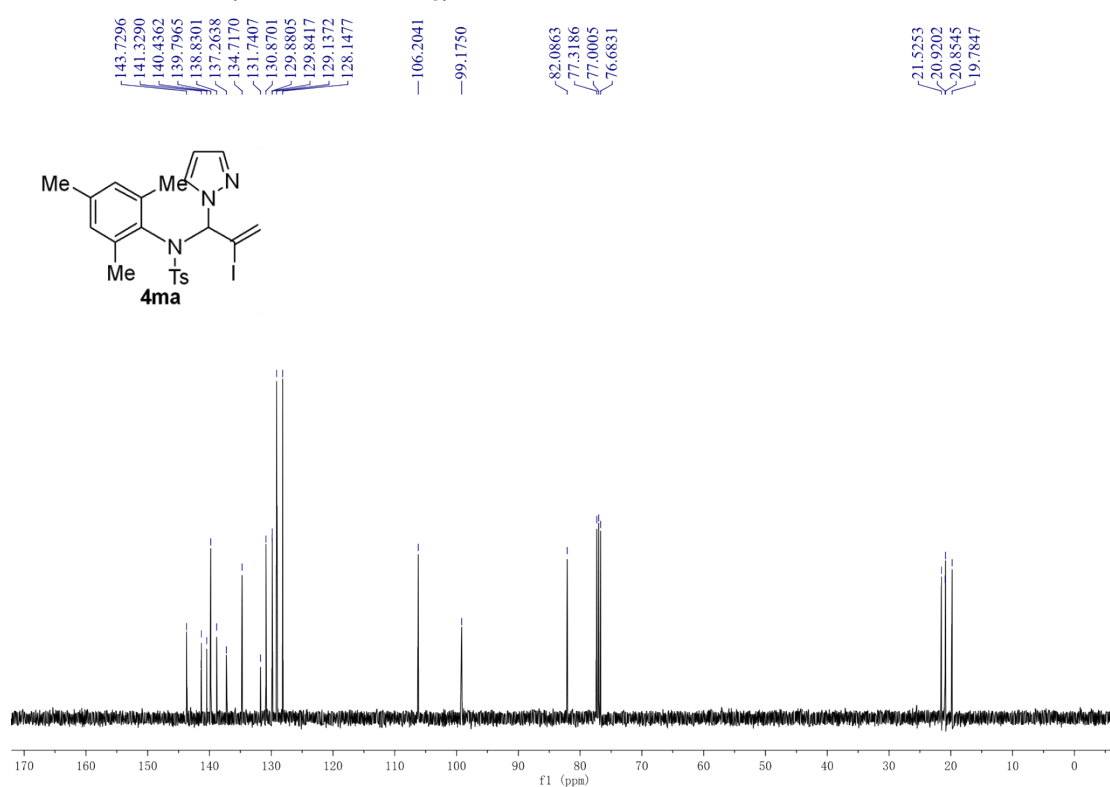




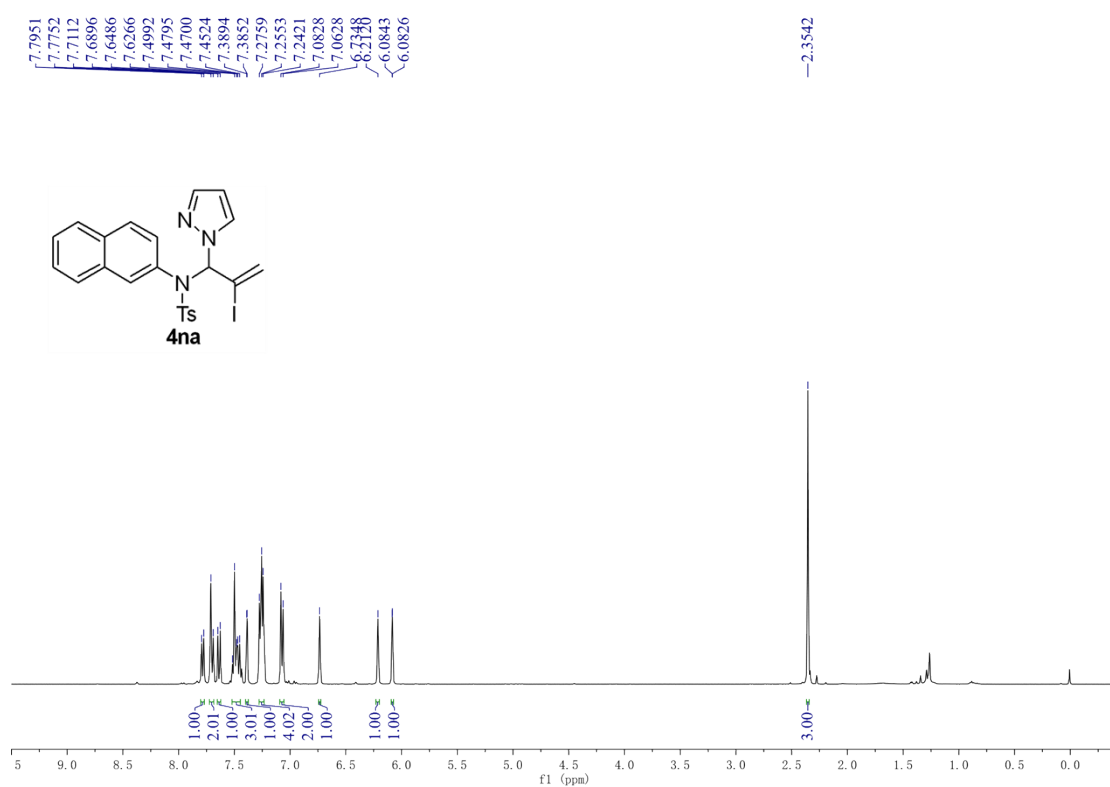
<sup>1</sup>H NMR of **4ma** (400 MHz, CDCl<sub>3</sub>)



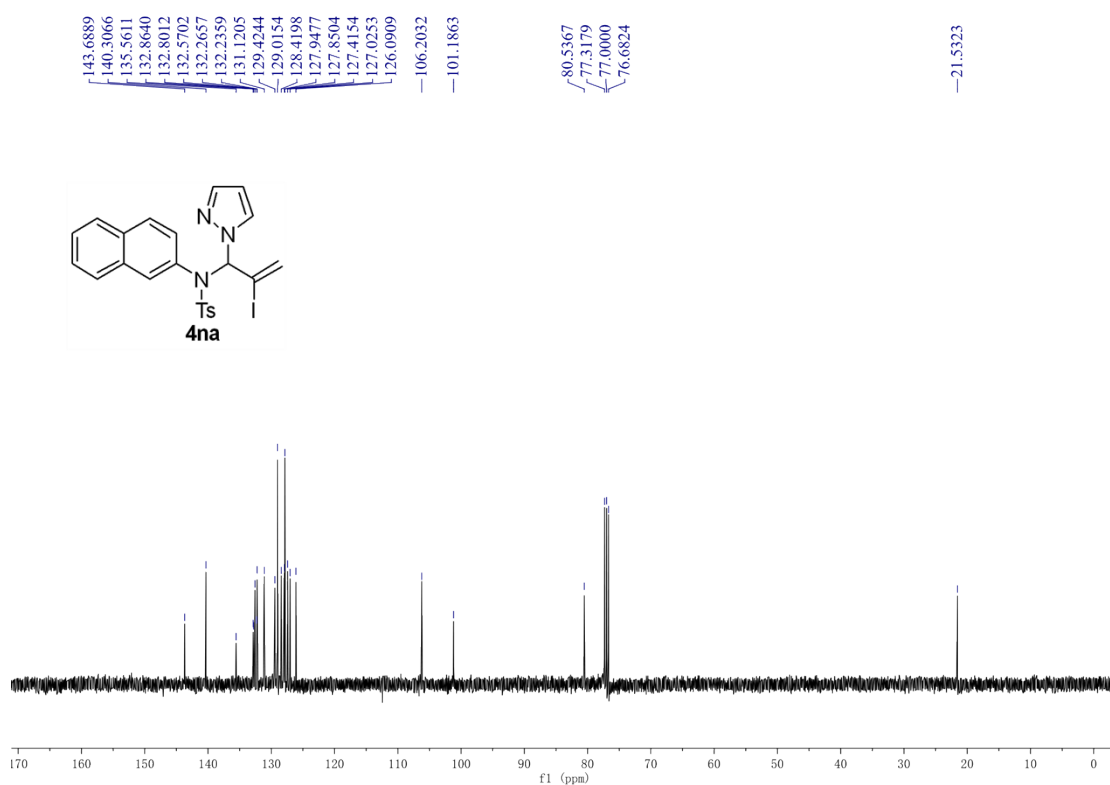
<sup>13</sup>C NMR of **4ma** (101 MHz, CDCl<sub>3</sub>)



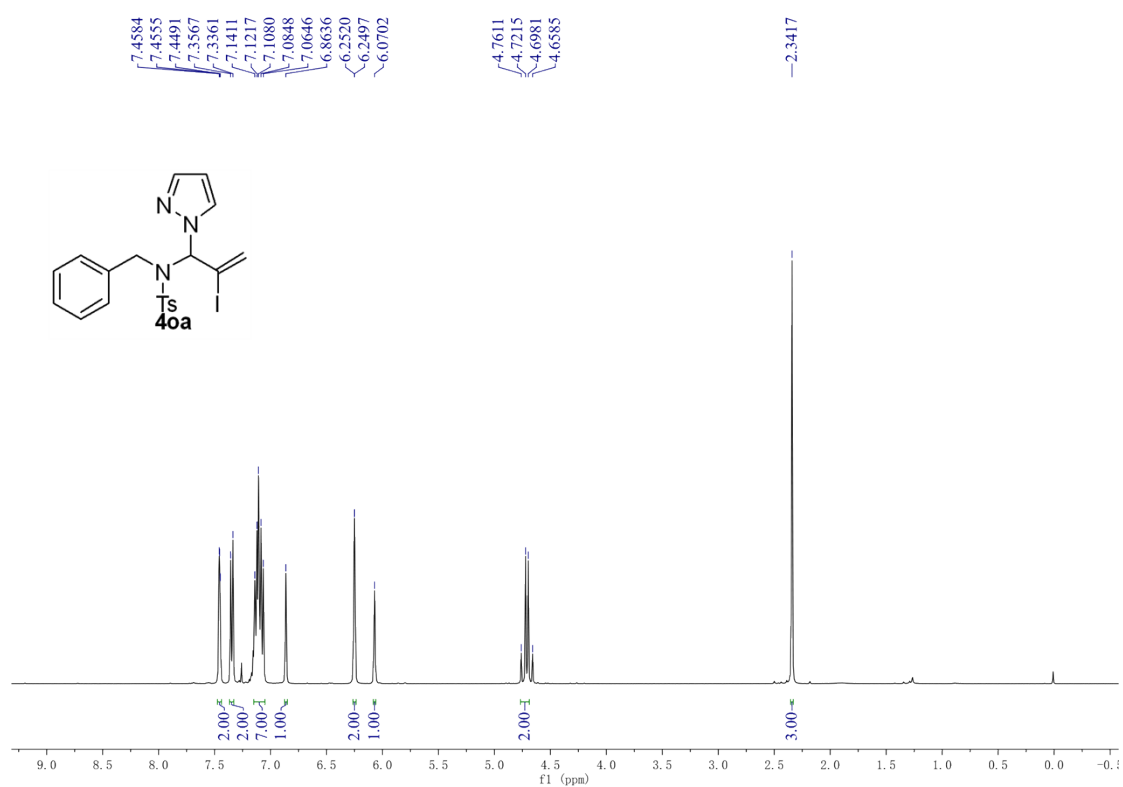
### $^1\text{H}$ NMR of **4na** (400 MHz, $\text{CDCl}_3$ )



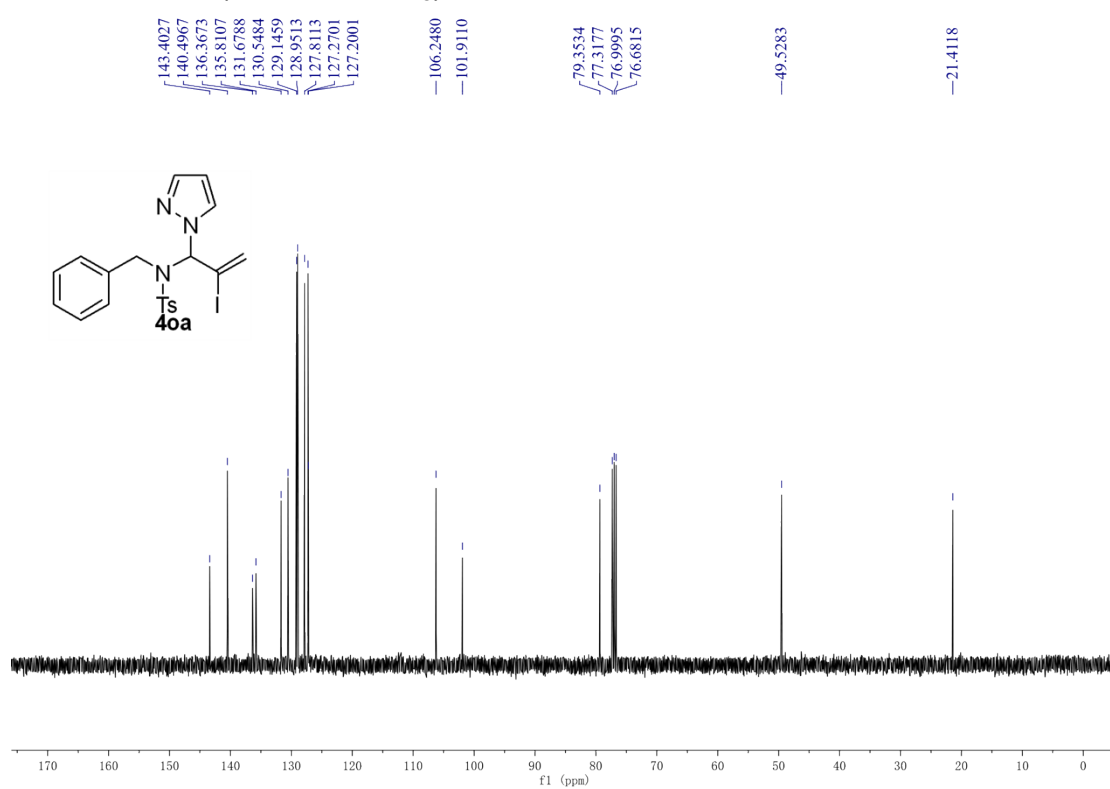
### $^{13}\text{C}$ NMR of **4na** (101 MHz, $\text{CDCl}_3$ )



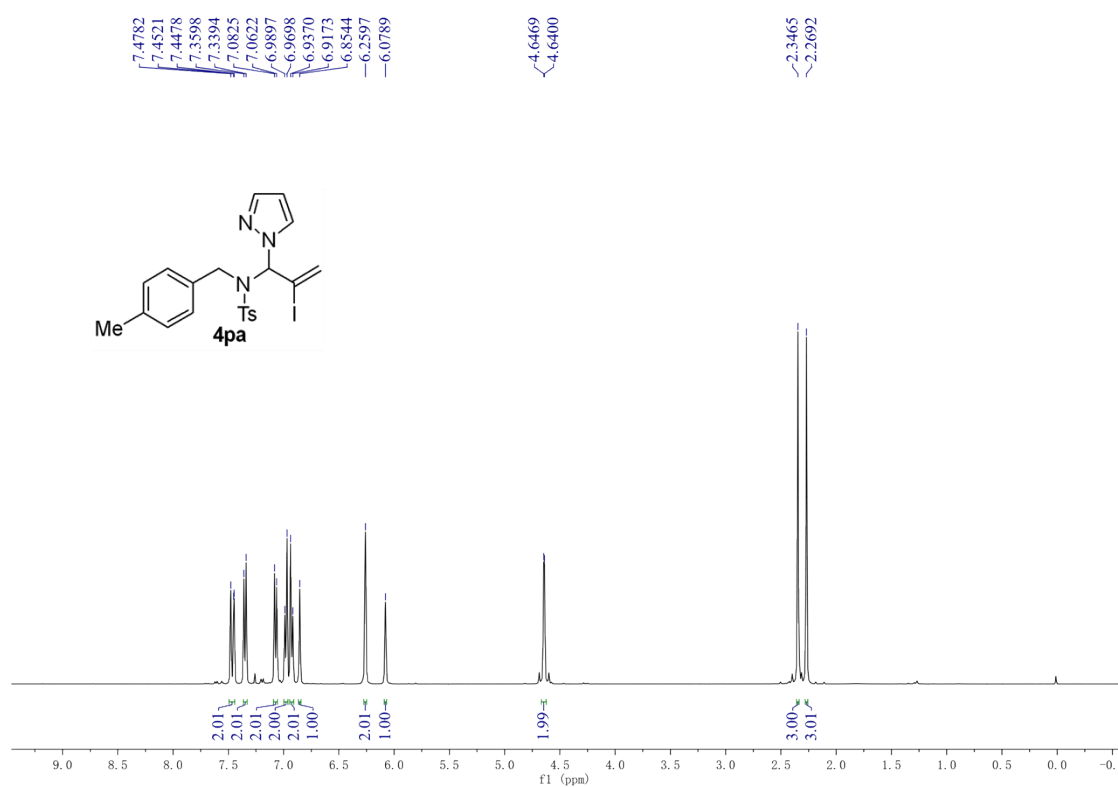
<sup>1</sup>H NMR of **4oa** (400 MHz, CDCl<sub>3</sub>)



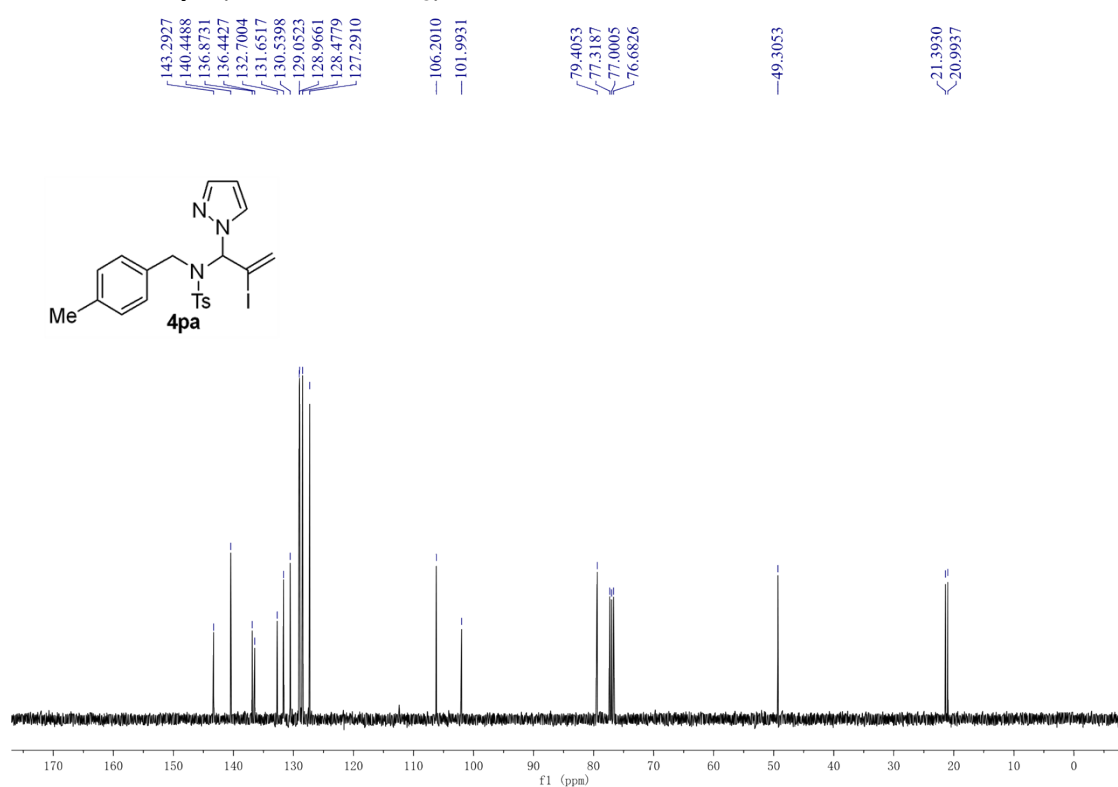
<sup>13</sup>C NMR of **4oa** (101 MHz, CDCl<sub>3</sub>)



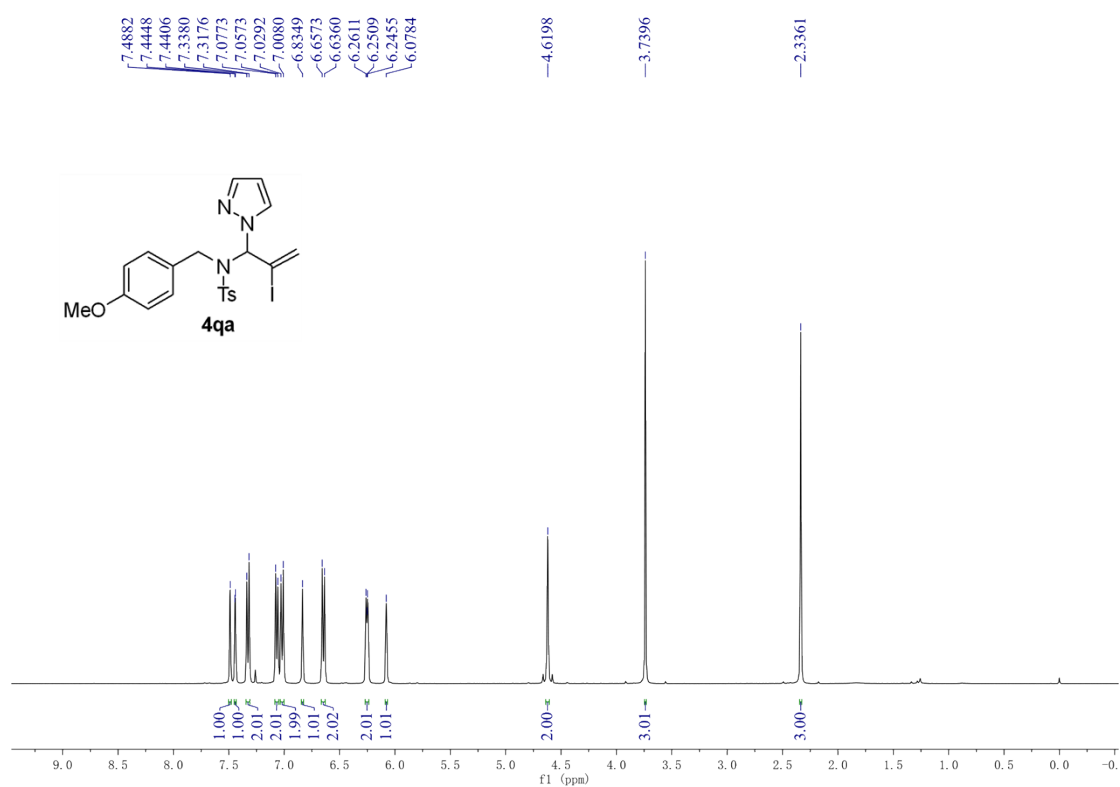
<sup>1</sup>H NMR of **4pa** (400 MHz, CDCl<sub>3</sub>)



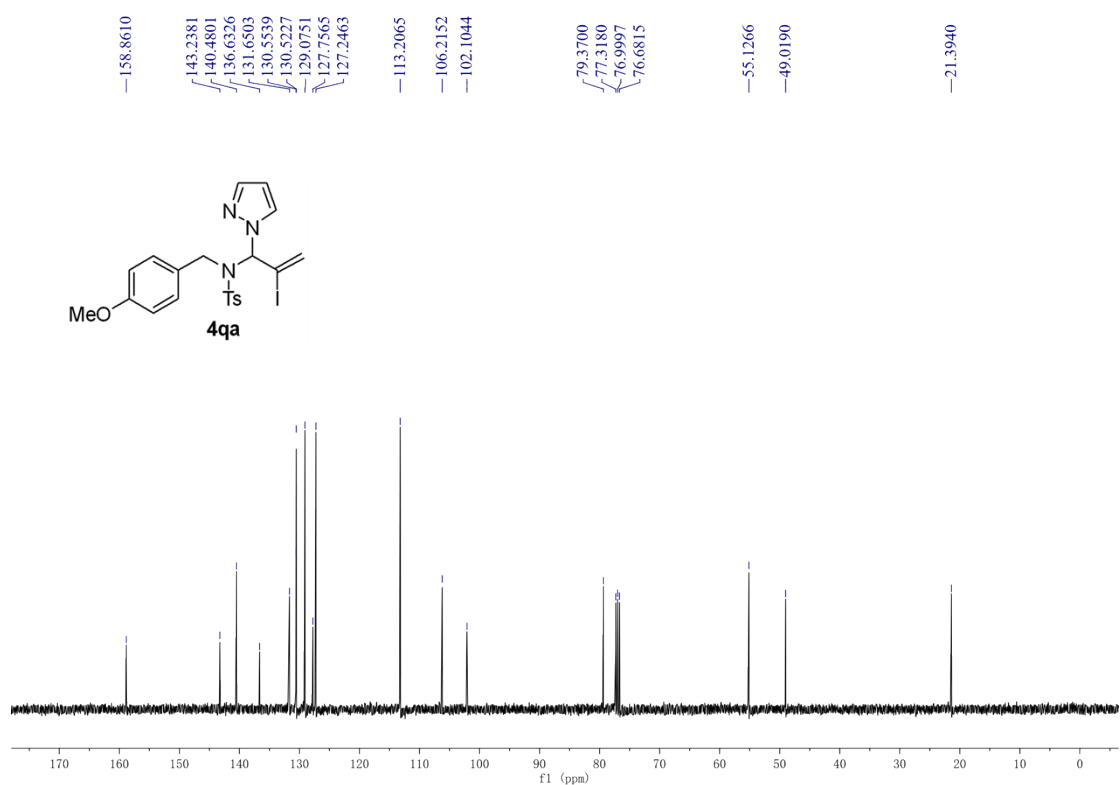
<sup>13</sup>C NMR of **4pa** (101 MHz, CDCl<sub>3</sub>)



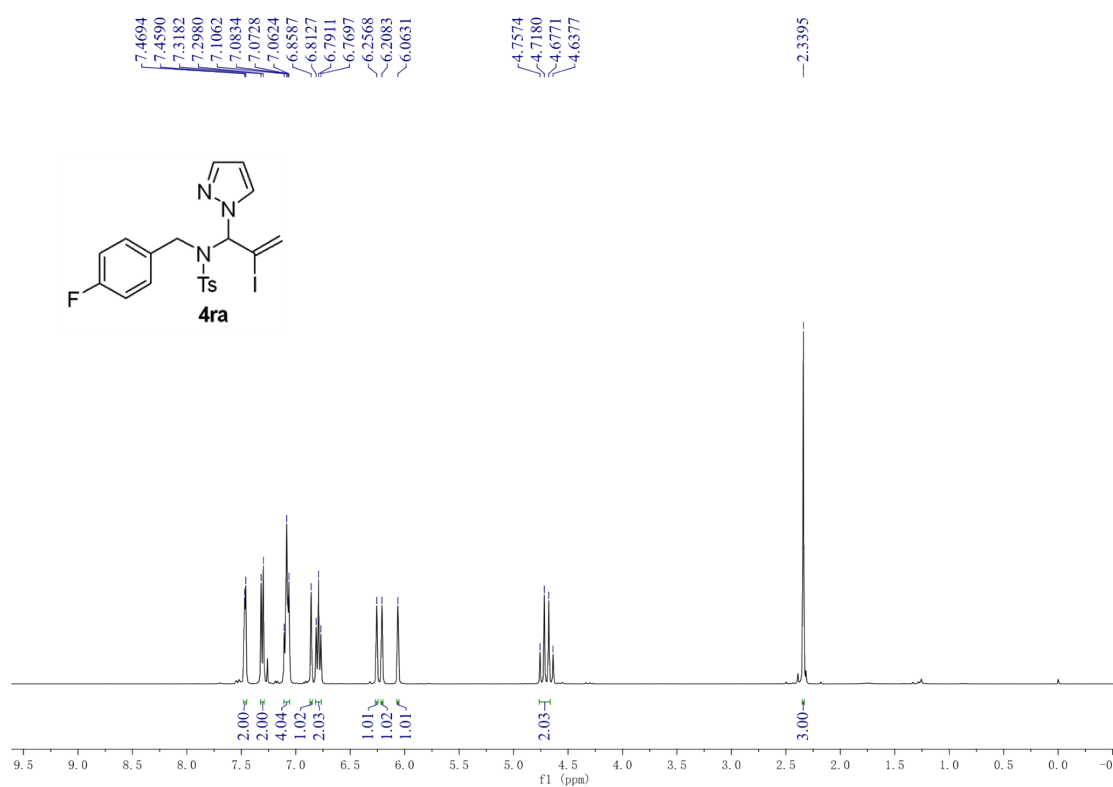
<sup>1</sup>H NMR of **4qa** (400 MHz, CDCl<sub>3</sub>)



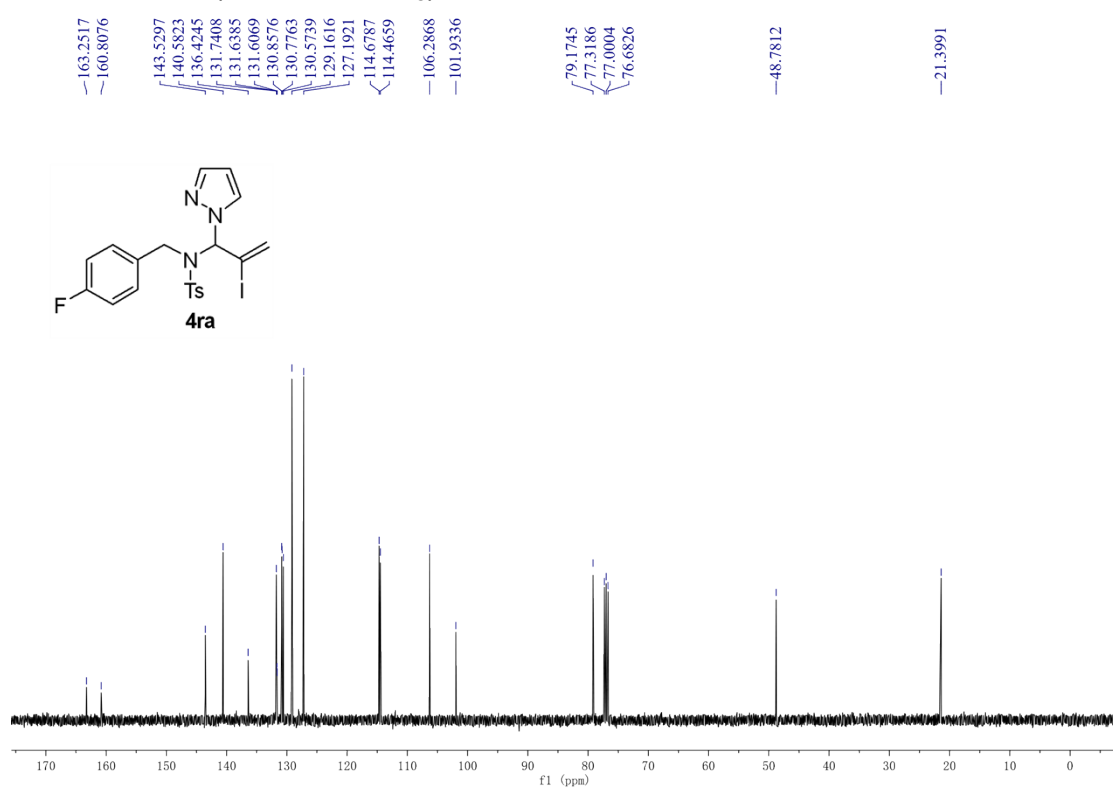
<sup>13</sup>C NMR of **4qa** (101 MHz, CDCl<sub>3</sub>)



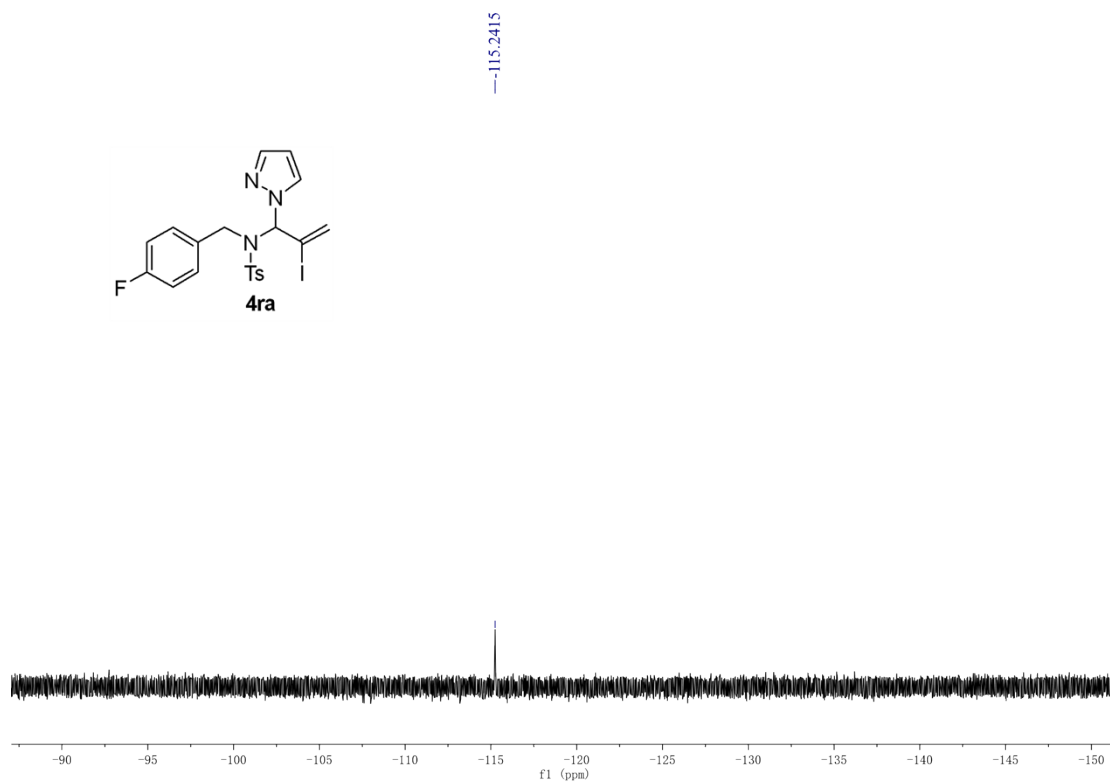
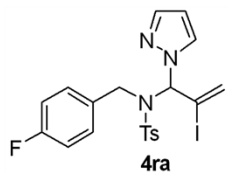
<sup>1</sup>H NMR of **4ra** (400 MHz, CDCl<sub>3</sub>)



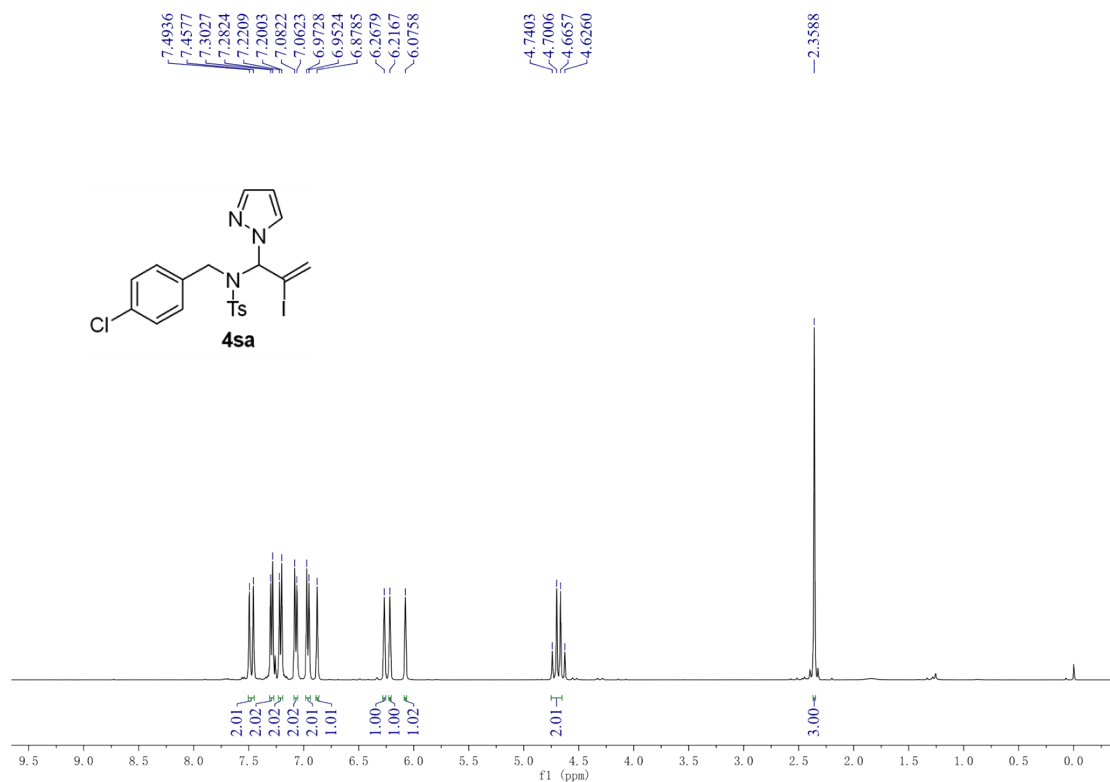
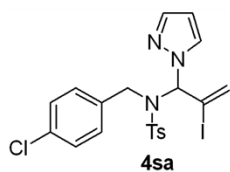
<sup>13</sup>C NMR of **4ra** (101 MHz, CDCl<sub>3</sub>)



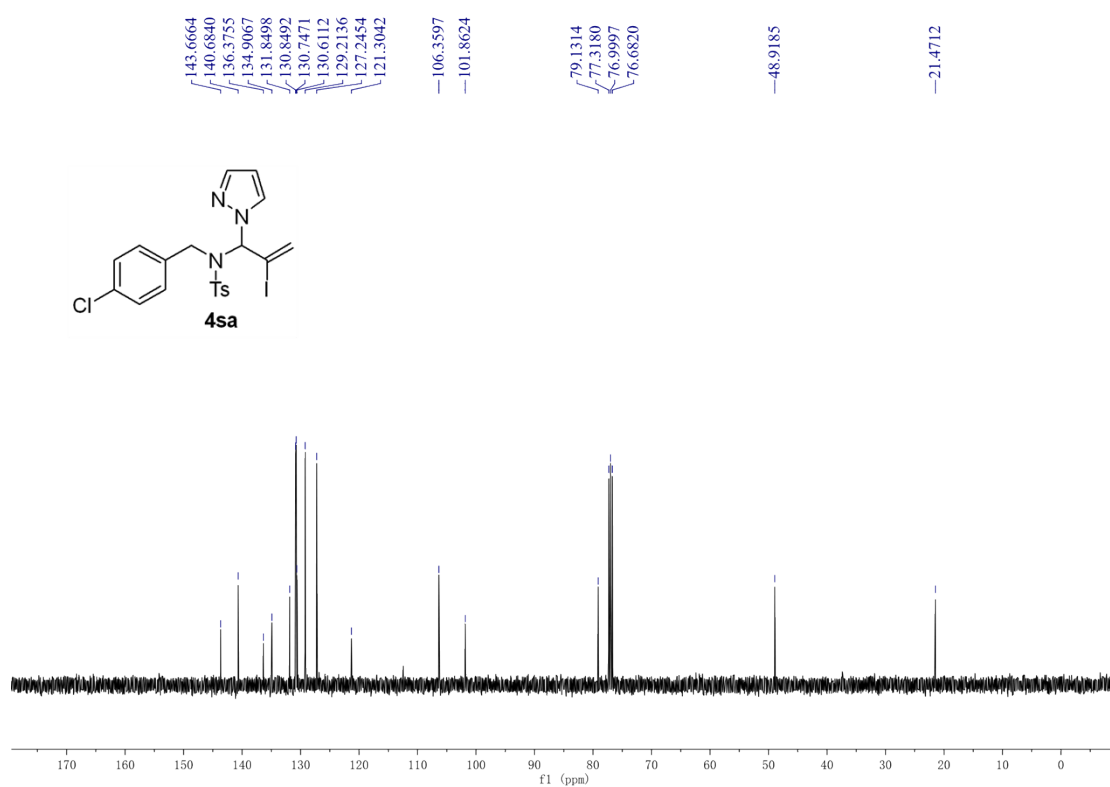
$^{19}\text{F}$  NMR of **4ra** (376 MHz,  $\text{CDCl}_3$ )



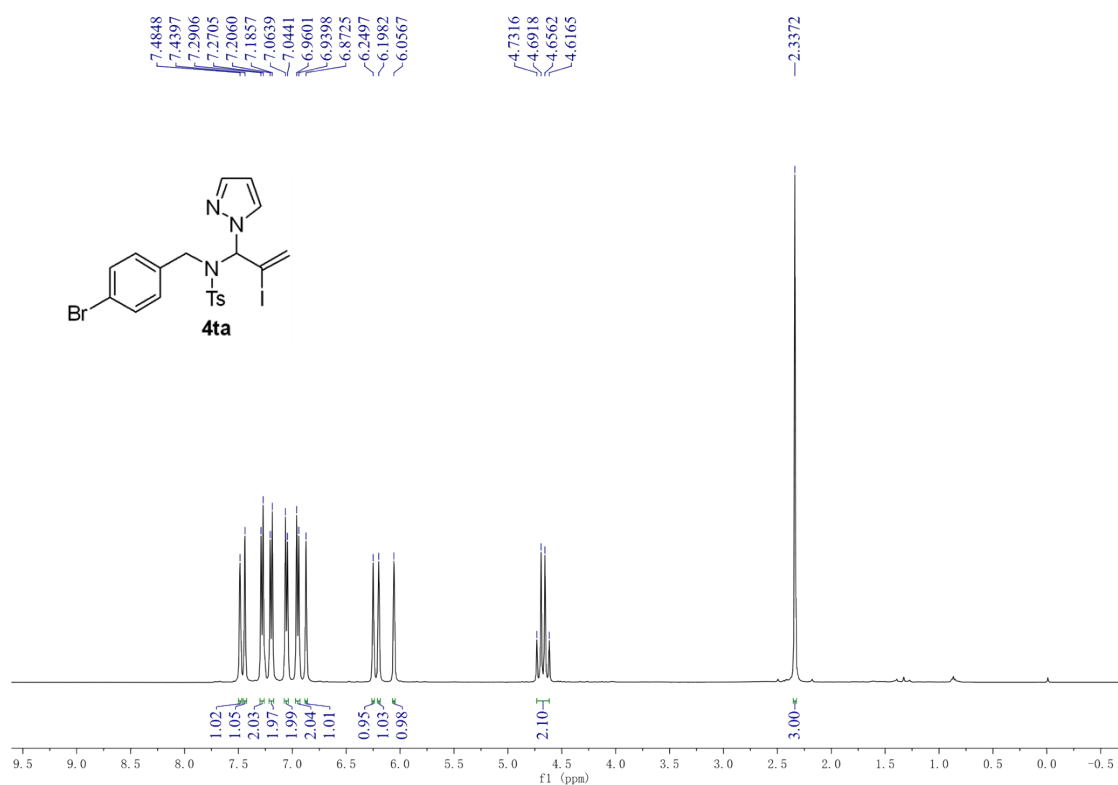
$^1\text{H}$  NMR of **4sa** (400 MHz,  $\text{CDCl}_3$ )



<sup>13</sup>C NMR of **4sa** (101 MHz, CDCl<sub>3</sub>)

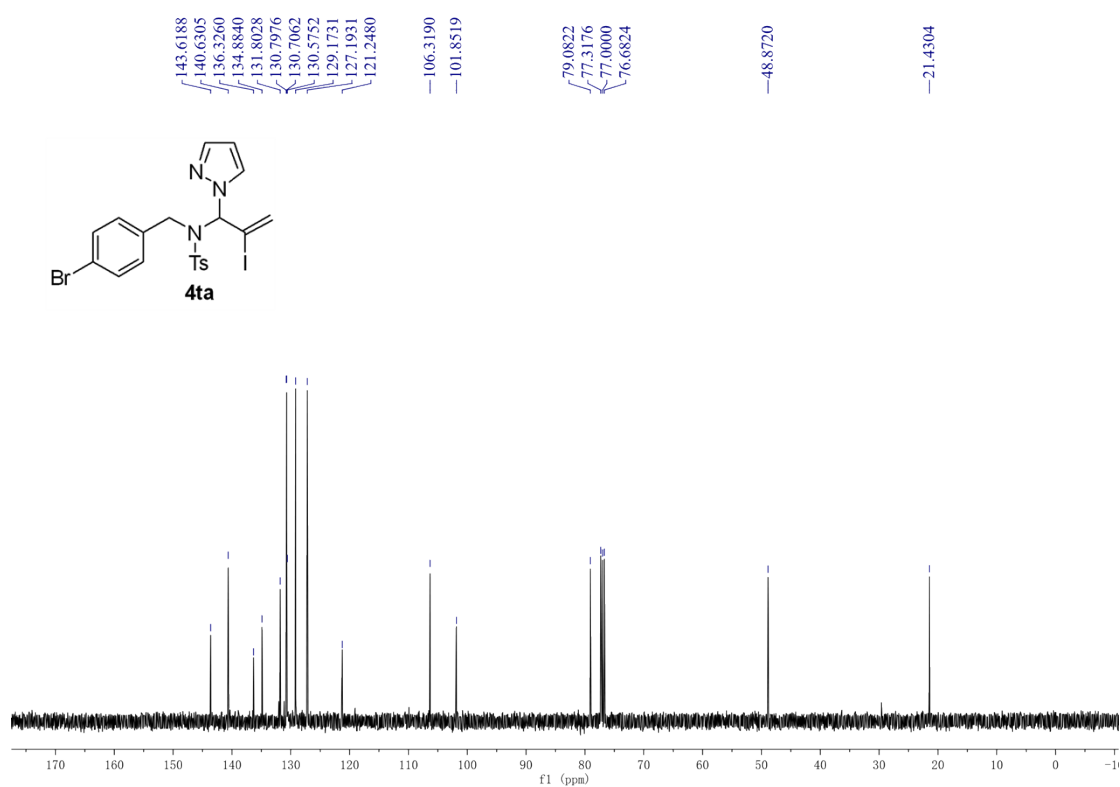


<sup>1</sup>H NMR of **4ta** (400 MHz, CDCl<sub>3</sub>)

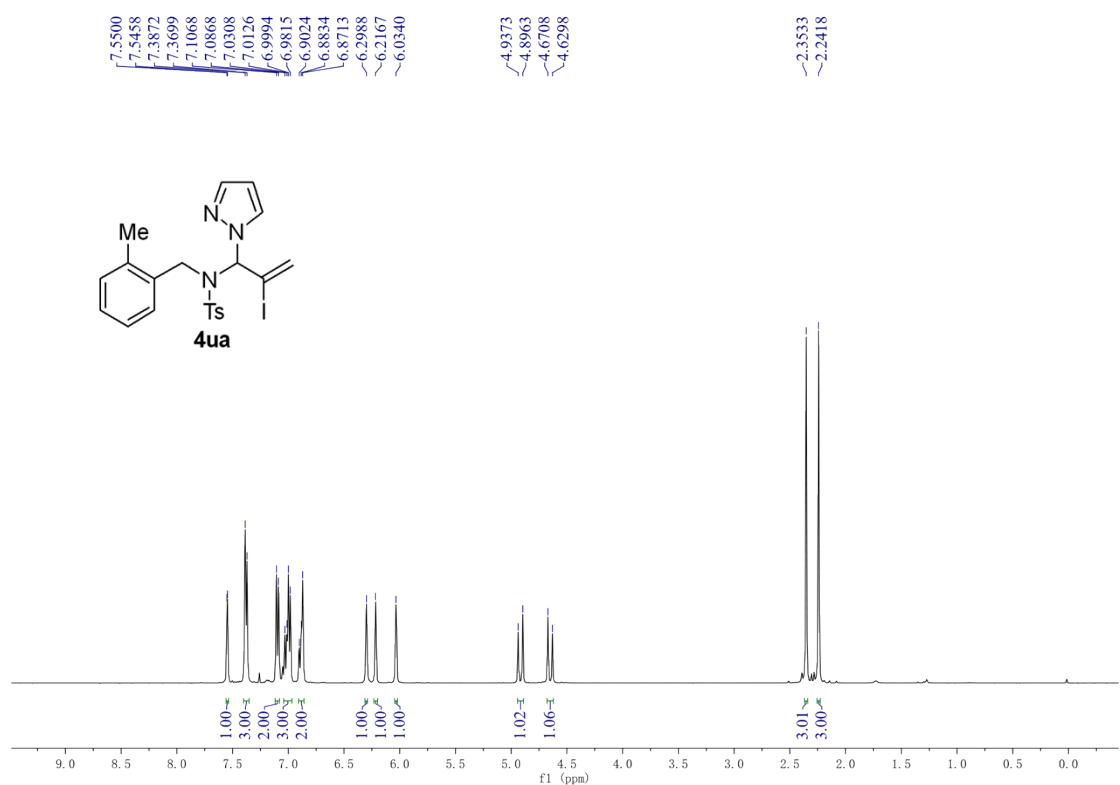




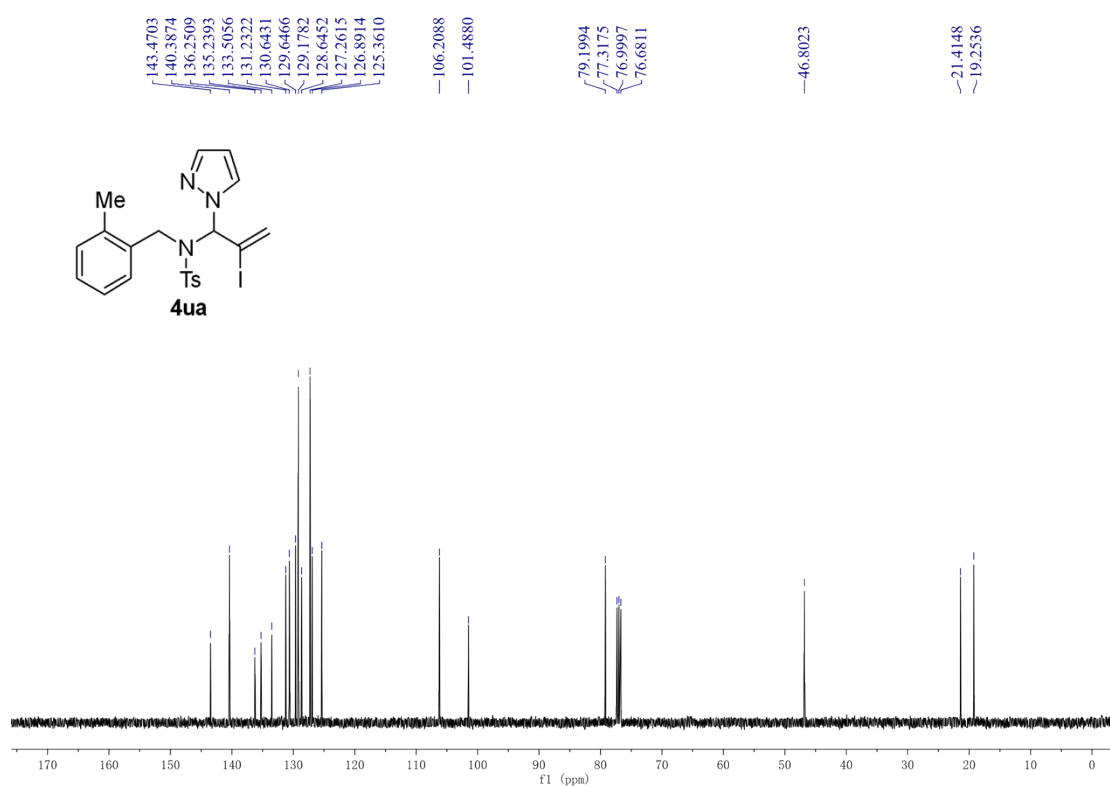
<sup>13</sup>C NMR of **4ta** (101 MHz, CDCl<sub>3</sub>)



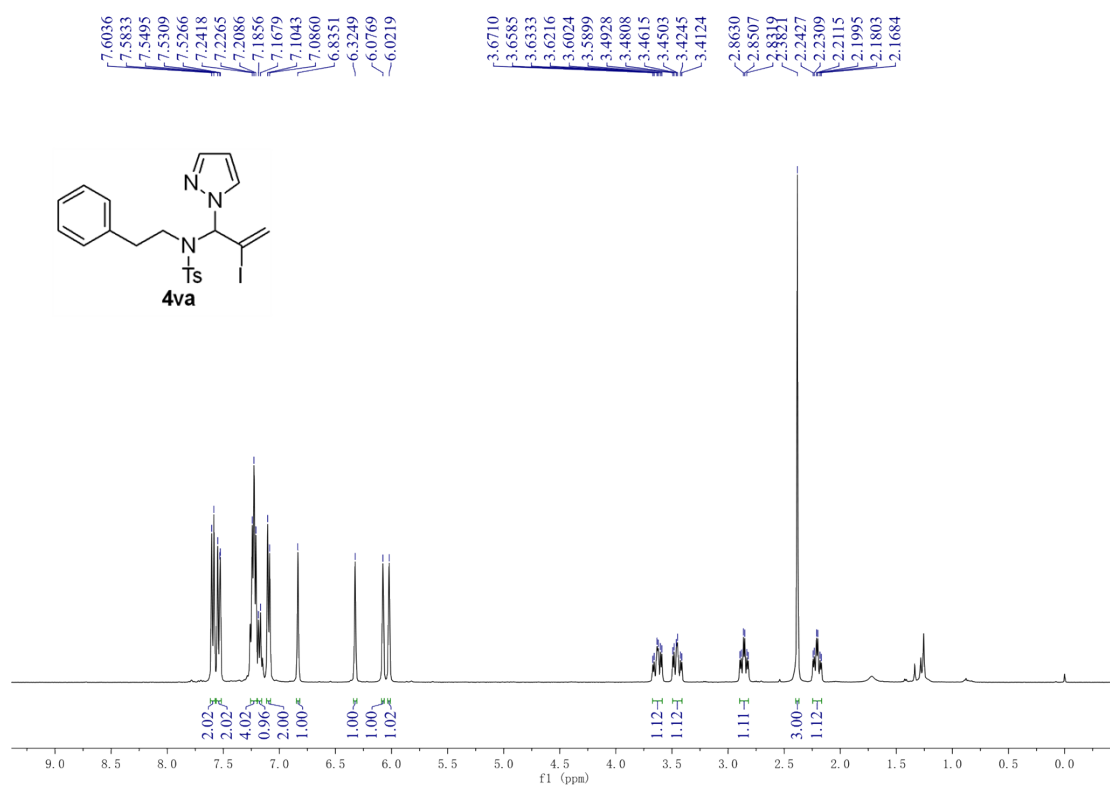
<sup>1</sup>H NMR of **4ua** (400 MHz, CDCl<sub>3</sub>)



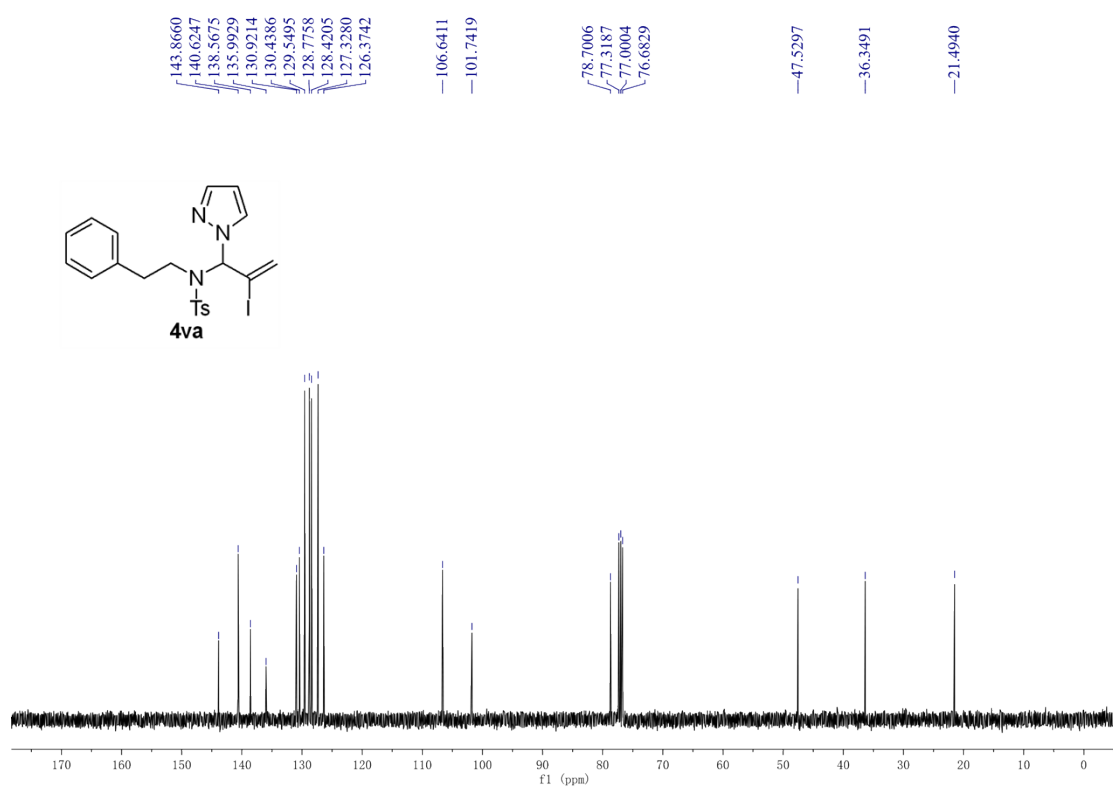
<sup>13</sup>C NMR of **4ua** (101 MHz, CDCl<sub>3</sub>)



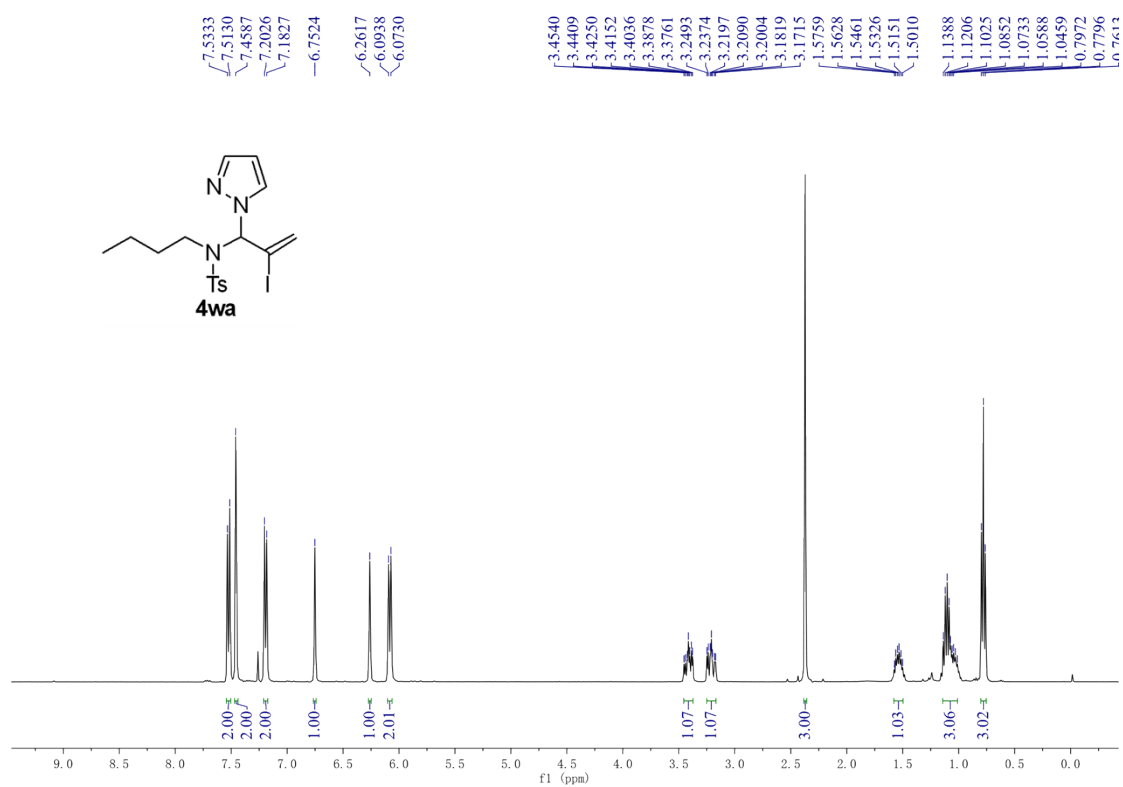
<sup>1</sup>H NMR of **4va** (400 MHz, CDCl<sub>3</sub>)



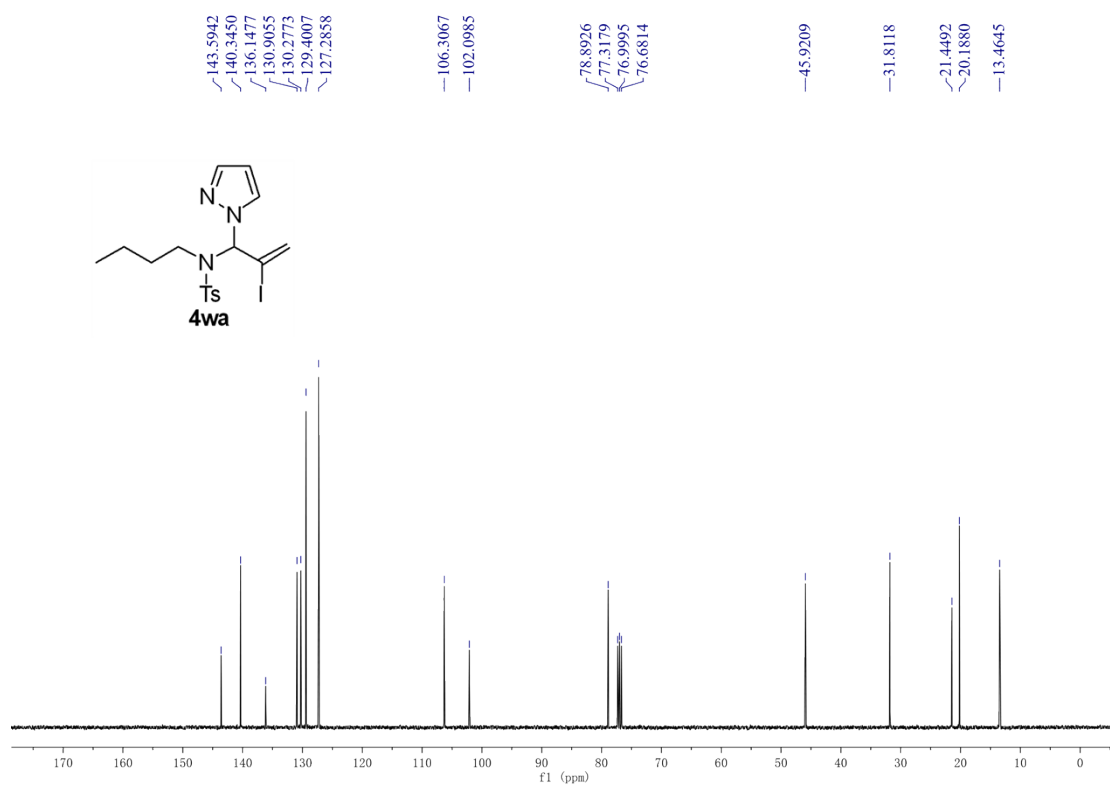
<sup>13</sup>C NMR of **4va** (101 MHz, CDCl<sub>3</sub>)



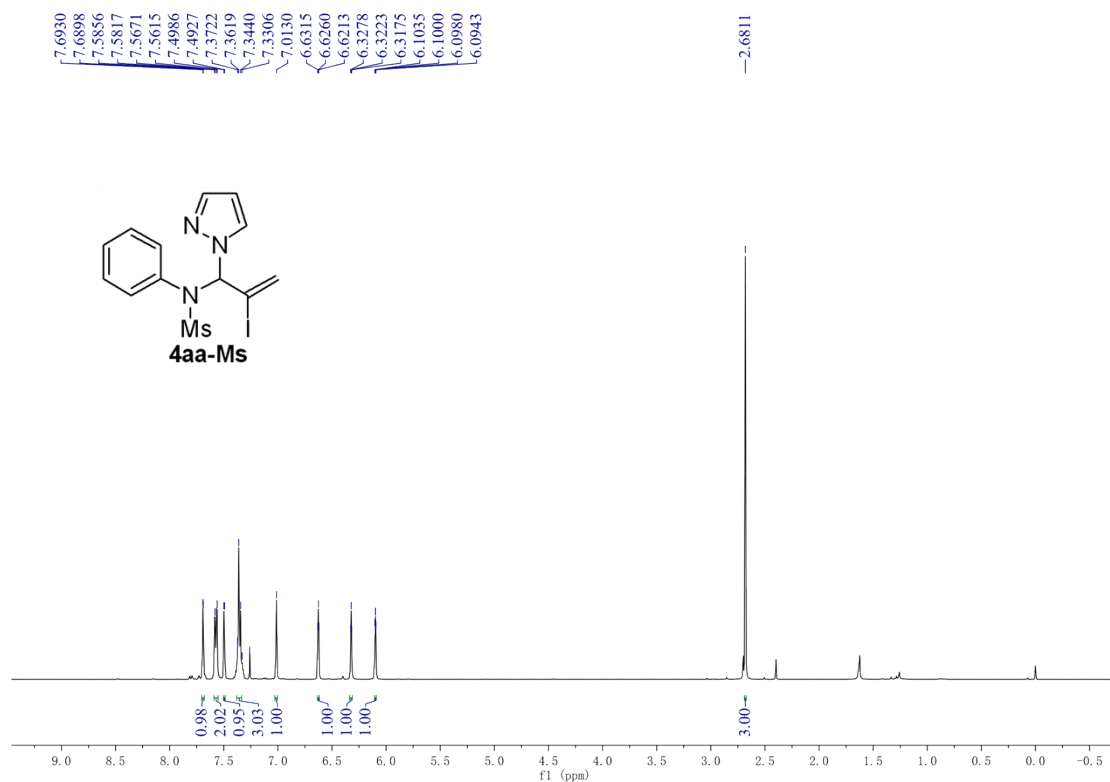
<sup>1</sup>H NMR of **4wa** (400 MHz, CDCl<sub>3</sub>)



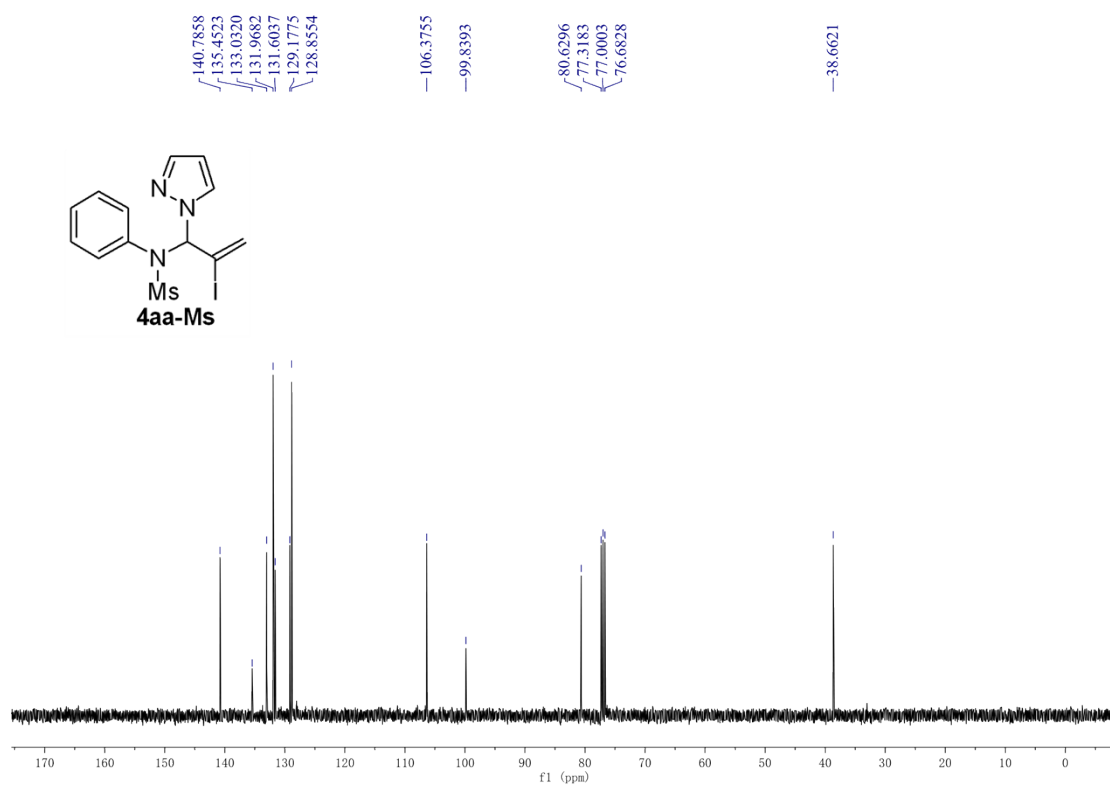
<sup>13</sup>C NMR of **4wa** (101 MHz, CDCl<sub>3</sub>)



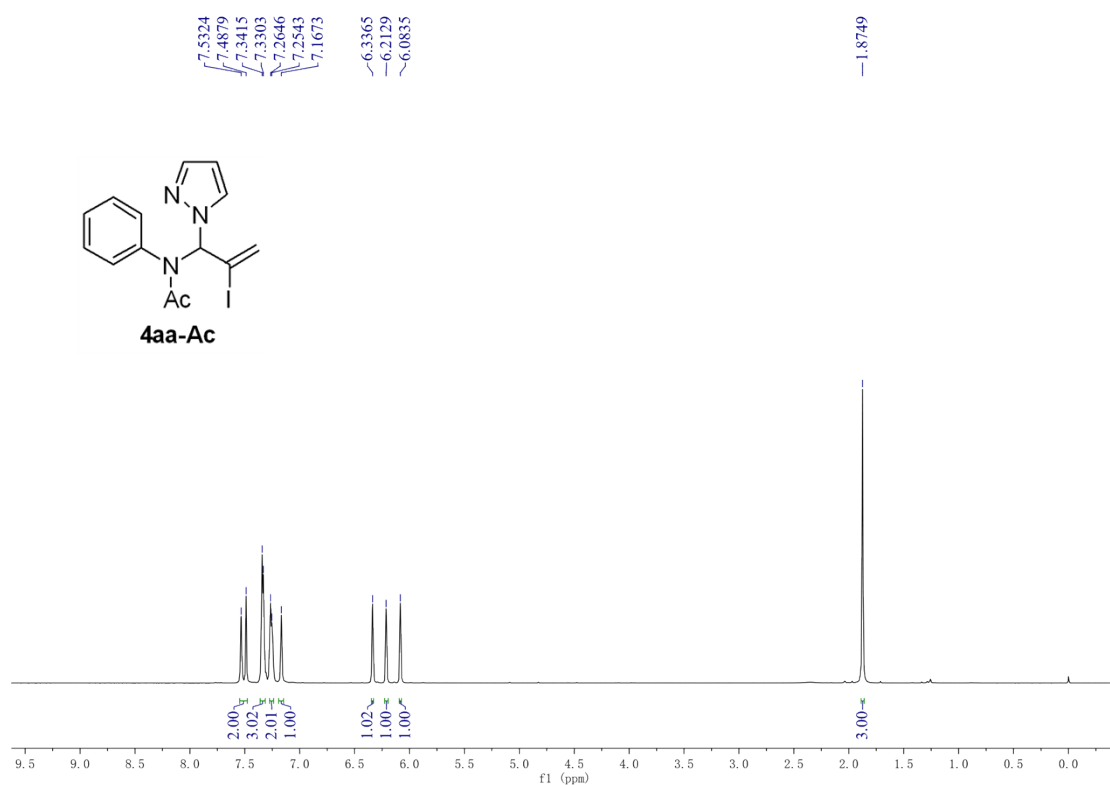
<sup>1</sup>H NMR of **4aa -Ms** (400 MHz, CDCl<sub>3</sub>)



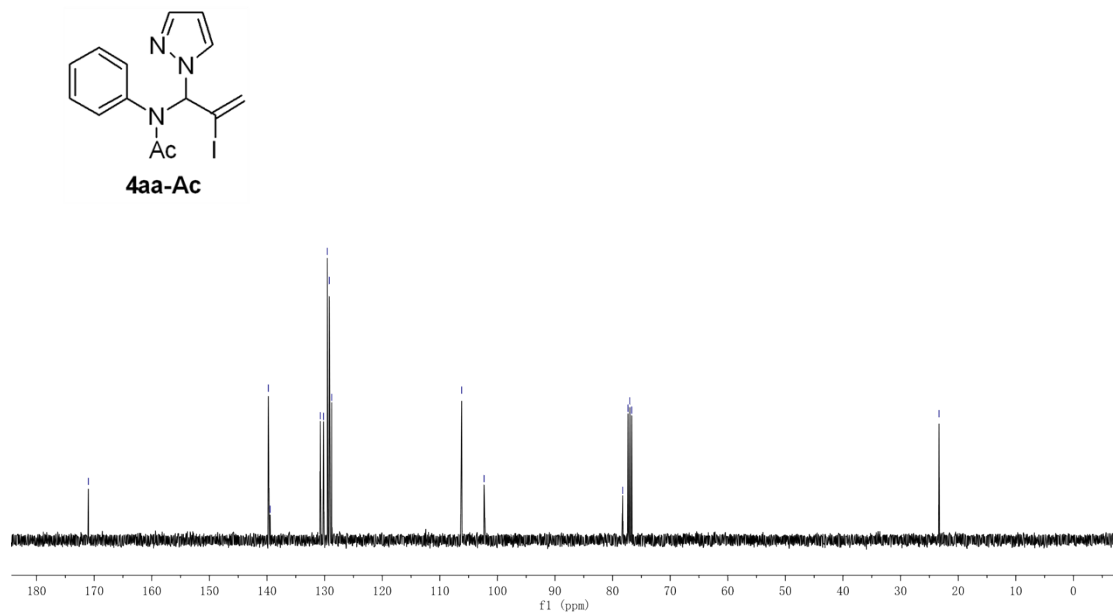
<sup>13</sup>C NMR of **4aa-Ms** (101 MHz, CDCl<sub>3</sub>)



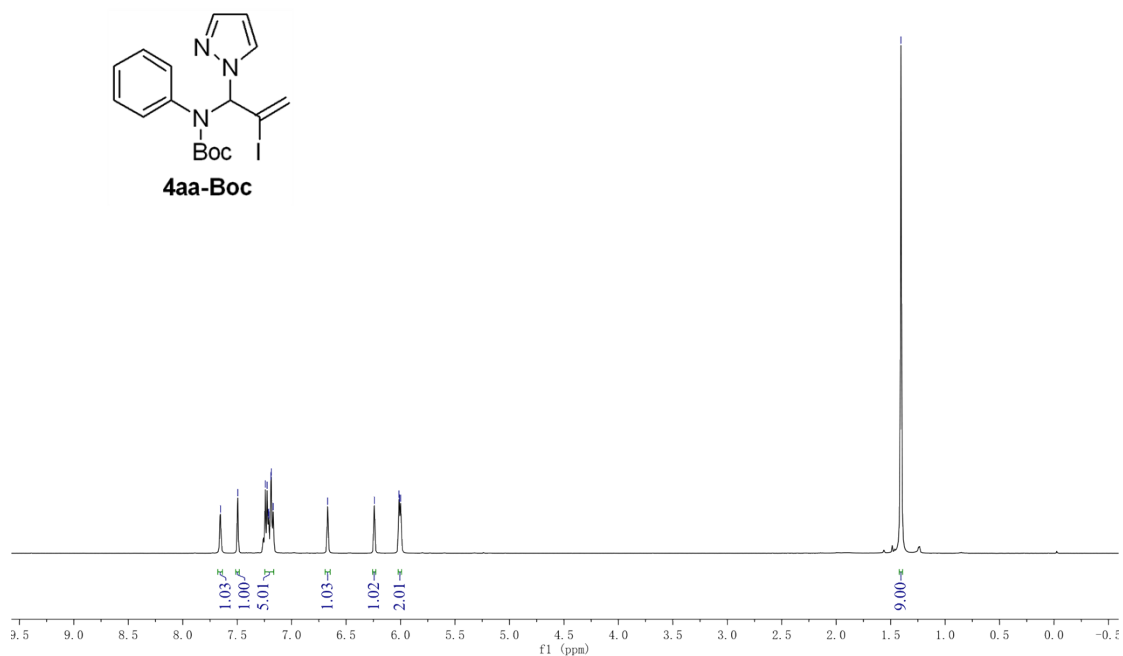
<sup>1</sup>H NMR of **4aa-Ac** (400 MHz, CDCl<sub>3</sub>)



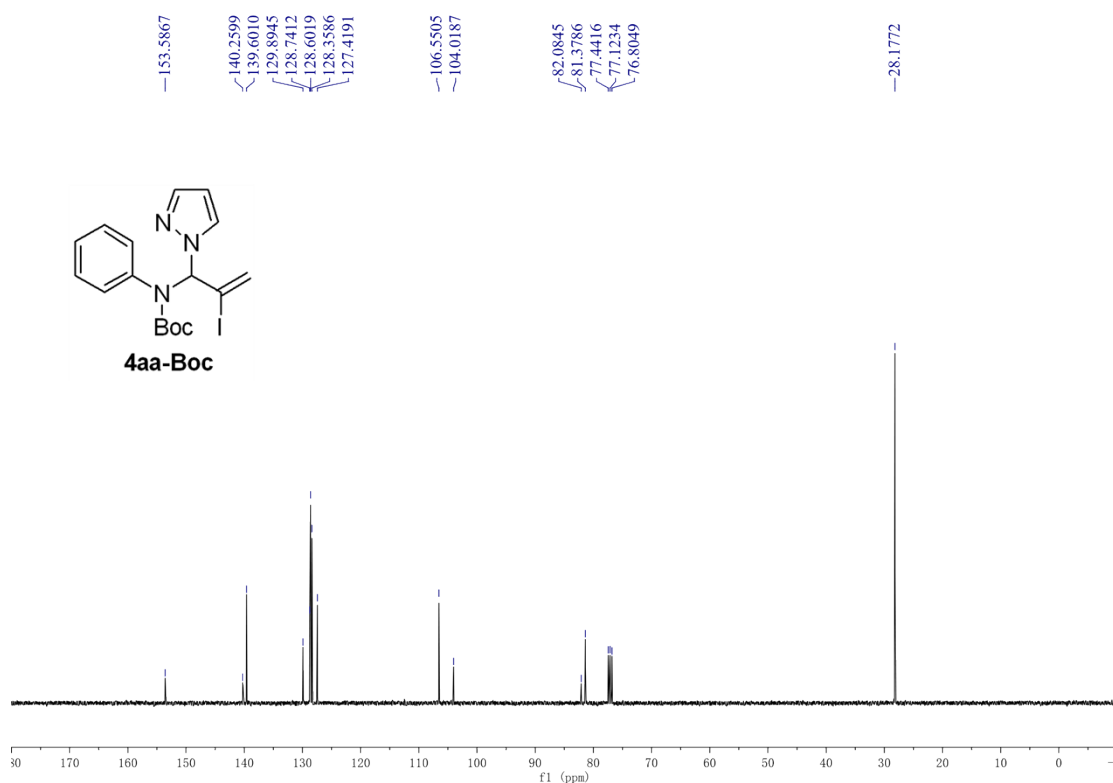
$^{13}\text{C}$  NMR of **4aa-Ac** (101 MHz,  $\text{CDCl}_3$ )



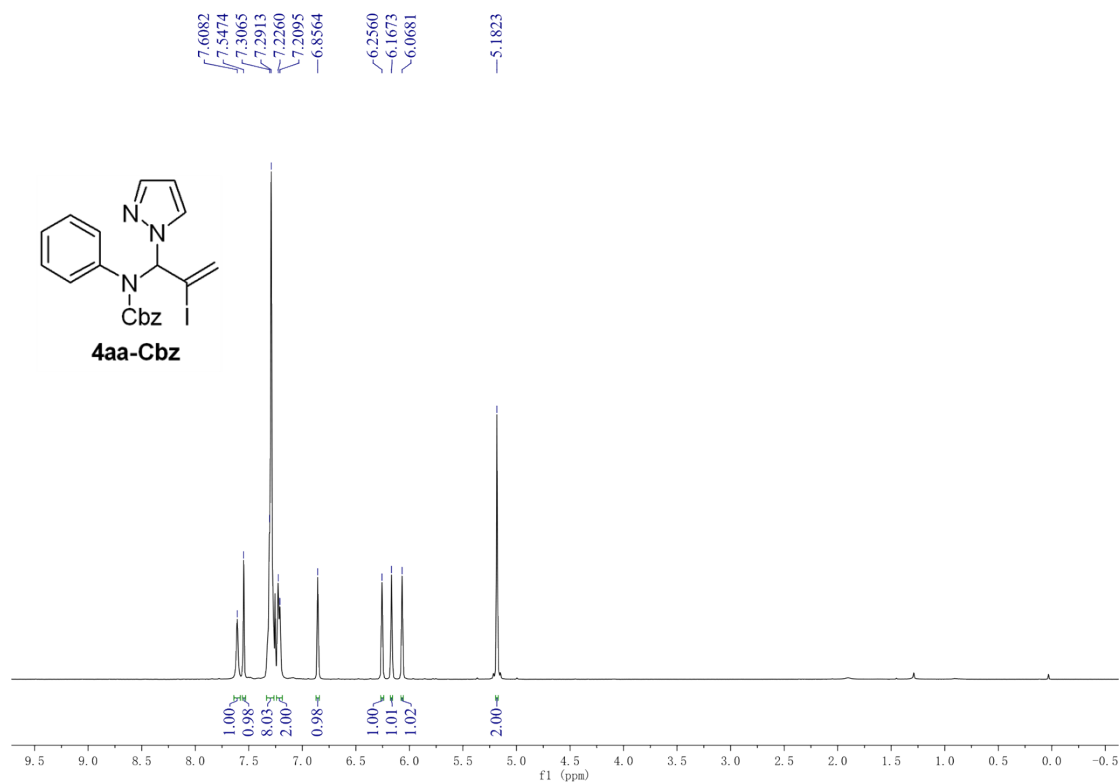
$^1\text{H}$  NMR of **4aa-Boc** (400 MHz,  $\text{CDCl}_3$ )



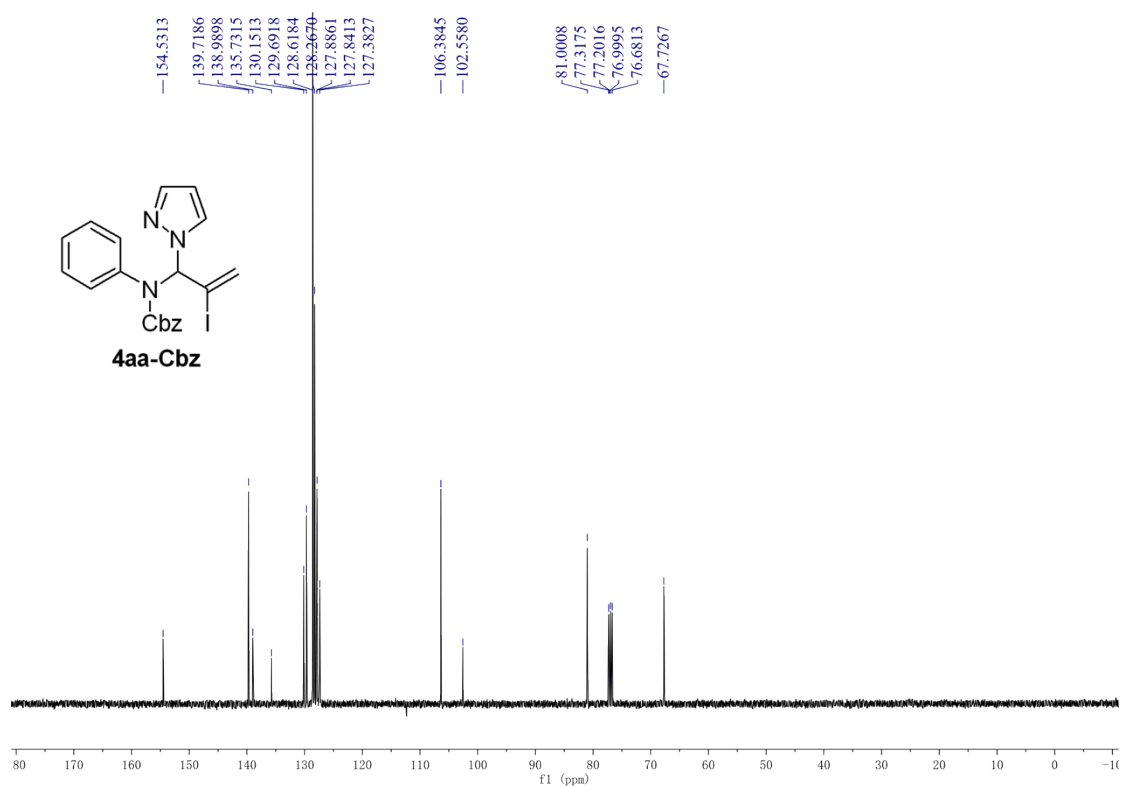
<sup>13</sup>C NMR of **4aa-Boc** (101 MHz, CDCl<sub>3</sub>)



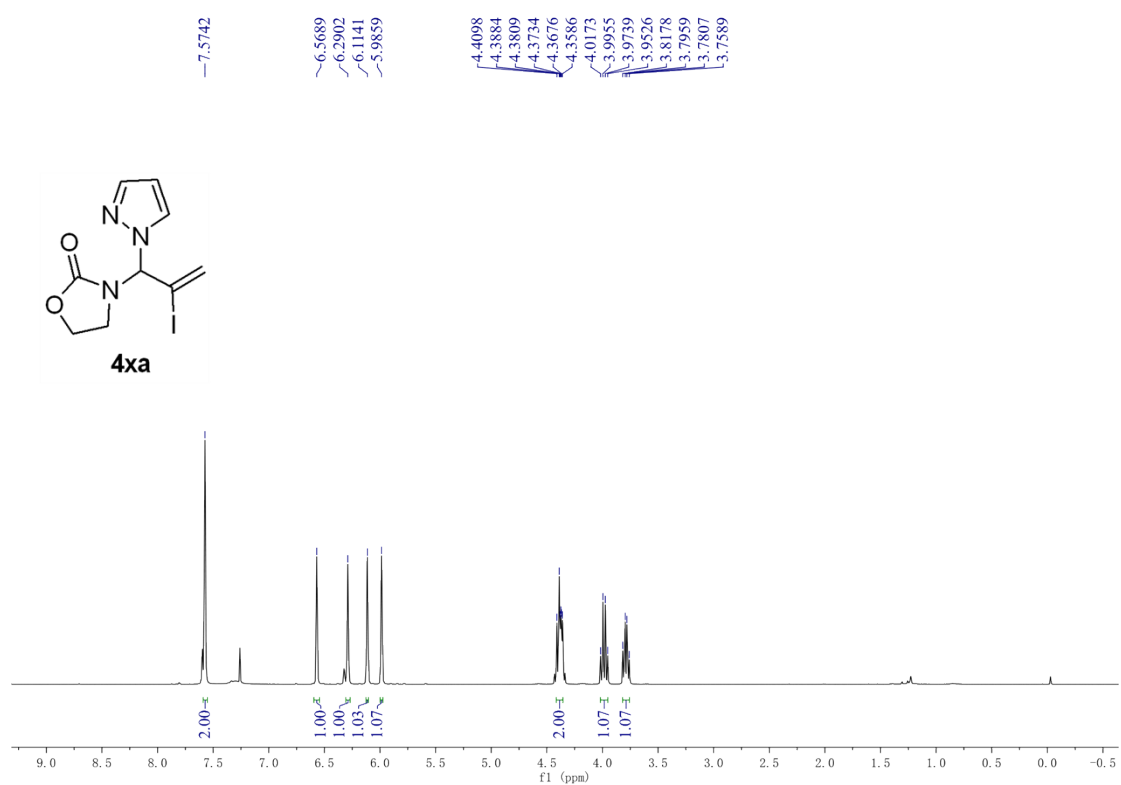
<sup>1</sup>H NMR of **4aa-Cbz** (400 MHz, CDCl<sub>3</sub>)



<sup>13</sup>C NMR of **4aa-Cbz** (101 MHz, CDCl<sub>3</sub>)

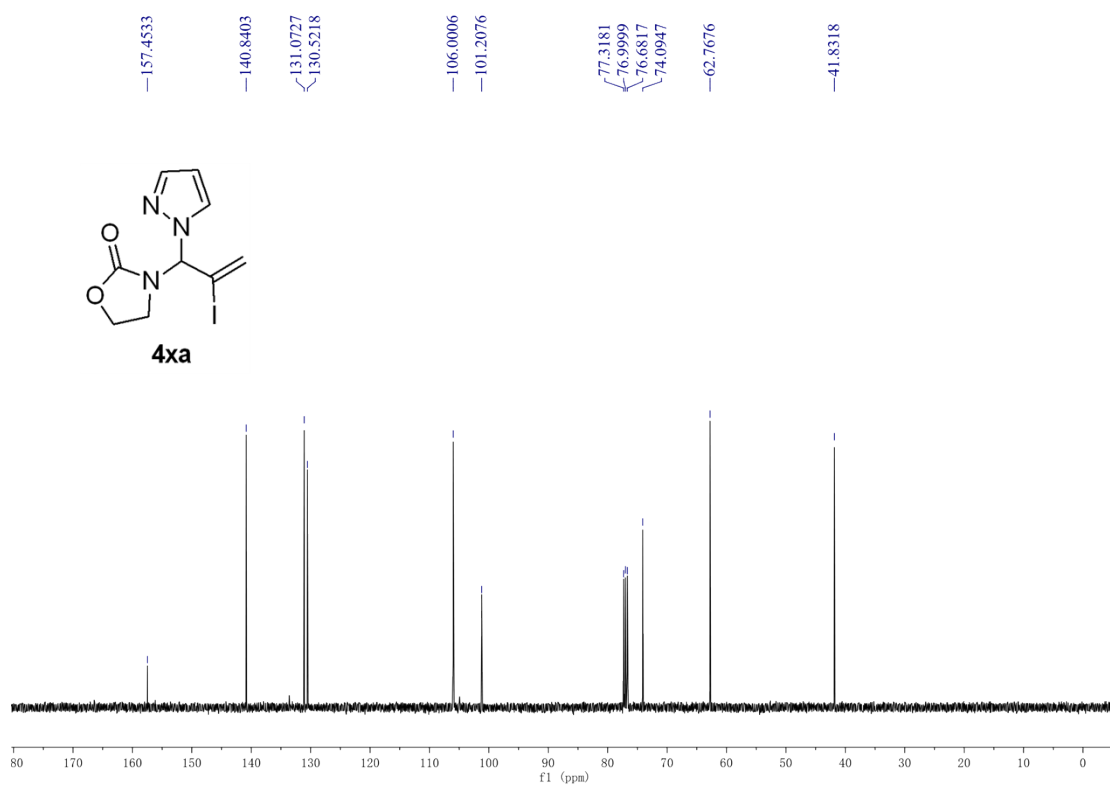


<sup>1</sup>H NMR of **4xa** (400 MHz, CDCl<sub>3</sub>)

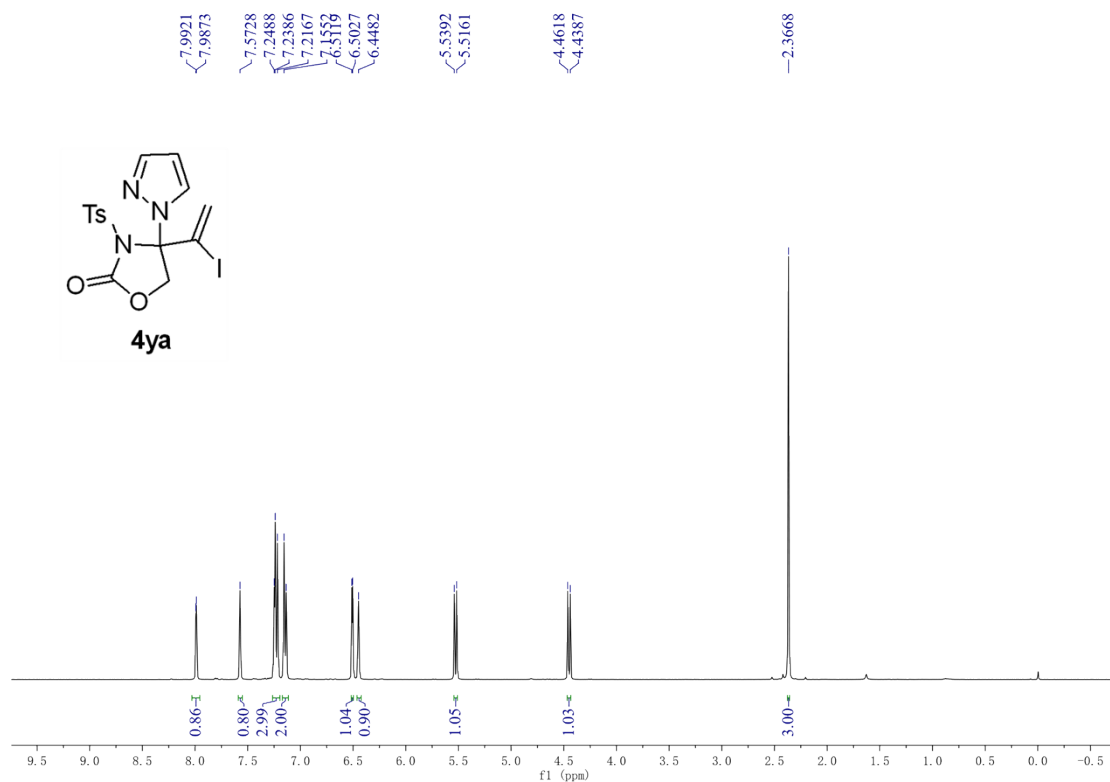




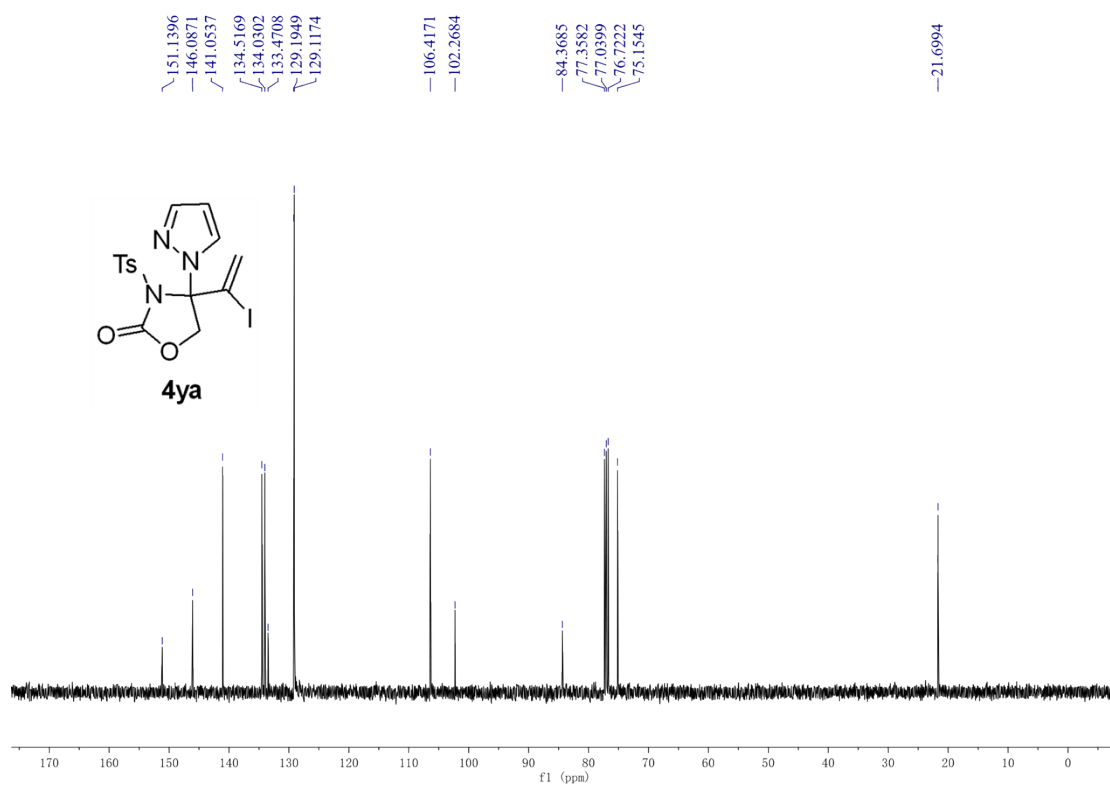
<sup>13</sup>C NMR of **4xa** (101 MHz, CDCl<sub>3</sub>)



<sup>1</sup>H NMR of **4ya** (400 MHz, CDCl<sub>3</sub>)

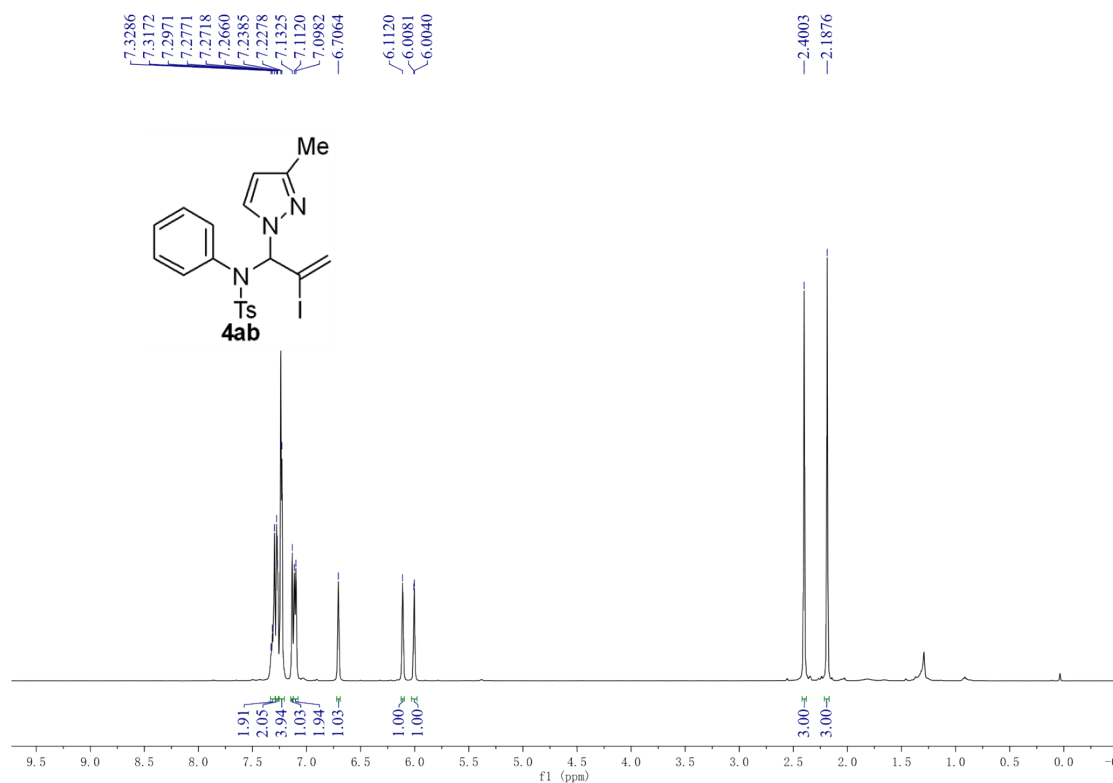


<sup>13</sup>C NMR of **4ya** (101 MHz, CDCl<sub>3</sub>)

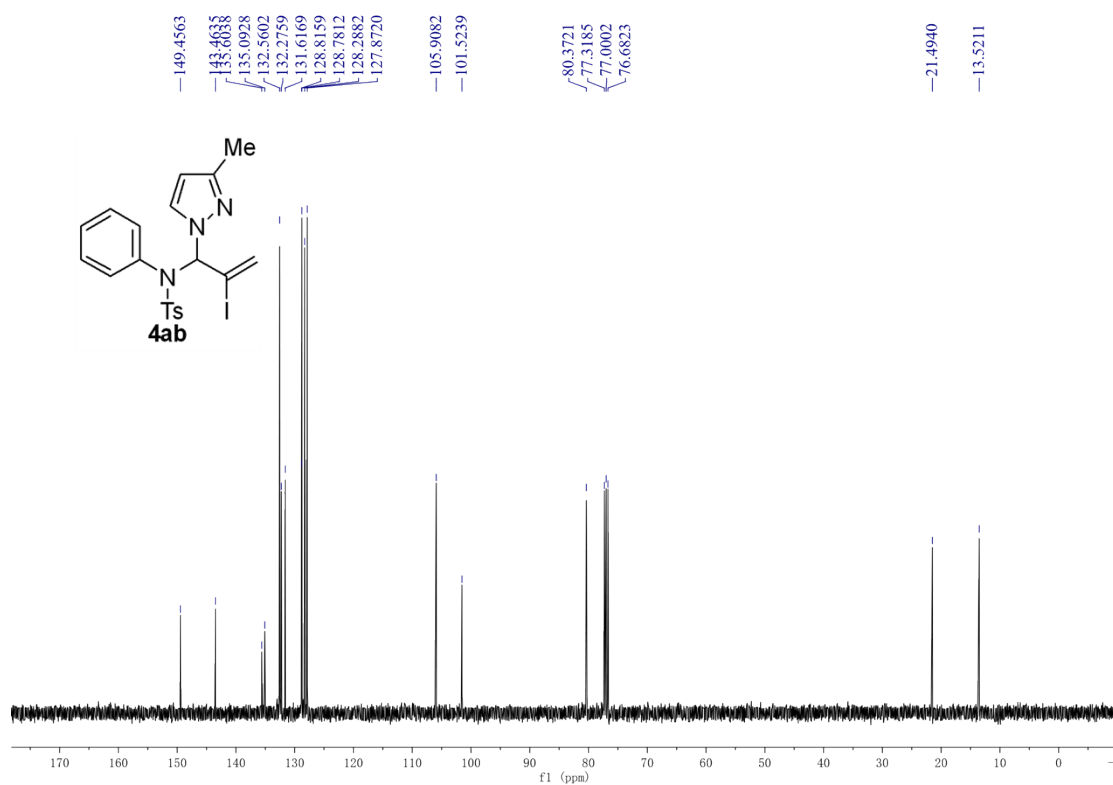


# NMR Spectra for 4ab-4av

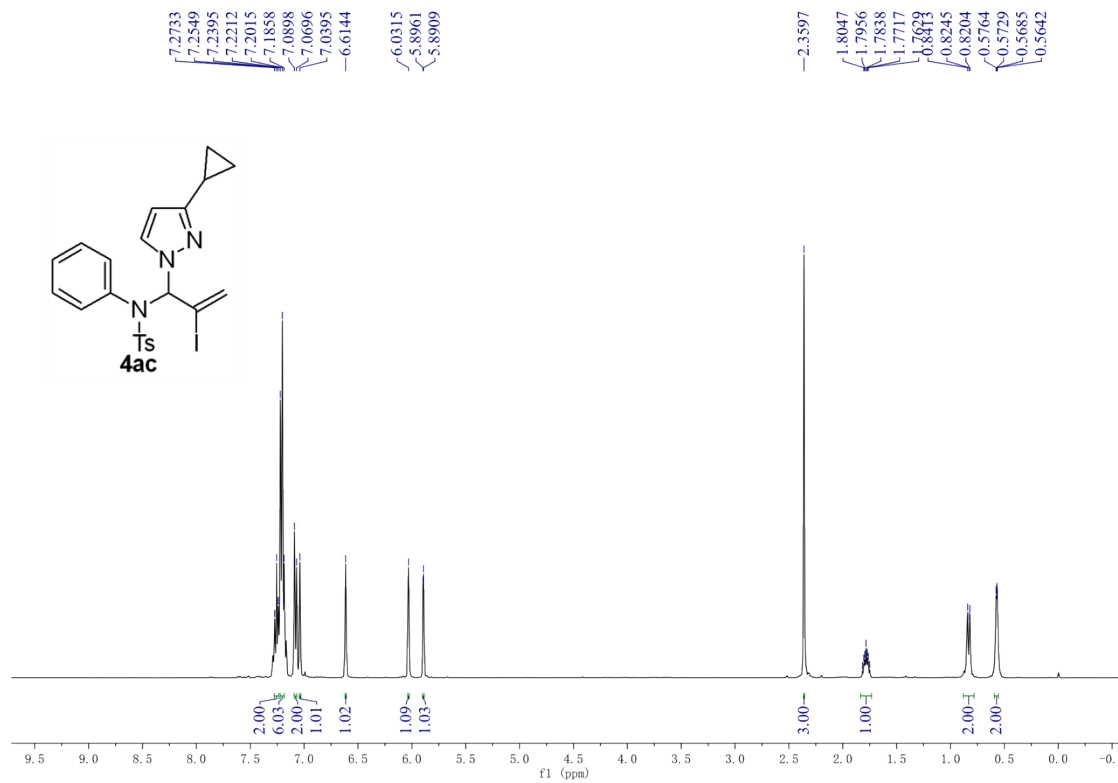
$^1\text{H}$  NMR of **4ab** (400 MHz,  $\text{CDCl}_3$ )



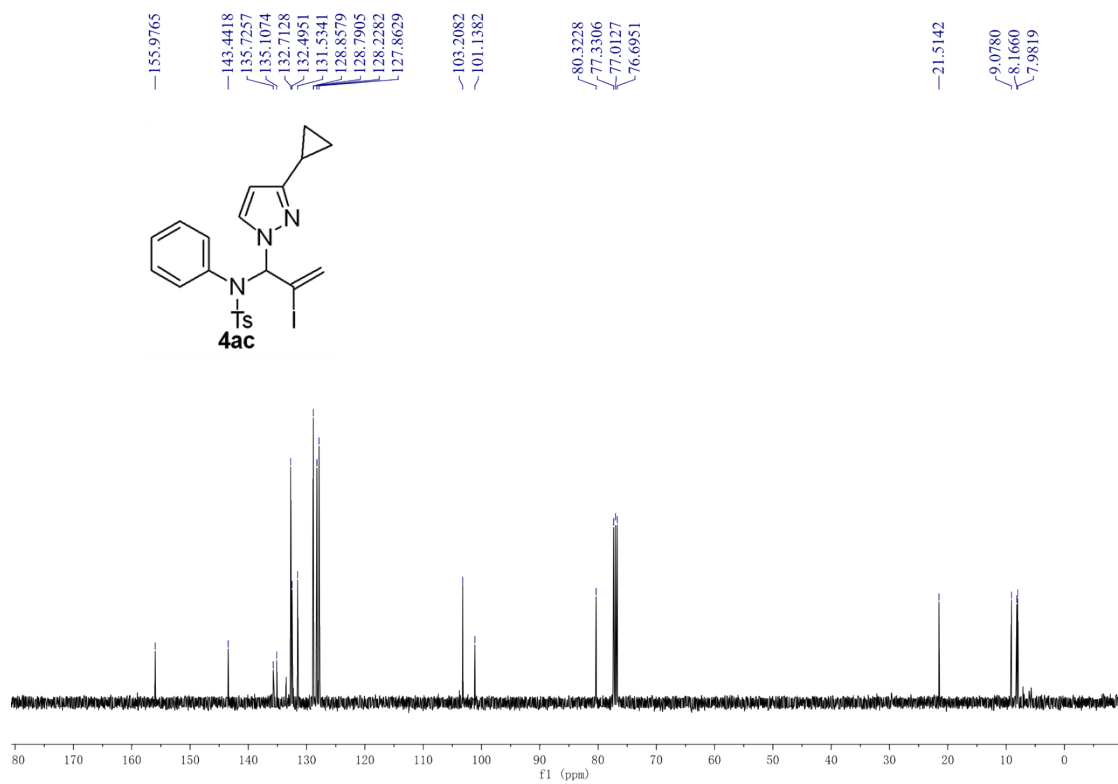
$^{13}\text{C}$  NMR of **4ab** (101 MHz,  $\text{CDCl}_3$ )



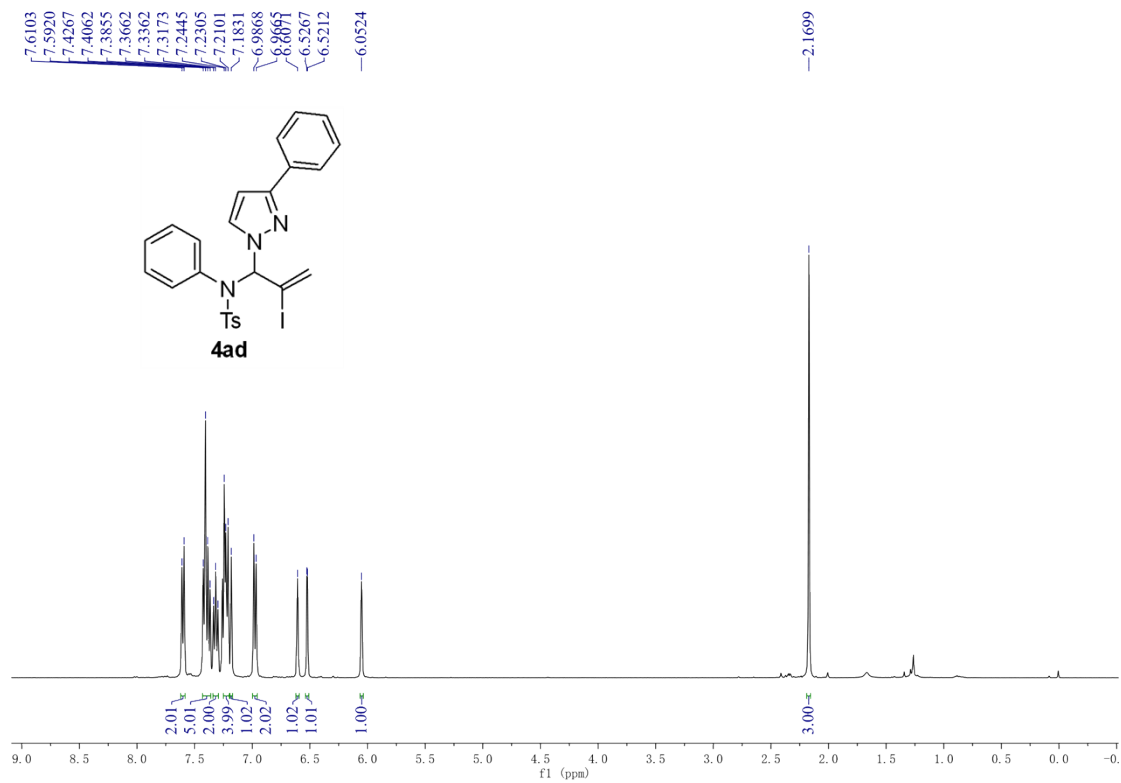
### $^1\text{H}$ NMR of **4ac** (400 MHz, $\text{CDCl}_3$ )



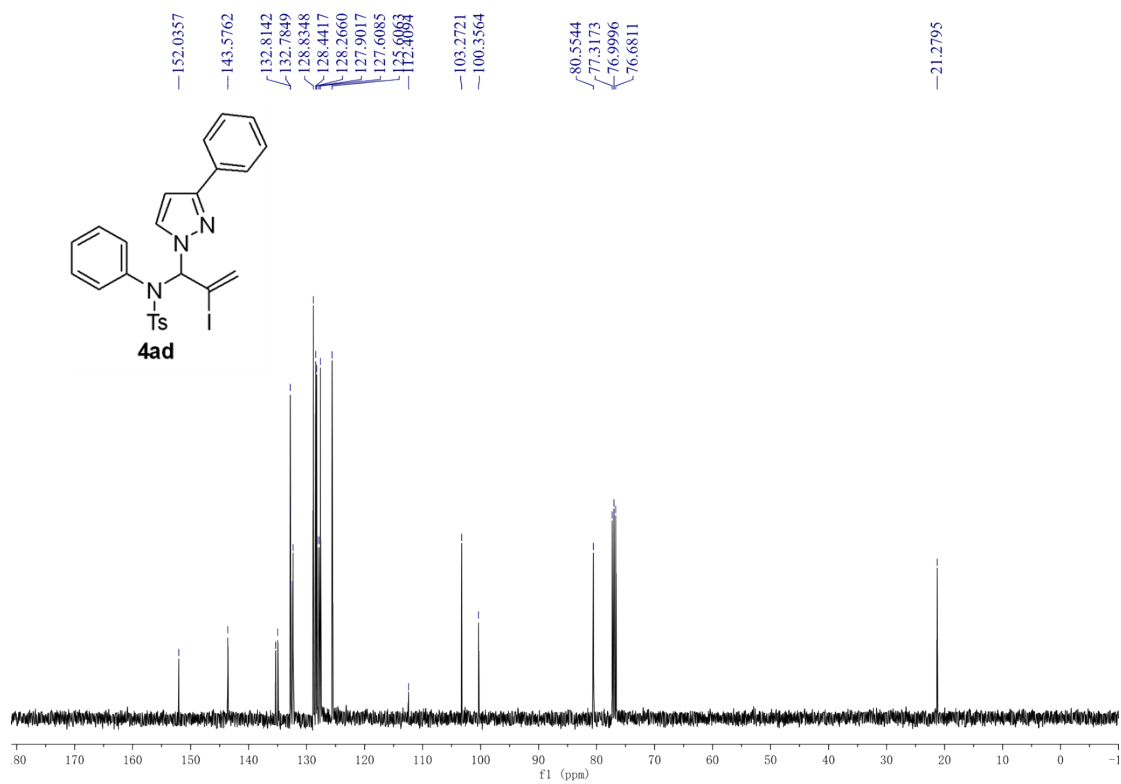
### $^{13}\text{C}$ NMR of **4ac** (101 MHz, $\text{CDCl}_3$ )



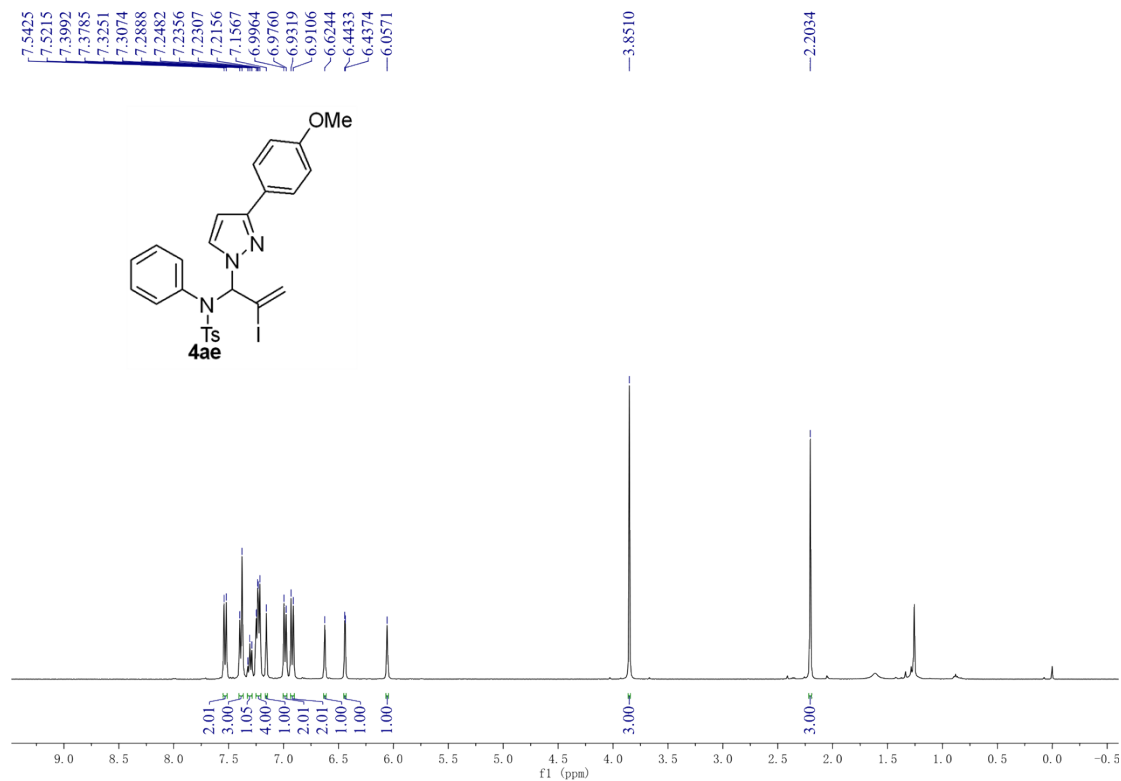
<sup>1</sup>H NMR of **4ad** (400 MHz, CDCl<sub>3</sub>)



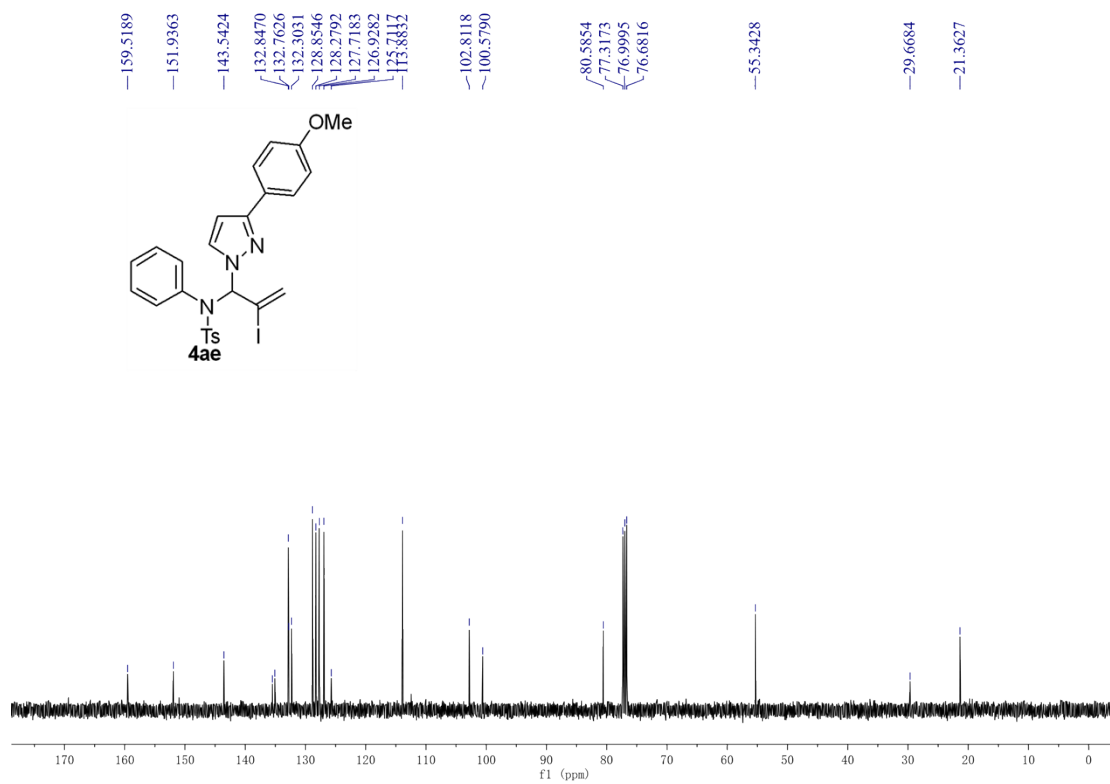
<sup>13</sup>C NMR of **4ad** (101 MHz, CDCl<sub>3</sub>)



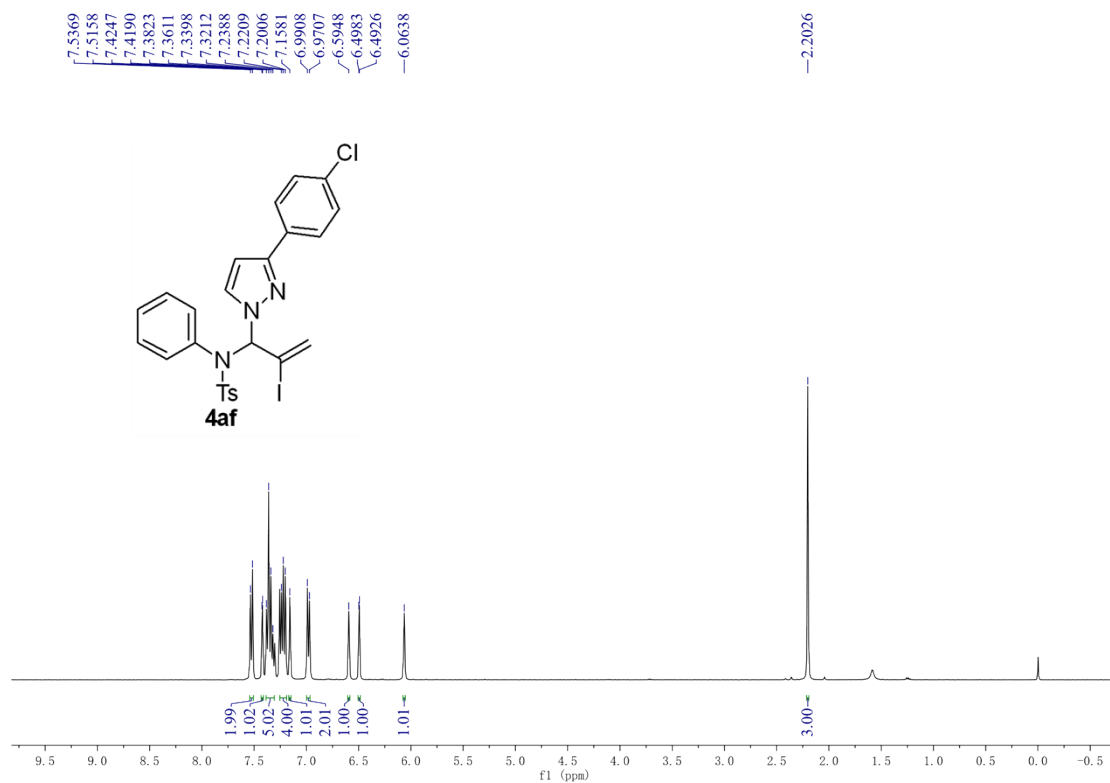
### $^1\text{H}$ NMR of **4ae** (400 MHz, $\text{CDCl}_3$ )



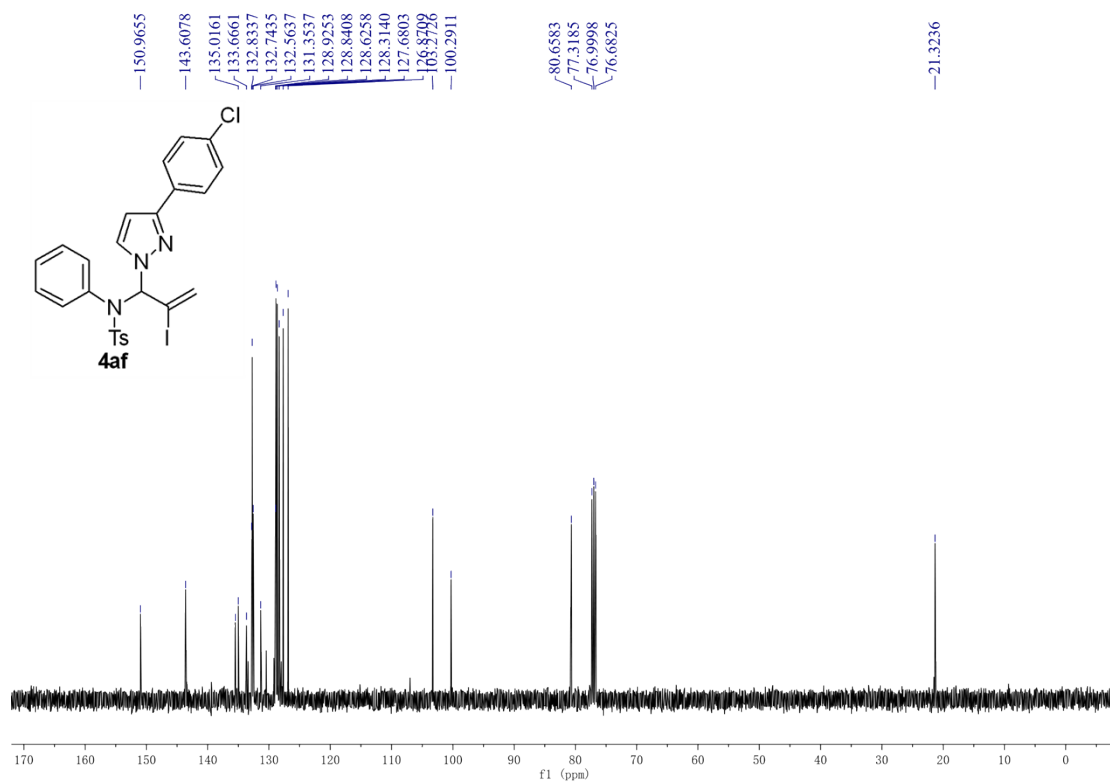
### $^{13}\text{C}$ NMR of **4ae** (101 MHz, $\text{CDCl}_3$ )



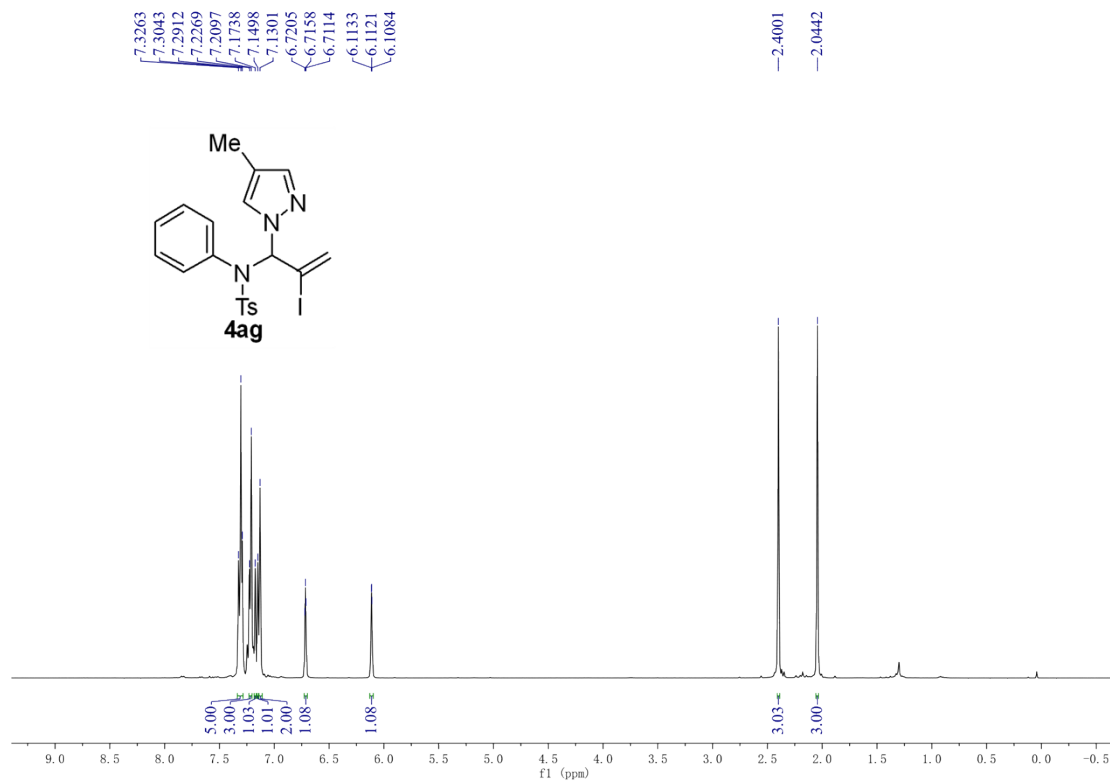
<sup>1</sup>H NMR of **4af** (400 MHz, CDCl<sub>3</sub>)



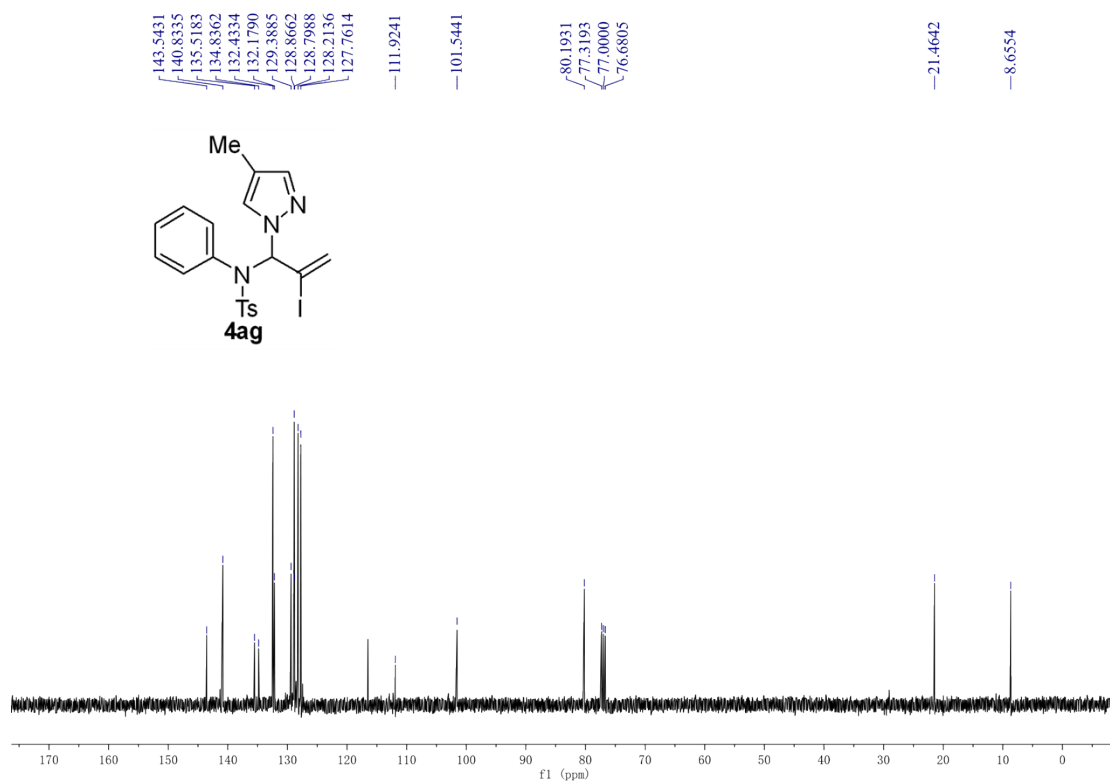
<sup>13</sup>C NMR of **4af** (101 MHz, CDCl<sub>3</sub>)



<sup>1</sup>H NMR of **4ag** (400 MHz, CDCl<sub>3</sub>)

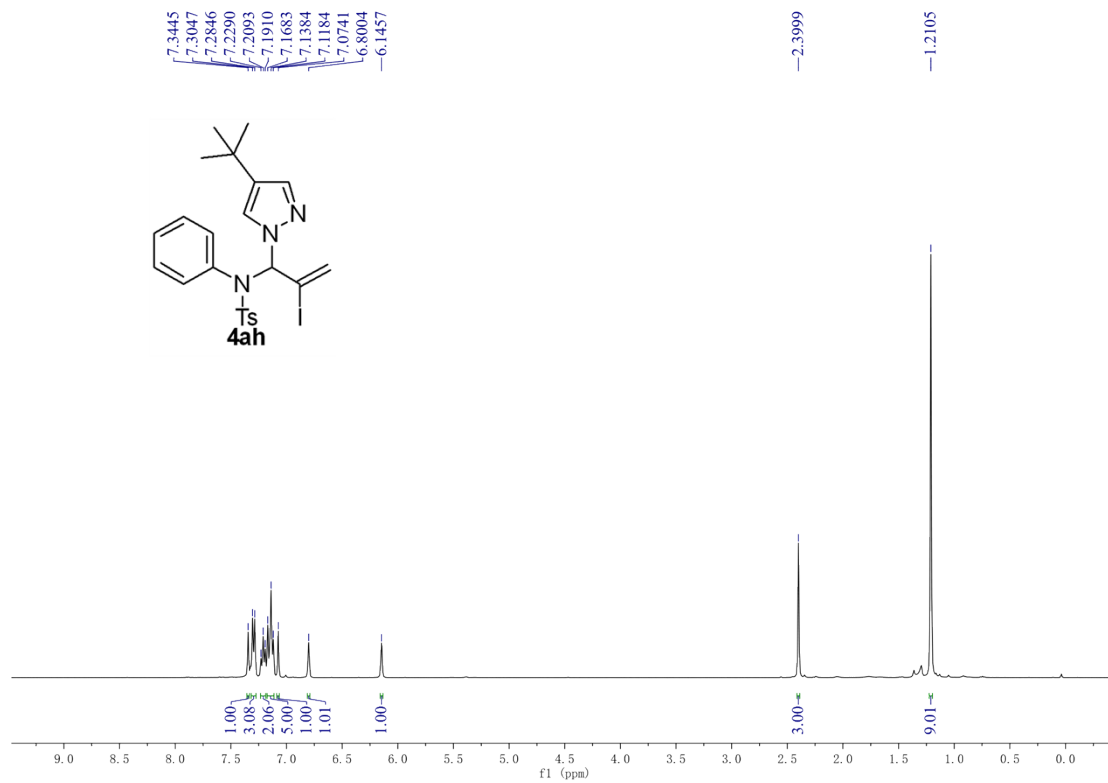


<sup>13</sup>C NMR of **4ag** (101 MHz, CDCl<sub>3</sub>)

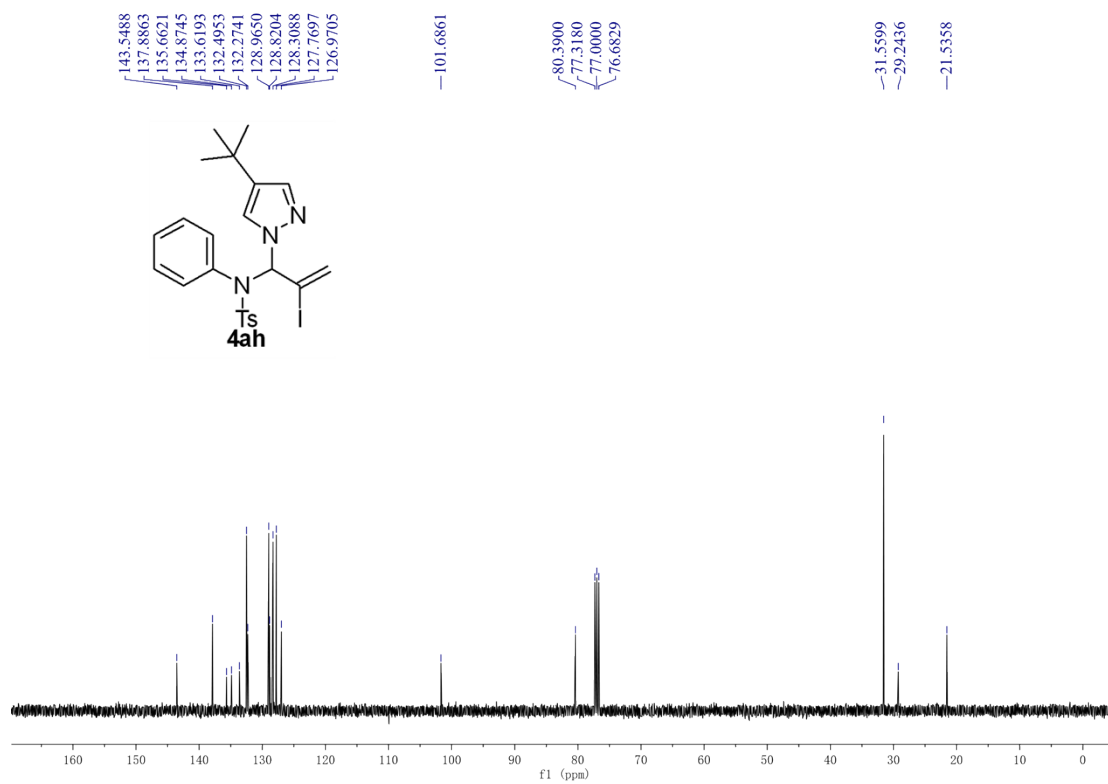




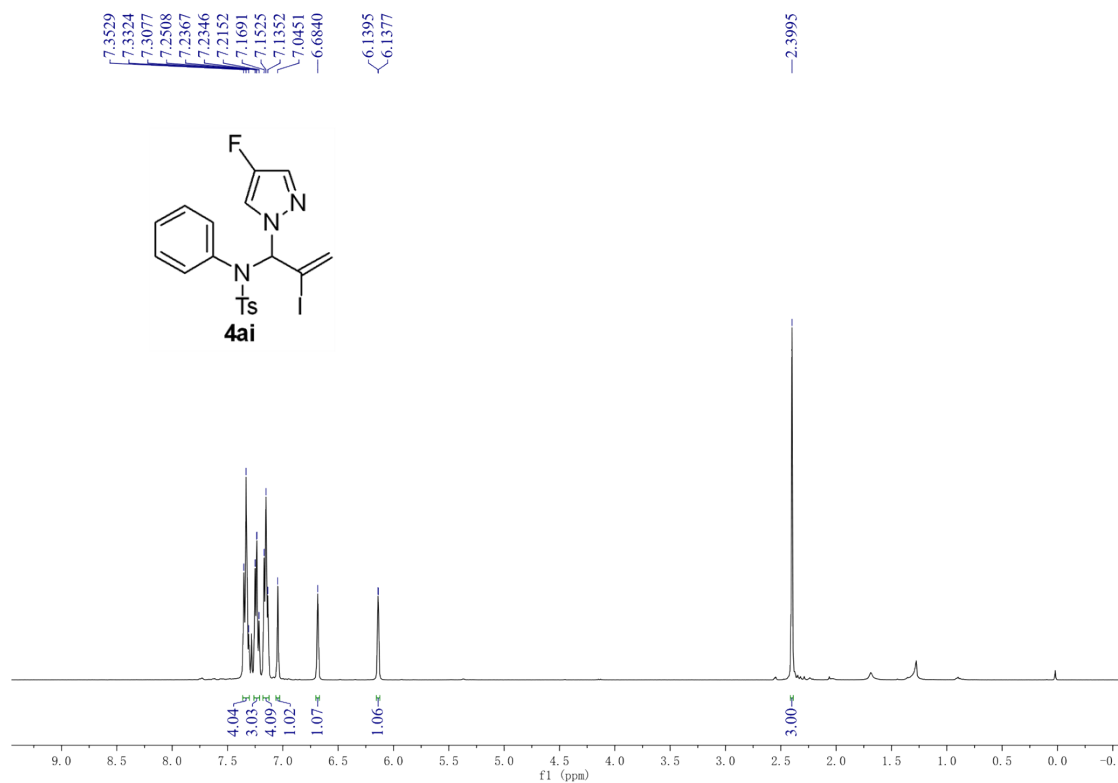
<sup>1</sup>H NMR of **4ah** (400 MHz, CDCl<sub>3</sub>)



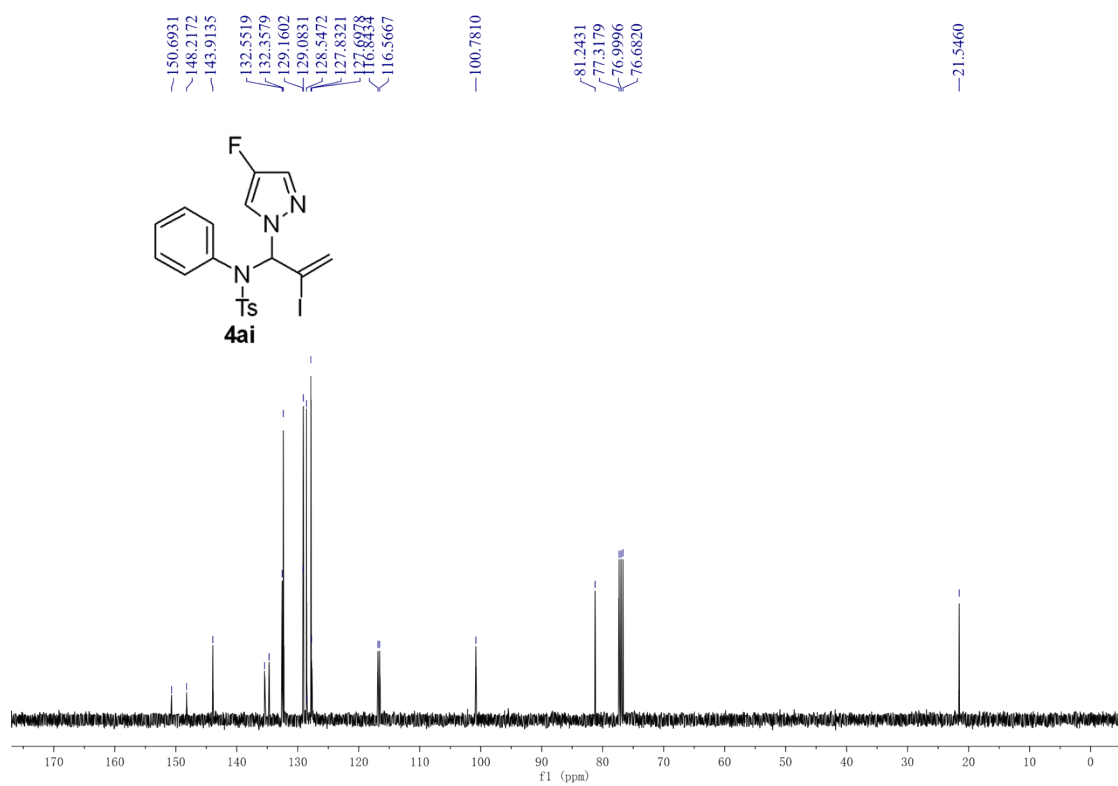
<sup>13</sup>C NMR of **4ah** (101 MHz, CDCl<sub>3</sub>)



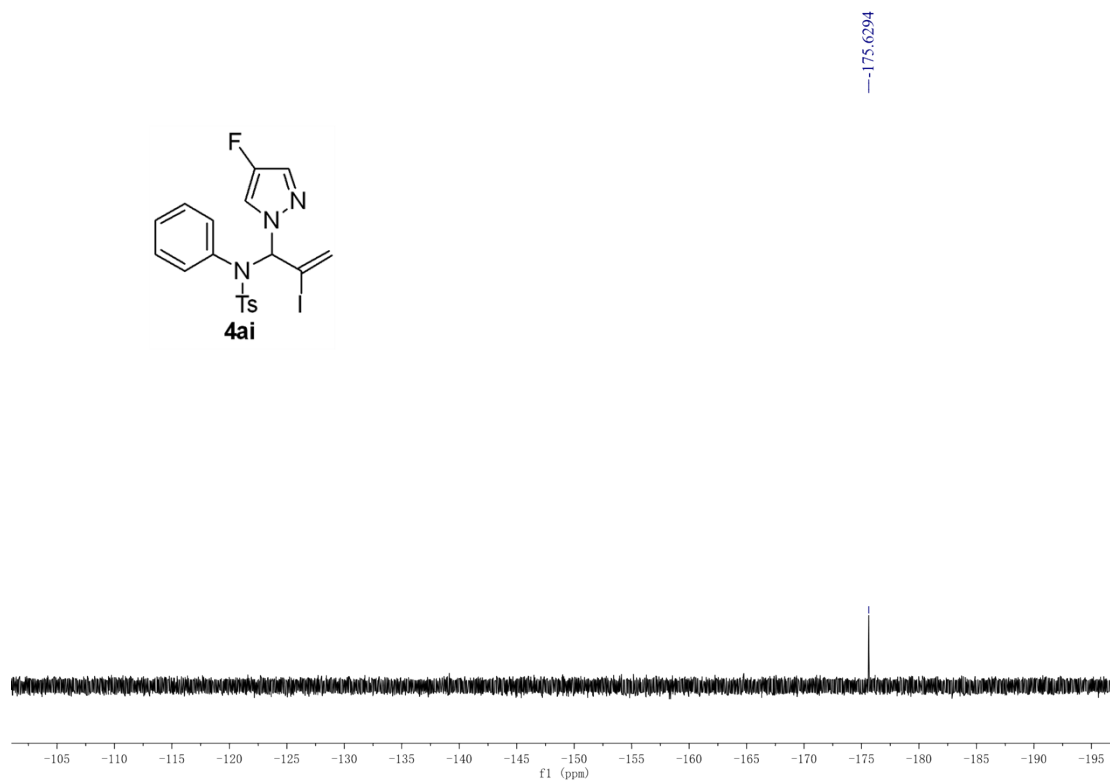
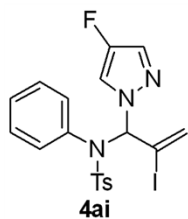
<sup>1</sup>H NMR of **4ai** (400 MHz, CDCl<sub>3</sub>)



<sup>13</sup>C NMR of **4ai** (101 MHz, CDCl<sub>3</sub>)

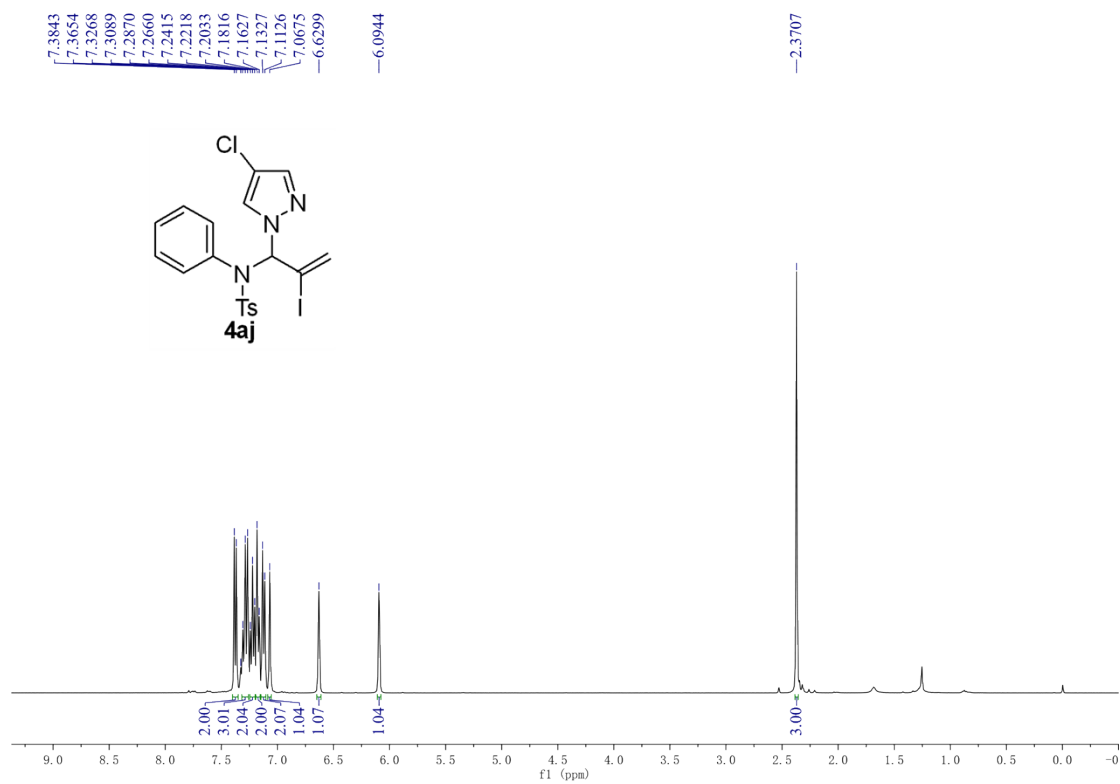
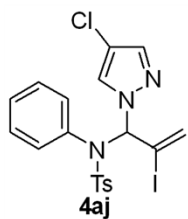


<sup>19</sup>F NMR of **4ai** (376 MHz, CDCl<sub>3</sub>)

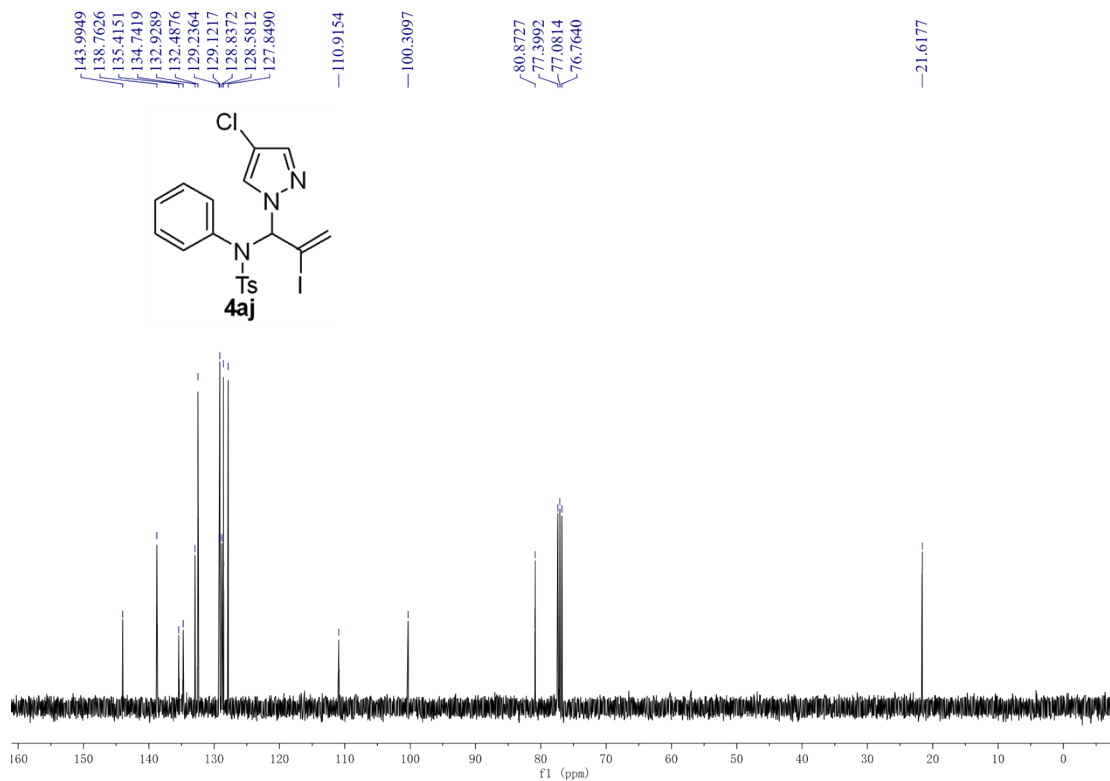


<sup>1</sup>H NMR of **4aj** (400 MHz, CDCl<sub>3</sub>)

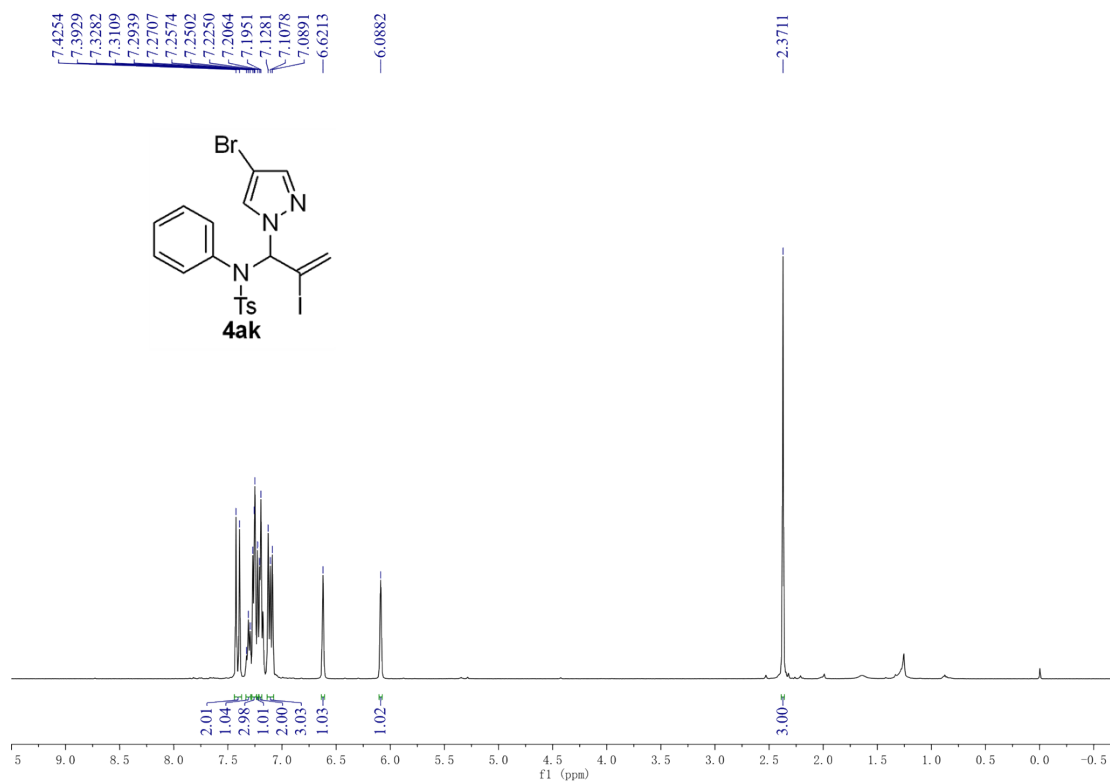
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7.3654  
7.3268  
7.3089  
7.2870  
7.2660  
7.2415  
7.2218  
7.2033  
7.1816  
7.1627  
7.1327  
7.1126  
7.0675  
6.6299  
6.0944  
2.3707



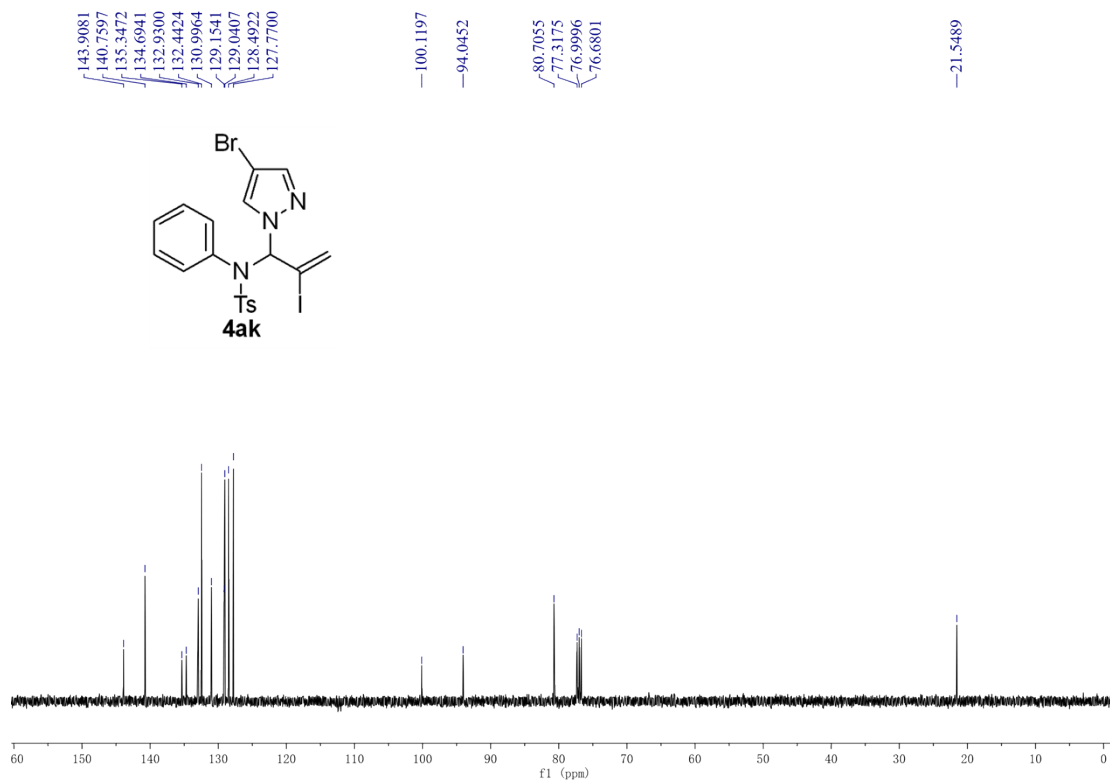
<sup>13</sup>C NMR of **4aj** (101 MHz, CDCl<sub>3</sub>)



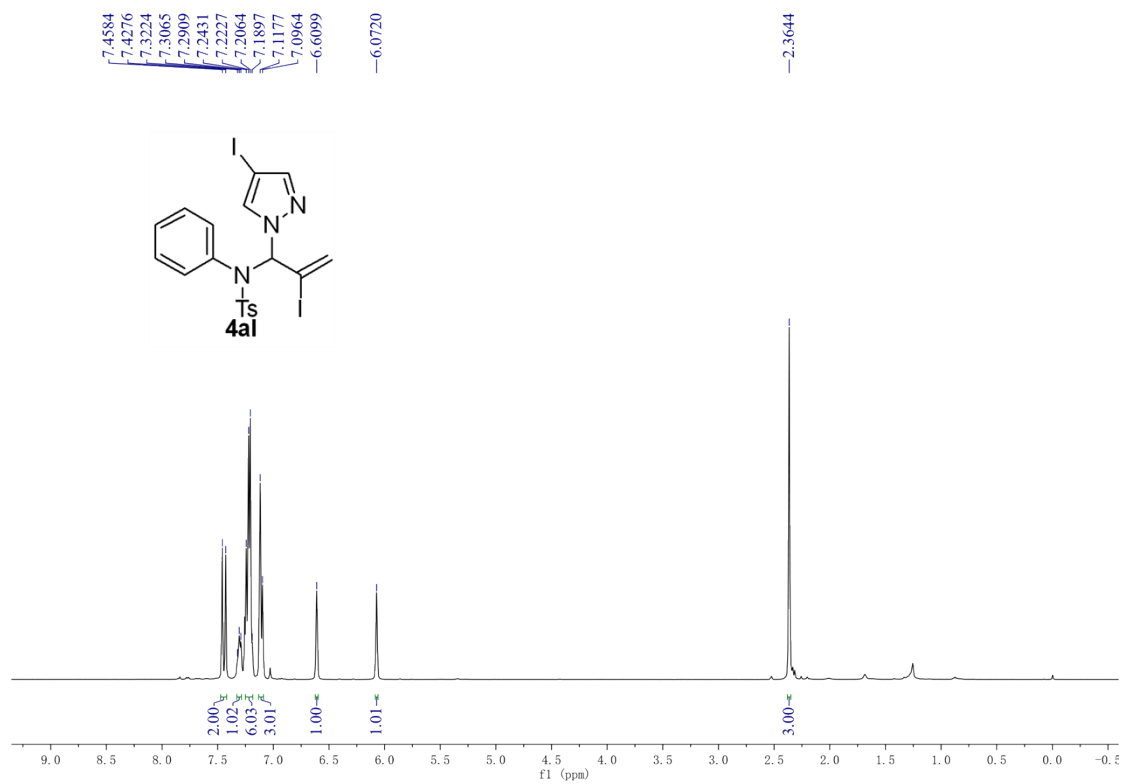
<sup>1</sup>H NMR of **4ak** (400 MHz, CDCl<sub>3</sub>)



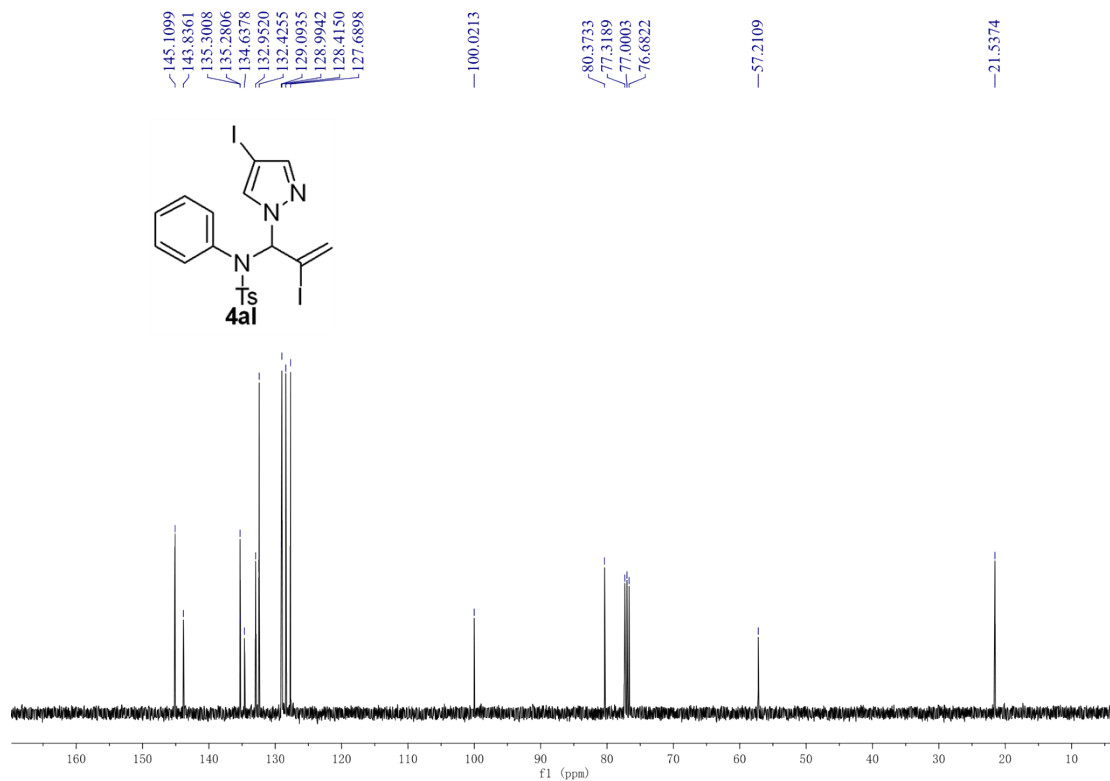
<sup>13</sup>C NMR of **4ak** (101 MHz, CDCl<sub>3</sub>)



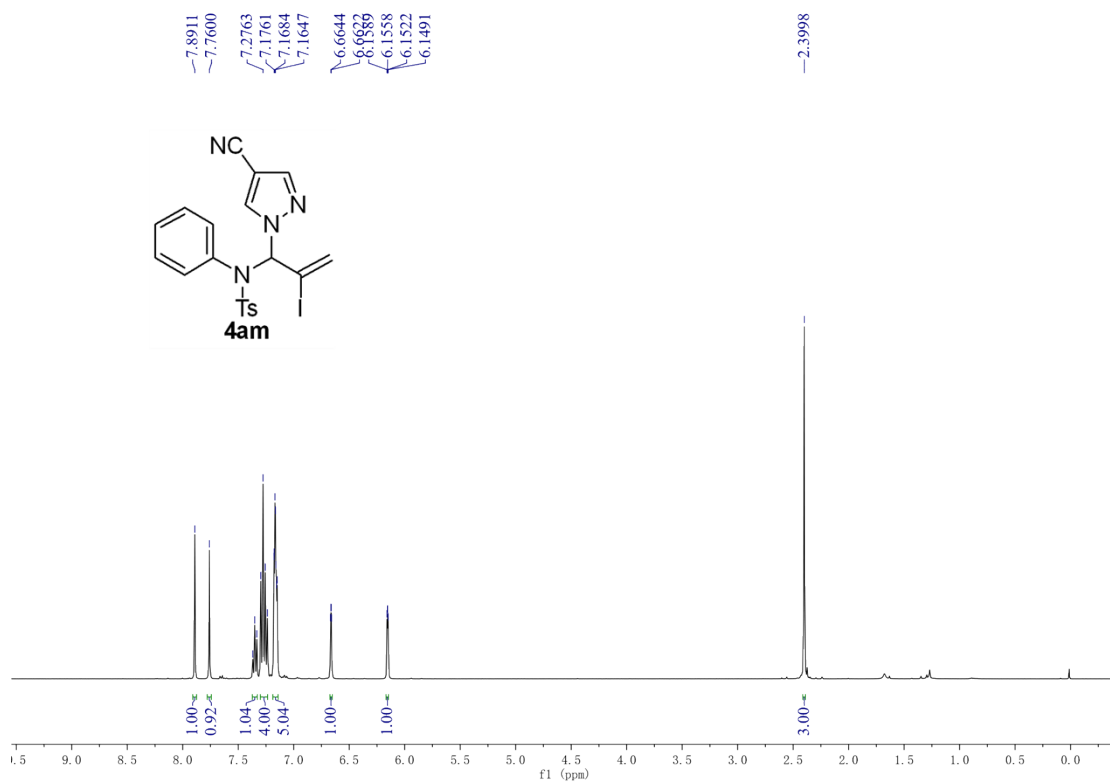
<sup>1</sup>H NMR of **4al** (400 MHz, CDCl<sub>3</sub>)



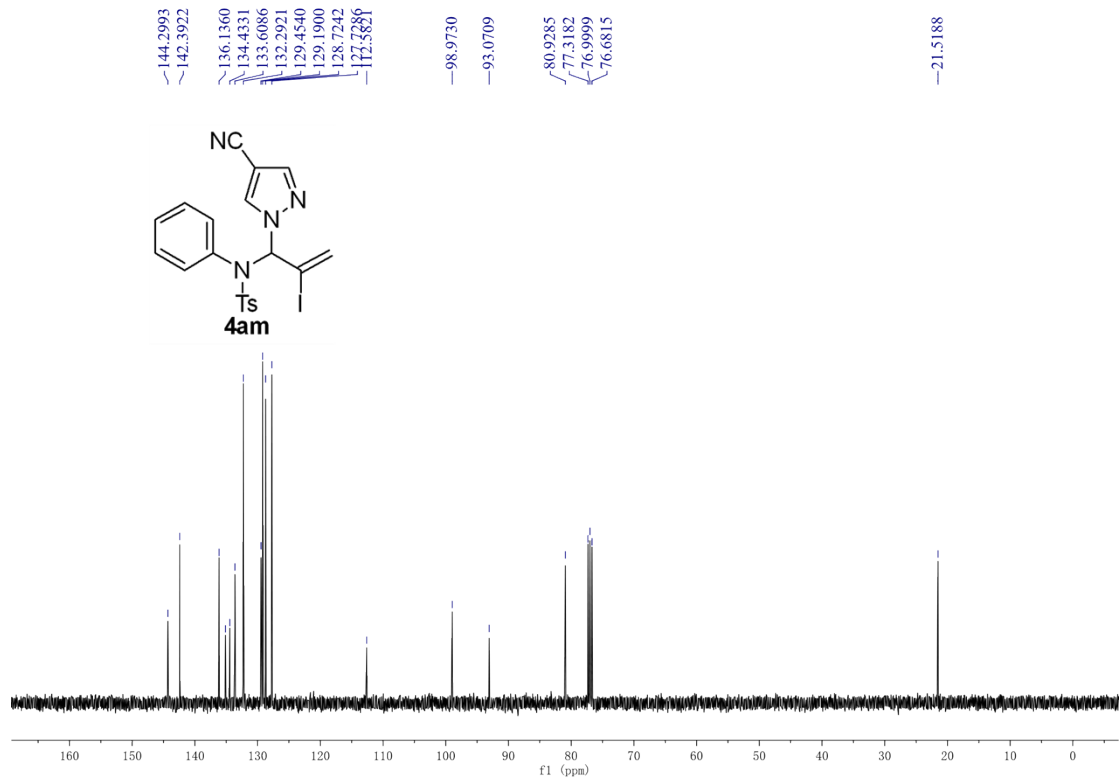
<sup>13</sup>C NMR of **4al** (101 MHz, CDCl<sub>3</sub>)



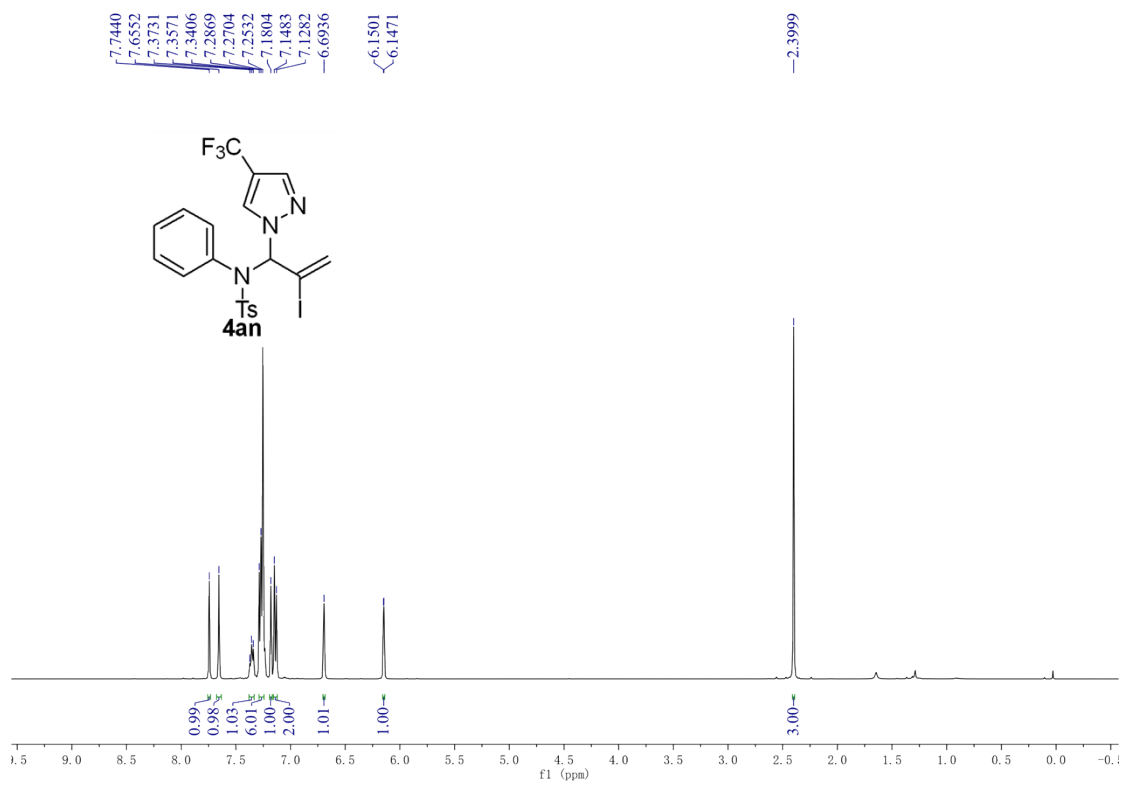
<sup>1</sup>H NMR of **4am** (400 MHz, CDCl<sub>3</sub>)



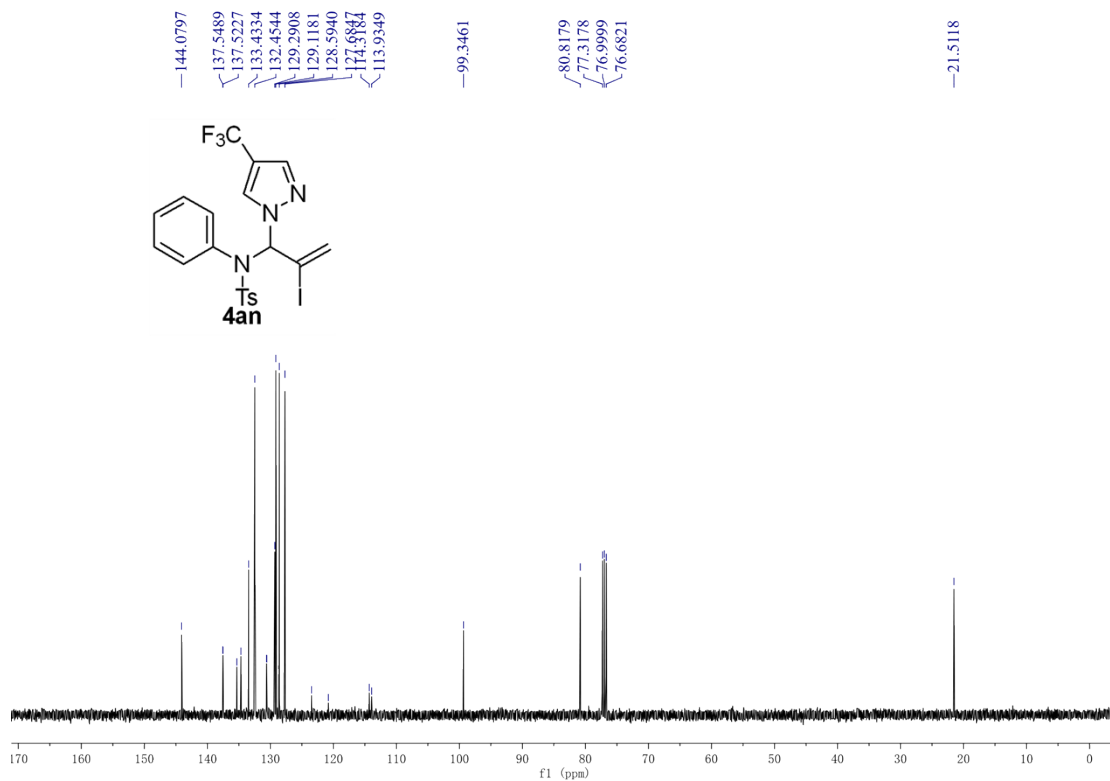
<sup>13</sup>C NMR of **4am** (101 MHz, CDCl<sub>3</sub>)



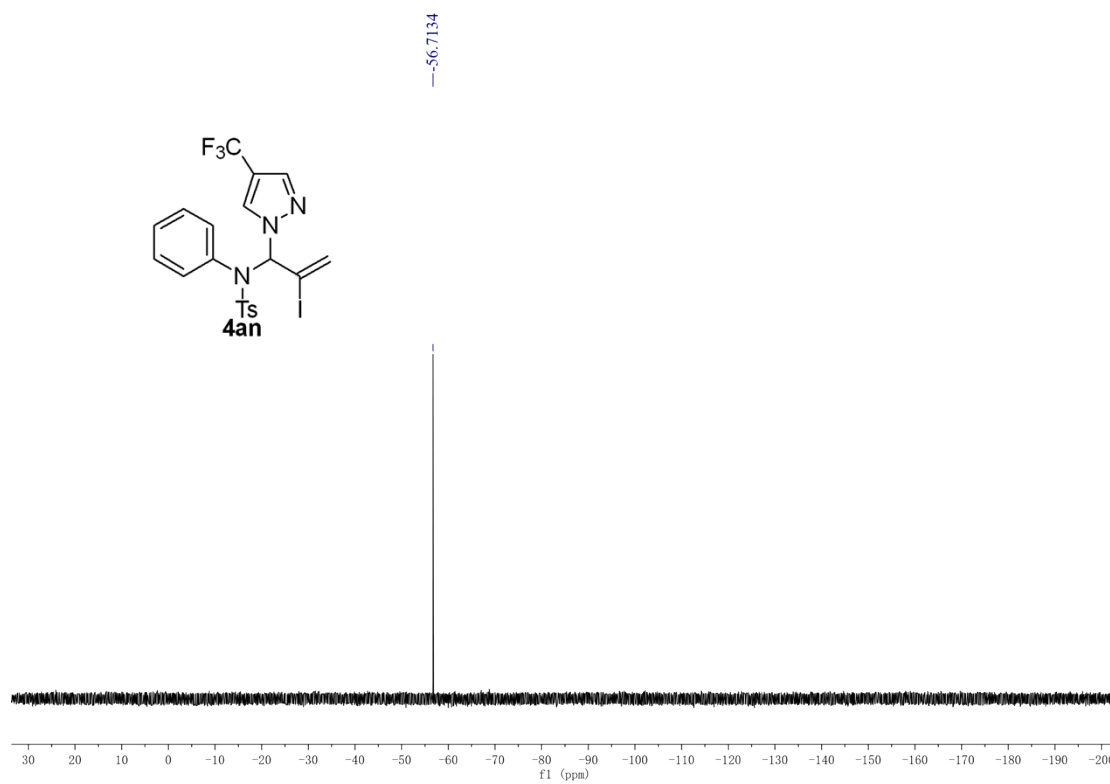
<sup>1</sup>H NMR of **4an** (400 MHz, CDCl<sub>3</sub>)



<sup>13</sup>C NMR of **4an** (101 MHz, CDCl<sub>3</sub>)

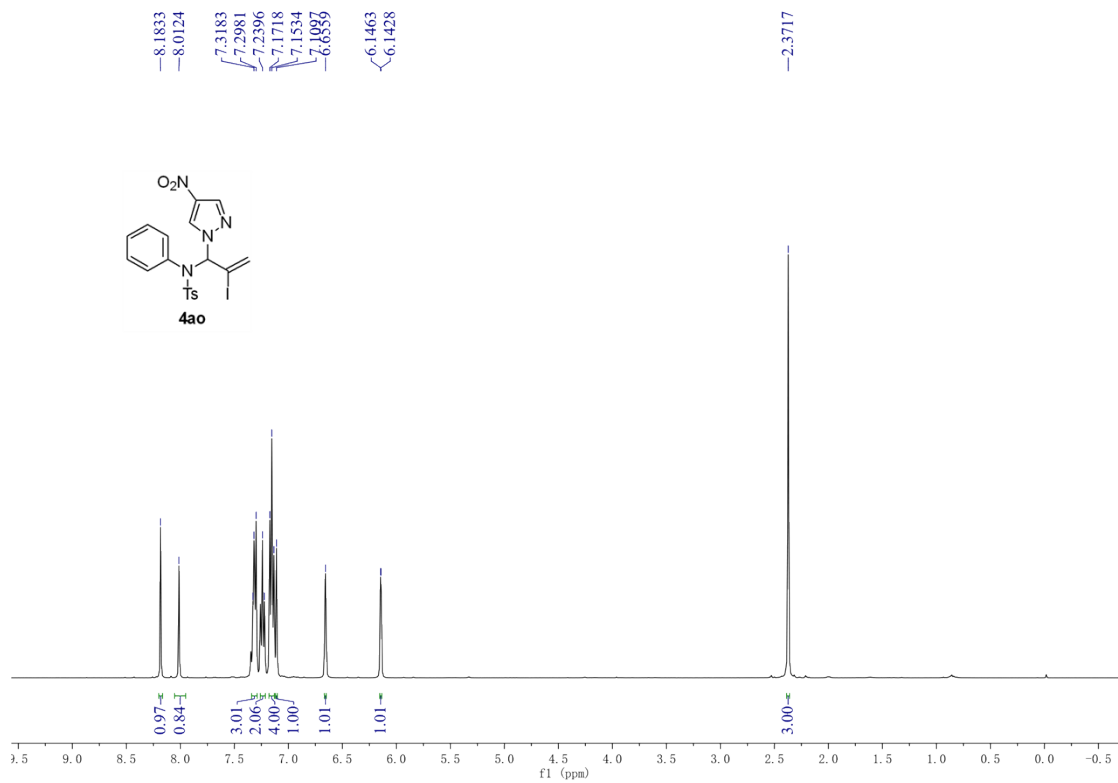


<sup>19</sup>F NMR of **4an** (376 MHz, CDCl<sub>3</sub>)

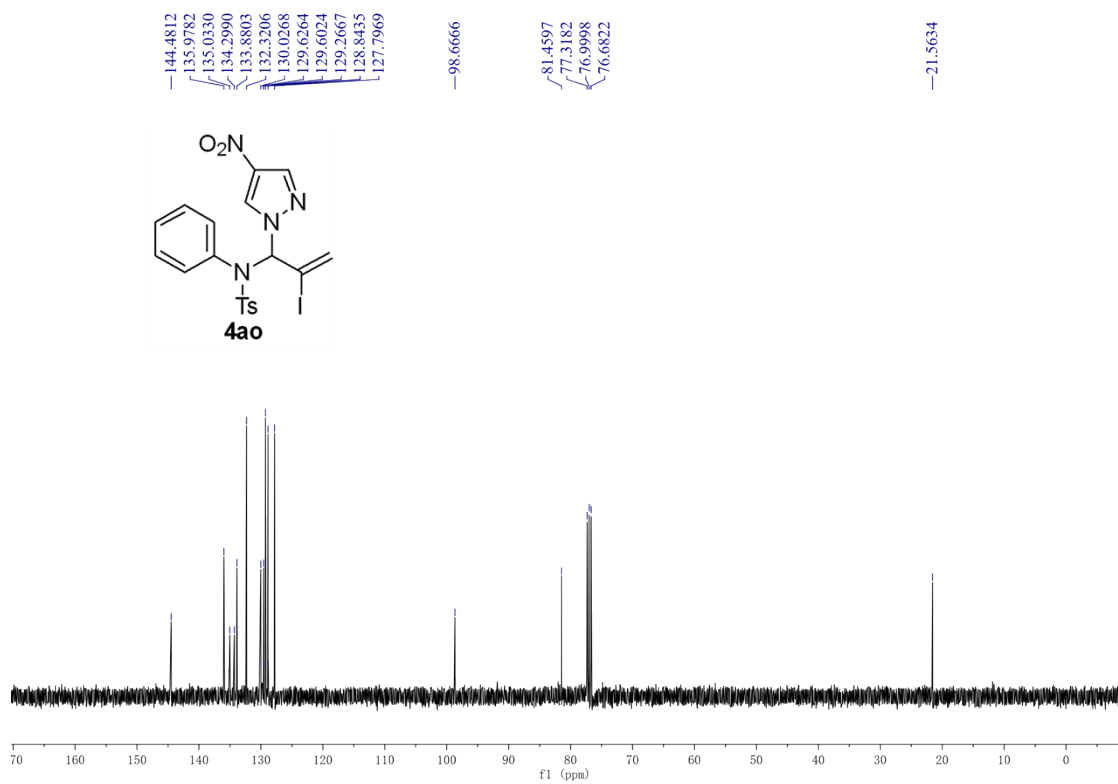




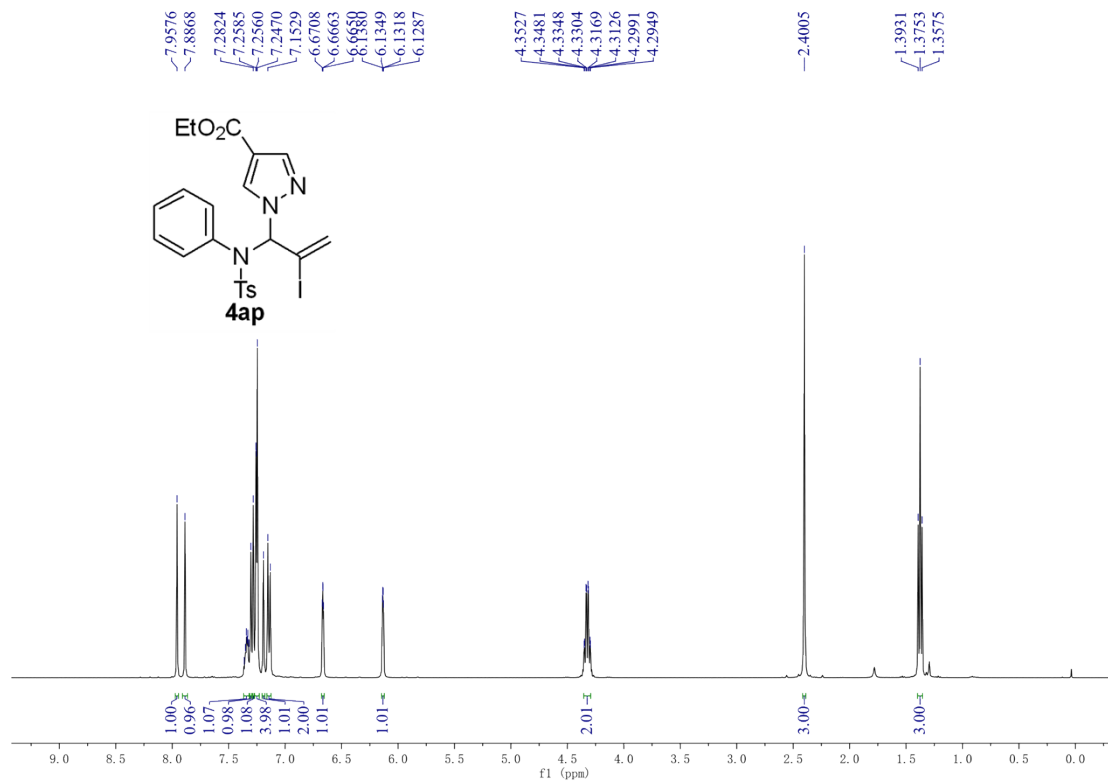
<sup>1</sup>H NMR of **4ao** (400 MHz, CDCl<sub>3</sub>)



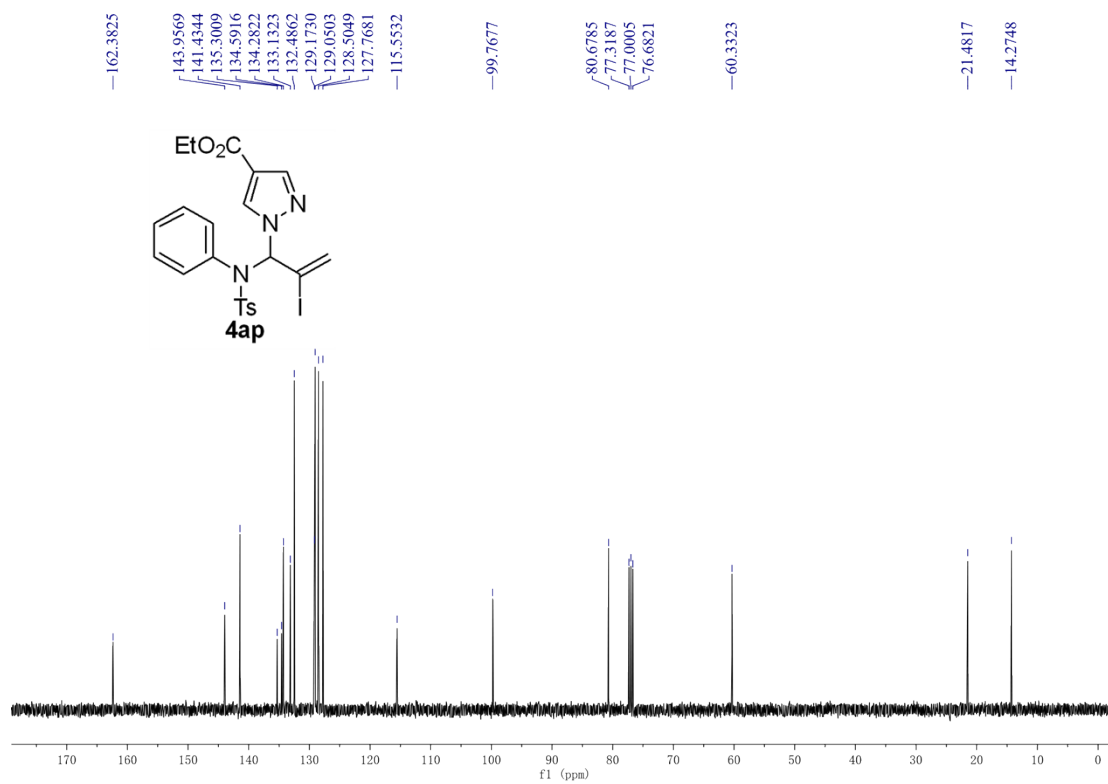
<sup>13</sup>C NMR of **4ao** (101 MHz, CDCl<sub>3</sub>)



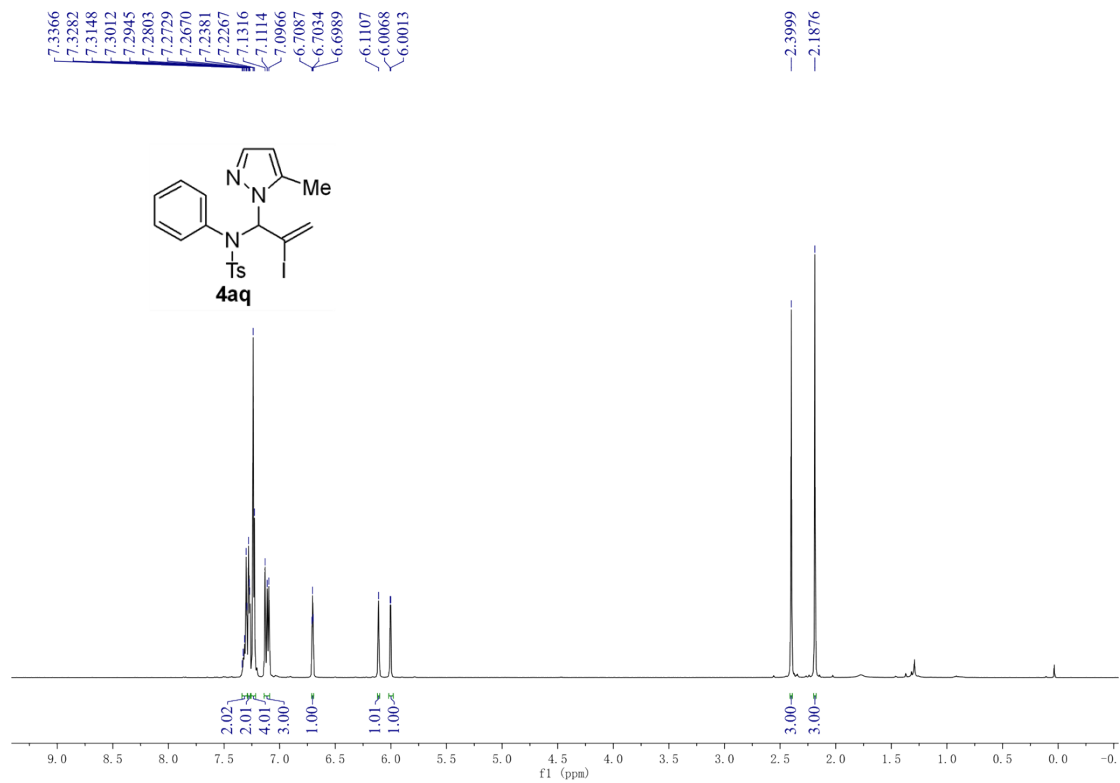
<sup>1</sup>H NMR of **4ap** (400 MHz, CDCl<sub>3</sub>)



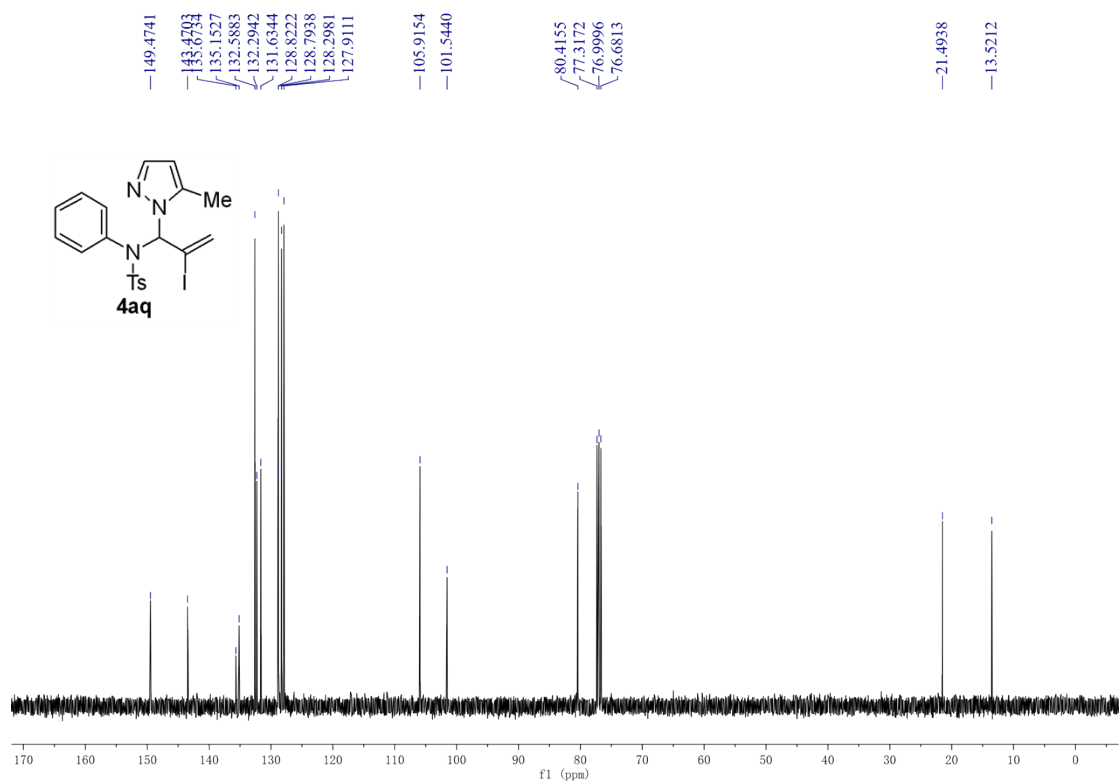
<sup>13</sup>C NMR of **4ap** (101 MHz, CDCl<sub>3</sub>)



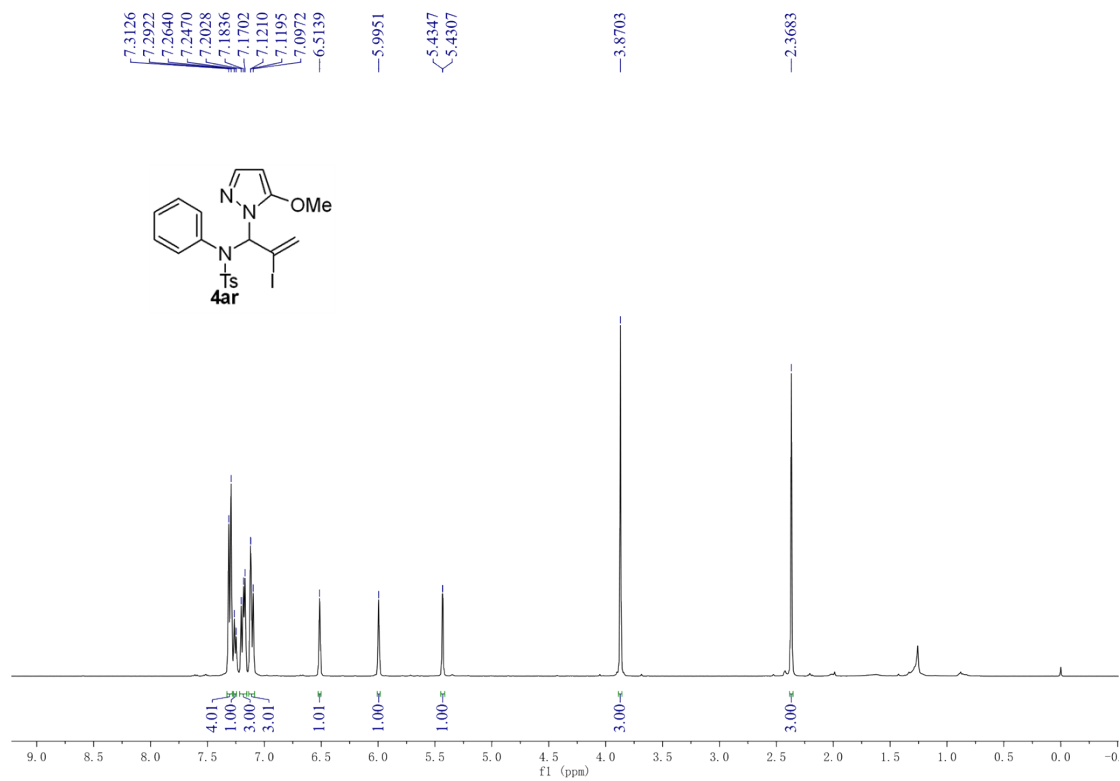
<sup>1</sup>H NMR of **4aq** (400 MHz, CDCl<sub>3</sub>)



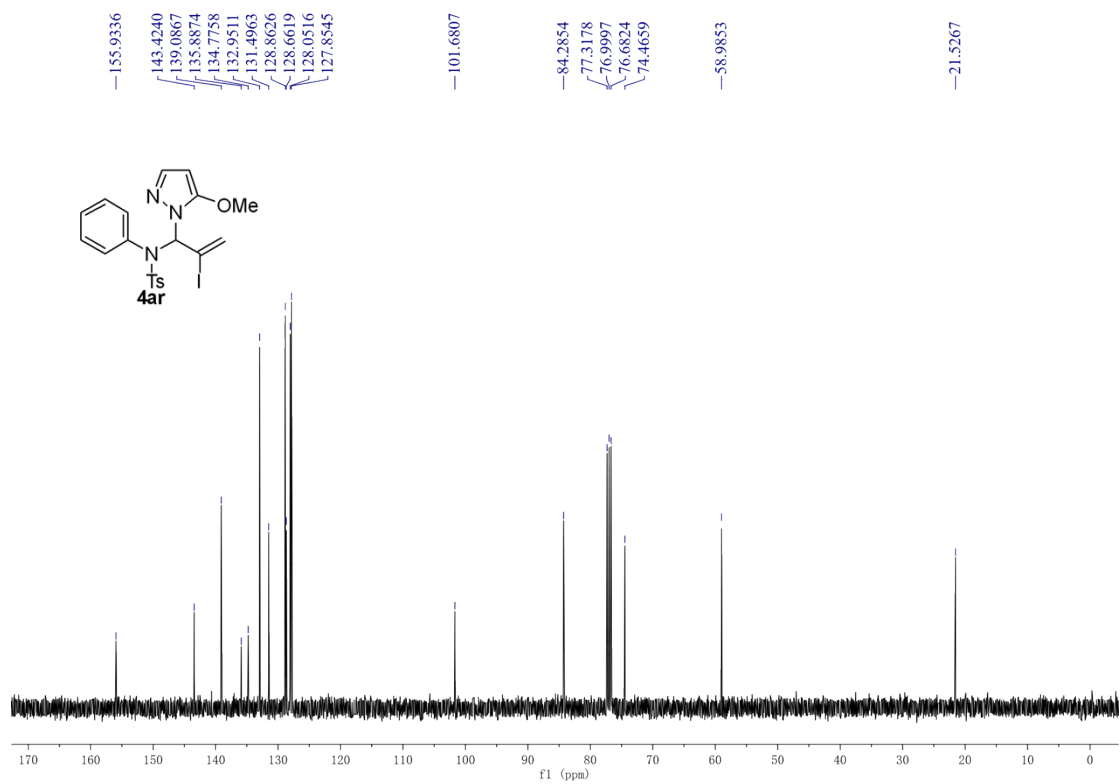
<sup>13</sup>C NMR of **4aq** (101 MHz, CDCl<sub>3</sub>)



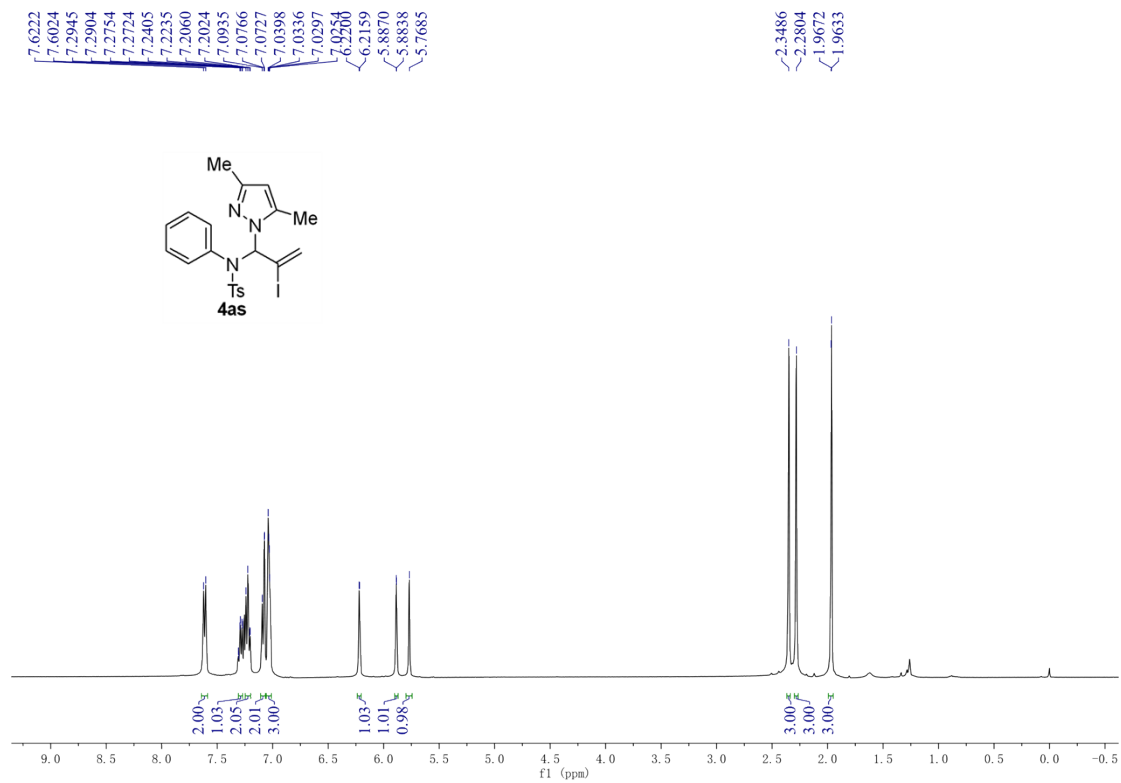
<sup>1</sup>H NMR of **4ar** (400 MHz, CDCl<sub>3</sub>)



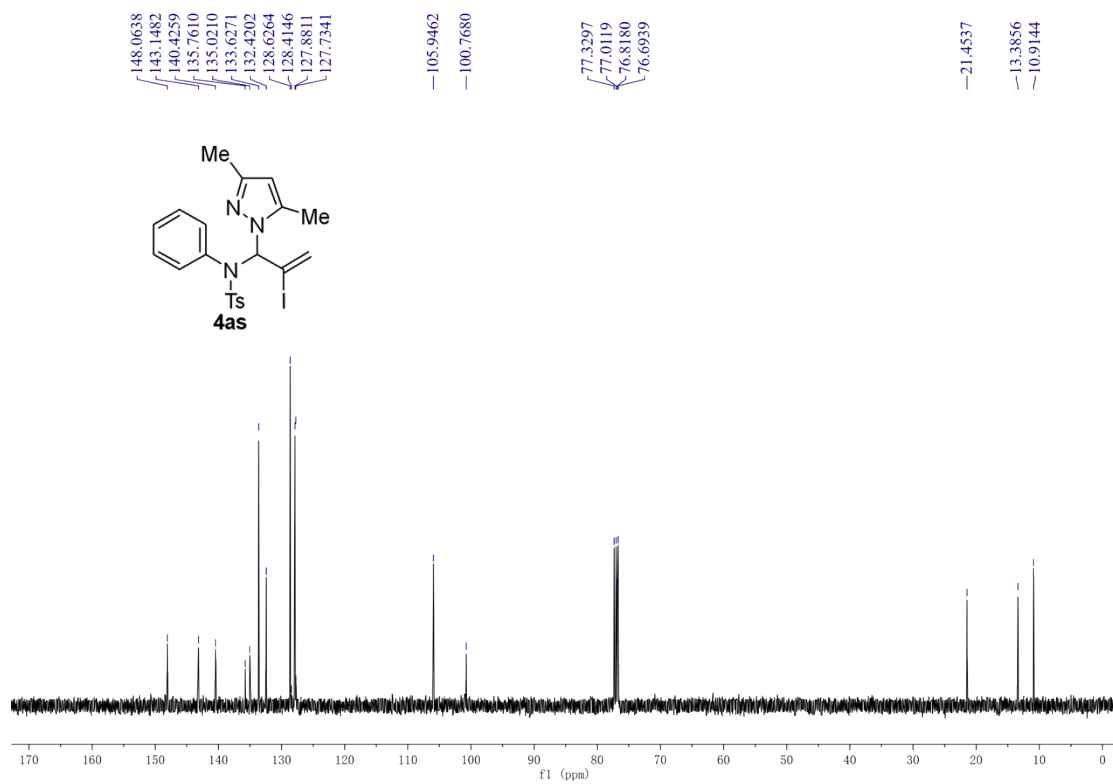
<sup>13</sup>C NMR of **4ar** (101 MHz, CDCl<sub>3</sub>)



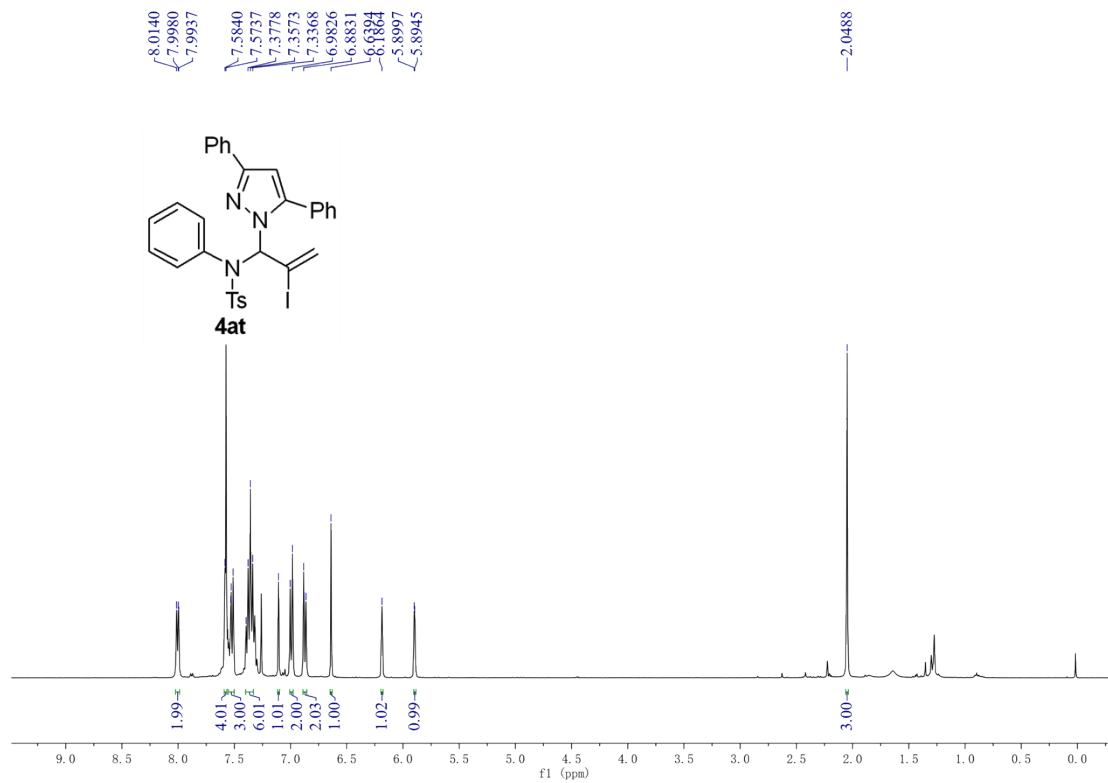
<sup>1</sup>H NMR of **4as** (400 MHz, CDCl<sub>3</sub>)



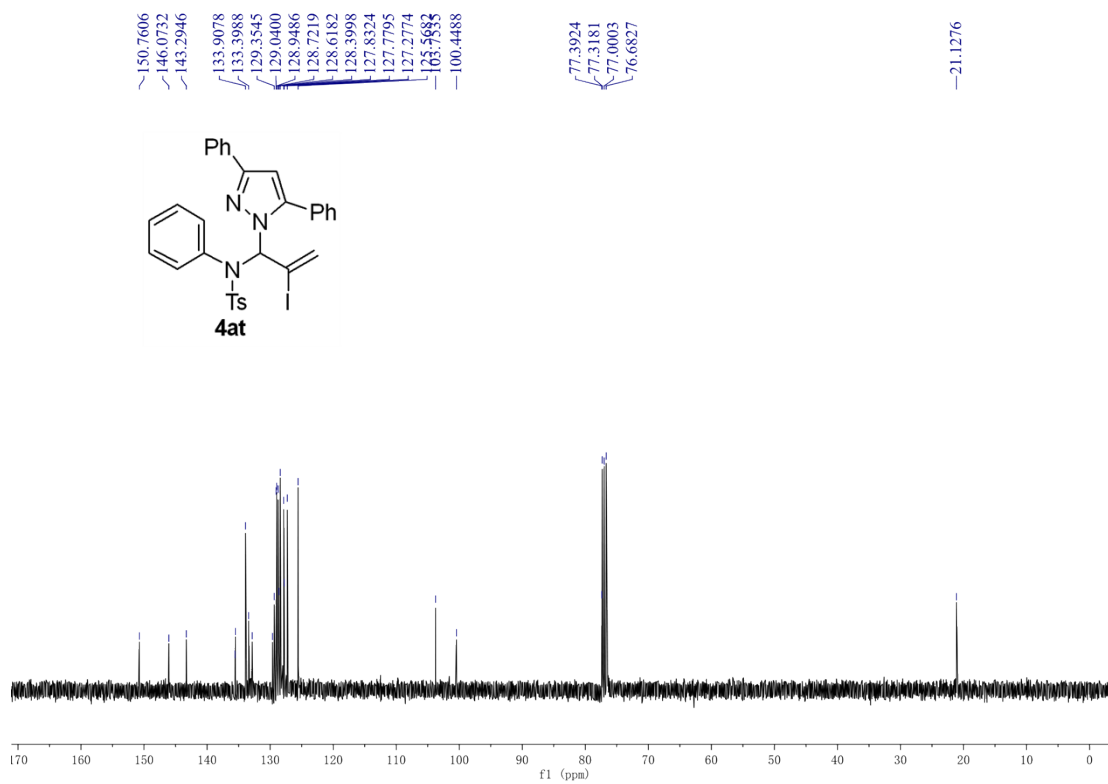
<sup>13</sup>C NMR of **4as** (101 MHz, CDCl<sub>3</sub>)



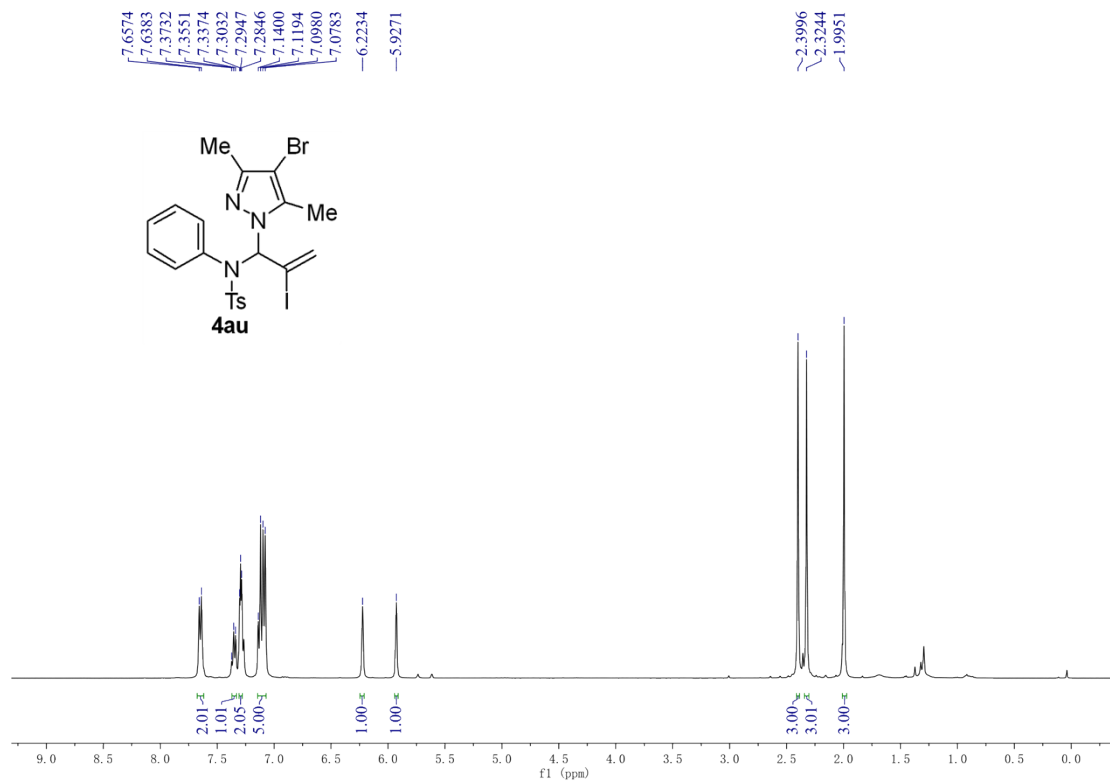
<sup>1</sup>H NMR of **4at** (400 MHz, CDCl<sub>3</sub>)



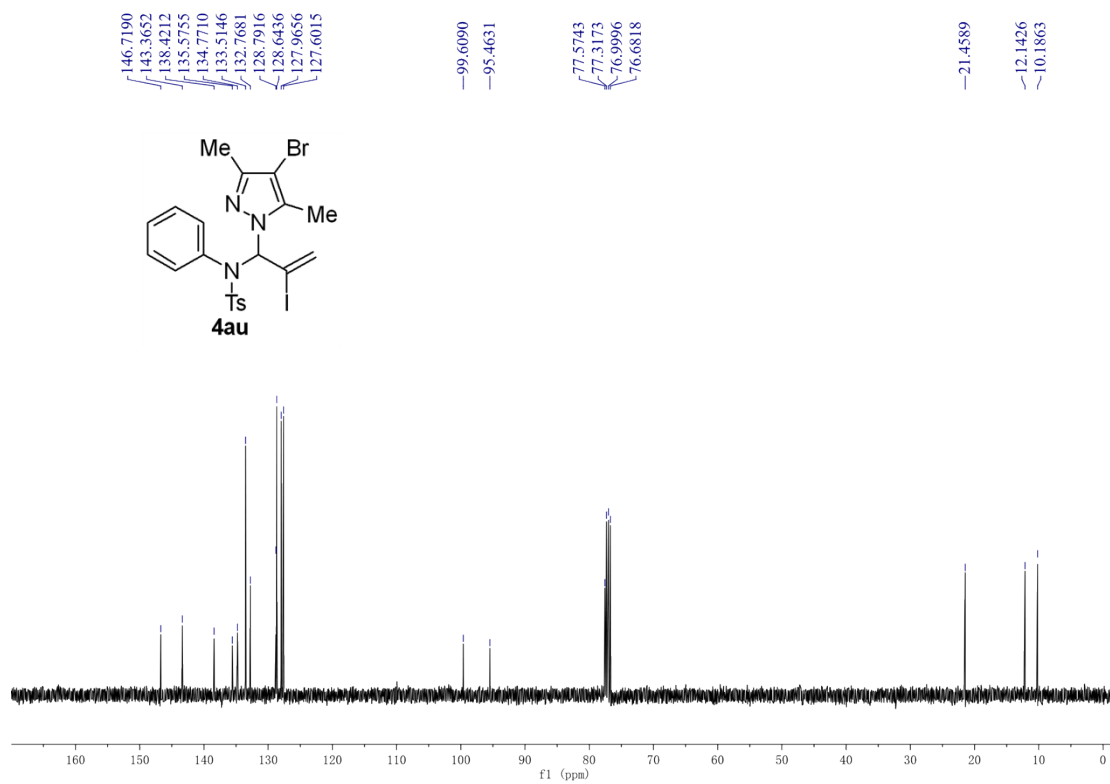
<sup>13</sup>C NMR of **4at** (101 MHz, CDCl<sub>3</sub>)



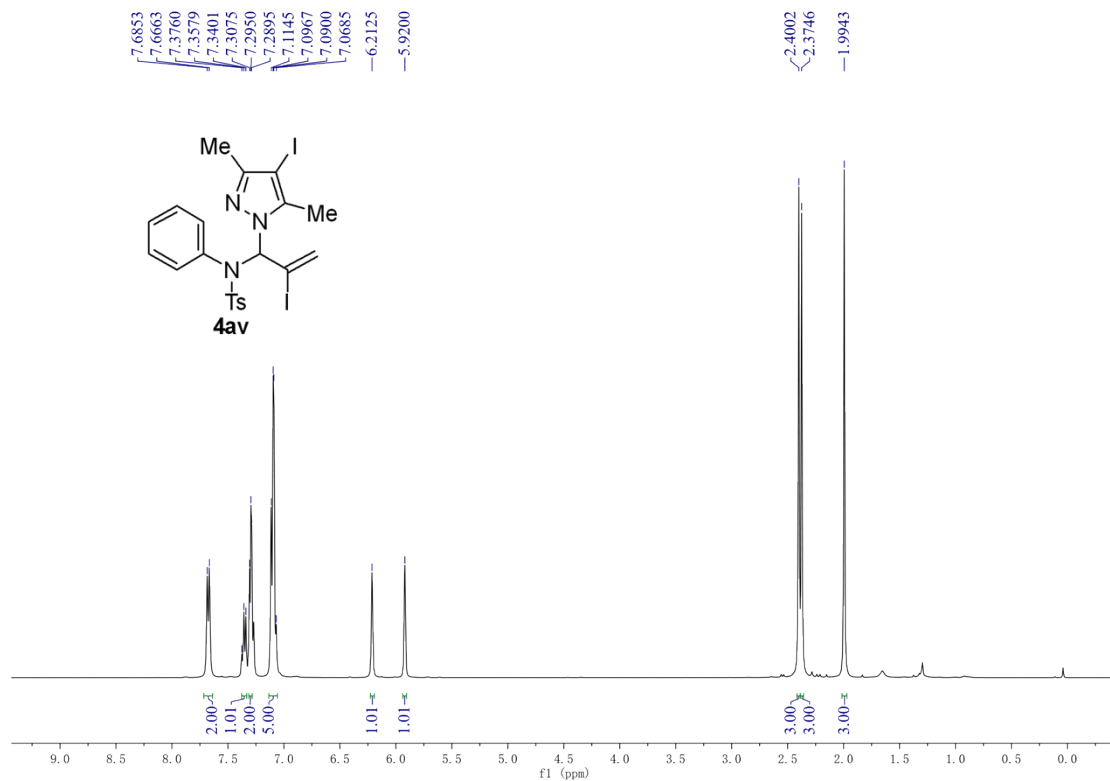
<sup>1</sup>H NMR of **4au** (400 MHz, CDCl<sub>3</sub>)



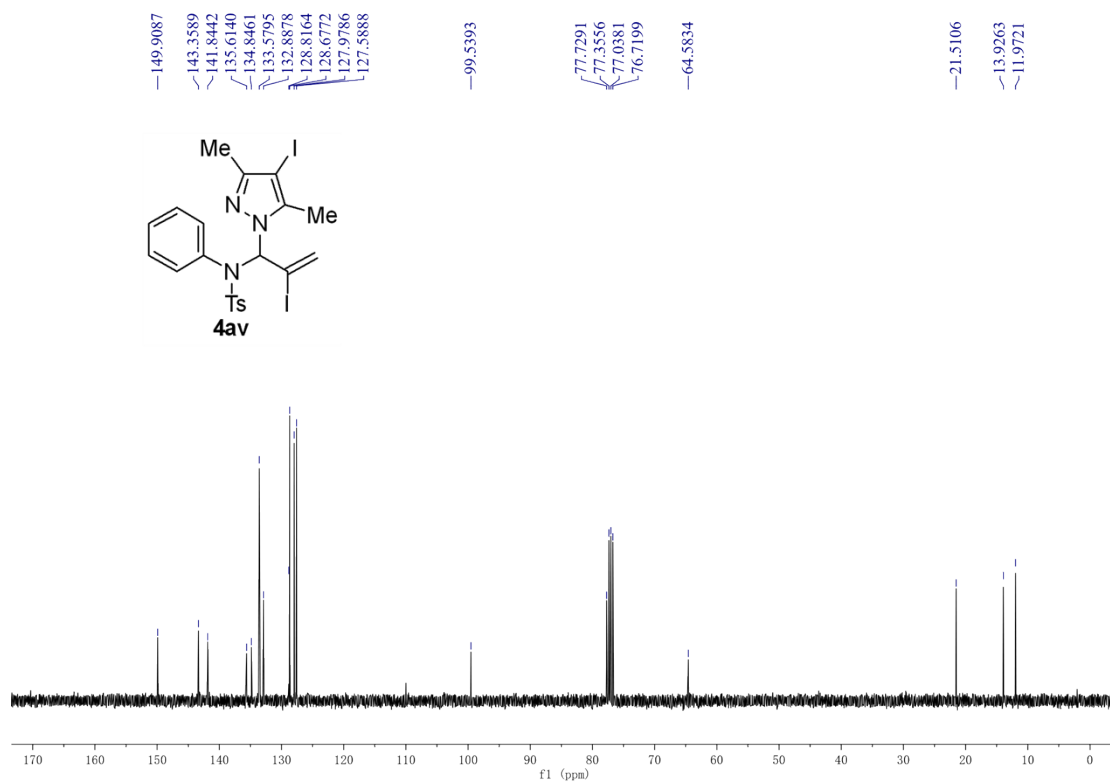
<sup>13</sup>C NMR of **4au** (101 MHz, CDCl<sub>3</sub>)



<sup>1</sup>H NMR of **4av** (400 MHz, CDCl<sub>3</sub>)



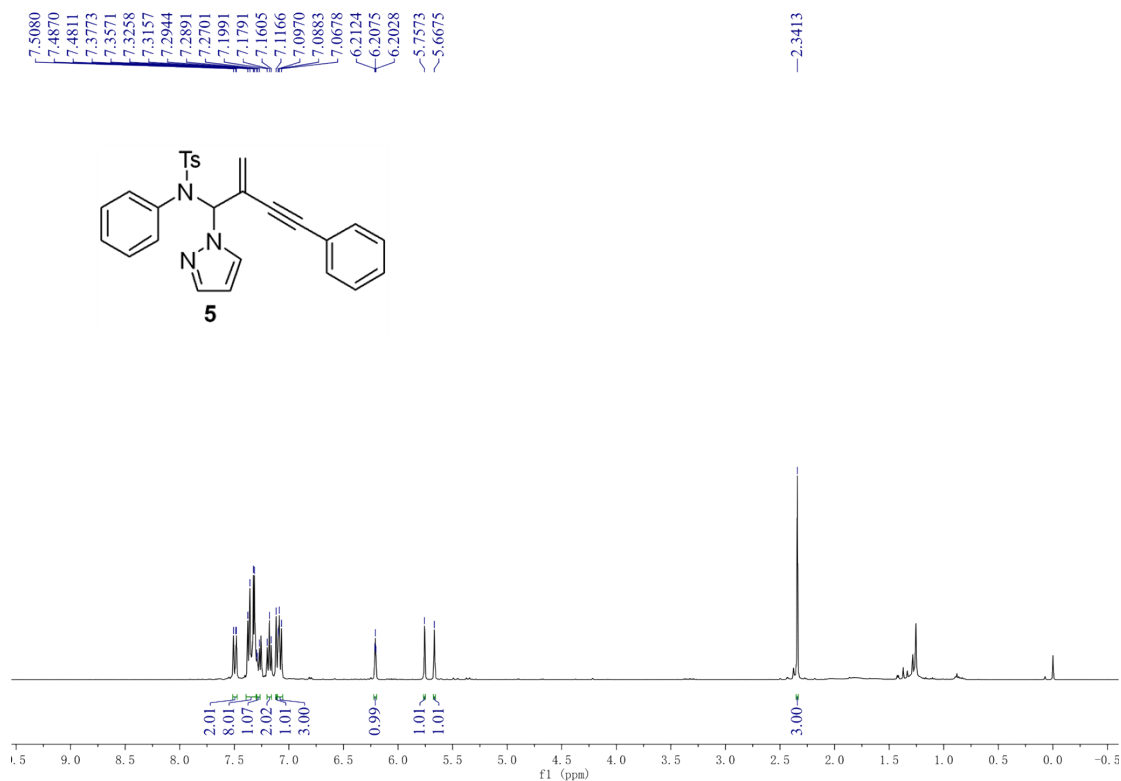
<sup>13</sup>C NMR of **4av** (101 MHz, CDCl<sub>3</sub>)



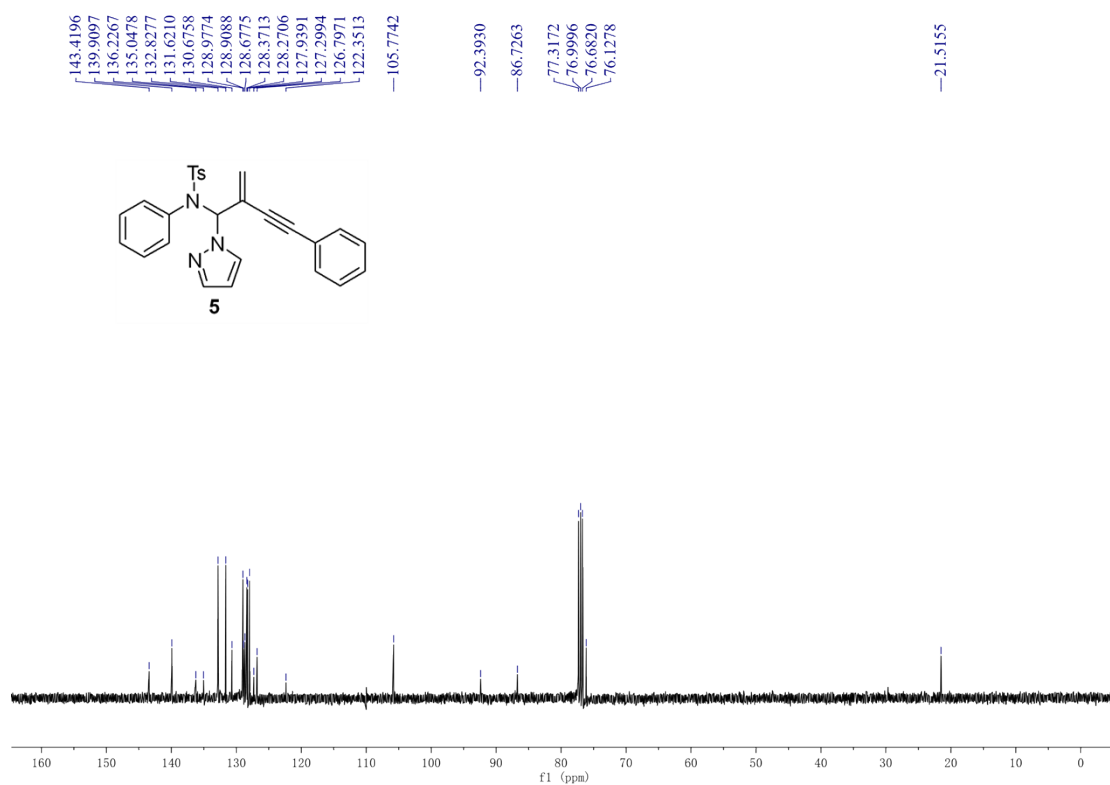


# NMR Spectra for 5

$^1\text{H}$  NMR of 5 (400 MHz,  $\text{CDCl}_3$ )

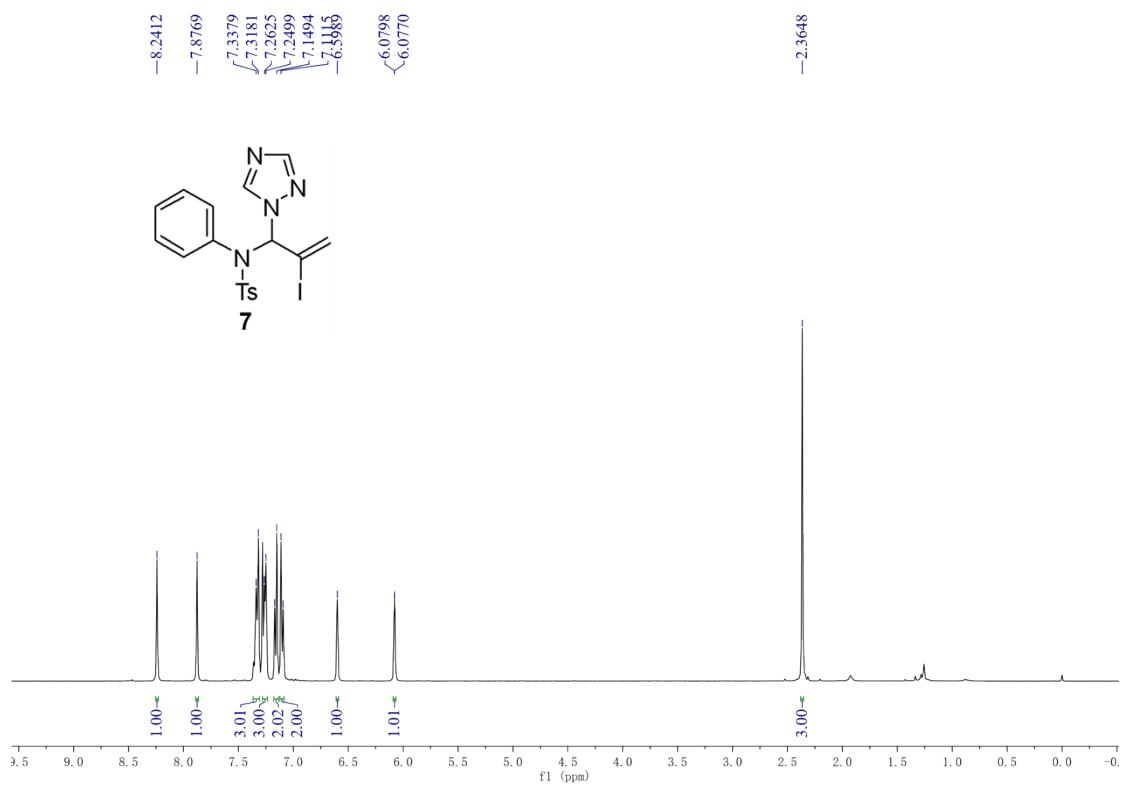


$^{13}\text{C}$  NMR of 5 (101 MHz,  $\text{CDCl}_3$ )



# NMR Spectra for 7

$^1\text{H}$  NMR of 7 (400 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}$  NMR of 7 (101 MHz,  $\text{CDCl}_3$ )

