

# Supporting Information

## Diversity Oriented Synthesis of Densely Substituted Pyrrolo[1,2-*a*]indoles

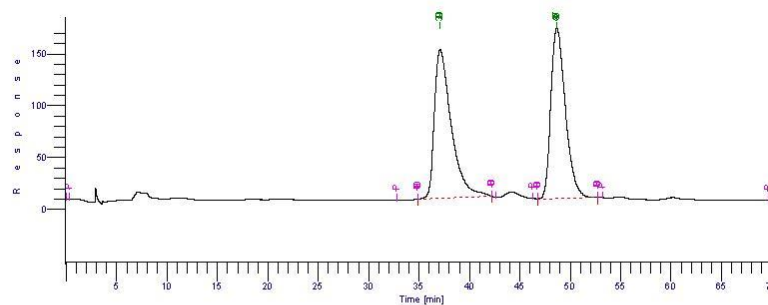
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### Table of Contents:

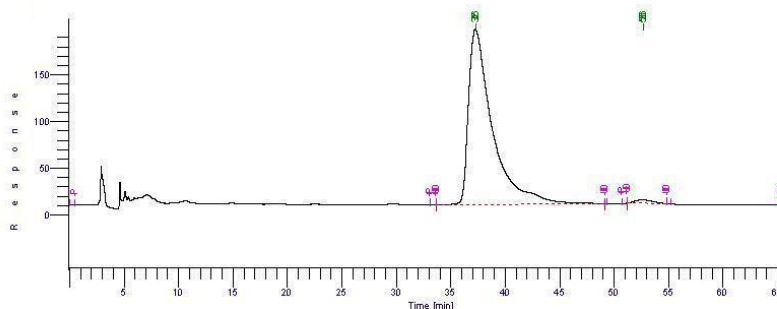
HPLC graphs of Compound (±)-19 and (-)-19: .....	2
CD spectras of Compound (+)-19 and (-)-19: .....	3
X-ray crystallographic data and structure refinement: .....	4-10
NMR Spectra: .....	11



cellulose-2

Peak #	Component Name	Time [min]	Area [ $\mu\text{V}\cdot\text{sec}$ ]	Height [ $\mu\text{V}$ ]	Area [%]	Norm. Area [%]
1		37.093	16733976.98	143785.84	50.39	50.39
2		48.672	16474158.60	164645.38	49.61	49.61
			33208135.58	308431.22	100.00	100.00

**HPLC graph of compound ( $\pm$ )-19**

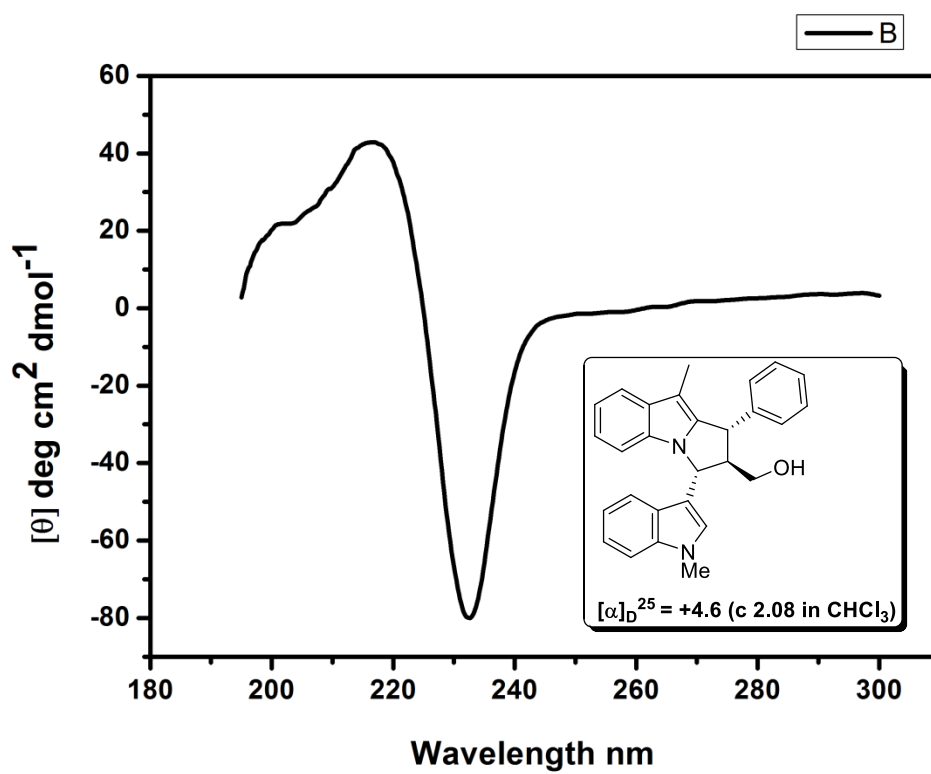
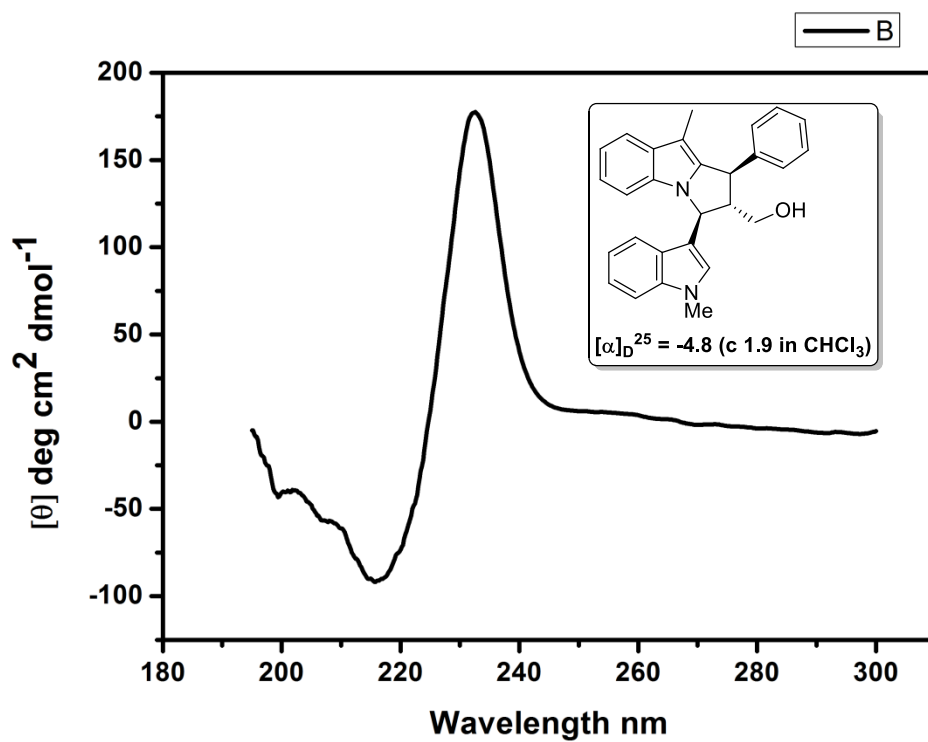


cellulose-2 , chiral

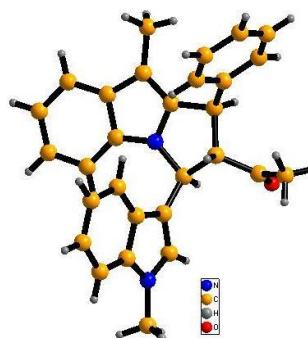
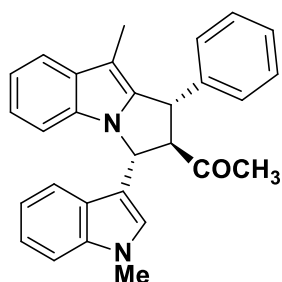
Peak #	Component Name	Time [min]	Area [ $\mu\text{V}\cdot\text{sec}$ ]	Height [ $\mu\text{V}$ ]	Area [%]	Norm. Area [%]
1		37.258	28589734.77	187597.01	98.54	98.54
2		52.657	424982.19	3771.33	1.46	1.46
			29014716.96	191368.34	100.00	100.00

**HPLC graph of compound (-)-19 (enantio enriched)**

### CD spectras of Compound (+)-19 and (-)-19

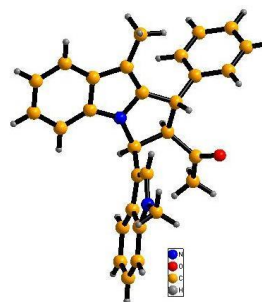
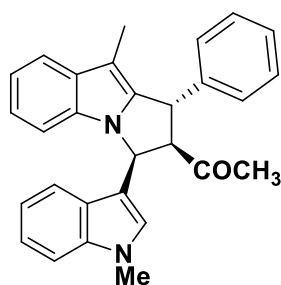


## Crystal data and structure refinement for compound 8e



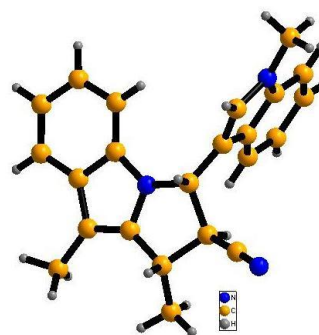
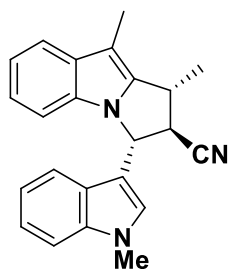
Chemical formula	C <sub>29</sub> H <sub>26</sub> N <sub>2</sub> O
$M_r$	418.52
Crystal system, space group	Triclinic, P-1
Temperature (K)	100
$a, b, c$ (Å)	9.500 (5), 11.269 (5), 12.113 (6)
$\alpha, \beta, \gamma$ (°)	111.974 (7), 97.280 (8), 101.443 (7)
$V$ (Å <sup>3</sup> )	1149.5 (10)
$Z$	2
Radiation type	Mo $K\alpha$
$\mu$ (mm <sup>-1</sup> )	0.07
Crystal size (mm)	0.16 × 0.14 × 0.11
Data collection	
Diffractometer	Bruker <i>SMART APEX</i> diffractometer
Absorption correction	Empirical (using intensity measurements) <i>SADABS</i>
$T_{\min}, T_{\max}$	0.928, 0.992
No. of measured, independent and observed [ $I > 2\sigma(I)$ ] reflections	6059, 4117, 2535
$R_{\text{int}}$	0.018
$(\sin \theta/\lambda)_{\text{max}}$ (Å <sup>-1</sup> )	0.600
Refinement	
$R[F^2 > 2\sigma(F^2)], wR(F^2), S$	0.055, 0.204, 0.89
No. of reflections	4117
No. of parameters	292
H-atom treatment	H-atom parameters constrained
$\Delta\rho_{\text{max}}, \Delta\rho_{\text{min}}$ (e Å <sup>-3</sup> )	0.21, -0.19

## Compound 8e'



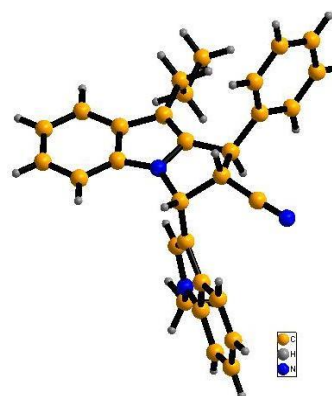
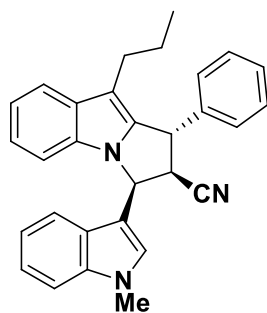
Chemical formula	C <sub>29</sub> H <sub>26</sub> N <sub>2</sub> O
$M_r$	418.52
Crystal system, space group	Triclinic, P -1
Temperature (K)	100
$a, b, c$ (Å)	9.752 (14), 11.395 (16), 12.462 (17)
$\alpha, \beta, \gamma$ (°)	105.79 (3), 107.47 (2), 99.95 (2)
$V$ (Å <sup>3</sup> )	1221 (3)
$Z$	2
Radiation type	Mo $K\alpha$
$\mu$ (mm <sup>-1</sup> )	0.07
Crystal size (mm)	0.12 × 0.11 × 0.10
Data collection	
Diffractometer	Bruker <i>SMART APEX</i> diffractometer
Absorption correction	Empirical (using intensity measurements) <i>SADABS</i>
$T_{\min}, T_{\max}$	0.992, 0.993
No. of measured, independent and observed [ $I > 2\sigma(I)$ ] reflections	6439, 4379, 1961
$R_{\text{int}}$	0.031
$(\sin \theta/\lambda)_{\text{max}}$ (Å <sup>-1</sup> )	0.600
Refinement	
$R[F^2 > 2\sigma(F^2)], wR(F^2), S$	0.069, 0.230, 0.84
No. of reflections	4379
No. of parameters	292
H-atom treatment	H-atom parameters constrained
$\Delta\rho_{\text{max}}, \Delta\rho_{\text{min}}$ (e Å <sup>-3</sup> )	0.25, -0.21

## Compound 10d



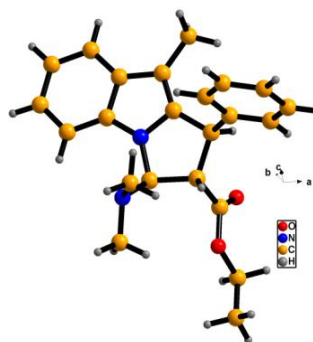
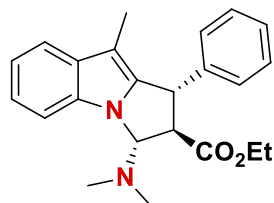
Chemical formula	C <sub>23</sub> H <sub>21</sub> N <sub>3</sub>
<i>M<sub>r</sub></i>	339.43
Crystal system, space group	Monoclinic, C 2/c
Temperature (K)	100
<i>a</i> , <i>b</i> , <i>c</i> (Å)	19.869 (9), 8.329 (3), 23.300 (9)
β (°)	110.432 (12)
<i>V</i> (Å <sup>3</sup> )	3613 (2)
<i>Z</i>	8
Radiation type	Mo <i>K</i> α
μ (mm <sup>-1</sup> )	0.07
Crystal size (mm)	0.15 × 0.13 × 0.12
Data collection	
Diffractometer	Bruker <i>SMART APEX</i> diffractometer
Absorption correction	Empirical (using intensity measurements) <i>SADABS</i>
<i>T<sub>min</sub></i> , <i>T<sub>max</sub></i>	0.989, 0.991
No. of measured, independent and observed [ <i>I</i> > 2σ( <i>I</i> )] reflections	9601, 3345, 2361
<i>R<sub>int</sub></i>	0.049
(sin θ/λ) <sub>max</sub> (Å <sup>-1</sup> )	0.606
Refinement	
<i>R</i> [ <i>F</i> <sup>2</sup> > 2σ( <i>F</i> <sup>2</sup> )], <i>wR</i> ( <i>F</i> <sup>2</sup> ), <i>S</i>	0.064, 0.195, 1.04
No. of reflections	3345
No. of parameters	247
H-atom treatment	H atoms treated by a mixture of independent and constrained refinement
Δρ <sub>max</sub> , Δρ <sub>min</sub> (e Å <sup>-3</sup> )	0.53, -0.52

## Compound 10b'



Chemical formula	C <sub>30</sub> H <sub>27</sub> N <sub>3</sub>
$M_r$	429.55
Crystal system, space group	Orthorhombic, <i>Pbca</i>
Temperature (K)	100
$a, b, c$ (Å)	9.0981 (18), 20.673 (4), 24.866 (5)
$V$ (Å <sup>3</sup> )	4677.0 (16)
$Z$	8
Radiation type	Mo $K\alpha$
$\mu$ (mm <sup>-1</sup> )	0.07
Crystal size (mm)	0.12 × 0.11 × 0.10
Data collection	
Diffractometer	Bruker <i>SMART APEX</i> diffractometer
Absorption correction	Empirical (using intensity measurements) <i>SADABS</i>
$T_{\min}, T_{\max}$	0.992, 0.993
No. of measured, independent and observed [ $I > 2\sigma(I)$ ] reflections	25350, 4589, 2978
$R_{\text{int}}$	0.080
$(\sin \theta/\lambda)_{\text{max}}$ (Å <sup>-1</sup> )	0.617
Refinement	
$R[F^2 > 2\sigma(F^2)], wR(F^2), S$	0.051, 0.150, 1.02
No. of reflections	4589
No. of parameters	300
H-atom treatment	H atoms treated by a mixture of independent and constrained refinement
$\Delta\rho_{\text{max}}, \Delta\rho_{\text{min}}$ (e Å <sup>-3</sup> )	0.24, -0.26

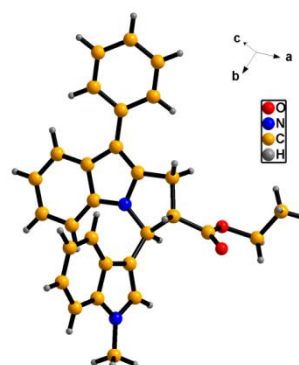
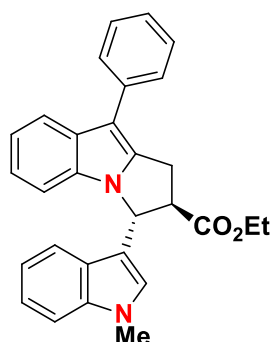
## Compound 12d



Chemical formula	C <sub>23</sub> H <sub>26</sub> N <sub>2</sub> O <sub>2</sub>
$M_r$	362.47
Crystal system, space group	Triclinic, P -1
Temperature (K)	100
$a, b, c$ (Å)	7.845 (5), 9.525 (3), 14.475 (5)
$\alpha, \beta, \gamma$ (°)	102.857 (5), 103.298 (2), 104.067 (5)
$V$ (Å <sup>3</sup> )	975.6 (9)
$Z$	2
Radiation type	Mo $K\alpha$
$\mu$ (mm <sup>-1</sup> )	0.08
Crystal size (mm)	0.12 × 0.11 × 0.10
Data collection	
Diffractometer	Bruker <i>SMART APEX</i> diffractometer
Absorption correction	Empirical (using intensity measurements) <i>SADABS</i>
$T_{\min}, T_{\max}$	0.991, 0.992
No. of measured, independent and observed [ $I > 2\sigma(I)$ ] reflections	12331, 3643, 2696
$R_{\text{int}}$	0.041
$(\sin \theta/\lambda)_{\text{max}}$ (Å <sup>-1</sup> )	0.606
Refinement	
$R[F^2 > 2\sigma(F^2)], wR(F^2), S$	0.057, 0.168, 1.07
No. of reflections	3643
No. of parameters	244
H-atom treatment	H atoms treated by a mixture of independent and constrained refinement
$\Delta\rho_{\text{max}}, \Delta\rho_{\text{min}}$ (e Å <sup>-3</sup> )	0.60, -0.48

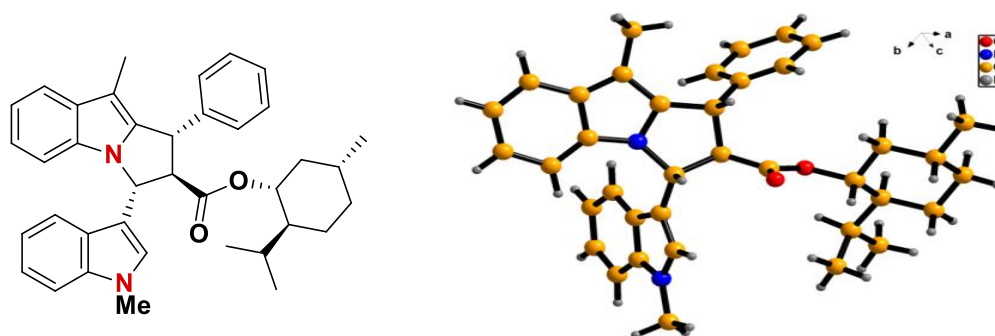


## Compound 16h



Chemical formula	C <sub>29</sub> H <sub>26</sub> N <sub>2</sub> O <sub>2</sub>
$M_r$	434.52
Crystal system, space group	Triclinic, P -1
Temperature (K)	100
$a, b, c$ (Å)	9.929 (4), 10.675 (4), 12.143 (4)
$\alpha, \beta, \gamma$ (°)	90.655 (7), 113.506 (6), 109.344 (6)
$V$ (Å <sup>3</sup> )	1098.2 (7)
$Z$	2
Radiation type	Mo $K\alpha$
$\mu$ (mm <sup>-1</sup> )	0.08
Crystal size (mm)	0.20 × 0.20 × 0.17
Data collection	
Diffractometer	Bruker <i>SMART APEX</i> diffractometer
Absorption correction	Empirical (using intensity measurements) <i>SADABS</i>
$T_{\min}, T_{\max}$	0.984, 0.986
No. of measured, independent and observed [ $I > 2\sigma(I)$ ] reflections	5750, 3823, 3016
$R_{\text{int}}$	0.023
$(\sin \theta/\lambda)_{\text{max}}$ (Å <sup>-1</sup> )	0.595
Refinement	
$R[F^2 > 2\sigma(F^2)], wR(F^2), S$	0.051, 0.150, 1.09
No. of reflections	3823
No. of parameters	300
H-atom treatment	H atoms treated by a mixture of independent and constrained refinement
$\Delta\rho_{\text{max}}, \Delta\rho_{\text{min}}$ (e Å <sup>-3</sup> )	0.23, -0.29

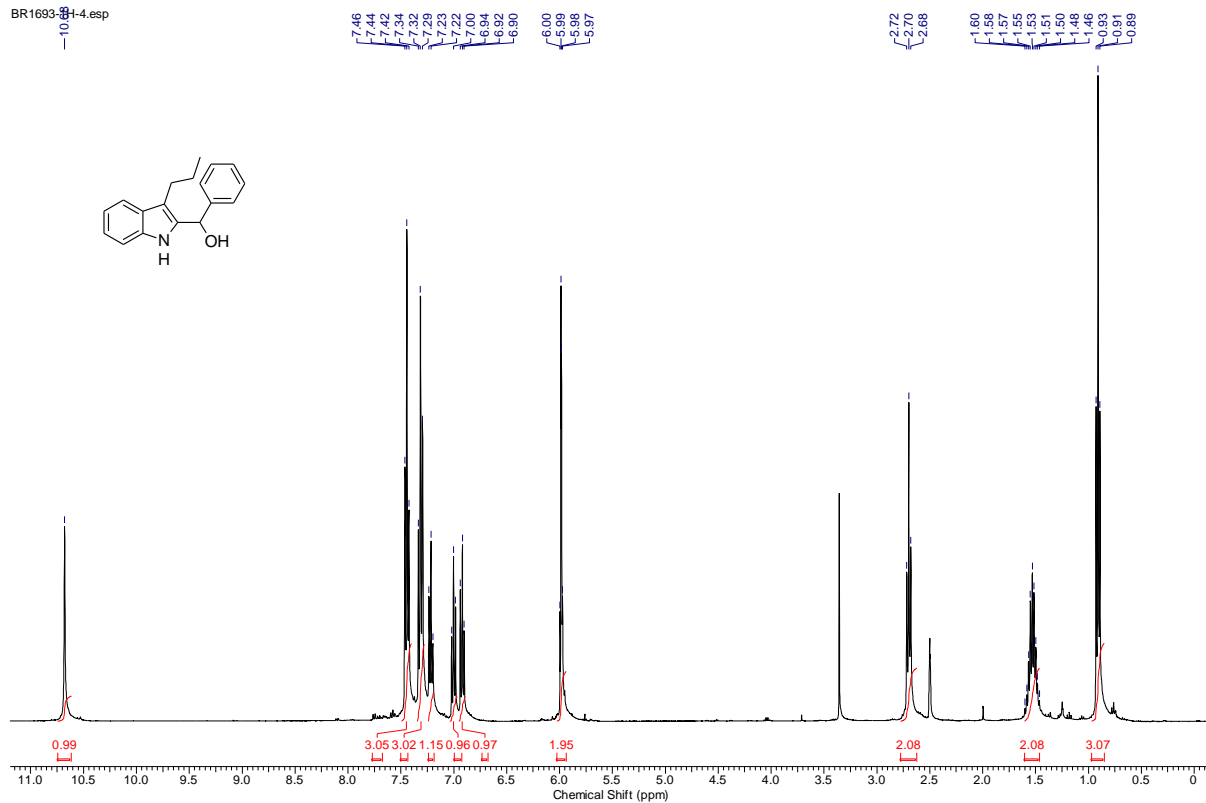
## Compound 18c



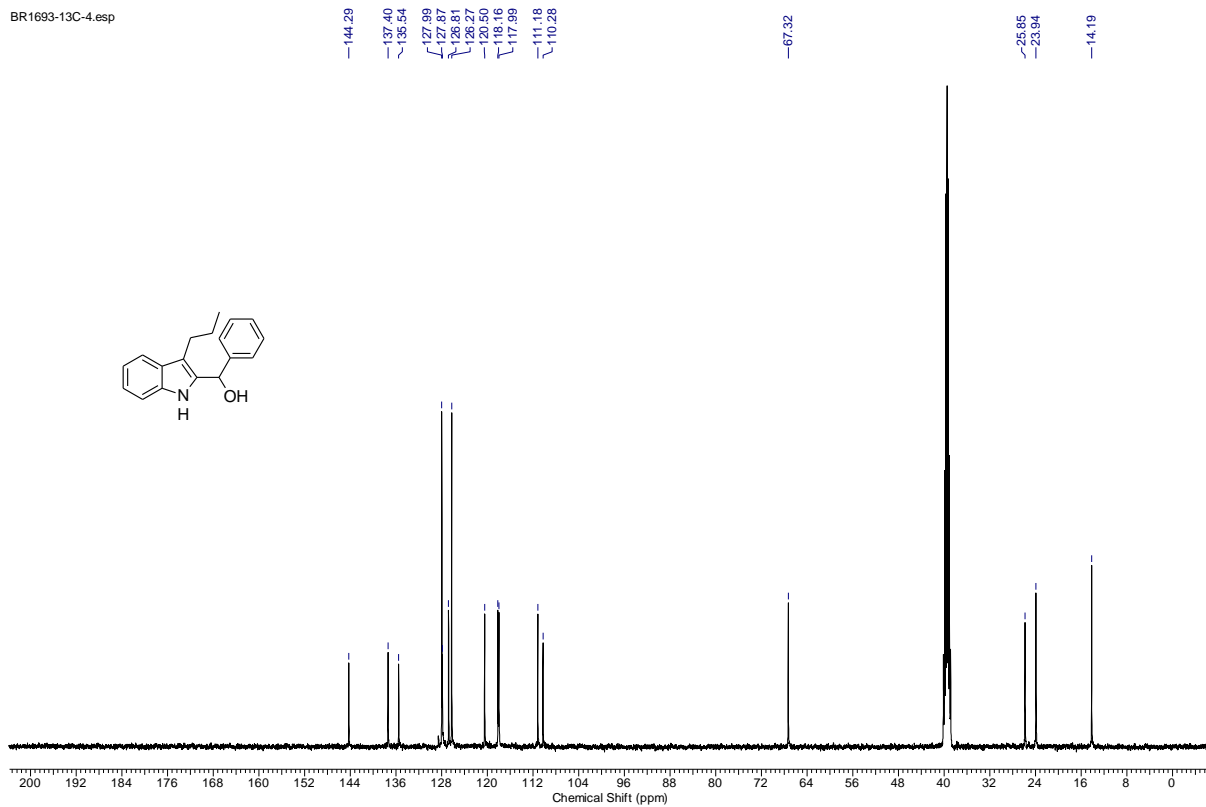
Chemical formula	C <sub>38</sub> H <sub>42</sub> N <sub>2</sub> O <sub>2</sub>
<i>M<sub>r</sub></i>	558.74
Crystal system, space group	Monoclinic, P 21
Temperature (K)	100
<i>a</i> , <i>b</i> , <i>c</i> (Å)	10.5253 (7), 19.4986 (12), 15.3673 (10)
β (°)	90.034 (2)
<i>V</i> (Å <sup>3</sup> )	3153.8 (4)
<i>Z</i>	4
Radiation type	Mo <i>K</i> α
μ (mm <sup>-1</sup> )	0.07
Crystal size (mm)	0.25 × 0.23 × 0.21
Data collection	
Diffractometer	Bruker <i>SMART APEX</i> diffractometer
Absorption correction	Empirical (using intensity measurements) <i>SADABS</i>
<i>T<sub>min</sub></i> , <i>T<sub>max</sub></i>	0.982, 0.985
No. of measured, independent and observed [ <i>I</i> > 2σ( <i>I</i> )] reflections	20849, 10249, 8489
<i>R<sub>int</sub></i>	0.098
(sin θ/λ) <sub>max</sub> (Å <sup>-1</sup> )	0.588
Refinement	
<i>R</i> [ <i>F</i> <sup>2</sup> > 2σ( <i>F</i> <sup>2</sup> )], <i>wR</i> ( <i>F</i> <sup>2</sup> ), <i>S</i>	0.137, 0.331, 1.08
No. of reflections	10249
No. of parameters	752
No. of restraints	1
H-atom treatment	H-atom parameters constrained
	$w = 1/[\sigma^2(F_o^2) + (0.0731P)^2 + 27.3416P]$ where $P = (F_o^2 + 2F_c^2)/3$
Δρ <sub>max</sub> , Δρ <sub>min</sub> (e Å <sup>-3</sup> )	0.53, -0.41
Absolute structure	Flack H D (1983), Acta Cryst. A39, 876-881
Absolute structure parameter	2 (4)

# <sup>1</sup>H and <sup>13</sup>C NMR of compound 4b

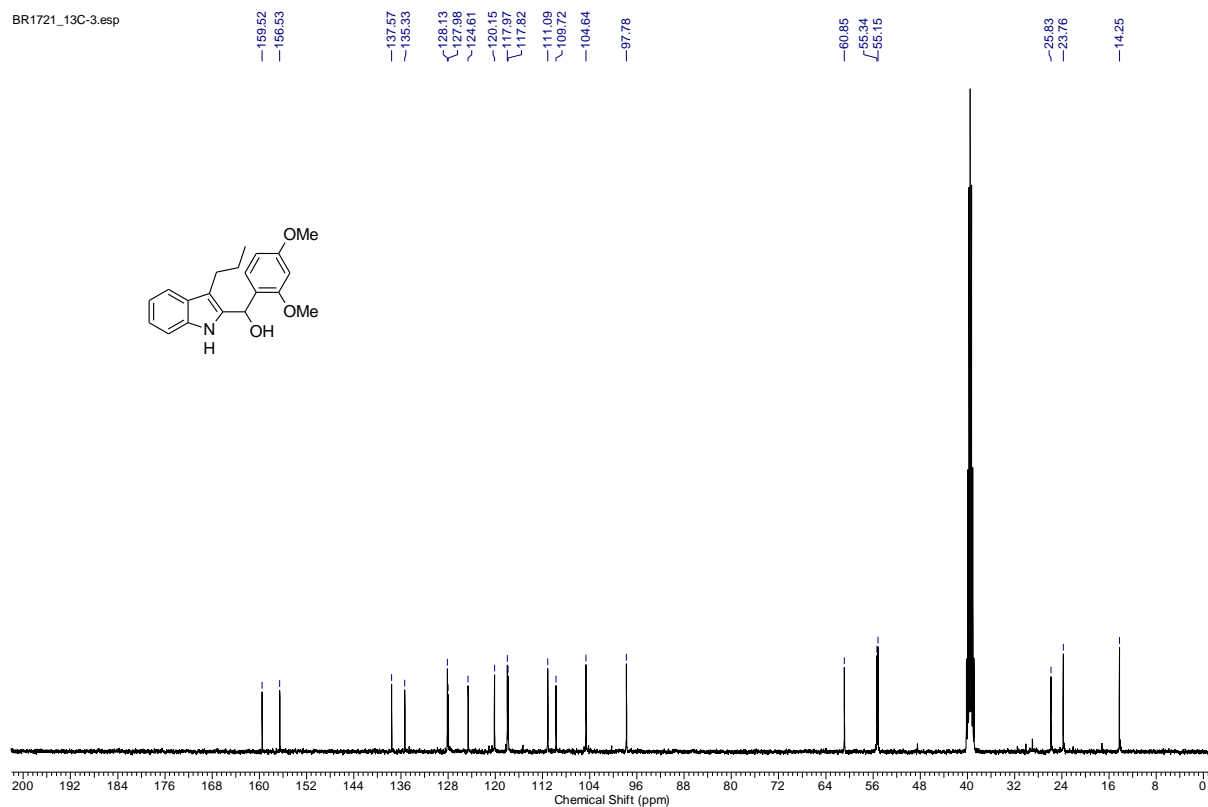
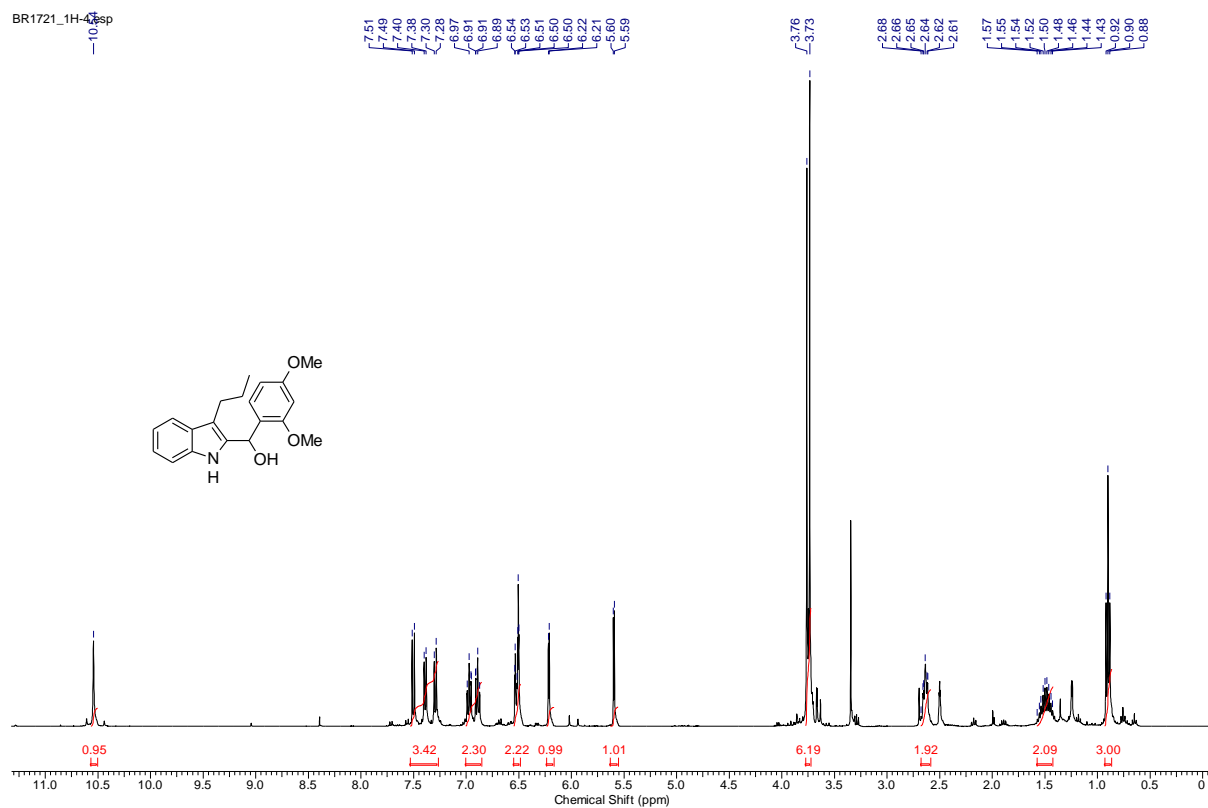
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BR1693-13C-4.esp

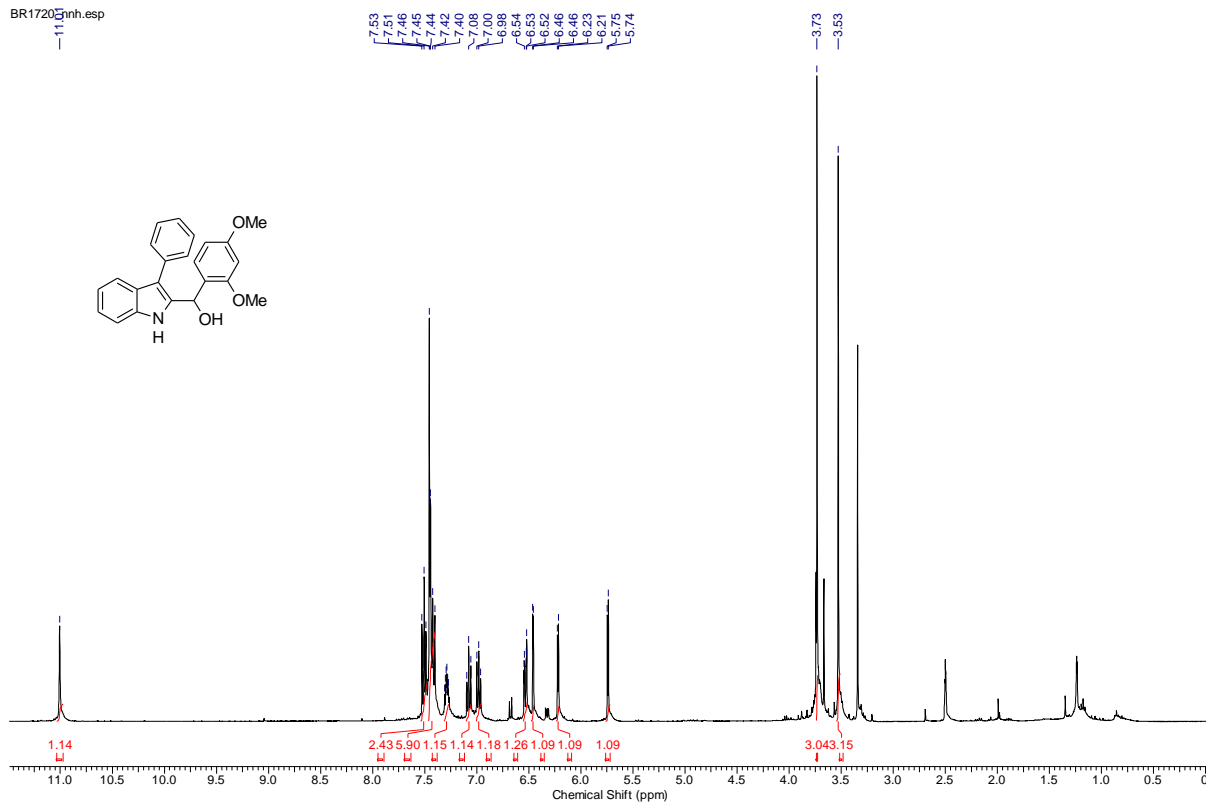


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 4c

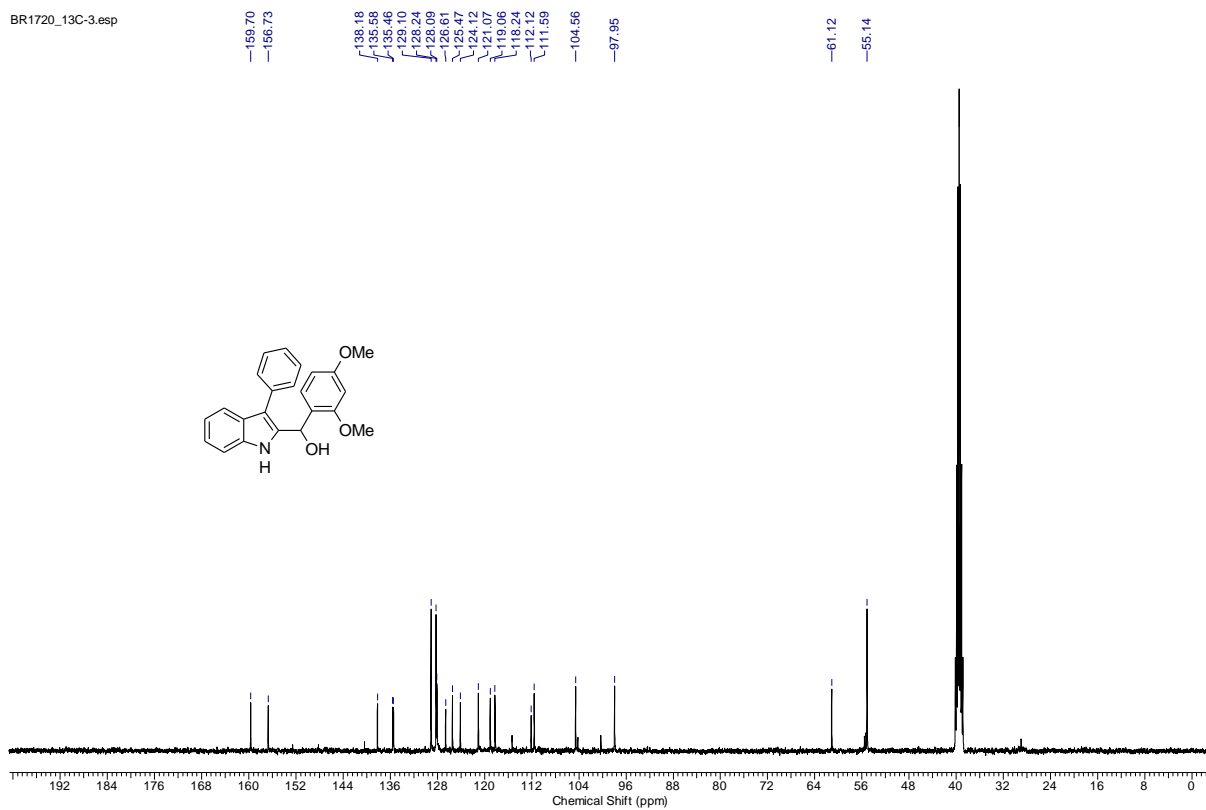


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 4f

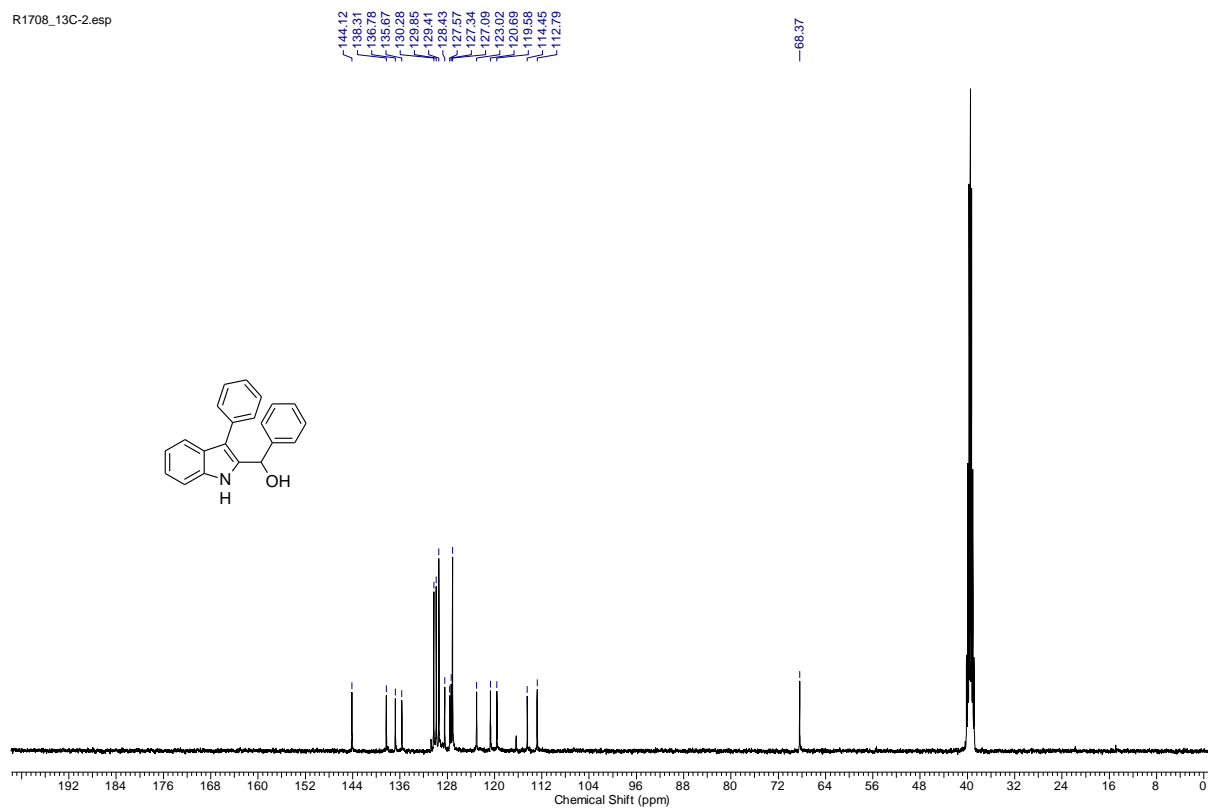
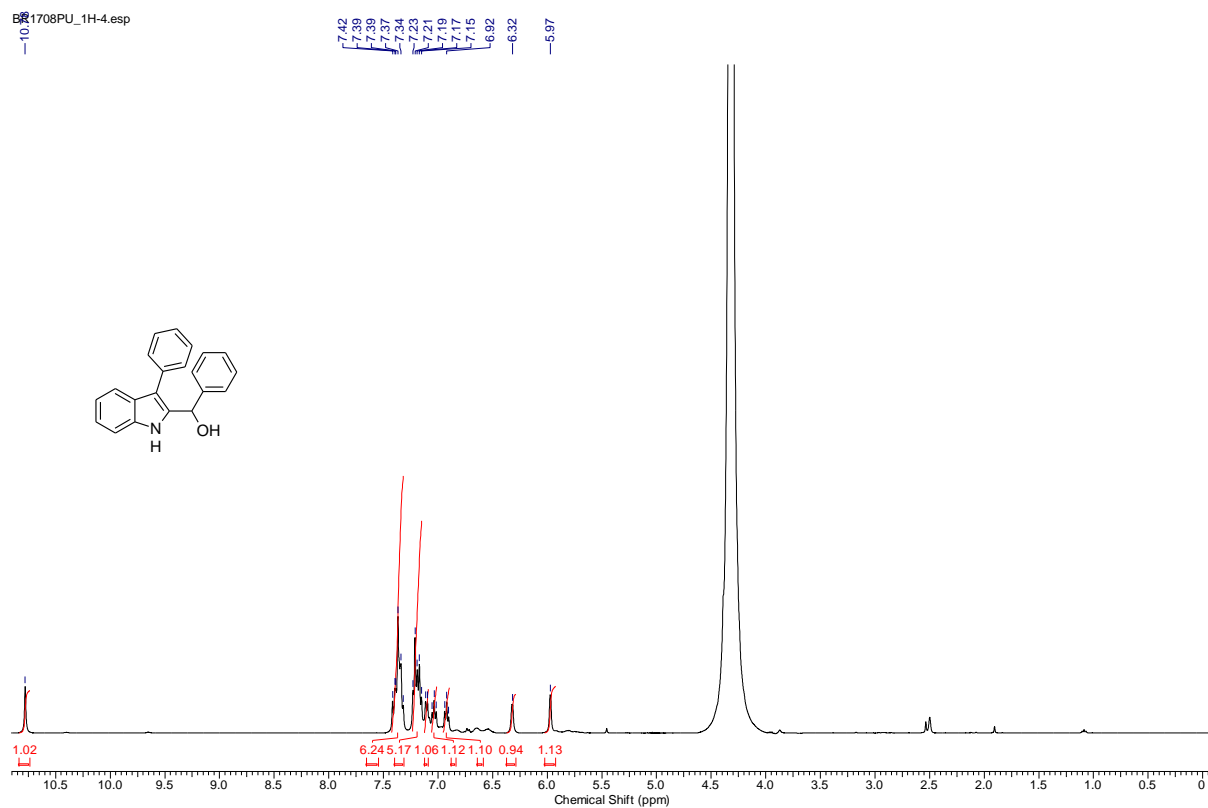
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BR1720\_13C-3.esp

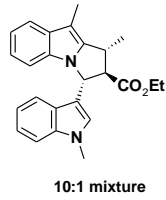
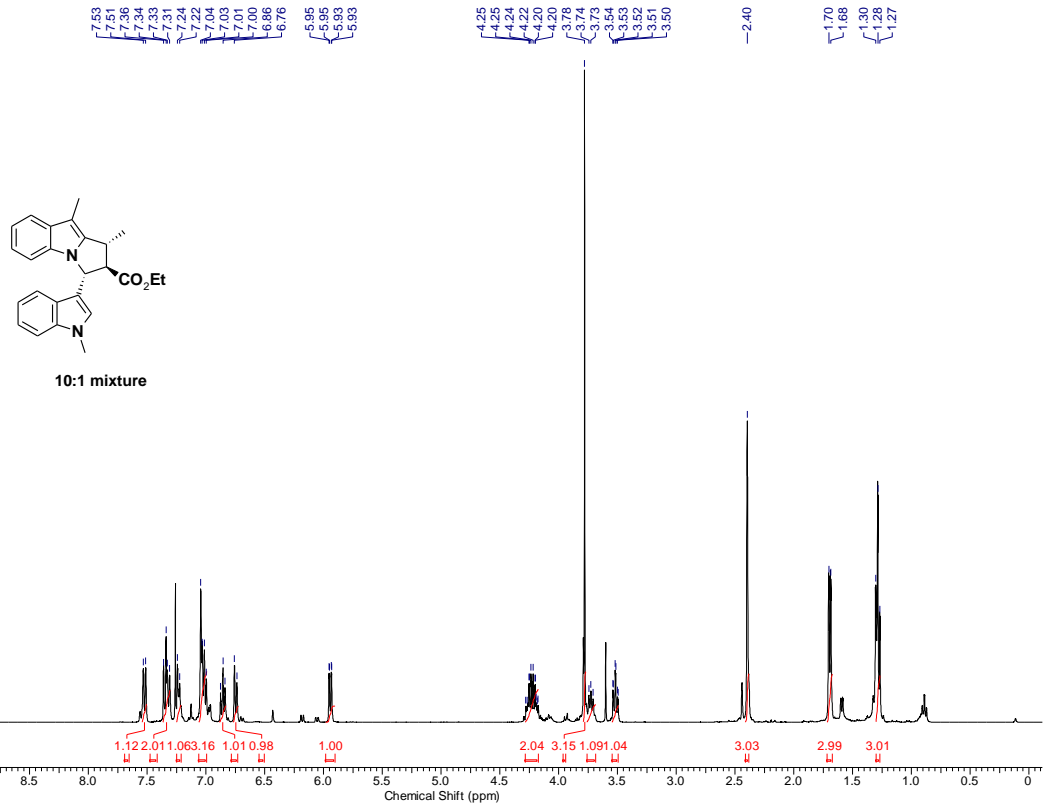


# $^1\text{H}$ and $^{13}\text{C}$ NMR of compound 4g

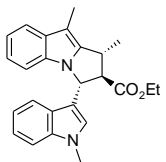
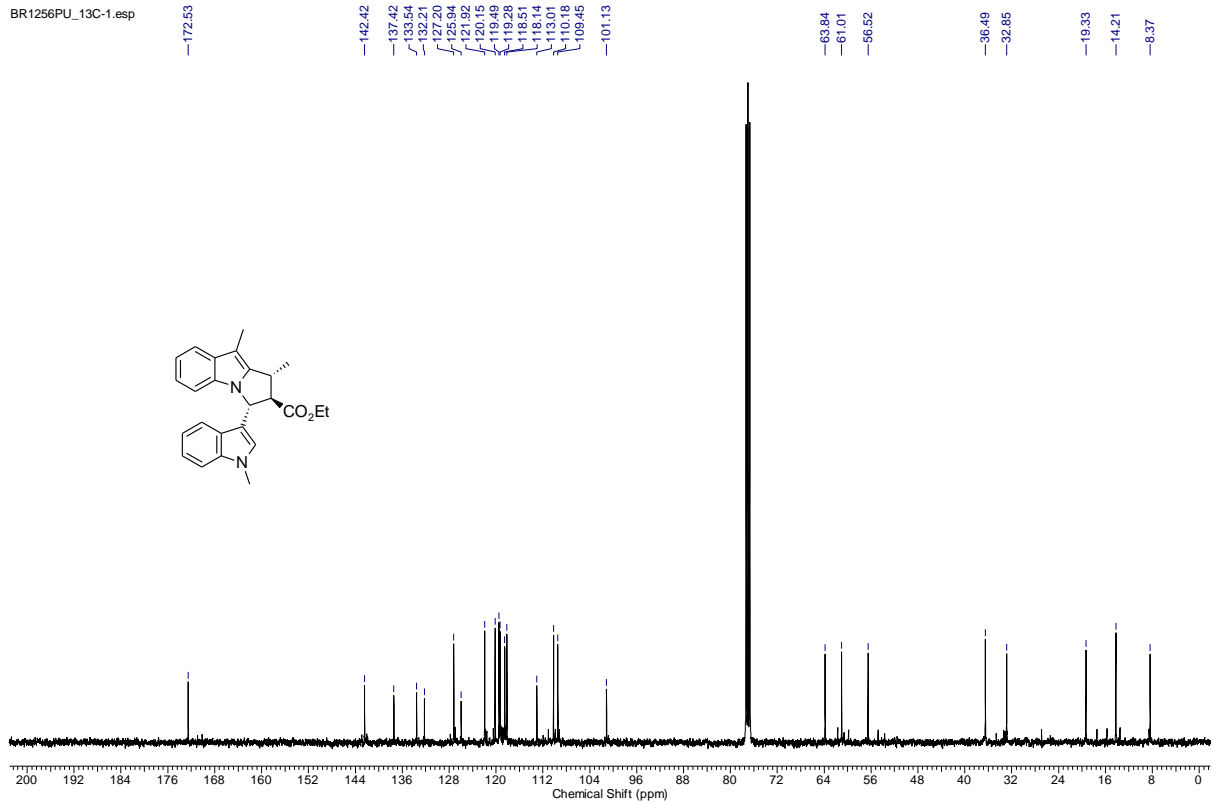


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 6a

BR1256\_PROTON-4.esp

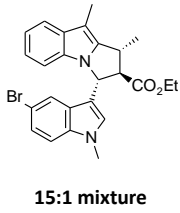
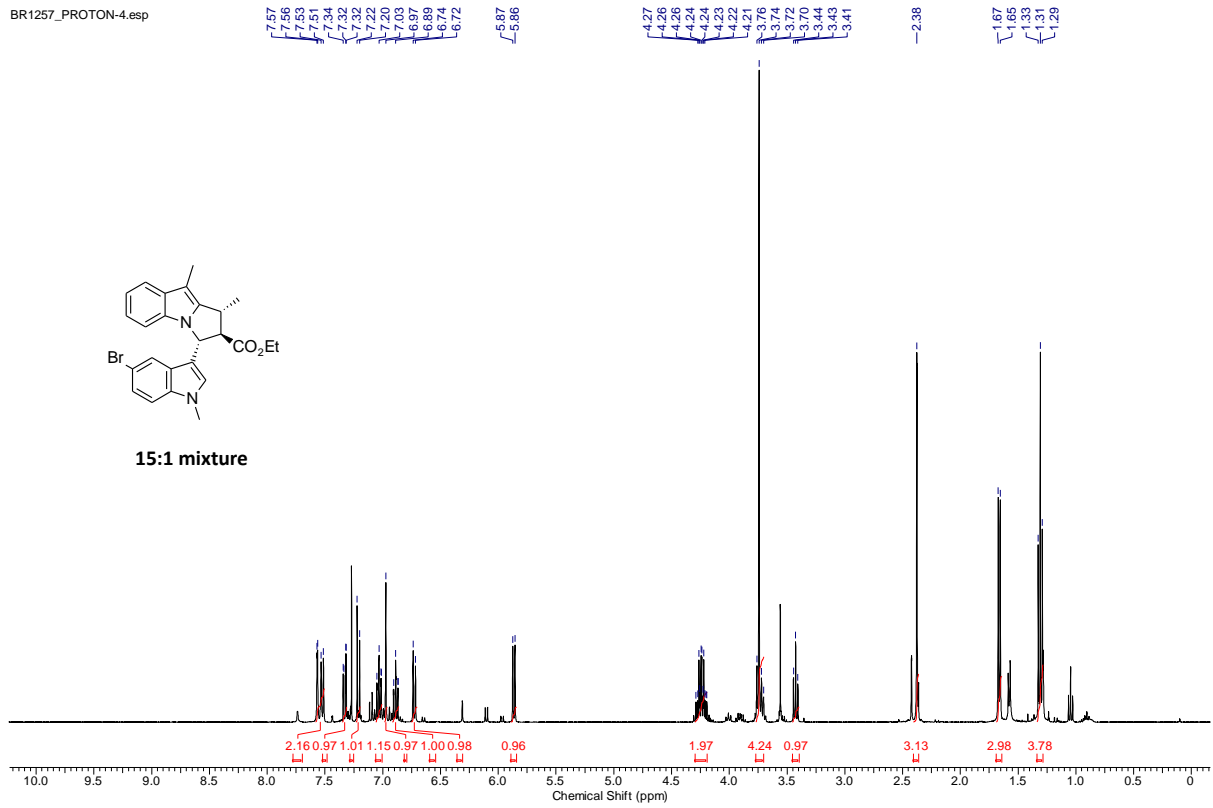


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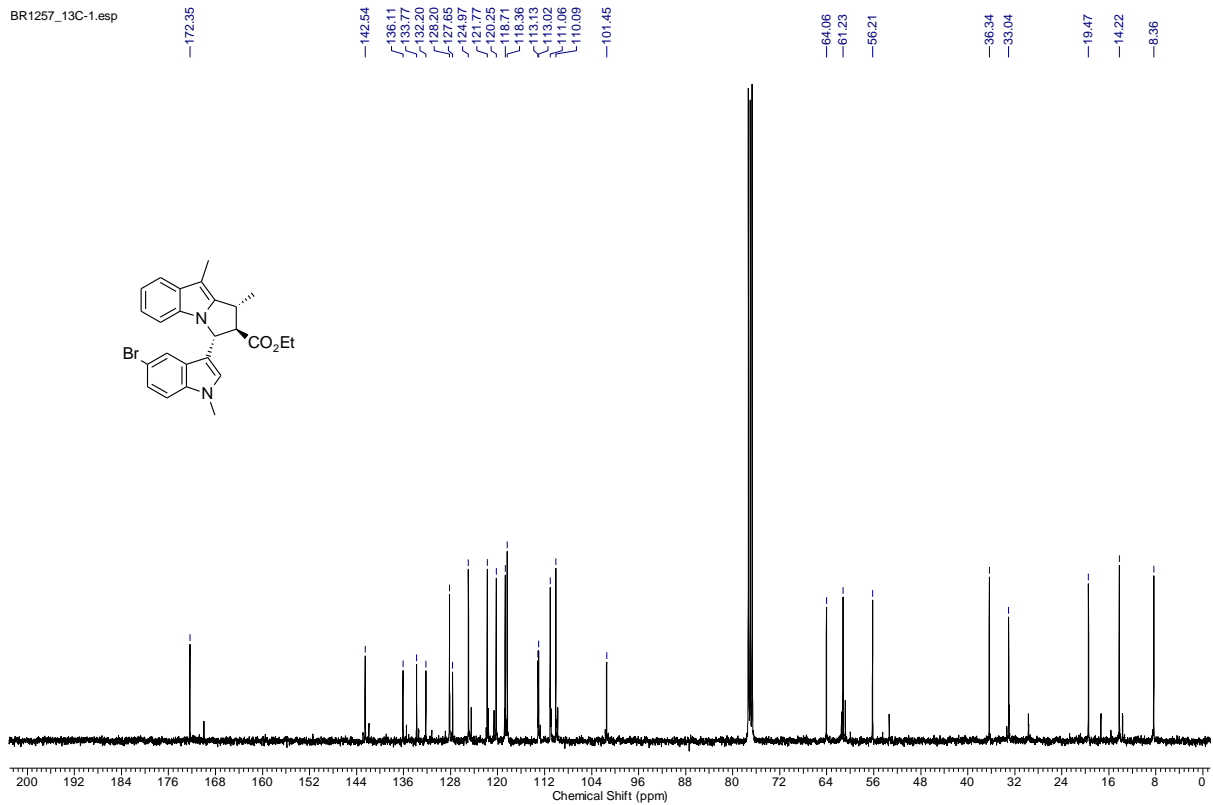


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 6b

BR1257\_PROTON-4.esp



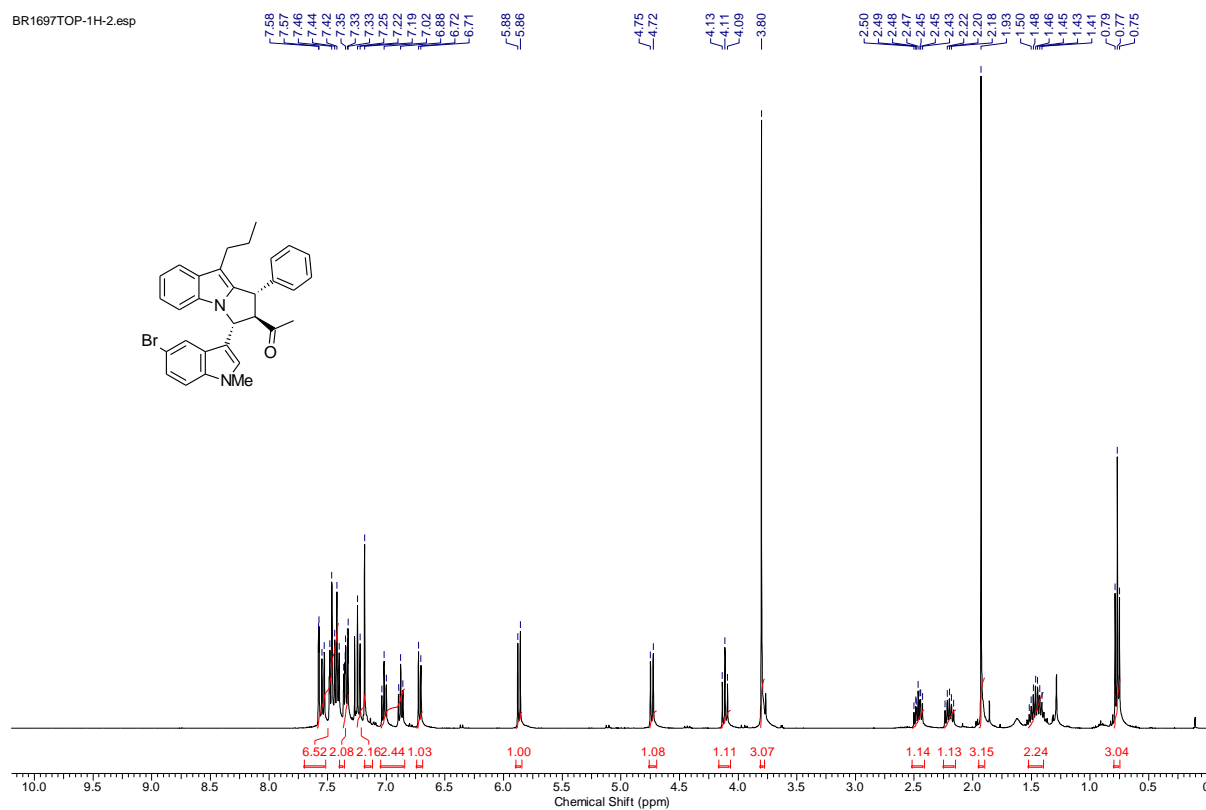
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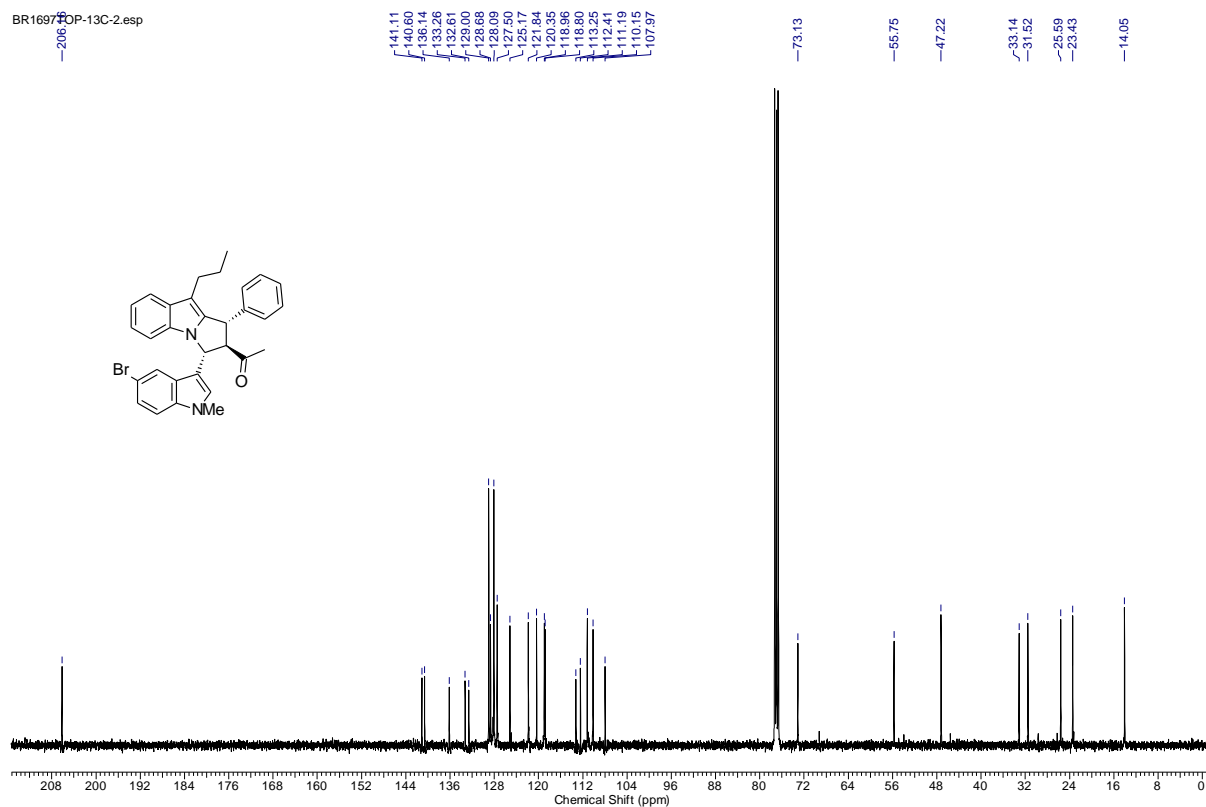


# $^1\text{H}$ and $^{13}\text{C}$ NMR of compound 8a

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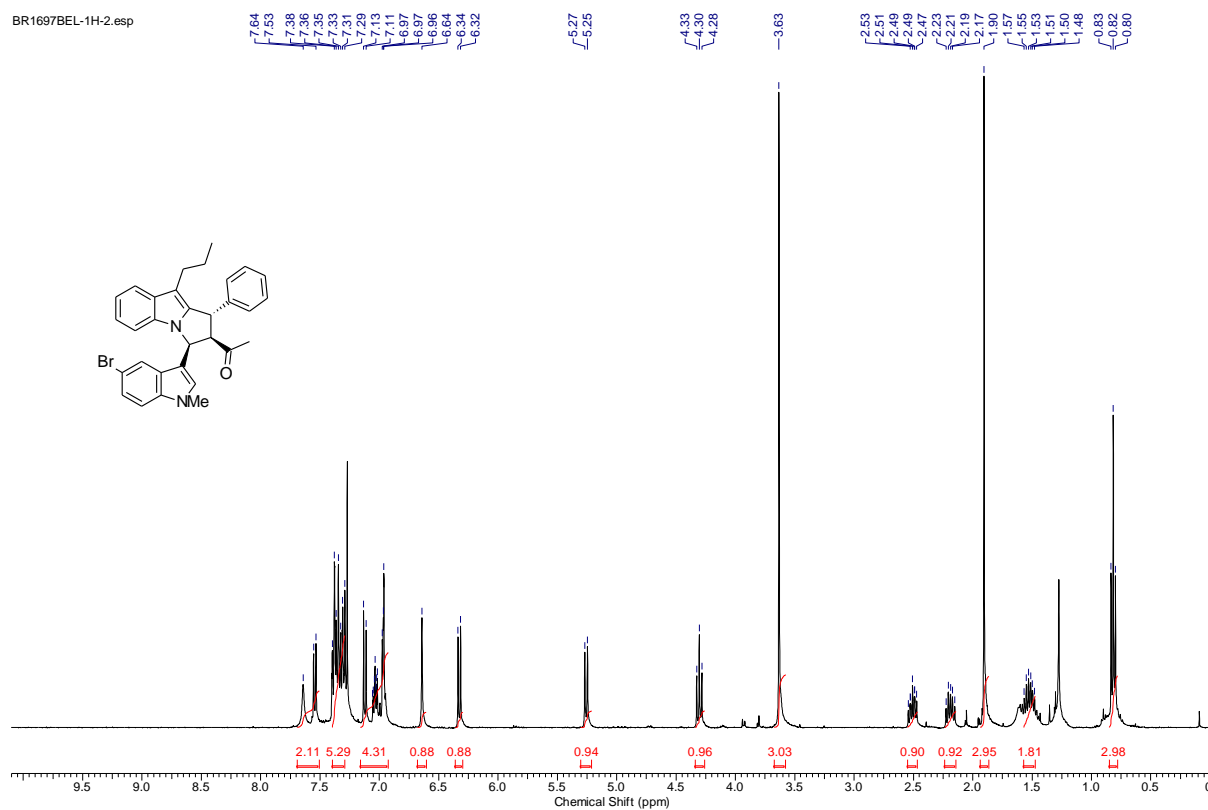


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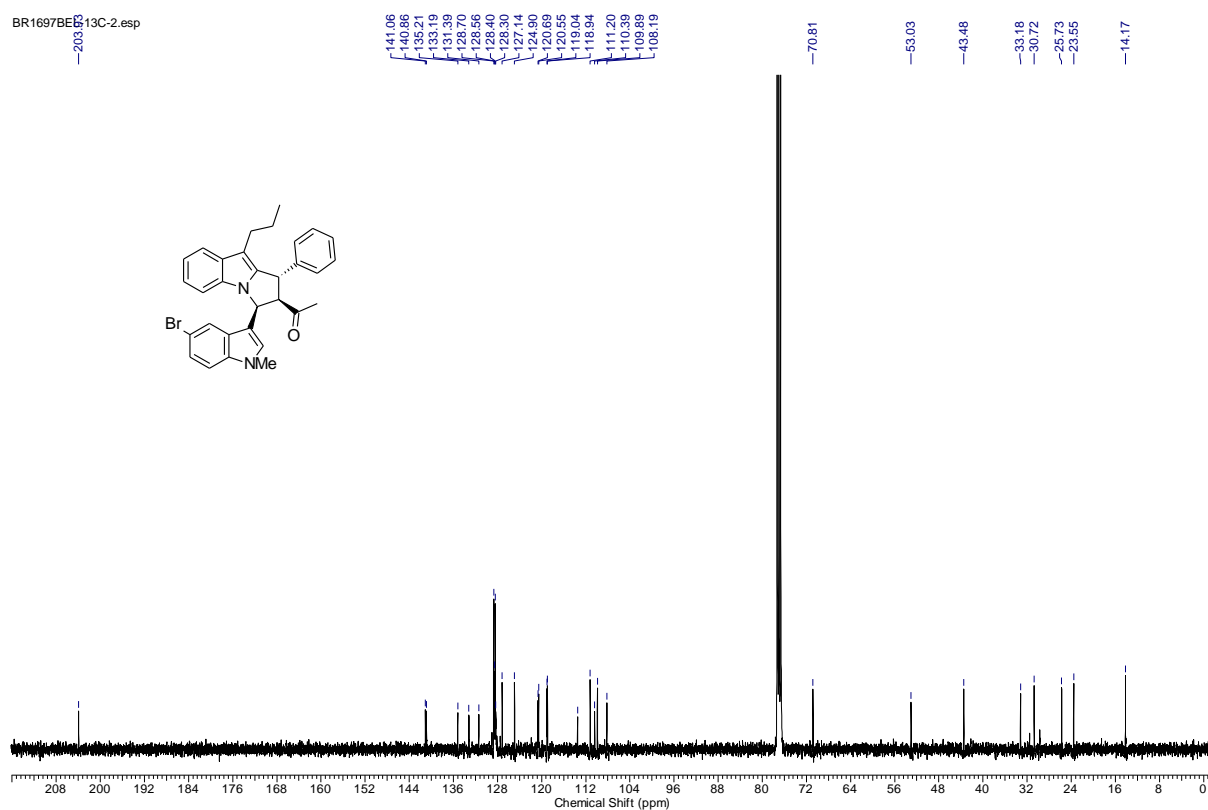


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 8a'

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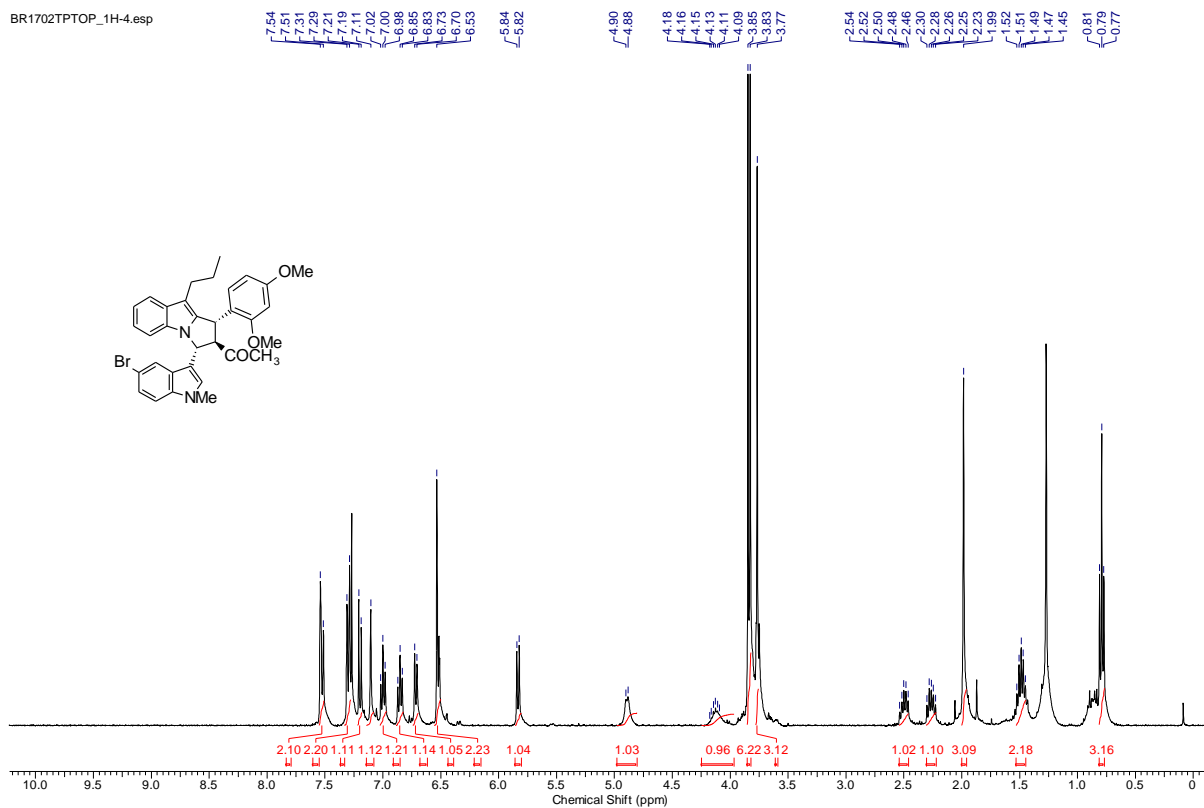


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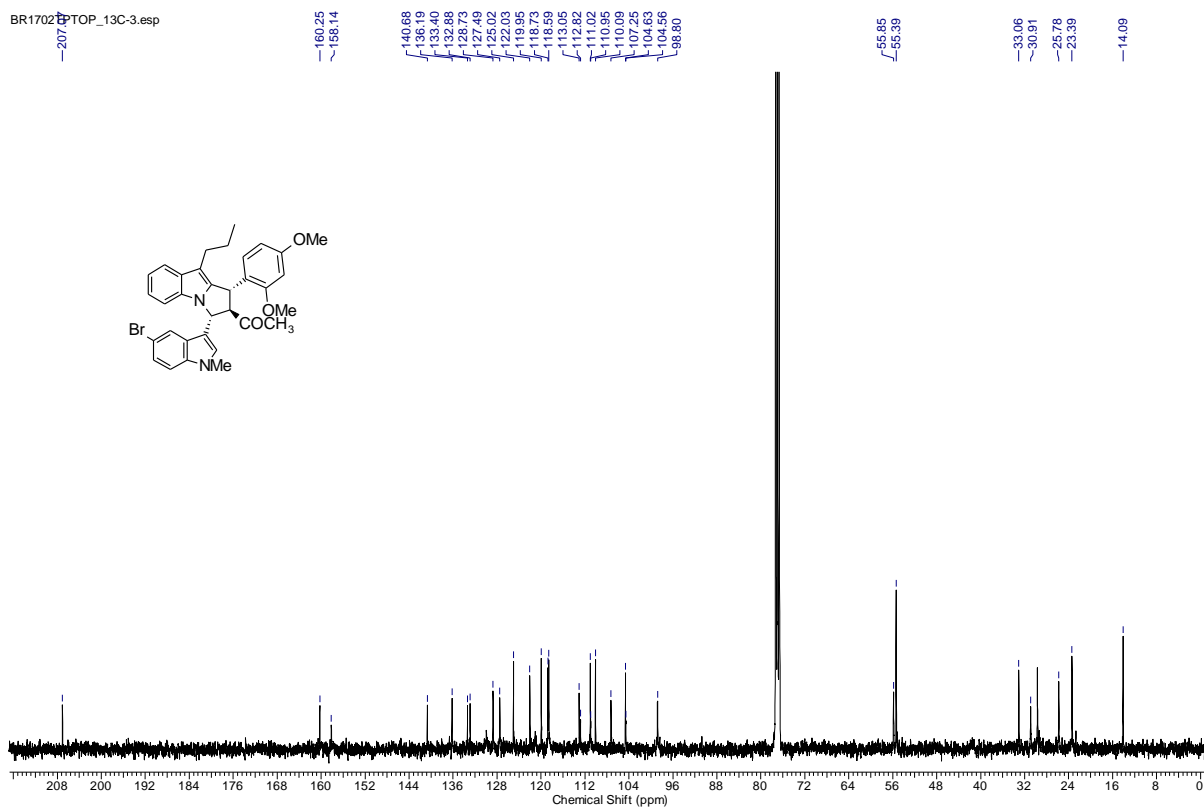


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 8b

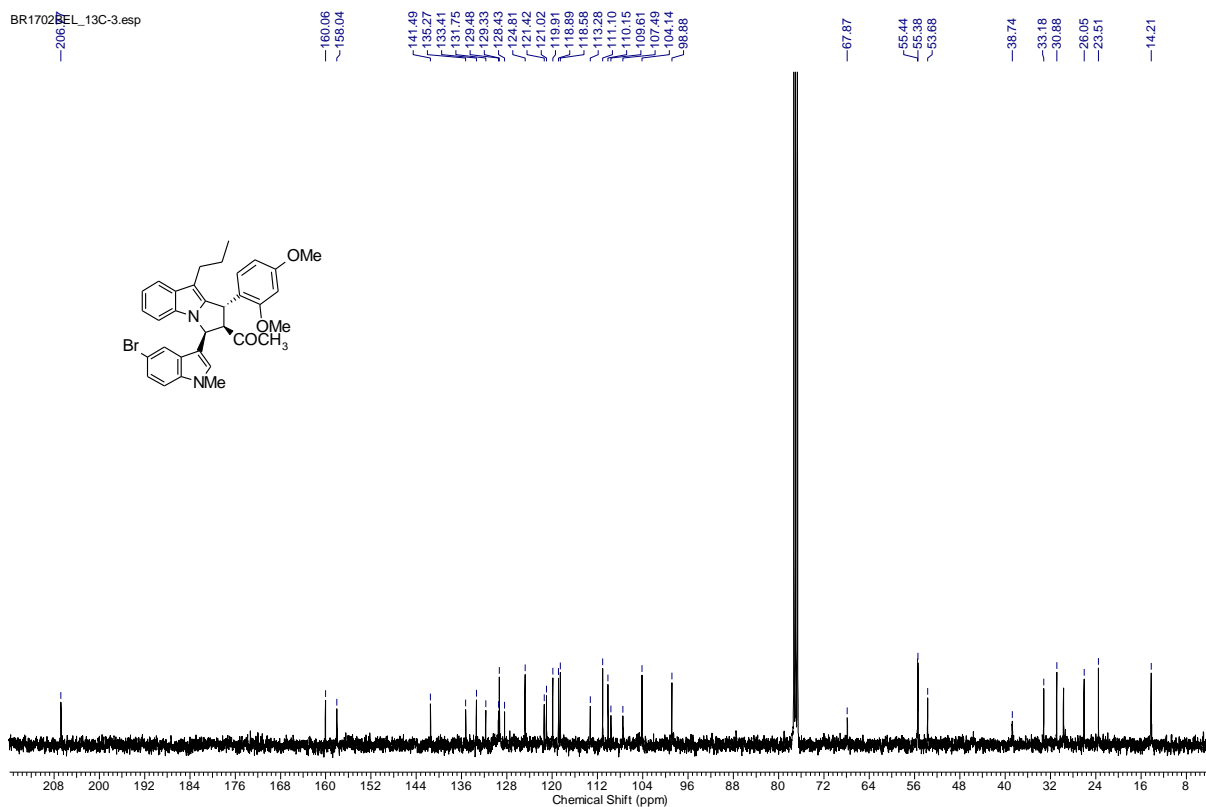
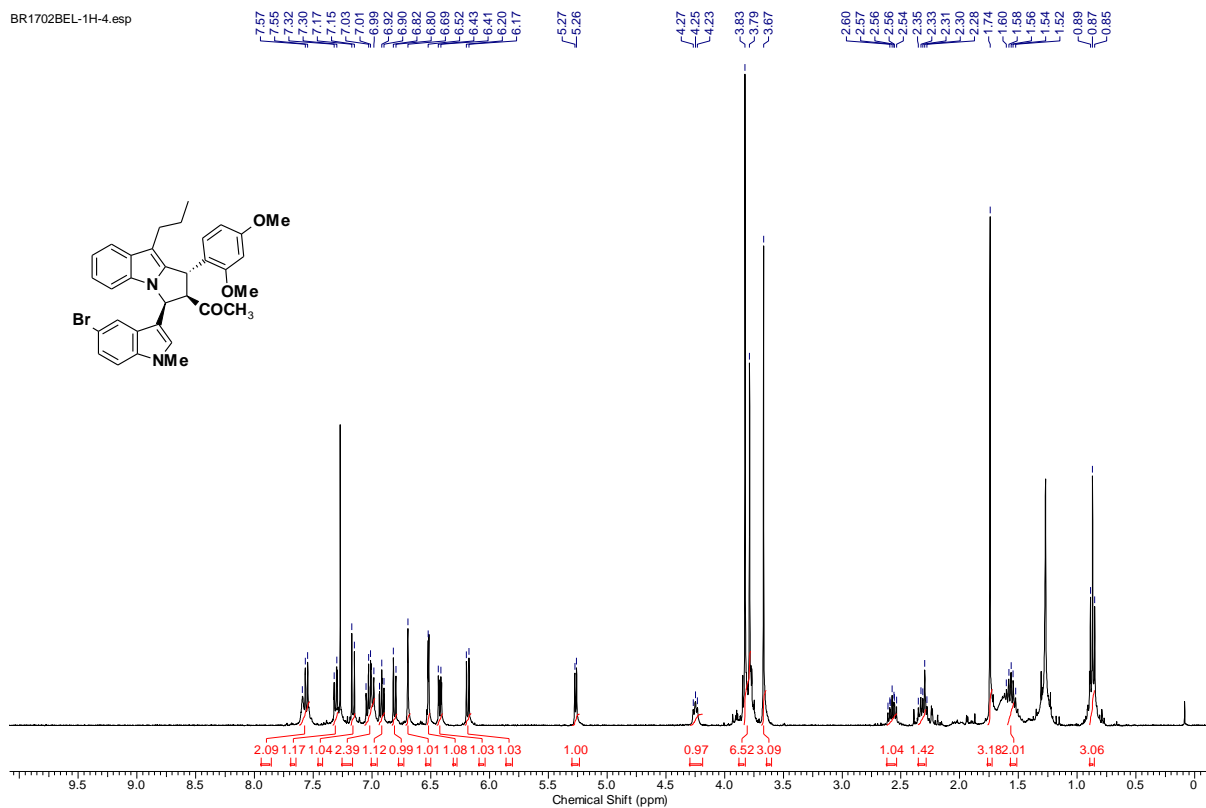
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BR1702TPTOP\_13C-3.esp

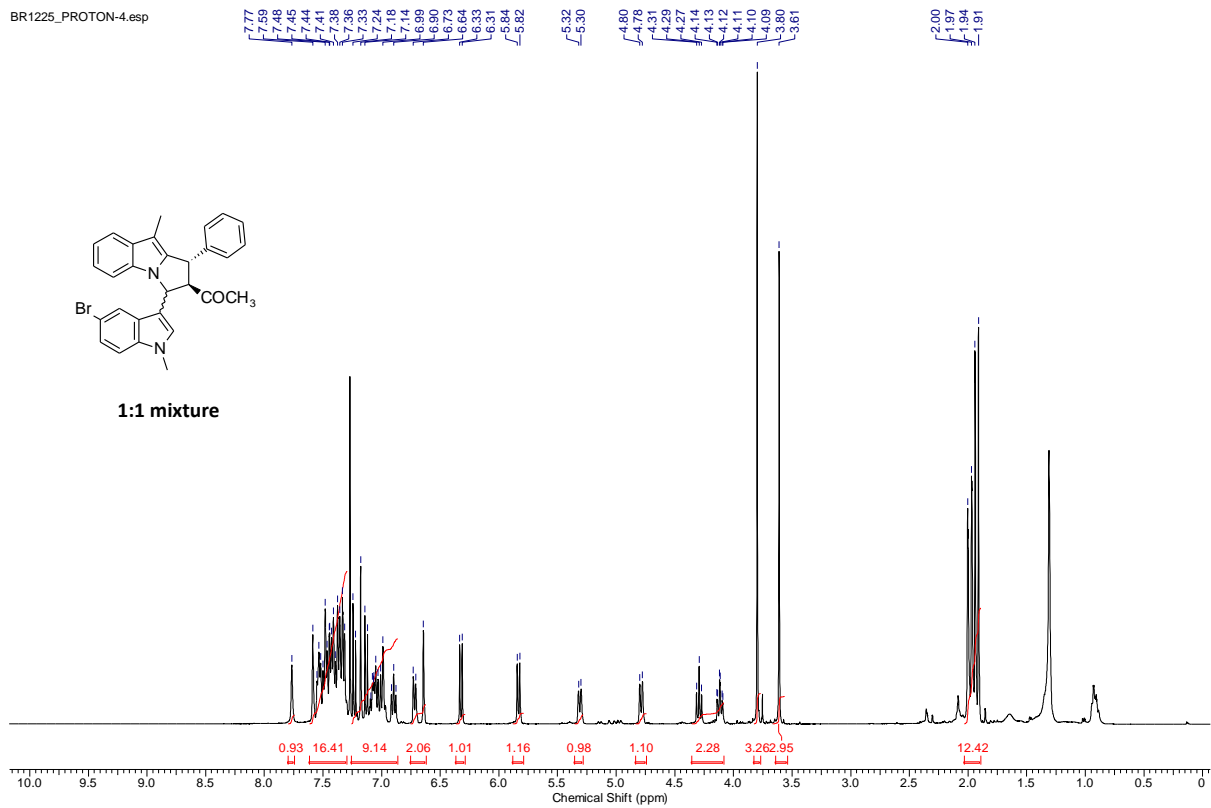


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 8b'

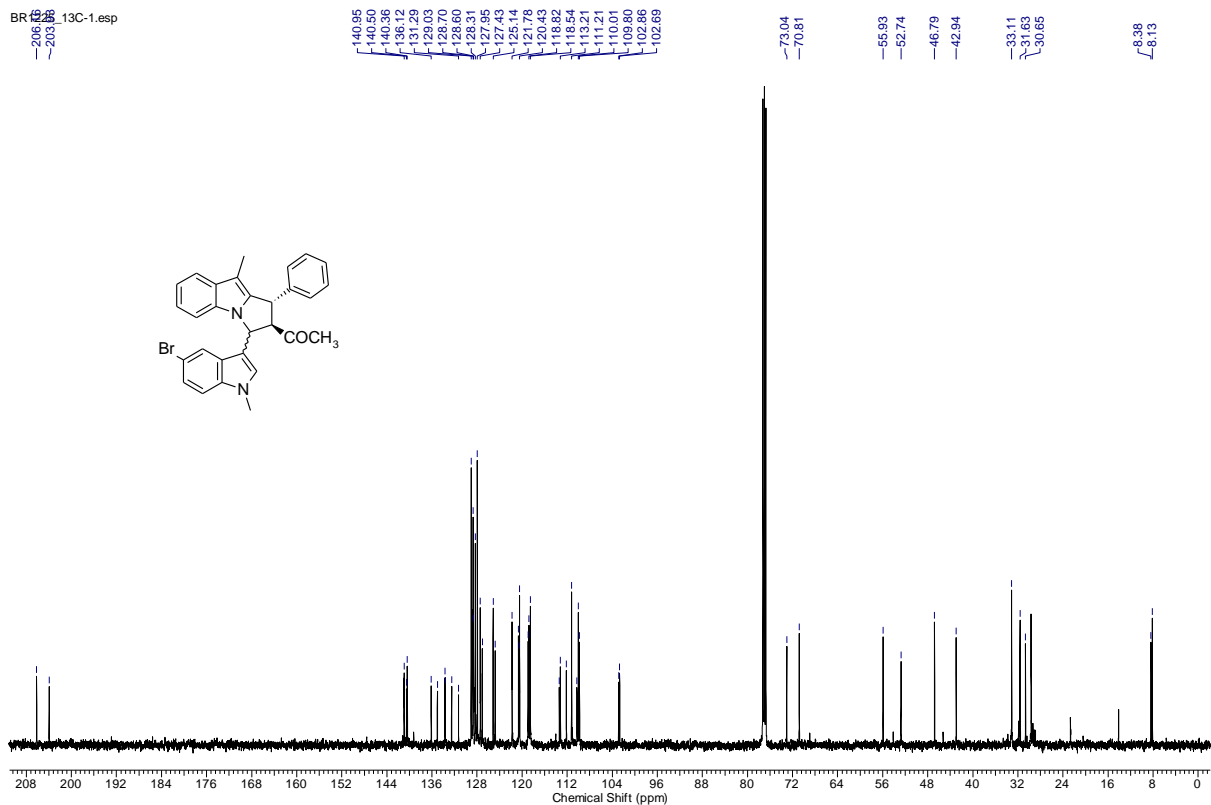


# $^1\text{H}$ and $^{13}\text{C}$ NMR of compound 8c

BR1225\_PROTON-4.esp

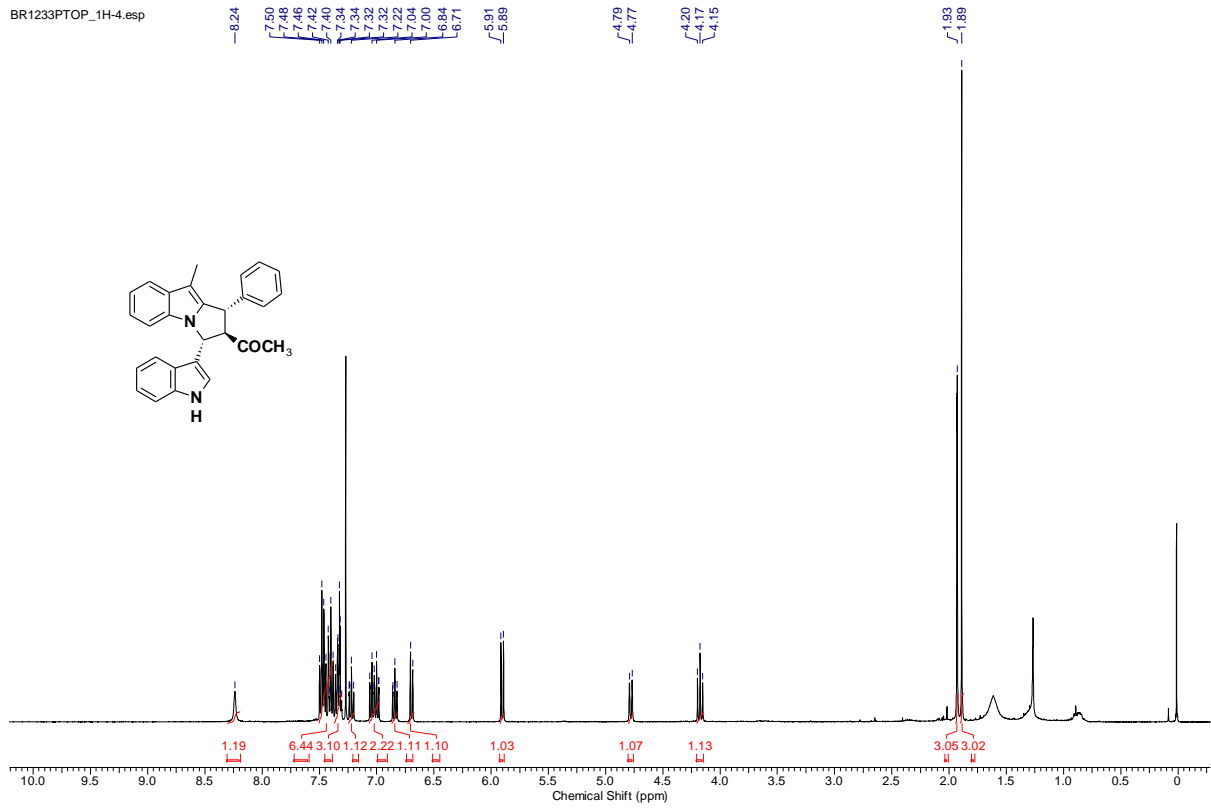


BR1225\_13C-1.esp

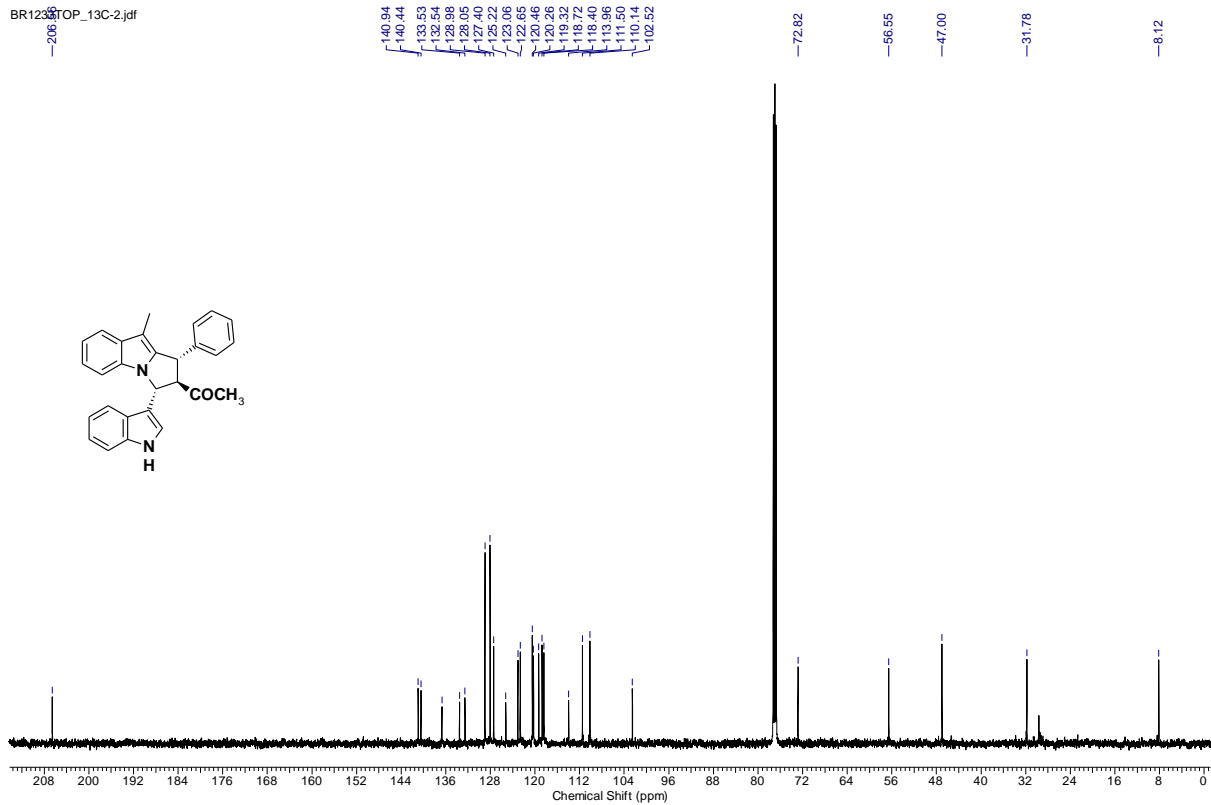


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 8d

BR1233PTOP\_1H-4.esp

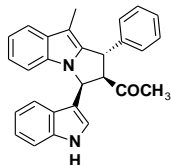
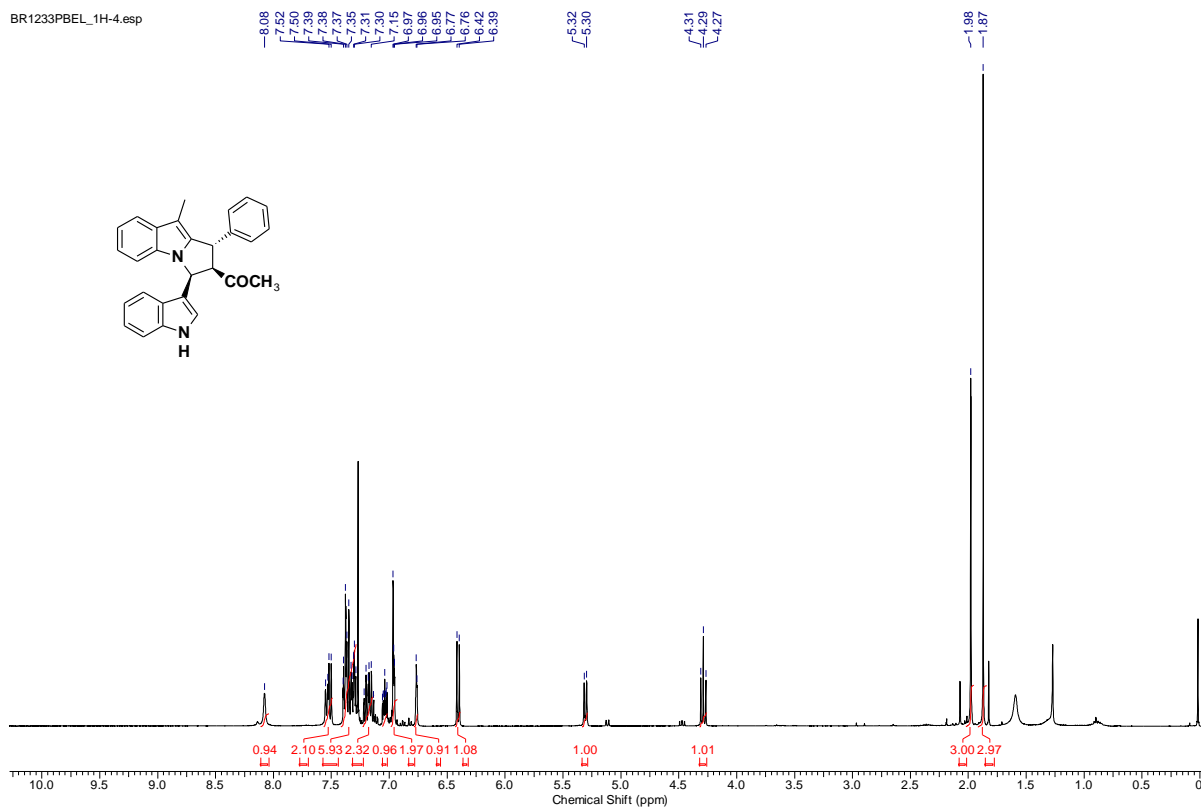


BR1233PTOP\_13C-2.jdf

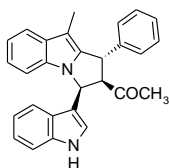
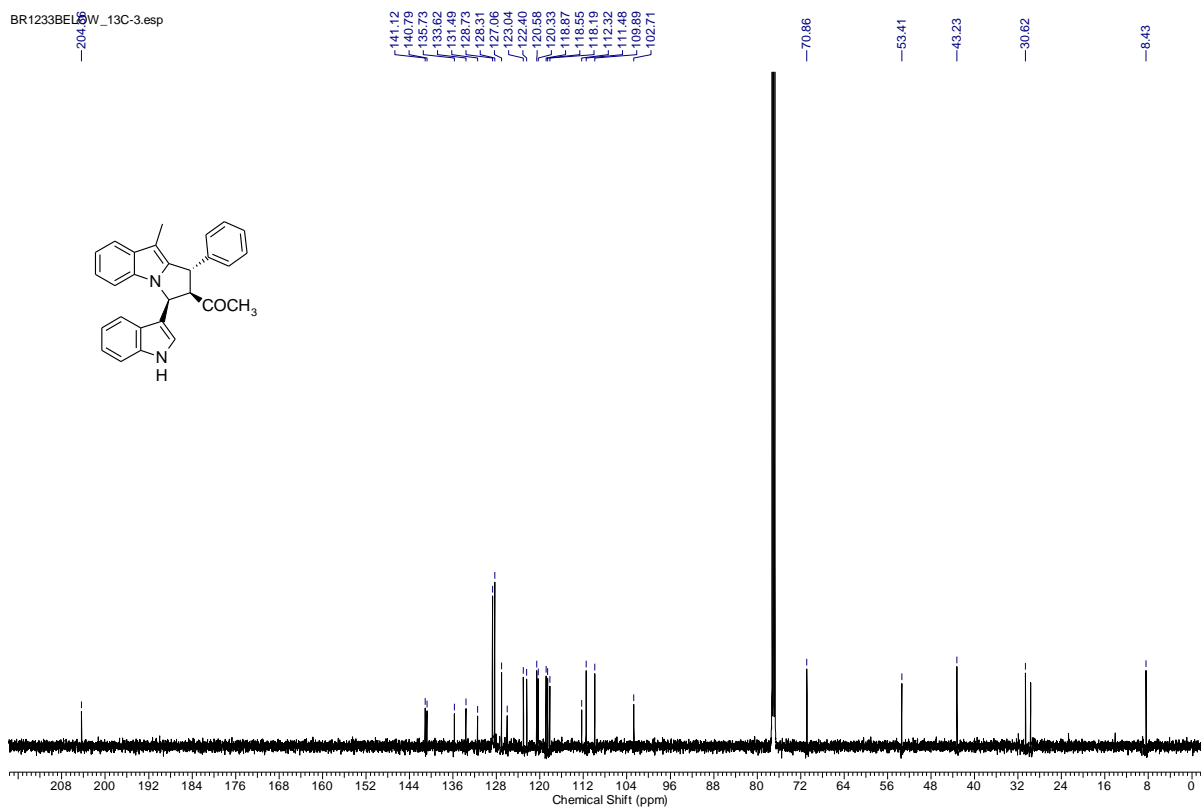


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 8d'

BR1233PBEL\_1H-4.esp

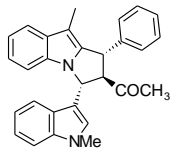
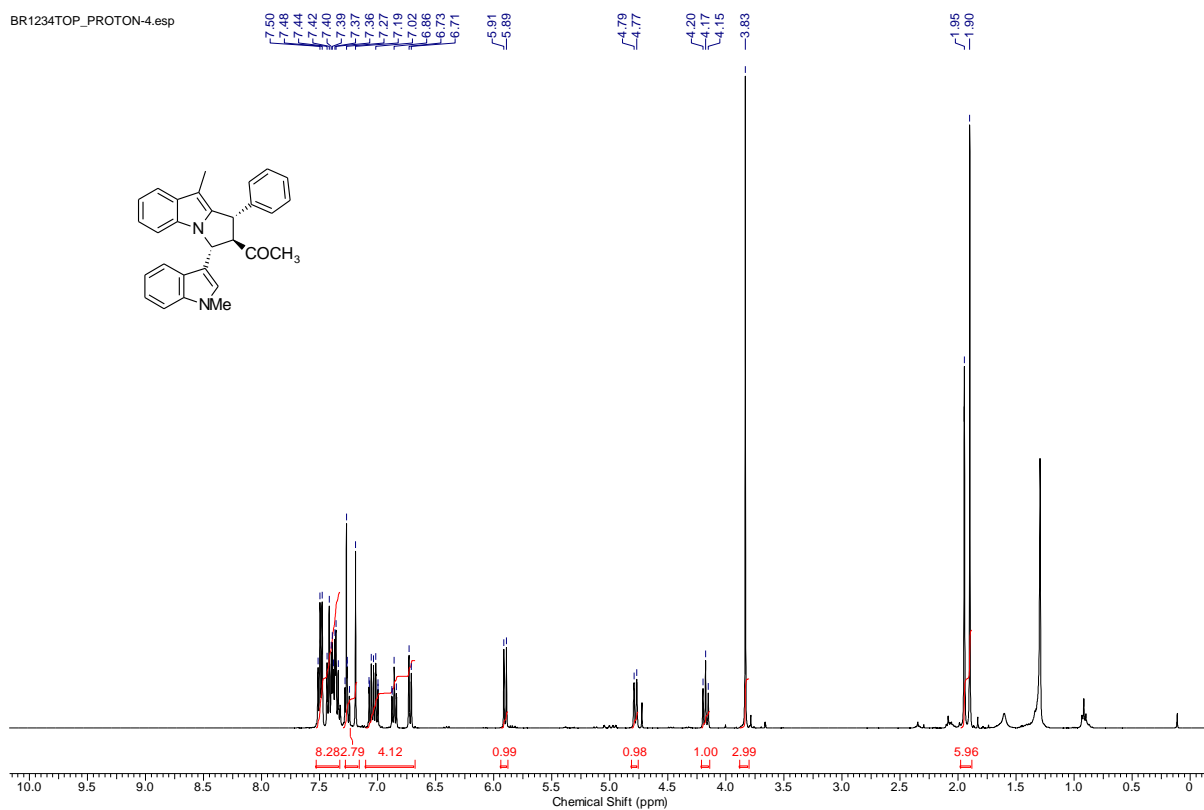


BR1233BE15W\_13C-3.esp

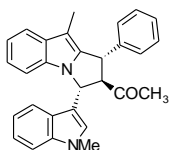
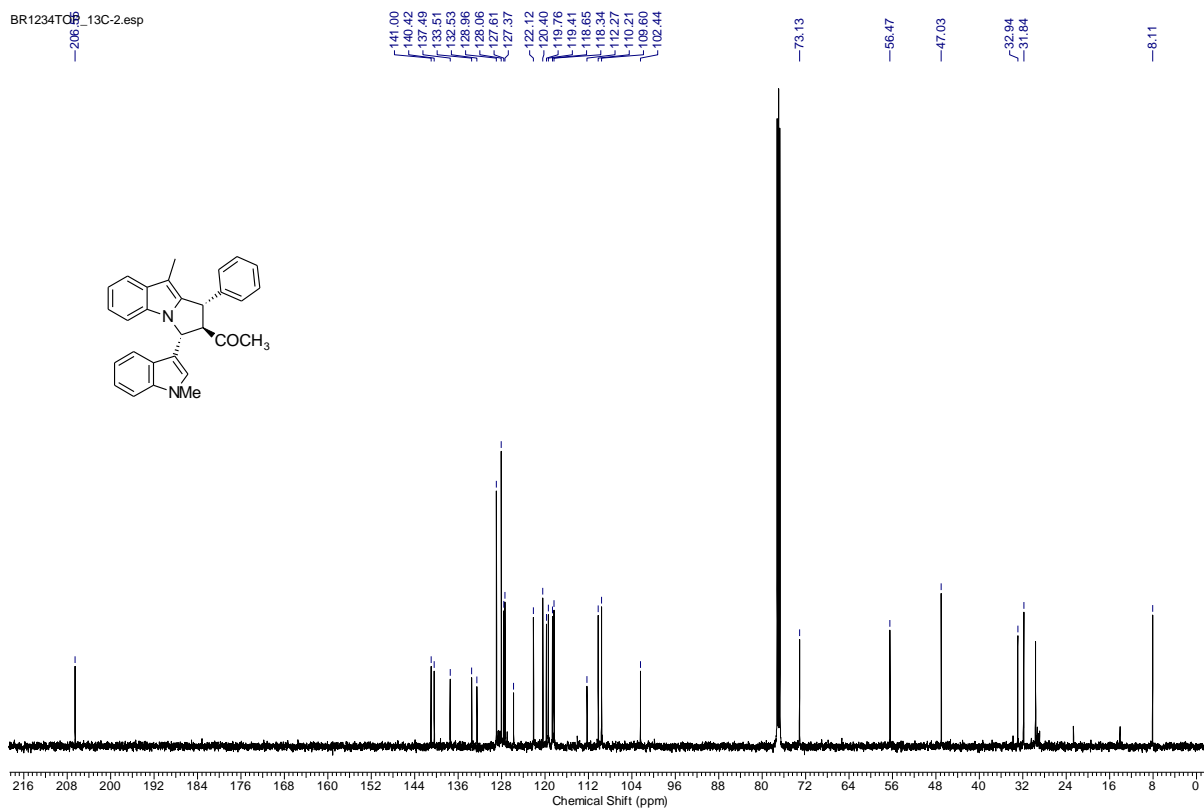


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 8e

BR1234TOP\_PROTON-4.esp



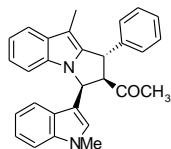
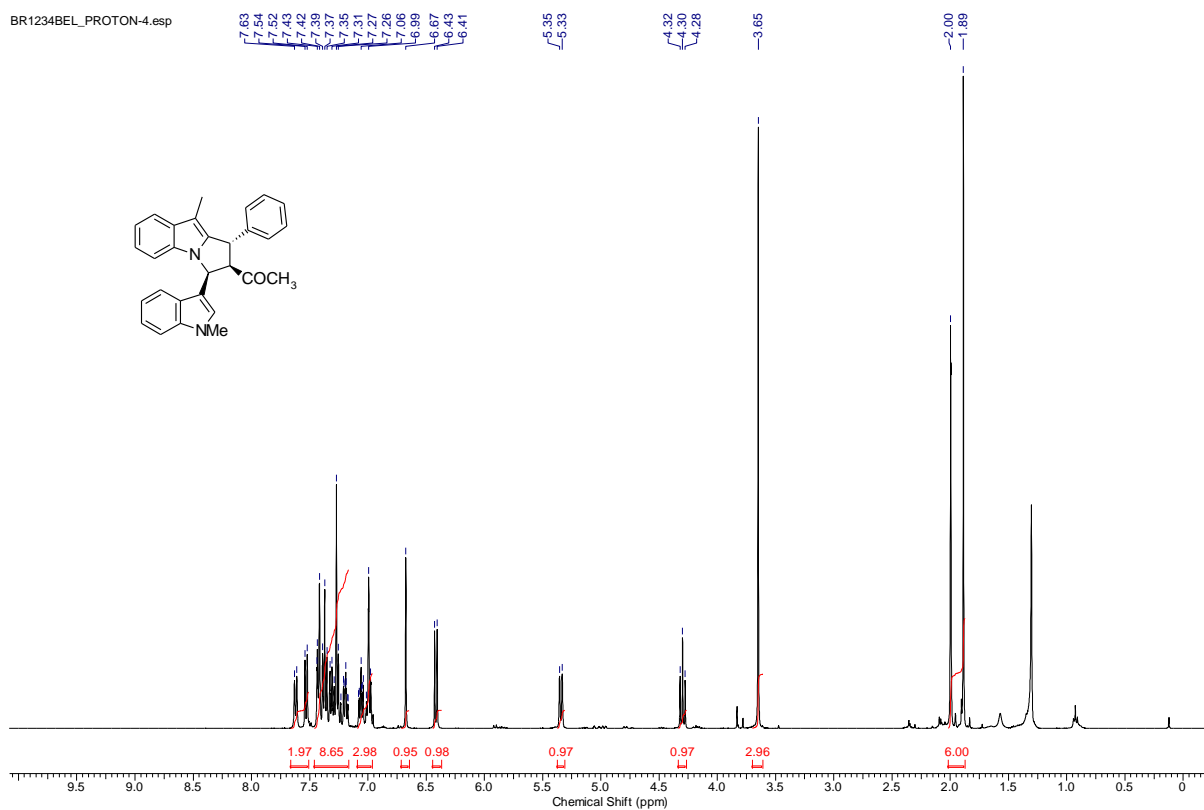
BR1234TOP\_13C-2.esp



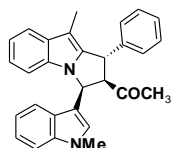
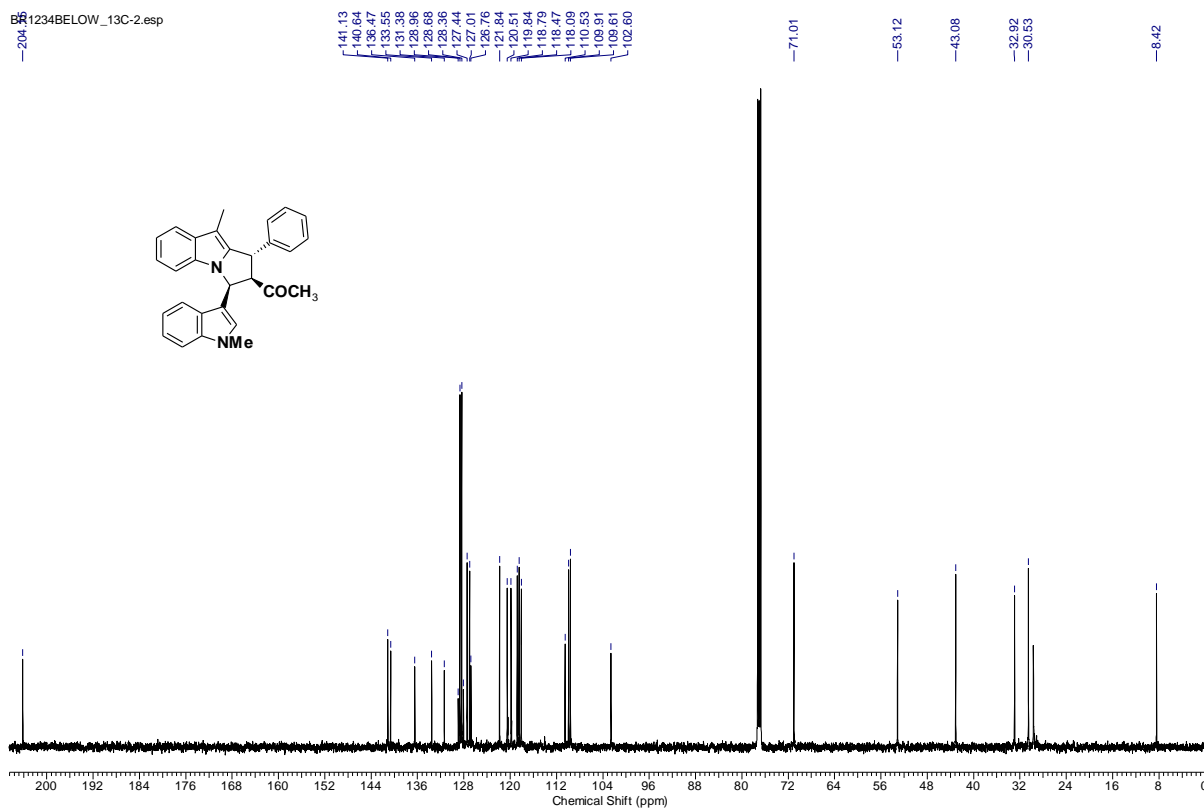


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 8e'

BR1234BEL\_PROTON-4.esp

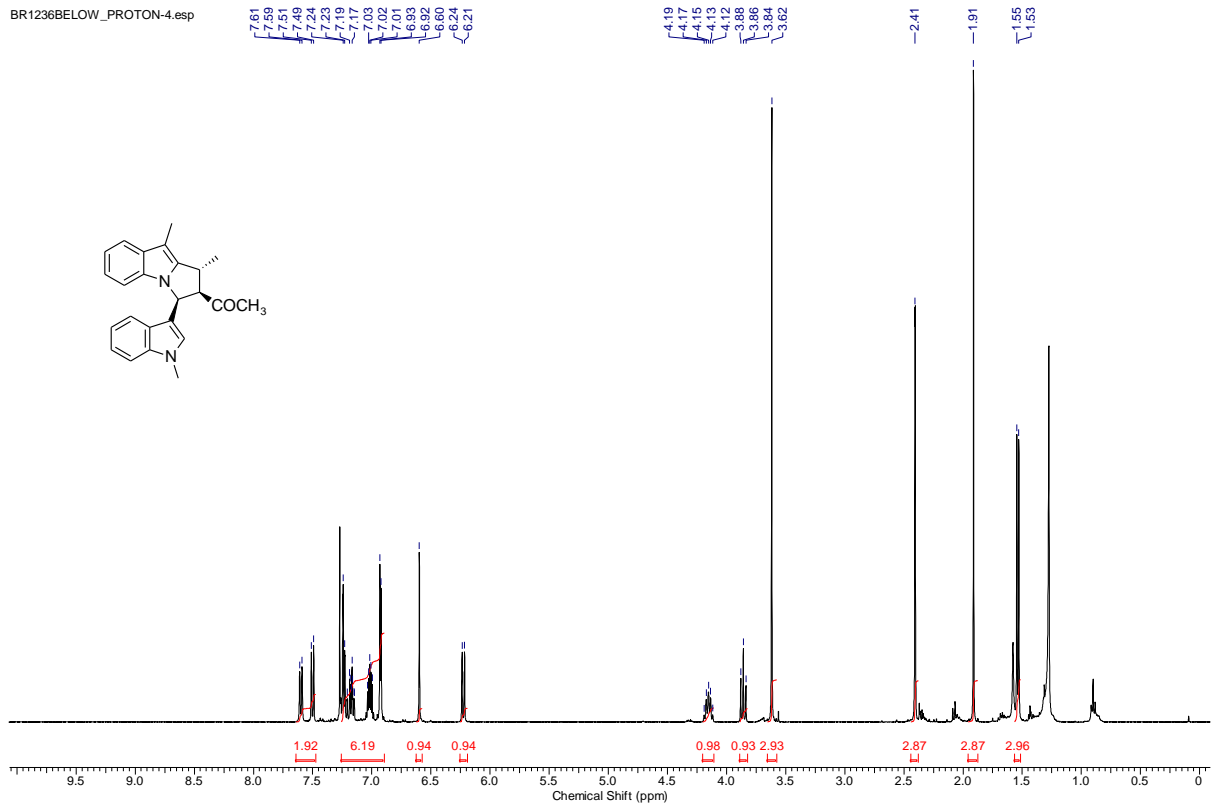


BR1234BELOW\_13C-2.esp

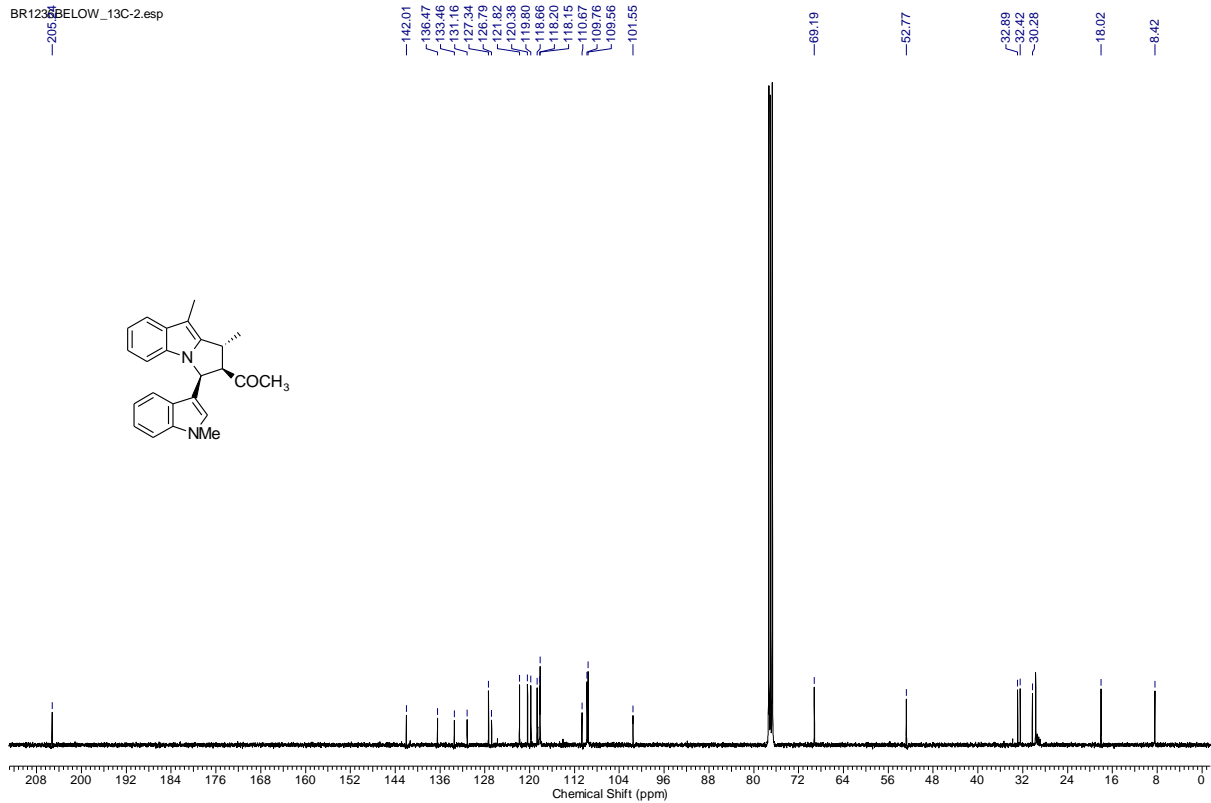


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 8f'

BR1236BELOW\_PROTON-4.esp

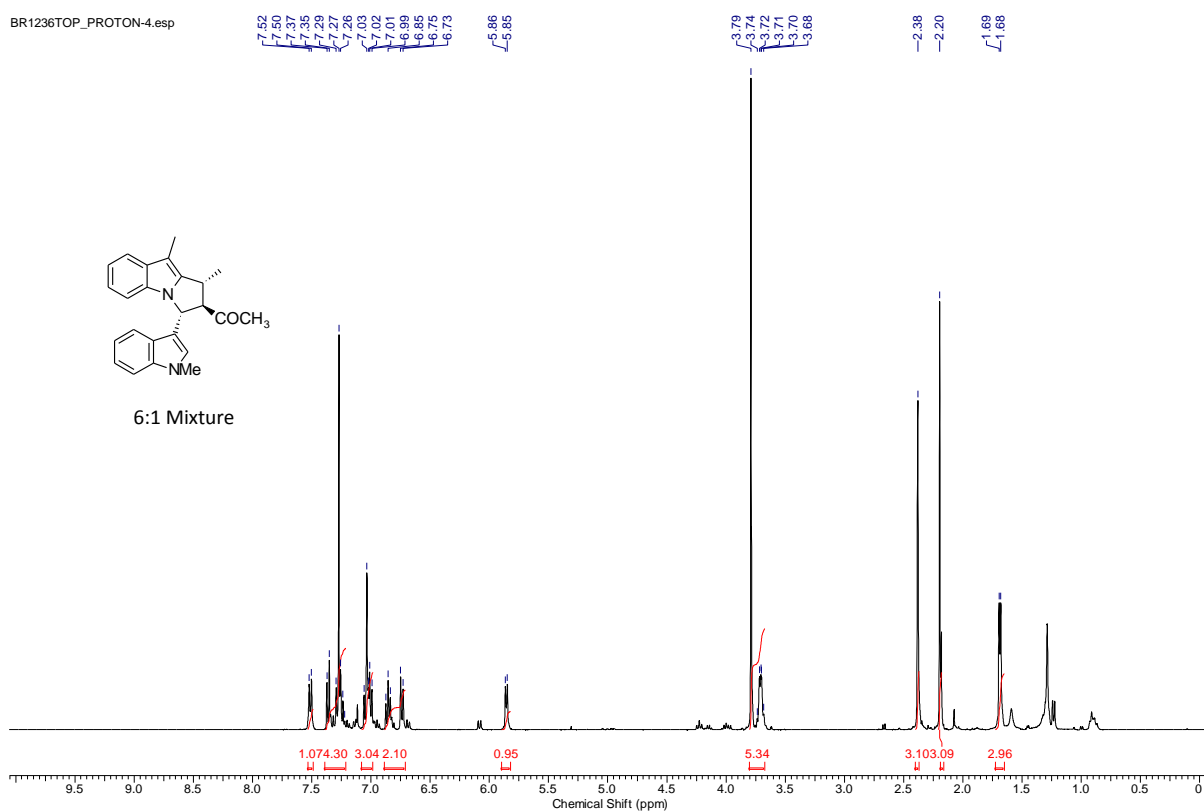


BR1236BELOW\_13C-2.esp

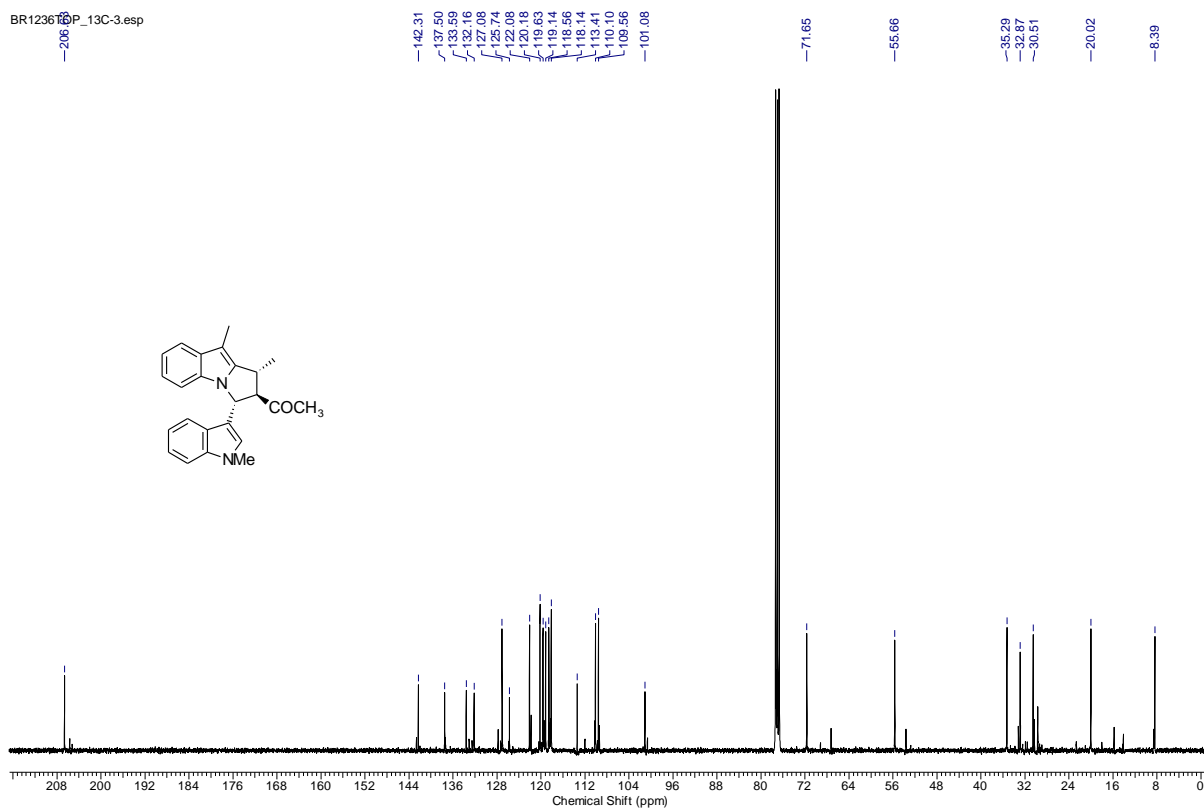


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 8f

BR1236TOP\_PROTON-4.esp

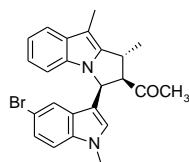
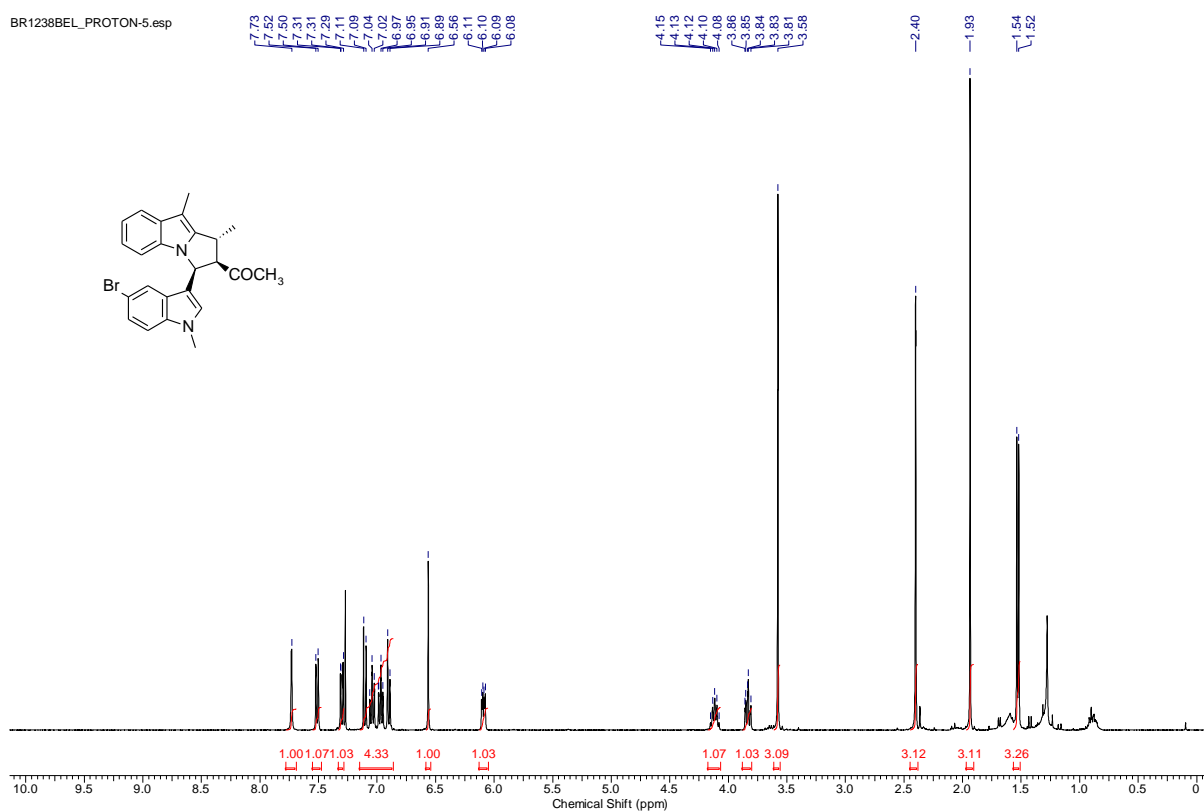


BR1236TOP\_13C-3.esp

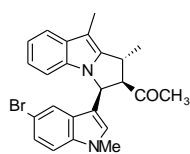
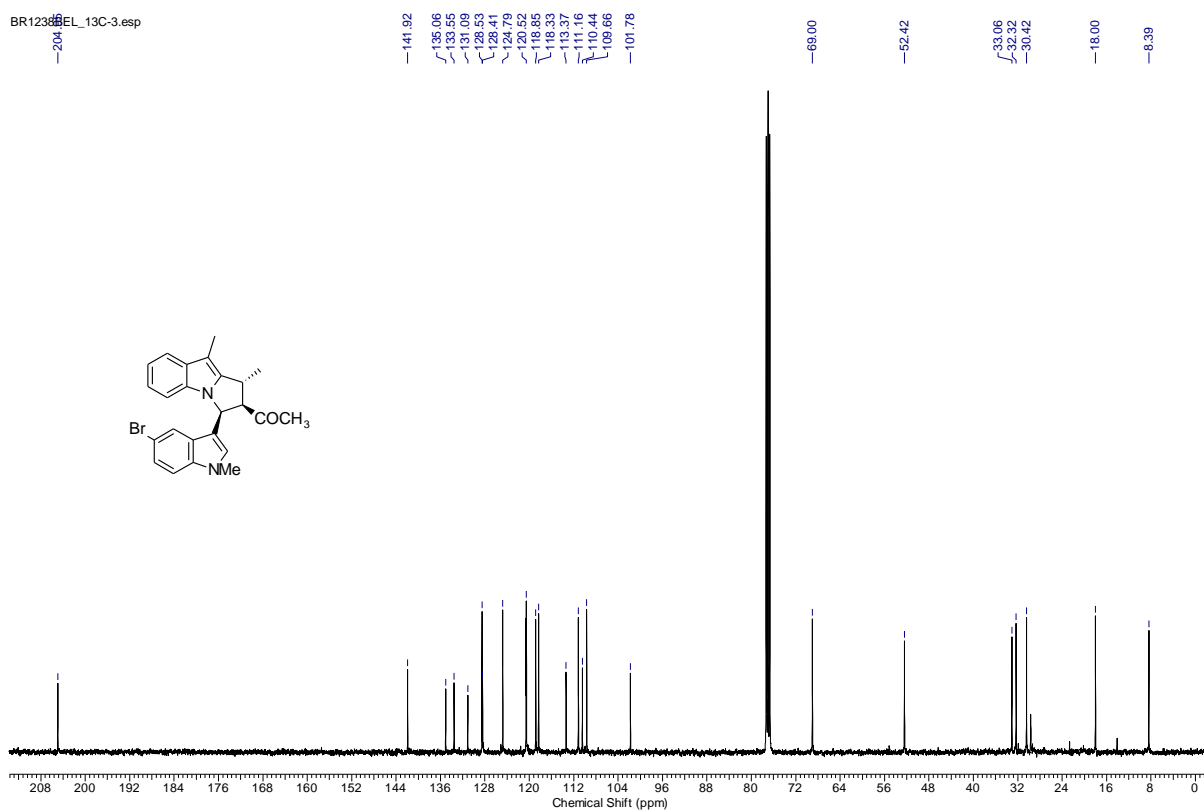


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 8g'

BR1238BEL\_PROTON-5.esp

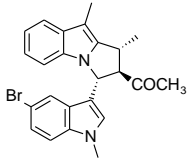
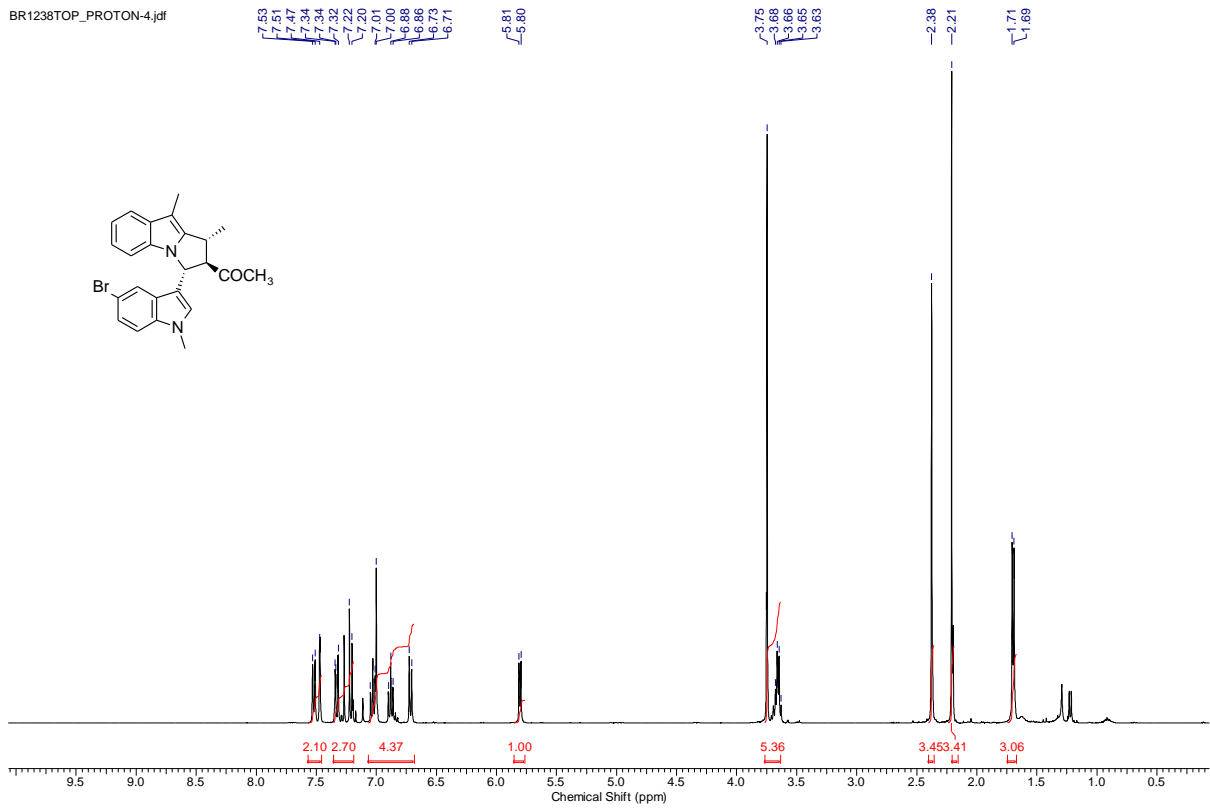


BR1238BEL\_13C-3.esp

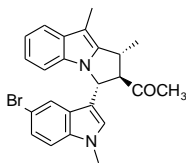
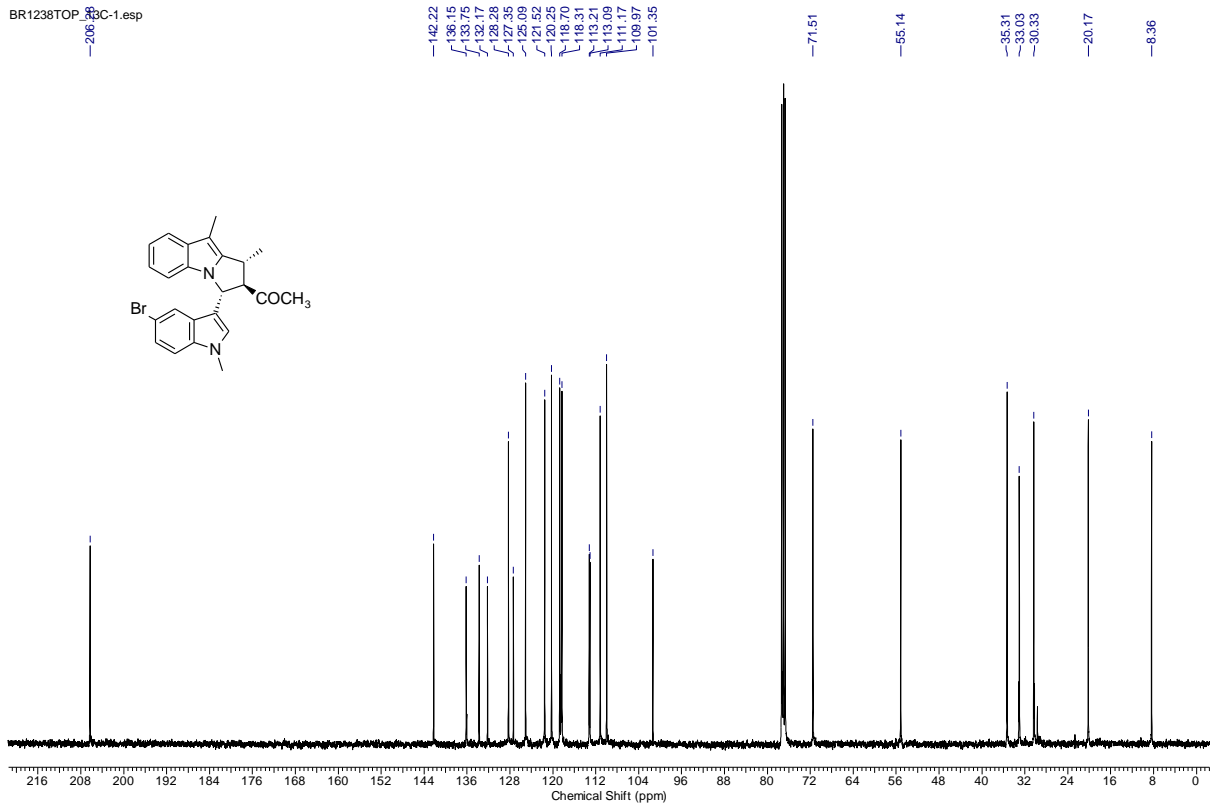


# $^1\text{H}$ and $^{13}\text{C}$ NMR of compound 8g

BR1238TOP\_PROTON-4.jdf

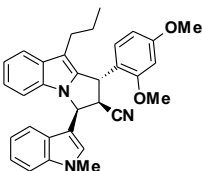
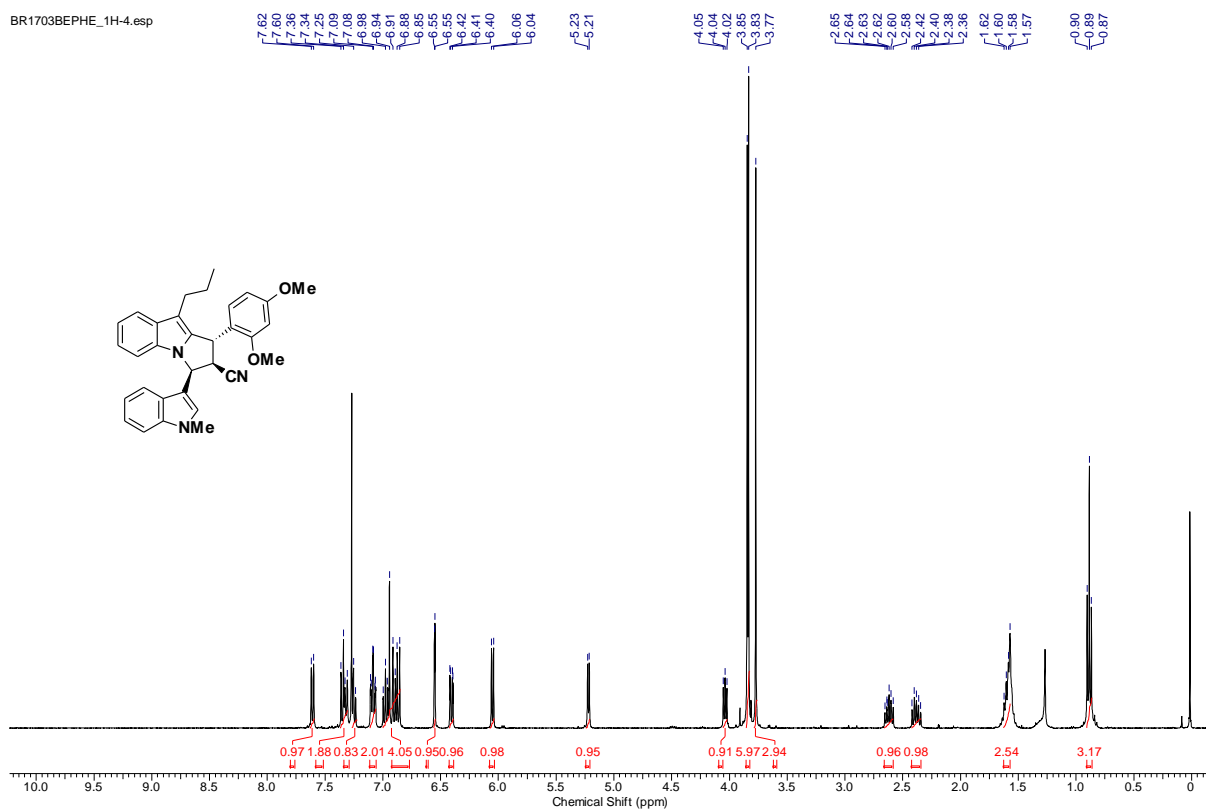


BR1238TOP\_13C-1.esp

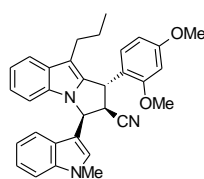
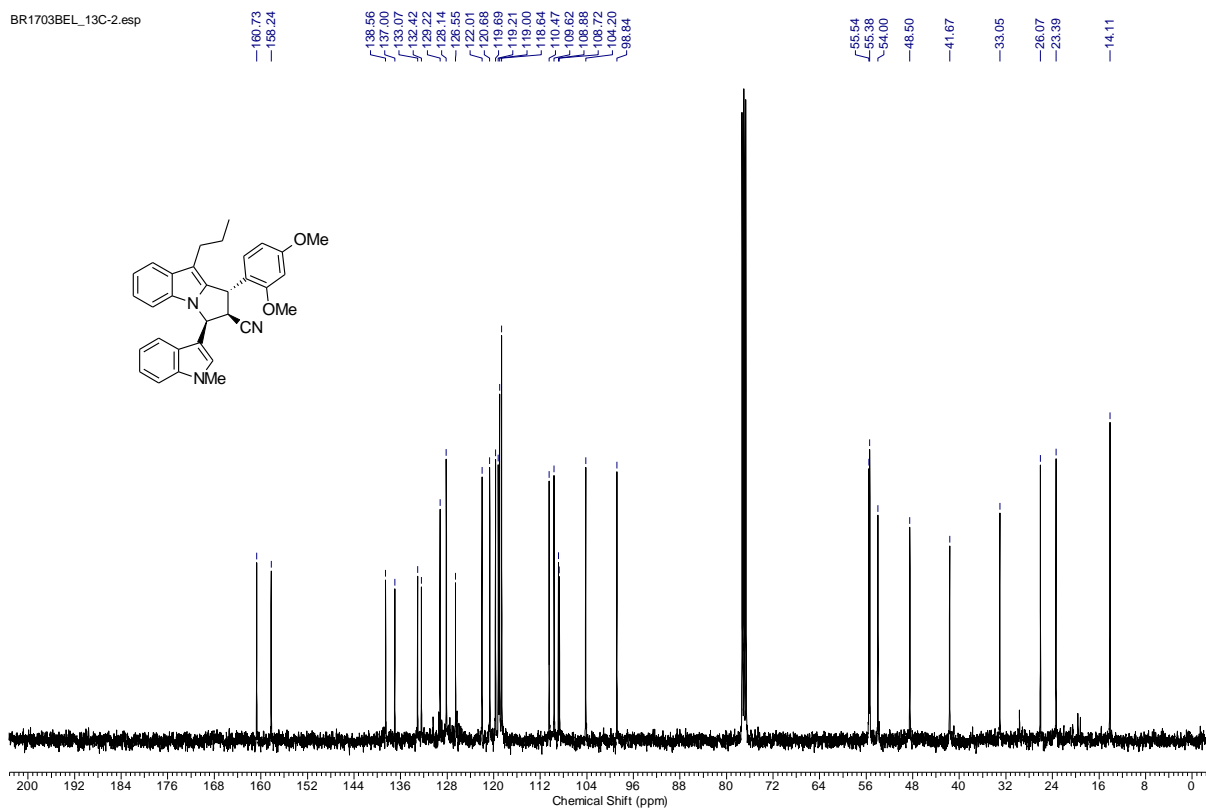


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 10a'

BR1703BEPHE\_1H-4.esp

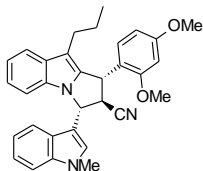
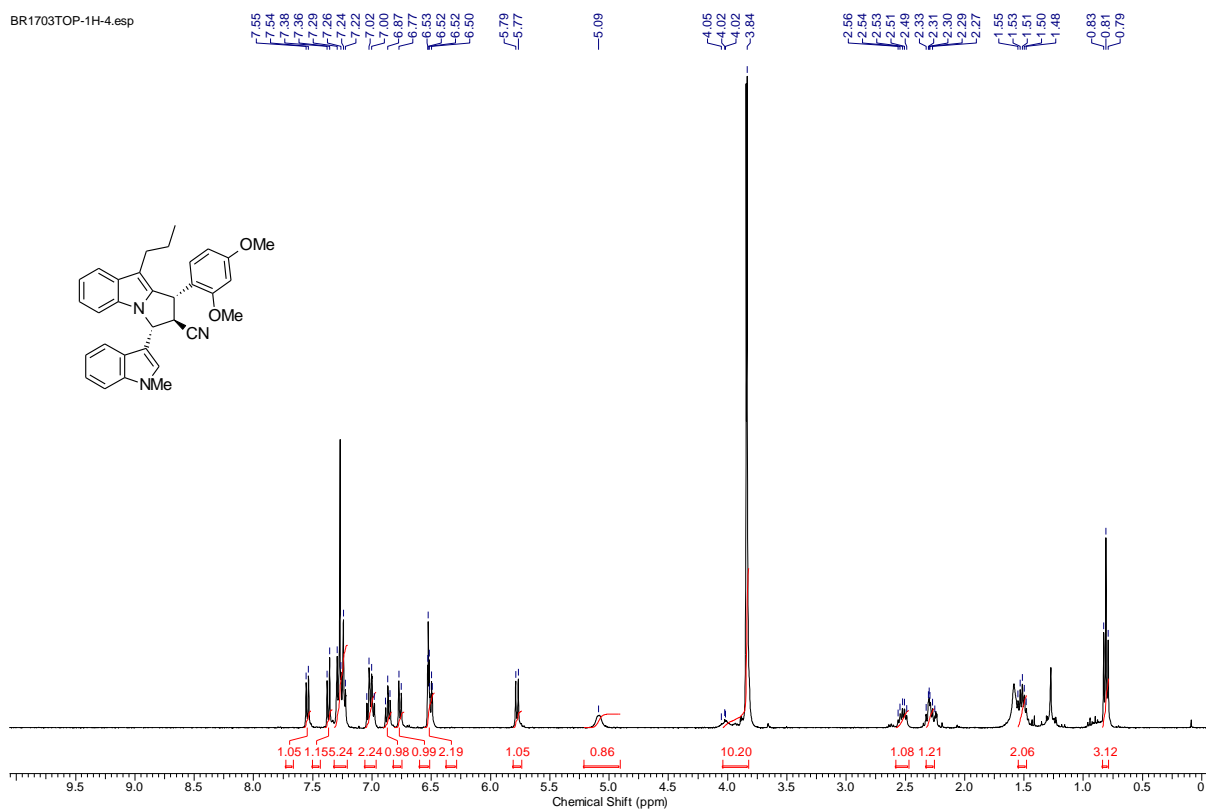


BR1703BEL\_13C-2.esp

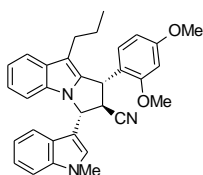
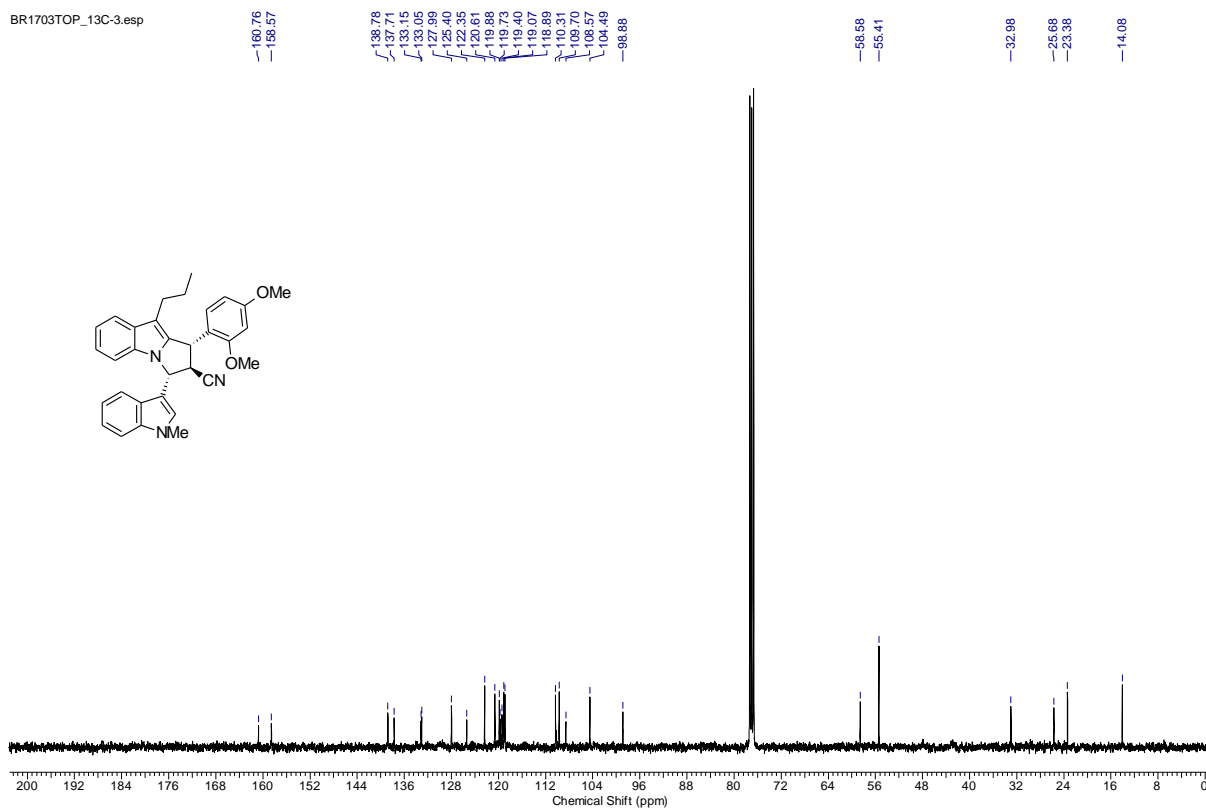


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 10a

BR1703TOP-1H-4.esp

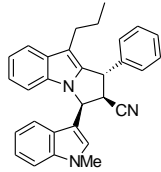
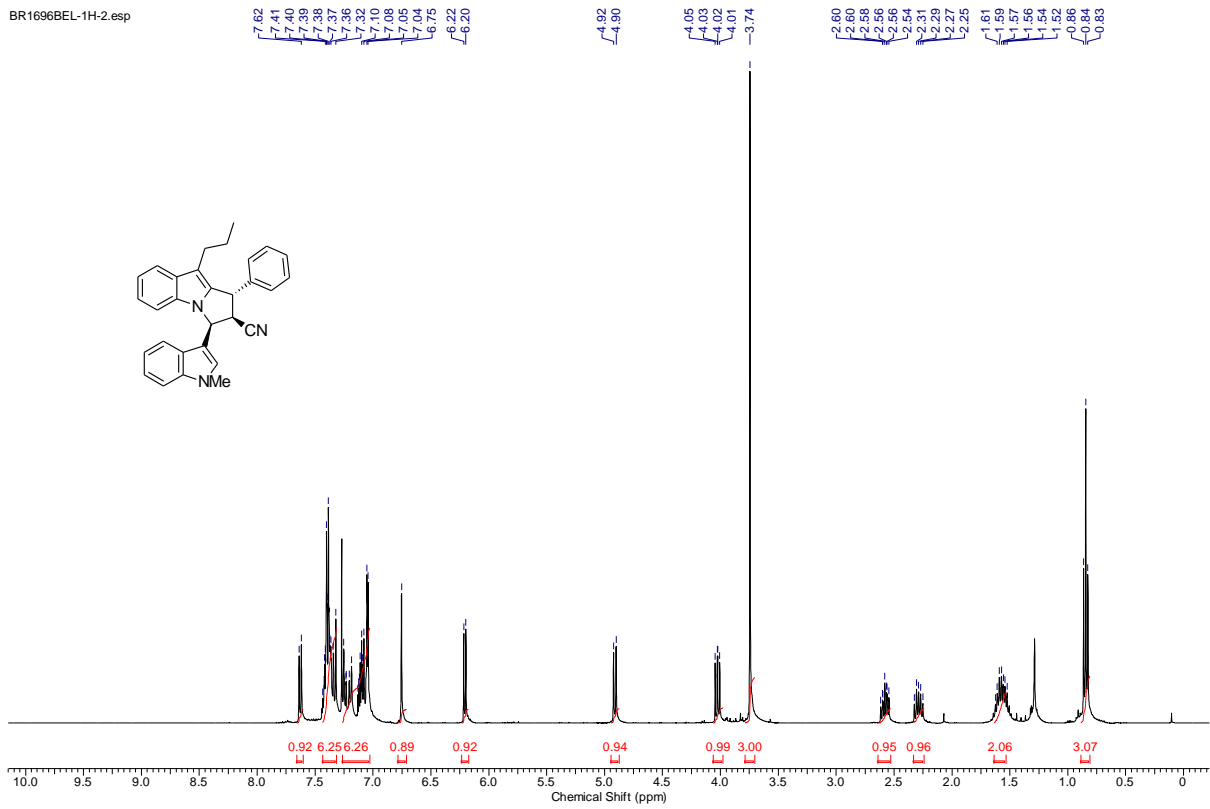


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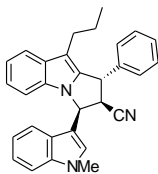
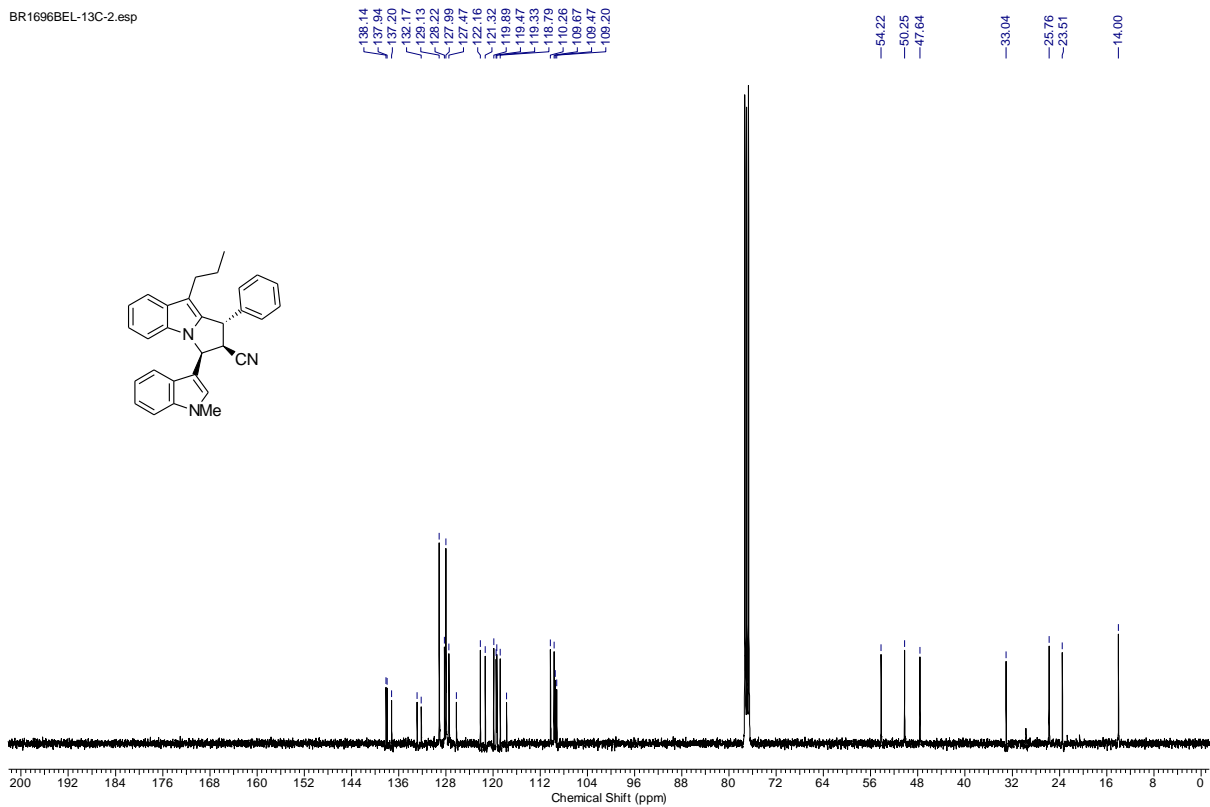


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 10b'

BR1696BEL-1H-2.esp



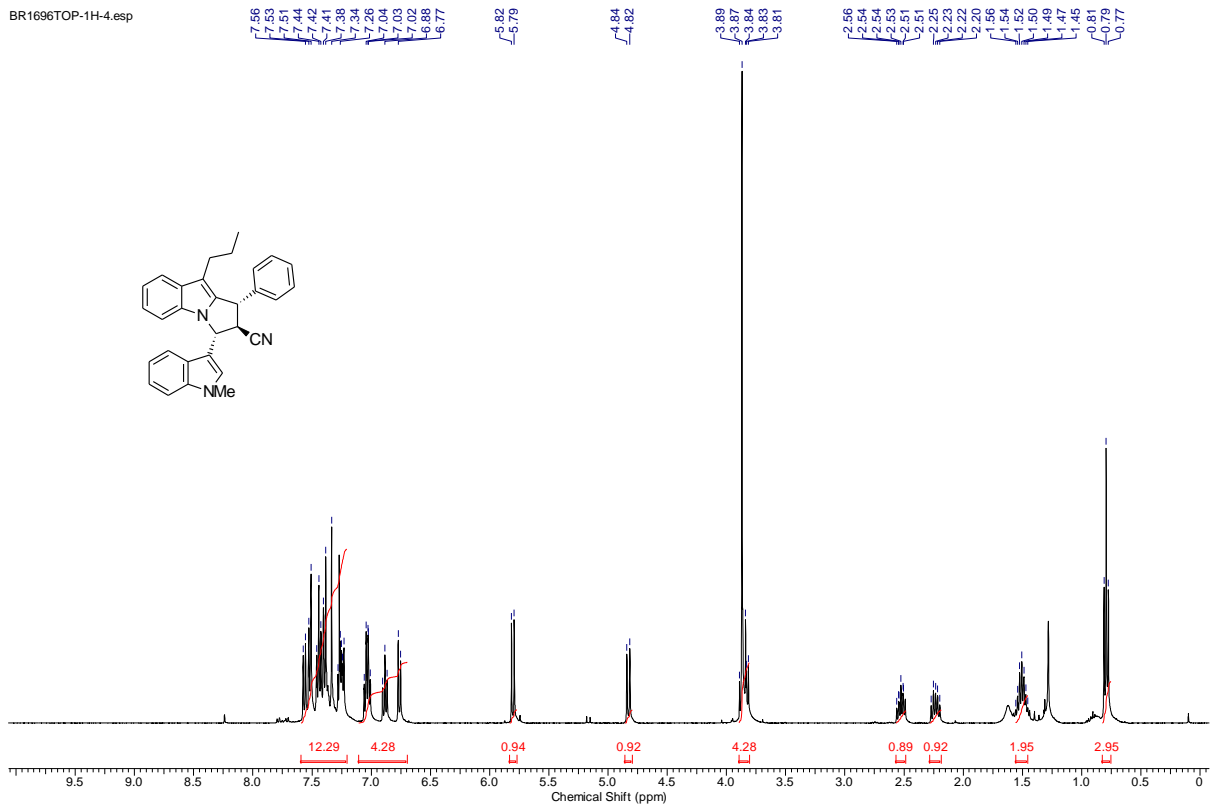
BR1696BEL-13C-2.esp



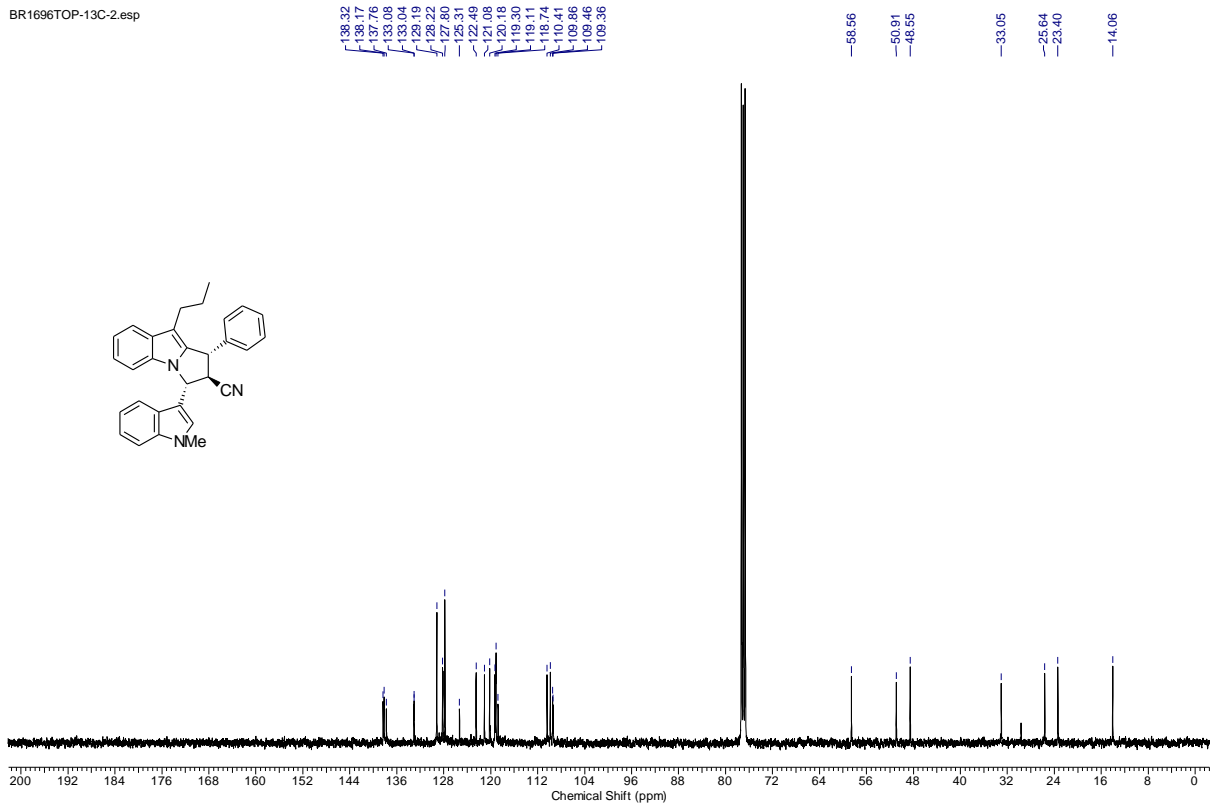


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 10b

BR1696TOP-1H-4.esp

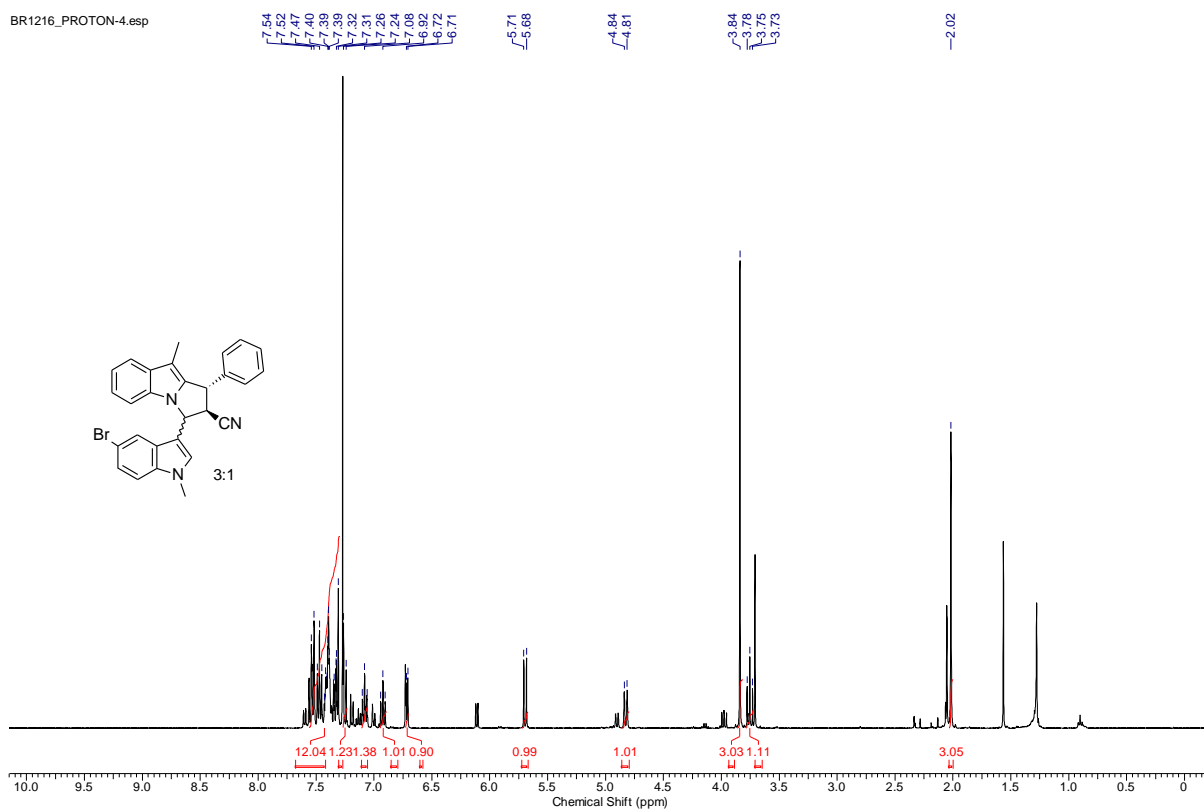


BR1696TOP-13C-2.esp

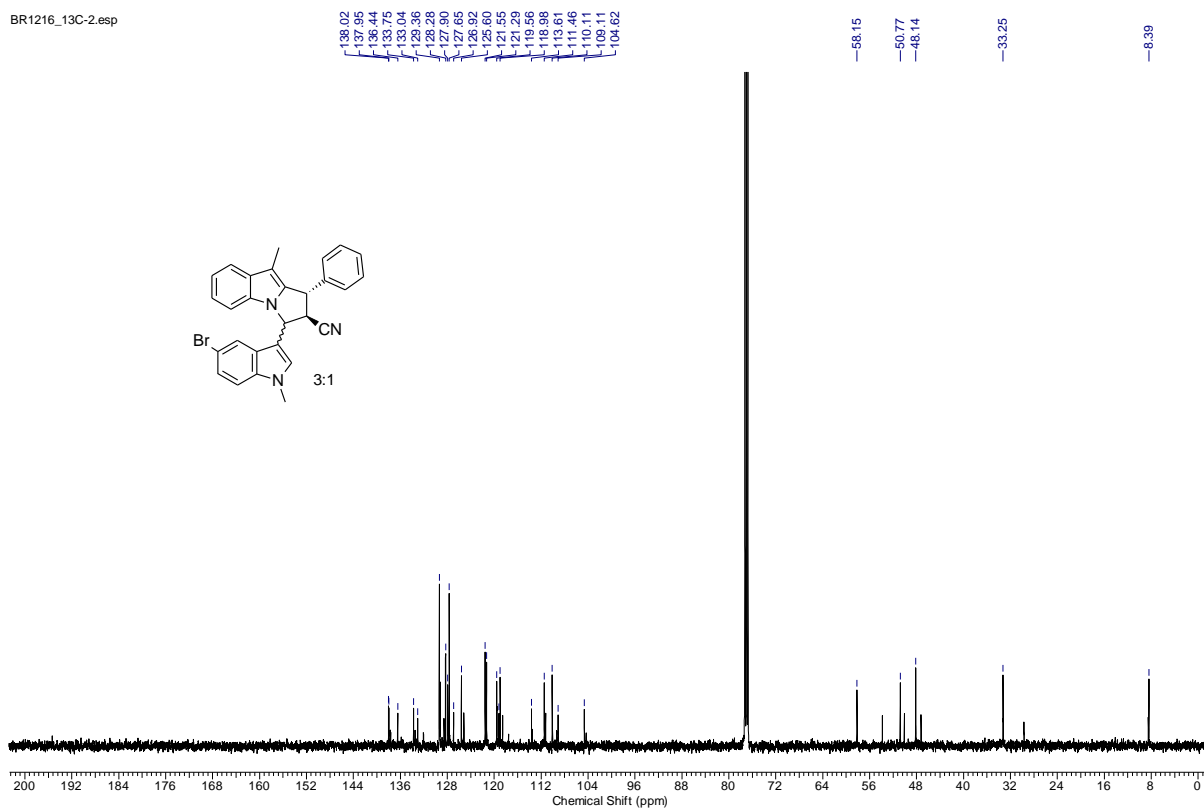


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 10c

BR1216\_PROTON-4.esp

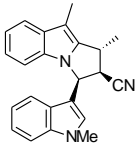
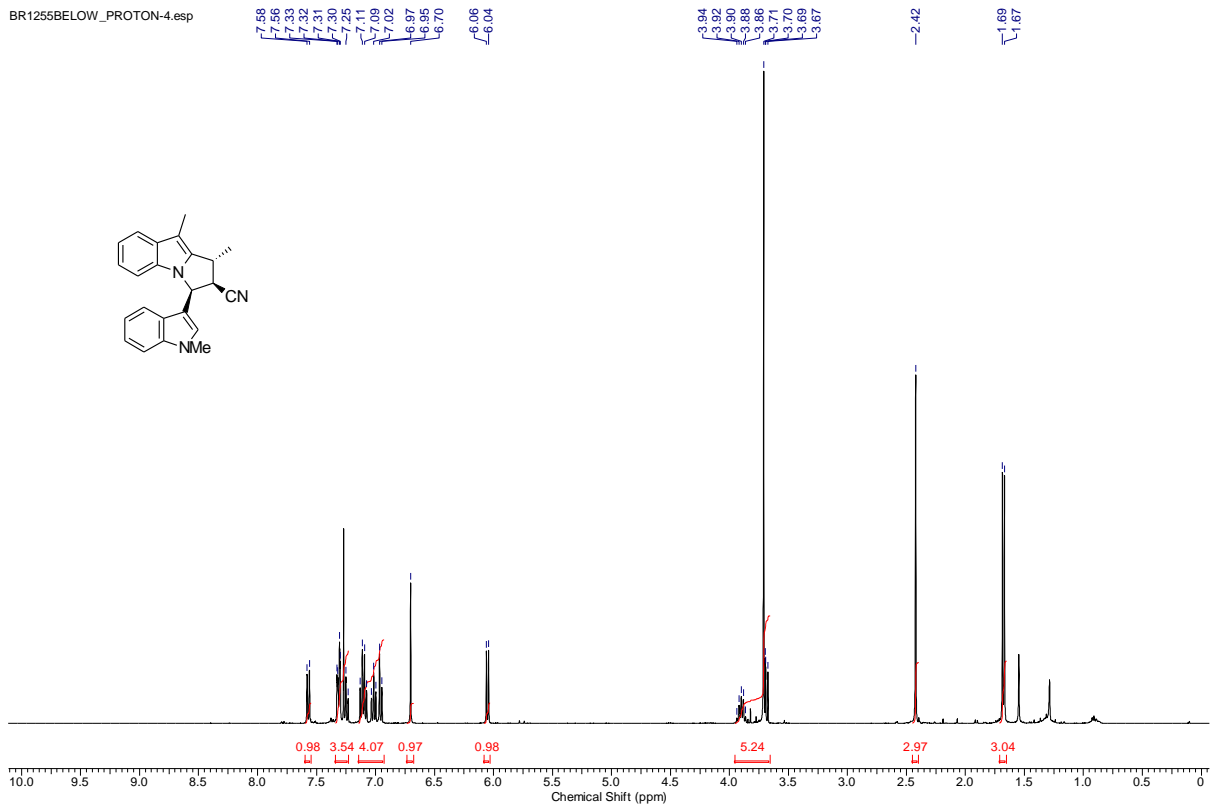


BR1216\_13C-2.esp

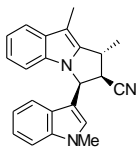
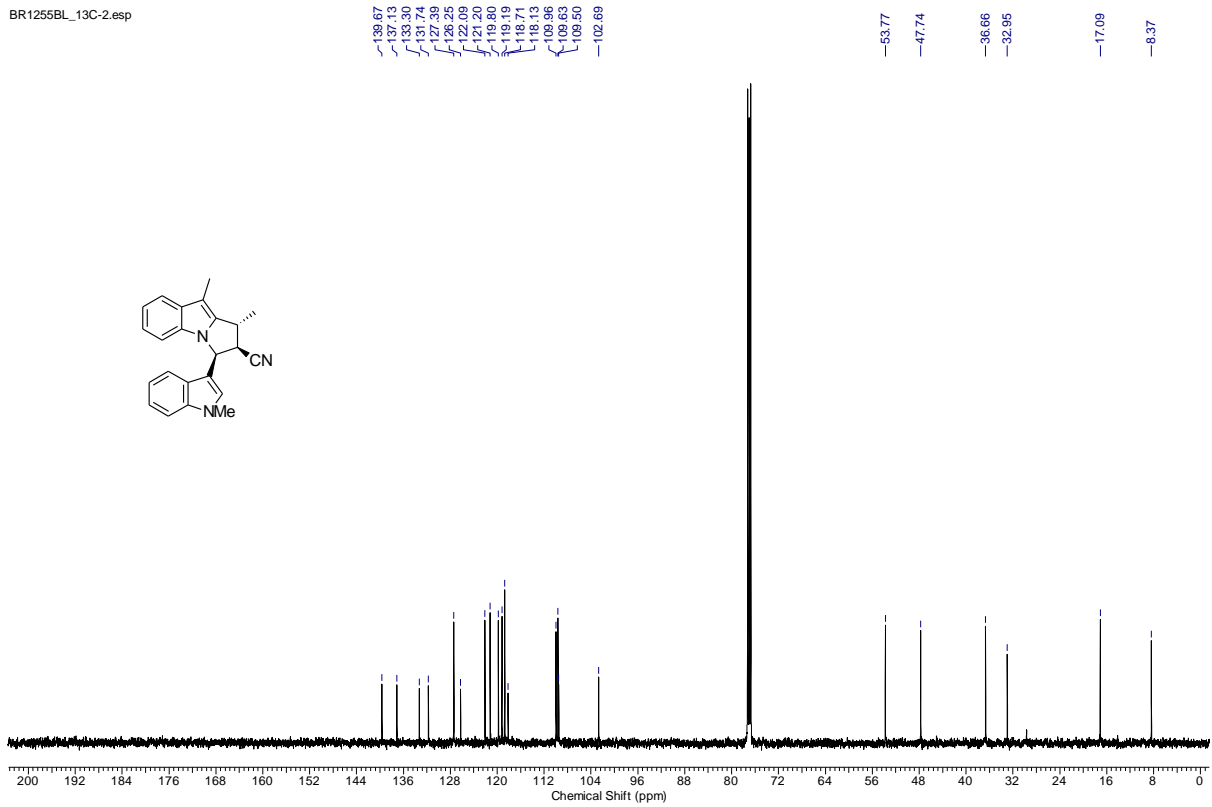


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 10d'

BR1255BELOW\_PROTON-4.esp

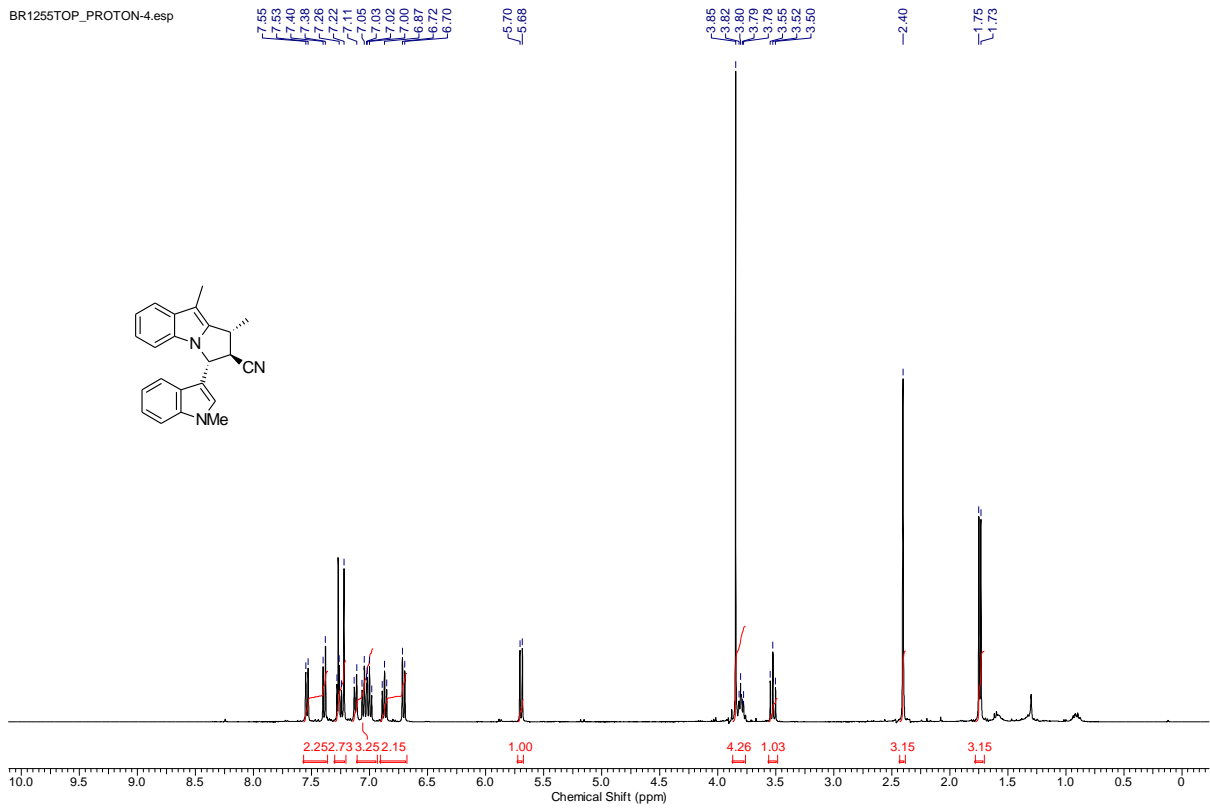


BR1255BL\_13C-2.esp

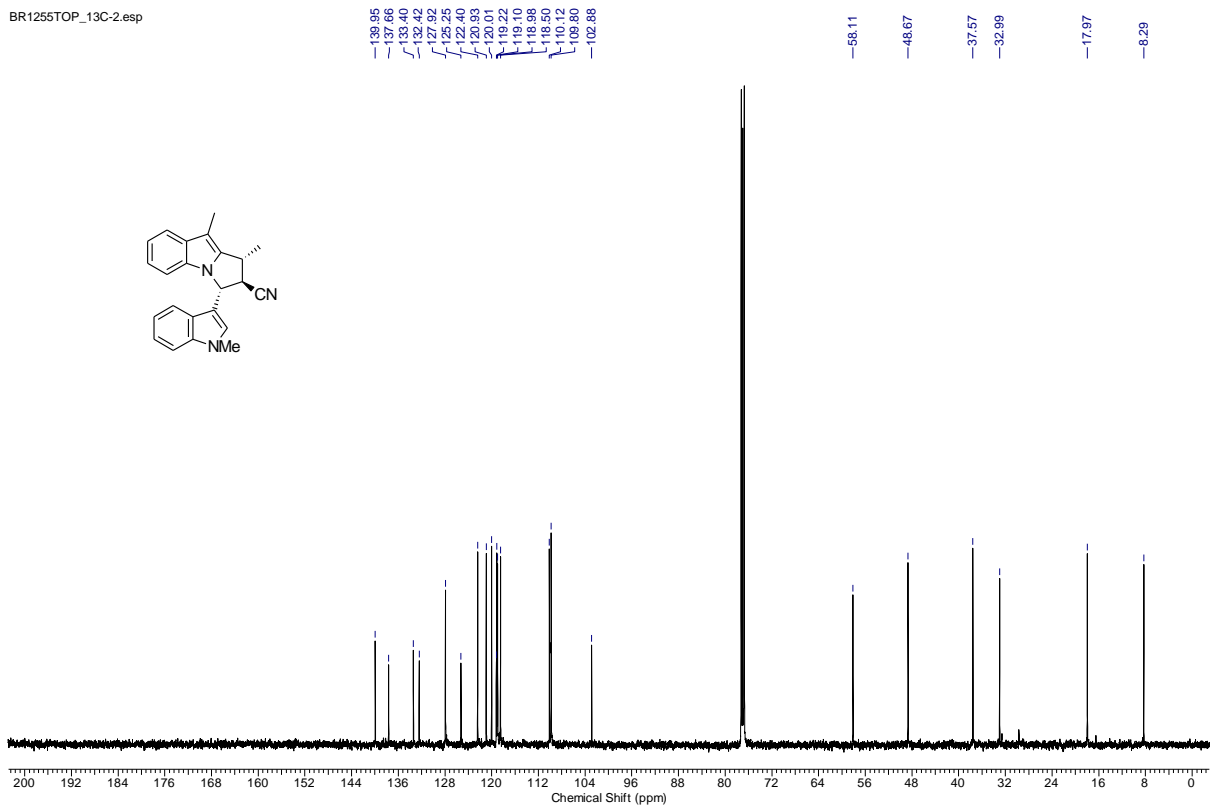


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 10d

BR1255TOP\_PROTON-4.esp

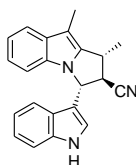
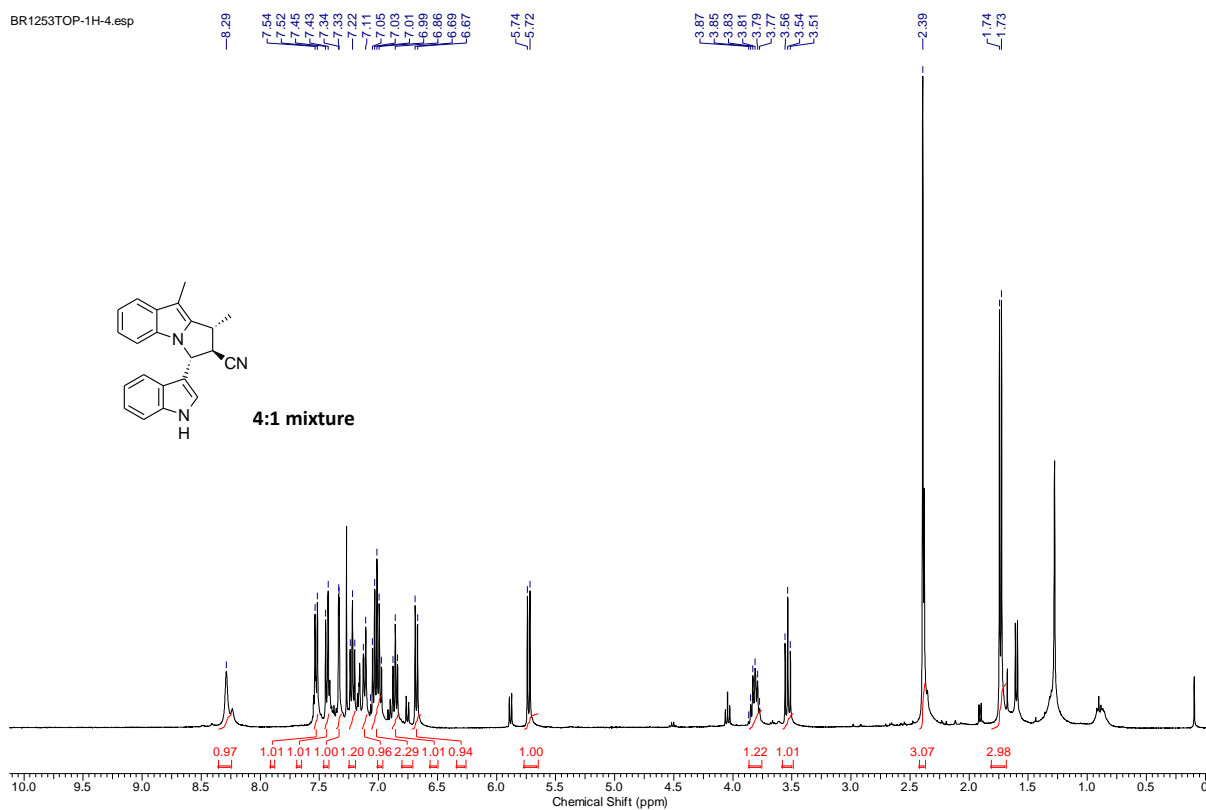


BR1255TOP\_13C-2.esp



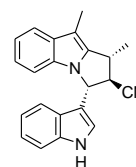
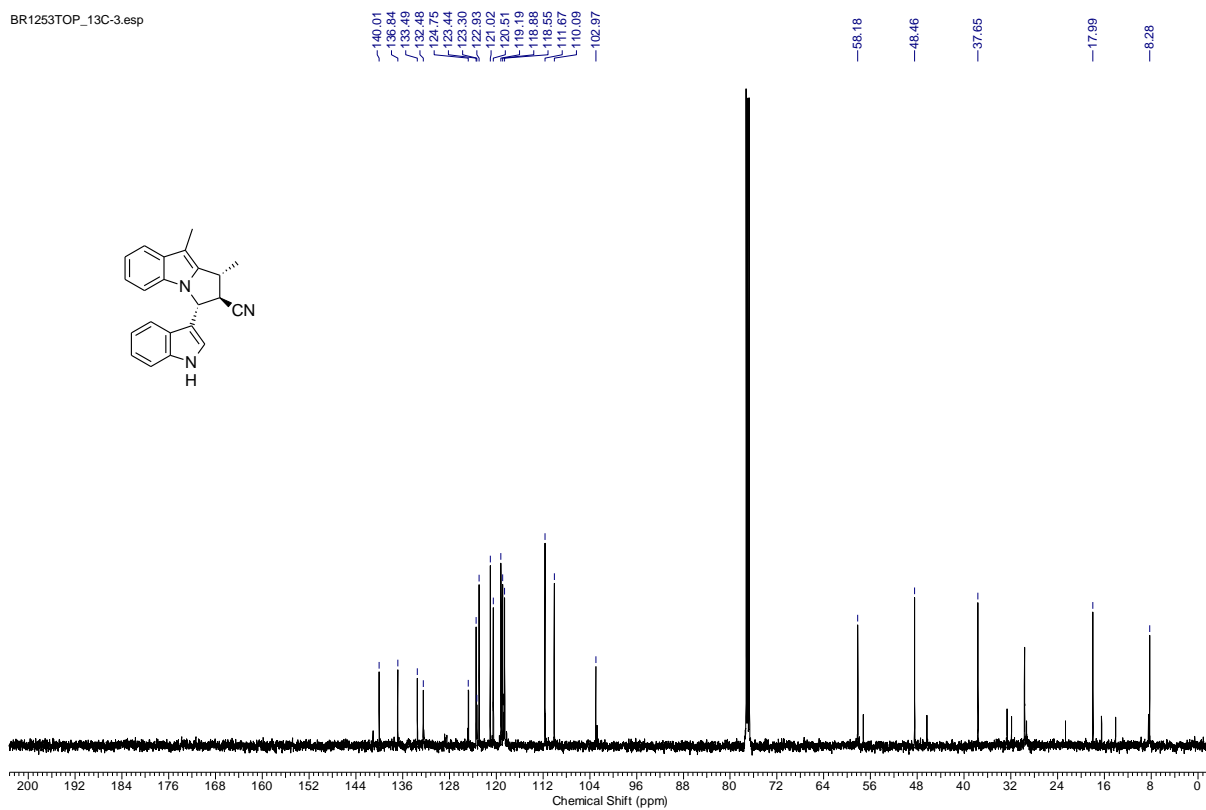
# <sup>1</sup>H and <sup>13</sup>C NMR of compound 10e

BR1253TOP-1H-4.esp



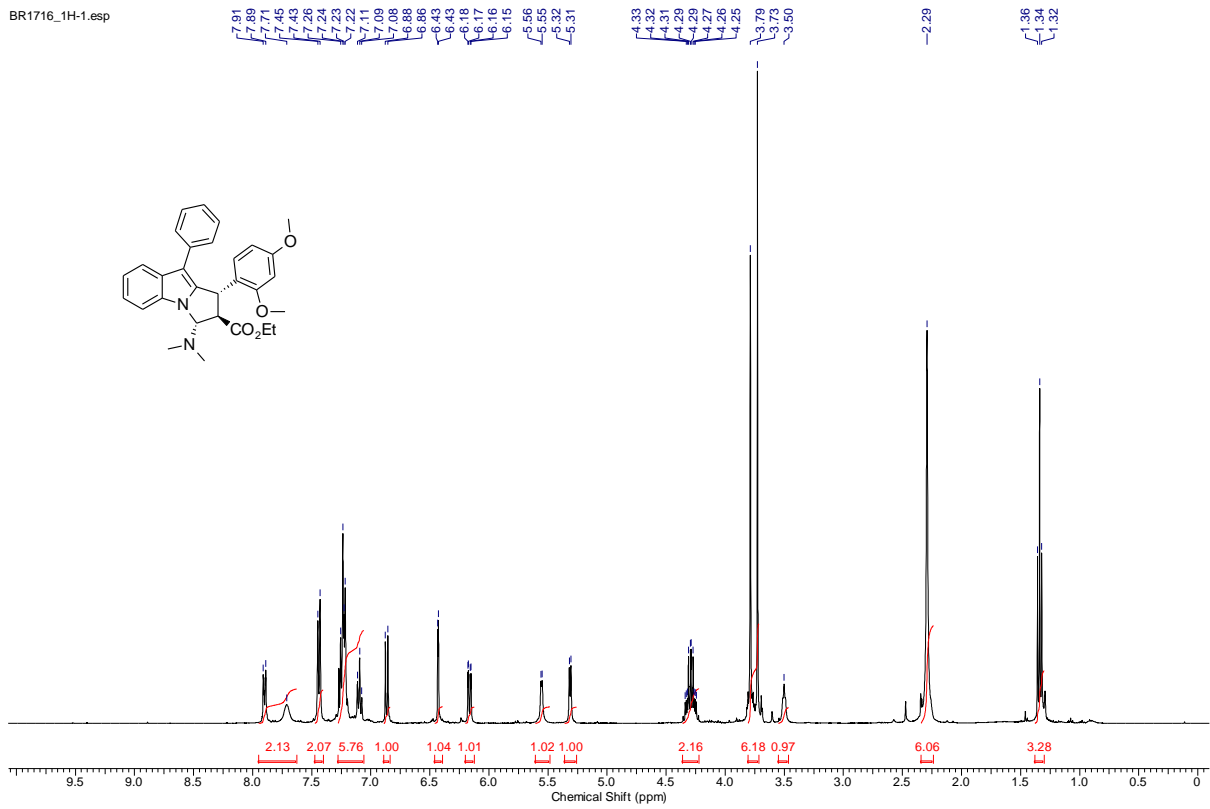
4:1 mixture

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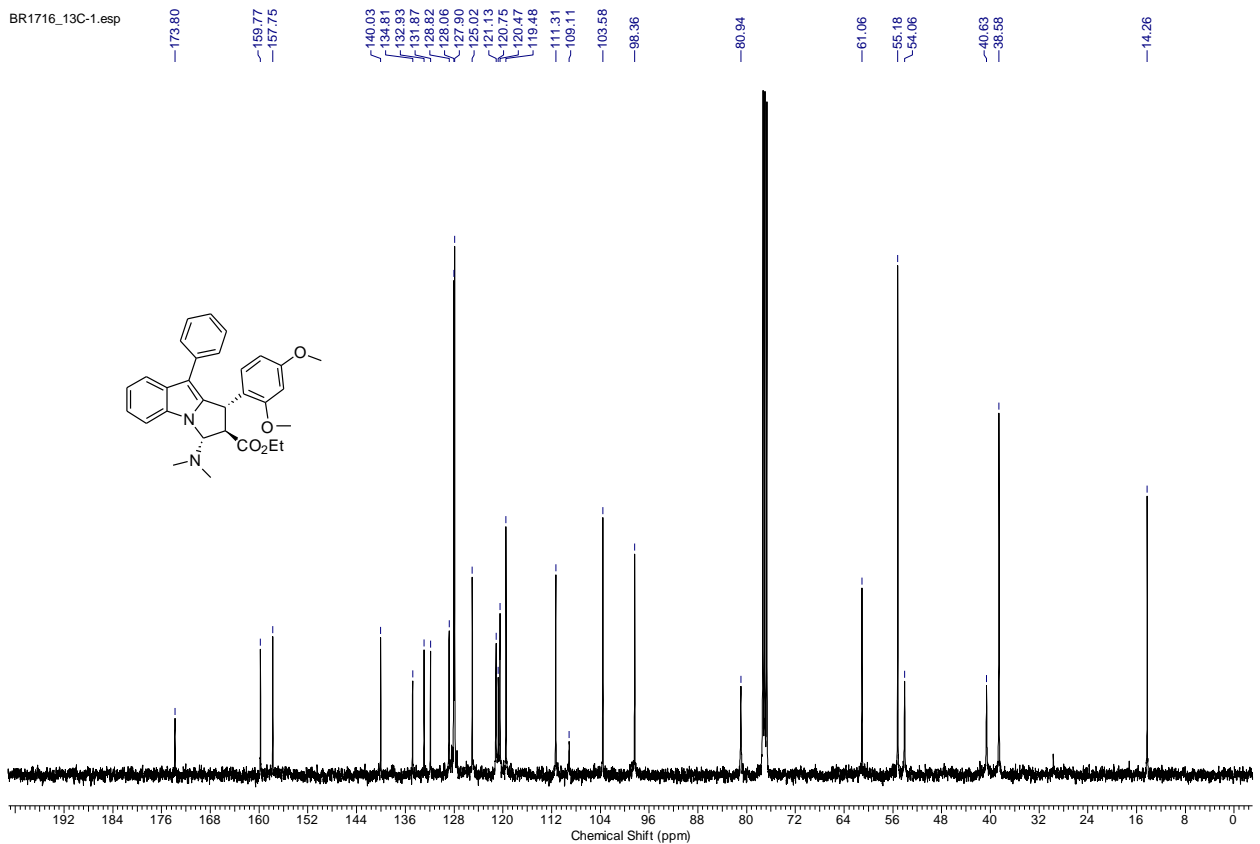


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 12a

BR1716\_1H-1.esp

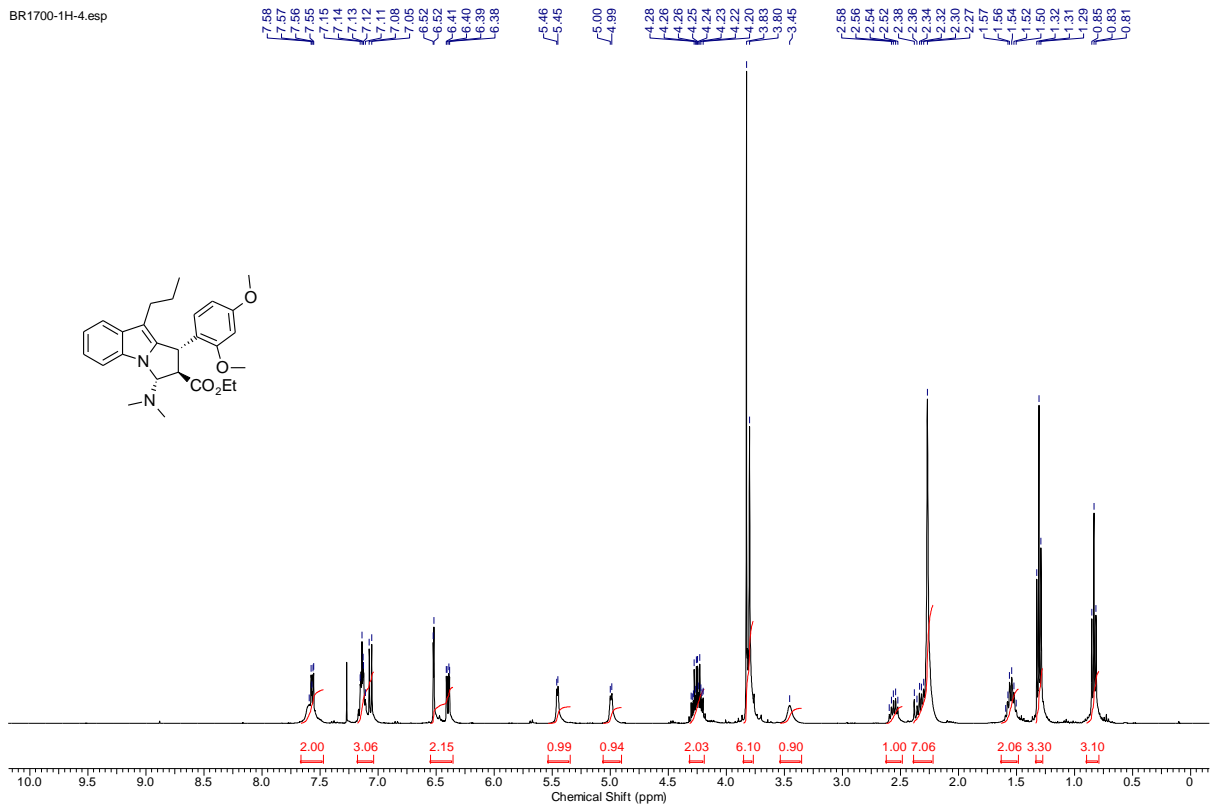


BR1716\_13C-1.esp

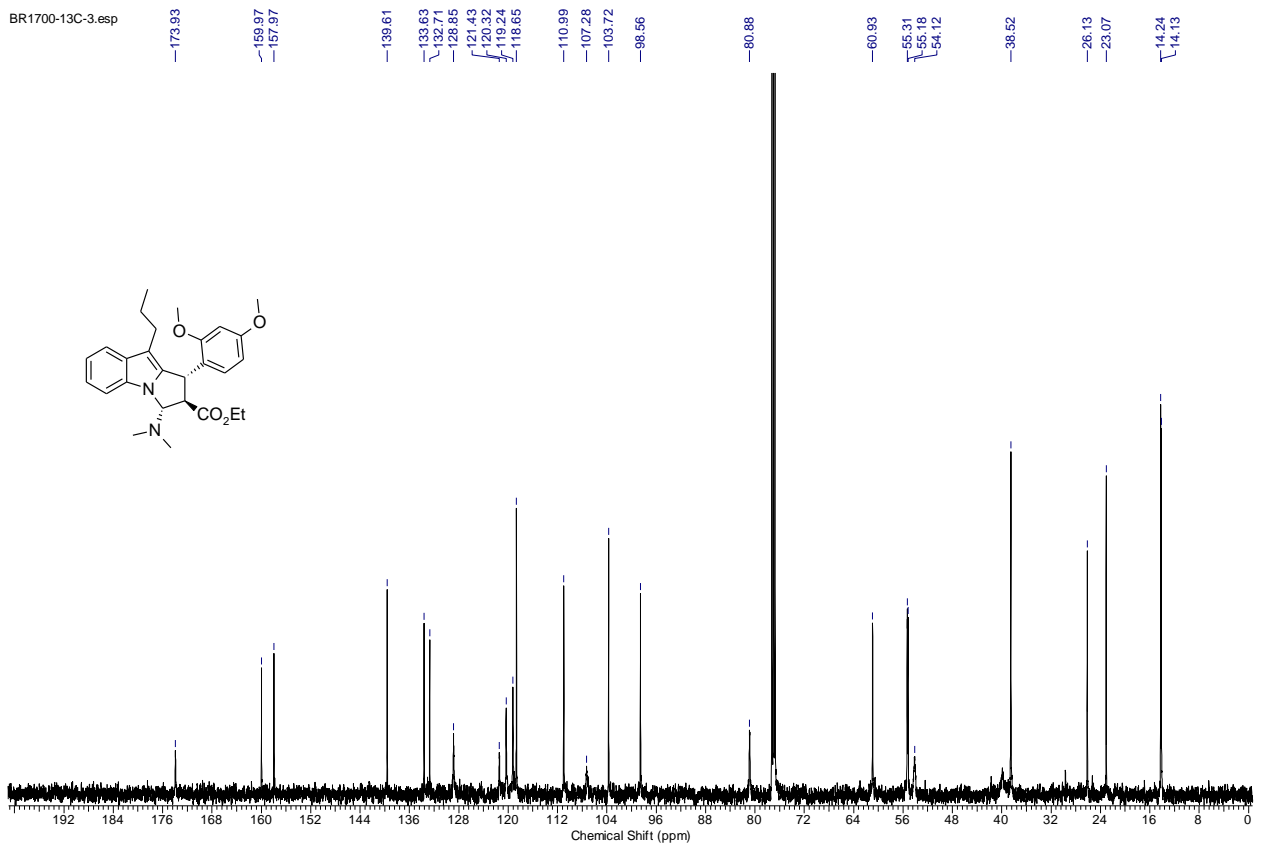


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 12b

BR1700-1H-4.esp

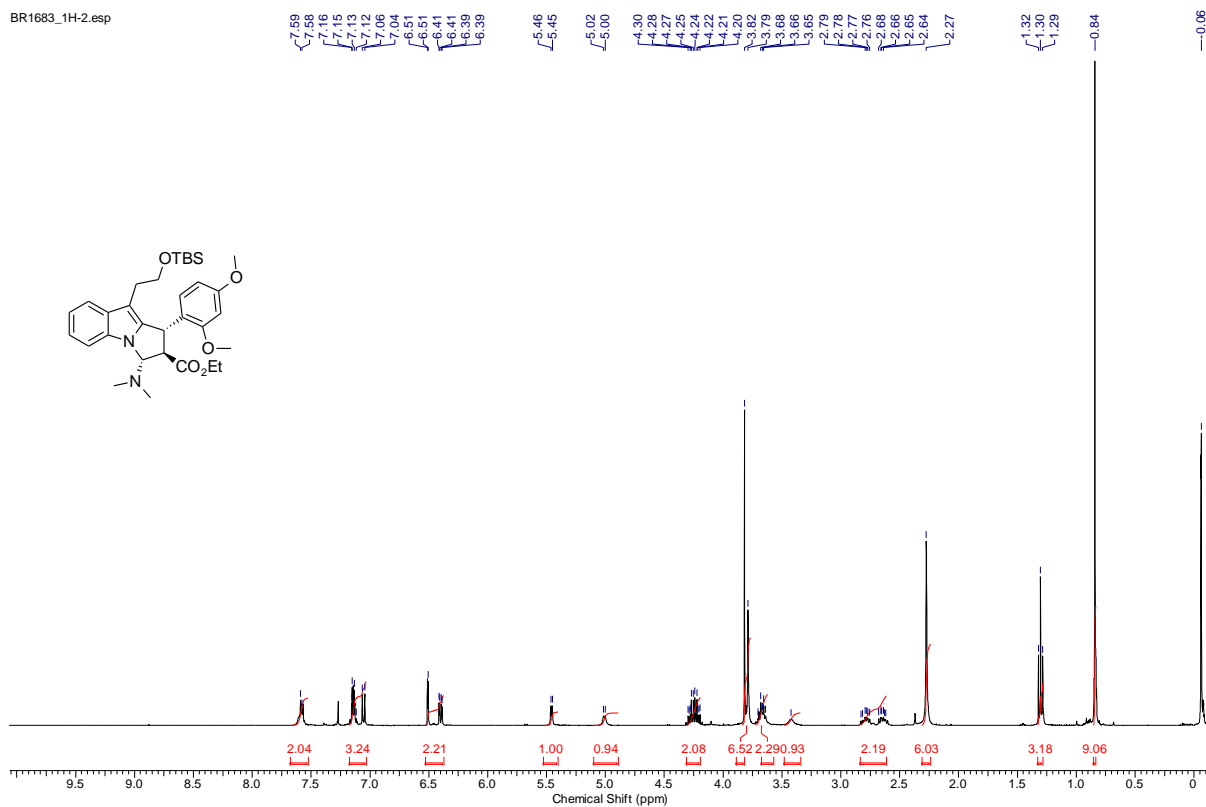


BR1700-13C-3.esp

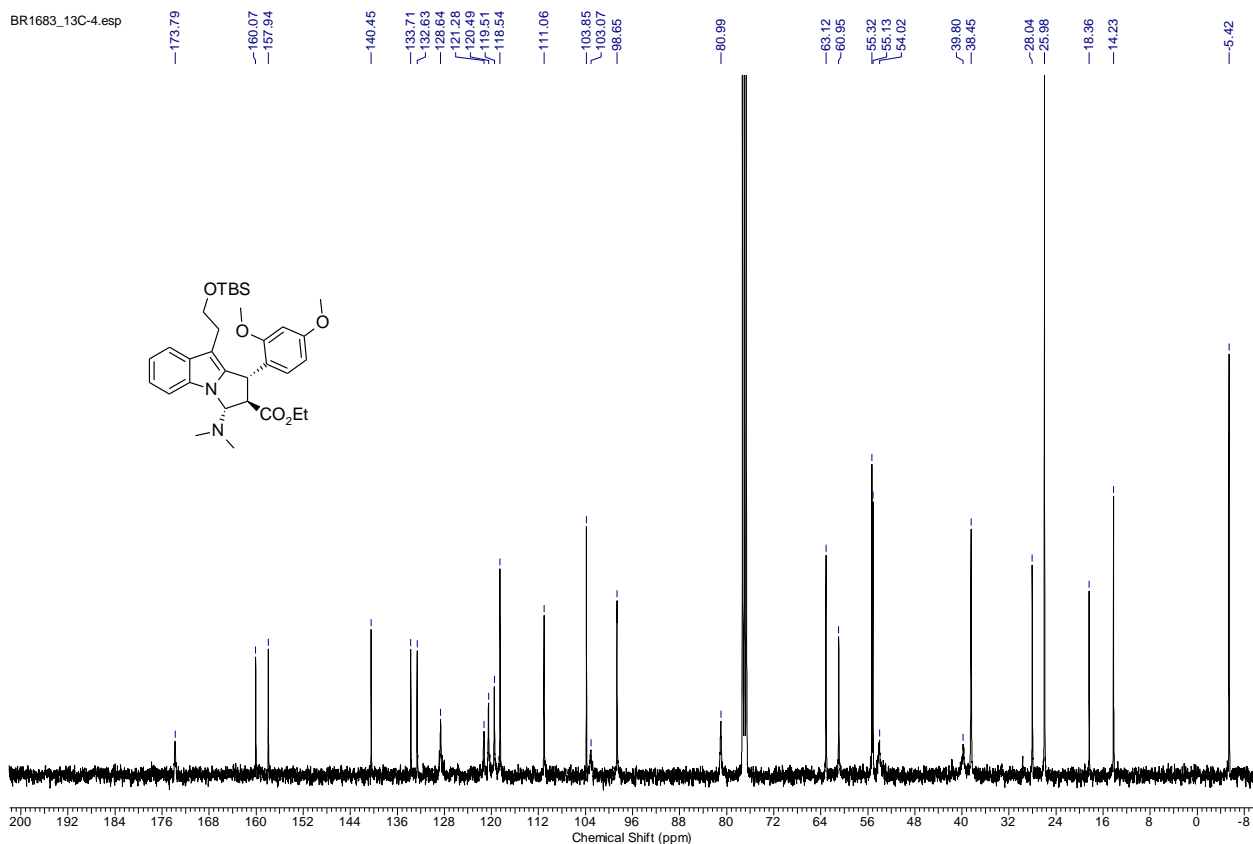


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 12c

BR1683\_1H-2.esp



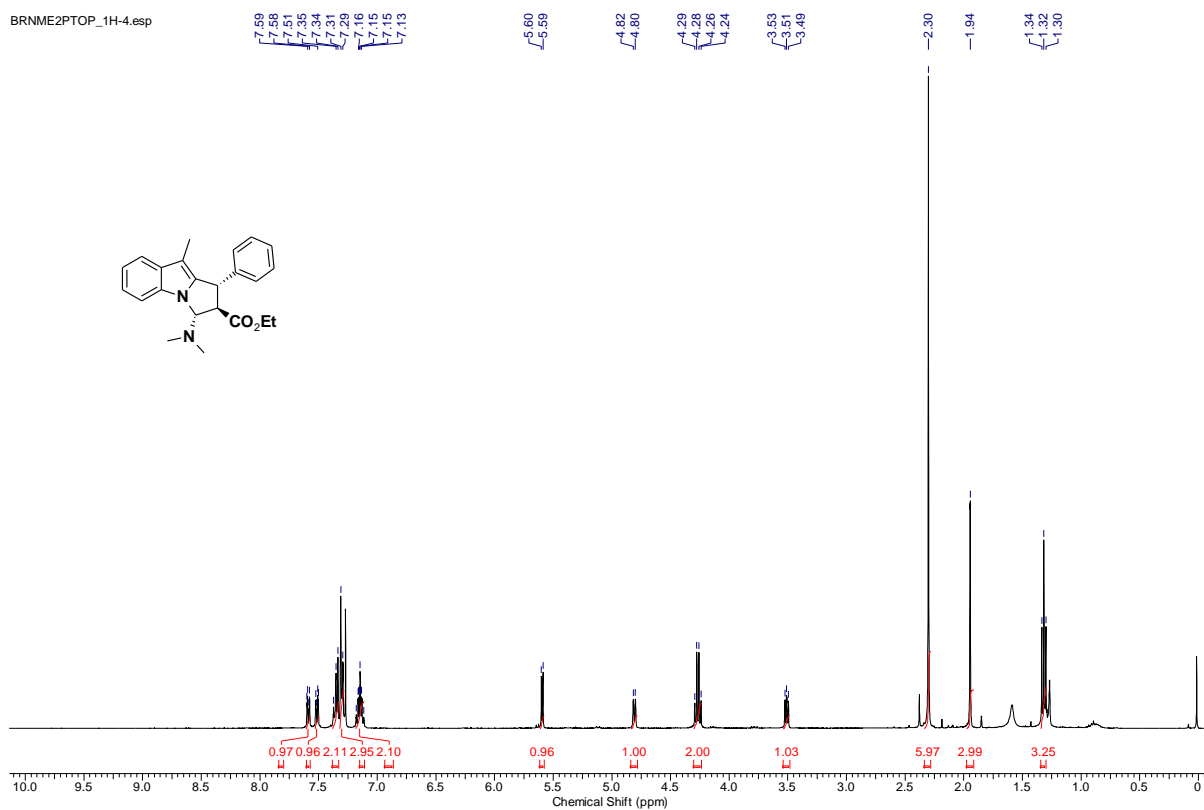
BR1683\_13C-4.esp



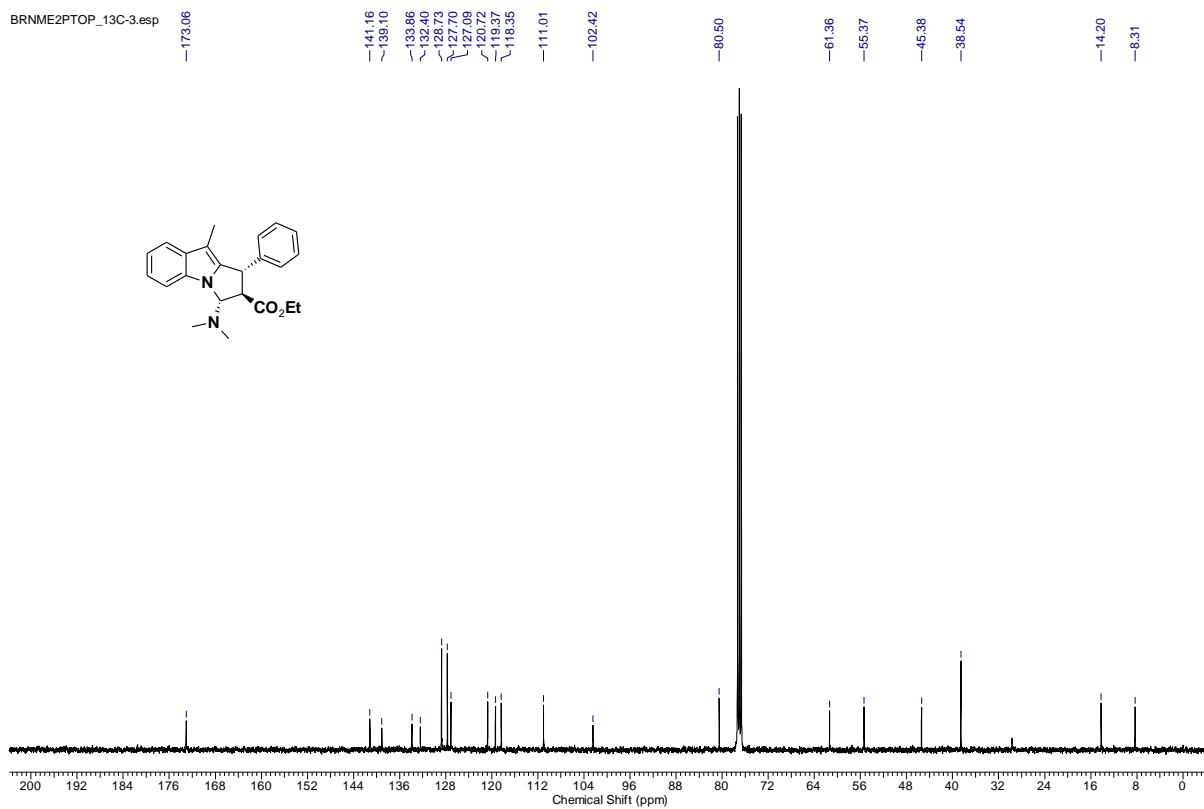


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 12d

BRNME2PTOP\_1H-4.esp

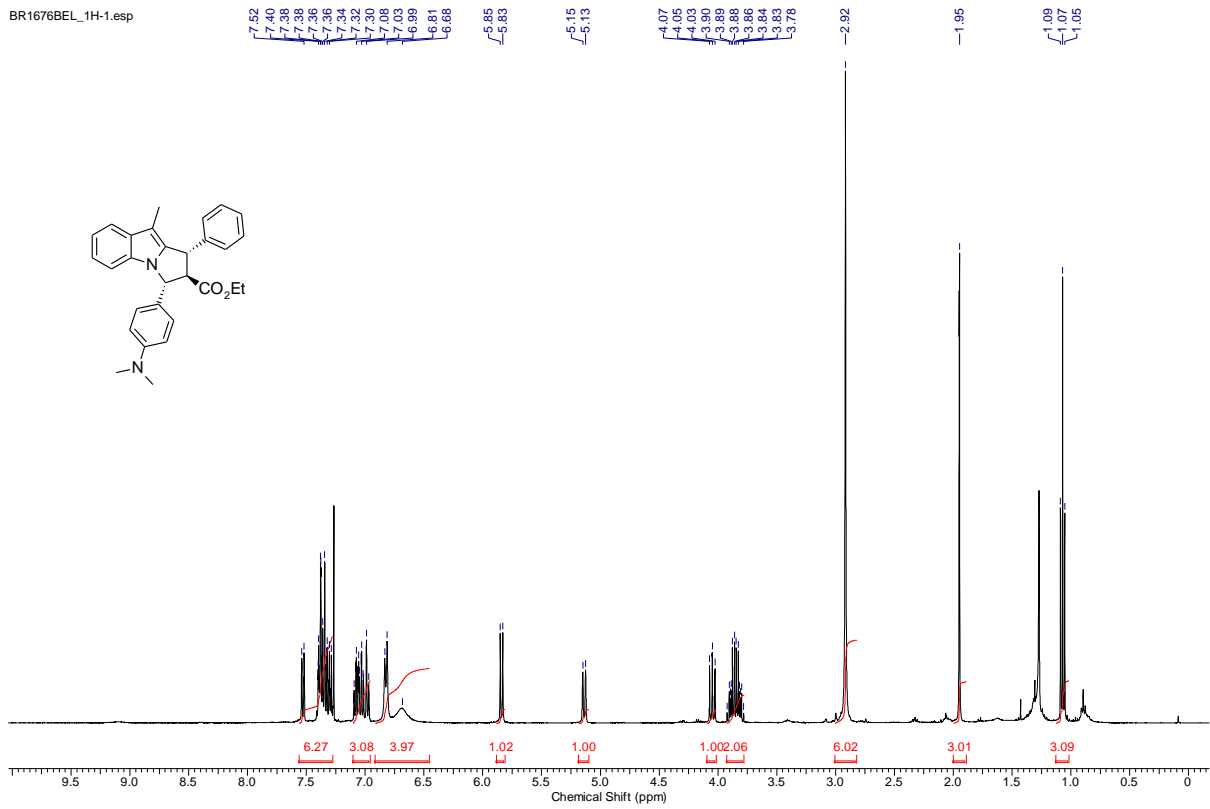


BRNME2PTOP\_13C-3.esp

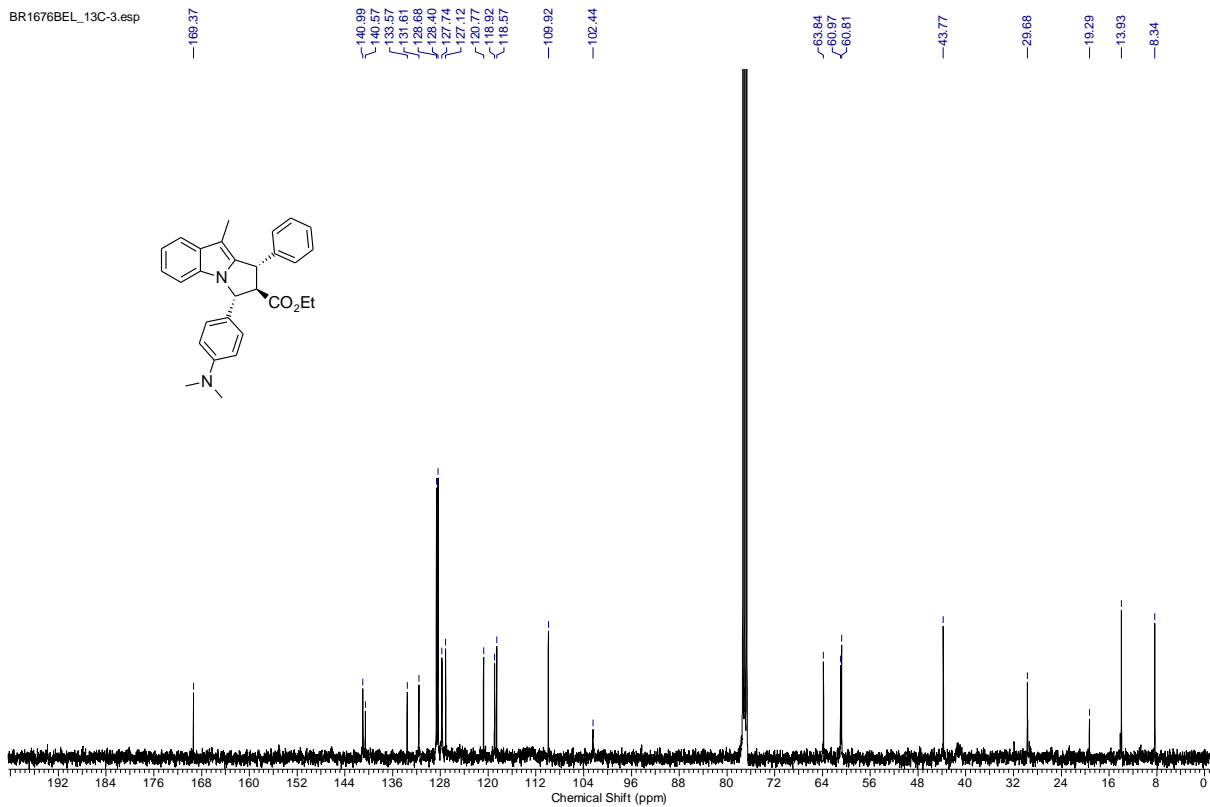


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 14a

BR1676BEL\_1H-1.esp

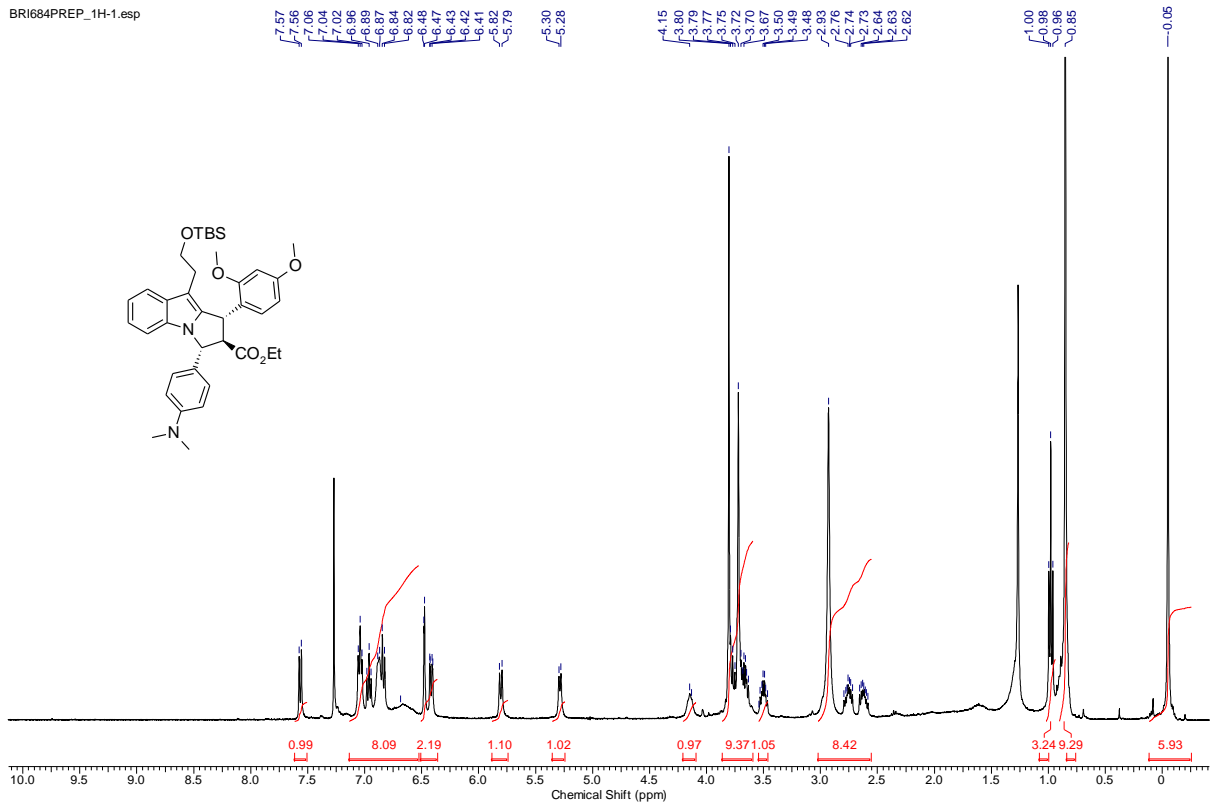


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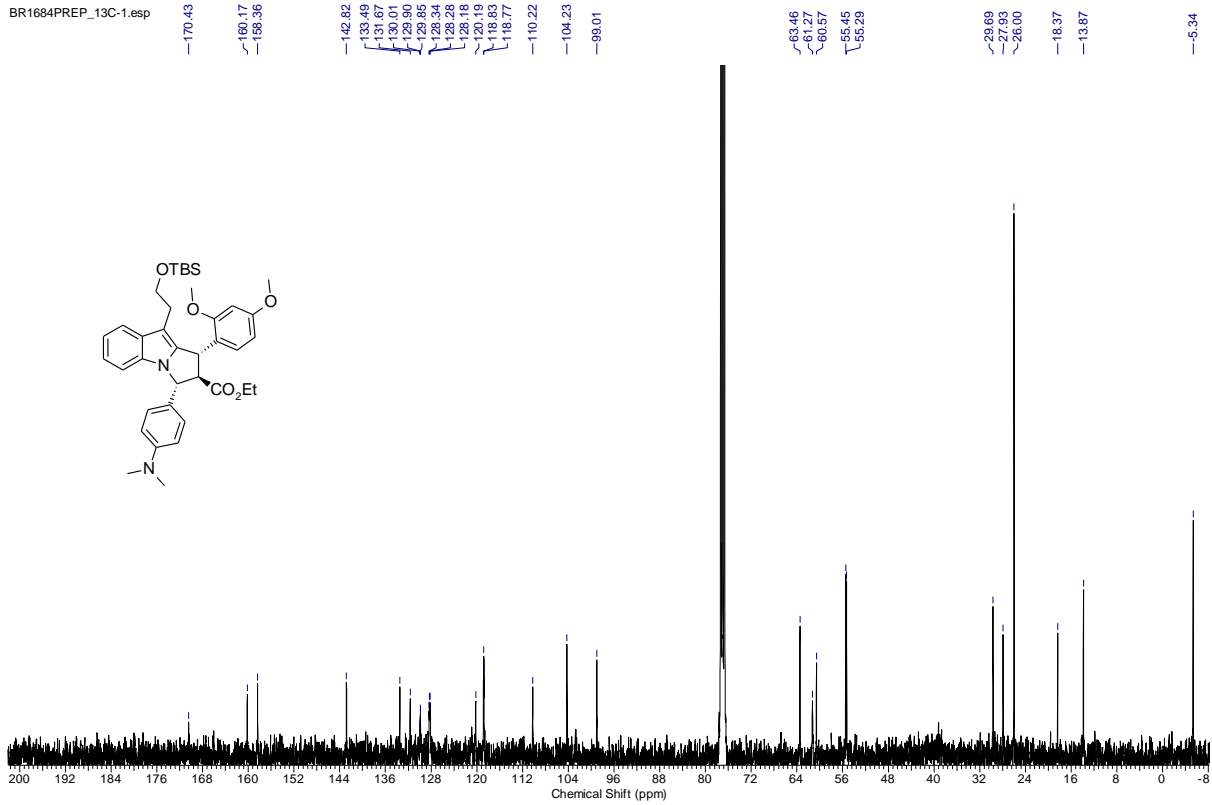


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 14b

BR1684PREP\_1H-1.esp

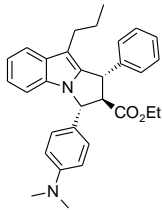
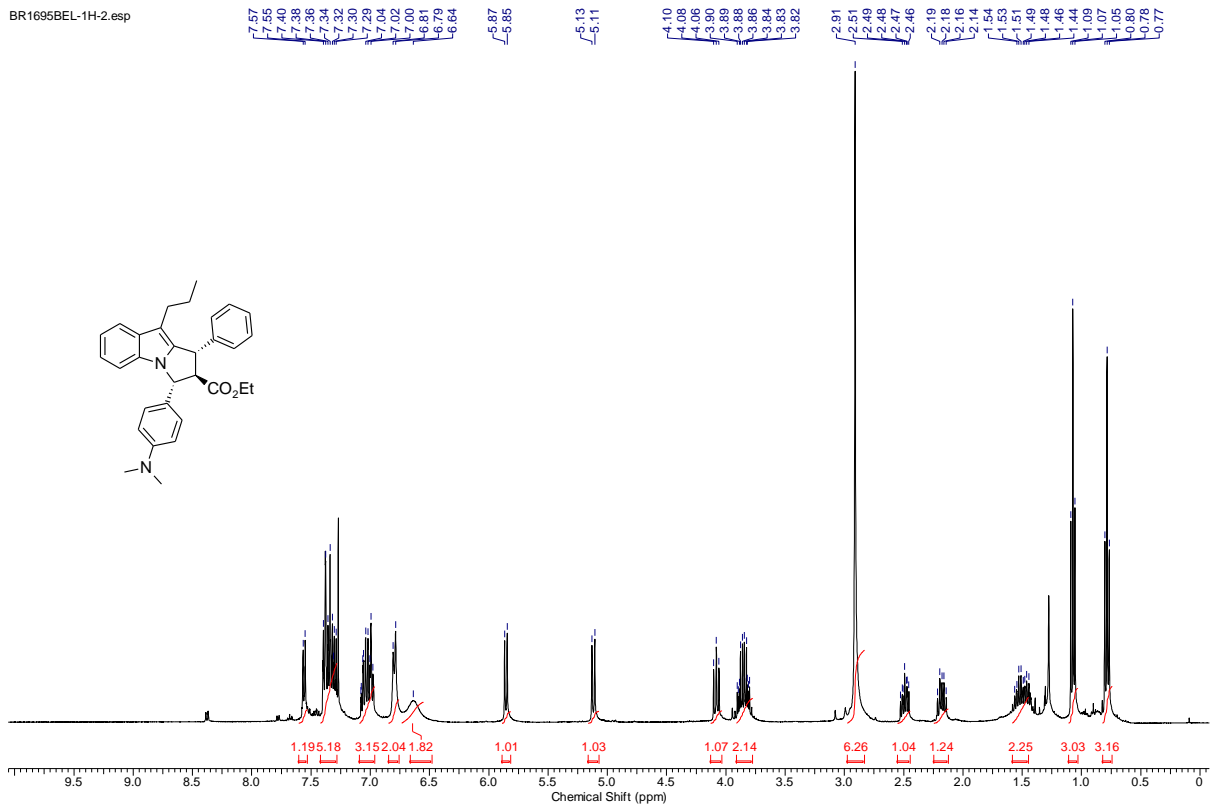


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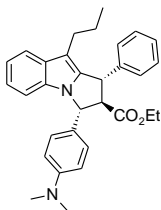
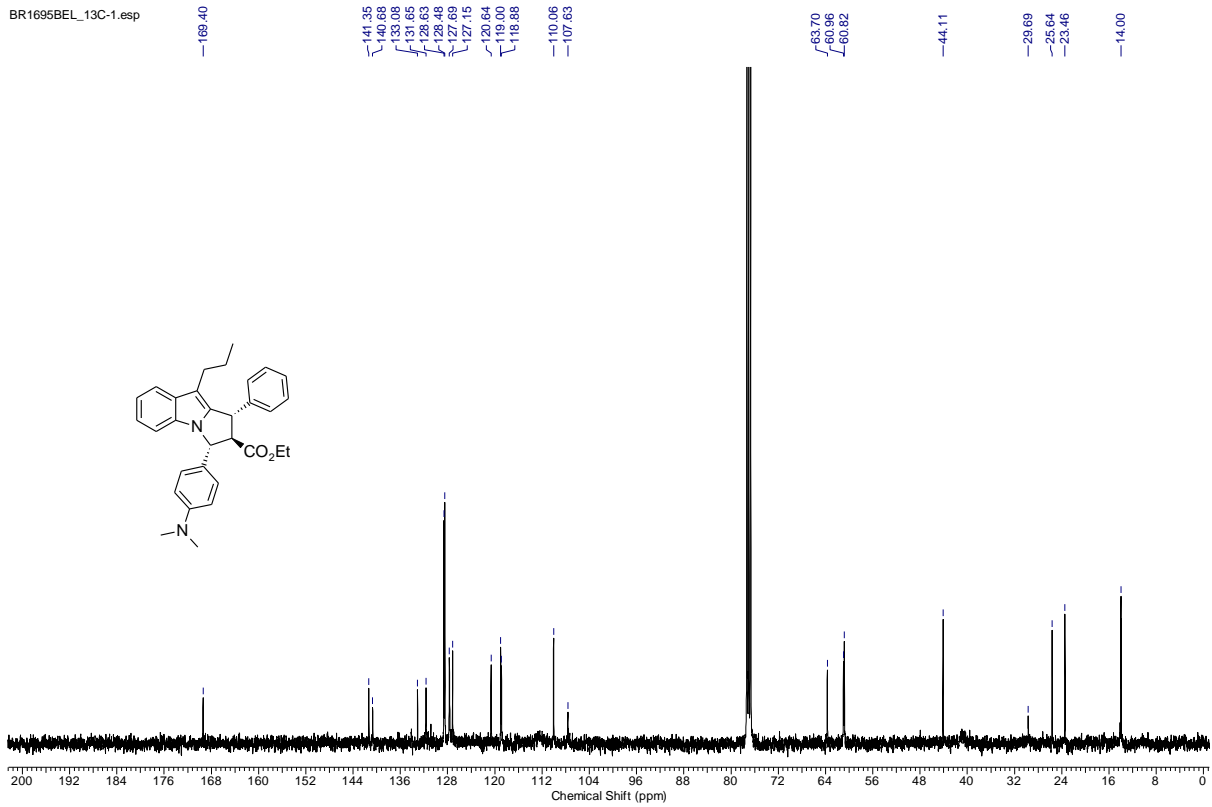


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 14c

BR1695BEL-1H-2.esp

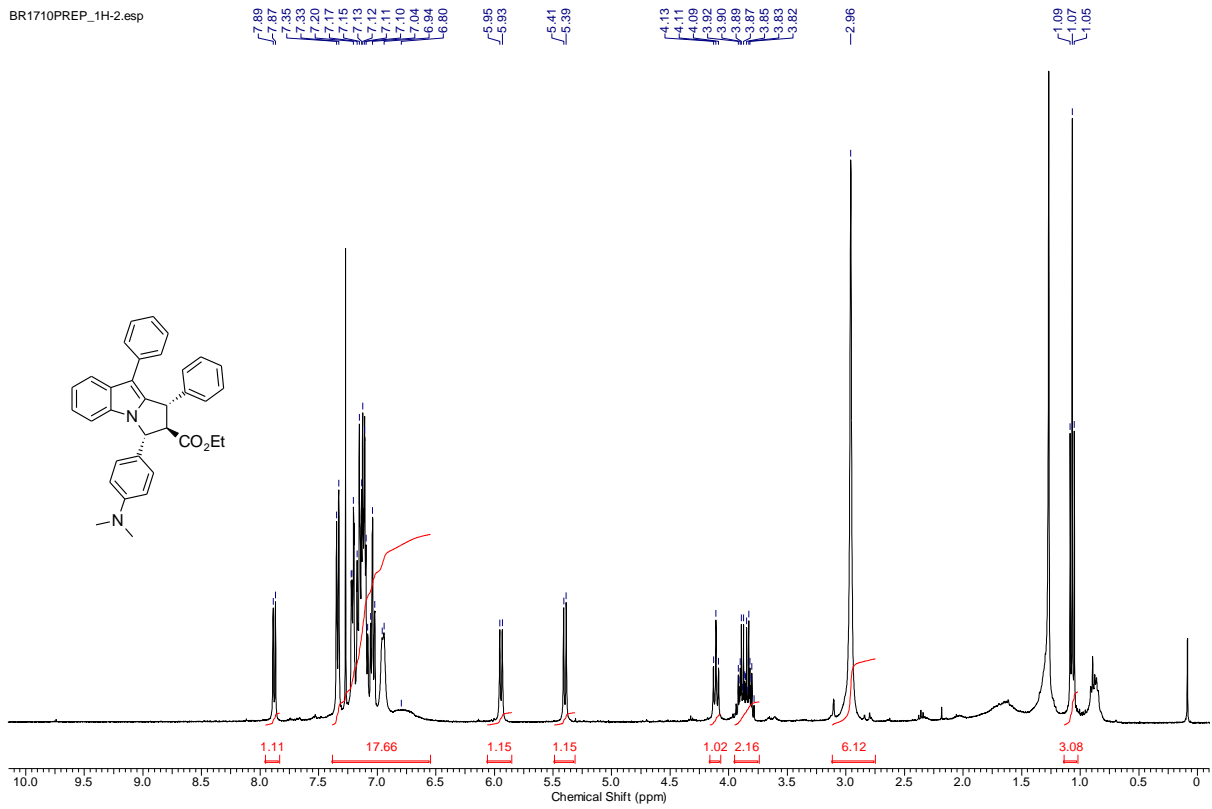


BR1695BEL\_13C-1.esp

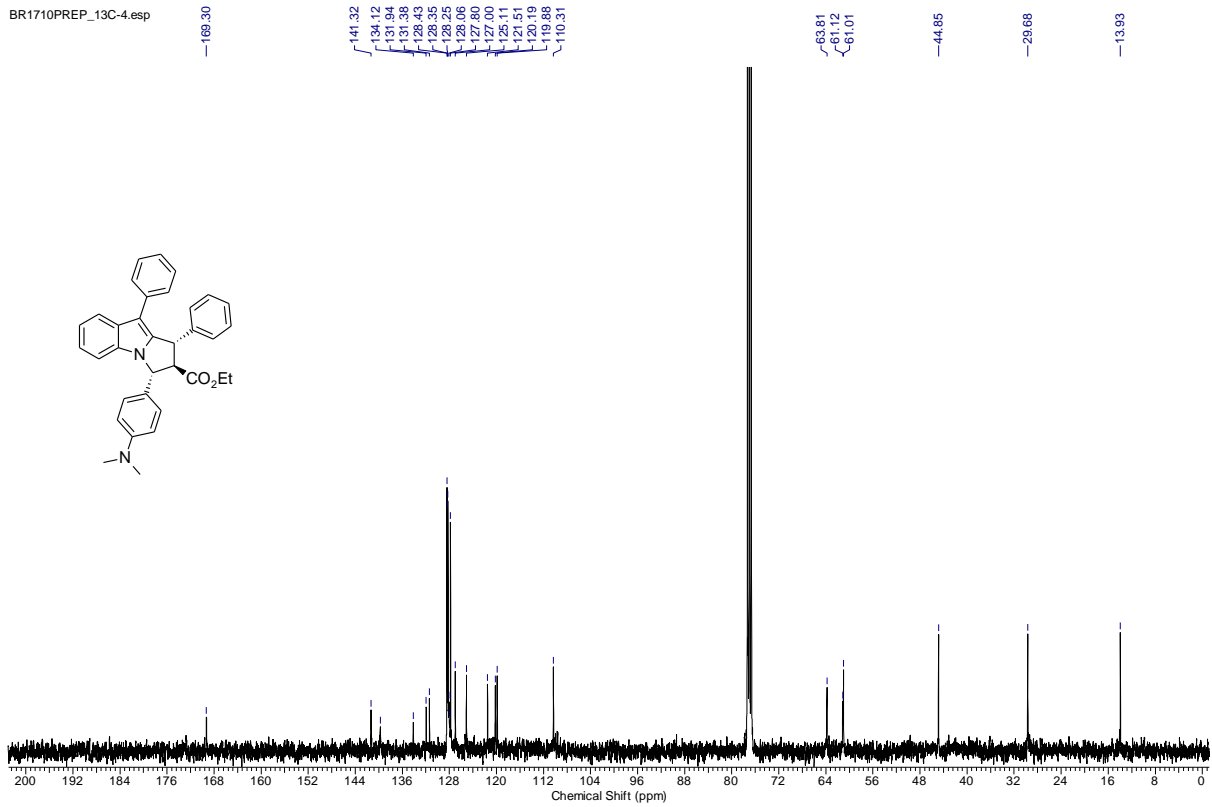


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 14d

BR1710PREP\_1H-2.esp

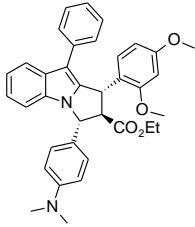
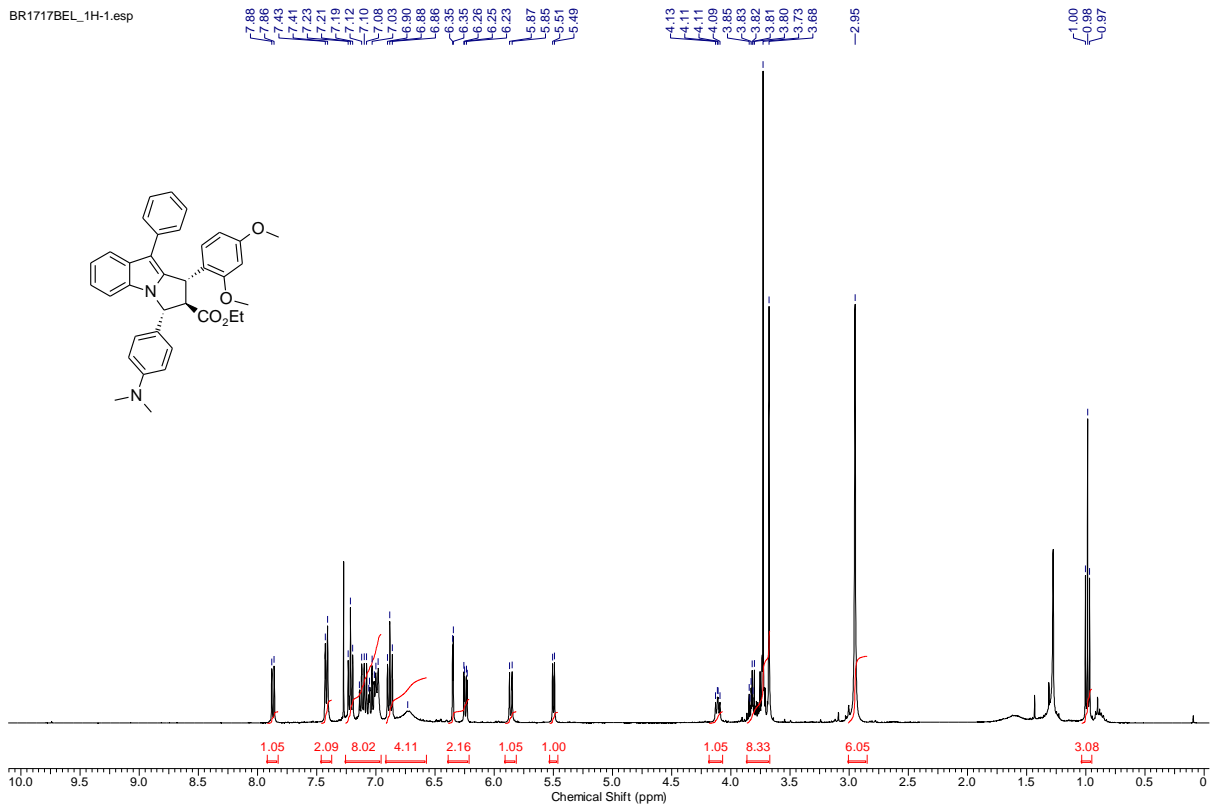


BR1710PREP\_13C-4.esp

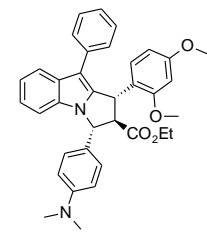
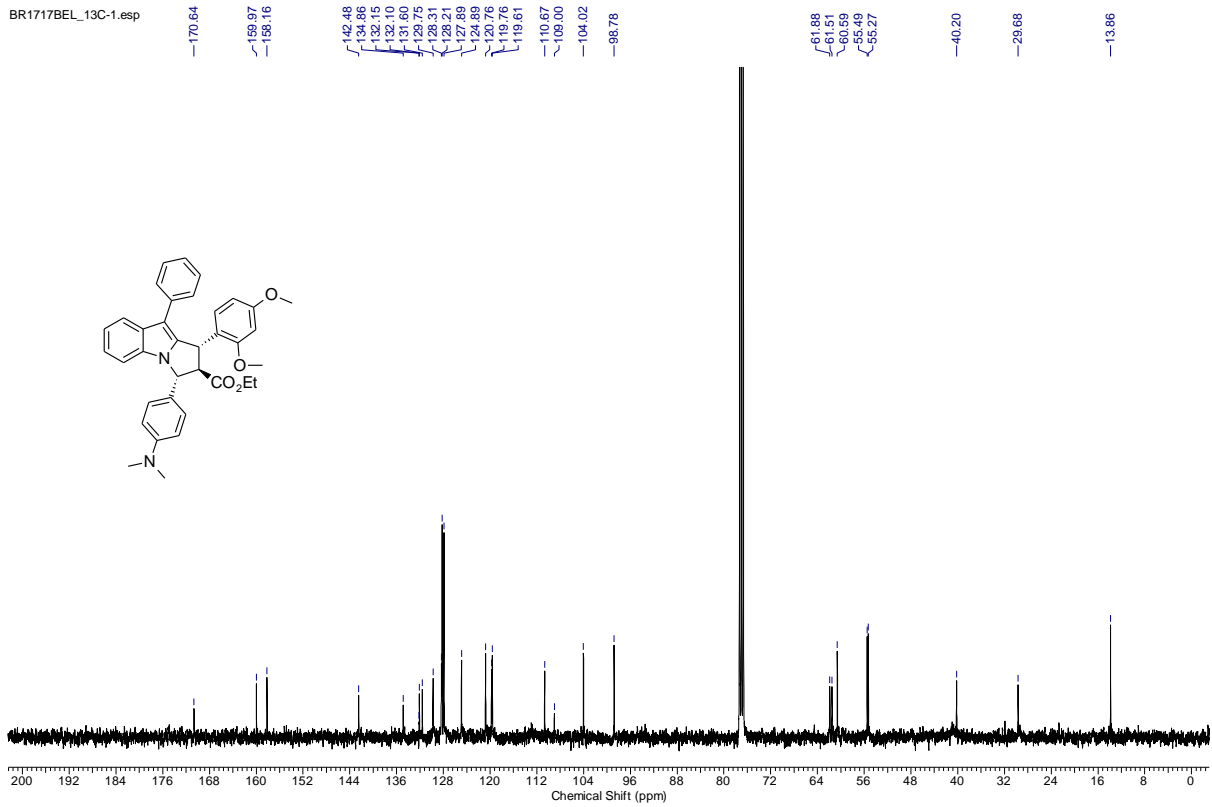


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 14e

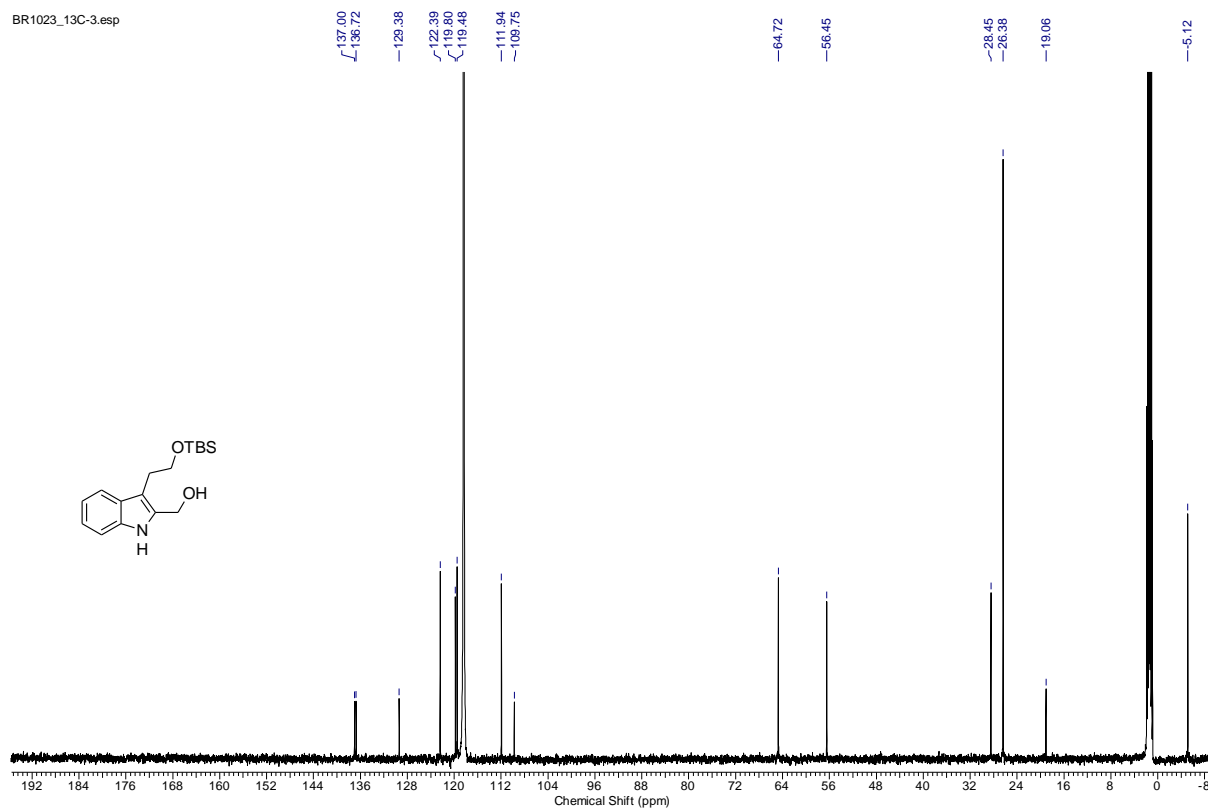
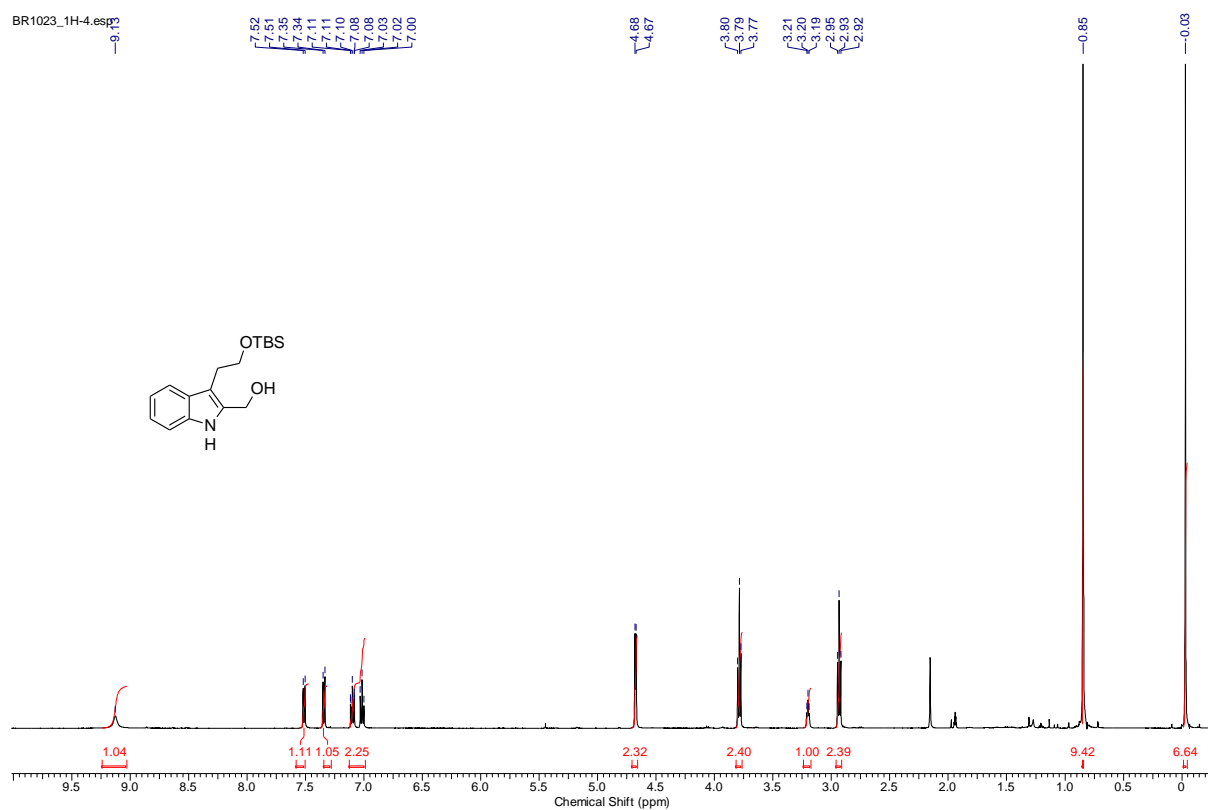
BR1717BEL\_1H-1.esp



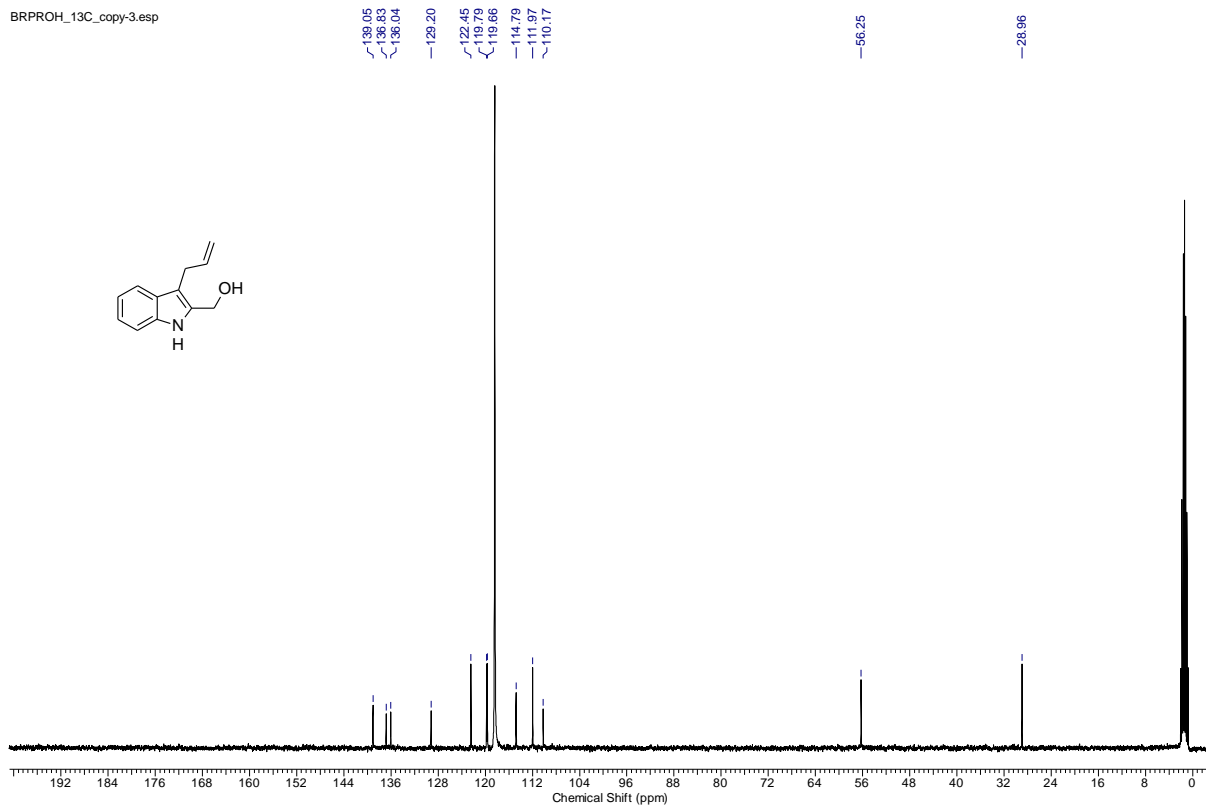
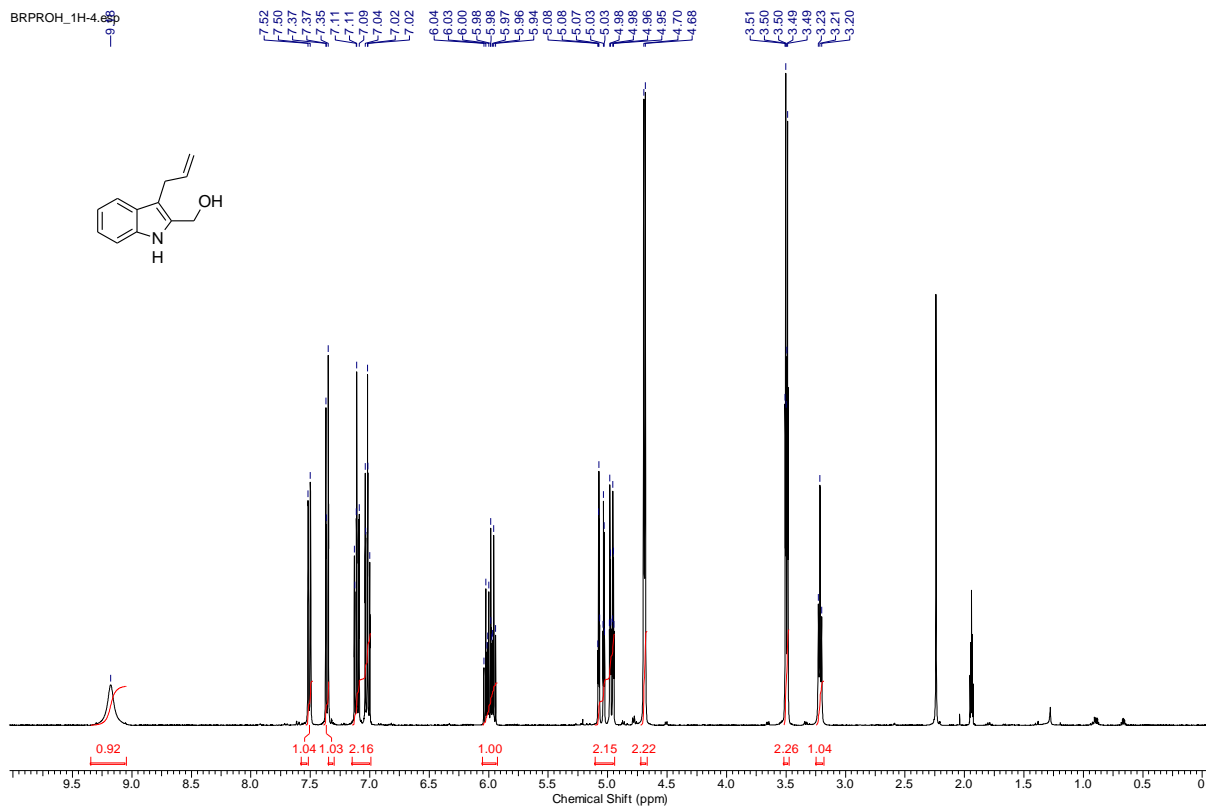
BR1717BEL\_13C-1.esp



# <sup>1</sup>H and <sup>13</sup>C NMR of compound 15b



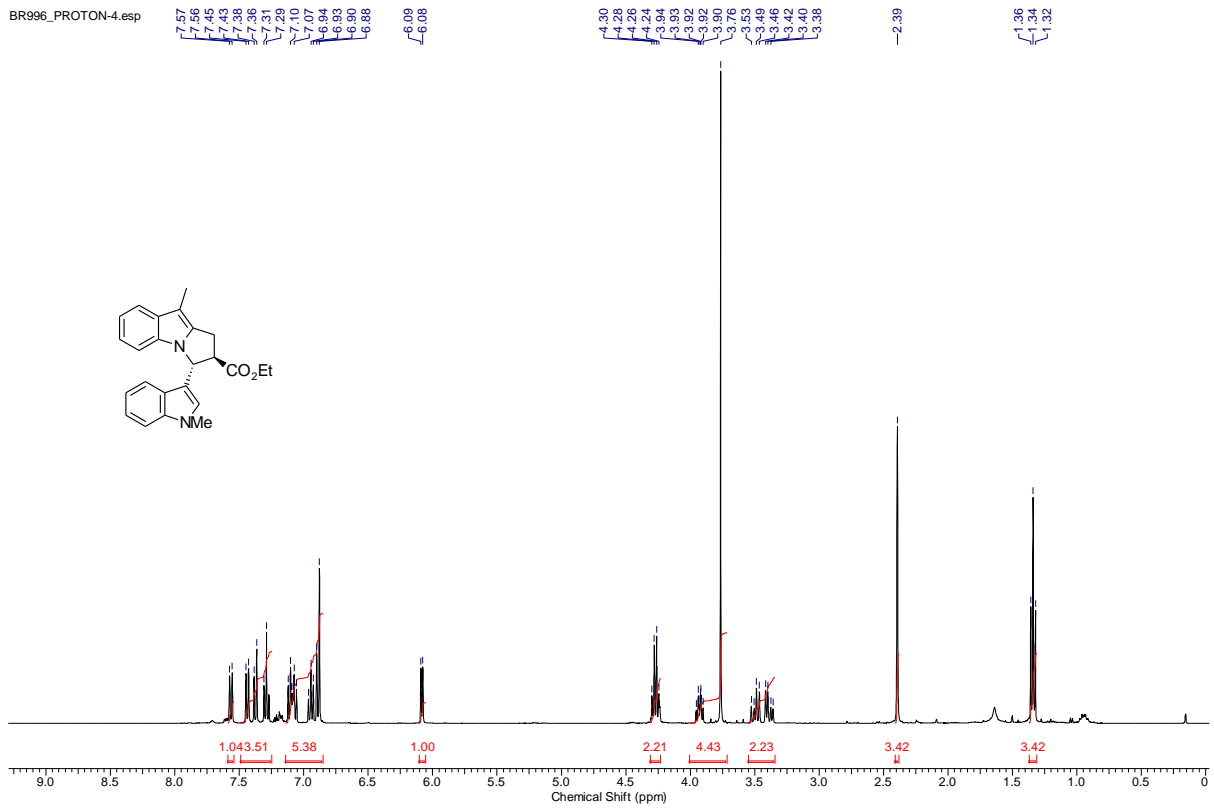
# <sup>1</sup>H and <sup>13</sup>C NMR of compound 15c



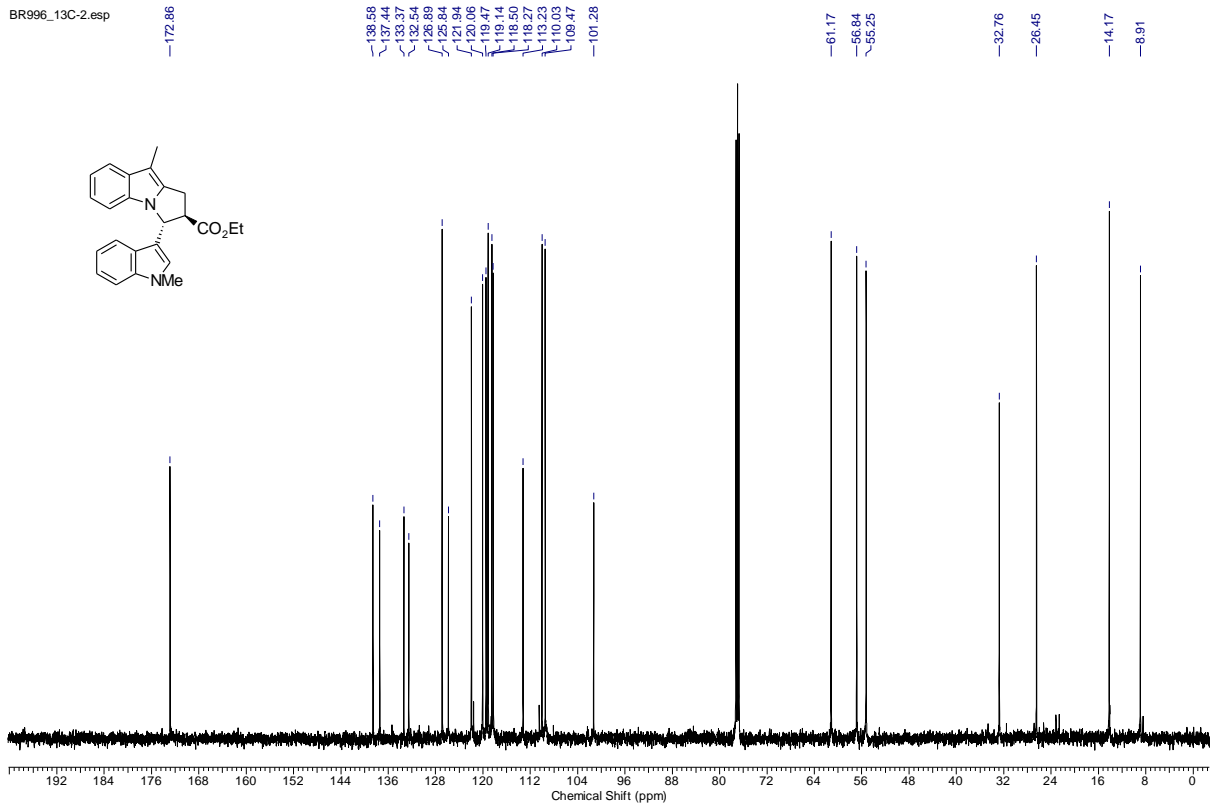


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16a

BR996\_PROTON-4.esp

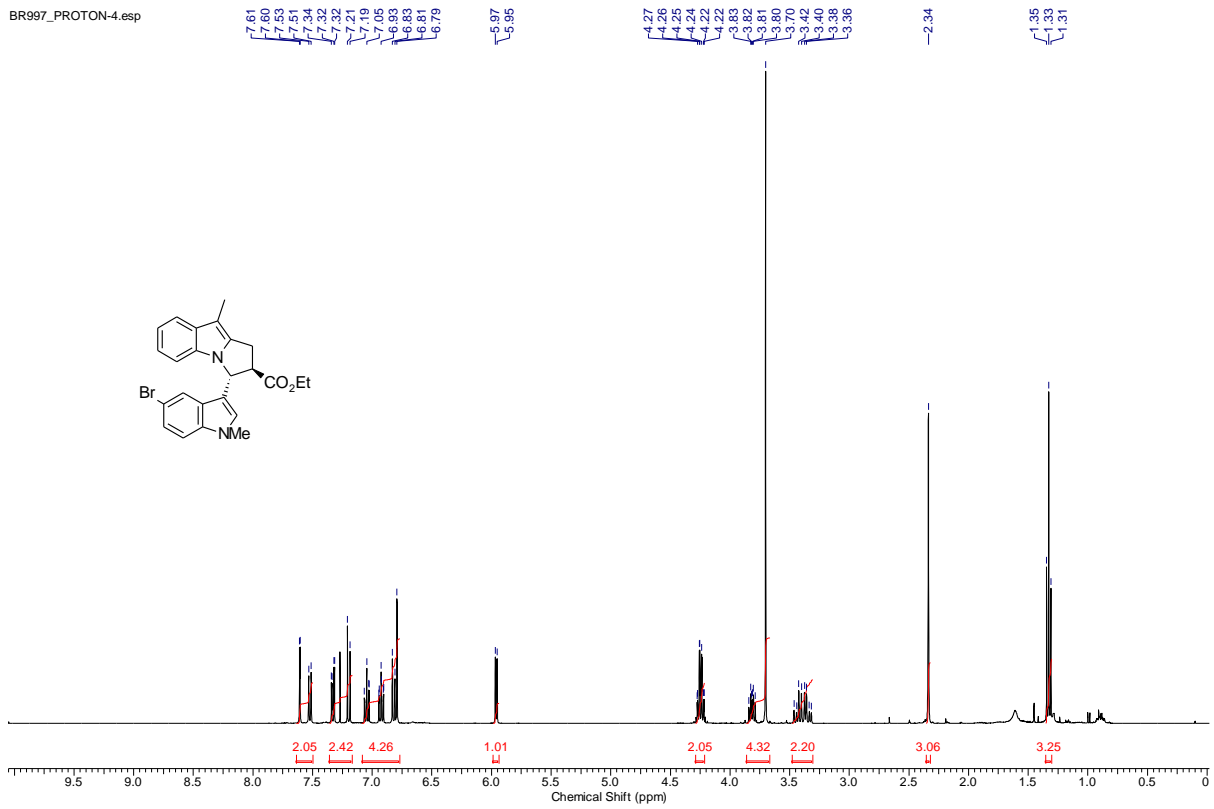


BR996\_13C-2.esp

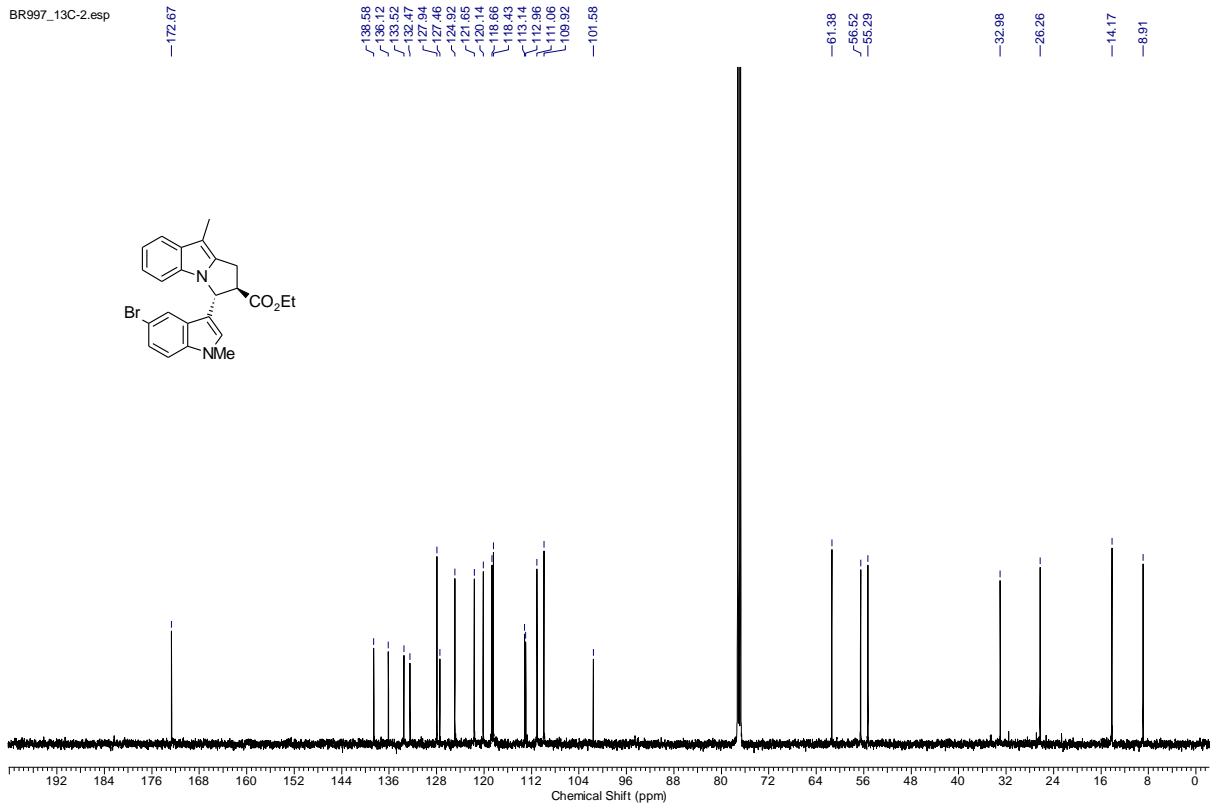


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16b

BR997\_PROTON-4.esp

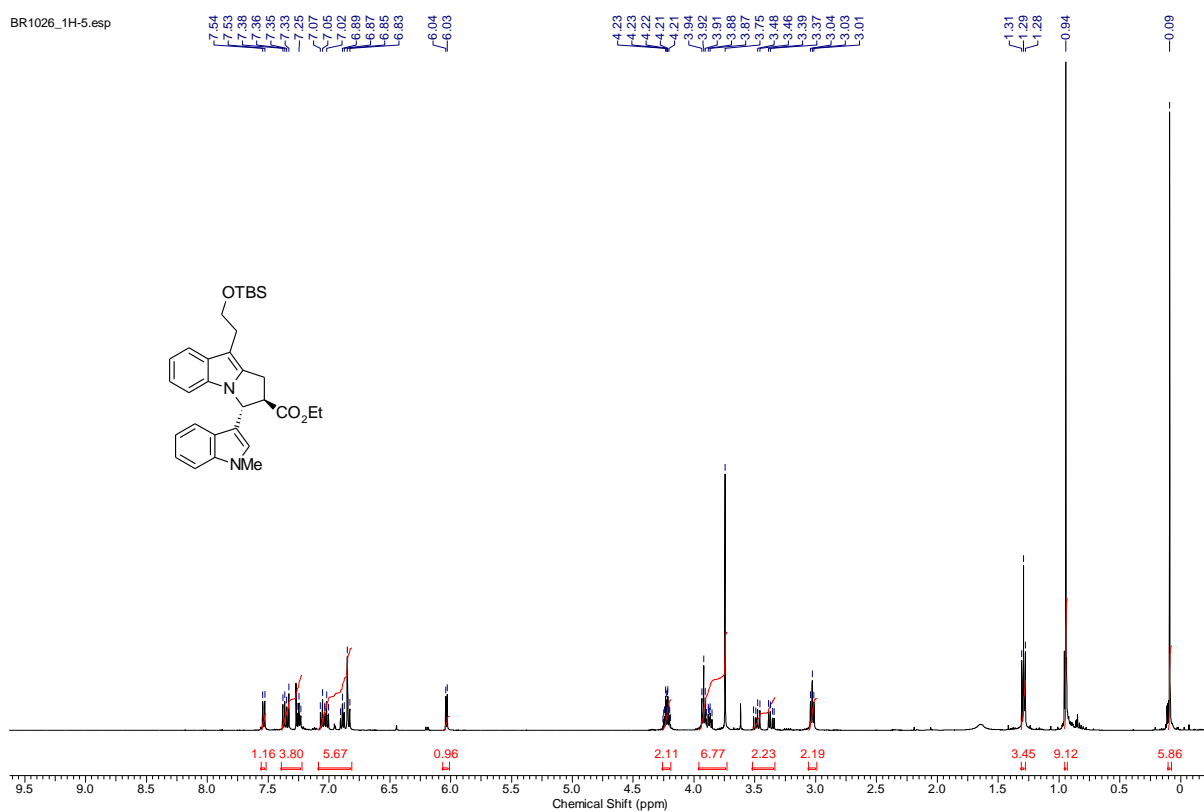


BR997\_13C-2.esp

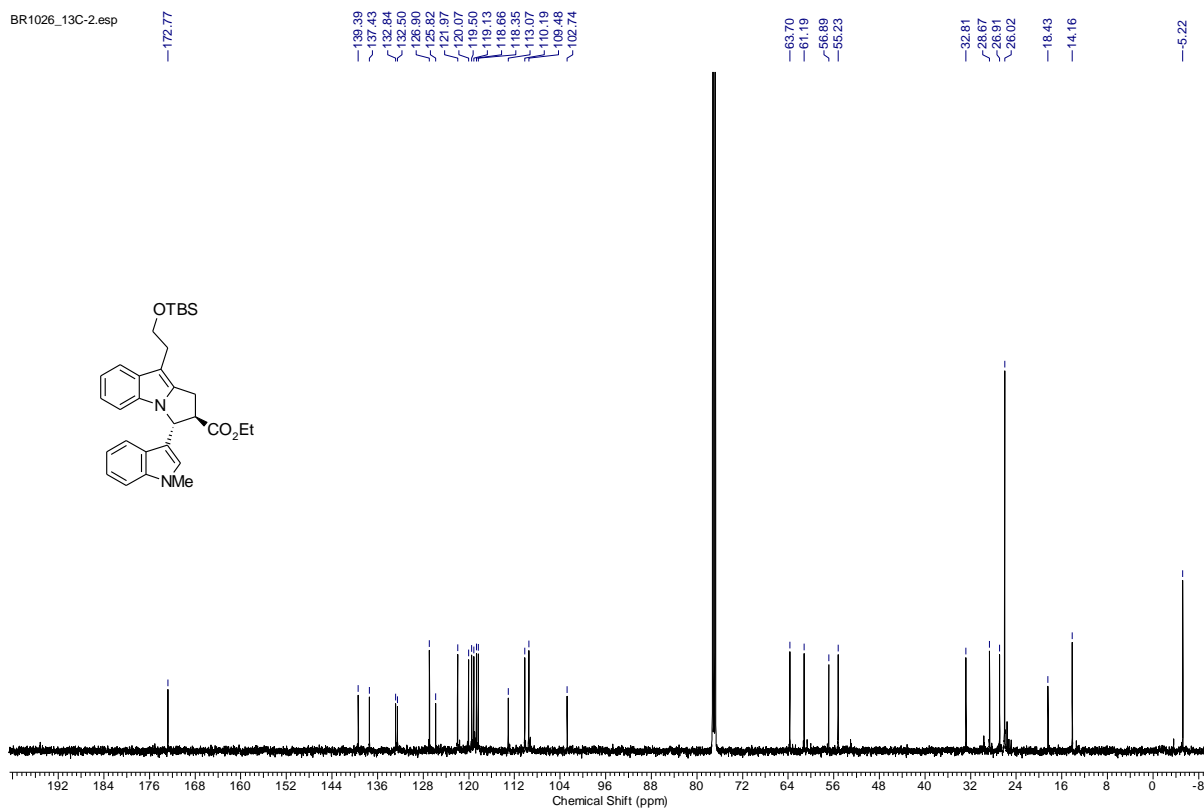


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16c

BR1026\_1H-5.esp

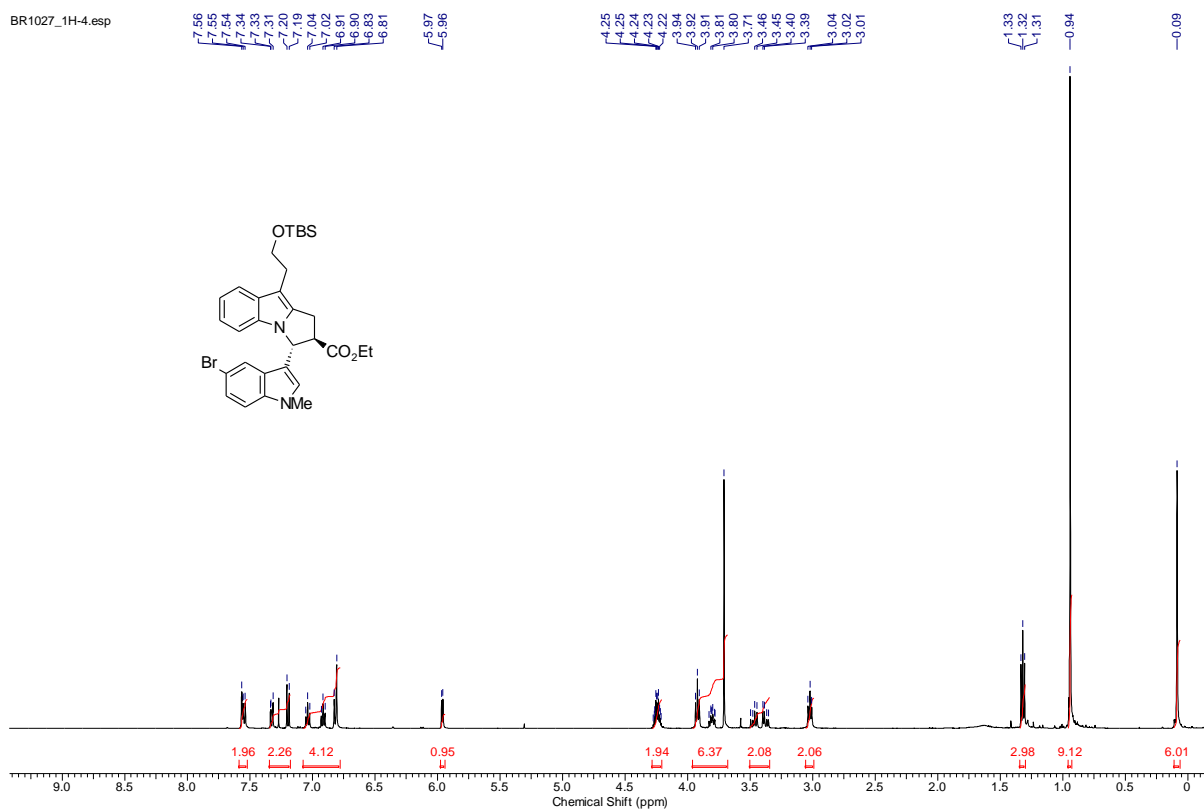


BR1026\_13C-2.esp

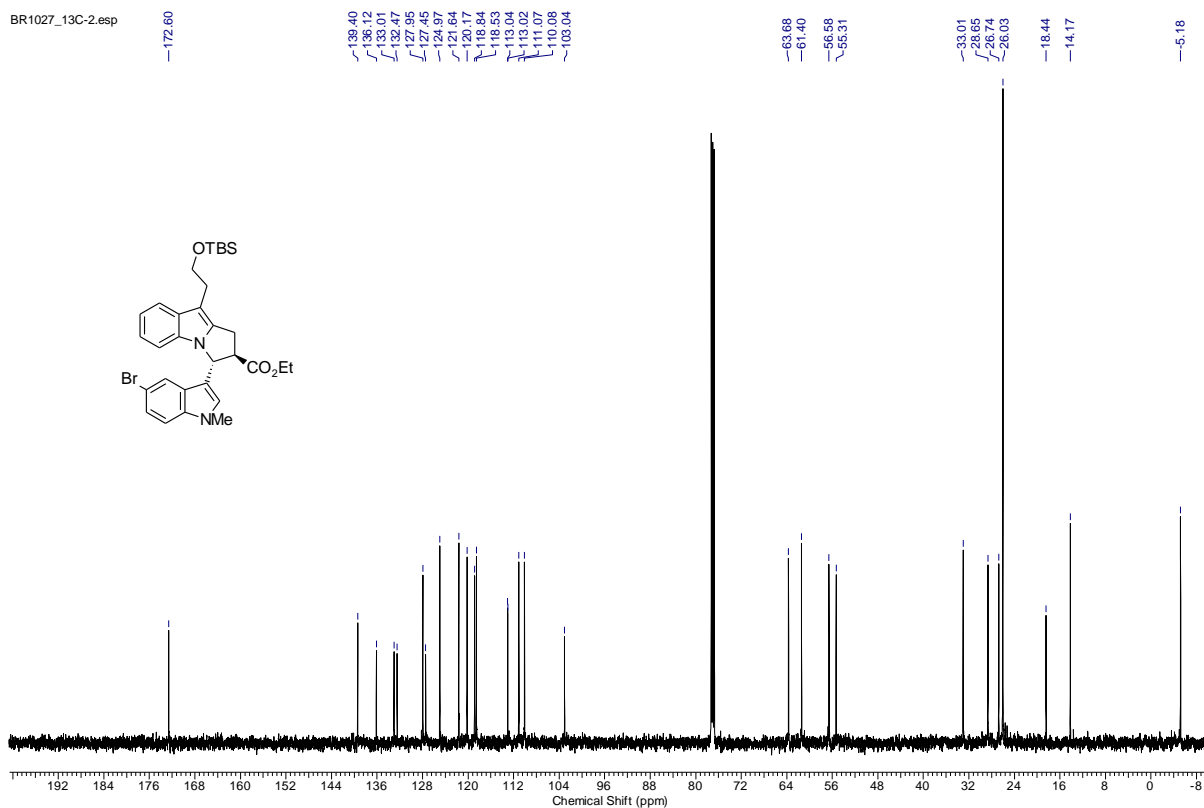


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16d

BR1027\_1H-4.esp

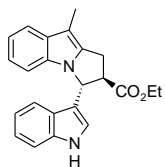
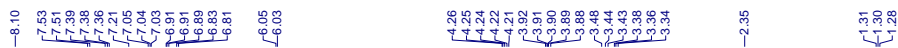


BR1027\_13C-2.esp

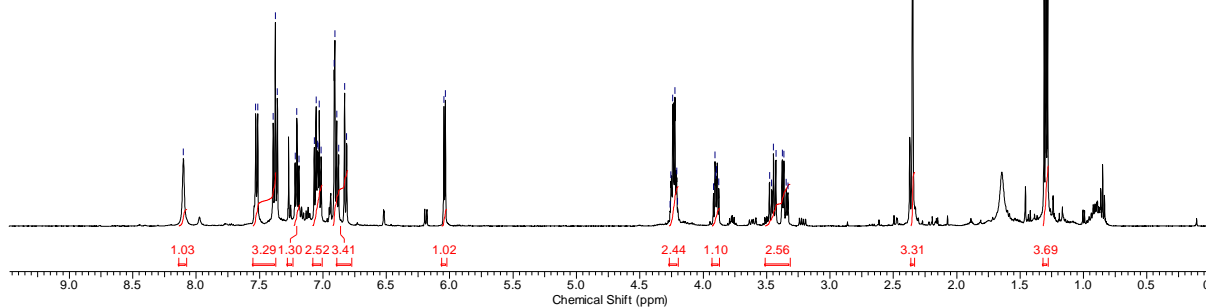


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16e

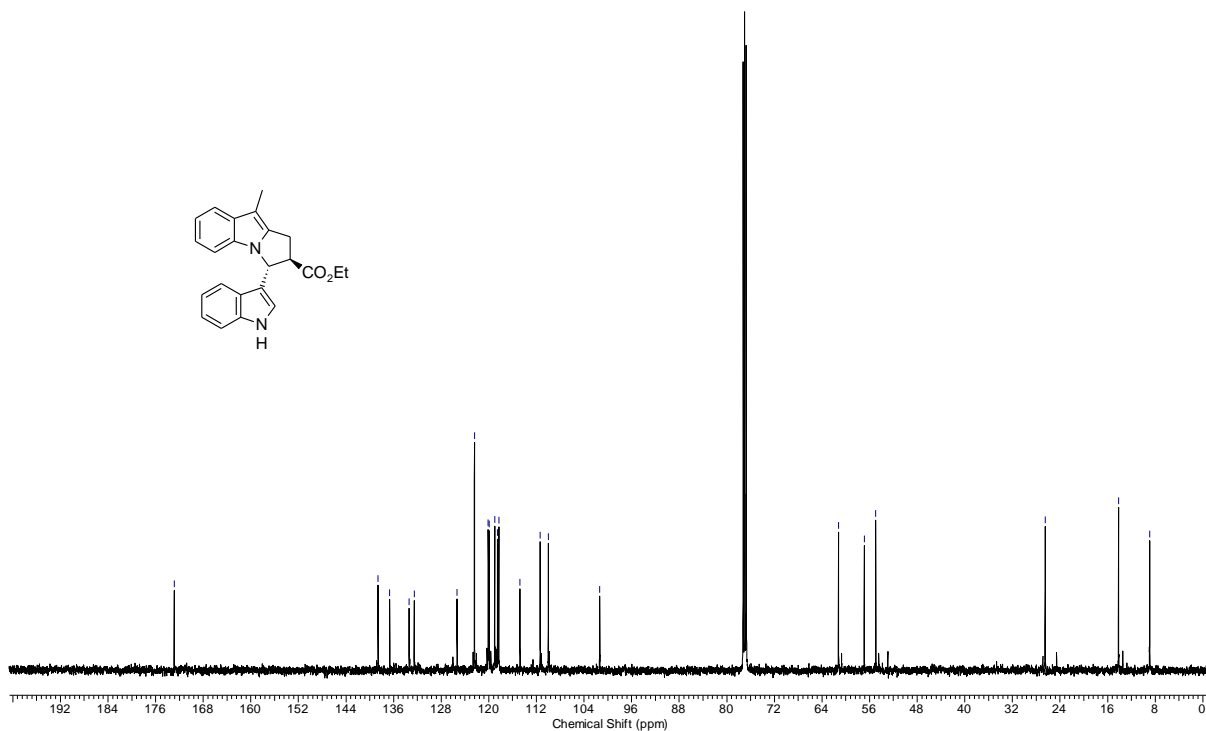
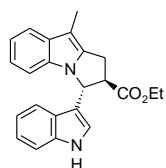
BR987\_1H-4.esp



7:1 mixture

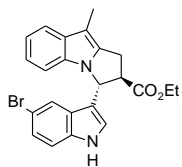
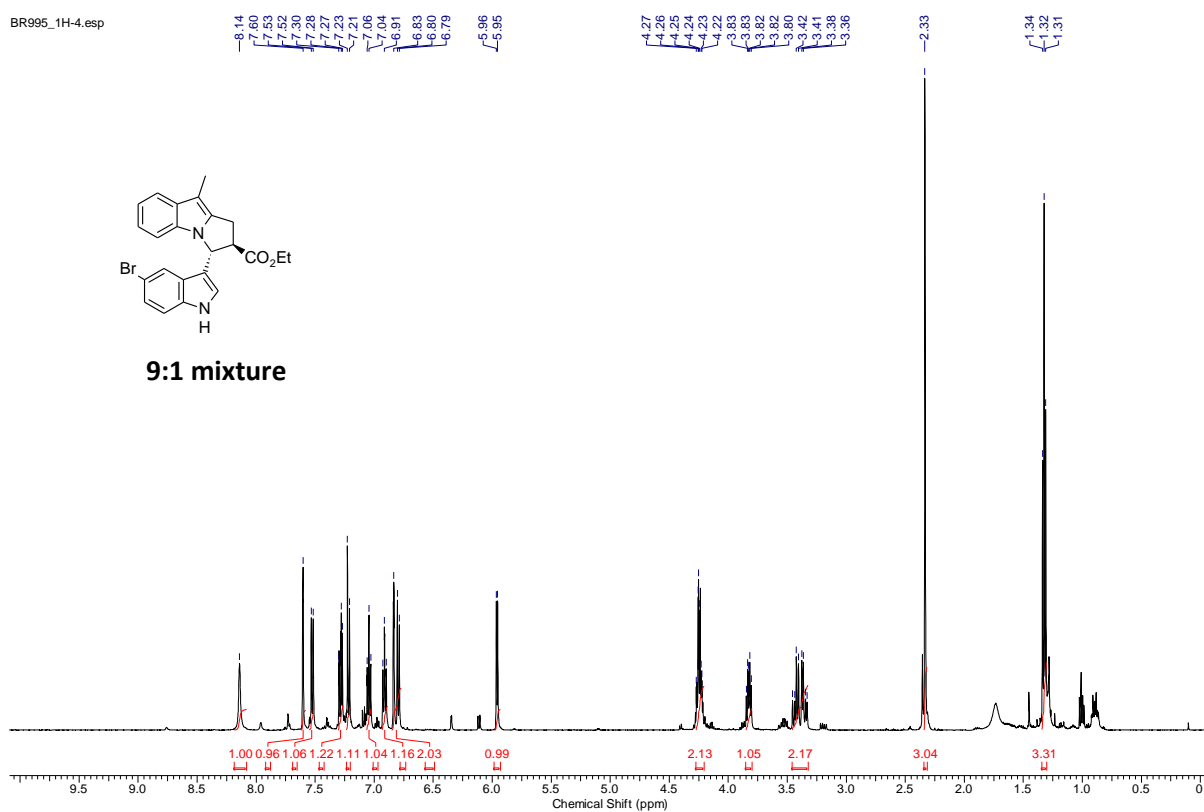


BR987\_13C-2.esp



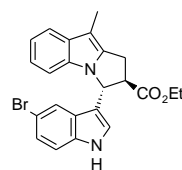
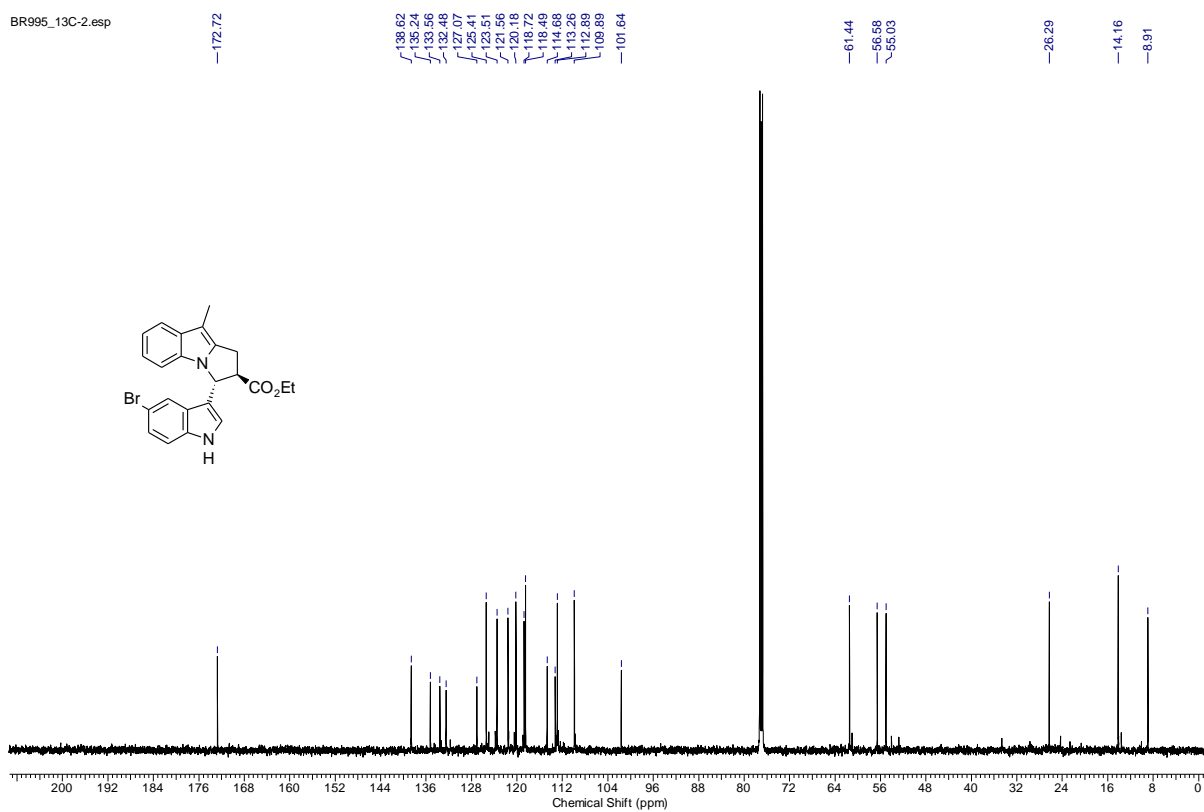
# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16f

BR995\_1H-4.esp



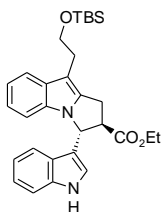
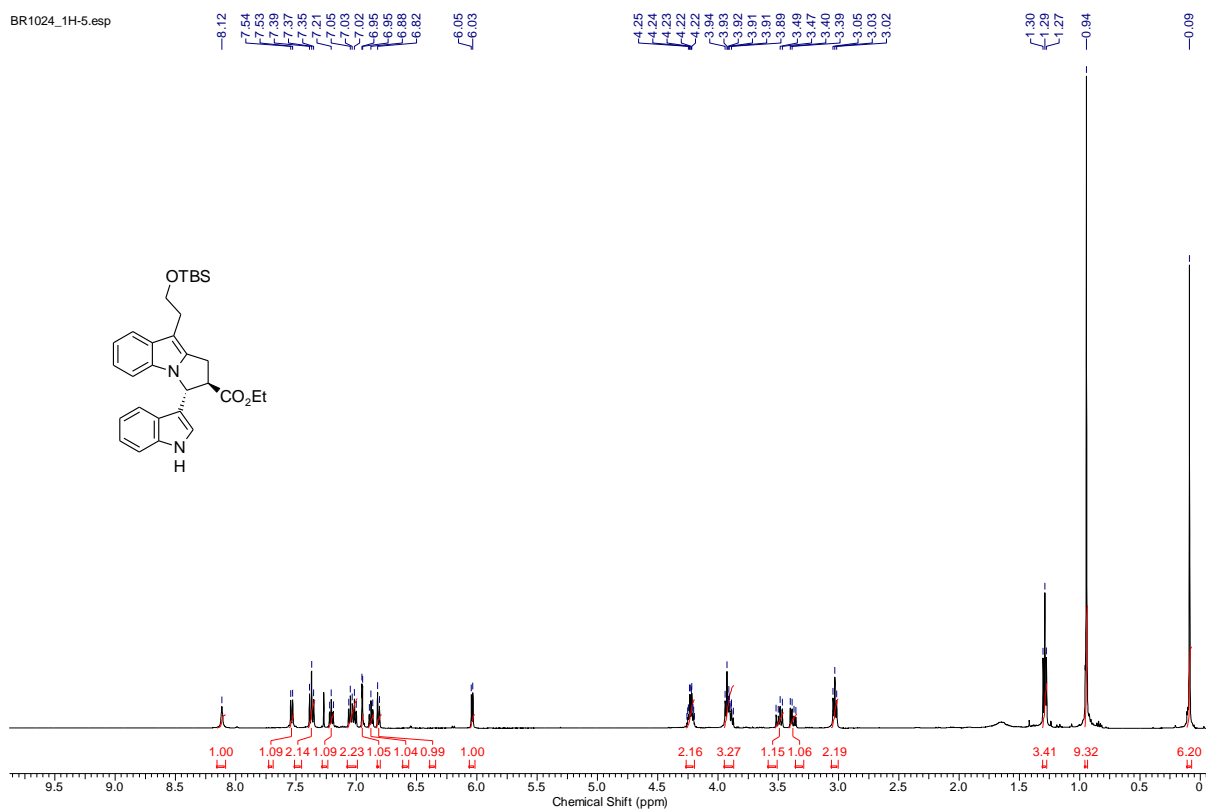
9:1 mixture

BR995\_13C-2.esp

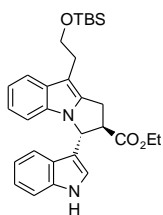
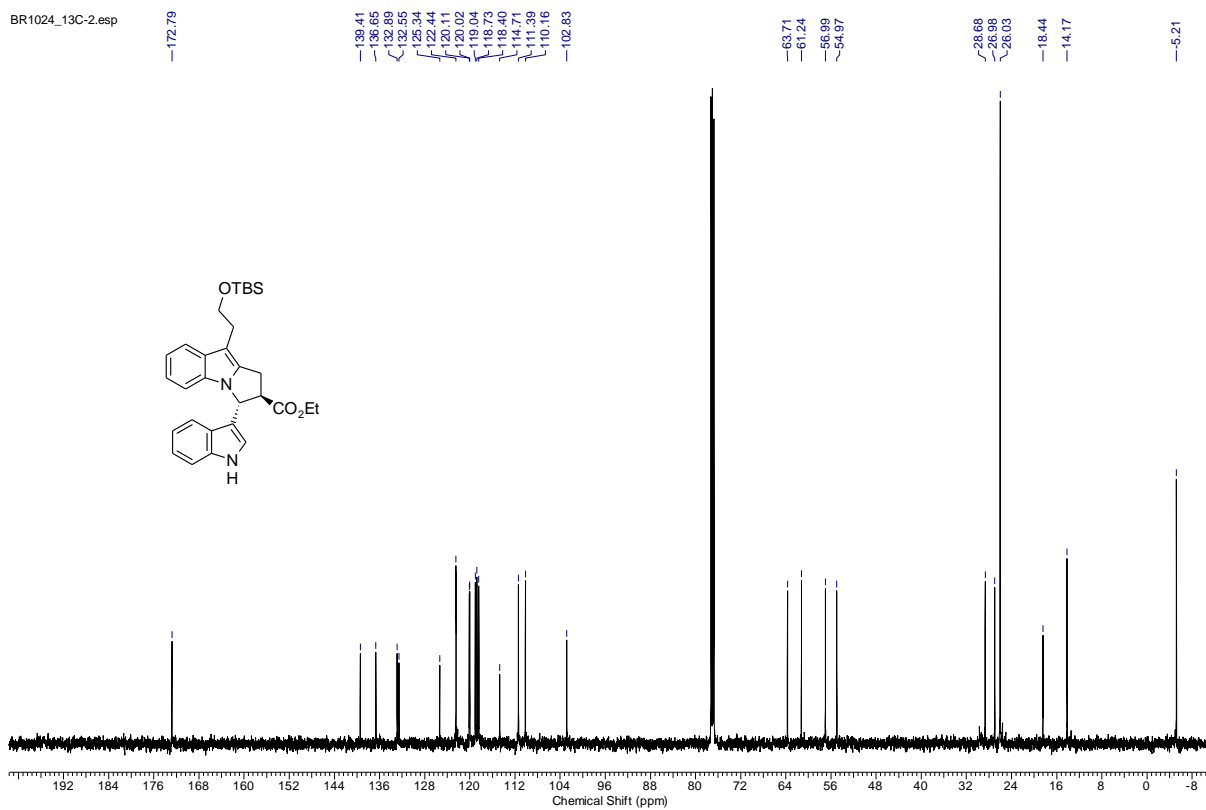


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16g

BR1024\_1H-5.esp

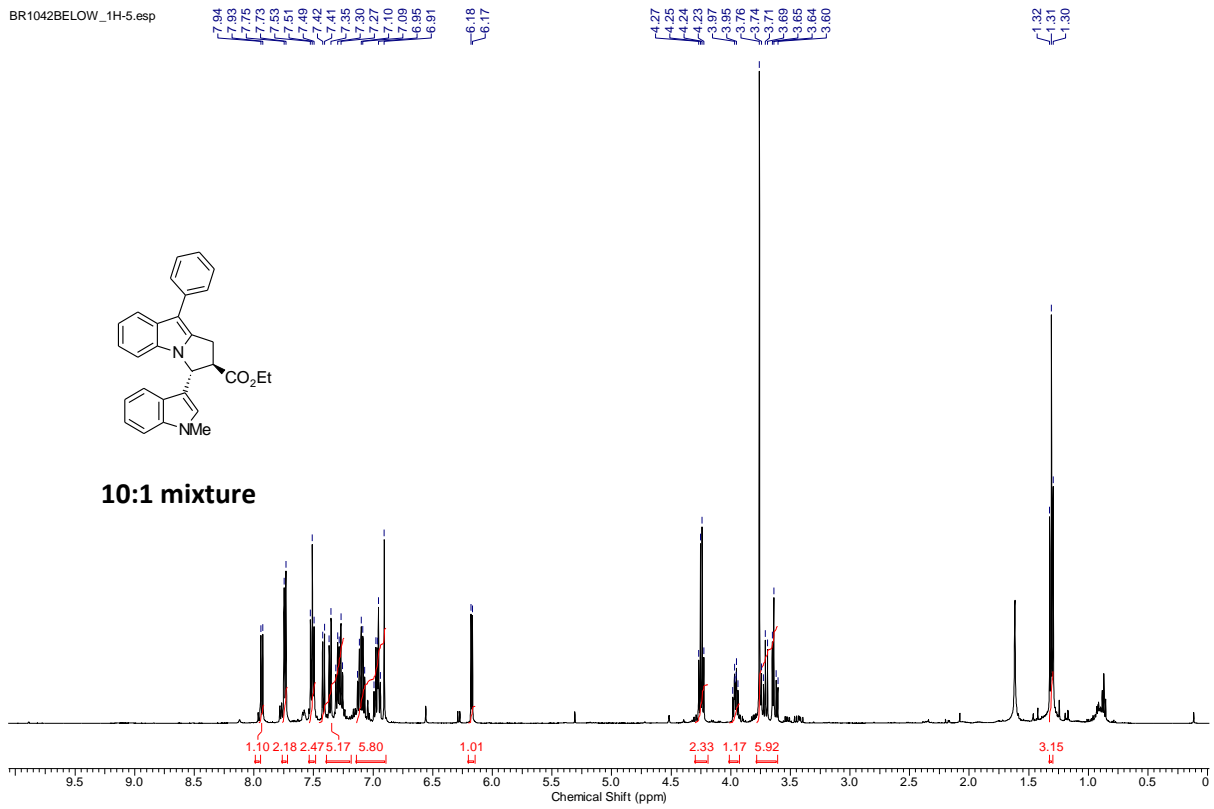


BR1024\_13C-2.esp

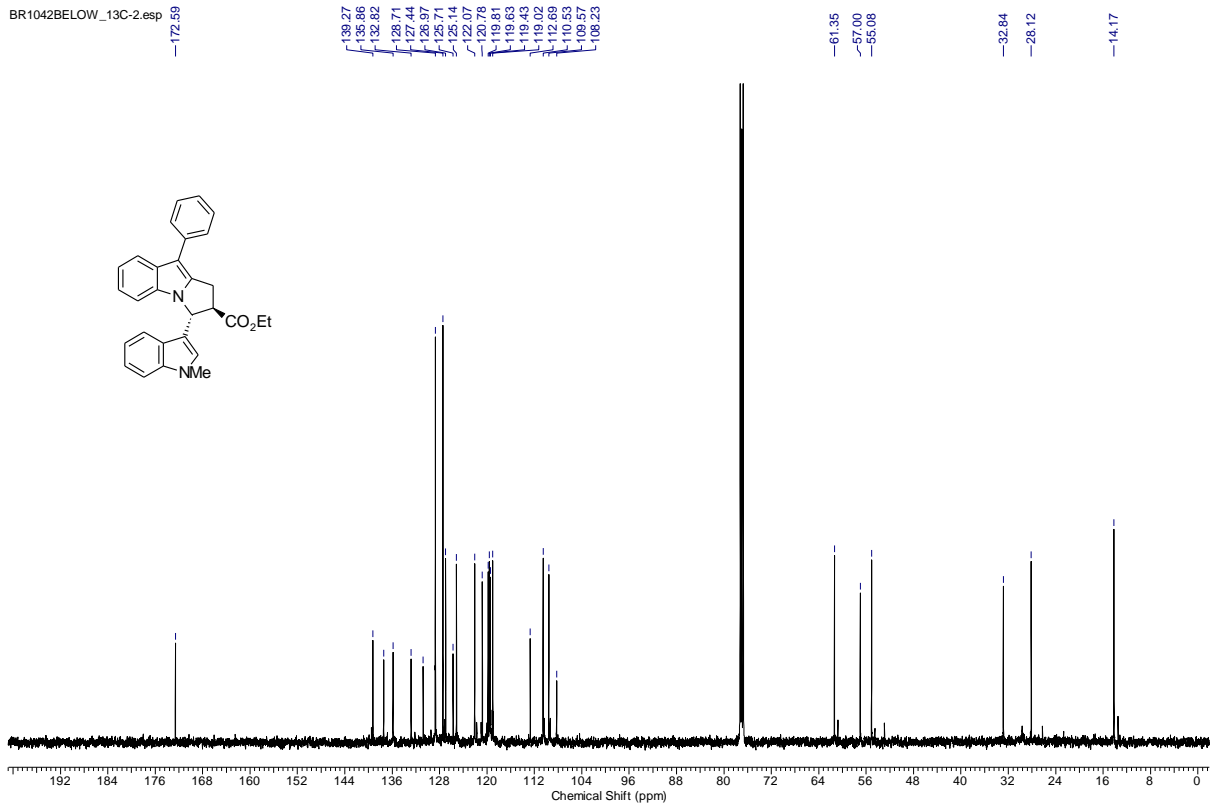


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16h

BR1042BELOW\_1H-5.esp



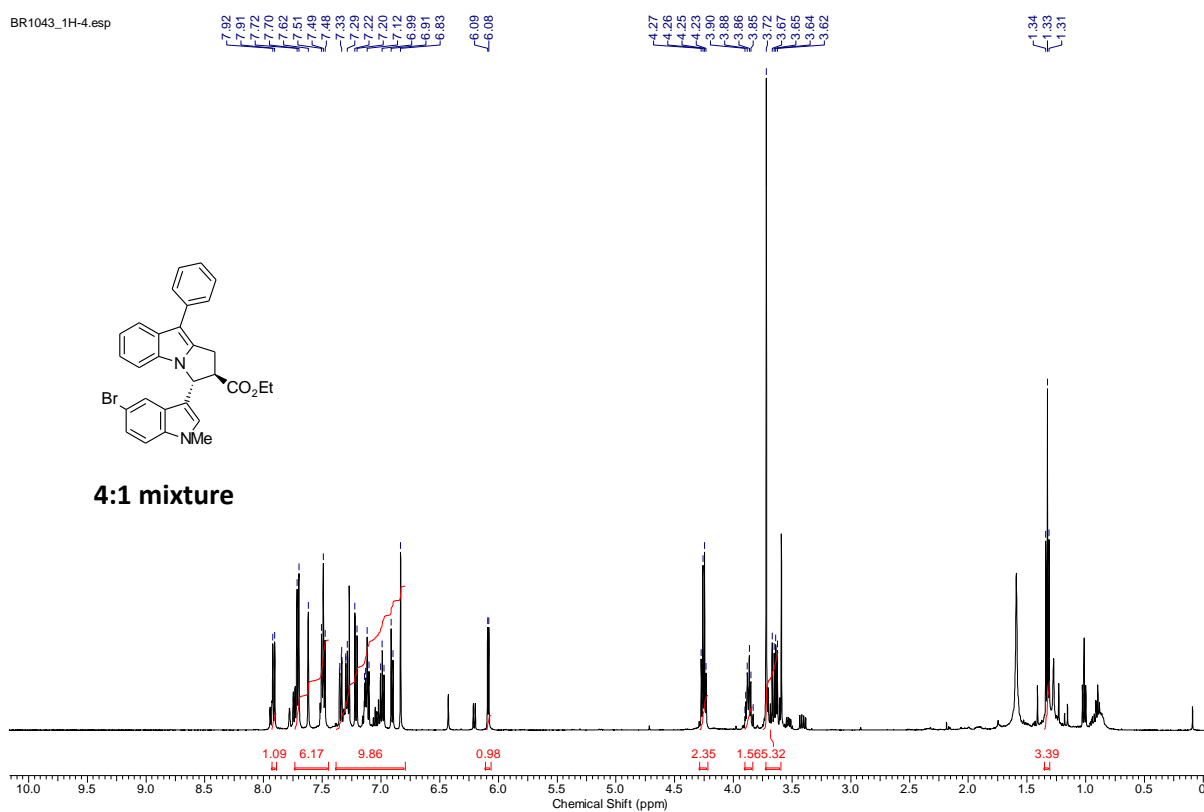
BR1042BELOW\_13C-2.esp



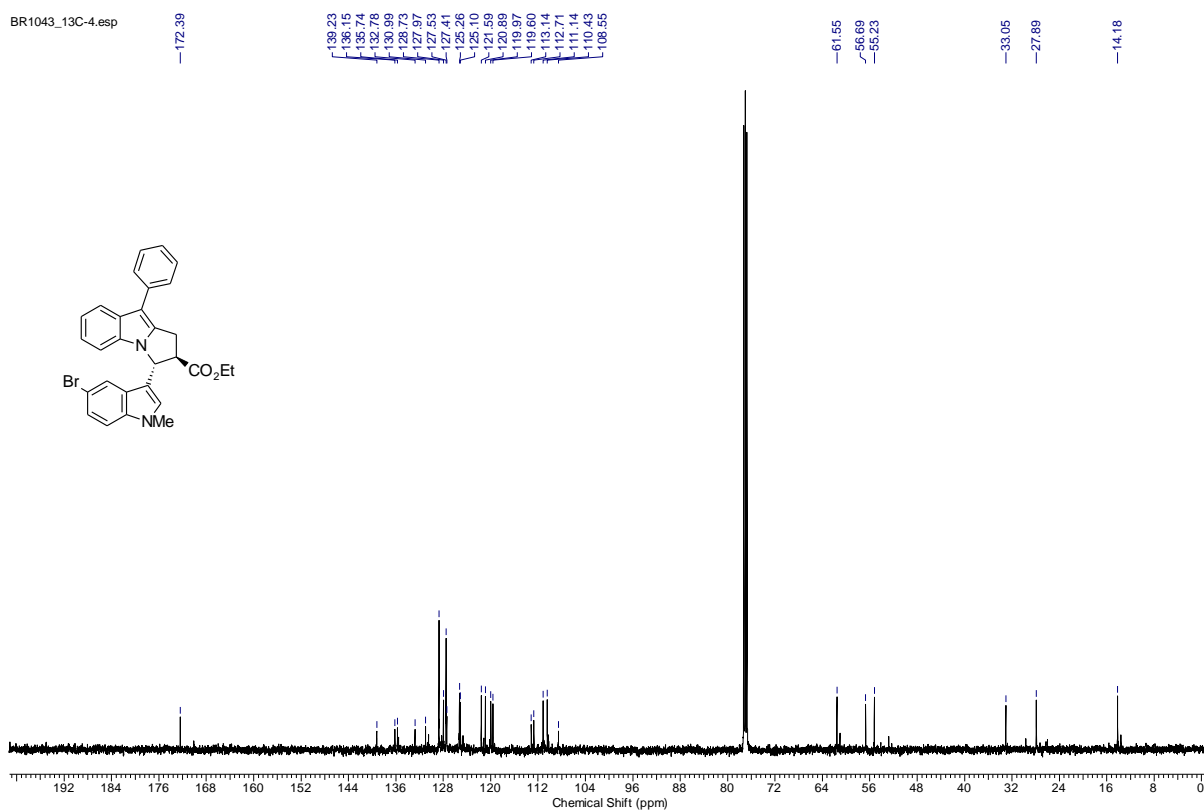


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16i

BR1043\_1H-4.esp



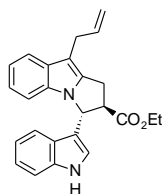
BR1043\_13C-4.esp



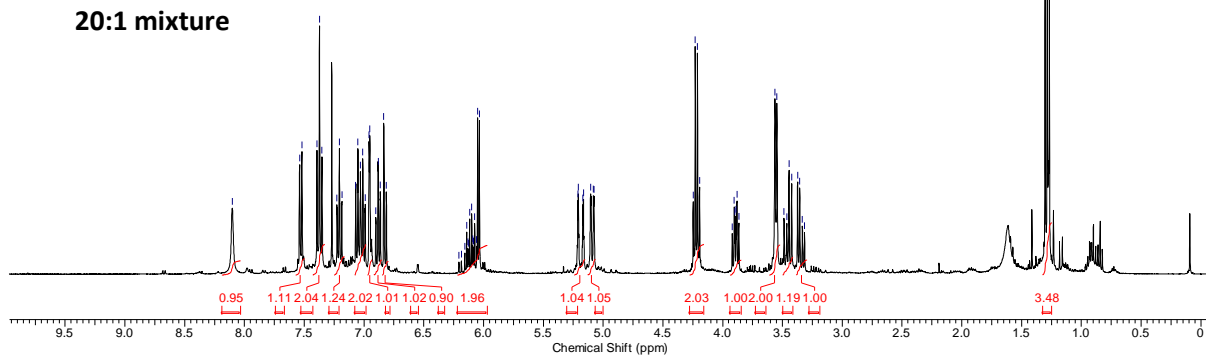
# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16j

BR1051\_PROTON-4.esp

8.10, 7.54, 7.52, 7.39, 7.36, 7.21, 7.05, 7.03, 7.01, 6.86, 6.85, 6.88, 6.83, 6.71, 6.12, 6.10, 6.09, 6.07, 6.05, 6.04, 5.21, 5.21, 5.17, 5.16, 5.11, 5.08, 5.08, 4.25, 4.23, 4.19, 4.19, 3.90, 3.89, 3.88, 3.88, 3.56, 3.55, 3.42, 3.37, 3.36, 1.30, 1.29, 1.27

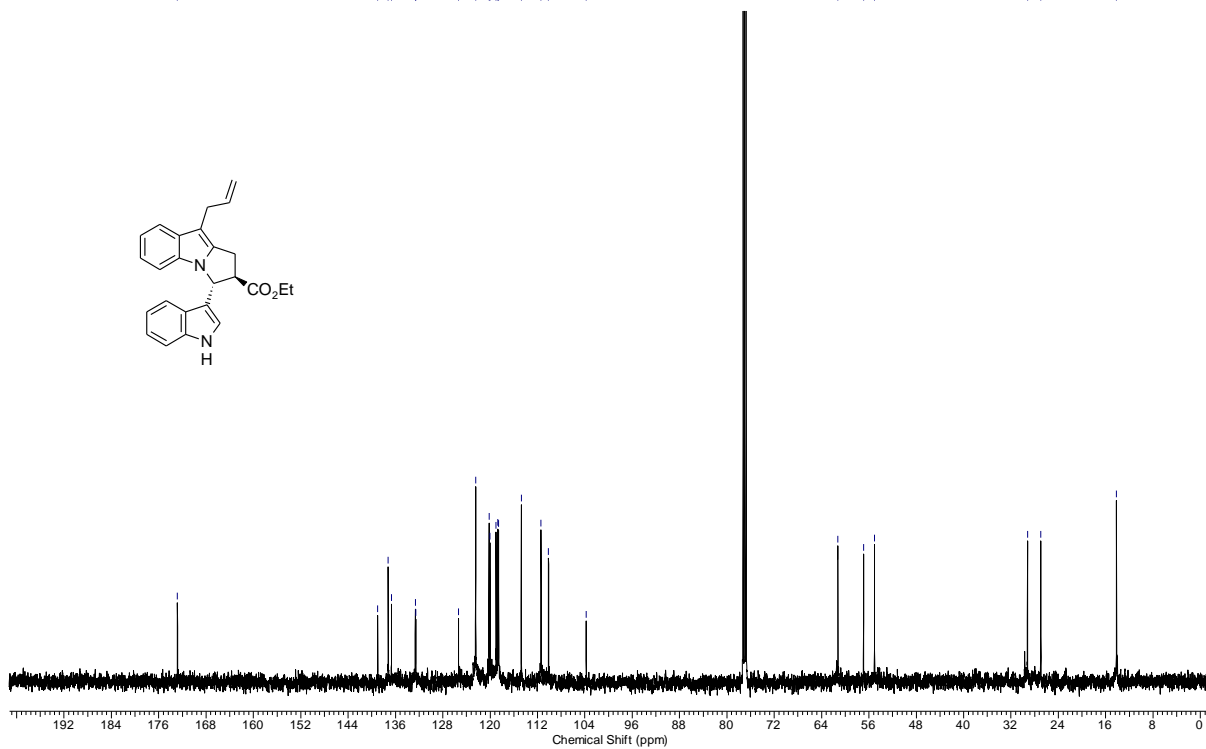


20:1 mixture



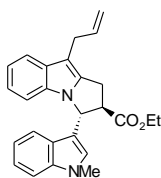
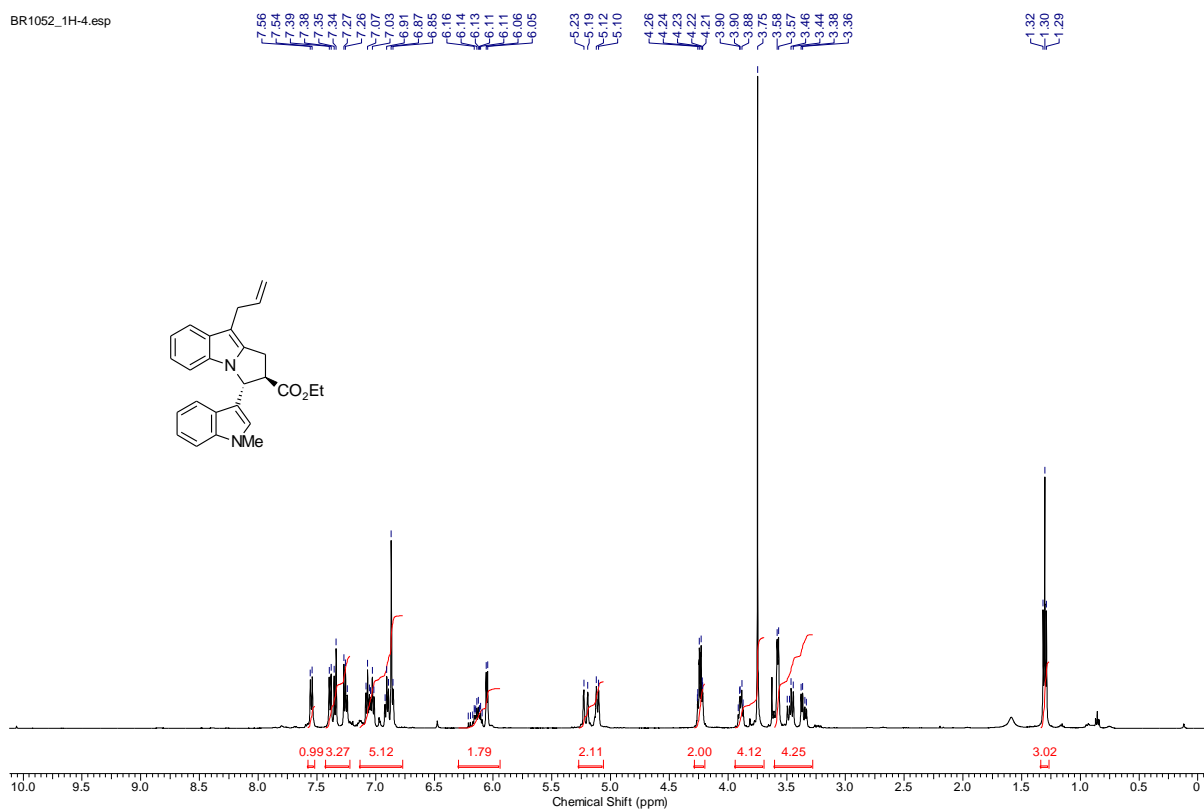
BR1051\_13C-3.esp

172.83, 139.01, 137.21, 136.68, 132.65, 132.56, 125.34, 122.45, 120.78, 120.01, 118.74, 118.56, 114.73, 111.40, 110.13, 103.75, 61.25, 56.90, 55.05, 28.20, 26.96, 14.17

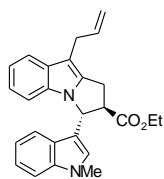
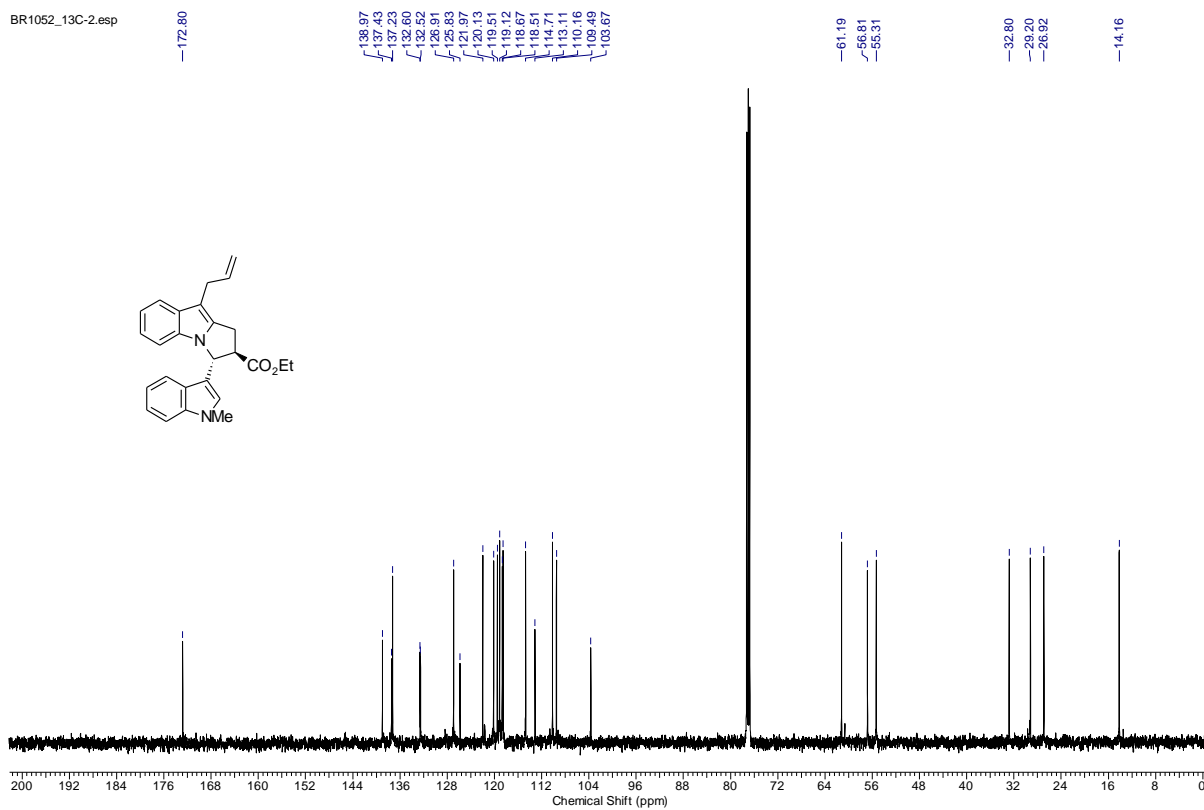


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16k

BR1052\_1H-4.esp

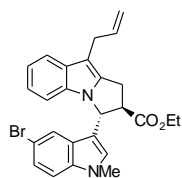
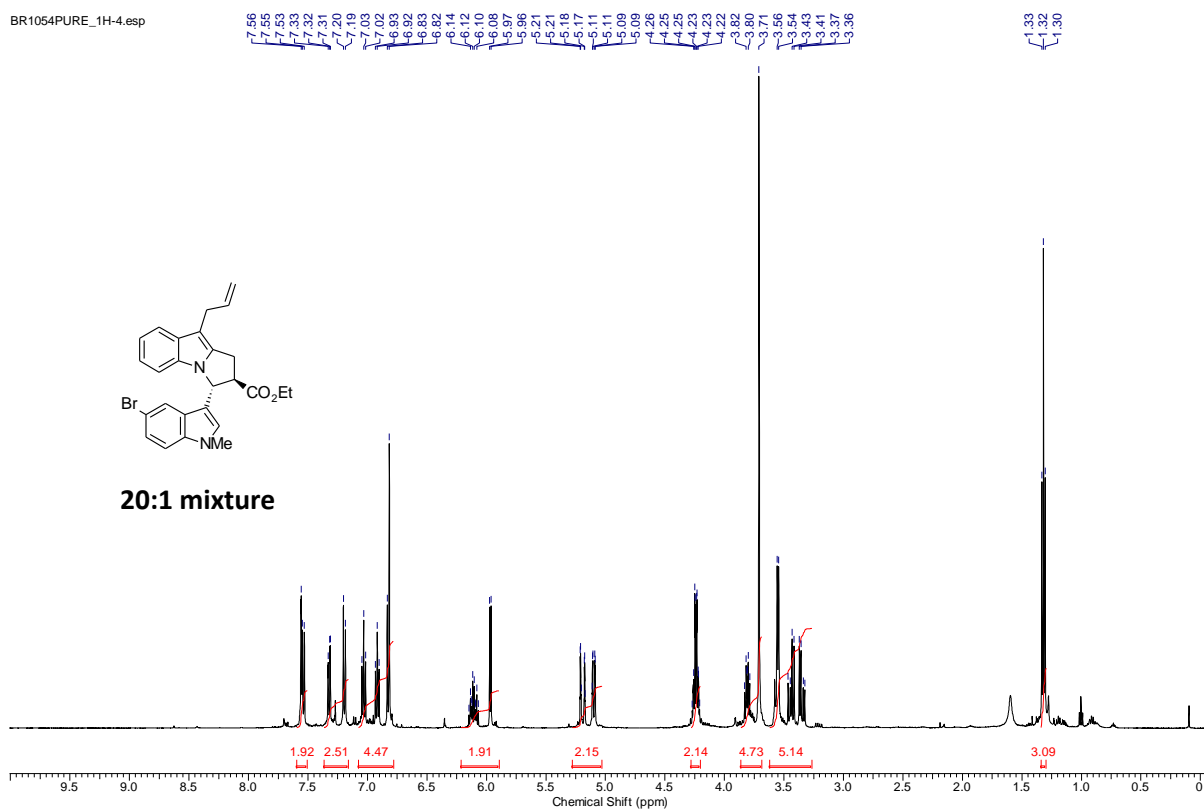


BR1052\_13C-2.esp



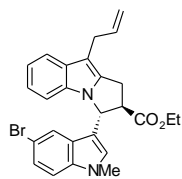
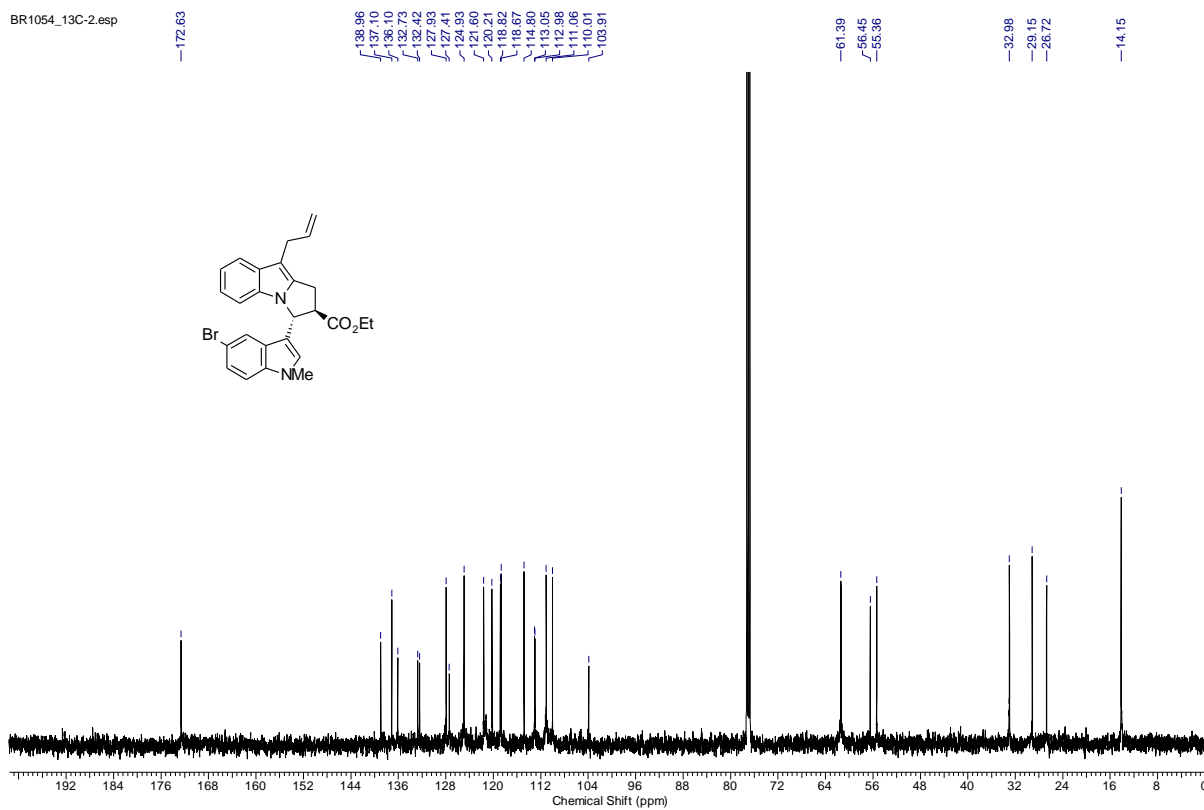
# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16l

BR1054PURE\_1H-4.esp



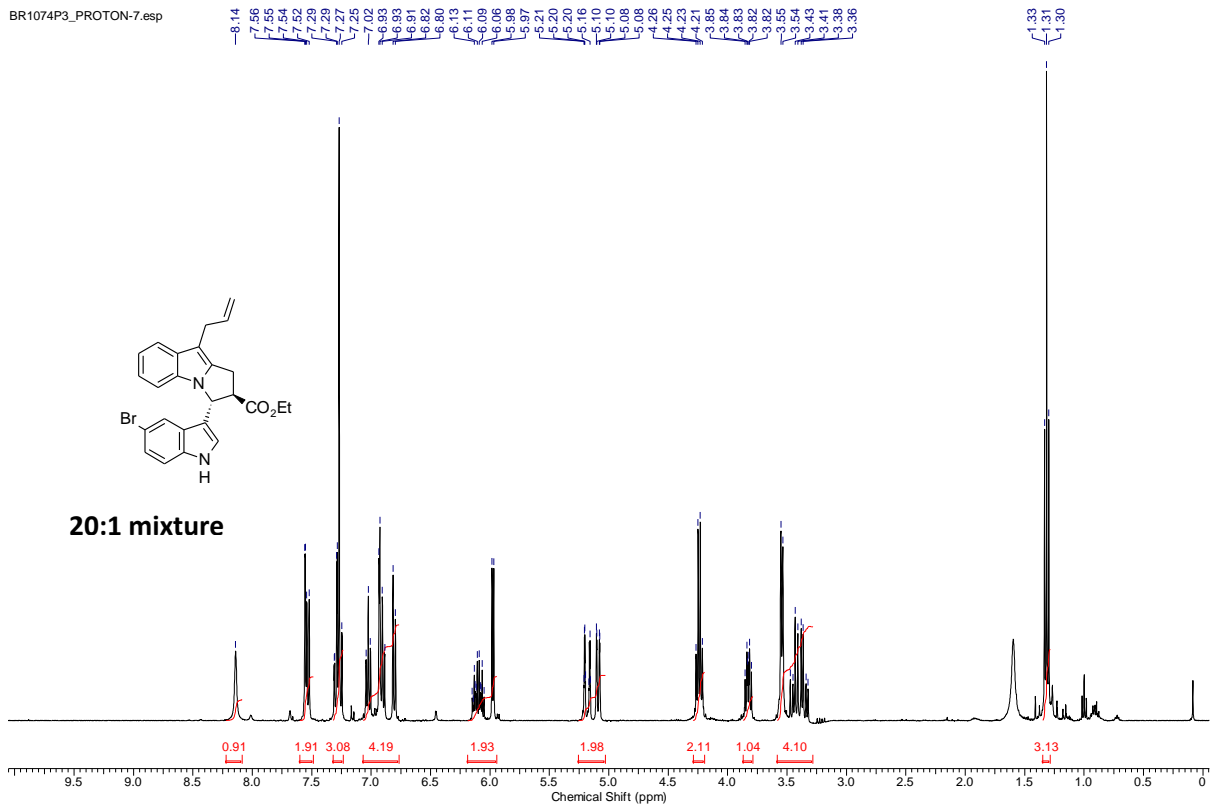
20:1 mixture

BR1054\_13C-2.esp

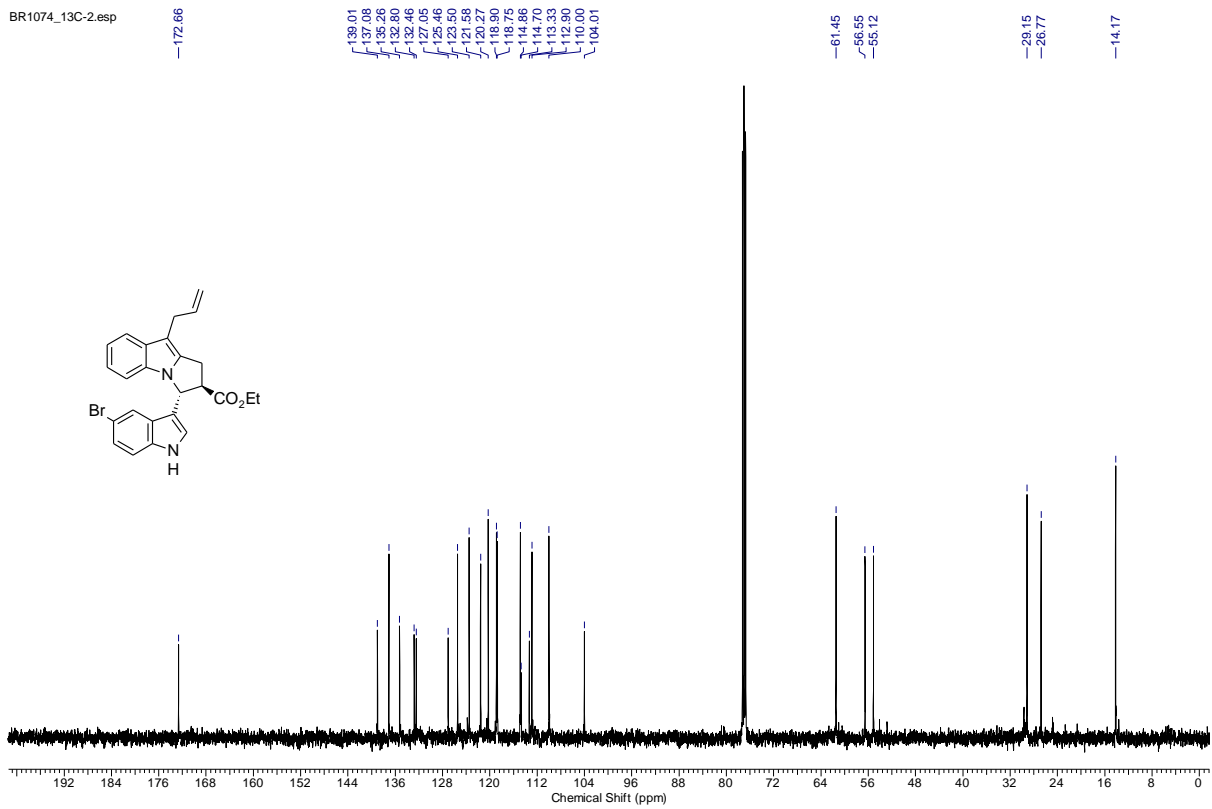


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 16m

BR1074P3\_PROTON-7.esp

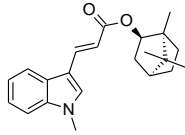
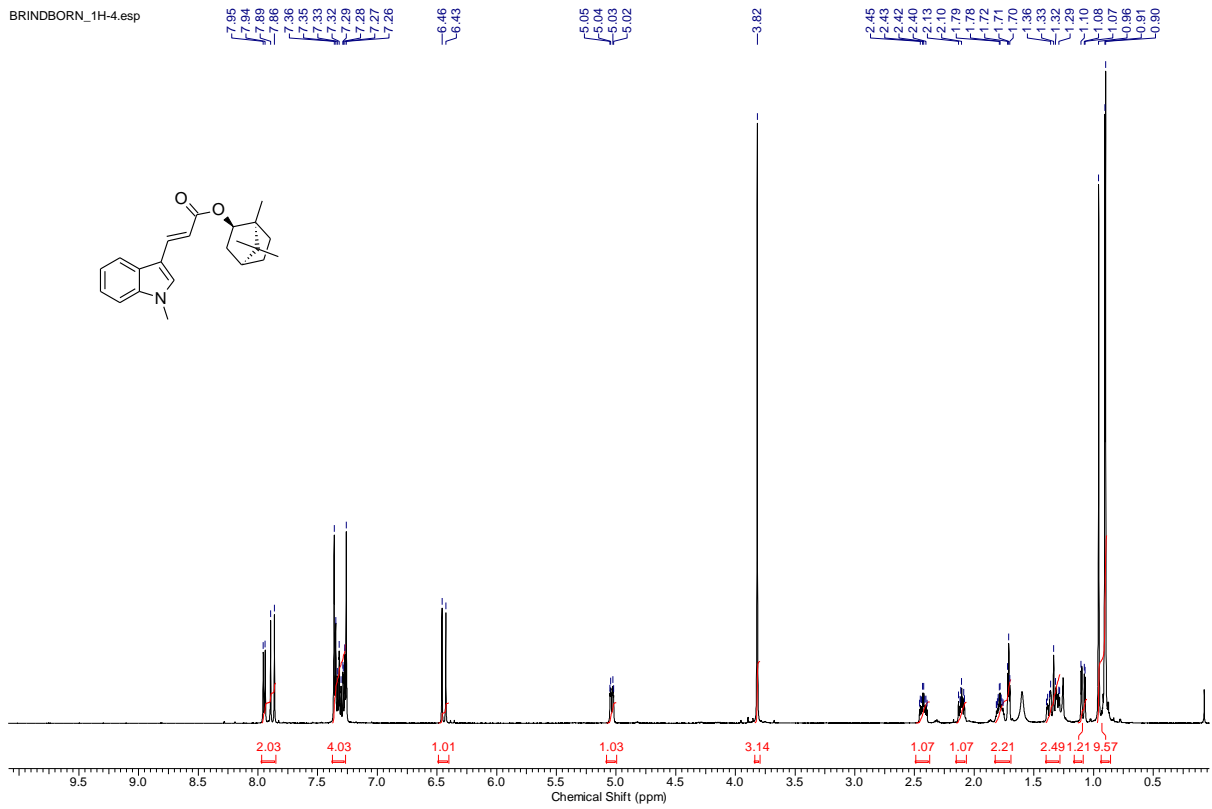


BR1074\_13C-2.esp

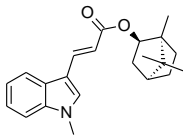
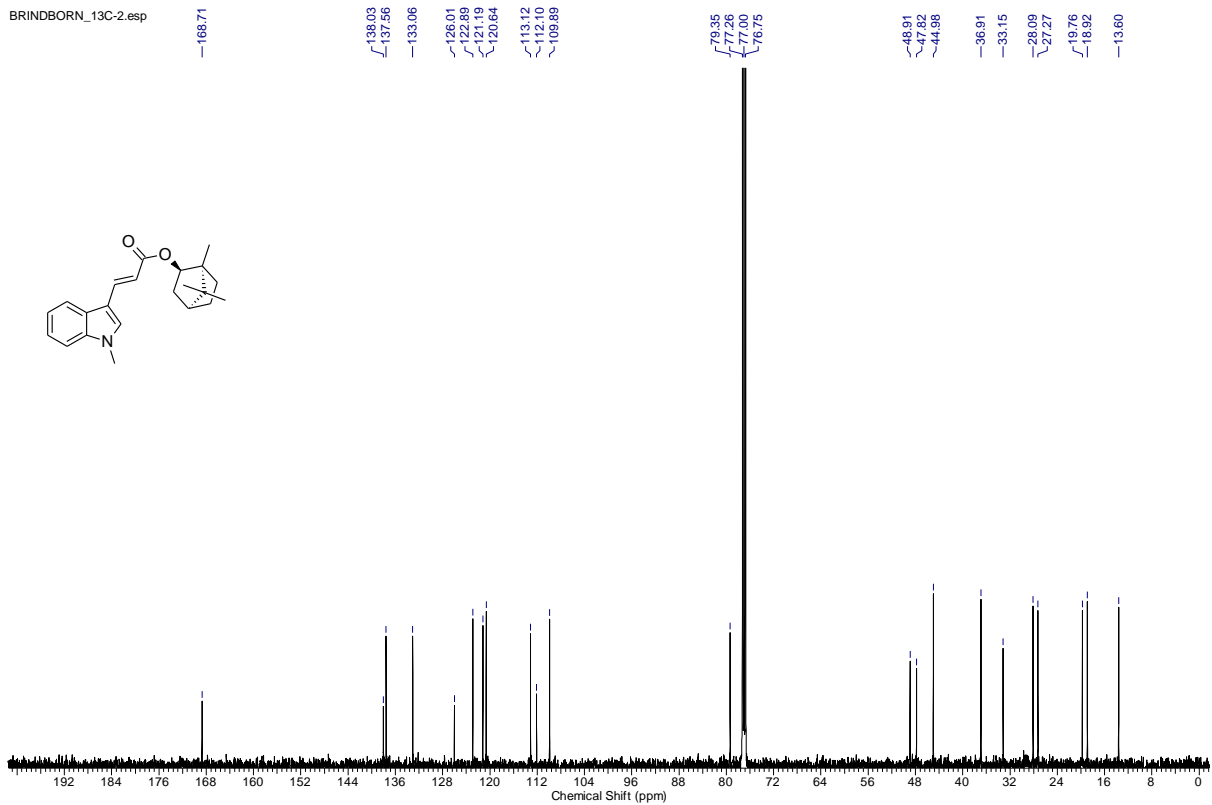


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 17a

BRINDBORN\_1H-4.esp

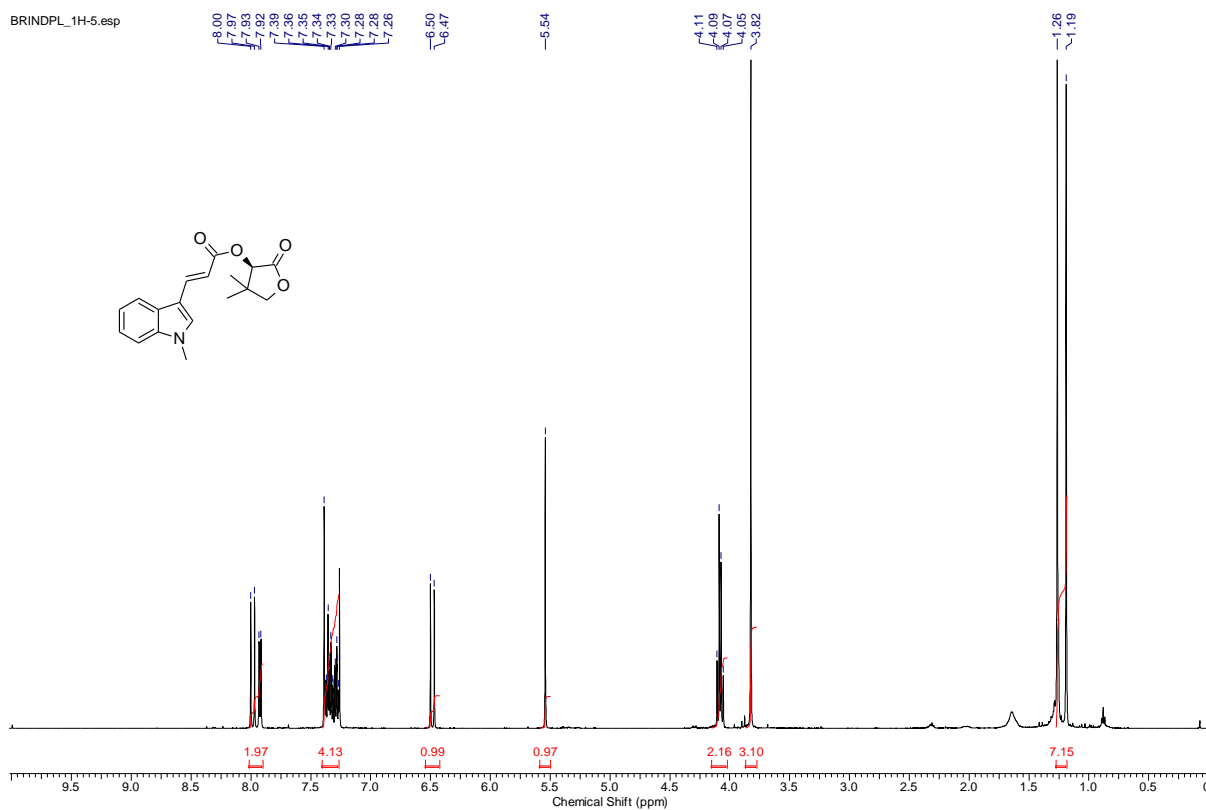


BRINDBORN\_13C-2.esp

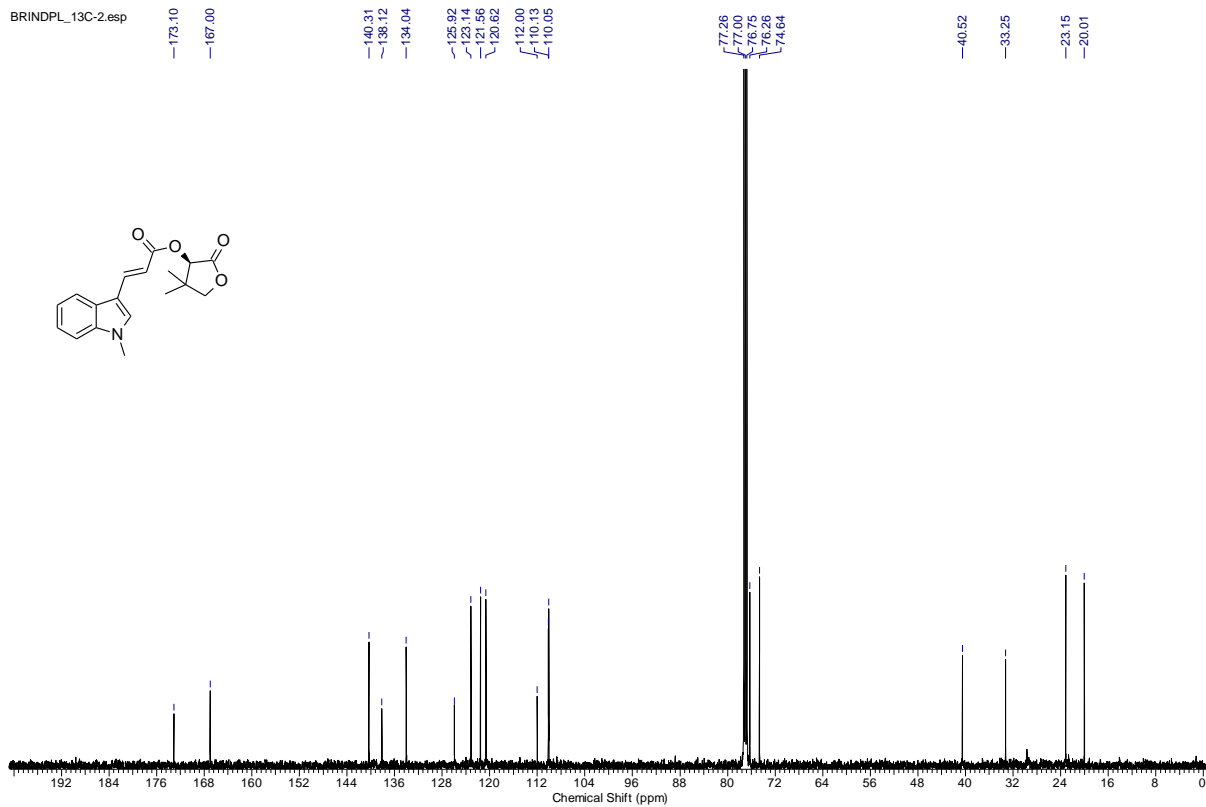


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 17b

BRINDPL\_1H-5.esp

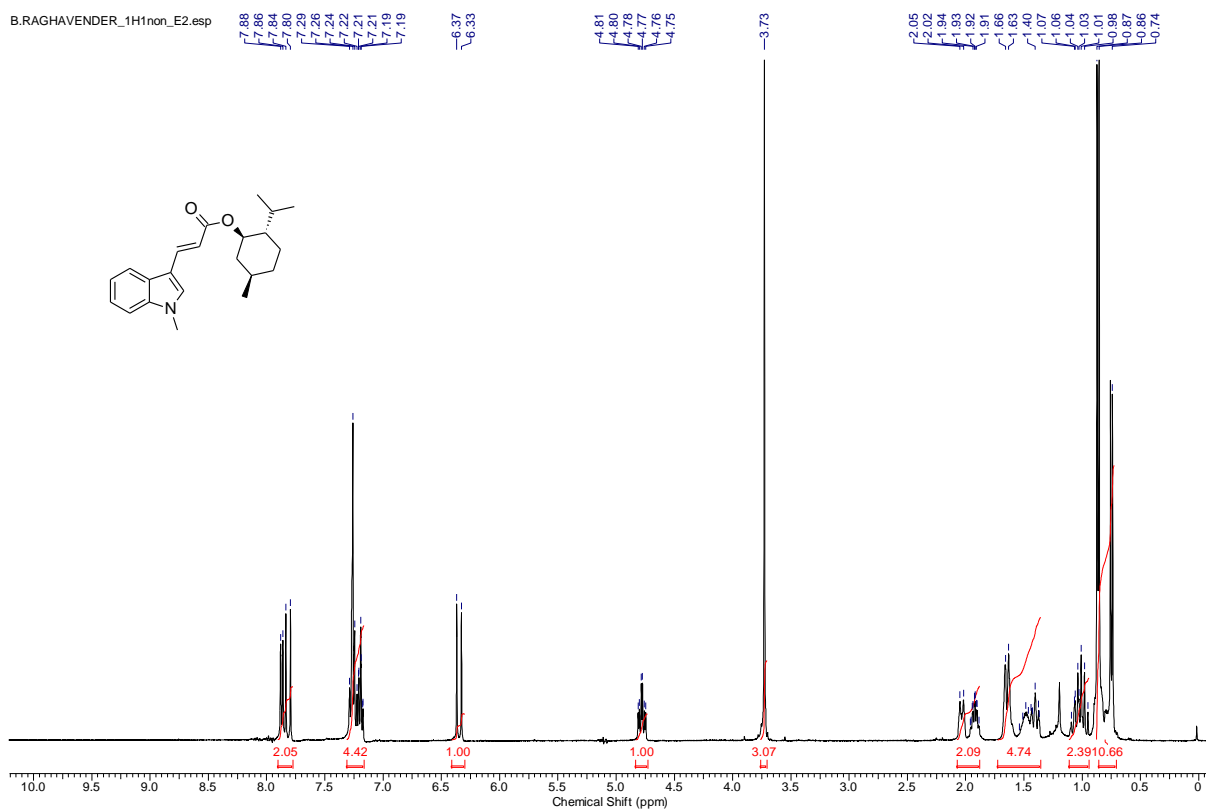


BRINDPL\_13C-2.esp

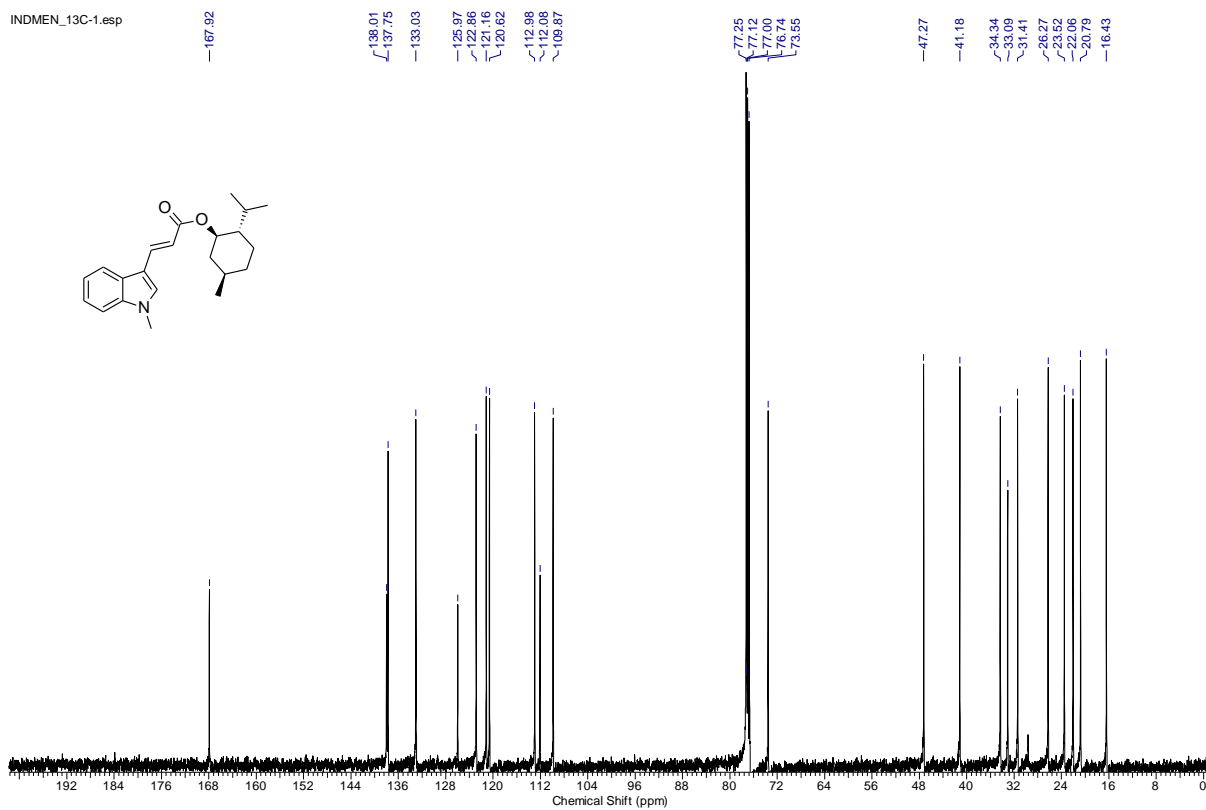


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 17c

B.RAGHAVENDER\_1H1non\_E2.esp



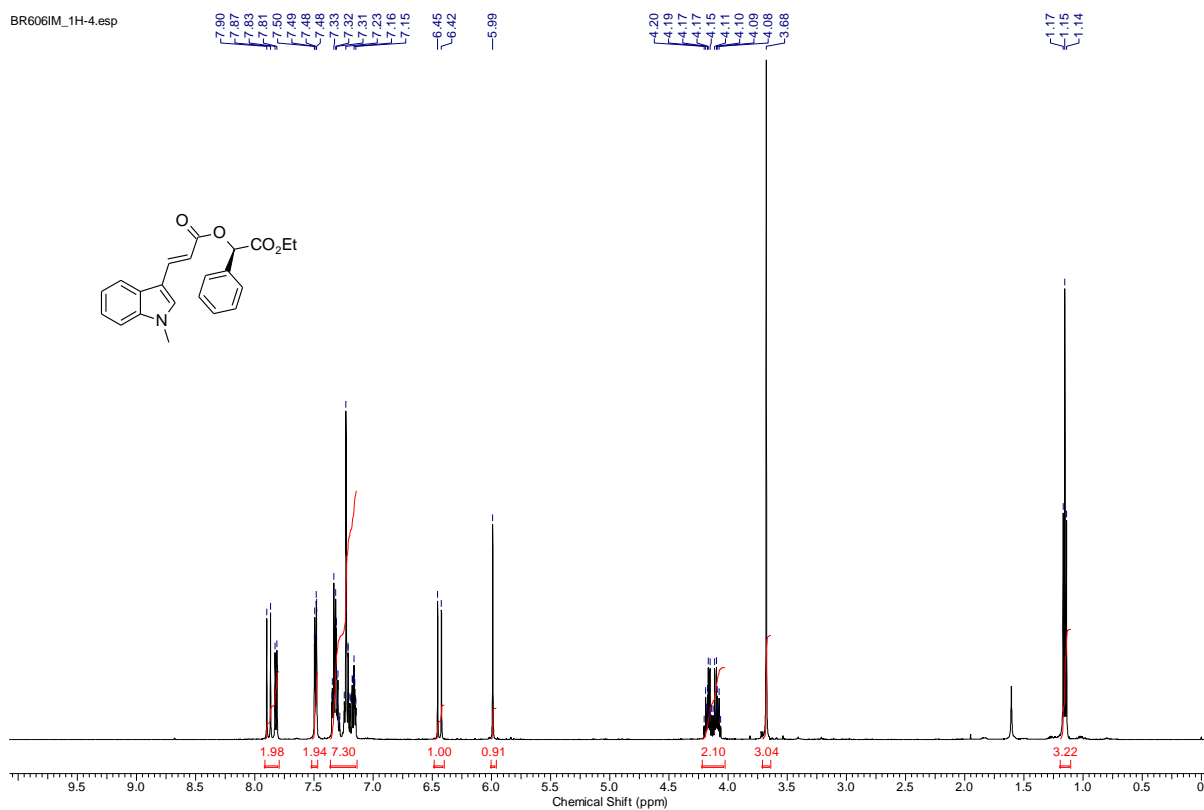
INDMEN\_13C-1.esp



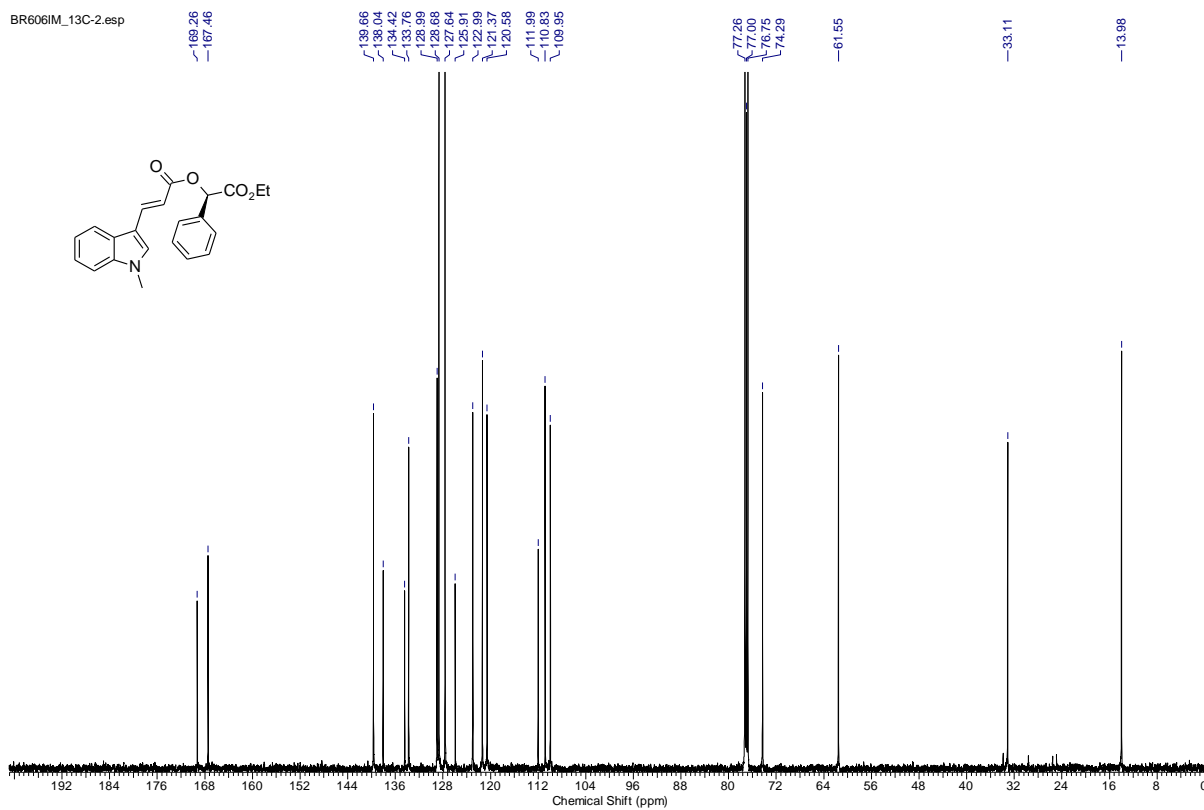


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 17d

BR606IM\_1H-4.esp

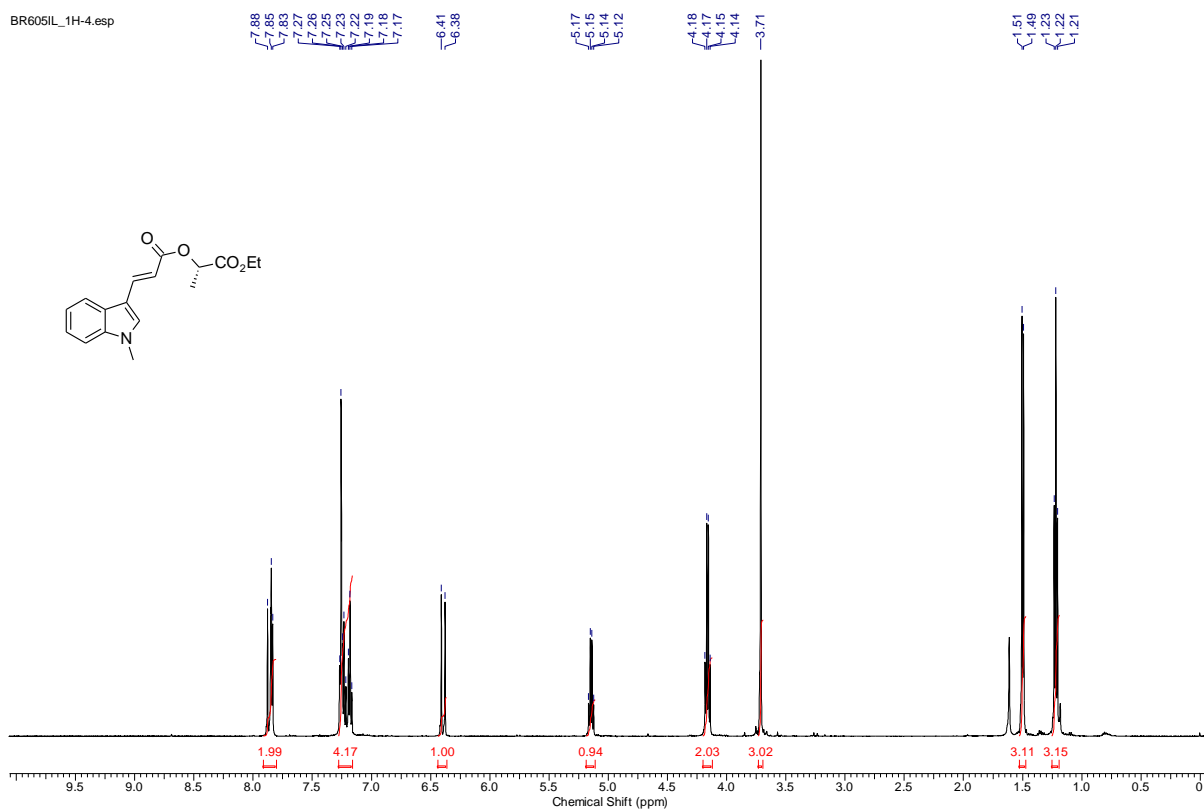


BR606IM\_13C-2.esp

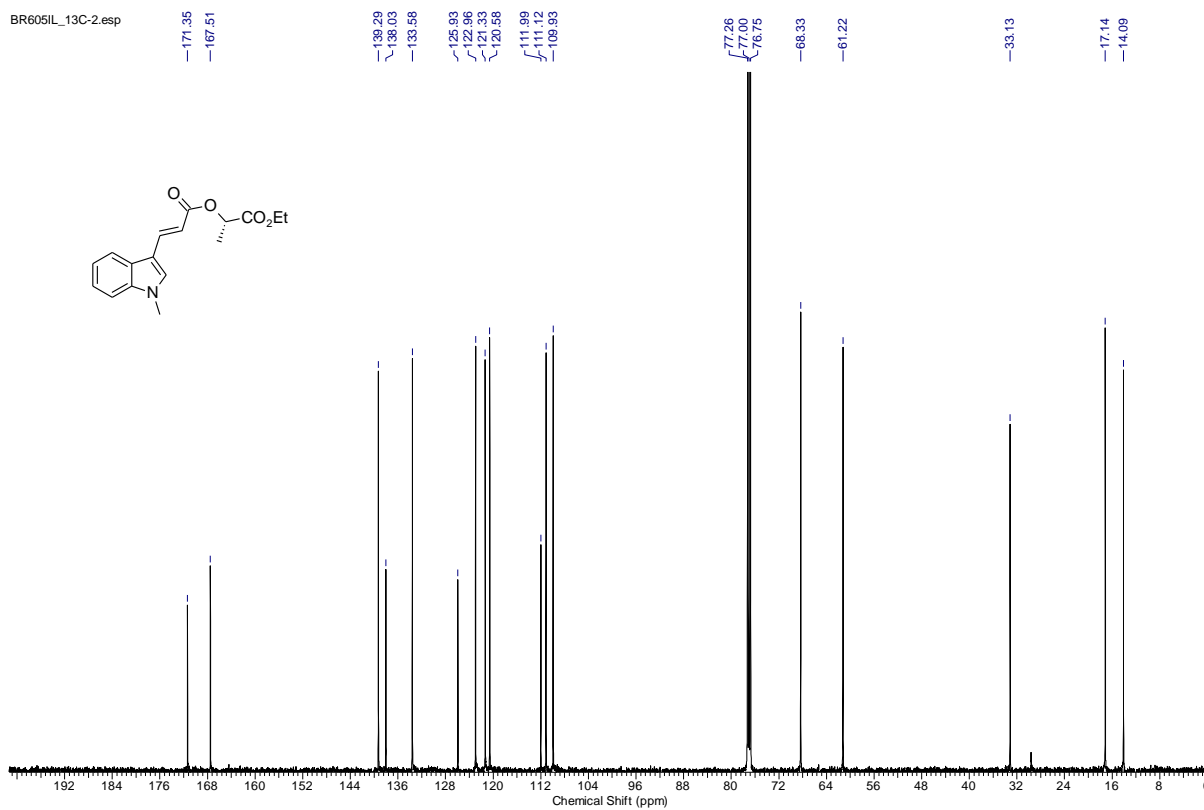


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 17e

BR605IL\_1H-4.esp

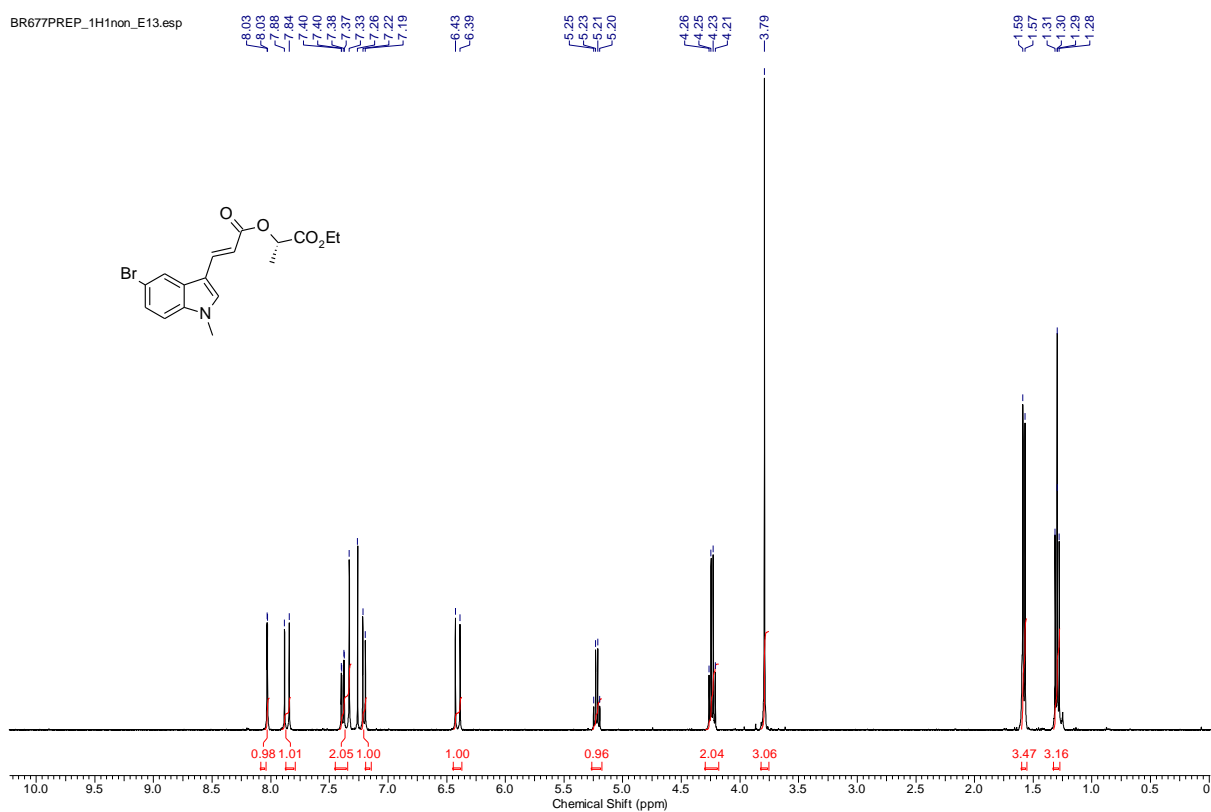


BR605IL\_13C-2.esp

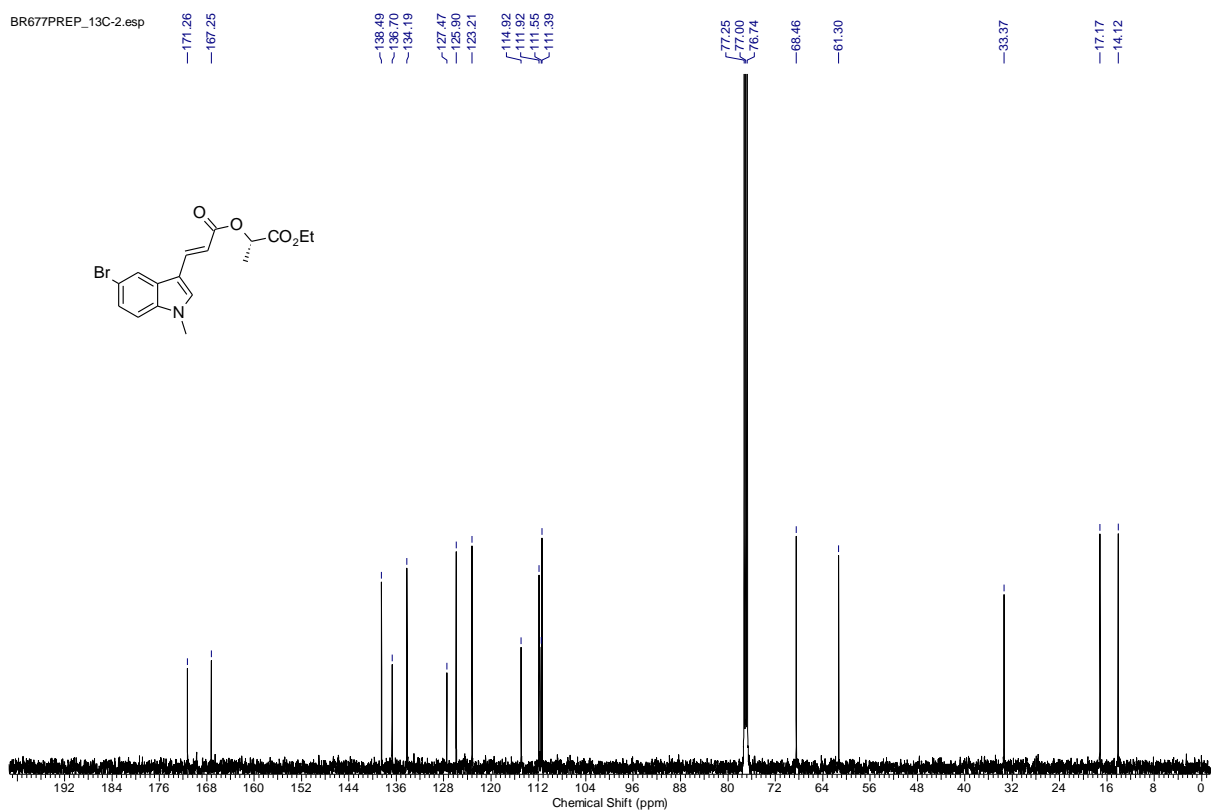


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 17f

BR677PREP\_1H1non\_E13.esp

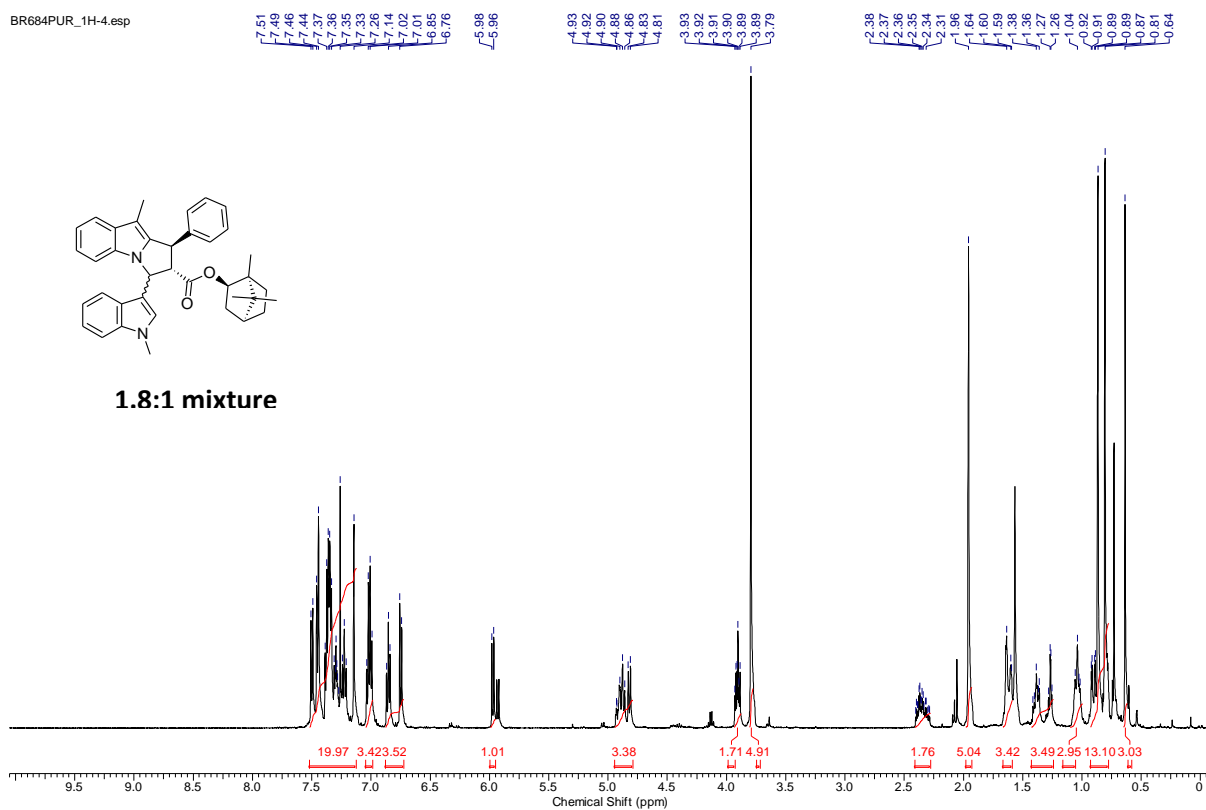


BR677PREP\_13C-2.esp

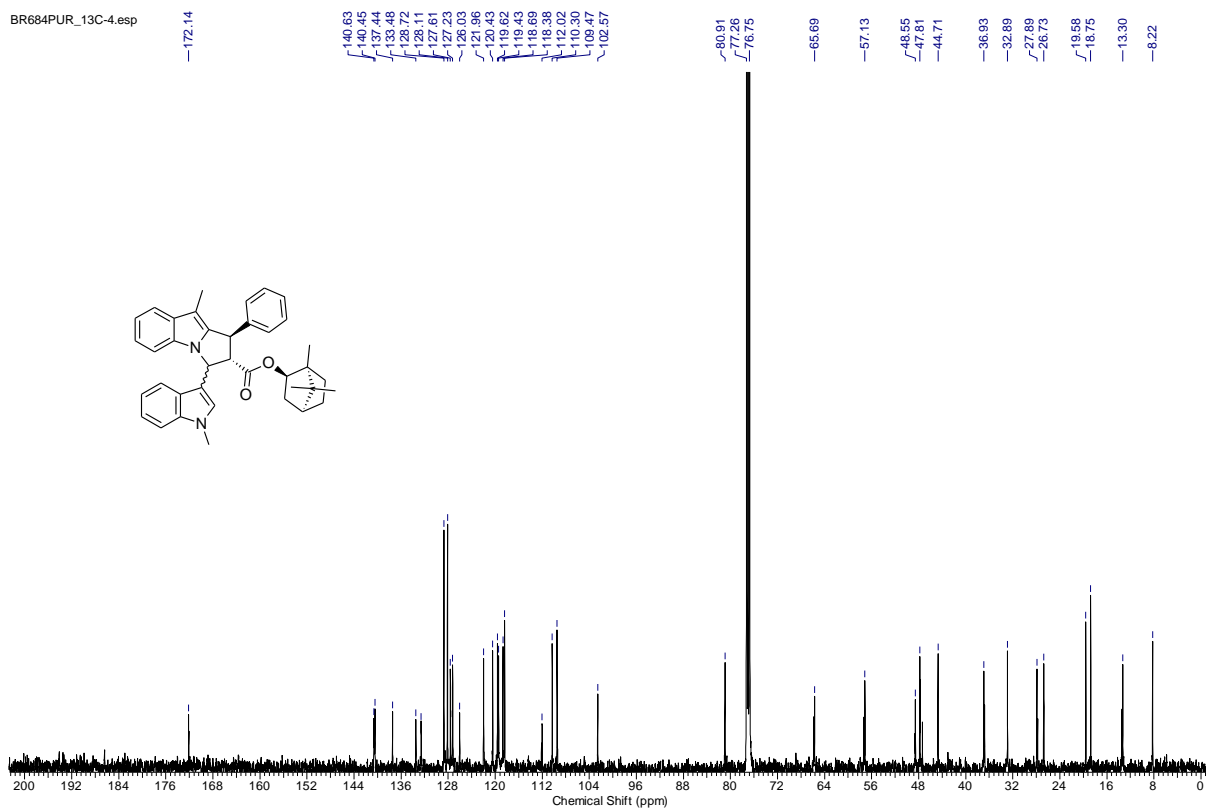


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 18a

BR684PUR\_1H-4.esp

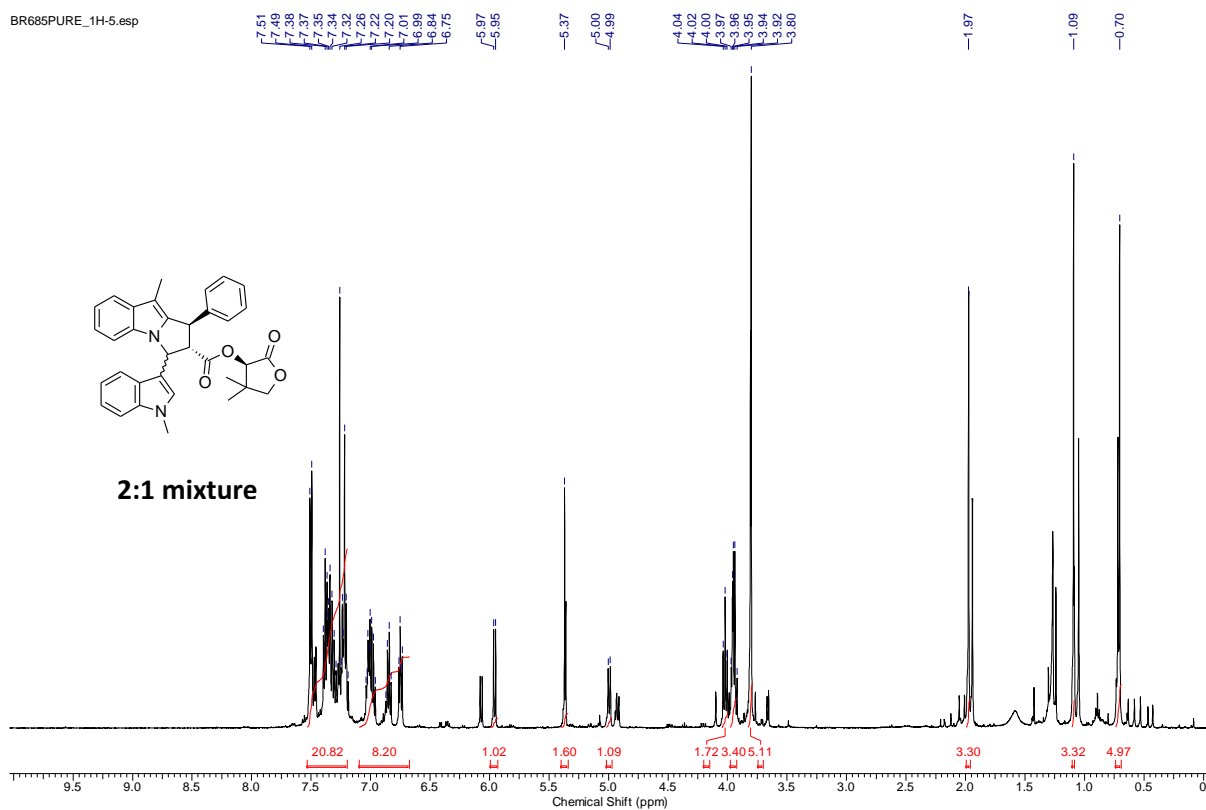


BR684PUR\_13C-4.esp



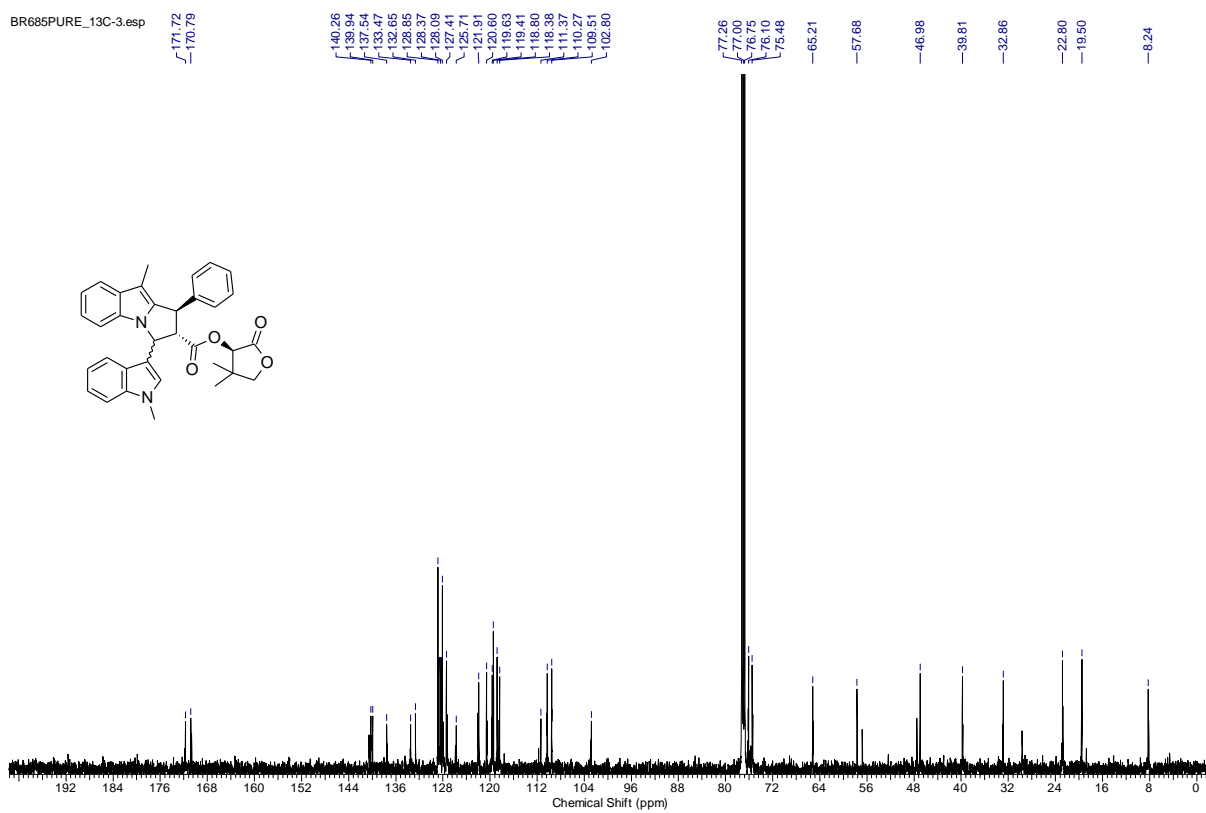
# <sup>1</sup>H and <sup>13</sup>C NMR of compound 18b

BR685PURE\_1H-5.esp



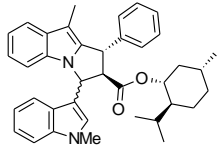
2:1 mixture

BR685PURE\_13C-3.esp

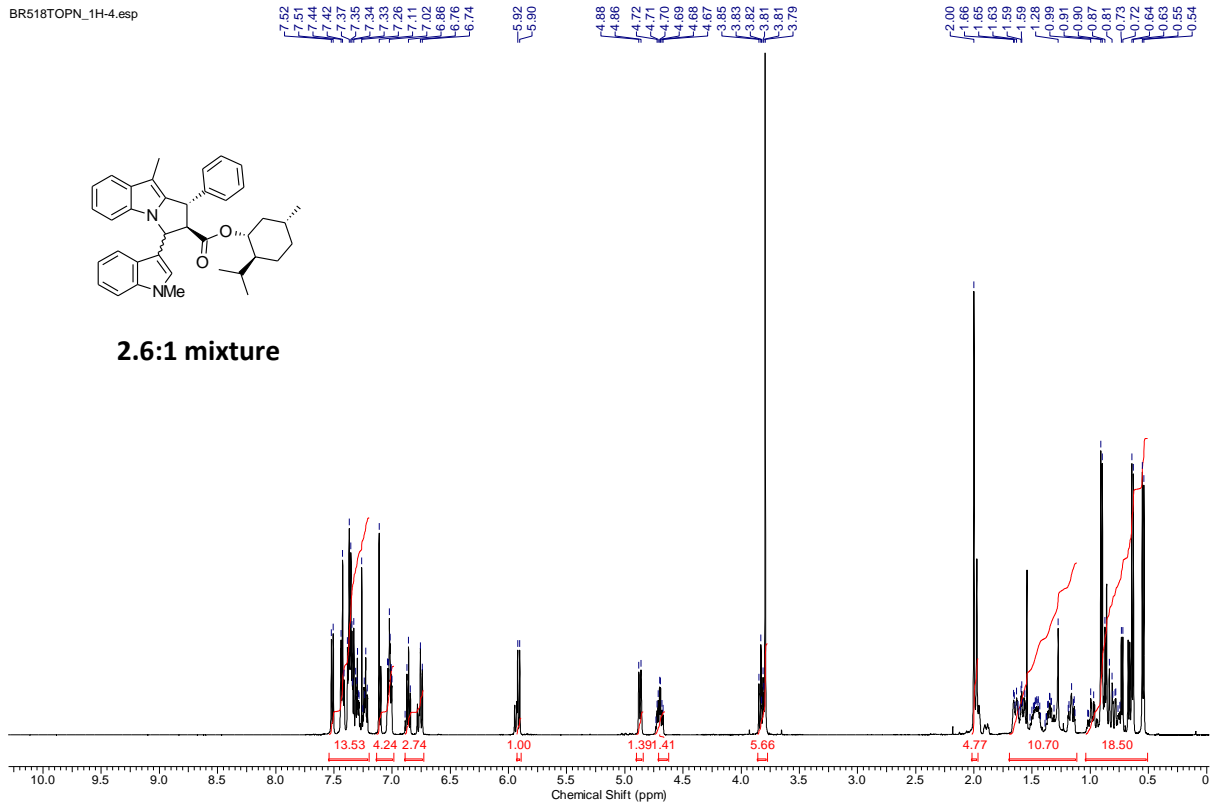


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 18c

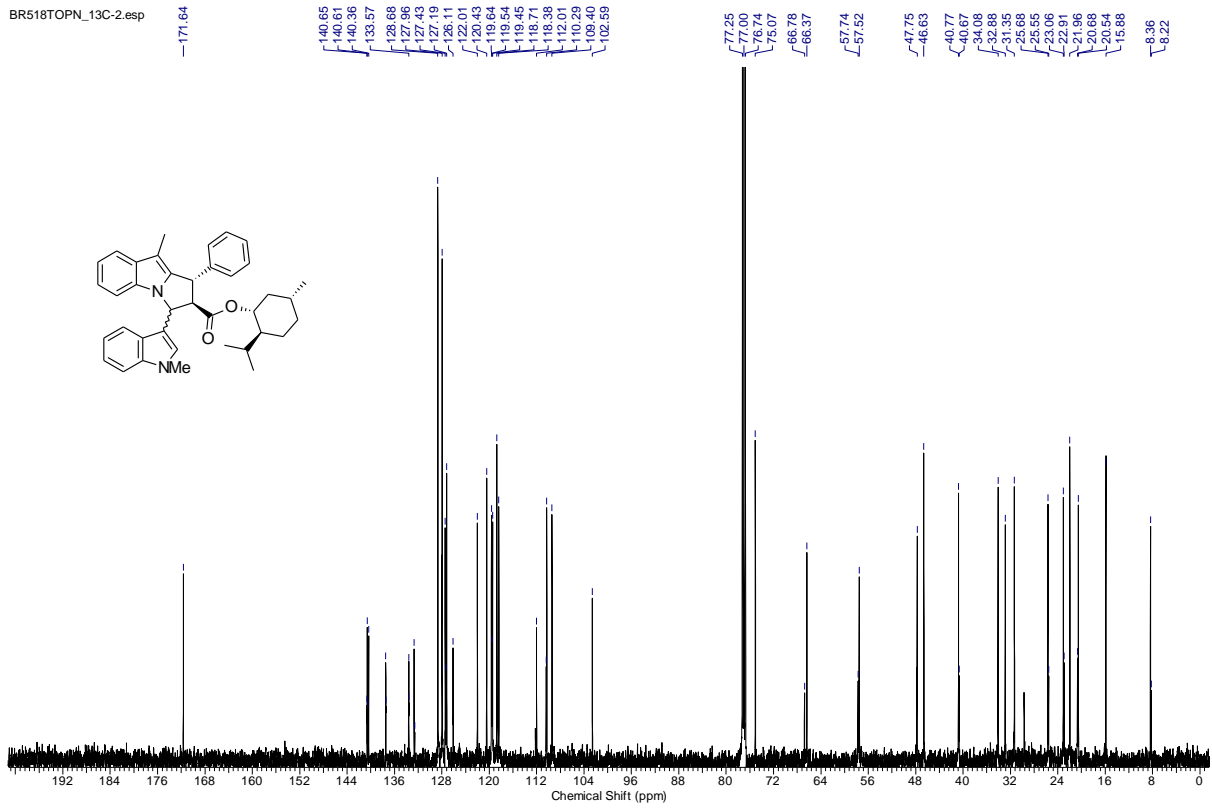
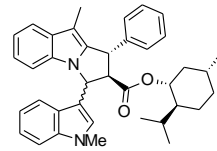
BR518TOPN\_1H-4.esp



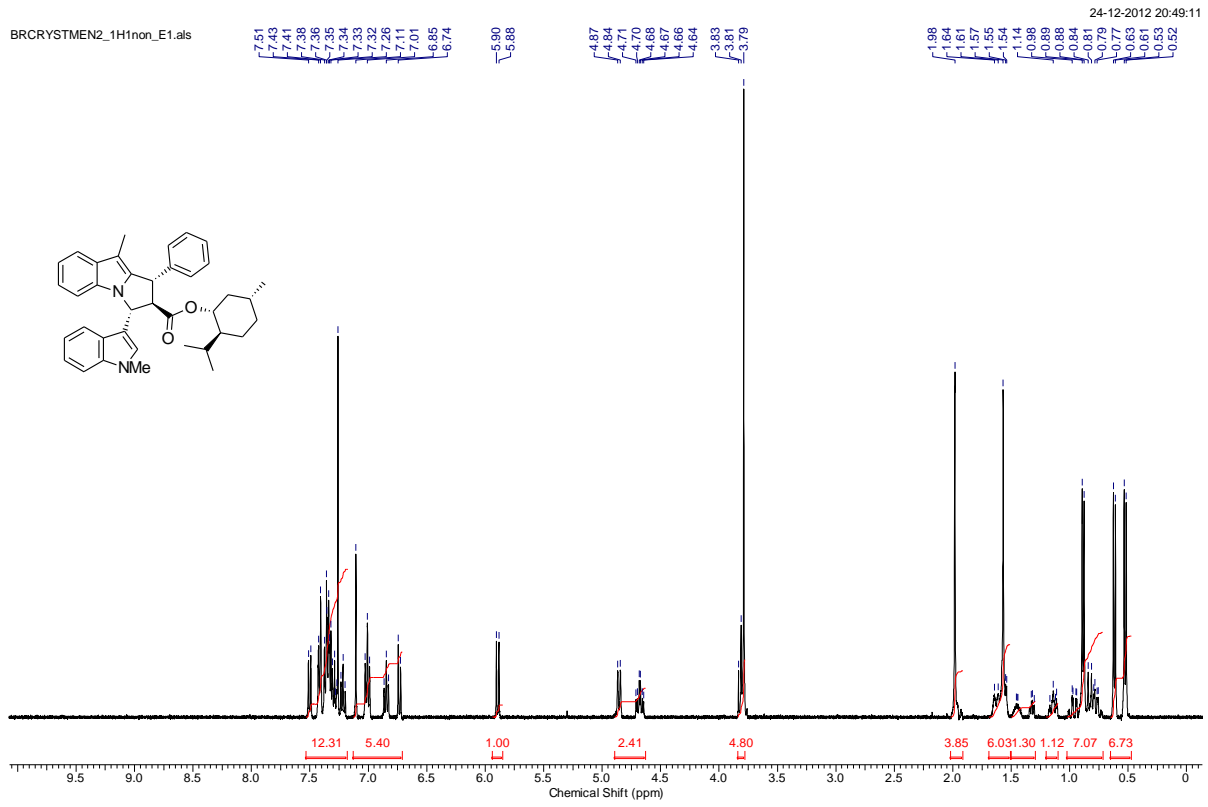
2.6:1 mixture



BR518TOPN\_13C-2.esp

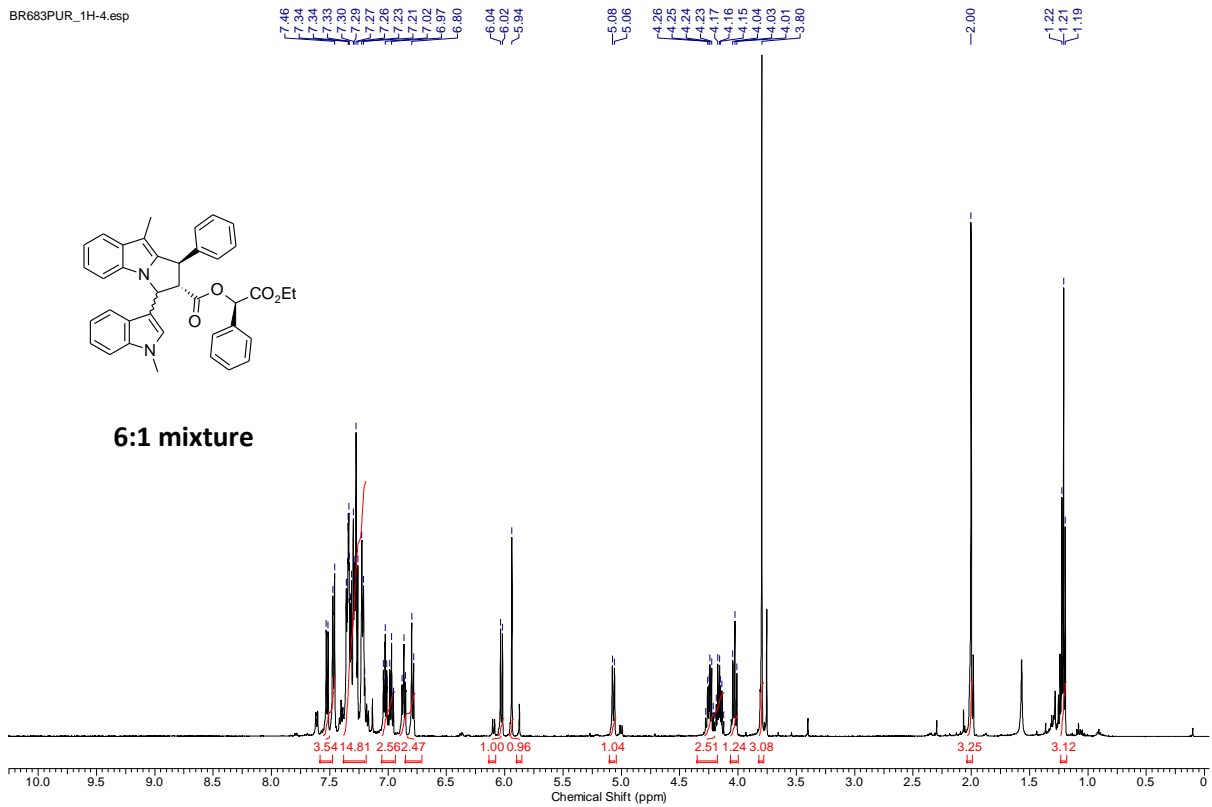


# <sup>1</sup>H NMR of compound 18c (Major isomer)

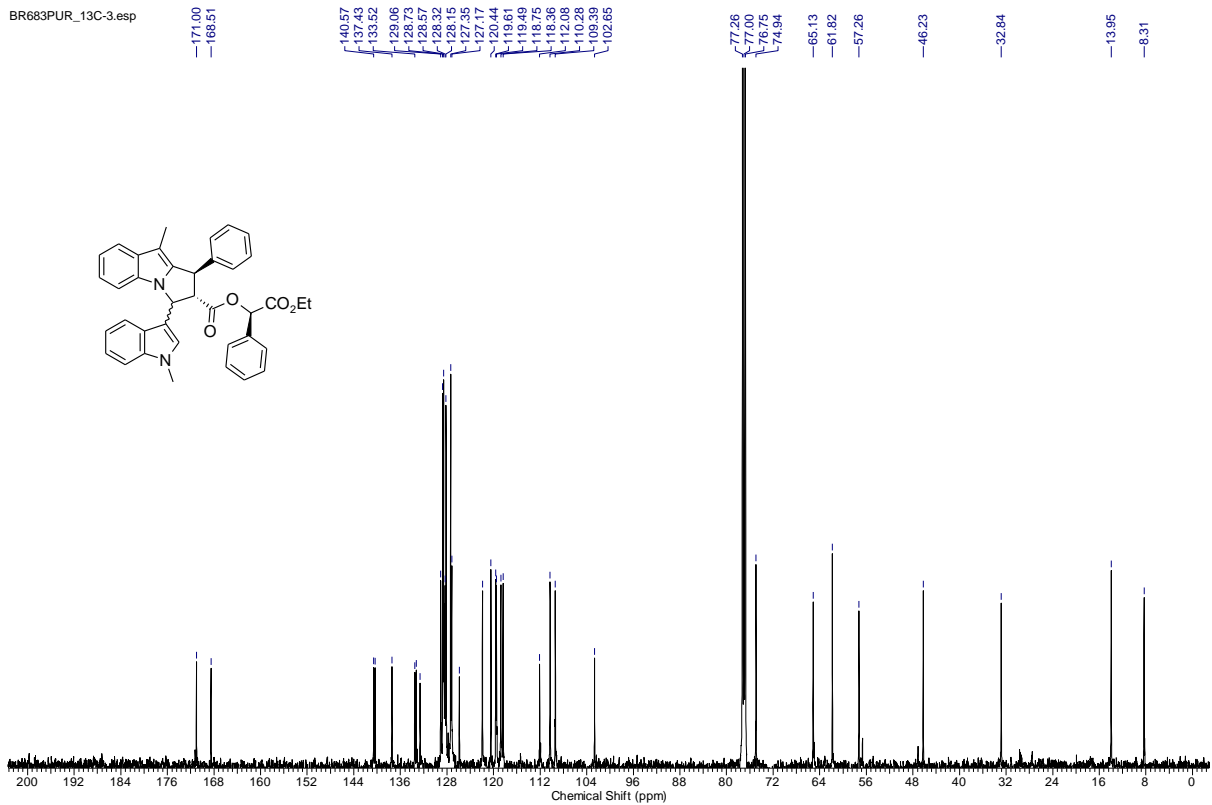


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 18d

BR683PUR\_1H-4.esp



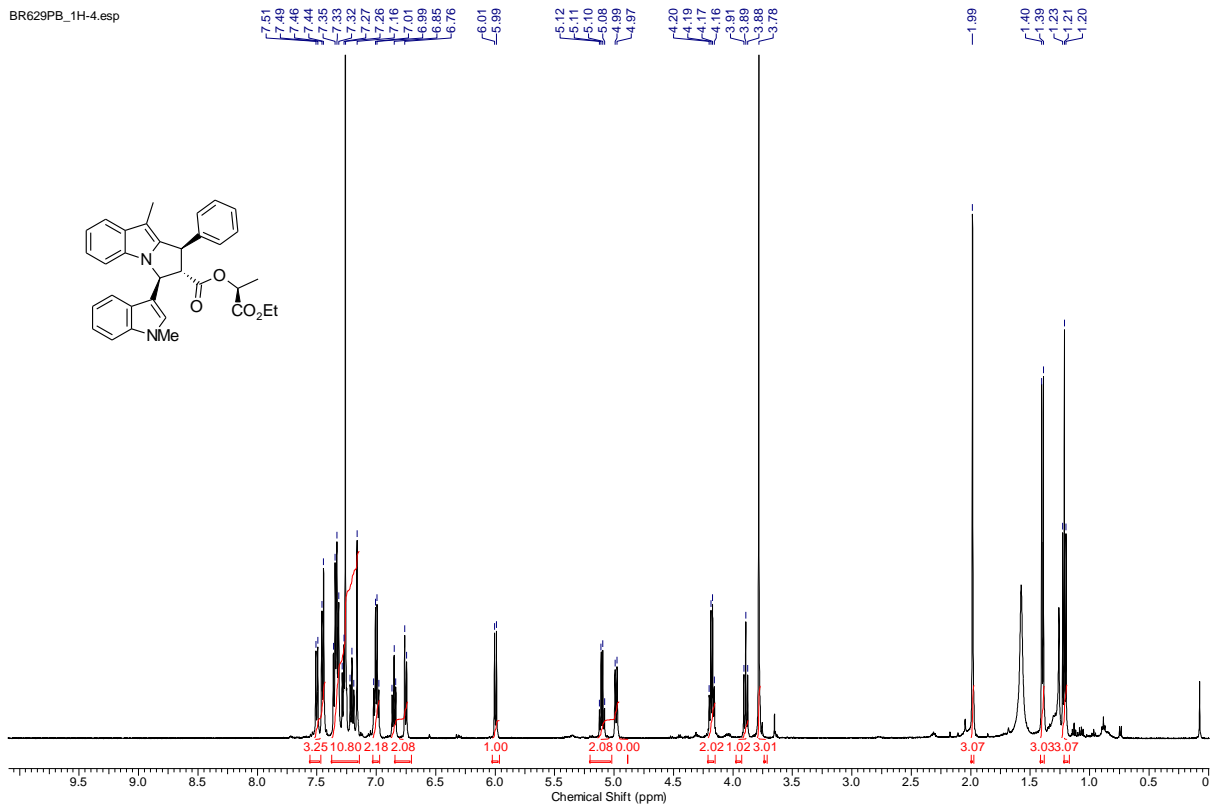
BR683PUR\_13C-3.esp



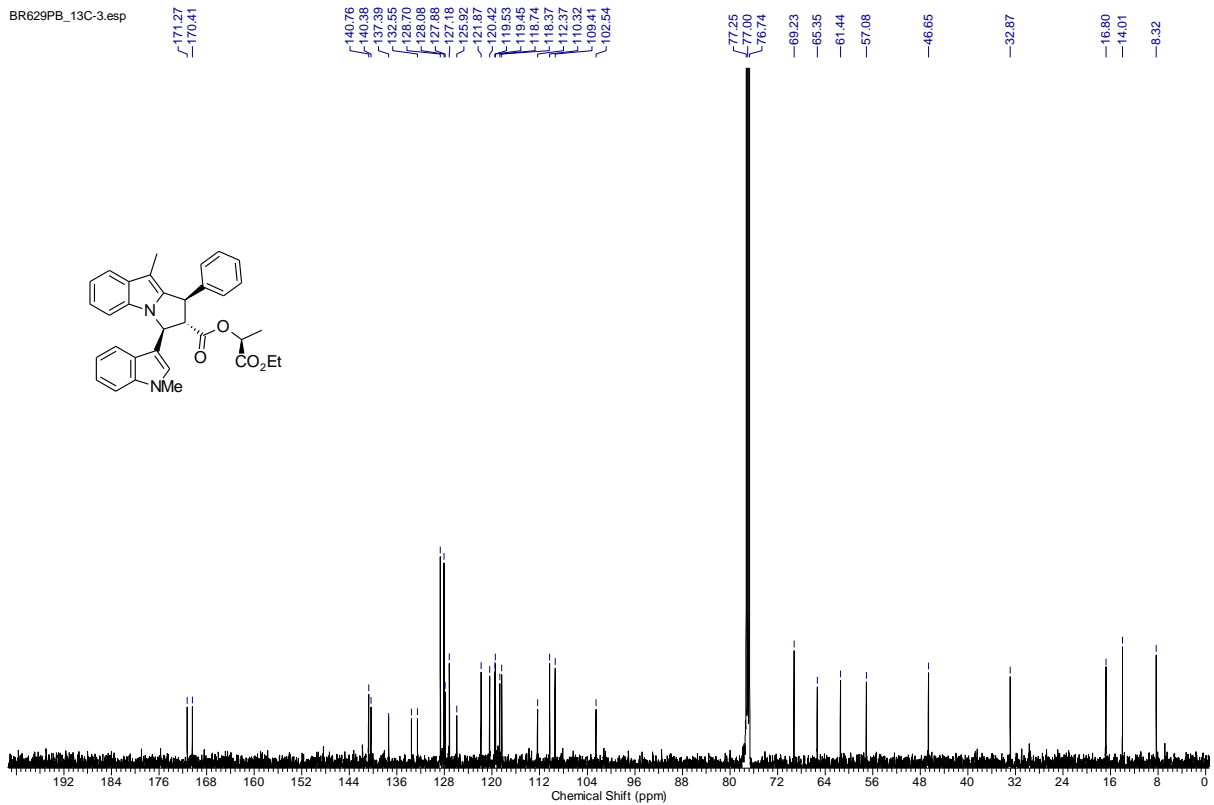


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 18e

BR629PB\_1H-4.esp

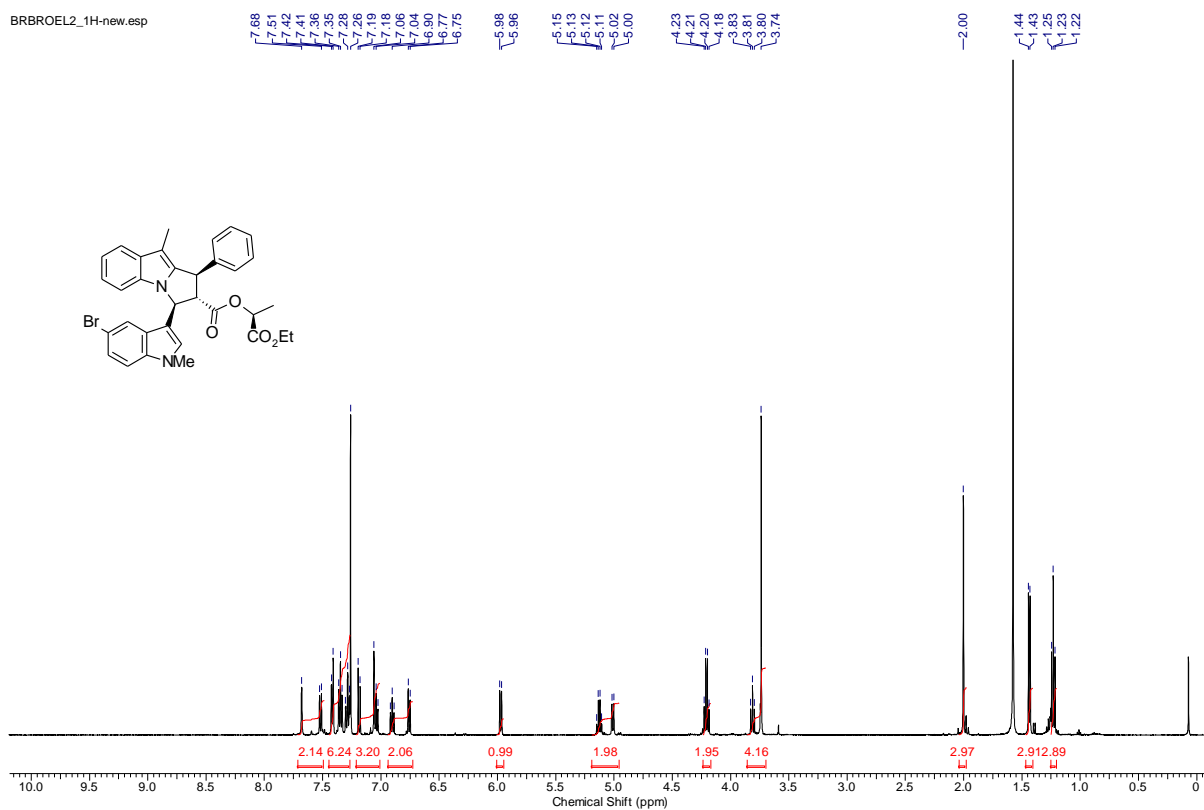


BR629PB\_13C-3.esp

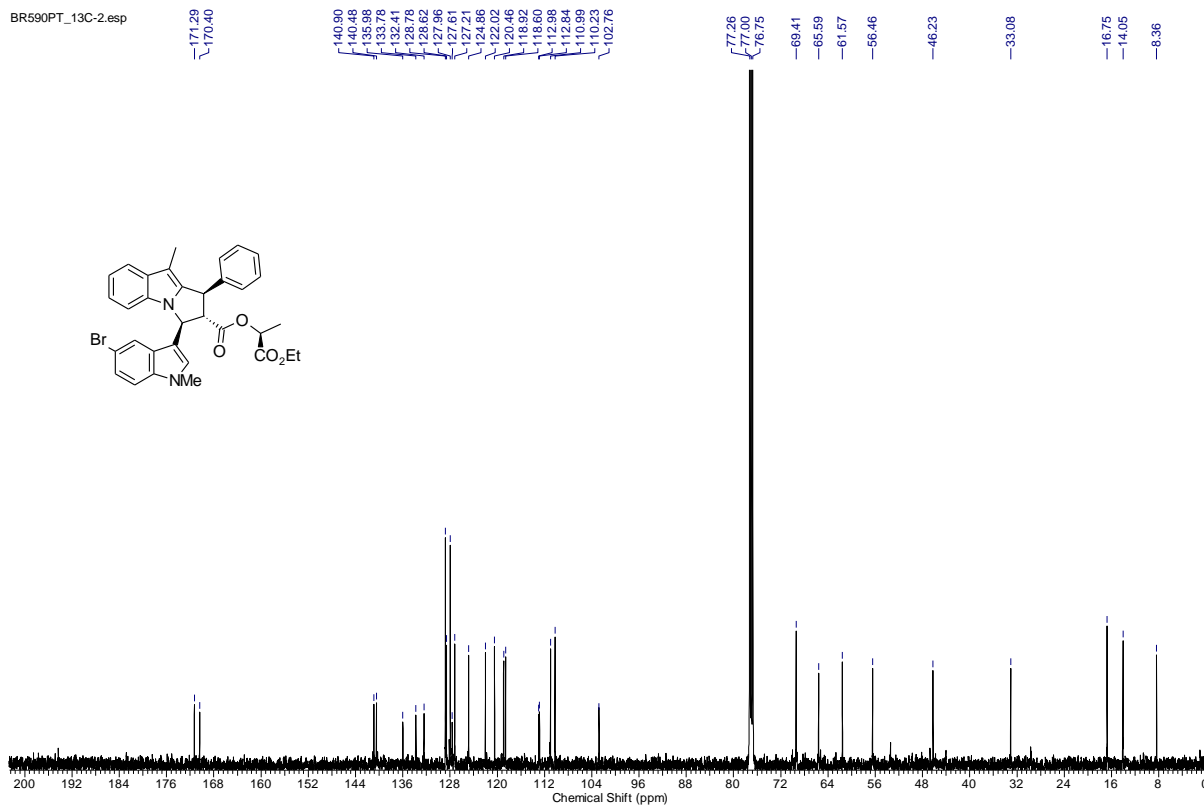


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 18f

BRBROEL2\_1H-new.esp

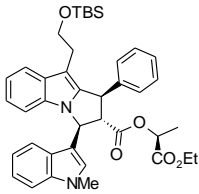
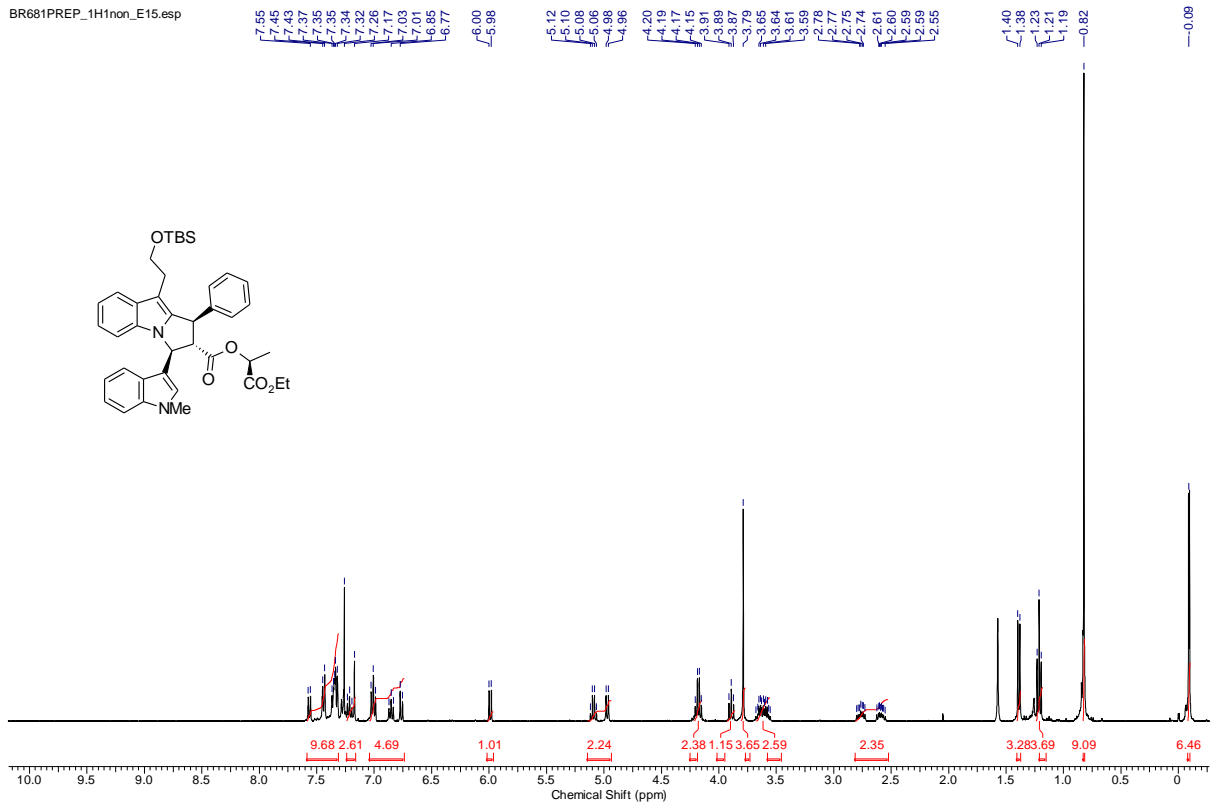


BR590PT\_13C-2.esp

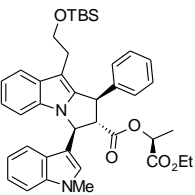
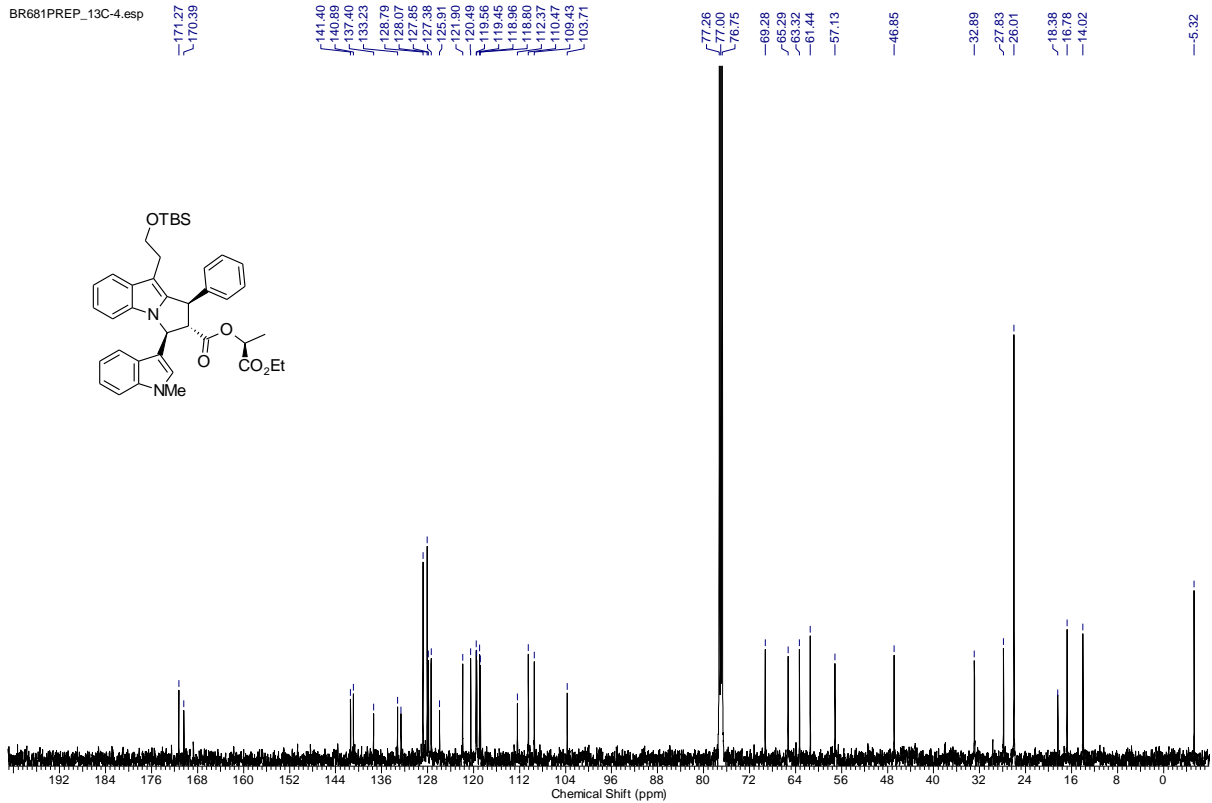


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 18h

BR681PREP\_1H1non\_E15.esp

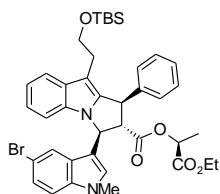
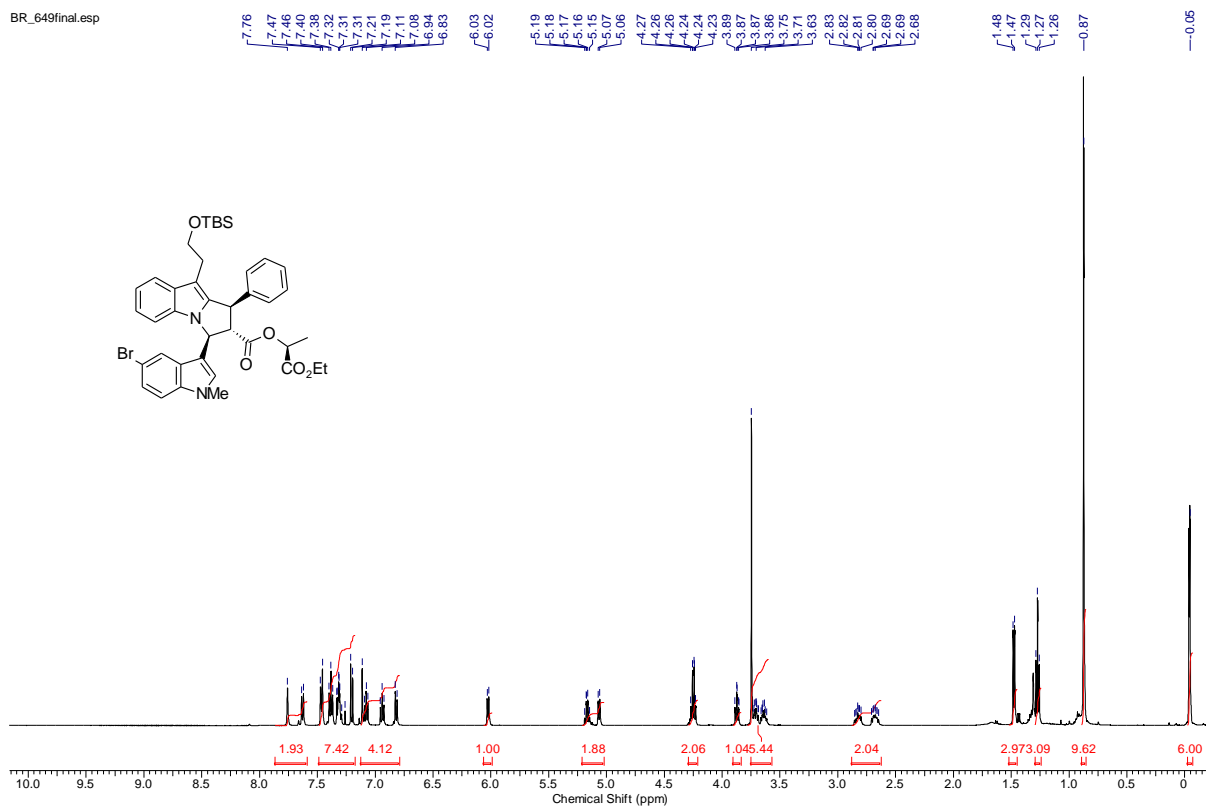


BR681PREP\_13C-4.esp

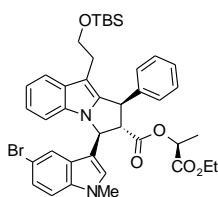
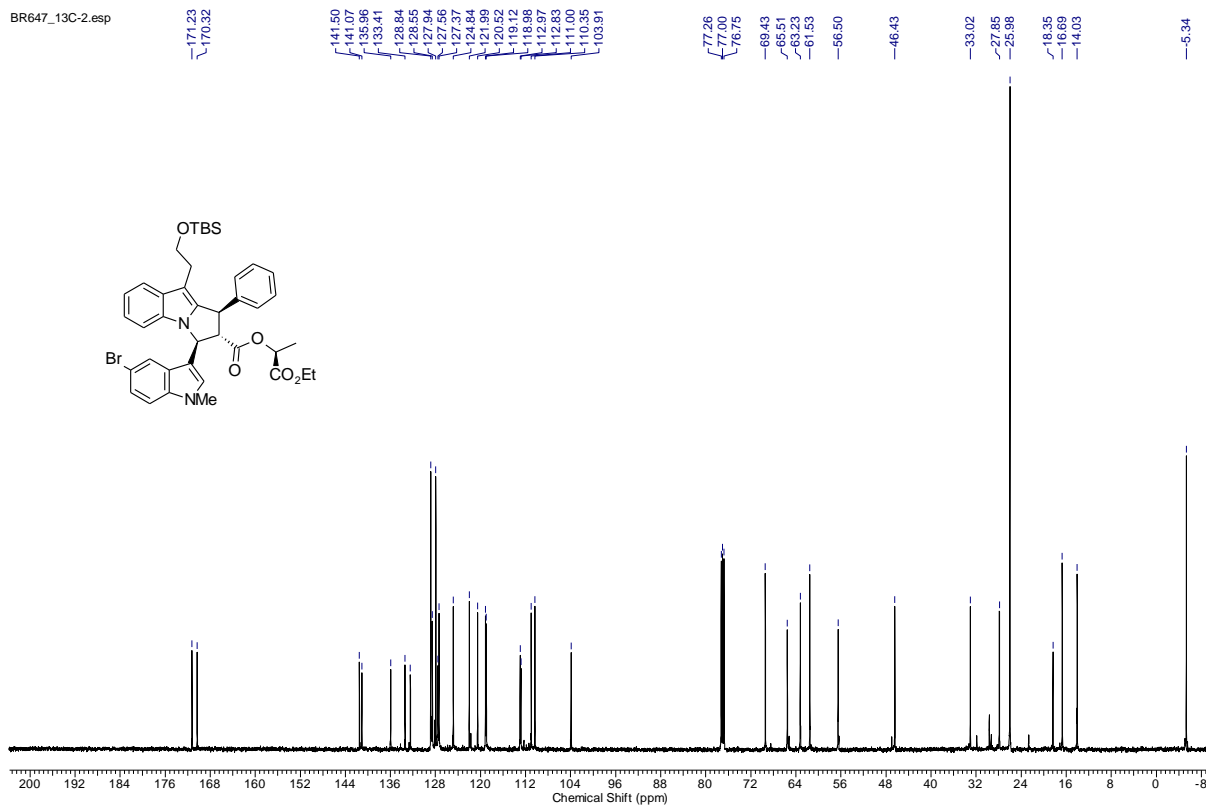


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 18i

BR\_649final.esp

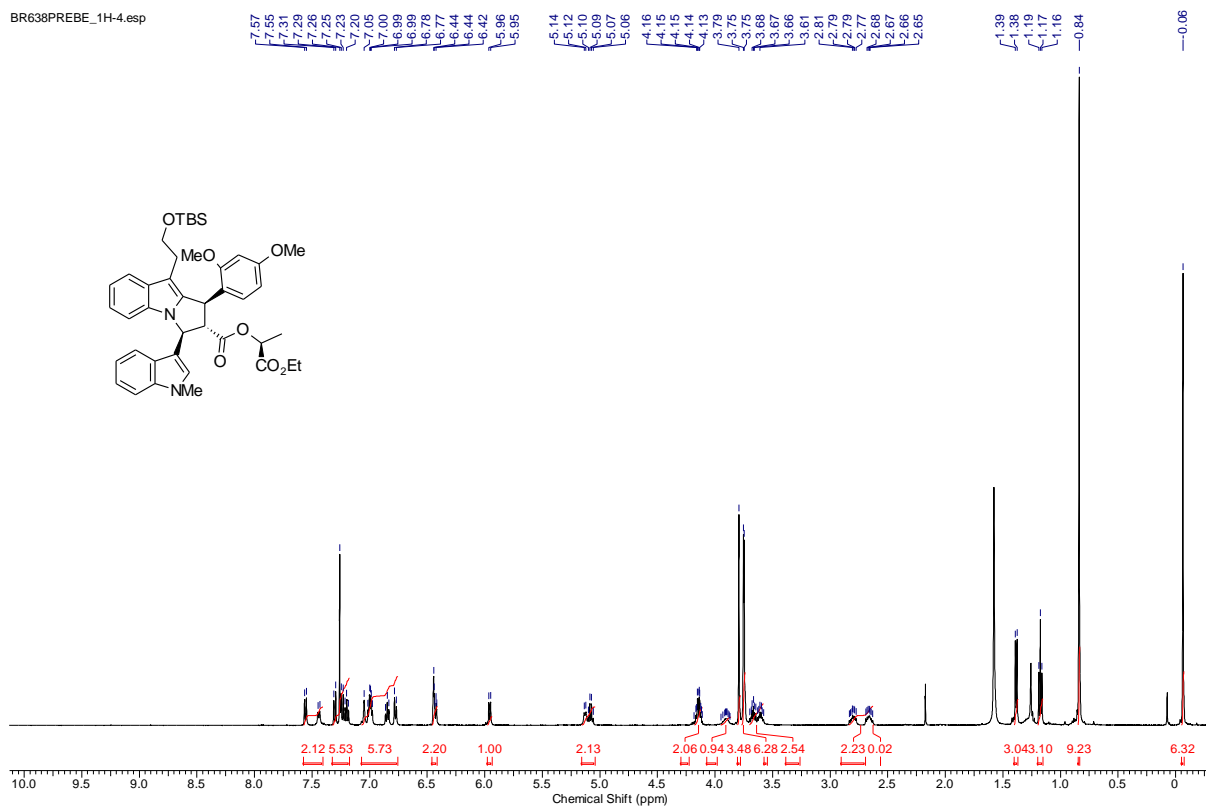


BR647\_13C-2.esp

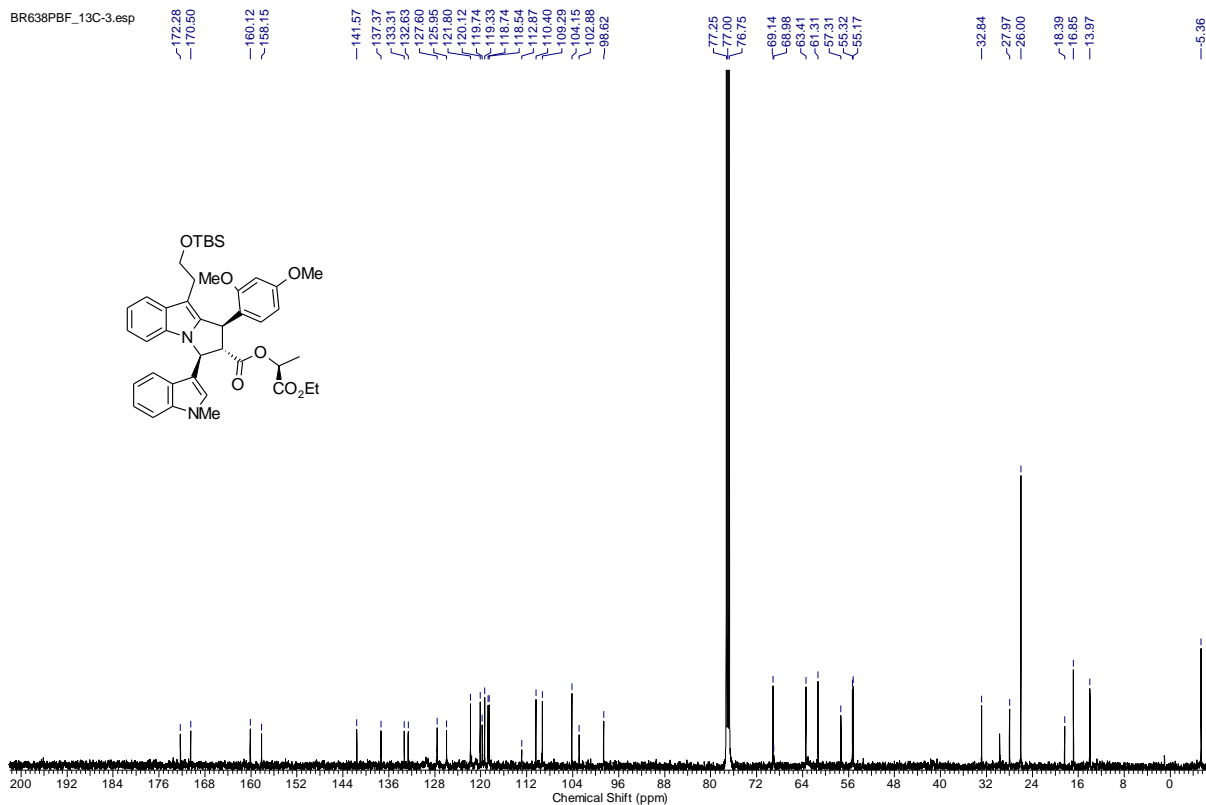


# <sup>1</sup>H and <sup>13</sup>C NMR of compound 18g

BR638PREBE\_1H-4.esp

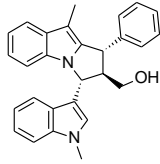
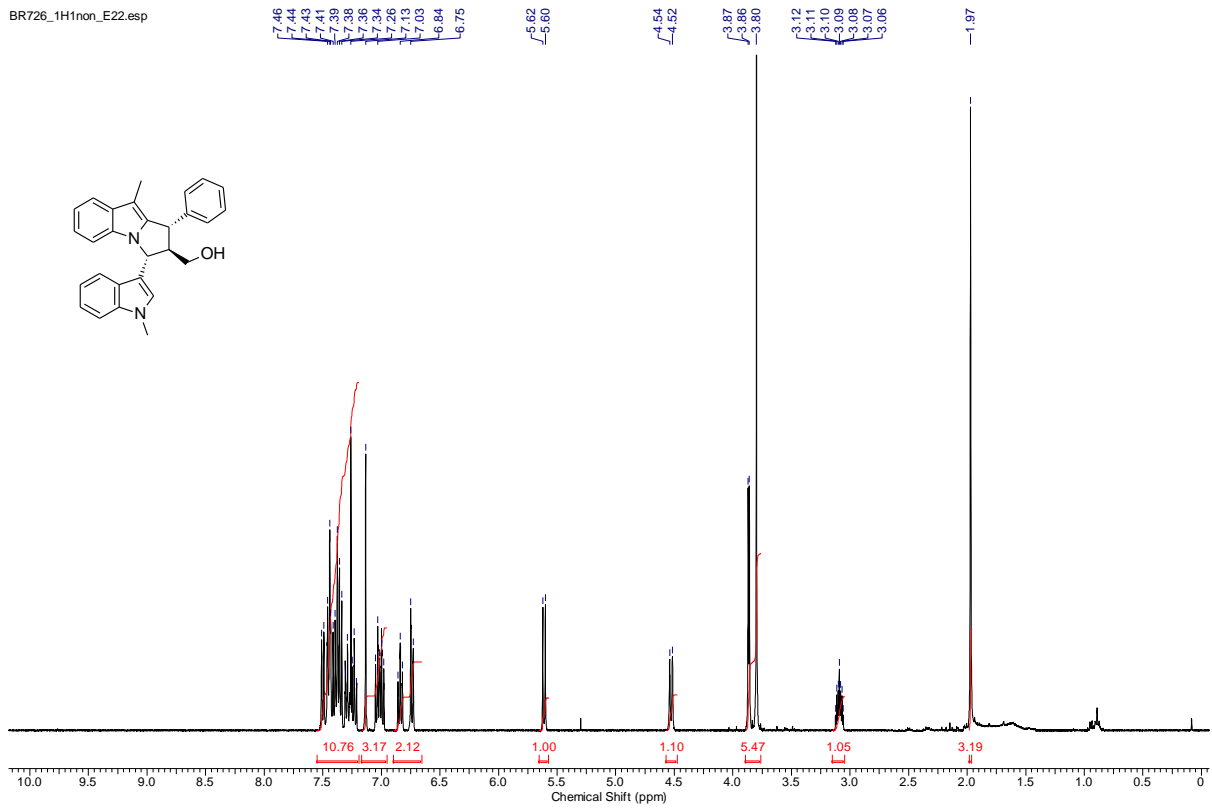


BR638PBF\_13C-3.esp



# <sup>1</sup>H and <sup>13</sup>C NMR of compound 19a

BR726\_1H1non\_E22.esp



BR723PURE\_13C-2.esp

