

# **Supporting Information**

## **Synthesis of 2-aryl acetophenones via hydrobromination and oxy-isomerization of (o-arylethynyl)benzyl alcohols.**

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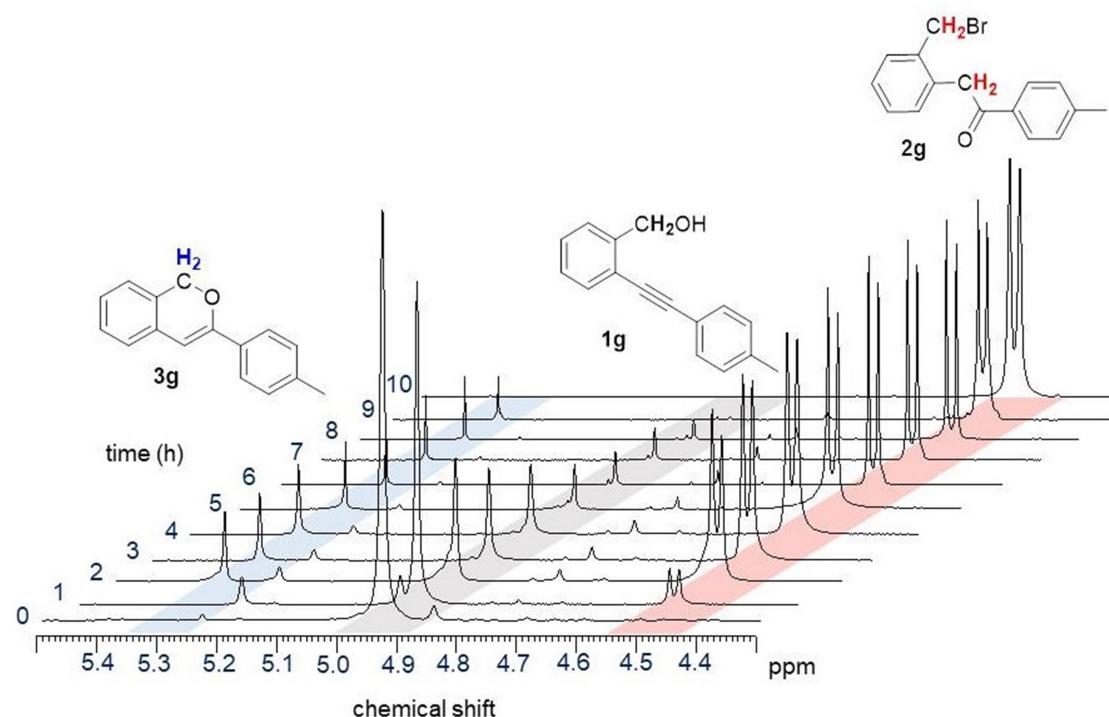
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Monitoring the reaction progress of **1g** to **2g** with  $^1\text{H}$  NMR

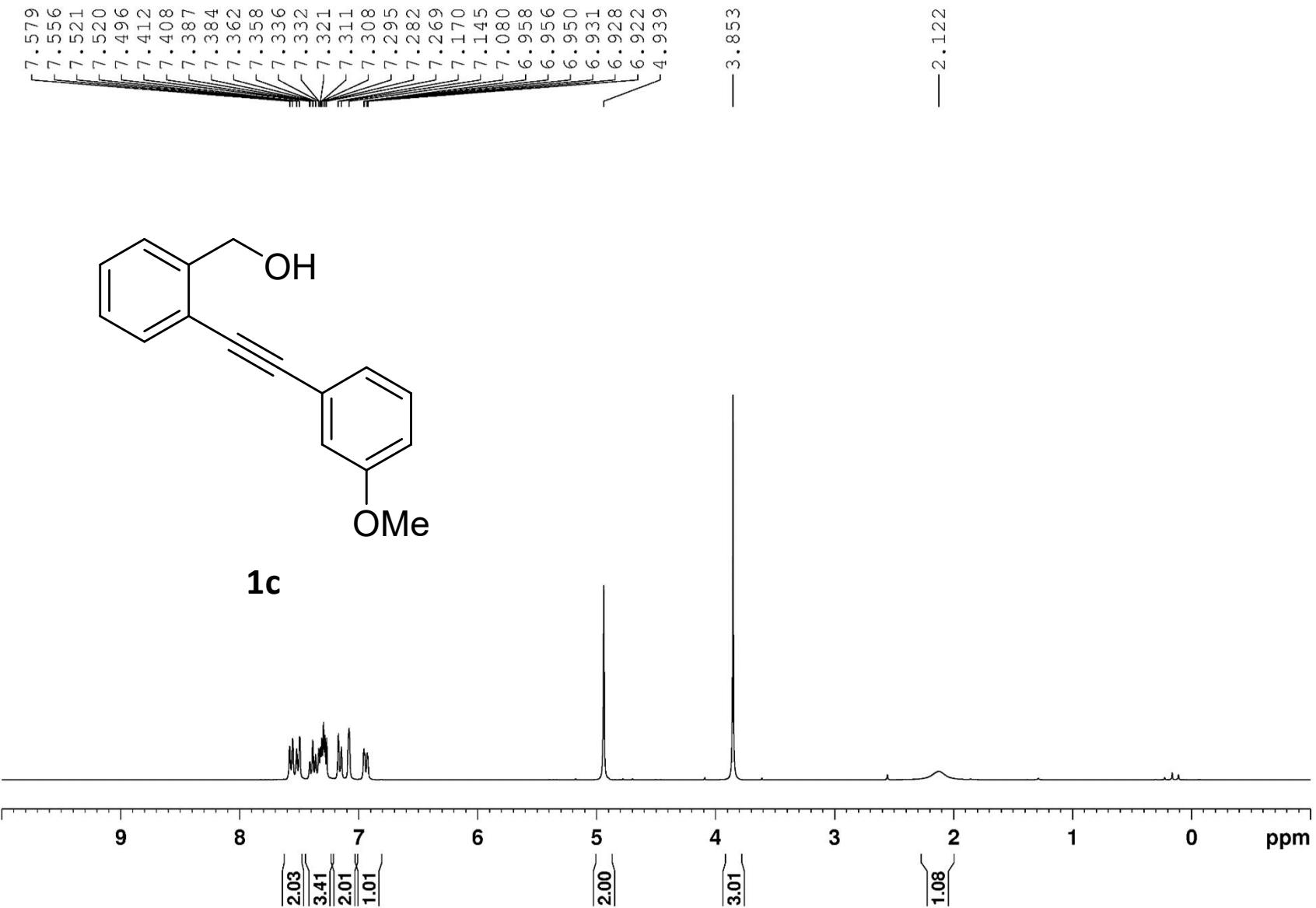


**Figure S1.** Stacked plots of the successively acquired  $^1\text{H}$  NMR spectra (300 MHz,  $\text{CDCl}_3$ ) during the progress of the reaction **1g** to **2g**. The three sets of the highlighted peaks from left to right are corresponding to those of **3g**, **1g**, and **2g**.

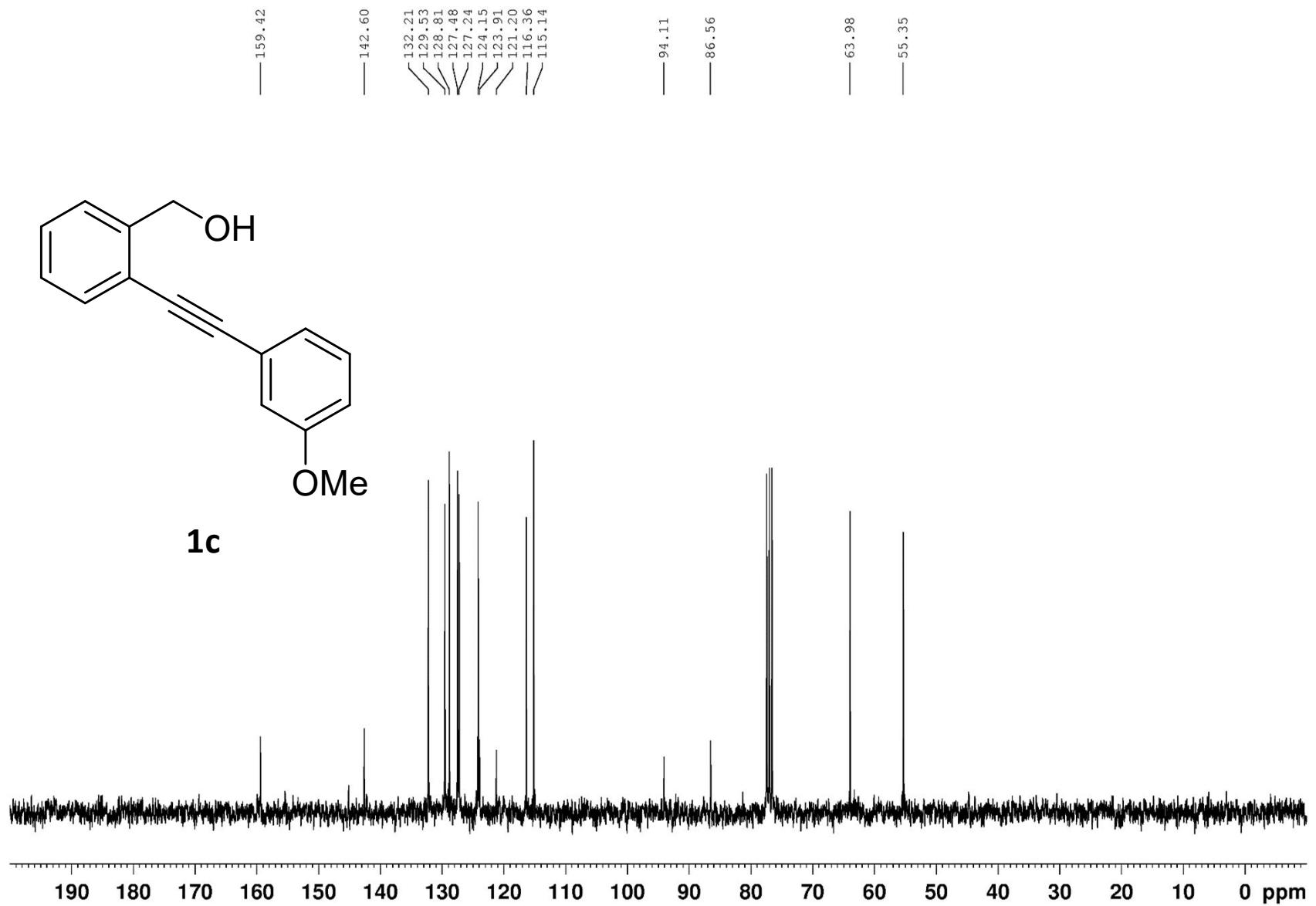
**Table S1.** Relative amounts of **3g**, **1g** and **2g** at different reaction time intervals.<sup>a</sup>

time (h)	<b>3g</b> (%)	<b>1g</b> (%)	<b>2g</b> (%)
0	0	99	0
1	7	77	8
2	8	31	54
3	9	22	59
4	12	15	64
5	14	5	72
6	11	5	76
7	11	4	78
8	9	3	82
9	4	2	88
10	0	0	99

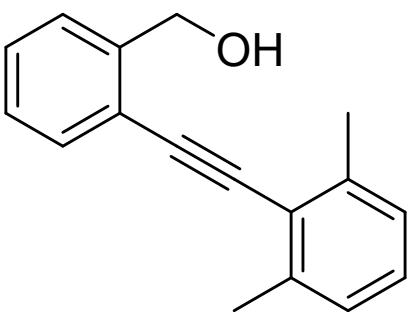
<sup>a</sup>TMSBr (8 µL, 9.1 mg, 0.06 mmol) was added to a nmr tube containing **1g** (10.0 mg, 0.051 mmol) and 1,4-dimethoxybenzene (2.0 mg) in CDCl<sub>3</sub> (1.0 mL). The tube was kept at rt and its <sup>1</sup>H NMR spectrum was recorded every hour. The relative amounts of **1g**, **2g** and **3g** were calculated according to their integrations compared to that of 1,4-dimethoxybenzene.



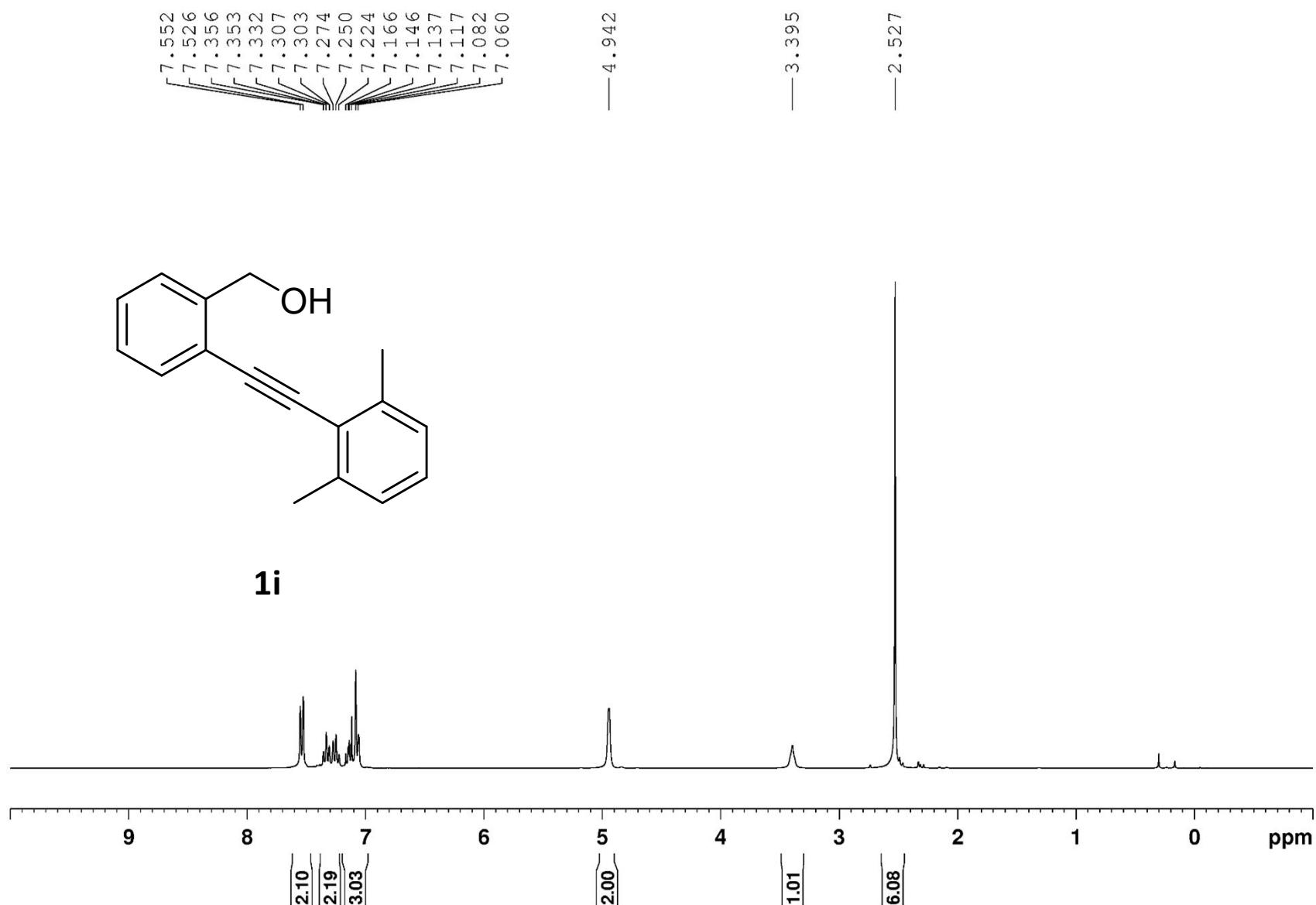
<sup>1</sup>H NMR of compound **1c** (300 MHz, CDCl<sub>3</sub>)



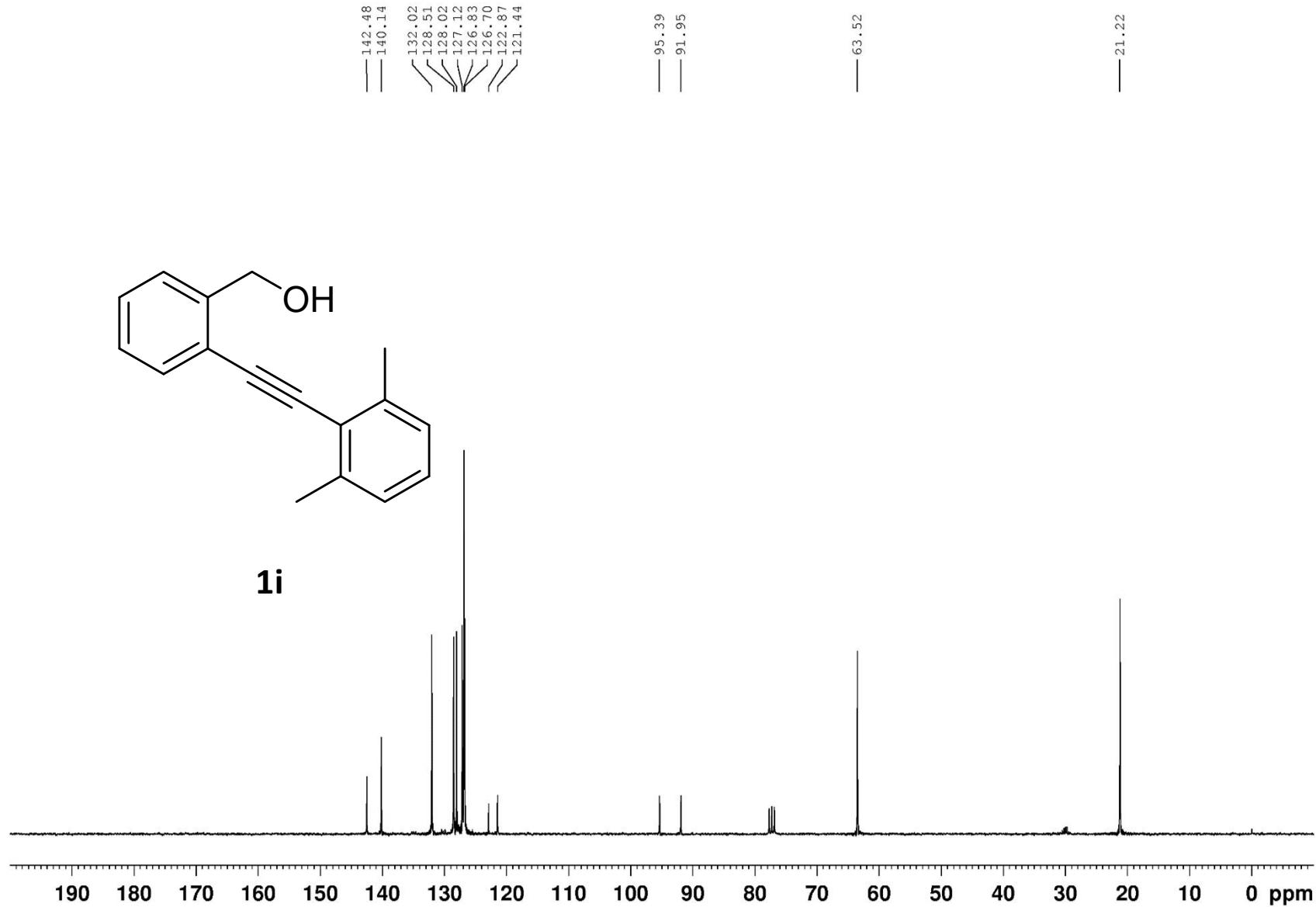
$^{13}\text{C}\{\text{H}\}$  NMR of compound **1c** (75 MHz,  $\text{CDCl}_3$ )



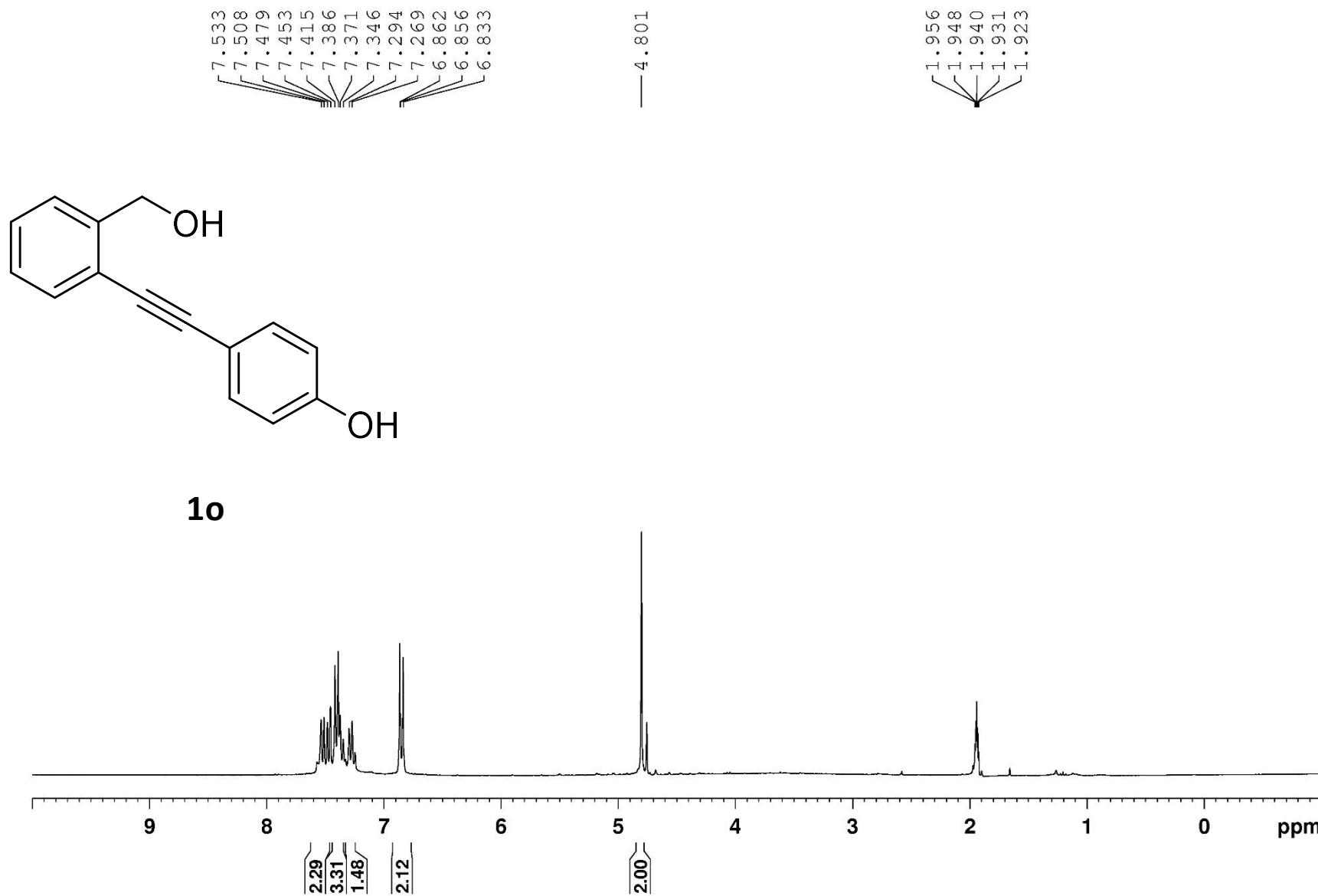
**1i**



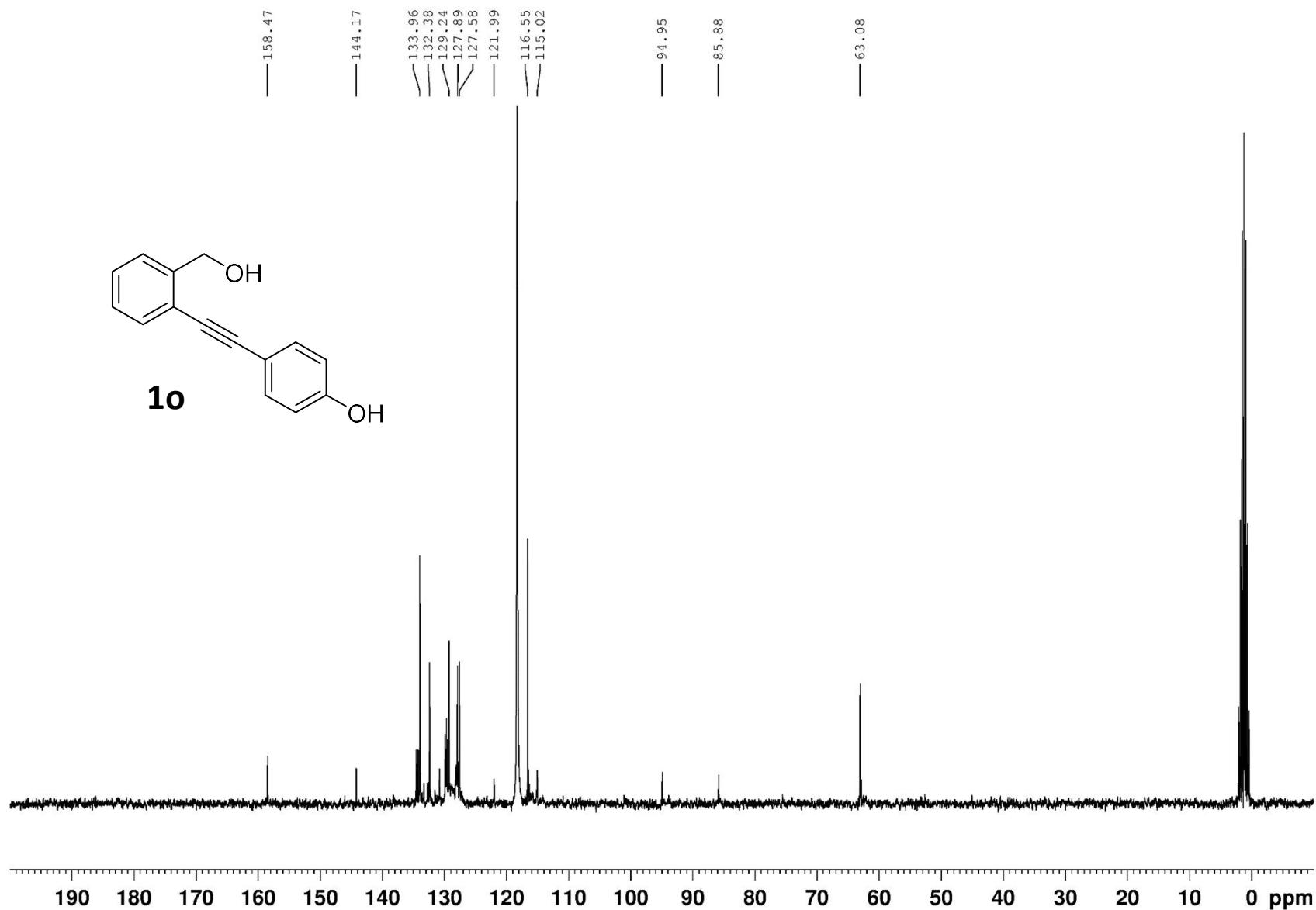
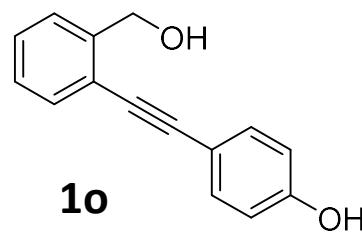
<sup>1</sup>H NMR of compound **1i** (300 MHz, CDCl<sub>3</sub>)



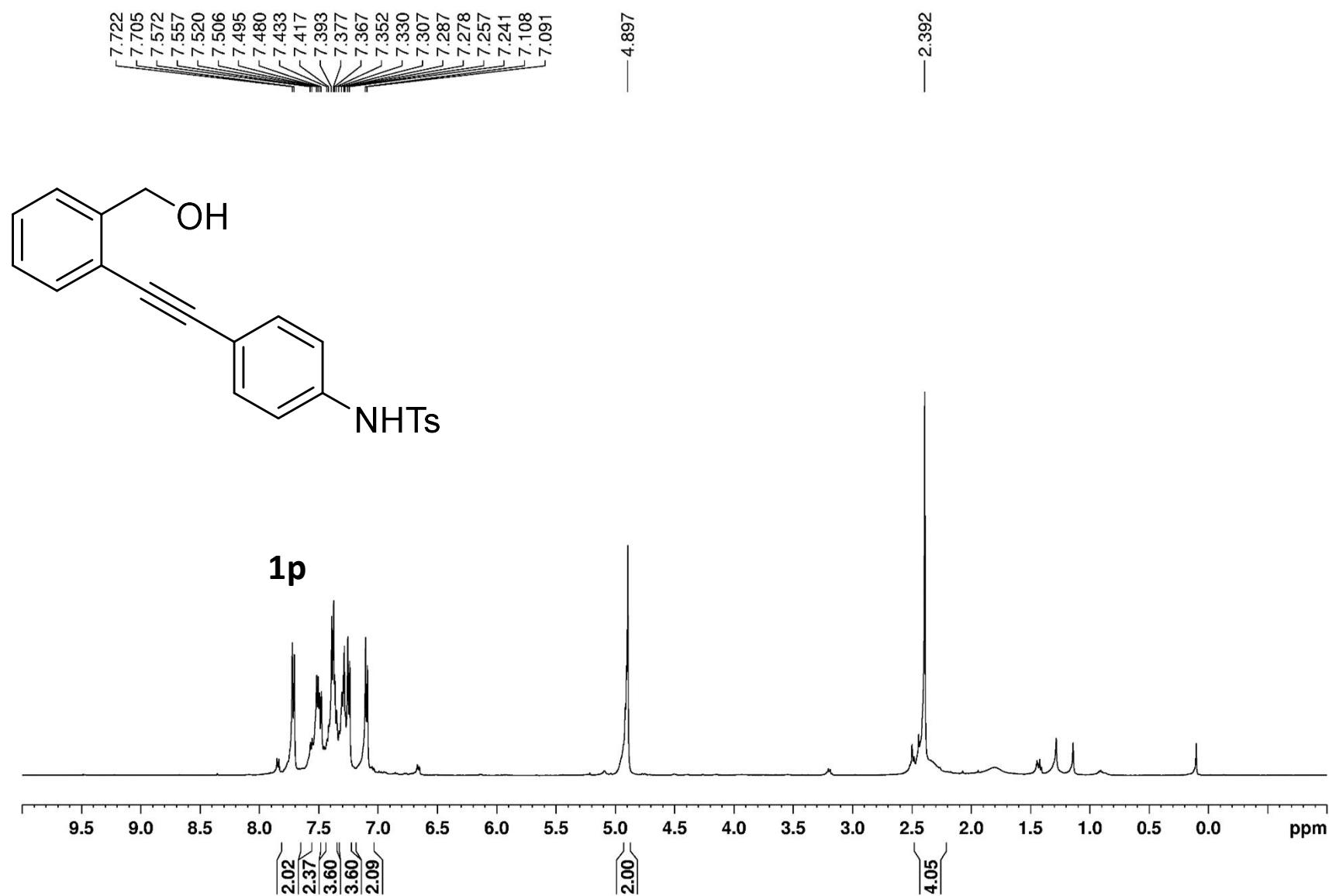
$^{13}\text{C}\{\text{H}\}$  NMR of compound **1i** (75 MHz,  $\text{CDCl}_3$ )



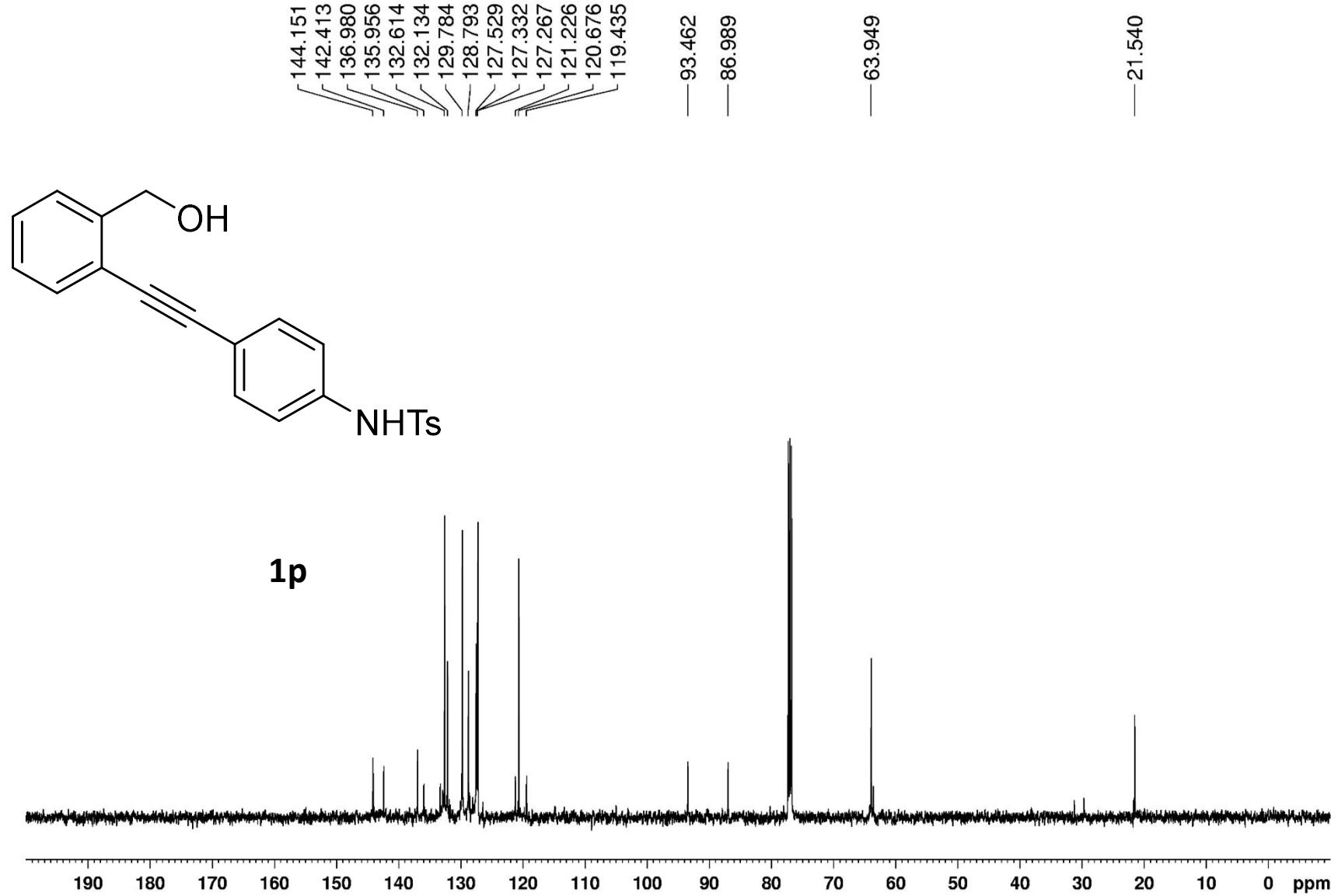
$^1\text{H}$  NMR of compound **1o** (300 MHz,  $\text{CD}_3\text{CN}$ )



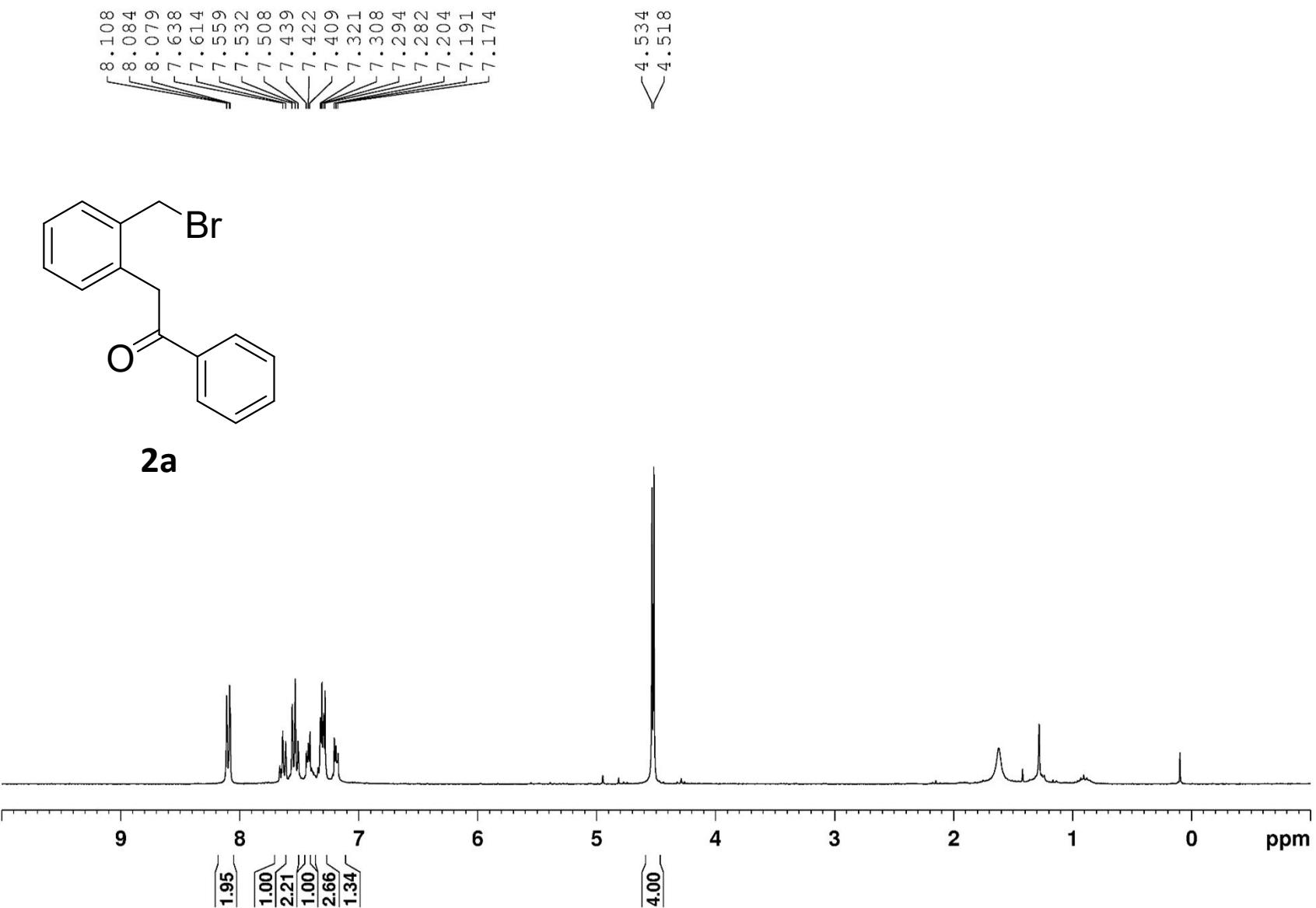
$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **1o** (75 MHz,  $\text{CD}_3\text{CN}$ )



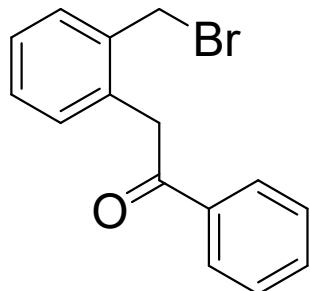
<sup>1</sup>H NMR of compound **1p** (300 MHz, CDCl<sub>3</sub>)



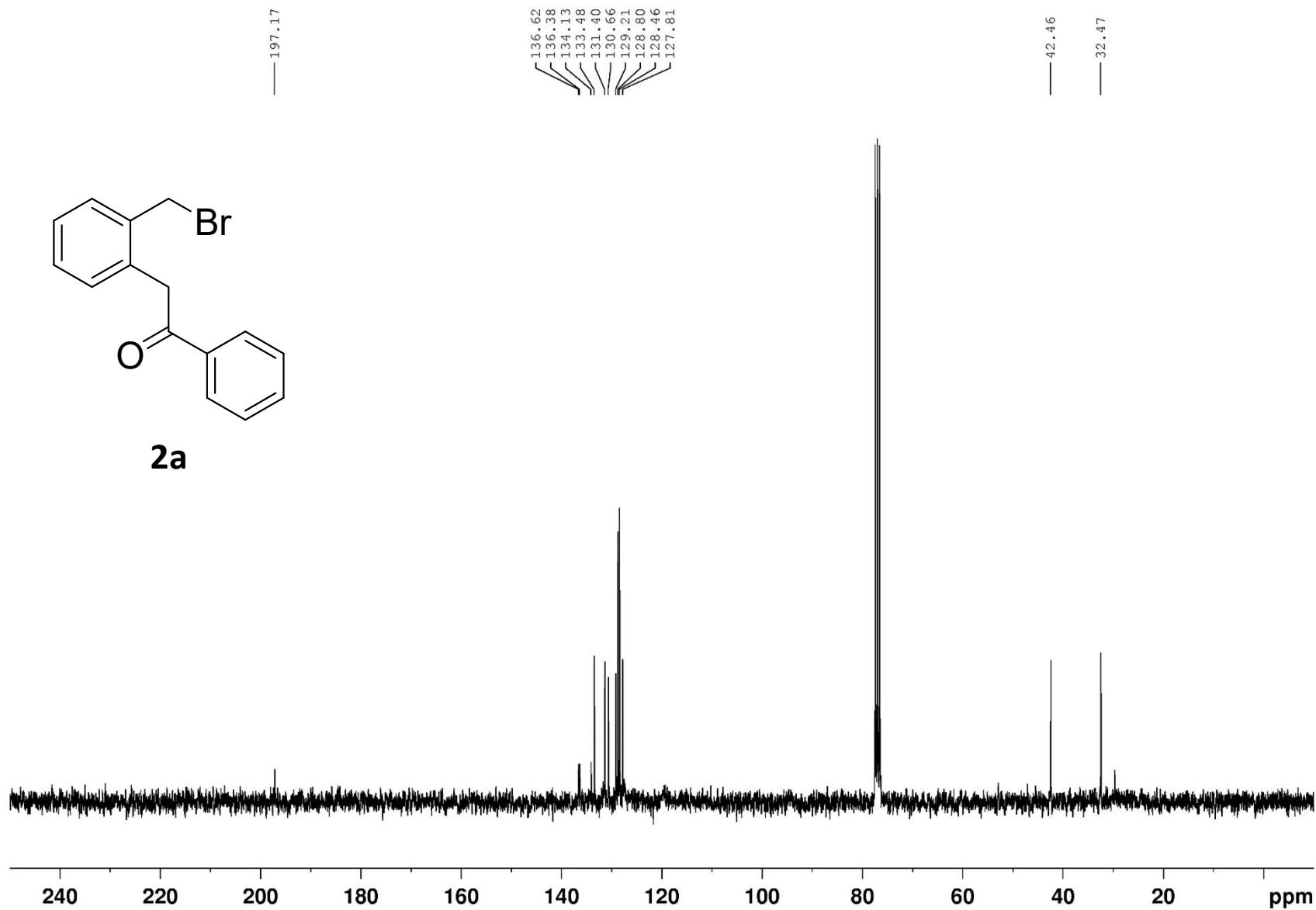
$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **1p** (75 MHz,  $\text{CDCl}_3$ )



$^1\text{H}$  NMR of compound **2a** (300 MHz,  $\text{CDCl}_3$ )

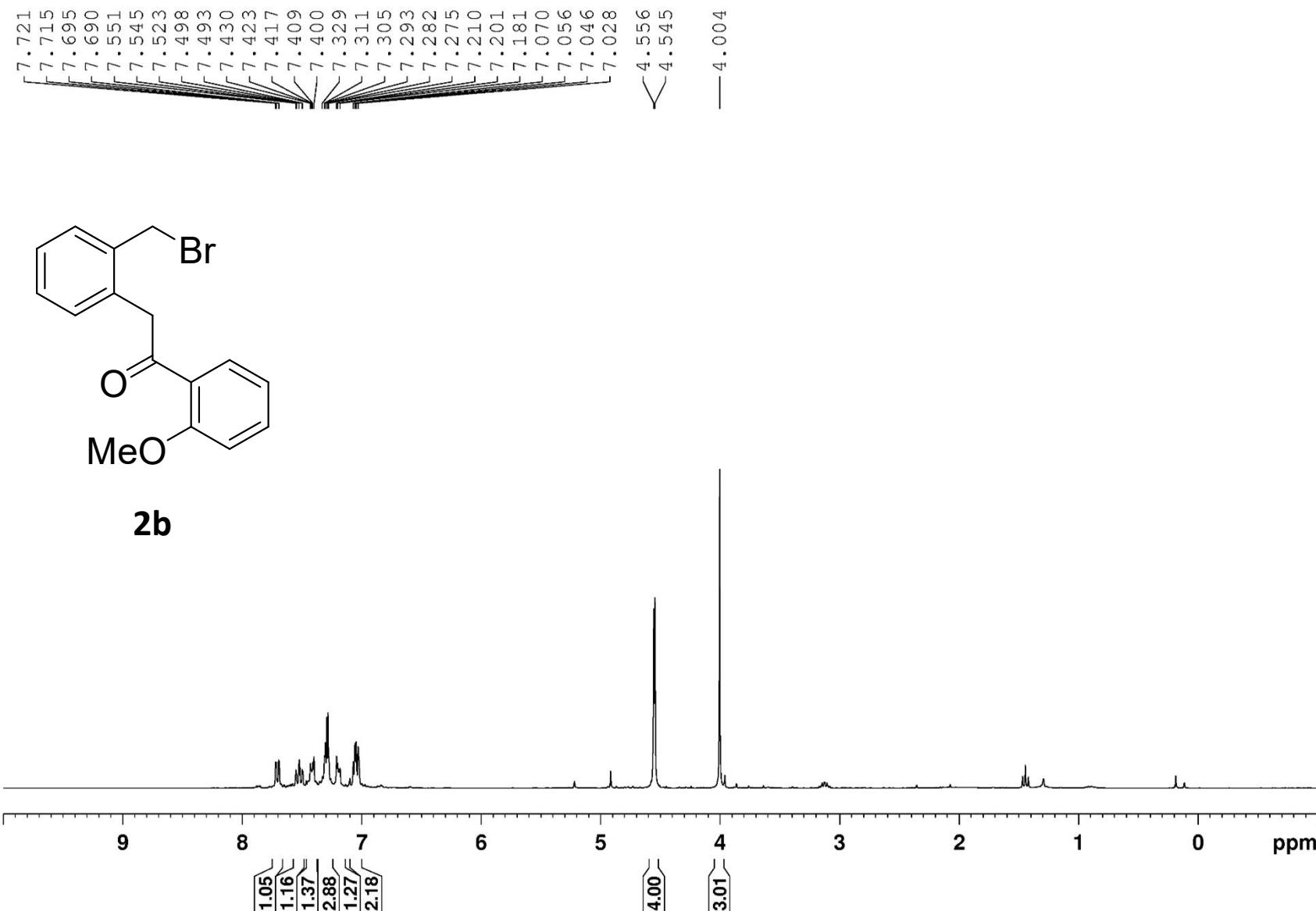


**2a**

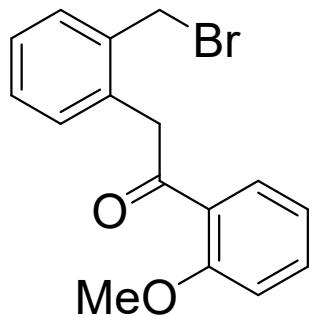


$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **2a** (75 MHz,  $\text{CDCl}_3$ )

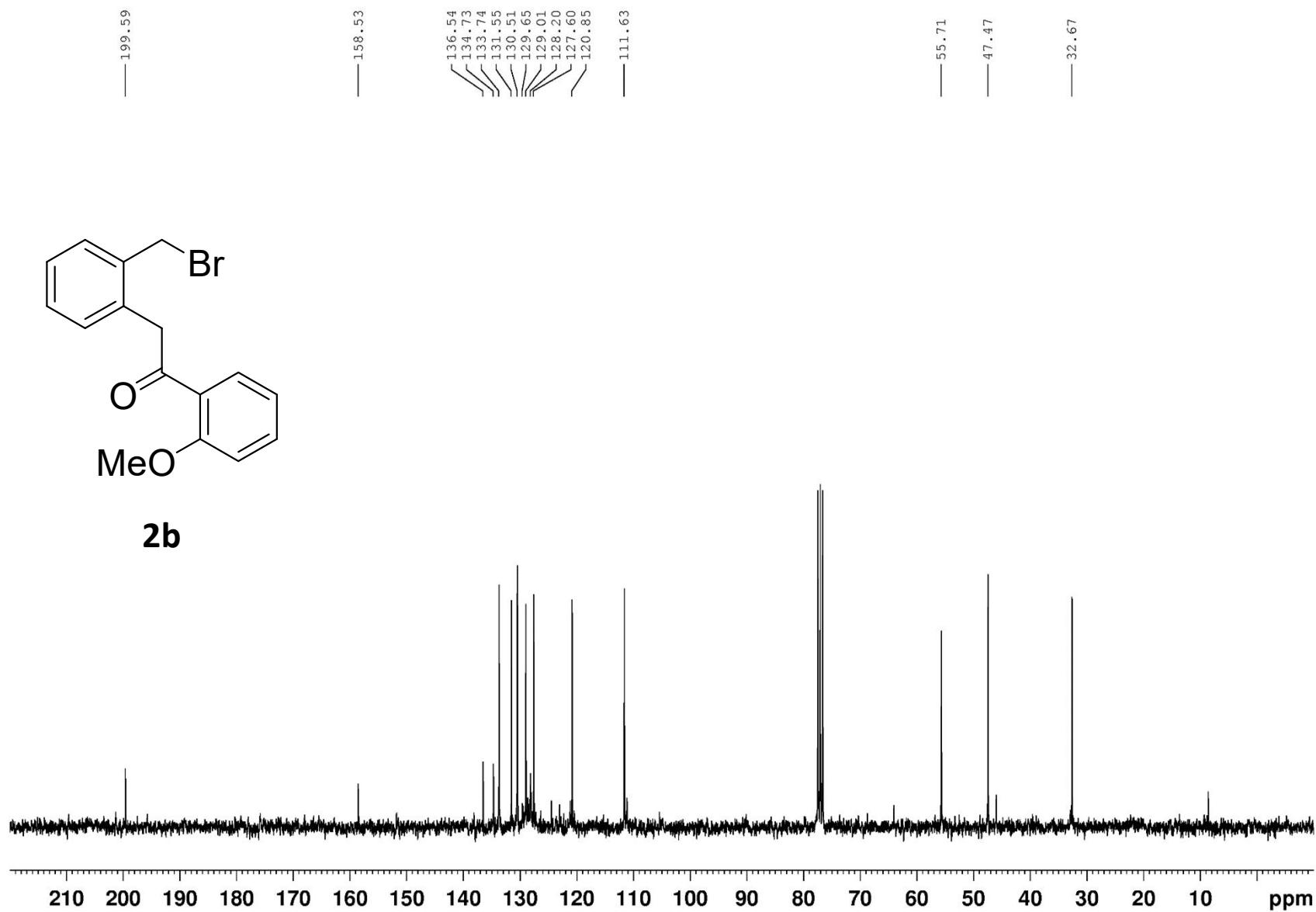
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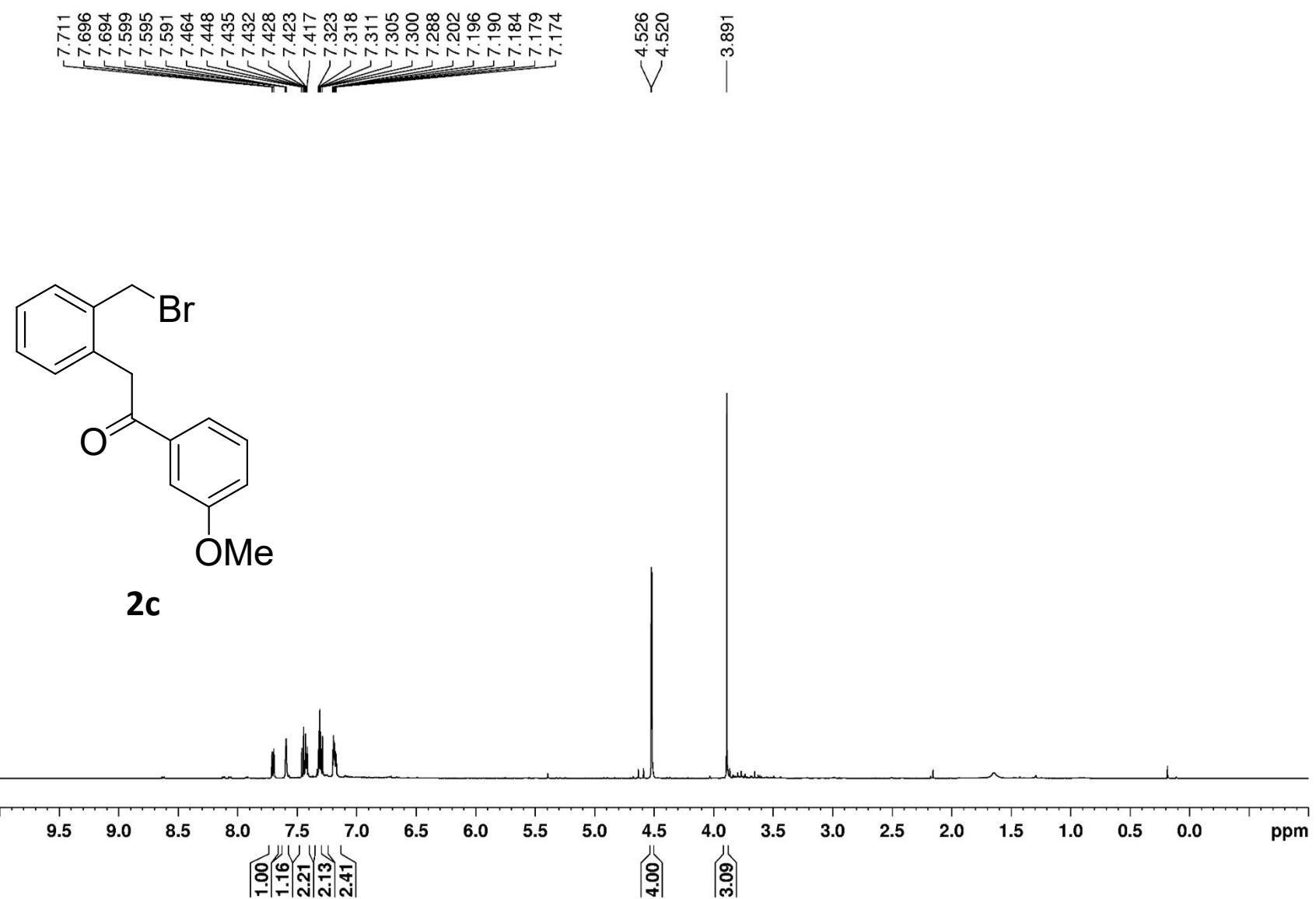
$^1\text{H}$  NMR of compound **2b** (300 MHz,  $\text{CDCl}_3$ )



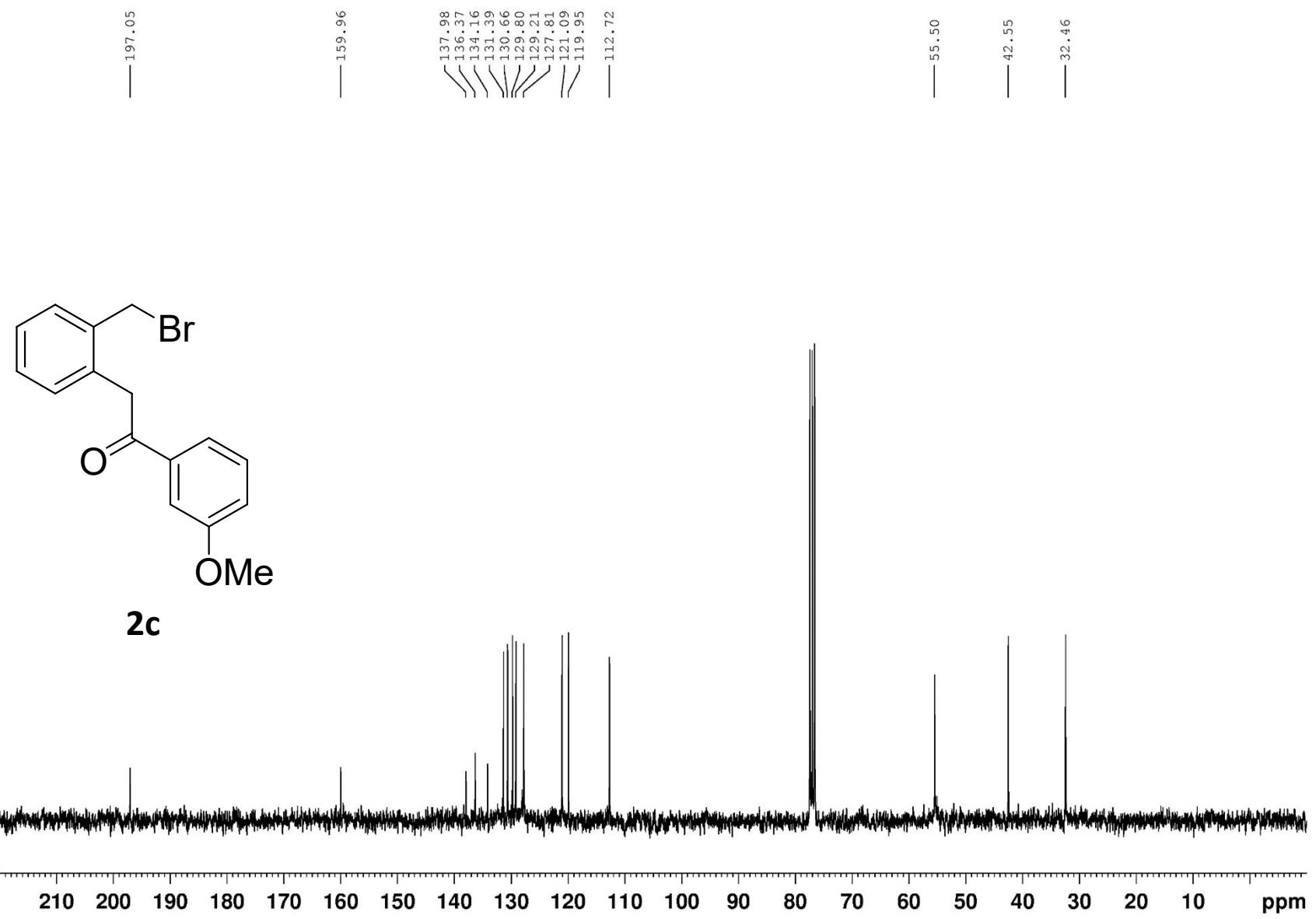
**2b**



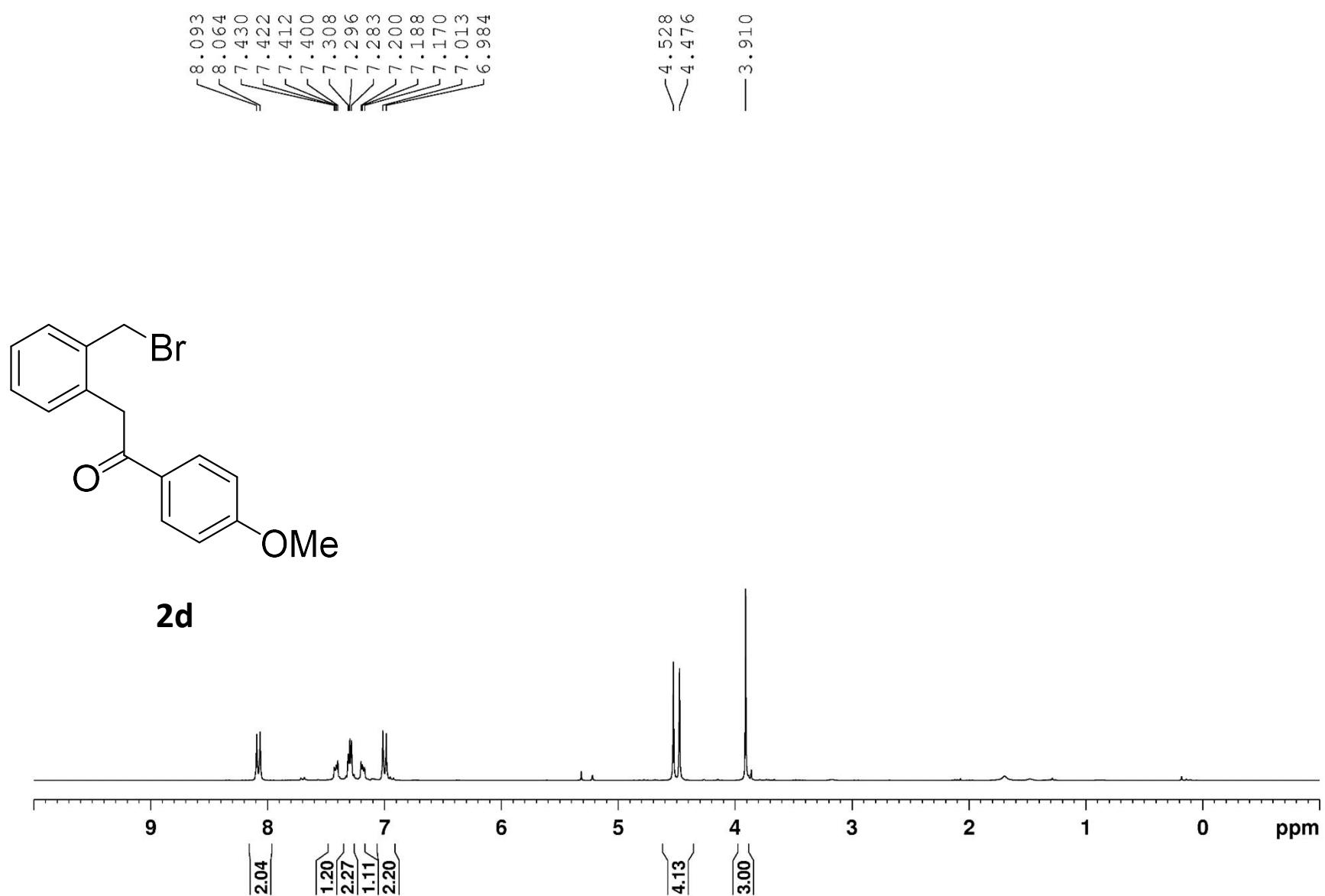
$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **2b** (75 MHz,  $\text{CDCl}_3$ )



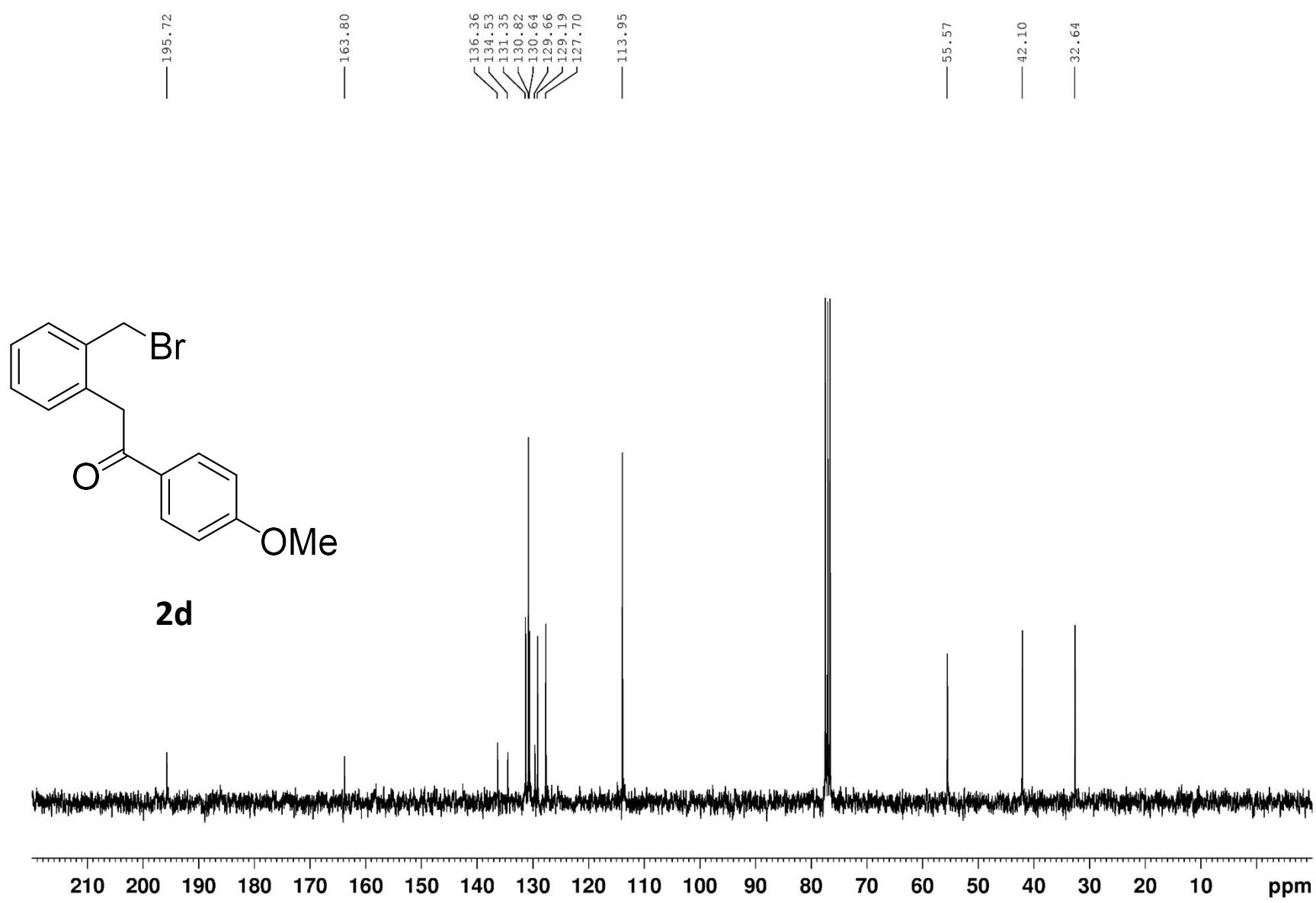
<sup>1</sup>H NMR of compound **2c** (300 MHz, CDCl<sub>3</sub>)



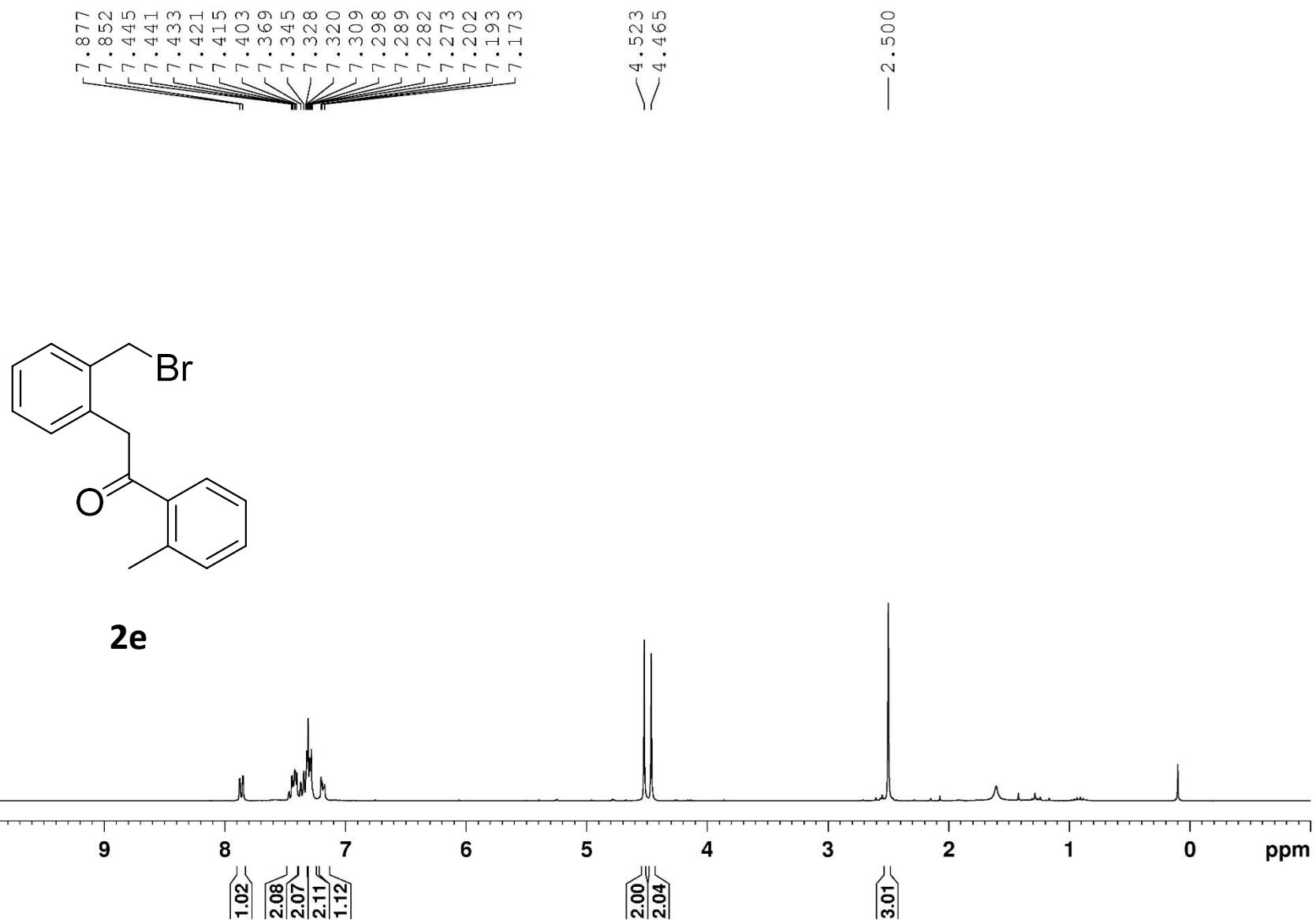
$^{13}\text{C}\{\text{H}\}$  NMR of compound **2c** (75 MHz,  $\text{CDCl}_3$ )



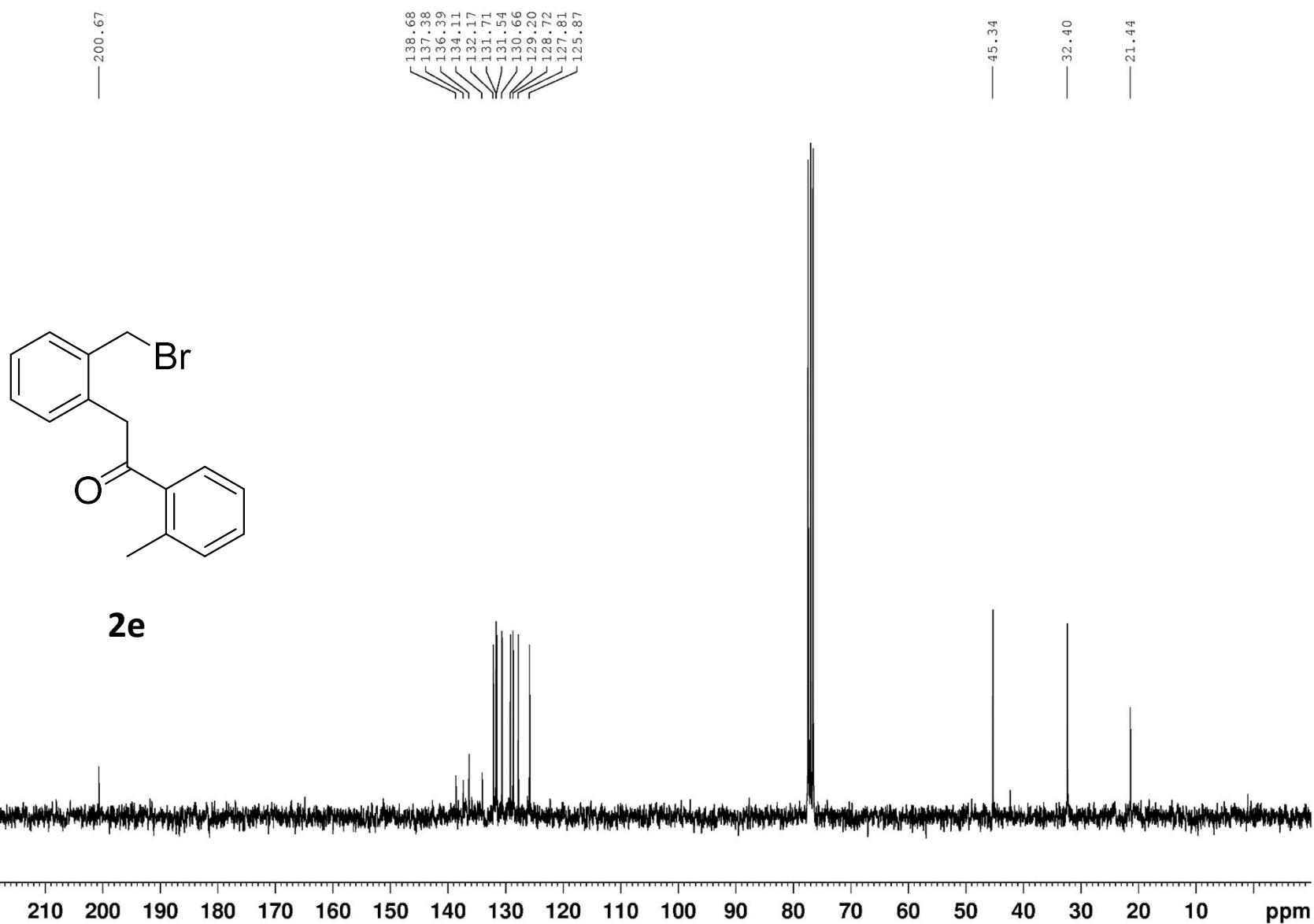
<sup>1</sup>H NMR of compound **2d** (300 MHz, CDCl<sub>3</sub>)



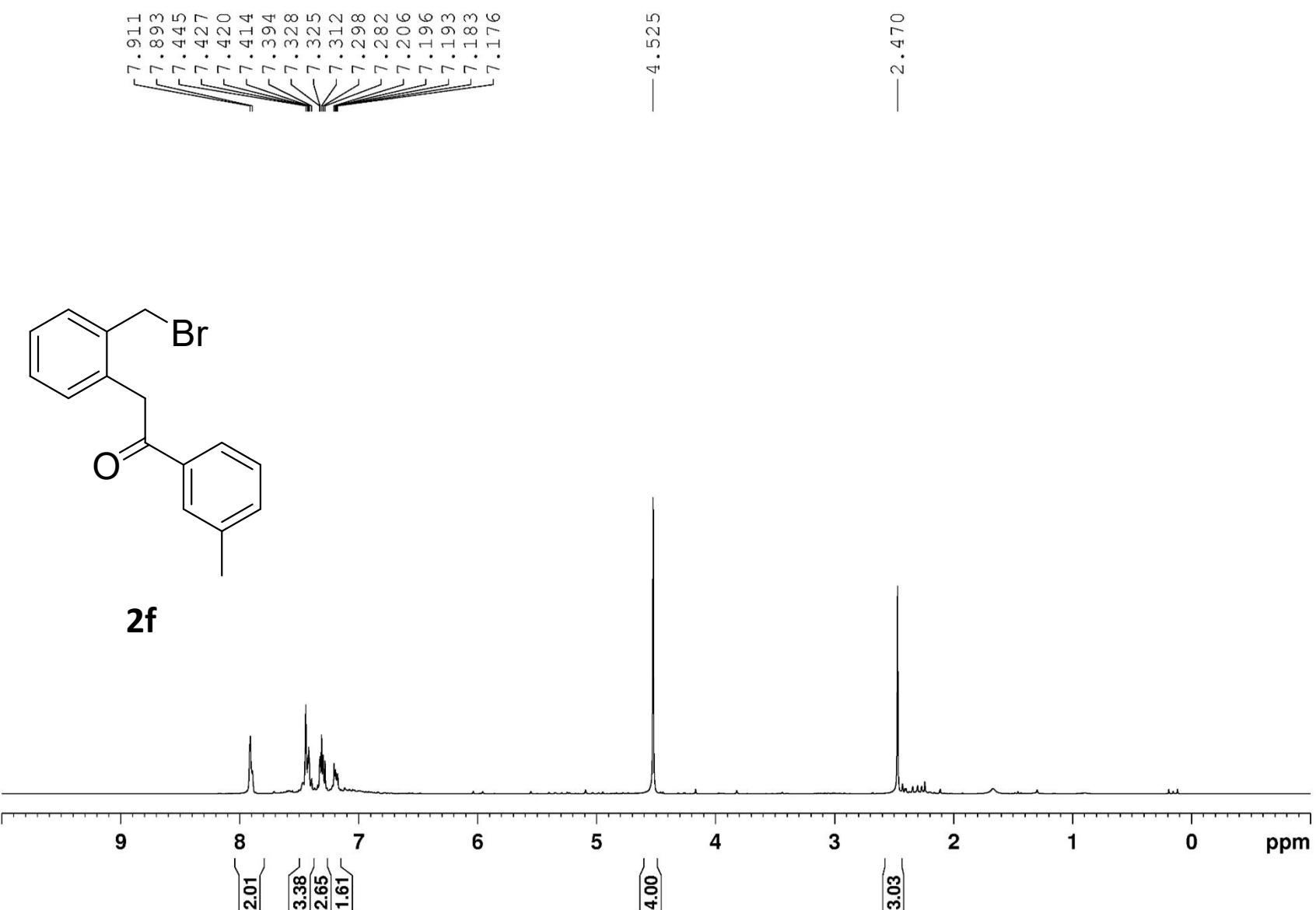
$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **2d** (75 MHz,  $\text{CDCl}_3$ )



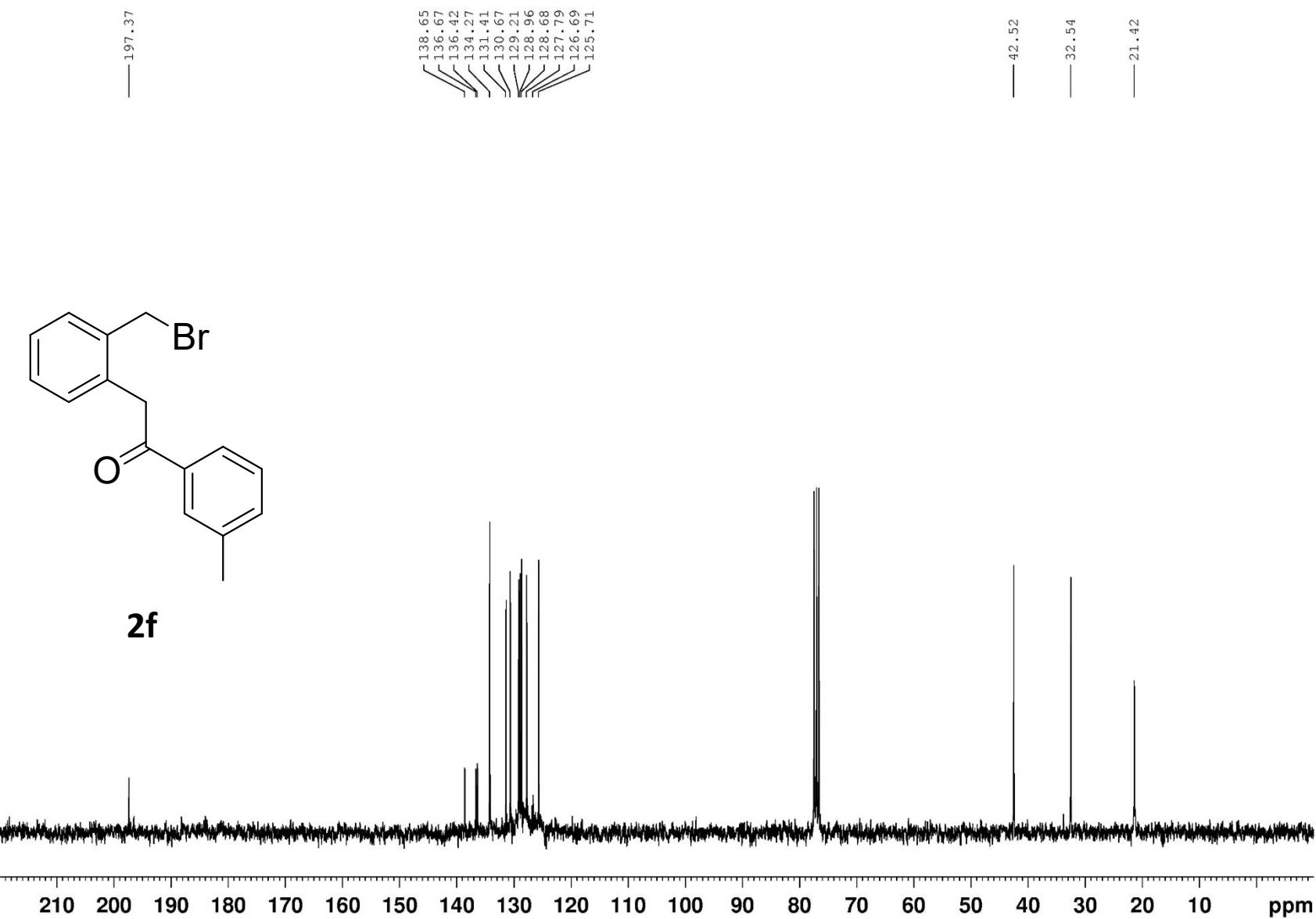
<sup>1</sup>H NMR of compound 2e (300 MHz, CDCl<sub>3</sub>)



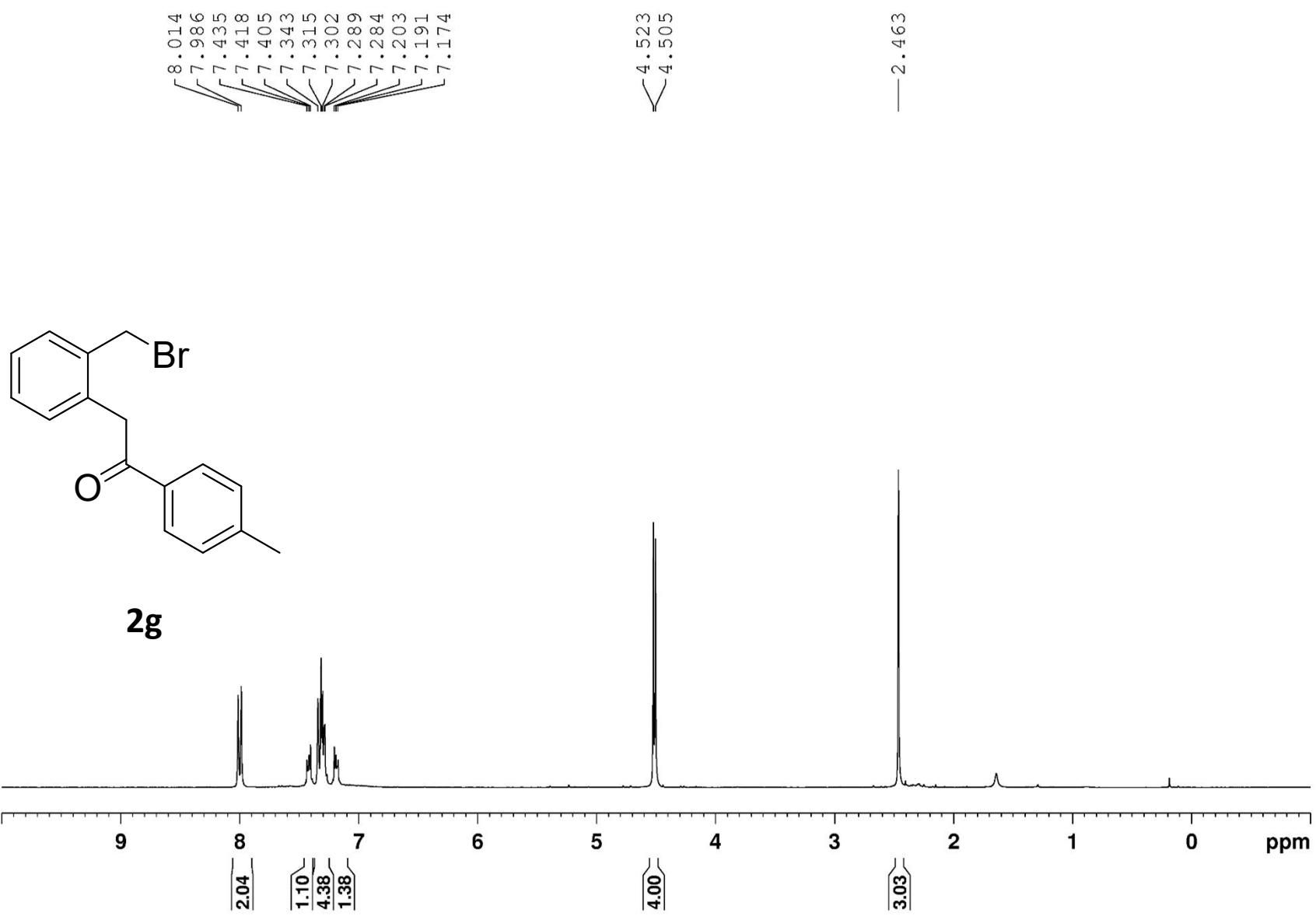
$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **2e** (75 MHz,  $\text{CDCl}_3$ )



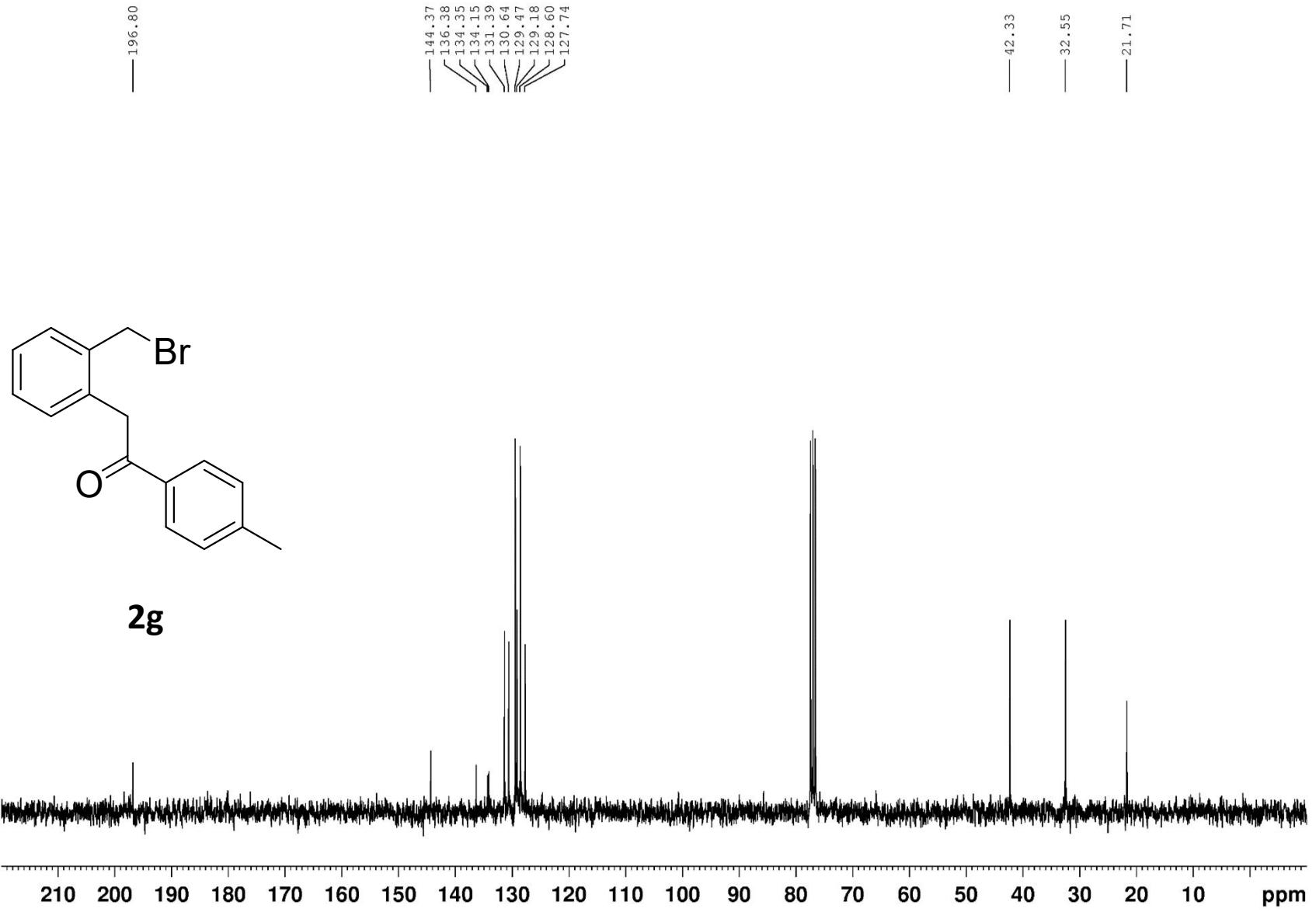
$^1\text{H}$  NMR of compound **2f** (300 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}\{\text{H}\}$  NMR of compound **2f** (75 MHz,  $\text{CDCl}_3$ )

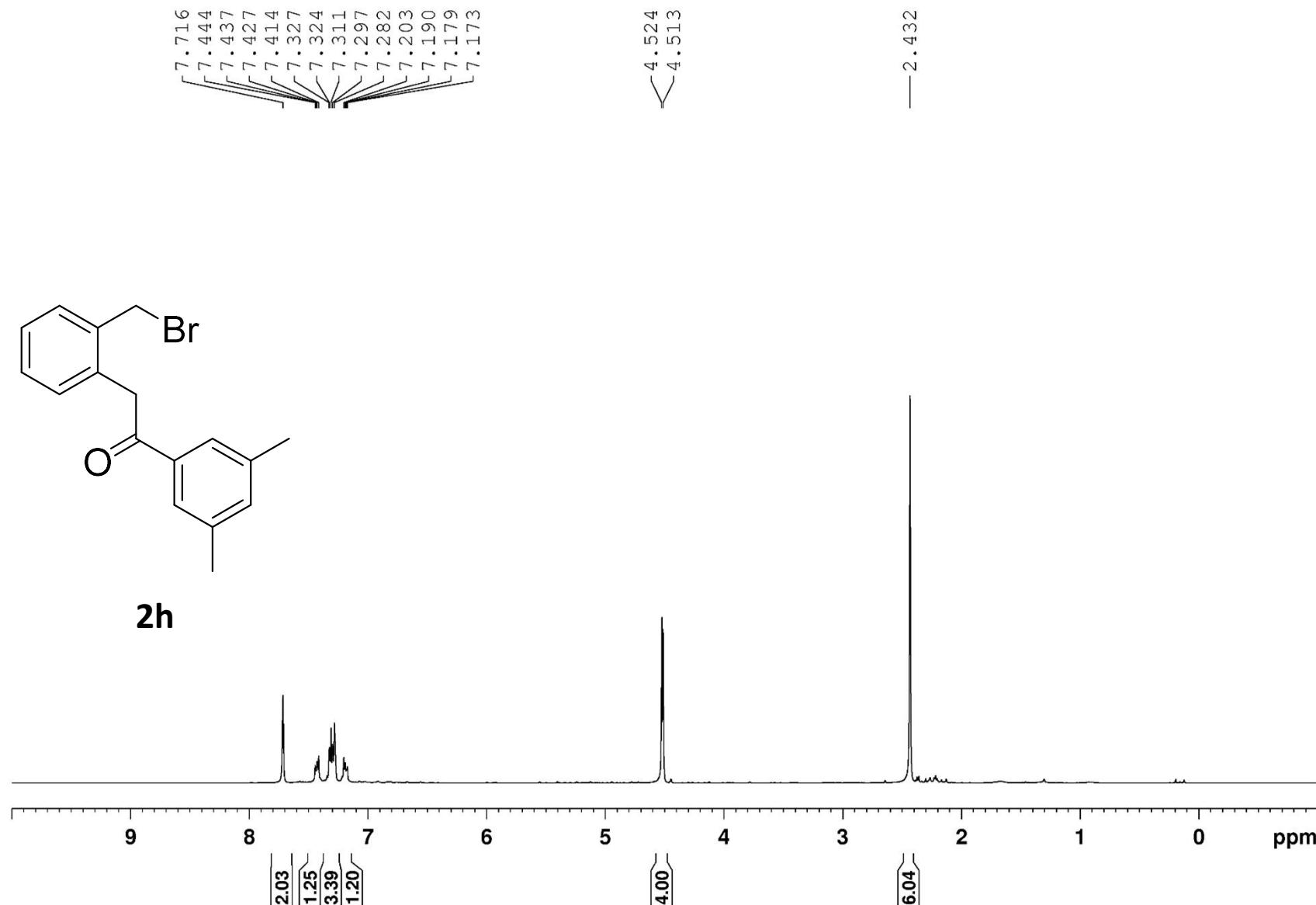


$^1\text{H}$  NMR of compound **2g** (300 MHz,  $\text{CDCl}_3$ )

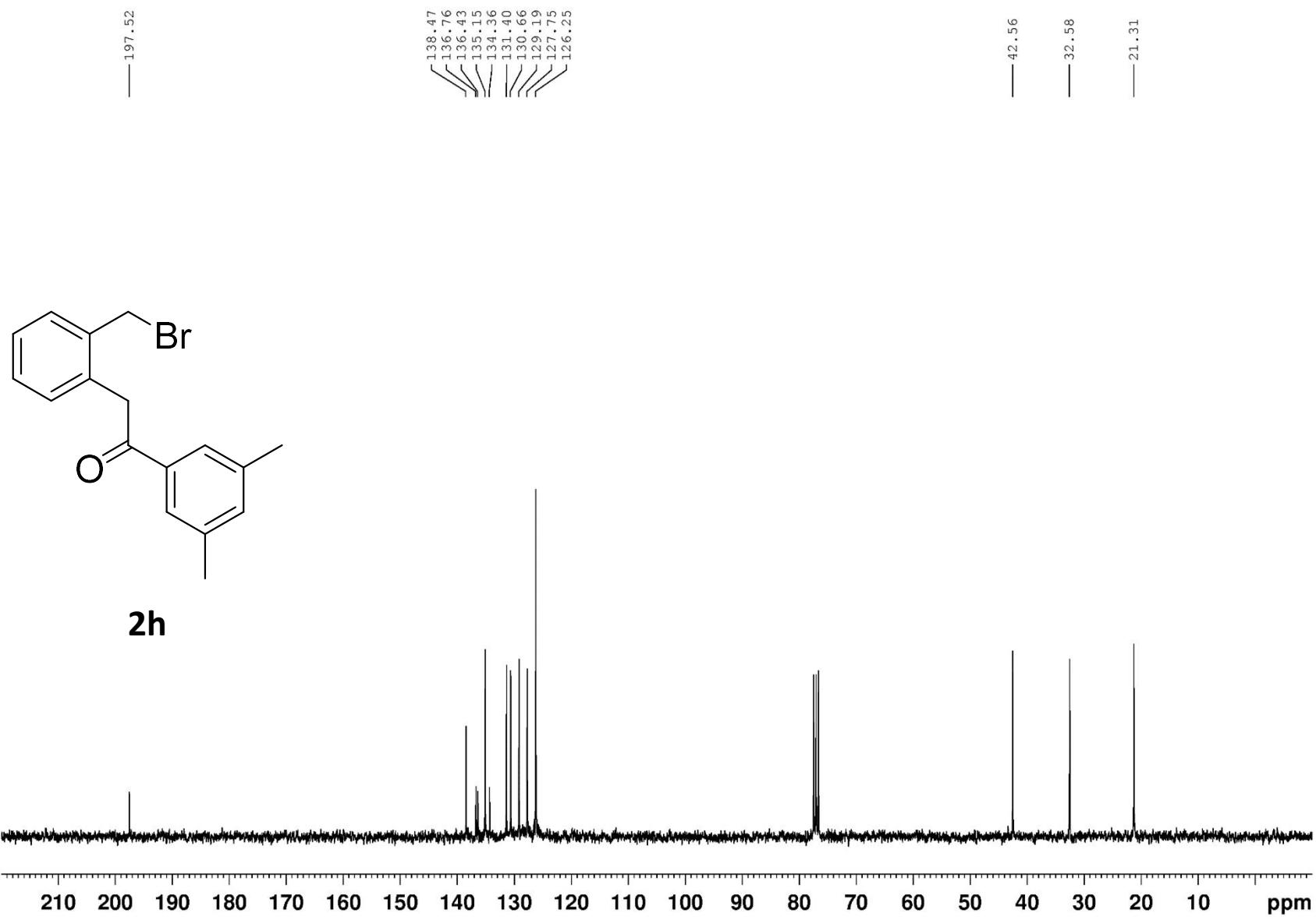


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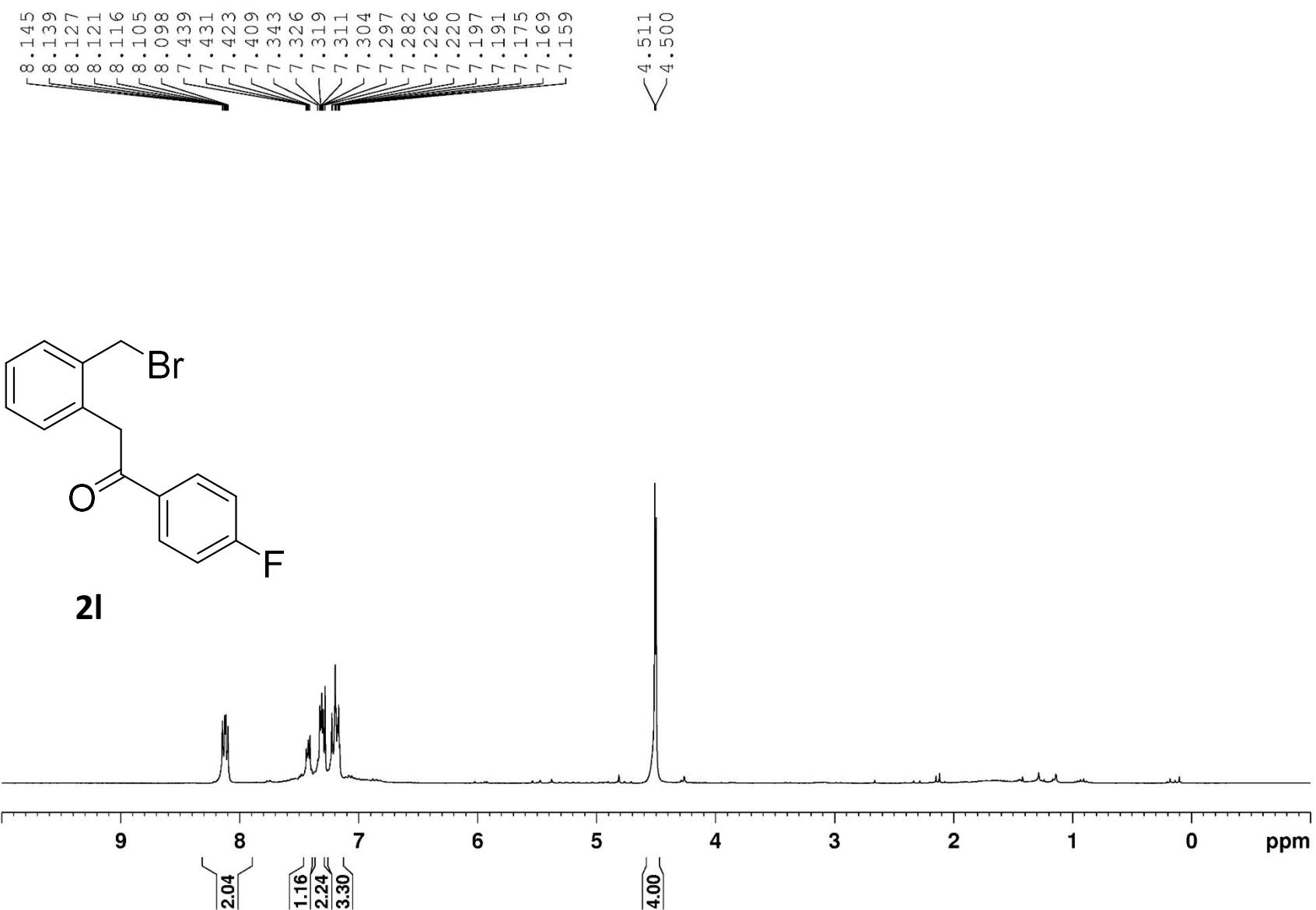
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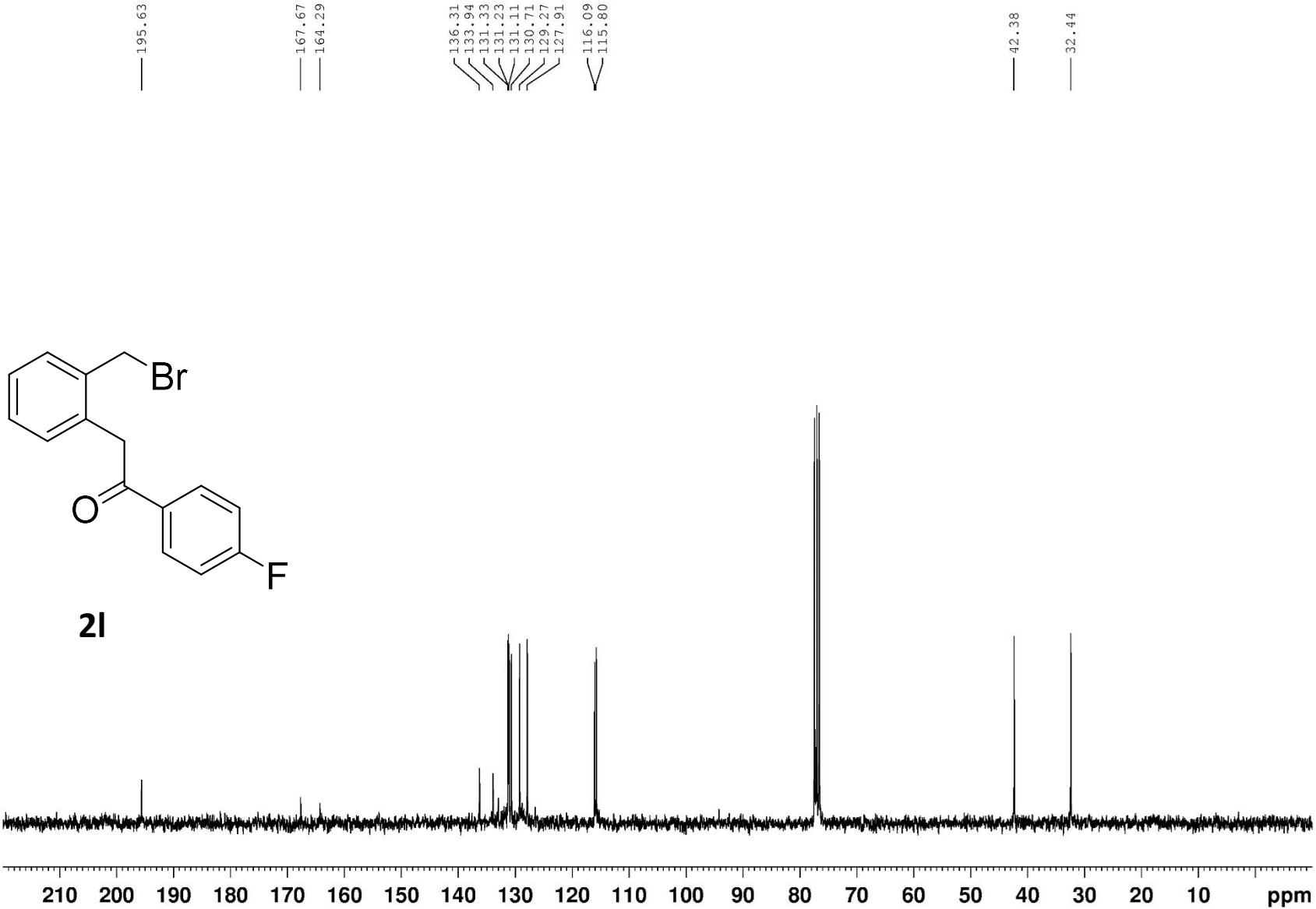
$^1\text{H}$  NMR of compound **2h** (300 MHz,  $\text{CDCl}_3$ )



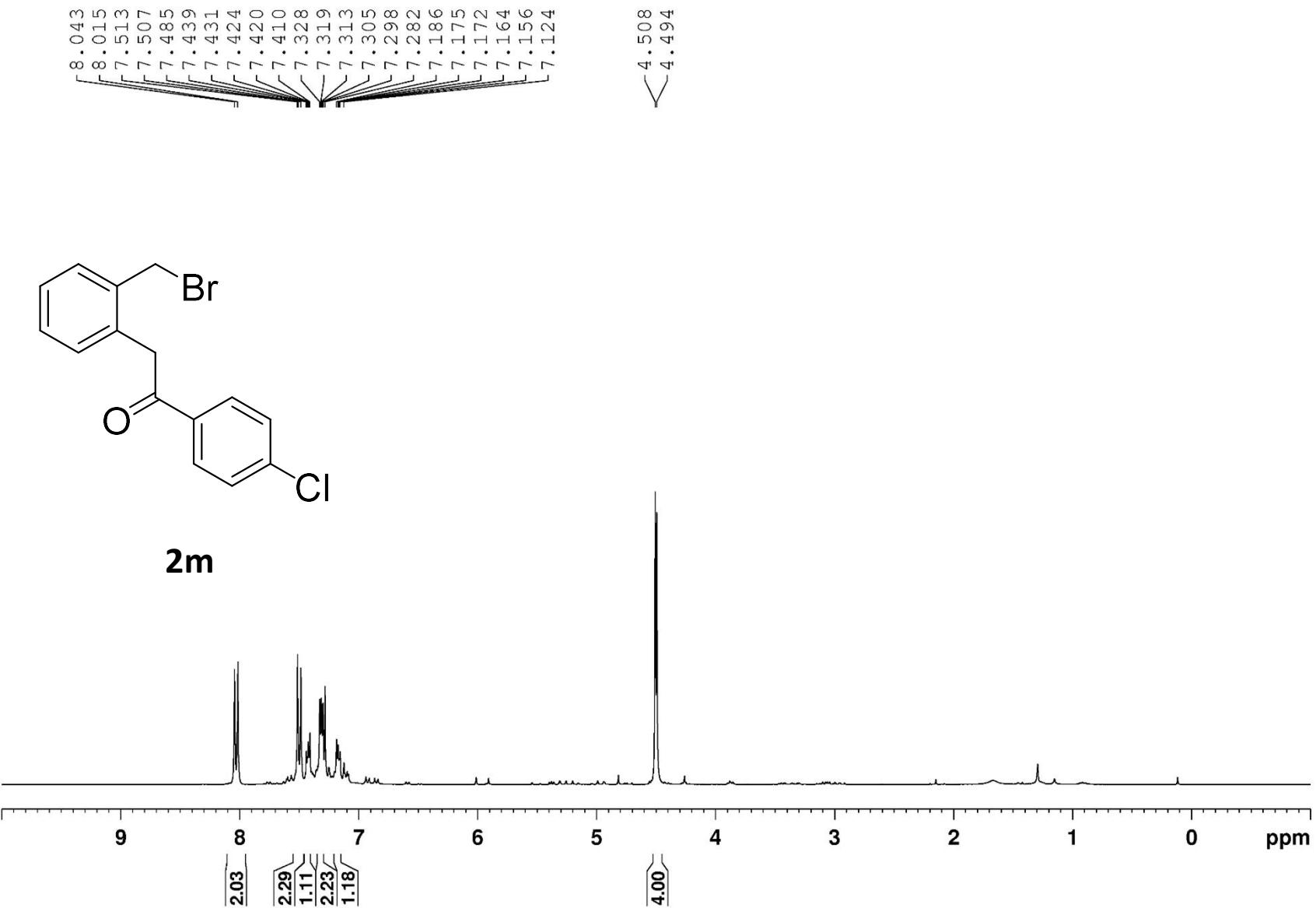
$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **2h** (75 MHz,  $\text{CDCl}_3$ )



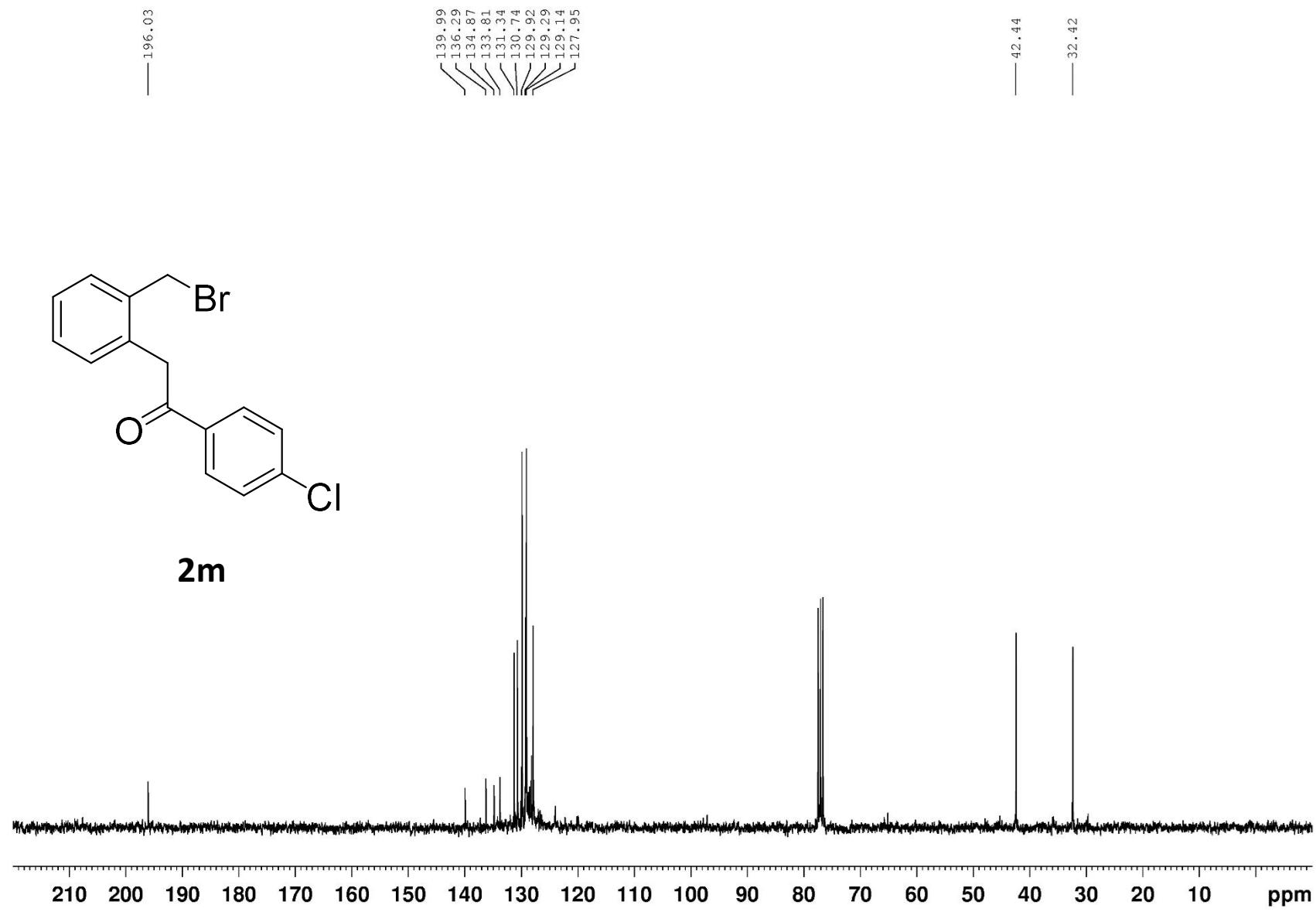
<sup>1</sup>H NMR of compound **2l** (300 MHz, CDCl<sub>3</sub>)



$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **2l** (75 MHz,  $\text{CDCl}_3$ )



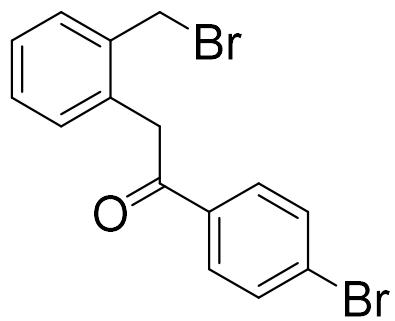
<sup>1</sup>H NMR of compound **2m** (300 MHz, CDCl<sub>3</sub>)



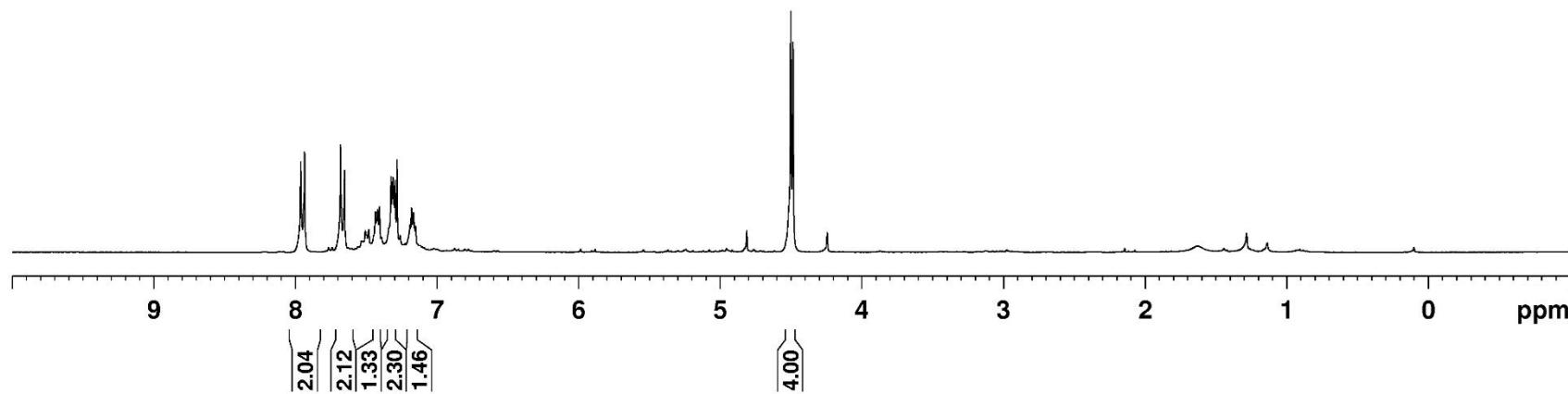
$^{13}\text{C}\{\text{H}\}$  NMR of compound **2m** (75 MHz,  $\text{CDCl}_3$ )

7.963  
7.935  
7.682  
7.653  
7.436  
7.428  
7.420  
7.417  
7.406  
7.325  
7.316  
7.311  
7.309  
7.295  
7.282  
7.191  
7.180  
7.169  
7.166  
7.150

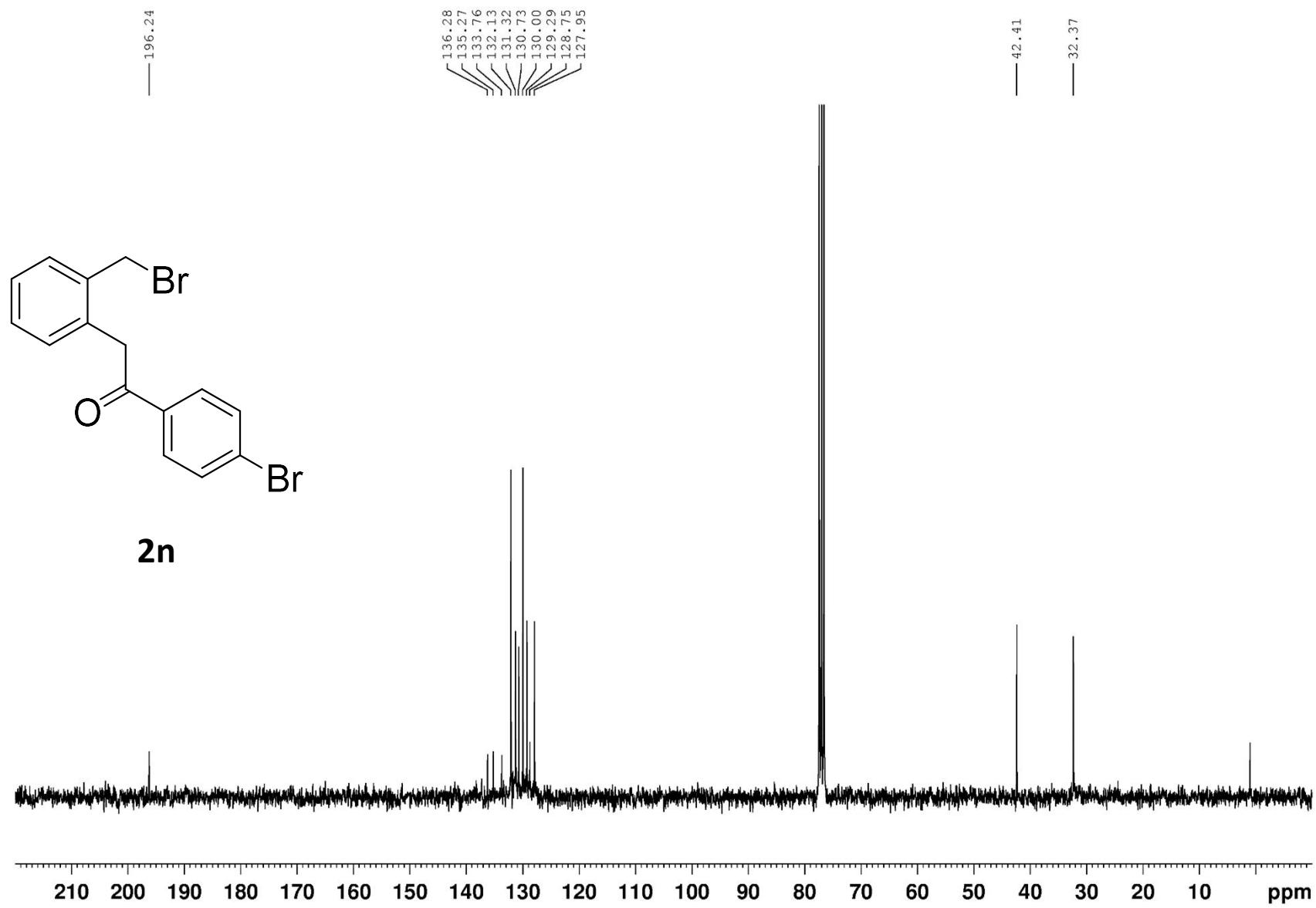
4.502  
4.485



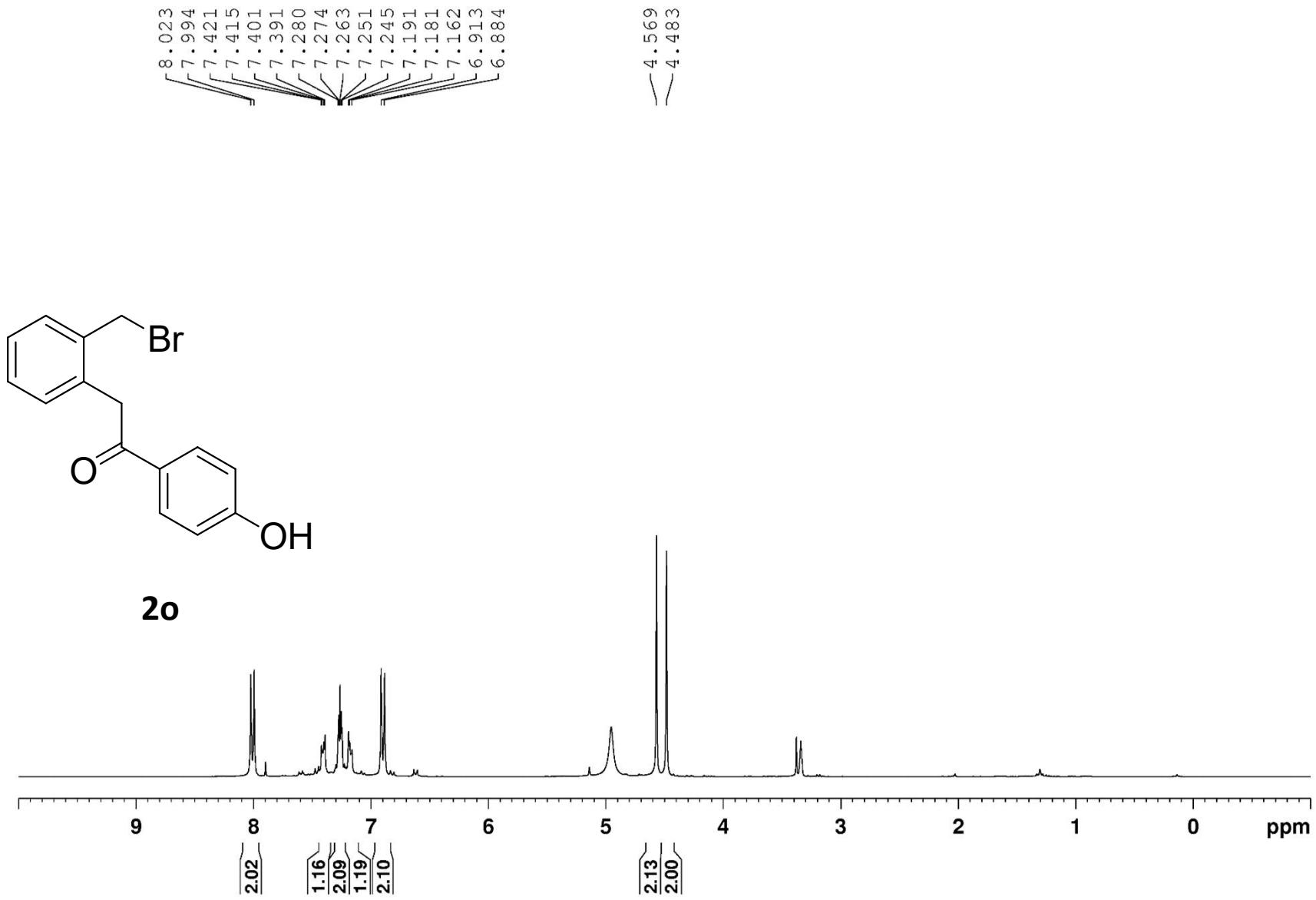
**2n**



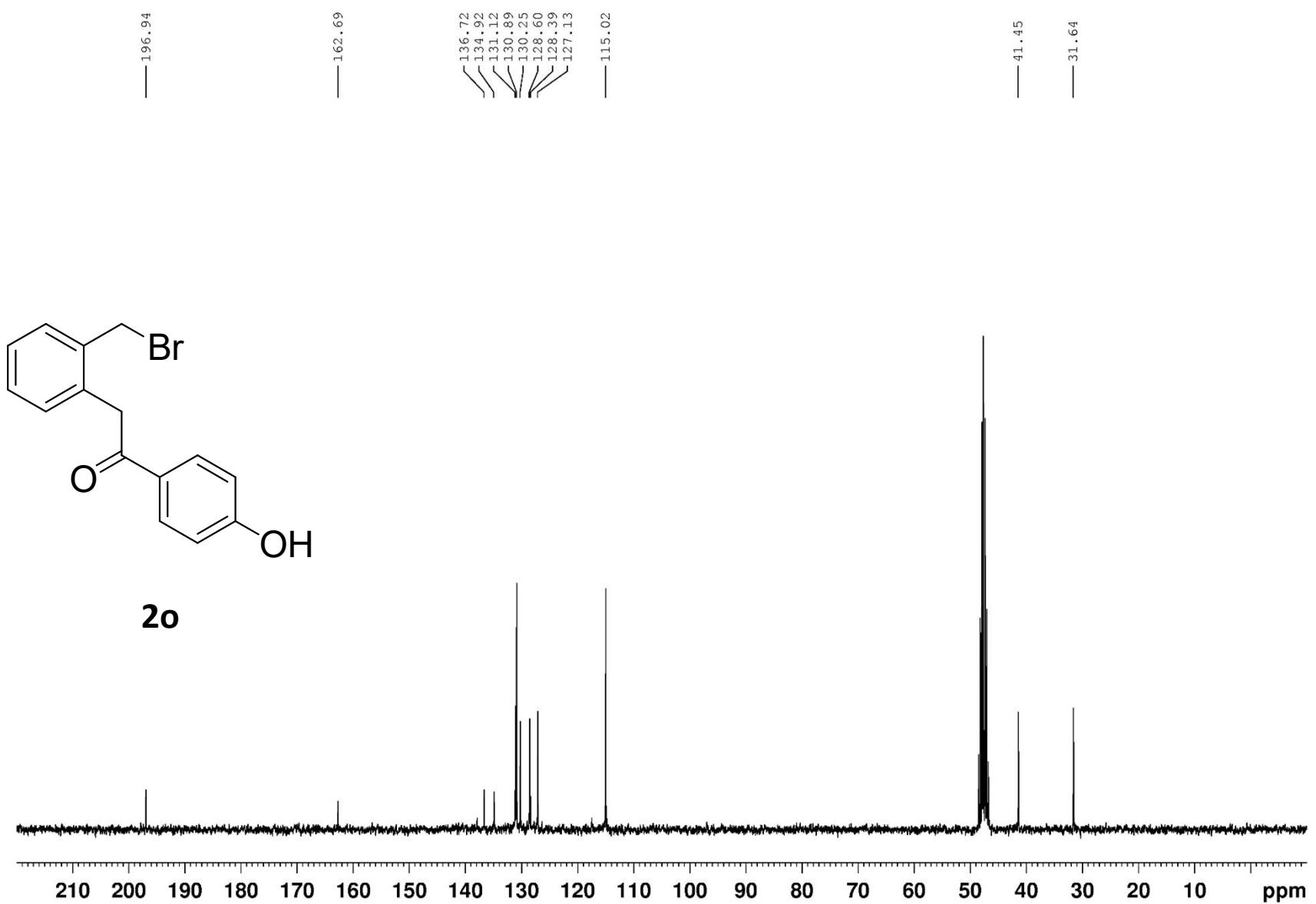
<sup>1</sup>H NMR of compound **2n** (300 MHz, CDCl<sub>3</sub>)



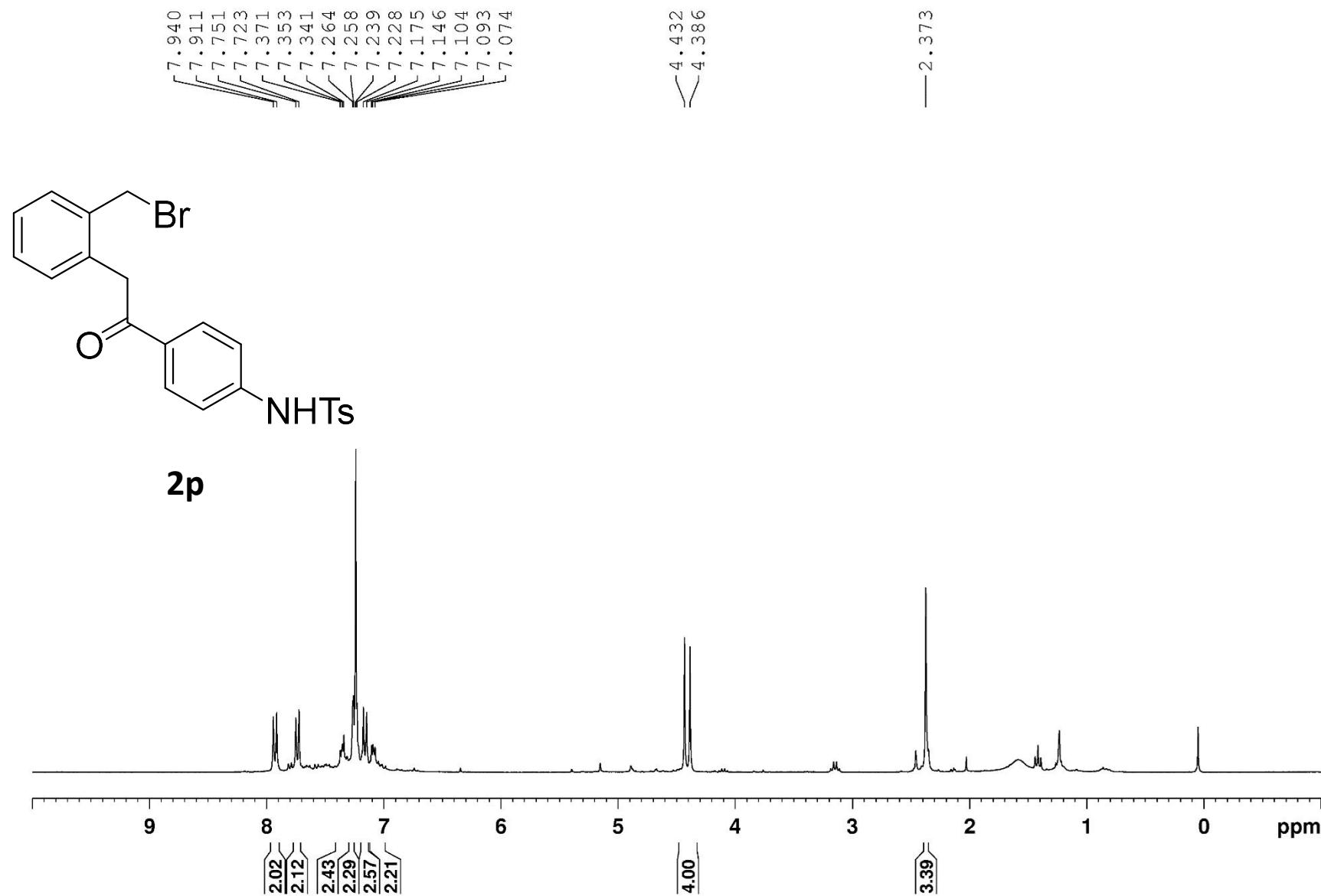
$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **2n** (75 MHz,  $\text{CDCl}_3$ )



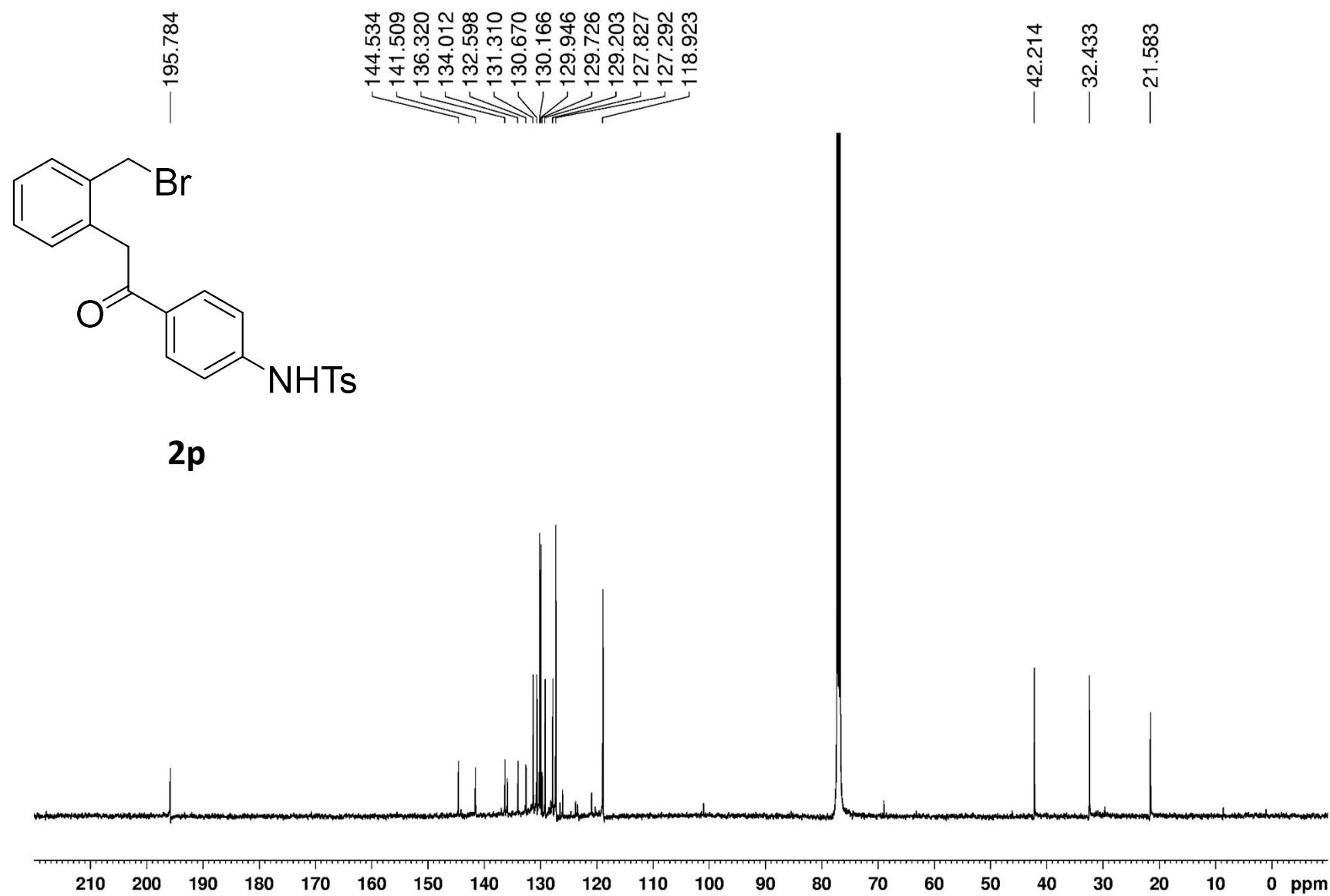
$^1\text{H}$  NMR of compound **2o** (300 MHz,  $\text{CD}_3\text{OD}$ )



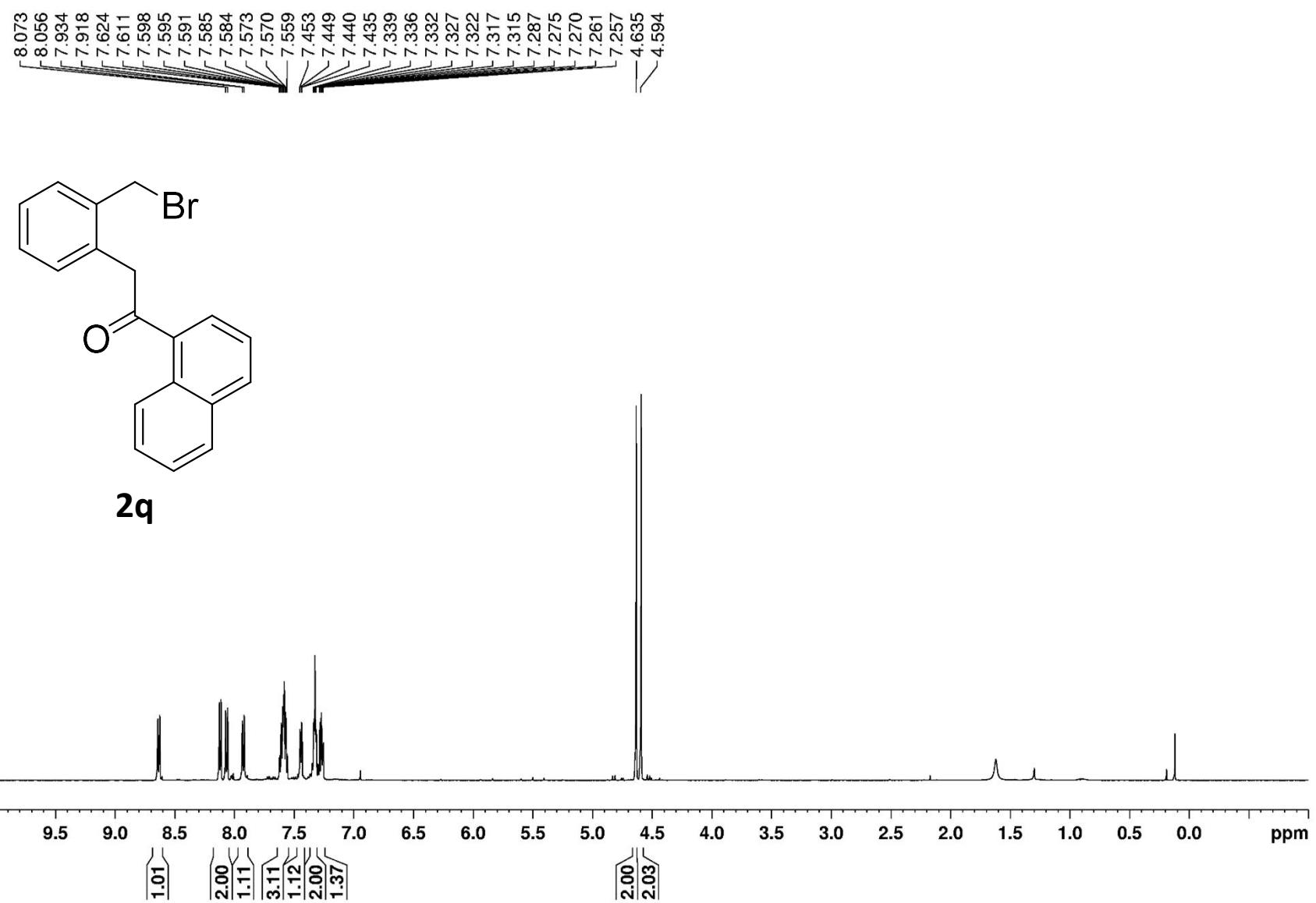
$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **2o** (75 MHz,  $\text{CD}_3\text{OD}$ )



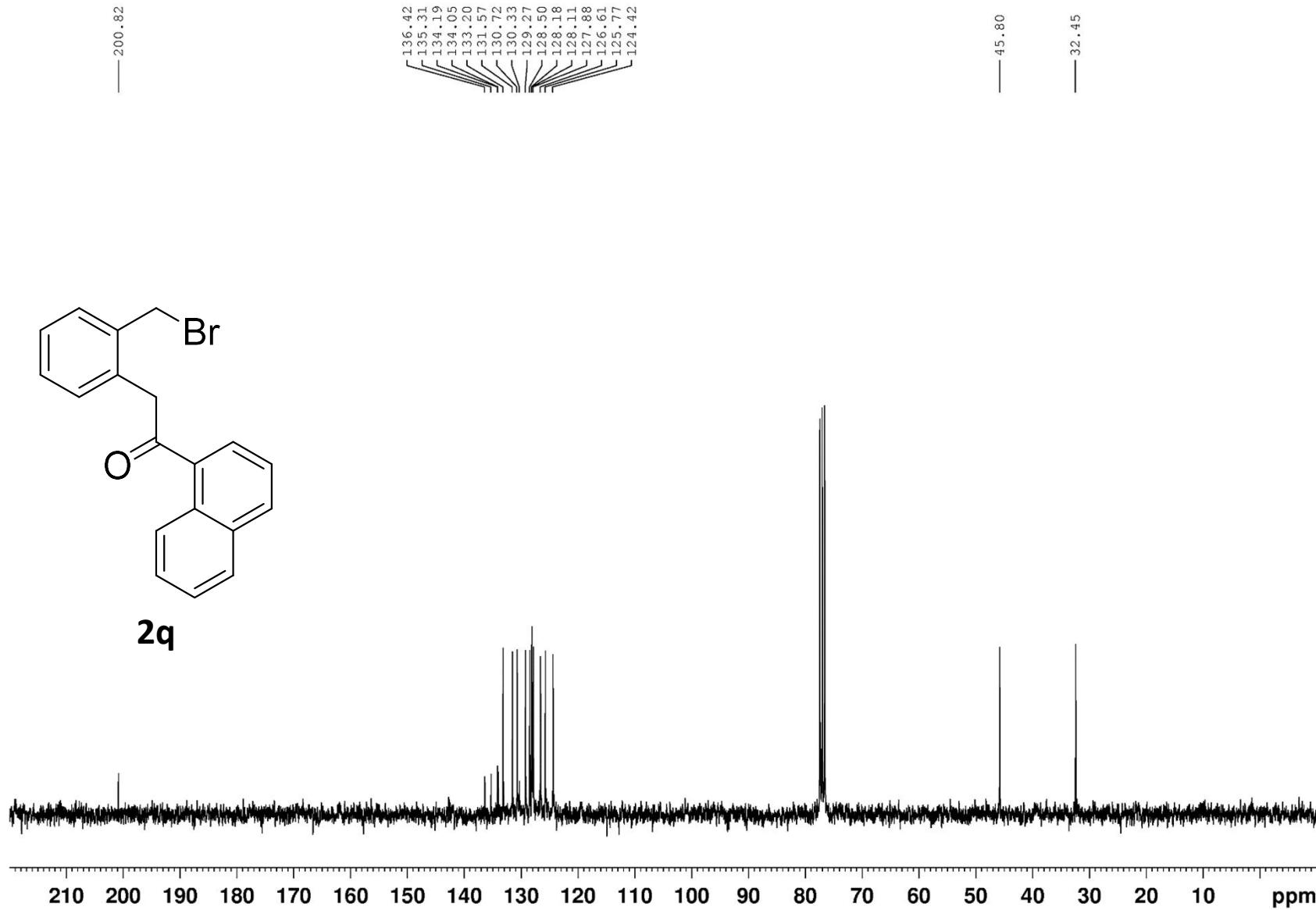
$^1\text{H}$  NMR of compound **2p** (300 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **2p** (75 MHz,  $\text{CDCl}_3$ )

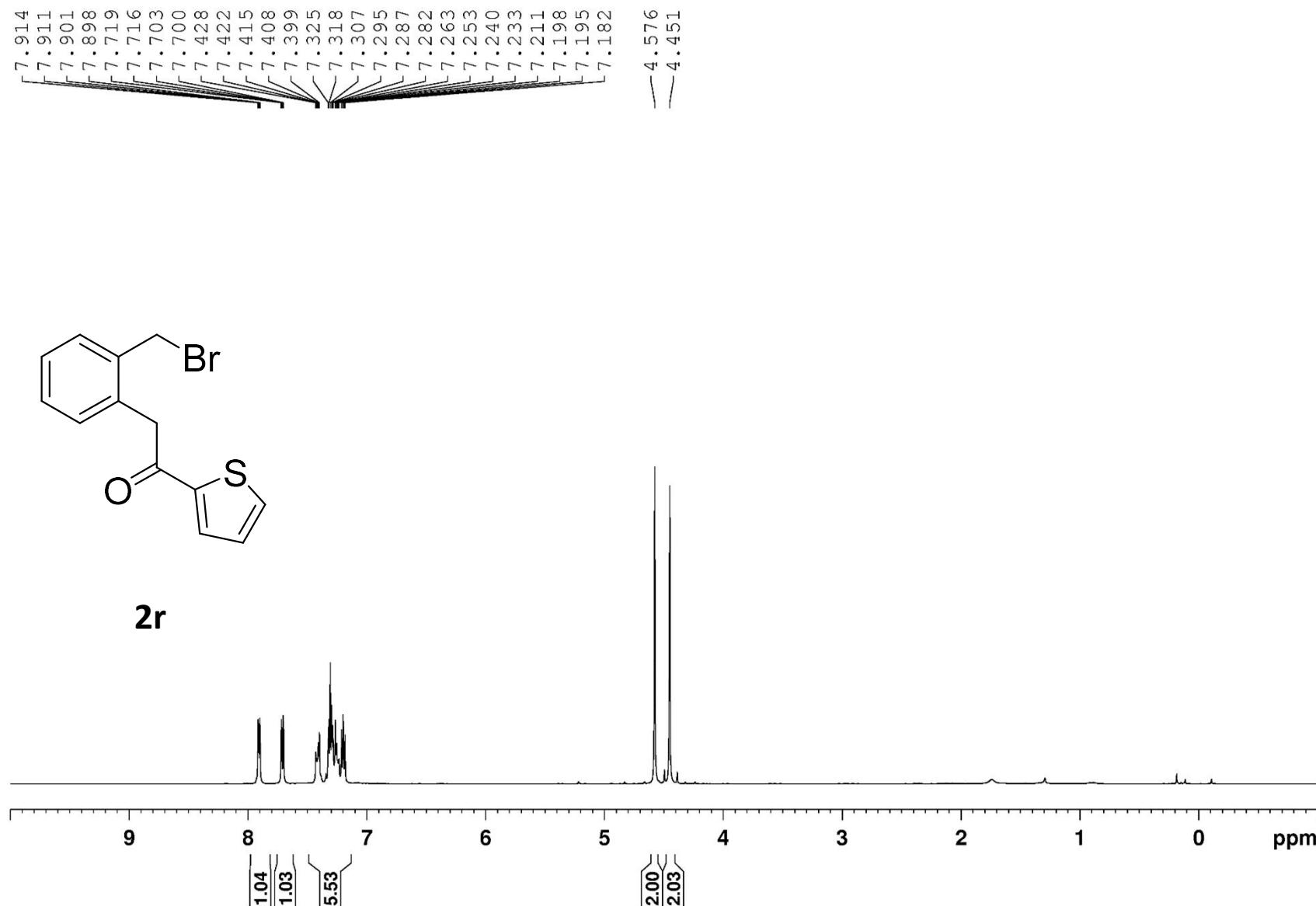


<sup>1</sup>H NMR of compound **2q** (300 MHz, CDCl<sub>3</sub>)

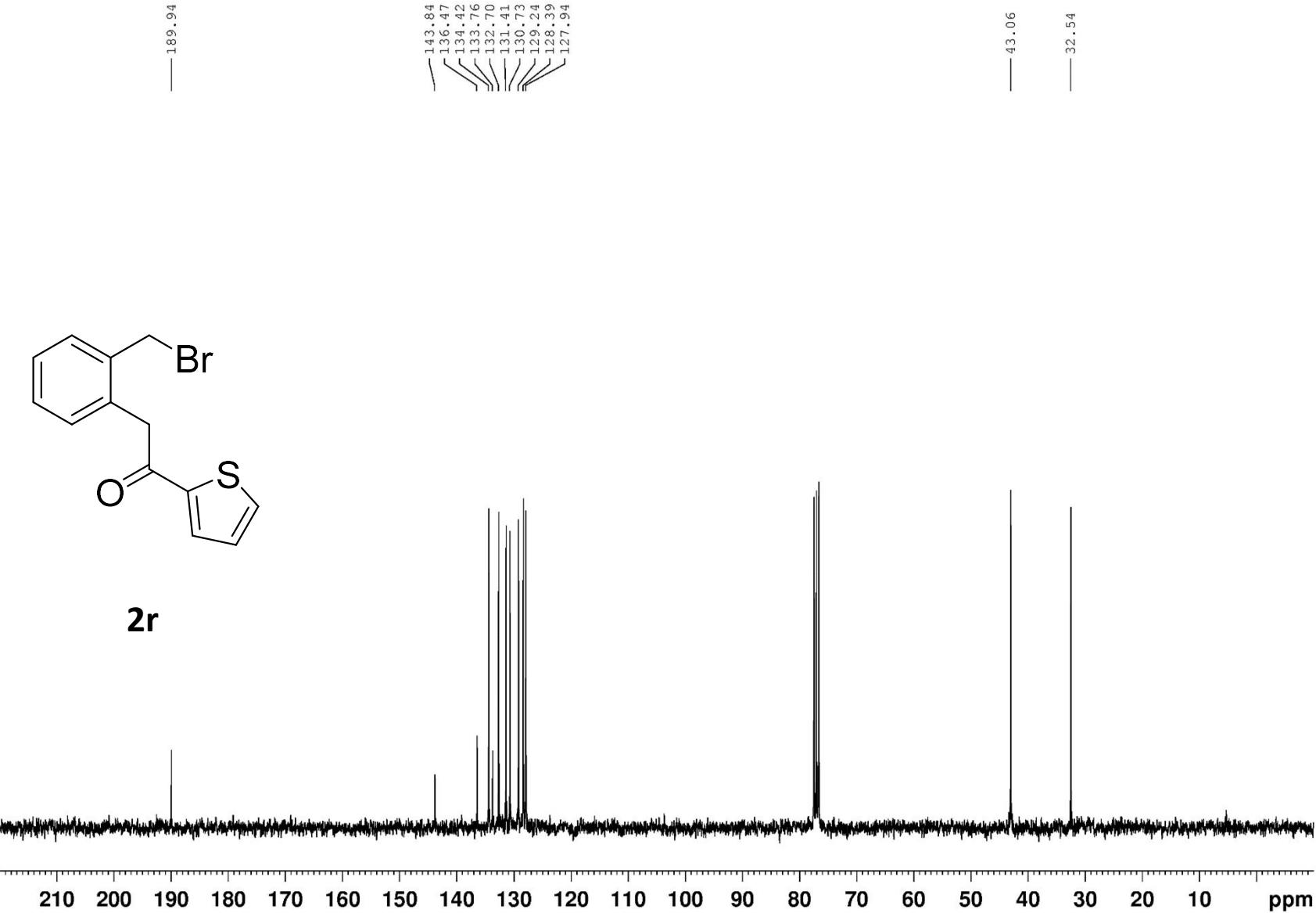


$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **2q** (75 MHz,  $\text{CDCl}_3$ )

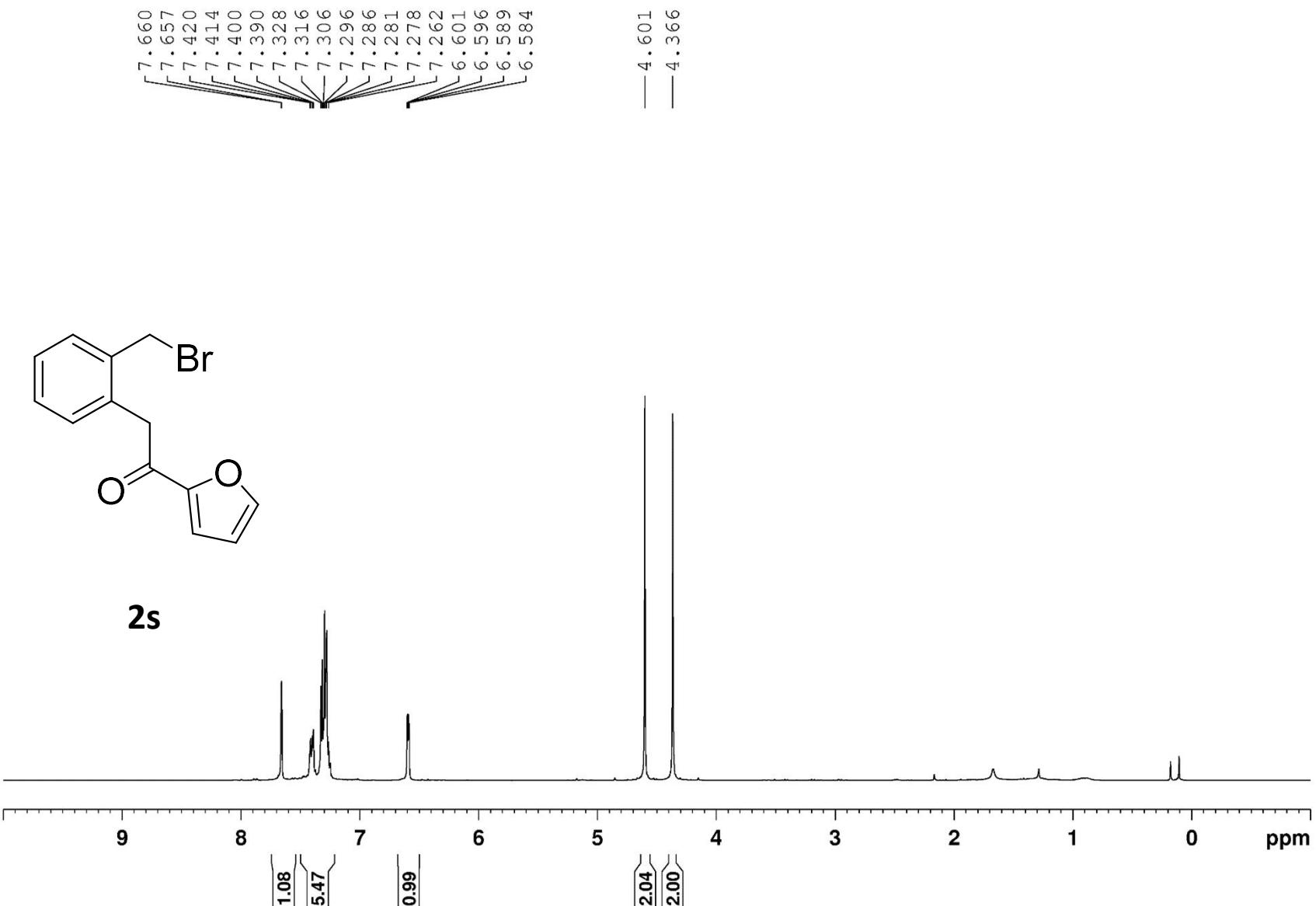
300MHz



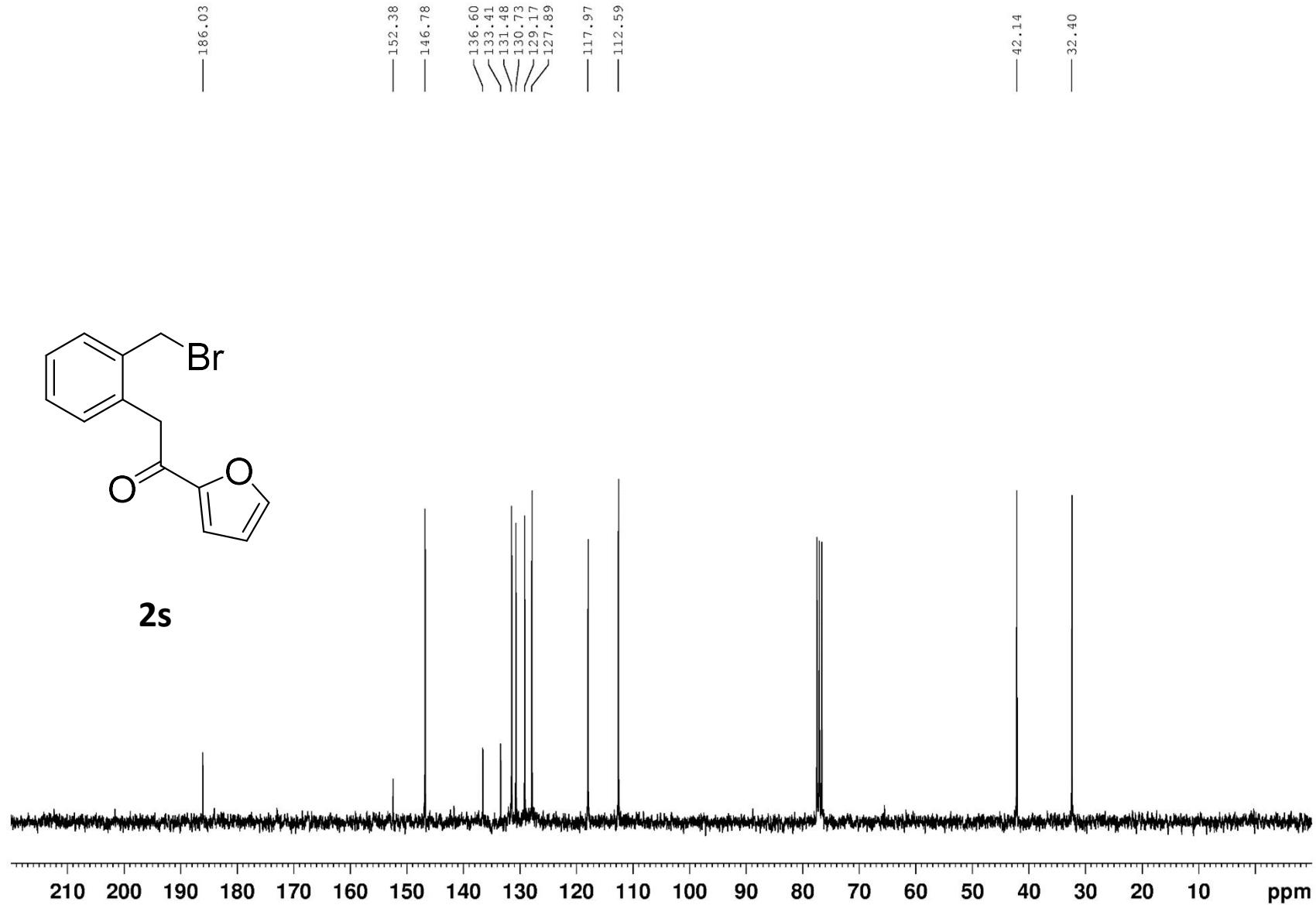
<sup>1</sup>H NMR of compound **2r** (300 MHz, CDCl<sub>3</sub>)



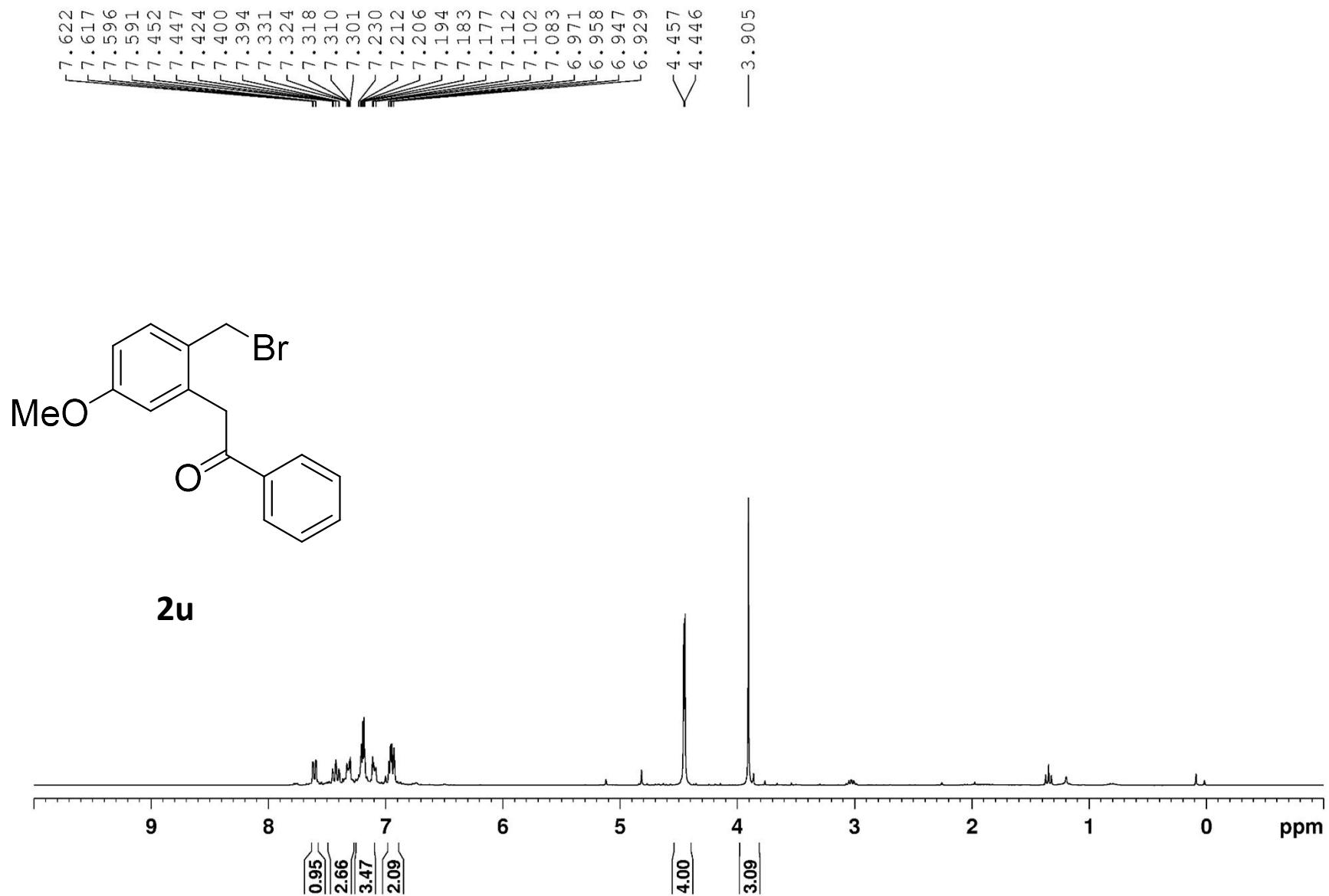
$^{13}\text{C}\{\text{H}\}$  NMR of compound **2r** (75 MHz,  $\text{CDCl}_3$ )



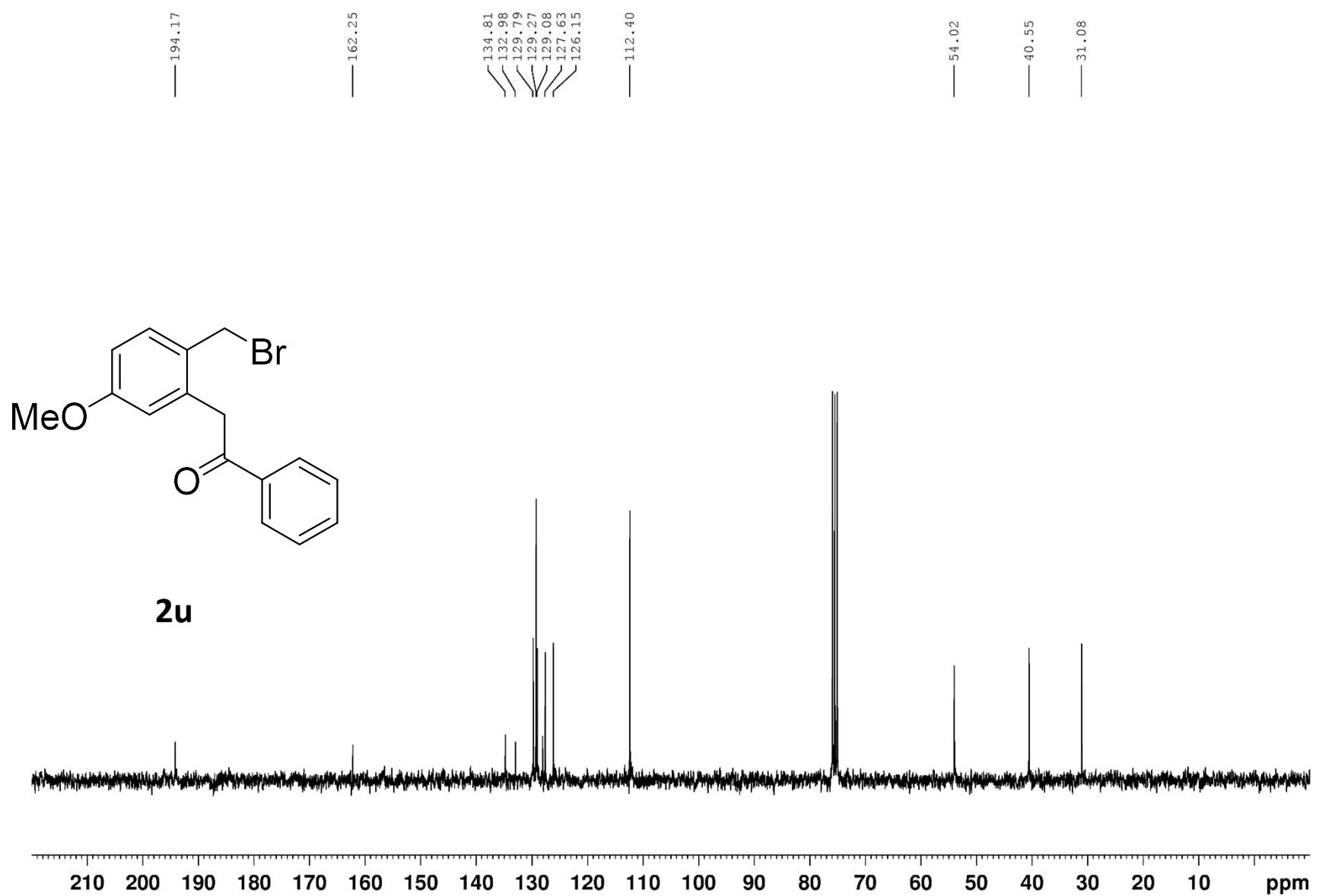
$^1\text{H}$  NMR of compound **2s** (300 MHz,  $\text{CDCl}_3$ )



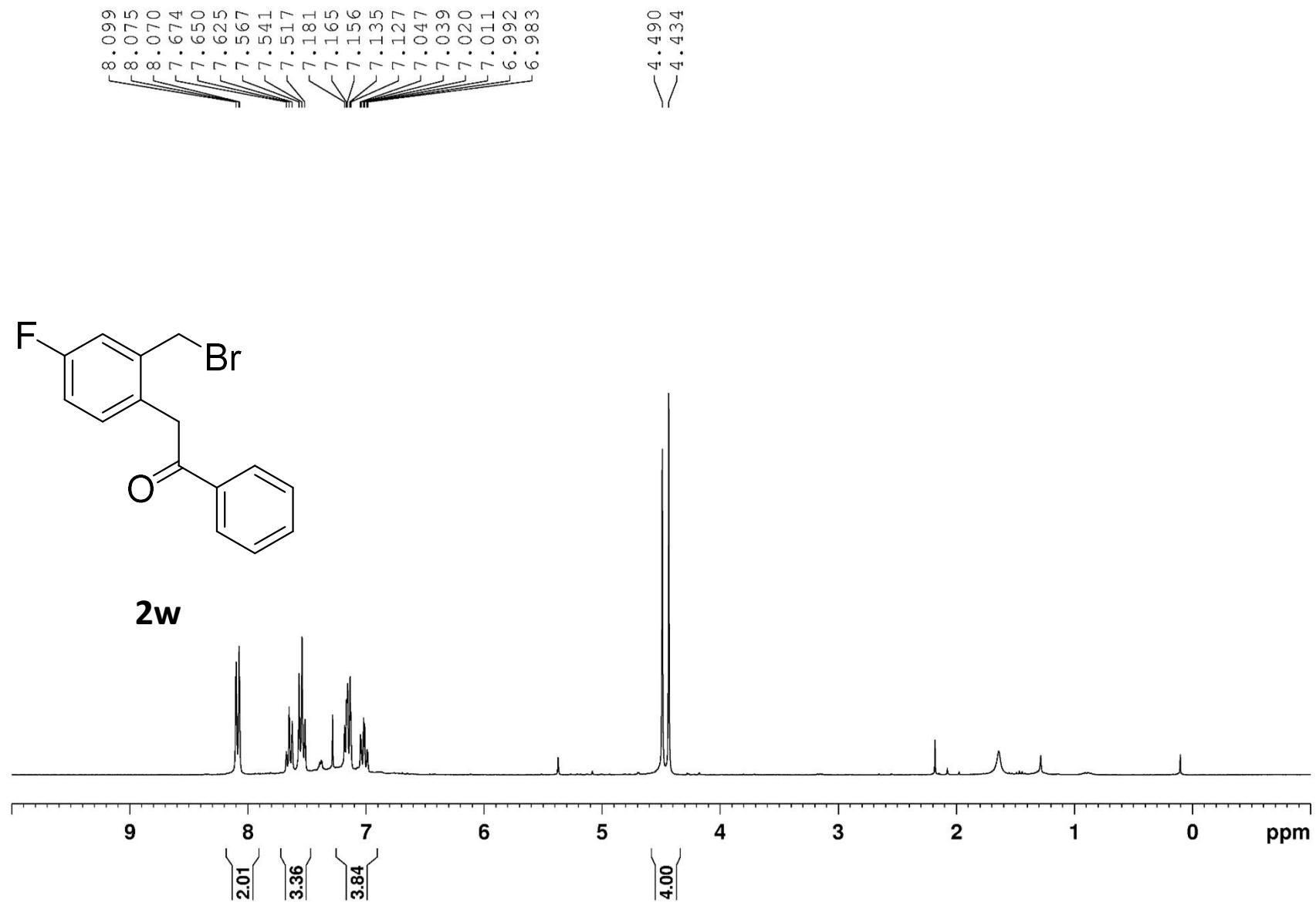
$^{13}\text{C}\{\text{H}\}$  NMR of compound **2s** (75 MHz,  $\text{CDCl}_3$ )



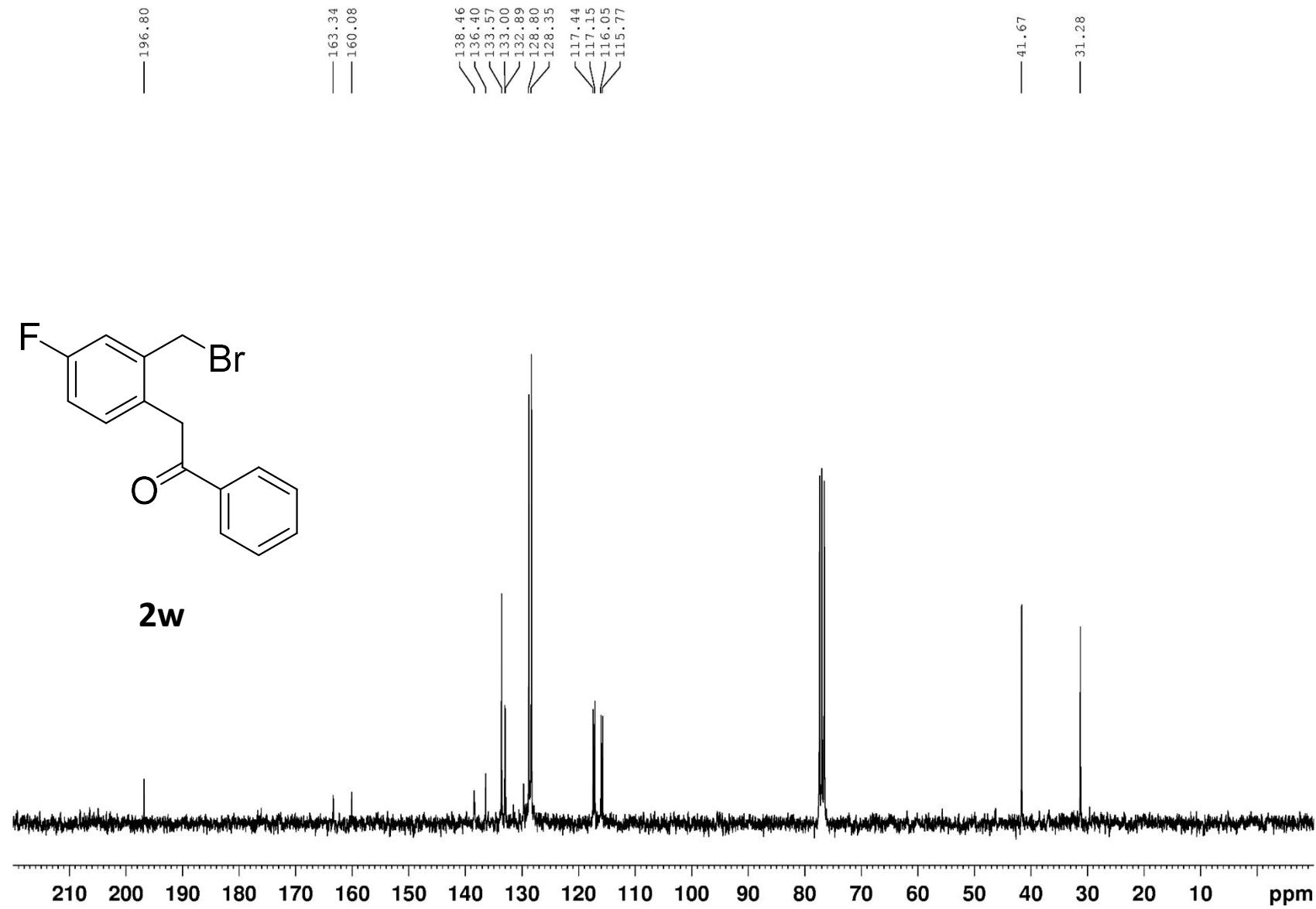
<sup>1</sup>H NMR of compound **2u** (300 MHz, CDCl<sub>3</sub>)



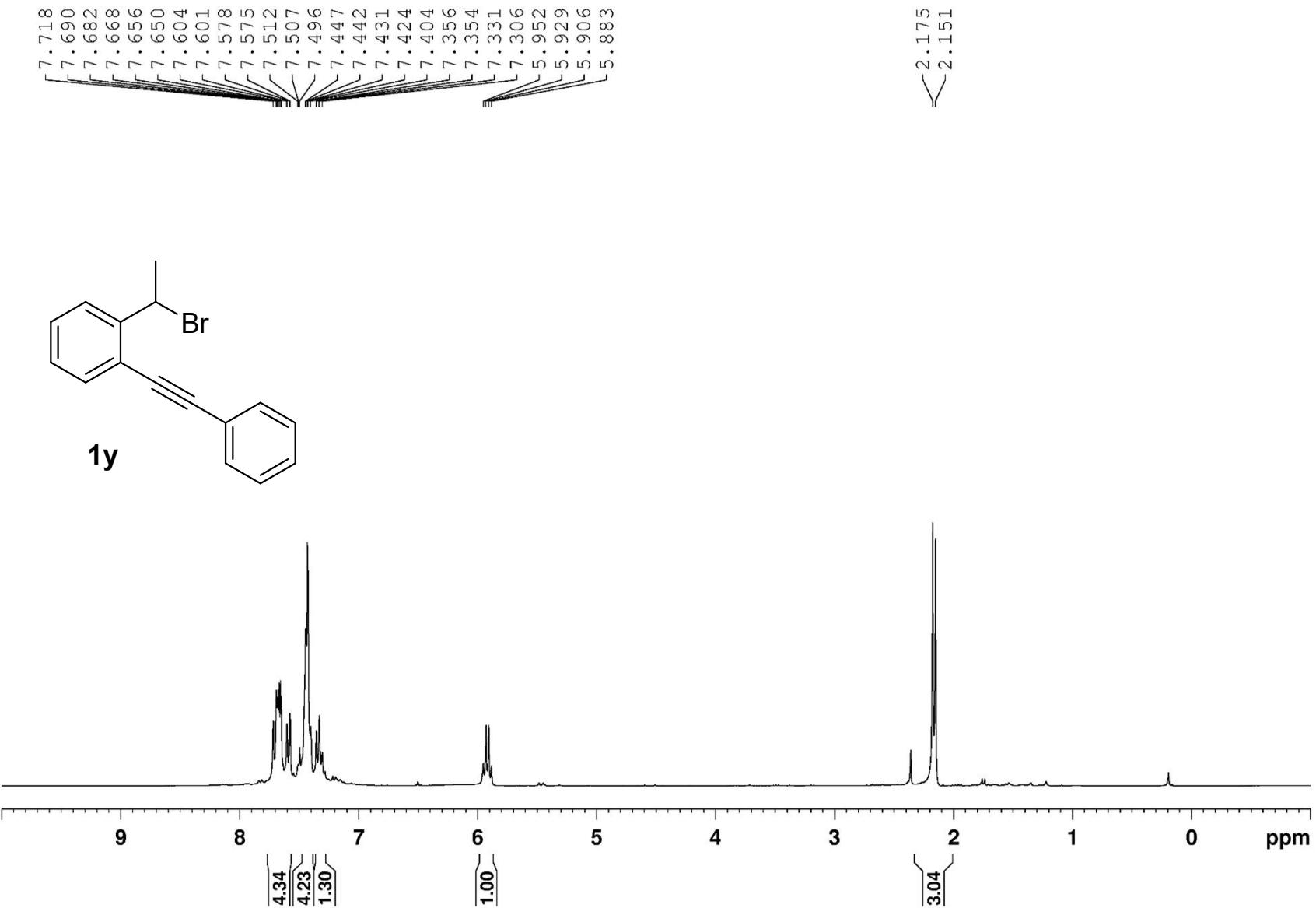
$^{13}\text{C}\{\text{H}\}$  NMR of compound **2u** (75 MHz,  $\text{CDCl}_3$ )



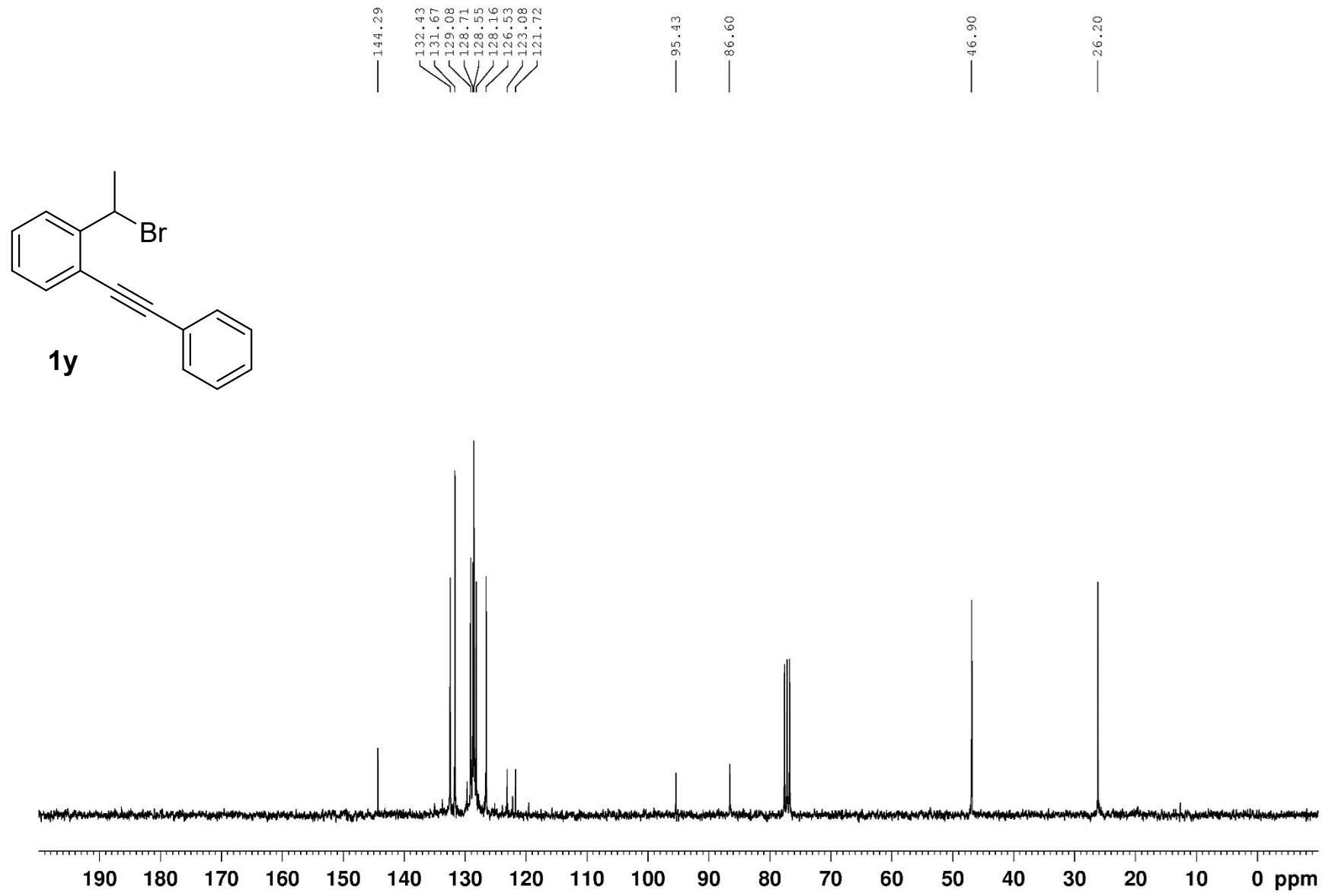
$^1\text{H}$  NMR of compound **2w** (300 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **2w** (75 MHz,  $\text{CDCl}_3$ )

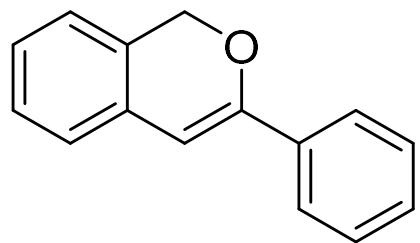


$^1\text{H}$  NMR of compound **1y** (300 MHz,  $\text{CDCl}_3$ )

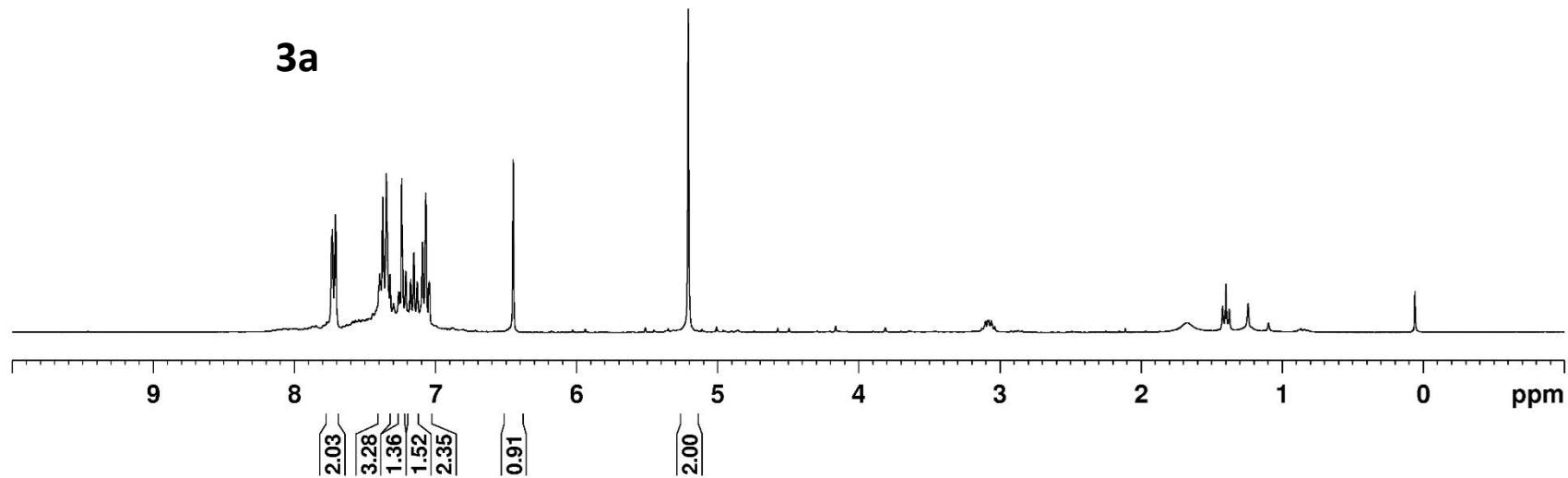


$^{13}\text{C}\{\text{H}\}$  NMR of compound **1y** (75 MHz,  $\text{CDCl}_3$ )

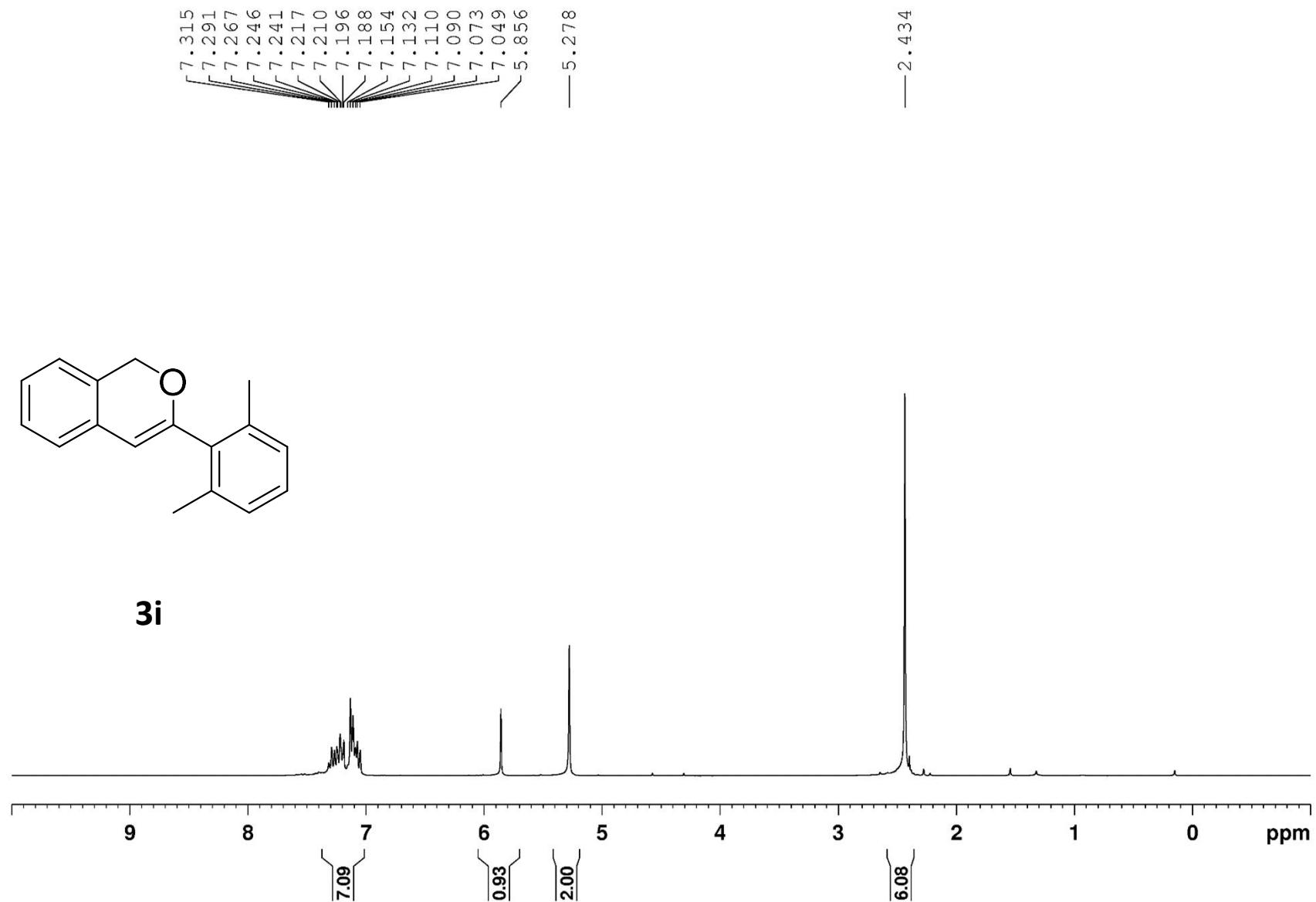
7.731  
7.709  
7.705  
7.444  
7.422  
7.402  
7.394  
7.389  
7.374  
7.348  
7.343  
7.331  
7.321  
7.306  
7.296  
7.260  
7.239  
7.212  
7.196  
7.179  
7.176  
7.155  
7.152  
7.130  
7.127  
7.093  
7.068  
7.045  
6.449  
5.208



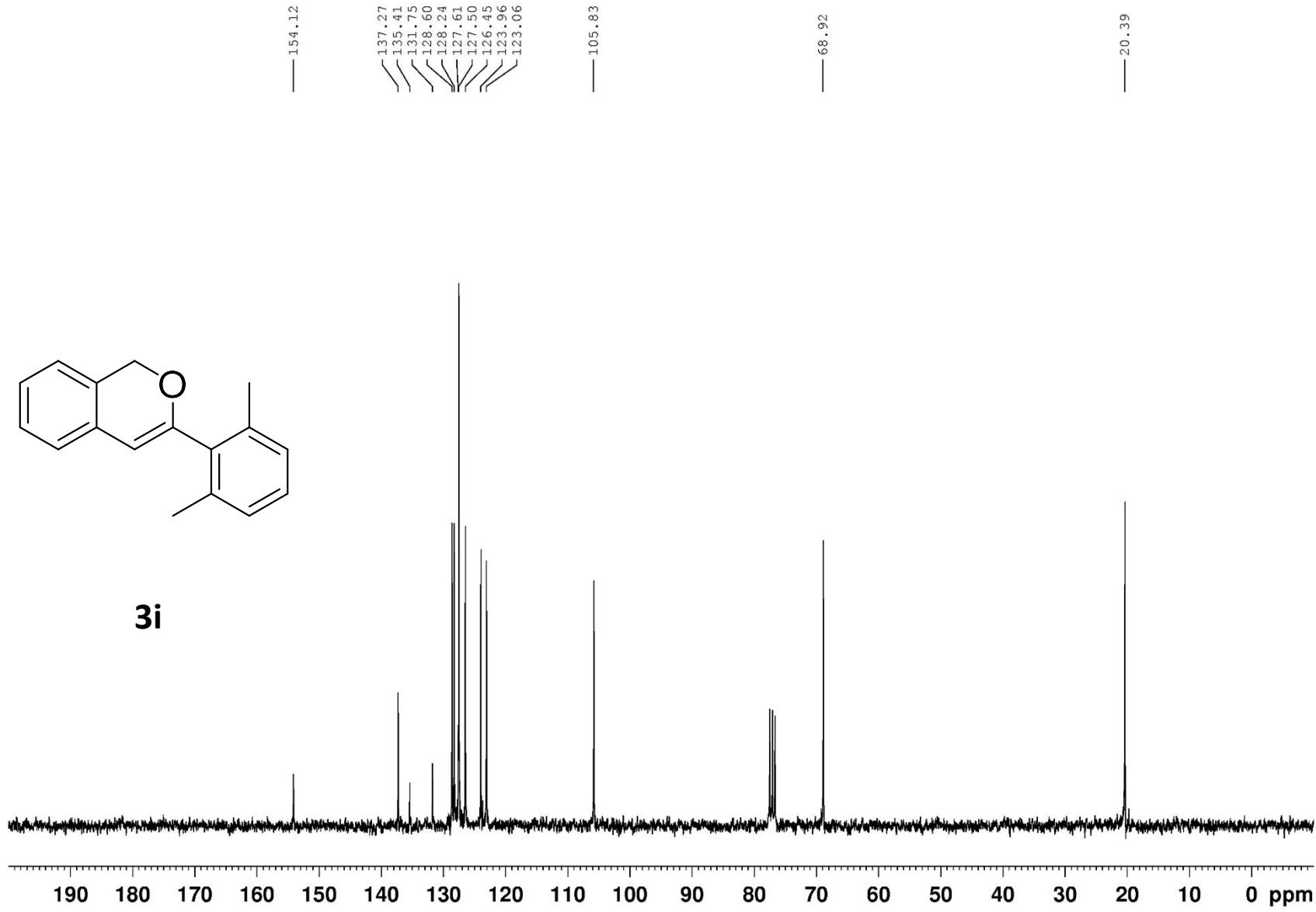
**3a**



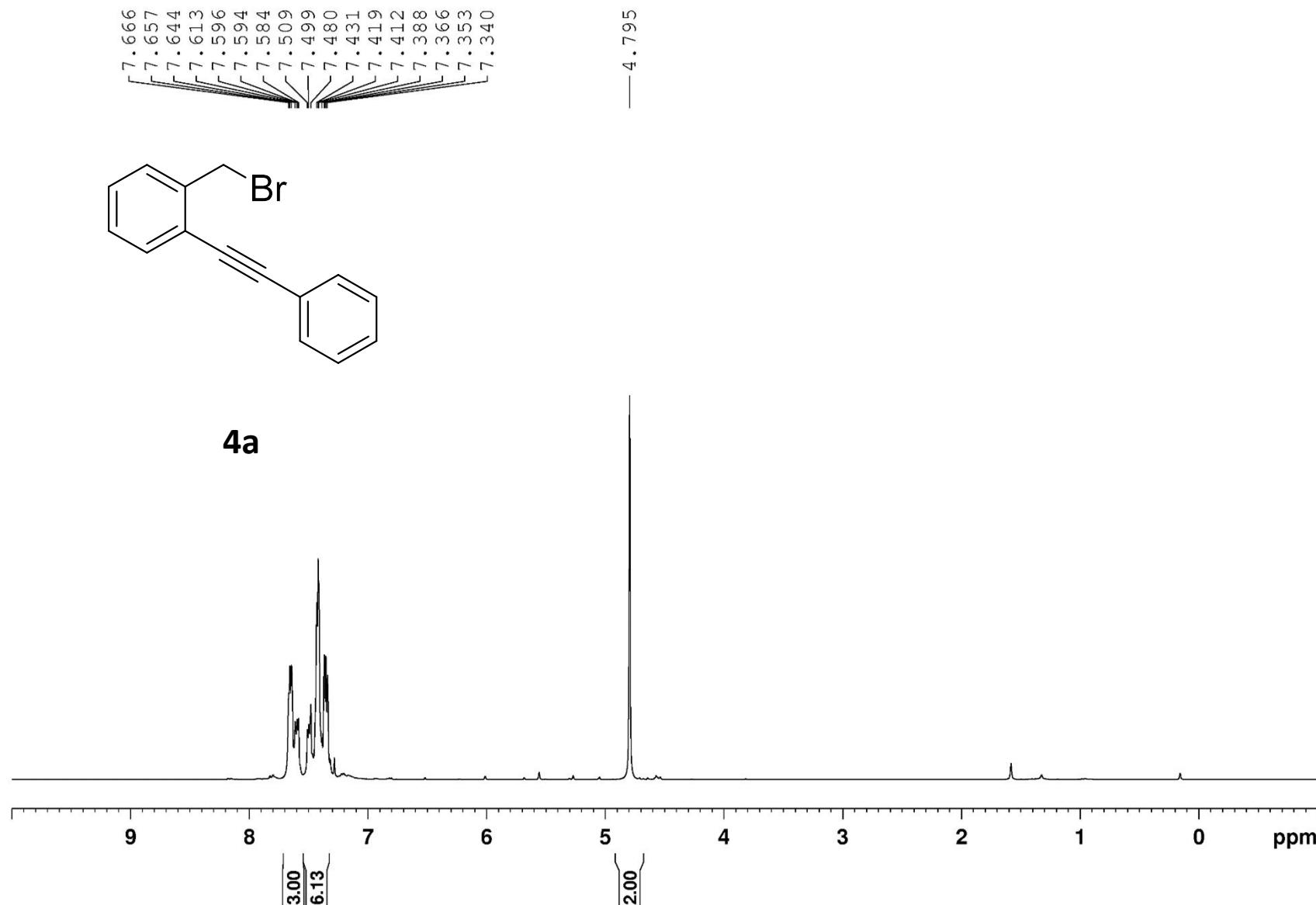
<sup>1</sup>H NMR of compound 3a (300 MHz, CDCl<sub>3</sub>)



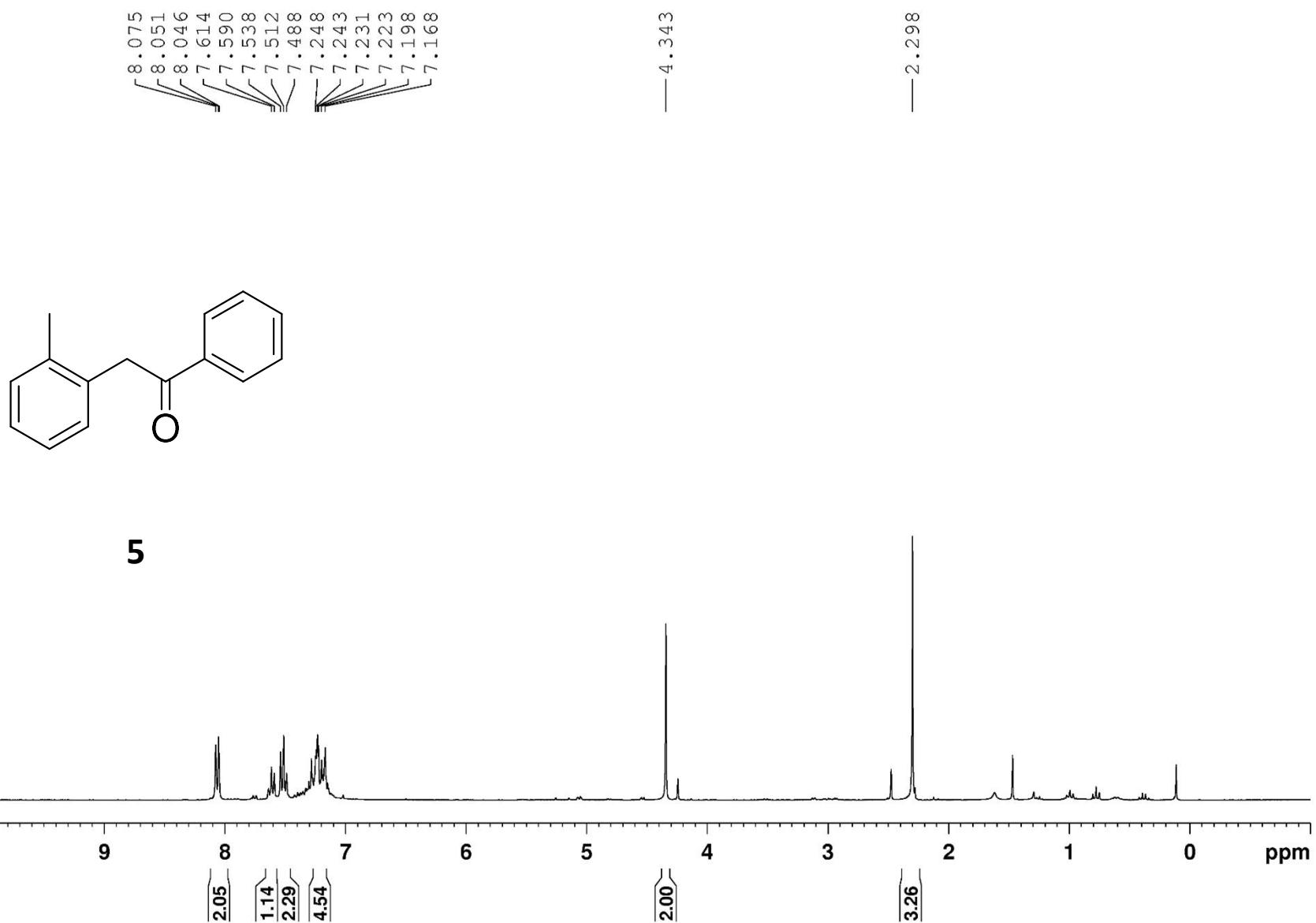
$^1\text{H}$  NMR of compound **3i** (300 MHz,  $\text{CDCl}_3$ )



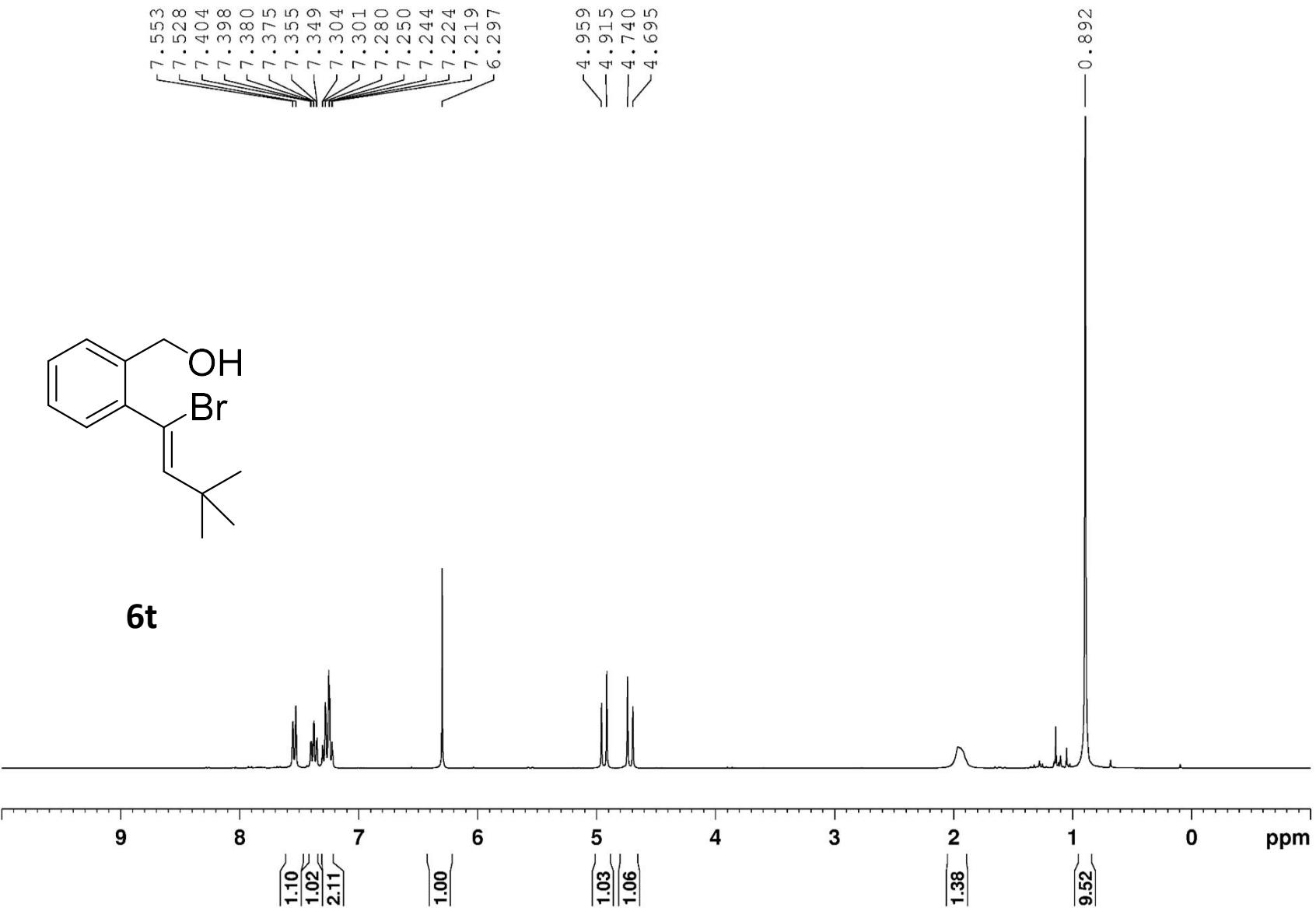
$^{13}\text{C}\{^1\text{H}\}$  NMR of compound **3i** (75 MHz,  $\text{CDCl}_3$ )



$^1\text{H}$  NMR of compound **4a** (300 MHz,  $\text{CDCl}_3$ )

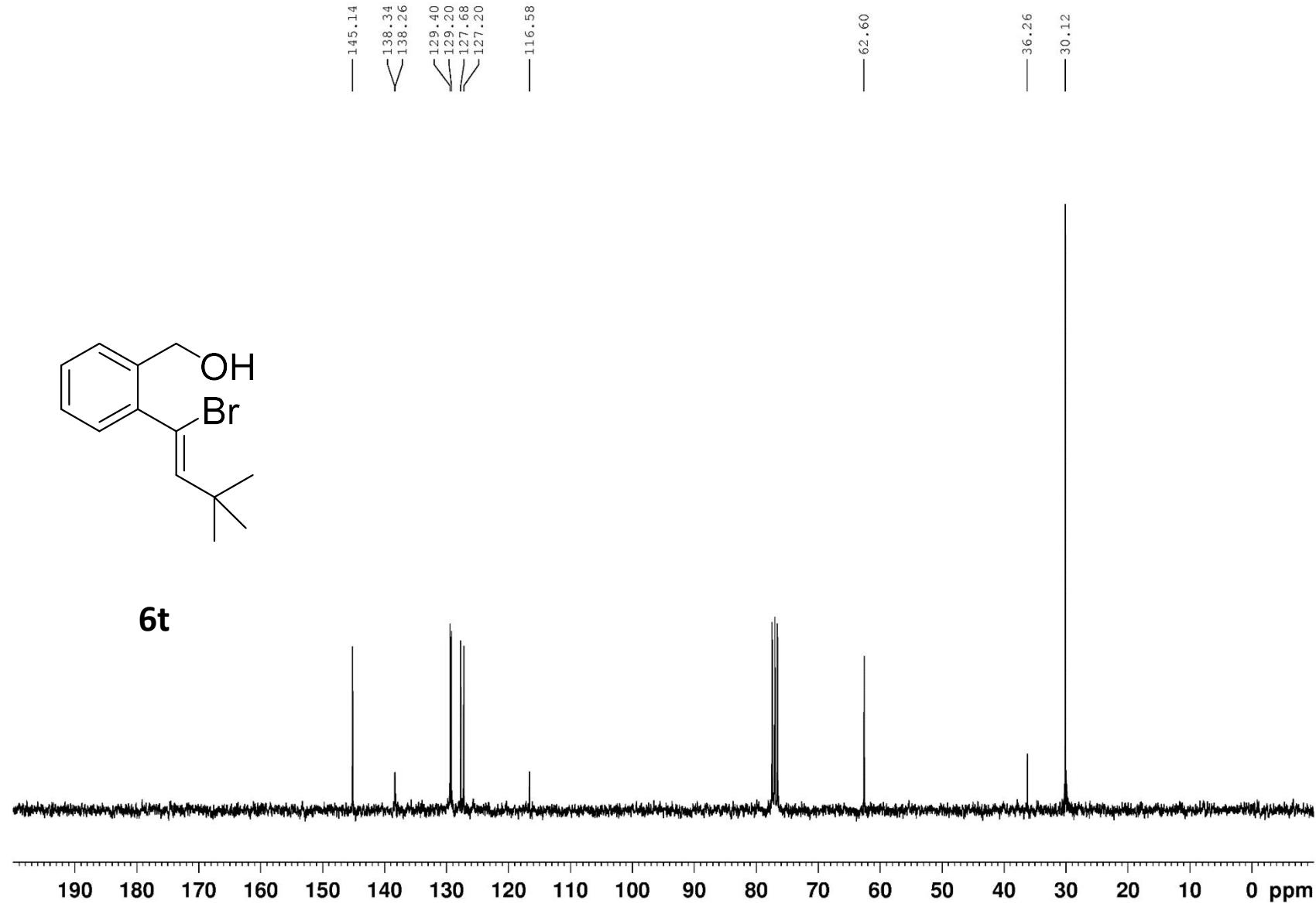


$^1\text{H}$  NMR of compound 5 (300 MHz,  $\text{CDCl}_3$ )

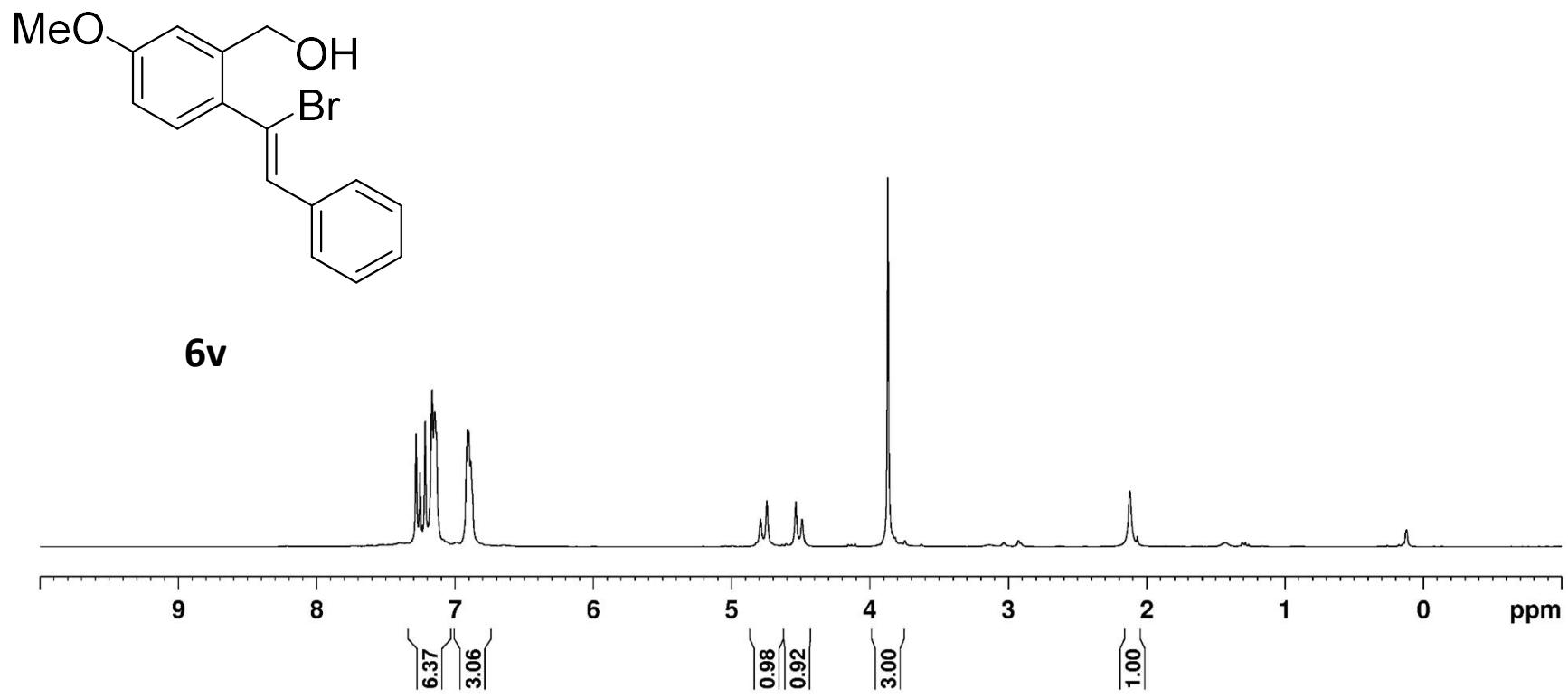


$^1\text{H}$  NMR of compound **6t** (300 MHz,  $\text{CDCl}_3$ )

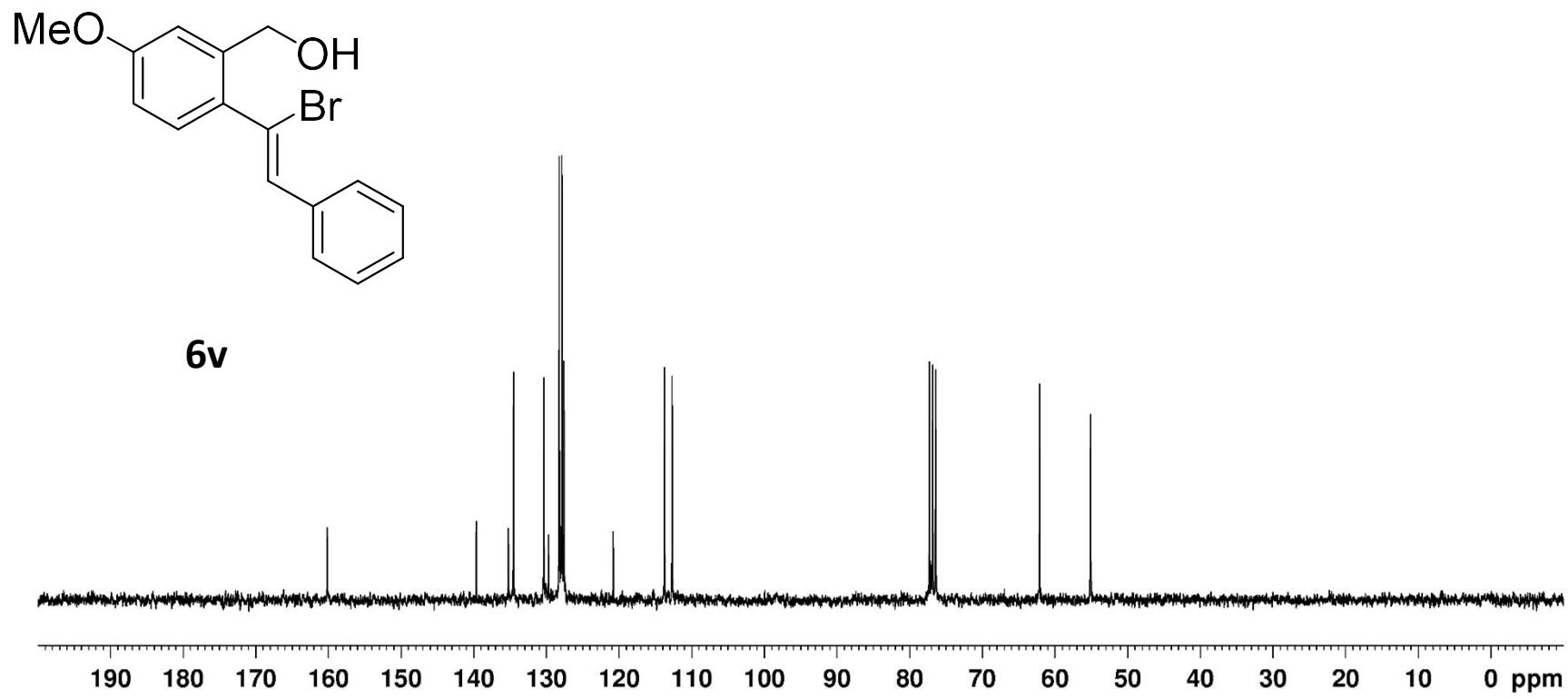
300MHz



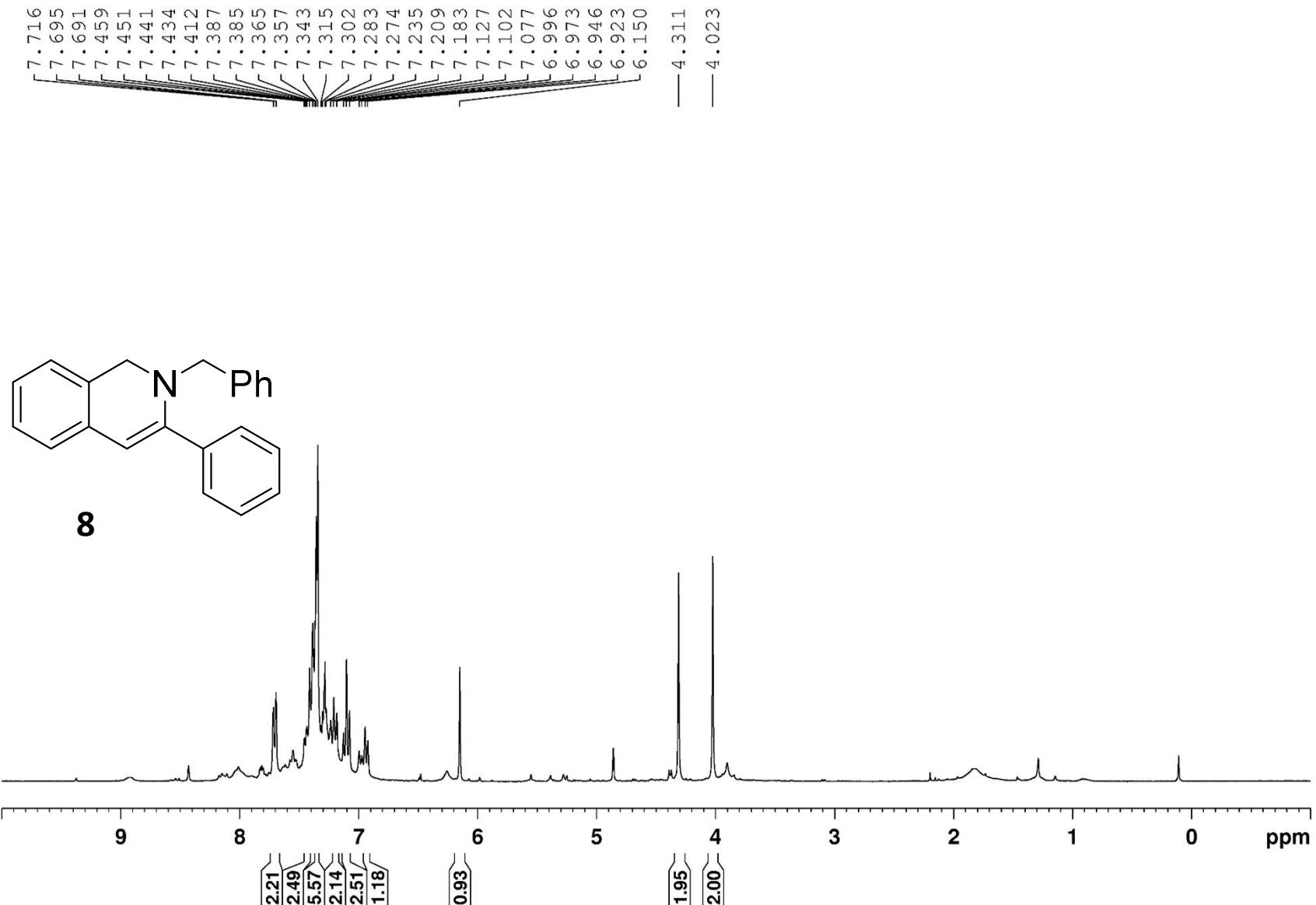
$^{13}\text{C}\{\text{H}\}$  NMR of compound **6t** (75 MHz,  $\text{CDCl}_3$ )



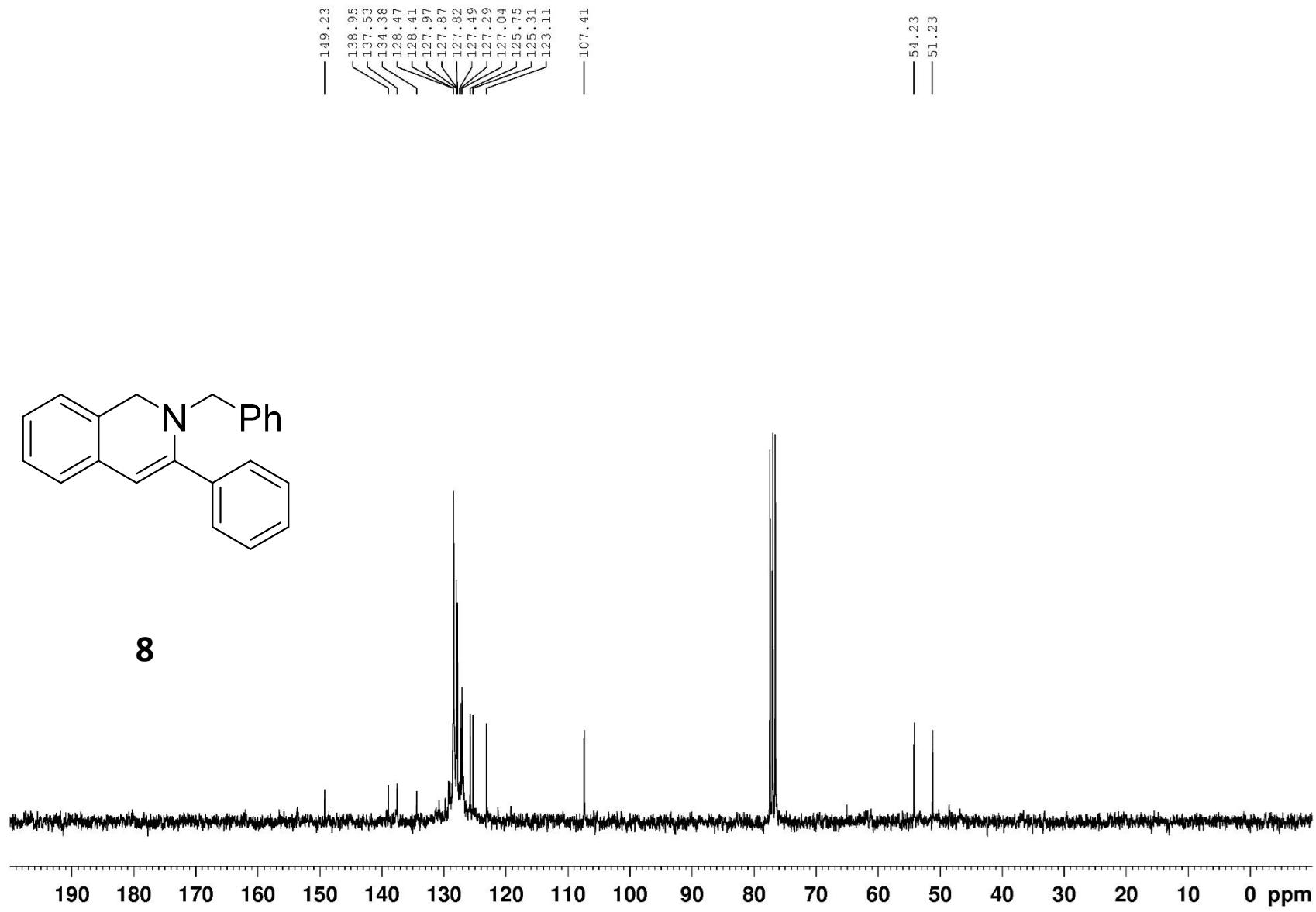
$^1\text{H}$  NMR of compound **6v** (300 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}\{\text{H}\}$  NMR of compound **6v** (75 MHz,  $\text{CDCl}_3$ )



$^1\text{H}$  NMR of compound **8** (300 MHz,  $\text{CDCl}_3$ )  
S62



<sup>13</sup>C{<sup>1</sup>H} NMR of compound 8 (75 MHz, CDCl<sub>3</sub>)