

## Supporting Information

# Tuning the Selectivity in Iridium-Catalyzed Acceptorless Dehydrogenative Coupling of Primary Alcohols

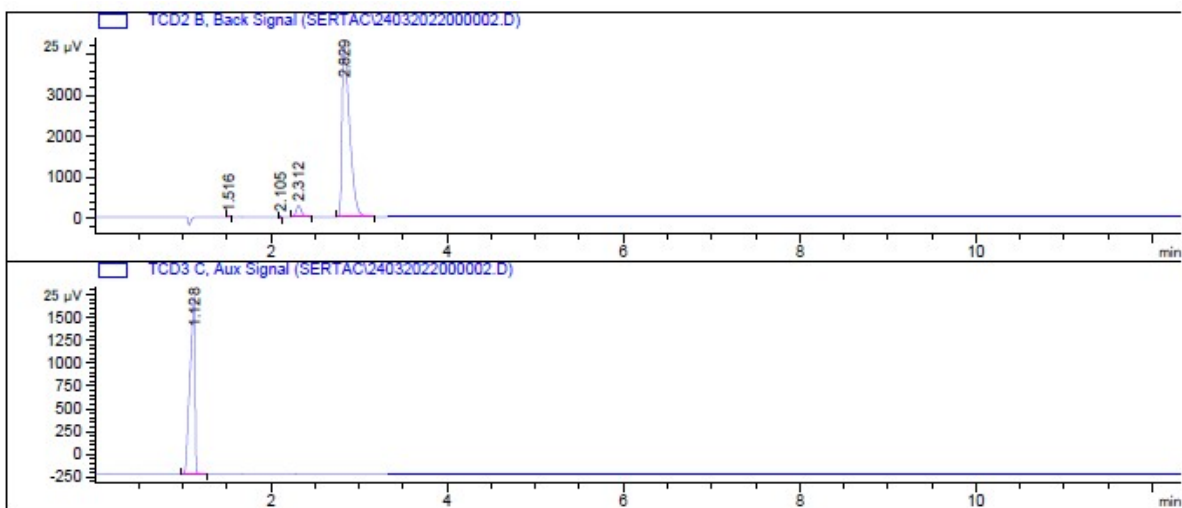
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Signal 2: TCD2 B, Back Signal

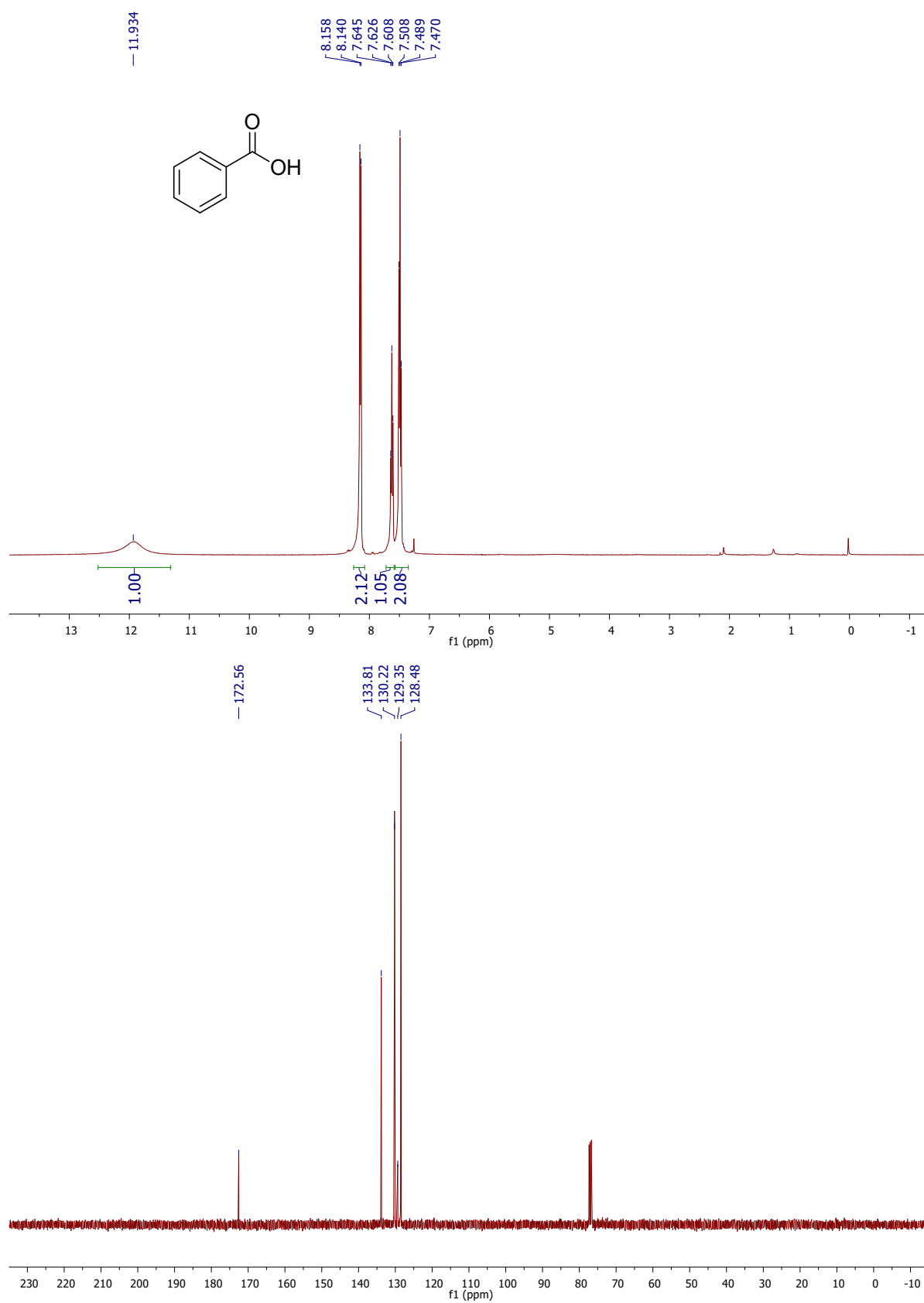
RetTime [min]	Type	Area [25 $\mu\text{V}\cdot\text{s}$ ]	Amt/Area	Amount [% mole]	Grp	Name
1.804	-	-	-	-	-	CO2
2.829	BB	2.51413e4	2.32397e-3	58.42767	-	N2
4.335	-	-	-	-	-	CO
Totals :				58.42767		

Signal 3: TCD3 C, Aux Signal

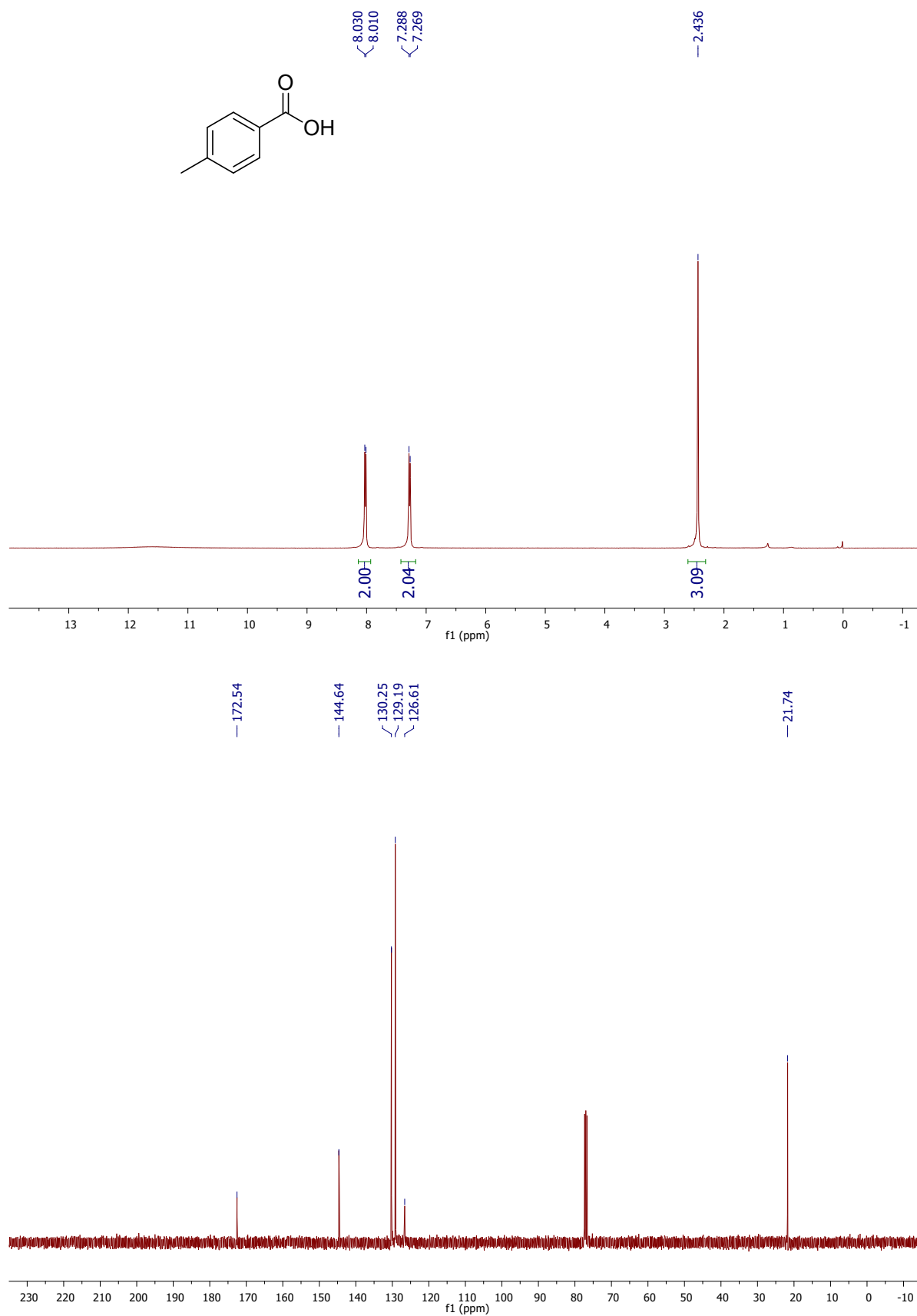
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1.128	BB	7721.81692	5.57870e-3	43.07771	-	H2
Totals :				43.07771		

**Figure S1.** GC traces to confirm  $\text{H}_2$  evolution

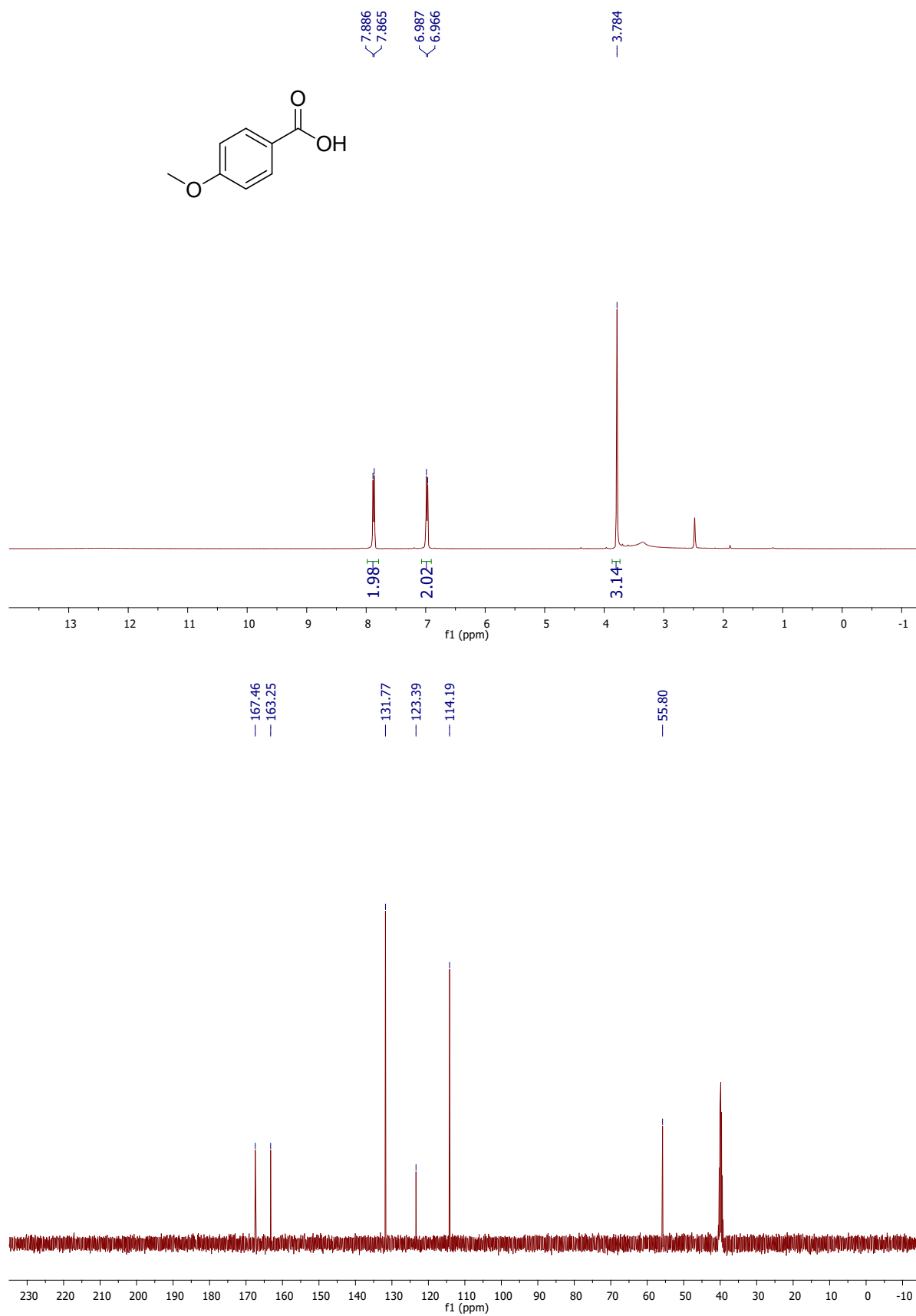
## Traces of $^1\text{H}$ and $^{13}\text{C}$ NMR spectra of isolated products



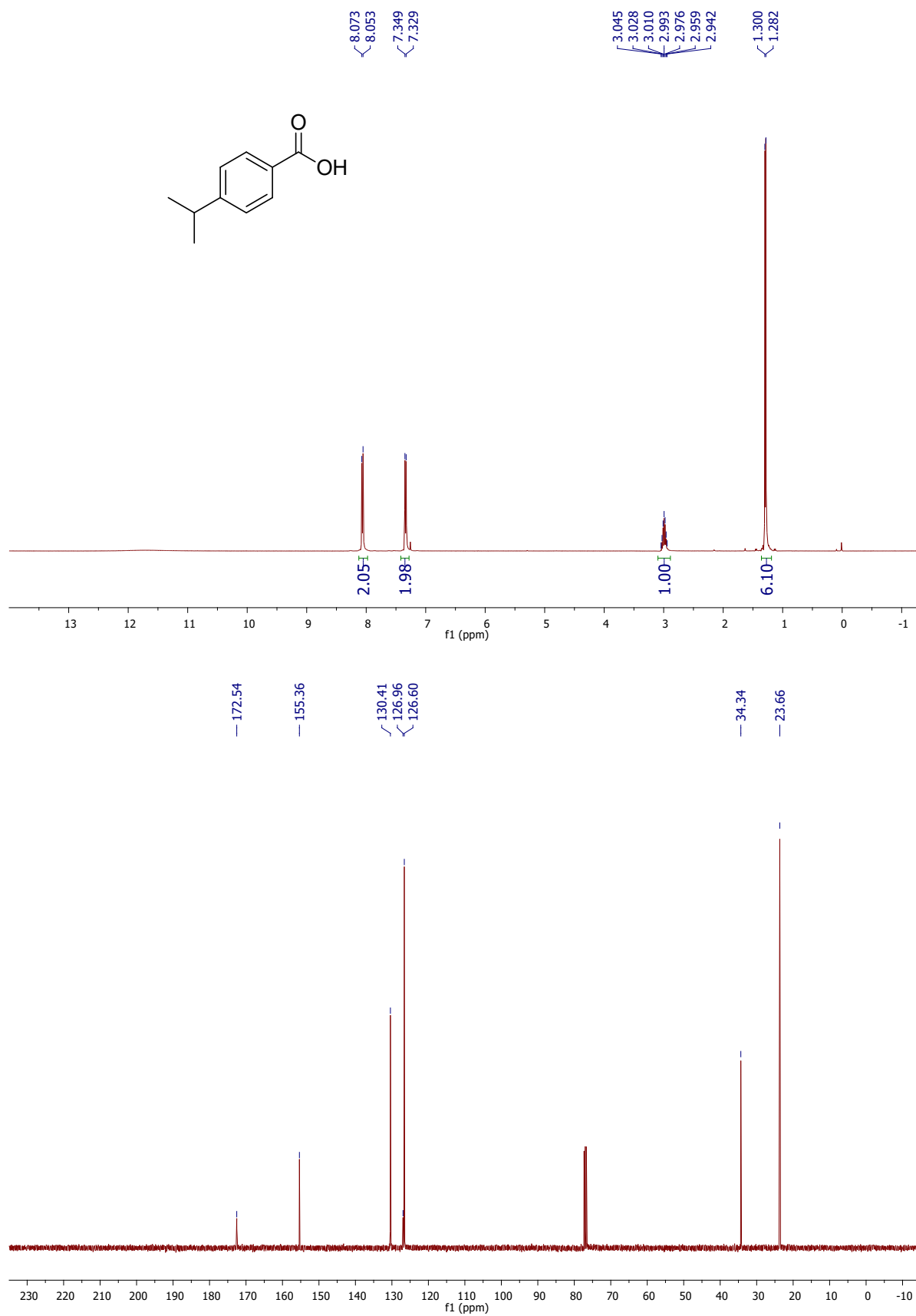
**Figure S2.**  $^1\text{H}$  (400 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{CDCl}_3$ ) NMR spectra of **3a**



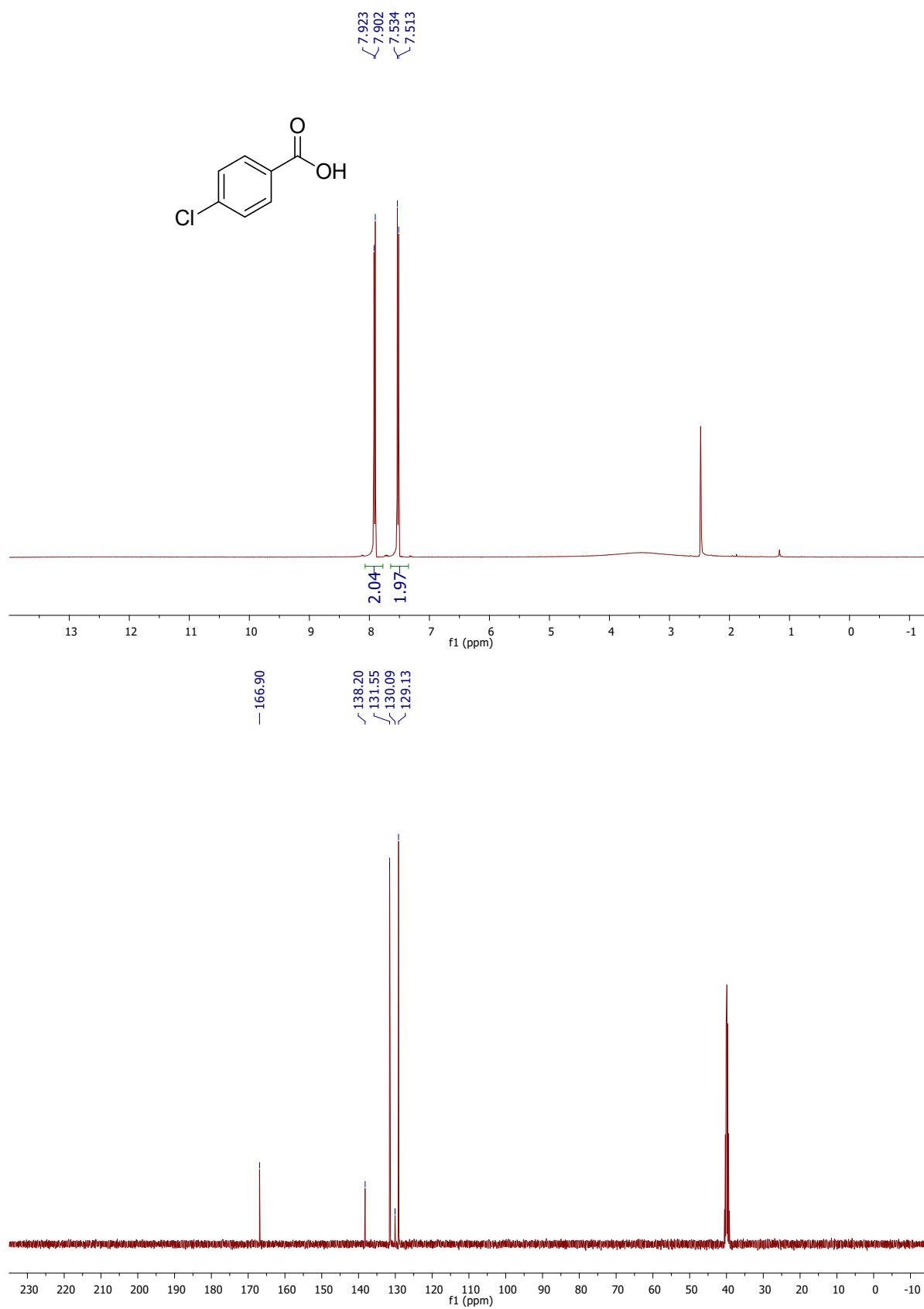
**Figure S3.** <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of **3b**



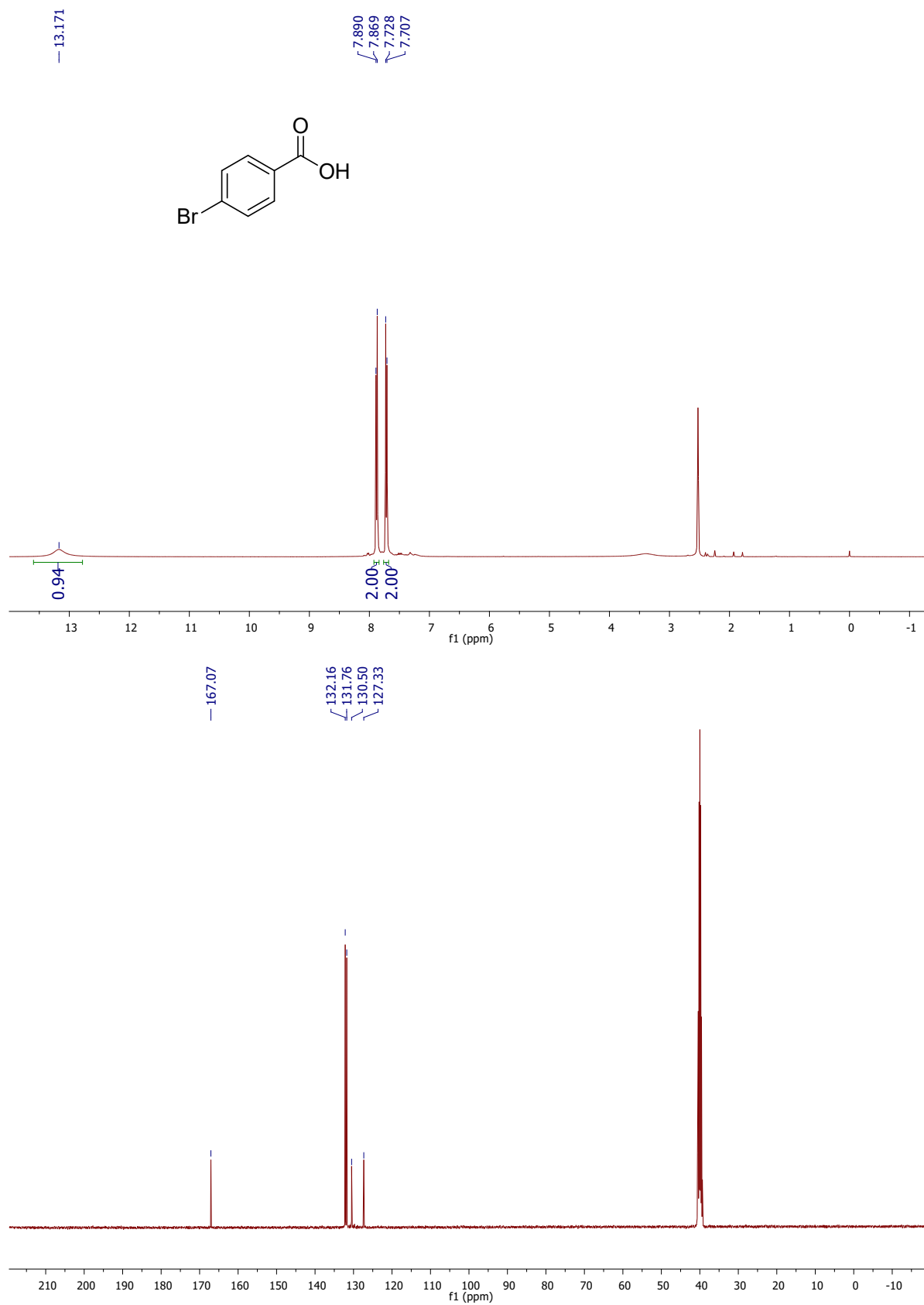
**Figure S4.**  $^1\text{H}$  (400 MHz,  $\text{DMSO-}d_6$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{DMSO-}d_6$ ) NMR spectra of **3c**



**Figure S5.** <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of **3d**

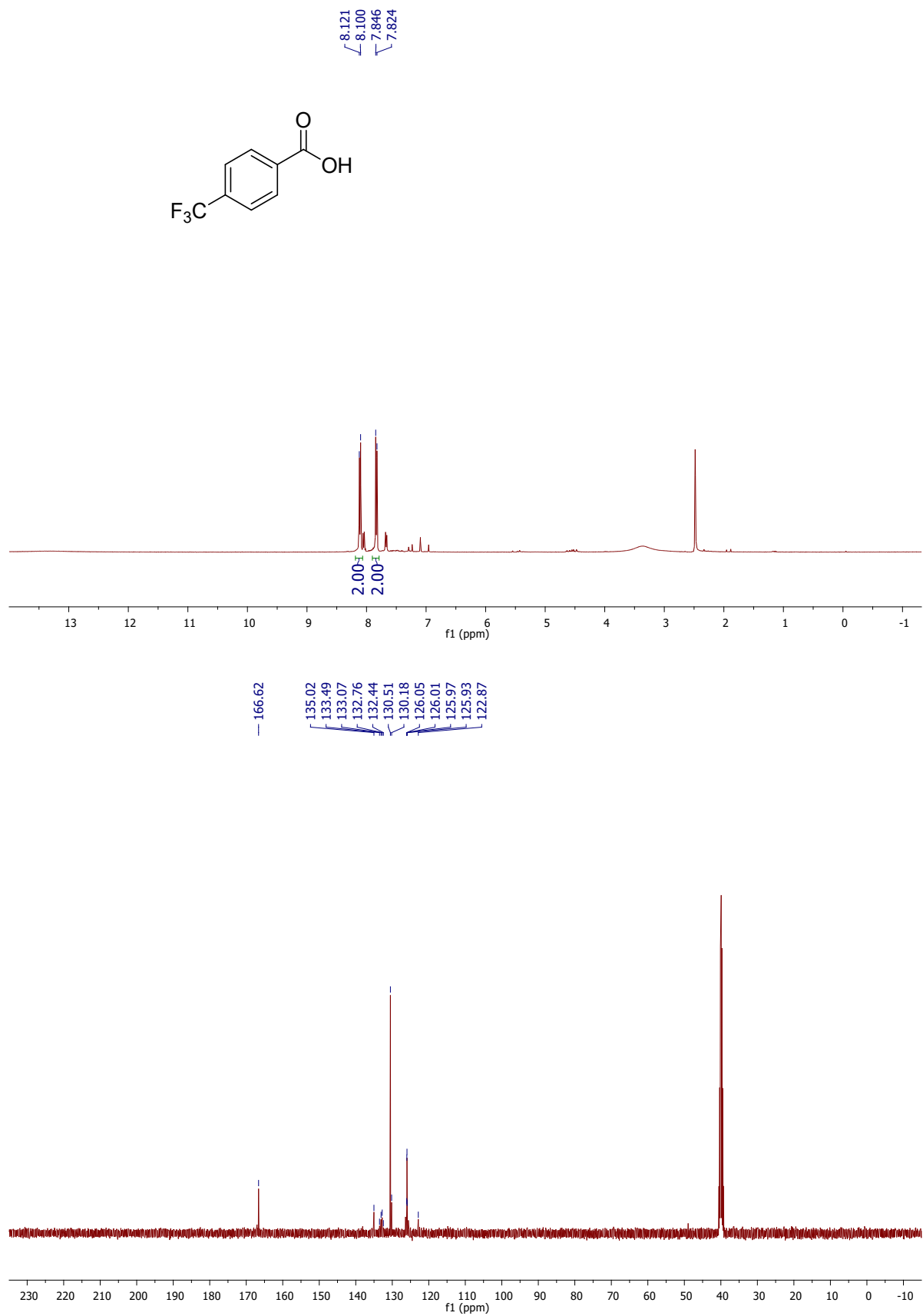


**Figure S6.**  $^1\text{H}$  (400 MHz,  $\text{DMSO}-d_6$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{DMSO}-d_6$ ) NMR spectra of **3e**

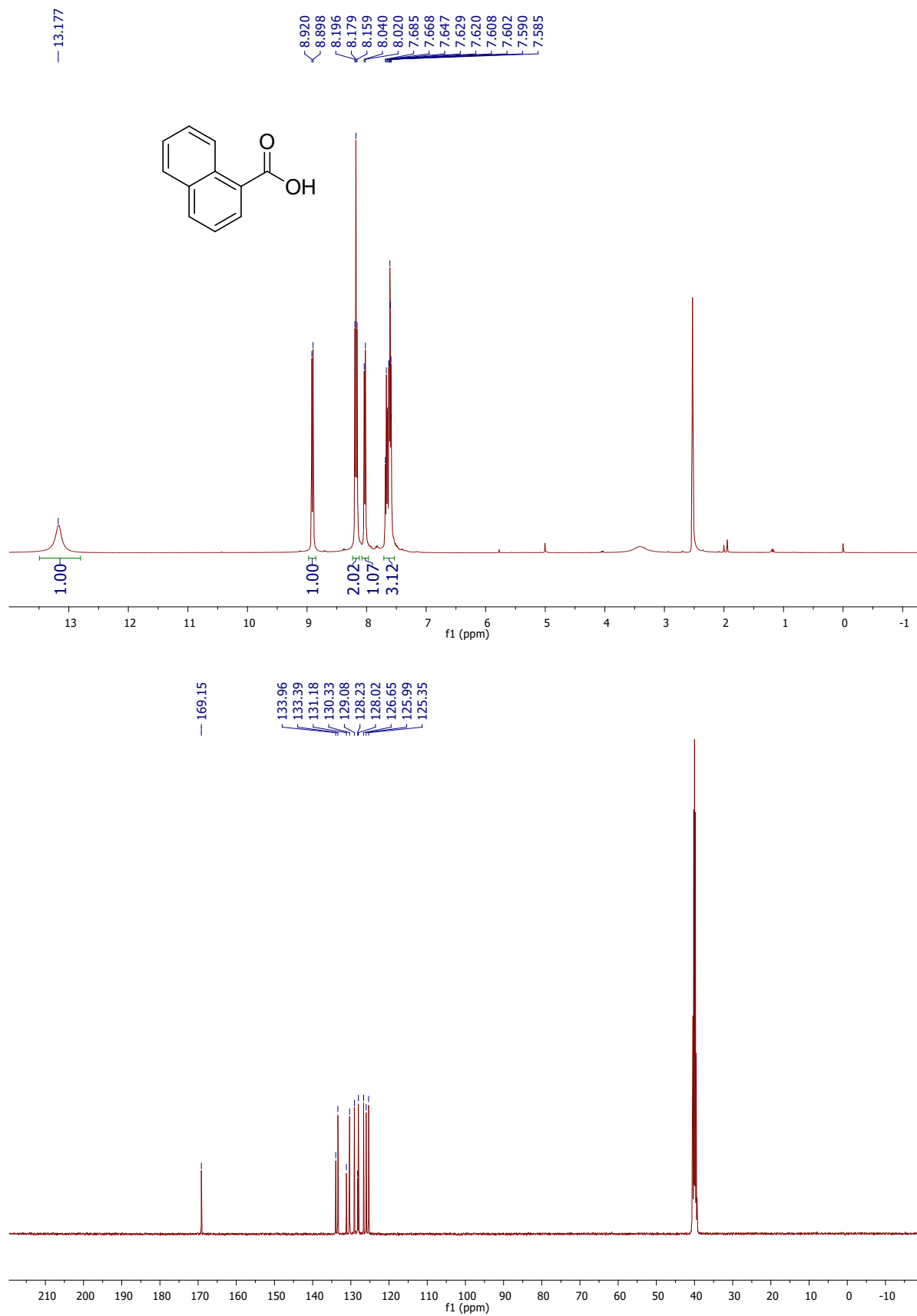


**Figure S7.**  $^1\text{H}$  (400 MHz, DMSO- $d_6$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz, DMSO- $d_6$ ) NMR spectra of **3f**

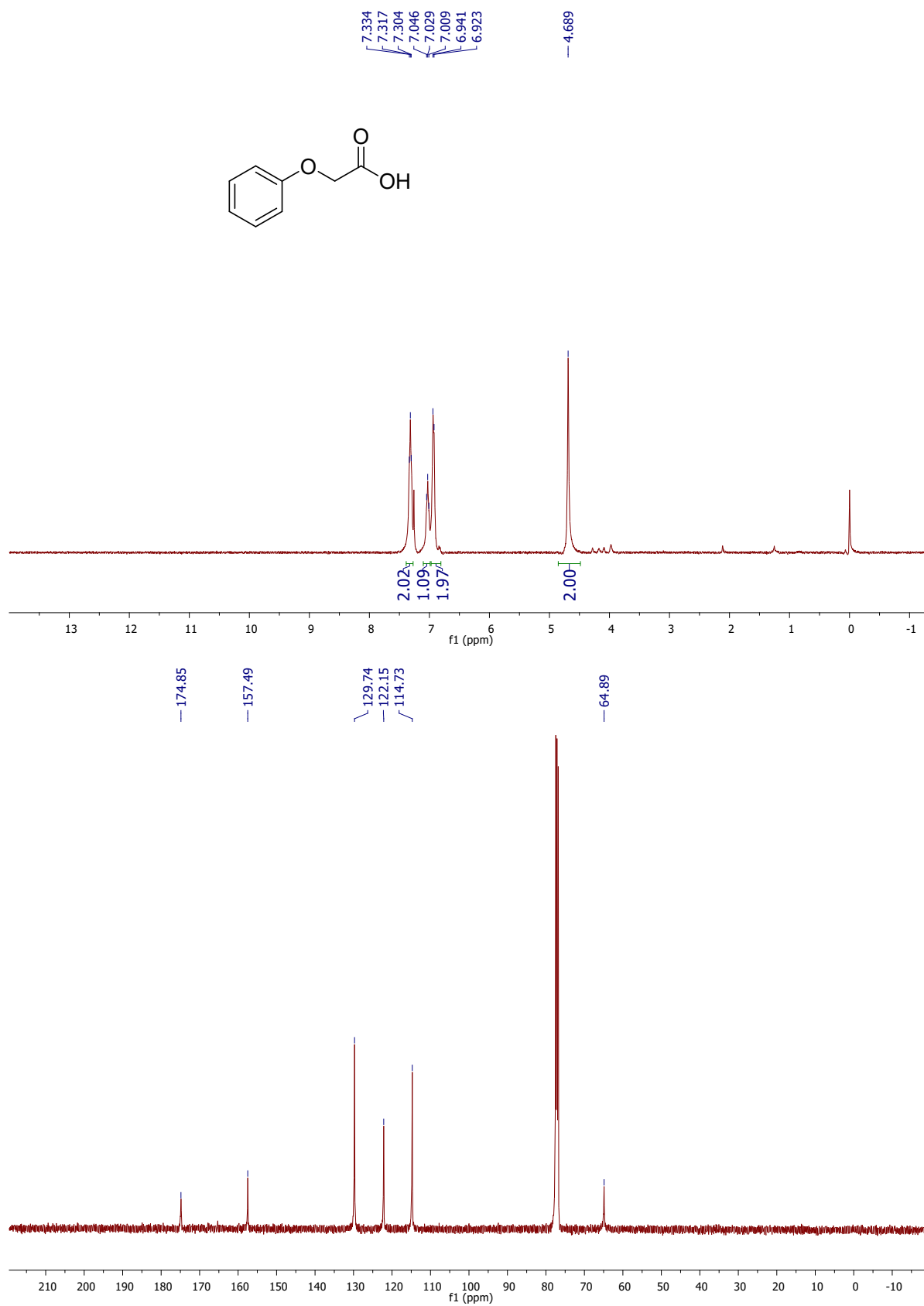




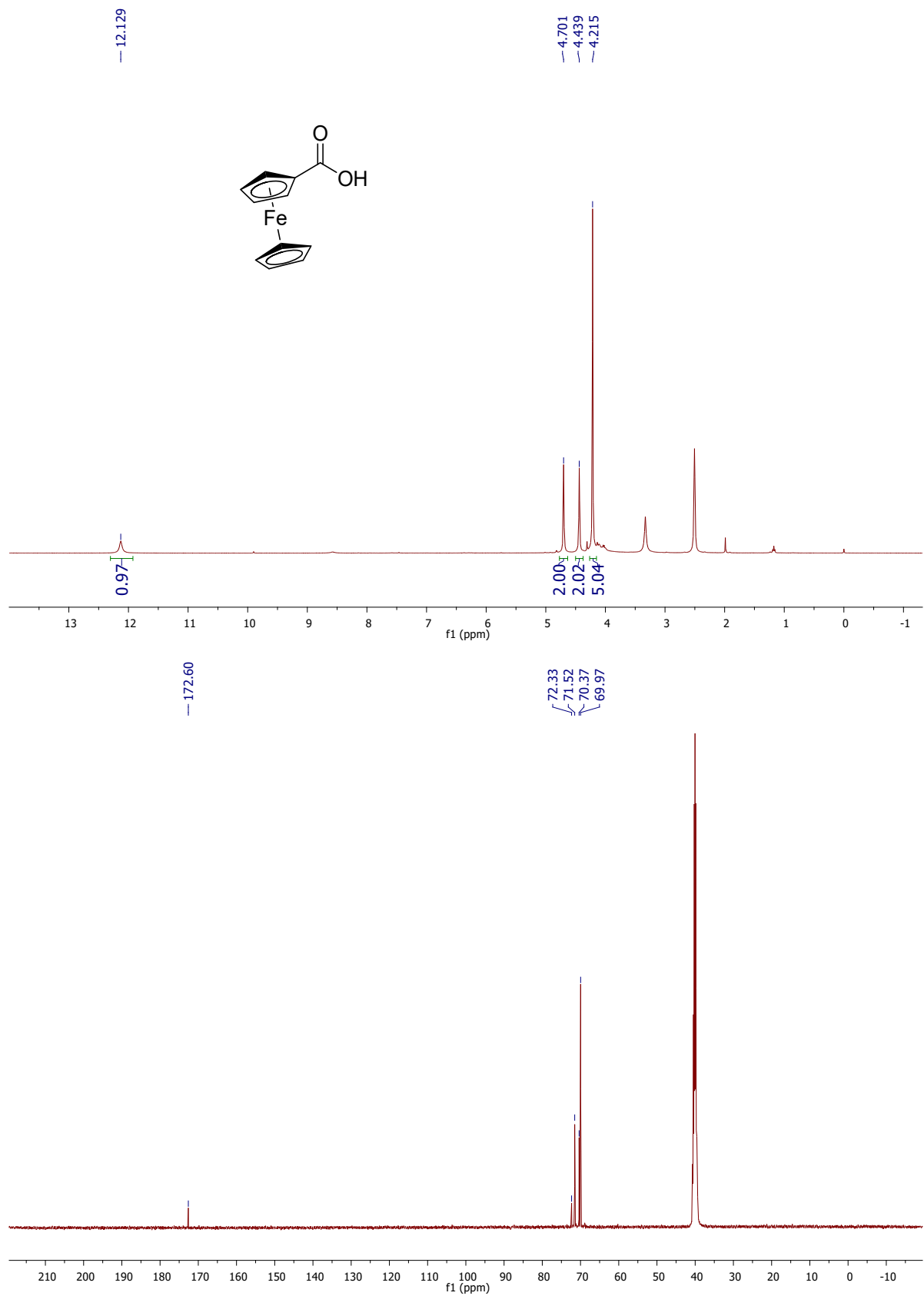
**Figure S8.**  $^1\text{H}$  (400 MHz,  $\text{DMSO-}d_6$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{DMSO-}d_6$ ) NMR spectra of **3g**



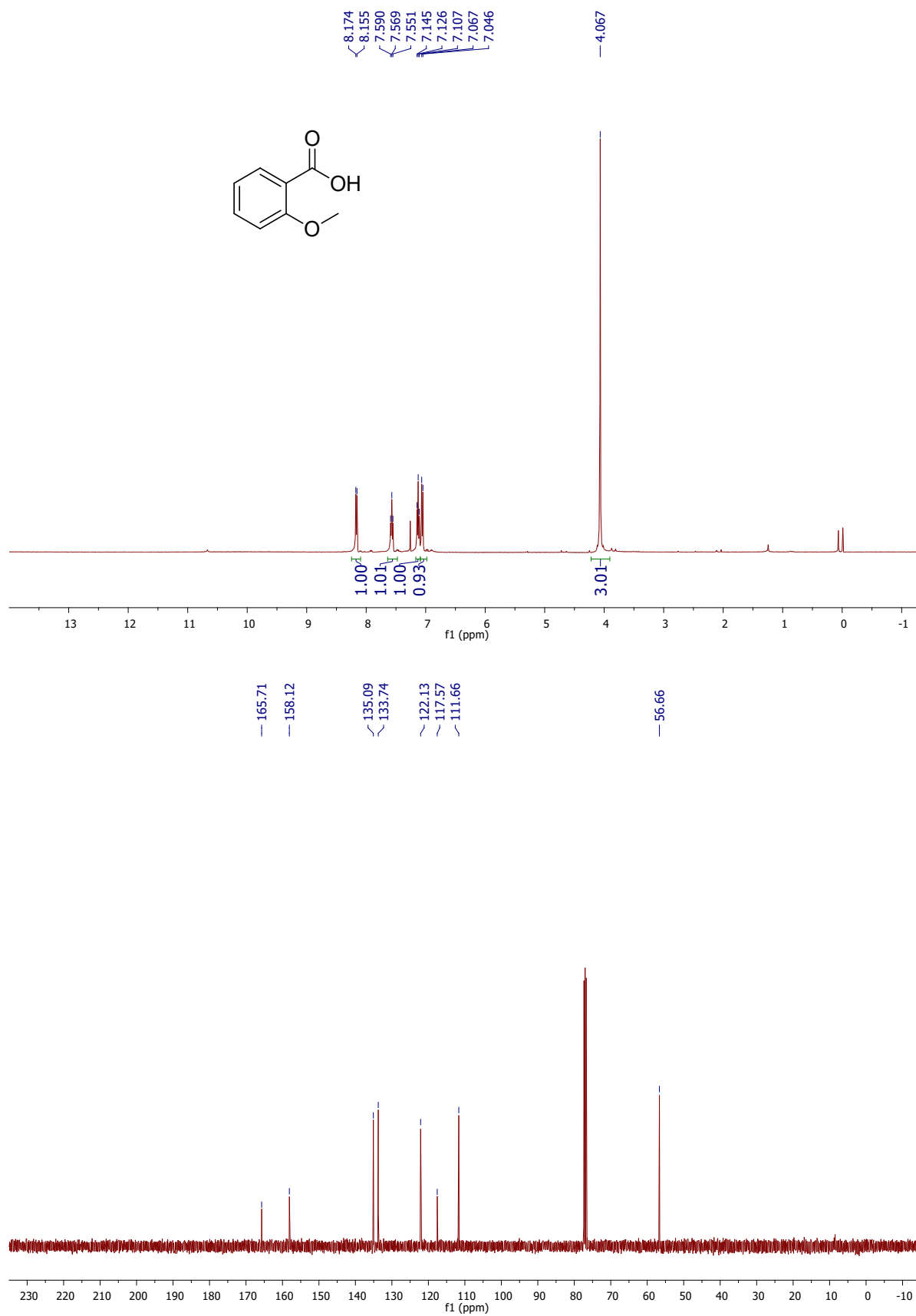
**Figure S9.**  $^1\text{H}$  (400 MHz,  $\text{DMSO-}d_6$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{DMSO-}d_6$ ) NMR spectra of **3h**



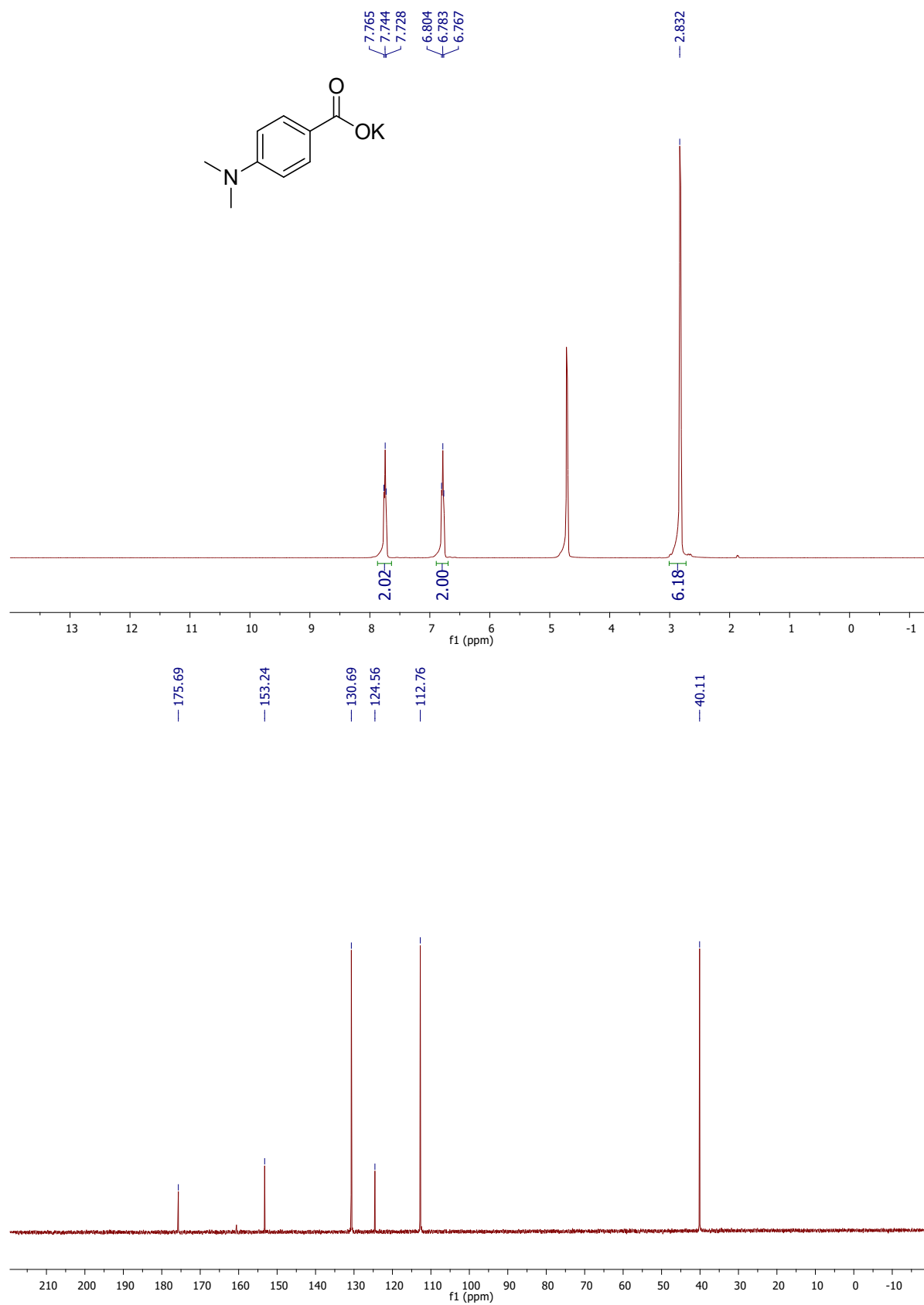
**Figure S10.**  $^1\text{H}$  (400 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{CDCl}_3$ ) NMR spectra of **3i**



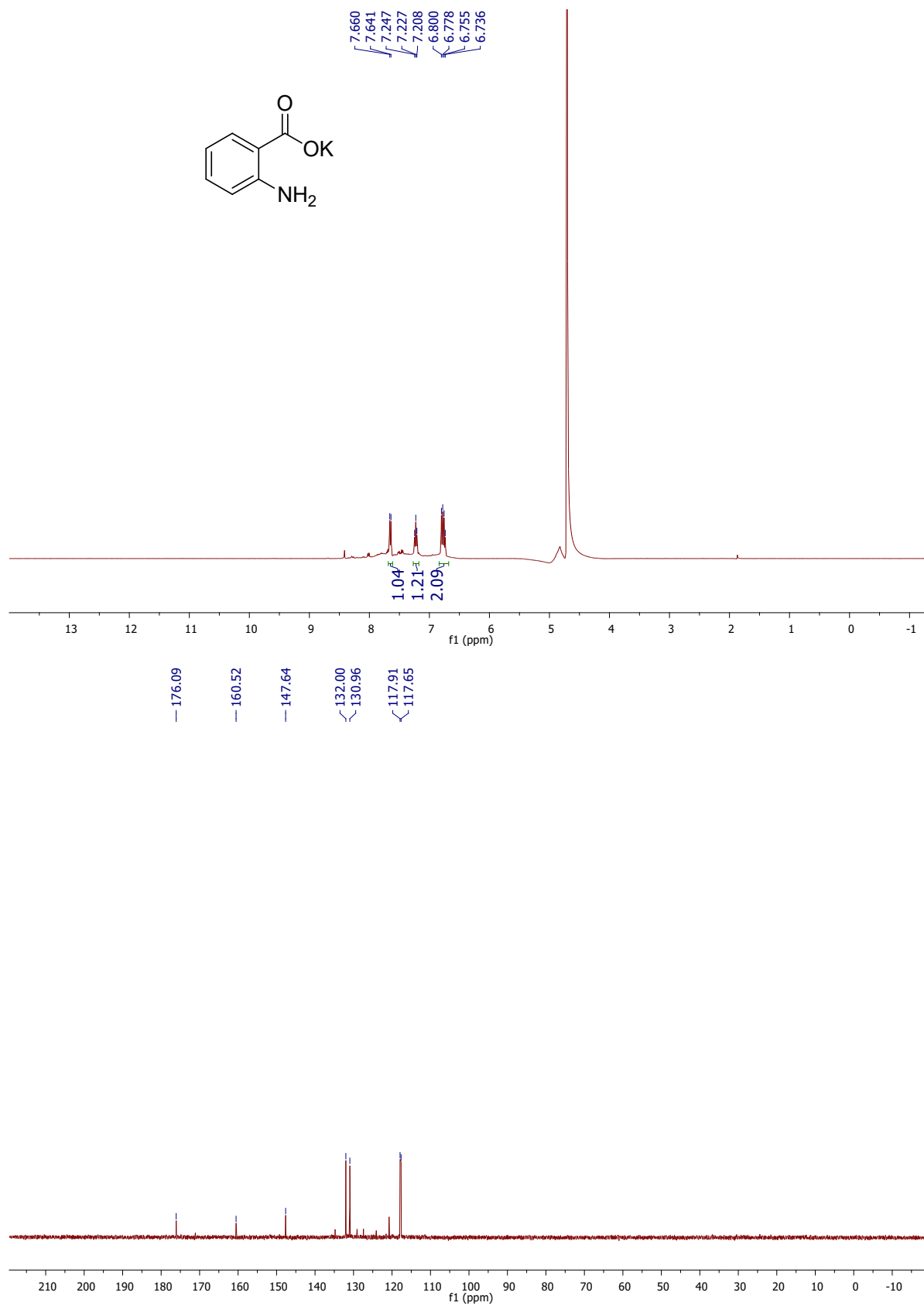
**Figure S11.**  $^1\text{H}$  (400 MHz,  $\text{DMSO-}d_6$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{DMSO-}d_6$ ) NMR spectra of **3j**



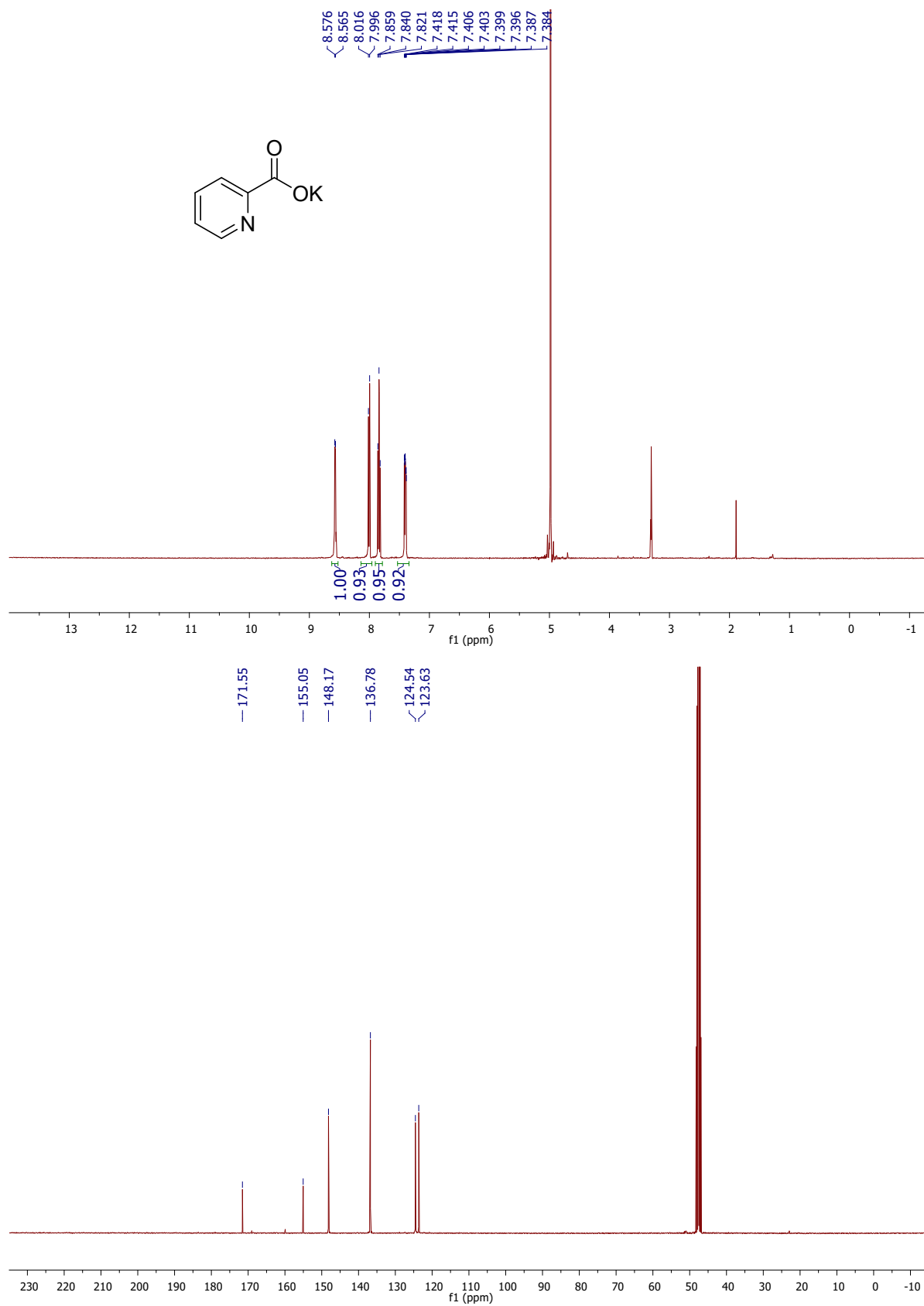
**Figure S12.** <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of **3k**



**Figure S13.**  $^1\text{H}$  (400 MHz,  $\text{D}_2\text{O}$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{D}_2\text{O}$ ) NMR spectra of **31**

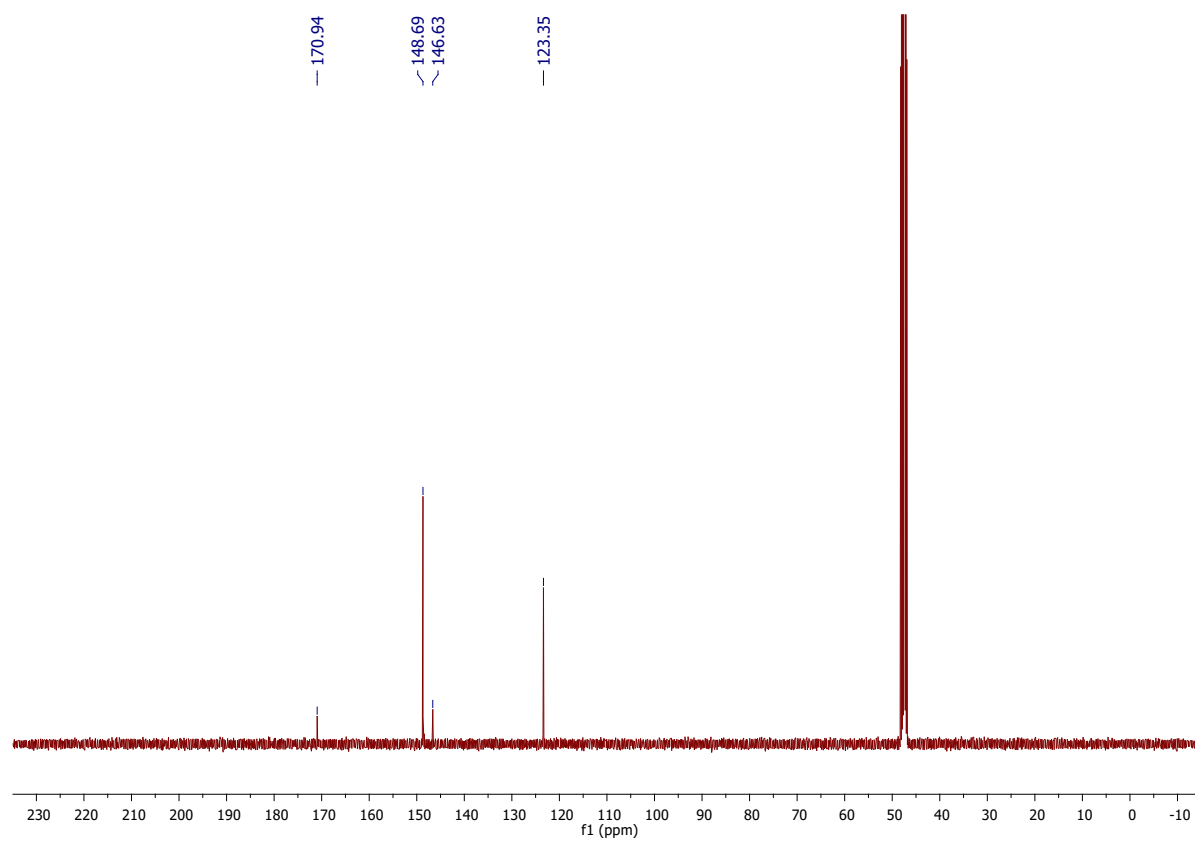
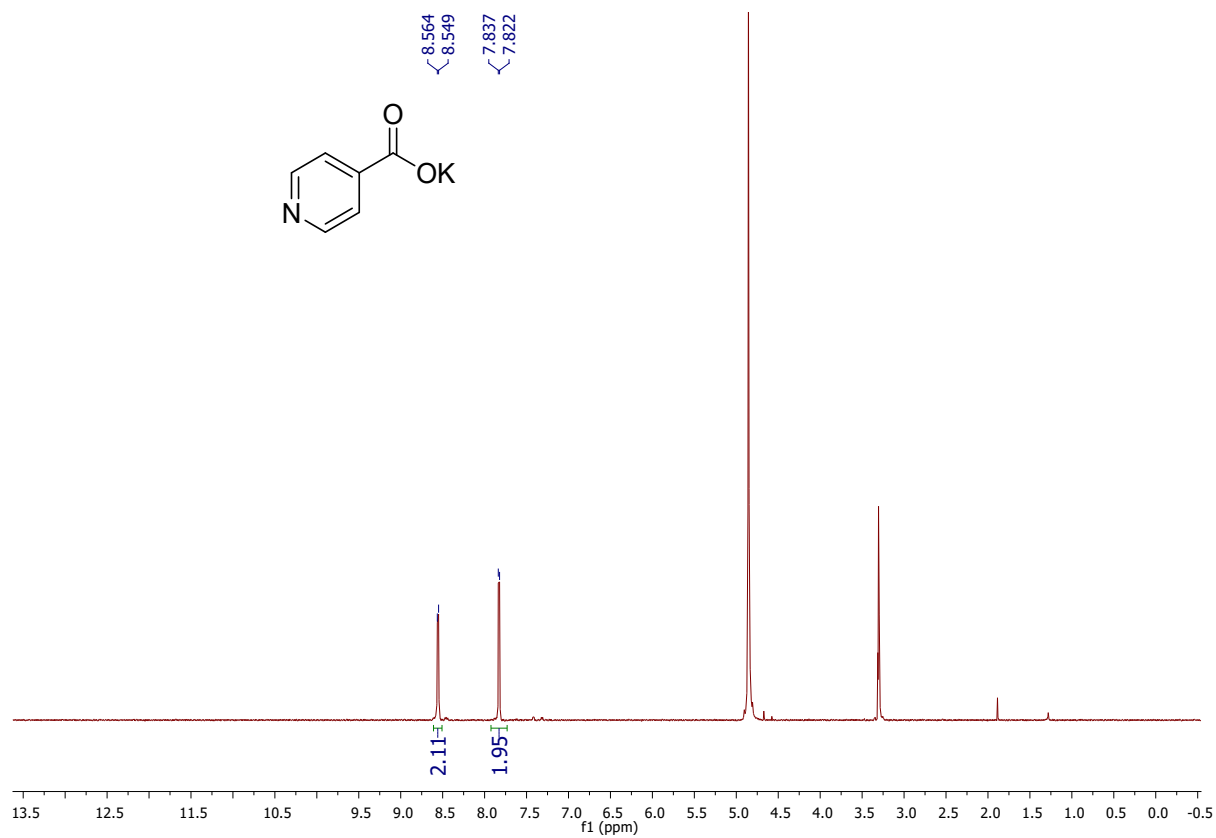


**Figure S14.** <sup>1</sup>H (400 MHz, D<sub>2</sub>O) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, D<sub>2</sub>O) NMR spectra of **3m**

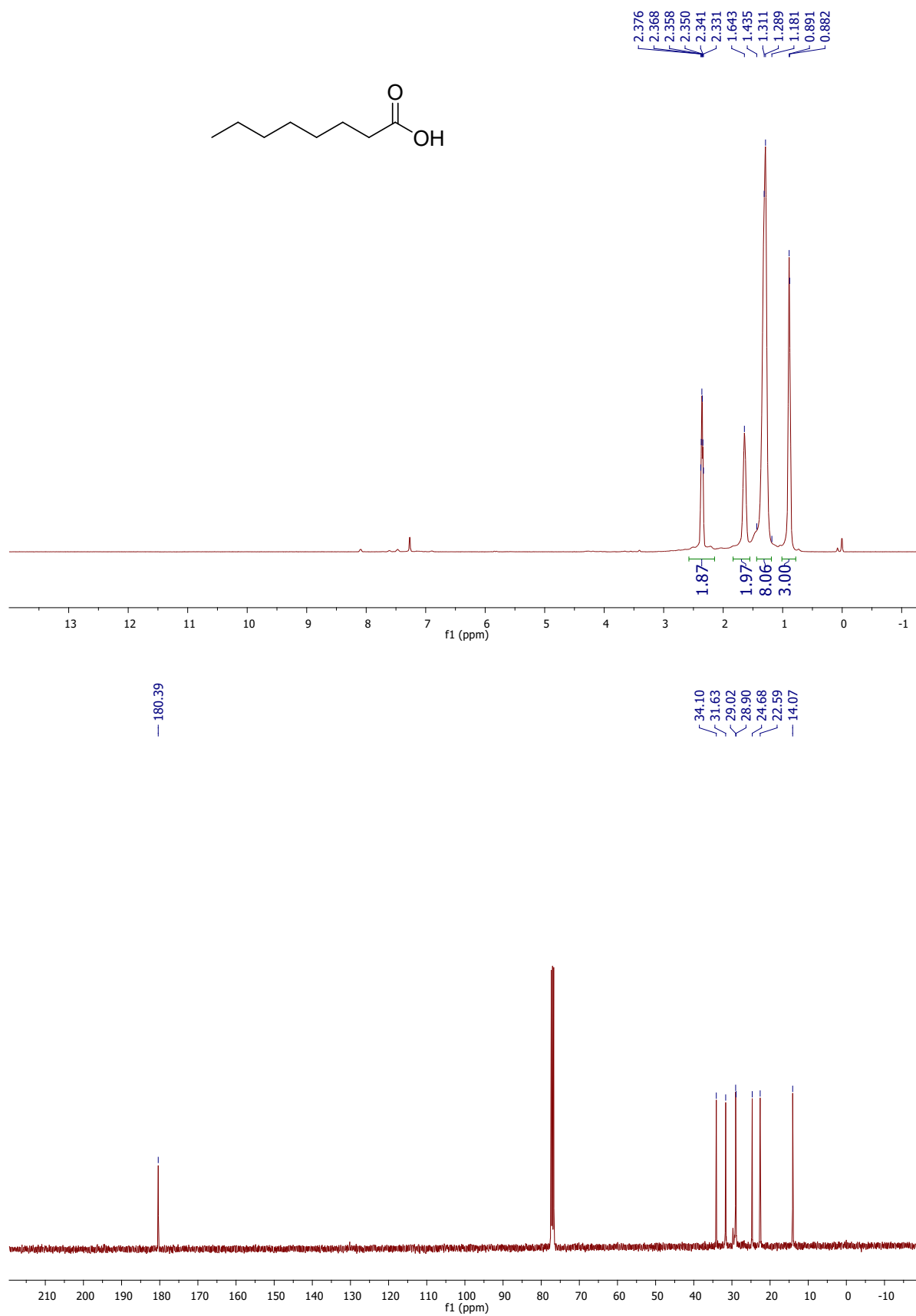


**Figure S15.**  $^1\text{H}$  (400 MHz,  $\text{CD}_3\text{OD}$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{CD}_3\text{OD}$ ) NMR spectra of **3n**

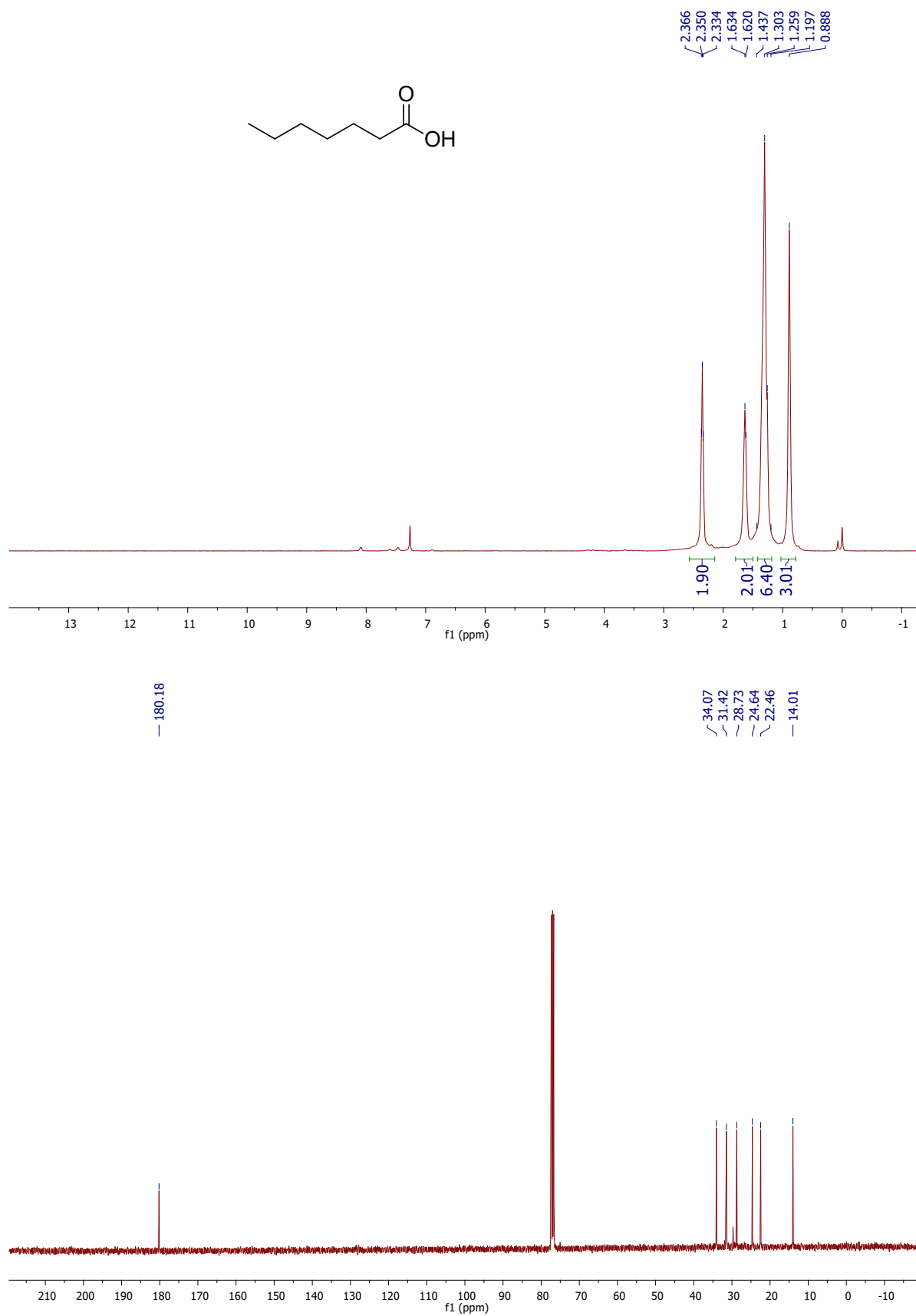




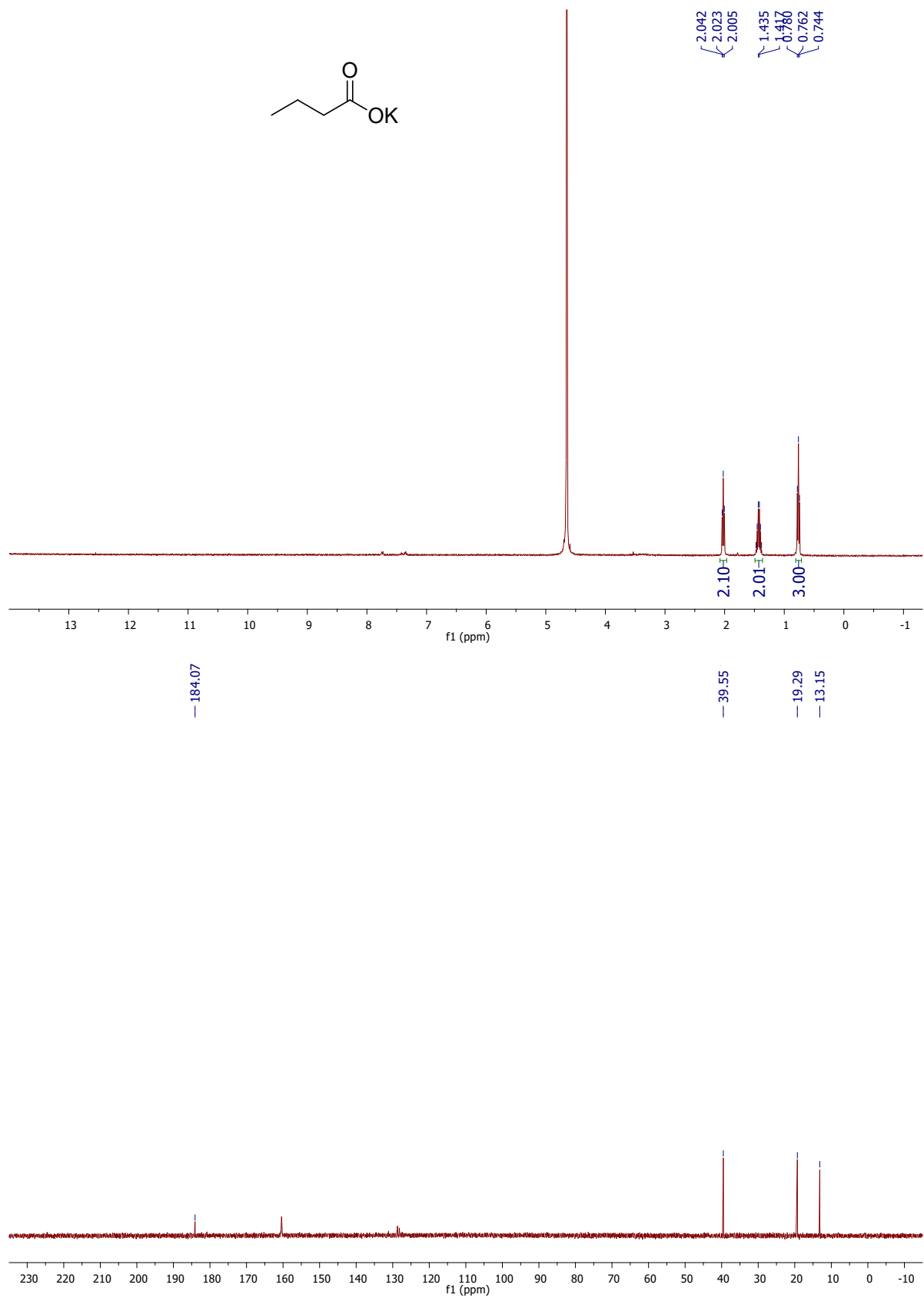
**Figure S16.**  $^1\text{H}$  (400 MHz,  $\text{CD}_3\text{OD}$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{CD}_3\text{OD}$ ) NMR spectra of **3o**



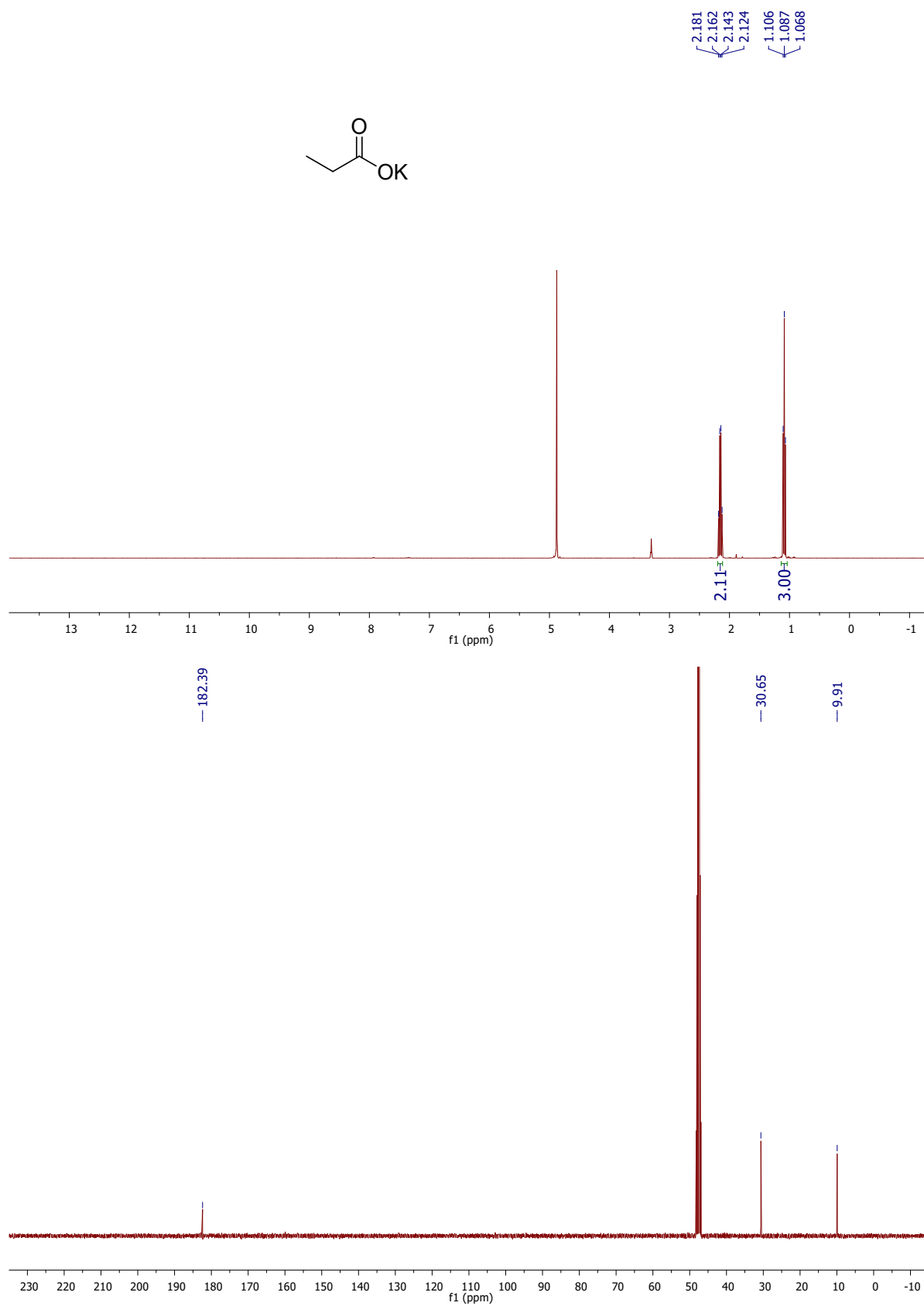
**Figure S17.**  $^1\text{H}$  (400 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{CDCl}_3$ ) NMR spectra of **3p**



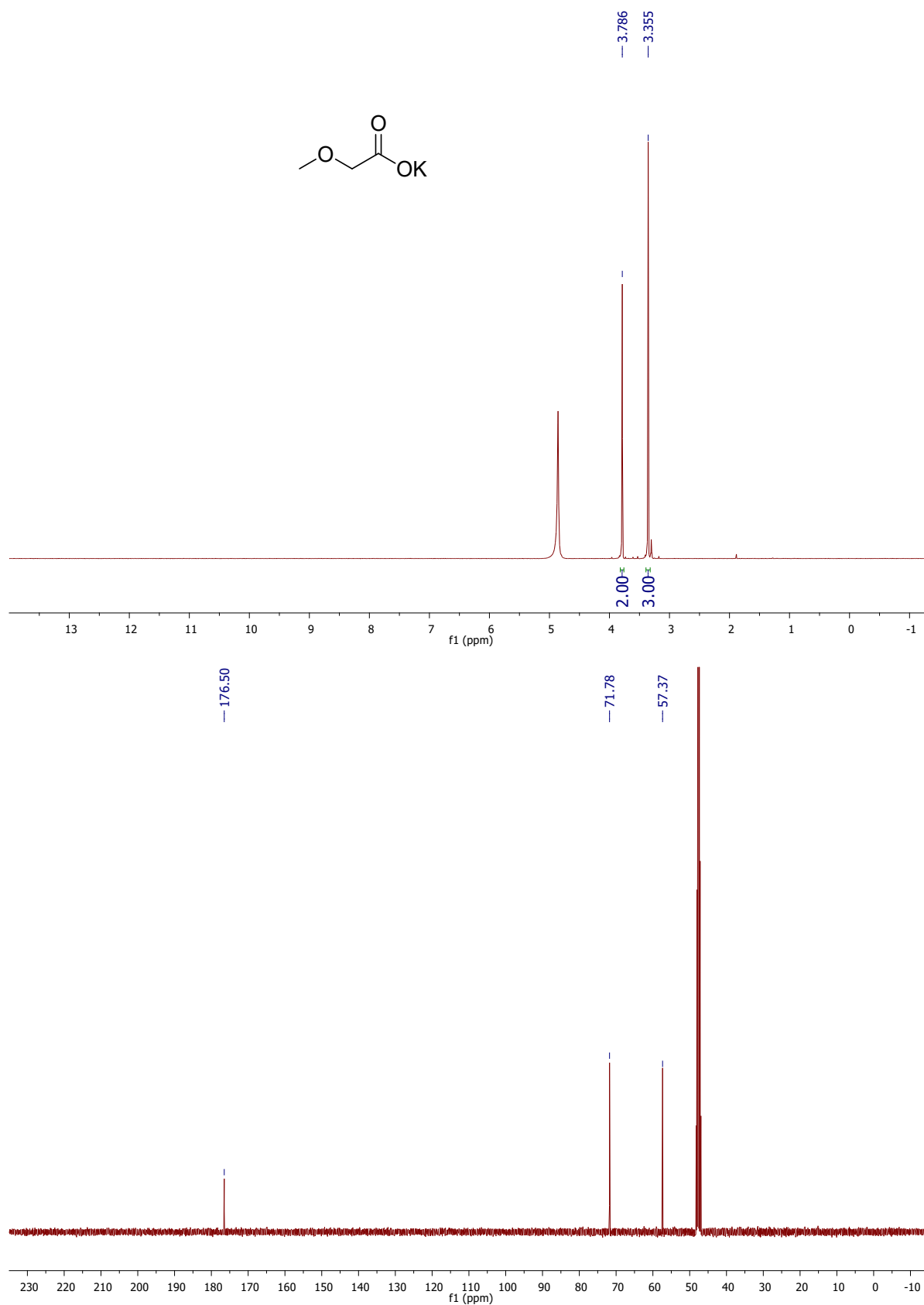
**Figure S18.** <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of **3q**



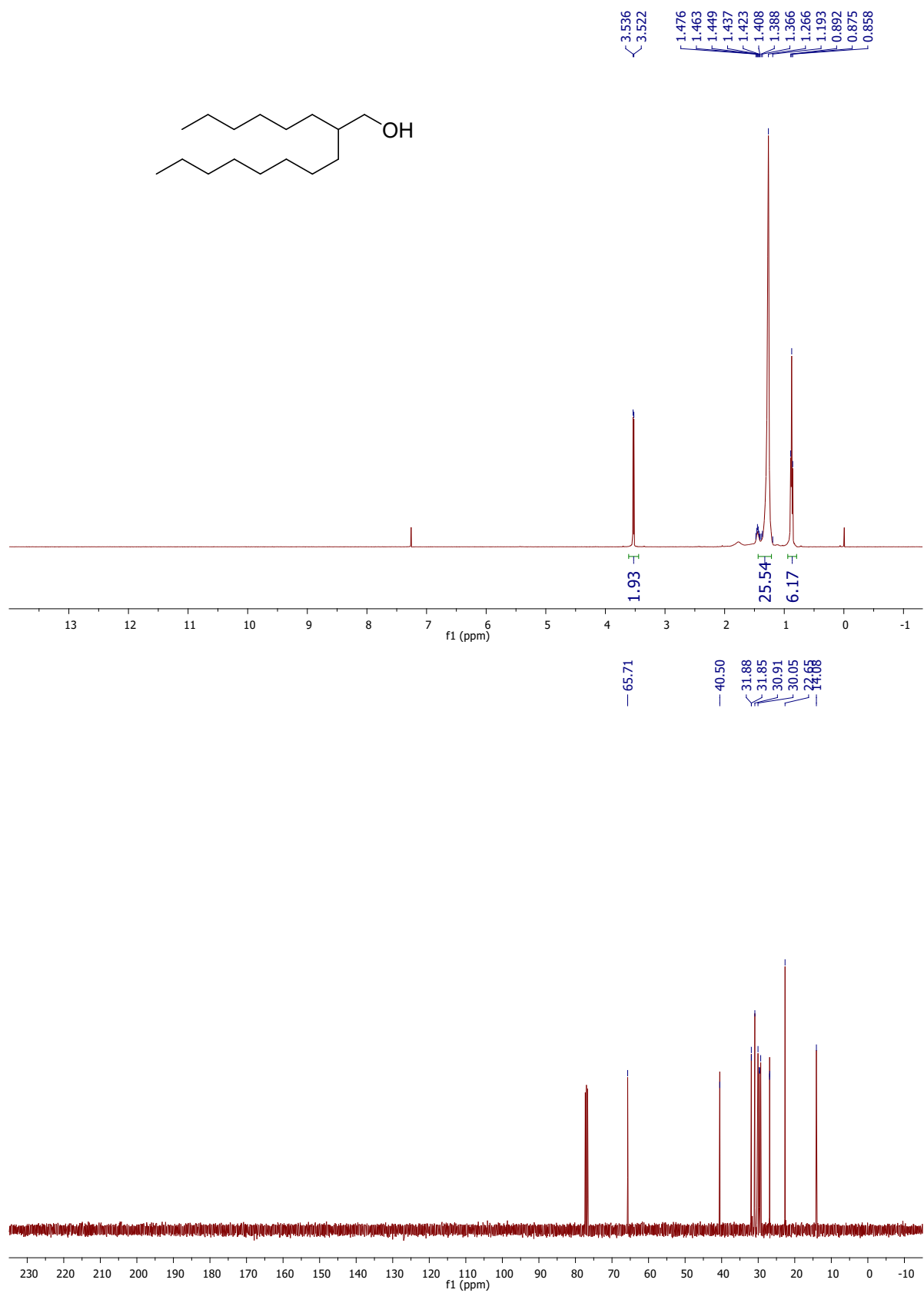
**Figure S19.**  $^1\text{H}$  (400 MHz,  $\text{D}_2\text{O}$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{D}_2\text{O}$ ) NMR spectra of **3r**



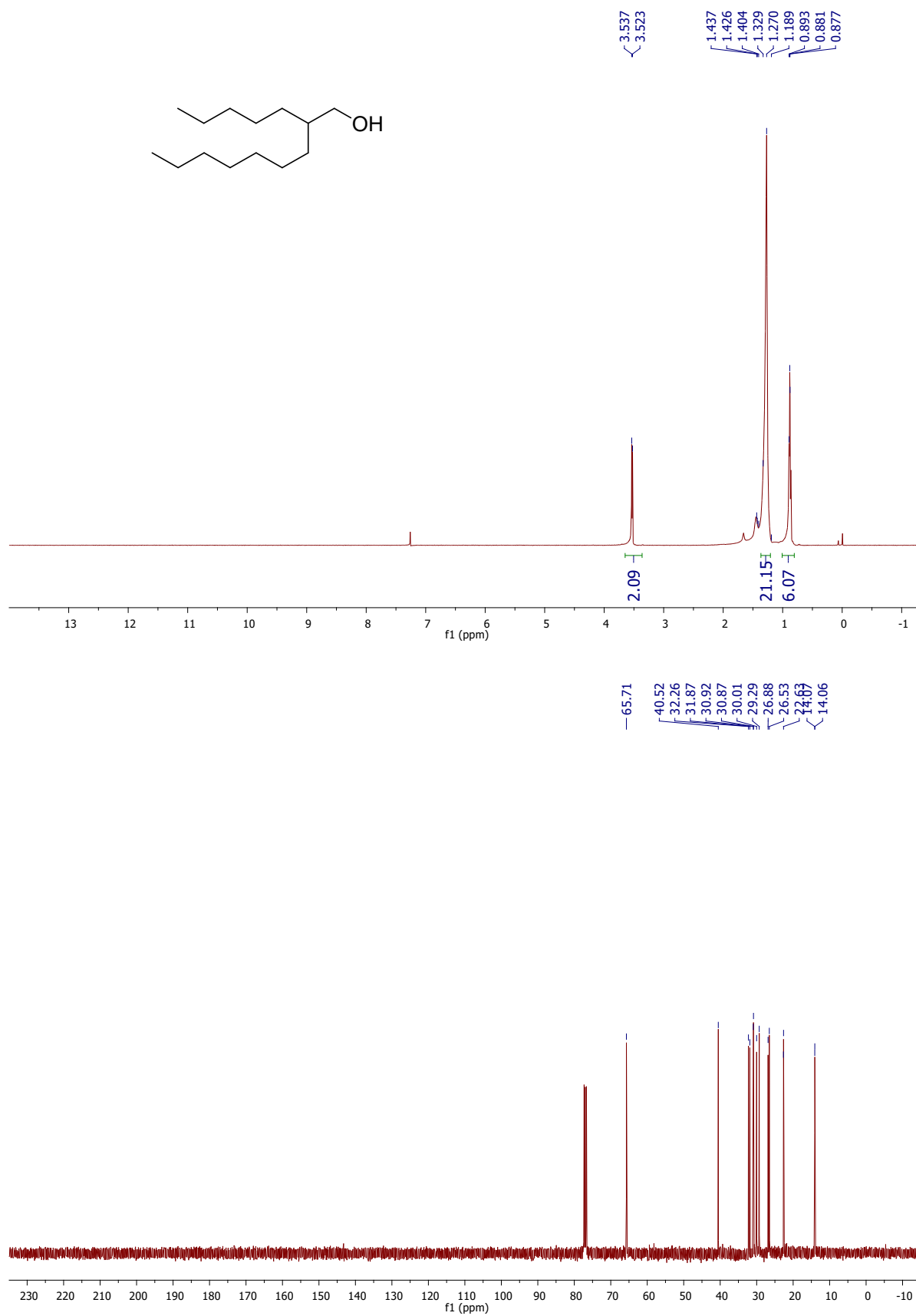
**Figure S20.**  $^1\text{H}$  (400 MHz,  $\text{CD}_3\text{OD}$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{CD}_3\text{OD}$ ) NMR spectra of **3s**



**Figure S21.** <sup>1</sup>H (400 MHz, CD<sub>3</sub>OD) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CD<sub>3</sub>OD) NMR spectra of **3t**

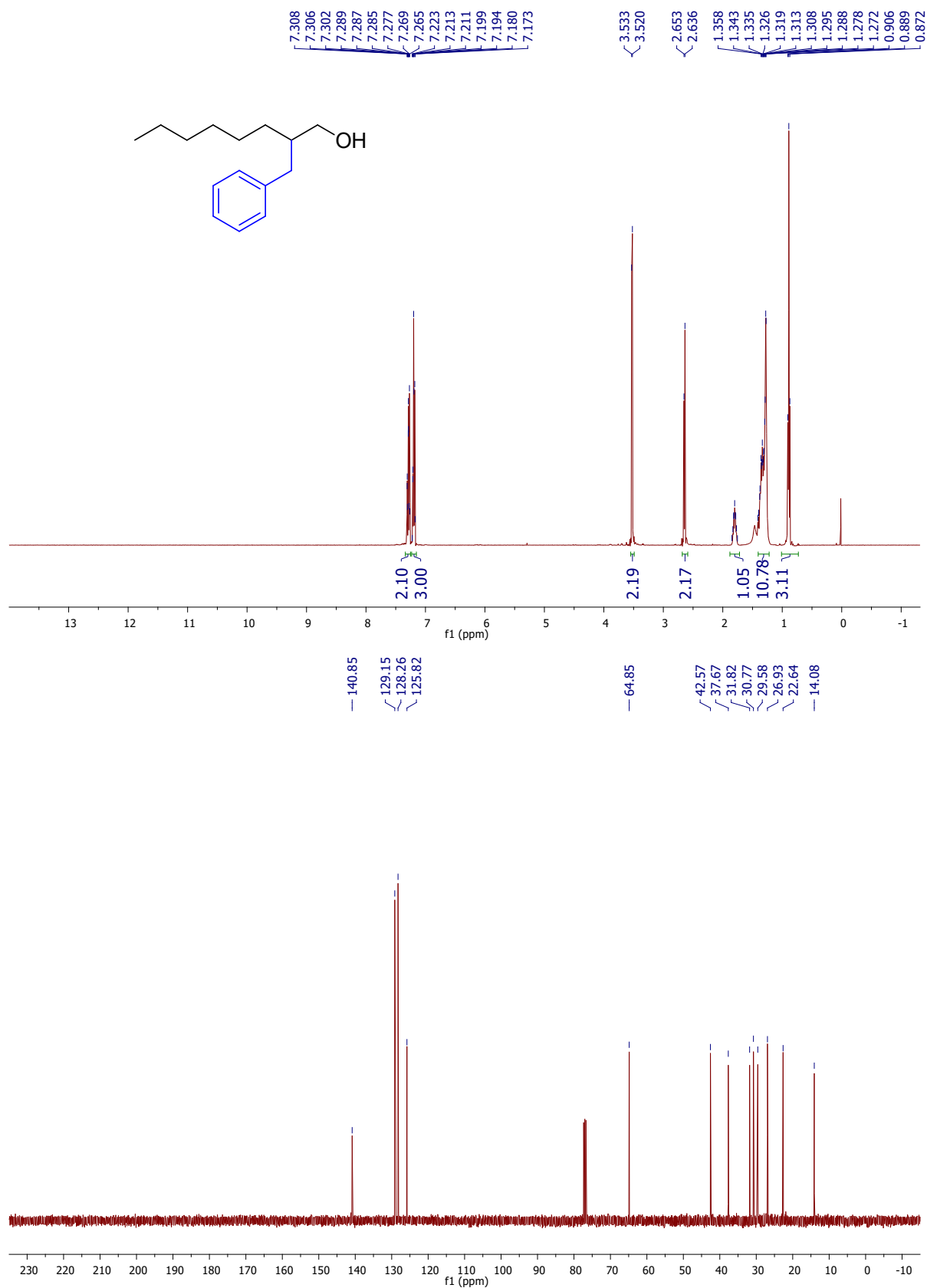


**Figure S22.** <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of **4a**

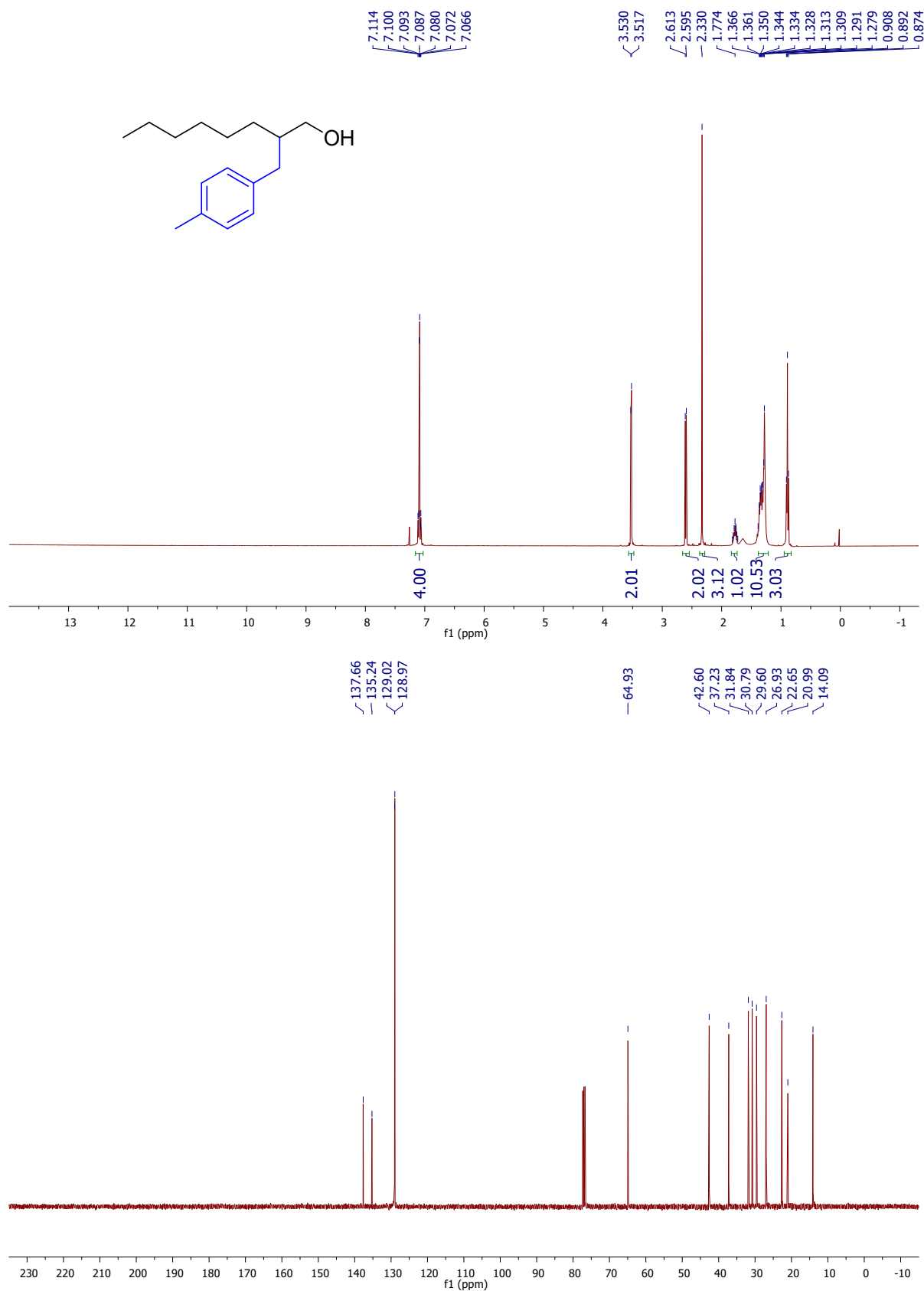


**Figure S23.**  $^1\text{H}$  (400 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{CDCl}_3$ ) NMR spectra of **4b**

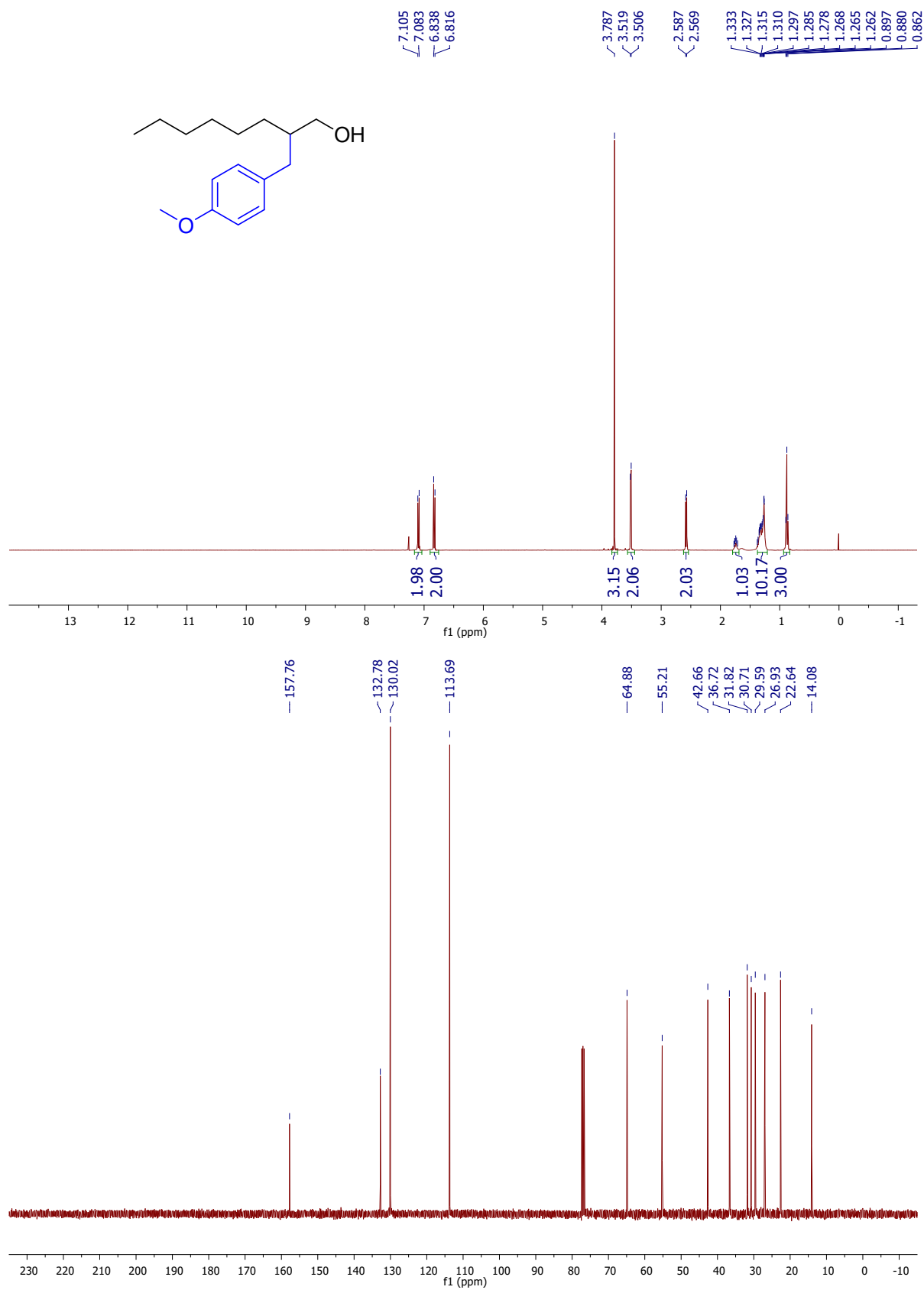




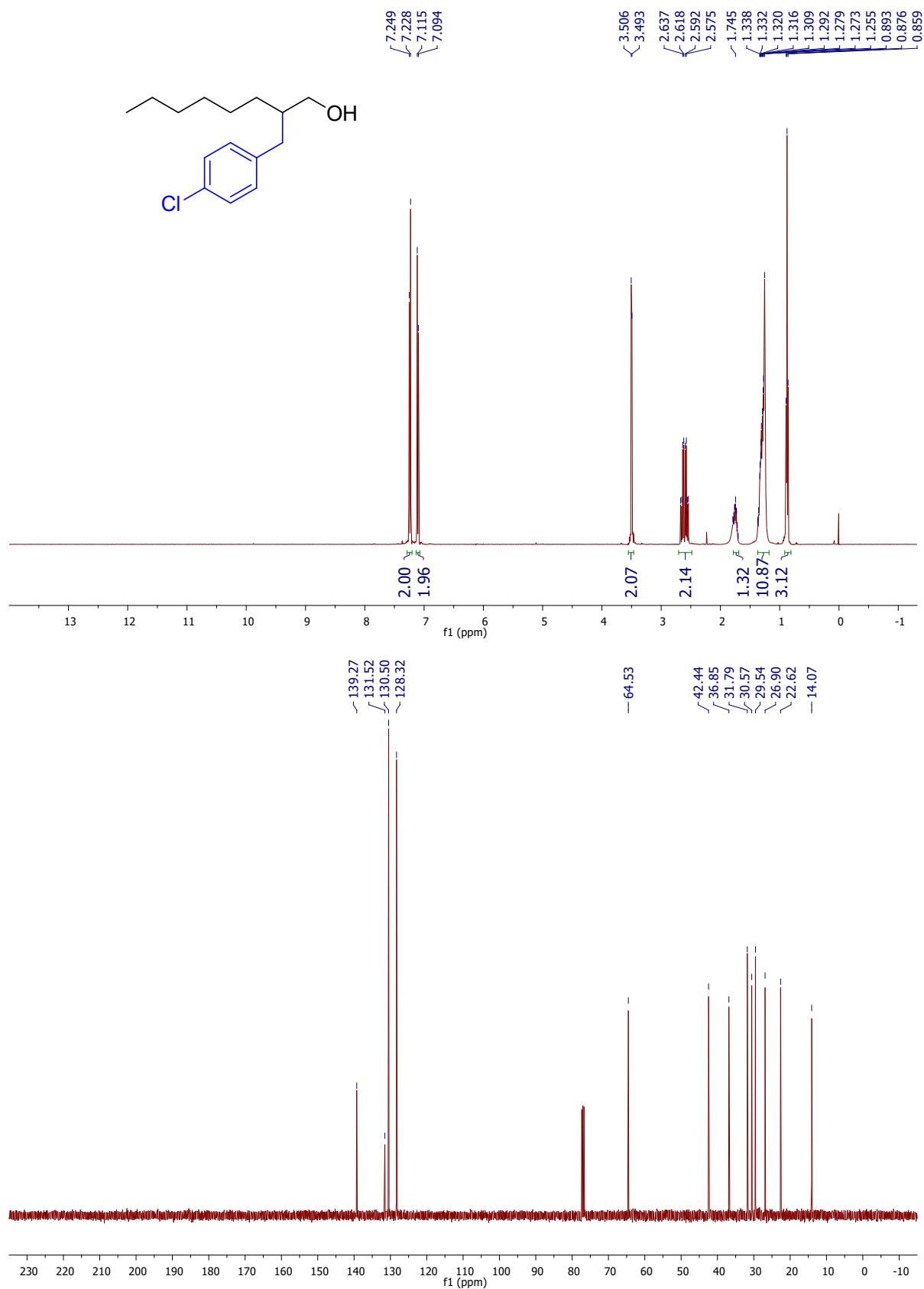
**Figure S24.** <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of **5a**



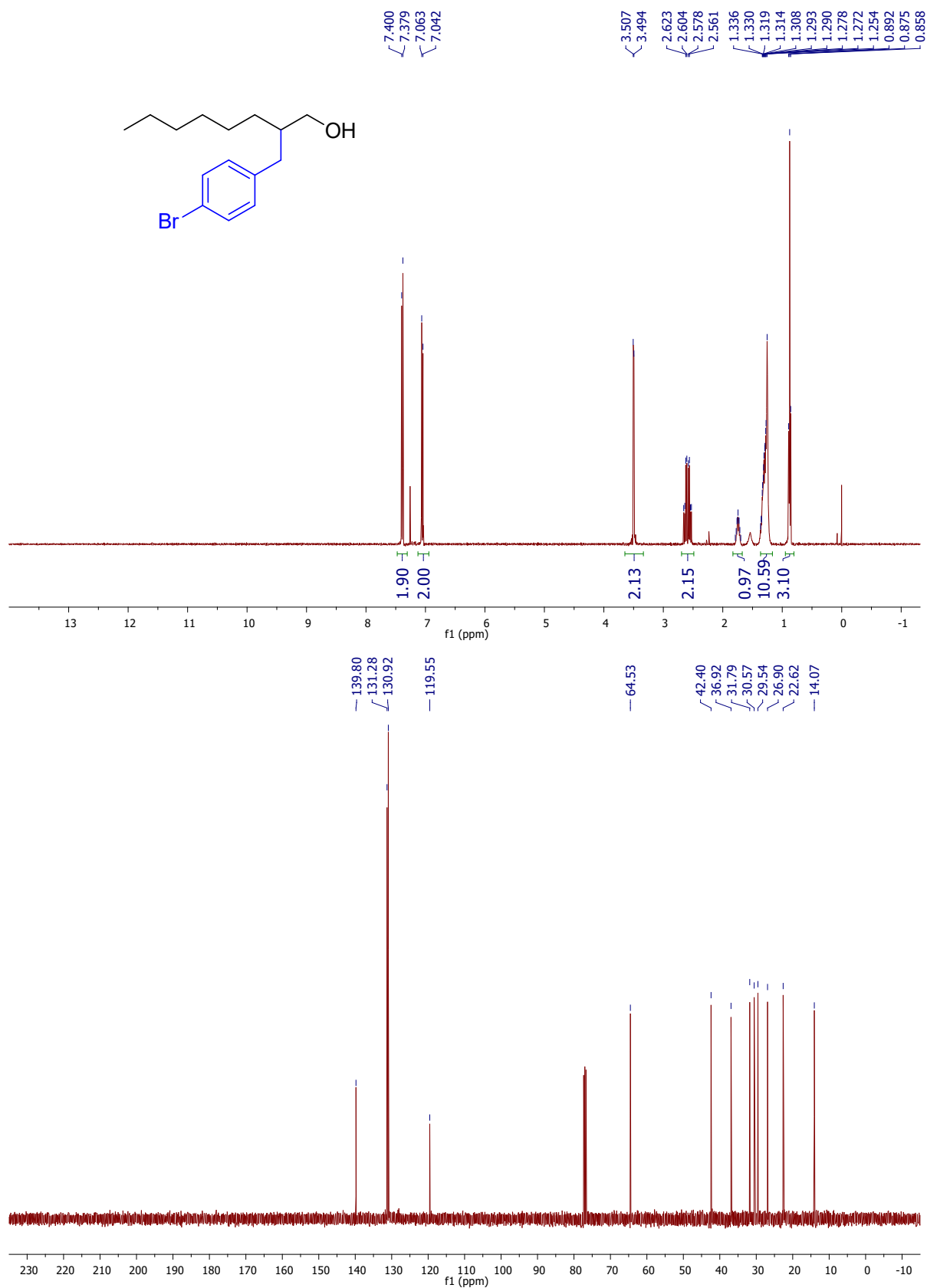
**Figure S25.**  $^1\text{H}$  (400 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{CDCl}_3$ ) NMR spectra of **5b**



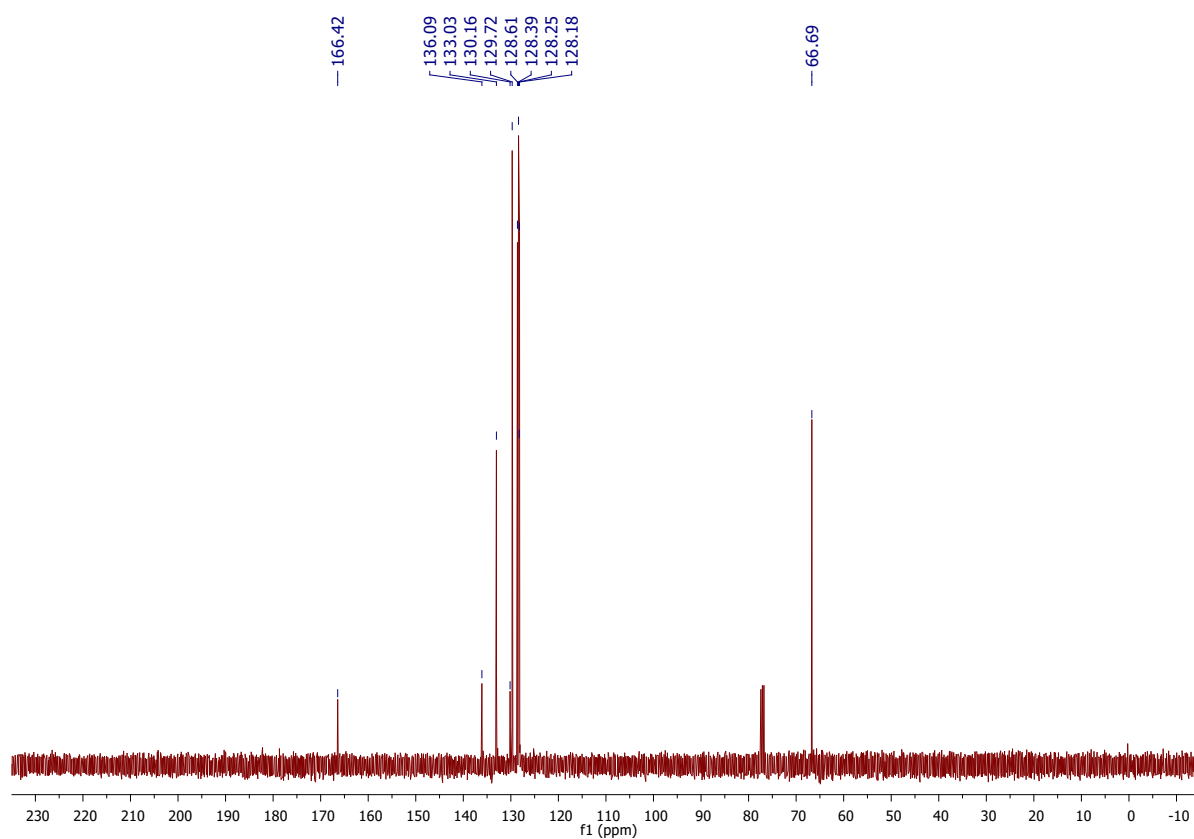
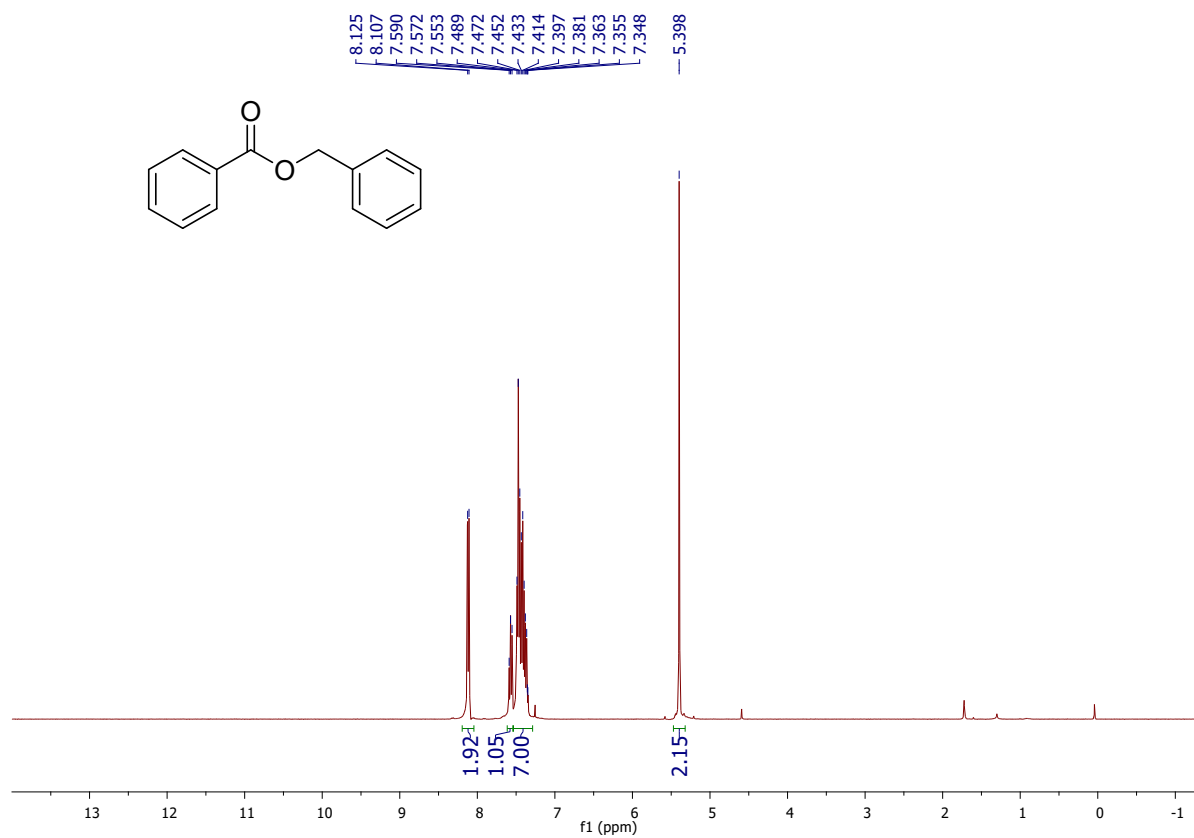
**Figure S26.**  $^1\text{H}$  (400 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{CDCl}_3$ ) NMR spectra of **5c**



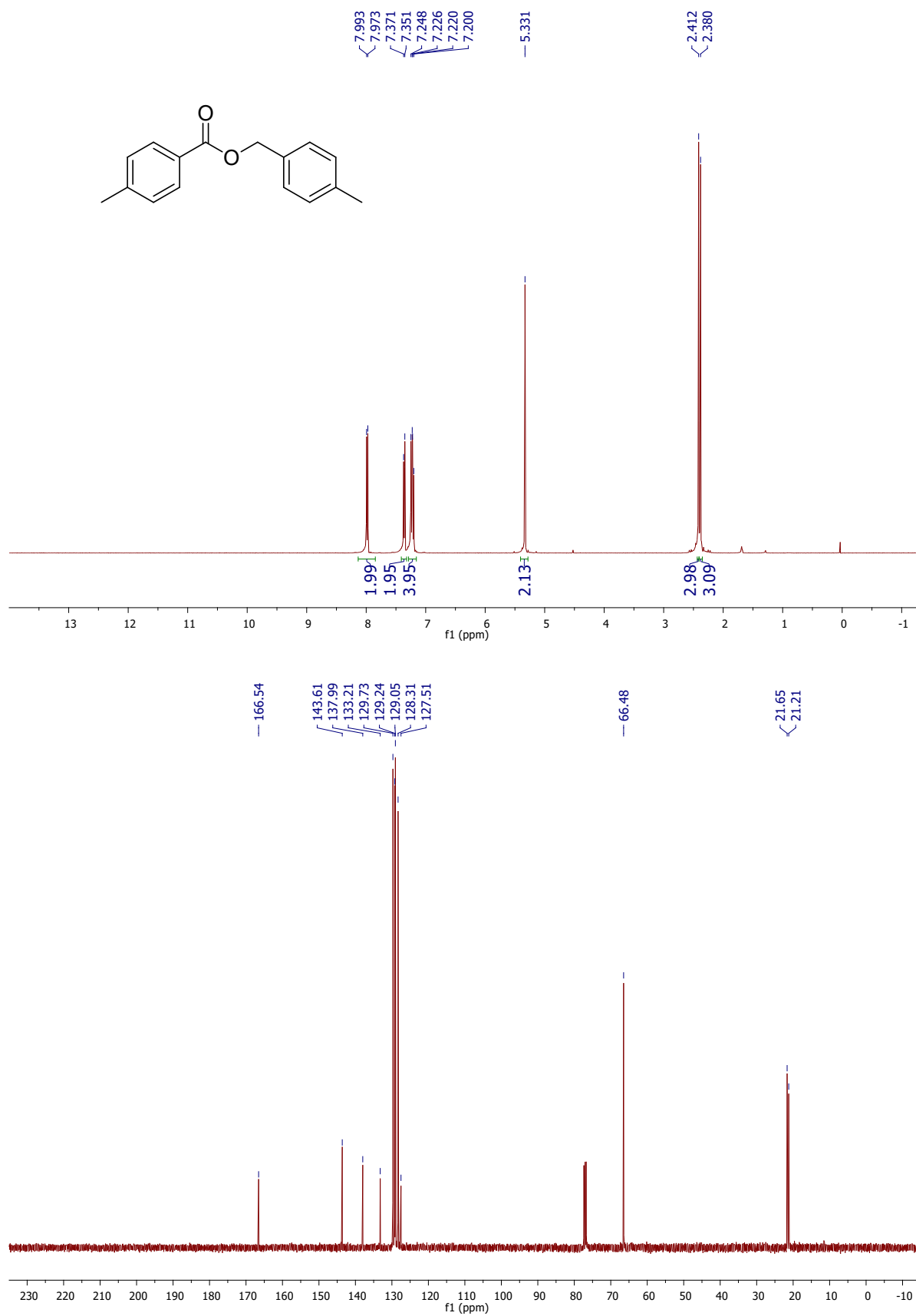
**Figure S27.** <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of **5d**



**Figure S28.**  $^1\text{H}$  (400 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{CDCl}_3$ ) NMR spectra of **5e**



**Figure S29.** <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of **6a**



**Figure S30.** <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of **6b**

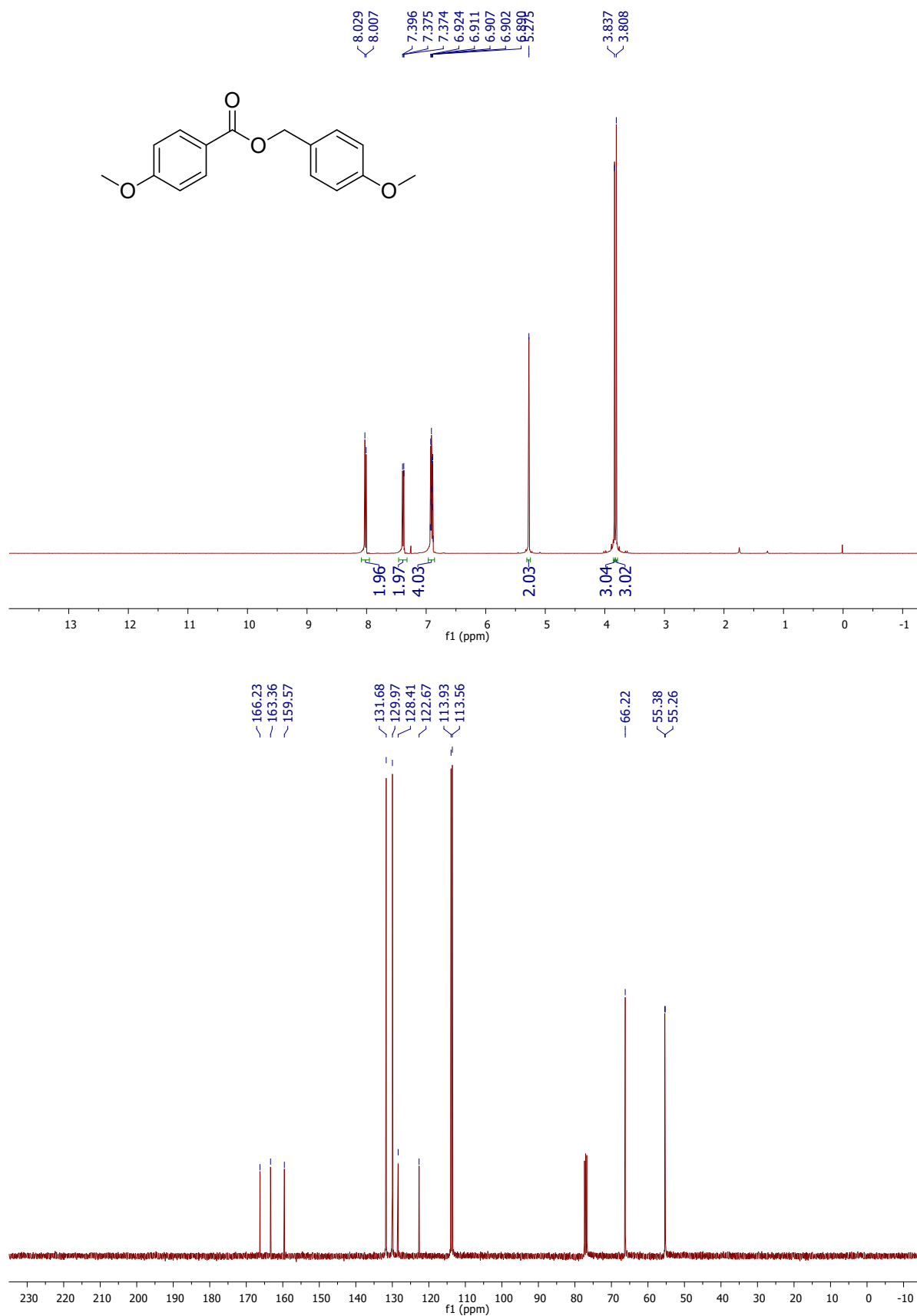
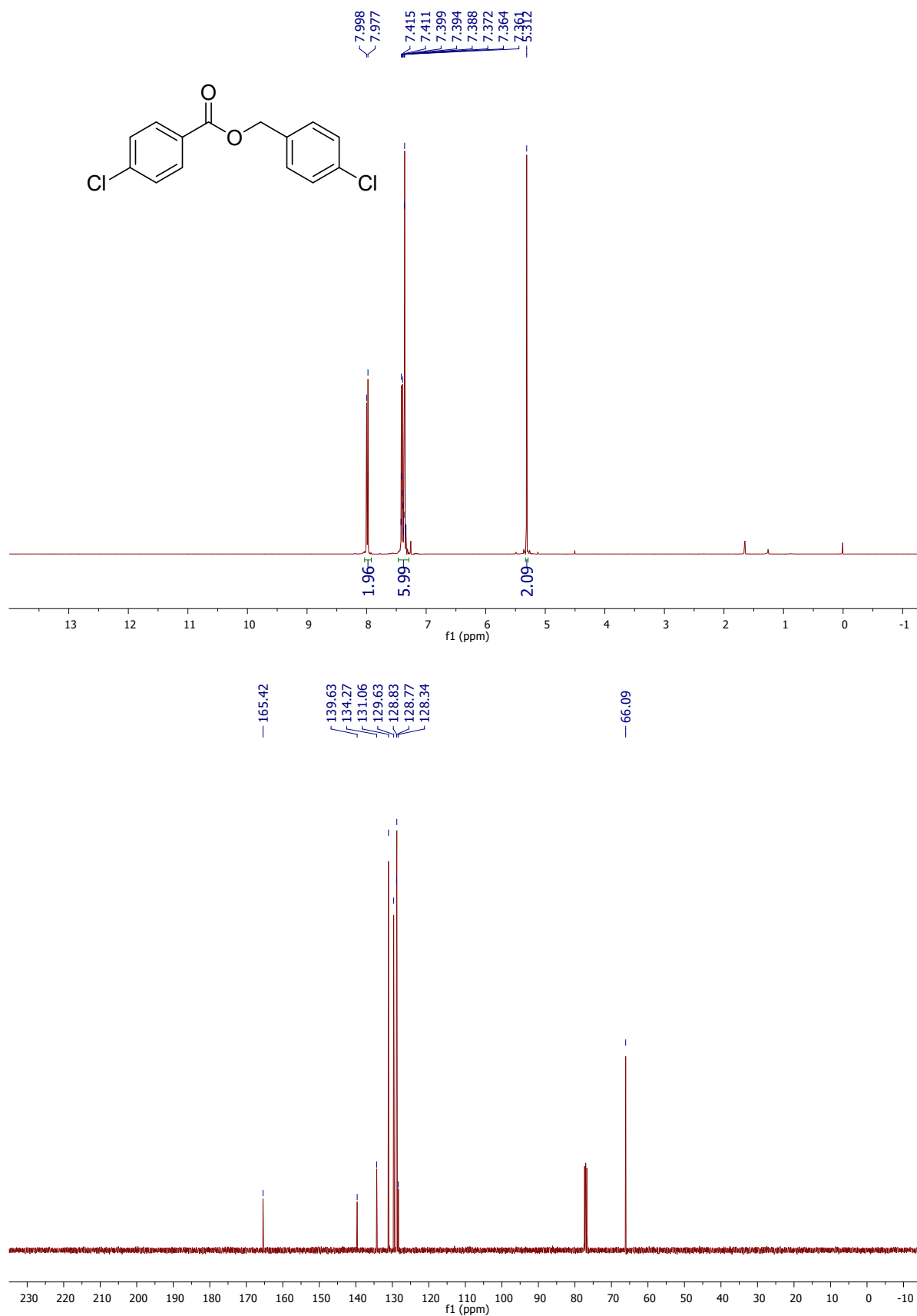
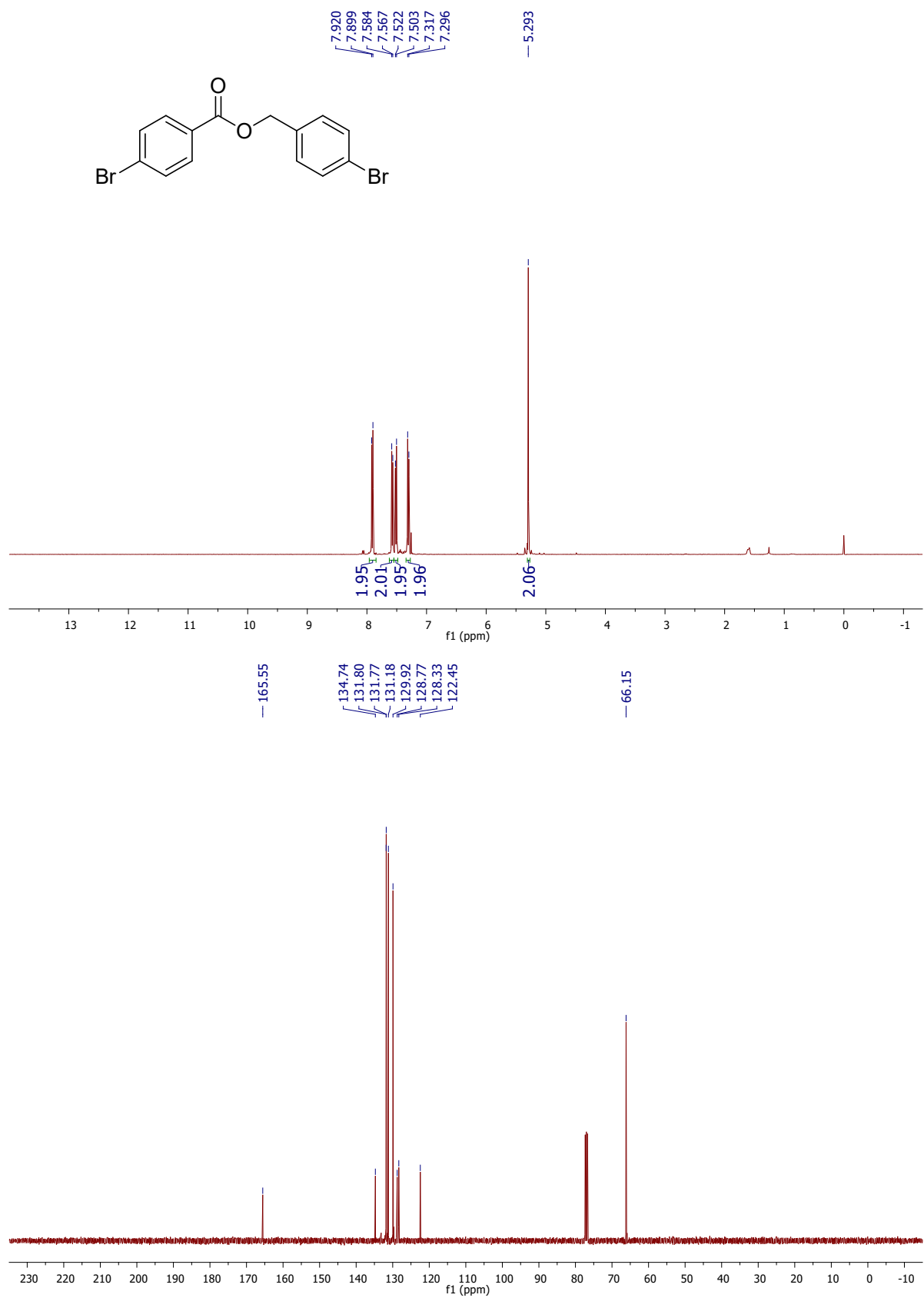


Figure S31. <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of 6c

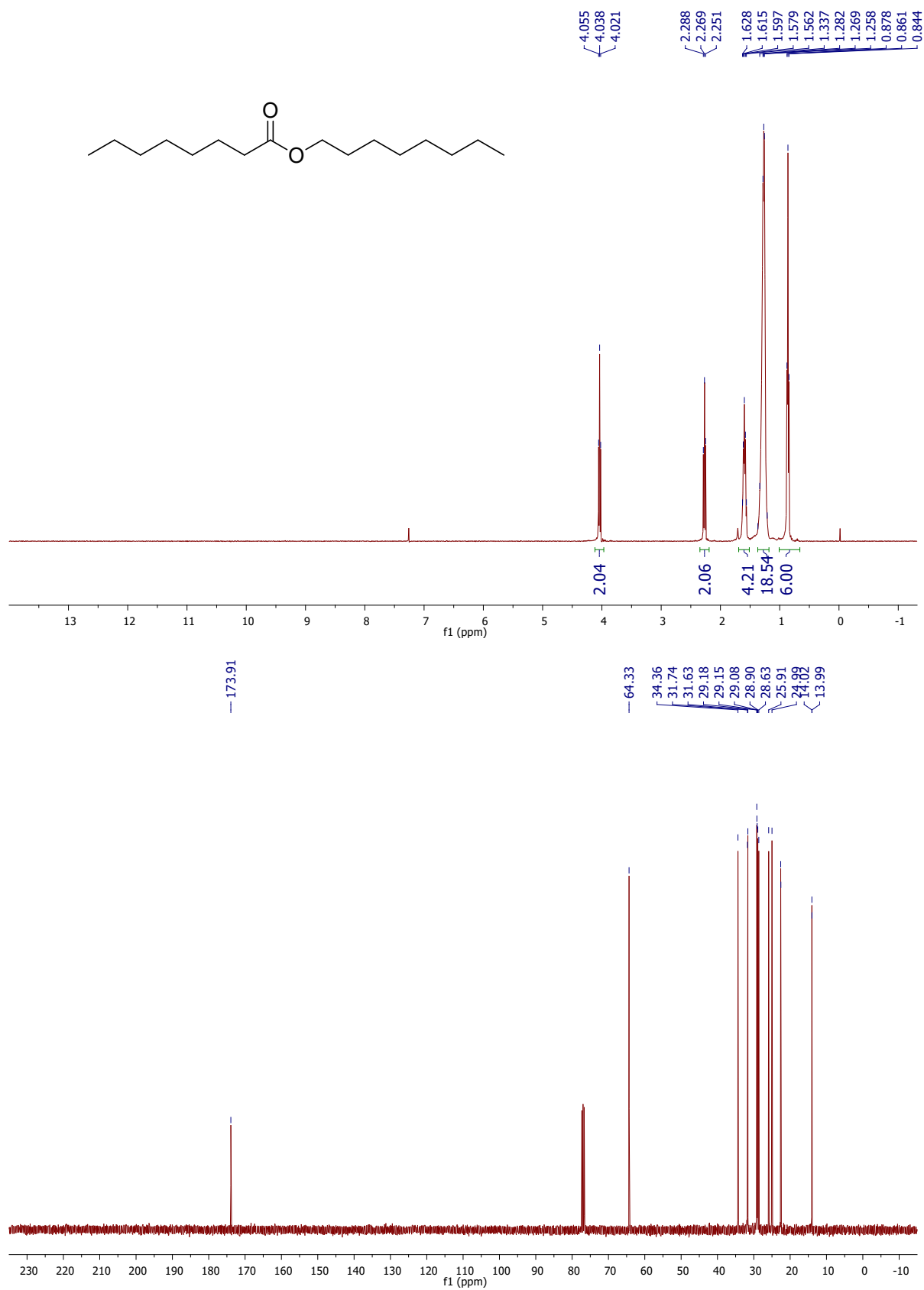




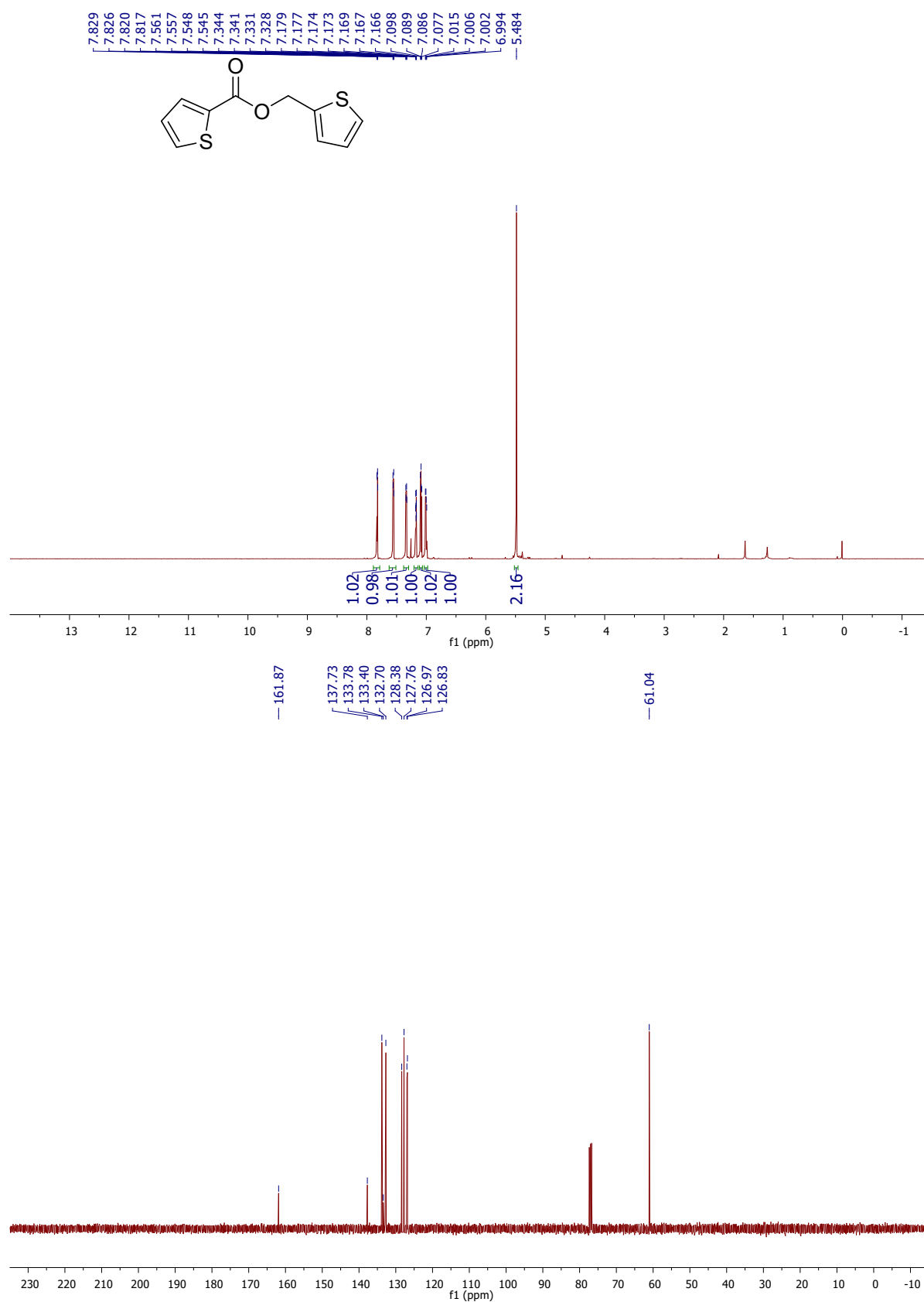
**Figure S32.** <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of **6d**



**Figure S33.**  $^1\text{H}$  (400 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C}\{^1\text{H}\}$  (100.6 MHz,  $\text{CDCl}_3$ ) NMR spectra of **6e**



**Figure S34.** <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of **6f**



**Figure S35.** <sup>1</sup>H (400 MHz, CDCl<sub>3</sub>) and <sup>13</sup>C{<sup>1</sup>H} (100.6 MHz, CDCl<sub>3</sub>) NMR spectra of **6g**