

## Supporting Information

### **4,5-Dioxo-imidazolinium Cation Activation of 1-Acyl-1-carbamoyl Oximes: Access to Cyanoformamides Using Dichloroimidazolidinedione**

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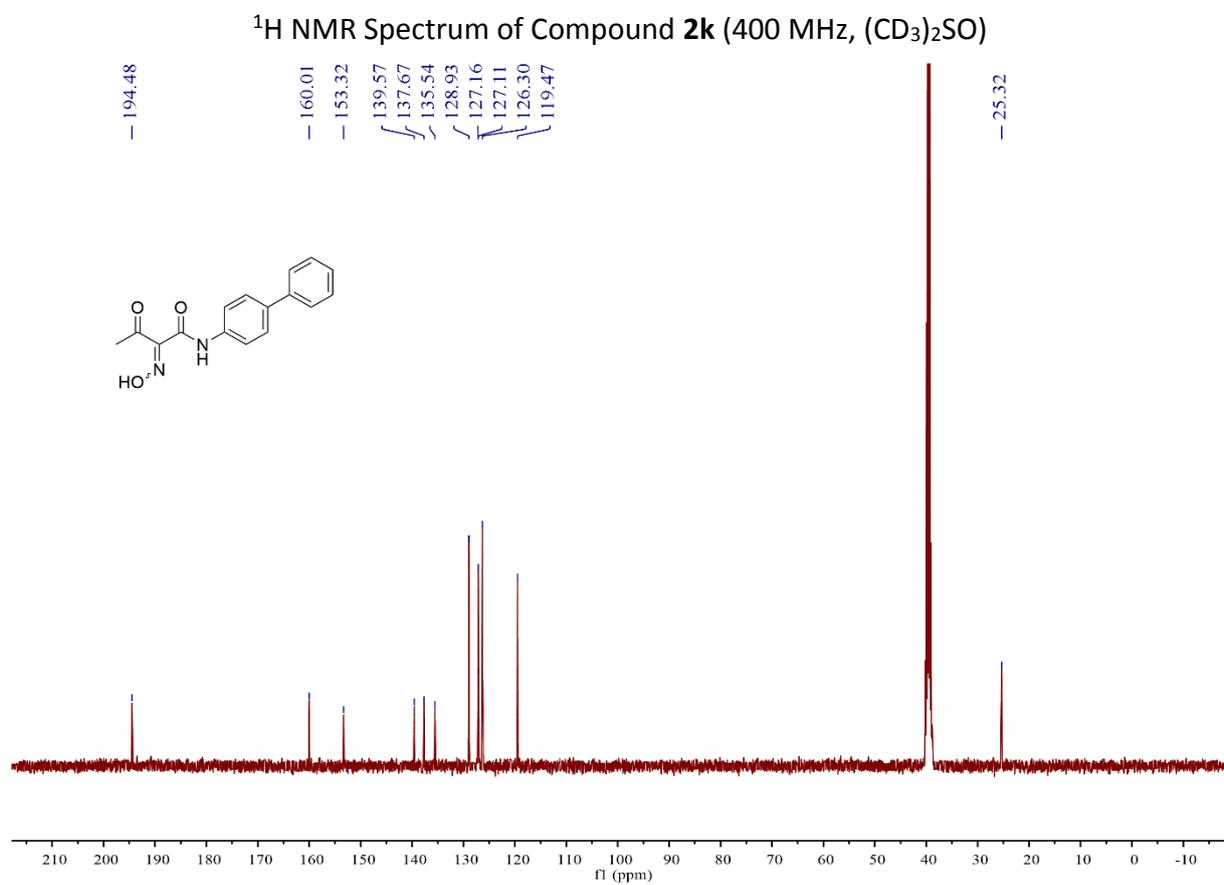
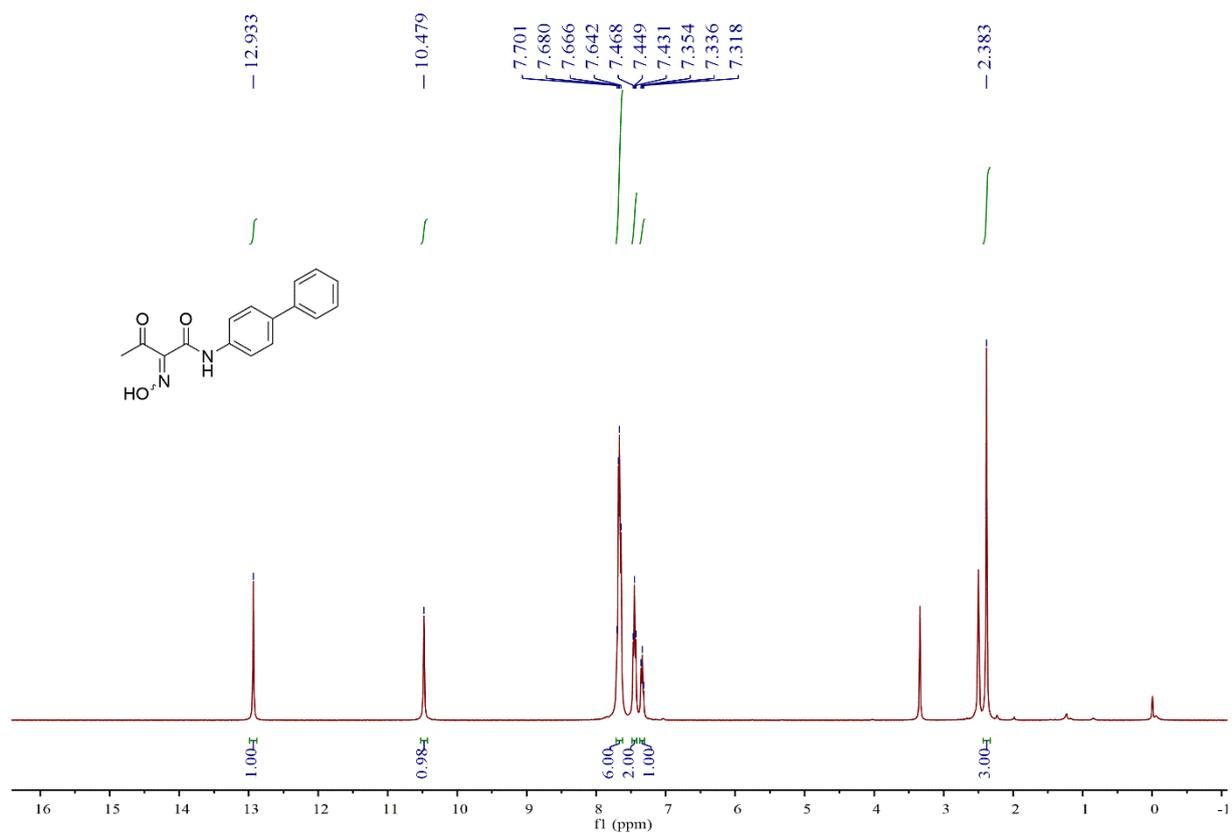
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<sup>‡</sup>State Key Laboratory of Materials-Oriented Chemical Engineering, Nanjing Tech University, 30 Puzhu Road South, Nanjing 211816, P. R. China  
E-mail: zjli@njtech.edu.cn, guok@njtech.edu.cn

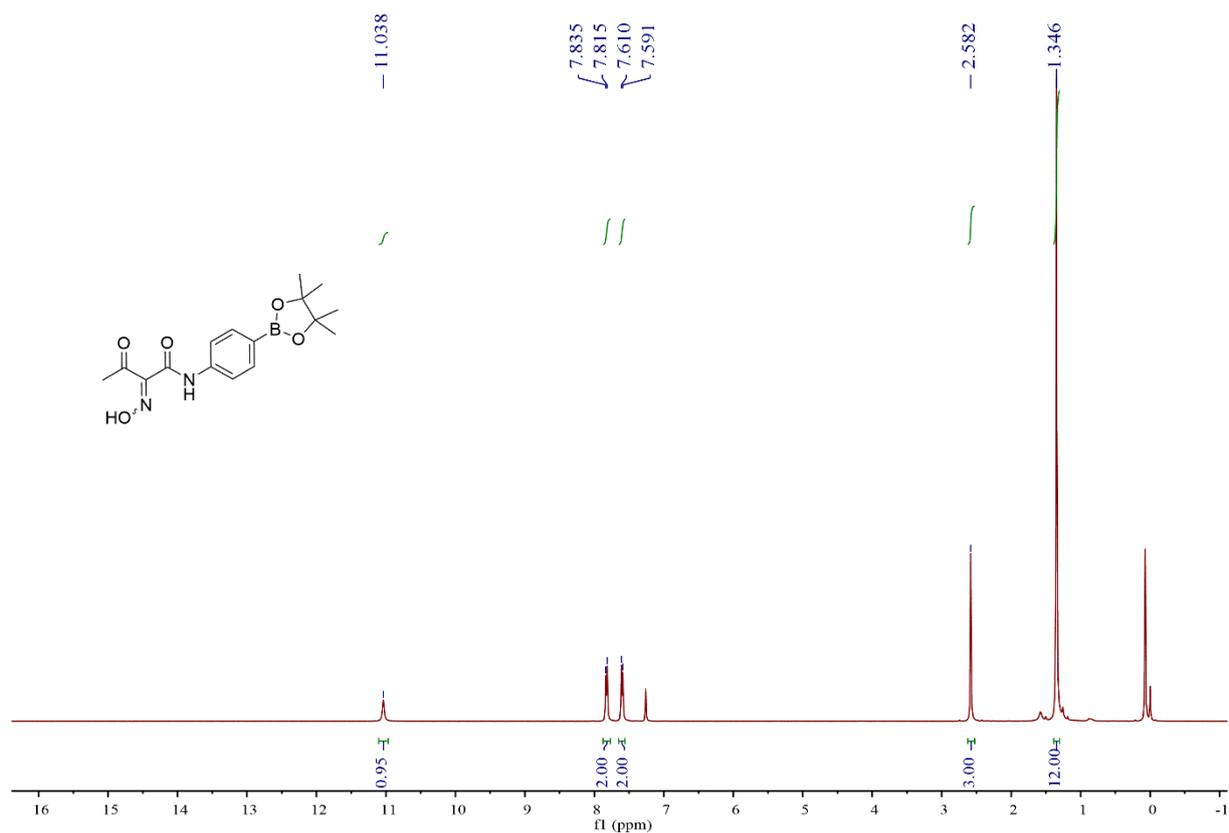
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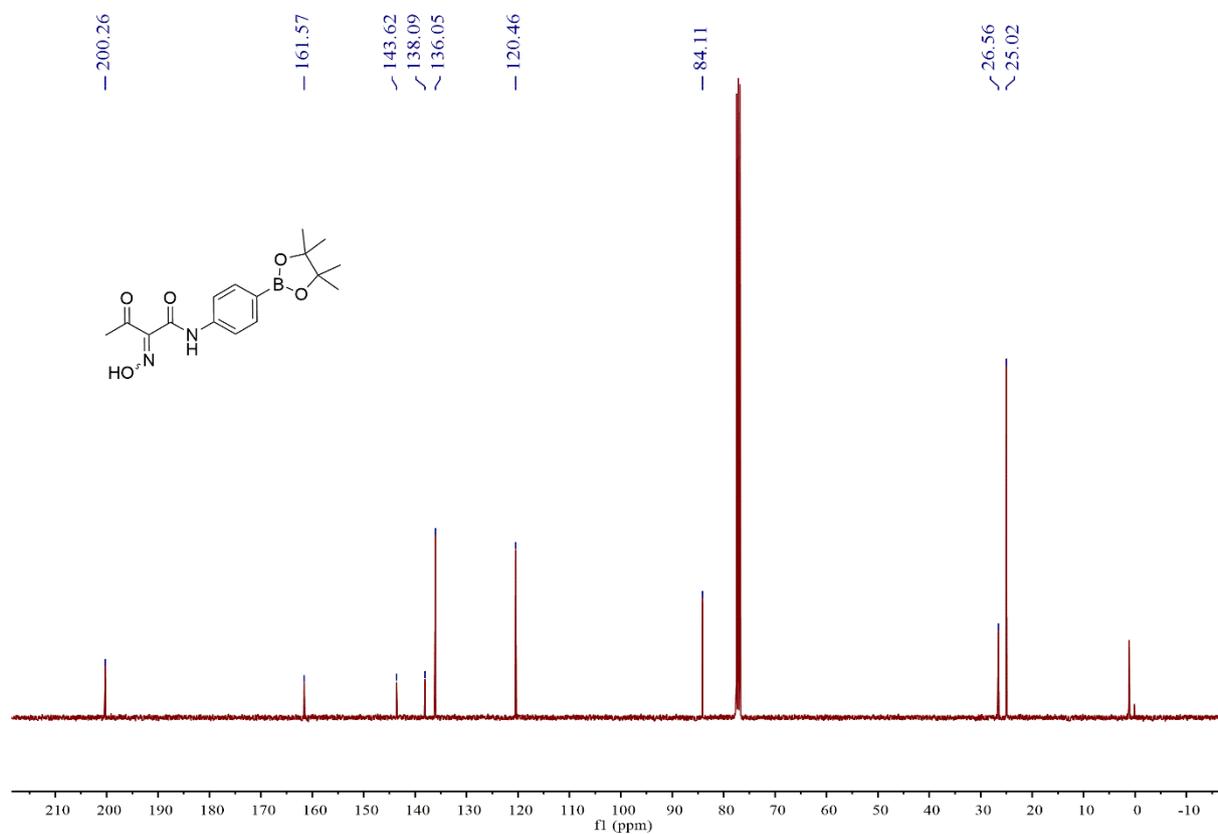
# NMR Spectra of Compounds



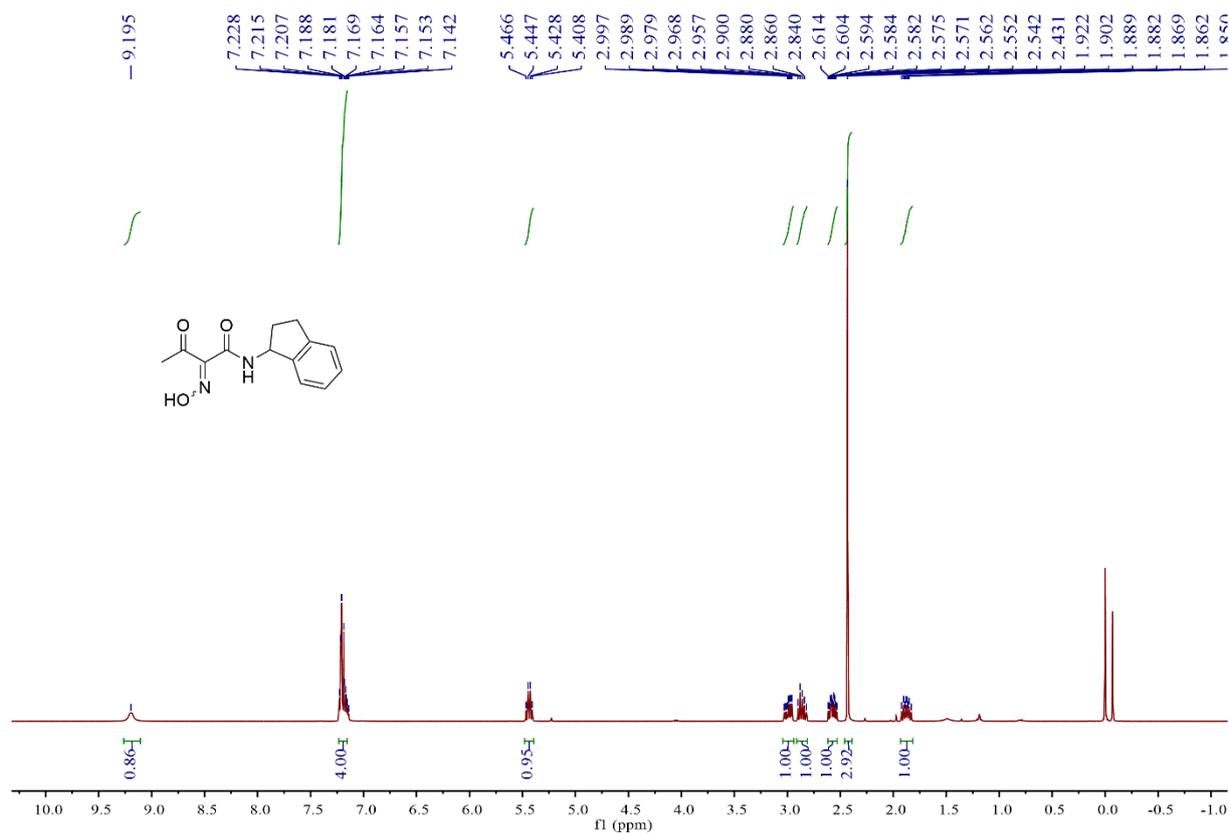
**<sup>13</sup>C NMR Spectrum of Compound 2k (100 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)**



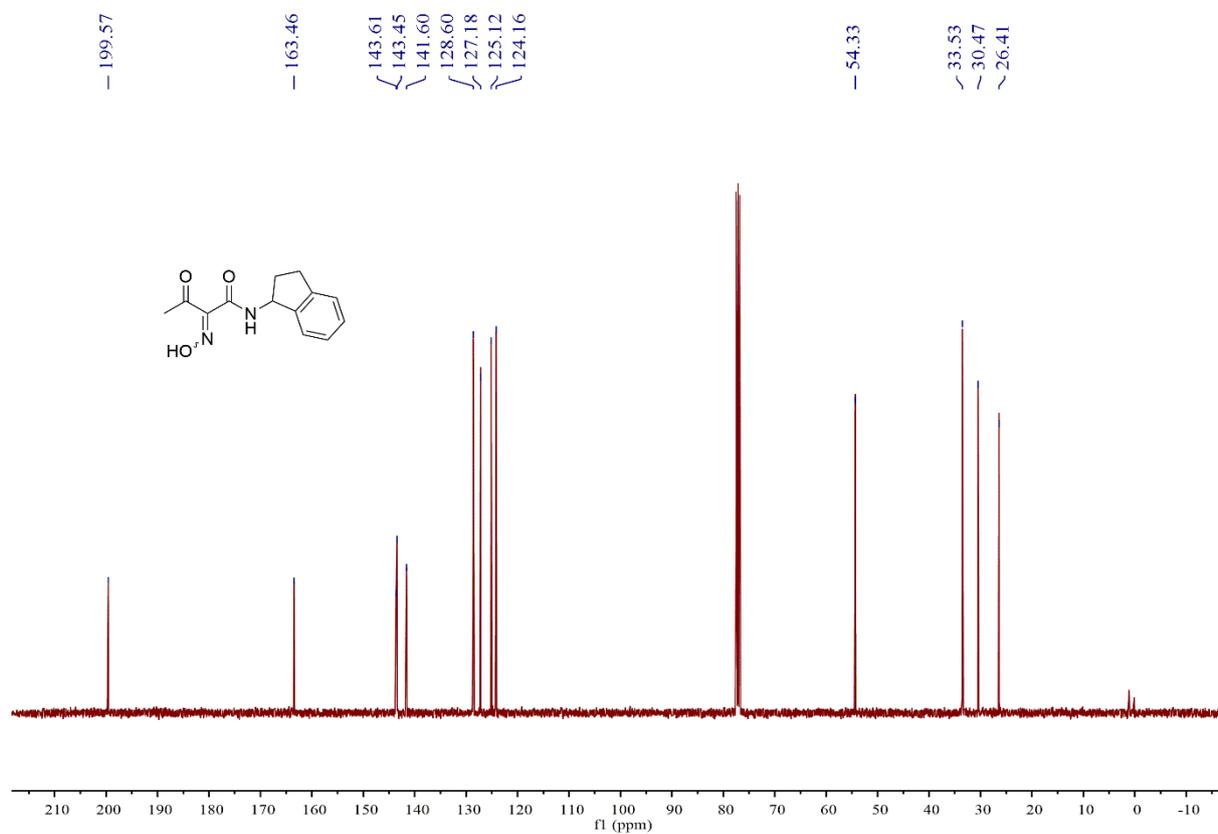
<sup>1</sup>H NMR Spectrum of Compound **2q** (400 MHz, CDCl<sub>3</sub>)



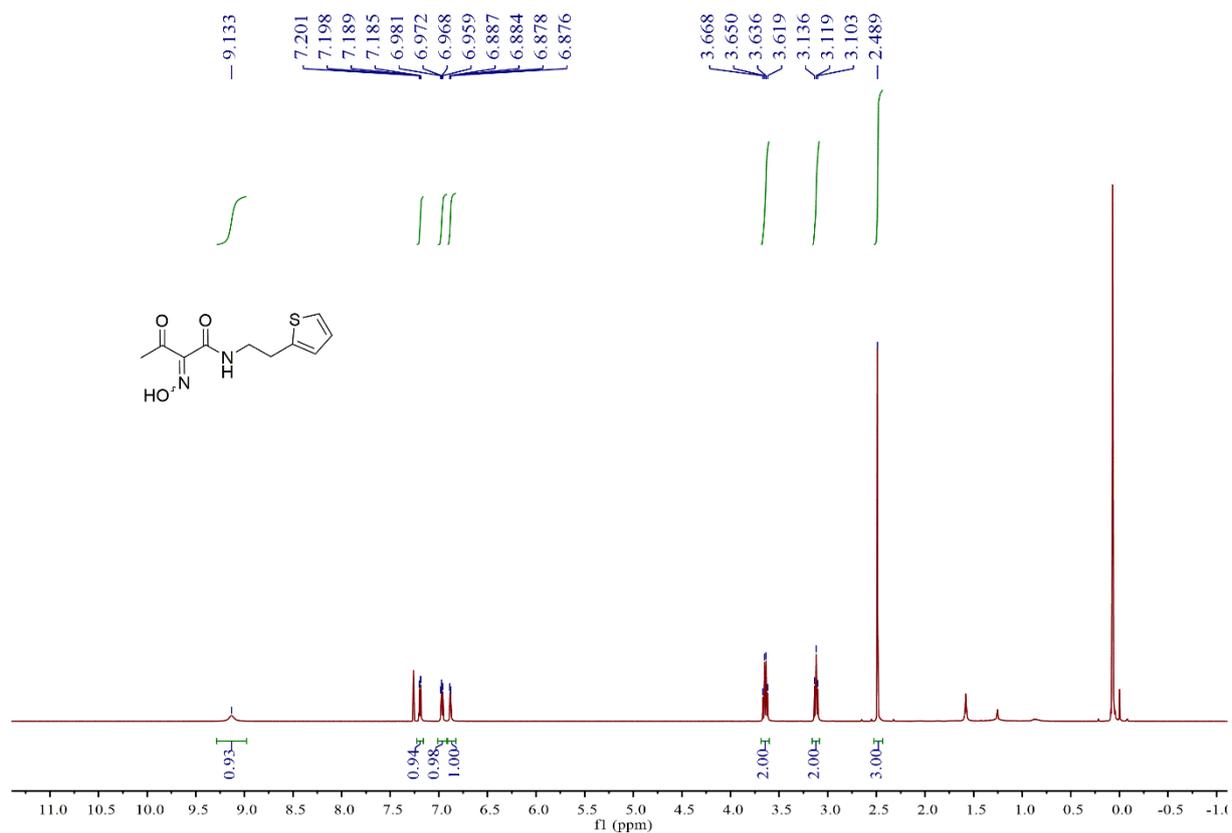
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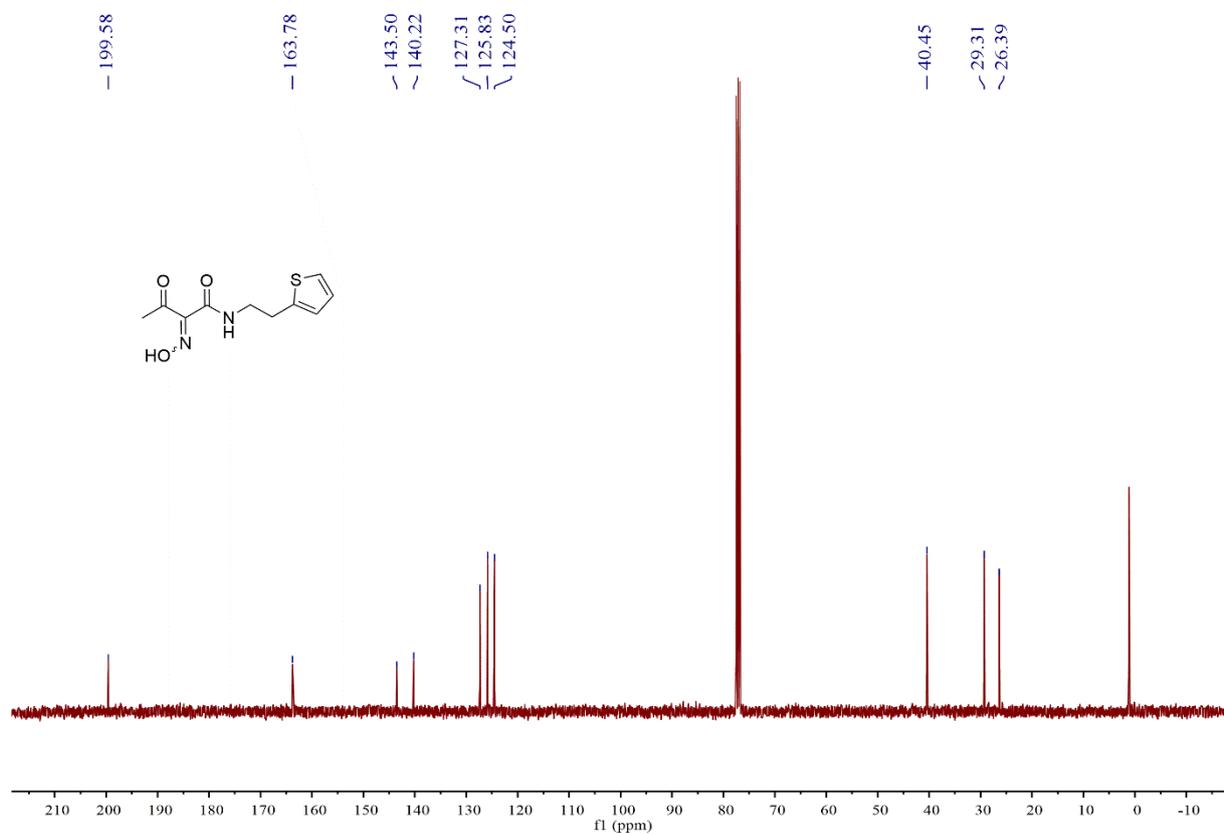
<sup>1</sup>H NMR Spectrum of Compound 2u (400 MHz, CDCl<sub>3</sub>)



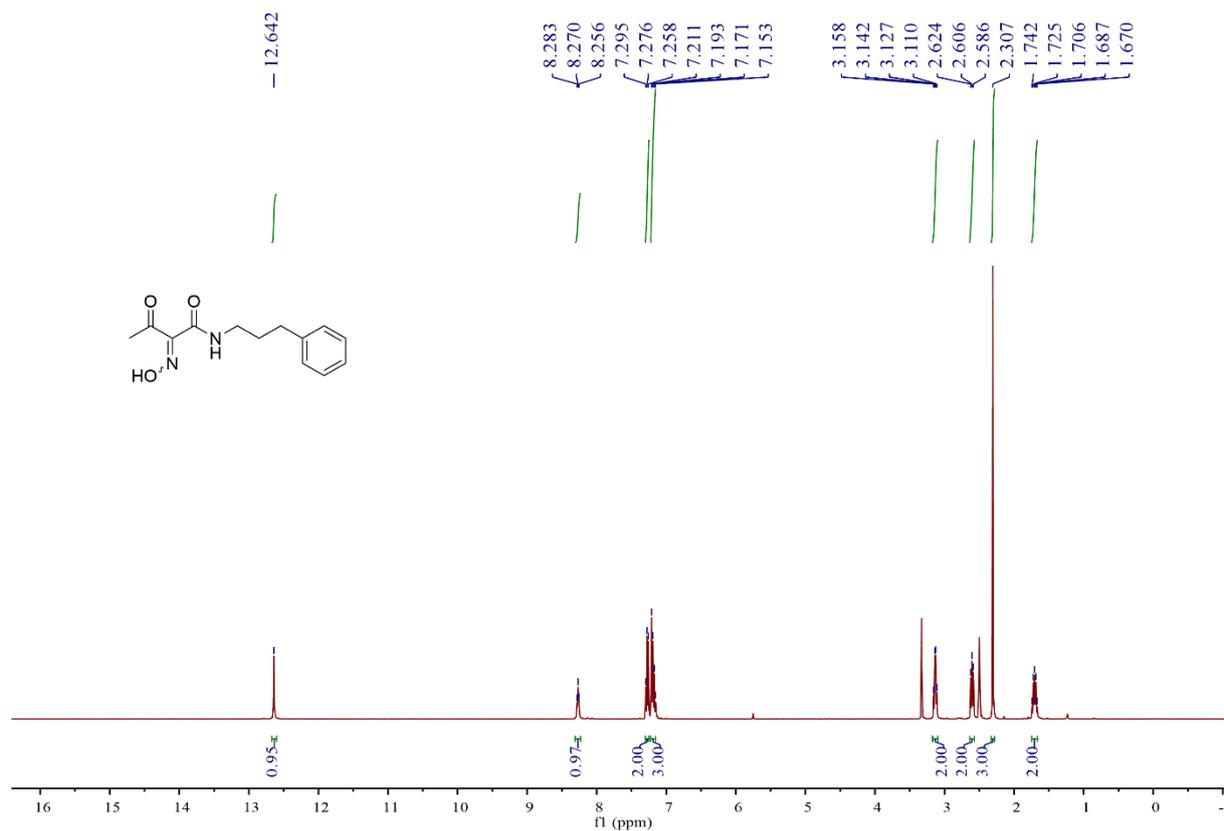
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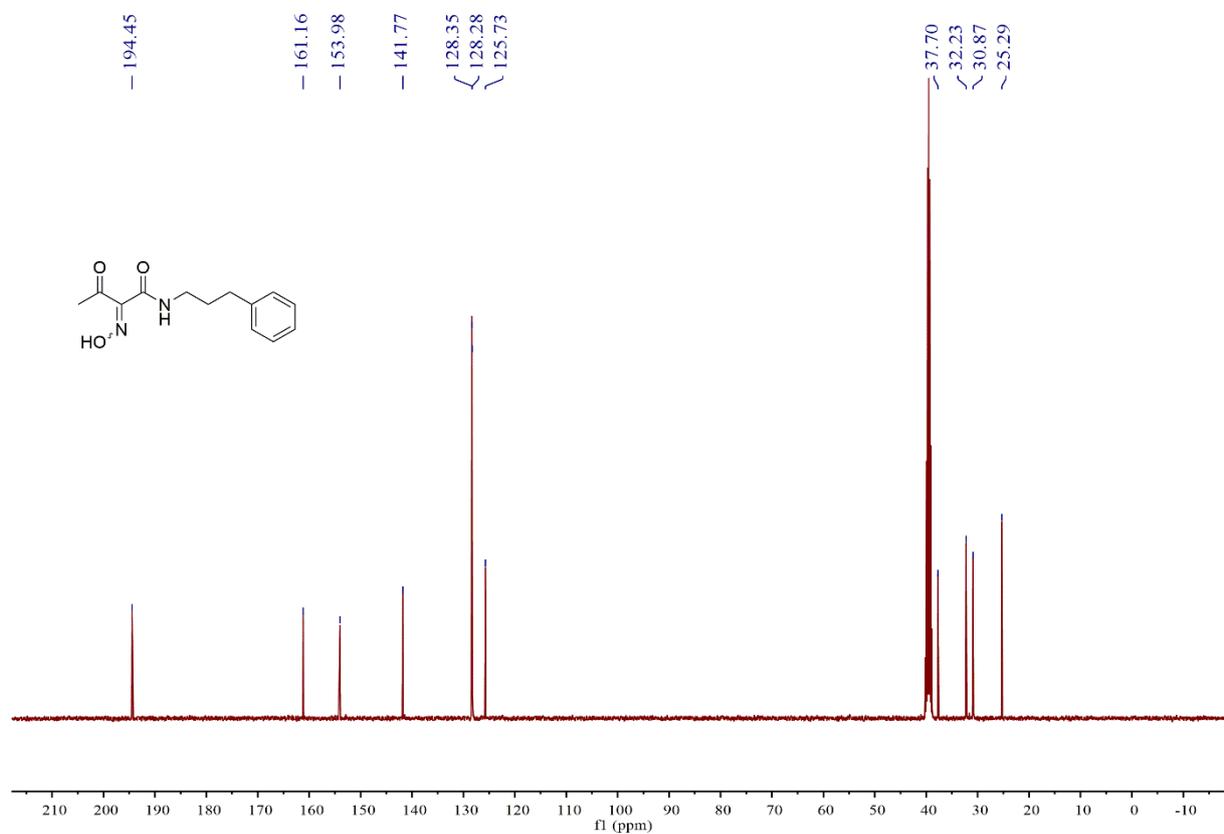
**<sup>1</sup>H NMR Spectrum of Compound 2z (400 MHz, CDCl<sub>3</sub>)**



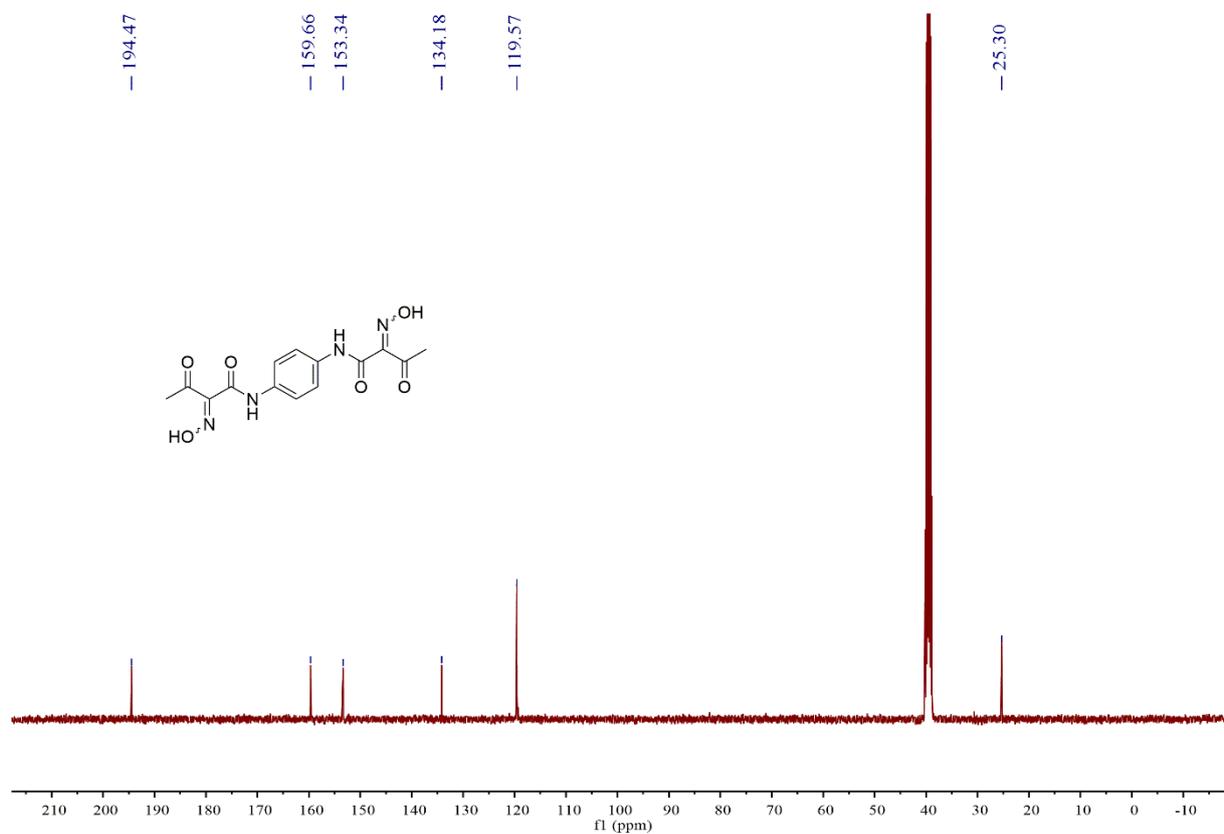
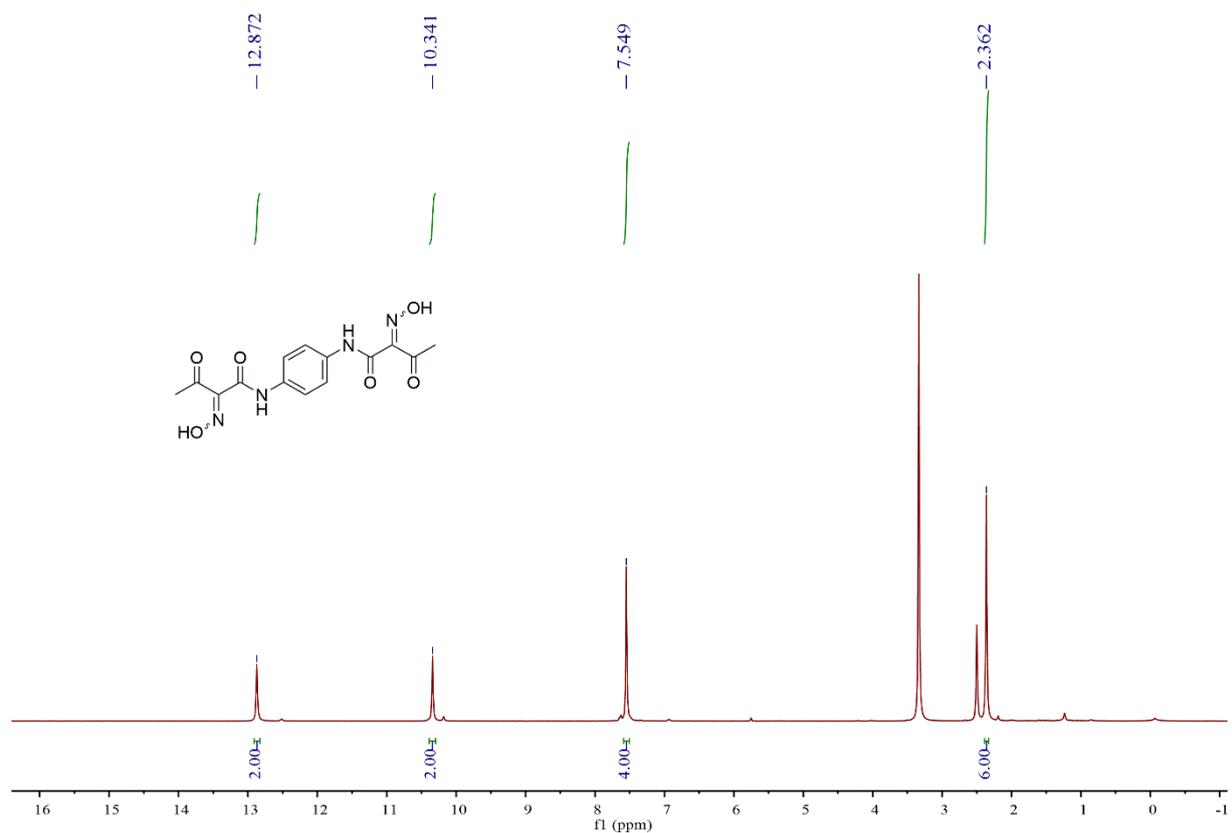
**<sup>13</sup>C NMR Spectrum of Compound 2z (100 MHz, CDCl<sub>3</sub>)**



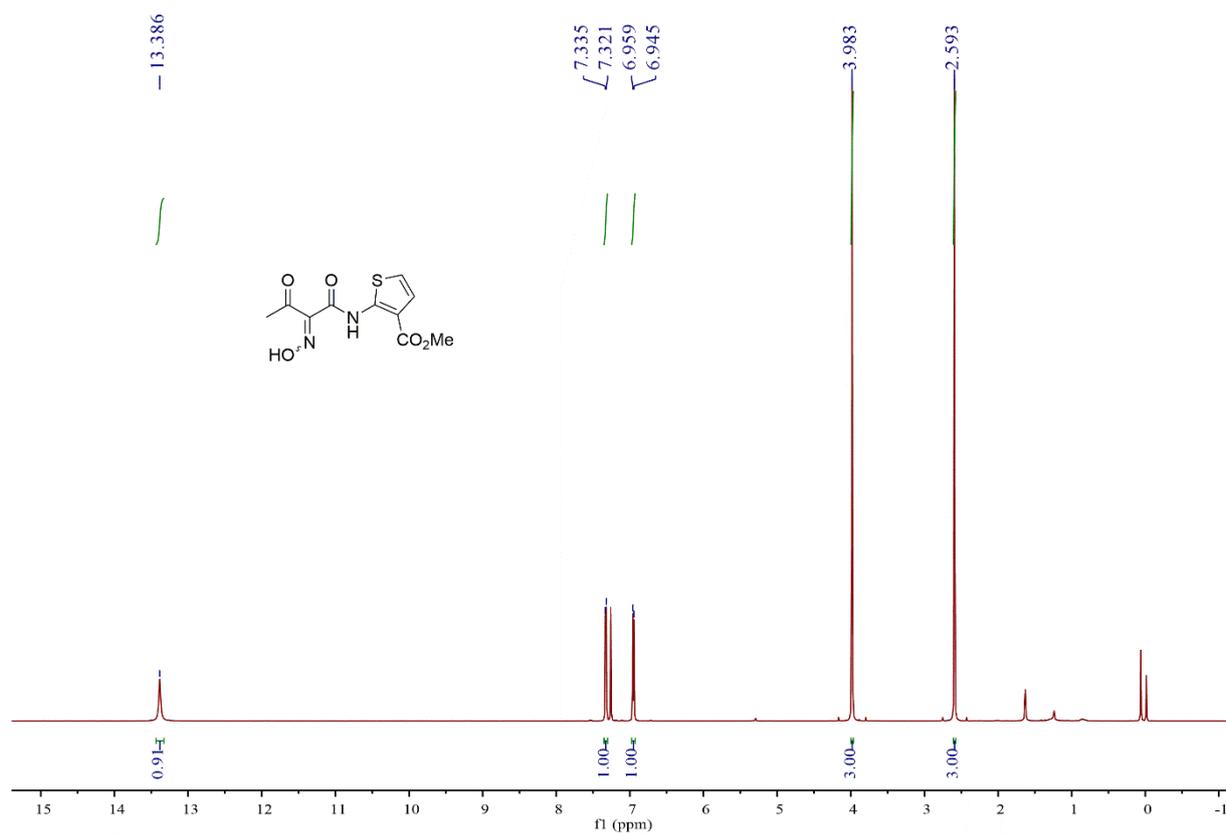
<sup>1</sup>H NMR Spectrum of Compound 2aa (400 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



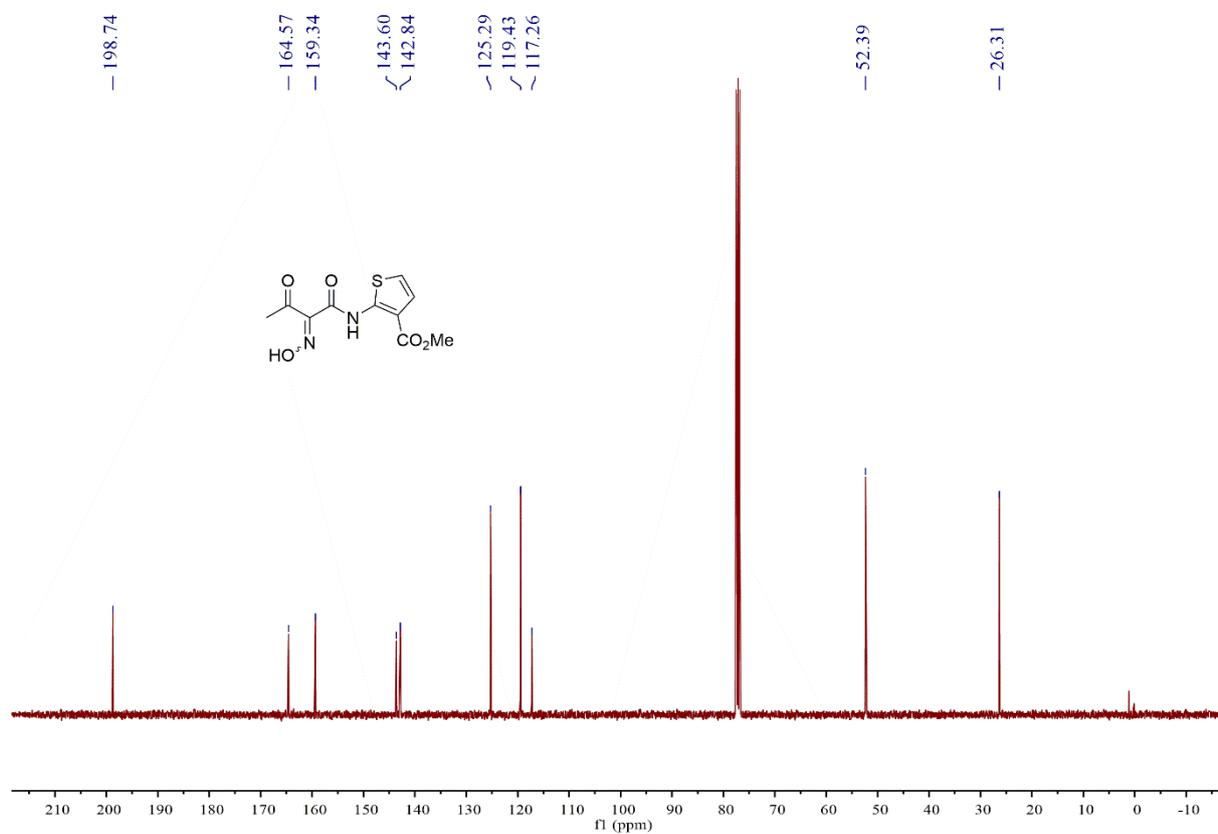
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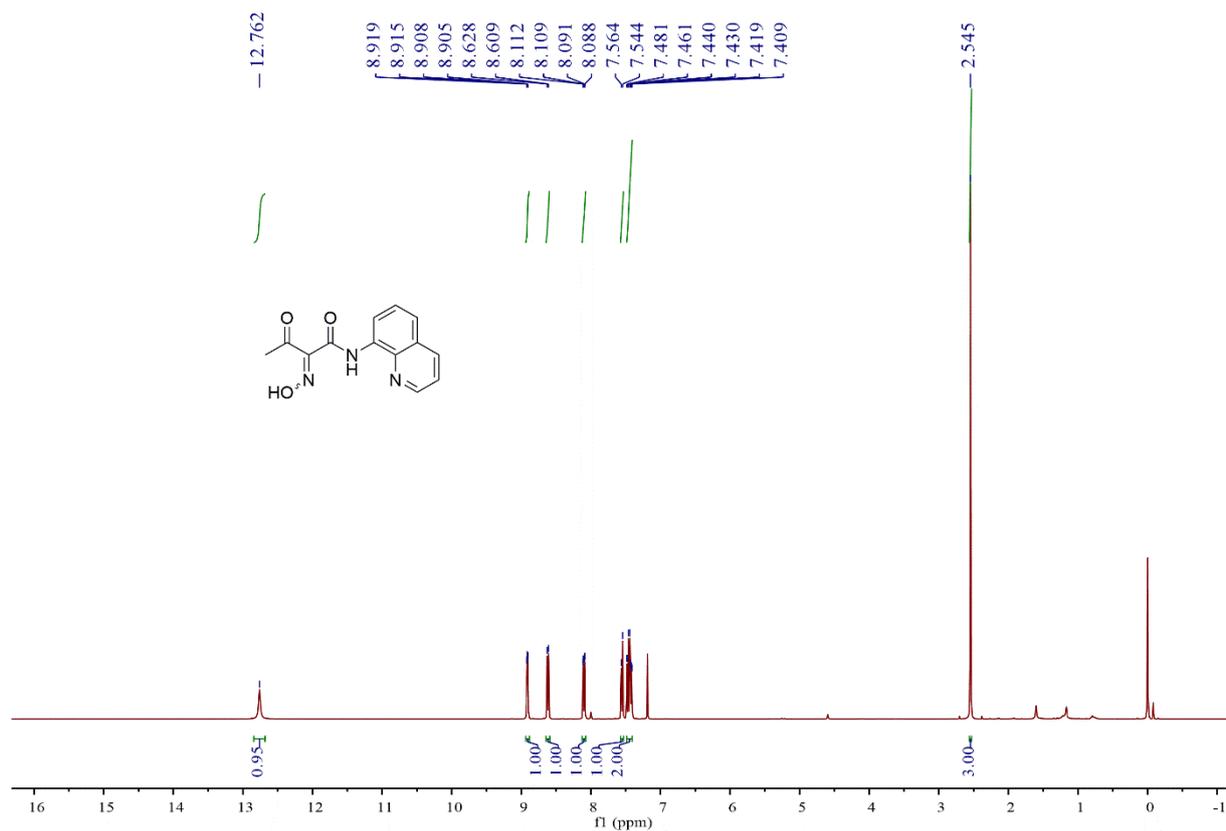
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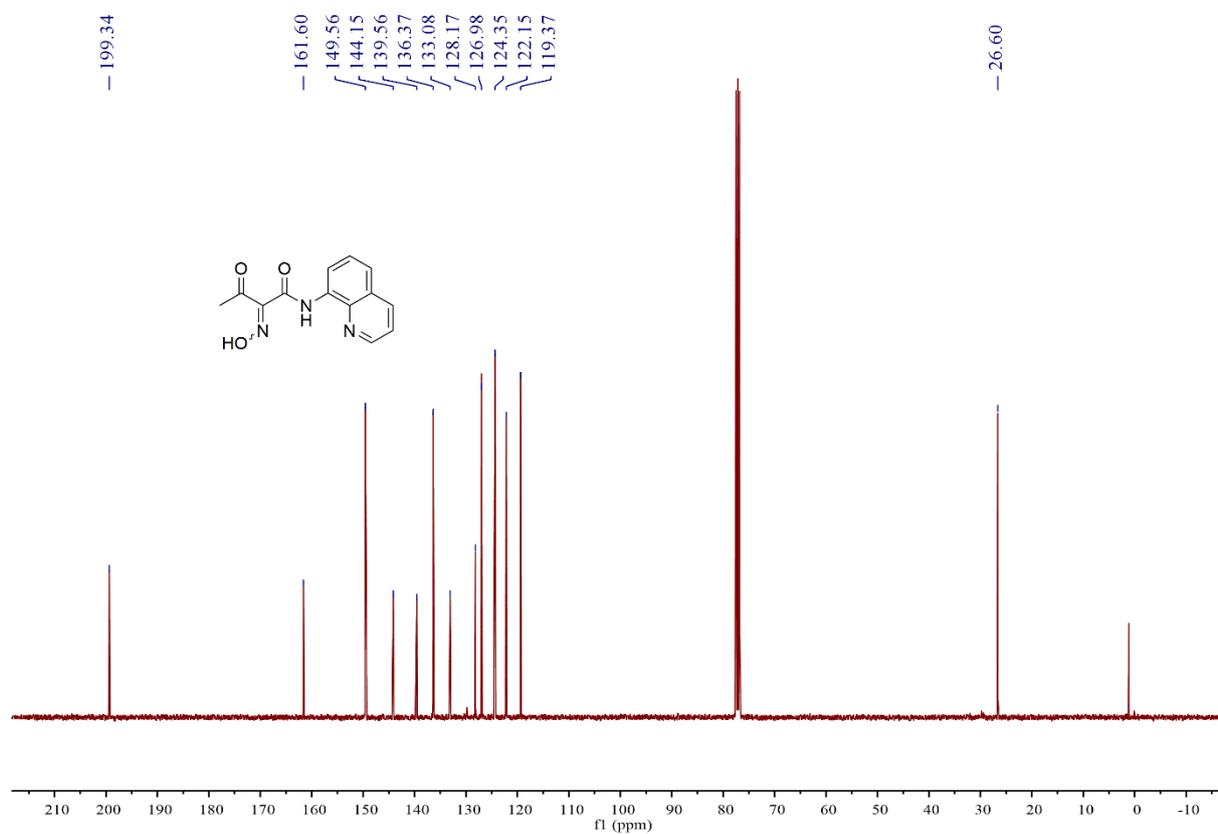
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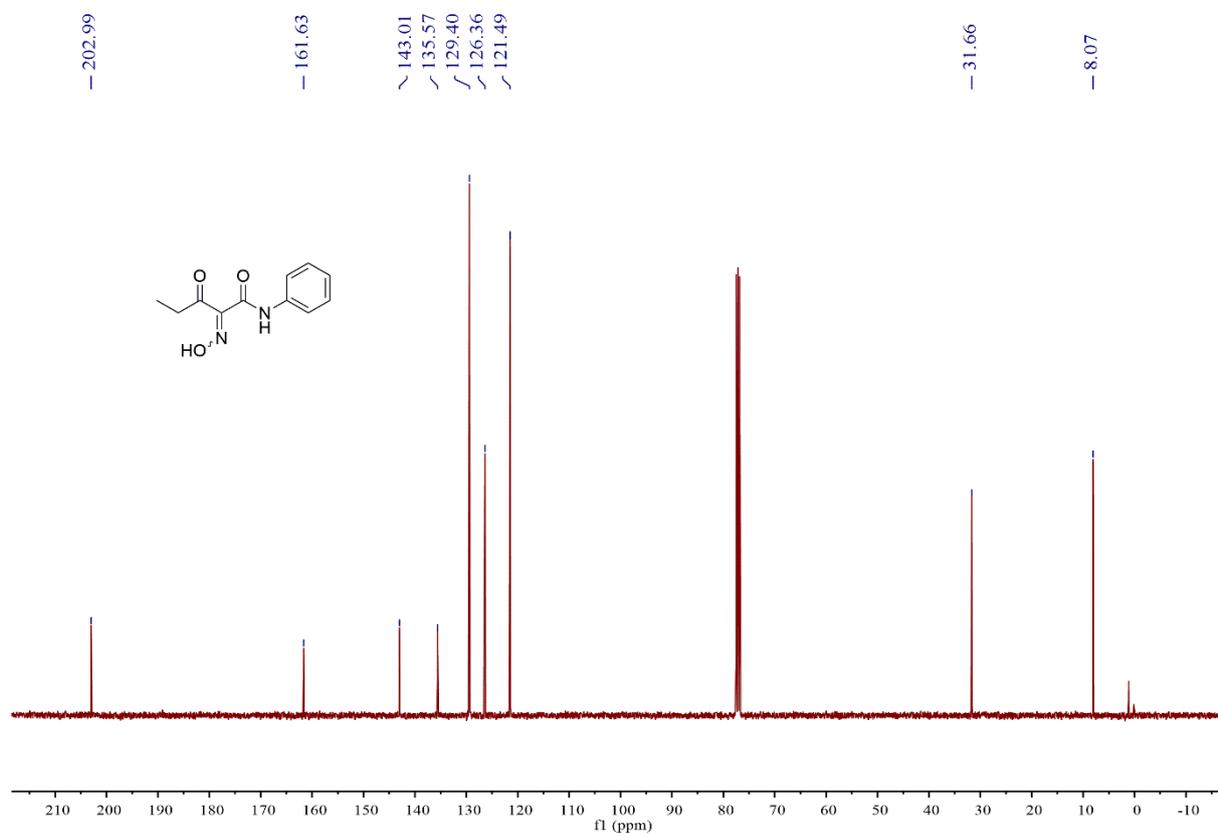
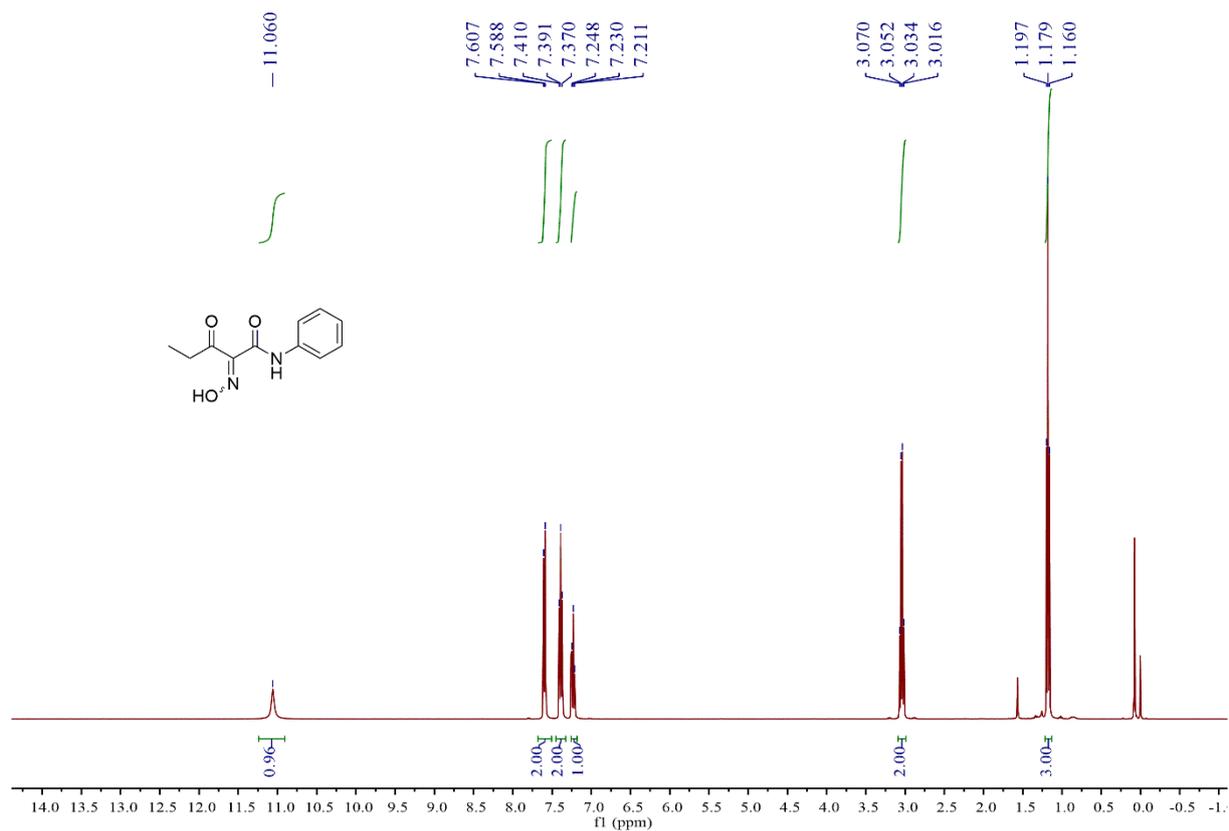
<sup>13</sup>C NMR Spectrum of Compound **2af** (100 MHz, CDCl<sub>3</sub>)



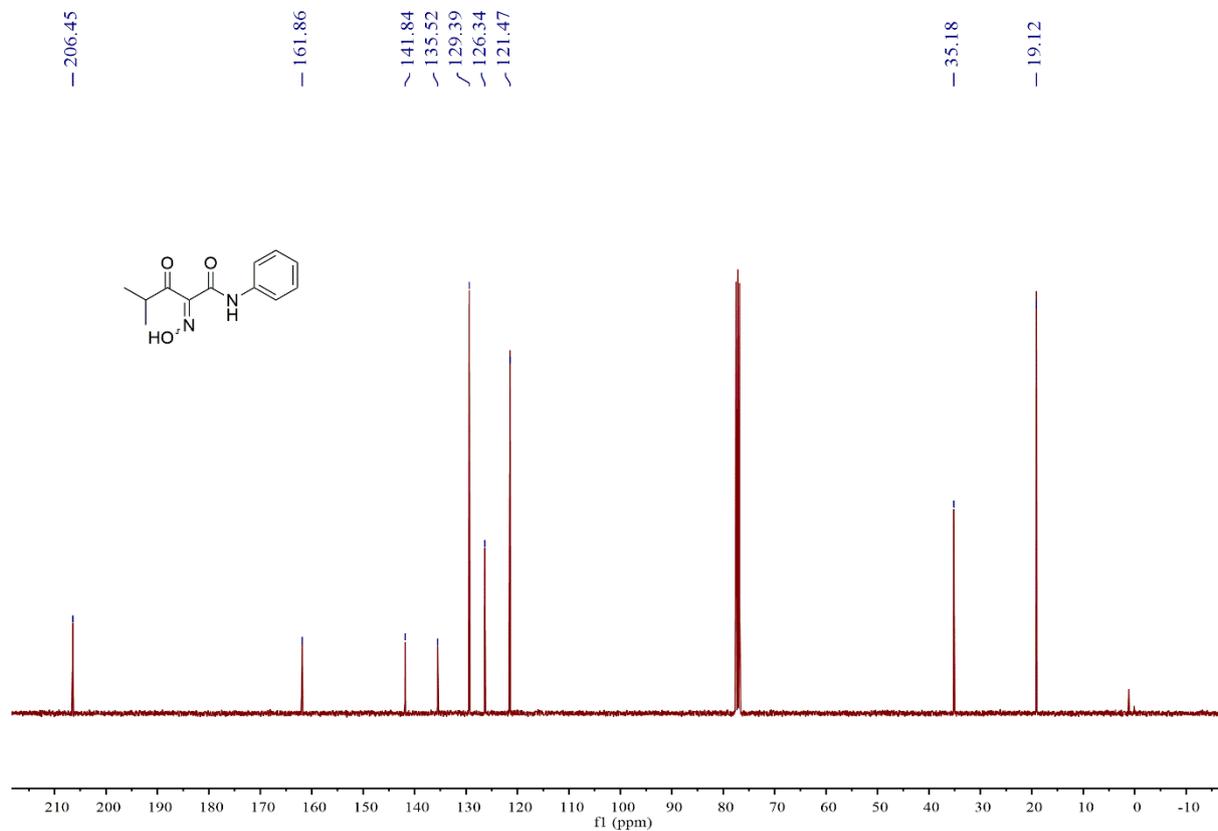
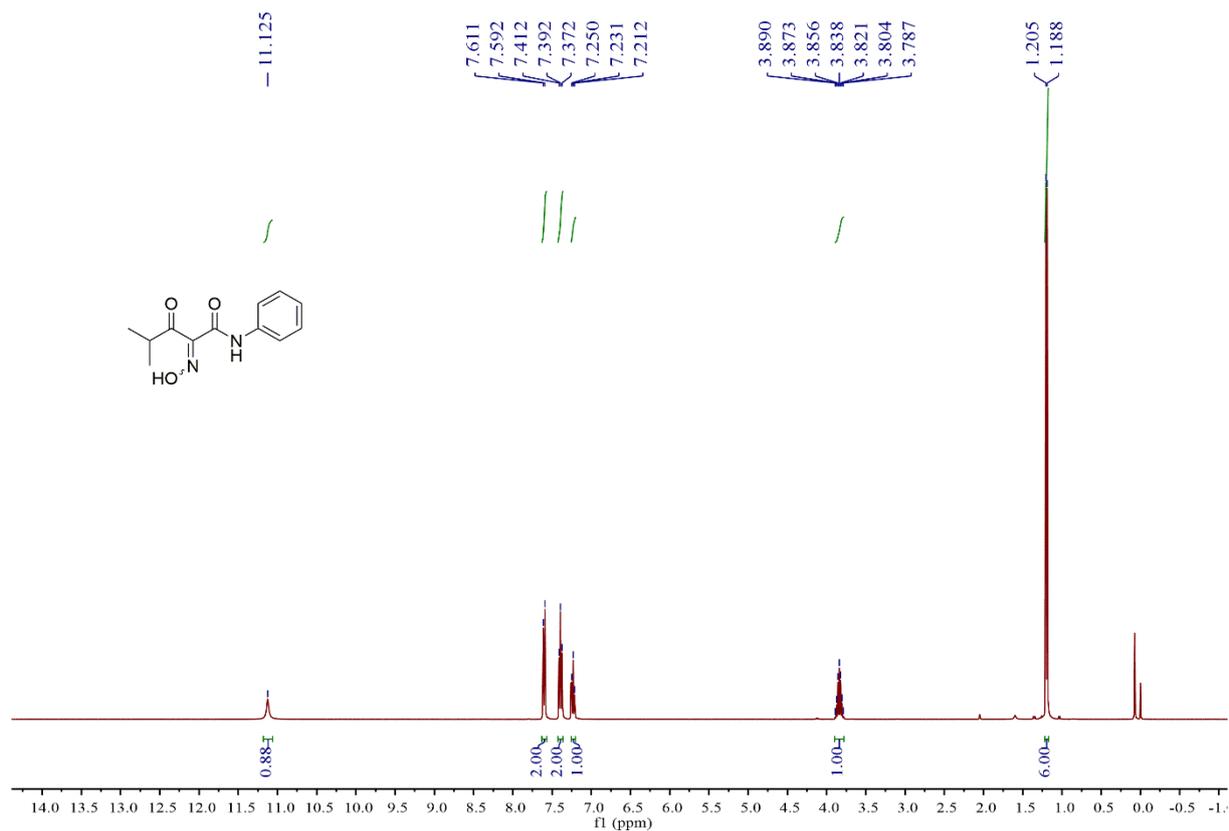
**<sup>1</sup>H NMR Spectrum of Compound 2ag (400 MHz, CDCl<sub>3</sub>)**

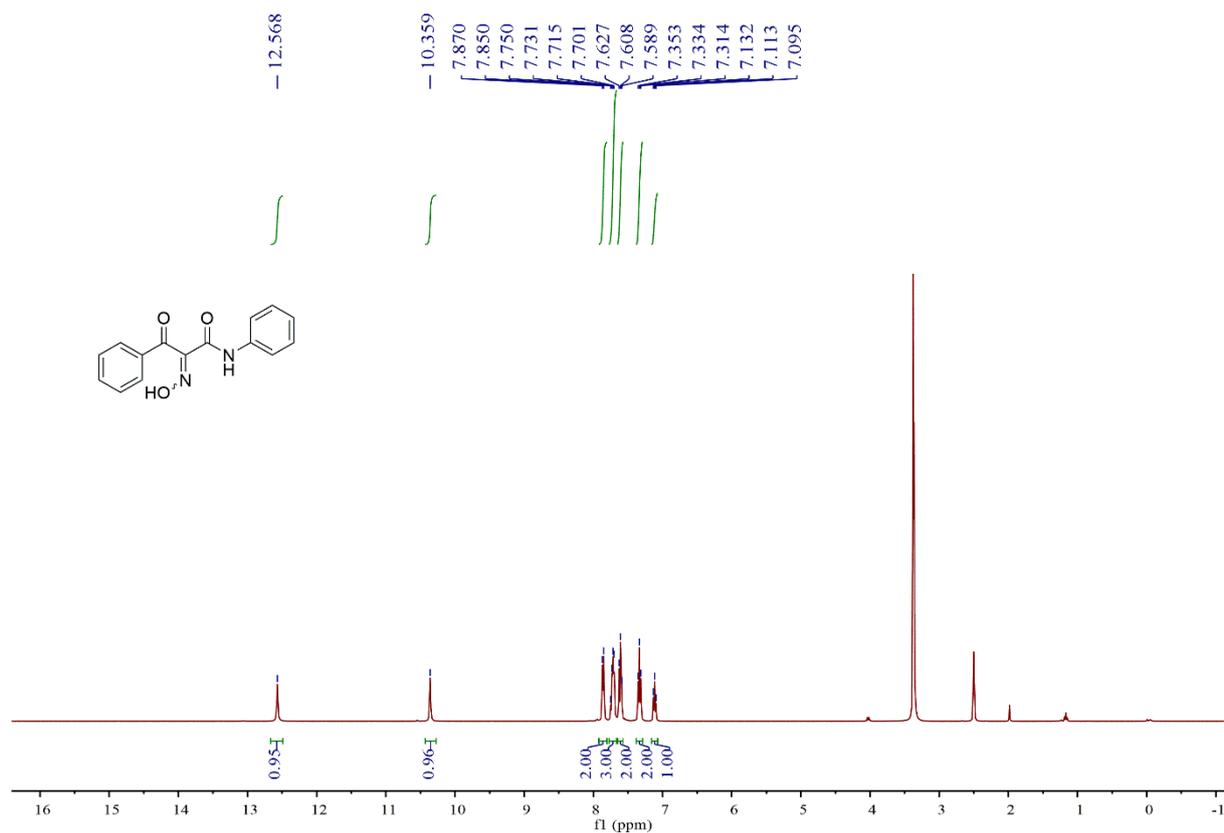


**<sup>13</sup>C NMR Spectrum of Compound 2ag (100 MHz, CDCl<sub>3</sub>)**

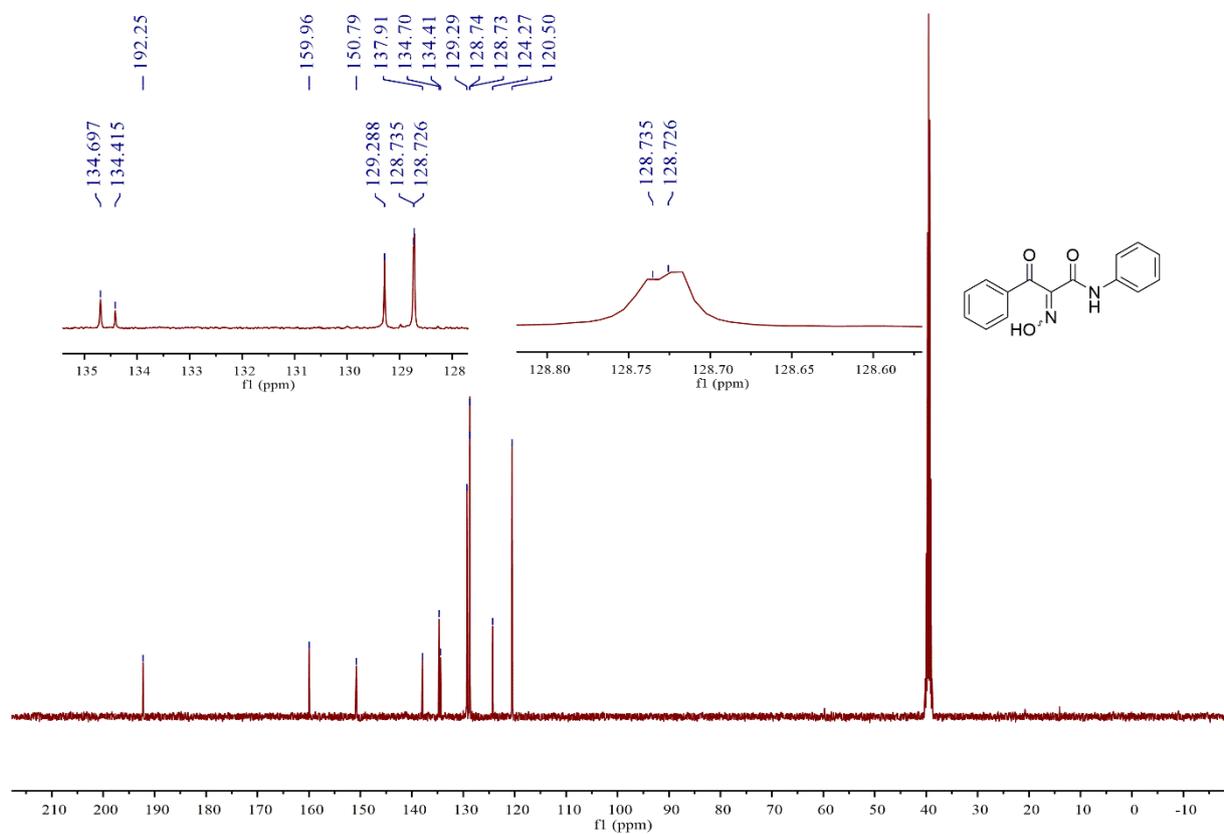


<sup>13</sup>C NMR Spectrum of Compound **2ah** (100 MHz, CDCl<sub>3</sub>)

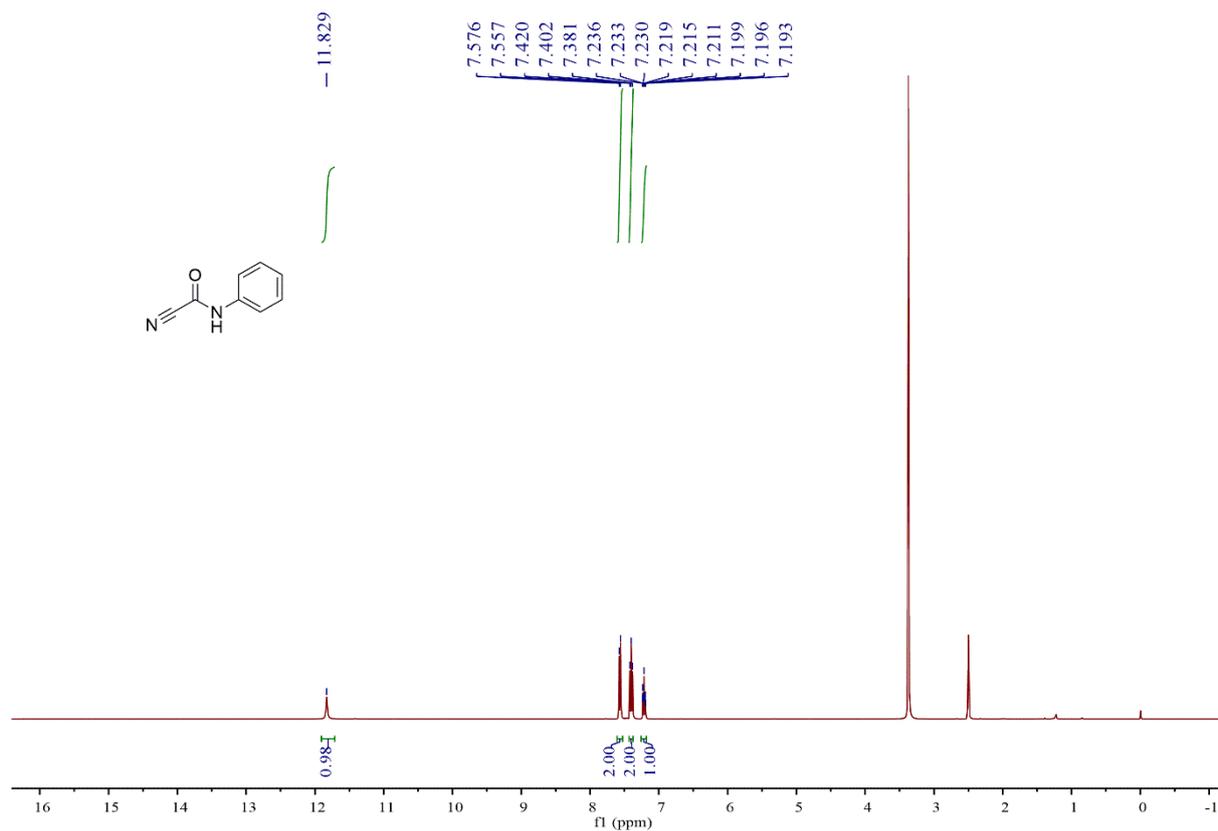




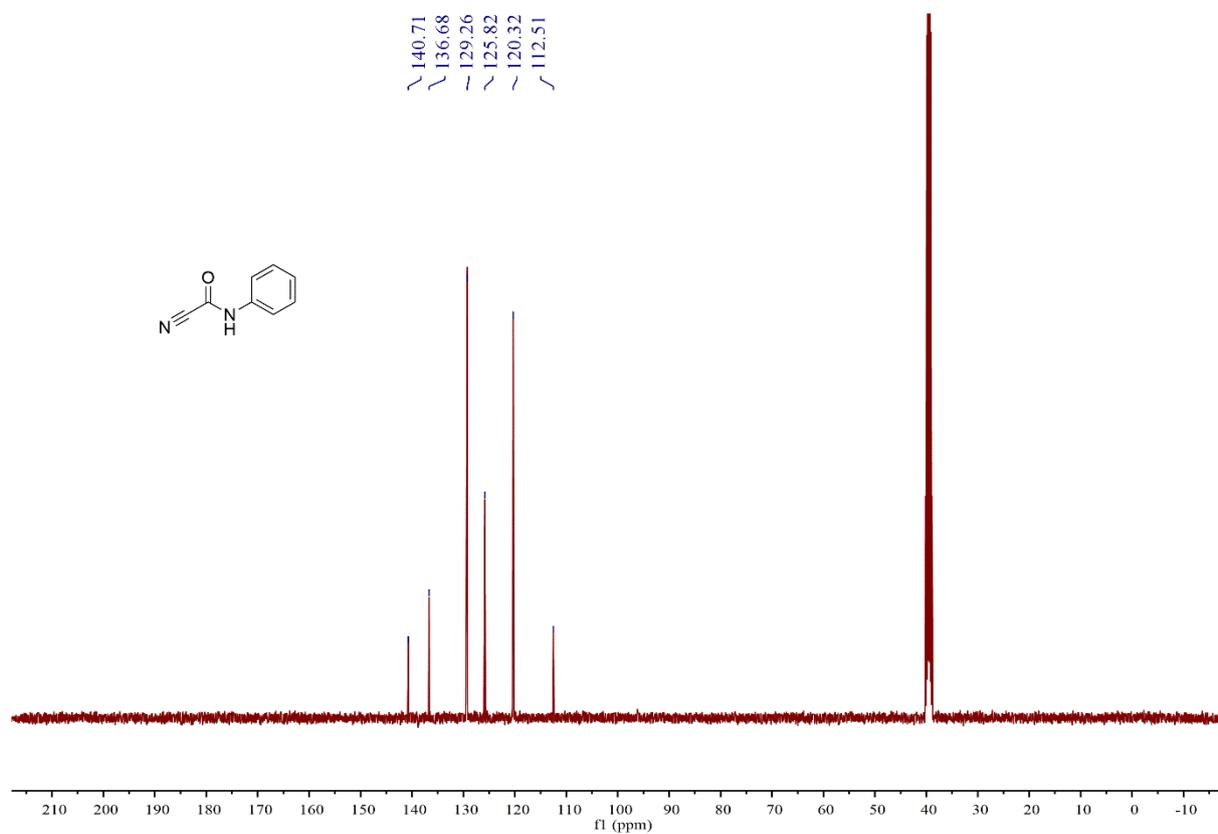
<sup>1</sup>H NMR Spectrum of Compound 2aj (400 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



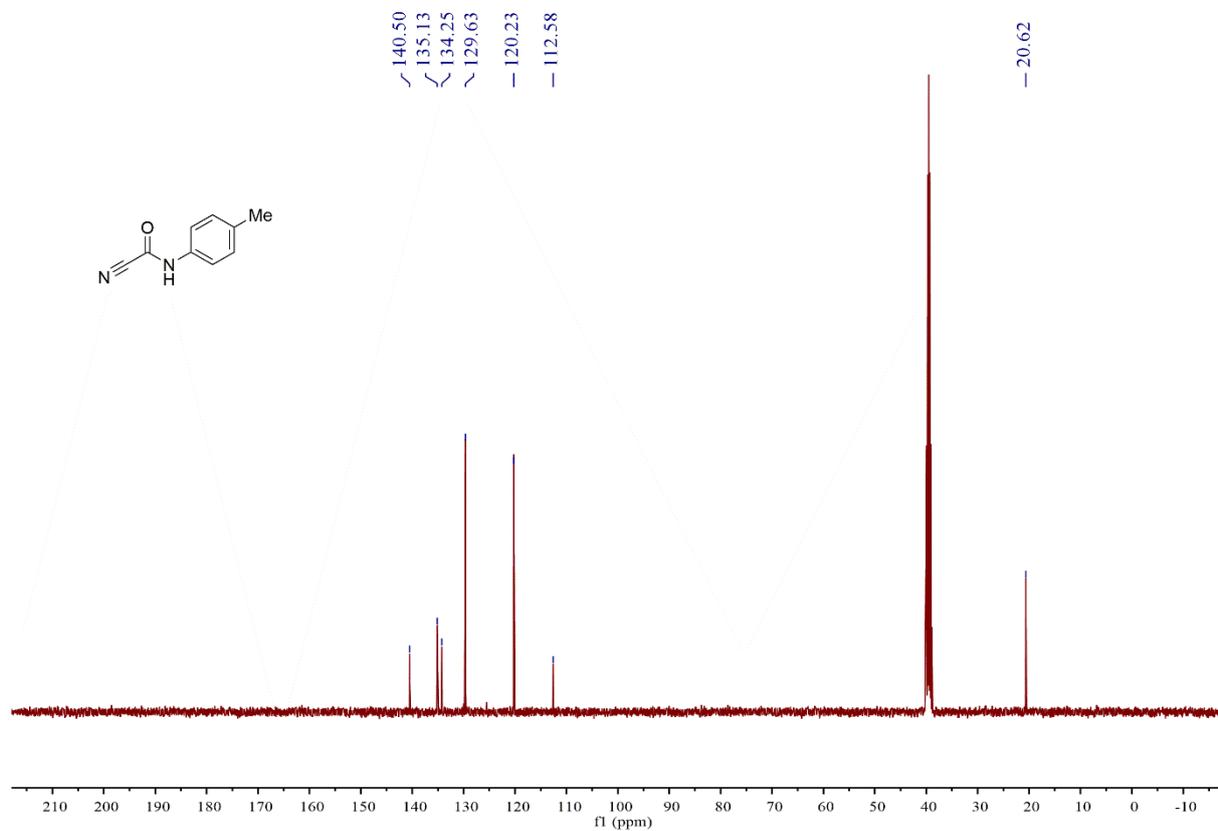
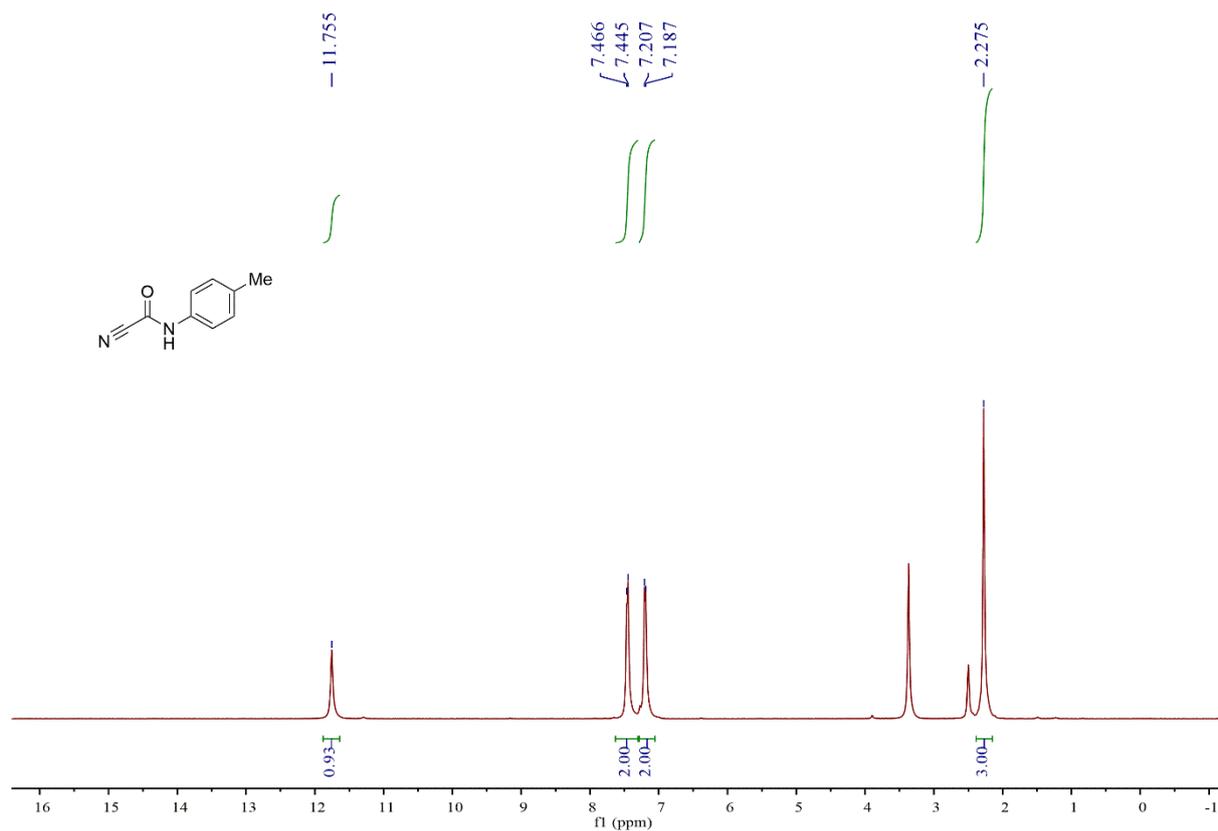
<sup>13</sup>C NMR Spectrum of Compound 2aj (100 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)

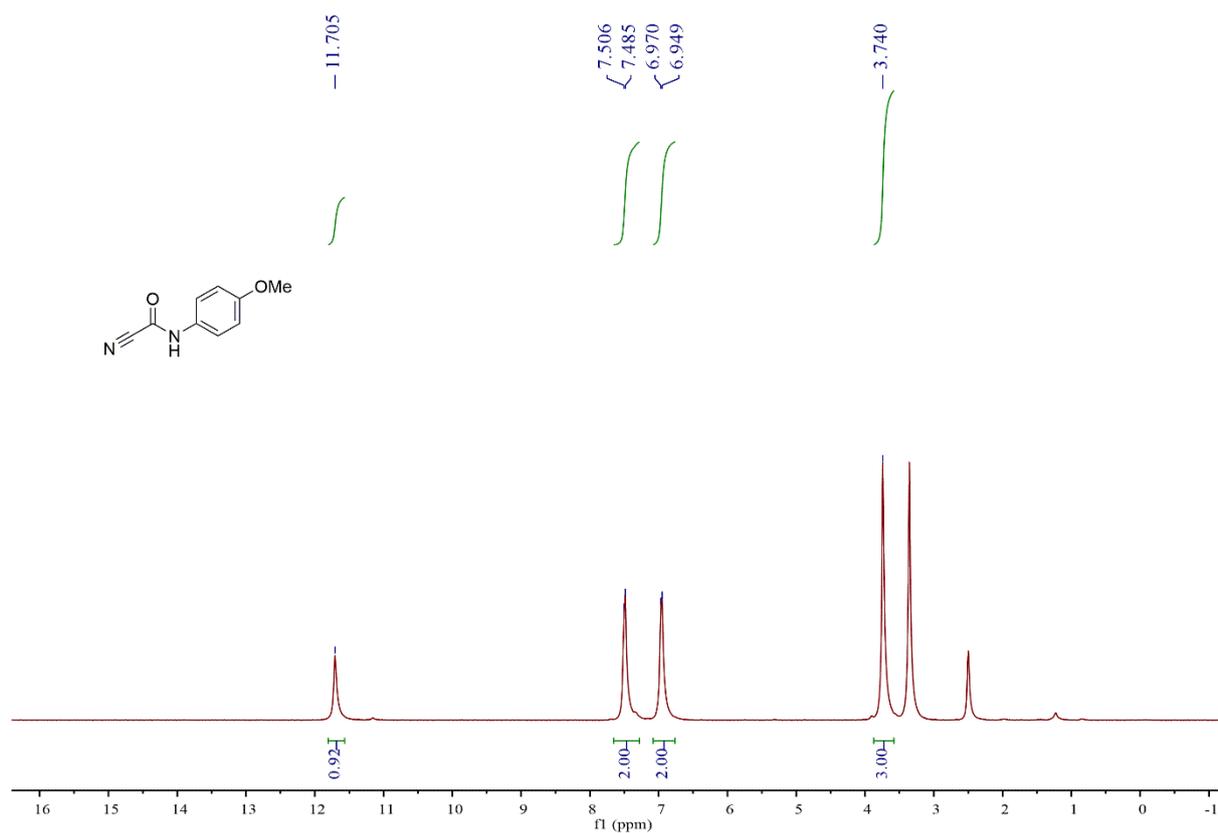


<sup>1</sup>H NMR Spectrum of Compound **3a** (400 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)

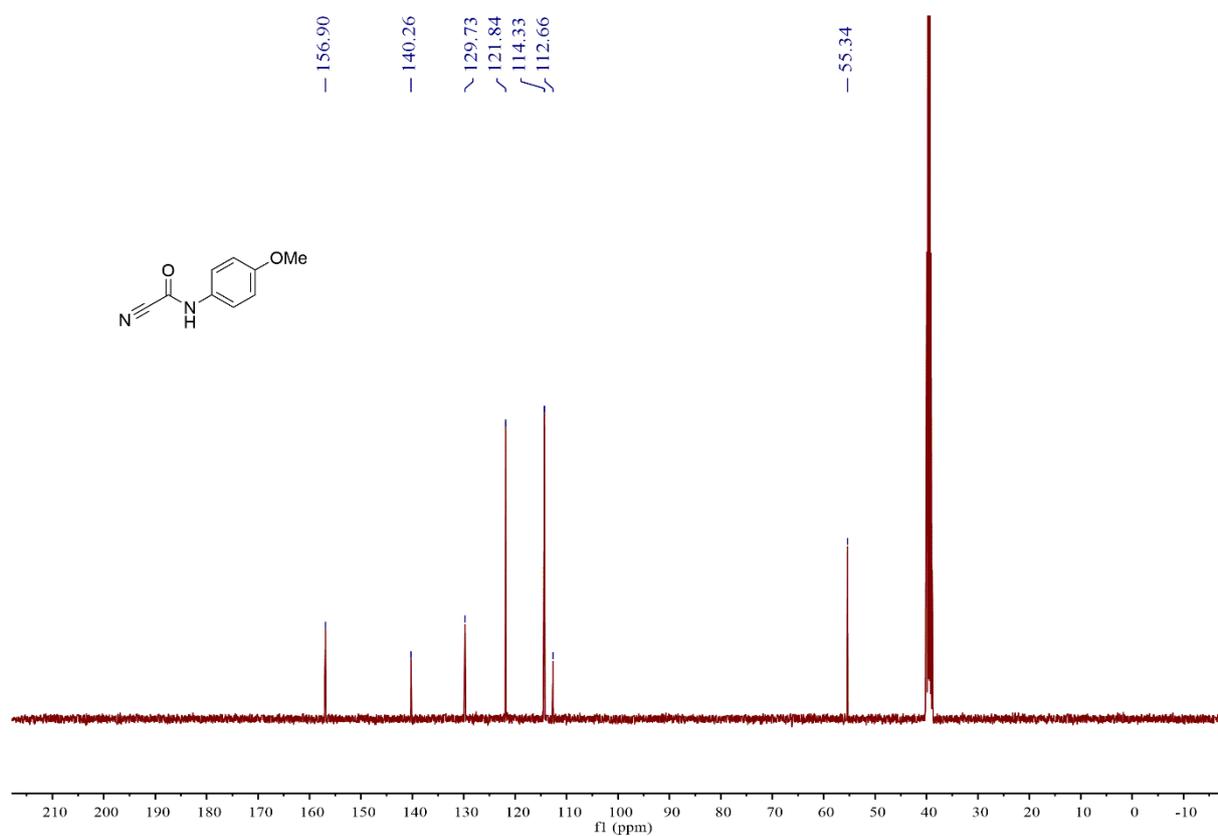


<sup>13</sup>C NMR Spectrum of Compound **3a** (100 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)

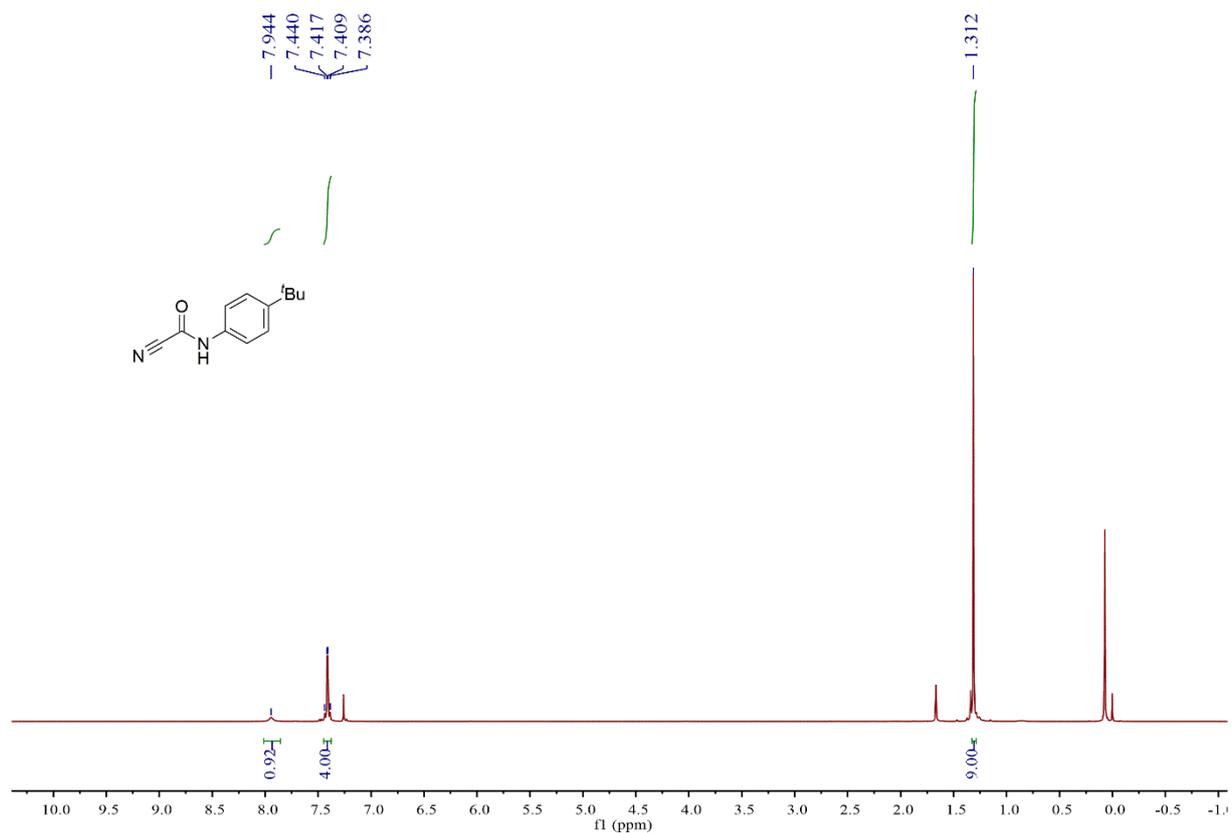




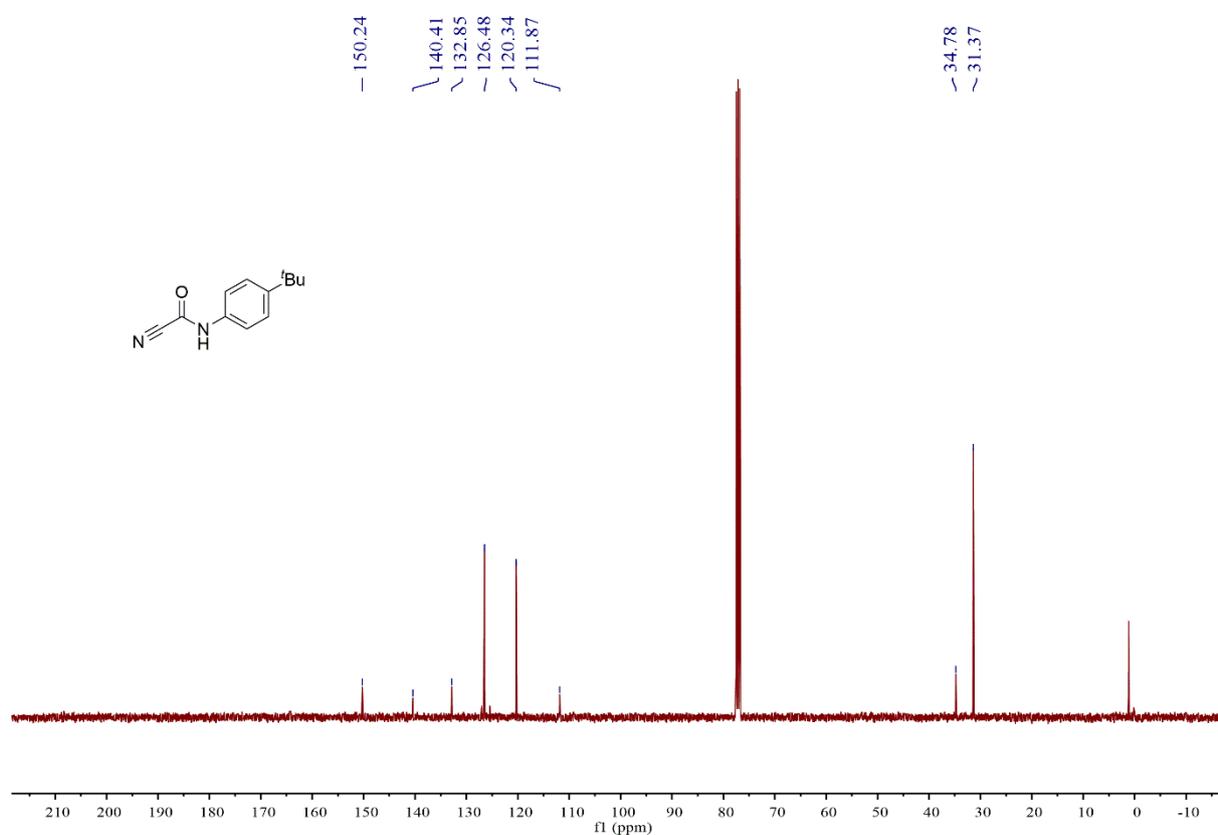
<sup>1</sup>H NMR Spectrum of Compound **3c** (400 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



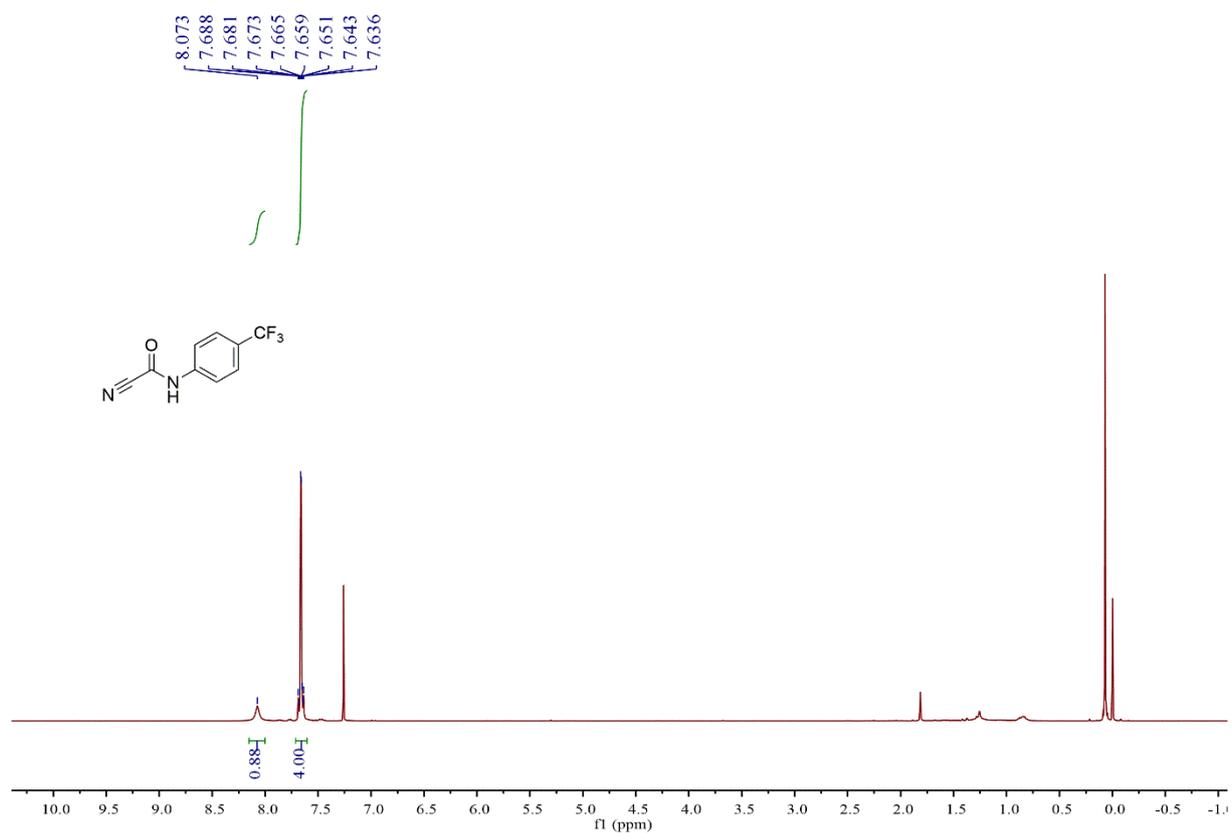
<sup>13</sup>C NMR Spectrum of Compound **3c** (100 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



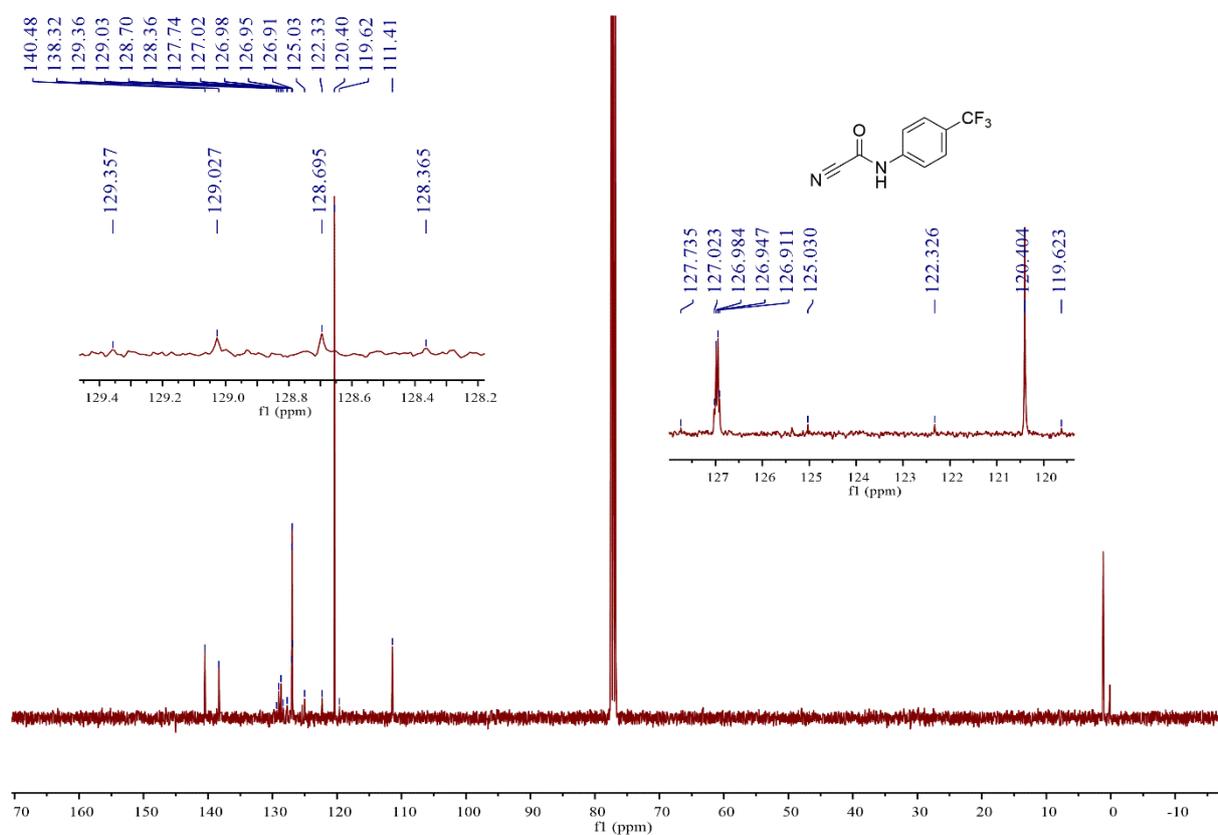
<sup>1</sup>H NMR Spectrum of Compound **3d** (400 MHz, CDCl<sub>3</sub>)



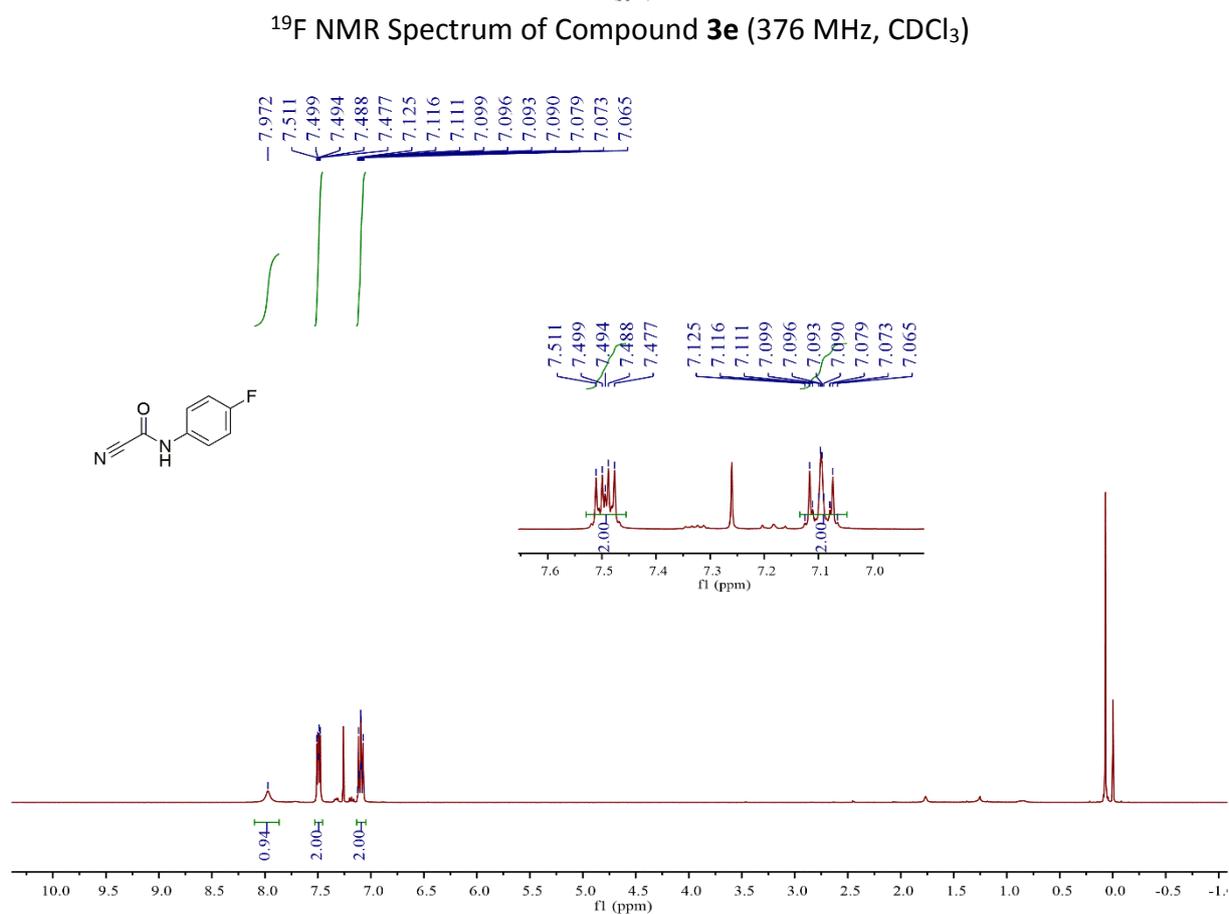
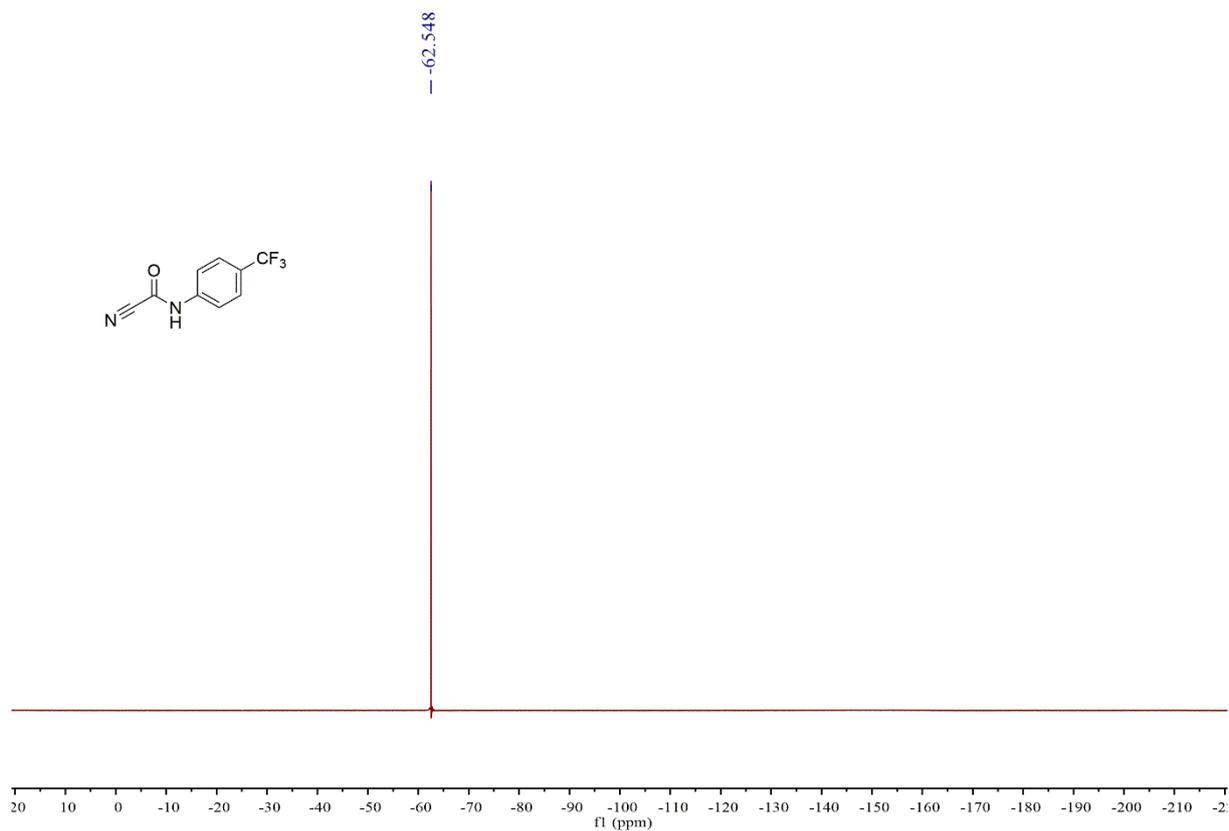
<sup>13</sup>C NMR Spectrum of Compound **3d** (100 MHz, CDCl<sub>3</sub>)

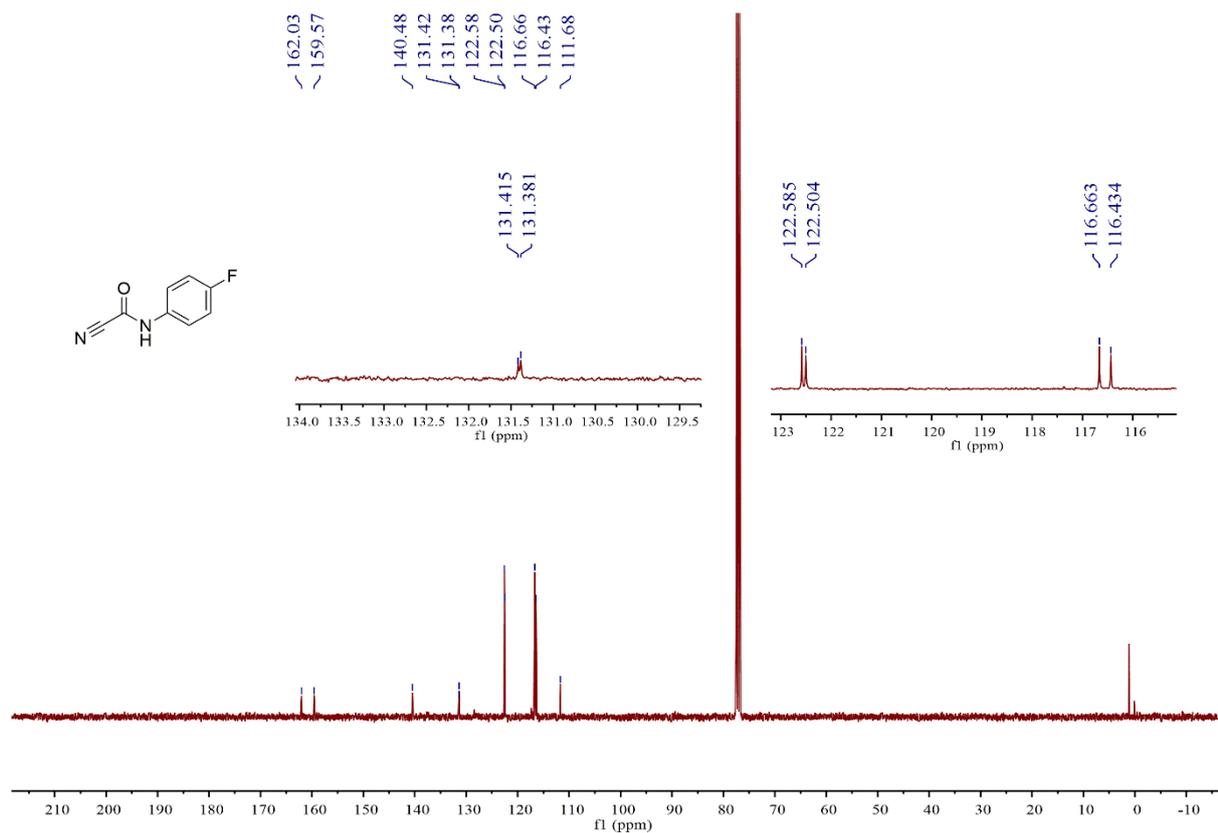


<sup>1</sup>H NMR Spectrum of Compound **3e** (400 MHz, CDCl<sub>3</sub>)

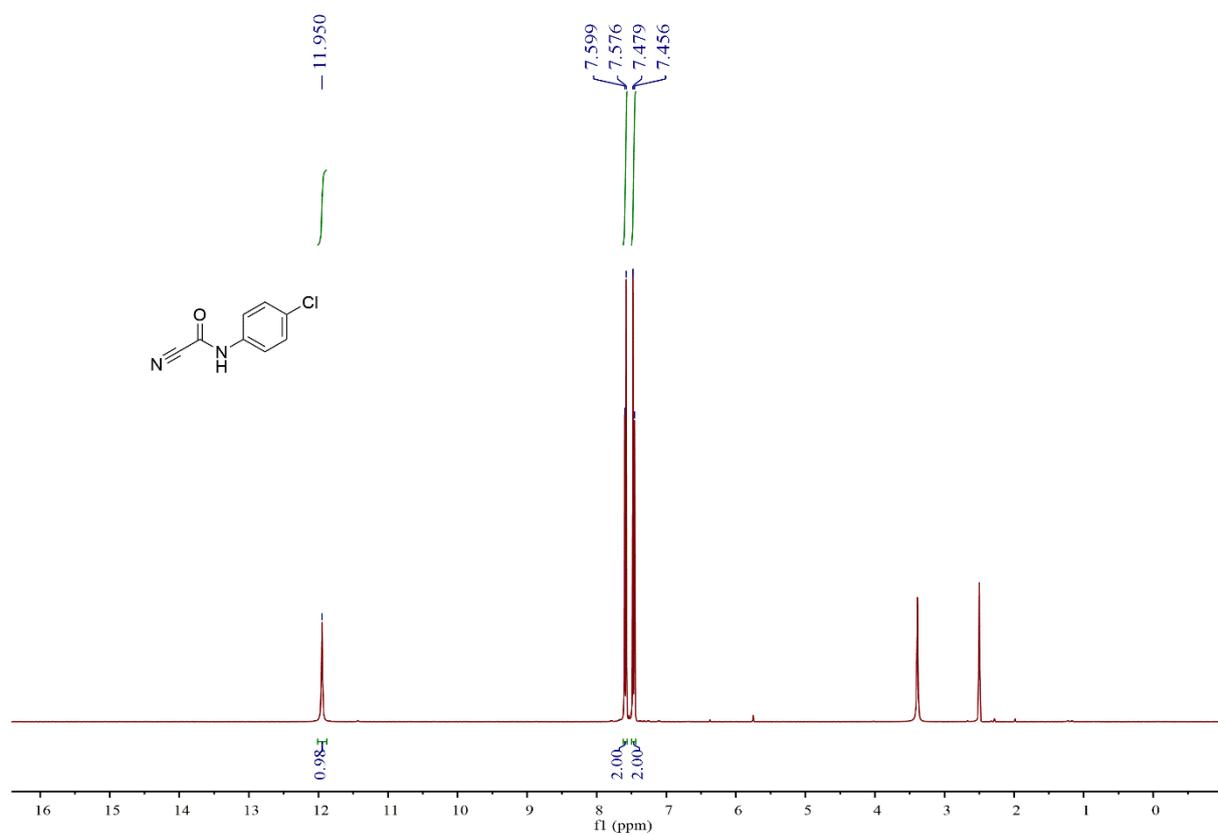


<sup>13</sup>C NMR Spectrum of Compound **3e** (100 MHz, CDCl<sub>3</sub>)

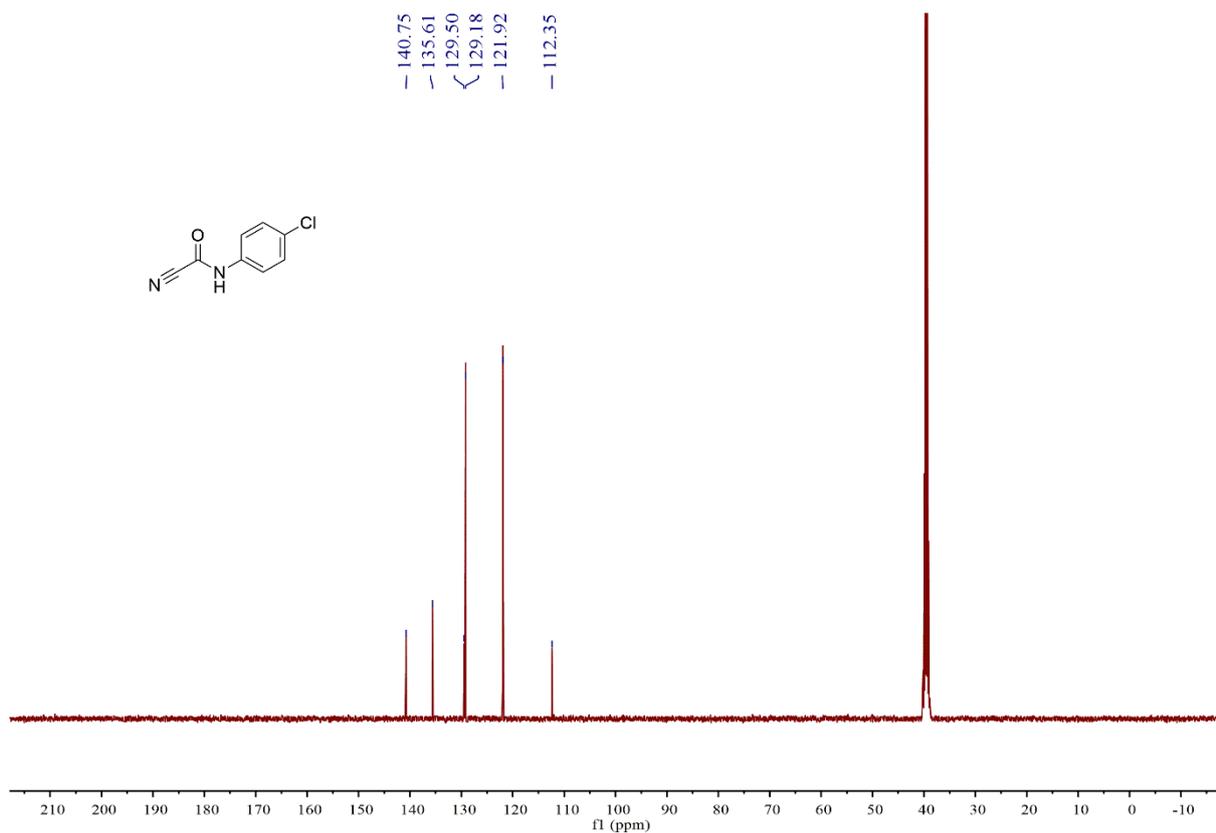




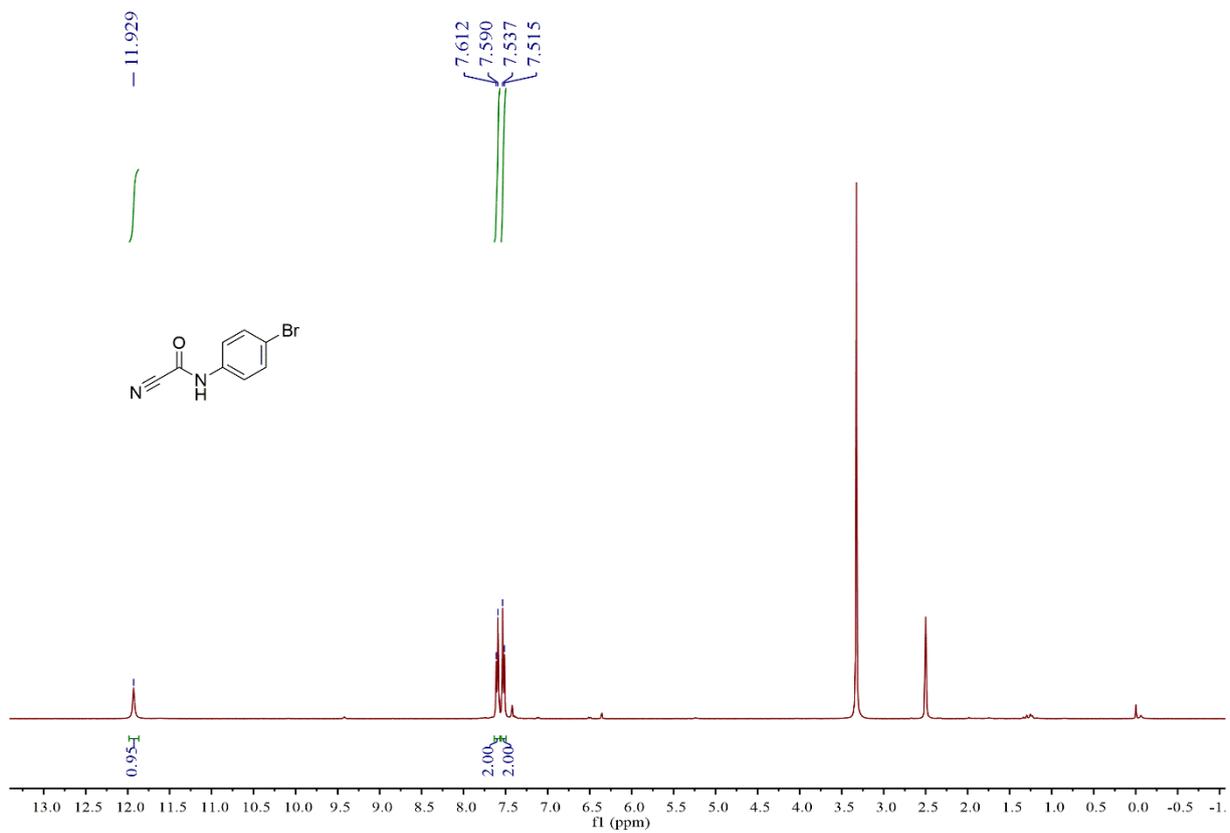
$^{13}\text{C}$  NMR Spectrum of Compound **3f** (100 MHz,  $\text{CDCl}_3$ )



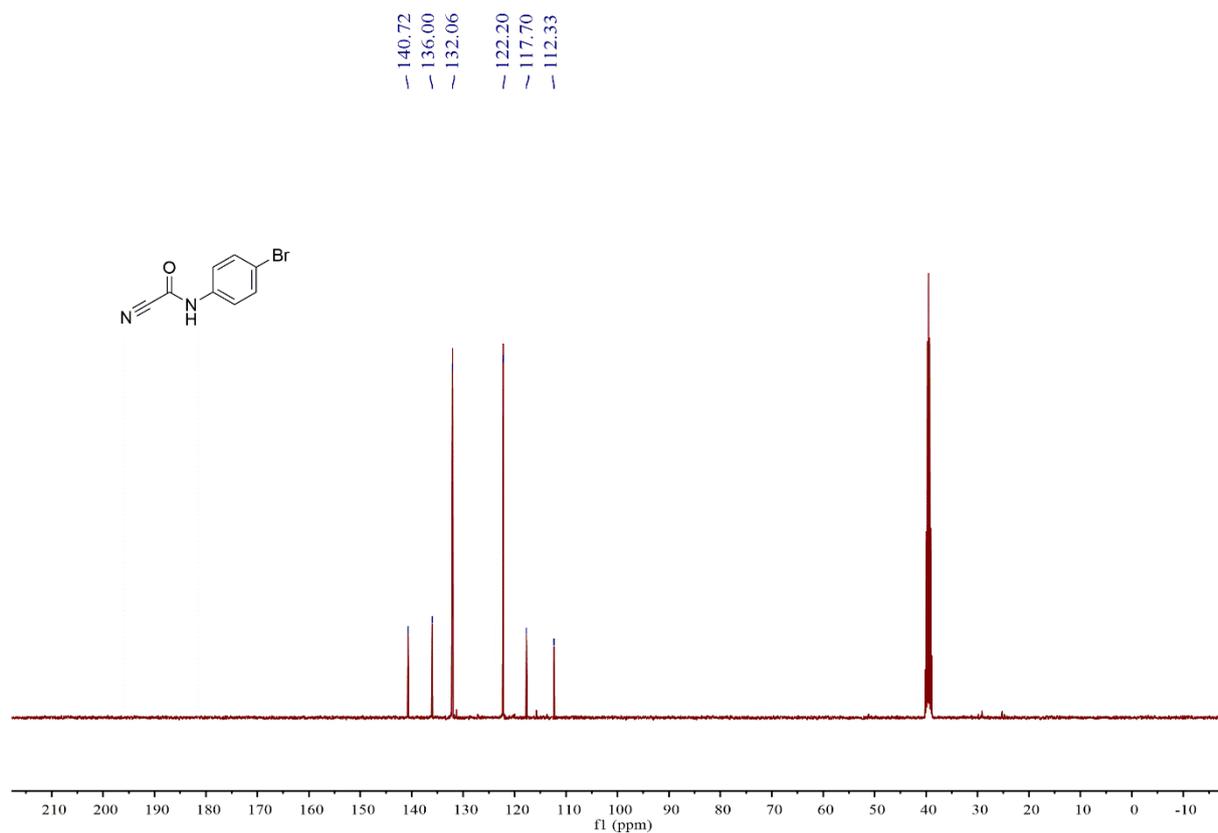
$^1\text{H}$  NMR Spectrum of Compound **3g** (400 MHz,  $(\text{CD}_3)_2\text{SO}$ )



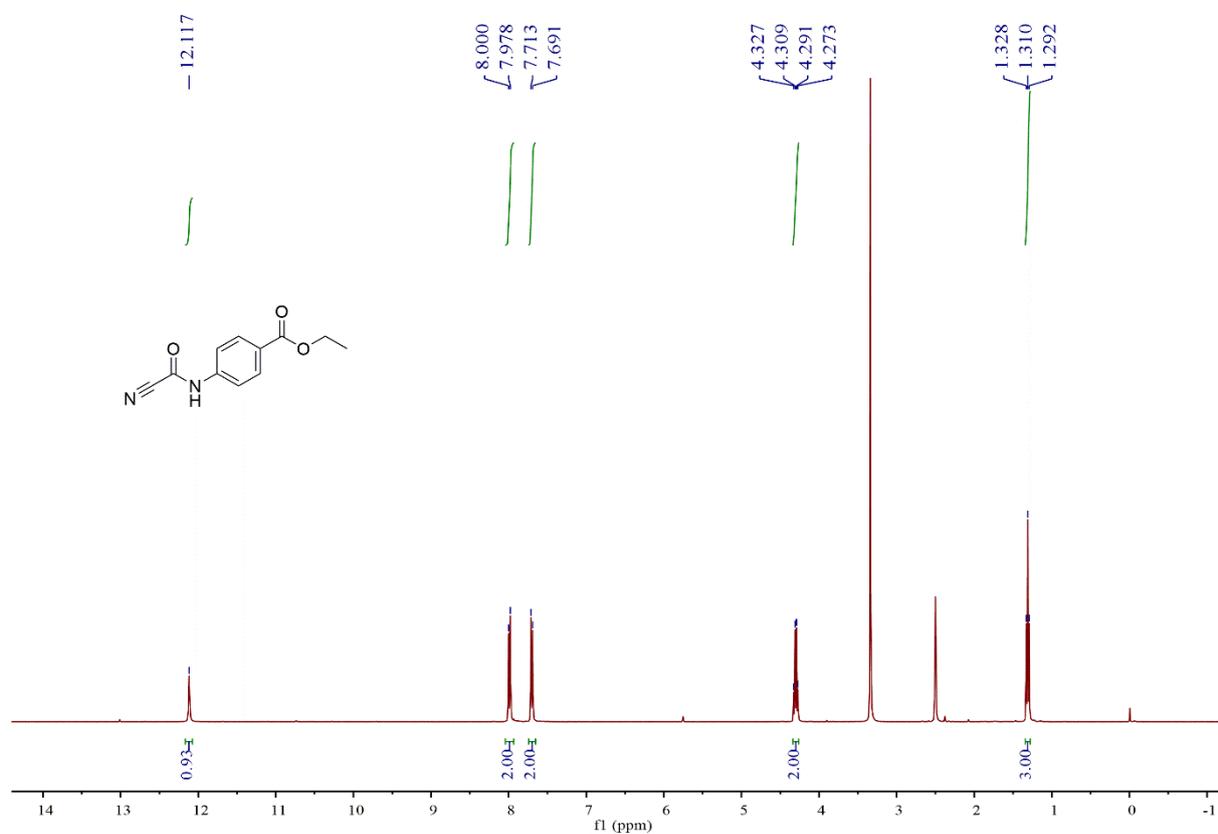
$^{13}\text{C}$  NMR Spectrum of Compound **3g** (100 MHz,  $(\text{CD}_3)_2\text{SO}$ )



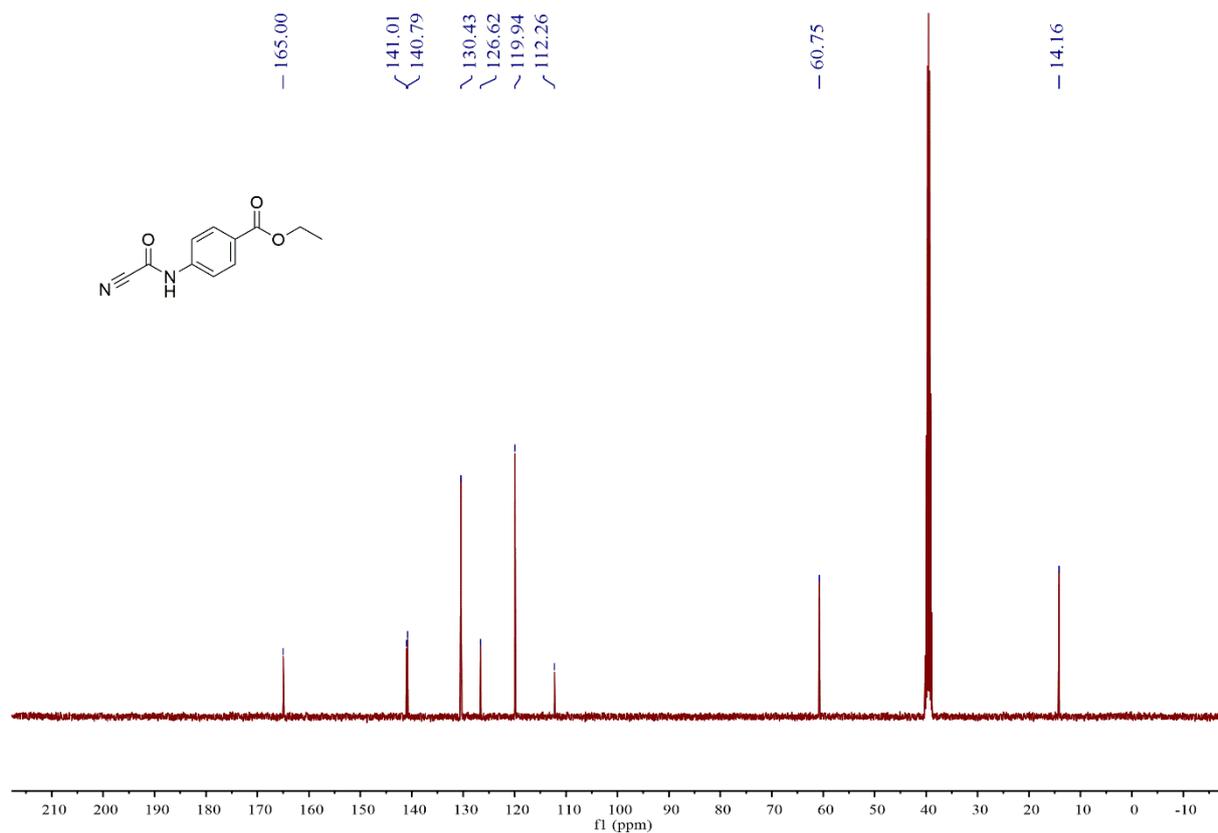
$^1\text{H}$  NMR Spectrum of Compound **3h** (400 MHz,  $(\text{CD}_3)_2\text{SO}$ )



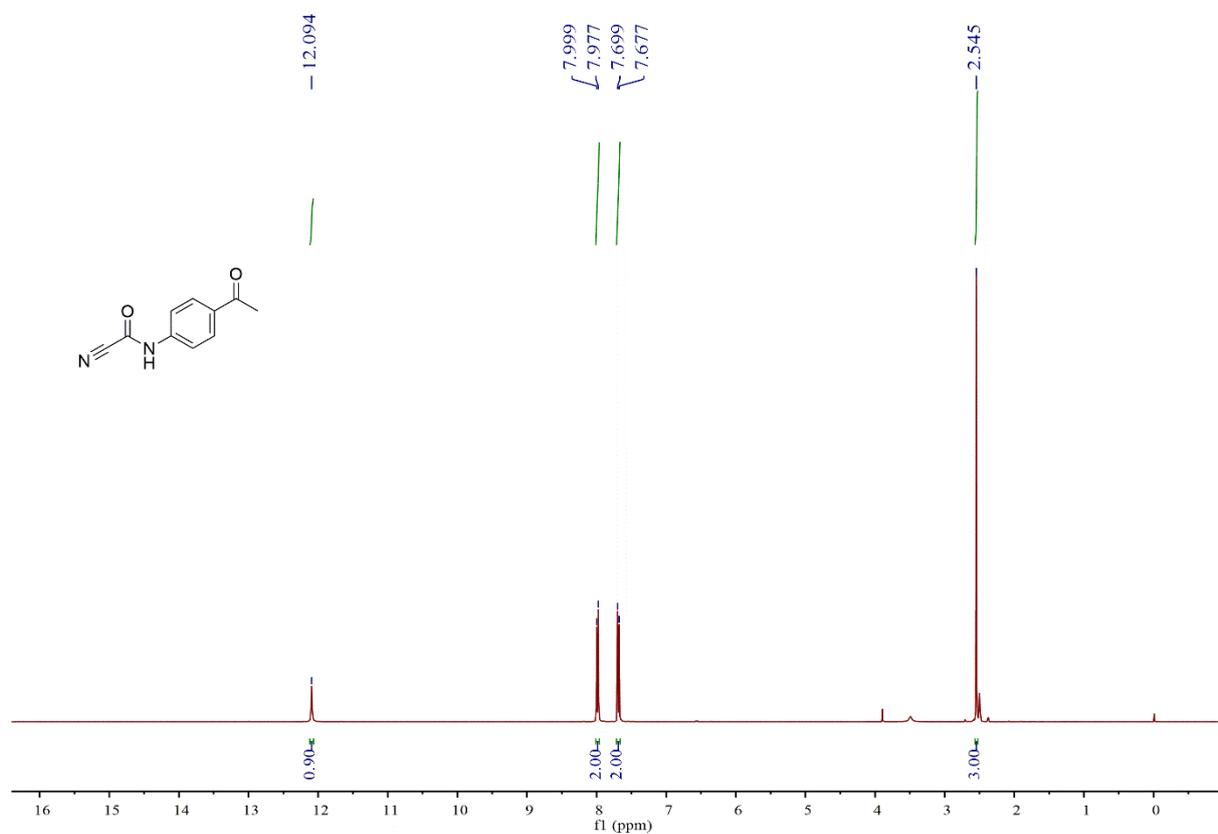
$^{13}\text{C}$  NMR Spectrum of Compound **3h** (100 MHz,  $(\text{CD}_3)_2\text{SO}$ )



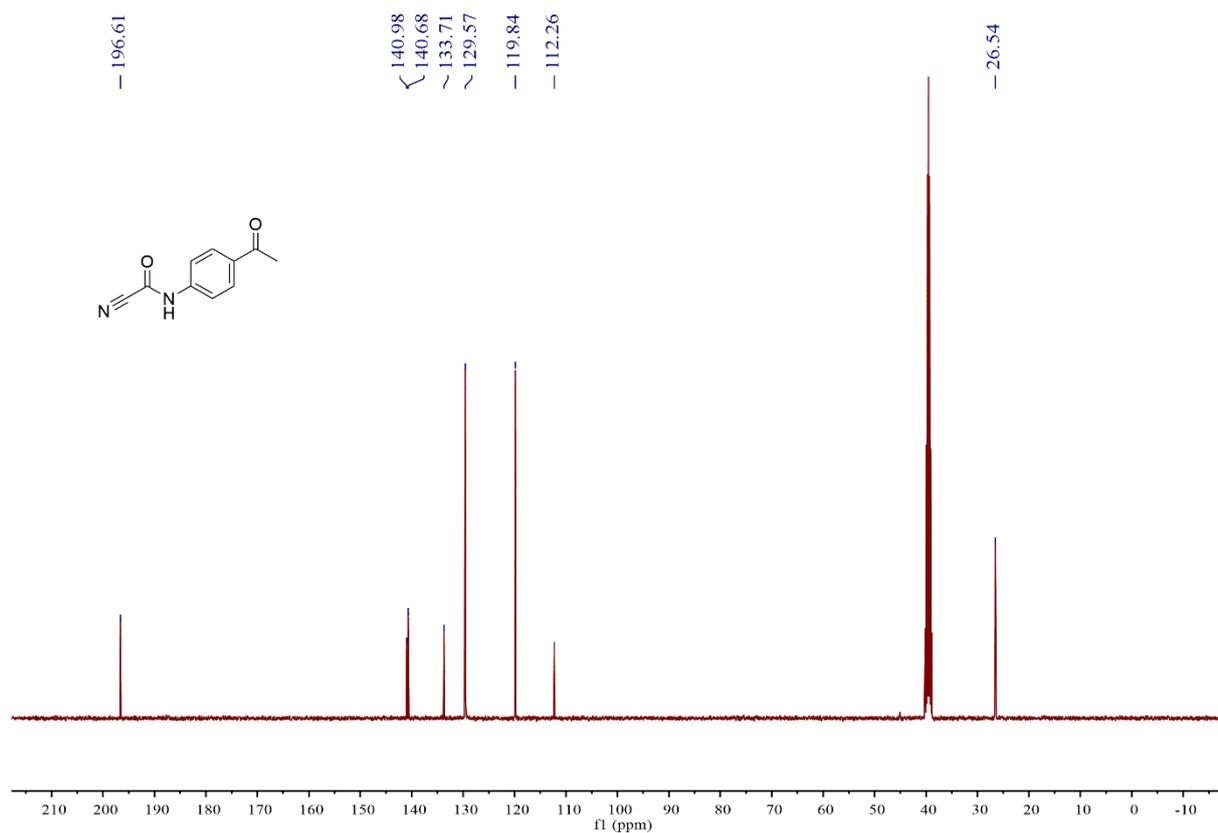
$^1\text{H}$  NMR Spectrum of Compound **3i** (400 MHz,  $(\text{CD}_3)_2\text{SO}$ )



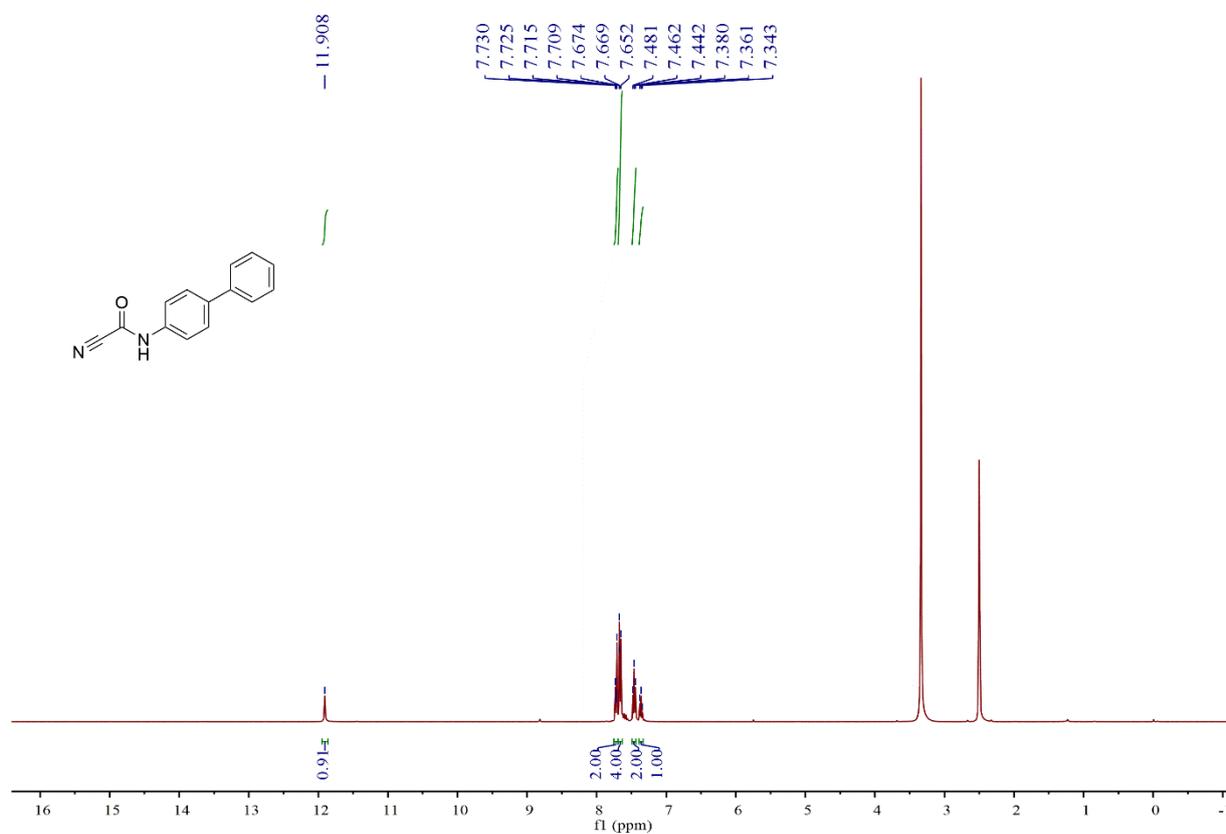
$^{13}\text{C}$  NMR Spectrum of Compound **3i** (100 MHz,  $(\text{CD}_3)_2\text{SO}$ )



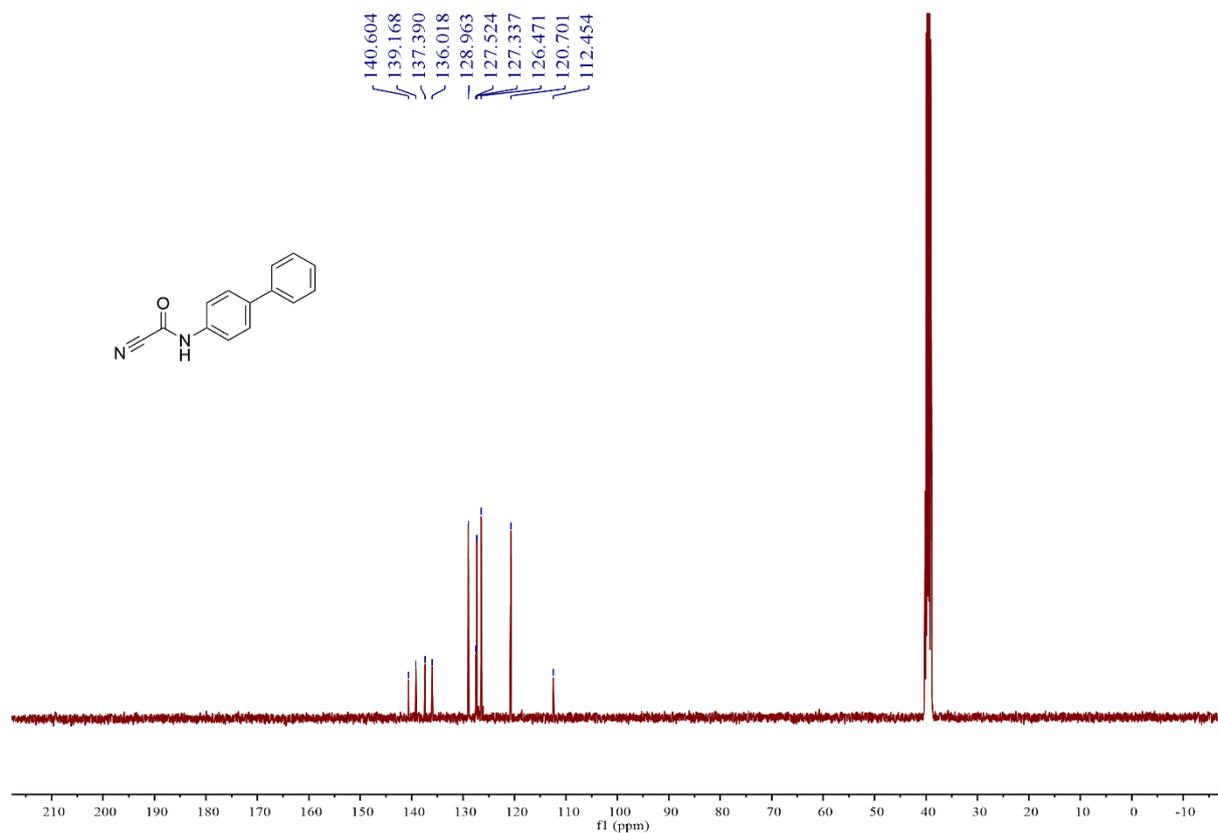
$^1\text{H}$  NMR Spectrum of Compound **3j** (400 MHz,  $(\text{CD}_3)_2\text{SO}$ )



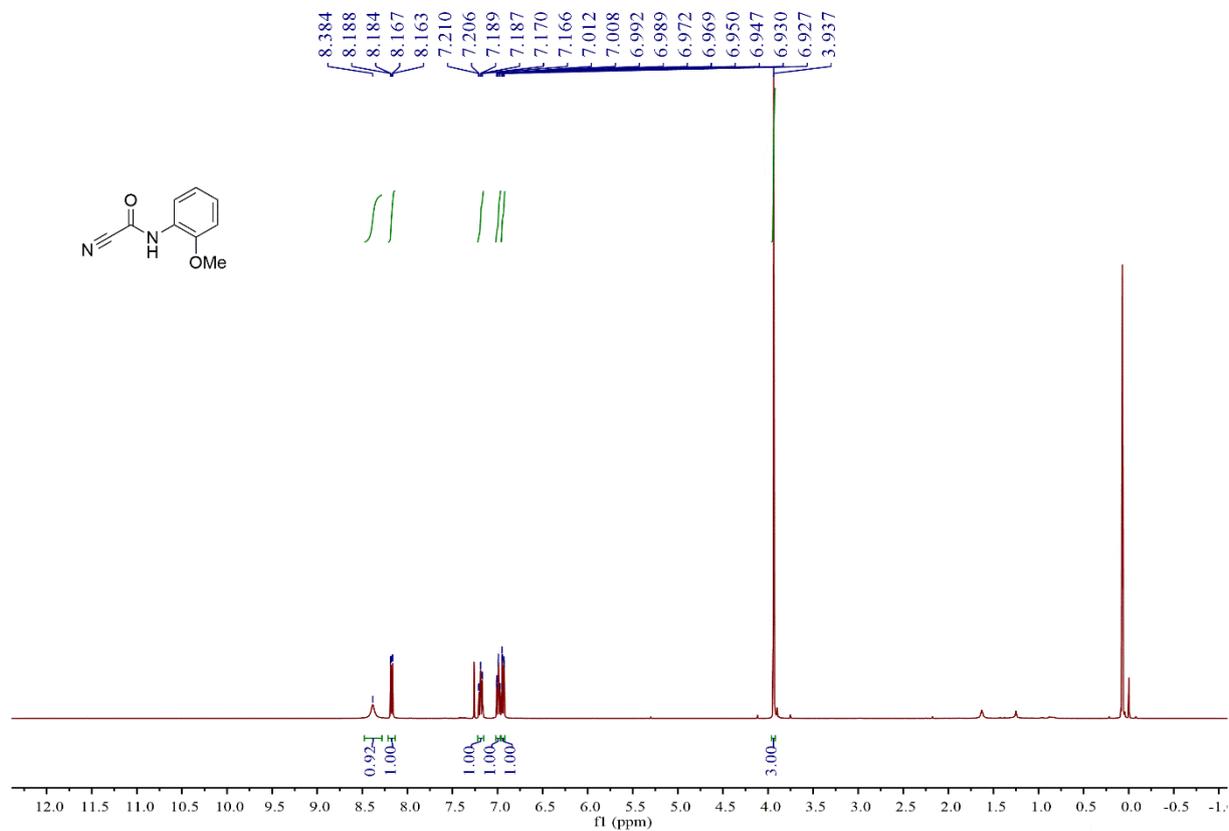
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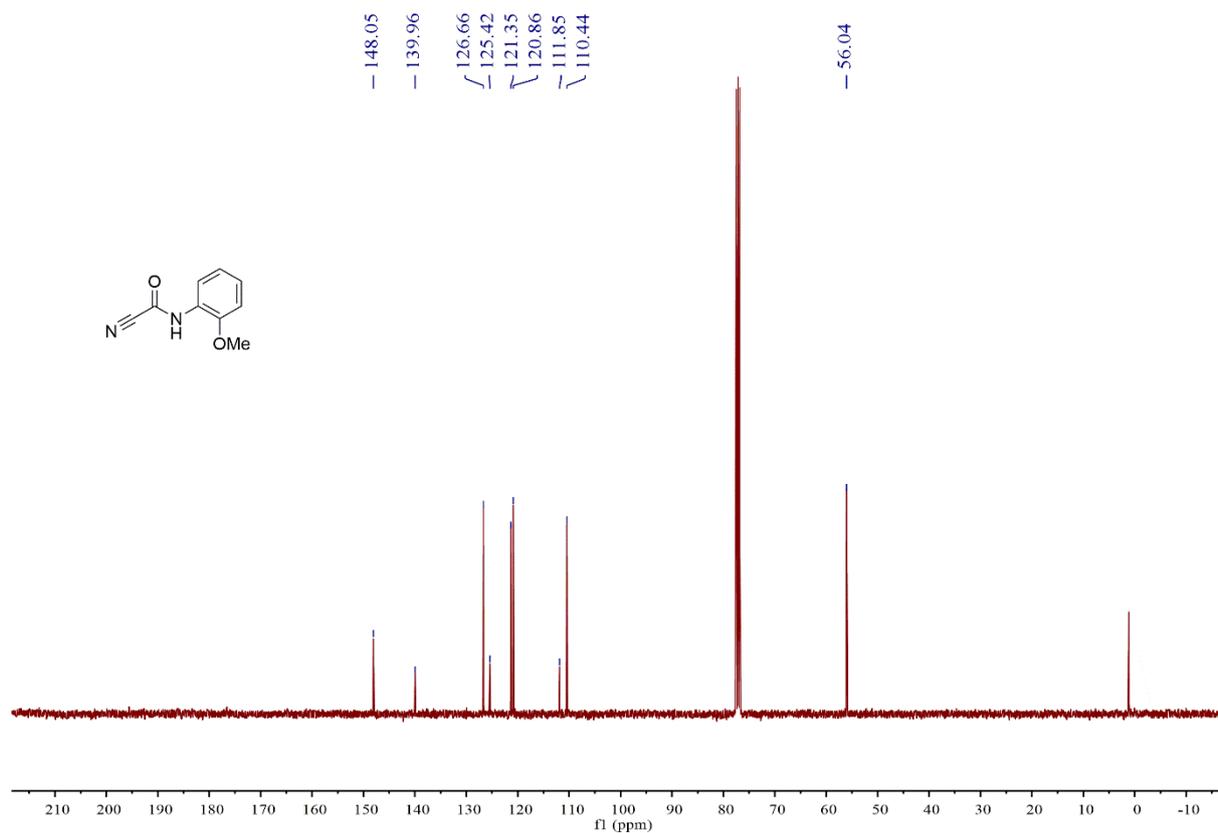
$^1\text{H}$  NMR Spectrum of Compound **3k** (400 MHz,  $(\text{CD}_3)_2\text{SO}$ )



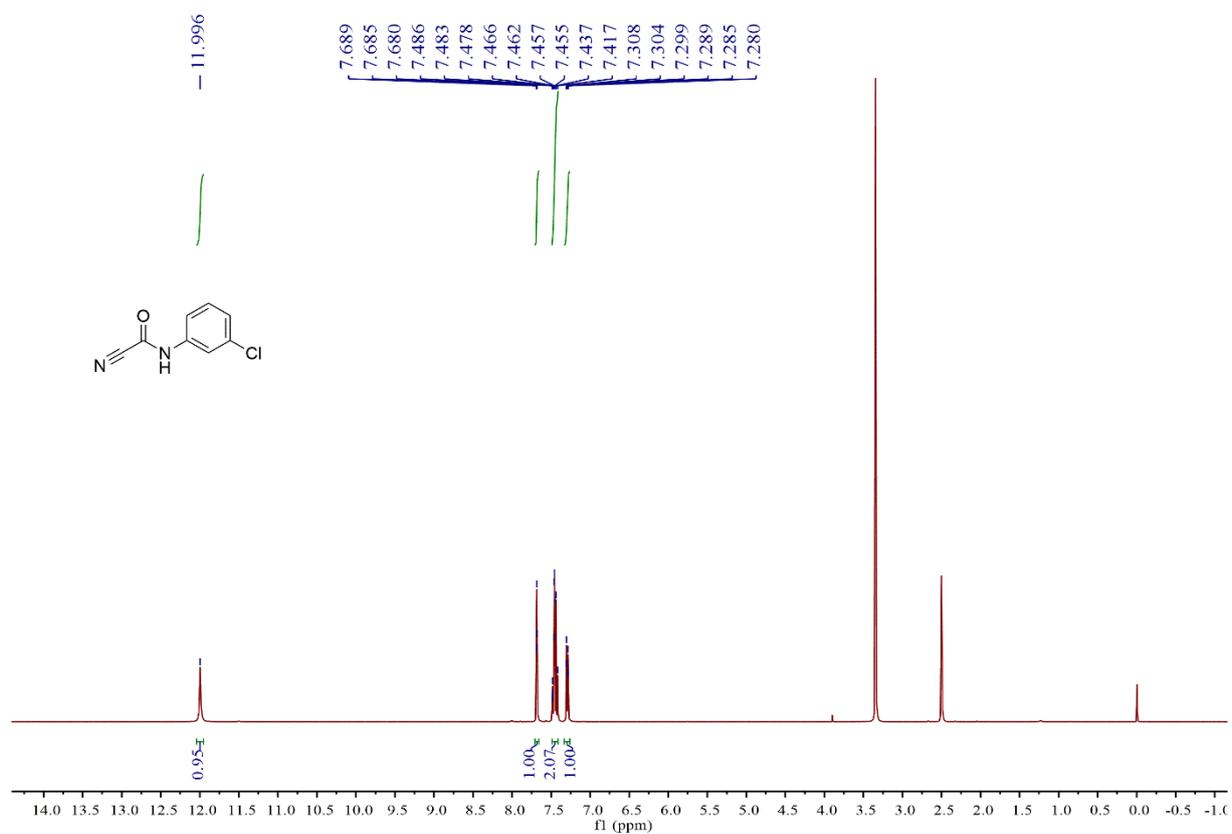
<sup>13</sup>C NMR Spectrum of Compound **3k** (100 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



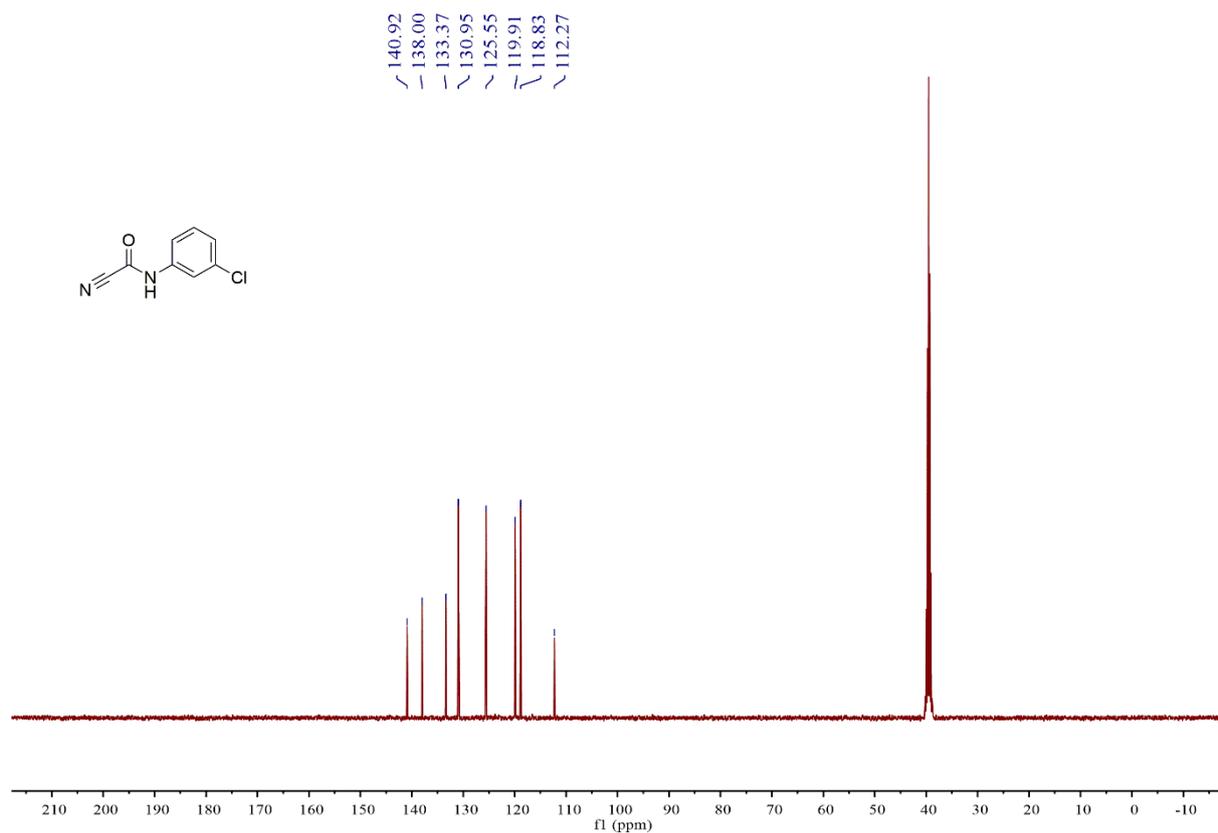
<sup>1</sup>H NMR Spectrum of Compound **3l** (400 MHz, CDCl<sub>3</sub>)



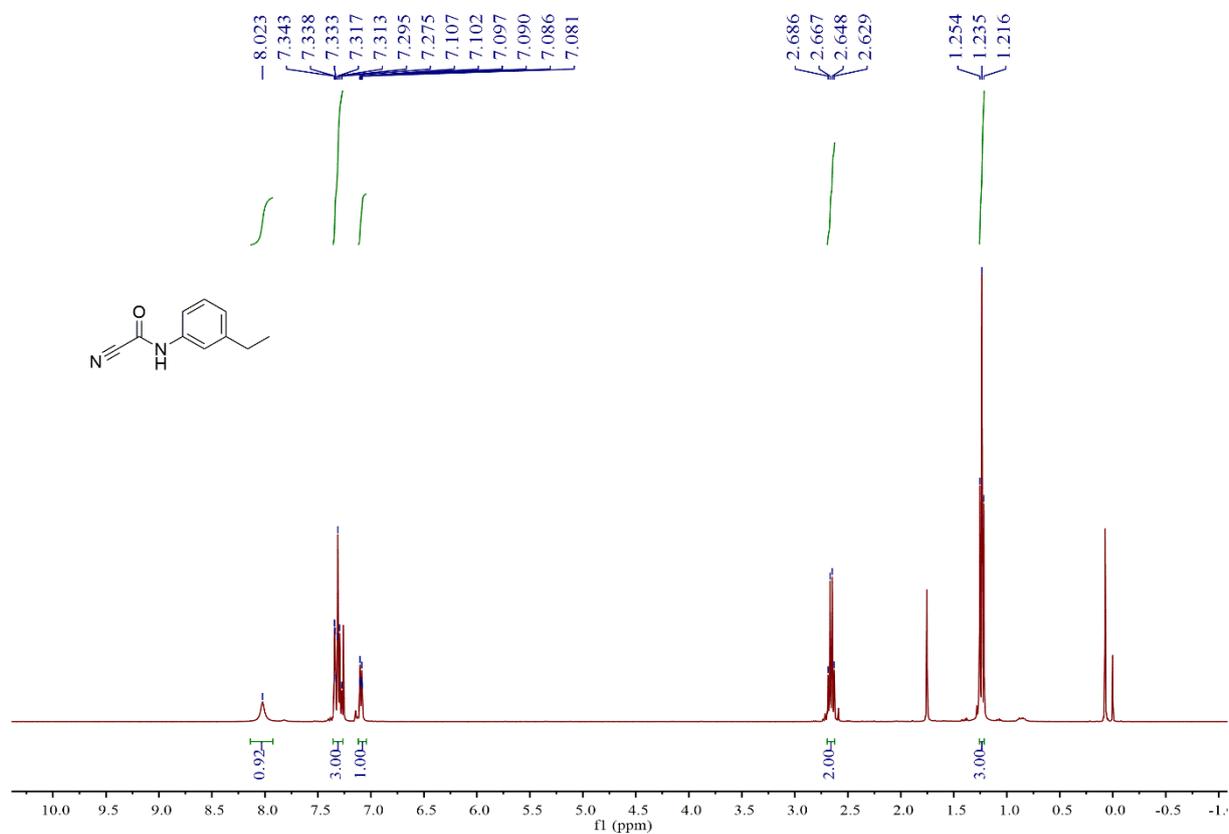
**<sup>13</sup>C NMR Spectrum of Compound 3l (100 MHz, CDCl<sub>3</sub>)**



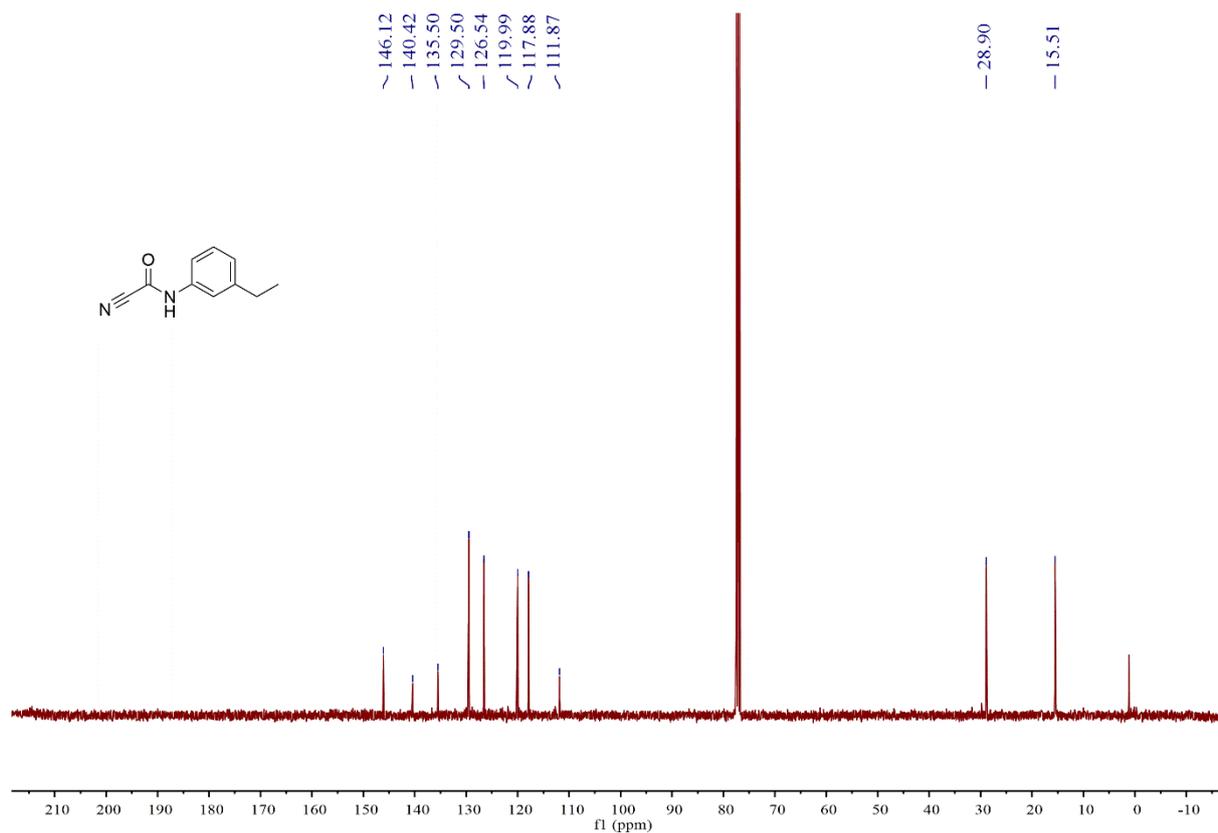
**<sup>1</sup>H NMR Spectrum of Compound 3m (400 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)**



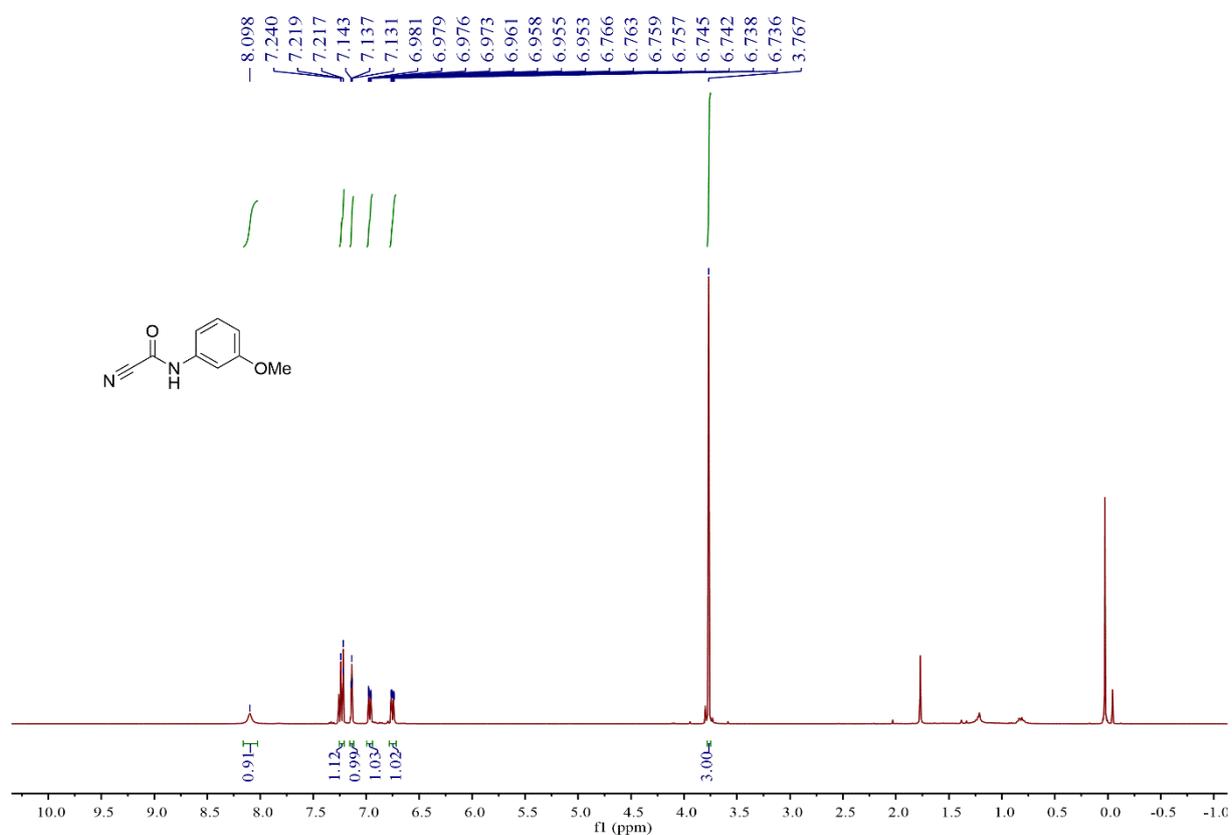
<sup>13</sup>C NMR Spectrum of Compound **3m** (100 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



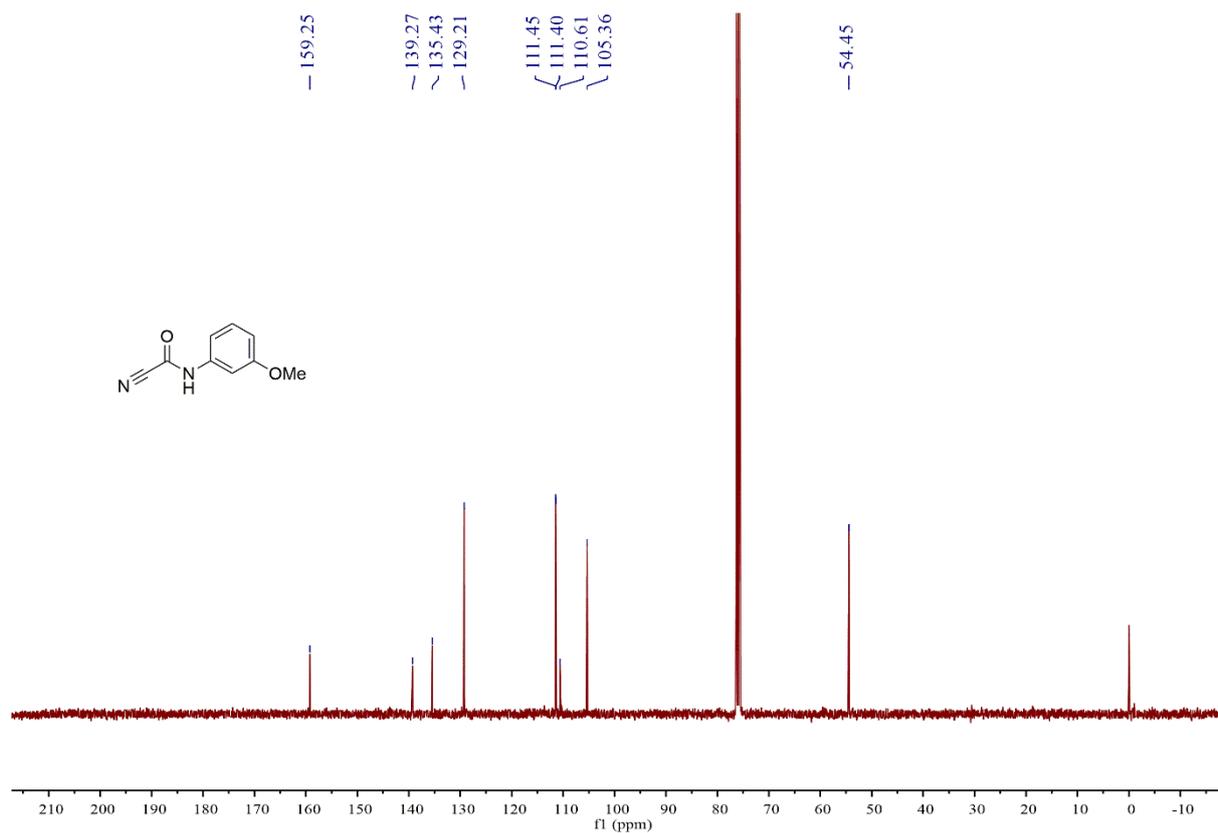
<sup>1</sup>H NMR Spectrum of Compound **3n** (400 MHz, CDCl<sub>3</sub>)



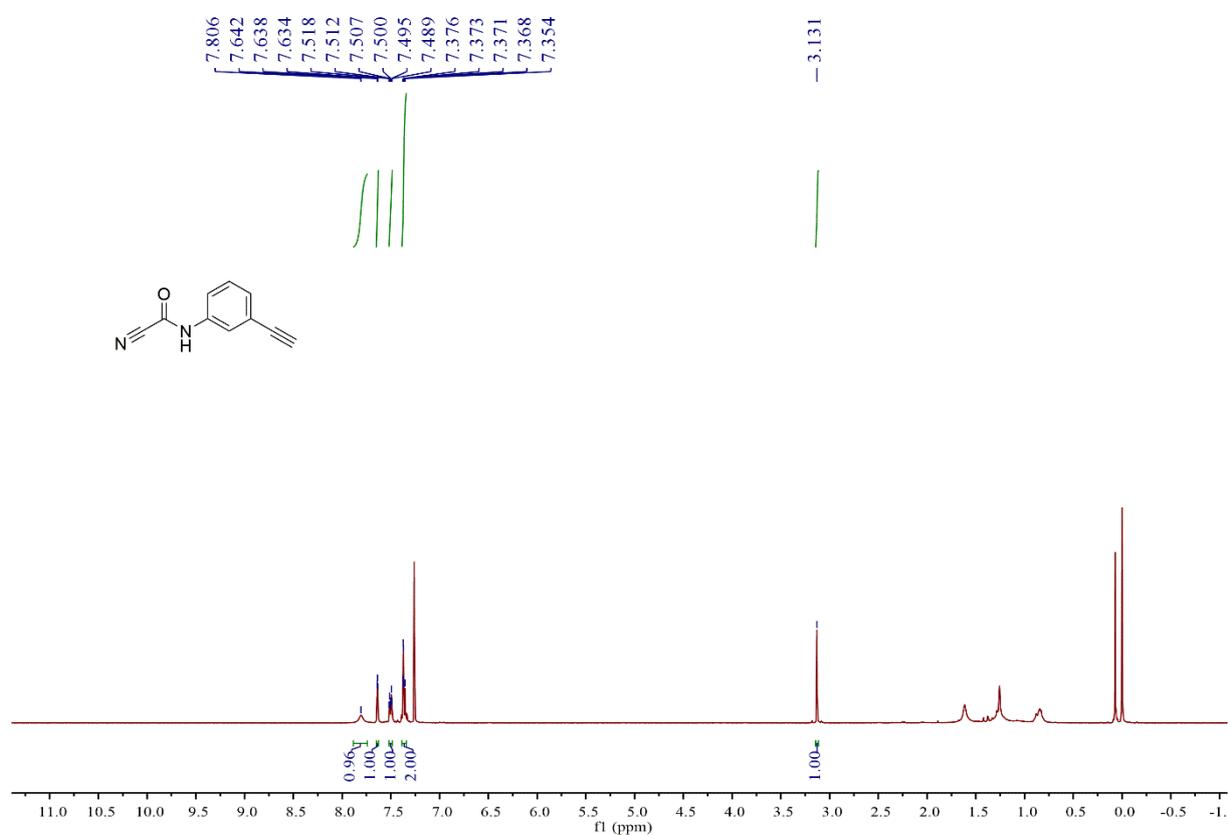
<sup>13</sup>C NMR Spectrum of Compound **3n** (100 MHz, CDCl<sub>3</sub>)



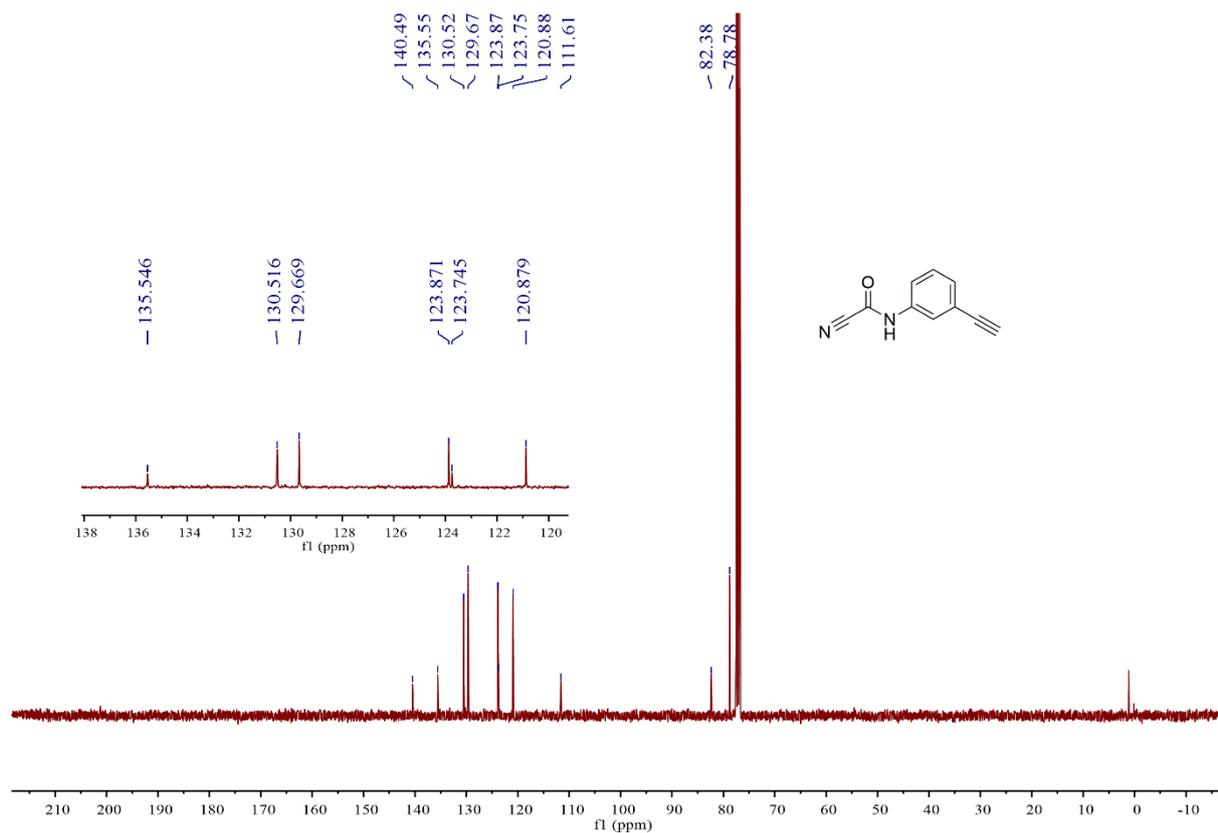
<sup>1</sup>H NMR Spectrum of Compound **3o** (400 MHz, CDCl<sub>3</sub>)



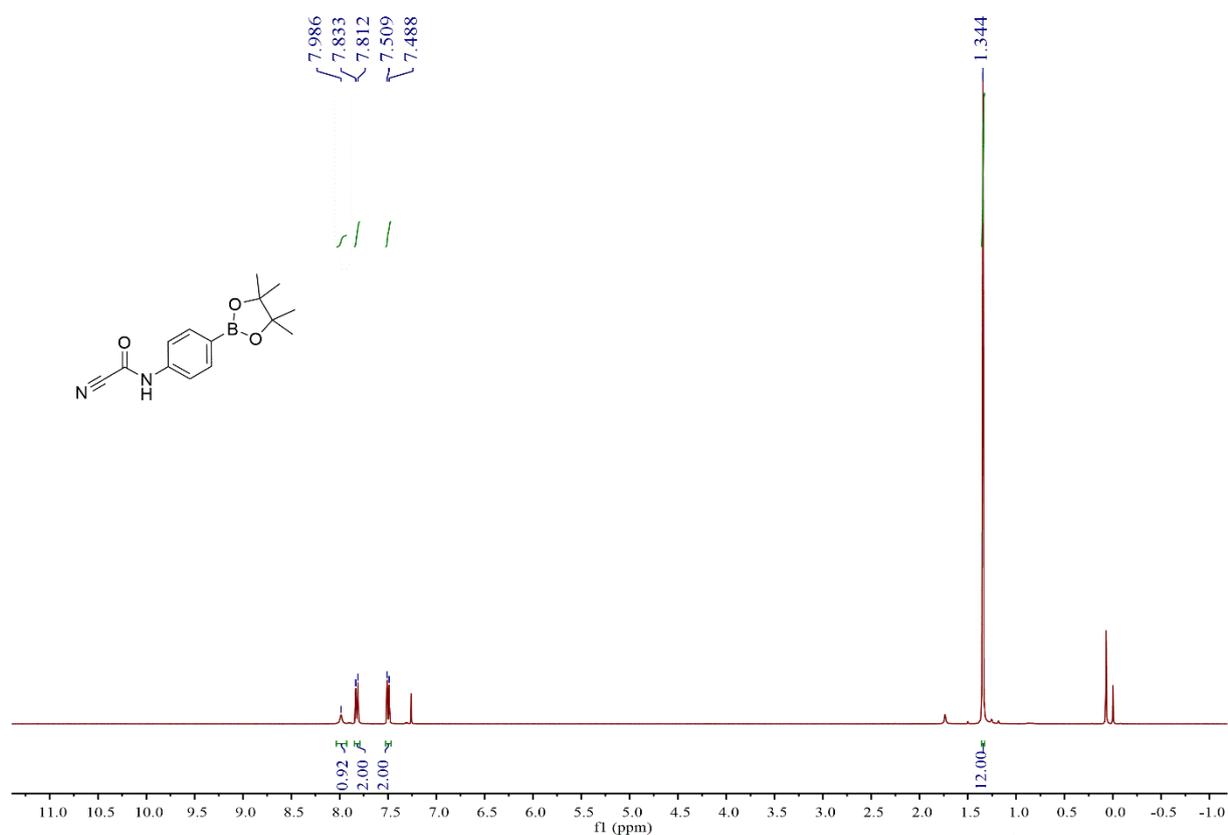
<sup>13</sup>C NMR Spectrum of Compound **3o** (100 MHz, CDCl<sub>3</sub>)



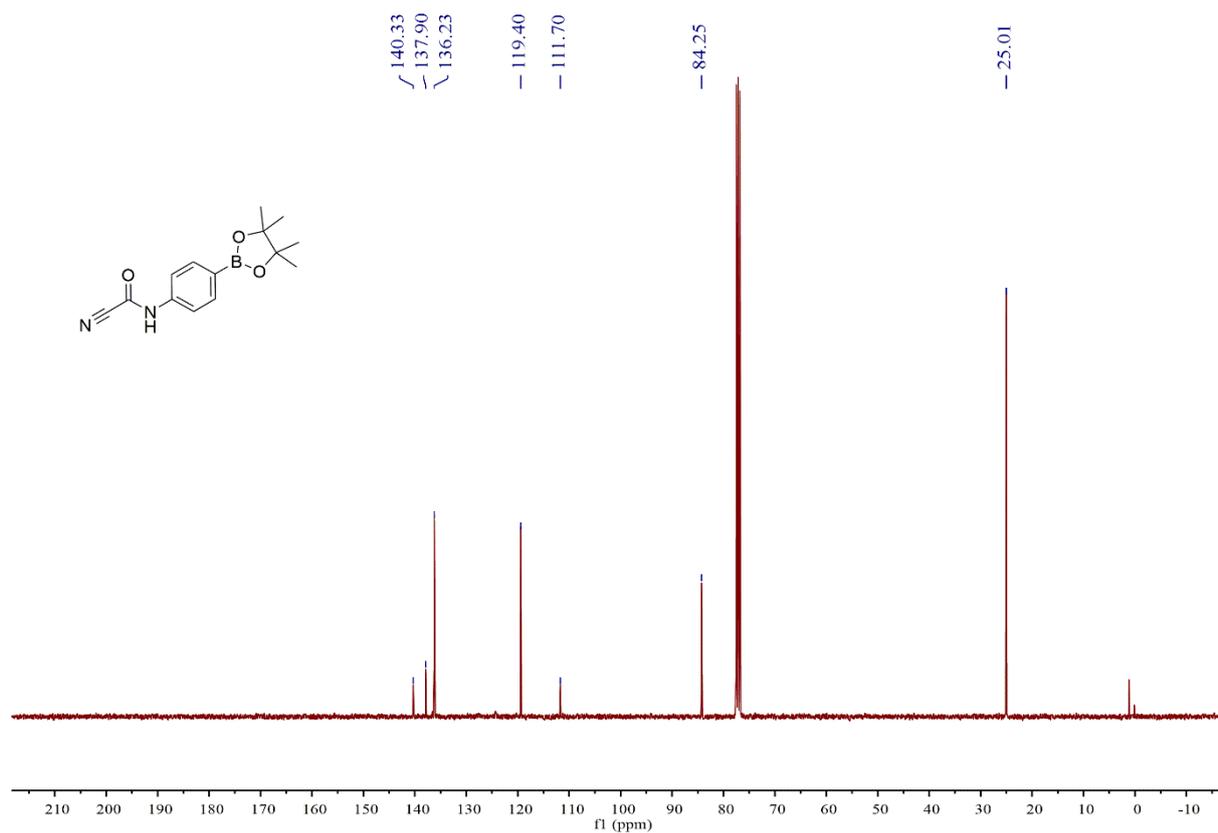
<sup>1</sup>H NMR Spectrum of Compound **3p** (400 MHz, CDCl<sub>3</sub>)



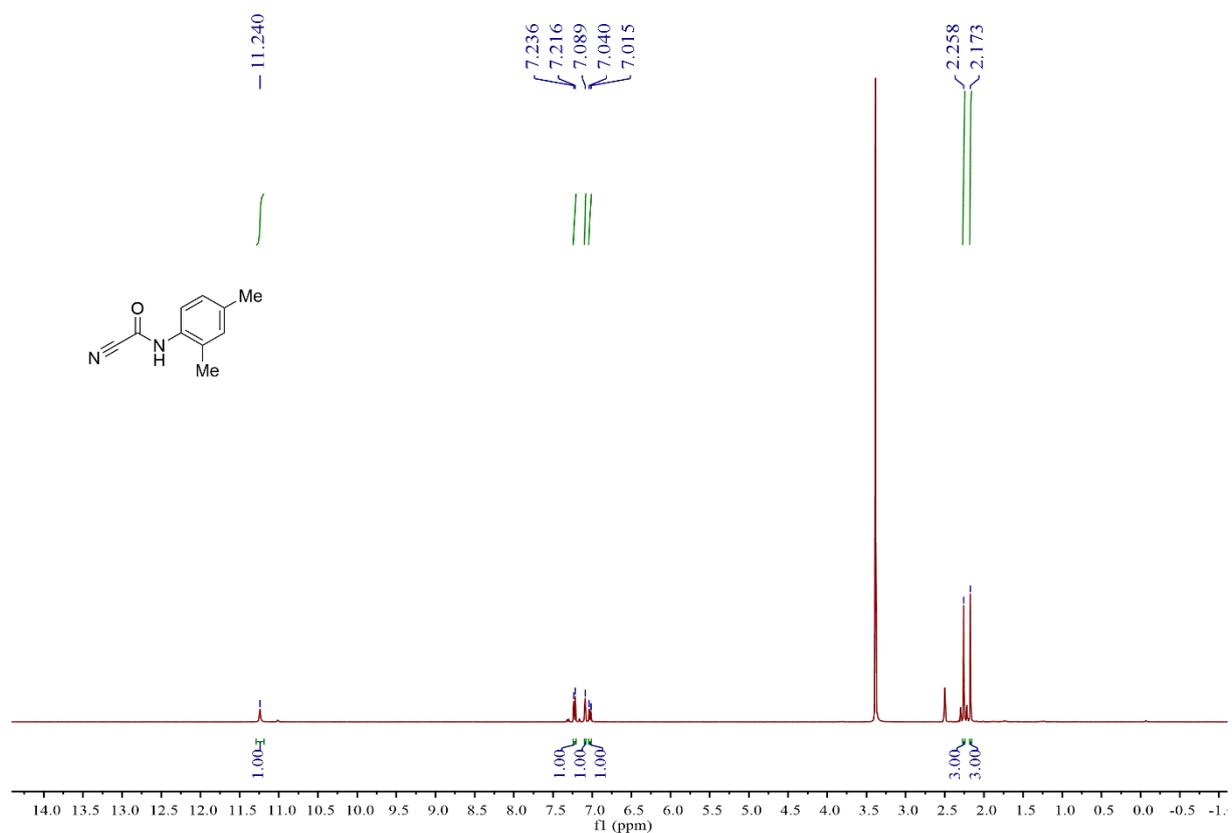
<sup>13</sup>C NMR Spectrum of Compound **3p** (100 MHz, CDCl<sub>3</sub>)



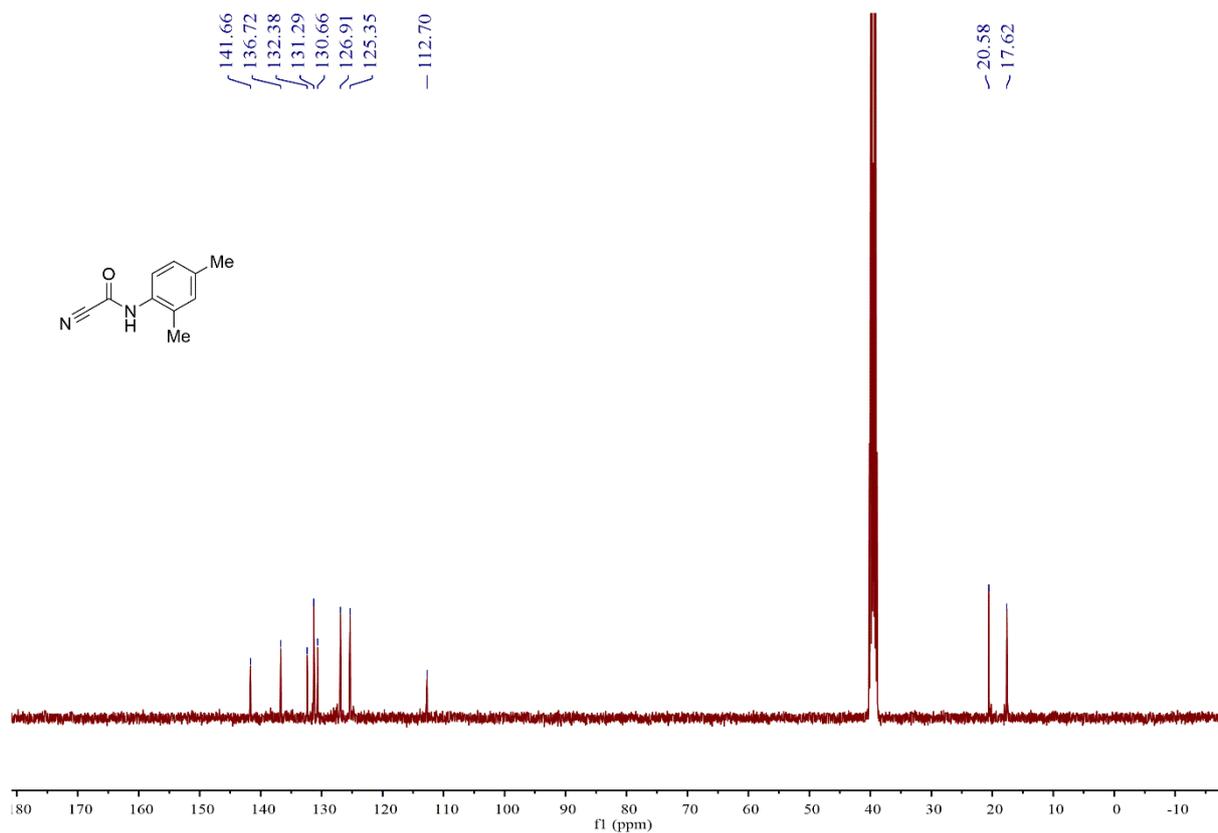
<sup>1</sup>H NMR Spectrum of Compound **3q** (400 MHz, CDCl<sub>3</sub>)



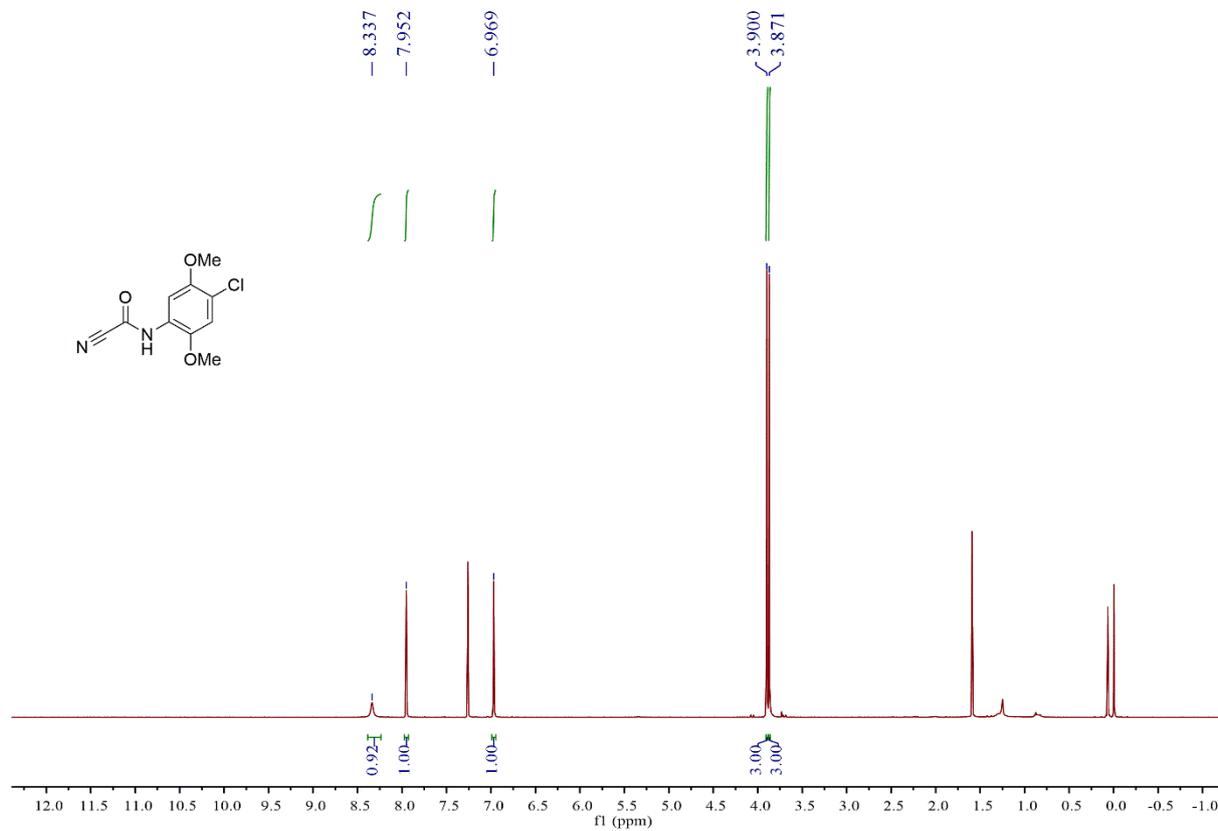
<sup>13</sup>C NMR Spectrum of Compound **3q** (100 MHz, CDCl<sub>3</sub>)



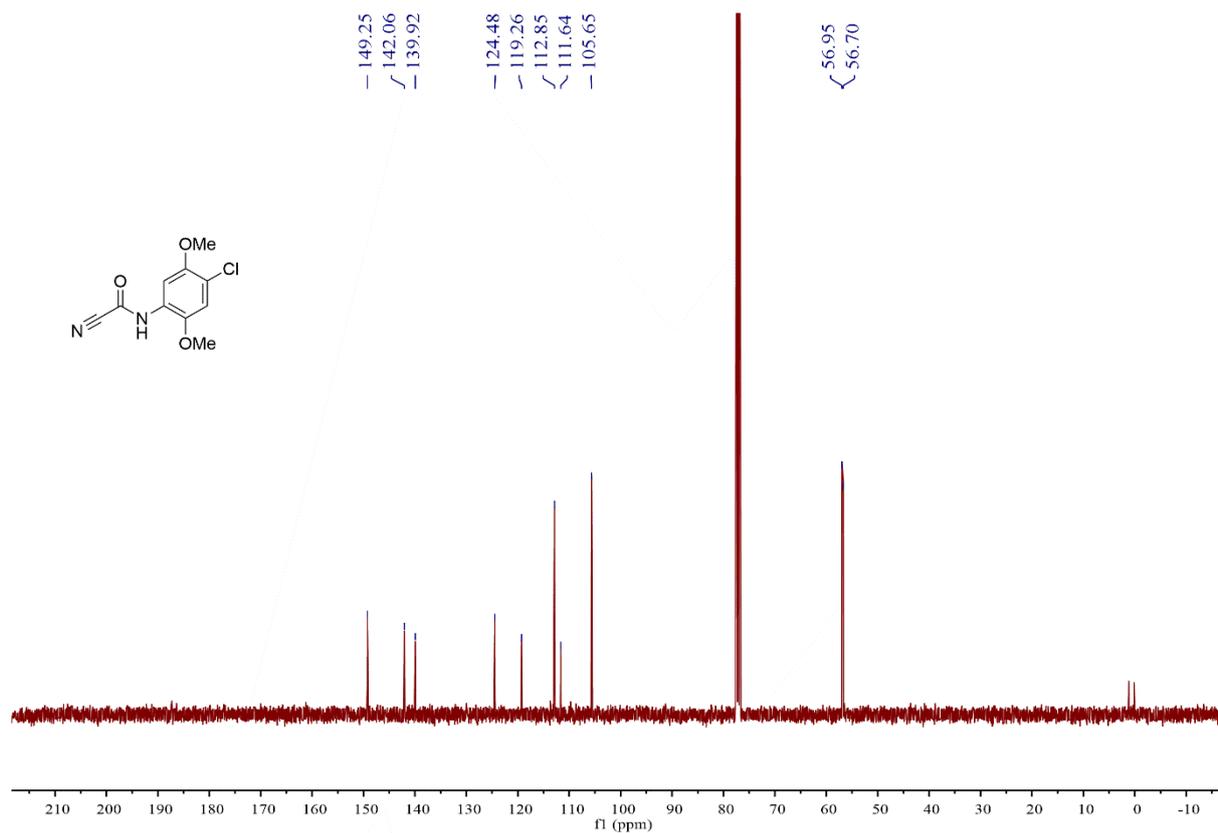
<sup>1</sup>H NMR Spectrum of Compound **3r** (400 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



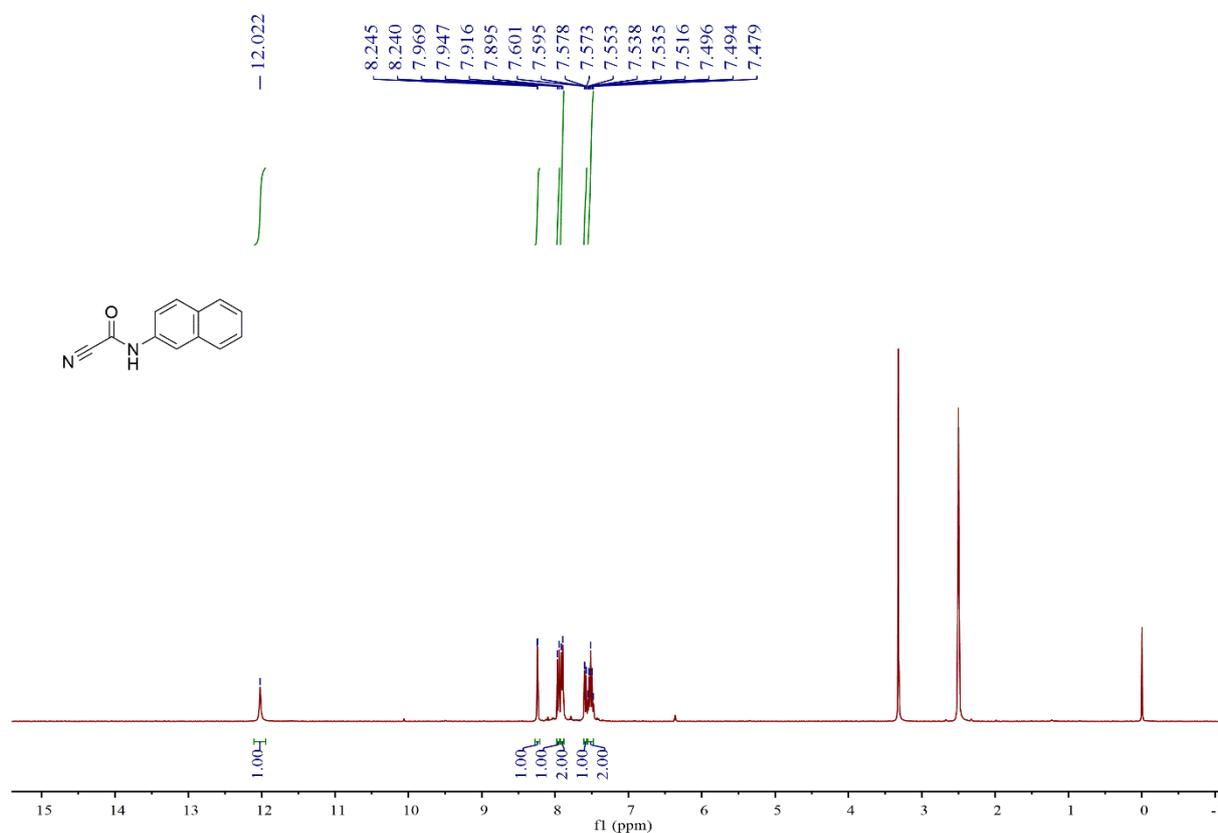
<sup>13</sup>C NMR Spectrum of Compound **3r** (100 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



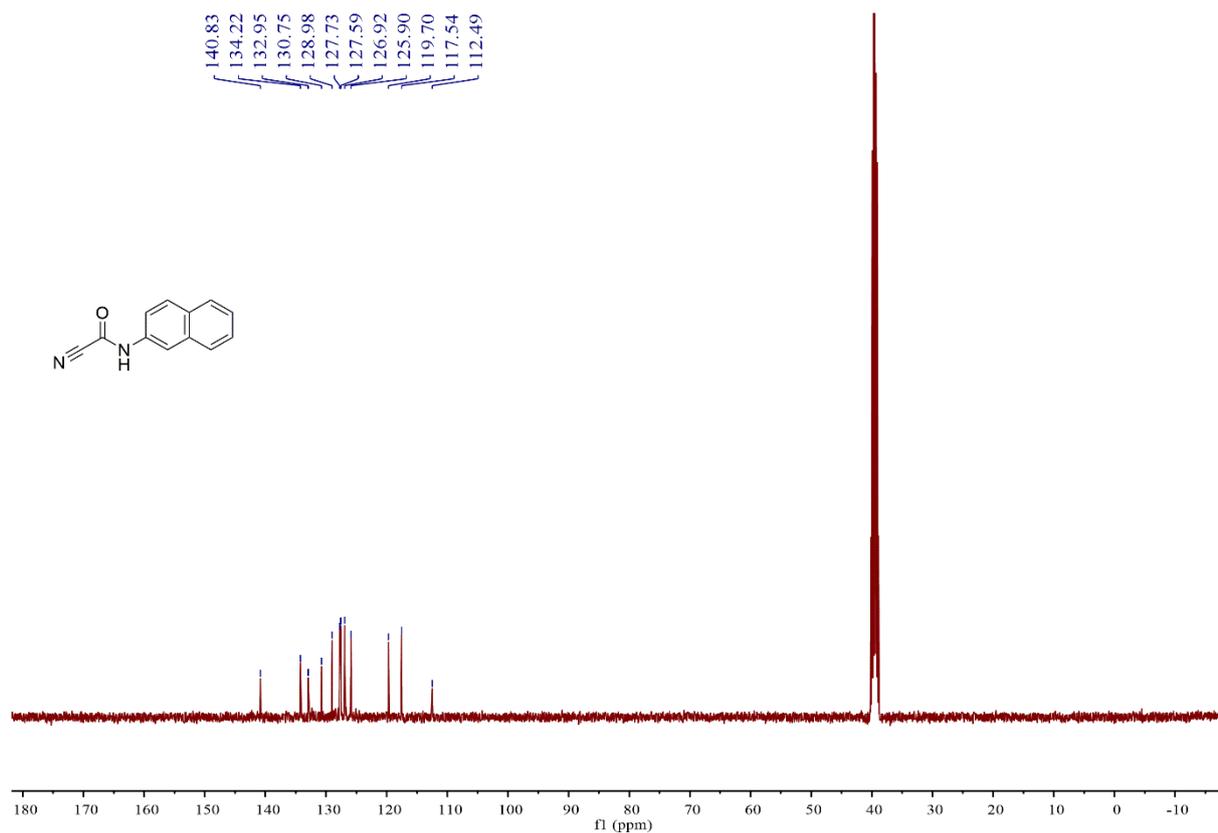
<sup>1</sup>H NMR Spectrum of Compound **3s** (400 MHz, CDCl<sub>3</sub>)



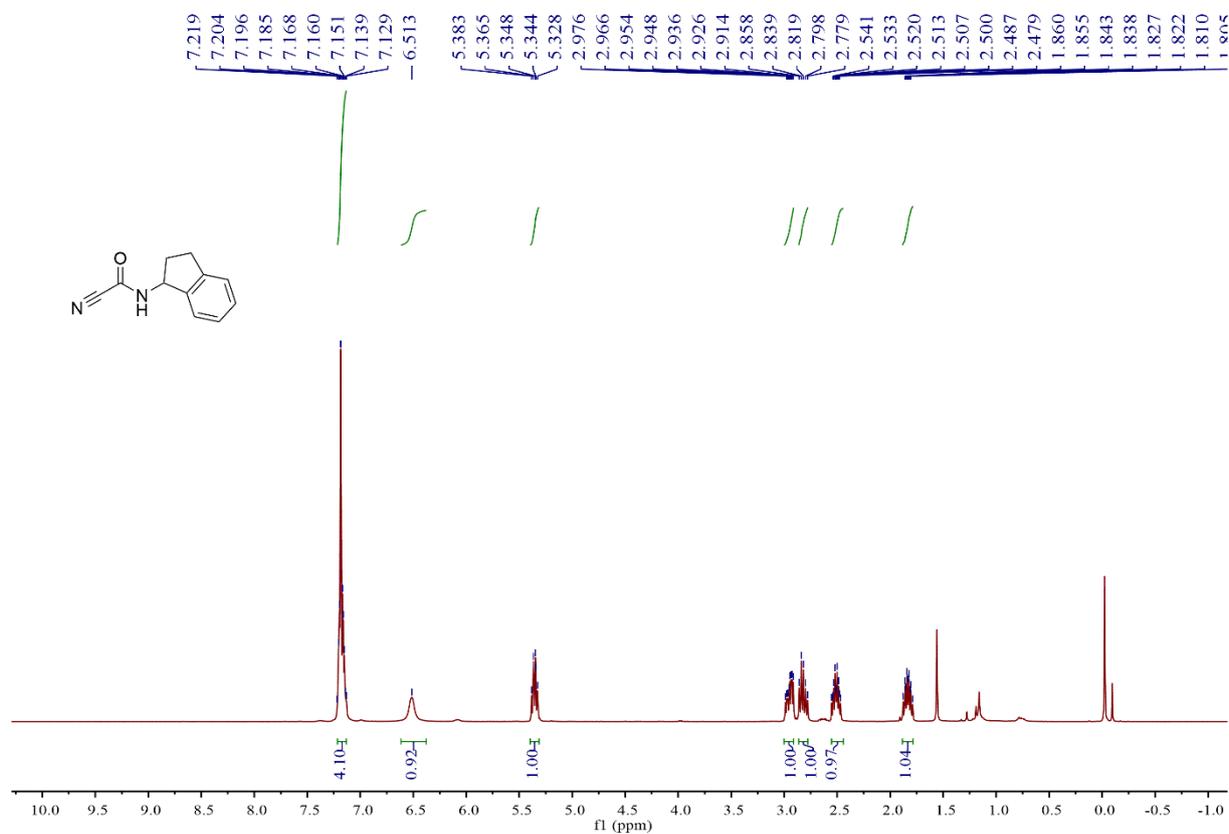
$^{13}\text{C}$  NMR Spectrum of Compound **3s** (100 MHz,  $\text{CDCl}_3$ )



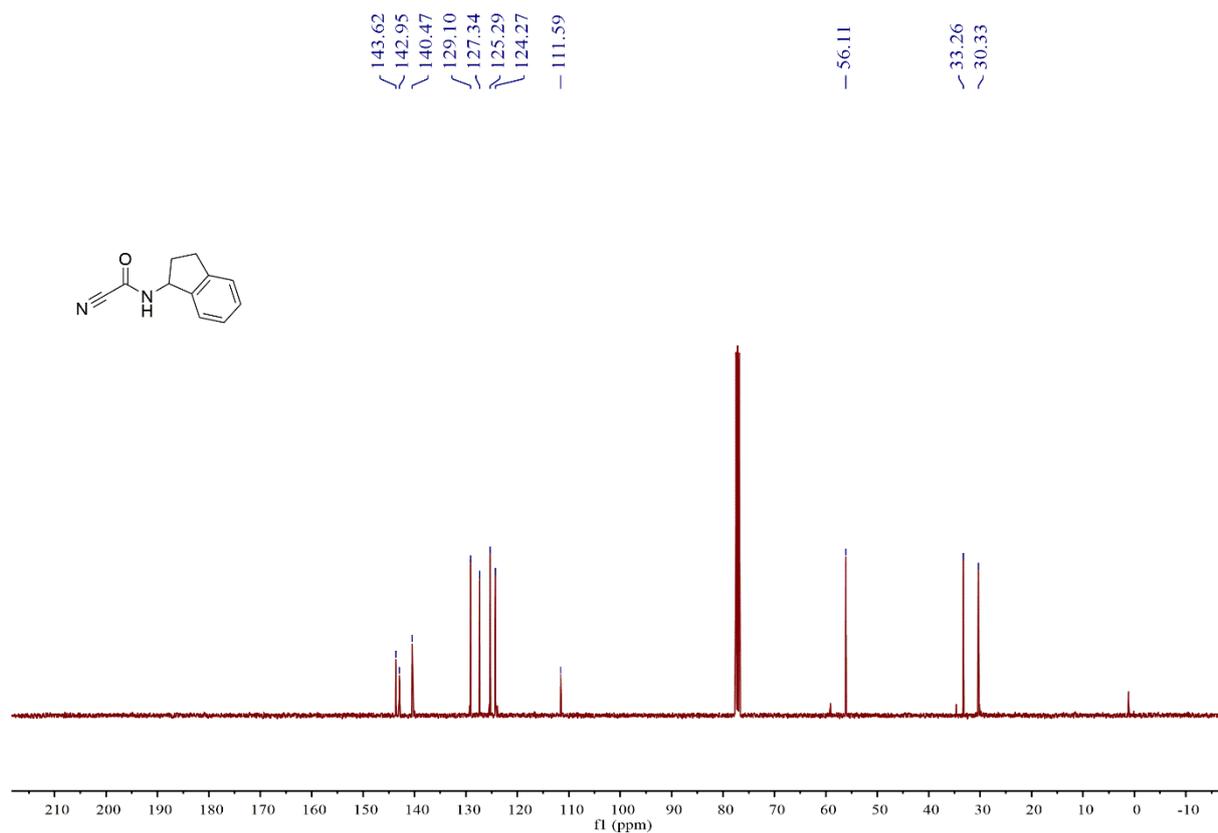
$^1\text{H}$  NMR Spectrum of Compound **3t** (400 MHz,  $(\text{CD}_3)_2\text{SO}$ )



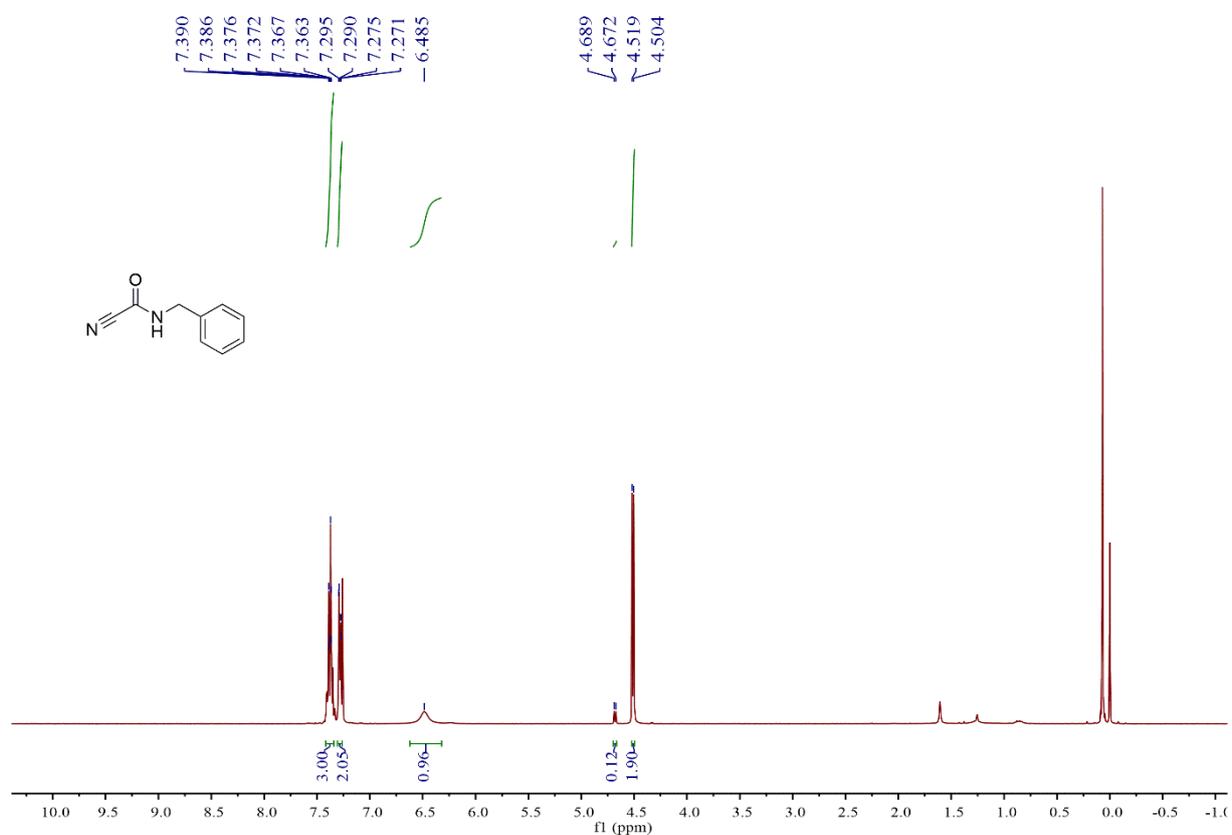
<sup>13</sup>C NMR Spectrum of Compound **3t** (100 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



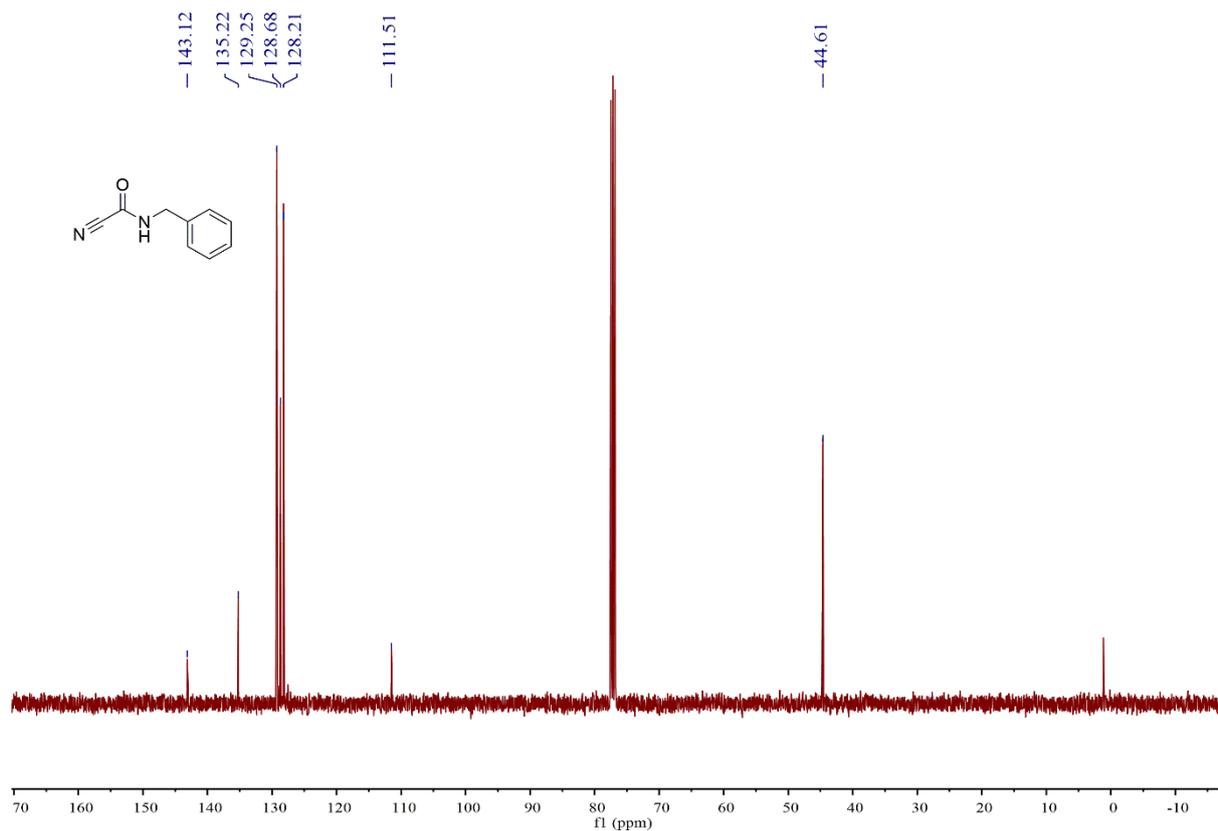
<sup>1</sup>H NMR Spectrum of Compound **3u** (400 MHz, CDCl<sub>3</sub>)



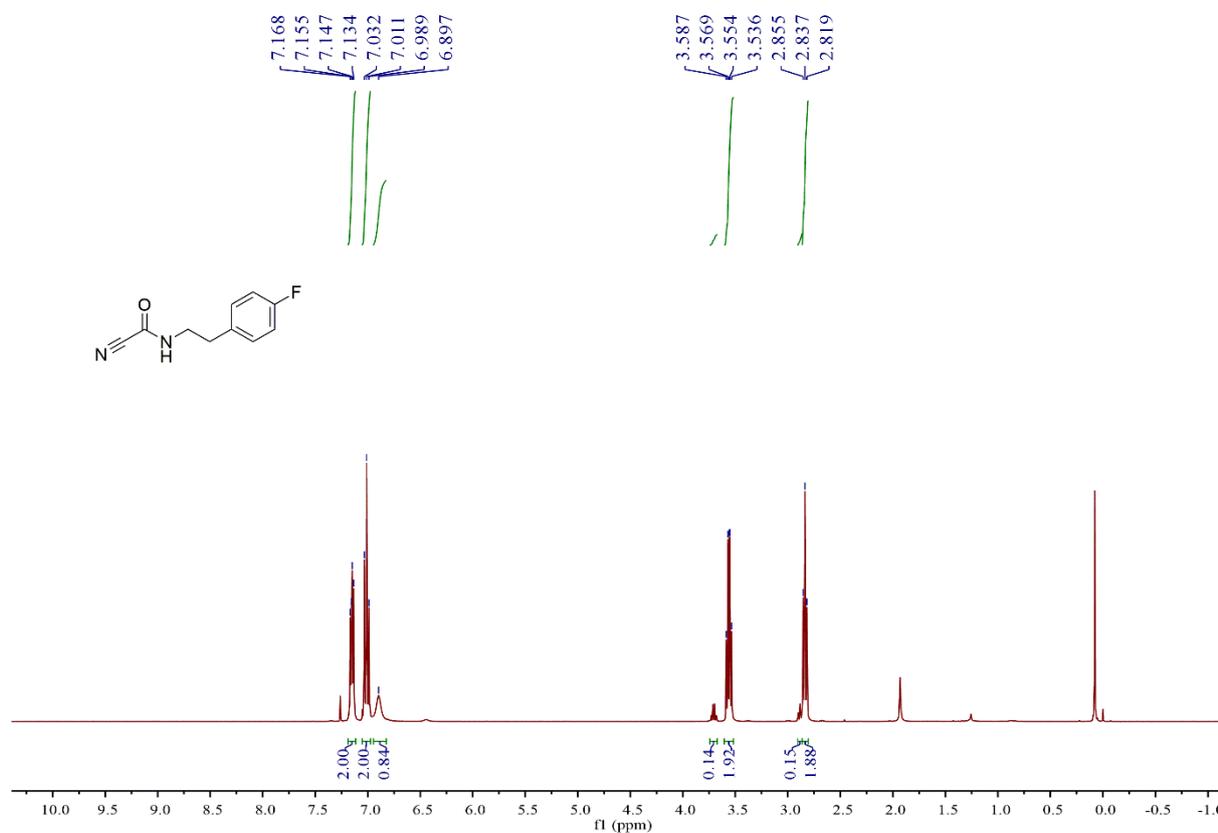
<sup>13</sup>C NMR Spectrum of Compound **3u** (100 MHz, CDCl<sub>3</sub>)



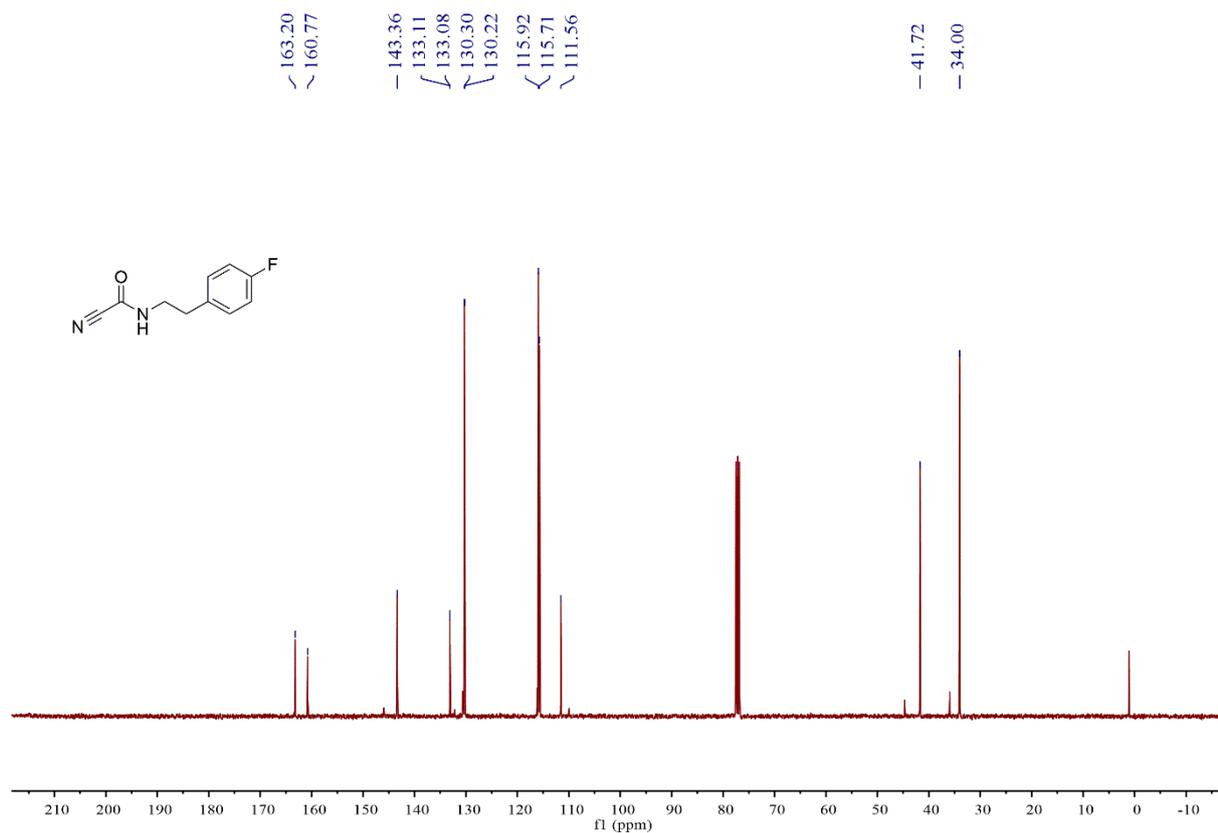
<sup>1</sup>H NMR Spectrum of Compound **3v** (400 MHz, CDCl<sub>3</sub>)



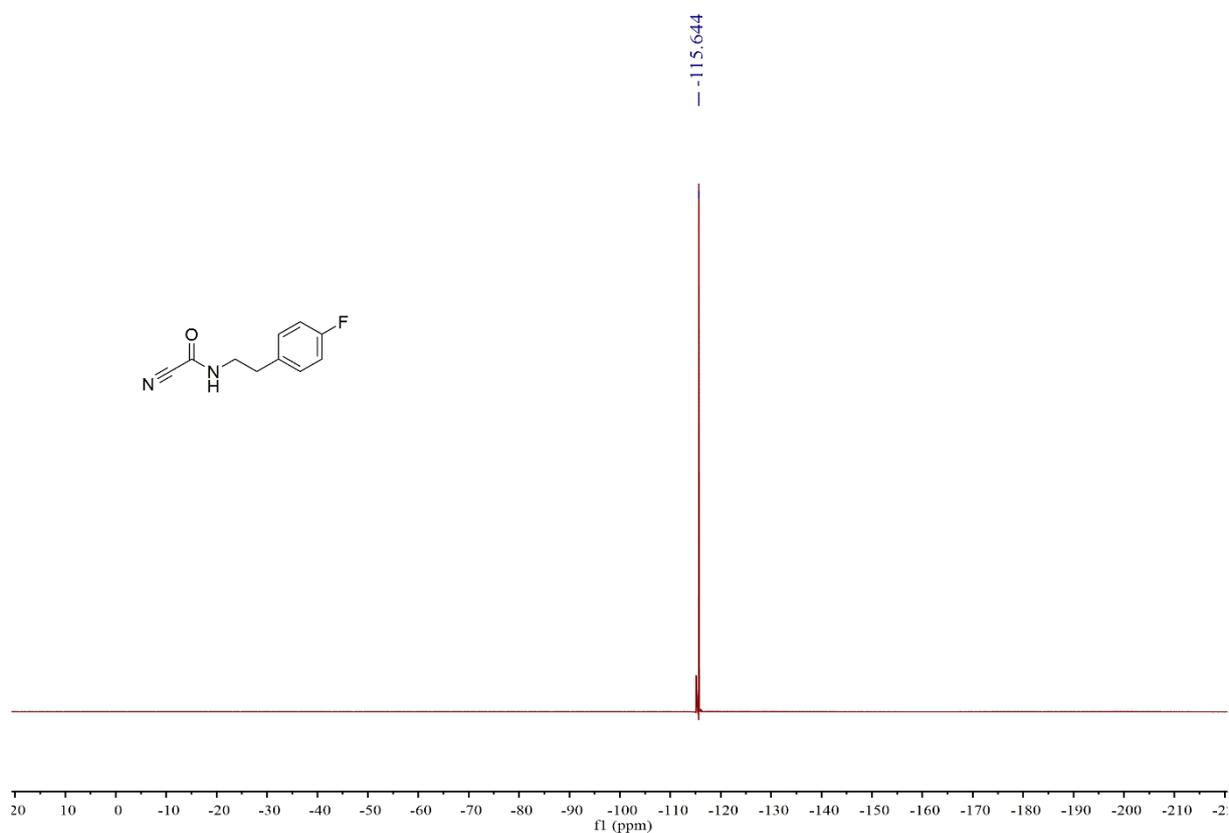
$^{13}\text{C}$  NMR Spectrum of Compound **3v** (100 MHz,  $\text{CDCl}_3$ )



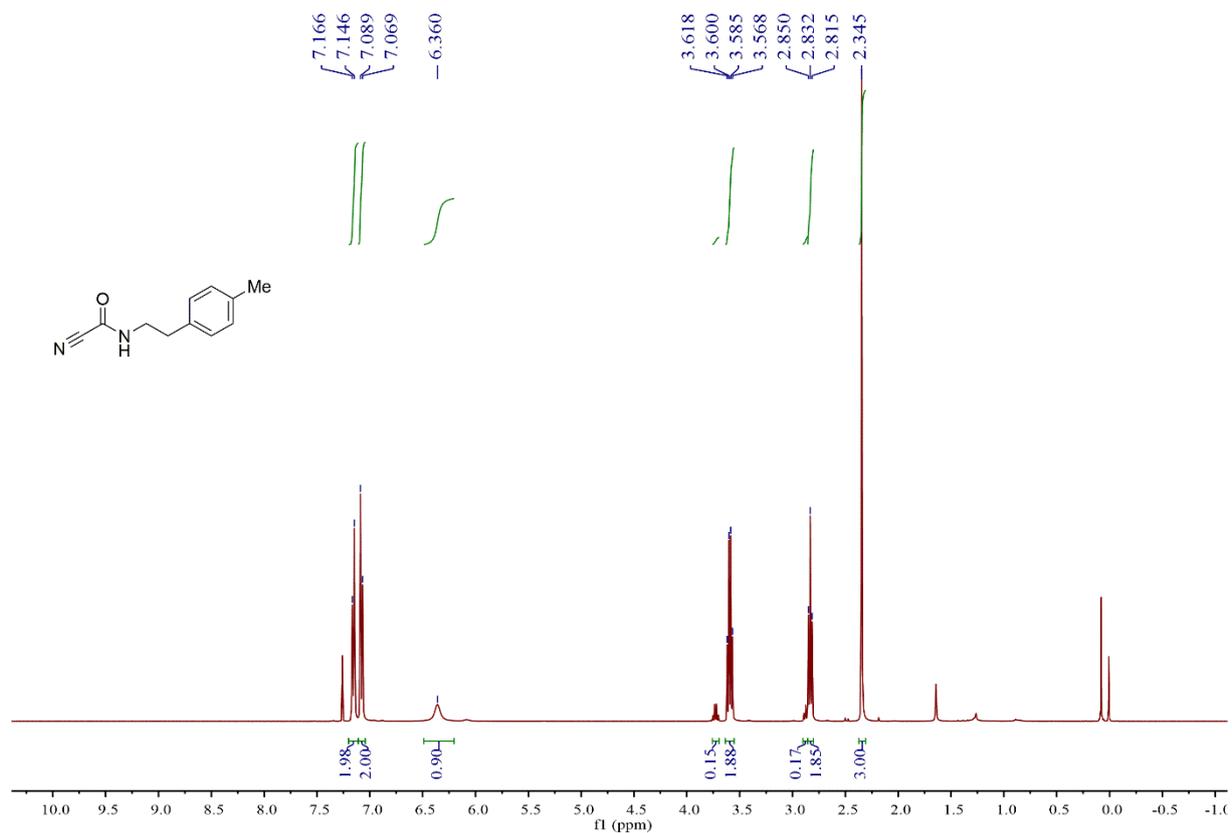
$^1\text{H}$  NMR Spectrum of Compound **3w** (400 MHz,  $\text{CDCl}_3$ )



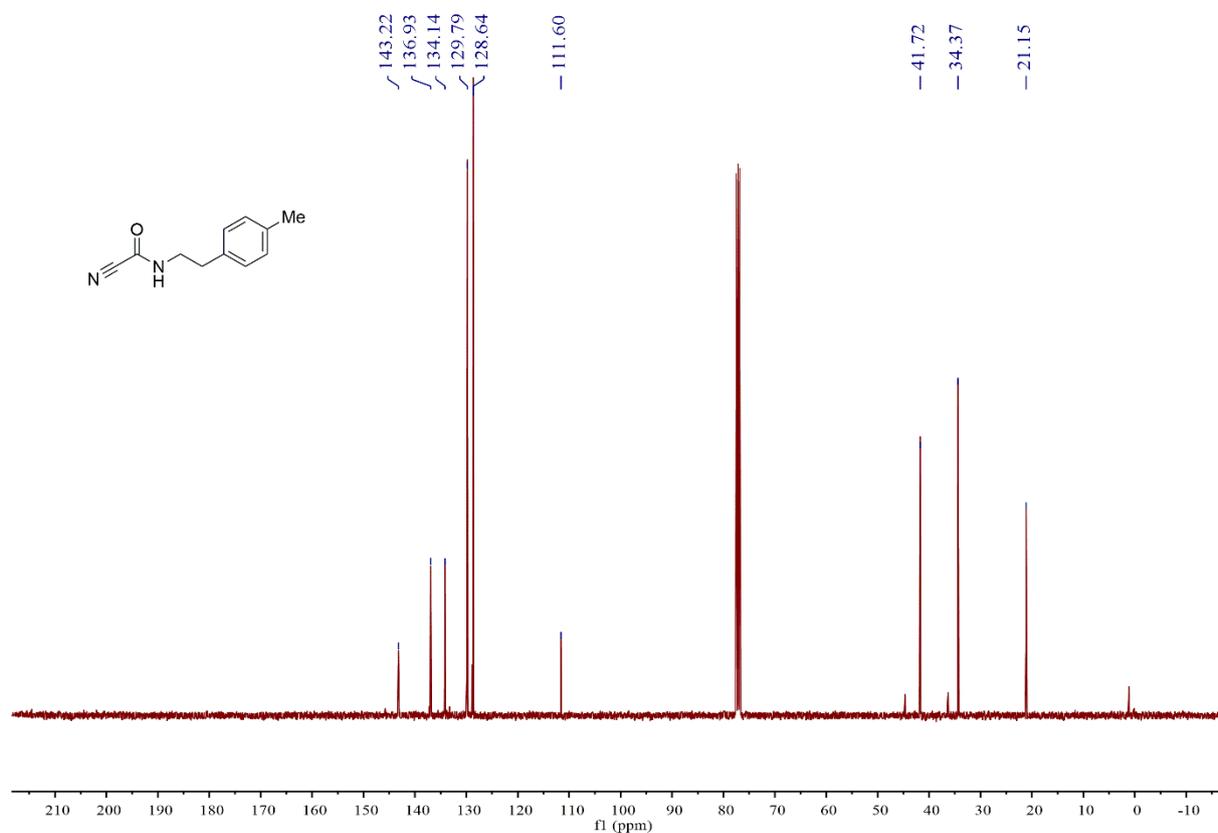
<sup>13</sup>C NMR Spectrum of Compound **3w** (100 MHz, CDCl<sub>3</sub>)



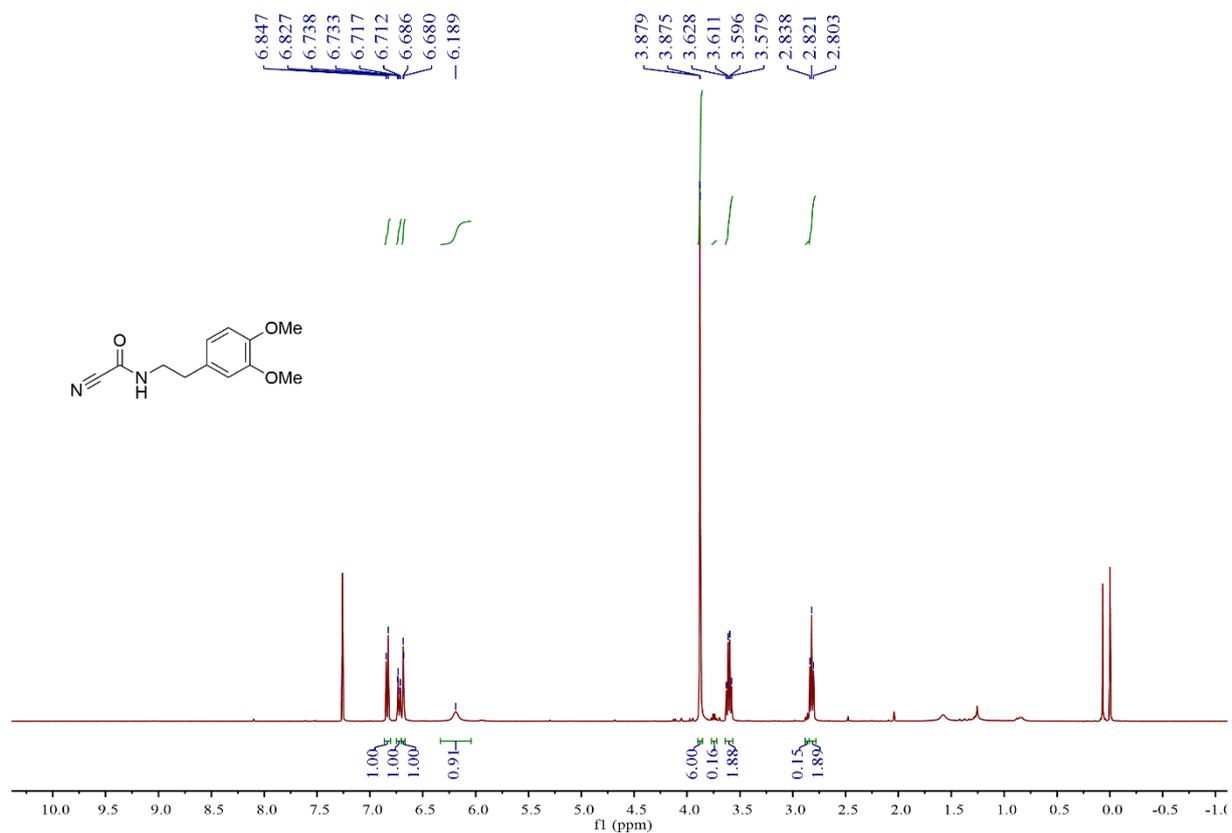
<sup>19</sup>F NMR Spectrum of Compound **3w** (376 MHz, CDCl<sub>3</sub>)



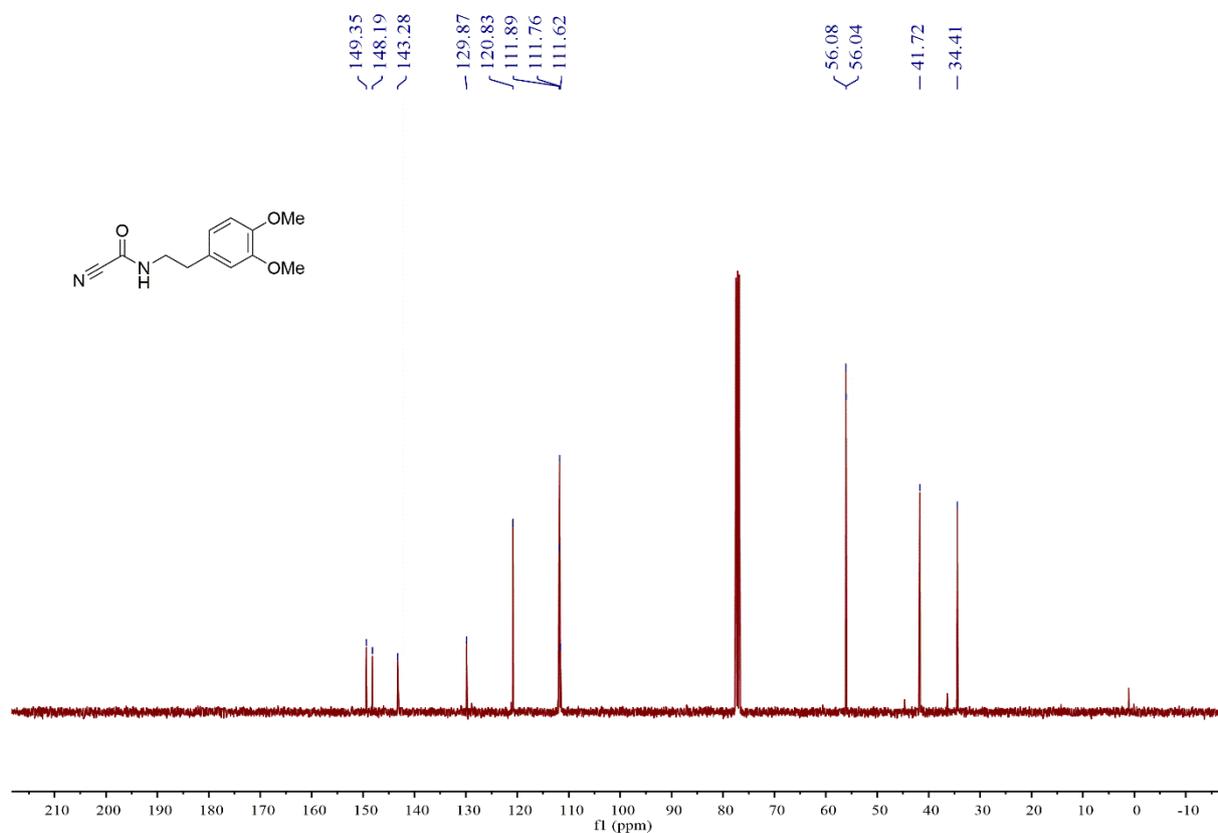
<sup>1</sup>H NMR Spectrum of Compound **3x** (400 MHz, CDCl<sub>3</sub>)



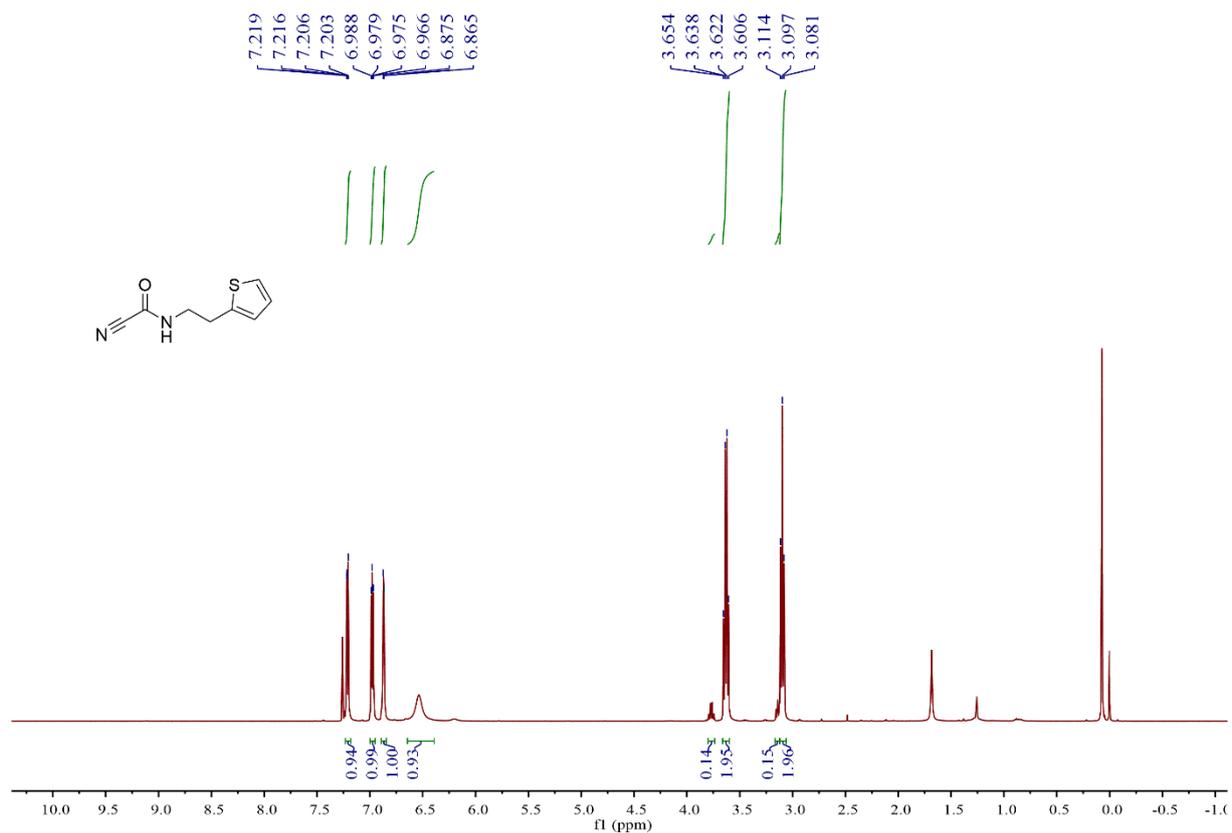
<sup>13</sup>C NMR Spectrum of Compound **3x** (100 MHz, CDCl<sub>3</sub>)



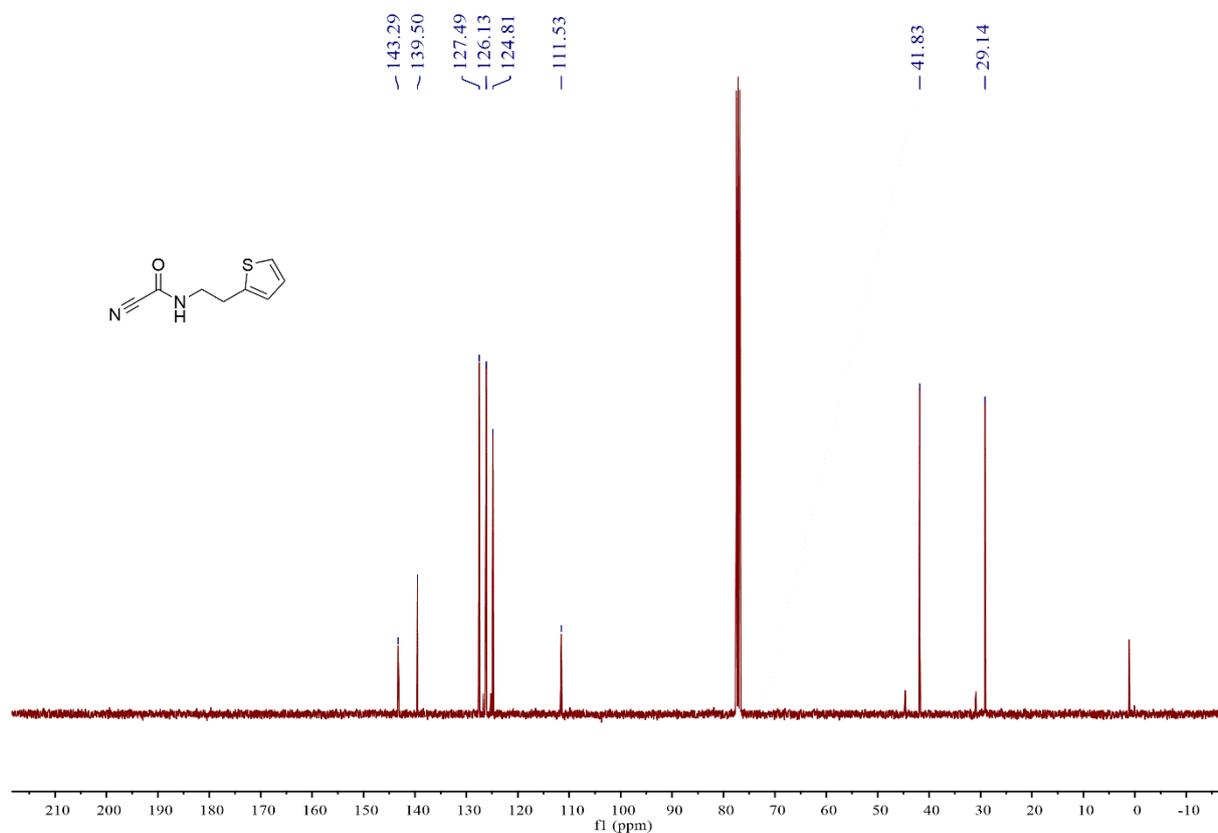
<sup>1</sup>H NMR Spectrum of Compound **3y** (400 MHz, CDCl<sub>3</sub>)



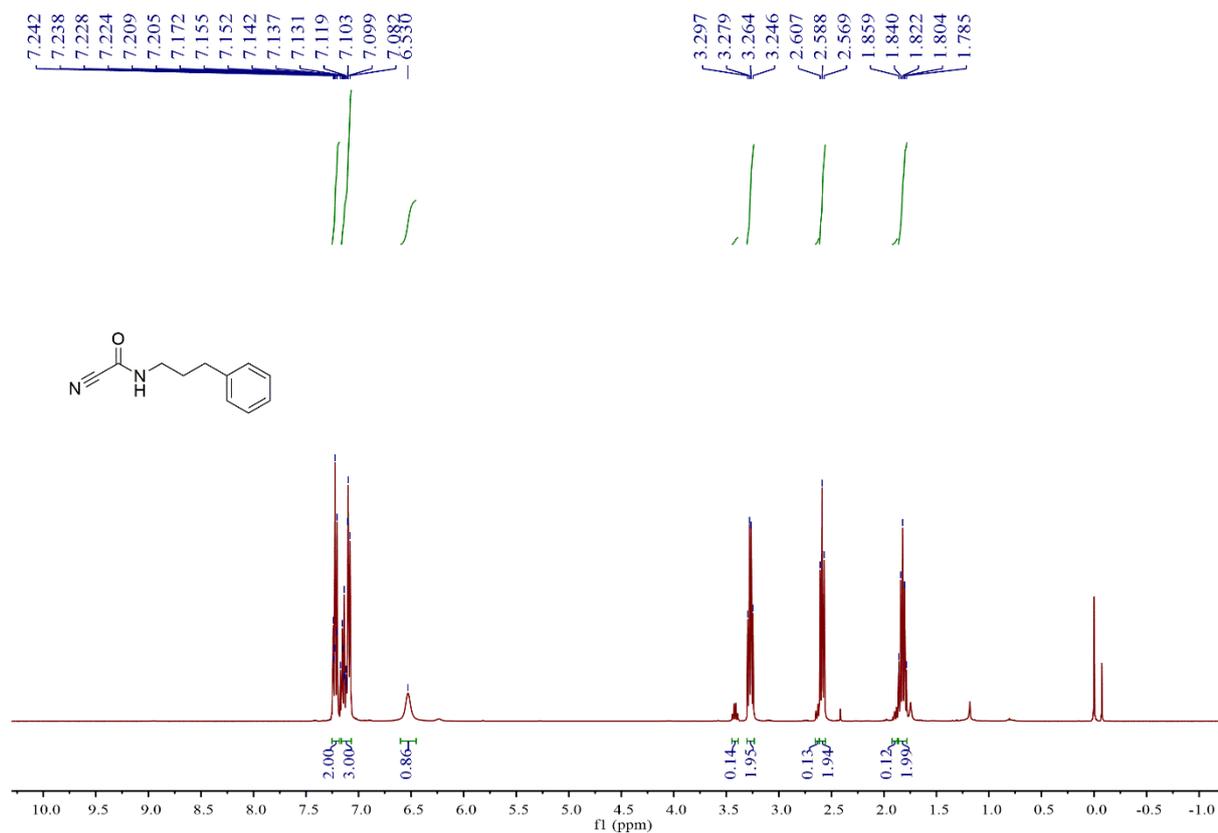
<sup>13</sup>C NMR Spectrum of Compound **3y** (100 MHz, CDCl<sub>3</sub>)



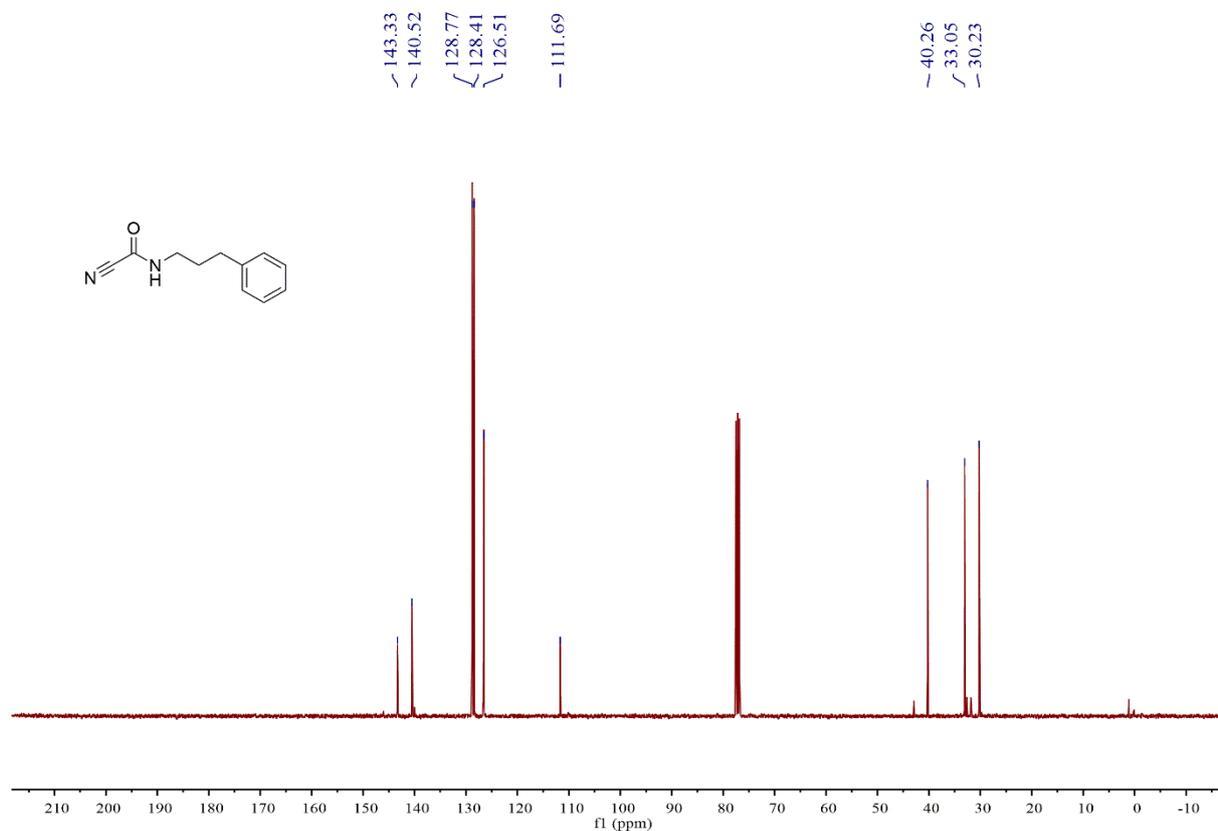
**<sup>1</sup>H NMR Spectrum of Compound **3z** (400 MHz, CDCl<sub>3</sub>)**



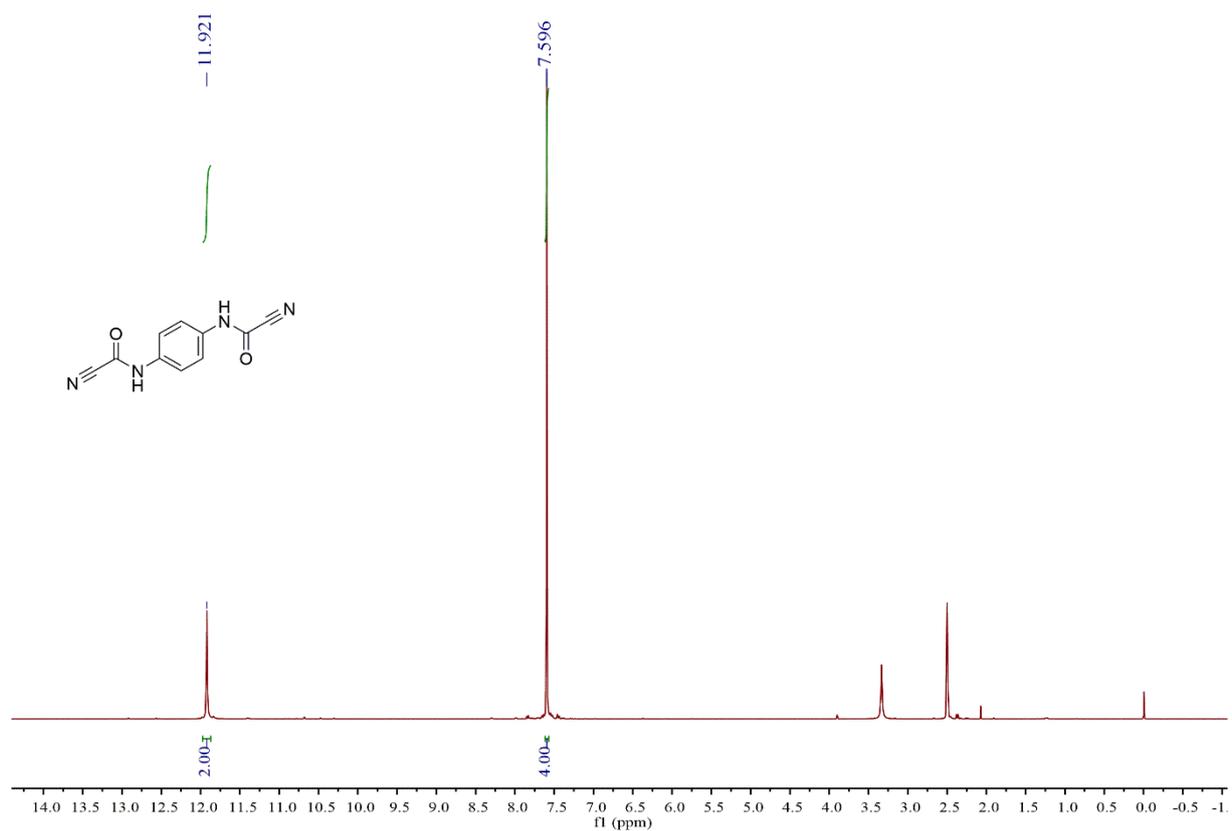
**<sup>13</sup>C NMR Spectrum of Compound **3z** (100 MHz, CDCl<sub>3</sub>)**



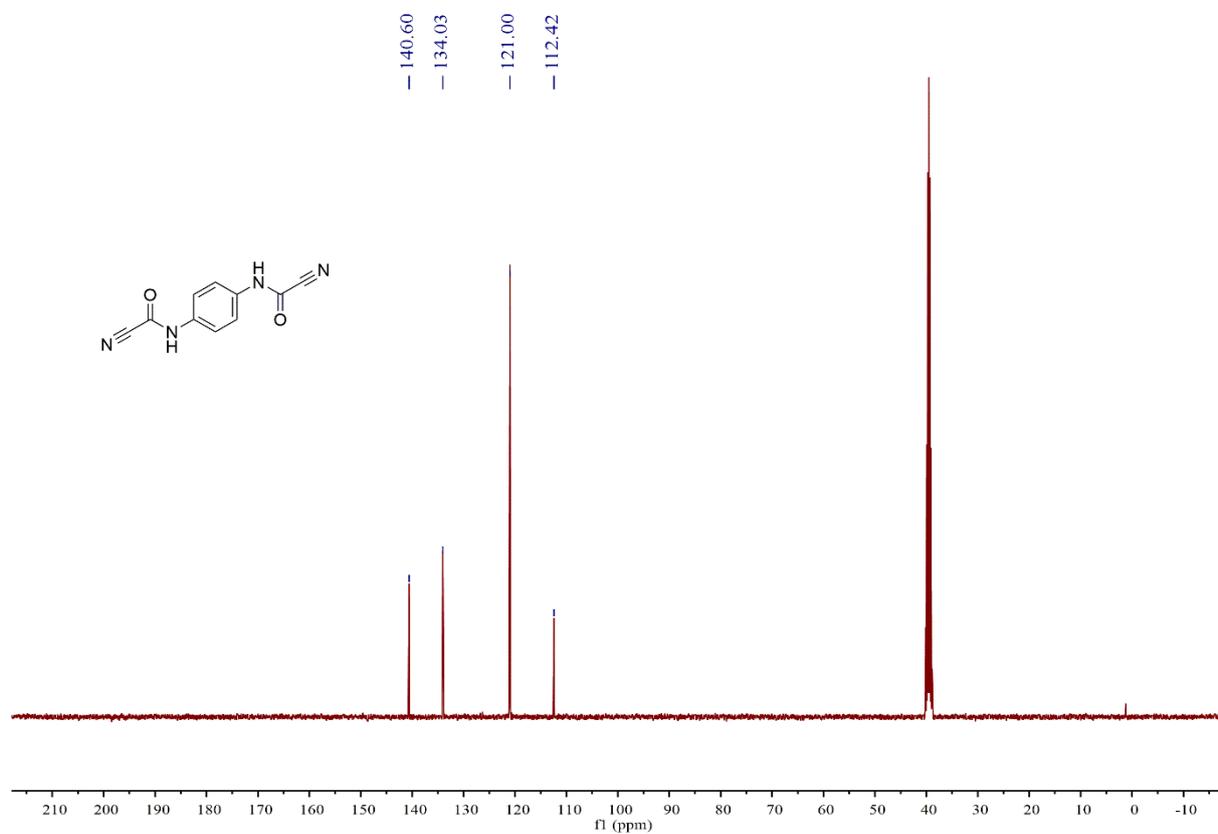
<sup>1</sup>H NMR Spectrum of Compound 3aa (400 MHz, CDCl<sub>3</sub>)



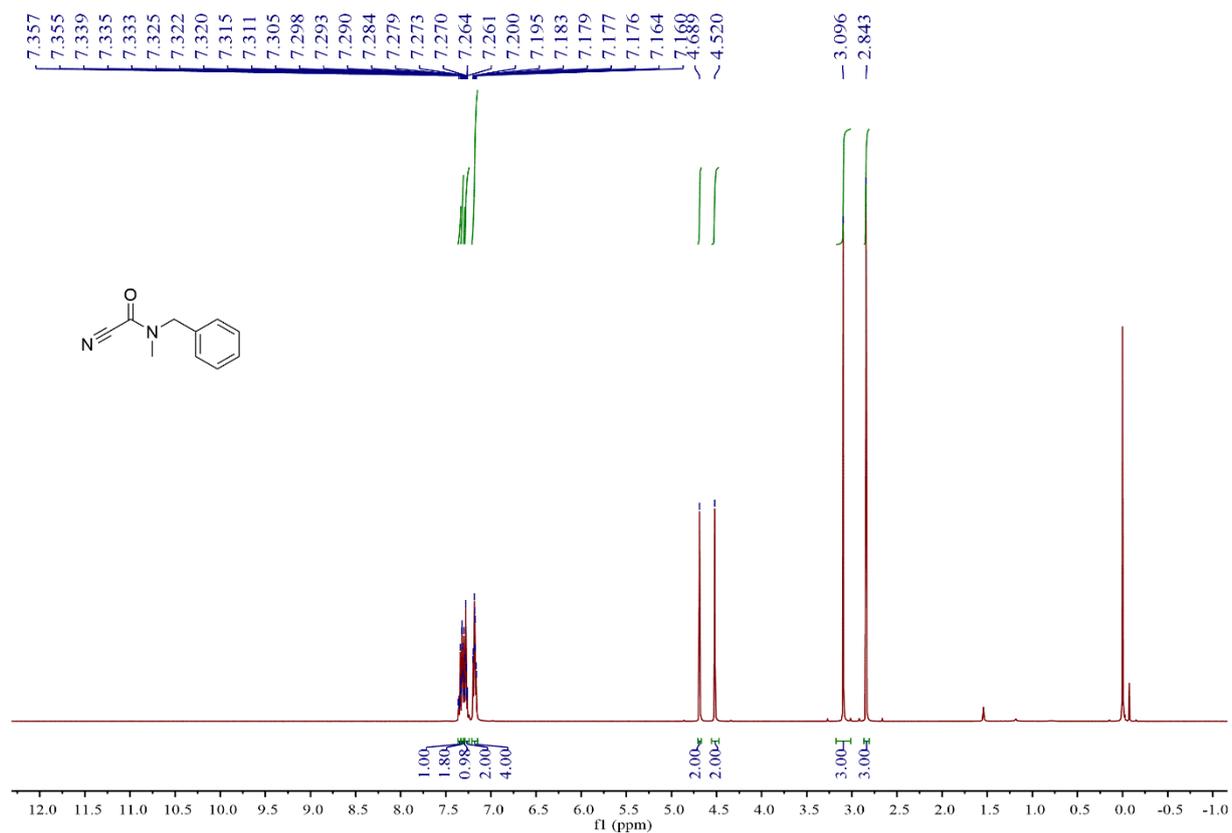
<sup>13</sup>C NMR Spectrum of Compound 3aa (100 MHz, CDCl<sub>3</sub>)



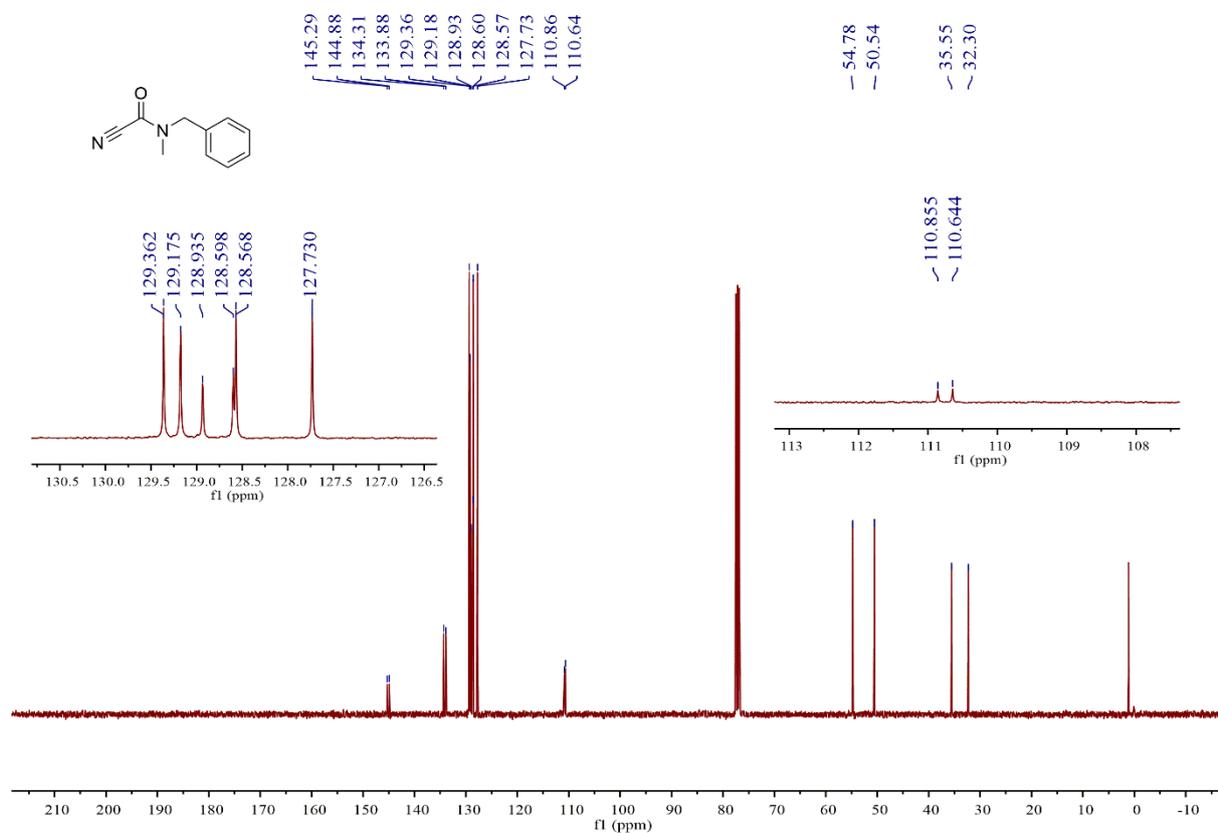
<sup>1</sup>H NMR Spectrum of Compound **3ab** (400 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



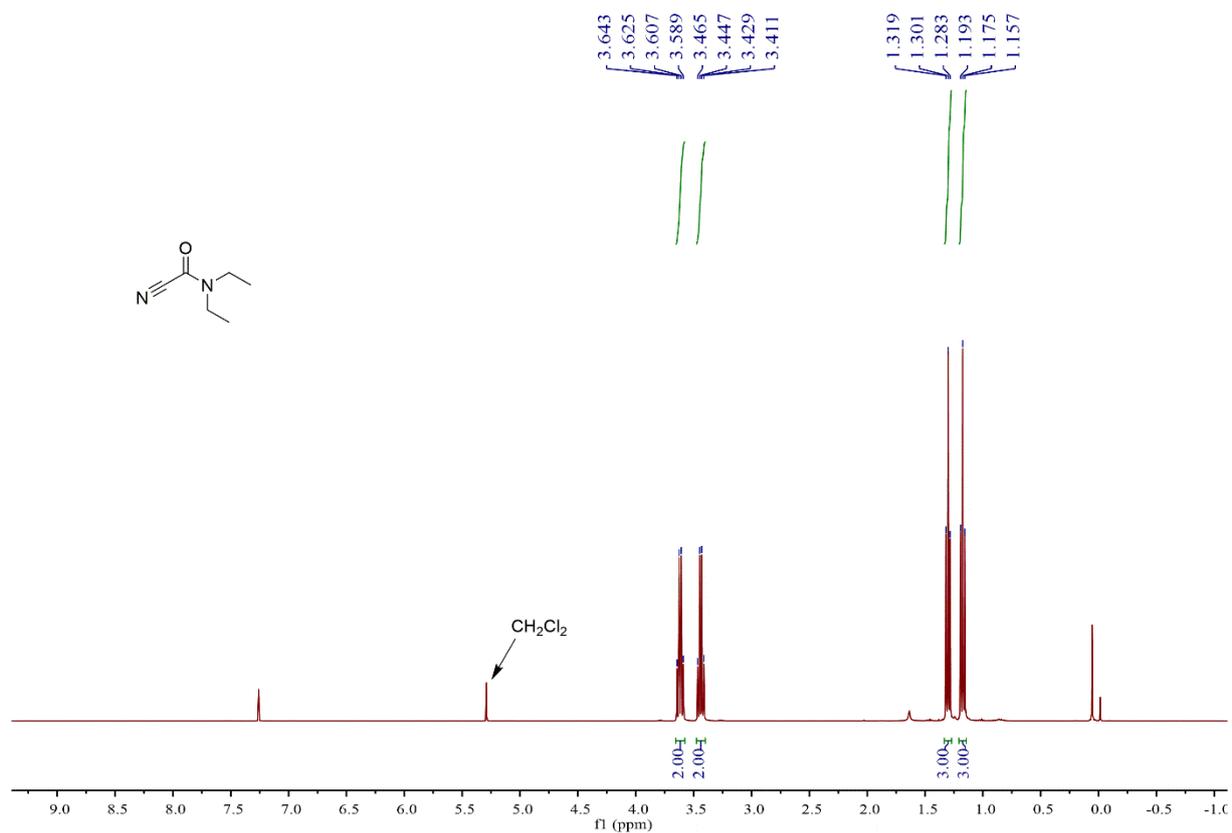
<sup>13</sup>C NMR Spectrum of Compound **3ab** (100 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



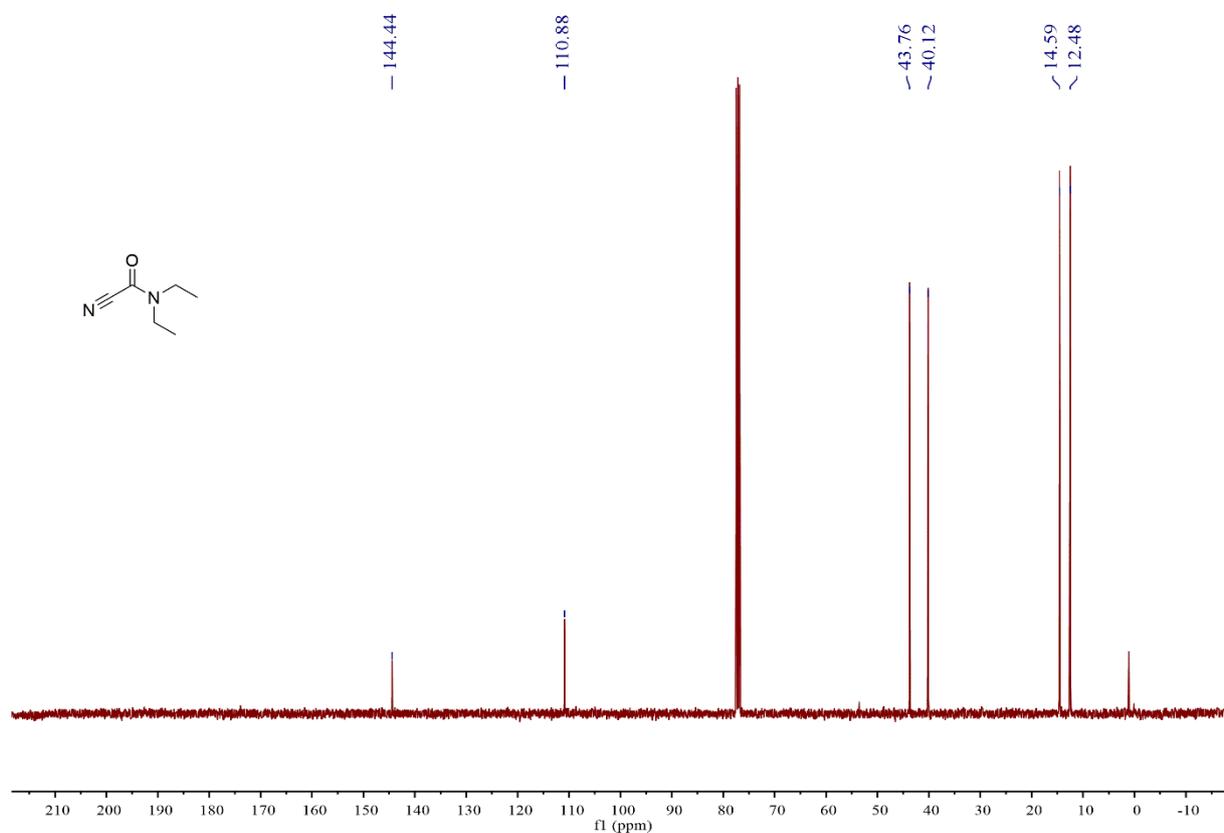
**<sup>1</sup>H NMR Spectrum of Compound 3ac (400 MHz, CDCl<sub>3</sub>)**



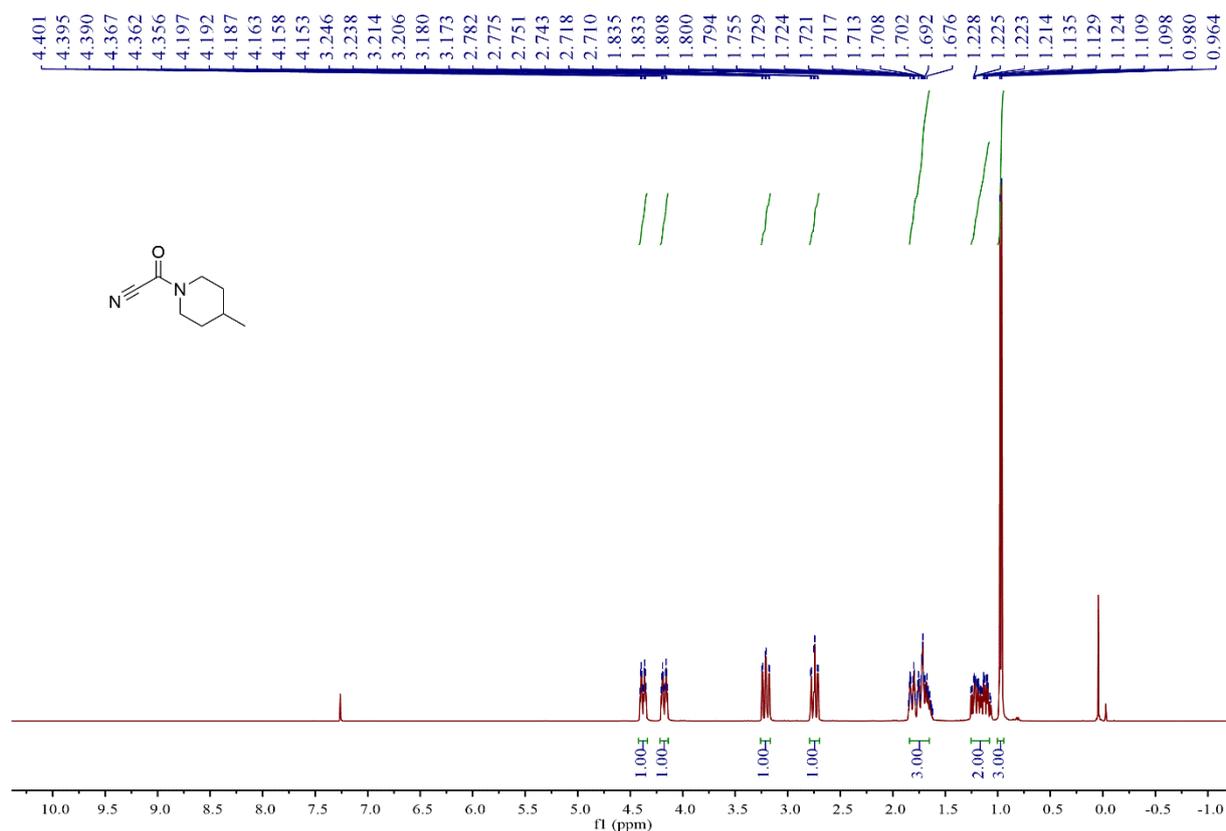
**<sup>13</sup>C NMR Spectrum of Compound 3ac (100 MHz, CDCl<sub>3</sub>)**



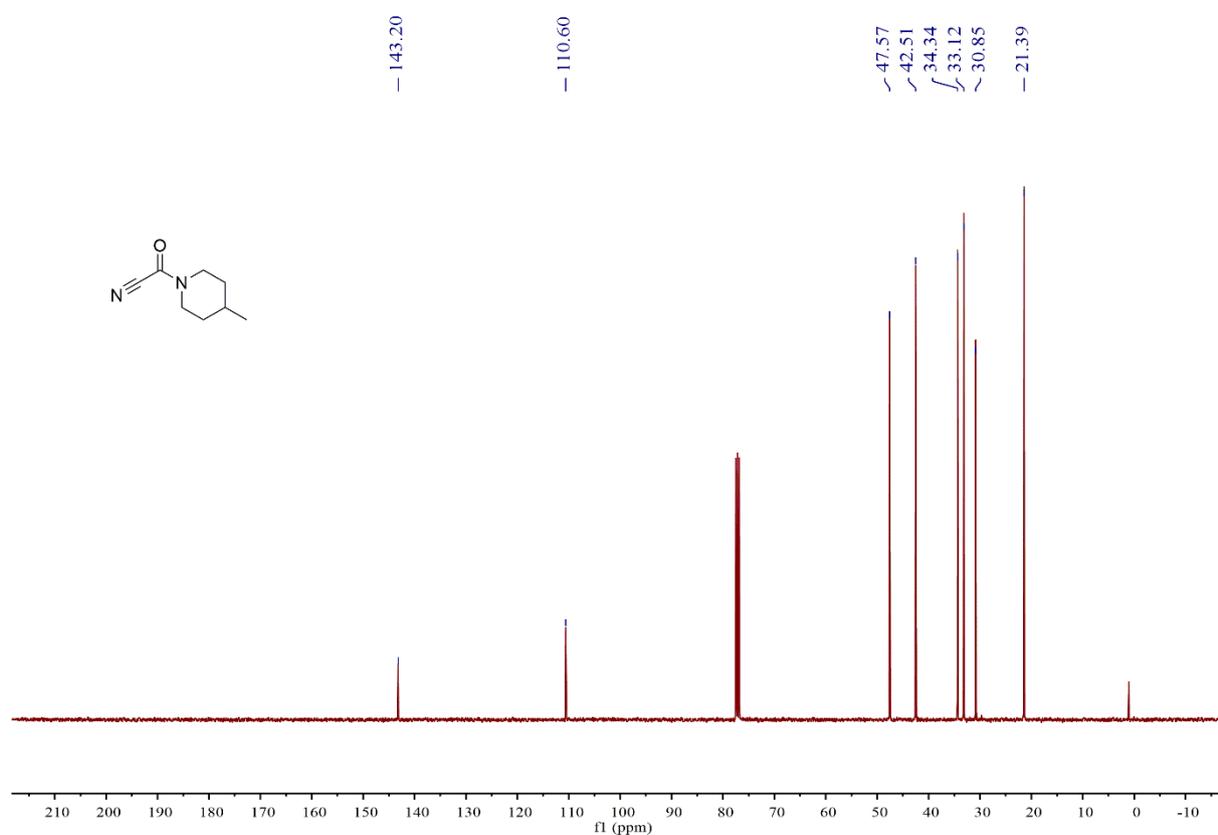
$^1\text{H}$  NMR Spectrum of Compound **3ad** (400 MHz,  $\text{CDCl}_3$ )



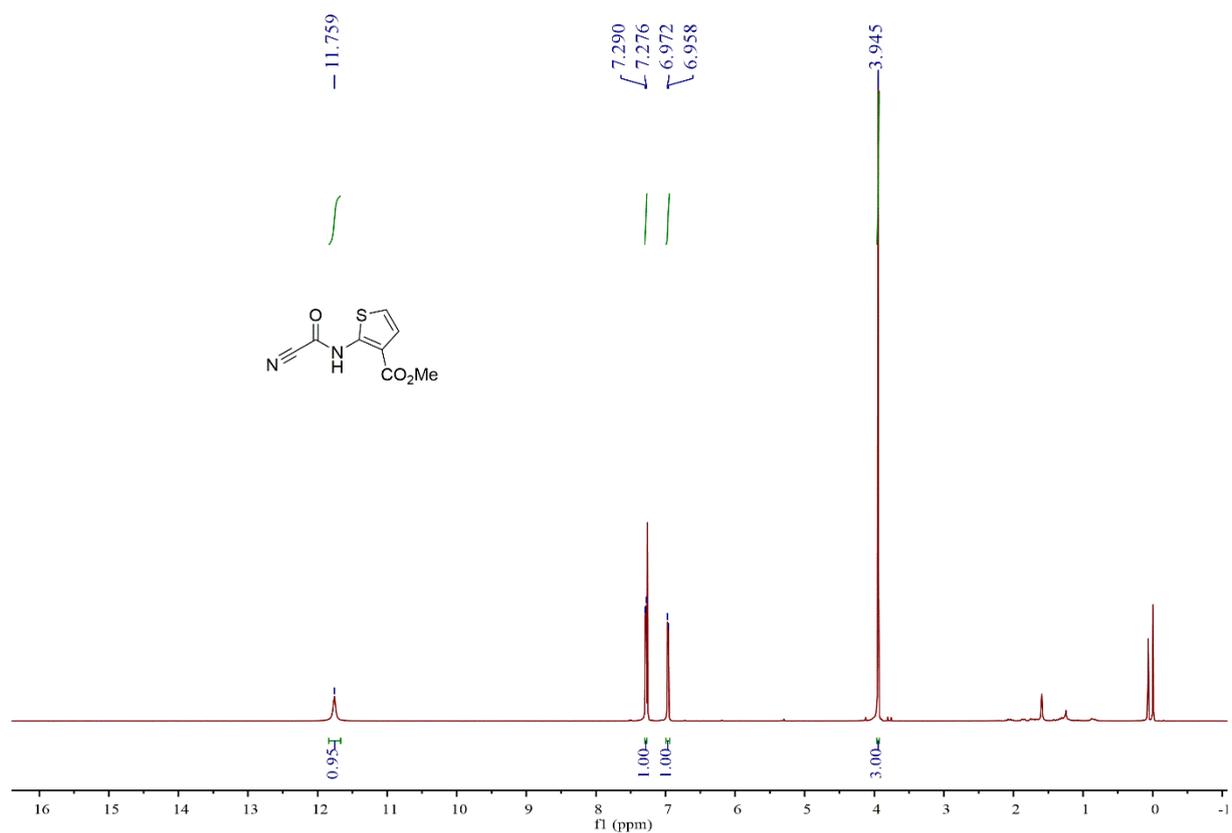
$^{13}\text{C}$  NMR Spectrum of Compound **3ad** (100 MHz,  $\text{CDCl}_3$ )



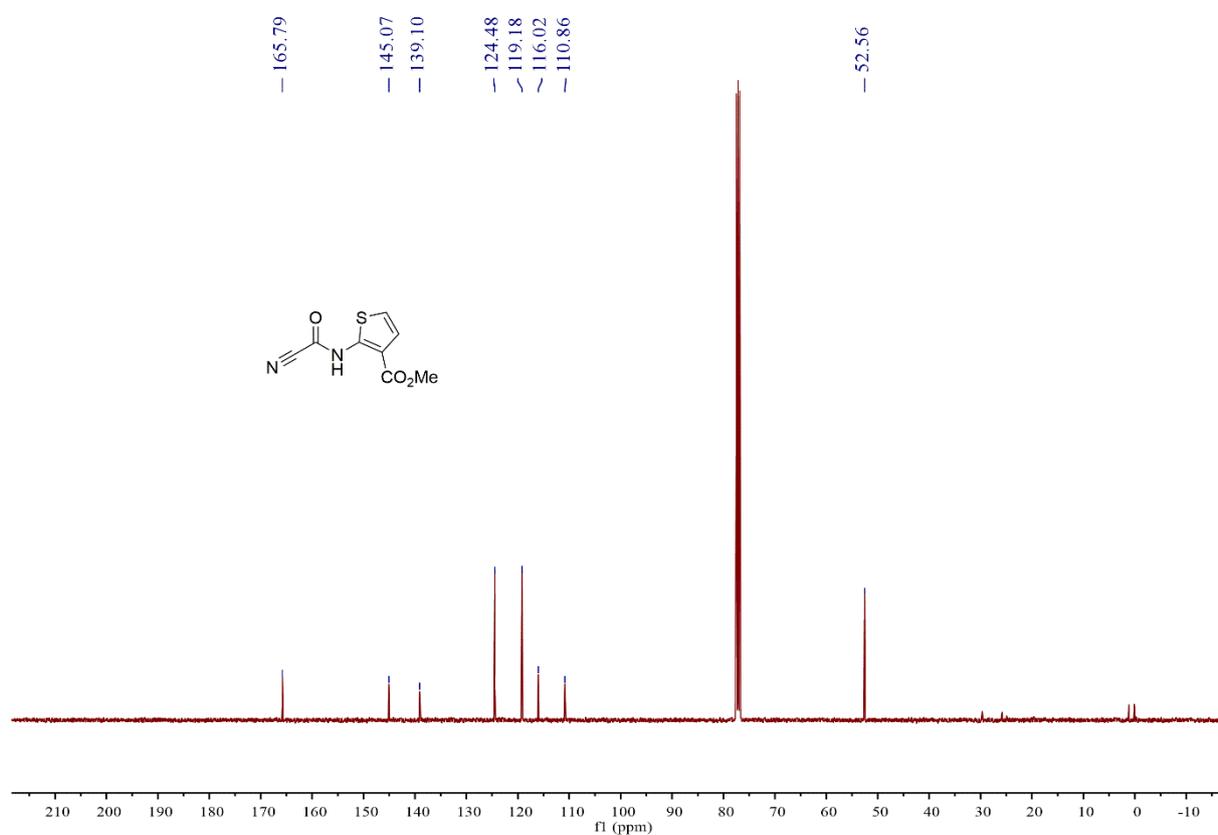
<sup>1</sup>H NMR Spectrum of Compound 3ae (400 MHz, CDCl<sub>3</sub>)



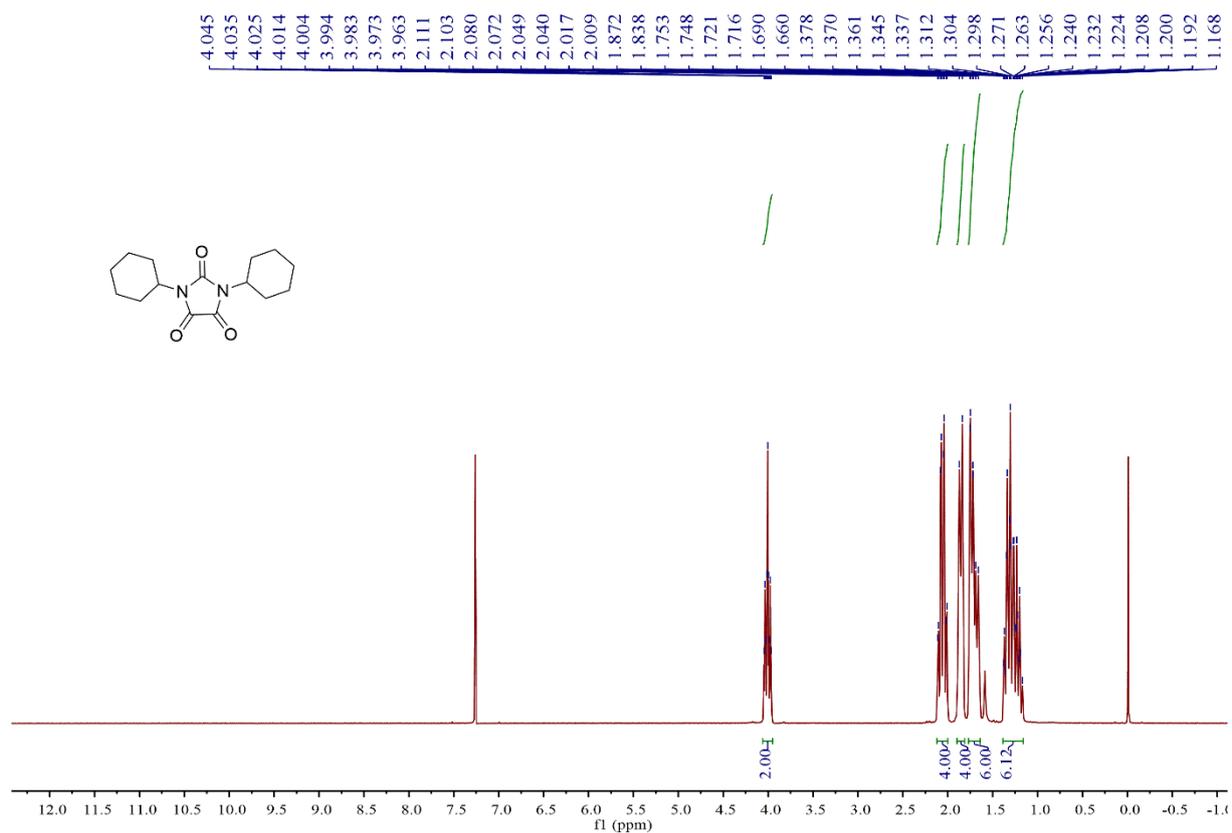
<sup>13</sup>C NMR Spectrum of Compound 3ae (100 MHz, CDCl<sub>3</sub>)



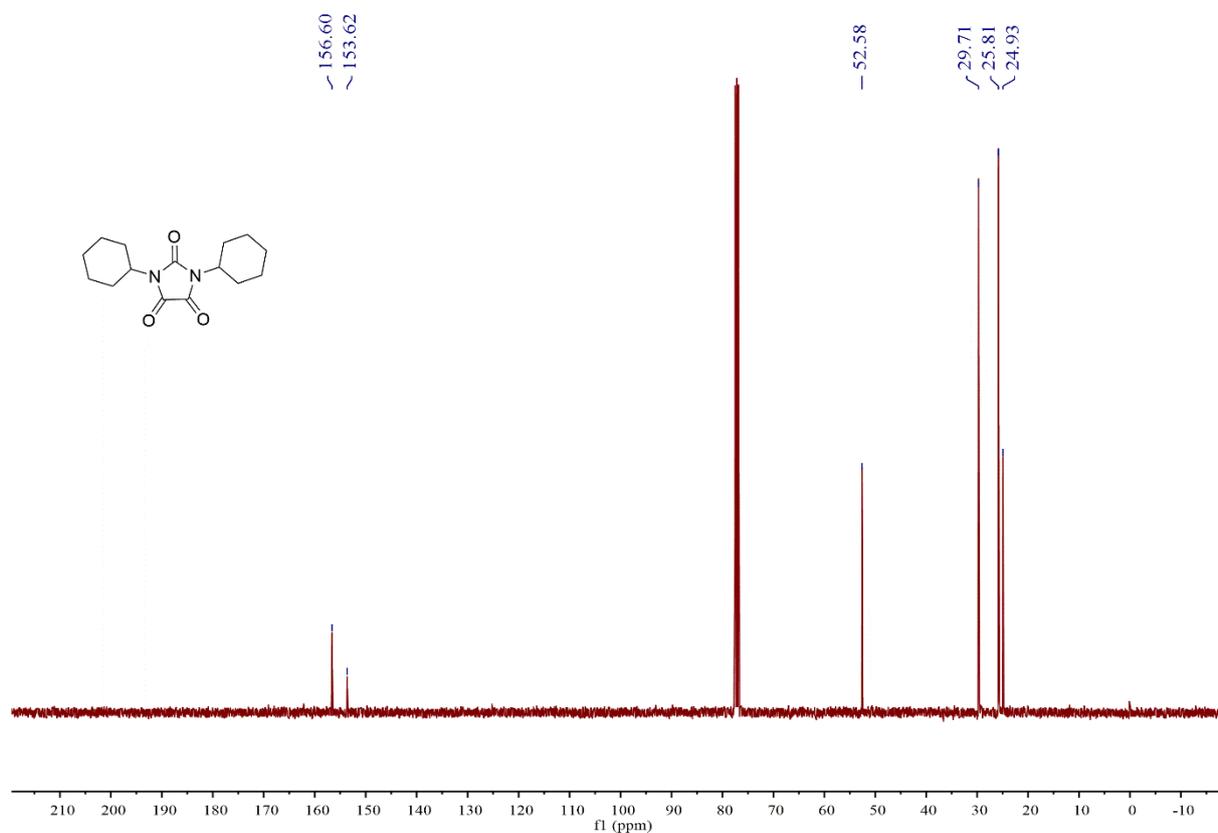
**<sup>1</sup>H NMR Spectrum of Compound 3af (400 MHz, CDCl<sub>3</sub>)**



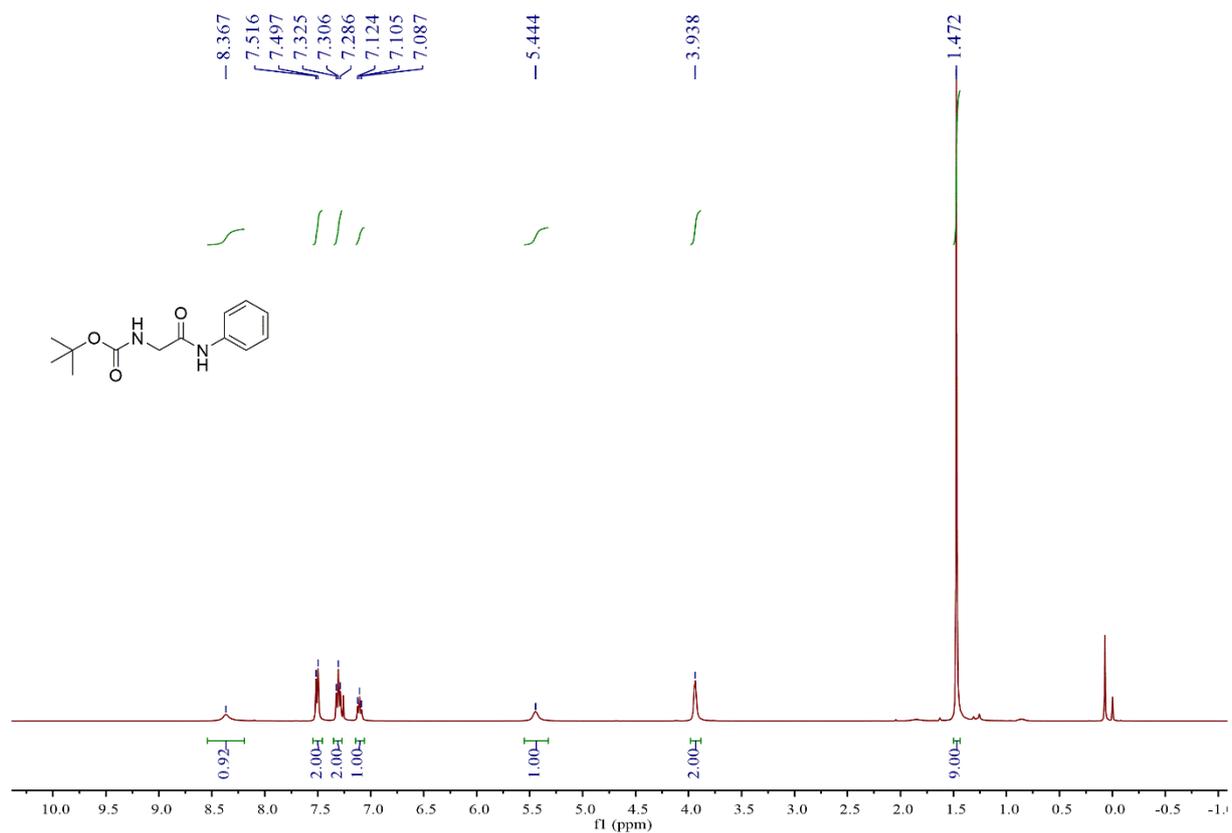
**<sup>13</sup>C NMR Spectrum of Compound 3af (100 MHz, CDCl<sub>3</sub>)**



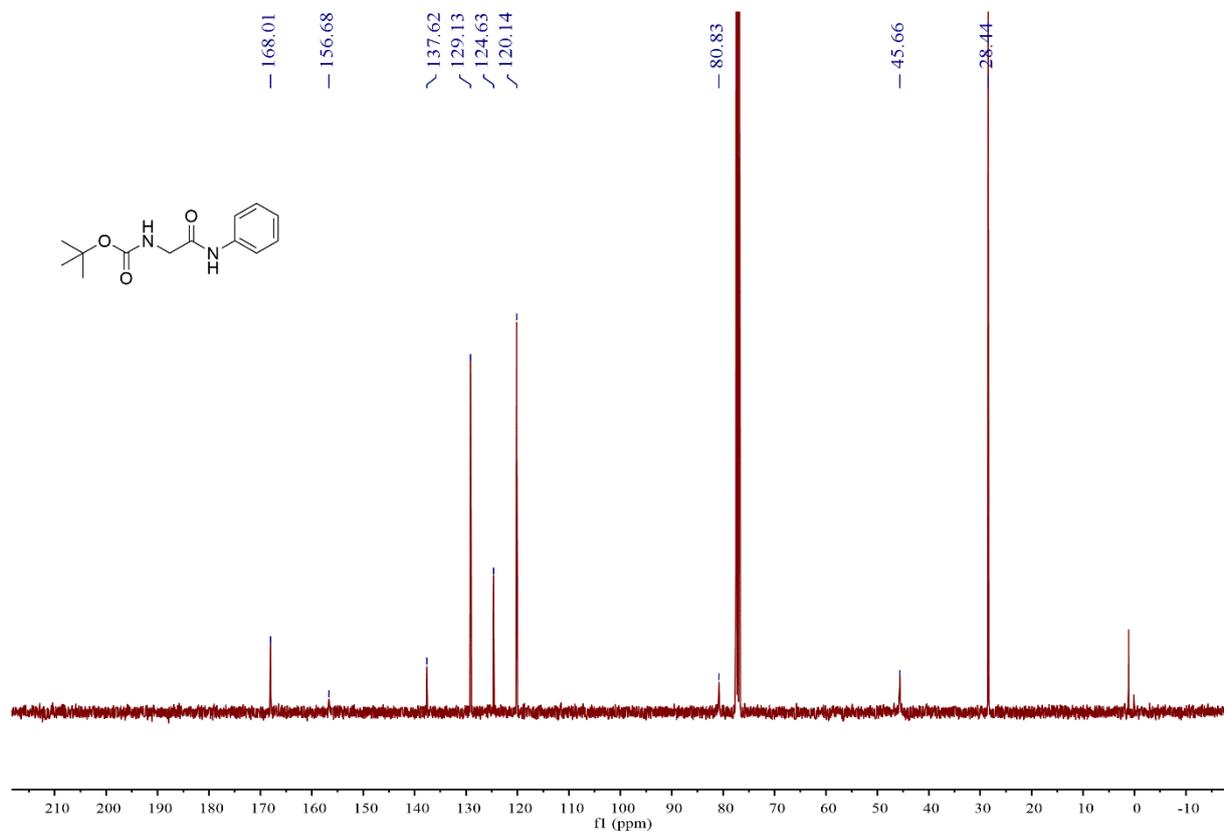
<sup>1</sup>H NMR Spectrum of Compound 4 (400 MHz, CDCl<sub>3</sub>)



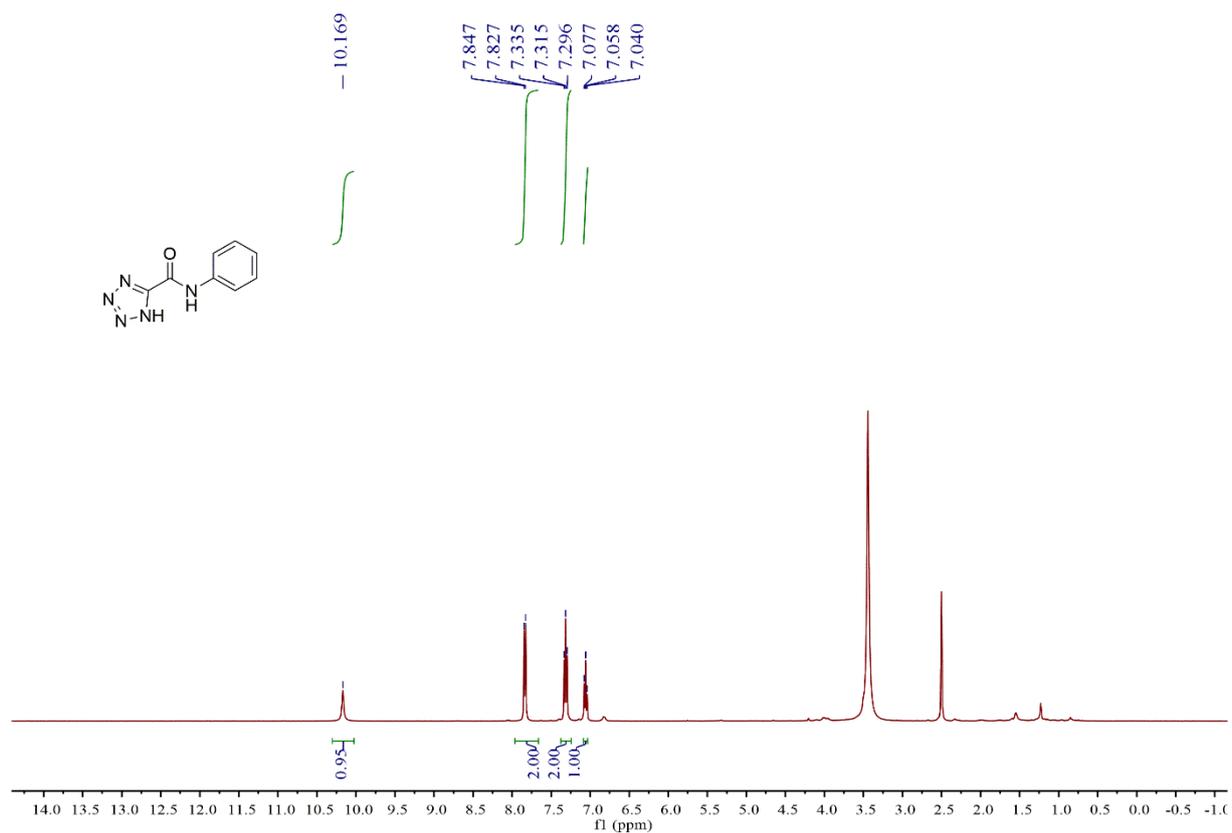
<sup>13</sup>C NMR Spectrum of Compound 4 (100 MHz, CDCl<sub>3</sub>)



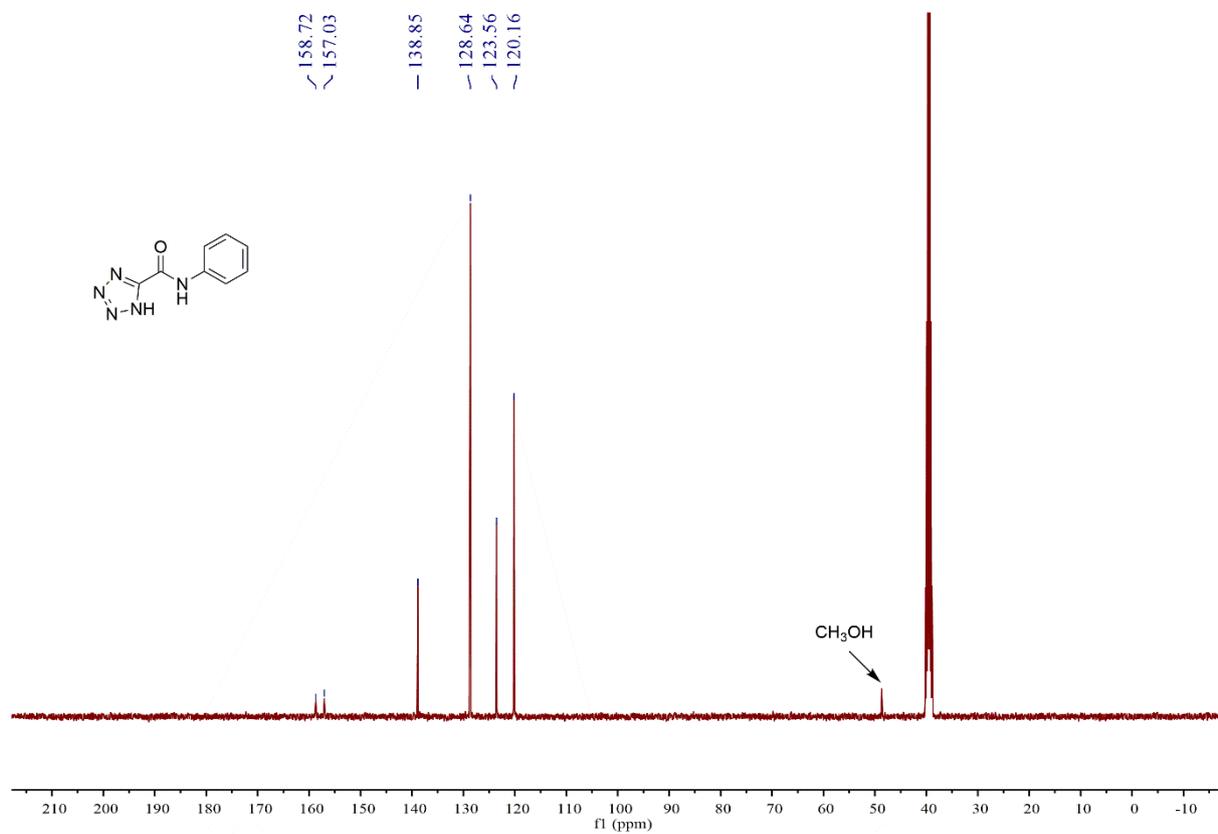
<sup>1</sup>H NMR Spectrum of Compound 5 (400 MHz, CDCl<sub>3</sub>)



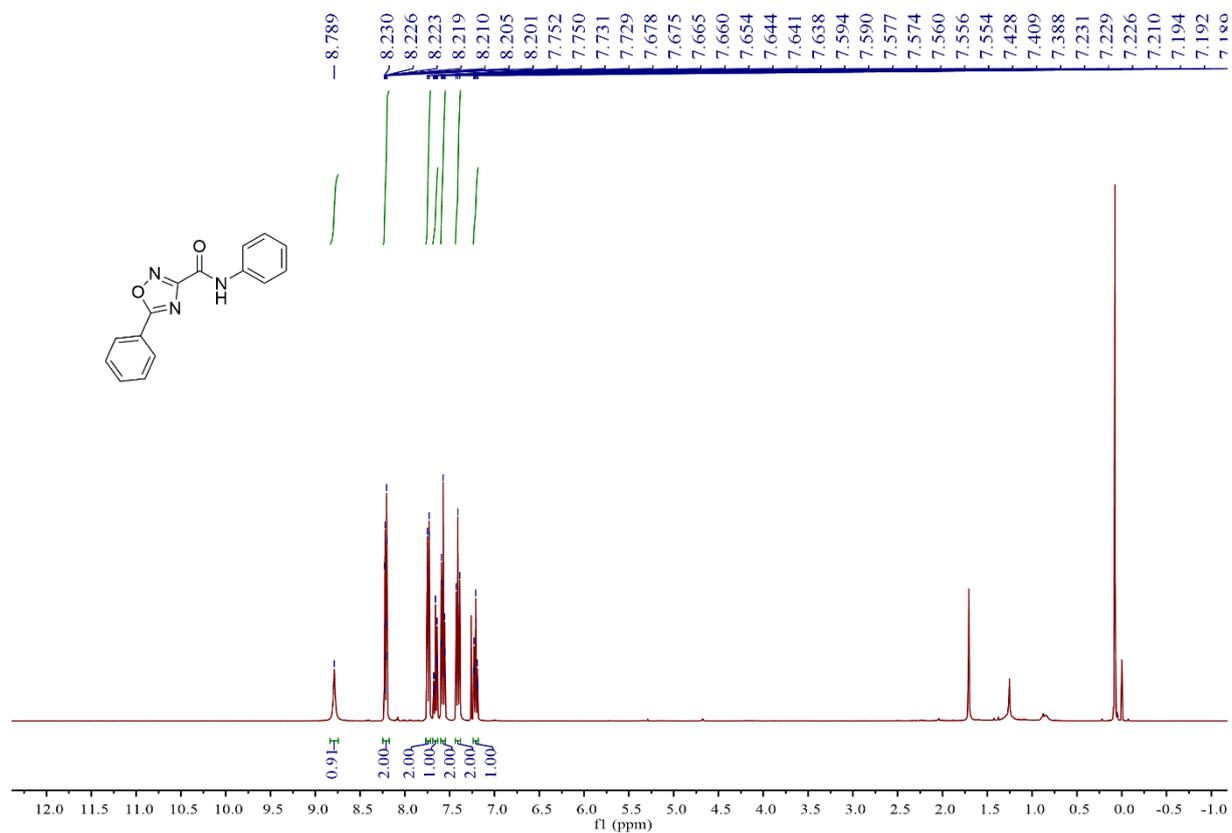
<sup>13</sup>C NMR Spectrum of Compound 5 (100 MHz, CDCl<sub>3</sub>)



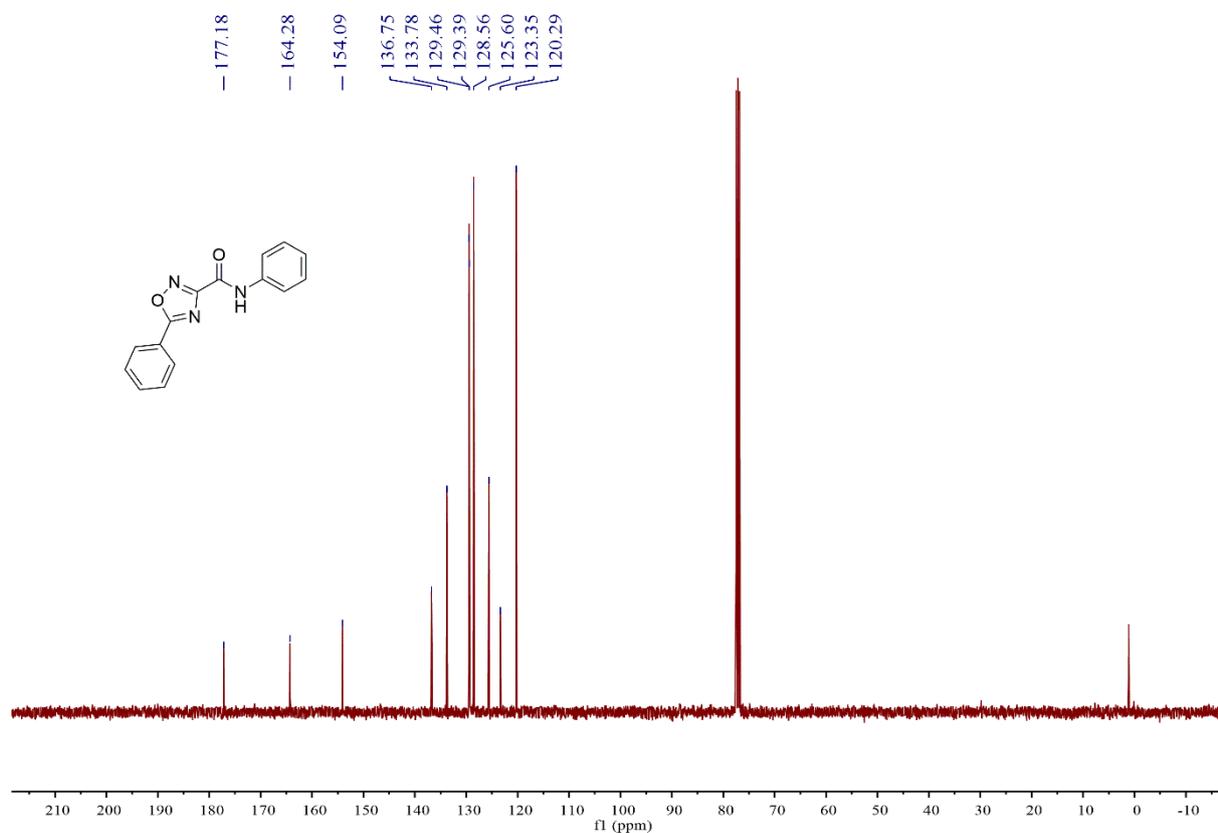
<sup>1</sup>H NMR Spectrum of Compound 6 (400 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



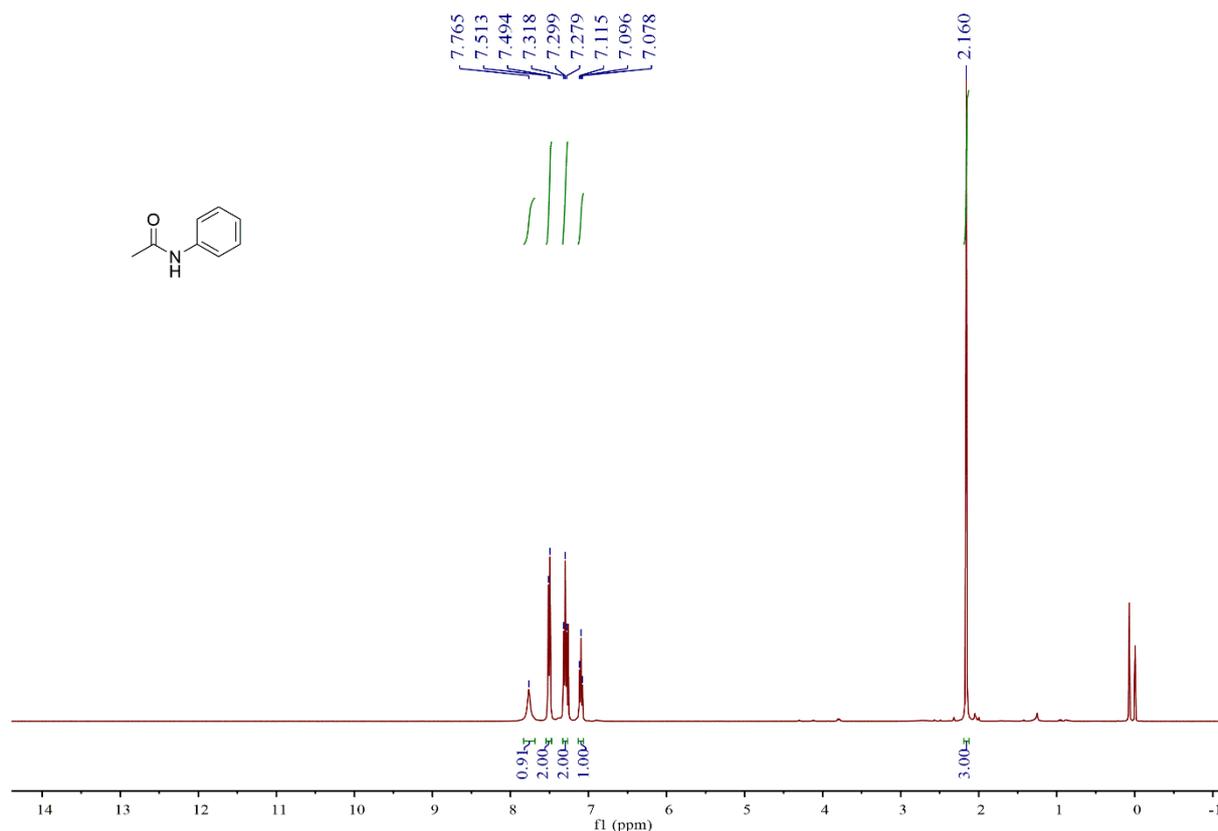
<sup>13</sup>C NMR Spectrum of Compound 6 (100 MHz, (CD<sub>3</sub>)<sub>2</sub>SO)



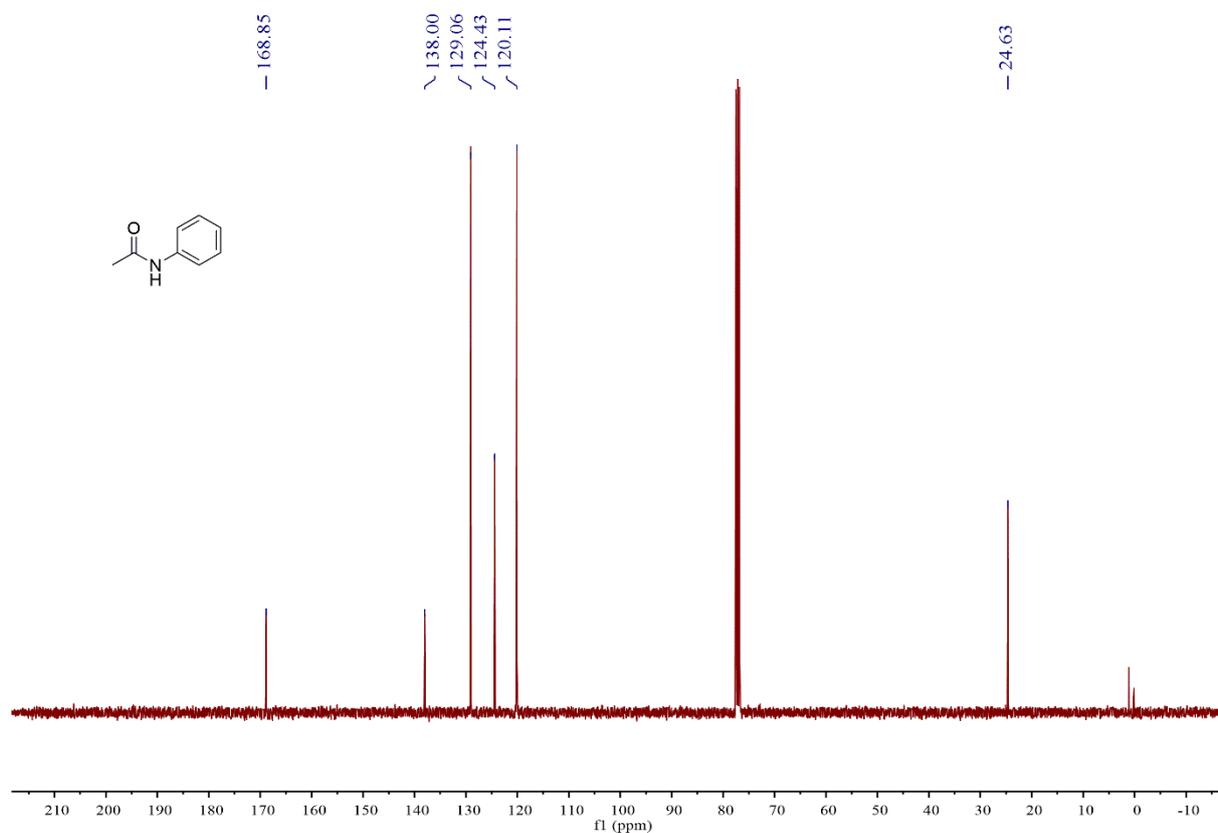
**<sup>1</sup>H NMR Spectrum of Compound 7 (400 MHz, CDCl<sub>3</sub>)**



**<sup>13</sup>C NMR Spectrum of Compound 7 (100 MHz, CDCl<sub>3</sub>)**



<sup>1</sup>H NMR Spectrum of *N*-Phenylacetamide (400 MHz, CDCl<sub>3</sub>)



<sup>13</sup>C NMR Spectrum of *N*-Phenylacetamide (100 MHz, CDCl<sub>3</sub>)