Synthesis of C,N'-linked bis-heterocycles using a deprotometalation-iodination-*N*-arylation sequence and evaluation of their antiproliferative activity in melanoma cells

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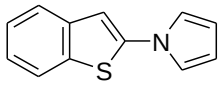
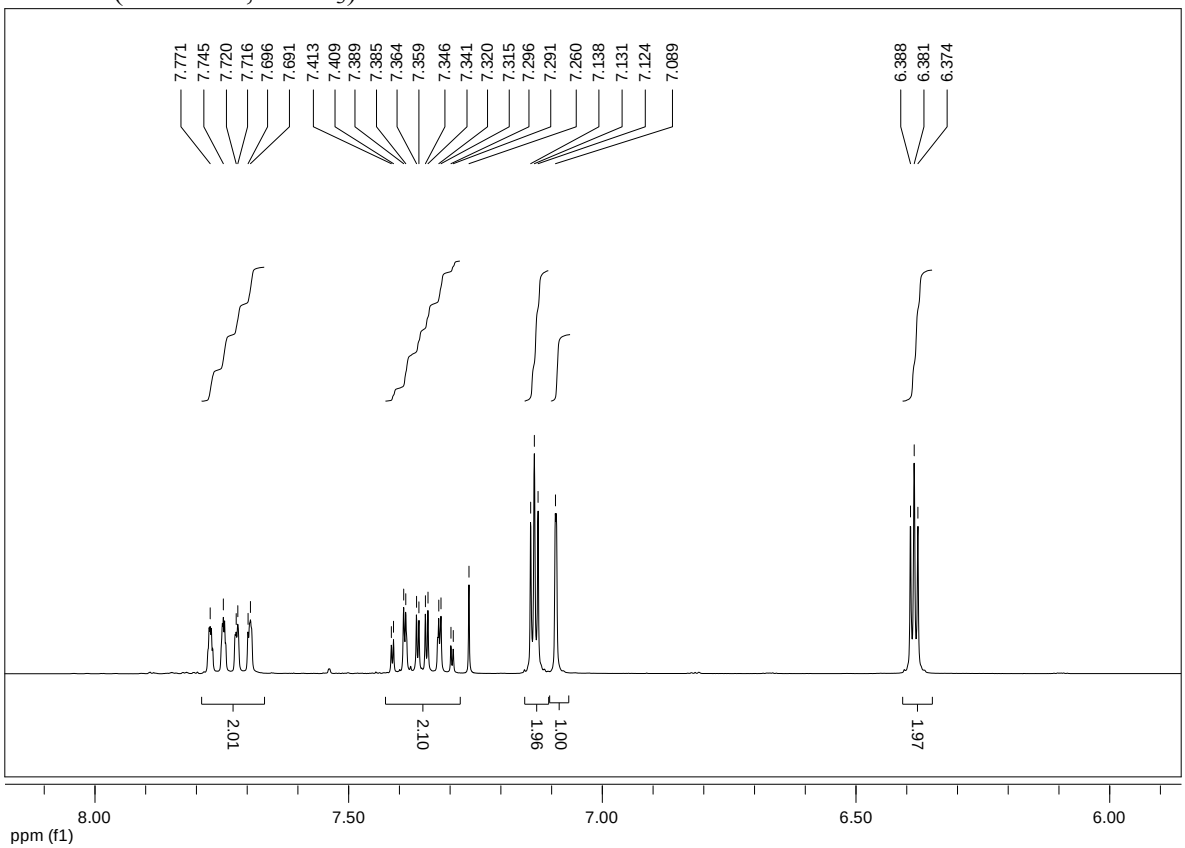
valerie.thiery@univ-lr.fr (V. Thiéry), florence.mongin@univ-rennes1.fr (F. Mongin).

NMR spectra of compounds **1c-j**, **2c-j**, **3c**, **3g**, **3i**, **3j**, and **4c-j**

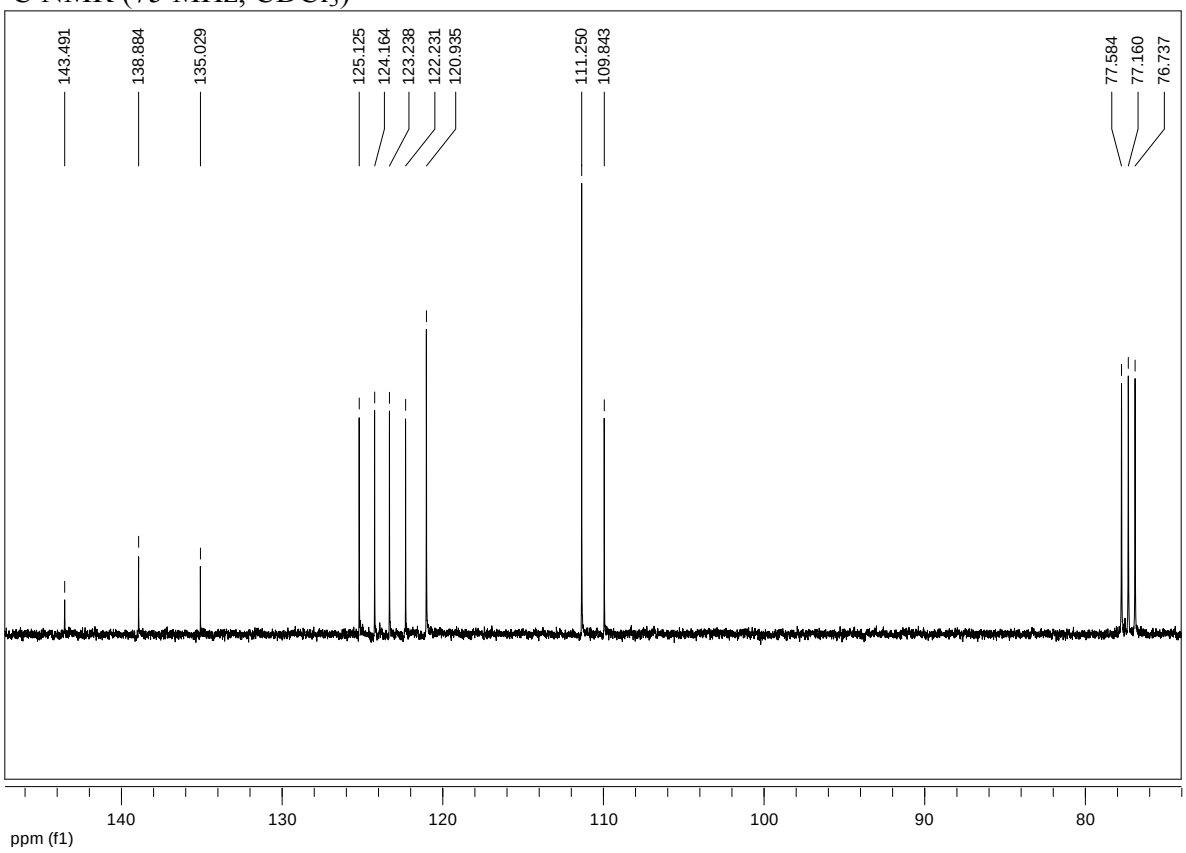
Compound 1c



^{1}H NMR (300 MHz, $CDCl_3$)



^{13}C NMR (75 MHz, $CDCl_3$)



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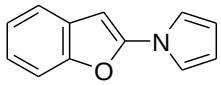

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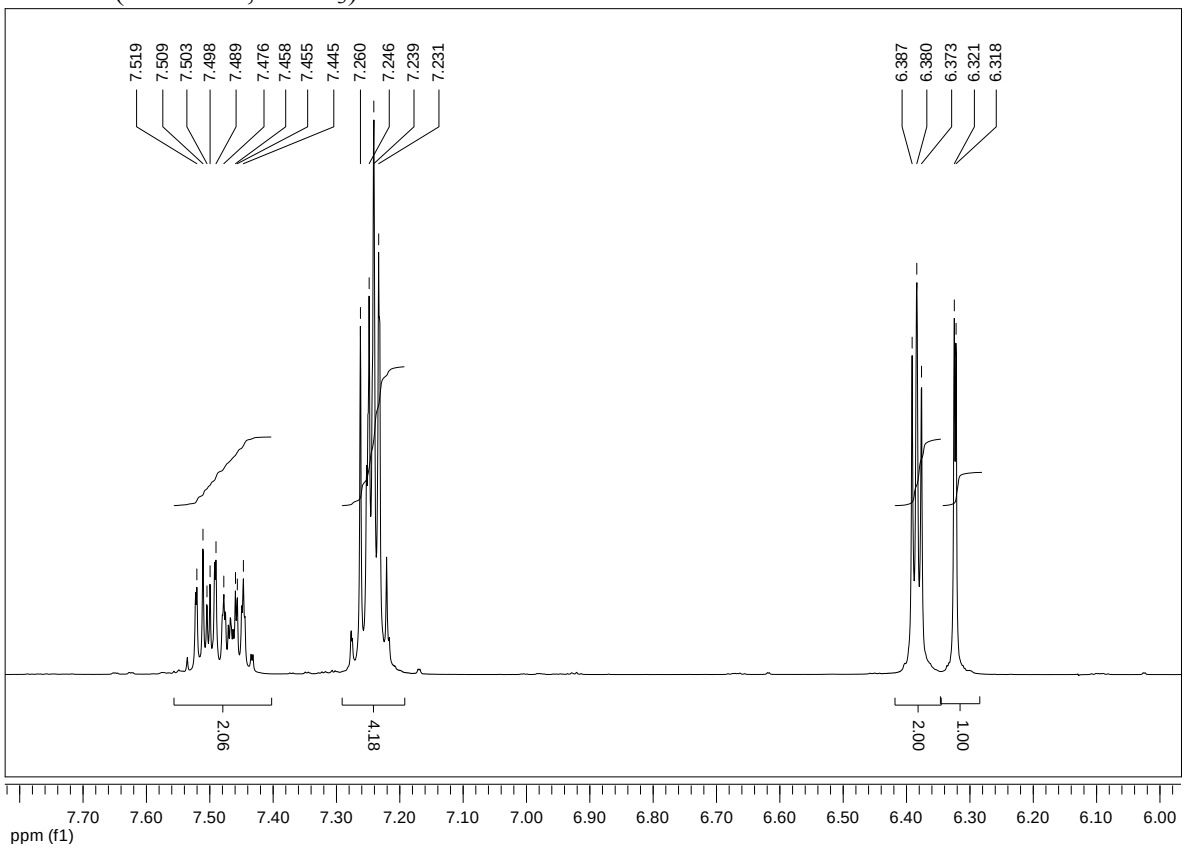

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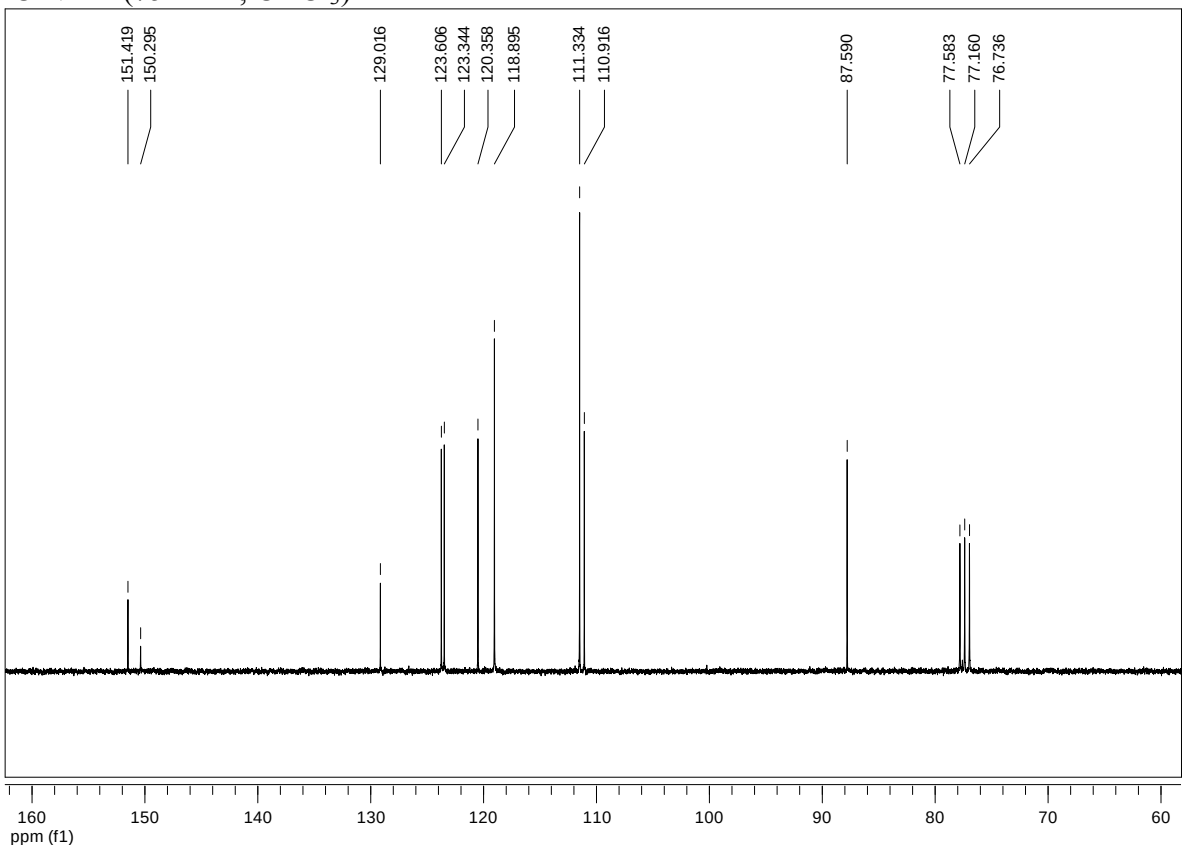
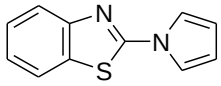
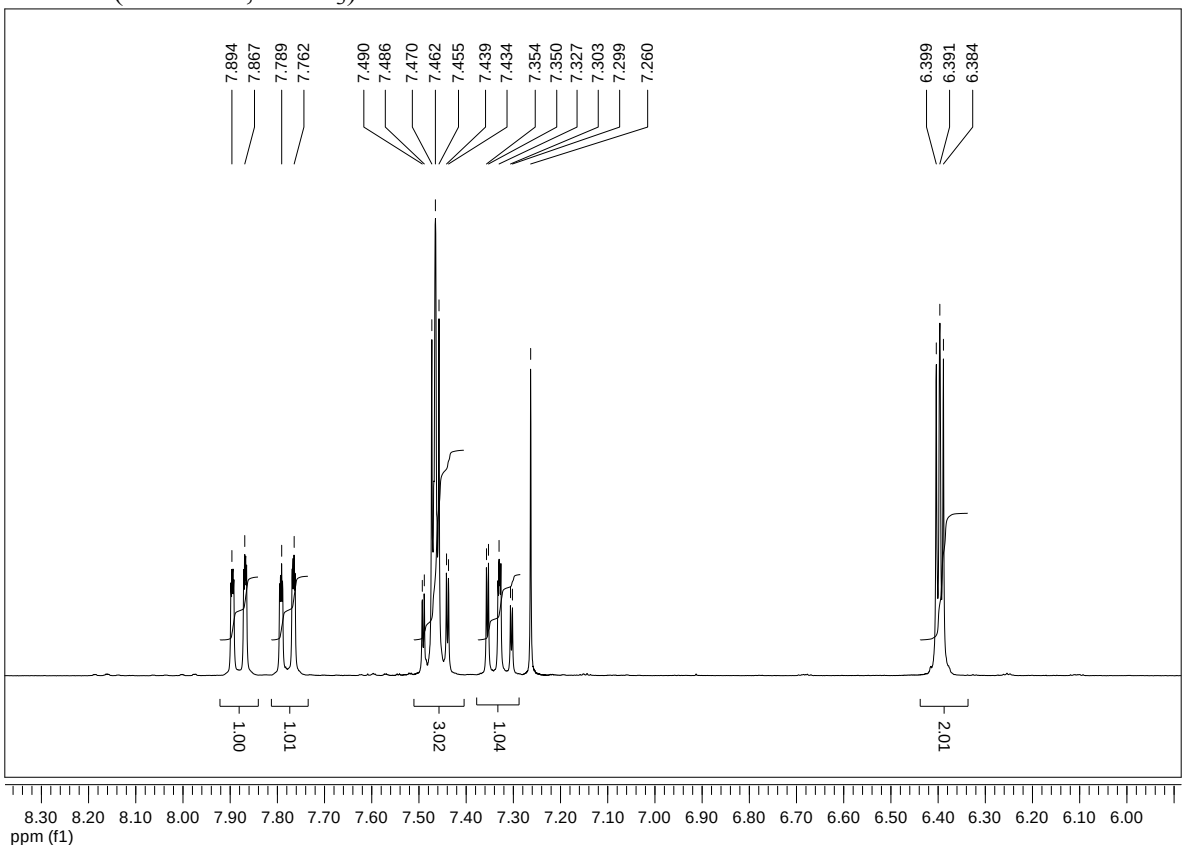


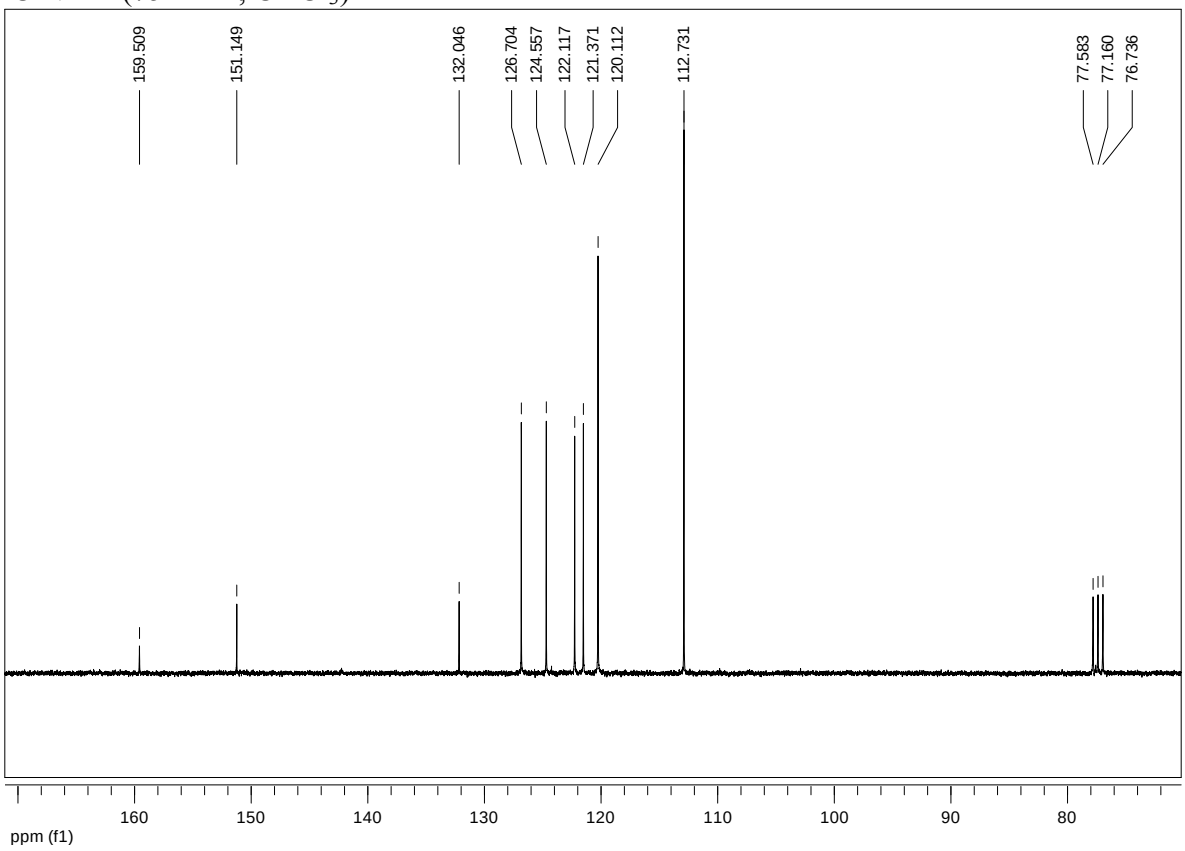
Compound 3c



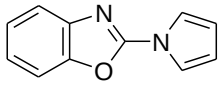
^{1}H NMR (300 MHz, $CDCl_3$)



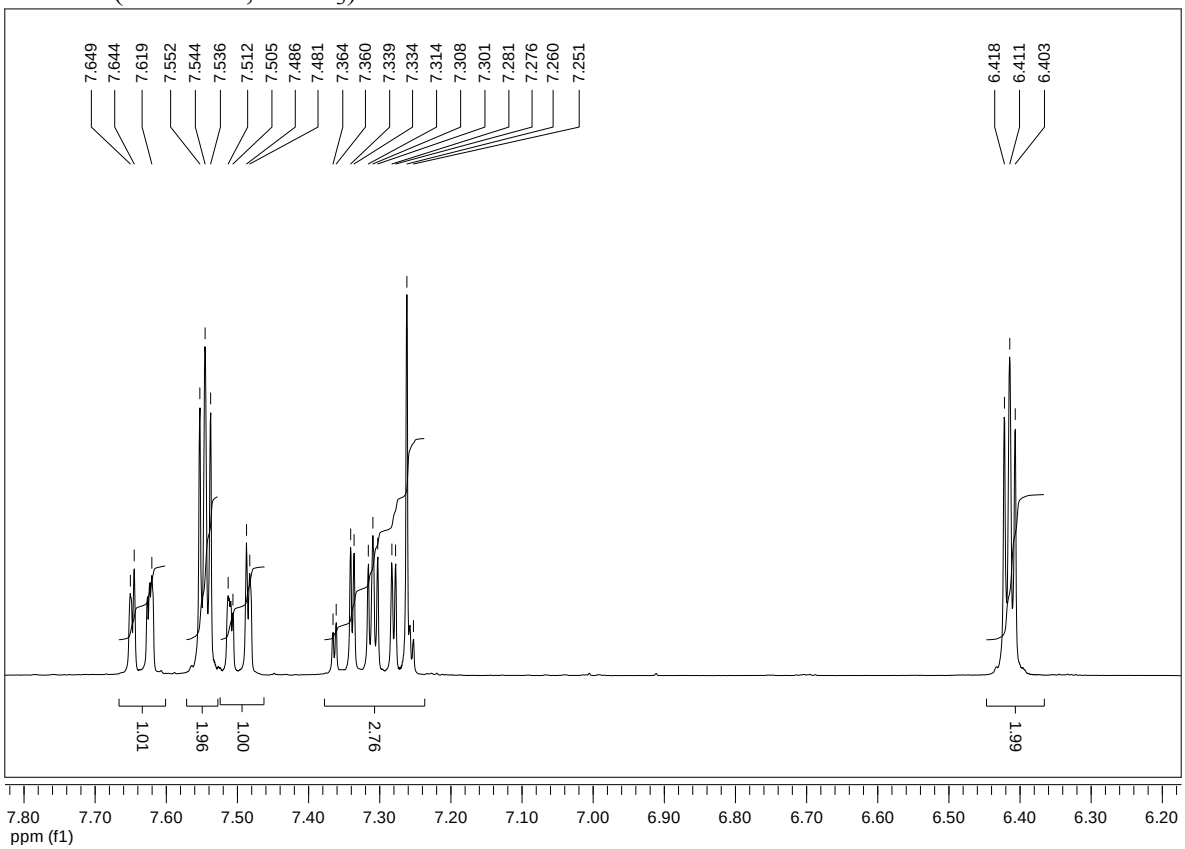
^{13}C NMR (75 MHz, $CDCl_3$)



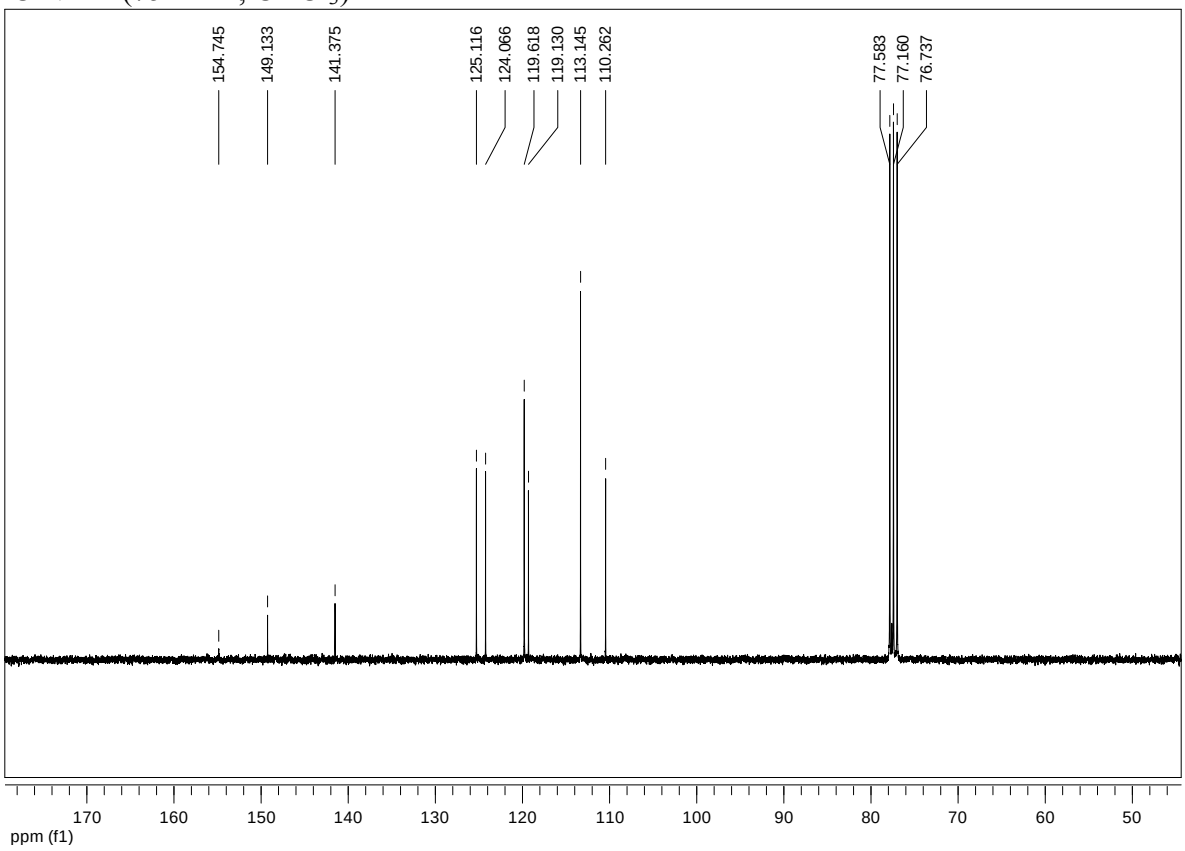
Compound 4c



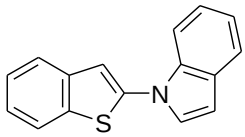
^{1}H NMR (300 MHz, $CDCl_3$)



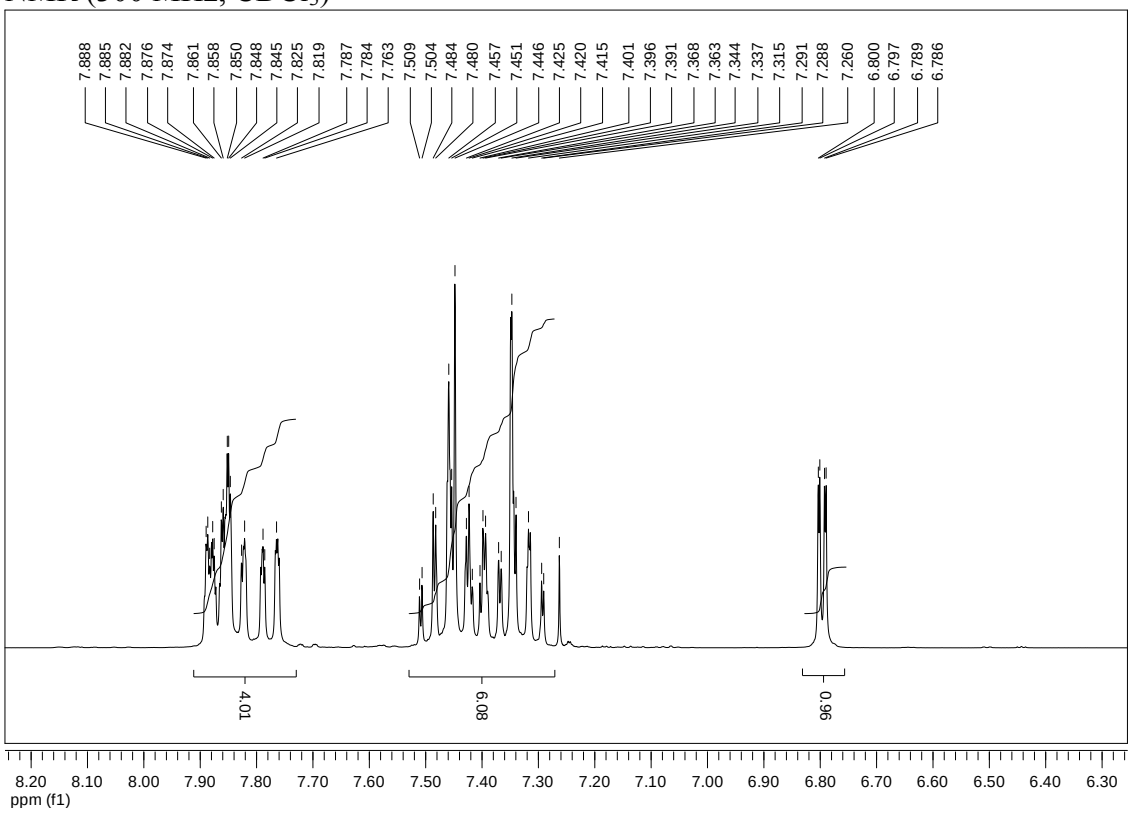
^{13}C NMR (75 MHz, $CDCl_3$)



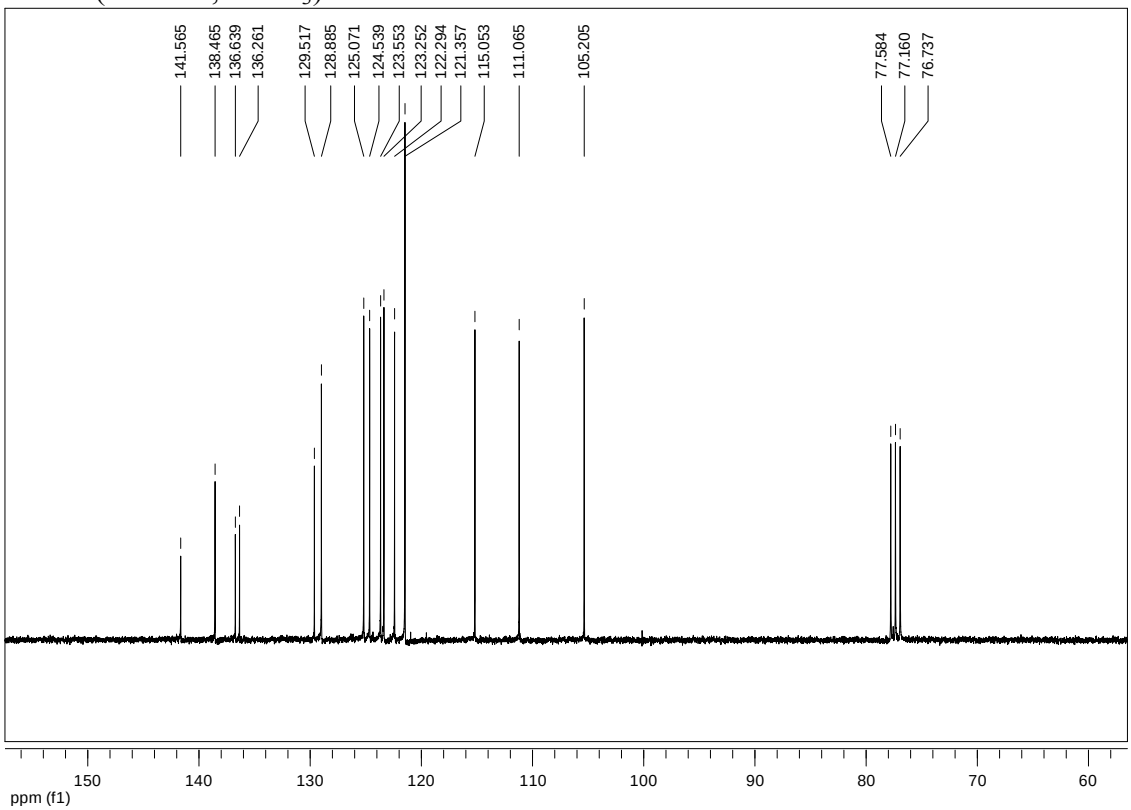
Compound 1d



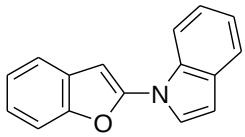
^{1}H NMR (300 MHz, $CDCl_3$)



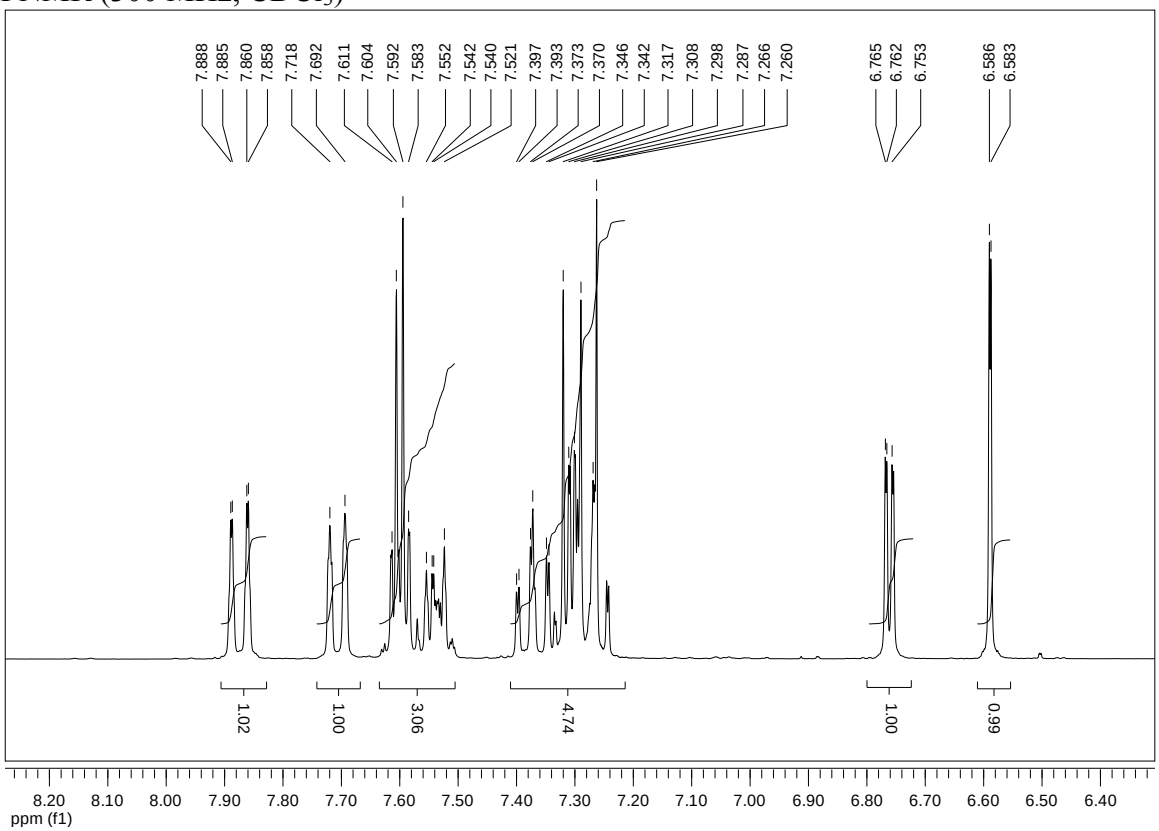
^{13}C NMR (75 MHz, $CDCl_3$)



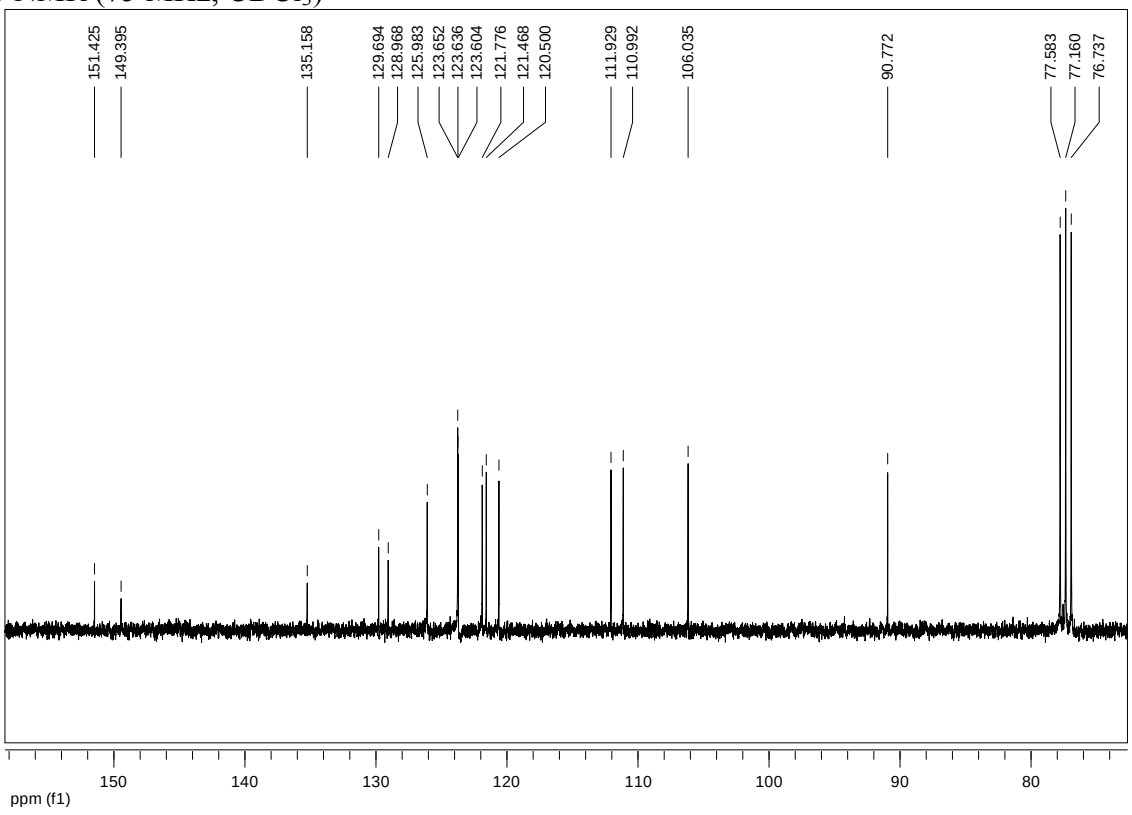
Compound 2d



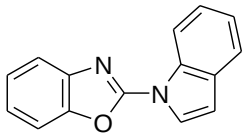
^{1}H NMR (300 MHz, $CDCl_3$)



^{13}C NMR (75 MHz, $CDCl_3$)



Compound 4d



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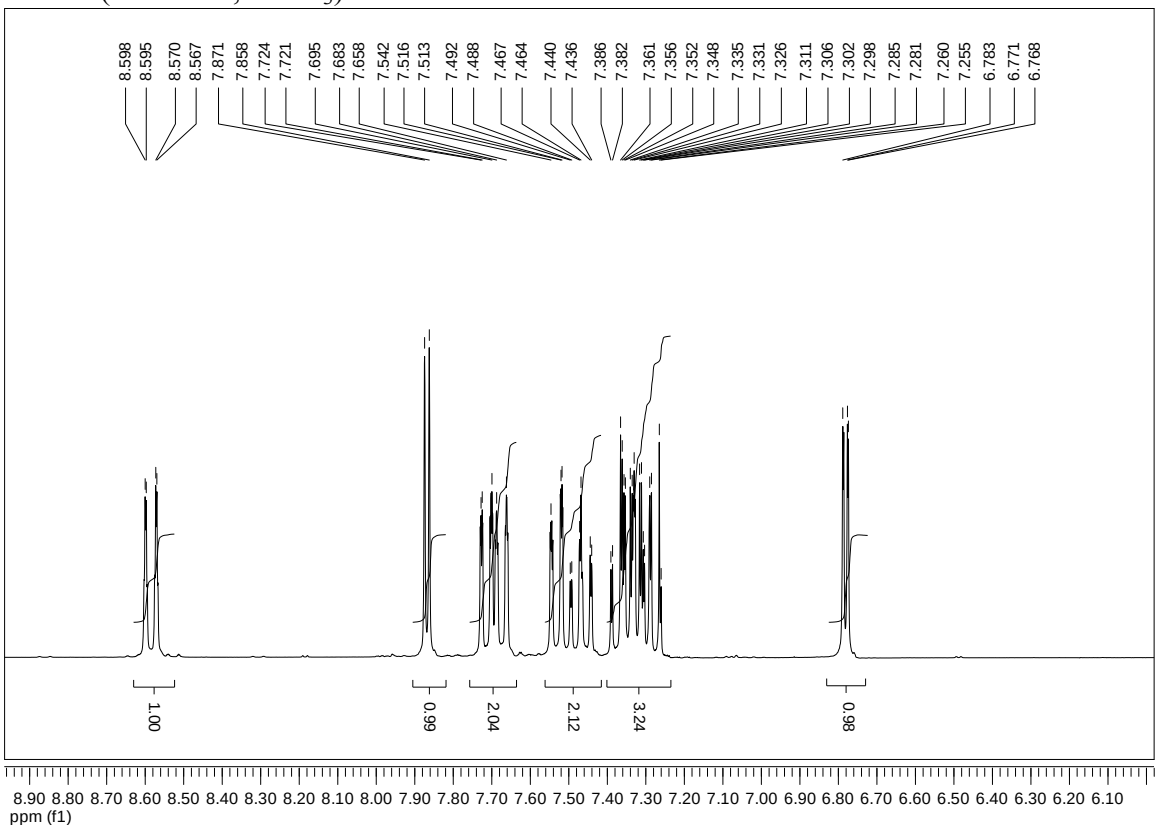

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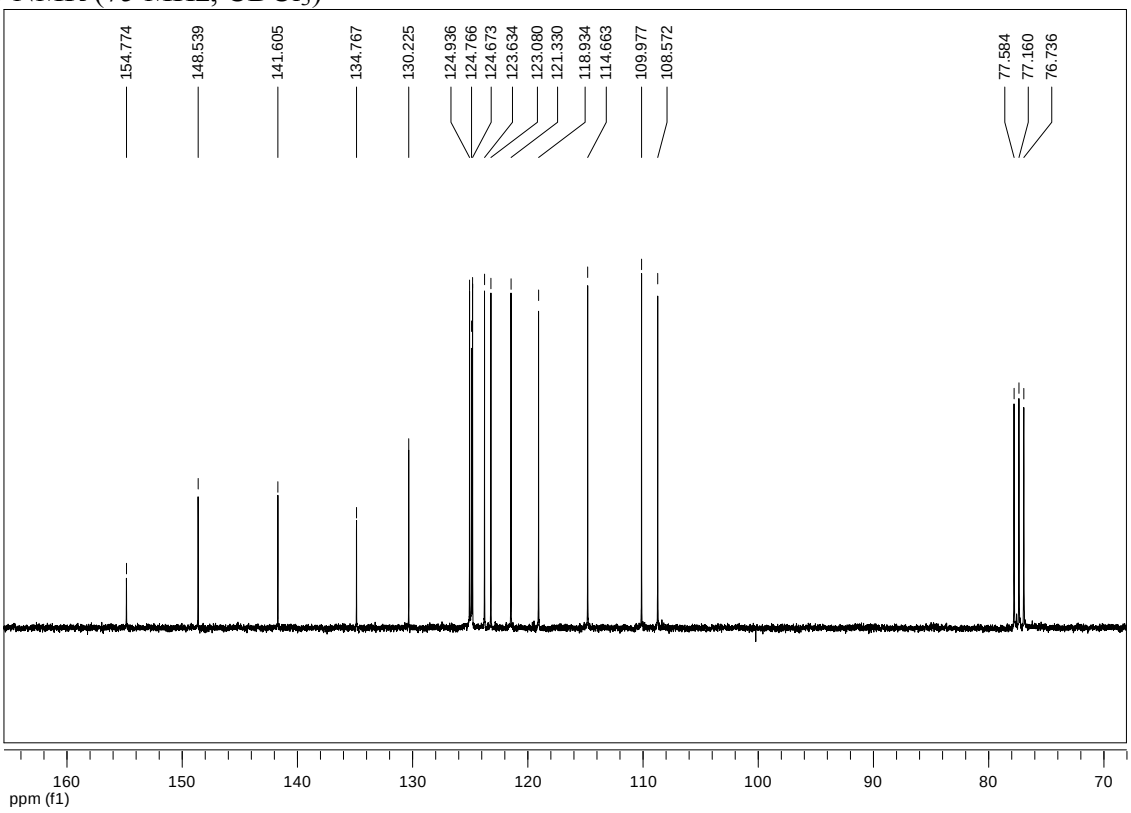
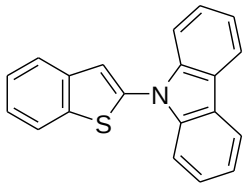
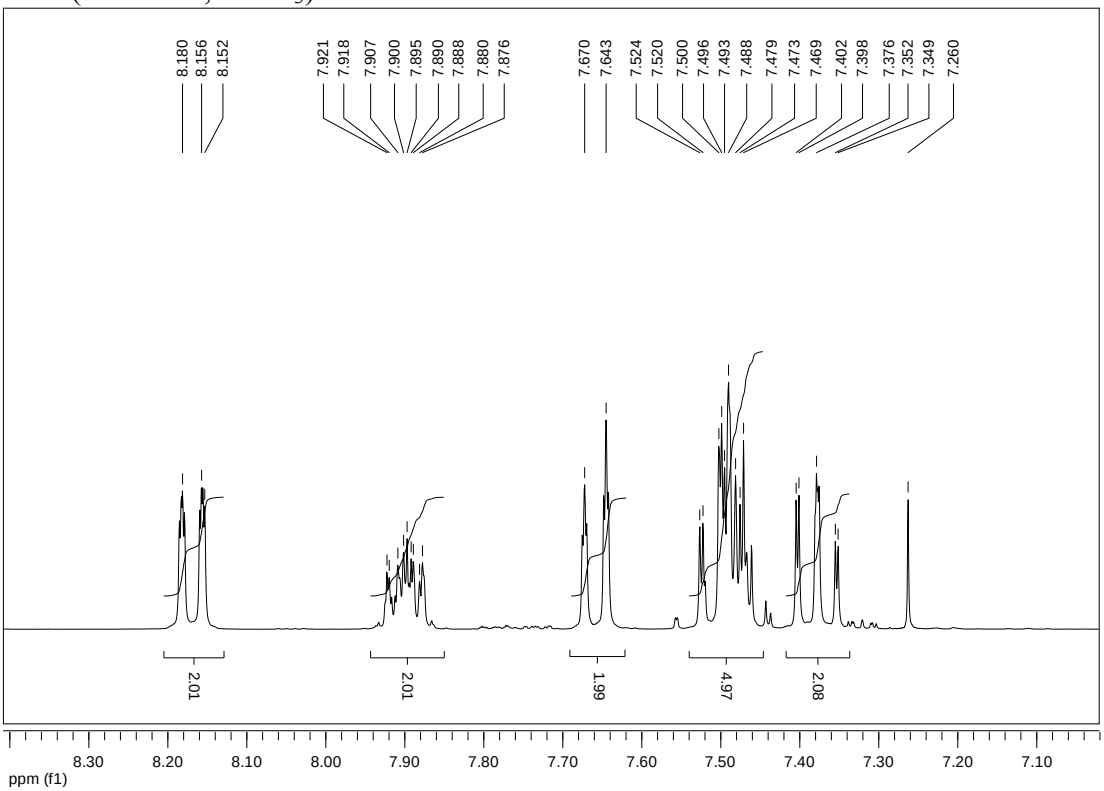


Compound 1e



^{1}H NMR (300 MHz, $CDCl_3$)



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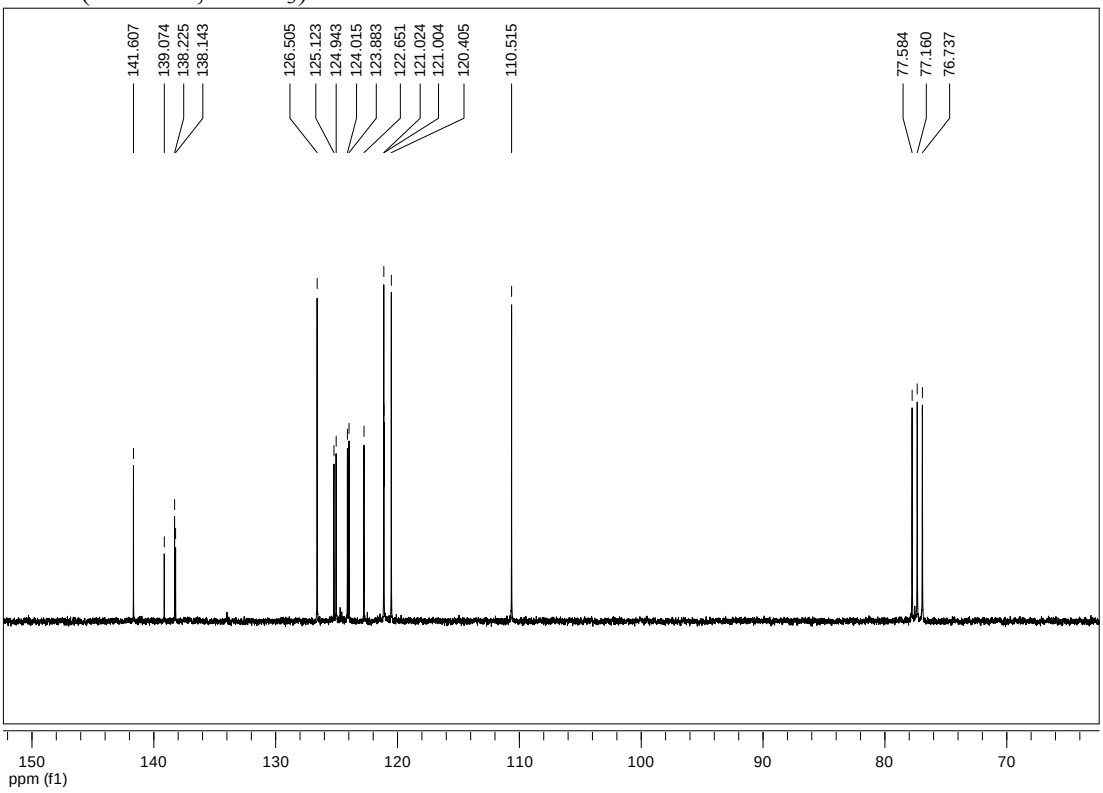
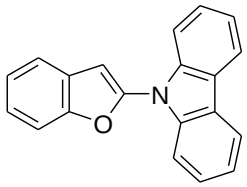
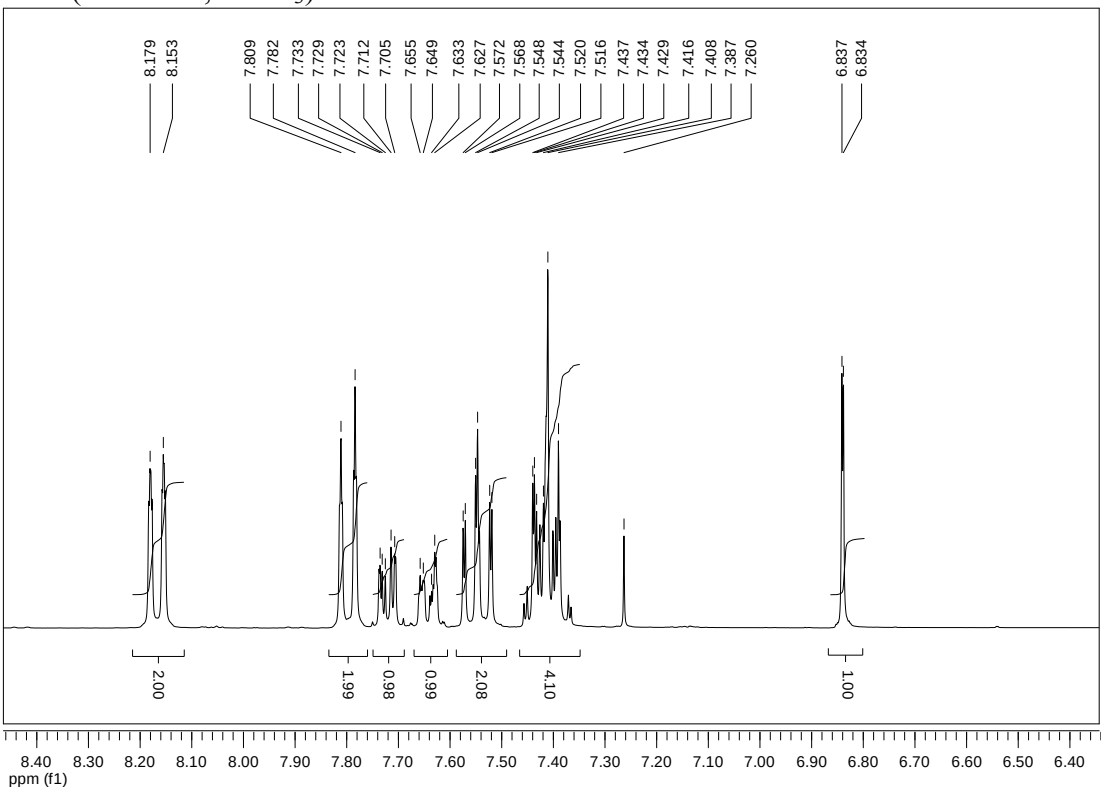


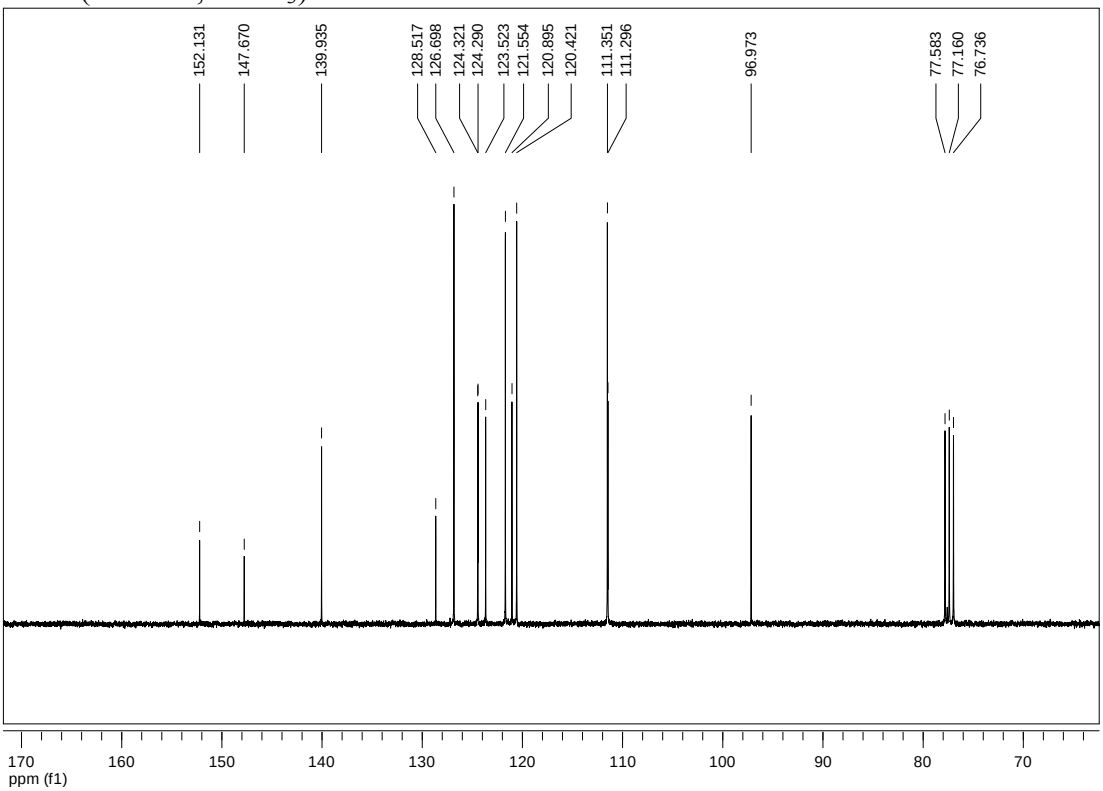
Compound 2e



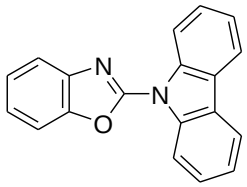
^{1}H NMR (300 MHz, $CDCl_3$)



^{13}C NMR (75 MHz, $CDCl_3$)



Compound 4e



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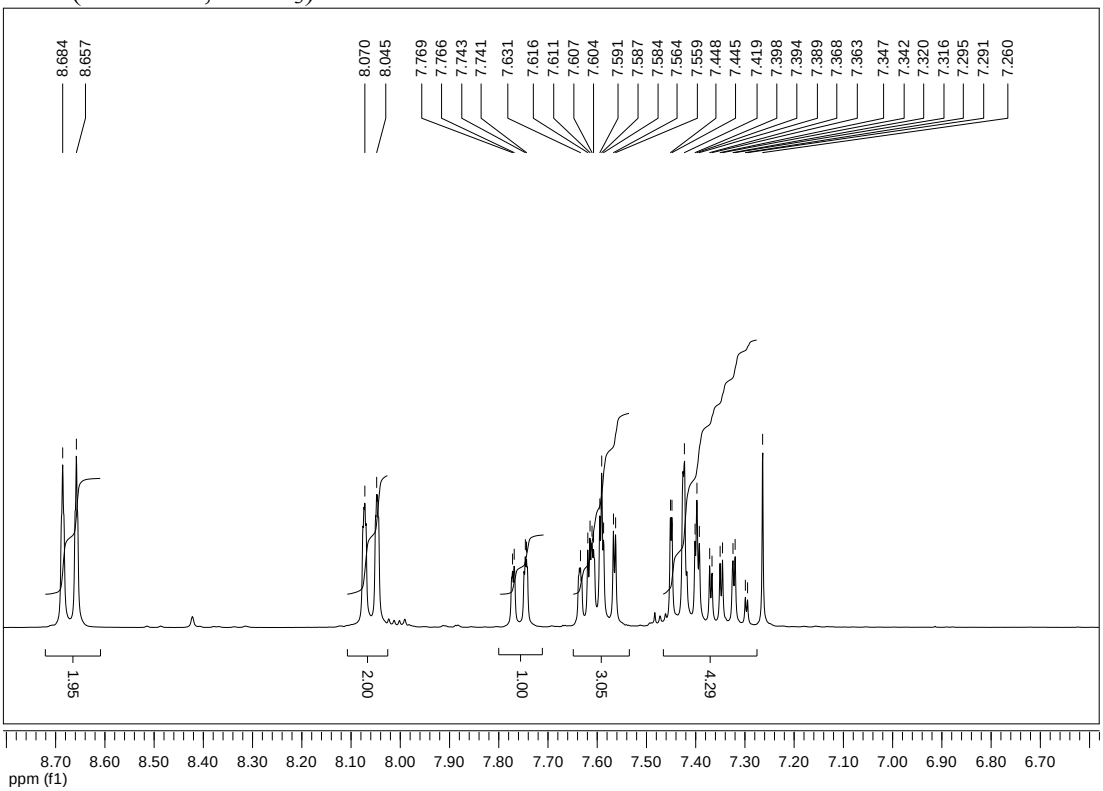
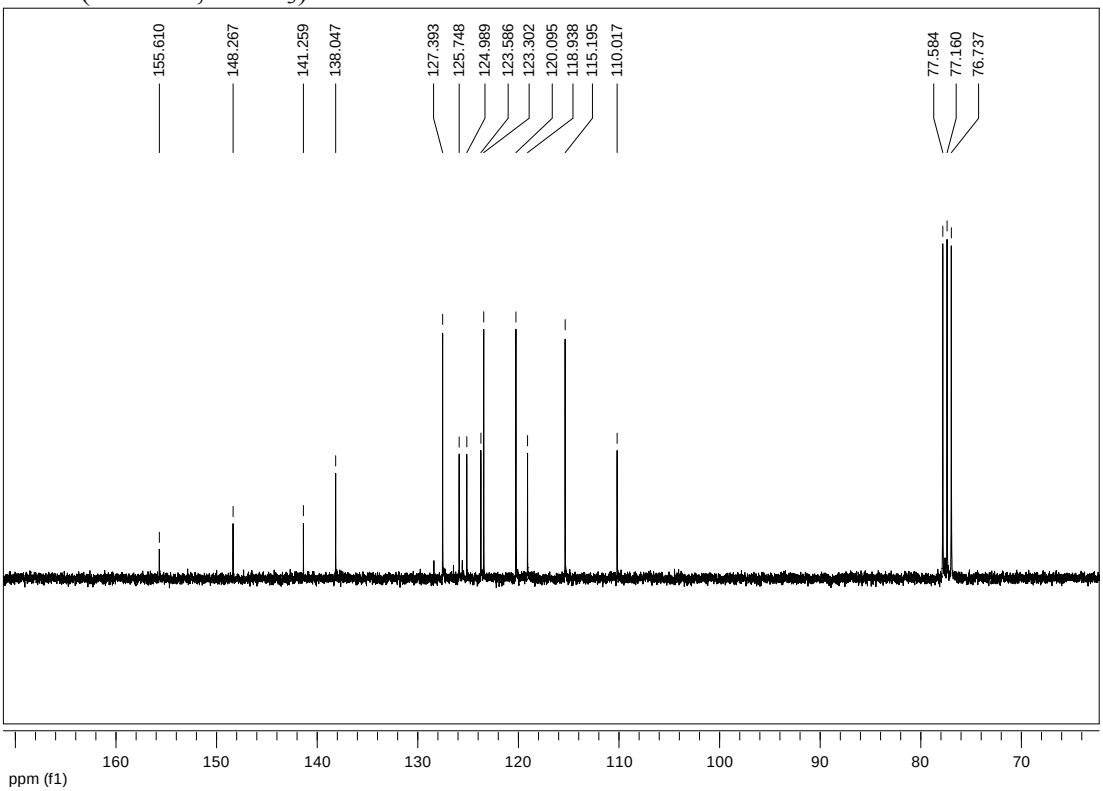
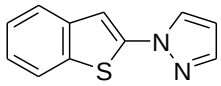


^{13}C NMR (75 MHz, $CDCl_3$)



Compound 1f



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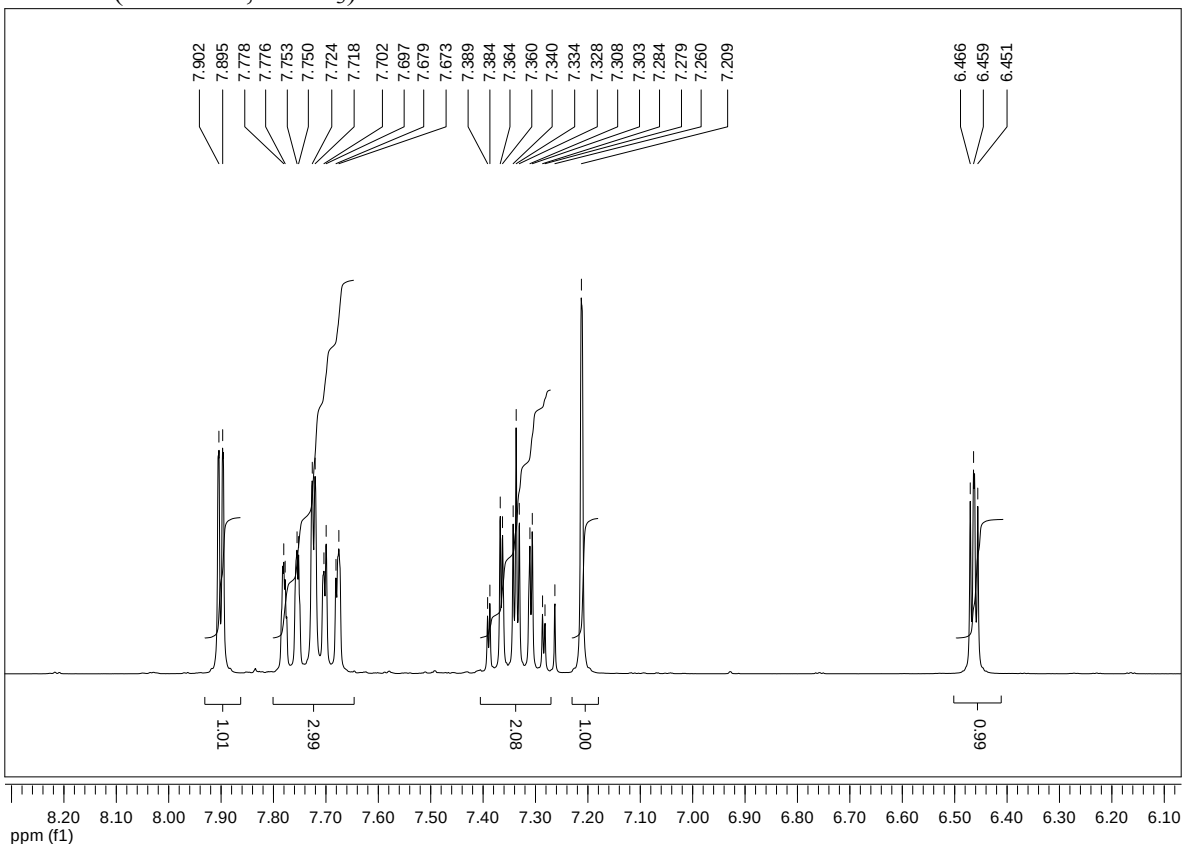

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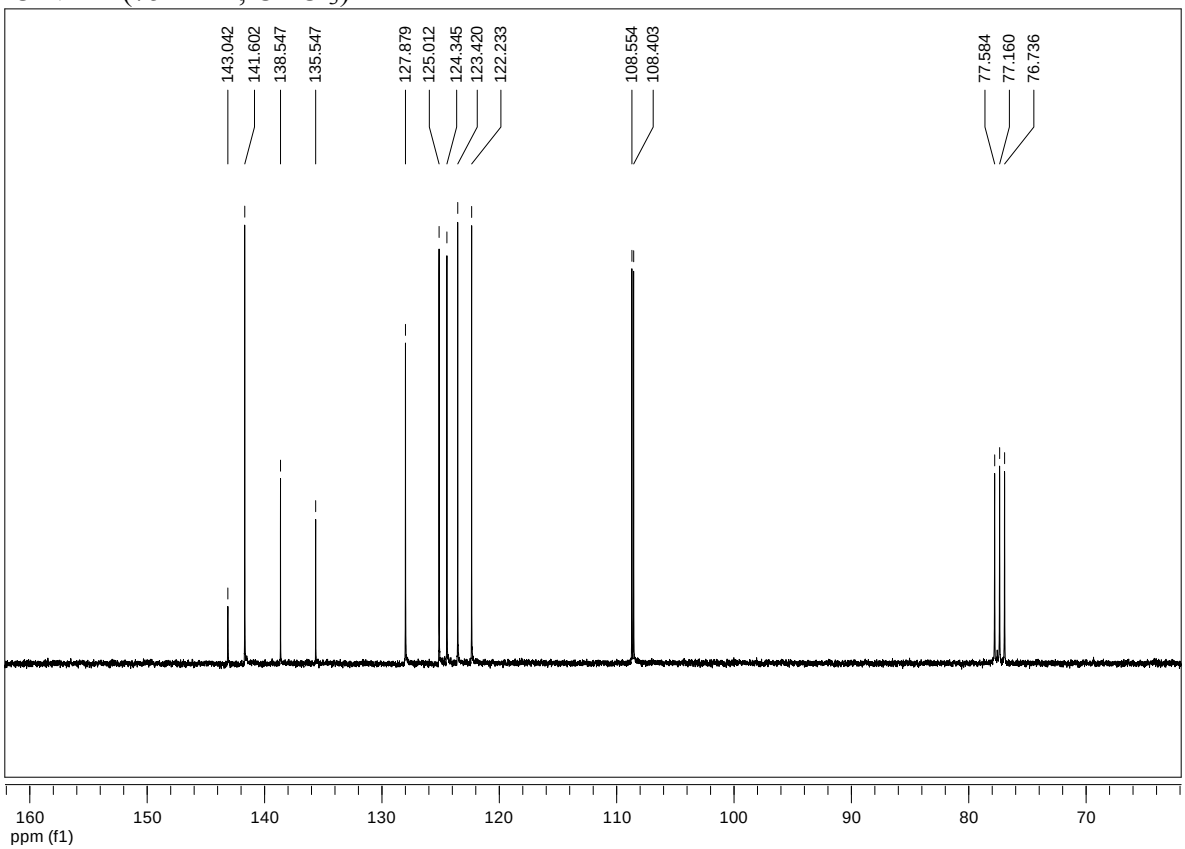
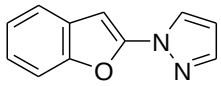


Compound 2f



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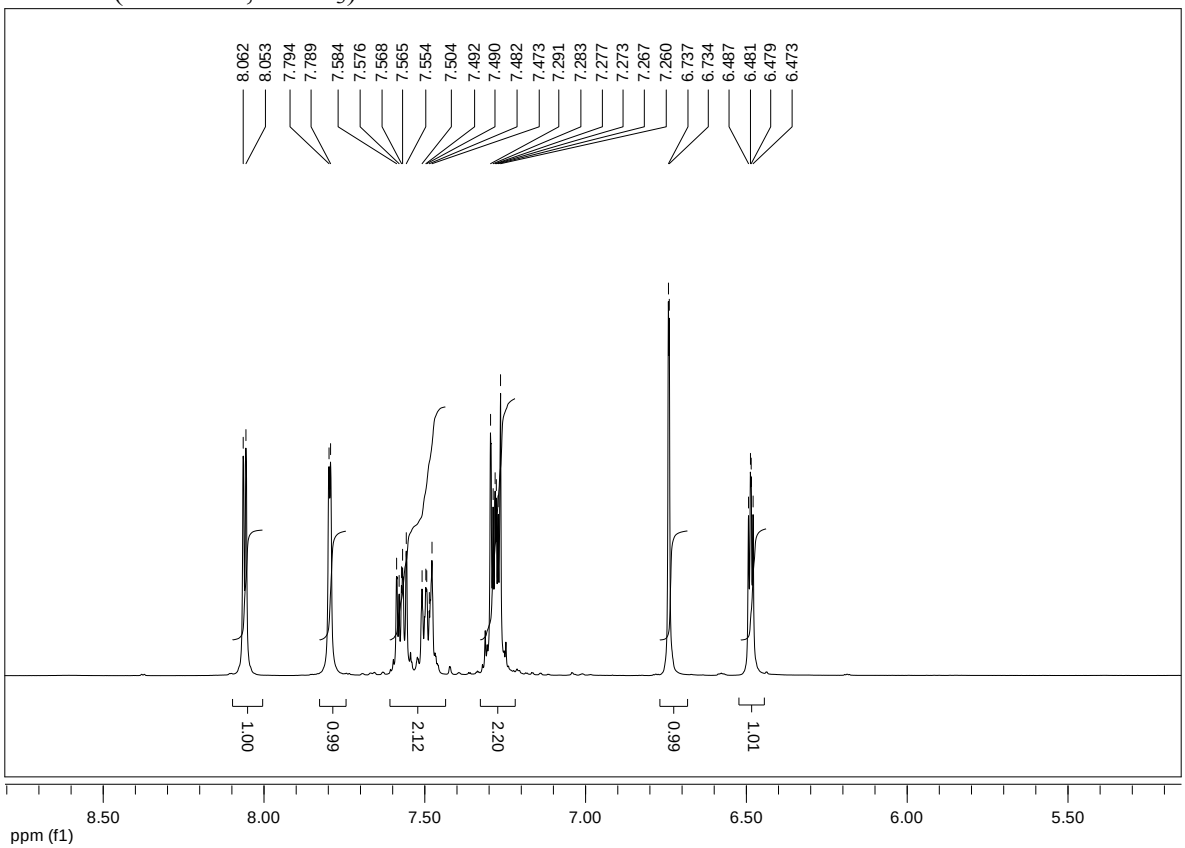

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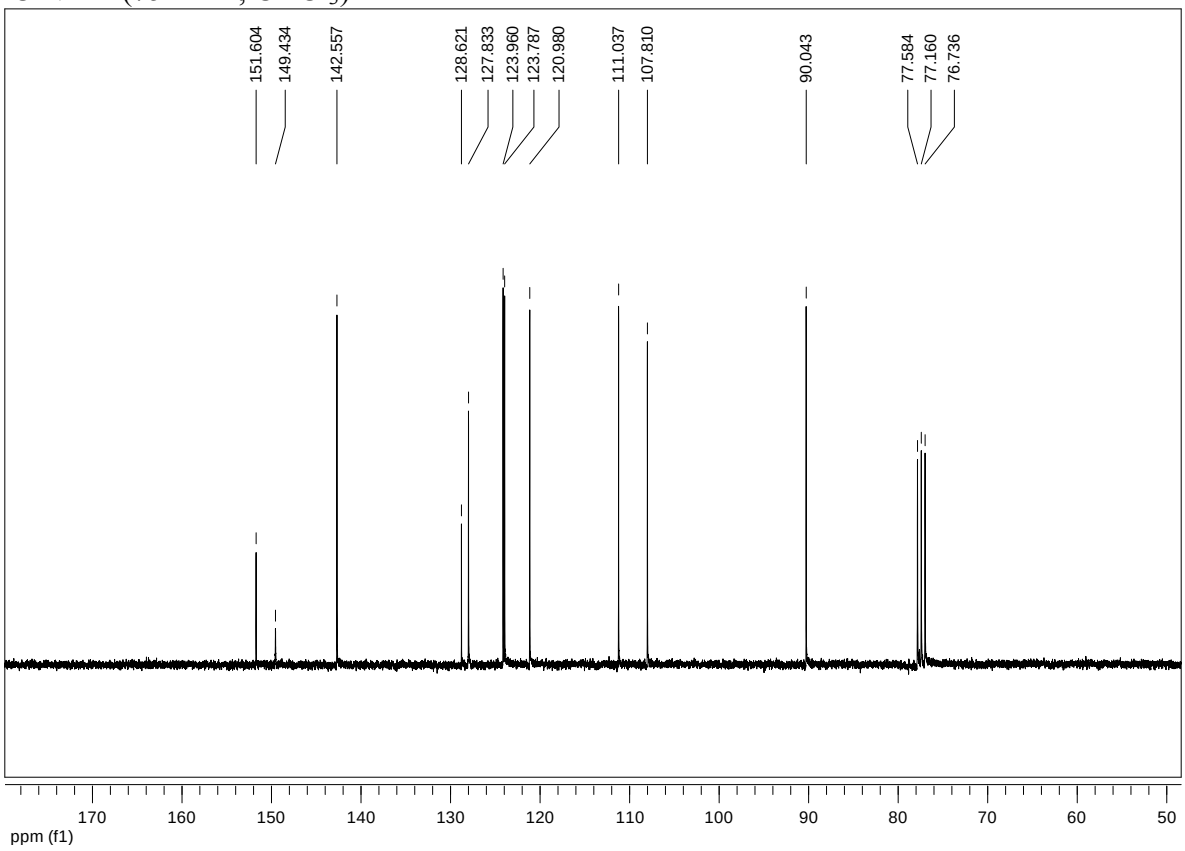
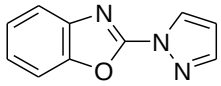
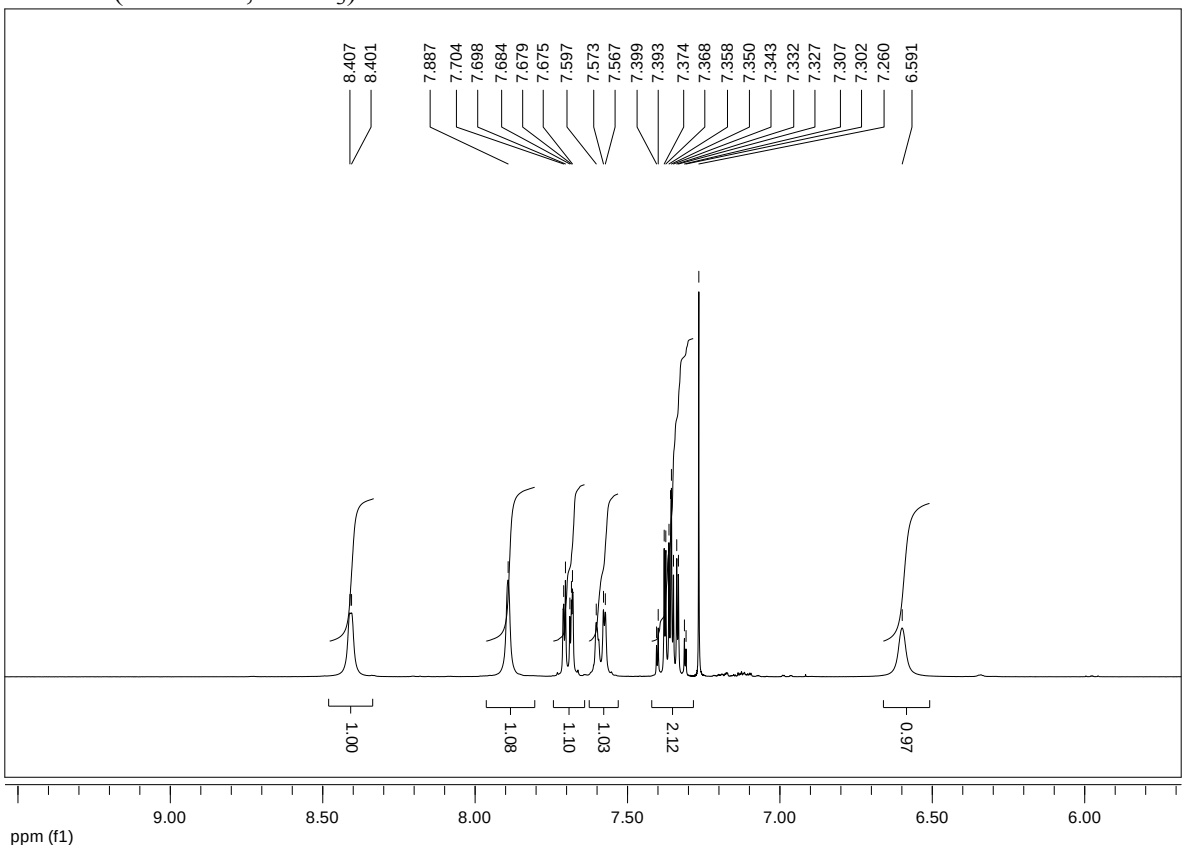


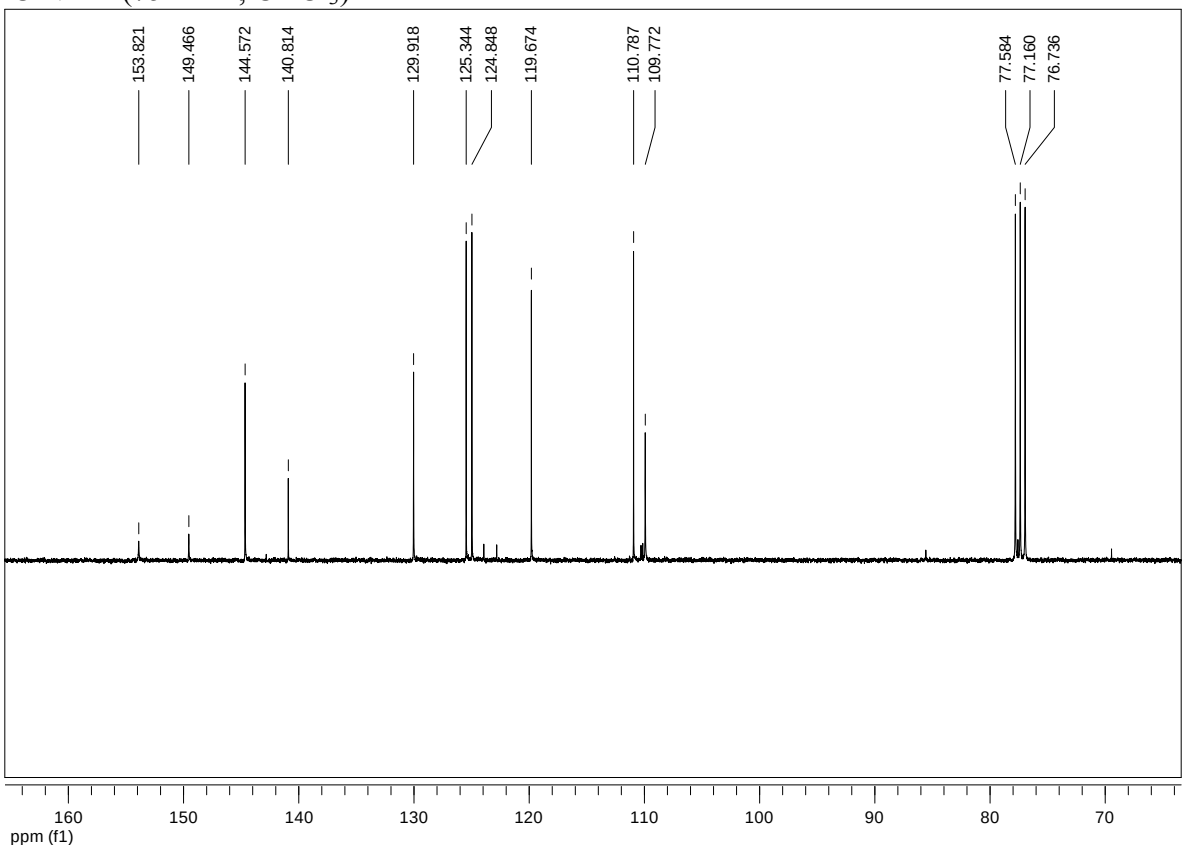
Compound 4f



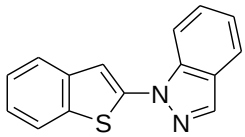
^{1}H NMR (300 MHz, $CDCl_3$)



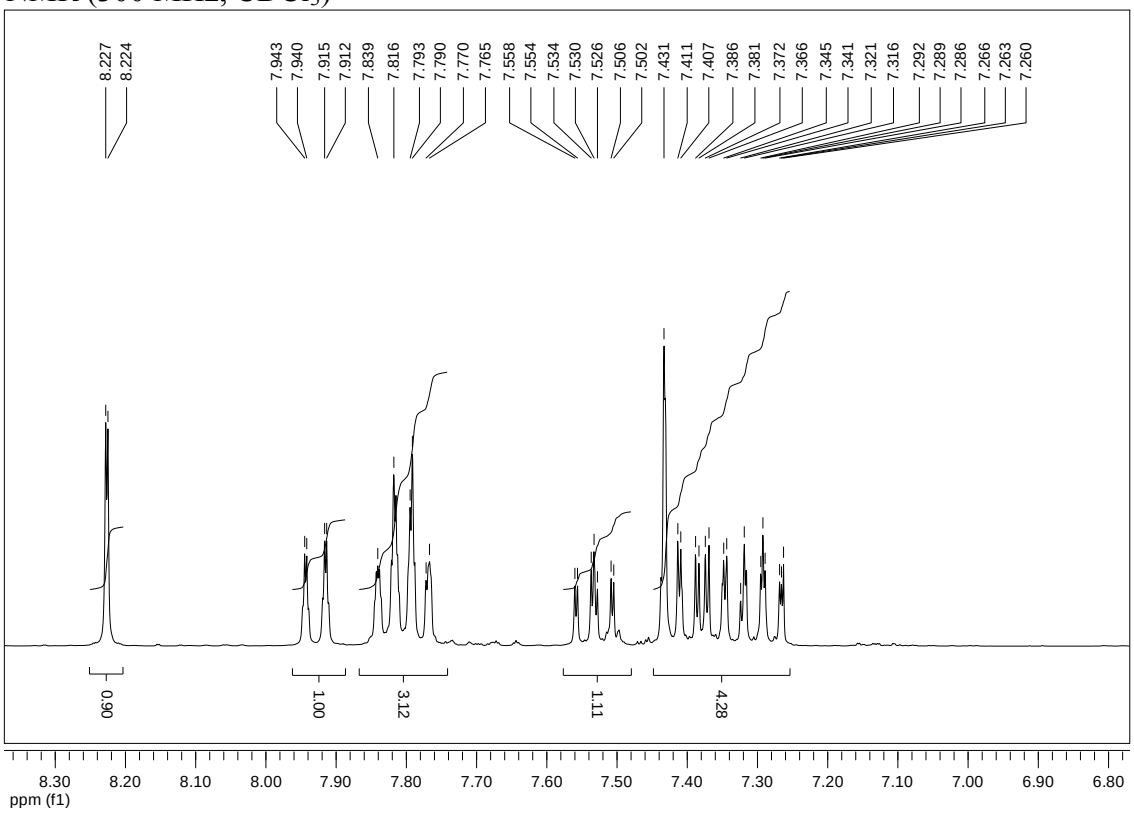
^{13}C NMR (75 MHz, $CDCl_3$)



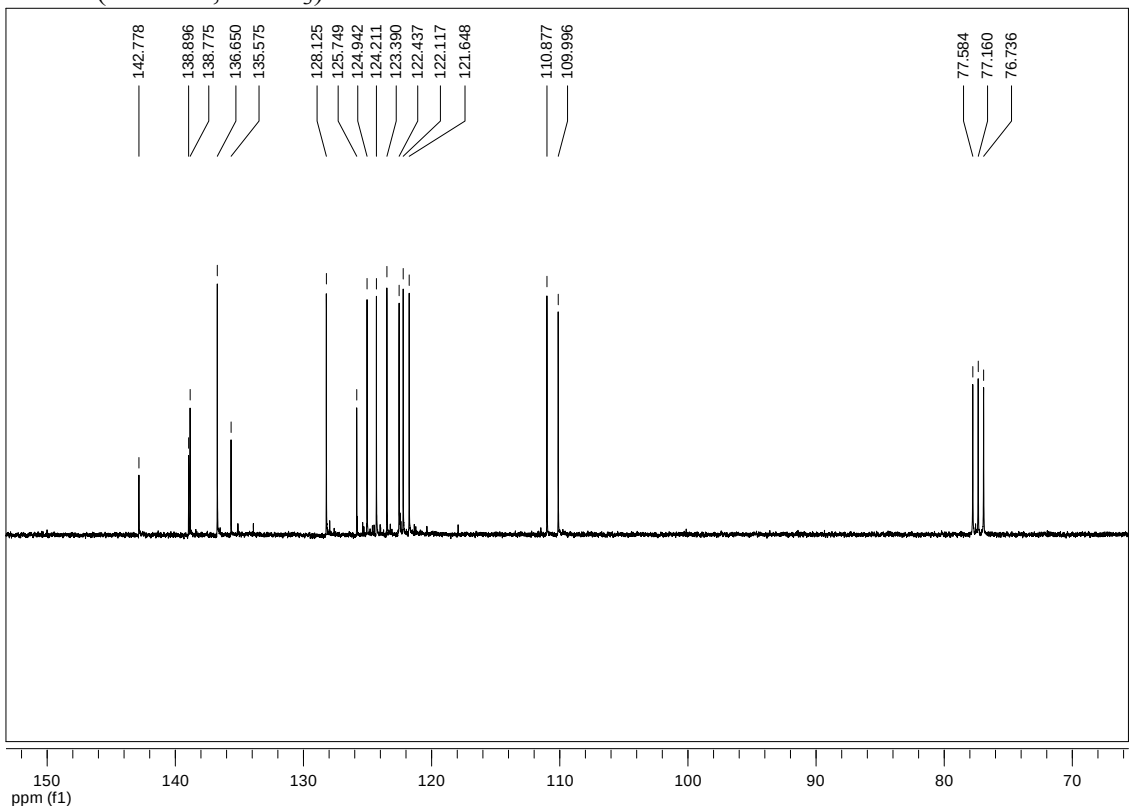
Compound 1g



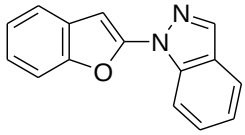
^{1}H NMR (300 MHz, $CDCl_3$)



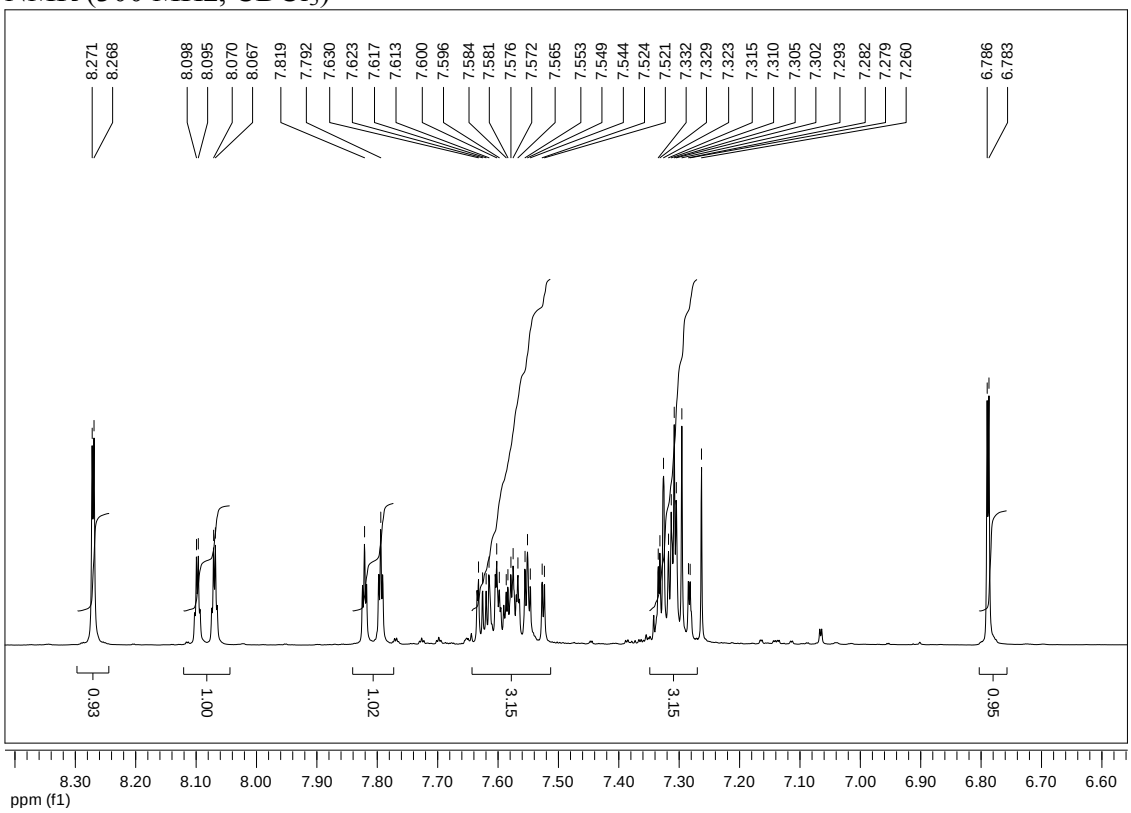
^{13}C NMR (75 MHz, $CDCl_3$)



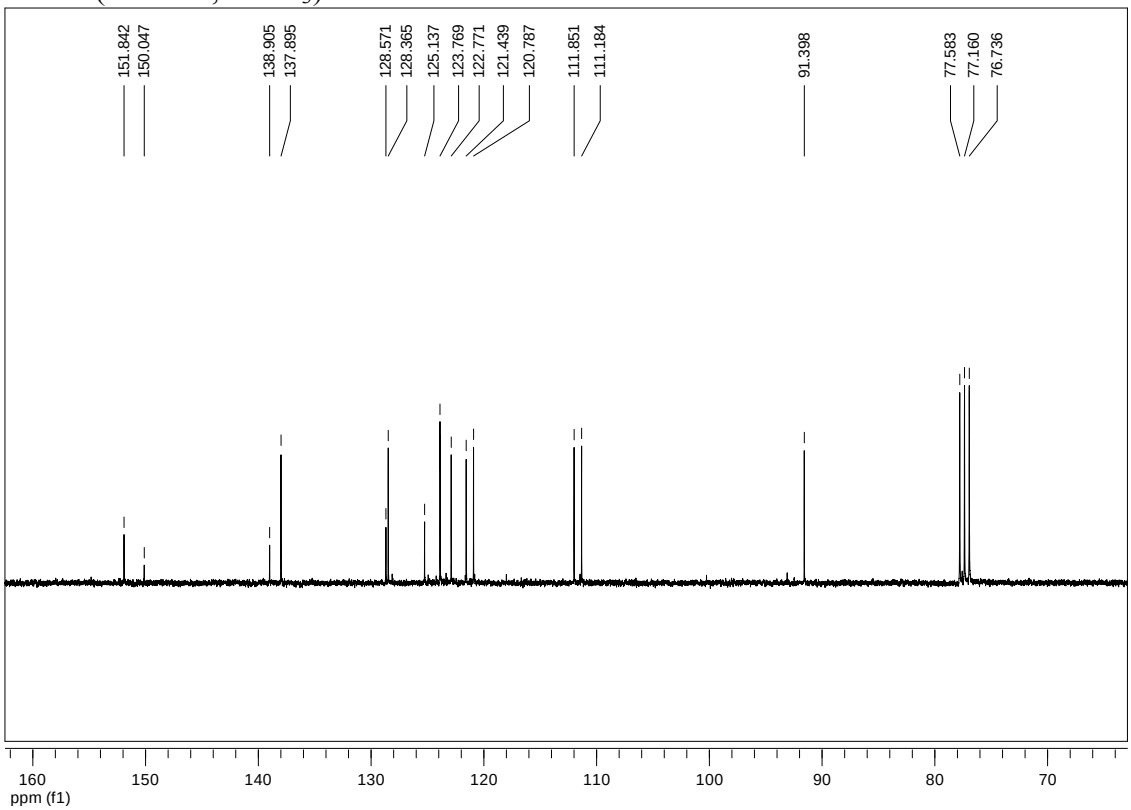
Compound 2g



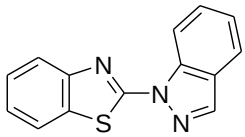
^{1}H NMR (300 MHz, $CDCl_3$)



^{13}C NMR (75 MHz, $CDCl_3$)



Compound 3g



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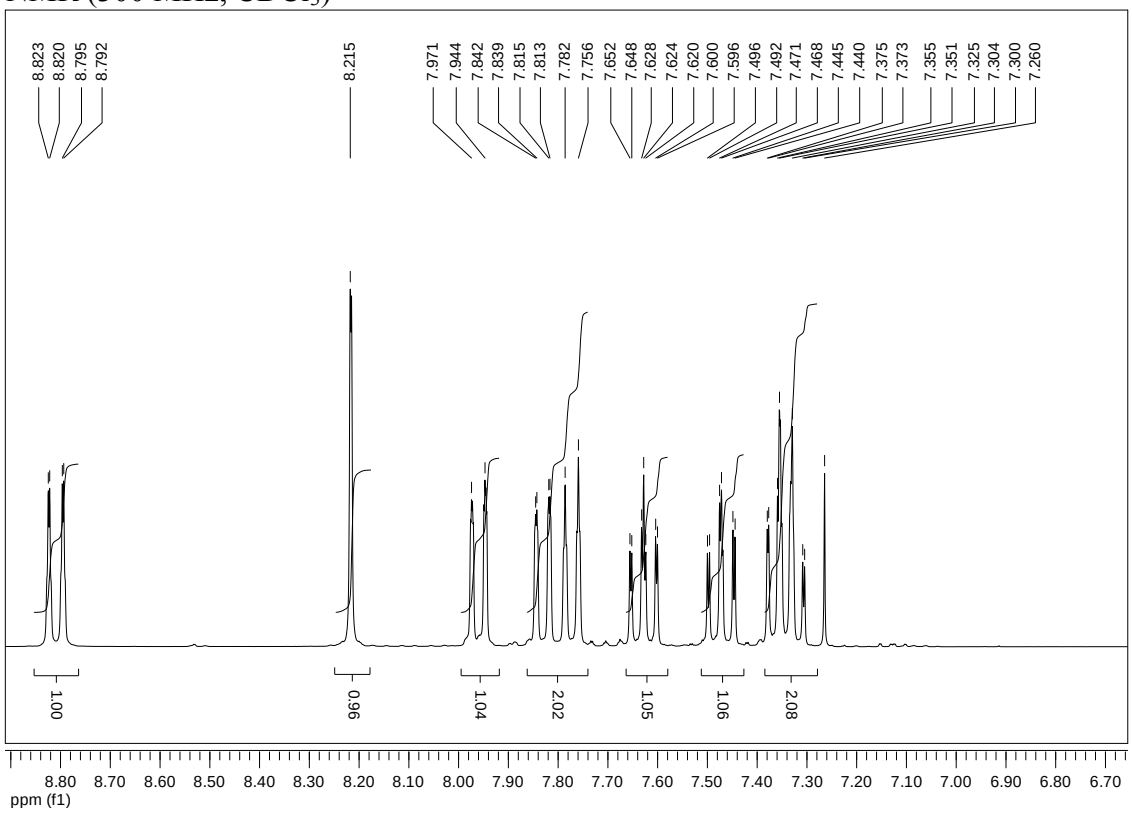
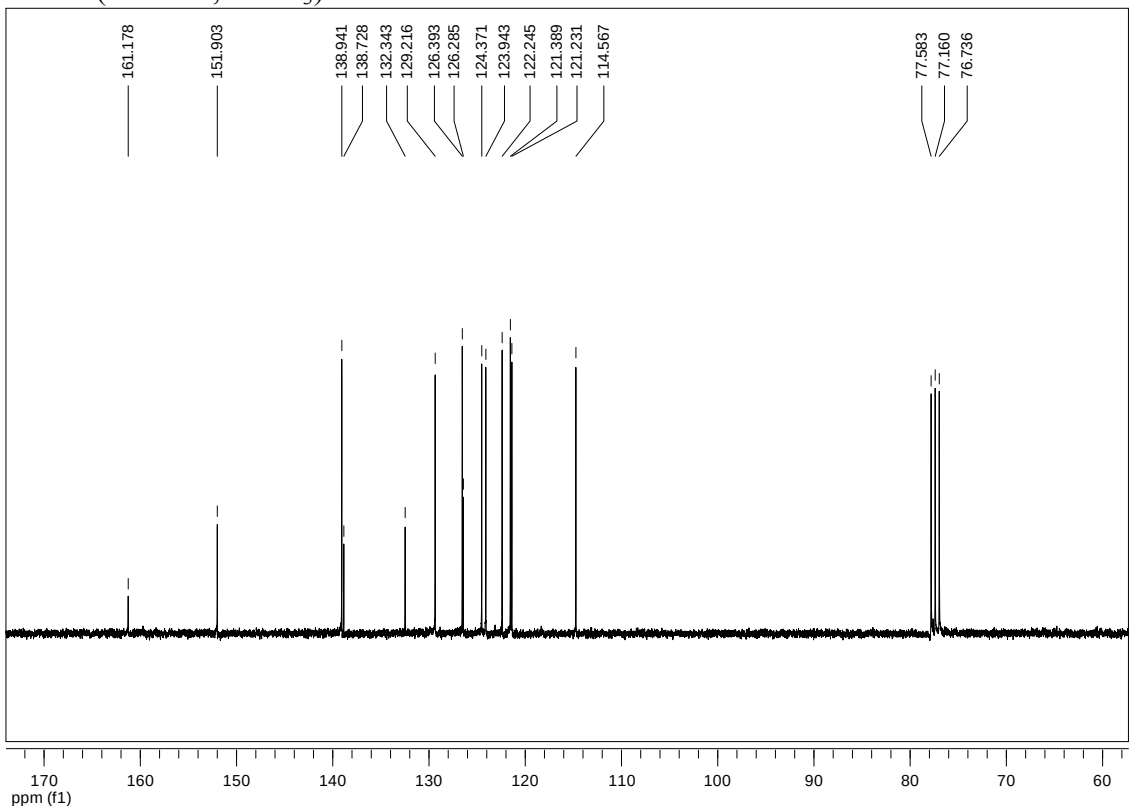
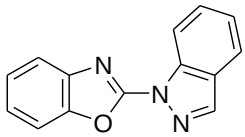


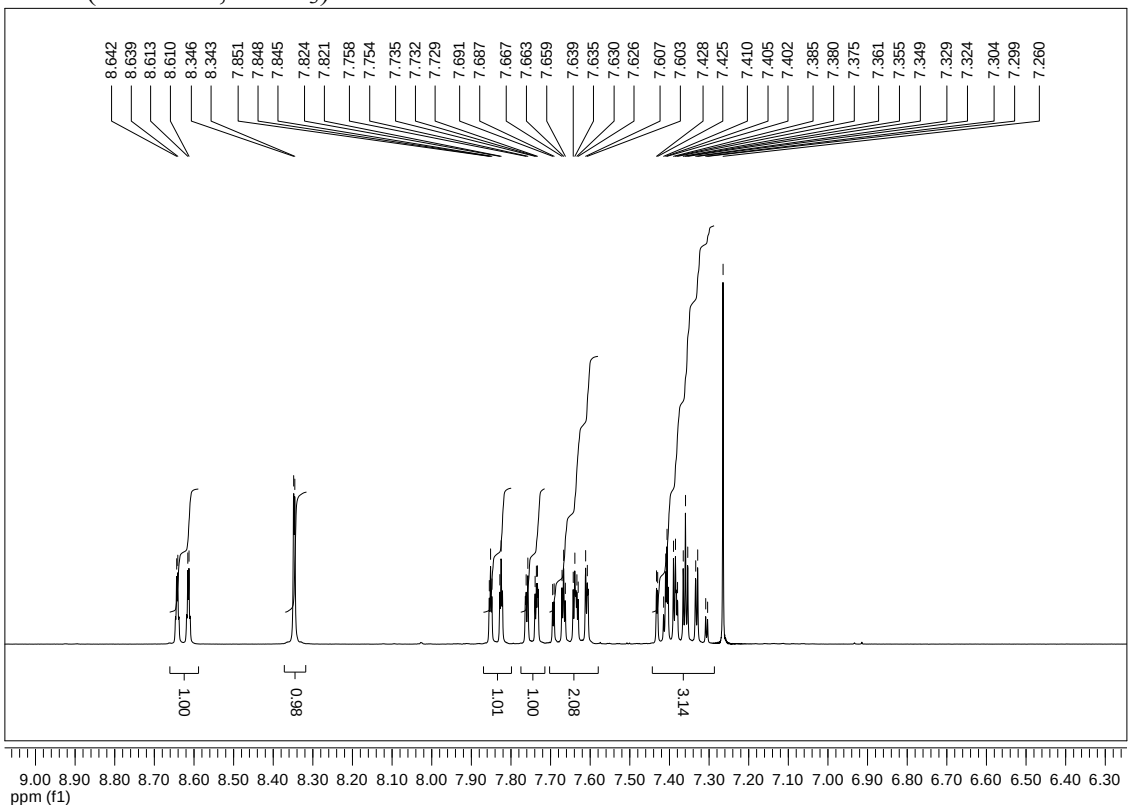
^{13}C NMR (75 MHz, $CDCl_3$)



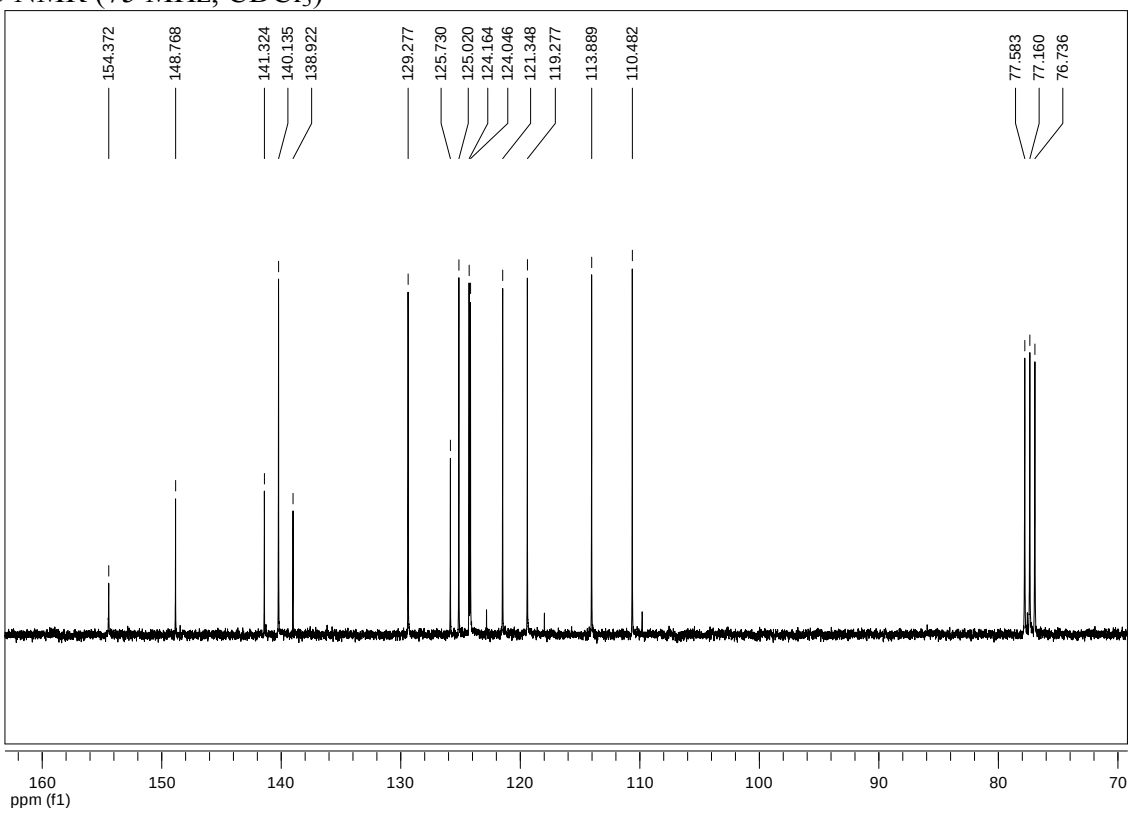
Compound 4g



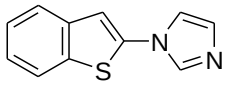
^{1}H NMR (300 MHz, $CDCl_3$)



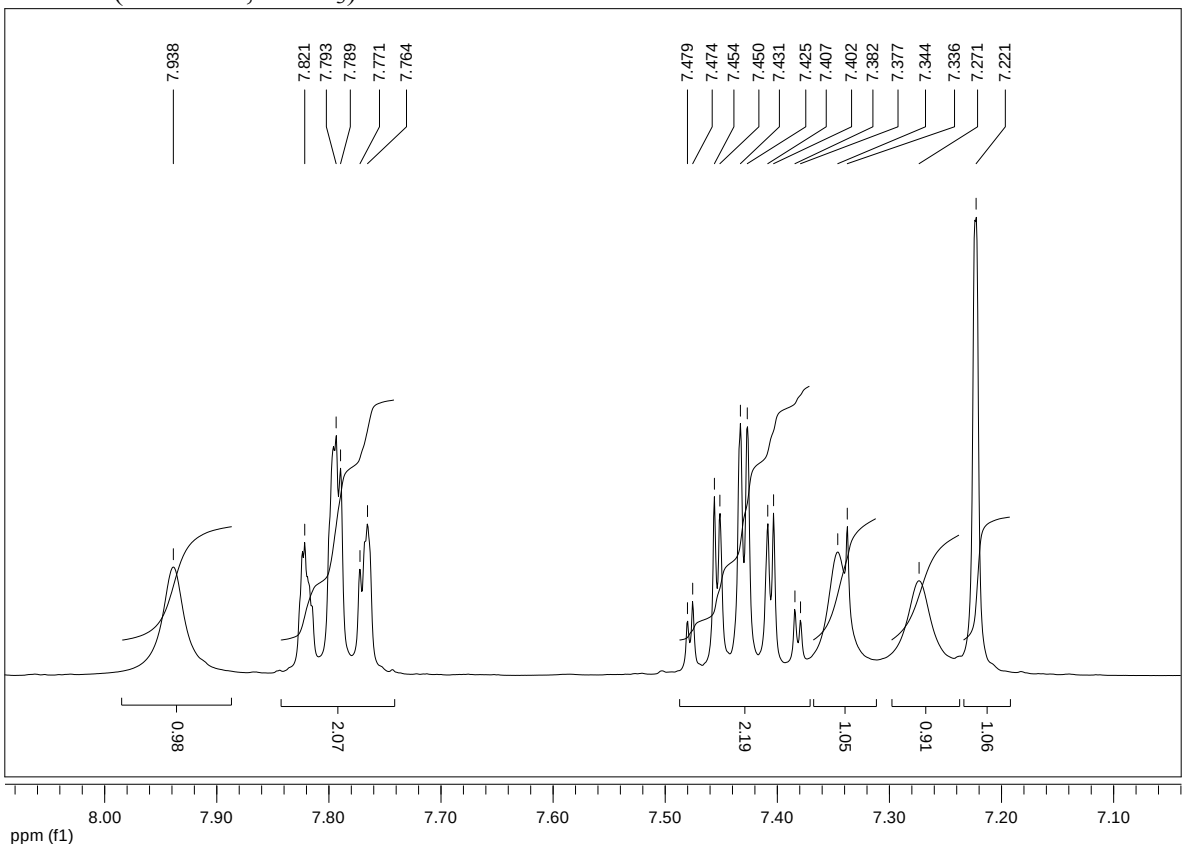
^{13}C NMR (75 MHz, $CDCl_3$)



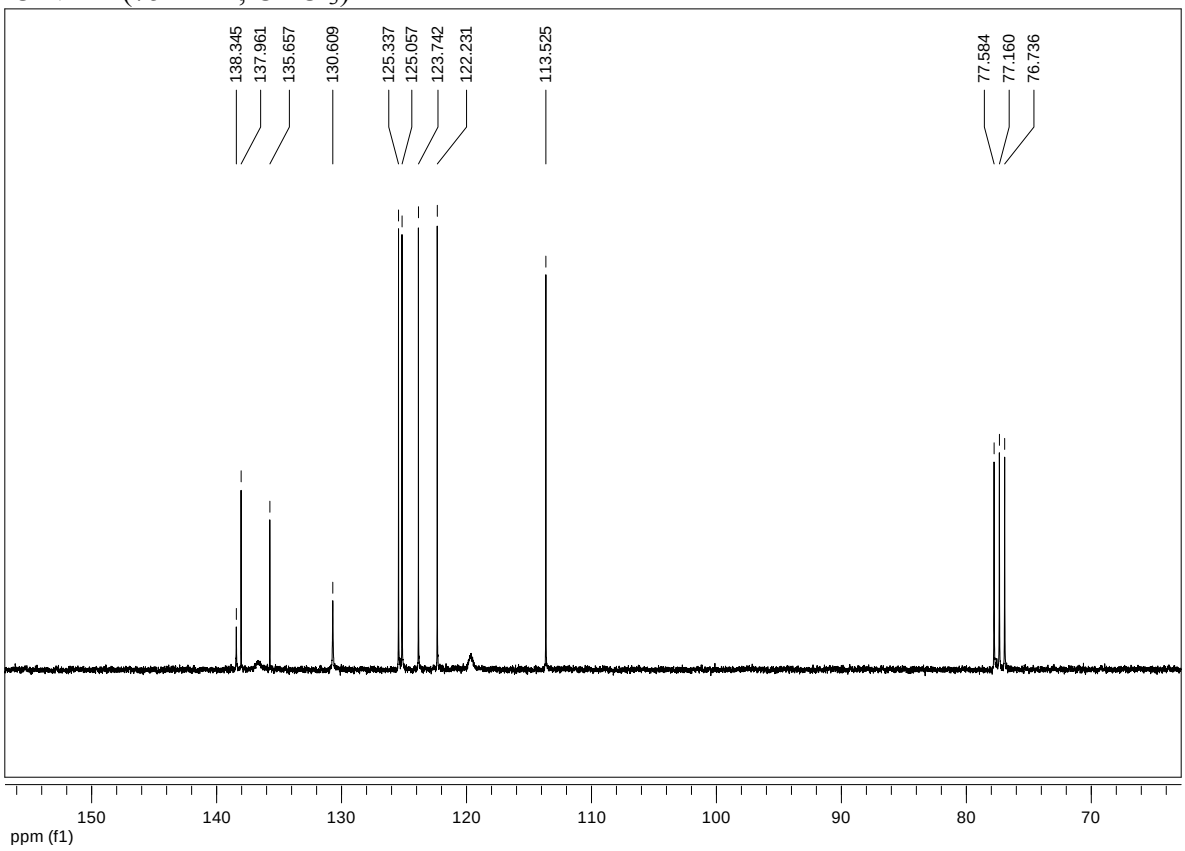
Compound 1h



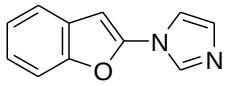
^{1}H NMR (300 MHz, $CDCl_3$)



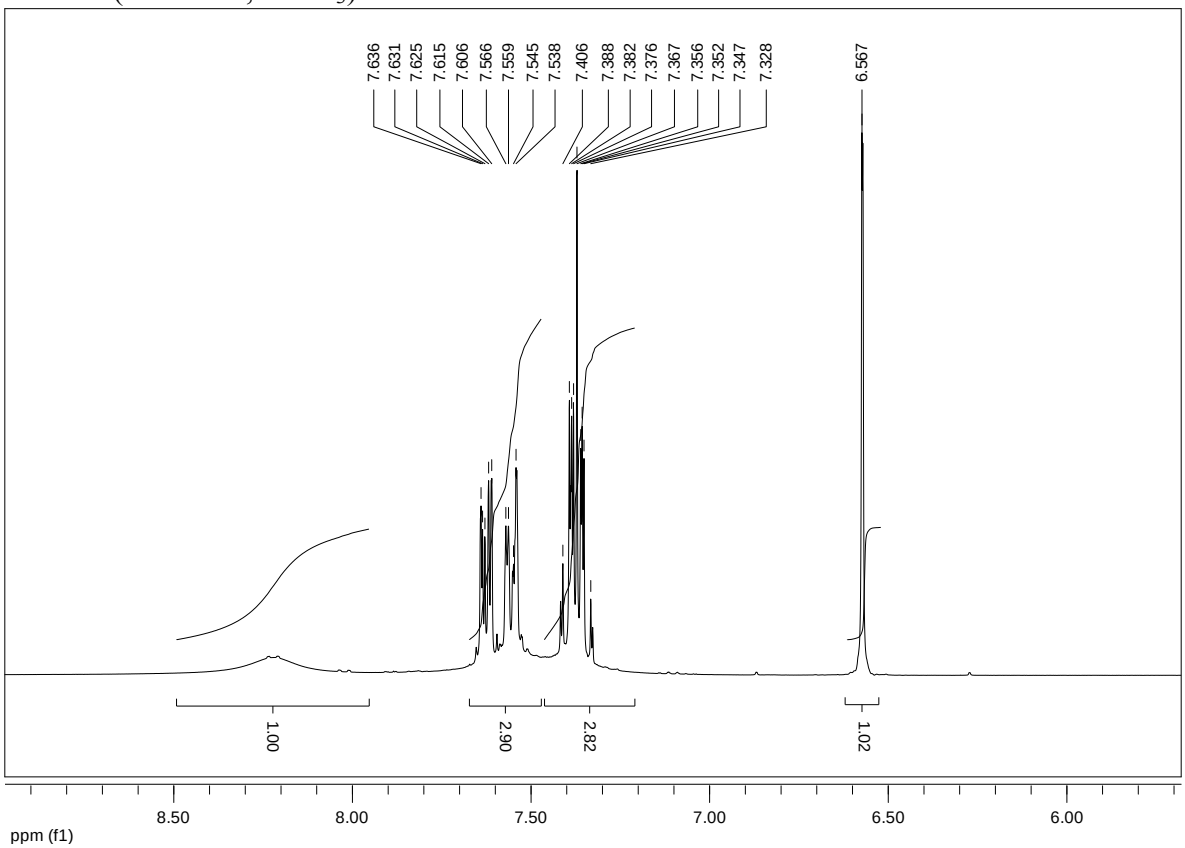
^{13}C NMR (75 MHz, $CDCl_3$)



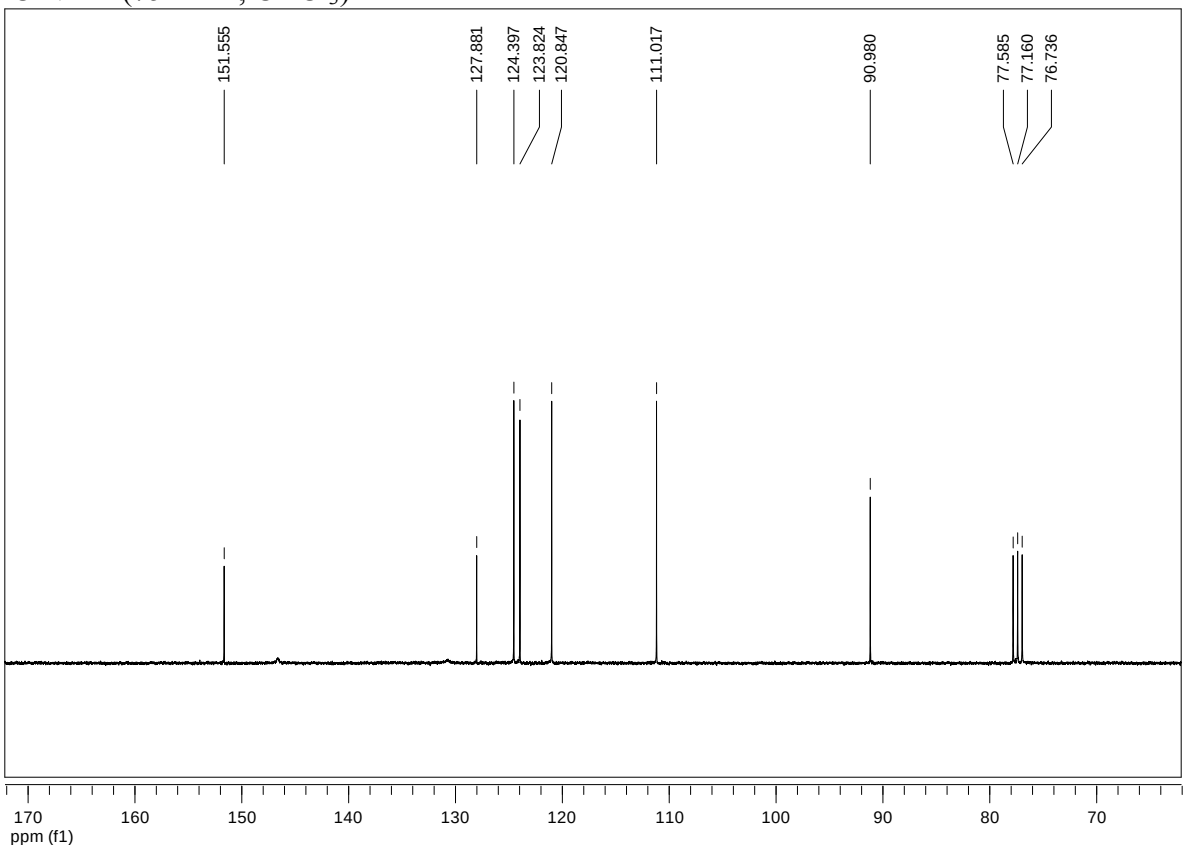
Compound 2h



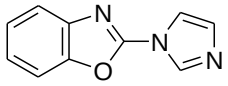
^{1}H NMR (300 MHz, $CDCl_3$)



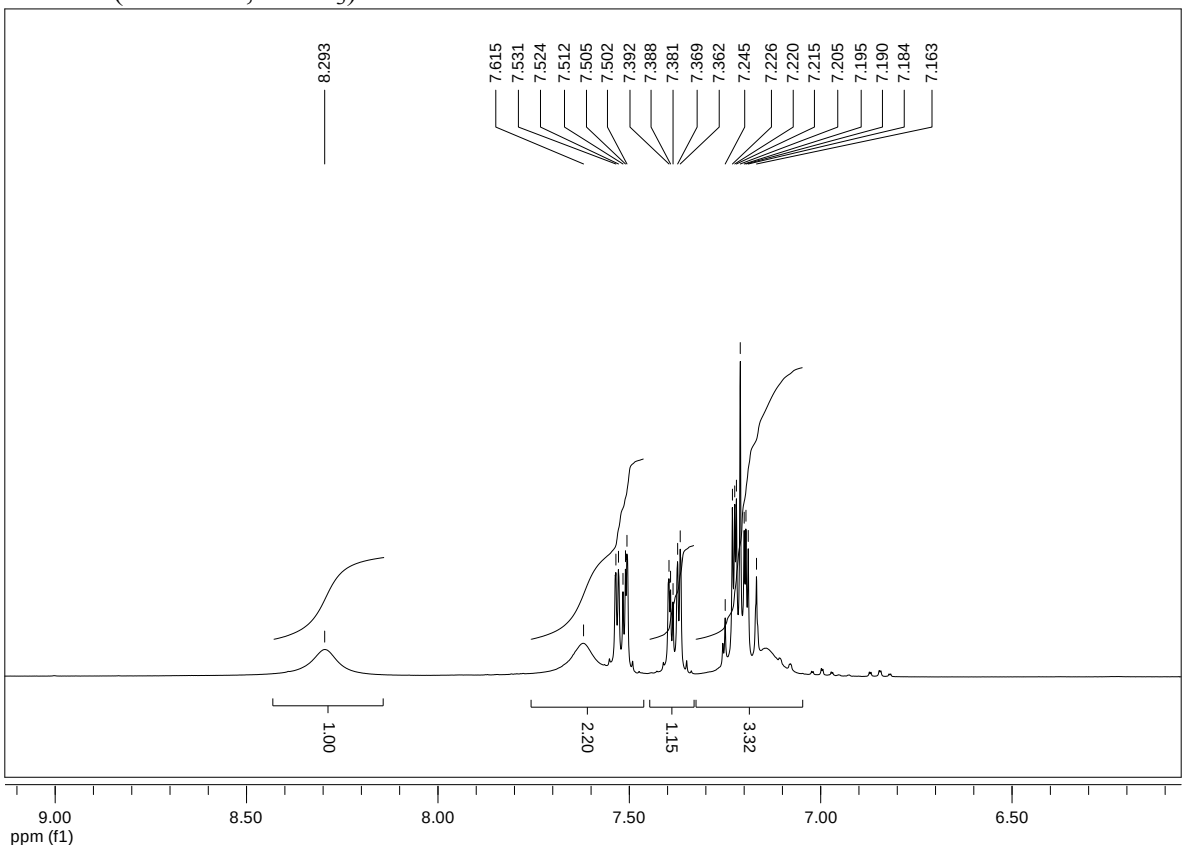
^{13}C NMR (75 MHz, $CDCl_3$)



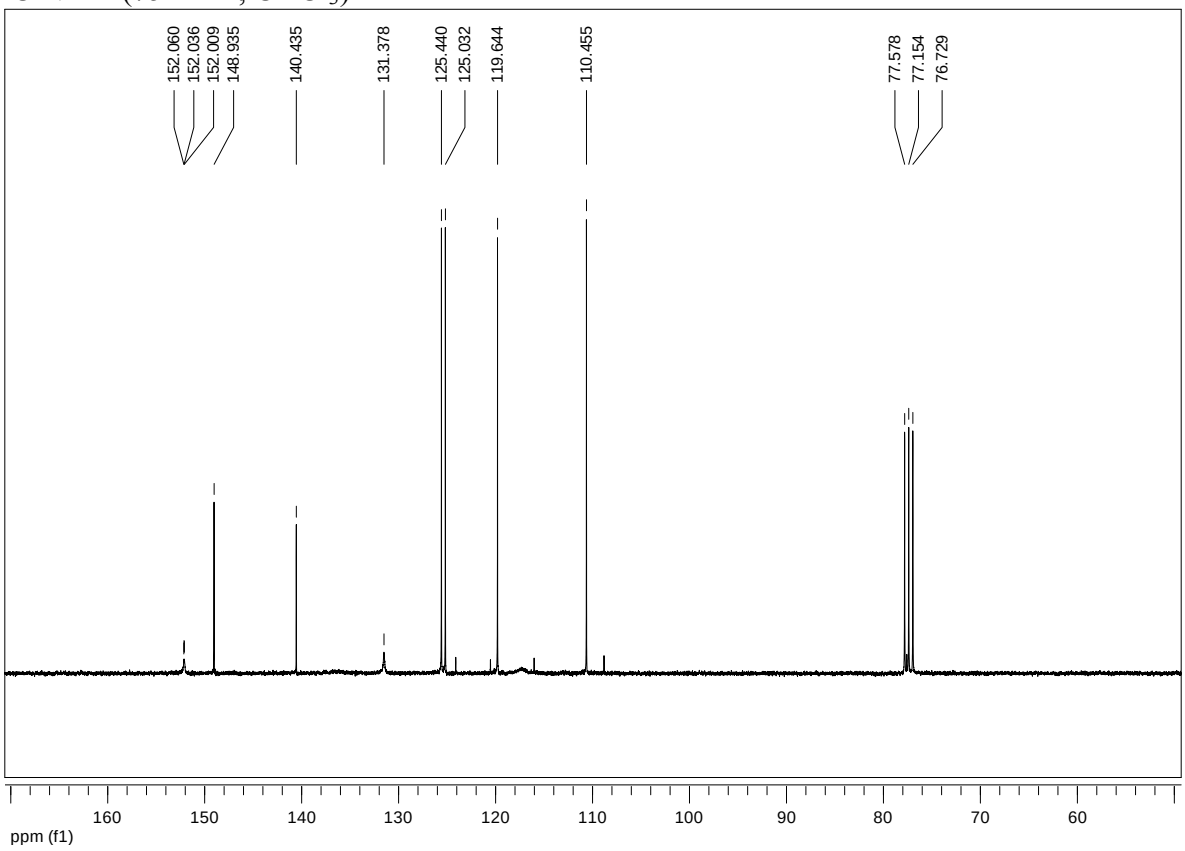
Compound 4h



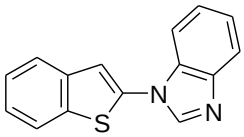
^{1}H NMR (300 MHz, $CDCl_3$)



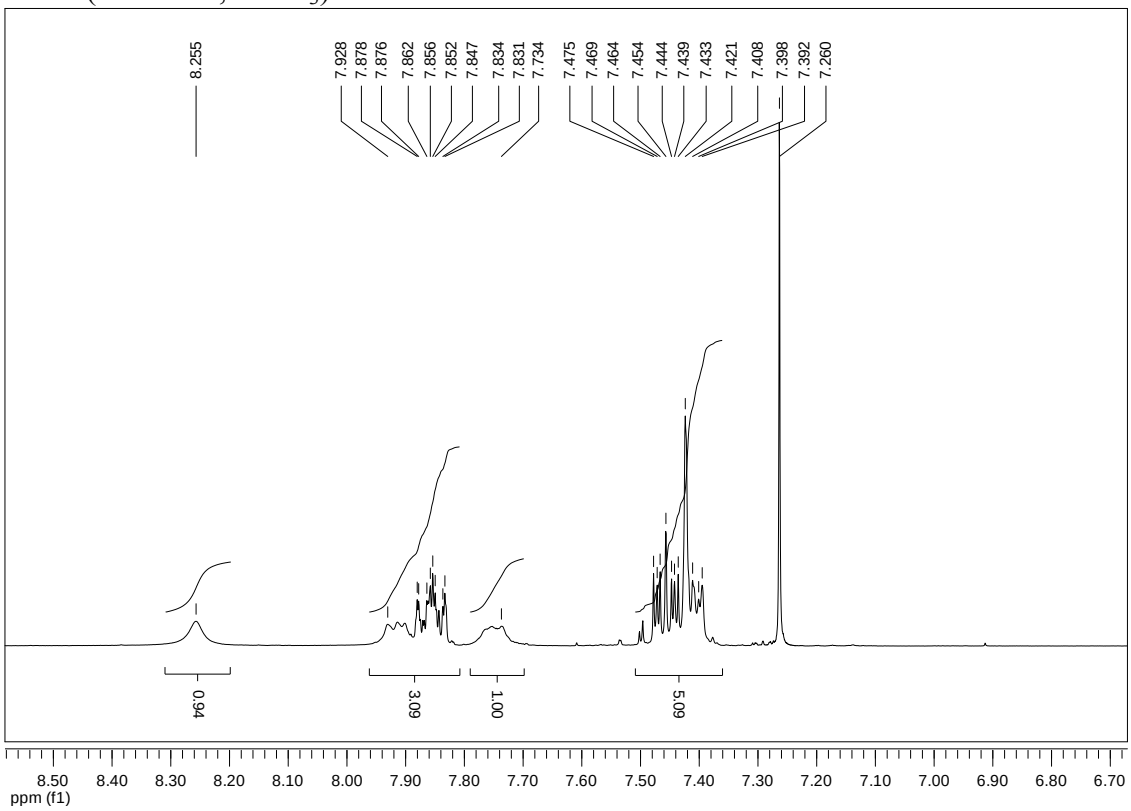
^{13}C NMR (75 MHz, $CDCl_3$)



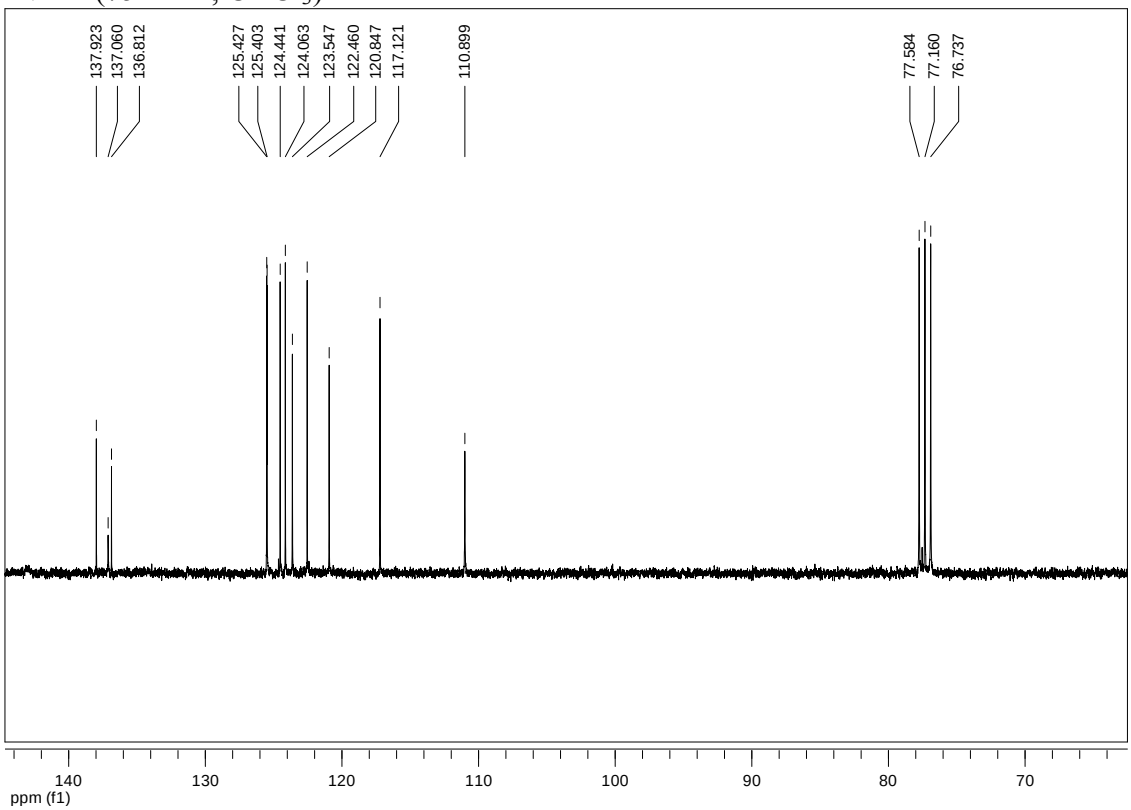
Compound 1i



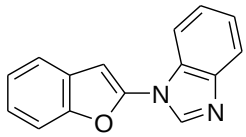
^{1}H NMR (300 MHz, $CDCl_3$)



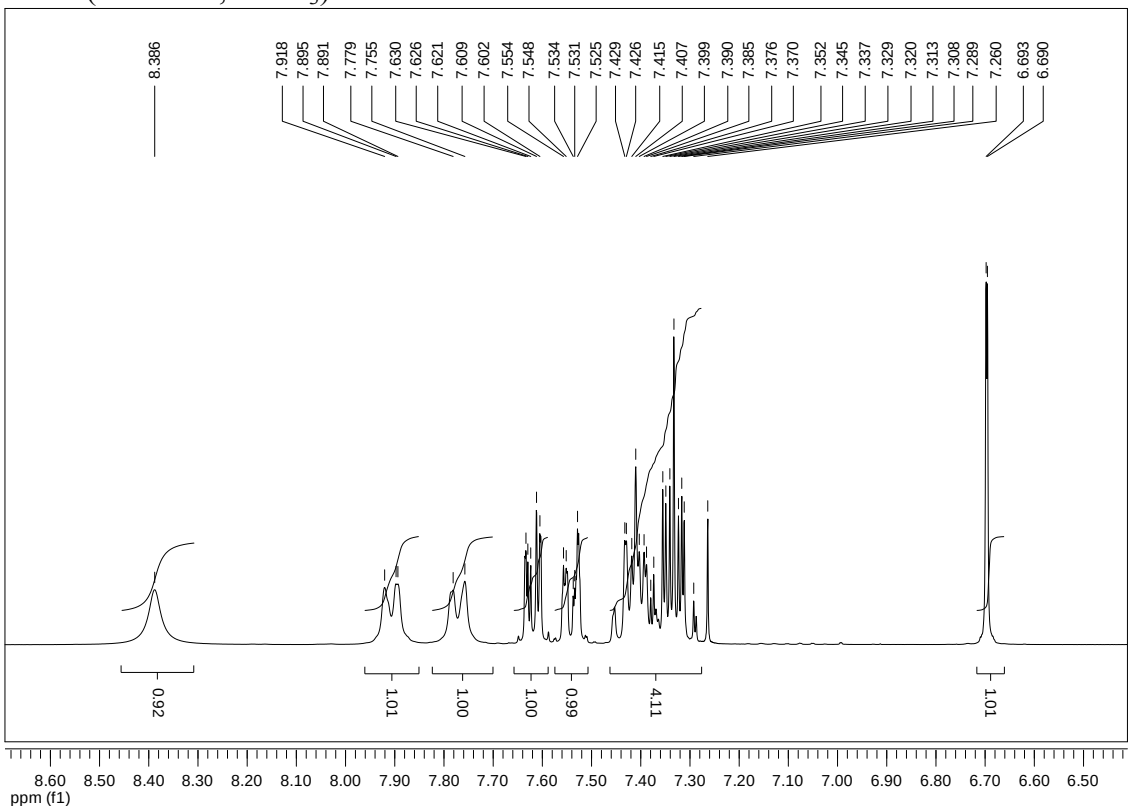
^{13}C NMR (75 MHz, $CDCl_3$)



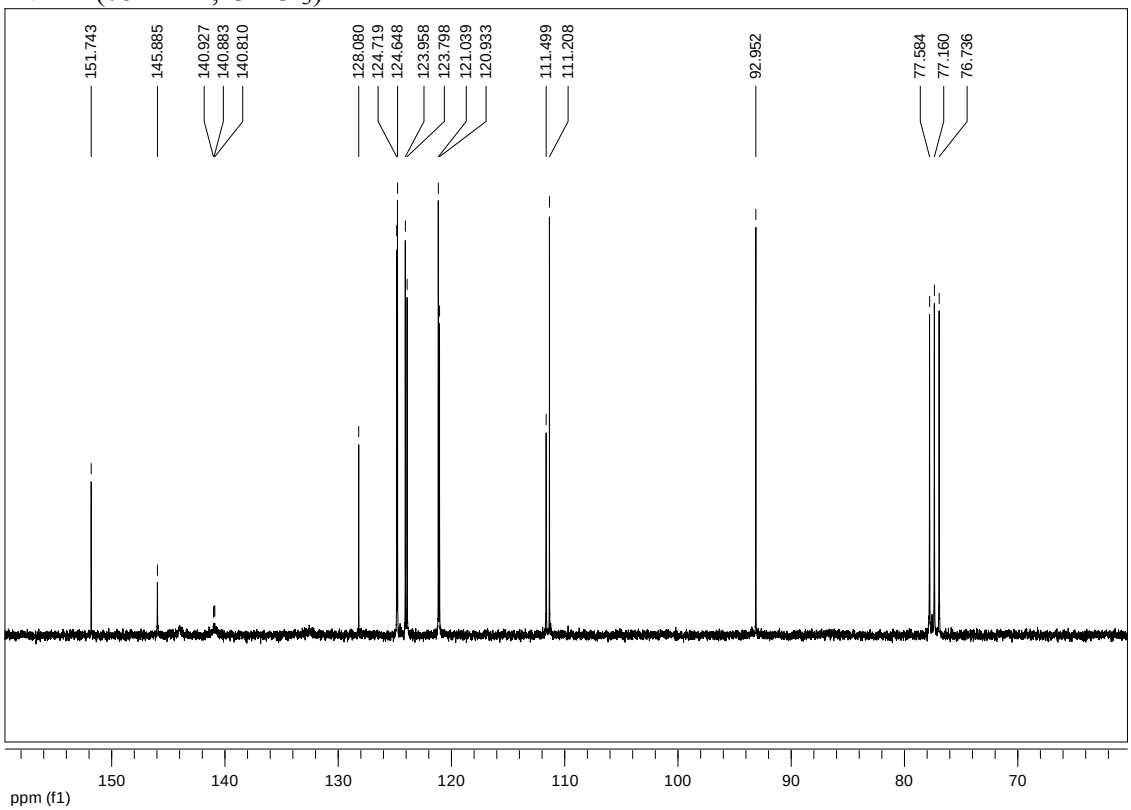
Compound 2i



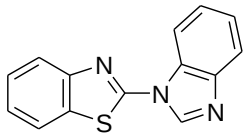
^{1}H NMR (300 MHz, $CDCl_3$)



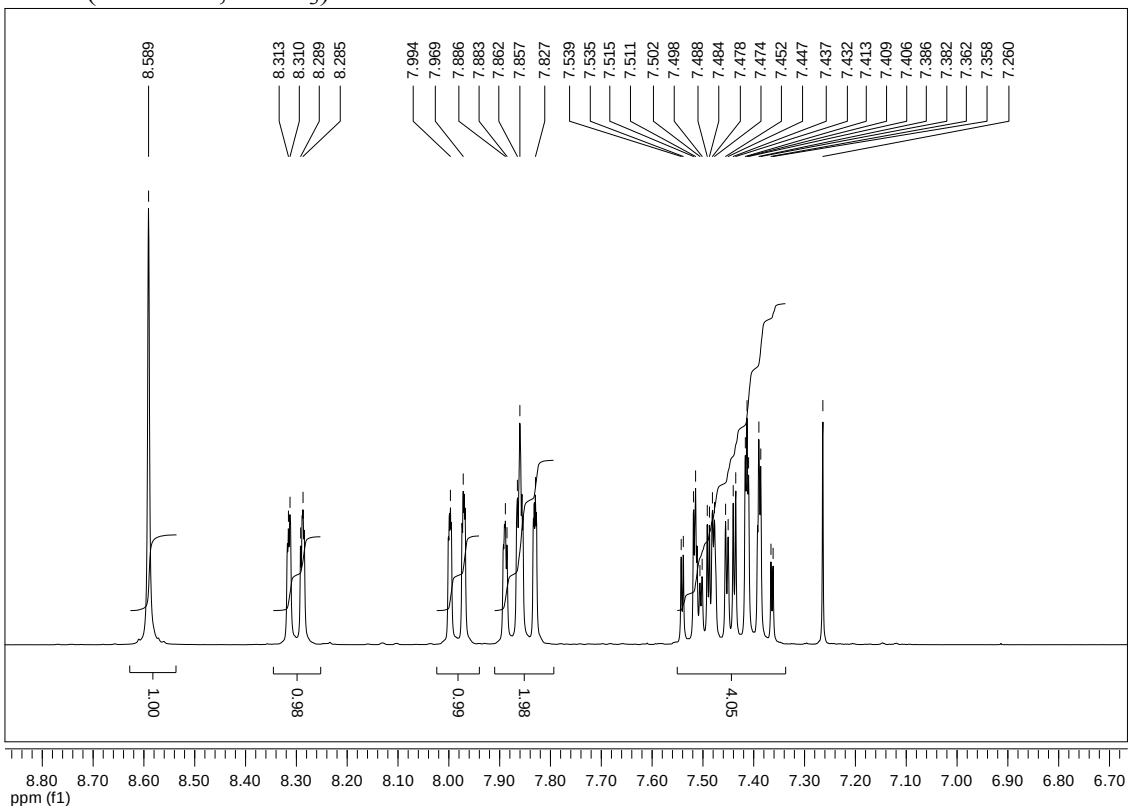
^{13}C NMR (75 MHz, $CDCl_3$)



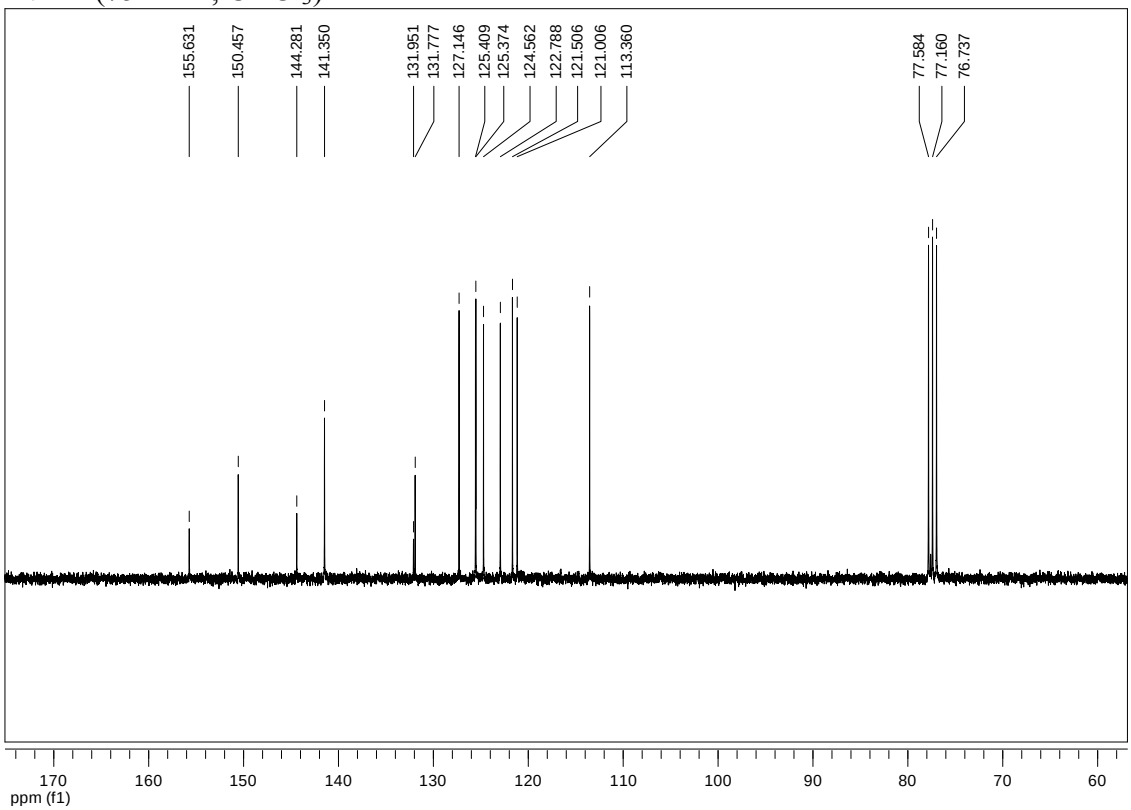
Compound 3i



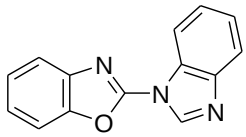
^{1}H NMR (300 MHz, $CDCl_3$)



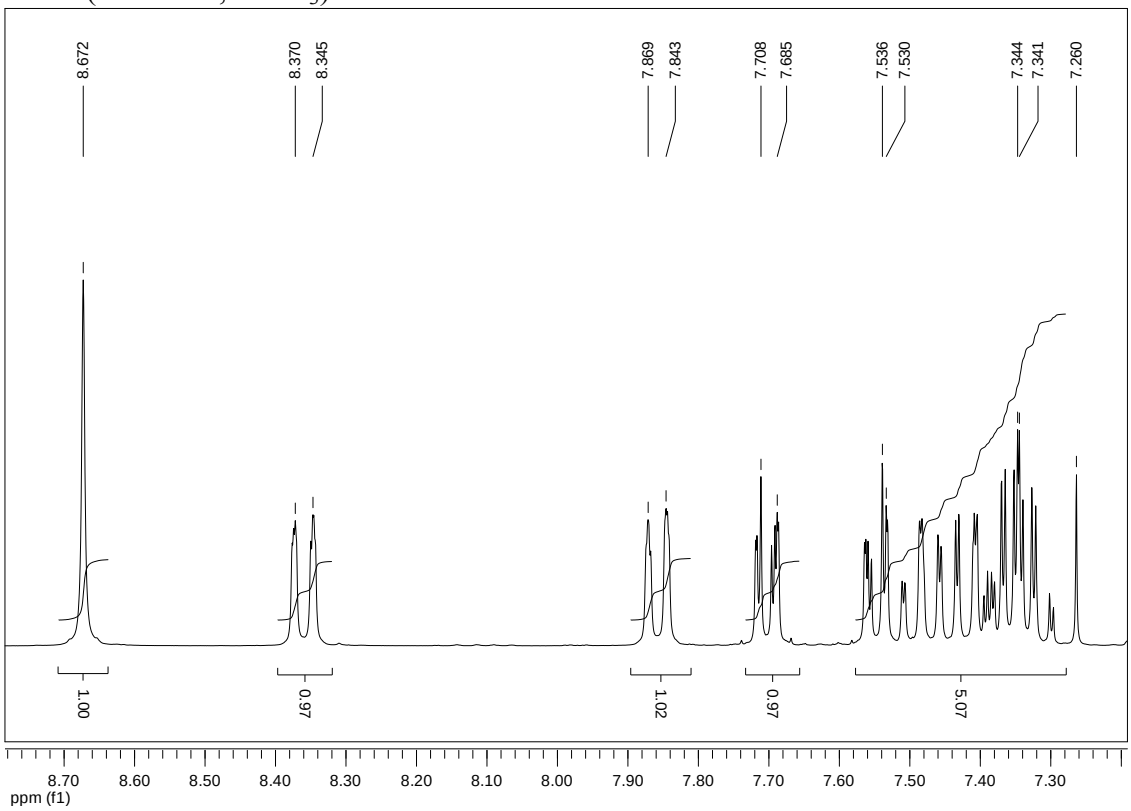
^{13}C NMR (75 MHz, $CDCl_3$)



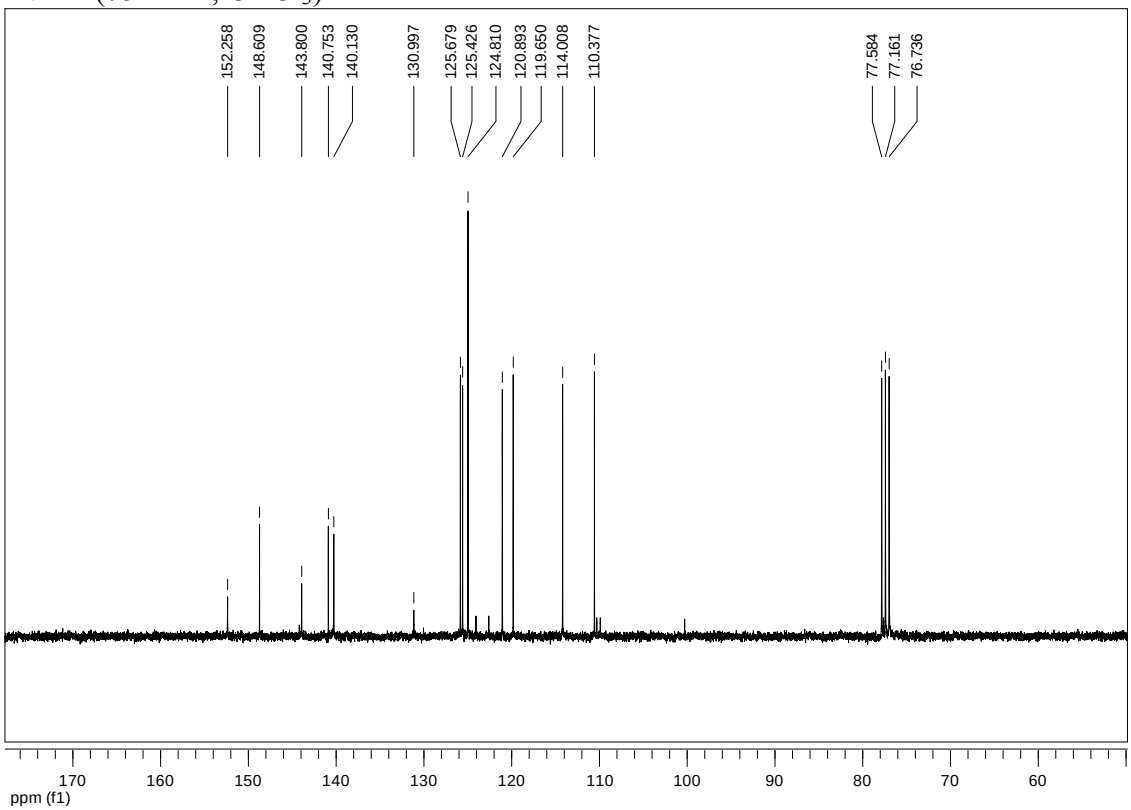
Compound 4i



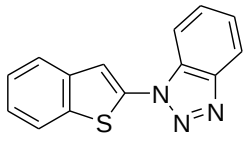
^{1}H NMR (300 MHz, $CDCl_3$)



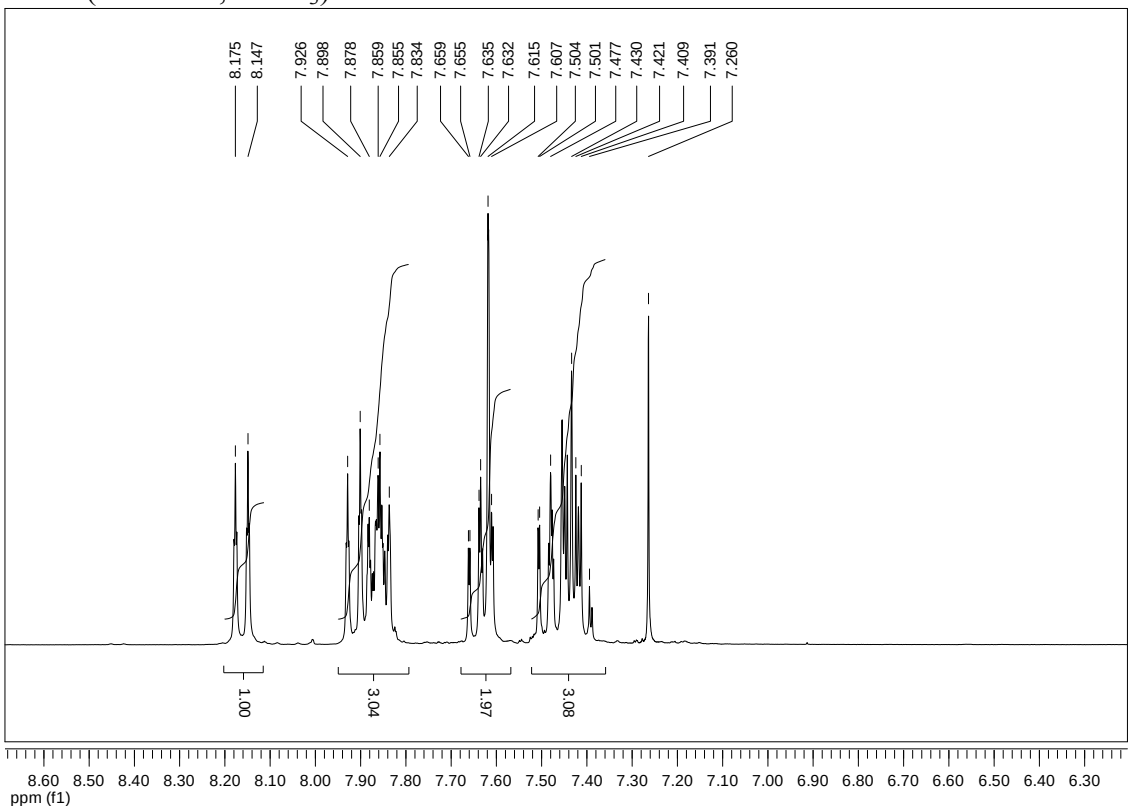
^{13}C NMR (75 MHz, $CDCl_3$)



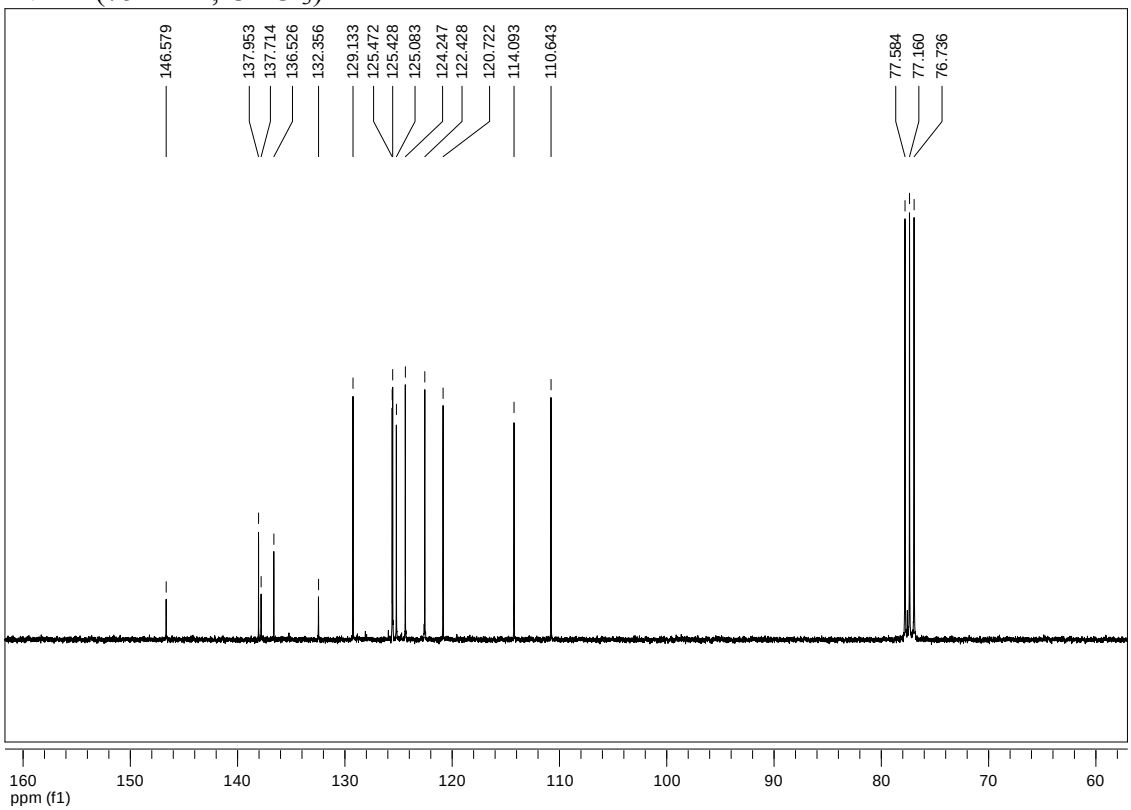
Compound 1j



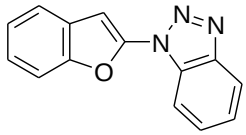
^{1}H NMR (300 MHz, $CDCl_3$)



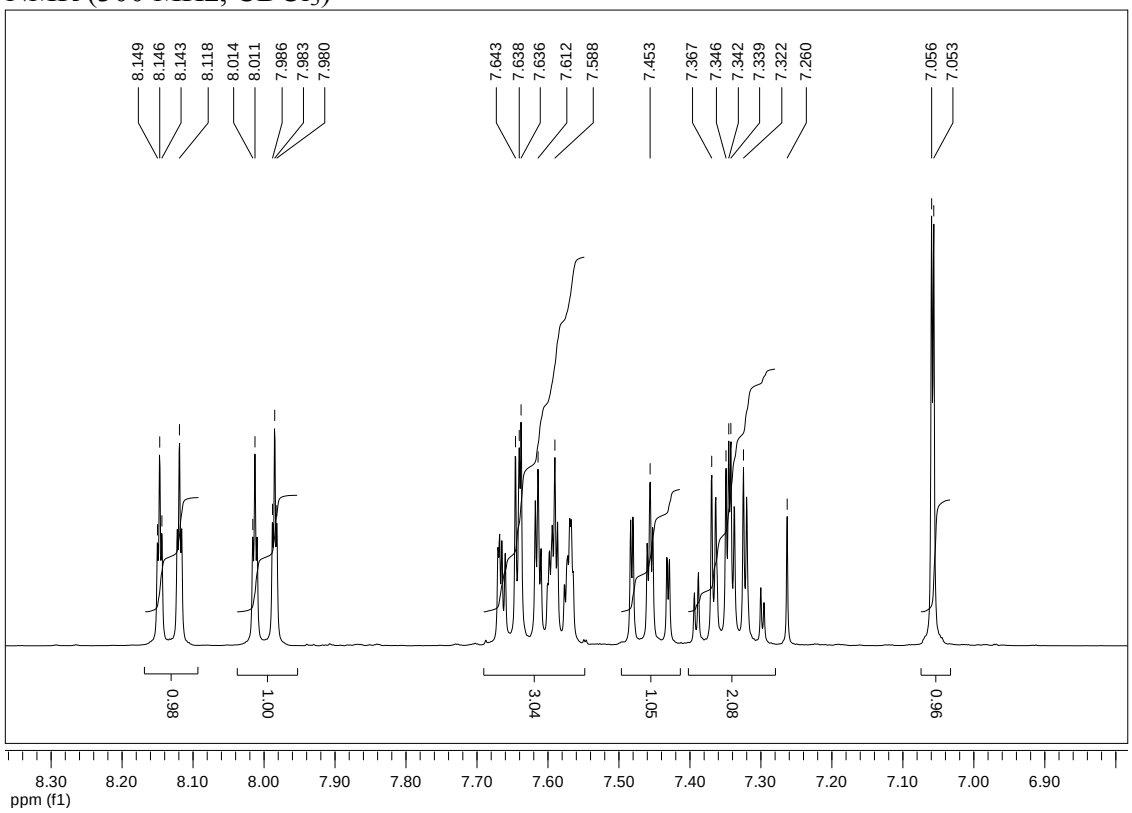
^{13}C NMR (75 MHz, $CDCl_3$)



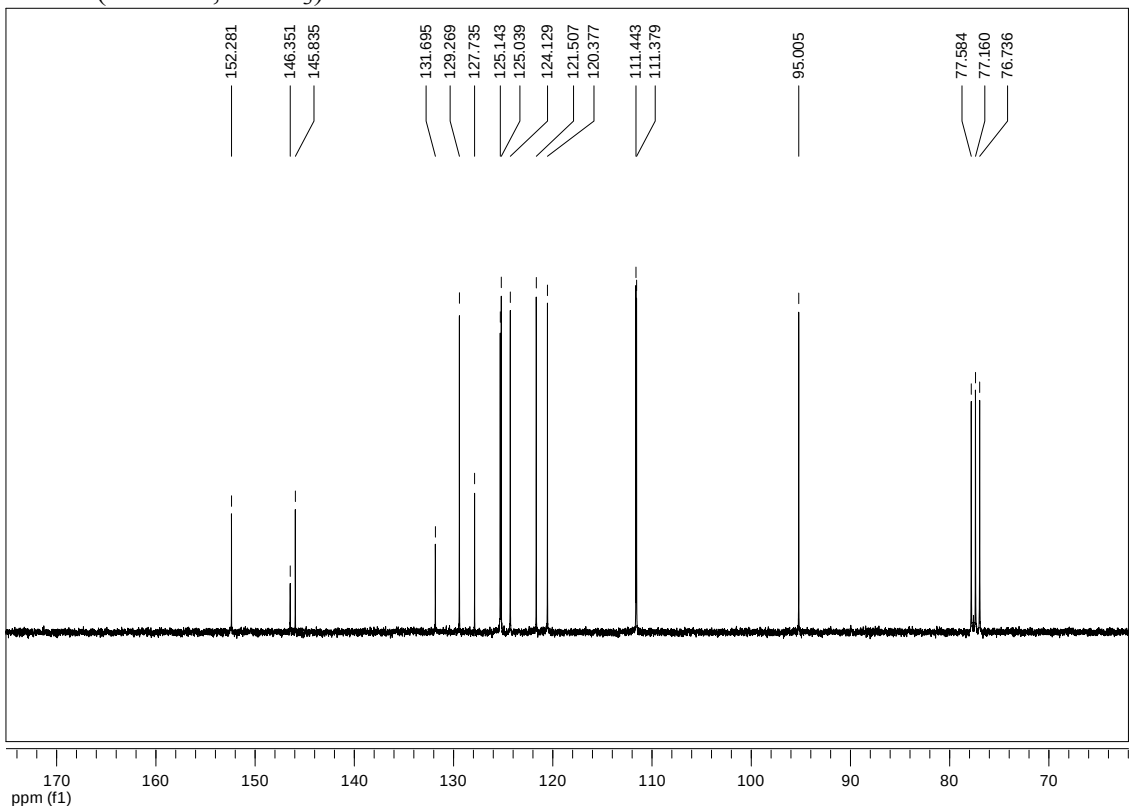
Compound 2j



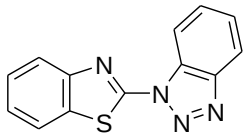
^{1}H NMR (300 MHz, $CDCl_3$)



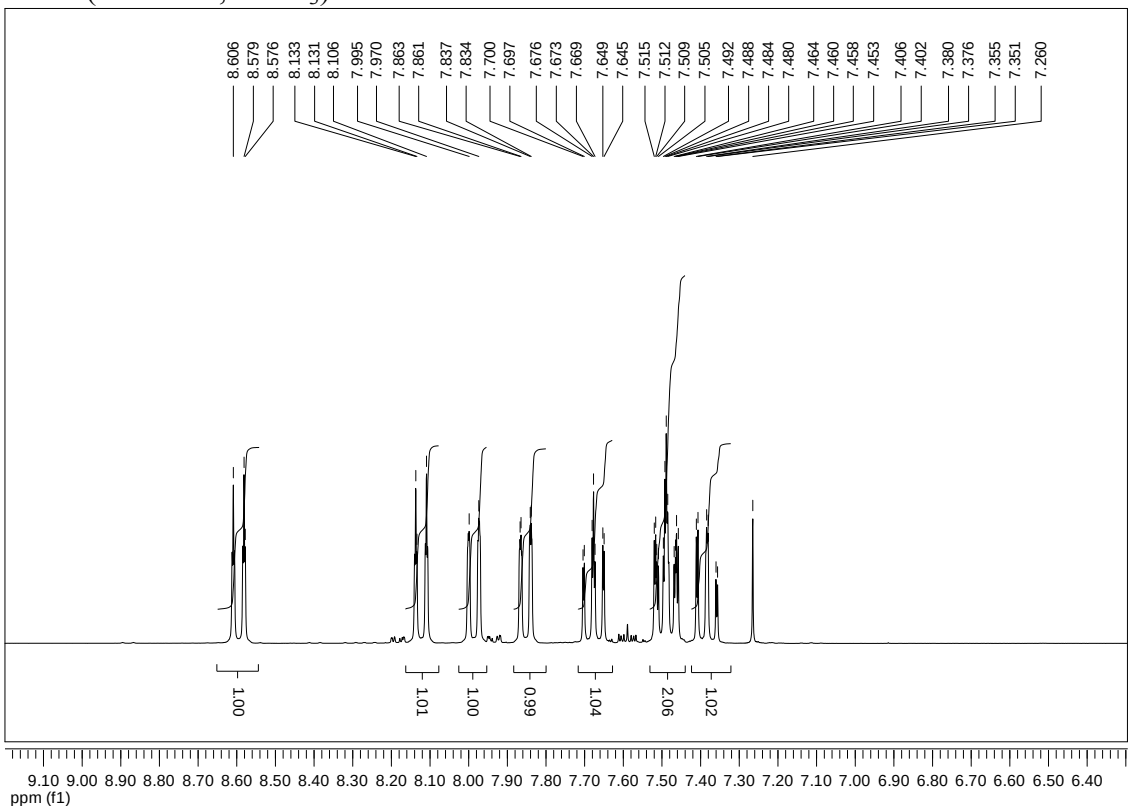
^{13}C NMR (75 MHz, $CDCl_3$)



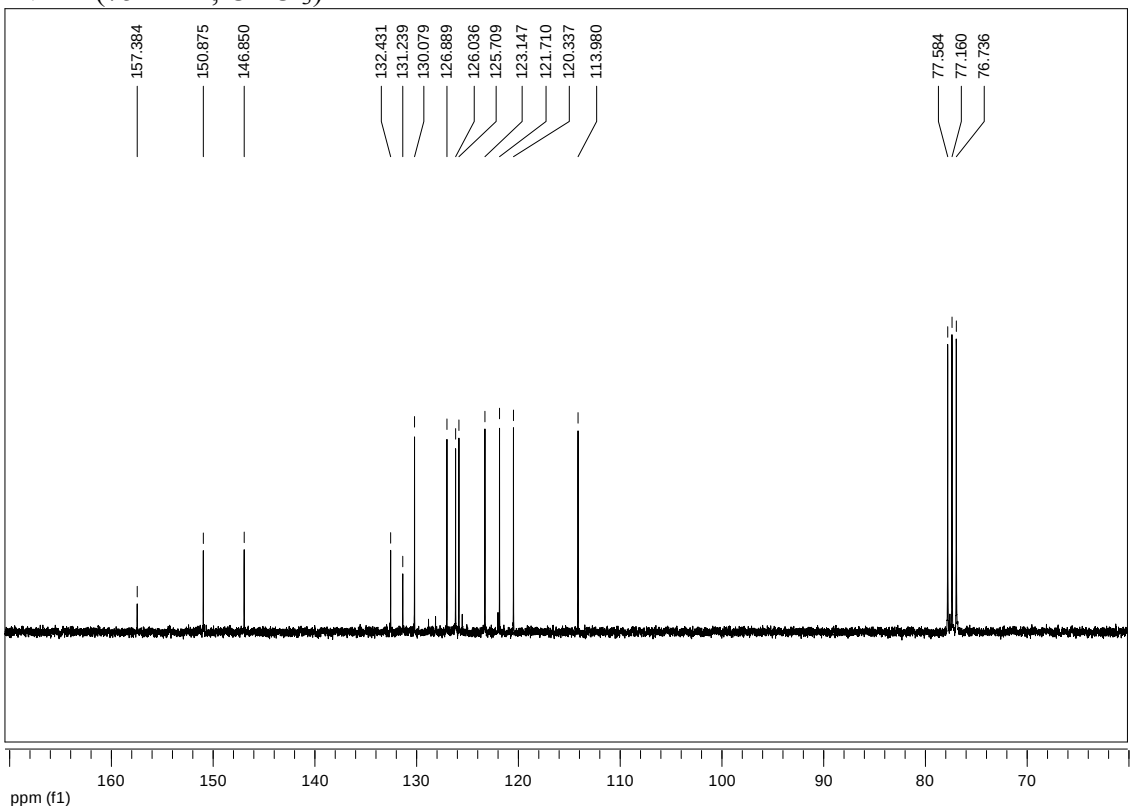
Compound 3j



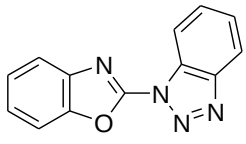
^{1}H NMR (300 MHz, $CDCl_3$)



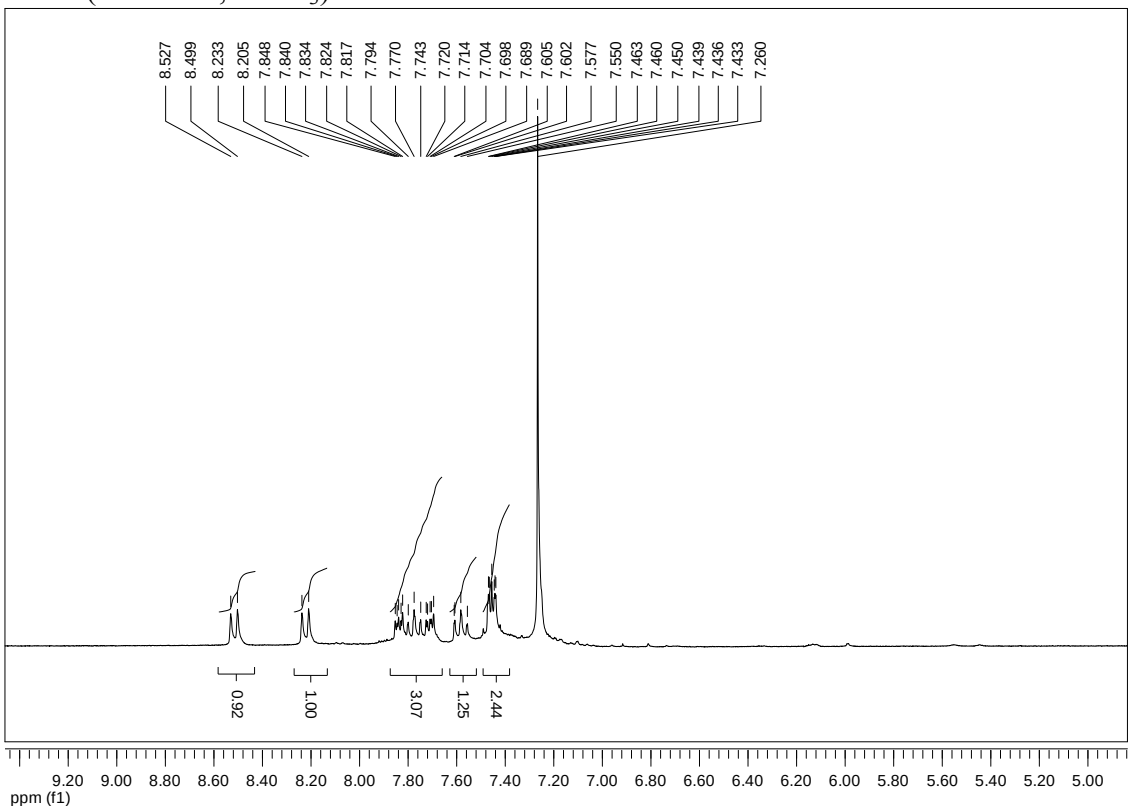
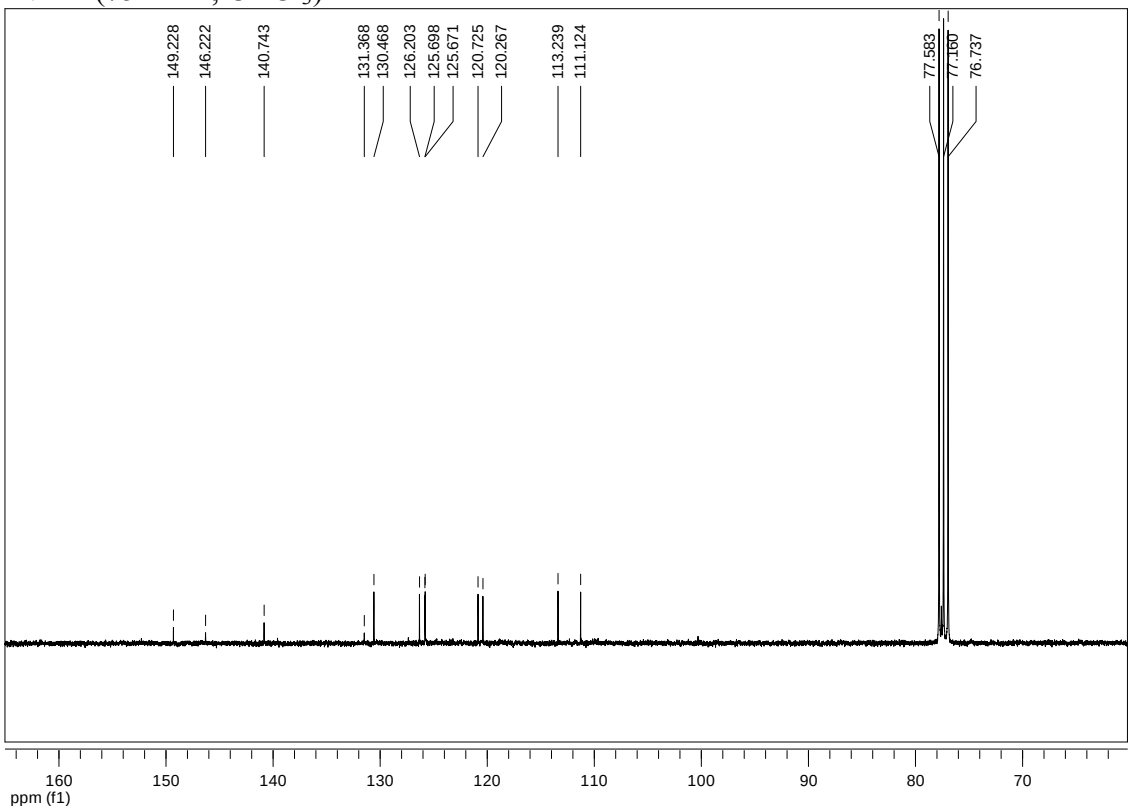
^{13}C NMR (75 MHz, $CDCl_3$)



Compound 4j



^{1}H NMR (300 MHz, $CDCl_3$)



^{13}C NMR (75 MHz, $CDCl_3$)