

# Group-Assisted Purification (GAP) for Protection of Amino Acids using *N*-Phosphonyl Functional Groups

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## Supplementary Data

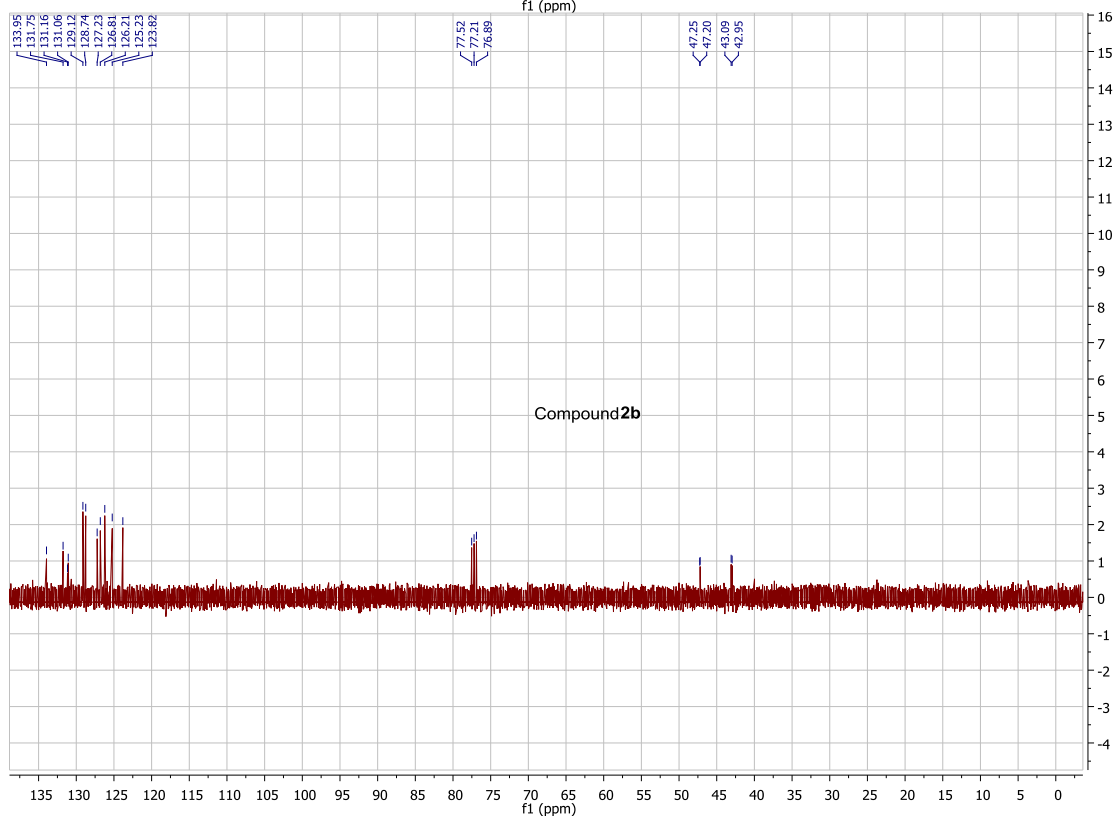
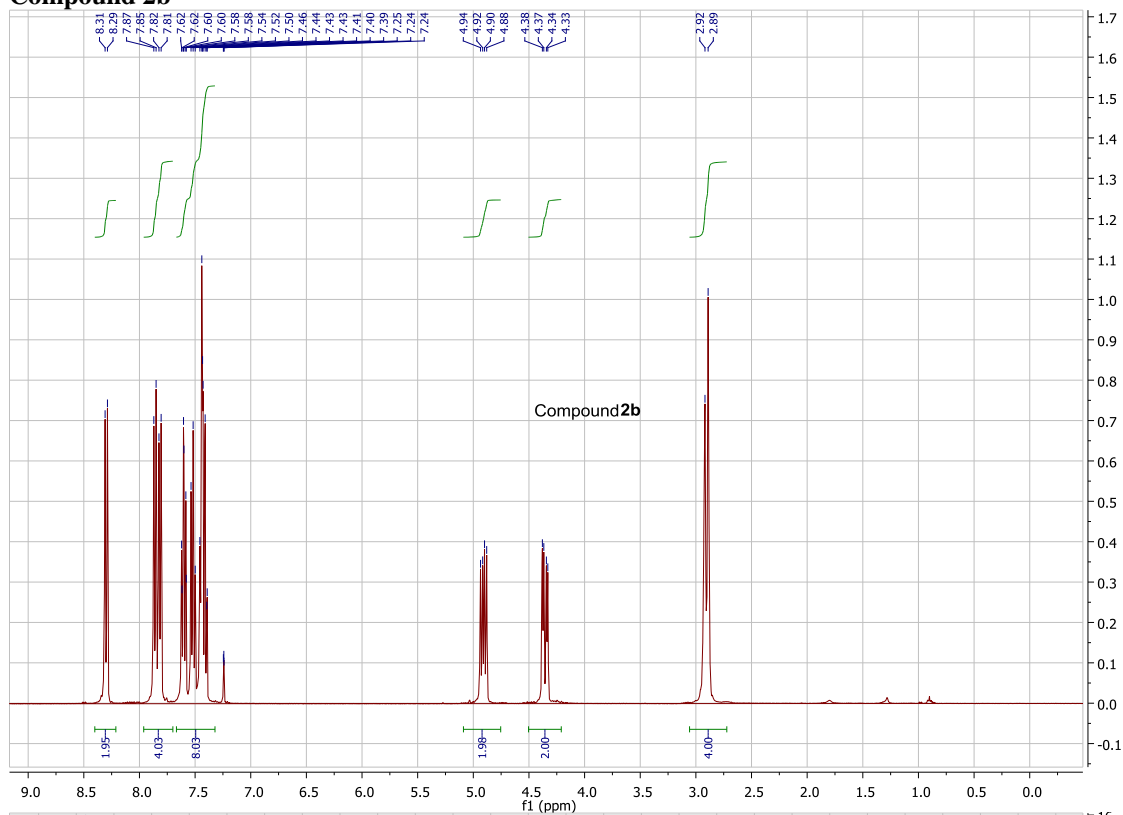
### General

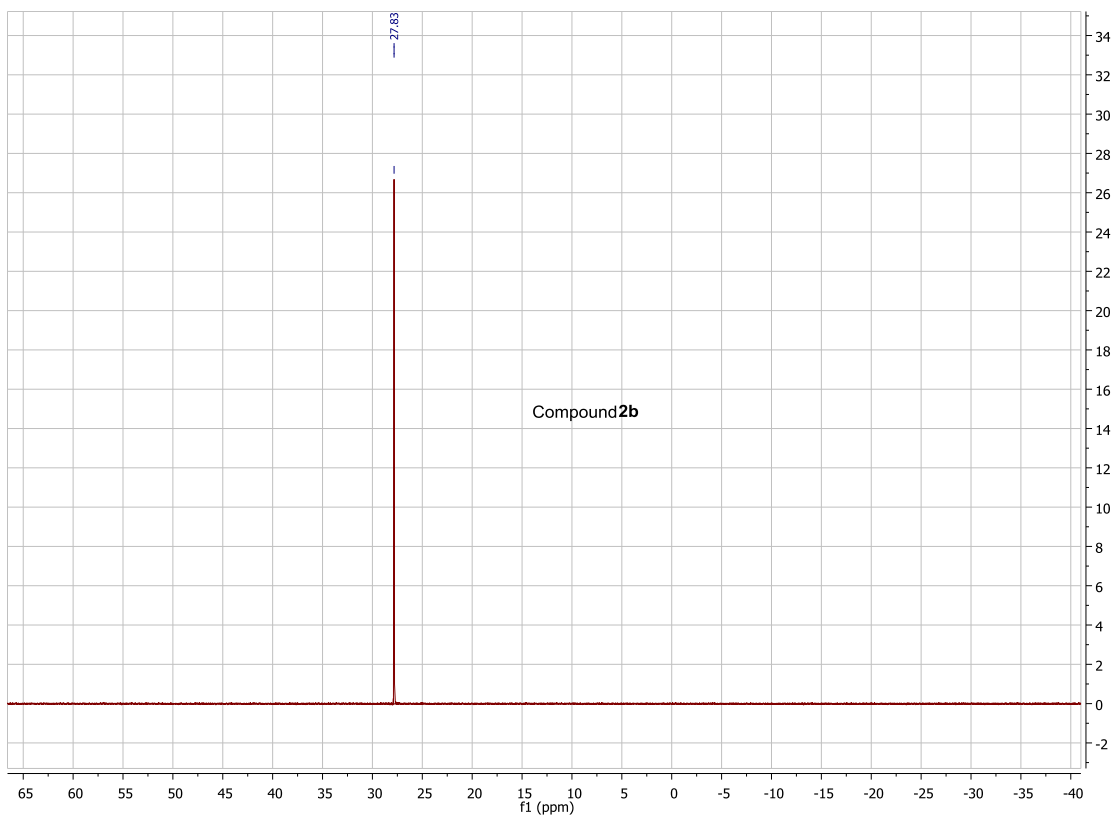
The <sup>1</sup>H NMR, <sup>13</sup>C NMR and <sup>31</sup>P NMR spectra were recorded on a Jeol eclipse 400 SS (operating at 400 MHz for proton) at ambient temperature. The ESI-MS and ESI-HRMS were recorded with an Exactive (Thermo Scientific, San Jose, CA) mass spectrometer.

Dry dichloromethane (DCM) was bought from Acros Organics and used directly. *N,N'*-dimethylformamide (DMF) was dried over 4 Å molecule sieves powder. 4 Å molecular sieves powder was activated by heating in oven at 120 °C for 24 hours. Triethylamine was stand over KOH solid overnight and distilled before use. Tetrahydrofuran (THF) was distilled from Na metal before use. All the other chemicals were bought from commercial source and used directly after arrival.

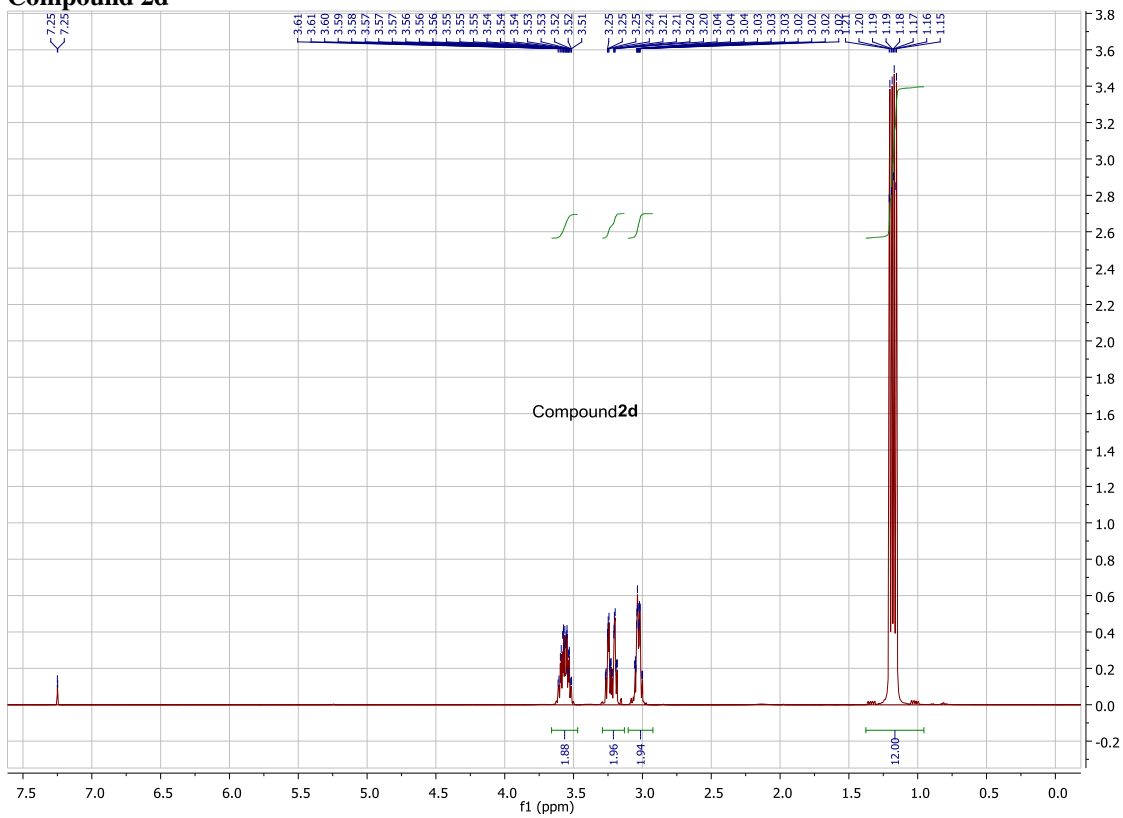
<sup>1</sup>H, <sup>13</sup>C and <sup>31</sup>P-NMR spectra

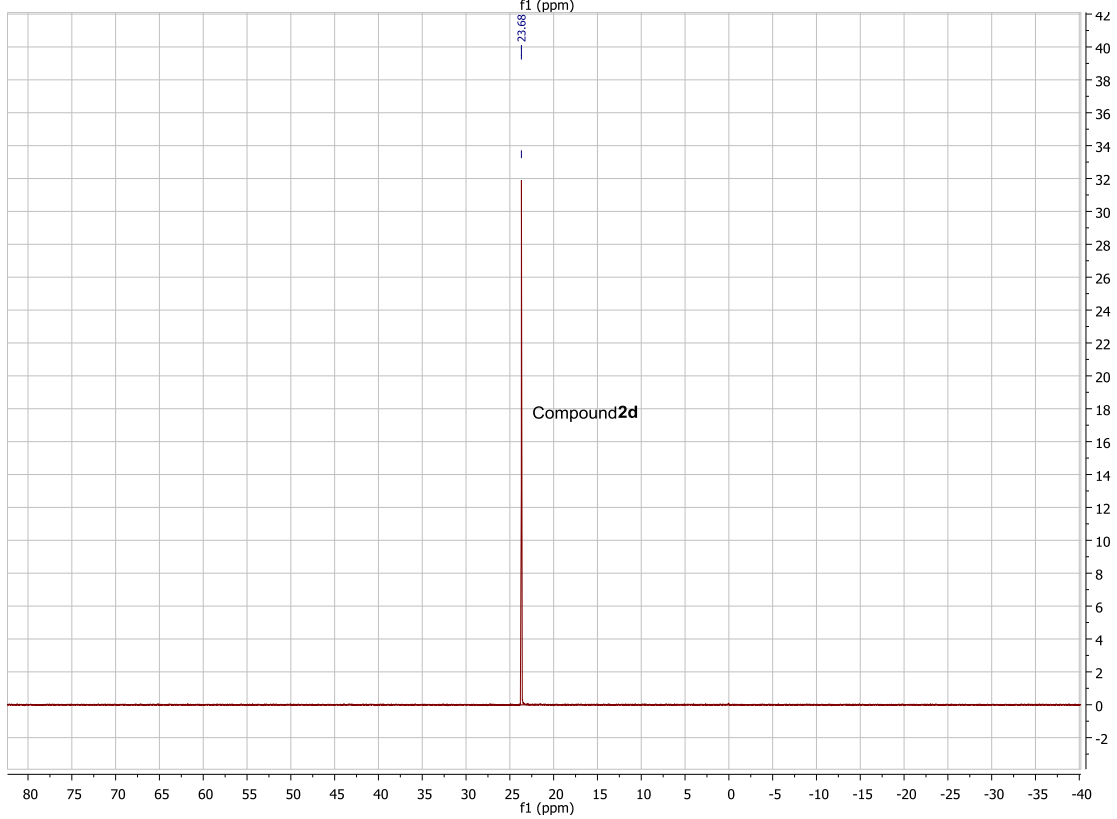
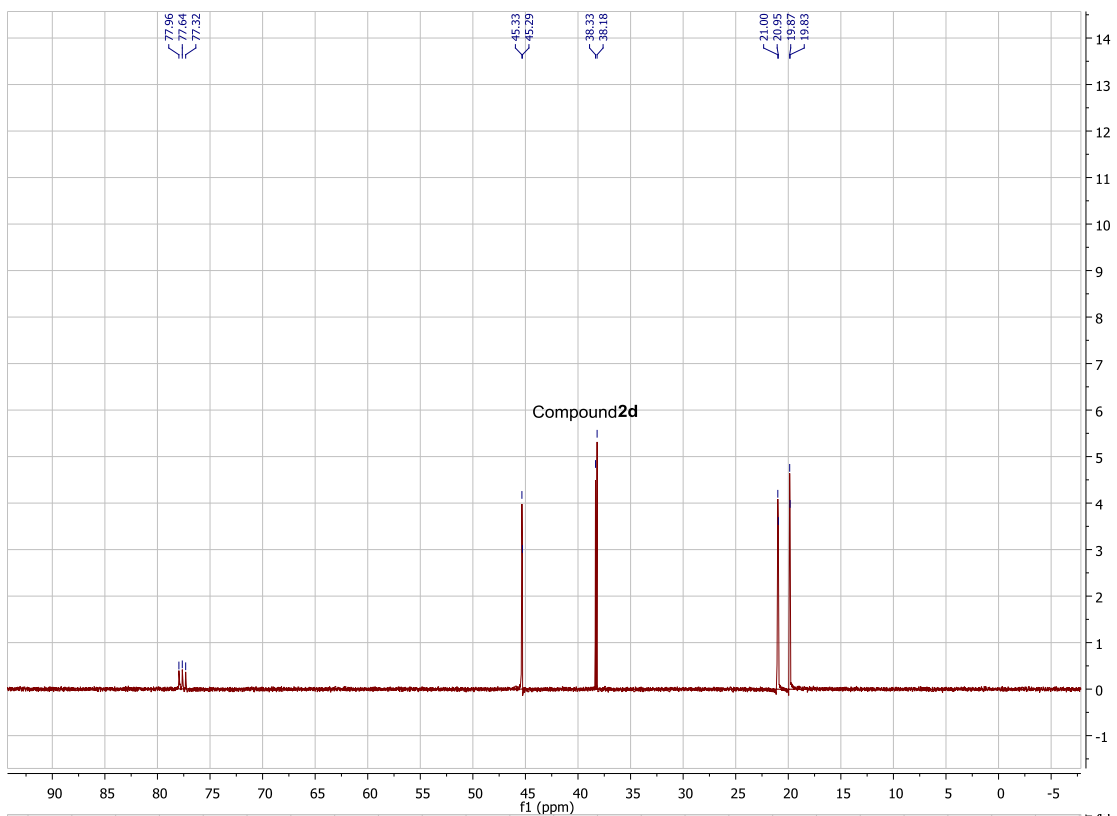
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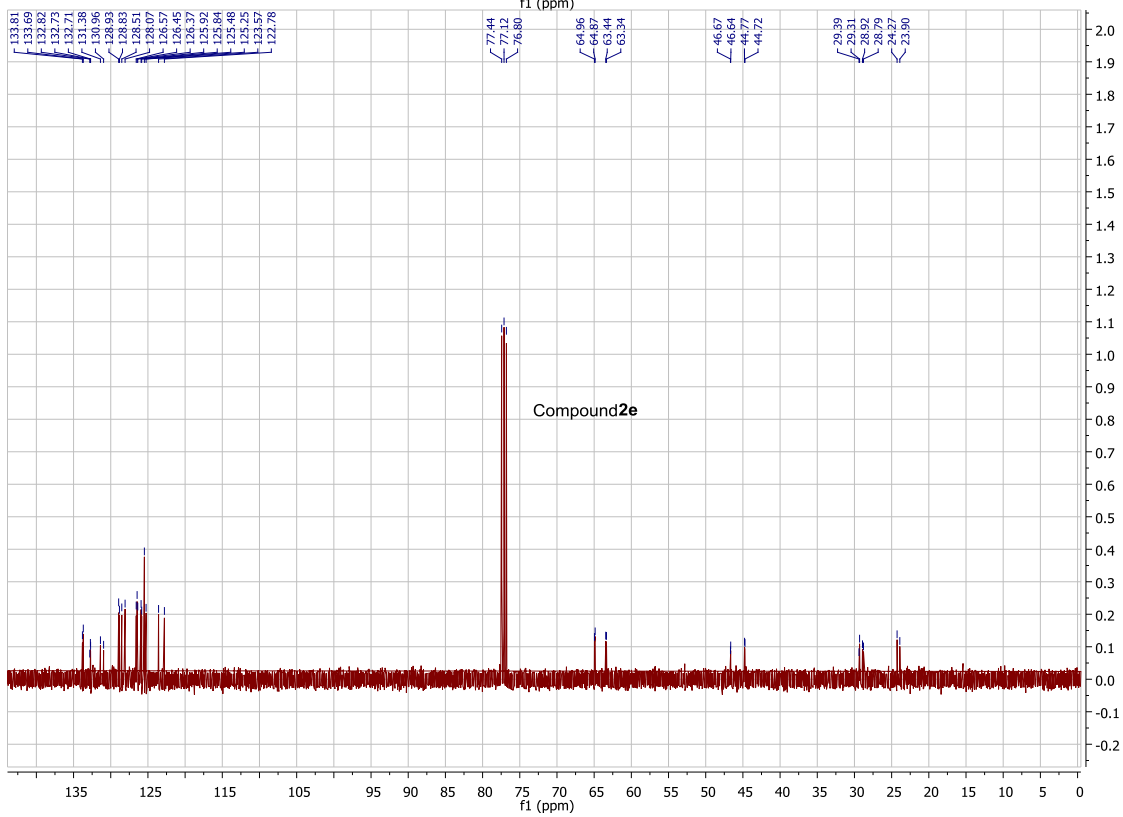
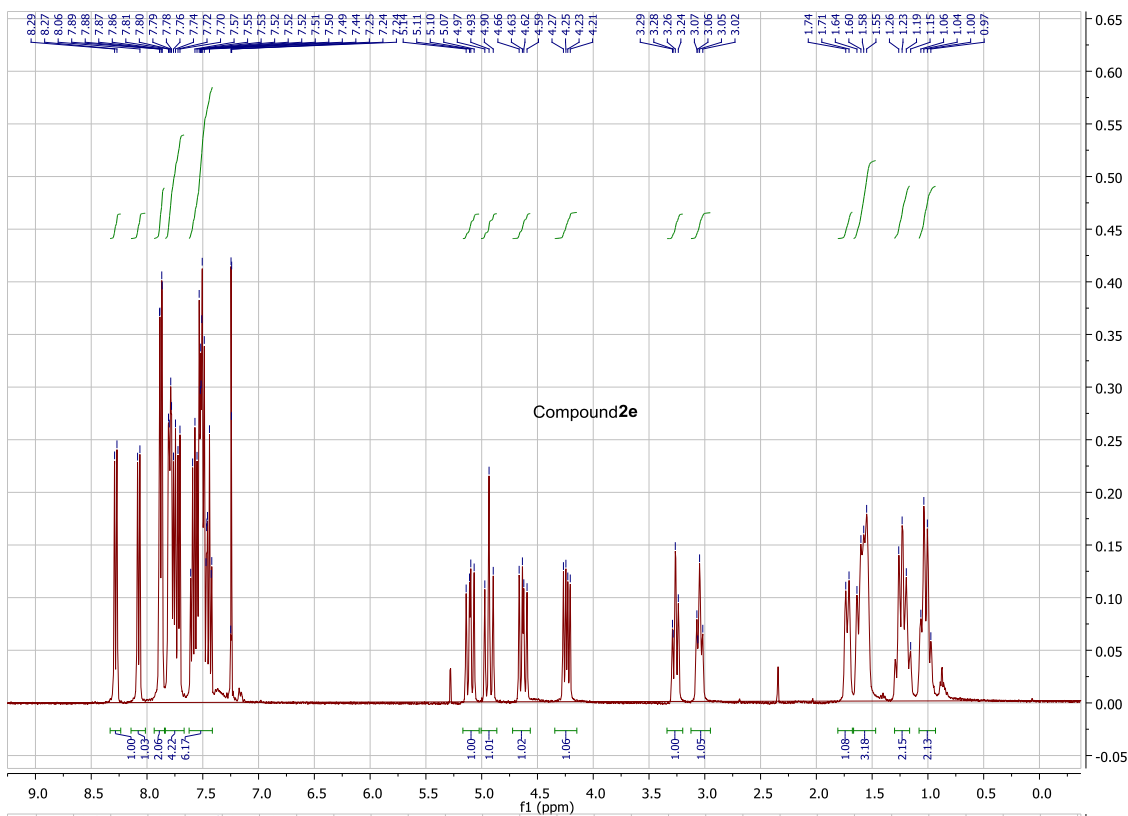


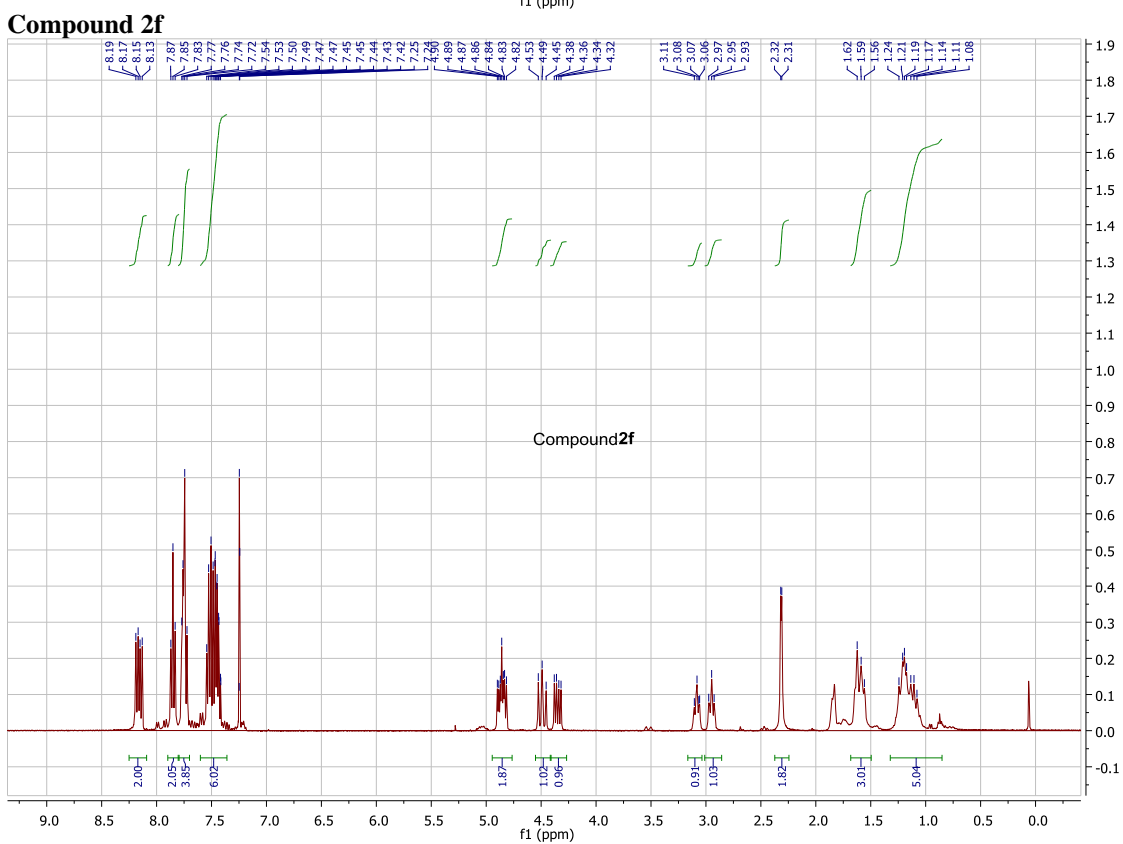
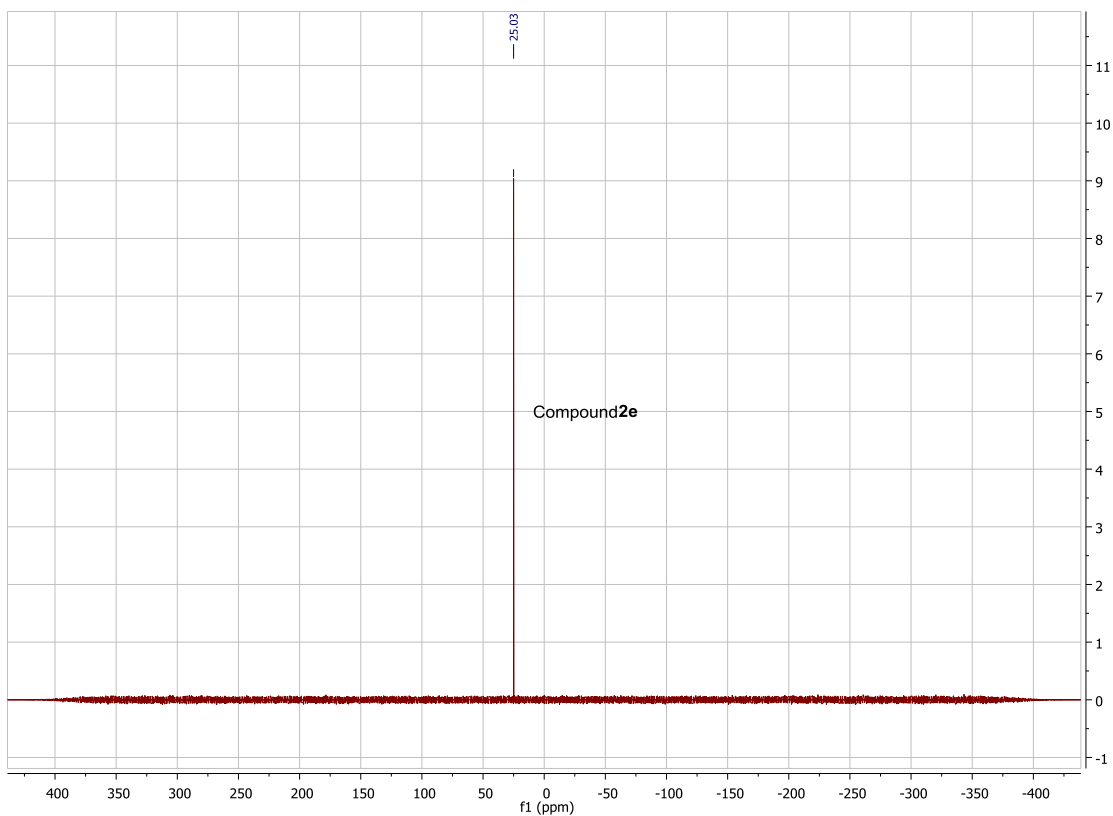
Compound 2d

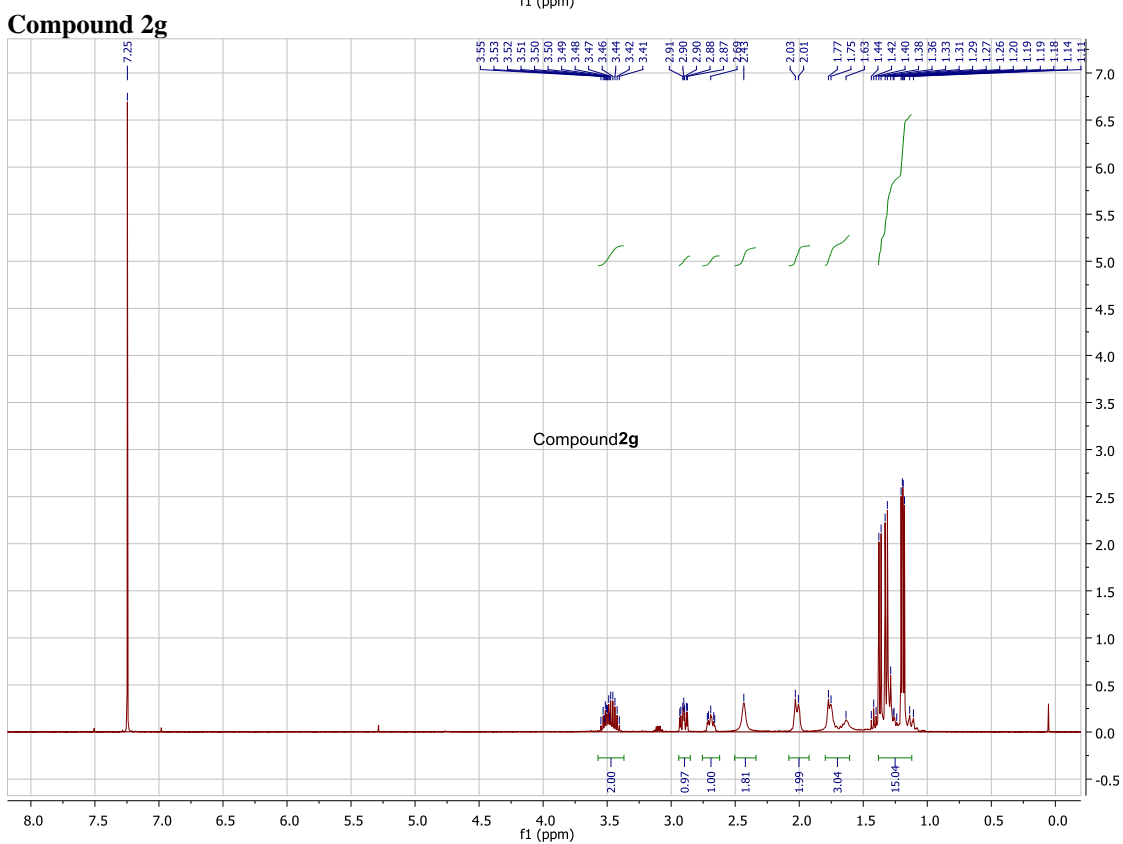
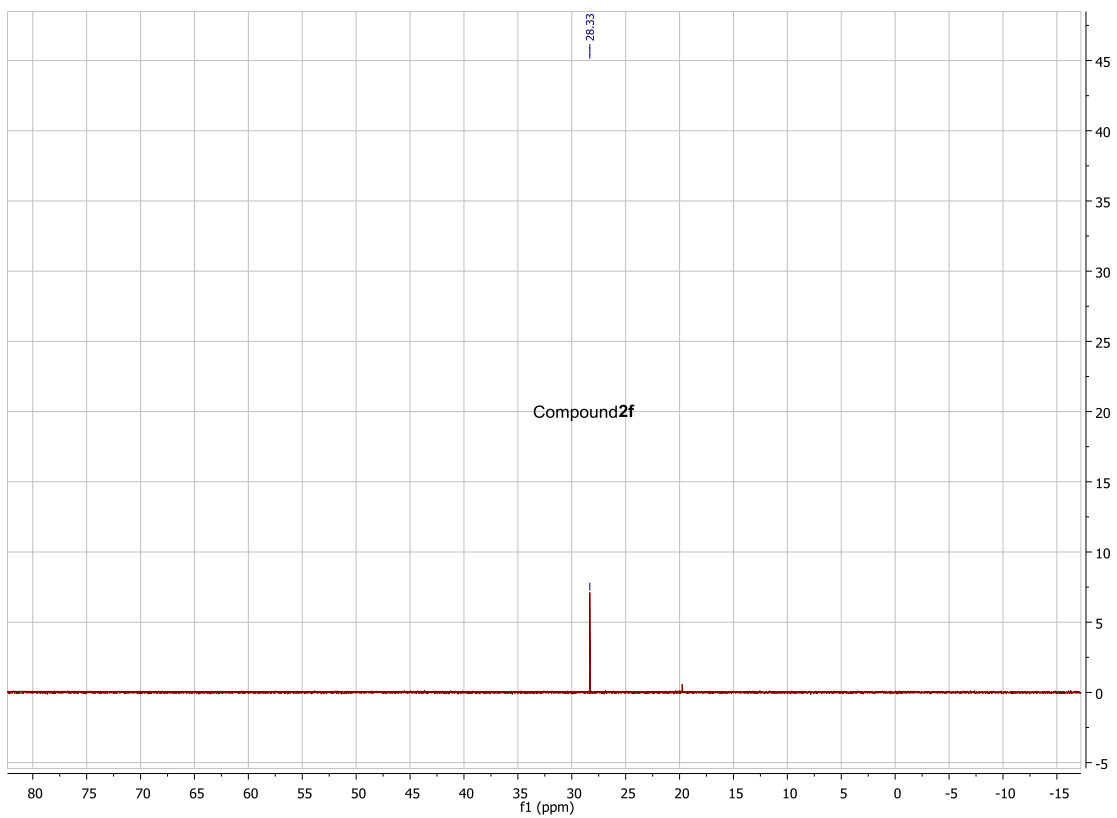


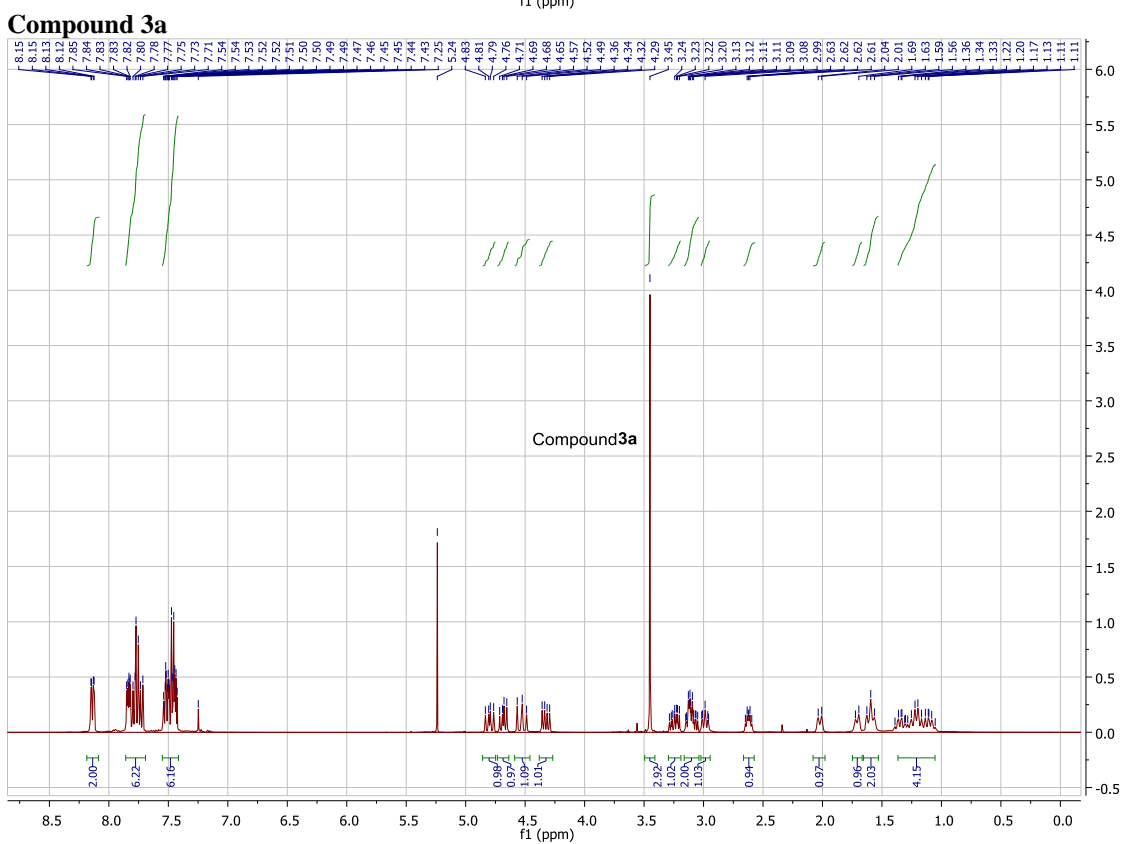
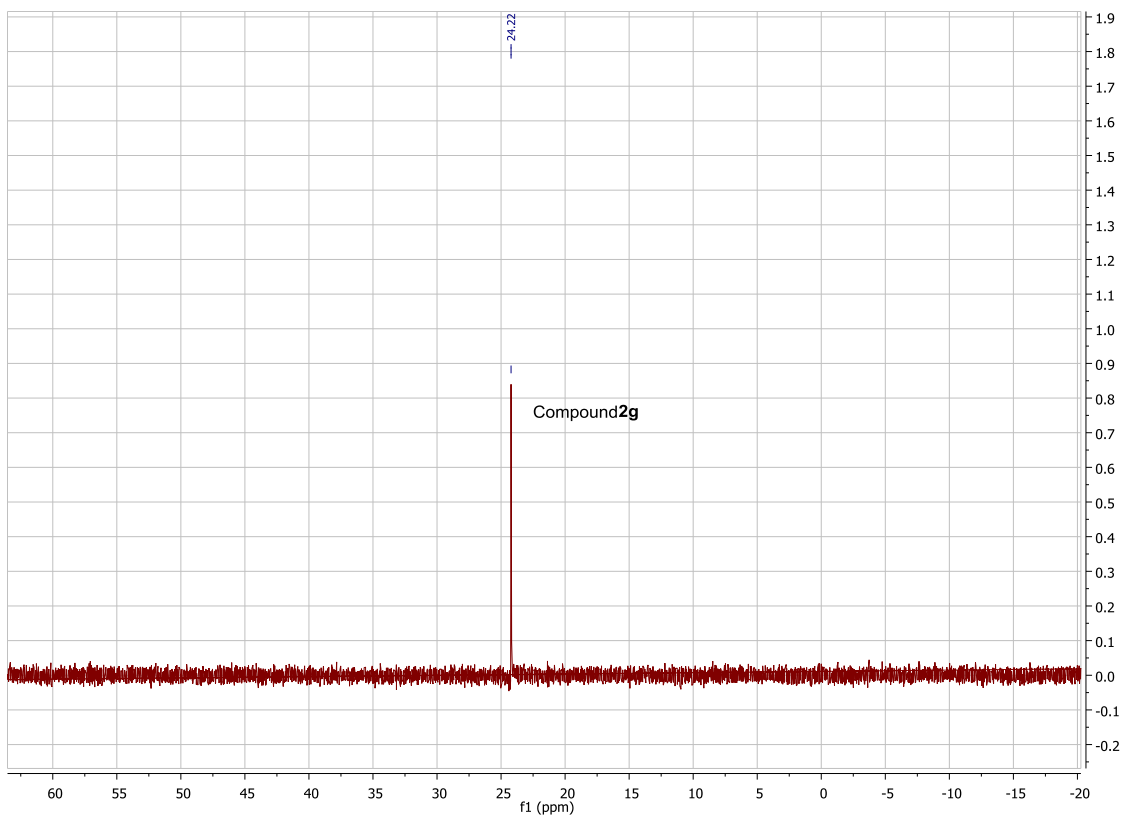


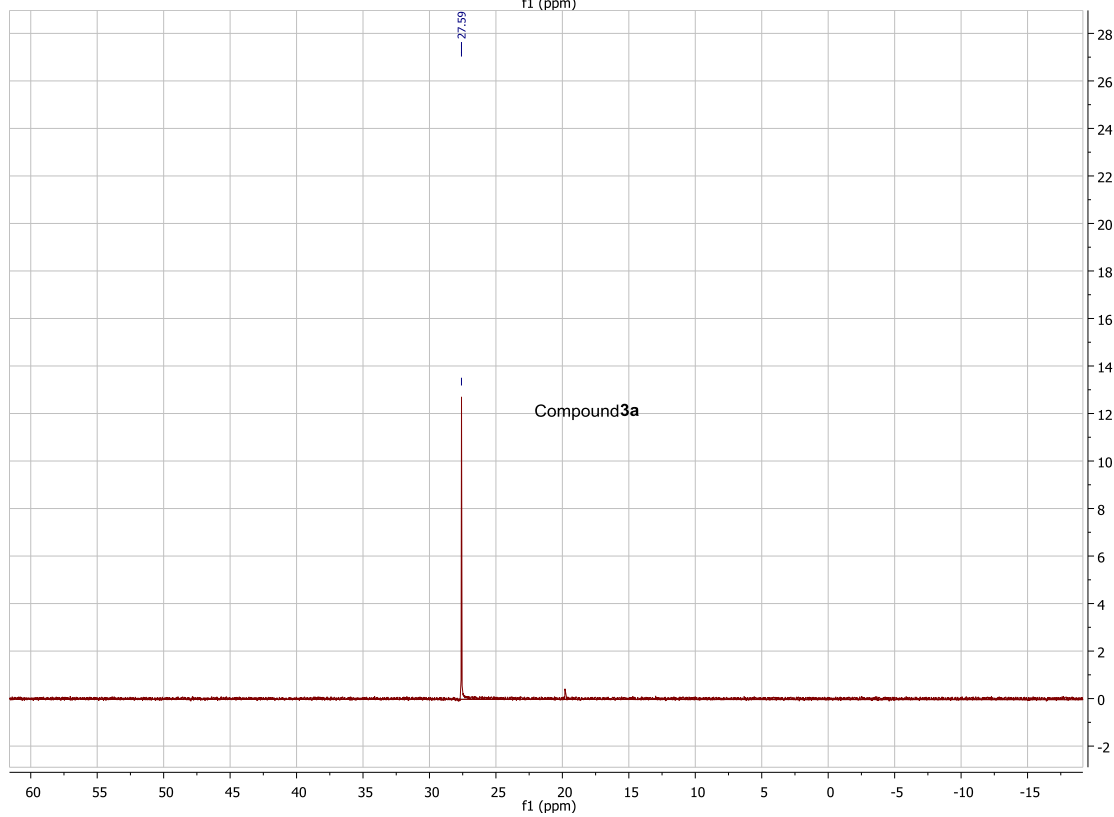
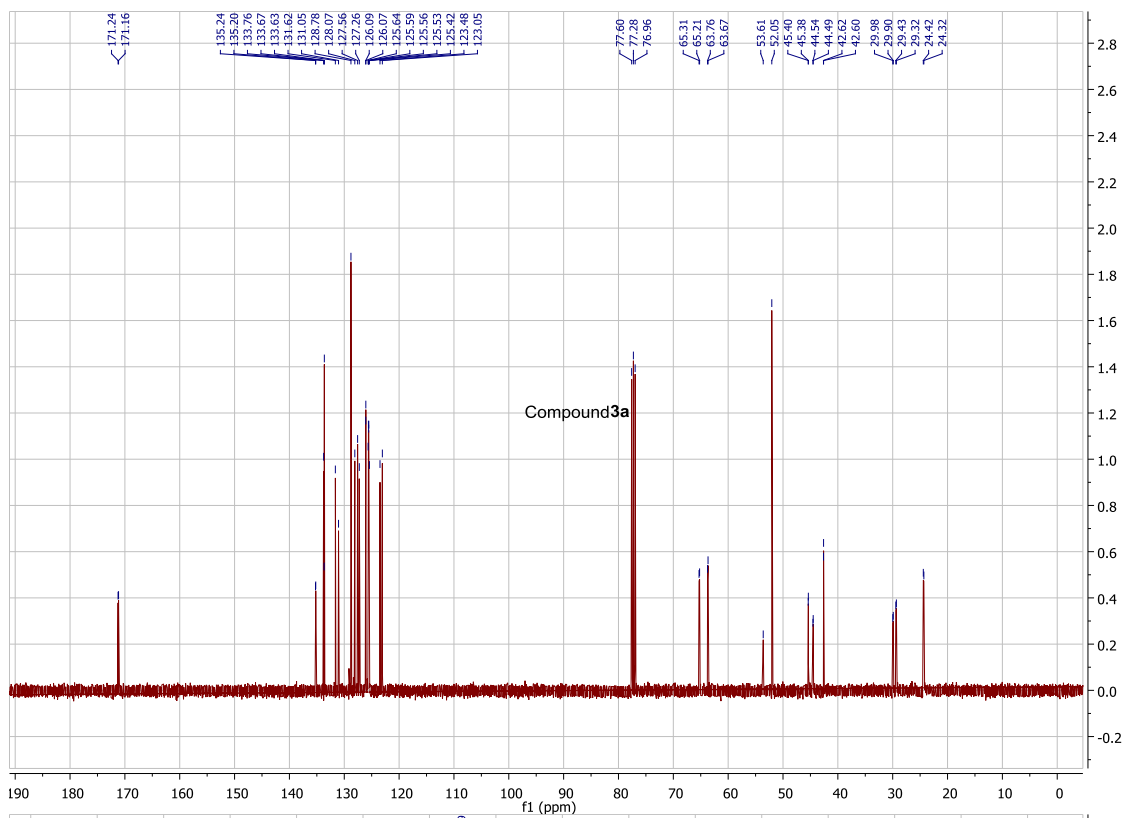
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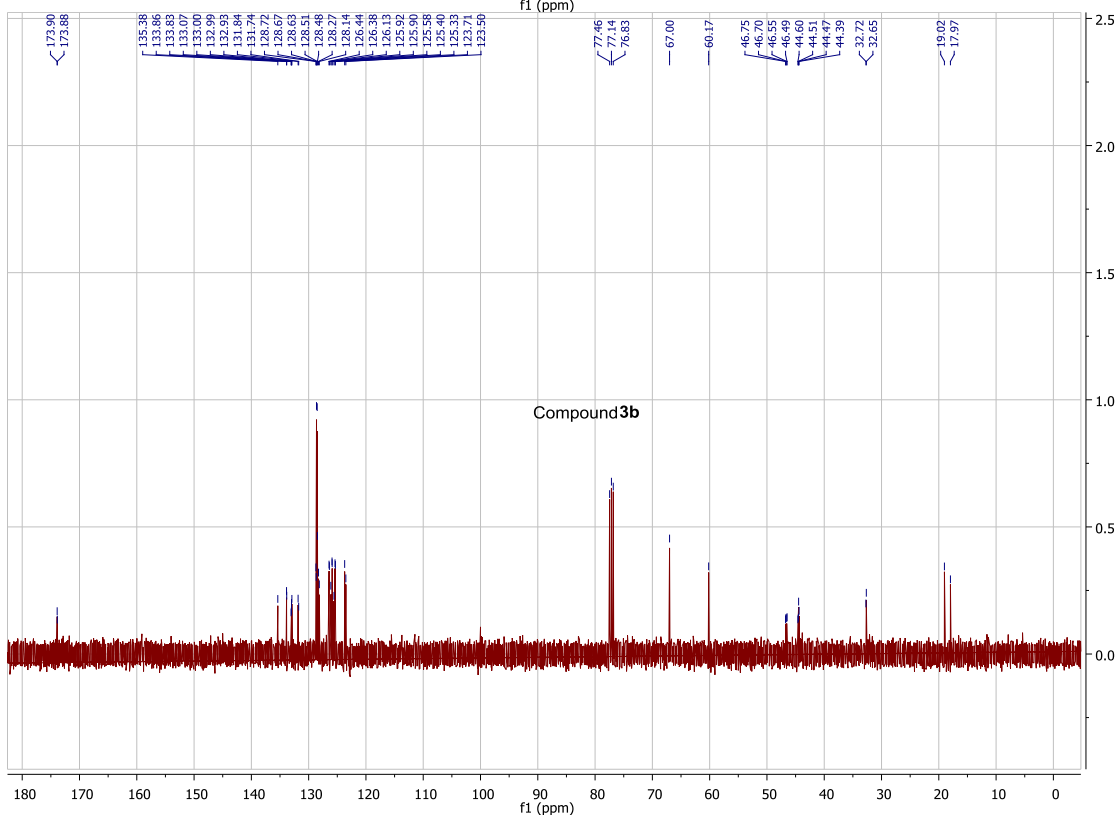
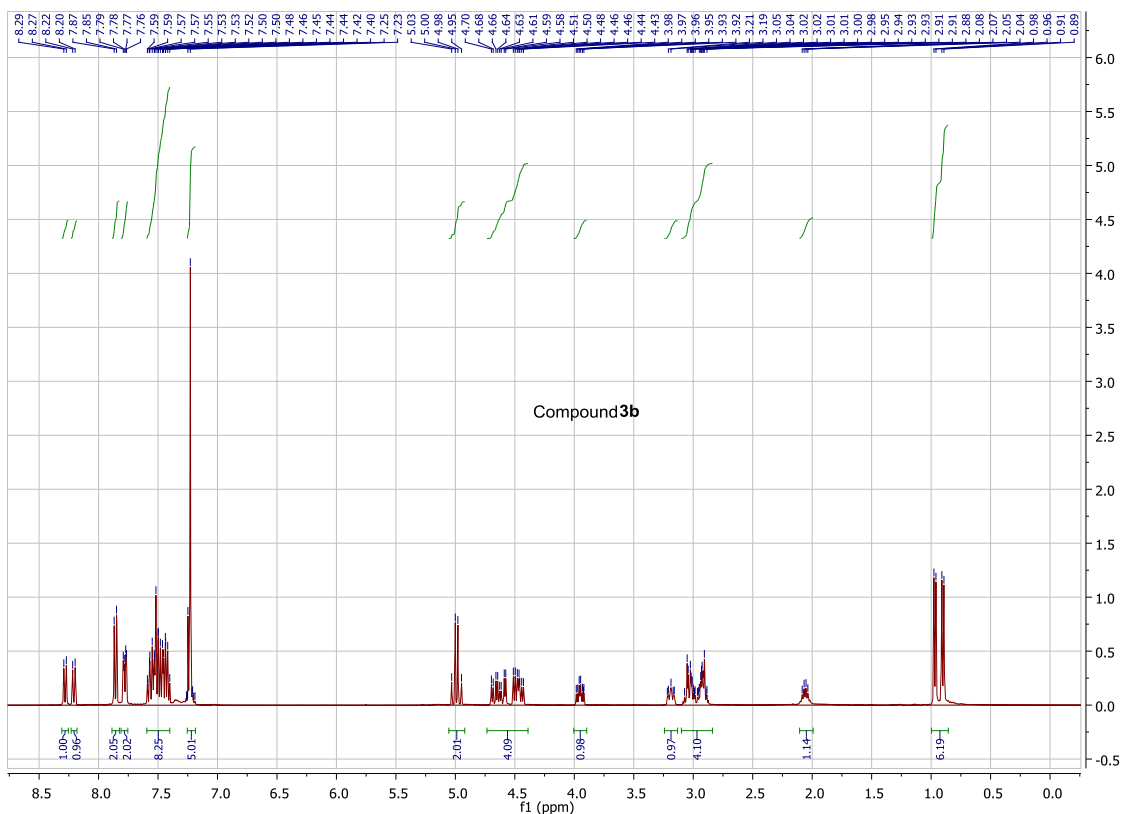


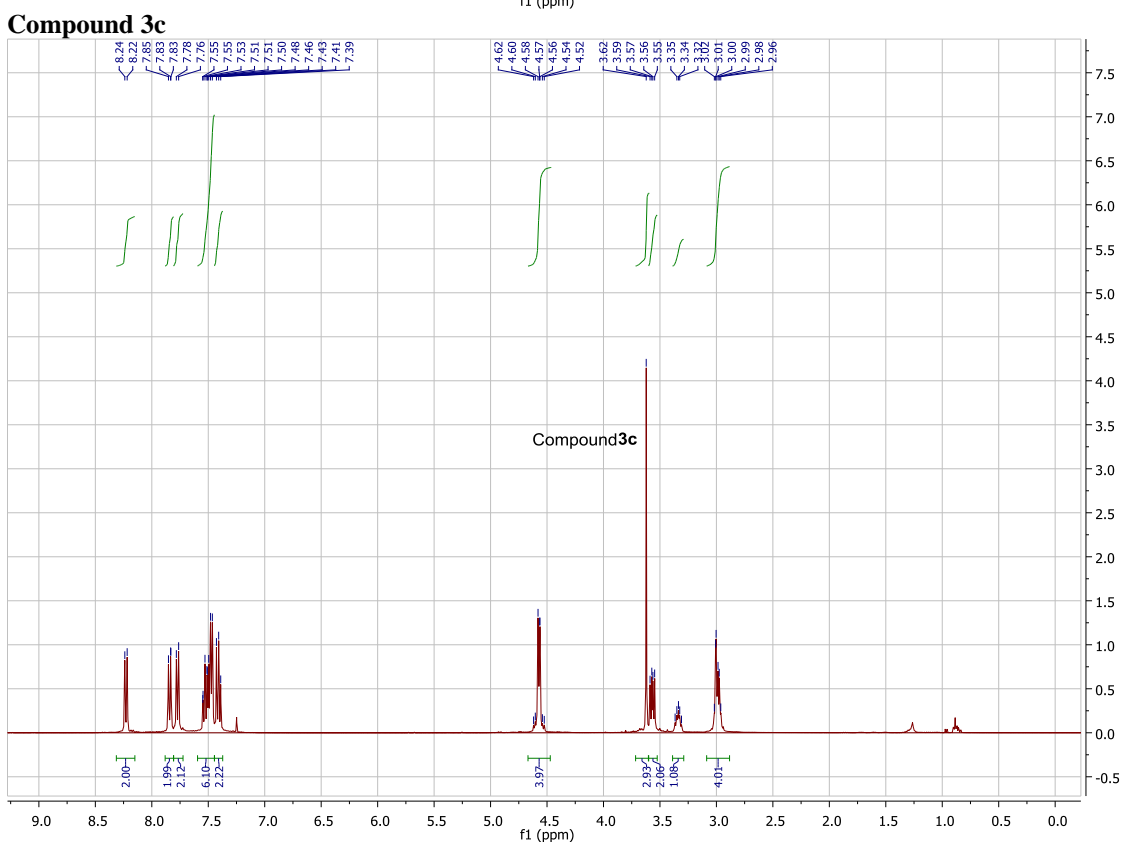
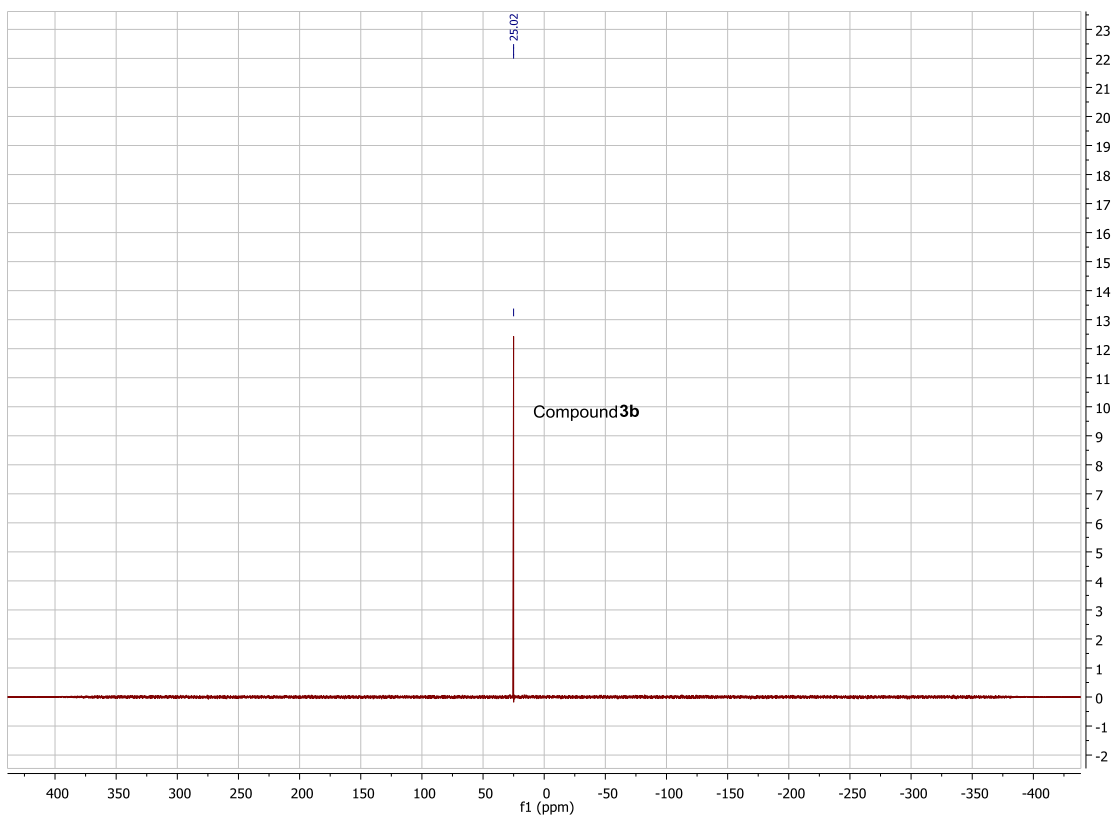


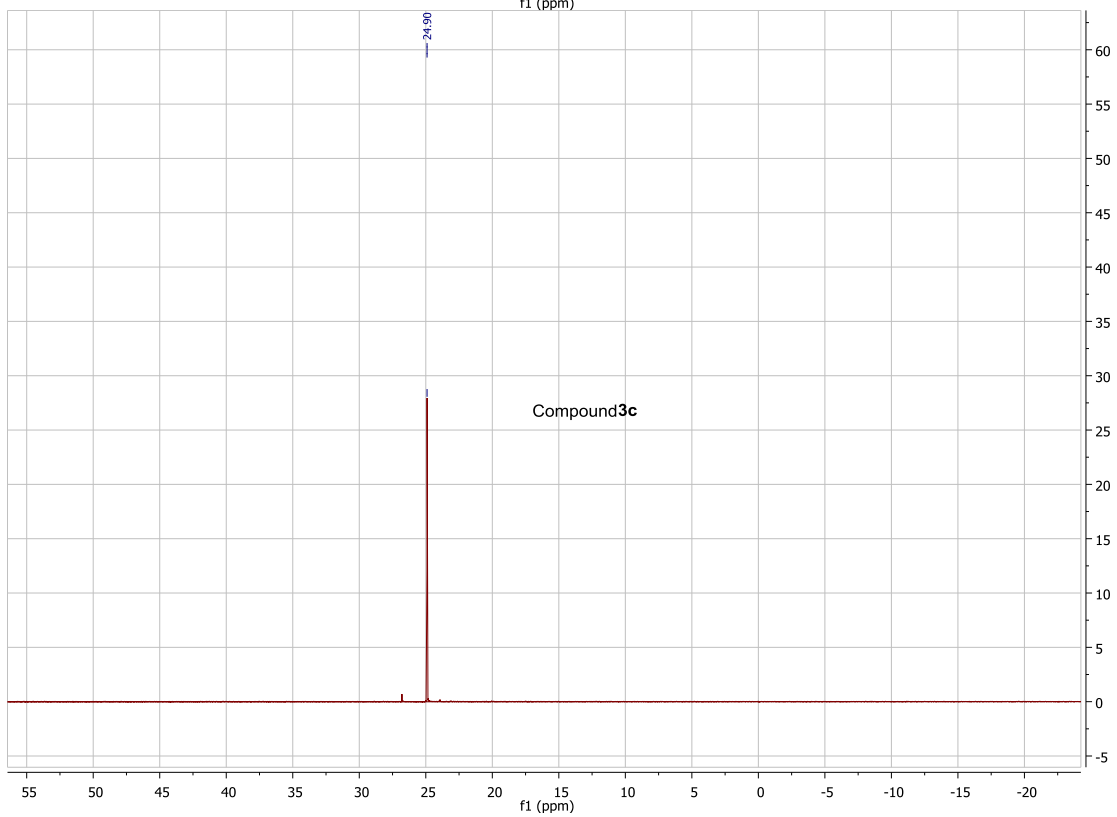
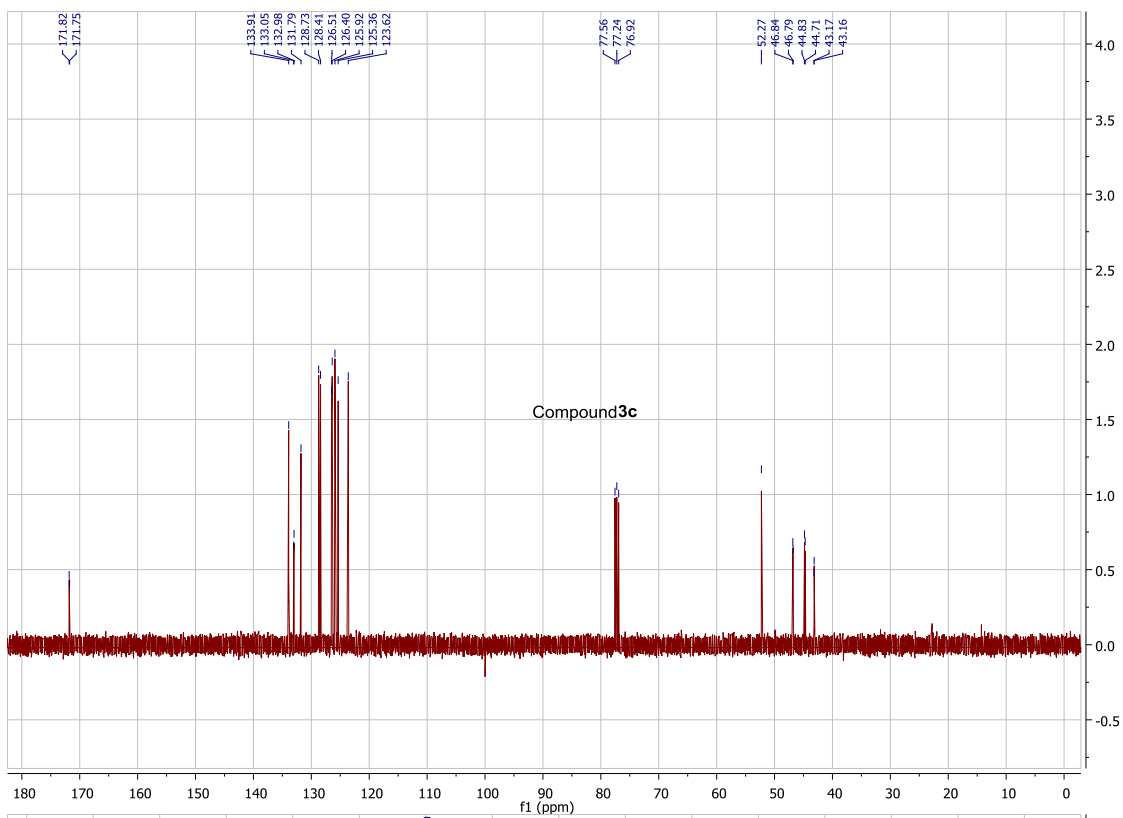




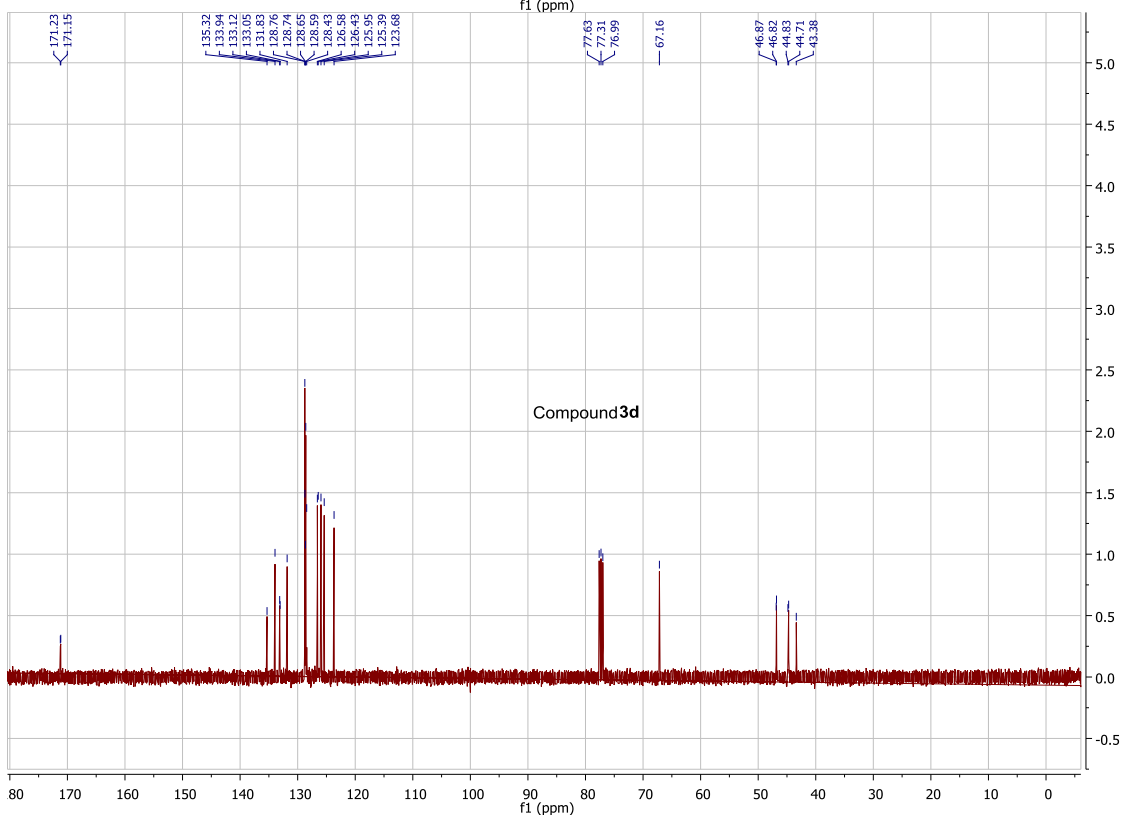
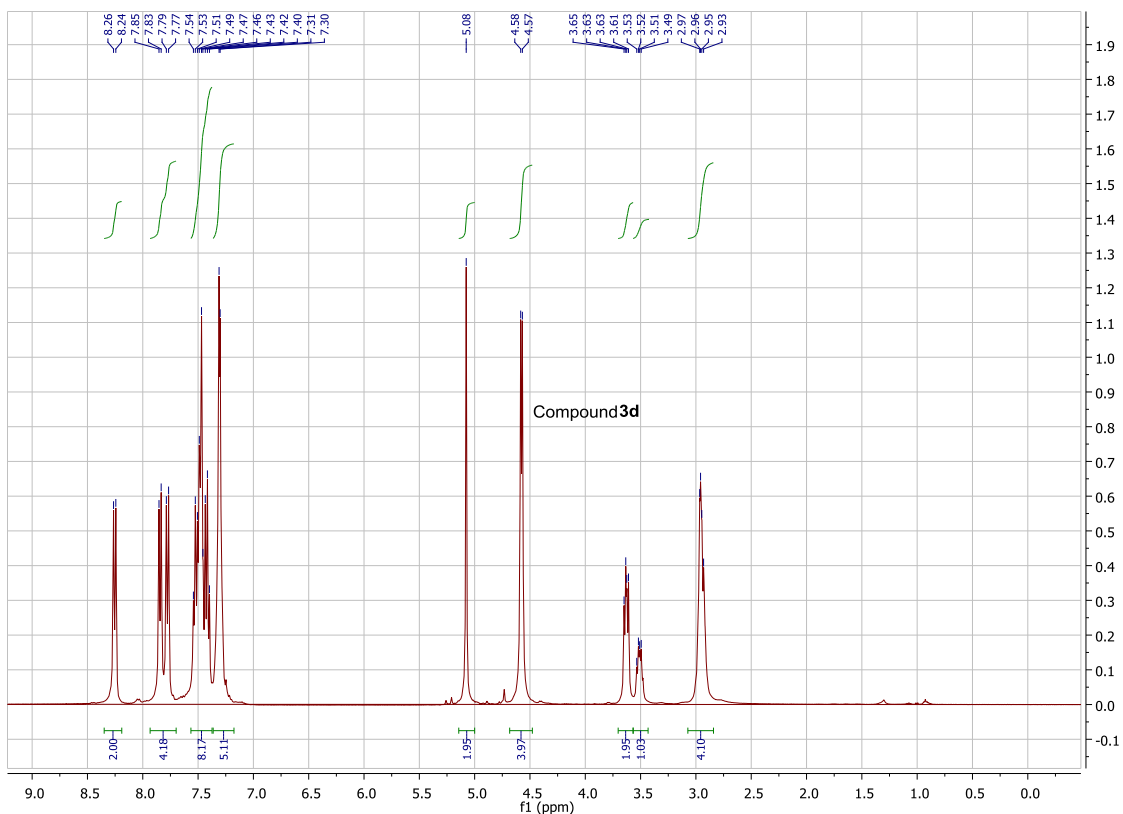
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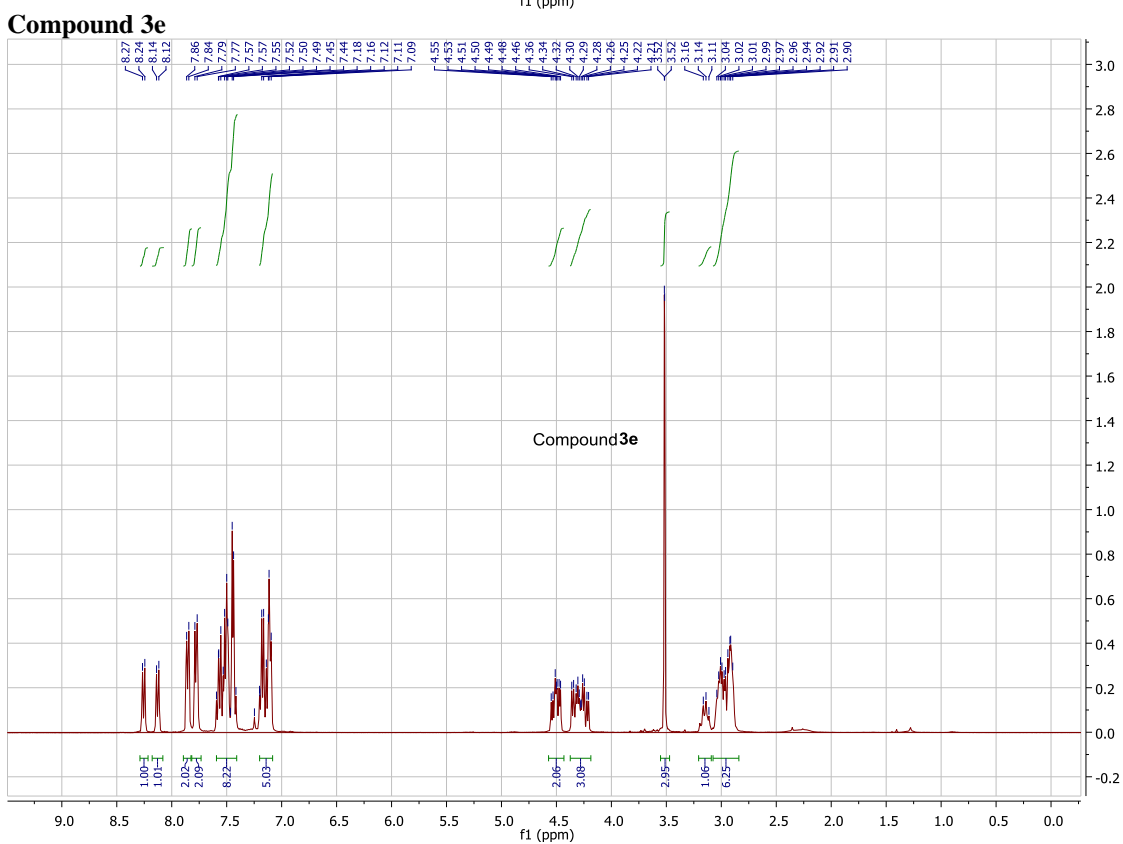
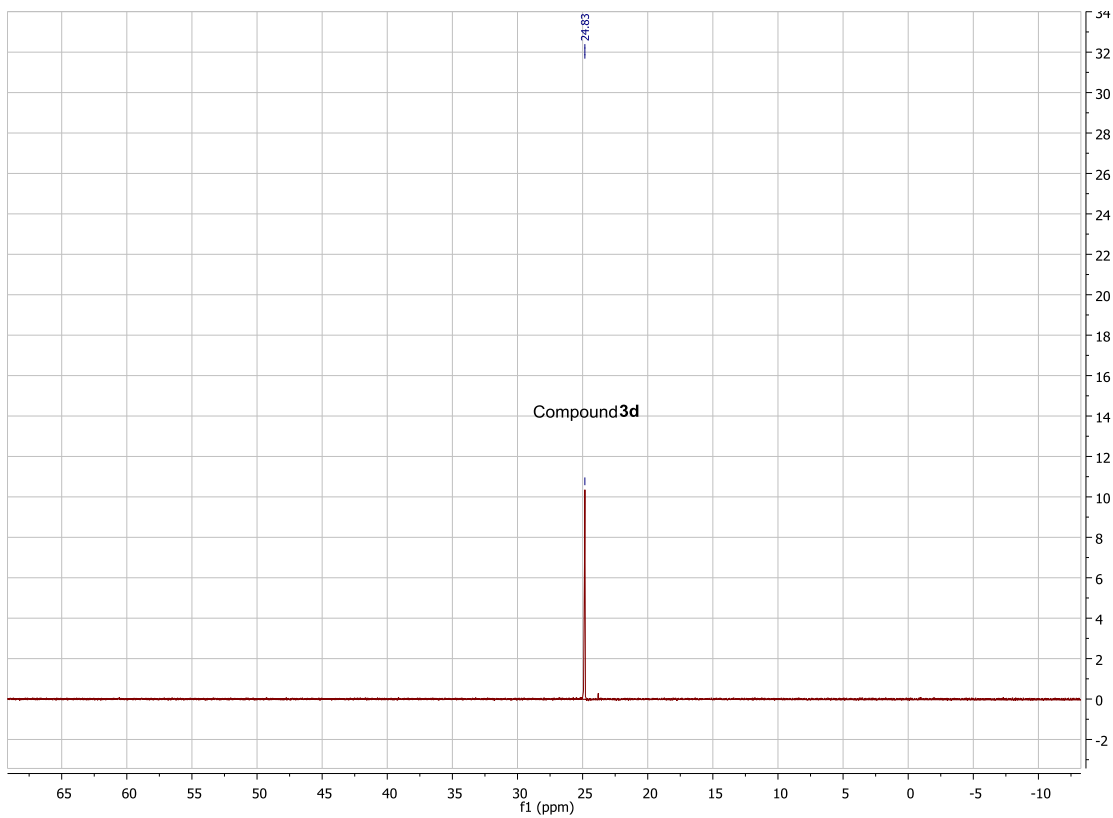


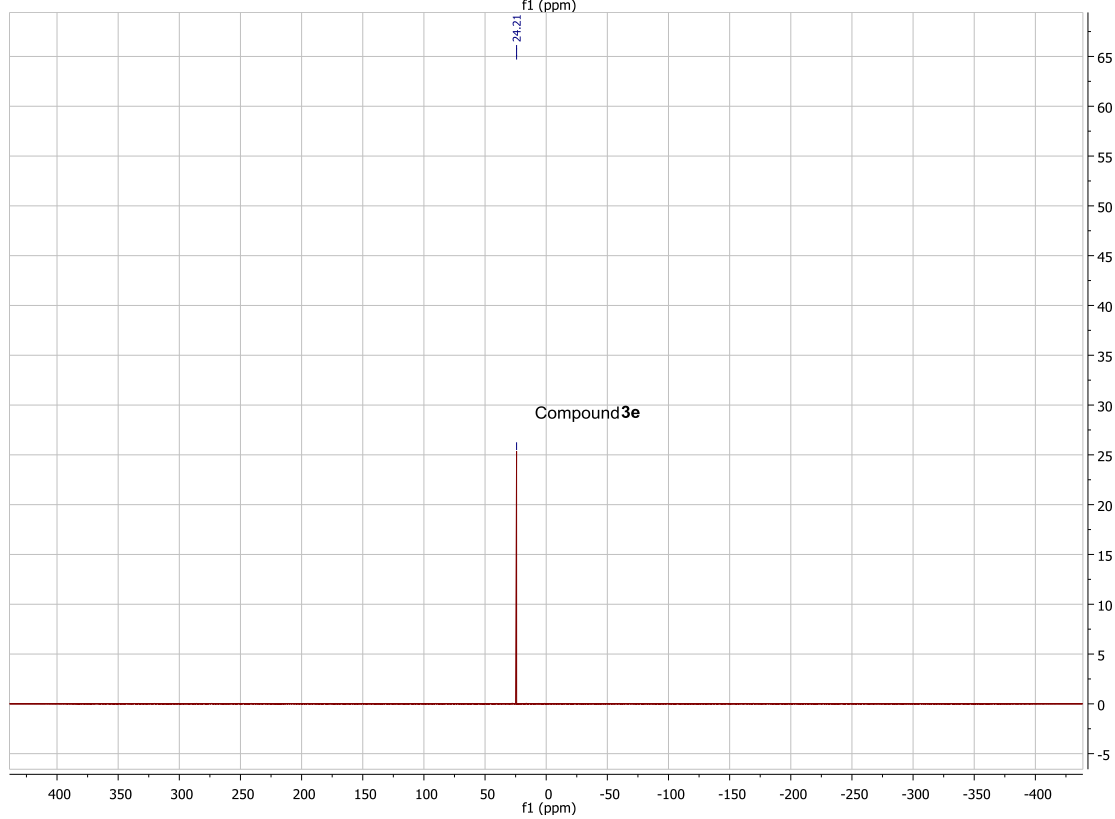
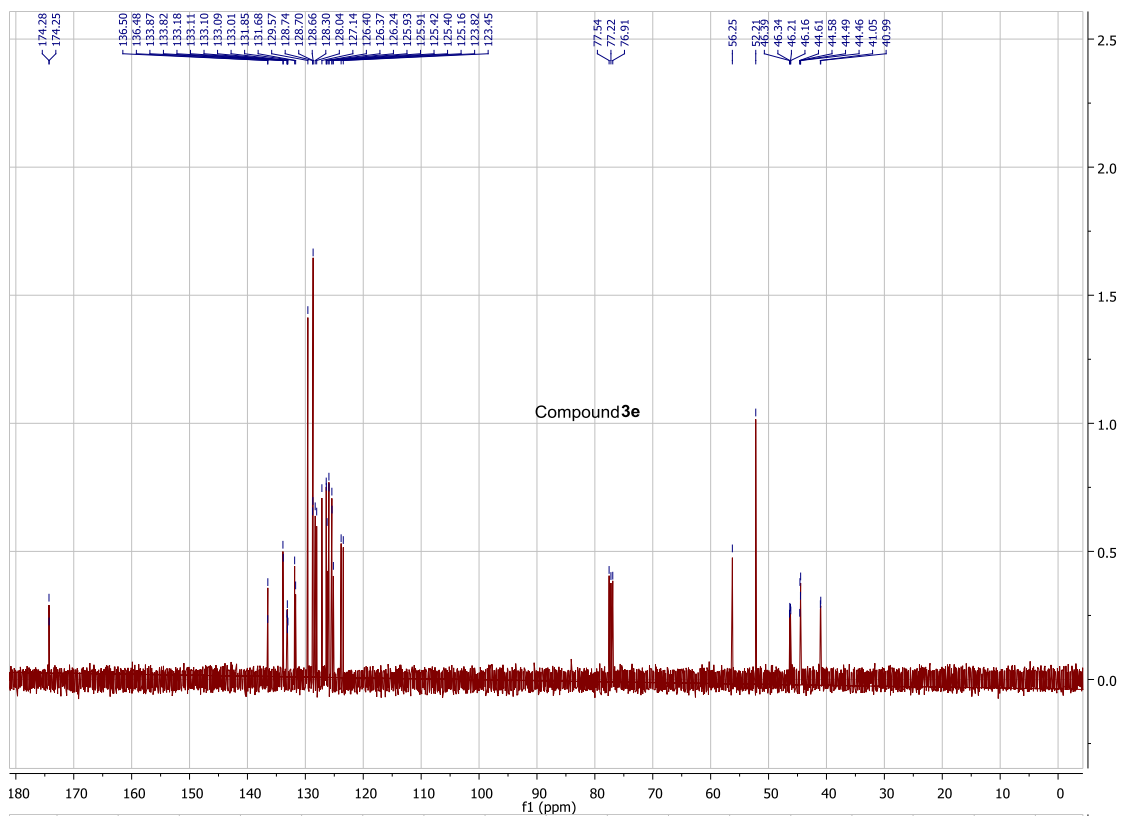




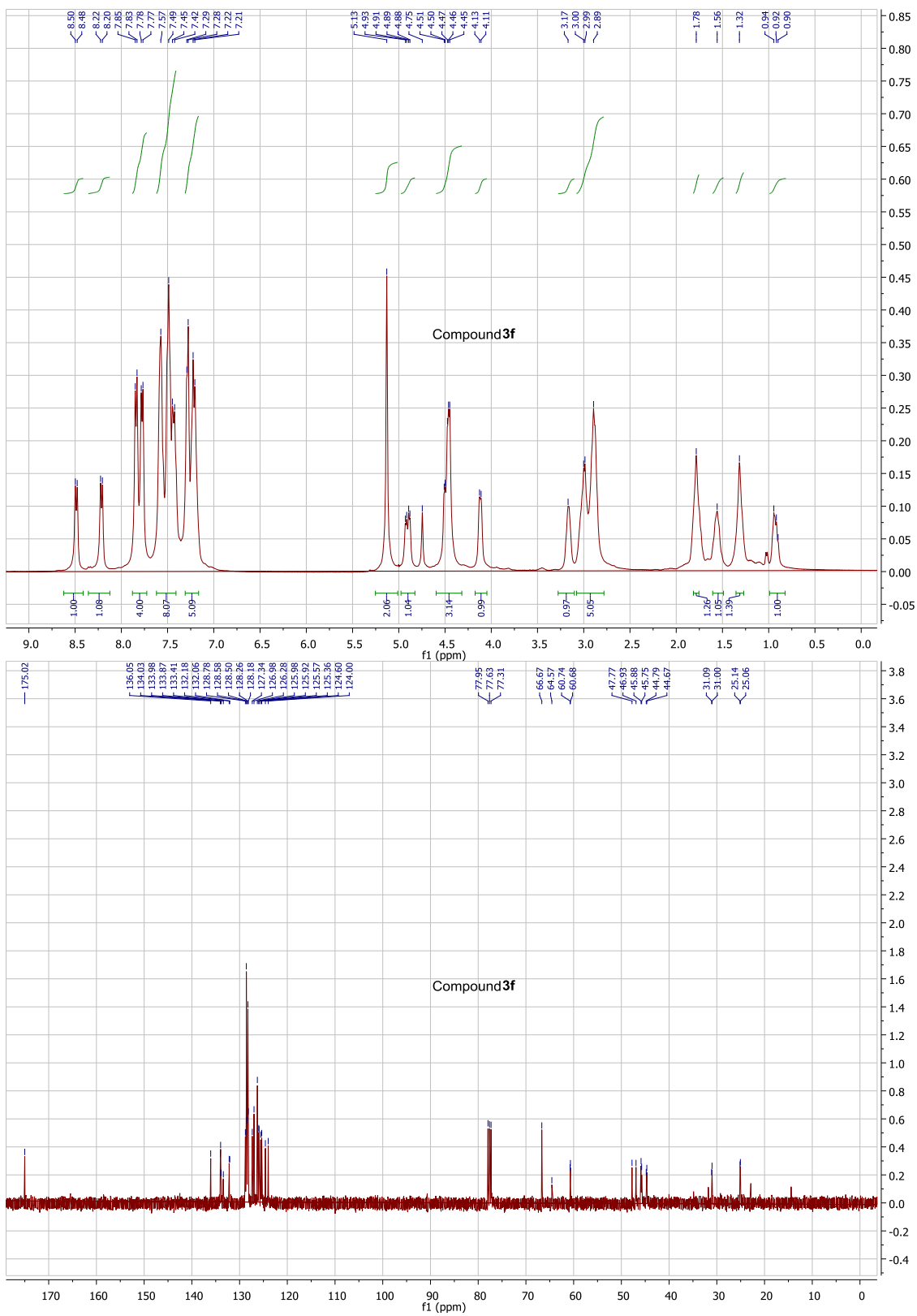
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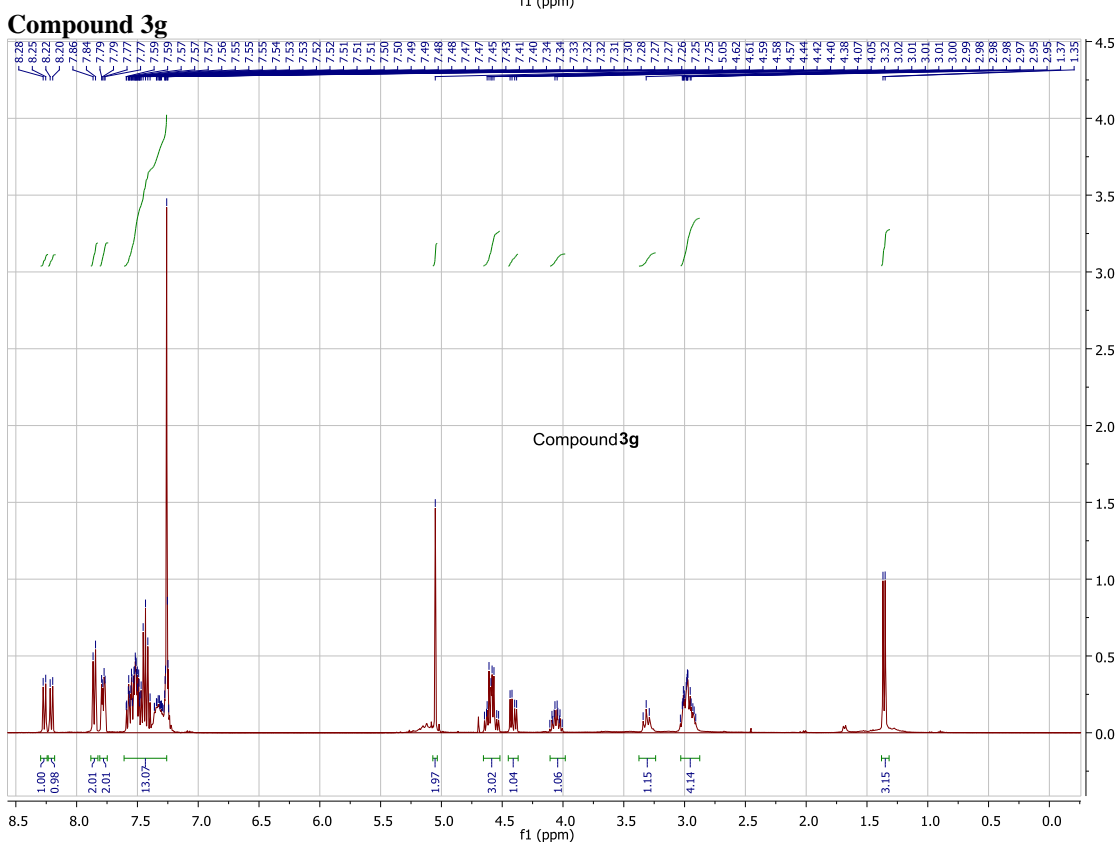
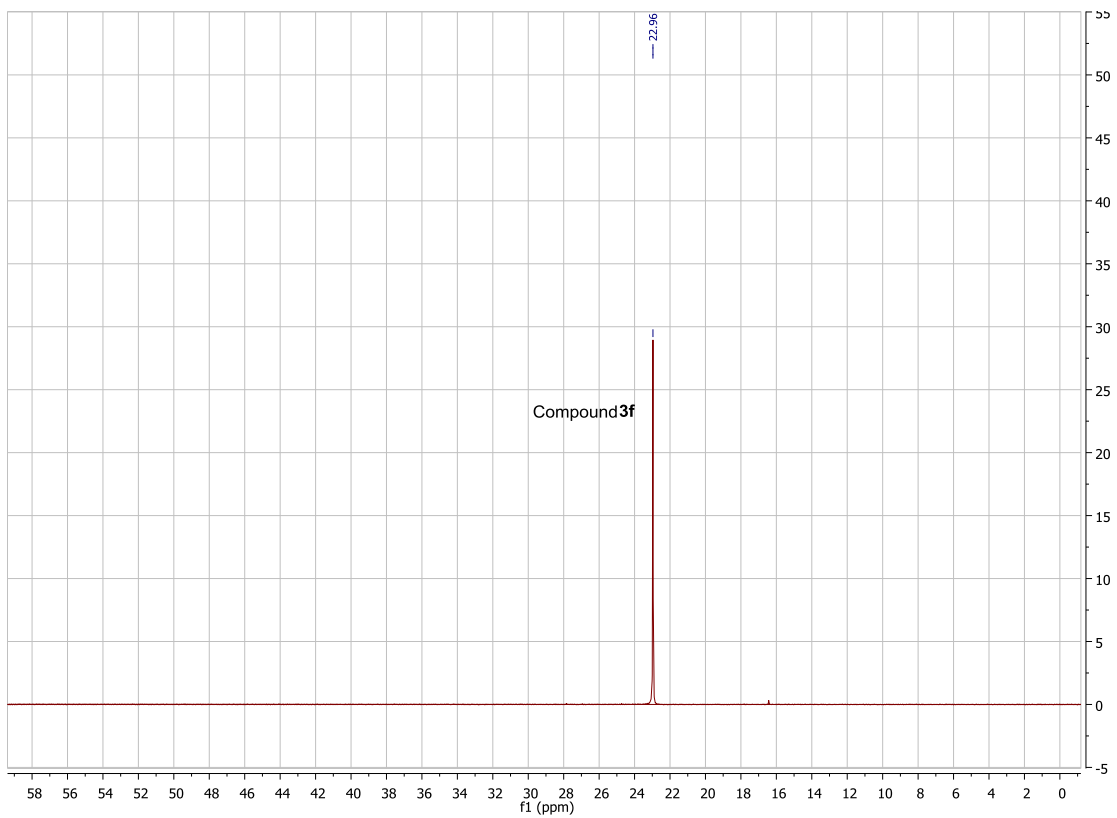


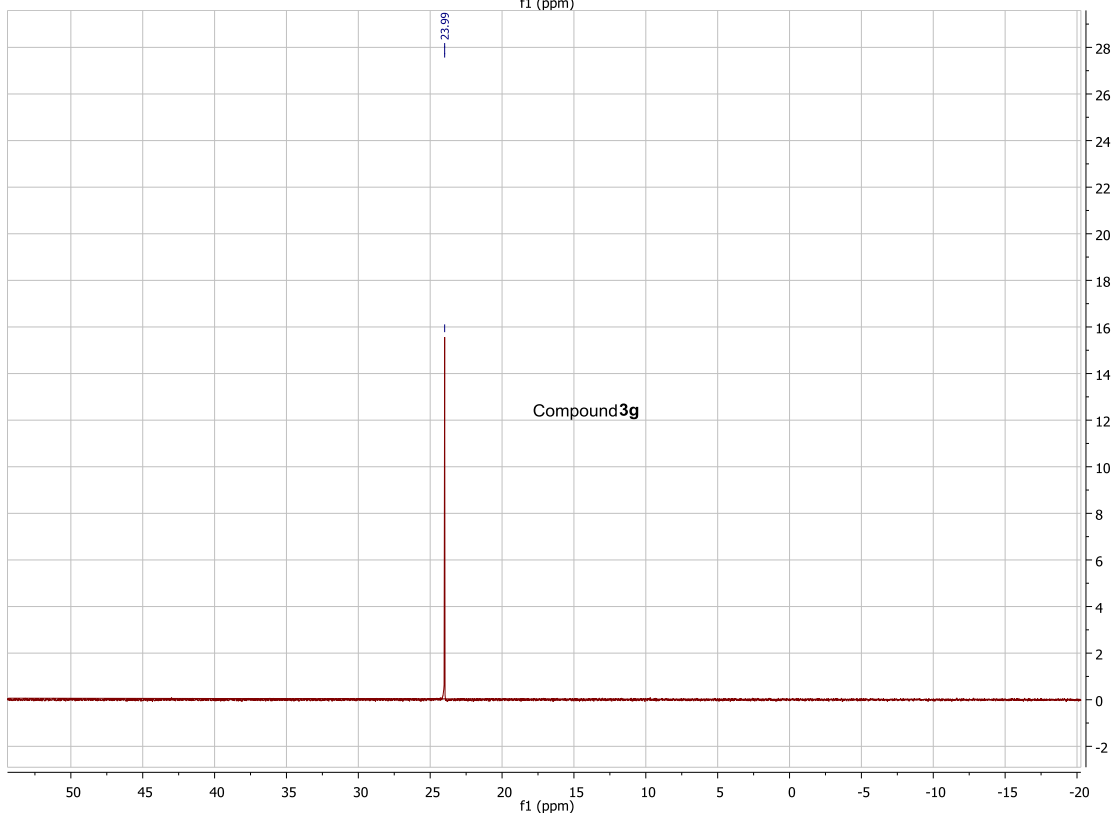
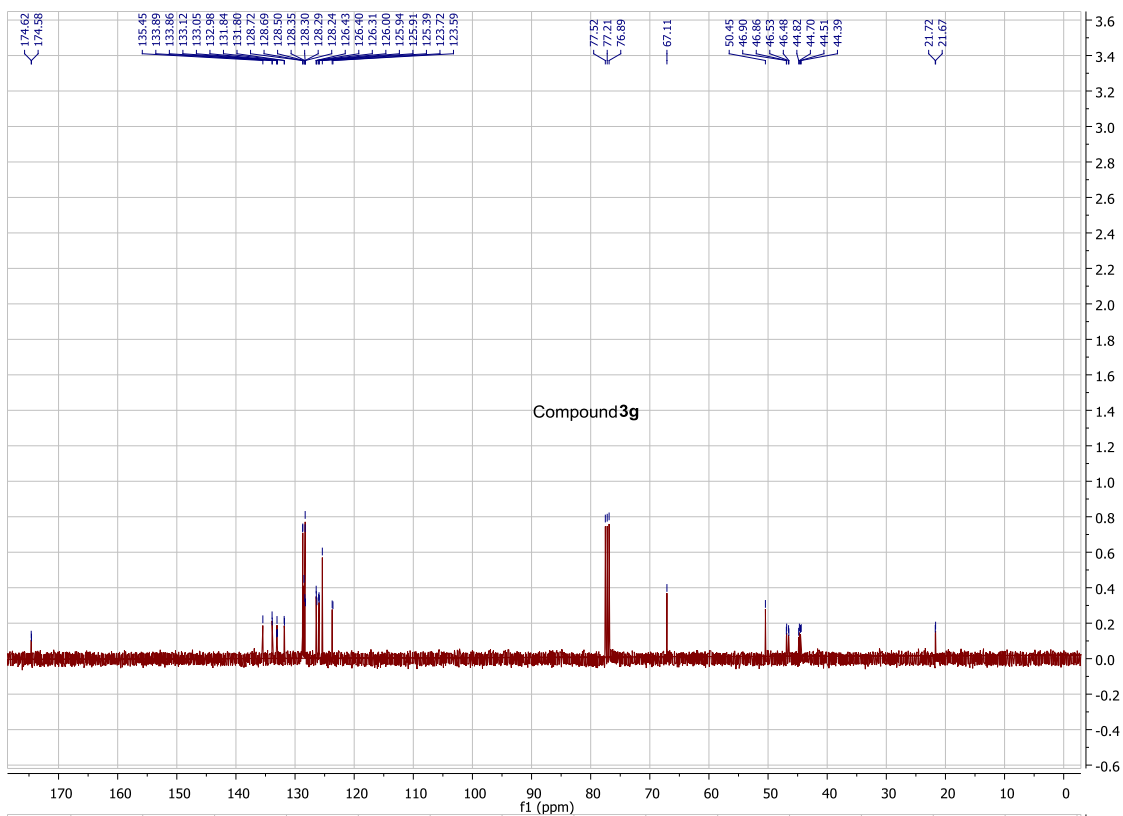




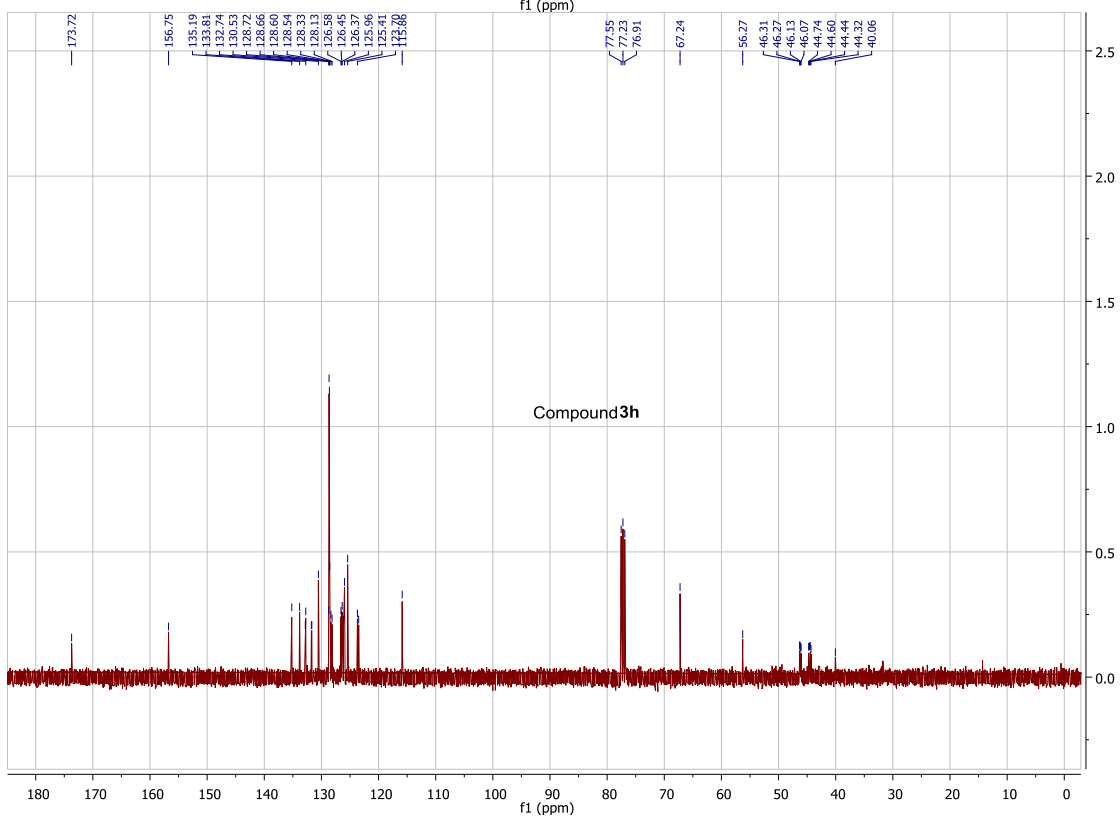
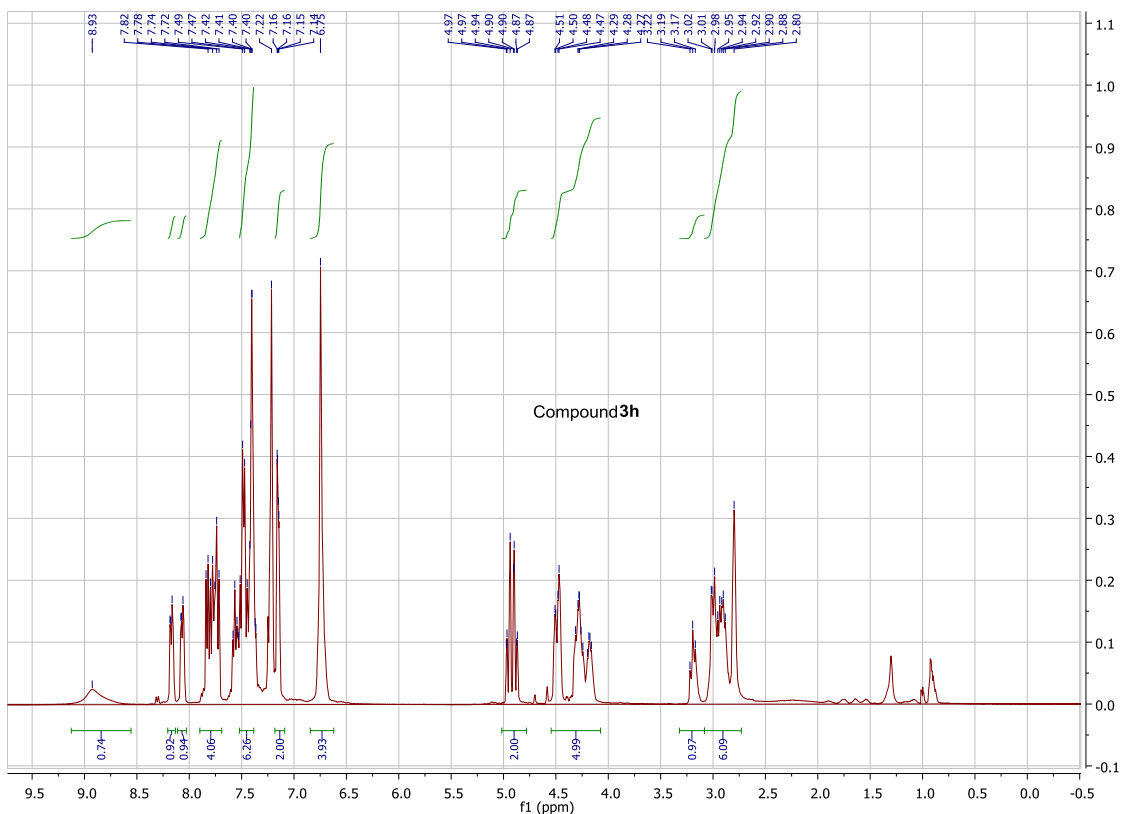
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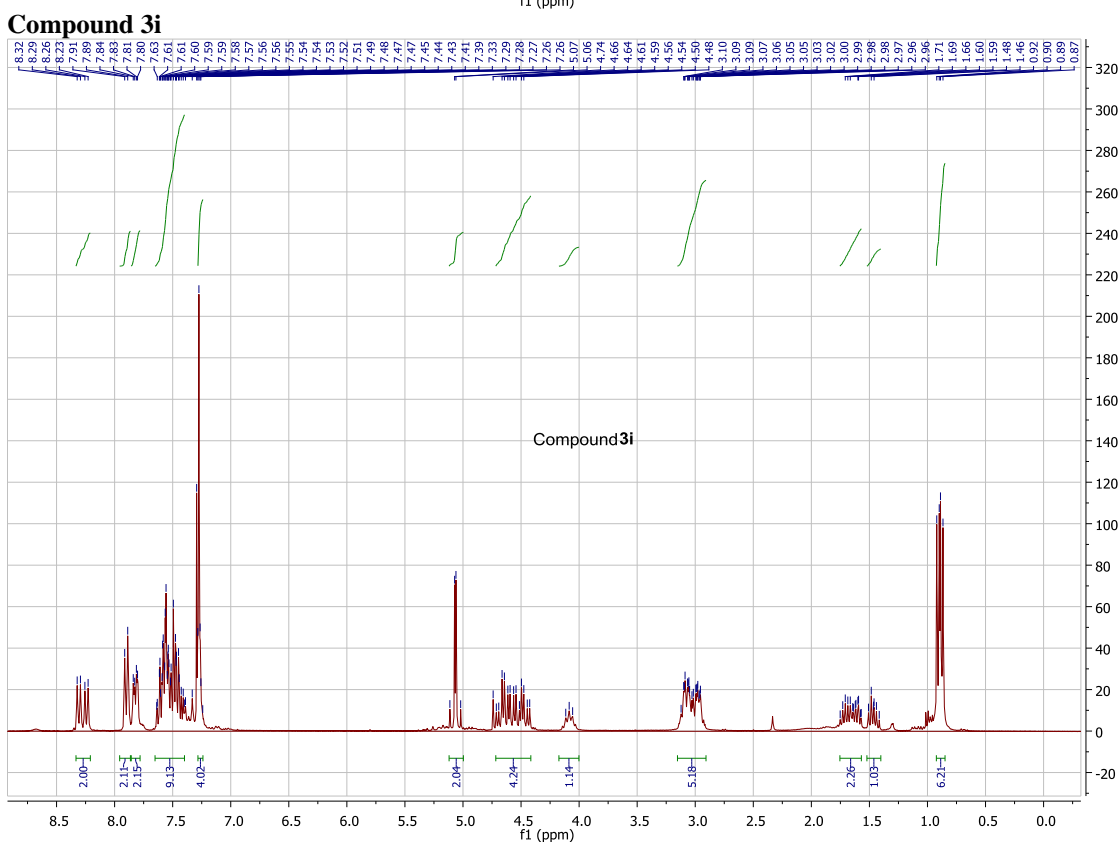
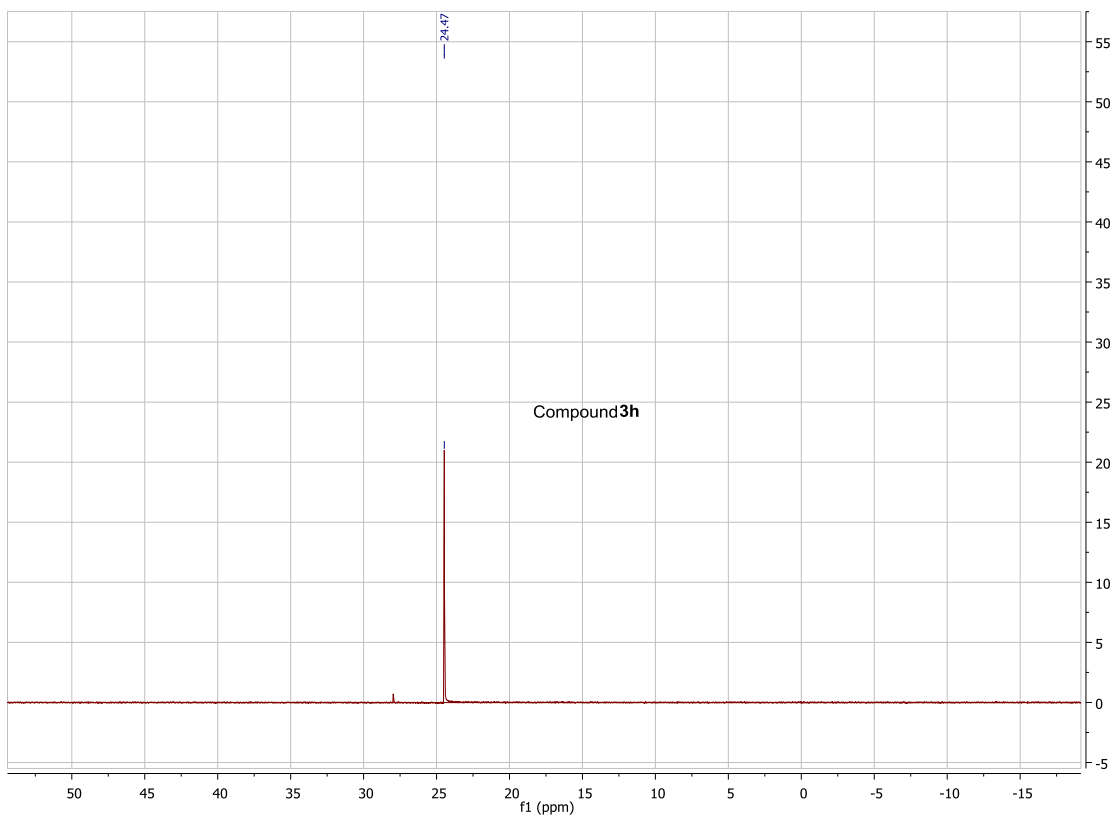


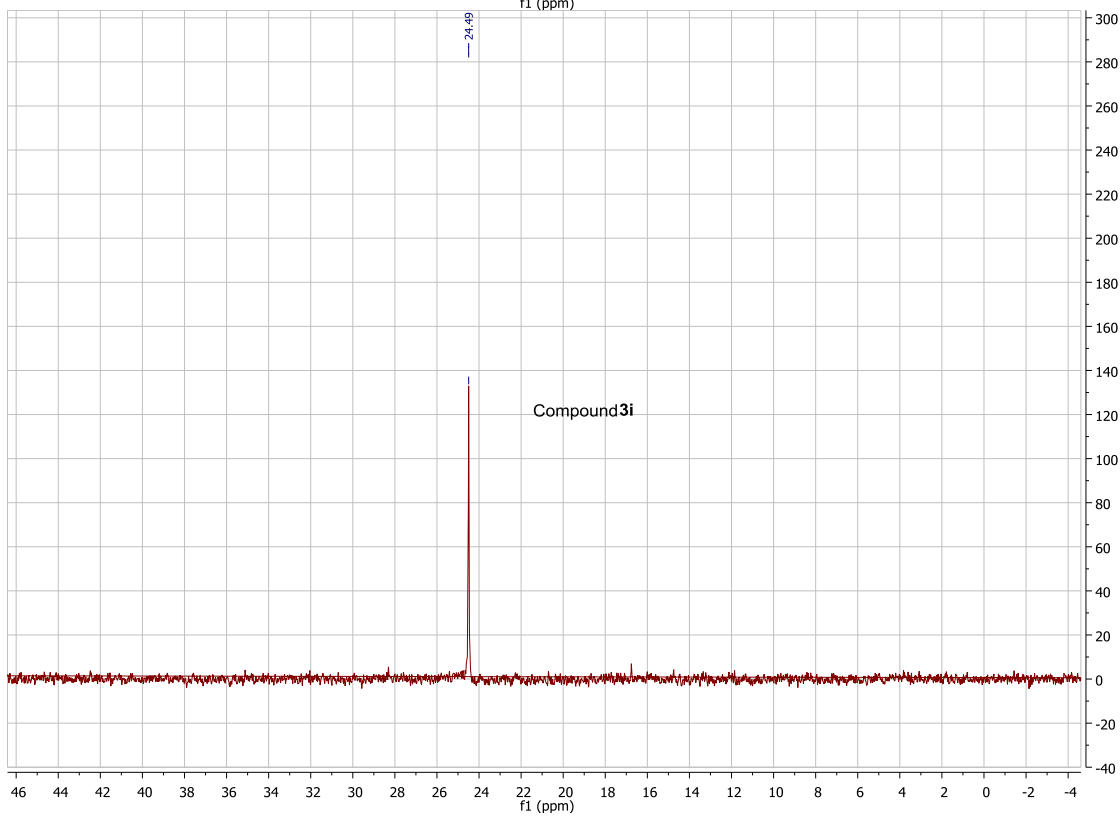
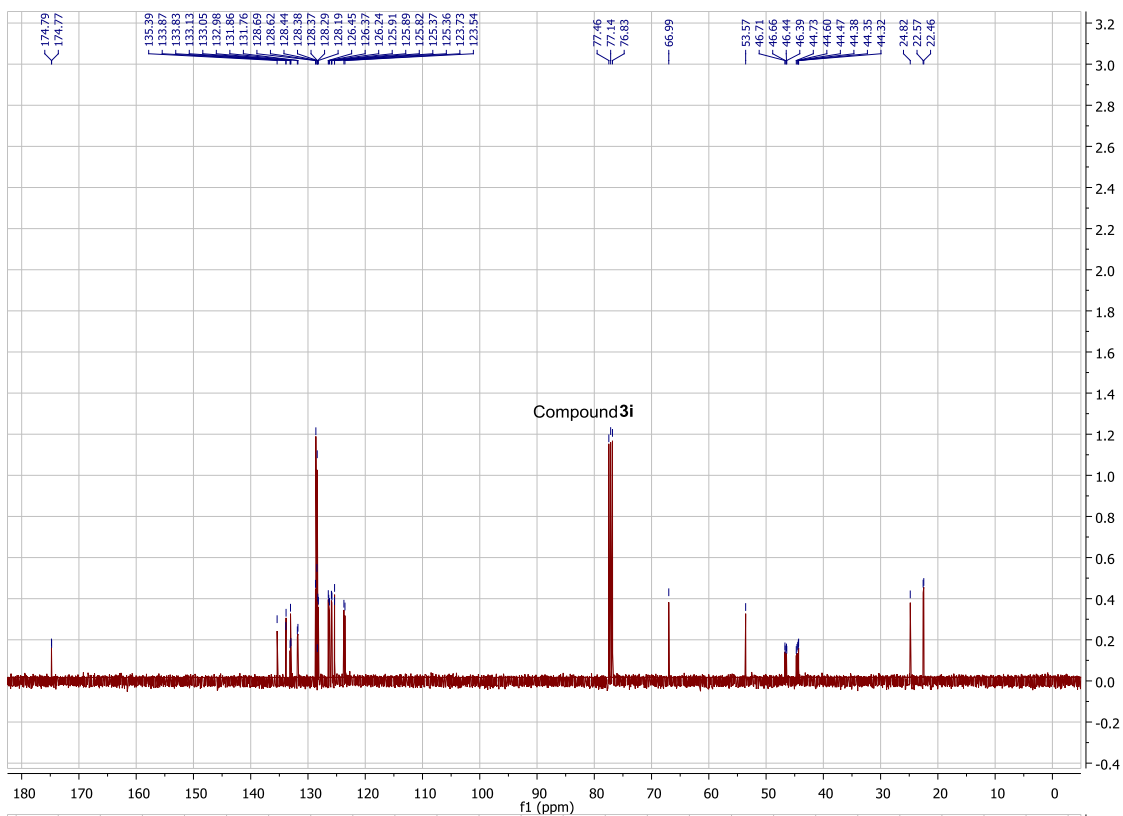




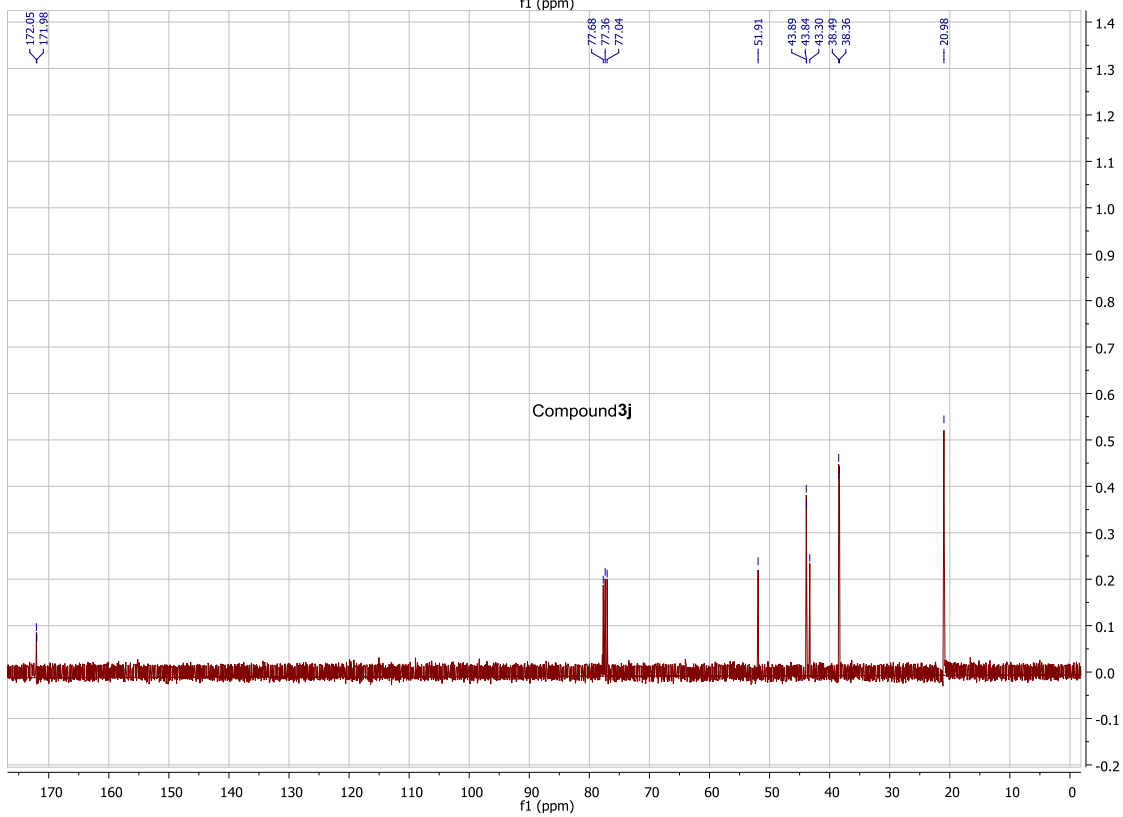
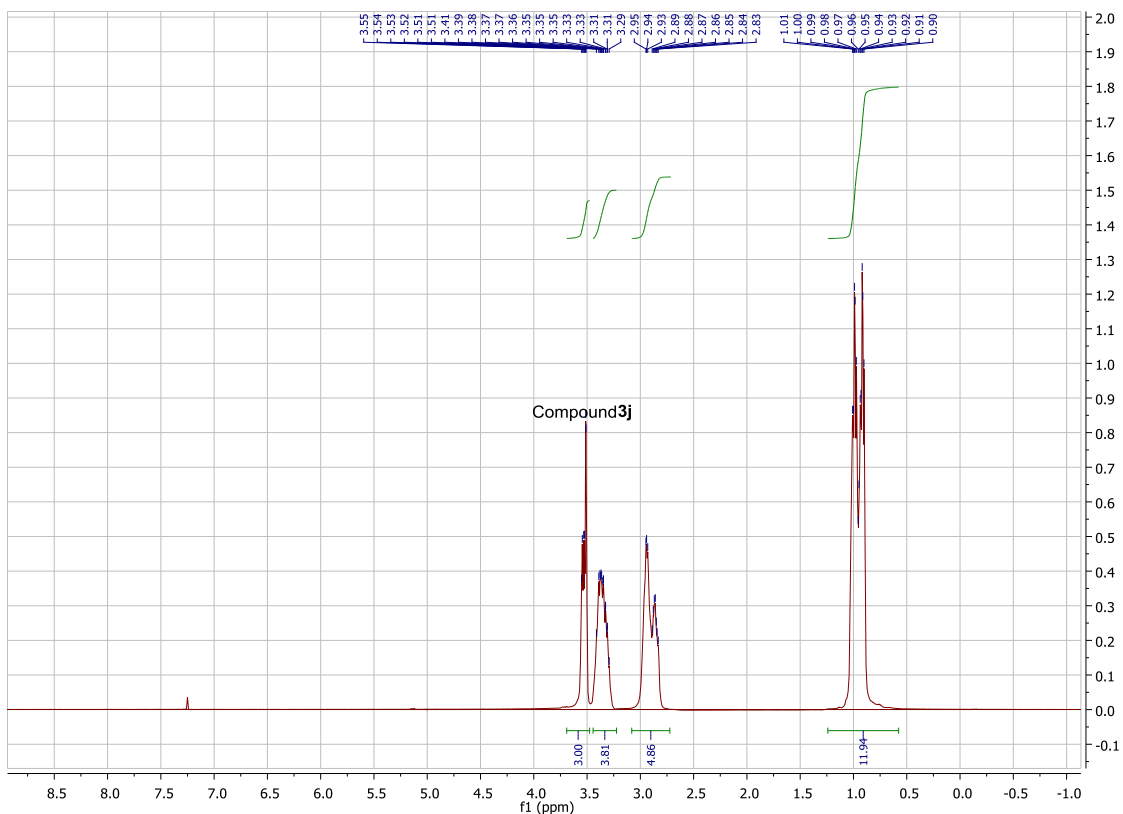
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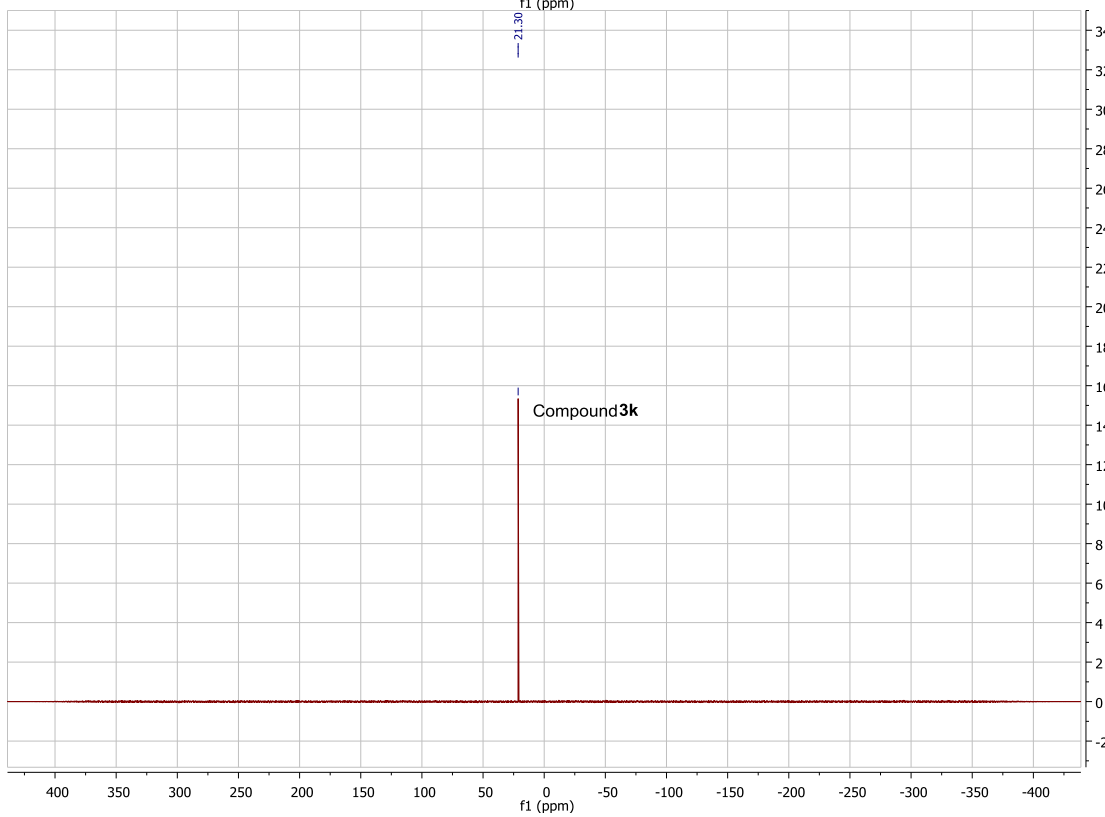
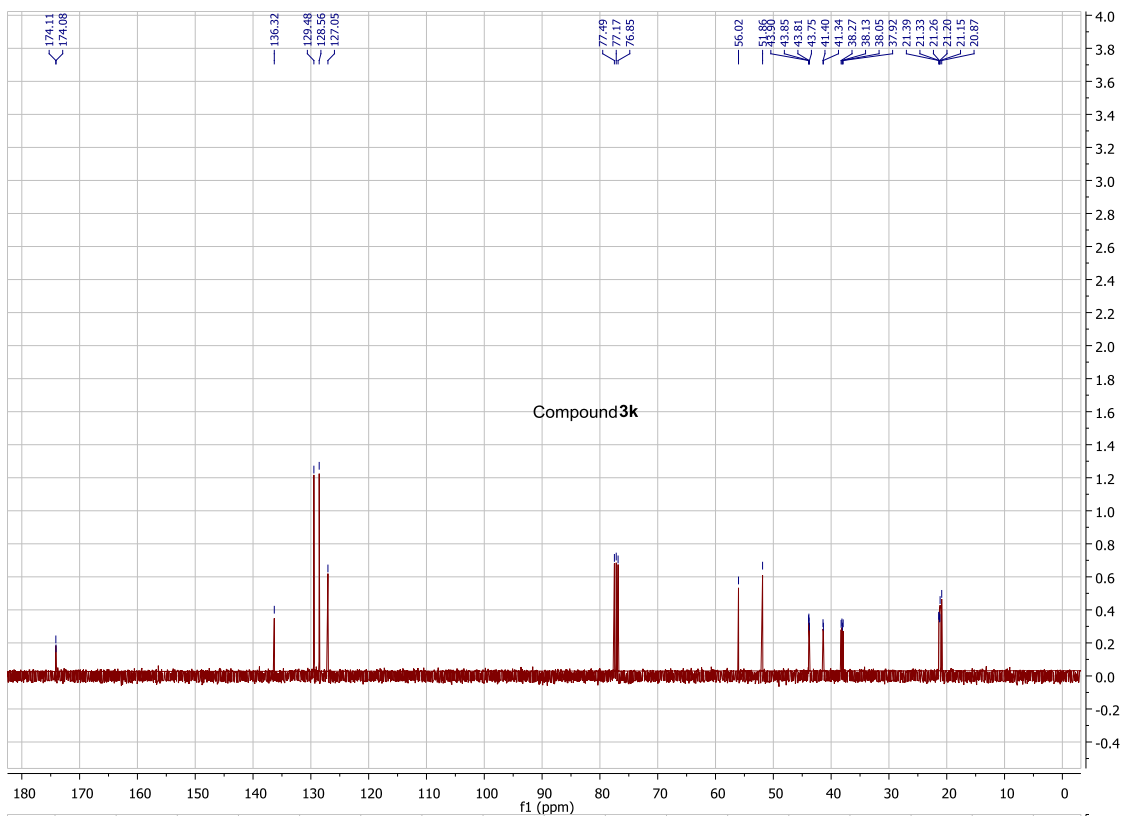




Compound 3j

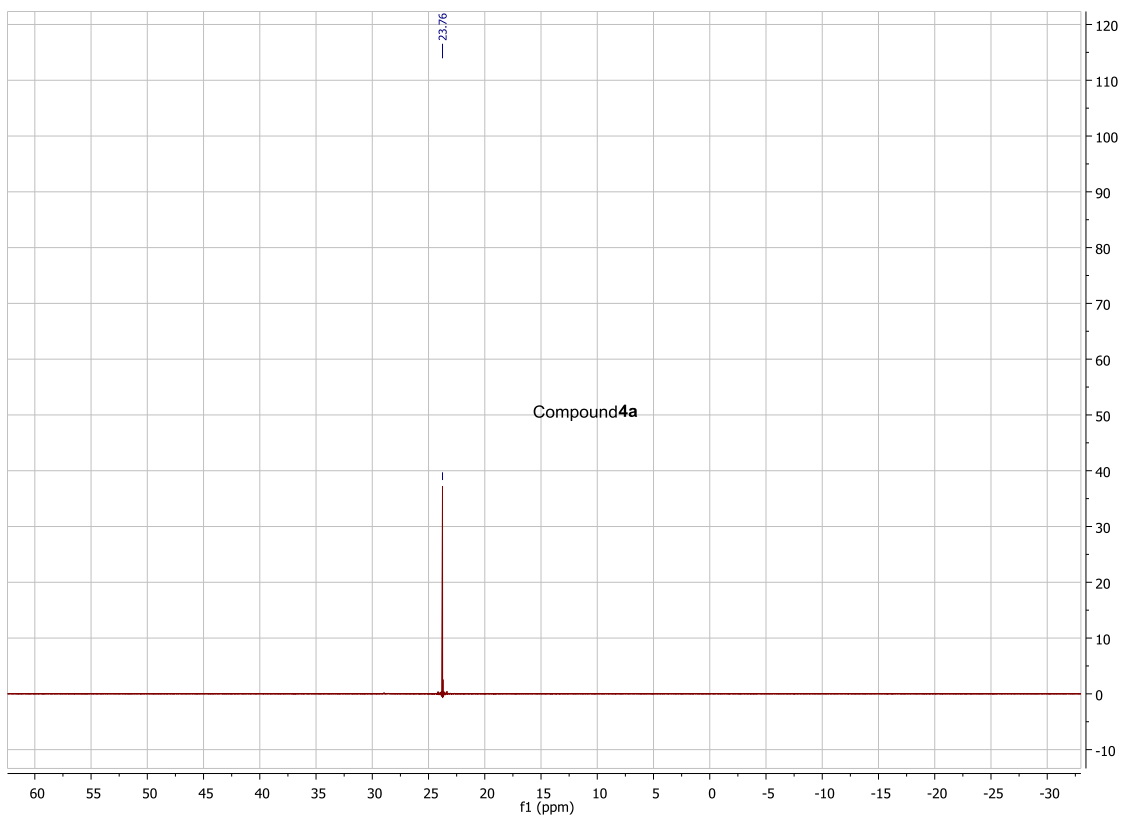






Compound 4a





**Compound 4b**

